TEST REPORT

Report No.:	BCTC2111884545-2E
Applicant:	REOLINK INNOVATION LIMITED
Product Name:	WiFi IP Camera
Model/Type reference:	Reolink Duo
Tested Date:	2021-11-16 to 2021-11-26
Issued Date:	2021-11-26

Shenzhen BCTC Testing Co., Ltd.

FCC ID:2AYHE-2108A

Product Name:	WiFi IP Camera
Trademark:	reolink
Model/Type reference:	Reolink Duo
Prepared For:	REOLINK INNOVATION LIMITED
Address:	FLAT/RM 705 7/F FA YUEN COMMERCIAL BUILDING 75-77 FA YUEN STREET MONG KOK KL HONG KONG
Manufacturer:	REOLINK INNOVATION LIMITED
Address:	FLAT/RM 705 7/F FA YUEN COMMERCIAL BUILDING 75-77 FA YUEN STREET MONG KOK KL HONG KONG
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:	2021-11-16
Sample tested Date:	2021-11-16 to 2021-11-26
Issue Date:	2021-11-26
Report No.:	BCTC2111884545-2E
Test Standards	FCC Part15 15.407 ANSI C63.10-2013 KDB 662911 D01 v02r01 KDB 789033 D02 v02r01
Test Results	PASS
Remark:	This is WIFI-5GHz band radio test report.

Tested by:

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.

Table Of Content

(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2111884545-2E	2021-11-26	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

1	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(30MHz-1GHz)	U=4.3dB
2	3m chamber Radiated spurious emission(9KHz-30MHz)	U=3.7dB
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

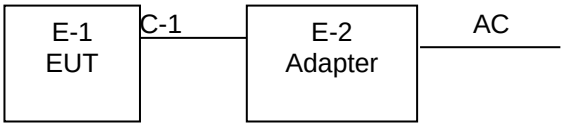
4.1 Product Information

Model/Type reference:	Reolink Duo
Model differences:	N/A
IEEE 802.11 WLAN Mode Supported	802.11a/n (20MHz channel bandwidth)
Operation Frequency:	5180-5240MHz for 802.11a/n(HT20); 5745-5825 MHz for 802.11a/n (HT20);
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n (HT20):MCS0-MCS15;
Type of Modulation:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/;
Number Of Channel	4 channels for 802.11a/n20 in the 5180-5240MHz band ; 5 channels for 802.11a/n20 in the 5745-5825MHz band ;
Antenna installation:	External antenna
Antenna Gain:	3.83dBi
Ratings:	AC 120V/60Hz/DC 3.65V

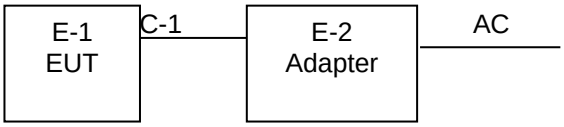
4.2 Test Setup Configuration

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	WiFi IP Camera	reolink	Reolink Duo	N/A	EUT
E-2	Adapter	UGreen	CD122	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.3M	USB 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 (20 MHz) band IV (5180-5240MHz):

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

Frequency and Channel list for 802.11a/n (20 MHz) band IV (5745-5825MHz):

802.11a/n (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	-	-	-	-	-	-

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 20 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165
Mode 2	Link Mode

Conducted Emission	
Final Test Mode	**Description**
Mode 2	Link Mode

For Radiated Emission	
Final Test Mode	**Description**
Mode 1	802.11a / n 20 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165

Note: The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

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	**CC3xxxRadioTool-1.0.3.16**		
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, 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

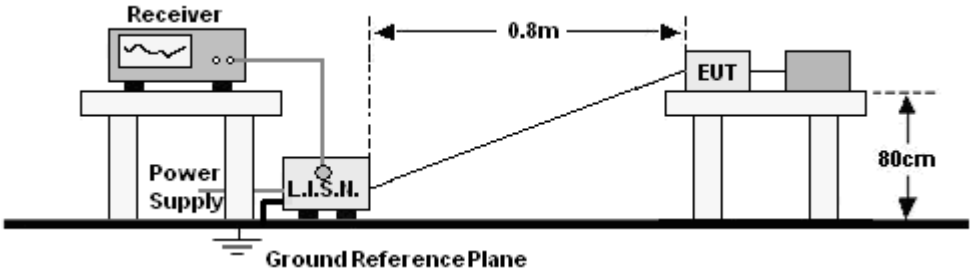
Conducted Emissions Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR3	102075	May 28, 2021	May 27, 2022
LISN	R&S	ENV216	101375	May 28, 2021	May 27, 2022
ISN	HPX	ISN T800	S1509001	May 28, 2021	May 27, 2022
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\

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 Analyzer 20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 28, 2021	May 27, 2022
Spectrum Analyzer 9kHz-40GHz	R&S	FSP 40	\	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 Analyzer 20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 28, 2021	May 27, 2022
Spectrum Analyzer 9kHz-40GHz	R&S	FSP 40	\	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

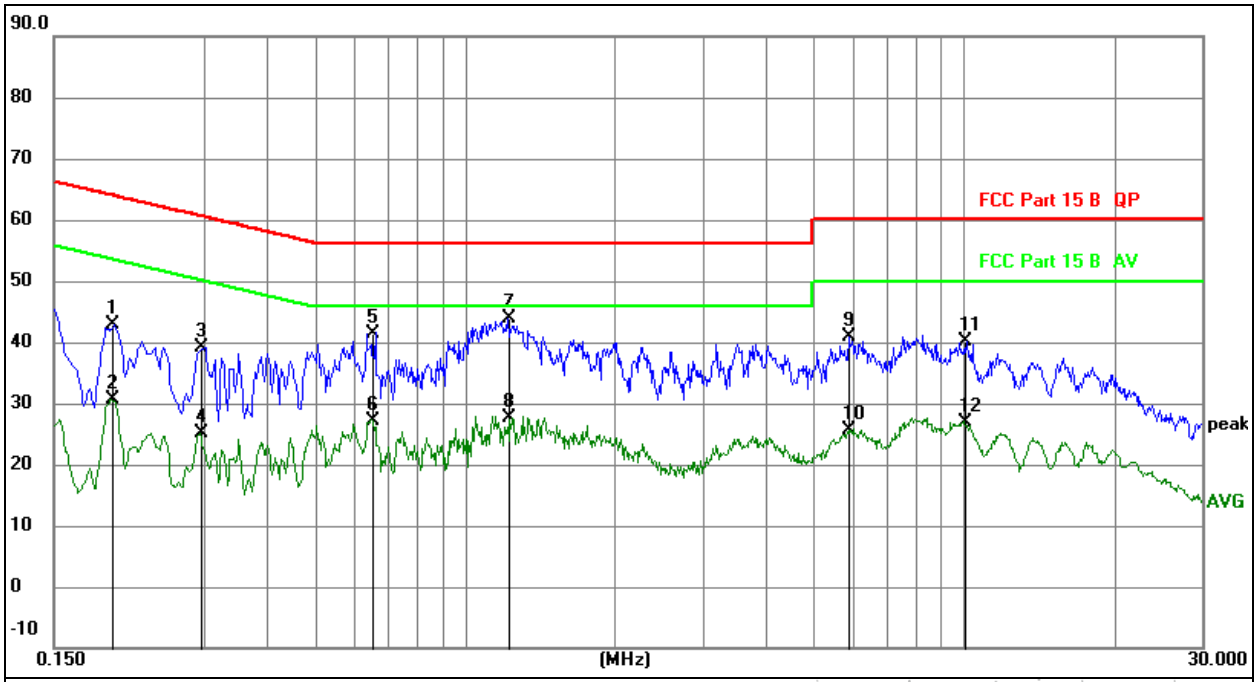
a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak 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.
We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in the report.

6.5 Test Result

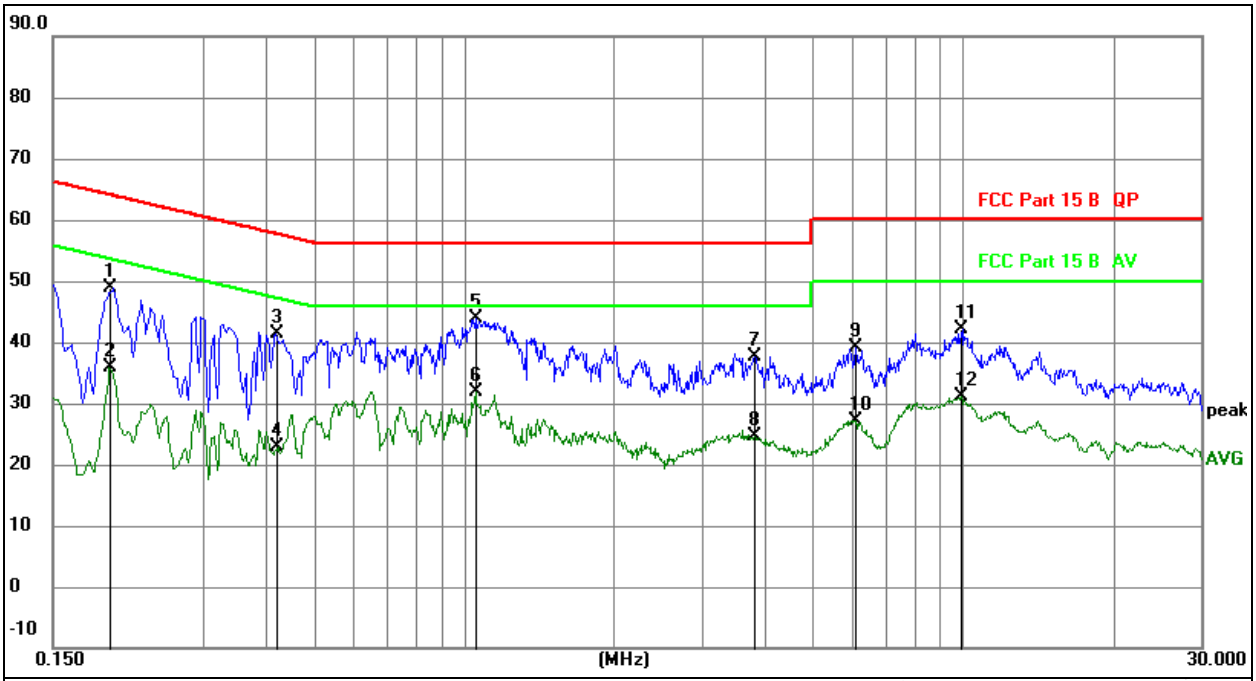
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage ：	AC120V/60Hz
Test Mode:	Mode 2	Polarization :	L



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		0.1955	23.17	19.61	42.78	63.80	-21.02	QP
2		0.1955	10.92	19.61	30.53	53.80	-23.27	AVG
3		0.2940	19.60	19.61	39.21	60.41	-21.20	QP
4		0.2940	5.50	19.61	25.11	50.41	-25.30	AVG
5		0.6543	21.88	19.62	41.50	56.00	-14.50	QP
6		0.6543	7.58	19.62	27.20	46.00	-18.80	AVG
7	*	1.2164	24.25	19.63	43.88	56.00	-12.12	QP
8		1.2164	7.98	19.63	27.61	46.00	-18.39	AVG
9		5.8830	21.19	19.72	40.91	60.00	-19.09	QP
10		5.8830	5.91	19.72	25.63	50.00	-24.37	AVG
11		10.0320	20.37	19.80	40.17	60.00	-19.83	QP
12		10.0320	6.97	19.80	26.77	50.00	-23.23	AVG

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage ：	AC120V/60Hz
Test Mode:	Mode 2	Polarization :	N



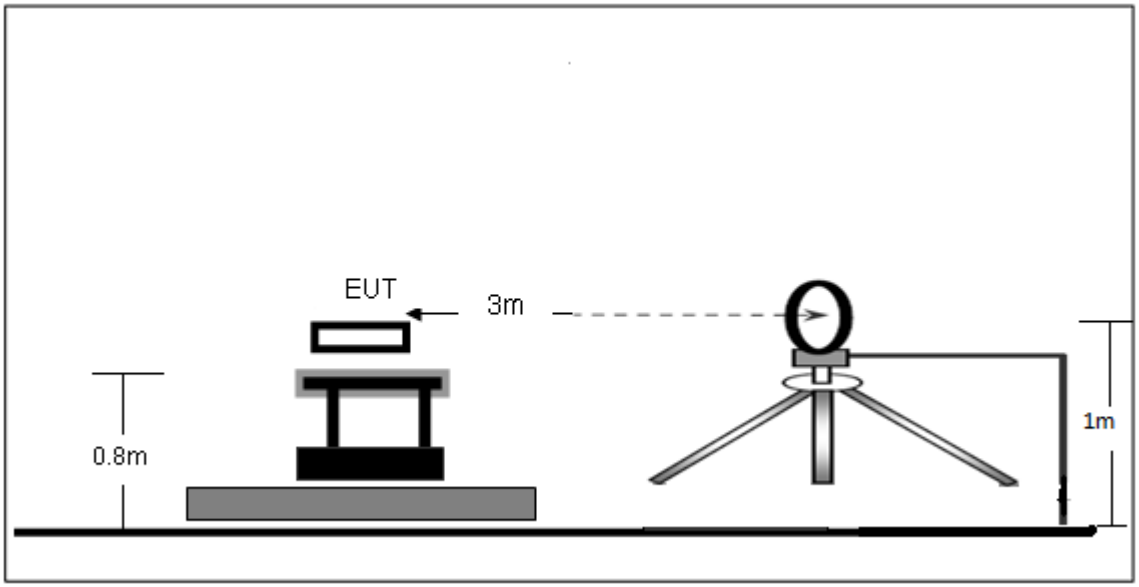
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1945	29.18	19.61	48.79	63.84	-15.05	QP
2		0.1945	16.23	19.61	35.84	53.84	-18.00	AVG
3		0.4193	21.67	19.62	41.29	57.46	-16.17	QP
4		0.4193	3.21	19.62	22.83	47.46	-24.63	AVG
5	*	1.0541	24.27	19.63	43.90	56.00	-12.10	QP
6		1.0541	12.19	19.63	31.82	46.00	-14.18	AVG
7		3.8196	17.96	19.68	37.64	56.00	-18.36	QP
8		3.8196	4.84	19.68	24.52	46.00	-21.48	AVG
9		6.0885	19.37	19.73	39.10	60.00	-20.90	QP
10		6.0885	7.52	19.73	27.25	50.00	-22.75	AVG
11		9.9130	22.36	19.80	42.16	60.00	-17.84	QP
12		9.9130	11.38	19.80	31.18	50.00	-18.82	AVG

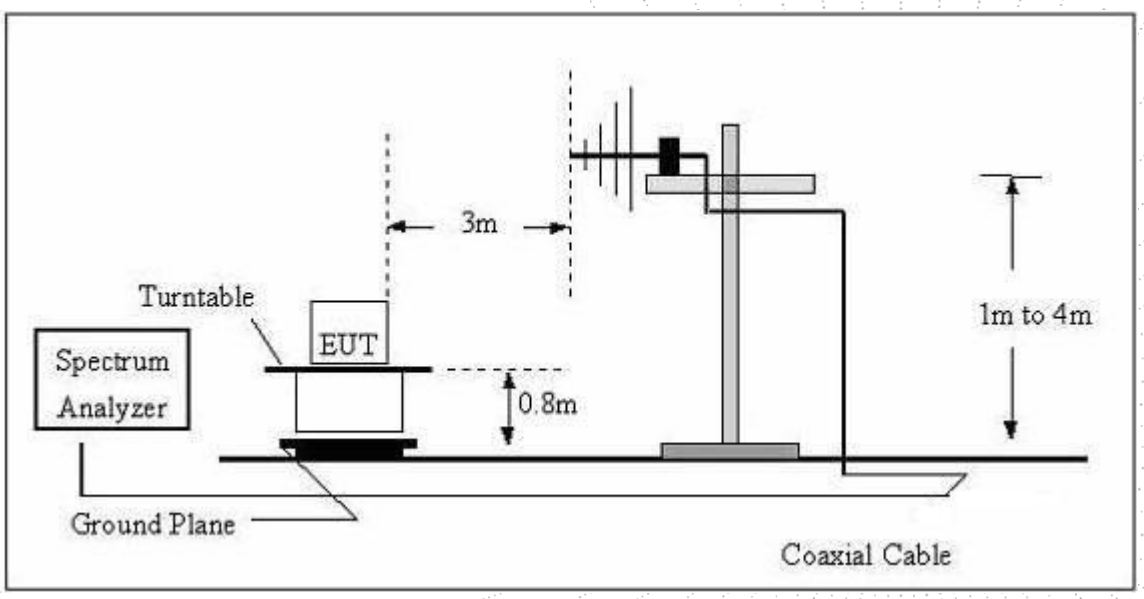
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

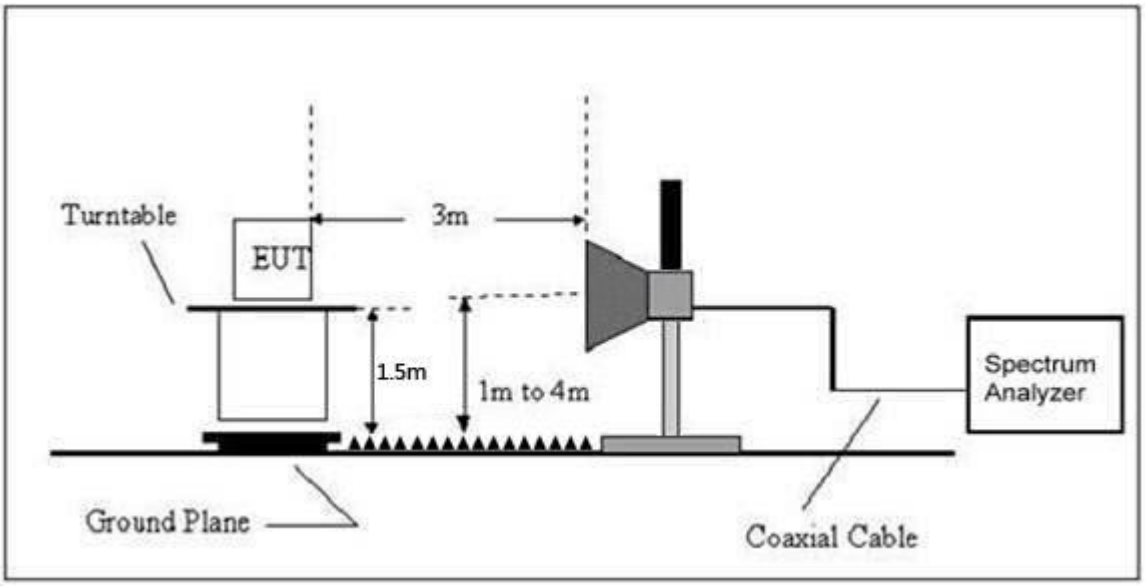
（A）Radiated Emission Test-Up Frequency Below 30MHz



（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

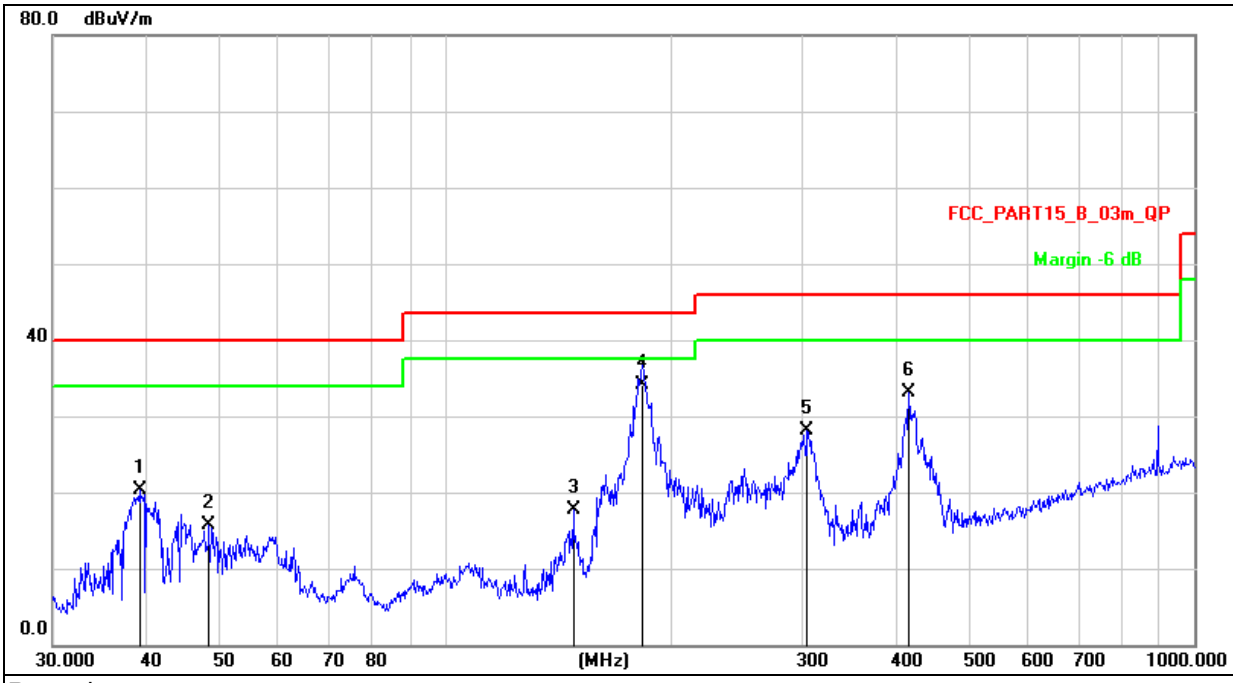
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage ：	AC120V/60Hz
Test Mode:	Mode 1	Polarization :	---

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:	101KPa	Test Voltage ：	AC120V/60Hz
Test Mode:	Mode 1	Polarization :	Horizontal

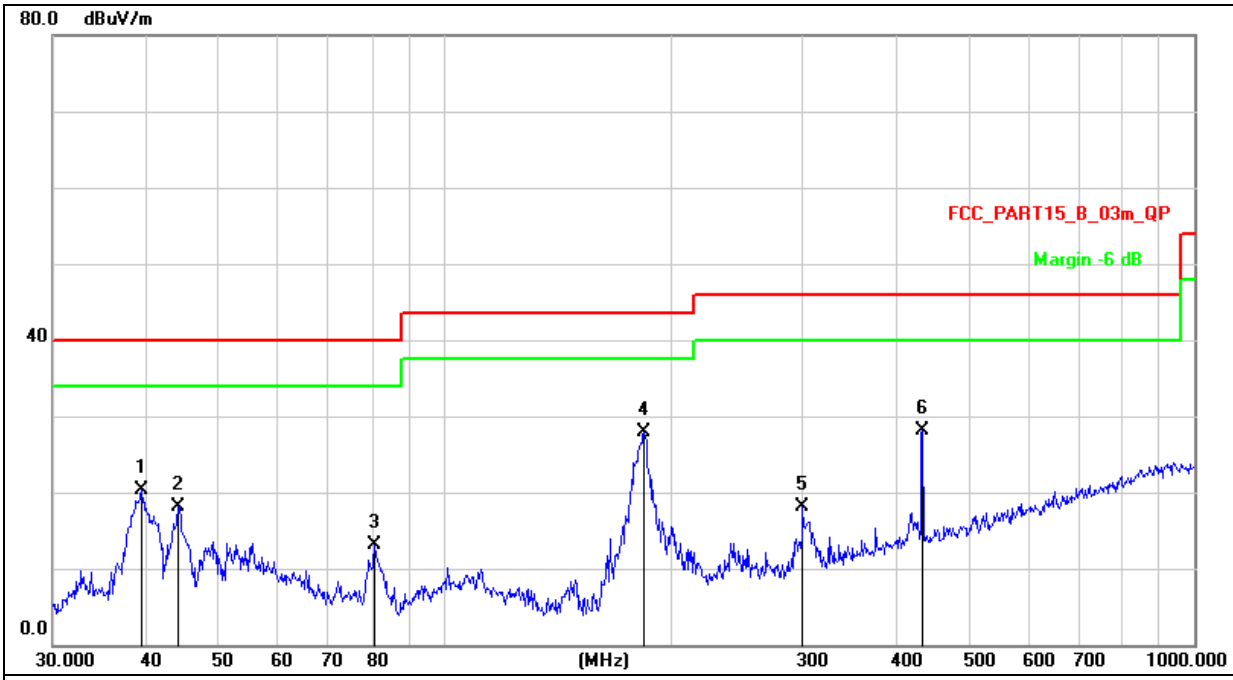


Remark:

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		39.1613	37.33	-17.02	20.31	40.00	-19.69	QP
2		48.5016	31.28	-15.65	15.63	40.00	-24.37	QP
3		148.4410	37.07	-19.38	17.69	43.50	-25.81	QP
4	*	183.0605	50.84	-16.82	34.02	43.50	-9.48	QP
5		304.6099	41.76	-13.63	28.13	46.00	-17.87	QP
6		416.1791	43.47	-10.44	33.03	46.00	-12.97	QP

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage ：	AC120V/60Hz
Test Mode:	Mode 1	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		39.4371	37.21	-16.98	20.23	40.00	-19.77	QP
2		44.1202	34.38	-16.29	18.09	40.00	-21.91	QP
3		80.6441	33.27	-20.25	13.02	40.00	-26.98	QP
4	*	184.4898	44.61	-16.70	27.91	43.50	-15.59	QP
5		300.3672	31.77	-13.75	18.02	46.00	-27.98	QP
6		434.0651	38.00	-9.98	28.02	46.00	-17.98	QP

Between 1GHz – 40GHz

The worst case is Antenna A.

Test Mode:	TX(5.1G) - 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	4434.080	60.90	5.94	35.40	44.00	58.24	68.20	-9.96	PK
V	4434.080	43.53	5.94	35.40	44.00	40.87	54.00	-13.13	AV
V	10360.052	52.35	8.46	39.75	44.50	56.06	68.20	-12.14	PK
V	10360.057	43.90	8.46	39.75	44.50	47.61	54.00	-6.39	AV
V	15540.192	62.18	10.12	38.80	44.10	67.00	74.00	-7.00	PK
V	15540.192	43.91	10.12	38.80	42.70	50.13	54.00	-3.87	AV
H	4434.080	61.40	5.94	35.18	44.00	58.52	68.20	-9.68	PK
H	4434.080	43.72	5.94	35.18	44.00	40.84	54.00	-13.16	AV
H	10360.010	50.04	8.46	38.71	44.50	52.71	68.20	-15.49	PK
H	10360.010	40.16	8.46	38.71	44.50	42.83	54.00	-11.17	AV
H	15540.063	52.61	10.12	38.38	44.10	57.01	74.00	-16.99	PK
H	15540.063	42.84	10.12	38.38	44.10	47.24	54.00	-6.76	AV
Middle Channel (5200 MHz)-Above 1G									
V	4592.178	62.43	6.48	36.35	44.05	61.21	74.00	-12.79	PK
V	4592.178	43.49	6.48	36.35	44.05	42.27	54.00	-11.73	AV
V	10400.050	64.81	8.47	37.88	44.51	66.65	68.20	-1.55	PK
V	10400.050	43.75	8.47	37.88	44.51	45.59	54.00	-8.41	AV
V	15600.186	64.42	10.12	38.80	44.10	69.24	74.00	-4.76	PK
V	15600.186	43.50	10.12	38.80	42.70	49.72	54.00	-4.28	AV
H	4592.196	63.61	6.48	36.37	44.05	62.41	74.00	-11.59	PK
H	4592.196	43.91	6.48	36.37	44.05	42.71	54.00	-11.29	AV
H	10400.100	54.62	8.47	38.64	44.50	57.23	68.20	-10.97	PK
H	10400.100	42.07	8.47	38.64	44.50	44.68	54.00	-9.32	AV
H	15600.155	50.69	10.12	38.38	44.10	55.09	74.00	-18.91	PK
H	15600.155	44.74	10.12	38.38	44.10	49.14	54.00	-4.86	AV
High Channel (5240 MHz)-Above 1G									
V	4739.108	61.00	7.10	37.24	43.50	61.84	74.00	-12.16	PK
V	4739.108	43.12	7.10	37.24	43.50	43.96	54.00	-10.04	AV
V	10480.029	61.54	8.46	37.68	44.50	63.18	68.20	-5.02	PK
V	10480.029	43.69	8.46	37.68	44.50	45.33	54.00	-8.67	AV
V	15720.061	60.49	10.12	38.80	44.10	65.31	74.00	-8.69	PK
V	15720.061	43.89	10.12	38.80	42.70	50.11	54.00	-3.89	AV
H	4739.158	63.81	7.10	37.24	43.50	64.65	74.00	-9.35	PK
H	4739.158	43.89	7.10	37.24	43.50	44.73	54.00	-9.27	AV
H	10480.095	50.01	8.46	38.57	44.50	52.54	68.20	-15.66	PK
H	10480.095	42.10	8.46	38.57	44.50	44.63	54.00	-9.37	AV
H	15720.199	53.25	10.12	38.38	44.10	57.65	74.00	-16.35	PK
H	15720.199	43.78	10.12	38.38	44.10	48.18	54.00	-5.82	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.

Test Mode:	TX(5.1G) - 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	4434.134	62.12	5.94	35.40	44.00	59.46	68.20	-8.74	PK
V	4434.134	43.32	5.94	35.40	44.00	40.66	54.00	-13.34	AV
V	10360.027	63.82	8.46	39.75	44.50	67.53	68.20	-0.67	PK
V	10360.027	43.35	8.46	39.75	44.50	47.06	54.00	-6.94	AV
V	15540.032	61.37	10.12	38.80	44.10	66.19	74.00	-7.81	PK
V	15540.032	43.86	10.12	38.80	42.70	50.08	54.00	-3.92	AV
H	4434.127	64.85	5.94	35.18	44.00	61.97	68.20	-6.23	PK
H	4434.127	43.57	5.94	35.18	44.00	40.69	54.00	-13.31	AV
H	10360.130	50.89	8.46	38.71	44.50	53.56	68.20	-14.64	PK
H	10360.130	41.96	8.46	38.71	44.50	44.63	54.00	-9.37	AV
H	15540.171	51.62	10.12	38.38	44.10	56.02	74.00	-17.98	PK
H	15540.171	42.54	10.12	38.38	44.10	46.94	54.00	-7.06	AV
Middle Channel (5200 MHz)-Above 1G									
V	4592.143	64.34	6.48	36.35	44.05	63.12	74.00	-10.88	PK
V	4592.143	43.77	6.48	36.35	44.05	42.55	54.00	-11.45	AV
V	10400.138	64.21	8.47	37.88	44.51	66.05	68.20	-2.15	PK
V	10400.138	43.07	8.47	37.88	44.51	44.91	54.00	-9.09	AV
V	15600.071	60.32	10.12	38.80	44.10	65.14	74.00	-8.86	PK
V	15600.071	43.27	10.12	38.80	42.70	49.49	54.00	-4.51	AV
H	4592.167	62.67	6.48	36.37	44.05	61.47	74.00	-12.53	PK
H	4592.167	43.44	6.48	36.37	44.05	42.24	54.00	-11.76	AV
H	10400.133	50.24	8.47	38.64	44.50	52.85	68.20	-15.35	PK
H	10400.133	44.16	8.47	38.64	44.50	46.77	54.00	-7.23	AV
H	15600.150	50.43	10.12	38.38	44.10	54.83	74.00	-19.17	PK
H	15600.150	44.66	10.12	38.38	44.10	49.06	54.00	-4.94	AV
High Channel (5240 MHz)-Above 1G									
V	4739.035	62.49	7.10	37.24	43.50	63.33	74.00	-10.67	PK
V	4739.035	43.79	7.10	37.24	43.50	44.63	54.00	-9.37	AV
V	10480.035	62.18	8.46	37.68	44.50	63.82	68.20	-4.38	PK
V	10480.035	43.26	8.46	37.68	44.50	44.90	54.00	-9.10	AV
V	15720.051	64.44	10.12	38.80	44.10	69.26	74.00	-4.74	PK
V	15720.051	43.75	10.12	38.80	42.70	49.97	54.00	-4.03	AV
H	4739.118	60.71	7.10	37.24	43.50	61.55	74.00	-12.45	PK
H	4739.118	43.00	7.10	37.24	43.50	43.84	54.00	-10.16	AV
H	10480.031	54.58	8.46	38.57	44.50	57.11	68.20	-11.09	PK
H	10480.031	44.22	8.46	38.57	44.50	46.75	54.00	-7.25	AV
H	15720.046	52.67	10.12	38.38	44.10	57.07	74.00	-16.93	PK
H	15720.046	41.79	10.12	38.38	44.10	46.19	54.00	-7.81	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	4679.056	55.70	5.94	35.40	44.00	53.04	74.00	-20.96	PK
V	4679.056	43.41	5.94	35.40	44.00	40.75	54.00	-13.25	AV
V	11490.147	55.67	8.46	39.75	44.50	59.38	68.20	-8.82	PK
V	11490.147	43.70	8.46	39.75	44.50	47.41	54.00	-6.59	AV
V	17235.127	60.34	10.12	38.80	44.10	65.16	74.00	-8.84	PK
V	17235.127	43.70	10.12	38.80	42.70	49.92	54.00	-4.08	AV
H	4679.020	56.56	5.94	35.18	44.00	53.68	74.00	-20.32	PK
H	4679.020	43.80	5.94	35.18	44.00	40.92	54.00	-13.08	AV
H	11490.008	52.17	8.46	38.71	44.50	54.84	68.20	-13.36	PK
H	11490.008	40.23	8.46	38.71	44.50	42.90	54.00	-11.10	AV
H	17235.128	51.94	10.12	38.38	44.10	56.34	74.00	-17.66	PK
H	17235.128	42.72	10.12	38.38	44.10	47.12	54.00	-6.88	AV
Middle Channel (5785 MHz)-Above 1G									
V	4592.163	54.73	6.48	36.35	44.05	53.51	74.00	-20.49	PK
V	4592.163	43.25	6.48	36.35	44.05	42.03	54.00	-11.97	AV
V	11570.058	57.92	8.47	37.88	44.51	59.76	68.20	-8.44	PK
V	11570.058	43.34	8.47	37.88	44.51	45.18	54.00	-8.82	AV
V	17355.014	56.02	10.12	38.80	44.10	60.84	74.00	-13.16	PK
V	17355.014	39.64	10.12	38.80	42.70	45.86	54.00	-8.14	AV
H	4592.178	58.16	6.48	36.37	44.05	56.96	74.00	-17.04	PK
H	4592.178	43.09	6.48	36.37	44.05	41.89	54.00	-12.11	AV
H	11570.004	54.13	8.47	38.64	44.50	56.74	68.20	-11.46	PK
H	11570.004	42.32	8.47	38.64	44.50	44.93	54.00	-9.07	AV
H	17355.113	51.31	10.12	38.38	44.10	55.71	74.00	-18.29	PK
H	17355.113	42.92	10.12	38.38	44.10	47.32	54.00	-6.68	AV
High Channel (5825 MHz)-Above 1G									
V	6039.018	57.65	7.10	37.24	43.50	58.49	68.20	-9.71	PK
V	6039.018	43.83	7.10	37.24	43.50	44.67	54.00	-9.33	AV
V	11650.024	61.14	8.46	37.68	44.50	62.78	74.00	-11.22	PK
V	11650.024	43.91	8.46	37.68	44.50	45.55	54.00	-8.45	AV
V	17475.075	54.49	10.12	38.80	44.10	59.31	68.20	-8.89	PK
V	17475.075	43.14	10.12	38.80	42.70	49.36	54.00	-4.64	AV
H	6039.132	58.56	7.10	37.24	43.50	59.40	68.20	-8.80	PK
H	6039.132	43.43	7.10	37.24	43.50	44.27	54.00	-9.73	AV
H	11650.031	53.63	8.46	38.57	44.50	56.16	74.00	-17.84	PK
H	11650.031	40.65	8.46	38.57	44.50	43.18	54.00	-10.82	AV
H	17475.058	53.97	10.12	38.38	44.10	58.37	68.20	-9.83	PK
H	17475.058	40.99	10.12	38.38	44.10	45.39	54.00	-8.61	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.
The Worst mode is Antenna A.

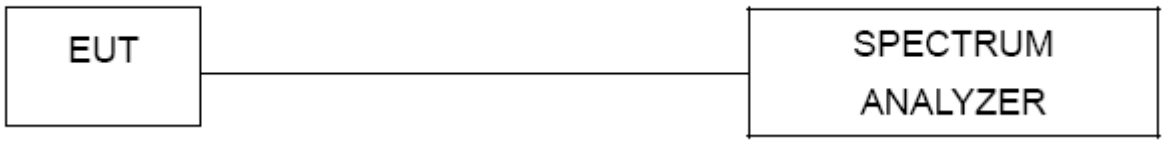
Test Mode:	TX(5.8G) - 802.11n-HT20

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	4679.125	58.34	5.94	35.40	44.00	55.68	74.00	-18.32	PK
V	4679.125	43.23	5.94	35.40	44.00	40.57	54.00	-13.43	AV
V	11490.082	55.78	8.46	39.75	44.50	59.49	68.20	-8.71	PK
V	11490.082	43.97	8.46	39.75	44.50	47.68	54.00	-6.32	AV
V	17235.034	60.42	10.12	38.80	44.10	65.24	74.00	-8.76	PK
V	17235.034	43.86	10.12	38.80	42.70	50.08	54.00	-3.92	AV
H	4679.001	56.97	5.94	35.18	44.00	54.09	74.00	-19.91	PK
H	4679.001	43.66	5.94	35.18	44.00	40.78	54.00	-13.22	AV
H	11490.186	48.16	8.46	38.71	44.50	50.83	68.20	-17.37	PK
H	11490.186	44.99	8.46	38.71	44.50	47.66	54.00	-6.34	AV
H	17235.054	50.45	10.12	38.38	44.10	54.85	74.00	-19.15	PK
H	17235.054	40.57	10.12	38.38	44.10	44.97	54.00	-9.03	AV
Middle Channel (5785 MHz)-Above 1G									
V	4592.036	60.15	6.48	36.35	44.05	58.93	74.00	-15.07	PK
V	4592.036	43.38	6.48	36.35	44.05	42.16	54.00	-11.84	AV
V	11570.095	55.19	8.47	37.88	44.51	57.03	68.20	-11.17	PK
V	11570.095	43.95	8.47	37.88	44.51	45.79	54.00	-8.21	AV
V	17355.043	57.22	10.12	38.80	44.10	62.04	74.00	-11.96	PK
V	17355.043	43.08	10.12	38.80	42.70	49.30	54.00	-4.70	AV
H	4592.146	56.67	6.48	36.37	44.05	55.47	74.00	-18.53	PK
H	4592.146	43.24	6.48	36.37	44.05	42.04	54.00	-11.96	AV
H	11570.063	51.32	8.47	38.64	44.50	53.93	68.20	-14.27	PK
H	11570.063	41.18	8.47	38.64	44.50	43.79	54.00	-10.21	AV
H	17355.108	52.15	10.12	38.38	44.10	56.55	74.00	-17.45	PK
H	17355.108	41.00	10.12	38.38	44.10	45.40	54.00	-8.60	AV
High Channel (5825 MHz)-Above 1G									
V	6039.046	55.64	7.10	37.24	43.50	56.48	68.20	-11.72	PK
V	6039.046	43.46	7.10	37.24	43.50	44.30	54.00	-9.70	AV
V	11650.181	59.49	8.46	37.68	44.50	61.13	74.00	-12.87	PK
V	11650.181	43.81	8.46	37.68	44.50	45.45	54.00	-8.55	AV
V	17475.038	58.22	10.12	38.80	44.10	63.04	68.20	-5.16	PK
V	17475.038	43.97	10.12	38.80	42.70	50.19	54.00	-3.81	AV
H	6039.019	58.40	7.10	37.24	43.50	59.24	68.20	-8.96	PK
H	6039.019	43.42	7.10	37.24	43.50	44.26	54.00	-9.74	AV
H	11650.124	51.38	8.46	38.57	44.50	53.91	74.00	-20.09	PK
H	11650.124	41.22	8.46	38.57	44.50	43.75	54.00	-10.25	AV
H	17475.036	54.02	10.12	38.38	44.10	58.42	68.20	-9.78	PK
H	17475.036	41.26	10.12	38.38	44.10	45.66	54.00	-8.34	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.

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 Wifi Repeater 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 Wifi Repeater 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 Wifi Repeaters 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

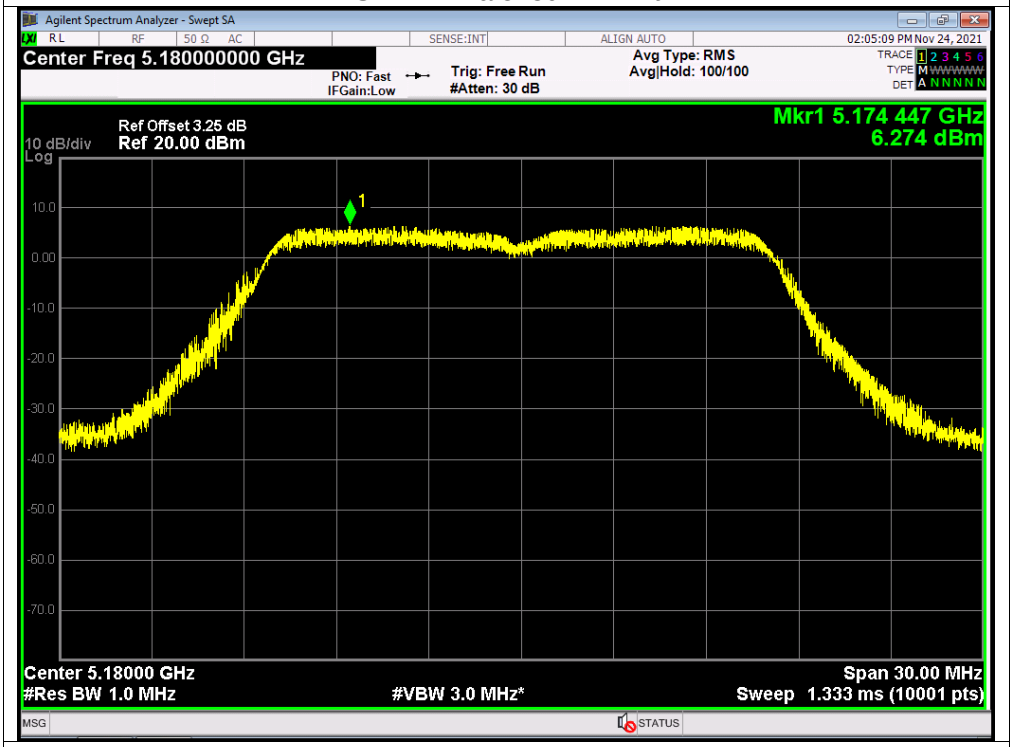
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

8.5 Test Result

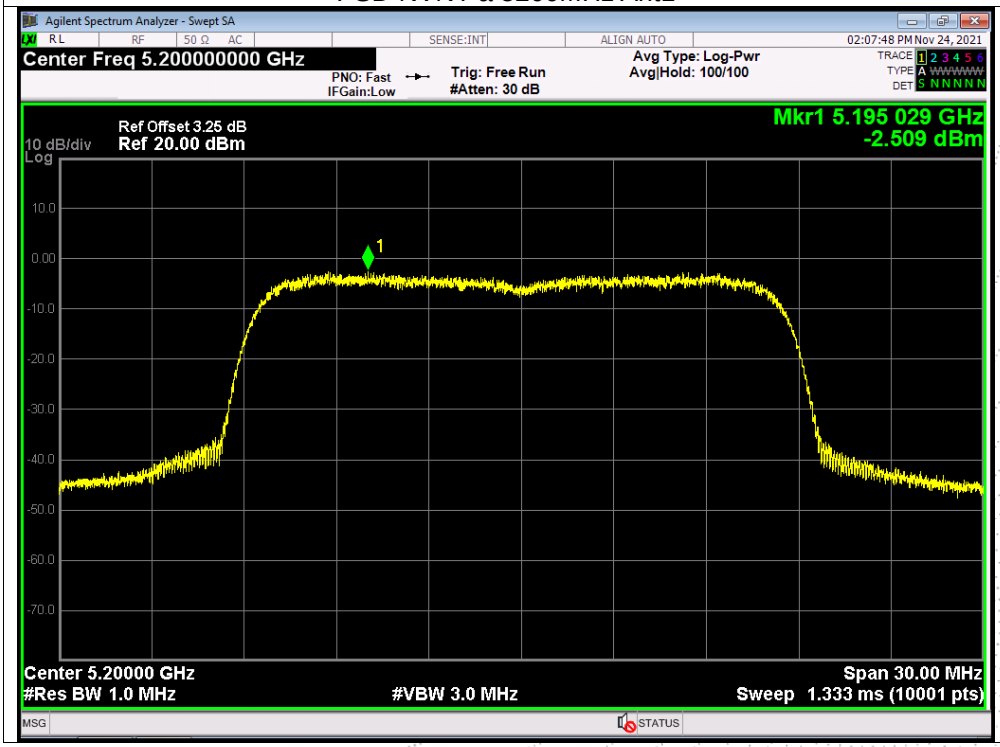
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage ：	AC120V/60Hz
Test Mode:	(5180-5240MHz); (5745-5825MHz)		

Mode	Frequency(MHz)	Measured Power Density (dBm/MHz)	Limit (dBm/MHz)	Result
802.11 a	5180	6.27	11	PASS
	5200	-2.51	11	PASS
	5240	0.08	11	PASS
802.11 n20	5180	6.2	11	PASS
	5200	8.05	11	PASS
	5240	7.37	11	PASS
Mode	**Frequency(MHz)**	**Measured Power Density (dBm/500KHz)**	**Limit (dBm/500KHz)**	**Result**
802.11 a	5745	-4.07	30	PASS
	5785	-4.3	30	PASS
	5825	-4.96	30	PASS
802.11 n20	5745	3.04	30	PASS
	5785	2.53	30	PASS
	5825	1.68	30	PASS

Test Graphs
PSD NVNT a 5180MHz Ant1



PSD NVNT a 5200MHz Ant1



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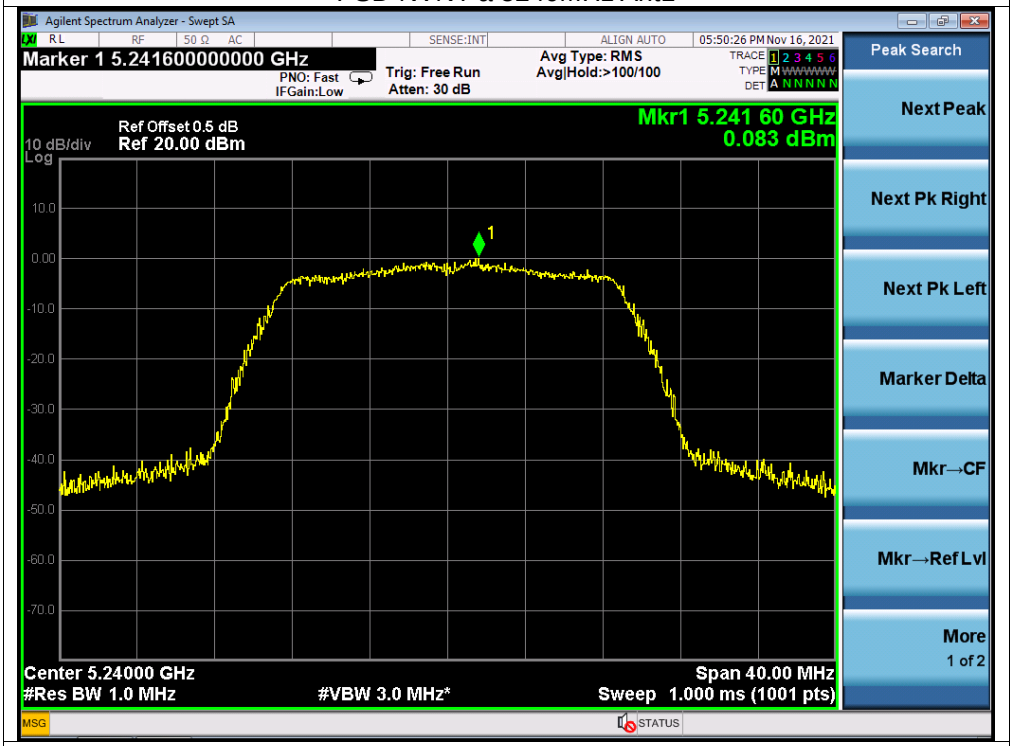
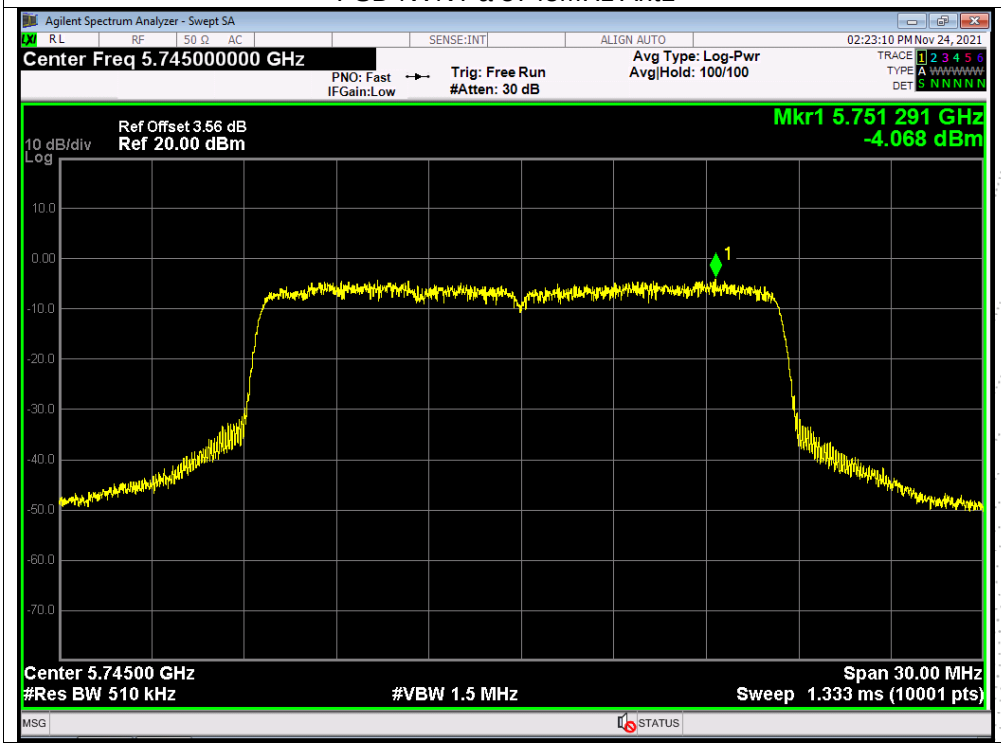
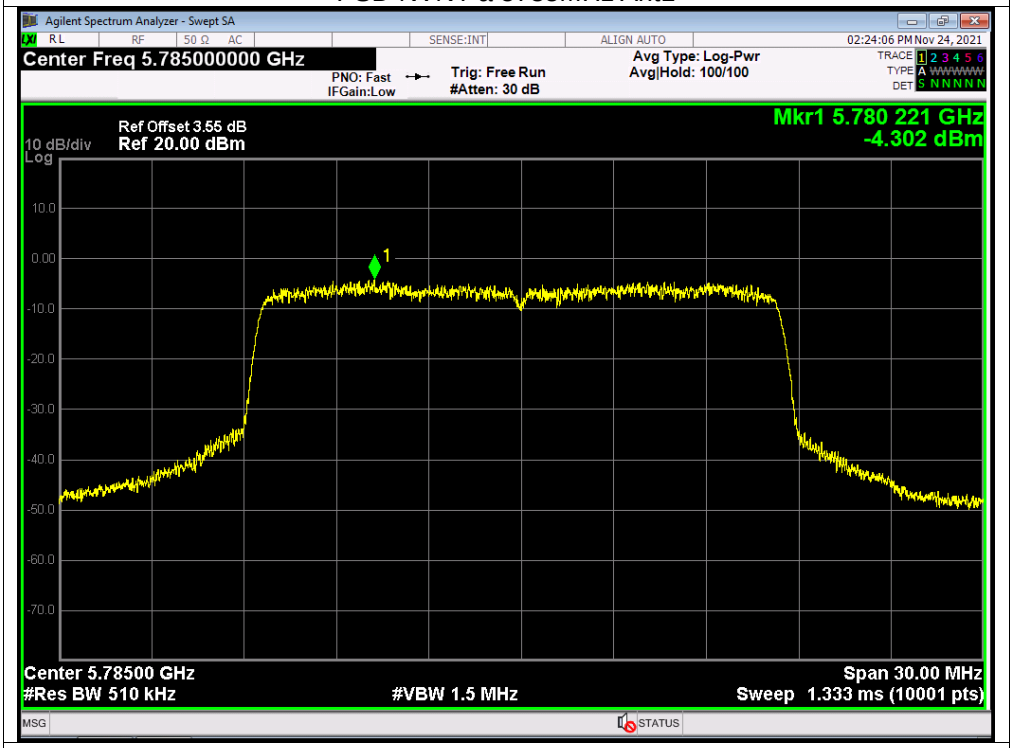


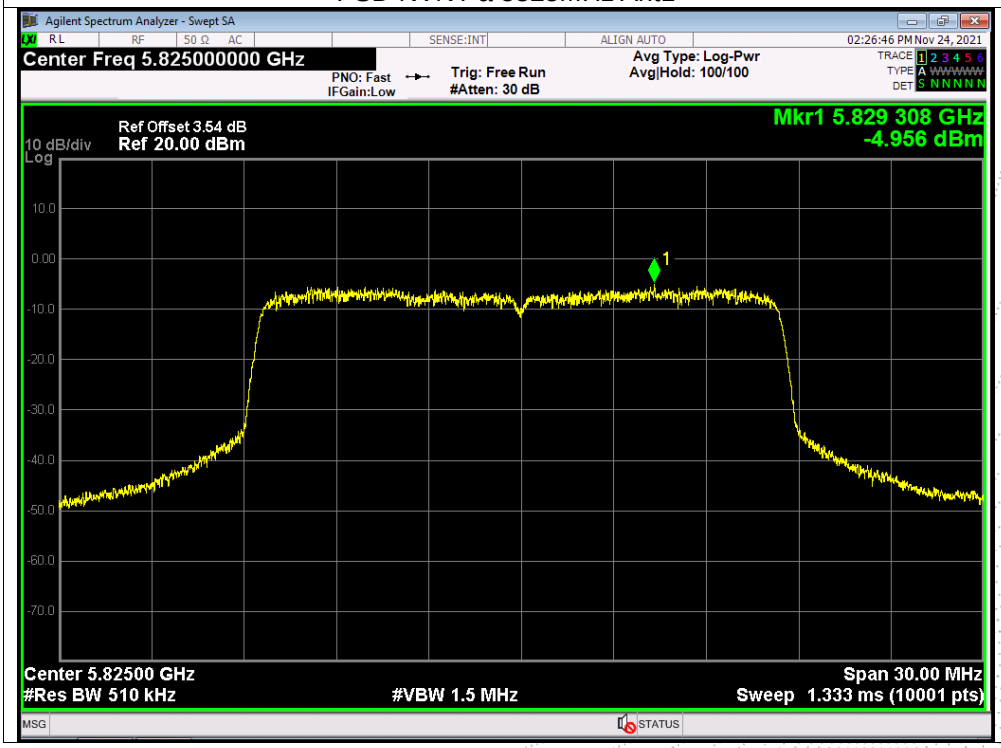
PSD NVNT a 5745MHz Ant1



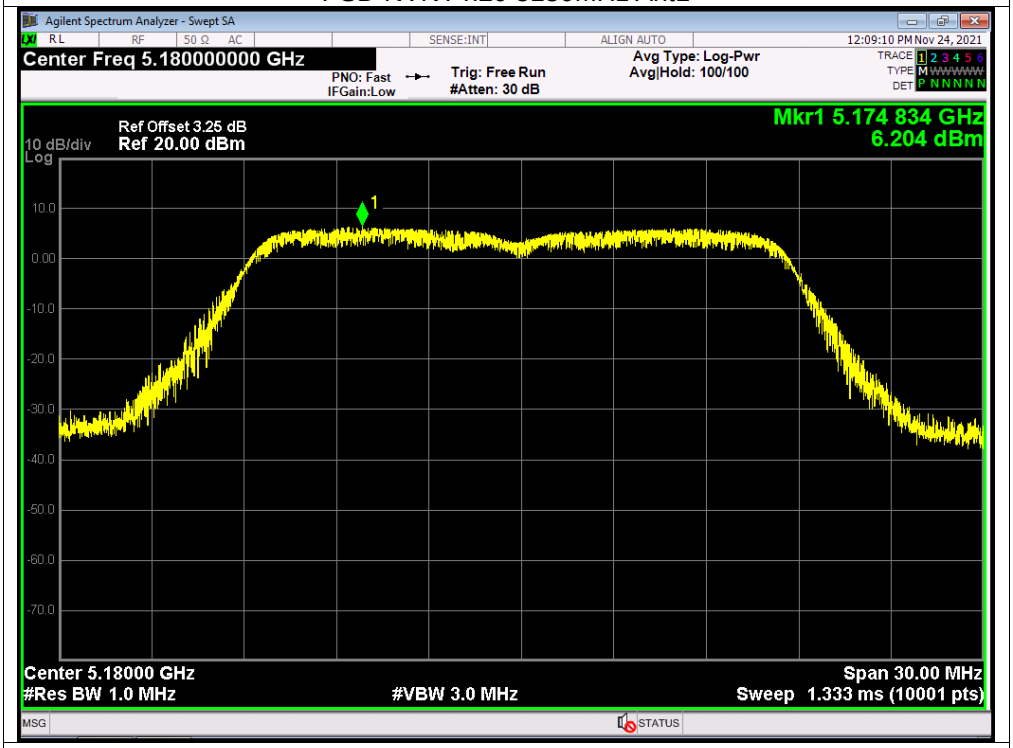
PSD NVNT a 5785MHz Ant1



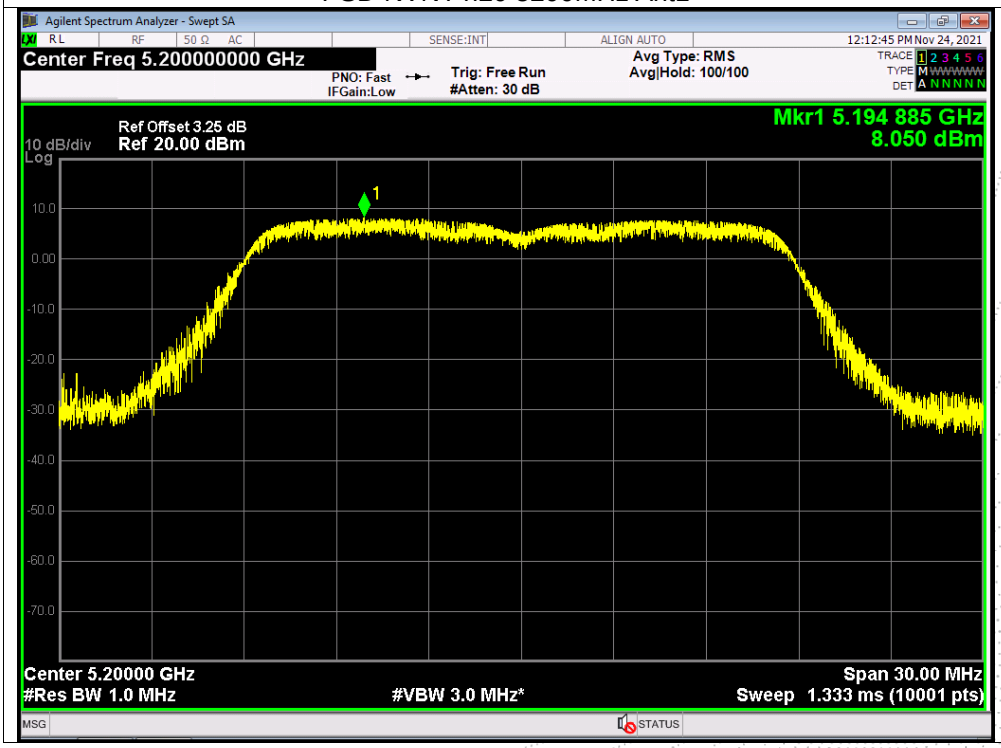
PSD NVNT a 5825MHz Ant1



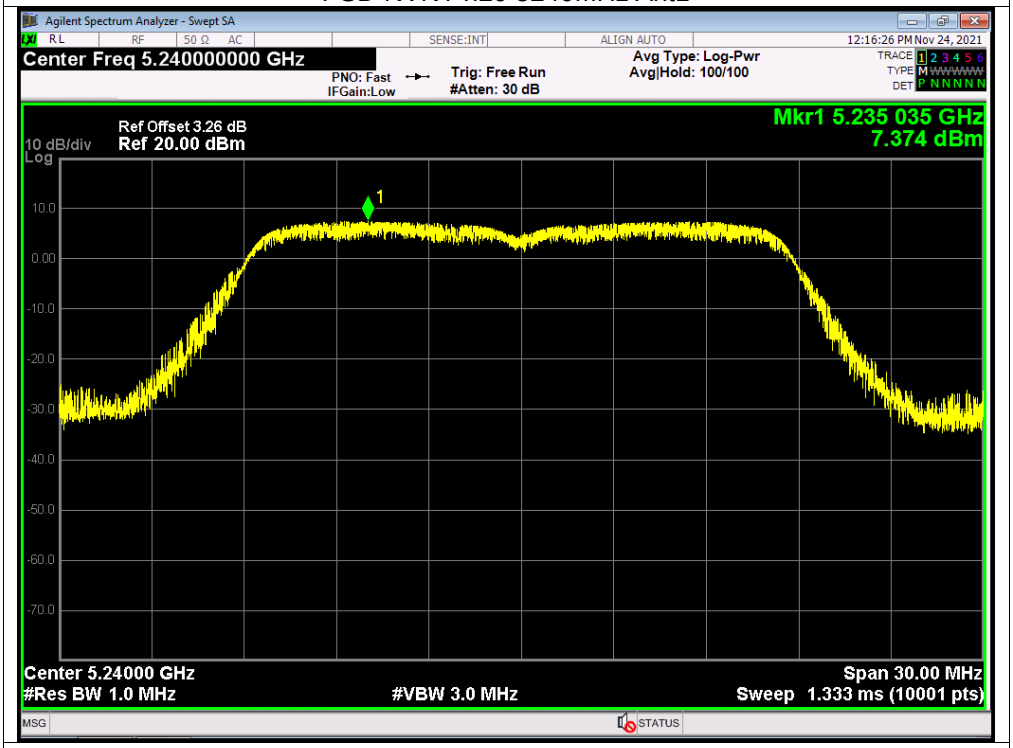
PSD NVNT n20 5180MHz Ant1



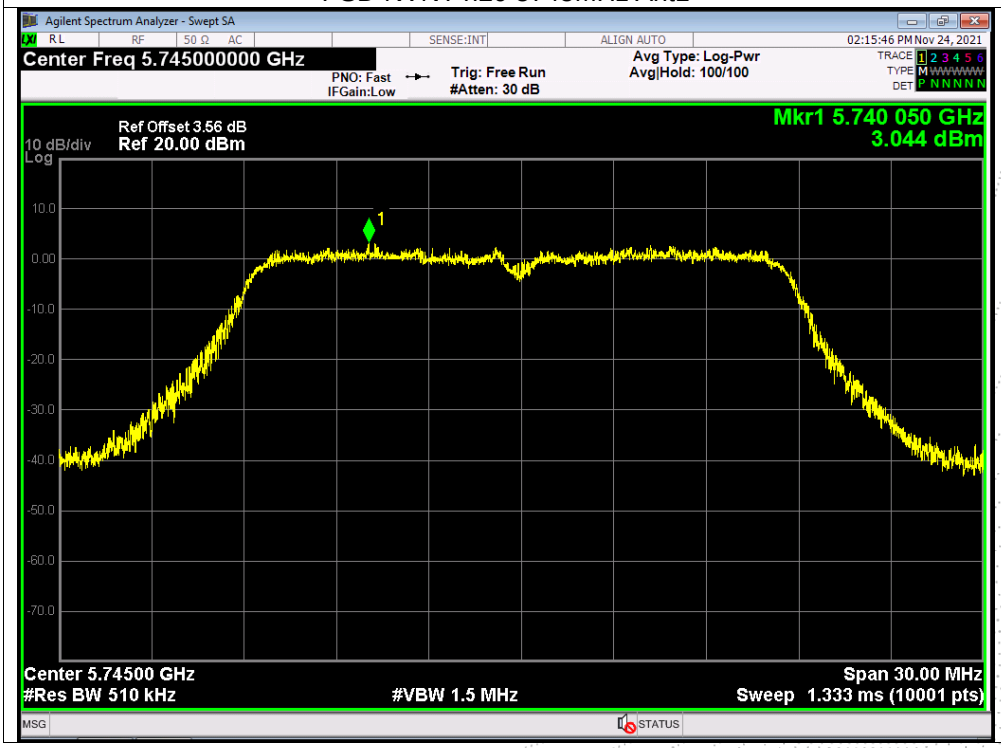
PSD NVNT n20 5200MHz Ant1



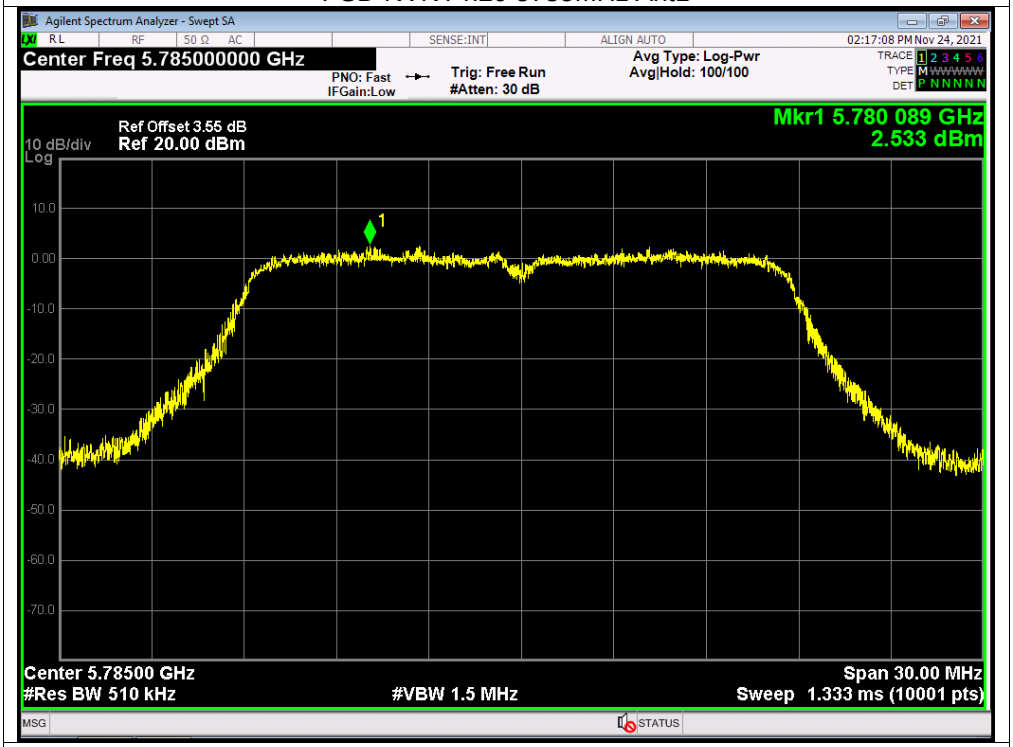
PSD NVNT n20 5240MHz Ant1



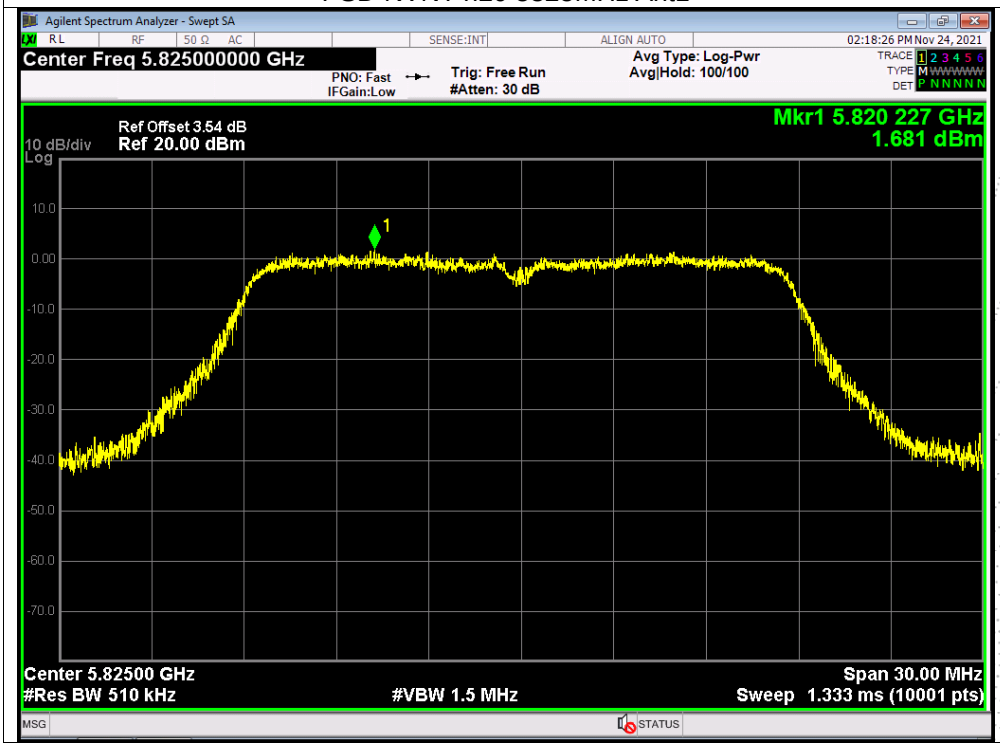
PSD NVNT n20 5745MHz Ant1



PSD NVNT n20 5785MHz Ant1

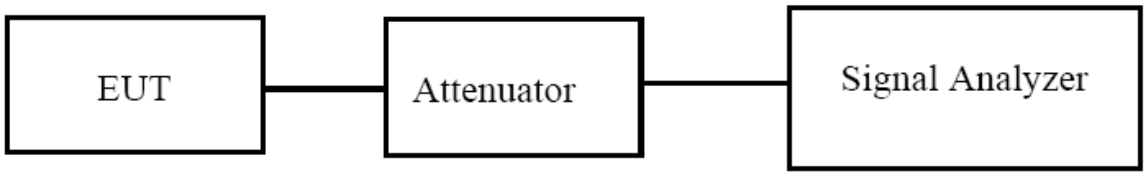


PSD NVNT n20 5825MHz Ant1



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 ：	AC120V/60Hz
Test Mode:	(5180-5240MHz); (5745-5825MHz)		

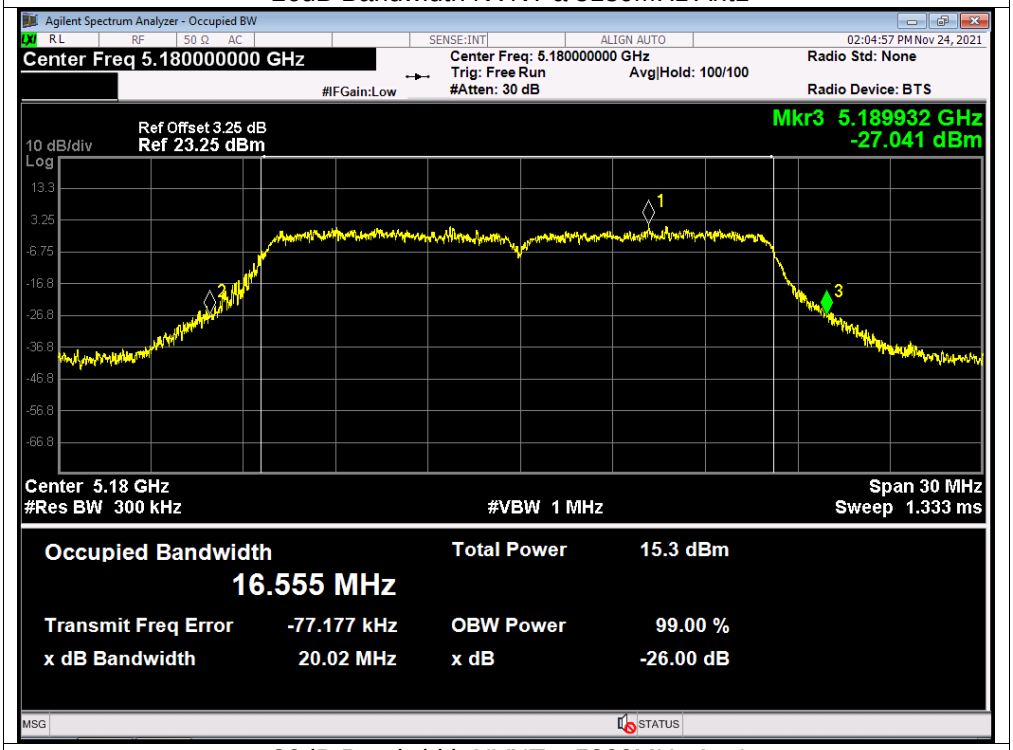
Mode	Frequency (MHz)	26dB bandwidth (MHz)	Limit MHz	Result
802.11a	5180	20.018	N/A	Pass
	5200	19.981	N/A	Pass
	5240	20.04	N/A	Pass
802.11 n20	5180	20.758	N/A	Pass
	5200	20.707	N/A	Pass
	5240	20.836	N/A	Pass

Mode	Frequency (MHz)	-6dB bandwidth (MHz)	Limit MHz	Result
802.11a	5745	5745	0.5	Pass
	5785	5785	0.5	Pass
	5825	5825	0.5	Pass
802.11 n20	5745	5745	0.5	Pass
	5785	5785	0.5	Pass
	5825	5825	0.5	Pass

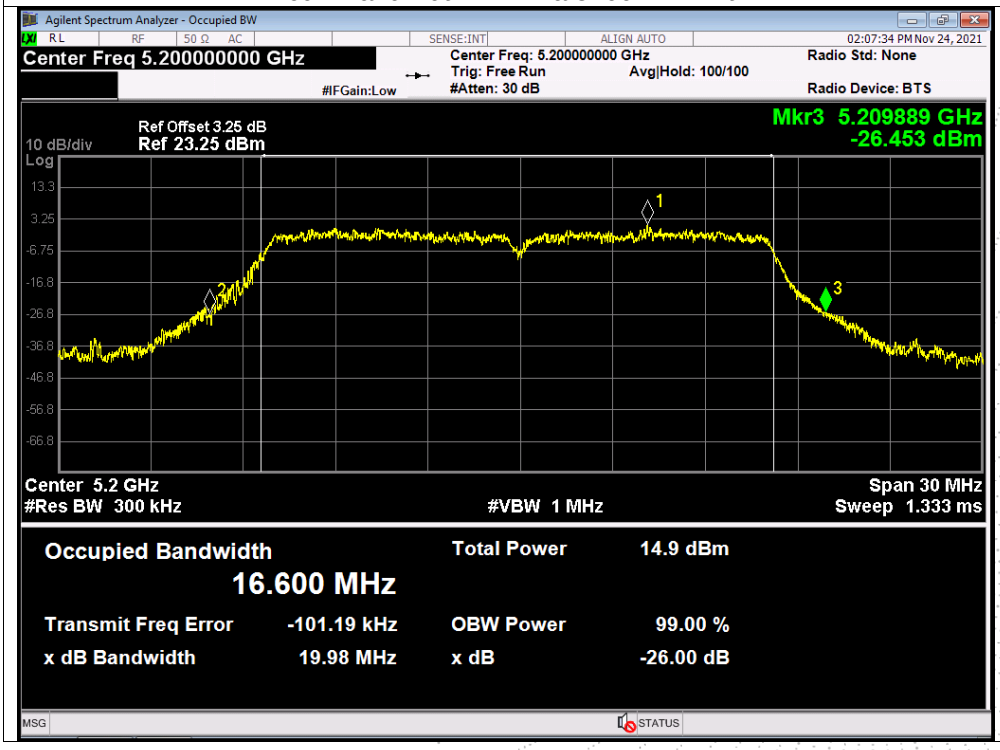
Mode	Frequency (MHz)	99% OBW (MHz)	Limit MHz	Result
802.11a	5180	16.447	N/A	Pass
	5200	16.453	N/A	Pass
	5240	16.456	N/A	Pass
	5745	16.515	N/A	Pass
	5785	16.497	N/A	Pass
	5825	16.523	N/A	Pass
802.11 n20	5180	17.554	N/A	Pass
	5200	17.541	N/A	Pass
	5240	17.542	N/A	Pass
	5745	17.577	N/A	Pass
	5785	17.571	N/A	Pass
	5825	17.593	N/A	Pass

Test Graphs

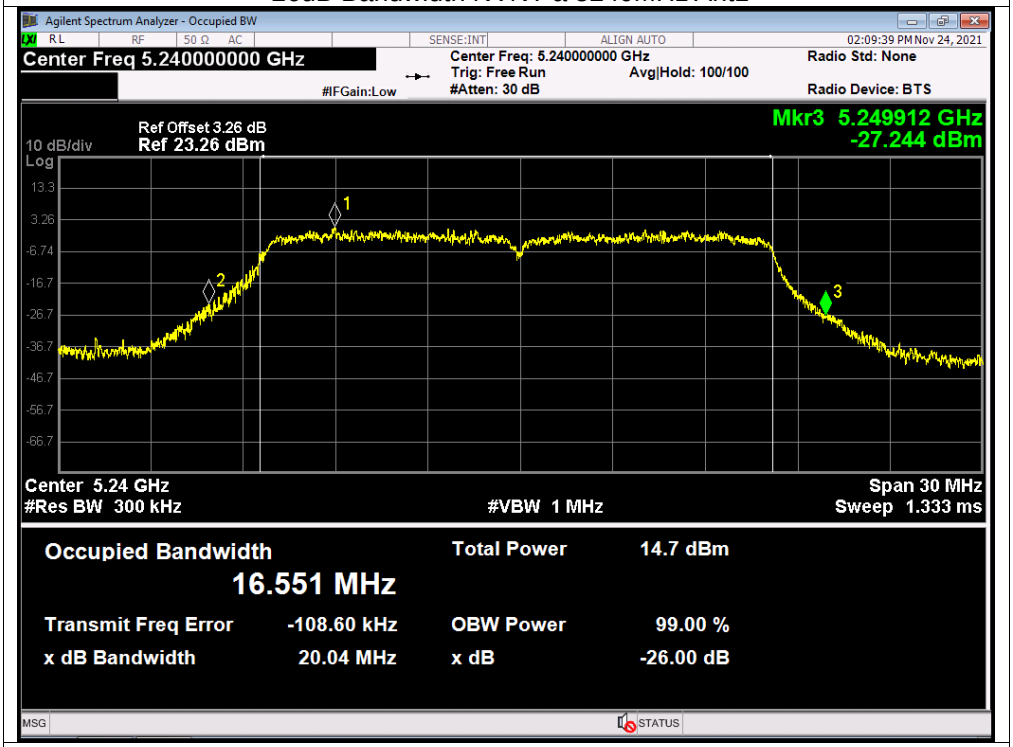
-26dB Bandwidth NVNT a 5180MHz Ant1



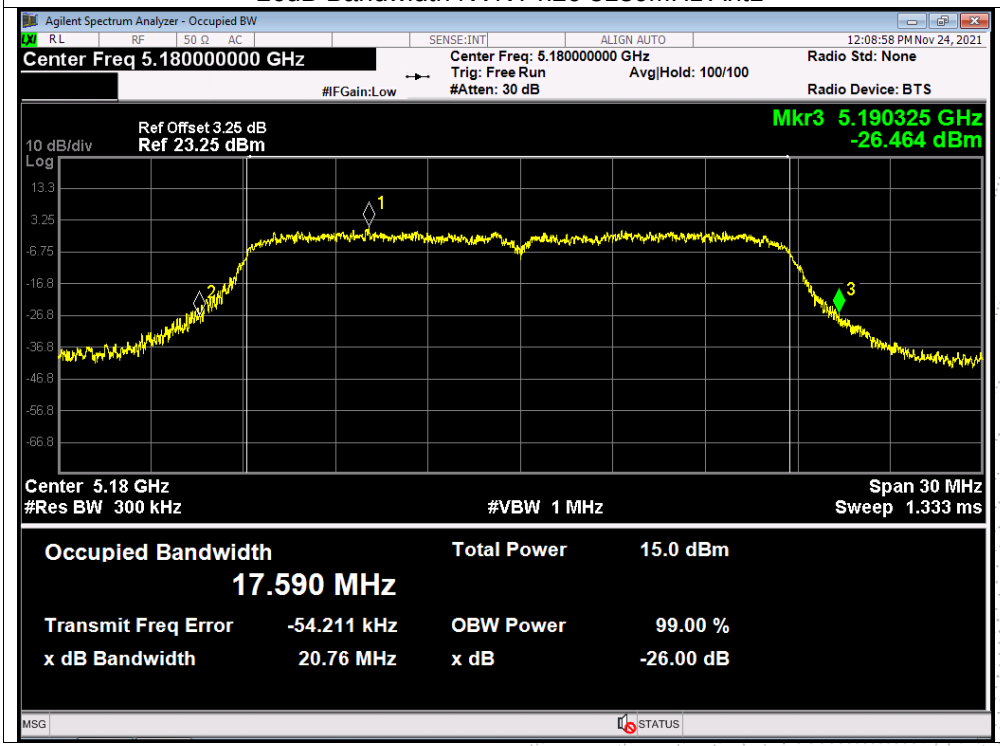
-26dB Bandwidth NVNT a 5200MHz Ant1



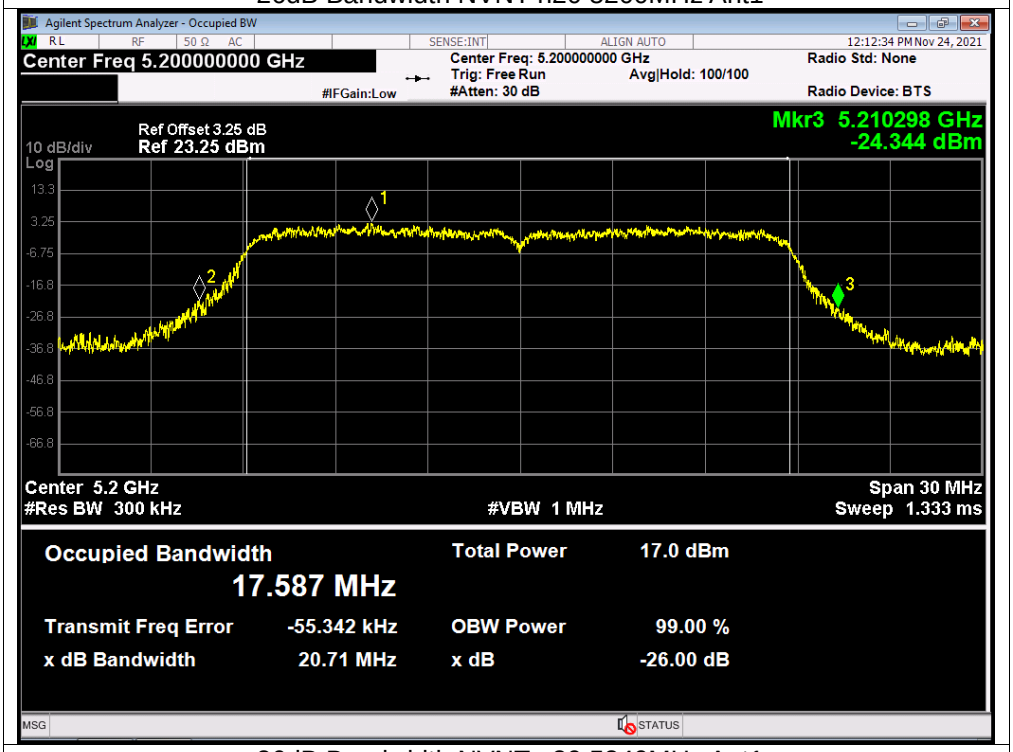
-26dB Bandwidth NVNT a 5240MHz Ant1



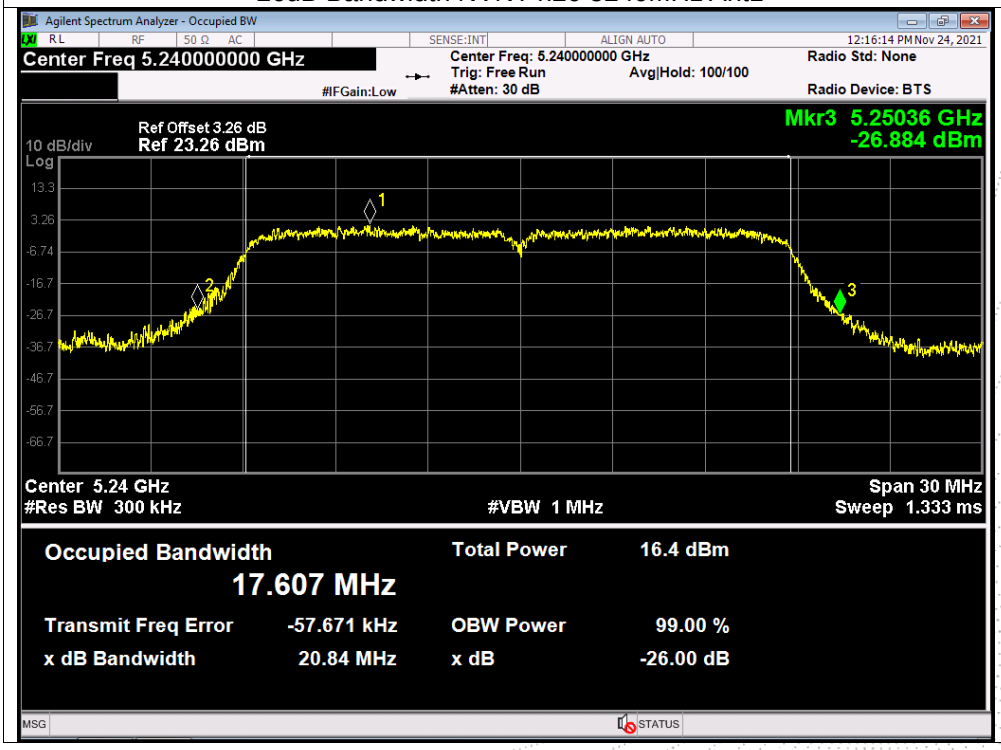
-26dB Bandwidth NVNT n20 5180MHz Ant1



-26dB Bandwidth NVNT n20 5200MHz Ant1

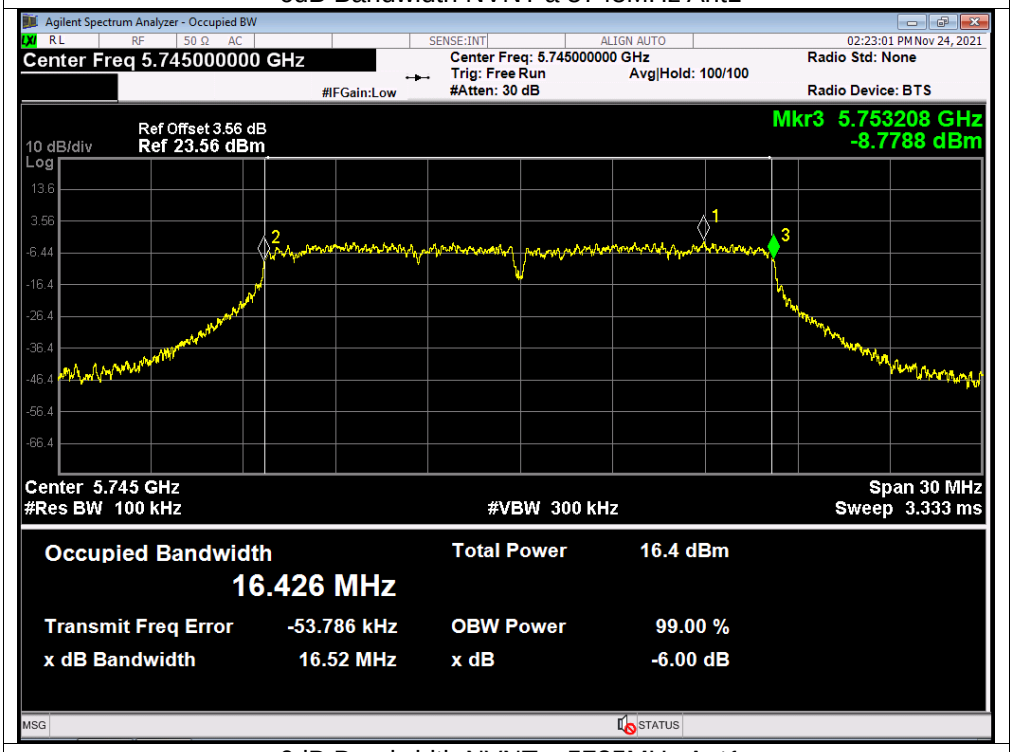


-26dB Bandwidth NVNT n20 5240MHz Ant1

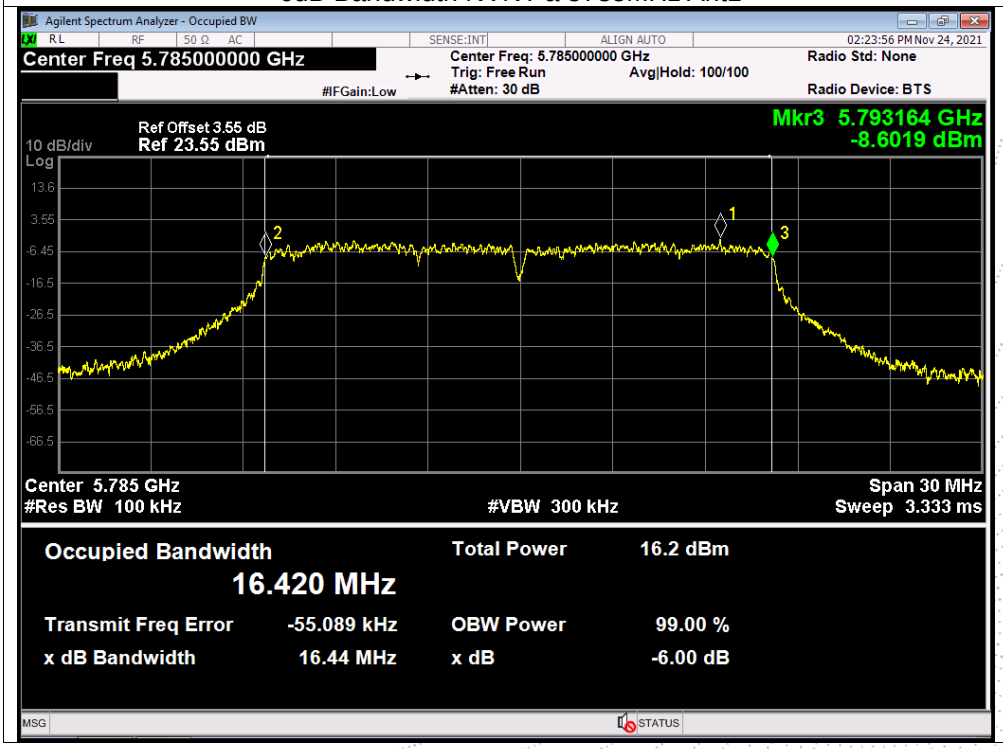


Test Graphs

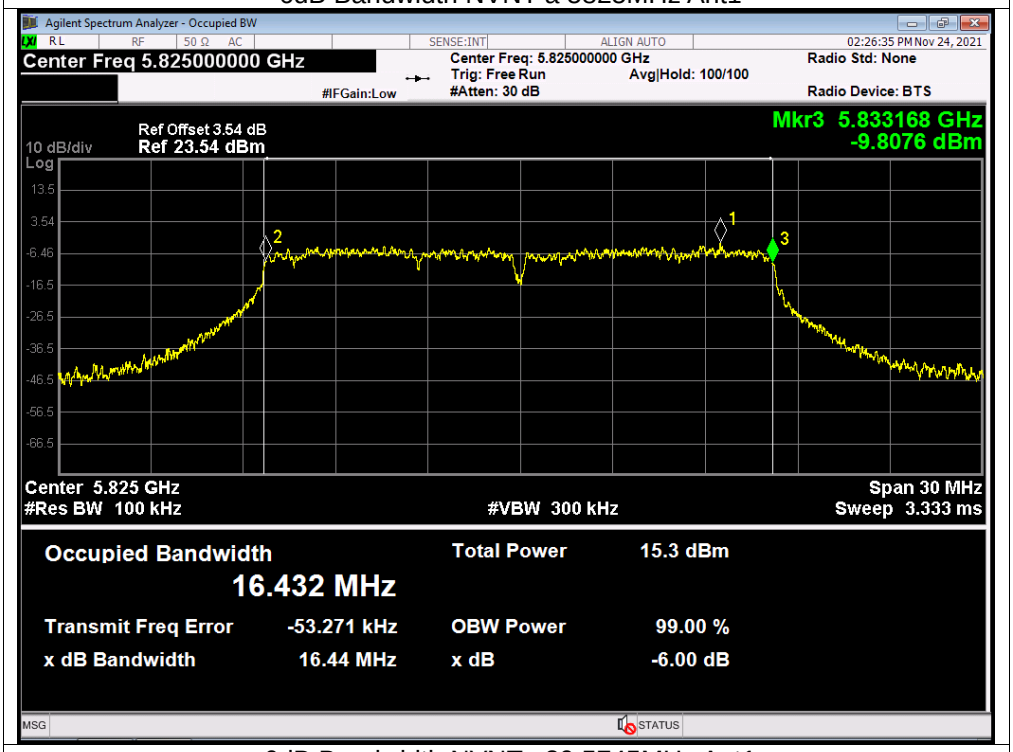
-6dB Bandwidth NVNT a 5745MHz Ant1



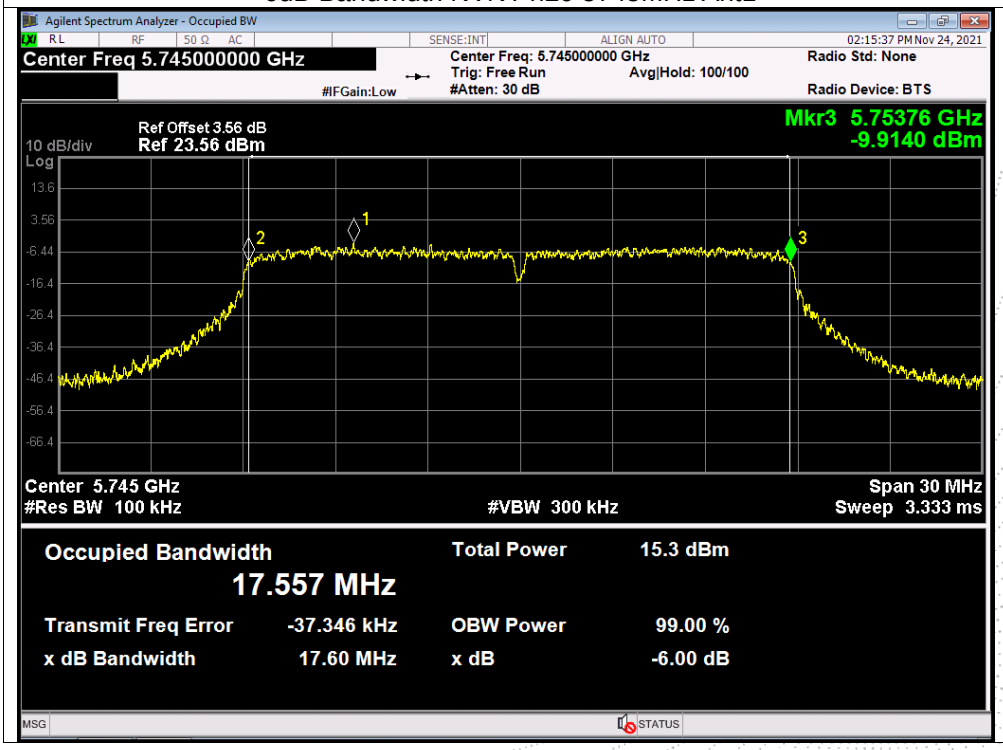
-6dB Bandwidth NVNT a 5785MHz Ant1



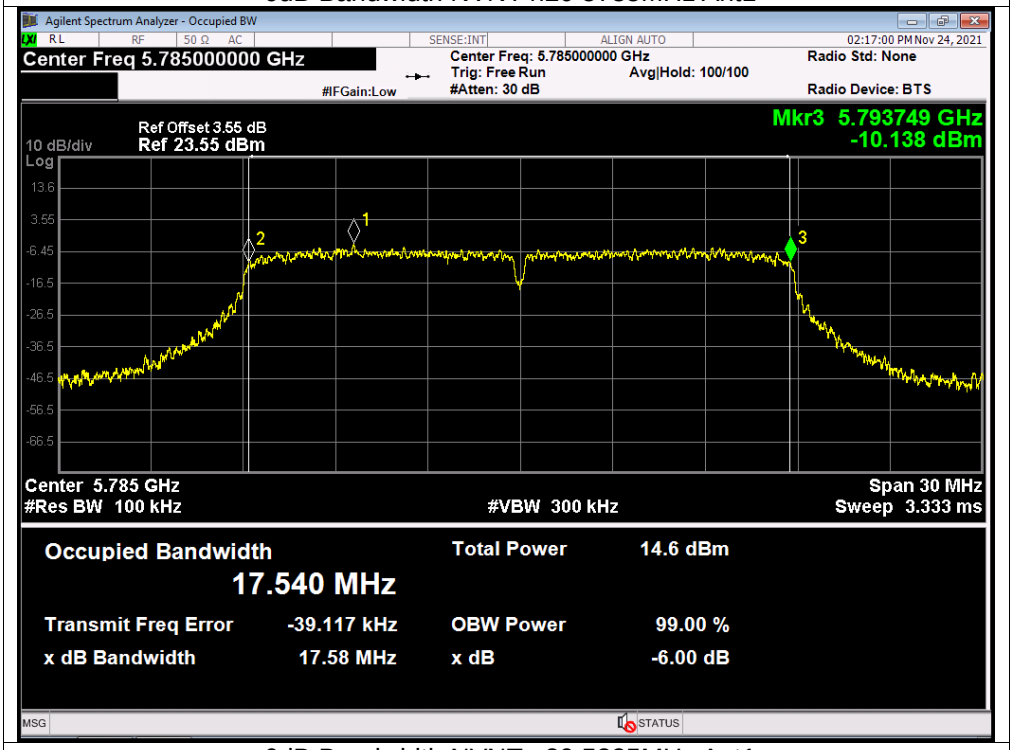
-6dB Bandwidth NVNT a 5825MHz Ant1



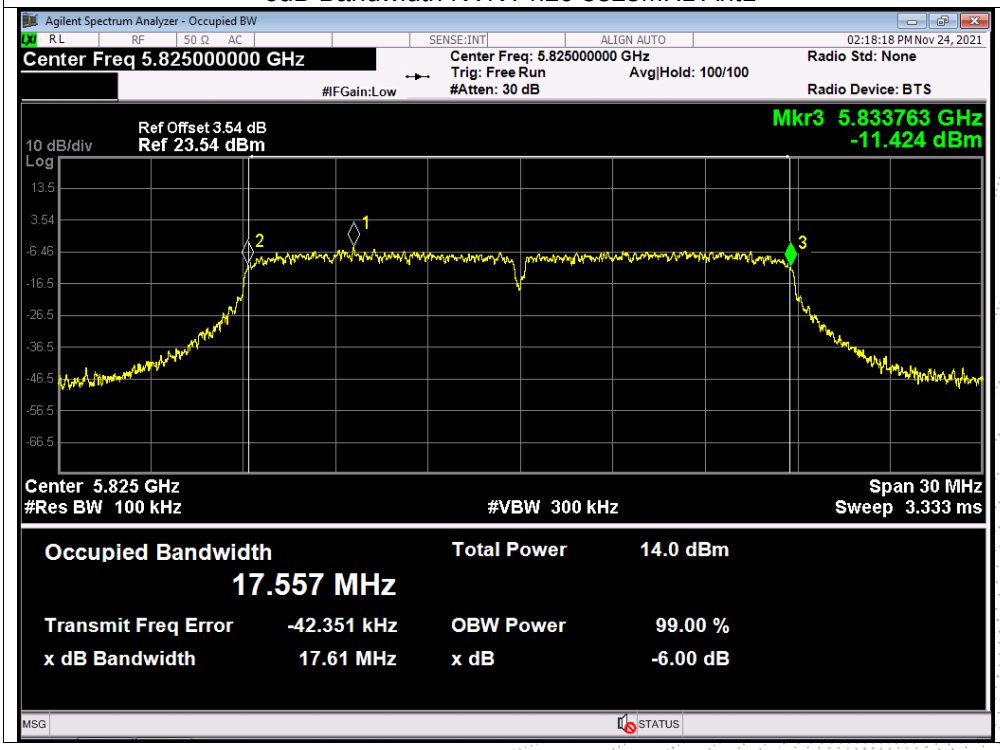
-6dB Bandwidth NVNT n20 5745MHz Ant1



-6dB Bandwidth NVNT n20 5785MHz Ant1

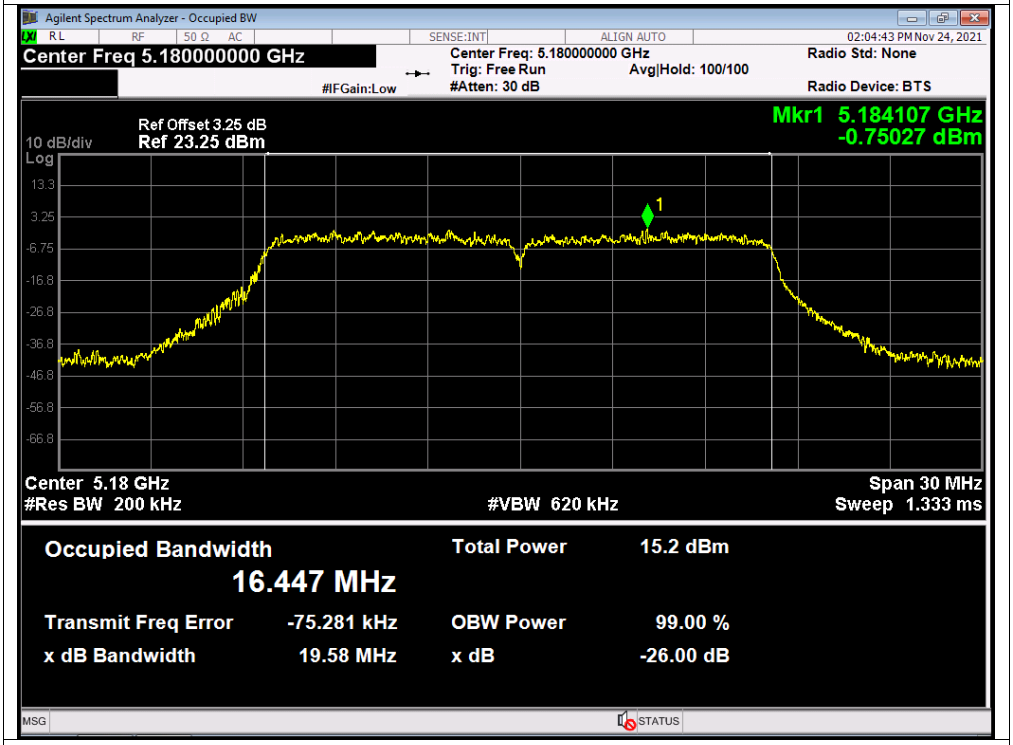


-6dB Bandwidth NVNT n20 5825MHz Ant1

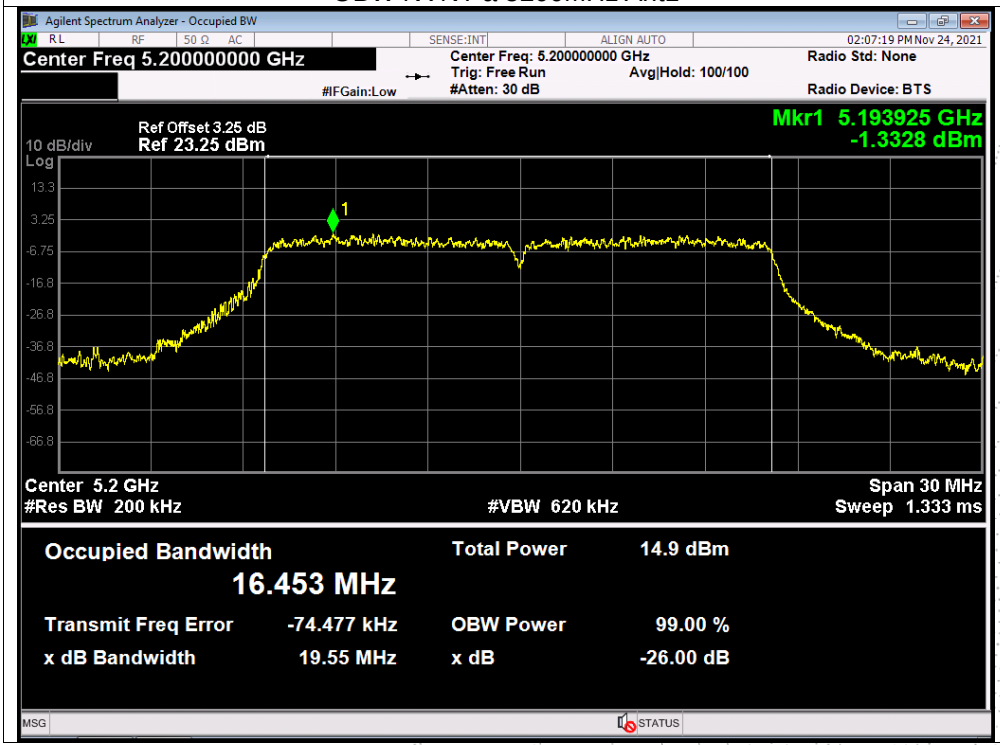


Test Graphs

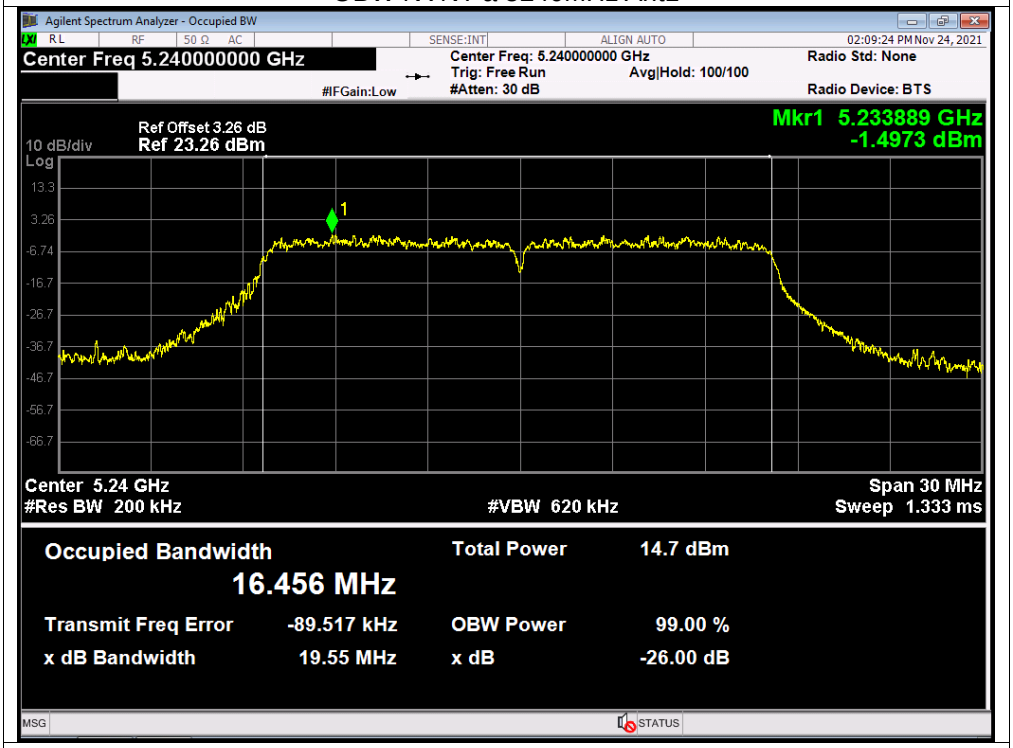
OBW NVNT a 5180MHz Ant1



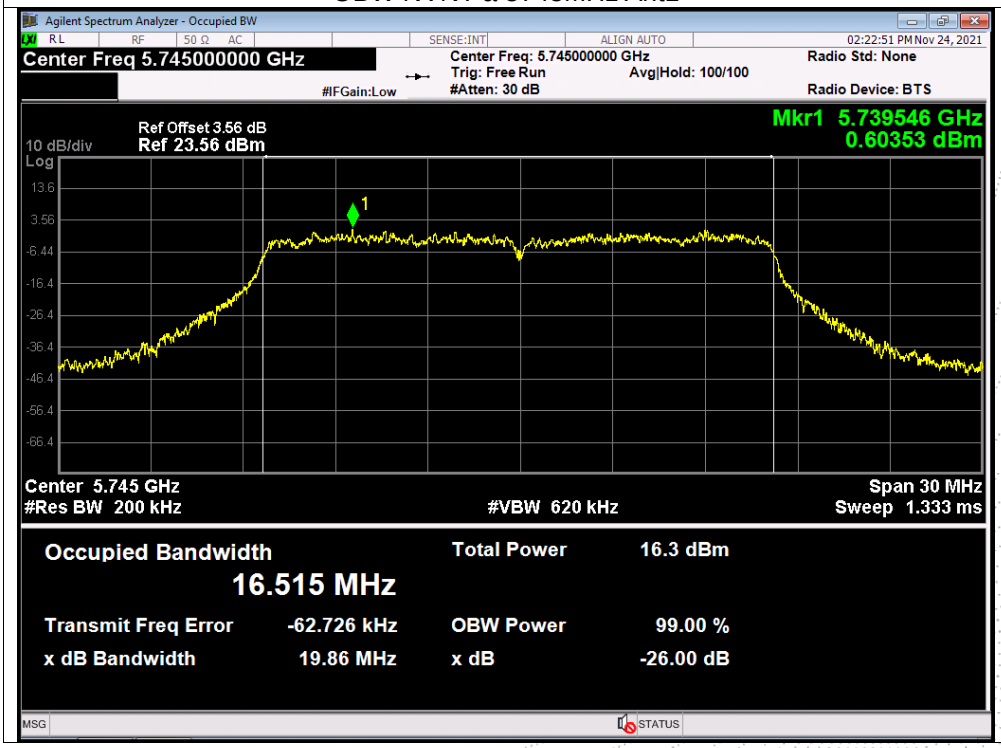
OBW NVNT a 5200MHz Ant1



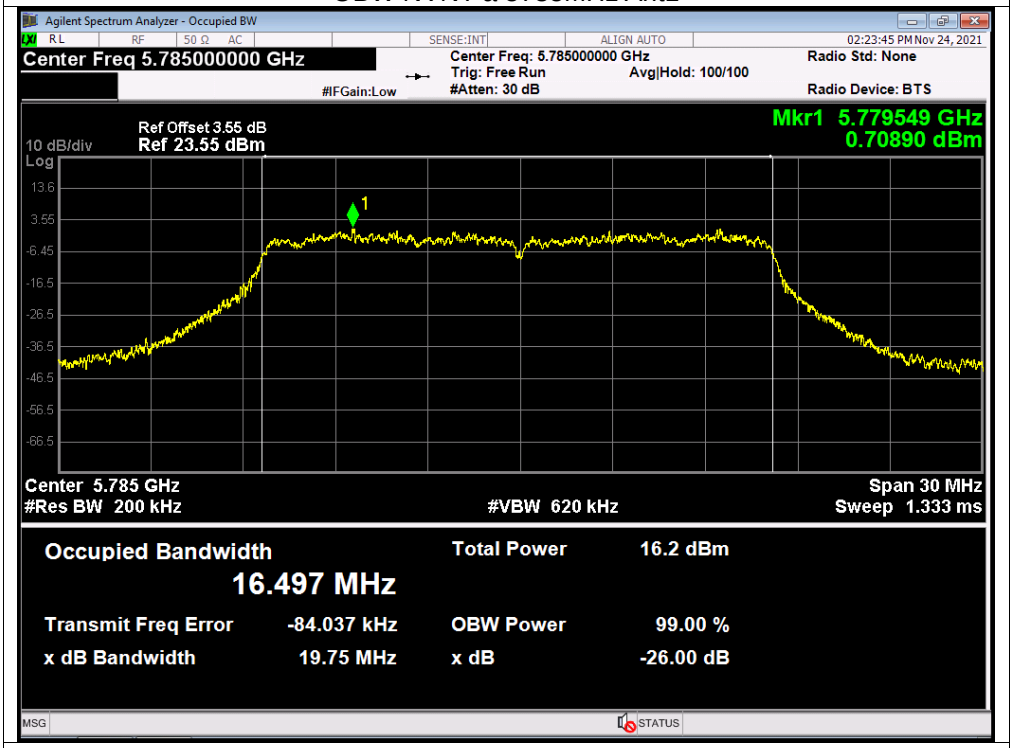
OBW NVNT a 5240MHz Ant1



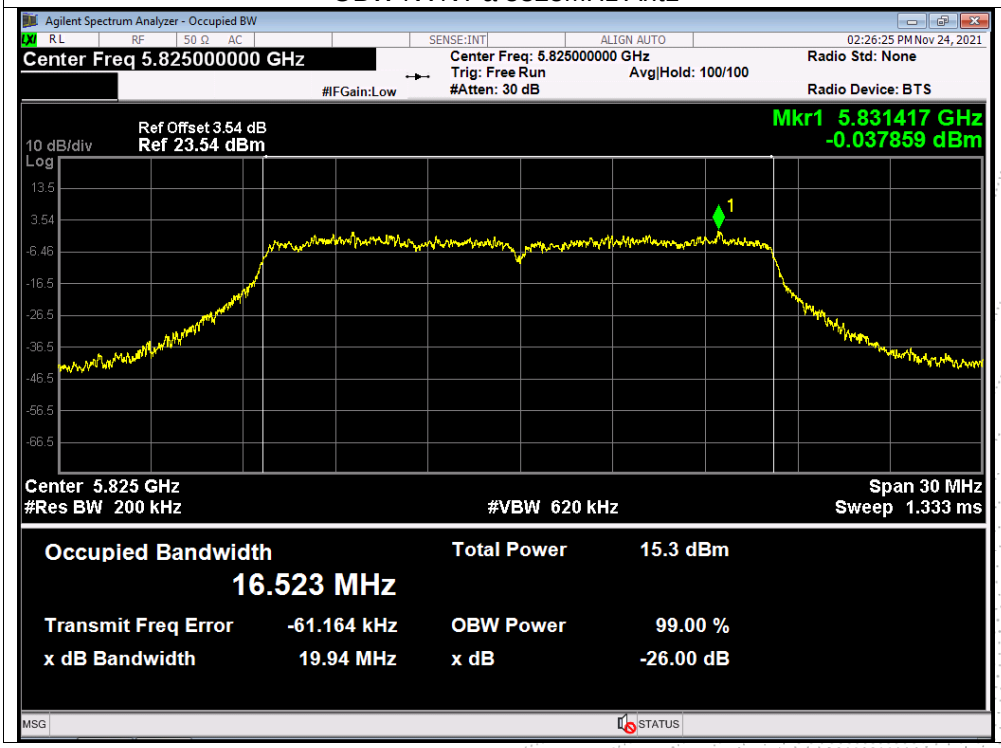
OBW NVNT a 5745MHz Ant1



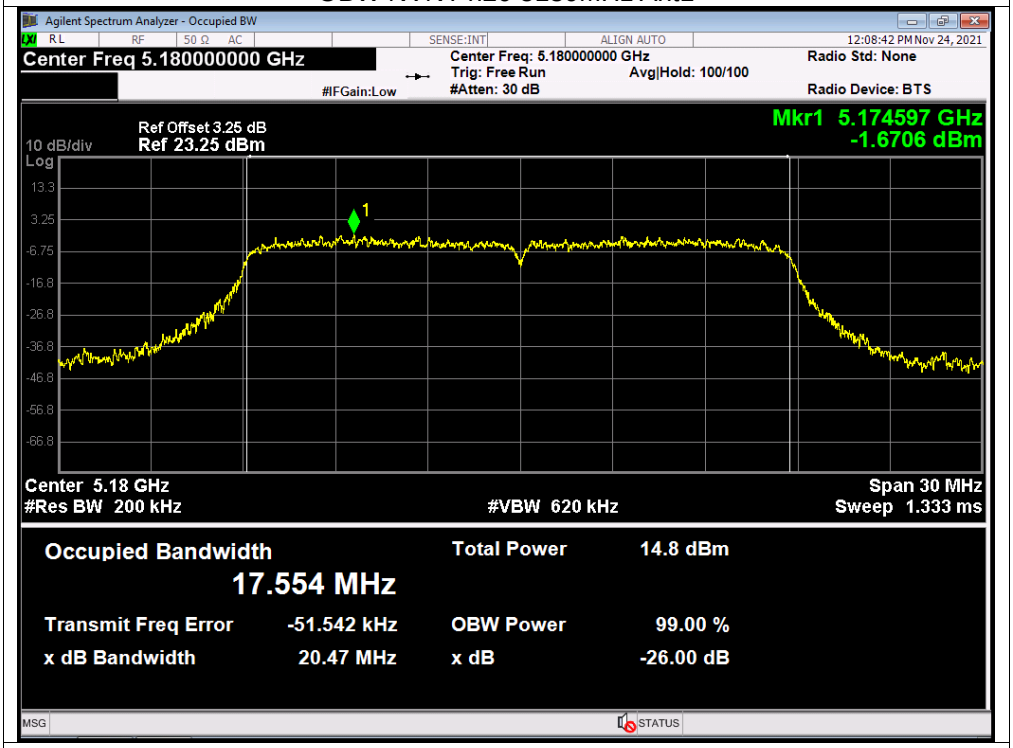
OBW NVNT a 5785MHz Ant1



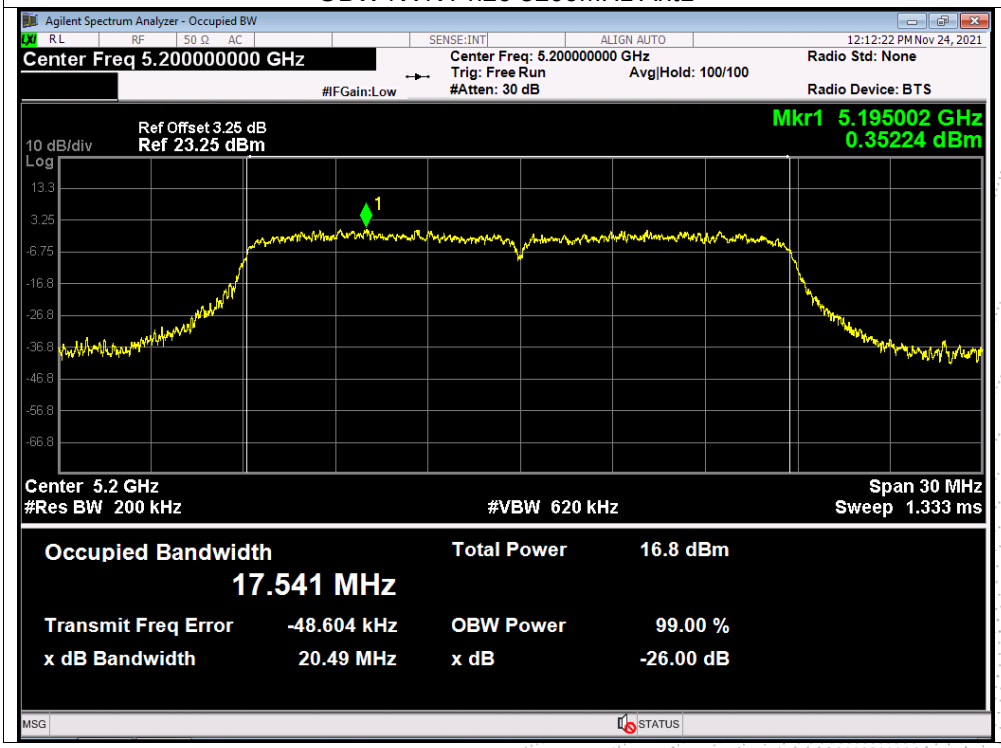
OBW NVNT a 5825MHz Ant1



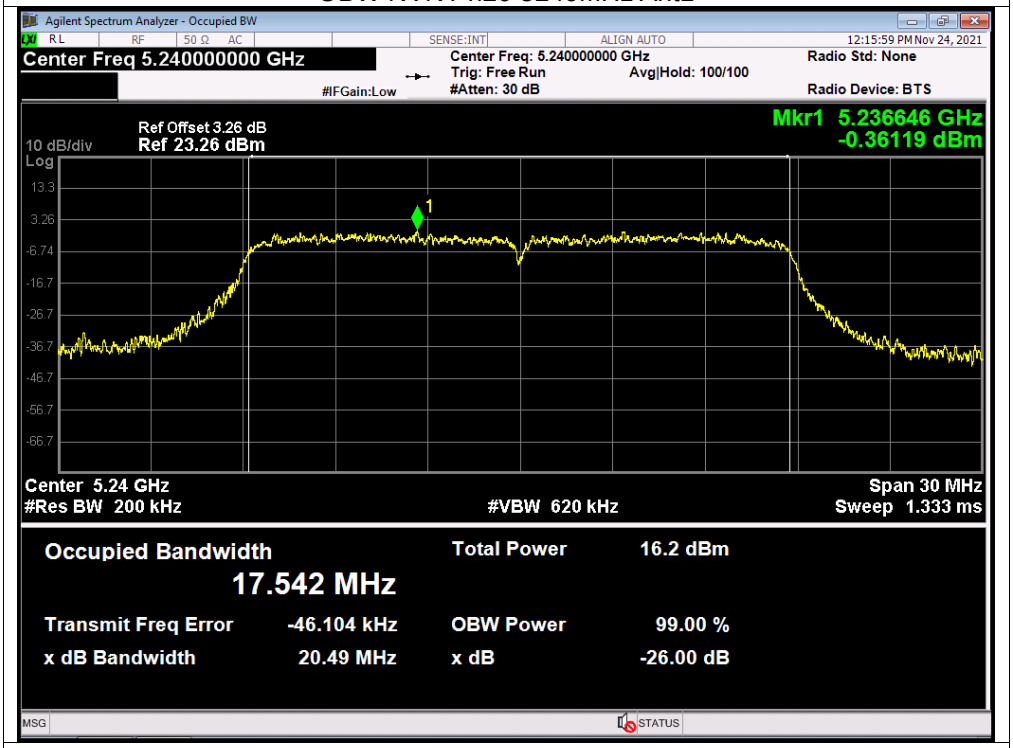
OBW NVNT n20 5180MHz Ant1



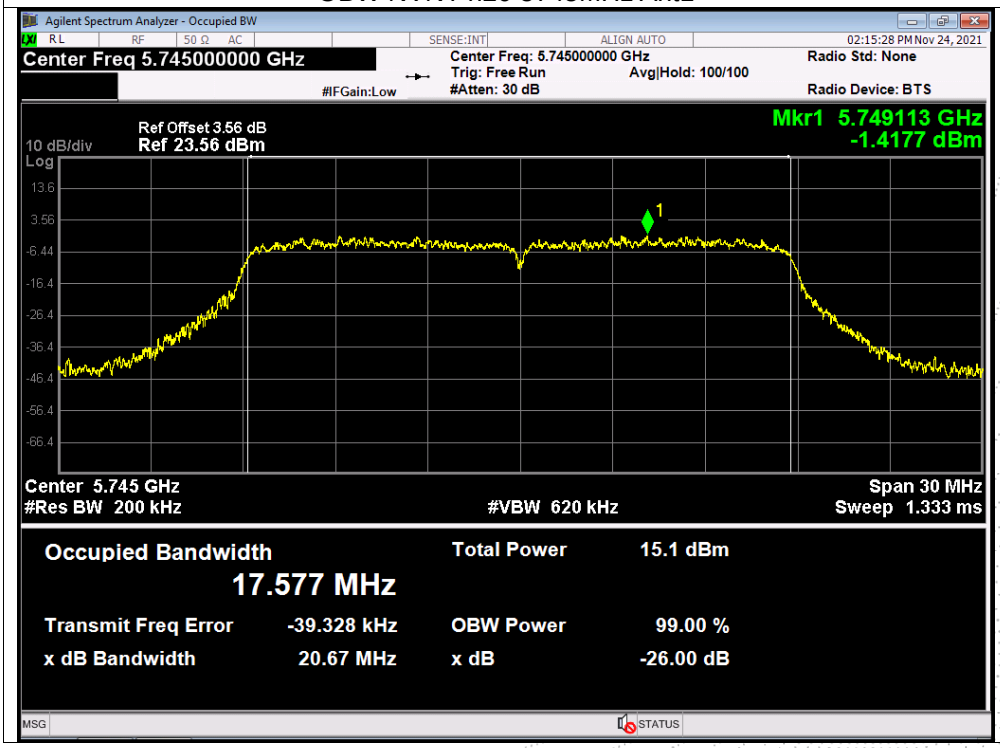
OBW NVNT n20 5200MHz Ant1



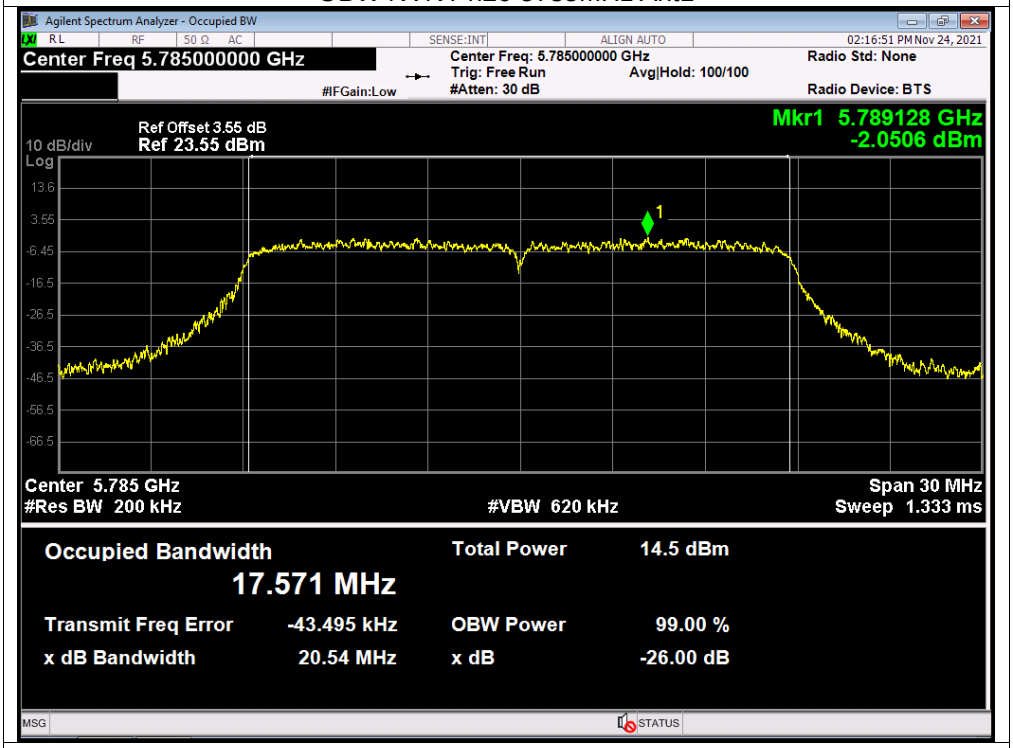
OBW NVNT n20 5240MHz Ant1



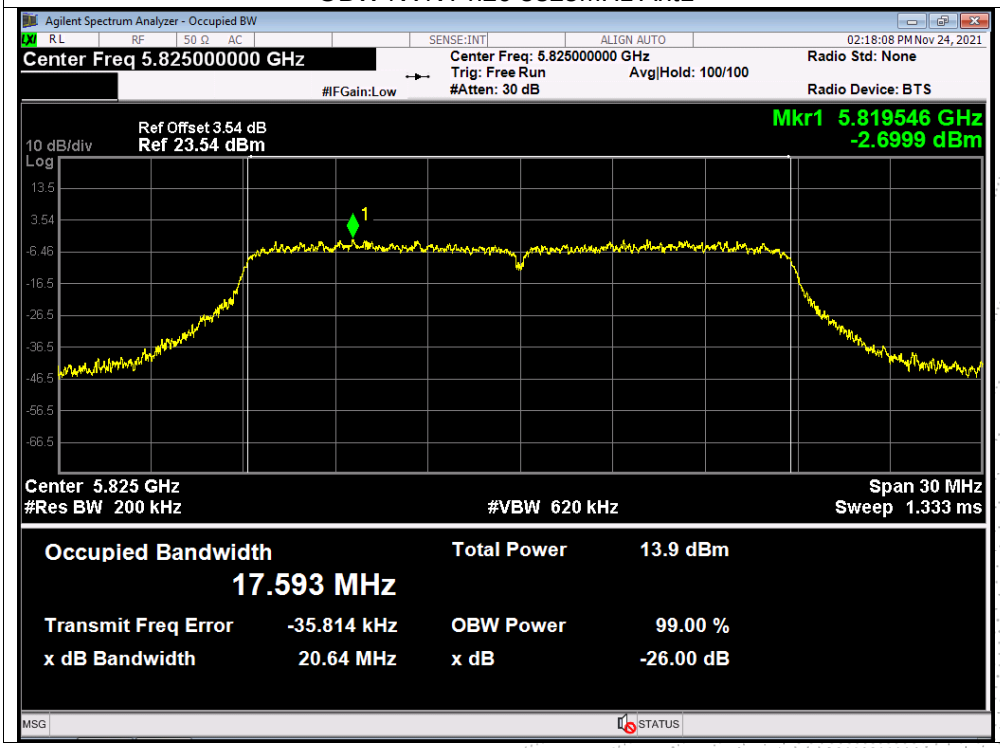
OBW NVNT n20 5745MHz Ant1



OBW NVNT n20 5785MHz Ant1

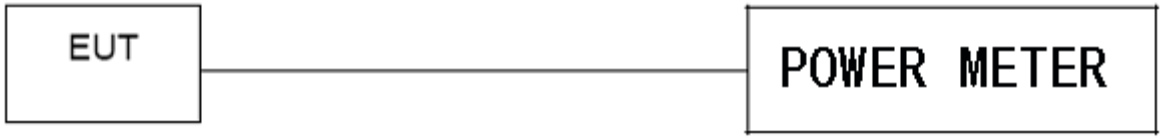


OBW NVNT n20 5825MHz Ant1



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	1W
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.

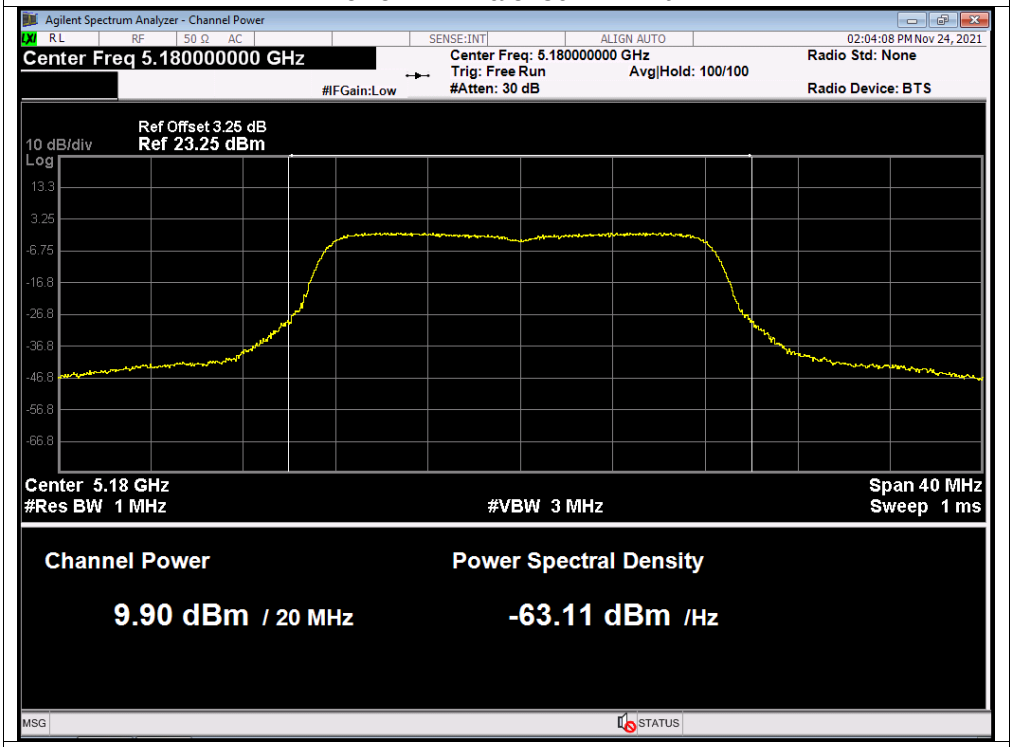
10.5 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage ：	AC120V/60Hz
Test Mode:	(5180-5240MHz); (5745-5825MHz)		

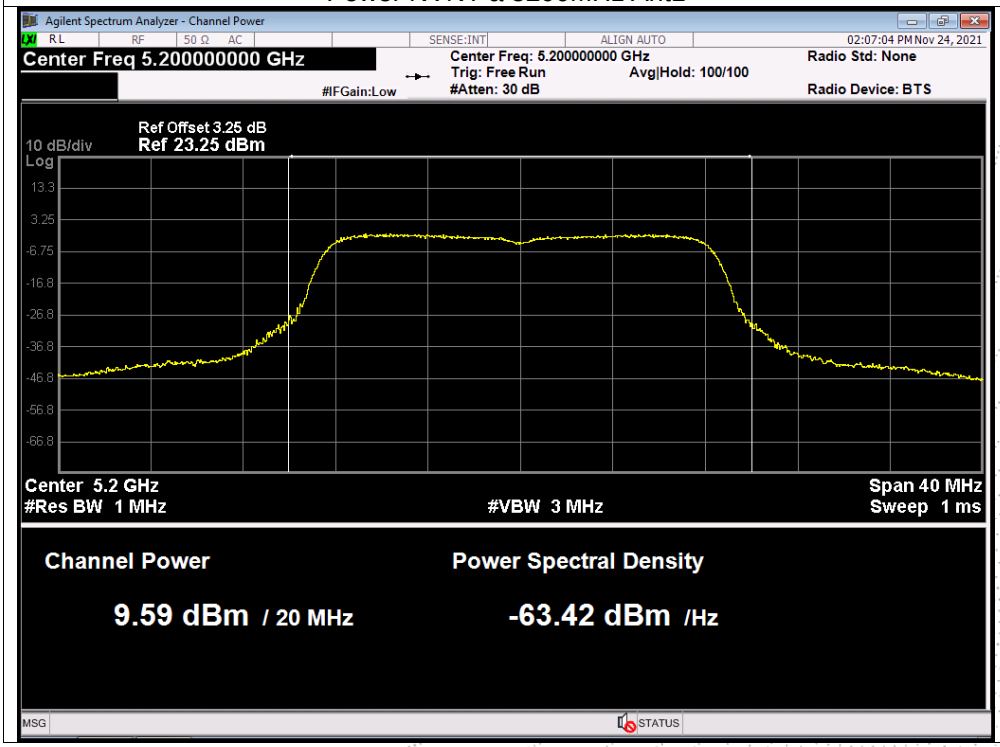
Mode	Frequency (MHz)	Conducted Power (dBm)	Limit MHz	Result
802.11a	5180	9.9	24	Pass
	5200	9.59	24	Pass
	5240	9.19	24	Pass
	5745	11.03	30	Pass
	5785	11.37	30	Pass
	5825	11.04	30	Pass
802.11 n20	5180	9.5	24	Pass
	5200	11.5	24	Pass
	5240	10.92	24	Pass
	5745	9.94	30	Pass
	5785	9.24	30	Pass
	5825	8.62	30	Pass

Test Graphs

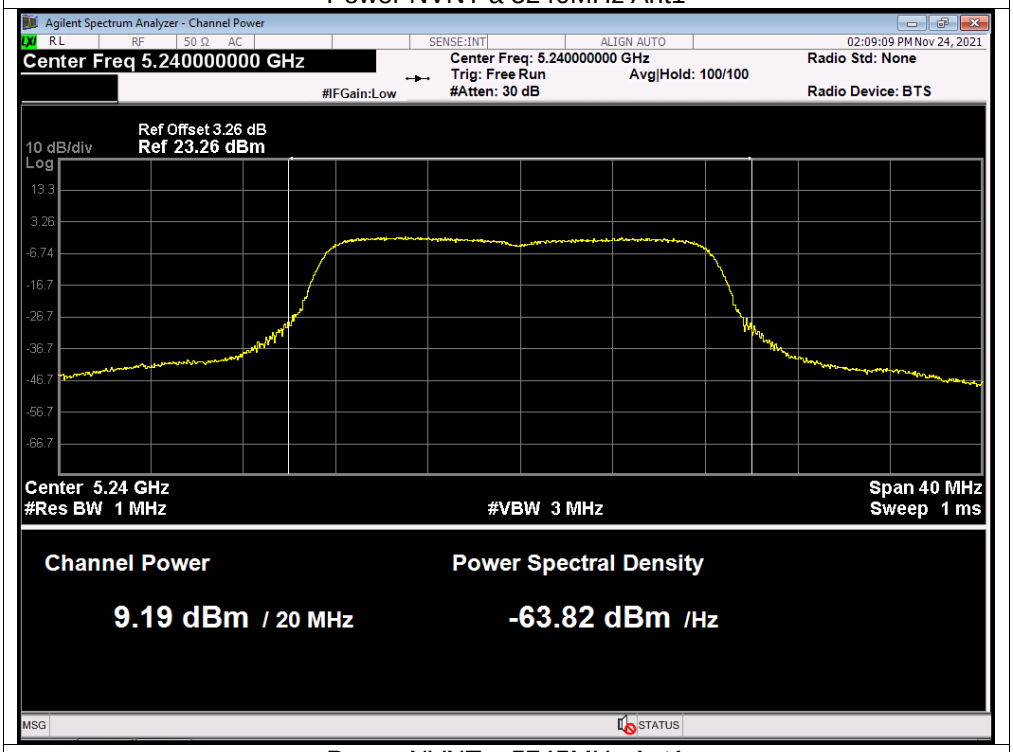
Power NVNT a 5180MHz Ant1



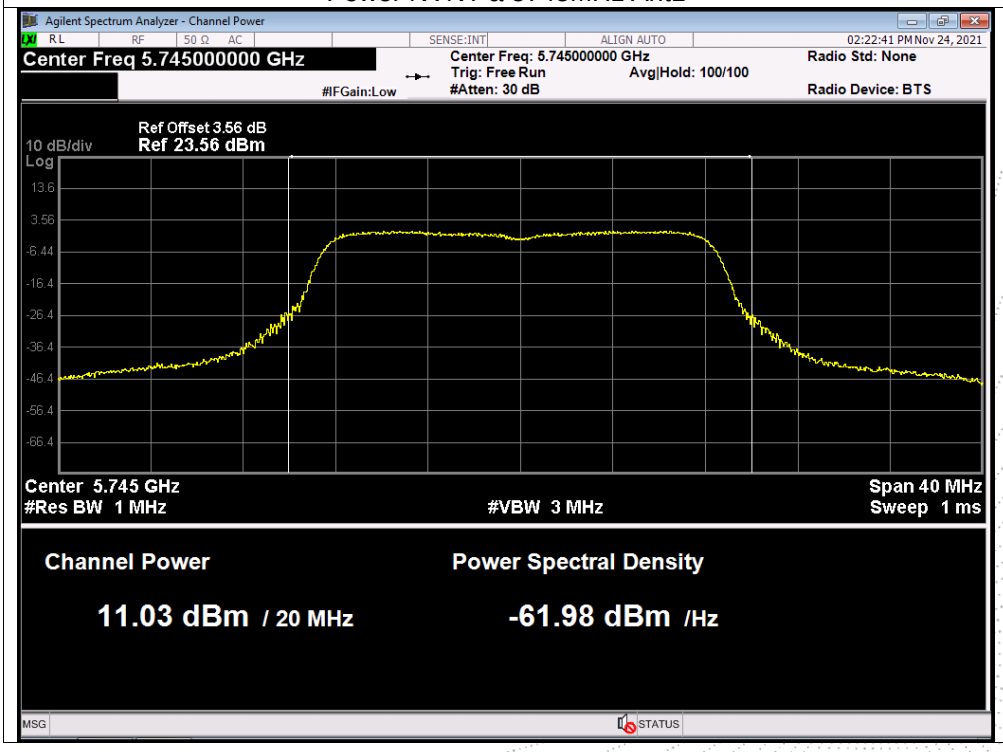
Power NVNT a 5200MHz Ant1



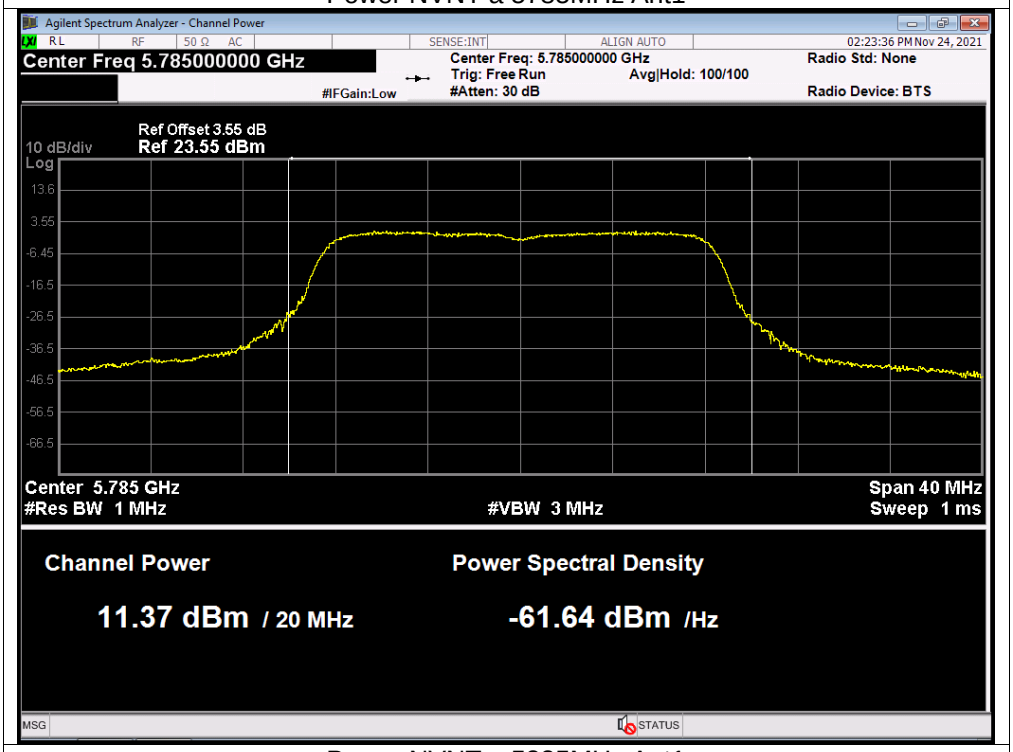
Power NVNT a 5240MHz Ant1



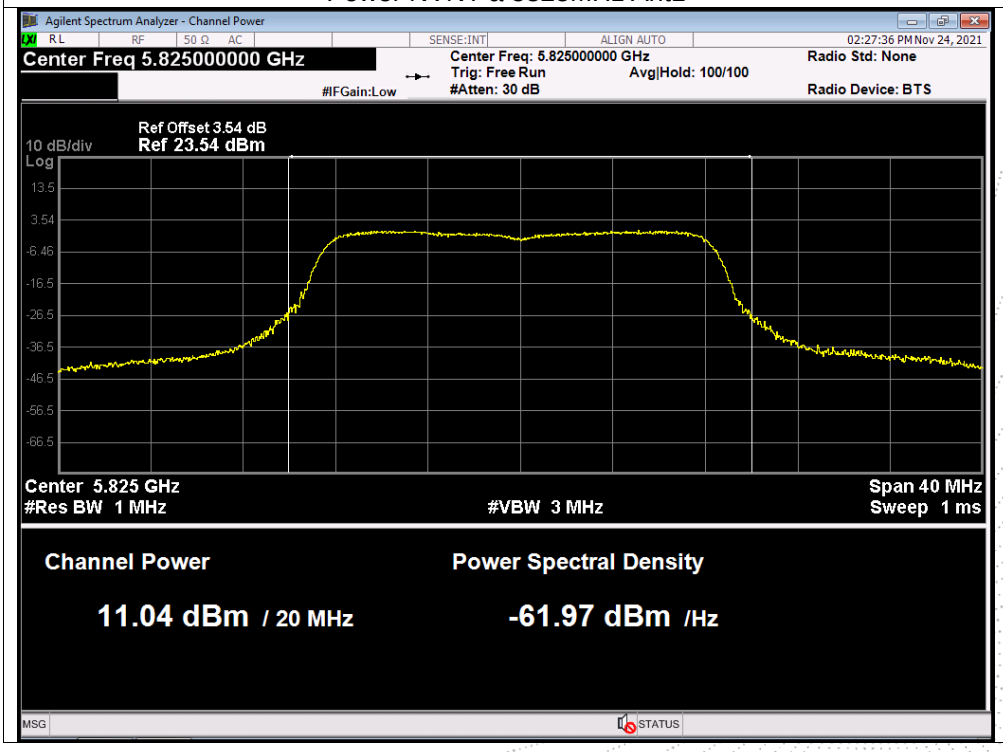
Power NVNT a 5745MHz Ant1



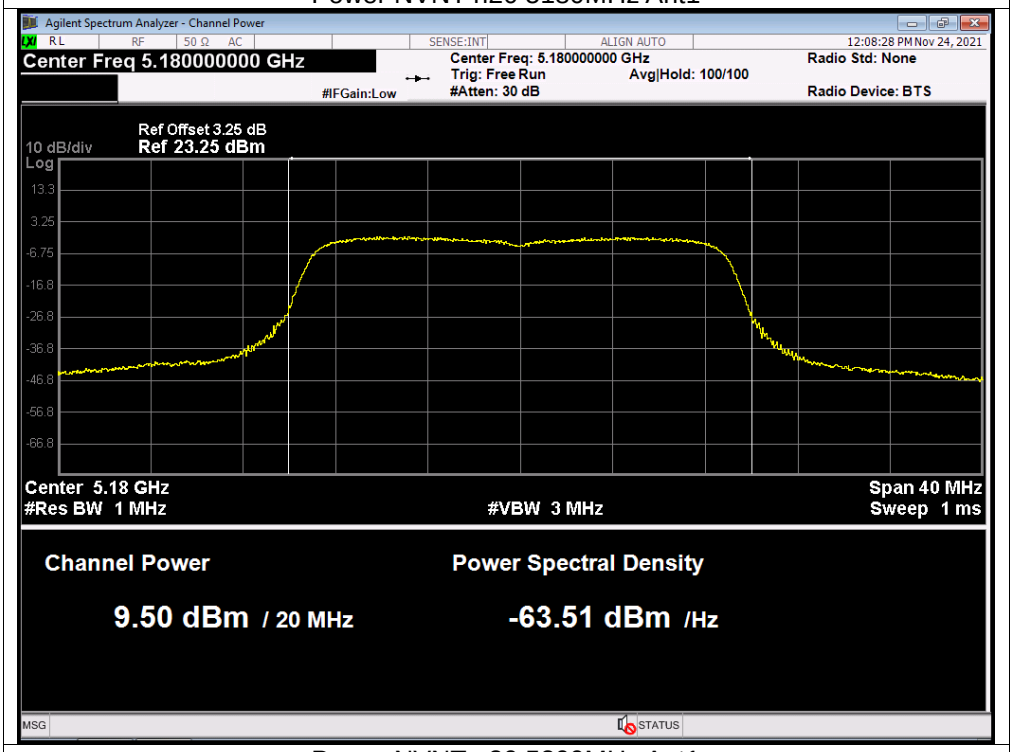
Power NVNT a 5785MHz Ant1



Power NVNT a 5825MHz Ant1



Power NVNT n20 5180MHz Ant1



Power NVNT n20 5200MHz Ant1