TEST REPORT

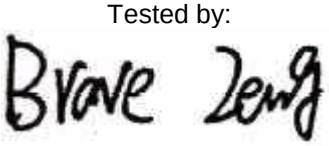
Report No.:	BCTC2312409035-4E
Applicant:	Guangzhou Huge Circle Electronic Technology Co., Ltd.
Product Name:	car audio and video navigation system
Test Model:	HA5010
Tested Date:	2023-12-05 to 2024-01-11
Issued Date:	2024-01-30

Shenzhen BCTC Testing Co., Ltd.

FCC ID: 2BD42-HA5010

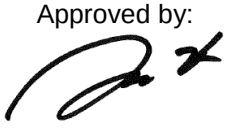
Product Name:	car audio and video navigation system
Trademark:	N/A
Model/Type Ref.:	HA5010, HA2000-HA5999,HB2000-HB5999,HS2000-HS5999, HC7000-HC7999,HD5000-HD6999,HT6000-HT6999, HM2000-HM5999,HL-XXYY（XX=A to Z）（YY=01-99）
Prepared For:	Guangzhou Huge Circle Electronic Technology Co., Ltd.
Address:	Room 305, No. 3, Pengshang Xincun West Road, Lianbian, Helong Street, Baiyun District, Guangzhou GuangDong China
Manufacturer:	Guangzhou Huge Circle Electronic Technology Co., Ltd.
Address:	Room 305, No. 3, Pengshang Xincun West Road, Lianbian, Helong Street, Baiyun District, Guangzhou GuangDong China
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2023-12-05
Sample tested Date:	2023-12-05 to 2024-01-11
Report No.:	BCTC2312409035-4E
Test Standards:	FCC Part15 15.407 ANSI C63.10-2013 KDB 662911 D01 v02r01 KDB 789033 D02 v02r01
Test Results:	PASS

Tested by:



Brave Zeng/ Project Handler

Approved by:



Zero Zhou/Reviewer

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1. Version

Report No.	Issue Date	Description	Approved
BCTC2312409035-4E	2024-01-30	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	N/A[1]
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

Remark:

1.This product is a DC power supply and is not suitable for this test

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

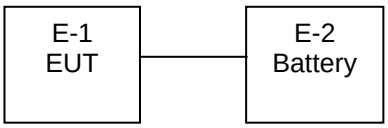
4.1 Product Information

Model/Type Ref.:	HA5010, HA2000-HA5999,HB2000-HB5999,HS2000-HS5999,HC7000-HC7999, HD5000-HD6999,HT6000-HT6999,HM2000-HM5999,HL-XXYY （XX=A to Z）（YY=01-99）
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 HA5010 as test model.
Hardware Version:	N/A
Software Version:	N/A
IEEE 802.11 WLAN Mode Supported	☒802.11a ☒802.11n(20MHz channel bandwidth) ☒802.11n(40MHz channel bandwidth) ☒802.11ac(20MHz channel bandwidth) ☒802.11ac(40MHz channel bandwidth) ☒802.11ac(80MHz channel bandwidth)
Operation Frequency:	5180-5240MHz for 802.11a/n/ac(HT20) 5190-5230MHz for 802.11n/ac(HT40) 5210MHz for 802.11 ac80; 5745-5825 MHz for 802.11a/n/ac(HT20) 5755-5795 MHz for 802.11n/ac(HT40) 5775MHz for 802.11 ac80
Type of Modulation:	☒OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n ☒OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11ac
Number Of Channel	4 channels for 802.11a/n20 in the 5180-5240MHz band ; 2 channels for 802.11 n40 in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210MHz band ; 5 channels for 802.11a/n20 in the 5745-5825MHz band ; 2 channels for 802.11 n40 in the 5755-5795MHz band ; 1 channels for 802.11 ac80 in the 5775MHz band
Antenna installation:	External antenna
Antenna Gain:	3.36dBi
Remark:	The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information.
Ratings:	DC 12V

4.2 Test Setup Configuration

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

Radiated Spurious Emission:



4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-1	car audio and video navigation system	N/A	HA5010	N/A	EUT
E-2	Battery	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 802.11a/n/ac (20 MHz) band I (5180-5240MHz):

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

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

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

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

802.11a/n/ac (20 MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)

149	5745	153	5765	157	5785	161	5805
165	5825	-	-	-	-	-	-

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

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

4.5 Test Mode

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

Pretest Mode	Description
Mode 1	802.11a / n/ ac 20 CH36/ CH40/ CH 48 802.11a /n/ ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ ac40 CH38/ CH 46 802.11n/ ac40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	Transmitting (Radiated emission)

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

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

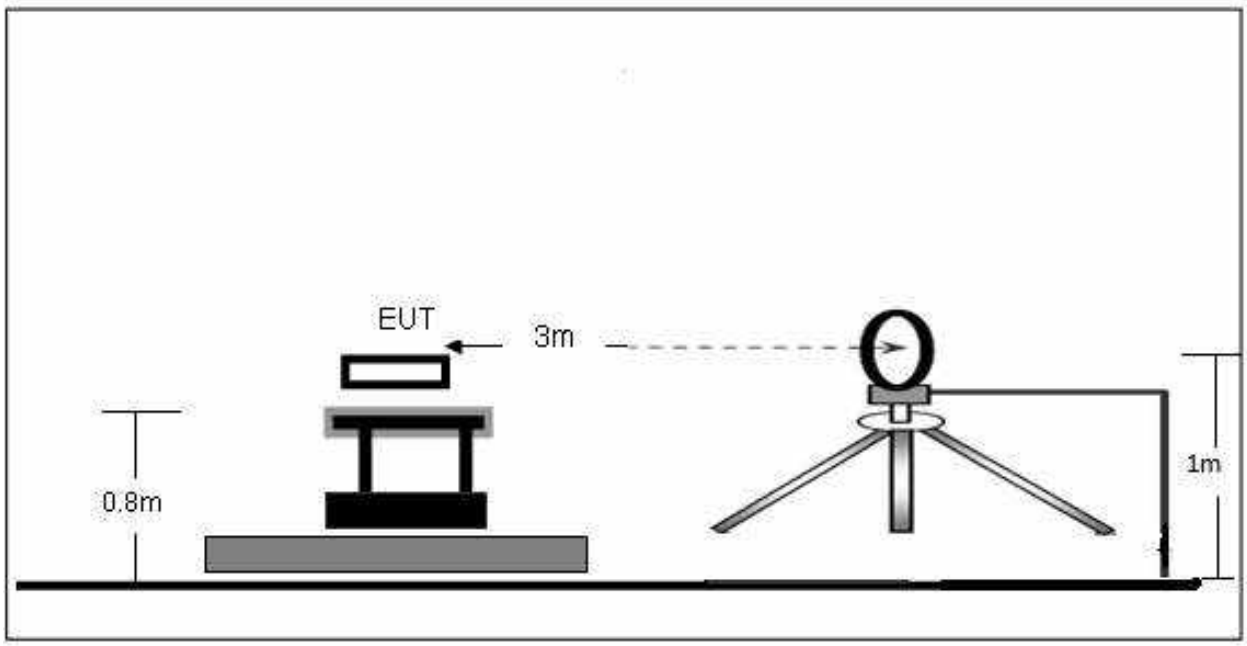
Radiated Emissions Test (966 Chamber)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	May 15, 2023	May 14, 2026
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
Receiver	R&S	ESRP	101154	May 15, 2023	May 14, 2024
Amplifier	SKET	LAPA_01G18G-45dB	\	May 15, 2023	May 14, 2024
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 15, 2023	May 14, 2024
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	May 15, 2023	May 14, 2024
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 15, 2023	May 14, 2024
Horn Antenn(18GHz-40GHz)	Schwarzbeck	BBHA9170	00822	May 15, 2023	May 14, 2024

Amplifier(18GHz-40GHz)	MITEQ	TTA1840-35-HG	2034381	May 15, 2023	May 14, 2024
Loop Antenna(9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	May 15, 2023	May 14, 2024
RF cables1(9kHz-30MHz)	Huber+Suhnar	9kHz-30MHz	B1702988-0008	May 15, 2023	May 14, 2024
RF cables2(30MHz-1GHz)	Huber+Suhnar	30MHz-1GHz	1486150	May 15, 2023	May 14, 2024
RF cables3(1GHz-40GHz)	Huber+Suhnar	1GHz-40GHz	1607106	May 15, 2023	May 14, 2024
Power Metter	Keysight	E4419	\	May 15, 2023	May 14, 2024
Power Sensor (AV)	Keysight	E9300A	\	May 15, 2023	May 14, 2024
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 15, 2023	May 14, 2024
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	\	May 15, 2023	May 14, 2024
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

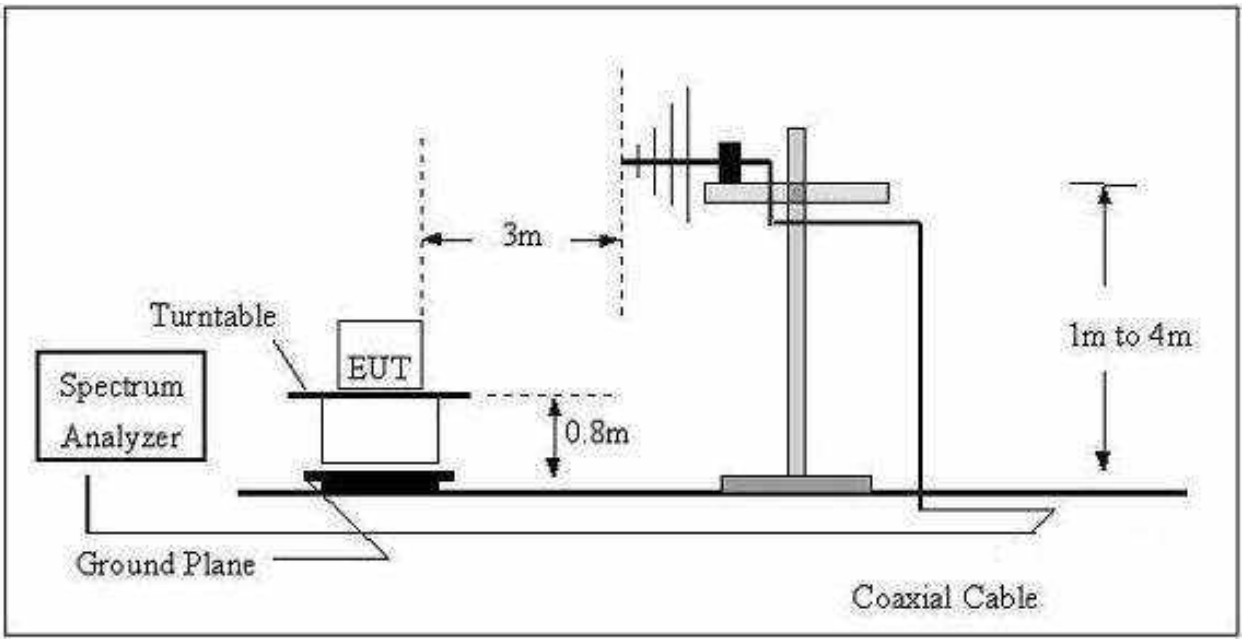
6. Radiated Emissions

7.1 Block Diagram Of Test Setup

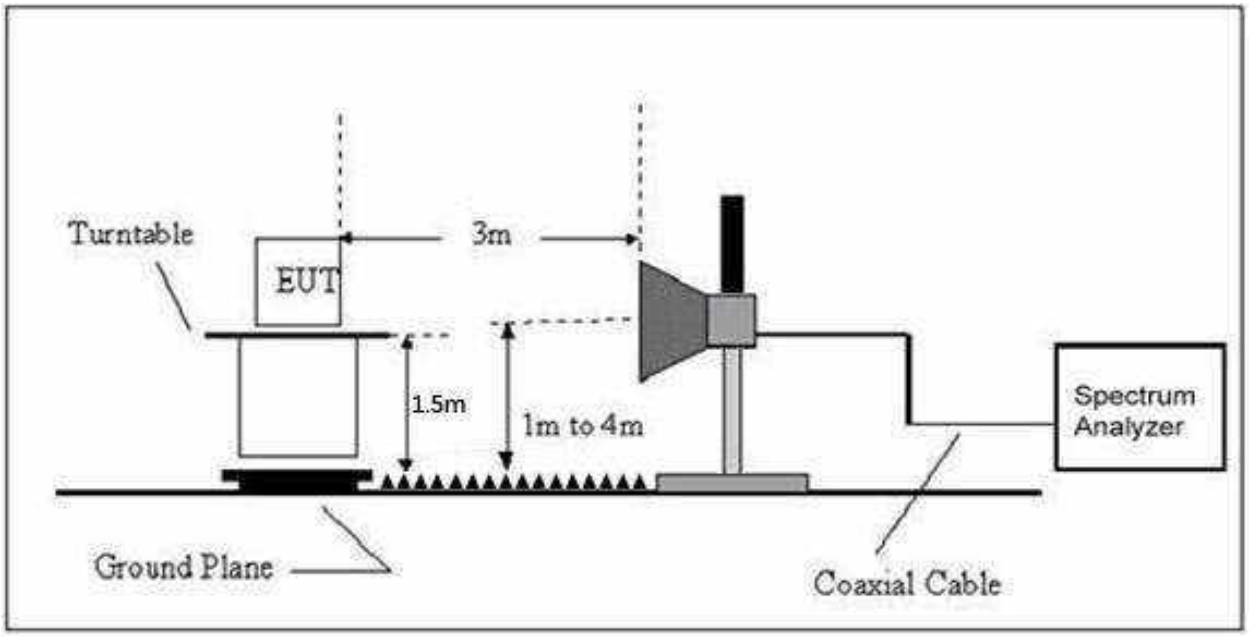
（A）Radiated Emission Test-Up Frequency Below 30MHz



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



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



7.2 Limit

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

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

Limits Of Radiated Emission Measurement (Above 1000MHz)

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

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

7.3 Test Procedure

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

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

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

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

Note:

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

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

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

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

7.4 EUT Operating Conditions

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

7.5 Test Result

Below 30MHz

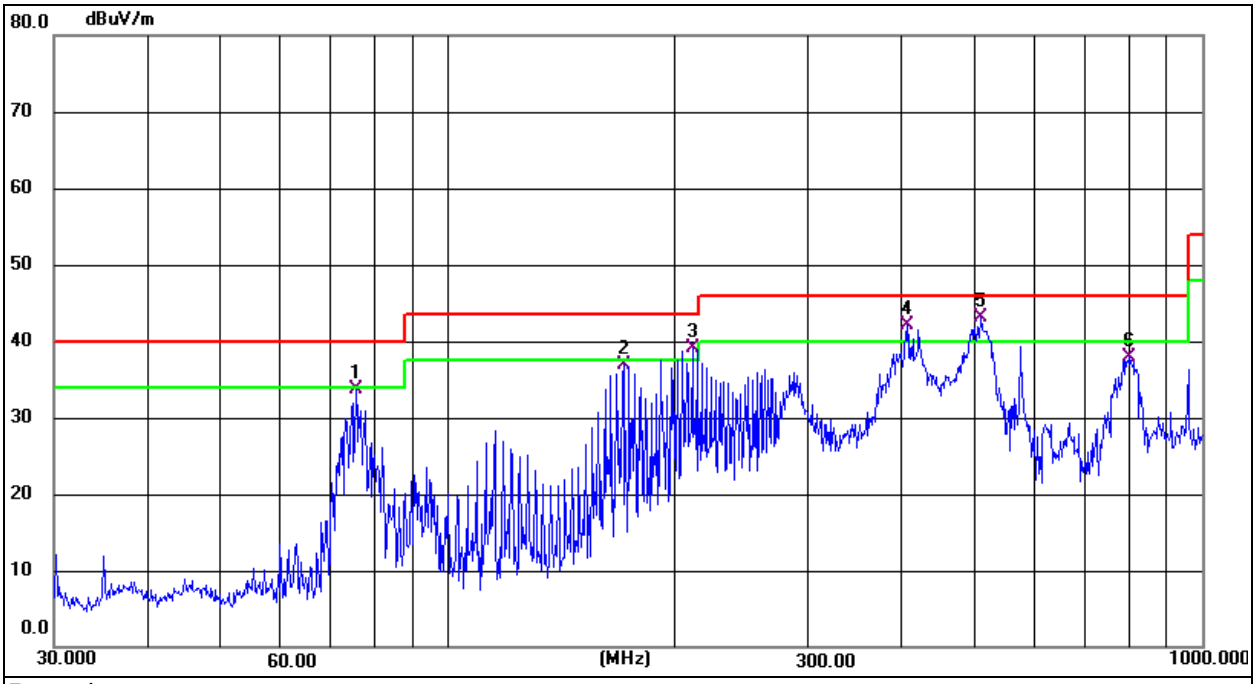
Temperature:	26℃	Relative Humidity:	24%
Pressure:	101 kPa	Test Voltage:	DC 12V
Test Mode:	Mode 4	Polarization:	--

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

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

Between 30MHz – 1GHz

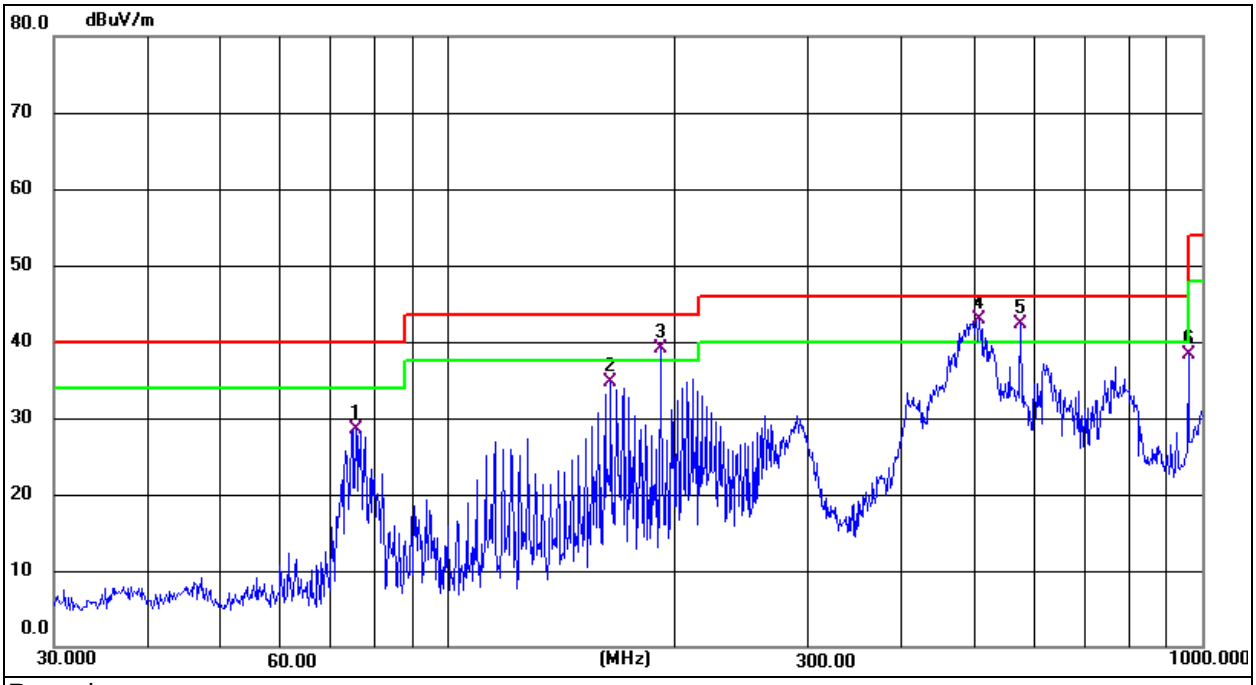
Temperature:	24 ℃	Relative Humidity:	51%
Pressure:	101KPa	Test Voltage :	DC 12V
Test Mode:	Mode 13	Polarization :	Horizontal



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	75.4463	53.62	-19.98	33.64	40.00	-6.36	QP
2	170.7926	53.33	-16.44	36.89	43.50	-6.61	QP
3 !	210.7860	56.71	-17.66	39.05	43.50	-4.45	QP
4 !	406.0880	52.90	-10.79	42.11	46.00	-3.89	QP
5 *	508.2582	51.27	-8.17	43.10	46.00	-2.90	QP
6	798.9797	39.22	-1.39	37.83	46.00	-8.17	QP

Temperature:	24 ℃	Relative Humidity:	51%
Pressure:	101KPa	Test Voltage :	DC 12V
Test Mode:	Mode 13	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	75.4464	48.52	-19.98	28.54	40.00	-11.46	QP
2	164.3301	50.30	-15.60	34.70	43.50	-8.80	QP
3 !	191.0738	56.91	-17.86	39.05	43.50	-4.45	QP
4 *	506.4790	51.12	-8.23	42.89	46.00	-3.11	QP
5 !	574.6258	48.48	-6.19	42.29	46.00	-3.71	QP
6	958.7943	36.95	1.38	38.33	46.00	-7.67	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	4434.040	74.19	-20.73	53.46	68.2	-14.74	Pk
Vertical	4434.040	59.12	-20.73	38.39	54	-15.61	AV
Vertical	10360.022	60.82	-9.36	51.46	68.2	-16.74	Pk
Vertical	10360.022	49.74	-9.36	40.38	54	-13.62	AV
Vertical	15540.096	64.64	-7.84	56.80	74	-17.20	Pk
Vertical	15540.096	49.41	-7.84	41.57	54	-12.43	AV
Horizontal	4434.076	72.56	-20.73	51.83	68.2	-16.37	Pk
Horizontal	4434.076	59.61	-20.73	38.88	54	-15.12	AV
Horizontal	10360.119	63.31	-9.36	53.95	68.2	-14.25	Pk
Horizontal	10360.119	49.57	-9.36	40.21	54	-13.79	AV
Horizontal	15540.194	64.67	-7.84	56.83	74	-17.17	Pk
Horizontal	15540.194	49.28	-7.84	41.44	54	-12.56	AV
middle Channel (5200 MHz)-Above 1G							
Vertical	4592.156	70.19	-20.42	49.78	74	-24.22	Pk
Vertical	4592.156	59.89	-20.42	39.47	54	-14.53	AV
Vertical	10400.137	62.80	-9.30	53.50	68.2	-14.70	Pk
Vertical	10400.137	49.83	-9.30	40.53	54	-13.47	AV
Vertical	15600.020	61.55	-7.82	53.73	74	-20.27	Pk
Vertical	15600.020	49.34	-7.82	41.52	54	-12.48	AV
Horizontal	4592.183	73.46	-20.42	53.05	74	-20.95	Pk
Horizontal	4592.183	59.72	-20.42	39.31	54	-14.69	AV
Horizontal	10400.141	60.26	-9.30	50.96	68.2	-17.24	Pk
Horizontal	10400.141	49.56	-9.30	40.26	54	-13.74	AV
Horizontal	15600.177	61.08	-7.82	53.26	74	-20.74	Pk
Horizontal	15600.177	49.90	-7.82	42.08	54	-11.92	AV
High Channel (5240 MHz)-Above 1G							
Vertical	4739.169	71.75	-20.12	51.62	74	-22.38	Pk
Vertical	4739.169	59.71	-20.12	39.59	54	-14.41	AV
Vertical	10480.069	64.43	-9.18	55.25	68.2	-12.95	Pk
Vertical	10480.069	49.99	-9.18	40.81	54	-13.19	AV
Vertical	15720.038	61.84	-7.78	54.06	74	-19.94	Pk
Vertical	15720.038	49.26	-7.78	41.48	54	-12.52	AV
Horizontal	4739.086	73.36	-20.12	53.24	74	-20.76	Pk
Horizontal	4739.086	59.23	-20.12	39.11	54	-14.89	AV
Horizontal	10480.044	63.63	-9.18	54.45	68.2	-13.75	Pk
Horizontal	10480.044	49.54	-9.18	40.36	54	-13.64	AV
Horizontal	15720.094	63.13	-7.78	55.35	74	-18.65	Pk
Horizontal	15720.094	49.28	-7.78	41.50	54	-12.50	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	4434.067	73.98	-20.73	53.24	68.2	-14.96	Pk
Vertical	4434.067	59.03	-20.73	38.30	54	-15.70	AV
Vertical	10360.089	60.99	-9.36	51.63	68.2	-16.57	Pk
Vertical	10360.089	49.41	-9.36	40.05	54	-13.95	AV
Vertical	15540.106	62.93	-7.84	55.09	74	-18.91	Pk
Vertical	15540.106	49.43	-7.84	41.59	54	-12.41	AV
Horizontal	4434.176	71.76	-20.73	51.03	68.2	-17.17	Pk
Horizontal	4434.176	59.45	-20.73	38.72	54	-15.28	AV
Horizontal	10360.074	64.41	-9.36	55.05	68.2	-13.15	Pk
Horizontal	10360.074	49.83	-9.36	40.47	54	-13.53	AV
Horizontal	15540.180	60.81	-7.84	52.97	74	-21.03	Pk
Horizontal	15540.180	49.02	-7.84	41.18	54	-12.82	AV
middle Channel (5200 MHz)-Above 1G							
Vertical	4592.155	74.34	-20.42	53.92	74	-20.08	Pk
Vertical	4592.155	59.58	-20.42	39.17	54	-14.83	AV
Vertical	10400.157	61.37	-9.30	52.07	68.2	-16.13	Pk
Vertical	10400.157	49.02	-9.30	39.72	54	-14.28	AV
Vertical	15600.149	61.92	-7.82	54.10	74	-19.90	Pk
Vertical	15600.149	49.11	-7.82	41.29	54	-12.71	AV
Horizontal	4592.164	73.95	-20.42	53.53	74	-20.47	Pk
Horizontal	4592.164	59.44	-20.42	39.03	54	-14.97	AV
Horizontal	10400.046	60.05	-9.30	50.75	68.2	-17.45	Pk
Horizontal	10400.046	49.57	-9.30	40.27	54	-13.73	AV
Horizontal	15600.094	62.92	-7.82	55.10	74	-18.90	Pk
Horizontal	15600.094	49.37	-7.82	41.55	54	-12.45	AV
High Channel (5240 MHz)-Above 1G							
Vertical	4739.099	73.99	-20.12	53.87	74	-20.13	Pk
Vertical	4739.099	59.13	-20.12	39.01	54	-14.99	AV
Vertical	10480.147	60.75	-9.18	51.57	68.2	-16.63	Pk
Vertical	10480.147	49.24	-9.18	40.06	54	-13.94	AV
Vertical	15720.089	63.59	-7.78	55.81	74	-18.19	Pk
Vertical	15720.089	49.44	-7.78	41.66	54	-12.34	AV
Horizontal	4739.144	71.22	-20.12	51.10	74	-22.90	Pk
Horizontal	4739.144	59.87	-20.12	39.74	54	-14.26	AV
Horizontal	10480.129	60.76	-9.18	51.58	68.2	-16.62	Pk
Horizontal	10480.129	49.20	-9.18	40.02	54	-13.98	AV
Horizontal	15720.117	60.06	-7.78	52.28	74	-21.72	Pk
Horizontal	15720.117	49.48	-7.78	41.70	54	-12.30	AV

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

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	4434.148	70.89	-20.73	50.16	68.2	-18.04	Pk
Vertical	4434.148	59.46	-20.73	38.73	54	-15.27	AV
Vertical	10380.088	60.76	-9.33	51.43	68.2	-16.77	Pk
Vertical	10380.088	49.95	-9.33	40.62	54	-13.38	AV
Vertical	15570.156	60.26	-7.83	52.43	74	-21.57	Pk
Vertical	15570.156	49.76	-7.83	41.93	54	-12.07	AV
Horizontal	4434.091	73.40	-20.73	52.67	74	-21.33	Pk
Horizontal	4434.091	59.42	-20.73	38.69	54	-15.31	AV
Horizontal	10380.130	64.25	-9.33	54.92	68.2	-13.28	Pk
Horizontal	10380.130	49.19	-9.33	39.86	54	-14.14	AV
Horizontal	15570.086	60.21	-7.83	52.38	74	-21.62	Pk
Horizontal	15570.086	49.17	-7.83	41.34	54	-12.66	AV
middle Channel (5230 MHz)-Above 1G							
Vertical	4739.112	70.75	-20.12	50.63	68.2	-17.57	Pk
Vertical	4739.112	59.29	-20.12	39.16	54	-14.84	AV
Vertical	10460.152	60.00	-9.21	50.79	68.2	-17.41	Pk
Vertical	10460.152	49.23	-9.21	40.02	54	-13.98	AV
Vertical	15690.032	64.35	-7.79	56.56	74	-17.44	Pk
Vertical	15690.032	49.49	-7.79	41.70	54	-12.30	AV
Horizontal	4739.020	70.51	-20.12	50.39	68.2	-17.81	Pk
Horizontal	4739.020	59.04	-20.12	38.91	54	-15.09	AV
Horizontal	10460.194	61.33	-9.21	52.12	68.2	-16.08	Pk
Horizontal	10460.194	49.51	-9.21	40.30	54	-13.70	AV
Horizontal	15690.069	60.01	-7.79	52.22	74	-21.78	Pk
Horizontal	15690.069	49.78	-7.79	41.99	54	-12.01	AV

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

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

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G							
Vertical	4434.161	71.81	-20.73	51.08	68.2	-17.12	Pk
Vertical	4434.161	59.29	-20.73	38.56	54	-15.44	AV
Vertical	10360.178	61.46	-9.36	52.10	68.2	-16.10	Pk
Vertical	10360.178	49.54	-9.36	40.18	54	-13.82	AV
Vertical	15540.013	60.62	-7.84	52.78	74	-21.22	Pk
Vertical	15540.013	49.37	-7.84	41.53	54	-12.47	AV
Horizontal	4434.018	73.71	-20.73	52.98	68.2	-15.22	Pk
Horizontal	4434.018	59.61	-20.73	38.88	54	-15.12	AV
Horizontal	10360.153	61.28	-9.36	51.92	68.2	-16.28	Pk
Horizontal	10360.153	49.59	-9.36	40.23	54	-13.77	AV
Horizontal	15540.081	63.83	-7.84	55.99	74	-18.01	Pk
Horizontal	15540.081	49.36	-7.84	41.52	54	-12.48	AV
middle Channel (5200 MHz)-Above 1G							
Vertical	4592.030	74.71	-20.42	54.30	74	-19.70	Pk
Vertical	4592.030	59.77	-20.42	39.35	54	-14.65	AV
Vertical	10400.141	60.35	-9.30	51.05	68.2	-17.15	Pk
Vertical	10400.141	49.47	-9.30	40.17	54	-13.83	AV
Vertical	15600.095	63.28	-7.82	55.46	74	-18.54	Pk
Vertical	15600.095	49.94	-7.82	42.12	54	-11.88	AV
Horizontal	4592.040	72.03	-20.42	51.62	74	-22.38	Pk
Horizontal	4592.040	59.48	-20.42	39.06	54	-14.94	AV
Horizontal	10400.147	64.20	-9.30	54.90	68.2	-13.30	Pk
Horizontal	10400.147	49.11	-9.30	39.81	54	-14.19	AV
Horizontal	15600.121	60.94	-7.82	53.12	74	-20.88	Pk
Horizontal	15600.121	49.11	-7.82	41.29	54	-12.71	AV
High Channel (5240 MHz)-Above 1G							
Vertical	4739.199	74.44	-20.12	54.32	74	-19.68	Pk
Vertical	4739.199	59.87	-20.12	39.75	54	-14.25	AV
Vertical	10480.179	61.44	-9.18	52.26	68.2	-15.94	Pk
Vertical	10480.179	49.25	-9.18	40.07	54	-13.93	AV
Vertical	15720.071	63.43	-7.78	55.65	74	-18.35	Pk
Vertical	15720.071	49.87	-7.78	42.09	54	-11.91	AV
Horizontal	4739.013	72.80	-20.12	52.68	74	-21.32	Pk
Horizontal	4739.013	59.34	-20.12	39.22	54	-14.78	AV
Horizontal	10480.024	60.99	-9.18	51.81	68.2	-16.39	Pk
Horizontal	10480.024	49.13	-9.18	39.95	54	-14.05	AV
Horizontal	15720.024	61.47	-7.78	53.69	74	-20.31	Pk
Horizontal	15720.024	49.09	-7.78	41.31	54	-12.69	AV

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

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

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5190 MHz)-Above 1G							
Vertical	4434.009	72.94	-20.73	52.21	68.2	-15.99	Pk
Vertical	4434.009	59.07	-20.73	38.34	54	-15.66	AV
Vertical	10380.124	60.76	-9.33	51.43	68.2	-16.77	Pk
Vertical	10380.124	49.30	-9.33	39.97	54	-14.03	AV
Vertical	15570.141	60.49	-7.83	52.66	74	-21.34	Pk
Vertical	15570.141	49.46	-7.83	41.63	54	-12.37	AV
Horizontal	4434.124	70.33	-20.73	49.60	74	-24.40	Pk
Horizontal	4434.124	59.62	-20.73	38.89	54	-15.11	AV
Horizontal	10380.046	60.77	-9.33	51.44	68.2	-16.76	Pk
Horizontal	10380.046	49.31	-9.33	39.98	54	-14.02	AV
Horizontal	15570.087	61.29	-7.83	53.46	74	-20.54	Pk
Horizontal	15570.087	49.64	-7.83	41.81	54	-12.19	AV
middle Channel (5230 MHz)-Above 1G							
Vertical	4739.067	70.96	-20.12	50.84	68.2	-17.36	Pk
Vertical	4739.067	59.05	-20.12	38.93	54	-15.07	AV
Vertical	10460.087	61.42	-9.21	52.21	68.2	-15.99	Pk
Vertical	10460.087	49.87	-9.21	40.66	54	-13.34	AV
Vertical	15690.138	61.77	-7.79	53.98	74	-20.02	Pk
Vertical	15690.138	49.77	-7.79	41.98	54	-12.02	AV
Horizontal	4739.088	73.80	-20.12	53.67	68.2	-14.53	Pk
Horizontal	4739.088	59.50	-20.12	39.38	54	-14.62	AV
Horizontal	10460.034	62.34	-9.21	53.13	68.2	-15.07	Pk
Horizontal	10460.034	49.97	-9.21	40.76	54	-13.24	AV
Horizontal	15690.192	63.52	-7.79	55.73	74	-18.27	Pk
Horizontal	15690.192	49.73	-7.79	41.94	54	-12.06	AV

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

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

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
(5210 MHz)-Above 1G							
Vertical	4434.147	72.64	-20.73	51.91	68.2	-16.29	Pk
Vertical	4434.147	59.40	-20.73	38.67	54	-15.33	AV
Vertical	10420.143	64.77	-9.27	55.50	68.2	-12.70	Pk
Vertical	10420.143	49.69	-9.27	40.42	54	-13.58	AV
Vertical	15630.171	63.58	-7.81	55.77	74	-18.23	Pk
Vertical	15630.171	49.75	-7.81	41.94	54	-12.06	AV
Horizontal	4434.026	72.68	-20.73	51.95	68.2	-16.25	Pk
Horizontal	4434.026	59.08	-20.73	38.34	54	-15.66	AV
Horizontal	10420.032	63.11	-9.27	53.84	68.2	-14.36	Pk
Horizontal	10420.032	49.03	-9.27	39.76	54	-14.24	AV
Horizontal	15630.148	62.31	-7.81	54.5	74	-19.50	Pk
Horizontal	15630.148	49.69	-7.81	41.88	54	-12.12	AV

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

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

Test mode: 802.11ac Frequency(MHz): 5180

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
5149.30	H	63.43	74	46.05	54
5148.10	V	63.34	74	45.04	54

Test mode: 802.11ac Frequency(MHz): 5240

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
5300.65	H	42.88	74	27.40	54
5300.30	V	42.00	74	27.39	54

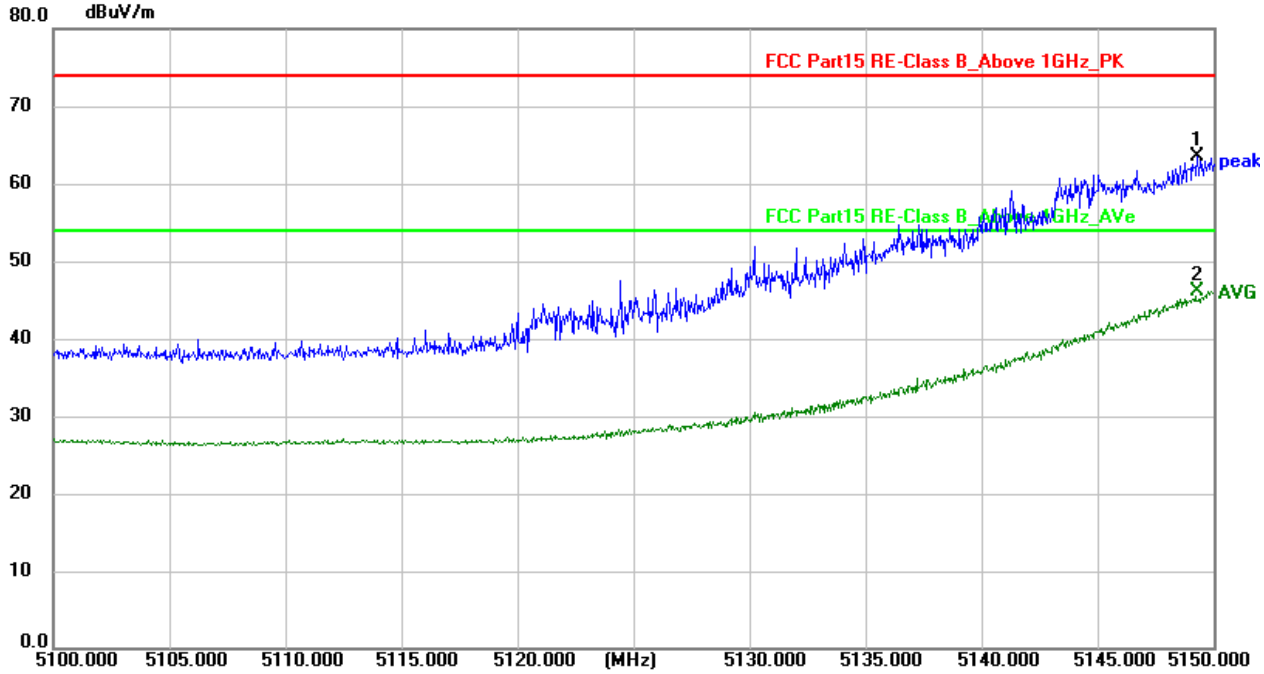
Note: (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor.
(3) Correct Factor= Ant_F + Cab_L - Preamp

U-NII - 1

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

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

☒5180 ☐5200 ☐5240 Ant.Pol H

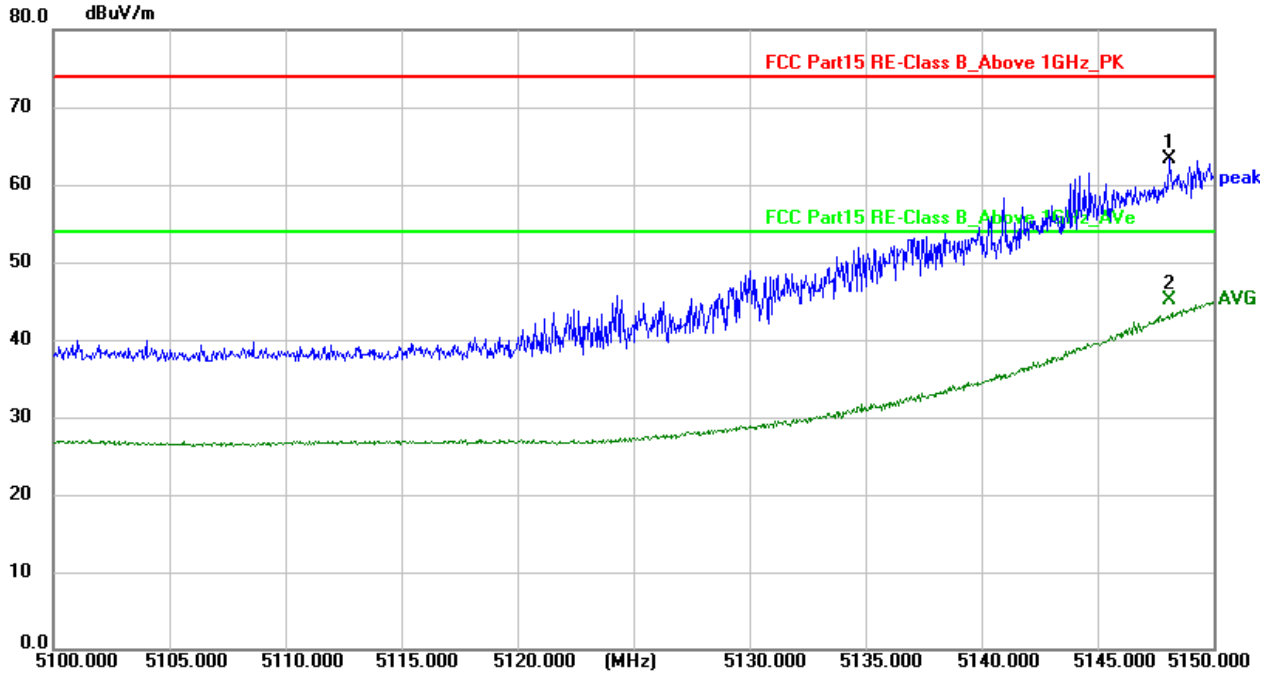


U-NII - 1

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

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

☒5180 ☐5200 ☐5240 Ant.Pol V

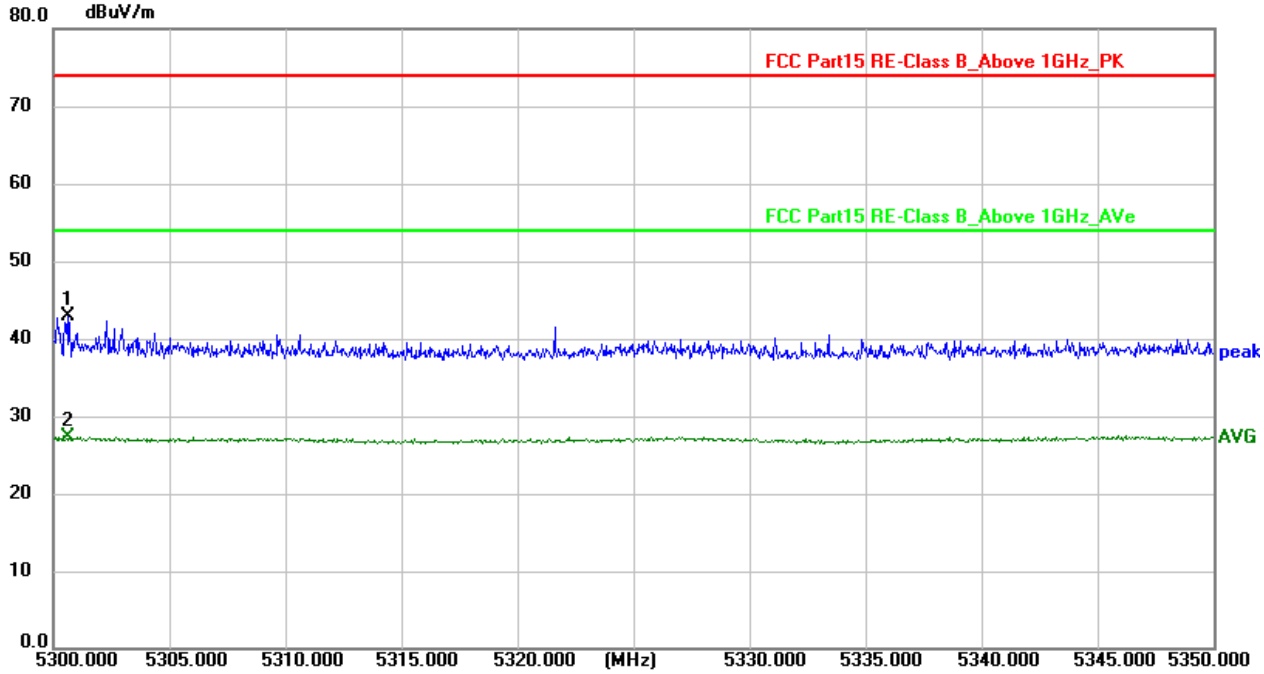


U-NII - 1

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

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

☐5180 ☐5200 ☒5240 Ant.Pol H

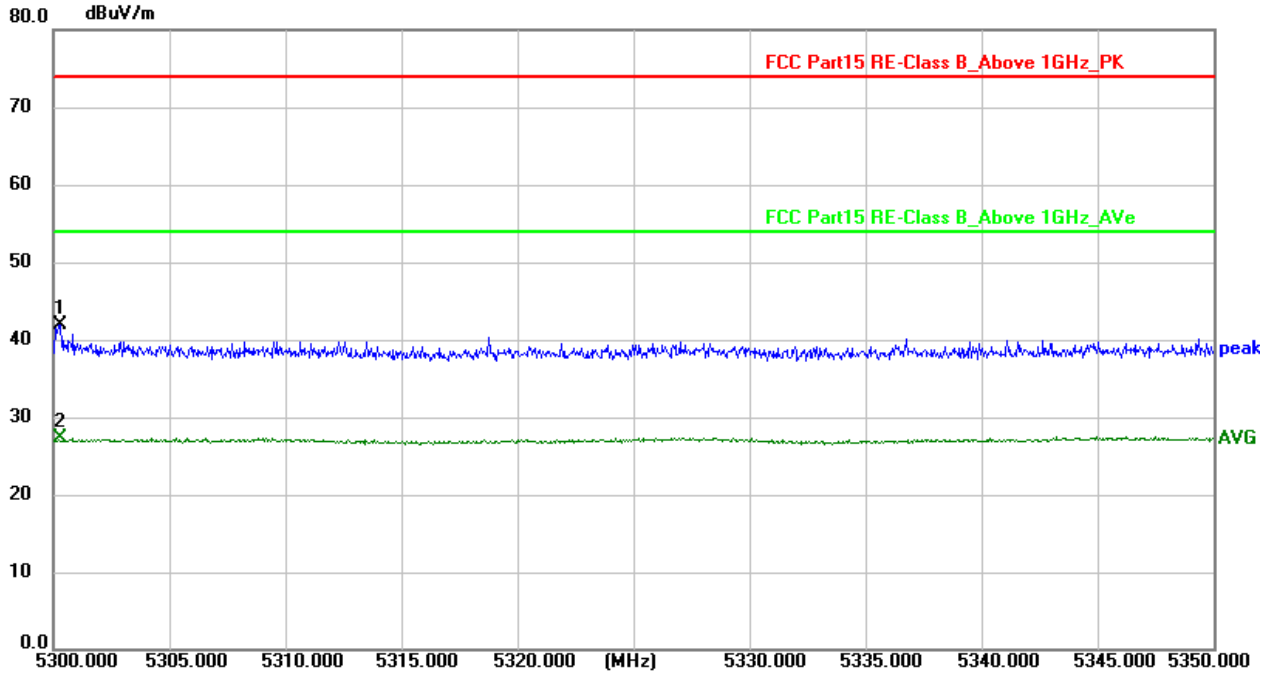


U-NII - 1

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

☒802.11ac ☐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	4679.127	70.69	-20.24	50.44	74	-23.56	Pk
Vertical	4679.127	59.26	-20.24	39.02	54	-14.98	AV
Vertical	11490.011	60.70	-8.79	51.91	68.2	-16.29	Pk
Vertical	11490.011	49.72	-8.79	40.93	54	-13.07	AV
Vertical	17235.130	56.31	-3.18	53.13	68.2	-15.07	Pk
Vertical	17235.130	44.17	-3.18	40.99	54	-13.01	AV
Horizontal	4679.102	74.59	-20.73	53.86	74	-20.14	Pk
Horizontal	4679.102	59.52	-20.73	38.79	54	-15.21	AV
Horizontal	11490.042	64.01	-8.79	55.22	68.2	-12.98	Pk
Horizontal	11490.042	49.82	-8.79	41.03	54	-12.97	AV
Horizontal	17235.143	57.21	-3.18	54.03	68.2	-14.17	Pk
Horizontal	17235.143	44.15	-3.18	40.97	54	-13.03	AV
middle Channel (5785 MHz)-Above 1G							
Vertical	4592.157	73.42	-20.42	53.00	74	-21.00	Pk
Vertical	4592.157	59.03	-20.42	38.61	54	-15.39	AV
Vertical	11570.064	64.73	-8.86	55.87	68.2	-12.33	Pk
Vertical	11570.064	49.86	-8.86	41.00	54	-13.00	AV
Vertical	17355.046	55.85	-2.52	53.33	68.2	-14.87	Pk
Vertical	17355.046	44.74	-2.52	42.22	54	-11.78	AV
Horizontal	4592.182	70.28	-20.42	49.86	74	-24.14	Pk
Horizontal	4592.182	59.78	-20.42	39.36	54	-14.64	AV
Horizontal	11570.071	61.83	-8.86	52.97	68.2	-15.23	Pk
Horizontal	11570.071	49.81	-8.86	40.95	54	-13.05	AV
Horizontal	17355.125	57.04	-2.52	54.52	68.2	-13.68	Pk
Horizontal	17355.125	44.81	-2.52	42.29	54	-11.71	AV
High Channel (5825 MHz)-Above 1G							
Vertical	6039.029	72.82	-18.93	53.89	68.2	-14.31	Pk
Vertical	6039.029	59.53	-18.93	40.60	54	-13.40	AV
Vertical	11650.041	62.06	-8.92	53.14	74	-20.86	Pk
Vertical	11650.041	49.54	-8.92	40.62	54	-13.38	AV
Vertical	17475.073	57.76	-1.86	55.90	68.2	-12.30	Pk
Vertical	17475.073	44.32	-1.86	42.46	54	-11.54	AV
Horizontal	6039.152	70.33	-18.93	51.40	68.2	-16.80	Pk
Horizontal	6039.152	60.00	-18.93	41.06	54	-12.94	AV
Horizontal	11650.145	62.47	-8.92	53.55	74	-20.45	Pk
Horizontal	11650.145	49.56	-8.92	40.64	54	-13.36	AV
Horizontal	17475.004	55.05	-1.86	53.19	68.2	-15.01	Pk
Horizontal	17475.004	44.66	-1.86	42.80	54	-11.20	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	4679.060	71.07	-20.24	50.83	74	-23.17	Pk
Vertical	4679.060	59.20	-20.24	38.96	54	-15.04	AV
Vertical	11490.122	63.93	-8.79	55.14	68.2	-13.06	Pk
Vertical	11490.122	49.59	-8.79	40.80	54	-13.20	AV
Vertical	17235.080	59.85	-3.18	56.67	68.2	-11.53	Pk
Vertical	17235.080	44.60	-3.18	41.42	54	-12.58	AV
Horizontal	4679.009	71.83	-20.24	51.58	74	-22.42	Pk
Horizontal	4679.009	59.26	-20.24	39.01	54	-14.99	AV
Horizontal	11490.008	63.84	-8.79	55.05	68.2	-13.15	Pk
Horizontal	11490.008	49.77	-8.79	40.98	54	-13.02	AV
Horizontal	17235.065	56.48	-3.18	53.30	68.2	-14.90	Pk
Horizontal	17235.065	44.18	-3.18	41.00	54	-13.00	AV
middle Channel (5785 MHz)-Above 1G							
Vertical	4592.048	72.58	-20.42	52.17	74	-21.83	Pk
Vertical	4592.048	59.18	-20.42	38.77	54	-15.23	AV
Vertical	11570.063	60.49	-8.86	51.63	68.2	-16.57	Pk
Vertical	11570.063	49.05	-8.86	40.19	54	-13.81	AV
Vertical	17355.195	55.01	-2.52	52.49	68.2	-15.71	Pk
Vertical	17355.195	44.37	-2.52	41.85	54	-12.15	AV
Horizontal	4592.168	73.71	-20.42	53.30	74	-20.70	Pk
Horizontal	4592.168	59.82	-20.42	39.41	54	-14.59	AV
Horizontal	11570.146	63.31	-8.86	54.45	68.2	-13.75	Pk
Horizontal	11570.146	49.58	-8.86	40.72	54	-13.28	AV
Horizontal	17355.039	57.83	-2.52	55.31	68.2	-12.89	Pk
Horizontal	17355.039	44.24	-2.52	41.72	54	-12.28	AV
High Channel (5825 MHz)-Above 1G							
Vertical	6039.088	71.06	-18.93	52.13	68.2	-16.07	Pk
Vertical	6039.088	59.79	-18.93	40.85	54	-13.15	AV
Vertical	11650.198	60.73	-8.92	51.81	74	-22.19	Pk
Vertical	11650.198	49.05	-8.92	40.13	54	-13.87	AV
Vertical	17475.169	57.30	-1.86	55.44	68.2	-12.76	Pk
Vertical	17475.169	44.64	-1.86	42.78	54	-11.22	AV
Horizontal	6039.058	71.58	-18.93	52.64	68.2	-15.56	Pk
Horizontal	6039.058	59.08	-18.93	40.15	54	-13.85	AV
Horizontal	11650.126	63.93	-8.92	55.01	74	-18.99	Pk
Horizontal	11650.126	49.51	-8.92	40.59	54	-13.41	AV
Horizontal	17475.057	58.77	-1.86	56.91	68.2	-11.29	Pk
Horizontal	17475.057	44.81	-1.86	42.95	54	-11.05	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	4679.008	71.33	-20.24	51.09	74	-22.91	Pk
Vertical	4679.008	59.75	-20.24	39.51	54	-14.49	AV
Vertical	11510.121	61.76	-8.81	52.95	74	-21.05	Pk
Vertical	11510.121	49.94	-8.81	41.13	54	-12.87	AV
Vertical	17265.033	58.29	-3.01	55.28	68.2	-12.92	Pk
Vertical	17265.033	44.15	-3.01	41.14	54	-12.86	AV
Horizontal	4679.014	72.98	-20.24	52.74	74	-21.26	Pk
Horizontal	4679.014	59.53	-20.24	39.28	54	-14.72	AV
Horizontal	11510.033	61.51	-8.81	52.70	74	-21.30	Pk
Horizontal	11510.033	49.17	-8.81	40.36	54	-13.64	AV
Horizontal	17265.115	58.16	-3.01	55.15	68.2	-13.05	Pk
Horizontal	17265.115	44.12	-3.01	41.11	54	-12.89	AV
middle Channel (5795 MHz)-Above 1G							
Vertical	6039.096	70.05	-18.93	51.12	68.2	-17.08	Pk
Vertical	6039.096	59.48	-18.93	40.55	54	-13.45	AV
Vertical	11590.174	61.23	-8.87	52.36	74	-21.64	Pk
Vertical	11590.174	49.20	-8.87	40.33	54	-13.67	AV
Vertical	17385.073	59.19	-2.35	56.84	68.2	-11.36	Pk
Vertical	17385.073	44.68	-2.35	42.33	54	-11.67	AV
Horizontal	6039.029	71.23	-18.93	52.29	68.2	-15.91	Pk
Horizontal	6039.029	59.65	-18.93	40.72	54	-13.28	AV
Horizontal	11590.075	63.26	-8.87	54.39	74	-19.61	Pk
Horizontal	11590.075	49.11	-8.87	40.24	54	-13.76	AV
Horizontal	17385.186	59.62	-2.35	57.27	68.2	-10.93	Pk
Horizontal	17385.186	44.24	-2.35	41.89	54	-12.11	AV

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

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

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G							
Vertical	4679.086	73.81	-20.24	53.57	74	-20.43	Pk
Vertical	4679.086	59.50	-20.24	39.26	54	-14.74	AV
Vertical	11490.042	63.10	-8.79	54.31	68.2	-13.89	Pk
Vertical	11490.042	49.53	-8.79	40.74	54	-13.26	AV
Vertical	17235.047	55.77	-3.18	52.59	68.2	-15.61	Pk
Vertical	17235.047	44.39	-3.18	41.21	54	-12.79	AV
Horizontal	4679.123	71.86	-20.24	51.62	74	-22.38	Pk
Horizontal	4679.123	59.05	-20.24	38.81	54	-15.19	AV
Horizontal	11490.175	61.89	-8.79	53.10	68.2	-15.10	Pk
Horizontal	11490.175	49.15	-8.79	40.36	54	-13.64	AV
Horizontal	17235.109	57.24	-3.18	54.06	68.2	-14.14	Pk
Horizontal	17235.109	44.91	-3.18	41.73	54	-12.27	AV
middle Channel (5785 MHz)-Above 1G							
Vertical	4592.081	72.69	-20.42	52.28	74	-21.72	Pk
Vertical	4592.081	59.34	-20.42	38.93	54	-15.07	AV
Vertical	11570.025	64.90	-8.86	56.04	68.2	-12.16	Pk
Vertical	11570.025	49.67	-8.86	40.81	54	-13.19	AV
Vertical	17355.060	59.12	-2.52	56.60	68.2	-11.60	Pk
Vertical	17355.060	44.84	-2.52	42.32	54	-11.68	AV
Horizontal	4592.197	71.60	-20.42	51.19	74	-22.81	Pk
Horizontal	4592.197	59.10	-20.42	38.68	54	-15.32	AV
Horizontal	11570.135	61.89	-8.86	53.03	68.2	-15.17	Pk
Horizontal	11570.135	49.44	-8.86	40.58	54	-13.42	AV
Horizontal	17355.070	55.08	-2.52	52.56	68.2	-15.64	Pk
Horizontal	17355.070	44.88	-2.52	42.36	54	-11.64	AV
High Channel (5825 MHz)-Above 1G							
Vertical	6039.092	74.96	-18.93	56.03	68.2	-12.17	Pk
Vertical	6039.092	59.91	-18.93	40.98	54	-13.02	AV
Vertical	11650.104	63.00	-8.92	54.08	74	-19.92	Pk
Vertical	11650.104	49.20	-8.92	40.28	54	-13.72	AV
Vertical	17475.194	58.87	-1.86	57.01	68.2	-11.19	Pk
Vertical	17475.194	44.75	-1.86	42.89	54	-11.11	AV
Horizontal	6039.034	73.28	-18.93	54.35	68.2	-13.85	Pk
Horizontal	6039.034	59.32	-18.93	40.38	54	-13.62	AV
Horizontal	11650.197	62.94	-8.92	54.02	74	-19.98	Pk
Horizontal	11650.197	49.76	-8.92	40.84	54	-13.16	AV
Horizontal	17475.054	56.05	-1.86	54.19	68.2	-14.01	Pk
Horizontal	17475.054	44.56	-1.86	42.70	54	-11.30	AV

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

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

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5755 MHz)-Above 1G							
Vertical	4679.036	72.76	-20.24	52.52	74	-21.48	Pk
Vertical	4679.036	59.61	-20.24	39.37	54	-14.63	AV
Vertical	11510.061	64.74	-8.81	55.93	74	-18.07	Pk
Vertical	11510.061	49.80	-8.81	40.99	54	-13.01	AV
Vertical	17265.021	55.73	-3.01	52.72	68.2	-15.48	Pk
Vertical	17265.021	44.85	-3.01	41.84	54	-12.16	AV
Horizontal	4679.124	73.70	-20.24	53.46	74	-20.54	Pk
Horizontal	4679.124	59.59	-20.24	39.35	54	-14.65	AV
Horizontal	11510.156	64.24	-8.81	55.43	74	-18.57	Pk
Horizontal	11510.156	49.88	-8.81	41.07	54	-12.93	AV
Horizontal	17265.065	58.60	-3.01	55.59	68.2	-12.61	Pk
Horizontal	17265.065	44.52	-3.01	41.51	54	-12.49	AV
middle Channel (5795 MHz)-Above 1G							
Vertical	6039.068	70.37	-18.93	51.44	68.2	-16.76	Pk
Vertical	6039.068	59.88	-18.93	40.95	54	-13.05	AV
Vertical	11590.063	61.66	-8.87	52.79	74	-21.21	Pk
Vertical	11590.063	49.63	-8.87	40.76	54	-13.24	AV
Vertical	17385.046	57.83	-2.35	55.48	68.2	-12.72	Pk
Vertical	17385.046	44.76	-2.35	42.41	54	-11.59	AV
Horizontal	6039.089	74.02	-18.93	55.09	68.2	-13.11	Pk
Horizontal	6039.089	59.38	-18.93	40.45	54	-13.55	AV
Horizontal	11590.057	62.74	-8.87	53.87	74	-20.13	Pk
Horizontal	11590.057	49.44	-8.87	40.57	54	-13.43	AV
Horizontal	17385.192	55.87	-2.35	53.52	68.2	-14.68	Pk
Horizontal	17385.192	44.58	-2.35	42.23	54	-11.77	AV

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

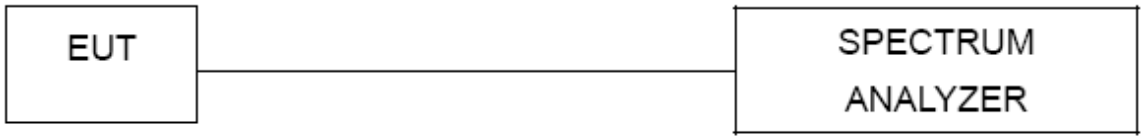
Test Mode:	TX(5.8G) - 802.11ac-HT80

Polar	Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
(5775 MHz)-Above 1G							
Vertical	4679.200	71.40	-20.24	51.16	74	-22.84	Pk
Vertical	4679.200	59.70	-20.24	39.46	54	-14.54	AV
Vertical	11550.061	60.72	-8.84	51.88	74	-22.12	Pk
Vertical	11550.061	49.67	-8.84	40.83	54	-13.17	AV
Vertical	17325.122	59.99	-2.68	57.31	68.2	-10.89	Pk
Vertical	17325.122	44.60	-2.68	41.92	54	-12.08	AV
Horizontal	4679.154	72.52	-20.24	52.28	74	-21.72	Pk
Horizontal	4679.154	59.39	-20.24	39.15	54	-14.85	AV
Horizontal	11550.022	63.88	-8.84	55.04	74	-18.96	Pk
Horizontal	11550.022	49.36	-8.84	40.52	54	-13.48	AV
Horizontal	17325.008	58.33	-2.68	55.65	68.2	-12.55	Pk
Horizontal	17325.008	44.82	-2.68	42.14	54	-11.86	AV

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

7. Power Spectral Density Test

7.1 Block Diagram Of Test Setup



7.2 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.

7.3 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.

7.4 EUT Operating Conditions

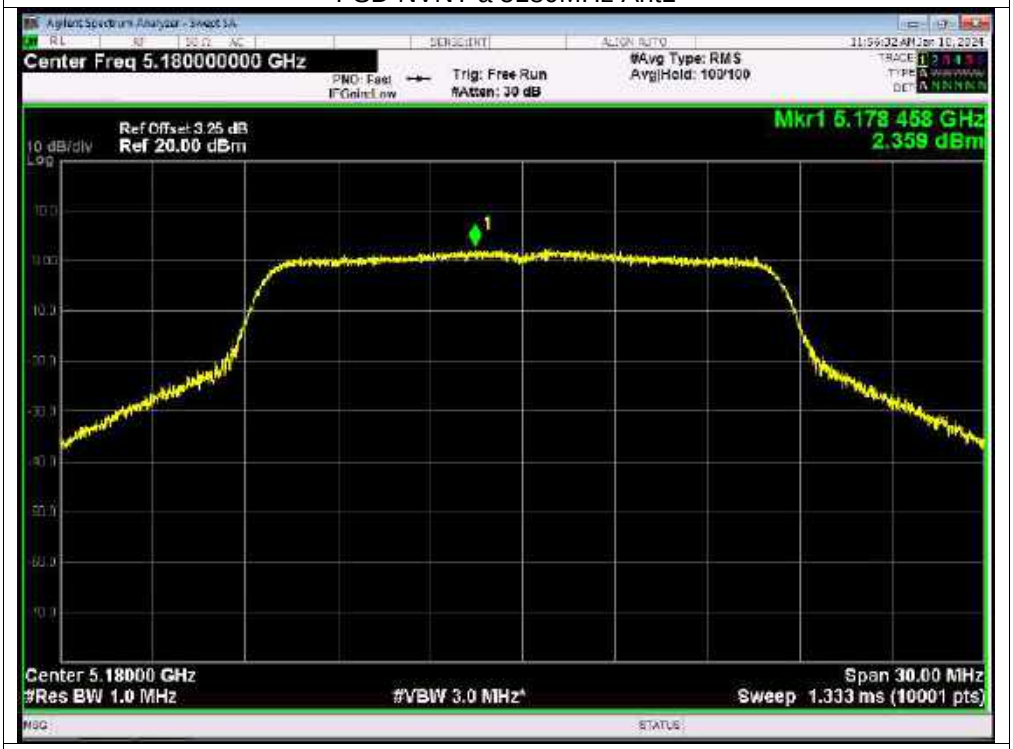
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

7.5 Test Result

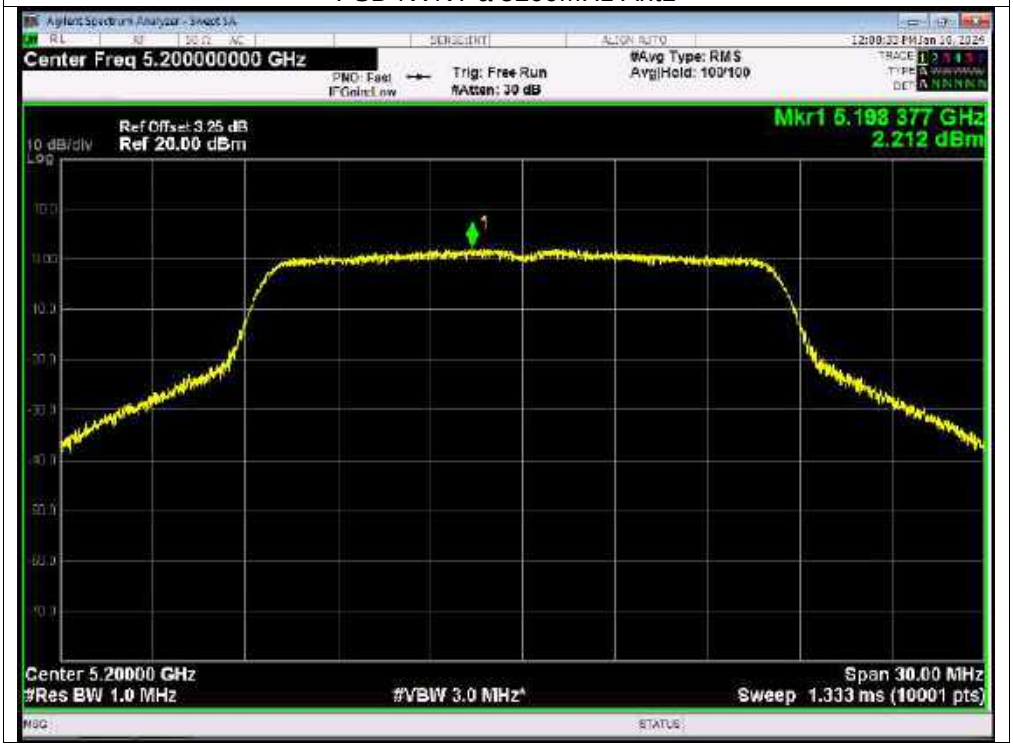
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	(5180-5240MHz)		

Condition	Mode	Frequency (MHz)	Conducted PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5180	2.36	11	Pass
NVNT	a	5200	2.21	11	Pass
NVNT	a	5240	2.38	11	Pass
NVNT	n20	5180	0.87	11	Pass
NVNT	n20	5200	1.01	11	Pass
NVNT	n20	5240	0.25	11	Pass
NVNT	n40	5190	-2.95	11	Pass
NVNT	n40	5230	-4.23	11	Pass
NVNT	ac20	5180	1.10	11	Pass
NVNT	ac20	5200	0.91	11	Pass
NVNT	ac20	5240	-0.29	11	Pass
NVNT	ac40	5190	-3.3	11	Pass
NVNT	ac40	5230	-3.04	11	Pass
NVNT	ac80	5210	-6.46	11	Pass

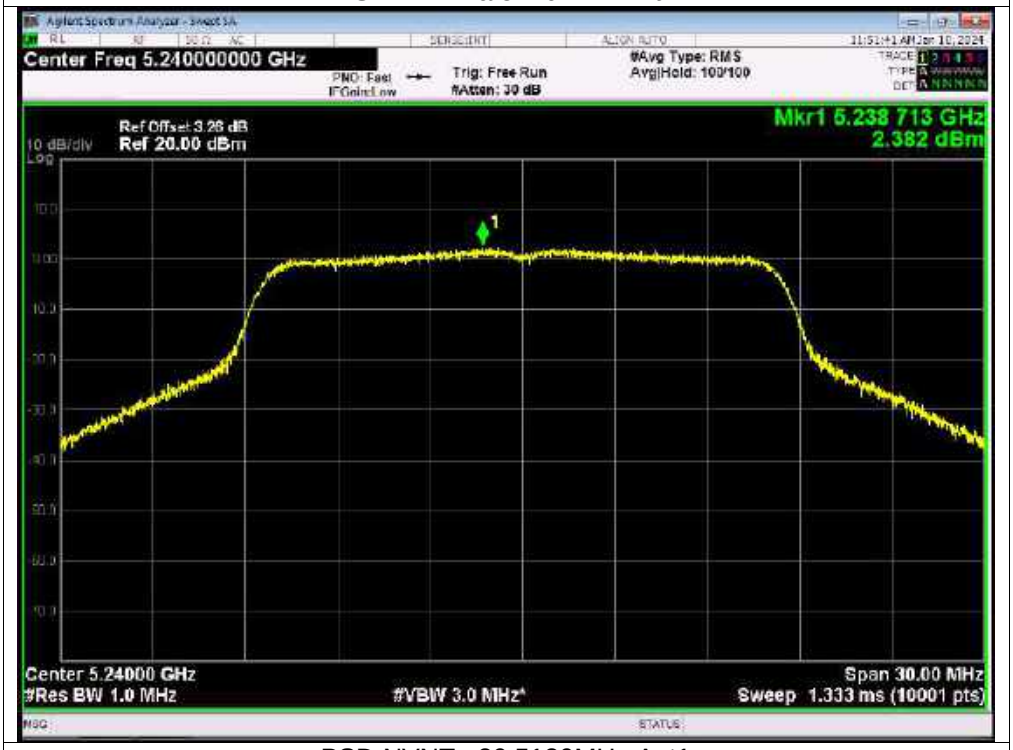
Test Graphs
PSD NVNT a 5180MHz Ant1



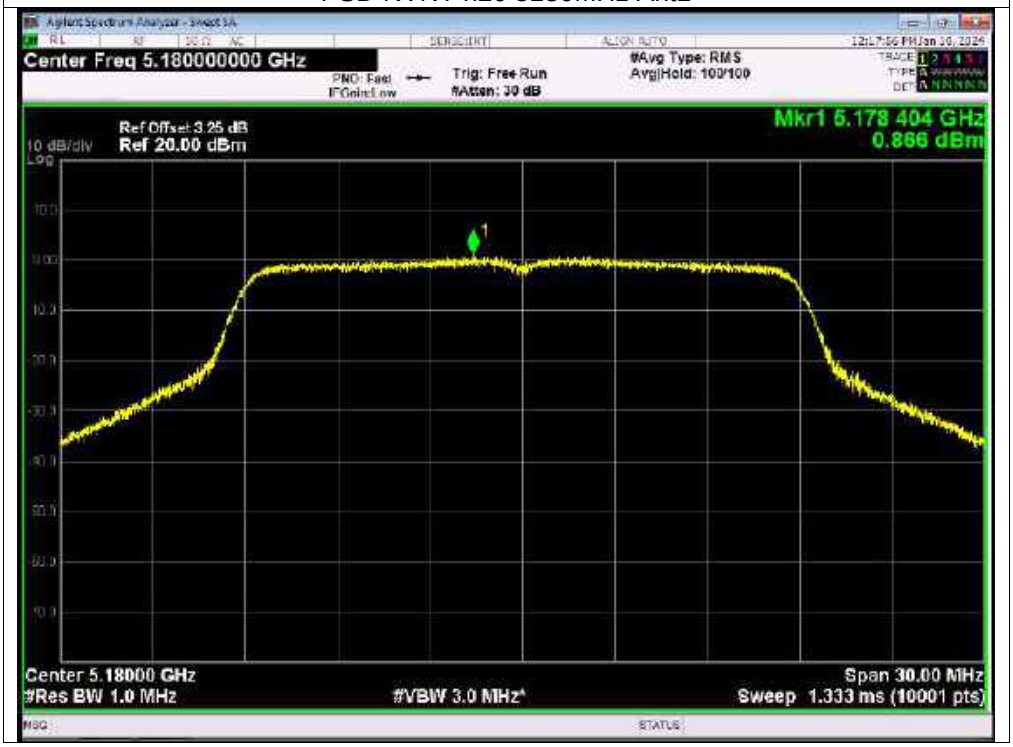
PSD NVNT a 5200MHz Ant1



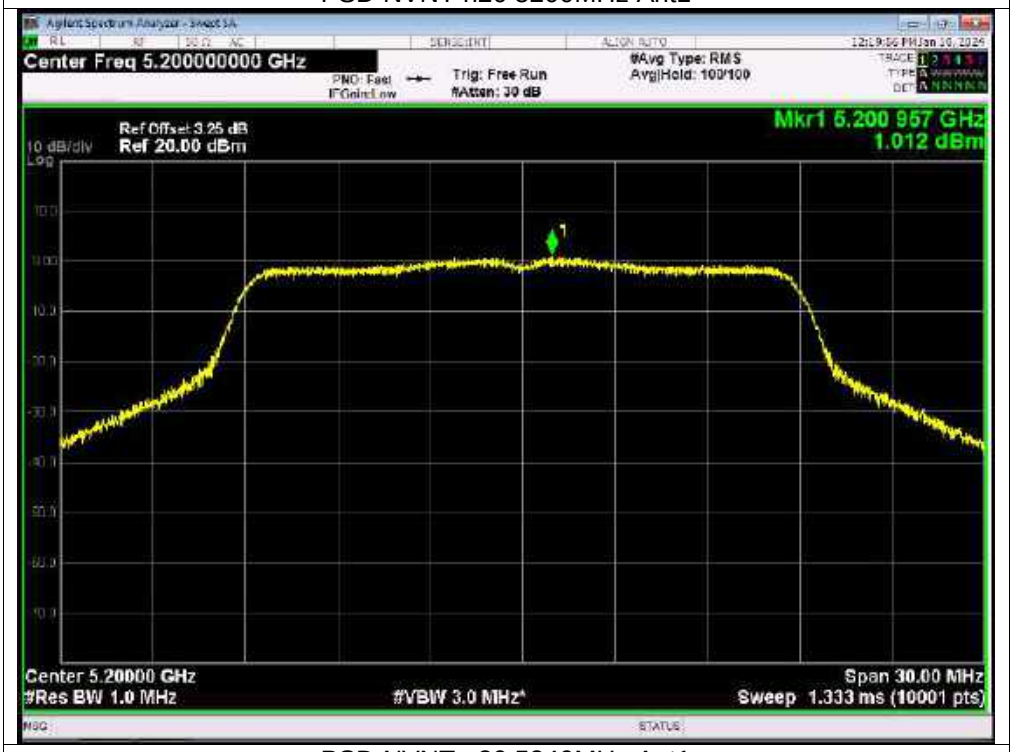
PSD NVNT a 5240MHz Ant1



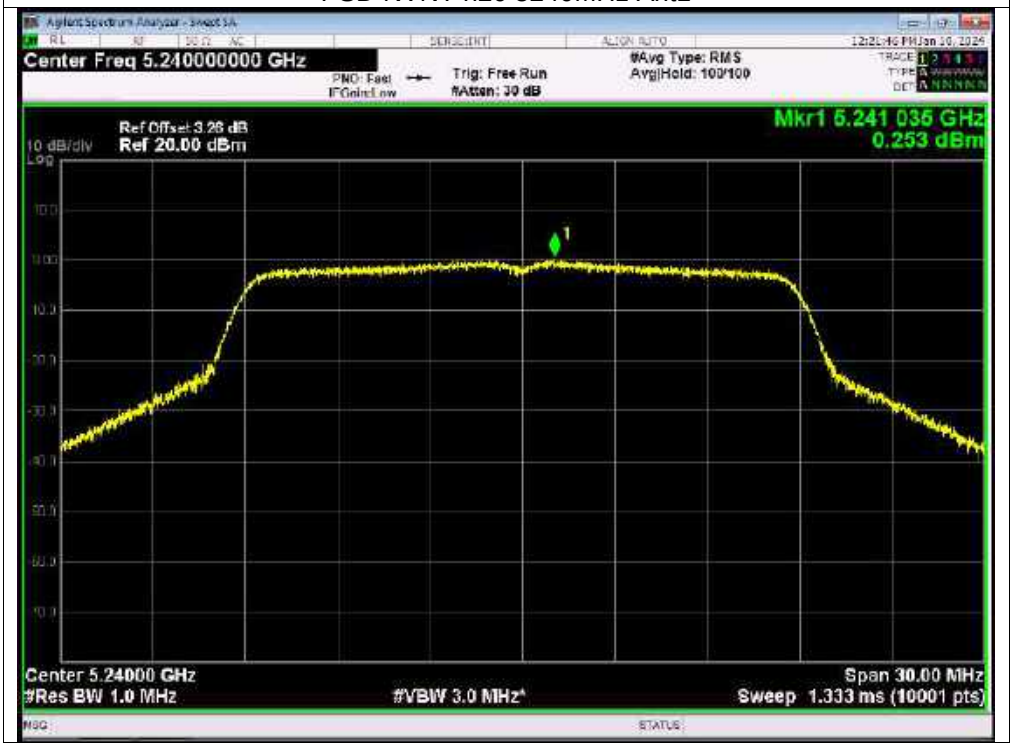
PSD NVNT n20 5180MHz Ant1



PSD NVNT n20 5200MHz Ant1



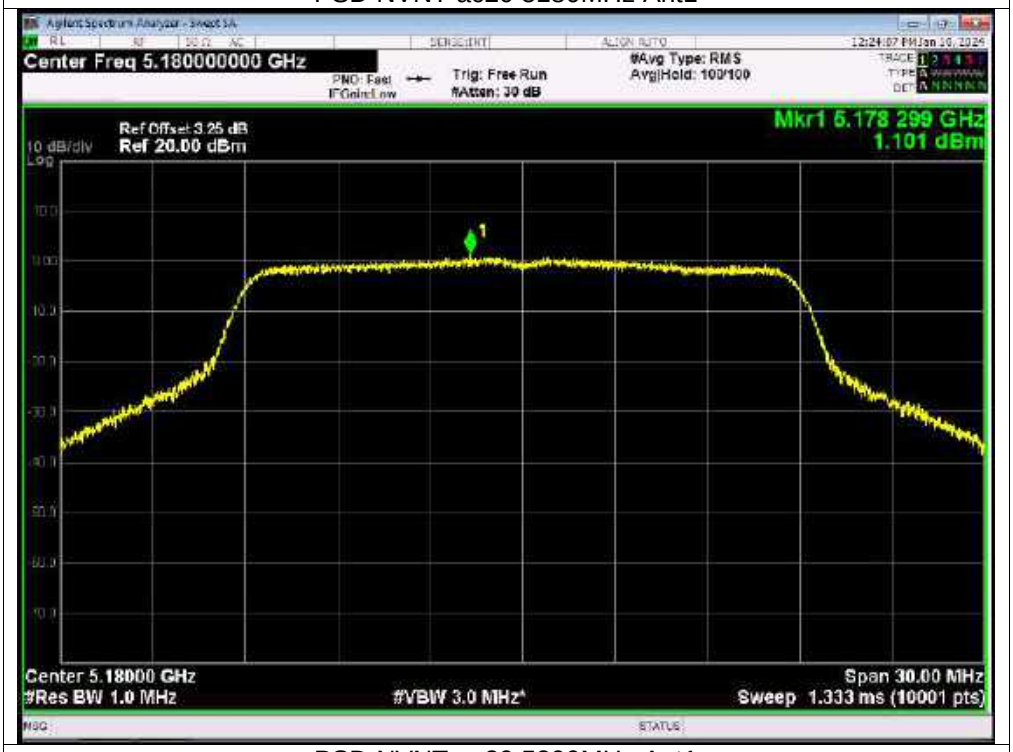
PSD NVNT n20 5240MHz Ant1



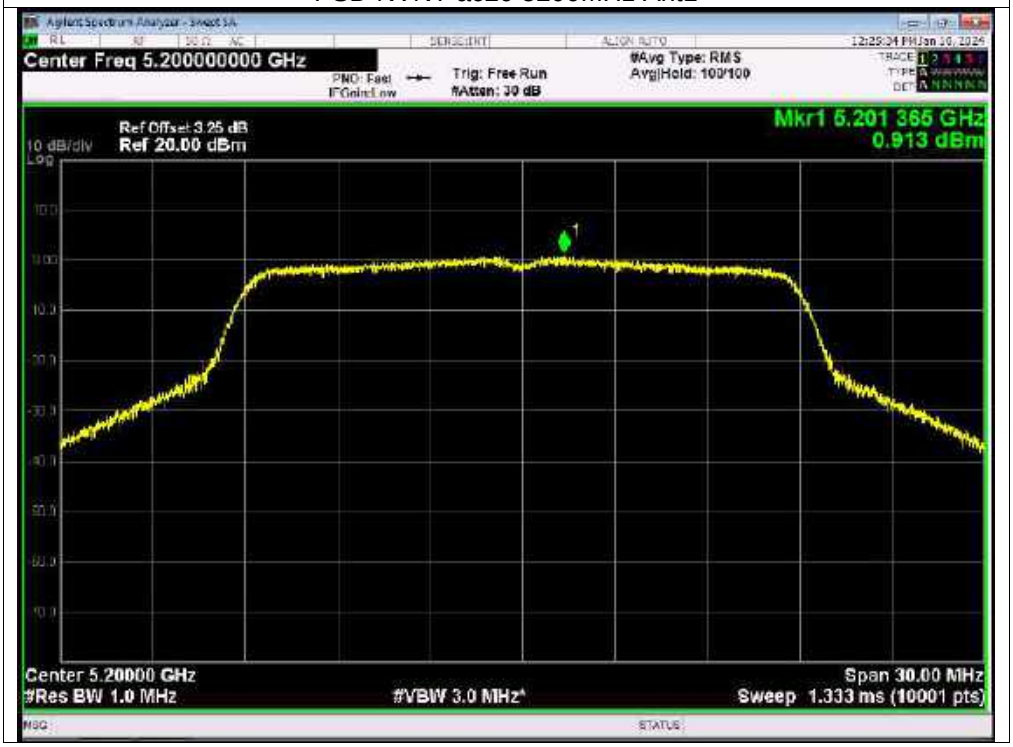
PSD NVNT n40 5190MHz Ant1

PSD NVNT n40 5230MHz Ant1

PSD NVNT ac20 5180MHz Ant1



PSD NVNT ac20 5200MHz Ant1



PSD NVNT ac20 5240MHz Ant1

PSD NVNT ac40 5190MHz Ant1

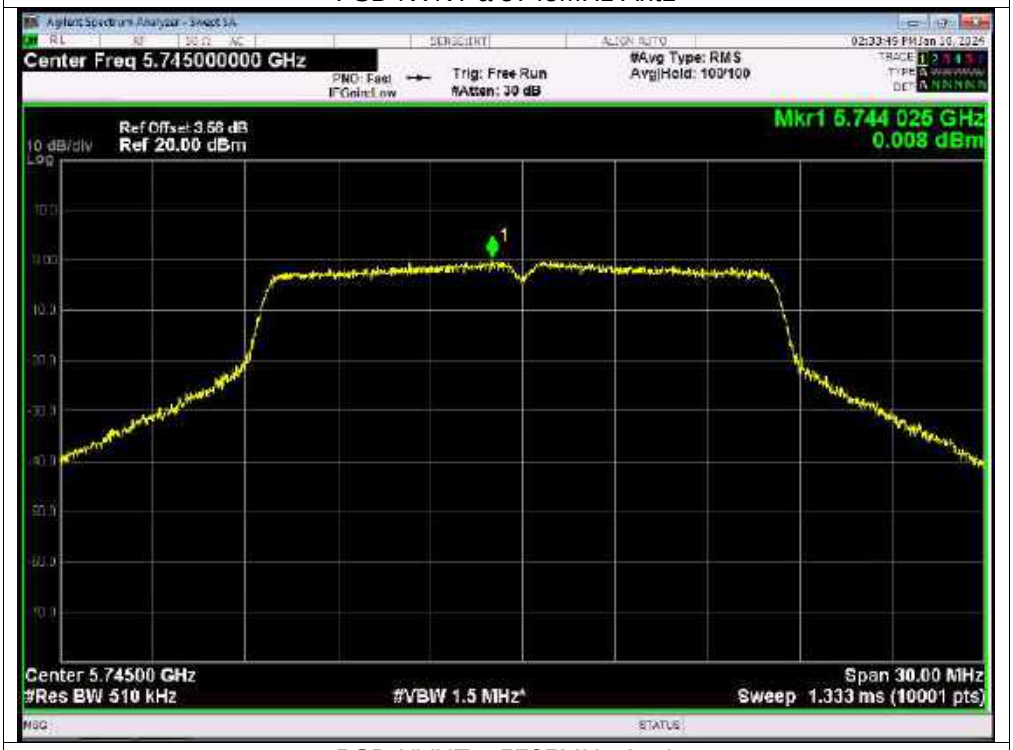
PSD NVNT ac40 5230MHz Ant1

PSD NVNT ac80 5210MHz Ant1

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

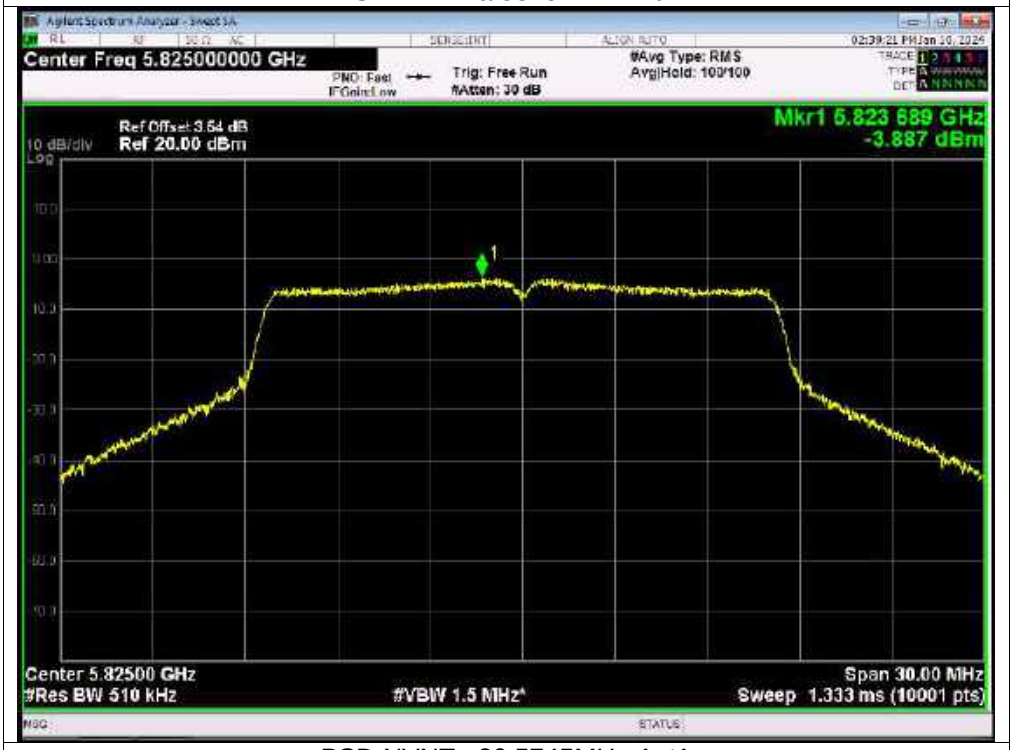
Condition	Mode	Frequency (MHz)	Power Spectral Density (dBm/500kHz)	Limit(dBm/500kHz)	Verdict
NVNT	a	5745	0.01	30	Pass
NVNT	a	5785	-0.66	30	Pass
NVNT	a	5825	-3.89	30	Pass
NVNT	n20	5745	-2.01	30	Pass
NVNT	n20	5785	-2.6	30	Pass
NVNT	n20	5825	-3.19	30	Pass
NVNT	n40	5755	-5.37	30	Pass
NVNT	n40	5795	-6.47	30	Pass
NVNT	ac20	5745	-1.65	30	Pass
NVNT	ac20	5785	-2.63	30	Pass
NVNT	ac20	5825	-3.52	30	Pass
NVNT	ac40	5755	-5.59	30	Pass
NVNT	ac40	5795	-6.49	30	Pass
NVNT	ac80	5775	-10.34	30	Pass

Test Graphs
PSD NVNT a 5745MHz Ant1



PSD NVNT a 5785MHz Ant1

PSD NVNT a 5825MHz Ant1

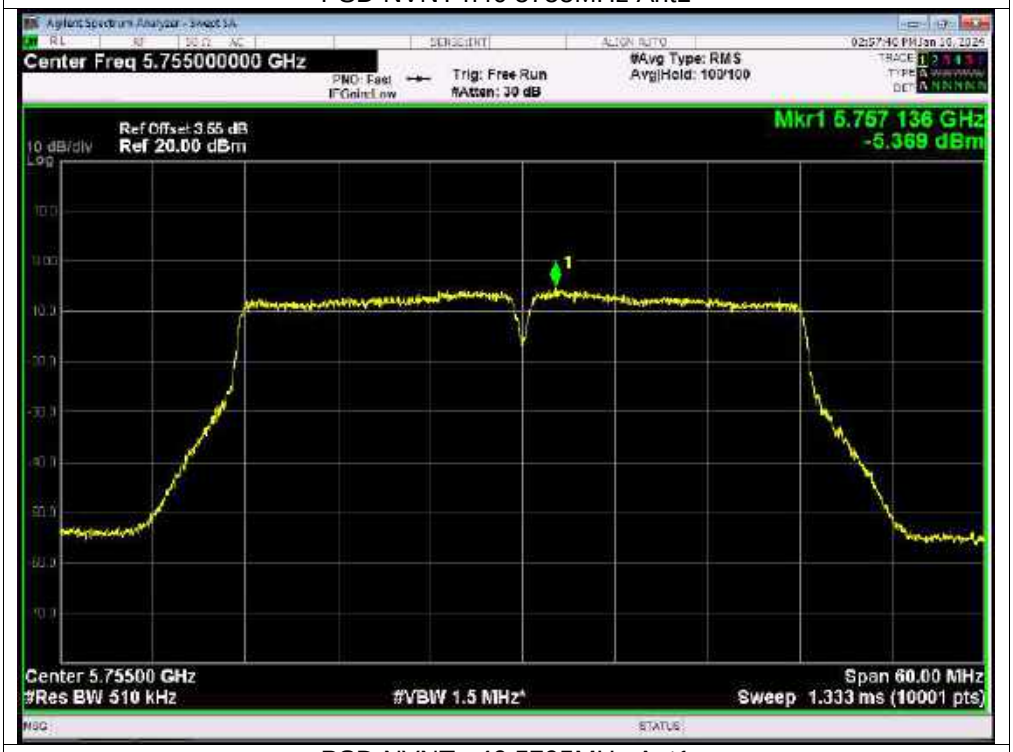


PSD NVNT n20 5745MHz Ant1

PSD NVNT n20 5785MHz Ant1

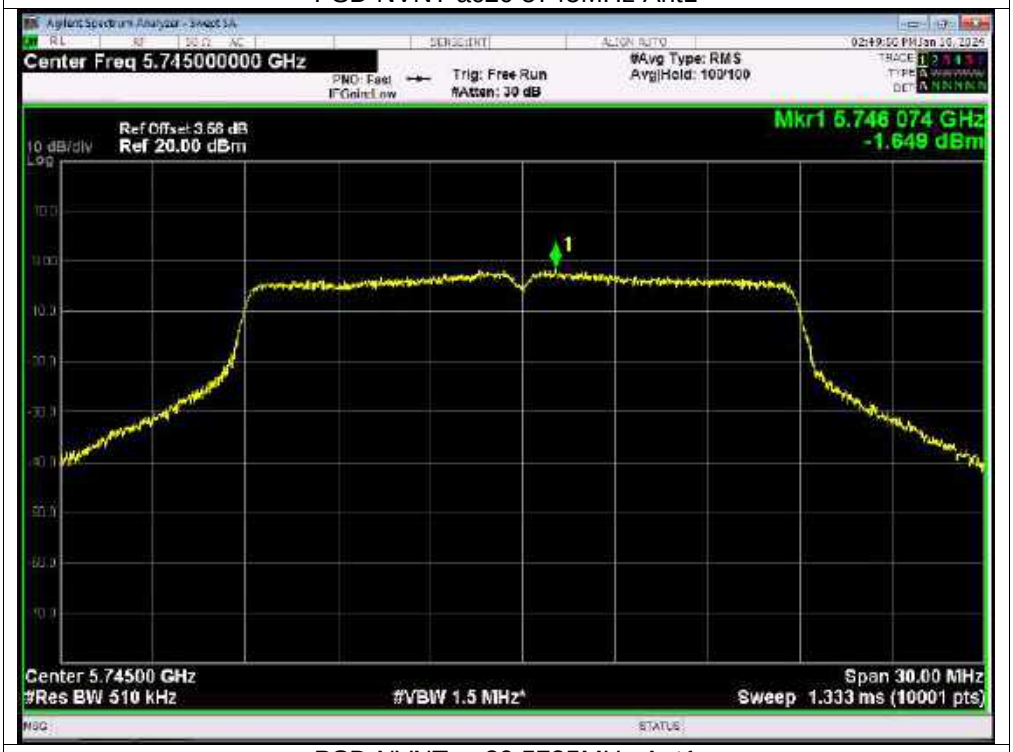
PSD NVNT n20 5825MHz Ant1

PSD NVNT n40 5755MHz Ant1



PSD NVNT n40 5795MHz Ant1

PSD NVNT ac20 5745MHz Ant1



PSD NVNT ac20 5785MHz Ant1

PSD NVNT ac20 5825MHz Ant1

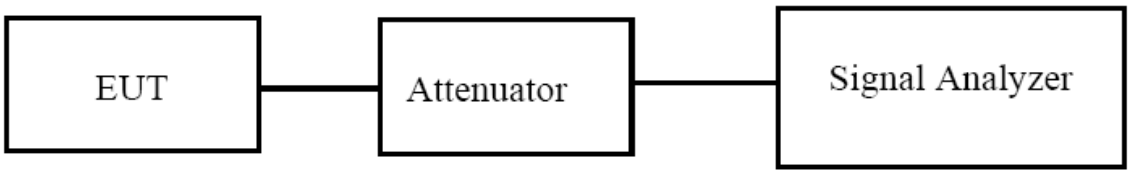
PSD NVNT ac40 5755MHz Ant1

PSD NVNT ac40 5795MHz Ant1

PSD NVNT ac80 5775MHz Ant1

8. 26dB & 6dB & 99% Emission Bandwidth

8.1 Block Diagram Of Test Setup



8.2 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.

8.3 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.

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

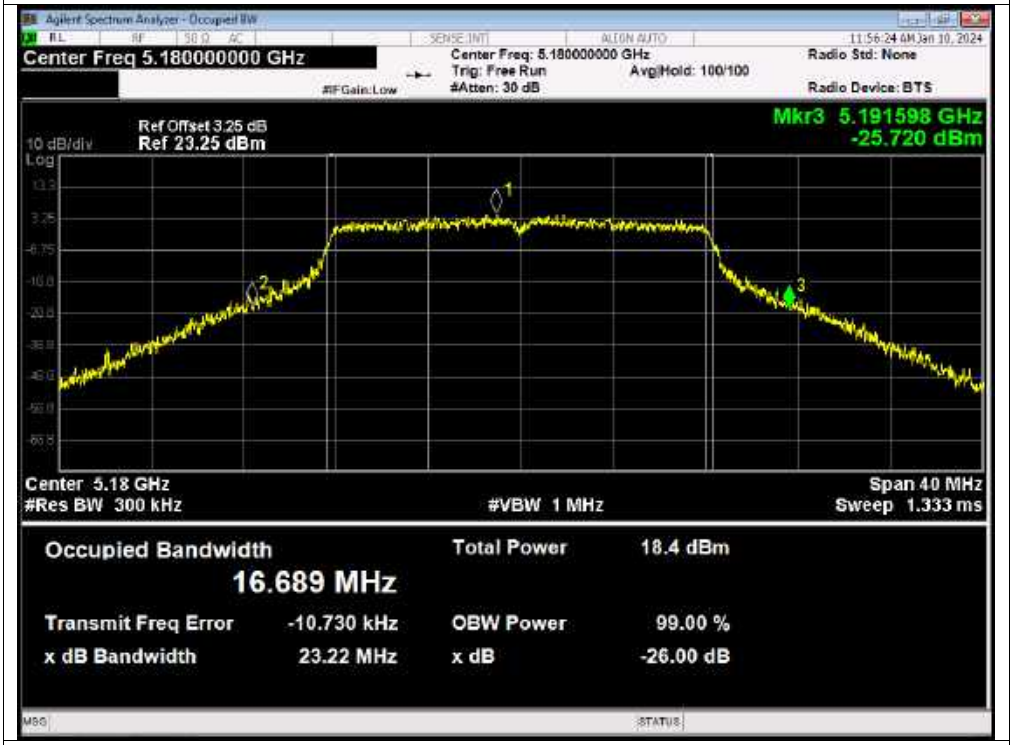
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	(5180-5240MHz)		

Condition	Mode	Frequency (MHz)	-26 dB Bandwidth (MHz)	Verdict
NVNT	a	5180	23.217	Pass
NVNT	a	5200	22.439	Pass
NVNT	a	5240	22.563	Pass
NVNT	n20	5180	23.759	Pass
NVNT	n20	5200	23.278	Pass
NVNT	n20	5240	24.028	Pass
NVNT	n40	5190	41.062	Pass
NVNT	n40	5230	41.734	Pass
NVNT	ac20	5180	24.546	Pass
NVNT	ac20	5200	24.779	Pass
NVNT	ac20	5240	23.714	Pass
NVNT	ac40	5190	41.797	Pass
NVNT	ac40	5230	41.534	Pass
NVNT	ac80	5210	83.197	Pass

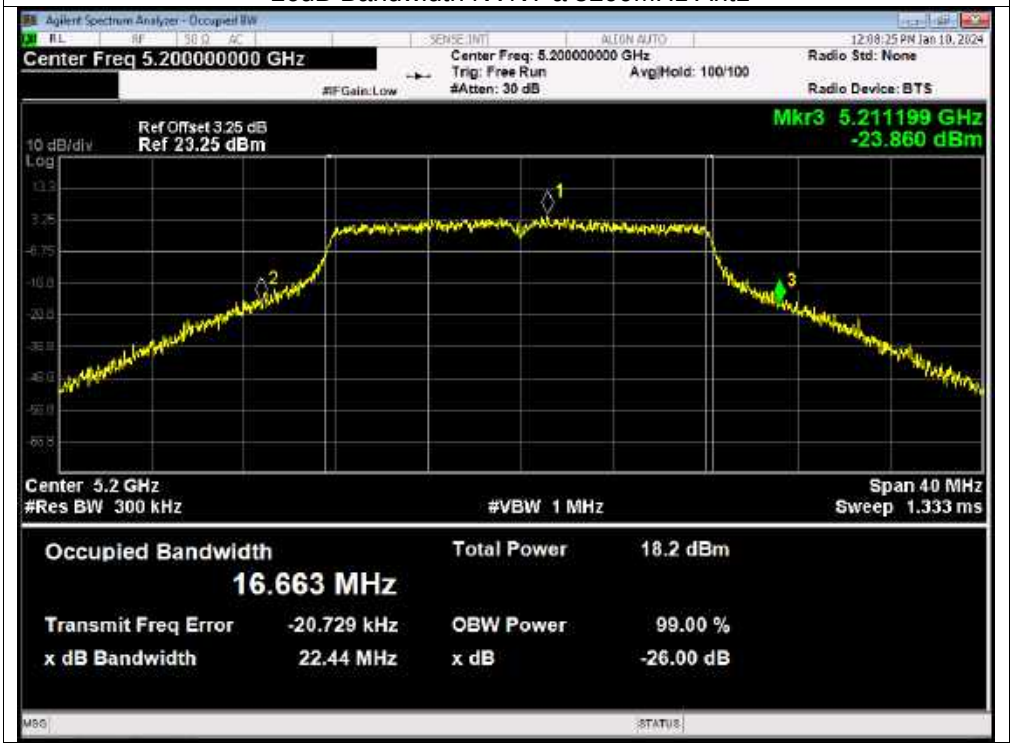
Condition	Mode	Frequency (MHz)	99% OBW (MHz)
NVNT	a	5180	16.558
NVNT	a	5200	16.543
NVNT	a	5240	16.597
NVNT	n20	5180	17.766
NVNT	n20	5200	17.751
NVNT	n20	5240	17.781
NVNT	n40	5190	36.26
NVNT	n40	5230	36.319
NVNT	ac20	5180	17.763
NVNT	ac20	5200	17.746
NVNT	ac20	5240	17.792
NVNT	ac40	5190	36.291
NVNT	ac40	5230	36.266
NVNT	ac80	5210	75.679

Test Graphs

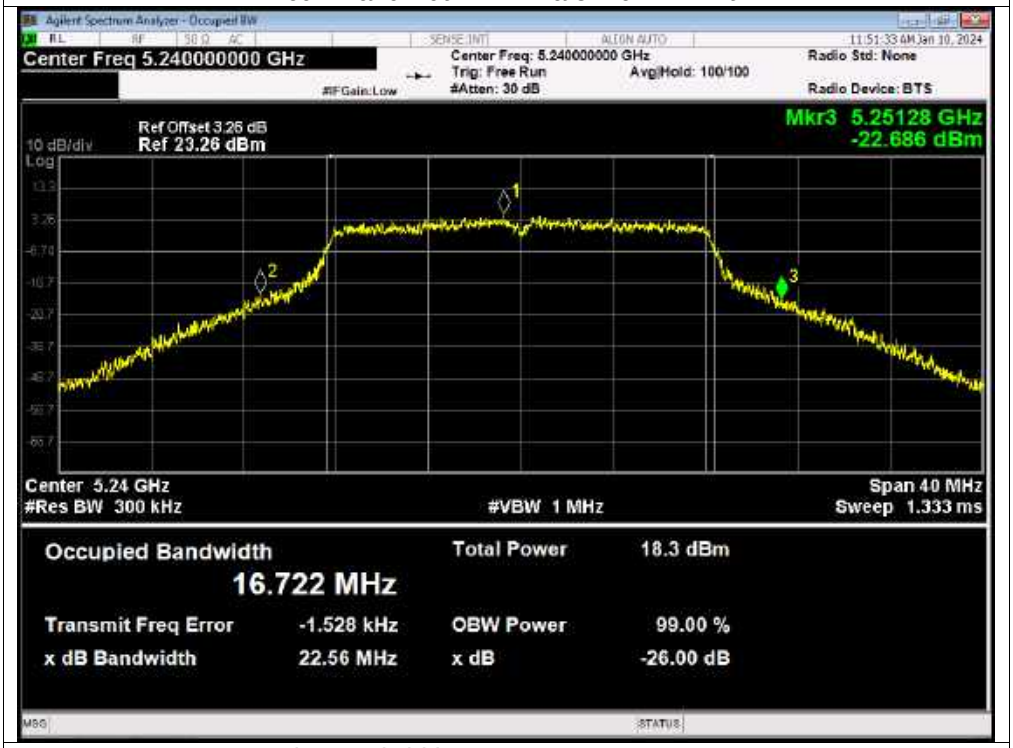
-26dB Bandwidth NVNT a 5180MHz Ant1



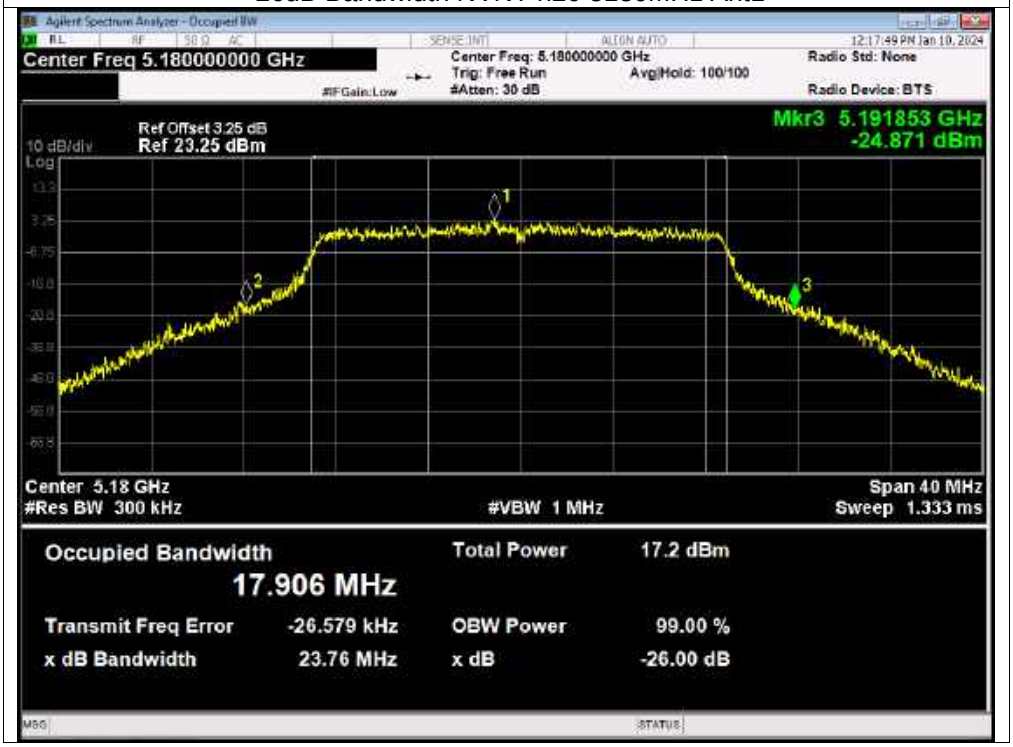
-26dB Bandwidth NVNT a 5200MHz Ant1



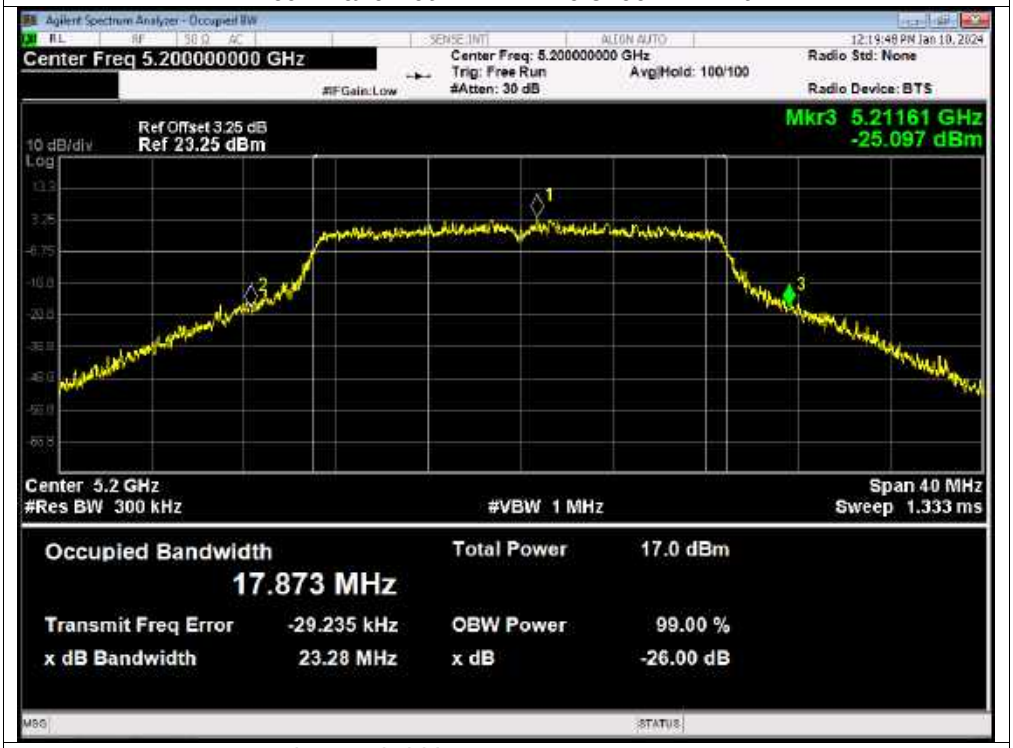
-26dB Bandwidth NVNT a 5240MHz Ant1



-26dB Bandwidth NVNT n20 5180MHz Ant1

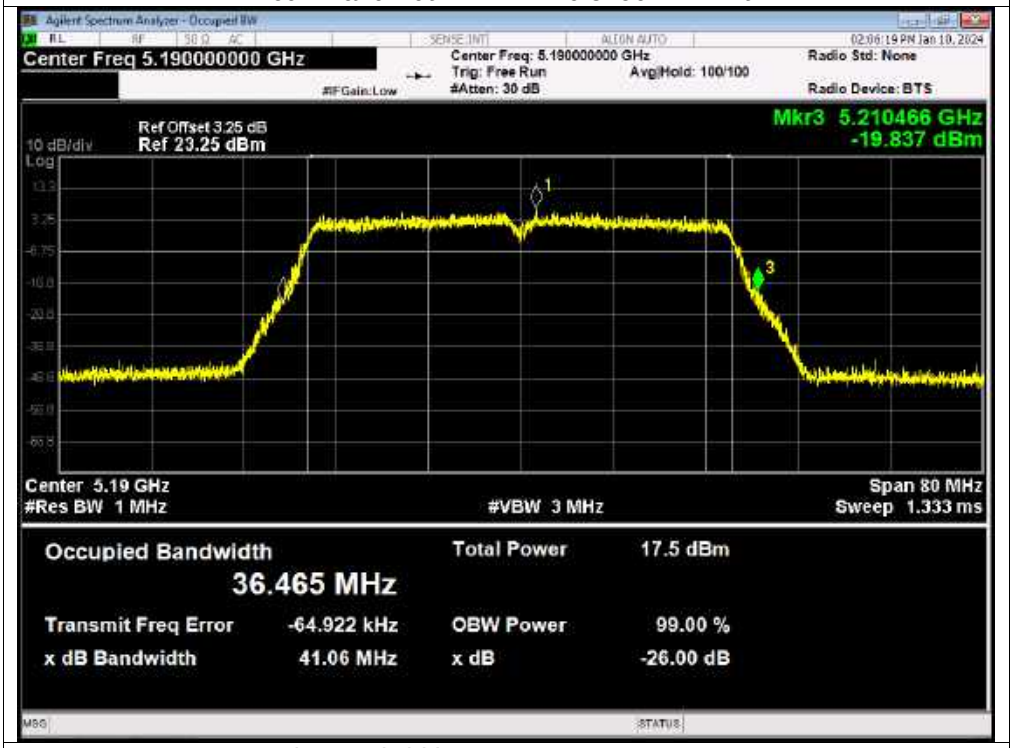


-26dB Bandwidth NVNT n20 5200MHz Ant1

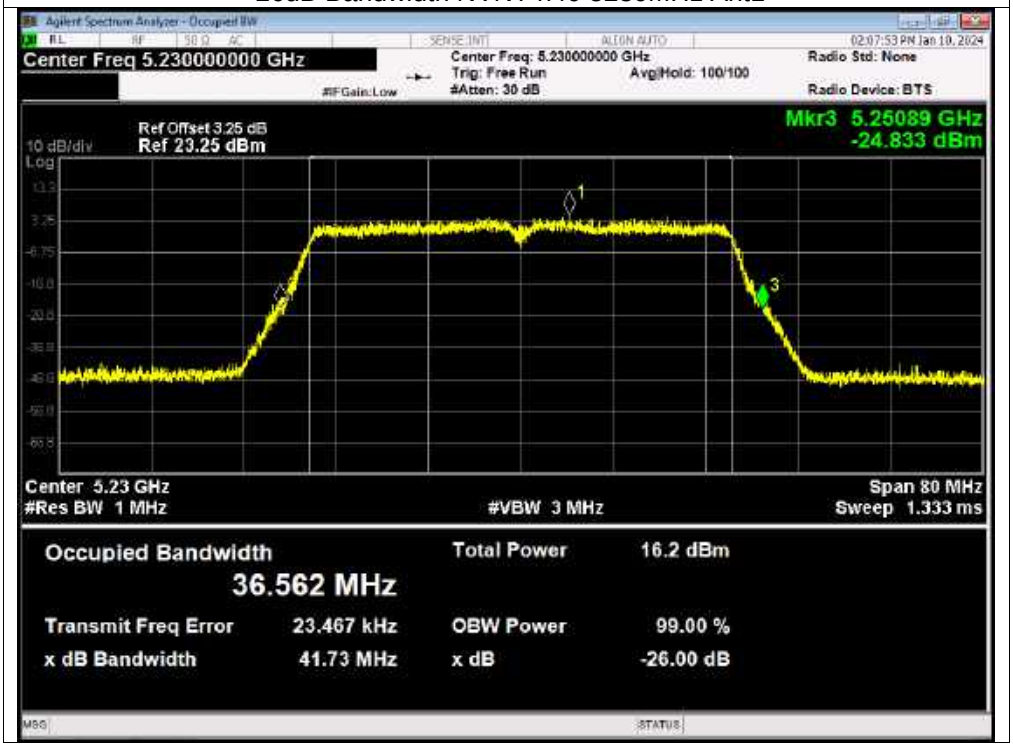


-26dB Bandwidth NVNT n20 5240MHz Ant1

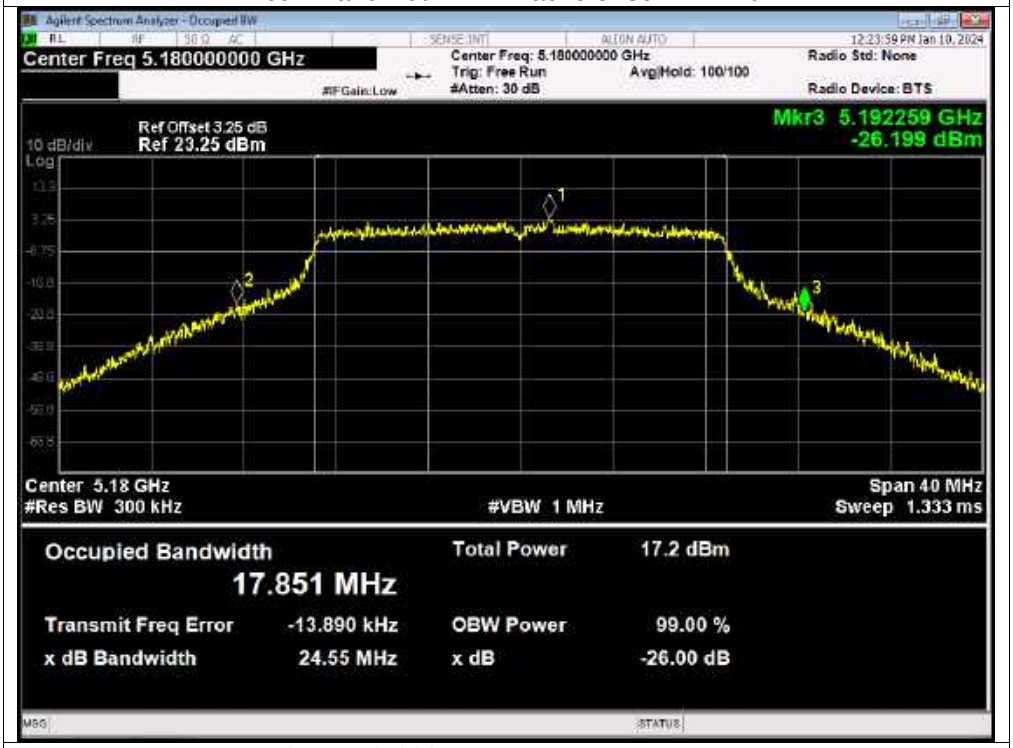
-26dB Bandwidth NVNT n40 5190MHz Ant1



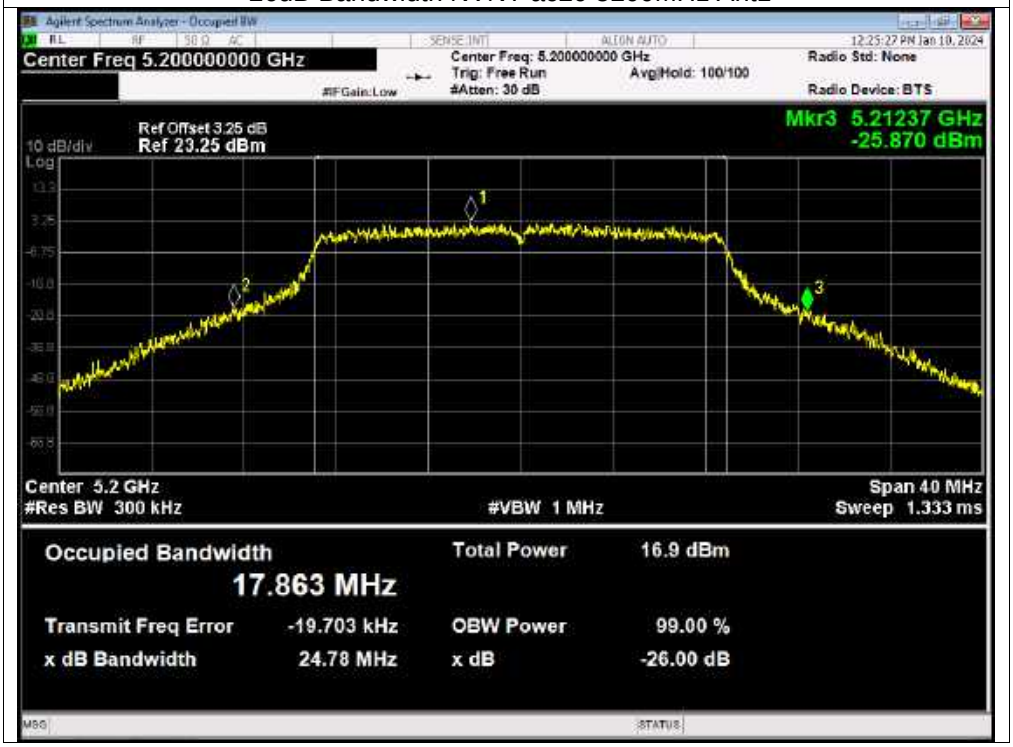
-26dB Bandwidth NVNT n40 5230MHz Ant1



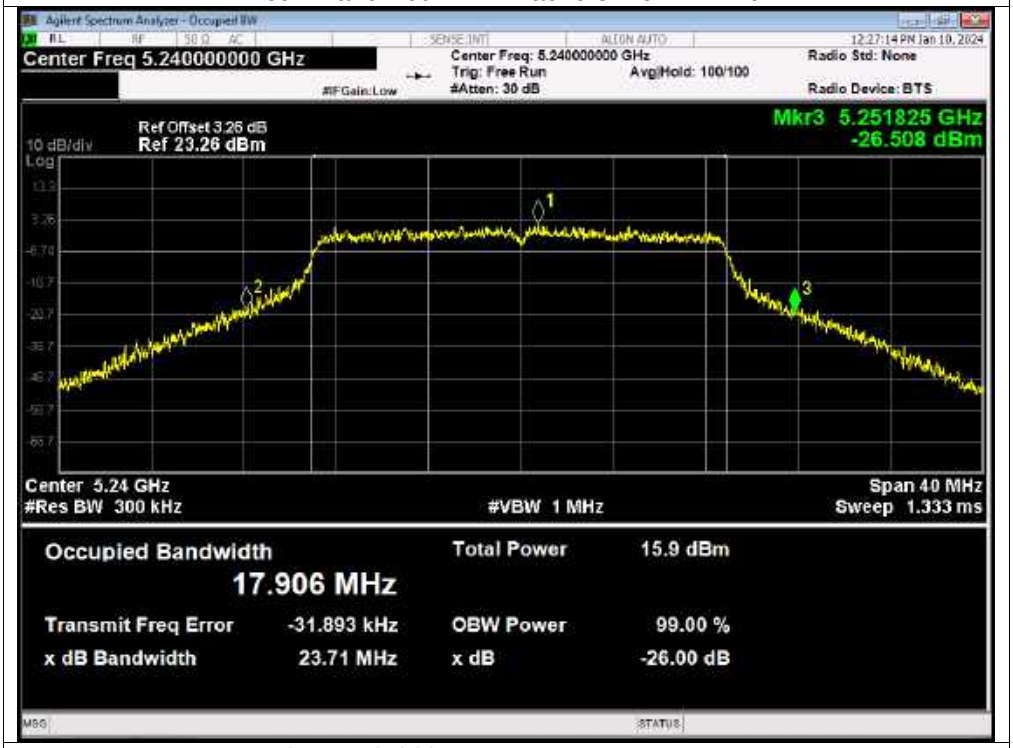
-26dB Bandwidth NVNT ac20 5180MHz Ant1



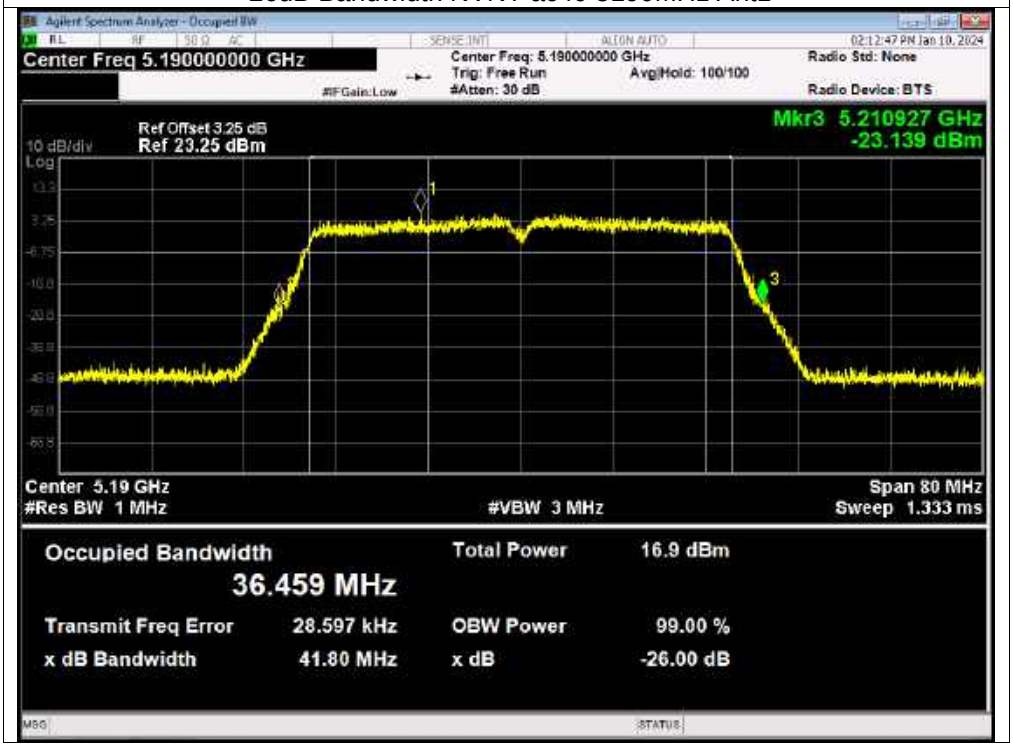
-26dB Bandwidth NVNT ac20 5200MHz Ant1



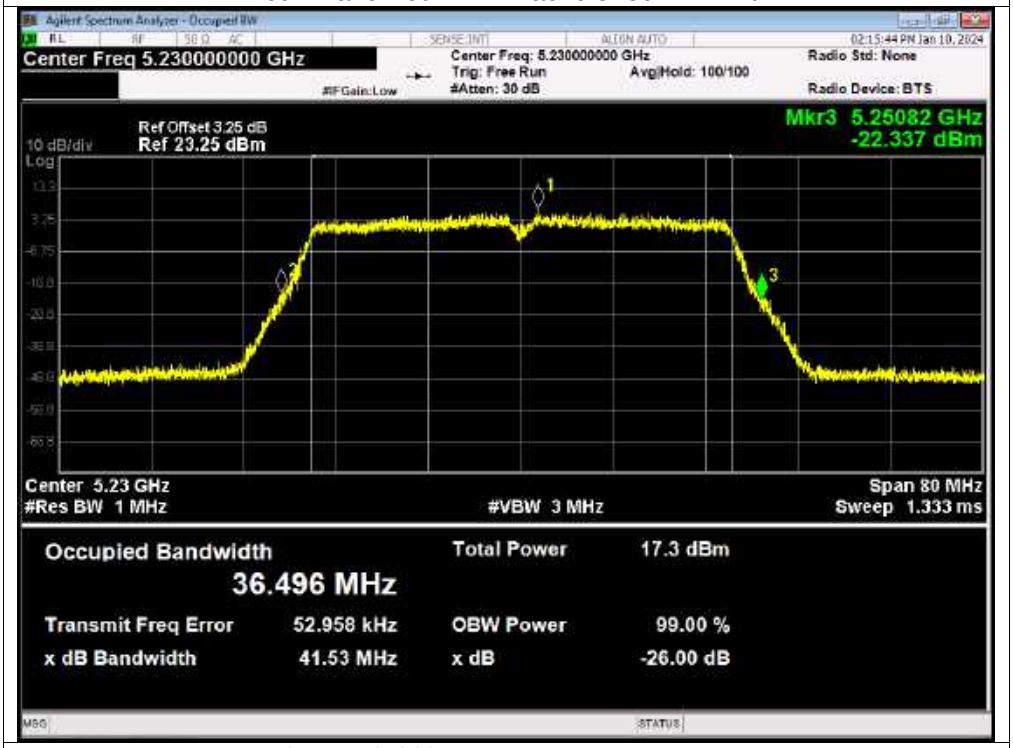
-26dB Bandwidth NVNT ac20 5240MHz Ant1



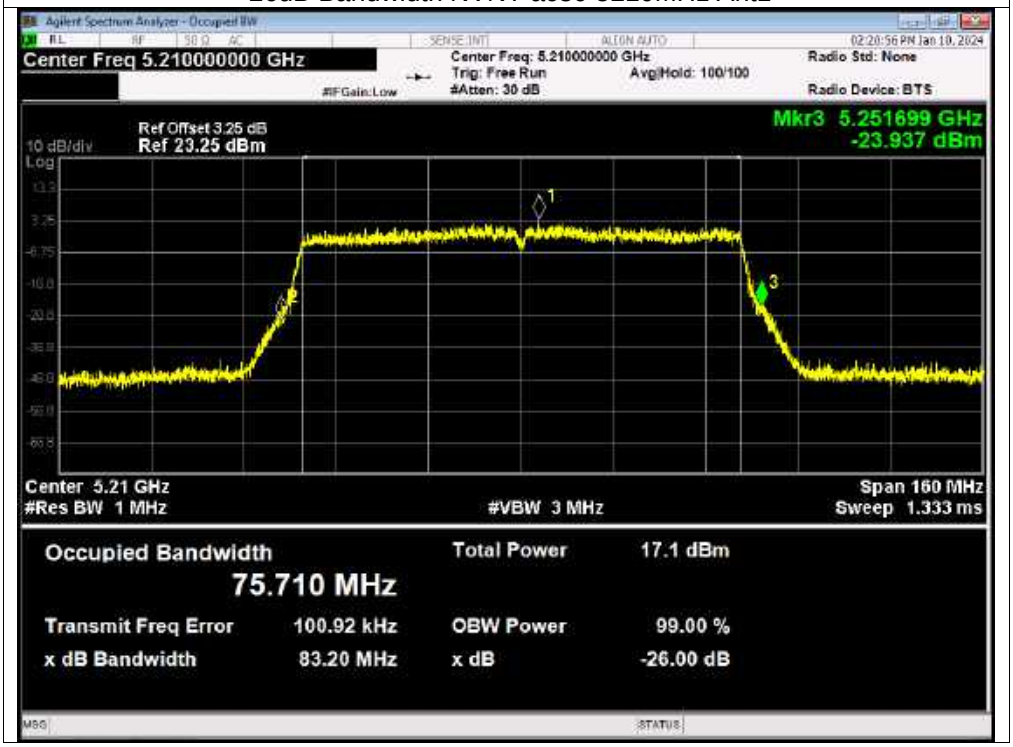
-26dB Bandwidth NVNT ac40 5190MHz Ant1



-26dB Bandwidth NVNT ac40 5230MHz Ant1

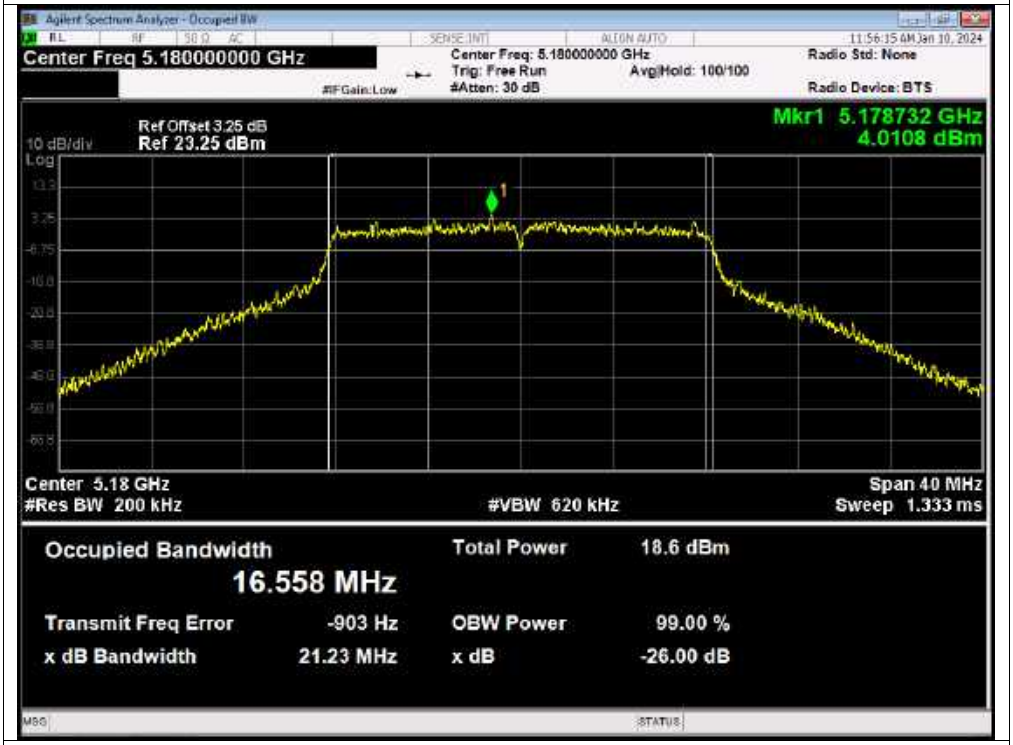


-26dB Bandwidth NVNT ac80 5210MHz Ant1

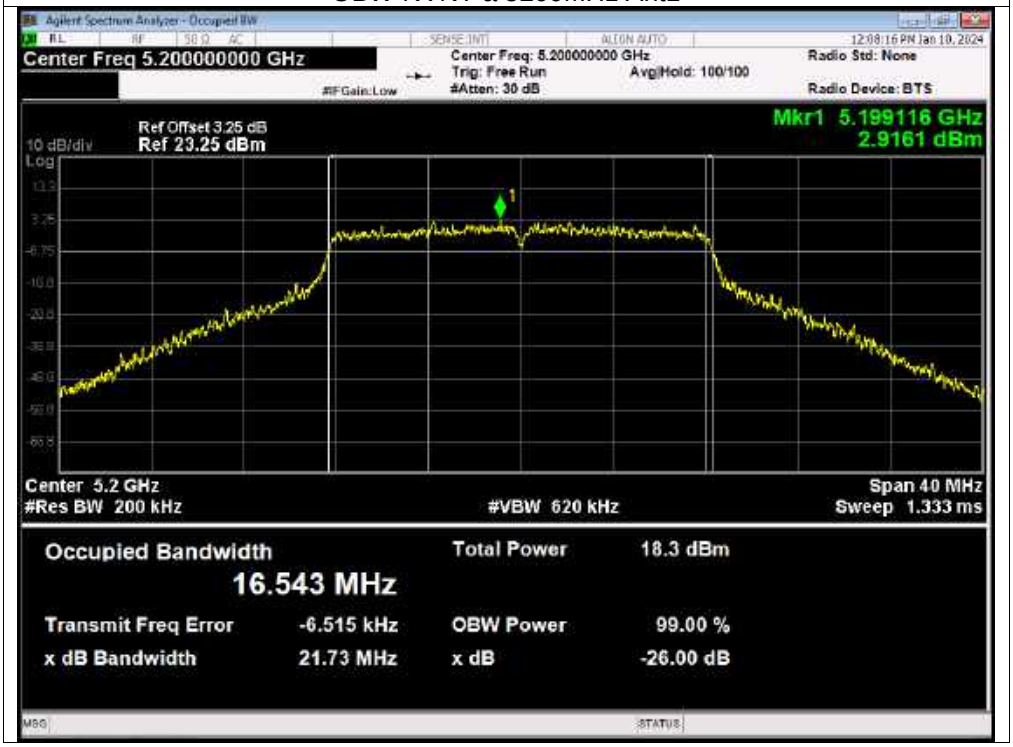


Test Graphs

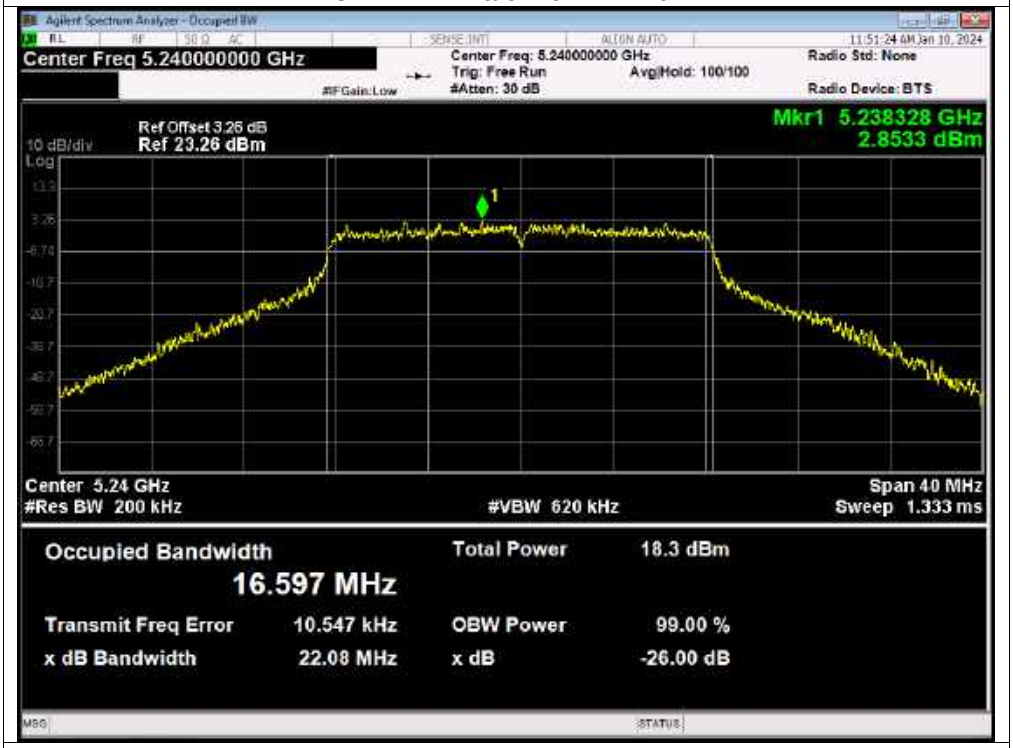
OBW NVNT a 5180MHz Ant1



OBW NVNT a 5200MHz Ant1

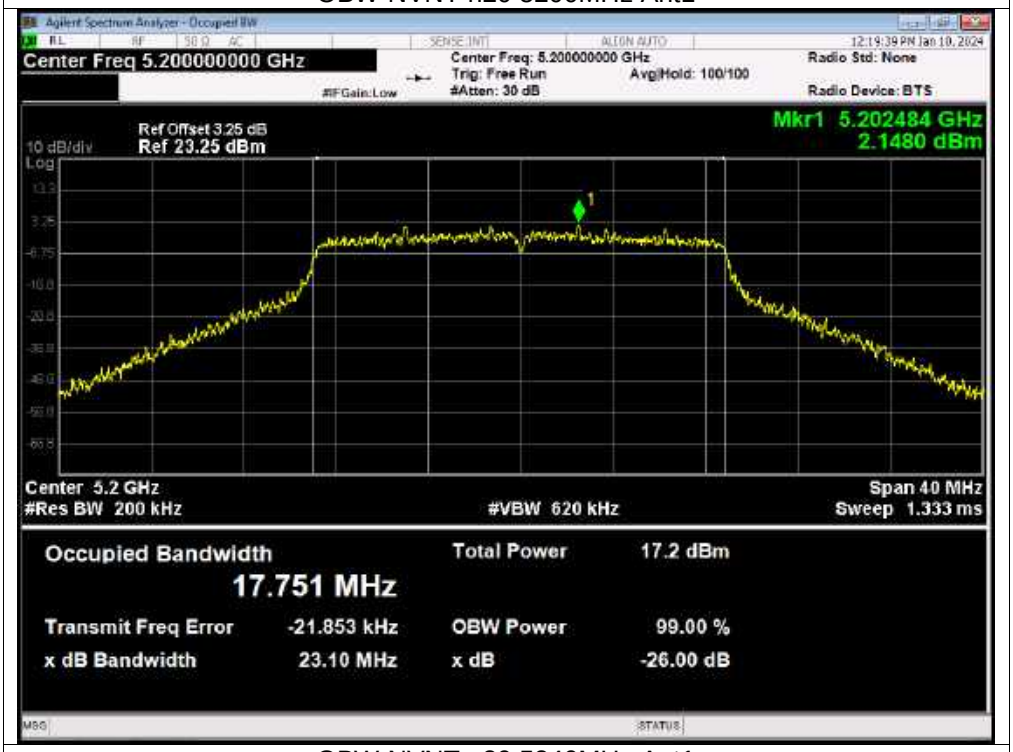


OBW NVNT a 5240MHz Ant1

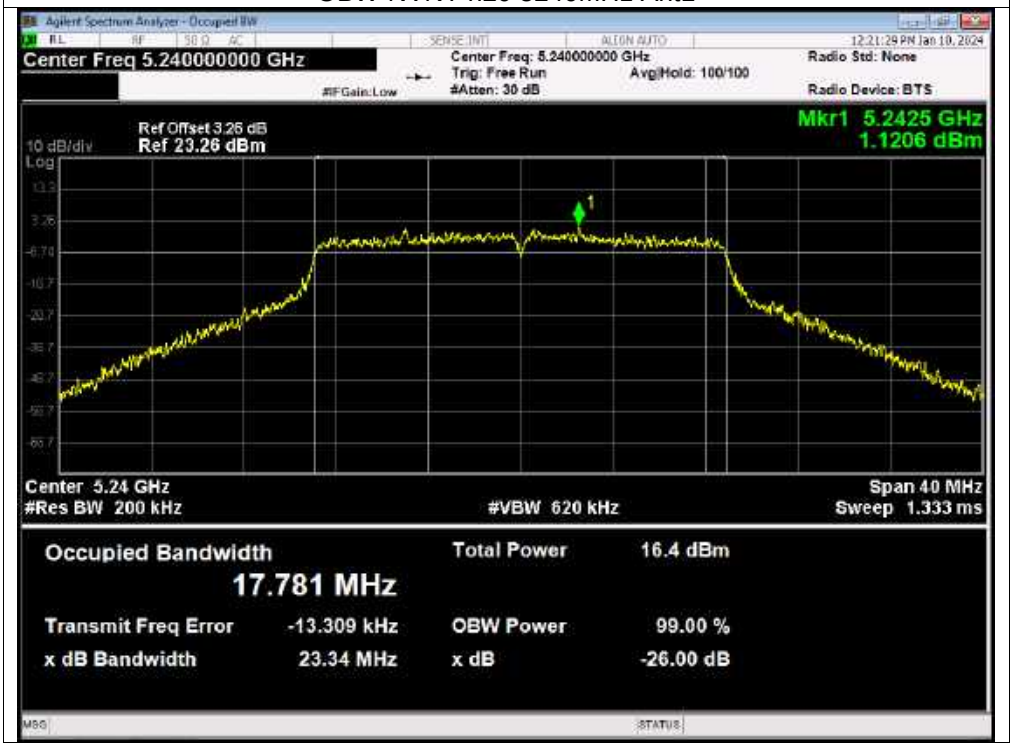


OBW NVNT n20 5180MHz Ant1

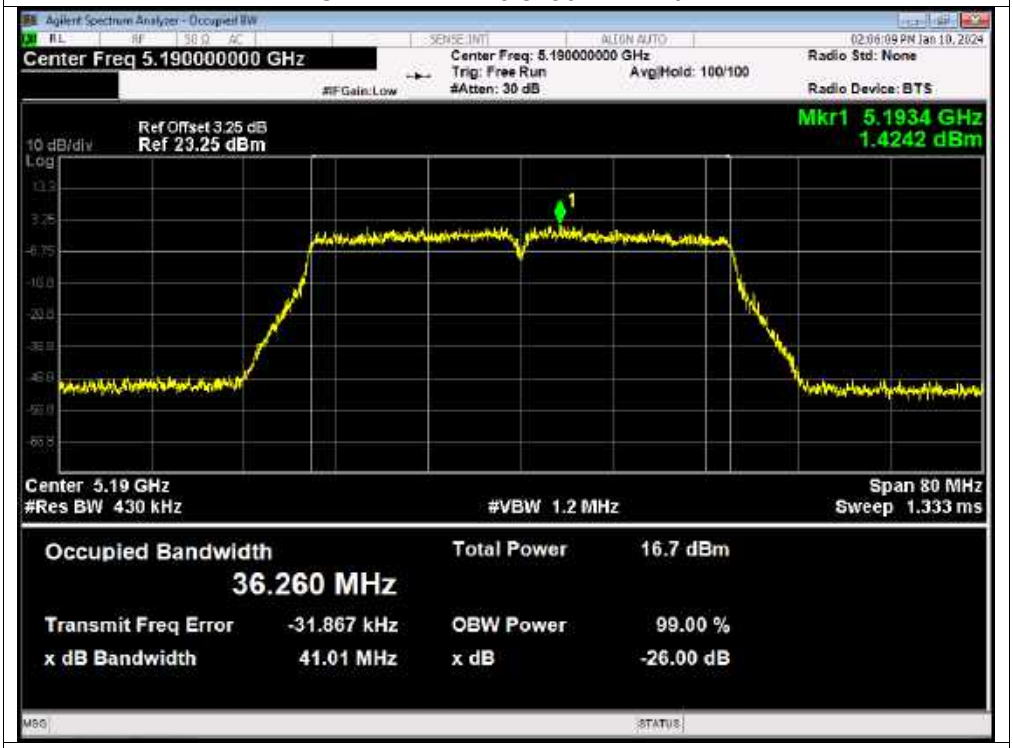
OBW NVNT n20 5200MHz Ant1



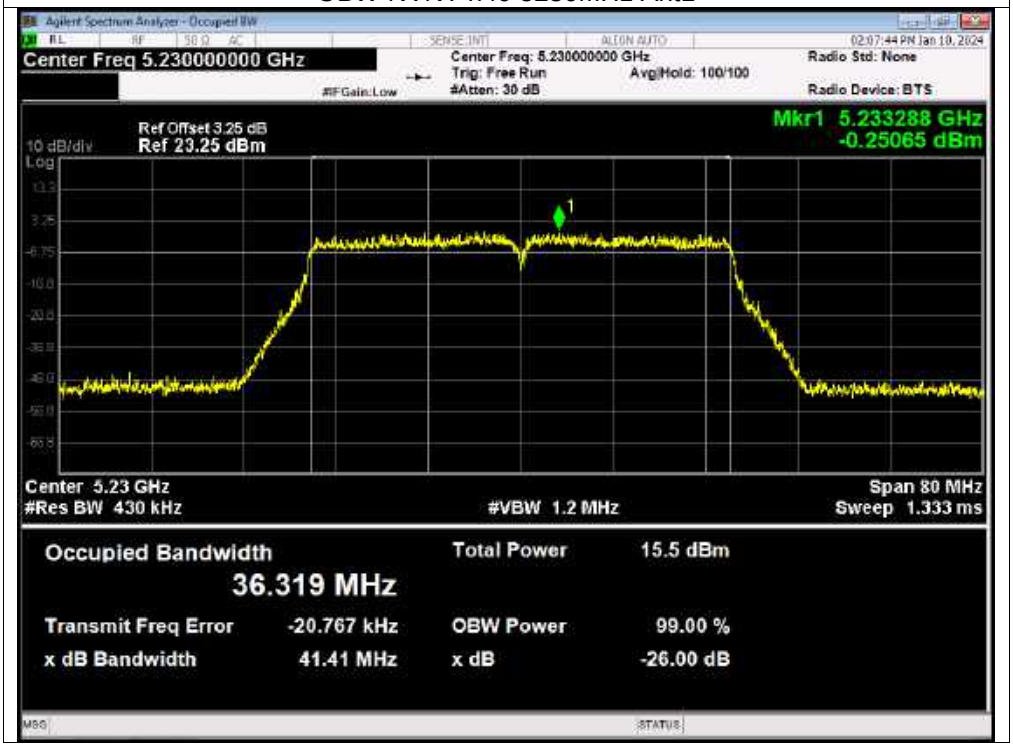
OBW NVNT n20 5240MHz Ant1



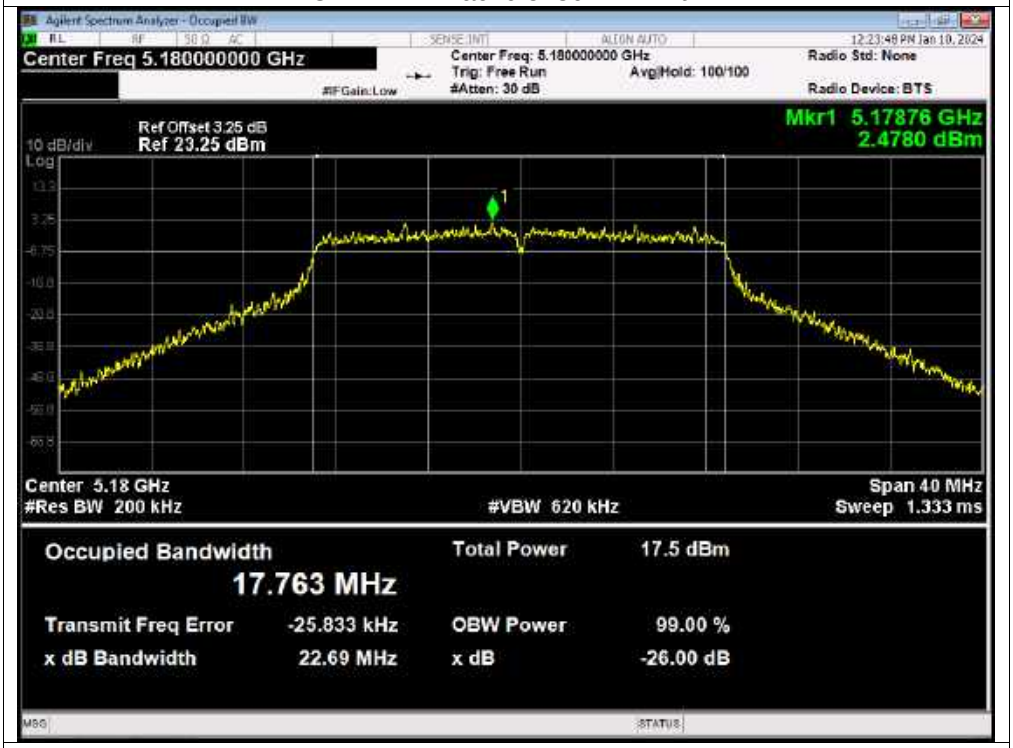
OBW NVNT n40 5190MHz Ant1



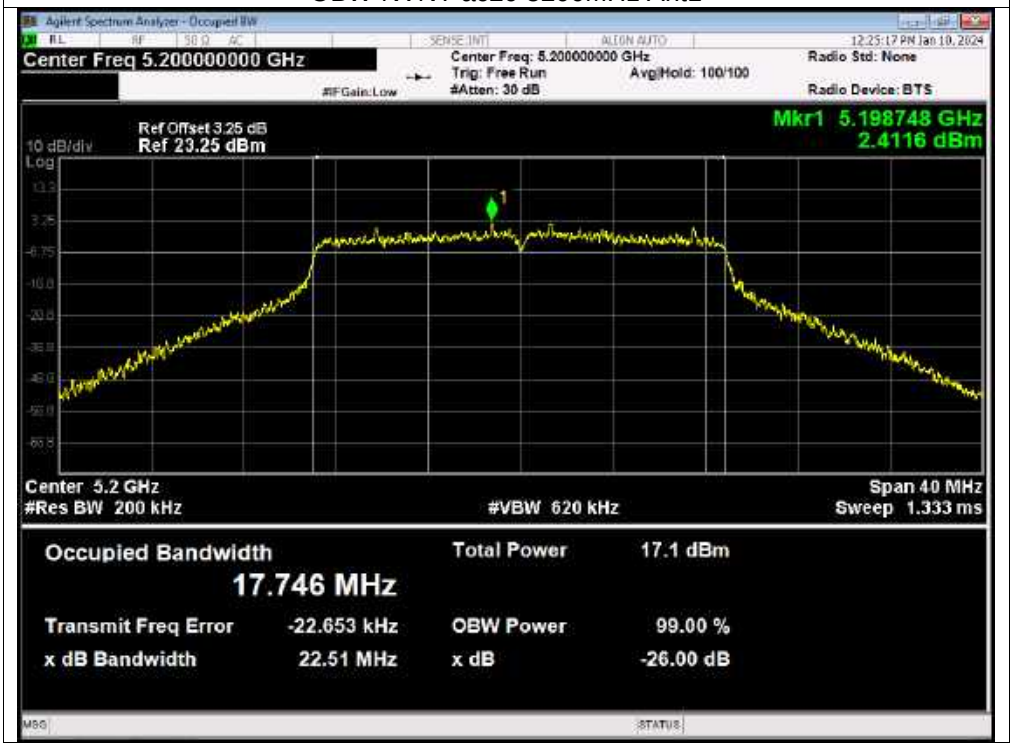
OBW NVNT n40 5230MHz Ant1



OBW NVNT ac20 5180MHz Ant1

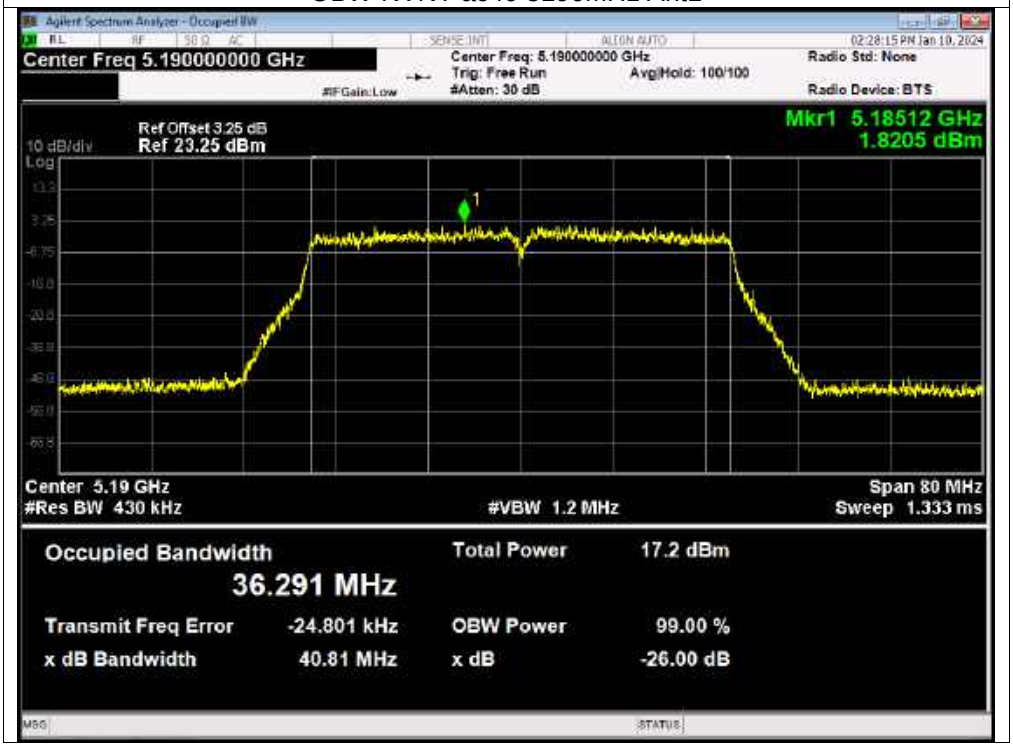


OBW NVNT ac20 5200MHz Ant1

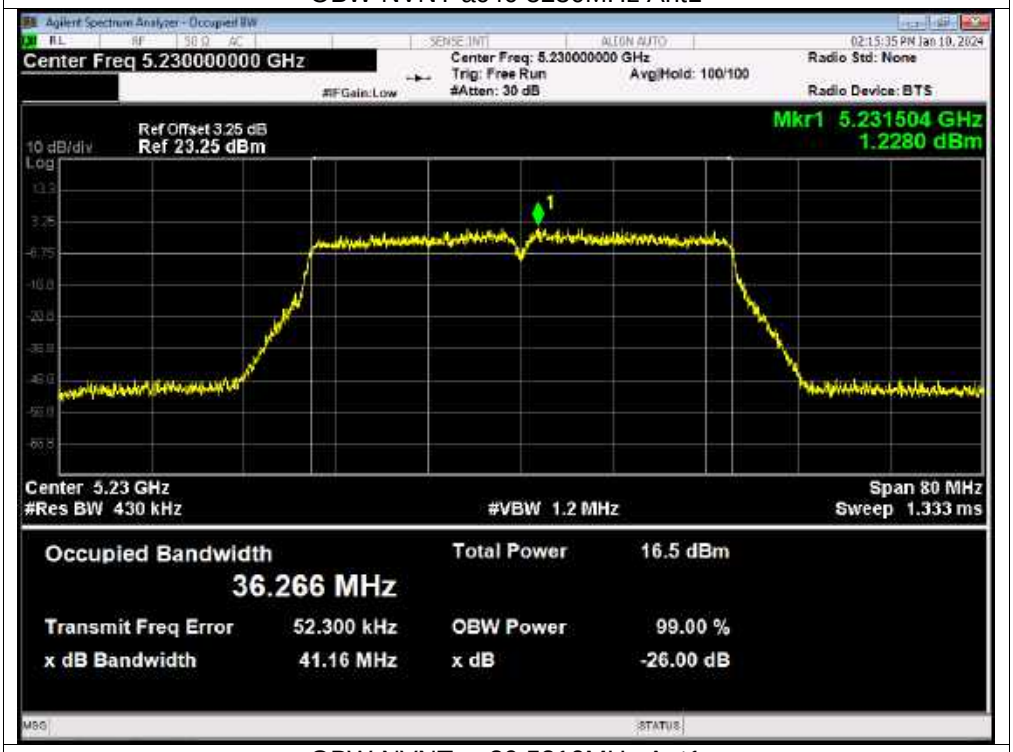


OBW NVNT ac20 5240MHz Ant1

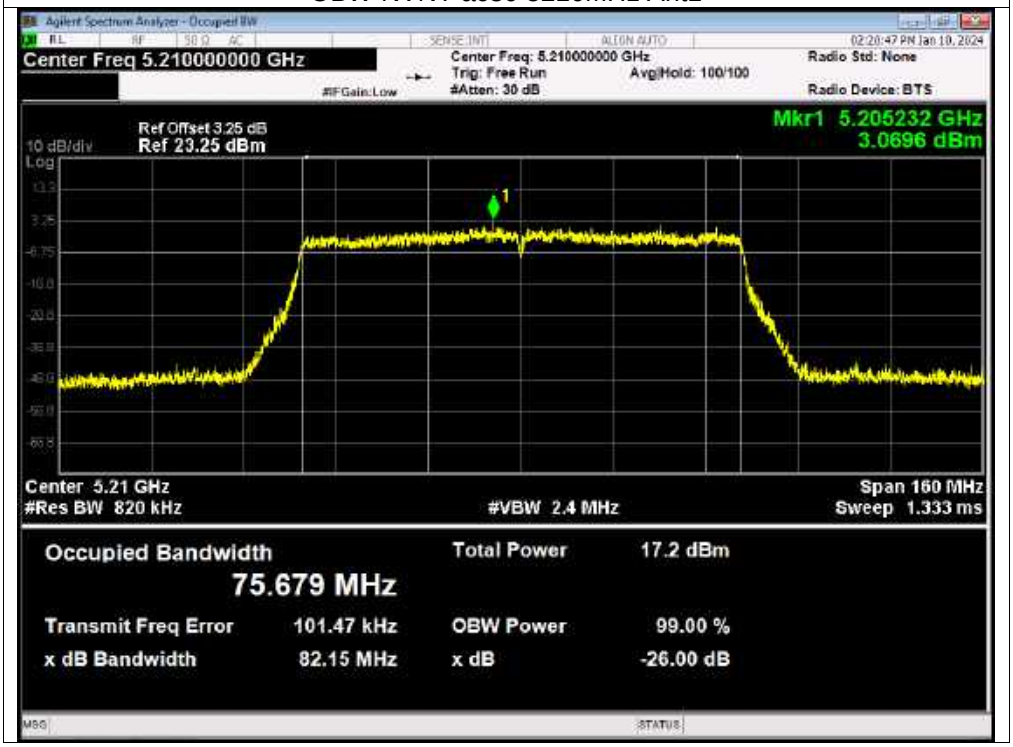
OBW NVNT ac40 5190MHz Ant1



OBW NVNT ac40 5230MHz Ant1



OBW NVNT ac80 5210MHz Ant1



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

Condition	Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	a	5745	16.311	0.5	Pass
NVNT	a	5785	14.771	0.5	Pass
NVNT	a	5825	15.633	0.5	Pass
NVNT	n20	5745	14.372	0.5	Pass
NVNT	n20	5785	16.966	0.5	Pass
NVNT	n20	5825	15.321	0.5	Pass
NVNT	n40	5755	35.57	0.5	Pass
NVNT	n40	5795	35.889	0.5	Pass
NVNT	ac20	5745	16.241	0.5	Pass
NVNT	ac20	5785	16.72	0.5	Pass
NVNT	ac20	5825	15.891	0.5	Pass
NVNT	ac40	5755	35.199	0.5	Pass
NVNT	ac40	5795	35.499	0.5	Pass
NVNT	ac80	5775	72.44	0.5	Pass

Condition	Mode	Frequency (MHz)	99% OBW (MHz)
NVNT	a	5745	16.528
NVNT	a	5785	16.516
NVNT	a	5825	16.563
NVNT	n20	5745	17.745
NVNT	n20	5785	17.745
NVNT	n20	5825	17.758
NVNT	n40	5755	36.293
NVNT	n40	5795	36.265
NVNT	ac20	5745	17.744
NVNT	ac20	5785	17.73
NVNT	ac20	5825	17.75
NVNT	ac40	5755	36.291
NVNT	ac40	5795	36.238
NVNT	ac80	5775	75.648

Test Graphs
-6dB Bandwidth NVNT a 5745MHz Ant1

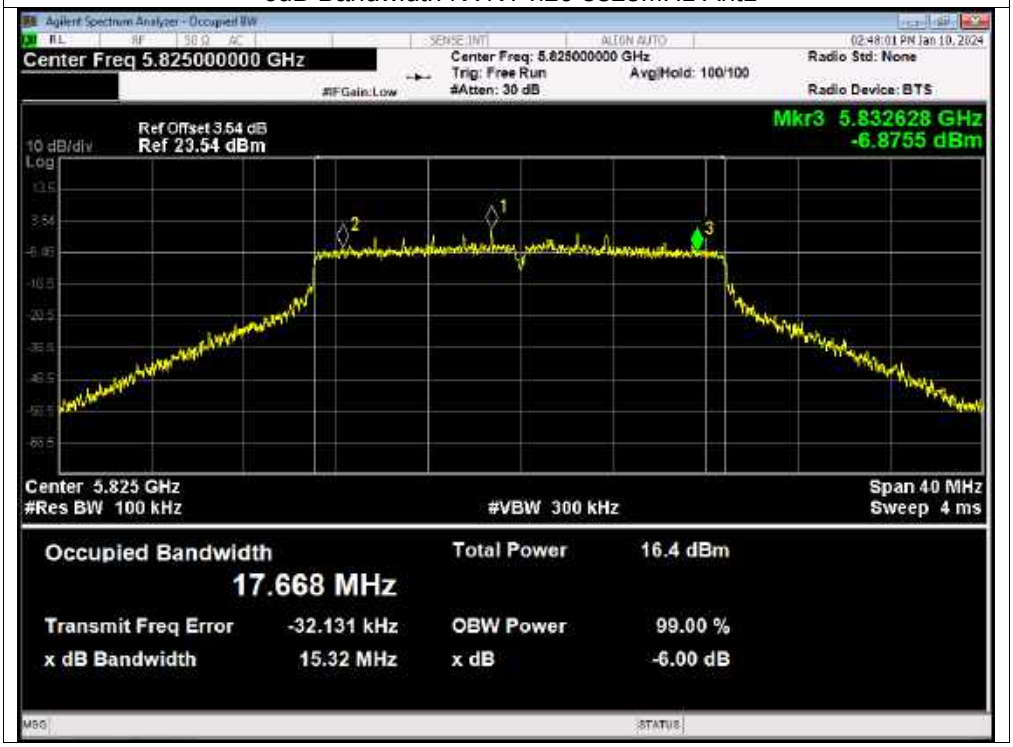
-6dB Bandwidth NVNT a 5785MHz Ant1

-6dB Bandwidth NVNT a 5825MHz Ant1

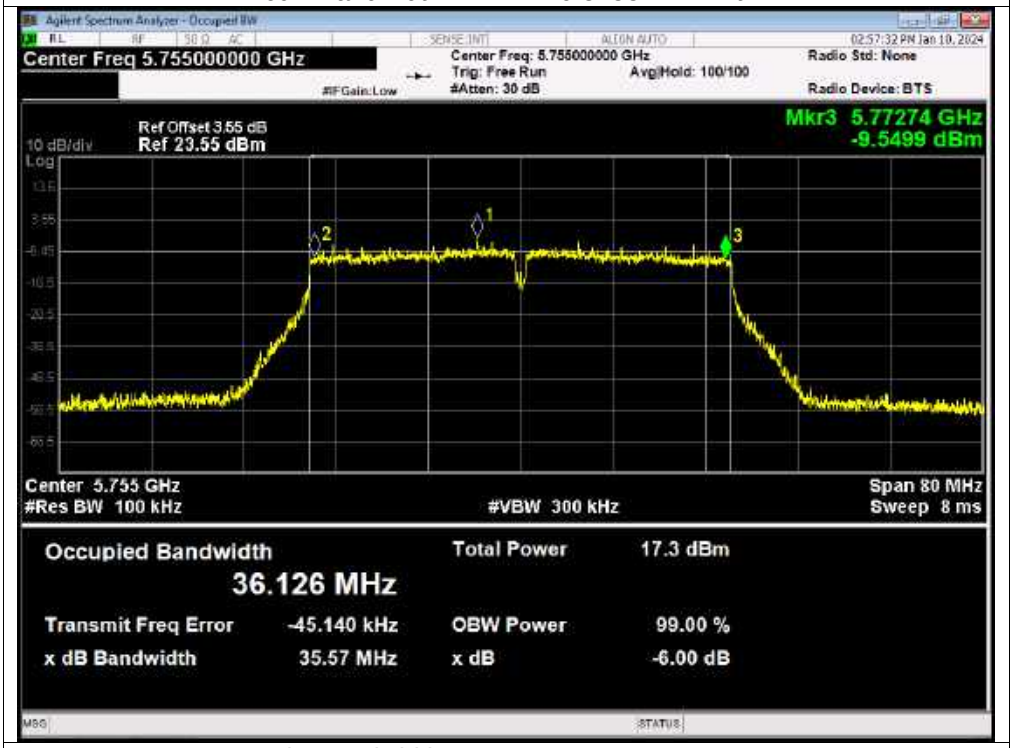
-6dB Bandwidth NVNT n20 5745MHz Ant1

-6dB Bandwidth NVNT n20 5785MHz Ant1

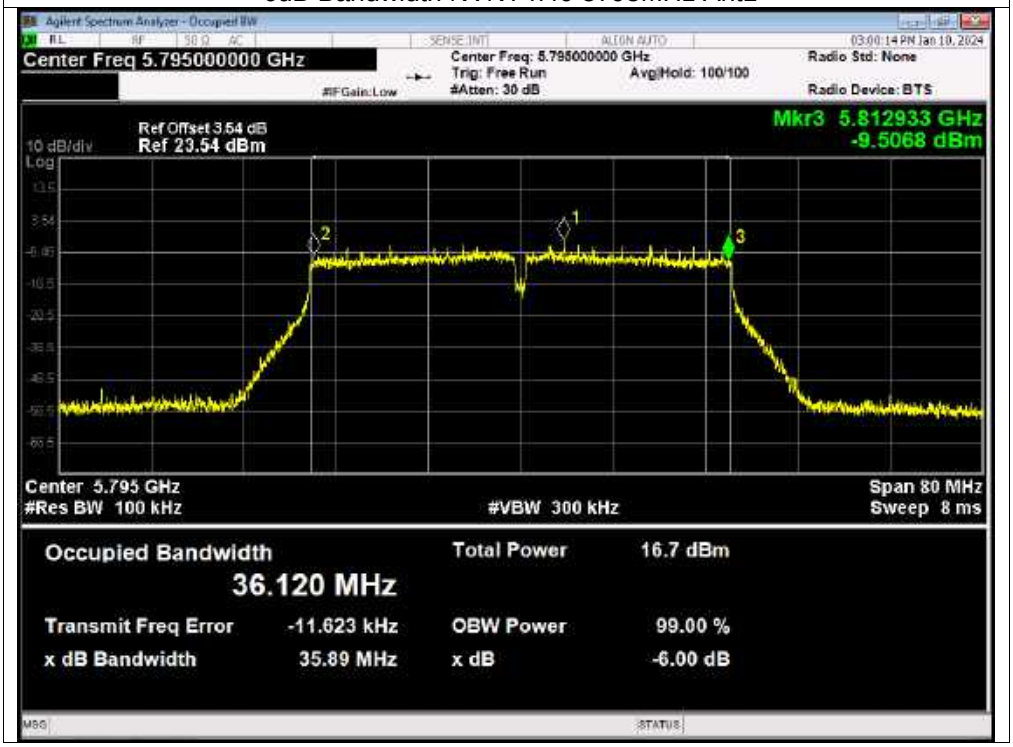
-6dB Bandwidth NVNT n20 5825MHz Ant1



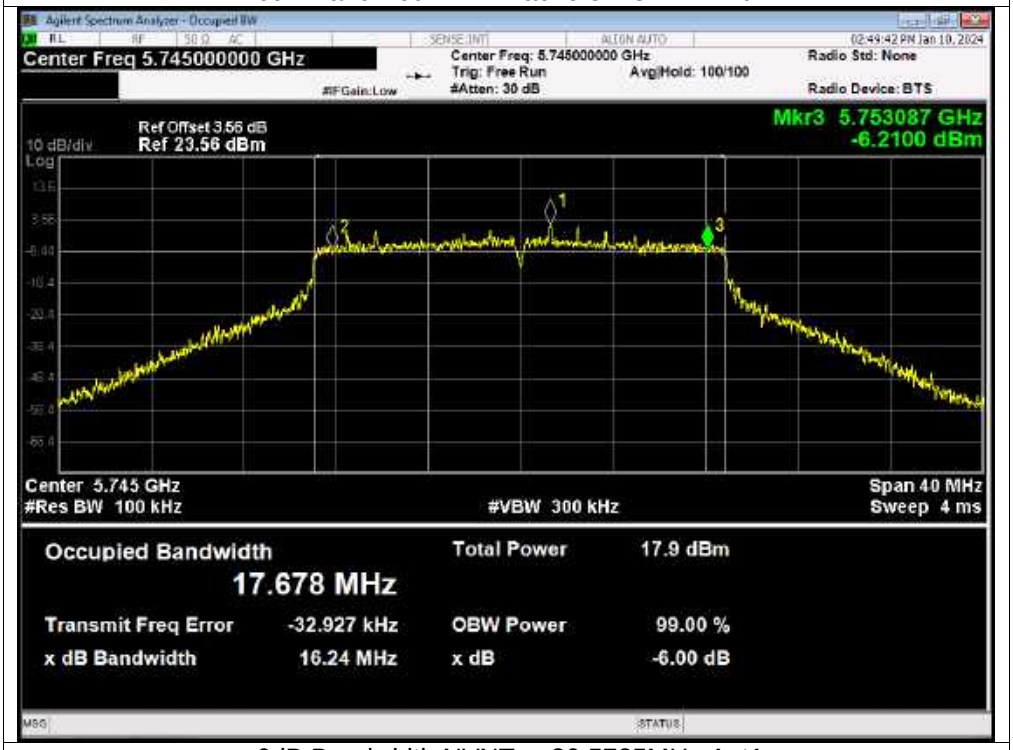
-6dB Bandwidth NVNT n40 5755MHz Ant1



-6dB Bandwidth NVNT n40 5795MHz Ant1

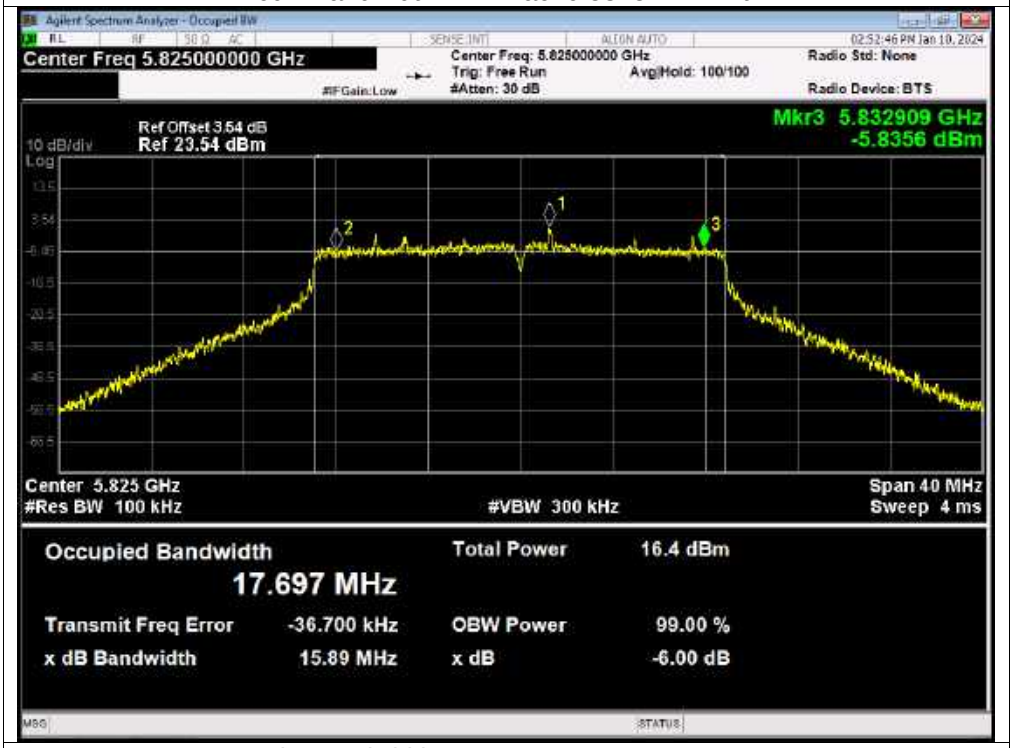


-6dB Bandwidth NVNT ac20 5745MHz Ant1

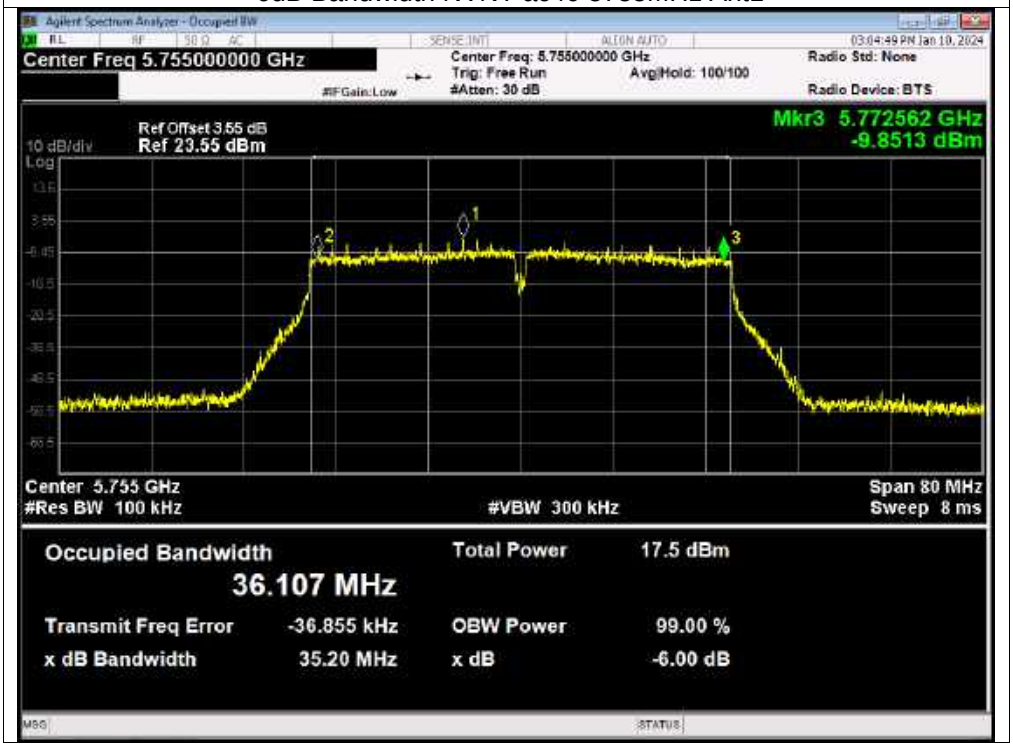


-6dB Bandwidth NVNT ac20 5785MHz Ant1

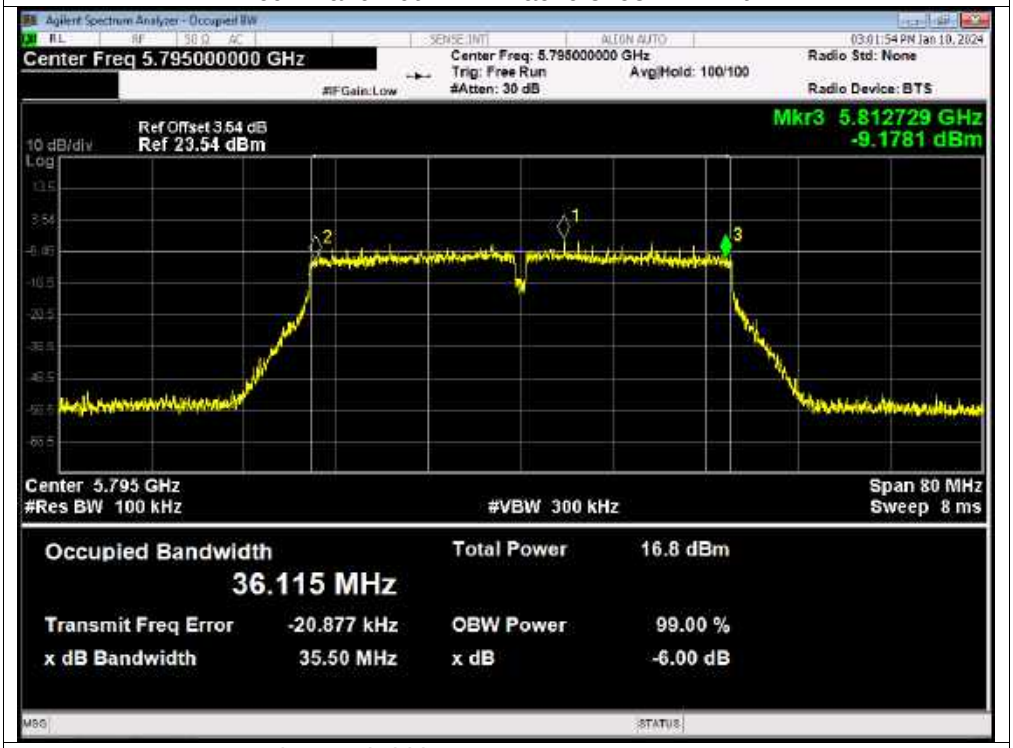
-6dB Bandwidth NVNT ac20 5825MHz Ant1



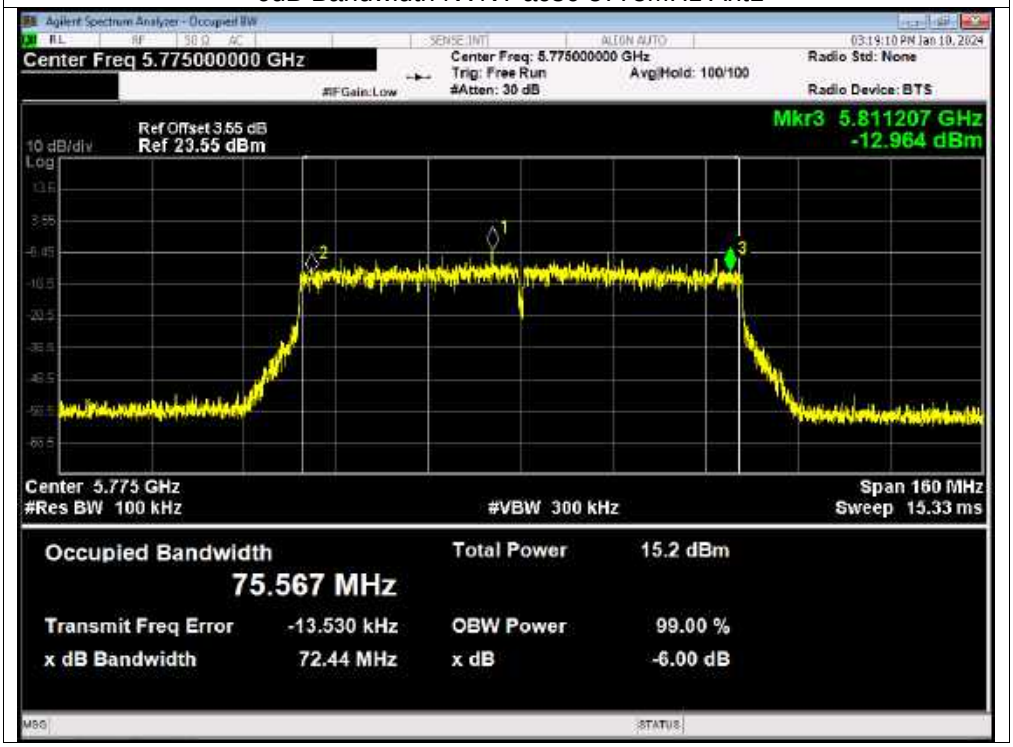
-6dB Bandwidth NVNT ac40 5755MHz Ant1



-6dB Bandwidth NVNT ac40 5795MHz Ant1



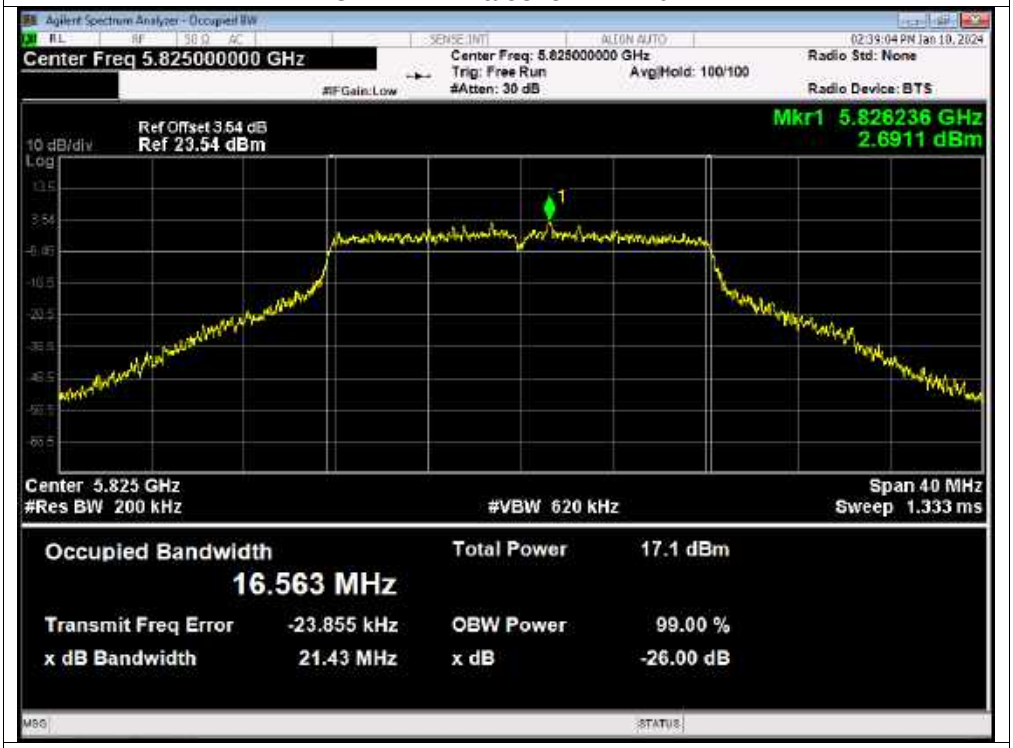
-6dB Bandwidth NVNT ac80 5775MHz Ant1



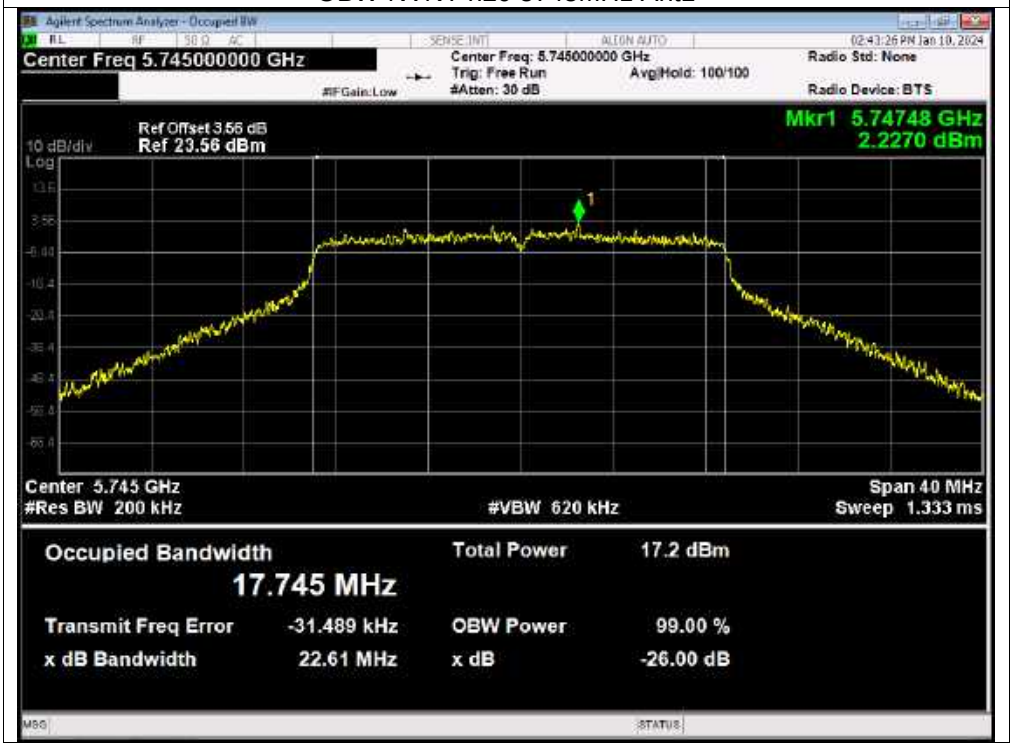
Test Graphs
OBW NVNT a 5745MHz Ant1

OBW NVNT a 5785MHz Ant1

OBW NVNT a 5825MHz Ant1



OBW NVNT n20 5745MHz Ant1



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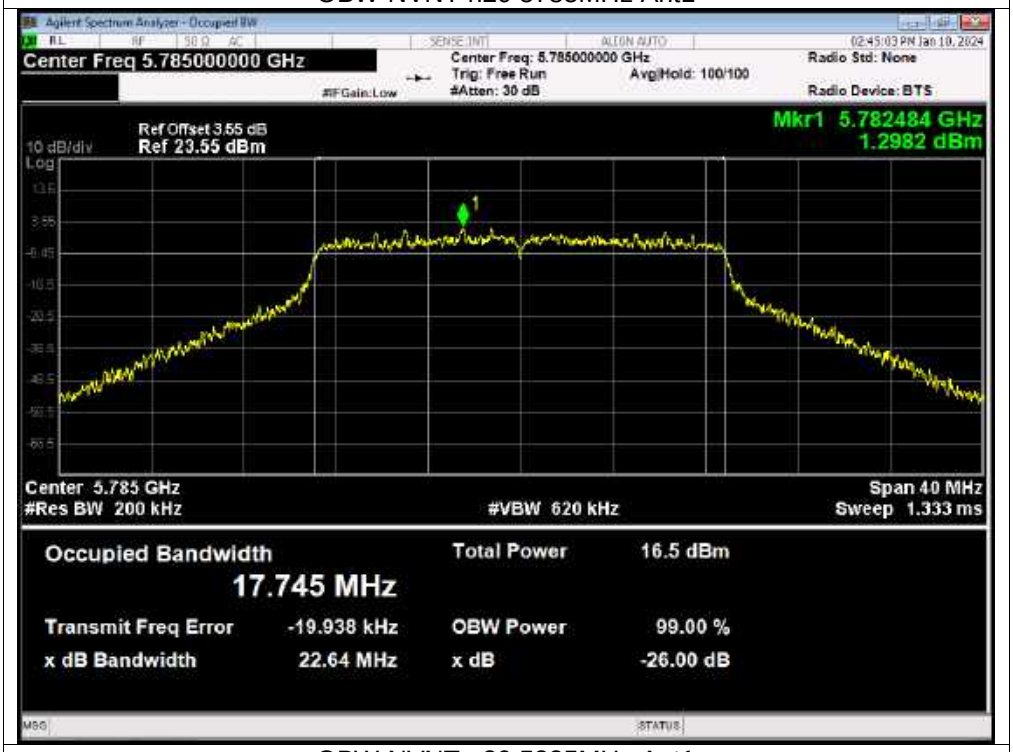
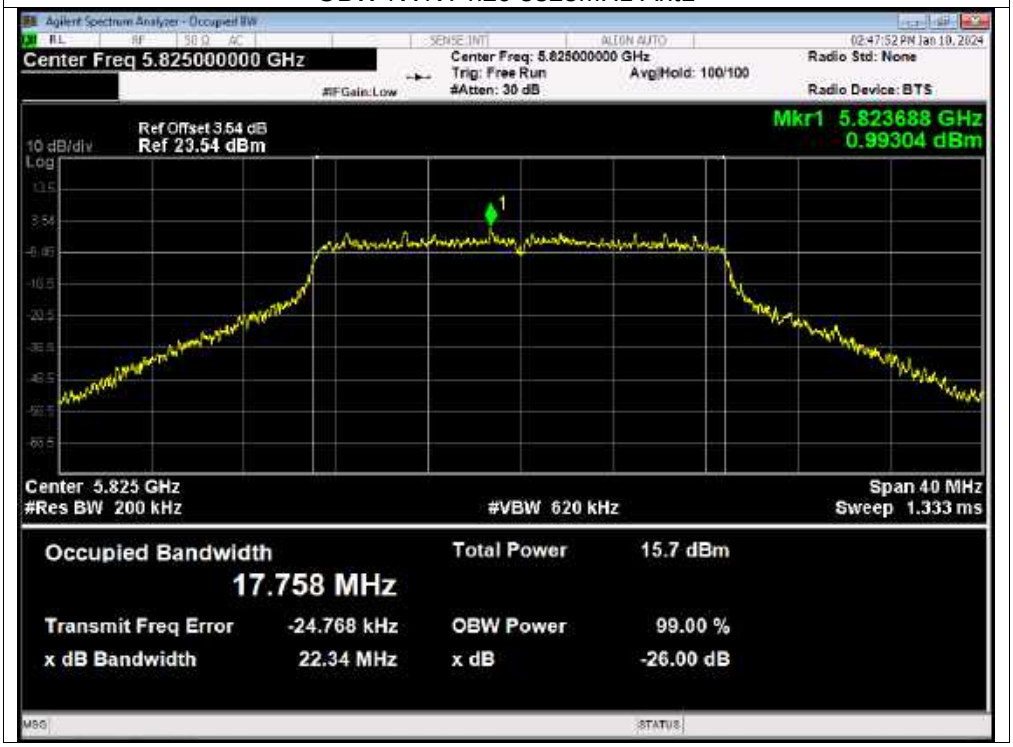
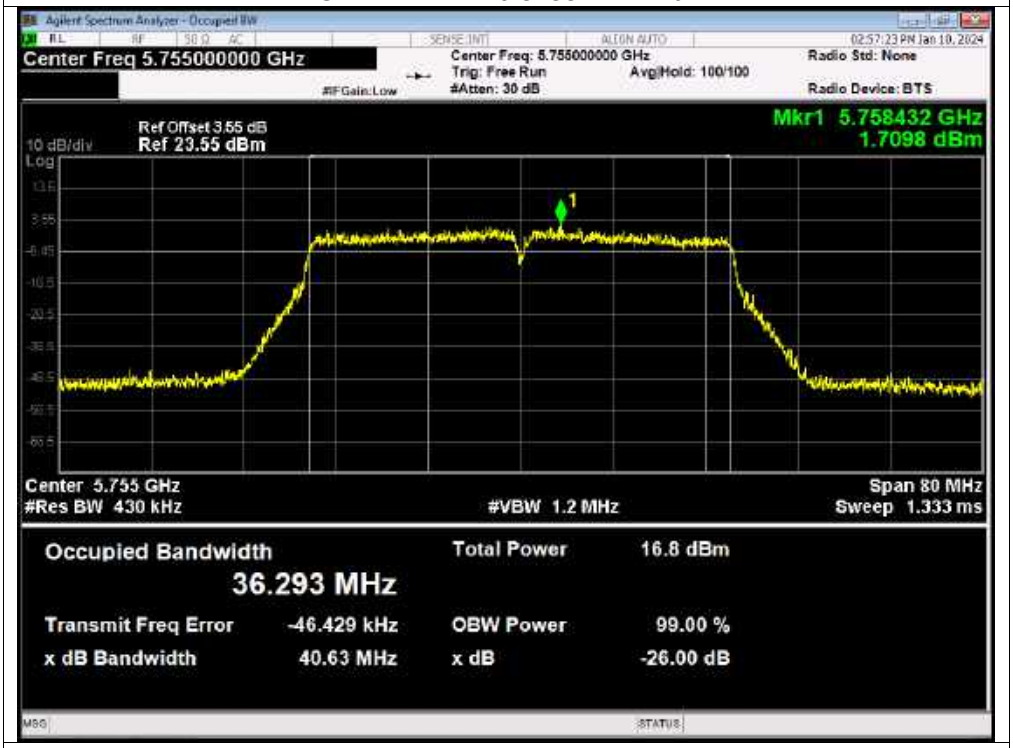


OBW NVNT n20 5825MHz Ant1



OBW NVNT n40 5755MHz Ant1



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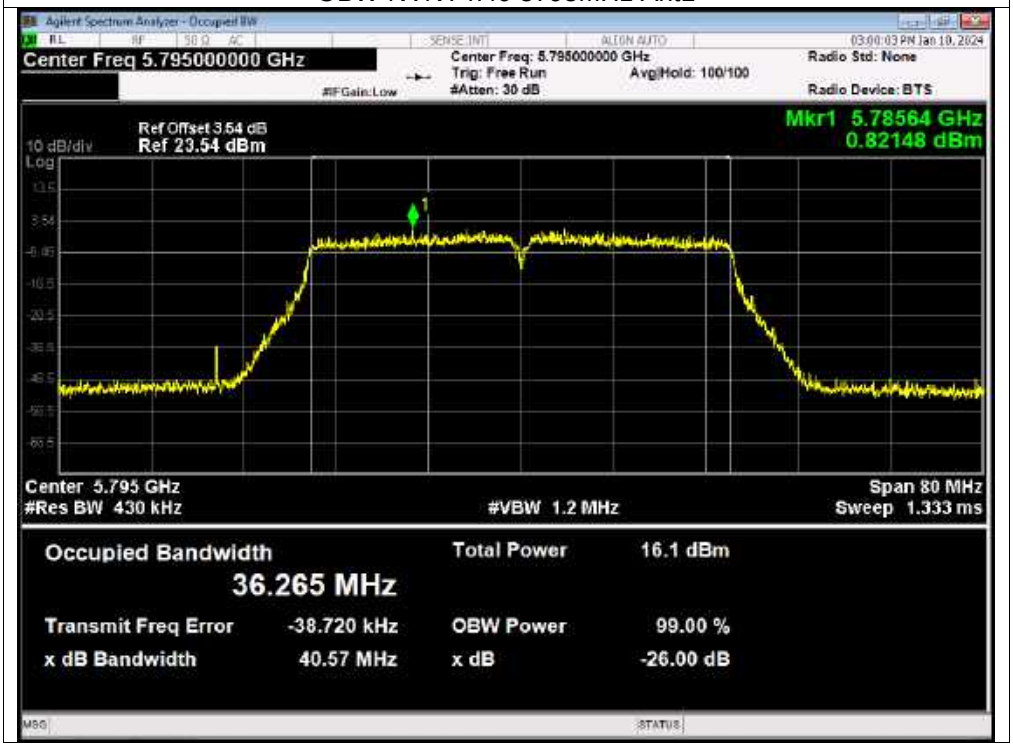

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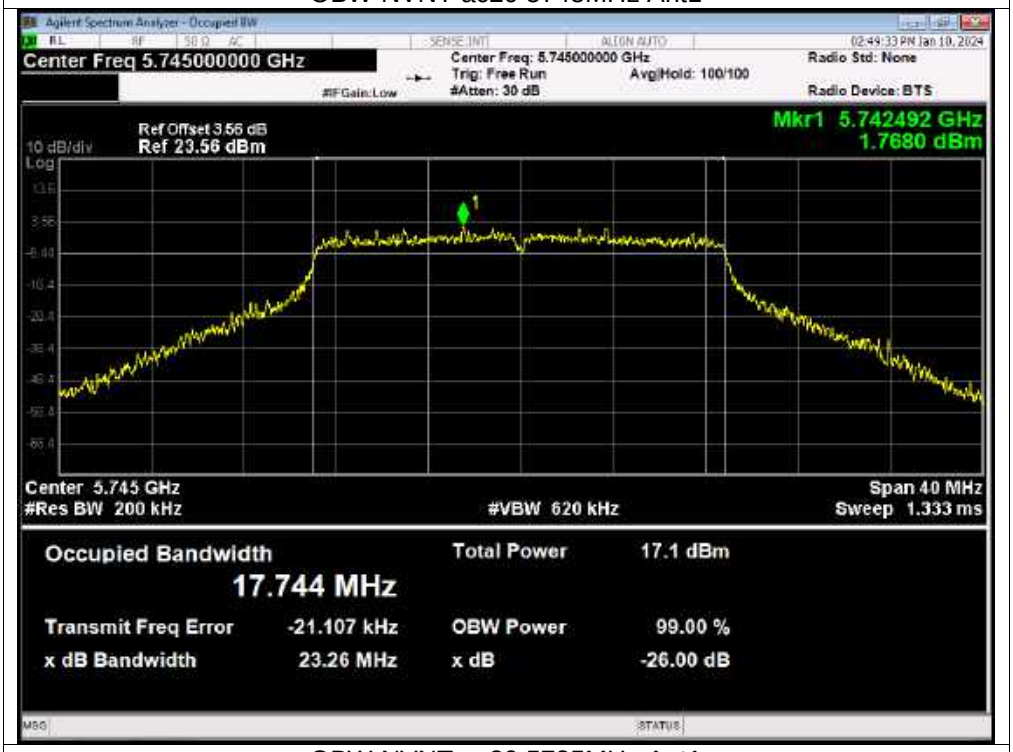

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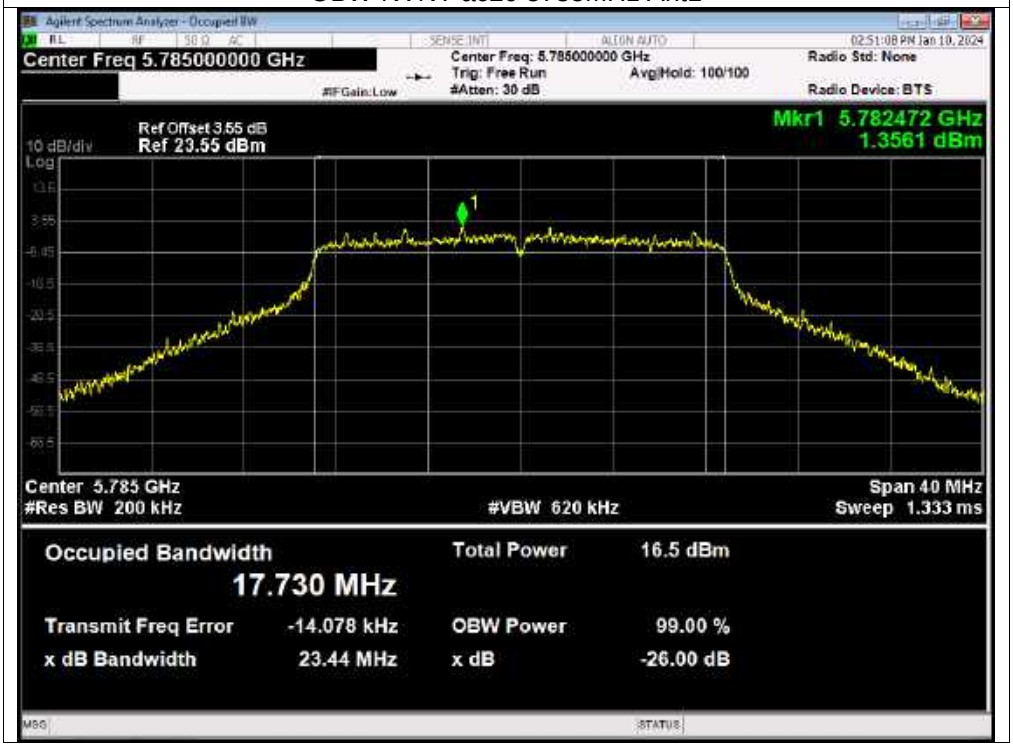

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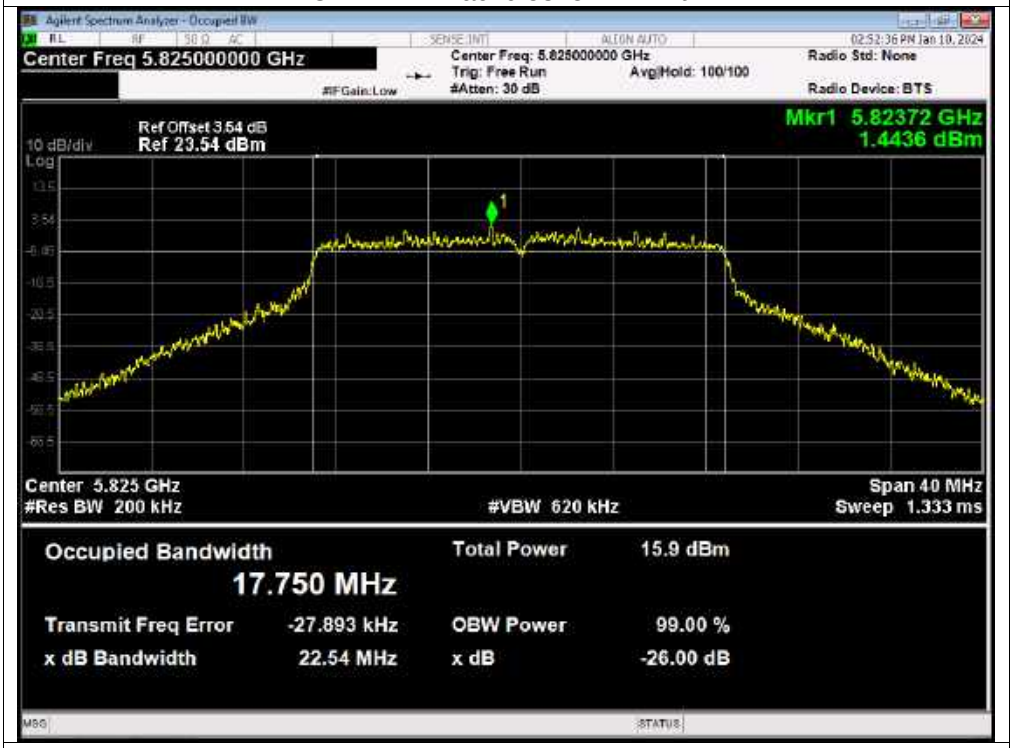

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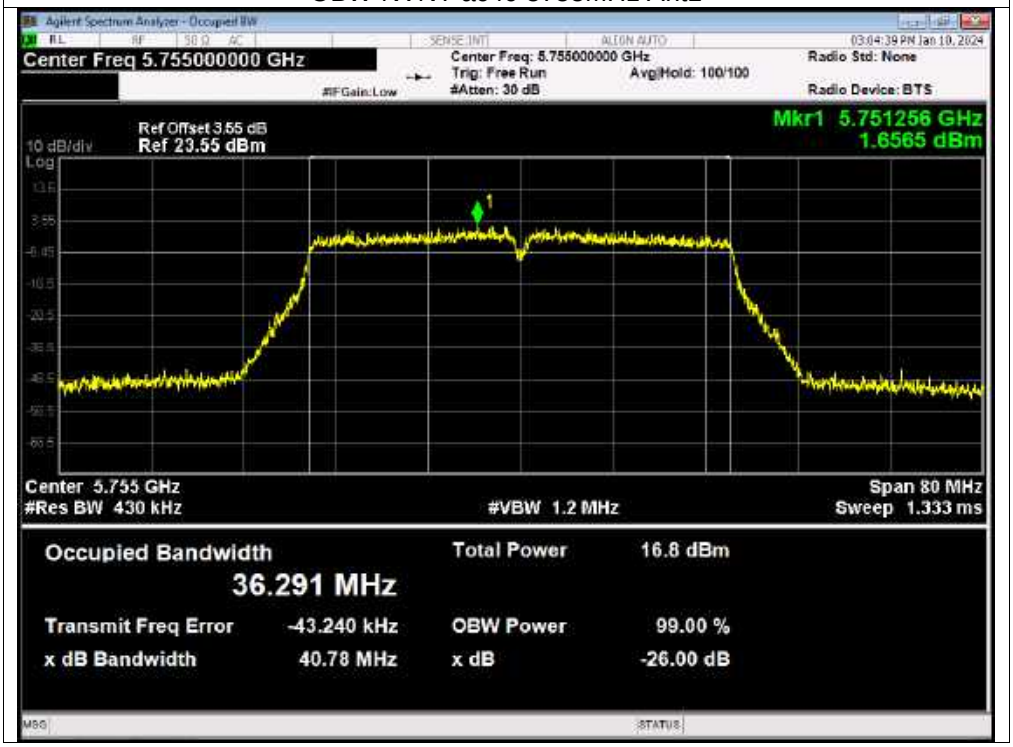

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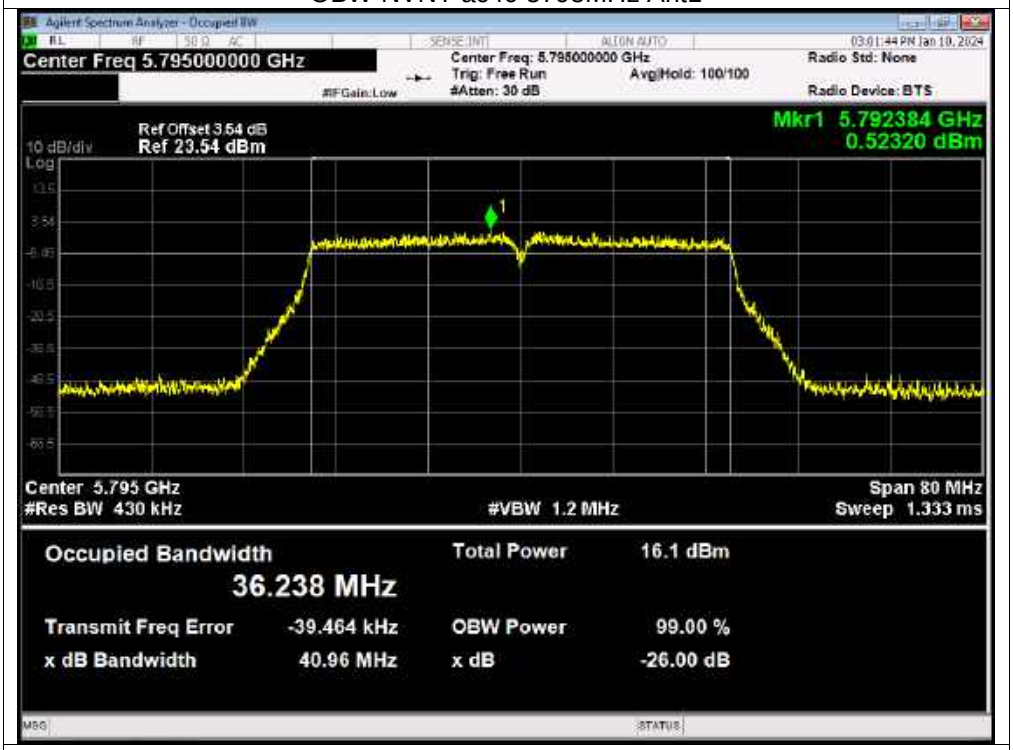
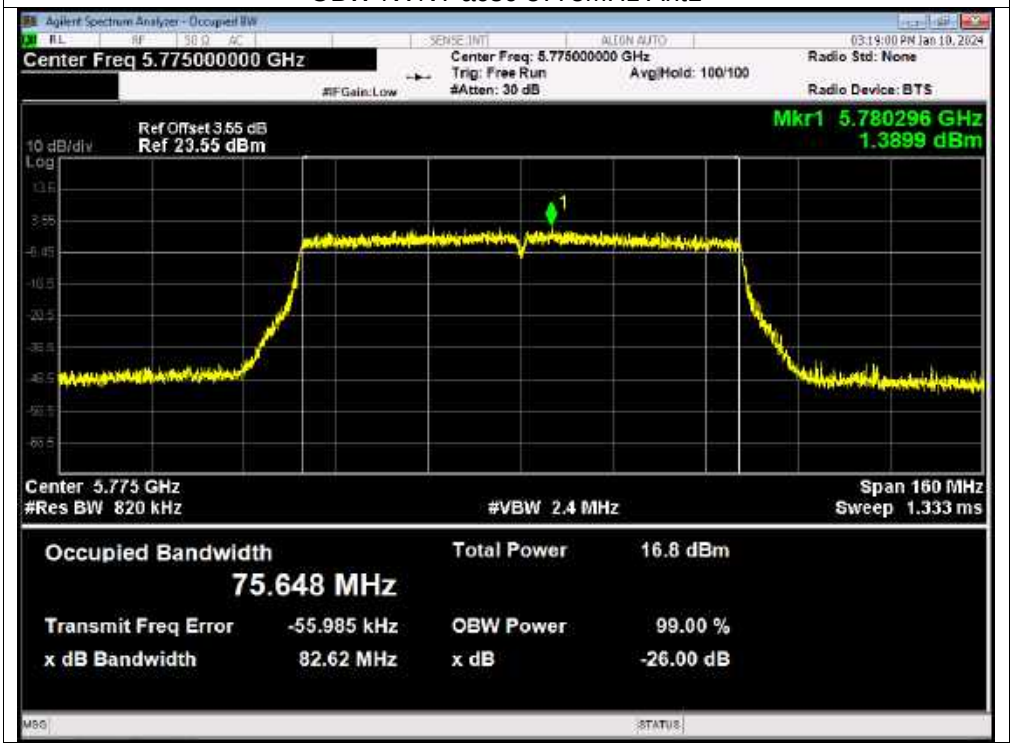
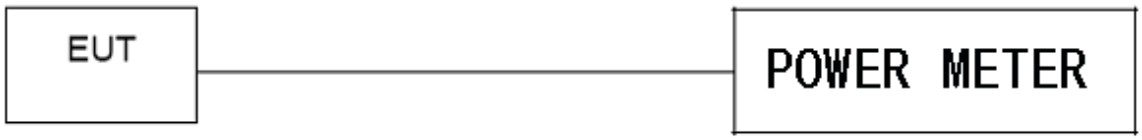


OBW NVNT ac80 5775MHz Ant1



9. Maximum Conducted Output Power

9.1 Block Diagram Of Test Setup



9.2 Limit

■ For the band 5.15-5.25 GHz,

(a) (1) (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, 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).

(a) (1) (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, 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.

(a) (1) (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 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.

(a) (1) (iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, 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 5.25-5.35 GHz and 5.47-5.725 GHz bands

(a) (2) The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, 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

(a) (3) for the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations

9.3 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

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		

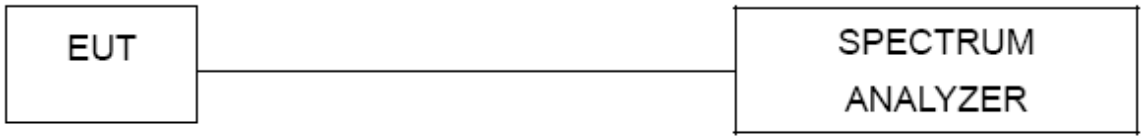
Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	12.51	24	Pass
NVNT	a	5200	12.28	24	Pass
NVNT	a	5240	12.40	24	Pass
NVNT	n20	5180	11.30	24	Pass
NVNT	n20	5200	11.13	24	Pass
NVNT	n20	5240	10.34	24	Pass
NVNT	n40	5190	10.09	24	Pass
NVNT	n40	5230	9.43	24	Pass
NVNT	ac20	5180	11.28	24	Pass
NVNT	ac20	5200	10.94	24	Pass
NVNT	ac20	5240	10.17	24	Pass
NVNT	ac40	5190	10.74	24	Pass
NVNT	ac40	5230	10.22	24	Pass
NVNT	ac80	5210	9.94	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	11.19	30	Pass
NVNT	a	5785	12.01	30	Pass
NVNT	a	5825	11.14	30	Pass
NVNT	n20	5745	11.32	30	Pass
NVNT	n20	5785	10.50	30	Pass
NVNT	n20	5825	9.72	30	Pass
NVNT	n40	5755	10.51	30	Pass
NVNT	n40	5795	9.72	30	Pass
NVNT	ac20	5745	11.24	30	Pass
NVNT	ac20	5785	10.46	30	Pass
NVNT	ac20	5825	9.65	30	Pass
NVNT	ac40	5755	10.54	30	Pass
NVNT	ac40	5795	9.64	30	Pass
NVNT	ac80	5775	9.40	30	Pass

10. Out Of Band Emissions

10.1 Block Diagram Of Test Setup



10.2 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.

FCC Part15 C Section 15.209 and 15.205

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	[2]
13.36-13.41			

10.3 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.

10.4 EUT Operating Conditions

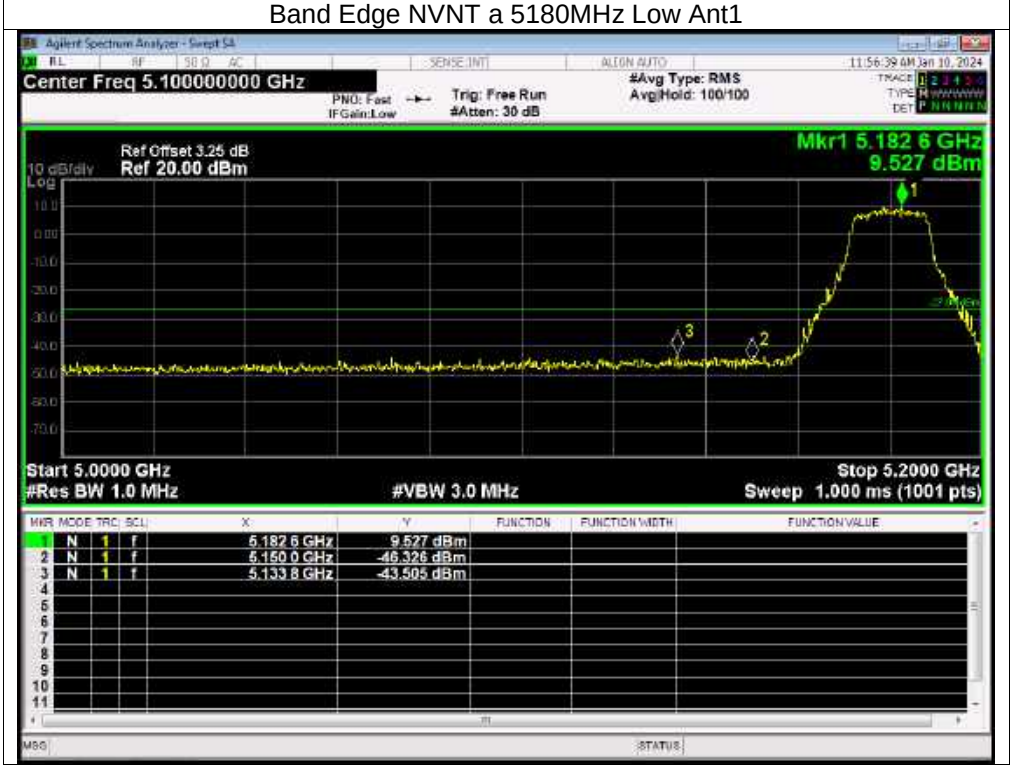
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

10.5 Test Result

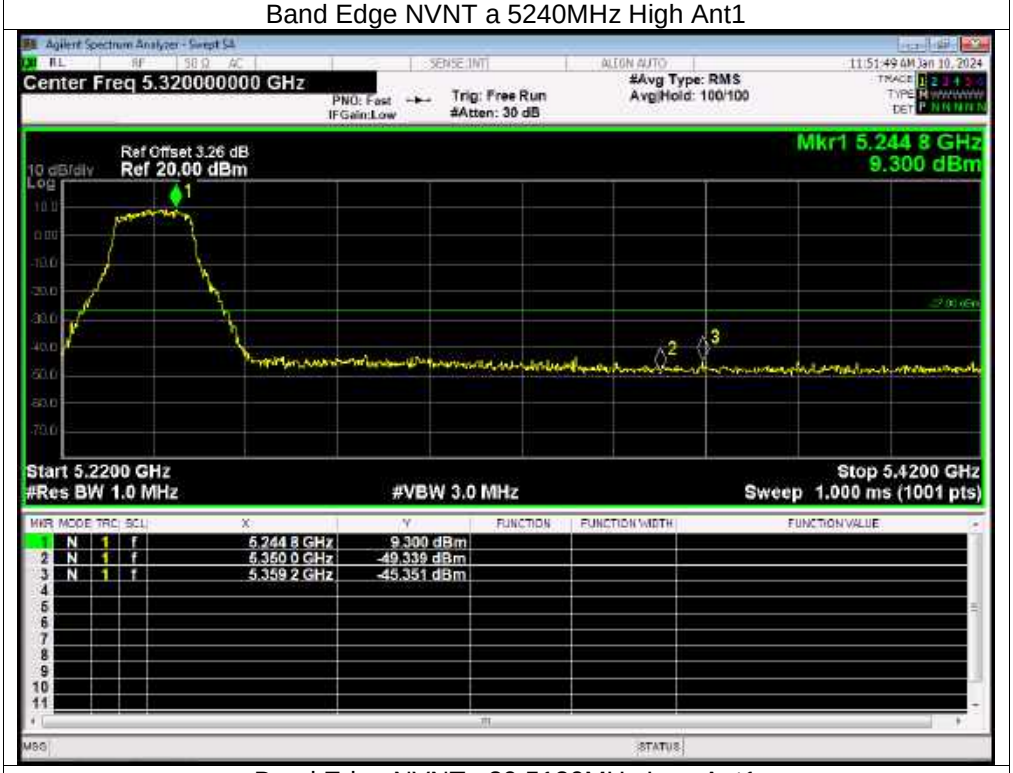
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	DC 12V

Plot.: 5180-5240MHz

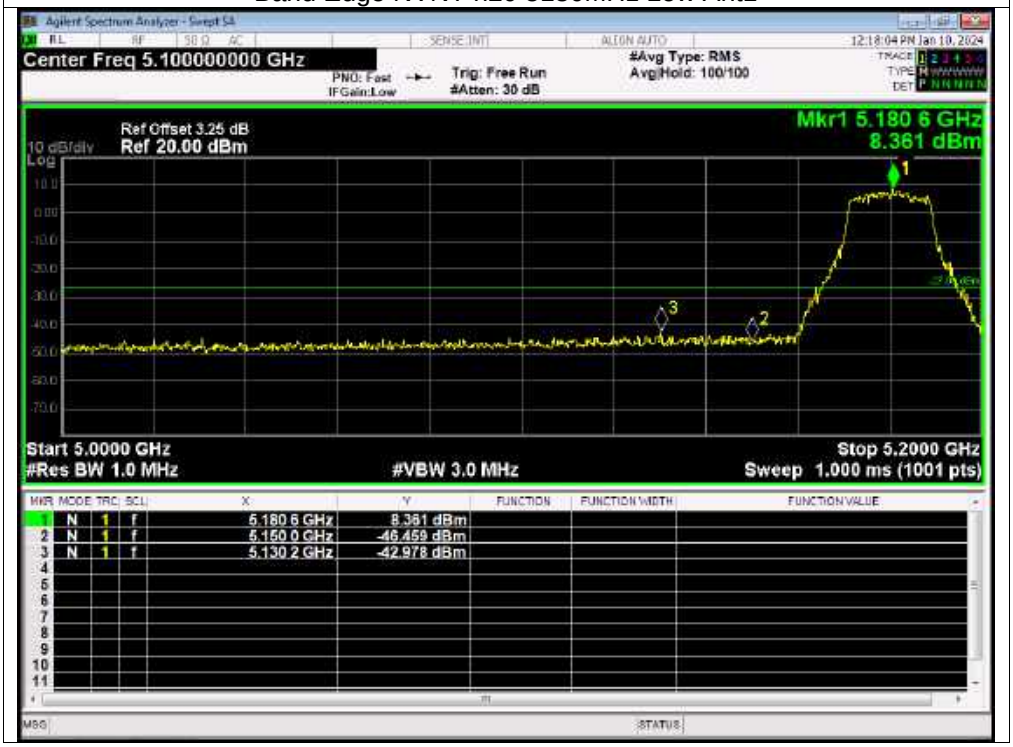
Test Graphs
Band Edge NVNT a 5180MHz Low Ant1



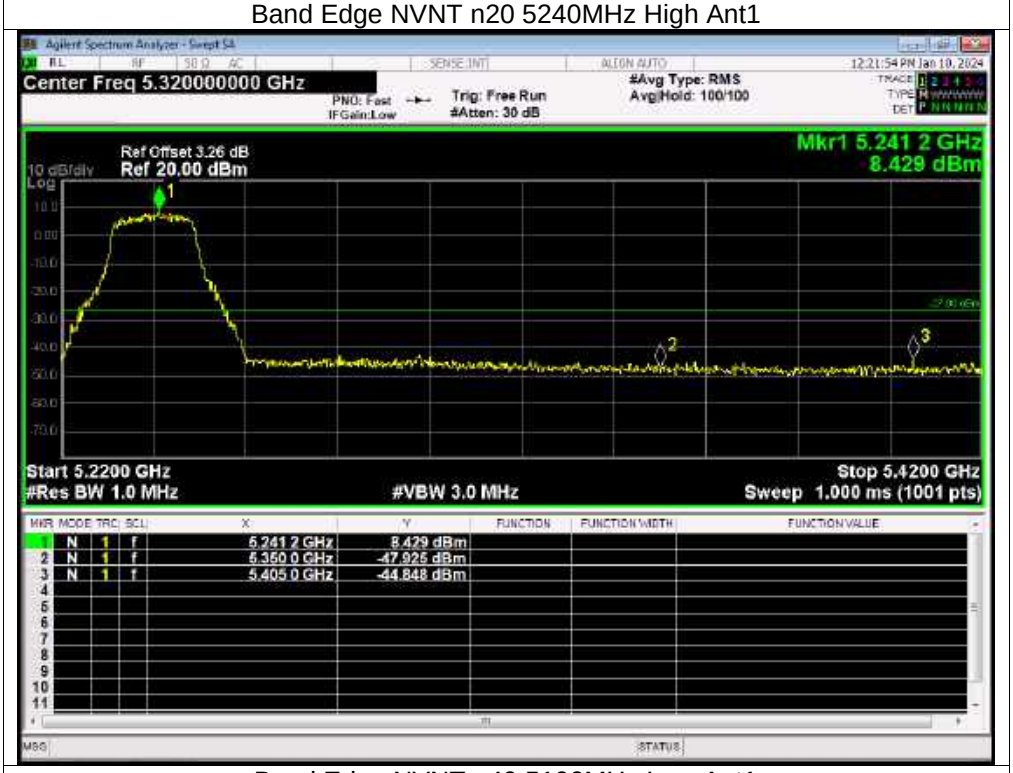
Band Edge NVNT a 5240MHz High Ant1



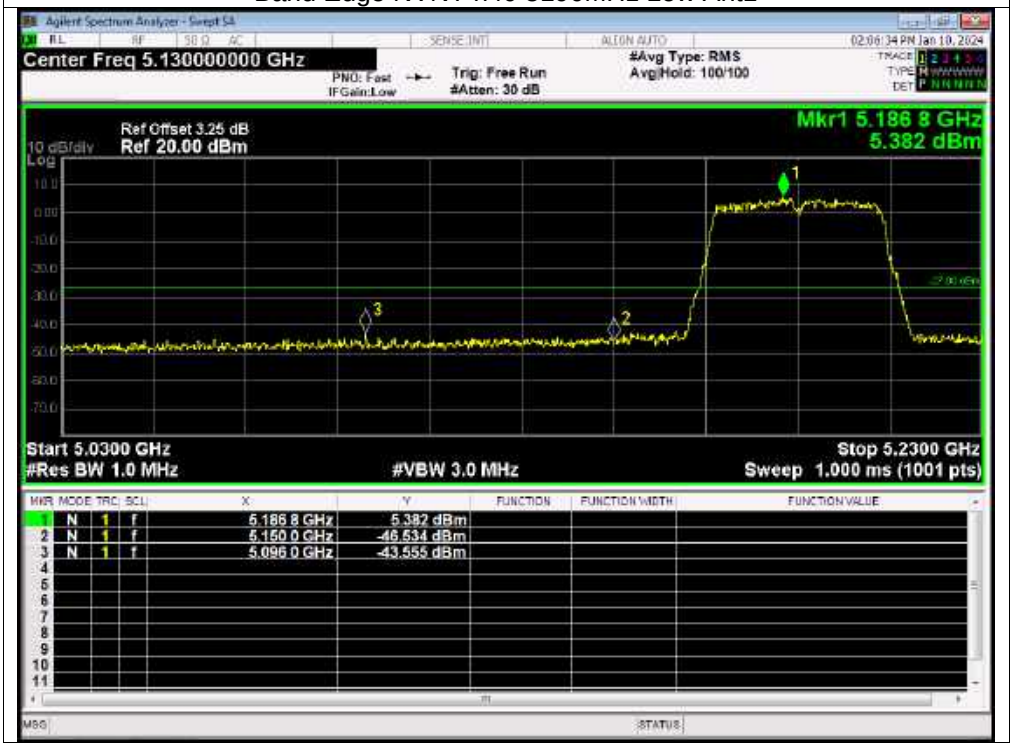
Band Edge NVNT n20 5180MHz Low Ant1



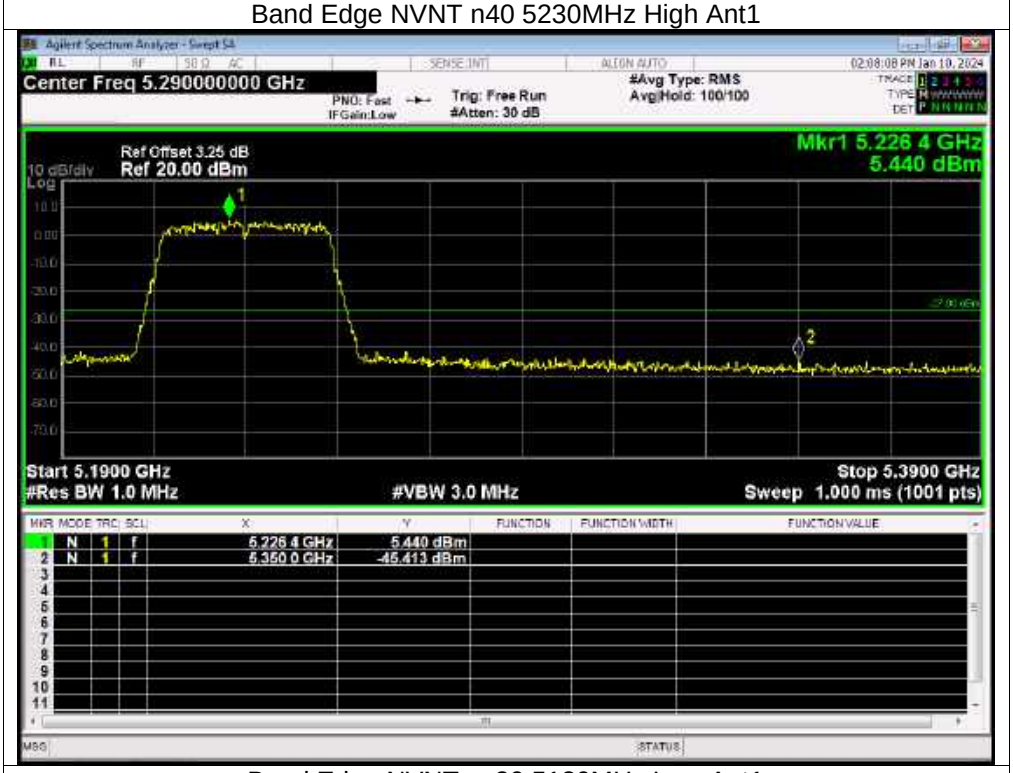
Band Edge NVNT n20 5240MHz High Ant1



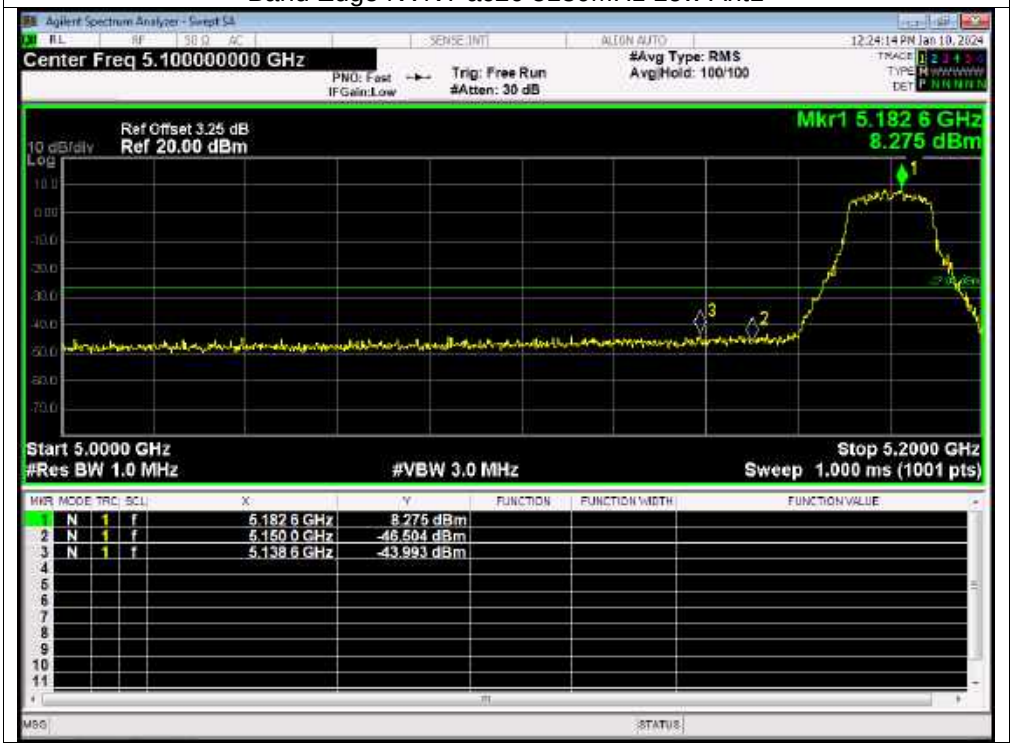
Band Edge NVNT n40 5190MHz Low Ant1



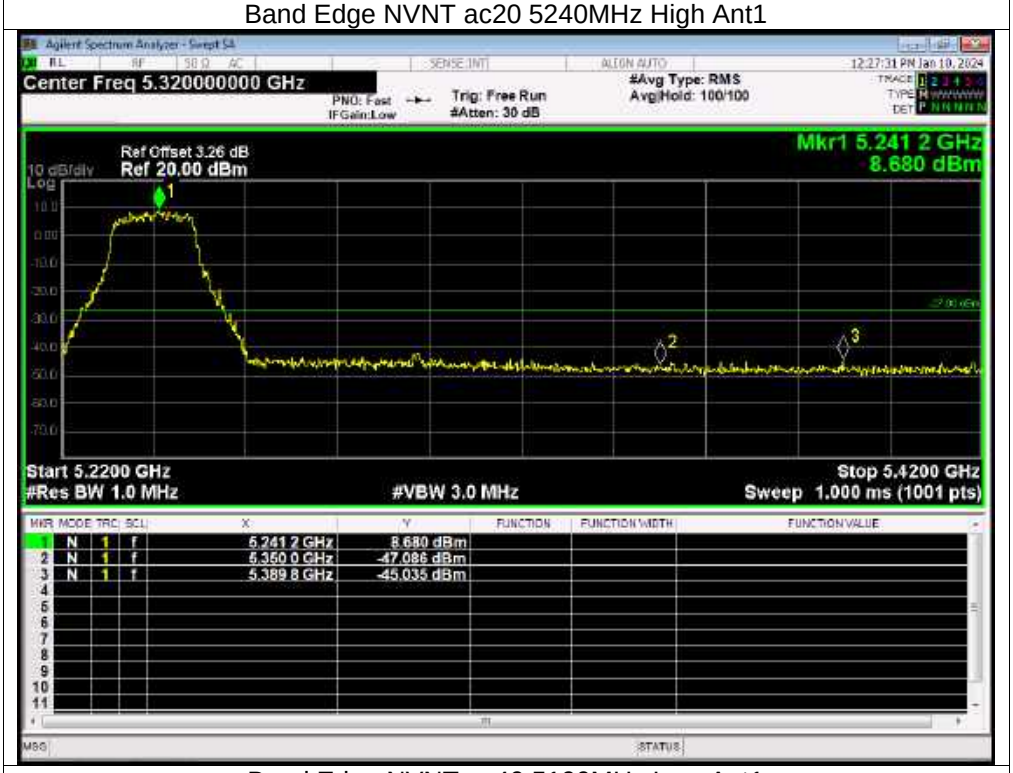
Band Edge NVNT n40 5230MHz High Ant1



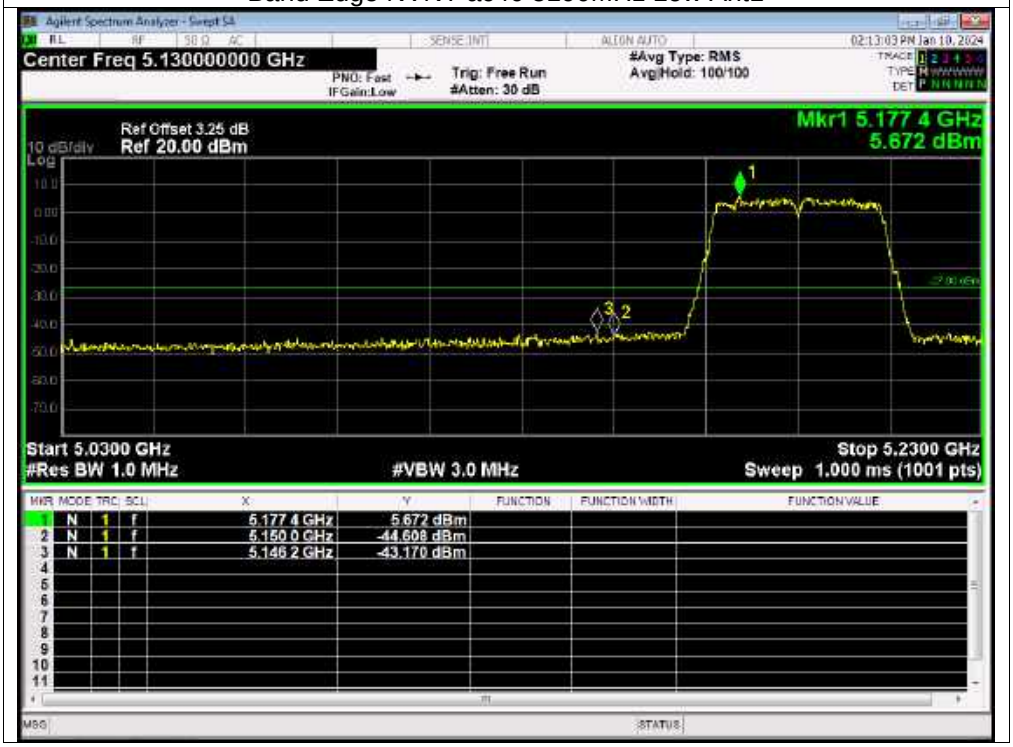
Band Edge NVNT ac20 5180MHz Low Ant1



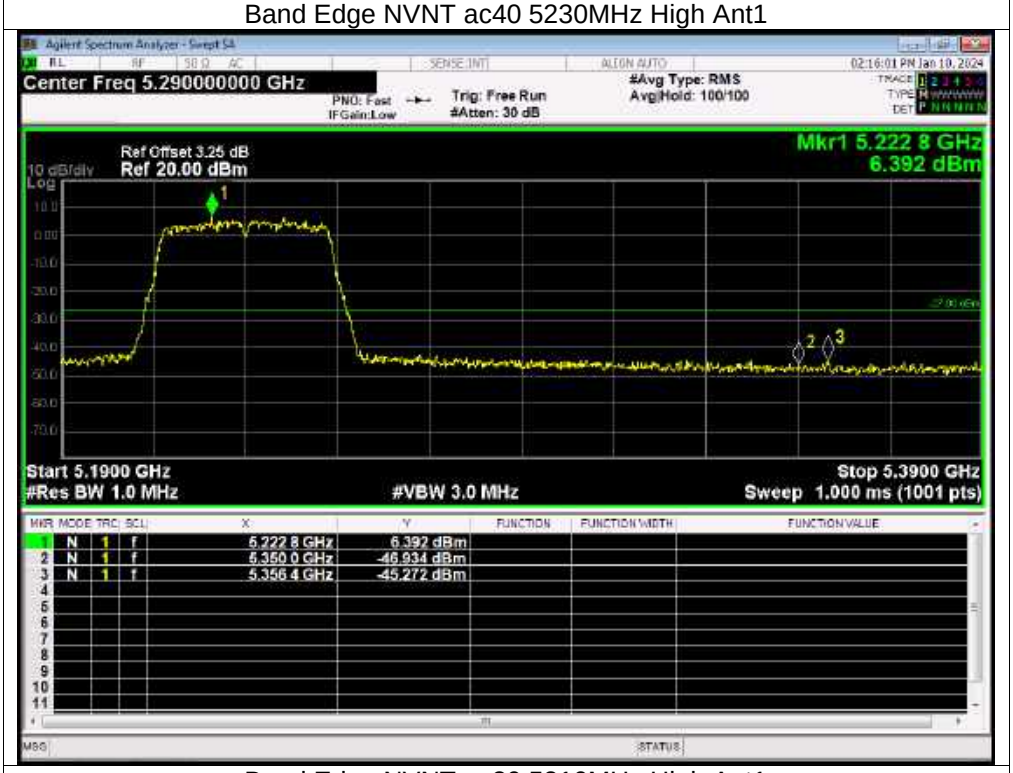
Band Edge NVNT ac20 5240MHz High Ant1



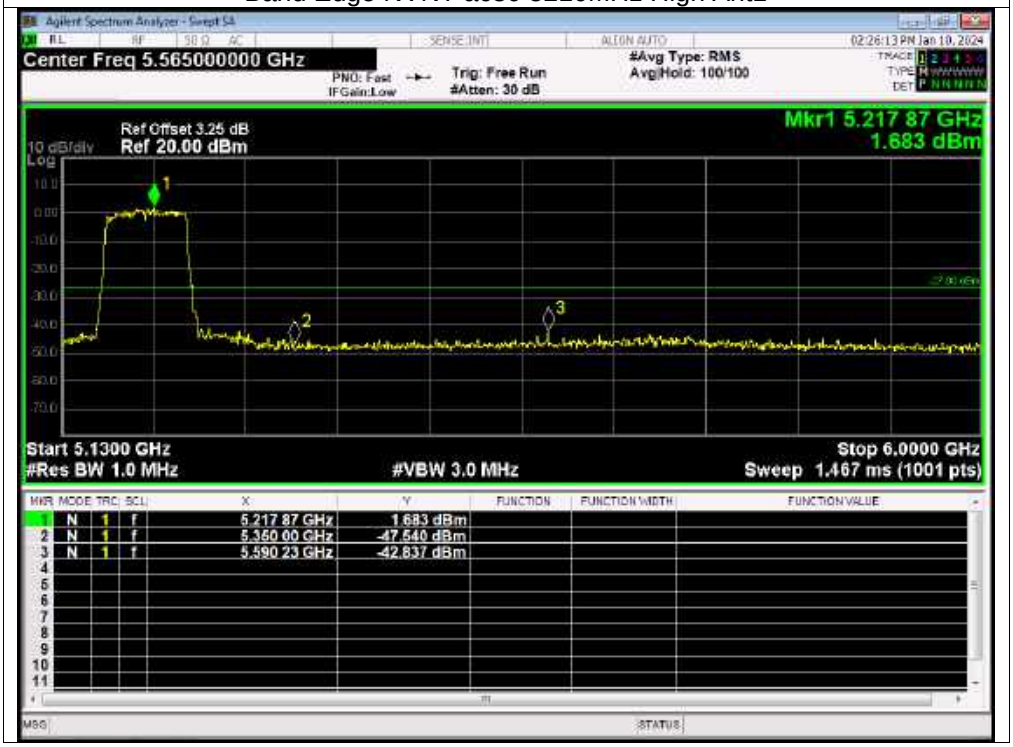
Band Edge NVNT ac40 5190MHz Low Ant1



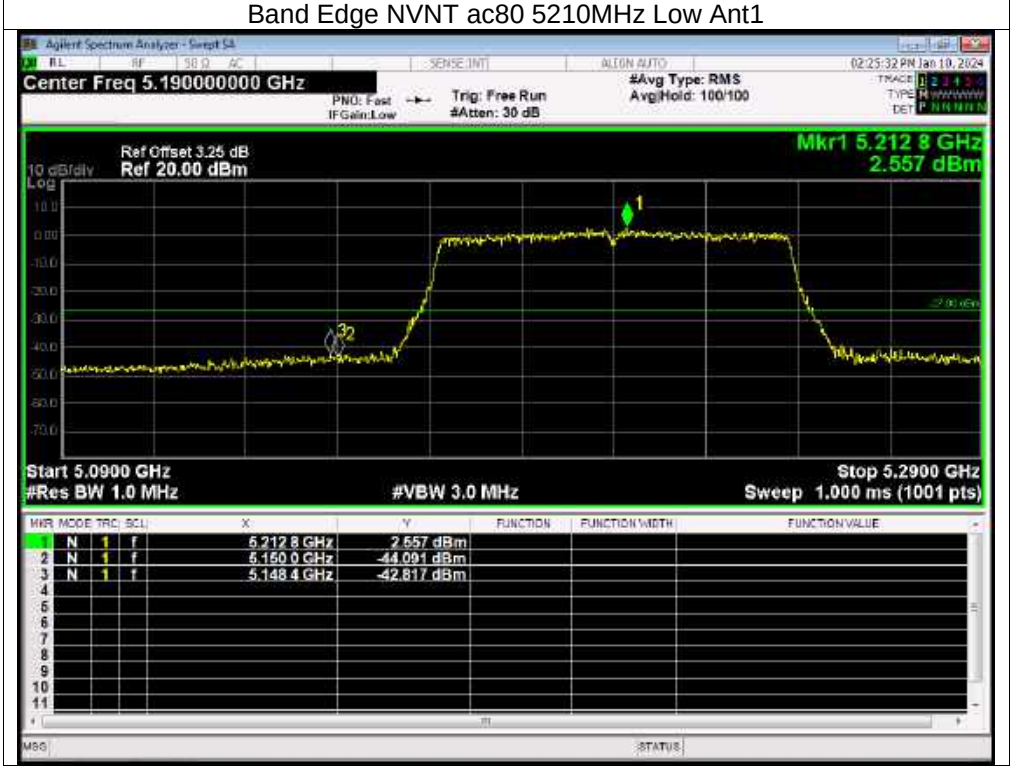
Band Edge NVNT ac40 5230MHz High Ant1



Band Edge NVNT ac80 5210MHz High Ant1

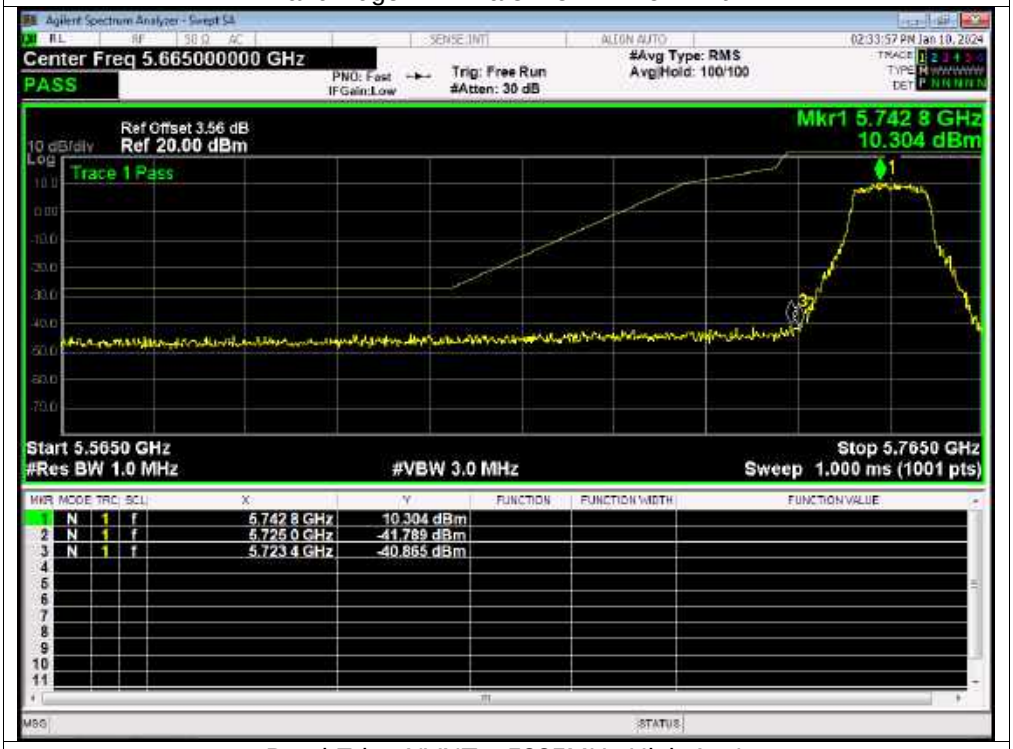


Band Edge NVNT ac80 5210MHz Low Ant1

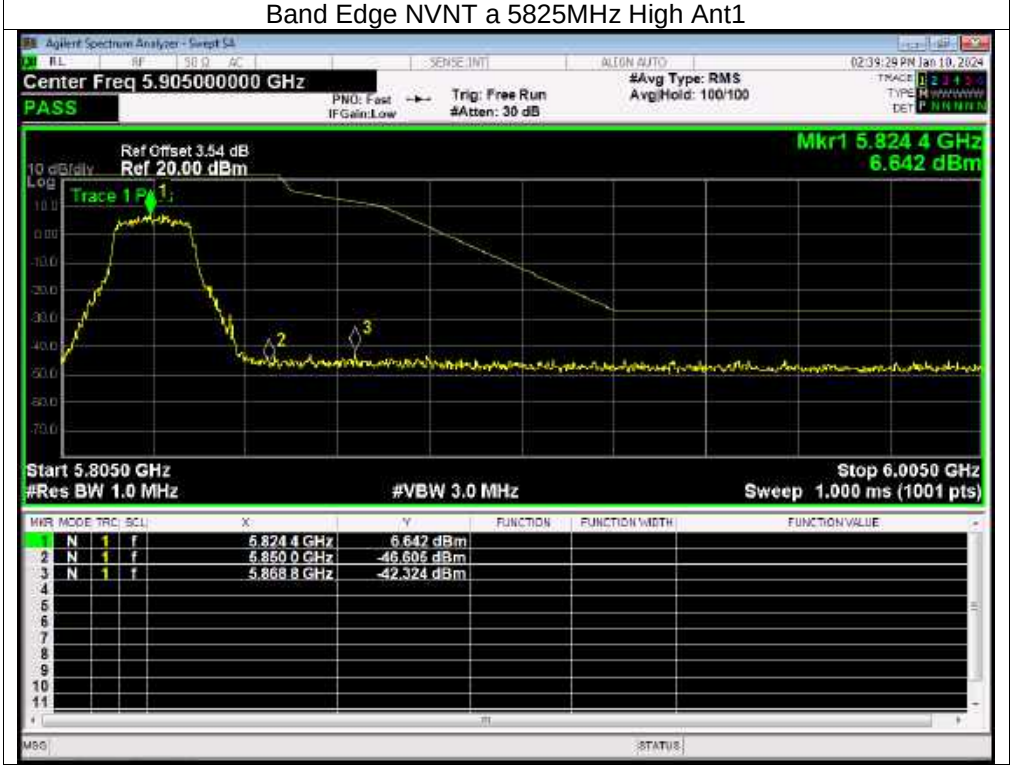


: 5745-5825MHz

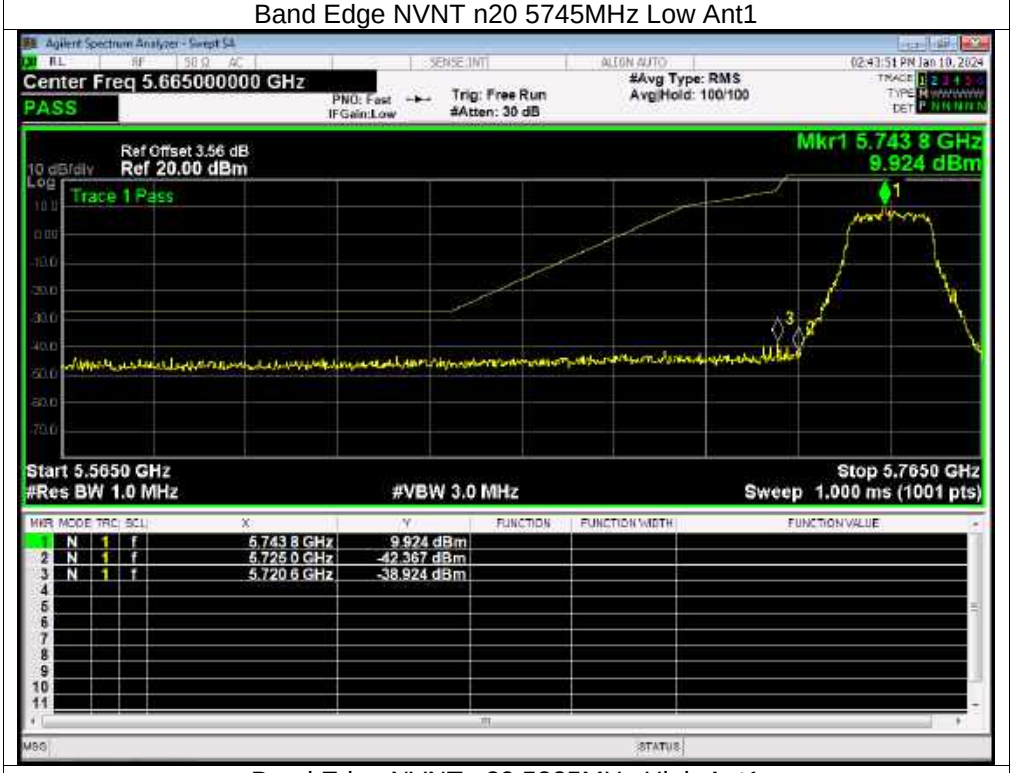
Test Graphs
Band Edge NVNT a 5745MHz Low Ant1



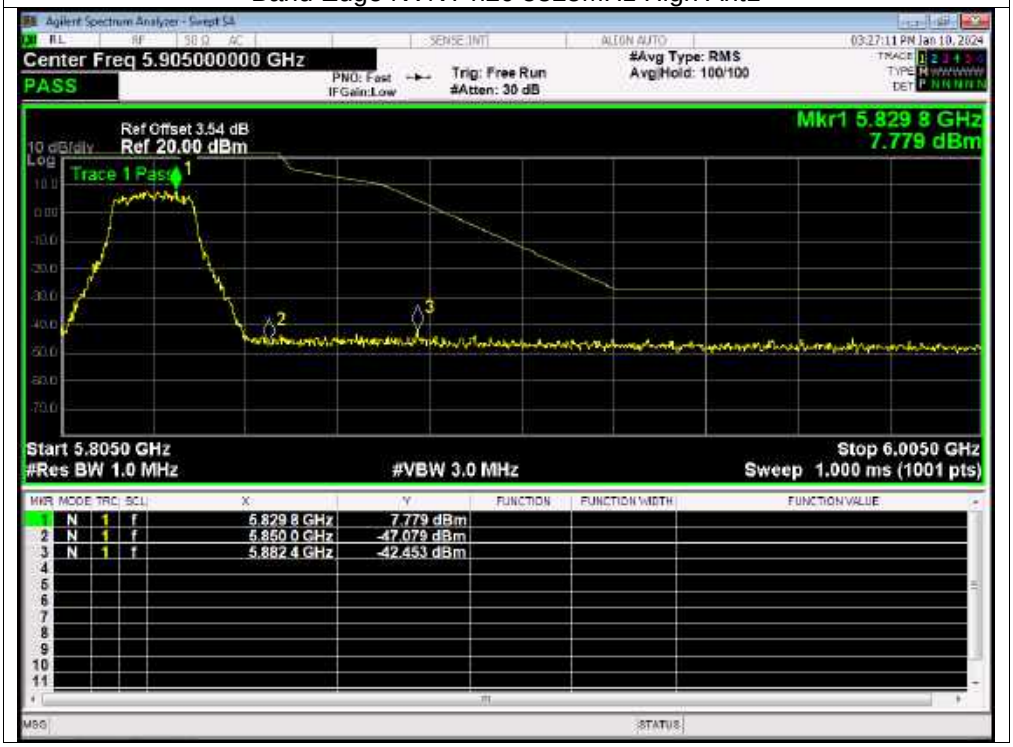
Band Edge NVNT a 5825MHz High Ant1



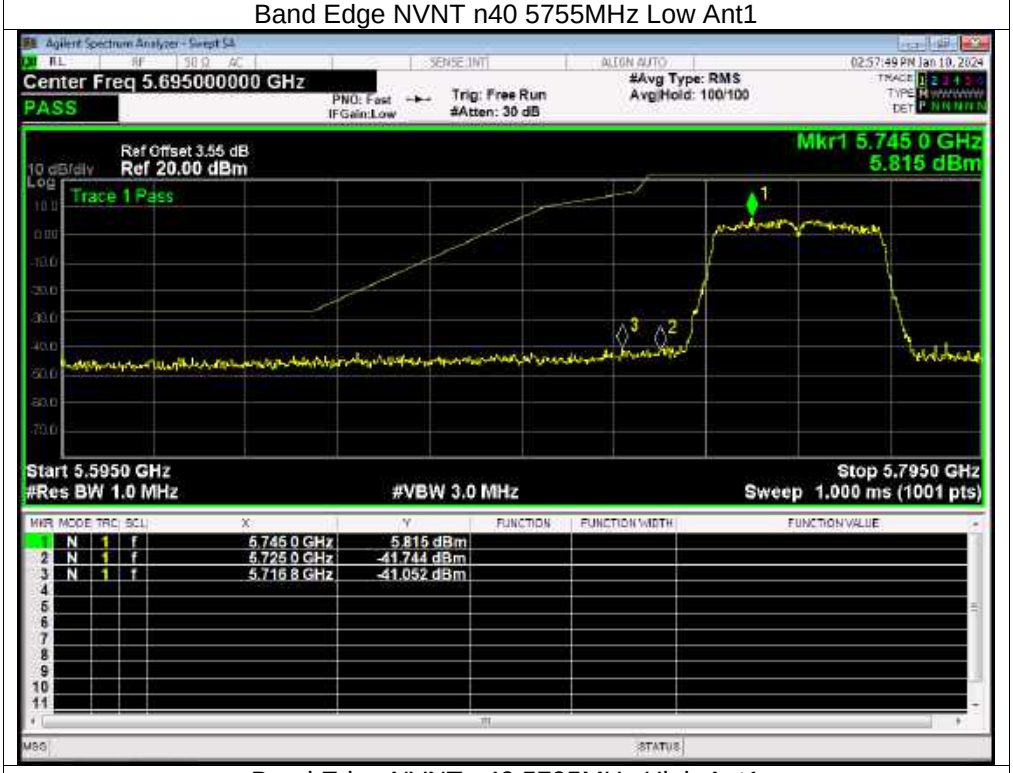
Band Edge NVNT n20 5745MHz Low Ant1



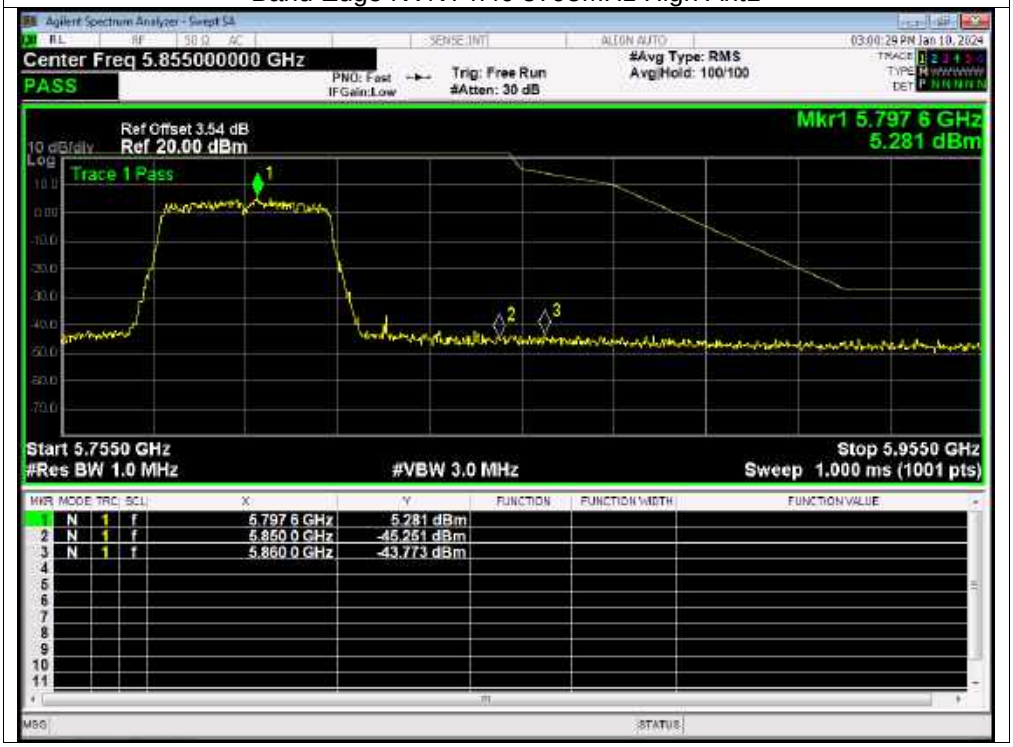
Band Edge NVNT n20 5825MHz High Ant1



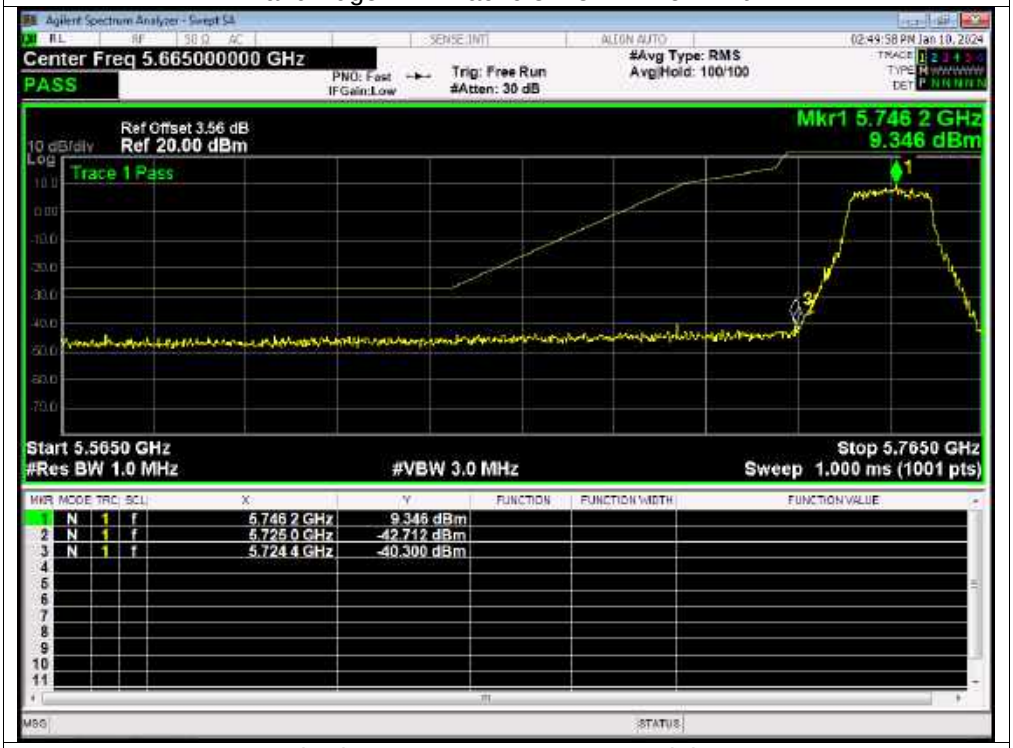
Band Edge NVNT n40 5755MHz Low Ant1



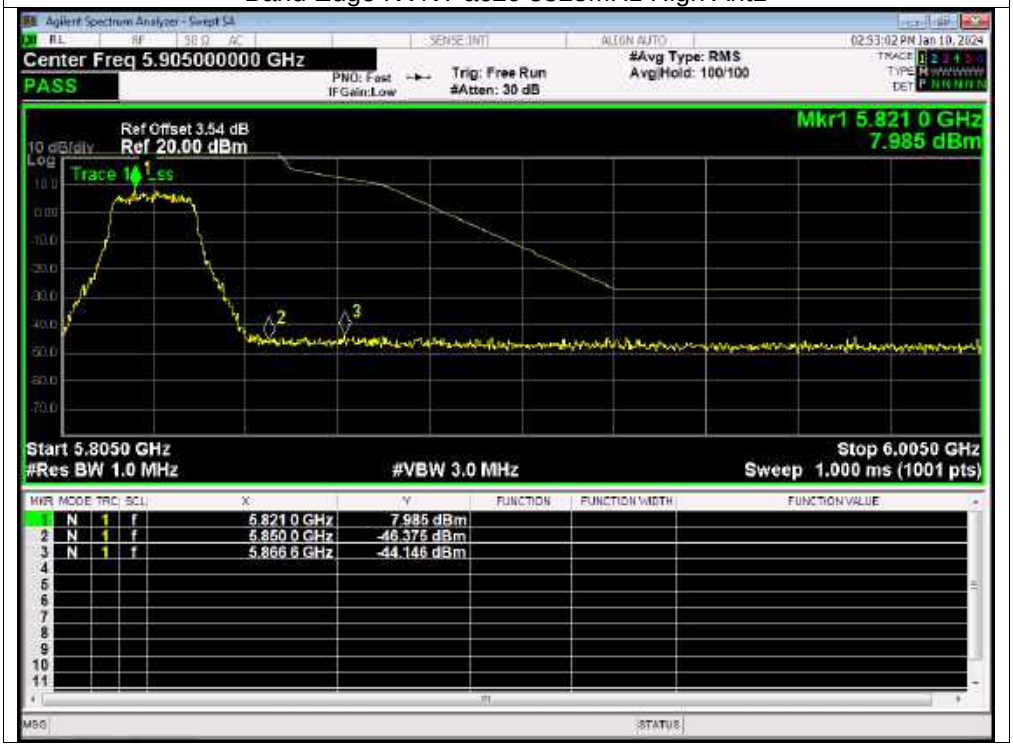
Band Edge NVNT n40 5795MHz High Ant1



Band Edge NVNT ac20 5745MHz Low Ant1

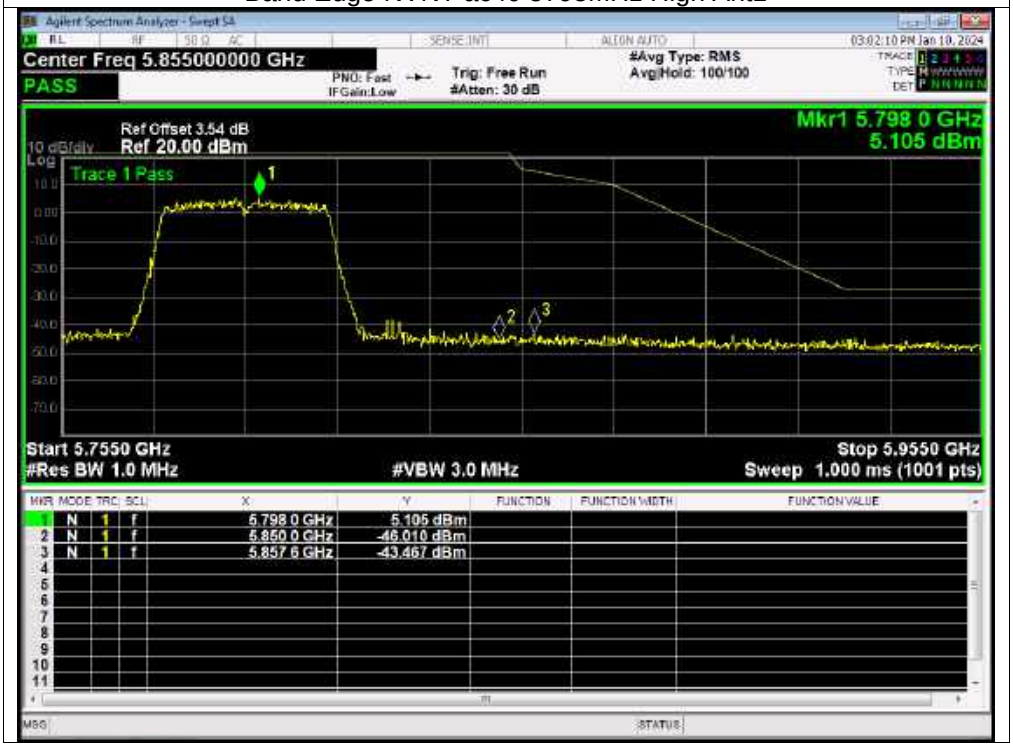


Band Edge NVNT ac20 5825MHz High Ant1

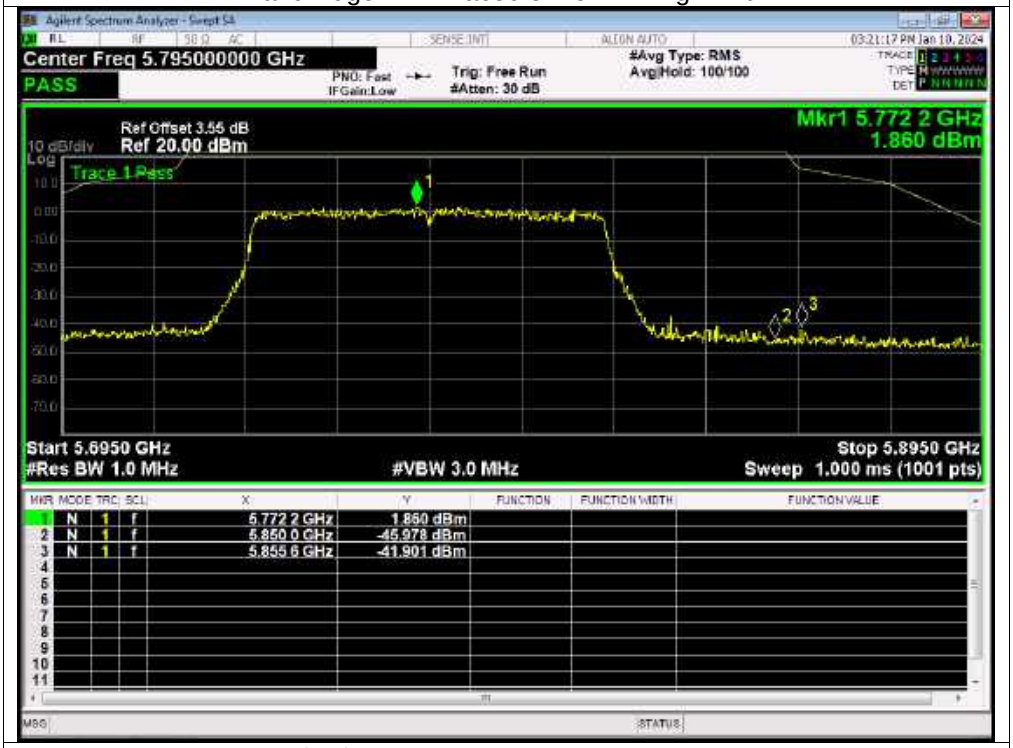


Band Edge NVNT ac40 5755MHz Low Ant1

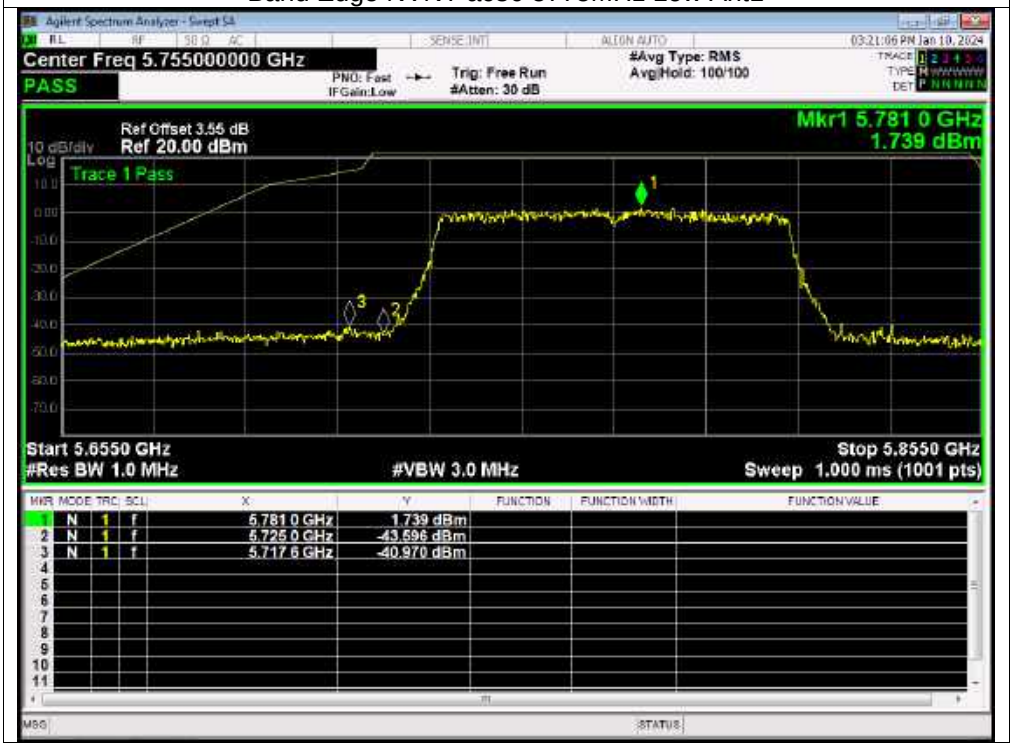
Band Edge NVNT ac40 5795MHz High Ant1



Band Edge NVNT ac80 5775MHz High Ant1

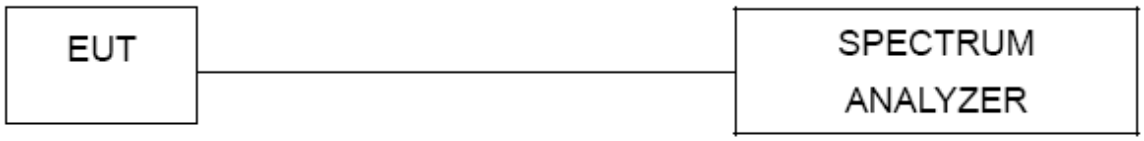


Band Edge NVNT ac80 5775MHz Low Ant1



11. Spurious RF Conducted Emissions

11.1 Block Diagram Of Test Setup



11.2 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..

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 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.

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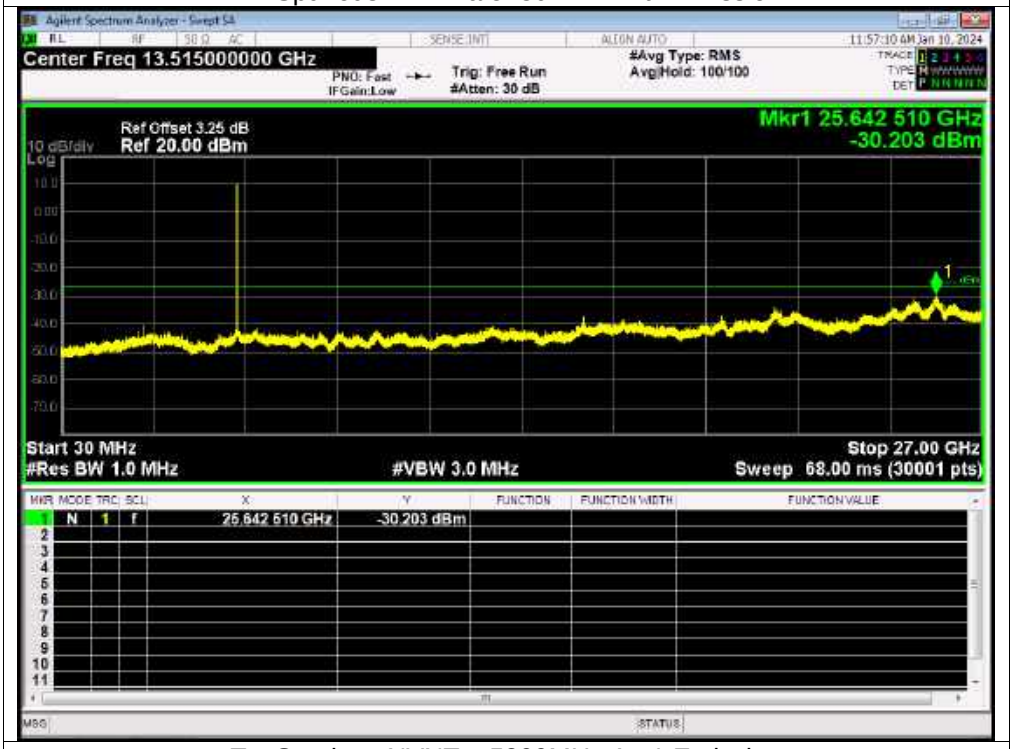
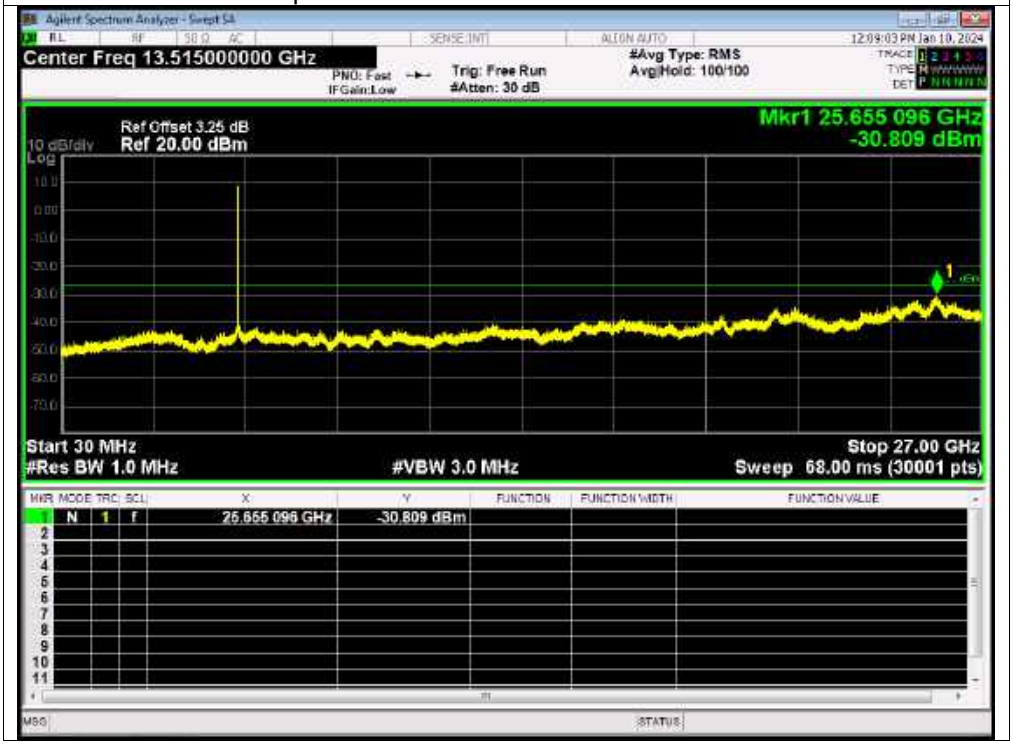
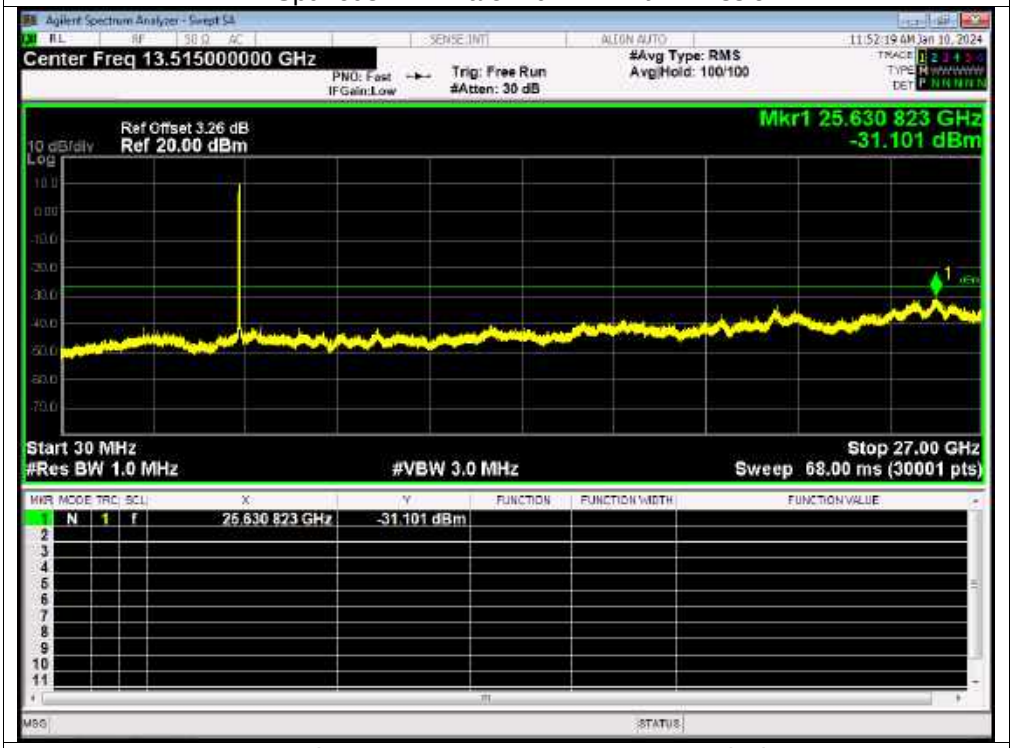
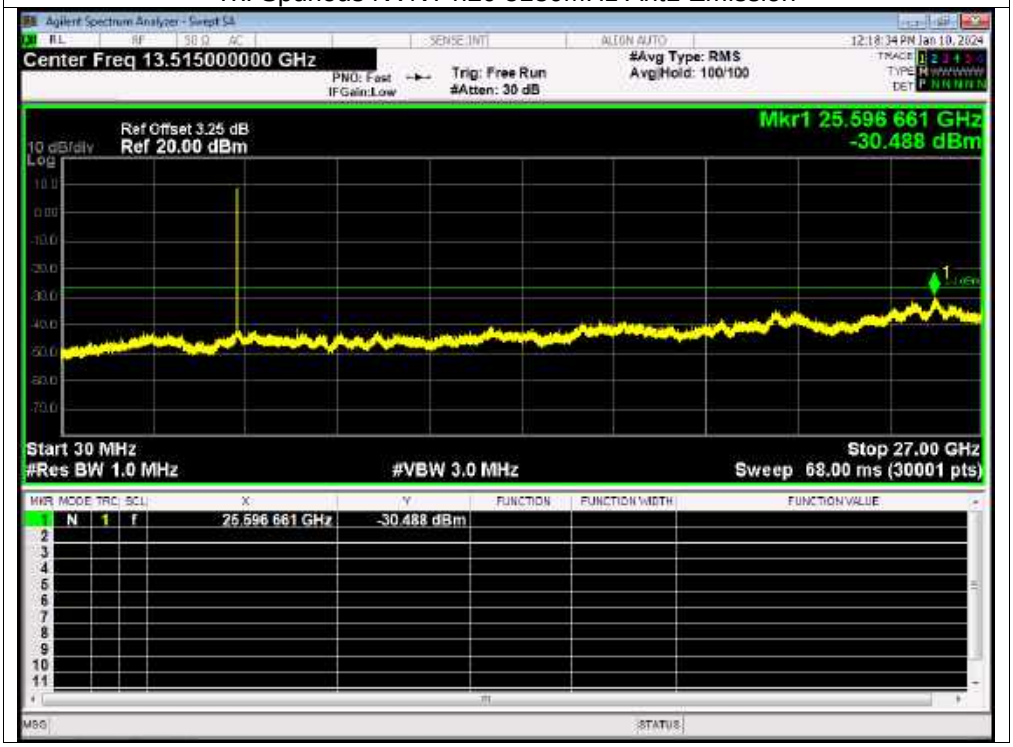
Plot.: 5180-5240MHz

Test Graphs
Tx. Spurious NVNT a 5180MHz Ant1 Emission

Tx. Spurious NVNT a 5200MHz Ant1 Emission


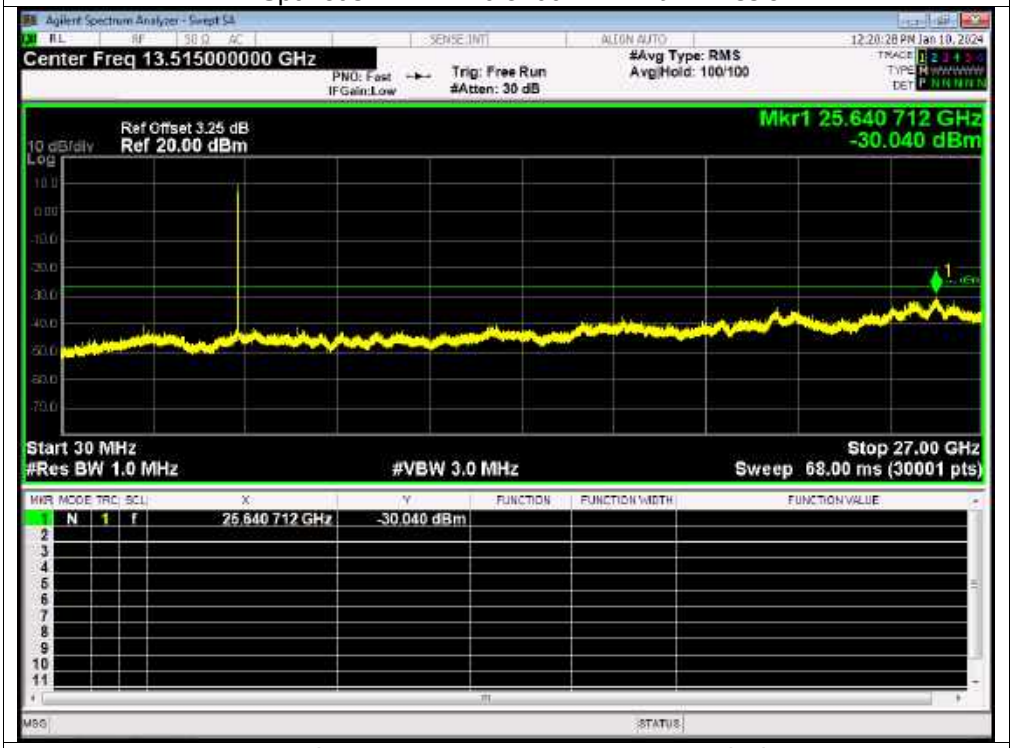
Tx. Spurious NVNT a 5240MHz Ant1 Emission



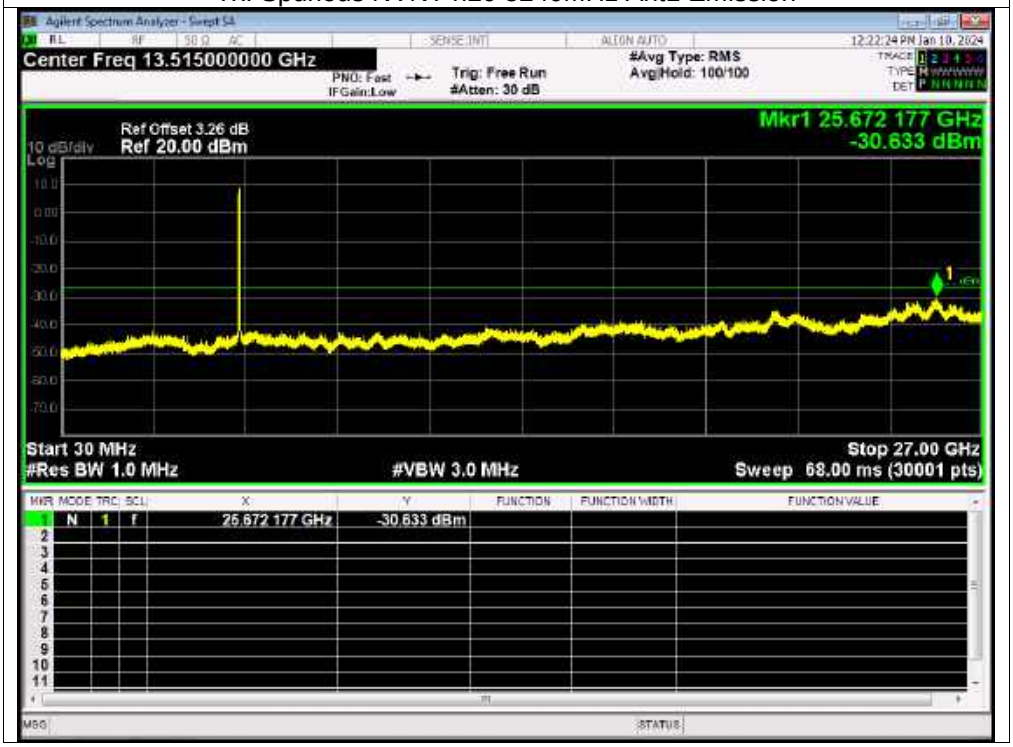
Tx. Spurious NVNT n20 5180MHz Ant1 Emission



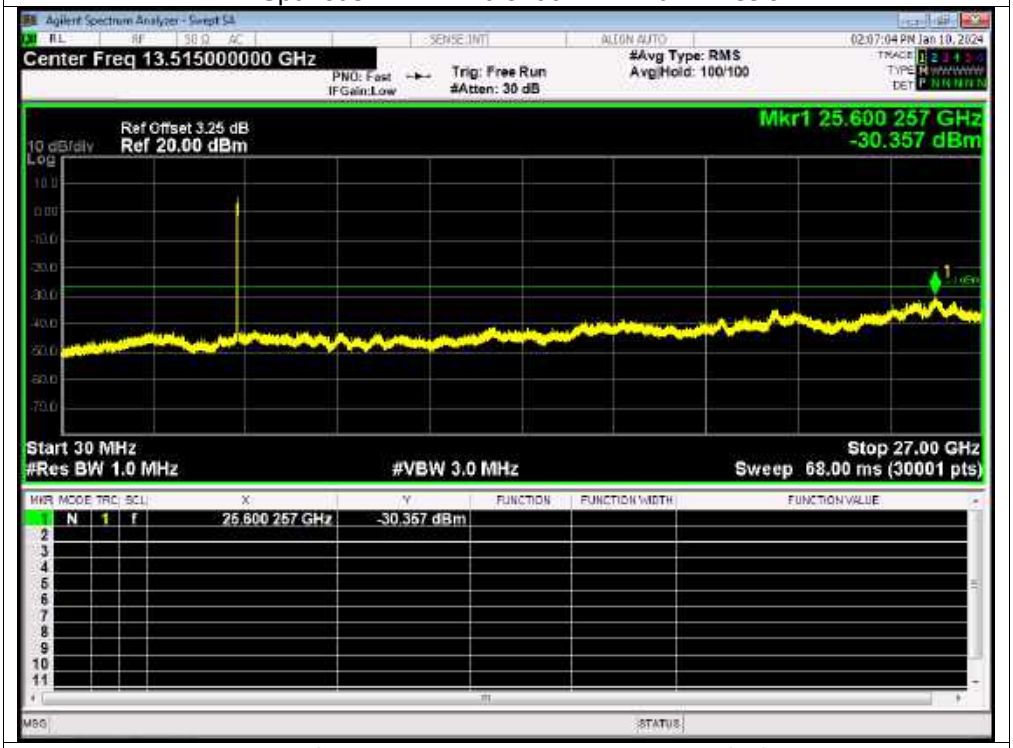
Tx. Spurious NVNT n20 5200MHz Ant1 Emission



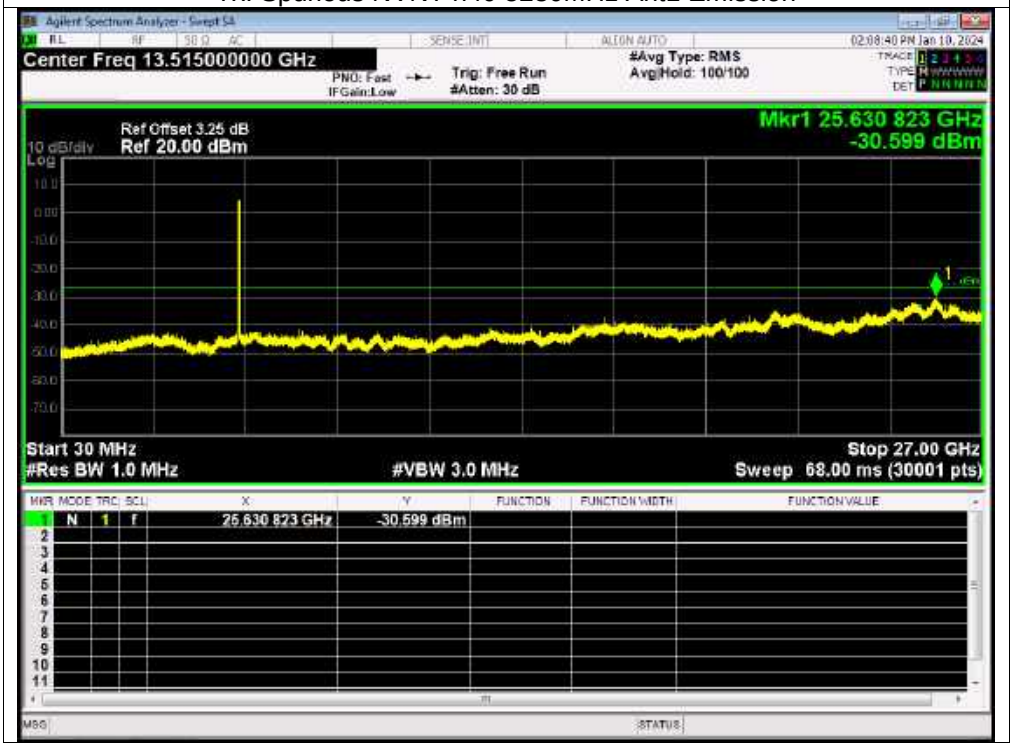
Tx. Spurious NVNT n20 5240MHz Ant1 Emission



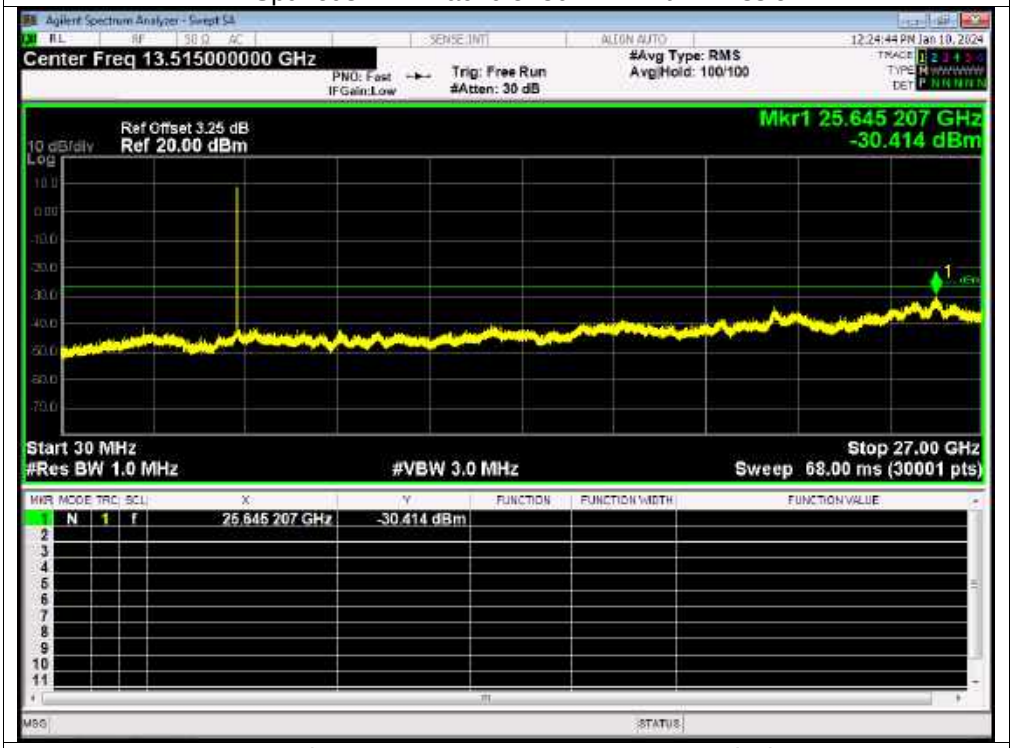
Tx. Spurious NVNT n40 5190MHz Ant1 Emission



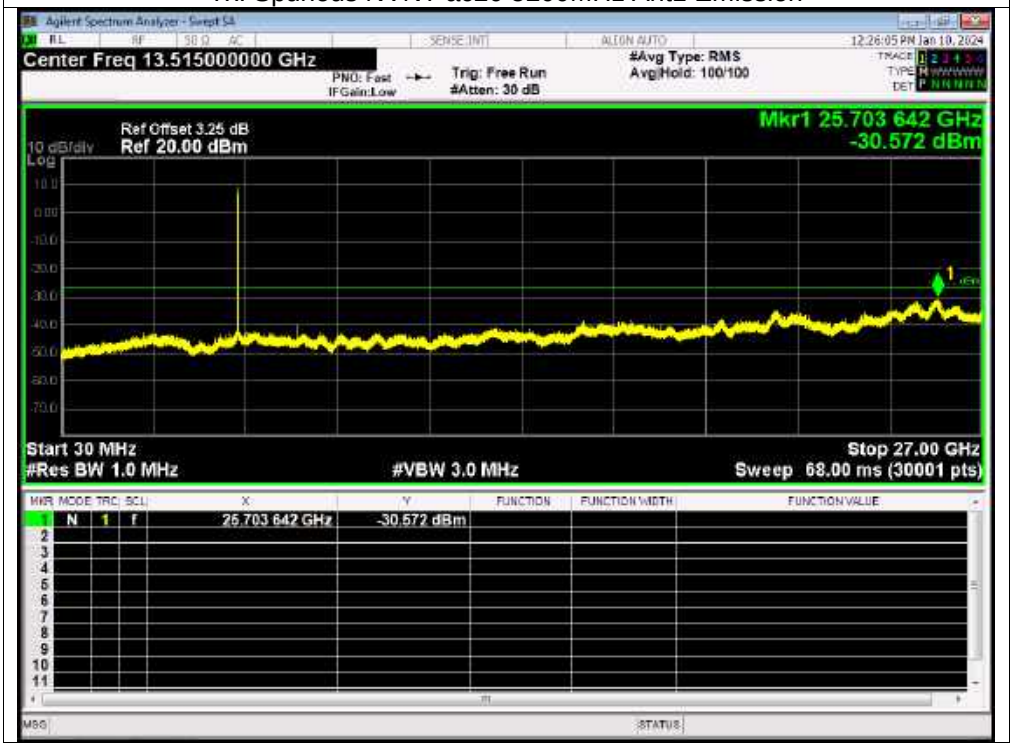
Tx. Spurious NVNT n40 5230MHz Ant1 Emission



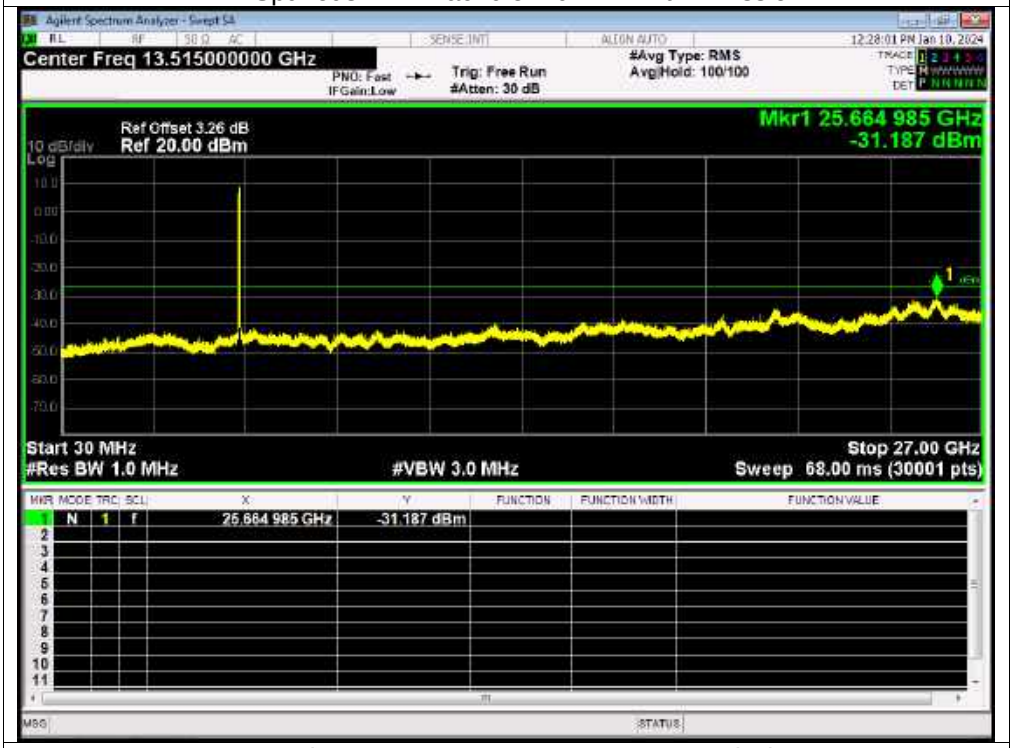
Tx. Spurious NVNT ac20 5180MHz Ant1 Emission



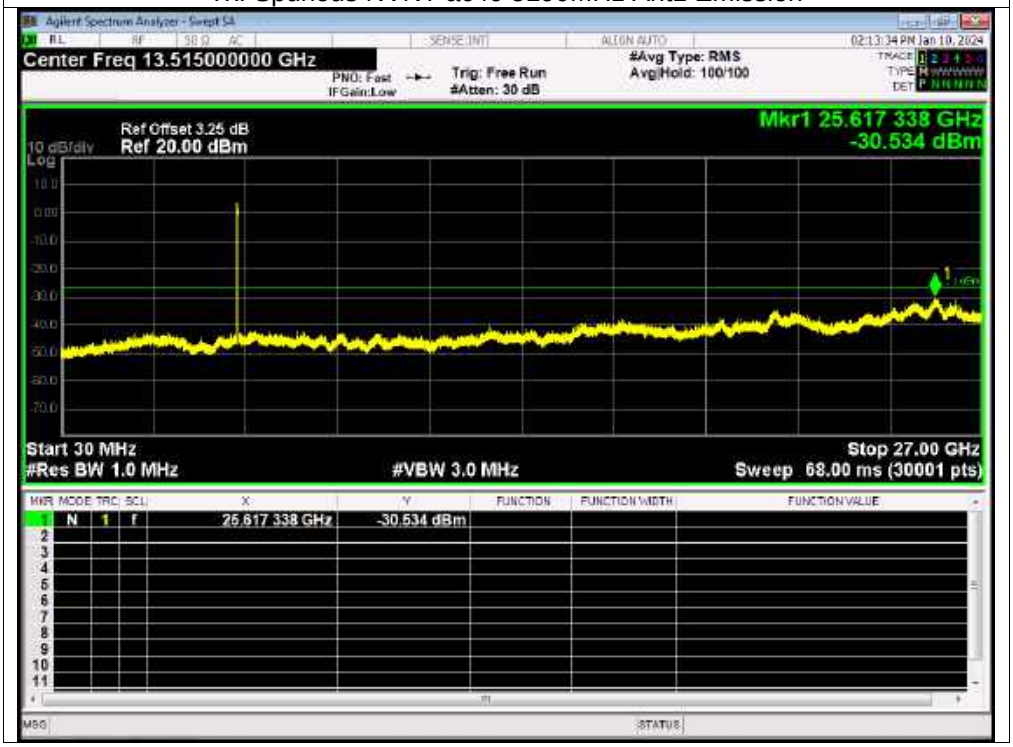
Tx. Spurious NVNT ac20 5200MHz Ant1 Emission



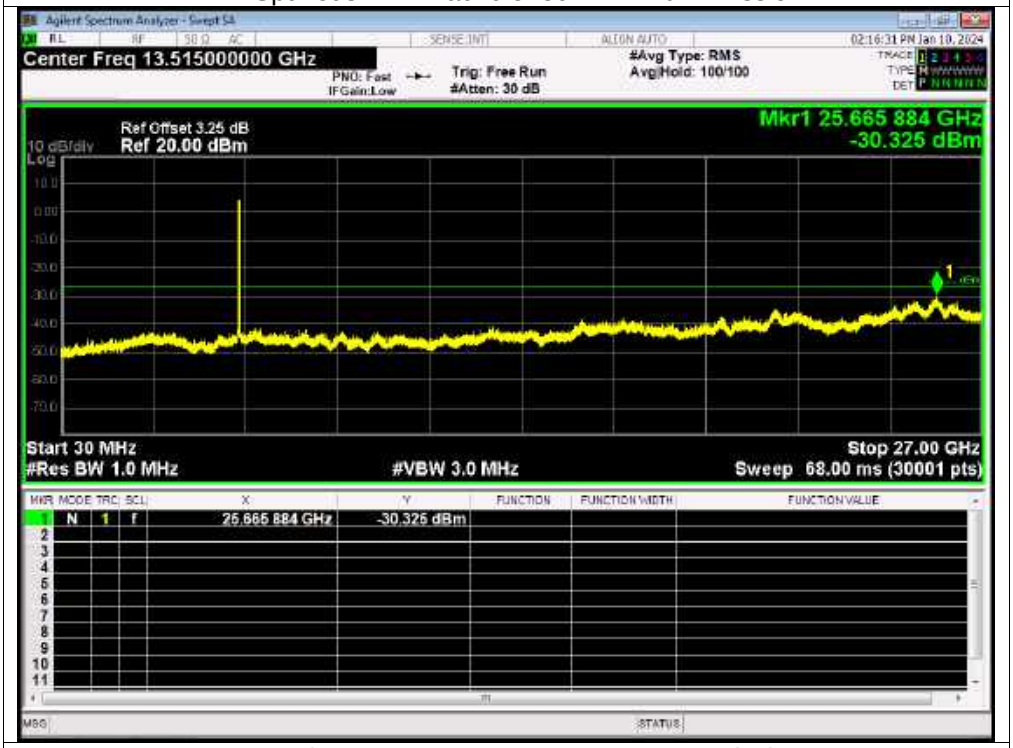
Tx. Spurious NVNT ac20 5240MHz Ant1 Emission



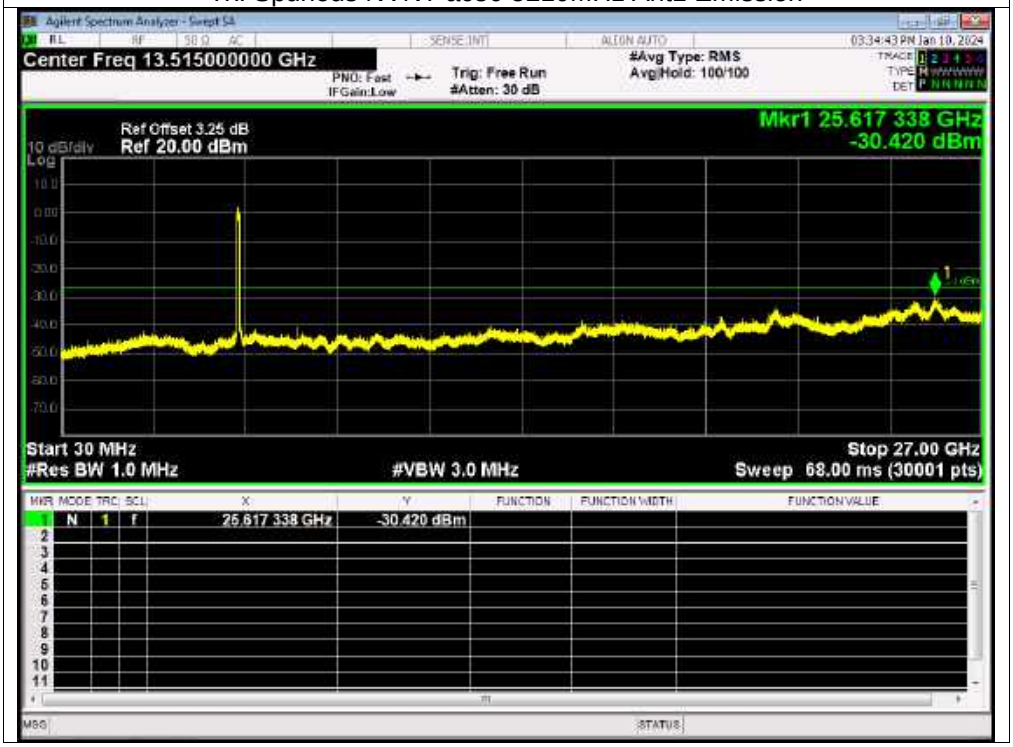
Tx. Spurious NVNT ac40 5190MHz Ant1 Emission



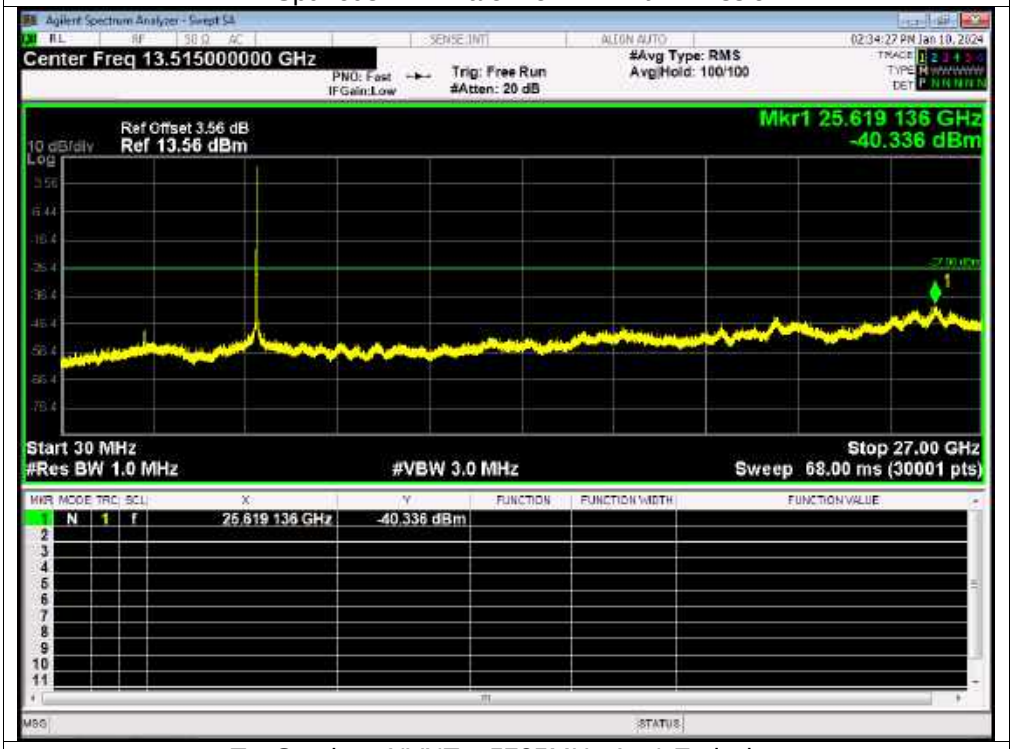
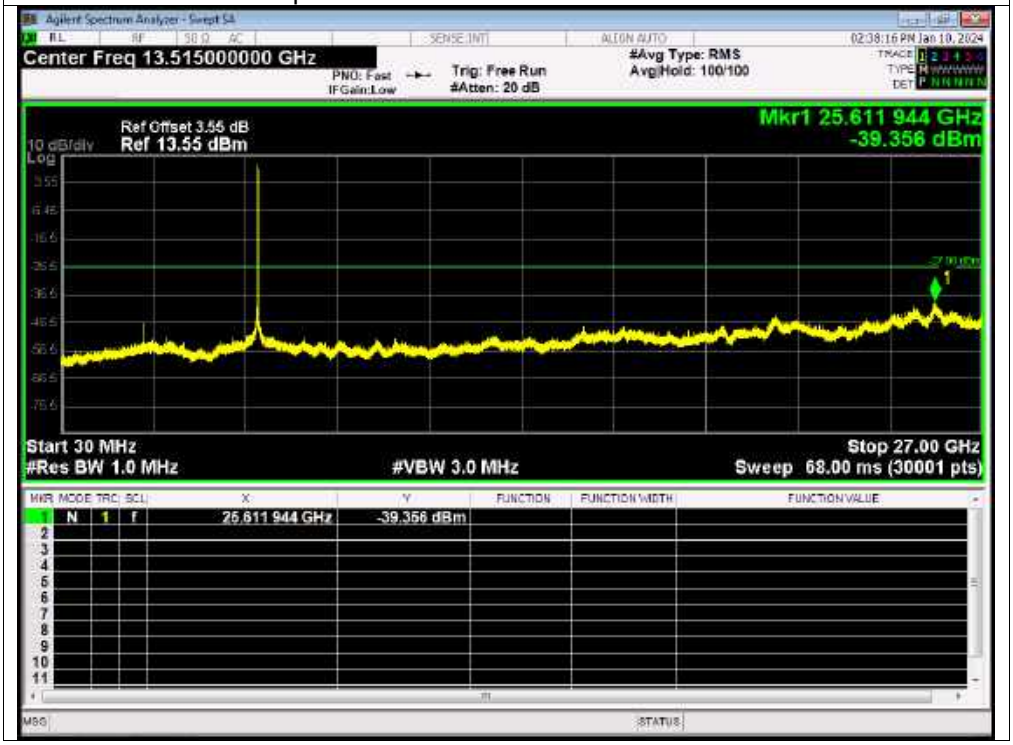
Tx. Spurious NVNT ac40 5230MHz Ant1 Emission



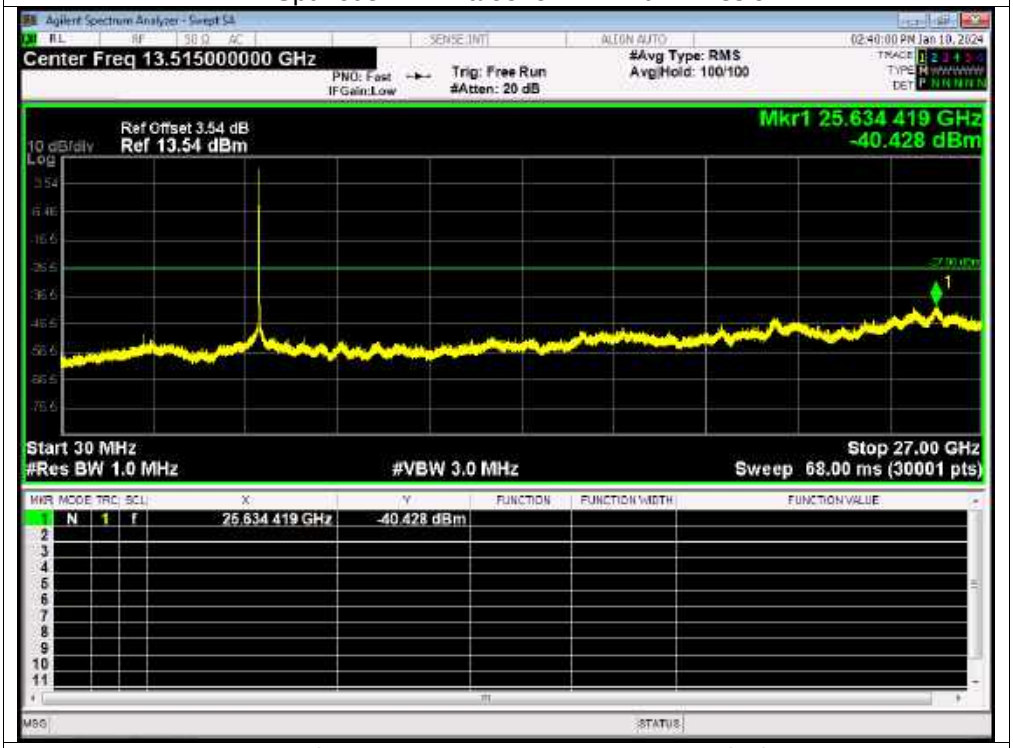
Tx. Spurious NVNT ac80 5210MHz Ant1 Emission



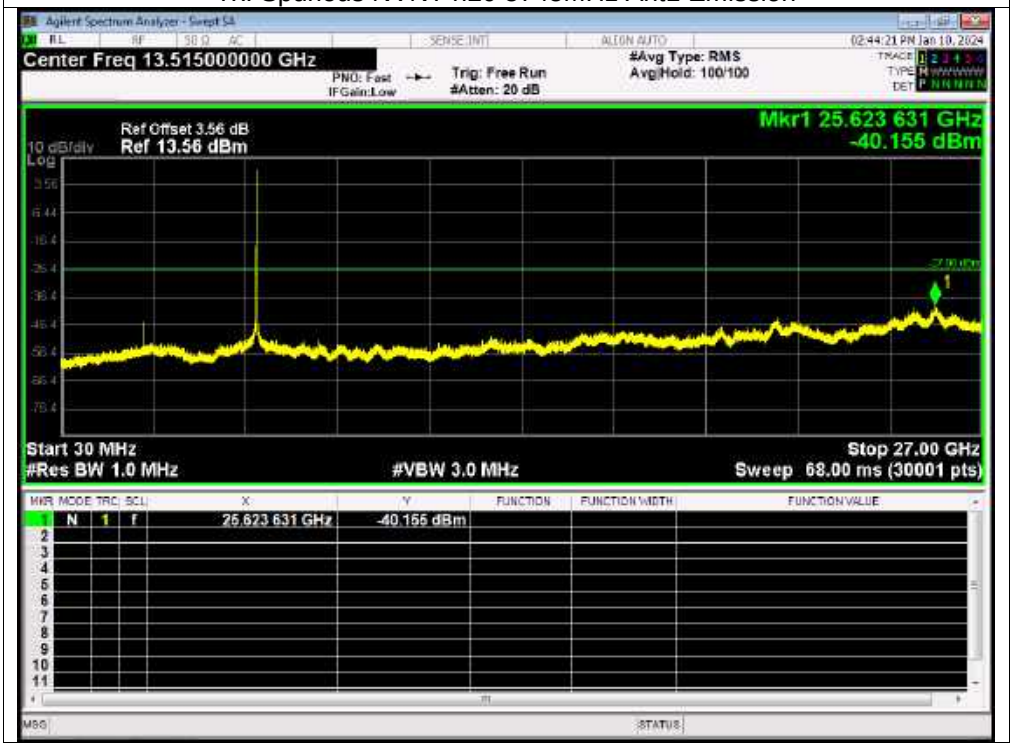
: 5745-58250MHz

Test Graphs
Tx. Spurious NVNT a 5745MHz Ant1 Emission

Tx. Spurious NVNT a 5785MHz Ant1 Emission


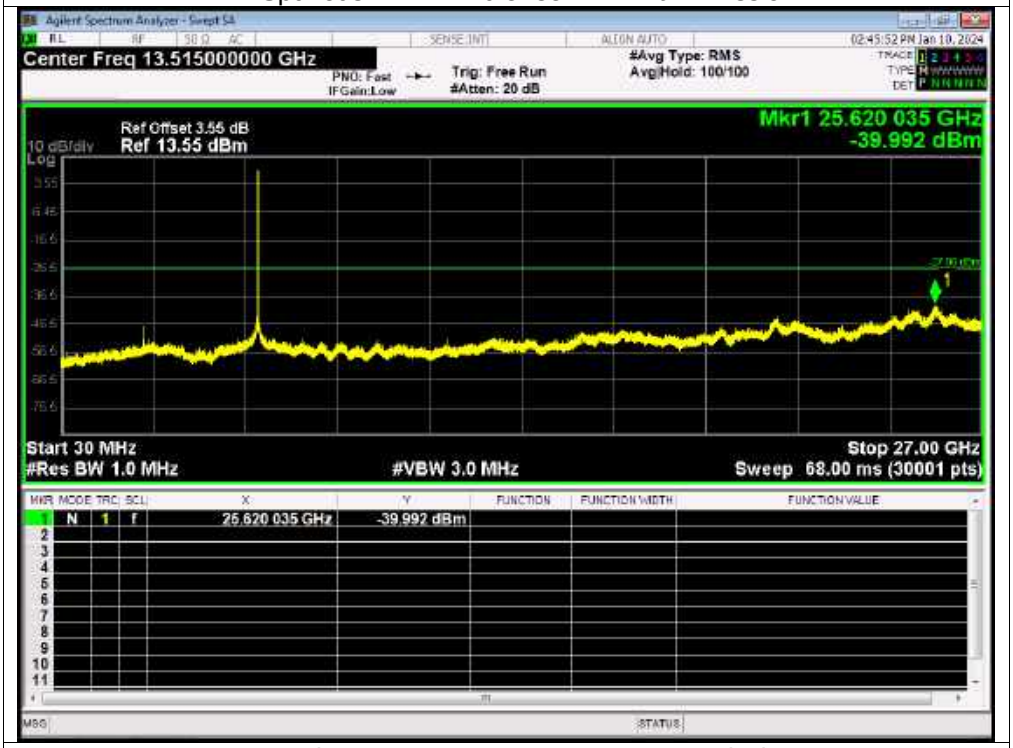
Tx. Spurious NVNT a 5825MHz Ant1 Emission



Tx. Spurious NVNT n20 5745MHz Ant1 Emission



Tx. Spurious NVNT n20 5785MHz Ant1 Emission



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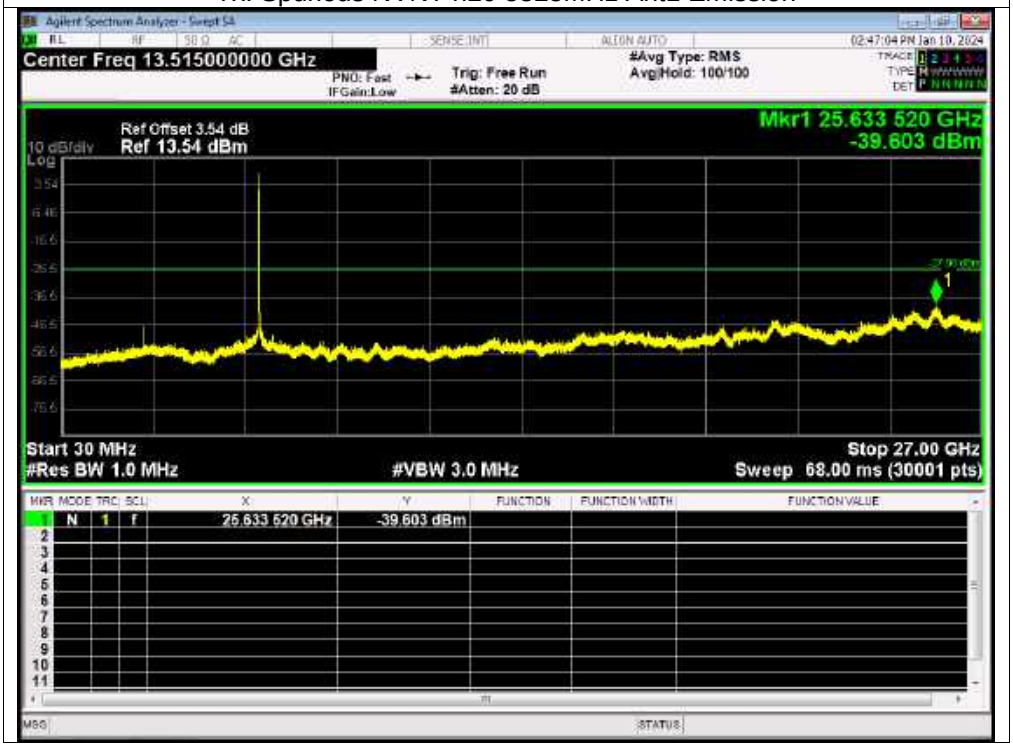
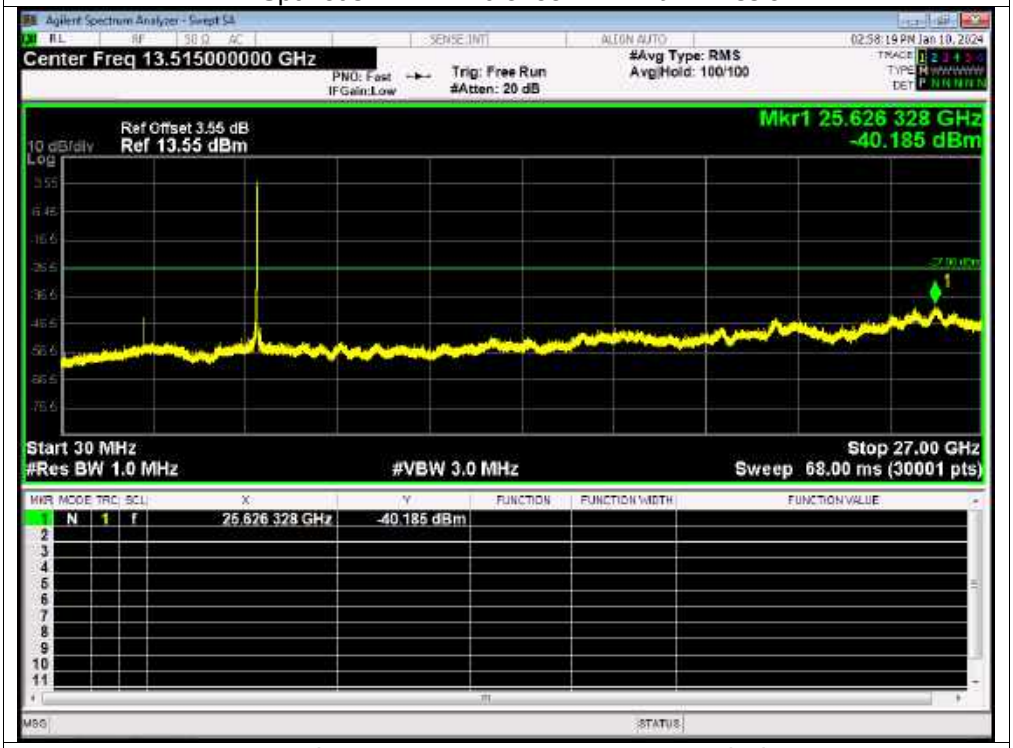
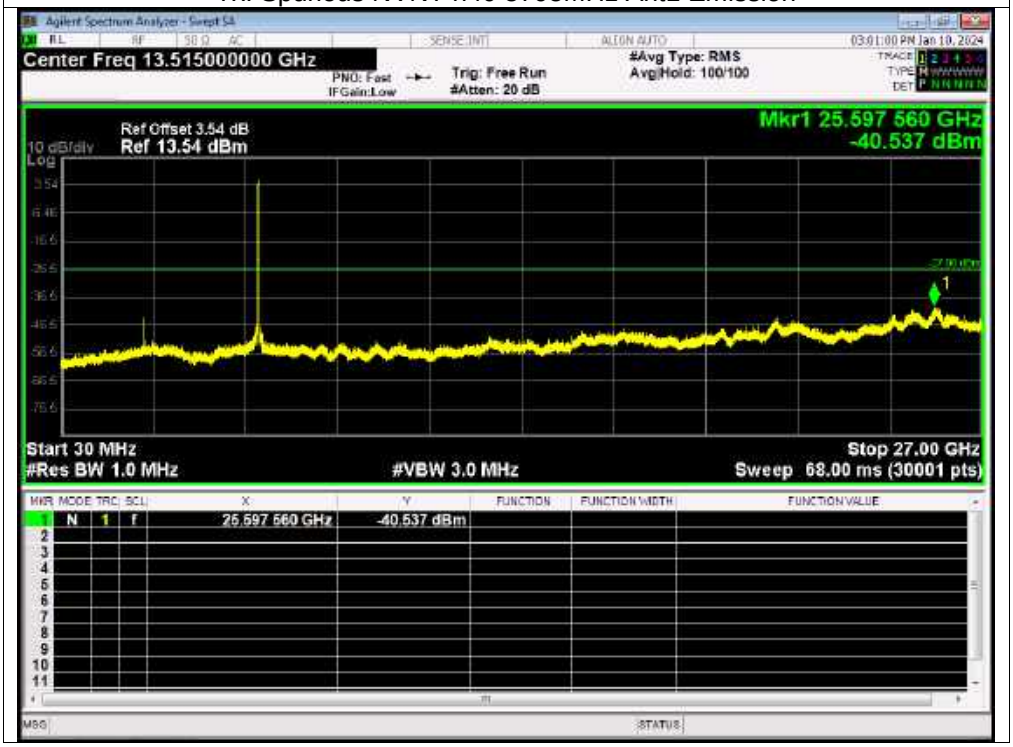


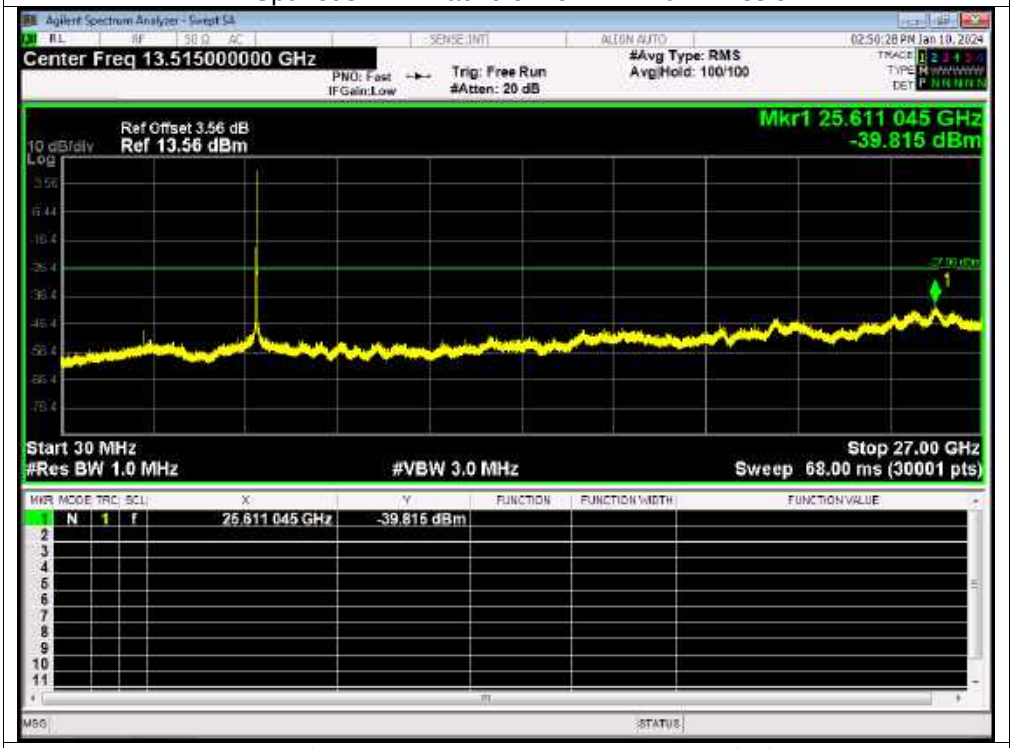
Tx. Spurious NVNT n40 5755MHz Ant1 Emission



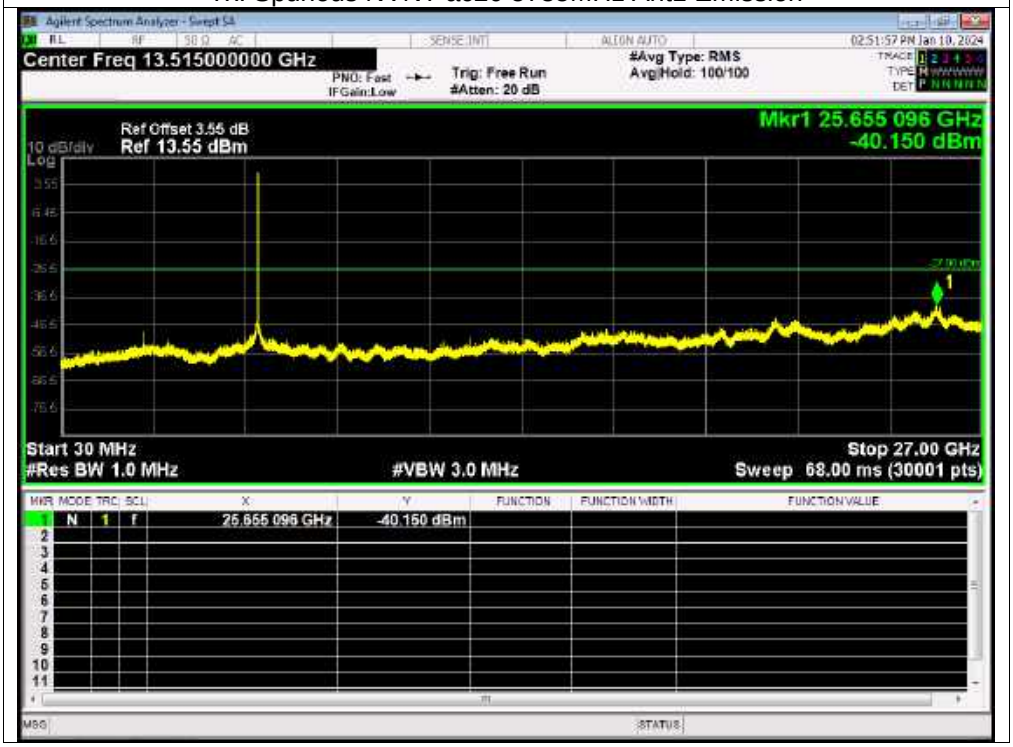
Tx. Spurious NVNT n40 5795MHz Ant1 Emission



Tx. Spurious NVNT ac20 5745MHz Ant1 Emission



Tx. Spurious NVNT ac20 5785MHz Ant1 Emission



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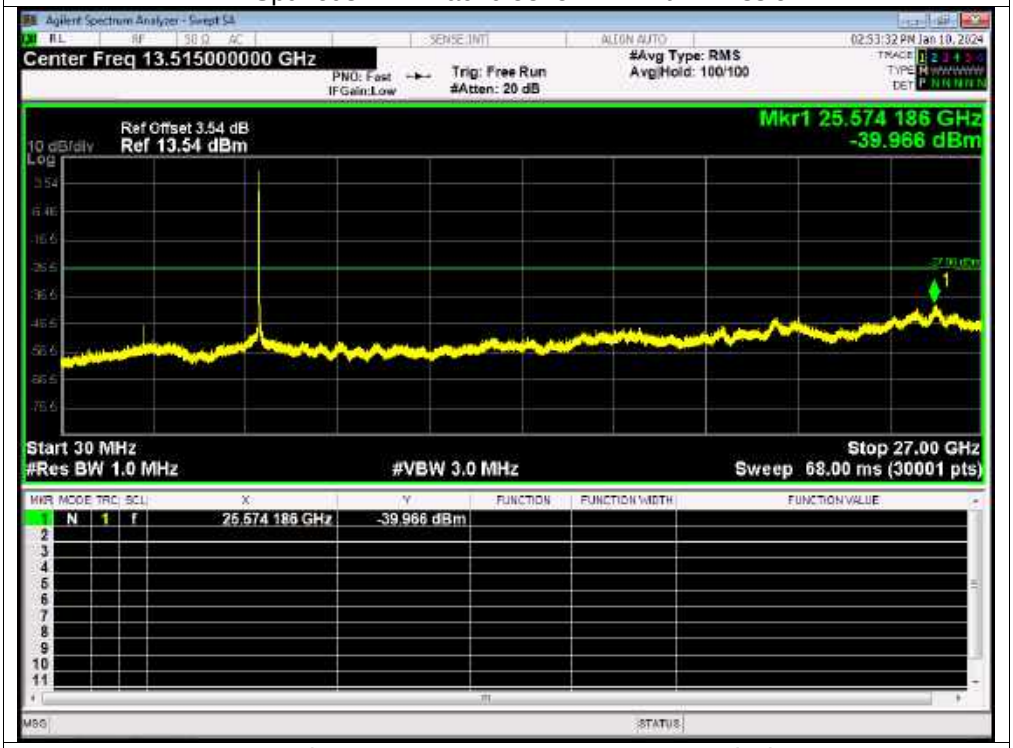

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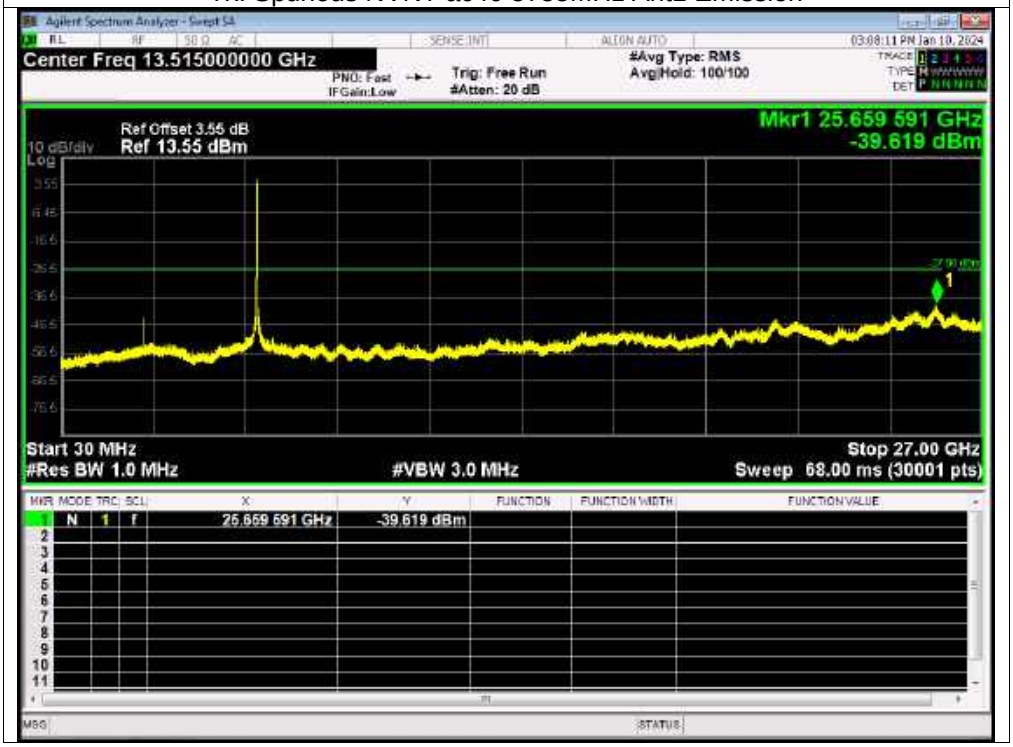
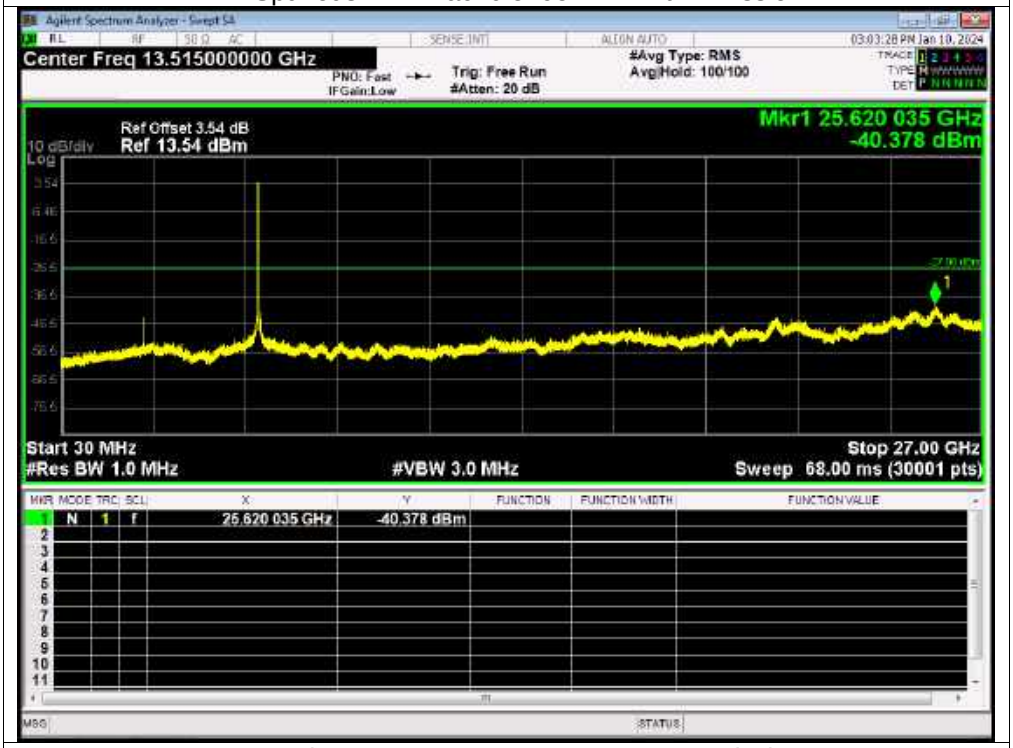
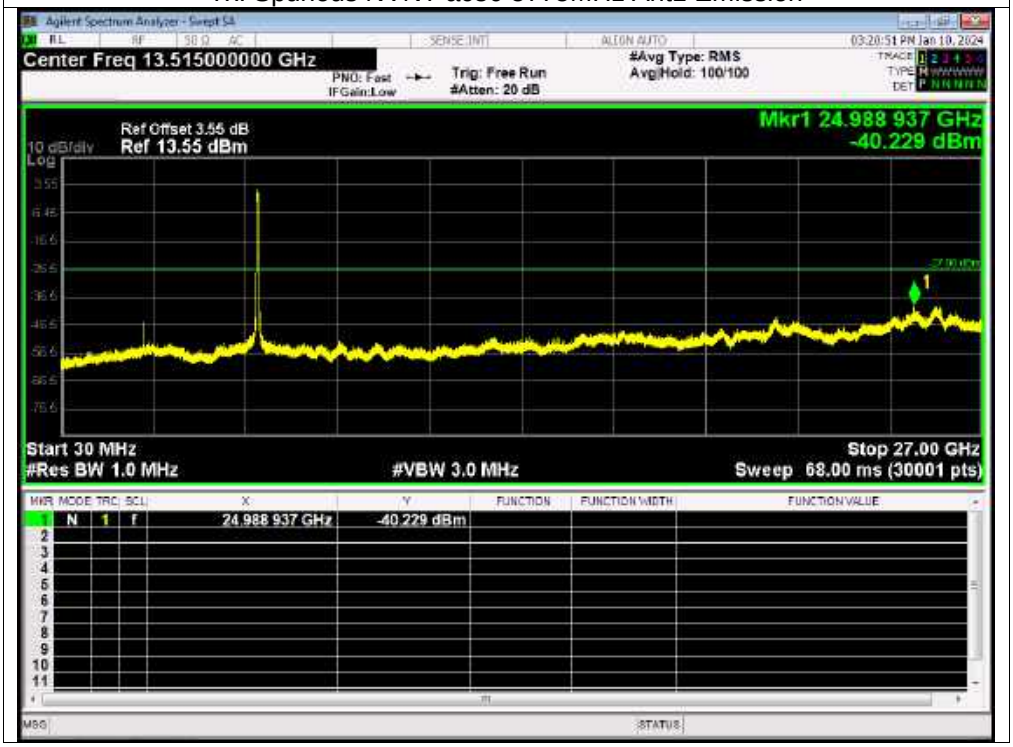


Tx. Spurious NVNT ac40 5795MHz Ant1 Emission

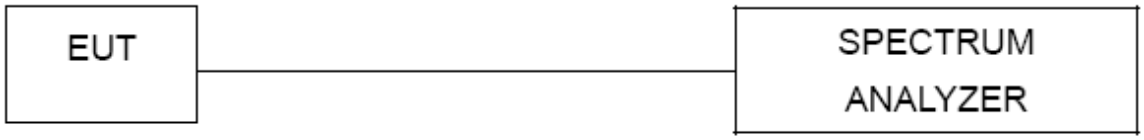


Tx. Spurious NVNT ac80 5775MHz Ant1 Emission



12. Frequency Stability Measurement

12.1 Block Diagram Of Test Setup



12.2 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)..

12.3 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.

12.4 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	5180.0110	5180	0.0110	2.1312
		V max (V)	13.80	5180.0169	5180	0.0169	3.2630
		V min (V)	10.20	5180.0001	5180	0.0001	0.0225
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	5180.0068	5180	0.0068	1.3039
		T (°C)	-10	5180.0046	5180	0.0046	0.8821
		T (°C)	0	5180.0041	5180	0.0041	0.7831
		T (°C)	10	5180.0023	5180	0.0023	0.4507
		T (°C)	20	5180.0029	5180	0.0029	0.5547
		T (°C)	30	5180.0045	5180	0.0045	0.8637
		T (°C)	40	5180.0087	5180	0.0087	1.6844
		T (°C)	50	5180.0075	5180	0.0075	1.4427
		T (°C)	60	5180.0065	5180	0.0065	1.2630
		T (°C)	70	5180.0002	5180	0.0002	0.0295
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	5200.0116	5200	0.0116	2.2394
		V max (V)	13.80	5200.0081	5200	0.0081	1.5668
		V min (V)	10.20	5200.0132	5200	0.0132	2.5378
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	5200.00304	5200	0.00304	0.5848
		T (°C)	-10	5200.00945	5200	0.00945	1.8164
		T (°C)	0	5200.00505	5200	0.00505	0.9706
		T (°C)	10	5200.00102	5200	0.00102	0.1963
		T (°C)	20	5200.01074	5200	0.01074	2.0646
		T (°C)	30	5200.00322	5200	0.00322	0.6200
		T (°C)	40	5200.00949	5200	0.00949	1.8259
		T (°C)	50	5200.00964	5200	0.00964	1.8534
		T (°C)	60	5200.00442	5200	0.00442	0.8501
		T (°C)	70	5200.01306	5200	0.01306	2.5123
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	5240.0017	5240	0.0017	0.3192
		V max (V)	13.80	5240.0015	5240	0.0015	0.2940
		V min (V)	10.20	5240.0008	5240	0.0008	0.1593
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	5240.0006	5240	0.0006	0.1088
		T (°C)	-10	5240.0089	5240	0.0089	1.7024
		T (°C)	0	5240.0024	5240	0.0024	0.4666
		T (°C)	10	5240.0105	5240	0.0105	2.0019
		T (°C)	20	5240.0116	5240	0.0116	2.2043
		T (°C)	30	5240.0109	5240	0.0109	2.0762
		T (°C)	40	5240.0056	5240	0.0056	1.0610
		T (°C)	50	5240.0082	5240	0.0082	1.5630
		T (°C)	60	5240.0014	5240	0.0014	0.2686
		T (°C)	70	5240.0122	5240	0.0122	2.3293
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	5745.01092	5745	0.01092	1.9000
		V max (V)	13.80	5745.00049	5745	0.00049	0.0859
		V min (V)	10.20	5745.00779	5745	0.00779	1.3565
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	5745.01048	5745	0.01048	1.8243
		T (°C)	-10	5745.00603	5745	0.00603	1.0493
		T (°C)	0	5745.00902	5745	0.00902	1.5694
		T (°C)	10	5745.00326	5745	0.00326	0.5682
		T (°C)	20	5745.00086	5745	0.00086	0.1495
		T (°C)	30	5745.01022	5745	0.01022	1.7781
		T (°C)	40	5745.00998	5745	0.00998	1.7375
		T (°C)	50	5745.00796	5745	0.00796	1.3855
		T (°C)	60	5745.01142	5745	0.01142	1.9876
		T (°C)	70	5745.00517	5745	0.00517	0.9002
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	5785.00632	5785	0.00632	1.0932
		V max (V)	13.80	5785.01058	5785	0.01058	1.8290
		V min (V)	10.20	5785.00375	5785	0.00375	0.6486
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	5785.00479	5785	0.00479	0.8281
		T (°C)	-10	5785.01279	5785	0.01279	2.2113
		T (°C)	0	5785.00328	5785	0.00328	0.5677
		T (°C)	10	5785.00479	5785	0.00479	0.8286
		T (°C)	20	5785.01248	5785	0.01248	2.1579
		T (°C)	30	5785.00861	5785	0.00861	1.4878
		T (°C)	40	5785.00418	5785	0.00418	0.7228
		T (°C)	50	5785.01162	5785	0.01162	2.0084
		T (°C)	60	5785.00047	5785	0.00047	0.0821
		T (°C)	70	5785.01172	5785	0.01172	2.0261
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	5825.00496	5825	0.00496	0.8519
		V max (V)	13.80	5825.00409	5825	0.00409	0.7014
		V min (V)	10.20	5825.00900	5825	0.00900	1.5451
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	5825.01293	5825	0.01293	2.2194
		T (°C)	-10	5825.00926	5825	0.00926	1.5895
		T (°C)	0	5825.01329	5825	0.01329	2.2819
		T (°C)	10	5825.01302	5825	0.01302	2.2354
		T (°C)	20	5825.01029	5825	0.01029	1.7670
		T (°C)	30	5825.00403	5825	0.00403	0.6911
		T (°C)	40	5825.00540	5825	0.00540	0.9277
		T (°C)	50	5825.01335	5825	0.01335	2.2912
		T (°C)	60	5825.00779	5825	0.00779	1.3373
		T (°C)	70	5825.00766	5825	0.00766	1.3157
Limits				5725-5850 MHz			
Result				Complies			

13. Antenna Requirement

13.1 Limit

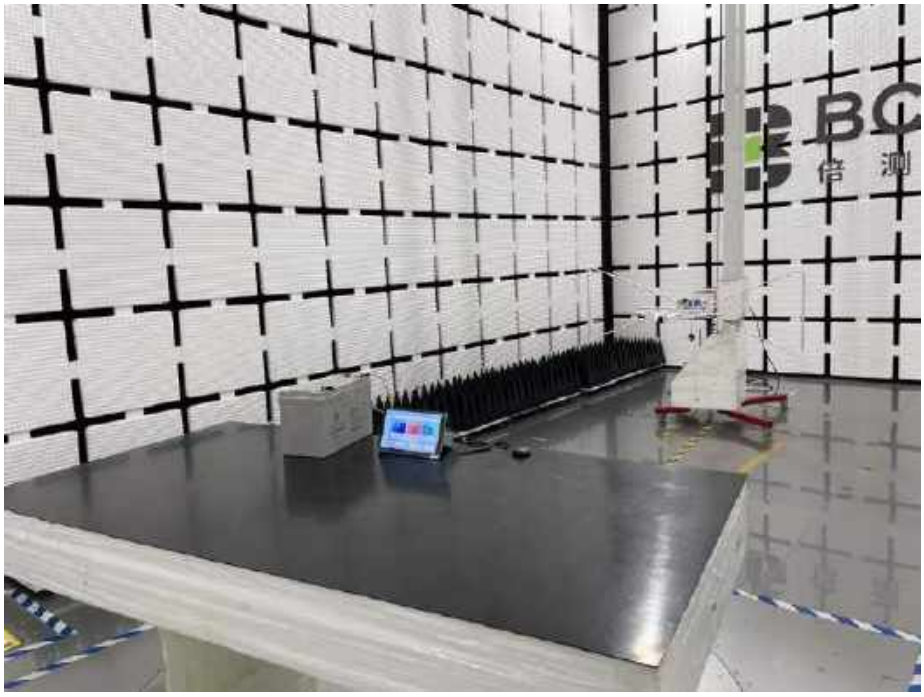
15.203 requirements:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217,§15.219, or §15.221. Further, this requirement does not apply to intentionalradiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

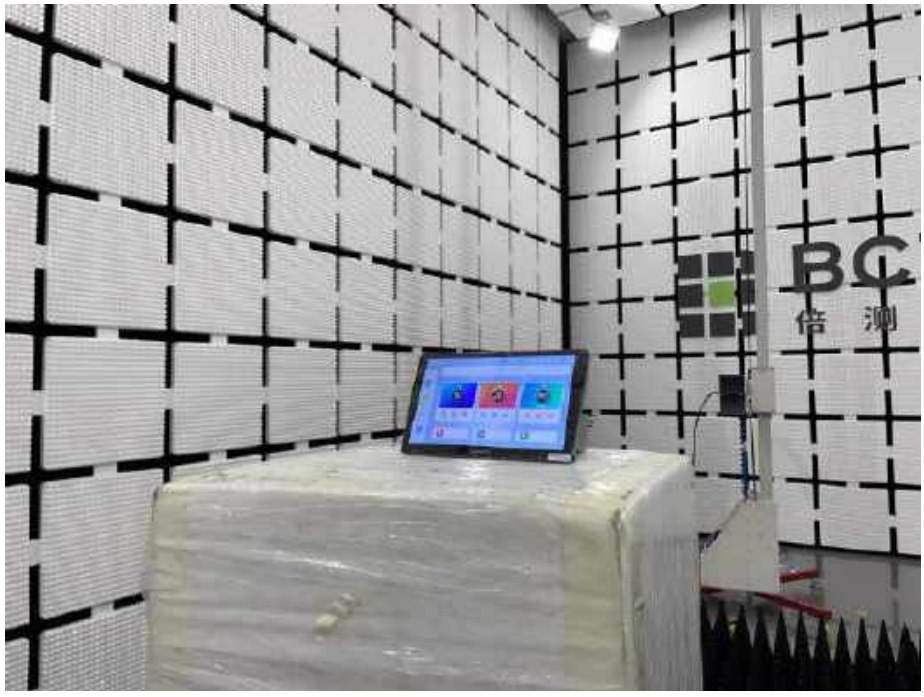
13.2 Test Result

The EUT antenna is external antenna, not using a standard antenna jack or electrical connector for antenna replacement, fulfill the requirement of this section.

14. EUT Test Setup Photographs

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.

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※※※※※ **END** ※※※※※