TEST REPORT

Report No.:	BCTC2312718793-4E
Applicant:	Shenzhen Beishida Technology Co., Ltd
Product Name:	Laptop computer
Test Model:	AlderLake N
Tested Date:	2023-12-27 to 2024-01-15
Issued Date:	2024-03-07

Shenzhen BCTC Testing Co., Ltd.

FCC ID:2BE6M-ALDERLAKEN

Product Name:	Laptop computer
Trademark:	N/A
Model/Type Ref.:	AlderLake N, ROW-61821CE
Prepared For:	Shenzhen Beishida Technology Co., Ltd
Address:	3rd Floor, Building F6, Juyin Technology Industrial Park, Bulan Road, Longgang,Shenzhen,Guangdong,China
Manufacturer:	Shenzhen Beishida Technology Co., Ltd
Address:	3rd Floor, Building F6, Juyin Technology Industrial Park, Bulan Road, Longgang,Shenzhen,Guangdong,China
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2023-12-27
Sample tested Date:	2023-12-27 to 2024-01-15
Report No.:	BCTC2312718793-4E
Test Standards:	FCC Part15 15.407 ANSI C63.10-2013 KDB 662911 D01 v02r01 KDB 789033 D02 v02r01
Test Results:	PASS

Tested by:

Brave Zeng

Brave Zeng/ Project Handler

Approved by:

Zero Zhou/Reviewer

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1. Version

Report No.	Issue Date	Description	Approved
BCTC2312718793-4E	2024-03-07	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No.	Results
1	Spurious Radiated Emissions	15.209(a), 15.407 (b)	PASS
2	Conducted Emission	15.207	PASS
3	26 dB and 99% Emission Bandwidth	15.407 (a)	PASS
4	Minimum 6 dB bandwidth	15.407(e)	PASS
5	Maximum Conducted Output Power	15.407 (a)	PASS
6	Band Edge	15.407(b)	PASS
7	Power Spectral Density	15.407 (a)	PASS
8	Spurious Emissions at Antenna Terminals	15.407(b)	PASS
9	Antenna Requirement	15.203	PASS

3. Measurement Uncertainty

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

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(9kHz-30MHz)	U=3.7dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.3dB
3	3m chamber Radiated spurious emission(1GHz-18GHz)	U=4.5dB
4	3m chamber Radiated spurious emission(18GHz-40GHz)	U=3.34dB
5	Conducted Emission(150kHz-30MHz)	U=3.20dB
6	Conducted Adjacent channel power	U=1.38dB
7	Conducted output power uncertainty Above 1G	U=1.576dB
8	Conducted output power uncertainty below 1G	U=1.28dB
9	humidity uncertainty	U=5.3%
10	Temperature uncertainty	U=0.59℃

4. Product Information and Test Setup

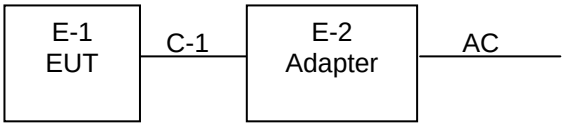
4.1 Product Information

Model/Type Ref.:	AlderLake N, ROW-61821CE
Model differences:	The following models of units we produce are identical in electrical, mechanical and physical structure; The difference is only in the model name, we finally have AlderLake N as test model.
Hardware Version:	N/A
Software Version:	N/A
IEEE 802.11 WLAN Mode Supported	☒802.11a ☒802.11n(20MHz channel bandwidth) ☒802.11n(40MHz channel bandwidth) ☒802.11ac(20MHz channel bandwidth) ☒802.11ac(40MHz channel bandwidth) ☒802.11ac(80MHz channel bandwidth)
Operation Frequency:	5180-5240MHz for 802.11a/n/ac(HT20); 5190-5230MHz for 802.11n/ac(HT40); 5210MHz for 802.11 ac80; 5745-5825 MHz for 802.11a/n/ac(HT20); 5755-5795 MHz for 802.11n/ac(HT40); 5775MHz for 802.11 ac80
Type of Modulation:	☒OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n ☒OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11ac
Number Of Channel	4 channels for 802.11a/n20 in the 5180-5240MHz band ; 2 channels for 802.11 n40 in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210MHz band ; 5 channels for 802.11a/n20 in the 5745-5825MHz band ; 2 channels for 802.11 n40 in the 5755-5795MHz band ; 1 channels for 802.11 ac80 in the 5775MHz band
Antenna installation:	Internal antenna
Antenna Gain:	WIFI5.1G:2.5dBi WIFI5.8G:2.5dBi
Remark:	The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information.
power supply:	AC 100-240,50/60Hz
Battery:	DC 7.7V,5000mAh
Adapter:	Input:AC100-240V,50/60Hz Output:DC12V,3A

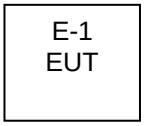
4.2 Test Setup Configuration

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

Conducted Emission:



Radiated Spurious Emission



4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-1	Laptop computer	N/A	AlderLake N	N/A	EUT
E-2	Adapter	N/A	N/A	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
C-1	N/A	N/A	N/A	N/A

Notes:
1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Channel List

Frequency and Channel list for 802.11a/n/ac(20MHz):

802.11a/n/ac(20MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220	-	-	-	-
40	5200	48	5240	-	-	-	-

802.11n /ac(40MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	-	-	-	-	-	-
46	5230	-	-	-	-	-	-

802.11ac(80MHz) Carrier Frequency Channel	
Channel	Frequency (MHz)
42	5210

Frequency and Channel list for 802.11a/n/ac(20MHz):

802.11a/n/ac(20 MHz) Carrier Frequency Channel							
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 40MHz Carrier Frequency Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795	-	-

802.11ac 80MHz Carrier Frequency Channel	
Channel	Frequency (MHz)
155	5775

4.5 Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	802.11a / n/ ac 20 CH36/ CH40/ CH 48 802.11a /n/ ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ ac40 CH38/ CH 46 802.11n/ ac40 CH 151 / CH 159
Mode 3	802.11 ac/80 CH 42/CH 155
Mode 4	Link Mode

4.6 Table Of Parameters Of Text Software Setting

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters

Test software Version	**CMD**		
Parameters	DEF	DEF	DEF

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address:1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.
FCC Test Firm Registration Number: 712850
A2LA certificate registration number is: CN1212
ISED Registered No.: 23583
ISED CAB identifier: CN0017

5.2 Test Instrument Used

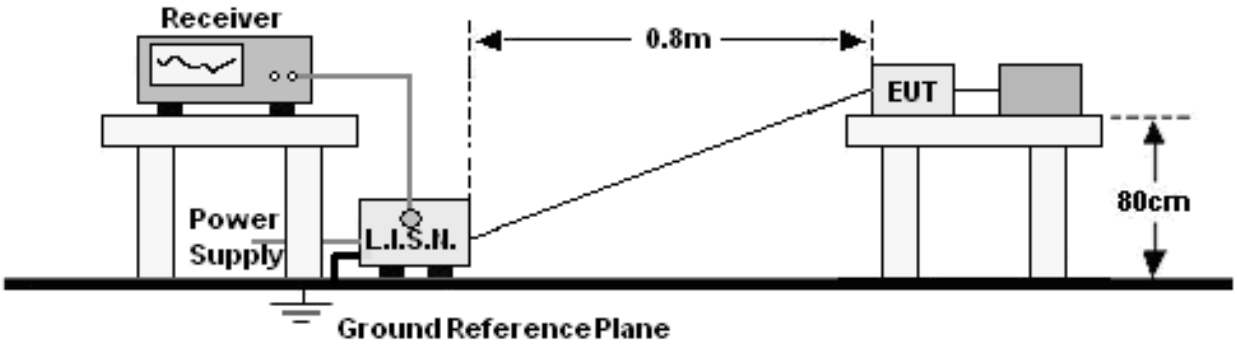
Conducted Emissions Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
LISN	R&S	ENV216	101375	May 15, 2023	May 14, 2024
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Attenuator	\	10dB DC-6GHz	1650	May 15, 2023	May 14, 2024

RF Conducted Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Power Metter	Keysight	E4419	\	May 15, 2023	May 14, 2024
Power Sensor (AV)	Keysight	E9300A	\	May 15, 2023	May 14, 2024
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 15, 2023	May 14, 2024
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	\	May 15, 2023	May 14, 2024

Radiated Emissions Test (966 Chamber)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	May 15, 2023	May 14, 2026
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
Receiver	R&S	ESRP	101154	May 15, 2023	May 14, 2024
Amplifier	SKET	LAPA_01G18G-45dB	\	May 15, 2023	May 14, 2024
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 15, 2023	May 14, 2024
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	May 15, 2023	May 14, 2024
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 15, 2023	May 14, 2024
Horn Antenn(18GHz-40GHz)	Schwarzbeck	BBHA9170	00822	May 15, 2023	May 14, 2024
Amplifier(18GHz-40GHz)	MITEQ	TTA1840-35-HG	2034381	May 15, 2023	May 14, 2024
Loop Antenna(9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	May 15, 2023	May 14, 2024
RF cables1(9kHz-30MHz)	Huber+Suhnar	9kHz-30MHz	B1702988-0008	May 15, 2023	May 14, 2024
RF cables2(30MHz-1GHz)	Huber+Suhnar	30MHz-1GHz	1486150	May 15, 2023	May 14, 2024
RF cables3(1GHz-40GHz)	Huber+Suhnar	1GHz-40GHz	1607106	May 15, 2023	May 14, 2024
Power Metter	Keysight	E4419	\	May 15, 2023	May 14, 2024
Power Sensor (AV)	Keysight	E9300A	\	May 15, 2023	May 14, 2024
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 15, 2023	May 14, 2024
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	\	May 15, 2023	May 14, 2024
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

6. Conducted Emissions

6.1 Block Diagram Of Test Setup



6.2 Limit

Frequency (MHz)	Limit (dBuV)	
	Quas-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00
Notes: 1. *Decreasing linearly with logarithm of frequency. 2. The lower limit shall apply at the transition frequencies.		

6.3 Test Procedure

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

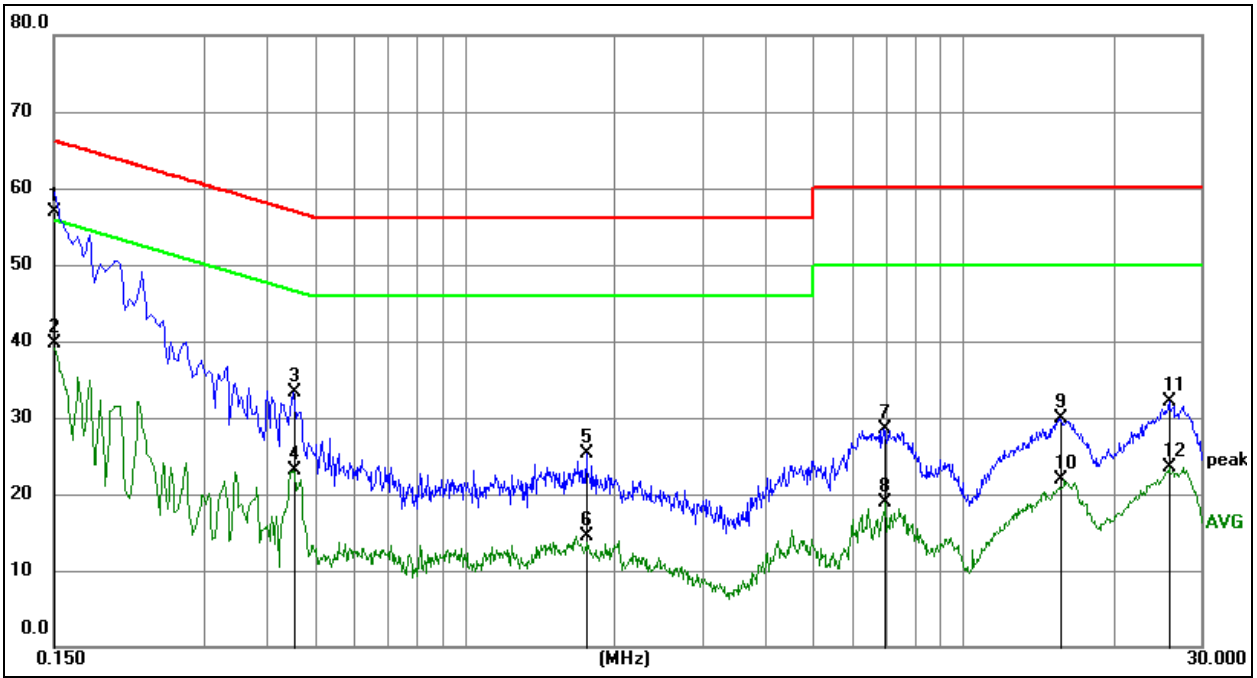
a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 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.

6.5 Test Result

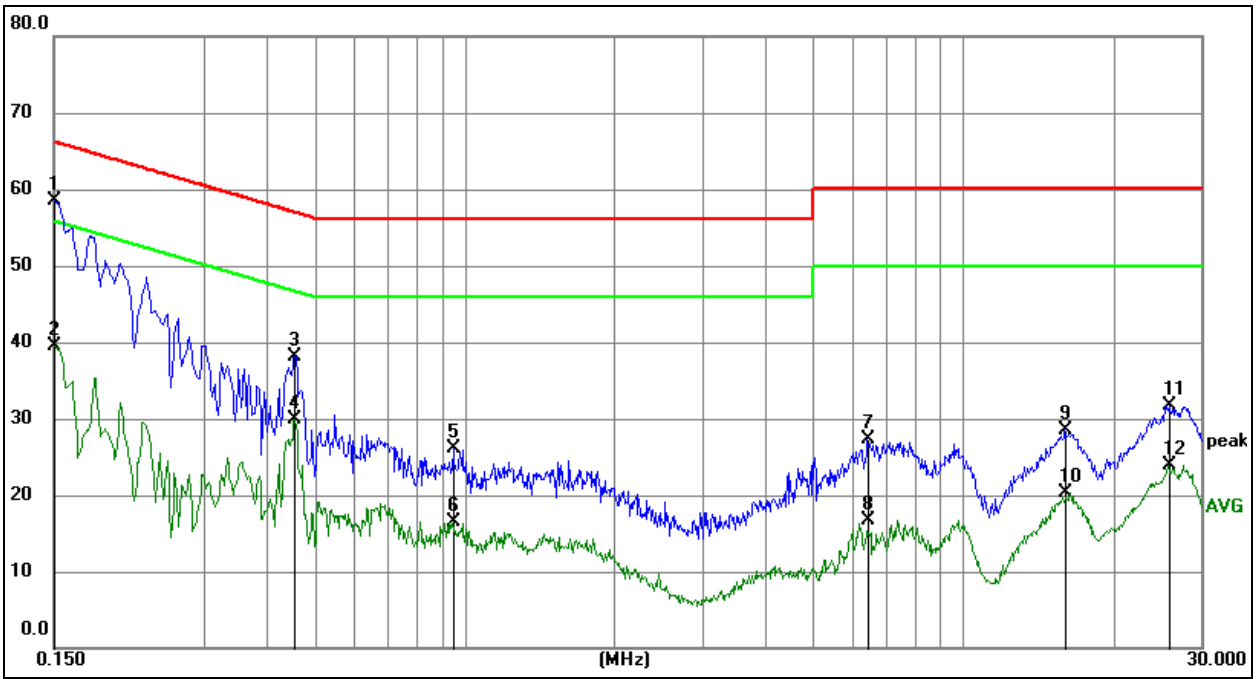
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	AC120V/60Hz
Test Mode:	Mode 4	Polarization :	L



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement=Reading Level+ Correct Factor
4. Over= Measurement-Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz		dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	46.72	10.18	56.90	66.00	-9.10	QP	
2		0.1500	29.53	10.18	39.71	56.00	-16.29	AVG	
3		0.4560	23.14	10.19	33.33	56.77	-23.44	QP	
4		0.4560	12.94	10.19	23.13	46.77	-23.64	AVG	
5		1.7610	15.18	10.12	25.30	56.00	-30.70	QP	
6		1.7610	4.31	10.12	14.43	46.00	-31.57	AVG	
7		6.9180	18.00	10.43	28.43	60.00	-31.57	QP	
8		6.9180	8.46	10.43	18.89	50.00	-31.11	AVG	
9		15.6975	19.41	10.41	29.82	60.00	-30.18	QP	
10		15.6975	11.56	10.41	21.97	50.00	-28.03	AVG	
11		25.9305	21.67	10.45	32.12	60.00	-27.88	QP	
12		25.9305	13.14	10.45	23.59	50.00	-26.41	AVG	

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	AC120V/60Hz
Test Mode:	Mode 4	Polarization :	N



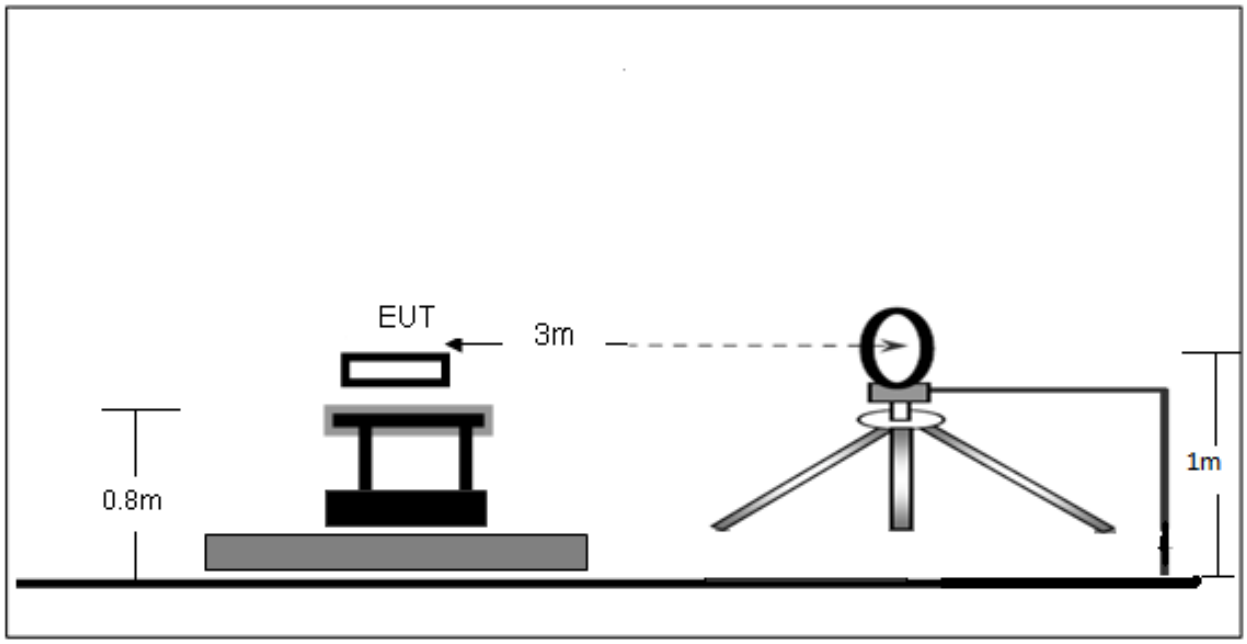
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement=Reading Level+ Correct Factor
4. Over= Measurement-Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz		dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	48.38	10.18	58.56	66.00	-7.44	QP	
2		0.1500	29.28	10.18	39.46	56.00	-16.54	AVG	
3		0.4560	28.00	10.19	38.19	56.77	-18.58	QP	
4		0.4560	19.77	10.19	29.96	46.77	-16.81	AVG	
5		0.9510	15.83	10.21	26.04	56.00	-29.96	QP	
6		0.9510	6.38	10.21	16.59	46.00	-29.41	AVG	
7		6.4500	16.78	10.43	27.21	60.00	-32.79	QP	
8		6.4500	6.18	10.43	16.61	50.00	-33.39	AVG	
9		16.0080	18.15	10.42	28.57	60.00	-31.43	QP	
10		16.0080	9.93	10.42	20.35	50.00	-29.65	AVG	
11		25.9890	21.34	10.45	31.79	60.00	-28.21	QP	
12		25.9890	13.36	10.45	23.81	50.00	-26.19	AVG	

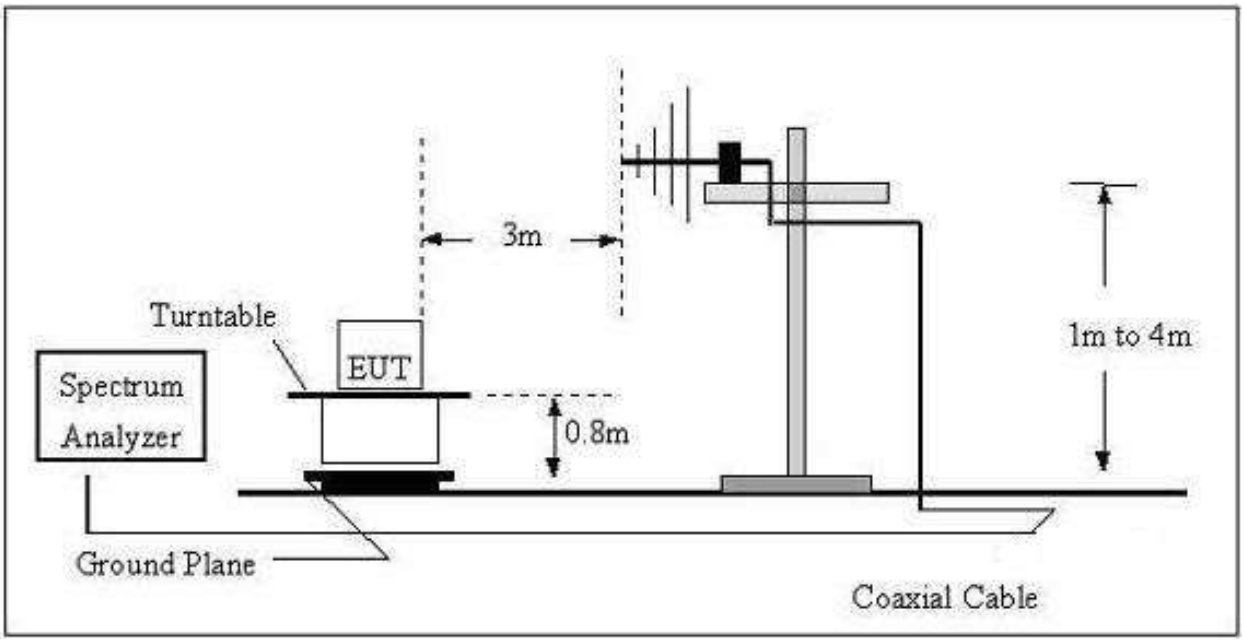
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

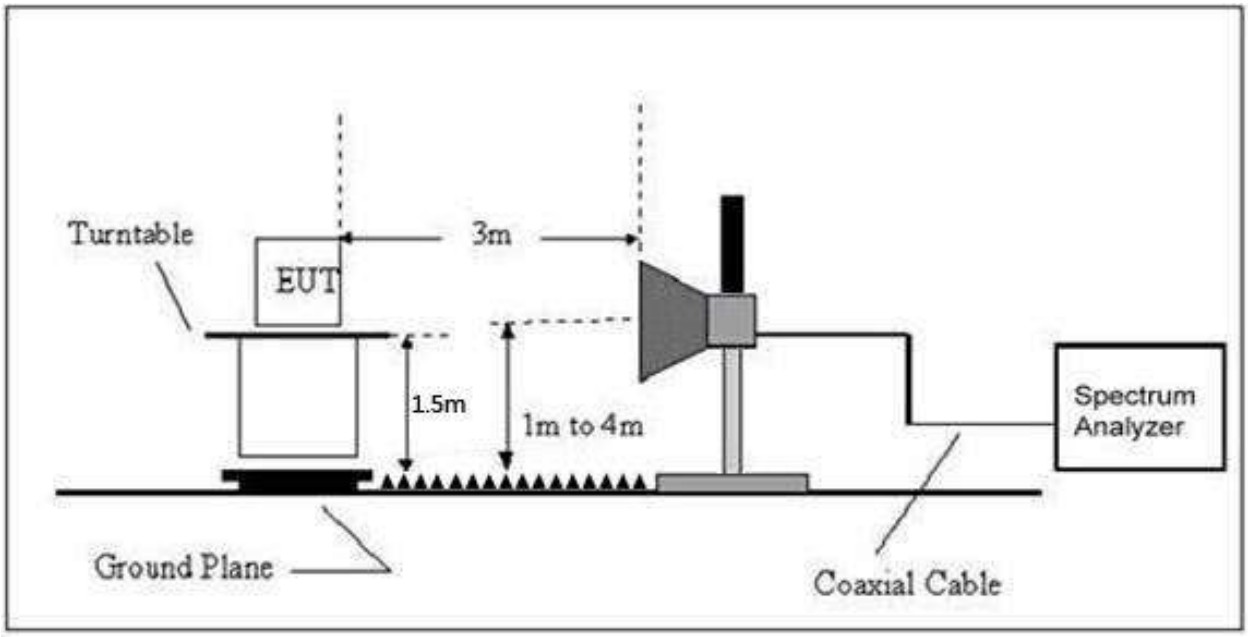
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



7.2 Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency	Field Strength	Distance	Field Strength Limit at 3m Distance	
(MHz)	uV/m	(m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

Limits Of Radiated Emission Measurement (Above 1000MHz)

Frequency (MHz)	Limit (dBuV/m) (at 3M)	
	Peak	Average
Above 1000	74	54

Notes:
(1)The limit for radiated test was performed according to FCC PART 15C.
(2)The tighter limit applies at the band edges.
(3) Emission level (dBuV/m)=20log Emission level (uV/m).

7.3 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m.The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 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*lg(100 [kHz]/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.

7.4 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.

7.5 Test Result

Below 30MHz

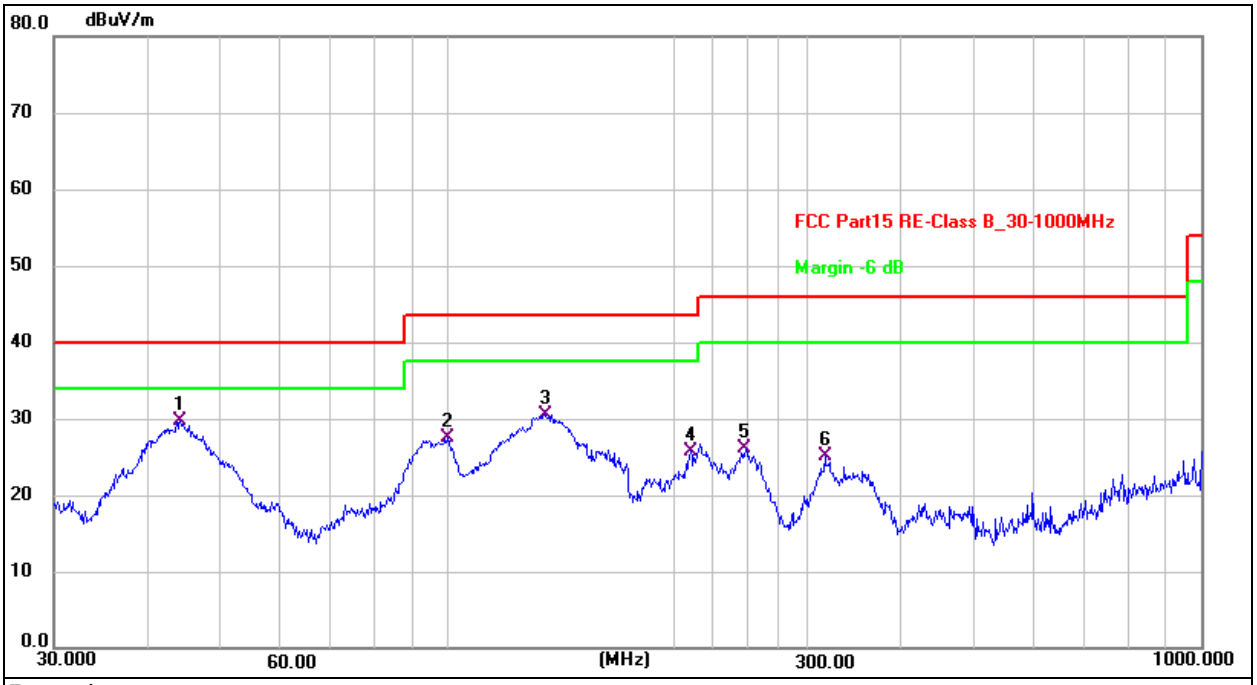
Temperature:	26℃	Relative Humidity:	24%
Pressure:	101 kPa	Test Voltage:	DC 7.7V
Test Mode:	Mode 4	Polarization:	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

Note:
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

Between 30MHz – 1GHz

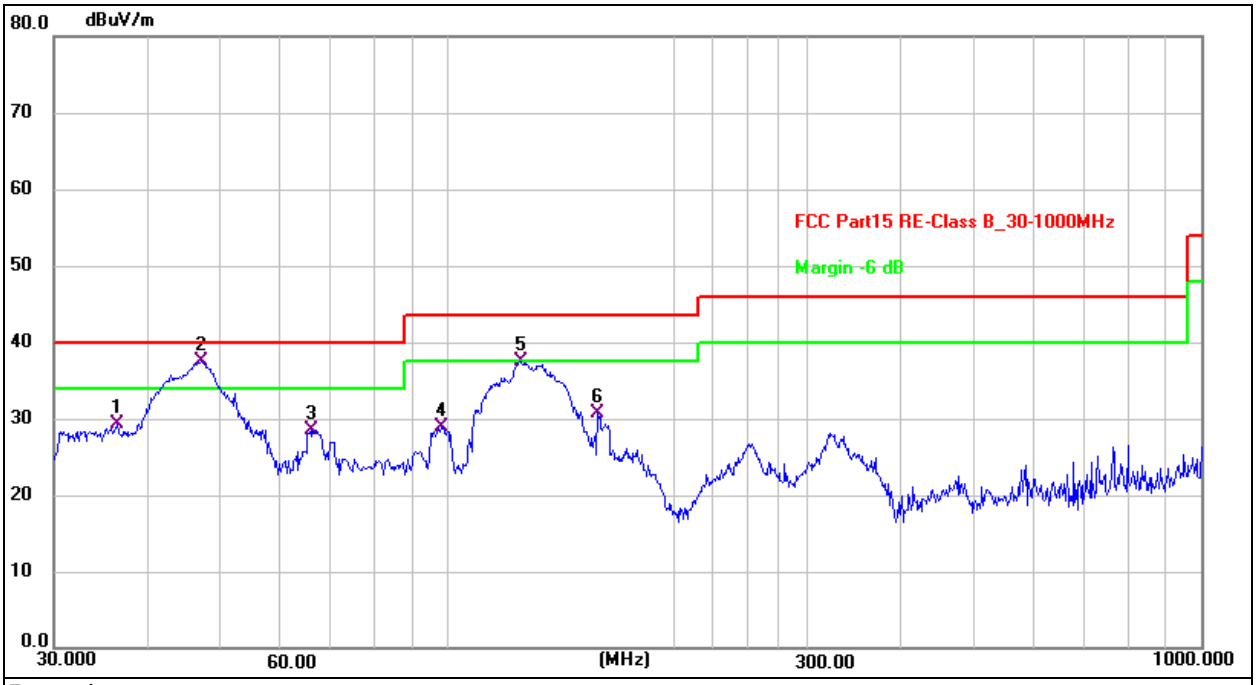
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Test Voltage :	DC 7.7V
Test Mode :	Mode 4	Polarization :	Horizontal



Remark:
1.Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement=Reading Level+ Correct Factor
3. Over= Measurement-Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	44.1202	38.13	-8.47	29.66	40.00	-10.34	QP
2	99.8777	40.09	-12.63	27.46	43.50	-16.04	QP
3	134.5592	40.50	-9.95	30.55	43.50	-12.95	QP
4	210.0482	37.75	-11.95	25.80	43.50	-17.70	QP
5	248.5519	37.18	-11.00	26.18	46.00	-19.82	QP
6	316.5890	33.68	-8.67	25.01	46.00	-20.99	QP

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Test Voltage :	DC 7.7V
Test Mode :	Mode 4	Polarization :	Vertical



Remark:
1.Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement=Reading Level+ Correct Factor
3. Over= Measurement-Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	36.3813	37.99	-8.67	29.32	40.00	-10.68	QP
2 *	46.9947	45.95	-8.42	37.53	40.00	-2.47	QP
3	65.8030	38.65	-10.15	28.50	40.00	-11.50	QP
4	98.1418	41.67	-12.68	28.99	43.50	-14.51	QP
5	125.0065	48.18	-10.68	37.50	43.50	-6.00	QP
6	158.1123	39.67	-8.87	30.80	43.50	-12.70	QP

Between 1GHz – 40GHz

Test Mode :	TX(5.1G) - 802.11a

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G							
Vertical	4434.138	73.26	-20.73	52.53	68.2	-15.67	Pk
Vertical	4434.138	59.48	-20.73	38.75	54	-15.25	AV
Vertical	10360.066	63.12	-9.36	53.76	68.2	-14.44	Pk
Vertical	10360.066	49.97	-9.36	40.61	54	-13.39	AV
Vertical	15540.118	63.42	-7.84	55.58	74	-18.42	Pk
Vertical	15540.118	49.88	-7.84	42.04	54	-11.96	AV
Horizontal	4434.187	72.57	-20.73	51.84	68.2	-16.36	Pk
Horizontal	4434.187	59.79	-20.73	39.06	54	-14.94	AV
Horizontal	10360.177	62.34	-9.36	52.98	68.2	-15.22	Pk
Horizontal	10360.177	49.69	-9.36	40.33	54	-13.67	AV
Horizontal	15540.116	62.64	-7.84	54.80	74	-19.20	Pk
Horizontal	15540.116	49.78	-7.84	41.94	54	-12.06	AV
middle Channel (5200 MHz)-Above 1G							
Vertical	4592.134	73.35	-20.42	52.93	74	-21.07	Pk
Vertical	4592.134	59.51	-20.42	39.10	54	-14.90	AV
Vertical	10400.151	63.32	-9.30	54.02	68.2	-14.18	Pk
Vertical	10400.151	49.27	-9.30	39.97	54	-14.03	AV
Vertical	15600.156	61.75	-7.82	53.93	74	-20.07	Pk
Vertical	15600.156	49.24	-7.82	41.42	54	-12.58	AV
Horizontal	4592.056	71.55	-20.42	51.14	74	-22.86	Pk
Horizontal	4592.056	59.37	-20.42	38.95	54	-15.05	AV
Horizontal	10400.079	61.94	-9.30	52.64	68.2	-15.56	Pk
Horizontal	10400.079	49.79	-9.30	40.49	54	-13.51	AV
Horizontal	15600.064	61.12	-7.82	53.30	74	-20.70	Pk
Horizontal	15600.064	49.64	-7.82	41.82	54	-12.18	AV
High Channel (5240 MHz)-Above 1G							
Vertical	4739.066	71.04	-20.12	50.92	74	-23.08	Pk
Vertical	4739.066	59.58	-20.12	39.45	54	-14.55	AV
Vertical	10480.032	63.85	-9.18	54.67	68.2	-13.53	Pk
Vertical	10480.032	49.59	-9.18	40.41	54	-13.59	AV
Vertical	15720.169	64.42	-7.78	56.64	74	-17.36	Pk
Vertical	15720.169	49.61	-7.78	41.83	54	-12.17	AV
Horizontal	4739.032	72.28	-20.12	52.16	74	-21.84	Pk
Horizontal	4739.032	59.05	-20.12	38.93	54	-15.07	AV
Horizontal	10480.019	61.47	-9.18	52.29	68.2	-15.91	Pk
Horizontal	10480.019	49.71	-9.18	40.53	54	-13.47	AV
Horizontal	15720.104	61.91	-7.78	54.13	74	-19.87	Pk
Horizontal	15720.104	49.64	-7.78	41.86	54	-12.14	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.1G) - 802.11n-HT20

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G							
Vertical	4434.125	72.28	-20.73	51.55	68.2	-16.65	Pk
Vertical	4434.125	59.55	-20.73	38.82	54	-15.18	AV
Vertical	10360.033	60.08	-9.36	50.72	68.2	-17.48	Pk
Vertical	10360.033	49.55	-9.36	40.19	54	-13.81	AV
Vertical	15540.130	63.79	-7.84	55.95	74	-18.05	Pk
Vertical	15540.130	49.44	-7.84	41.60	54	-12.40	AV
Horizontal	4434.006	70.78	-20.73	50.04	68.2	-18.16	Pk
Horizontal	4434.006	59.20	-20.73	38.47	54	-15.53	AV
Horizontal	10360.029	60.75	-9.36	51.39	68.2	-16.81	Pk
Horizontal	10360.029	49.68	-9.36	40.32	54	-13.68	AV
Horizontal	15540.165	60.82	-7.84	52.98	74	-21.02	Pk
Horizontal	15540.165	49.72	-7.84	41.88	54	-12.12	AV
middle Channel (5200 MHz)-Above 1G							
Vertical	4592.125	73.50	-20.42	53.08	74	-20.92	Pk
Vertical	4592.125	59.06	-20.42	38.65	54	-15.35	AV
Vertical	10400.174	60.91	-9.30	51.61	68.2	-16.59	Pk
Vertical	10400.174	49.92	-9.30	40.62	54	-13.38	AV
Vertical	15600.172	62.76	-7.82	54.94	74	-19.06	Pk
Vertical	15600.172	49.86	-7.82	42.04	54	-11.96	AV
Horizontal	4592.011	74.59	-20.42	54.17	74	-19.83	Pk
Horizontal	4592.011	59.47	-20.42	39.06	54	-14.94	AV
Horizontal	10400.133	63.51	-9.30	54.21	68.2	-13.99	Pk
Horizontal	10400.133	49.06	-9.30	39.76	54	-14.24	AV
Horizontal	15600.182	64.14	-7.82	56.32	74	-17.68	Pk
Horizontal	15600.182	49.75	-7.82	41.93	54	-12.07	AV
High Channel (5240 MHz)-Above 1G							
Vertical	4739.027	70.58	-20.12	50.46	74	-23.54	Pk
Vertical	4739.027	59.86	-20.12	39.73	54	-14.27	AV
Vertical	10480.143	63.68	-9.18	54.50	68.2	-13.70	Pk
Vertical	10480.143	49.28	-9.18	40.10	54	-13.90	AV
Vertical	15720.082	64.58	-7.78	56.80	74	-17.20	Pk
Vertical	15720.082	49.80	-7.78	42.02	54	-11.98	AV
Horizontal	4739.200	71.15	-20.12	51.03	74	-22.97	Pk
Horizontal	4739.200	59.54	-20.12	39.42	54	-14.58	AV
Horizontal	10480.156	60.98	-9.18	51.80	68.2	-16.40	Pk
Horizontal	10480.156	49.27	-9.18	40.09	54	-13.91	AV
Horizontal	15720.169	63.96	-7.78	56.18	74	-17.82	Pk
Horizontal	15720.169	49.68	-7.78	41.90	54	-12.10	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.1G) - 802.11n-HT40

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5190 MHz)-Above 1G							
Vertical	4434.065	70.97	-20.73	50.24	68.2	-17.96	Pk
Vertical	4434.065	59.91	-20.73	39.18	54	-14.82	AV
Vertical	10380.102	60.35	-9.33	51.02	68.2	-17.18	Pk
Vertical	10380.102	49.88	-9.33	40.55	54	-13.45	AV
Vertical	15570.014	61.03	-7.83	53.20	74	-20.80	Pk
Vertical	15570.014	49.55	-7.83	41.72	54	-12.28	AV
Horizontal	4434.149	71.67	-20.73	50.94	74	-23.06	Pk
Horizontal	4434.149	59.52	-20.73	38.79	54	-15.21	AV
Horizontal	10380.141	63.00	-9.33	53.67	68.2	-14.53	Pk
Horizontal	10380.141	49.96	-9.33	40.63	54	-13.37	AV
Horizontal	15570.031	64.31	-7.83	56.48	74	-17.52	Pk
Horizontal	15570.031	49.94	-7.83	42.11	54	-11.89	AV
High Channel (5230 MHz)-Above 1G							
Vertical	4739.118	74.27	-20.12	54.15	68.2	-14.05	Pk
Vertical	4739.118	59.32	-20.12	39.19	54	-14.81	AV
Vertical	10460.156	62.53	-9.21	53.32	68.2	-14.88	Pk
Vertical	10460.156	49.95	-9.21	40.74	54	-13.26	AV
Vertical	15690.143	64.65	-7.79	56.86	74	-17.14	Pk
Vertical	15690.143	49.43	-7.79	41.64	54	-12.36	AV
Horizontal	4739.132	73.55	-20.12	53.43	68.2	-14.77	Pk
Horizontal	4739.132	59.10	-20.12	38.98	54	-15.02	AV
Horizontal	10460.144	63.91	-9.21	54.70	68.2	-13.50	Pk
Horizontal	10460.144	49.48	-9.21	40.27	54	-13.73	AV
Horizontal	15690.049	64.70	-7.79	56.91	74	-17.09	Pk
Horizontal	15690.049	49.06	-7.79	41.27	54	-12.73	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode:	TX(5.1G) - 802.11ac-HT20

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G							
Vertical	4434.133	73.92	-20.73	53.19	68.2	-15.01	Pk
Vertical	4434.133	59.83	-20.73	39.10	54	-14.90	AV
Vertical	10360.075	61.09	-9.36	51.73	68.2	-16.47	Pk
Vertical	10360.075	49.24	-9.36	39.88	54	-14.12	AV
Vertical	15540.052	62.85	-7.84	55.01	74	-18.99	Pk
Vertical	15540.052	49.59	-7.84	41.75	54	-12.25	AV
Horizontal	4434.128	72.44	-20.73	51.71	68.2	-16.49	Pk
Horizontal	4434.128	59.72	-20.73	38.99	54	-15.01	AV
Horizontal	10360.146	62.36	-9.36	53.00	68.2	-15.20	Pk
Horizontal	10360.146	49.26	-9.36	39.90	54	-14.10	AV
Horizontal	15540.147	62.84	-7.84	55.00	74	-19.00	Pk
Horizontal	15540.147	49.88	-7.84	42.04	54	-11.96	AV
middle Channel (5200 MHz)-Above 1G							
Vertical	4592.184	71.45	-20.42	51.04	74	-22.96	Pk
Vertical	4592.184	59.15	-20.42	38.73	54	-15.27	AV
Vertical	10400.087	64.49	-9.30	55.19	68.2	-13.01	Pk
Vertical	10400.087	49.48	-9.30	40.18	54	-13.82	AV
Vertical	15600.101	64.76	-7.82	56.94	74	-17.06	Pk
Vertical	15600.101	49.65	-7.82	41.83	54	-12.17	AV
Horizontal	4592.012	73.45	-20.42	53.03	74	-20.97	Pk
Horizontal	4592.012	59.37	-20.42	38.95	54	-15.05	AV
Horizontal	10400.059	61.34	-9.30	52.04	68.2	-16.16	Pk
Horizontal	10400.059	49.22	-9.30	39.92	54	-14.08	AV
Horizontal	15600.080	61.32	-7.82	53.50	74	-20.50	Pk
Horizontal	15600.080	49.42	-7.82	41.60	54	-12.40	AV
High Channel (5240 MHz)-Above 1G							
Vertical	4739.148	70.13	-20.12	50.01	74	-23.99	Pk
Vertical	4739.148	59.41	-20.12	39.29	54	-14.71	AV
Vertical	10480.066	64.78	-9.18	55.60	68.2	-12.60	Pk
Vertical	10480.066	49.23	-9.18	40.05	54	-13.95	AV
Vertical	15720.178	63.34	-7.78	55.56	74	-18.44	Pk
Vertical	15720.178	49.61	-7.78	41.83	54	-12.17	AV
Horizontal	4739.045	74.67	-20.12	54.55	74	-19.45	Pk
Horizontal	4739.045	59.27	-20.12	39.14	54	-14.86	AV
Horizontal	10480.081	64.78	-9.18	55.60	68.2	-12.60	Pk
Horizontal	10480.081	49.27	-9.18	40.09	54	-13.91	AV
Horizontal	15720.098	63.46	-7.78	55.68	74	-18.32	Pk
Horizontal	15720.098	49.78	-7.78	42.00	54	-12.00	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode:	TX(5.1G) - 802.11ac-HT40

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5190 MHz)-Above 1G							
Vertical	4434.086	72.36	-20.73	51.62	68.2	-16.58	Pk
Vertical	4434.086	59.91	-20.73	39.18	54	-14.82	AV
Vertical	10380.191	62.42	-9.33	53.09	68.2	-15.11	Pk
Vertical	10380.191	49.42	-9.33	40.09	54	-13.91	AV
Vertical	15570.039	61.80	-7.83	53.97	74	-20.03	Pk
Vertical	15570.039	49.99	-7.83	42.16	54	-11.84	AV
Horizontal	4434.117	73.54	-20.73	52.81	74	-21.19	Pk
Horizontal	4434.117	59.40	-20.73	38.67	54	-15.33	AV
Horizontal	10380.187	63.27	-9.33	53.94	68.2	-14.26	Pk
Horizontal	10380.187	49.79	-9.33	40.46	54	-13.54	AV
Horizontal	15570.089	62.19	-7.83	54.36	74	-19.64	Pk
Horizontal	15570.089	49.05	-7.83	41.22	54	-12.78	AV
middle Channel (5230 MHz)-Above 1G							
Vertical	4739.035	74.65	-20.12	54.52	68.2	-13.68	Pk
Vertical	4739.035	59.45	-20.12	39.33	54	-14.67	AV
Vertical	10460.020	64.65	-9.21	55.44	68.2	-12.76	Pk
Vertical	10460.020	49.09	-9.21	39.88	54	-14.12	AV
Vertical	15690.175	64.47	-7.79	56.68	74	-17.32	Pk
Vertical	15690.175	49.67	-7.79	41.88	54	-12.12	AV
Horizontal	4739.141	74.81	-20.12	54.69	68.2	-13.51	Pk
Horizontal	4739.141	59.01	-20.12	38.89	54	-15.11	AV
Horizontal	10460.014	62.84	-9.21	53.63	68.2	-14.57	Pk
Horizontal	10460.014	49.43	-9.21	40.22	54	-13.78	AV
Horizontal	15690.115	60.29	-7.79	52.50	74	-21.50	Pk
Horizontal	15690.115	49.22	-7.79	41.43	54	-12.57	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode:	TX(5.1G) - 802.11ac-HT80

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
(5210 MHz)-Above 1G							
Vertical	4434.176	72.28	-20.73	51.55	68.2	-16.65	Pk
Vertical	4434.176	59.05	-20.73	38.32	54	-15.68	AV
Vertical	10420.129	61.08	-9.27	51.81	68.2	-16.39	Pk
Vertical	10420.129	49.13	-9.27	39.86	54	-14.14	AV
Vertical	15630.128	64.40	-7.81	56.59	74	-17.41	Pk
Vertical	15630.128	49.94	-7.81	42.13	54	-11.87	AV
Horizontal	4434.174	72.14	-20.73	51.41	68.2	-16.79	Pk
Horizontal	4434.174	59.60	-20.73	38.87	54	-15.13	AV
Horizontal	10420.053	61.13	-9.27	51.86	68.2	-16.34	Pk
Horizontal	10420.053	49.20	-9.27	39.93	54	-14.07	AV
Horizontal	15630.102	62.82	-7.81	55.01	74	-18.99	Pk
Horizontal	15630.102	49.56	-7.81	41.75	54	-12.25	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

- ☒Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
- All the modes 802.11a/n/ac has been tested and the worst result 802.11n20 recorded as below:

Test mode: 802.11n20 Frequency(MHz): 5180

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
5149.650	H	67.78	74	49.76	54
5149.925	V	63.43	74	46.51	54

Test mode: 802.11n20 Frequency(MHz): 5240

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2372.813	H	57.07	74	45.36	54
2372.313	V	55.02	74	43.29	54

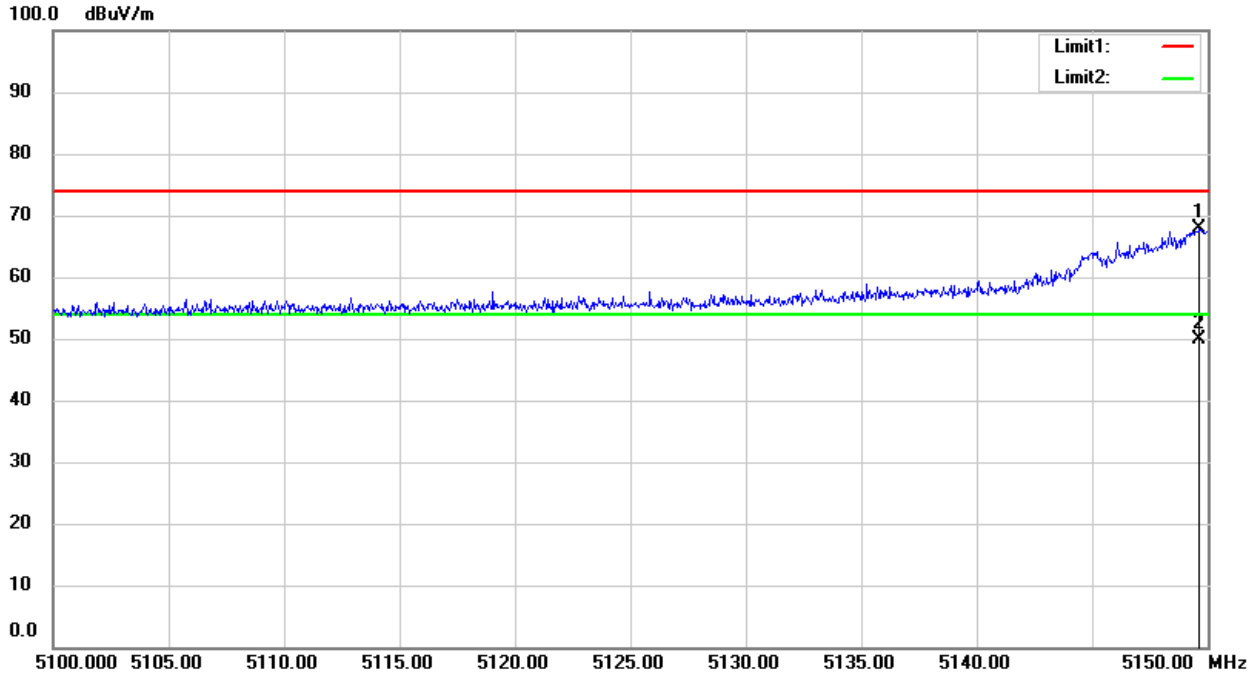
Note: (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor.
(3) Correct Factor= Ant_F + Cab_L - Preamp

U-NII - 1

Test Model Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)

☐802.11a ☒802.11n(HT20) ☐802.11n(HT40)

☒5180 ☐5200 ☐5240 Ant.Pol H

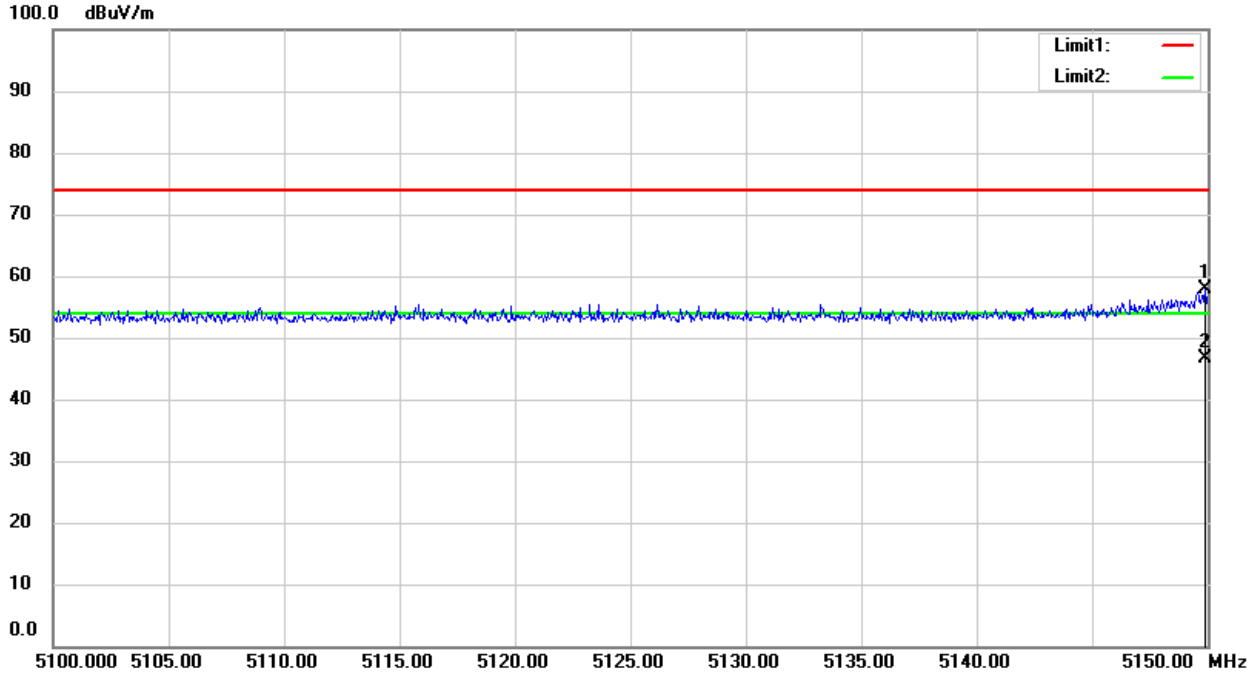


U-NII - 1

Test Model Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)

☐802.11a ☒802.11n(HT20) ☐802.11n(HT40)

☒5180 ☐5200 ☐5240 Ant.Pol V

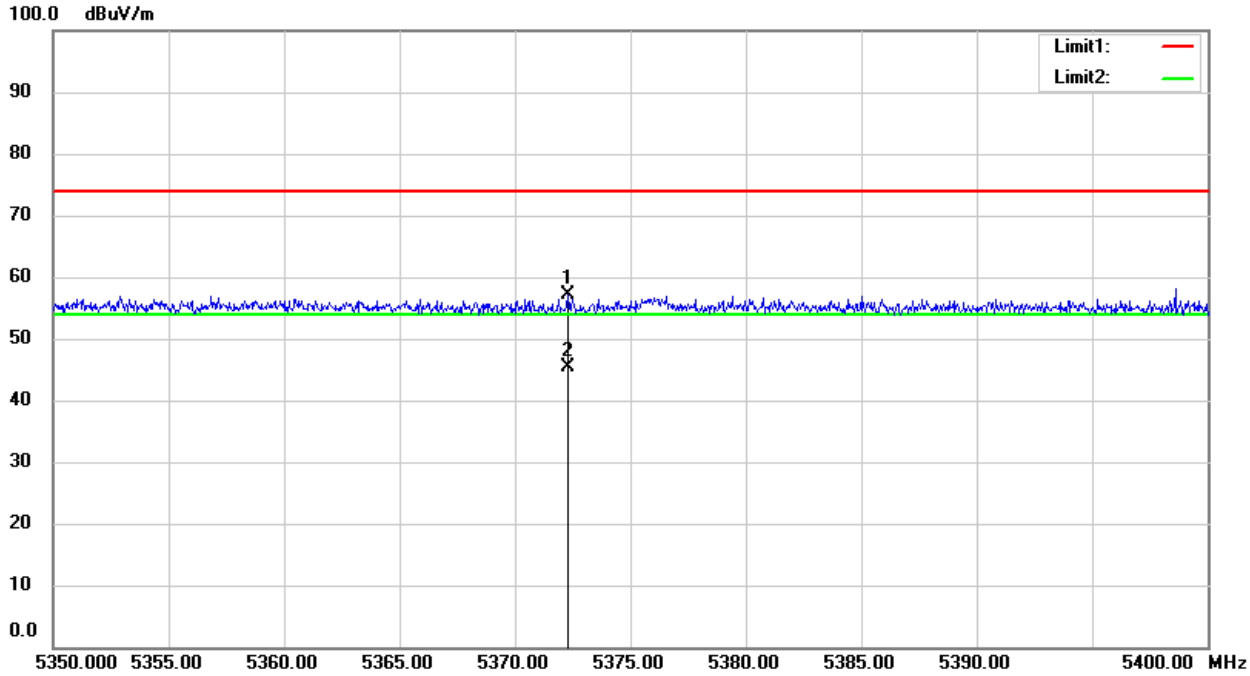


U-NII - 1

Test Model Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz)

☐802.11a ☒802.11n(HT20) ☐802.11n(HT40)

☐5180 ☐5200 ☒5240 Ant.Pol H

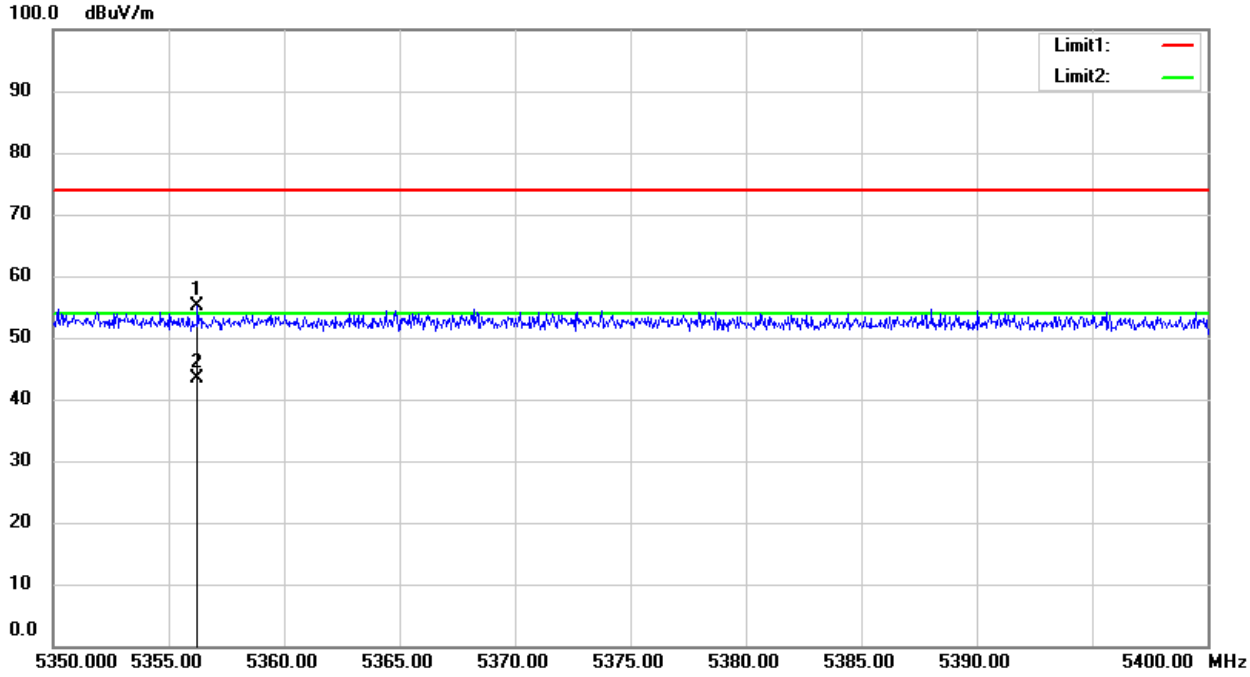


U-NII - 1

Test Model Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz)

☐802.11a ☒802.11n(HT20) ☐802.11n(HT40)

☐5180 ☐5200 ☒5240 Ant.Pol V



Test Mode:	TX(5.8G) - 802.11a

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G							
Vertical	4679.073	73.36	-20.24	53.12	74	-20.88	Pk
Vertical	4679.073	59.02	-20.24	38.78	54	-15.22	AV
Vertical	11490.006	62.31	-8.79	53.52	68.2	-14.68	Pk
Vertical	11490.006	49.33	-8.79	40.54	54	-13.46	AV
Vertical	17235.185	58.06	-3.18	54.88	68.2	-13.32	Pk
Vertical	17235.185	44.08	-3.18	40.90	54	-13.10	AV
Horizontal	4679.044	72.53	-20.73	51.80	74	-22.20	Pk
Horizontal	4679.044	59.56	-20.73	38.83	54	-15.17	AV
Horizontal	11490.145	64.84	-8.79	56.05	68.2	-12.15	Pk
Horizontal	11490.145	49.39	-8.79	40.60	54	-13.40	AV
Horizontal	17235.172	56.79	-3.18	53.61	68.2	-14.59	Pk
Horizontal	17235.172	45.00	-3.18	41.82	54	-12.18	AV
middle Channel (5785 MHz)-Above 1G							
Vertical	4592.086	73.19	-20.42	52.77	74	-21.23	Pk
Vertical	4592.086	59.48	-20.42	39.06	54	-14.94	AV
Vertical	11570.198	60.03	-8.86	51.17	68.2	-17.03	Pk
Vertical	11570.198	49.13	-8.86	40.27	54	-13.73	AV
Vertical	17355.164	58.55	-2.52	56.03	68.2	-12.17	Pk
Vertical	17355.164	44.16	-2.52	41.64	54	-12.36	AV
Horizontal	4592.074	74.83	-20.42	54.41	74	-19.59	Pk
Horizontal	4592.074	59.41	-20.42	38.99	54	-15.01	AV
Horizontal	11570.025	62.90	-8.86	54.04	68.2	-14.16	Pk
Horizontal	11570.025	49.67	-8.86	40.81	54	-13.19	AV
Horizontal	17355.157	57.99	-2.52	55.47	68.2	-12.73	Pk
Horizontal	17355.157	44.90	-2.52	42.38	54	-11.62	AV
High Channel (5825 MHz)-Above 1G							
Vertical	6039.057	74.84	-18.93	55.90	68.2	-12.30	Pk
Vertical	6039.057	59.46	-18.93	40.53	54	-13.47	AV
Vertical	11650.042	60.08	-8.92	51.16	74	-22.84	Pk
Vertical	11650.042	49.61	-8.92	40.69	54	-13.31	AV
Vertical	17475.043	59.77	-1.86	57.91	68.2	-10.29	Pk
Vertical	17475.043	44.37	-1.86	42.51	54	-11.49	AV
Horizontal	6039.124	70.96	-18.93	52.03	68.2	-16.17	Pk
Horizontal	6039.124	59.30	-18.93	40.37	54	-13.63	AV
Horizontal	11650.187	61.41	-8.92	52.49	74	-21.51	Pk
Horizontal	11650.187	49.61	-8.92	40.69	54	-13.31	AV
Horizontal	17475.080	58.56	-1.86	56.70	68.2	-11.50	Pk
Horizontal	17475.080	44.40	-1.86	42.54	54	-11.46	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode:	TX(5.8G) - 802.11n-HT20

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G							
Vertical	4679.021	74.18	-20.24	53.94	74	-20.06	Pk
Vertical	4679.021	59.78	-20.24	39.54	54	-14.46	AV
Vertical	11490.004	63.42	-8.79	54.63	68.2	-13.57	Pk
Vertical	11490.004	49.25	-8.79	40.46	54	-13.54	AV
Vertical	17235.035	55.55	-3.18	52.37	68.2	-15.83	Pk
Vertical	17235.035	44.46	-3.18	41.28	54	-12.72	AV
Horizontal	4679.054	74.15	-20.24	53.91	74	-20.09	Pk
Horizontal	4679.054	59.03	-20.24	38.79	54	-15.21	AV
Horizontal	11490.036	60.06	-8.79	51.27	68.2	-16.93	Pk
Horizontal	11490.036	49.08	-8.79	40.29	54	-13.71	AV
Horizontal	17235.124	56.13	-3.18	52.95	68.2	-15.25	Pk
Horizontal	17235.124	44.62	-3.18	41.44	54	-12.56	AV
middle Channel (5785 MHz)-Above 1G							
Vertical	4592.101	70.50	-20.42	50.09	74	-23.91	Pk
Vertical	4592.101	59.16	-20.42	38.74	54	-15.26	AV
Vertical	11570.072	61.50	-8.86	52.64	68.2	-15.56	Pk
Vertical	11570.072	49.71	-8.86	40.85	54	-13.15	AV
Vertical	17355.184	55.99	-2.52	53.47	68.2	-14.73	Pk
Vertical	17355.184	44.38	-2.52	41.86	54	-12.14	AV
Horizontal	4592.061	71.69	-20.42	51.28	74	-22.72	Pk
Horizontal	4592.061	59.45	-20.42	39.03	54	-14.97	AV
Horizontal	11570.083	62.56	-8.86	53.70	68.2	-14.50	Pk
Horizontal	11570.083	49.27	-8.86	40.41	54	-13.59	AV
Horizontal	17355.141	58.29	-2.52	55.77	68.2	-12.43	Pk
Horizontal	17355.141	44.48	-2.52	41.96	54	-12.04	AV
High Channel (5825 MHz)-Above 1G							
Vertical	6039.015	72.71	-18.93	53.77	68.2	-14.43	Pk
Vertical	6039.015	59.65	-18.93	40.72	54	-13.28	AV
Vertical	11650.134	61.90	-8.92	52.98	74	-21.02	Pk
Vertical	11650.134	49.93	-8.92	41.01	54	-12.99	AV
Vertical	17475.048	59.46	-1.86	57.60	68.2	-10.60	Pk
Vertical	17475.048	44.58	-1.86	42.72	54	-11.28	AV
Horizontal	6039.006	70.84	-18.93	51.91	68.2	-16.29	Pk
Horizontal	6039.006	59.24	-18.93	40.31	54	-13.69	AV
Horizontal	11650.019	60.71	-8.92	51.79	74	-22.21	Pk
Horizontal	11650.019	49.82	-8.92	40.90	54	-13.10	AV
Horizontal	17475.153	59.89	-1.86	58.03	68.2	-10.17	Pk
Horizontal	17475.153	44.11	-1.86	42.25	54	-11.75	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode:	TX(5.8G) - 802.11n-HT40

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5755 MHz)-Above 1G							
Vertical	4679.194	70.58	-20.24	50.34	74	-23.66	AV
Vertical	4679.194	59.22	-20.24	38.98	54	-15.02	Pk
Vertical	11510.189	61.65	-8.81	52.84	74	-21.16	AV
Vertical	11510.189	49.02	-8.81	40.21	54	-13.79	Pk
Vertical	17265.004	59.41	-3.01	56.40	68.2	-11.80	AV
Horizontal	17265.004	44.16	-3.01	41.15	54	-12.85	Pk
Horizontal	4679.128	70.71	-20.24	50.47	74	-23.53	AV
Horizontal	4679.128	59.43	-20.24	39.19	54	-14.81	Pk
Horizontal	11510.149	62.14	-8.81	53.33	74	-20.67	AV
Horizontal	11510.149	49.52	-8.81	40.71	54	-13.29	Pk
Horizontal	17265.139	57.10	-3.01	54.09	68.2	-14.11	AV
Vertical	17265.139	44.51	-3.01	41.50	54	-12.50	AV
middle Channel (5795 MHz)-Above 1G							
Vertical	6039.050	72.68	-18.93	53.74	68.2	-14.46	Pk
Vertical	6039.050	59.69	-18.93	40.76	54	-13.24	AV
Vertical	11590.193	60.62	-8.87	51.75	74	-22.25	Pk
Vertical	11590.193	49.35	-8.87	40.48	54	-13.52	AV
Vertical	17385.144	55.57	-2.35	53.22	68.2	-14.98	Pk
Vertical	17385.144	44.95	-2.35	42.60	54	-11.40	AV
Horizontal	6039.065	71.16	-18.93	52.23	68.2	-15.97	Pk
Horizontal	6039.065	59.94	-18.93	41.01	54	-12.99	AV
Horizontal	11590.056	61.59	-8.87	52.72	74	-21.28	Pk
Horizontal	11590.056	49.97	-8.87	41.10	54	-12.90	AV
Horizontal	17385.012	56.73	-2.35	54.38	68.2	-13.82	Pk
Horizontal	17385.012	44.88	-2.35	42.53	54	-11.47	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode:	TX(5.8G) - 802.11ac-HT20

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G							
Vertical	4679.011	73.30	-20.24	53.05	74	-20.95	Pk
Vertical	4679.011	59.02	-20.24	38.77	54	-15.23	AV
Vertical	11490.111	60.14	-8.79	51.35	68.2	-16.85	Pk
Vertical	11490.111	49.80	-8.79	41.01	54	-12.99	AV
Vertical	17235.038	55.58	-3.18	52.40	68.2	-15.80	Pk
Vertical	17235.038	44.63	-3.18	41.45	54	-12.55	AV
Horizontal	4679.108	70.54	-20.24	50.30	74	-23.70	Pk
Horizontal	4679.108	59.76	-20.24	39.52	54	-14.48	AV
Horizontal	11490.092	61.24	-8.79	52.45	68.2	-15.75	Pk
Horizontal	11490.092	49.20	-8.79	40.41	54	-13.59	AV
Horizontal	17235.007	56.65	-3.18	53.47	68.2	-14.73	Pk
Horizontal	17235.007	44.98	-3.18	41.80	54	-12.20	AV
middle Channel (5785 MHz)-Above 1G							
Vertical	4592.096	71.66	-20.42	51.25	74	-22.75	Pk
Vertical	4592.096	59.75	-20.42	39.33	54	-14.67	AV
Vertical	11570.062	63.64	-8.86	54.78	68.2	-13.42	Pk
Vertical	11570.062	49.12	-8.86	40.26	54	-13.74	AV
Vertical	17355.119	55.14	-2.52	52.62	68.2	-15.58	Pk
Vertical	17355.119	44.49	-2.52	41.97	54	-12.03	AV
Horizontal	4592.144	70.63	-20.42	50.21	74	-23.79	Pk
Horizontal	4592.144	59.38	-20.42	38.97	54	-15.03	AV
Horizontal	11570.111	62.94	-8.86	54.08	68.2	-14.12	Pk
Horizontal	11570.111	49.44	-8.86	40.58	54	-13.42	AV
Horizontal	17355.176	57.67	-2.52	55.15	68.2	-13.05	Pk
Horizontal	17355.176	44.55	-2.52	42.03	54	-11.97	AV
High Channel (5825 MHz)-Above 1G							
Vertical	6039.069	71.77	-18.93	52.84	68.2	-15.36	Pk
Vertical	6039.069	59.98	-18.93	41.05	54	-12.95	AV
Vertical	11650.162	63.76	-8.92	54.84	74	-19.16	Pk
Vertical	11650.162	49.13	-8.92	40.21	54	-13.79	AV
Vertical	17475.171	55.65	-1.86	53.79	68.2	-14.41	Pk
Vertical	17475.171	44.24	-1.86	42.38	54	-11.62	AV
Horizontal	6039.186	72.22	-18.93	53.29	68.2	-14.91	Pk
Horizontal	6039.186	59.10	-18.93	40.17	54	-13.83	AV
Horizontal	11650.196	61.10	-8.92	52.18	74	-21.82	Pk
Horizontal	11650.196	49.93	-8.92	41.01	54	-12.99	AV
Horizontal	17475.092	57.57	-1.86	55.71	68.2	-12.49	Pk
Horizontal	17475.092	44.25	-1.86	42.39	54	-11.61	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode:	TX(5.8G) - 802.11ac-HT40

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5755 MHz)-Above 1G							
Vertical	4679.155	70.16	-20.24	49.92	74	-24.08	Pk
Vertical	4679.155	59.05	-20.24	38.80	54	-15.20	AV
Vertical	11510.062	62.31	-8.81	53.50	74	-20.50	Pk
Vertical	11510.062	49.34	-8.81	40.53	54	-13.47	AV
Vertical	17265.180	57.10	-3.01	54.09	68.2	-14.11	Pk
Vertical	17265.180	44.13	-3.01	41.12	54	-12.88	AV
Horizontal	4679.109	70.95	-20.24	50.71	74	-23.29	Pk
Horizontal	4679.109	59.77	-20.24	39.53	54	-14.47	AV
Horizontal	11510.002	61.26	-8.81	52.45	74	-21.55	Pk
Horizontal	11510.002	49.57	-8.81	40.76	54	-13.24	AV
Horizontal	17265.072	59.13	-3.01	56.12	68.2	-12.08	Pk
Horizontal	17265.072	44.16	-3.01	41.15	54	-12.85	AV
middle Channel (5795 MHz)-Above 1G							
Vertical	6039.130	70.82	-18.93	51.89	68.2	-16.31	Pk
Vertical	6039.130	59.05	-18.93	40.12	54	-13.88	AV
Vertical	11590.117	61.30	-8.87	52.43	74	-21.57	Pk
Vertical	11590.117	49.12	-8.87	40.25	54	-13.75	AV
Vertical	17385.045	59.69	-2.35	57.34	68.2	-10.86	Pk
Vertical	17385.045	44.63	-2.35	42.28	54	-11.72	AV
Horizontal	6039.094	70.92	-18.93	51.98	68.2	-16.22	Pk
Horizontal	6039.094	59.07	-18.93	40.14	54	-13.86	AV
Horizontal	11590.122	62.20	-8.87	53.33	74	-20.67	Pk
Horizontal	11590.122	49.62	-8.87	40.75	54	-13.25	AV
Horizontal	17385.054	56.69	-2.35	54.34	68.2	-13.86	Pk
Horizontal	17385.054	44.71	-2.35	42.36	54	-11.64	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

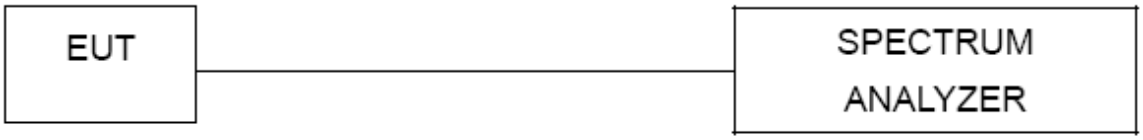
Test Mode:	TX(5.8G) - 802.11ac-HT80

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
(5775 MHz)-Above 1G							
Vertical	4679.041	71.61	-20.24	51.37	74	-22.63	Pk
Vertical	4679.041	59.70	-20.24	39.46	54	-14.54	AV
Vertical	11550.086	61.65	-8.84	52.81	74	-21.19	Pk
Vertical	11550.086	49.49	-8.84	40.65	54	-13.35	AV
Vertical	17325.159	59.86	-2.68	57.18	68.2	-11.02	Pk
Vertical	17325.159	44.87	-2.68	42.19	54	-11.81	AV
Horizontal	4679.095	72.54	-20.24	52.30	74	-21.70	Pk
Horizontal	4679.095	59.84	-20.24	39.59	54	-14.41	AV
Horizontal	11550.008	60.73	-8.84	51.89	74	-22.11	Pk
Horizontal	11550.008	49.96	-8.84	41.12	54	-12.88	AV
Horizontal	17325.076	58.68	-2.68	56.00	68.2	-12.20	Pk
Horizontal	17325.076	44.86	-2.68	42.18	54	-11.82	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

8. Power Spectral Density Test

8.1 Block Diagram Of Test Setup



8.2 Limit

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.

For the band 5.725-5.85 GHz

(3)For the band 5.725-5.85 GHz, 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.

8.3 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 ≥ 1/T, where T is defined in section II.B.l.a).
b) Set VBW ≥ 3 RBW.
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/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 10log(1MHz/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.

8.4 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.

8.5 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 7.7V
Test Mode:	(5180-5240MHz)		

Condition	Mode	Frequency (MHz)	Conducted PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5180	-5.12	11	Pass
NVNT	a	5200	-4.49	11	Pass
NVNT	a	5240	-5.41	11	Pass
NVNT	n20	5180	-5.48	11	Pass
NVNT	n20	5200	-4.8	11	Pass
NVNT	n20	5240	-5.78	11	Pass
NVNT	n40	5190	-11.32	11	Pass
NVNT	n40	5230	-6.13	11	Pass
NVNT	ac20	5180	-5.48	11	Pass
NVNT	ac20	5200	-4.83	11	Pass
NVNT	ac20	5240	-5.65	11	Pass
NVNT	ac40	5190	-10.96	11	Pass
NVNT	ac40	5230	-7.05	11	Pass
NVNT	ac80	5210	-12.34	11	Pass

Test Graphs

PSD NVNT a 5180MHz Ant1

PSD NVNT a 5200MHz Ant1

PSD NVNT a 5240MHz Ant1

PSD NVNT n20 5180MHz Ant1

PSD NVNT n20 5200MHz Ant1

PSD NVNT n20 5240MHz Ant1

PSD NVNT n40 5190MHz Ant1

PSD NVNT n40 5230MHz Ant1

PSD NVNT ac20 5180MHz Ant1

PSD NVNT ac20 5200MHz Ant1

PSD NVNT ac20 5240MHz Ant1

PSD NVNT ac40 5190MHz Ant1

PSD NVNT ac40 5230MHz Ant1

PSD NVNT ac80 5210MHz Ant1

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 7.7V
Test Mode:	(5745-5825MHz)		

Condition	Mode	Frequency (MHz)	Conducted PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5745	-8.58	30	Pass
NVNT	a	5785	-7.96	30	Pass
NVNT	a	5825	-8.27	30	Pass
NVNT	n20	5745	-8.65	30	Pass
NVNT	n20	5785	-8.45	30	Pass
NVNT	n20	5825	-9.52	30	Pass
NVNT	n40	5755	-10.66	30	Pass
NVNT	n40	5795	-10.81	30	Pass
NVNT	ac20	5745	-7.71	30	Pass
NVNT	ac20	5785	-9.29	30	Pass
NVNT	ac20	5825	-8.99	30	Pass
NVNT	ac40	5755	-9.31	30	Pass
NVNT	ac40	5795	-11.12	30	Pass
NVNT	ac80	5775	-15.06	30	Pass

PSD NVNT a 5745MHz Ant1

PSD NVNT a 5785MHz Ant1

PSD NVNT a 5825MHz Ant1

PSD NVNT n20 5745MHz Ant1

PSD NVNT n20 5785MHz Ant1

PSD NVNT n20 5825MHz Ant1

PSD NVNT n40 5755MHz Ant1

PSD NVNT n40 5795MHz Ant1

PSD NVNT ac20 5745MHz Ant1

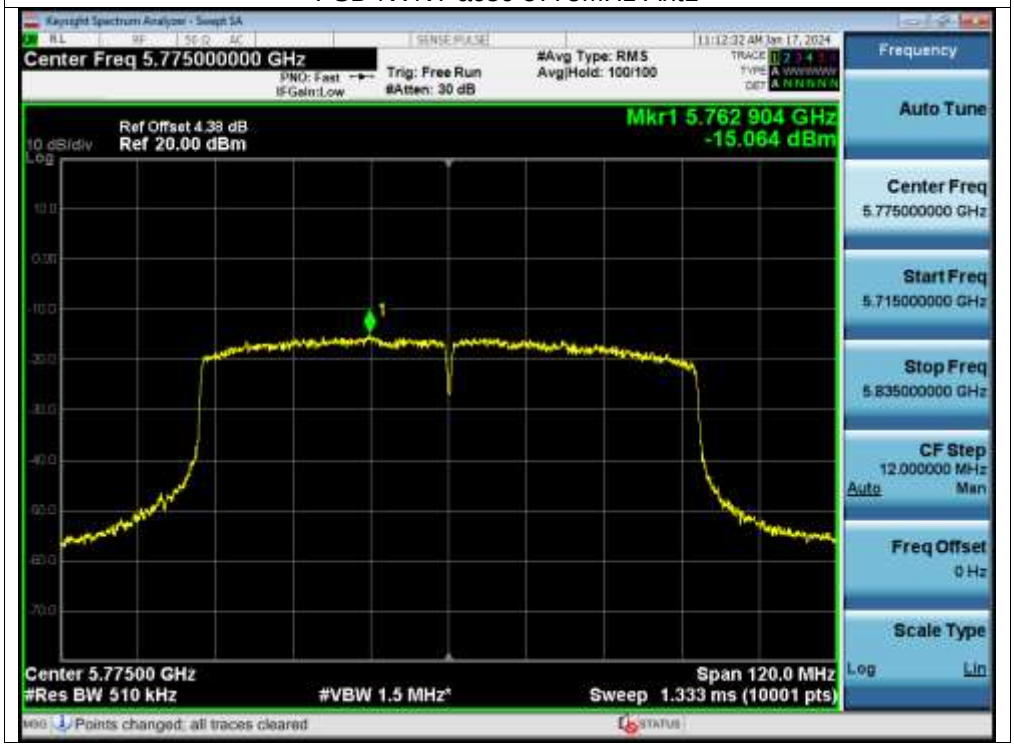
PSD NVNT ac20 5785MHz Ant1

PSD NVNT ac20 5825MHz Ant1

PSD NVNT ac40 5755MHz Ant1

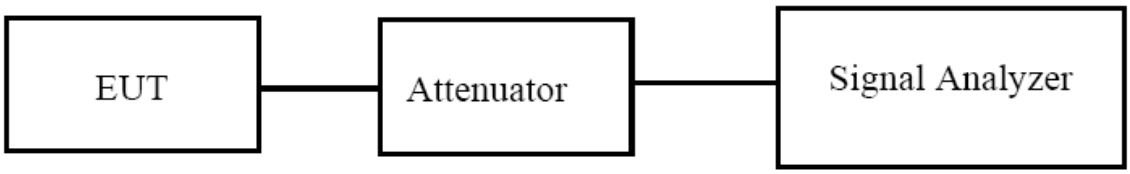
PSD NVNT ac40 5795MHz Ant1

PSD NVNT ac80 5775MHz Ant1



9. 26dB & 6dB & 99% Emission Bandwidth

9.1 Block Diagram Of Test Setup



9.2 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 are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power
is integrated over the full reference bandwidth.

9.3 Test Procedure

a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
The following procedure shall be used for measuring (99 %) power bandwidth:
1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW ≥ 3 · RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

9.4 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.

9.5 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 7.7V
Test Mode:	(5180-5240MHz)		

Condition	Mode	Frequency (MHz)	-26 dB Bandwidth (MHz)	Verdict
NVNT	a	5180	18.728	Pass
NVNT	a	5200	19.692	Pass
NVNT	a	5240	20.304	Pass
NVNT	n20	5180	20.140	Pass
NVNT	n20	5200	19.982	Pass
NVNT	n20	5240	20.170	Pass
NVNT	n40	5190	39.486	Pass
NVNT	n40	5230	40.247	Pass
NVNT	ac20	5180	20.309	Pass
NVNT	ac20	5200	19.972	Pass
NVNT	ac20	5240	20.656	Pass
NVNT	ac40	5190	39.307	Pass
NVNT	ac40	5230	40.382	Pass
NVNT	ac80	5210	79.861	Pass

Condition	Mode	Frequency (MHz)	99% OBW (MHz)
NVNT	a	5180	16.258
NVNT	a	5200	16.243
NVNT	a	5240	16.253
NVNT	n20	5180	17.394
NVNT	n20	5200	17.381
NVNT	n20	5240	17.399
NVNT	n40	5190	35.775
NVNT	n40	5230	35.835
NVNT	ac20	5180	17.397
NVNT	ac20	5200	17.385
NVNT	ac20	5240	17.411
NVNT	ac40	5190	35.763
NVNT	ac40	5230	35.831
NVNT	ac80	5210	75.066

Test Graphs

-26dB Bandwidth NVNT a 5180MHz Ant1

-26dB Bandwidth NVNT a 5200MHz Ant1

-26dB Bandwidth NVNT a 5240MHz Ant1

-26dB Bandwidth NVNT n20 5180MHz Ant1

-26dB Bandwidth NVNT n20 5200MHz Ant1

-26dB Bandwidth NVNT n20 5240MHz Ant1

-26dB Bandwidth NVNT n40 5190MHz Ant1

-26dB Bandwidth NVNT n40 5230MHz Ant1

-26dB Bandwidth NVNT ac20 5180MHz Ant1

-26dB Bandwidth NVNT ac20 5200MHz Ant1

-26dB Bandwidth NVNT ac20 5240MHz Ant1

-26dB Bandwidth NVNT ac40 5190MHz Ant1

-26dB Bandwidth NVNT ac40 5230MHz Ant1

-26dB Bandwidth NVNT ac80 5210MHz Ant1

Test Graphs

OBW NVNT a 5180MHz Ant1

OBW NVNT a 5200MHz Ant1

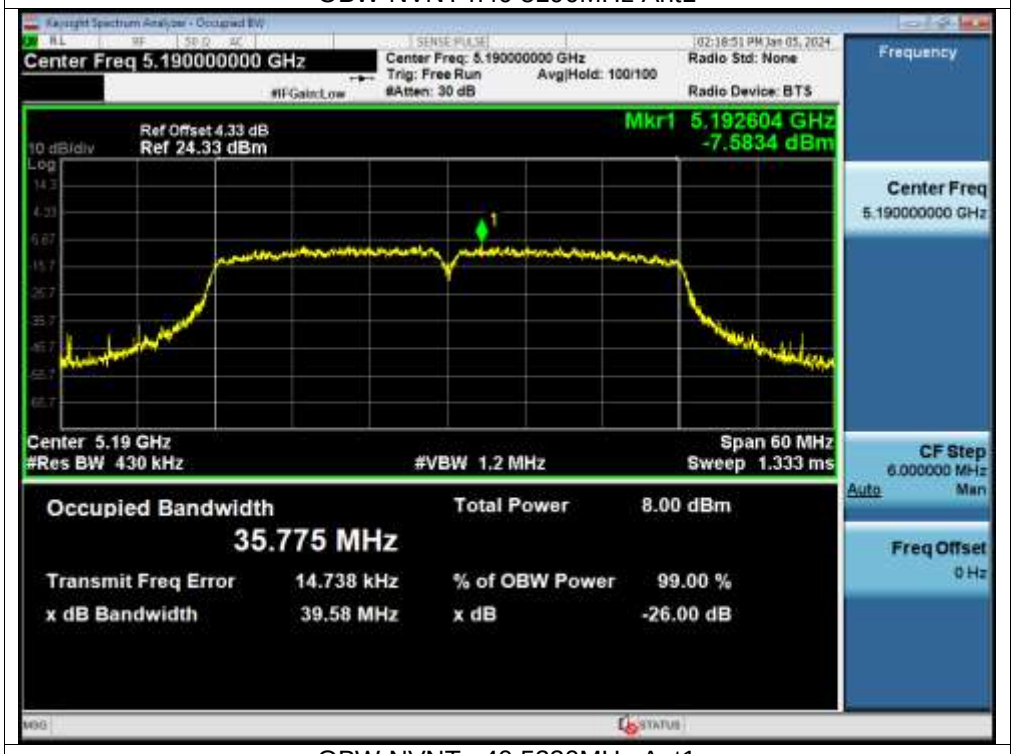
OBW NVNT a 5240MHz Ant1

OBW NVNT n20 5180MHz Ant1

OBW NVNT n20 5200MHz Ant1

OBW NVNT n20 5240MHz Ant1

OBW NVNT n40 5190MHz Ant1



OBW NVNT n40 5230MHz Ant1

OBW NVNT ac20 5180MHz Ant1

OBW NVNT ac20 5200MHz Ant1

OBW NVNT ac20 5240MHz Ant1

OBW NVNT ac40 5190MHz Ant1

OBW NVNT ac40 5230MHz Ant1

OBW NVNT ac80 5210MHz Ant1

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 7.7V
Test Mode:	(5745-5825MHz)		

Condition	Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	a	5745	15.057	0.5	Pass
NVNT	a	5785	14.467	0.5	Pass
NVNT	a	5825	14.443	0.5	Pass
NVNT	n20	5745	14.676	0.5	Pass
NVNT	n20	5785	15.046	0.5	Pass
NVNT	n20	5825	15.418	0.5	Pass
NVNT	n40	5755	35.052	0.5	Pass
NVNT	n40	5795	33.876	0.5	Pass
NVNT	ac20	5745	15.089	0.5	Pass
NVNT	ac20	5785	15.022	0.5	Pass
NVNT	ac20	5825	15.077	0.5	Pass
NVNT	ac40	5755	35.01	0.5	Pass
NVNT	ac40	5795	35.01	0.5	Pass
NVNT	ac80	5775	75.071	0.5	Pass

Condition	Mode	Frequency (MHz)	99% OBW (MHz)
NVNT	a	5745	16.237
NVNT	a	5785	16.257
NVNT	a	5825	16.225
NVNT	n20	5745	17.391
NVNT	n20	5785	17.401
NVNT	n20	5825	17.385
NVNT	n40	5755	35.767
NVNT	n40	5795	35.79
NVNT	ac20	5745	17.407
NVNT	ac20	5785	17.401
NVNT	ac20	5825	17.405
NVNT	ac40	5755	35.774
NVNT	ac40	5795	35.833
NVNT	ac80	5775	74.974

Test Graphs

-6dB Bandwidth NVNT a 5745MHz Ant1

-6dB Bandwidth NVNT a 5785MHz Ant1

-6dB Bandwidth NVNT a 5825MHz Ant1

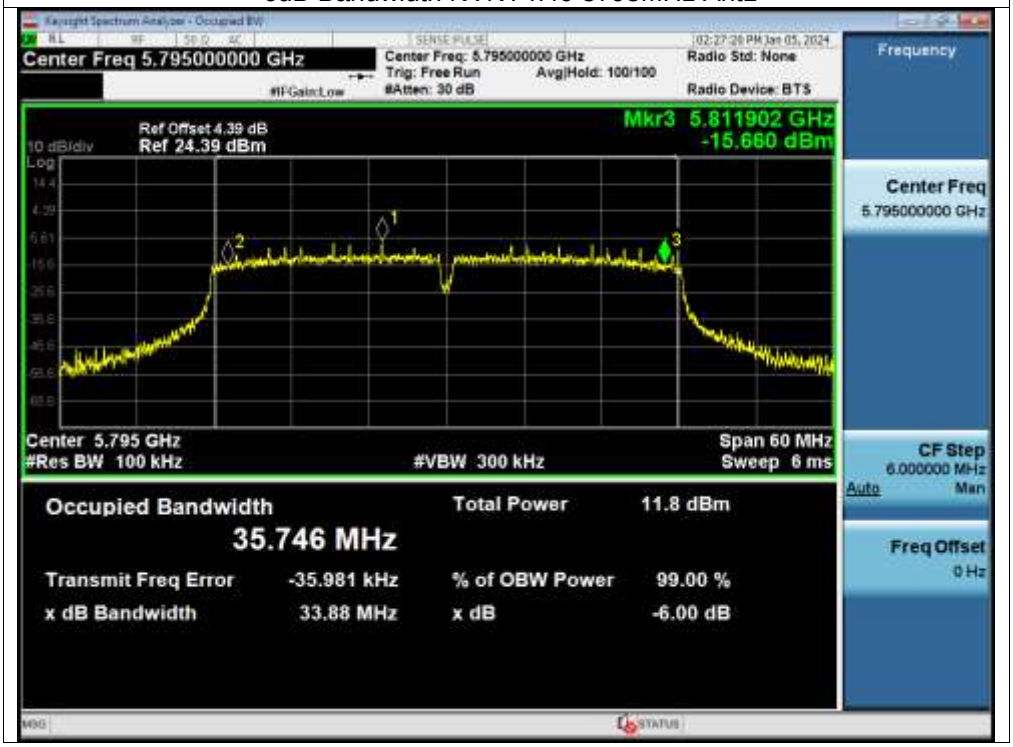
-6dB Bandwidth NVNT n20 5745MHz Ant1

-6dB Bandwidth NVNT n20 5785MHz Ant1

-6dB Bandwidth NVNT n20 5825MHz Ant1

-6dB Bandwidth NVNT n40 5755MHz Ant1

-6dB Bandwidth NVNT n40 5795MHz Ant1



-6dB Bandwidth NVNT ac20 5745MHz Ant1

-6dB Bandwidth NVNT ac20 5785MHz Ant1

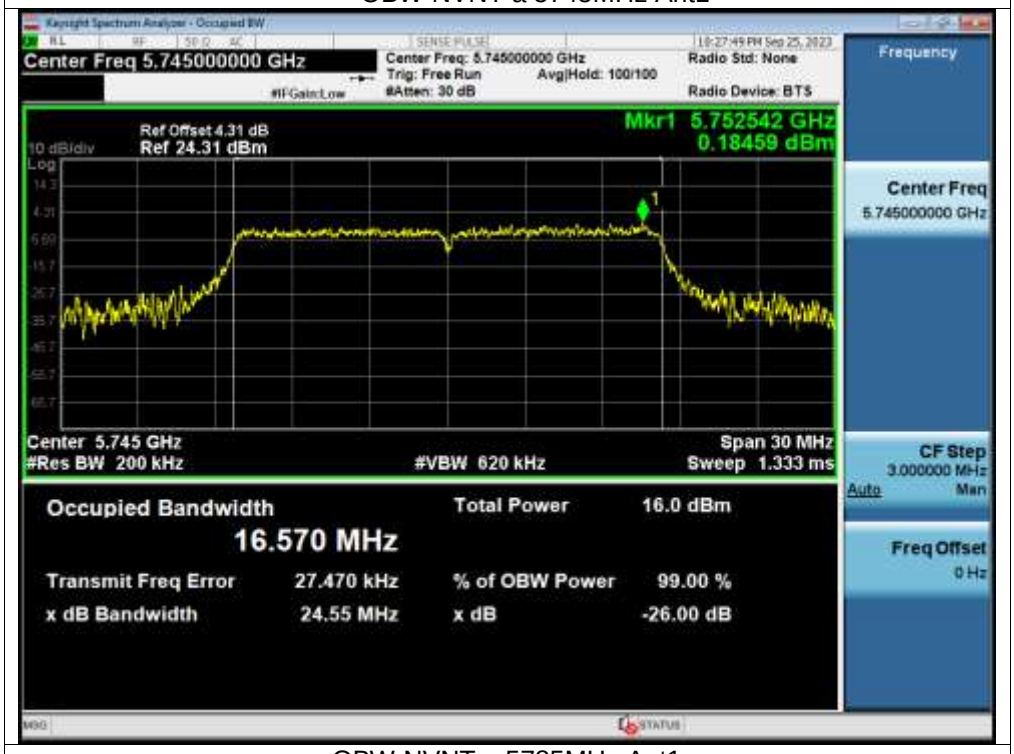
-6dB Bandwidth NVNT ac20 5825MHz Ant1

-6dB Bandwidth NVNT ac40 5755MHz Ant1

-6dB Bandwidth NVNT ac40 5795MHz Ant1

-6dB Bandwidth NVNT ac80 5775MHz Ant1

OBW NVNT a 5745MHz Ant1



OBW NVNT a 5785MHz Ant1

OBW NVNT a 5745MHz Ant1

OBW NVNT a 5785MHz Ant1

OBW NVNT a 5825MHz Ant1

OBW NVNT n20 5745MHz Ant1

OBW NVNT n20 5785MHz Ant1

OBW NVNT n20 5825MHz Ant1

OBW NVNT n40 5755MHz Ant1

OBW NVNT n40 5795MHz Ant1

OBW NVNT ac20 5745MHz Ant1

OBW NVNT ac20 5785MHz Ant1

OBW NVNT ac20 5825MHz Ant1

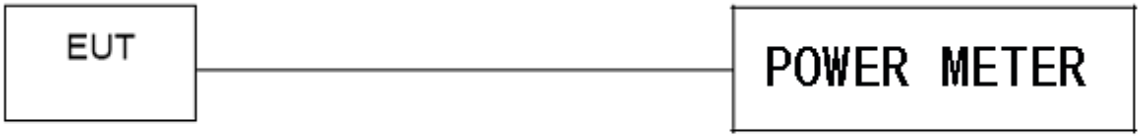
OBW NVNT ac40 5755MHz Ant1

OBW NVNT ac40 5795MHz Ant1

OBW NVNT ac80 5775MHz Ant1

10. Maximum Conducted Output Power

10.1 Block Diagram Of Test Setup



10.2 Limit

According to FCC §15.407

The maximum conduced output power should not exceed**:**

Frequency Band(MHz)	Limit
5150~5250	0.25W
5250~5350	0.25W
5725~5850	1W

10.3 Test Procedure

Maximum conducted output power may be measured using a spectrum analyzer/EMI receiver or an RF 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 ≤ 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

10.4 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.

10.5 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 7.7V
Test Mode:	5180-5240MHz		

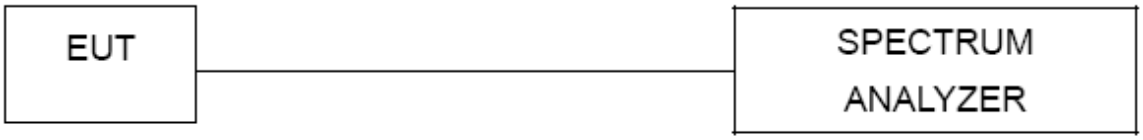
Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	5.3	24	Pass
NVNT	a	5200	5.95	24	Pass
NVNT	a	5240	5.06	24	Pass
NVNT	n20	5180	4.93	24	Pass
NVNT	n20	5200	5.73	24	Pass
NVNT	n20	5240	4.83	24	Pass
NVNT	n40	5190	2.1	24	Pass
NVNT	n40	5230	5.42	24	Pass
NVNT	ac20	5180	5.14	24	Pass
NVNT	ac20	5200	5.79	24	Pass
NVNT	ac20	5240	5.09	24	Pass
NVNT	ac40	5190	2.16	24	Pass
NVNT	ac40	5230	6.03	24	Pass
NVNT	ac80	5210	4.05	24	Pass

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 7.7V
Test Mode:	5745-5825MHz		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	4.81	30	Pass
NVNT	a	5785	5.35	30	Pass
NVNT	a	5825	5.15	30	Pass
NVNT	n20	5745	4.92	30	Pass
NVNT	n20	5785	5.19	30	Pass
NVNT	n20	5825	4.13	30	Pass
NVNT	n40	5755	5.67	30	Pass
NVNT	n40	5795	5.44	30	Pass
NVNT	ac20	5745	5.08	30	Pass
NVNT	ac20	5785	4.38	30	Pass
NVNT	ac20	5825	4.24	30	Pass
NVNT	ac40	5755	4.8	30	Pass
NVNT	ac40	5795	5.27	30	Pass
NVNT	ac80	5775	4.24	30	Pass

11. Out Of Band Emissions

11.1 Block Diagram Of Test Setup



11.2 Limit

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) 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.

11.3 Test Procedure

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

11.4 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

11.5 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	DC 7.7V

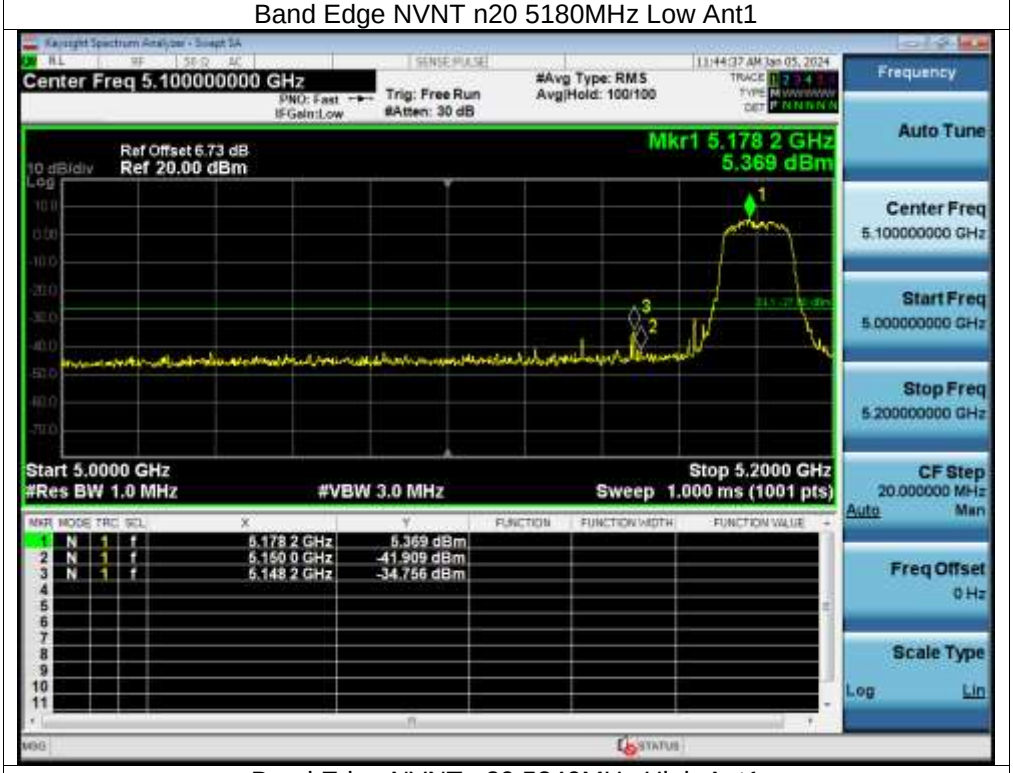
5180-5240MHz

Test Graphs

Band Edge NVNT a 5180MHz Low Ant1

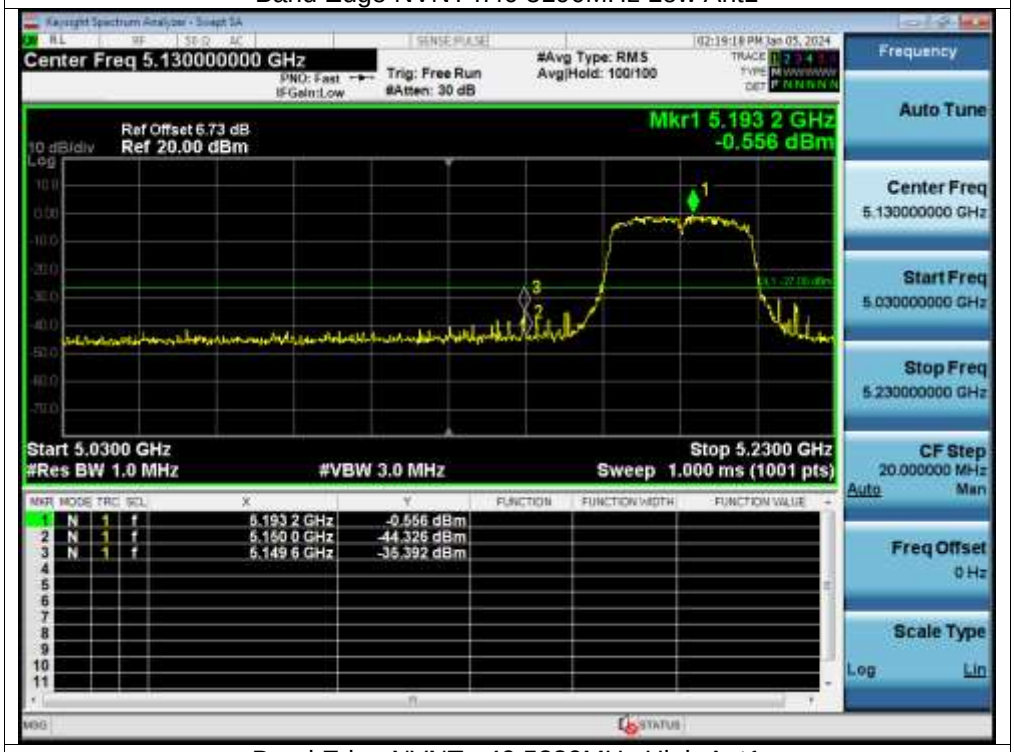
Band Edge NVNT a 5240MHz High Ant1

Band Edge NVNT n20 5180MHz Low Ant1



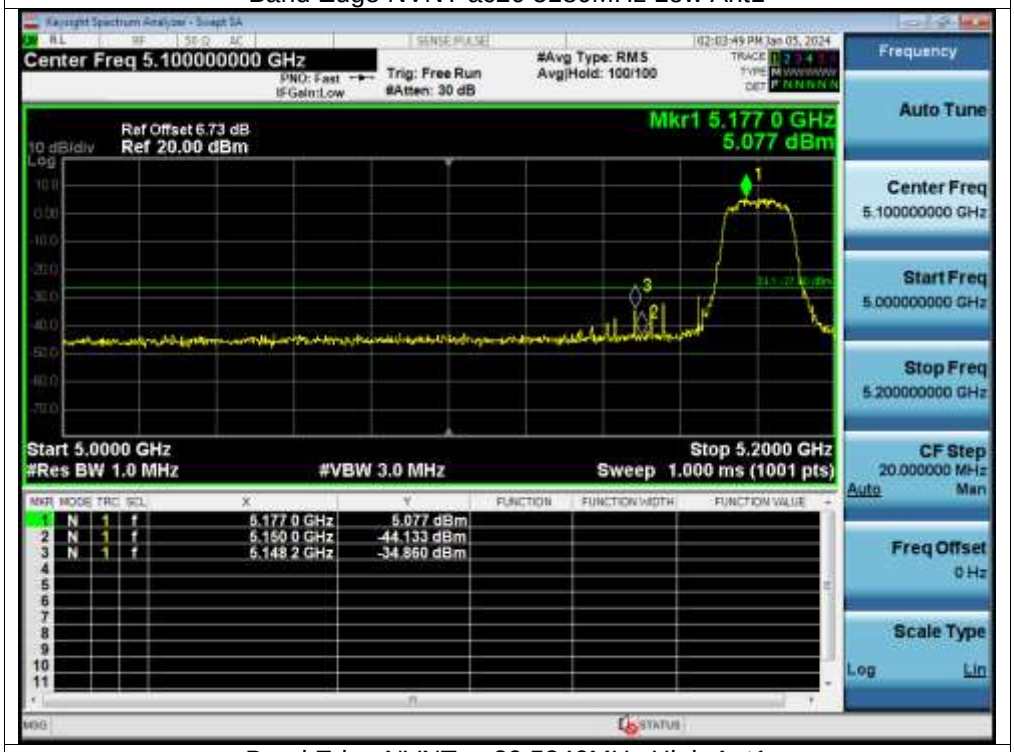
Band Edge NVNT n20 5240MHz High Ant1

Band Edge NVNT n40 5190MHz Low Ant1

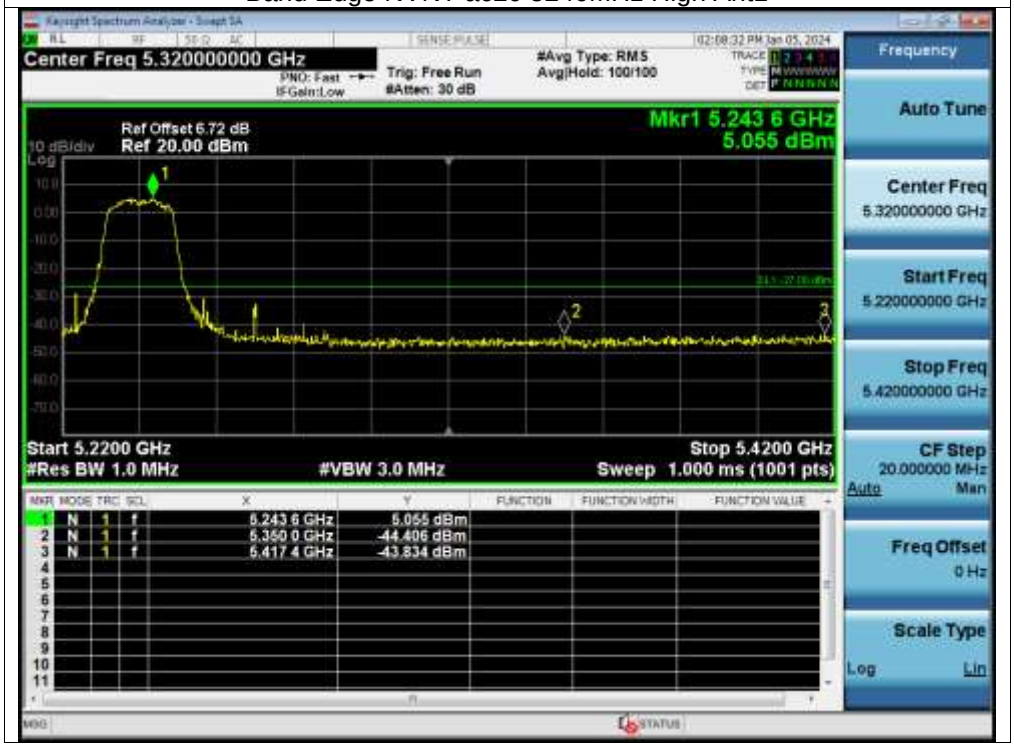


Band Edge NVNT n40 5230MHz High Ant1

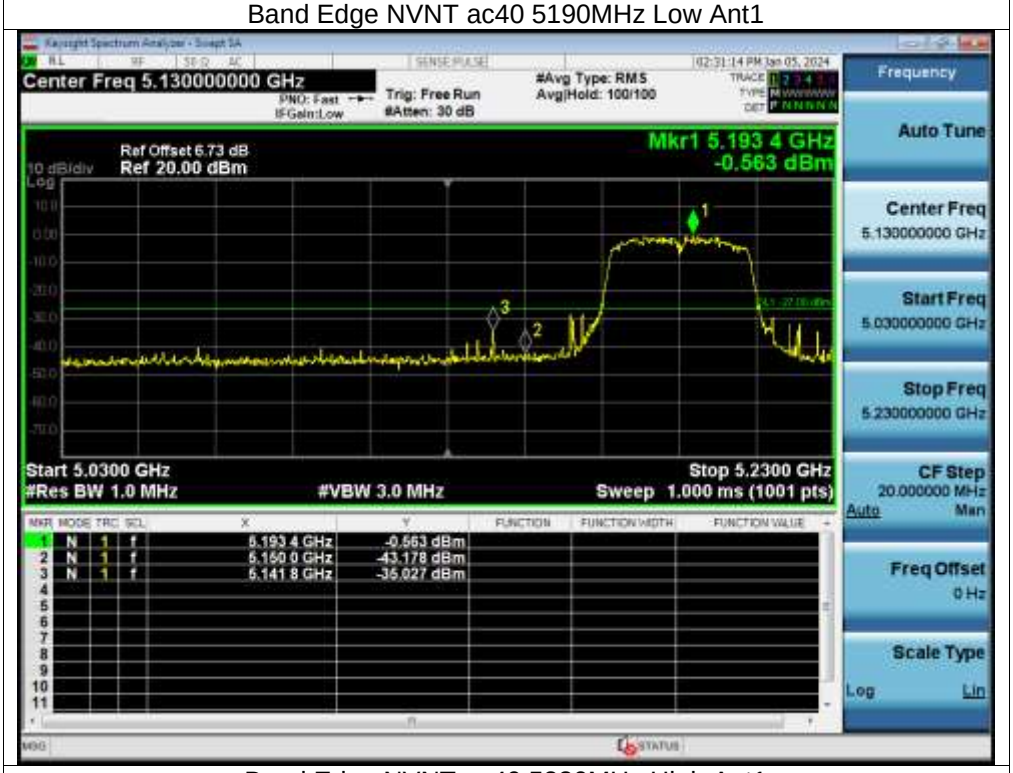
Band Edge NVNT ac20 5180MHz Low Ant1



Band Edge NVNT ac20 5240MHz High Ant1



Band Edge NVNT ac40 5190MHz Low Ant1



Band Edge NVNT ac40 5230MHz High Ant1

Band Edge NVNT ac80 5210MHz High Ant1

Band Edge NVNT ac80 5210MHz Low Ant1

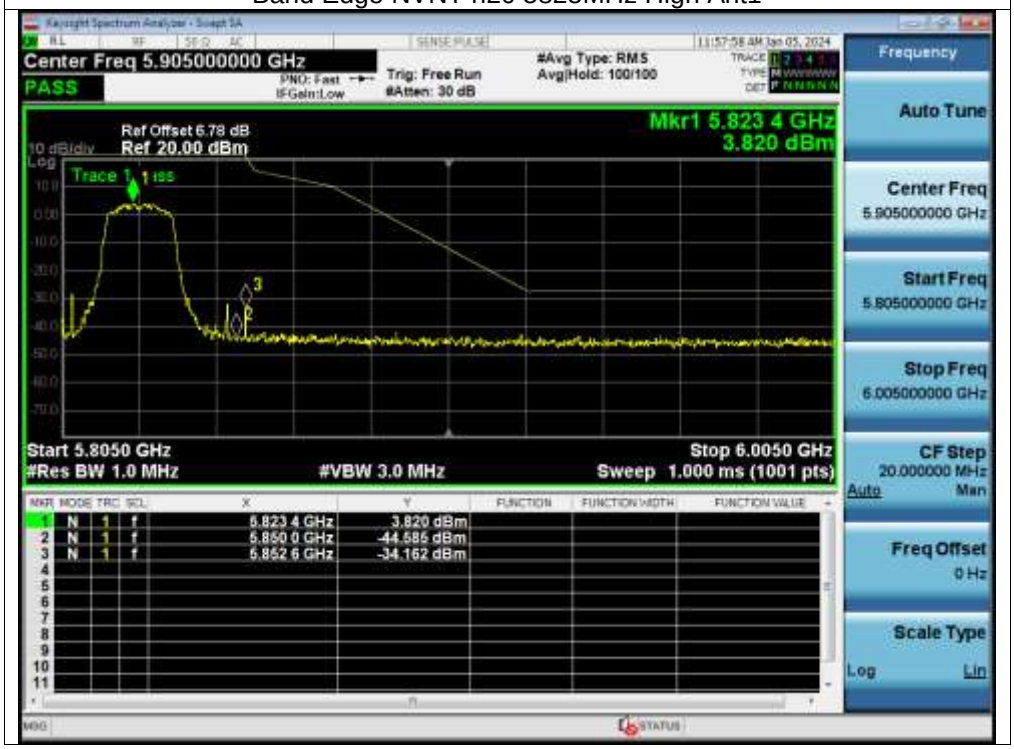
5745-5825MHz

Band Edge NVNT a 5745MHz Low Ant1

Band Edge NVNT a 5825MHz High Ant1

Band Edge NVNT n20 5745MHz Low Ant1

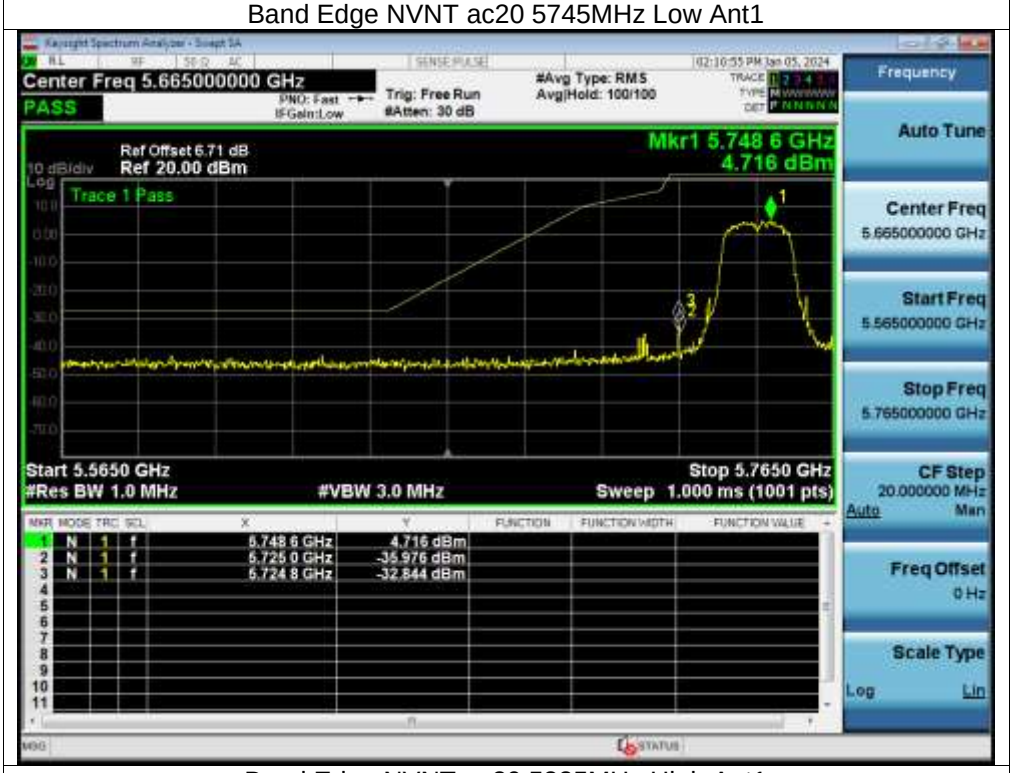
Band Edge NVNT n20 5825MHz High Ant1



Band Edge NVNT n40 5755MHz Low Ant1

Band Edge NVNT n40 5795MHz High Ant1

Band Edge NVNT ac20 5745MHz Low Ant1



Band Edge NVNT ac20 5825MHz High Ant1

Band Edge NVNT ac40 5755MHz Low Ant1

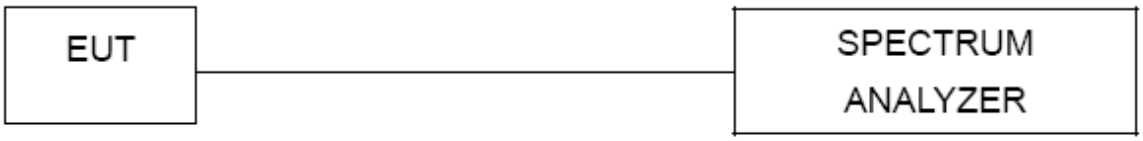
Band Edge NVNT ac40 5795MHz High Ant1

Band Edge NVNT ac80 5755MHz High Ant1

Band Edge NVNT ac80 5755MHz Low Ant1

12. Spurious RF Conducted Emissions

12.1 Block Diagram Of Test Setup



12.2 Limit

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..

12.3 Test Procedure

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

12.4 Test Result

Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandege measurement data.

About:26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

5180-5240MHz

Test Graphs

Tx. Spurious NVNT a 5180MHz Ant1 Emission

Tx. Spurious NVNT a 5200MHz Ant1 Emission

Tx. Spurious NVNT a 5240MHz Ant1 Emission

Tx. Spurious NVNT n20 5180MHz Ant1 Emission

Tx. Spurious NVNT n20 5200MHz Ant1 Emission

Tx. Spurious NVNT n20 5240MHz Ant1 Emission

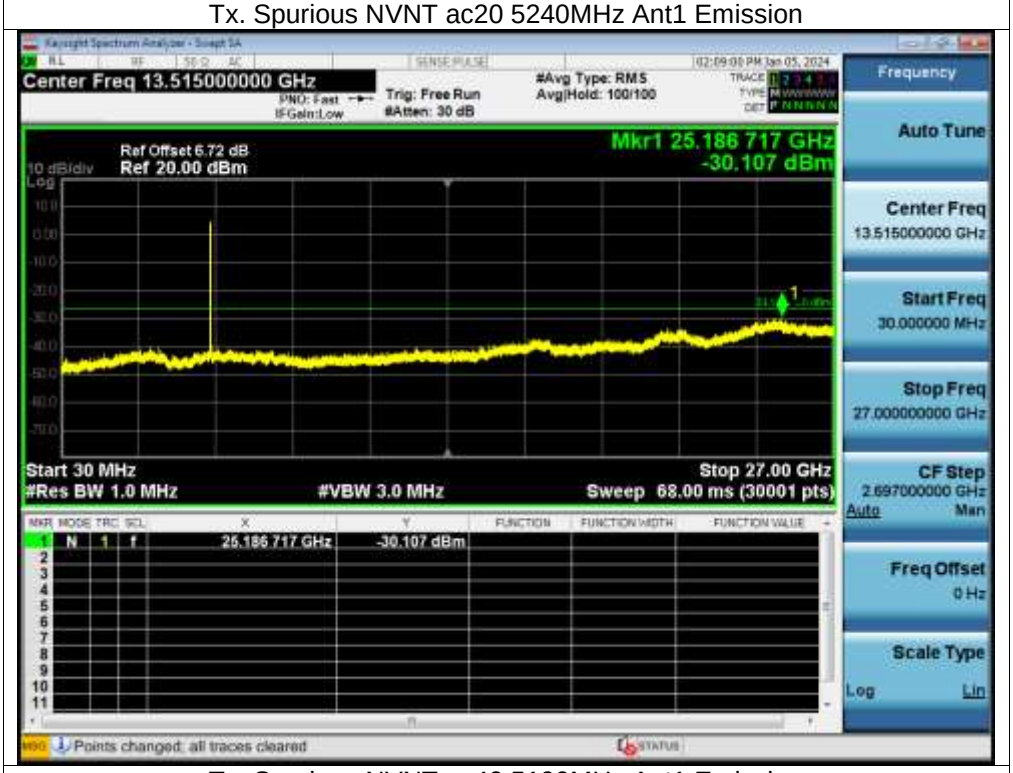
Tx. Spurious NVNT n40 5190MHz Ant1 Emission

Tx. Spurious NVNT n40 5230MHz Ant1 Emission

Tx. Spurious NVNT ac20 5180MHz Ant1 Emission

Tx. Spurious NVNT ac20 5200MHz Ant1 Emission

Tx. Spurious NVNT ac20 5240MHz Ant1 Emission



Tx. Spurious NVNT ac40 5190MHz Ant1 Emission

Tx. Spurious NVNT ac40 5230MHz Ant1 Emission

Tx. Spurious NVNT ac80 5210MHz Ant1 Emission

5745-58250MHz

Tx. Spurious NVNT a 5745MHz Ant1 Emission

Tx. Spurious NVNT a 5785MHz Ant1 Emission