



FCC Part 15C Test Report

FCC ID:2A53E-G10

Report Number..... : ZKT-25120829328E-2

Date of Test..... Feb. 10, 2026 - Apr. 21, 2026

Date of issue..... Apr. 21, 2026

Total number of pages..... 71

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 Haoqing Technology Co., LTD

Address : Room 405, Zongtai Future City, No. 2007, Baoyuan Road, Xixiang, Bao'an District Shenzhen, China

Manufacturer's name : Shenzhen Haoqing Technology Co., LTD

Address : Room 405, Zongtai Future City, No. 2007, Baoyuan Road, Xixiang, Bao'an District Shenzhen, China

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..... : TRF-EL-113_V0**Test Report Form(s) Originator.....** : ZKT Testing**Master TRF** : Dated: 2021-04-22

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..... : E-book reader

Trademark : N/A

Model/Type reference..... : G10
G10S, G10CRatings..... : Input: 5 V  2A, 10W
Battery: 3.8V 3700mA, 14.06Wh



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-25120829328E-2	Rev.01	Initial issue of report	Apr. 21, 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(a)	AC Power Line Conducted Emission	PASS	
15.205(a)/15.209(a) 15.407(b)(1) 15.407(b)(4) 15.407(b)(8) 2.1051	Radiated Emissions and Band Edge	PASS	
15.407 (e) 789033 D02 General U-NII	26dB Emission Bandwidth and 6dB Occupied Bandwidth	PASS	
15.407(a)(1) 15.407 (a)(3) i	Power Spectral Density	PASS	
15.407(a)(1) 15.407 (a)(3) i 15.407(a)(12)	Maximum Conducted Output Power	PASS	
15.407(b)(1) 15.407(b)(4) 15.407(b)(8) 2.1051	Conducted Emissions and Band Edge	PASS	
15.407(g)	Frequency Stability	PASS	
789033 D02 General U-NII	Duty Cycle	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℃
13	Duty Cycle	U=1.3dB



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	E-book reader	
Model No.:	G10 G10S, G10C	
Serial Model:	N/A	
Model Different:	N/A	
Sample ID	ZKT-25120829328E-2	
Sample(s) Status:	Engineer sample	
Product Description:	IEEE 802.11 WLAN Mode Supported	☒ 802.11a/n
	Data Rate	802.11a: 6/9/12/24/18/36/48/54Mbit/s 802.11n: MCS0-MCS7
	Modulation	802.11a/n: Orthogonal Frequency Division Multiplexing (OFDM)
	Frequency Range	☒ 5180-5240MHz for 802.11 a/n (20M); ☒ 5190-5230MHz for 802.11 n (40M); ☒ 5745-5825 MHz for 802.11 a/n (20M); ☒ 5755-5795 MHz for 802.11 n (40M);
	Number of Channels	☒ 4 channels for 802.11 a/n (20M) in the 5180-5240MHz band ; ☒ 2 channels for 802.11 n (40M) in the 5190-5230 MHz band ; ☒ 5 channels for 802.11 a (20M) in the 5745-5825MHz band ; ☒ 2 channels for 802.11 n (40M) in the 5755-5795 MHz band ;
Channel List:	Please refer to the Note 2.	
Antenna Type:	FPC Antenna	
Antenna Gain:	5.2G: -0.58dBi 5.8G: -0.44dBi	
Power Supply:	Input: 5 V --- 2A, 10W Battery: 3.8V 3700mA, 14.06Wh	



Note:

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

802.11a/n(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

802.11n(40MHz) Frequency Channel for 5.2G							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230	-	-	-	-

802.11a/n(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(40MHz) Frequency Channel for 5.8G					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795	-	-

3.2 DESCRIPTION OF TEST MODES

Pretest Mode	Description
Mode 1	802.11a/n20 CH 36/ CH 40/ CH 48 for 5.2G 802.11a/n20 CH149/ CH157/ CH 165 for 5.8G
Mode 2	802.11n 40 CH38/ CH 46 for 5.2G 802.11n 40 CH 151 / CH 159 for 5.8G

For Conducted Emission	
Final Test Mode	Description
Mode 1	802.11a/n20 CH 36/ CH 40/ CH 48 for 5.2G 802.11a/n20 CH149/ CH157/ CH 165 for 5.8G
Mode 2	802.11n 40 CH38/ CH 46 for 5.2G 802.11n 40 CH 151 / CH 159 for 5.8G

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a/n20 CH 36/ CH 40/ CH 48 for 5.2G 802.11a/n20 CH149/ CH157/ CH 165 for 5.8G
Mode 2	802.11n 40 CH38/ CH 46 for 5.2G 802.11n 40 CH 151 / CH 159 for 5.8G

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.



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:				
Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.				
	Mode	802.11a	802.11n20	802.11n40
	Data rate	6Mbps	MCS0(HT0)	MCS0(HT0)
Test Software	DRUT			
Power level setup	Default			



3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

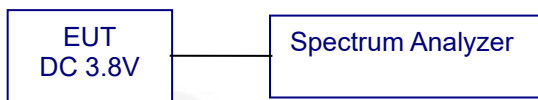
Conducted Emission



Radiated Emission



Conducted Spurious



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	E-book reader	N/A	G10	N/A	EUT
A-1	Power adapter	N/A	XH2400-24500	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.



3.5 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	\	\



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	\	\



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

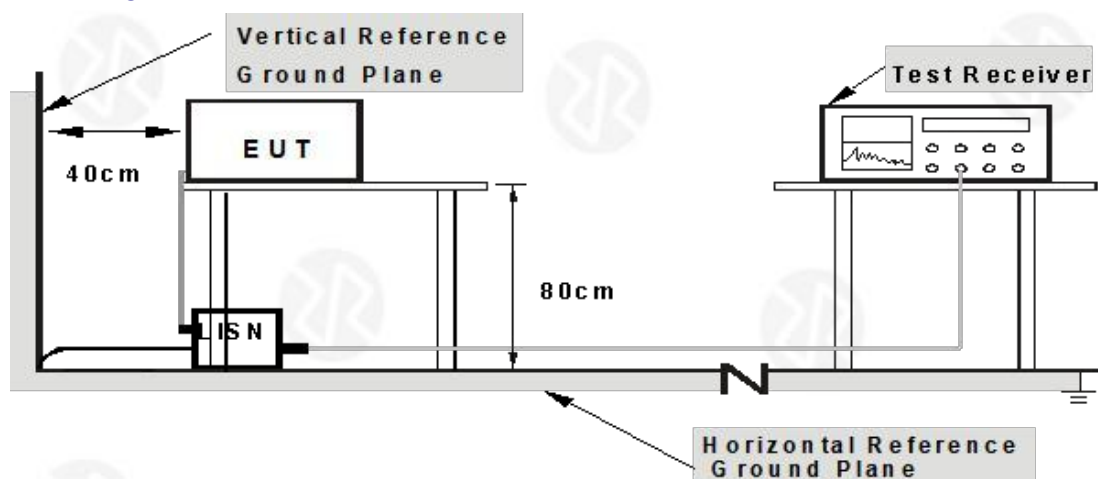
- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments
- a. powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
 - b. 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.
 - c. 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.
 - d. LISN at least 80 cm from nearest part of EUT chassis.
 - e. 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 cm from other units and other metal planes

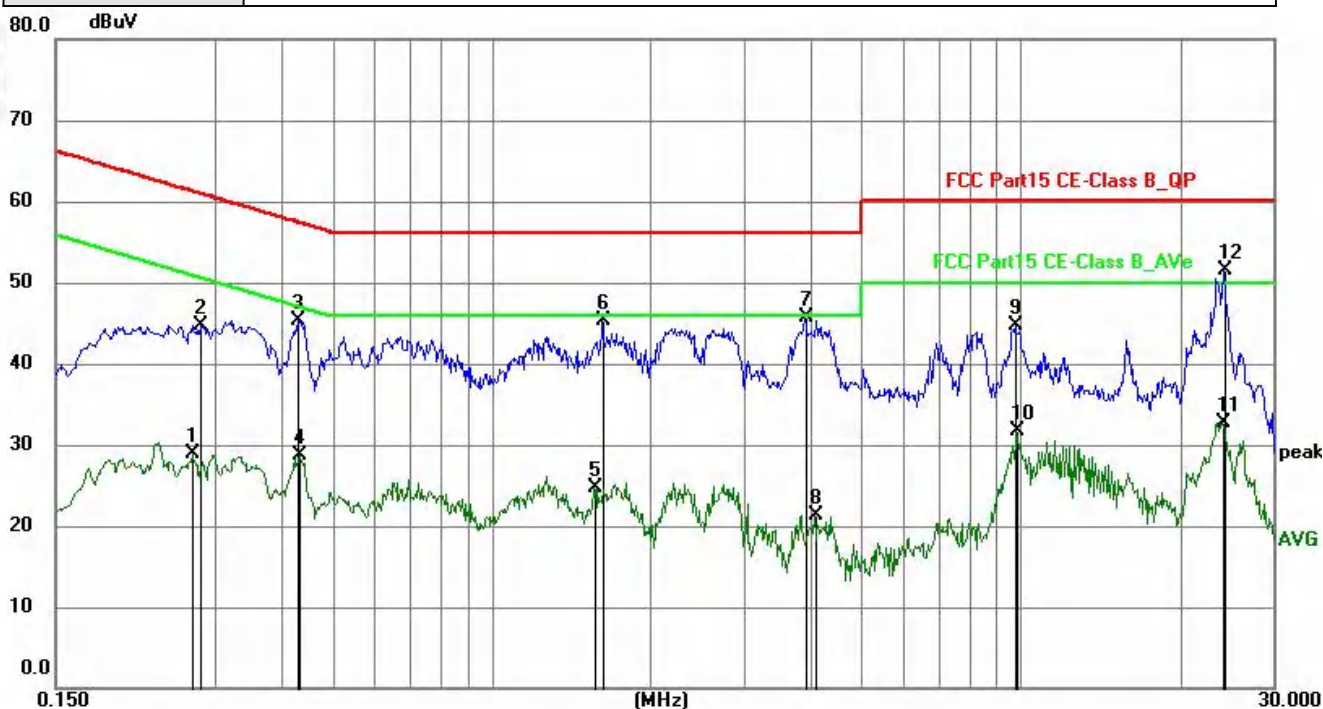
4.1.5 EUT OPERATING CONDITIONS

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

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	802.11n20 - 5180MHz
Test Band:	5.2G		



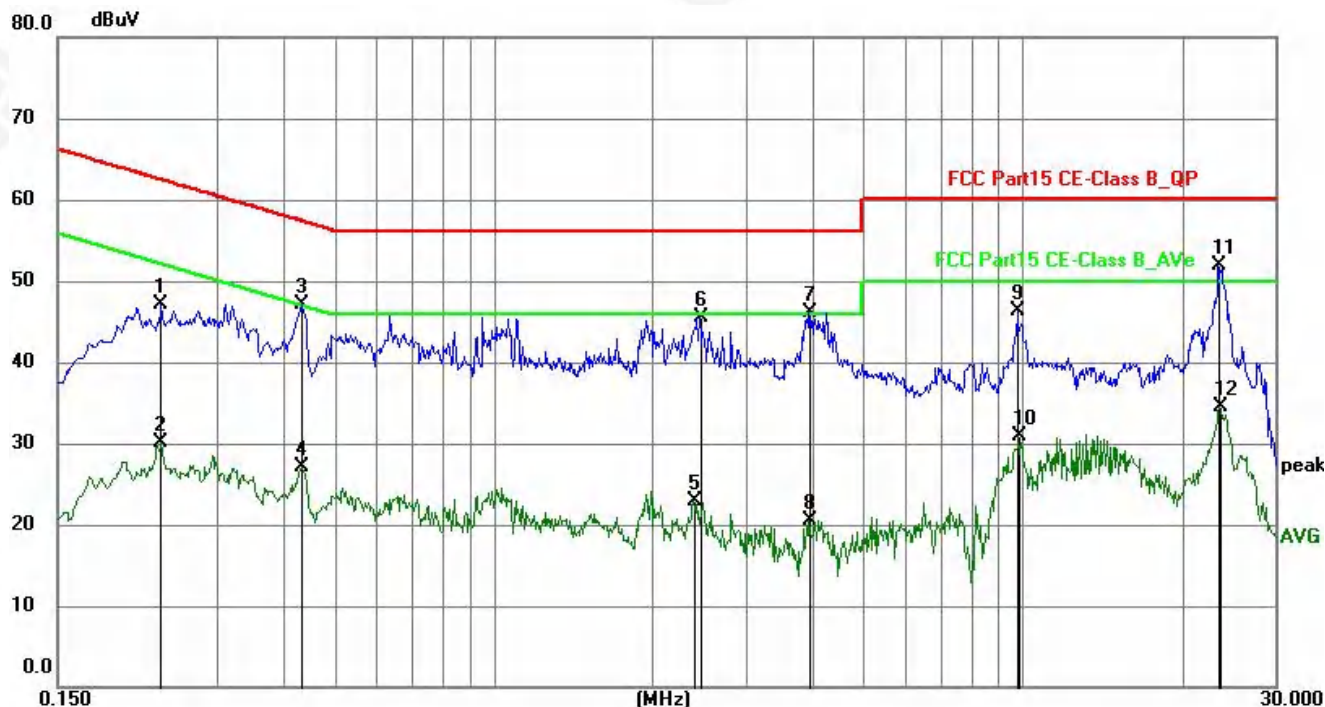
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2714	8.57	20.35	28.92	51.07	-22.15	AVG	P	
2	0.2816	24.28	20.35	44.63	60.77	-16.14	QP	P	
3	0.4304	24.96	20.32	45.28	57.24	-11.96	QP	P	
4	0.4334	8.30	20.32	28.62	47.19	-18.57	AVG	P	
5	1.5667	4.42	20.30	24.72	46.00	-21.28	AVG	P	
6	1.6209	25.08	20.30	45.38	56.00	-10.62	QP	P	
7	3.9165	25.35	20.34	45.69	56.00	-10.31	QP	P	
8	4.0830	1.00	20.35	21.35	46.00	-24.65	AVG	P	
9	9.7665	24.33	20.46	44.79	60.00	-15.21	QP	P	
10	9.8475	11.15	20.46	31.61	50.00	-18.39	AVG	P	
11	24.1080	12.11	20.61	32.72	50.00	-17.28	AVG	P	
12	24.2294	30.90	20.61	51.51	60.00	-8.49	QP	P	

Notes:

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 = Loss factor + Cable loss factor + limiter factor.
5. Margin = Measurement Level - Limit.
6. The test data shows only the worst case TX 802.11n20 - 5180MHz.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	802.11n20 - 5180MHz
Test Band:	5.2G		



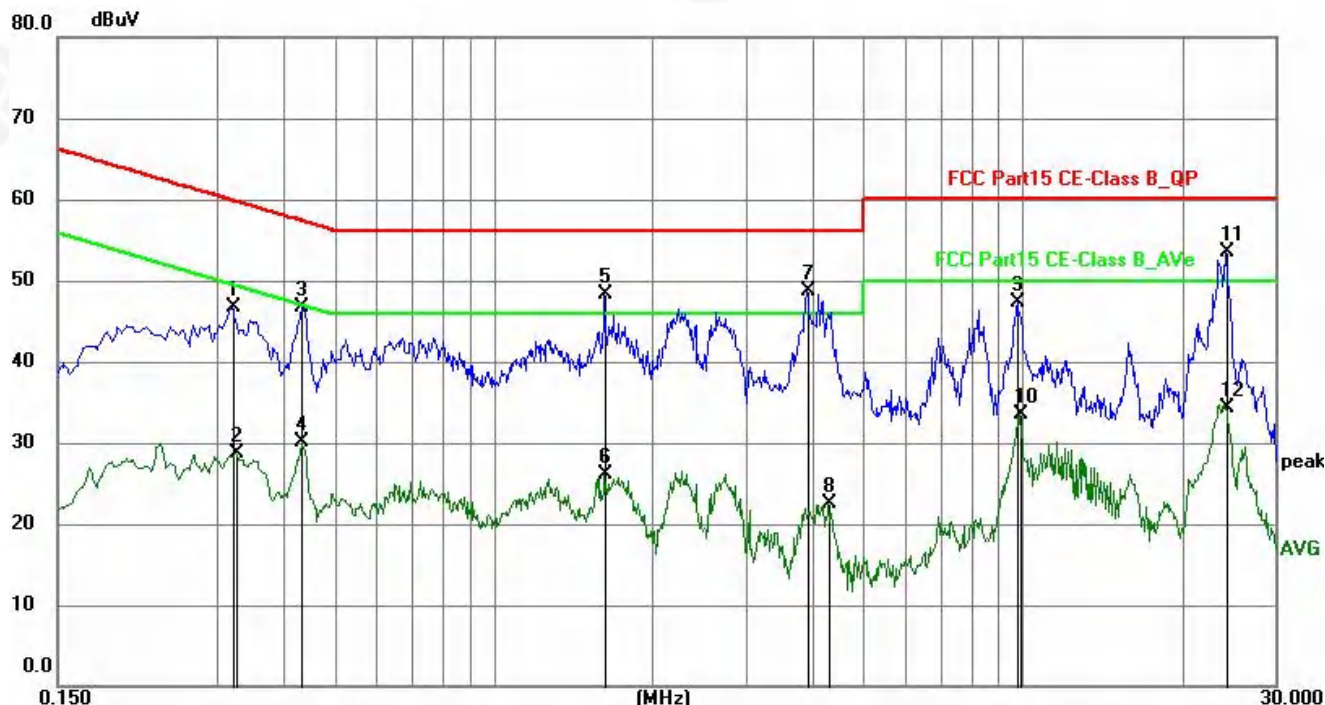
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2353	26.82	20.36	47.18	62.26	-15.08	QP	P	
2	0.2353	9.77	20.36	30.13	52.26	-22.13	AVG	P	
3	0.4334	26.75	20.32	47.07	57.19	-10.12	QP	P	
4	0.4334	6.73	20.32	27.05	47.19	-20.14	AVG	P	
5	2.3864	2.53	20.32	22.85	46.00	-23.15	AVG	P	
6	2.4539	25.16	20.32	45.48	56.00	-10.52	QP	P	
7	3.9479	25.76	20.33	46.09	56.00	-9.91	QP	P	
8	3.9479	0.13	20.33	20.46	46.00	-25.54	AVG	P	
9	9.7842	25.80	20.47	46.27	60.00	-13.73	QP	P	
10	9.8384	10.35	20.47	30.82	50.00	-19.18	AVG	P	
11	23.4599	31.26	20.62	51.88	60.00	-8.12	QP	P	
12	23.5809	13.79	20.63	34.42	50.00	-15.58	AVG	P	

Notes:

- 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 = Lish factor+ Cable loss factor + limiter factor.
- 5.Margin = Measurement Level-Limit.
- 6.The test data shows only the worst case TX 802.11n20 - 5180MHz.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	802.11n20 - 5745MHz
Test Band:	5.8G		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.3209	26.30	20.34	46.64	59.68	-13.04	QP	P	
2	0.3255	8.37	20.34	28.71	49.57	-20.86	AVG	P	
3	0.4334	26.44	20.32	46.76	57.19	-10.43	QP	P	
4	0.4334	9.80	20.32	30.12	47.19	-17.07	AVG	P	
5	1.6211	28.08	20.30	48.38	56.00	-7.62	QP	P	
6	1.6211	5.72	20.30	26.02	46.00	-19.98	AVG	P	
7	3.9165	28.35	20.34	48.69	56.00	-7.31	QP	P	
8	4.3079	2.09	20.35	22.44	46.00	-23.56	AVG	P	
9	9.7665	26.83	20.46	47.29	60.00	-12.71	QP	P	
10	9.8610	13.02	20.46	33.48	50.00	-16.52	AVG	P	
11	24.2294	32.90	20.61	53.51	60.00	-6.49	QP	P	
12	24.2294	13.75	20.61	34.36	50.00	-15.64	AVG	P	

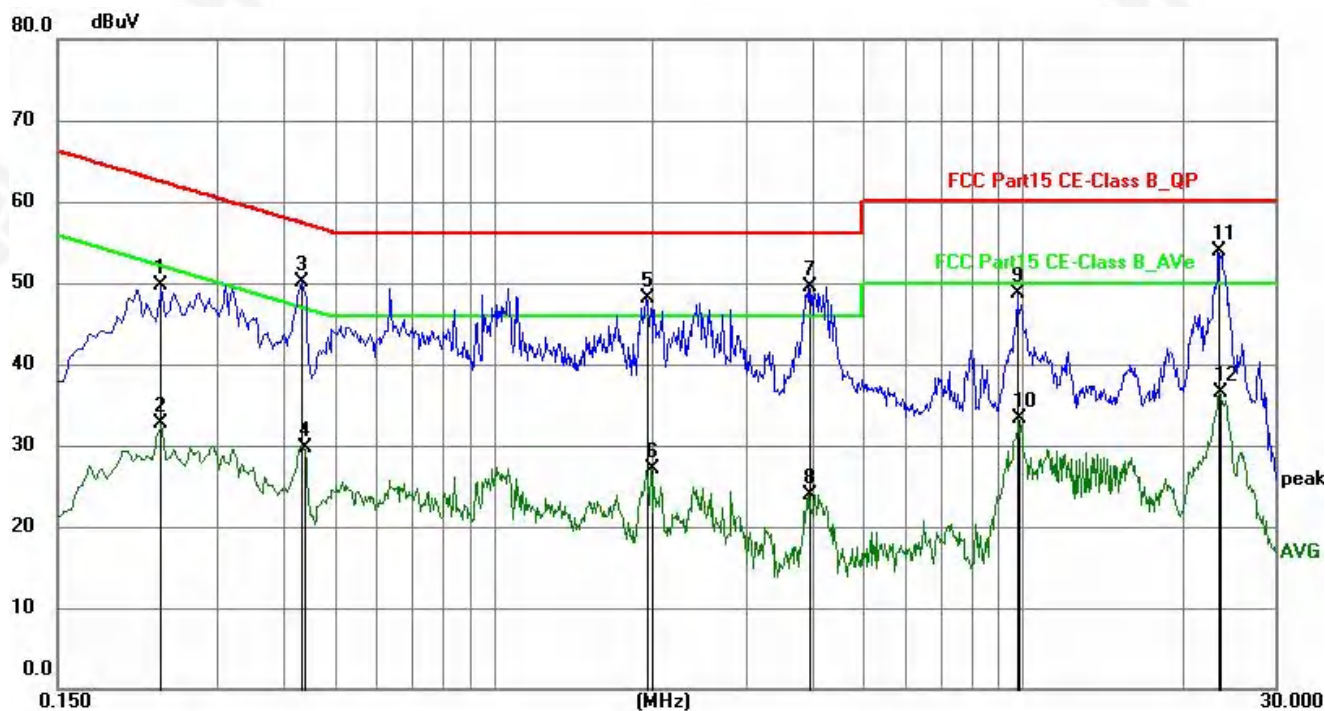
Notes:

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 TX 802.11n20 - 5745MHz.

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	N



Test Voltage:	AC 120V/60Hz	Test Mode:	802.11n20 - 5745MHz
Test Band:	5.8G		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2353	29.32	20.36	49.68	62.26	-12.58	QP	P	
2	0.2353	12.27	20.36	32.63	52.26	-19.63	AVG	P	
3	0.4334	29.75	20.32	50.07	57.19	-7.12	QP	P	
4	0.4380	9.40	20.31	29.71	47.10	-17.39	AVG	P	
5	1.9409	27.81	20.31	48.12	56.00	-7.88	QP	P	
6	1.9902	6.72	20.31	27.03	46.00	-18.97	AVG	P	
7	3.9479	29.26	20.33	49.59	56.00	-6.41	QP	P	
8	3.9479	3.63	20.33	23.96	46.00	-22.04	AVG	P	
9	9.7843	28.30	20.47	48.77	60.00	-11.23	QP	P	
10	9.8384	12.85	20.47	33.32	50.00	-16.68	AVG	P	
11	23.4599	33.26	20.62	53.88	60.00	-6.12	QP	P	
12	23.5813	15.79	20.63	36.42	50.00	-13.58	AVG	P	

Notes:

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 TX 802.11n20 - 5745MHz.

4.2 RADIATED EMISSION AND BAND EDGE MEASUREMENT

4.2.1 APPLICABLE STANDARD

According to FCC Part 15.407(b)(1) and 15.407(b)(4)(i) and 15.205(a) and 15.209(a).



4.2.2 CONFORMANCE LIMIT

According to FCC Part 15.407(b)(1) Undesirable emission limits. Except as shown in paragraph (b)(10) 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.

Frequency Range	Peak	Average
All emissions outside of the 5.15-5.35 GHz band shall not exceed	68.20 (dBuV/m)	54 (dBuV/m)

(4) For transmitters operating solely in the 5.725-5.850 GHz band:

(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.

Frequency Range	Peak	Average
All emissions shall be limited	68.20 (dBuV/m)	54 (dBuV/m)
Band edge $\pm$ 75 MHz	105.20 (dBuV/m)	54 (dBuV/m)
Band edge $\pm$ 25 MHz	110.80 (dBuV/m)	54 (dBuV/m)
Band edge $\pm$ 5 MHz	122.20 (dBuV/m)	54 (dBuV/m)

According to FCC Part 15.407(b)(10): 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 (μ V/m)	Field Strength (dB μ V/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (μ V/m)	300
0.490~1.705	2400/F(KHz)	20 log (μ V/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

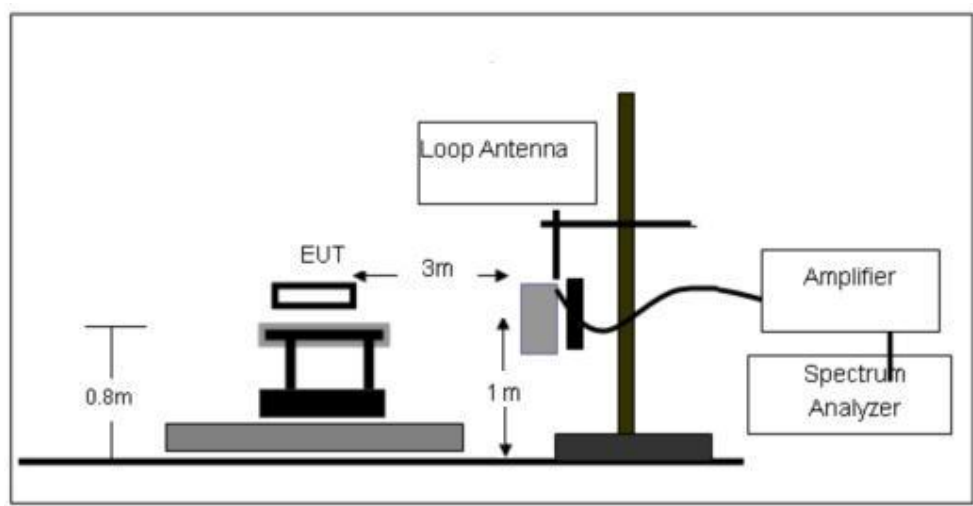
Remark: 1. Emission level in dBuV/m = $20 \log (\mu\text{V/m})$;
2. Measurement was performed at an antenna to the closed point of EUT distance of meters;
3. Distance extrapolation factor = $40 \log (\text{Specific distance/ test distance})$ (dB);
4. Limit line=Specific limits(dBuV) + distance extrapolation factor;
5. Emission level in dBuV/m = (dBm) + 95.2.

4.2.3 MEASURING INSTRUMENTS

The Measuring equipment is listed in the section 3.5 of this test report.

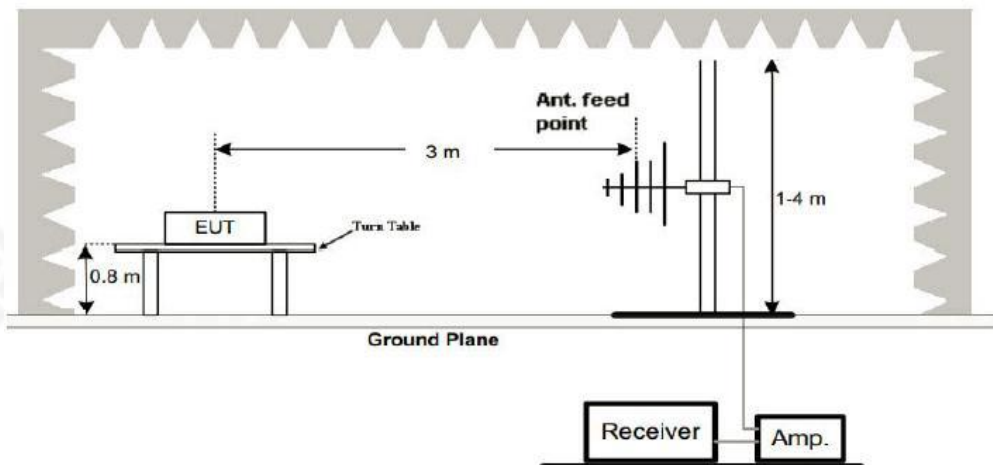
4.2.4 TEST CONFIGURATION

1.For radiated emissions below 30MHz

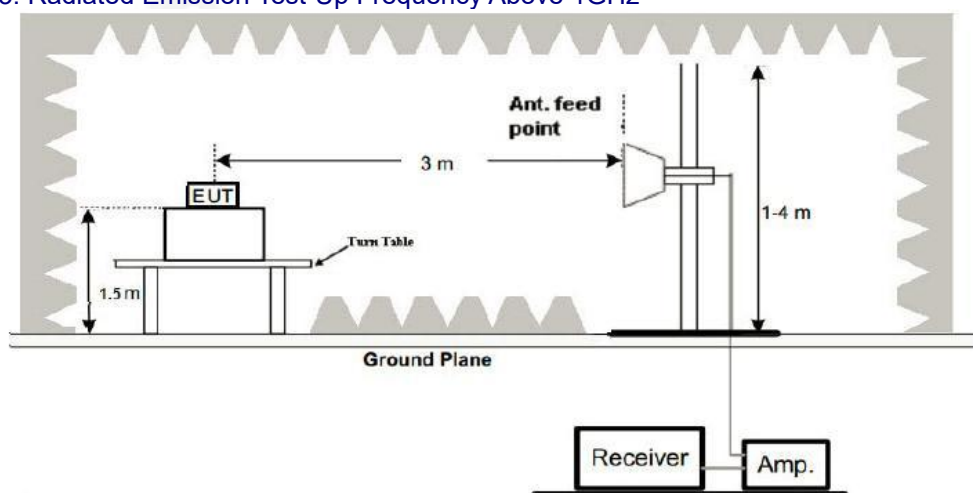




2. For radiated emissions from 30MHz to 1000MHz



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



- a. 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.
- b. 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.
- c. 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.
- d. 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.
- e. 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.
- f. 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 RADIATED EMISSION TEST RESULT

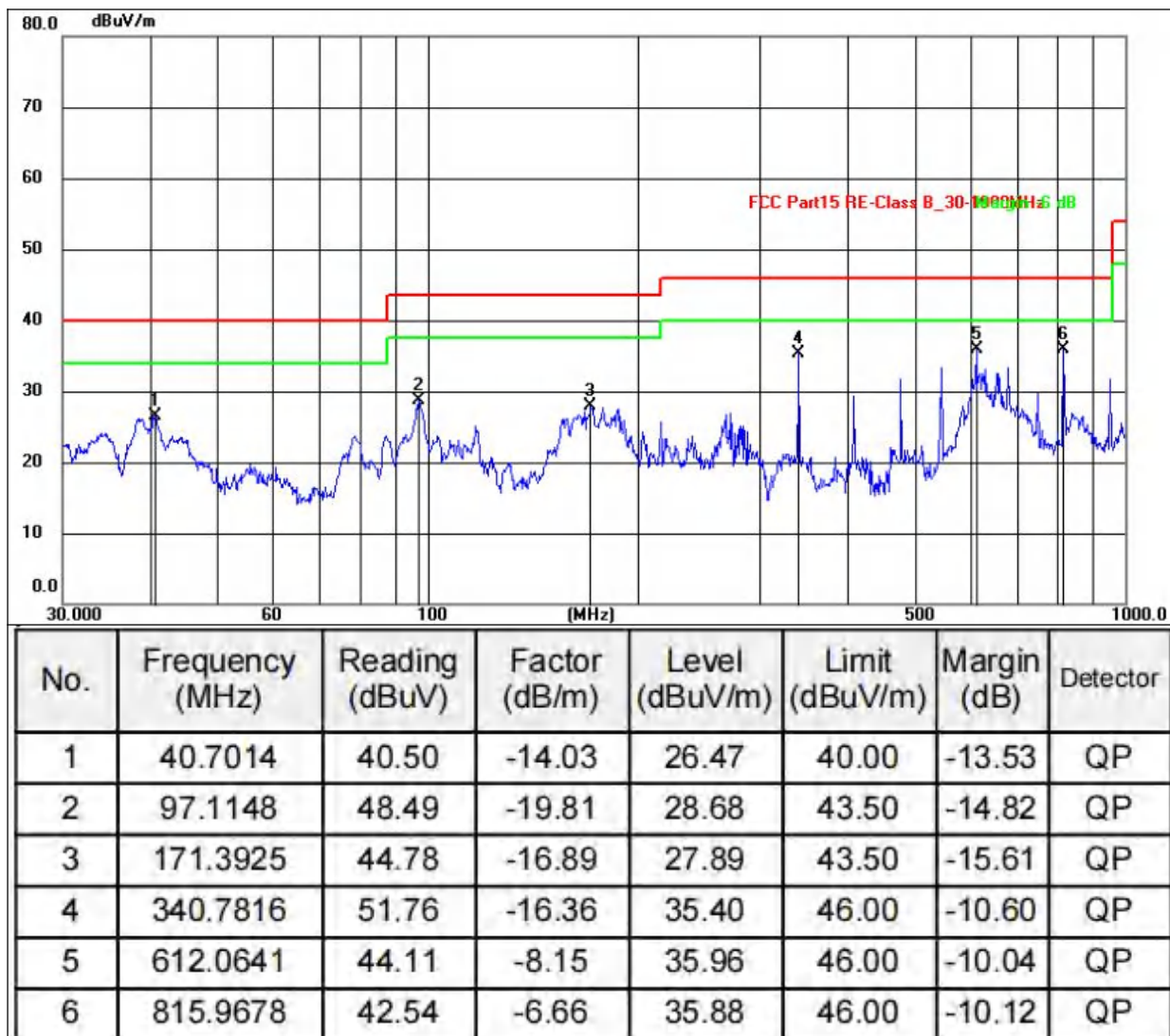
Between 9KHz – 30MHz

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:

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.8V	Test Mode :	TX 802.11n20 - 5180MHz
Test Band:	5.2G		

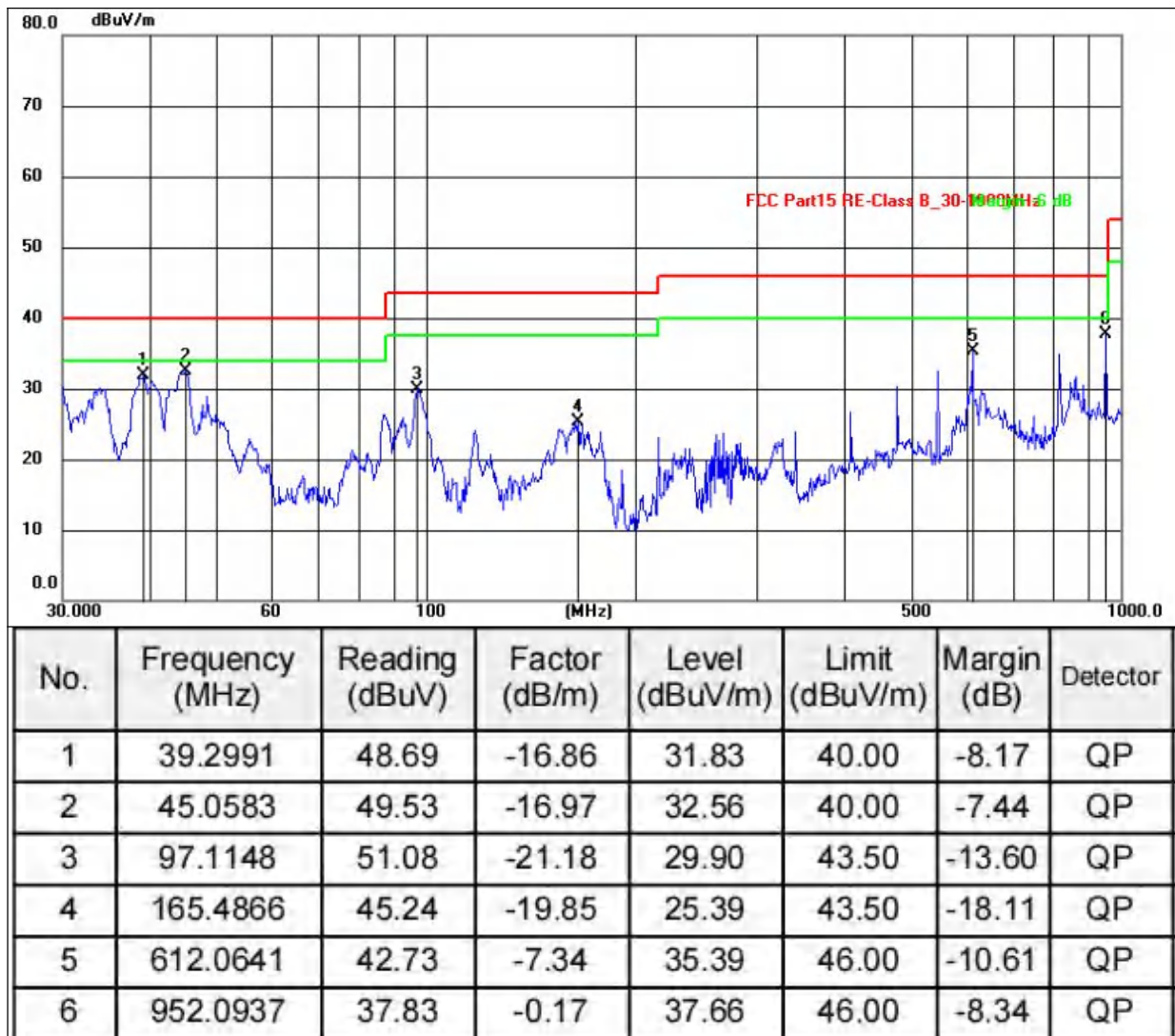


Notes:

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 TX 802.11n20 - 5180MHz.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 3.8V	Test Mode :	TX 802.11n20 -5180MHz
Test Band:	5.2G		

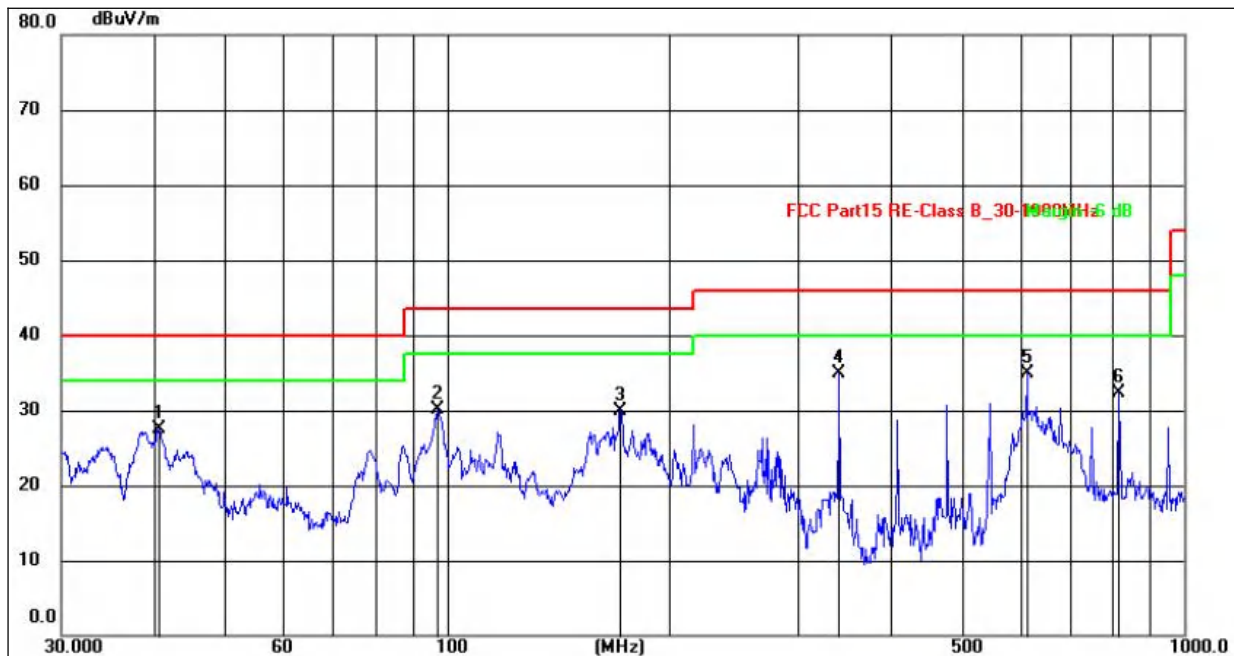


Notes:

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 TX 802.11n20 - 5180MHz.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.8V	Test Mode :	TX 802.11n20 - 5745MHz
Test Band:	5.8G		



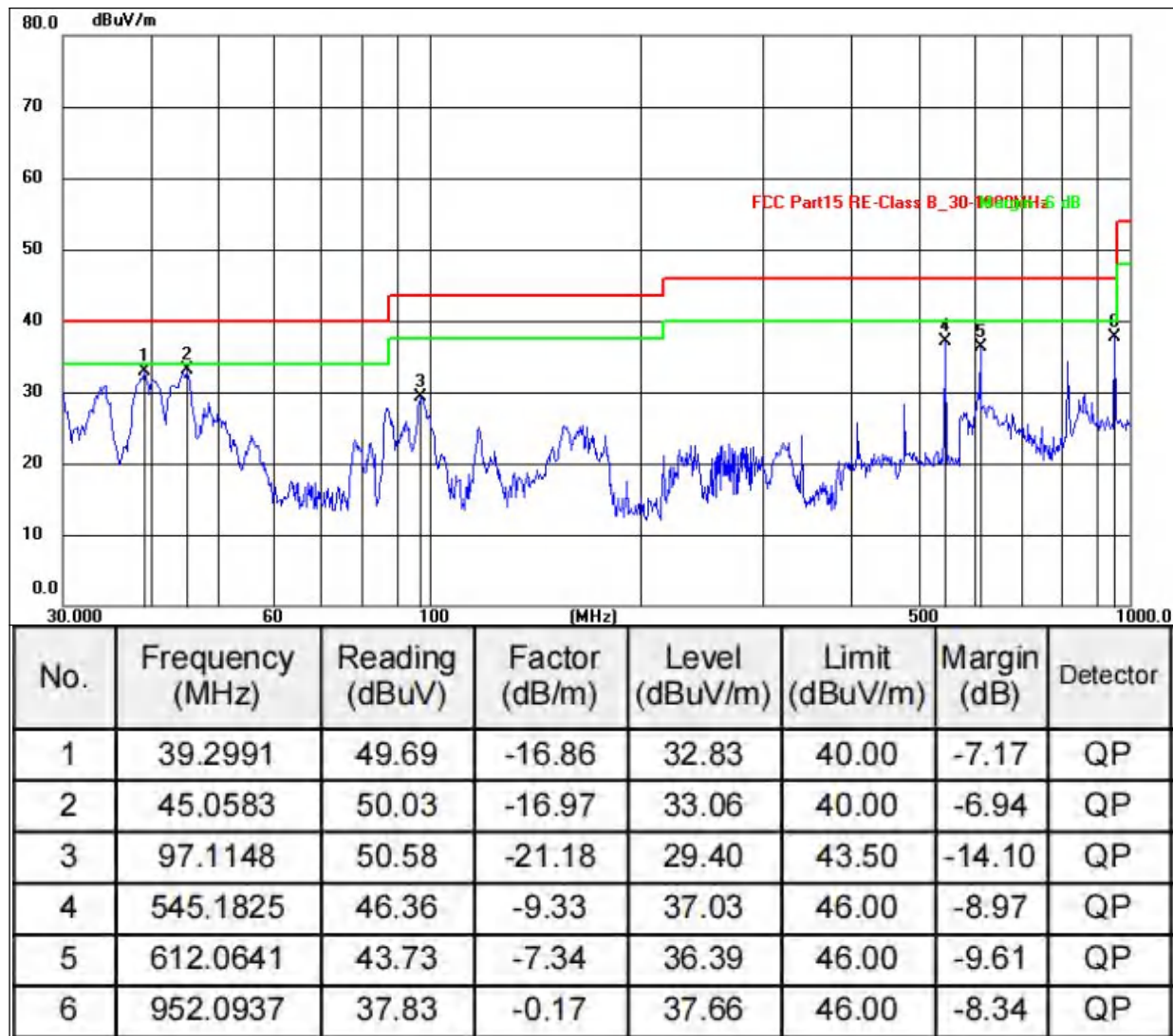
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	40.7014	41.50	-14.03	27.47	40.00	-12.53	QP
2	97.1148	49.99	-19.81	30.18	43.50	-13.32	QP
3	171.9944	46.93	-16.93	30.00	43.50	-13.50	QP
4	340.7816	51.26	-16.36	34.90	46.00	-11.10	QP
5	612.0641	43.11	-8.15	34.96	46.00	-11.04	QP
6	815.9678	39.04	-6.66	32.38	46.00	-13.62	QP

Notes:

- 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 TX 802.11n20 - 5745MHz.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 3.8V	Test Mode :	TX 802.11n20 - 5745MHz
Test Band:	5.8G		



Notes:

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 TX 802.11n20 - 5745MHz.



Between 1GHz – 40GHz:

Temperature :	26°C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC 3.8V
Test Band :	5.2G TX - 802.11a / n20 / n40		
Note: All patterns have been tested, and only the worst test data recorded in this report is 802.11a/n20.			

802.11a

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	10360.00	50.18	30.55	5.77	24.66	50.06	74.00	-23.94	PK
V	10360.00	43.20	30.55	5.77	24.66	43.08	54.00	-10.92	AV
V	15540.00	51.33	30.33	6.32	24.55	51.87	74.00	-22.13	PK
V	15540.00	43.18	30.33	6.32	24.55	43.72	54.00	-10.28	AV
V	20720.00	53.53	30.85	7.45	24.69	54.82	74.00	-19.18	PK
V	20720.00	43.98	30.85	7.45	24.69	45.27	54.00	-8.73	AV
V	25900.00	54.77	31.02	8.99	25.57	58.31	74.00	-15.69	PK
V	25900.00	43.74	31.02	8.99	25.57	47.28	54.00	-6.72	AV
H	10360.00	50.34	30.55	5.77	24.66	50.22	74.00	-23.78	PK
H	10360.00	43.37	30.55	5.77	24.66	43.25	54.00	-10.75	AV
H	15540.00	52.22	30.33	6.32	24.55	52.76	74.00	-21.24	PK
H	15540.00	43.03	30.33	6.32	24.55	43.57	54.00	-10.43	AV
H	20720.00	53.66	30.85	7.45	24.69	54.95	74.00	-19.05	PK
H	20720.00	43.37	30.85	7.45	24.69	44.66	54.00	-9.34	AV
H	25900.00	50.93	31.02	8.99	25.57	54.47	74.00	-19.53	PK
H	25900.00	43.07	31.02	8.99	25.57	46.61	54.00	-7.39	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	10400.00	50.76	30.55	5.77	24.66	50.64	74.00	-23.36	PK
V	10400.00	43.63	30.55	5.77	24.66	43.51	54.00	-10.49	AV
V	15600.00	54.34	30.33	6.32	24.55	54.88	74.00	-19.12	PK
V	15600.00	43.46	30.33	6.32	24.55	44.00	54.00	-10.00	AV
V	20800.00	52.81	30.85	7.45	24.69	54.10	74.00	-19.90	PK
V	20800.00	43.56	30.85	7.45	24.69	44.85	54.00	-9.15	AV
V	26000.00	52.69	31.02	8.99	25.57	56.23	74.00	-17.77	PK
V	26000.00	43.22	31.02	8.99	25.57	46.76	54.00	-7.24	AV
H	10400.00	51.36	30.55	5.77	24.66	51.24	74.00	-22.76	PK
H	10400.00	43.66	30.55	5.77	24.66	43.54	54.00	-10.46	AV
H	15600.00	51.97	30.33	6.32	24.55	52.51	74.00	-21.49	PK
H	15600.00	43.41	30.33	6.32	24.55	43.95	54.00	-10.05	AV
H	20800.00	52.97	30.85	7.45	24.69	54.26	74.00	-19.74	PK
H	20800.00	43.98	30.85	7.45	24.69	45.27	54.00	-8.73	AV
H	26000.00	52.93	31.02	8.99	25.57	56.47	74.00	-17.53	PK
H	26000.00	43.15	31.02	8.99	25.57	46.69	54.00	-7.31	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:5240MHz									
V	10480.00	52.77	30.55	5.77	24.66	52.65	74.00	-21.35	PK
V	10480.00	43.90	30.55	5.77	24.66	43.78	54.00	-10.22	AV
V	15720.00	52.34	30.33	6.32	24.55	52.88	74.00	-21.12	PK
V	15720.00	43.07	30.33	6.32	24.55	43.61	54.00	-10.39	AV
V	20960.00	52.69	30.85	7.45	24.69	53.98	74.00	-20.02	PK
V	20960.00	43.88	30.85	7.45	24.69	45.17	54.00	-8.83	AV
V	26200.00	53.52	31.02	8.99	25.57	57.06	74.00	-16.94	PK
V	26200.00	43.51	31.02	8.99	25.57	47.05	54.00	-6.95	AV
H	10480.00	54.53	30.55	5.77	24.66	54.41	74.00	-19.59	PK
H	10480.00	43.24	30.55	5.77	24.66	43.12	54.00	-10.88	AV
H	15720.00	50.30	30.33	6.32	24.55	50.84	74.00	-23.16	PK
H	15720.00	43.07	30.33	6.32	24.55	43.61	54.00	-10.39	AV
H	20960.00	53.35	30.85	7.45	24.69	54.64	74.00	-19.36	PK
H	20960.00	43.92	30.85	7.45	24.69	45.21	54.00	-8.79	AV
H	26200.00	50.96	31.02	8.99	25.57	54.50	74.00	-19.50	PK
H	26200.00	43.04	31.02	8.99	25.57	46.58	54.00	-7.42	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.



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	10360.00	53.62	30.55	5.77	24.66	53.50	74.00	-20.50	PK
V	10360.00	43.29	30.55	5.77	24.66	43.17	54.00	-10.83	AV
V	15540.00	54.93	30.33	6.32	24.55	55.47	74.00	-18.53	PK
V	15540.00	43.12	30.33	6.32	24.55	43.66	54.00	-10.34	AV
V	20720.00	53.30	30.85	7.45	24.69	54.59	74.00	-19.41	PK
V	20720.00	43.15	30.85	7.45	24.69	44.44	54.00	-9.56	AV
V	25900.00	53.57	31.02	8.99	25.57	57.11	74.00	-16.89	PK
V	25900.00	43.82	31.02	8.99	25.57	47.36	54.00	-6.64	AV
H	10360.00	52.25	30.55	5.77	24.66	52.13	74.00	-21.87	PK
H	10360.00	43.37	30.55	5.77	24.66	43.25	54.00	-10.75	AV
H	15540.00	51.80	30.33	6.32	24.55	52.34	74.00	-21.66	PK
H	15540.00	43.88	30.33	6.32	24.55	44.42	54.00	-9.58	AV
H	20720.00	52.63	30.85	7.45	24.69	53.92	74.00	-20.08	PK
H	20720.00	43.63	30.85	7.45	24.69	44.92	54.00	-9.08	AV
H	25900.00	50.15	31.02	8.99	25.57	53.69	74.00	-20.31	PK
H	25900.00	43.54	31.02	8.99	25.57	47.08	54.00	-6.92	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	10400.00	52.88	30.55	5.77	24.66	52.76	74.00	-21.24	PK
V	10400.00	43.96	30.55	5.77	24.66	43.84	54.00	-10.16	AV
V	15600.00	52.18	30.33	6.32	24.55	52.72	74.00	-21.28	PK
V	15600.00	43.11	30.33	6.32	24.55	43.65	54.00	-10.35	AV
V	20800.00	53.14	30.85	7.45	24.69	54.43	74.00	-19.57	PK
V	20800.00	43.22	30.85	7.45	24.69	44.51	54.00	-9.49	AV
V	26000.00	53.97	31.02	8.99	25.57	57.51	74.00	-16.49	PK
V	26000.00	43.81	31.02	8.99	25.57	47.35	54.00	-6.65	AV
H	10400.00	52.14	30.55	5.77	24.66	52.02	74.00	-21.98	PK
H	10400.00	43.25	30.55	5.77	24.66	43.13	54.00	-10.87	AV
H	15600.00	50.38	30.33	6.32	24.55	50.92	74.00	-23.08	PK
H	15600.00	43.95	30.33	6.32	24.55	44.49	54.00	-9.51	AV
H	20800.00	53.68	30.85	7.45	24.69	54.97	74.00	-19.03	PK
H	20800.00	43.55	30.85	7.45	24.69	44.84	54.00	-9.16	AV
H	26000.00	52.26	31.02	8.99	25.57	55.80	74.00	-18.20	PK
H	26000.00	43.68	31.02	8.99	25.57	47.22	54.00	-6.78	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	10480.00	50.31	30.55	5.77	24.66	50.19	74.00	-23.81	PK
V	10480.00	43.82	30.55	5.77	24.66	43.70	54.00	-10.30	AV
V	15720.00	52.23	30.33	6.32	24.55	52.77	74.00	-21.23	PK
V	15720.00	43.47	30.33	6.32	24.55	44.01	54.00	-9.99	AV
V	20960.00	51.44	30.85	7.45	24.69	52.73	74.00	-21.27	PK
V	20960.00	43.94	30.85	7.45	24.69	45.23	54.00	-8.77	AV
V	26200.00	53.37	31.02	8.99	25.57	56.91	74.00	-17.09	PK
V	26200.00	43.27	31.02	8.99	25.57	46.81	54.00	-7.19	AV
H	10480.00	50.37	30.55	5.77	24.66	50.25	74.00	-23.75	PK
H	10480.00	43.88	30.55	5.77	24.66	43.76	54.00	-10.24	AV
H	15720.00	50.02	30.33	6.32	24.55	50.56	74.00	-23.44	PK
H	15720.00	43.97	30.33	6.32	24.55	44.51	54.00	-9.49	AV
H	20960.00	52.15	30.85	7.45	24.69	53.44	74.00	-20.56	PK
H	20960.00	43.38	30.85	7.45	24.69	44.67	54.00	-9.33	AV
H	26200.00	54.03	31.02	8.99	25.57	57.57	74.00	-16.43	PK
H	26200.00	43.67	31.02	8.99	25.57	47.21	54.00	-6.79	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 :	DC 3.8V
Test Band :	5.8G TX - 802.11a / n20 / n40		
Note: All patterns have been tested, and only the worst test data recorded in this report is 802.11a/n20.			

802.11a

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	52.90	30.55	5.77	24.66	52.78	74.00	-21.22	PK
V	11490.00	43.91	30.55	5.77	24.66	43.79	54.00	-10.21	AV
V	17235.00	52.03	30.33	6.32	24.55	52.57	74.00	-21.43	PK
V	17235.00	43.80	30.33	6.32	24.55	44.34	54.00	-9.66	AV
V	22980.00	53.35	30.85	7.45	24.69	54.64	74.00	-19.36	PK
V	22980.00	43.04	30.85	7.45	24.69	44.33	54.00	-9.67	AV
V	28725.00	53.25	31.02	8.99	25.57	56.79	74.00	-17.21	PK
V	28725.00	43.05	31.02	8.99	25.57	46.59	54.00	-7.41	AV
H	11490.00	53.73	30.55	5.77	24.66	53.61	74.00	-20.39	PK
H	11490.00	43.97	30.55	5.77	24.66	43.85	54.00	-10.15	AV
H	17235.00	51.17	30.33	6.32	24.55	51.71	74.00	-22.29	PK
H	17235.00	43.14	30.33	6.32	24.55	43.68	54.00	-10.32	AV
H	22980.00	53.85	30.85	7.45	24.69	55.14	74.00	-18.86	PK
H	22980.00	43.64	30.85	7.45	24.69	44.93	54.00	-9.07	AV
H	28725.00	50.27	31.02	8.99	25.57	53.81	74.00	-20.19	PK
H	28725.00	44.00	31.02	8.99	25.57	47.54	54.00	-6.46	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
Middle Channel:5785MHz									
V	11570.00	50.97	30.55	5.77	24.66	50.85	74.00	-23.15	PK
V	11570.00	43.39	30.55	5.77	24.66	43.27	54.00	-10.73	AV
V	17355.00	50.52	30.33	6.32	24.55	51.06	74.00	-22.94	PK
V	17355.00	43.02	30.33	6.32	24.55	43.56	54.00	-10.44	AV
V	23140.00	50.72	30.85	7.45	24.69	52.01	74.00	-21.99	PK
V	23140.00	43.63	30.85	7.45	24.69	44.92	54.00	-9.08	AV
V	28925.00	51.83	31.02	8.99	25.57	55.37	74.00	-18.63	PK
V	28925.00	43.59	31.02	8.99	25.57	47.13	54.00	-6.87	AV
H	11570.00	52.93	30.55	5.77	24.66	52.81	74.00	-21.19	PK
H	11570.00	43.13	30.55	5.77	24.66	43.01	54.00	-10.99	AV
H	17355.00	53.17	30.33	6.32	24.55	53.71	74.00	-20.29	PK
H	17355.00	43.92	30.33	6.32	24.55	44.46	54.00	-9.54	AV
H	23140.00	50.31	30.85	7.45	24.69	51.60	74.00	-22.40	PK
H	23140.00	43.38	30.85	7.45	24.69	44.67	54.00	-9.33	AV
H	28925.00	51.08	31.02	8.99	25.57	54.62	74.00	-19.38	PK
H	28925.00	43.10	31.02	8.99	25.57	46.64	54.00	-7.36	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:5825MHz									
V	11650.00	54.03	30.55	5.77	24.66	53.91	74.00	-20.09	PK
V	11650.00	43.07	30.55	5.77	24.66	42.95	54.00	-11.05	AV
V	17475.00	53.24	30.33	6.32	24.55	53.78	74.00	-20.22	PK
V	17475.00	43.18	30.33	6.32	24.55	43.72	54.00	-10.28	AV
V	23300.00	51.95	30.85	7.45	24.69	53.24	74.00	-20.76	PK
V	23300.00	43.03	30.85	7.45	24.69	44.32	54.00	-9.68	AV
V	29125.00	54.57	31.02	8.99	25.57	58.11	74.00	-15.89	PK
V	29125.00	43.63	31.02	8.99	25.57	47.17	54.00	-6.83	AV
H	11650.00	51.47	30.55	5.77	24.66	51.35	74.00	-22.65	PK
H	11650.00	43.20	30.55	5.77	24.66	43.08	54.00	-10.92	AV
H	17475.00	54.48	30.33	6.32	24.55	55.02	74.00	-18.98	PK
H	17475.00	43.18	30.33	6.32	24.55	43.72	54.00	-10.28	AV
H	23300.00	52.41	30.85	7.45	24.69	53.70	74.00	-20.30	PK
H	23300.00	43.46	30.85	7.45	24.69	44.75	54.00	-9.25	AV
H	29125.00	53.38	31.02	8.99	25.57	56.92	74.00	-17.08	PK
H	29125.00	43.30	31.02	8.99	25.57	46.84	54.00	-7.16	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.



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	50.21	30.55	5.77	24.66	50.09	74.00	-23.91	PK
V	11490.00	43.63	30.55	5.77	24.66	43.51	54.00	-10.49	AV
V	17235.00	52.21	30.33	6.32	24.55	52.75	74.00	-21.25	PK
V	17235.00	43.74	30.33	6.32	24.55	44.28	54.00	-9.72	AV
V	22980.00	52.81	30.85	7.45	24.69	54.10	74.00	-19.90	PK
V	22980.00	43.08	30.85	7.45	24.69	44.37	54.00	-9.63	AV
V	28725.00	50.50	31.02	8.99	25.57	54.04	74.00	-19.96	PK
V	28725.00	43.54	31.02	8.99	25.57	47.08	54.00	-6.92	AV
H	11490.00	50.80	30.55	5.77	24.66	50.68	74.00	-23.32	PK
H	11490.00	43.41	30.55	5.77	24.66	43.29	54.00	-10.71	AV
H	17235.00	50.32	30.33	6.32	24.55	50.86	74.00	-23.14	PK
H	17235.00	43.24	30.33	6.32	24.55	43.78	54.00	-10.22	AV
H	22980.00	51.77	30.85	7.45	24.69	53.06	74.00	-20.94	PK
H	22980.00	43.48	30.85	7.45	24.69	44.77	54.00	-9.23	AV
H	28725.00	54.42	31.02	8.99	25.57	57.96	74.00	-16.04	PK
H	28725.00	43.73	31.02	8.99	25.57	47.27	54.00	-6.73	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	53.16	30.55	5.77	24.66	53.04	74.00	-20.96	PK
V	11570.00	43.93	30.55	5.77	24.66	43.81	54.00	-10.19	AV
V	17355.00	53.65	30.33	6.32	24.55	54.19	74.00	-19.81	PK
V	17355.00	43.56	30.33	6.32	24.55	44.10	54.00	-9.90	AV
V	23140.00	52.88	30.85	7.45	24.69	54.17	74.00	-19.83	PK
V	23140.00	43.72	30.85	7.45	24.69	45.01	54.00	-8.99	AV
V	28925.00	51.57	31.02	8.99	25.57	55.11	74.00	-18.89	PK
V	28925.00	43.90	31.02	8.99	25.57	47.44	54.00	-6.56	AV
H	11570.00	54.60	30.55	5.77	24.66	54.48	74.00	-19.52	PK
H	11570.00	43.68	30.55	5.77	24.66	43.56	54.00	-10.44	AV
H	17355.00	50.64	30.33	6.32	24.55	51.18	74.00	-22.82	PK
H	17355.00	43.19	30.33	6.32	24.55	43.73	54.00	-10.27	AV
H	23140.00	51.78	30.85	7.45	24.69	53.07	74.00	-20.93	PK
H	23140.00	43.24	30.85	7.45	24.69	44.53	54.00	-9.47	AV
H	28925.00	52.14	31.02	8.99	25.57	55.68	74.00	-18.32	PK
H	28925.00	44.00	31.02	8.99	25.57	47.54	54.00	-6.46	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:5825MHz									
V	11650.00	51.75	30.55	5.77	24.66	51.63	74.00	-22.37	PK
V	11650.00	43.59	30.55	5.77	24.66	43.47	54.00	-10.53	AV
V	17475.00	51.58	30.33	6.32	24.55	52.12	74.00	-21.88	PK
V	17475.00	43.13	30.33	6.32	24.55	43.67	54.00	-10.33	AV
V	23300.00	52.55	30.85	7.45	24.69	53.84	74.00	-20.16	PK
V	23300.00	43.42	30.85	7.45	24.69	44.71	54.00	-9.29	AV
V	29125.00	54.06	31.02	8.99	25.57	57.60	74.00	-16.40	PK
V	29125.00	43.94	31.02	8.99	25.57	47.48	54.00	-6.52	AV
H	11650.00	51.37	30.55	5.77	24.66	51.25	74.00	-22.75	PK
H	11650.00	43.62	30.55	5.77	24.66	43.50	54.00	-10.50	AV
H	17475.00	54.89	30.33	6.32	24.55	55.43	74.00	-18.57	PK
H	17475.00	43.30	30.33	6.32	24.55	43.84	54.00	-10.16	AV
H	23300.00	51.03	30.85	7.45	24.69	52.32	74.00	-21.68	PK
H	23300.00	43.12	30.85	7.45	24.69	44.41	54.00	-9.59	AV
H	29125.00	53.50	31.02	8.99	25.57	57.04	74.00	-16.96	PK
H	29125.00	43.73	31.02	8.99	25.57	47.27	54.00	-6.73	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.



4.2.7 RADIATED BAND EDGE TEST RESULT

Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC 3.8V
Test Band :	5.2G TX - 802.11a / n20 / n40		
Note: All patterns have been tested, and only the worst test data recorded in this report is 802.11a/n20.			

802.11a

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	4500.00	45.94	30.45	8.77	38.66	62.92	74.00	-11.08	PK
V	4500.00	30.21	30.45	8.77	38.66	47.19	54.00	-6.81	AV
V	5100.00	44.74	30.45	8.77	38.66	61.72	74.00	-12.28	PK
V	5100.00	30.67	30.45	8.77	38.66	47.65	54.00	-6.35	AV
V	5150.00	44.11	30.45	8.77	38.66	61.09	74.00	-12.91	PK
V	5150.00	30.81	30.45	8.77	38.66	47.79	54.00	-6.21	AV
H	4500.00	50.01	30.45	8.77	38.66	66.99	74.00	-7.01	PK
H	4500.00	30.50	30.45	8.77	38.66	47.48	54.00	-6.52	AV
H	5100.00	44.60	30.45	8.77	38.66	61.58	74.00	-12.42	PK
H	5100.00	30.74	30.45	8.77	38.66	47.72	54.00	-6.28	AV
H	5150.00	47.80	30.45	8.77	38.66	64.78	74.00	-9.22	PK
H	5150.00	30.76	30.45	8.77	38.66	47.74	54.00	-6.26	PK

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:5240MHz									
V	5350.00	45.97	30.45	8.77	38.66	62.95	74.00	-11.05	PK
V	5350.00	30.26	30.45	8.77	38.66	47.24	54.00	-6.76	AV
V	5400.00	44.64	30.45	8.77	38.66	61.62	74.00	-12.38	PK
V	5400.00	30.07	30.45	8.77	38.66	47.05	54.00	-6.95	AV
V	5460.00	46.15	30.45	8.77	38.66	63.13	74.00	-10.87	PK
V	5460.00	30.82	30.45	8.77	38.66	47.80	54.00	-6.20	AV
H	5350.00	54.35	30.45	8.77	38.66	71.33	74.00	-2.67	PK
H	5350.00	30.38	30.45	8.77	38.66	47.36	54.00	-6.64	AV
H	5400.00	45.41	30.45	8.77	38.66	62.39	74.00	-11.61	PK
H	5400.00	30.92	30.45	8.77	38.66	47.90	54.00	-6.10	AV
H	5460.00	45.90	30.45	8.77	38.66	62.88	74.00	-11.12	PK
H	5460.00	30.48	30.45	8.77	38.66	47.46	54.00	-6.54	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.



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	4500.00	44.65	30.45	8.77	38.66	61.63	74.00	-12.37	PK
V	4500.00	30.31	30.45	8.77	38.66	47.29	54.00	-6.71	AV
V	5100.00	45.64	30.45	8.77	38.66	62.62	74.00	-11.38	PK
V	5100.00	30.52	30.45	8.77	38.66	47.50	54.00	-6.50	AV
V	5150.00	47.95	30.45	8.77	38.66	64.93	74.00	-9.07	PK
V	5150.00	30.06	30.45	8.77	38.66	47.04	54.00	-6.96	AV
H	4500.00	51.08	30.45	8.77	38.66	68.06	74.00	-5.94	PK
H	4500.00	30.87	30.45	8.77	38.66	47.85	54.00	-6.15	AV
H	5100.00	46.09	30.45	8.77	38.66	63.07	74.00	-10.93	PK
H	5100.00	30.73	30.45	8.77	38.66	47.71	54.00	-6.29	AV
H	5150.00	46.51	30.45	8.77	38.66	63.49	74.00	-10.51	PK
H	5150.00	30.61	30.45	8.77	38.66	47.59	54.00	-6.41	PK

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:5240MHz									
V	5350.00	44.17	30.45	8.77	38.66	61.15	74.00	-12.85	PK
V	5350.00	30.98	30.45	8.77	38.66	47.96	54.00	-6.04	AV
V	5400.00	43.36	30.45	8.77	38.66	60.34	74.00	-13.66	PK
V	5400.00	30.88	30.45	8.77	38.66	47.86	54.00	-6.14	AV
V	5460.00	44.19	30.45	8.77	38.66	61.17	74.00	-12.83	PK
V	5460.00	30.21	30.45	8.77	38.66	47.19	54.00	-6.81	AV
H	5350.00	54.26	30.45	8.77	38.66	71.24	74.00	-2.76	PK
H	5350.00	30.93	30.45	8.77	38.66	47.91	54.00	-6.09	AV
H	5400.00	42.51	30.45	8.77	38.66	59.49	74.00	-14.51	PK
H	5400.00	30.97	30.45	8.77	38.66	47.95	54.00	-6.05	AV
H	5460.00	44.60	30.45	8.77	38.66	61.58	74.00	-12.42	PK
H	5460.00	30.07	30.45	8.77	38.66	47.05	54.00	-6.95	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°C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC 3.8V
Test Band :	5.8G TX - 802.11a / n20 / n40		
Note: All patterns have been tested, and only the worst test data recorded in this report is 802.11a/n20.			

802.11a

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	5700.00	53.26	30.22	4.85	23.98	51.87	74.00	-22.13	PK
V	5700.00	44.36	30.22	4.85	23.98	42.97	54.00	-11.03	AV
V	5725.00	53.25	30.22	4.85	23.98	51.86	74.00	-22.14	PK
V	5725.00	44.75	30.22	4.85	23.98	43.36	54.00	-10.64	AV
H	5700.00	53.73	30.22	4.85	23.98	52.34	74.00	-21.66	PK
H	5700.00	44.82	30.22	4.85	23.98	43.43	54.00	-10.57	AV
H	5725.00	54.20	30.22	4.85	23.98	52.81	74.00	-21.19	PK
H	5725.00	44.53	30.22	4.85	23.98	43.14	54.00	-10.86	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:5825MHz									
V	5850.00	54.77	30.22	4.85	23.98	53.38	74.00	-20.62	PK
V	5850.00	44.58	30.22	4.85	23.98	43.19	54.00	-10.81	AV
V	5875.00	53.52	30.22	4.85	23.98	52.13	74.00	-21.87	PK
V	5875.00	44.28	30.22	4.85	23.98	42.89	54.00	-11.11	AV
H	5850.00	54.13	30.22	4.85	23.98	52.74	74.00	-21.26	PK
H	5850.00	44.33	30.22	4.85	23.98	42.94	54.00	-11.06	AV
H	5875.00	53.62	30.22	4.85	23.98	52.23	74.00	-21.77	PK
H	5875.00	44.67	30.22	4.85	23.98	43.28	54.00	-10.72	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.



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:5745MHz									
V	5700.00	53.04	30.22	4.85	23.98	51.65	74.00	-22.35	PK
V	5700.00	44.83	30.22	4.85	23.98	43.44	54.00	-10.56	AV
V	5725.00	54.70	30.22	4.85	23.98	53.31	74.00	-20.69	PK
V	5725.00	44.93	30.22	4.85	23.98	43.54	54.00	-10.46	AV
H	5700.00	53.32	30.22	4.85	23.98	51.93	74.00	-22.07	PK
H	5700.00	44.92	30.22	4.85	23.98	43.53	54.00	-10.47	AV
H	5725.00	53.60	30.22	4.85	23.98	52.21	74.00	-21.79	PK
H	5725.00	44.92	30.22	4.85	23.98	43.53	54.00	-10.47	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	5850.00	54.81	30.22	4.85	23.98	53.42	74.00	-20.58	PK
V	5850.00	44.97	30.22	4.85	23.98	43.58	54.00	-10.42	AV
V	5875.00	53.08	30.22	4.85	23.98	51.69	74.00	-22.31	PK
V	5875.00	44.64	30.22	4.85	23.98	43.25	54.00	-10.75	AV
H	5850.00	53.25	30.22	4.85	23.98	51.86	74.00	-22.14	PK
H	5850.00	44.60	30.22	4.85	23.98	43.21	54.00	-10.79	AV
H	5875.00	53.75	30.22	4.85	23.98	52.36	74.00	-21.64	PK
H	5875.00	44.87	30.22	4.85	23.98	43.48	54.00	-10.52	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(a) (1) Power limits:

(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.

According to FCC §15.407(a) (3) Power limits:

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 $RBW (< 500 \text{ kHz})$ 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 $RBW (< 1 \text{ MHz})$ 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 $RBW=100 \text{ kHz}$ 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 chapter 3, Unless otherwise a special operating condition is specified in the follows during the testing.



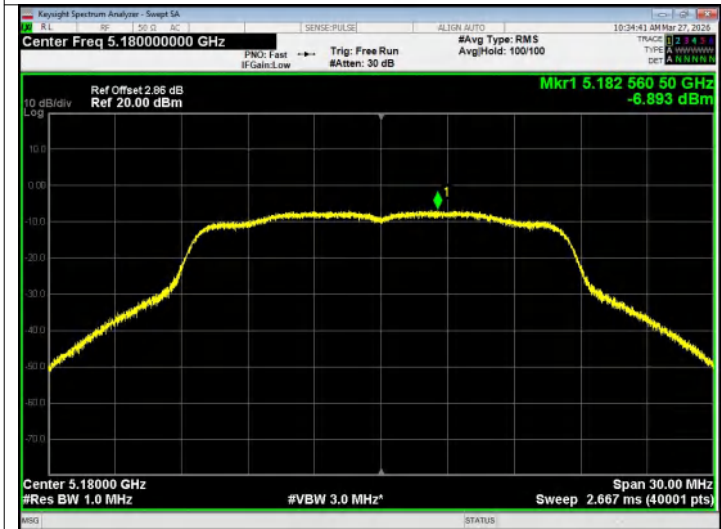
5.6 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1015 hPa	Test Voltage :	DC 3.8V
Test Band :	5.2G		

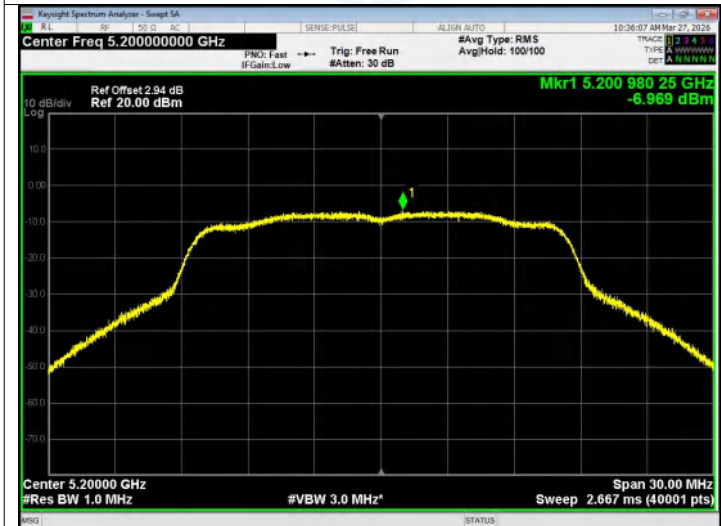
5.2G						
Test mode	Test Channel (MHz)	PSD (dBm)	duty cycle Factor (dB)	Total PSD (dBm)	Limit (dBm/MHz)	Result
802.11a	5180	-6.893	0	-6.893	11	Pass
	5200	-6.969	0	-6.969	11	Pass
	5240	-6.502	0	-6.502	11	Pass
802.11n20	5180	-7.144	0	-7.144	11	Pass
	5200	-7.28	0	-7.28	11	Pass
	5240	-6.681	0	-6.681	11	Pass
802.11n40	5190	-10.31	0	-10.31	11	Pass
	5230	-10.093	0	-10.093	11	Pass



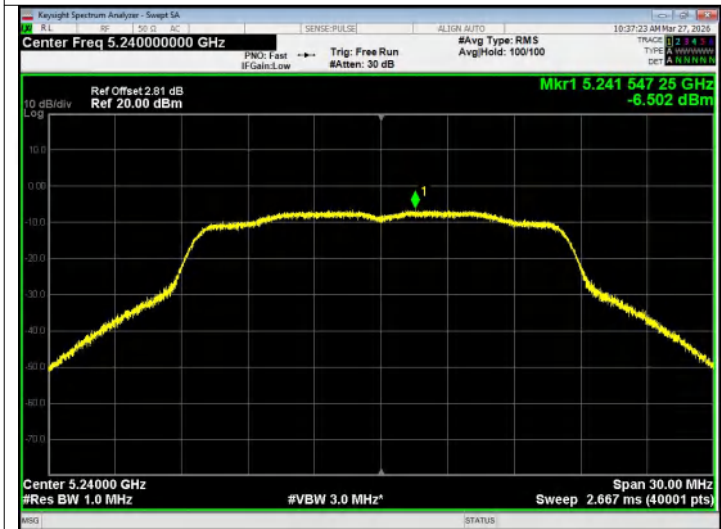
Test Graphs PSD NVNT a 5180MHz

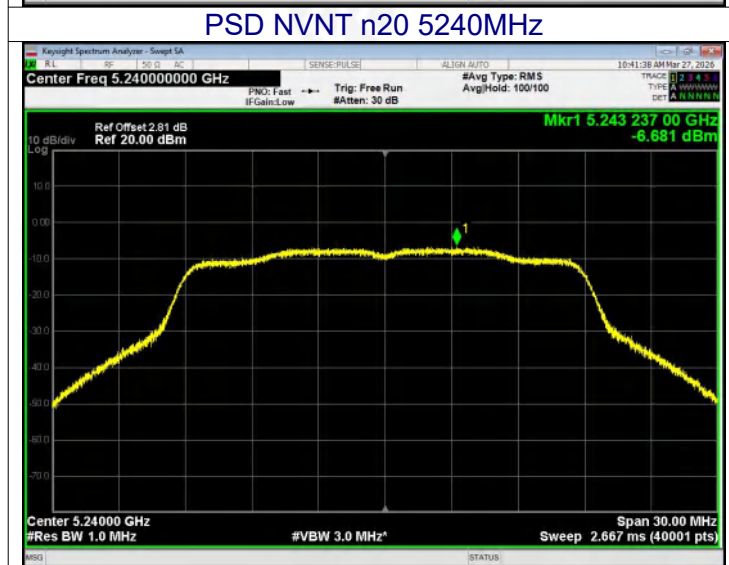
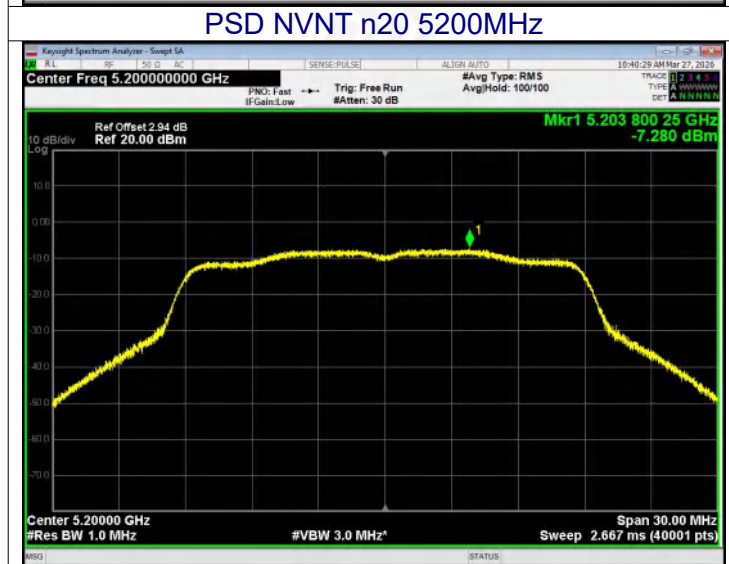
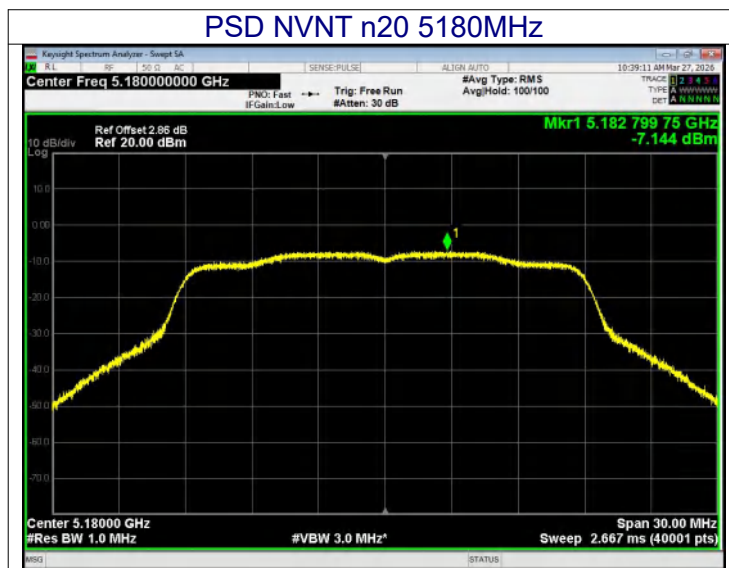


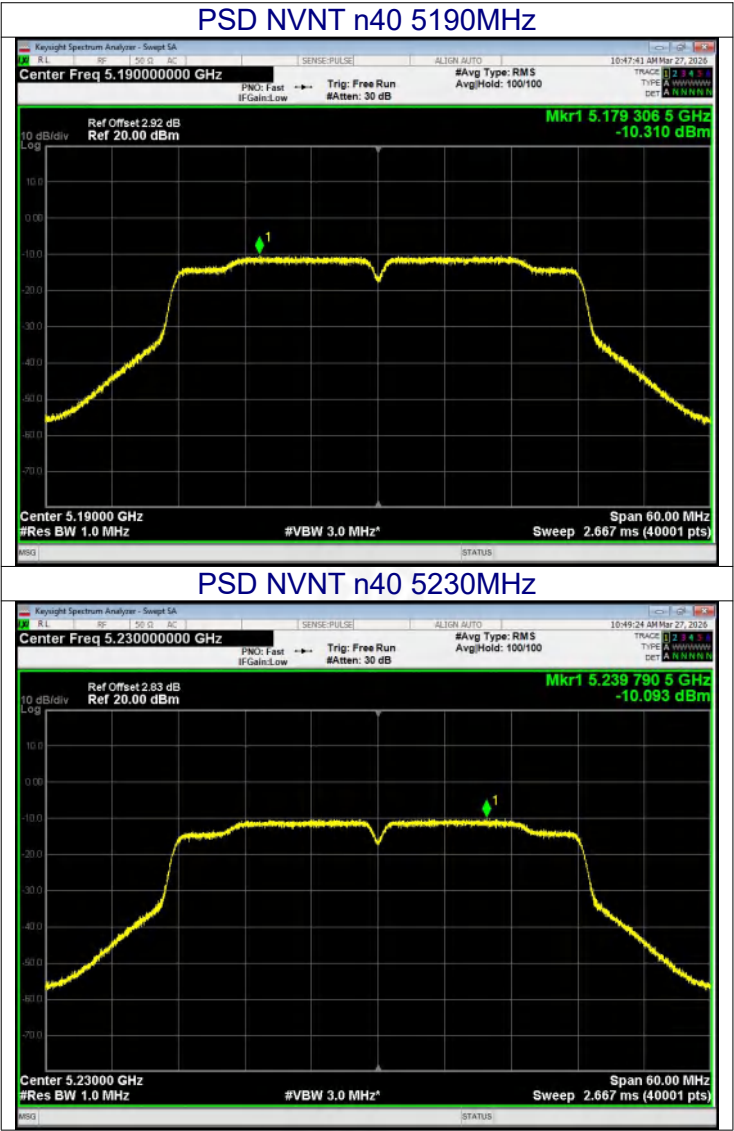
PSD NVNT a 5200MHz



PSD NVNT a 5240MHz







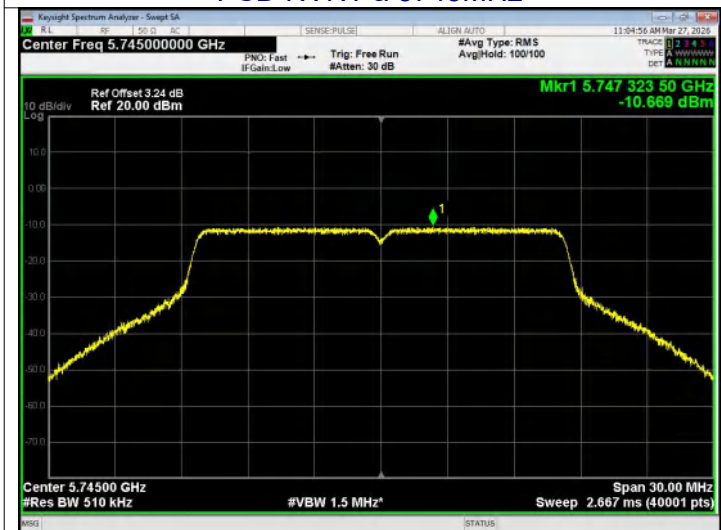


Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1015 hPa	Test Voltage :	DC 3.8V
Test Band :	5.8G		

5.8G						
Test mode	Test Channel (MHz)	PSD (dBm/500kHz)	duty cycle Factor (dB)	Total PSD (dBm)	Limit (dBm/500kHz)	Result
802.11a	5745	-10.669	0	-10.669	30	Pass
	5785	-9.793	0	-9.793	30	Pass
	5825	-9.235	0	-9.235	30	Pass
802.11n20	5745	-10.863	0	-10.863	30	Pass
	5785	-10.047	0	-10.047	30	Pass
	5825	-9.582	0	-9.582	30	Pass
802.11n40	5755	-13.386	0	-13.386	30	Pass
	5795	-12.744	0	-12.744	30	Pass



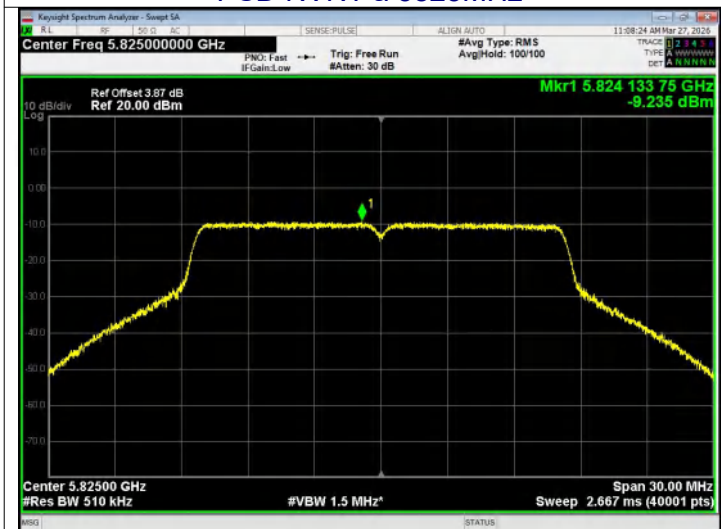
Test Graphs PSD NVNT a 5745MHz



PSD NVNT a 5785MHz

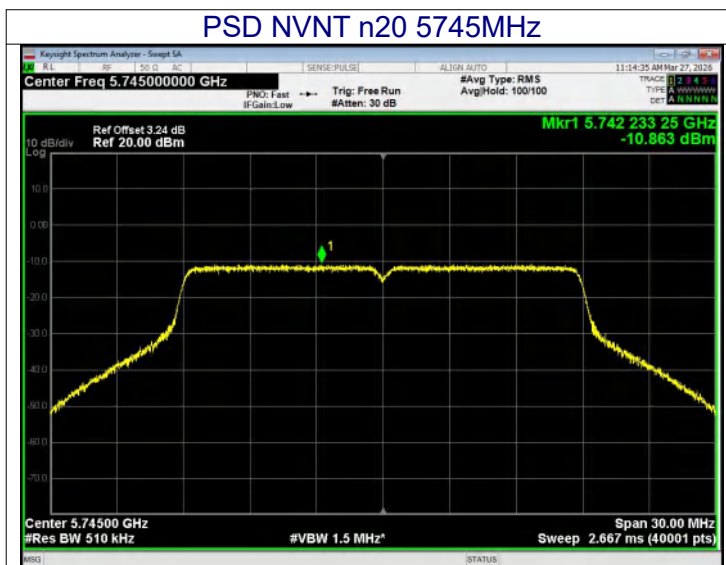


PSD NVNT a 5825MHz





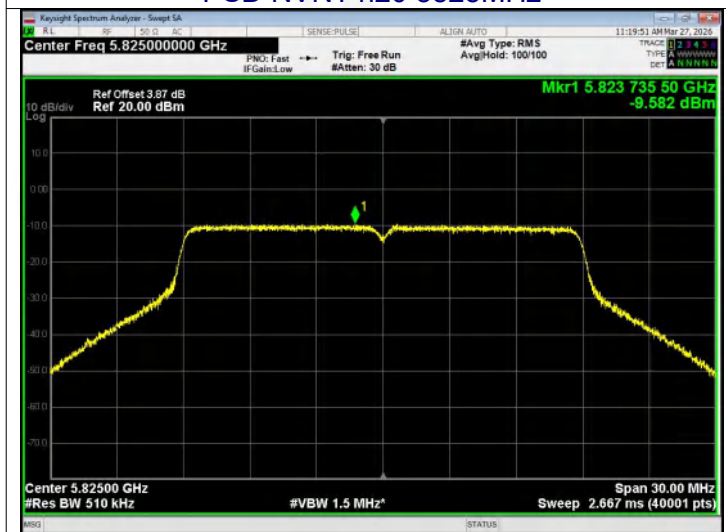
PSD NVNT n20 5745MHz

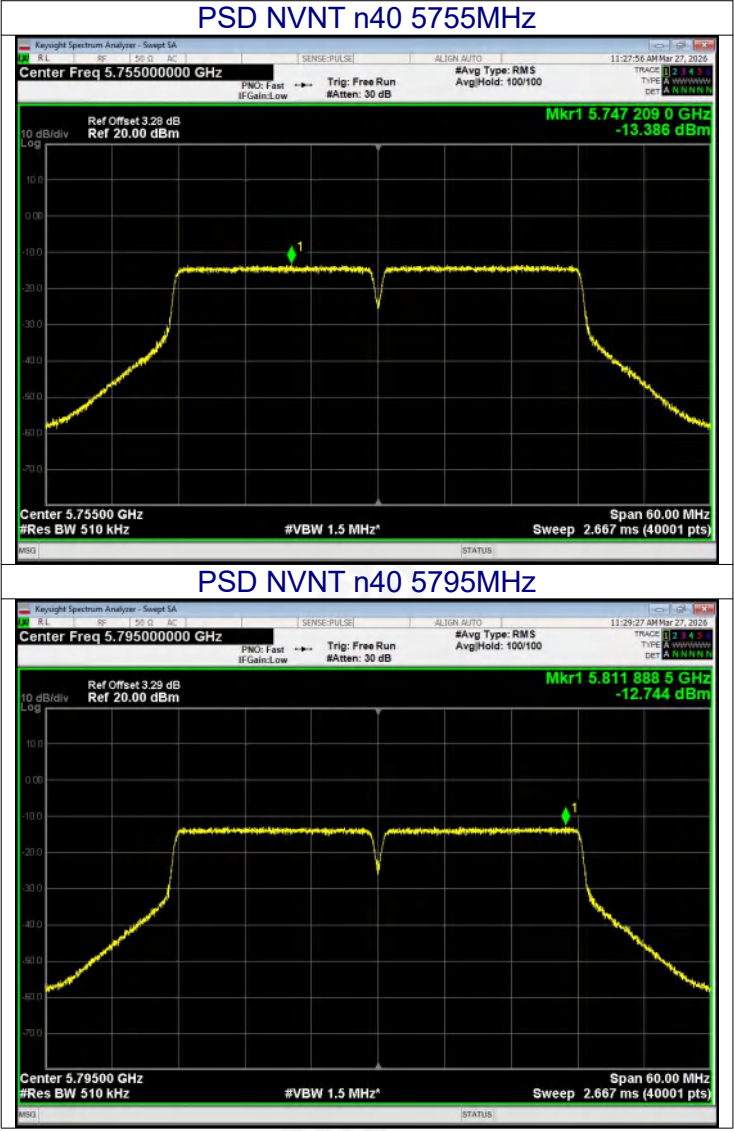


PSD NVNT n20 5785MHz



PSD NVNT n20 5825MHz







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:

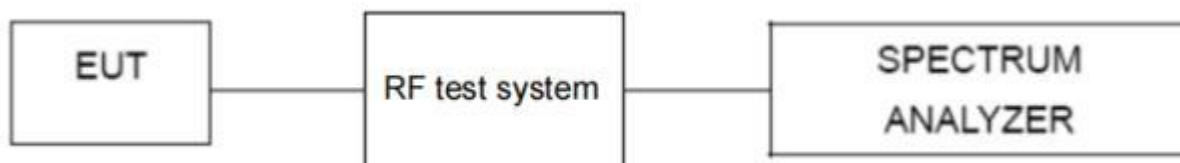
The procedure for this method is as follows:

- 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 = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the 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 approximately 1%.



6.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of chapter 3, Unless otherwise a special operating condition is specified in the follows during the testing.



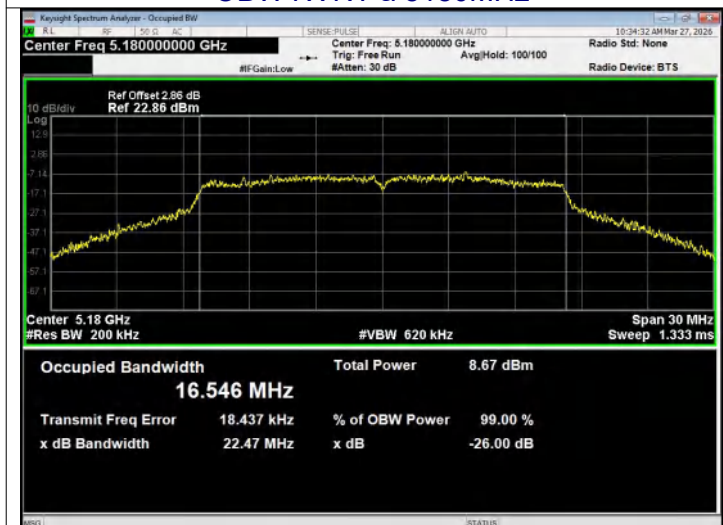
6.4 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 3.8V
Test Band :	5.2G		

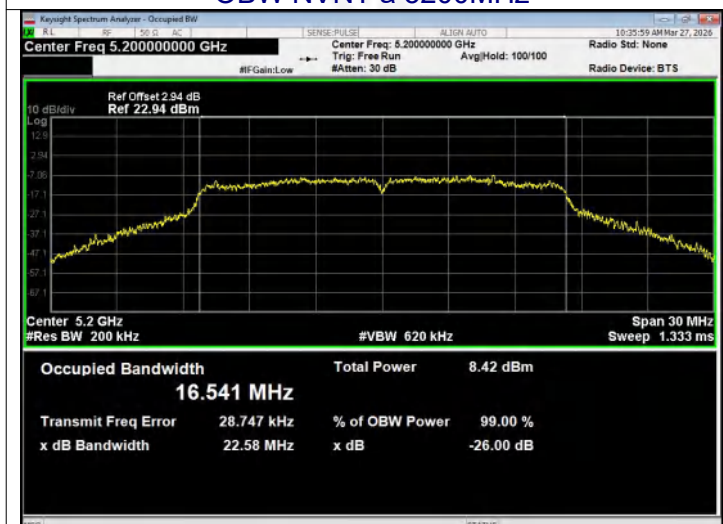
5.2G				
Test Mode	Test Channel (MHz)	26dB Emission Bandwidth (MHz)	Limit(KHz)	Result
802.11a	5180	22.47	N/A	Pass
	5200	22.58		
	5240	21.99		
802.11n20	5180	22.26	N/A	Pass
	5200	23.18		
	5240	22.10		
802.11n40	5190	42.32	N/A	Pass
	5230	41.85		



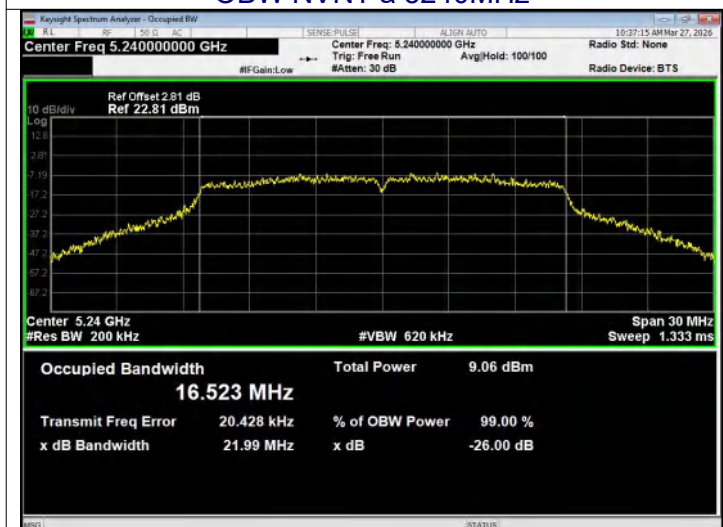
Test Graphs OBW NVNT a 5180MHz

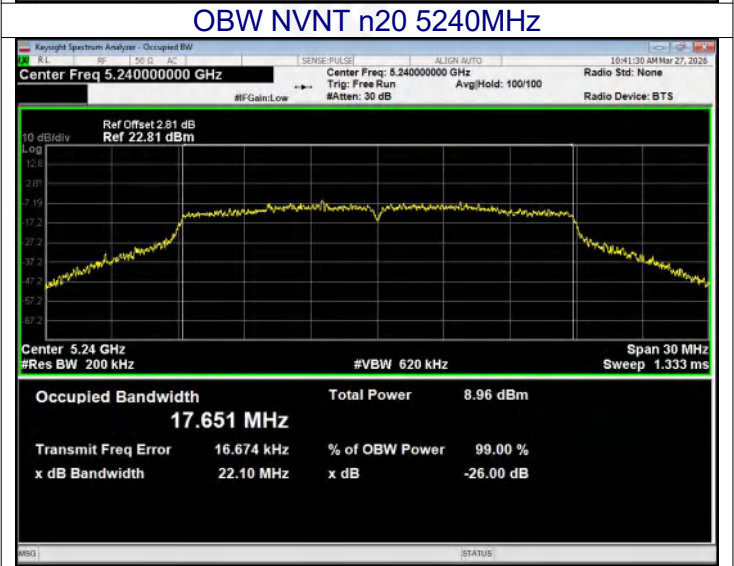
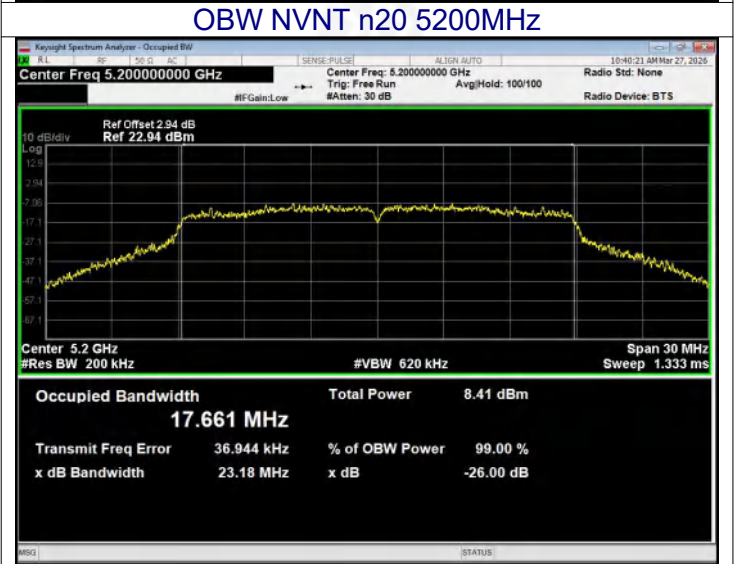
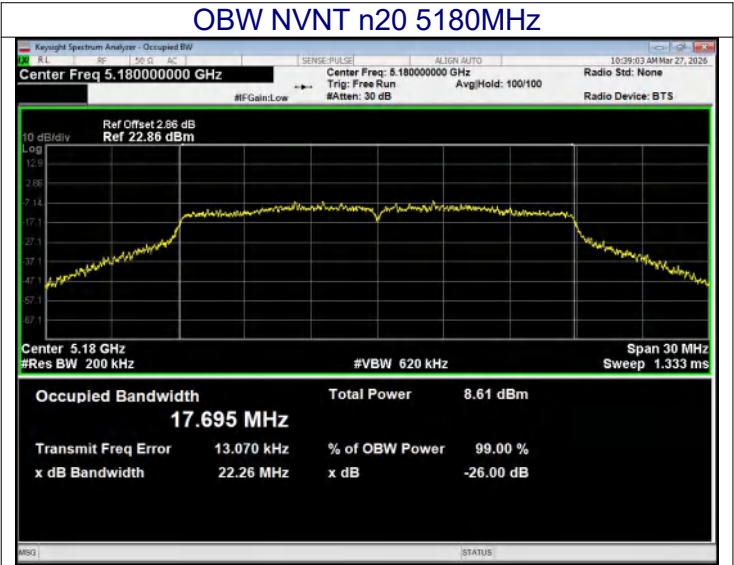


OBW NVNT a 5200MHz



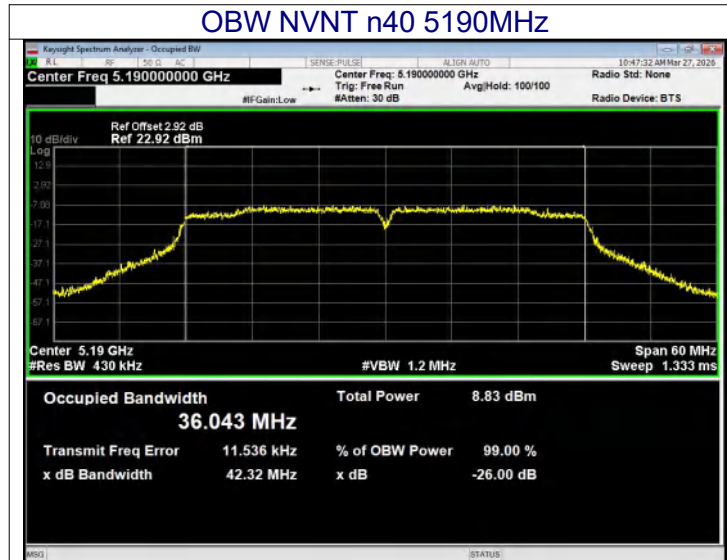
OBW NVNT a 5240MHz



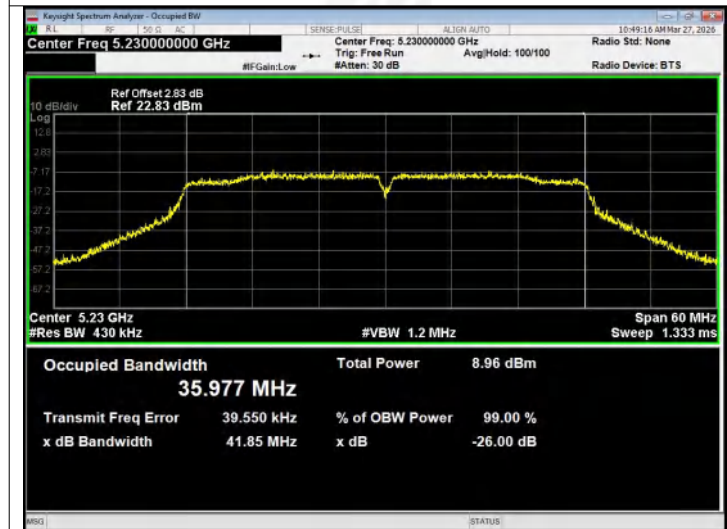




OBW NVNT n40 5190MHz



OBW NVNT n40 5230MHz





Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 5V
Test Band :	5.8G		

Test Mode	Test Channel (MHz)	6dB Bandwidth (MHz)	6dB Limit (kHz)	Result
802.11a	5745	16.336	>500	Pass
	5785	16.341		
	5825	16.327		
802.11n20	5745	17.574	>500	Pass
	5785	17.525		
	5825	17.561		
802.11n40	5755	36.337	>500	Pass
	5795	36.351		



Test Graphs

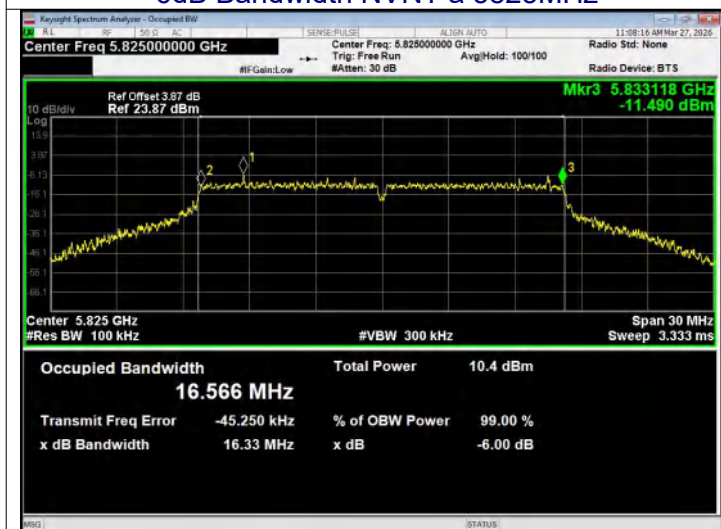
-6dB Bandwidth NVNT a 5745MHz



-6dB Bandwidth NVNT a 5785MHz

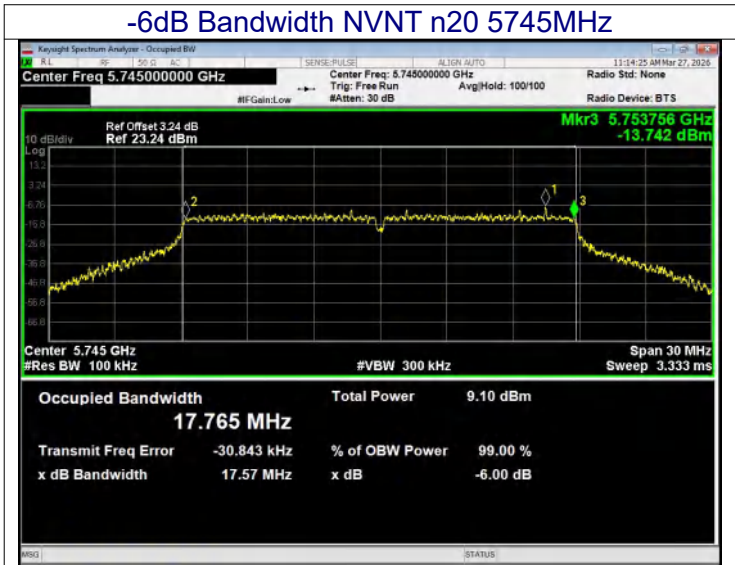


-6dB Bandwidth NVNT a 5825MHz

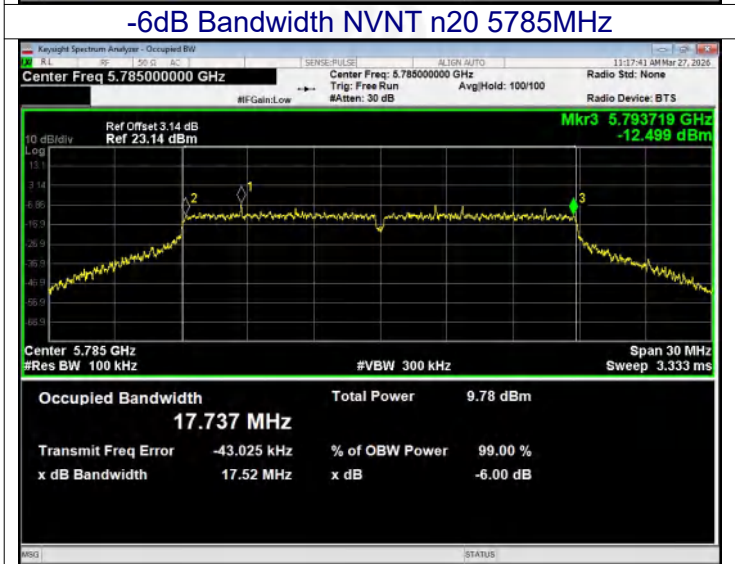




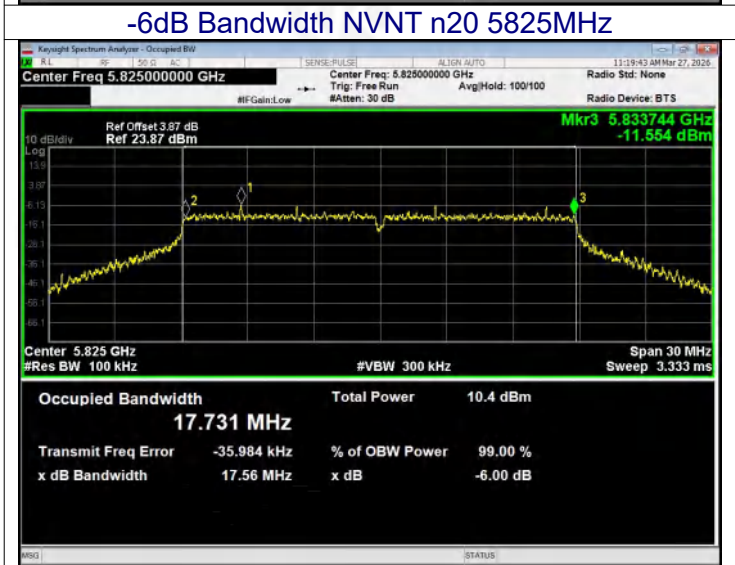
-6dB Bandwidth NVNT n20 5745MHz

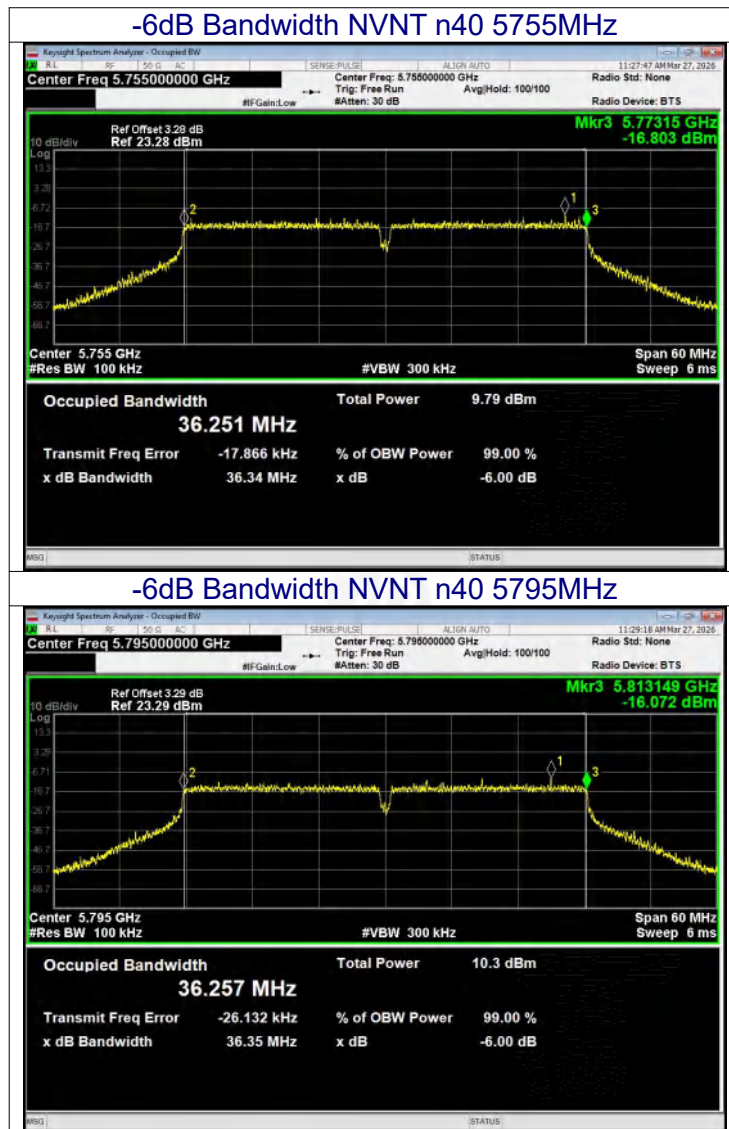


-6dB Bandwidth NVNT n20 5785MHz



-6dB Bandwidth NVNT n20 5825MHz







7. MAXIMUM CONDUCTED OUTPUT POWER

7.1 PPLIED PROCEDURES / LIMIT

According to FCC §15.407 (a)(1) & (a)(3)(i)
The maximum conducted output power should not exceed:

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

7.2 TEST PROCEDURE

According 789033 D02 General UNII Test Procedures New Rules v02r01.
EUT Measurement using a Power Meter (PM)

a) Method PM (Measurement using an RF average power meter):

(i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the following conditions are satisfied:

- The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
- At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
- The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

(ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in II.B.

(iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

(iv) Adjust the measurement in dBm by adding $10 \log (1/x)$ where x is the duty cycle (e.g., $10 \log (1/0.25)$ if the duty cycle is 25%).

b) Method PM-G (Measurement using a gated RF average power meter):

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

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 chapter 7.4, 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 :	DC 3.8V

Test Mode	Frequency (MHz)	Output Power (dBm)	Duty Cycle Factor (dB)	Total Power (dBm)	Limit (dBm)	Result
802.11 a	5180	2.959	0.00	2.959	23.98	Pass
	5200	2.77	0.00	2.77	23.98	Pass
	5240	3.247	0.00	3.247	23.98	Pass
802.11 n20	5180	2.935	0.00	2.935	23.98	Pass
	5200	2.658	0.00	2.658	23.98	Pass
	5240	3.163	0.00	3.163	23.98	Pass
802.11 n40	5190	3.059	0.00	3.059	23.98	Pass
	5230	3.261	0.00	3.261	23.98	Pass

Note: Total Power = Output Power + Duty Cycle Factor.

Test Mode	Frequency (MHz)	Output Power (dBm)	Duty Cycle Factor (dB)	Total Power (dBm)	Limit (dBm)	Result
802.11 a	5745	3.211	0.00	3.211	30	Pass
	5785	3.864	0.00	3.864	30	Pass
	5825	4.462	0.00	4.462	30	Pass
802.11 n20	5745	3.264	0.00	3.264	30	Pass
	5785	3.829	0.00	3.829	30	Pass
	5825	4.441	0.00	4.441	30	Pass
802.11 n40	5755	3.677	0.00	3.677	30	5755
	5795	4.303	0.00	4.303	30	5795

Note: Total Power = Output Power + Duty Cycle Factor.



8. CONDUCTED 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) For transmitters operating in the 5.725-5.85 GHz band:

(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

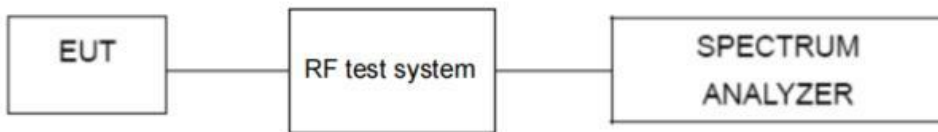
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then 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

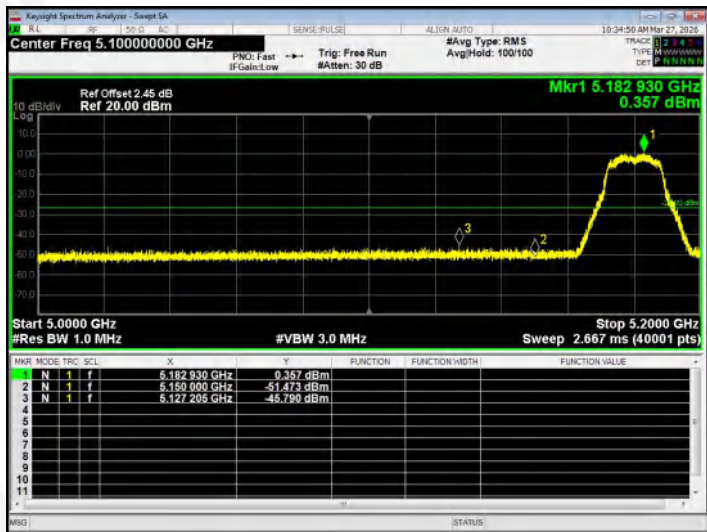
The EUT tested system was configured as the statements of chapter 8.5, Unless otherwise a special operating condition is specified in the follows during the testing.

8.6 TEST RESULTS

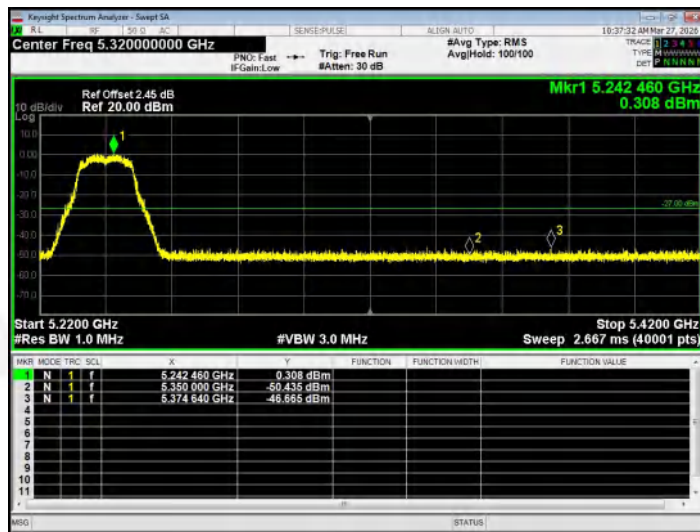
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	DC 3.8V
Test band :	5.2G	Antenna gain :	-0.58dBi(The gain value of antenna is tested uniformly)

5.180~5.240 GHz

(802.11a) Band Edge, Left Side

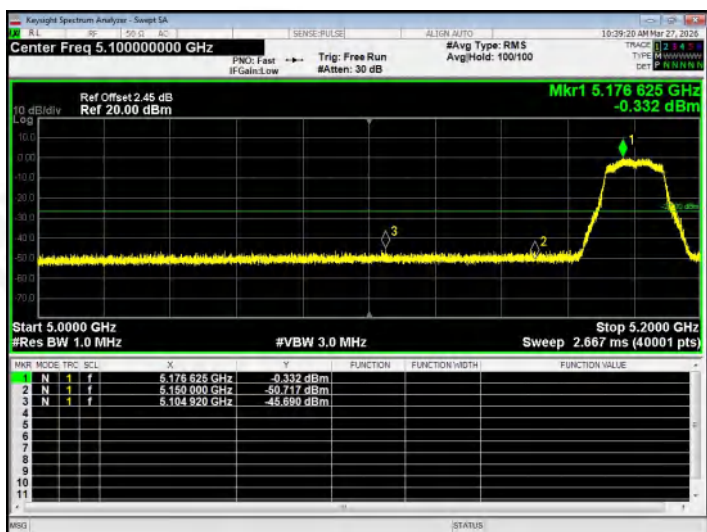


(802.11a) Band Edge, Right Side

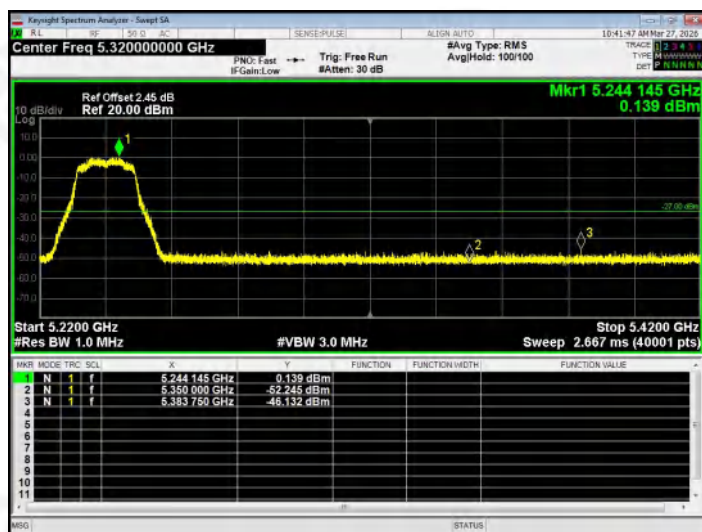




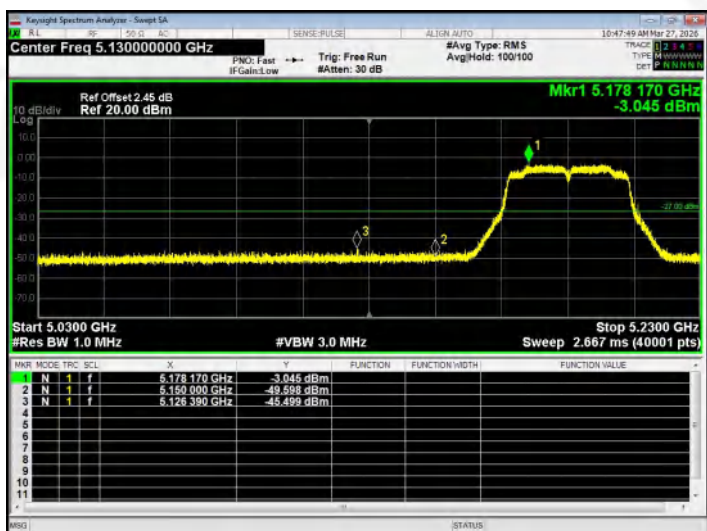
(802.11n20) Band Edge, Left Side



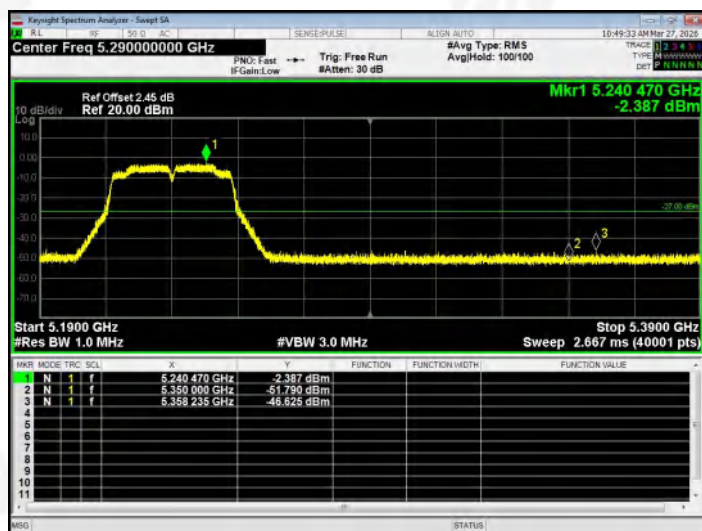
(802.11n20) Band Edge, Right Side



(802.11n40) Band Edge, Left Side



(802.11n40) Band Edge, Right Side



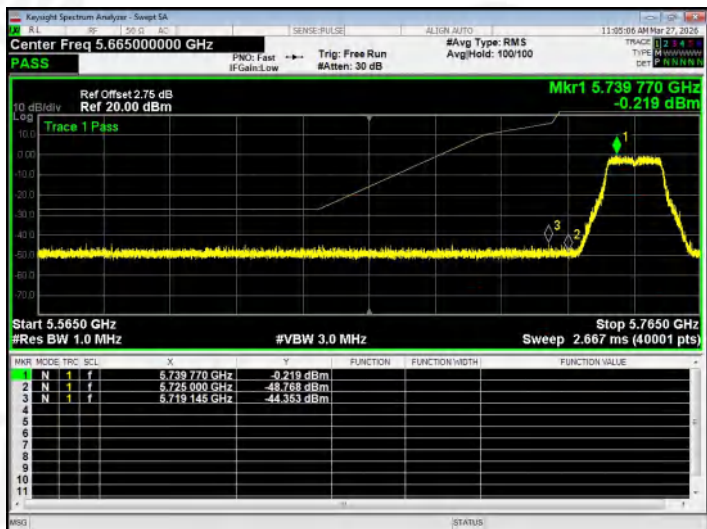
Note: Offset=Ant Gain + Cable Loss



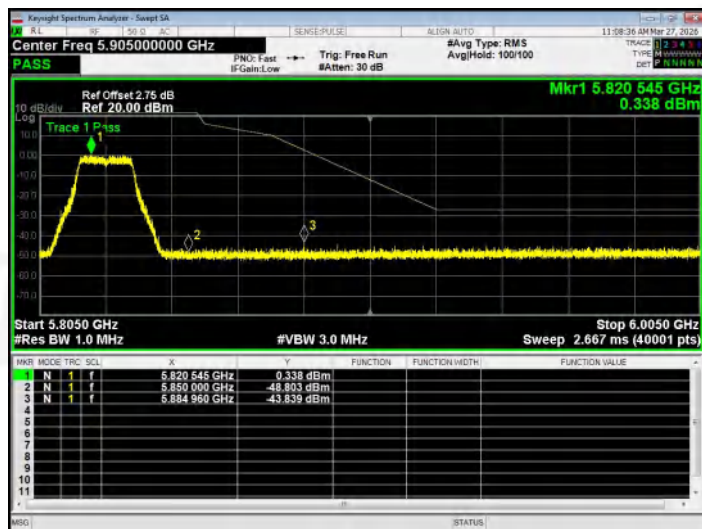
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	DC 3.8V
Test band :	5.8G	Antenna gain :	-0.44dBi(The gain value of antenna is tested uniformly)

5.745~5.825 GHz

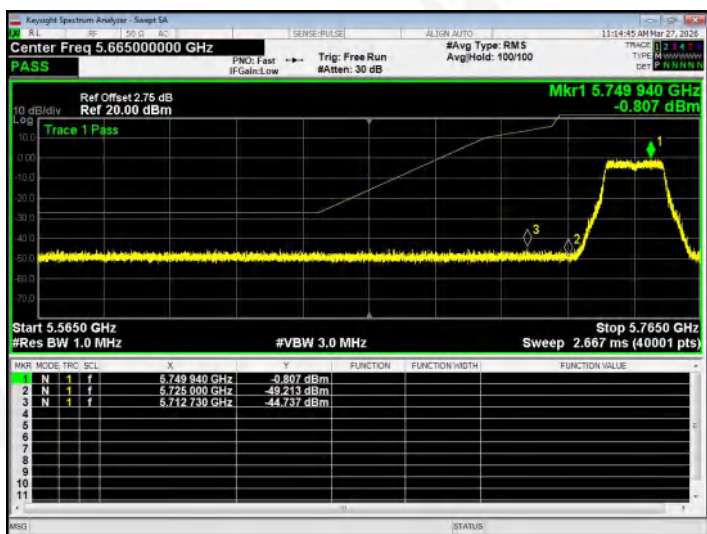
(802.11a) Band Edge, Left Side



(802.11a) Band Edge, Right Side



(802.11n20) Band Edge, Left Side

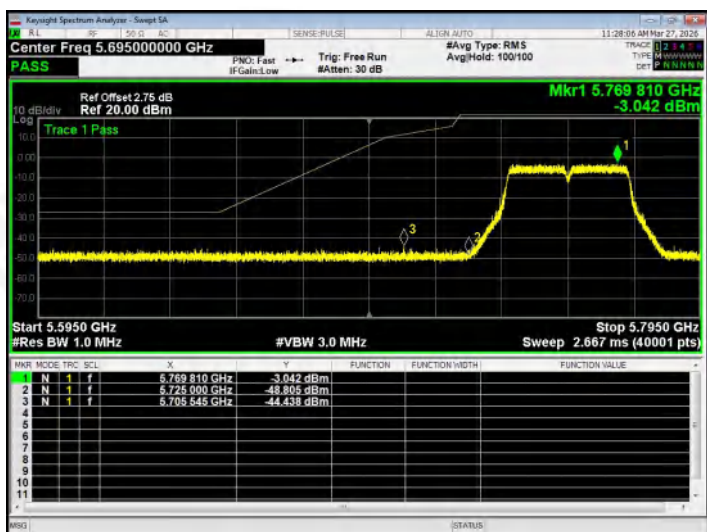


(802.11n20) Band Edge, Right Side

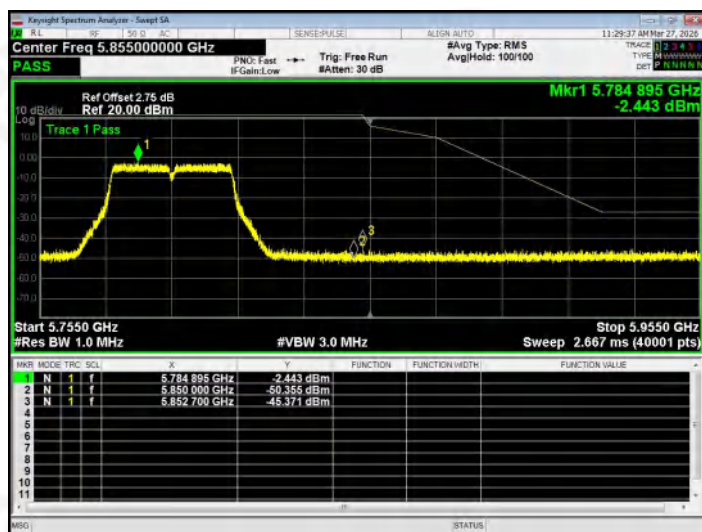




(802.11n40) Band Edge, Left Side



(802.11n40) Band Edge, Right Side



Note: The antenna gain and cable loss are compensated in the test data.



9. FREQUENCY STABILITY MEASUREMENT

9.1 LIMIT

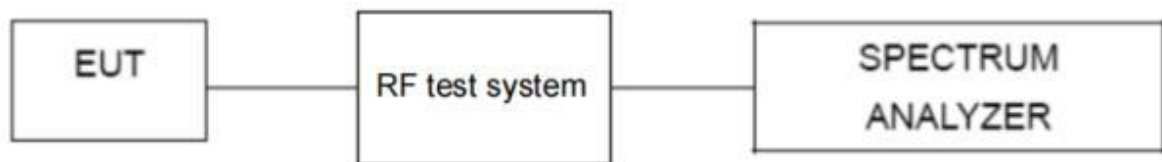
Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be (IEEE 802.11n specification).

9.2 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 $(f_c - f)/f_c \times 106$ ppm.
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°C~70°C.

9.3 TEST SETUP LAYOUT



9.4 EUT OPERATION DURING TEST

The EUT tested system was configured as the statements of chapter 10.3, Unless otherwise a special operating condition is specified in the follows during the testing.



9.5 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	DC 3.8V
Note: Note: All channels have been tested, and only the worst test data is recorded in this report.			

Extreme temperature frequency stability:

Reference Frequency: 5180MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
70	3.8	5179.978	-4.221

Reference Frequency: 5190MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
70	3.8	5189.987	-2.490

Reference Frequency: 5745MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
70	3.8	5744.970	-5.146

Reference Frequency: 5755MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
70	3.8	5754.974	-4.469



Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	DC 3.8V
Note: Note: All channels have been tested, and only the worst test data is recorded in this report.			

Extreme voltage frequency stability:

Reference Frequency: 5180MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
25	3.8	5179.971	-5.553

Reference Frequency: 5190MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
25	3.8	5189.974	-5.048

Reference Frequency: 5745MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
25	3.8	5744.969	-5.426

Reference Frequency: 5755MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Measured Frequency (MHz)	Deviation (ppm)
25	3.8	5754.963	-6.358



10. DUTY CYCLE

10.1 APPLIED PROCEDURES / LIMIT

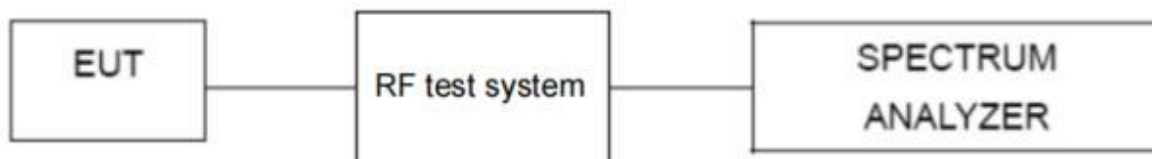
Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

- 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 $T \leq 16.7 \mu s$.)

10.2 DEVIATION FROM STANDARD

No deviation.

10.3 TEST SETUP



10.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of chapter 10.3, Unless otherwise a special operating condition is specified in the follows during the testing.



10.5 TEST RESULTS

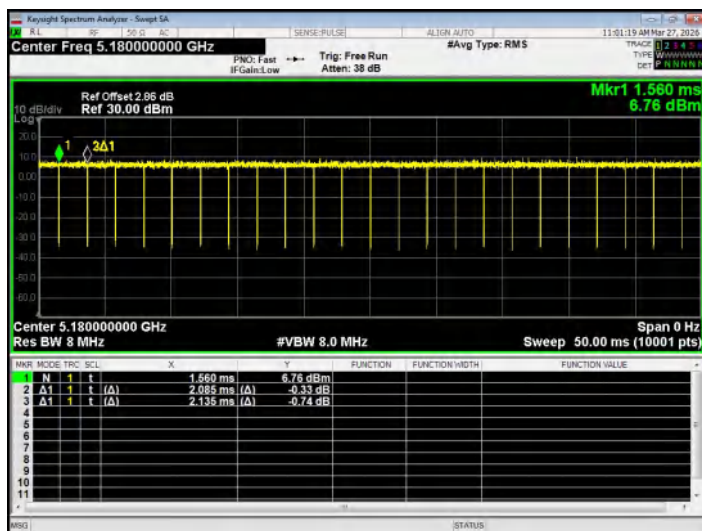
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1012 hPa	Test Voltage :	DC 3.8V
Note: All channels have been tested, and only the worst test data is recorded in this report.			

5.2G				
Mode	Frequency (MHz)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Result
802.11a	5180	98.12	0	Pass
802.11n20	5180	98.76	0	Pass
802.11n40	5190	98.76	0	Pass
Duty Cycle= Ton /Total*100%				
Duty Cycle Correction Factor = 10log (1/Duty Cycle)				

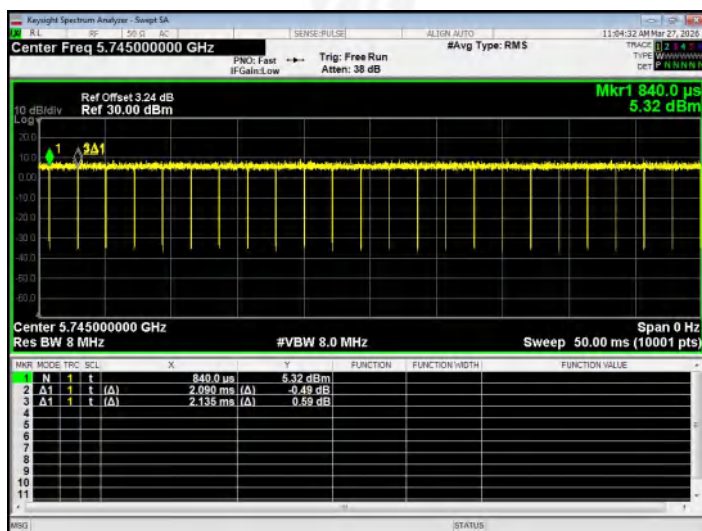
5.8G				
Mode	Frequency (MHz)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Result
802.11a	5745	98.12	0	Pass
802.11n20	5745	99	0	Pass
802.11n40	5755	98.76	0	Pass
Duty Cycle= Ton /Total*100%				
Duty Cycle Correction Factor = 10log (1/Duty Cycle)				



802.11a - 5180MHz



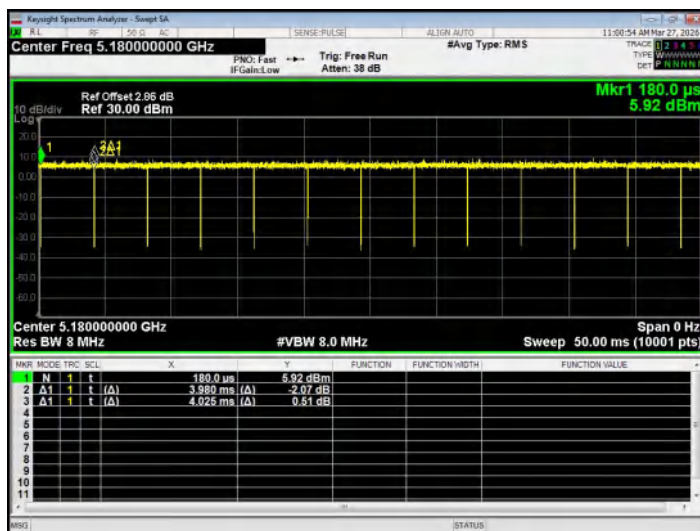
802.11a - 5745MHz



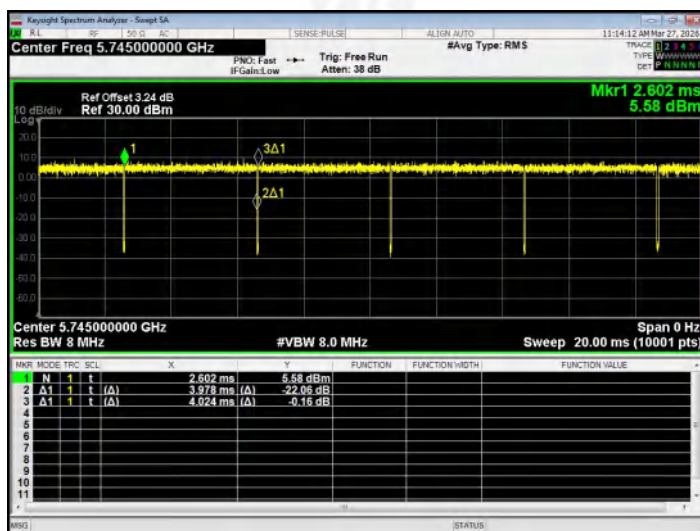
Note: All channel have been tested, and the report only reflects the worst case data.



802.11n20 - 5180MHz



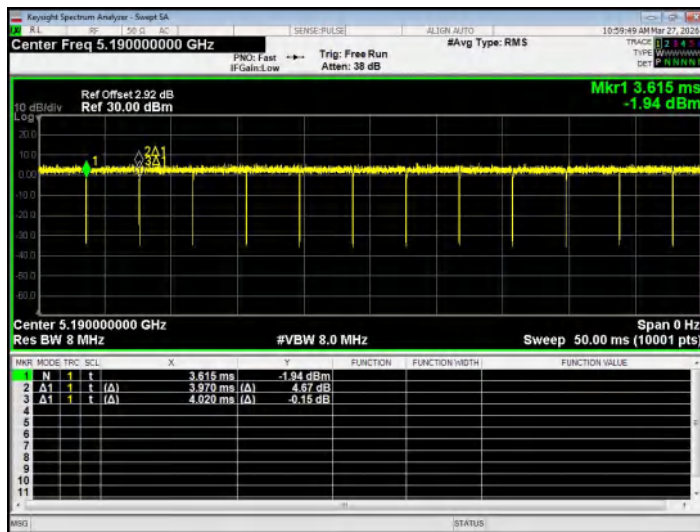
802.11n20 - 5745MHz



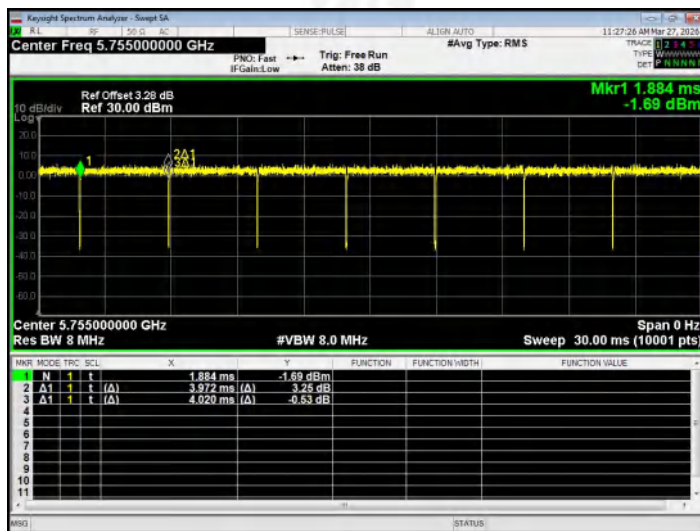
Note: All channel have been tested, and the report only reflects the worst case data.



802.11n40 - 5190MHz



802.11n40 - 5755MHz



Note: All channel have been tested, and the report only reflects the worst case data.



11. 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 FPC Antenna, the best case gain of the antenna is 5.2G is -0.58dBi&5.8 is -0.44dBi, reference to the appendix II for details	



12. TEST SETUP PHOTO

Reference to the appendix I for details.

13. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

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