TEST REPORT

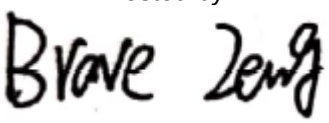
Report No.:	BCTC2406953441-3E
Applicant:	Shenzhen Whale Vision Technology Co.,Ltd
Product Name:	Smart Camera
Test Model:	JS-G01
Tested Date:	2024-06-24 to 2024-07-15
Issued Date:	2024-07-30

Shenzhen BCTC Testing Co., Ltd.

FCC ID: 2AW24JS-G01

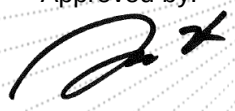
Product Name:	Smart Camera
Trademark:	N/A
Model/Type Ref.:	JS-G01,JS-G02,JS-G03,JS-G04,JS-G05,JS-G08,JS-P169,JS-DL02,JS-G09,JS-G10,JS-G11,JS-G12,JS-G13,JS-G14,JS-G15,JS-G16,JS-G17,JS-G18,JS-G19,JS-G20,JS-G201,JS-G21,JS-G301,JS-G401,JS-GL09,JS-G09,JS-G22,JS-G23,JS-G24,JS-G25,JS-G26,JS-G27,JS-G28,JS-G29,JS-G30,JS-G401,JS-G501,JS-601,JS-GLXX, JS-GXX, JS-G4XX,JS-G5XX, JS-G6XX,JS-G7XX,(xx Can be 01-199)
Prepared For:	Shenzhen Whale Vision Technology Co.,Ltd
Address:	Room 510-511, Building A8, Peking University Sci-Tech Park, 3000-1 Songbai Road, Shiyan Town, Bao'an District, Shenzhen, China
Manufacturer:	Shenzhen Whale Vision Technology Co.,Ltd
Address:	Room 510-511, Building A8, Peking University Sci-Tech Park, 3000-1 Songbai Road, Shiyan Town, Bao'an 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:	2024-06-24
Sample tested Date:	2024-06-24 to 2024-07-15
Report No.:	BCTC2406953441-3E
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/ Project Handler

Approved by:



Zero Zhou/Reviewer

Table of Content

1. Version

Report No.	Issue Date	Description	Approved
BCTC2406953441-3E	2024-07-30	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

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

3. Measurement Uncertainty

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

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

4. Product Information and Test Setup

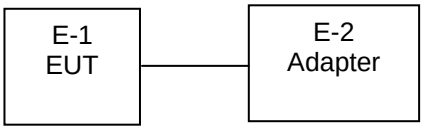
4.1 Product Information

Model/Type Ref.:	JS-G01,JS-G02,JS-G03,JS-G04,JS-G05,JS-G08,JS-P169,JS-DL02,JS-G09,JS-G10,JS-G11,JS-G12,JS-G13,JS-G14,JS-G15,JS-G16,JS-G17,JS-G18,JS-G19,JS-G20,JS-G201,JS-G21,JS-G301,JS-G401,JS-GL09,JS-G09,JS-G22,JS-G23,JS-G24,JS-G25,JS-G26,JS-G27,JS-G28,JS-G29,JS-G30,JS-G401,JS-G501,JS-601,JS-GLXX, JS-GXX, JS-G4XX,JS-G5XX, JS-G6XX,JS-G7XX,(xx Can be 01-199)
Model differences:	The following models of units we produce are identical in electrical, mechanical and physical structure; The difference is only in the model name, we finally have JS-G01 as test model.
Hardware Version:	N/A
Software Version:	N/A
IEEE 802.11 WLAN Mode Supported	☒802.11a ☒802.11n(20MHz channel bandwidth) ☒802.11n(40MHz channel bandwidth)
Operation Frequency:	5180-5240MHz for 802.11a/n (HT20); 5190-5230MHz for 802.11n(HT40); 5745-5825 MHz for 802.11a/n/(HT20); 5755-5795 MHz for 802.11n(HT40);
Data Rate	☒802.11a:54/48/36/24/18/12/9/6Mbps ☒802.11n:up to 300 Mbps
Type of Modulation:	☒OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n
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 ; 5 channels for 802.11a/n20 in the 5745-5825MHz band ; 2 channels for 802.11 n40 in the 5755-5795MHz band ;
Transmit Power:	WIFI5.1G:12.32dBm WIFI5.8G: 10.63dBm
Antenna installation:	Internal antenna,
Antenna Gain:	-2.3dBi
Power supply:	DC 12V/1A

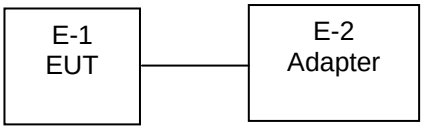
4.2 Test Setup Configuration

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	Smart Camera	N/A	JS-G01	N/A	EUT
E-2	Adapter	N/A	N/A	N/A	Auxiliary

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

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

4.4 Channel List

Frequency and Channel list for (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	-	-	-	-

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

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

802.11n(40MHz)Carrier Frequency Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795	-	-

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 802.11a /n 20 CH149/ CH157
Mode 2	802.11n 40 CH38 802.11n 40 CH 151
Mode 3	Link Mode

4.6 Table Of Parameters Of Text Software Setting

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

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

5. Test Facility And Test Instrument Used

5.1 Test Facility

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

5.2 Test Instrument Used

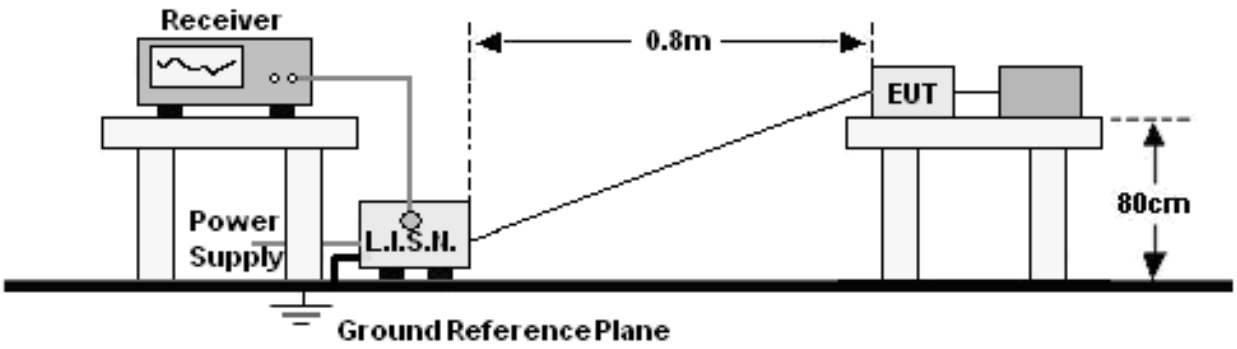
Conducted Emissions Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR3	102075	May 16, 2024	May 15, 2025
LISN	R&S	ENV216	101375	May 16, 2024	May 15, 2025
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Pulse limiter	Schwarzbeck	VTSD 9561-F	01323	May 16, 2024	May 15, 2025

RF Conducted Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Power meter	Keysight	E4419	\	May 16, 2024	May 15, 2025
Power Sensor (AV)	Keysight	E9300A	\	May 16, 2024	May 15, 2025
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 16, 2024	May 15, 2025
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	100363	May 16, 2024	May 15, 2025

Radiated Emissions Test (966 Chamber)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	May 16, 2024	May 15, 2025
Receiver	R&S	ESR3	102075	May 16, 2024	May 15, 2025
Receiver	R&S	ESRP	101154	May 16, 2024	May 15, 2025
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 16, 2024	May 15, 2025
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	May 21, 2024	May 20, 2025
Loop Antenna(9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	May 21, 2024	May 20, 2025
Amplifier	SKET	LAPA_01G18G-45dB	SK2021040901	May 16, 2024	May 15, 2025
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 21, 2024	May 20, 2025
Amplifier(18GHz-40GHz)	MITEQ	TTA1840-35-HG	2034381	May 16, 2024	May 15, 2025
Horn Antenn(18GHz-40GHz)	Schwarzbeck	BBHA9170	00822	May 21, 2024	May 20, 2025
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	100363	May 16, 2024	May 15, 2025
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

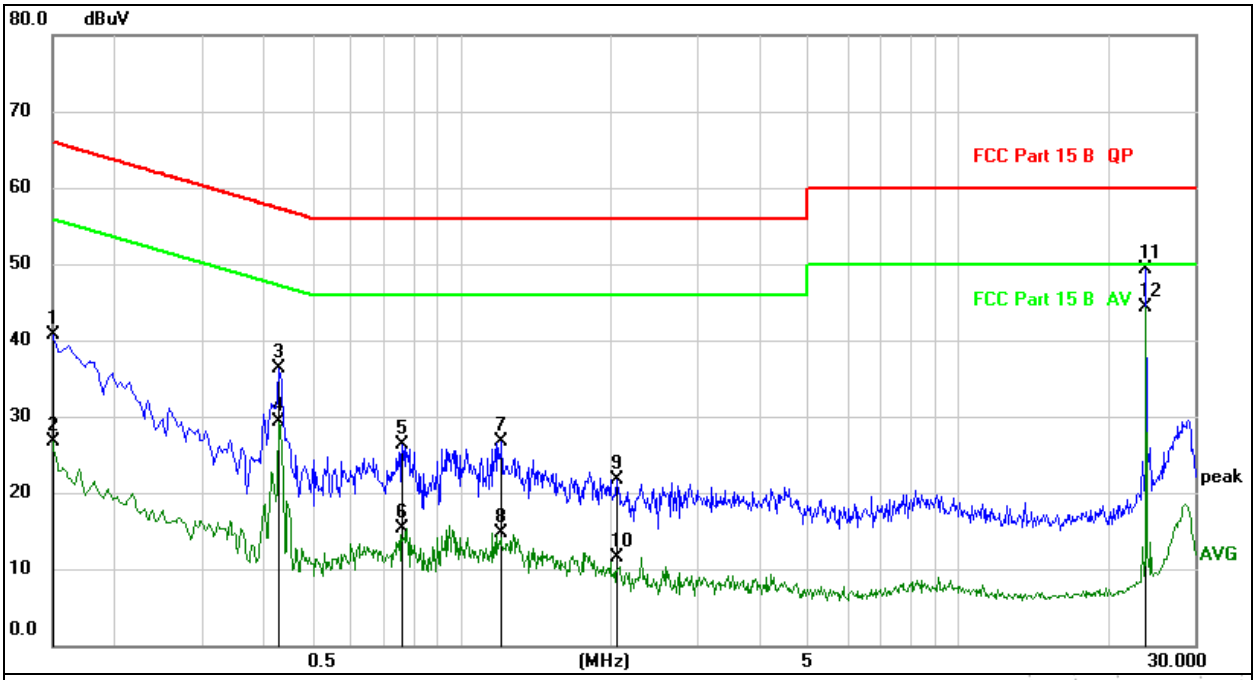
a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak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

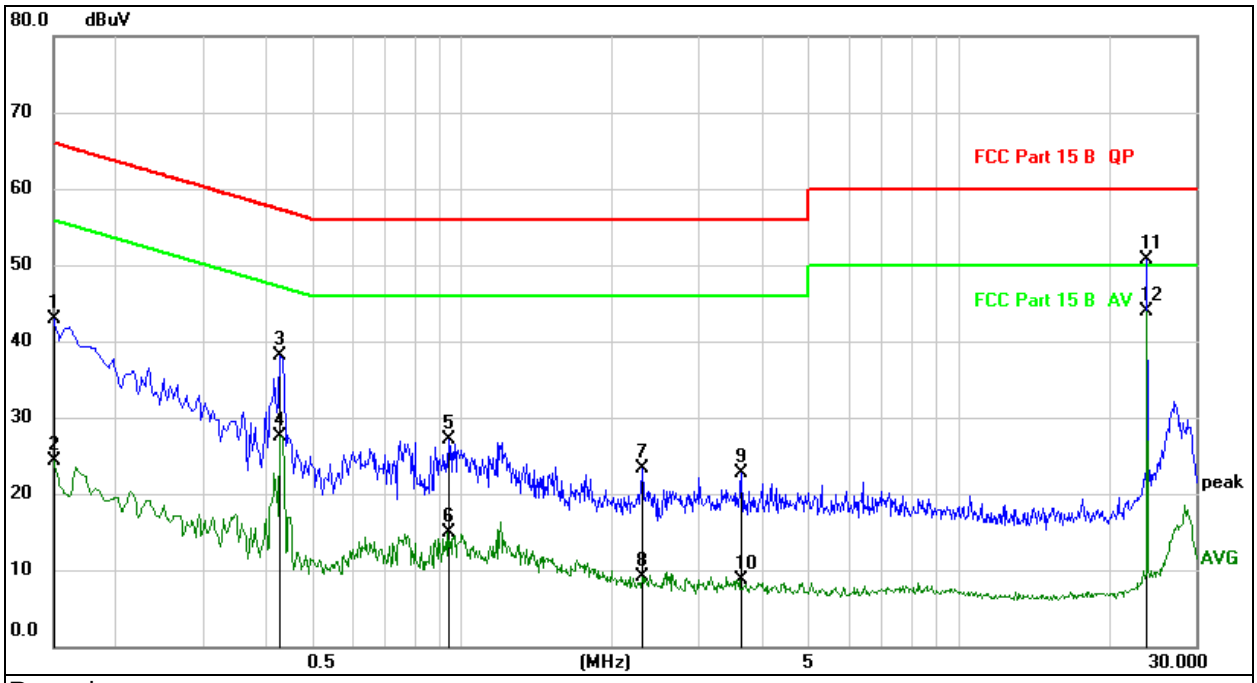
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	L
Test Mode:	Mode 3	Test Voltage :	AC 120V/60Hz



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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV		dBuV	dBuV	dB	Detector	Comment
1		0.1500	30.52	10.25	40.77	66.00	-25.23	QP	
2		0.1500	16.52	10.25	26.77	56.00	-29.23	AVG	
3		0.4300	25.97	10.30	36.27	57.25	-20.98	QP	
4		0.4300	19.02	10.30	29.32	47.25	-17.93	AVG	
5		0.7620	16.01	10.33	26.34	56.00	-29.66	QP	
6		0.7620	4.96	10.33	15.29	46.00	-30.71	AVG	
7		1.2059	16.40	10.29	26.69	56.00	-29.31	QP	
8		1.2059	4.44	10.29	14.73	46.00	-31.27	AVG	
9		2.0620	11.41	10.38	21.79	56.00	-34.21	QP	
10		2.0620	1.03	10.38	11.41	46.00	-34.59	AVG	
11		24.0020	37.96	11.39	49.35	60.00	-10.65	QP	
12	*	24.0020	32.99	11.39	44.38	50.00	-5.62	AVG	

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	N
Test Mode:	Mode 3	Test Voltage :	AC 120V/60Hz



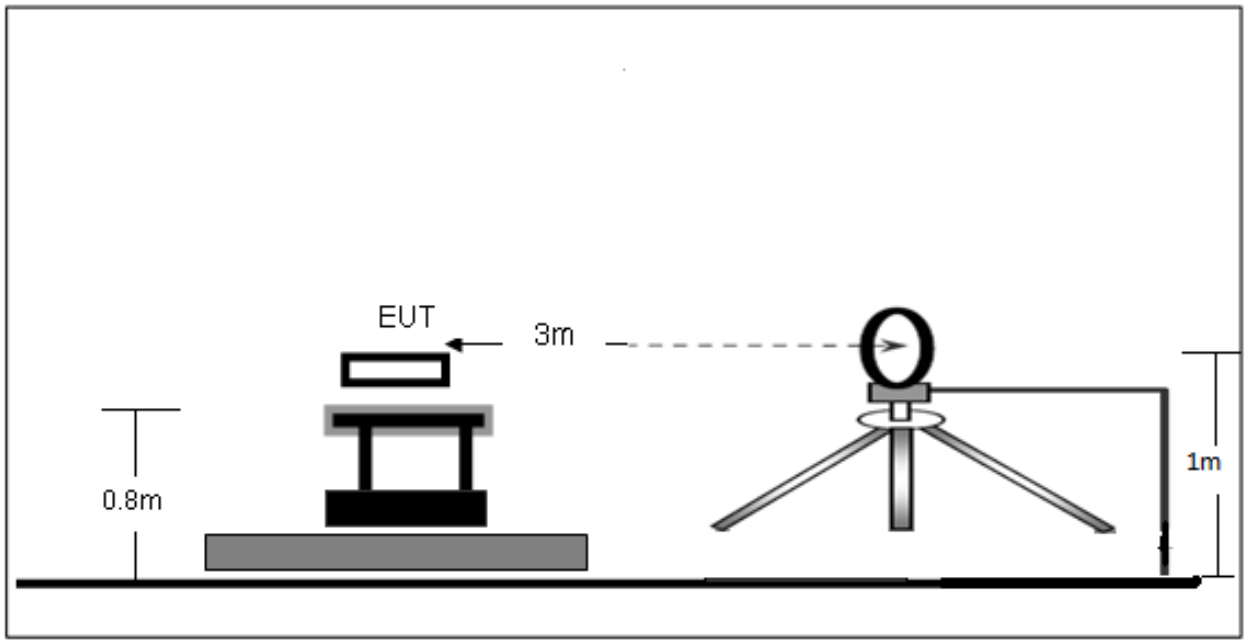
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV		dBuV	dBuV	dB	Detector	Comment
1		0.1500	32.58	10.25	42.83	66.00	-23.17	QP	
2		0.1500	14.14	10.25	24.39	56.00	-31.61	AVG	
3		0.4300	27.86	10.30	38.16	57.25	-19.09	QP	
4		0.4300	17.13	10.30	27.43	47.25	-19.82	AVG	
5		0.9420	16.76	10.29	27.05	56.00	-28.95	QP	
6		0.9420	4.68	10.29	14.97	46.00	-31.03	AVG	
7		2.2980	12.84	10.41	23.25	56.00	-32.75	QP	
8		2.2980	-1.32	10.41	9.09	46.00	-36.91	AVG	
9		3.6580	11.99	10.63	22.62	56.00	-33.38	QP	
10		3.6580	-1.88	10.63	8.75	46.00	-37.25	AVG	
11		24.0020	39.35	11.39	50.74	60.00	-9.26	QP	
12	*	24.0020	32.53	11.39	43.92	50.00	-6.08	AVG	

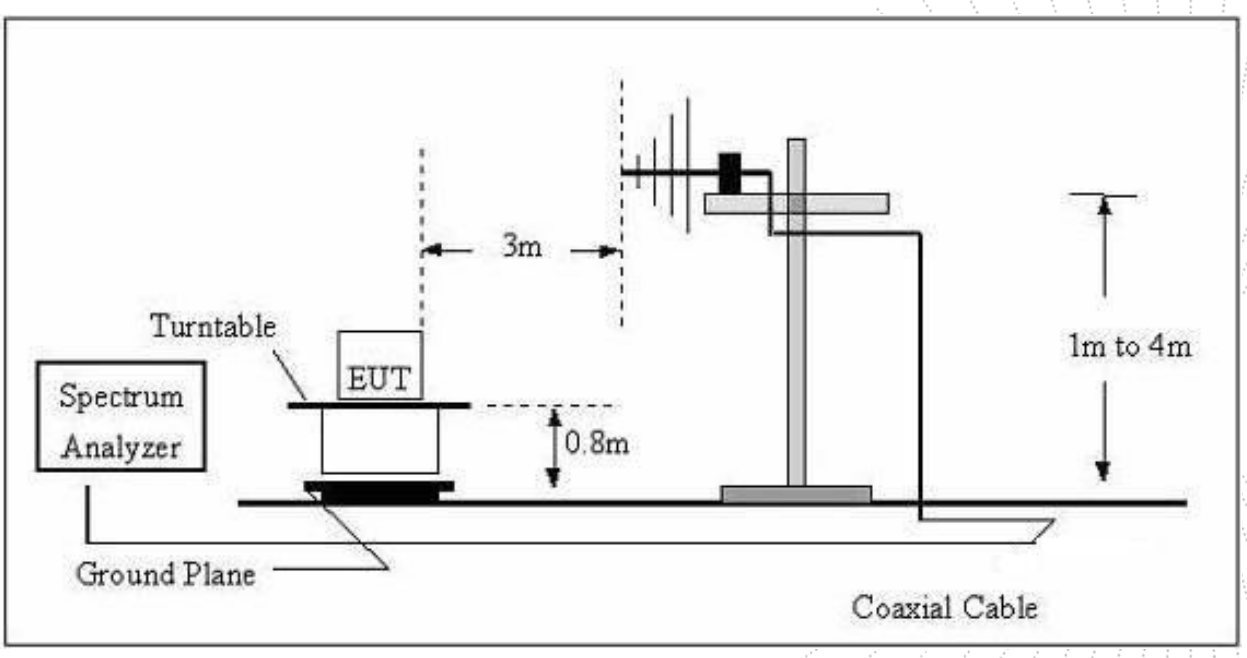
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

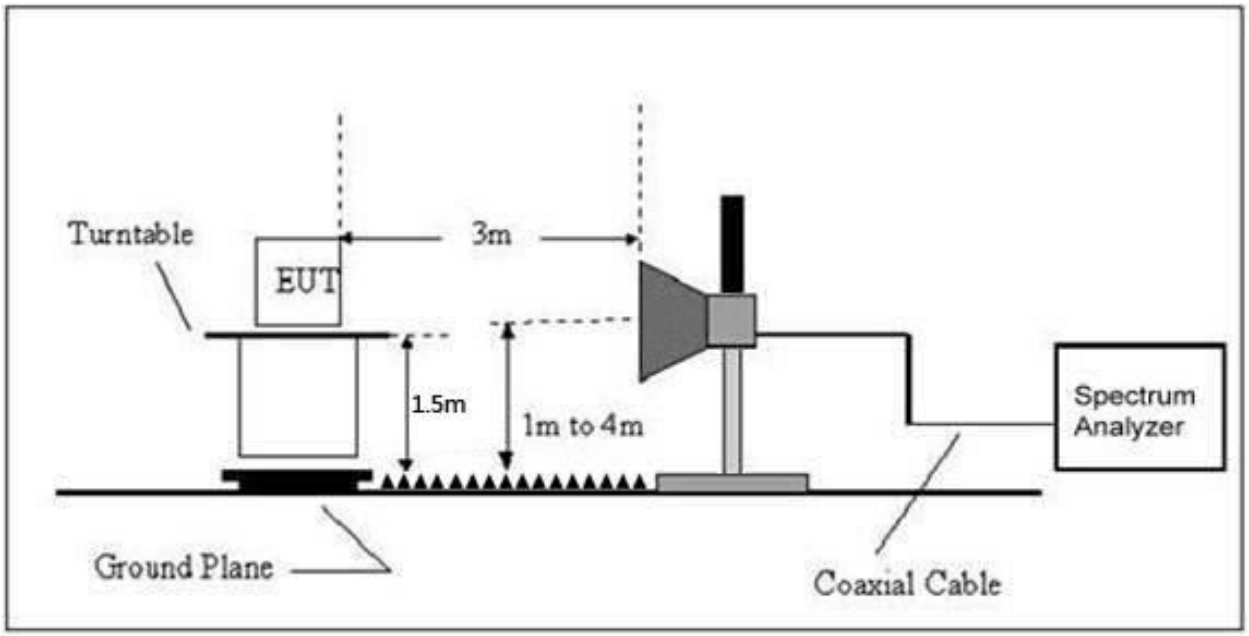
（A）Radiated Emission Test-Up Frequency Below 30MHz



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



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



7.2 Limit

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

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

Limits Of Radiated Emission Measurement (Above 1000MHz)

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

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

7.3 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m.The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.
This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205.
It must be performed with the highest gain of each type of antenna proposed for use with the EUT.
Use the following spectrum analyzer settings:

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

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

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

Note:

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

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

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

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

7.4 EUT Operating Conditions

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

7.5 Test Result

Below 30MHz

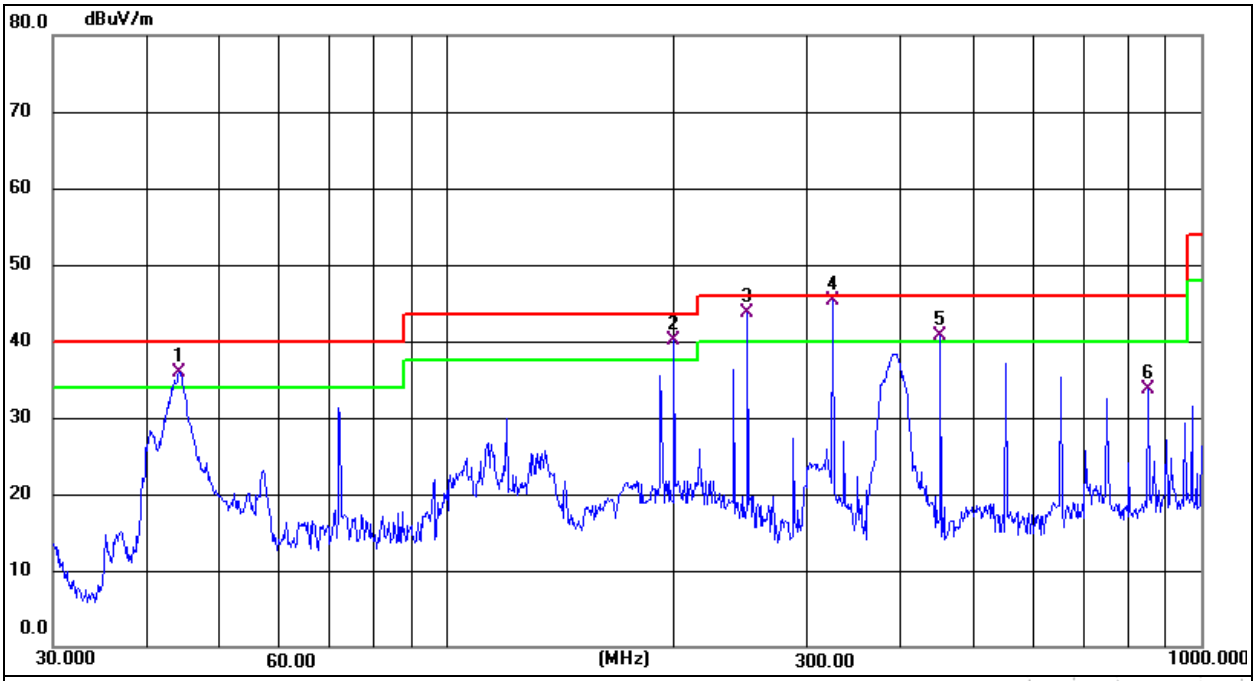
Temperature:	26℃	Relative Humidity:	24%
Pressure:	101 kPa	Test Voltage:	AC 120V/60Hz
Test Mode:	Mode 3	Polarization:	--

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

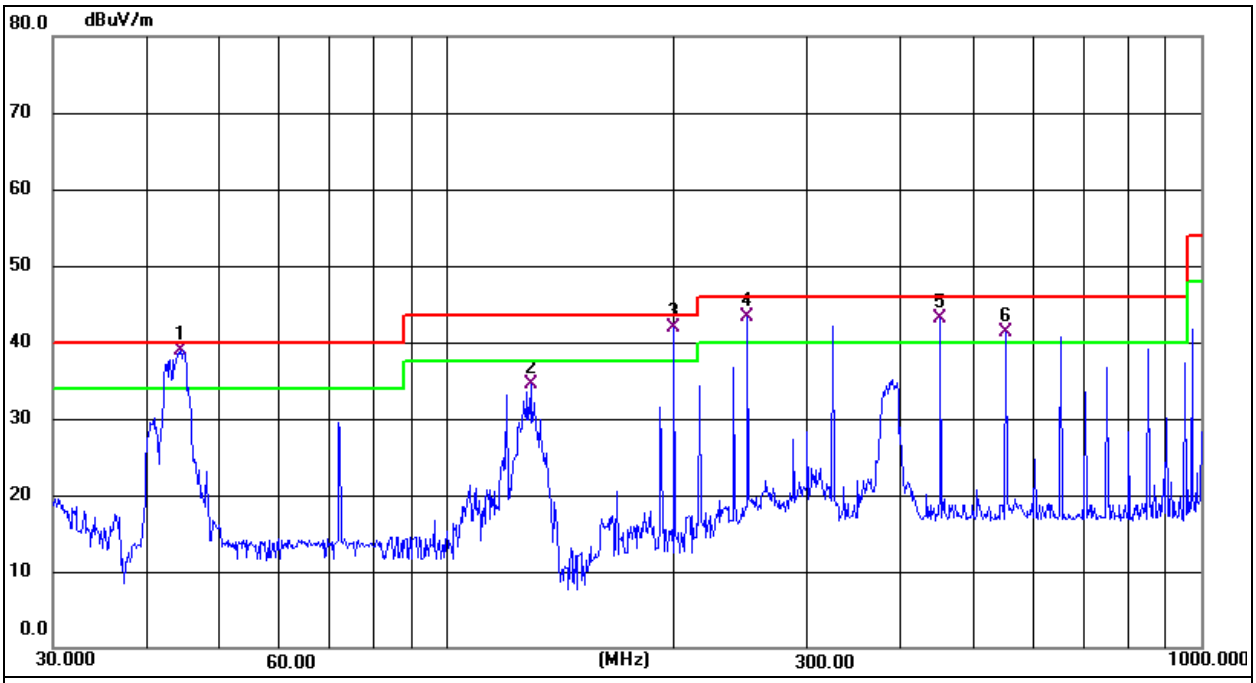
Temperature:	24 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	AC 120V/60Hz
Test Mode:	Mode 3	Polarization :	Horizontal



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

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 !	44.1202	52.82	-16.87	35.95	40.00	-4.05	QP
2 !	199.9855	57.64	-17.54	40.10	43.50	-3.40	QP
3 !	250.3011	59.39	-15.64	43.75	46.00	-2.25	QP
4 *	324.4560	58.04	-12.79	45.25	46.00	-0.75	QP
5 !	451.1350	49.64	-8.88	40.76	46.00	-5.24	QP
6	851.0353	33.52	0.21	33.73	46.00	-12.27	QP

Temperature:	24 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	AC 120V/60Hz
Test Mode:	Mode 3	Polarization :	Vertical



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

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	44.2751	55.79	-16.86	38.93	40.00	-1.07	QP
2	129.0144	50.67	-16.17	34.50	43.50	-9.00	QP
3 !	199.9855	59.41	-17.54	41.87	43.50	-1.63	QP
4 !	250.3010	58.89	-15.64	43.25	46.00	-2.75	QP
5 !	451.1349	51.97	-8.88	43.09	46.00	-2.91	QP
6 !	550.9479	47.62	-6.28	41.34	46.00	-4.66	QP

Between 1GHz – 40GHz

Test Mode :	TX(5.1G) - 802.11a

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G							
Vertical	4434.074	73.44	-20.73	52.71	68.2	-15.49	Pk
Vertical	4434.074	59.65	-20.73	38.92	54	-15.08	AV
Vertical	10360.152	62.54	-9.36	53.18	68.2	-15.02	Pk
Vertical	10360.152	49.47	-9.36	40.11	54	-13.89	AV
Vertical	15540.084	63.09	-7.84	55.25	74	-18.75	Pk
Vertical	15540.084	49.72	-7.84	41.88	54	-12.12	AV
Horizontal	4434.003	72.35	-20.73	51.62	68.2	-16.58	Pk
Horizontal	4434.003	59.75	-20.73	39.02	54	-14.98	AV
Horizontal	10360.160	60.84	-9.36	51.48	68.2	-16.72	Pk
Horizontal	10360.160	49.51	-9.36	40.15	54	-13.85	AV
Horizontal	15540.109	64.80	-7.84	56.96	74	-17.04	Pk
Horizontal	15540.109	49.18	-7.84	41.34	54	-12.66	AV
middle Channel (5200 MHz)-Above 1G							
Vertical	4592.185	70.07	-20.42	49.66	74	-24.34	Pk
Vertical	4592.185	59.55	-20.42	39.14	54	-14.86	AV
Vertical	10400.195	63.85	-9.30	54.55	68.2	-13.65	Pk
Vertical	10400.195	49.37	-9.30	40.07	54	-13.93	AV
Vertical	15600.171	62.40	-7.82	54.58	74	-19.42	Pk
Vertical	15600.171	49.16	-7.82	41.34	54	-12.66	AV
Horizontal	4592.160	71.24	-20.42	50.82	74	-23.18	Pk
Horizontal	4592.160	59.26	-20.42	38.84	54	-15.16	AV
Horizontal	10400.118	61.85	-9.30	52.55	68.2	-15.65	Pk
Horizontal	10400.118	49.43	-9.30	40.13	54	-13.87	AV
Horizontal	15600.073	62.48	-7.82	54.66	74	-19.34	Pk
Horizontal	15600.073	49.31	-7.82	41.49	54	-12.51	AV
High Channel (5240 MHz)-Above 1G							
Vertical	4739.153	70.22	-20.12	50.10	74	-23.90	Pk
Vertical	4739.153	59.72	-20.12	39.60	54	-14.40	AV
Vertical	10480.105	63.02	-9.18	53.84	68.2	-14.36	Pk
Vertical	10480.105	49.52	-9.18	40.34	54	-13.66	AV
Vertical	15720.175	63.27	-7.78	55.49	74	-18.51	Pk
Vertical	15720.175	49.62	-7.78	41.84	54	-12.16	AV
Horizontal	4739.138	70.57	-20.12	50.45	74	-23.55	Pk
Horizontal	4739.138	59.26	-20.12	39.13	54	-14.87	AV
Horizontal	10480.164	61.56	-9.18	52.38	68.2	-15.82	Pk
Horizontal	10480.164	49.82	-9.18	40.64	54	-13.36	AV
Horizontal	15720.091	61.67	-7.78	53.89	74	-20.11	Pk
Horizontal	15720.091	49.21	-7.78	41.43	54	-12.57	AV

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

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

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G							
Vertical	4434.196	70.93	-20.73	50.20	68.2	-18.00	Pk
Vertical	4434.196	59.55	-20.73	38.82	54	-15.18	AV
Vertical	10360.189	64.70	-9.36	55.34	68.2	-12.86	Pk
Vertical	10360.189	49.16	-9.36	39.80	54	-14.20	AV
Vertical	15540.197	63.25	-7.84	55.41	74	-18.59	Pk
Vertical	15540.197	49.99	-7.84	42.15	54	-11.85	AV
Horizontal	4434.108	70.55	-20.73	49.82	68.2	-18.38	Pk
Horizontal	4434.108	59.61	-20.73	38.88	54	-15.12	AV
Horizontal	10360.108	60.29	-9.36	50.93	68.2	-17.27	Pk
Horizontal	10360.108	49.23	-9.36	39.87	54	-14.13	AV
Horizontal	15540.156	62.80	-7.84	54.96	74	-19.04	Pk
Horizontal	15540.156	49.32	-7.84	41.48	54	-12.52	AV
middle Channel (5200 MHz)-Above 1G							
Vertical	4592.085	74.62	-20.42	54.20	74	-19.80	Pk
Vertical	4592.085	59.39	-20.42	38.97	54	-15.03	AV
Vertical	10400.038	62.19	-9.30	52.89	68.2	-15.31	Pk
Vertical	10400.038	49.20	-9.30	39.90	54	-14.10	AV
Vertical	15600.169	60.02	-7.82	52.20	74	-21.80	Pk
Vertical	15600.169	49.52	-7.82	41.70	54	-12.30	AV
Horizontal	4592.047	72.79	-20.42	52.37	74	-21.63	Pk
Horizontal	4592.047	59.40	-20.42	38.99	54	-15.01	AV
Horizontal	10400.199	64.44	-9.30	55.14	68.2	-13.06	Pk
Horizontal	10400.199	49.11	-9.30	39.81	54	-14.19	AV
Horizontal	15600.155	63.19	-7.82	55.37	74	-18.63	Pk
Horizontal	15600.155	49.75	-7.82	41.93	54	-12.07	AV
High Channel (5240 MHz)-Above 1G							
Vertical	4592.136	72.31	-20.42	51.89	74	-22.11	Pk
Vertical	4592.136	59.90	-20.42	39.48	54	-14.52	AV
Vertical	10480.056	62.44	-9.30	53.14	68.2	-15.06	Pk
Vertical	10480.056	49.30	-9.30	40.00	54	-14.00	AV
Vertical	15720.030	60.82	-7.82	53.00	74	-21.00	Pk
Vertical	15720.030	49.19	-7.82	41.37	54	-12.63	AV
Horizontal	4592.128	71.06	-20.42	50.64	74	-23.36	Pk
Horizontal	4592.128	59.02	-20.42	38.61	54	-15.39	AV
Horizontal	10480.023	63.02	-9.30	53.72	68.2	-14.48	Pk
Horizontal	10480.023	49.70	-9.30	40.40	54	-13.60	AV
Horizontal	15720.152	61.37	-7.82	53.55	74	-20.45	Pk
Horizontal	15720.152	49.11	-7.82	41.29	54	-12.71	AV

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

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

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5190 MHz)-Above 1G							
Vertical	4434.004	70.48	-20.73	49.75	68.2	-18.45	Pk
Vertical	4434.004	59.05	-20.73	38.31	54	-15.69	AV
Vertical	10380.081	64.79	-9.33	55.46	68.2	-12.74	Pk
Vertical	10380.081	49.66	-9.33	40.33	54	-13.67	AV
Vertical	15570.122	64.45	-7.83	56.62	74	-17.38	Pk
Vertical	15570.122	49.49	-7.83	41.66	54	-12.34	AV
Horizontal	4434.154	71.87	-20.73	51.14	74	-22.86	Pk
Horizontal	4434.154	59.87	-20.73	39.14	54	-14.86	AV
Horizontal	10380.005	61.94	-9.33	52.61	68.2	-15.59	Pk
Horizontal	10380.005	49.09	-9.33	39.76	54	-14.24	AV
Horizontal	15570.150	64.15	-7.83	56.32	74	-17.68	Pk
Horizontal	15570.150	49.09	-7.83	41.26	54	-12.74	AV
High Channel (5230 MHz)-Above 1G							
Vertical	4739.038	70.66	-20.12	50.54	68.2	-17.66	Pk
Vertical	4739.038	59.11	-20.12	38.99	54	-15.01	AV
Vertical	10460.081	62.38	-9.21	53.17	68.2	-15.03	Pk
Vertical	10460.081	49.58	-9.21	40.37	54	-13.63	AV
Vertical	15690.194	61.92	-7.79	54.13	74	-19.87	Pk
Vertical	15690.194	49.63	-7.79	41.84	54	-12.16	AV
Horizontal	4739.126	72.44	-20.12	52.31	68.2	-15.89	Pk
Horizontal	4739.126	59.86	-20.12	39.74	54	-14.26	AV
Horizontal	10460.187	60.57	-9.21	51.36	68.2	-16.84	Pk
Horizontal	10460.187	49.29	-9.21	40.08	54	-13.92	AV
Horizontal	15690.194	60.84	-7.79	53.05	74	-20.95	Pk
Horizontal	15690.194	49.03	-7.79	41.24	54	-12.76	AV

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

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

Test mode: 802.11a Frequency(MHz): 5180

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
5149.65	H	63.62	74	48.32	54
5145.36	V	55.06	74	43.59	54

Test mode: 802.11a Frequency(MHz): 5240

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
5372.31	H	57.04	74	45.36	54
5356.29	V	55.02	74	43.29	54

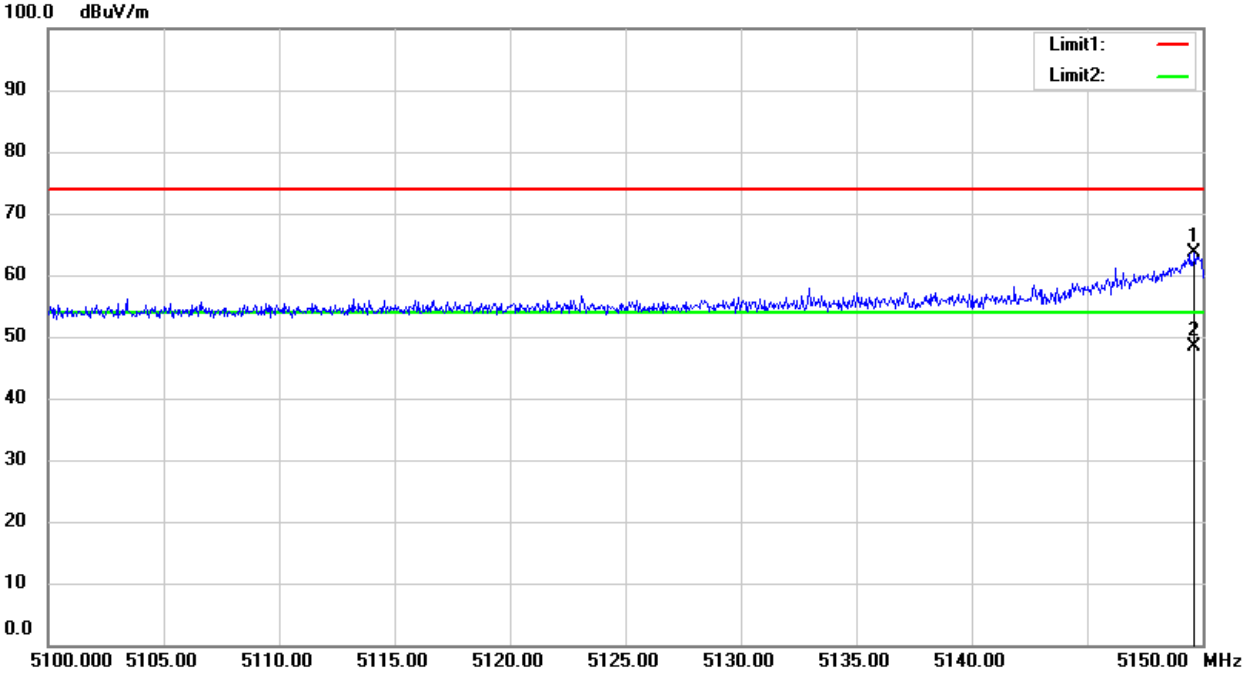
Note: (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor.
(3) Correct Factor= Ant_F + Cab_L - Preamp

U-NII - 1

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

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

☒5180 ☐5200 ☐5240 Ant.Pol H

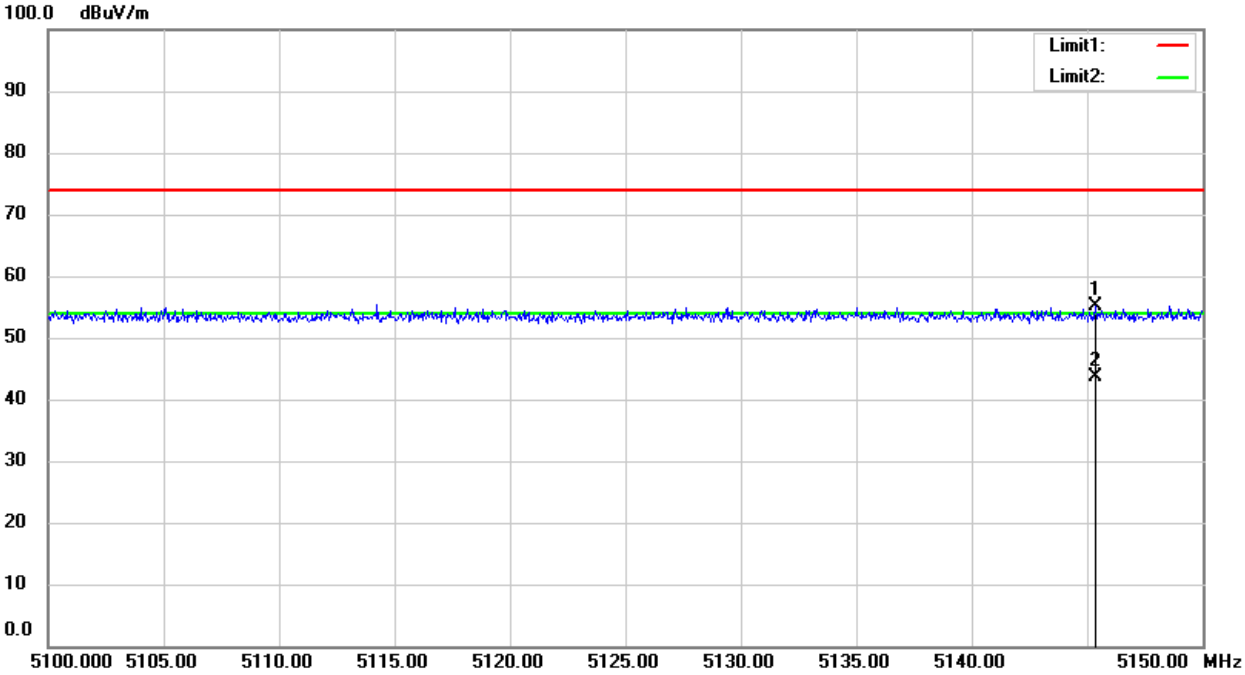


U-NII - 1

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

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

☒5180 ☐5200 ☐5240 Ant.Pol V

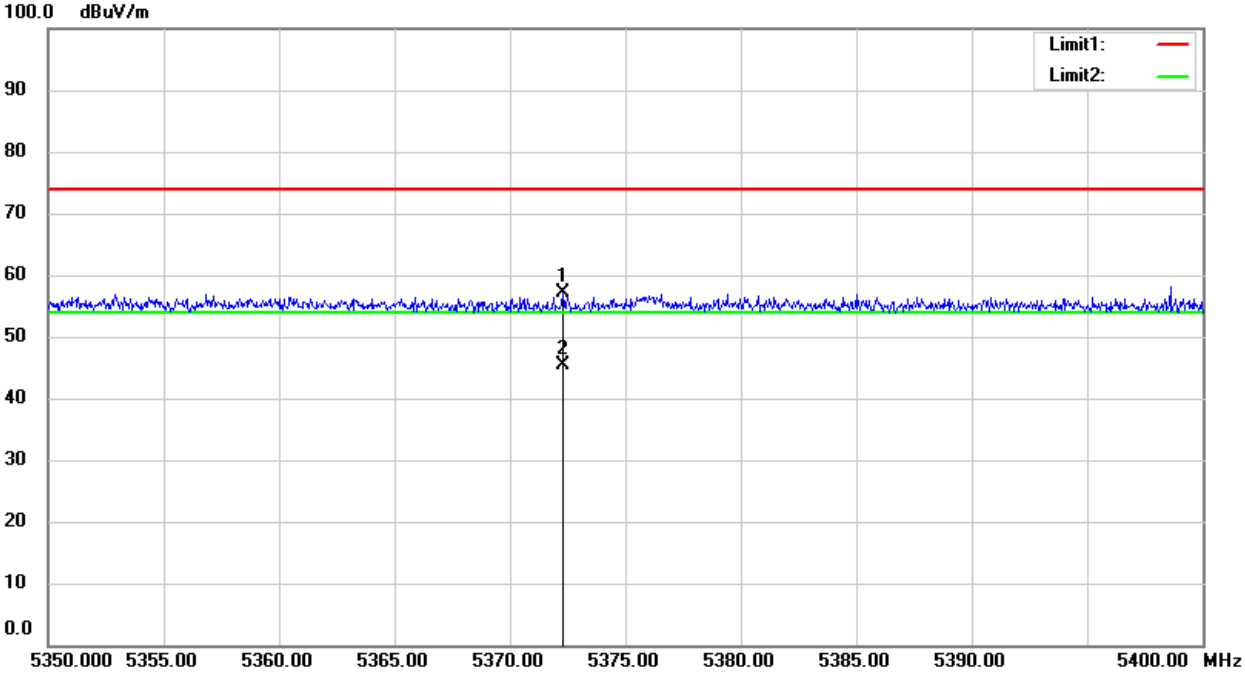


U-NII - 1

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

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

☐5180 ☐5200 ☒5240 Ant.Pol H

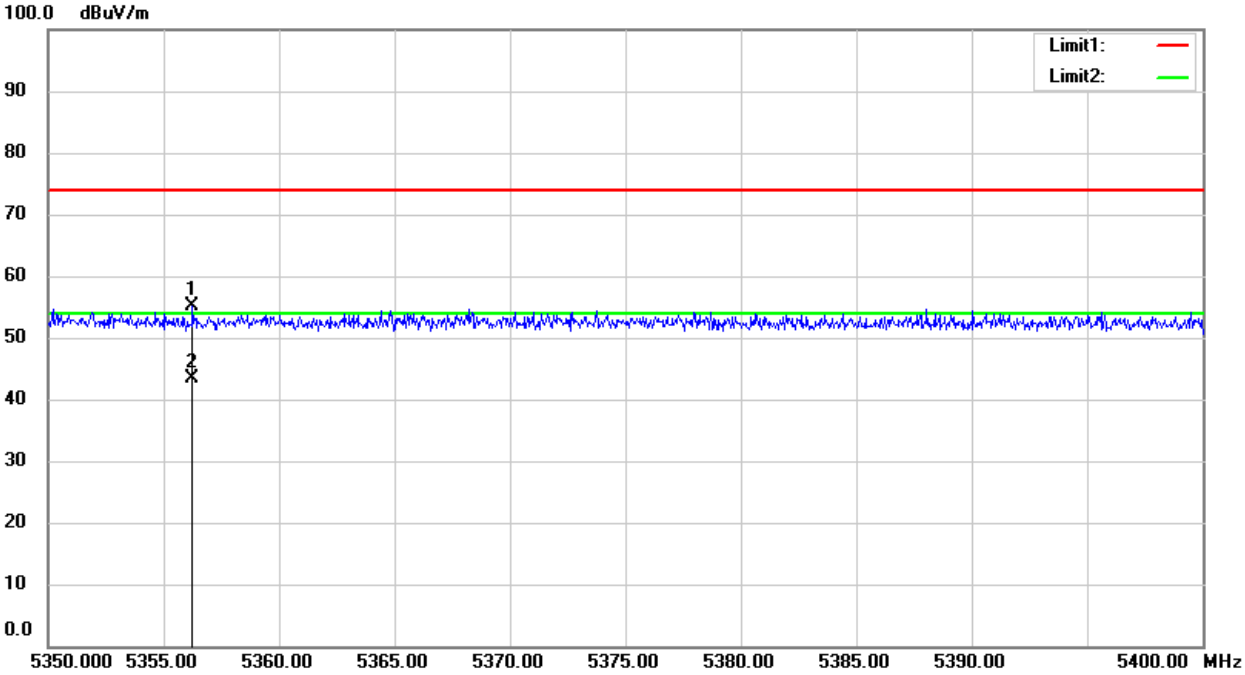


U-NII - 1

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

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

☐5180 ☐5200 ☒5240 Ant.Pol V



Test Mode:	TX(5.8G) - 802.11a

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G							
Vertical	4679.131	72.27	-20.24	52.03	74	-21.97	Pk
Vertical	4679.131	59.78	-20.24	39.54	54	-14.46	AV
Vertical	11490.138	62.41	-8.79	53.62	68.2	-14.58	Pk
Vertical	11490.138	49.24	-8.79	40.45	54	-13.55	AV
Vertical	17235.167	55.03	-3.18	51.85	68.2	-16.35	Pk
Vertical	17235.167	44.55	-3.18	41.37	54	-12.63	AV
Horizontal	4679.063	72.94	-20.73	52.21	74	-21.79	Pk
Horizontal	4679.063	59.65	-20.73	38.92	54	-15.08	AV
Horizontal	11490.059	61.77	-8.79	52.98	68.2	-15.22	Pk
Horizontal	11490.059	49.49	-8.79	40.70	54	-13.30	AV
Horizontal	17235.055	58.83	-3.18	55.65	68.2	-12.55	Pk
Horizontal	17235.055	45.00	-3.18	41.82	54	-12.18	AV
middle Channel (5785 MHz)-Above 1G							
Vertical	4592.134	72.17	-20.42	51.75	74	-22.25	Pk
Vertical	4592.134	59.60	-20.42	39.19	54	-14.81	AV
Vertical	11570.080	62.31	-8.86	53.45	68.2	-14.75	Pk
Vertical	11570.080	49.37	-8.86	40.51	54	-13.49	AV
Vertical	17355.092	58.56	-2.52	56.04	68.2	-12.16	Pk
Vertical	17355.092	44.56	-2.52	42.04	54	-11.96	AV
Horizontal	4592.115	71.51	-20.42	51.10	74	-22.90	Pk
Horizontal	4592.115	59.56	-20.42	39.14	54	-14.86	AV
Horizontal	11570.167	62.97	-8.86	54.11	68.2	-14.09	Pk
Horizontal	11570.167	49.85	-8.86	40.99	54	-13.01	AV
Horizontal	17355.060	56.03	-2.52	53.51	68.2	-14.69	Pk
Horizontal	17355.060	44.80	-2.52	42.28	54	-11.72	AV
High Channel (5825 MHz)-Above 1G							
Vertical	6039.125	71.73	-18.93	52.80	68.2	-15.40	Pk
Vertical	6039.125	59.40	-18.93	40.46	54	-13.54	AV
Vertical	11650.050	63.96	-8.92	55.04	74	-18.96	Pk
Vertical	11650.050	49.51	-8.92	40.59	54	-13.41	AV
Vertical	17475.155	55.78	-1.86	53.92	68.2	-14.28	Pk
Vertical	17475.155	44.65	-1.86	42.79	54	-11.21	AV
Horizontal	6039.035	74.60	-18.93	55.67	68.2	-12.53	Pk
Horizontal	6039.035	59.88	-18.93	40.95	54	-13.05	AV
Horizontal	11650.070	64.39	-8.92	55.47	74	-18.53	Pk
Horizontal	11650.070	49.36	-8.92	40.44	54	-13.56	AV
Horizontal	17475.176	57.46	-1.86	55.60	68.2	-12.60	Pk
Horizontal	17475.176	44.53	-1.86	42.67	54	-11.33	AV

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

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

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G							
Vertical	4679.137	71.30	-20.24	51.06	74	-22.94	Pk
Vertical	4679.137	59.85	-20.24	39.61	54	-14.39	AV
Vertical	11490.045	61.03	-8.79	52.24	68.2	-15.96	Pk
Vertical	11490.045	49.83	-8.79	41.04	54	-12.96	AV
Vertical	17235.131	57.57	-3.18	54.39	68.2	-13.81	Pk
Vertical	17235.131	45.00	-3.18	41.82	54	-12.18	AV
Horizontal	4679.192	72.23	-20.24	51.99	74	-22.01	Pk
Horizontal	4679.192	59.44	-20.24	39.20	54	-14.80	AV
Horizontal	11490.113	60.97	-8.79	52.18	68.2	-16.02	Pk
Horizontal	11490.113	49.71	-8.79	40.92	54	-13.08	AV
Horizontal	17235.133	55.66	-3.18	52.48	68.2	-15.72	Pk
Horizontal	17235.133	44.81	-3.18	41.63	54	-12.37	AV
middle Channel (5785 MHz)-Above 1G							
Vertical	4592.079	71.40	-20.42	50.99	74	-23.01	Pk
Vertical	4592.079	59.37	-20.42	38.96	54	-15.04	AV
Vertical	11570.128	61.18	-8.86	52.32	68.2	-15.88	Pk
Vertical	11570.128	49.53	-8.86	40.67	54	-13.33	AV
Vertical	17355.111	55.52	-2.52	53.00	68.2	-15.20	Pk
Vertical	17355.111	44.87	-2.52	42.35	54	-11.65	AV
Horizontal	4592.003	74.80	-20.42	54.39	74	-19.61	Pk
Horizontal	4592.003	59.88	-20.42	39.47	54	-14.53	AV
Horizontal	11570.161	63.18	-8.86	54.32	68.2	-13.88	Pk
Horizontal	11570.161	49.75	-8.86	40.89	54	-13.11	AV
Horizontal	17355.107	56.40	-2.52	53.88	68.2	-14.32	Pk
Horizontal	17355.107	44.34	-2.52	41.82	54	-12.18	AV
High Channel (5825 MHz)-Above 1G							
Vertical	6039.020	74.40	-18.93	55.47	68.2	-12.73	Pk
Vertical	6039.020	59.19	-18.93	40.25	54	-13.75	AV
Vertical	11650.058	64.43	-8.92	55.51	74	-18.49	Pk
Vertical	11650.058	49.25	-8.92	40.33	54	-13.67	AV
Vertical	17475.044	59.26	-1.86	57.40	68.2	-10.80	Pk
Vertical	17475.044	44.25	-1.86	42.39	54	-11.61	AV
Horizontal	6039.140	74.84	-18.93	55.91	68.2	-12.29	Pk
Horizontal	6039.140	59.09	-18.93	40.16	54	-13.84	AV
Horizontal	11650.115	64.42	-8.92	55.50	74	-18.50	Pk
Horizontal	11650.115	49.14	-8.92	40.22	54	-13.78	AV
Horizontal	17475.165	59.83	-1.86	57.97	68.2	-10.23	Pk
Horizontal	17475.165	44.95	-1.86	43.09	54	-10.91	AV

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

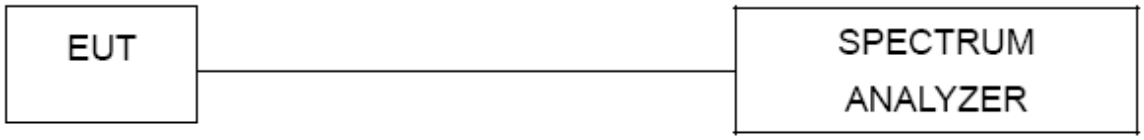
Test Mode:	TX(5.8G) - 802.11n-HT40

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5755 MHz)-Above 1G							
Vertical	4679.156	71.02	-20.24	50.77	74	-23.23	Pk
Vertical	4679.156	59.39	-20.24	39.15	54	-14.85	AV
Vertical	11510.000	62.71	-8.81	53.90	74	-20.10	Pk
Vertical	11510.000	49.96	-8.81	41.15	54	-12.85	AV
Vertical	17265.158	57.11	-3.01	54.10	68.2	-14.10	Pk
Vertical	17265.158	44.24	-3.01	41.23	54	-12.77	AV
Horizontal	4679.072	72.57	-20.24	52.33	74	-21.67	Pk
Horizontal	4679.072	59.74	-20.24	39.49	54	-14.51	AV
Horizontal	11510.000	61.88	-8.81	53.07	74	-20.93	Pk
Horizontal	11510.000	49.38	-8.81	40.57	54	-13.43	AV
Horizontal	17265.175	55.19	-3.01	52.18	68.2	-16.02	Pk
Horizontal	17265.175	44.31	-3.01	41.30	54	-12.70	AV
middle Channel (5795 MHz)-Above 1G							
Vertical	6039.164	73.11	-18.93	54.17	68.2	-14.03	Pk
Vertical	6039.164	59.96	-18.93	41.02	54	-12.98	AV
Vertical	11590.109	64.01	-8.87	55.14	74	-18.86	Pk
Vertical	11590.109	49.92	-8.87	41.05	54	-12.95	AV
Vertical	17385.156	56.45	-2.35	54.10	68.2	-14.10	Pk
Vertical	17385.156	44.88	-2.35	42.53	54	-11.47	AV
Horizontal	6039.156	72.12	-18.93	53.18	68.2	-15.02	Pk
Horizontal	6039.156	59.55	-18.93	40.62	54	-13.38	AV
Horizontal	11590.140	64.57	-8.87	55.70	74	-18.30	Pk
Horizontal	11590.140	50.00	-8.87	41.13	54	-12.87	AV
Horizontal	17385.170	56.54	-2.35	54.19	68.2	-14.01	Pk
Horizontal	17385.170	44.93	-2.35	42.58	54	-11.42	AV

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

8. Power Spectral Density Test

8.1 Block Diagram Of Test Setup



8.2 Limit

For the band 5.15-5.25 GHz,
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
For the band 5.725-5.85 GHz

(3)For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.3 Test Procedure

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:
a) Set RBW ≥ 1/T, where T is defined in section II.B.I.a).
b) Set VBW ≥ 3 RBW.
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

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

8.4 EUT Operating Conditions

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

8.5 Test Result

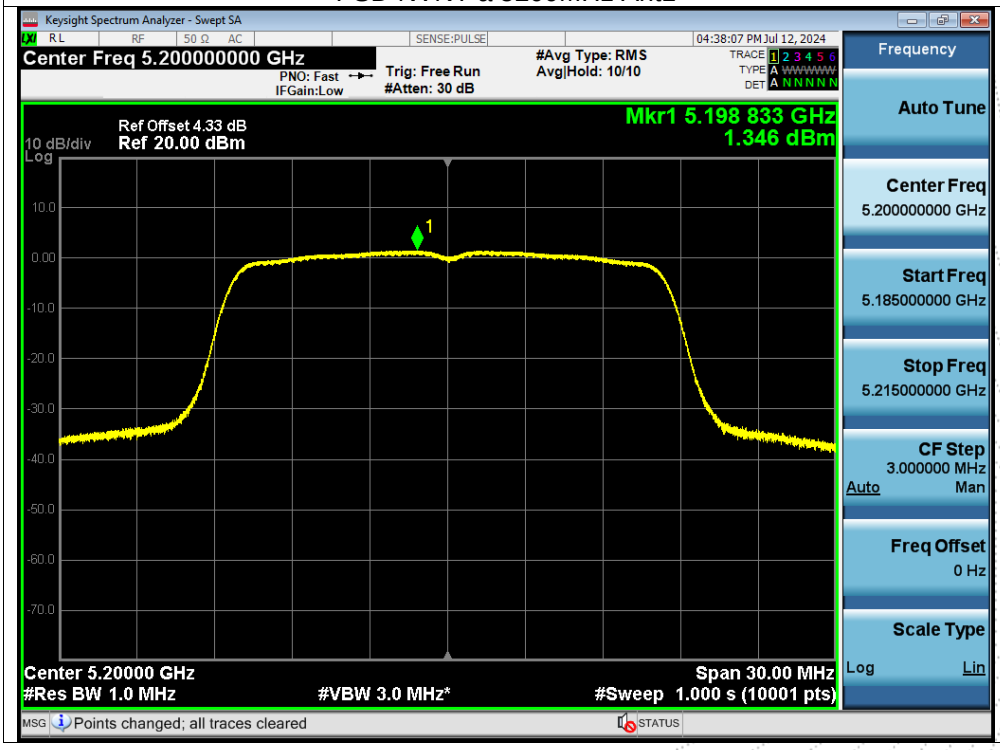
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	(5180-5240MHz)		

Condition	Mode	Frequency (MHz)	Conducted PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5180	1.45	11	Pass
NVNT	a	5200	1.47	11	Pass
NVNT	a	5240	1.02	11	Pass
NVNT	n20	5180	0.85	11	Pass
NVNT	n20	5200	0.72	11	Pass
NVNT	n20	5240	0.31	11	Pass
NVNT	n40	5190	-2.82	11	Pass
NVNT	n40	5230	-1.66	11	Pass

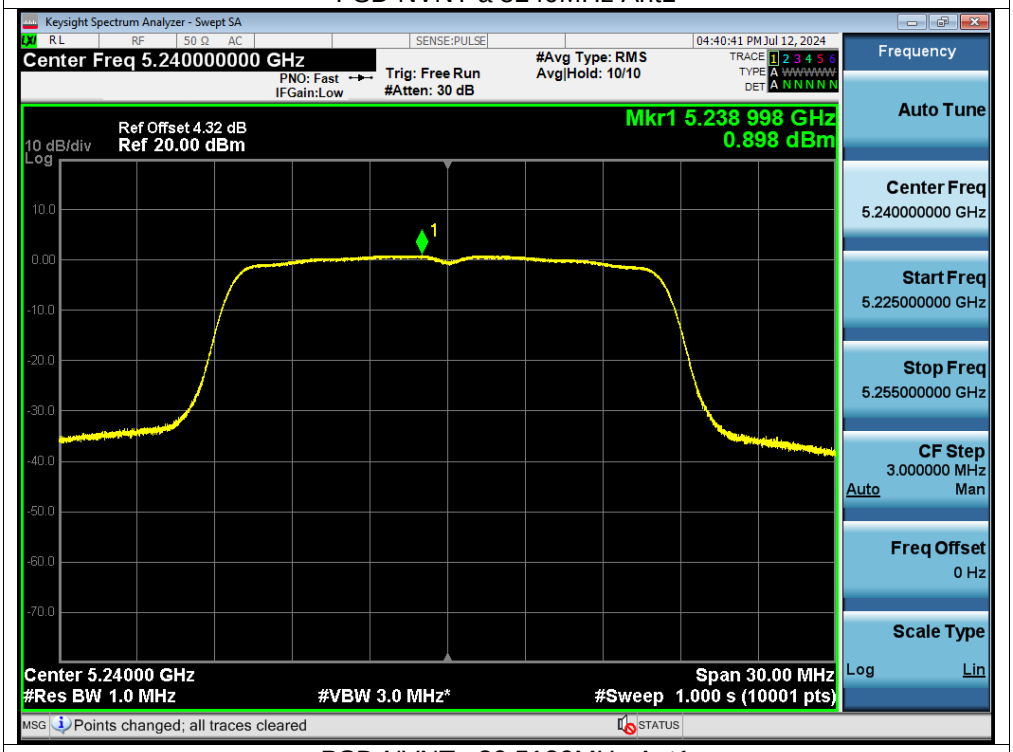
Test Graphs

PSD NVNT a 5180MHz Ant1

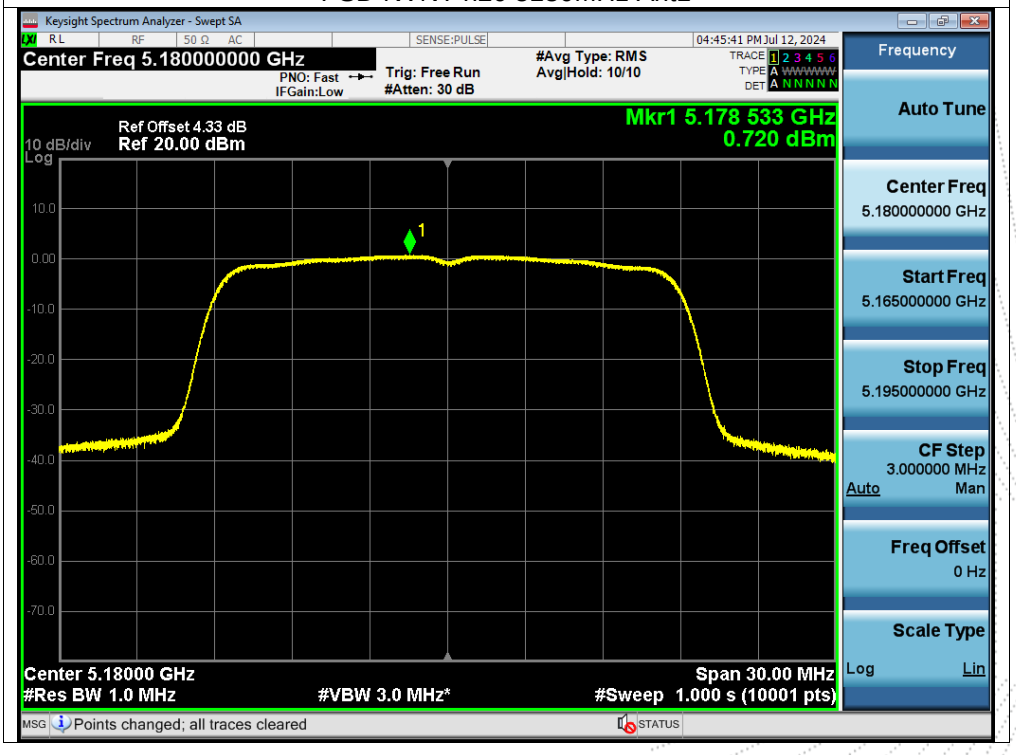
PSD NVNT a 5200MHz Ant1



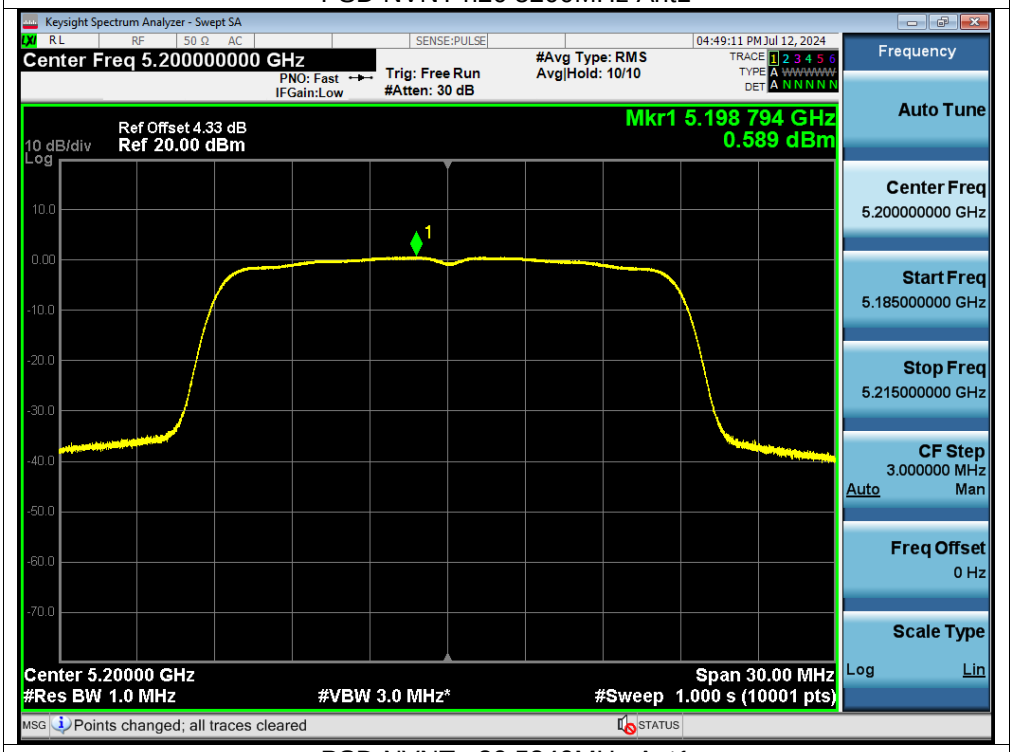
PSD NVNT a 5240MHz Ant1



PSD NVNT n20 5180MHz Ant1

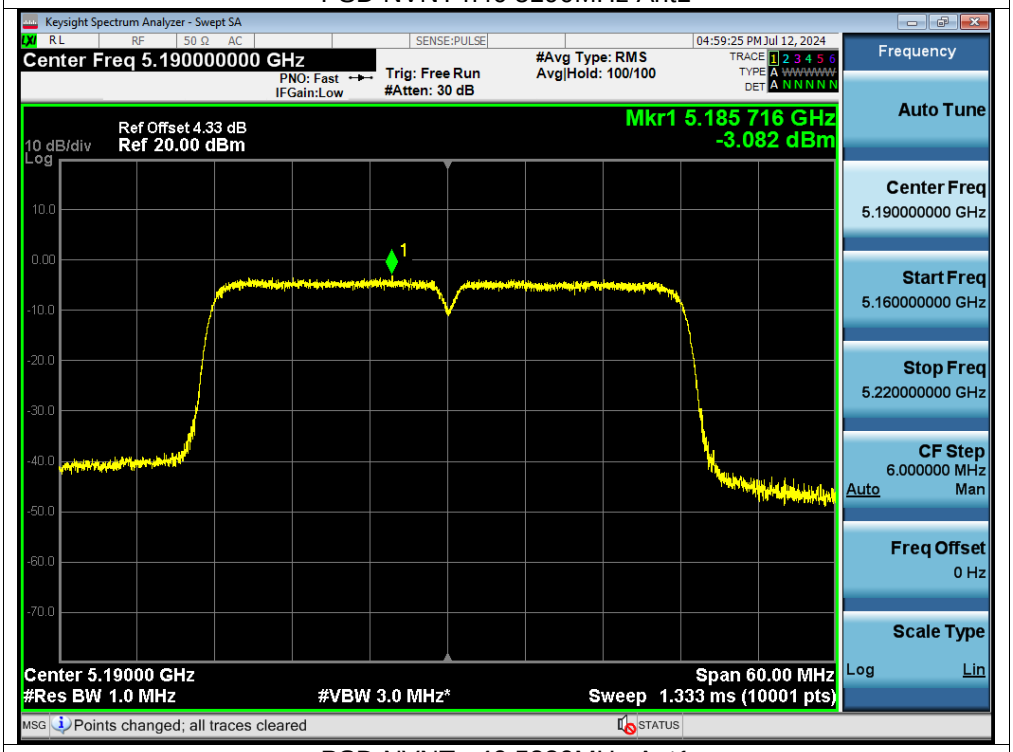


PSD NVNT n20 5200MHz Ant1

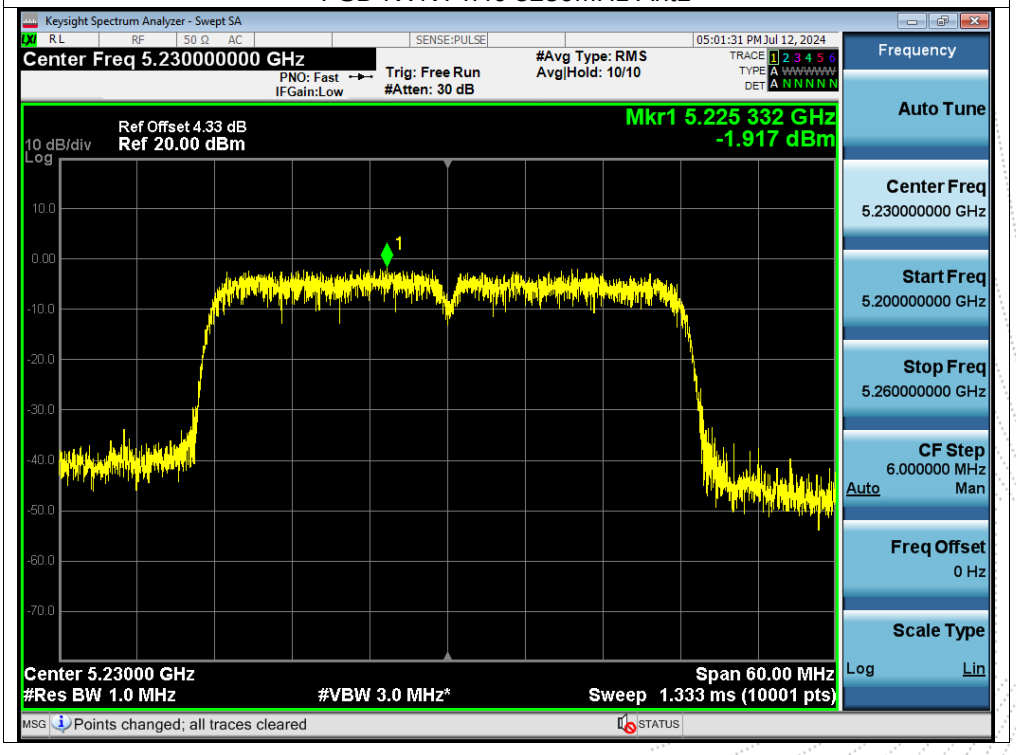


PSD NVNT n20 5240MHz Ant1

PSD NVNT n40 5190MHz Ant1



PSD NVNT n40 5230MHz Ant1



Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	(5745-5825MHz)		

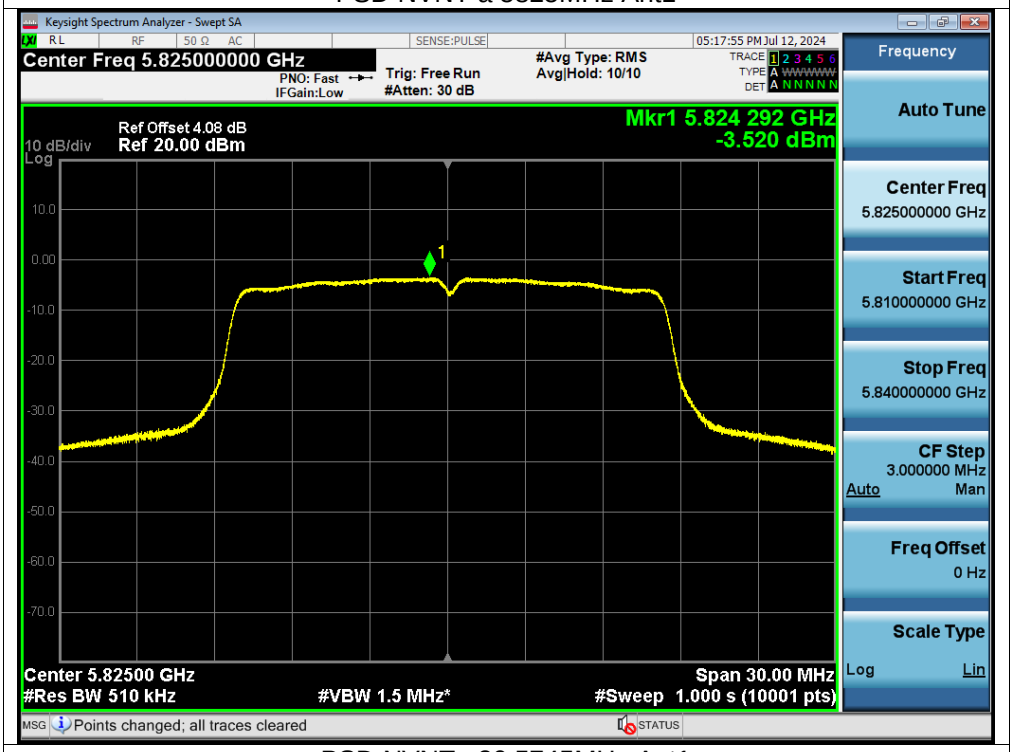
Condition	Mode	Frequency (MHz)	Conducted PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5745	-3.25	30	Pass
NVNT	a	5785	-3.28	30	Pass
NVNT	a	5825	-3.4	30	Pass
NVNT	n20	5745	-4.43	30	Pass
NVNT	n20	5785	-4.1	30	Pass
NVNT	n20	5825	-4.33	30	Pass
NVNT	n40	5755	-7.21	30	Pass
NVNT	n40	5795	-6.96	30	Pass

Test Graphs

PSD NVNT a 5745MHz Ant1

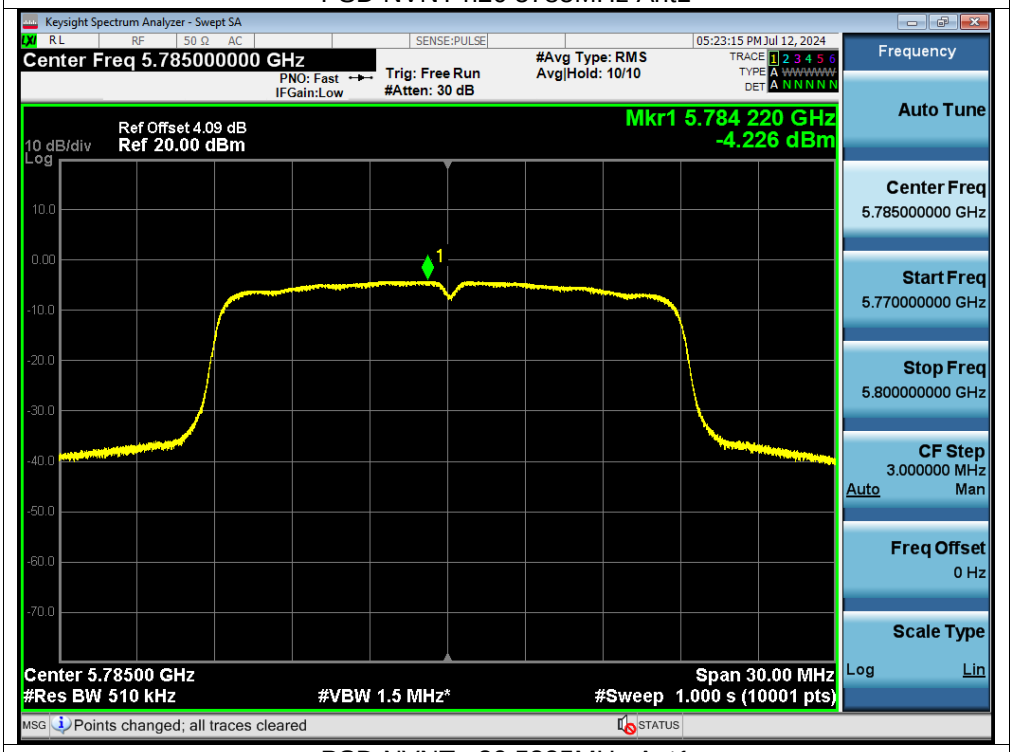
PSD NVNT a 5785MHz Ant1

PSD NVNT a 5825MHz Ant1



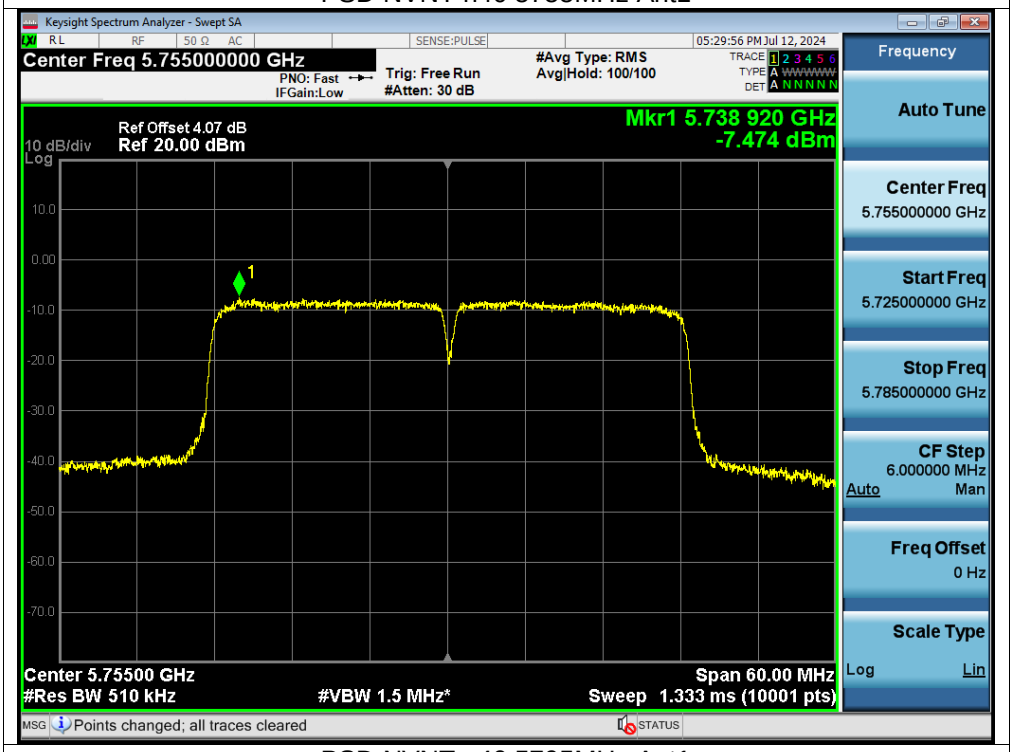
PSD NVNT n20 5745MHz Ant1

PSD NVNT n20 5785MHz Ant1



PSD NVNT n20 5825MHz Ant1

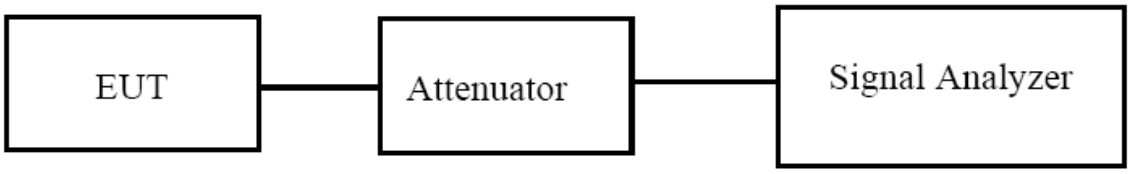
PSD NVNT n40 5755MHz Ant1



PSD NVNT n40 5795MHz Ant1

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

9.1 Block Diagram Of Test Setup



9.2 Limit

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power
is integrated over the full reference bandwidth.

9.3 Test Procedure

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

9.4 EUT Operating Conditions

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

9.5 Test Result

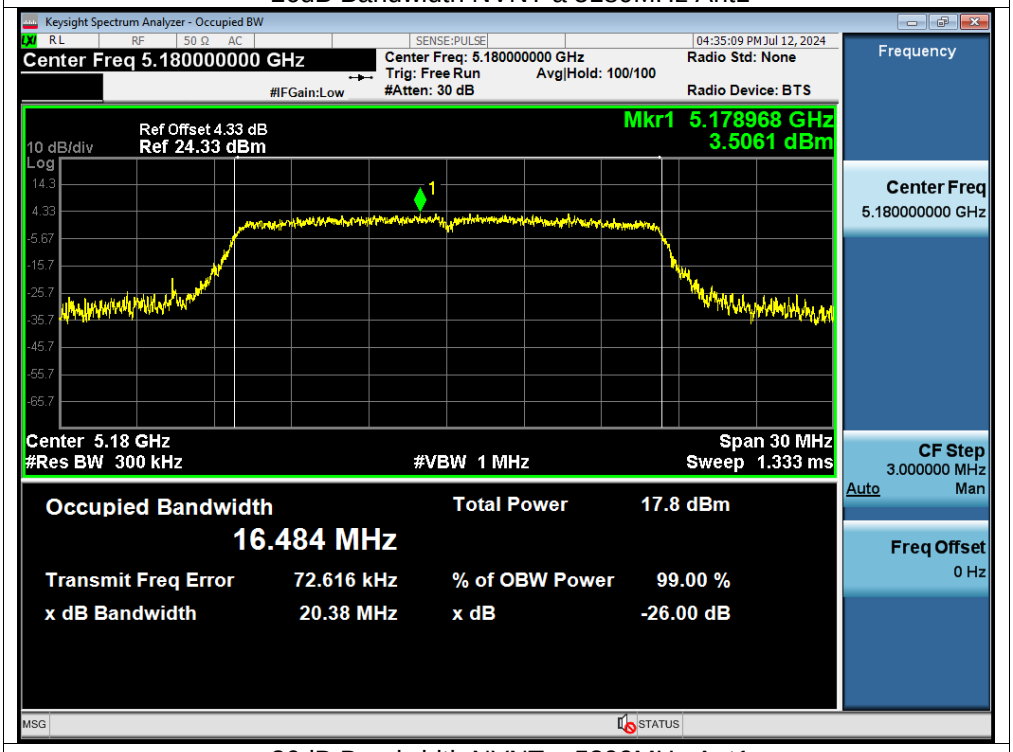
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	(5180-5240MHz)		

Condition	Mode	Frequency (MHz)	-26 dB (MHz)	Verdict
NVNT	a	5180	20.384	Pass
NVNT	a	5200	19.106	Pass
NVNT	a	5240	19.195	Pass
NVNT	n20	5180	19.425	Pass
NVNT	n20	5200	19.546	Pass
NVNT	n20	5240	19.563	Pass
NVNT	n40	5190	38.846	Pass
NVNT	n40	5230	38.589	Pass

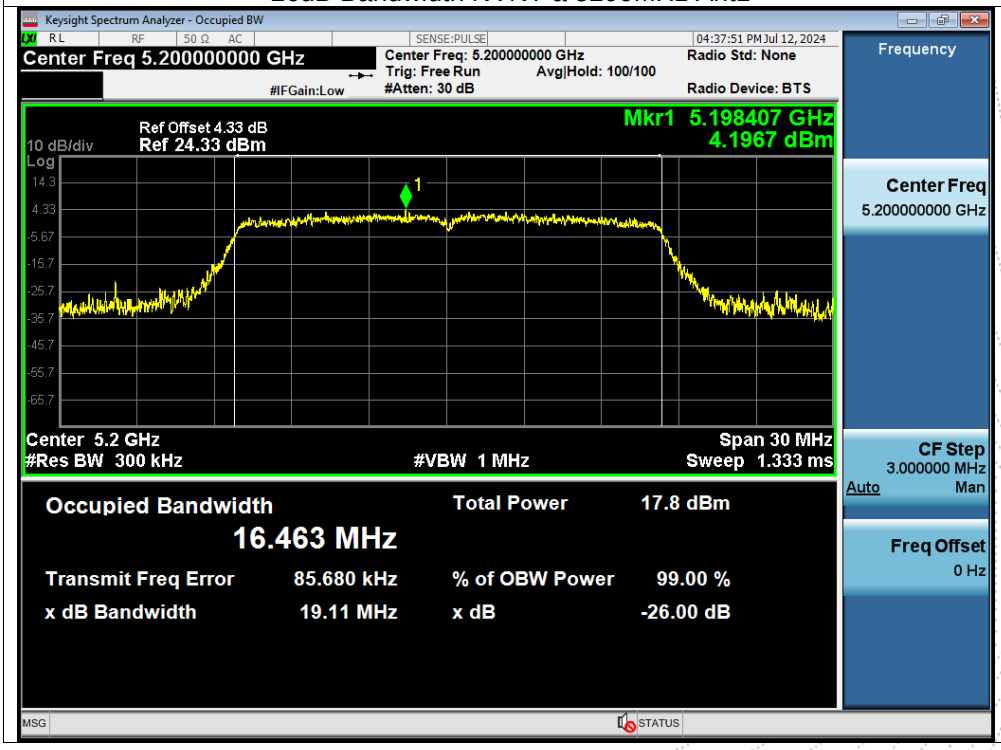
Condition	Mode	Frequency (MHz)	99% OBW (MHz)
NVNT	a	5180	16.384
NVNT	a	5200	16.378
NVNT	a	5240	16.359
NVNT	n20	5180	17.388
NVNT	n20	5200	17.401
NVNT	n20	5240	17.394
NVNT	n40	5190	35.885
NVNT	n40	5230	35.872

Test Graphs

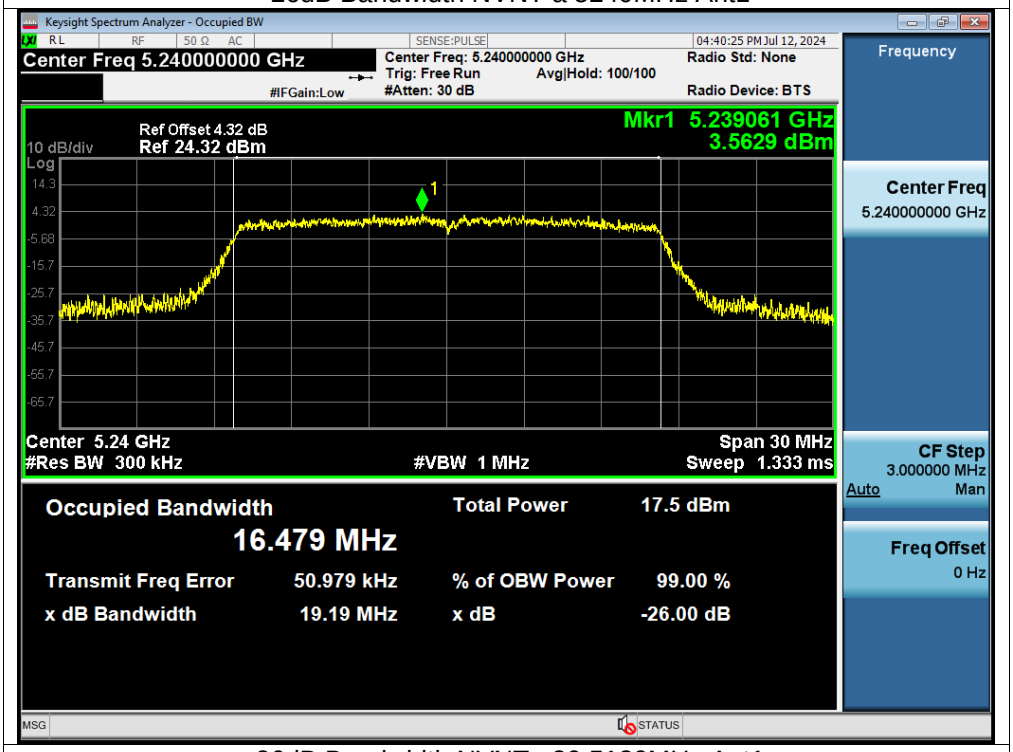
-26dB Bandwidth NVNT a 5180MHz Ant1



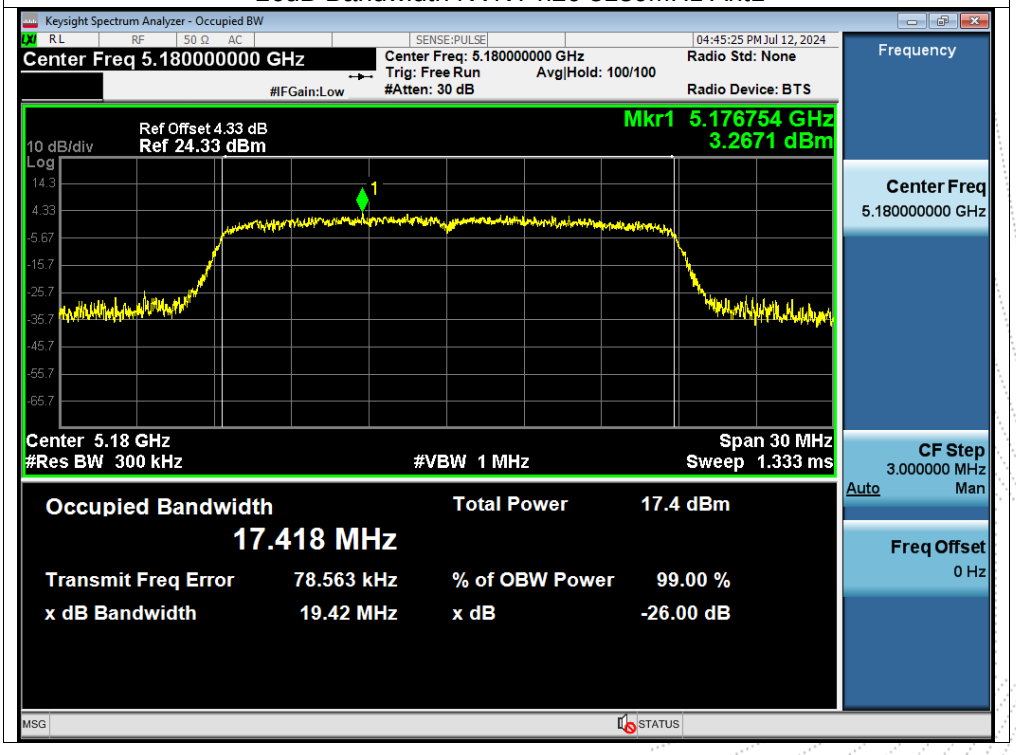
-26dB Bandwidth NVNT a 5200MHz Ant1



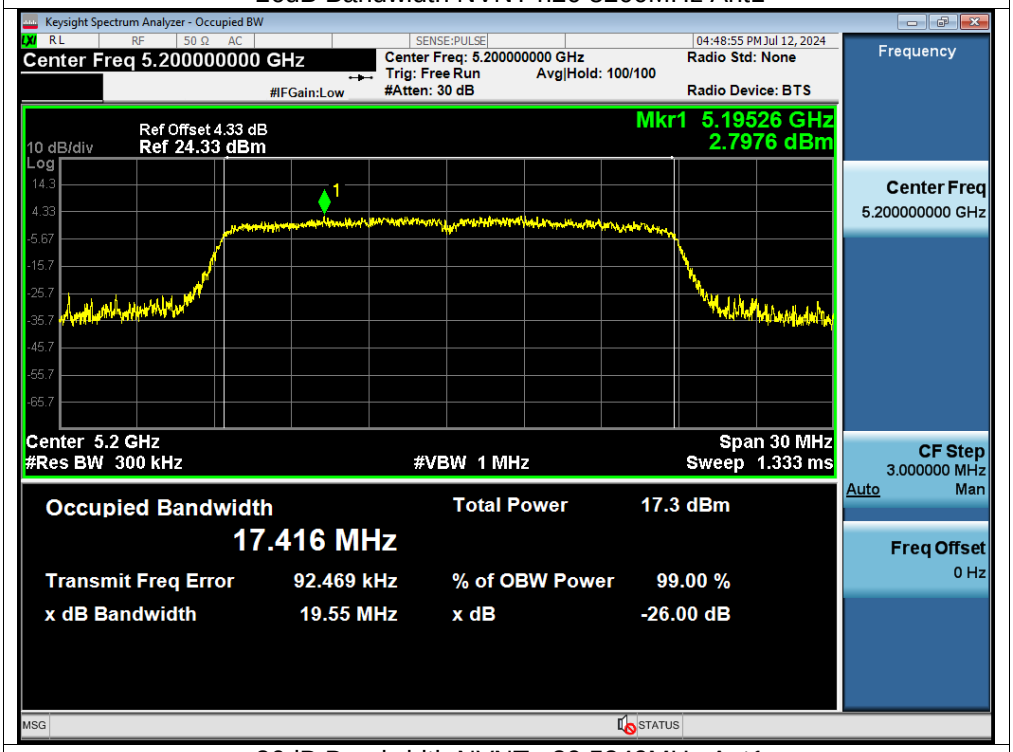
-26dB Bandwidth NVNT a 5240MHz Ant1



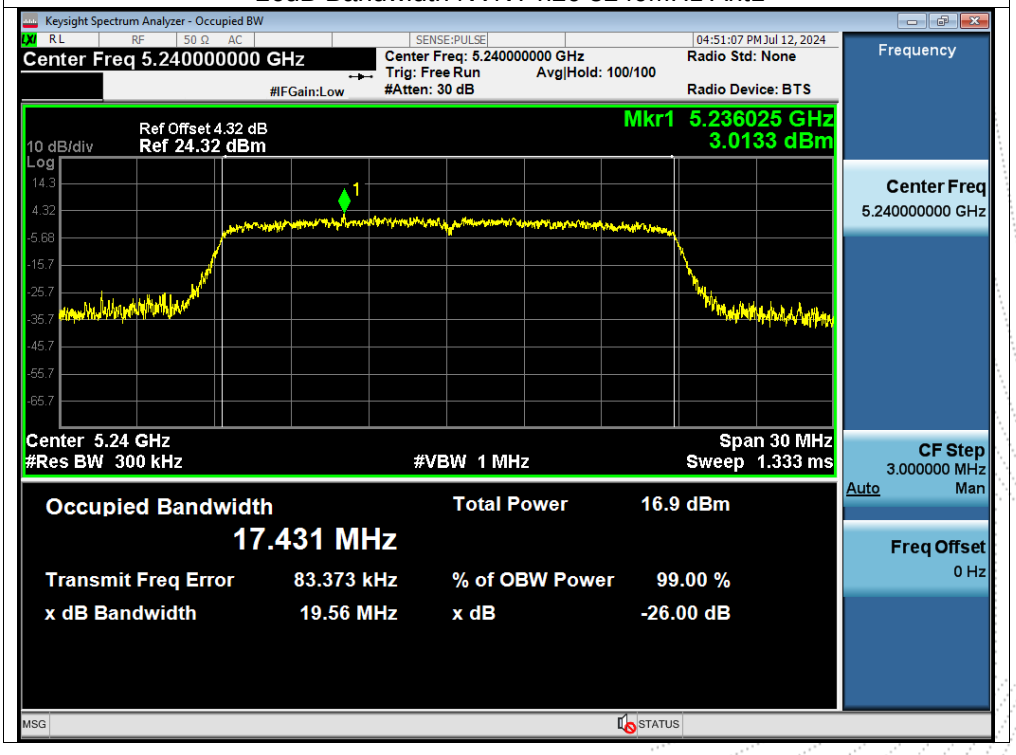
-26dB Bandwidth NVNT n20 5180MHz Ant1



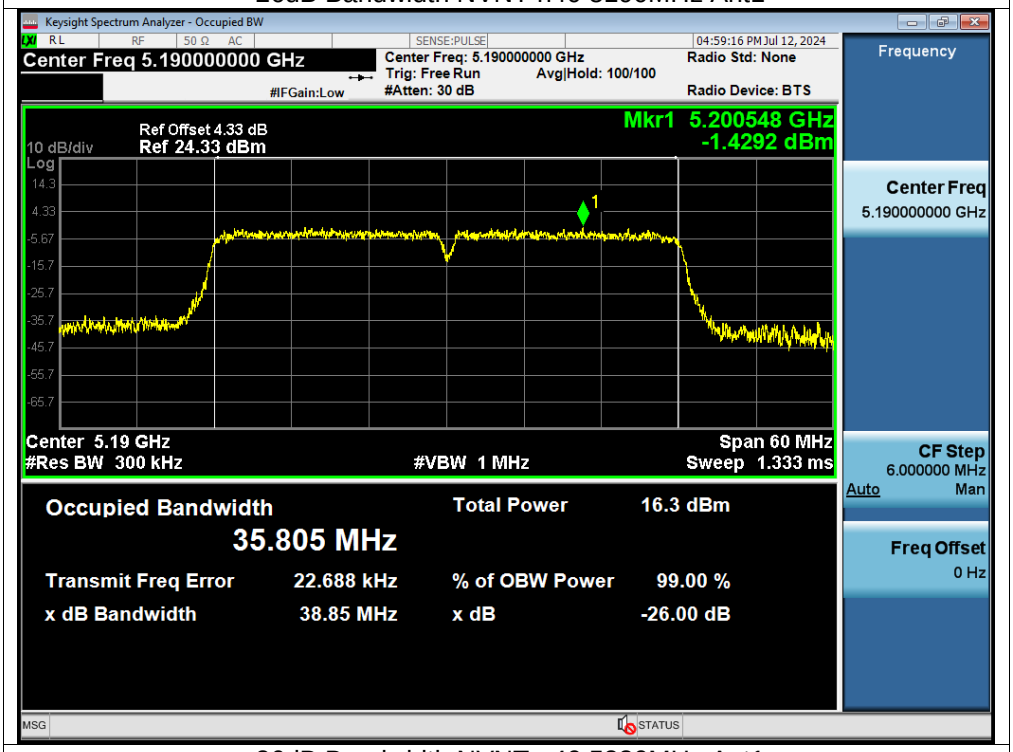
-26dB Bandwidth NVNT n20 5200MHz Ant1



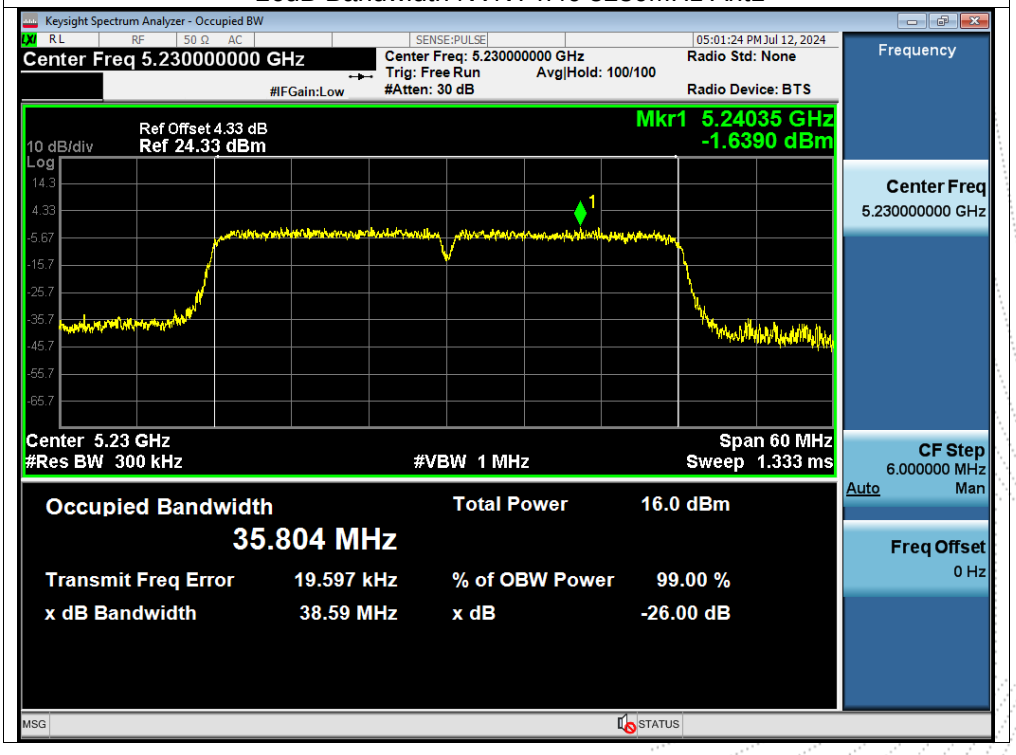
-26dB Bandwidth NVNT n20 5240MHz Ant1



-26dB Bandwidth NVNT n40 5190MHz Ant1

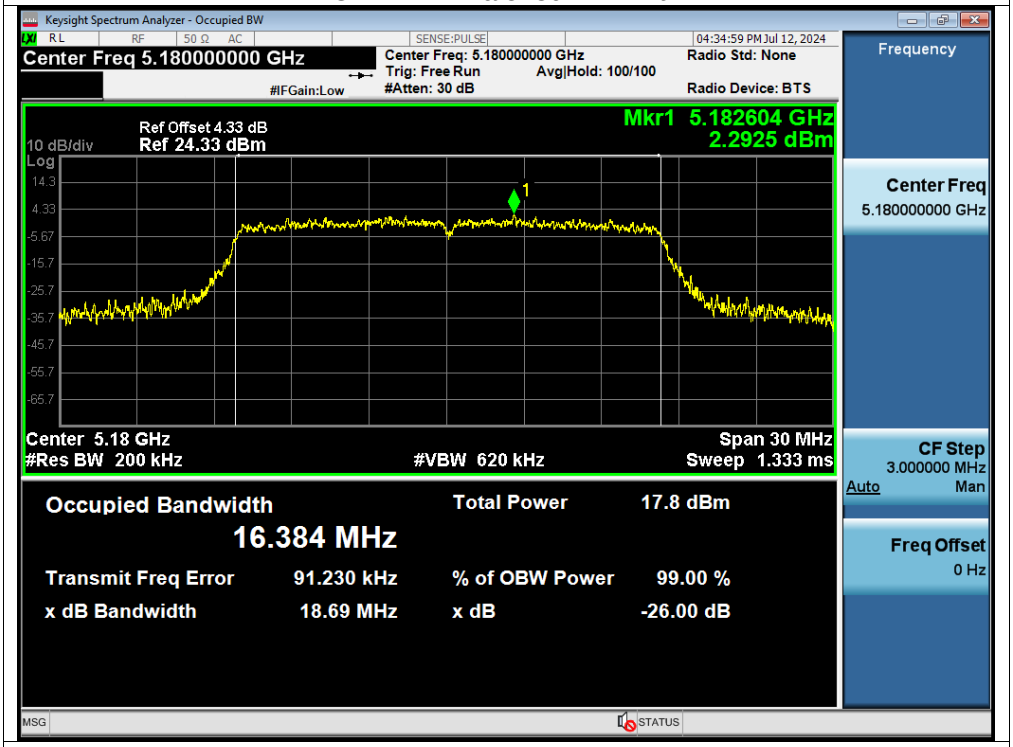


-26dB Bandwidth NVNT n40 5230MHz Ant1

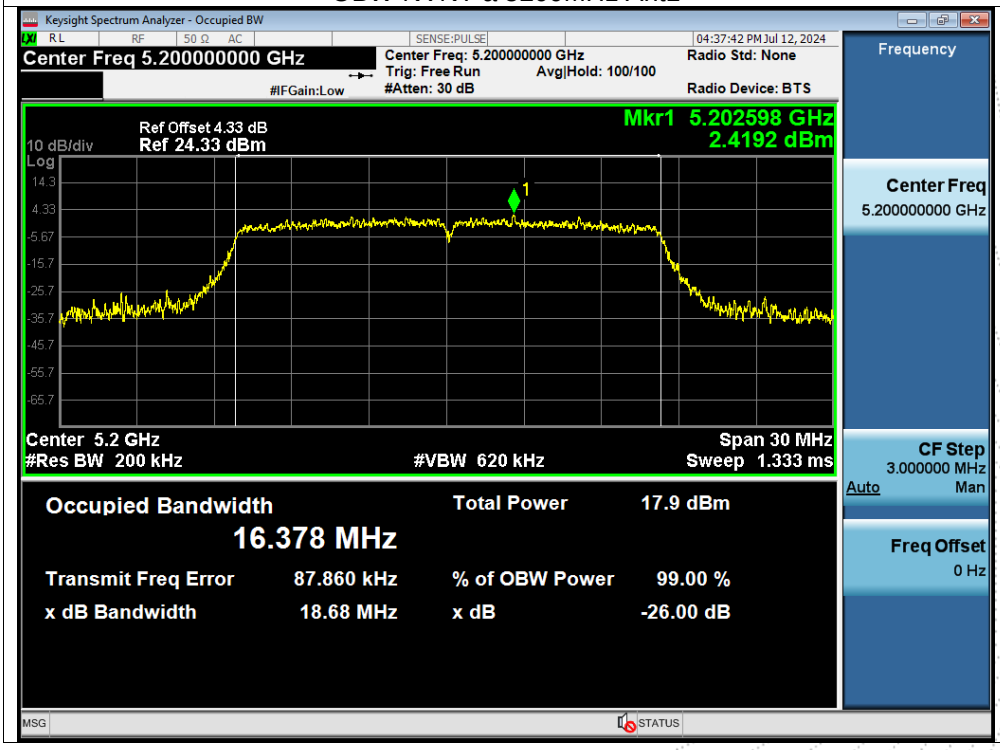


Test Graphs

OBW NVNT a 5180MHz Ant1

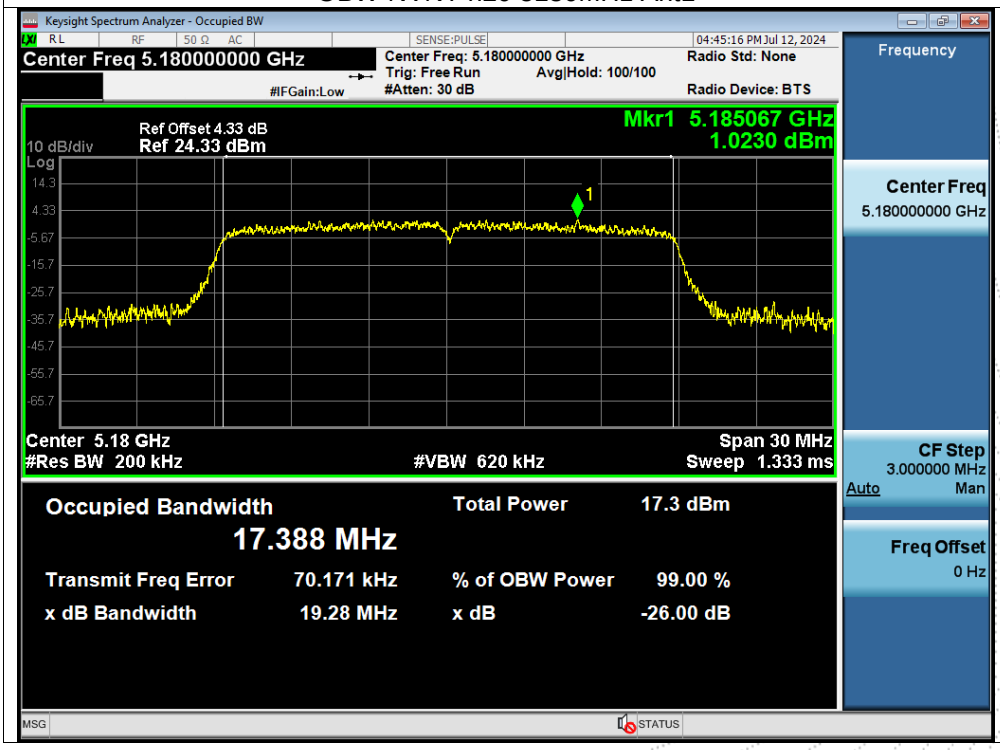


OBW NVNT a 5200MHz Ant1

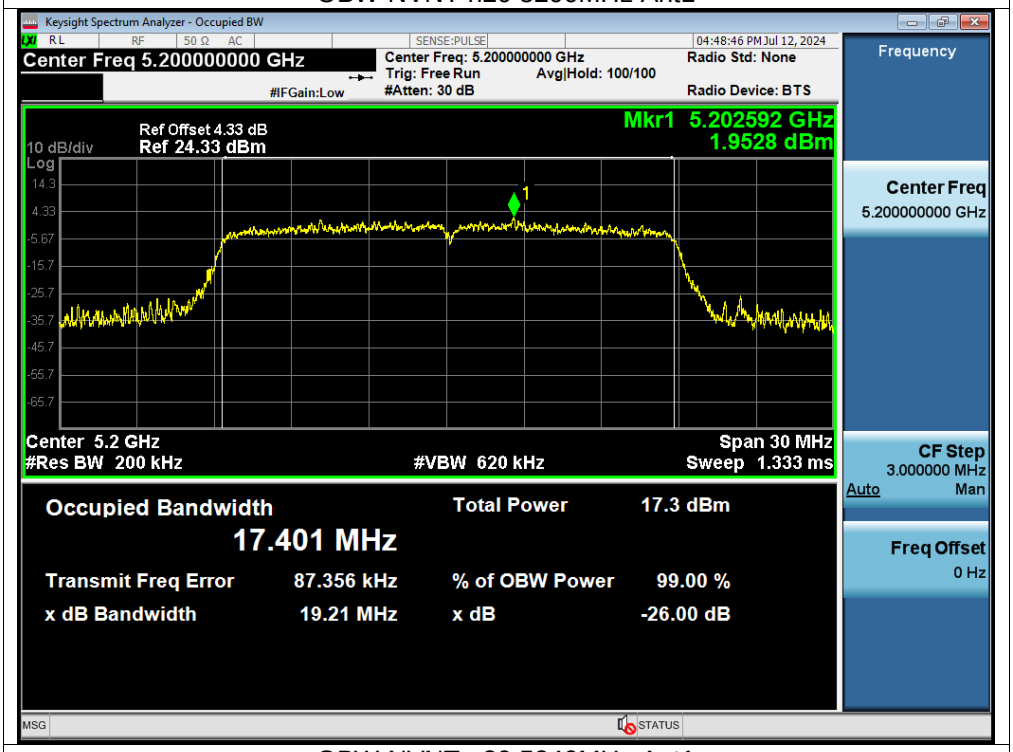


OBW NVNT a 5240MHz Ant1

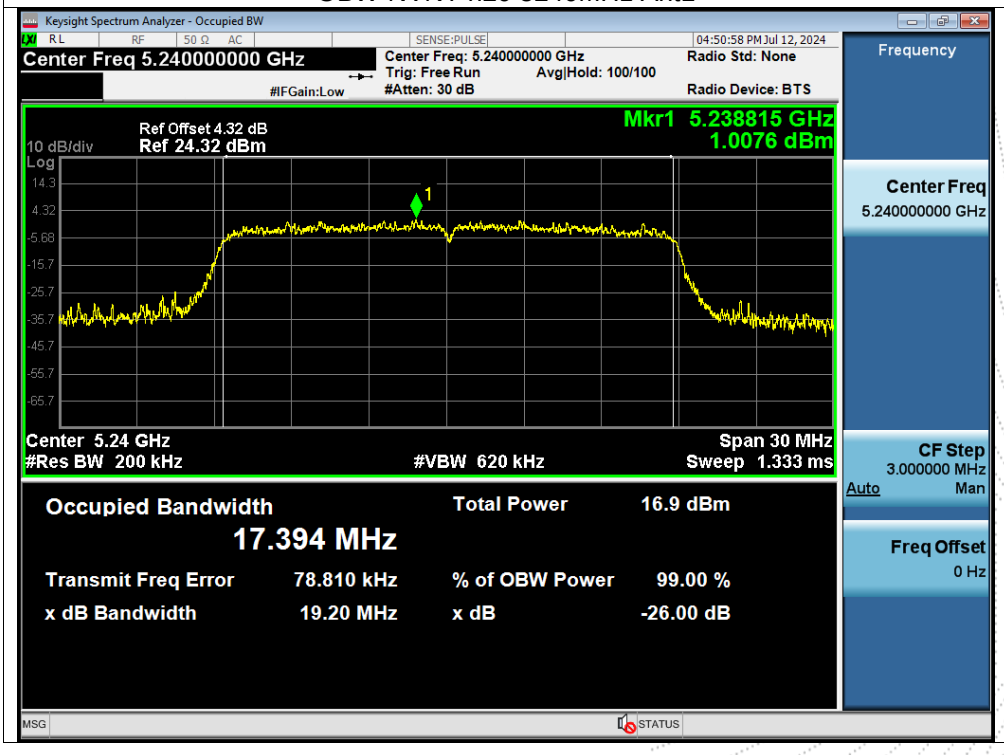
OBW NVNT n20 5180MHz Ant1



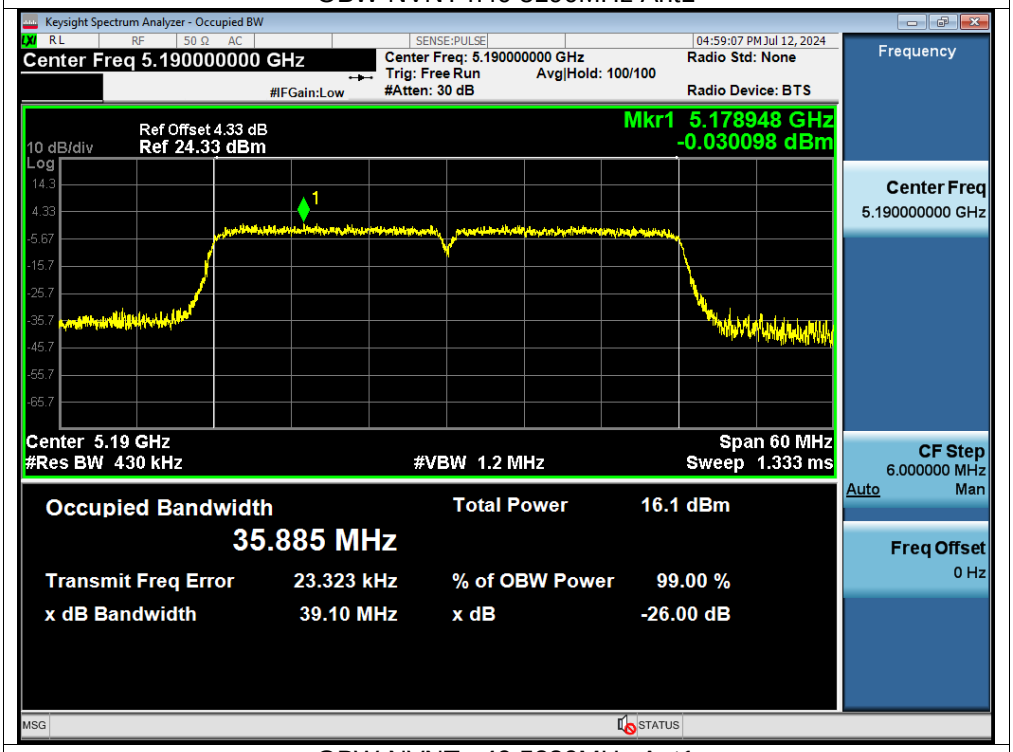
OBW NVNT n20 5200MHz Ant1



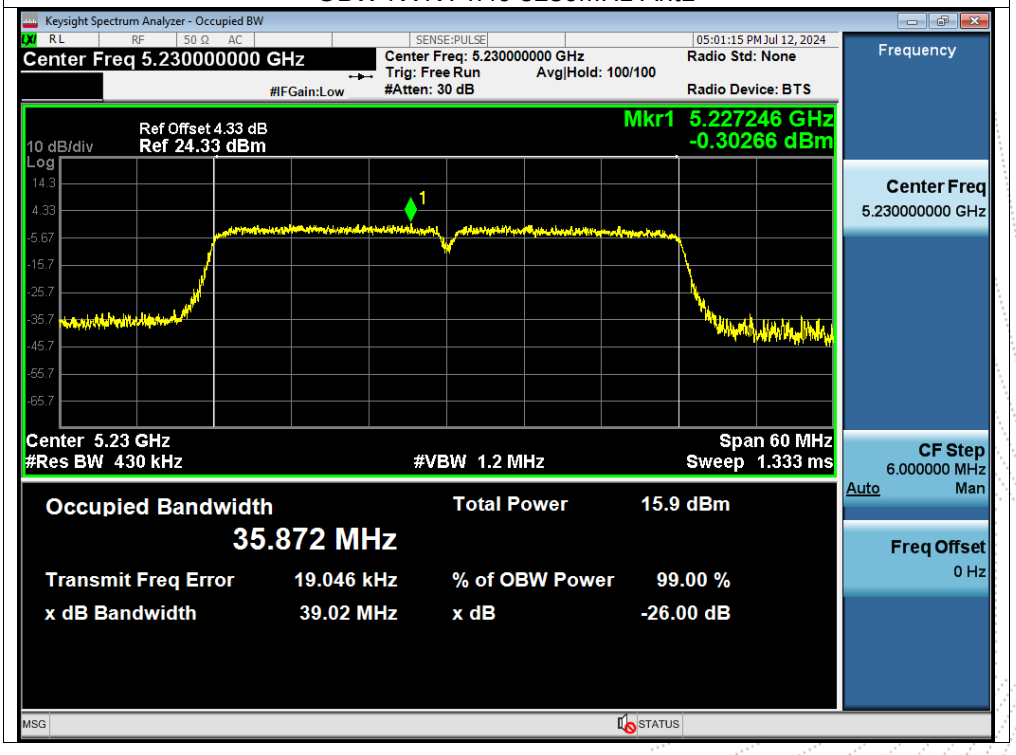
OBW NVNT n20 5240MHz Ant1



OBW NVNT n40 5190MHz Ant1



OBW NVNT n40 5230MHz Ant1



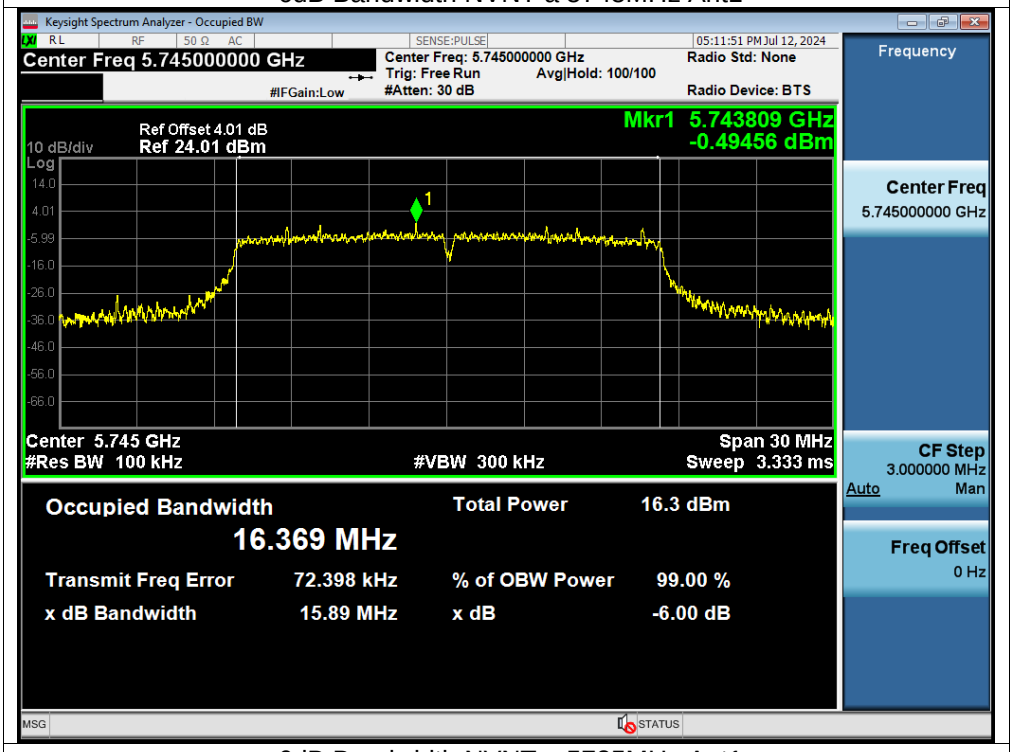
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	(5745-5825MHz)		

Condition	Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	a	5745	15.894	0.5	Pass
NVNT	a	5785	15.619	0.5	Pass
NVNT	a	5825	16.026	0.5	Pass
NVNT	n20	5745	15.902	0.5	Pass
NVNT	n20	5785	16.022	0.5	Pass
NVNT	n20	5825	15.904	0.5	Pass
NVNT	n40	5755	35.293	0.5	Pass
NVNT	n40	5795	35.11	0.5	Pass

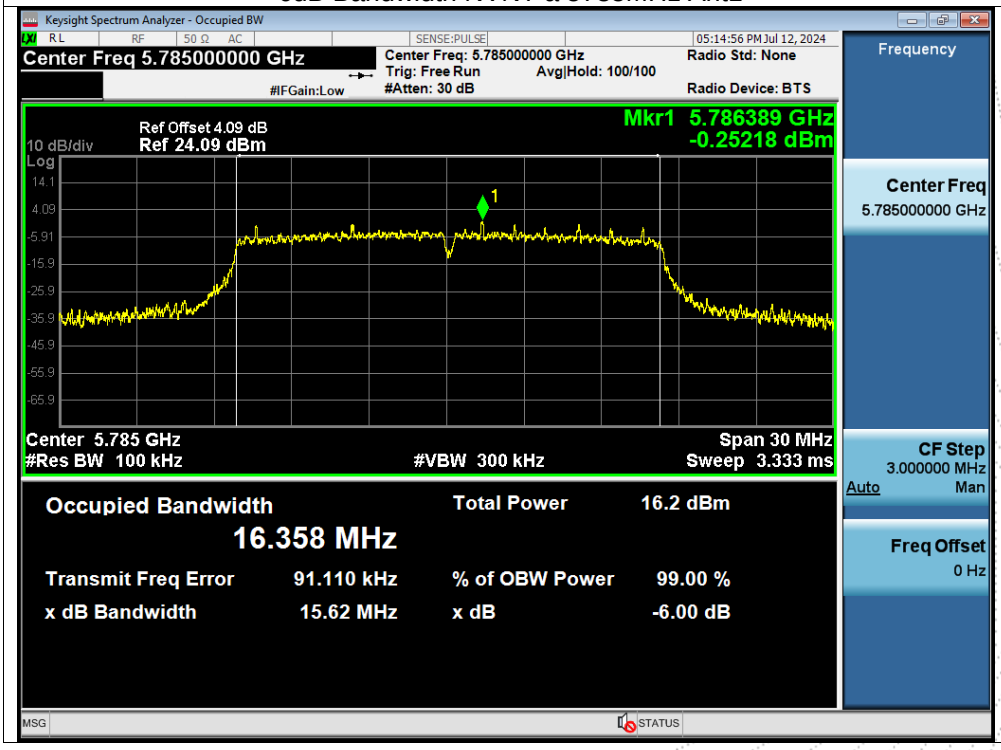
Condition	Mode	Frequency (MHz)	99% OBW (MHz)
NVNT	a	5745	16.426
NVNT	a	5785	16.423
NVNT	a	5825	16.427
NVNT	n20	5745	17.431
NVNT	n20	5785	17.401
NVNT	n20	5825	17.402
NVNT	n40	5755	35.942
NVNT	n40	5795	35.99

Test Graphs

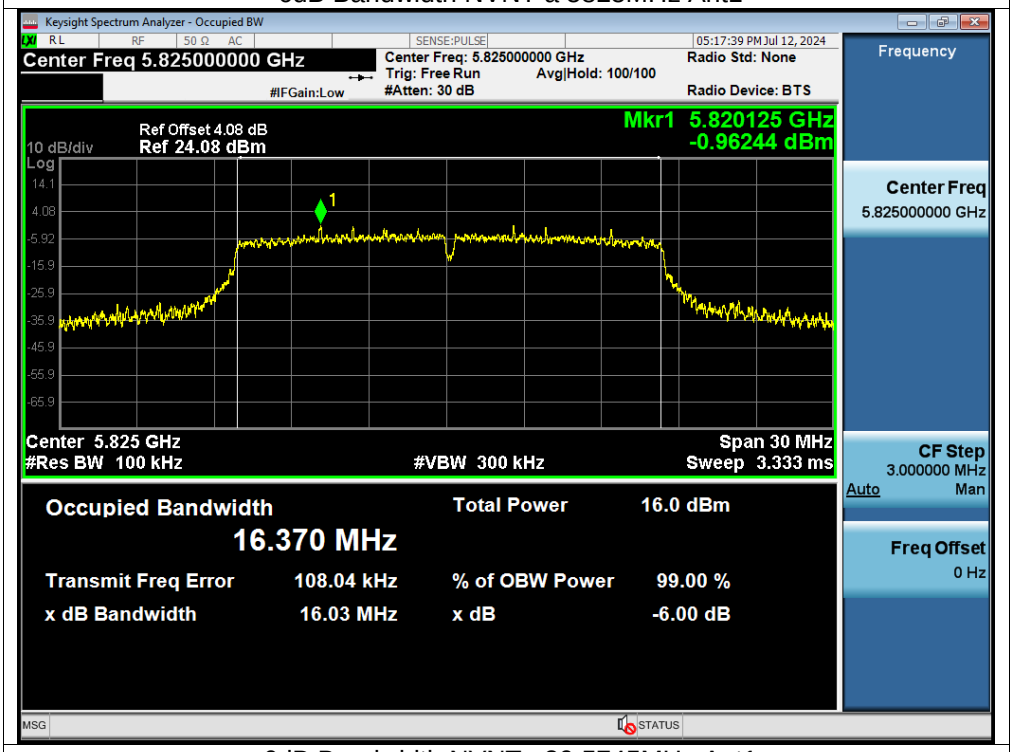
-6dB Bandwidth NVNT a 5745MHz Ant1



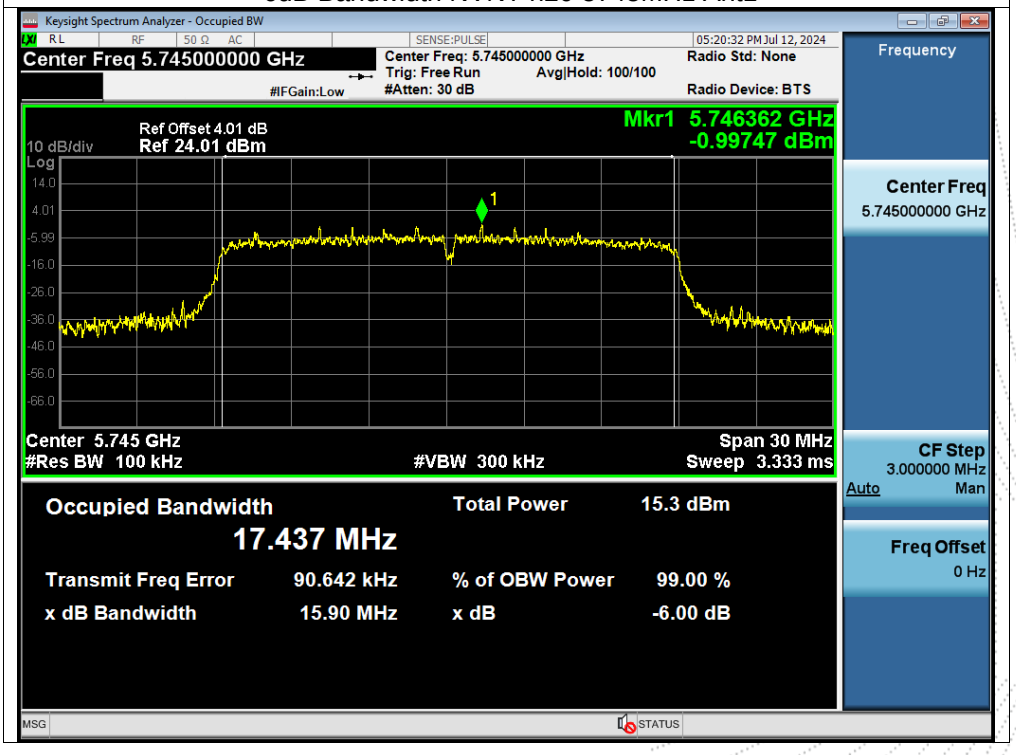
-6dB Bandwidth NVNT a 5785MHz Ant1



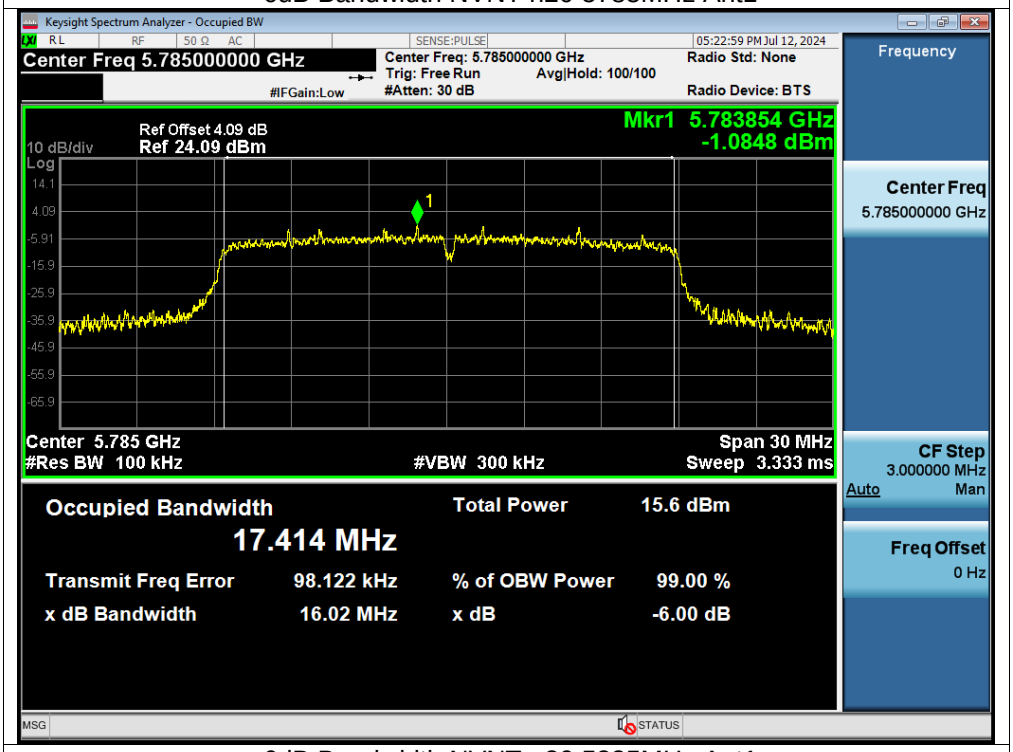
-6dB Bandwidth NVNT a 5825MHz Ant1



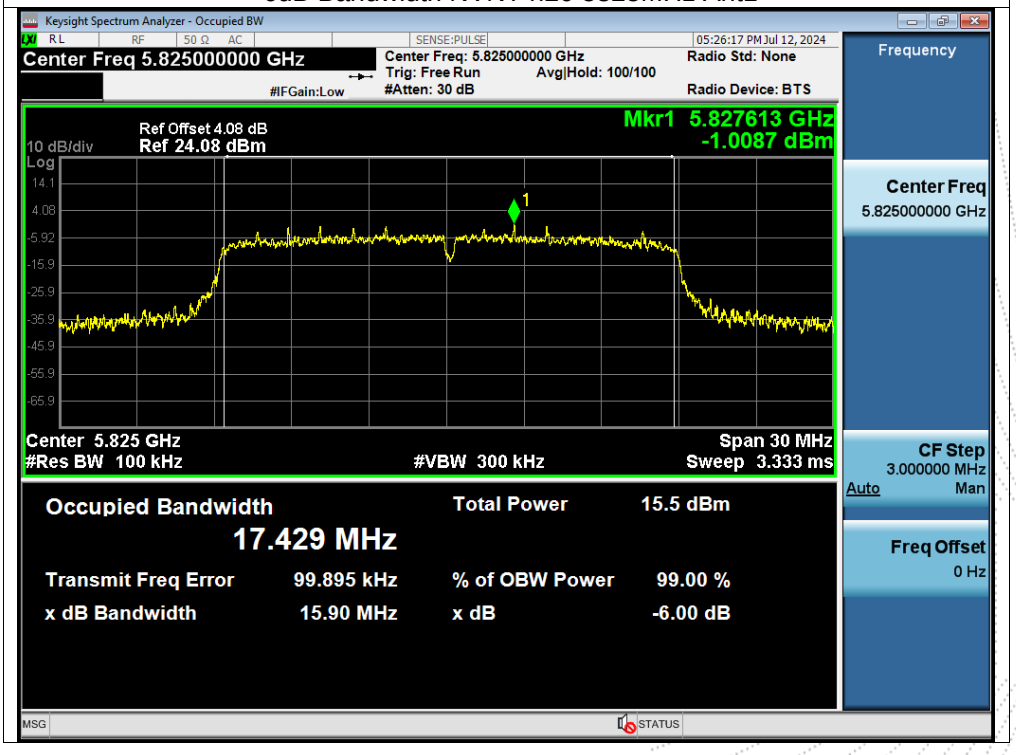
-6dB Bandwidth NVNT n20 5745MHz Ant1



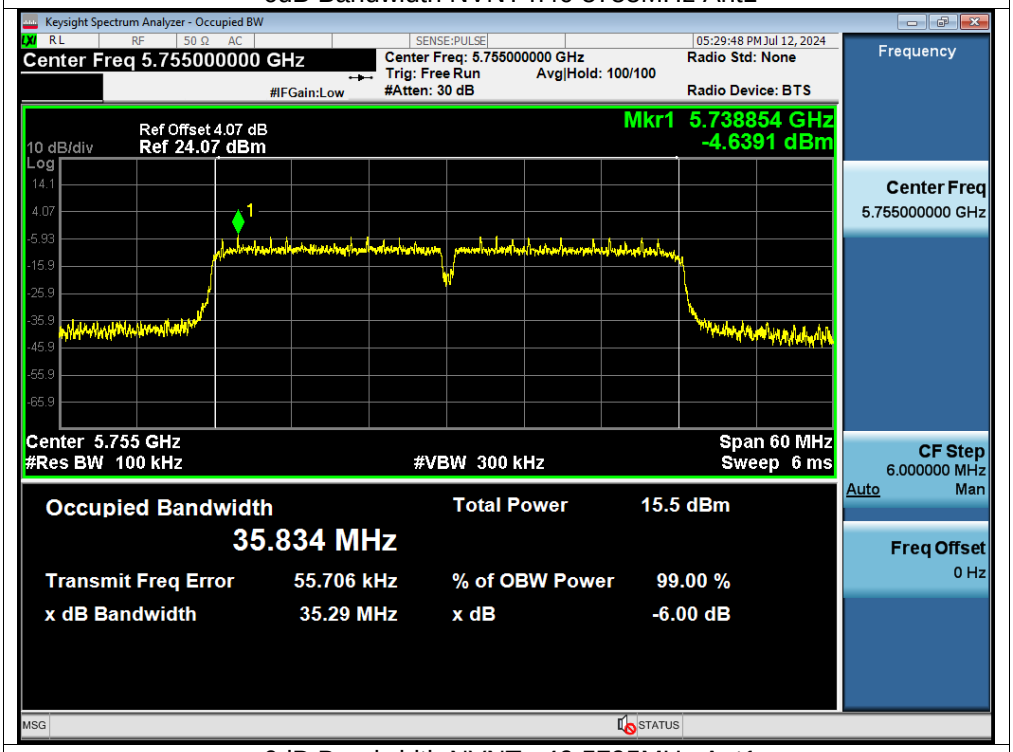
-6dB Bandwidth NVNT n20 5785MHz Ant1



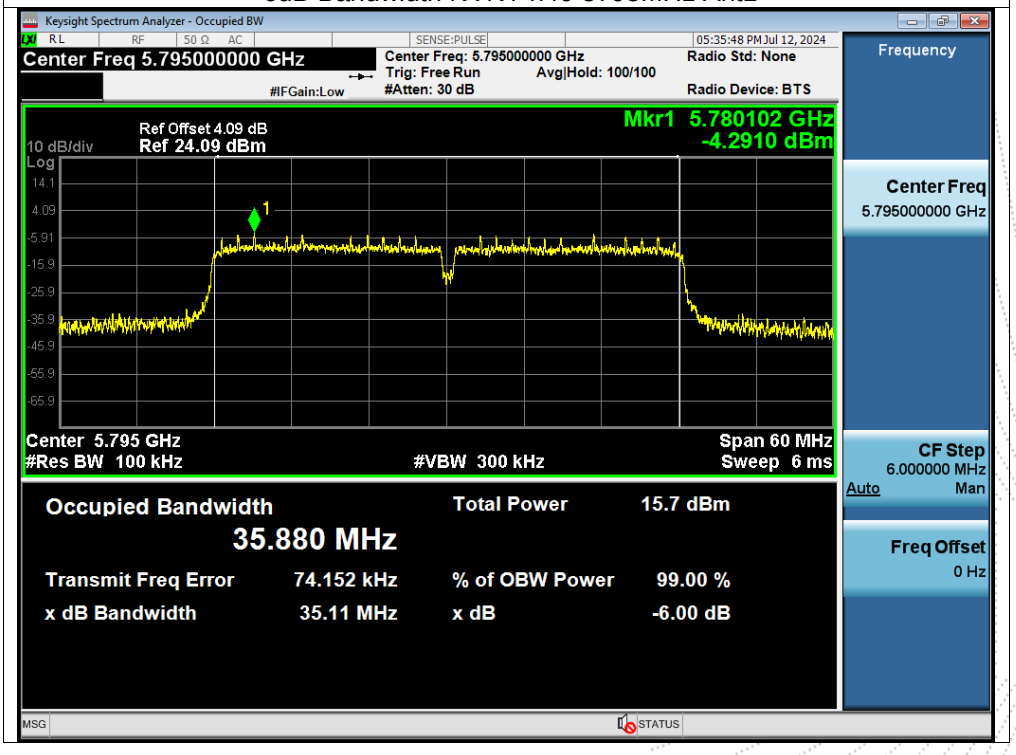
-6dB Bandwidth NVNT n20 5825MHz Ant1



-6dB Bandwidth NVNT n40 5755MHz Ant1

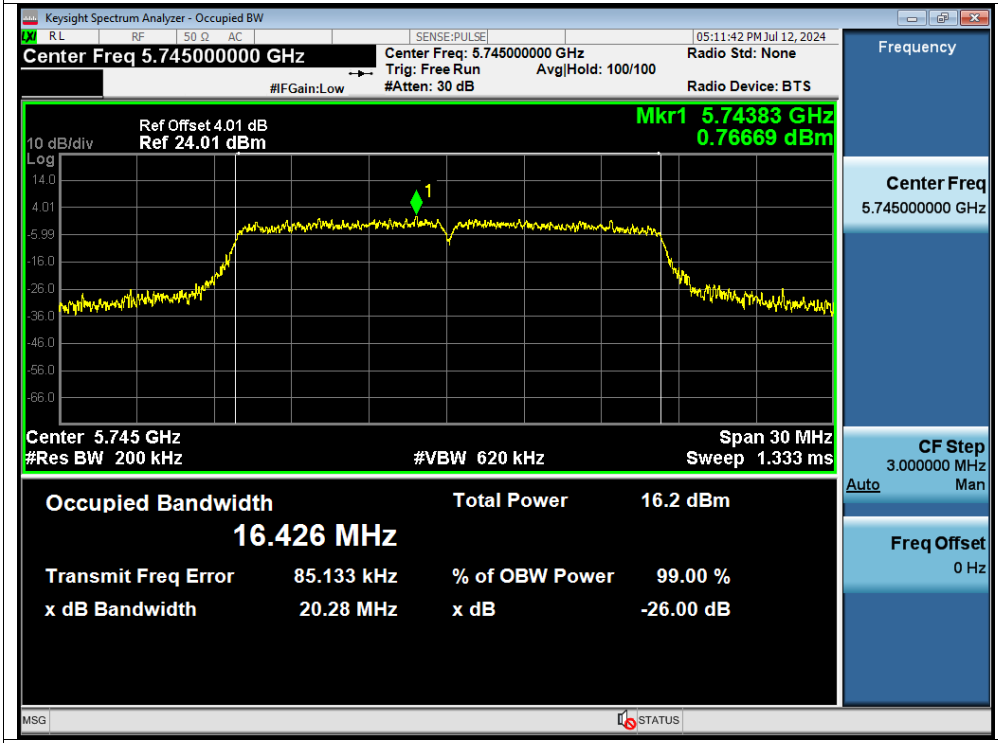


-6dB Bandwidth NVNT n40 5795MHz Ant1

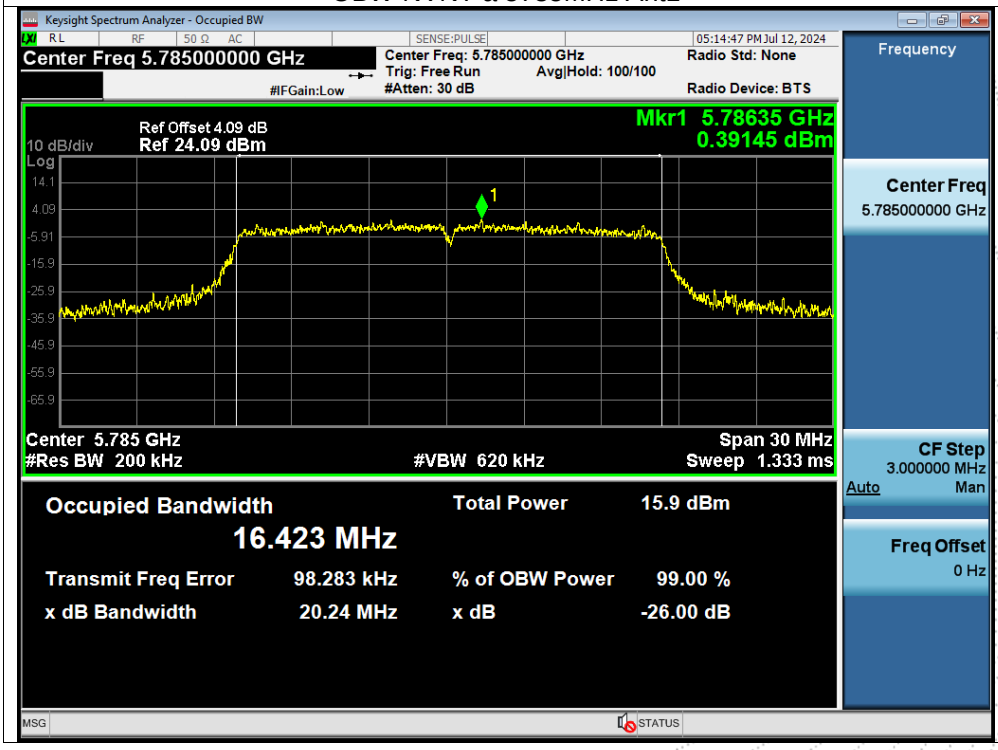


Test Graphs

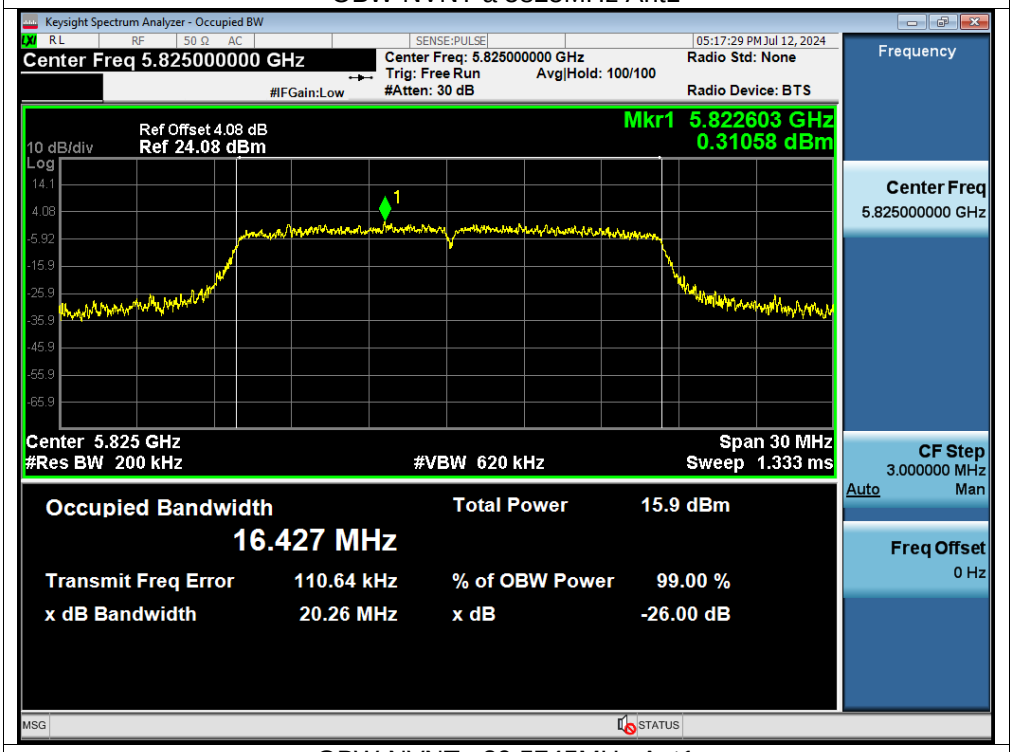
OBW NVNT a 5745MHz Ant1



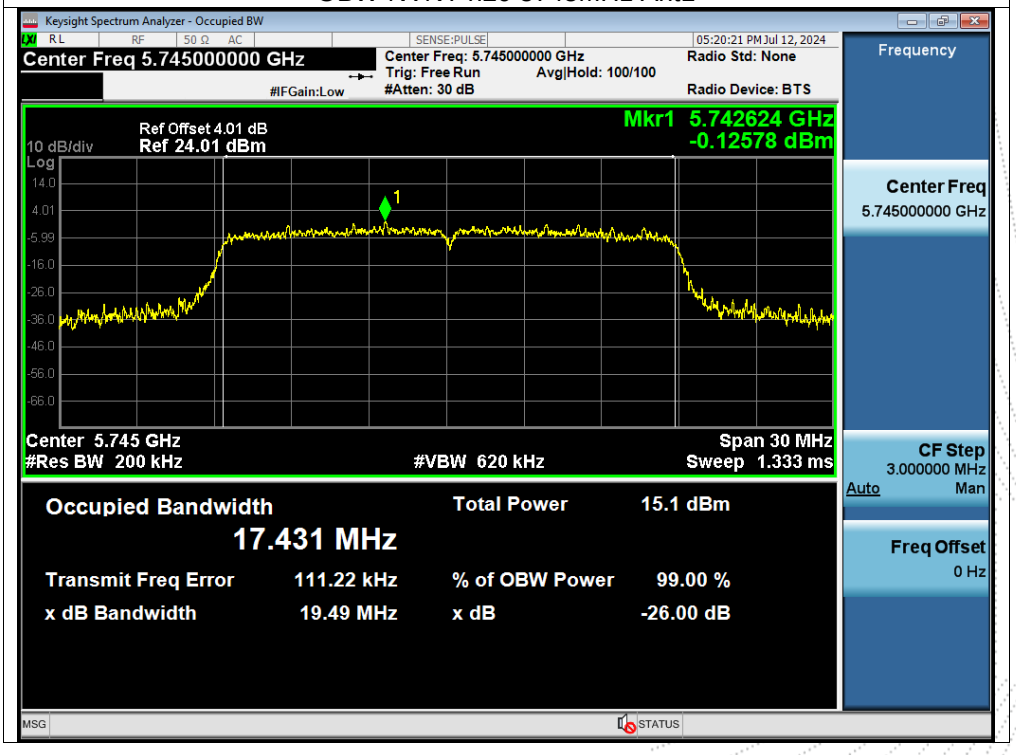
OBW NVNT a 5785MHz Ant1



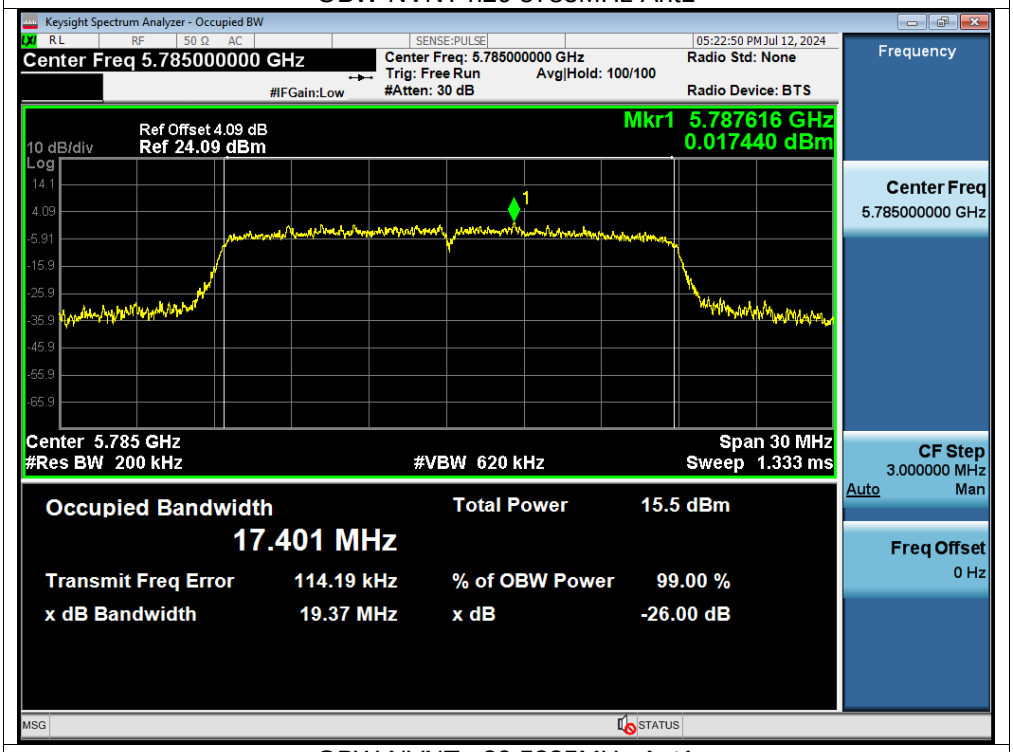
OBW NVNT a 5825MHz Ant1



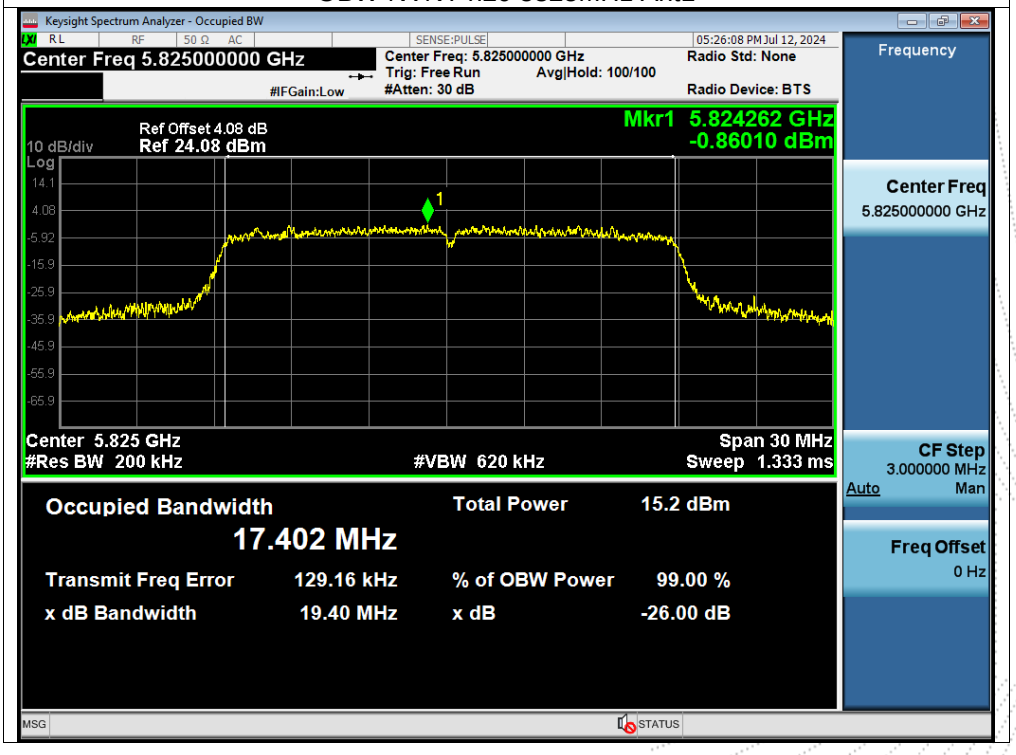
OBW NVNT n20 5745MHz Ant1



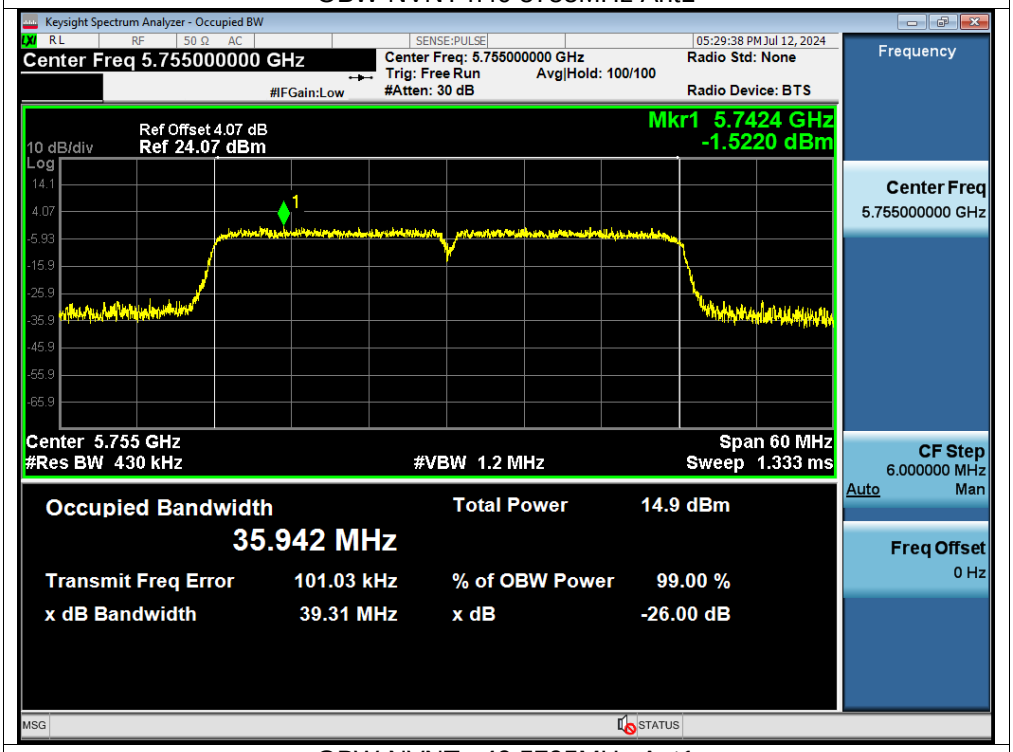
OBW NVNT n20 5785MHz Ant1



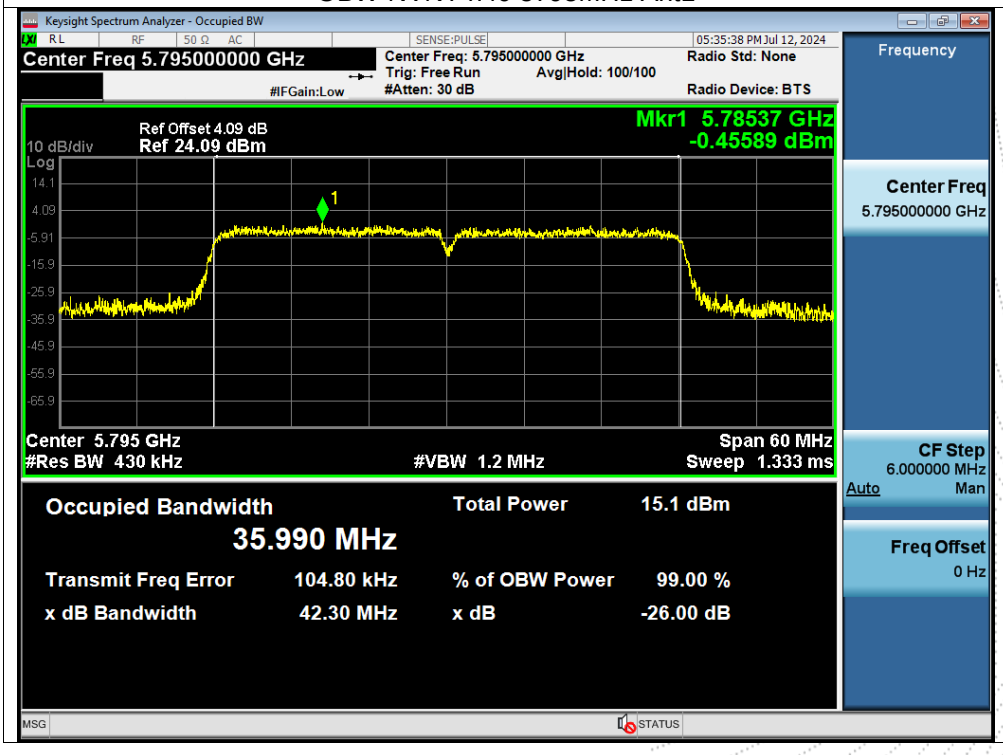
OBW NVNT n20 5825MHz Ant1



OBW NVNT n40 5755MHz Ant1

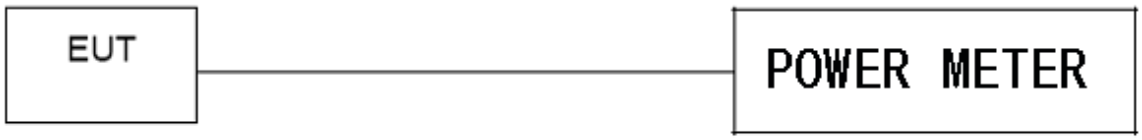


OBW NVNT n40 5795MHz Ant1



10. Maximum Conducted Output Power

10.1 Block Diagram Of Test Setup



10.2 Limit

According to FCC §15.407

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

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

10.3 Test Procedure

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

1. Device Configuration

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

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

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

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

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

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

• The EUT transmits continuously (or with a duty cycle ≥ 98 percent).

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

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

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

b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep): (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1 MHz.

(iii) Set VBW ≥ 3 MHz.

(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Sweep time = auto.

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

(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run”.

(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum

10.4 EUT Operating Conditions

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

10.5 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	5180-5240MHz		

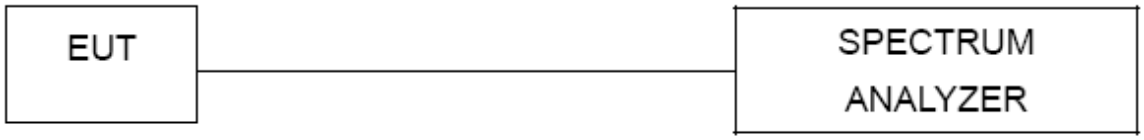
Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	12.24	24	Pass
NVNT	a	5200	12.32	24	Pass
NVNT	a	5240	12.02	24	Pass
NVNT	n20	5180	11.81	24	Pass
NVNT	n20	5200	11.71	24	Pass
NVNT	n20	5240	11.34	24	Pass
NVNT	n40	5190	10.63	24	Pass
NVNT	n40	5230	10.36	24	Pass

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	5745-5825MHz		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	10.63	30	Pass
NVNT	a	5785	10.35	30	Pass
NVNT	a	5825	10.39	30	Pass
NVNT	n20	5745	9.48	30	Pass
NVNT	n20	5785	9.8	30	Pass
NVNT	n20	5825	9.67	30	Pass
NVNT	n40	5755	9.35	30	Pass
NVNT	n40	5795	9.55	30	Pass

11. Out Of Band Emissions

11.1 Block Diagram Of Test Setup



11.2 Limit

According to FCC §15.407(b)
Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

11.3 Test Procedure

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

11.4 EUT Operating Conditions

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

11.5 Test Result

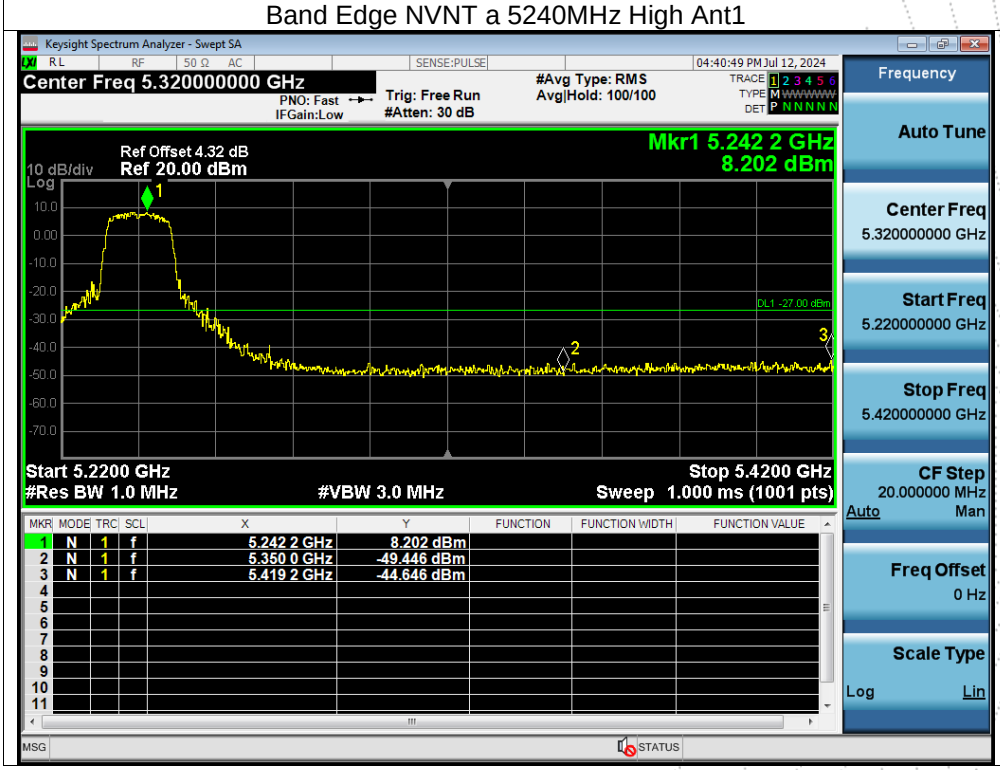
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	DC 12V

5180-5240MHz

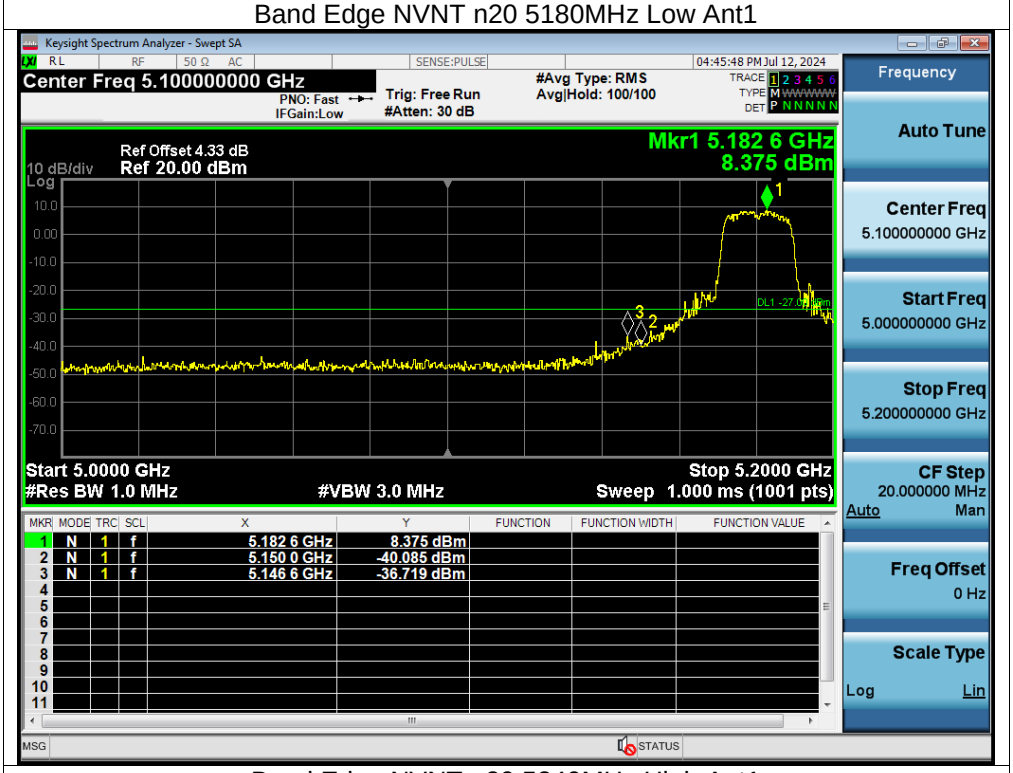
Test Graphs

Band Edge NVNT a 5180MHz Low Ant1

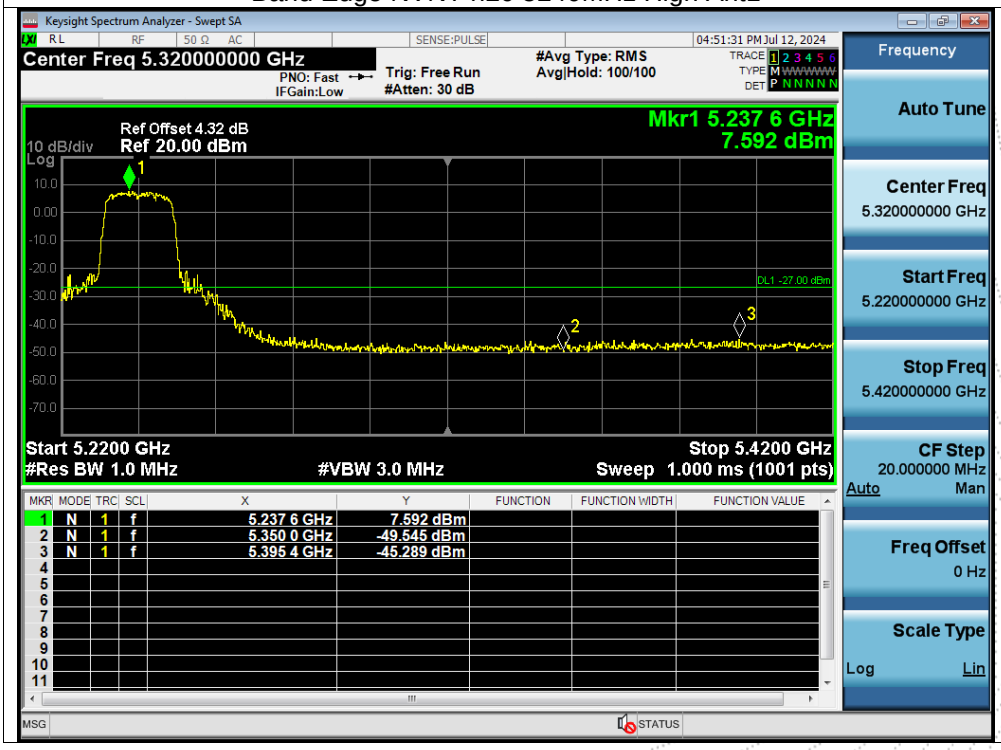
Band Edge NVNT a 5240MHz High Ant1



Band Edge NVNT n20 5180MHz Low Ant1

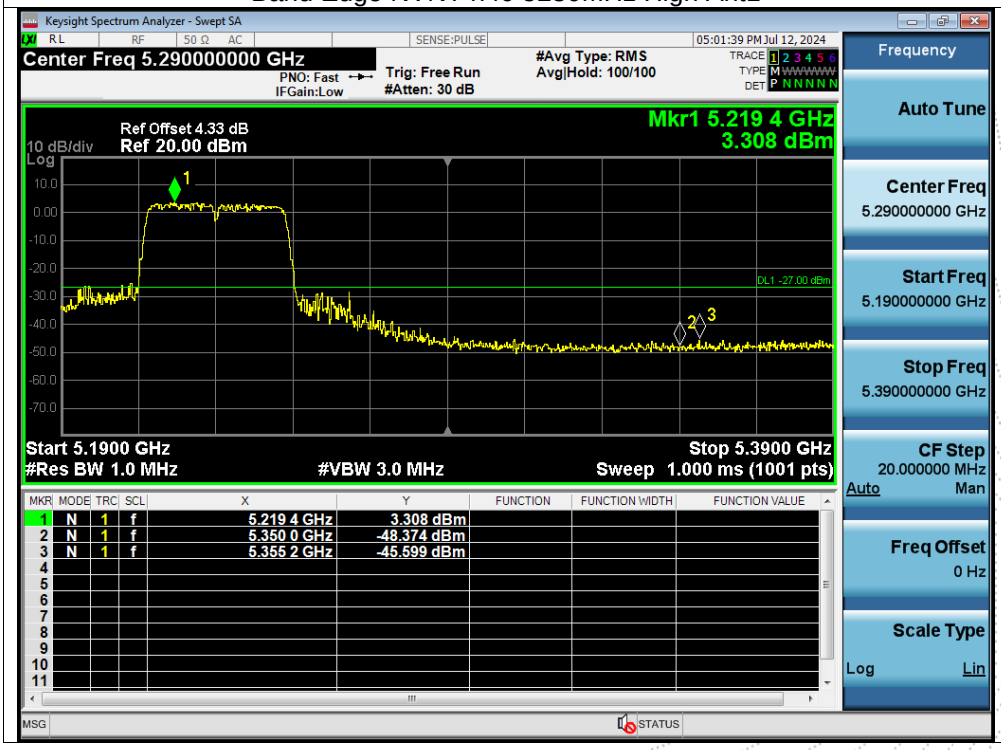


Band Edge NVNT n20 5240MHz High Ant1



Band Edge NVNT n40 5190MHz Low Ant1

Band Edge NVNT n40 5230MHz High Ant1



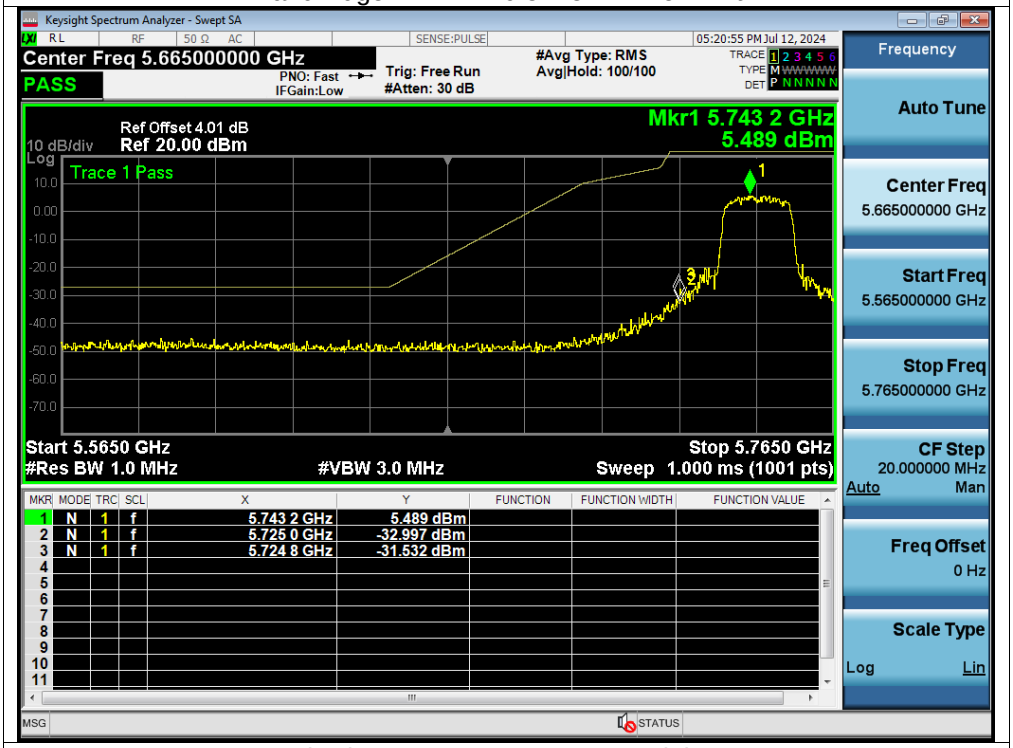
5745-5825MHz

Test Graphs

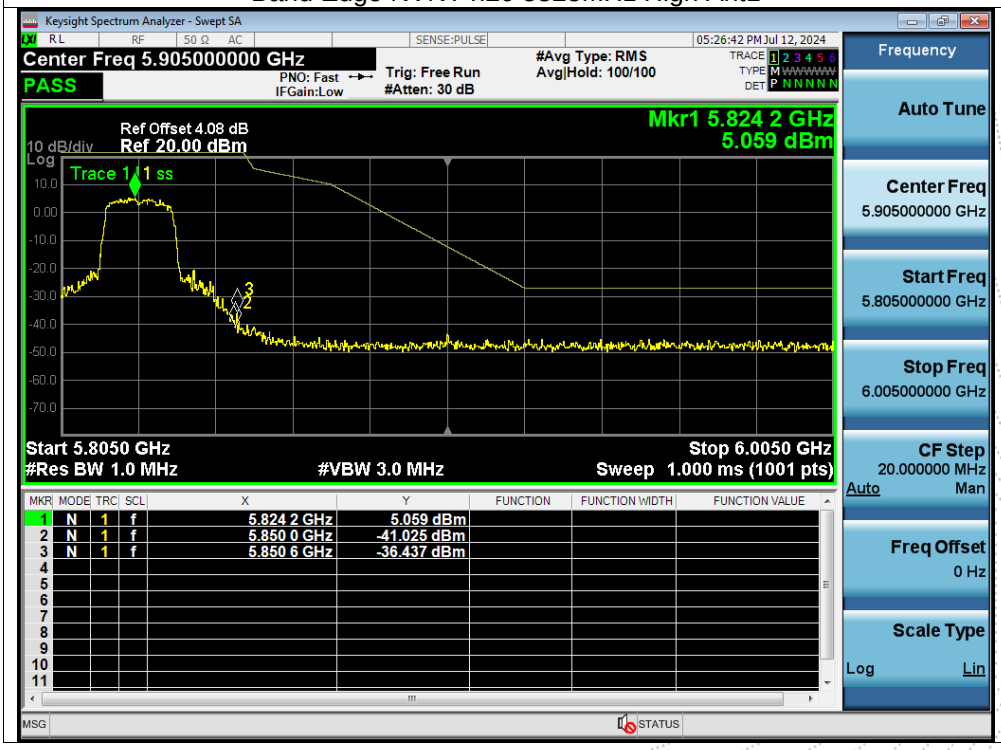
Band Edge NVNT a 5745MHz Low Ant1

Band Edge NVNT a 5825MHz High Ant1

Band Edge NVNT n20 5745MHz Low Ant1



Band Edge NVNT n20 5825MHz High Ant1

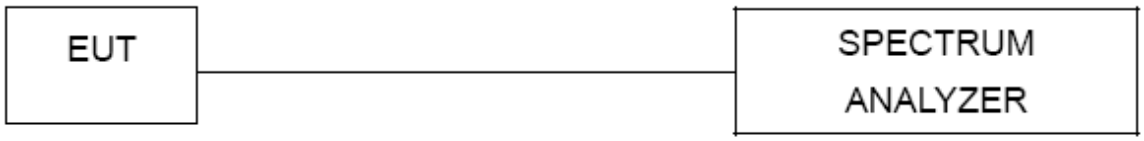


Band Edge NVNT n40 5755MHz Low Ant1

Band Edge NVNT n40 5795MHz High Ant1

12. Spurious RF Conducted Emissions

12.1 Block Diagram Of Test Setup



12.2 Limit

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1)For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2)For transmitters operating in the 5.725-5.85 GHz band(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge..

12.3 Test Procedure

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

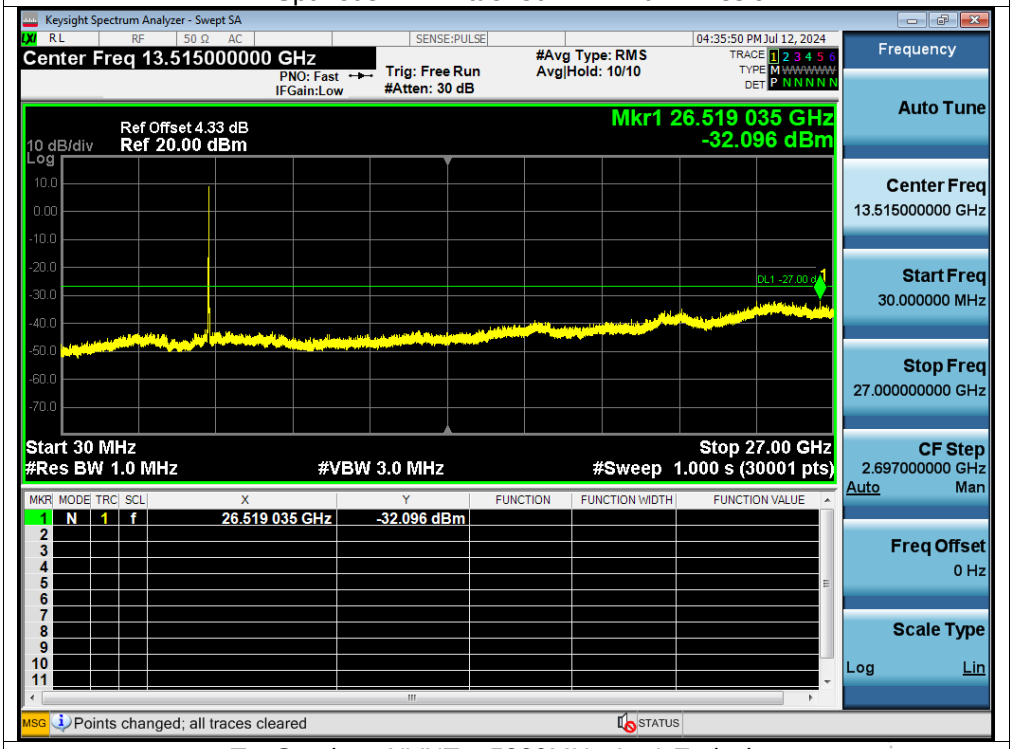
12.4 Test Result

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

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

5180-5240MHz

Test Graphs
Tx. Spurious NVNT a 5180MHz Ant1 Emission

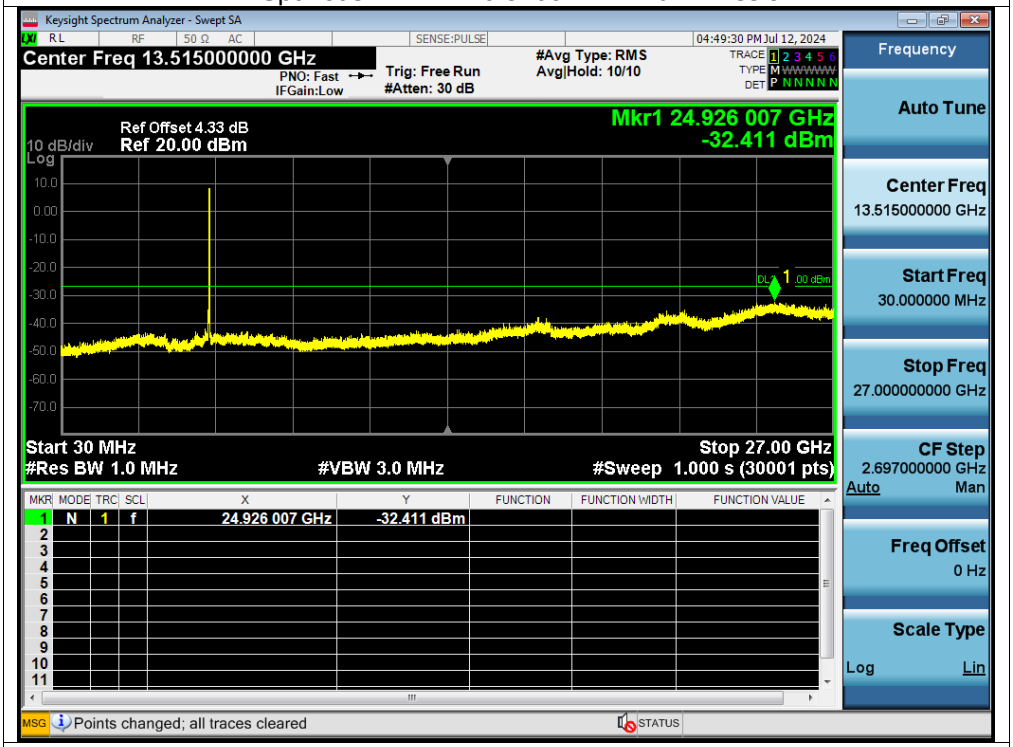


Tx. Spurious NVNT a 5200MHz Ant1 Emission

Tx. Spurious NVNT a 5240MHz Ant1 Emission

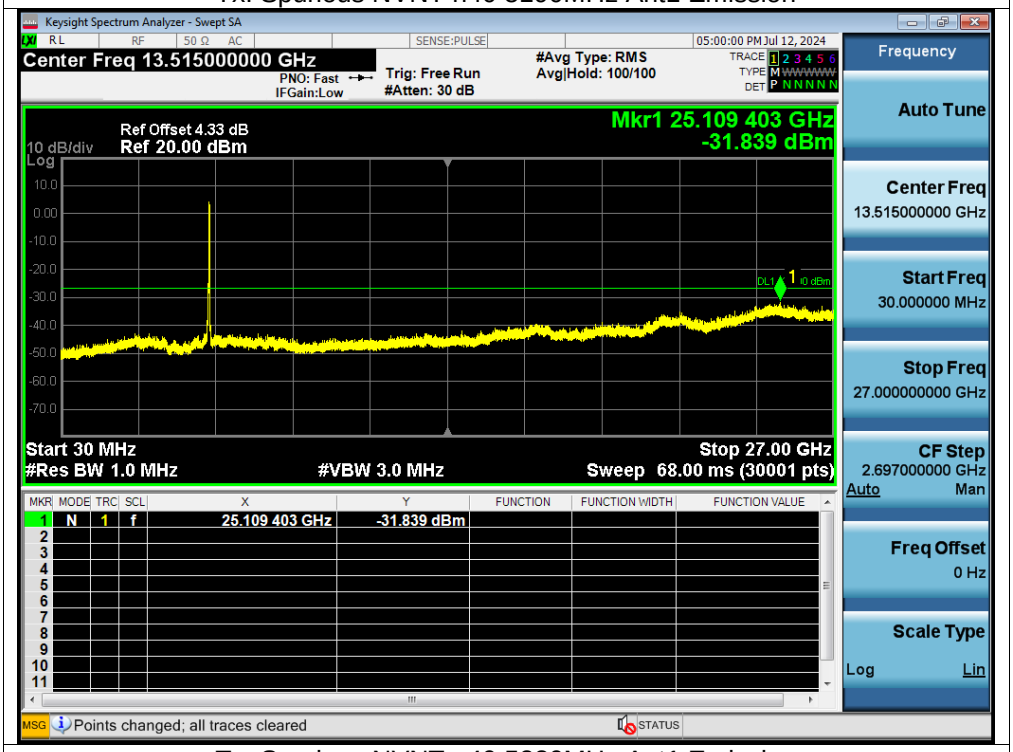
Tx. Spurious NVNT n20 5180MHz Ant1 Emission

Tx. Spurious NVNT n20 5200MHz Ant1 Emission



Tx. Spurious NVNT n20 5240MHz Ant1 Emission

Tx. Spurious NVNT n40 5190MHz Ant1 Emission



Tx. Spurious NVNT n40 5230MHz Ant1 Emission

5745-58250MHz

Test Graphs
Tx. Spurious NVNT a 5745MHz Ant1 Emission

Tx. Spurious NVNT a 5785MHz Ant1 Emission

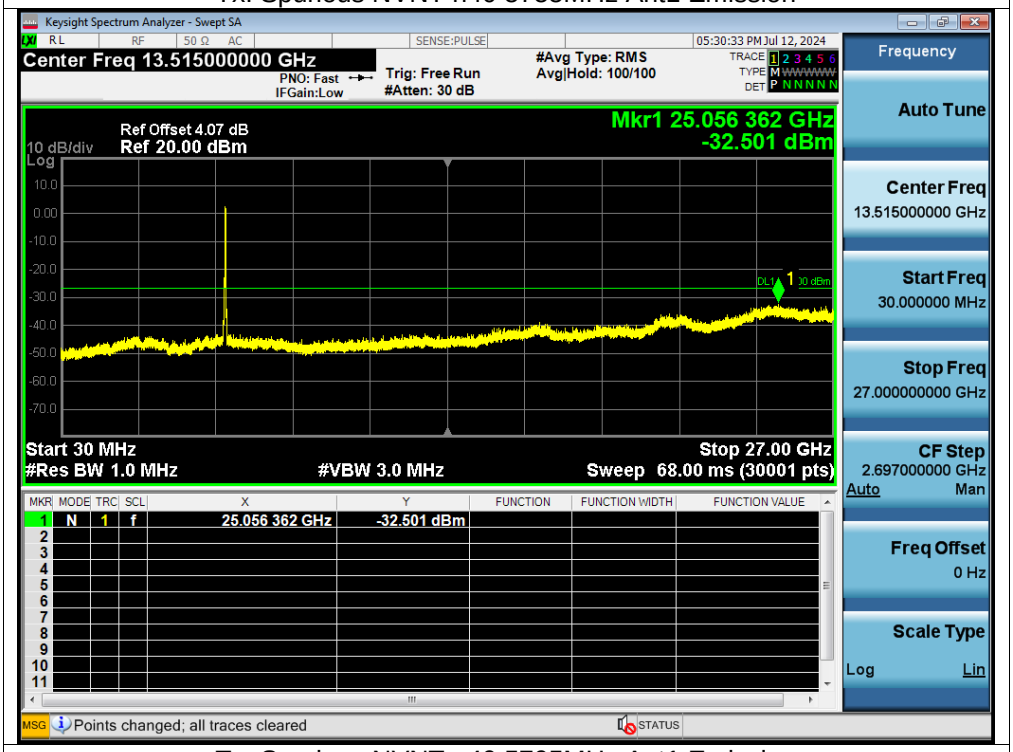
Tx. Spurious NVNT a 5825MHz Ant1 Emission

Tx. Spurious NVNT n20 5745MHz Ant1 Emission

Tx. Spurious NVNT n20 5785MHz Ant1 Emission

Tx. Spurious NVNT n20 5825MHz Ant1 Emission

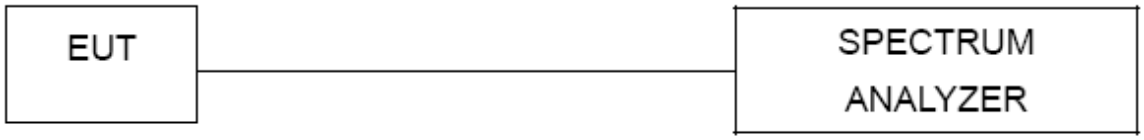
Tx. Spurious NVNT n40 5755MHz Ant1 Emission



Tx. Spurious NVNT n40 5795MHz Ant1 Emission

13. Frequency Stability Measurement

13.1 Block Diagram Of Test Setup



13.2 Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.
The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification)..

13.3 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and he limit is less than ±20ppm (IEEE 802.11nspecification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is -20°C~70°C.

13.4 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	TX (5.1G) Mode Frequency U-NII-1 (5180-5240MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5180.0193	5180	0.0193	3.7272
		V max (V)	13.80	5180.0200	5180	0.0200	3.8582
		V min (V)	10.20	5180.0084	5180	0.0084	1.6256
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	12	T (°C)	-20	5180.0116	5180	0.0116	2.2476
		T (°C)	-10	5180.0032	5180	0.0032	0.6137
		T (°C)	0	5180.0118	5180	0.0118	2.2816
		T (°C)	10	5180.0094	5180	0.0094	1.8108
		T (°C)	20	5180.0134	5180	0.0134	2.5952
		T (°C)	30	5180.0082	5180	0.0082	1.5764
		T (°C)	40	5180.0123	5180	0.0123	2.3727
		T (°C)	50	5180.0062	5180	0.0062	1.2063
		T (°C)	60	5180.0100	5180	0.0100	1.9245
		T (°C)	70	5180.0030	5180	0.0030	0.5803
Limits				5150-5250 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5200.0087	5200	0.0087	1.6642
		V max (V)	13.80	5200.0029	5200	0.0029	0.5597
		V min (V)	10.20	5200.0021	5200	0.0021	0.4001
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	12	T (°C)	-20	5200.00152	5200	0.00152	0.2917
		T (°C)	-10	5200.00303	5200	0.00303	0.5836
		T (°C)	0	5200.01056	5200	0.01056	2.0298
		T (°C)	10	5200.01256	5200	0.01256	2.4156
		T (°C)	20	5200.00014	5200	0.00014	0.0274
		T (°C)	30	5200.00736	5200	0.00736	1.4158
		T (°C)	40	5200.01271	5200	0.01271	2.4436
		T (°C)	50	5200.00395	5200	0.00395	0.7587
		T (°C)	60	5200.00714	5200	0.00714	1.3723
		T (°C)	70	5200.00285	5200	0.00285	0.5475
Limits				5150-5250 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5240.0020	5240	0.0020	0.3886
		V max (V)	13.80	5240.0129	5240	0.0129	2.4608
		V min (V)	10.20	5240.0003	5240	0.0003	0.0595
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	12	T (°C)	-20	5240.0060	5240	0.0060	1.1432
		T (°C)	-10	5240.0129	5240	0.0129	2.4530
		T (°C)	0	5240.0103	5240	0.0103	1.9584
		T (°C)	10	5240.0038	5240	0.0038	0.7215
		T (°C)	20	5240.0075	5240	0.0075	1.4363
		T (°C)	30	5240.0109	5240	0.0109	2.0815
		T (°C)	40	5240.0132	5240	0.0132	2.5211
		T (°C)	50	5240.0059	5240	0.0059	1.1309
		T (°C)	60	5240.0008	5240	0.0008	0.1508
		T (°C)	70	5240.0051	5240	0.0051	0.9755
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz)		

Voltage vs. Frequency Stabilit

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5745.00549	5745	0.00549	0.9554
		V max (V)	13.80	5745.00824	5745	0.00824	1.4343
		V min (V)	10.20	5745.01090	5745	0.01090	1.8978
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	12	T (°C)	-20	5745.01023	5745	0.01023	1.7814
		T (°C)	-10	5745.00991	5745	0.00991	1.7255
		T (°C)	0	5745.00813	5745	0.00813	1.4149
		T (°C)	10	5745.00343	5745	0.00343	0.5976
		T (°C)	20	5745.00928	5745	0.00928	1.6153
		T (°C)	30	5745.00244	5745	0.00244	0.4254
		T (°C)	40	5745.00599	5745	0.00599	1.0430
		T (°C)	50	5745.00811	5745	0.00811	1.4110
		T (°C)	60	5745.00108	5745	0.00108	0.1874
		T (°C)	70	5745.00685	5745	0.00685	1.1924
Limits				5725-5850 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5785.00564	5785	0.00564	0.9750
		V max (V)	13.80	5785.00067	5785	0.00067	0.1156
		V min (V)	10.20	5785.00502	5785	0.00502	0.8680
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	12	T (°C)	-20	5785.00633	5785	0.00633	1.0938
		T (°C)	-10	5785.00563	5785	0.00563	0.9733
		T (°C)	0	5785.01006	5785	0.01006	1.7382
		T (°C)	10	5785.01022	5785	0.01022	1.7665
		T (°C)	20	5785.00371	5785	0.00371	0.6407
		T (°C)	30	5785.00554	5785	0.00554	0.9582
		T (°C)	40	5785.01153	5785	0.01153	1.9937
		T (°C)	50	5785.01093	5785	0.01093	1.8893
		T (°C)	60	5785.01221	5785	0.01221	2.1098
		T (°C)	70	5785.01178	5785	0.01178	2.0363
Limits				5725-5850 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	12.00	5825.00739	5825	0.00739	1.2691
		V max (V)	13.80	5825.01064	5825	0.01064	1.8267
		V min (V)	10.20	5825.01190	5825	0.01190	2.0431
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency:5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	12	T (°C)	-20	5825.00699	5825	0.00699	1.2008
		T (°C)	-10	5825.00961	5825	0.00961	1.6504
		T (°C)	0	5825.00901	5825	0.00901	1.5469
		T (°C)	10	5825.00265	5825	0.00265	0.4541
		T (°C)	20	5825.00774	5825	0.00774	1.3290
		T (°C)	30	5825.00072	5825	0.00072	0.1227
		T (°C)	40	5825.01090	5825	0.01090	1.8714
		T (°C)	50	5825.00609	5825	0.00609	1.0447
		T (°C)	60	5825.01197	5825	0.01197	2.0557
		T (°C)	70	5825.00063	5825	0.00063	0.1086
Limits				5725-5850 MHz			
Result				Complies			

14. Duty Cycle Of Test Signal

14.1 Standard Requirement

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle. All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

14.2 Formula

Duty Cycle = Ton / (Ton+Toff)

14.3 Test Procedure

1.Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

14.4 Test Result

Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	100	0	0
NVNT	a	5200	100	0	0
NVNT	a	5240	100	0	0
NVNT	n20	5180	100	0	0
NVNT	n20	5200	100	0	0
NVNT	n20	5240	100	0	0
NVNT	n40	5190	100	0	0
NVNT	n40	5230	100	0	0

15. Antenna Requirement

15.1 Limit

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

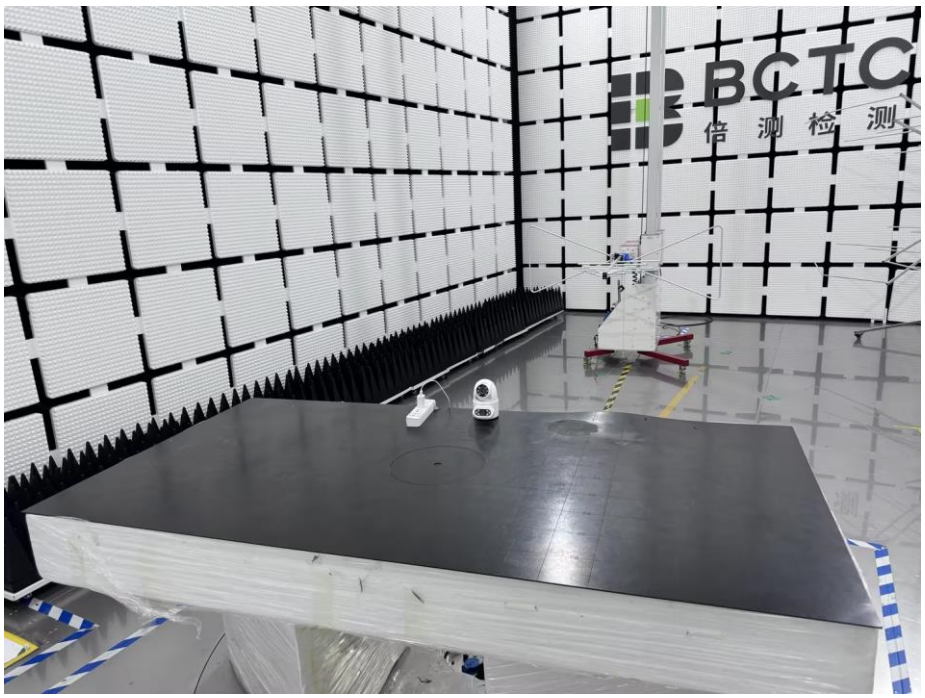
15.2 Test Result

The EUT antenna is internal antenna, fulfill the requirement of this section.

16. EUT Test Setup Photographs

Conducted emissions

Radiated Measurement Photos



STATEMENT

1. The equipment lists are traceable to the national reference standards.

2. The test report can not be partially copied unless prior written approval is issued from our lab.

3. The test report is invalid without the "special seal for inspection and testing".

4. The test report is invalid without the signature of the approver.

5. The test process and test result is only related to the Unit Under Test.

6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.

7. The quality system of our laboratory is in accordance with ISO/IEC17025.

8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:
1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL：400-788-9558

P.C.: 518103

FAX：0755-33229357

Website：http://www.chnbctc.com

Consultation E-mail: bctc@bctc-lab.com.cn

Complaint/Advice E-mail: advice@bctc-lab.com.cn

※※※※※ **END** ※※※※※