TEST REPORT

Report No.:	BCTC2112684739-4E
Applicant:	L FORWARD INC.
Product Name:	14.1inch laptop
Model/Type Ref.:	SGIN_X14
Tested Date:	2021-12-09 to 2021-12-28
Issued Date:	2021-12-29

Shenzhen BCTC Testing Co., Ltd.

FCC ID: 2A3YZ-SGINX14

Product Name:	14.1inch laptop
Trademark:	N/A
Model/Type Ref.:	SGIN_X14 M1415N
Prepared For:	L FORWARD INC.
Address:	1908 Thomes Ave Cheyenne,Laramie, WY 82001, us
Manufacturer:	Shenzhen NST Industry and Trade Co., Ltd.
Address:	3/F, Bldg 1, Hongbang Technology Park, No.30 Cuibao Road, Baolong Street, Longgang District, Shenzhen, 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:	2021-12-09
Sample tested Date:	2021-12-09 to 2021-12-28
Issue Date:	2021-12-29
Report No.:	BCTC2112684739-4E
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

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

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(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2112684739-4E	2021-12-29	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)(1) 15.407 (b)(4) 15.407 (b)(8)	PASS
2	Conducted Emission	15.207	PASS
3	26 dB and 99% Emission Bandwidth	15.407 (a)(12) 15.1049	PASS
4	Minimum 6 dB bandwidth	15.407(e)	PASS
5	Maximum Conducted Output Power	15.407 (a)(1) 15.407 (a)(3)	PASS
6	Band Edge	2.1051, 15.407(b)(1) 15.407(b)(4)	PASS
7	Power Spectral Density	15.407 (a)(1) 15.407 (a)(3)	PASS
8	Spurious Emissions at Antenna Terminals	2.1051, 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℃

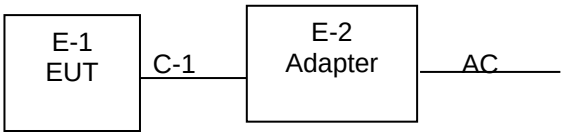
4. Product Information And Test Setup

4.1 Product Information

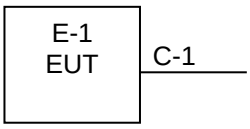
Model/Type Ref.:	SGIN_X14 M1415N
Model differences:	All the model are the same circuit and RF module, except model names.
Hardware Version:	P142K-1-REV003
Software Version:	E.P142K_6.D12.E1.006
IEEE 802.11 WLAN Mode Supported	802.11a/n/ac(20MHz channel bandwidth) 802.11n/ac(40MHz channel bandwidth) 802.11ac(80MHz channel bandwidth)
Operation Frequency:	5180-5240MHz for 802.11a/n(HT20); 5190-5230MHz for 802.11n(HT40); 5210MHz for 802.11 ac80; 5745-5825 MHz for 802.11a/n(HT20); 5755-5795 MHz for 802.11n(HT40); 5775MHz for 802.11 ac80;
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40/VHT80):NSS1, MCS0-MCS
Type of Modulation:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac;
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:	5.1G: Antenna A: 3.01dBi Antenna B: 3.01dBi 5.8G: Antenna A: 4.65dBi Antenna B: 4.65dBi
Ratings:	AC 120V/60Hz/DC 7.6V
Adapter:	MODEL: JZB024-120250UX INPUT: 100-240V 50/60Hz 0.7A OUTPUT: DC 12V 2.5A 30W

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	14.1inch laptop	N/A	SGIN_X14	N/A	EUT
E-2	Adapter	N/A	JZB024-120250UX	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.2M	DC cable unshielded

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(20 MHz) band IV (5180-5240MHz):

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(20 MHz) band IV (5745-5825MHz):

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 ac80 CH 42/CH 155
Mode 4	Link Mode

Conducted Emission	
Final Test Mode	Description
Mode 4	Link Mode

For Radiated Emission	
Final Test 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 ac80 CH 42/CH 155

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.
(2) We're testing antenna A data

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

4.7 Antenna

5.2G
1)For power spectral density(PSD) measurements,
Array Gain=10log(NANT/NSS)dB=10log(2/1)=3.01dB,
So the directional gain for PSD is 6.02dBi

Antenna	Brand	Model Name	Antenna Type	Gain (dBi)	NOTE
A	N/A	N/A	Internal antenna	3.01	
B	N/A	N/A	Internal antenna	3.01	

5.8G
1)For power spectral density(PSD) measurements,
Array Gain=10log(NANT/NSS)dB=10log(2/1)=3.01dB,
So the directional gain for PSD is 7.66dBi

Antenna	Brand	Model Name	Antenna Type	Gain (dBi)	NOTE
A	N/A	N/A	Internal antenna	4.65	
B	N/A	N/A	Internal antenna	4.65	

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, Tangwei, 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
IC Registered No.: 23583

5.2 Test Instrument Used

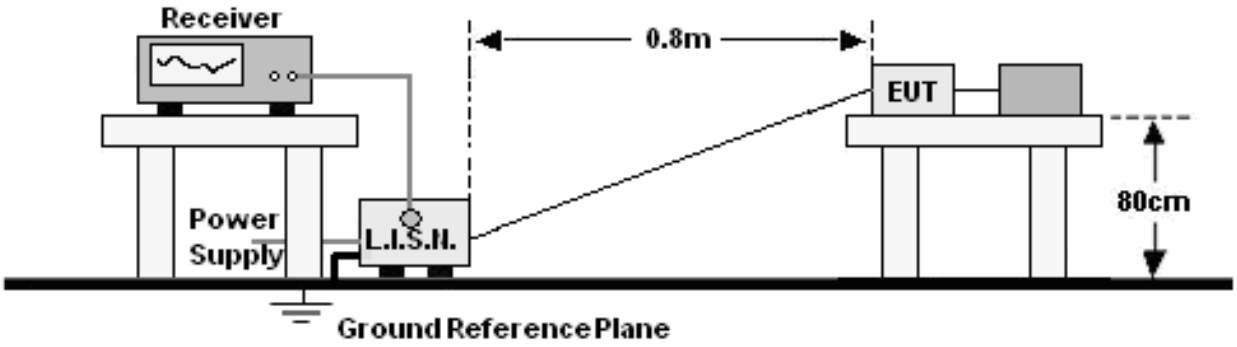
Conducted emissions Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR3	102075	May 28, 2021	May 27, 2022
LISN	R&S	ENV216	101375	May 28, 2021	May 27, 2022
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Attenuator	\	10dB DC-6GHz	1650	May 28, 2021	May 27, 2022

RF Conducted Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Power Metter	Keysight	E4419	\	May 28, 2021	May 27, 2022
Power Sensor (AV)	Keysight	E9300A	\	May 28, 2021	May 27, 2022
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 28, 2021	May 27, 2022
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	\	May 28, 2021	May 27, 2022

Radiated emissions Test (966 chamber)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	Jun. 06. 2020	Jun. 05, 2023
Receiver	R&S	ESR3	102075	May 28, 2021	May 27, 2022
Receiver	R&S	ESRP	101154	May 28, 2021	May 27, 2022
Amplifier	SKET	LAPA_01G18G-45dB	\	May 28, 2021	May 27, 2022
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 28, 2021	May 27, 2022
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	Jun. 01, 2021	May 31, 2022
Horn Antenna	Schwarzbeck	BBHA9120D	1541	Jun. 02, 2021	Jun. 01, 2022
Horn Antenn(18GHz-40GHz)	Schwarzbeck	BBHA9170	00822	Jun. 15, 2021	Jun. 14, 2022
Amplifier(18GHz-40GHz)	MITEQ	TTA1840-35-HG	2034381	May 28, 2021	May 27, 2022
Loop Antenna(9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Jun. 02, 2021	Jun. 01, 2022
RF cables1(9kHz-30MHz)	Huber+Suhnar	9kHz-30MHz	B1702988-0008	May 28, 2021	May 27, 2022
RF cables2(30MHz-1GHz)	Huber+Suhnar	30MHz-1GHz	1486150	May 28, 2021	May 27, 2022
RF cables3(1GHz-40GHz)	Huber+Suhnar	1GHz-40GHz	1607106	May 28, 2021	May 27, 2022
Power Metter	Keysight	E4419	\	May 28, 2021	May 27, 2022
Power Sensor (AV)	Keysight	E9300A	\	May 28, 2021	May 27, 2022
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 28, 2021	May 27, 2022
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	\	May 28, 2021	May 27, 2022
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

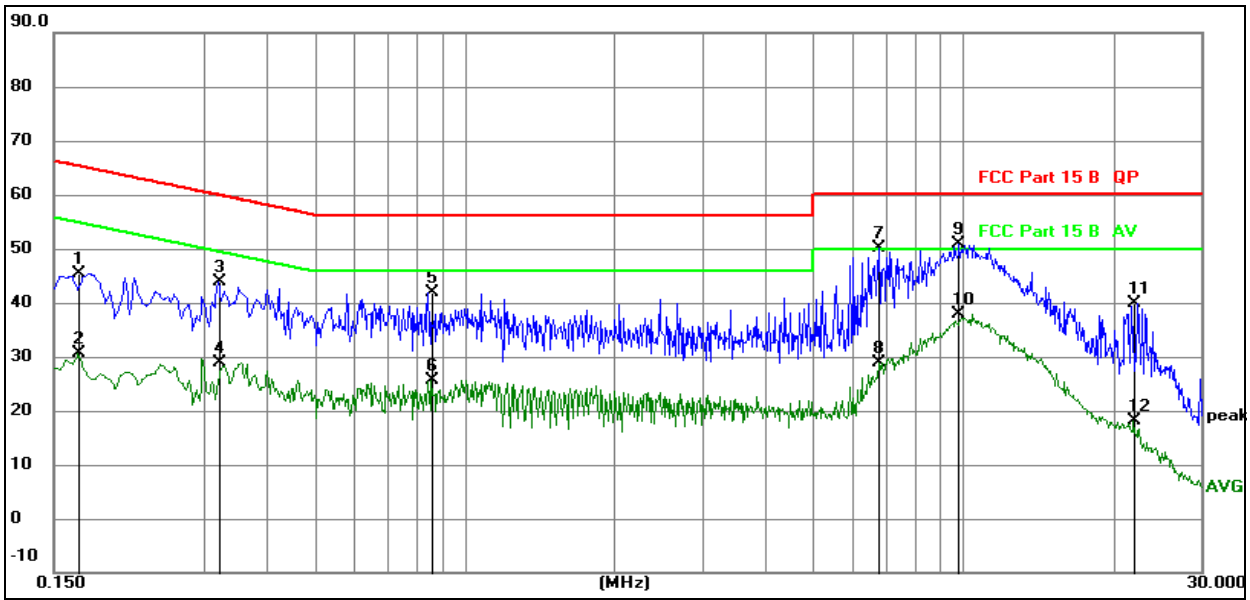
a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak 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

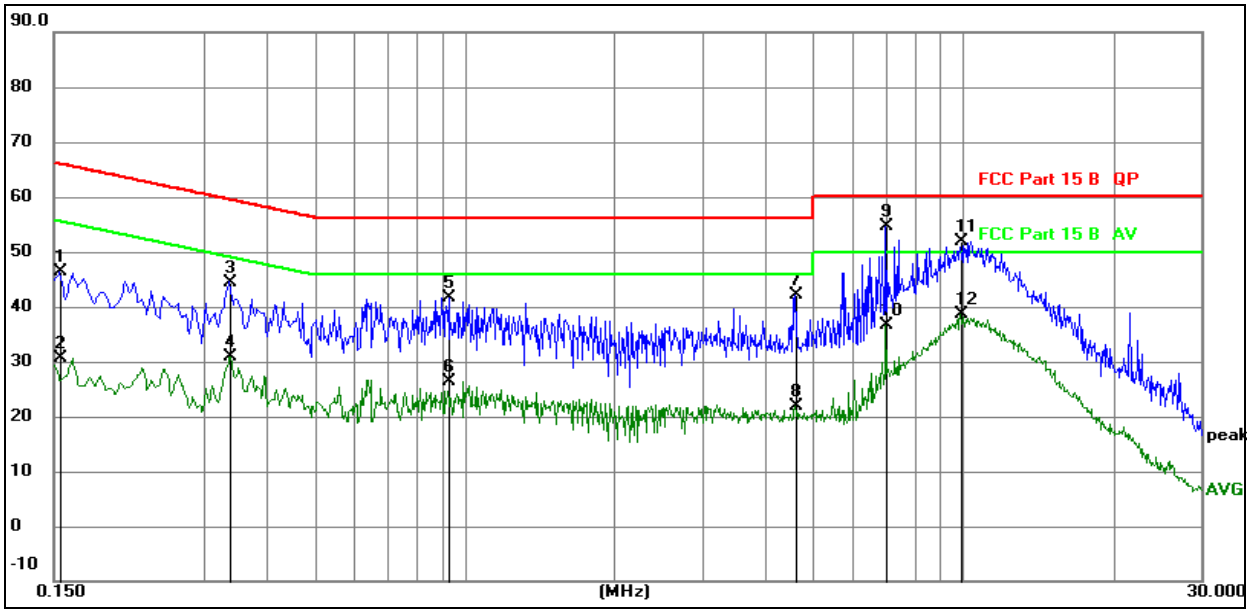
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Phase：	L
Test Voltage ：	AC 120V/60Hz	Test Mode：	Mode 4



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1677	25.80	19.61	45.41	65.07	-19.66	QP
2		0.1677	10.90	19.61	30.51	55.07	-24.56	AVG
3		0.3200	24.23	19.61	43.84	59.71	-15.87	QP
4		0.3200	9.39	19.61	29.00	49.71	-20.71	AVG
5		0.8573	22.36	19.62	41.98	56.00	-14.02	QP
6		0.8573	6.07	19.62	25.69	46.00	-20.31	AVG
7		6.7691	30.30	19.74	50.04	60.00	-9.96	QP
8		6.7691	9.05	19.74	28.79	50.00	-21.21	AVG
9	*	9.8085	31.06	19.80	50.86	60.00	-9.14	QP
10		9.8085	18.01	19.80	37.81	50.00	-12.19	AVG
11		21.9463	20.15	19.75	39.90	60.00	-20.10	QP
12		21.9463	-1.62	19.75	18.13	50.00	-31.87	AVG

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Phase：	N
Test Voltage ：	AC 120V/60Hz	Test Mode：	Mode 4



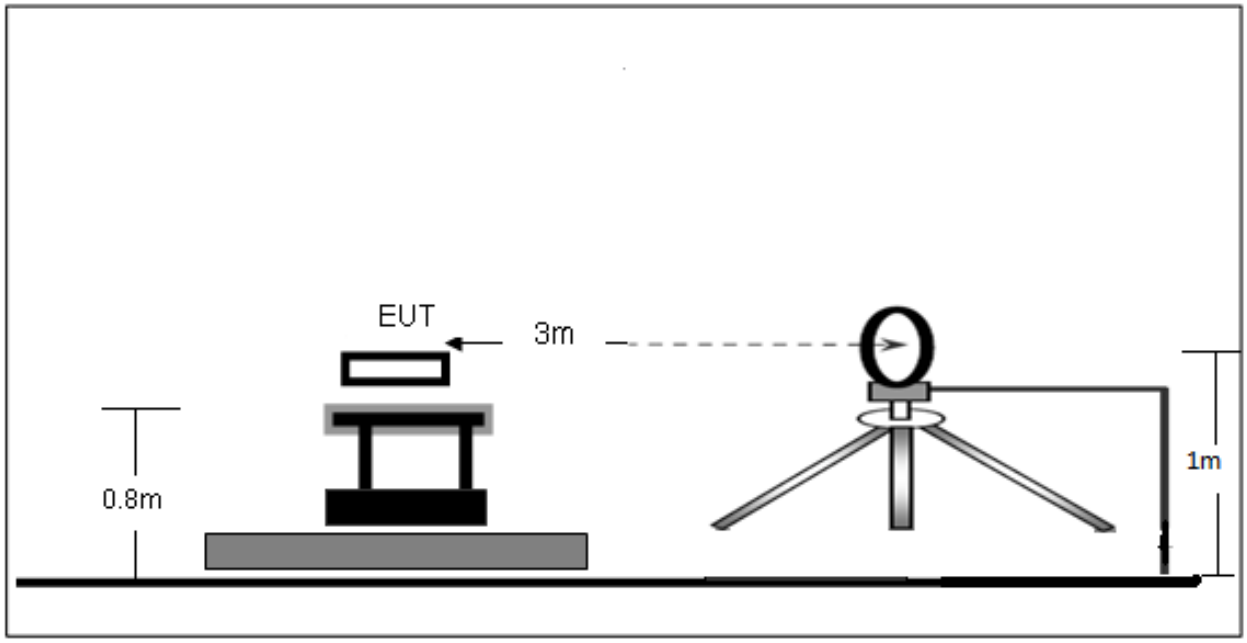
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1545	26.74	19.61	46.35	65.75	-19.40	QP
2		0.1545	11.01	19.61	30.62	55.75	-25.13	AVG
3		0.3390	24.89	19.61	44.50	59.23	-14.73	QP
4		0.3390	11.32	19.61	30.93	49.23	-18.30	AVG
5		0.9330	22.00	19.62	41.62	56.00	-14.38	QP
6		0.9330	6.70	19.62	26.32	46.00	-19.68	AVG
7		4.6095	22.31	19.70	42.01	56.00	-13.99	QP
8		4.6095	2.09	19.70	21.79	46.00	-24.21	AVG
9	*	7.0125	35.01	19.74	54.75	60.00	-5.25	QP
10		7.0125	16.86	19.74	36.60	50.00	-13.40	AVG
11		9.8790	32.08	19.80	51.88	60.00	-8.12	QP
12		9.8790	18.79	19.80	38.59	50.00	-11.41	AVG

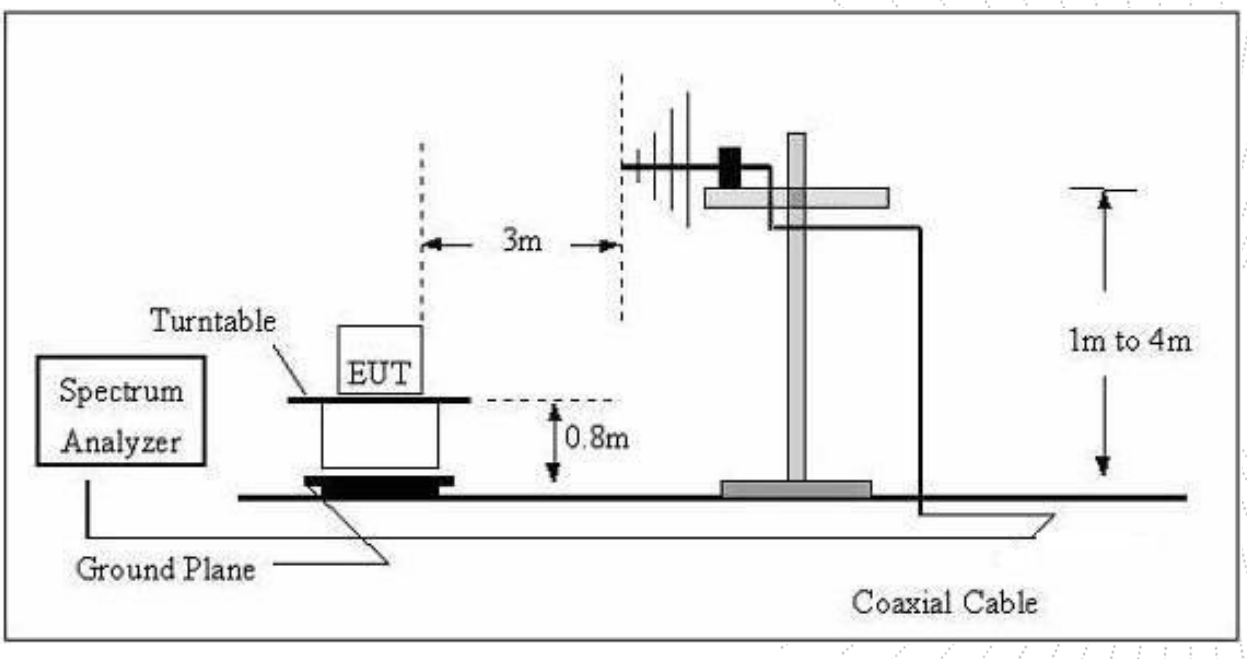
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

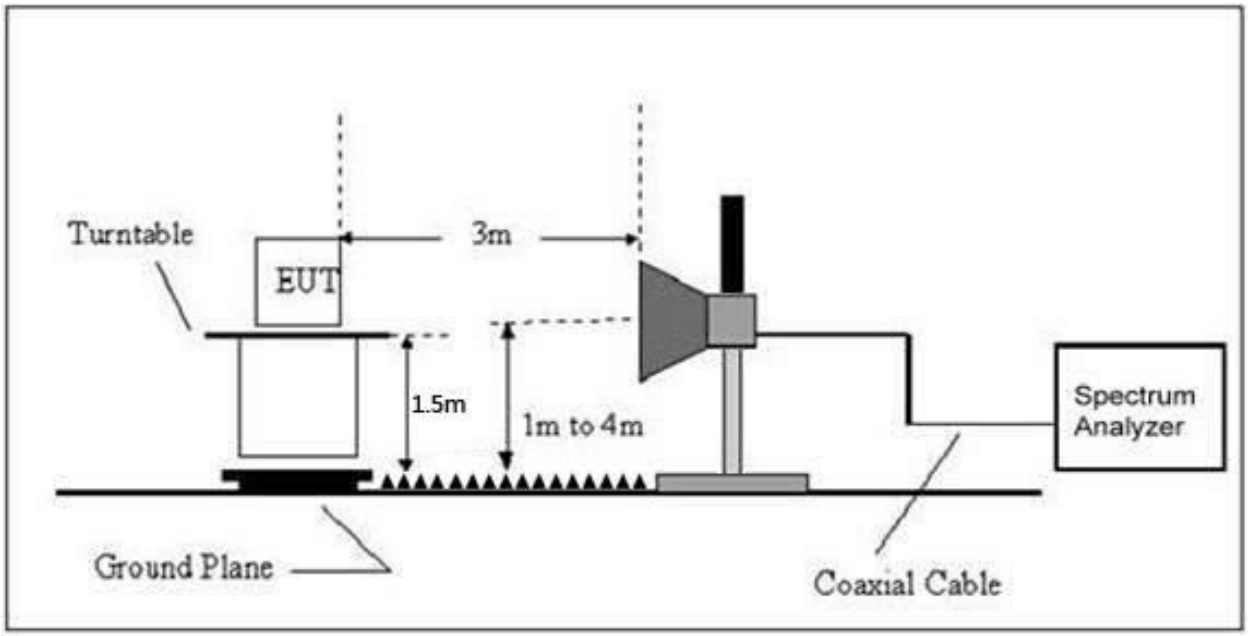
（A）Radiated Emission Test-Up Frequency Below 30MHz



（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.

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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

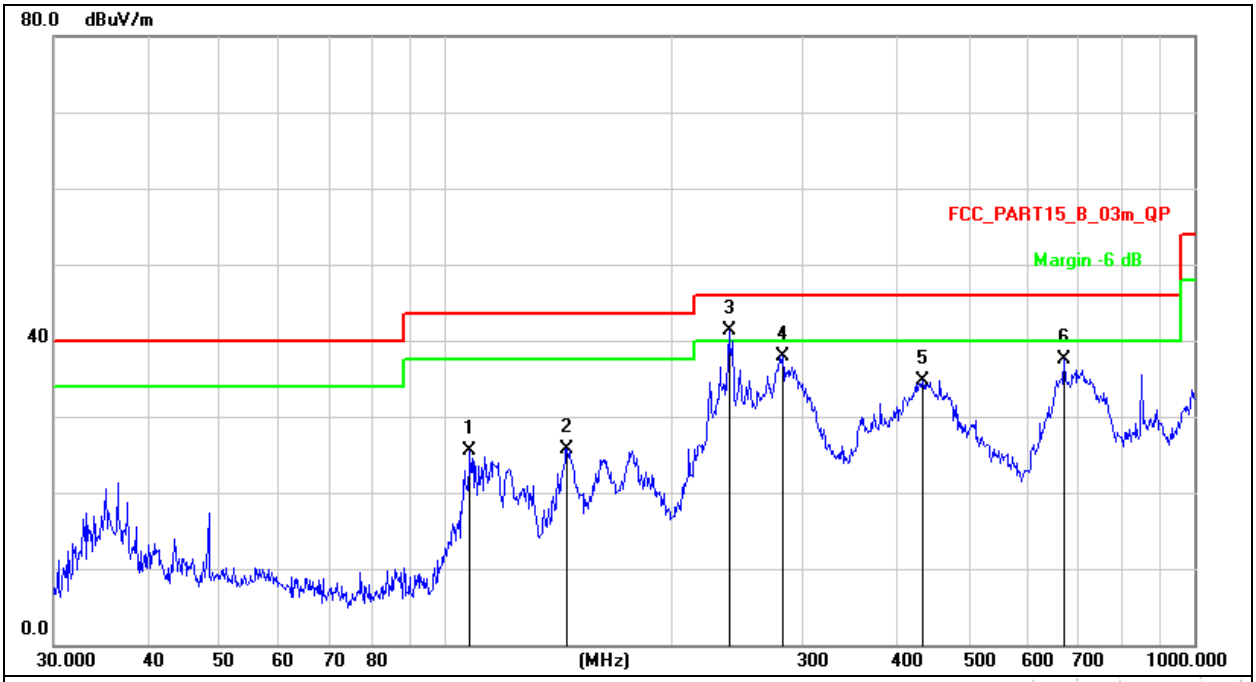
Temperature:	26℃	Relative Humidity:	24%
Pressure:	101 kPa	Test Voltage :	DC 7.6V
Test Mode :	Mode 4	Polarization :	--

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 7.6V
Test Mode :	Mode 4	Polarization :	Horizontal



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		107.8877	42.15	-16.66	25.49	43.50	-18.01	QP
2		145.3506	44.94	-19.18	25.76	43.50	-17.74	QP
3	*	239.1473	56.19	-14.82	41.37	46.00	-4.63	QP
4		281.9946	51.99	-14.08	37.91	46.00	-8.09	QP
5		434.0651	44.63	-9.98	34.65	46.00	-11.35	QP
6		670.4893	41.88	-4.34	37.54	46.00	-8.46	QP

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kpa	Test Voltage :	DC 7.6V
Test Mode :	Mode 4	Polarization :	Vertical

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		35.0933	47.84	-17.66	30.18	40.00	-9.82	QP
2	*	48.3318	50.95	-15.67	35.28	40.00	-4.72	QP
3		116.1321	46.63	-17.21	29.42	43.50	-14.08	QP
4		225.3080	50.02	-15.04	34.98	46.00	-11.02	QP
5		279.0436	49.36	-14.13	35.23	46.00	-10.77	QP
6		687.1507	39.83	-3.96	35.87	46.00	-10.13	QP

Between 1GHz – 40GHz

Test Mode :	TX(5.2G) - 802.11a

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5180 MHz)-Above 1G									
V	4434.036	61.42	5.94	35.40	44.00	58.76	68.2	-9.44	PK
V	4434.036	44.00	5.94	35.40	44.00	41.34	54	-12.66	AV
V	10360.073	61.07	8.46	39.75	44.50	64.78	68.2	-3.42	PK
V	10360.073	43.58	8.46	39.75	44.50	47.29	54	-6.71	AV
V	15540.055	63.08	10.12	38.80	44.10	67.90	74	-6.10	PK
V	15540.055	43.59	10.12	38.80	42.70	49.81	54	-4.19	AV
H	4434.119	64.53	5.94	35.18	44.00	61.65	68.2	-6.55	PK
H	4434.119	43.80	5.94	35.18	44.00	40.92	54	-13.08	AV
H	10360.111	53.77	8.46	38.71	44.50	56.44	68.2	-11.76	PK
H	10360.111	42.78	8.46	38.71	44.50	45.45	54	-8.55	AV
H	15540.041	54.56	10.12	38.38	44.10	58.96	74	-15.04	PK
H	15540.041	43.69	10.12	38.38	44.10	48.09	54	-5.91	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.173	60.57	6.48	36.35	44.05	59.35	74	-14.65	PK
V	4592.173	43.61	6.48	36.35	44.05	42.39	54	-11.61	AV
V	10400.144	62.30	8.47	37.88	44.51	64.14	68.2	-4.06	PK
V	10400.144	43.64	8.47	37.88	44.51	45.48	54	-8.52	AV
V	15600.023	64.86	10.12	38.80	44.10	69.68	74	-4.32	PK
V	15600.023	43.66	10.12	38.80	42.70	49.88	54	-4.12	AV
H	4592.005	64.99	6.48	36.37	44.05	63.79	74	-10.21	PK
H	4592.005	43.89	6.48	36.37	44.05	42.69	54	-11.31	AV
H	10400.102	51.58	8.47	38.64	44.50	54.19	68.2	-14.01	PK
H	10400.102	44.64	8.47	38.64	44.50	47.25	54	-6.75	AV
H	15600.078	51.88	10.12	38.38	44.10	56.28	74	-17.72	PK
H	15600.078	43.78	10.12	38.38	44.10	48.18	54	-5.82	AV
High Channel (5240 MHz)-Above 1G									
V	4739.003	61.62	7.10	37.24	43.50	62.46	74	-11.54	PK
V	4739.003	43.07	7.10	37.24	43.50	43.91	54	-10.09	AV
V	10480.000	62.29	8.46	37.68	44.50	63.93	68.2	-4.27	PK
V	10480.000	43.62	8.46	37.68	44.50	45.26	54	-8.74	AV
V	15720.123	63.02	10.12	38.80	44.10	67.84	74	-6.16	PK
V	15720.123	43.67	10.12	38.80	42.70	49.89	54	-4.11	AV
H	4739.110	62.16	7.10	37.24	43.50	63.00	74	-11.00	PK
H	4739.110	43.93	7.10	37.24	43.50	44.77	54	-9.23	AV
H	10480.198	51.50	8.46	38.57	44.50	54.03	68.2	-14.17	PK
H	10480.198	44.69	8.46	38.57	44.50	47.22	54	-6.78	AV
H	15720.148	54.60	10.12	38.38	44.10	59.00	74	-15.00	PK
H	15720.148	42.00	10.12	38.38	44.10	46.40	54	-7.60	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.
The worst case is Antenna A.

Test Mode :	TX(5.2G) - 802.11n-HT20

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5180 MHz)-Above 1G									
V	4434.086	61.98	5.94	35.40	44.00	59.32	68.2	-8.88	PK
V	4434.086	43.66	5.94	35.40	44.00	41.00	54	-13.00	AV
V	10360.017	62.44	8.46	39.75	44.50	66.15	68.2	-2.05	PK
V	10360.017	43.10	8.46	39.75	44.50	46.81	54	-7.19	AV
V	15540.078	63.89	10.12	38.80	44.10	68.71	74	-5.29	PK
V	15540.078	43.47	10.12	38.80	42.70	49.69	54	-4.31	AV
H	4434.190	61.21	5.94	35.18	44.00	58.33	68.2	-9.87	PK
H	4434.190	43.82	5.94	35.18	44.00	40.94	54	-13.06	AV
H	10360.159	50.18	8.46	38.71	44.50	52.85	68.2	-15.35	PK
H	10360.159	42.62	8.46	38.71	44.50	45.29	54	-8.71	AV
H	15540.128	53.79	10.12	38.38	44.10	58.19	74	-15.81	PK
H	15540.128	42.05	10.12	38.38	44.10	46.45	54	-7.55	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.017	63.06	6.48	36.35	44.05	61.84	74	-12.16	PK
V	4592.017	43.24	6.48	36.35	44.05	42.02	54	-11.98	AV
V	10400.152	63.66	8.47	37.88	44.51	65.50	68.2	-2.70	PK
V	10400.152	43.60	8.47	37.88	44.51	45.44	54	-8.56	AV
V	15600.114	63.87	10.12	38.80	44.10	68.69	74	-5.31	PK
V	15600.114	43.01	10.12	38.80	42.70	49.23	54	-4.77	AV
H	4592.108	61.39	6.48	36.37	44.05	60.19	74	-13.81	PK
H	4592.108	43.36	6.48	36.37	44.05	42.16	54	-11.84	AV
H	10400.077	53.47	8.47	38.64	44.50	56.08	68.2	-12.12	PK
H	10400.077	42.12	8.47	38.64	44.50	44.73	54	-9.27	AV
H	15600.138	50.88	10.12	38.38	44.10	55.28	74	-18.72	PK
H	15600.138	44.16	10.12	38.38	44.10	48.56	54	-5.44	AV
High Channel (5240 MHz)-Above 1G									
V	4739.144	64.47	7.10	37.24	43.50	65.31	74	-8.69	PK
V	4739.144	43.54	7.10	37.24	43.50	44.38	54	-9.62	AV
V	10480.065	62.30	8.46	37.68	44.50	63.94	68.2	-4.26	PK
V	10480.065	43.98	8.46	37.68	44.50	45.62	54	-8.38	AV
V	15720.127	62.25	10.12	38.80	44.10	67.07	74	-6.93	PK
V	15720.127	43.38	10.12	38.80	42.70	49.60	54	-4.40	AV
H	4739.023	61.72	7.10	37.24	43.50	62.56	74	-11.44	PK
H	4739.023	43.91	7.10	37.24	43.50	44.75	54	-9.25	AV
H	10480.166	53.49	8.46	38.57	44.50	56.02	68.2	-12.18	PK
H	10480.166	41.71	8.46	38.57	44.50	44.24	54	-9.76	AV
H	15720.024	51.36	10.12	38.38	44.10	55.76	74	-18.24	PK
H	15720.024	40.25	10.12	38.38	44.10	44.65	54	-9.35	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 is MIMO Mode.

Test Mode :	TX(5.2G) - 802.11n-HT40

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5190 MHz)-Above 1G									
V	4434.169	64.56	5.94	35.40	44.00	61.90	68.2	-6.30	PK
V	4434.169	43.09	5.94	35.40	44.00	40.43	54	-13.57	AV
V	10380.010	61.15	8.46	39.75	44.50	64.86	68.2	-3.34	PK
V	10380.010	43.92	8.46	39.75	44.50	47.63	54	-6.37	AV
V	15570.050	61.69	10.12	38.80	44.10	66.51	74	-7.49	PK
V	15570.050	43.22	10.12	38.80	42.70	49.44	54	-4.56	AV
H	4434.126	64.42	5.94	35.18	44.00	61.54	74	-12.46	PK
H	4434.126	43.04	5.94	35.18	44.00	40.16	54	-13.84	AV
H	10380.077	52.64	8.46	38.71	44.50	55.31	68.2	-12.89	PK
H	10380.077	43.71	8.46	38.71	44.50	46.38	54	-7.62	AV
H	15570.116	52.37	10.12	38.38	44.10	56.77	74	-17.23	PK
H	15570.116	43.09	10.12	38.38	44.10	47.49	54	-6.51	AV
middle Channel (5230 MHz)-Above 1G									
V	4739.148	64.38	6.48	36.35	44.05	63.16	68.2	-5.04	PK
V	4739.148	43.05	6.48	36.35	44.05	41.83	54	-12.17	AV
V	10460.156	63.31	8.47	37.88	44.51	65.15	68.2	-3.05	PK
V	10460.156	43.08	8.47	37.88	44.51	44.92	54	-9.08	AV
V	15690.030	61.38	10.12	38.80	44.10	66.20	74	-7.80	PK
V	15690.030	43.46	10.12	38.80	42.70	49.68	54	-4.32	AV
H	4739.019	60.21	6.48	36.37	44.05	59.01	68.2	-9.19	PK
H	4739.019	43.32	6.48	36.37	44.05	42.12	54	-11.88	AV
H	10460.003	54.96	8.47	38.64	44.50	57.57	68.2	-10.63	PK
H	10460.003	44.75	8.47	38.64	44.50	47.36	54	-6.64	AV
H	15690.138	54.54	10.12	38.38	44.10	58.94	74	-15.06	PK
H	15690.138	41.53	10.12	38.38	44.10	45.93	54	-8.07	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 is MIMO Mode.

Test Mode :	TX(5.2G) - 802.11ac-HT20

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5180 MHz)-Above 1G									
V	4434.115	63.21	5.94	35.40	44.00	60.55	68.2	-7.65	PK
V	4434.115	43.44	5.94	35.40	44.00	40.78	54	-13.22	AV
V	10360.001	60.70	8.46	39.75	44.50	64.41	68.2	-3.79	PK
V	10360.001	43.85	8.46	39.75	44.50	47.56	54	-6.44	AV
V	15540.190	62.28	10.12	38.80	44.10	67.10	74	-6.90	PK
V	15540.190	43.31	10.12	38.80	42.70	49.53	54	-4.47	AV
H	4434.193	64.76	5.94	35.18	44.00	61.88	68.2	-6.32	PK
H	4434.193	43.12	5.94	35.18	44.00	40.24	54	-13.76	AV
H	10360.113	52.61	8.46	38.71	44.50	55.28	68.2	-12.92	PK
H	10360.113	41.93	8.46	38.71	44.50	44.60	54	-9.40	AV
H	15540.056	52.48	10.12	38.38	44.10	56.88	74	-17.12	PK
H	15540.056	42.68	10.12	38.38	44.10	47.08	54	-6.92	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.156	60.22	6.48	36.35	44.05	59.00	74	-15.00	PK
V	4592.156	43.97	6.48	36.35	44.05	42.75	54	-11.25	AV
V	10400.102	63.55	8.47	37.88	44.51	65.39	68.2	-2.81	PK
V	10400.102	43.82	8.47	37.88	44.51	45.66	54	-8.34	AV
V	15600.041	61.26	10.12	38.80	44.10	66.08	74	-7.92	PK
V	15600.041	43.41	10.12	38.80	42.70	49.63	54	-4.37	AV
H	4592.098	64.77	6.48	36.37	44.05	63.57	74	-10.43	PK
H	4592.098	43.71	6.48	36.37	44.05	42.51	54	-11.49	AV
H	10400.138	51.22	8.47	38.64	44.50	53.83	68.2	-14.37	PK
H	10400.138	40.70	8.47	38.64	44.50	43.31	54	-10.69	AV
H	15600.155	51.40	10.12	38.38	44.10	55.80	74	-18.20	PK
H	15600.155	44.96	10.12	38.38	44.10	49.36	54	-4.64	AV
High Channel (5240 MHz)-Above 1G									
V	4739.142	62.05	7.10	37.24	43.50	62.89	74	-11.11	PK
V	4739.142	43.59	7.10	37.24	43.50	44.43	54	-9.57	AV
V	10480.103	64.09	8.46	37.68	44.50	65.73	68.2	-2.47	PK
V	10480.103	43.08	8.46	37.68	44.50	44.72	54	-9.28	AV
V	15720.168	64.34	10.12	38.80	44.10	69.16	74	-4.84	PK
V	15720.168	43.51	10.12	38.80	42.70	49.73	54	-4.27	AV
H	4739.166	64.31	7.10	37.24	43.50	65.15	74	-8.85	PK
H	4739.166	43.81	7.10	37.24	43.50	44.65	54	-9.35	AV
H	10480.095	50.25	8.46	38.57	44.50	52.78	68.2	-15.42	PK
H	10480.095	41.51	8.46	38.57	44.50	44.04	54	-9.96	AV
H	15720.122	50.23	10.12	38.38	44.10	54.63	74	-19.37	PK
H	15720.122	41.71	10.12	38.38	44.10	46.11	54	-7.89	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 is MIMO Mode.

Test Mode :	TX(5.2G) - 802.11ac-HT40

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5190 MHz)-Above 1G									
V	4434.050	64.02	5.94	35.40	44.00	61.36	68.2	-6.84	PK
V	4434.050	43.27	5.94	35.40	44.00	40.61	54	-13.39	AV
V	10380.131	60.45	8.46	39.75	44.50	64.16	68.2	-4.04	PK
V	10380.131	43.88	8.46	39.75	44.50	47.59	54	-6.41	AV
V	15570.181	60.92	10.12	38.80	44.10	65.74	74	-8.26	PK
V	15570.181	43.22	10.12	38.80	42.70	49.44	54	-4.56	AV
H	4434.134	64.78	5.94	35.18	44.00	61.90	74	-12.10	PK
H	4434.134	43.44	5.94	35.18	44.00	40.56	54	-13.44	AV
H	10380.151	52.90	8.46	38.71	44.50	55.57	68.2	-12.63	PK
H	10380.151	43.41	8.46	38.71	44.50	46.08	54	-7.92	AV
H	15570.114	50.25	10.12	38.38	44.10	54.65	74	-19.35	PK
H	15570.114	41.81	10.12	38.38	44.10	46.21	54	-7.79	AV
middle Channel (5230 MHz)-Above 1G									
V	4739.027	63.28	6.48	36.35	44.05	62.06	68.2	-6.14	PK
V	4739.027	43.43	6.48	36.35	44.05	42.21	54	-11.79	AV
V	10460.002	60.91	8.47	37.88	44.51	62.75	68.2	-5.45	PK
V	10460.002	43.70	8.47	37.88	44.51	45.54	54	-8.46	AV
V	15690.076	60.74	10.12	38.80	44.10	65.56	74	-8.44	PK
V	15690.076	43.40	10.12	38.80	42.70	49.62	54	-4.38	AV
H	4739.163	62.98	6.48	36.37	44.05	61.78	68.2	-6.42	PK
H	4739.163	43.12	6.48	36.37	44.05	41.92	54	-12.08	AV
H	10460.195	54.61	8.47	38.64	44.50	57.22	68.2	-10.98	PK
H	10460.195	41.25	8.47	38.64	44.50	43.86	54	-10.14	AV
H	15690.065	52.73	10.12	38.38	44.10	57.13	74	-16.87	PK
H	15690.065	42.00	10.12	38.38	44.10	46.40	54	-7.60	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 is MIMO Mode.

Test Mode :	TX(5.2G) - 802.11ac 80

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5210 MHz)-Above 1G									
V	4434.105	60.06	5.94	35.40	44.00	57.40	68.2	-10.80	PK
V	4434.105	43.37	5.94	35.40	44.00	40.71	54	-13.29	AV
V	10420.183	61.32	8.46	39.75	44.50	65.03	68.2	-3.17	PK
V	10420.183	43.45	8.46	39.75	44.50	47.16	54	-6.84	AV
V	15630.015	63.48	10.12	38.80	44.10	68.30	74	-5.70	PK
V	15630.015	43.44	10.12	38.80	42.70	49.66	54	-4.34	AV
H	4434.174	64.60	5.94	35.18	44.00	61.72	68.2	-6.48	PK
H	4434.174	43.29	5.94	35.18	44.00	40.41	54	-13.59	AV
H	10420.193	51.45	8.46	38.71	44.50	54.12	68.2	-14.08	PK
H	10420.193	41.57	8.46	38.71	44.50	44.24	54	-9.76	AV
H	15630.033	53.85	10.12	38.38	44.10	58.25	74	-15.75	PK
H	15630.033	42.87	10.12	38.38	44.10	47.27	54	-6.73	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 is MIMO Mode.

Test Mode :	TX (5.8G) -- 802.11a

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5745 MHz)-Above 1G									
V	4679.191	58.83	5.94	35.40	44.00	56.17	74	-17.83	PK
V	4679.191	43.09	5.94	35.40	44.00	40.43	54	-13.57	AV
V	11490.168	54.11	8.46	39.75	44.50	57.82	68.2	-10.38	PK
V	11490.168	43.98	8.46	39.75	44.50	47.69	54	-6.31	AV
V	17235.083	58.84	10.12	38.80	44.10	63.66	68.2	-4.54	PK
V	17235.083	43.69	10.12	38.80	42.70	49.91	54	-4.09	AV
H	4679.020	57.39	5.94	35.18	44.00	54.51	74	-19.49	PK
H	4679.020	43.05	5.94	35.18	44.00	40.17	54	-13.83	AV
H	11490.076	53.40	8.46	38.71	44.50	56.07	68.2	-12.13	PK
H	11490.076	42.18	8.46	38.71	44.50	44.85	54	-9.15	AV
H	17235.064	51.19	10.12	38.38	44.10	55.59	68.2	-12.61	PK
H	17235.064	40.63	10.12	38.38	44.10	45.03	54	-8.97	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.149	57.32	6.48	36.35	44.05	56.10	74	-17.90	PK
V	4592.149	43.58	6.48	36.35	44.05	42.36	54	-11.64	AV
V	11570.143	55.50	8.47	37.88	44.51	57.34	68.2	-10.86	PK
V	11570.143	43.98	8.47	37.88	44.51	45.82	54	-8.18	AV
V	17355.126	59.77	10.12	38.80	44.10	64.59	68.2	-3.61	PK
V	17355.126	39.87	10.12	38.80	42.70	46.09	54	-7.91	AV
H	4592.154	55.89	6.48	36.37	44.05	54.69	74	-19.31	PK
H	4592.154	43.15	6.48	36.37	44.05	41.95	54	-12.05	AV
H	11570.036	51.15	8.47	38.64	44.50	53.76	68.2	-14.44	PK
H	11570.036	44.33	8.47	38.64	44.50	46.94	54	-7.06	AV
H	17355.021	50.10	10.12	38.38	44.10	54.50	68.2	-13.70	PK
H	17355.021	43.24	10.12	38.38	44.10	47.64	54	-6.36	AV
High Channel (5825 MHz)-Above 1G									
V	6039.140	59.44	7.10	37.24	43.50	60.28	68.2	-7.92	PK
V	6039.140	43.34	7.10	37.24	43.50	44.18	54	-9.82	AV
V	11650.191	61.26	8.46	37.68	44.50	62.90	74	-11.10	PK
V	11650.191	43.22	8.46	37.68	44.50	44.86	54	-9.14	AV
V	17475.171	57.35	10.12	38.80	44.10	62.17	68.2	-6.03	PK
V	17475.171	43.38	10.12	38.80	42.70	49.60	54	-4.40	AV
H	6039.048	55.90	7.10	37.24	43.50	56.74	68.2	-11.46	PK
H	6039.048	43.79	7.10	37.24	43.50	44.63	54	-9.37	AV
H	11650.046	51.85	8.46	38.57	44.50	54.38	74	-19.62	PK
H	11650.046	44.02	8.46	38.57	44.50	46.55	54	-7.45	AV
H	17475.027	54.24	10.12	38.38	44.10	58.64	68.2	-9.56	PK
H	17475.027	44.49	10.12	38.38	44.10	48.89	54	-5.11	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.
The Worst mode is Antenna A.

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

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5745 MHz)-Above 1G									
V	4679.070	57.78	5.94	35.40	44.00	55.12	74	-18.88	PK
V	4679.070	43.03	5.94	35.40	44.00	40.37	54	-13.63	AV
V	11490.082	54.92	8.46	39.75	44.50	58.63	68.2	-9.57	PK
V	11490.082	43.60	8.46	39.75	44.50	47.31	54	-6.69	AV
V	17235.022	61.86	10.12	38.80	44.10	66.68	68.2	-1.52	PK
V	17235.022	43.60	10.12	38.80	42.70	49.82	54	-4.18	AV
H	4679.099	58.81	5.94	35.18	44.00	55.93	74	-18.07	PK
H	4679.099	43.03	5.94	35.18	44.00	40.15	54	-13.85	AV
H	11490.013	48.31	8.46	38.71	44.50	50.98	68.2	-17.22	PK
H	11490.013	41.55	8.46	38.71	44.50	44.22	54	-9.78	AV
H	17235.150	52.52	10.12	38.38	44.10	56.92	68.2	-11.28	PK
H	17235.150	42.95	10.12	38.38	44.10	47.35	54	-6.65	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.047	59.72	6.48	36.35	44.05	58.50	74	-15.50	PK
V	4592.047	43.14	6.48	36.35	44.05	41.92	54	-12.08	AV
V	11570.048	56.27	8.47	37.88	44.51	58.11	68.2	-10.09	PK
V	11570.048	43.70	8.47	37.88	44.51	45.54	54	-8.46	AV
V	17355.014	57.40	10.12	38.80	44.10	62.22	68.2	-5.98	PK
V	17355.014	43.84	10.12	38.80	42.70	50.06	54	-3.94	AV
H	4592.022	57.43	6.48	36.37	44.05	56.23	74	-17.77	PK
H	4592.022	43.55	6.48	36.37	44.05	42.35	54	-11.65	AV
H	11570.179	52.17	8.47	38.64	44.50	54.78	68.2	-13.42	PK
H	11570.179	43.17	8.47	38.64	44.50	45.78	54	-8.22	AV
H	17355.181	53.20	10.12	38.38	44.10	57.60	68.2	-10.60	PK
H	17355.181	44.07	10.12	38.38	44.10	48.47	54	-5.53	AV
High Channel (5825 MHz)-Above 1G									
V	6039.105	55.04	7.10	37.24	43.50	55.88	68.2	-12.32	PK
V	6039.105	43.55	7.10	37.24	43.50	44.39	54	-9.61	AV
V	11650.027	60.05	8.46	37.68	44.50	61.69	74	-12.31	PK
V	11650.027	43.57	8.46	37.68	44.50	45.21	54	-8.79	AV
V	17475.065	59.70	10.12	38.80	44.10	64.52	68.2	-3.68	PK
V	17475.065	43.56	10.12	38.80	42.70	49.78	54	-4.22	AV
H	6039.001	55.06	7.10	37.24	43.50	55.90	68.2	-12.30	PK
H	6039.001	43.57	7.10	37.24	43.50	44.41	54	-9.59	AV
H	11650.100	52.42	8.46	38.57	44.50	54.95	74	-19.05	PK
H	11650.100	40.64	8.46	38.57	44.50	43.17	54	-10.83	AV
H	17475.033	51.32	10.12	38.38	44.10	55.72	68.2	-12.48	PK
H	17475.033	42.04	10.12	38.38	44.10	46.44	54	-7.56	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 is MIMO Mode.

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

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5755 MHz)-Above 1G									
V	4679.175	59.30	5.94	35.40	44.00	56.64	74	-17.36	PK
V	4679.175	43.21	5.94	35.40	44.00	40.55	54	-13.45	AV
V	11510.140	56.25	8.46	39.75	44.50	59.96	74	-14.04	PK
V	11510.140	44.00	8.46	39.75	44.50	47.71	54	-6.29	AV
V	17265.101	58.69	10.12	38.80	44.10	63.51	68.2	-4.69	PK
V	17265.101	2.00	10.12	38.80	42.70	8.22	54	-45.78	AV
H	4679.113	60.60	5.94	35.18	44.00	57.72	74	-16.28	PK
H	4679.113	43.50	5.94	35.18	44.00	40.62	54	-13.38	AV
H	11510.179	54.35	8.46	38.71	44.50	57.02	74	-16.98	PK
H	11510.179	44.76	8.46	38.71	44.50	47.43	54	-6.57	AV
H	17265.091	51.98	10.12	38.38	44.10	56.38	68.2	-11.82	PK
H	17265.091	43.51	10.12	38.38	44.10	47.91	54	-6.09	AV
middle Channel (5795 MHz)-Above 1G									
V	6039.091	59.57	6.48	36.35	44.05	58.35	68.2	-9.85	PK
V	6039.091	43.13	6.48	36.35	44.05	41.91	54	-12.09	AV
V	11590.009	56.86	8.47	37.88	44.51	58.70	74	-15.30	PK
V	11590.009	43.46	8.47	37.88	44.51	45.30	54	-8.70	AV
V	17385.019	55.87	10.12	38.80	44.10	60.69	68.2	-7.51	PK
V	17385.019	41.65	10.12	38.80	42.70	47.87	54	-6.13	AV
H	6039.028	56.85	6.48	36.37	44.05	55.65	68.2	-12.55	PK
H	6039.028	43.45	6.48	36.37	44.05	42.25	54	-11.75	AV
H	11590.034	52.48	8.47	38.64	44.50	55.09	74	-18.91	PK
H	11590.034	42.18	8.47	38.64	44.50	44.79	54	-9.21	AV
H	17385.072	54.11	10.12	38.38	44.10	58.51	68.2	-9.69	PK
H	17385.072	40.30	10.12	38.38	44.10	44.70	54	-9.30	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.
The Worst mode is MIMO Mode.

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

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5745 MHz)-Above 1G									
V	4679.056	56.72	5.94	35.40	44.00	54.06	74	-19.94	PK
V	4679.056	43.47	5.94	35.40	44.00	40.81	54	-13.19	AV
V	11490.130	54.34	8.46	39.75	44.50	58.05	68.2	-10.15	PK
V	11490.130	43.29	8.46	39.75	44.50	47.00	54	-7.00	AV
V	17235.134	56.93	10.12	38.80	44.10	61.75	68.2	-6.45	PK
V	17235.134	43.38	10.12	38.80	42.70	49.60	54	-4.40	AV
H	4679.068	54.26	5.94	35.18	44.00	51.38	74	-22.62	PK
H	4679.068	43.04	5.94	35.18	44.00	40.16	54	-13.84	AV
H	11490.113	52.55	8.46	38.71	44.50	55.22	68.2	-12.98	PK
H	11490.113	41.24	8.46	38.71	44.50	43.91	54	-10.09	AV
H	17235.075	50.62	10.12	38.38	44.10	55.02	68.2	-13.18	PK
H	17235.075	42.32	10.12	38.38	44.10	46.72	54	-7.28	AV
middle Channel (5785 MHz)-Above 1G									
V	4592.119	56.38	6.48	36.35	44.05	55.16	74	-18.84	PK
V	4592.119	43.38	6.48	36.35	44.05	42.16	54	-11.84	AV
V	11570.146	58.40	8.47	37.88	44.51	60.24	68.2	-7.96	PK
V	11570.146	43.84	8.47	37.88	44.51	45.68	54	-8.32	AV
V	17355.097	58.25	10.12	38.80	44.10	63.07	68.2	-5.13	PK
V	17355.097	39.94	10.12	38.80	42.70	46.16	54	-7.84	AV
H	4592.102	57.78	6.48	36.37	44.05	56.58	74	-17.42	PK
H	4592.102	43.28	6.48	36.37	44.05	42.08	54	-11.92	AV
H	11570.031	51.53	8.47	38.64	44.50	54.14	68.2	-14.06	PK
H	11570.031	42.20	8.47	38.64	44.50	44.81	54	-9.19	AV
H	17355.099	53.82	10.12	38.38	44.10	58.22	68.2	-9.98	PK
H	17355.099	44.92	10.12	38.38	44.10	49.32	54	-4.68	AV
High Channel (5825 MHz)-Above 1G									
V	6039.192	56.32	7.10	37.24	43.50	57.16	68.2	-11.04	PK
V	6039.192	43.16	7.10	37.24	43.50	44.00	54	-10.00	AV
V	11650.181	61.87	8.46	37.68	44.50	63.51	74	-10.49	PK
V	11650.181	43.66	8.46	37.68	44.50	45.30	54	-8.70	AV
V	17475.028	57.64	10.12	38.80	44.10	62.46	68.2	-5.74	PK
V	17475.028	43.85	10.12	38.80	42.70	50.07	54	-3.93	AV
H	6039.112	54.35	7.10	37.24	43.50	55.19	68.2	-13.01	PK
H	6039.112	43.49	7.10	37.24	43.50	44.33	54	-9.67	AV
H	11650.063	51.24	8.46	38.57	44.50	53.77	74	-20.23	PK
H	11650.063	41.43	8.46	38.57	44.50	43.96	54	-10.04	AV
H	17475.171	50.83	10.12	38.38	44.10	55.23	68.2	-12.97	PK
H	17475.171	41.74	10.12	38.38	44.10	46.14	54	-7.86	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 is MIMO Mode.

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

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5755 MHz)-Above 1G									
V	4679.086	59.24	5.94	35.40	44.00	56.58	74	-17.42	PK
V	4679.086	43.88	5.94	35.40	44.00	41.22	54	-12.78	AV
V	11510.096	55.27	8.46	39.75	44.50	58.98	74	-15.02	PK
V	11510.096	43.93	8.46	39.75	44.50	47.64	54	-6.36	AV
V	17265.149	59.57	10.12	38.80	44.10	64.39	68.2	-3.81	PK
V	17265.149	2.00	10.12	38.80	42.70	8.22	54	-45.78	AV
H	4679.137	58.58	5.94	35.18	44.00	55.70	74	-18.30	PK
H	4679.137	43.55	5.94	35.18	44.00	40.67	54	-13.33	AV
H	11510.165	50.54	8.46	38.71	44.50	53.21	74	-20.79	PK
H	11510.165	43.67	8.46	38.71	44.50	46.34	54	-7.66	AV
H	17265.060	53.08	10.12	38.38	44.10	57.48	68.2	-10.72	PK
H	17265.060	40.17	10.12	38.38	44.10	44.57	54	-9.43	AV
middle Channel (5795 MHz)-Above 1G									
V	6039.081	59.34	6.48	36.35	44.05	58.12	68.2	-10.08	PK
V	6039.081	43.39	6.48	36.35	44.05	42.17	54	-11.83	AV
V	11590.195	59.97	8.47	37.88	44.51	61.81	74	-12.19	PK
V	11590.195	43.51	8.47	37.88	44.51	45.35	54	-8.65	AV
V	17385.177	55.33	10.12	38.80	44.10	60.15	68.2	-8.05	PK
V	17385.177	41.01	10.12	38.80	42.70	47.23	54	-6.77	AV
H	6039.034	59.07	6.48	36.37	44.05	57.87	68.2	-10.33	PK
H	6039.034	43.95	6.48	36.37	44.05	42.75	54	-11.25	AV
H	11590.073	54.36	8.47	38.64	44.50	56.97	74	-17.03	PK
H	11590.073	40.81	8.47	38.64	44.50	43.42	54	-10.58	AV
H	17385.119	54.48	10.12	38.38	44.10	58.88	68.2	-9.32	PK
H	17385.119	43.57	10.12	38.38	44.10	47.97	54	-6.03	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 is MIMO Mode.

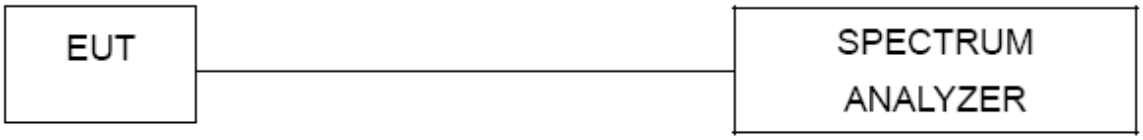
Test Mode :	TX (5.8G) -- 802.11ac 80

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5775 MHz)-Above 1G									
V	4679.173	57.03	5.94	35.40	44.00	54.37	74	-19.63	PK
V	4679.173	43.90	5.94	35.40	44.00	41.24	54	-12.76	AV
V	11550.103	59.34	8.46	39.75	44.50	63.05	74	-10.95	PK
V	11550.103	43.64	8.46	39.75	44.50	47.35	54	-6.65	AV
V	17325.124	56.68	10.12	38.80	44.10	61.50	68.2	-6.70	PK
V	17325.124	41.34	10.12	38.80	42.70	47.56	54	-6.44	AV
H	4679.182	57.64	5.94	35.18	44.00	54.76	74	-19.24	PK
H	4679.182	43.94	5.94	35.18	44.00	41.06	54	-12.94	AV
H	11550.108	51.74	8.46	38.71	44.50	54.41	74	-19.59	PK
H	11550.108	44.82	8.46	38.71	44.50	47.49	54	-6.51	AV
H	17325.194	53.02	10.12	38.38	44.10	57.42	68.2	-10.78	PK
H	17325.194	44.24	10.12	38.38	44.10	48.64	54	-5.36	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 is MIMO Mode.

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.

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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 7.6V
Test Mode ：	TX Frequency U-NII-1 (5180-5240MHz)		

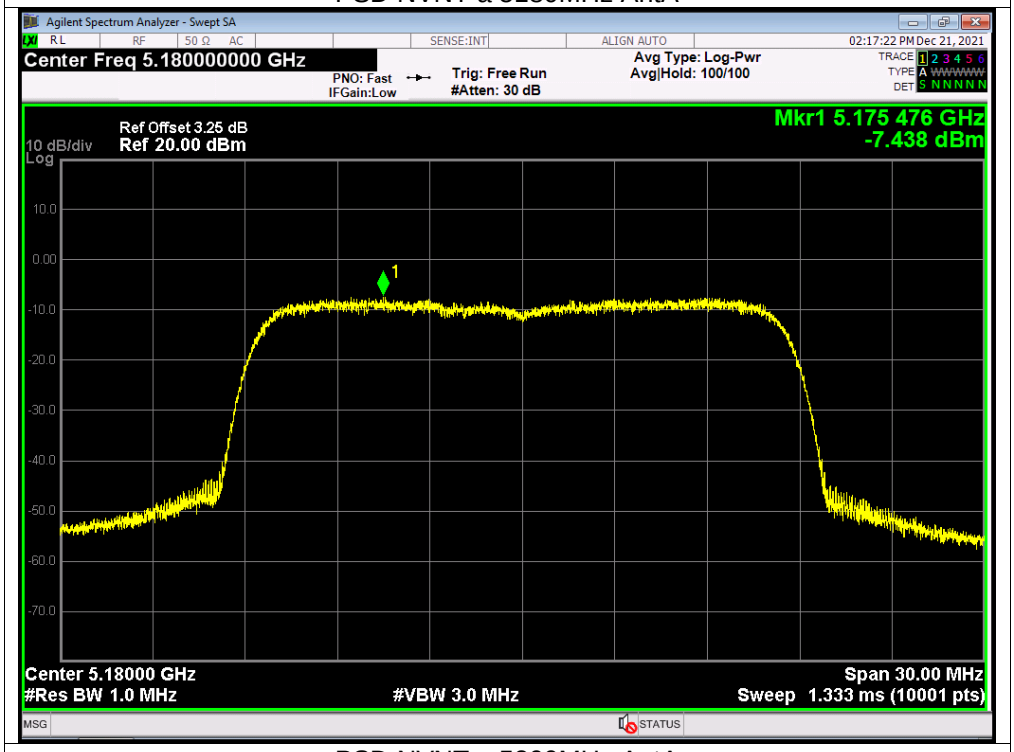
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

For power spectral density(PSD) measurements,
Array Gain=10log(NANT/NSS)dB=10log(2/1)=3.01dB,
So the directional gain for PSD is 6.02dBi

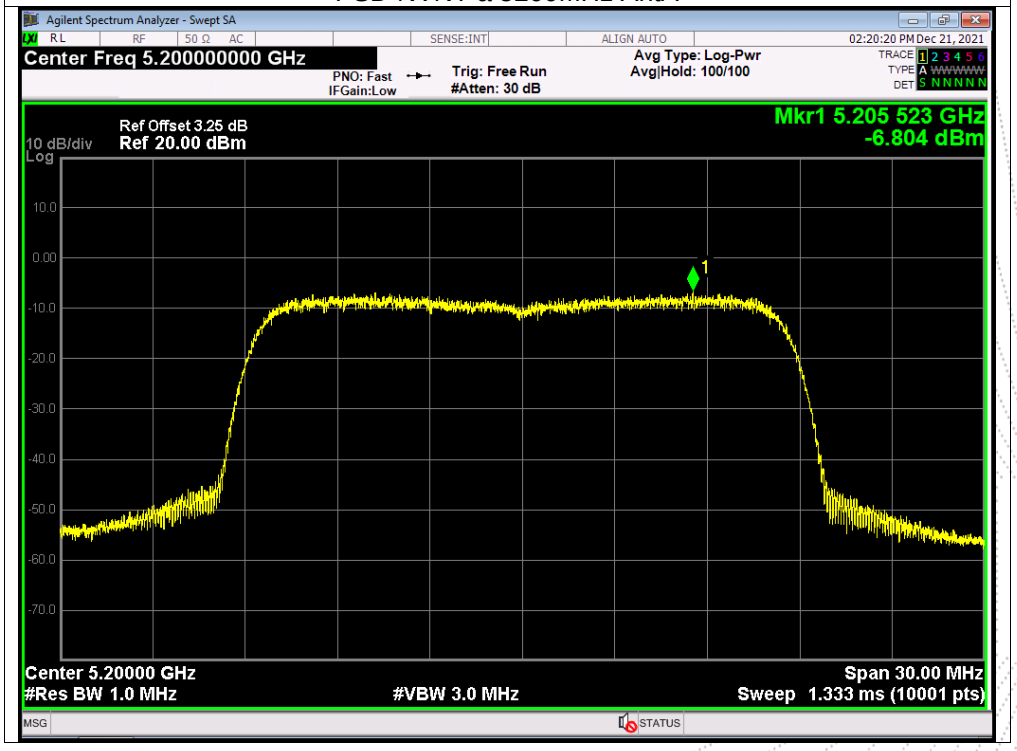
Mode	Frequency	Measured Power Density (dBm/MHz)			Limit (dBm/MHz)	Result
		ANT A	ANT B	Total		
802.11 a	5180 MHz	-7.44	-7.56	/	11	PASS
	5200 MHz	-6.8	-7.42	/	11	PASS
	5240 MHz	-7.81	-7.89	/	11	PASS
802.11 n20	5180 MHz	-8.15	-8.42	-5.27	10.98	PASS
	5200 MHz	-7.84	-8.31	-5.06	10.98	PASS
	5240 MHz	-8.59	-9.05	-5.80	10.98	PASS
802.11 n40	5190 MHz	-12	-11.59	-8.78	10.98	PASS
	5230 MHz	-11.99	-12.52	-9.24	10.98	PASS
802.11 ac20	5180 MHz	-8.2	-8.41	-5.29	10.98	PASS
	5200 MHz	-8.14	-8.14	-5.13	10.98	PASS
	5240 MHz	-8.9	-9	-5.94	10.98	PASS
802.11 ac40	5190 MHz	-11.72	-11.69	-8.69	10.98	PASS
	5230 MHz	-12.18	-12.32	-9.24	10.98	PASS
802.11 AC80	5210 MHz	-14.56	-14.14	-11.33	10.98	PASS

Test Graphs

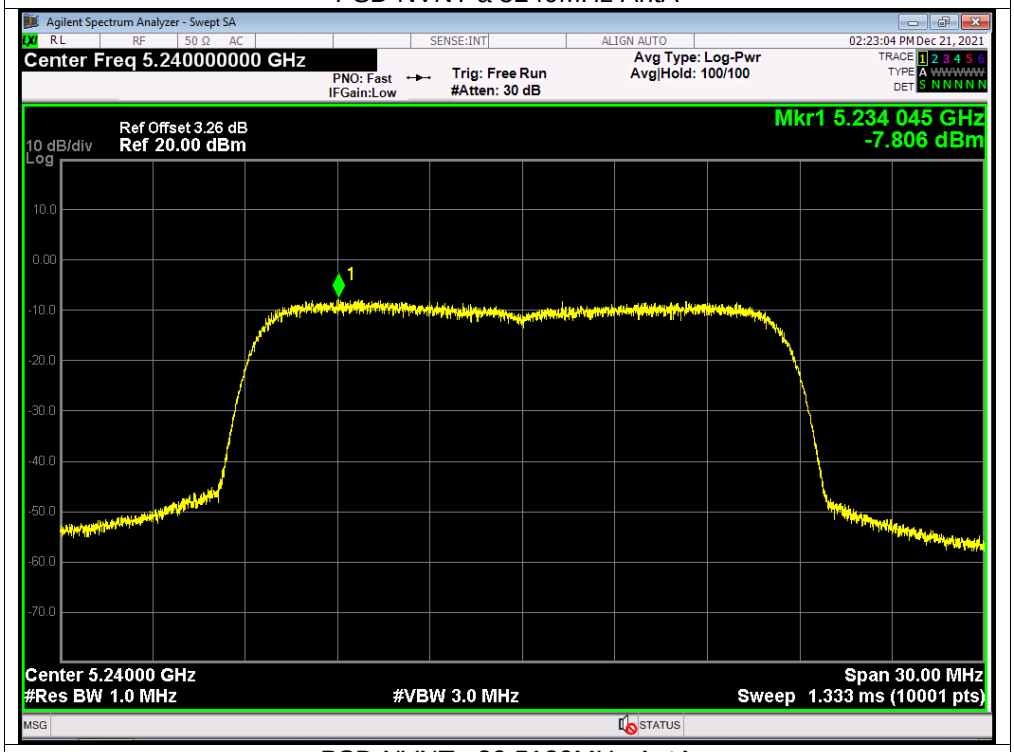
PSD NVNT a 5180MHz AntA



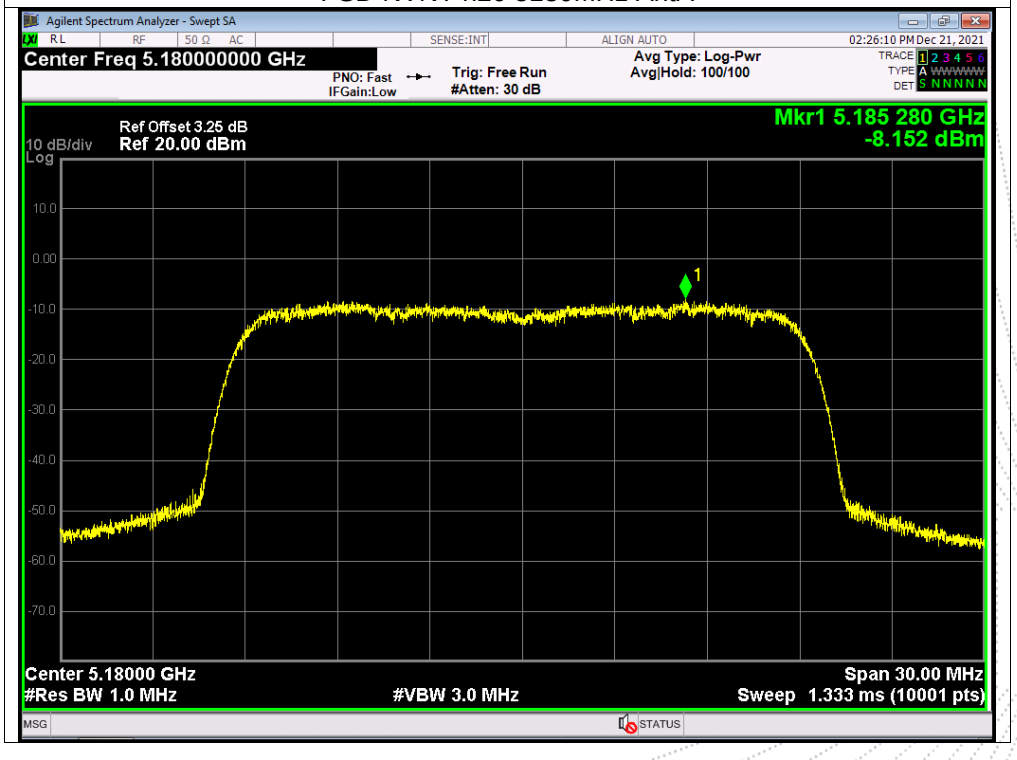
PSD NVNT a 5200MHz AntA



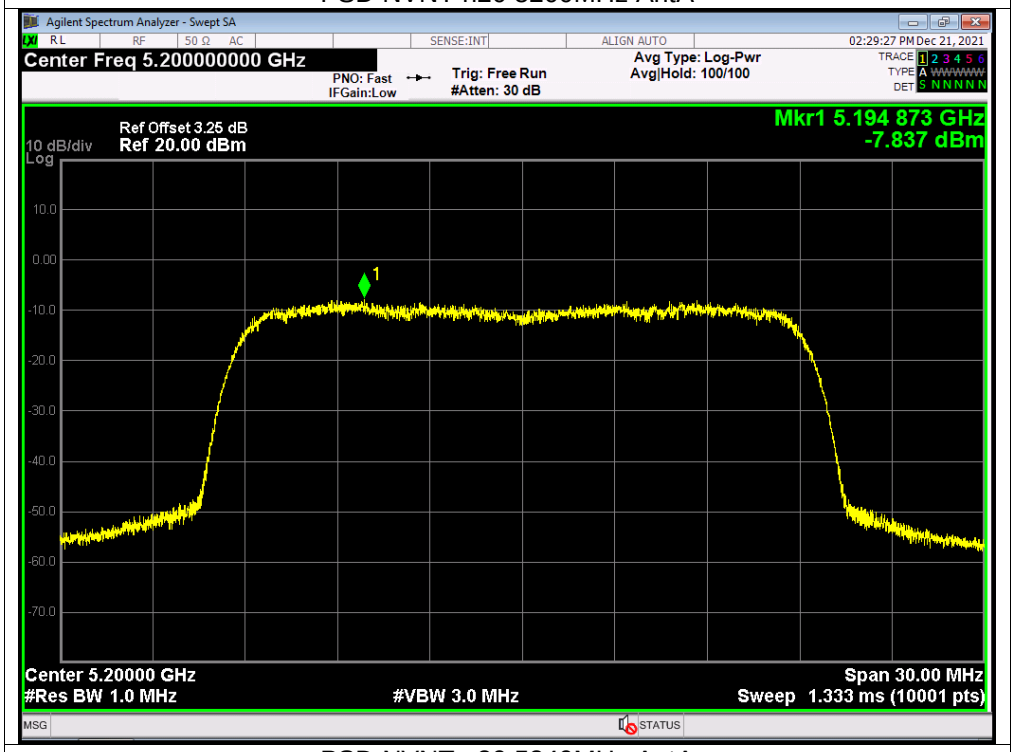
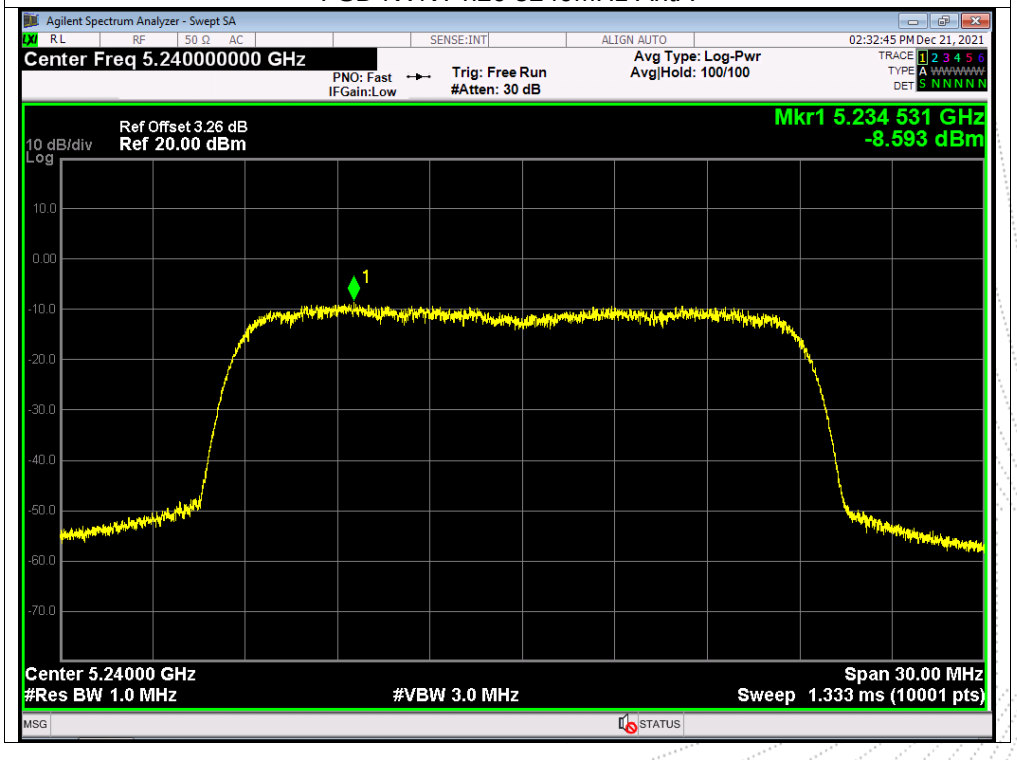
PSD NVNT a 5240MHz AntA



PSD NVNT n20 5180MHz AntA



PSD NVNT n20 5200MHz AntA



PSD NVNT n20 5240MHz AntA