TCT 通测检测
TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID. ..... :	2BMBU-NODEX100	
Test Report No..... :	TCT241118E044	
Date of issue..... :	Dec. 12, 2024	
Testing laboratory ..... :	SHENZHEN TONGCE TESTING LAB	
Testing location/ address:	2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China	
Applicant's name..... :	HELIOQ INC.	
Address..... :	254 Chapman Rd, Ste 208 #20159, Newark, DELAWARE 19702	
Manufacturer's name ... :	HELIOQ INC.	
Address..... :	254 Chapman Rd, Ste 208 #20159, Newark, DELAWARE 19702	
Standard(s) ..... :	FCC CFR Title 47 Part 15 Subpart E Section 15.407 KDB 662911 D01 Multiple Transmitter Output v02r01 KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Product Name..... :	Helioq NodeX Computing Server	
Trade Mark ..... :	N/A	
Model/Type reference..... :	NodeX 100, NodeX 200, NodeX 300, S-DA004	
Rating(s)..... :	Adapter Information: MODEL: CS-1204000 INPUT: AC 100-240V, 50/60Hz, 2A Max. OUTPUT: DC 12.0V, 4.0A, 48.0W	
Date of receipt of test item ..... :	Nov. 18, 2024	
Date (s) of performance of test..... :	Nov. 18, 2024 ~ Dec. 12, 2024	
Tested by (+signature) ... :	Onnado YE	Onnado YE
Check by (+signature).... :	Beryl ZHAO	Beryl Zhao
Approved by (+signature):	Tomsin	Tomsin

SHENZHEN TONGCE TESTING LAB TCT

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1. General Product Information

1.1. EUT description

Product Name.....:	Helioq NodeX Computing Server
Model/Type reference.....:	NodeX 100
Sample Number.....:	TCT241118E026-0101
Operation Frequency.....:	Band 1: 5180 MHz ~ 5240 MHz Band 3: 5745 MHz ~ 5825 MHz
Channel Bandwidth.....:	802.11a: 20MHz 802.11n: 20MHz, 40MHz 802.11ac: 20MHz, 40MHz, 80MHz 802.11ax: 20MHz, 40MHz, 80MHz
Modulation Technology .....:	Orthogonal Frequency Division Multiplexing(OFDM)
Modulation Type.....:	256QAM, 64QAM, 16QAM, BPSK, QPSK
Antenna Type.....:	FPC Antenna
Antenna Gain.....:	Band 1: Antenna 1: 3.03dBi, Antenna 2: 2.57dBi Band 3: Antenna 1: 3.11dBi, Antenna 2: 2.48dBi
Rating(s).....:	Adapter Information: MODEL: CS-1204000 INPUT: AC 100-240V, 50/60Hz, 2A Max. OUTPUT: DC 12.0V, 4.0A, 48.0W

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

1.2. Model(s) list

No.	Model No.	Tested with
1	NodeX 100	☒
Other models	NodeX 200, NodeX 300, S-DA004	☐

Note: NodeX 100 is tested model, other models are derivative models. The models are identical in circuit and PCB layout, only different on the model names, solid state drive capacity and appearance color. So the test data of NodeX 100 can represent the remaining models.

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1.3. Test Frequency

Band 1

20MHz		40MHz		80MHz	
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180	38	5190	42	5210
40	5200	46	5230		
48	5240				

Band 3

20MHz		40MHz		80MHz	
Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745	151	5755	155	5775
157	5785	159	5795		
165	5825				

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

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2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Maximum Conducted Output Power	§15.407(a)	PASS
6dB Emission Bandwidth	§15.407(a)	PASS
26dB Emission Bandwidth& 99% Occupied Bandwidth	§15.407(a)	PASS
Power Spectral Density	§15.407(a)	PASS
Restricted Bands around fundamental frequency	§15.407(b)	PASS
Radiated Emission	§15.407(b)	PASS
Frequency Stability	§15.407(g)	PASS

Note:

1. PASS: Test item meets the requirement.

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

5. For the band 5.15-5.25GHz, EUT meet the requirements of 15.407(a)(ii).

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3. General Information

3.1. Test environment and mode

Operating Environment:		
Condition	Conducted Emission	Radiated Emission
Temperature:	22.1 °C	21.4 °C
Humidity:	50 % RH	51 % RH
Atmospheric Pressure:	1010 mbar	1010 mbar
Test Software:		
Software Information:	QRCT	
Power Level:	12	
Test Mode:		
Engineer mode:	Keep the EUT in continuous transmitting by select channel and modulations with max duty cycle.	

The sample was placed 0.8m/1.5m for blow/above 1GHz above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	Data rate
802.11a(SISO)	6 Mbps
802.11n(HT20) (MIMO)	6.5 Mbps
802.11n(HT40) (MIMO)	13.5 Mbps
802.11ac(VHT20) (MIMO)	6.5 Mbps
802.11ac(VHT40) (MIMO)	13.5 Mbps
802.11ac(VHT80) (MIMO)	29.3 Mbps
802.11ax(HE20) (MIMO)	6.5 Mbps

802.11ax(HE40) (MIMO)	13.5 Mbps
802.11ax(HE80) (MIMO)	29.3 Mbps
Final Test Mode:	
Operation mode:	Keep the EUT in continuous transmitting with modulation

3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

Note:

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.

3. For conducted measurements (Output Power, Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

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4. Facilities and Accreditations

4.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098
  SHENZHEN TONGCE TESTING LAB
  Designation Number: CN1205
  The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.
- IC - Registration No.: 10668A
  SHENZHEN TONGCE TESTING LAB
  CAB identifier: CN0031
  The testing lab has been registered by Innovation, Science and Economic Development Canada for radio equipment testing.

4.2. Location

SHENZHEN TONGCE TESTING LAB
Address: 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China
TEL: +86-755-27673339

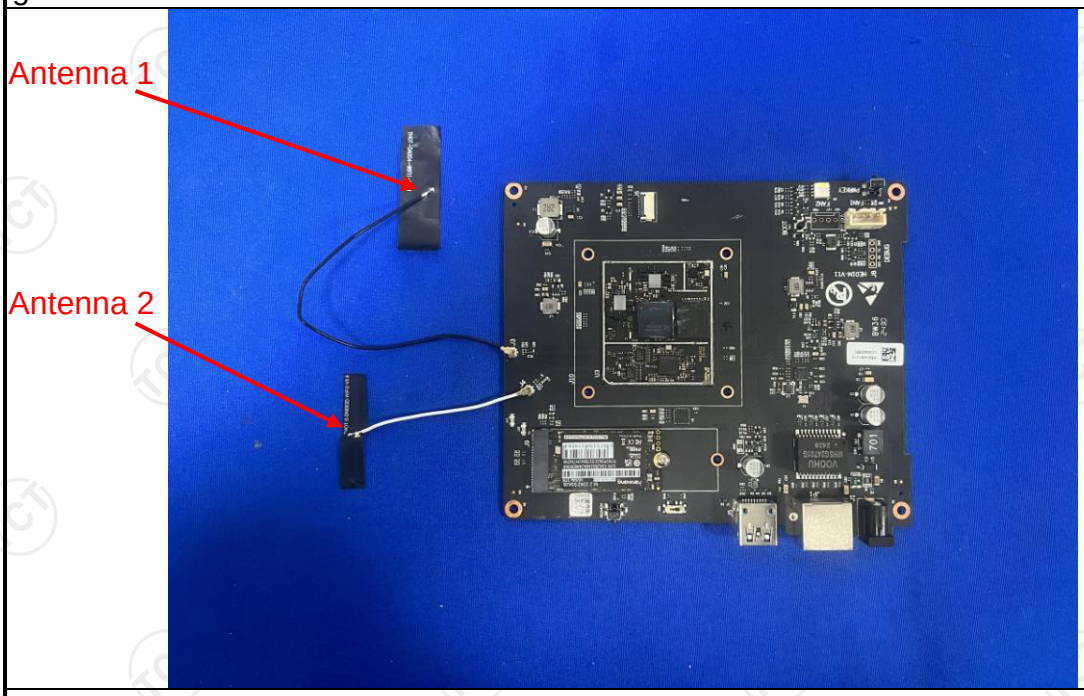
4.3. Measurement Uncertainty

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	± 3.10 dB
2	RF power, conducted	± 0.12 dB
3	Spurious emissions, conducted	± 0.11 dB
4	All emissions, radiated(<1 GHz)	± 4.56 dB
5	All emissions, radiated(1 GHz - 18 GHz)	± 4.22 dB
6	All emissions, radiated(18 GHz- 40 GHz)	± 4.36 dB

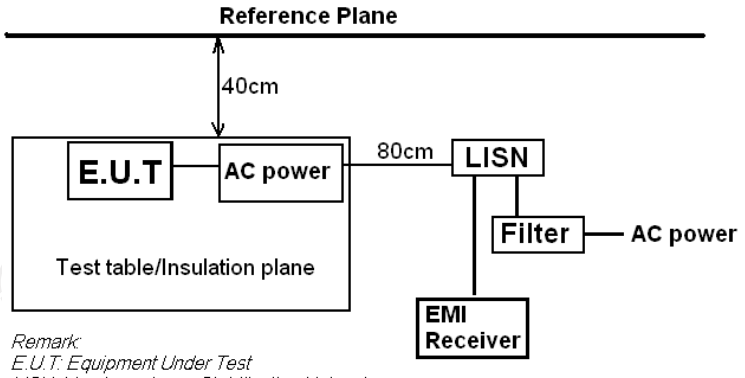
5. Test Results and Measurement Data

5.1. Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: 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, 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.	
E.U.T Antenna:	
The EUT test with two FPC antennas for maximum gain which are detachable, and the gain is shown below.	
	
Refer to KDB 662911 D01 Multiple Transmitter Output v02r01: Unequal antenna gains, with equal transmit powers, if transmit signals are correlated, then Directional gain of B1= $10\log[(10^{3.03/20}+10^{2.57/20})^2/2]$ = 5.81dBi; Directional gain of B3 = $10\log[(10^{3.11/20}+10^{2.48/20})^2/2]$ = 5.81dBi.	
Note: Above directional gain not applicable to power measurements.	

5.2. Conducted Emission

5.2.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.207</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10:2020</td></tr>
<tr><td>Frequency Range:</td><td>150 kHz to 30 MHz</td></tr>
<tr><td>Receiver setup:</td><td>RBW=9 kHz, VBW=30 kHz, Sweep time=auto</td></tr>
<tr><td>Limits:</td><td>
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
</td></tr>
<tr><td>Test Setup:</td><td>


Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m
</td></tr>
<tr><td>Test Mode:</td><td>Transmitting Mode</td></tr>
<tr><td>Test Procedure:</td><td>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2020 on conducted measurement.</td></tr>
<tr><td>Test Result:</td><td>PASS</td></tr>
</table>

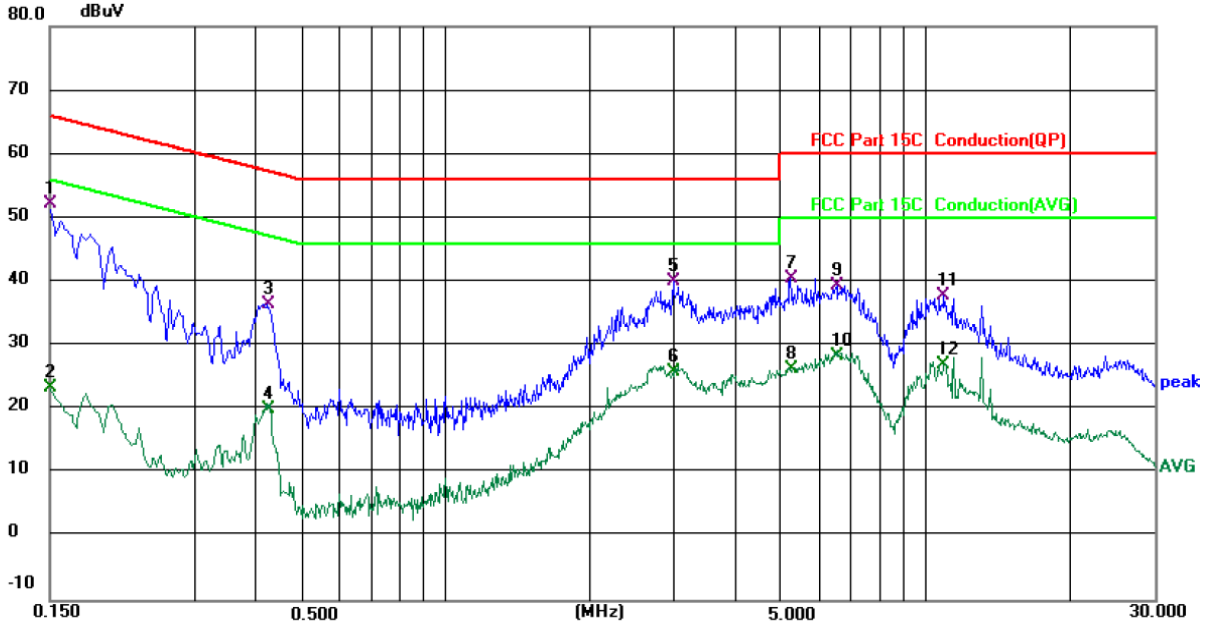
5.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESCI3	100898	Jun. 26, 2025
LISN	Schwarzbeck	NSLK 8126	8126453	Jan. 31, 2025
Attenuator	N/A	10dB	164080	Jun. 26, 2025
Line-5	TCT	CE-05	/	Jun. 26, 2025
EMI Test Software	EZ_EMC	EMEC-3A1	1.1.4.2	/

5.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Site 844 Shielding Room | Phase: *L1* | Temperature: 22.1 (℃) | Humidity: 50 %

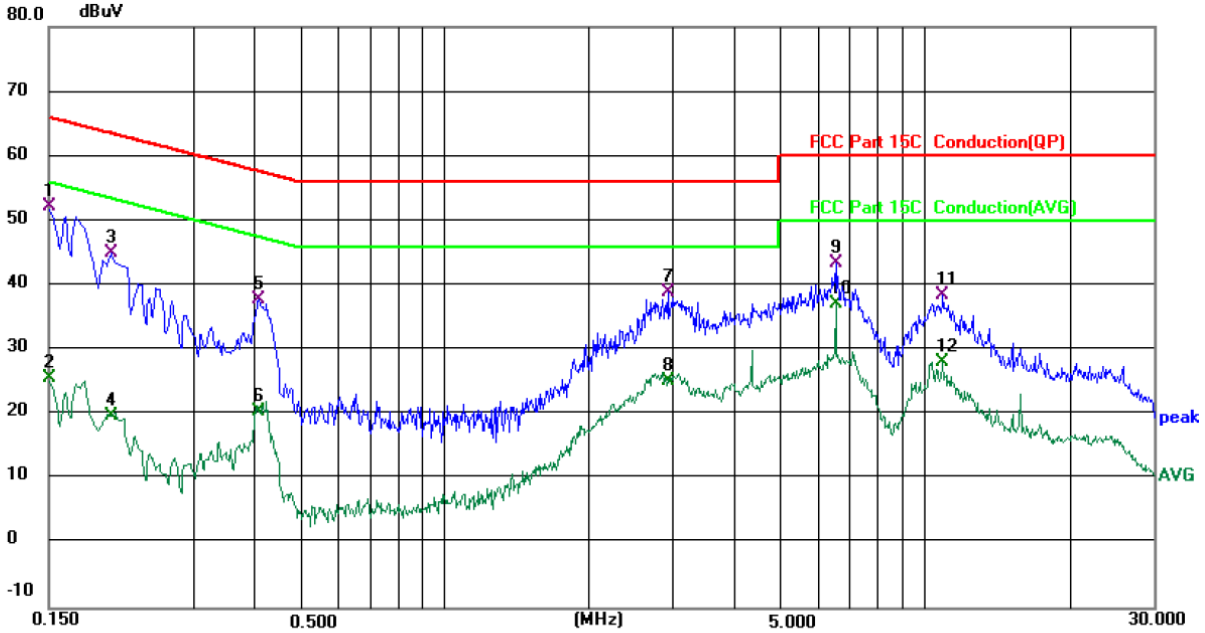
Limit: FCC Part 15C Conduction(QP) | Power: AC 120 V/60 Hz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	42.57	9.67	52.24	66.00	-13.76	QP	
2		0.1500	13.81	9.67	23.48	56.00	-32.52	AVG	
3		0.4260	26.43	10.09	36.52	57.33	-20.81	QP	
4		0.4260	10.05	10.09	20.14	47.33	-27.19	AVG	
5		2.9820	30.05	9.97	40.02	56.00	-15.98	QP	
6		2.9820	15.89	9.97	25.86	46.00	-20.14	AVG	
7		5.2340	30.29	10.20	40.49	60.00	-19.51	QP	
8		5.2340	16.07	10.20	26.27	50.00	-23.73	AVG	
9		6.5460	29.21	10.24	39.45	60.00	-20.55	QP	
10		6.5460	18.18	10.24	28.42	50.00	-21.58	AVG	
11		10.9100	27.38	10.32	37.70	60.00	-22.30	QP	
12		10.9100	16.62	10.32	26.94	50.00	-23.06	AVG	

Note:

Freq. = Emission frequency in MHz
Reading level (dBµV) = Receiver reading
Corr. Factor (dB) = LISN factor + Cable loss
Measurement (dBµV) = Reading level (dBµV) + Corr. Factor (dB)
Limit (dBµV) = Limit stated in standard
Margin (dB) = Measurement (dBµV) – Limits (dBµV)
Q.P. =Quasi-Peak
AVG =average
** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.*

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site 844 Shielding Room | Phase: N | Temperature: 22.1 (℃) | Humidity: 50 %

Limit: FCC Part 15C Conduction(QP) | Power: AC 120 V/60 Hz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	42.67	9.65	52.32	66.00	-13.68	QP	
2		0.1500	15.98	9.65	25.63	56.00	-30.37	AVG	
3		0.2020	35.29	9.63	44.92	63.53	-18.61	QP	
4		0.2020	10.29	9.63	19.92	53.53	-33.61	AVG	
5		0.4100	27.87	10.04	37.91	57.65	-19.74	QP	
6		0.4100	10.37	10.04	20.41	47.65	-27.24	AVG	
7		2.9180	29.04	9.89	38.93	56.00	-17.07	QP	
8		2.9180	15.36	9.89	25.25	46.00	-20.75	AVG	
9		6.5419	33.14	10.20	43.34	60.00	-16.66	QP	
10	*	6.5419	26.90	10.20	37.10	50.00	-12.90	AVG	
11		10.9060	28.20	10.30	38.50	60.00	-21.50	QP	
12		10.9060	17.82	10.30	28.12	50.00	-21.88	AVG	

Note: *1. Freq. = Emission frequency in MHz*
Reading level (dBµV) = Receiver reading
Corr. Factor (dB) = LISN factor + Cable loss
Measurement (dBµV) = Reading level (dBµV) + Corr. Factor (dB)
Limit (dBµV) = Limit stated in standard
Margin (dB) = Measurement (dBµV) – Limits (dBµV)
Q.P. =Quasi-Peak
AVG =average
** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.*
2. Measurements were conducted in all three channels (high, middle, low) and all modulation (802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(VHT20), 802.11ac(VHT40), 802.11ac(VHT80), 802.11ax(HE20), 802.11ax(HE40) , 802.11ax(HE80)) and the worst case Mode (Highest channel and 802.11ac(VHT40) transmit with antenna 1) was submitted only.

5.3. Maximum Conducted Output Power

5.3.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407(a)& Part 2 J Section 2.1046
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section E
Limit:	Frequency Band (MHz) / Limit 5180 - 5240: 24dBm(250mW) for client device 5260 - 5320: 24dBm(250mW) or 11 dBm + 10 log B, B is the 26 dB emission bandwidth in megahertz 5470 - 5725: 24dBm(250mW) or 11 dBm + 10 log B, B is the 26 dB emission bandwidth in megahertz 5745 - 5825: 30dBm(1W)
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows the Measurement Procedure of KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section E, 3, a 2. The RF output of EUT was connected to the power meter by RF cable. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 5. Measure the conducted output power and record the results in the test report.
Test Result:	PASS
Remark:	Conducted output power= measurement power +10log(1/x) X is duty cycle=1, so 10log(1/1)=0 Conducted output power= measurement power

5.3.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 26, 2025
Power Meter	Agilent	E4418B	MY45100357	Jun. 26, 2025
Power Sensor	Agilent	8184A	MY41096530	Jun. 26, 2025
Combiner Box	Ascentest	AT890-RFB	/	/

5.3.3. Test Data

Configuration Band 1 (5180 - 5240 MHz) / Antenna 1+Antenna 2						
Mode	Test channel	Maximum Conducted (Average) Output Power (dBm)			Limit (dBm)	Result
		Ant1	Ant2	Total		
11a	CH36	12.13	12.02	/	24	PASS
11a	CH40	12.42	12.43	/	24	PASS
11a	CH48	12.87	12.80	/	24	PASS
11n(HT20)	CH36	12.25	11.97	15.12	24	PASS
11n(HT20)	CH40	12.33	12.39	15.37	24	PASS
11n(HT20)	CH48	12.70	12.64	15.68	24	PASS
11n(HT40)	CH38	12.57	12.43	15.51	24	PASS
11n(HT40)	CH46	12.84	12.66	15.76	24	PASS
11ac(VHT20)	CH36	12.20	11.96	15.09	24	PASS
11ac(VHT20)	CH40	12.29	12.38	15.35	24	PASS
11ac(VHT20)	CH48	12.69	12.61	15.66	24	PASS
11ac(VHT40)	CH38	12.52	12.44	15.49	24	PASS
11ac(VHT40)	CH46	12.83	12.67	15.76	24	PASS
11ac(VHT80)	CH42	12.58	12.72	15.66	24	PASS
11ax(HE20)	CH36	12.48	12.24	15.37	24	PASS
11ax(HE20)	CH40	12.55	12.66	15.62	24	PASS
11ax(HE20)	CH48	12.89	12.92	15.92	24	PASS
11ax(HE40)	CH38	12.30	12.28	15.30	24	PASS
11ax(HE40)	CH46	12.64	12.50	15.58	24	PASS
11ax(HE80)	CH42	12.23	12.35	15.30	24	PASS

Configuration Band 3 (5745 - 5825 MHz) / Antenna 1+Antenna 2						
Mode	Test channel	Maximum Conducted (Average) Output Power (dBm)			Limit (dBm)	Result
		Ant1	Ant2	Total		
11a	CH149	14.55	14.98	/	30	PASS
11a	CH157	15.10	15.25	/	30	PASS
11a	CH165	15.15	15.08	/	30	PASS
11n(HT20)	CH149	14.33	12.85	16.66	30	PASS
11n(HT20)	CH157	14.86	13.08	17.07	30	PASS
11n(HT20)	CH165	14.96	12.98	17.09	30	PASS
11n(HT40)	CH151	14.52	13.15	16.90	30	PASS
11n(HT40)	CH159	15.22	13.41	17.42	30	PASS
11ac(VHT20)	CH149	14.33	12.90	16.68	30	PASS
11ac(VHT20)	CH157	14.86	13.08	17.07	30	PASS
11ac(VHT20)	CH165	14.96	13.01	17.10	30	PASS
11ac(VHT40)	CH151	14.58	13.16	16.94	30	PASS
11ac(VHT40)	CH159	15.29	13.41	17.46	30	PASS
11ac(VHT80)	CH155	14.81	13.32	17.14	30	PASS
11ax(HE20)	CH149	14.44	13.07	16.82	30	PASS
11ax(HE20)	CH157	15.04	13.32	17.27	30	PASS
11ax(HE20)	CH165	15.12	13.22	17.28	30	PASS
11ax(HE40)	CH151	14.45	13.06	16.82	30	PASS
11ax(HE40)	CH159	15.09	13.22	17.27	30	PASS
11ax(HE80)	CH155	14.51	13.06	16.86	30	PASS

5.4. 6dB Emission Bandwidth

5.4.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407(e)& Part 2 J Section 2.1049
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C
Limit:	>500kHz
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz. 4. Measure and record the results in the test report.
Test Result:	PASS

5.4.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 26, 2025
Combiner Box	Ascentest	AT890-RFB	/	/

5.5. 26dB Bandwidth and 99% Occupied Bandwidth

5.5.1. Test Specification

Test Requirement:	47 CFR Part 15C Section 15.407 (a)& Part 2 J Section 2.1049
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section D
Limit:	No restriction limits
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section D 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1% to 5% of the OBW. Set the Video bandwidth (VBW) = 3 *RBW. In order to make an accurate measurement. 4. Measure and record the results in the test report.
Test Result:	PASS

5.5.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 26, 2025
Combiner Box	Ascentest	AT890-RFB	/	/

5.6. Power Spectral Density

5.6.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407 (a)
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section F
Limit:	≤11.00dBm/MHz for Band 1 5150MHz-5250MHz(client device) ≤11.00dBm/MHz for Band 2A&2C 5250-5350&5470-5725 ≤30.00dBm/500KHz for Band 3 5725MHz-5850MHz The e.i,r,p spectral density for Band 1 5150MHz – 5250 MHz should not exceed 10dBm/MHz
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth. 1. Set RBW = 510 kHz/1 MHz, VBW ≥ 3*RBW, Sweep time = Auto, Detector = RMS. 2. Allow the sweeps to continue until the trace stabilizes. 3. Use the peak marker function to determine the maximum amplitude level. 4. The E.I.R.P spectral density used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.
Test Result:	PASS

5.6.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 26, 2025
Combiner Box	Ascentest	AT890-RFB	/	/

5.6.3. Test data

Configuration Band 1 (5180 - 5240 MHz) / Antenna 1+Antenna 2						
Mode	Test channel	Power Spectral Density(dBm/MHz)			Limit (dBm/MHz)	Result
		Ant1	Ant2	Total		
11a	CH36	0.70	0.55	/	11	PASS
11a	CH40	0.99	1.13	/	11	PASS
11a	CH48	1.44	1.38	/	11	PASS
11n(HT20)	CH36	0.49	0.27	3.39	11	PASS
11n(HT20)	CH40	0.72	0.74	3.74	11	PASS
11n(HT20)	CH48	1.07	0.98	4.04	11	PASS
11n(HT40)	CH38	-2.29	-2.24	0.75	11	PASS
11n(HT40)	CH46	-1.93	-2.07	1.01	11	PASS
11ac(VHT20)	CH36	0.44	0.26	3.36	11	PASS
11ac(VHT20)	CH40	0.59	0.78	3.70	11	PASS
11ac(VHT20)	CH48	1.01	1.00	4.02	11	PASS
11ac(VHT40)	CH38	-2.30	-2.25	0.74	11	PASS
11ac(VHT40)	CH46	-1.90	-2.06	1.03	11	PASS
11ac(VHT80)	CH42	-5.14	-4.91	-2.01	11	PASS
11ax(HE20)	CH36	1.19	0.95	4.08	11	PASS
11ax(HE20)	CH40	1.14	1.31	4.24	11	PASS
11ax(HE20)	CH48	1.91	1.66	4.80	11	PASS
11ax(HE40)	CH38	-1.57	-1.43	1.51	11	PASS
11ax(HE40)	CH46	-1.12	-1.38	1.76	11	PASS
11ax(HE80)	CH42	-4.87	-4.48	-1.66	11	PASS

Refer to KDB 662911 D01 Multiple Transmitter Output v02r01:
For power spectral density (PSD) measurements when antenna gains are not equal,
Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}$] dBi =5.81<6,
So limit=11

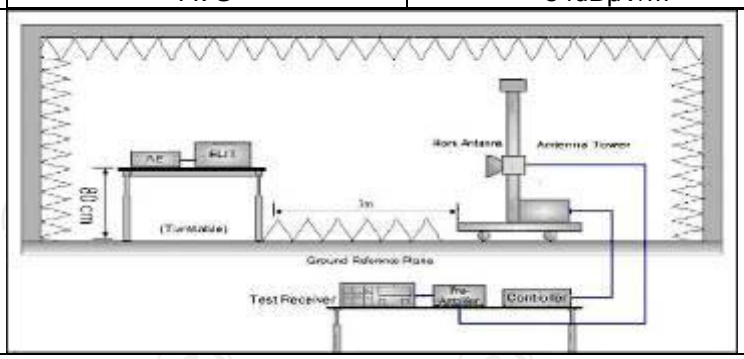
Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

Configuration Band 3(5745-5825MHz) / Antenna 1+Antenna 2						
Mode	Test channel	Power Spectral Density(dBm/MHz)			Limit (dBm/MHz)	Result
		Ant1	Ant2	Total		
11a	CH149	0.28	0.88	/	30	PASS
11a	CH157	0.83	1.13	/	30	PASS
11a	CH165	0.89	0.88	/	30	PASS
11n(HT20)	CH149	-0.18	0.28	3.07	30	PASS
11n(HT20)	CH157	0.36	0.55	3.47	30	PASS
11n(HT20)	CH165	0.39	0.32	3.37	30	PASS
11n(HT40)	CH151	-3.16	-4.41	-0.73	30	PASS
11n(HT40)	CH159	-2.42	-4.24	-0.23	30	PASS
11ac(VHT20)	CH149	-0.17	-1.65	2.16	30	PASS
11ac(VHT20)	CH157	0.35	-1.40	2.57	30	PASS
11ac(VHT20)	CH165	0.36	-1.49	2.54	30	PASS
11ac(VHT40)	CH151	-3.01	-4.44	-0.66	30	PASS
11ac(VHT40)	CH159	-2.39	-4.13	-0.16	30	PASS
11ac(VHT80)	CH155	-5.79	-7.39	-3.51	30	PASS
11ax(HE20)	CH149	0.35	-1.03	2.72	30	PASS
11ax(HE20)	CH157	0.78	-0.58	3.16	30	PASS
11ax(HE20)	CH165	1.23	-0.93	3.29	30	PASS
11ax(HE40)	CH151	-2.75	-3.96	-0.30	30	PASS
11ax(HE40)	CH159	-1.84	-3.86	0.28	30	PASS
11ax(HE80)	CH155	-5.55	-6.88	-3.15	30	PASS

Refer to KDB 662911 D01 Multiple Transmitter Output v02r01:
For power spectral density (PSD) measurements when antenna gains are not equal,
Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}$] dBi=5.81<6,
So limit=30

5.7. Band edge

5.7.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC CFR47 Part 15E Section 15.407</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10 2020</td></tr>
<tr><td>Limit:</td><td>In un-restricted band:
For Band 1&2A&2C: -27dBm/MHz
For Band 3:
<table>
<tr><td>Frequency (MHz)</td><td>Limit (dBm/MHz)</td><td>Frequency (MHz)</td><td>Limit (dBm/MHz)</td></tr>
<tr><td>< 5650</td><td>-27</td><td>5850~5855</td><td>27~15.6</td></tr>
<tr><td>5650~5700</td><td>-27~10</td><td>5855~5875</td><td>15.6~10</td></tr>
<tr><td>5700~5720</td><td>10~15.6</td><td>5875~5925</td><td>10~-27</td></tr>
<tr><td>5720~5725</td><td>15.6~27</td><td>> 5925</td><td>-27</td></tr>
</table>
E[dBμV/m] = EIRP[dBm] + 95.2 @3m
In restricted band:
<table>
<tr><td>Detector</td><td>Limit@3m</td></tr>
<tr><td>Peak</td><td>74dBμV/m</td></tr>
<tr><td>AVG</td><td>54dBμV/m</td></tr>
</table></td></tr>
<tr><td>Test Setup:</td><td> 
</td></tr>
<tr><td>Test Mode:</td><td>Transmitting mode with modulation</td></tr>
<tr><td>Test Procedure:</td><td>1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold</td></tr>
</table>

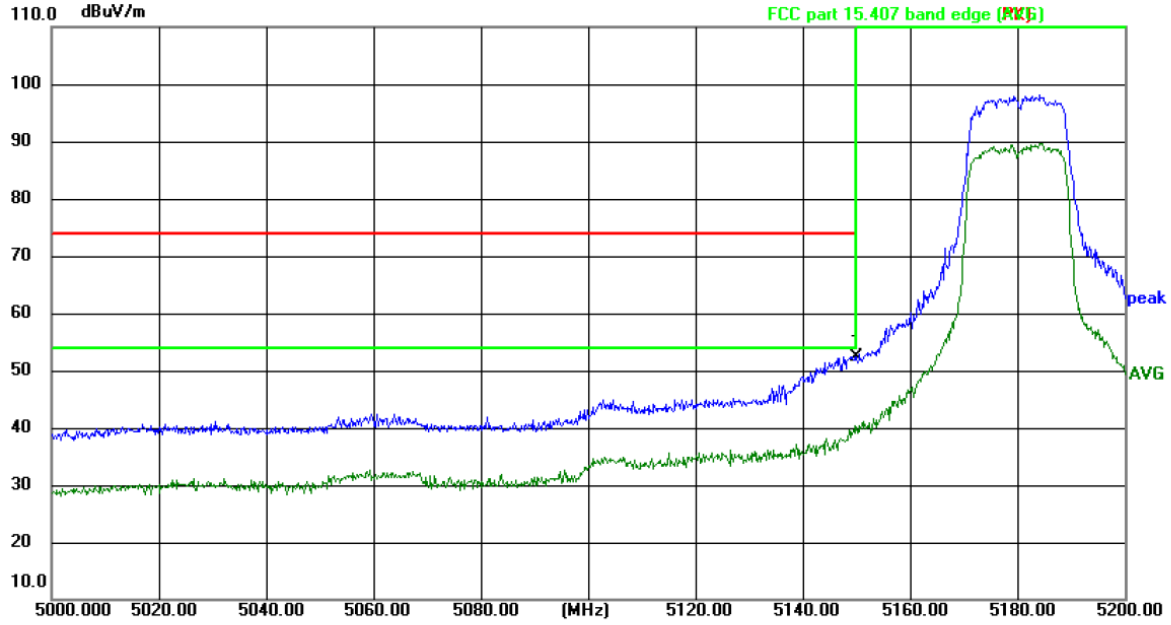
	Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data sheet.
Test Result:	PASS

5.7.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCI7	100529	Jan. 31, 2025
Spectrum Analyzer	R&S	FSQ40	200061	Jun. 26, 2025
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 26, 2025
Pre-amplifier	SKET	LNPA_0118G-45	SK2021012102	Jan. 31, 2025
Pre-amplifier	SKET	LNPA_1840G-50	SK202109203500	Jan. 31, 2025
Pre-amplifier	HP	8447D	2727A05017	Jun. 26, 2025
Loop antenna	Schwarzbeck	FMZB1519B	00191	Jun. 26, 2025
Broadband Antenna	Schwarzbeck	VULB9163	340	Jun. 28, 2025
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Jun. 28, 2025
Horn Antenna	Schwarzbeck	BBHA 9170	00956	Feb. 02, 2025
Coaxial cable	SKET	RE-03-D	/	Jun. 26, 2025
Coaxial cable	SKET	RE-03-M	/	Jun. 26, 2025
Coaxial cable	SKET	RE-03-L	/	Jun. 26, 2025
Coaxial cable	SKET	RE-04-D	/	Jun. 26, 2025
Coaxial cable	SKET	RE-04-M	/	Jun. 26, 2025
Coaxial cable	SKET	RE-04-L	/	Jun. 26, 2025
Antenna Mast	Keleto	RE-AM	/	/
EMI Test Software	EZ_EMC	FA-03A2 RE+	1.1.4.2	/

5.7.3. Test Data

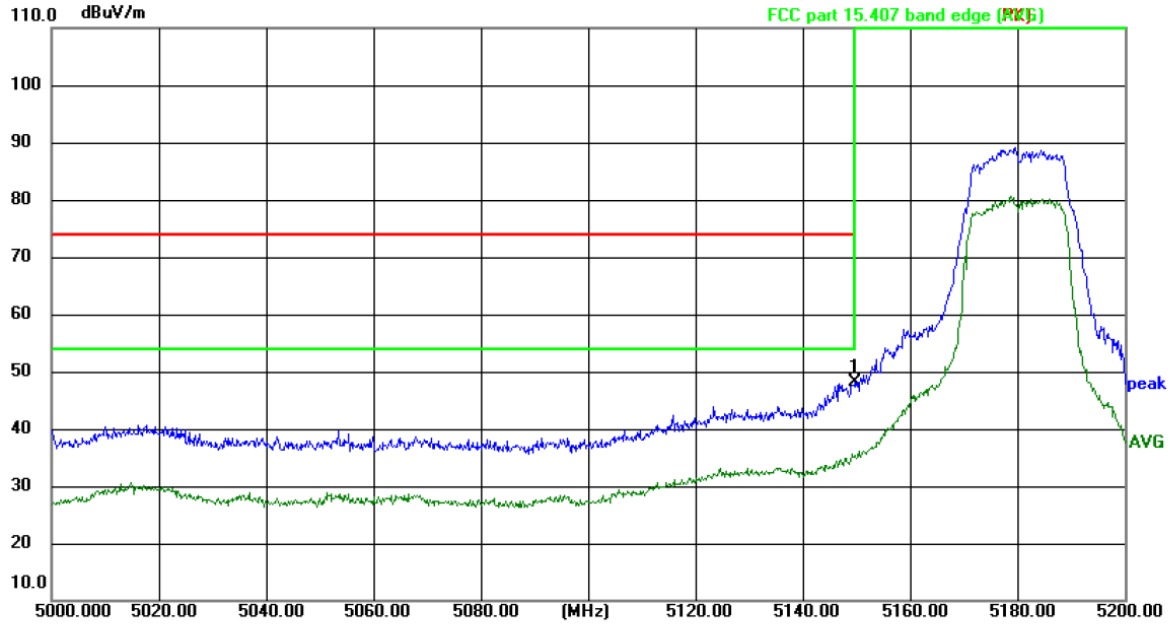
AX20-5180



Site: 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 23.3(℃) Humidity: 52 %

Limit: FCC part 15.407 band edge (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5150.000	61.65	-9.24	52.41	74.00	-21.59	peak	P	

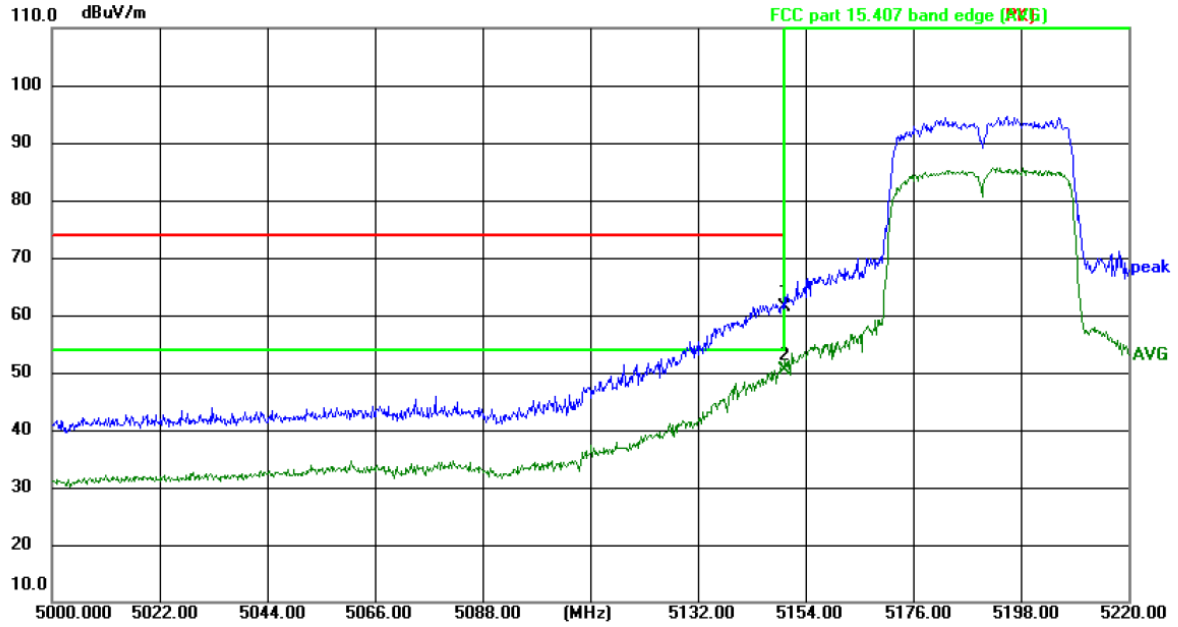


Site: 3m Anechoic Chamber Polarization: ***Vertical*** Temperature: 23.3(℃) Humidity: 52 %

Limit: FCC part 15.407 band edge (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5150.000	57.27	-9.24	48.03	74.00	-25.97	peak	P	

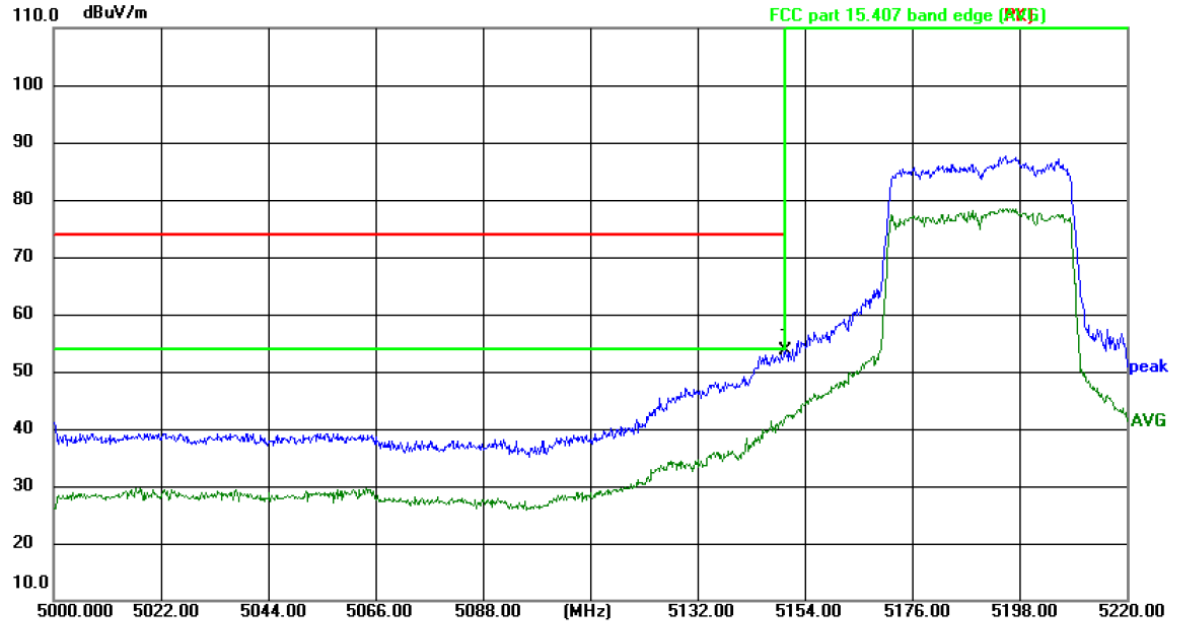
AX40-5190



Site: 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 23.3(℃) Humidity: 52 %

Limit: FCC part 15.407 band edge (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	5150.000	70.57	-9.24	61.33	74.00	-12.67	peak	P	
2 *	5150.000	59.54	-9.24	50.30	54.00	-3.70	AVG	P	

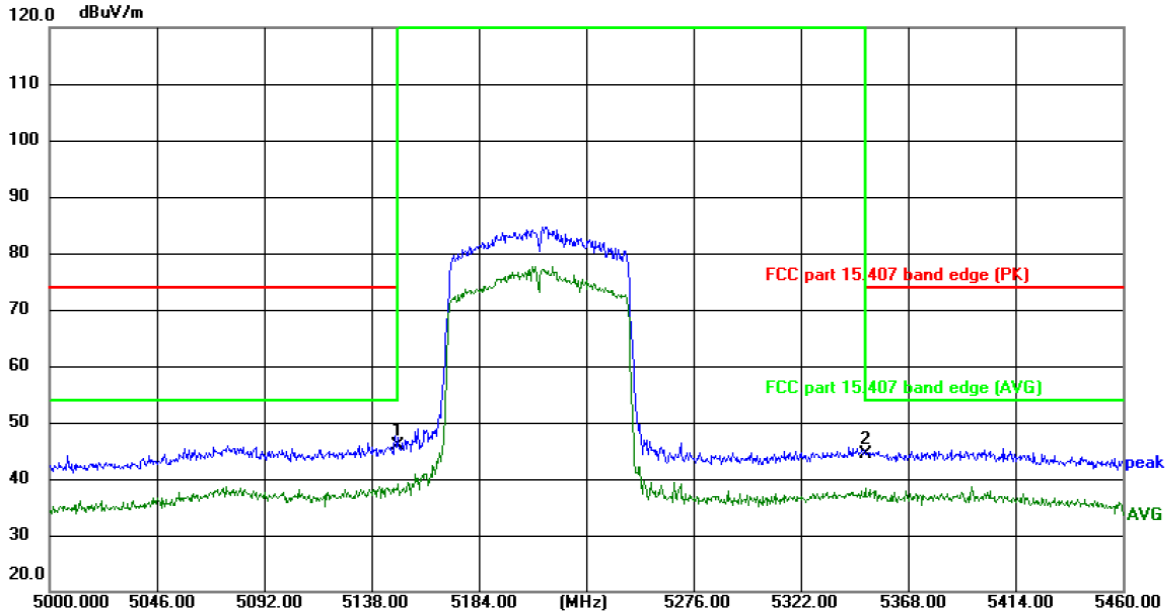


Site: 3m Anechoic Chamber Polarization: ***Vertical*** Temperature: 23.3(℃) Humidity: 52 %

Limit: FCC part 15.407 band edge (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5150.000	62.97	-9.24	53.73	74.00	-20.27	peak	P	

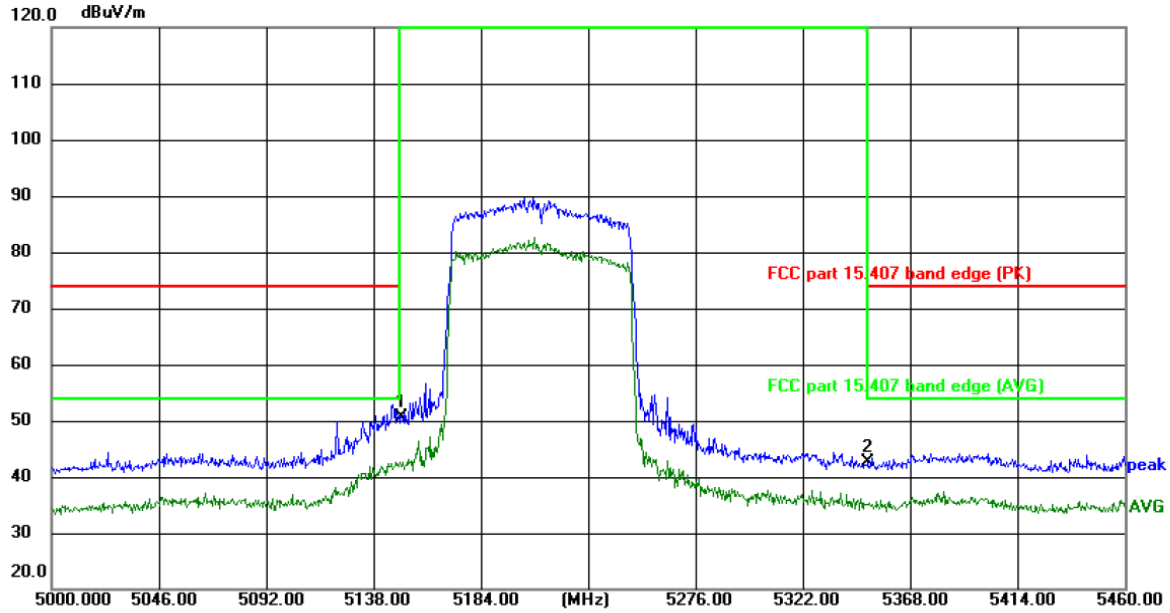
AX80-5210



Site: 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 23.9(℃) Humidity: 42 %

Limit: FCC part 15.407 band edge (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5150.000	55.62	-9.78	45.84	74.00	-28.16	peak	P	
2	5350.000	53.68	-9.27	44.41	74.00	-29.59	peak	P	

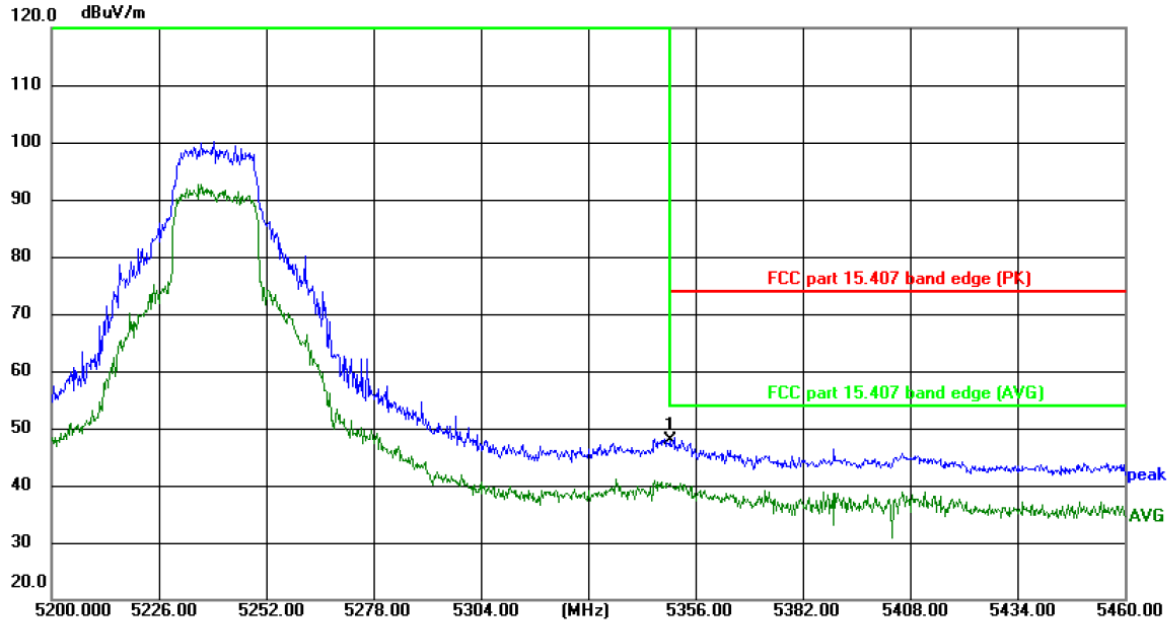


Site: 3m Anechoic Chamber Polarization: ***Vertical*** Temperature: 23.9(℃) Humidity: 42 %

Limit: FCC part 15.407 band edge (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5150.000	60.34	-9.78	50.56	74.00	-23.44	peak	P	
2	5350.000	51.87	-9.27	42.60	74.00	-31.40	peak	P	

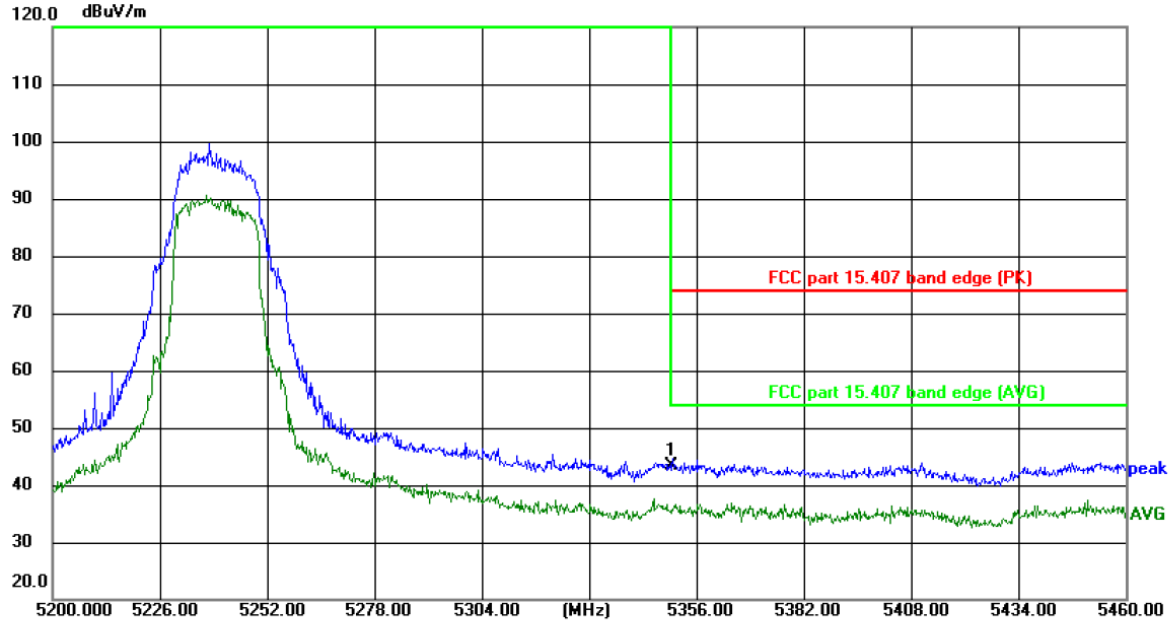
AX20-5240



Site: 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 23.1(℃) Humidity: 44 %

Limit: FCC part 15.407 band edge (PK) Power:AC 120V/60Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5350.000	55.95	-7.95	48.00	74.00	-26.00	peak	P	

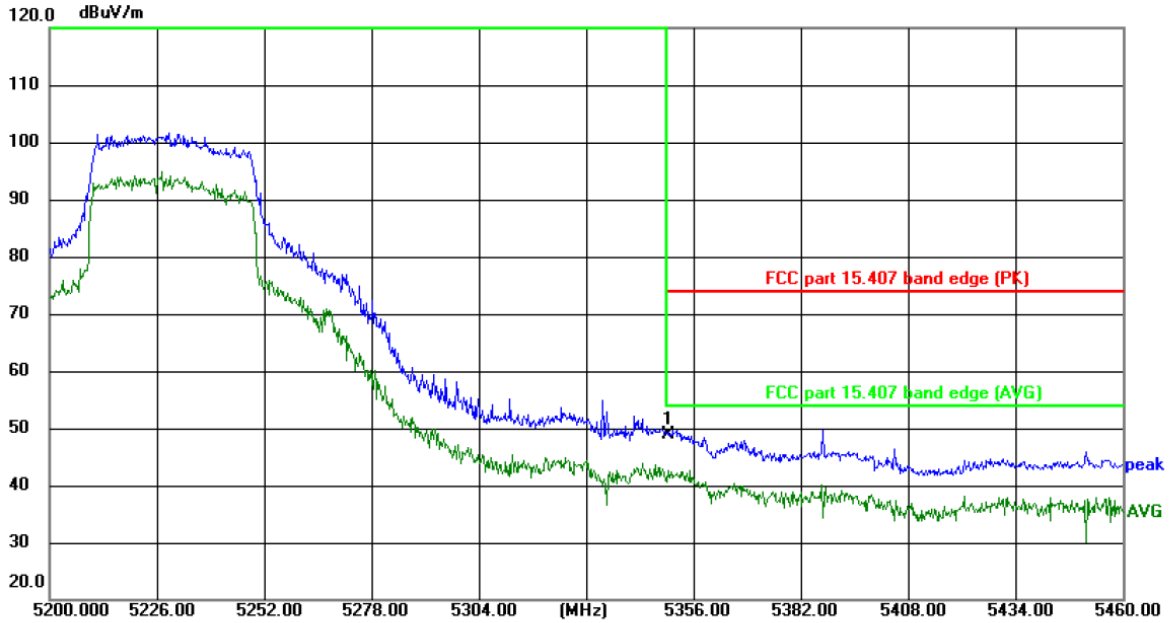


Site: 3m Anechoic Chamber Polarization: ***Vertical*** Temperature: 23.1(℃) Humidity: 44 %

Limit: FCC part 15.407 band edge (PK) Power:AC 120V/60Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5350.000	51.22	-7.95	43.27	74.00	-30.73	peak	P	

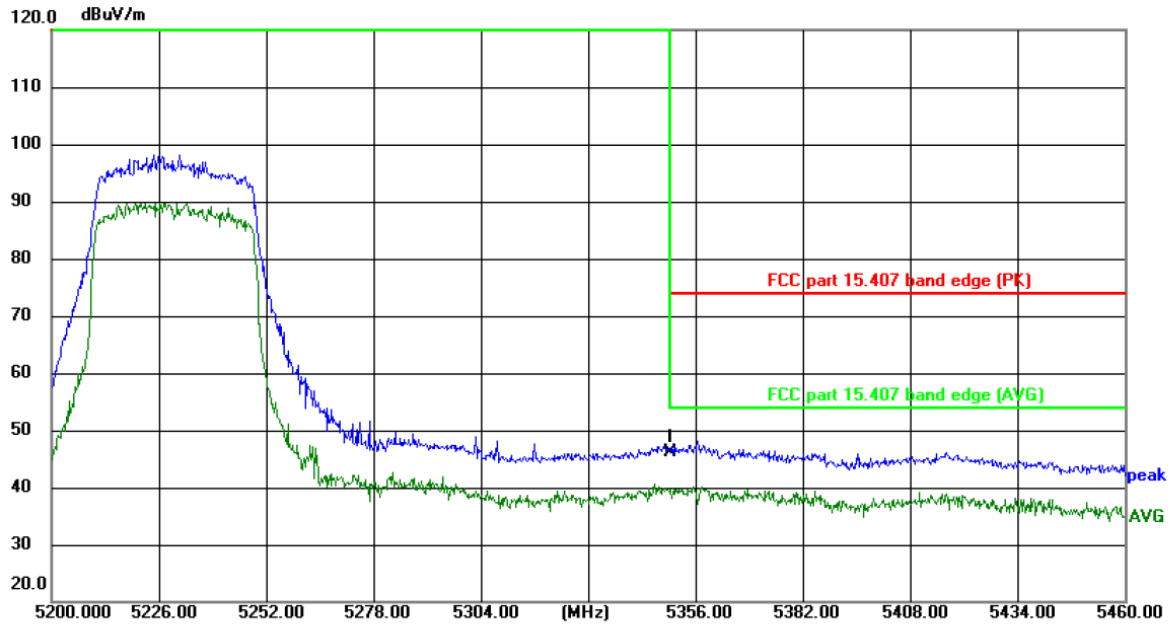
AX40-5230



Site: 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 23.1(℃) Humidity: 44 %

Limit: FCC part 15.407 band edge (PK) Power:AC 120V/60Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5350.000	56.71	-7.95	48.76	74.00	-25.24	peak	P	

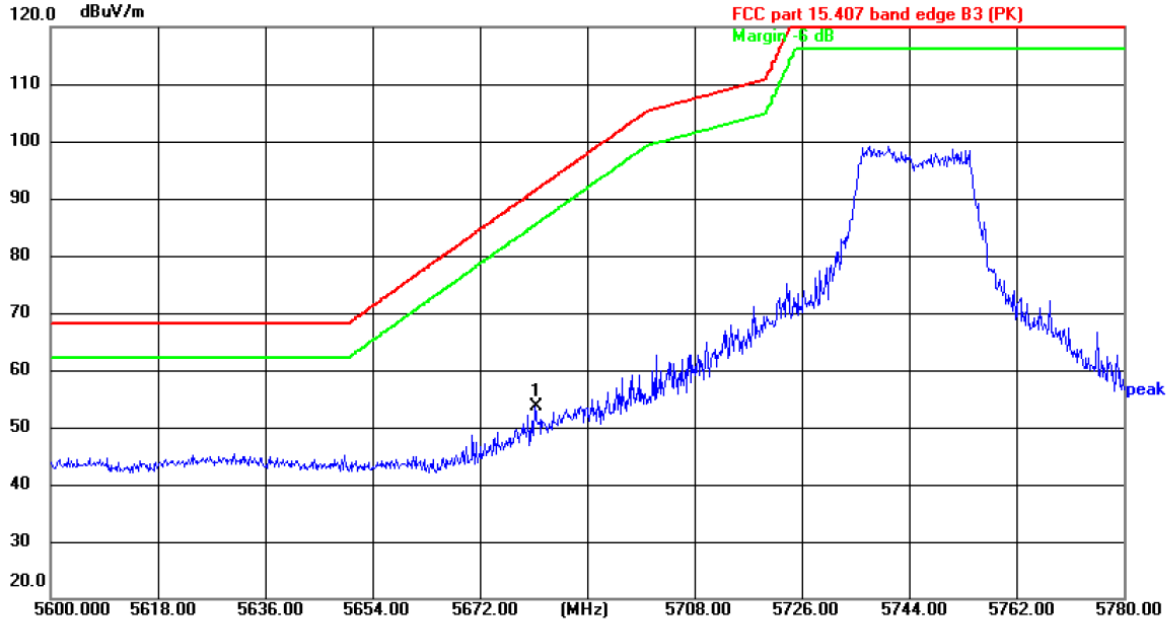


Site: 3m Anechoic Chamber Polarization: ***Vertical*** Temperature: 23.1(℃) Humidity: 44 %

Limit: FCC part 15.407 band edge (PK) Power:AC 120V/60Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5350.000	54.11	-7.95	46.16	74.00	-27.84	peak	P	

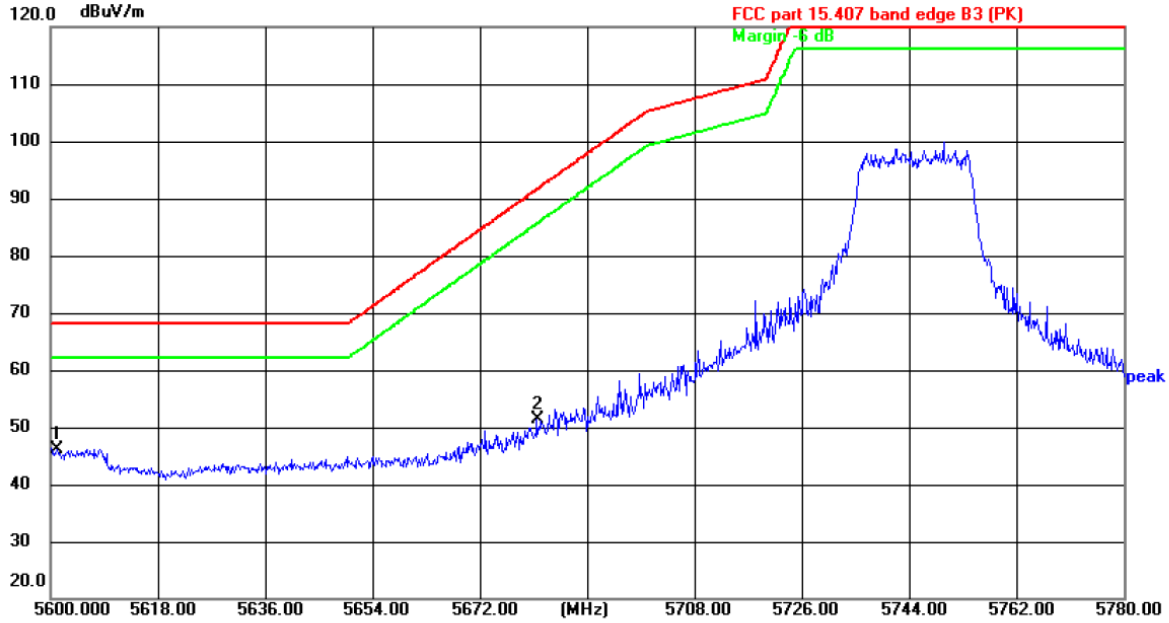
AX20-5745



Site: 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 24.1(℃) Humidity: 53 %

Limit: FCC part 15.407 band edge B3 (PK) Power:AC 120V/60Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5681.342	60.25	-6.61	53.64	91.39	-37.75	peak	P	

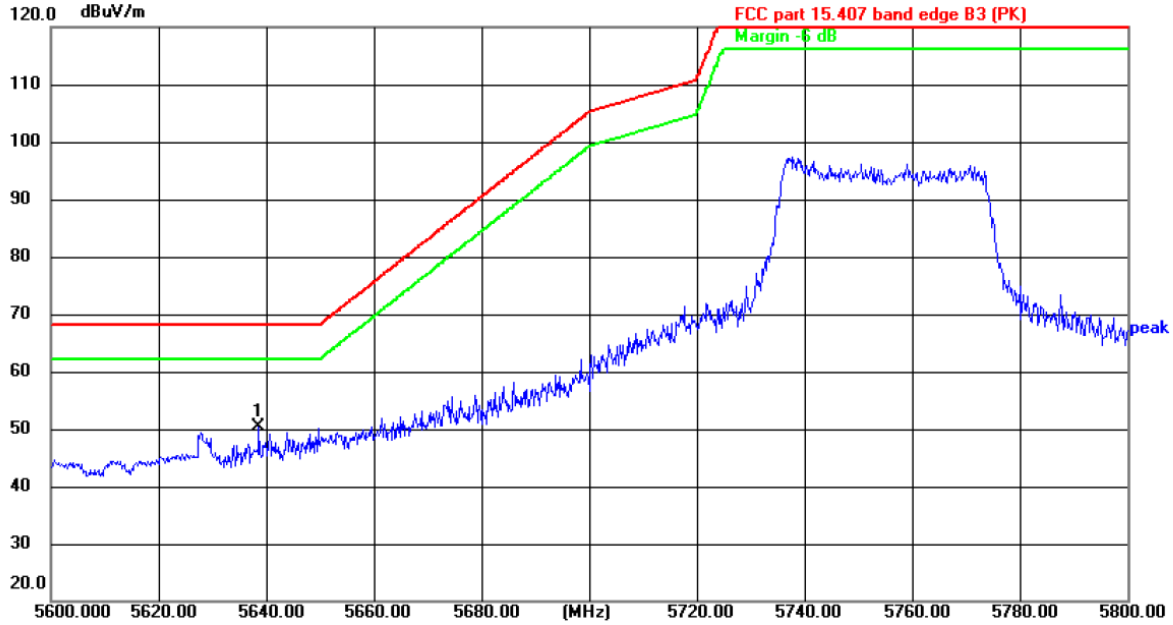


Site: 3m Anechoic Chamber Polarization: ***Vertical*** Temperature: 24.1(℃) Humidity: 53 %

Limit: FCC part 15.407 band edge B3 (PK) Power:AC 120V/60Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5601.170	53.03	-6.88	46.15	68.20	-22.05	peak	P	
2	5681.558	57.98	-6.61	51.37	91.55	-40.18	peak	P	

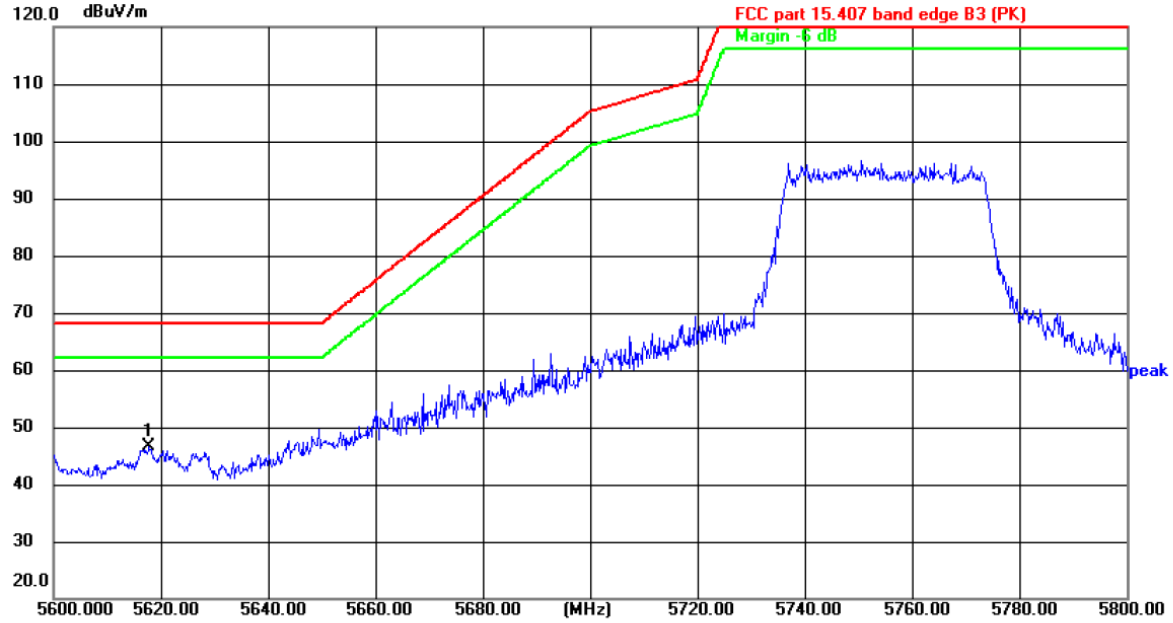
AX40-5755



Site: 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 24.1(℃) Humidity: 53 %

Limit: FCC part 15.407 band edge B3 (PK) Power:AC 120V/60Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5638.760	57.20	-6.78	50.42	68.20	-17.78	peak	P	

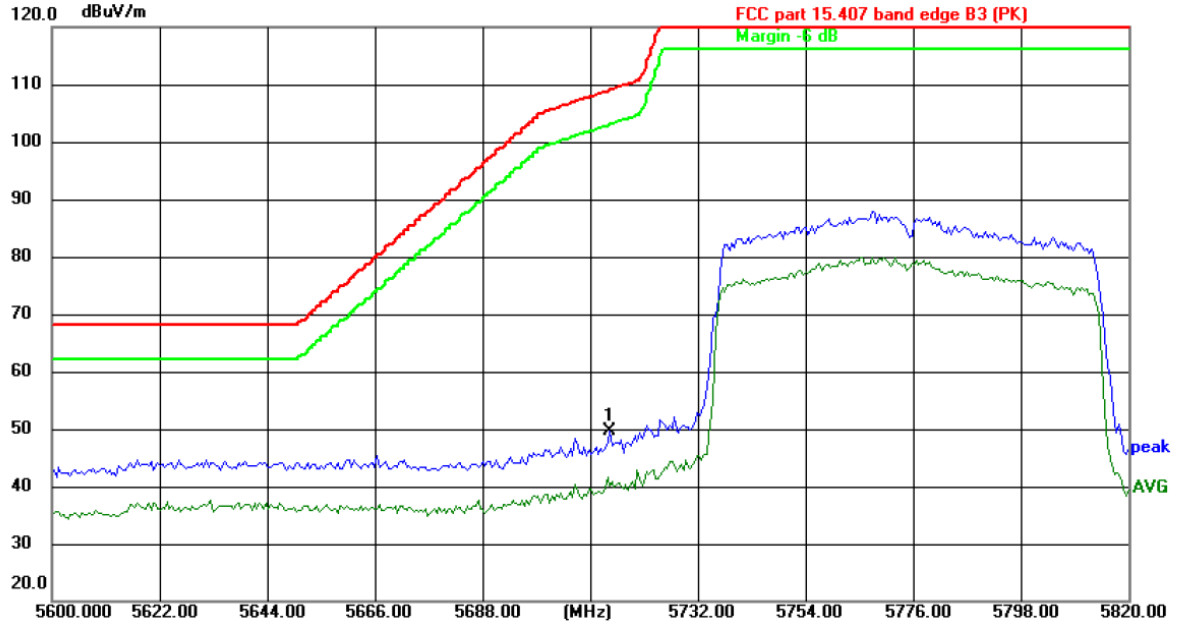


Site: 3m Anechoic Chamber Polarization: ***Vertical*** Temperature: 24.1(℃) Humidity: 53 %

Limit: FCC part 15.407 band edge B3 (PK) Power:AC 120V/60Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5617.840	53.42	-6.83	46.59	68.20	-21.61	peak	P	

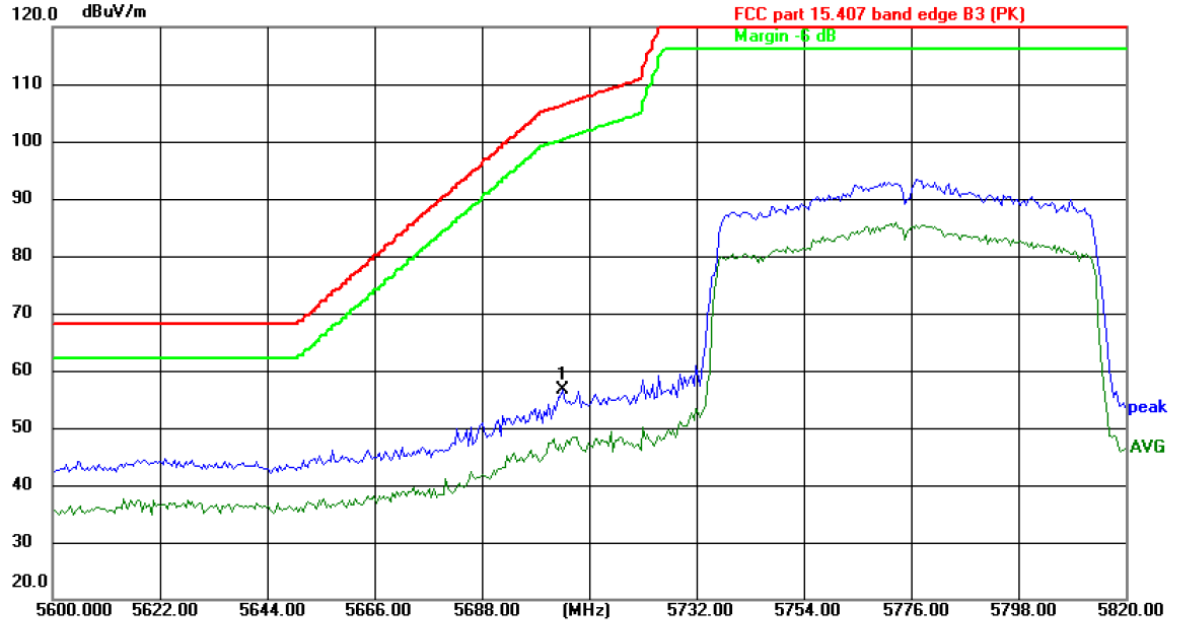
AX80-5775-left



Site: 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 23.9(℃) Humidity: 42 %

Limit: FCC part 15.407 band edge B3 (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5714.004	57.70	-8.17	49.53	109.12	-59.59	peak	P	

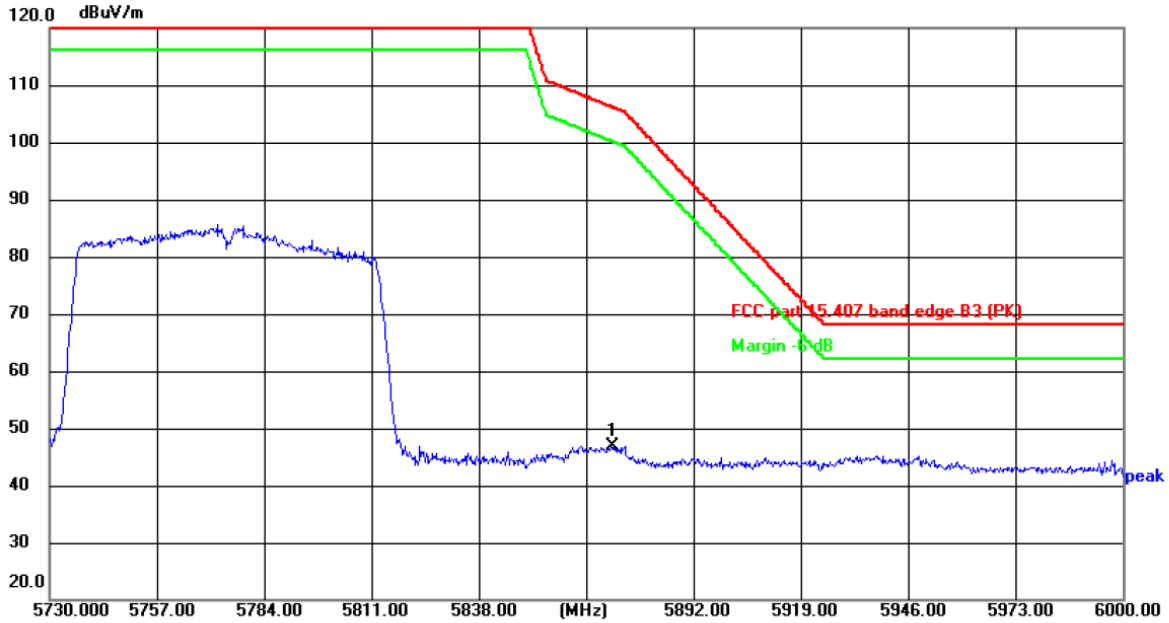


Site: 3m Anechoic Chamber Polarization: ***Vertical*** Temperature: 23.9(℃) Humidity: 42 %

Limit: FCC part 15.407 band edge B3 (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5704.582	64.81	-8.20	56.61	106.48	-49.87	peak	P	

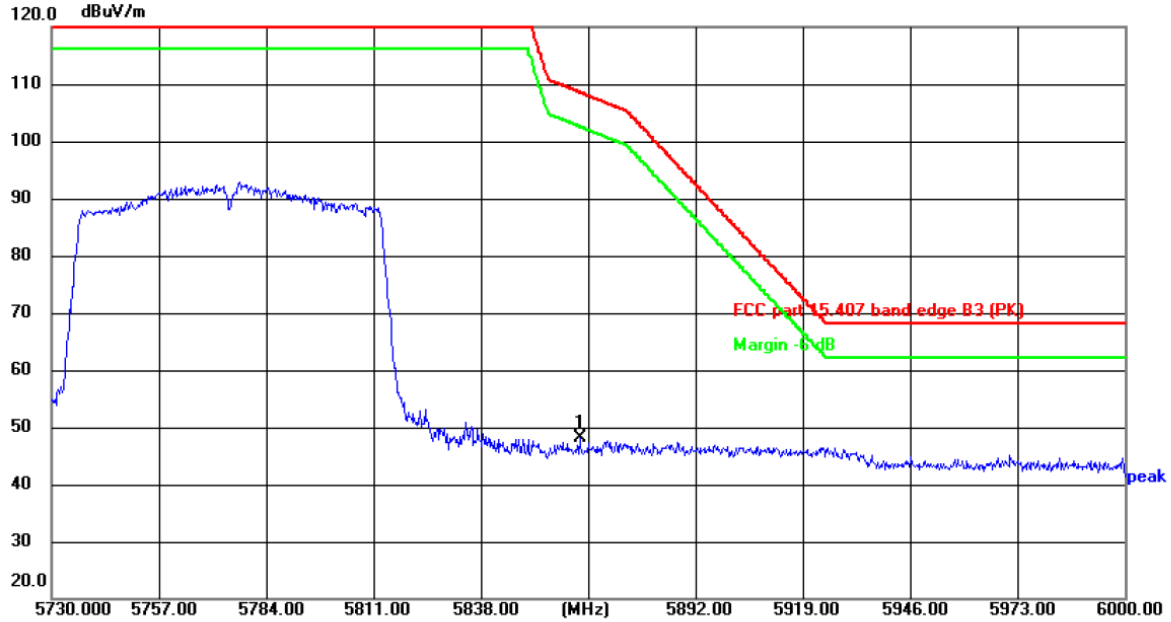
AX80-5775-right



Site: 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 23.9(℃) Humidity: 42 %

Limit: FCC part 15.407 band edge B3 (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5871.251	54.52	-7.65	46.87	106.25	-59.38	peak	P	

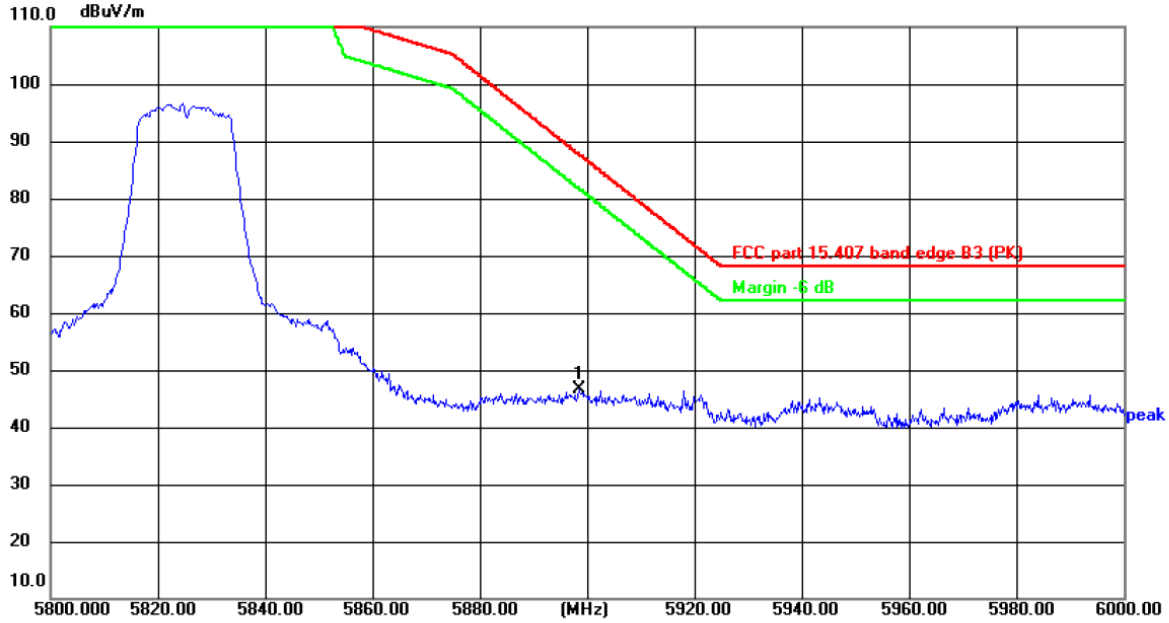


Site: 3m Anechoic Chamber Polarization: ***Vertical*** Temperature: 23.9(℃) Humidity: 42 %

Limit: FCC part 15.407 band edge B3 (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5863.096	55.79	-7.70	48.09	108.53	-60.44	peak	P	

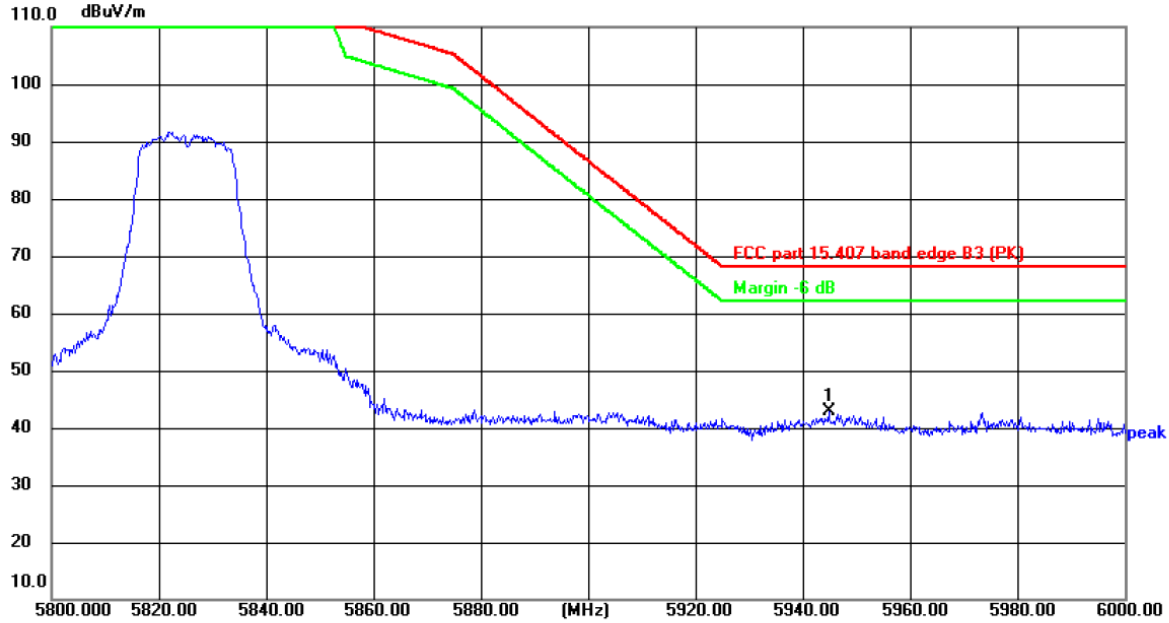
AX20-5825



Site: 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 23.3(℃) Humidity: 52 %

Limit: FCC part 15.407 band edge B3 (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5898.440	53.67	-6.99	46.68	87.85	-41.17	peak	P	

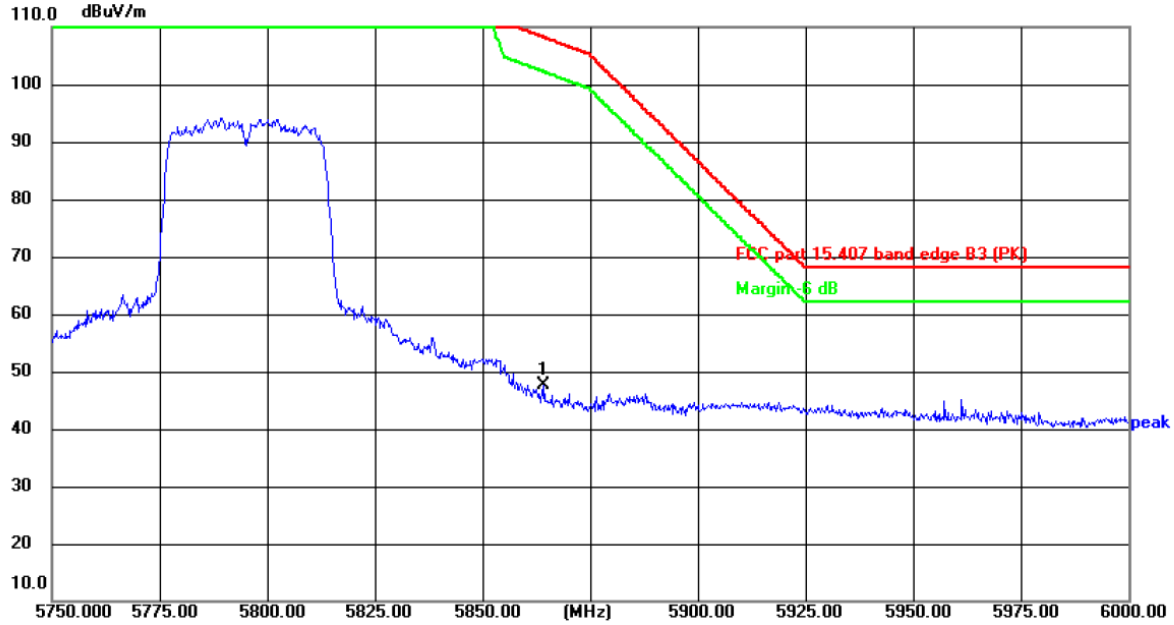


Site: 3m Anechoic Chamber Polarization: ***Vertical*** Temperature: 23.3(℃) Humidity: 52 %

Limit: FCC part 15.407 band edge B3 (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5944.840	49.80	-6.81	42.99	68.20	-25.21	peak	P	

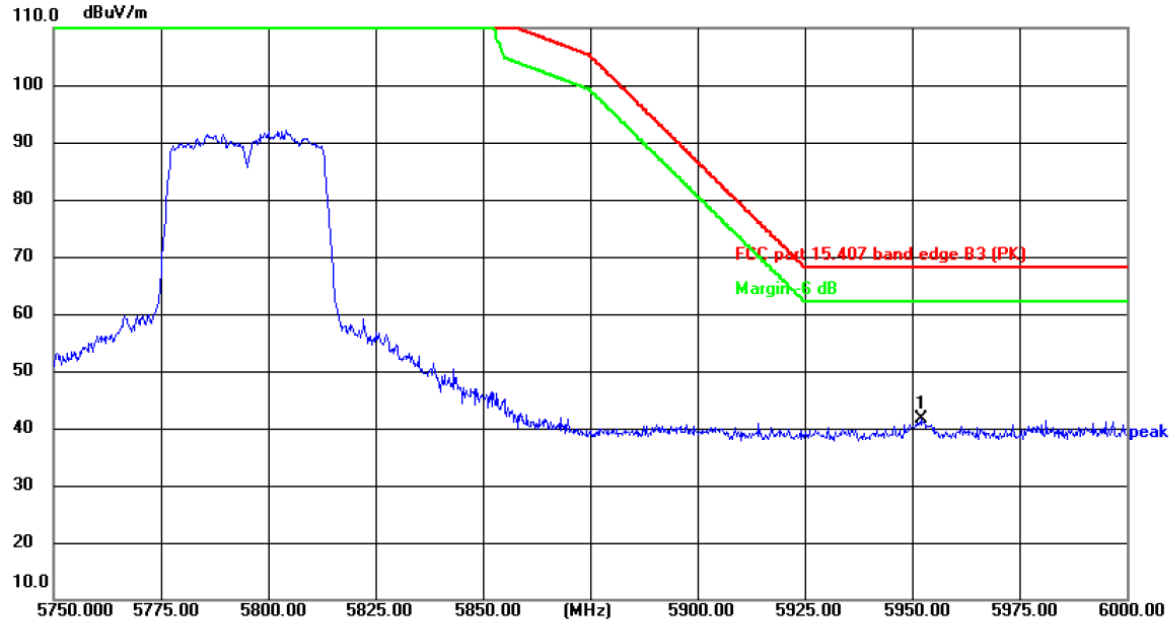
AX40-5795



Site: 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 23.3(℃) Humidity: 52 %

Limit: FCC part 15.407 band edge B3 (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5864.350	54.81	-7.13	47.68	108.18	-60.50	peak	P	



Site: 3m Anechoic Chamber Polarization: ***Vertical*** Temperature: 23.3(℃) Humidity: 52 %

Limit: FCC part 15.407 band edge B3 (PK) Power:AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	5952.425	48.29	-6.78	41.51	68.20	-26.69	peak	P	

Note: *All modulation (802.11a, 802.11n, 802.11ac, 802.11ax) have been tested, only the worst case in 802.11ax be reported.*

5.8. Unwanted Emissions

5.8.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407 & 15.209 & 15.205
Test Method:	KDB 789033 D02 v02r01
Frequency Range:	9kHz to 40GHz
Measurement Distance:	3 m
Antenna Polarization:	Horizontal & Vertical
Operation mode:	Transmitting mode with modulation
Receiver Setup:	

Frequency	Detector	RBW	VBW	Remark
9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
150kHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	Peak	1MHz	10Hz	Average Value

Limit:

Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

In restricted bands:

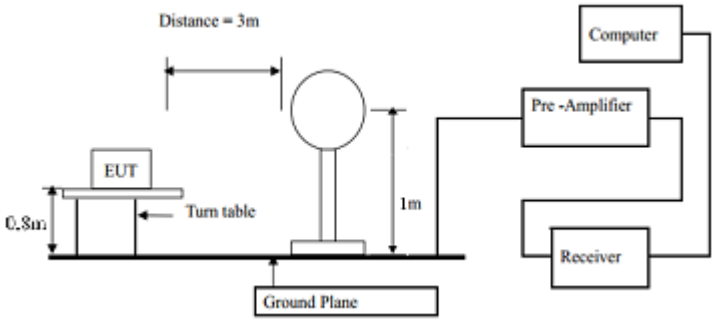
Frequency	Detector	Limit@3m
Above 1G	Peak	74dBμV/m
	AVG	54dBμV/m

Frequency	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400/F(KHz)	300
0.49 -1.705	24000/F(KHz)	3
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

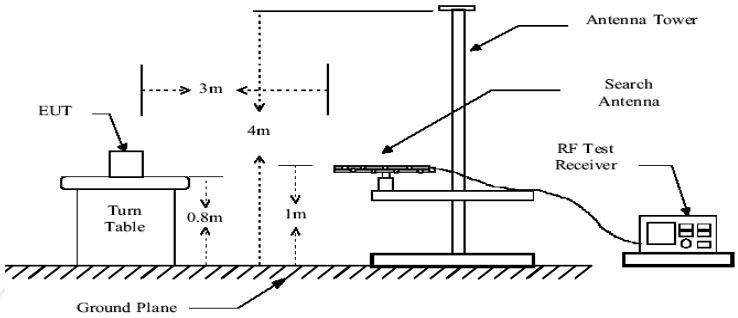
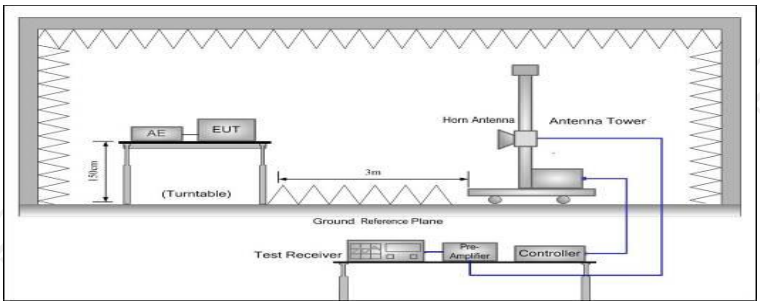
In un-restricted bands: 68.2dBuV/m

Test setup:

For radiated emissions below 30MHz



30MHz to 1GHz

	 Above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter camber. The table was rotated 360 degrees todetermine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and thenthe antenna was tuned to heights from 1 meter to 4 meters and the rotatablewas turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasi-peak or average method as specified andthen reported in a data sheet.
Test results:	PASS

5.8.2. Test Instruments

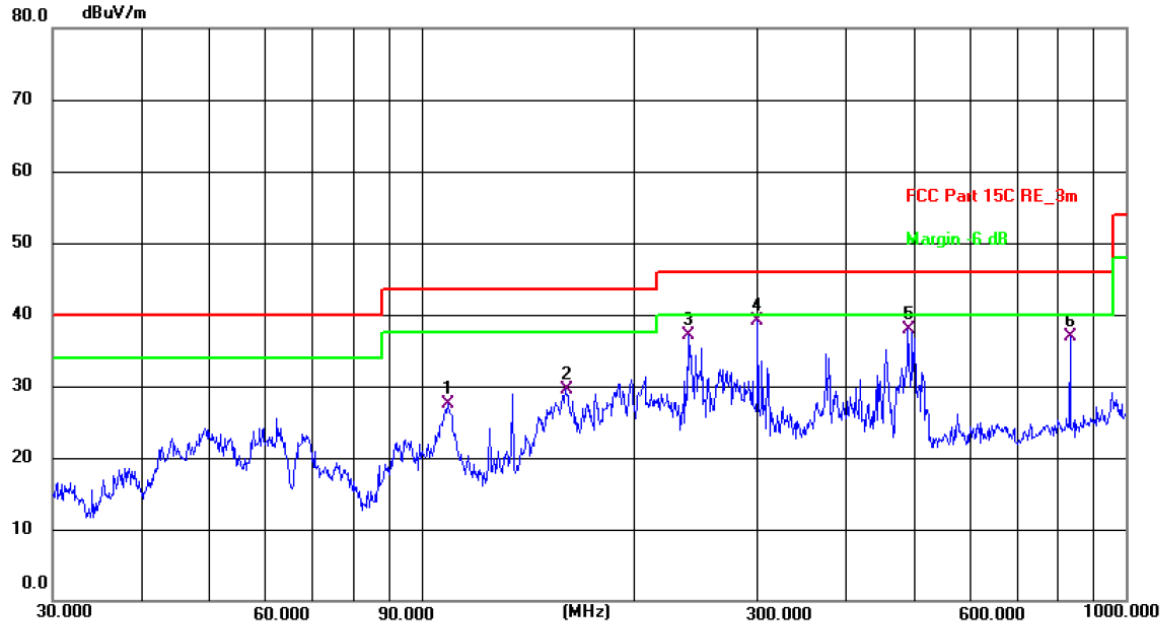
Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCI7	100529	Jan. 31, 2025
Spectrum Analyzer	R&S	FSQ40	200061	Jun. 26, 2025
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 26, 2025
Pre-amplifier	SKET	LNPA_0118G-45	SK2021012102	Jan. 31, 2025
Pre-amplifier	SKET	LNPA_1840G-50	SK202109203500	Jan. 31, 2025
Pre-amplifier	HP	8447D	2727A05017	Jun. 26, 2025
Loop antenna	Schwarzbeck	FMZB1519B	00191	Jun. 26, 2025
Broadband Antenna	Schwarzbeck	VULB9163	340	Jun. 28, 2025
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Jun. 28, 2025
Horn Antenna	Schwarzbeck	BBHA 9170	00956	Feb. 02, 2025
Coaxial cable	SKET	RE-03-D	/	Jun. 26, 2025
Coaxial cable	SKET	RE-03-M	/	Jun. 26, 2025
Coaxial cable	SKET	RE-03-L	/	Jun. 26, 2025
Coaxial cable	SKET	RE-04-D	/	Jun. 26, 2025
Coaxial cable	SKET	RE-04-M	/	Jun. 26, 2025
Coaxial cable	SKET	RE-04-L	/	Jun. 26, 2025
Antenna Mast	Keleto	RE-AM	/	/
EMI Test Software	EZ_EMC	FA-03A2 RE+	1.1.4.2	/

5.8.3. Test Data

Please refer to following diagram for individual

Below 1GHz

Horizontal:

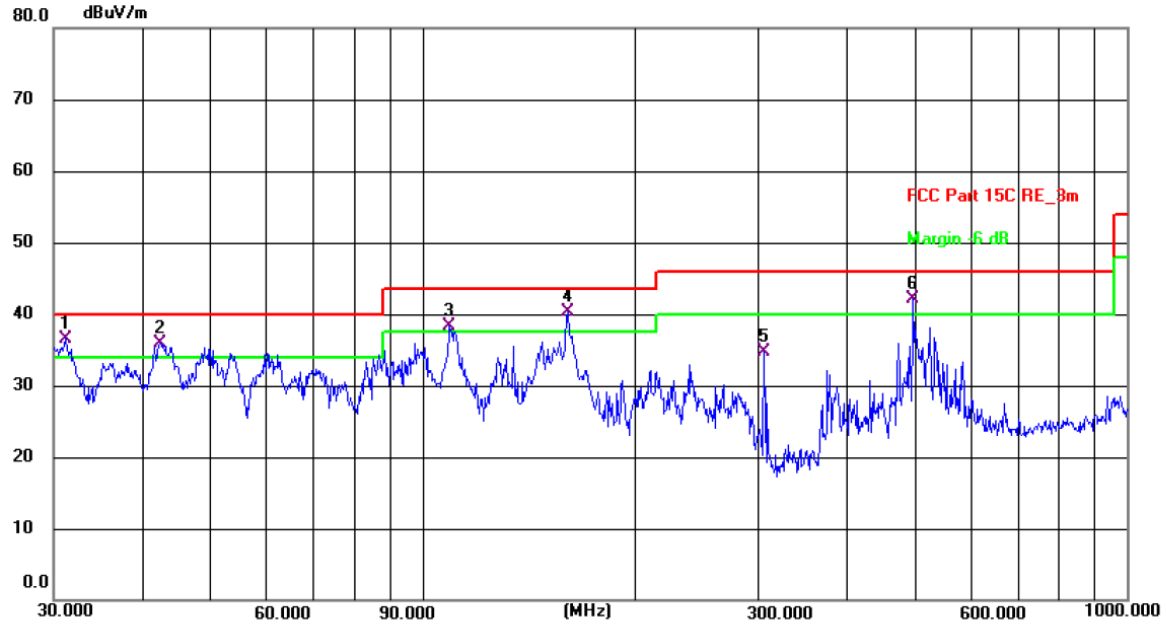


Site 3m Anechoic Chamber2 Polarization: ***Horizontal*** Temperature: 21.4(C) Humidity: 51 %

Limit: FCC Part 15C RE_3m Power: AC 120 V/ 60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	109.0286	48.00	-20.56	27.44	43.50	-16.06	QP	P	
2	160.3456	46.68	-17.17	29.51	43.50	-13.99	QP	P	
3	239.1472	56.85	-19.73	37.12	46.00	-8.88	QP	P	
4 *	300.3672	56.89	-17.76	39.13	46.00	-6.87	QP	P	
5	490.7446	50.19	-12.34	37.85	46.00	-8.15	QP	P	
6	833.3171	43.51	-6.62	36.89	46.00	-9.11	QP	P	

Vertical:



Site 3m Anechoic Chamber2 Polarization: ***Vertical*** Temperature: 21.4(C) Humidity: 51 %

Limit: FCC Part 15C RE_3m Power: AC 120 V/ 60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 !	31.1797	56.08	-19.48	36.60	40.00	-3.40	QP	P	
2 !	42.4508	54.47	-18.58	35.89	40.00	-4.11	QP	P	
3 !	109.4116	58.82	-20.52	38.30	43.50	-5.20	QP	P	
4 *	160.9088	57.45	-17.17	40.28	43.50	-3.22	QP	P	
5	305.6800	52.60	-17.86	34.74	46.00	-11.26	QP	P	
6 !	497.6764	54.32	-12.23	42.09	46.00	-3.91	QP	P	

Note: *1.The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported*

2. Measurements were conducted in all three channels (high, middle, low) and all modulation (802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(VHT20), 802.11ac(VHT40), 802.11ac(VHT80), 802.11ax(HE20), 802.11ax(HE40), 802.11ax(HE80) and the worst case Mode (Highest channel and 802.11ac(VHT40) transmit with antenna 1) was submitted only.

3. Measurement (dBµV) = Reading level + Correction Factor, correction Factor= Antenna Factor + Cable loss – Pre-amplifier.

Modulation Type: Band 1									
11a CH36: 5180MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10360	H	38.57	---	1.78	40.35	---	68.2	---	-27.85
15540	H	39.02	---	5.21	44.23	---	74	54	-9.77
---	H	---	---	---	---	---	---	---	---
10360	V	38.23	---	1.78	40.01	---	68.2	---	-28.19
15540	V	40.74	---	5.21	45.95	---	74	54	-8.05
---	V	---	---	---	---	----	---	---	---
11a CH40: 5200MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10400	H	39.1	---	1.83	40.93	---	68.2	---	-27.27
15600	H	40.94	---	5.23	46.17	---	74	54	-7.83
---	H	---	---	---	---	---	---	---	---
10400	V	40.58	---	1.83	42.41	---	68.2	---	-25.79
15600	V	41.36	---	5.23	46.59	---	74	54	-7.41
---	V	---	---	---	---	----	---	---	---
11a CH48: 5240MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10480	H	38.07	---	1.85	39.92	---	68.2	---	-28.28
15720	H	39.51	---	5.25	44.76	---	74	54	-9.24
---	H	---	---	---	---	---	---	---	---
10480	V	38.27	---	1.85	40.12	---	68.2	---	-28.08
15720	V	40.94	---	5.25	46.19	---	74	54	-7.81
---	V	---	---	---	---	----	---	---	---
11n(HT20) CH36: 5180MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10360	H	41.64	---	1.78	43.42	---	68.2	---	-24.78
15540	H	40.59	---	5.21	45.8	---	74	54	-8.2
---	H	---	---	---	---	---	---	---	---
10360	V	42.77	---	1.78	44.55	---	68.2	---	-23.65
15540	V	41.3	---	5.21	46.51	---	74	54	-7.49
---	V	---	---	---	---	----	---	---	---

11n(HT20) CH40: 5200MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10400	H	40.69	---	1.83	42.52	---	68.2	---	-25.68
15600	H	41.12	---	5.23	46.35	---	74	54	-7.65
---	H	---	---	---	---	---	---	---	---
10400	V	40.59	---	1.83	42.42	---	68.2	---	-25.78
15600	V	39.82	---	5.23	45.05	---	74	54	-8.95
---	V	---	---	---	---	----	---	---	---

11n(HT20) CH48: 5240MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10480	H	41.21	---	1.85	43.06	---	68.2	---	-25.14
15720	H	41.09	---	5.25	46.34	---	74	54	-7.66
---	H	---	---	---	---	---	---	---	---
10480	V	40.14	---	1.85	41.99	---	68.2	---	-26.21
15720	V	40.83	---	5.25	46.08	---	74	54	-7.92
---	V	---	---	---	---	----	---	---	---

11n(HT40) CH38: 5190MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10380	H	42.95	---	1.80	44.75	---	68.2	---	-23.45
15570	H	41.72	---	5.22	46.94	---	74	54	-7.06
---	H	---	---	---	---	---	---	---	---
10380	V	40.68	---	1.80	42.48	---	68.2	---	-25.72
15570	V	39.41	---	5.22	44.63	---	74	54	-9.37
---	V	---	---	---	---	----	---	---	---

11n(HT40) CH46: 5230MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10460	H	41.3	---	1.85	43.15	---	68.2	---	-25.05
15690	H	39.58	---	5.08	44.66	---	74	54	-9.34
---	H	---	---	---	---	---	---	---	---
10460	V	41.94	---	1.85	43.79	---	68.2	---	-24.41
15690	V	40.02	---	5.08	45.1	---	74	54	-8.9
---	V	---	---	---	---	----	---	---	---

11ac(VHT20) CH36: 5180MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10360	H	40.22	---	1.78	42	---	68.2	---	-26.2
15540	H	39.76	---	5.21	44.97	---	74	54	-9.03
---	H	---	---	---	---	---	---	---	---
10360	V	38.4	---	1.78	40.18	---	68.2	---	-28.02
15540	V	39.73	---	5.21	44.94	---	74	54	-9.06
---	V	---	---	---	---	----	---	---	---

11ac(VHT20) CH40: 5200MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10400	H	39.66	---	1.83	41.49	---	68.2	---	-26.71
15600	H	40.19	---	5.23	45.42	---	74	54	-8.58
---	H	---	---	---	---	---	---	---	---
10400	V	39.63	---	1.83	41.46	---	68.2	---	-26.74
15600	V	39.11	---	5.23	44.34	---	74	54	-9.66
---	V	---	---	---	---	----	---	---	---

11ac(VHT20) CH48:5240									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10480	H	37.34	---	1.85	39.19	---	68.2	---	-29.01
15720	H	38.82	---	5.25	44.07	---	74	54	-9.93
---	H	---	---	---	---	---	---	---	---
10480	V	38.05	---	1.85	39.9	---	68.2	---	-28.3
15720	V	39.18	---	5.25	44.43	---	74	54	-9.57
---	V	---	---	---	---	----	---	---	---

11ac(VHT40) CH38:5190									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10380	H	40.59	---	1.80	42.39	---	68.2	---	-25.81
15570	H	39.67	---	5.22	44.89	---	74	54	-9.11
---	H	---	---	---	---	---	---	---	---
10380	V	38.07	---	1.80	39.87	---	68.2	---	-28.33
15570	V	39.42	---	5.22	44.64	---	74	54	-9.36
---	V	---	---	---	---	----	---	---	---

11ac(VHT40) CH46:5230									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10460	H	38.59	---	1.85	40.44	---	68.2	---	-27.76
15690	H	39.22	---	5.08	44.3	---	74	54	-9.7
---	H	---	---	---	---	---	---	---	---
10460	V	39.16	---	1.85	41.01	---	68.2	---	-27.19
15690	V	40.88	---	5.08	45.96	---	74	54	-8.04
---	V	---	---	---	---	----	---	---	---

11ax(HE20) CH36: 5180MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10360	H	39.57	---	1.78	41.35	---	68.2	---	-26.85
15540	H	40.23	---	5.21	45.44	---	74	54	-8.56
---	H	---	---	---	---	---	---	---	---
10360	V	38.14	---	1.78	39.92	---	68.2	---	-28.28
15540	V	40.63	---	5.21	45.84	---	74	54	-8.16
---	V	---	---	---	---	----	---	---	---

11ax(HE20) CH40: 5200MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10400	H	39.37	---	1.83	41.2	---	68.2	---	-27
15600	H	40.15	---	5.23	45.38	---	74	54	-8.62
---	H	---	---	---	---	---	---	---	---
10400	V	39.74	---	1.83	41.57	---	68.2	---	-26.63
15600	V	39.82	---	5.23	45.05	---	74	54	-8.95
---	V	---	---	---	---	----	---	---	---

11ax(HE20) CH48:5240									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10480	H	38.98	---	1.85	40.83	---	68.2	---	-27.37
15720	H	39.61	---	5.25	44.86	---	74	54	-9.14
---	H	---	---	---	---	---	---	---	---
10480	V	38.27	---	1.85	40.12	---	68.2	---	-28.08
15720	V	39.85	---	5.25	45.1	---	74	54	-8.9
---	V	---	---	---	---	----	---	---	---

11ax(HE40) CH38:5190									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10380	H	40.26	---	1.80	42.06	---	68.2	---	-26.14
15570	H	39.13	---	5.22	44.35	---	74	54	-9.65
---	H	---	---	---	---	---	---	---	---
10380	V	38.64	---	1.80	40.44	---	68.2	---	-27.76
15570	V	38.12	---	5.22	43.34	---	74	54	-10.66
---	V	---	---	---	---	----	---	---	---

11ax(HE40) CH46:5230									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10460	H	38.47	---	1.85	40.32	---	68.2	---	-27.88
15690	H	39.25	---	5.08	44.33	---	74	54	-9.67
---	H	---	---	---	---	---	---	---	---
10460	V	39.42	---	1.85	41.27	---	68.2	---	-26.93
15690	V	40.68	---	5.08	45.76	---	74	54	-8.24
---	V	---	---	---	---	----	---	---	---

11ax(HE80) CH42:5210									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10420	H	41.47	---	1.84	43.31	---	68.2	---	-24.89
15630	H	39.83	---	5.17	45	---	74	54	-9
---	H	---	---	---	---	---	---	---	---
10420	V	41.72	---	1.84	43.56	---	68.2	---	-24.64
15630	V	40.43	---	5.17	45.6	---	74	54	-8.4
---	V	---	---	---	---	----	---	---	---

Note:

1. *Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier*
2. *Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)*
3. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
4. *Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 40GHz.*
5. *Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.*

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Modulation Type: Band 3									
11a CH149: 5745MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11490	H	44.57	---	2.48	47.05	---	74	54	-6.95
17235	H	37.01	---	6.50	43.51	---	68.2	---	-24.69
---	H	---	---	---	---	---	---	---	---
11490	V	45.84	---	2.48	48.32	---	74	54	-5.68
17235	V	38.78	---	6.50	45.28	---	68.2	---	-22.92
---	V	---	---	---	---	----	---	---	---
11a CH157: 5785MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11570	H	43.08	---	2.42	45.5	---	74	54	-8.5
17355	H	38.62	---	7.03	45.65	---	68.2	---	-22.55
---	H	---	---	---	---	---	---	---	---
11570	V	43.46	---	2.42	45.88	---	74	54	-8.12
17355	V	39.2	---	7.03	46.23	---	68.2	---	-21.97
---	V	---	---	---	---	----	---	---	---
11a CH165: 5825MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11650	H	43.96	---	2.41	46.37	---	74	54	-7.63
17475	H	36.4	---	7.41	43.81	---	68.2	---	-24.39
---	H	---	---	---	---	---	---	---	---
11650	V	43.88	---	2.41	46.29	---	74	54	-7.71
17475	V	38.13	---	7.41	45.54	---	68.2	---	-22.66
---	V	---	---	---	---	----	---	---	---
11n(HT20) CH149: 5745MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11490	H	44.17	---	2.48	46.65	---	74	54	-7.35
17235	H	38.55	---	6.50	45.05	---	68.2	---	-23.15
---	H	---	---	---	---	---	---	---	---
11490	V	44.86	---	2.48	47.34	---	74	54	-6.66
17235	V	37.53	---	6.50	44.03	---	68.2	---	-24.17
---	V	---	---	---	---	----	---	---	---

11n(HT20) CH157: 5785MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11570	H	44.3	---	2.42	46.72	---	74	54	-7.28
17355	H	39.27	---	7.03	46.3	---	68.2	---	-21.9
---	H	---	---	---	---	---	---	---	---
11570	V	44.85	---	2.42	47.27	---	74	54	-6.73
17355	V	39.59	---	7.03	46.62	---	68.2	---	-21.58
---	V	---	---	---	---	----	---	---	---

11n(HT20) CH165: 5825MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11650	H	45.02	---	2.41	47.43	---	74	54	-6.57
17475	H	37.68	---	7.41	45.09	---	68.2	---	-23.11
---	H	---	---	---	---	---	---	---	---
11650	V	45.85	---	2.41	48.26	---	74	54	-5.74
17475	V	40.12	---	7.41	47.53	---	68.2	---	-20.67
---	V	---	---	---	---	----	---	---	---

11n(HT40) CH151: 5755MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11510	H	44.28	---	2.47	46.75	---	74	54	-7.25
17265	H	37.64	---	6.62	44.26	---	68.2	---	-23.94
---	H	---	---	---	---	---	---	---	---
11510	V	44.69	---	2.47	47.16	---	74	54	-6.84
17265	V	38.2	---	6.62	44.82	---	68.2	---	-23.38
---	V	---	---	---	---	----	---	---	---

11n(HT40) CH159: 5795MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11590	H	44.82	---	2.40	47.22	---	74	54	-6.78
17385	H	38.13	---	7.15	45.28	---	68.2	---	-22.92
---	H	---	---	---	---	---	---	---	---
11590	V	44.71	---	2.40	47.11	---	74	54	-6.89
17385	V	37.53	---	7.15	44.68	---	68.2	---	-23.52
---	V	---	---	---	---	----	---	---	---

11ac(VHT20) CH149: 5745MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11490	H	44.12	---	2.48	46.6	---	74	54	-7.4
17235	H	37.87	---	6.50	44.37	---	68.2	---	-23.83
---	H	---	---	---	---	---	---	---	---
11490	V	44.2	---	2.48	46.68	---	74	54	-7.32
17235	V	38.27	---	6.50	44.77	---	68.2	---	-23.43
---	V	---	---	---	---	----	---	---	---

11ac(VHT20) CH157: 5785MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11570	H	43.03	---	2.42	45.45	---	74	54	-8.55
17355	H	36.48	---	7.03	43.51	---	68.2	---	-24.69
---	H	---	---	---	---	---	---	---	---
11570	V	43.89	---	2.42	46.31	---	74	54	-7.69
17355	V	38.25	---	7.03	45.28	---	68.2	---	-22.92
---	V	---	---	---	---	----	---	---	---

11ac(VHT20) CH165: 5825MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11650	H	44.58	---	2.41	46.99	---	74	54	-7.01
17475	H	38.29	---	7.41	45.7	---	68.2	---	-22.5
---	H	---	---	---	---	---	---	---	---
11650	V	44.67	---	2.41	47.08	---	74	54	-6.92
17475	V	40.14	---	7.41	47.55	---	68.2	---	-20.65
---	V	---	---	---	---	----	---	---	---

11ac(VHT40) CH151: 5755MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11510	H	44.92	---	2.47	47.39	---	74	54	-6.61
17265	H	37.07	---	6.62	43.69	---	68.2	---	-24.51
---	H	---	---	---	---	---	---	---	---
11510	V	43.06	---	2.47	45.53	---	74	54	-8.47
17265	V	36.81	---	6.62	43.43	---	68.2	---	-24.77
---	V	---	---	---	---	----	---	---	---

11ac(VHT40) CH159: 5795MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11590	H	43.52	---	2.40	45.92	---	74	54	-8.08
17385	H	37.47	---	7.15	44.62	---	68.2	---	-23.58
---	H	---	---	---	---	---	---	---	---
11590	V	42.85	---	2.40	45.25	---	74	54	-8.75
17385	V	38.19	---	7.15	45.34	---	68.2	---	-22.86
---	V	---	---	---	---	----	---	---	---

11ac(VHT80) CH155: 5775MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11550	H	44.31	---	2.44	46.75	---	74	54	-7.25
17325	H	38.93	---	6.89	45.82	---	68.2	---	-22.38
---	H	---	---	---	---	---	---	---	---
11550	V	44.26	---	2.44	46.7	---	74	54	-7.3
17325	V	38.77	---	6.89	45.66	---	68.2	---	-22.54
---	V	---	---	---	---	----	---	---	---

11ax(HE20) CH149: 5745MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11490	H	45.72	---	2.48	48.2	---	74	54	-5.8
17235	H	37.07	---	6.50	43.57	---	68.2	---	-24.63
---	H	---	---	---	---	---	---	---	---
11490	V	45.69	---	2.48	48.17	---	74	54	-5.83
17235	V	38.54	---	6.50	45.04	---	68.2	---	-23.16
---	V	---	---	---	---	----	---	---	---

11ax(HE20) CH157: 5785MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11570	H	43.15	---	2.42	45.57	---	74	54	-8.43
17355	H	36.46	---	7.03	43.49	---	68.2	---	-24.71
---	H	---	---	---	---	---	---	---	---
11570	V	44.81	---	2.42	47.23	---	74	54	-6.77
17355	V	38.29	---	7.03	45.32	---	68.2	---	-22.88
---	V	---	---	---	---	----	---	---	---

11ax(HE20) CH165: 5825MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11650	H	43.47	---	2.41	45.88	---	74	54	-8.12
17475	H	39.6	---	7.41	47.01	---	68.2	---	-21.19
---	H	---	---	---	---	---	---	---	---
11650	V	43.27	---	2.41	45.68	---	74	54	-8.32
17475	V	39.43	---	7.41	46.84	---	68.2	---	-21.36
---	V	---	---	---	---	----	---	---	---

11ax(HE40) CH151: 5755MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11510	H	43.91	---	2.47	46.38	---	74	54	-7.62
17265	H	37.35	---	6.62	43.97	---	68.2	---	-24.23
---	H	---	---	---	---	---	---	---	---
11510	V	43.59	---	2.47	46.06	---	74	54	-7.94
17265	V	36.74	---	6.62	43.36	---	68.2	---	-24.84
---	V	---	---	---	---	----	---	---	---

11ax(HE40) CH159: 5795MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11590	H	44.32	---	2.40	46.72	---	74	54	-7.28
17385	H	37.49	---	7.15	44.64	---	68.2	---	-23.56
---	H	---	---	---	---	---	---	---	---
11590	V	43.85	---	2.40	46.25	---	74	54	-7.75
17385	V	38.26	---	7.15	45.41	---	68.2	---	-22.79
---	V	---	---	---	---	----	---	---	---

11ax(HE80) CH155: 5775MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11550	H	44.69	---	2.44	47.13	---	74	54	-6.87
17325	H	38.17	---	6.89	45.06	---	68.2	---	-23.14
---	H	---	---	---	---	---	---	---	---
11550	V	44.93	---	2.44	47.37	---	74	54	-6.63
17325	V	38.58	---	6.89	45.47	---	68.2	---	-22.73
---	V	---	---	---	---	----	---	---	---

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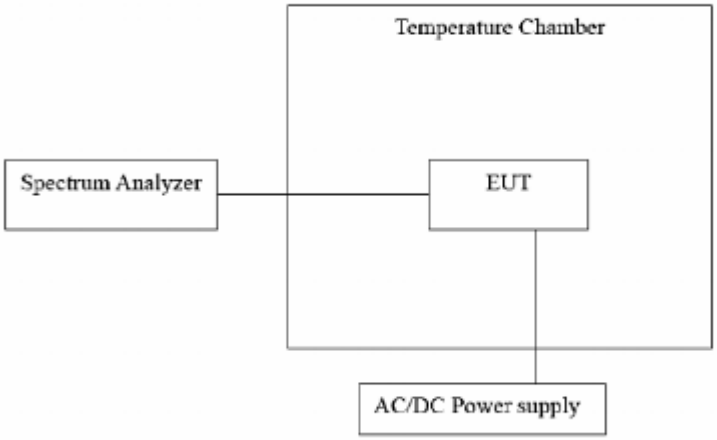
Note:

1. *Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier*
2. *Margin (dB) = Emission Level (Peak) (dBµV/m)-Average limit (dBµV/m)*
3. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
4. *Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 40GHz.*
5. *Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.*

5.9. Frequency Stability Measurement

5.9.1. Test Specification

Test Requirement:	FCC Part15 Section 15.407(g) &Part2 J Section 2.1055
Test Method:	ANSI C63.10: 2020
Limit:	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 45 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.
Test Setup:	
Test Procedure:	The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test Result:	PASS
Remark:	Pre-scan was performed at all models(11a,11n,11ac, 11ax), Antenna 1 and Antenna 2, the worst case (11ax, Antenna 1) was found and test data was shown in this report.

Test plots as follows:

Test mode:	802.11ax(HE20)	Frequency(MHz):	5180
Temperature (°C)	Voltage(V_{DC})	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	120V	5180	0	PASS
35		5180	0	PASS
25		5180	0	PASS
15		5180	0	PASS
5		5180	0	PASS
0		5180.02	20000	PASS
25	100V	5180	0	PASS
	120V	5180	0	PASS
	240V	5180	0	PASS

Test mode:	802.11ax(HE20)	Frequency(MHz):	5200
Temperature (°C)	Voltage(V_{DC})	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	120V	5200	0	PASS
35		5200	0	PASS
25		5200	0	PASS
15		5200	0	PASS
5		5200	0	PASS
0		5200	0	PASS
25	100V	5200	0	PASS
	120V	5200	0	PASS
	240V	5200	0	PASS

Test mode:	802.11ax(HE20)	Frequency(MHz):	5240
Temperature (°C)	Voltage(V_{DC})	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	120V	5240	0	PASS
35		5240	0	PASS
25		5240	0	PASS
15		5240	0	PASS
5		5240	0	PASS
0		5240	0	PASS
25	100V	5240	0	PASS
	120V	5240	0	PASS
	240V	5240	0	PASS

Test mode:	802.11ax(HE20)	Frequency(MHz):	5745	
Temperature (°C)	Voltage(V_{DC})	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	120V	5745	0	PASS
35		5745	0	PASS
25		5745	0	PASS
15		5745	0	PASS
5		5745	0	PASS
0		5745	0	PASS
25	100V	5745	0	PASS
	120V	5745	0	PASS
	240V	5745	0	PASS

Test mode:	802.11ax(HE20)	Frequency(MHz):	5785	
Temperature (°C)	Voltage(V_{DC})	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	120V	5785	0	PASS
35		5785	0	PASS
25		5785	0	PASS
15		5785	0	PASS
5		5785	0	PASS
0		5785	0	PASS
25	100V	5785	0	PASS
	120V	5785	0	PASS
	240V	5785	0	PASS

Test mode:	802.11ax(HE20)	Frequency(MHz):	5825	
Temperature (°C)	Voltage(V_{DC})	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	120V	5825	0	PASS
35		5825	0	PASS
25		5825	0	PASS
15		5825	0	PASS
5		5825	0	PASS
0		5825.02	20000	PASS
25	100V	5825	0	PASS
	120V	5825	0	PASS
	240V	5825	0	PASS

Test mode:	802.11ax(HE40)	Frequency(MHz):	5190
Temperature (°C)	Voltage(V_{DC})	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	120V	5190	0	PASS
35		5190	0	PASS
25		5190	0	PASS
15		5190	0	PASS
5		5190	0	PASS
0		5190	0	PASS
25	100V	5190	0	PASS
	120V	5190	0	PASS
	240V	5190	0	PASS

Test mode:	802.11ax(HE40)	Frequency(MHz):	5230
Temperature (°C)	Voltage(V_{DC})	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	120V	5230	0	PASS
35		5230	0	PASS
25		5230	0	PASS
15		5230	0	PASS
5		5230	0	PASS
0		5230	0	PASS
25	100V	5230	0	PASS
	120V	5230.04	40000	PASS
	240V	5230	0	PASS

Test mode:	802.11ax(HE40)	Frequency(MHz):	5755
Temperature (°C)	Voltage(V_{DC})	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	120V	5755	0	PASS
35		5755	0	PASS
25		5755	0	PASS
15		5755	0	PASS
5		5755	0	PASS
0		5755	0	PASS
25	100V	5755	0	PASS
	120V	5755	0	PASS
	240V	5755.04	40000	PASS

Test mode:	802.11ax(HE40)	Frequency(MHz):	5795	
Temperature (°C)	Voltage(V_{DC})	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	120V	5795	0	PASS
35		5795	0	PASS
25		5795	0	PASS
15		5795	0	PASS
5		5795	0	PASS
0		5795.04	40000	PASS
25	100V	5795	0	PASS
	120V	5795	0	PASS
	240V	5795	0	PASS

Test mode:	802.11ax(HE80)	Frequency(MHz):	5210	
Temperature (°C)	Voltage(V_{DC})	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	120V	5210	0	PASS
35		5210	0	PASS
25		5210	0	PASS
15		5210	0	PASS
5		5210	0	PASS
0		5210	0	PASS
20	100V	5210	0	PASS
	120V	5210	0	PASS
	240V	5210	0	PASS

Test mode:	802.11ax(HE80)	Frequency(MHz):	5775	
Temperature (°C)	Voltage(V_{DC})	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	120V	5775	0	PASS
35		5775	0	PASS
25		5775	0	PASS
15		5775	0	PASS
5		5775	0	PASS
0		5775	0	PASS
20	100V	5775	0	PASS
	120V	5775	0	PASS
	240V	5775	0	PASS

Appendix A: Test Result of Conducted Test

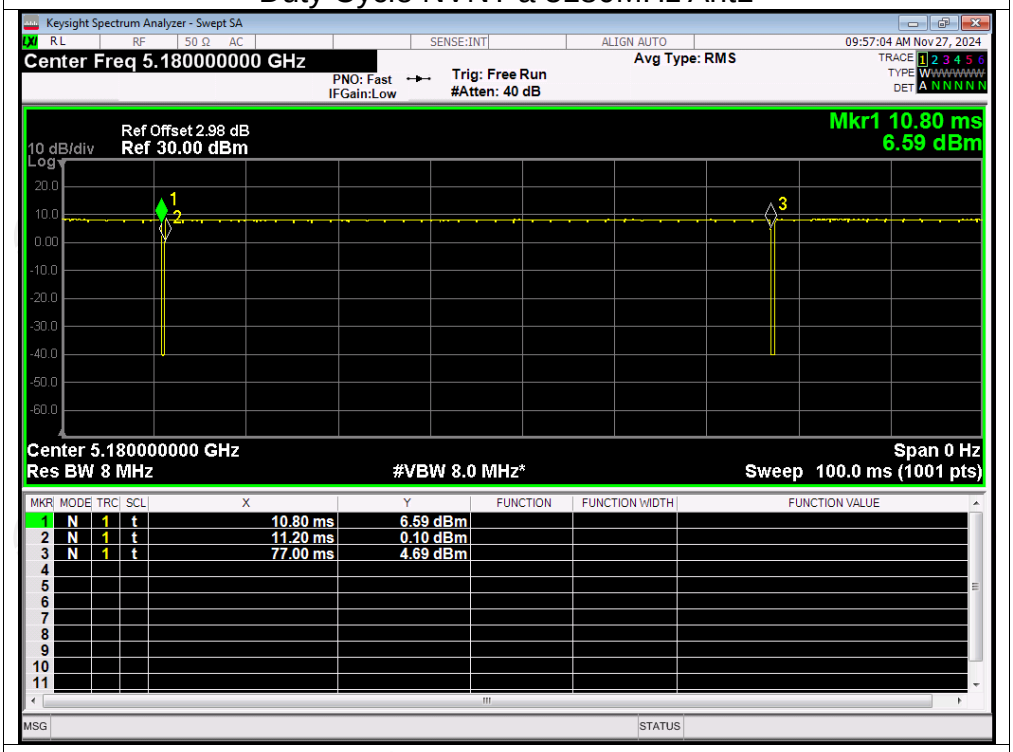
Antenna 1

Duty Cycle

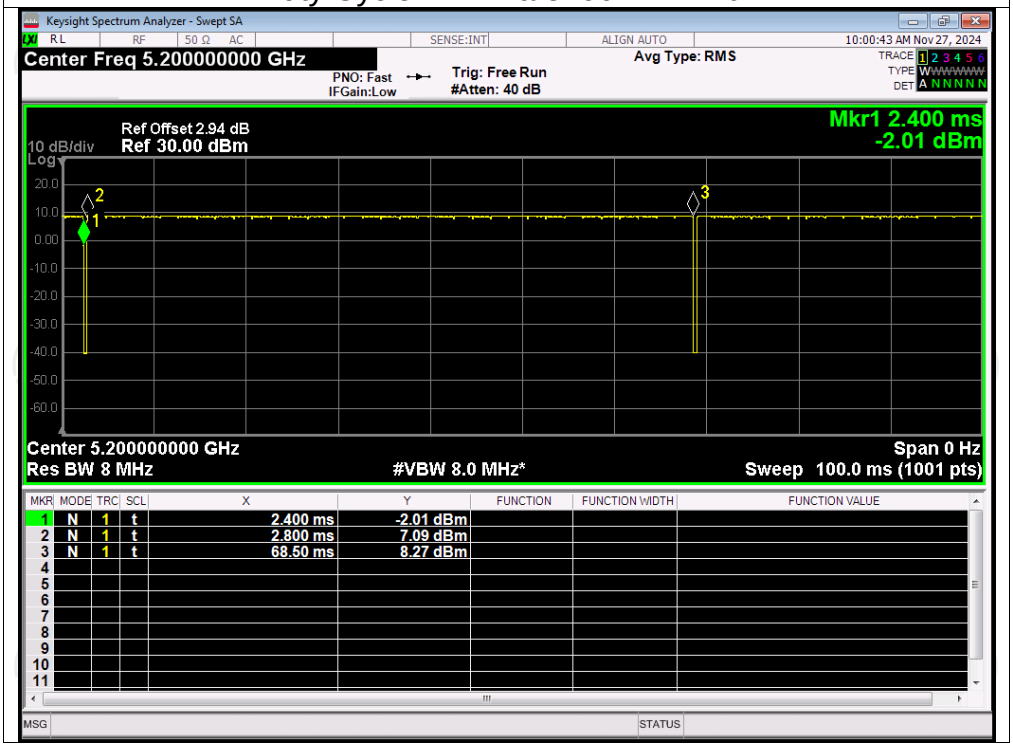
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)
NVNT	a	5180	Ant1	99.3
NVNT	a	5200	Ant1	99.3
NVNT	a	5240	Ant1	99.3
NVNT	n20	5180	Ant1	99.6
NVNT	n20	5200	Ant1	99.7
NVNT	n20	5240	Ant1	99.4
NVNT	n40	5190	Ant1	99.2
NVNT	n40	5230	Ant1	99.7
NVNT	ac20	5180	Ant1	99.7
NVNT	ac20	5200	Ant1	99.6
NVNT	ac20	5240	Ant1	99.7
NVNT	ac40	5190	Ant1	99.7
NVNT	ac40	5230	Ant1	99.7
NVNT	ac80	5210	Ant1	99.7
NVNT	ax20	5180	Ant1	99.7
NVNT	ax20	5200	Ant1	99.7
NVNT	ax20	5240	Ant1	99.6
NVNT	ax40	5190	Ant1	99.7
NVNT	ax40	5230	Ant1	99.2
NVNT	ax80	5210	Ant1	99.8
NVNT	a	5745	Ant1	99.3
NVNT	a	5785	Ant1	99.4
NVNT	a	5825	Ant1	99.3
NVNT	n20	5745	Ant1	99.6
NVNT	n20	5785	Ant1	99.6
NVNT	n20	5825	Ant1	99.7
NVNT	n40	5755	Ant1	99.6
NVNT	n40	5795	Ant1	99.7
NVNT	ac20	5745	Ant1	99.7
NVNT	ac20	5785	Ant1	99.4
NVNT	ac20	5825	Ant1	99.7
NVNT	ac40	5755	Ant1	99.6
NVNT	ac40	5795	Ant1	99.4
NVNT	ac80	5775	Ant1	99.6
NVNT	ax20	5745	Ant1	99.5
NVNT	ax20	5785	Ant1	99.4
NVNT	ax20	5825	Ant1	99.3
NVNT	ax40	5755	Ant1	99.7
NVNT	ax40	5795	Ant1	99.3
NVNT	ax80	5775	Ant1	99.7

Test Graphs

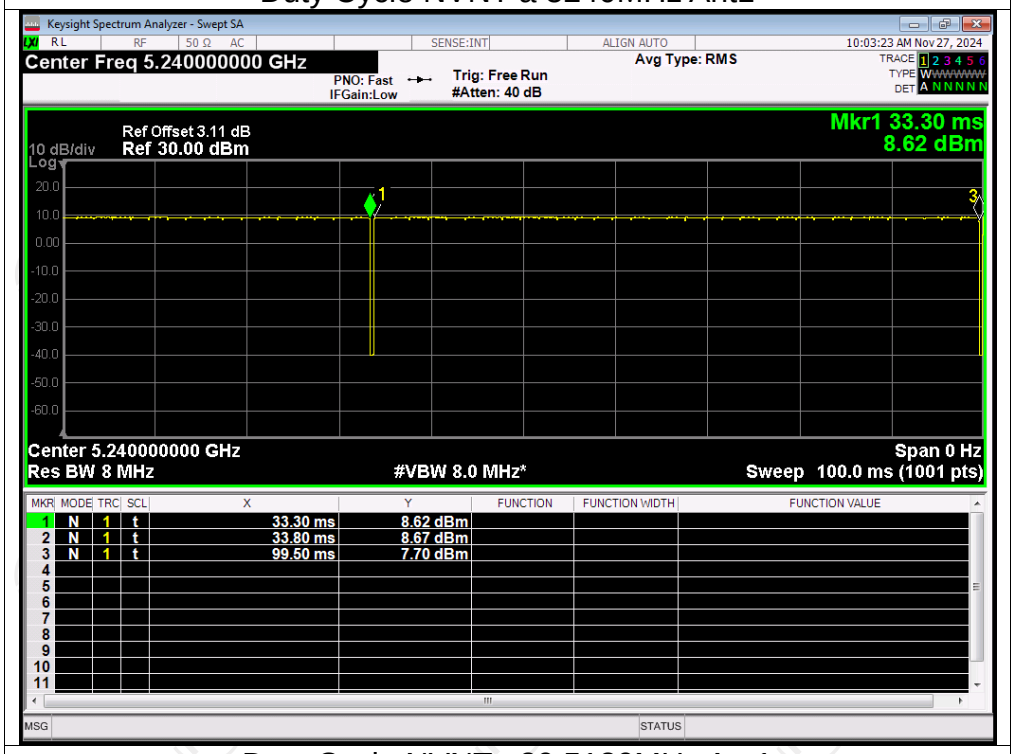
Duty Cycle NVNT a 5180MHz Ant1



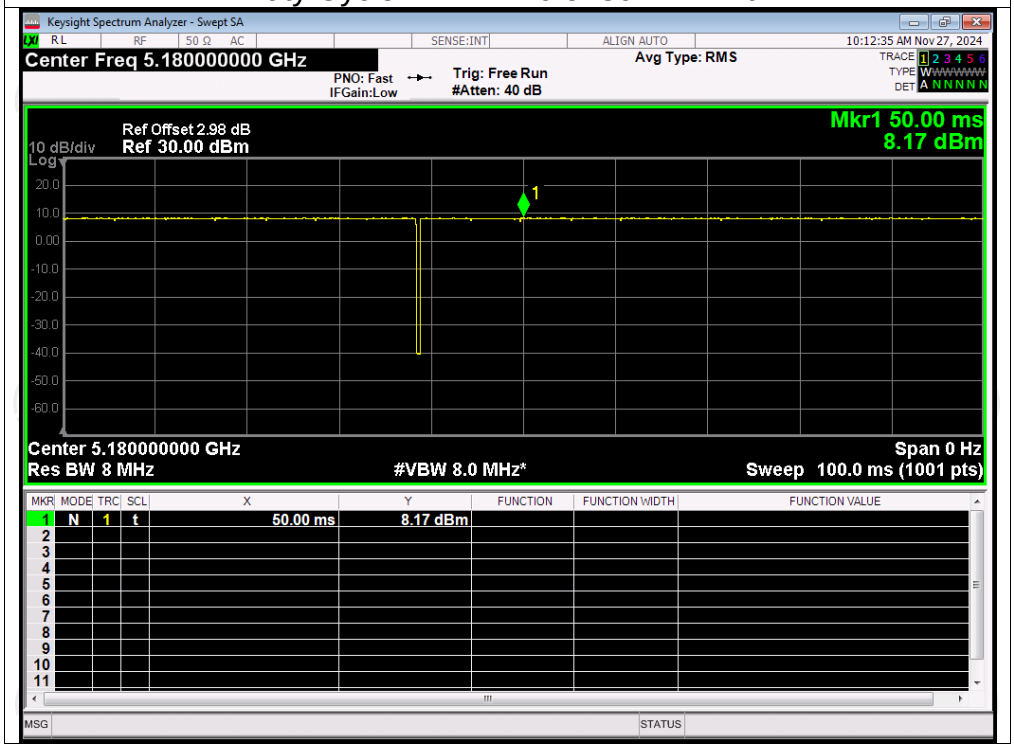
Duty Cycle NVNT a 5200MHz Ant1



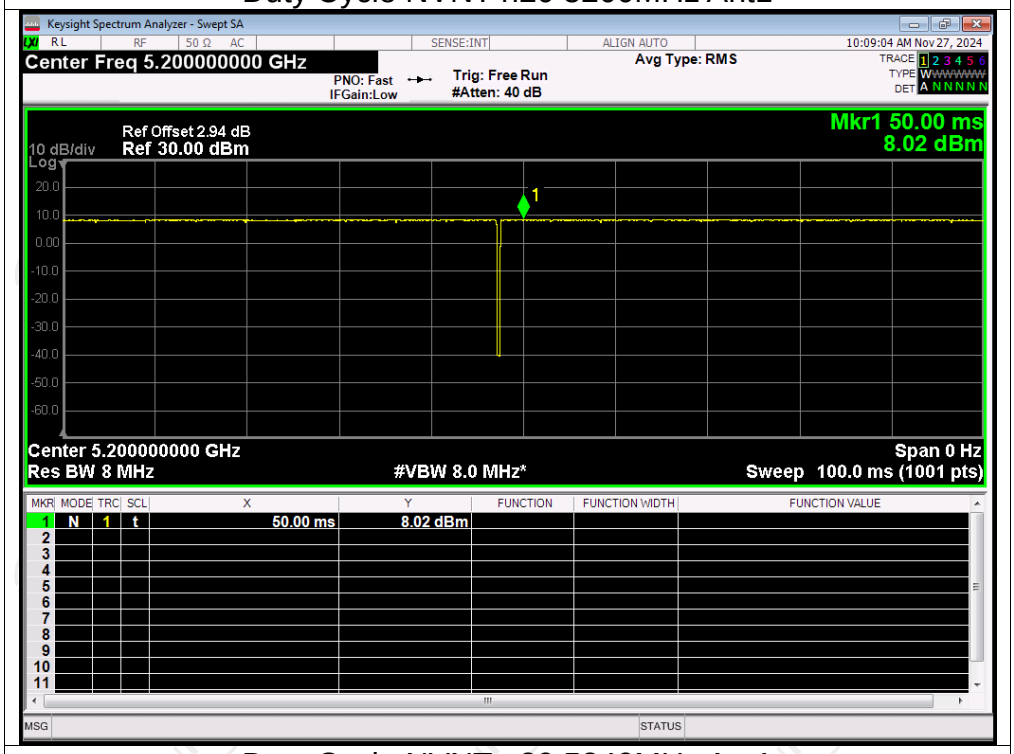
Duty Cycle NVNT a 5240MHz Ant1



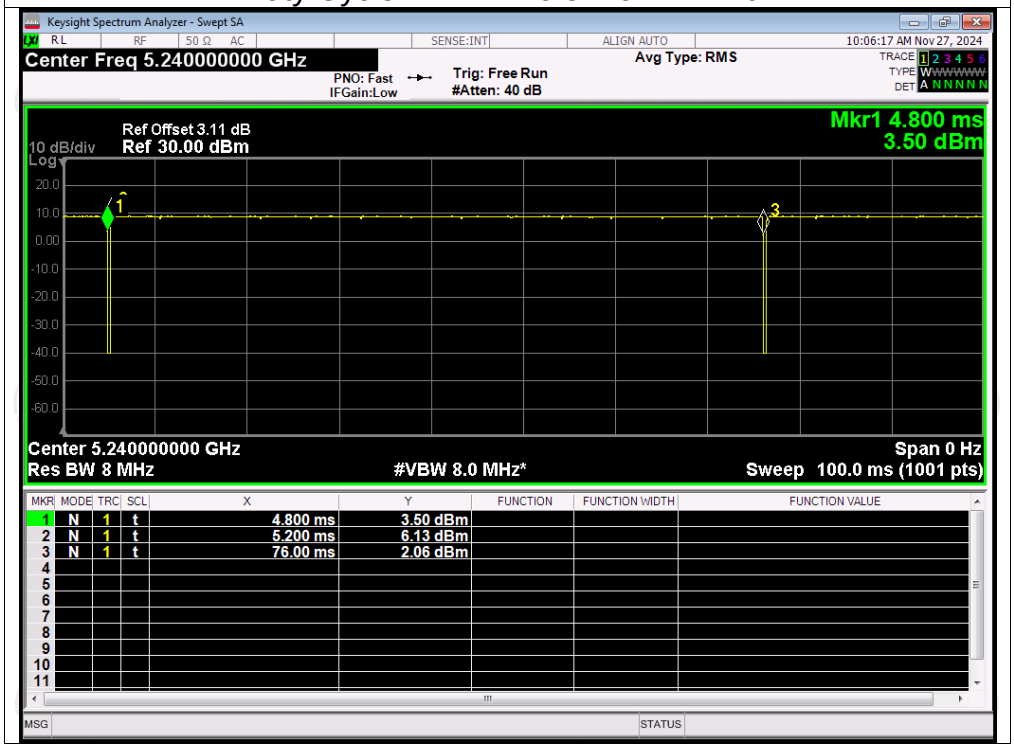
Duty Cycle NVNT n20 5180MHz Ant1



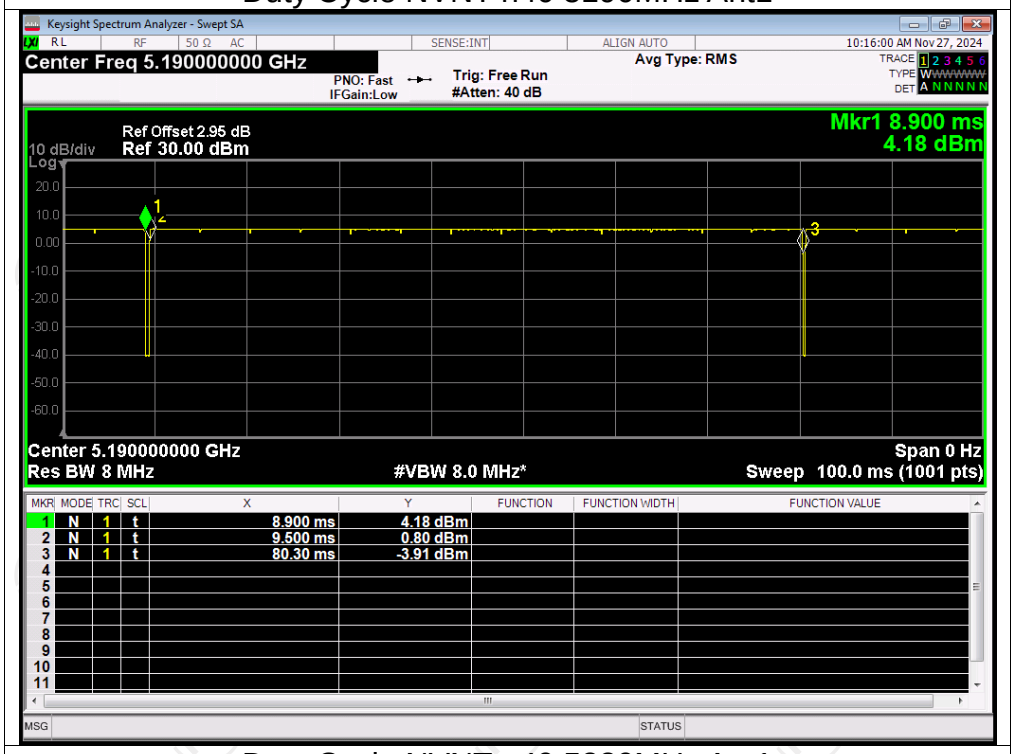
Duty Cycle NVNT n20 5200MHz Ant1



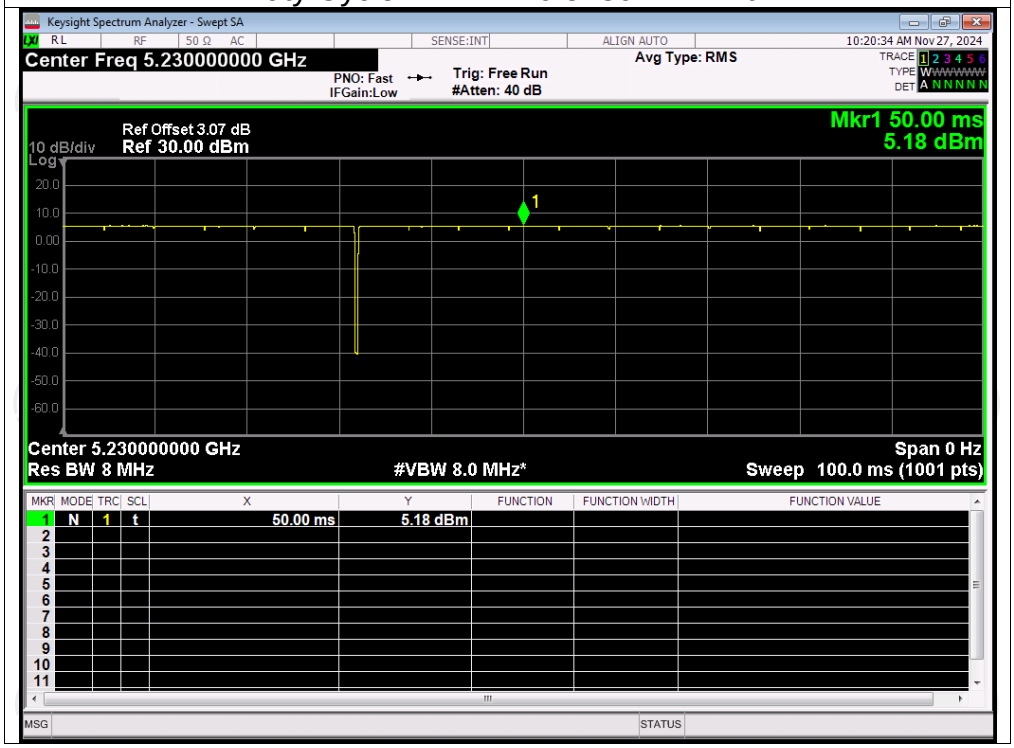
Duty Cycle NVNT n20 5240MHz Ant1



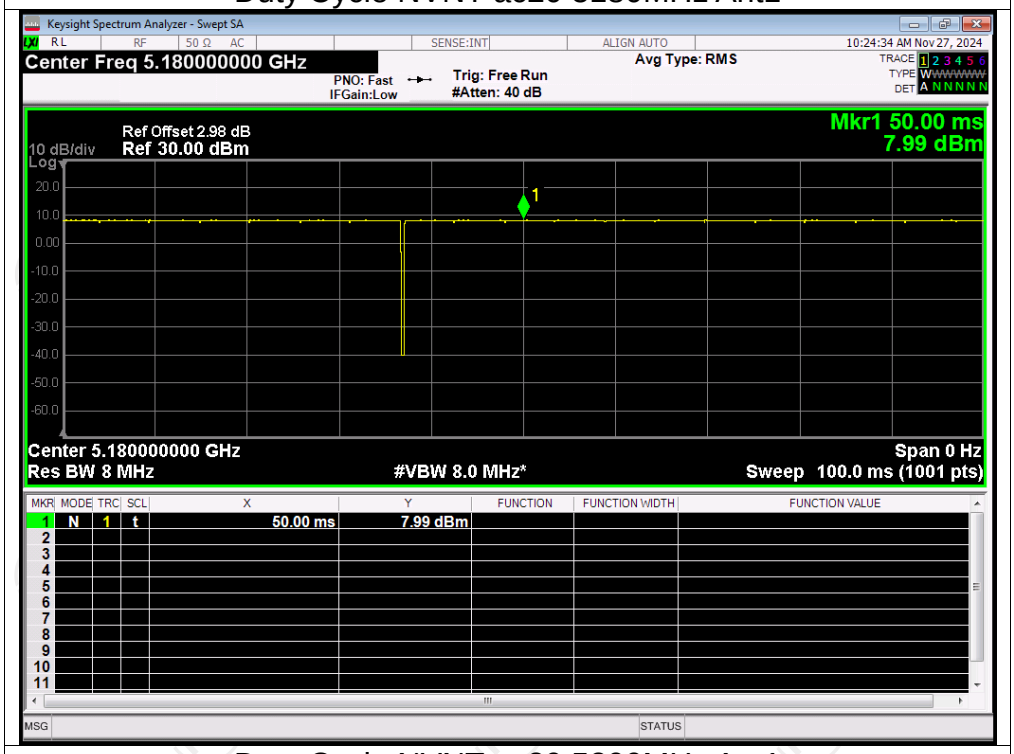
Duty Cycle NVNT n40 5190MHz Ant1



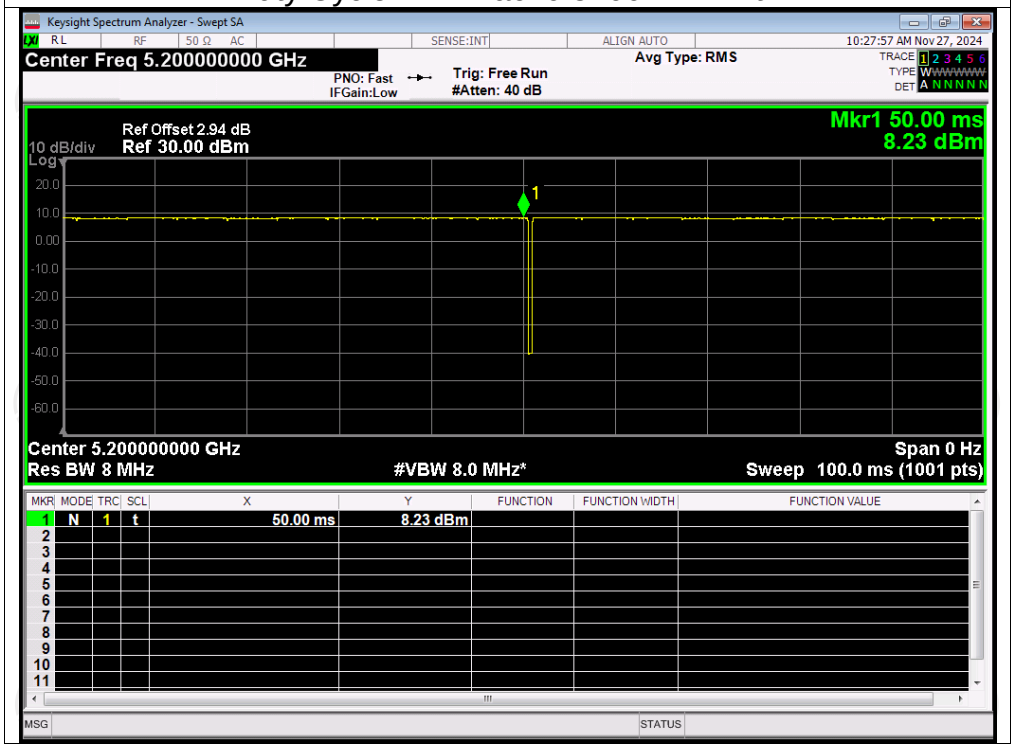
Duty Cycle NVNT n40 5230MHz Ant1



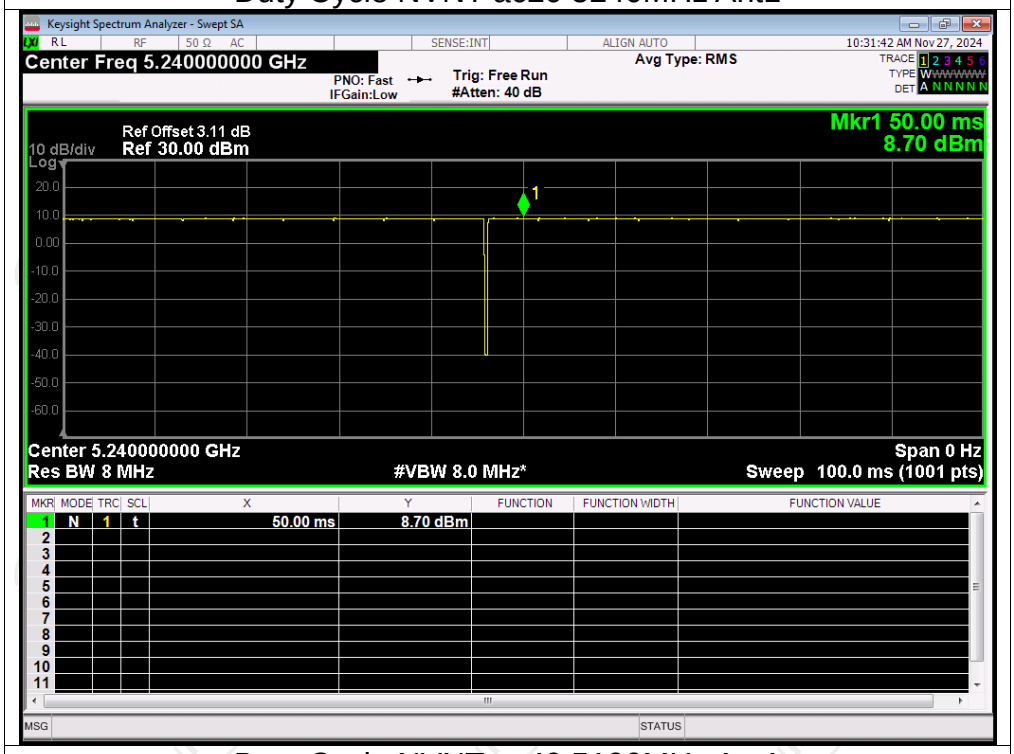
Duty Cycle NVNT ac20 5180MHz Ant1



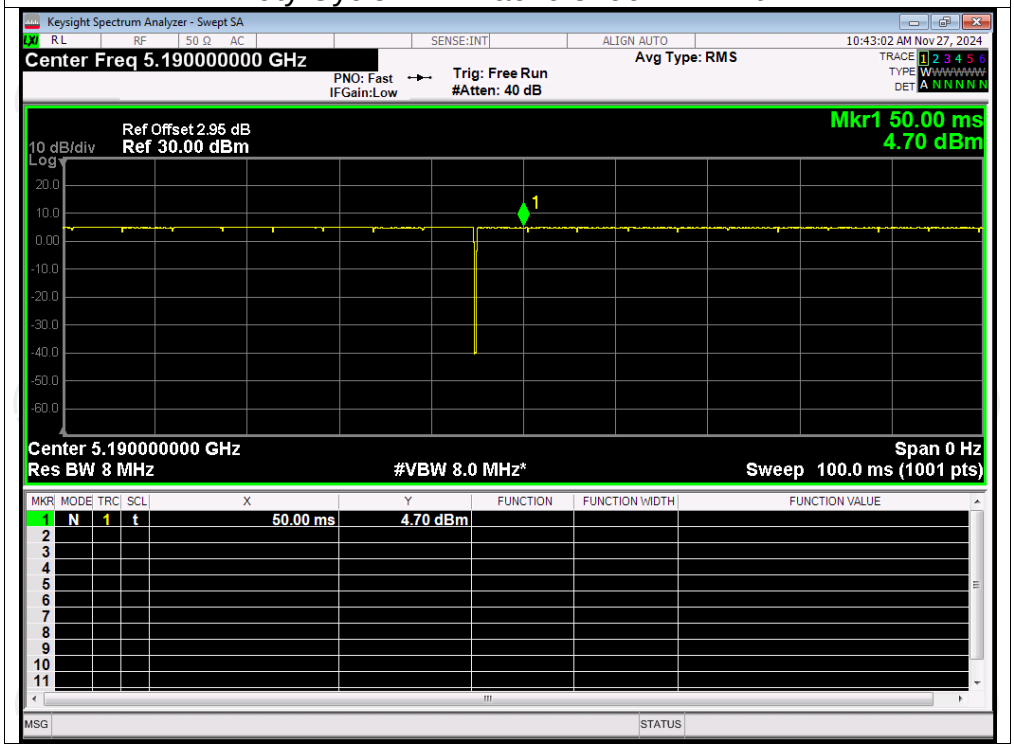
Duty Cycle NVNT ac20 5200MHz Ant1



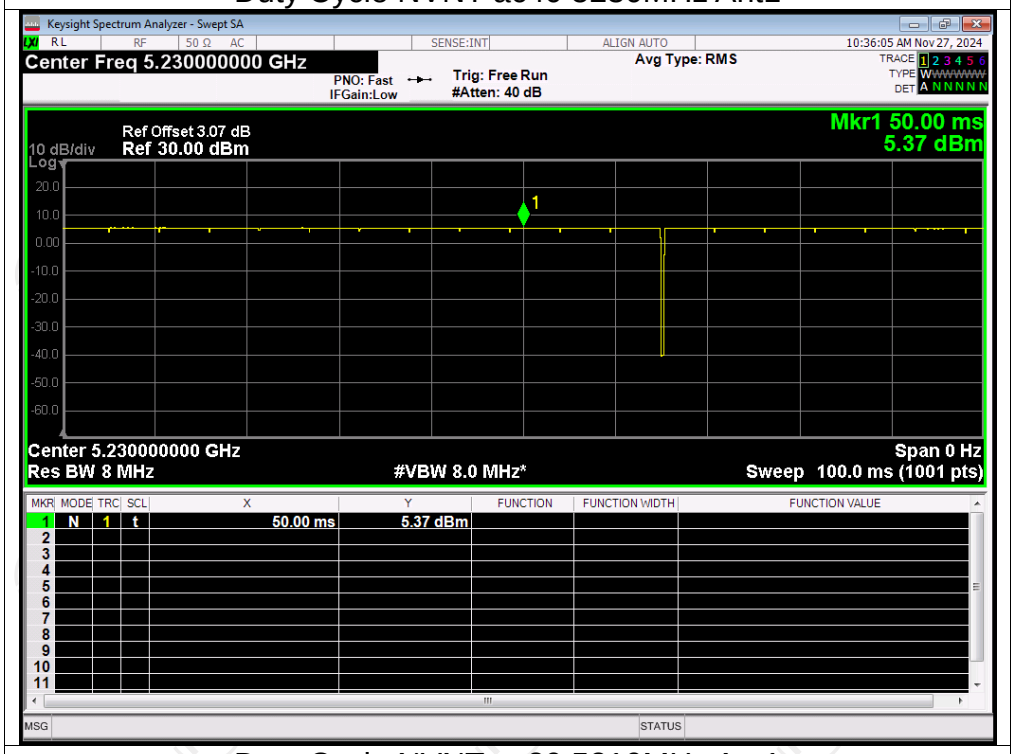
Duty Cycle NVNT ac20 5240MHz Ant1



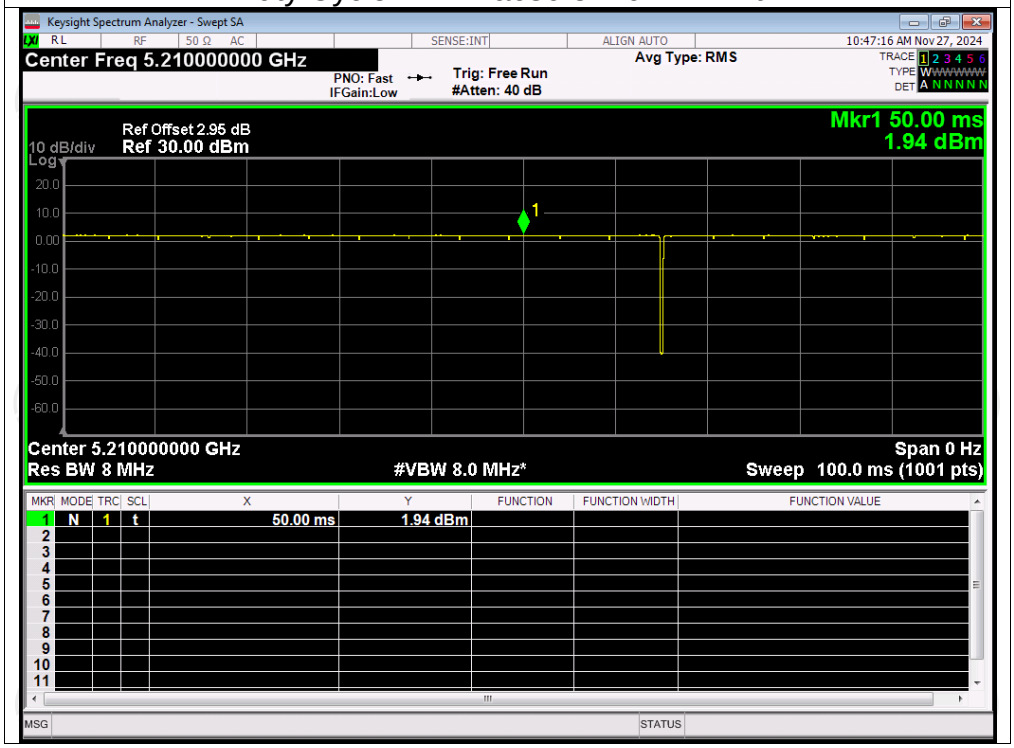
Duty Cycle NVNT ac40 5190MHz Ant1



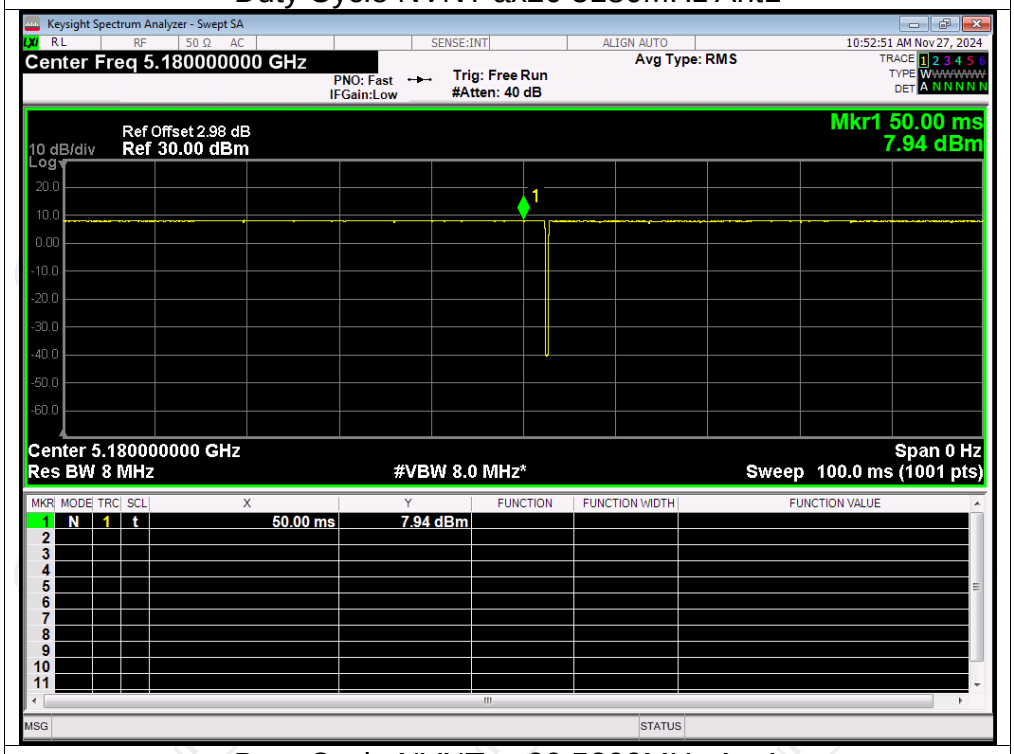
Duty Cycle NVNT ac40 5230MHz Ant1



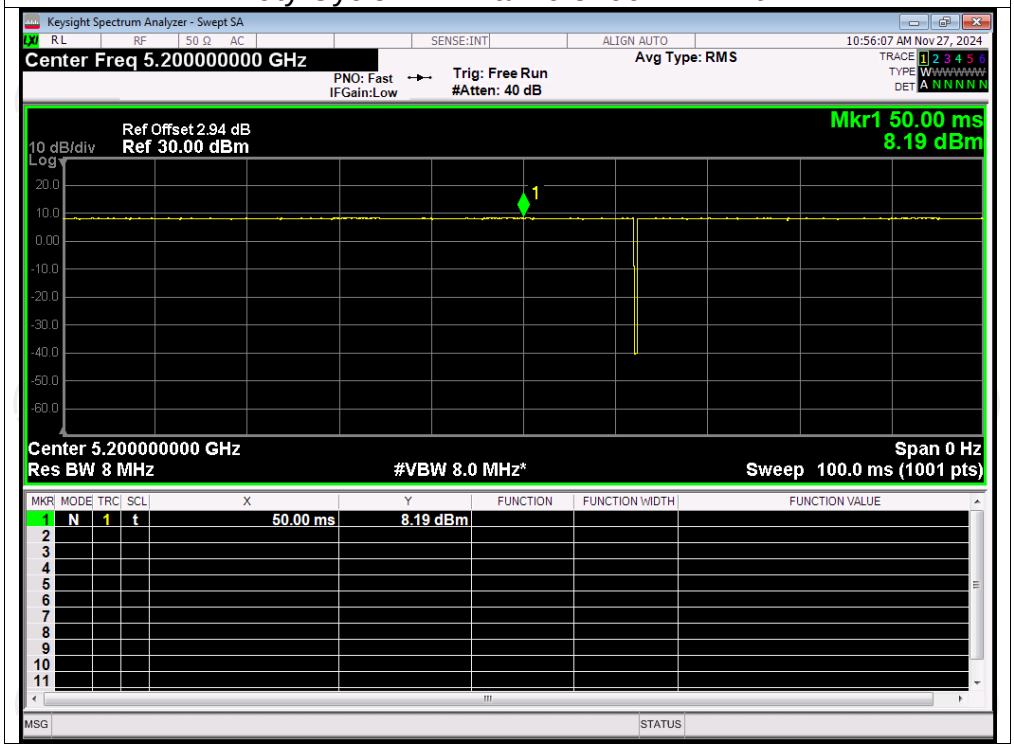
Duty Cycle NVNT ac80 5210MHz Ant1



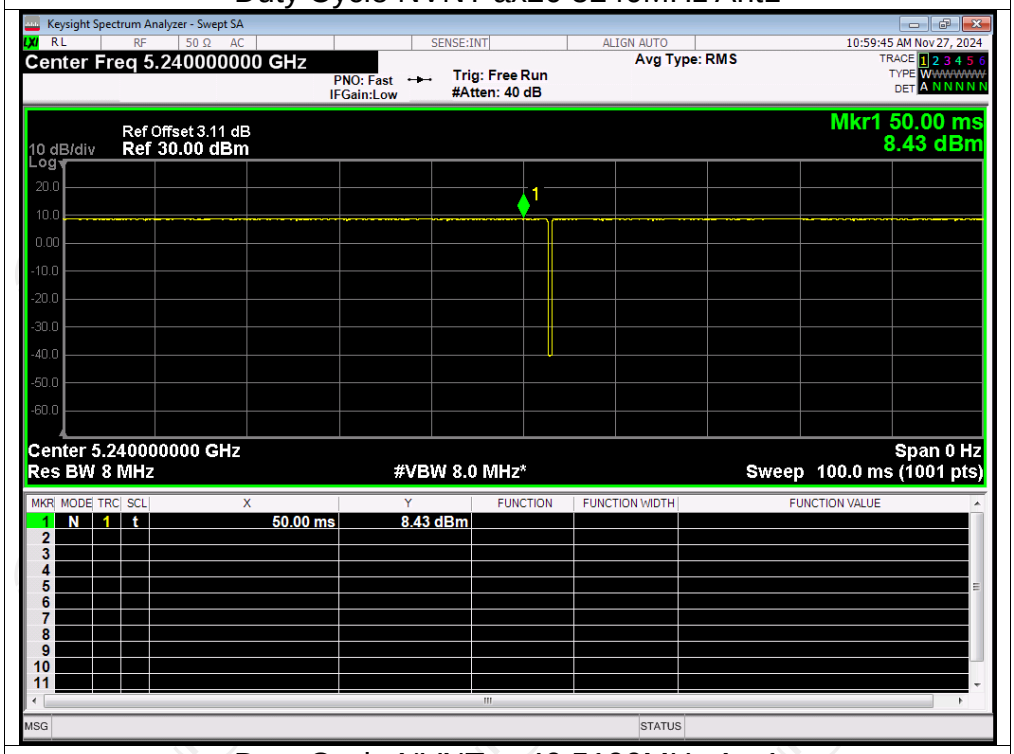
Duty Cycle NVNT ax20 5180MHz Ant1



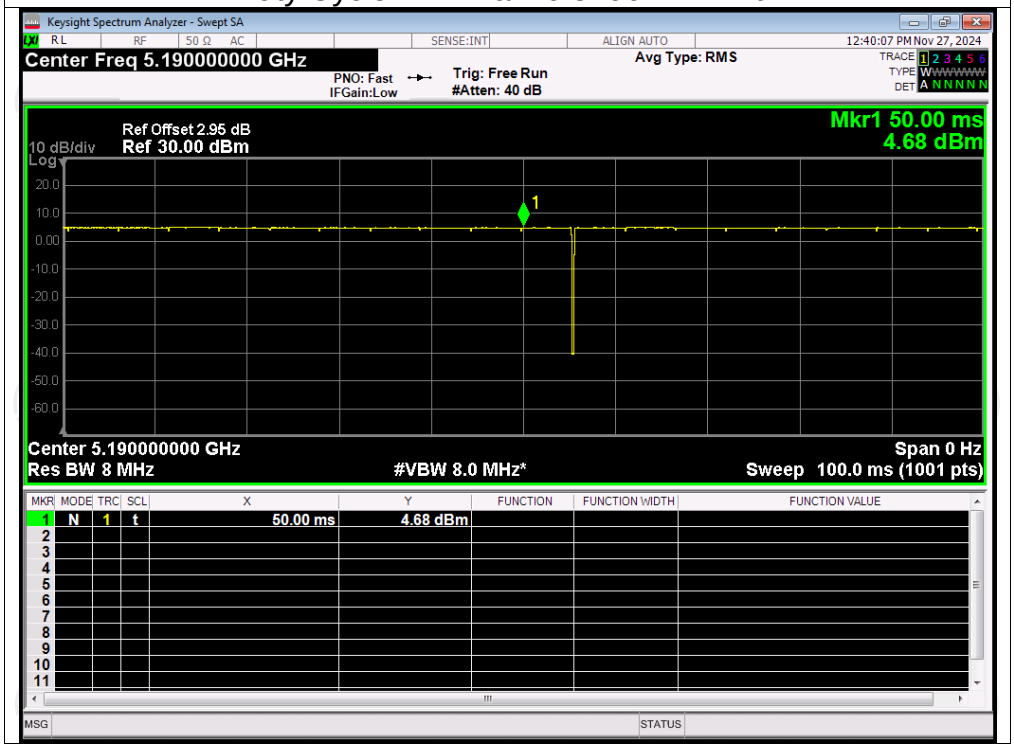
Duty Cycle NVNT ax20 5200MHz Ant1



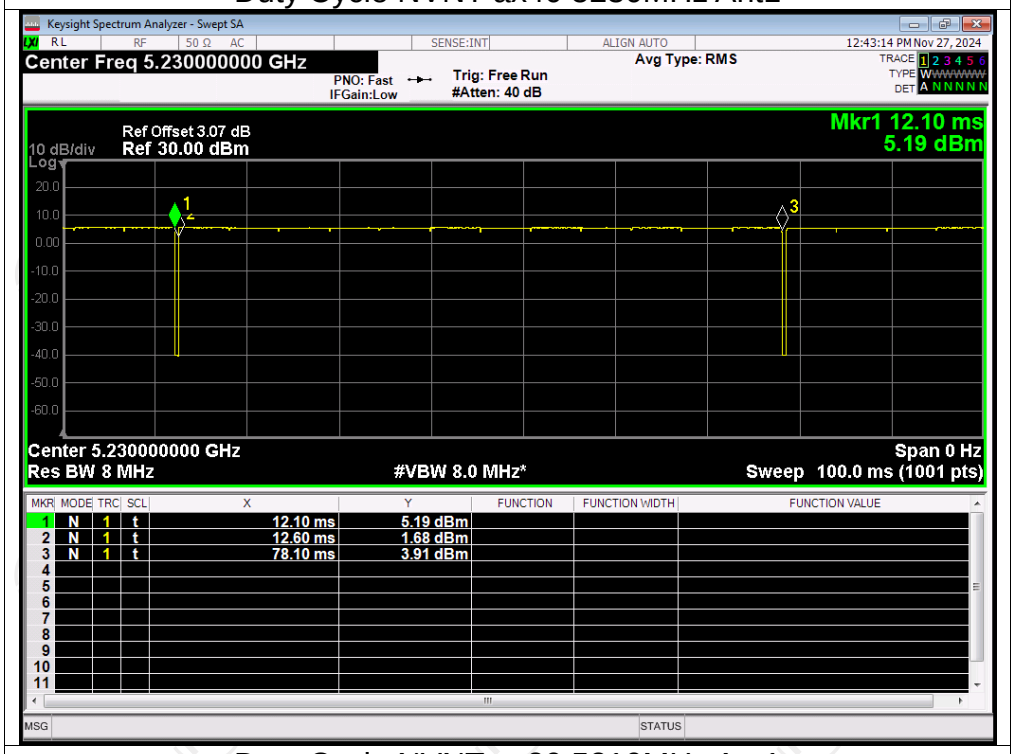
Duty Cycle NVNT ax20 5240MHz Ant1



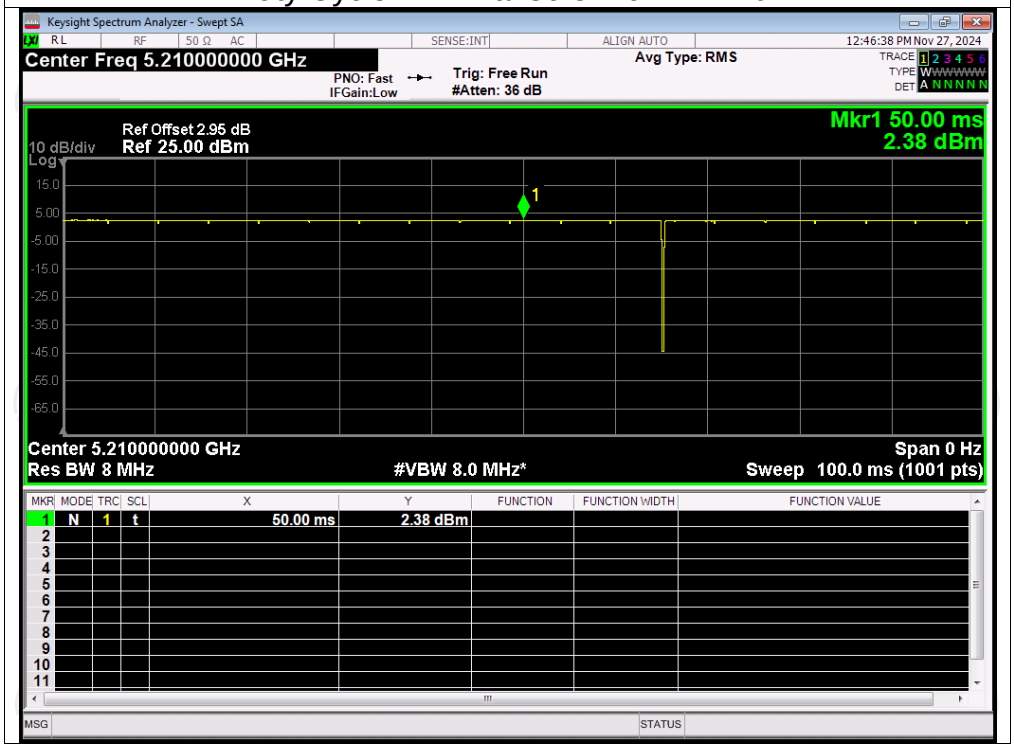
Duty Cycle NVNT ax40 5190MHz Ant1



Duty Cycle NVNT ax40 5230MHz Ant1

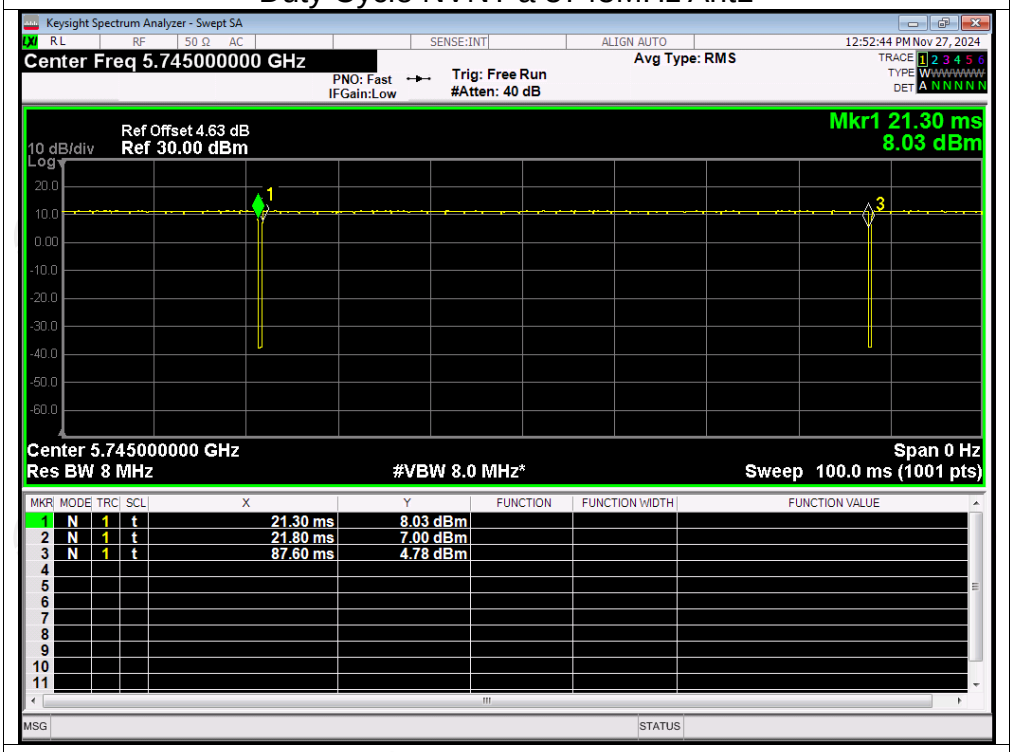


Duty Cycle NVNT ax80 5210MHz Ant1

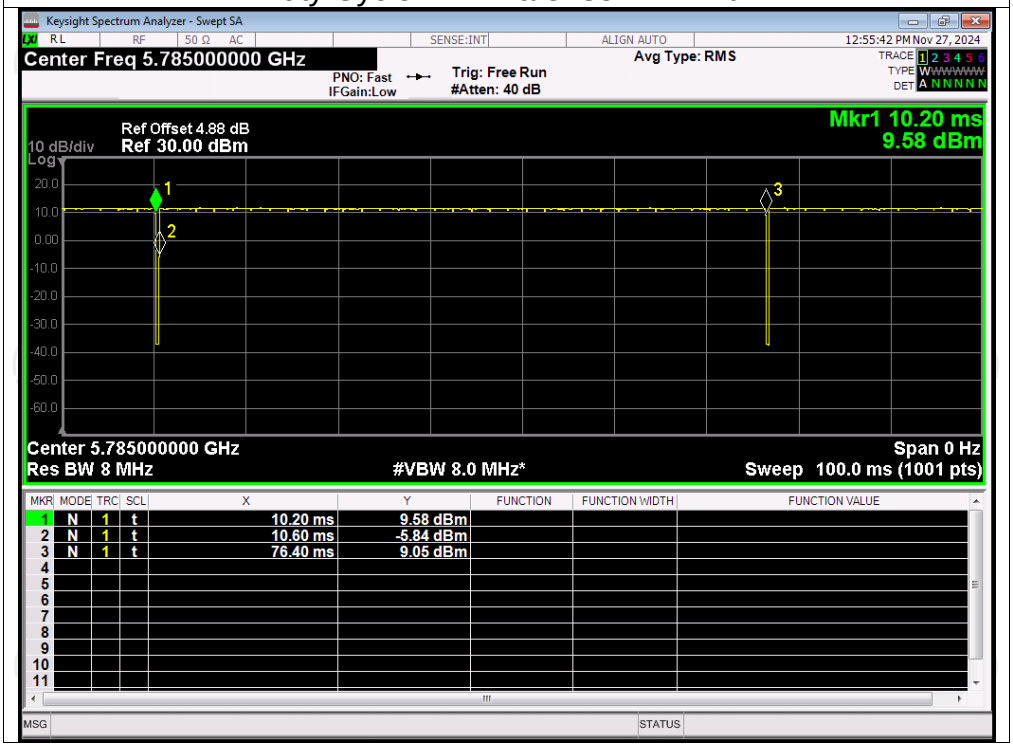


Test Graphs

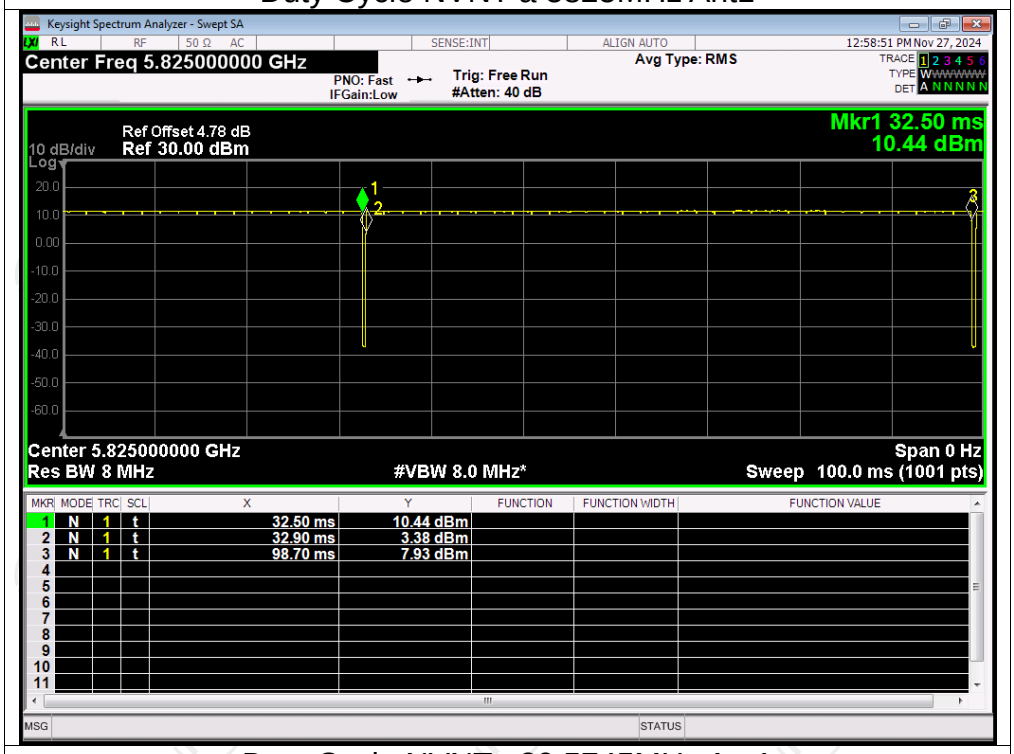
Duty Cycle NVNT a 5745MHz Ant1



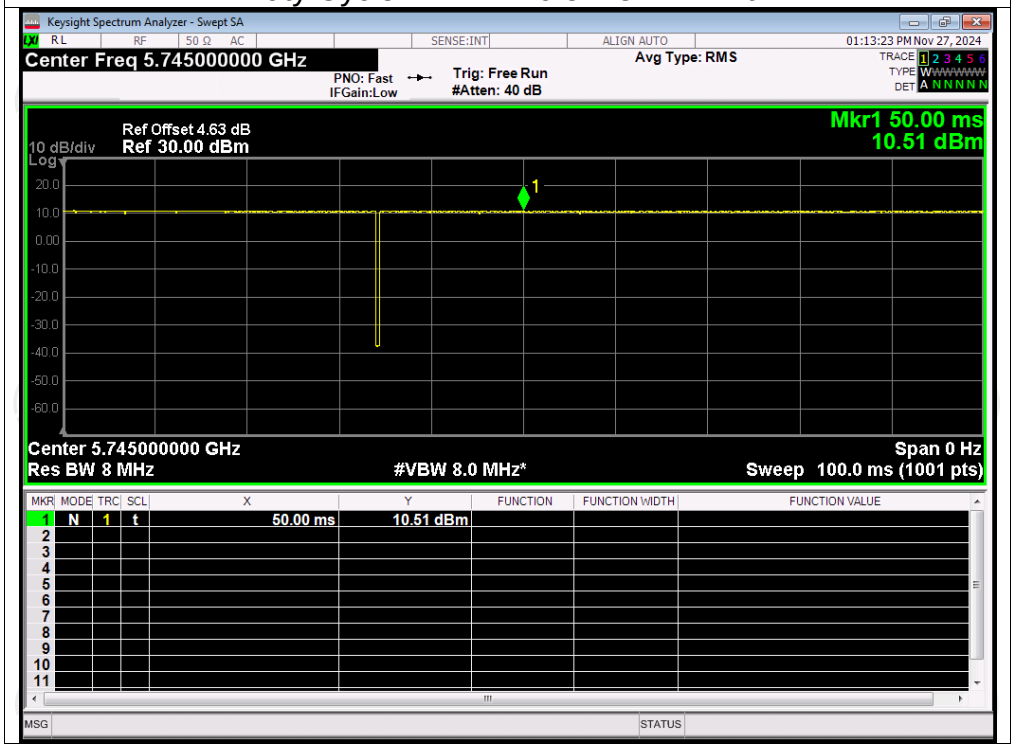
Duty Cycle NVNT a 5785MHz Ant1



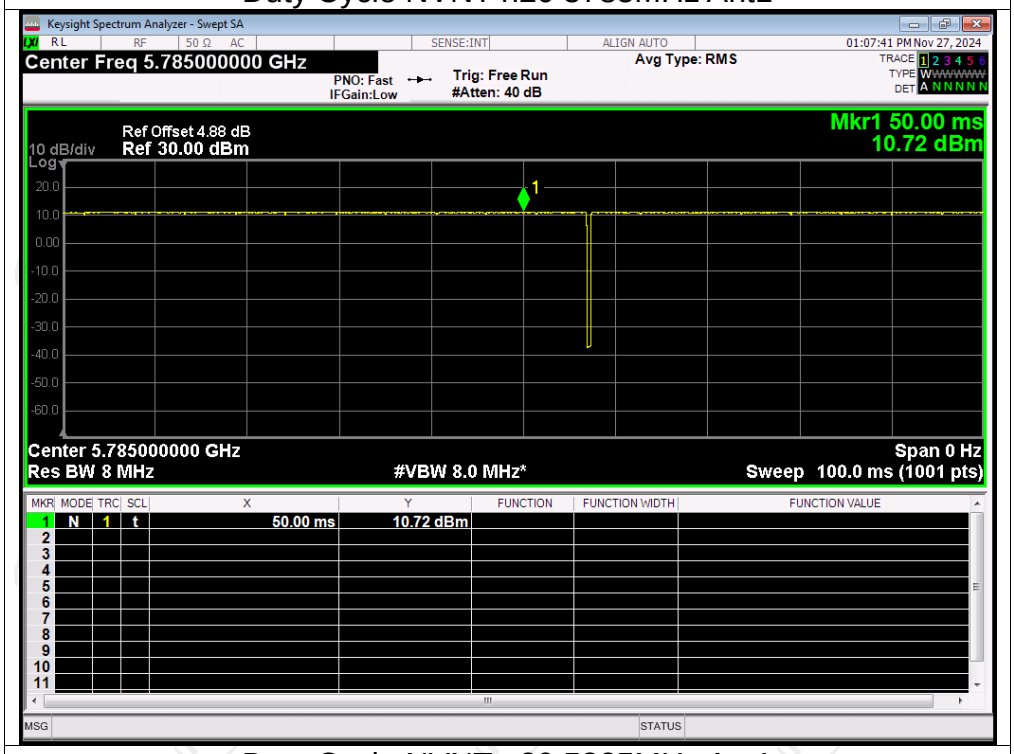
Duty Cycle NVNT a 5825MHz Ant1



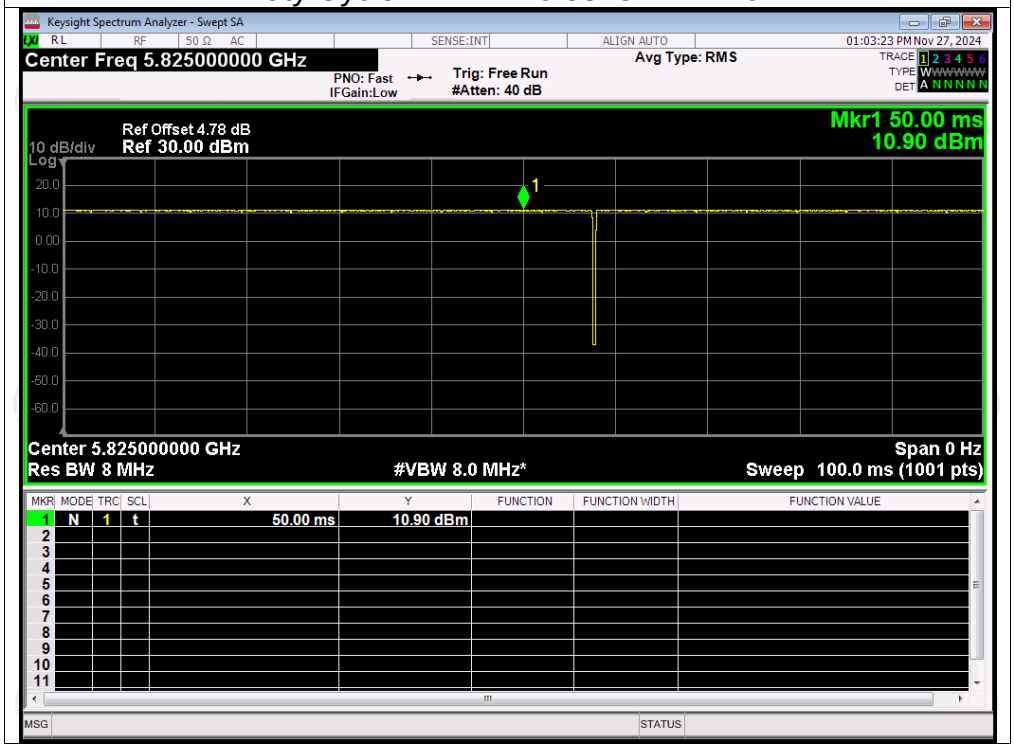
Duty Cycle NVNT n20 5745MHz Ant1



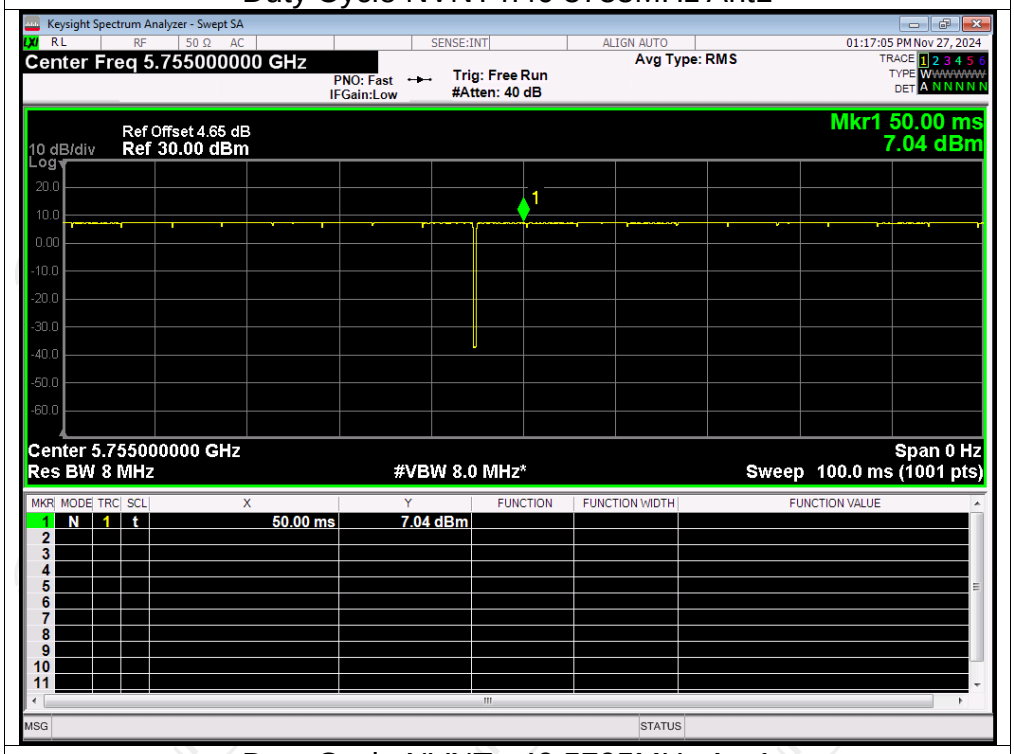
Duty Cycle NVNT n20 5785MHz Ant1



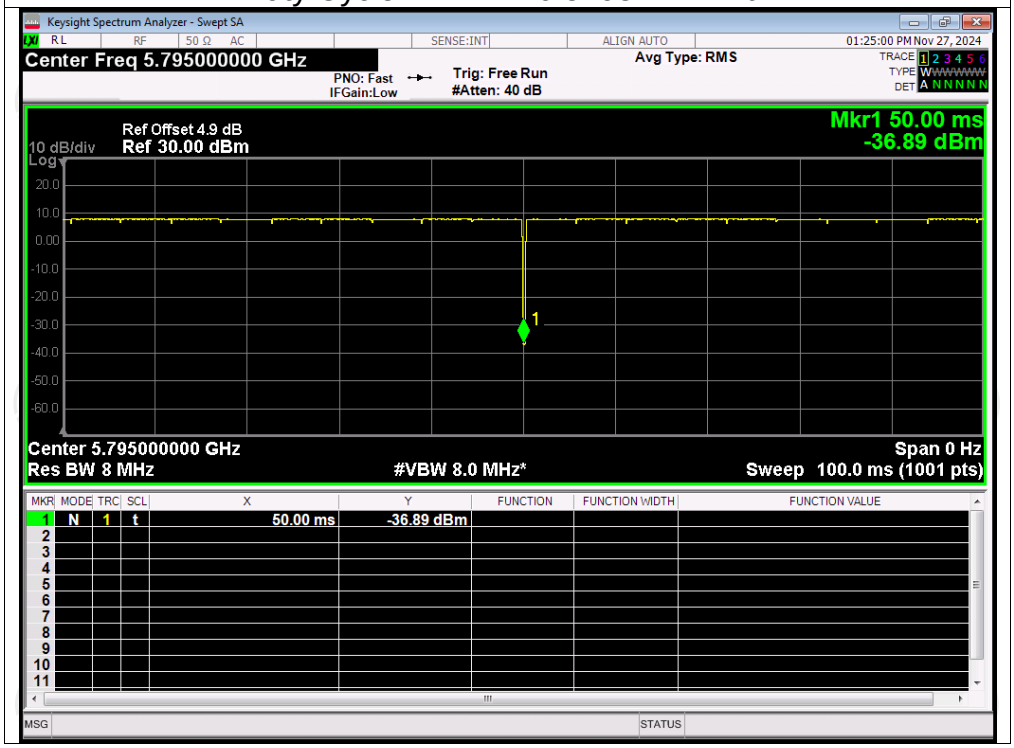
Duty Cycle NVNT n20 5825MHz Ant1



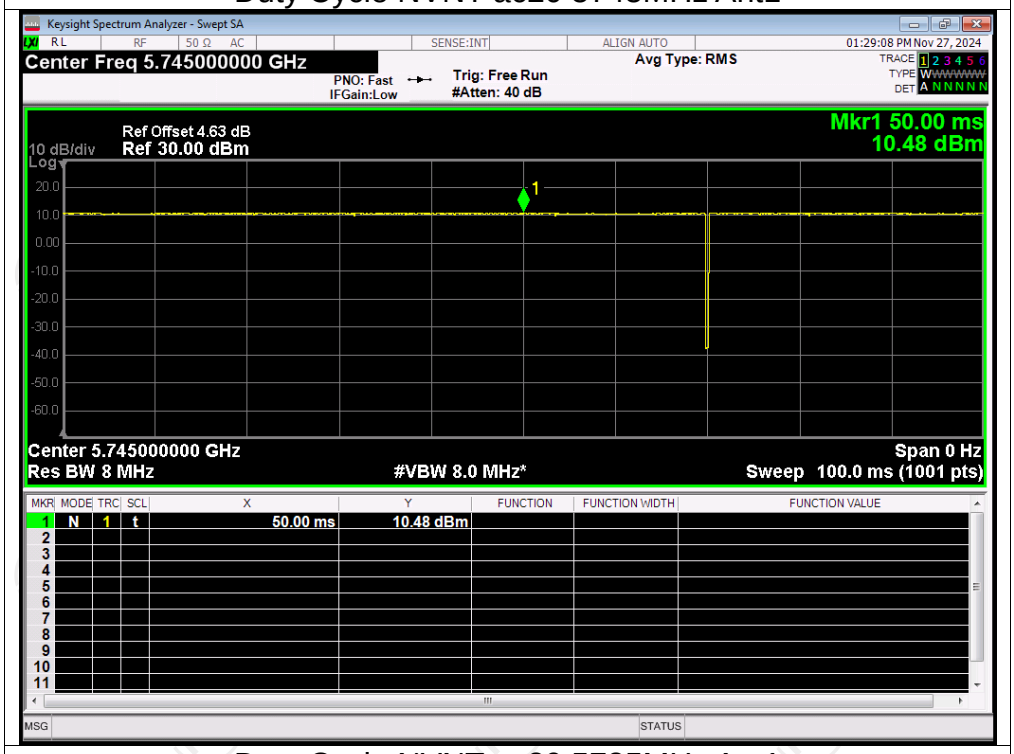
Duty Cycle NVNT n40 5755MHz Ant1



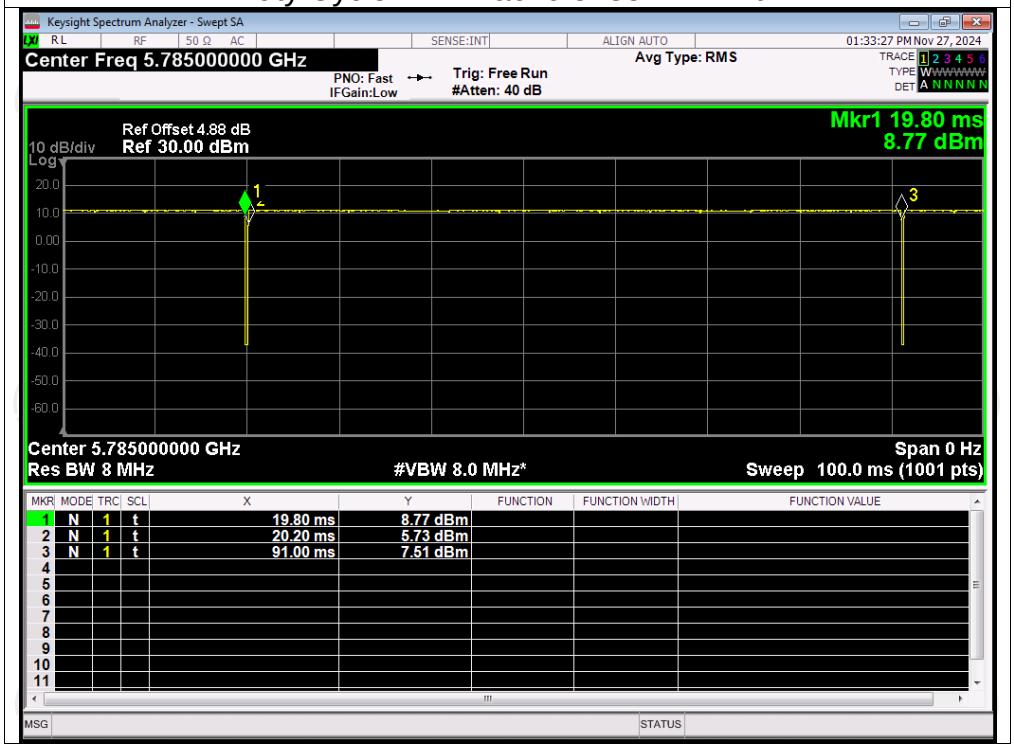
Duty Cycle NVNT n40 5795MHz Ant1



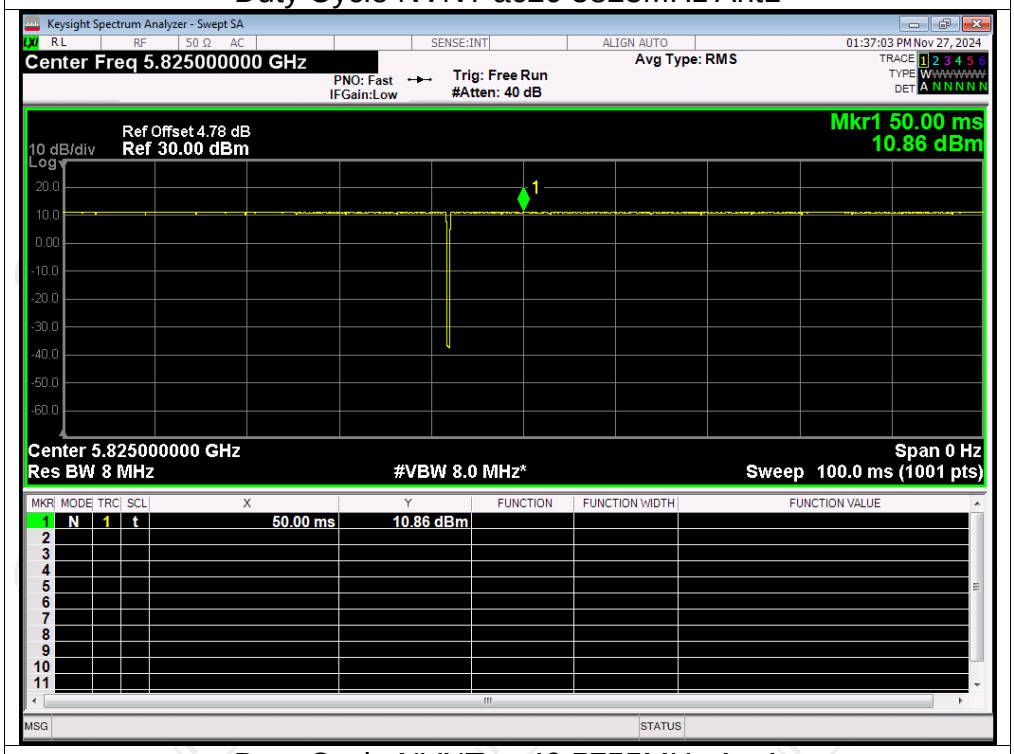
Duty Cycle NVNT ac20 5745MHz Ant1



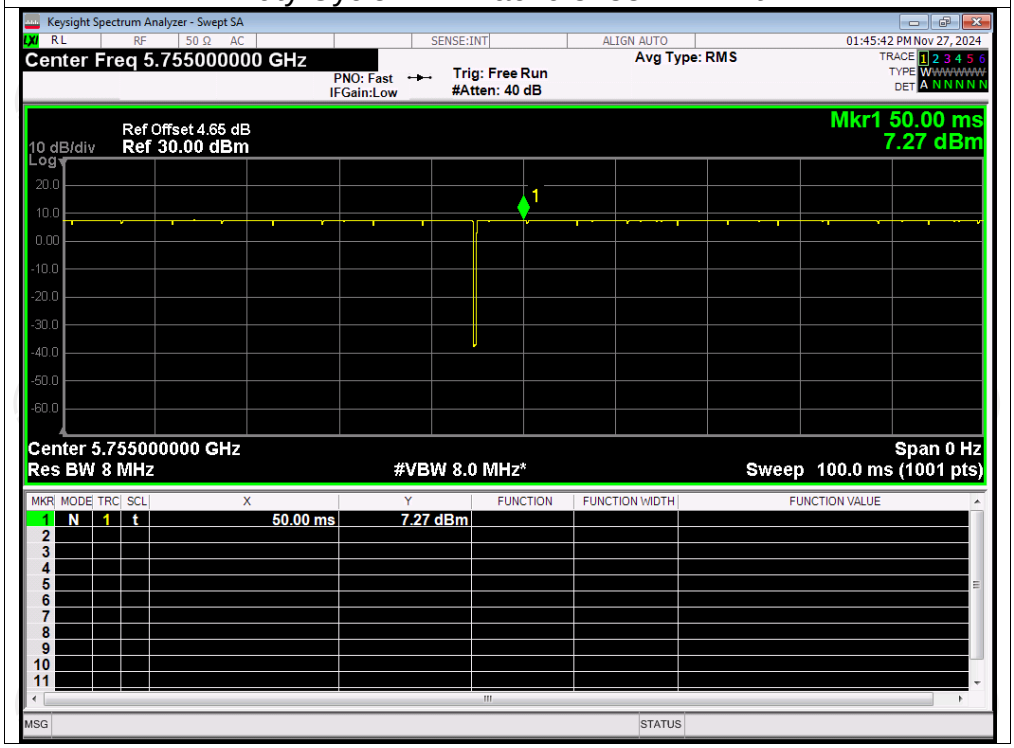
Duty Cycle NVNT ac20 5785MHz Ant1



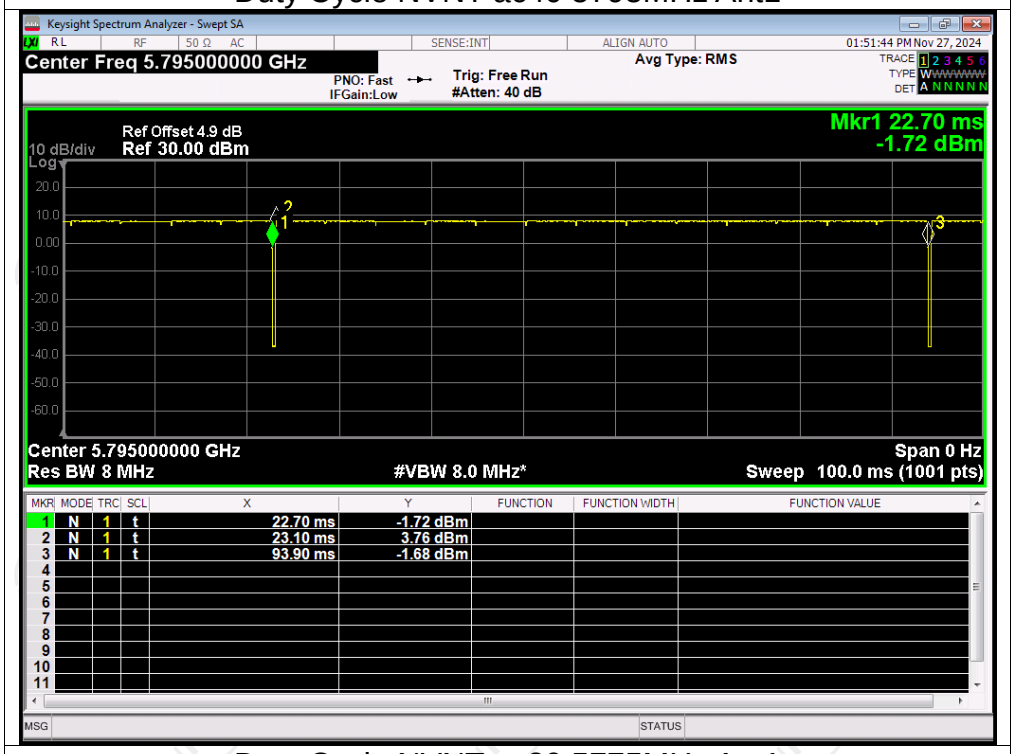
Duty Cycle NVNT ac20 5825MHz Ant1



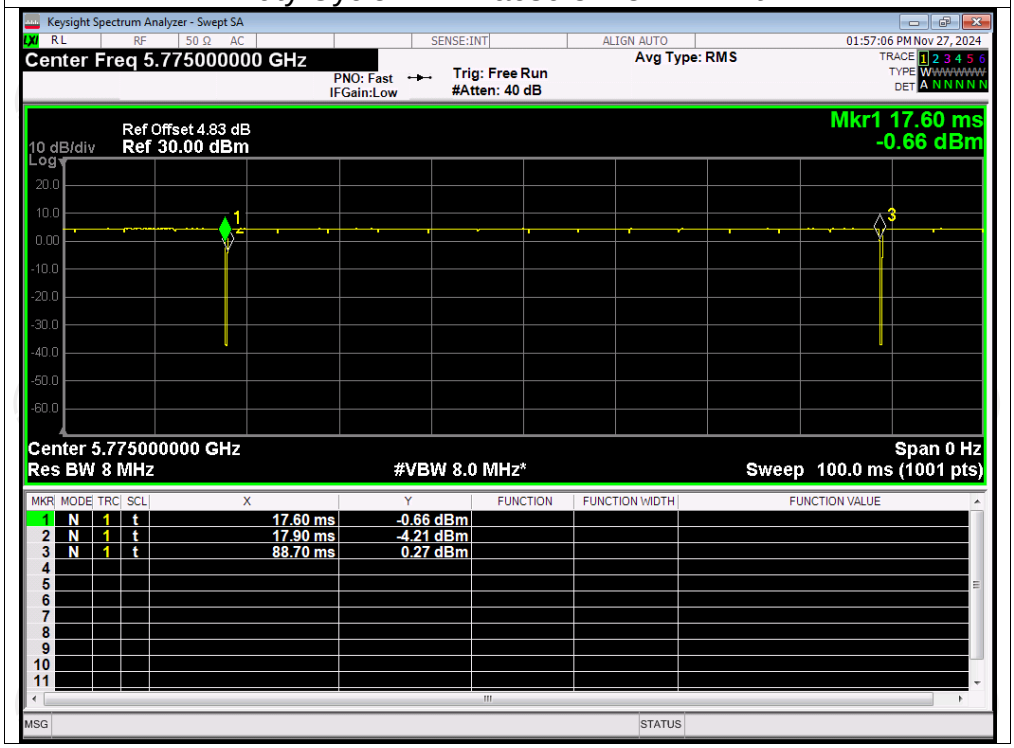
Duty Cycle NVNT ac40 5755MHz Ant1



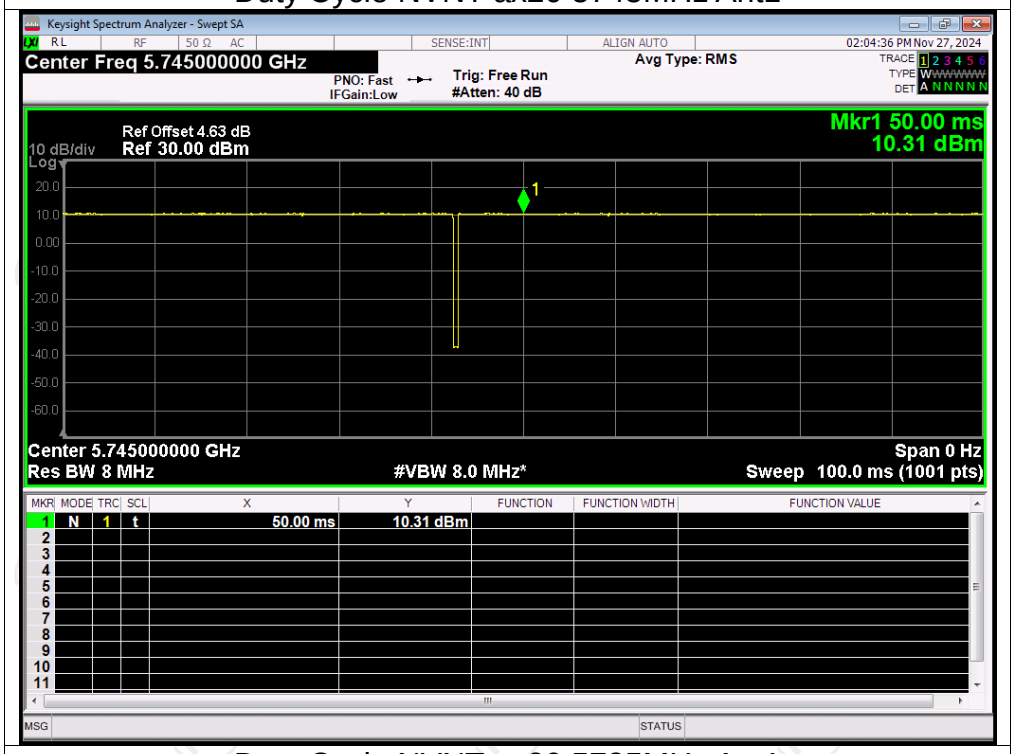
Duty Cycle NVNT ac40 5795MHz Ant1



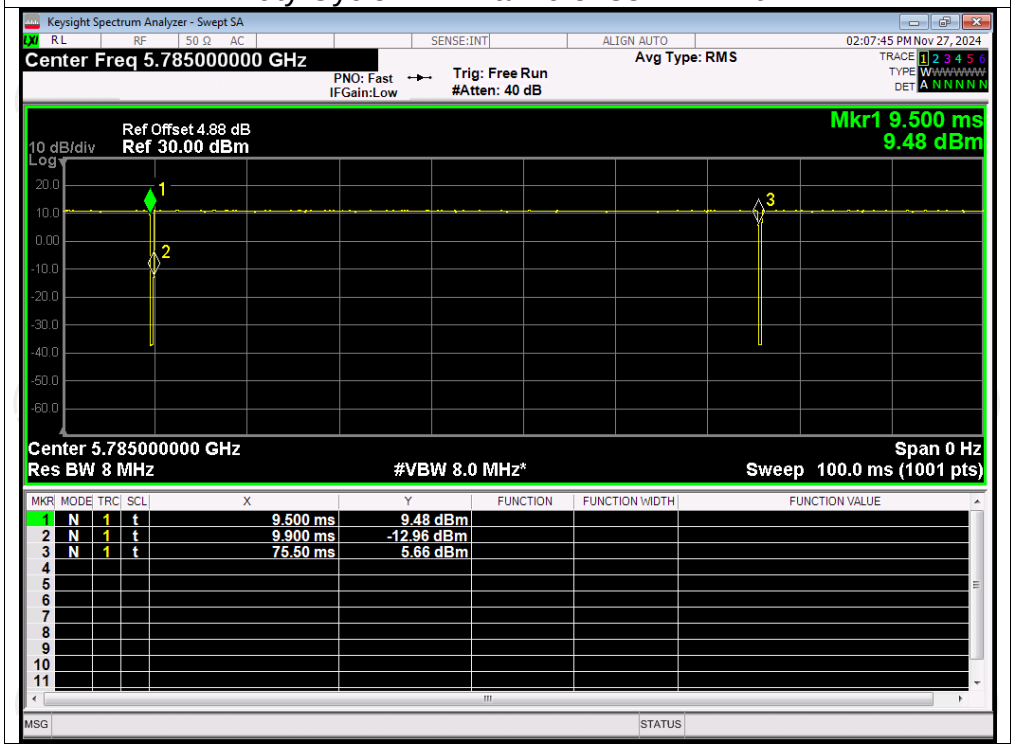
Duty Cycle NVNT ac80 5775MHz Ant1



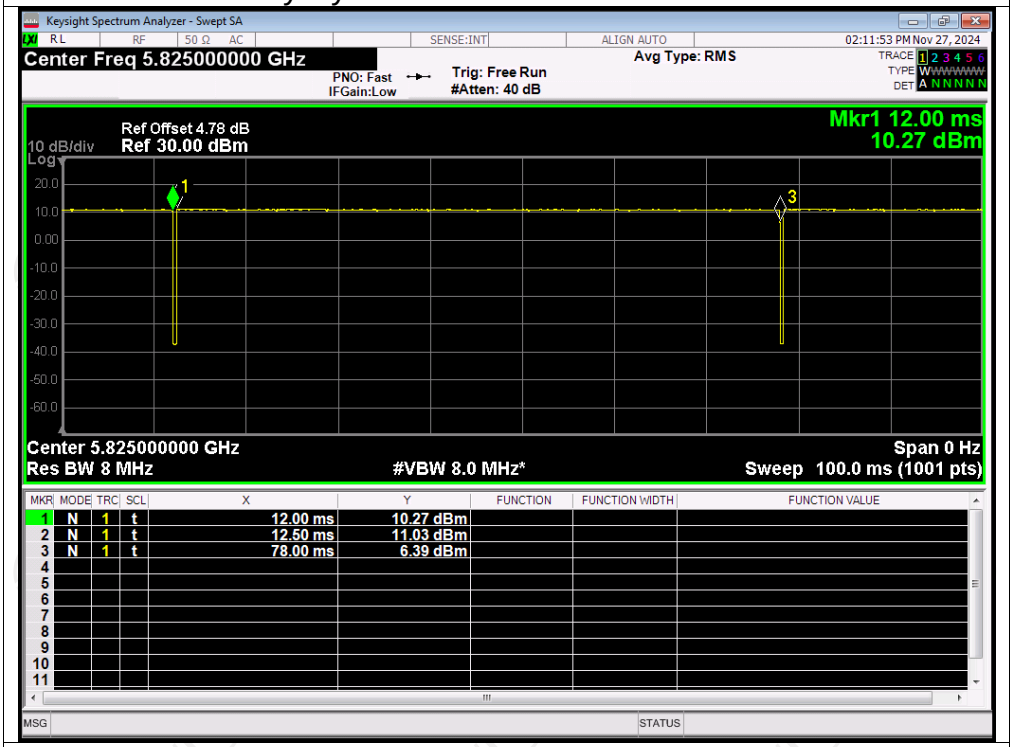
Duty Cycle NVNT ax20 5745MHz Ant1



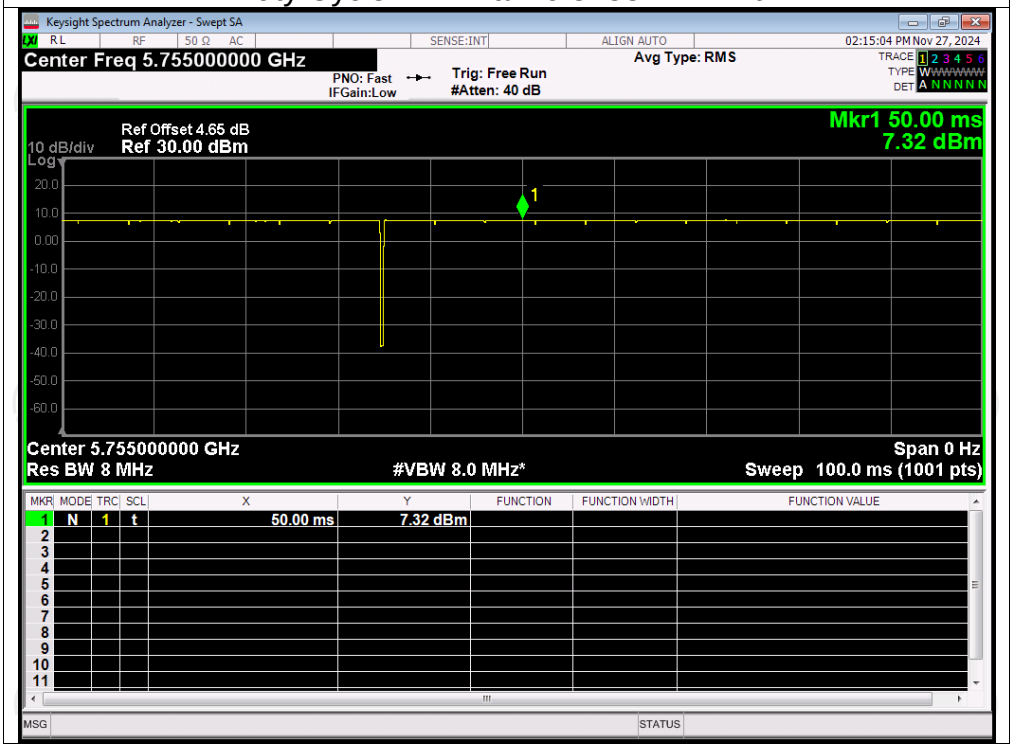
Duty Cycle NVNT ax20 5785MHz Ant1



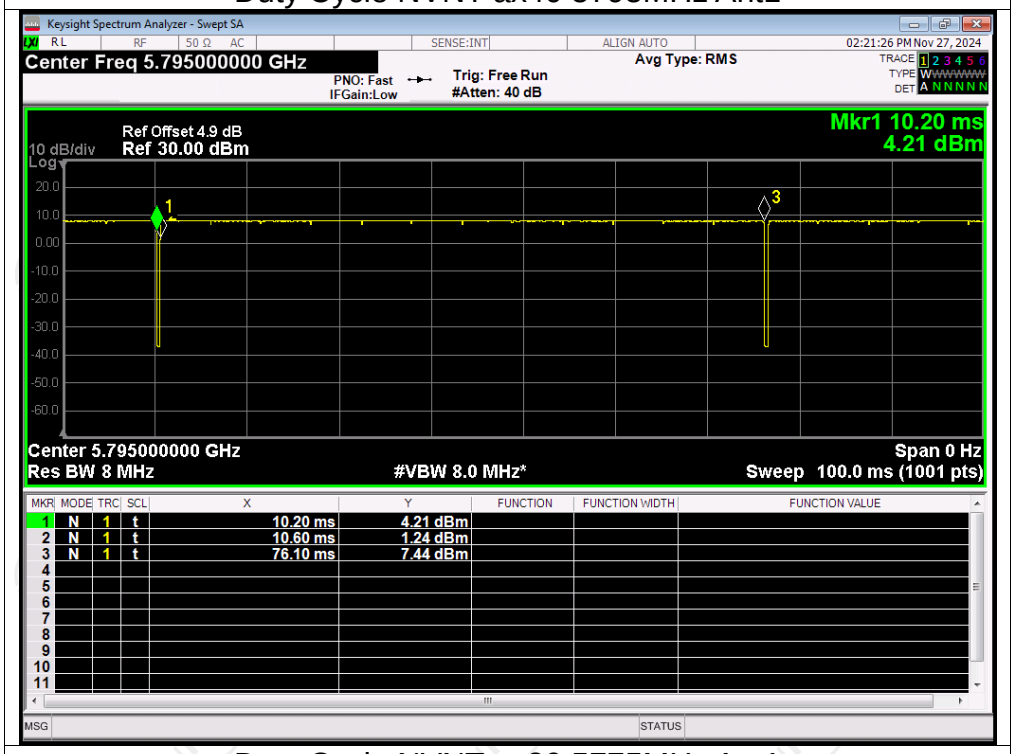
Duty Cycle NVNT ax20 5825MHz Ant1



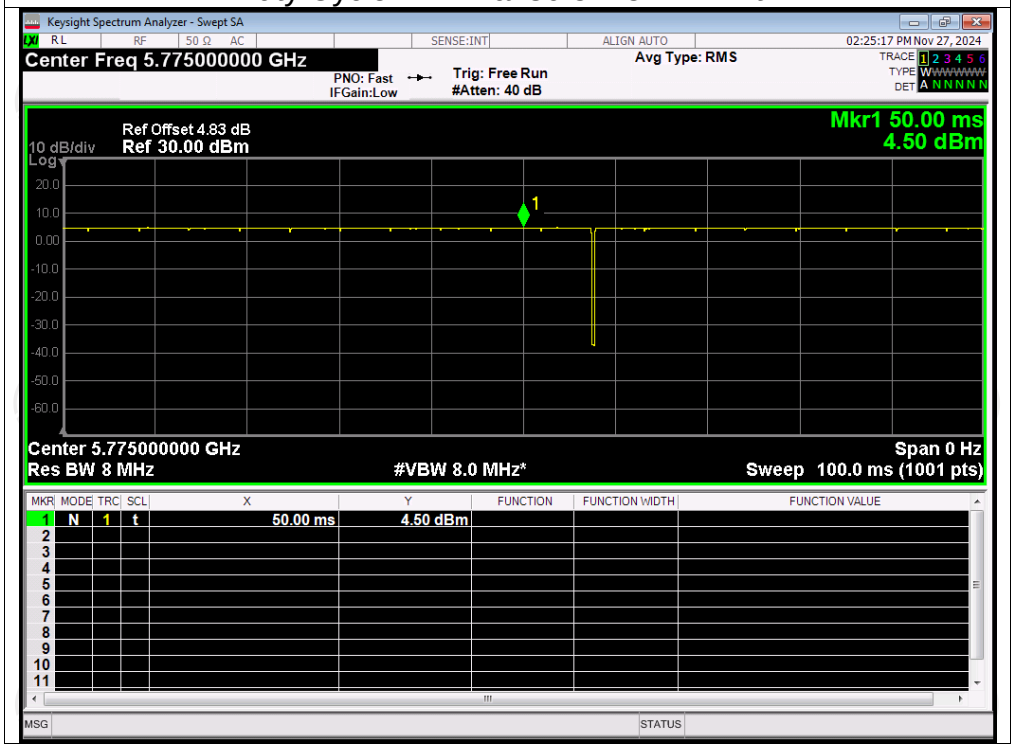
Duty Cycle NVNT ax40 5755MHz Ant1



Duty Cycle NVNT ax40 5795MHz Ant1



Duty Cycle NVNT ax80 5775MHz Ant1

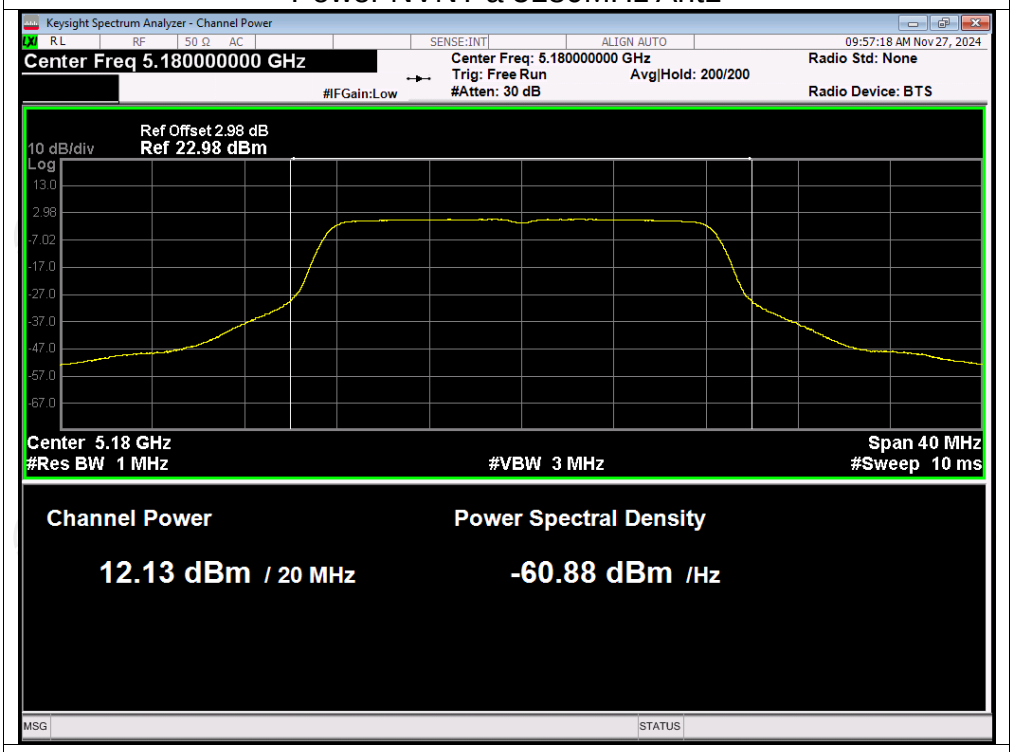


Maximum Conducted Output Power

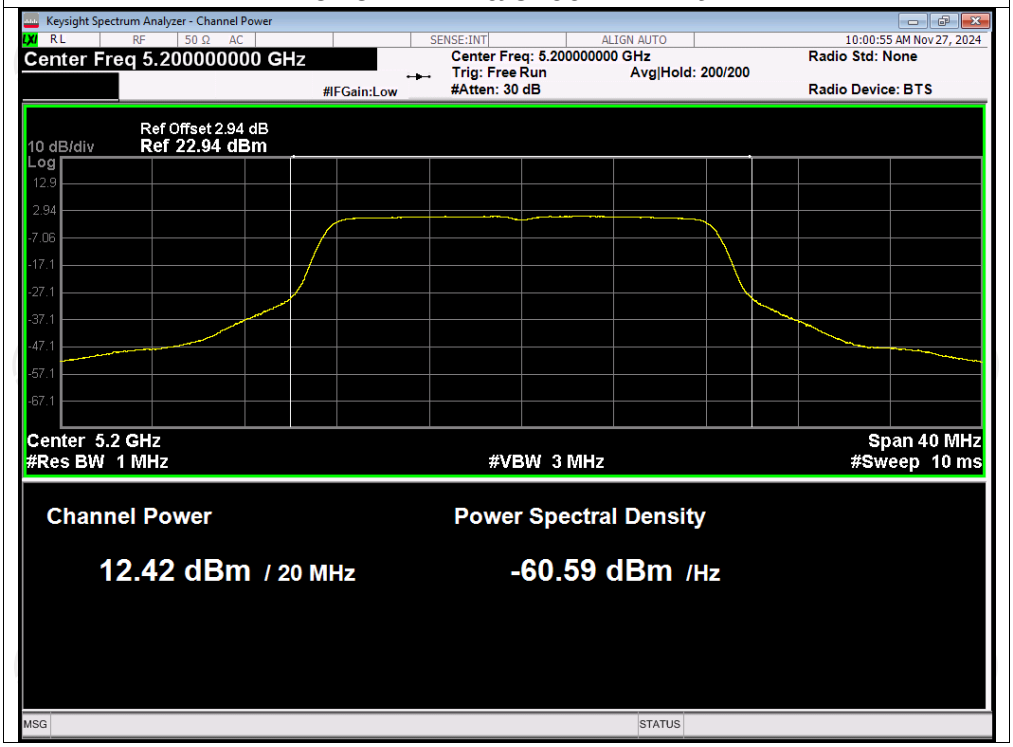
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	12.13	24	Pass
NVNT	a	5200	Ant1	12.42	24	Pass
NVNT	a	5240	Ant1	12.87	24	Pass
NVNT	n20	5180	Ant1	12.25	24	Pass
NVNT	n20	5200	Ant1	12.33	24	Pass
NVNT	n20	5240	Ant1	12.70	24	Pass
NVNT	n40	5190	Ant1	12.57	24	Pass
NVNT	n40	5230	Ant1	12.84	24	Pass
NVNT	ac20	5180	Ant1	12.20	24	Pass
NVNT	ac20	5200	Ant1	12.29	24	Pass
NVNT	ac20	5240	Ant1	12.69	24	Pass
NVNT	ac40	5190	Ant1	12.52	24	Pass
NVNT	ac40	5230	Ant1	12.83	24	Pass
NVNT	ac80	5210	Ant1	12.58	24	Pass
NVNT	ax20	5180	Ant1	12.48	24	Pass
NVNT	ax20	5200	Ant1	12.55	24	Pass
NVNT	ax20	5240	Ant1	12.89	24	Pass
NVNT	ax40	5190	Ant1	12.30	24	Pass
NVNT	ax40	5230	Ant1	12.64	24	Pass
NVNT	ax80	5210	Ant1	12.23	24	Pass
NVNT	a	5745	Ant1	14.55	30	Pass
NVNT	a	5785	Ant1	15.10	30	Pass
NVNT	a	5825	Ant1	15.15	30	Pass
NVNT	n20	5745	Ant1	14.33	30	Pass
NVNT	n20	5785	Ant1	14.86	30	Pass
NVNT	n20	5825	Ant1	14.96	30	Pass
NVNT	n40	5755	Ant1	14.52	30	Pass
NVNT	n40	5795	Ant1	15.22	30	Pass
NVNT	ac20	5745	Ant1	14.33	30	Pass
NVNT	ac20	5785	Ant1	14.86	30	Pass
NVNT	ac20	5825	Ant1	14.96	30	Pass
NVNT	ac40	5755	Ant1	14.58	30	Pass
NVNT	ac40	5795	Ant1	15.29	30	Pass
NVNT	ac80	5775	Ant1	14.81	30	Pass
NVNT	ax20	5745	Ant1	14.44	30	Pass
NVNT	ax20	5785	Ant1	15.04	30	Pass
NVNT	ax20	5825	Ant1	15.12	27	Pass
NVNT	ax40	5755	Ant1	14.45	30	Pass
NVNT	ax40	5795	Ant1	15.09	30	Pass
NVNT	ax80	5775	Ant1	14.51	30	Pass

Test Graphs

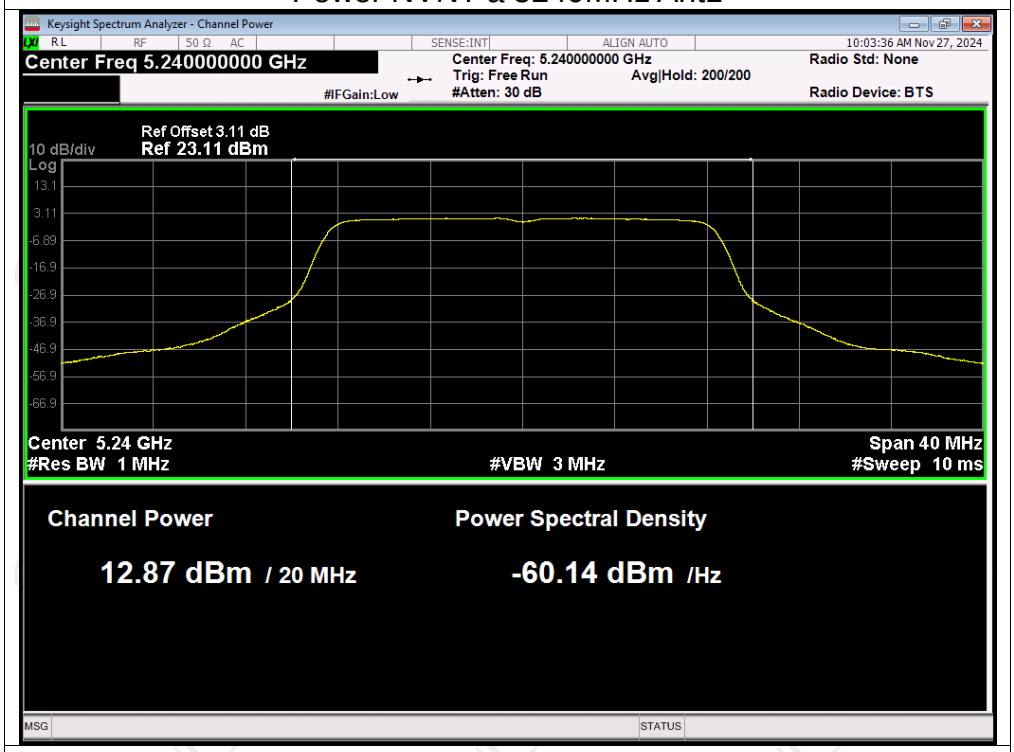
Power NVNT a 5180MHz Ant1



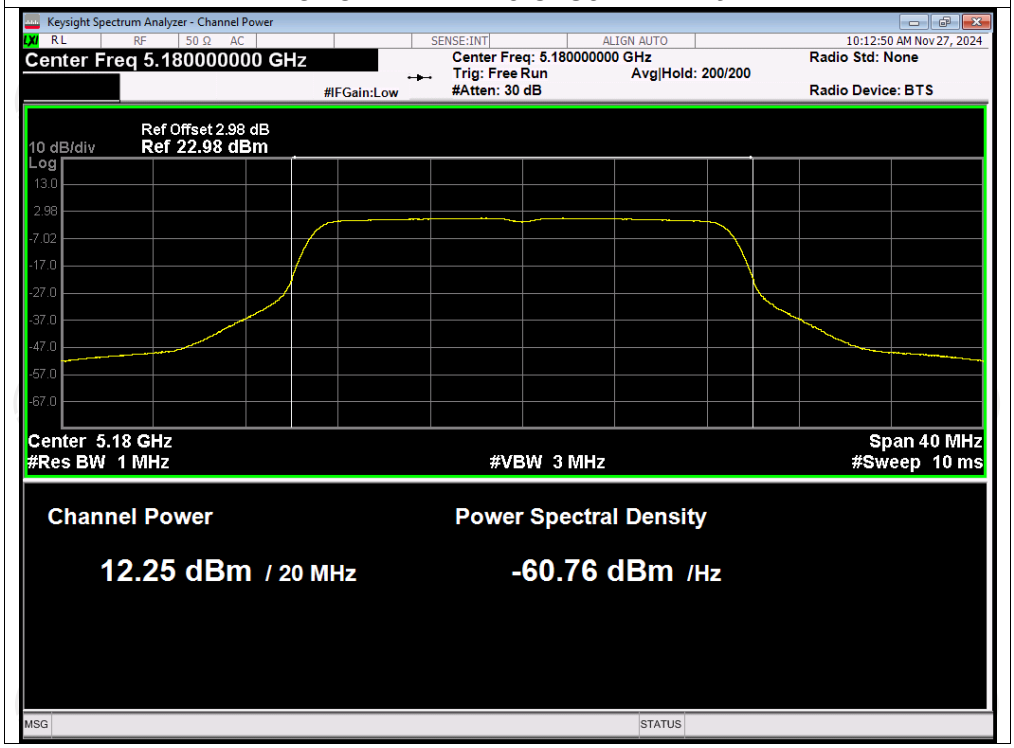
Power NVNT a 5200MHz Ant1



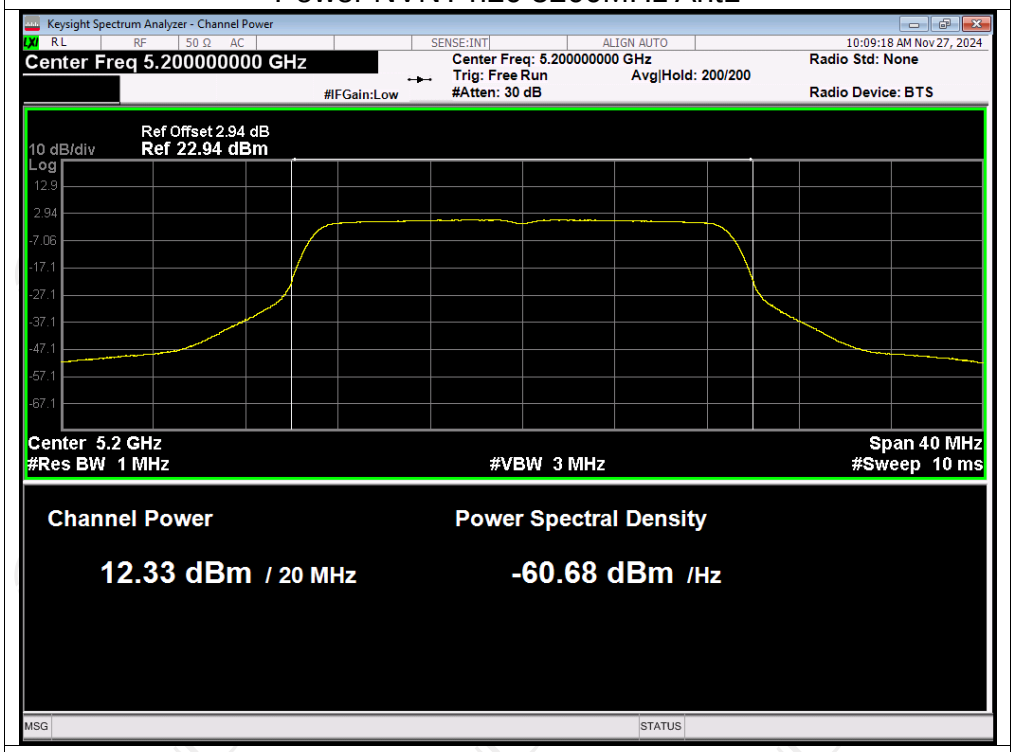
Power NVNT a 5240MHz Ant1



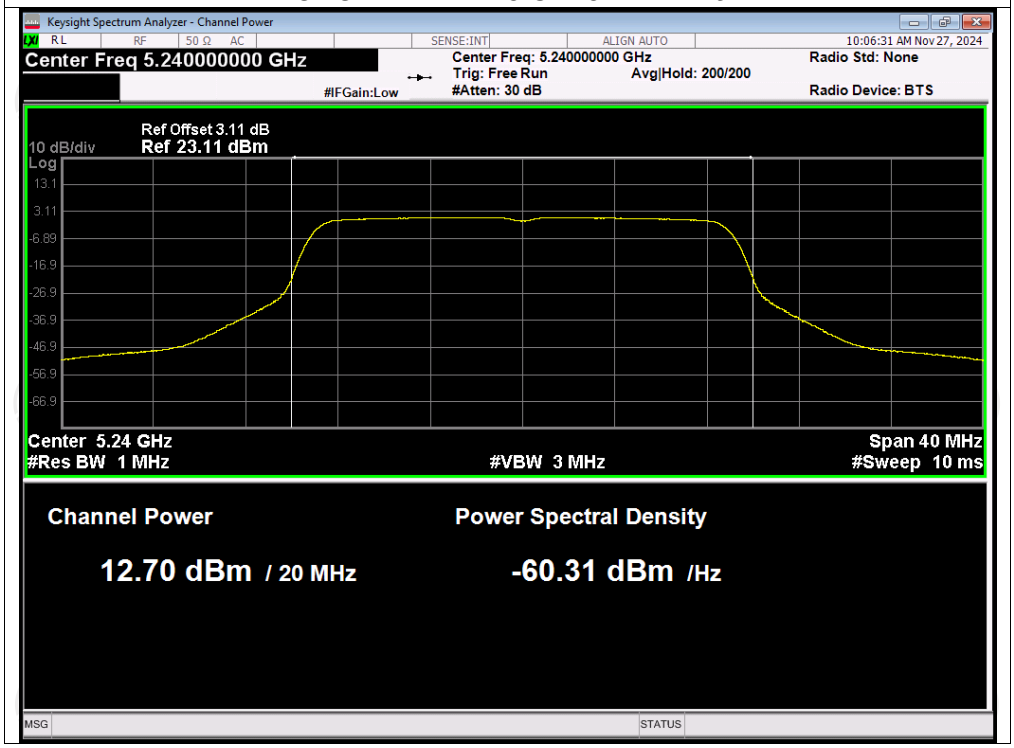
Power NVNT n20 5180MHz Ant1



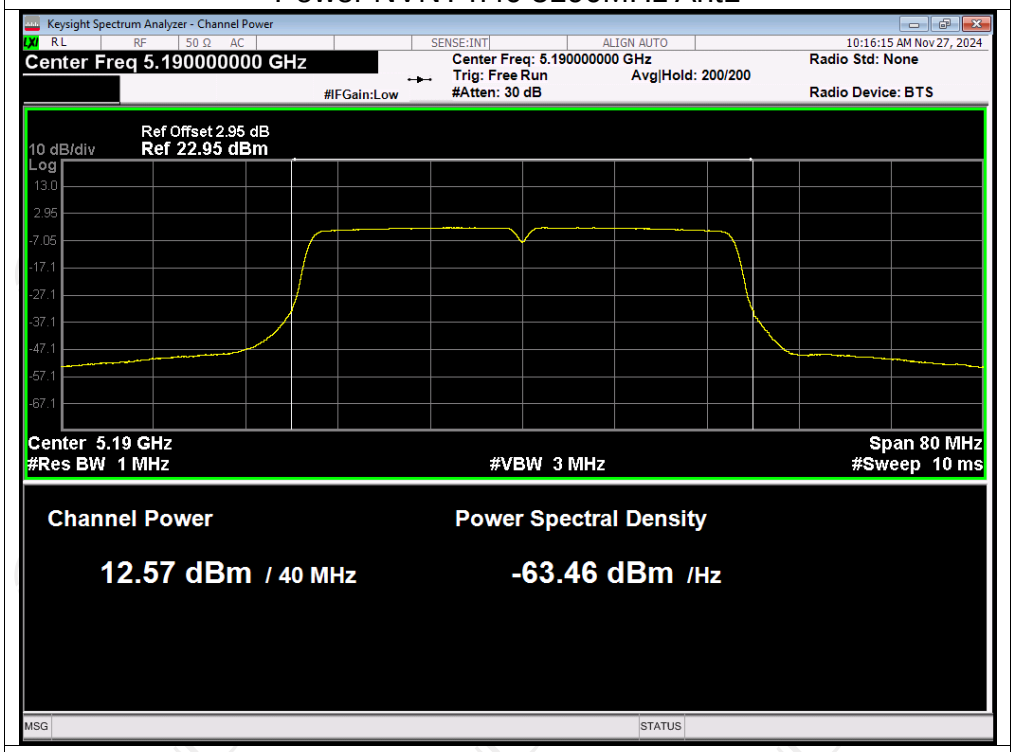
Power NVNT n20 5200MHz Ant1



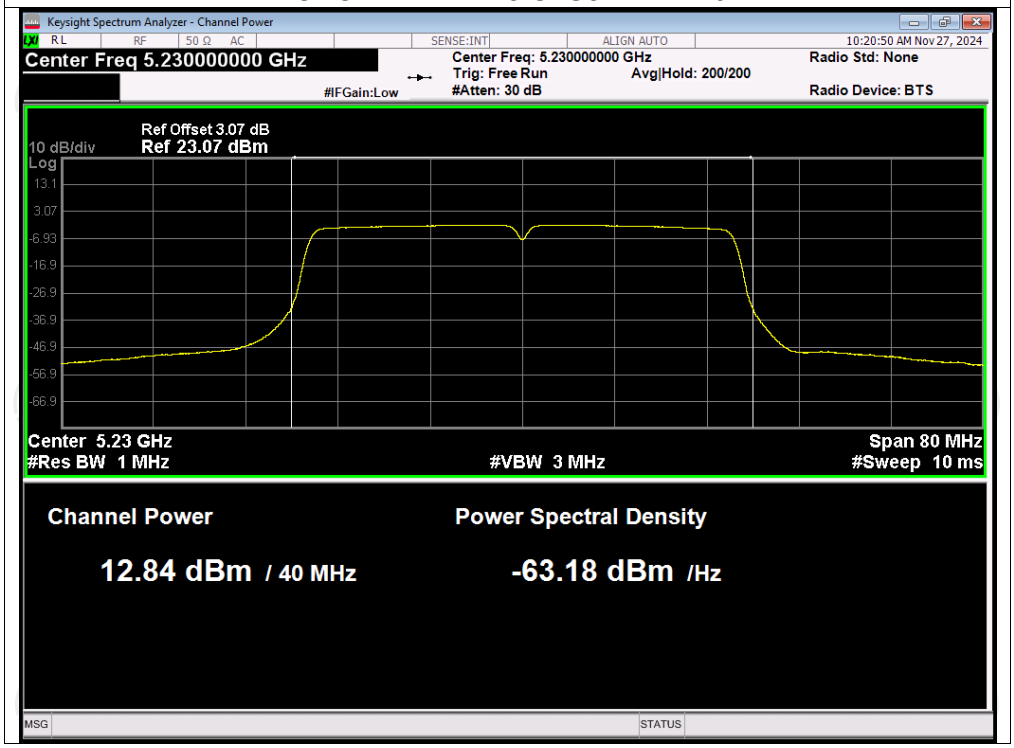
Power NVNT n20 5240MHz Ant1



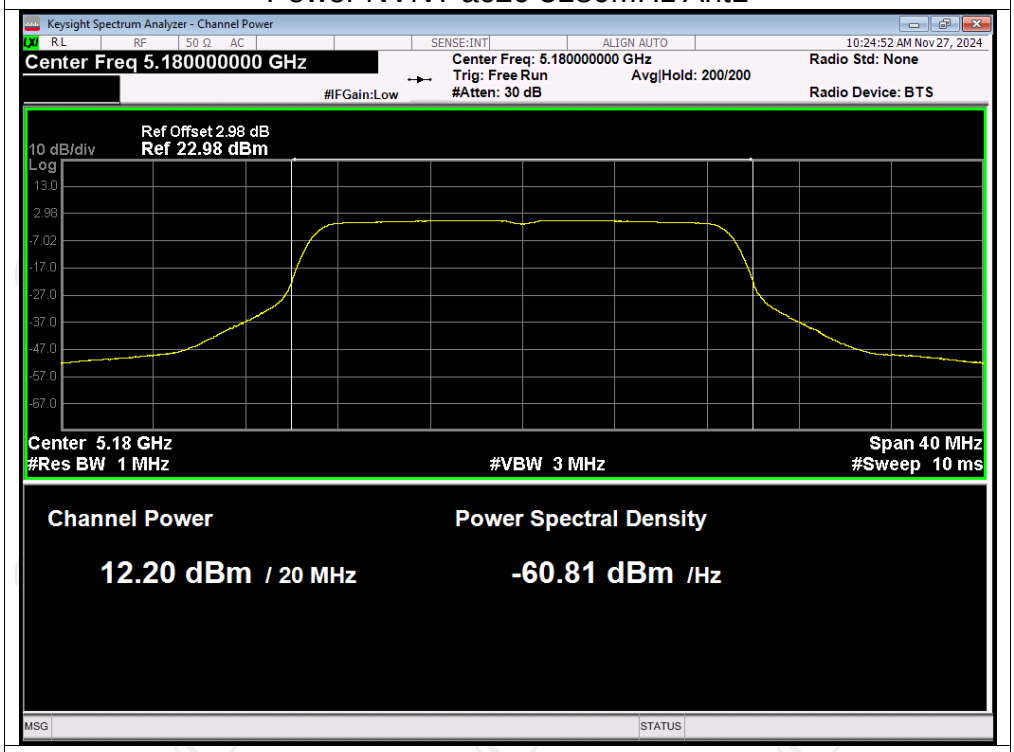
Power NVNT n40 5190MHz Ant1



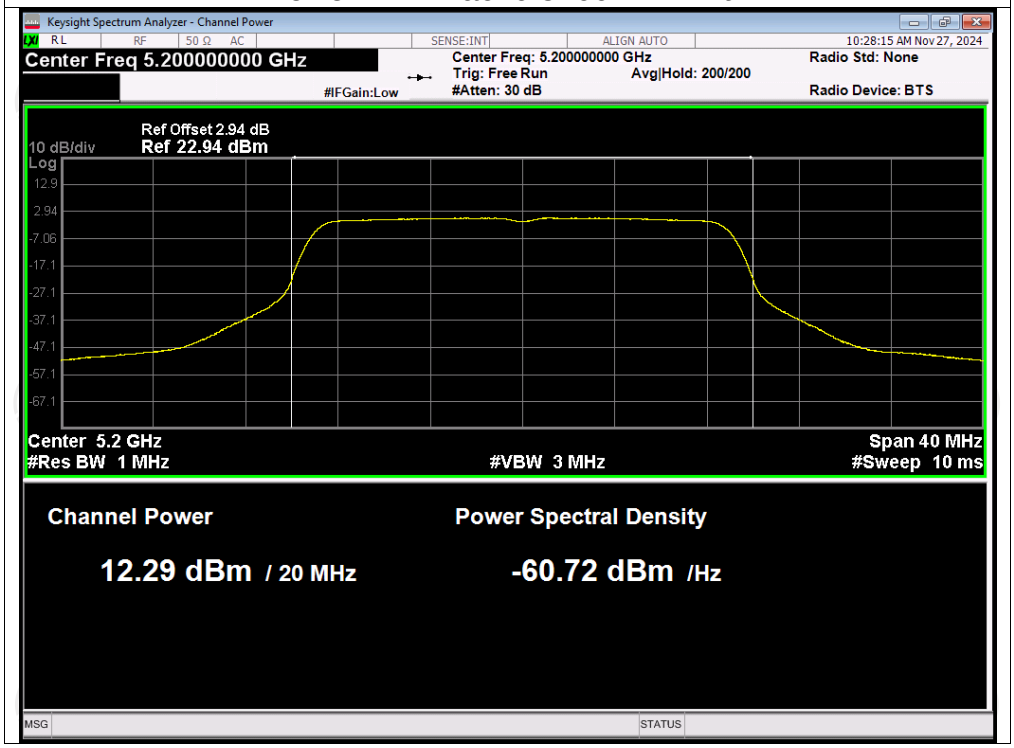
Power NVNT n40 5230MHz Ant1



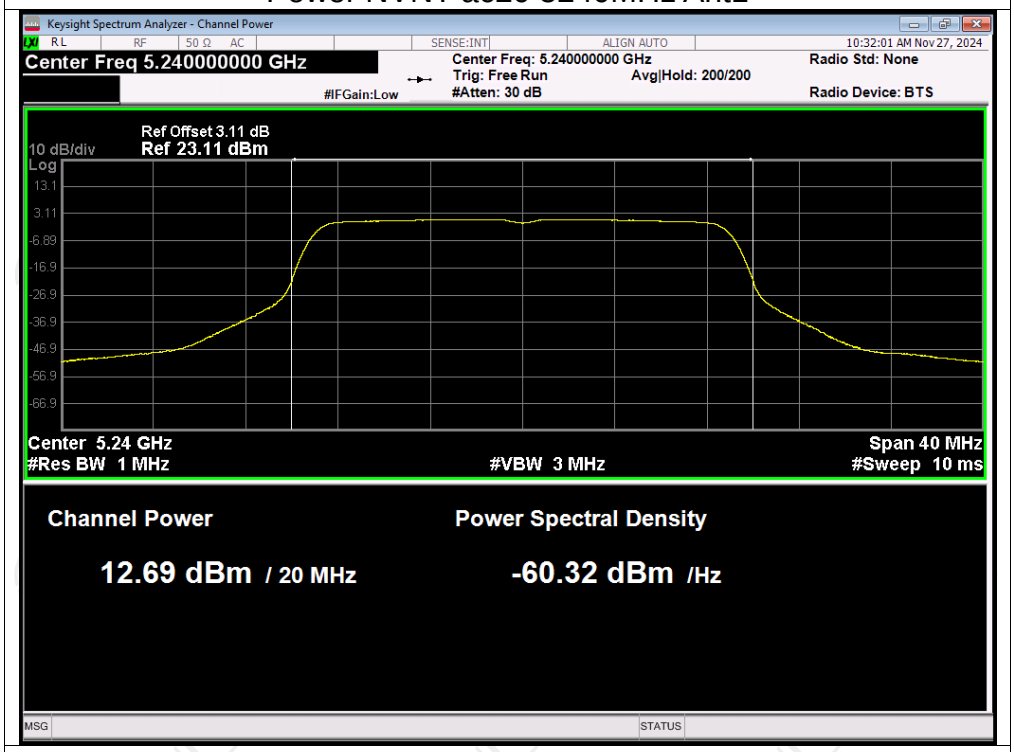
Power NVNT ac20 5180MHz Ant1



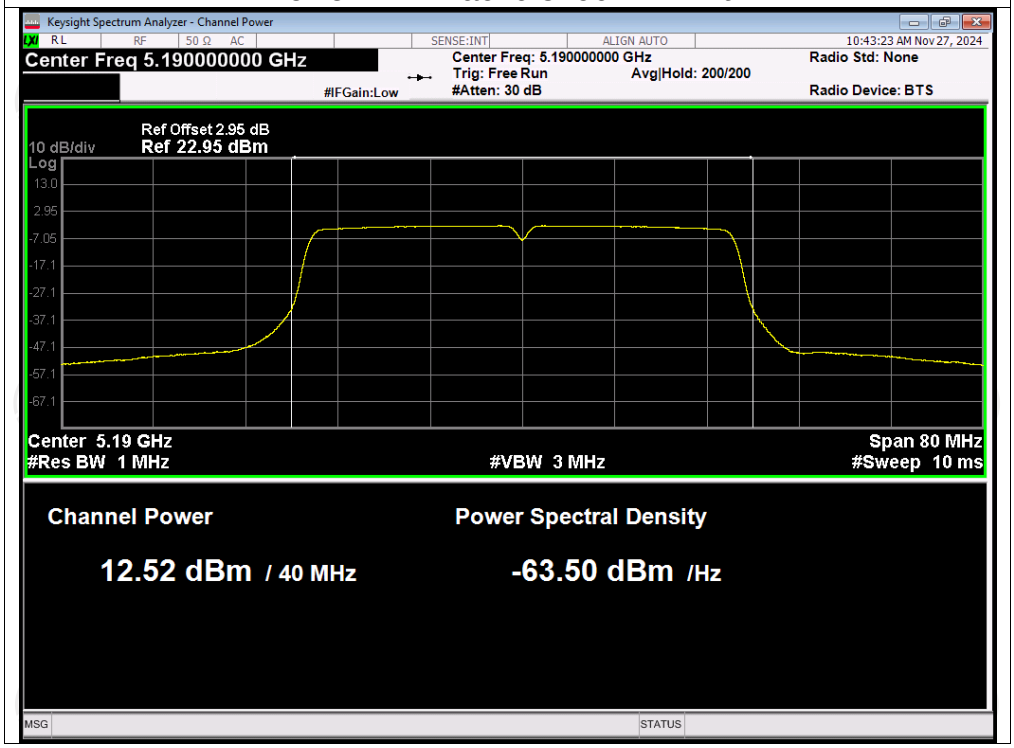
Power NVNT ac20 5200MHz Ant1



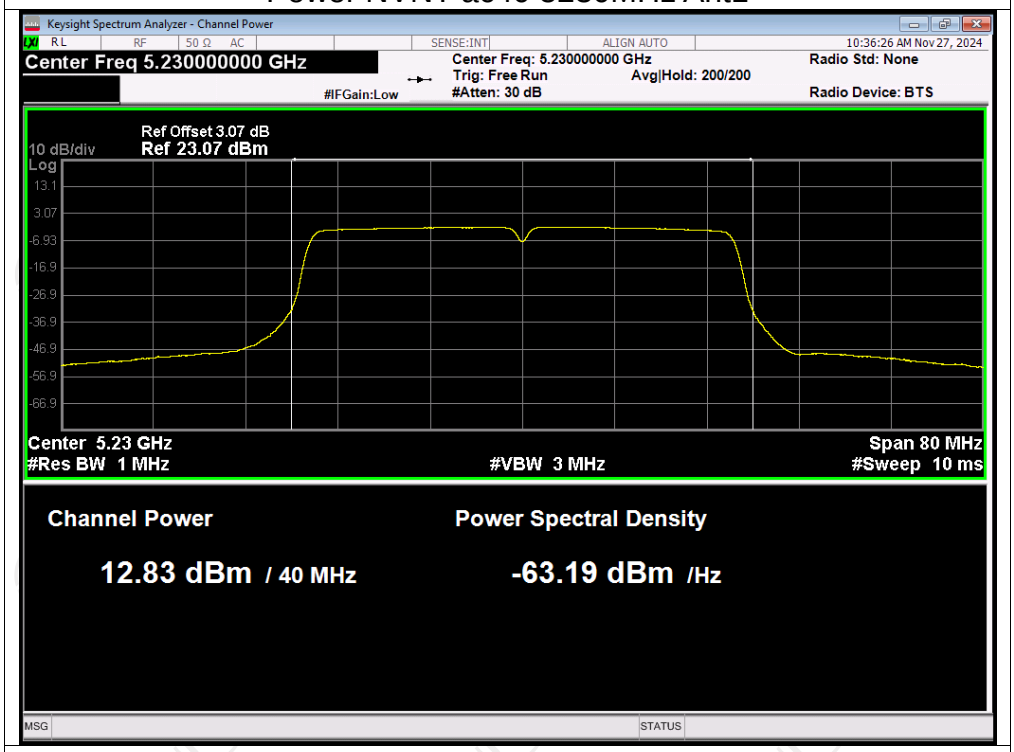
Power NVNT ac20 5240MHz Ant1



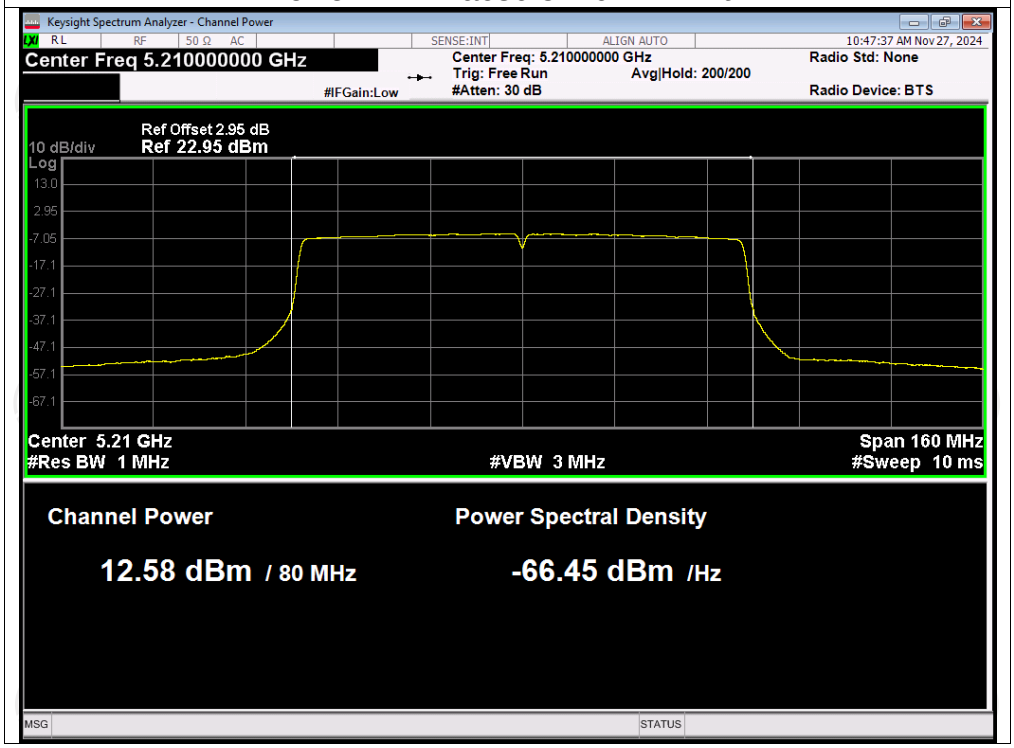
Power NVNT ac40 5190MHz Ant1



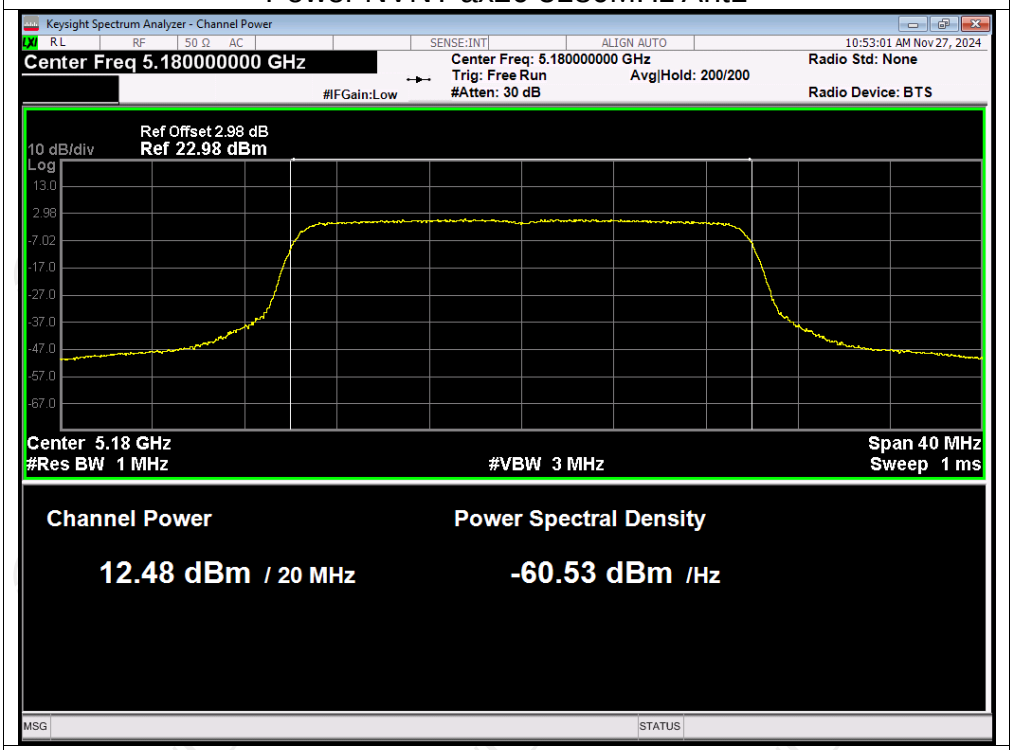
Power NVNT ac40 5230MHz Ant1



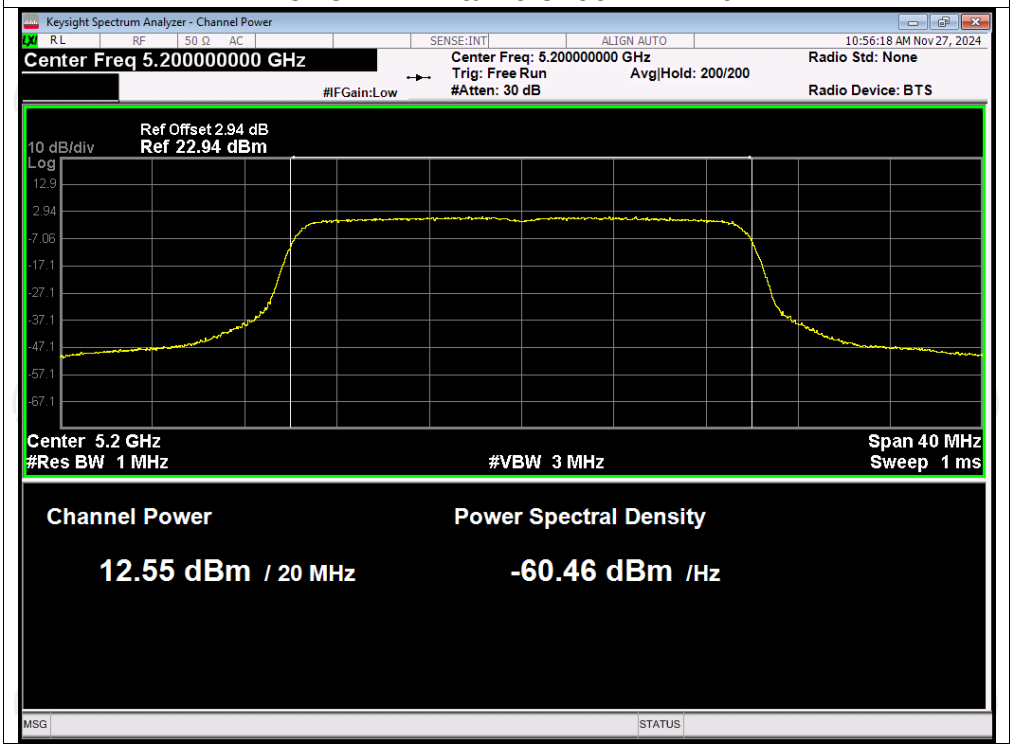
Power NVNT ac80 5210MHz Ant1



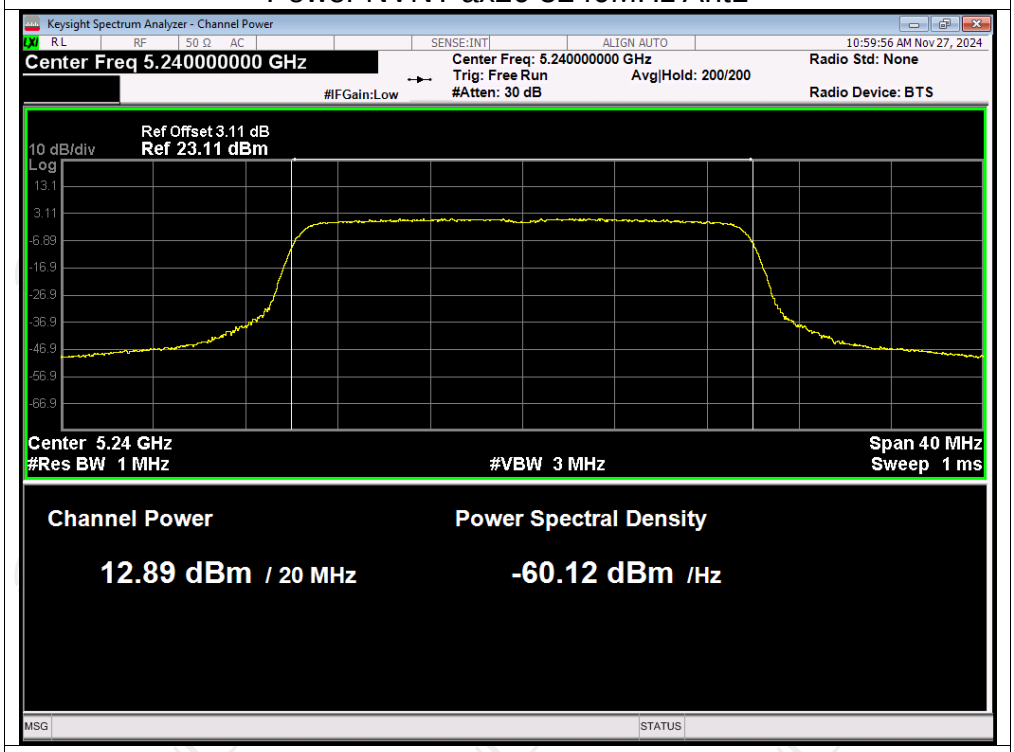
Power NVNT ax20 5180MHz Ant1



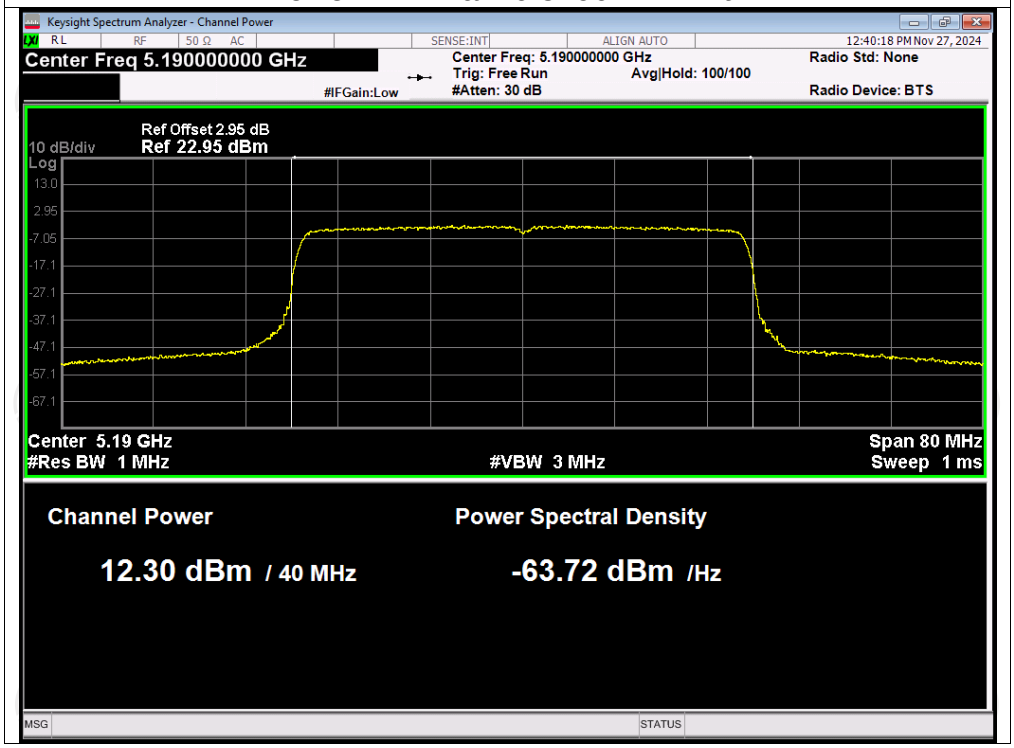
Power NVNT ax20 5200MHz Ant1



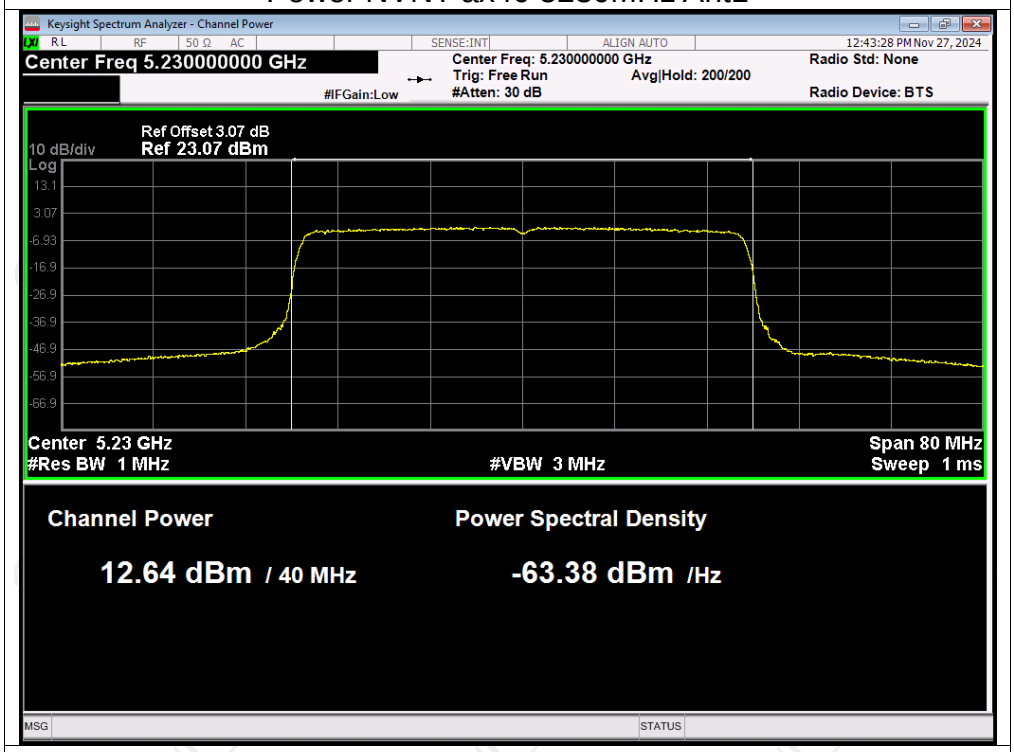
Power NVNT ax20 5240MHz Ant1



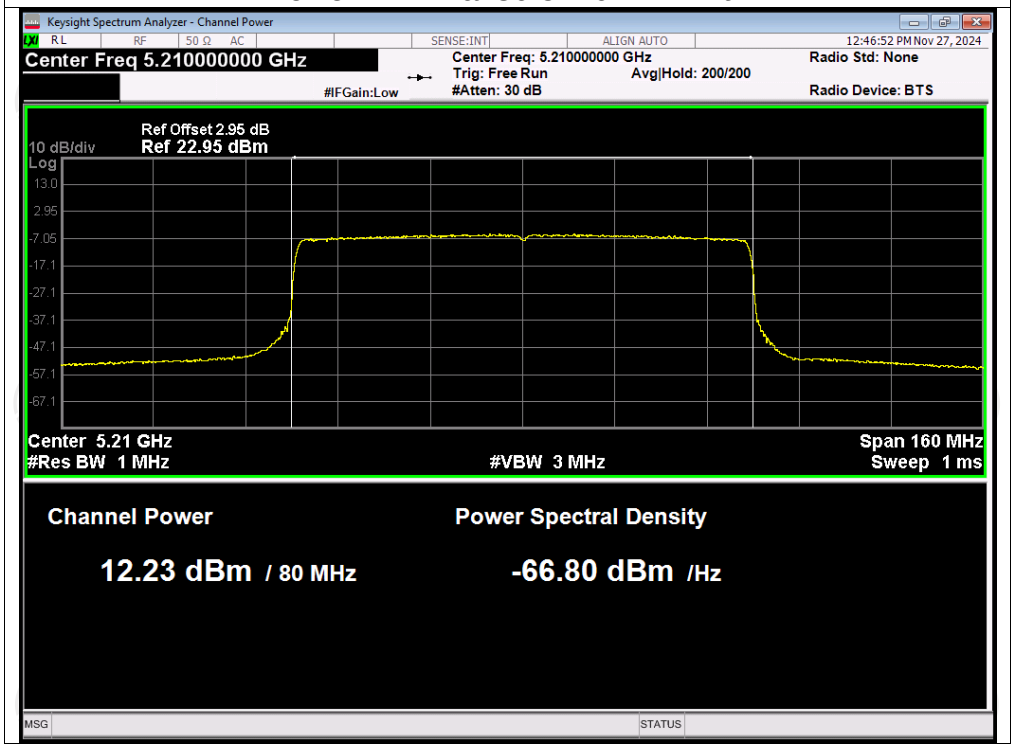
Power NVNT ax40 5190MHz Ant1



Power NVNT ax40 5230MHz Ant1

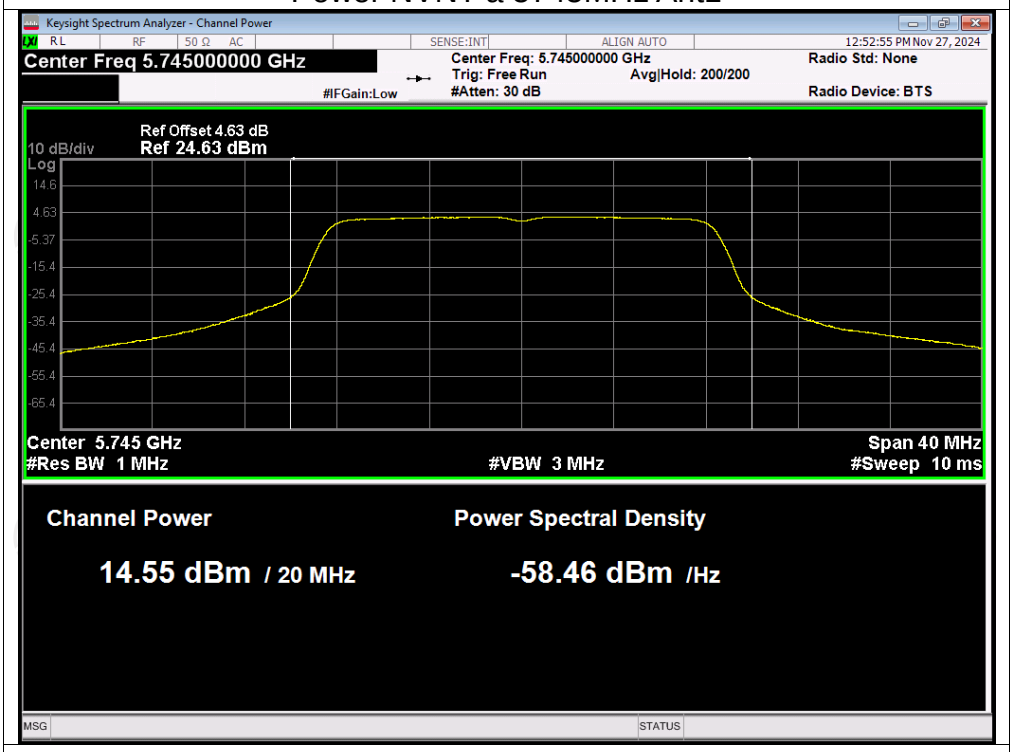


Power NVNT ax80 5210MHz Ant1

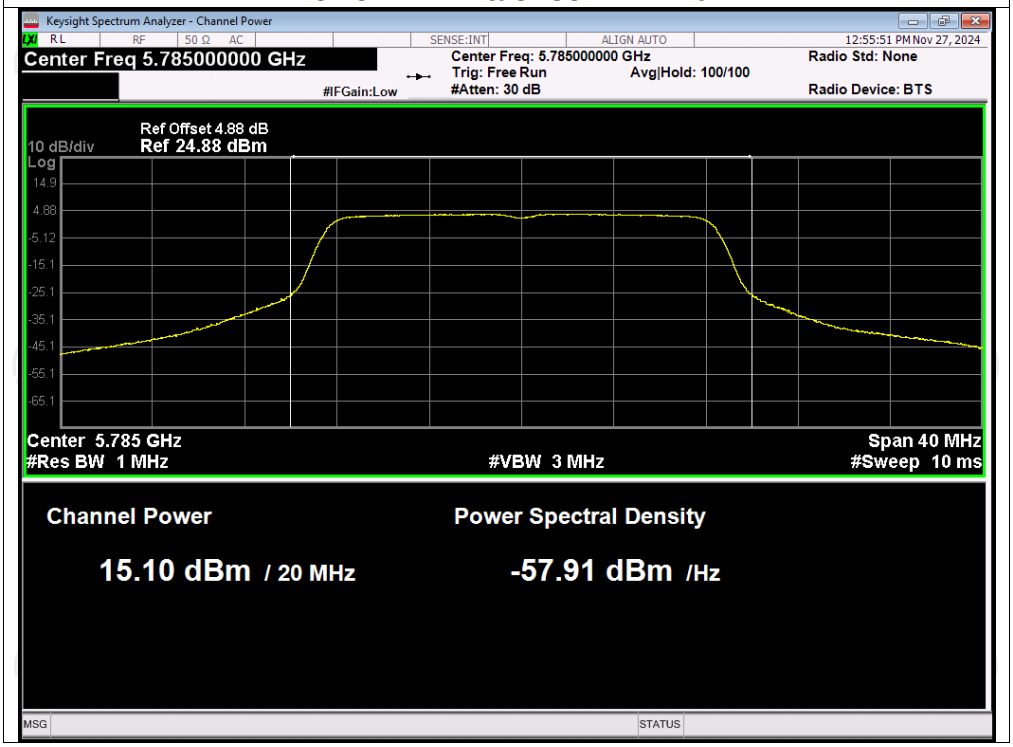


Test Graphs

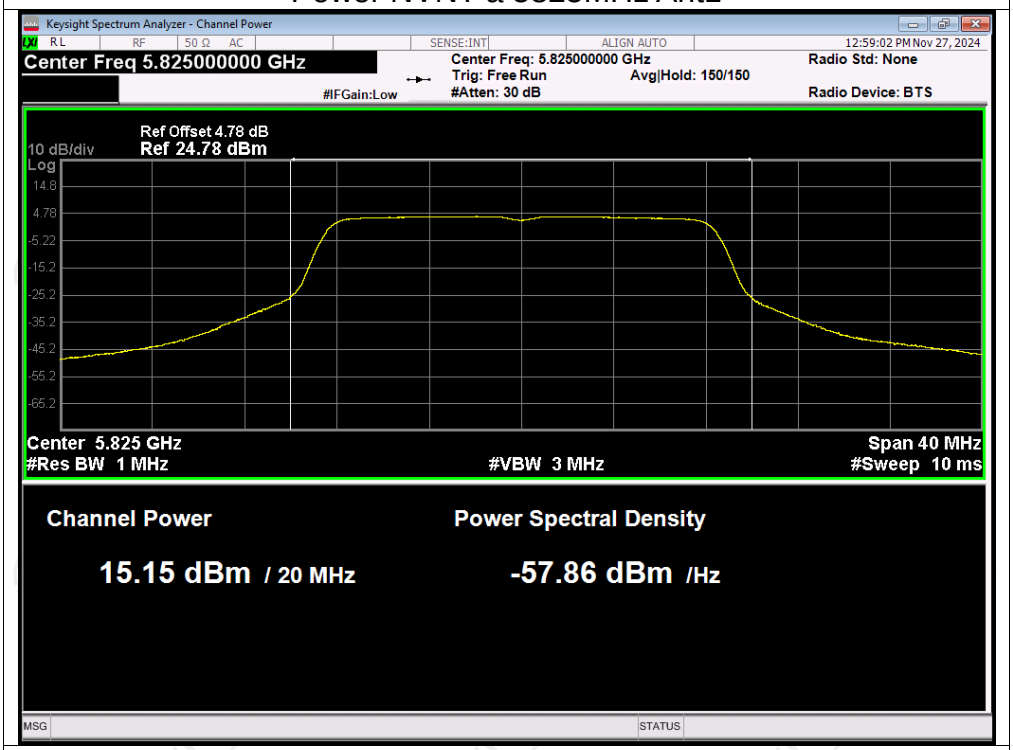
Power NVNT a 5745MHz Ant1



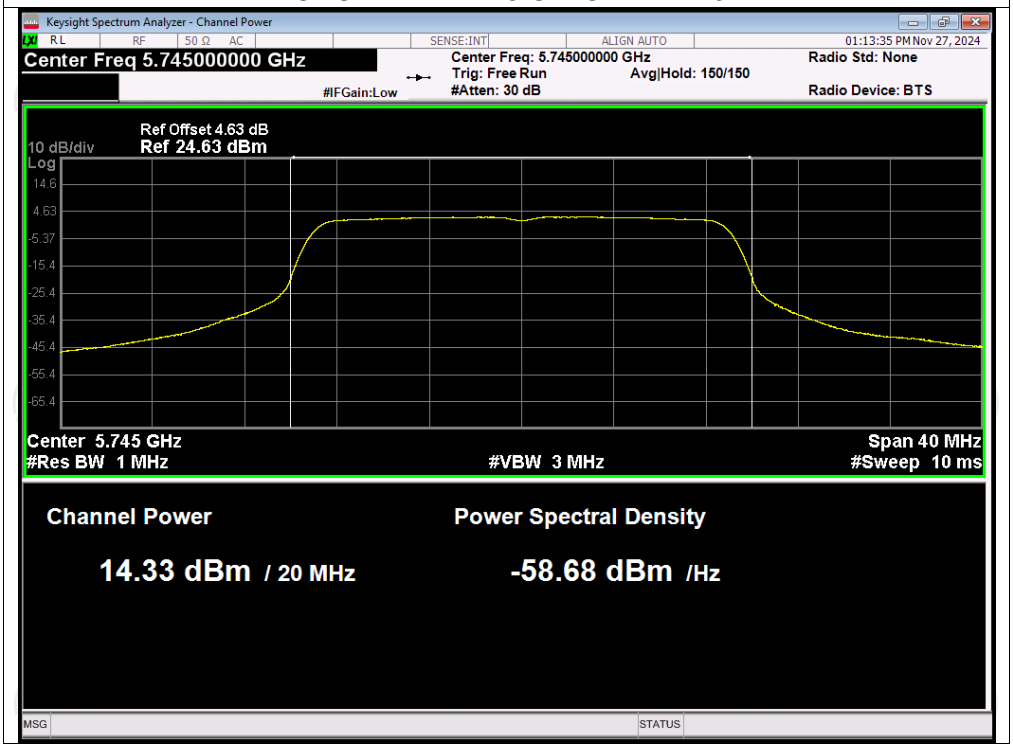
Power NVNT a 5785MHz Ant1



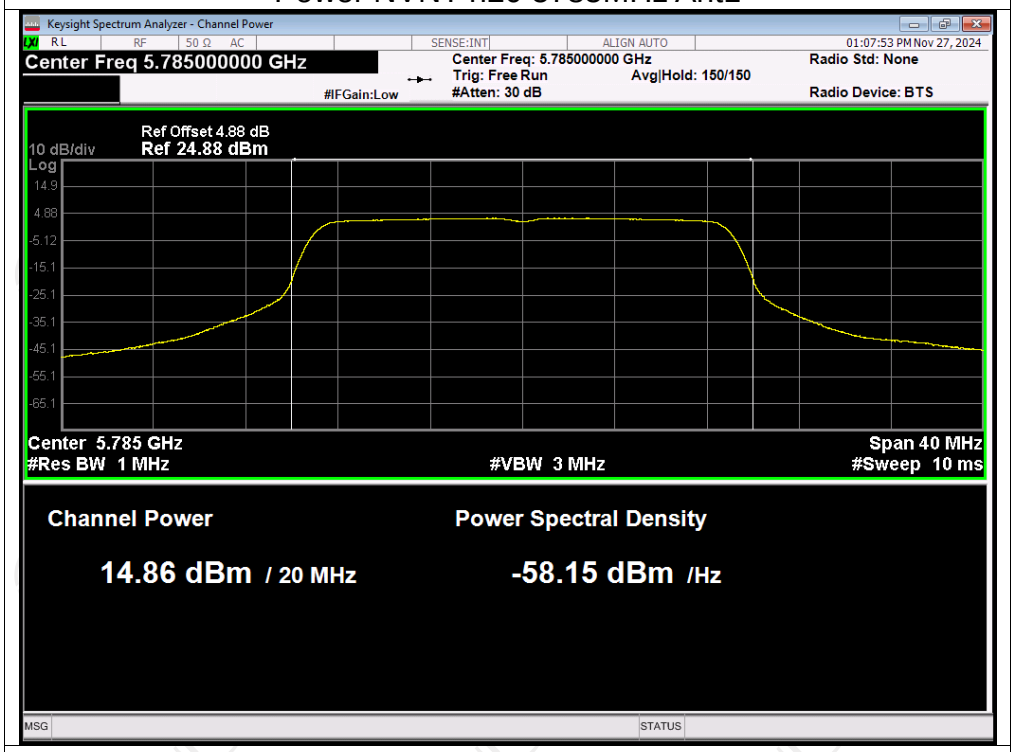
Power NVNT a 5825MHz Ant1



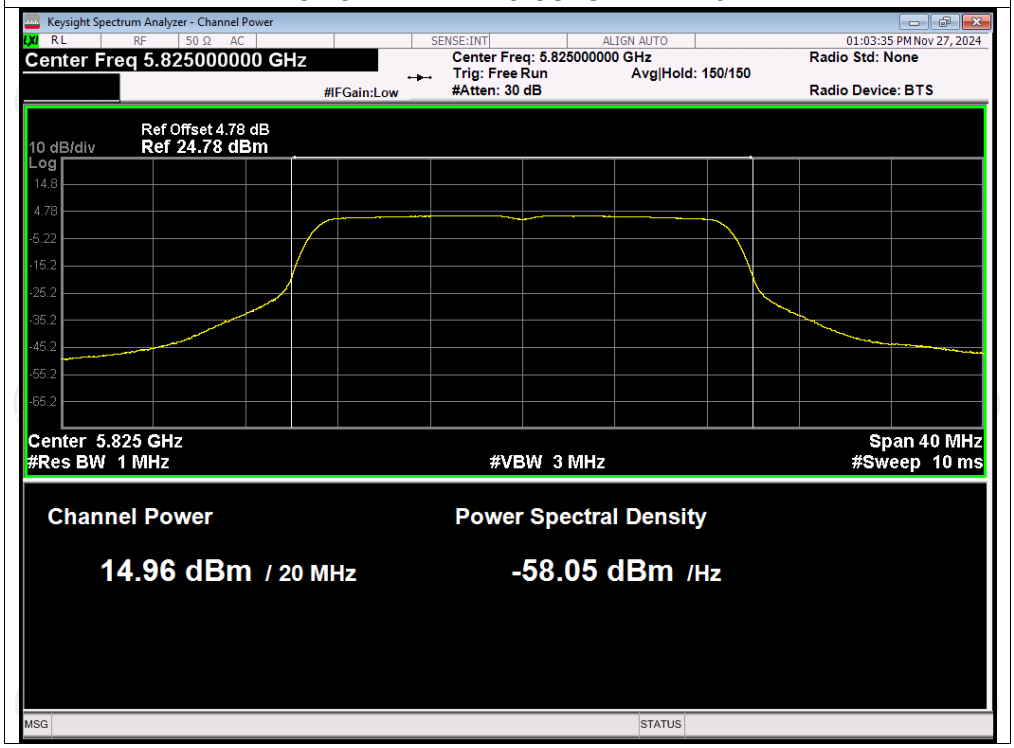
Power NVNT n20 5745MHz Ant1



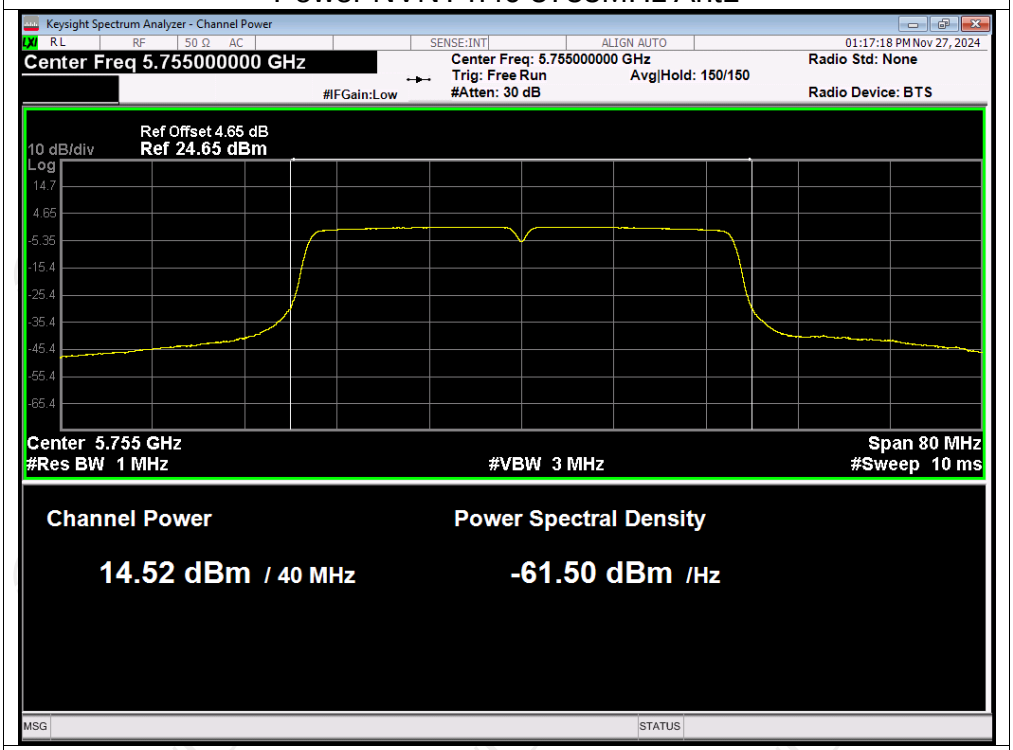
Power NVNT n20 5785MHz Ant1



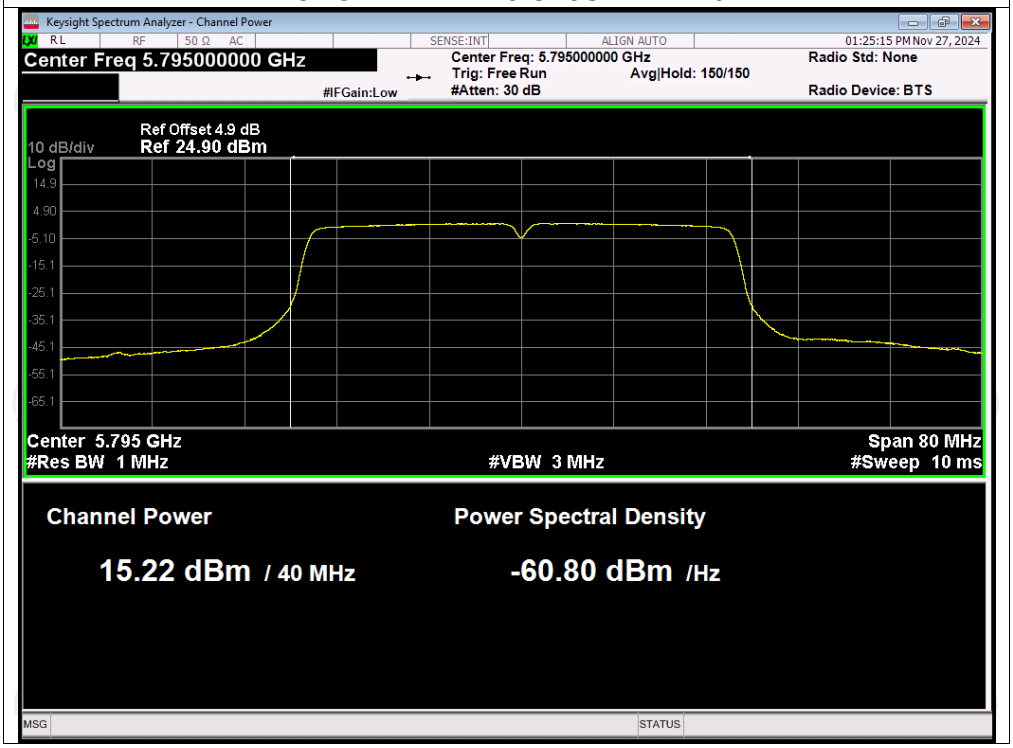
Power NVNT n20 5825MHz Ant1



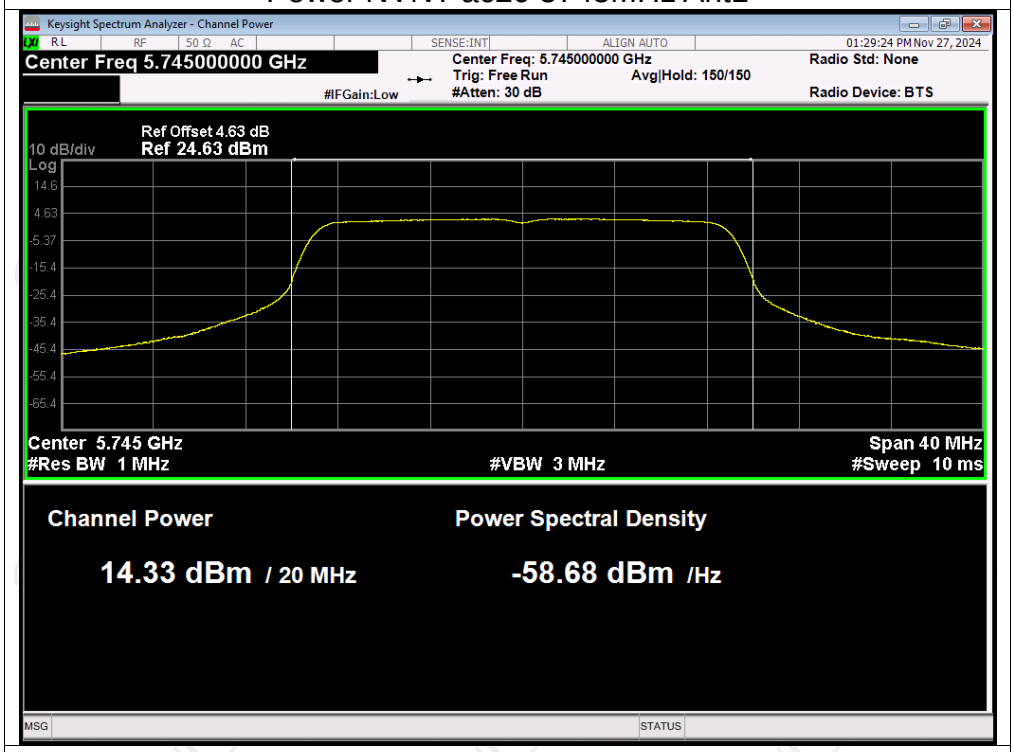
Power NVNT n40 5755MHz Ant1



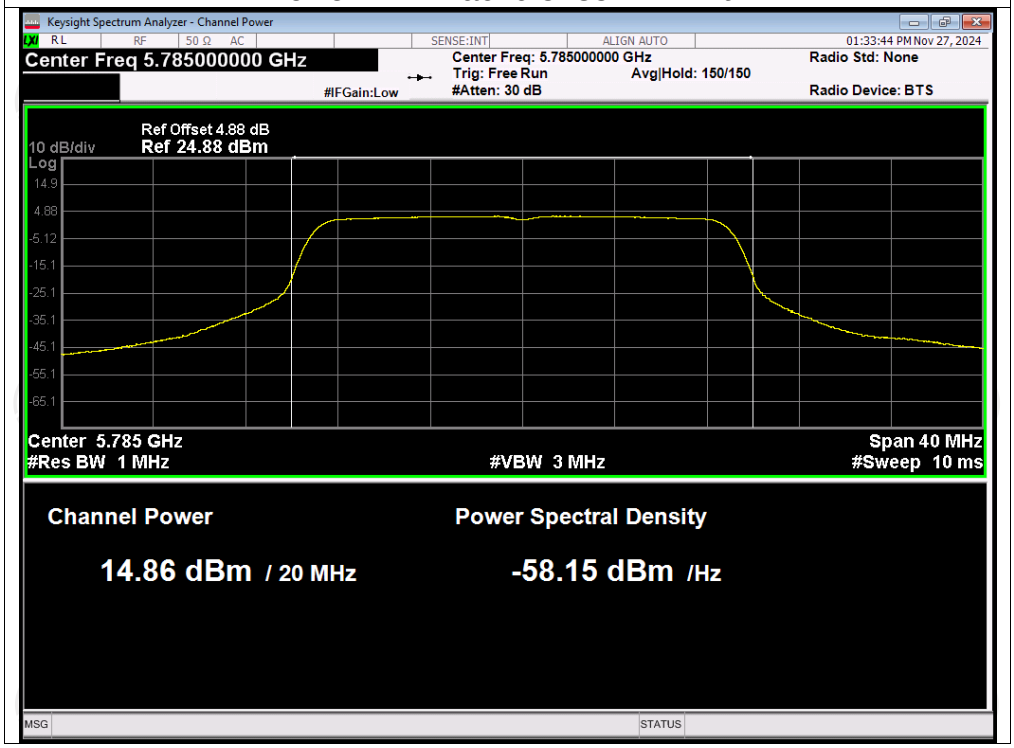
Power NVNT n40 5795MHz Ant1



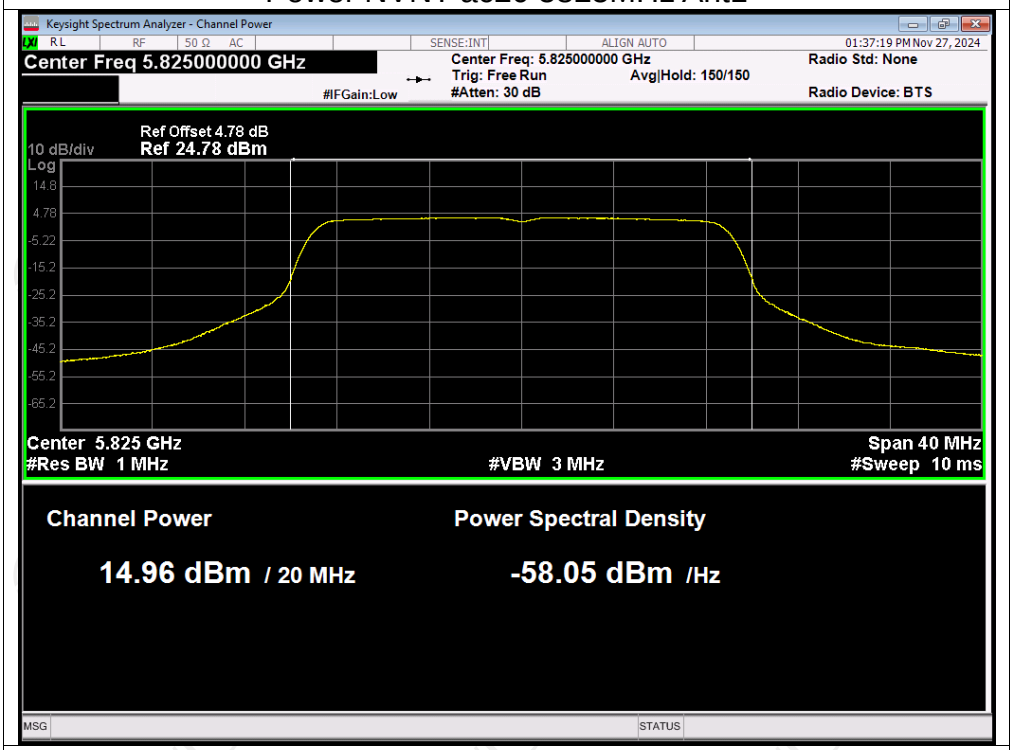
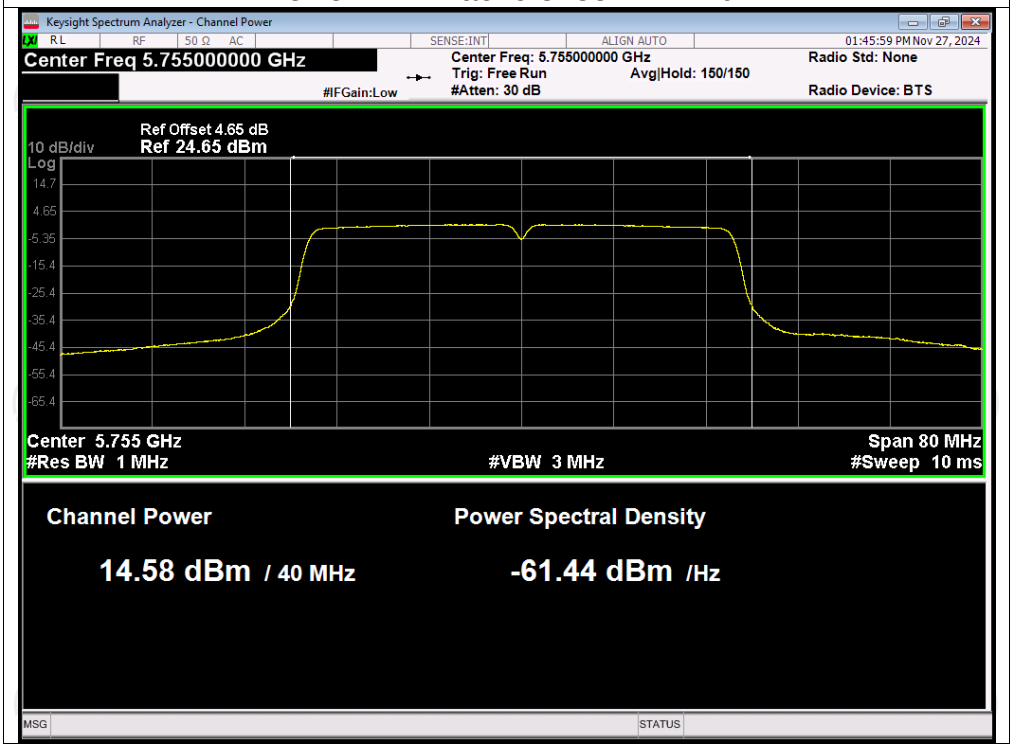
Power NVNT ac20 5745MHz Ant1



Power NVNT ac20 5785MHz Ant1



Power NVNT ac20 5825MHz Ant1



Power NVNT ac40 5755MHz Ant1