



FCC TEST REPORT

FCC ID:2BWU7-V5

Report Number..... : ZKT-2603233086E-3

Date of Test..... Mar. 23, 2026 to Jul. 13, 2026

Date of issue..... Jul. 13, 2026

Total number of pages..... 111

Test Result : PASS

Testing Laboratory..... : Shenzhen ZKT Technology Co., Ltd.

Address 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name : Shenzhen Linland Youpin Technology Co., Ltd

Address 2F558, Area B, Gushu Huating, No. 38 Gushu 1st Road, Guxing Community, Xixiang Street, Bao' an District, Shenzhen

Manufacturer's name : Shenzhen Linland Youpin Technology Co., Ltd

Address 2F558, Area B, Gushu Huating, No. 38 Gushu 1st Road, Guxing Community, Xixiang Street, Bao' an District, Shenzhen

Test specification:

Standard..... FCC CFR Title 47 Part 15 Subpart E Section 15.407
ANSI C63.10-2020+Cor 1-2023
KDB 789033 D02 v02r01

Test procedure..... : /

Non-standard test method : N/A

Test Report Form No..... : /

Test Report Form(s) Originator..... : ZKT Testing

Master TRF : Dated: 2020-01-06

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Product name..... : Projector

Trademark : N/A

Model/Type reference..... V5
V5-KTV, V1-V100, U1-U100, HCS350-HCS390, P10-P90, S10-S90

Ratings..... Input: 100-240V ~ 50/60Hz
Output: 12V $\overline{\text{---}}$ 1.5A / 36V $\overline{\text{---}}$ 1.5A



Testing procedure and testing location:

Testing Laboratory.....: **Shenzhen ZKT Technology Co., Ltd.**

Address.....: 1/F, No. 101, Building B, No. 6, Tangwei Community
Industrial Avenue, Fuhai Street, Bao'an District,
Shenzhen, China

Tested by (name + signature).....: Jim Liu

Reviewer (name + signature).....: Jackson Fang

Approved (name + signature).....: Lake Xie





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1. VERSION

Report No.	Version	Description	Approved
ZKT-2603233086E-3	Rev.01	Initial issue of report	Jul. 13, 2026



2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.407) , Subpart E			
Standard Section	Test Item	Judgment	Remark
15.207	AC Power Line Conducted Emission	PASS	
789033 D02 General U-NII	Duty Cycle	PASS	
15.209(a) 15.407 (b)(1) 15.407 (b)(4) 15.407 (b)(8)	Spurious Radiated Emissions	PASS	
15.407 (a)(12) 15.407(e)	26dB Emission Bandwidth & 6dB Occupied Bandwidth	PASS	
15.407 (a)(1) 15.407 (a)(3)	Maximum Conducted Output Power	PASS	
2.1051, 15.407(b)(1) 15.407(b)(4)	Band Edge	PASS	
15.407 (a)(1) 15.407 (a)(3)	Power Spectral Density	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report



2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.

Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 927491

Designation Number: CN1431

IC Registered No.: 27033

CAB identifier: CN0110

2.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(9KHz-30MHz)	U=4.5dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-6GHz)	U=4.9dB
4	3m chamber Radiated spurious emission(6GHz-40GHz)	U=5.0dB
5	Conducted disturbance	U=3.2dB
6	RF Band Edge	U=1.68dB
7	RF power conducted	U=1.86dB
8	RF conducted Spurious Emission	U=2.2dB
9	RF Occupied Bandwidth	U=1.8MHz
10	RF Power Spectral Density	U=1.75dB
11	humidity uncertainty	U=5.3%
12	Temperature uncertainty	U=0.59°C



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	Projector	
Model No.:	V5	
Serial Model:	V5-KTV, V1-V100, U1-U100, HCS350-HCS390, P10-P90, S10-S90	
Model Different.:	1.Different exterior colors are provided, and knitted fabric is added to the lens housing. 2.Model V5-KTV features a thick base where the speaker is installed inside the base.	
Sample ID	ZKT-2603233086E-3	
Sample(s) Status:	Engineer sample	
Product Description	IEEE 802.11 WLAN Mode Supported	☒ 802.11a/n/ac/ax
	Modulation Technology	802.11a/n/ac: Orthogonal Frequency Division Multiplexing(OFDM) 802.11ax: Orthogonal Frequency Division Multiple Access(OFDMA)
	Data Rate	802.11a: 6/9/12/24/18/36/48/54Mbit/s 802.11n: MCS0-MCS7 802.11ac: MCS0-MCS9 802.11ax: MCS0-MCS11
	Operating Frequency Range	☒ 5180-5240MHz for 802.11 a/n/ac/ax (20M); ☒ 5190-5230MHz for 802.11 n/ac/ax (40M); ☒ 5210MHz for 802.11 ac/ax (80M). ☒ 5745-5825 MHz for 802.11 a/n/ac/ax (20M); ☒ 5755-5795 MHz for 802.11 n/ac/ax (40M);
	Number of Channels	☒ 4 channels for 802.11 a/n/ac/ax (20M) in the 5180-5240MHz band ; ☒ 2 channels for 802.11 n/ac/ax (40M) in the 5190-5230 MHz band ; ☒ 1 channels for 802.11 ac/ax (80M) in the 5210MHz band. ☒ 5 channels for 802.11 a/n/ac/ax (20M) in the 5745-5825MHz band ; ☒ 2 channels for 802.11 n/ac/ax (40M) in the 5755-5795 MHz band ;
Antenna Type:	PCB Antenna	
Antenna Gain:	5.2G: 2.0dB 5.8G: 2.1dB	
Power supply:	Input: 100-240V ~ 50/60Hz Output: 12V $\overline{\text{---}}$ 1.5A / 36V $\overline{\text{---}}$ 1.5A	
Note1: 802.11ax Full RU is supported only.		

Note:

For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



802.11a/n/ac/ax (20MHz) Frequency Channel For 5.2G							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5200	40	5220	48	5240
802.11a/n/ac/ax (20 MHz) Frequency Channel For 5.8G							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	153	5765	157	5785	161	5805
165	5825	-	-	-	-	-	-
802.11n/ac/ax (40MHz) Frequency Channel For 5.2G							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230	-	-	-	-
802.11n/ac/ax (40MHz) Frequency Channel For 5.8G							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795	-	-	-	-
802.11ac/ax (80MHz) Frequency Channel For 5.2G							
Channel		Frequency (MHz)					
42		5210					
802.11ac/ax (80MHz) Frequency Channel For 5.8G							
Channel		Frequency (MHz)					
155		5775					

3.2 DESCRIPTION OF TEST MODES

Transmitting mode	Keep the EUT in continuously transmitting mode			
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.				
We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows: For battery operated equipment, the equipment tests shall be performed using a new battery.				
Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.				
Mode	802.11a	802.11n	802.11ac	802.11ax
Data rate	6Mbps	MCS0(HT0)	MCS0(VHT0)	MCS0(HE0)

Test Software	CMD
Power level setup	Default



Pretest Mode	Description
Mode 1	802.11 a/n/ac/ax (20M) CH 36/CH 40/CH 48 For 5.2G CH 149/CH 157/CH 165 For 5.8G
Mode 2	802.11 n/ac/ax (40M) CH 38/CH 46 For 5.2G CH 151/CH 159 For 5.8G
Mode 3	802.11 ac/ax (80M) CH 42 For 5.2G CH 155 For 5.8G

Final Test Mode	For Conducted Emission
	Description
Mode 1	802.11 a/n/ac/ax (20M) CH 36/CH 40/CH 48 For 5.2G CH 149/CH 157/CH 165 For 5.8G
Mode 2	802.11 n/ac/ax (40M) CH 38/CH 46 For 5.2G CH 151/CH 159 For 5.8G
Mode 3	802.11 ac/ax (80M) CH 42 For 5.2G CH 155 For 5.8G

Final Test Mode	For Radiated Emission
	Description
Mode 1	802.11 a/n/ac/ax (20M) CH 36/CH 40/CH 48 For 5.2G CH 149/CH 157/CH 165 For 5.8G
Mode 2	802.11 n/ac/ax (40M) CH 38/CH 46 For 5.2G CH 151/CH 159 For 5.8G
Mode 3	802.11 ac/ax (80M) CH 42 For 5.2G CH 155 For 5.8G



3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission



Radiated Emission



3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Projector	N/A	V5	N/A	EUT
A-1	AC/DC Adapter	OLEAD	OLD24D-120200U	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) EUT is tested with new battery.



3.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Conduction Emissions Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Sep. 23, 2025	Sep. 22, 2026
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Sep. 19, 2025	Sep. 18, 2026
3	Test Cable	N/A	C-01	N/A	N/A	May. 22, 2025	May. 21, 2026
4	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Oct. 24, 2025	Oct. 23, 2026
5	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\

Radiation Emissions & Radiation Spurious Emissions Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 20, 2025	Sep. 19, 2026
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 20, 2025	Sep. 19, 2026
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Oct. 24, 2025	Oct. 23, 2026
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	00877	N/A	Sep. 20, 2025	Sep. 19, 2026
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Sep. 20, 2025	Sep. 19, 2026
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Sep. 30, 2025	Sep. 29, 2026
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Sep. 20, 2025	Sep. 19, 2026
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Sep. 19, 2025	Sep. 18, 2026
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Sep. 19, 2025	Sep. 18, 2026
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Oct. 24, 2025	Oct. 23, 2026
11	Test Cable	N/A	R-01	N/A	N/A	May. 25, 2025	May. 24, 2026
12	Test Cable	N/A	R-02	N/A	N/A	May. 25, 2025	May. 24, 2026
13	Test Cable	N/A	R-03	N/A	N/A	May. 25, 2025	May. 24, 2026
14	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
15	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\
16	Turntable	MF	MF-7802BS	N/A	N/A	\	\
17	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\
18	Constant temperature and humidity test chamber	N/A	GX-3000-10 00LT	N/A	N/A	Nov. 01, 2025	Oct. 31, 2026



RF Conducted Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 20, 2025	Sep. 19, 2026
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 20, 2025	Sep. 19, 2026
3	Test Cable	N/A	RF-01	N/A	N/A	May. 25, 2025	May. 24, 2026
4	Test Cable	N/A	RF-02	N/A	N/A	May. 25, 2025	May. 24, 2026
5	Test Cable	N/A	RF-03	N/A	N/A	May. 25, 2025	May. 24, 2026
6	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Sep. 19, 2025	Sep. 18, 2026
7	Signal Generator	Agilent	N5182A	N/A	A.01.87	Sep. 20, 2025	Sep. 19, 2026
8	Magnetic Field Probe Tester	Narda	ELT-400	0-0344/M-1752	N/A	Sep. 25, 2025	Sep. 24, 2026
9	SHIELD BOX	TESCOM	TC-5970C	5970C015553	N/A	Dec. 18, 2025	Dec. 17, 2026
10	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Sep. 28, 2025	Sep. 27, 2026
11	MWRF Power Meter Test system	MW	MW100-RF CB	N/A	N/A	Sep. 19, 2025	Sep. 18, 2026
12	D.C. Power Supply	LongWei	TPR-6405 D	N/A	N/A	\	\
13	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\



Conduction Emissions Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Sep. 23, 2025	Sep. 22, 2026
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Sep. 19, 2025	Sep. 18, 2026
3	Test Cable	N/A	C-01	N/A	N/A	May 22, 2026	May 21, 2027
4	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Oct. 24, 2025	Oct. 23, 2026
5	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\

Radiation Emissions & Radiation Spurious Emissions Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 20, 2025	Sep. 19, 2026
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 20, 2025	Sep. 19, 2026
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Oct. 24, 2025	Oct. 23, 2026
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	00877	N/A	Sep. 20, 2025	Sep. 19, 2026
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Sep. 20, 2025	Sep. 19, 2026
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Sep. 30, 2025	Sep. 29, 2026
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Sep. 20, 2025	Sep. 19, 2026
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Sep. 19, 2025	Sep. 18, 2026
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Sep. 19, 2025	Sep. 18, 2026
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Oct. 24, 2025	Oct. 23, 2026
11	Test Cable	N/A	R-01	N/A	N/A	May 25, 2026	May 24, 2027
12	Test Cable	N/A	R-02	N/A	N/A	May 25, 2026	May 24, 2027
13	Test Cable	N/A	R-03	N/A	N/A	May 25, 2026	May 24, 2027
14	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
15	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\
16	Turntable	MF	MF-7802BS	N/A	N/A	\	\
17	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\



RF Conducted Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 20, 2025	Sep. 19, 2026
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 20, 2025	Sep. 19, 2026
3	Test Cable	N/A	RF-01	N/A	N/A	May 25, 2026	May 24, 2027
4	Test Cable	N/A	RF-02	N/A	N/A	May 25, 2026	May 24, 2027
5	Test Cable	N/A	RF-03	N/A	N/A	May 25, 2026	May 24, 2027
6	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Sep. 19, 2025	Sep. 18, 2026
7	Signal Generator	Agilent	N5182A	N/A	A.01.87	Sep. 20, 2025	Sep. 19, 2026
8	Magnetic Field Probe Tester	Narda	ELT-400	0-0344/M-1752	N/A	Sep. 25, 2025	Sep. 24, 2026
9	SHIELD BOX	TESCOM	TC-5970C	5970C015553	N/A	Dec. 18, 2025	Dec. 17, 2026
10	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Sep. 28, 2025	Sep. 27, 2026
11	MWRF Power Meter Test system	MW	MW100-RF CB	N/A	N/A	Sep. 19, 2025	Sep. 18, 2026
12	D.C. Power Supply	LongWei	TPR-6405 D	N/A	N/A	\	\
13	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\



4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10-2020+Cor 1-2023
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) *Decreases with the logarithm of the frequency.

4.1.2 TEST PROCEDURE

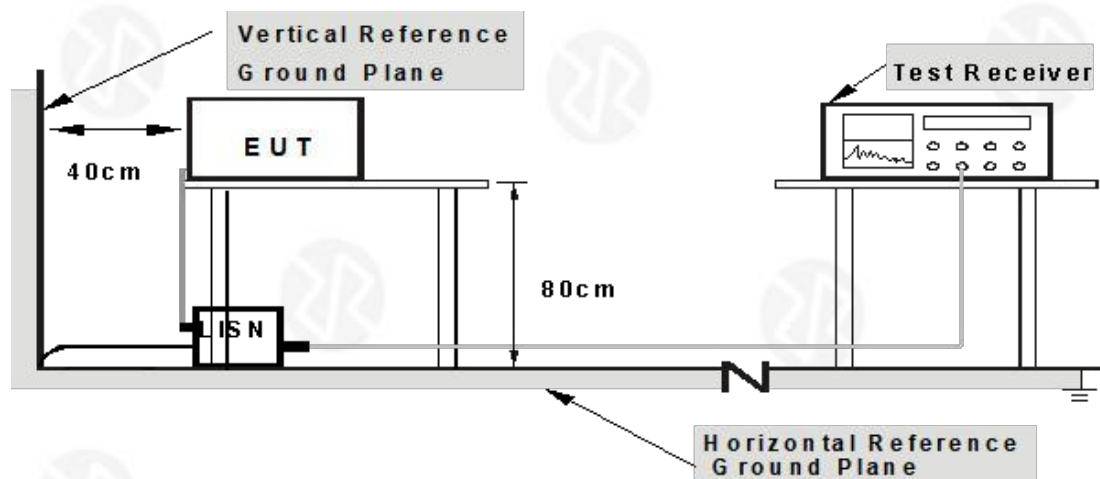
- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation



4.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80
from other units and other metal planes

4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

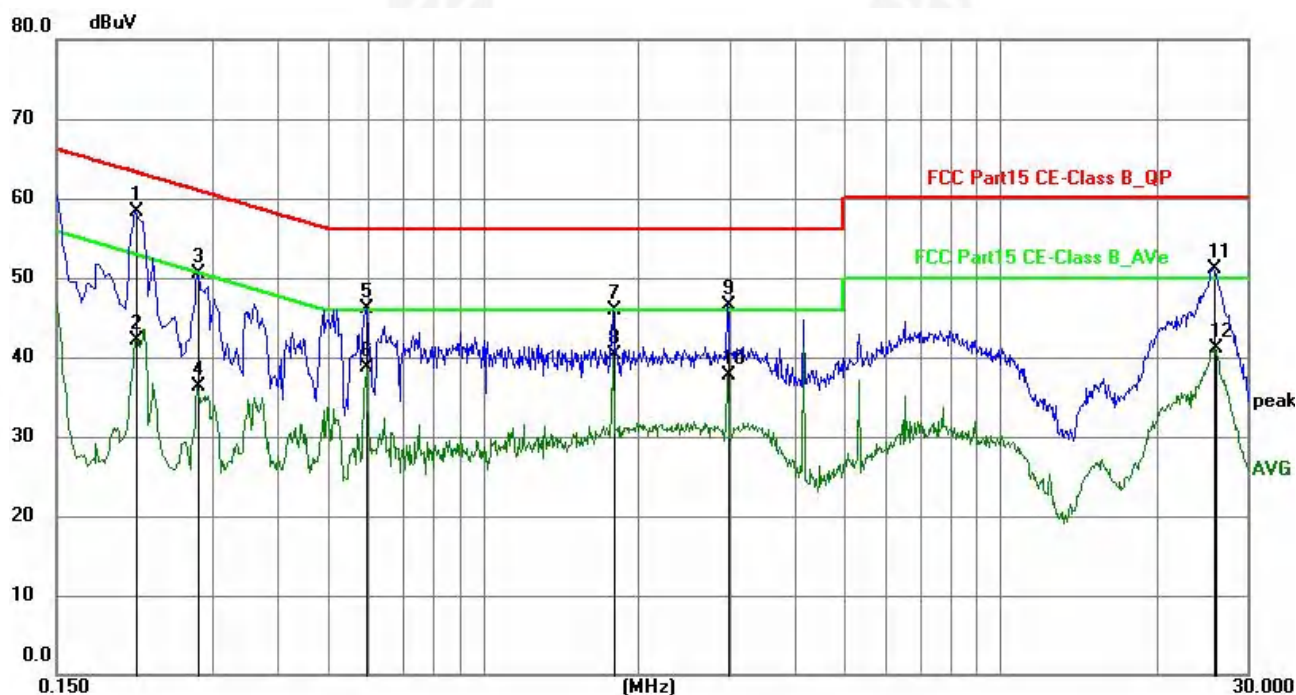


4.1.6 TEST RESULT

5.2G:

Test Model:V5

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	802.11n20 - 5180MHz



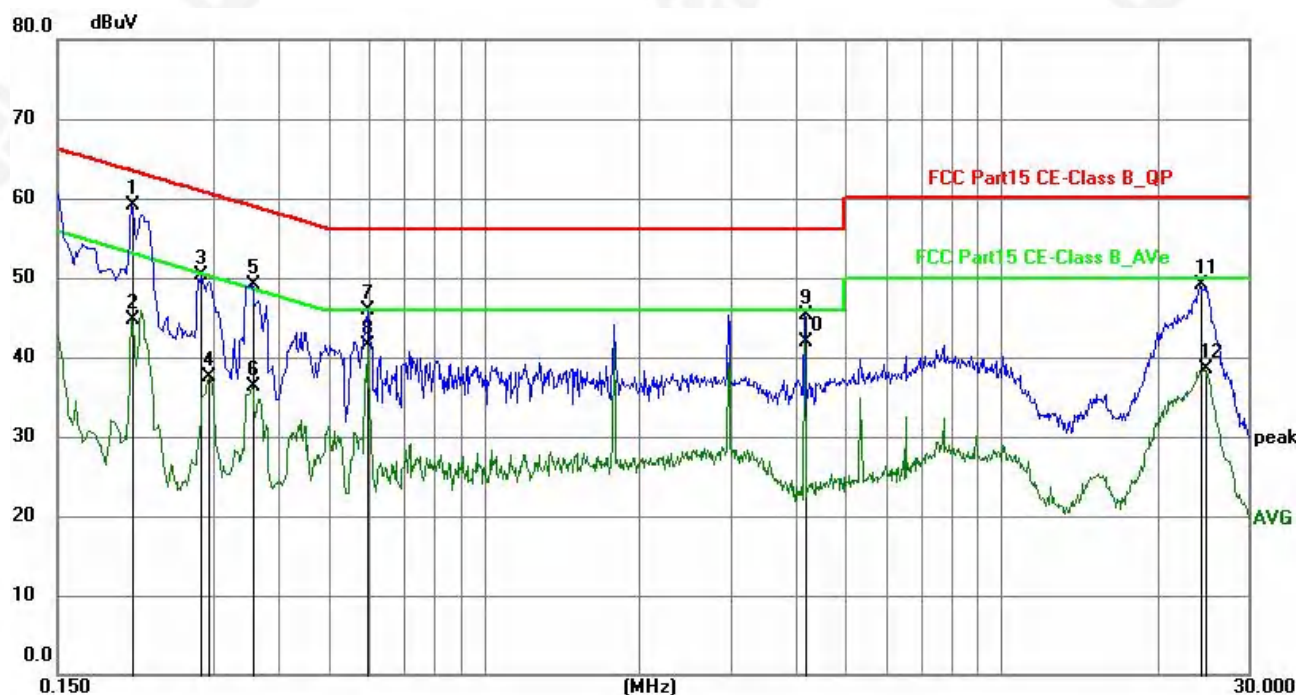
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2129	38.70	19.64	58.34	63.09	-4.75	QP	P	
2	0.2129	22.54	19.64	42.18	53.09	-10.91	AVG	P	
3	0.2805	30.79	19.64	50.43	60.80	-10.37	QP	P	
4	0.2805	16.75	19.64	36.39	50.80	-14.41	AVG	P	
5	0.5954	26.51	19.62	46.13	56.00	-9.87	QP	P	
6	0.5954	19.04	19.62	38.66	46.00	-7.34	AVG	P	
7	1.7834	26.26	19.66	45.92	56.00	-10.08	QP	P	
8	1.7834	20.60	19.66	40.26	46.00	-5.74	AVG	P	
9	2.9759	26.84	19.67	46.51	56.00	-9.49	QP	P	
10	2.9759	18.11	19.67	37.78	46.00	-8.22	AVG	P	
11	25.8134	31.35	19.73	51.08	60.00	-8.92	QP	P	
12	26.0970	21.33	19.73	41.06	50.00	-8.94	AVG	P	

Note:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Reading level + Correct Factor.
4. Correct Factor= Lisen factor+ Cable loss factor + limiter factor.
5. Margin= Measurement Level-Limit.
6. The test data shows only the worst case 802.11n20 - 5180MHz.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	802.11n20 - 5180MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2084	39.44	19.66	59.10	63.27	-4.17	QP	P	
2	0.2084	25.03	19.66	44.69	53.27	-8.58	AVG	P	
3	0.2847	30.71	19.65	50.36	60.68	-10.32	QP	P	
4	0.2938	17.89	19.65	37.54	50.42	-12.88	AVG	P	
5	0.3568	29.41	19.65	49.06	58.80	-9.74	QP	P	
6	0.3568	16.60	19.65	36.25	48.80	-12.55	AVG	P	
7	0.5954	26.31	19.63	45.94	56.00	-10.06	QP	P	
8	0.5954	21.79	19.63	41.42	46.00	-4.58	AVG	P	
9	4.1684	25.67	19.71	45.38	56.00	-10.62	QP	P	
10	4.1684	22.16	19.71	41.87	46.00	-4.13	AVG	P	
11	24.1615	29.42	19.78	49.20	60.00	-10.80	QP	P	
12	24.7423	18.80	19.77	38.57	50.00	-11.43	AVG	P	

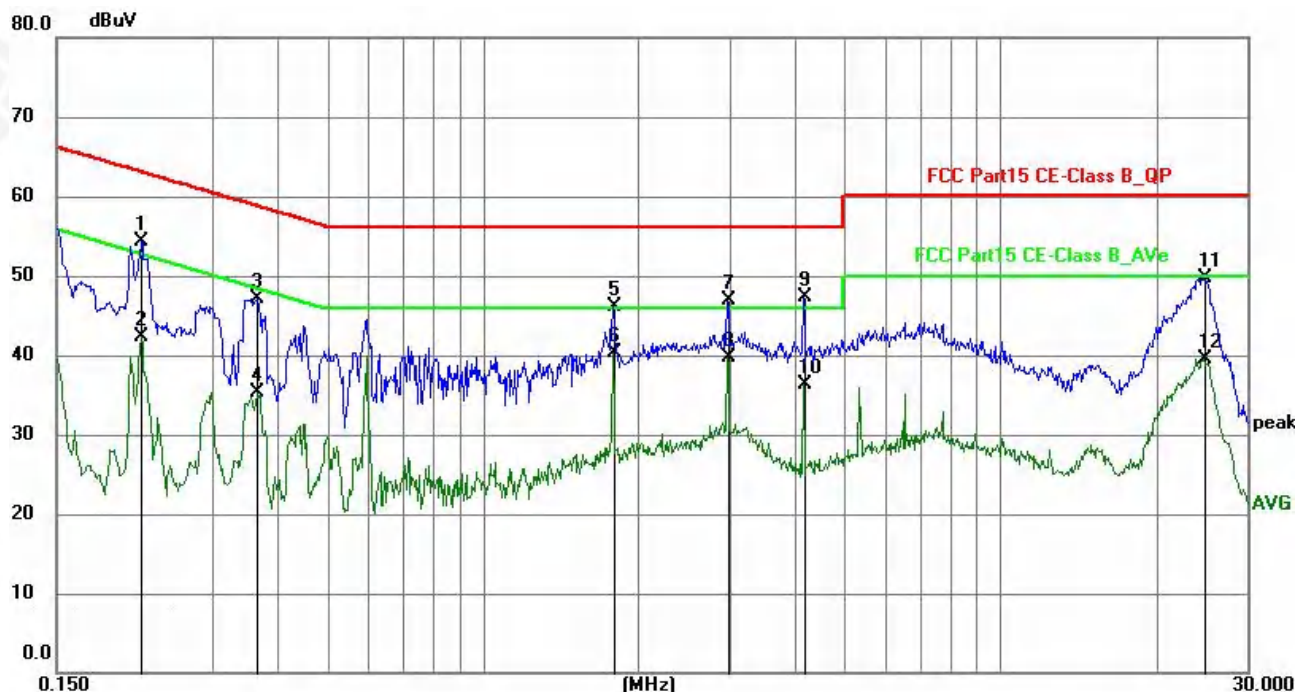
Note:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Reading level + Correct Factor.
4. Correct Factor= Liss factor+ Cable loss factor + limiter factor.
5. Margin= Measurement Level-Limit.
7. The test data shows only the worst case 802.11n20 - 5180MHz.



Test Model:V5-KTV

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	802.11n20 - 5180MHz



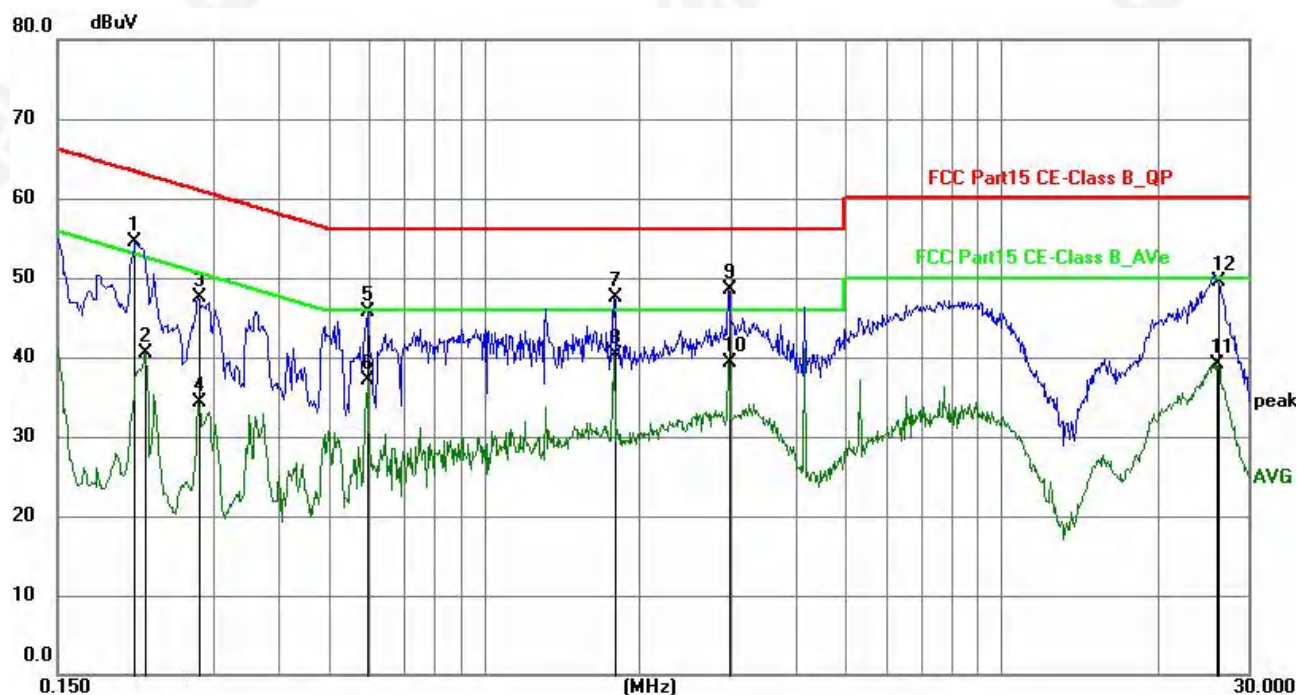
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2184	34.70	19.66	54.36	62.88	-8.52	QP	P	
2	0.2184	22.55	19.66	42.21	52.88	-10.67	AVG	P	
3	0.3659	27.51	19.65	47.16	58.59	-11.43	QP	P	
4	0.3659	15.65	19.65	35.30	48.59	-13.29	AVG	P	
5	1.7879	26.37	19.67	46.04	56.00	-9.96	QP	P	
6	1.7879	20.66	19.67	40.33	46.00	-5.67	AVG	P	
7	2.9759	27.19	19.68	46.87	56.00	-9.13	QP	P	
8	2.9759	20.04	19.68	39.72	46.00	-6.28	AVG	P	
9	4.1684	27.67	19.71	47.38	56.00	-8.62	QP	P	
10	4.1684	16.66	19.71	36.37	46.00	-9.63	AVG	P	
11	24.7423	30.01	19.77	49.78	60.00	-10.22	QP	P	
12	24.7423	19.80	19.77	39.57	50.00	-10.43	AVG	P	

Note:

8. An initial pre-scan was performed on the line and neutral lines with peak detector.
9. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
10. Final Level = Reading level + Correct Factor.
11. Correct Factor= Lisen factor+ Cable loss factor + limiter factor.
12. Margin= Measurement Level-Limit.
13. The test data shows only the worst case 802.11n20 - 5180MHz.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	802.11n20 - 5180MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2116	34.89	19.64	54.53	63.14	-8.61	QP	P	
2	0.2220	20.84	19.64	40.48	52.74	-12.26	AVG	P	
3	0.2805	27.79	19.64	47.43	60.80	-13.37	QP	P	
4	0.2805	14.75	19.64	34.39	50.80	-16.41	AVG	P	
5	0.5954	26.01	19.62	45.63	56.00	-10.37	QP	P	
6	0.5954	17.54	19.62	37.16	46.00	-8.84	AVG	P	
7	1.7834	27.76	19.66	47.42	56.00	-8.58	QP	P	
8	1.7834	20.60	19.66	40.26	46.00	-5.74	AVG	P	
9	2.9759	28.84	19.67	48.51	56.00	-7.49	QP	P	
10	2.9759	19.61	19.67	39.28	46.00	-6.72	AVG	P	
11	26.0970	19.33	19.73	39.06	50.00	-10.94	AVG	P	
12	26.2362	29.75	19.73	49.48	60.00	-10.52	QP	P	

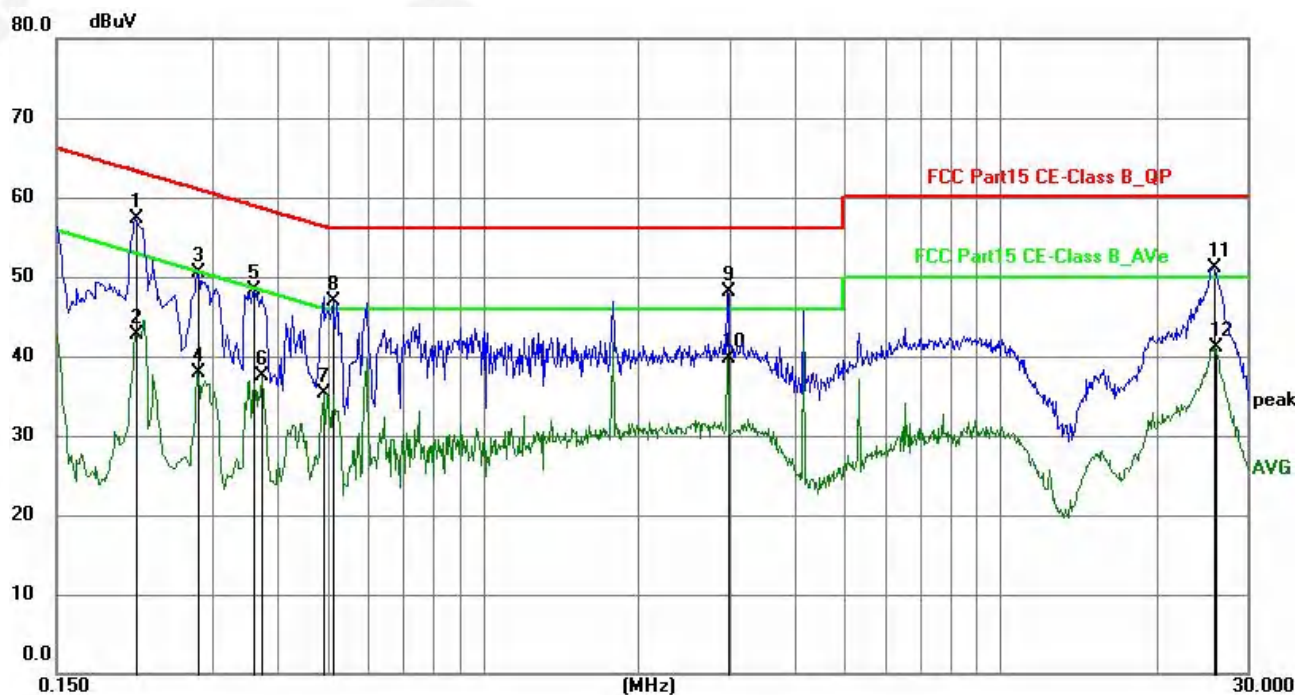
Note:

- An initial pre-scan was performed on the line and neutral lines with peak detector.
- Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- Final Level = Reading level + Correct Factor.
- Correct Factor= Liss factor+ Cable loss factor + limiter factor.
- Margin= Measurement Level-Limit.
- The test data shows only the worst case 802.11n20 - 5180MHz.

**5.8G:**

Test Model:V5

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	802.11n20 - 5745MHz



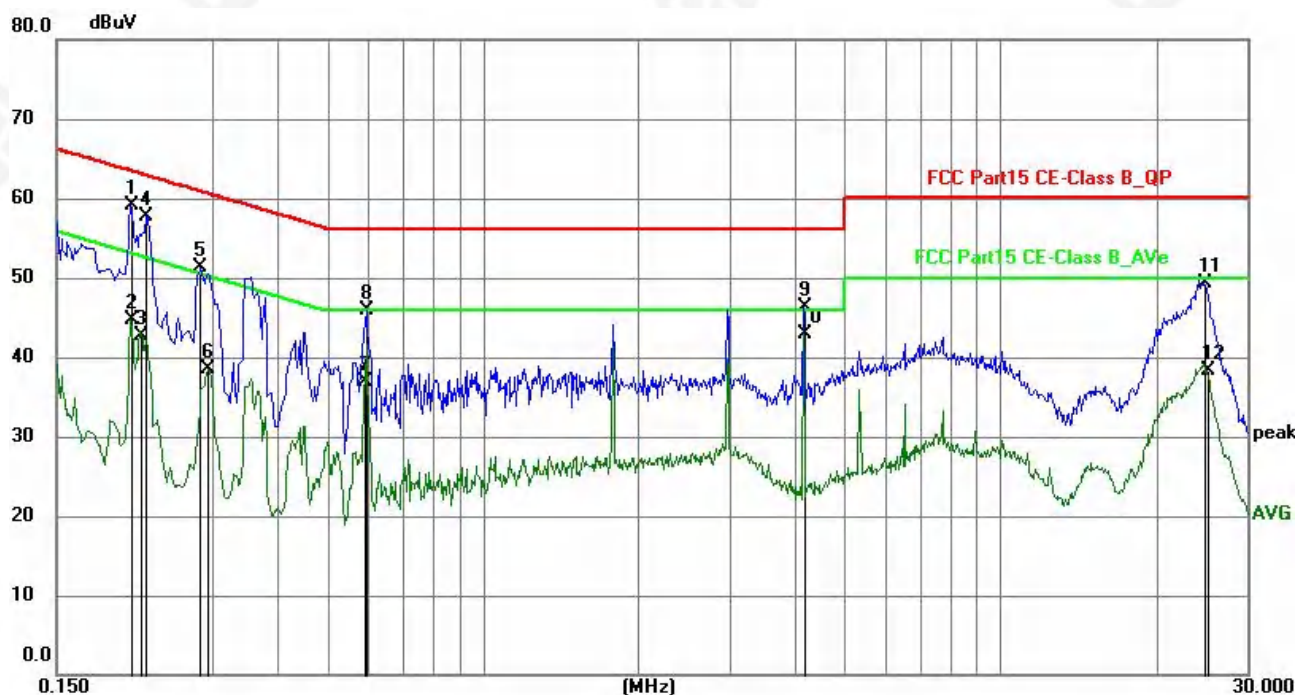
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2129	37.70	19.64	57.34	63.09	-5.75	QP	P	
2	0.2129	23.04	19.64	42.68	53.09	-10.41	AVG	P	
3	0.2805	30.79	19.64	50.43	60.80	-10.37	QP	P	
4	0.2805	18.25	19.64	37.89	50.80	-12.91	AVG	P	
5	0.3613	28.57	19.64	48.21	58.70	-10.49	QP	P	
6	0.3750	17.82	19.64	37.46	48.39	-10.93	AVG	P	
7	0.4919	15.66	19.64	35.30	46.14	-10.84	AVG	P	
8	0.5141	27.19	19.64	46.83	56.00	-9.17	QP	P	
9	2.9759	28.34	19.67	48.01	56.00	-7.99	QP	P	
10	2.9759	20.11	19.67	39.78	46.00	-6.22	AVG	P	
11	25.8134	31.35	19.73	51.08	60.00	-8.92	QP	P	
12	26.0970	21.33	19.73	41.06	50.00	-8.94	AVG	P	

Note:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Reading level + Correct Factor.
4. Correct Factor= Liscn factor+ Cable loss factor + limiter factor.
5. Margin= Measurement Level-Limit.T
6. The test data shows only the worst case 802.11n20 - 5745MHz.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	802.11n20 - 5745MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2084	39.44	19.66	59.10	63.27	-4.17	QP	P	
2	0.2084	25.03	19.66	44.69	53.27	-8.58	AVG	P	
3	0.2184	23.05	19.66	42.71	52.88	-10.17	AVG	P	
4	0.2230	37.99	19.66	57.65	62.71	-5.06	QP	P	
5	0.2847	31.71	19.65	51.36	60.68	-9.32	QP	P	
6	0.2938	18.89	19.65	38.54	50.42	-11.88	AVG	P	
7	0.5916	17.36	19.63	36.99	46.00	-9.01	AVG	P	
8	0.5954	26.31	19.63	45.94	56.00	-10.06	QP	P	
9	4.1684	26.67	19.71	46.38	56.00	-9.62	QP	P	
10	4.1684	23.16	19.71	42.87	46.00	-3.13	AVG	P	
11	24.7423	29.51	19.77	49.28	60.00	-10.72	QP	P	
12	25.0840	18.59	19.77	38.36	50.00	-11.64	AVG	P	

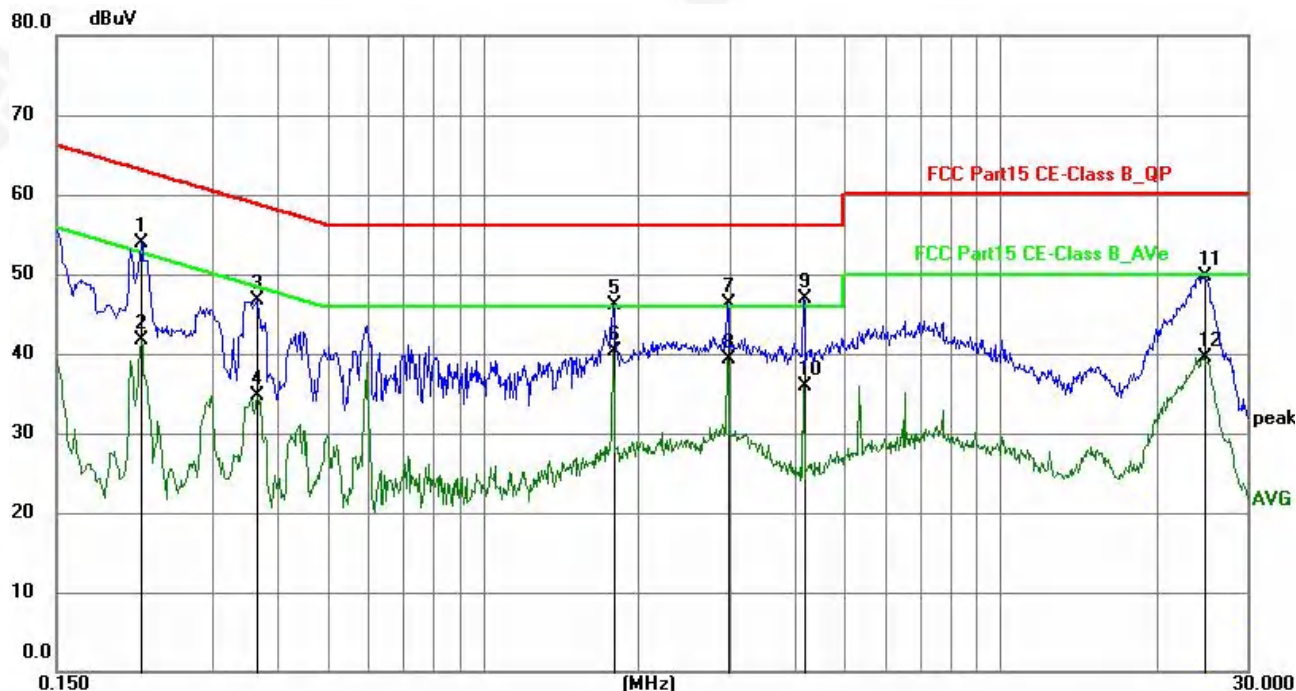
Note:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Reading level + Correct Factor.
4. Correct Factor= Lism factor+ Cable loss factor + limiter factor.
5. Margin= Measurement Level-Limit.
6. The test data shows only the worst case 802.11n20 - 5745MHz.



Test Model:V5-KT

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	802.11n20 - 5745MHz



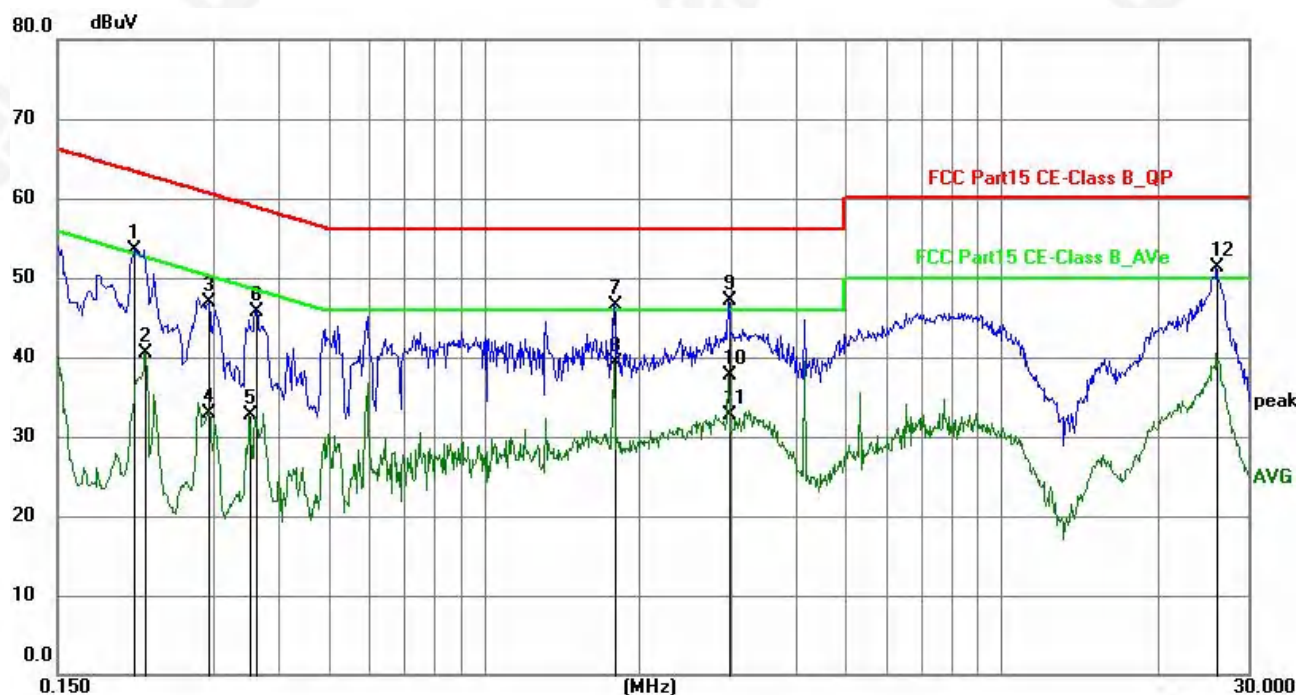
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2184	34.20	19.66	53.86	62.88	-9.02	QP	P	
2	0.2184	22.05	19.66	41.71	52.88	-11.17	AVG	P	
3	0.3659	27.01	19.65	46.66	58.59	-11.93	QP	P	
4	0.3659	15.15	19.65	34.80	48.59	-13.79	AVG	P	
5	1.7879	26.37	19.67	46.04	56.00	-9.96	QP	P	
6	1.7879	20.66	19.67	40.33	46.00	-5.67	AVG	P	
7	2.9759	26.69	19.68	46.37	56.00	-9.63	QP	P	
8	2.9759	19.54	19.68	39.22	46.00	-6.78	AVG	P	
9	4.1684	27.17	19.71	46.88	56.00	-9.12	QP	P	
10	4.1684	16.16	19.71	35.87	46.00	-10.13	AVG	P	
11	24.7423	30.01	19.77	49.78	60.00	-10.22	QP	P	
12	24.7423	19.80	19.77	39.57	50.00	-10.43	AVG	P	

Note:

- An initial pre-scan was performed on the line and neutral lines with peak detector.
- Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- Final Level = Reading level + Correct Factor.
- Correct Factor= Liscn factor+ Cable loss factor + limiter factor.
- Margin= Measurement Level-Limit.T
- The test data shows only the worst case 802.11n20 - 5745MHz.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	802.11n20 - 5745MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2116	33.89	19.64	53.53	63.14	-9.61	QP	P	
2	0.2220	20.84	19.64	40.48	52.74	-12.26	AVG	P	
3	0.2938	27.26	19.64	46.90	60.42	-13.52	QP	P	
4	0.2938	13.36	19.64	33.00	50.42	-17.42	AVG	P	
5	0.3523	13.15	19.64	32.79	48.91	-16.12	AVG	P	
6	0.3633	26.09	19.64	45.73	58.65	-12.92	QP	P	
7	1.7834	26.76	19.66	46.42	56.00	-9.58	QP	P	
8	1.7834	19.60	19.66	39.26	46.00	-6.74	AVG	P	
9	2.9759	27.34	19.67	47.01	56.00	-8.99	QP	P	
10	2.9759	18.11	19.67	37.78	46.00	-8.22	AVG	P	
11	2.9805	13.10	19.67	32.77	46.00	-13.23	AVG	P	
12	26.0970	31.57	19.73	51.30	60.00	-8.70	QP	P	

Note:

- An initial pre-scan was performed on the line and neutral lines with peak detector.
- Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- Final Level = Reading level + Correct Factor.
- Correct Factor= Lisen factor+ Cable loss factor + limiter factor.
- Margin= Measurement Level-Limit.
- The test data shows only the worst case 802.11n20 - 5745MHz.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 APPLICABLE STANDARD

According to FCC Part 15.407(d) and 15.209

4.2.2 CONFORMANCE LIMIT

According to FCC Part 15.407(b)(7): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

According to FCC Part 15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	2400/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Limits of Radiated Emission Measurement(Above 1000MHz)

Frequency(MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Remark :1. Emission level in dBuV/m=20 log (uV/m)

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

3. Distance extrapolation factor =40log(Specific distance/ test distance)(dB);

Limit line=Specific limits(dBuV) + distance extrapolation factor.

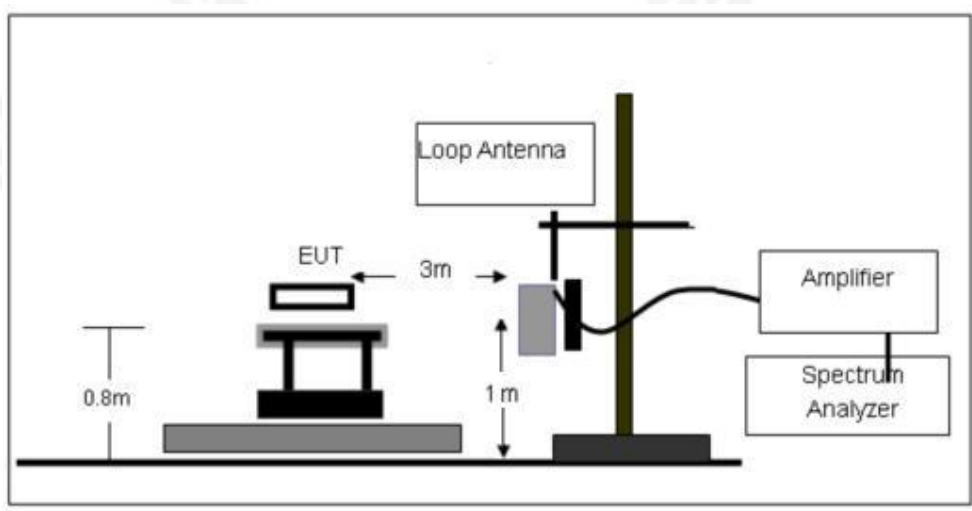
4.2.3 MEASURING INSTRUMENTS

The Measuring equipment is listed in the section 6.3 of this test report.

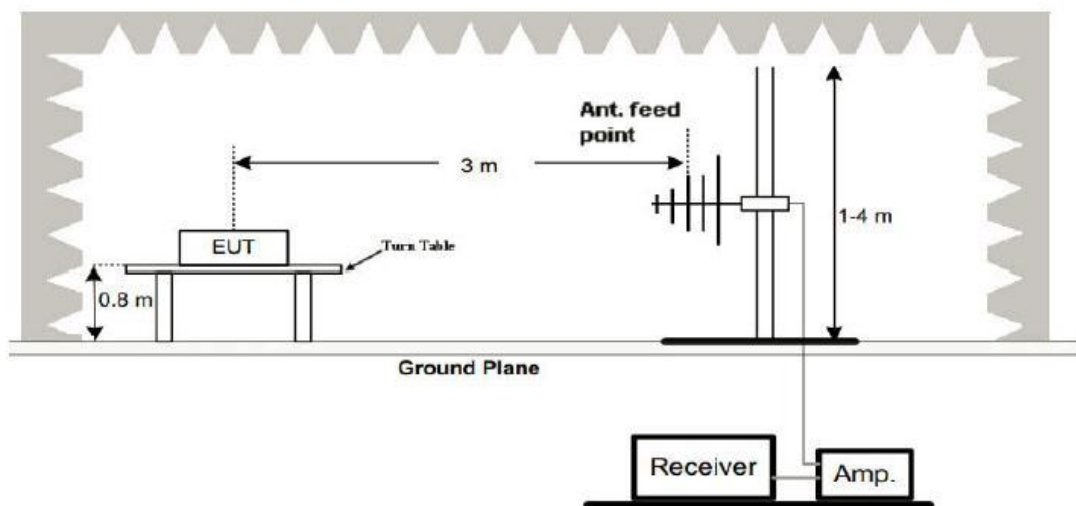


4.2.4 TEST CONFIGURATION

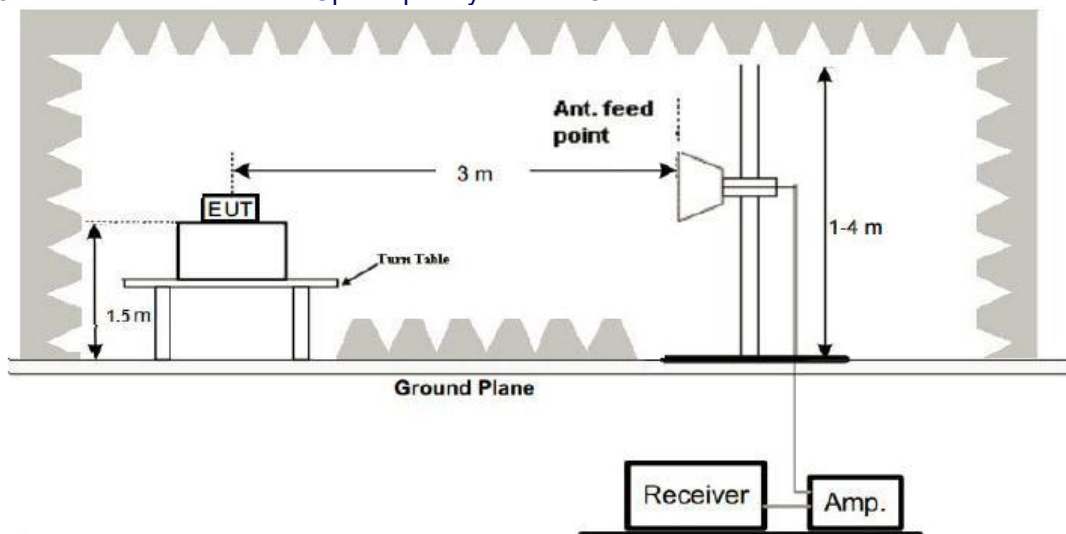
1. For radiated emissions below 30MHz



2. For radiated emissions from 30MHz to 1000MHz



3. Radiated Emission Test-Up Frequency Above 1GHz





4.2.5 TEST PROCEDURE

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2020+Cor 1-2023. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2020+Cor 1-2023 and CAN/CSA-CEI/IEC CISPR 22. This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item – EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \cdot \lg(100 [kHz] / \text{narrower RBW} [kHz])$. , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

4.2.6 TEST RESULT

Between 9KHz – 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

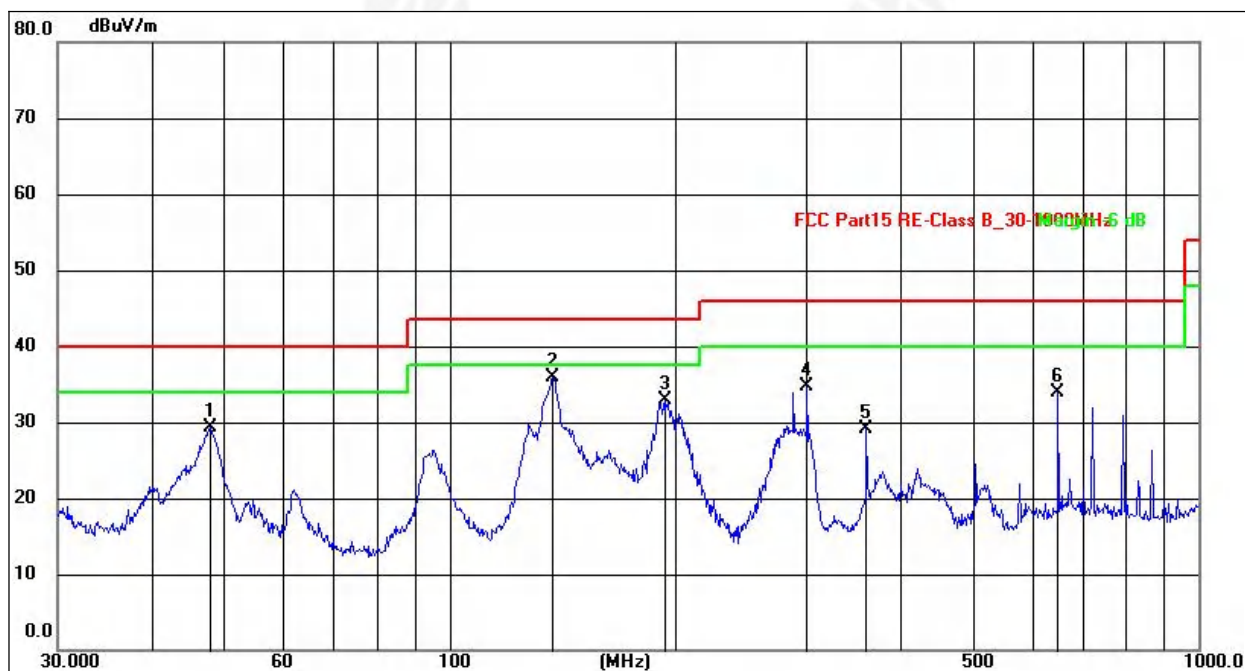


Between 30MHz – 1GHz

5.2G:

Test Model:V5

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Test Mode :	802.11n20 - 5180MHz



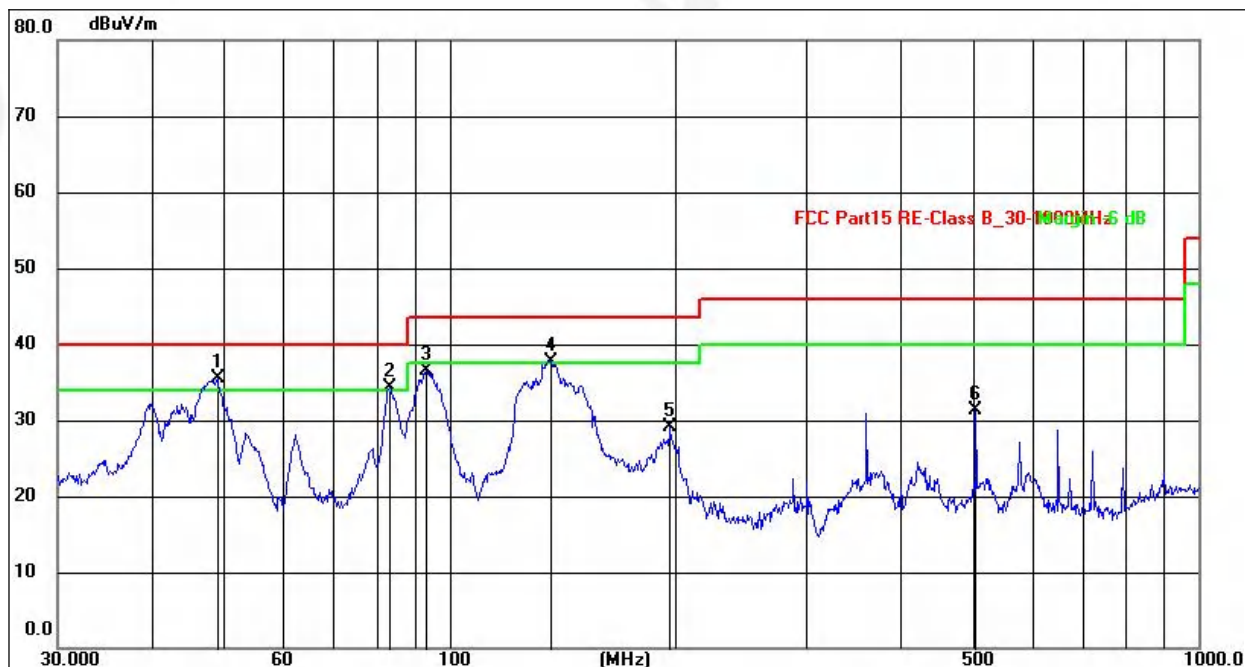
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	47.9938	44.61	-15.34	29.27	40.00	-10.73	QP
2	137.4200	55.33	-19.34	35.99	43.50	-7.51	QP
3	193.7726	54.41	-21.57	32.84	43.50	-10.66	QP
4	300.3672	56.24	-21.55	34.69	46.00	-11.31	QP
5	360.4476	50.55	-21.45	29.10	46.00	-16.90	QP
6	649.6594	47.30	-13.37	33.93	46.00	-12.07	QP

Note:

1. An initial pre-scan was performed on the peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor= Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin= Measurement Level-Limit.
7. The test data shows only the worst case 802.11n20 - 5180MHz.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Test Mode :	802.11n20 - 5180MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	49.0144	54.00	-18.55	35.45	40.00	-4.55	QP
2	83.2296	57.50	-23.25	34.25	40.00	-5.75	QP
3	93.1131	59.43	-22.98	36.45	43.50	-7.05	QP
4	136.4598	60.89	-23.19	37.70	43.50	-5.80	QP
5	197.2000	52.70	-23.69	29.01	43.50	-14.49	QP
6	504.7062	47.72	-16.49	31.23	46.00	-14.77	QP

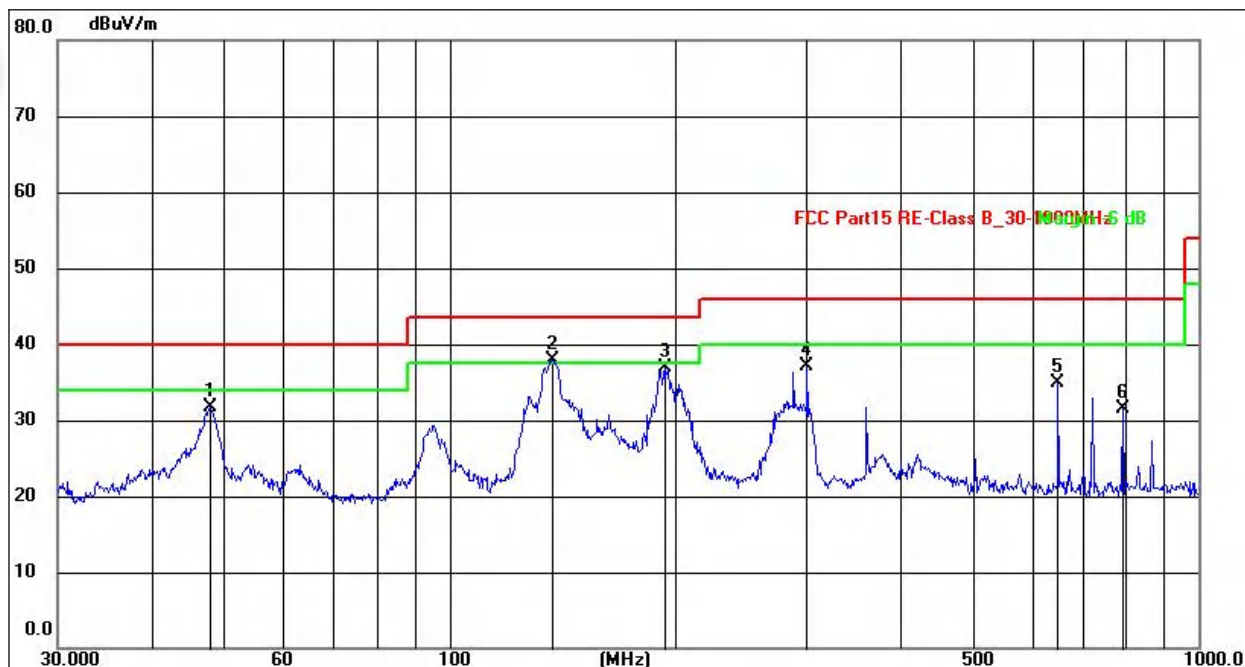
Note:

1. An initial pre-scan was performed on the peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor= Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin= Measurement Level-Limit.
7. The test data shows only the worst case 802.11n20 - 5180MHz.



Test Model:V5-KTV

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Test Mode :	802.11n20 - 5180MHz



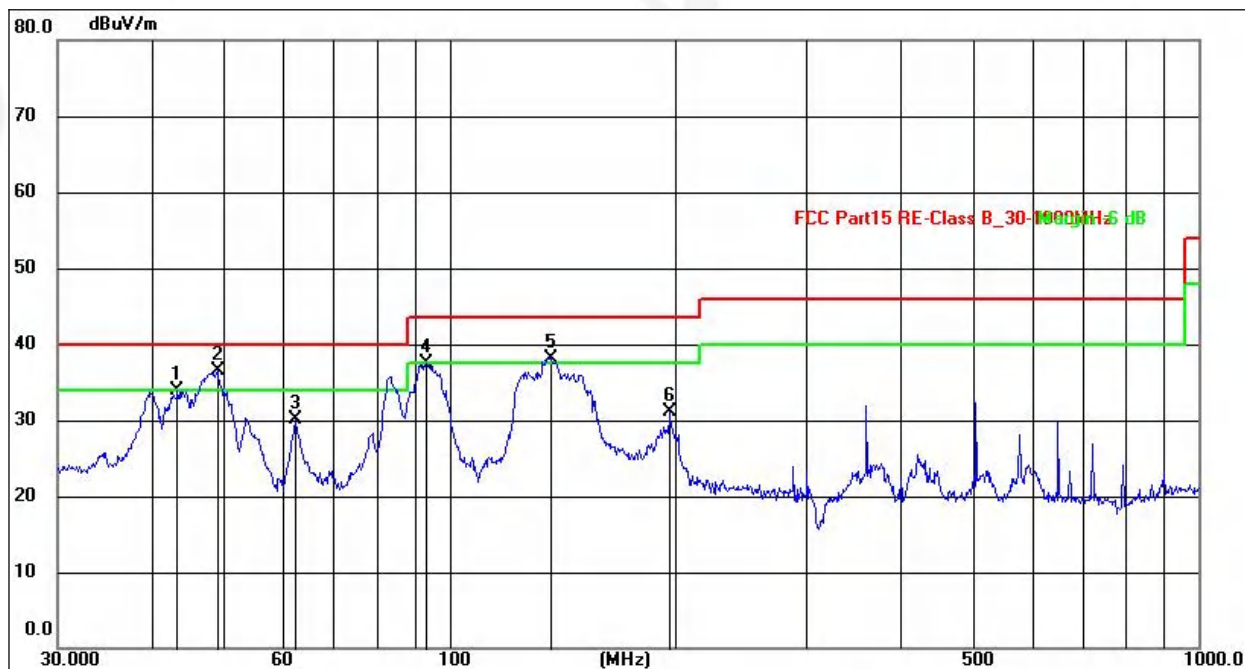
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	47.9938	47.11	-15.34	31.77	40.00	-8.23	QP
2	137.4200	57.33	-19.34	37.99	43.50	-5.51	QP
3	193.7726	58.41	-21.57	36.84	43.50	-6.66	QP
4	300.3672	58.74	-21.55	37.19	46.00	-8.81	QP
5	649.6594	48.30	-13.37	34.93	46.00	-11.07	QP
6	793.3958	44.46	-13.01	31.45	46.00	-14.55	QP

Note:

8. An initial pre-scan was performed on the peak detector.
9. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
10. The emission levels of other frequencies are very lower than the limit and not show in test report.
11. Final Level = Reading level + Correct Factor.
12. Correct Factor= Antenna factor+ Cable loss factor - Amplifier factor.
13. Margin= Measurement Level-Limit.
14. The test data shows only the worst case 802.11n20 - 5180MHz.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Test Mode :	802.11n20 - 5180MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	43.3534	52.15	-18.27	33.88	40.00	-6.12	QP
2	49.0144	55.00	-18.55	36.45	40.00	-3.55	QP
3	62.2128	50.03	-19.91	30.12	40.00	-9.88	QP
4	93.1131	60.43	-22.98	37.45	43.50	-6.05	QP
5	136.4598	61.39	-23.19	38.20	43.50	-5.30	QP
6	197.2000	54.70	-23.69	31.01	43.50	-12.49	QP

Note:

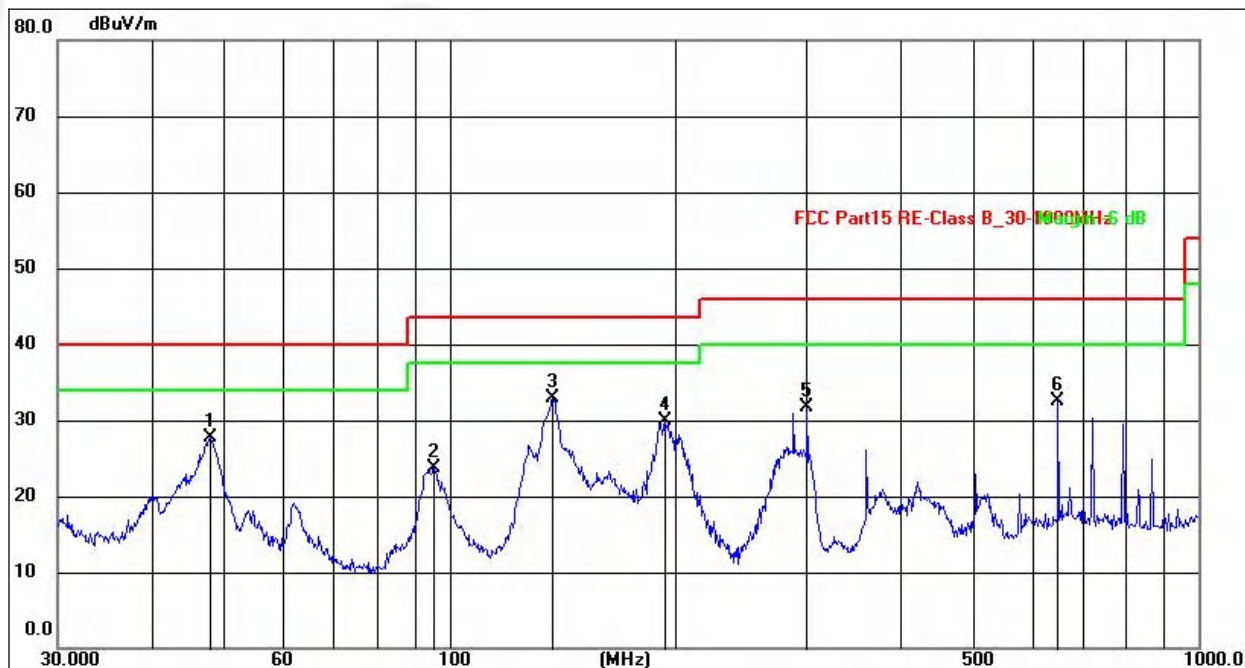
8. An initial pre-scan was performed on the peak detector.
9. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
10. The emission levels of other frequencies are very lower than the limit and not show in test report.
11. Final Level = Reading level + Correct Factor.
12. Correct Factor= Antenna factor+ Cable loss factor - Amplifier factor.
13. Margin= Measurement Level-Limit.
14. The test data shows only the worst case 802.11n20 - 5180MHz.



5.8G:

Test Model:V5

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Test Mode :	802.11n20 - 5745MHz



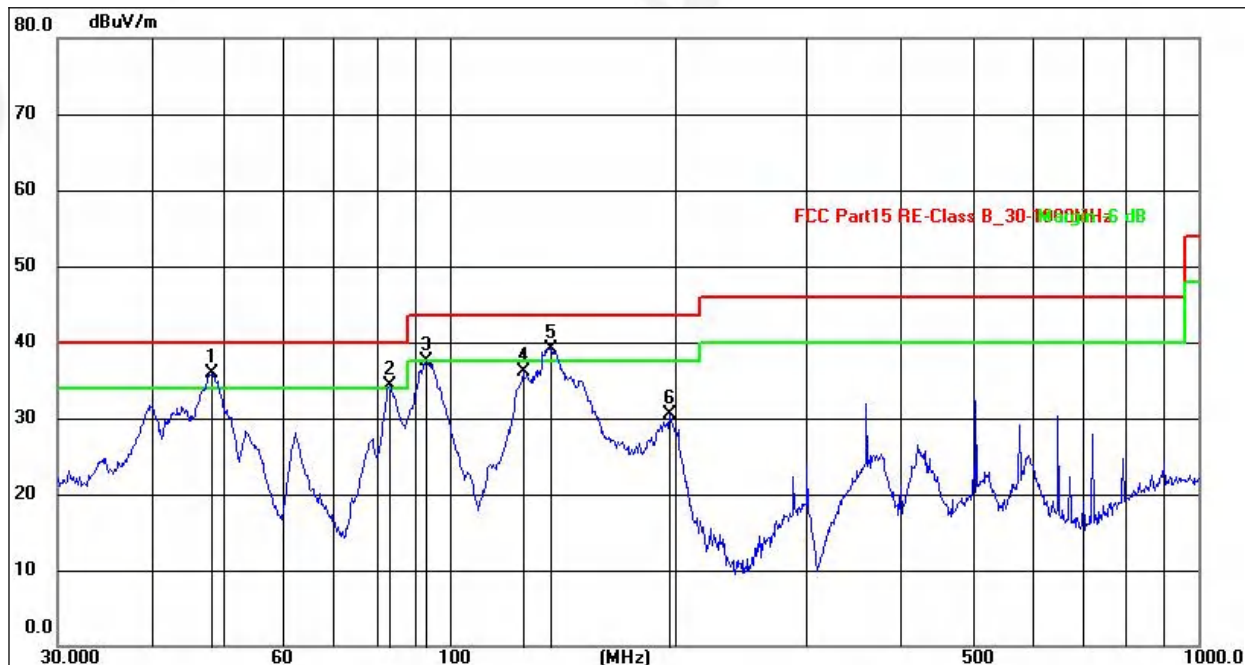
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	47.9940	43.11	-15.34	27.77	40.00	-12.23	QP
2	95.4269	45.33	-21.58	23.75	43.50	-19.75	QP
3	137.4202	52.33	-19.34	32.99	43.50	-10.51	QP
4	193.7727	51.41	-21.57	29.84	43.50	-13.66	QP
5	300.3672	53.24	-21.55	31.69	46.00	-14.31	QP
6	649.6596	45.80	-13.37	32.43	46.00	-13.57	QP

Note:

1. An initial pre-scan was performed on the peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor= Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin= Measurement Level-Limit.
7. The test data shows only the worst case 802.11n20 - 5745MHz.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Test Mode :	802.11n20 - 5745MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	48.1625	54.39	-18.51	35.88	40.00	-4.12	QP
2	83.2297	57.50	-23.25	34.25	40.00	-5.75	QP
3	93.1131	60.43	-22.98	37.45	43.50	-6.05	QP
4	125.4457	59.43	-23.26	36.17	43.50	-7.33	QP
5	136.4598	62.39	-23.19	39.20	43.50	-4.30	QP
6	197.2000	54.20	-23.69	30.51	43.50	-12.99	QP

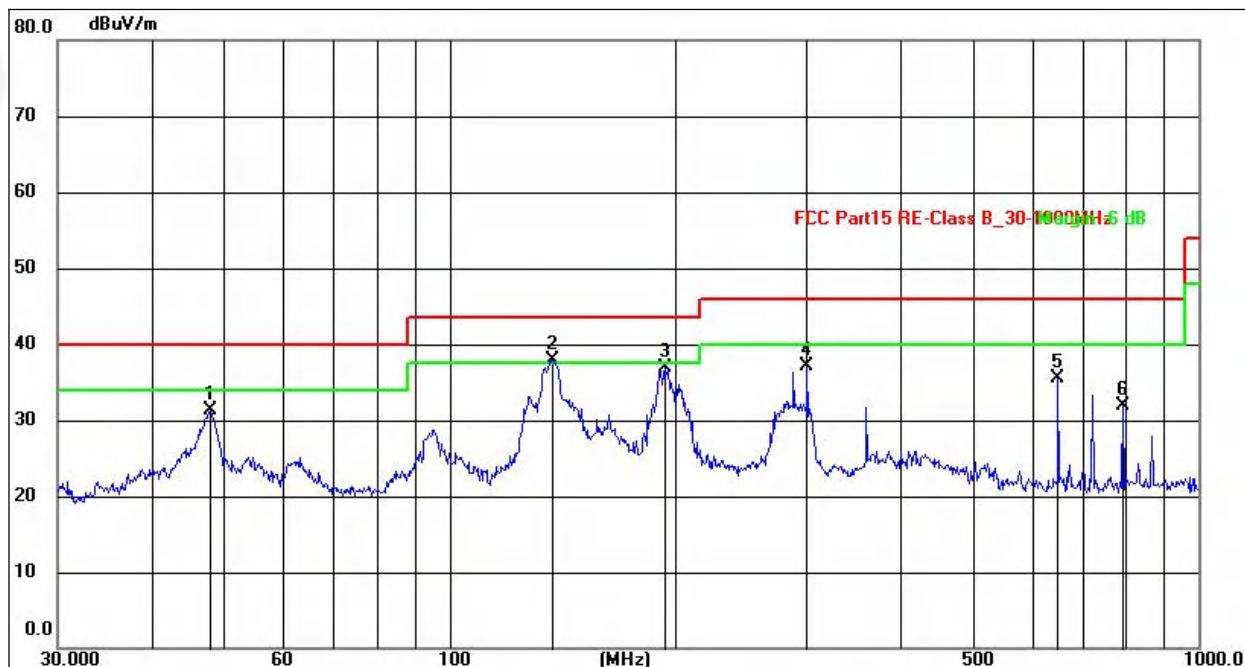
Note:

1. An initial pre-scan was performed on the peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor= Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin= Measurement Level-Limit.
7. The test data shows only the worst case 802.11n20 - 5745MHz.



Test Model:V5-KTV

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Test Mode :	802.11n20 - 5745MHz



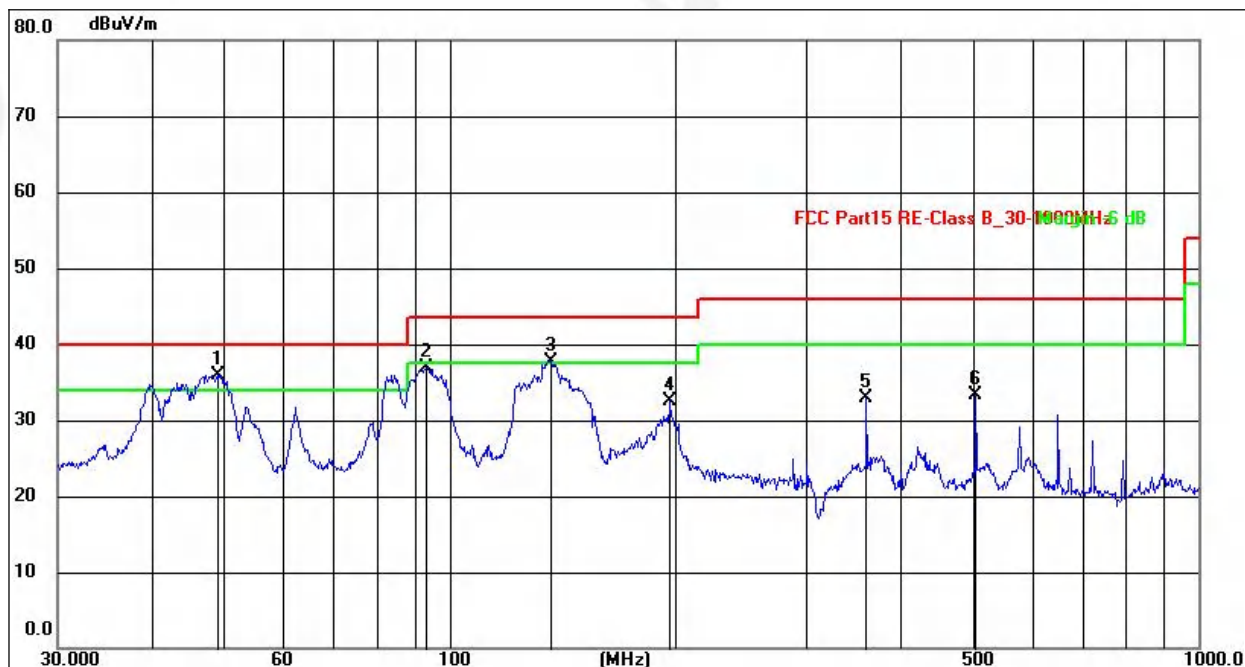
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	47.9938	46.61	-15.34	31.27	40.00	-8.73	QP
2	137.4200	57.33	-19.34	37.99	43.50	-5.51	QP
3	193.7726	58.41	-21.57	36.84	43.50	-6.66	QP
4	300.3672	58.74	-21.55	37.19	46.00	-8.81	QP
5	649.6594	48.80	-13.37	35.43	46.00	-10.57	QP
6	793.3958	44.96	-13.01	31.95	46.00	-14.05	QP

Note:

- An initial pre-scan was performed on the peak detector.
- Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- Final Level = Reading level + Correct Factor.
- Correct Factor= Antenna factor+ Cable loss factor - Amplifier factor.
- Margin= Measurement Level-Limit.
- The test data shows only the worst case 802.11n20 - 5745MHz.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Test Mode :	802.11n20 - 5745MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	49.0144	54.50	-18.55	35.95	40.00	-4.05	QP
2	93.1131	59.93	-22.98	36.95	43.50	-6.55	QP
3	136.4598	60.89	-23.19	37.70	43.50	-5.80	QP
4	197.2000	56.20	-23.69	32.51	43.50	-10.99	QP
5	360.4476	53.92	-21.06	32.86	46.00	-13.14	QP
6	504.7062	49.72	-16.49	33.23	46.00	-12.77	QP

Note:

- An initial pre-scan was performed on the peak detector.
- Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- Final Level = Reading level + Correct Factor.
- Correct Factor= Antenna factor+ Cable loss factor - Amplifier factor.
- Margin= Measurement Level-Limit.
- The test data shows only the worst case 802.11n20 - 5745MHz.



Between 1GHz – 40GHz

Test Model:V5

Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	5.2G TX - 802.11a / n20 / n40 / ac20 / ac40 / ax20 / ax40		
Note: All patterns have been tested, and only the worst test data recorded in this report is 802.11n20.			

802.11n20

Polar (H/V)	Frequency	Meter Reading	Pre-ampl ifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
Low Channel:5180MHz									
V	5150.00	41.68	30.45	8.77	38.66	58.66	74.00	-15.34	PK
V	5150.00	30.21	30.45	8.77	38.66	47.19	54.00	-6.81	AV
V	10360.00	52.73	30.55	5.77	24.66	52.61	74.00	-21.39	PK
V	10360.00	42.83	30.55	5.77	24.66	42.71	54.00	-11.29	AV
V	15540.00	53.58	30.33	6.32	24.55	54.12	74.00	-19.88	PK
V	15540.00	43.25	30.33	6.32	24.55	43.79	54.00	-10.21	AV
V	20720.00	49.95	30.85	7.45	24.69	51.24	74.00	-22.76	PK
V	20720.00	43.09	30.85	7.45	24.69	44.38	54.00	-9.62	AV
V	25900.00	52.13	31.02	8.99	25.57	55.67	74.00	-18.33	PK
V	25900.00	43.38	31.02	8.99	25.57	46.92	54.00	-7.08	AV
H	5150.00	41.98	30.45	8.77	38.66	58.96	74.00	-15.04	PK
H	5150.00	30.31	30.45	8.77	38.66	47.29	54.00	-6.71	AV
H	10360.00	50.52	30.55	5.77	24.66	50.40	74.00	-23.60	PK
H	10360.00	42.21	30.55	5.77	24.66	42.09	54.00	-11.91	AV
H	15540.00	52.86	30.33	6.32	24.55	53.40	74.00	-20.60	PK
H	15540.00	43.38	30.33	6.32	24.55	43.92	54.00	-10.08	AV
H	20720.00	51.17	30.85	7.45	24.69	52.46	74.00	-21.54	PK
H	20720.00	43.46	30.85	7.45	24.69	44.75	54.00	-9.25	AV
H	25900.00	49.79	31.02	8.99	25.57	53.33	74.00	-20.67	PK
H	25900.00	42.11	31.02	8.99	25.57	45.65	54.00	-8.35	AV

Polar (H/V)	Frequency	Meter Reading	Pre-ampl ifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
Middle Channel:5200MHz									
V	5150.00	43.59	30.45	8.77	38.66	60.57	74.00	-13.43	PK
V	5150.00	31.73	30.45	8.77	38.66	48.71	54.00	-5.29	AV
V	10400.00	55.55	30.55	5.77	24.66	55.43	74.00	-18.57	PK
V	10400.00	47.37	30.55	5.77	24.66	47.25	54.00	-6.75	AV
V	15600.00	54.37	30.33	6.32	24.55	54.91	74.00	-19.09	PK
V	15600.00	44.64	30.33	6.32	24.55	45.18	54.00	-8.82	AV
V	20800.00	53.80	30.85	7.45	24.69	55.09	74.00	-18.91	PK
V	20800.00	45.65	30.85	7.45	24.69	46.94	54.00	-7.06	AV
V	26000.00	55.33	31.02	8.99	25.57	58.87	74.00	-15.13	PK
V	26000.00	45.88	31.02	8.99	25.57	49.42	54.00	-4.58	AV
H	5150.00	46.12	30.45	8.77	38.66	63.10	74.00	-10.90	PK
H	5150.00	34.89	30.45	8.77	38.66	51.87	54.00	-2.13	AV
H	10400.00	53.40	30.55	5.77	24.66	53.28	74.00	-20.72	PK



H	10400.00	45.51	30.55	5.77	24.66	45.39	54.00	-8.61	AV
H	15600.00	53.00	30.33	6.32	24.55	53.54	74.00	-20.46	PK
H	15600.00	46.03	30.33	6.32	24.55	46.57	54.00	-7.43	AV
H	20800.00	54.17	30.85	7.45	24.69	55.46	74.00	-18.54	PK
H	20800.00	45.17	30.85	7.45	24.69	46.46	54.00	-7.54	AV
H	26000.00	49.79	31.02	8.99	25.57	53.33	74.00	-20.67	PK
H	26000.00	43.00	31.02	8.99	25.57	46.54	54.00	-7.46	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detect or Type
High Channel:5240MHz									
V	5350.00	43.40	30.45	8.77	38.66	60.38	74.00	-13.62	PK
V	5350.00	34.58	30.45	8.77	38.66	51.56	54.00	-2.44	AV
V	10480.00	55.55	30.55	5.77	24.66	55.43	74.00	-18.57	PK
V	10480.00	42.97	30.55	5.77	24.66	42.85	54.00	-11.15	AV
V	15720.00	54.77	30.33	6.32	24.55	55.31	74.00	-18.69	PK
V	15720.00	45.73	30.33	6.32	24.55	46.27	54.00	-7.73	AV
V	20960.00	50.00	30.85	7.45	24.69	51.29	74.00	-22.71	PK
V	20960.00	44.55	30.85	7.45	24.69	45.84	54.00	-8.16	AV
V	26200.00	54.91	31.02	8.99	25.57	58.45	74.00	-15.55	PK
V	26200.00	47.08	31.02	8.99	25.57	50.62	54.00	-3.38	AV
H	5350.00	46.62	30.45	8.77	38.66	63.60	74.00	-10.40	PK
H	5350.00	35.21	30.45	8.77	38.66	52.19	54.00	-1.81	AV
H	10480.00	51.31	30.55	5.77	24.66	51.19	74.00	-22.81	PK
H	10480.00	46.23	30.55	5.77	24.66	46.11	54.00	-7.89	AV
H	15720.00	56.47	30.33	6.32	24.55	57.01	74.00	-16.99	PK
H	15720.00	46.78	30.33	6.32	24.55	47.32	54.00	-6.68	AV
H	20960.00	52.79	30.85	7.45	24.69	54.08	74.00	-19.92	PK
H	20960.00	46.83	30.85	7.45	24.69	48.12	54.00	-5.88	AV
H	26200.00	53.06	31.02	8.99	25.57	56.60	74.00	-17.40	PK
H	26200.00	46.93	31.02	8.99	25.57	50.47	54.00	-3.53	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	5.8G TX - 802.11a / n20 / n40 / ac20 / ac40 / ax20 / ax40		
Note: All patterns have been tested, and only the worst test data recorded in this report is 802.11n20.			

802.11n20

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detect or Type
Low Channel:5745MHz									
V	11490.00	50.92	30.55	5.77	24.66	50.80	74.00	-23.20	PK
V	11490.00	43.52	30.55	5.77	24.66	43.40	54.00	-10.60	AV
V	17235.00	52.58	30.33	6.32	24.55	53.12	68.20	-15.08	PK
V	17235.00	41.91	30.33	6.32	24.55	42.45	54.00	-11.55	AV
V	22980.00	49.49	30.85	7.45	24.69	50.78	74.00	-23.22	PK
V	22980.00	42.81	30.85	7.45	24.69	44.10	54.00	-9.90	AV
V	28725.00	53.55	31.02	8.99	25.57	57.09	68.20	-11.11	PK
V	28725.00	43.17	31.02	8.99	25.57	46.71	54.00	-7.29	AV
H	11490.00	52.23	30.55	5.77	24.66	52.11	74.00	-21.89	PK
H	11490.00	43.49	30.55	5.77	24.66	43.37	54.00	-10.63	AV
H	17235.00	52.77	30.33	6.32	24.55	53.31	68.20	-14.89	PK
H	17235.00	43.14	30.33	6.32	24.55	43.68	54.00	-10.32	AV
H	22980.00	51.67	30.85	7.45	24.69	52.96	74.00	-21.04	PK
H	22980.00	43.62	30.85	7.45	24.69	44.91	54.00	-9.09	AV
H	28725.00	52.45	31.02	8.99	25.57	55.99	68.20	-12.21	PK
H	28725.00	43.18	31.02	8.99	25.57	46.72	54.00	-7.28	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detect or Type
Middle Channel:5785MHz									
V	11570.00	49.09	30.55	5.77	24.66	48.97	74.00	-25.03	PK
V	11570.00	41.94	30.55	5.77	24.66	41.82	54.00	-12.18	AV
V	17355.00	48.48	30.33	6.32	24.55	49.02	68.20	-19.18	PK
V	17355.00	41.67	30.33	6.32	24.55	42.21	54.00	-11.79	AV
V	23140.00	50.36	30.85	7.45	24.69	51.65	68.20	-16.55	PK
V	23140.00	41.21	30.85	7.45	24.69	42.50	54.00	-11.50	AV
V	28925.00	48.74	31.02	8.99	25.57	52.28	68.20	-15.92	PK
V	28925.00	41.35	31.02	8.99	25.57	44.89	54.00	-9.11	AV
H	11570.00	48.44	30.55	5.77	24.66	48.32	74.00	-25.68	PK
H	11570.00	41.94	30.55	5.77	24.66	41.82	54.00	-12.18	AV
H	17355.00	52.98	30.33	6.32	24.55	53.52	68.20	-14.68	PK
H	17355.00	41.26	30.33	6.32	24.55	41.80	54.00	-12.20	AV
H	23140.00	50.32	30.85	7.45	24.69	51.61	68.20	-16.59	PK
H	23140.00	41.63	30.85	7.45	24.69	42.92	54.00	-11.08	AV
H	28925.00	48.55	31.02	8.99	25.57	52.09	68.20	-16.11	PK
H	28925.00	41.72	31.02	8.99	25.57	45.26	54.00	-8.74	AV



Polar (H/V)	Frequency	Meter Reading	Pre-ampli fier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
High Channel:5825MHz									
V	11650.00	50.13	30.55	5.77	24.66	50.01	74.00	-23.99	PK
V	11650.00	41.72	30.55	5.77	24.66	41.60	54.00	-12.40	AV
V	17475.00	48.15	30.33	6.32	24.55	48.69	68.20	-19.51	PK
V	17475.00	41.49	30.33	6.32	24.55	42.03	54.00	-11.97	AV
V	23300.00	49.60	30.85	7.45	24.69	50.89	68.20	-17.31	PK
V	23300.00	41.27	30.85	7.45	24.69	42.56	54.00	-11.44	AV
V	29125.00	52.06	31.02	8.99	25.57	55.60	68.20	-12.60	PK
V	29125.00	41.30	31.02	8.99	25.57	44.84	54.00	-9.16	AV
H	11650.00	50.88	30.55	5.77	24.66	50.76	74.00	-23.24	PK
H	11650.00	40.81	30.55	5.77	24.66	40.69	54.00	-13.31	AV
H	17475.00	51.19	30.33	6.32	24.55	51.73	68.20	-16.47	PK
H	17475.00	41.46	30.33	6.32	24.55	42.00	54.00	-12.00	AV
H	23300.00	52.40	30.85	7.45	24.69	53.69	68.20	-14.51	PK
H	23300.00	41.09	30.85	7.45	24.69	42.38	54.00	-11.62	AV
H	29125.00	48.37	31.02	8.99	25.57	51.91	68.20	-16.29	PK
H	29125.00	41.45	31.02	8.99	25.57	44.99	54.00	-9.01	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



5. POWER SPECTRAL DENSITY TEST

5.1 APPLIED PROCEDURES / LIMIT

According to FCC §15.407(3)

Power limits:

- (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 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 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 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 client devices in the 5.15-5.25 GHz band, 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 $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.



5.2 TEST PROCEDURE

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set $RBW \geq 1/T$, where T is defined in section II.B.I.a).
- b) Set $VBW \geq 3 RBW$.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/RBW)$ to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10\log(1\text{MHz}/RBW)$ to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

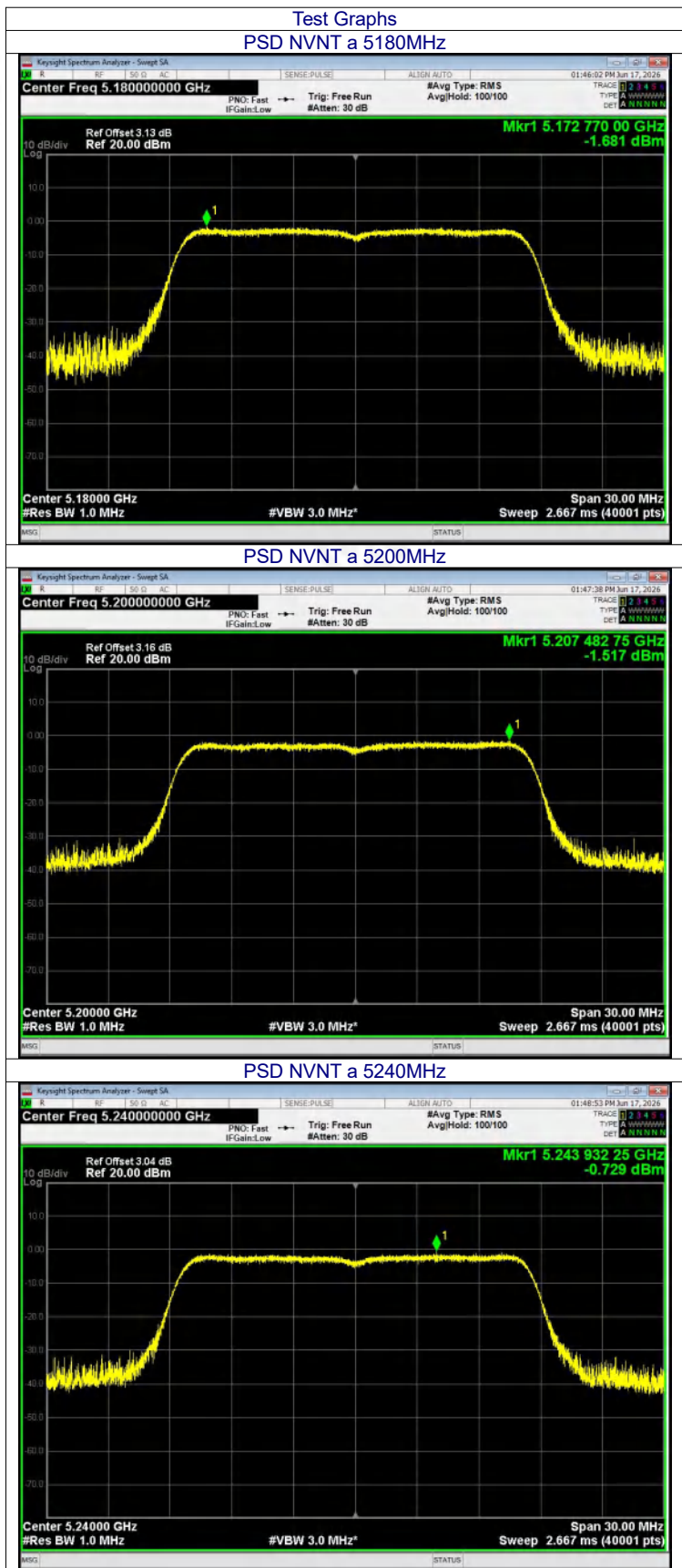
The EUT tested system was configured as the statements of 5.4 Unless otherwise a special operating condition is specified in the follows during the testing.

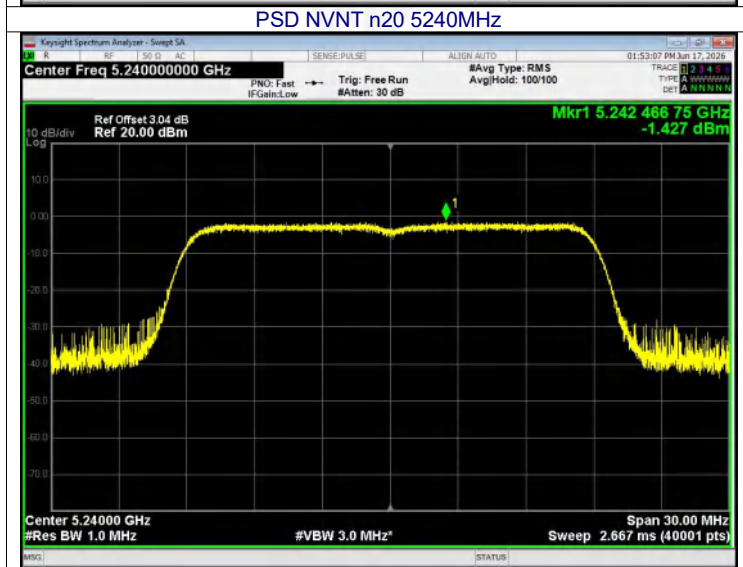
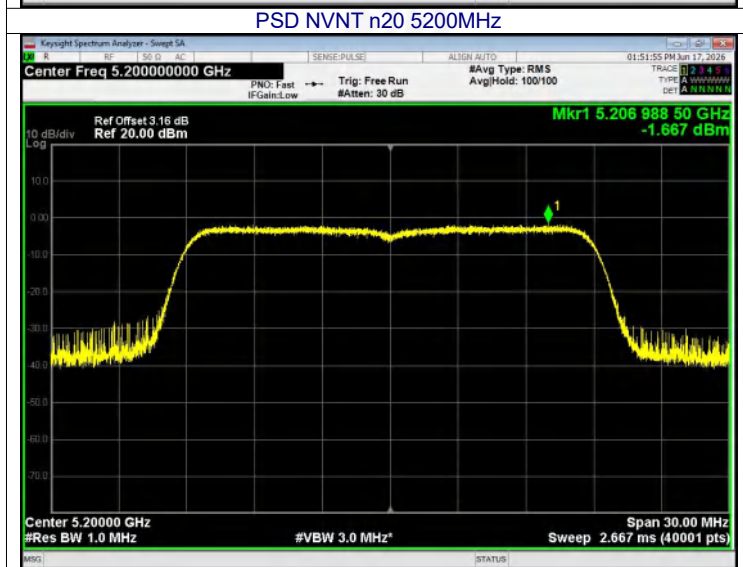
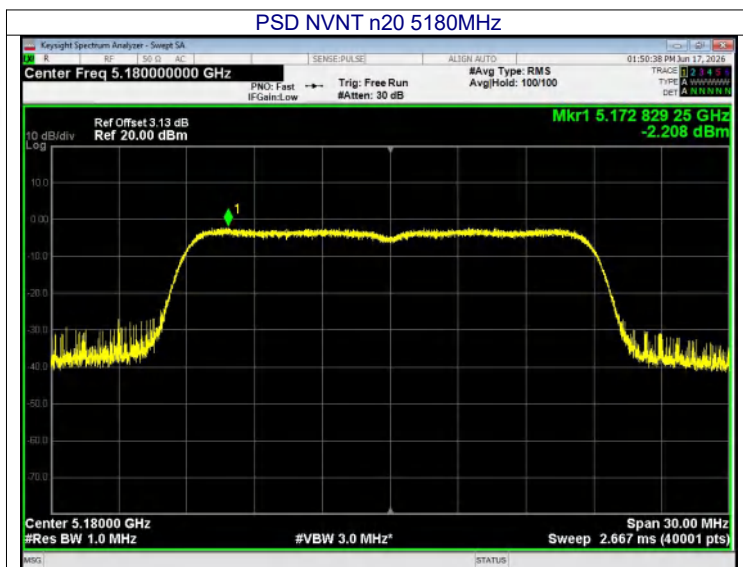


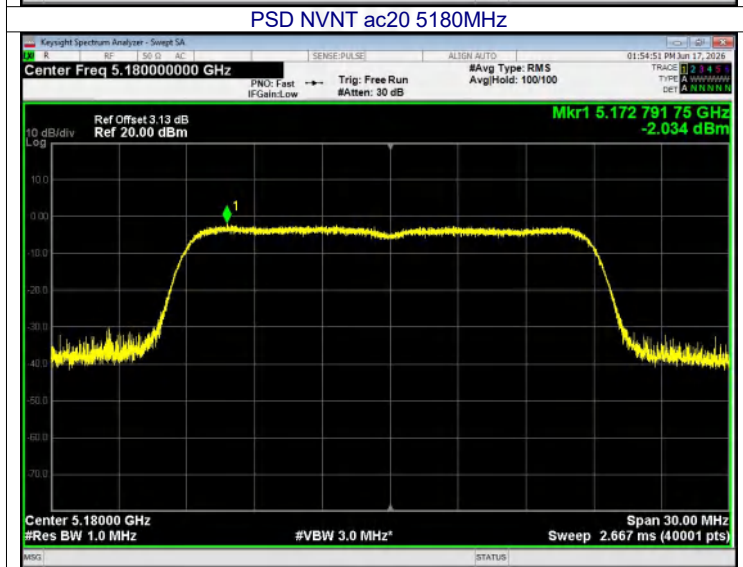
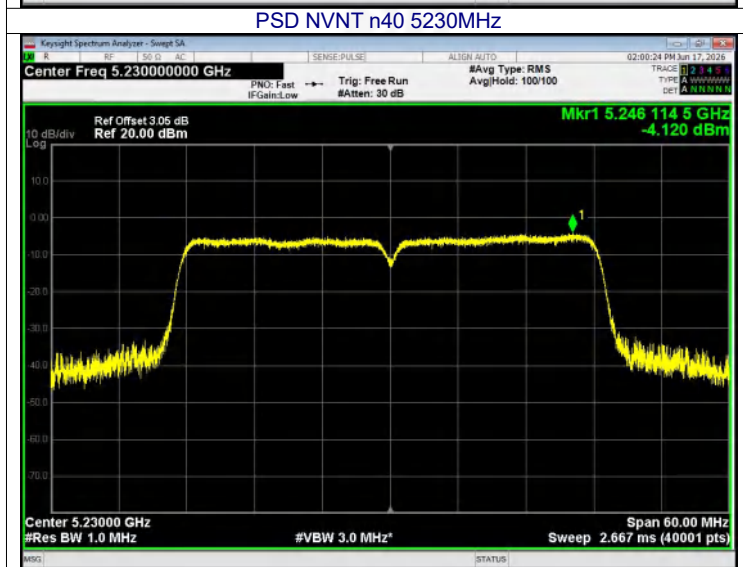
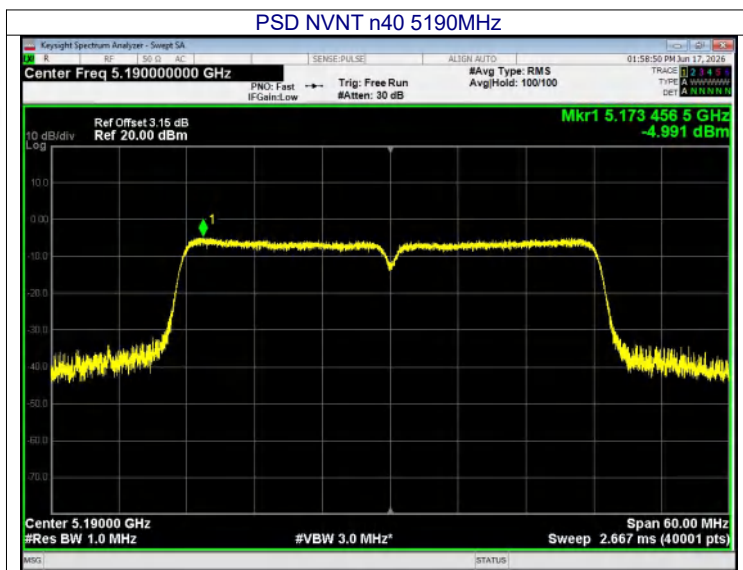
5.6 TEST RESULTS

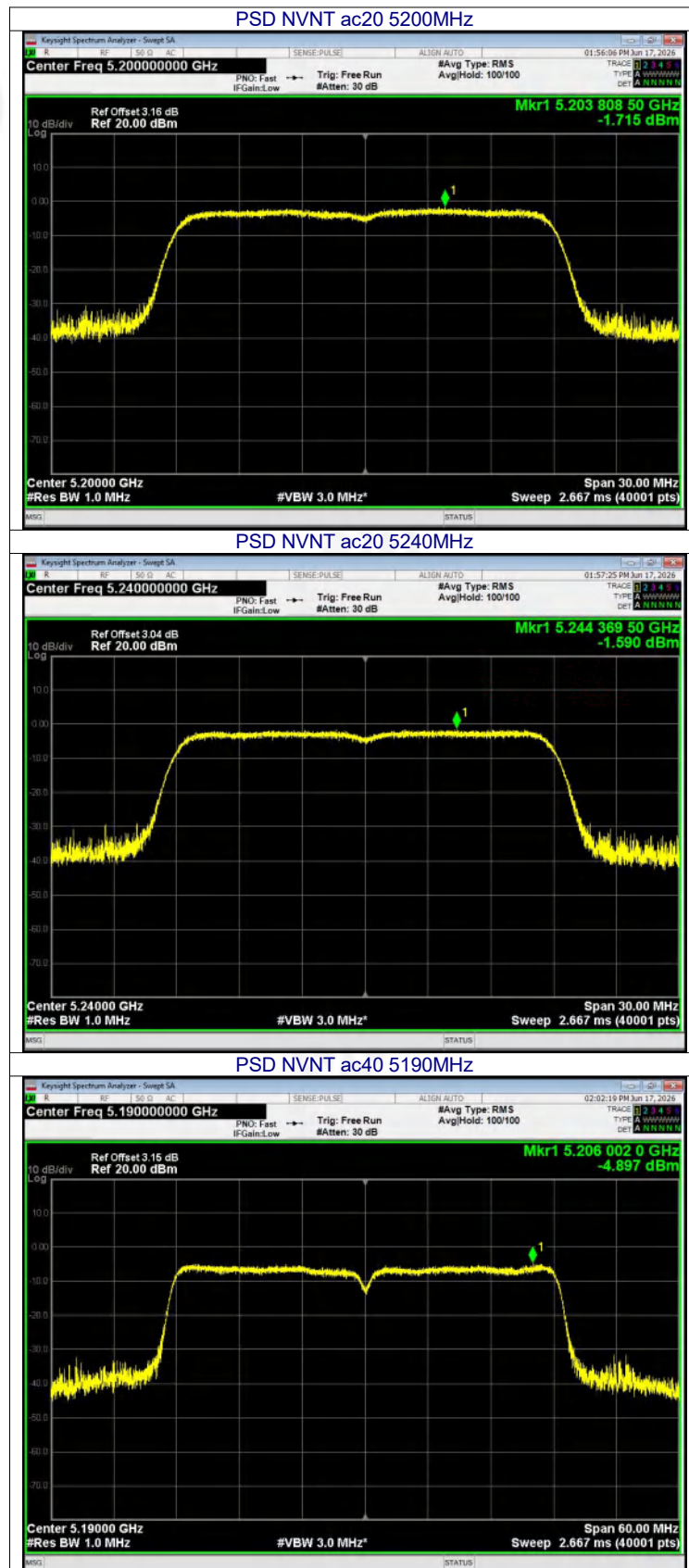
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1015 hPa	Test Voltage :	AC 120V/60Hz
Test Band :	5.2G		

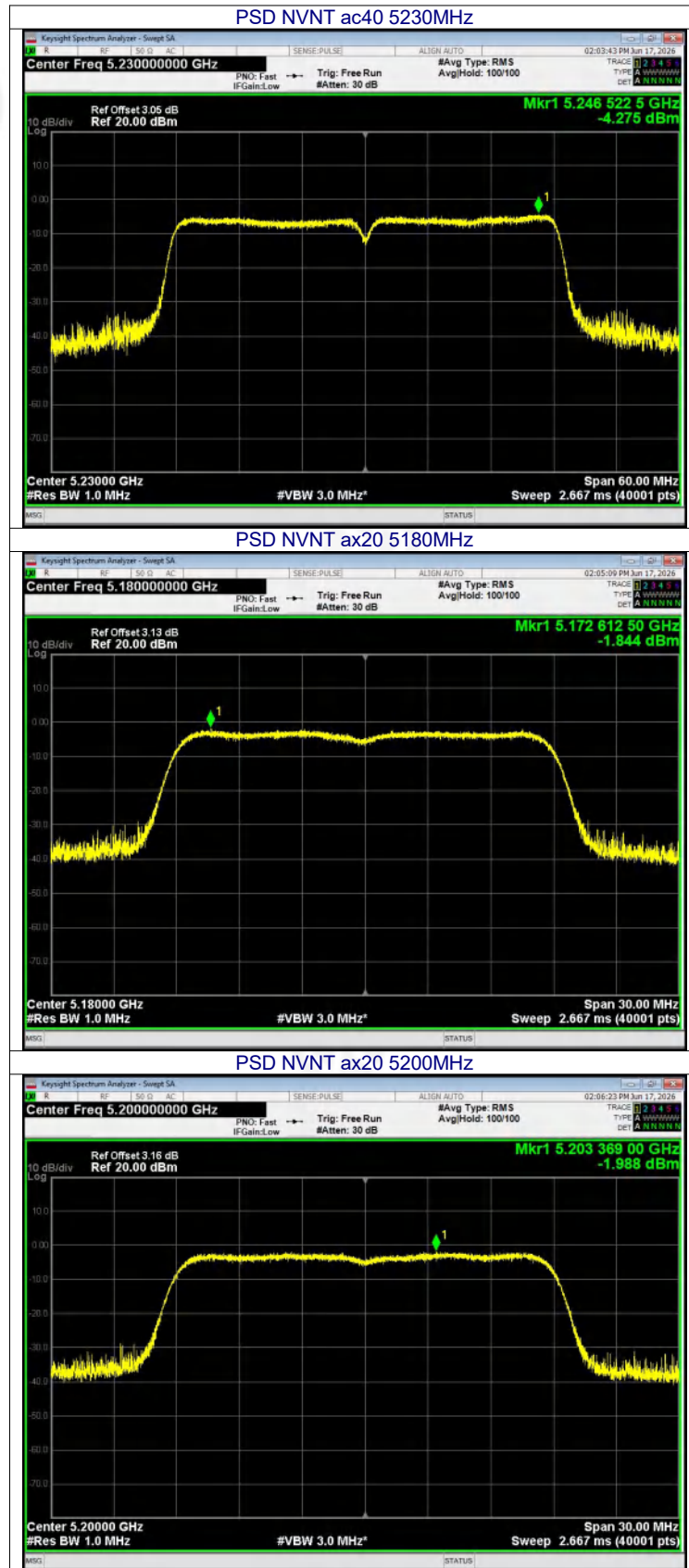
Mode	Antenna	Frequency (MHz)	PSD (dBm)	Duty Cycle Factor (dB)	Total PSD (dBm)	Limit (dBm)	Result
802.11a	SISO ANT	5180	-1.681	0.442	-1.239	11	Pass
		5200	-1.517	0.442	-1.075	11	Pass
		5240	-0.729	0.442	-0.287	11	Pass
802.11n20	SISO ANT	5180	-2.208	0.717	-1.491	11	Pass
		5200	-1.667	0.717	-0.95	11	Pass
		5240	-1.427	0.717	-0.71	11	Pass
802.11n40	SISO ANT	5190	-4.991	0.984	-4.007	11	Pass
		5230	-4.12	0.984	-3.136	11	Pass
802.11ac20	SISO ANT	5180	-2.034	1.534	-0.5	11	Pass
		5200	-1.715	1.534	-0.181	11	Pass
		5240	-1.59	1.534	-0.056	11	Pass
802.11ac40	SISO ANT	5190	-4.897	1.026	-3.871	11	Pass
		5230	-4.275	1.026	-3.249	11	Pass
802.11ax20	SISO ANT	5180	-1.844	0.520	-1.324	11	Pass
		5200	-1.988	0.520	-1.468	11	Pass
		5240	-1.392	0.520	-0.872	11	Pass
802.11ax40	SISO ANT	5190	-4.696	0.984	-3.712	11	Pass
		5230	-4.207	0.984	-3.223	11	Pass
Note: Total PSD = PSD + Duty Cycle Factor.							

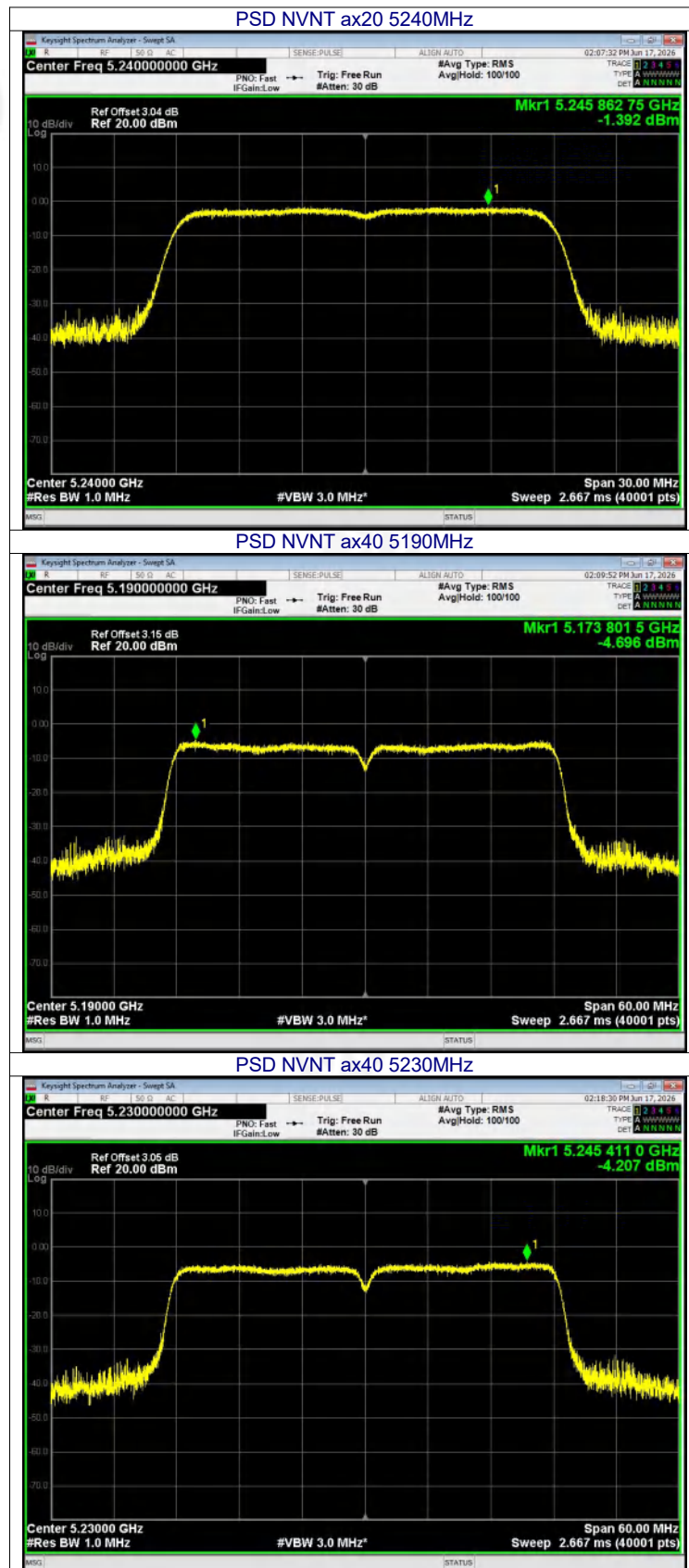












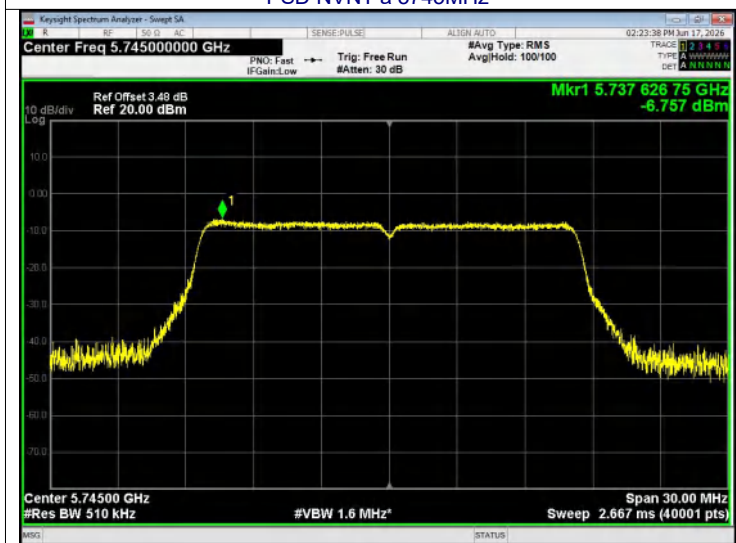


Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1015 hPa	Test Voltage :	AC 120V/60Hz
Test Band :	5.8G		

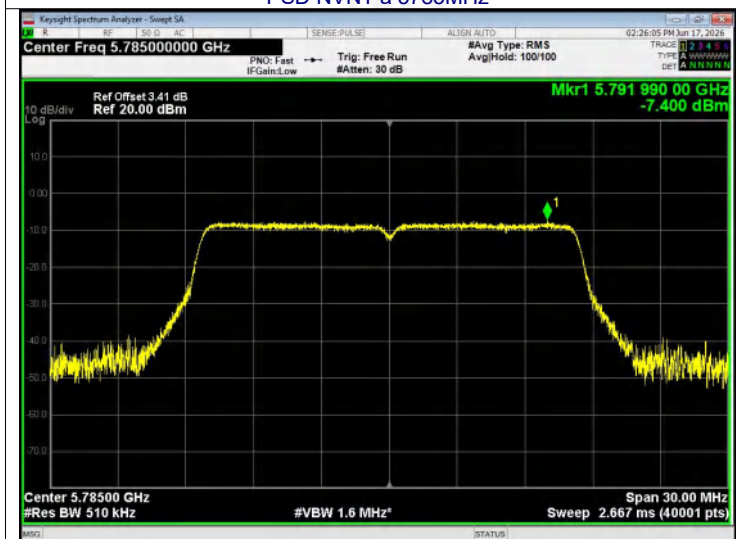
Mode	Antenna	Frequency (MHz)	PSD (dBm)	Duty Cycle Factor (dB)	Total PSD (dBm)	Limit (dBm)	Result
802.11a	SISO ANT	5745	-6.757	0.459	-6.298	30	Pass
		5785	-7.4	0.459	-6.941	30	Pass
		5825	-7.078	0.459	-6.619	30	Pass
802.11n20	SISO ANT	5745	-6.838	0.618	-6.22	30	Pass
		5785	-7.766	0.618	-7.148	30	Pass
		5825	-7.478	0.618	-6.86	30	Pass
802.11n40	SISO ANT	5755	-8.919	0.954	-7.965	30	Pass
		5795	-8.917	0.954	-7.963	30	Pass
802.11ac20	SISO ANT	5745	-7.191	0.518	-6.673	30	Pass
		5785	-7.898	0.518	-7.38	30	Pass
		5825	-7.277	0.518	-6.759	30	Pass
802.11ac40	SISO ANT	5755	-8.057	0.954	-7.103	30	Pass
		5795	-9.253	0.954	-8.299	30	Pass
802.11ax20	SISO ANT	5745	-5.726	0.522	-5.204	30	Pass
		5785	-6.143	0.522	-5.621	30	Pass
		5825	-5.746	0.522	-5.224	30	Pass
802.11ax40	SISO ANT	5755	-9.277	0.946	-8.331	30	Pass
		5795	-9.1	0.946	-8.154	30	Pass
Note: Total PSD = PSD + Duty Cycle Factor.							



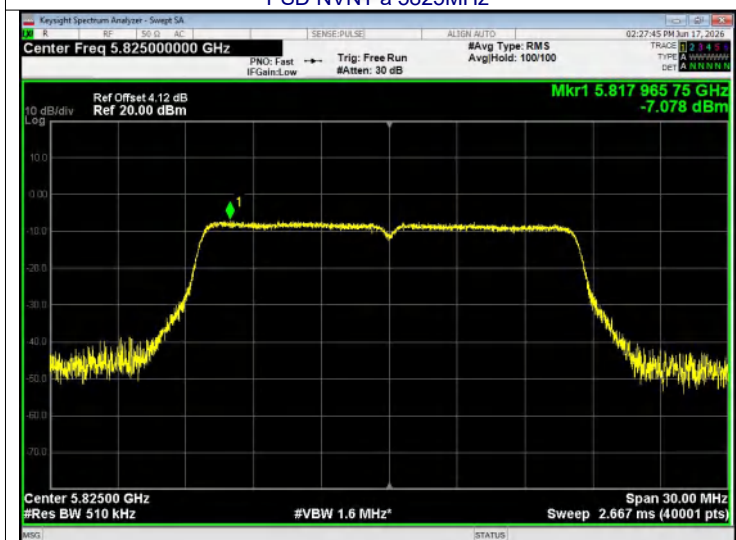
Test Graphs
PSD NVNT a 5745MHz

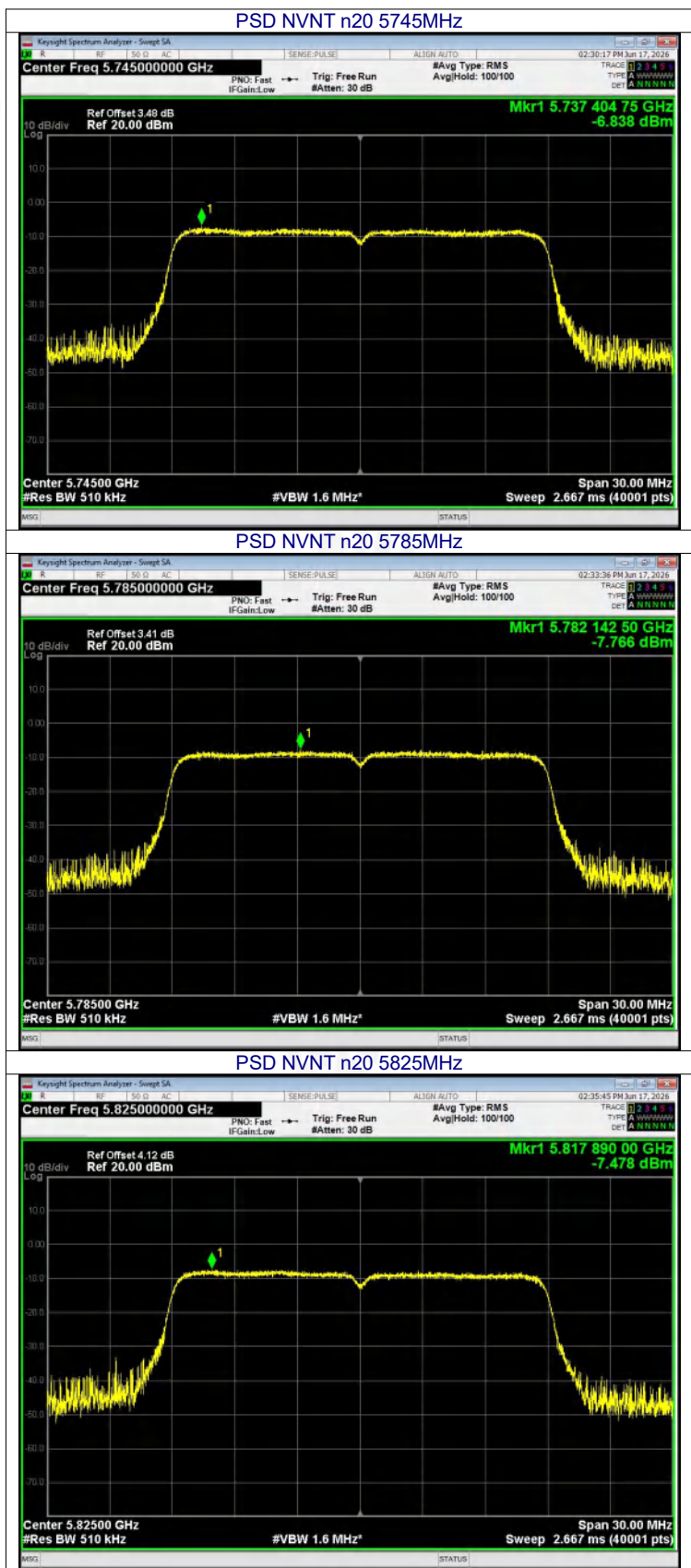


PSD NVNT a 5785MHz



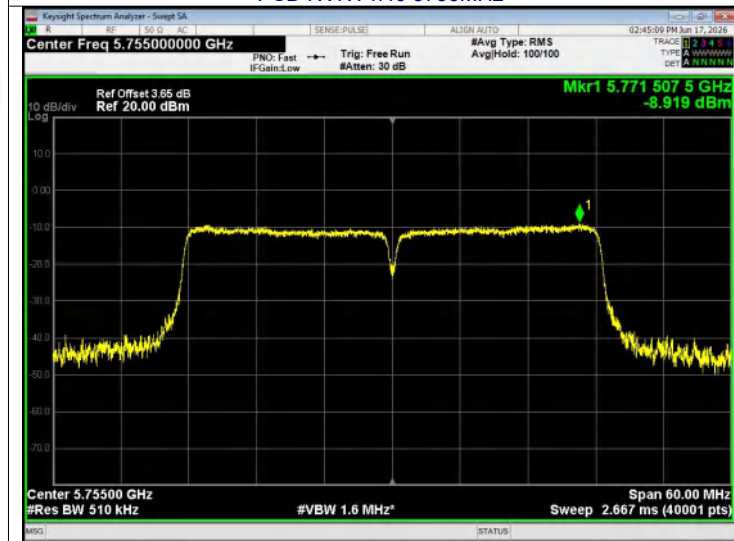
PSD NVNT a 5825MHz



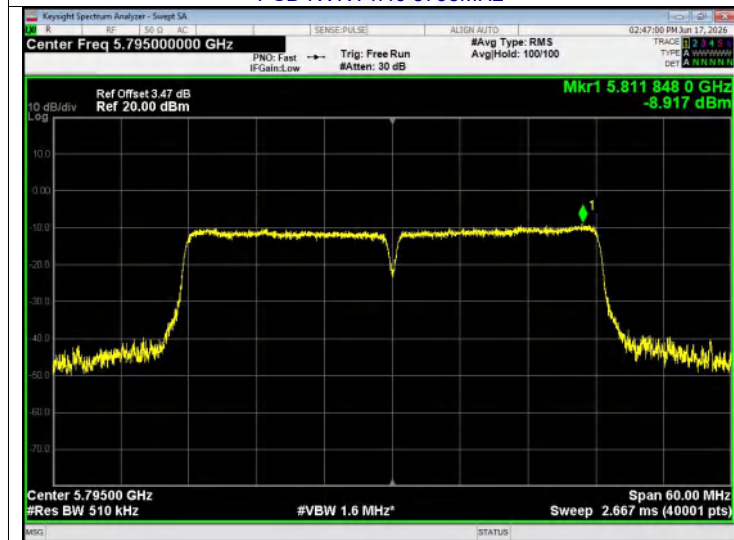




PSD NVNT n40 5755MHz

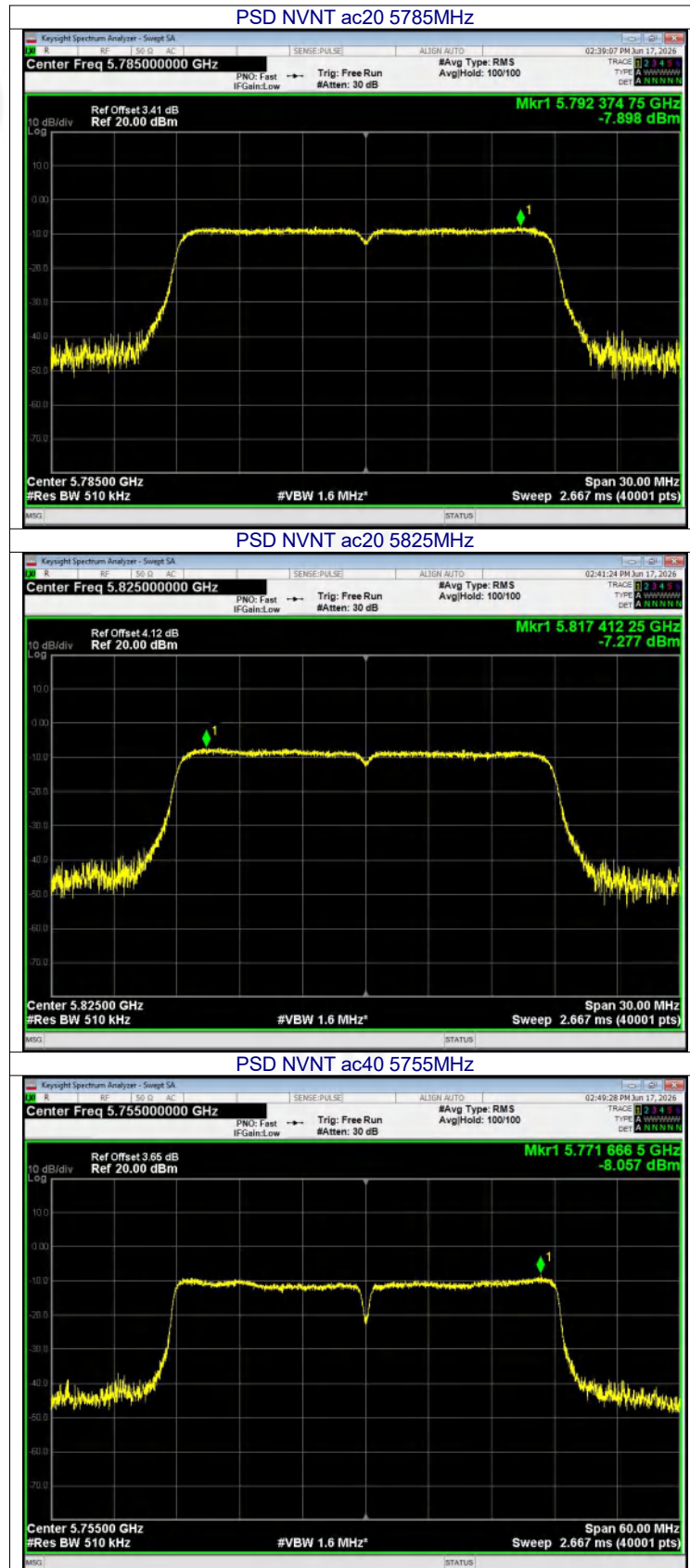


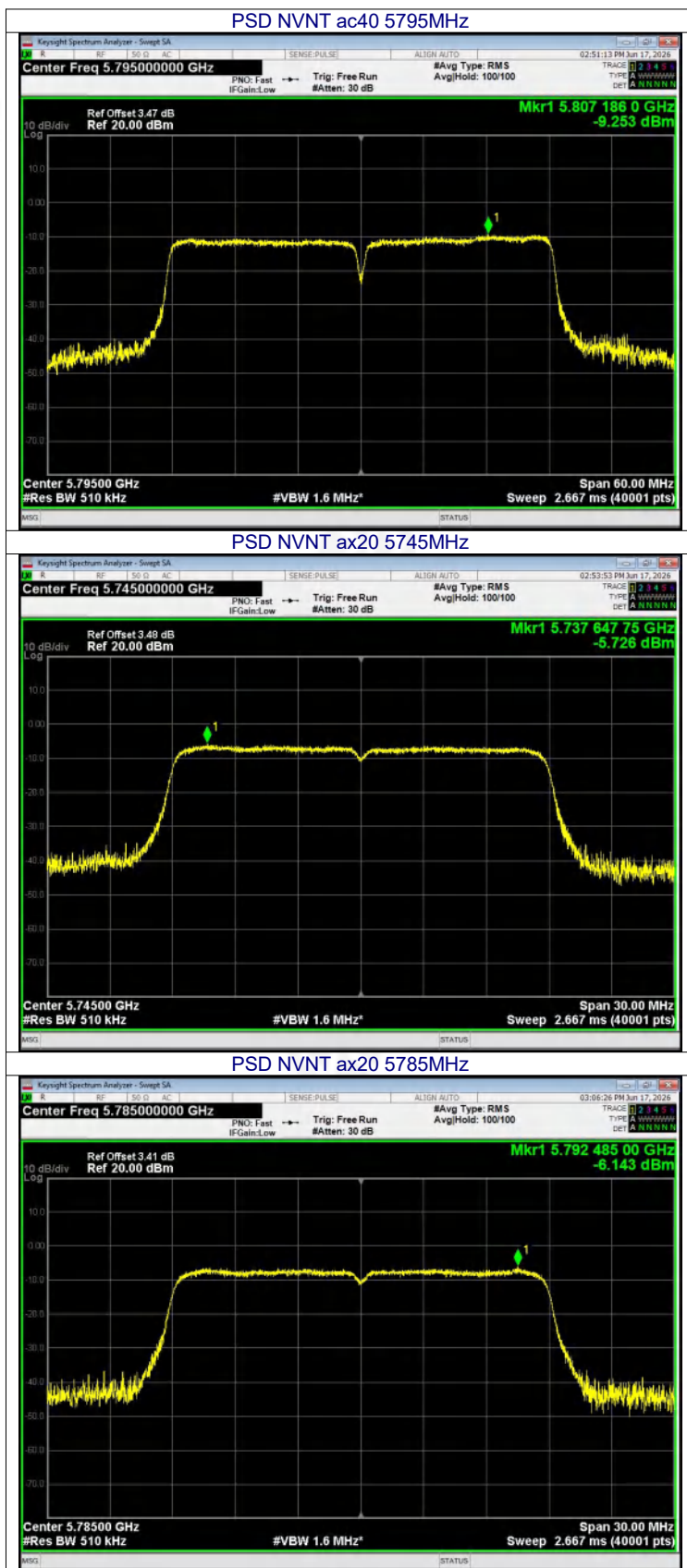
PSD NVNT n40 5795MHz

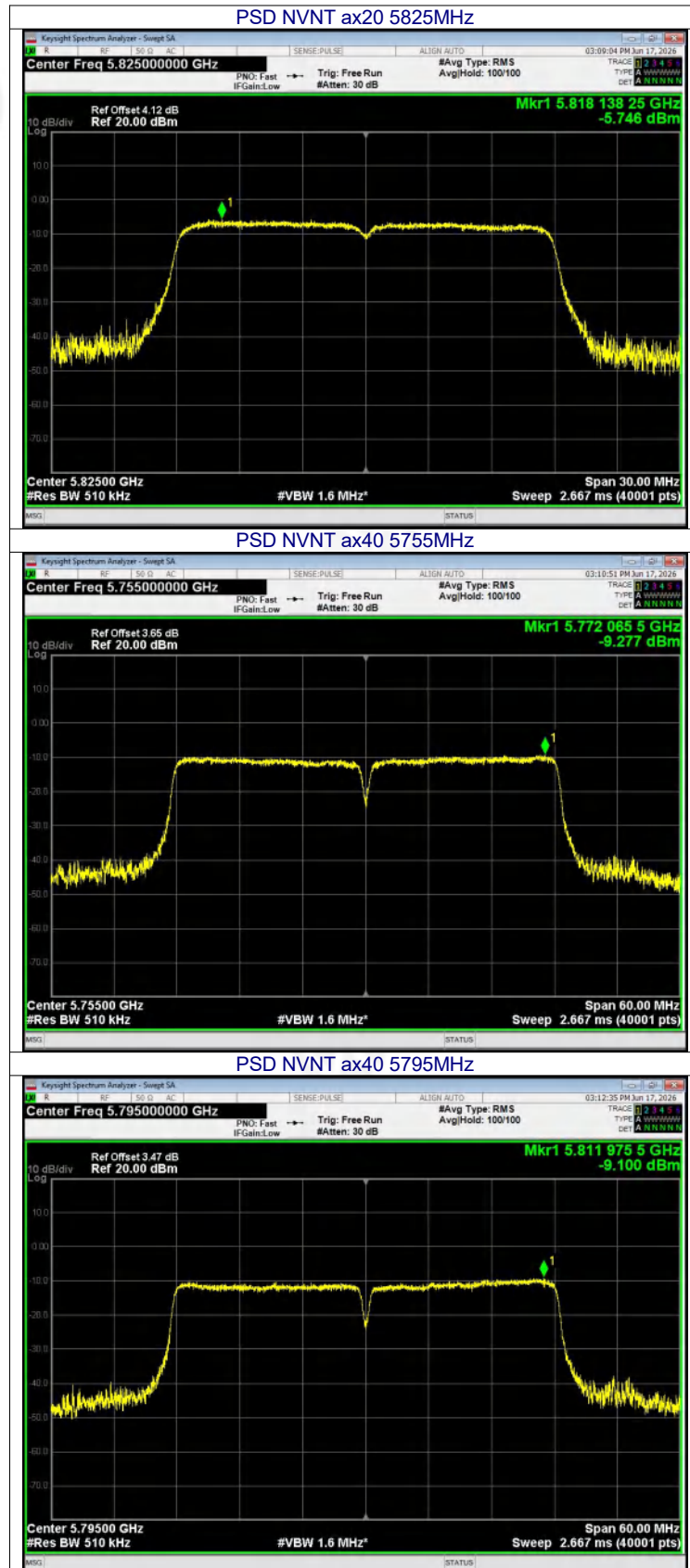


PSD NVNT ac20 5745MHz











6. 26DB EMISSION BANDWIDTH & 6DB OCCUPIED BANDWIDTH

6.1 APPLIED PROCEDURES / LIMIT

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, the minimum bandwidth 6 dB bandwidth of U-NII devices shall be at least 500KHz. 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.

6.2 TEST PROCEDURE

The following procedure shall be used for measuring 6dB Occupied Bandwidth:

The procedure for this method is as follows:

- a) Set RBW = 100KHz.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

The following procedure shall be used for measuring 26dB Emission bandwidth:

The procedure for this method is as follows:

- a) Set RBW = shall be in the range of 1% to 5% of the emission bandwidth..
- b) Set the VBW > RBW.
- c) Detector = peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is in the range of 1% to 5%.



6.3 EUT OPERATION CONDITIONS

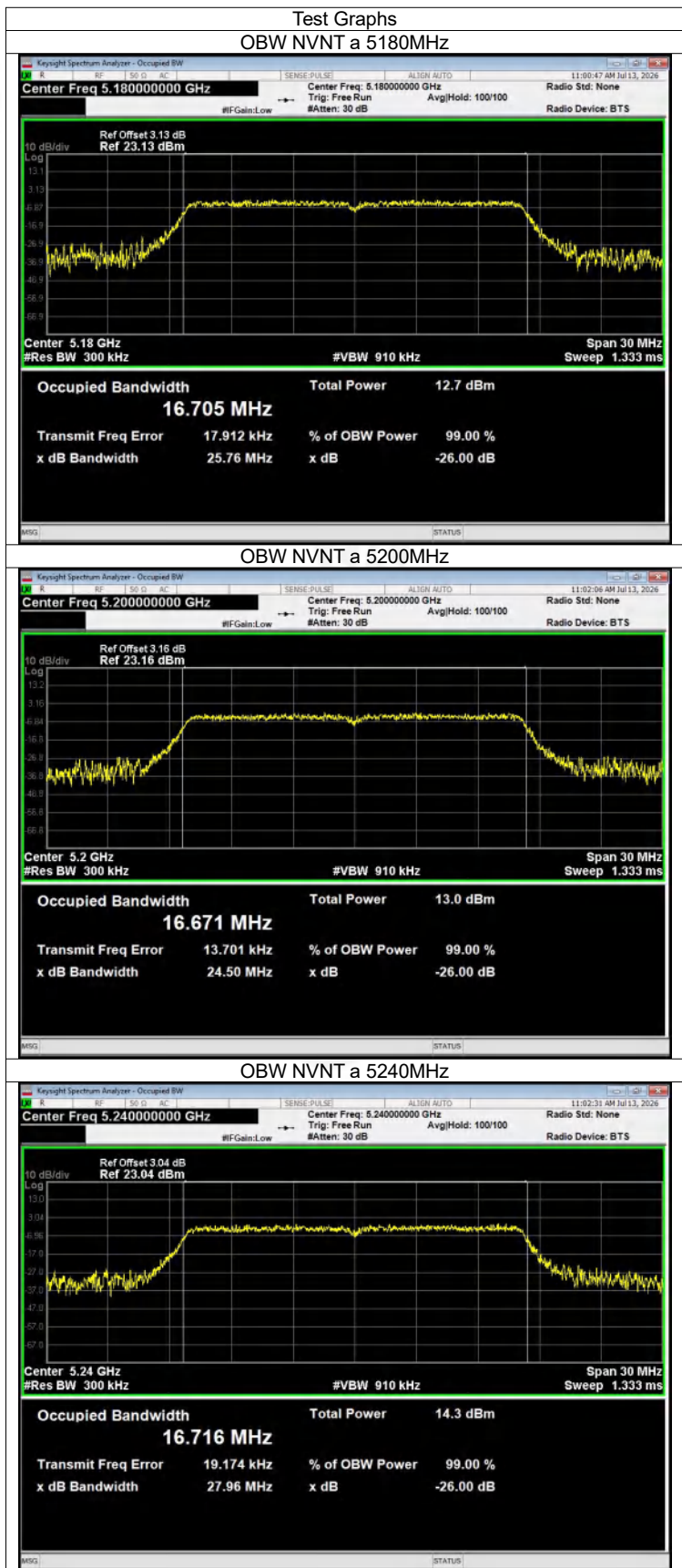
The EUT tested system was configured as the statements of 6.2 Unless otherwise a special operating condition is specified in the follows during the testing.



6.4 TEST RESULTS

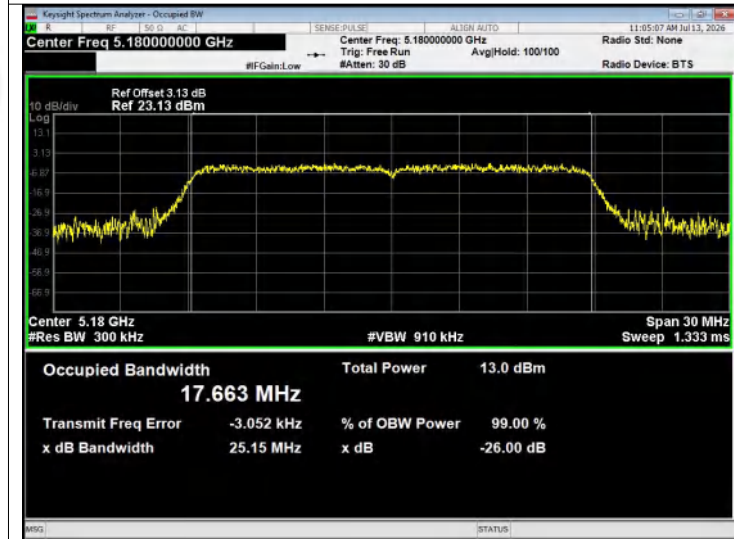
Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC 120V/60Hz
Test Band :	5.2G		

Test Mode	Antenna	Frequency (MHz)	26dB Emission Bandwidth (MHz)	Limit (MHz)	Result
802.11a	SISO ANT	5180	25.76	N/A	Pass
		5200	24.50		
		5240	27.96		
802.11n20	SISO ANT	5180	25.15	N/A	Pass
		5200	26.98		
		5240	26.41		
802.11n40	SISO ANT	5190	53.25	N/A	Pass
		5230	53.70		
802.11ac20	SISO ANT	5180	24.84	N/A	Pass
		5200	28.01		
		5240	27.37		
802.11ac40	SISO ANT	5190	53.39	N/A	Pass
		5230	54.05		
802.11ax20	SISO ANT	5180	26.34	N/A	Pass
		5200	27.11		
		5240	25.47		
802.11ax40	SISO ANT	5190	53.79	N/A	Pass
		5230	54.16		

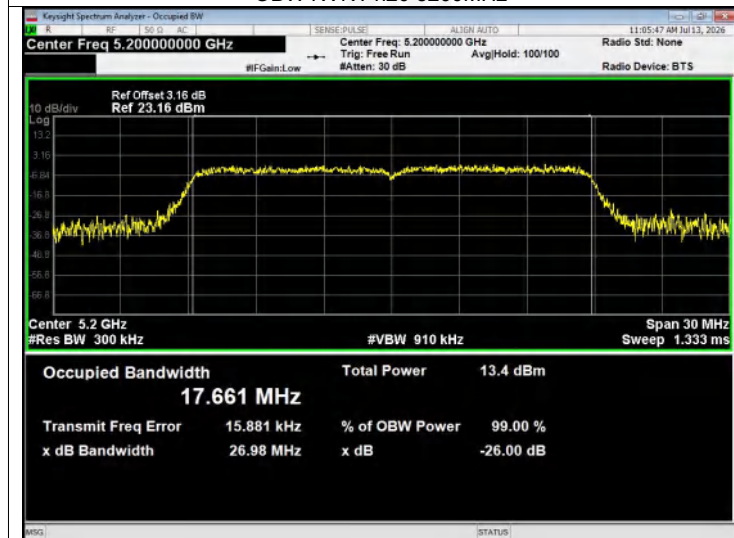




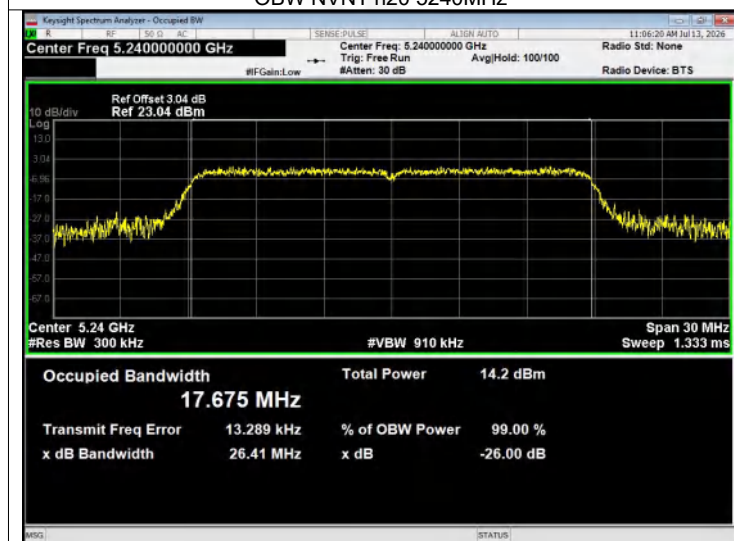
OBW NVNT n20 5180MHz



OBW NVNT n20 5200MHz

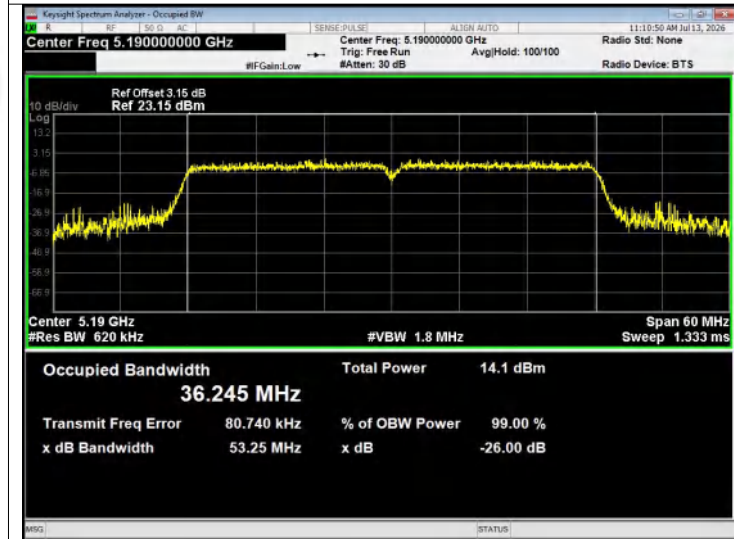


OBW NVNT n20 5240MHz

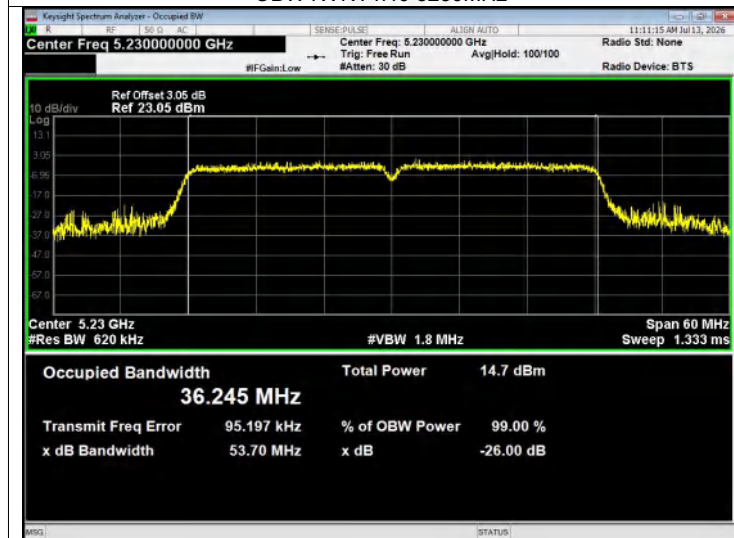




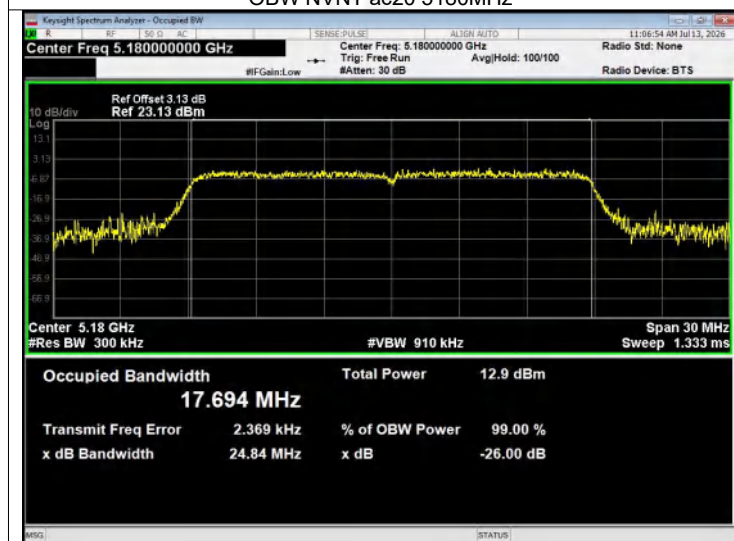
OBW NVNT n40 5190MHz



OBW NVNT n40 5230MHz

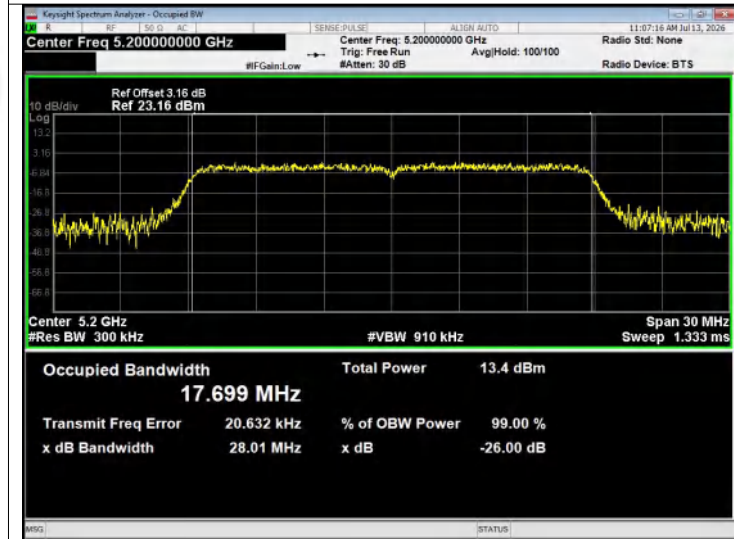


OBW NVNT ac20 5180MHz

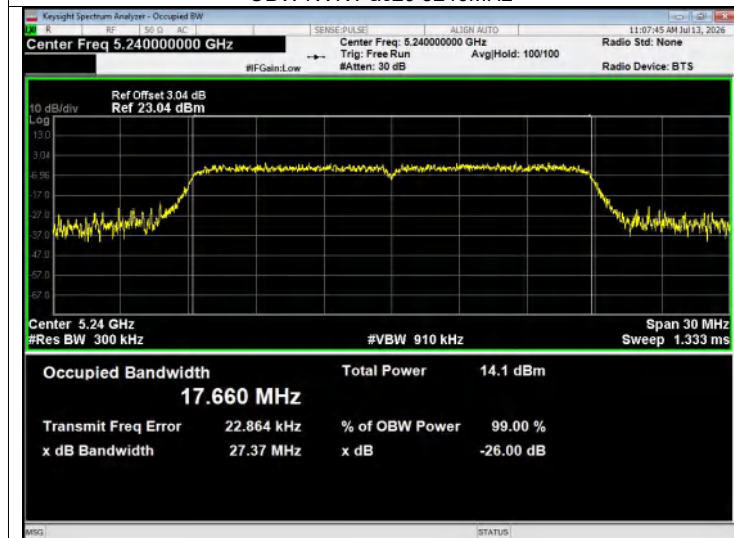




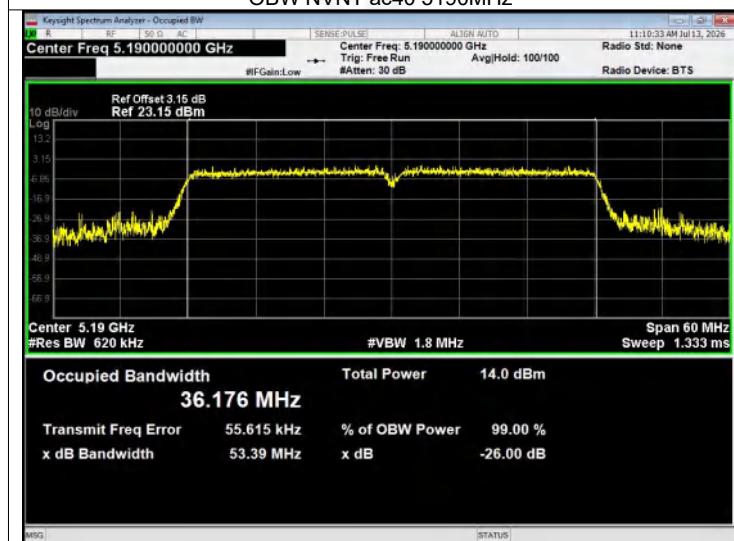
OBW NVNT ac20 5200MHz



OBW NVNT ac20 5240MHz

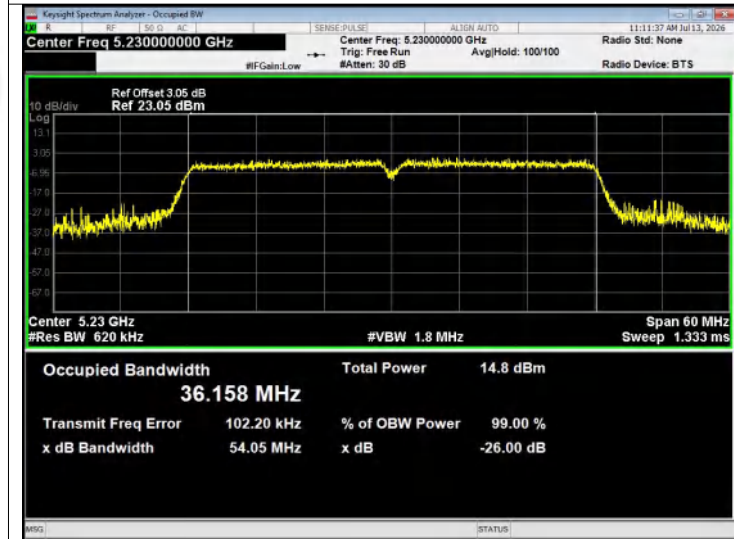


OBW NVNT ac40 5190MHz

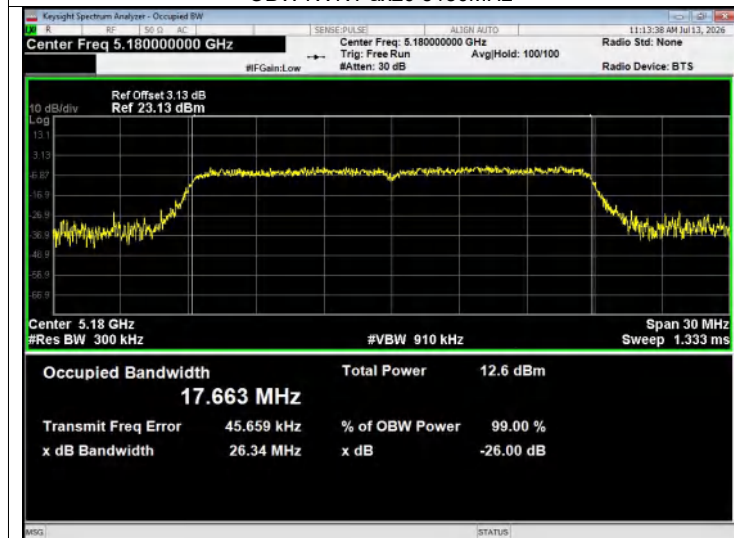




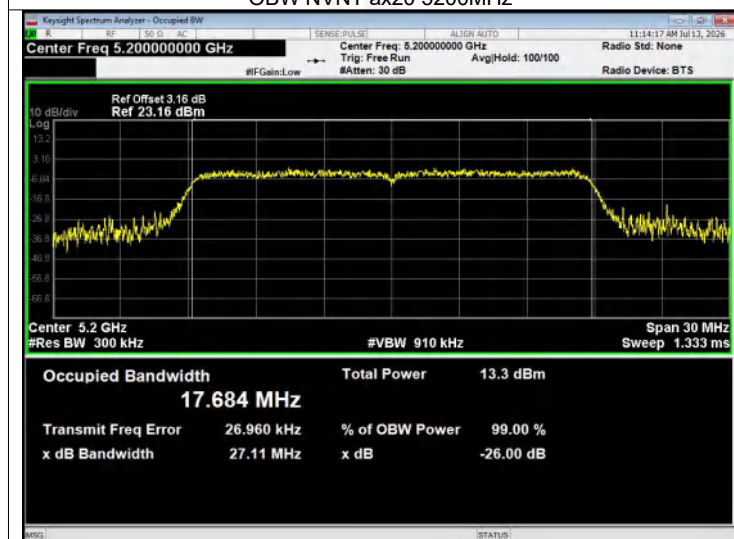
OBW NVNT ac40 5230MHz



OBW NVNT ax20 5180MHz

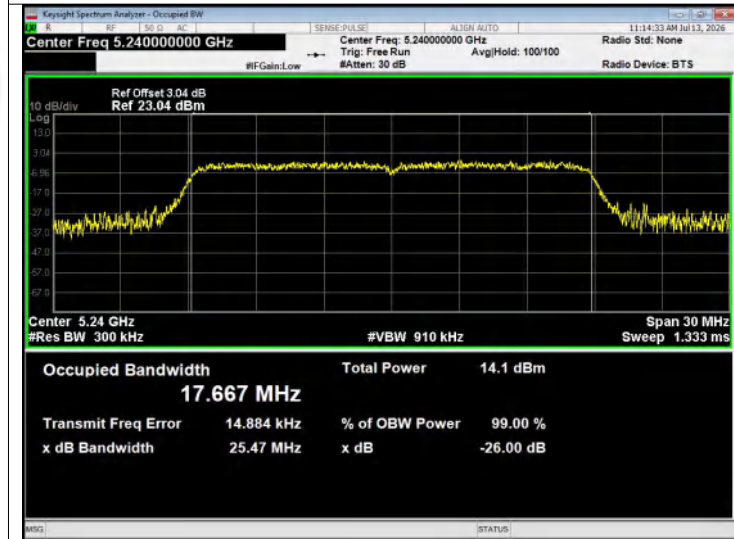


OBW NVNT ax20 5200MHz

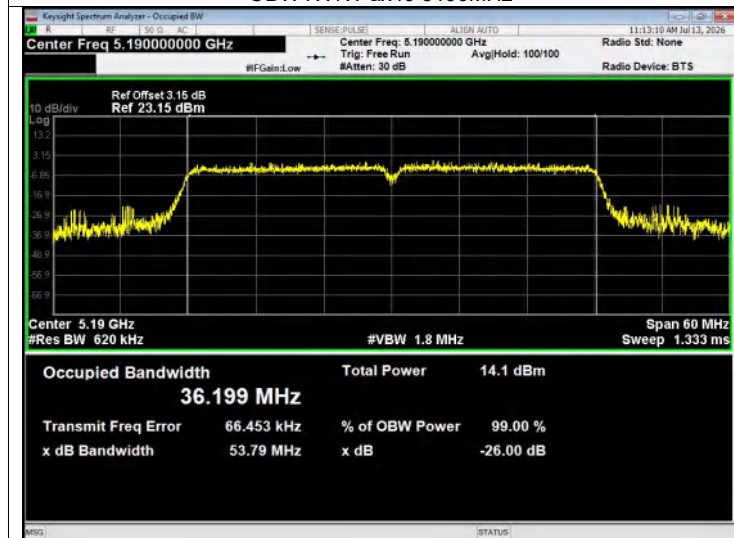




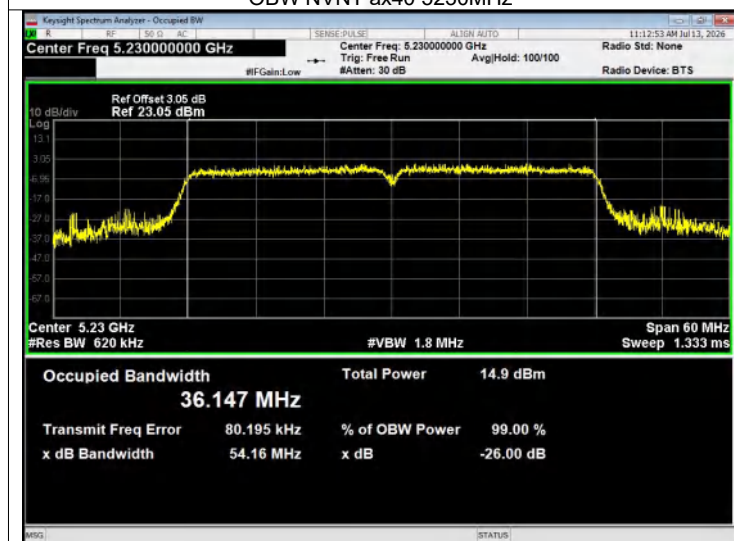
OBW NVNT ax20 5240MHz



OBW NVNT ax40 5190MHz



OBW NVNT ax40 5230MHz





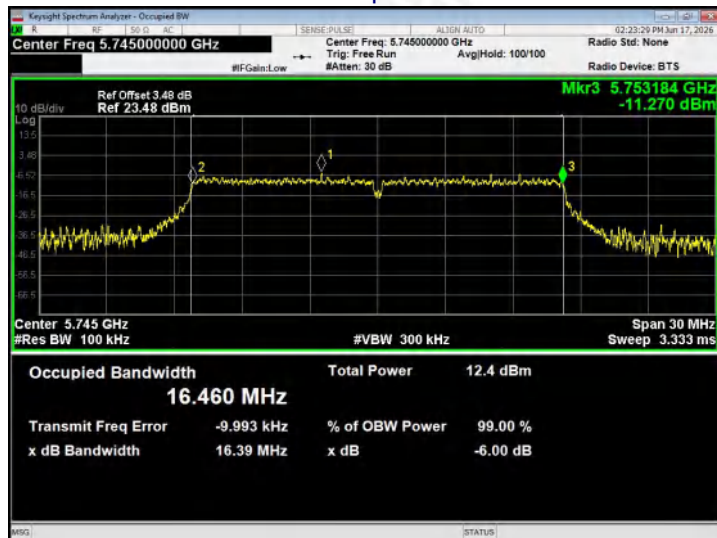
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC 120V/60Hz
Test Band :	5.8G		

Test Mode	Antenna	Frequency (MHz)	6dB Bandwidth (MHz)	6dB Limit (kHz)	Result
802.11a	SISO ANT	5745	16.39	>500	Pass
		5785	16.32		
		5825	16.36		
802.11n20	SISO ANT	5745	17.21	>500	Pass
		5785	17.23		
		5825	16.97		
802.11n40	SISO ANT	5755	36.10	>500	Pass
		5795	35.94		
802.11ac20	SISO ANT	5745	17.28	>500	Pass
		5785	17.21		
		5825	17.39		
802.11ac40	SISO ANT	5755	36.26	>500	Pass
		5795	36.04		
802.11ax20	SISO ANT	5745	17.57	>500	Pass
		5785	17.36		
		5825	17.24		
802.11ax40	SISO ANT	5755	36.03	>500	Pass
		5795	36.15		

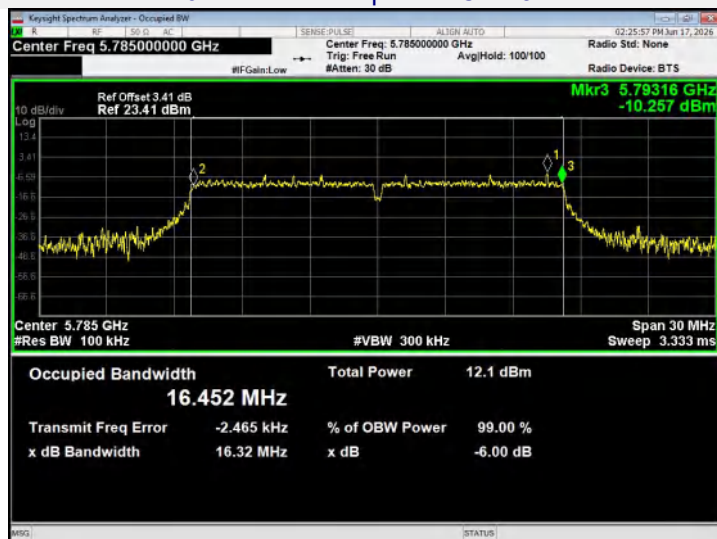


SISO ANT - 802.11a

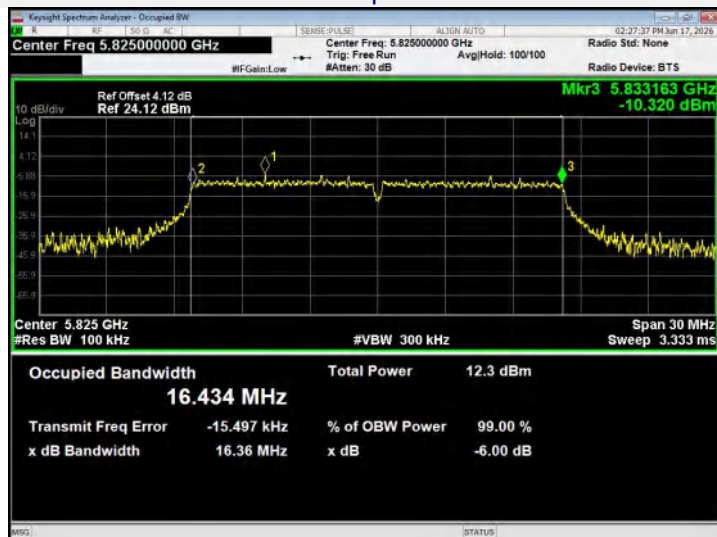
6dB Bandwidth plot on CH 149



6dB Bandwidth plot on CH 157



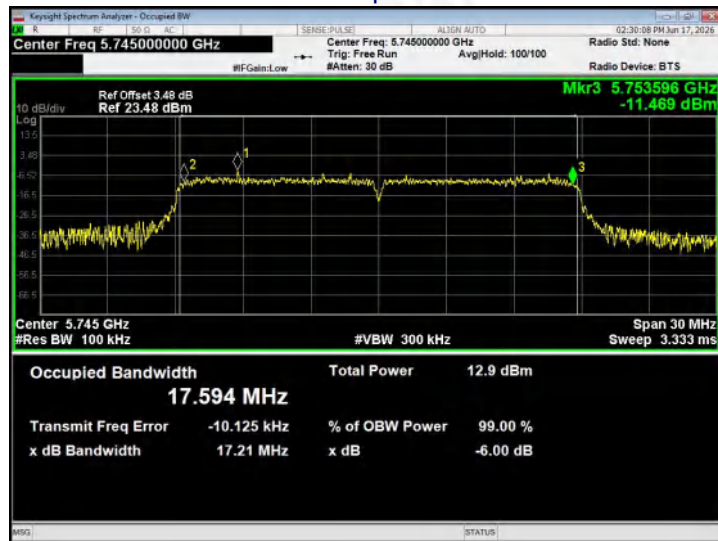
6dB Bandwidth plot on CH 165



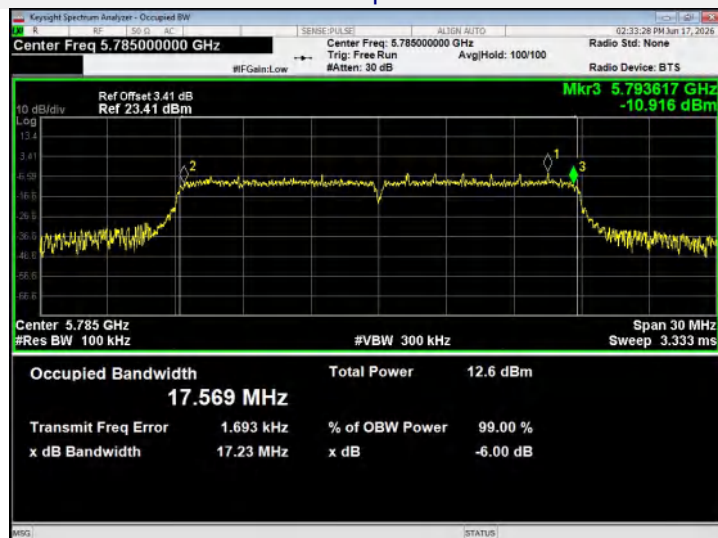


SISO ANT - 802.11n20

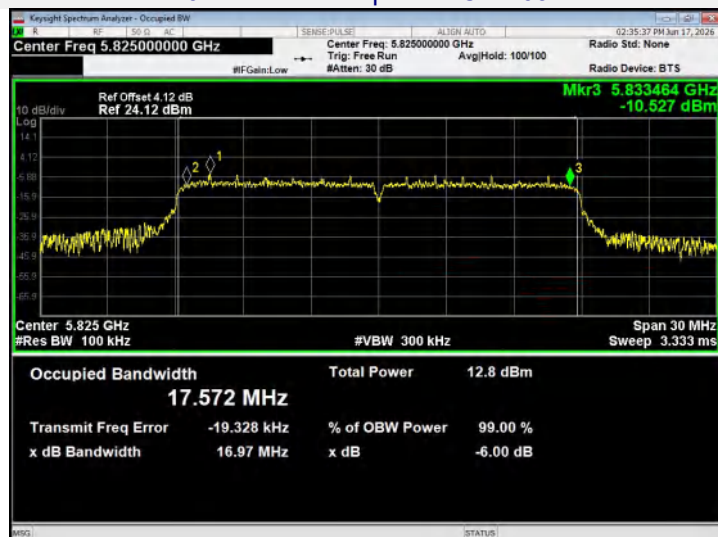
6dB Bandwidth plot on CH 149



6dB Bandwidth plot on CH 157



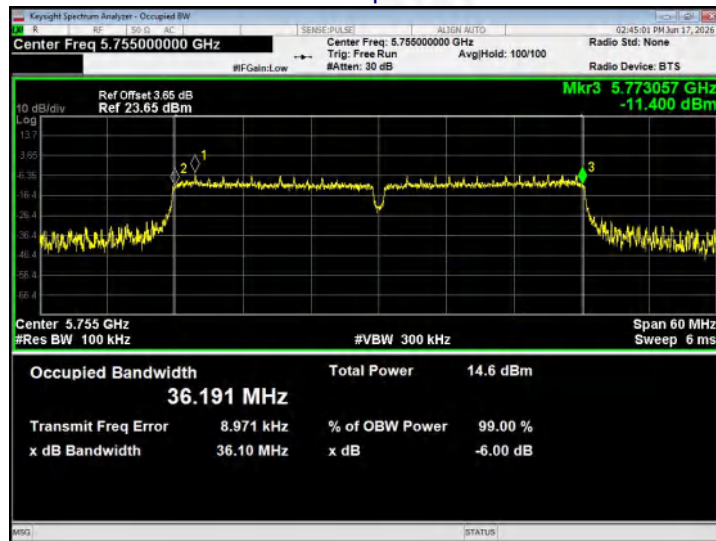
6dB Bandwidth plot on CH 165



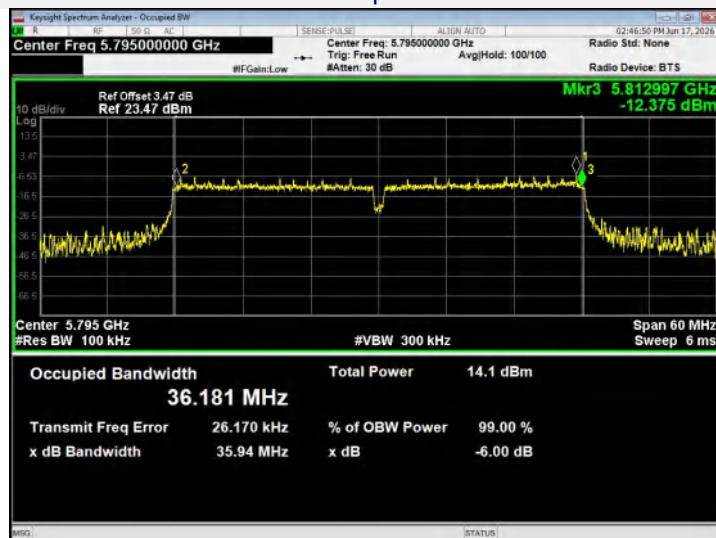


SISO ANT - 802.11n40

6dB Bandwidth plot on CH 151



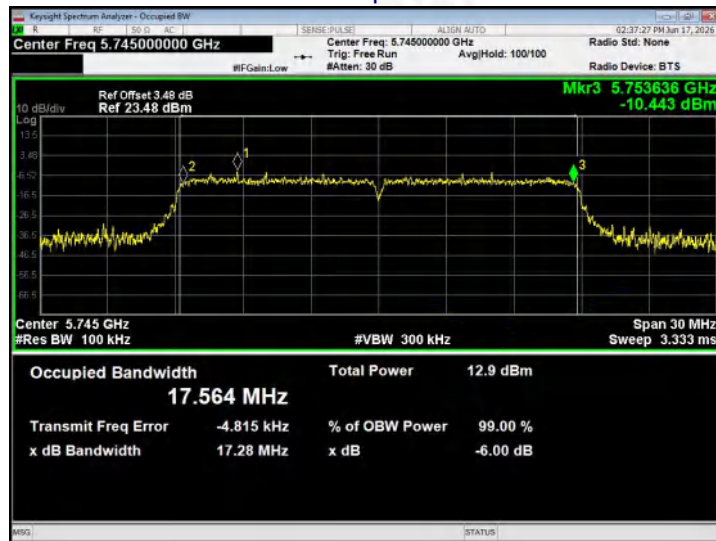
6dB Bandwidth plot on CH 159



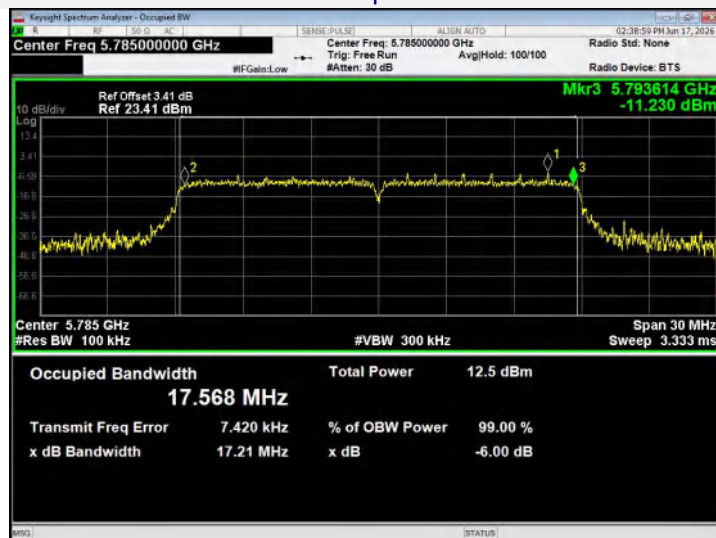


SISO ANT - 802.11ac20

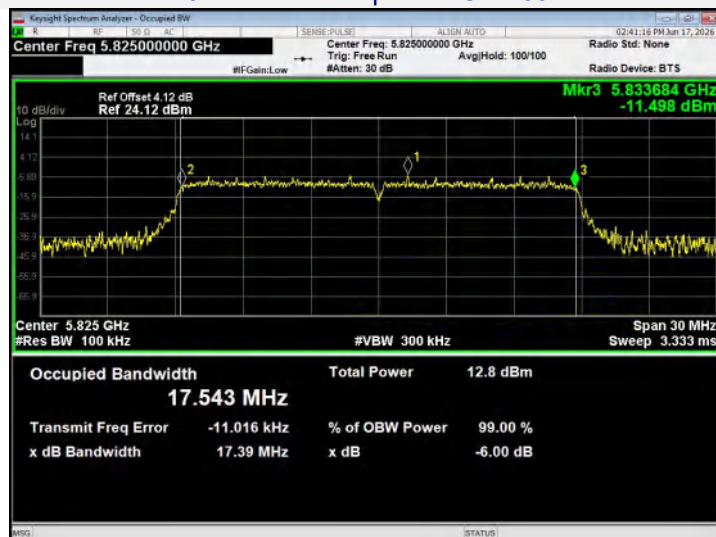
6dB Bandwidth plot on CH 149



6dB Bandwidth plot on CH 157



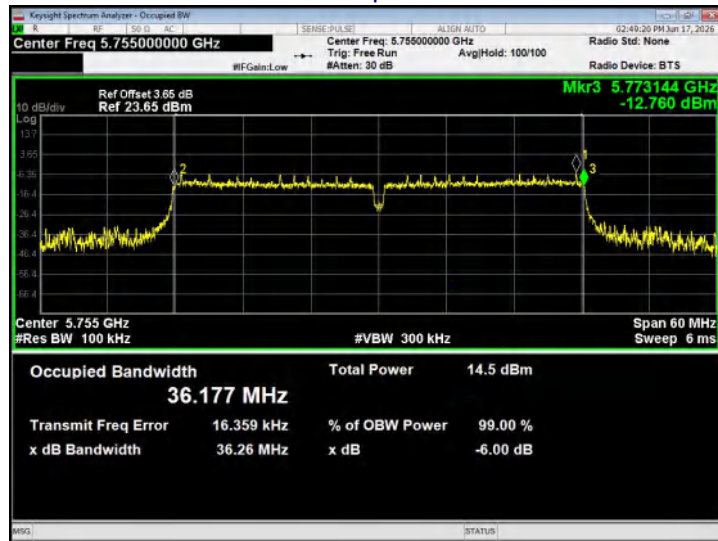
6dB Bandwidth plot on CH 165



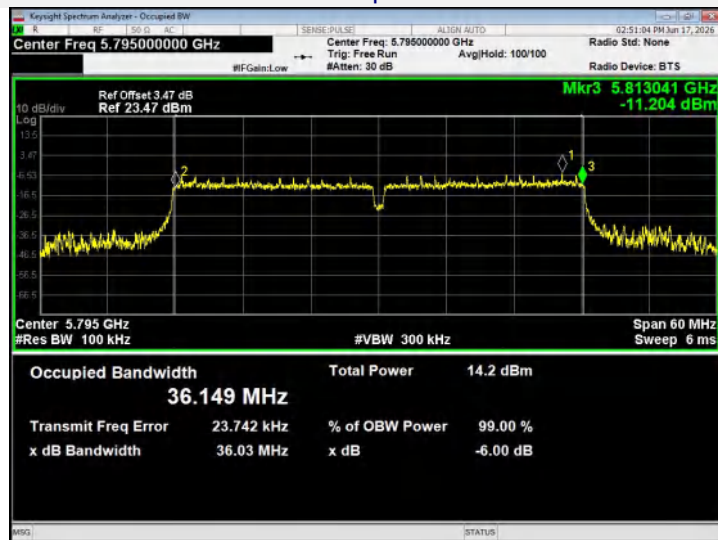


SISO ANT - 802.11ac40

6dB Bandwidth plot on CH 151



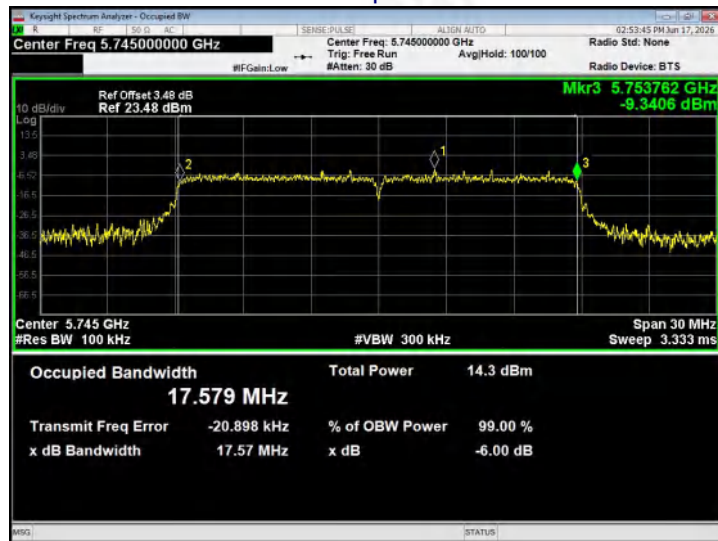
6dB Bandwidth plot on CH 159



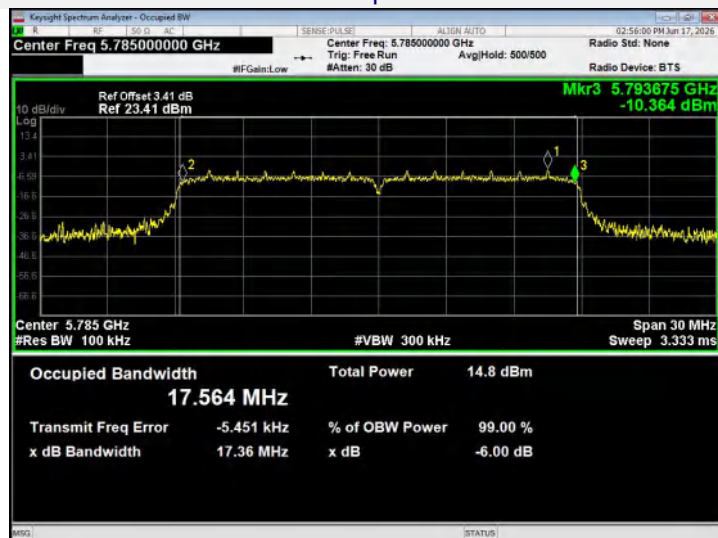


SISO ANT - 802.11ax20

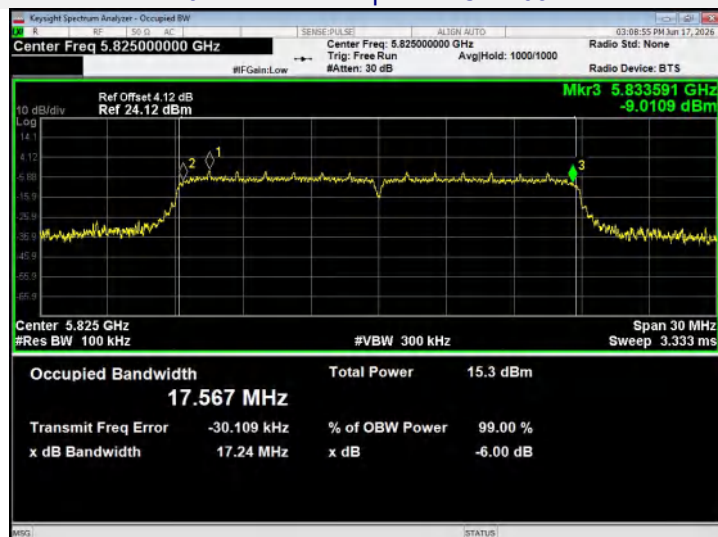
6dB Bandwidth plot on CH 149



6dB Bandwidth plot on CH 157



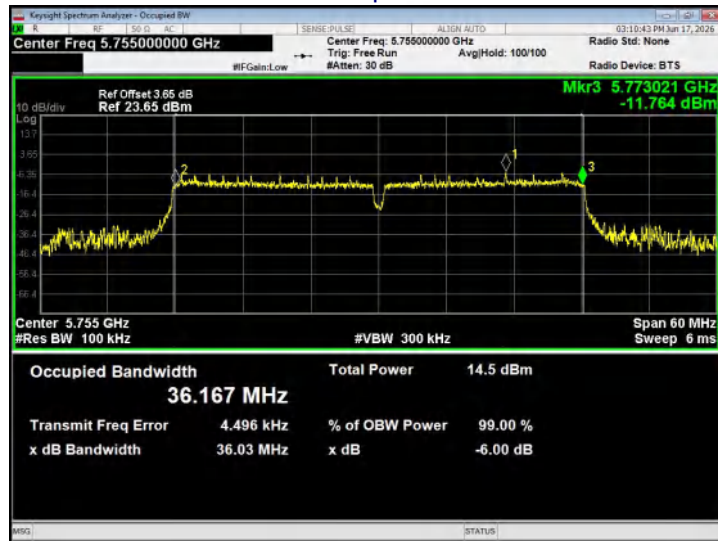
6dB Bandwidth plot on CH 165



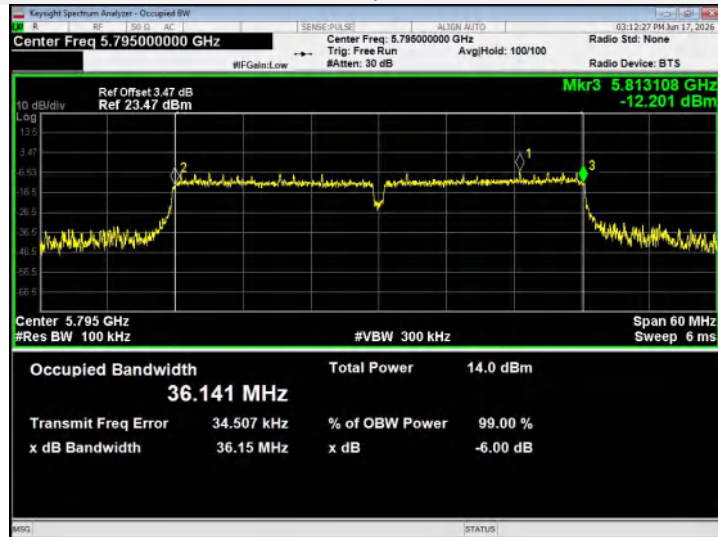


SISO ANT - 802.11ax40

6dB Bandwidth plot on CH 151



6dB Bandwidth plot on CH 159





7. MAXIMUM CONDUCTED OUTPUT POWER

7.1 APPLIED PROCEDURES / LIMIT

According to FCC §15.407

The maximum conducted output power should not exceed:

Frequency Band(MHz)	Limit
5150~5250	250mW
5725~5850	1W

7.2 TEST PROCEDURE

The EUT was directly connected to the Power meter

1. Device Configuration

If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level (see section II.B.).

a) The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (to no lower than 98 percent) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.

b) If continuous transmission (or at least 98 percent duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level with the transmit duration as long as possible and the duty cycle as high as possible.

2. Measurement using a Spectrum Analyzer or EMI Receiver (SA)

Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99-percent occupied bandwidth of the signal.¹ However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with § 15.407(a).

a) The test method shall be selected as follows: (i) Method SA-1 or SA-1 Alternative (averaging with the EUT transmitting at full power throughout each sweep) shall be applied if either of the following conditions can be satisfied:

- The EUT transmits continuously (or with a duty cycle ≥ 98 percent).
- Sweep triggering or gating can be implemented in a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the analyzer configured as in Method SA-1, below) is equal to or shorter than the duration T of each transmission from the EUT and if those transmissions exhibit full power throughout their durations.

(ii) Method SA-2 or SA-2 Alternative (averaging across on and off times of the EUT transmissions, followed by duty cycle correction) shall be applied if the conditions of (i) cannot be achieved and the transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than ± 2 percent.

(iii) Method SA-3 (RMS detection with max hold) or SA-3 Alternative (reduced VBW with max hold) shall be applied if the conditions of (i) and (ii) cannot be achieved.

b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep): (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 $\leq$ RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Sweep time = auto.

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

(vii) If transmit duty cycle < 98 percent, 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 percent, 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 (i.e., 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

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



7.6 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Band :	5.2G		

Test Mode	Antenna	Frequency (MHz)	Output power (dBm)	Duty cycle factor (dB)	Total power (dBm)	Limit (dBm)	Result
802.11a	SISO ANT	5180	8.689	0.442	9.131	23.98	Pass
		5200	8.918	0.442	9.36		
		5240	9.391	0.442	9.833		
802.11n20	SISO ANT	5180	8.386	0.717	9.103	23.98	Pass
		5200	8.854	0.717	9.571		
		5240	9.284	0.717	10.001		
802.11n40	SISO ANT	5190	8.429	0.984	9.413	23.98	Pass
		5230	8.945	0.984	9.929		
802.11ac20	SISO ANT	5180	8.4	1.534	9.934	23.98	Pass
		5200	8.908	1.534	10.442		
		5240	9.291	1.534	10.825		
802.11ac40	SISO ANT	5190	8.415	1.026	9.441	23.98	Pass
		5230	9.111	1.026	10.137		
802.11ax20	SISO ANT	5180	8.213	0.52	8.733	23.98	Pass
		5200	8.747	0.52	9.267		
		5240	9.316	0.52	9.836		
802.11ax40	SISO ANT	5190	8.453	0.984	9.437	23.98	Pass
		5230	8.962	0.984	9.946		

Note: Total power = Output power + Duty cycle factor.



Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Band :	5.8G		

Test Mode	Antenna	Frequency (MHz)	Output power (dBm)	Duty cycle factor (dB)	Total power (dBm)	Limit (dBm)	Result
802.11a	SISO ANT	5745	6.292	0.459	6.751	30	Pass
		5785	5.95	0.459	6.409		
		5825	6.229	0.459	6.688		
802.11n20	SISO ANT	5745	6.347	0.618	6.965	30	Pass
		5785	5.875	0.618	6.493		
		5825	6.157	0.618	6.775		
802.11n40	SISO ANT	5755	7.283	0.954	8.237	30	Pass
		5795	6.833	0.954	7.787		
802.11ac20	SISO ANT	5745	6.239	0.518	6.757	30	Pass
		5785	5.942	0.518	6.46		
		5825	6.289	0.518	6.807		
802.11ac40	SISO ANT	5755	7.16	0.954	8.114	30	Pass
		5795	6.939	0.954	7.893		
802.11ax20	SISO ANT	5745	7.485	0.522	8.007	30	Pass
		5785	6.323	0.522	6.845		
		5825	6.513	0.522	7.035		
802.11ax40	SISO ANT	5755	7.14	0.946	8.086	30	Pass
		5795	6.773	0.946	7.719		
Note: Total power = Output power + Duty cycle factor.							



8. OUT OF BAND EMISSIONS

8.1 APPLICABLE STANDARD

According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(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)

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

8.2 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.

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



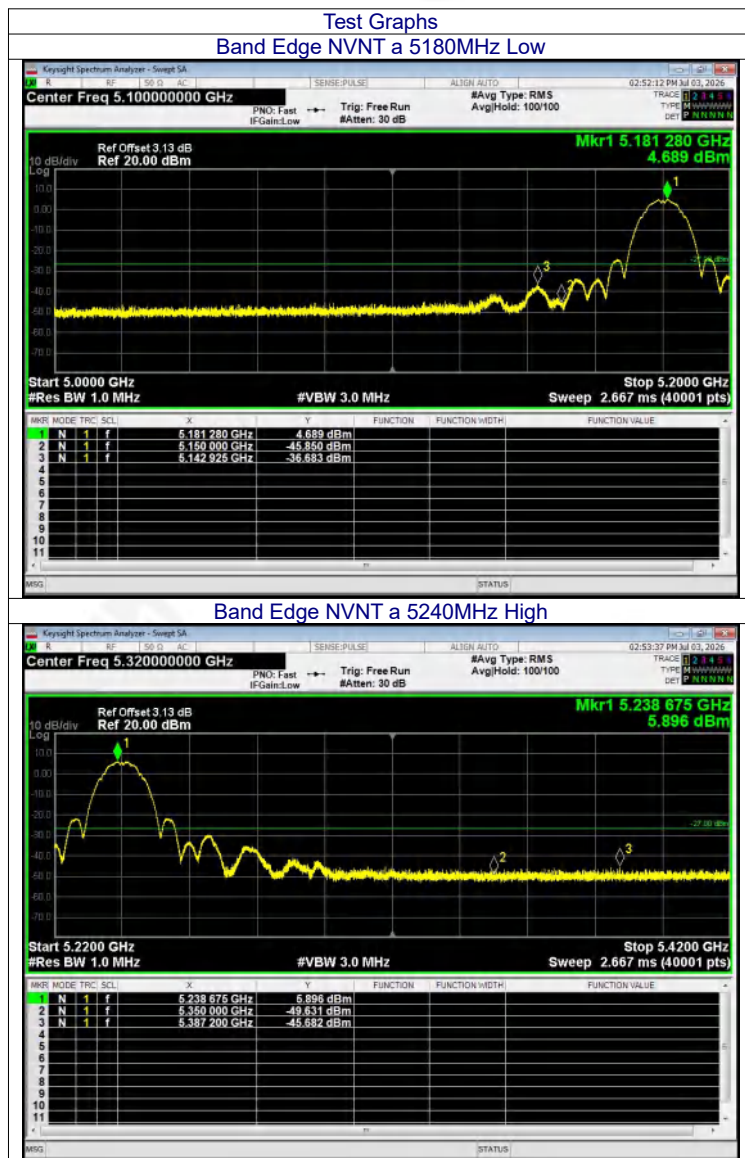
8.5 EUT OPERATION CONDITIONS

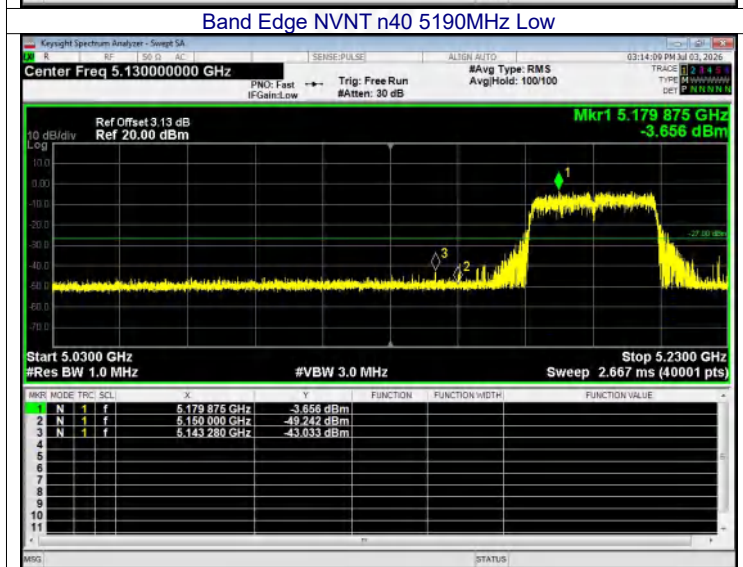
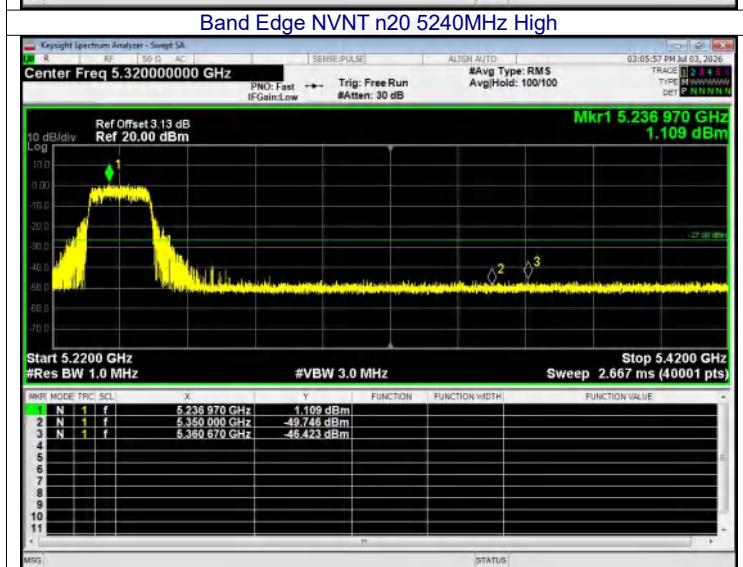
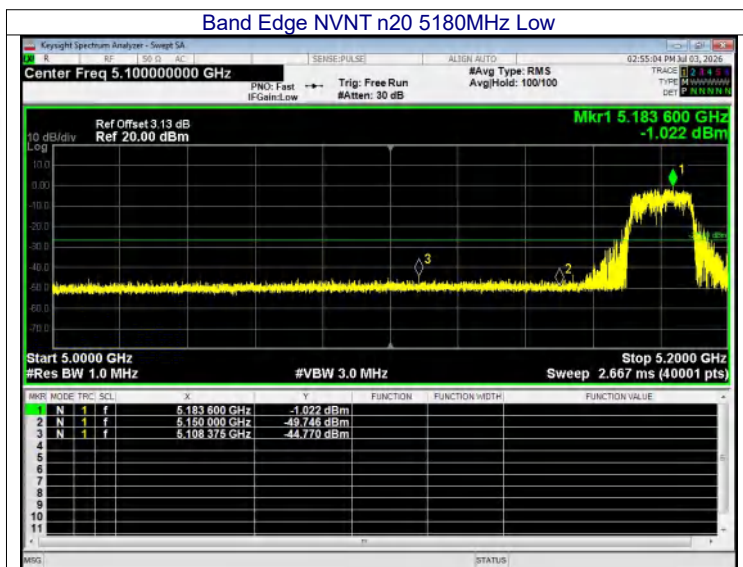
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



8.6 TEST RESULTS

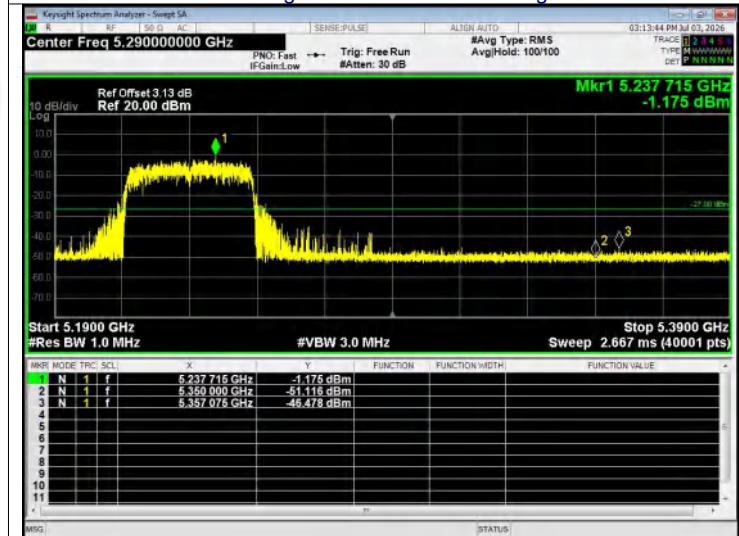
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test band :	5.2G	Antenna gain :	2dBi (The gain value of antenna A is tested uniformly)



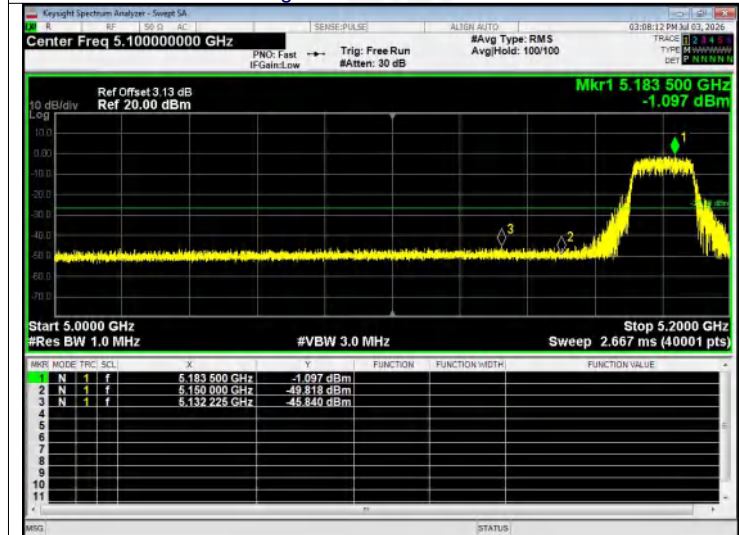




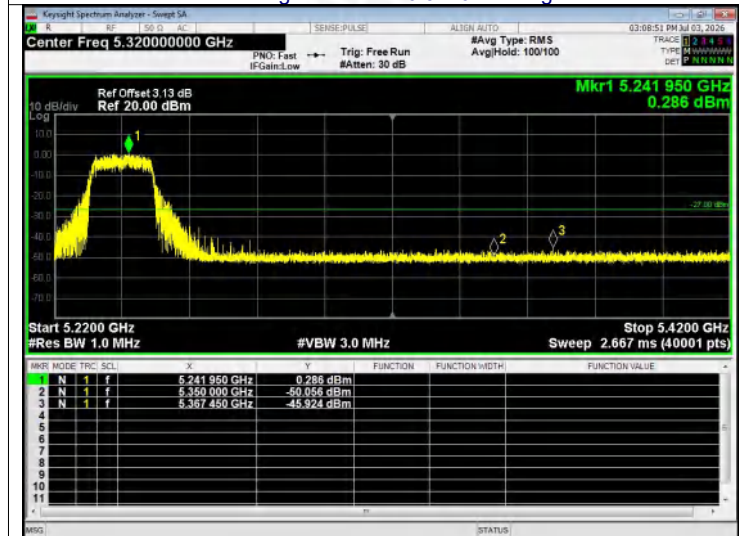
Band Edge NVNT n40 5230MHz High

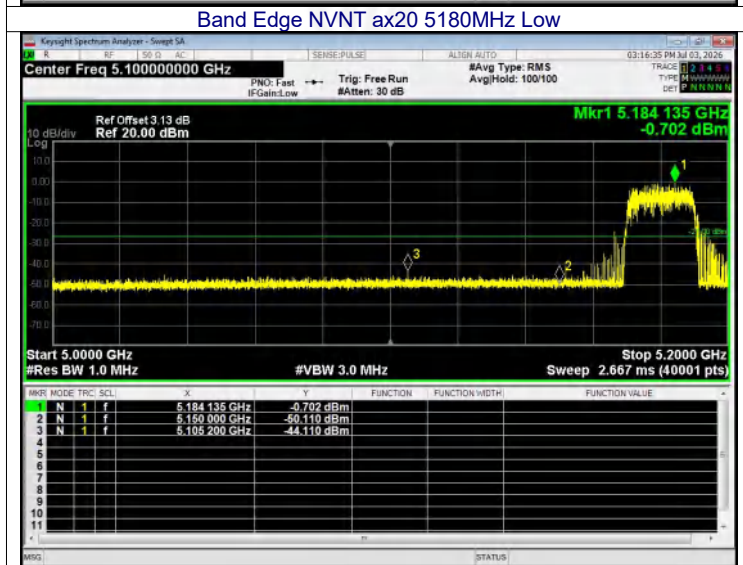
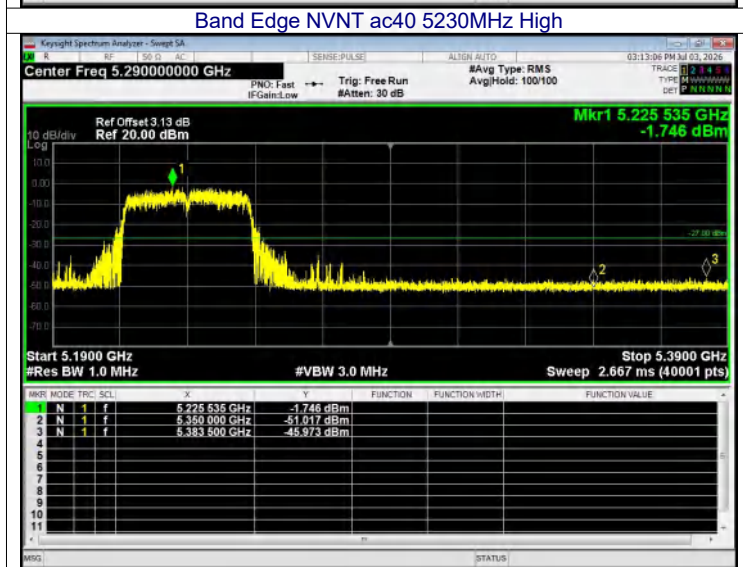
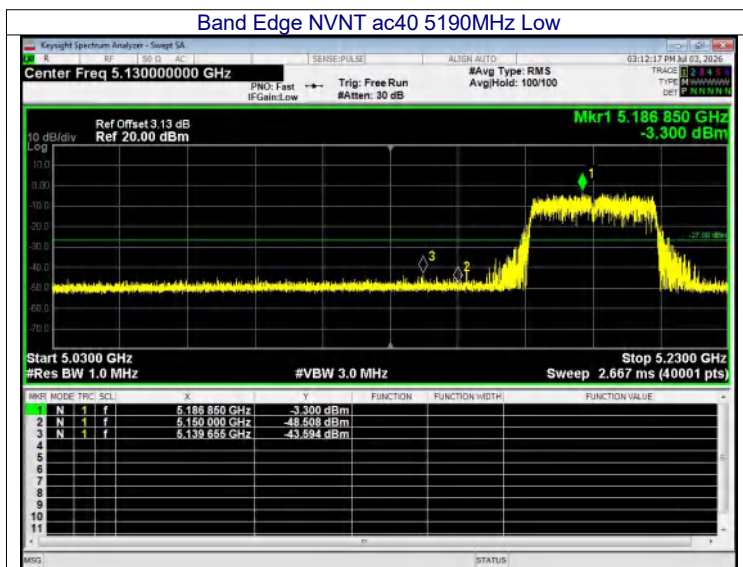


Band Edge NVNT ac20 5180MHz Low



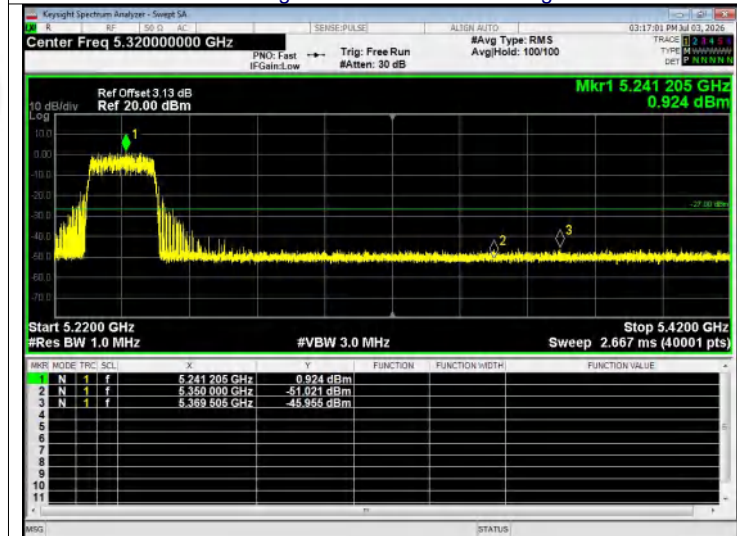
Band Edge NVNT ac20 5240MHz High



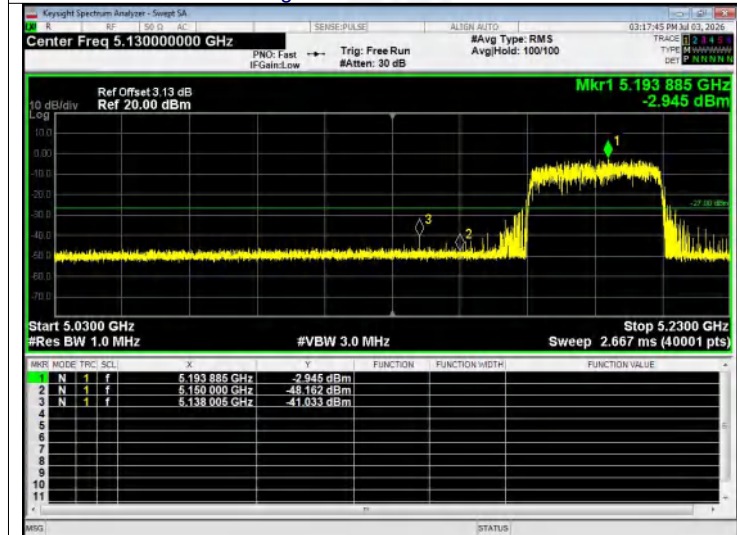




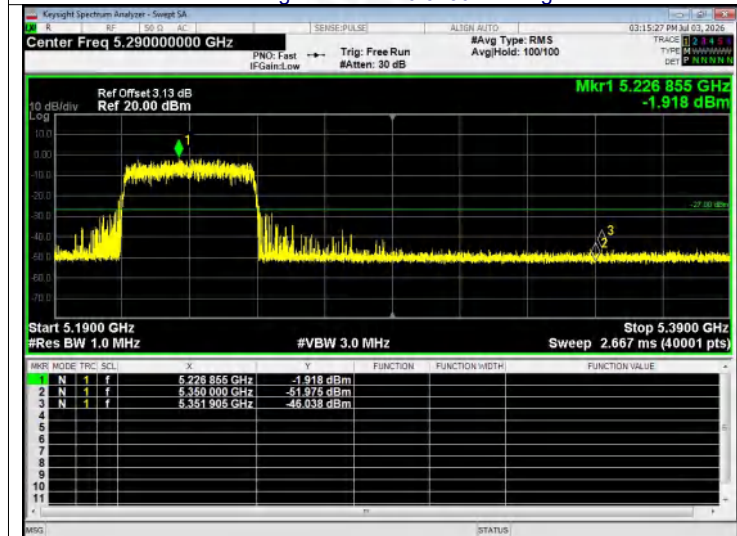
Band Edge NVNT ax20 5240MHz High



Band Edge NVNT ax40 5190MHz Low

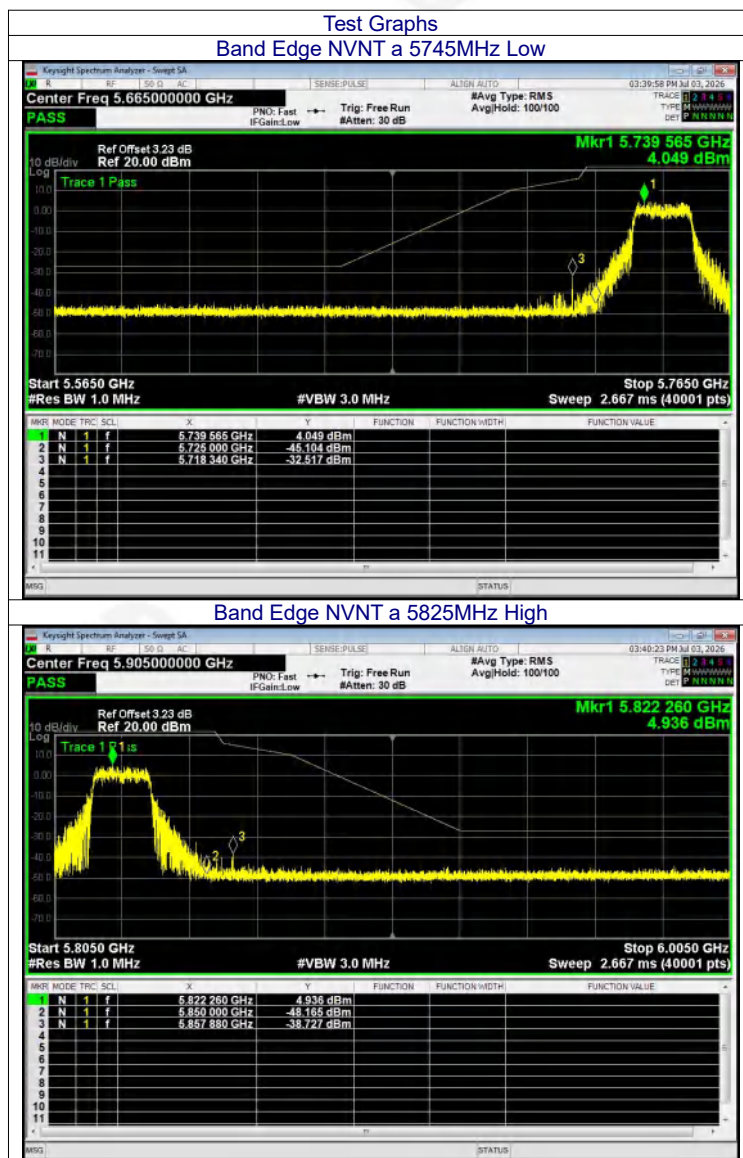


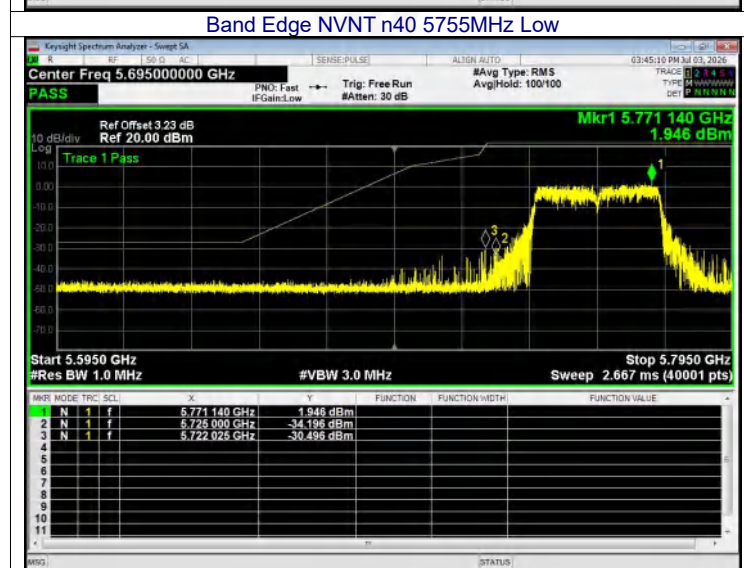
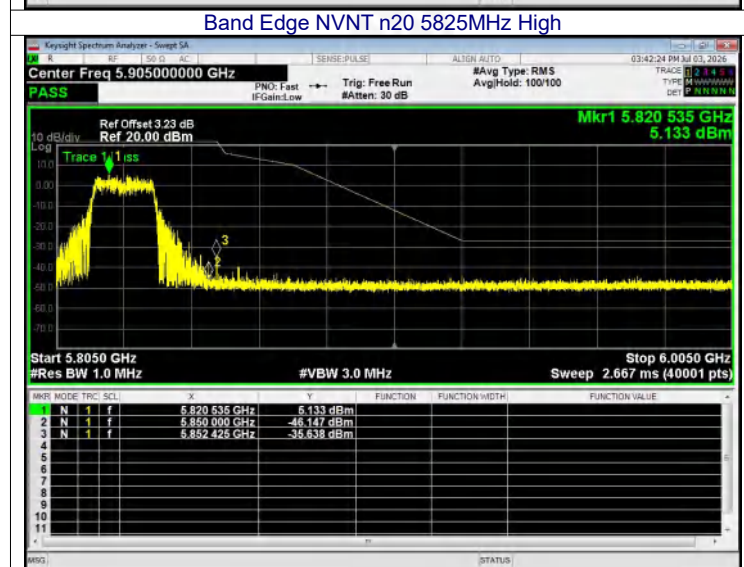
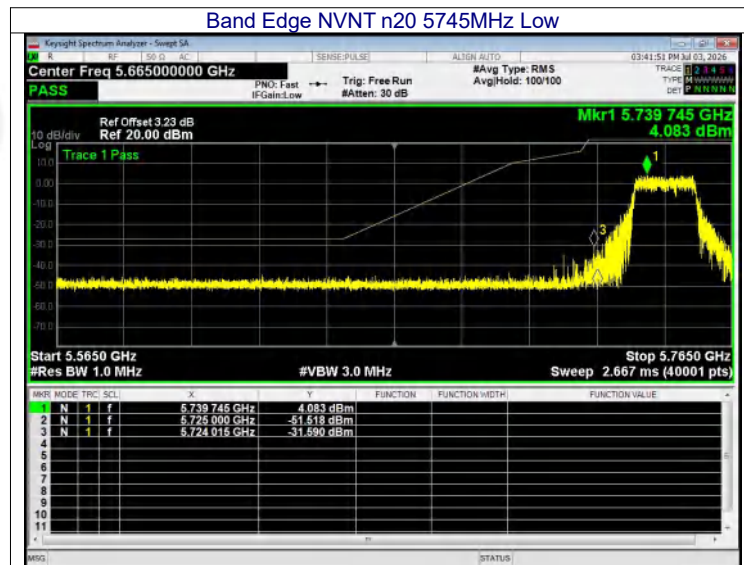
Band Edge NVNT ax40 5230MHz High





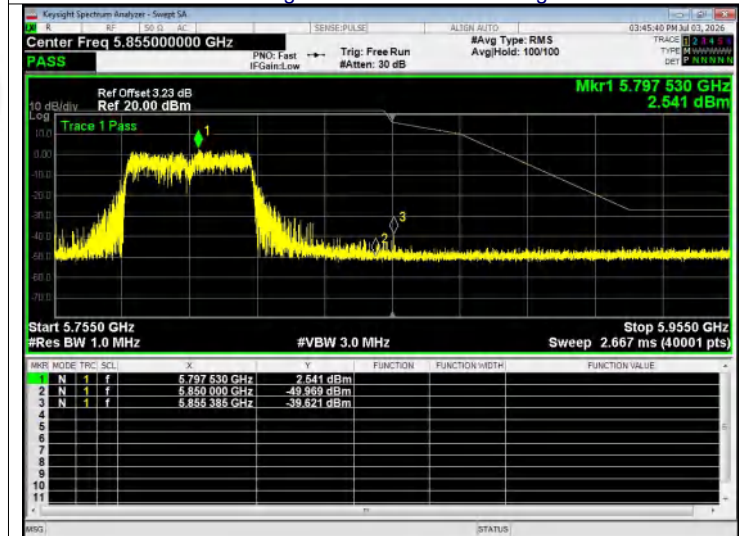
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test band :	5.8G	Antenna gain :	2.1dBi (The gain value of antenna A is tested uniformly)



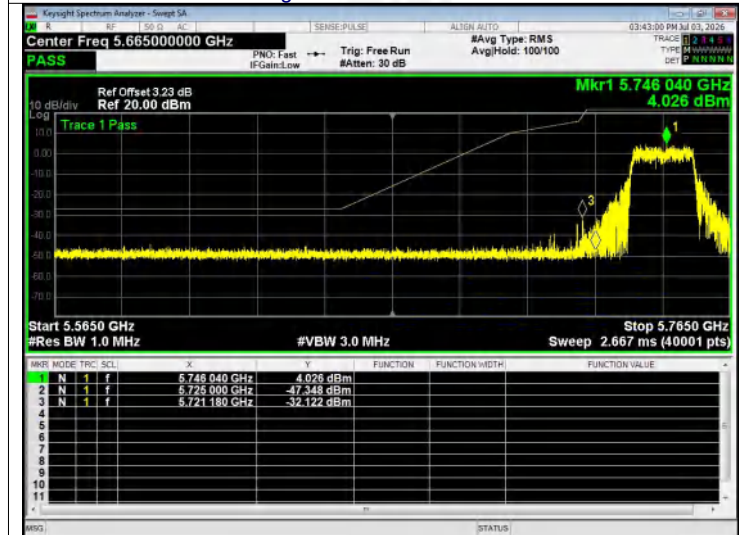




Band Edge NVNT n40 5795MHz High

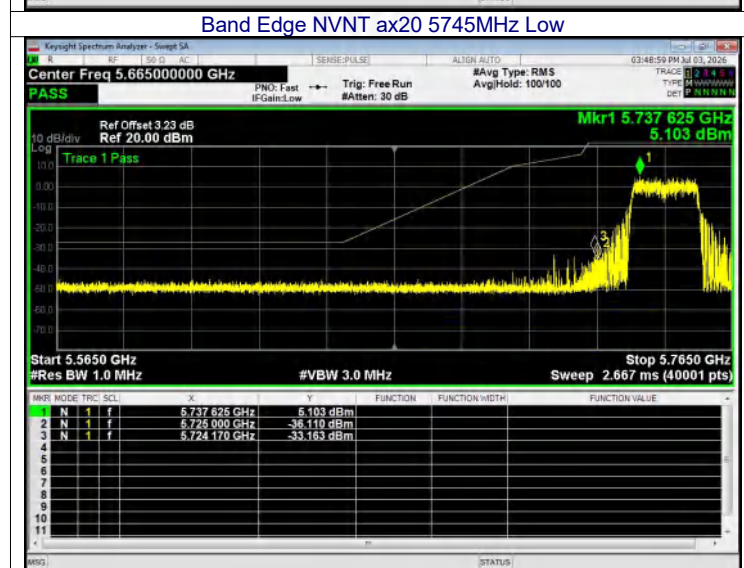
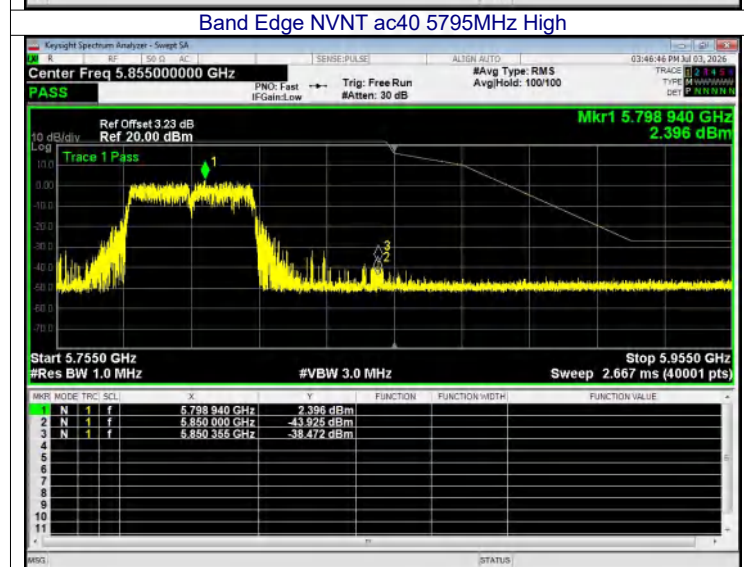
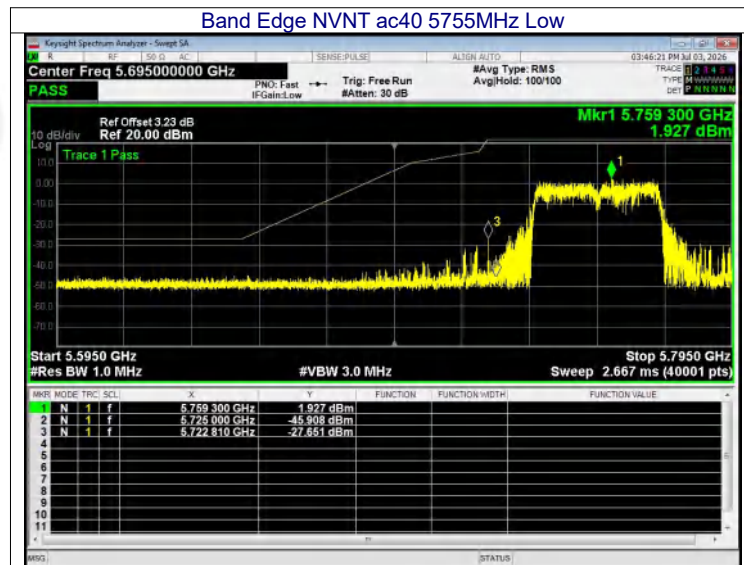


Band Edge NVNT ac20 5745MHz Low



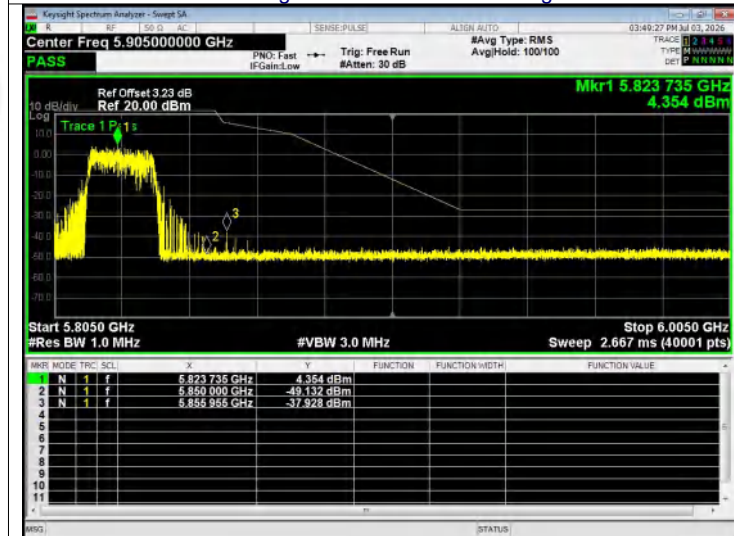
Band Edge NVNT ac20 5825MHz High



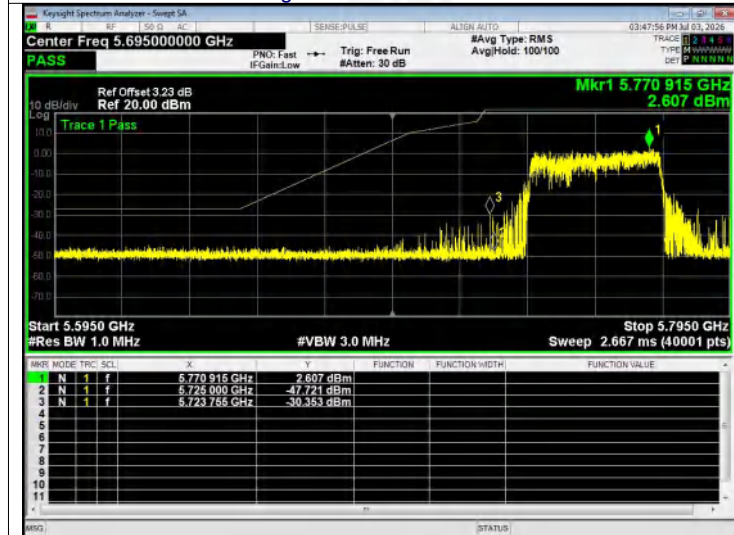




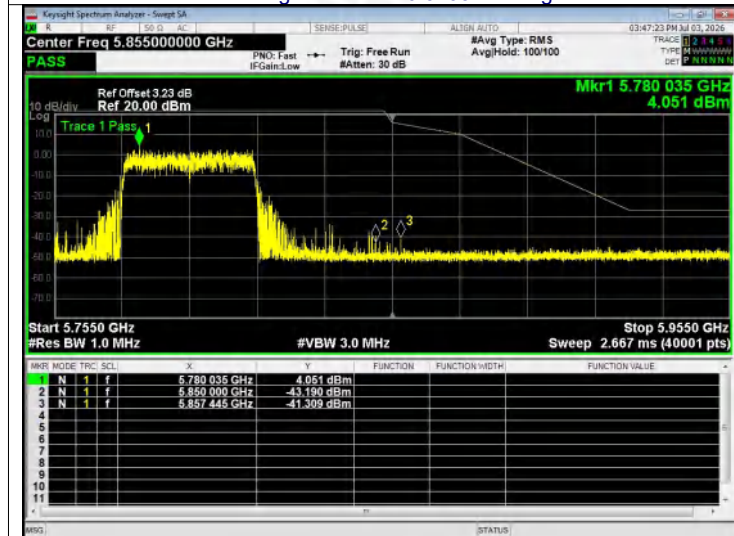
Band Edge NVNT ax20 5825MHz High



Band Edge NVNT ax40 5755MHz Low



Band Edge NVNT ax40 5795MHz High





9.SPURIOUS RF CONDUCTED EMISSIONS

9.1 CONFORMANCE LIMIT

Frequency Band (MHz)	Limit
5150 - 5250	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5250 - 5350	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5470 - 5725	Outside of the 5.47-5.725 GHz band: e.i.r.p. -27 dBm
5725 - 5850	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

9.2 MEASURING INSTRUMENTS

The Measuring equipment is listed in the section 6.3 of this test report.

9.3 TEST SETUP



9.4 TEST PROCEDURE

The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2020+Cor 1-2023 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=1MHz and VBW= 3MHz to measure the peak field strength, and measure frequency range from 30MHz to 26.5GHz.

9.5 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test band :	5.2G & 5.8G		
Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. And above 26.5GHz of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. The lowest, middle and highest channels are tested to verify the spurious emissions and band edge measurement data.			



10.FREQUENCY STABILITY MEASUREMENT

10.1 LIMIT

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification).

10.2 TEST PROCEDURES

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c-f)/f_c \times 10^6$ ppm and the limit is less than ± 20 ppm (IEEE 802.11n specification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is $-20^{\circ}\text{C} \sim 50^{\circ}\text{C}$.

10.3 TEST SETUP LAYOUT



10.4 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously un-modulation transmitting mode.

10.5 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Band :	5.2G & 5.8G		
Note: All channels have been tested, and only the worst test data is recorded in this report.			



Extreme temperature frequency stability:

Reference Frequency: SISO ANT 802.11a - 5180MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5179.986	-2.691
40	120	5179.975	-4.904
30	120	5179.984	-3.060
25	120	5179.986	-2.643
10	120	5179.980	-3.811
0	120	5179.978	-4.214
-10	120	5179.980	-3.824
-20	120	5179.978	-4.301

Reference Frequency: SISO ANT 802.11n20 - 5180MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5179.986	-2.624
40	120	5179.970	-5.733
30	120	5179.972	-5.540
25	120	5179.978	-4.255
10	120	5179.979	-4.421
0	120	5179.988	-2.321
-10	120	5179.978	-4.224
-20	120	5179.987	-2.341

Reference Frequency: SISO ANT 802.11n40 - 5190MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5189.974	-5.250
40	120	5189.988	-2.244
30	120	5189.979	-3.274
25	120	5189.981	-3.254
10	120	5189.990	-1.248
0	120	5189.981	-3.275
-10	120	5189.971	-5.744
-20	120	5189.988	-2.284



Reference Frequency: SISO ANT 802.11ac20 - 5180MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5179.968	-6.257
40	120	5179.978	-4.257
30	120	5179.971	-5.551
25	120	5179.969	-5.925
10	120	5179.975	-4.835
0	120	5179.966	-6.624
-10	120	5179.978	-4.324
-20	120	5179.975	-4.733

Reference Frequency: SISO ANT 802.11ac40 - 5190MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5189.988	-2.224
40	120	5189.986	-2.714
30	120	5189.982	-3.575
25	120	5189.974	-5.028
10	120	5189.981	-3.535
0	120	5189.980	-3.994
-10	120	5189.988	-2.357
-20	120	5189.979	-4.054

Reference Frequency: SISO ANT 802.11ax20 - 5180MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5179.971	-5.657
40	120	5179.964	-6.958
30	120	5179.975	-4.824
25	120	5179.967	-6.367
10	120	5179.977	-4.453
0	120	5179.962	-7.323
-10	120	5179.979	-3.937
-20	120	5179.969	-6.058



Reference Frequency: SISO ANT 802.11ax40 - 5190MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5189.974	-5.060
40	120	5189.988	-2.400
30	120	5189.979	-3.983
25	120	5189.981	-3.600
10	120	5189.990	-1.940
0	120	5189.981	-3.657
-10	120	5189.971	-5.626
-20	120	5189.988	-2.236

Reference Frequency: SISO ANT 802.11a - 5745MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5744.974	-4.534
40	120	5744.954	-7.901
30	120	5744.962	-6.672
25	120	5744.962	-6.215
10	120	5744.979	-3.725
0	120	5744.977	-3.924
-10	120	5744.969	-5.457
-20	120	5744.964	-6.241

Reference Frequency: SISO ANT 802.11n20 - 5745MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5744.974	-4.587
40	120	5744.954	-7.998
30	120	5744.962	-6.606
25	120	5744.962	-6.541
10	120	5744.979	-3.731
0	120	5744.977	-3.954
-10	120	5744.969	-5.407
-20	120	5744.964	-6.185



Reference Frequency: SISO ANT 802.11n40 - 5755MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5754.961	-6.234
40	120	5754.957	-7.432
30	120	5754.971	-5.427
25	120	5754.964	-6.280
10	120	5754.980	-3.241
0	120	5754.979	-3.240
-10	120	5754.964	-6.272
-20	120	5754.965	-6.256

Reference Frequency: SISO ANT 802.11ac20 - 5745MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5744.973	-4.570
40	120	5744.963	-6.613
30	120	5744.978	-3.371
25	120	5744.968	-5.571
10	120	5744.978	-3.327
0	120	5744.971	-5.374
-10	120	5744.970	-5.314
-20	120	5744.965	-6.041

Reference Frequency: SISO ANT 802.11ac40 - 5755MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5754.963	-6.358
40	120	5754.970	-5.157
30	120	5754.977	-3.934
25	120	5754.964	-6.210
10	120	5754.977	-3.920
0	120	5754.957	-7.483
-10	120	5754.958	-7.299
-20	120	5754.960	-6.943



Reference Frequency: SISO ANT 802.11ax20 - 5745MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5744.972	-4.830
40	120	5744.971	-5.414
30	120	5744.977	-4.074
25	120	5744.968	-5.511
10	120	5744.980	-3.549
0	120	5744.964	-6.325
-10	120	5744.975	-4.417
-20	120	5744.975	-4.386

Reference Frequency: SISO ANT 802.11ax40 - 5755MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
50	120	5754.961	-6.816
40	120	5754.957	-7.467
30	120	5754.971	-5.008
25	120	5754.964	-6.317
10	120	5754.980	-3.511
0	120	5754.979	-3.705
-10	120	5754.964	-6.171
-20	120	5754.965	-6.059



Extreme voltage frequency stability:

Reference Frequency: 802.11a - 5180MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5179.989	-2.078
26	126	5179.979	-4.093
26	120	5179.970	-5.769
26	114	5179.984	-3.102
26	102	5179.984	-3.079

Reference Frequency: 802.11n20 - 5180MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5179.988	-2.265
26	126	5179.979	-4.129
26	120	5179.971	-5.535
26	114	5179.974	-5.097
26	102	5179.984	-3.182

Reference Frequency: 802.11n40 - 5190MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5189.972	-5.419
26	126	5189.987	-2.418
26	120	5189.977	-4.349
26	114	5189.979	-4.103
26	102	5189.986	-2.777



Reference Frequency: 802.11ac20 - 5180MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5179.979	-4.035
26	126	5179.966	-6.589
26	120	5179.988	-2.330
26	114	5179.973	-5.188
26	102	5179.971	-5.580

Reference Frequency: 802.11ac40 - 5190MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5189.980	-3.792
26	126	5189.983	-3.324
26	120	5189.974	-4.935
26	114	5189.982	-3.530
26	102	5189.973	-5.228

Reference Frequency: 802.11ax20 - 5180MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5179.985	-2.805
26	126	5179.982	-3.476
26	120	5179.982	-3.497
26	114	5179.971	-5.546
26	102	5179.985	-2.936

Reference Frequency: 802.11ax40 - 5190MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5189.974	-4.987
26	126	5189.966	-6.527
26	120	5189.984	-3.073
26	114	5189.978	-4.273
26	102	5189.986	-2.718



Reference Frequency: 802.11a - 5745MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5744.964	-6.260
26	126	5744.964	-6.212
26	120	5744.978	-3.915
26	114	5744.972	-4.936
26	102	5744.973	-4.694

Reference Frequency: 802.11n20 - 5745MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5744.967	-5.757
26	126	5744.963	-6.358
26	120	5744.975	-4.405
26	114	5744.979	-3.628
26	102	5744.961	-6.807

Reference Frequency: 802.11n40 - 5755MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5754.972	-4.793
26	126	5754.952	-8.286
26	120	5754.977	-3.944
26	114	5754.969	-5.421
26	102	5754.965	-6.117



Reference Frequency: 802.11ac20 - 5745MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5744.964	-6.189
26	126	5744.970	-5.296
26	120	5744.961	-6.725
26	114	5744.971	-5.098
26	102	5744.972	-4.960

Reference Frequency: 802.11ac40 - 5755MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5754.961	-6.816
26	126	5754.961	-6.699
26	120	5754.973	-4.635
26	114	5754.967	-5.677
26	102	5754.964	-6.340

Reference Frequency: 802.11ax20 - 5745MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5744.968	-5.492
26	126	5744.954	-7.949
26	120	5744.975	-4.308
26	114	5744.971	-4.971
26	102	5744.966	-5.855

Reference Frequency: 802.11ax40 - 5755MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
26	138	5754.963	-6.372
26	126	5754.978	-3.888
26	120	5754.980	-3.479
26	114	5754.973	-4.660
26	102	5754.966	-5.994



11. DUTY CYCLE

11.1 APPLIED PROCEDURES / LIMIT

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

- a) A diode detector and an oscilloscope that together have a sufficiently short response time to permit accurate measurements of the ON and OFF times of the transmitted signal.
- b) The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:
 - 1) Set the center frequency of the instrument to the center frequency of the transmission.
 - 2) Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value.
 - 3) Set $VBW \geq RBW$. Set detector = peak or average.
 - 4) The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if $T \leq 16.7 \mu s$.)

11.2 DEVIATION FROM STANDARD

No deviation.

11.3 TEST SETUP





11.4 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Note: All channels have been tested, and only the worst test data is recorded in this report.			

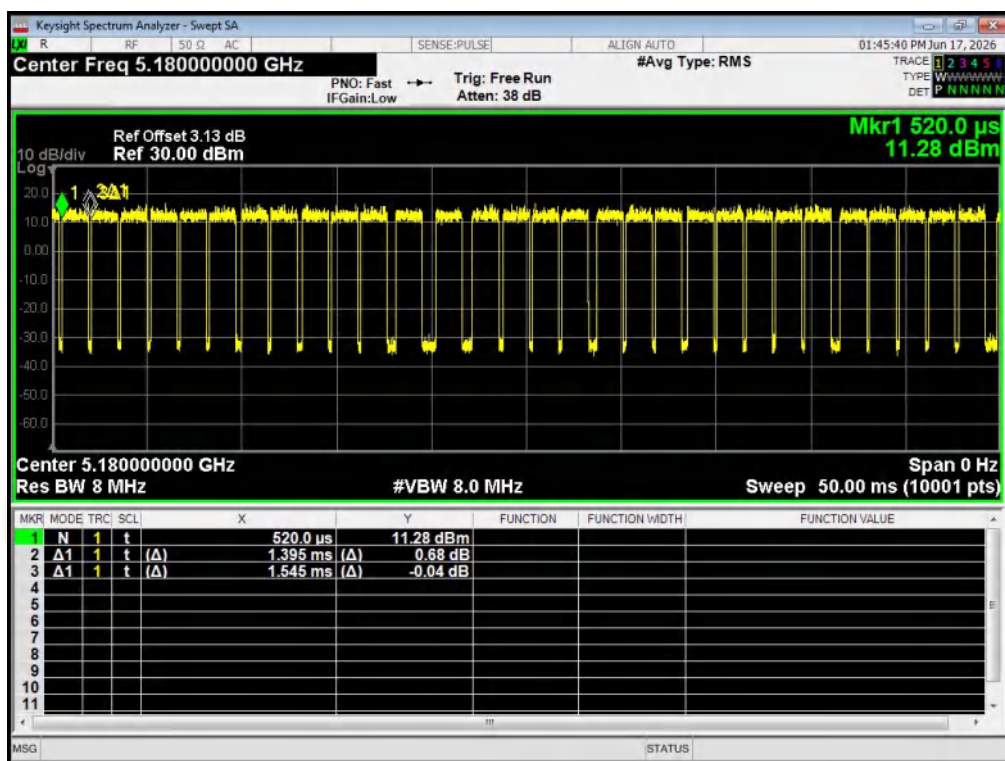
Test Mode	Frequency (MHz)	Duty Cycle (%)	Factor (dB)	Result
802.11a	5180	90.32	0.442	Pass
802.11n20	5180	84.78	0.717	Pass
802.11n40	5190	79.73	0.984	Pass
802.11ac20	5180	70.24	1.534	Pass
802.11ac40	5190	78.95	1.026	Pass
802.11ax20	5180	88.72	0.520	Pass
802.11ax40	5190	79.73	0.984	Pass

Note: Duty Cycle= Ton /Total*100%

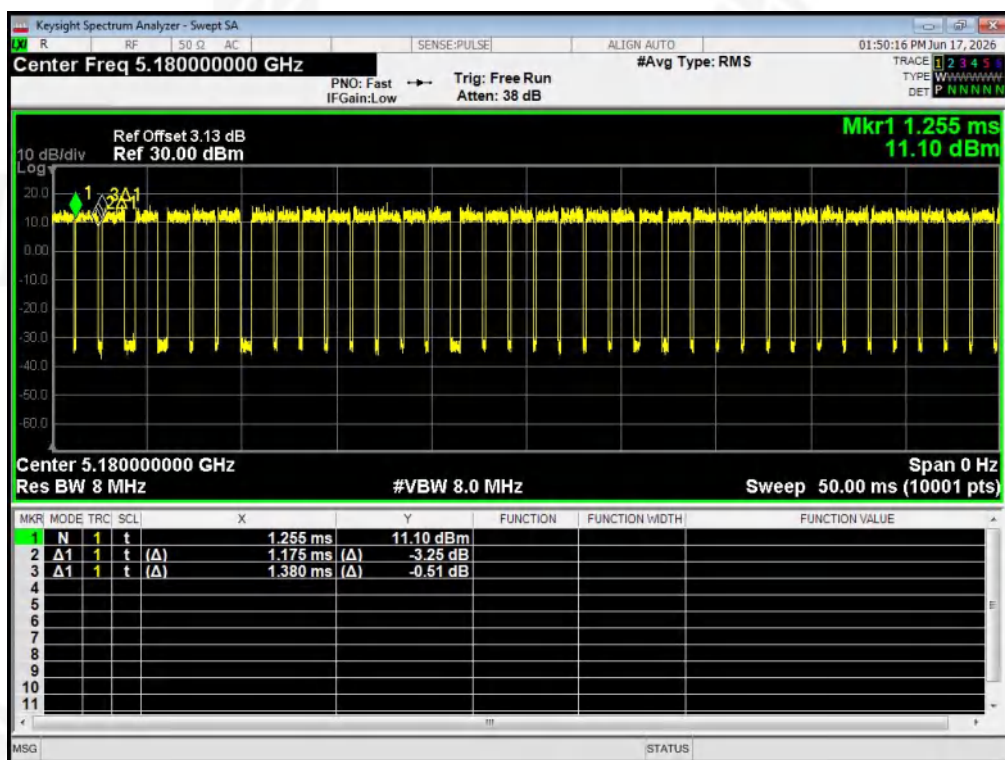
Duty Cycle Correction Factor = $10\log (1/\text{Duty Cycle})$



802.11a - 5180MHz

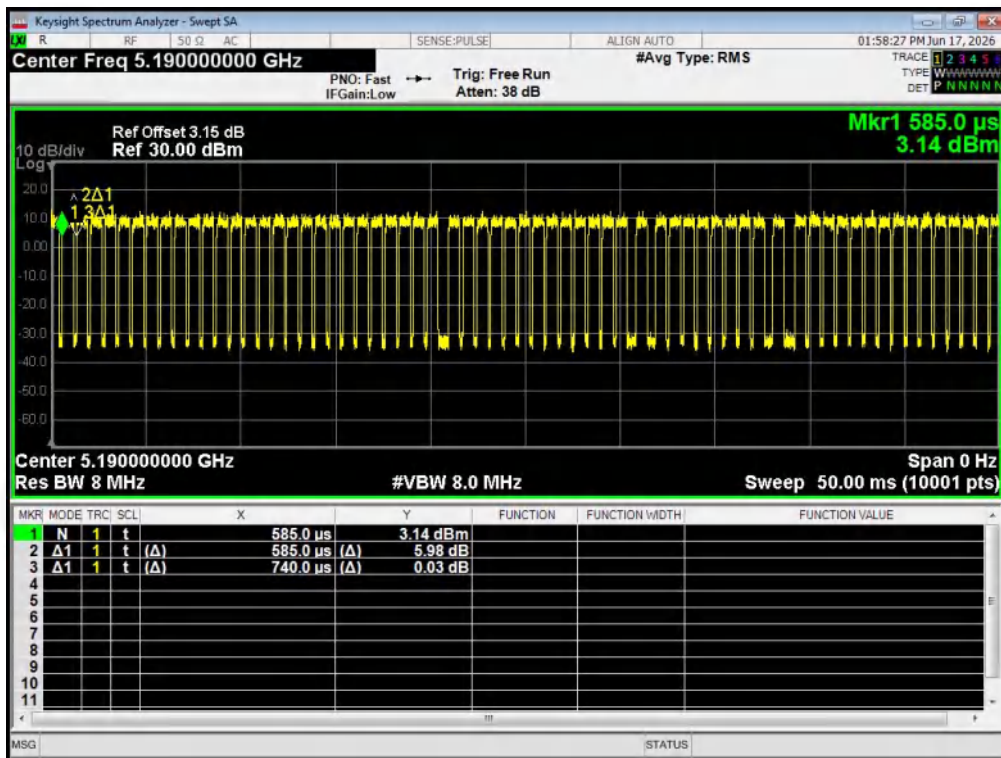


802.11n20 - 5180MHz

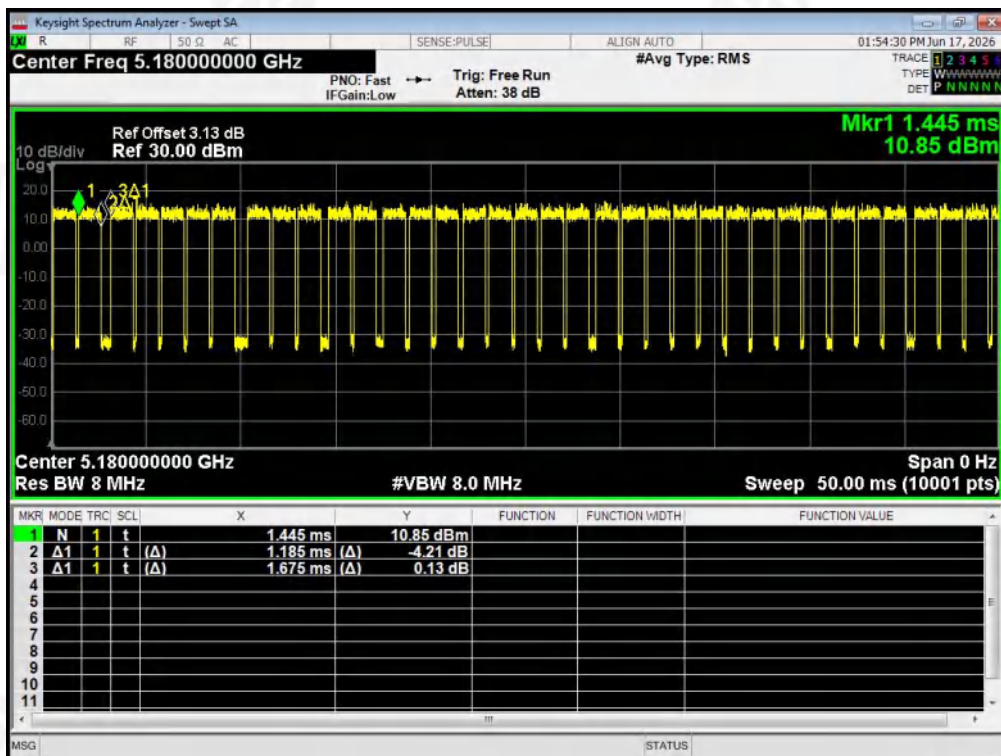




802.11n40 - 5190MHz

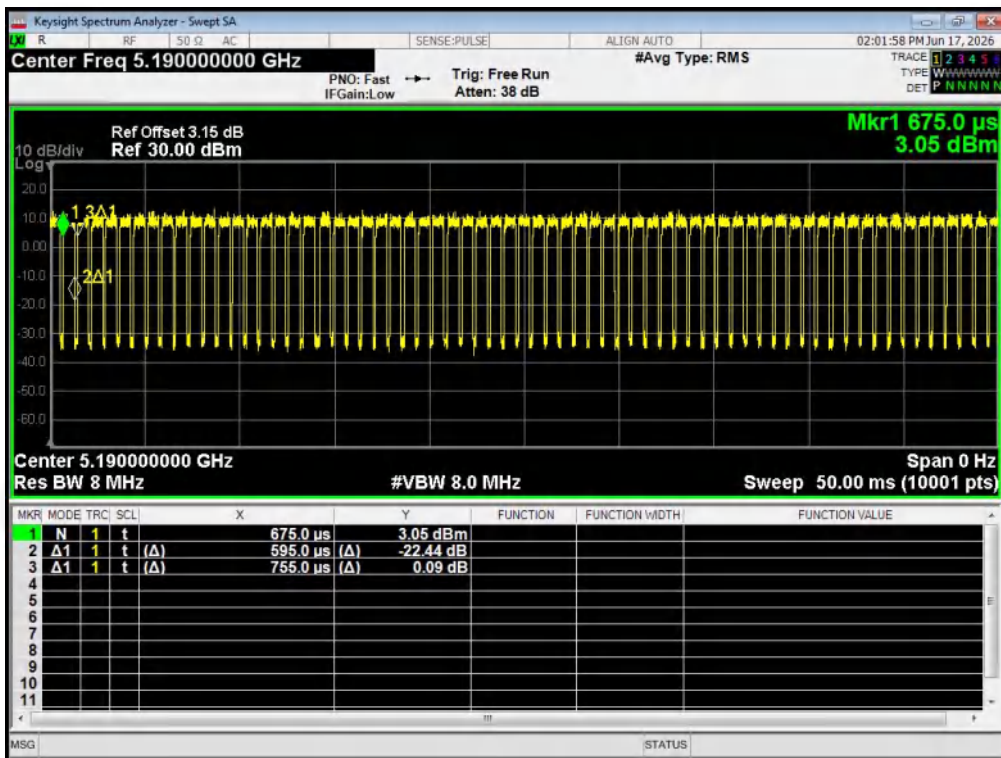


802.11ac20 - 5180MHz

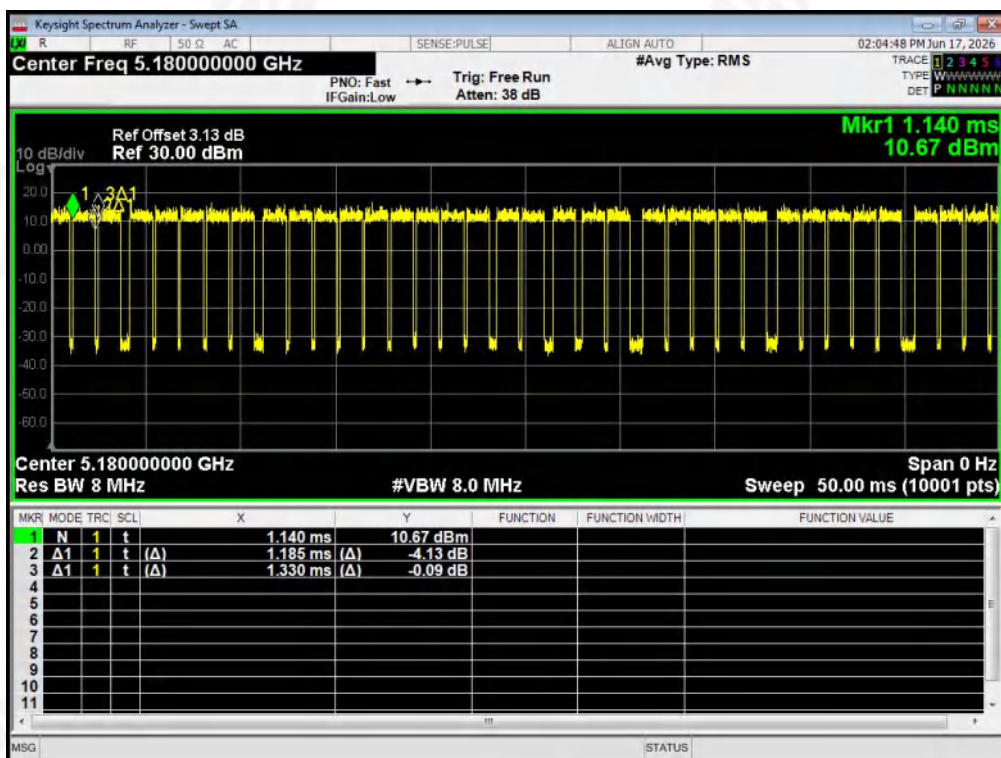




802.11ac40 - 5190MHz

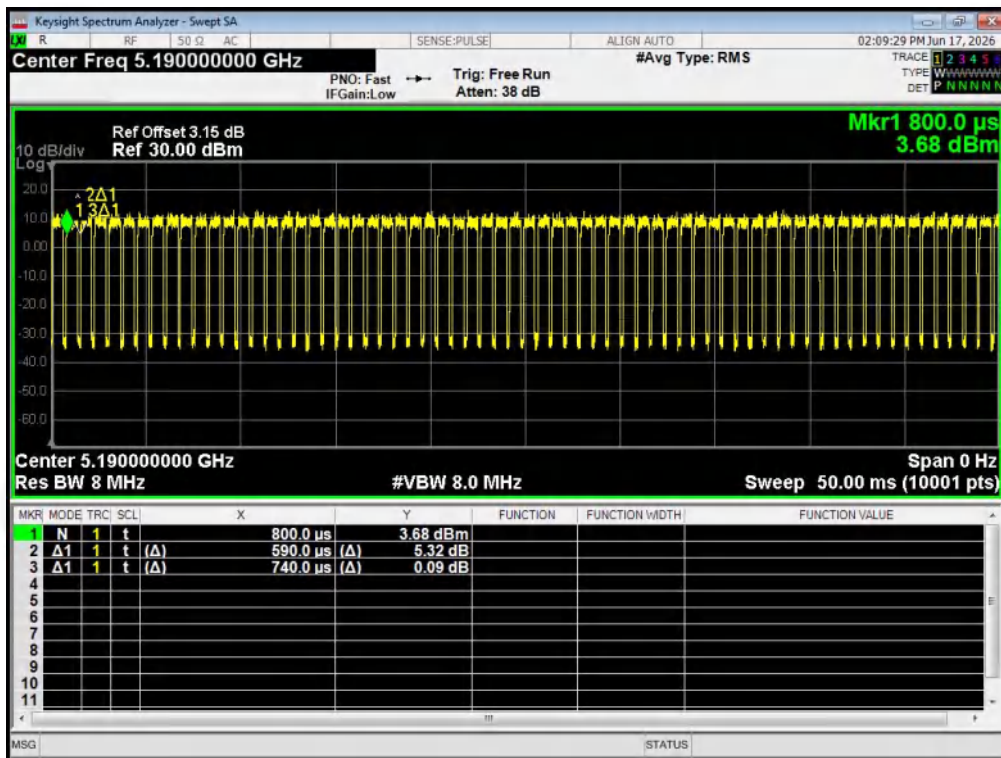


802.11ax20 - 5180MHz





802.11ax40 - 5190MHz





Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Note: All channels have been tested, and only the worst test data is recorded in this report.			

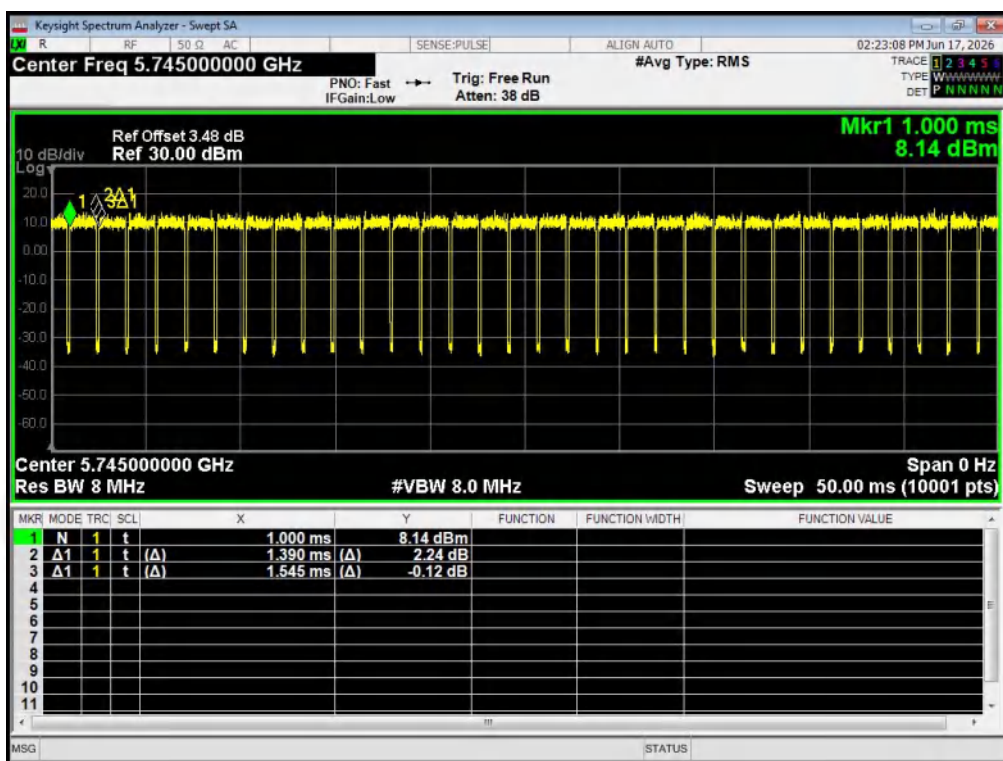
Test Mode	Frequency (MHz)	Duty Cycle (%)	Factor (dB)	Result
802.11a	5745	89.97	0.459	Pass
802.11n20	5745	86.73	0.618	Pass
802.11n40	5755	80.27	0.954	Pass
802.11ac20	5745	88.76	0.518	Pass
802.11ac40	5755	80.27	0.954	Pass
802.11ax20	5745	88.68	0.522	Pass
802.11ax40	5755	80.42	0.946	Pass

Note: Duty Cycle= Ton /Total*100%

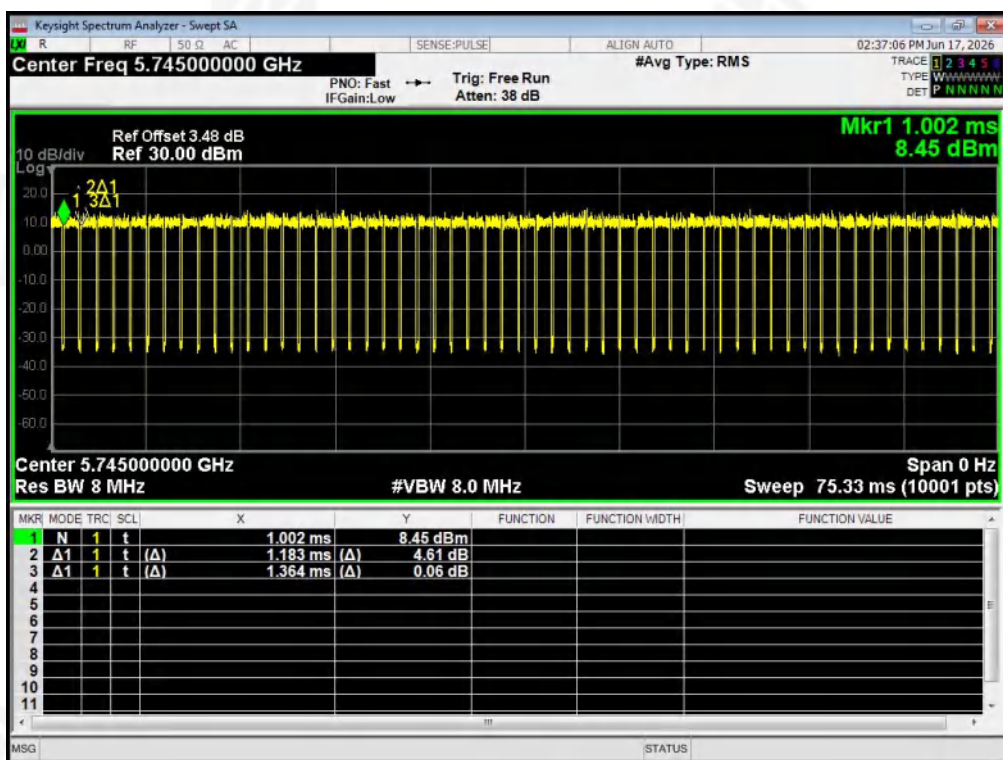
Duty Cycle Correction Factor = 10log (1/Duty Cycle)



802.11a - 5745MHz

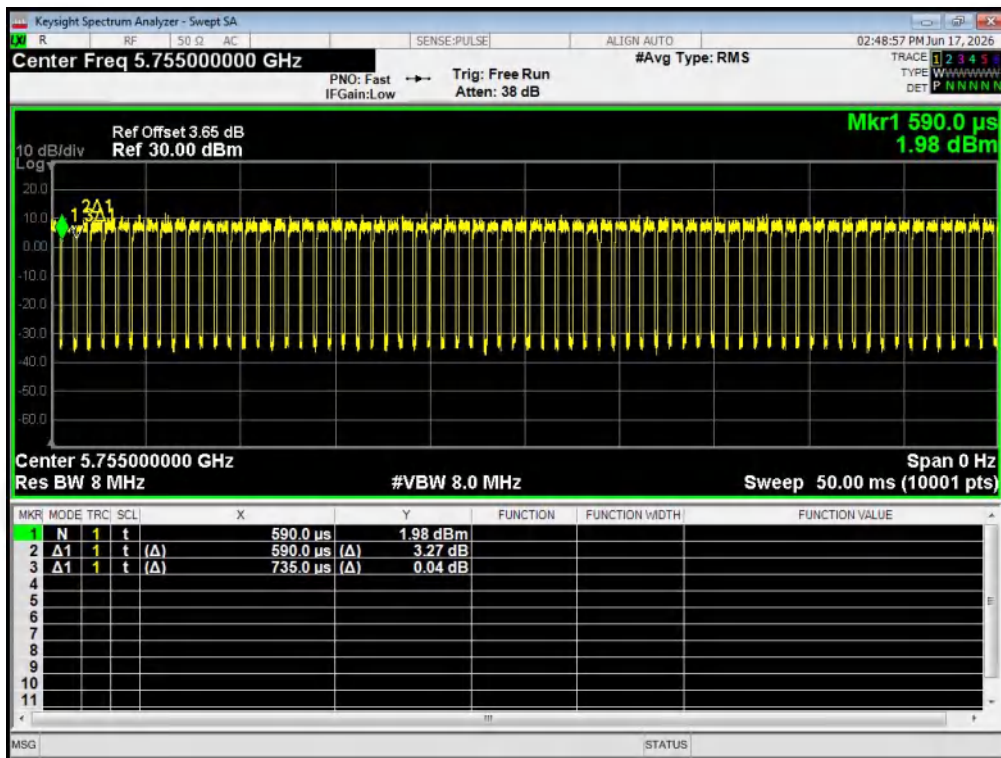


802.11n20 - 5745MHz

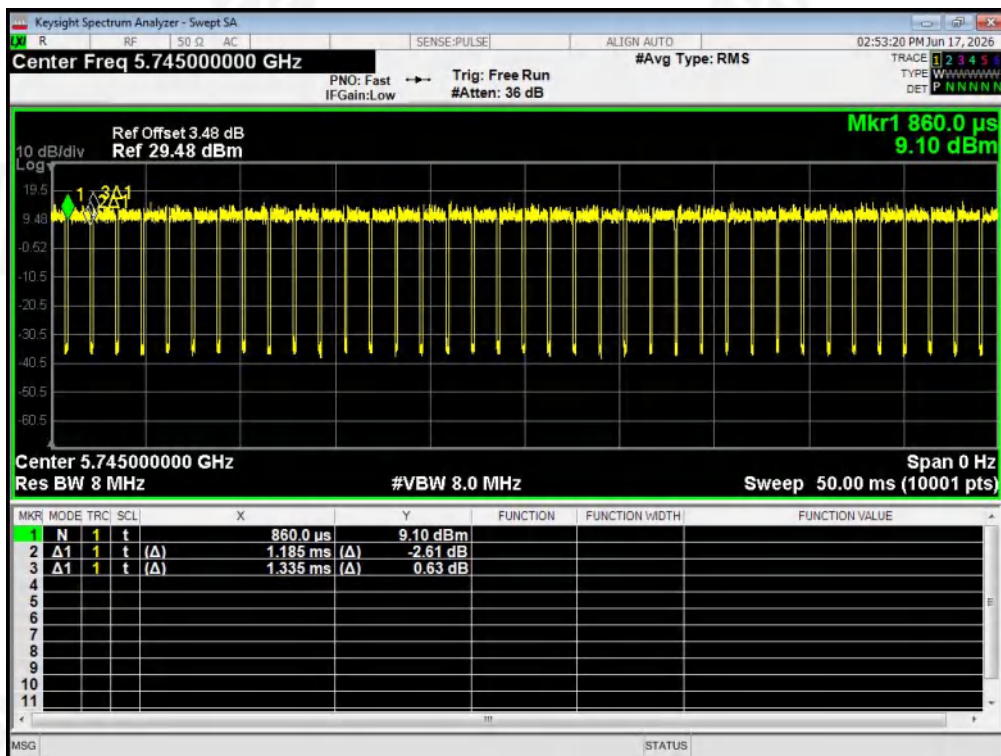




802.11n40 - 5755MHz

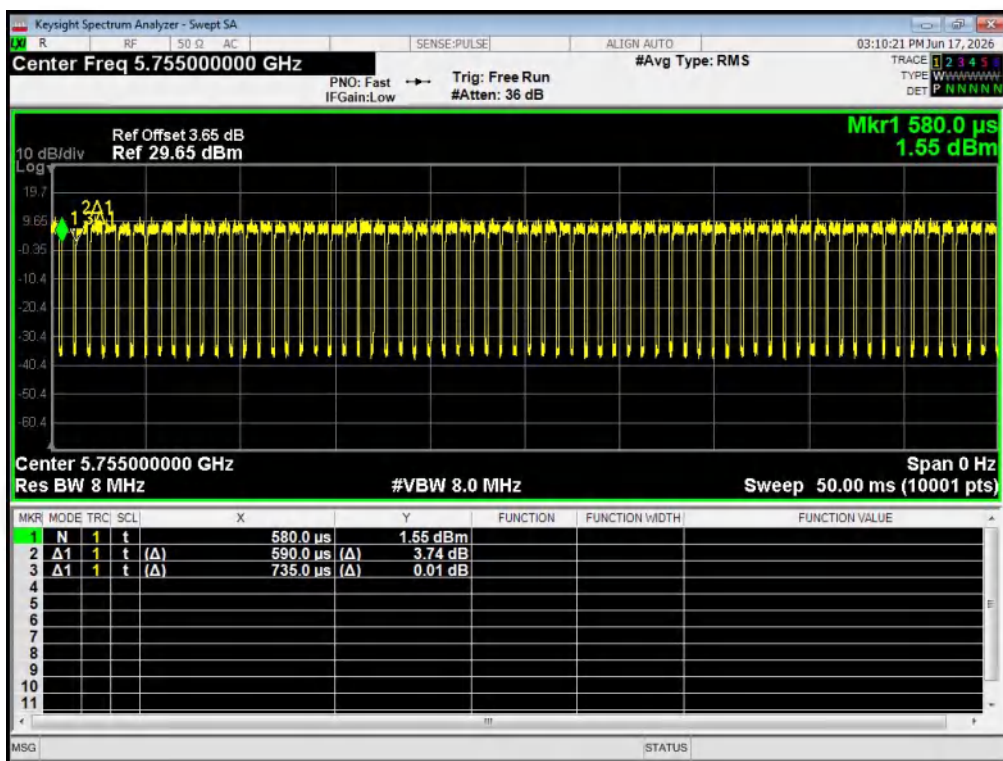


802.11ac20 - 5745MHz

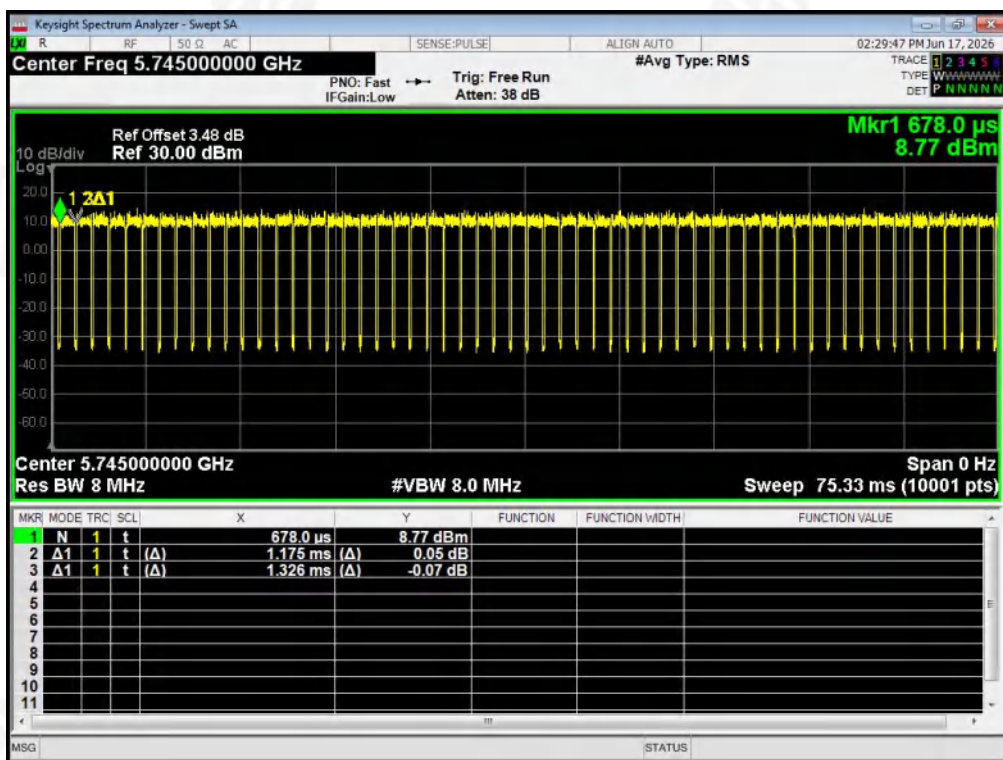




802.11ac40 - 5755MHz

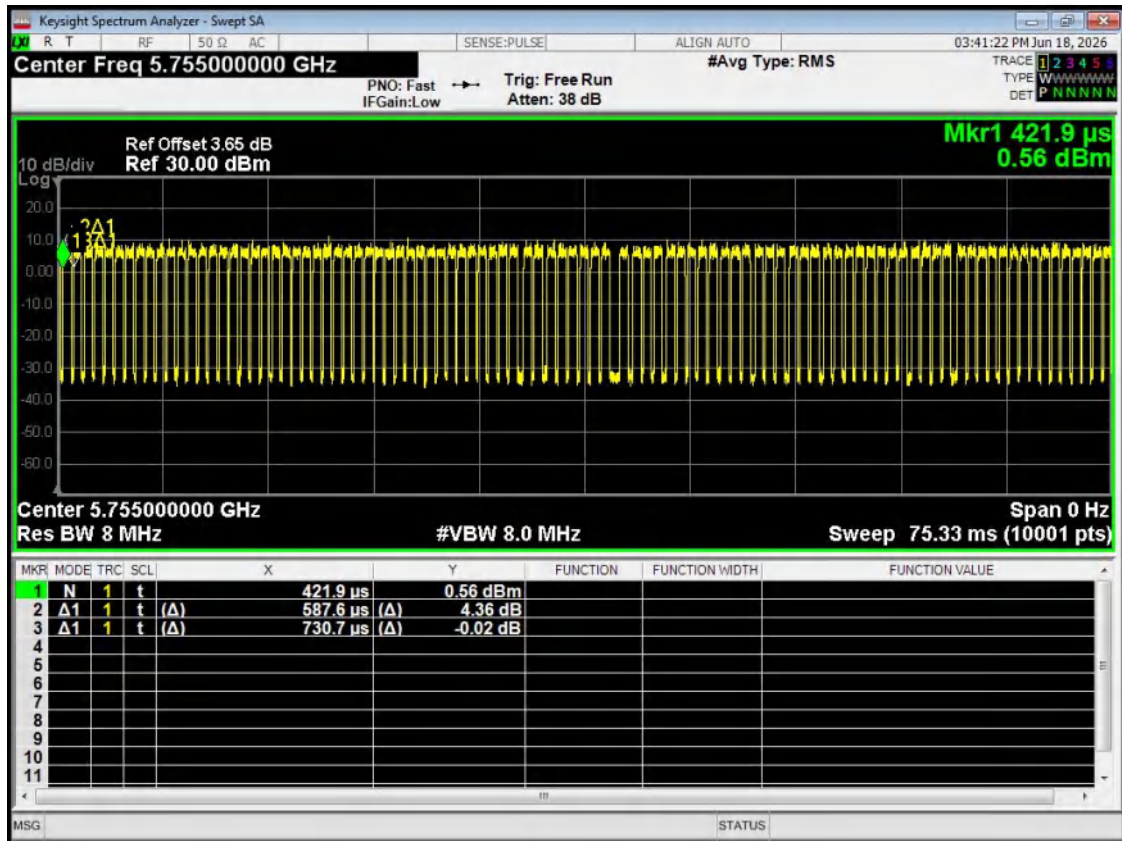


802.11ax20 - 5745MHz





802.11ax40 - 5755MHz





12. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
EUT Antenna:	
The antenna is PCB Antenna, the best case gain of the antenna is 2dBi & 2.1dBi, reference to the appendix II for details.	



13. TEST SETUP PHOTO

Reference to the appendix I for details.

14. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

***** END OF REPORT *****