

RF TEST REPORT

For

Chengdu Hotack Technology Co., Ltd.

Product Name: PROJECTOR

Test Model(s): X5AD

Report Reference No. : DACE260805001RF001

FCC ID : 2BFIZ-X5AD2

Applicant's Name : Chengdu Hotack Technology Co., Ltd.

Address : 501-502, Unit 3, Building 13, No. 666 Jinfenghuang Avenue, High-tech Industry Park, Jinniu District, Chengdu City, Si Chuan Province, China

Testing Laboratory : Shenzhen DACE Testing Technology Co., Ltd.

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Test Specification Standard : 47 CFR Part 15.247

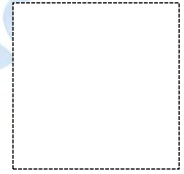
Date of Receipt : August 5, 2026

Date of Test : August 5, 2026 to August 21, 2026

Date of Issue : August 21, 2026

Result : Pass

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Apply for company information

Applicant's Name	:	Chengdu Hotack Technology Co., Ltd.
Address	:	501-502, Unit 3, Building 13, No. 666 Jinfenghuang Avenue, High-tech Industry Park, Jinniu District, Chengdu City, Si Chuan Province, China
Product Name	:	PROJECTOR
Test Model(s)	:	X5AD
Series Model(s)	:	X5Max, X5MAX, X5GTV, AC1069, X5, X5DD, X5BD, X5CD, X5ED, QV3000, WV3000, SDT2602, PL900GTV, PL800GTV, PL800, PL900
Test Specification Standard(s)	:	47 CFR Part 15.247

NOTE1:

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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August 21, 2026

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August 21, 2026

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August 21, 2026

Revision History Of Report

Version	Description	REPORT No.	Issue Date
V1.0	Original	DACE260805001RF001	August 21, 2026

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1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:

47 CFR Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

1.2 Summary of Test Result

Item	Standard	Method	Requirement	Result
Antenna requirement	47 CFR Part 15.247	---	47 CFR 15.203	Pass
Conducted Emission at AC power line	47 CFR Part 15.247	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.2	47 CFR 15.207(a)	Pass
20dB Bandwidth	47 CFR Part 15.247	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, section 7.8.6 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(a)(1)	Pass
Maximum Conducted Output Power	47 CFR Part 15.247	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, section 7.8.5 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(b)(1)	Pass
Channel Separation	47 CFR Part 15.247	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, section 7.8.2 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(a)(1)	Pass
Number of Hopping Frequencies	47 CFR Part 15.247	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, section 7.8.3 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(a)(1)(iii)	Pass
Dwell Time	47 CFR Part 15.247	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, section 7.8.4 KDB 558074 D01	47 CFR 15.247(a)(1)(iii)	Pass

		15.247 Meas Guidance v05r02		
Emissions in non-restricted frequency bands	47 CFR Part 15.247	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 7.8.7 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d)	Pass
Band edge emissions (Radiated)	47 CFR Part 15.247	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass
Emissions in frequency bands (below 1GHz)	47 CFR Part 15.247	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.5.4 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass
Emissions in frequency bands (above 1GHz)	47 CFR Part 15.247	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.5.4 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass

2 GENERAL INFORMATION

2.1 Client Information

Applicant's Name : Chengdu Hotack Technology Co., Ltd.
Address : 501-502, Unit 3, Building 13, No. 666 Jinfenghuang Avenue, High-tech Industry Park, Jinniu District, Chengdu City, Si Chuan Province, China

Manufacturer : Chengdu Hotack Technology Co., Ltd.
Address : 501-502, Unit 3, Building 13, No. 666 Jinfenghuang Avenue, High-tech Industry Park, Jinniu District, Chengdu City, Si Chuan Province, China

2.2 Description of Device (EUT)

Product Name:	PROJECTOR
Model/Type reference:	X5AD
Series Model:	X5Max, X5MAX, X5GTV, AC1069, X5, X5DD, X5BD, X5CD, X5ED, QV3000, WV3000, SDT2602, PL900GTV, PL800GTV, PL800, PL900
Model Difference:	All the model are the same circuit and RF module, only the model name, appearance color and appearance panel stripes and printing are different. Test sample model: X5AD
Trade Mark:	N/A
Power Supply:	100-240V~, 50/60Hz, 2.5A
Operation Frequency:	2402-2480MHz
Number of Channels:	79CH
Modulation Type:	GFSK, ($\pi/4$)DQPSK, 8DPSK
Antenna Type:	PCB Antenna
Antenna Gain:	2.03dBi
Hardware Version:	V1.0
Software Version:	V1.0

2.3 Description of Test Modes

No	Title	Description
TM1	TX mode	Keep the EUT in TX mode
Test Environment		Normal Voltage(AC): 120V

2.4 Description of Support Units

The EUT was tested as an independent device.

2.5 Operation Frequency each of channel

CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)
0	2402	1	2403	2	2404	3	2405
4	2406	5	2407	6	2408	7	2409
8	2410	9	2411	10	2412	11	2413
12	2414	13	2415	14	2416	15	2417
16	2418	17	2419	18	2420	19	2421
20	2422	21	2423	22	2424	23	2425
24	2426	25	2427	26	2428	27	2429
28	2430	29	2431	30	2432	31	2433
32	2434	33	2435	34	2436	35	2437
36	2438	37	2439	38	2440	39	2441
40	2442	41	2443	42	2444	43	2445
44	2446	45	2447	46	2448	47	2449
48	2450	49	2451	50	2452	51	2453
52	2454	53	2455	54	2456	55	2457
56	2458	57	2459	58	2460	59	2461
60	2462	61	2463	62	2464	63	2465
64	2466	65	2467	66	2468	67	2469
68	2470	69	2471	70	2472	71	2473
72	2474	73	2475	74	2476	75	2477
76	2478	77	2479	78	2480	/	/

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:

Test channel	Frequency (MHz)
	GFSK, ($\pi/4$)DQPSK, 8DPSK
Lowest channel	2402MHz
Middle channel	2441MHz
Highest channel	2480MHz

2.6 Equipments Used During The Test

Conducted Emission at AC power line					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Power absorbing clamp	SCHWARZ BECK	MESS-ELEKTRONIK	/	2026-04-14	2027-04-13
Electric Network	SCHWARZ BECK	CAT5 8158	CAT5 8158#207	2026-04-14	2027-04-13
Cable	SCHWARZ BECK	/	/	2026-04-14	2027-04-13
Pulse Limiter	SCHWARZ BECK	VTSD 9561-F Pulse limiter 10dB Attenuation	561-G071	2025-12-02	2026-12-01
Test Receiver	Rohde & Schwarz	ESPI TEST RECEIVER	1164.6607K03 -102109-MH	2026-04-14	2027-04-13
L.I.S.N	R&S	ESH3-Z5	831.5518.52	2026-04-14	2027-04-13
L.I.S.N	SCHWARZ BECK	NSLK 8126	05055	2026-04-14	2027-04-13
Pulse Limiter	CYBERTEK	EM5010A	/	2026-04-14	2027-04-13
EMI test software	Farad	EZ -EMC	EMEC-3A1.1	/	/

20dB Bandwidth
Maximum Conducted Output Power
Channel Separation
Number of Hopping Frequencies
Dwell Time
Emissions in non-restricted frequency bands

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RF Test Software	Tachoy Information Technology(she n zhen) Co.,Ltd.	RTS-01	V1.0.0	/	/
Power divider	MIDEWEST	PWD-2533	SMA-79	2026-04-16	2027-04-15
RF Power Sensor Unit	Tachoy Information Technology(she n zhen) Co.,Ltd.	TR1029-2	20220428P005	/	/
Wideband radio communication tester	R&S	CMW500	113410	2026-04-14	2027-04-13
Signal Generator	Keysight	N5181A	MY50143455	2025-12-02	2026-12-01
Vector Signal Generator	Keysight	N5182A	MY48180415	2025-12-02	2026-12-01
Spectrum Analyzer	Keysight	N9020A	MY53420323	2025-12-02	2026-12-01
RF Control Unit	Tachoy Information Technology(she n zhen) Co.,Ltd.	TR1029-1	20220428C005	/	/
Power meter	Agilent	E4416	MY48200166	2025-12-06	2026-12-05

Emissions in frequency bands (below 1GHz)
Emissions in frequency bands (above 1GHz)
Band edge emissions (Radiated)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test software	Farad	EZ -EMC	FA-03A2 RE+	/	/
Positioning Controller	MF	MF-7802	/	/	/
Amplifier(18-40G)	COM-POWER	AH-1840	10100008-1	2024-04-26	2027-04-25
Horn antenna	COM-POWER	AH-1840 (18-40G)	10100008	2024-04-26	2027-04-25
Loop antenna	ZHINAN	ZN30900C	ZN30900C	2026-04-14	2027-04-13
Cable(LF)#2	Schwarzbeck	/	/	2026-04-13	2027-04-12
Cable(LF)#1	Schwarzbeck	/	/	2026-04-14	2027-04-13
Cable(HF)#2	Schwarzbeck	AK9515E	96250	2026-04-14	2027-04-13
Cable(HF)#1	Schwarzbeck	SYV-50-3-1	/	2026-04-14	2027-04-13
Power amplifier(LF)	Schwarzbeck	BBV9743	9743-151	2026-04-14	2027-04-13
Power amplifier(HF)	Schwarzbeck	BBV9718	9718-282	2026-04-14	2027-04-13
Wideband radio communication tester	R&S	CMW500	113410	2026-04-14	2027-04-13
Spectrum Analyzer	R&S	FSP30	1321.3008K40-101729-jR	2026-04-14	2027-04-13
Test Receiver	R&S	ESCI 3	1166.5950K03-101431-Jq	2026-04-14	2027-04-13
Horn Antenna	Sunol Sciences	DRH-118	A091114	2026-04-14	2027-04-13
Broadband Antenna	Sunol Sciences	JB6 Antenna	A090414	2026-04-29	2028-04-28

2.7 Statement Of The Measurement Uncertainty

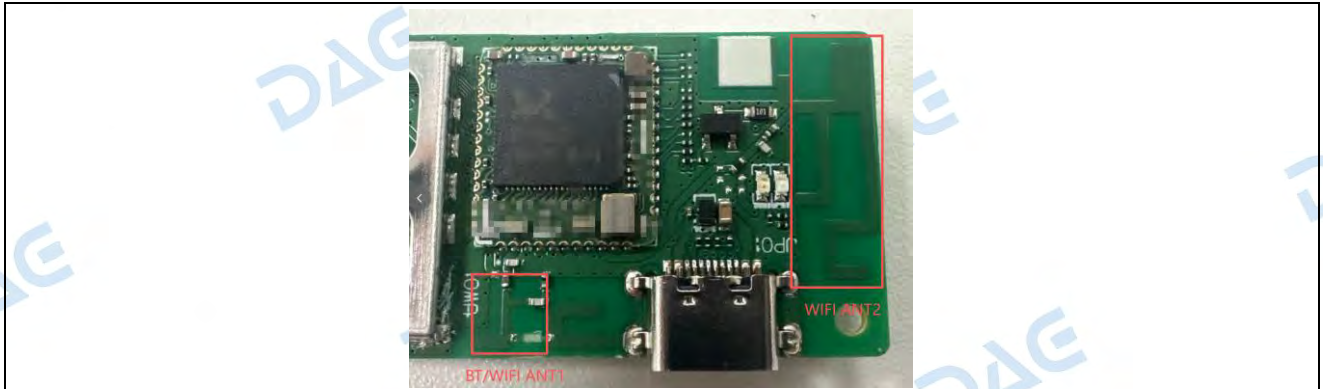
Test Item	Measurement Uncertainty
Conducted Disturbance (0.15~30MHz)	±3.41dB
Occupied Bandwidth	±3.63%
RF conducted power	±0.733dB
Duty cycle	±3.1%
Conducted Spurious emissions	±1.98dB
Radiated Emission (Above 1GHz)	±5.46dB
Radiated Emission (Below 1GHz)	±5.79dB
Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3 Evaluation Results (Evaluation)

3.1 Antenna requirement

Test Requirement:	Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
Test Method:	---

3.1.1 Conclusion:



4 Radio Spectrum Matter Test Results (RF)

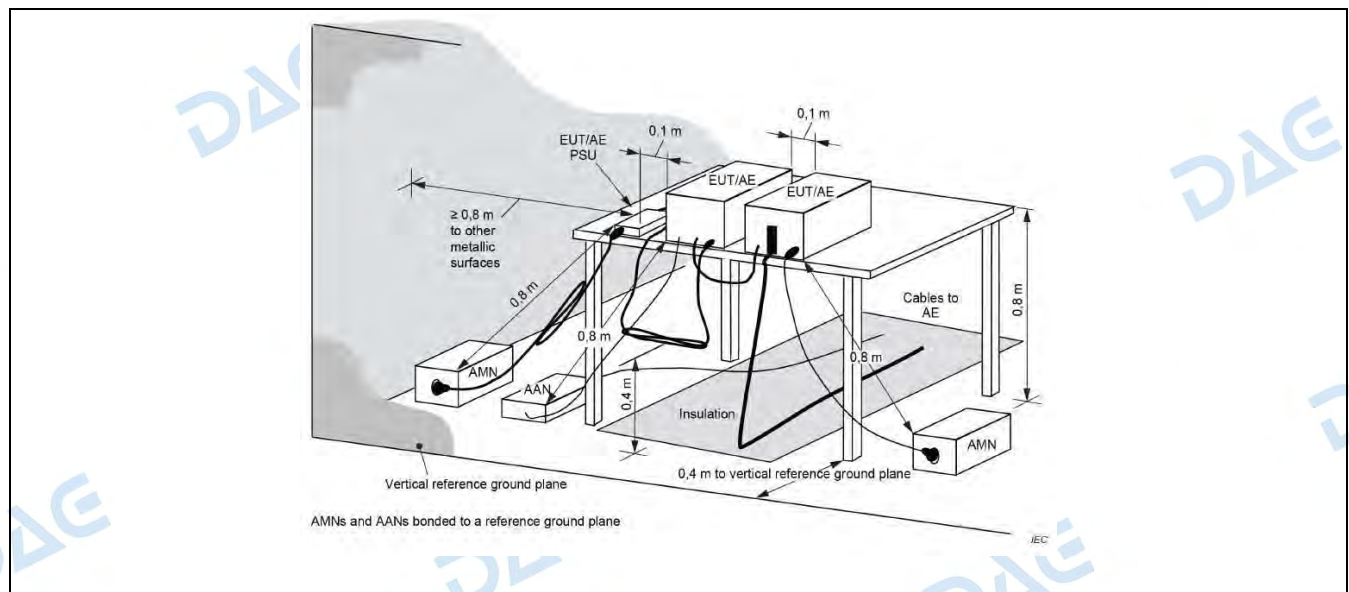
4.1 Conducted Emission at AC power line

Test Requirement:	Refer to 47 CFR 15.207(a), Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).		
Test Limit:	Frequency of emission (MHz)	Conducted limit (dB μ V)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
*Decreases with the logarithm of the frequency.			
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.2		
Procedure:	Refer to ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices		

4.1.1 E.U.T. Operation:

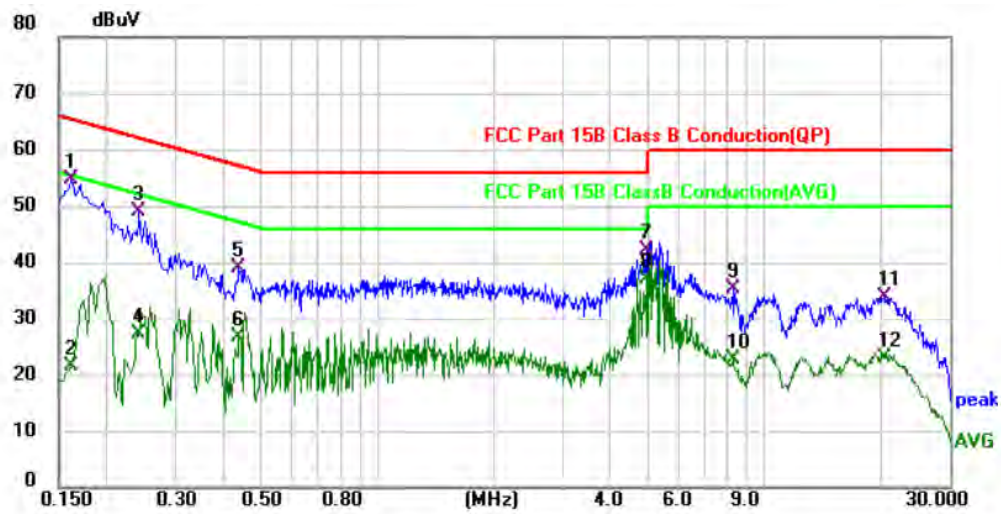
Operating Environment:					
Temperature:	23.4 °C	Humidity:	55 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.1.2 Test Setup Diagram:



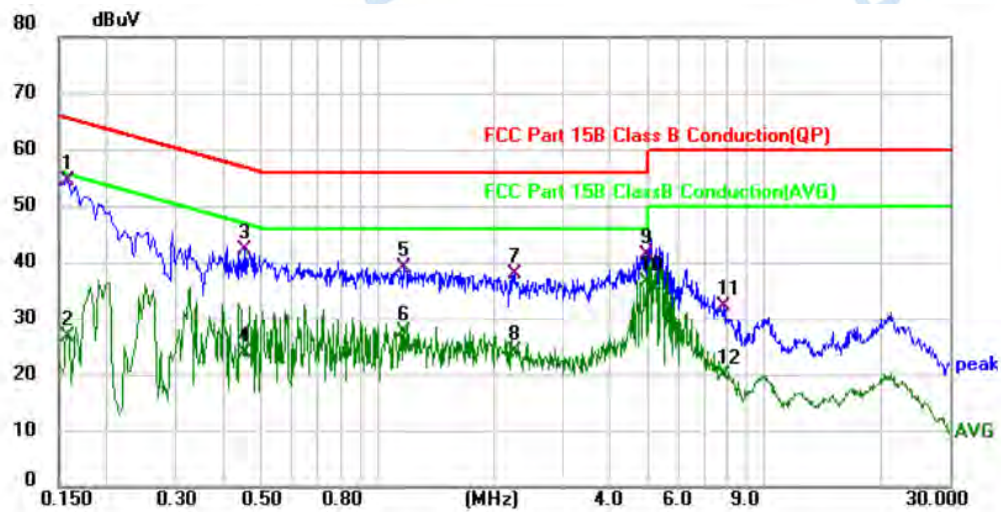
4.1.3 Test Data:

TM1 / Line: Line / Band: 2400-2483.5 MHz / BW: 1 / CH: L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1620	44.68	10.00	54.68	65.36	-10.68	QP	
2		0.1620	11.59	10.00	21.59	55.36	-33.77	AVG	
3		0.2420	38.88	9.99	48.87	62.03	-13.16	QP	
4		0.2420	17.18	9.99	27.17	52.03	-24.86	AVG	
5		0.4380	29.07	10.00	39.07	57.10	-18.03	QP	
6		0.4380	16.71	10.00	26.71	47.10	-20.39	AVG	
7		4.9460	32.34	9.75	42.09	56.00	-13.91	QP	
8	*	4.9460	27.16	9.75	36.91	46.00	-9.09	AVG	
9		8.3060	25.77	9.40	35.17	60.00	-24.83	QP	
10		8.3060	13.26	9.40	22.66	50.00	-27.34	AVG	
11		20.3460	26.12	7.67	33.79	60.00	-26.21	QP	
12		20.3460	15.39	7.67	23.06	50.00	-26.94	AVG	

TM1 / Line: Neutral / Band: 2400-2483.5 MHz / BW: 1 / CH: L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1580	44.54	9.98	54.52	65.57	-11.05	QP	
2		0.1580	16.63	9.98	26.61	55.57	-28.96	AVG	
3		0.4540	32.08	9.99	42.07	56.80	-14.73	QP	
4		0.4540	13.86	9.99	23.85	46.80	-22.95	AVG	
5		1.1740	29.17	9.95	39.12	56.00	-16.88	QP	
6		1.1740	17.53	9.95	27.48	46.00	-18.52	AVG	
7		2.2500	28.11	9.80	37.91	56.00	-18.09	QP	
8		2.2500	14.41	9.80	24.21	46.00	-21.79	AVG	
9		4.9460	31.28	9.89	41.17	56.00	-14.83	QP	
10	*	4.9460	26.60	9.89	36.49	46.00	-9.51	AVG	
11		7.8300	22.21	9.89	32.10	60.00	-27.90	QP	
12		7.8300	10.00	9.89	19.89	50.00	-30.11	AVG	

NOTE:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor, Over = Limit - Measurement

4.2 20dB Bandwidth

Test Requirement:	47 CFR 15.247(a)(1)
Test Limit:	Refer to 47 CFR 15.215(c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, section 7.8.6, For occupied bandwidth measurements, use the procedure in 6.9.2. Frequency hopping shall be disabled for this test. KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	A dBc bandwidth is measured as the width of the spectral envelope of the modulated signal, at an amplitude level reduced from a reference value by a specified ratio (or in decibels, a specified number of dB down from the reference value). Typical ratios, expressed in dB, are -6 dB, -20 dB, and -26 dB, corresponding to 6 dB BW, 20 dB BW, and 26 dB BW, respectively. In this subclause, the ratio is designated by “-xx dB.” The reference value is either the level of the unmodulated carrier or the highest level of the spectral envelope of the modulated signal, as stated by the applicable requirement. Some requirements might specify a specific maximum or minimum value for the “-xx dB” bandwidth; other requirements might specify that the “-xx dB” bandwidth be entirely contained within the authorized or designated frequency band.⁵¹ a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW. b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be at least three times RBW, unless otherwise specified by the applicable requirement. c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.6.2. d) Steps a) through c) might require iteration to adjust within the specified tolerances. e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “-xx dB down” requirement; that is, if the requirement calls for measuring the -20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value. f) Set detection mode to peak and trace mode to max-hold. g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value). h) Determine the “-xx dB down amplitude” using $[(\text{reference value}) - \text{xx}]$. Alternatively, this calculation may be made by using the marker-delta function of the instrument. i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j). j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-xx dB down amplitude” determined in step h). If a marker is below this “-xx dB down amplitude” value, then it shall be as close as possible to this value. The dBc bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the “-xx dB down amplitude”

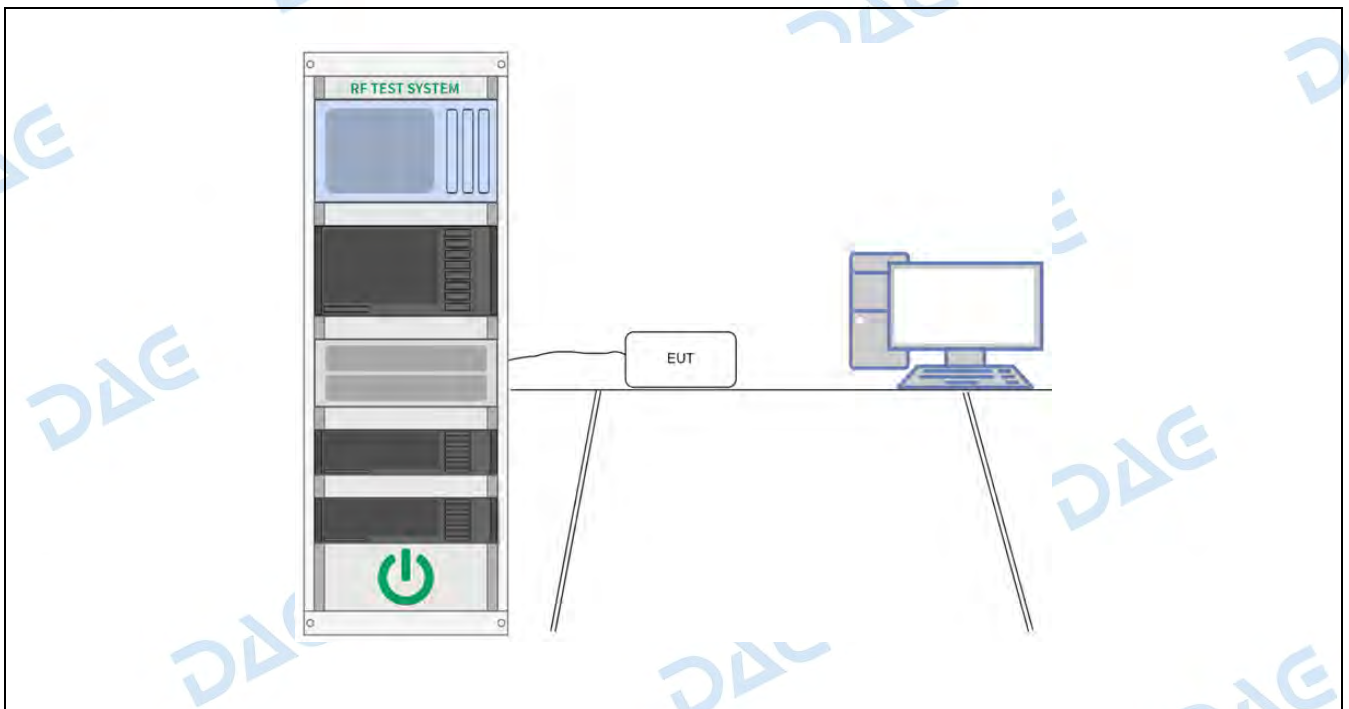
determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.

k) The dBc bandwidth shall be reported by providing spectral plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

4.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.1 °C	Humidity:	52 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.2.2 Test Setup Diagram:



4.2.3 Test Data:

Please Refer to Appendix for Details.

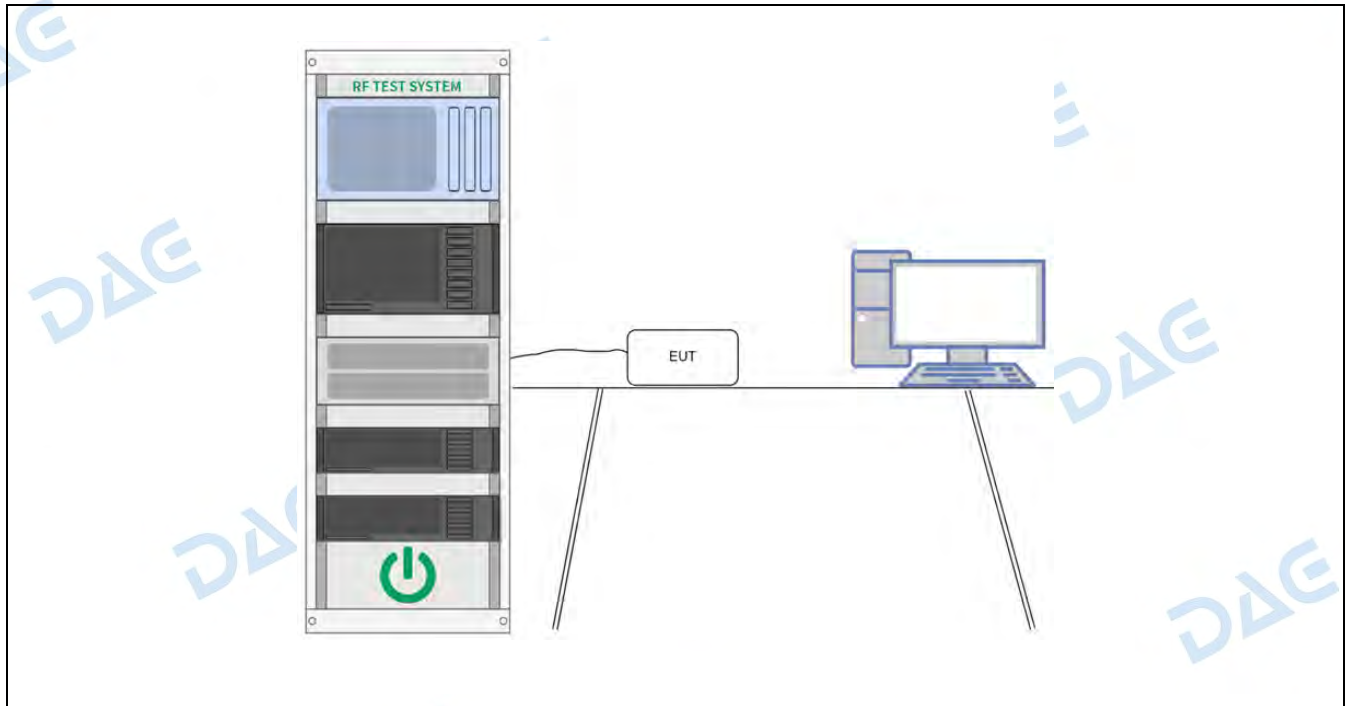
4.3 Maximum Conducted Output Power

Test Requirement:	47 CFR 15.247(b)(1)
Test Limit:	Refer to 47 CFR 15.247(b)(1), For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, section 7.8.5 KDB 558074 D01 15.247 Meas Guidance v05r02

4.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.3 °C	Humidity:	51 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.3.2 Test Setup Diagram:



4.3.3 Test Data:

Please Refer to Appendix for Details.

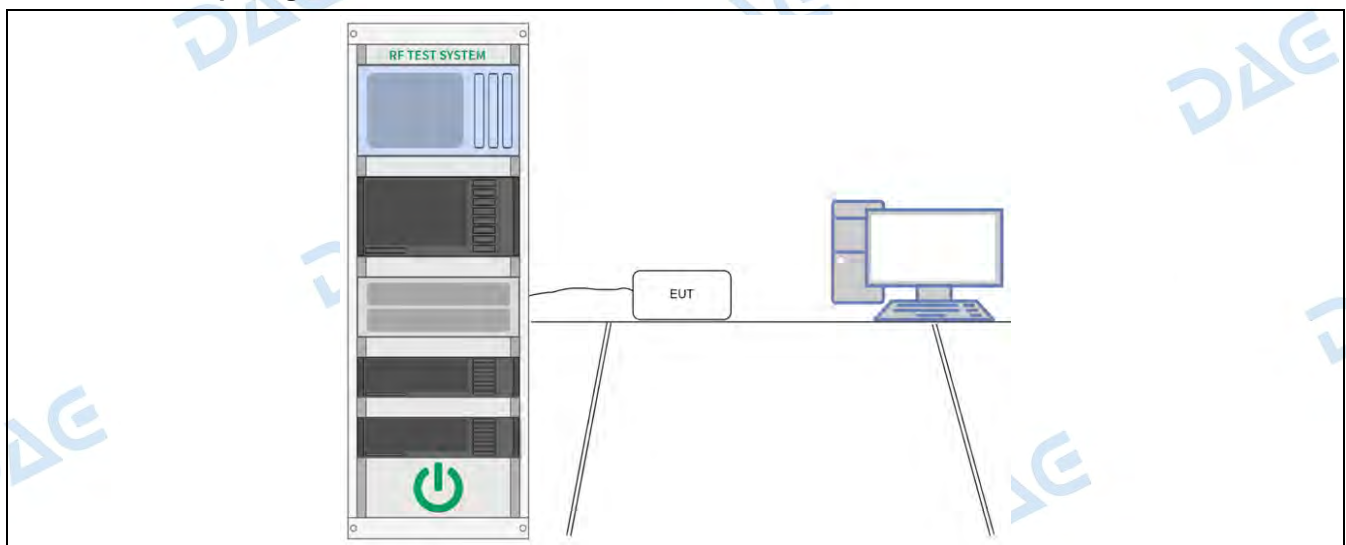
4.4 Channel Separation

Test Requirement:	47 CFR 15.247(a)(1)
Test Limit:	Refer to 47 CFR 15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, section 7.8.2 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings: a) Span: Wide enough to capture the peaks of two adjacent channels. b) RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel. c) Video (or average) bandwidth (VBW) $\geq$ RBW. d) Sweep: No faster than coupled (auto) time. e) Detector function: Peak. f) Trace: Max-hold. g) Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Compliance of an EUT with the appropriate regulatory limit shall be determined. A spectral plot of the data shall be included in the test report.

4.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.9 °C	Humidity:	55 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.4.2 Test Setup Diagram:



4.4.3 Test Data:

Please Refer to Appendix for Details.

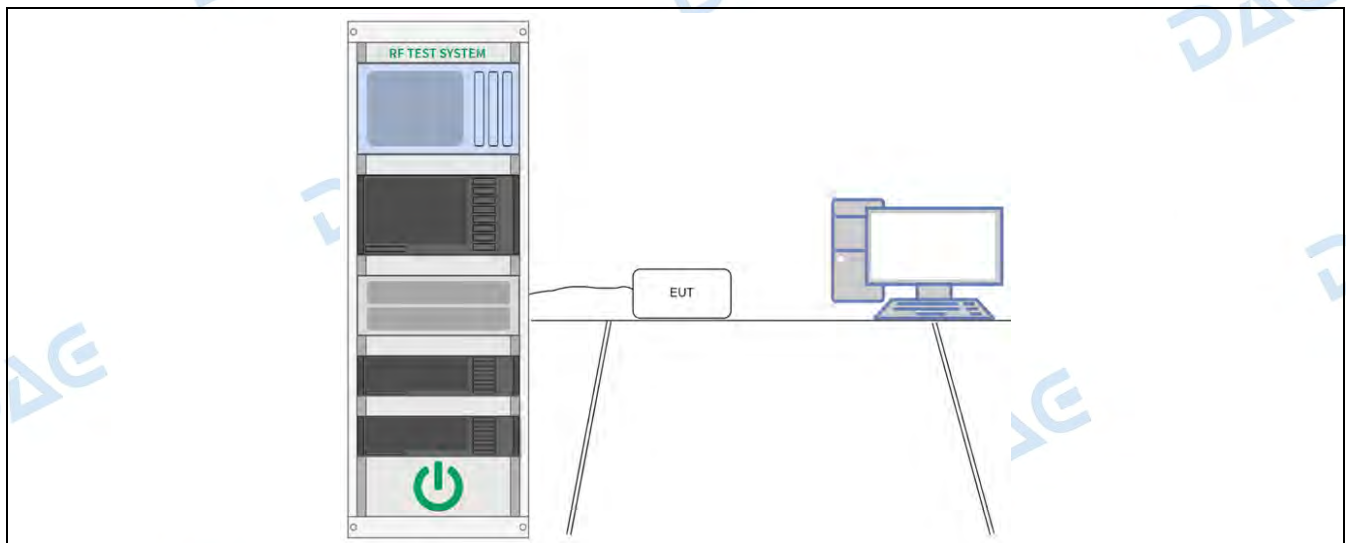
4.5 Number of Hopping Frequencies

Test Requirement:	47 CFR 15.247(a)(1)(iii)
Test Limit:	Refer to 47 CFR 15.247(a)(1)(iii), Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, section 7.8.3 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings: a) Span: The frequency band of operation. Depending on the number of channels the device supports, it could be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen. b) RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller. c) VBW $\geq$ RBW. d) Sweep: No faster than coupled (auto) time. e) Detector function: Peak. f) Trace: Max-hold. g) Allow the trace to stabilize. It might prove necessary to break the span up into subranges to show clearly all of the hopping frequencies. Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels. A spectral plot of the data shall be included in the test report.

4.5.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22 °C	Humidity:	55 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.5.2 Test Setup Diagram:



4.5.3 Test Data:

Please Refer to Appendix for Details.

4.6 Dwell Time

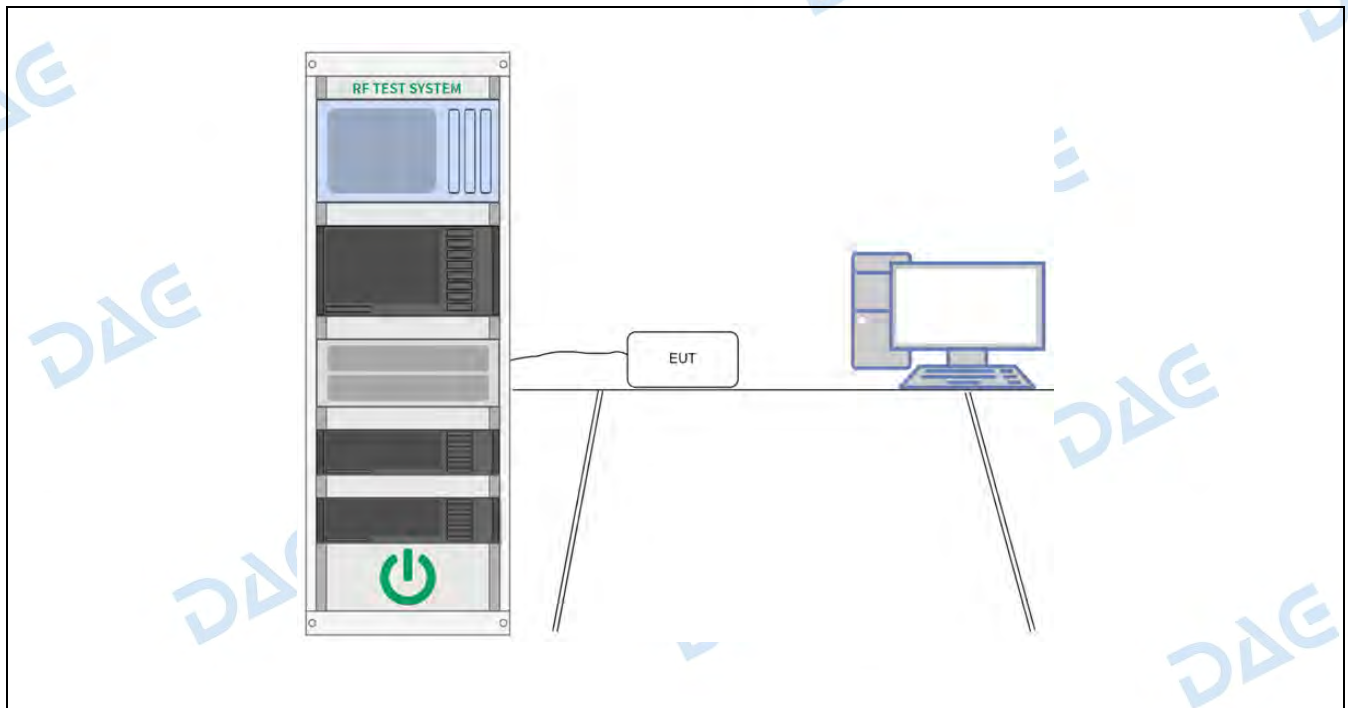
Test Requirement:	47 CFR 15.247(a)(1)(iii)
Test Limit:	Refer to 47 CFR 15.247(a)(1)(iii), Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, section 7.8.4 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	The dwell time per hop on a channel is the time from the start of the first transmission to the end of the last transmission for that hop. If the device has a single transmission per hop then the dwell time is the duration of that transmission. If the device has a multiple transmissions per hop then the dwell time is measured from the start of the first transmission to the end of the last transmission. The time of occupancy is the total time that the device dwells on a channel over an observation period specified in the regulatory requirement. To determine the time of occupancy the spectrum analyzer will be configured to measure both the dwell time per hop and the number of times the device transmits on a specific channel in a given period. The EUT shall have its hopping function enabled. Compliance with the requirements shall be made with the minimum and with the maximum number of channels enabled. If the dwell time per channel does not vary with the number of channels then compliance with the requirements may be based on the minimum number of channels. If the device supports different dwell times per channel (example Bluetooth devices can dwell on a channel for 1, 3 or 5 time slots) then measurements can be limited to the longest dwell time with the minimum number of channels. Use the following spectrum analyzer settings to determine the dwell time per hop: - Span: Zero span, centered on a hopping channel. - RBW shall be $\leq$ channel spacing and where possible RBW should be set $\gg 1/T$, where T is the expected transmission time per hop. - Sweep time: Set so that the start of the first transmission and end of the last transmission for the hop are clearly captured. Setting the sweep time to be slightly longer than the hopping period per channel (hopping period = $1/\text{hopping rate}$) should achieve this. - Use a video trigger, where possible with a trigger delay, so that the start of the transmission is clearly observed. The trigger level might need adjustment to reduce the chance of triggering when the system hops on an adjacent channel. - Detector function: Peak. - Trace: Clear-write, single sweep. - Place markers at the start of the first transmission on the channel and at the end of the last transmission. The dwell time per hop is the time between these two markers. To determine the number of hops on a channel in the regulatory observation period repeat the measurement using a longer sweep time. When the device uses a single hopping sequence the period of measurement should be sufficient to capture at least 2 hops. When the device uses a dynamic hopping sequence, or the sequence varies, the period of measurement may need to capture multiple hops to better determine the average time of occupancy. Count the number of hops on the channel across the sweep time.

	The average number of hops on the same channel within the regulatory observation period is calculated from the number of hops on the channel divided by the spectrum analyzer sweep time multiplied by the regulatory observation period. For example, if three hops are counted with an analyzer sweep time of 500 ms and the regulatory observation period is 10 s, then the number of hops in that ten seconds is $3 / 0.5 \times 10$, or 60 hops. The average time of occupancy is calculated by multiplying the dwell time per hop by the number of hops in the observation period.
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4.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.3 °C	Humidity:	52 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.6.2 Test Setup Diagram:



4.6.3 Test Data:

Please Refer to Appendix for Details.

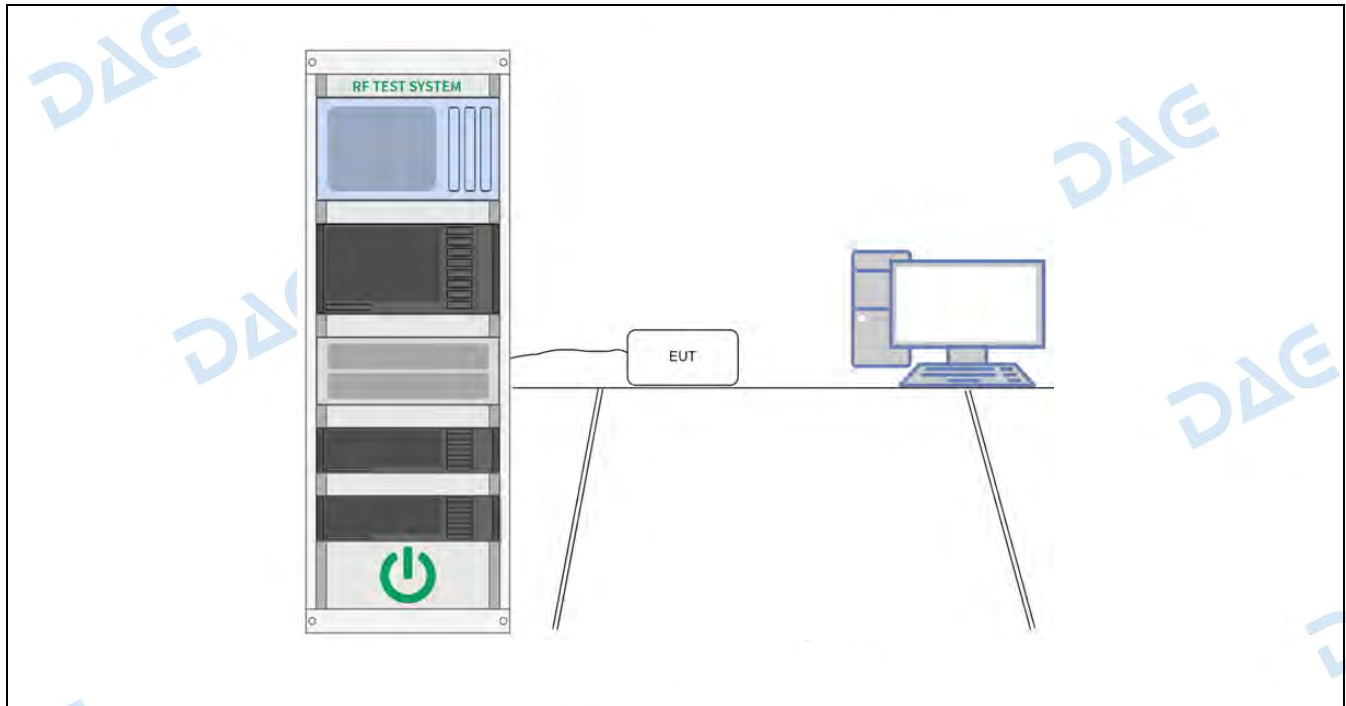
4.7 Emissions in non-restricted frequency bands

Test Requirement:	47 CFR 15.247(d)
Test Limit:	Refer to 47 CFR 15.247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required.
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 7.8.7 KDB 558074 D01 15.247 Meas Guidance v05r02

4.7.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.3 °C	Humidity:	46 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.7.2 Test Setup Diagram:



4.7.3 Test Data:

Please Refer to Appendix for Details.

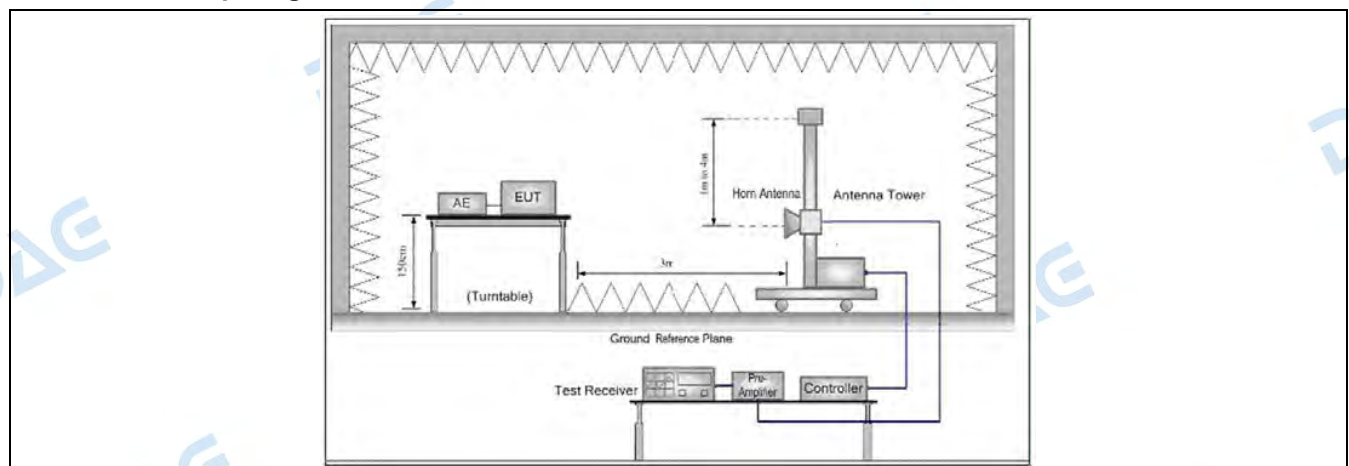
4.8 Band edge emissions (Radiated)

Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.			
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.10.5.2		

4.8.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.1 °C	Humidity:	47 %
Atmospheric Pressure:	101 kPa		
Pretest mode:	TM1		
Final test mode:	TM1		

4.8.2 Test Setup Diagram:



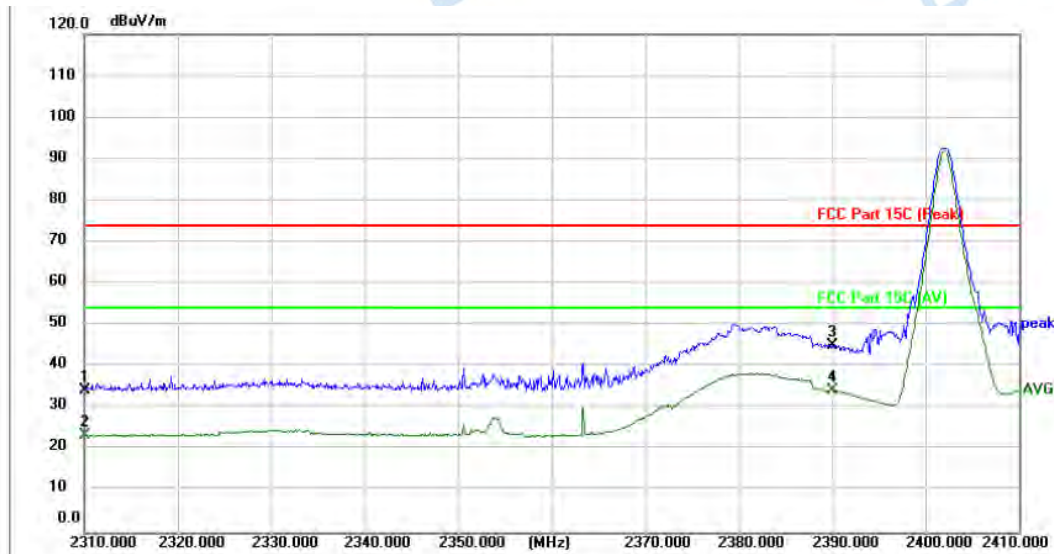
4.8.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: L



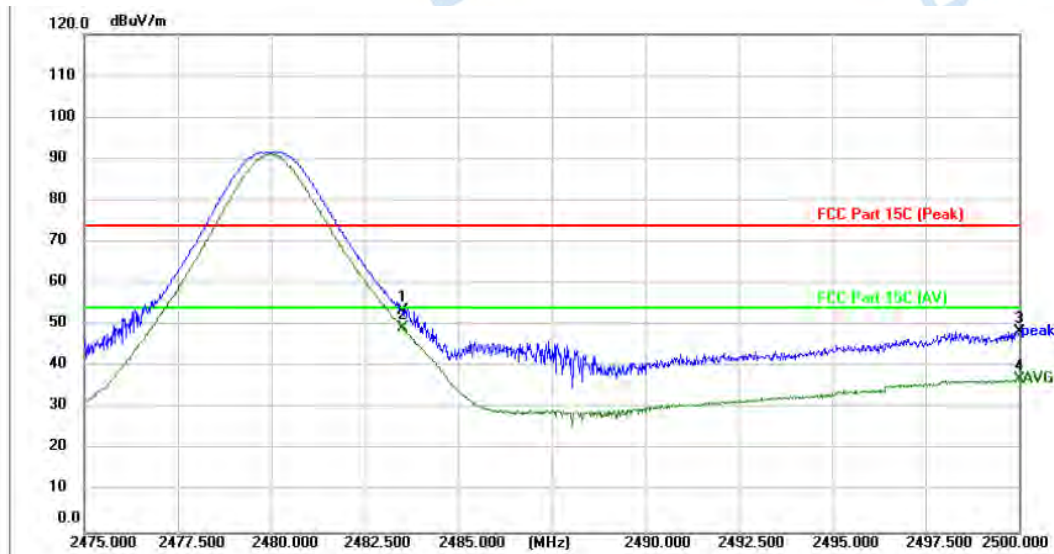
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	45.79	-6.63	39.16	74.00	-34.84	peak			P	
2	2310.000	31.93	-6.63	25.30	54.00	-28.70	AVG			P	
3	2390.000	47.98	-6.42	41.56	74.00	-32.44	peak			P	
4 *	2390.000	38.20	-6.42	31.78	54.00	-22.22	AVG			P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: L



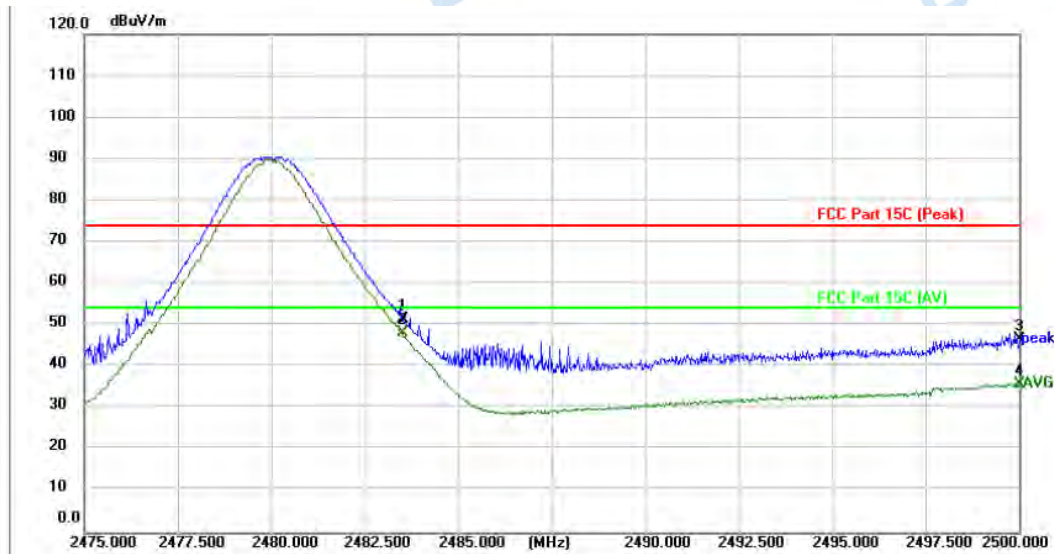
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	41.08	-6.63	34.45	74.00	-39.55	peak			P	
2	2310.000	30.31	-6.63	23.68	54.00	-30.32	AVG			P	
3	2390.000	51.59	-6.42	45.17	74.00	-28.83	peak			P	
4 *	2390.000	40.77	-6.42	34.35	54.00	-19.65	AVG			P	

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	59.63	-6.17	53.46	74.00	-20.54	peak			P	
2 *	2483.500	55.60	-6.17	49.43	54.00	-4.57	AVG			P	
3	2500.000	54.51	-6.13	48.38	74.00	-25.62	peak			P	
4	2500.000	43.10	-6.13	36.97	54.00	-17.03	AVG			P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	57.64	-6.17	51.47	74.00	-22.53	peak			P	
2 *	2483.500	54.23	-6.17	48.06	54.00	-5.94	AVG			P	
3	2500.000	52.83	-6.13	46.70	74.00	-27.30	peak			P	
4	2500.000	42.01	-6.13	35.88	54.00	-18.12	AVG			P	

Remark: Margin=Level - Limit, Level=Test receiver reading + correction factor

The test software will only record the worst test angle and height, and only the worst case will be recorded in the test report.

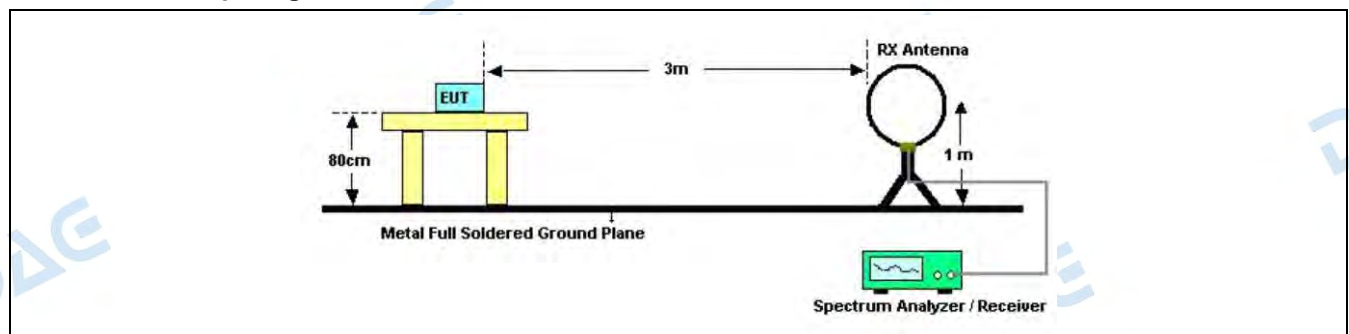
4.9 Emissions in frequency bands (below 1GHz)

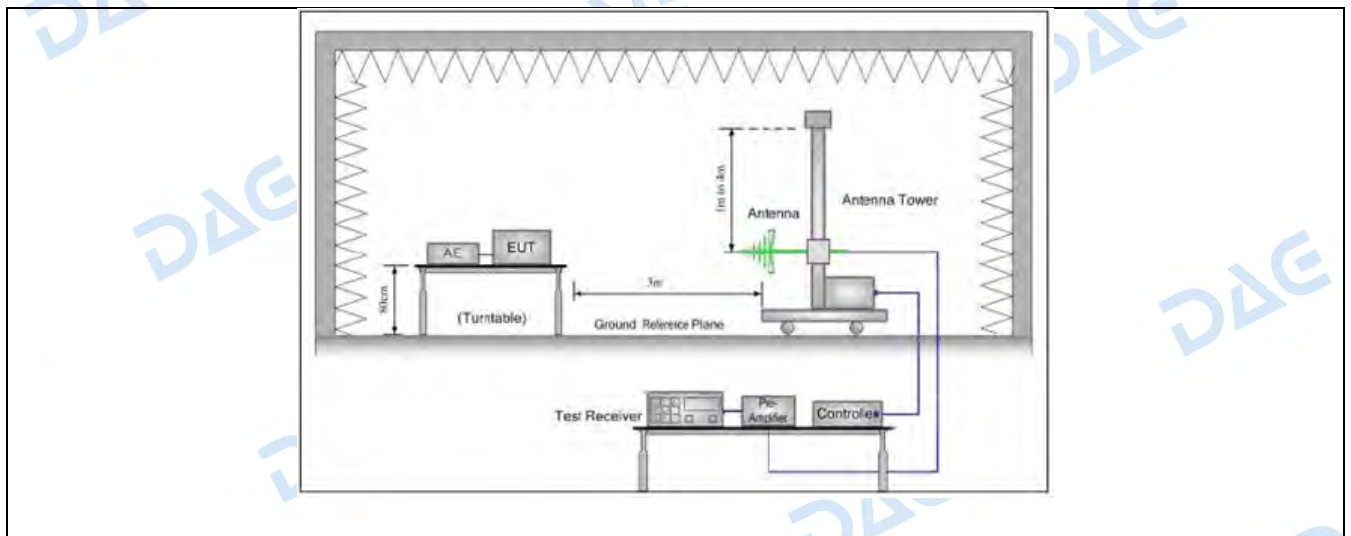
Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.			
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.5.4 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.5.4		

4.9.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.4 °C	Humidity:	55 %
Atmospheric Pressure:	101 kPa		
Pretest mode:	TM1		
Final test mode:	TM1		

4.9.2 Test Setup Diagram:





4.9.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	36.6372	31.25	-5.30	25.95	40.00	-14.05	QP			P	
2	63.7588	37.70	-13.95	23.75	40.00	-16.25	QP			P	
3 *	138.3873	38.09	-7.26	30.83	43.50	-12.67	QP			P	
4	201.3930	39.39	-9.71	29.68	43.50	-13.82	QP			P	
5	281.9945	37.45	-7.93	29.52	46.00	-16.48	QP			P	
6	590.9737	34.53	-1.77	32.76	46.00	-13.24	QP			P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	39.9941	34.75	-7.60	27.15	40.00	-12.85	QP			P	
2 *	63.5356	41.07	-13.82	27.25	40.00	-12.75	QP			P	
3	72.5914	38.84	-12.85	25.99	40.00	-14.01	QP			P	
4	139.8506	35.23	-7.30	27.93	43.50	-15.57	QP			P	
5	201.3930	34.45	-9.62	24.83	43.50	-18.67	QP			P	
6	588.9050	32.81	-1.81	31.00	46.00	-15.00	QP			P	

Remark: Margin=Level - Limit, Level=Test receiver reading + correction factor

The test software will only record the worst test angle and height, and only the worst case will be of GFSK 1MHz recorded in the test report.

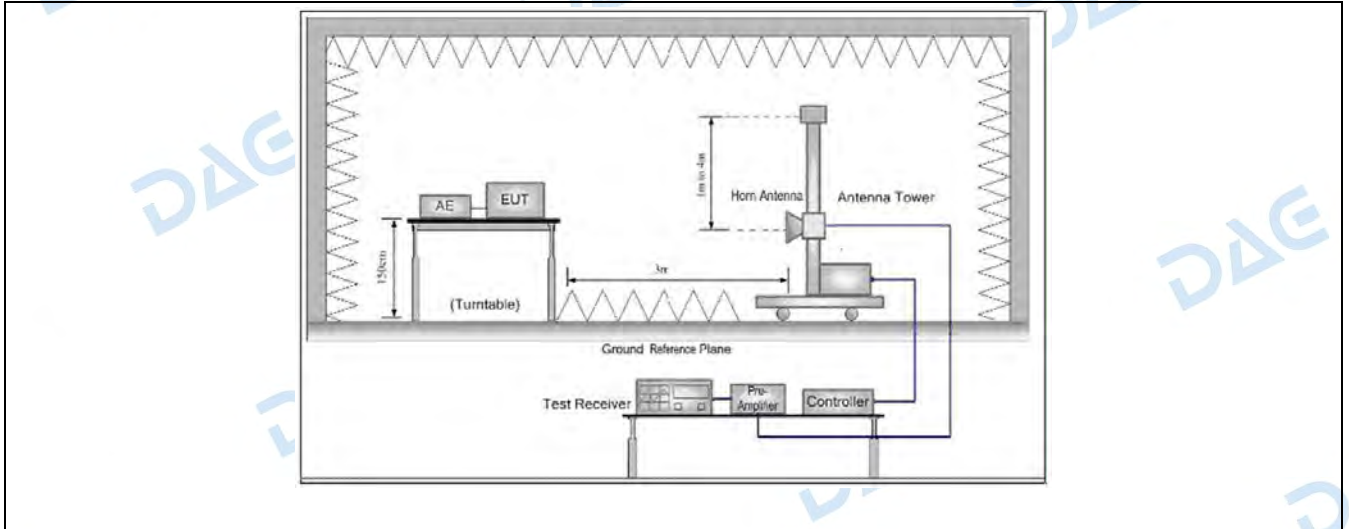
4.10 Emissions in frequency bands (above 1GHz)

Test Requirement:	Refer to 47 CFR 15.247(d), in addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.			
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.5.4 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.5.4		

4.10.1 E.U.T. Operation:

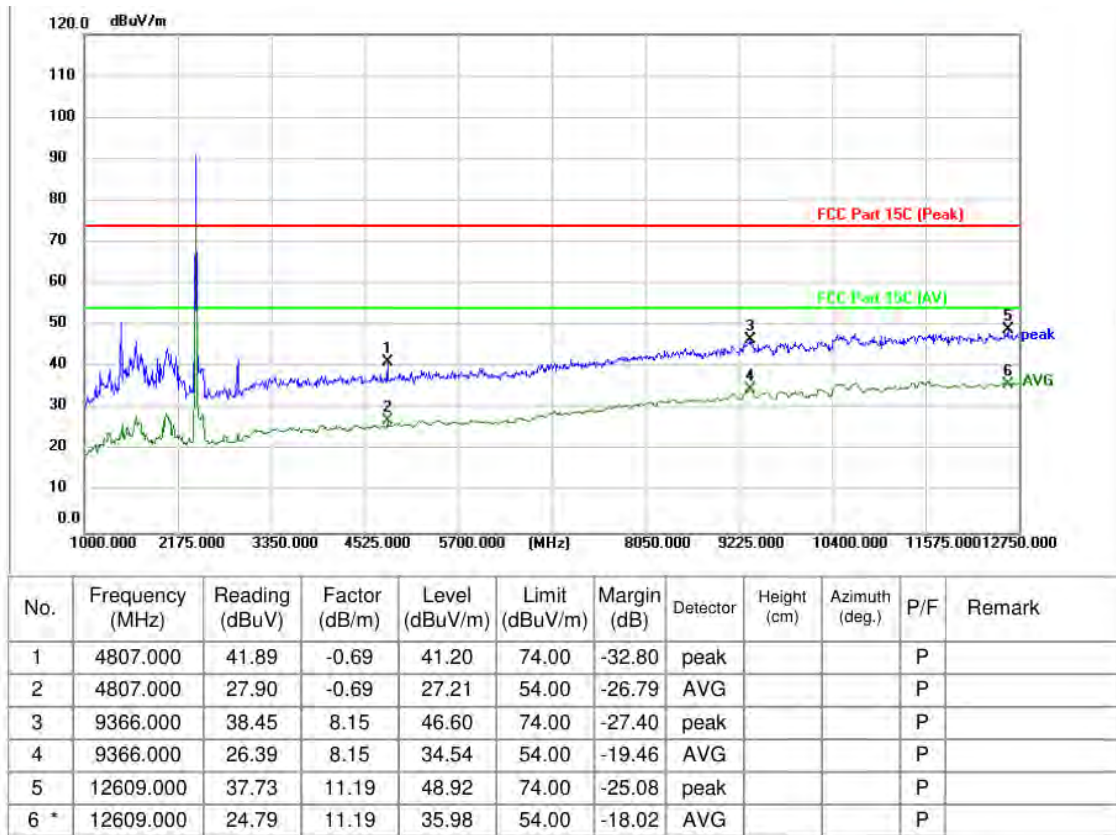
Operating Environment:			
Temperature:	22.8 °C	Humidity:	48 %
		Atmospheric Pressure:	101 kPa
Pretest mode:	TM1		
Final test mode:	TM1		

4.10.2 Test Setup Diagram:

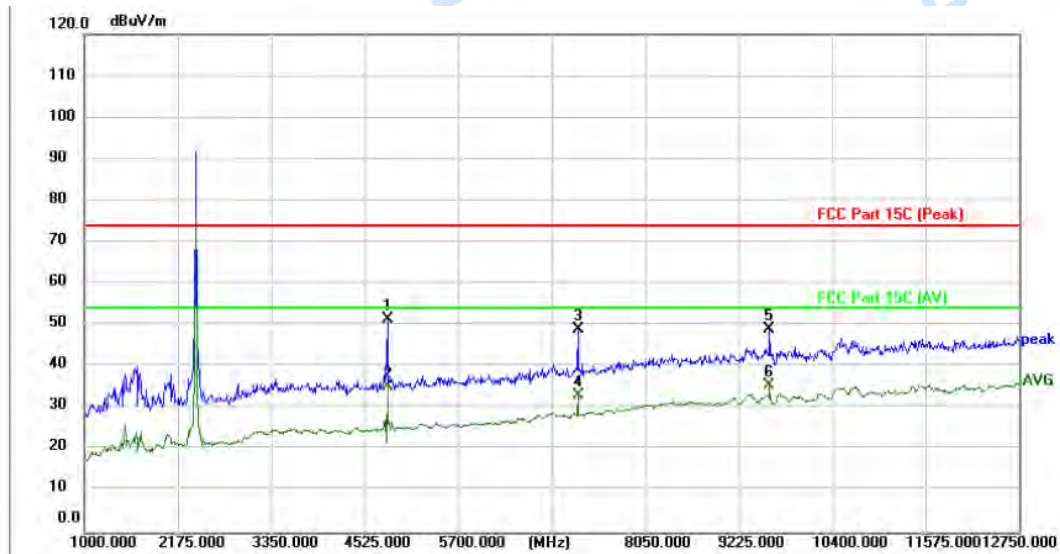


4.10.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: L

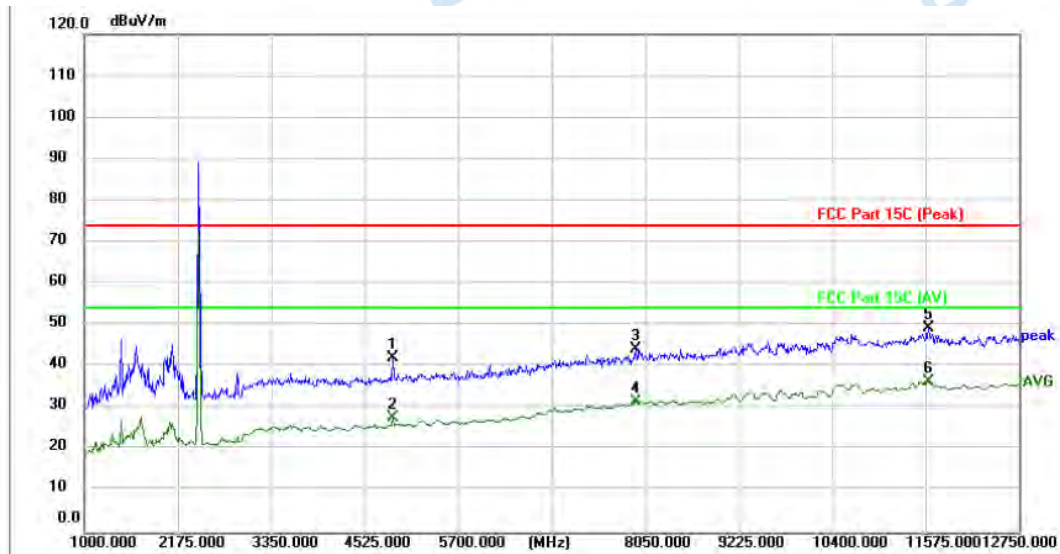


TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: L



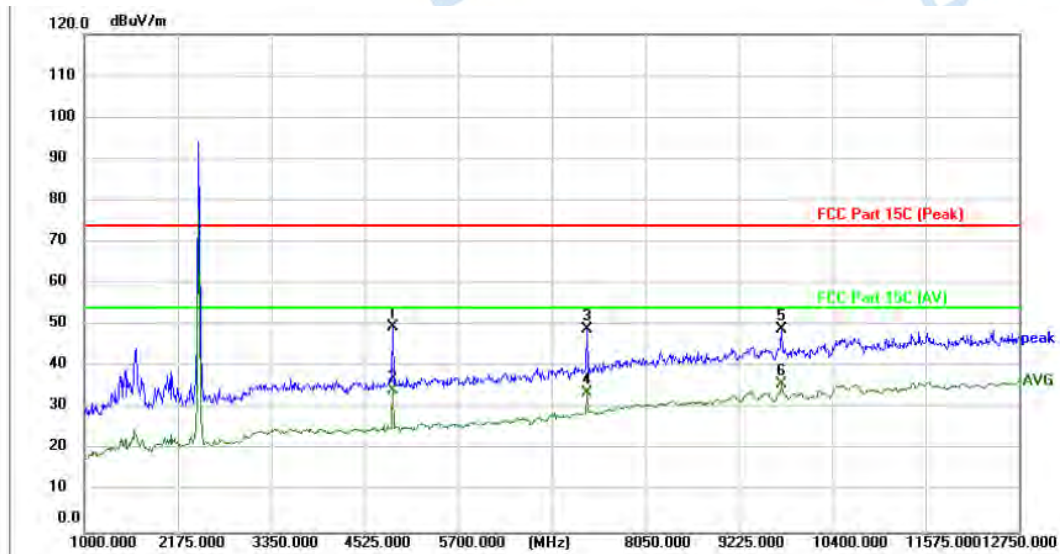
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4807.000	52.28	-0.69	51.59	74.00	-22.41	peak			P	
2	4807.000	35.84	-0.69	35.15	54.00	-18.85	AVG			P	
3	7204.000	44.72	4.37	49.09	74.00	-24.91	peak			P	
4	7204.000	28.90	4.37	33.27	54.00	-20.73	AVG			P	
5	9612.750	40.90	8.10	49.00	74.00	-25.00	peak			P	
6 *	9612.750	27.52	8.10	35.62	54.00	-18.38	AVG			P	

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: M



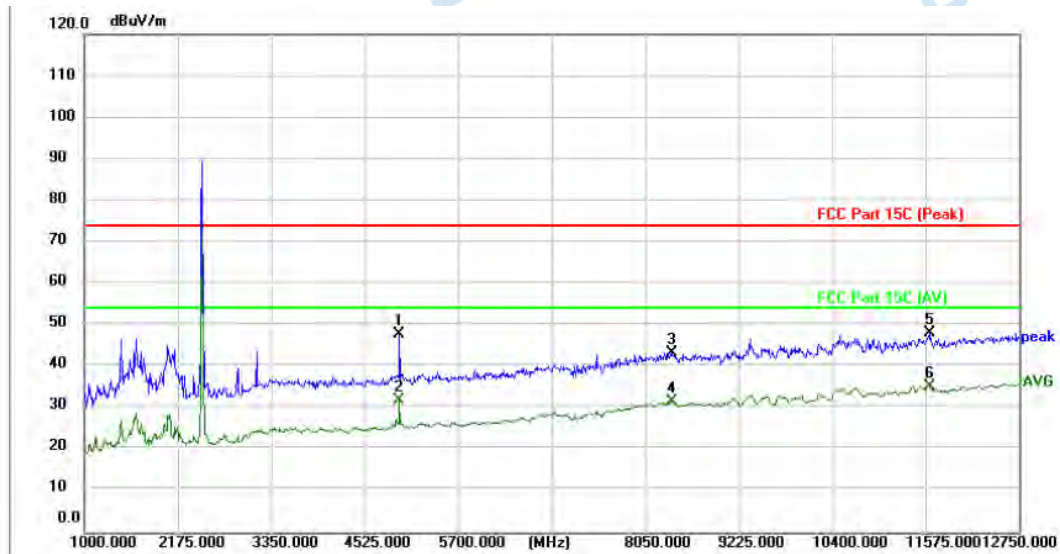
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4877.500	42.60	-0.45	42.15	74.00	-31.85	peak			P	
2	4877.500	28.32	-0.45	27.87	54.00	-26.13	AVG			P	
3	7932.500	37.82	6.44	44.26	74.00	-29.74	peak			P	
4	7932.500	25.13	6.44	31.57	54.00	-22.43	AVG			P	
5	11610.250	39.58	9.74	49.32	74.00	-24.68	peak			P	
6 *	11610.250	26.67	9.74	36.41	54.00	-17.59	AVG			P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: M



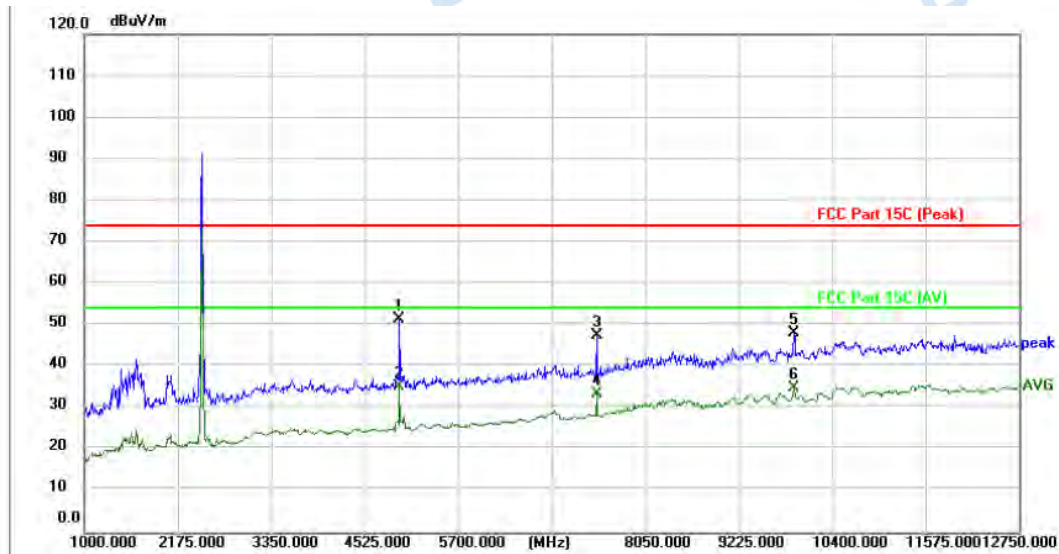
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4877.500	50.22	-0.45	49.77	74.00	-24.23	peak			P	
2	4877.500	34.72	-0.45	34.27	54.00	-19.73	AVG			P	
3	7321.500	44.43	4.57	49.00	74.00	-25.00	peak			P	
4	7321.500	29.17	4.57	33.74	54.00	-20.26	AVG			P	
5	9765.500	40.88	8.09	48.97	74.00	-25.03	peak			P	
6 *	9765.500	27.63	8.09	35.72	54.00	-18.28	AVG			P	

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4959.750	48.12	-0.17	47.95	74.00	-26.05	peak			P	
2	4959.750	32.08	-0.17	31.91	54.00	-22.09	AVG			P	
3	8379.000	36.17	7.26	43.43	74.00	-30.57	peak			P	
4	8379.000	24.40	7.26	31.66	54.00	-22.34	AVG			P	
5	11633.750	38.41	9.75	48.16	74.00	-25.84	peak			P	
6 *	11633.750	25.37	9.75	35.12	54.00	-18.88	AVG			P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4959.750	51.73	-0.17	51.56	74.00	-22.44	peak			P	
2 *	4959.750	35.48	-0.17	35.31	54.00	-18.69	AVG			P	
3	7439.000	42.77	4.78	47.55	74.00	-26.45	peak			P	
4	7439.000	28.67	4.78	33.45	54.00	-20.55	AVG			P	
5	9918.250	40.20	8.08	48.28	74.00	-25.72	peak			P	
6	9918.250	26.81	8.08	34.89	54.00	-19.11	AVG			P	

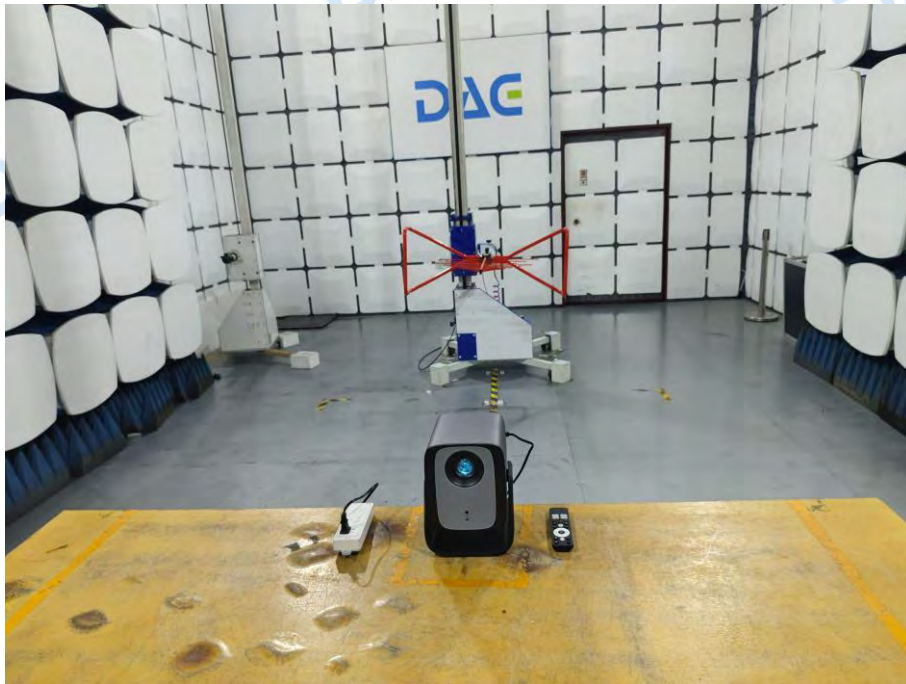
1. Remark: Margin=Level - Limit, Level=Test receiver reading + correction factor
2. Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured, so the noise floor test chart was not uploaded.
3. The test software will only record the worst test angle and height, and only the worst case will be recorded in the test report.

5 TEST SETUP PHOTOS

Conducted Emission at AC power line



Emissions in frequency bands (below 1GHz)



Emissions in frequency bands (above 1GHz)

6 PHOTOS OF THE EUT

Refer to Appendix - EUT Photos for EUT External Photo and Internal Photo.

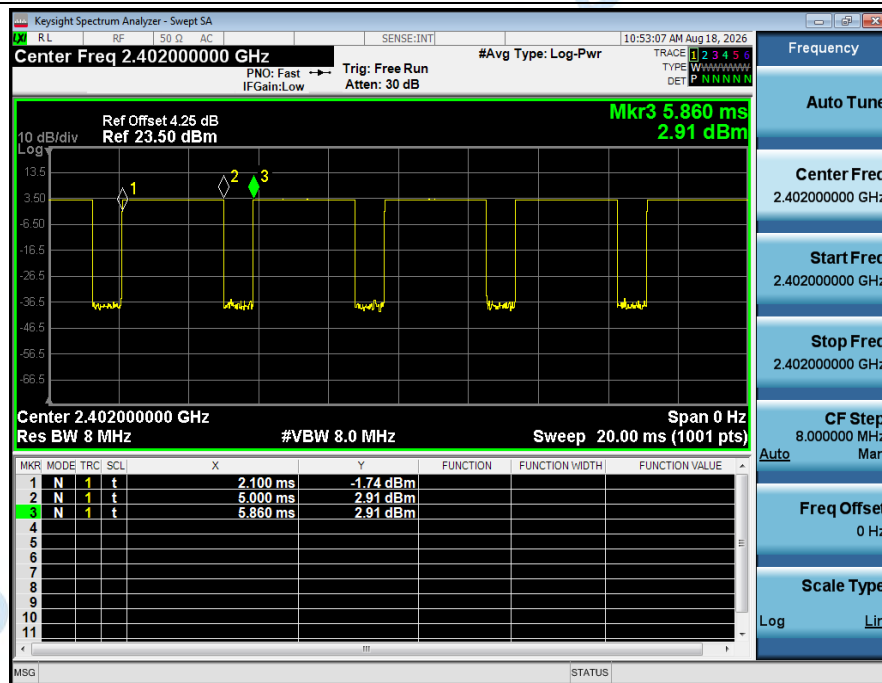
Appendix

FCC_BT (Part15.247) Test Data

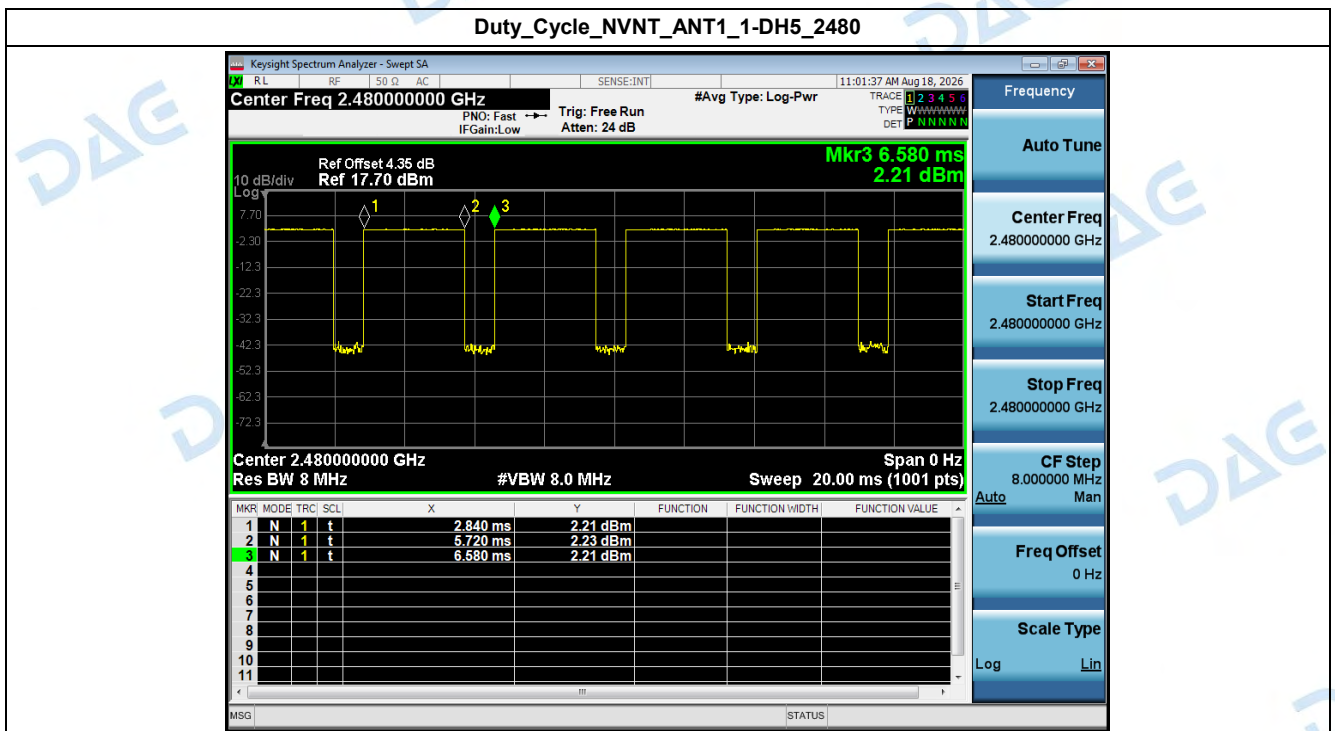
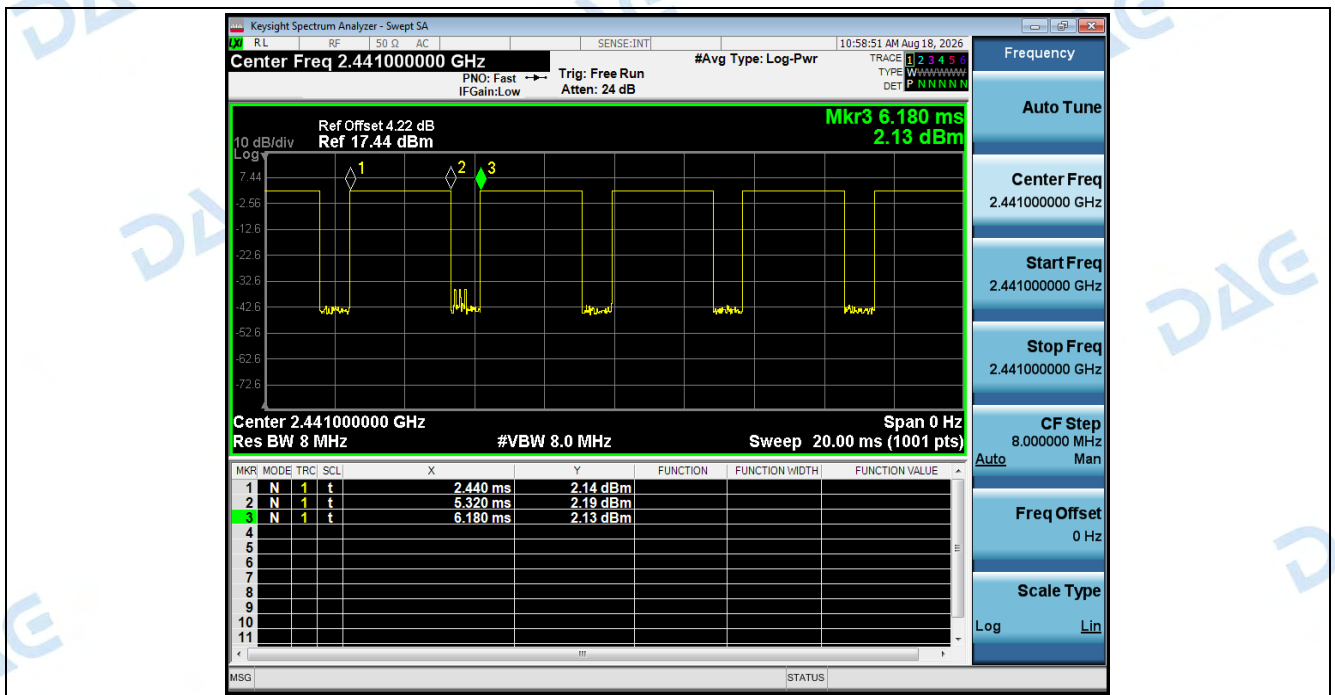
1. Duty Cycle

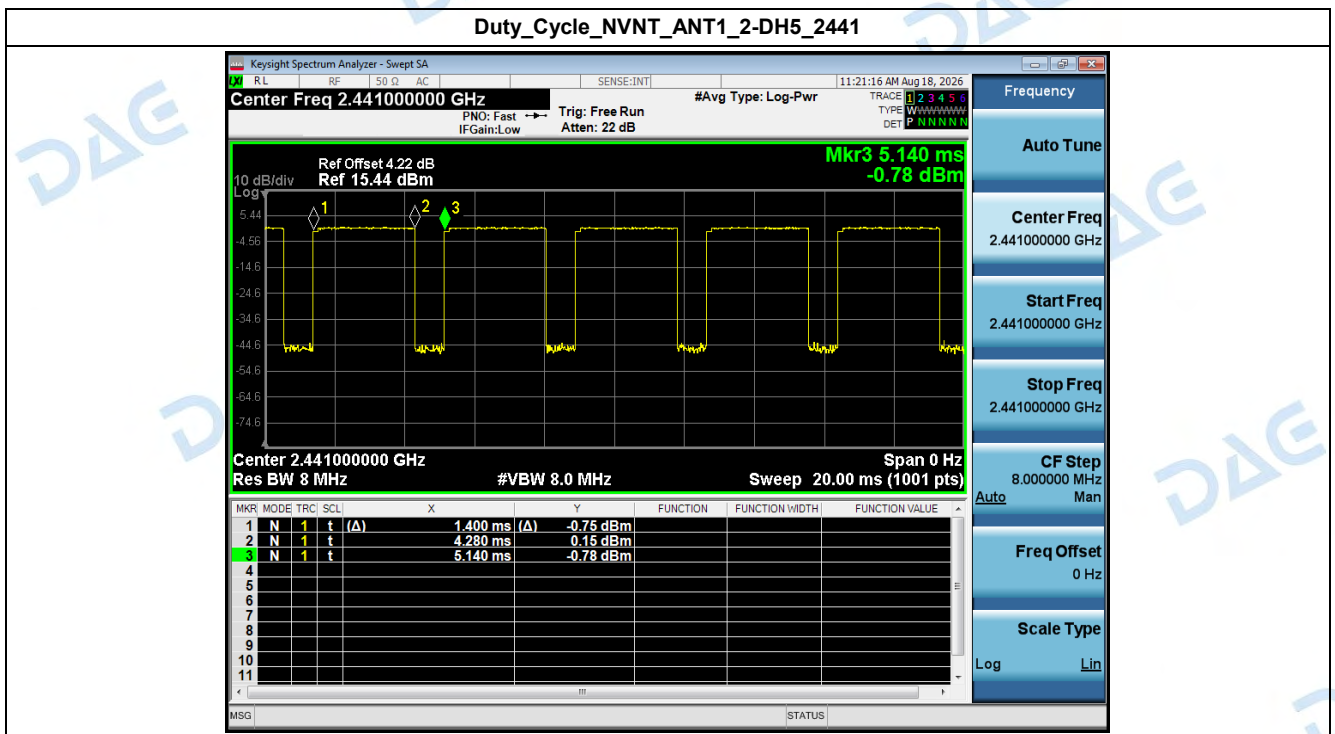
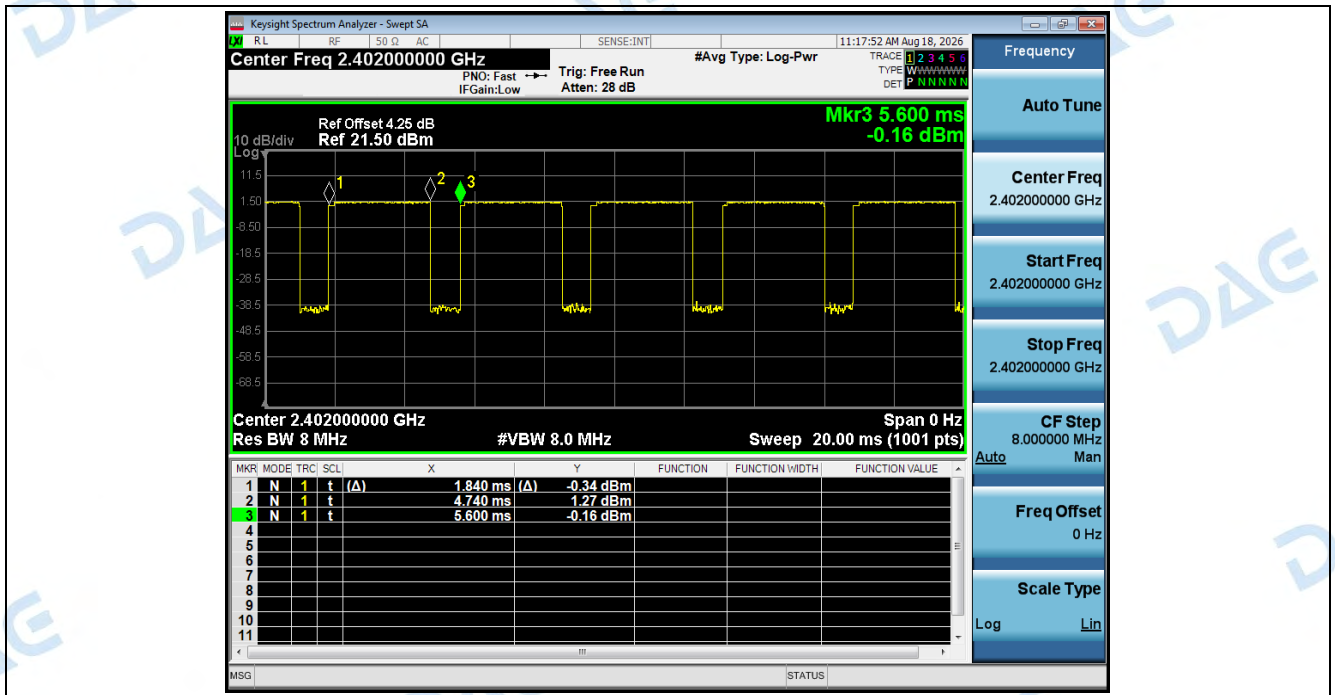
Condition	Antenna	Rate	Frequency (MHz)	Dutycycle(%)	Duty_factor
NVNT	ANT1	1-DH5	2402.00	77.66	1.10
NVNT	ANT1	1-DH5	2441.00	77.54	1.10
NVNT	ANT1	1-DH5	2480.00	77.54	1.10
NVNT	ANT1	2-DH5	2402.00	77.66	1.10
NVNT	ANT1	2-DH5	2441.00	77.54	1.10
NVNT	ANT1	2-DH5	2480.00	77.66	1.10
NVNT	ANT1	3-DH5	2402.00	77.66	1.10
NVNT	ANT1	3-DH5	2441.00	77.66	1.10
NVNT	ANT1	3-DH5	2480.00	77.66	1.10

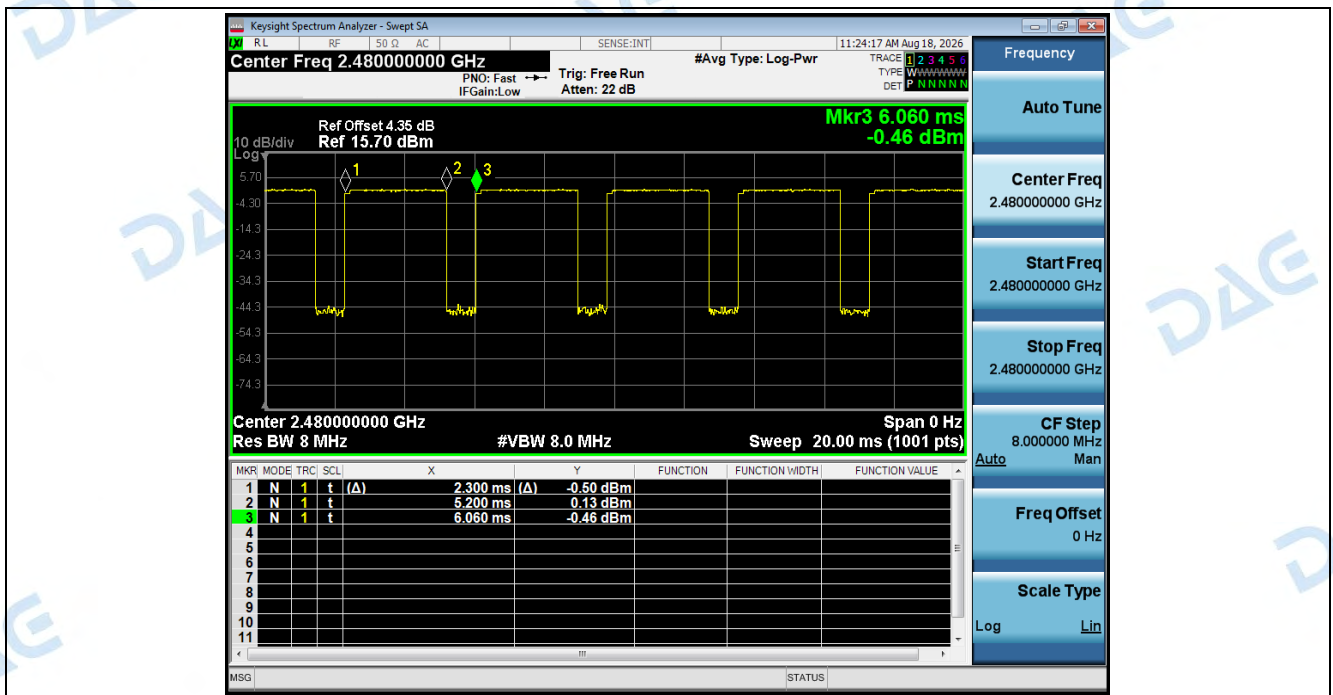
Duty_Cycle_NVNT_ANT1_1-DH5_2402



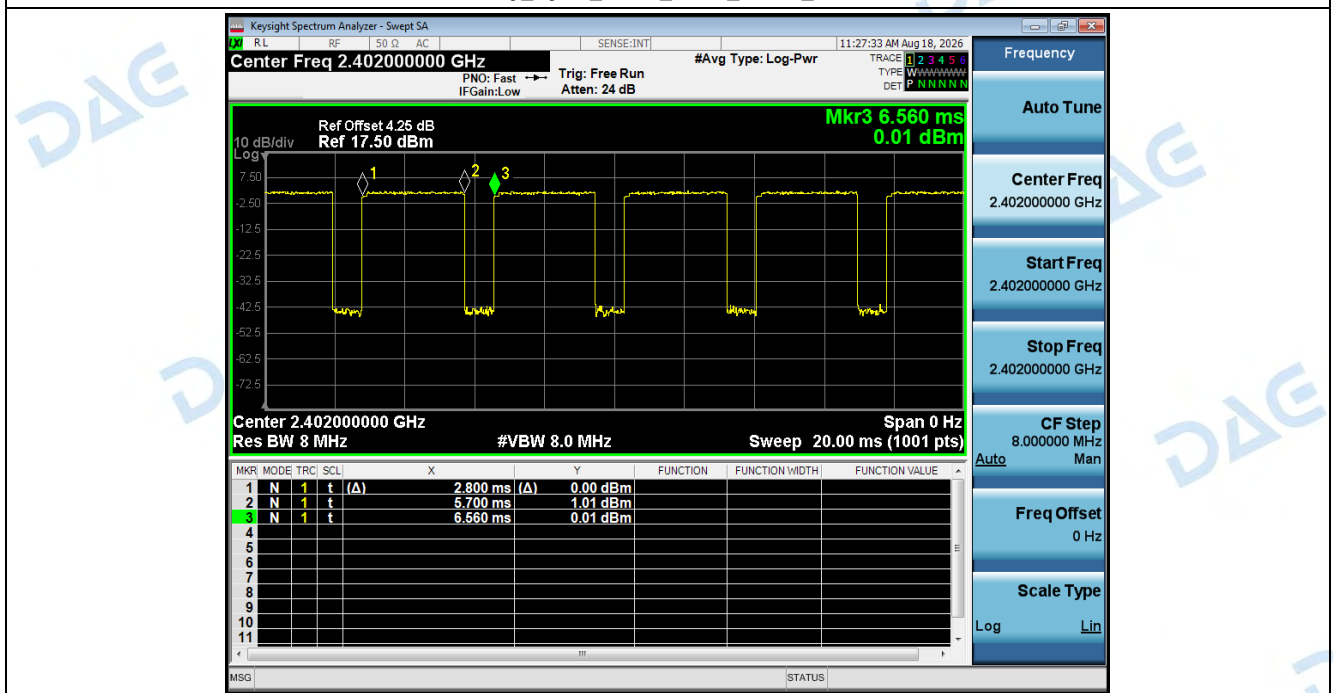
Duty_Cycle_NVNT_ANT1_1-DH5_2441



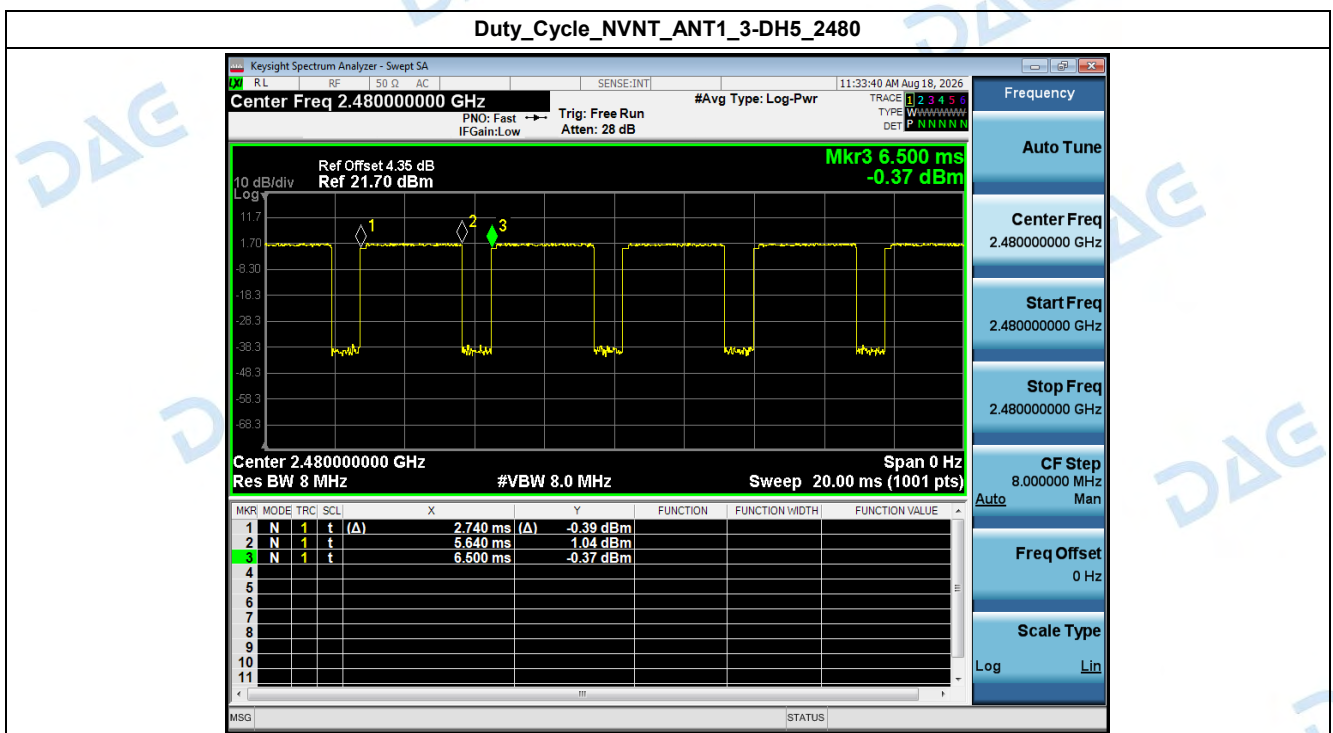
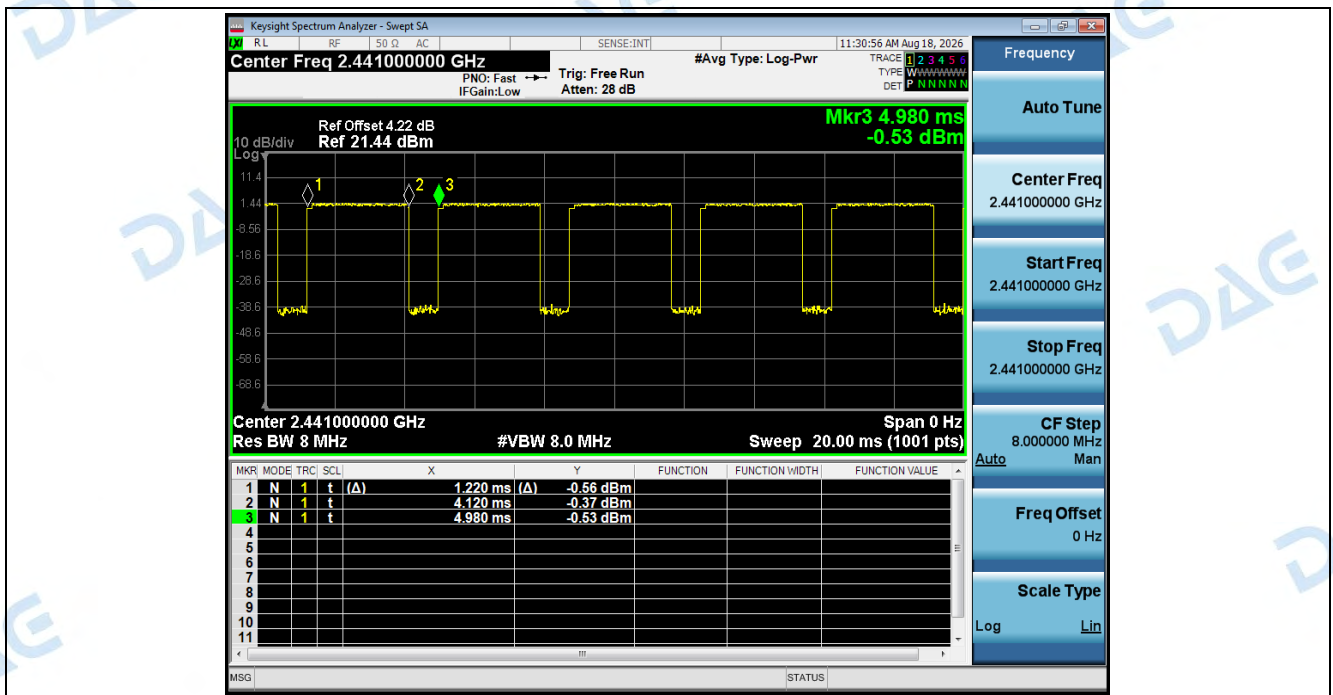




Duty_Cycle_NVNT_ANT1_3-DH5_2402



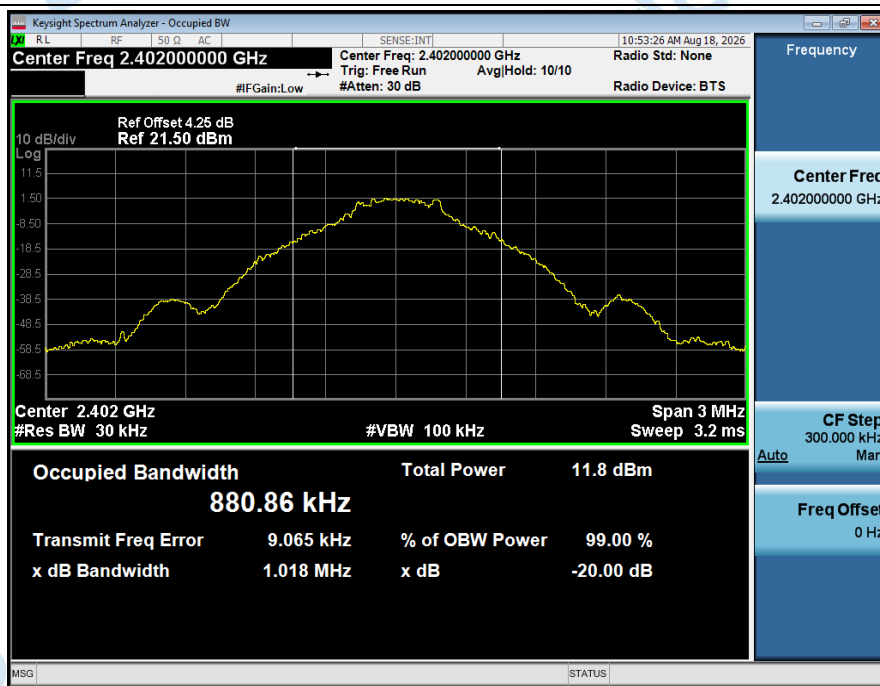
Duty_Cycle_NVNT_ANT1_3-DH5_2441



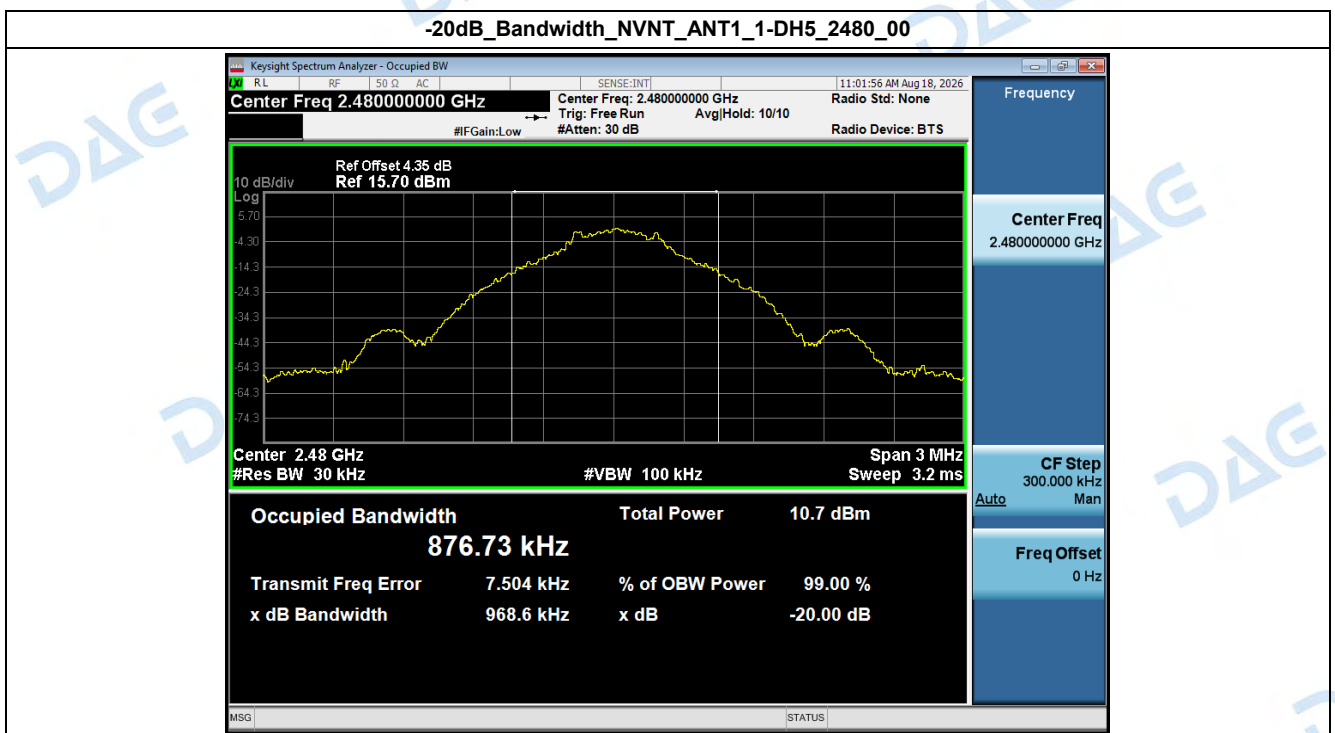
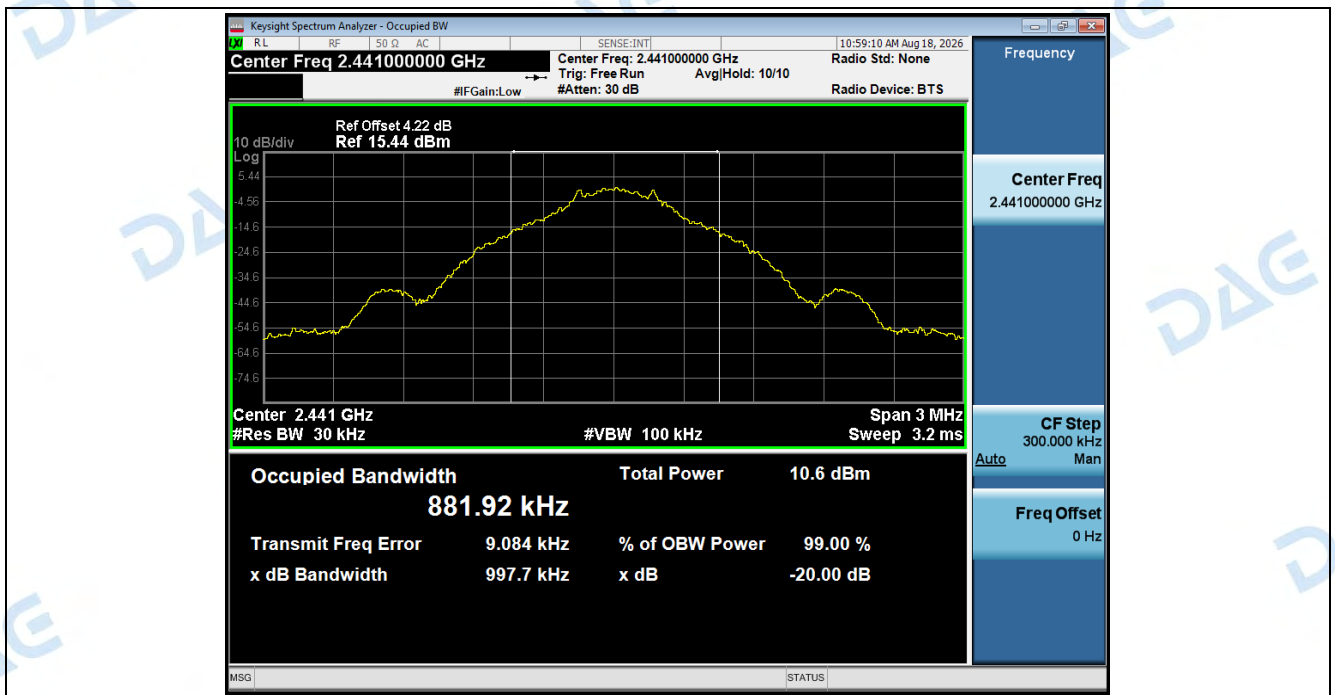
2. -20dB Bandwidth

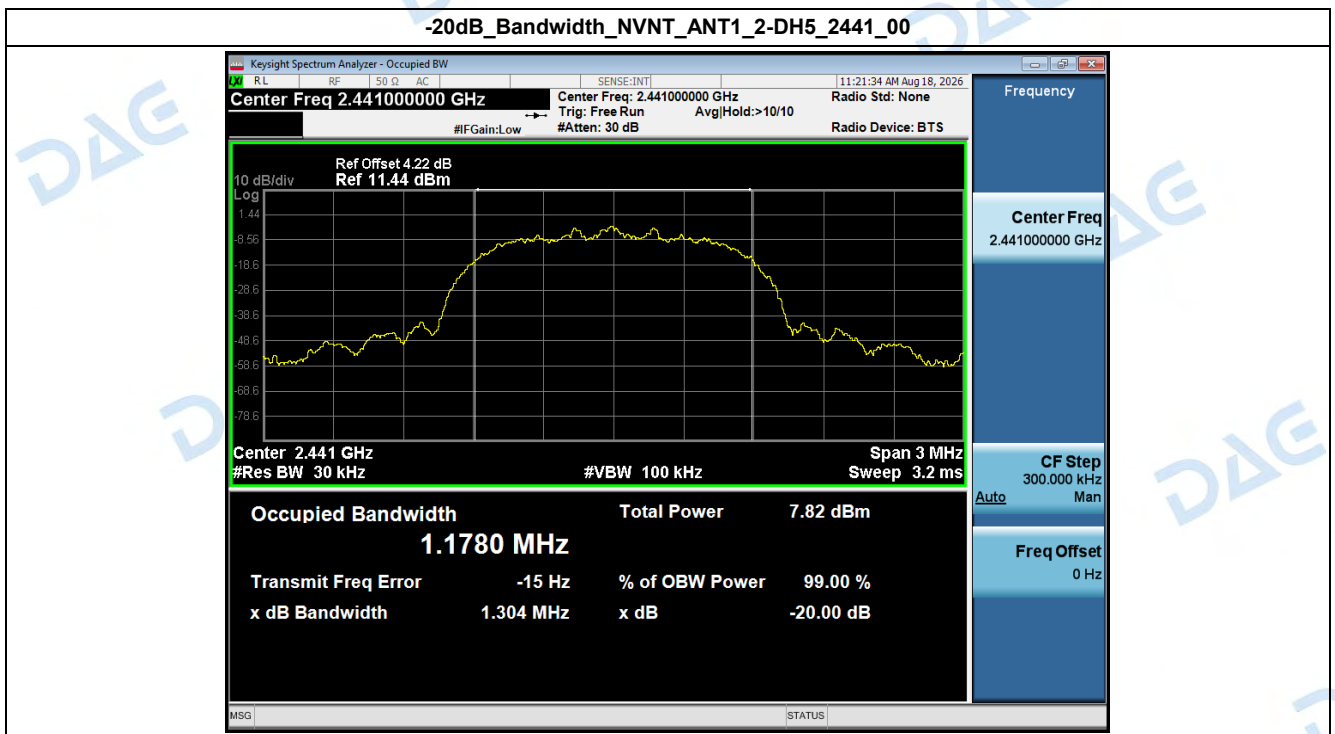
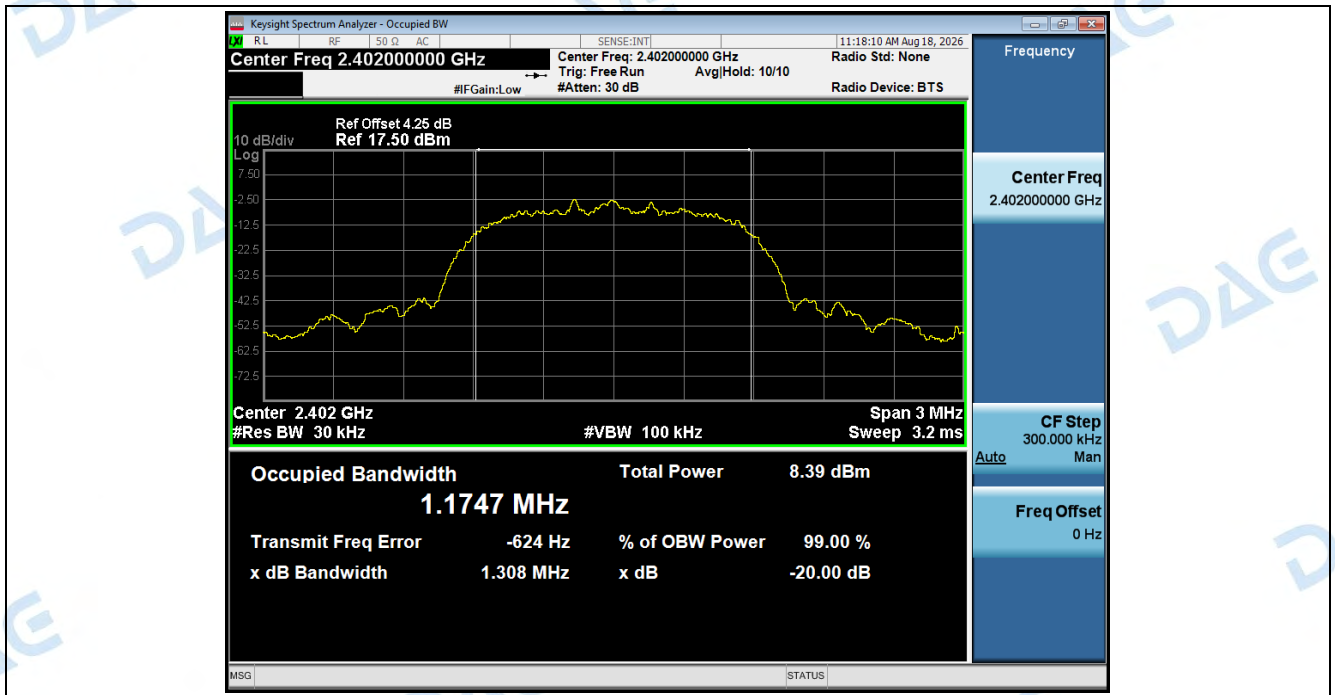
Condition	Antenna	Modulation	Frequency (MHz)	-20dB BW(MHz)	If larger than CFS
NVNT	ANT1	1-DH5	2402.00	1.018	Yes
NVNT	ANT1	1-DH5	2441.00	0.998	No
NVNT	ANT1	1-DH5	2480.00	0.969	No
NVNT	ANT1	2-DH5	2402.00	1.308	Yes
NVNT	ANT1	2-DH5	2441.00	1.304	Yes
NVNT	ANT1	2-DH5	2480.00	1.320	Yes
NVNT	ANT1	3-DH5	2402.00	1.301	Yes
NVNT	ANT1	3-DH5	2441.00	1.319	Yes
NVNT	ANT1	3-DH5	2480.00	1.291	Yes

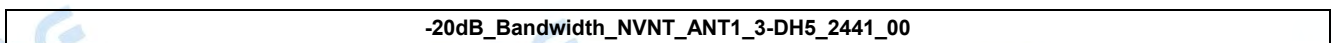
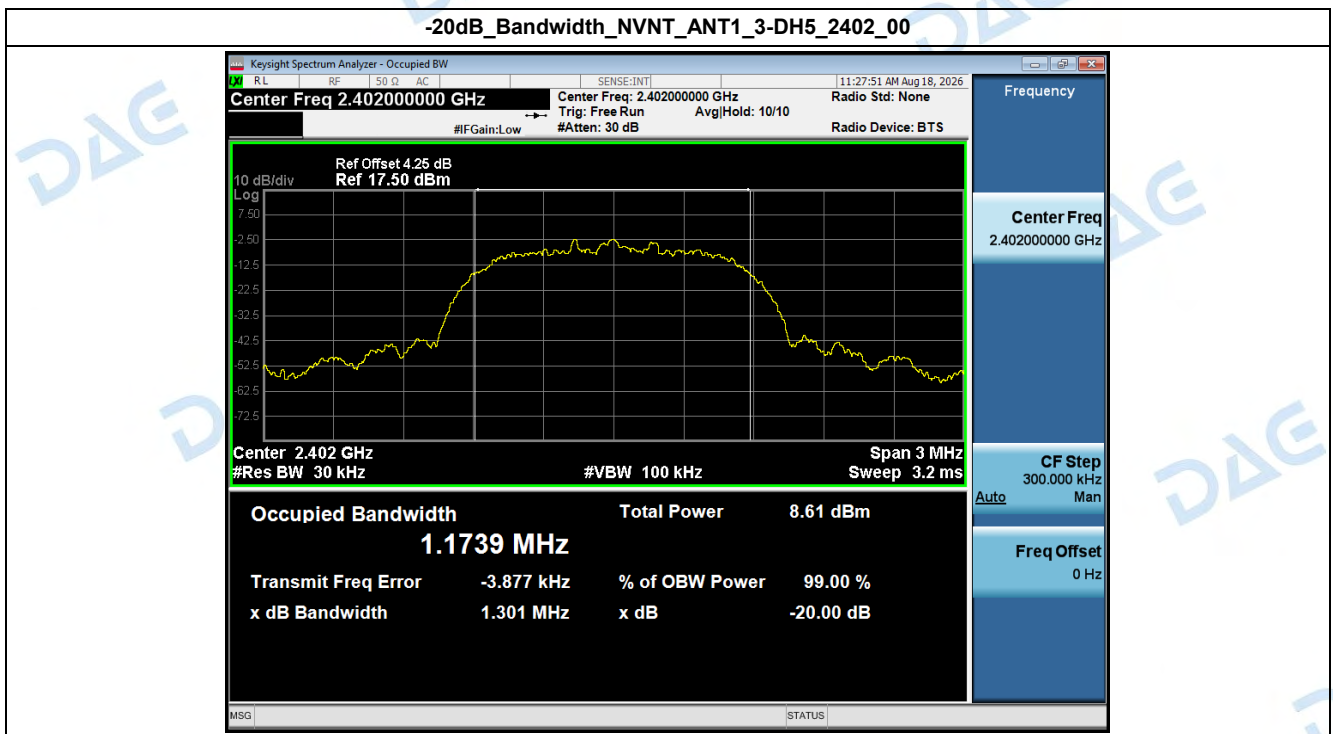
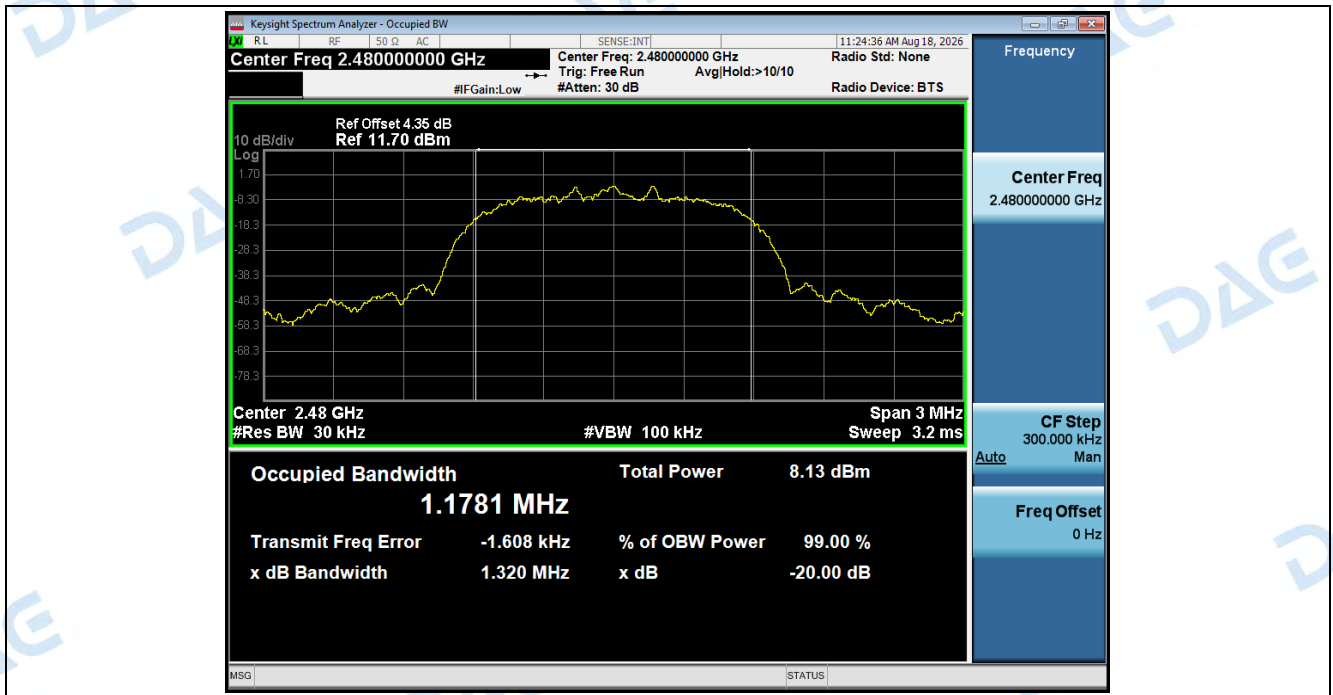
-20dB_Bandwidth_NVNT_ANT1_1-DH5_2402_00

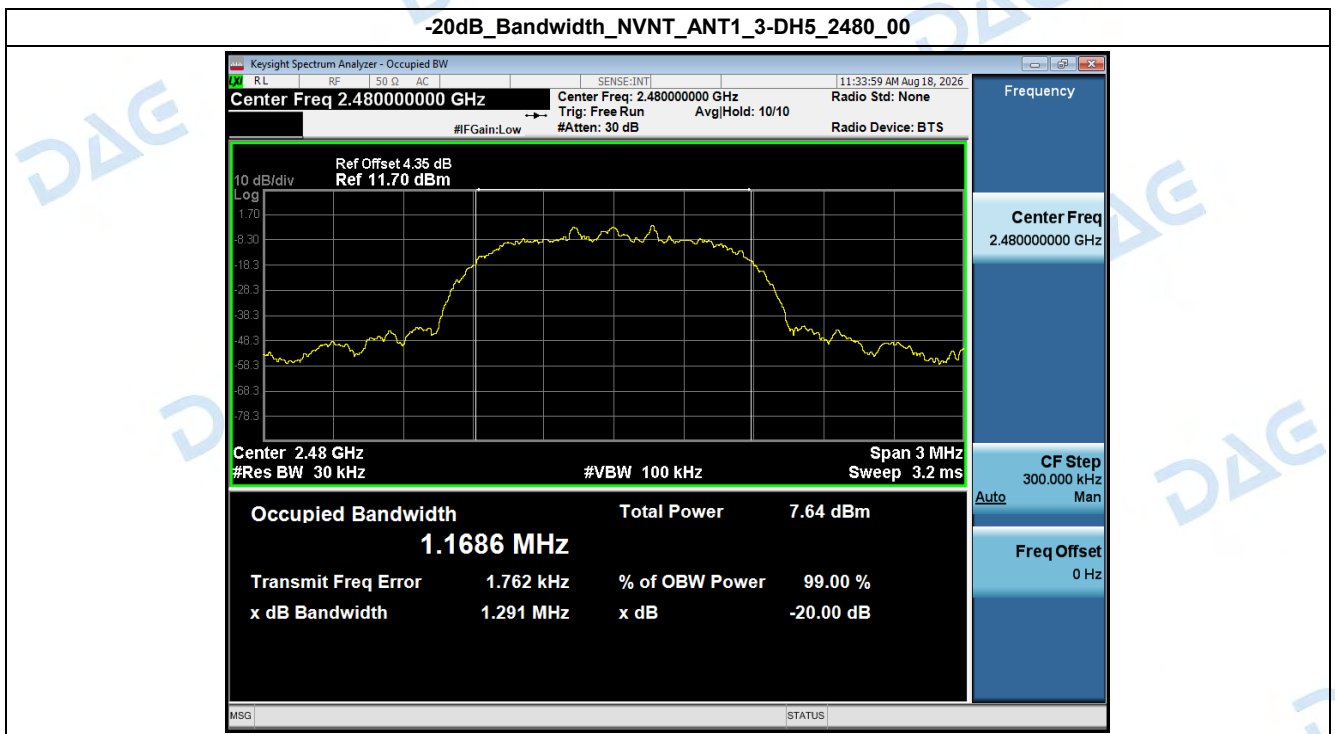
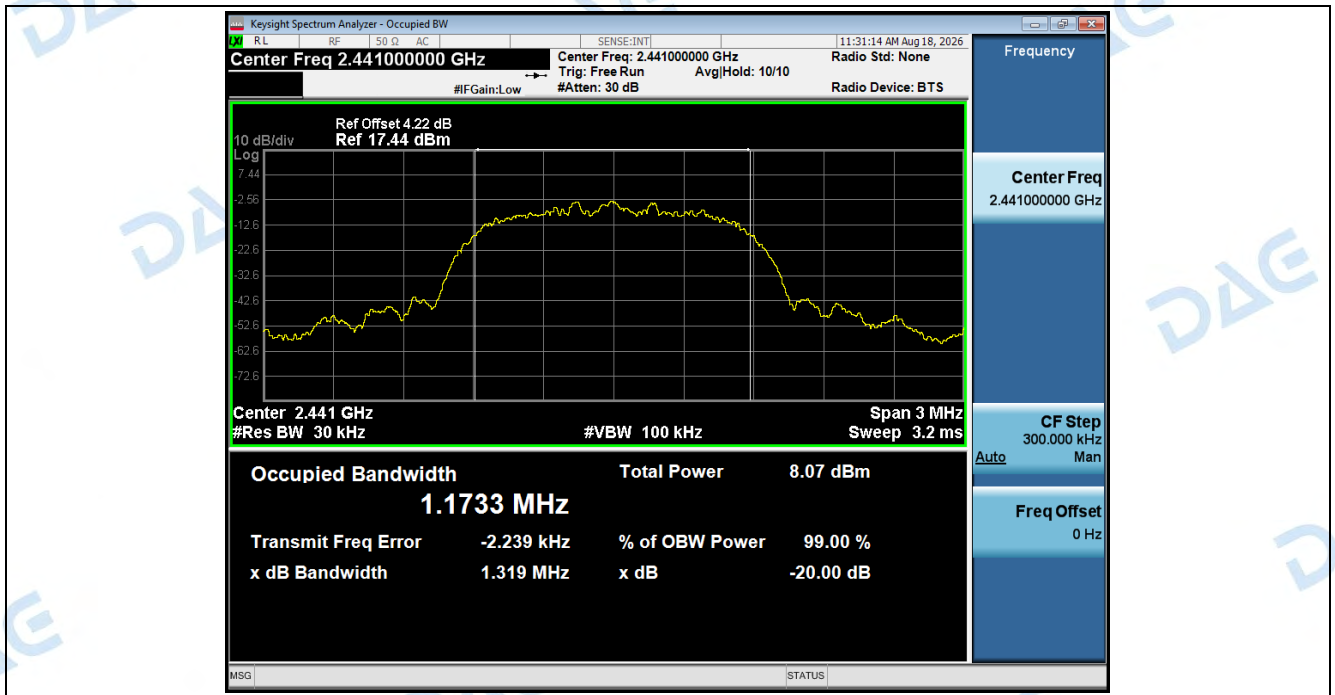


-20dB_Bandwidth_NVNT_ANT1_1-DH5_2441_00





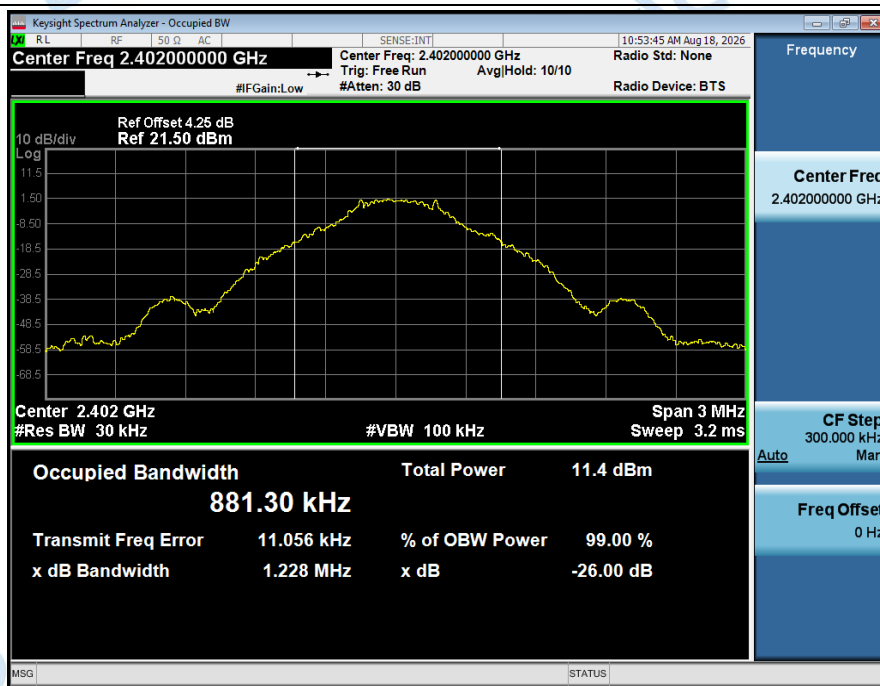




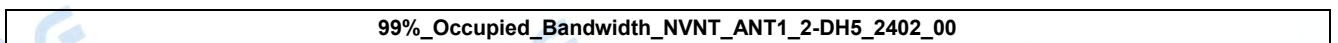
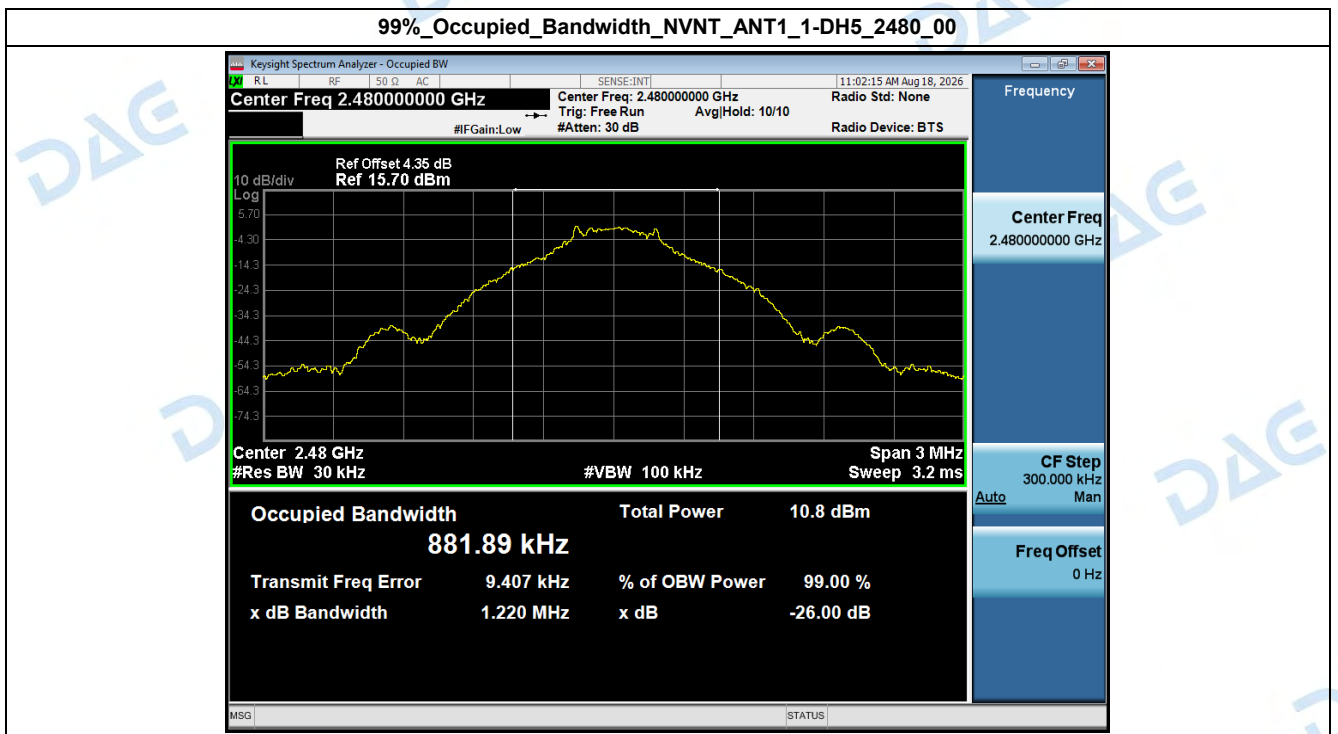
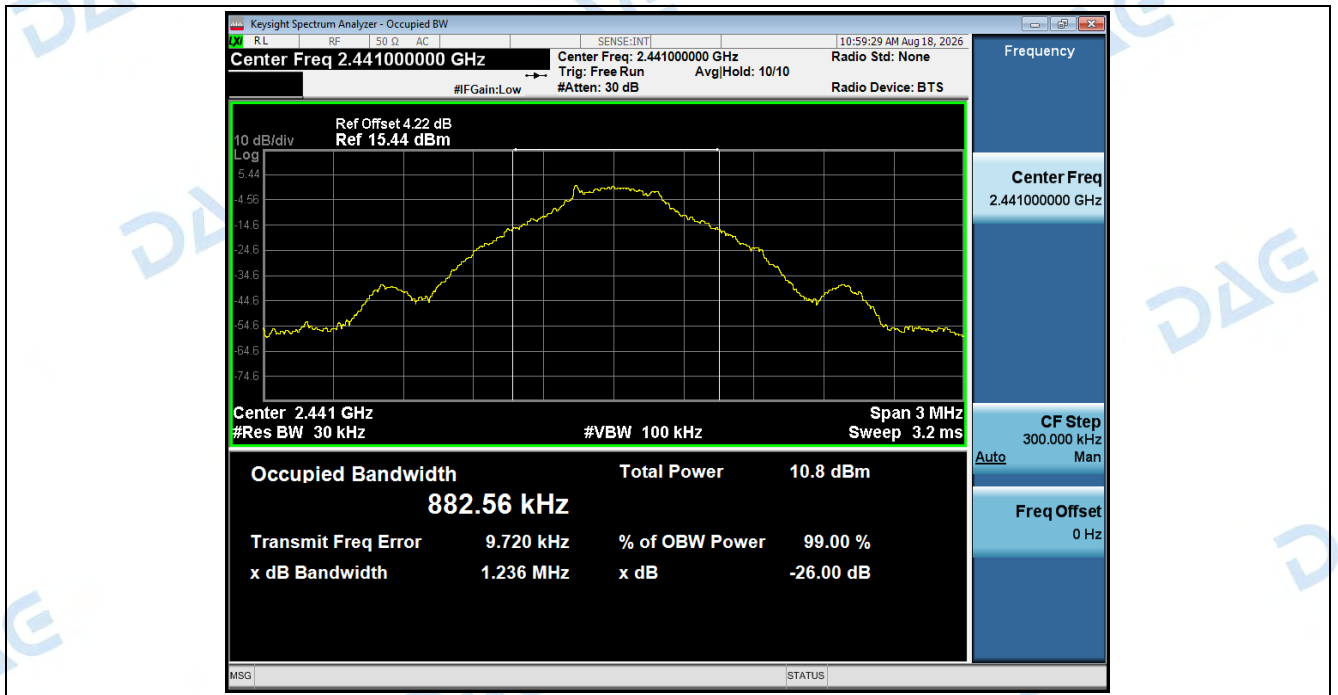
3. 99% Occupied Bandwidth

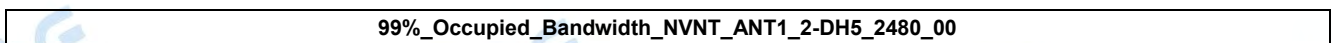
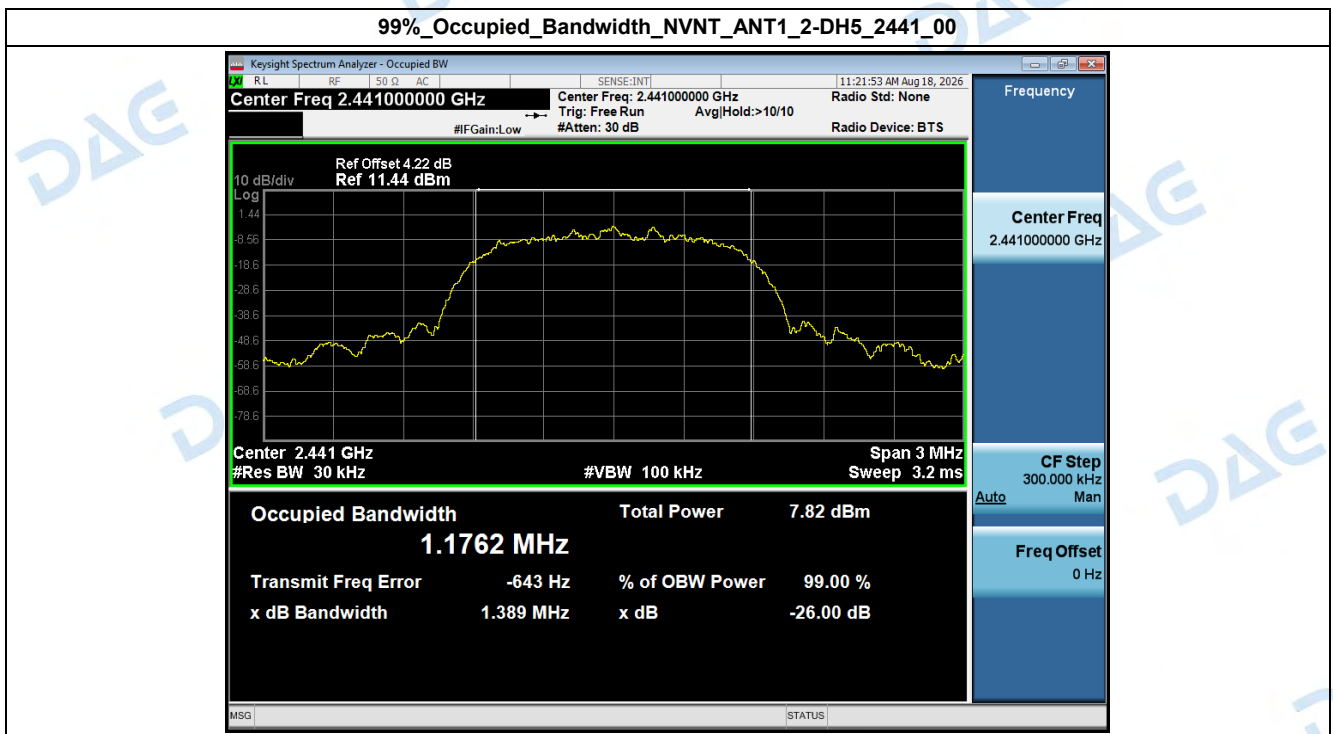
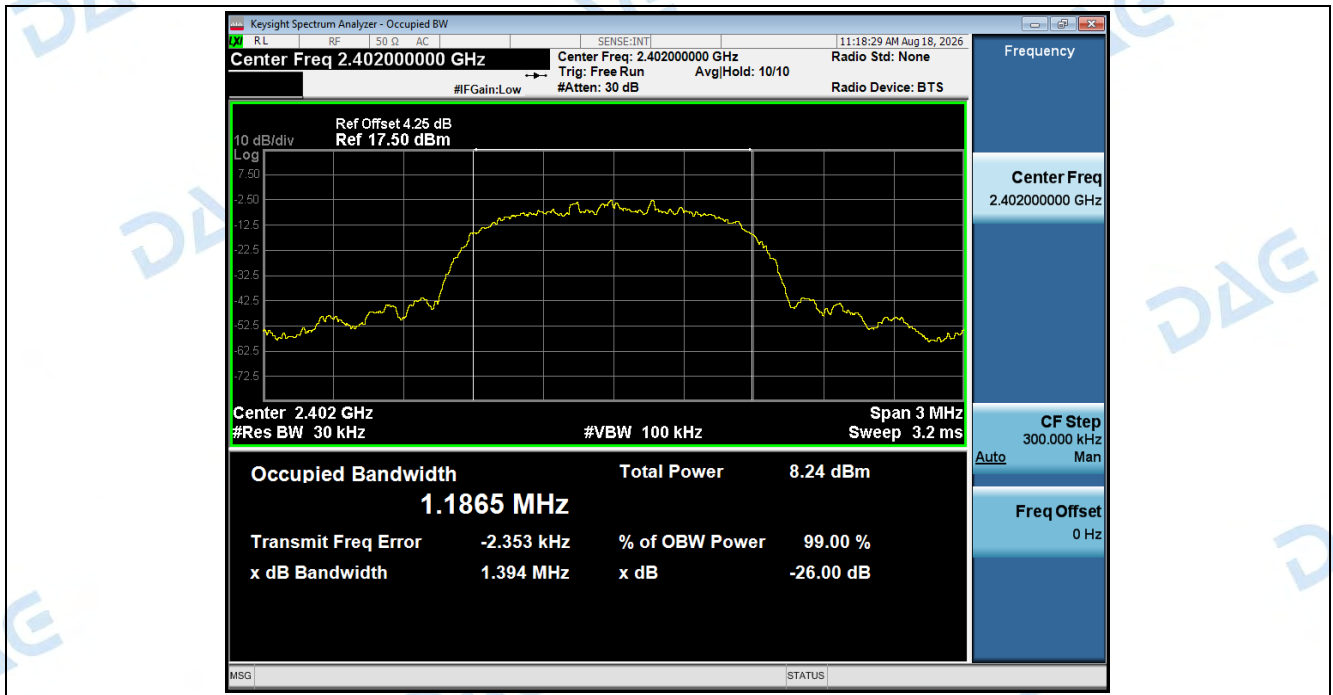
Condition	Antenna	Modulation	Frequency (MHz)	99% BW (MHz)
NVNT	ANT1	1-DH5	2402.00	0.881
NVNT	ANT1	1-DH5	2441.00	0.883
NVNT	ANT1	1-DH5	2480.00	0.882
NVNT	ANT1	2-DH5	2402.00	1.186
NVNT	ANT1	2-DH5	2441.00	1.176
NVNT	ANT1	2-DH5	2480.00	1.179
NVNT	ANT1	3-DH5	2402.00	1.172
NVNT	ANT1	3-DH5	2441.00	1.176
NVNT	ANT1	3-DH5	2480.00	1.174

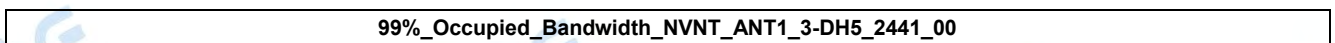
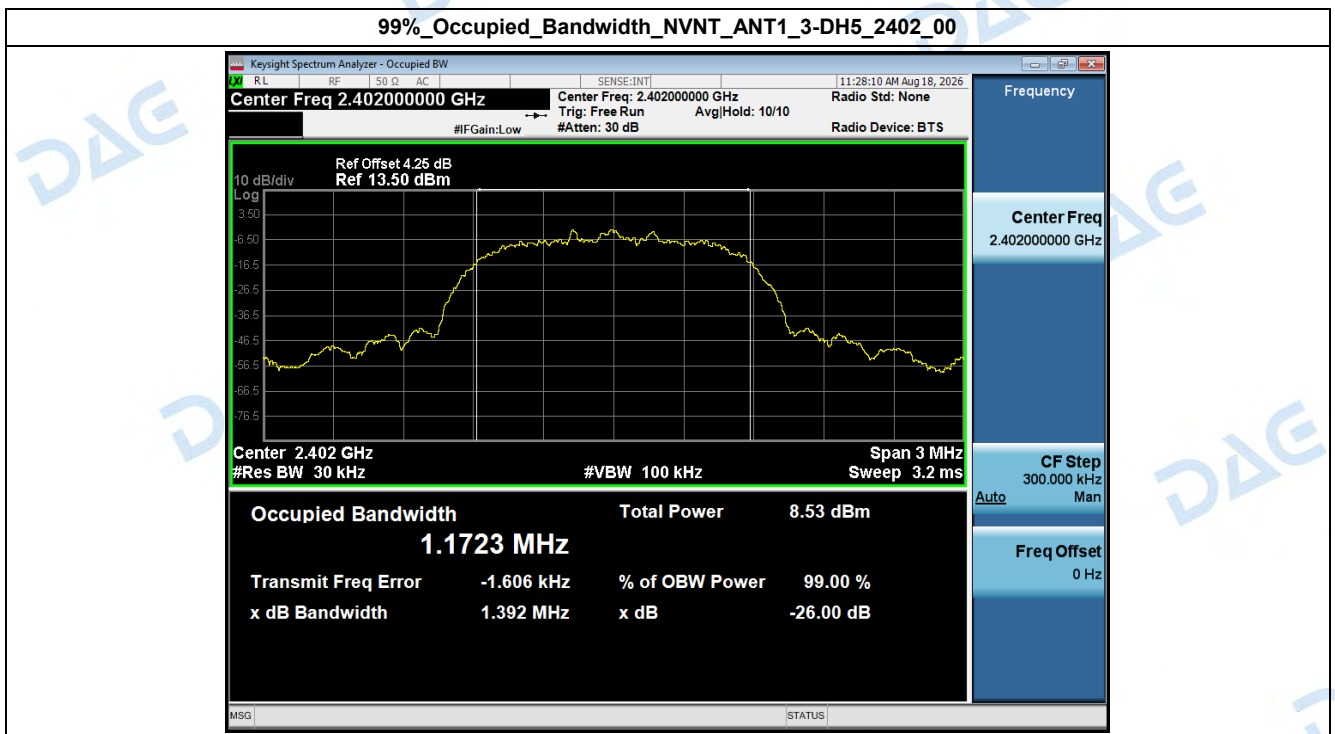
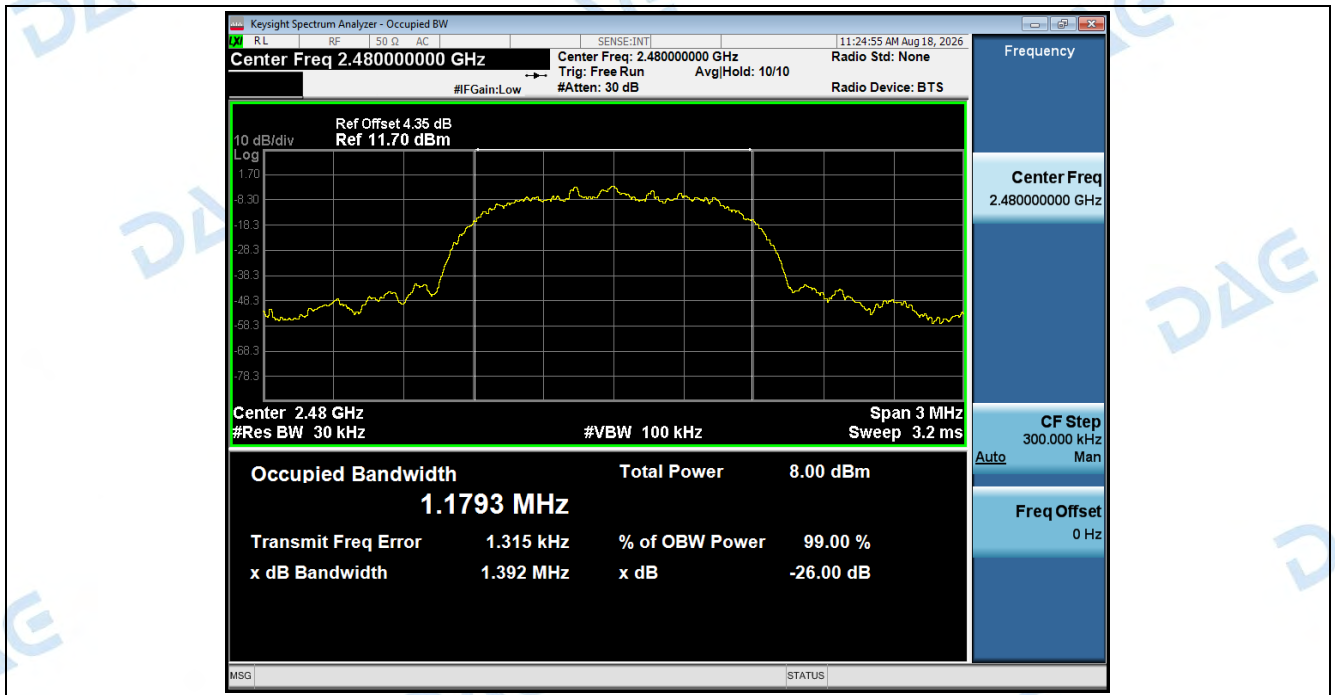
99%_Occupied_Bandwidth_NVNT_ANT1_1-DH5_2402_00

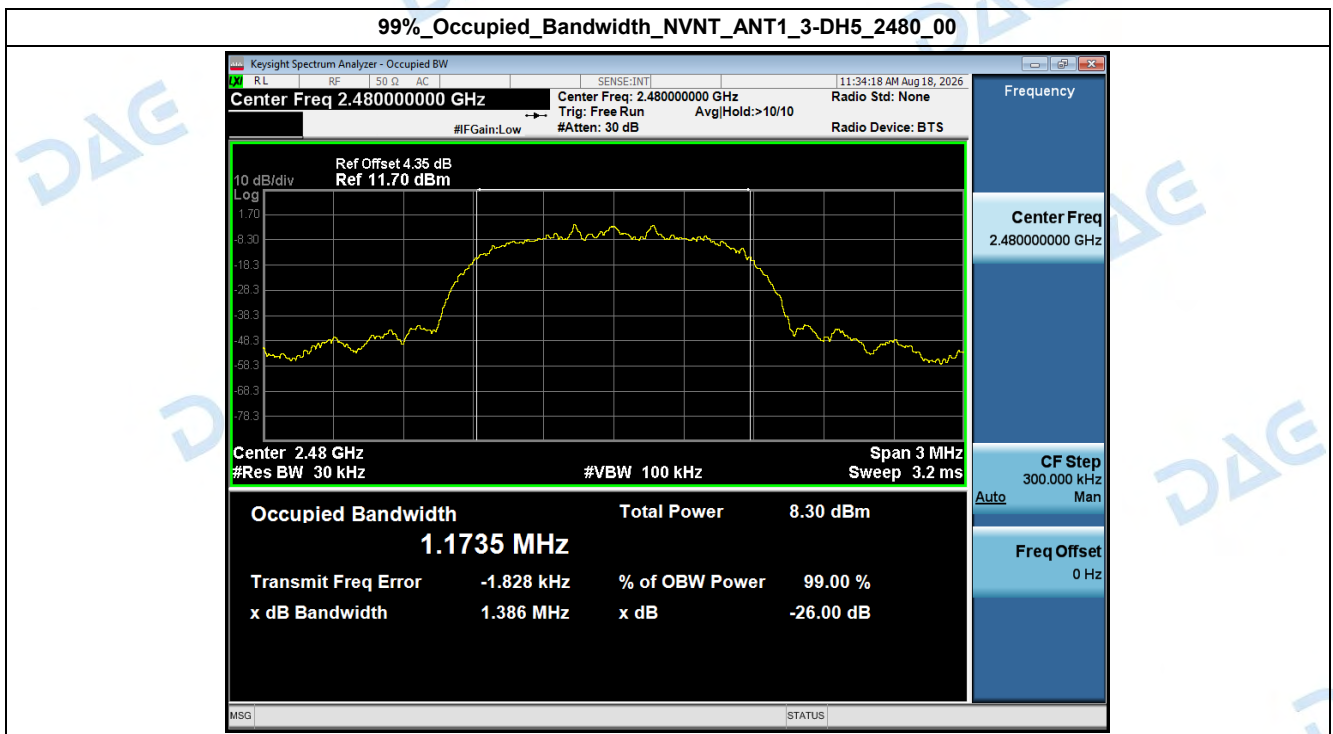
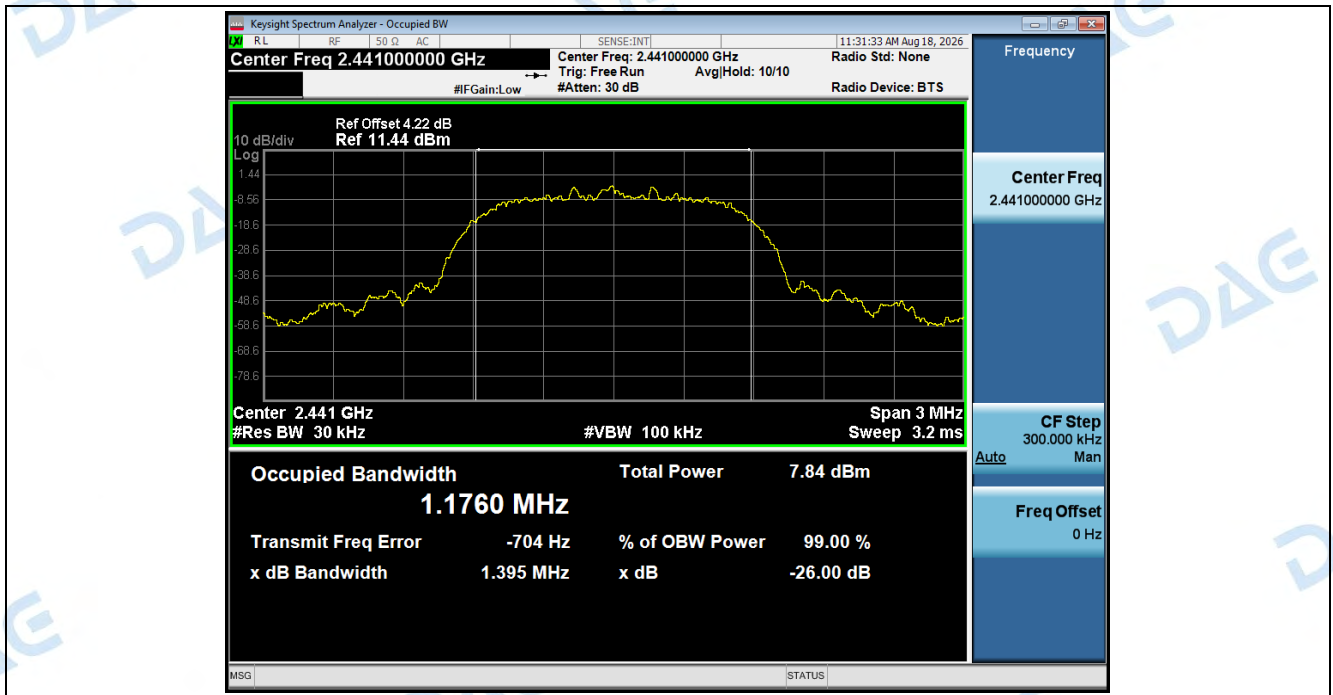


99%_Occupied_Bandwidth_NVNT_ANT1_1-DH5_2441_00





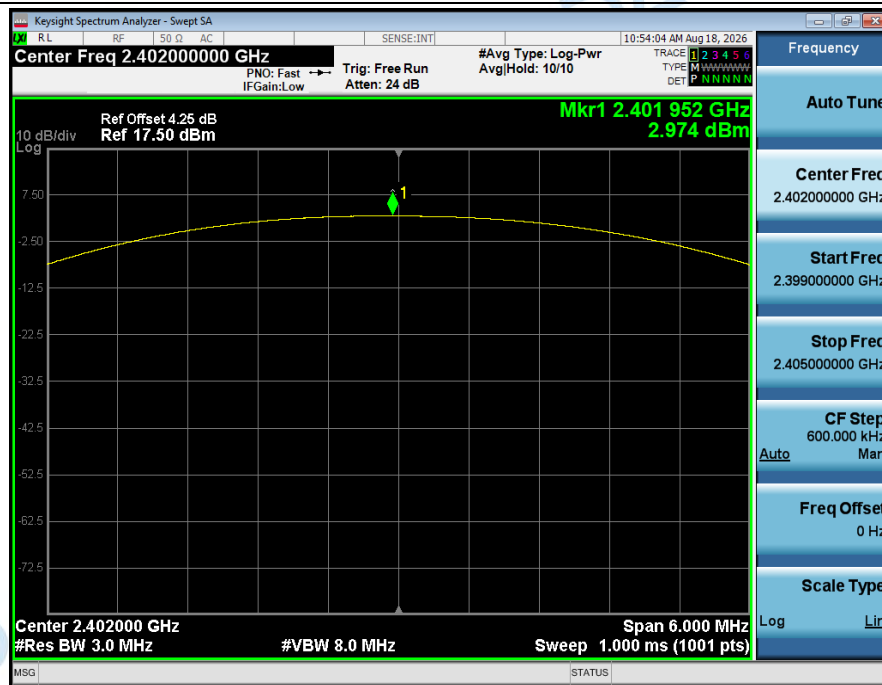




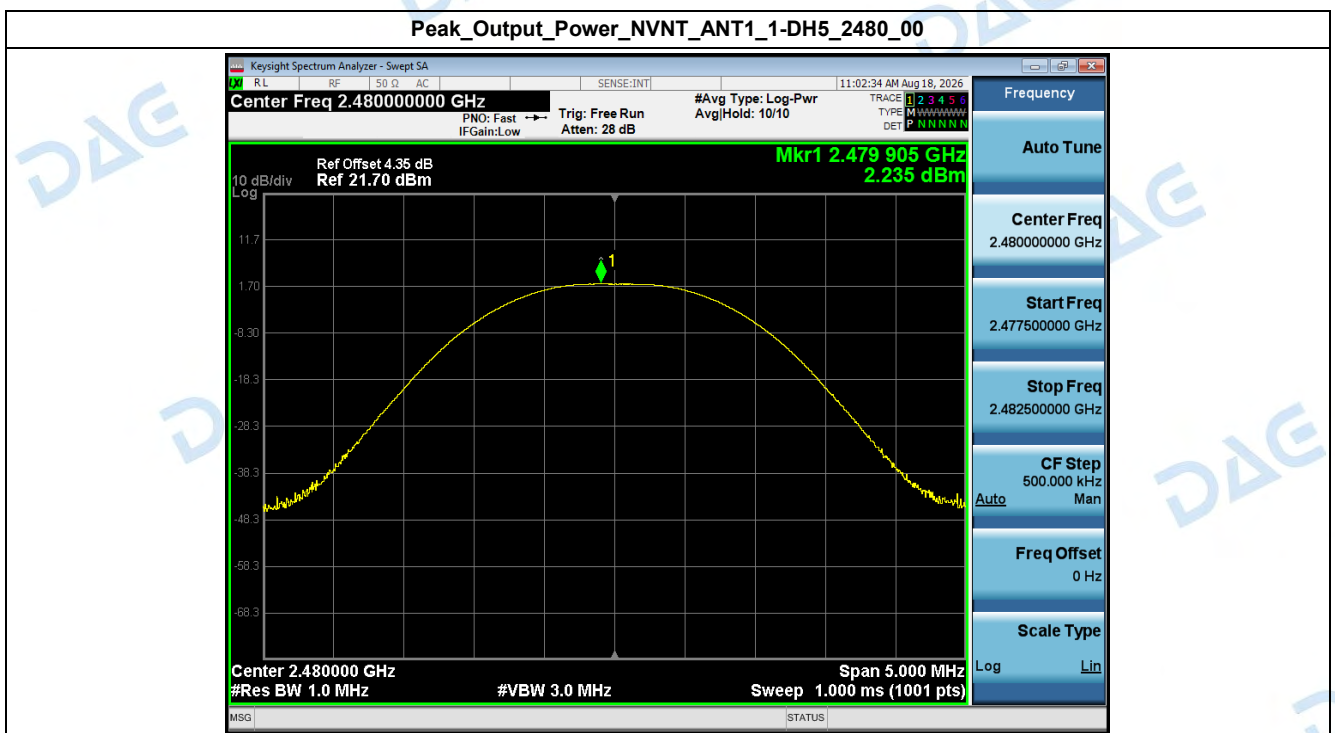
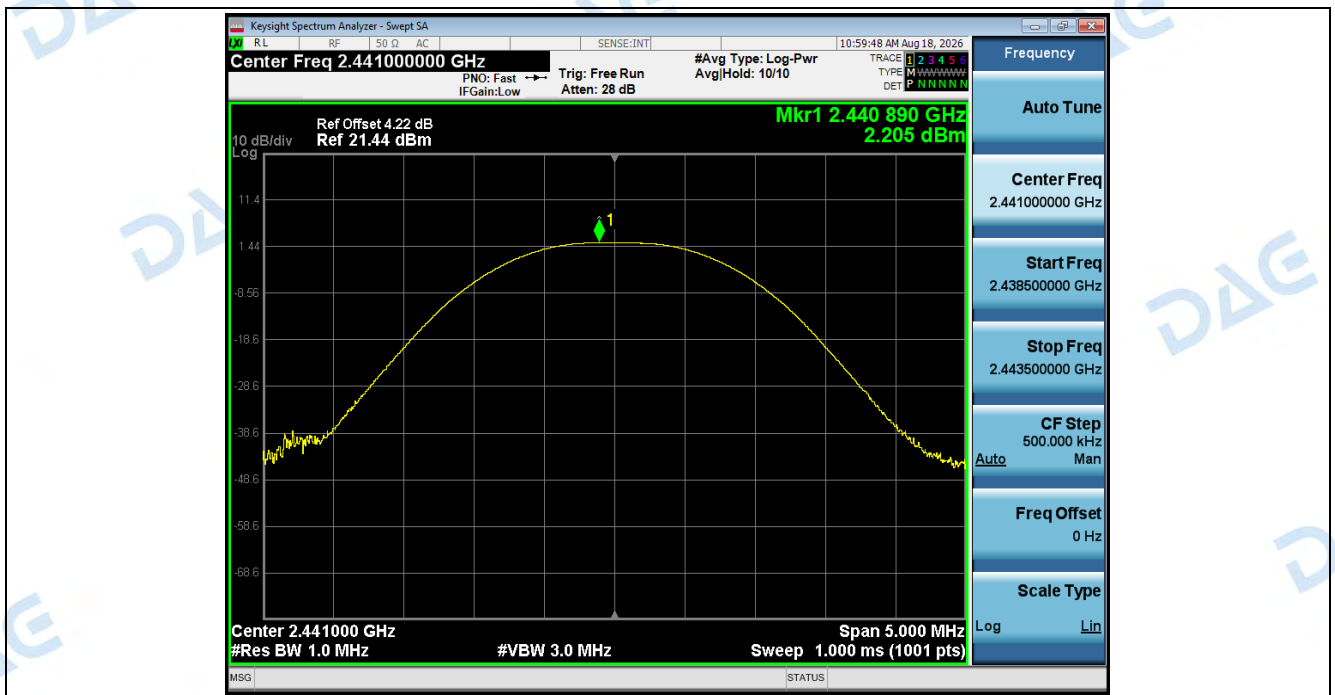
4. Peak Output Power

Condition	Antenna	Modulation	Frequency (MHz)	Max. Conducted Power(dBm)	Max. Conducted Power(mW)	Limit(mW)	Result
NVNT	ANT1	1-DH5	2402.00	2.97	1.98	125	Pass
NVNT	ANT1	1-DH5	2441.00	2.21	1.66	1000	Pass
NVNT	ANT1	1-DH5	2480.00	2.23	1.67	1000	Pass
NVNT	ANT1	2-DH5	2402.00	1.35	1.37	125	Pass
NVNT	ANT1	2-DH5	2441.00	0.81	1.21	125	Pass
NVNT	ANT1	2-DH5	2480.00	0.99	1.26	125	Pass
NVNT	ANT1	3-DH5	2402.00	2.08	1.61	125	Pass
NVNT	ANT1	3-DH5	2441.00	1.53	1.42	125	Pass
NVNT	ANT1	3-DH5	2480.00	1.65	1.46	125	Pass

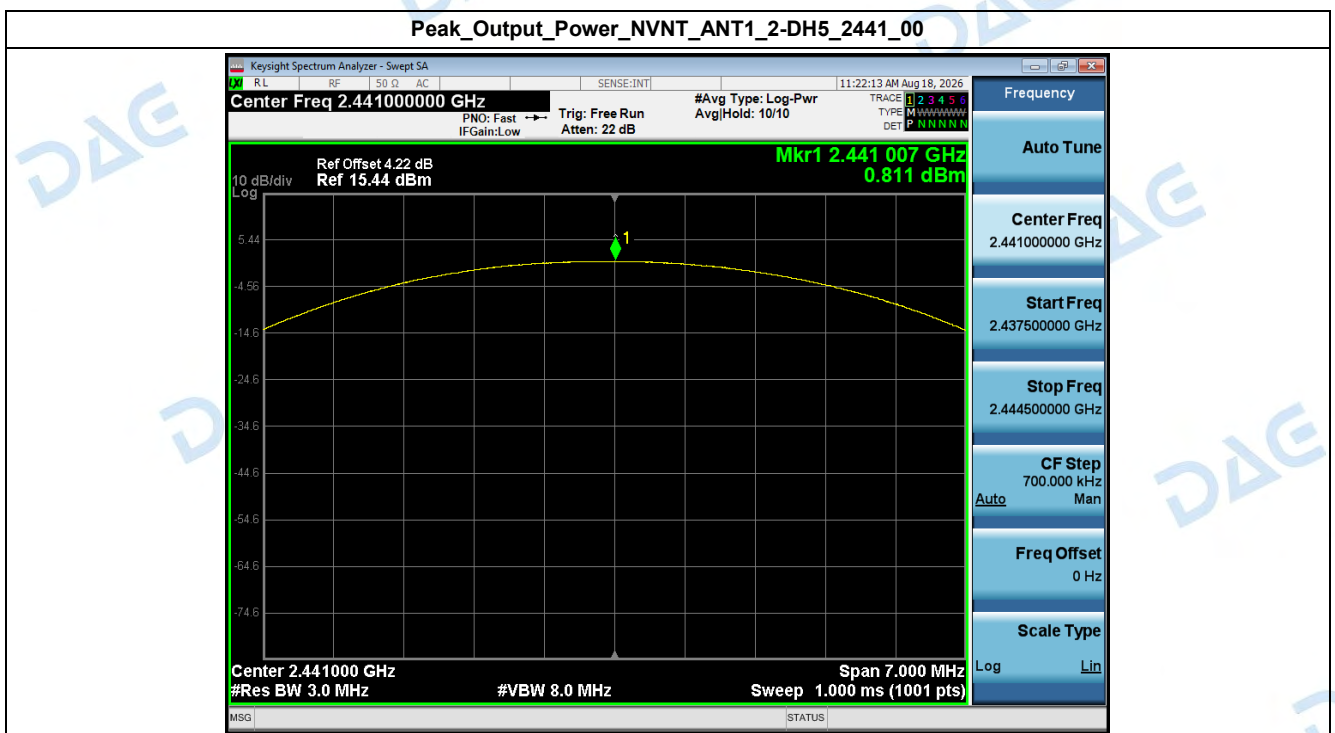
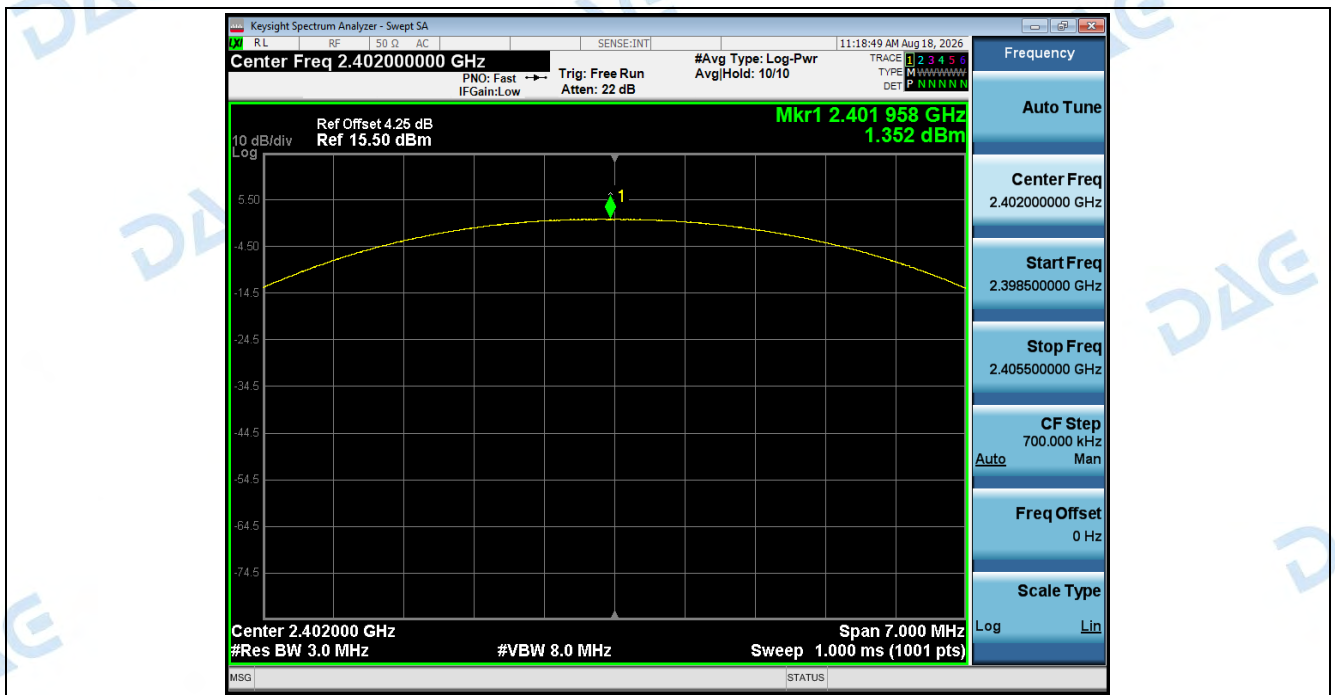
Peak_Output_Power_NVNT_ANT1_1-DH5_2402_00



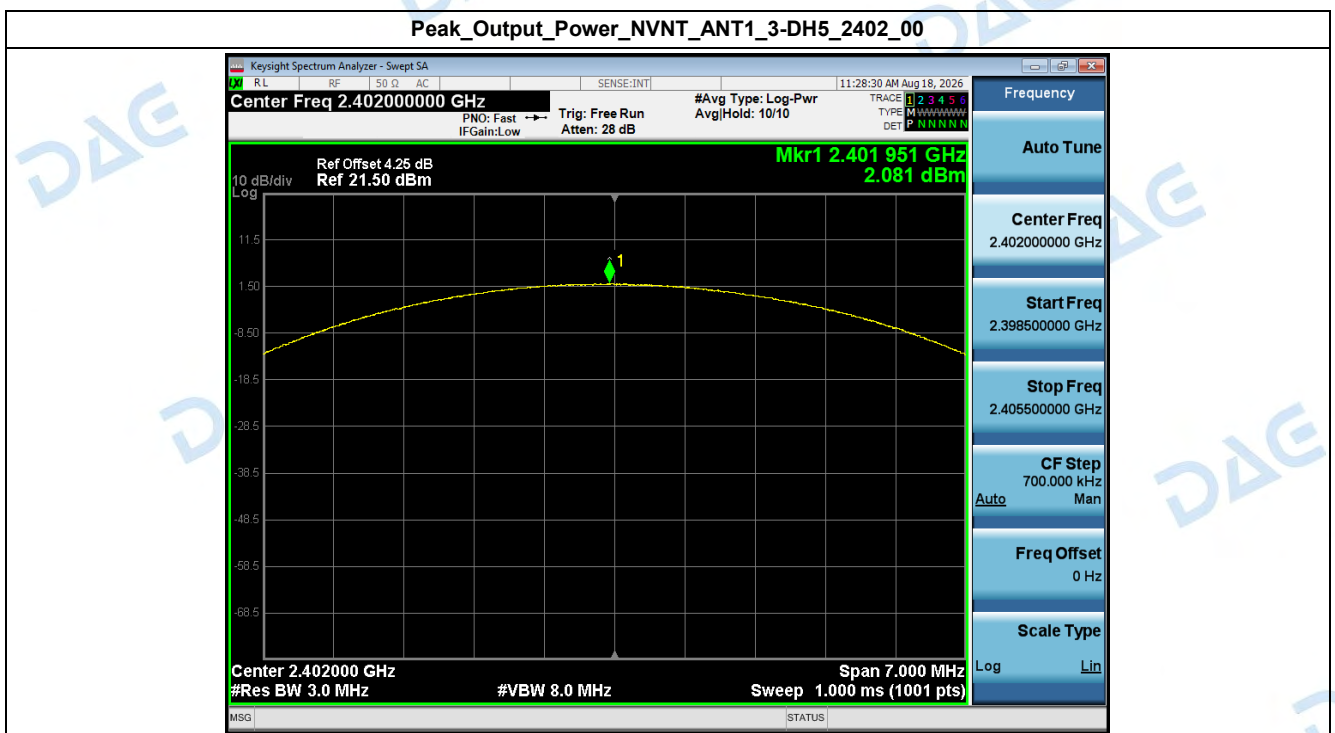
Peak_Output_Power_NVNT_ANT1_1-DH5_2441_00



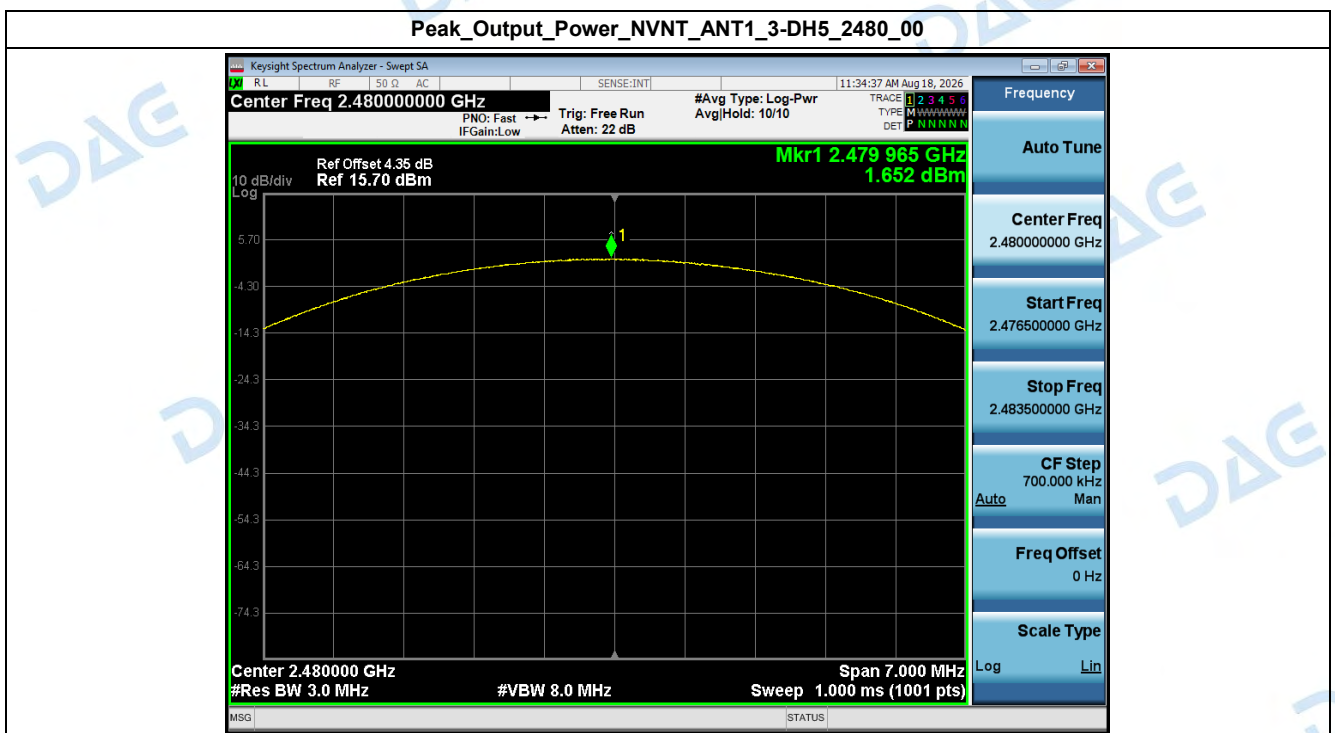
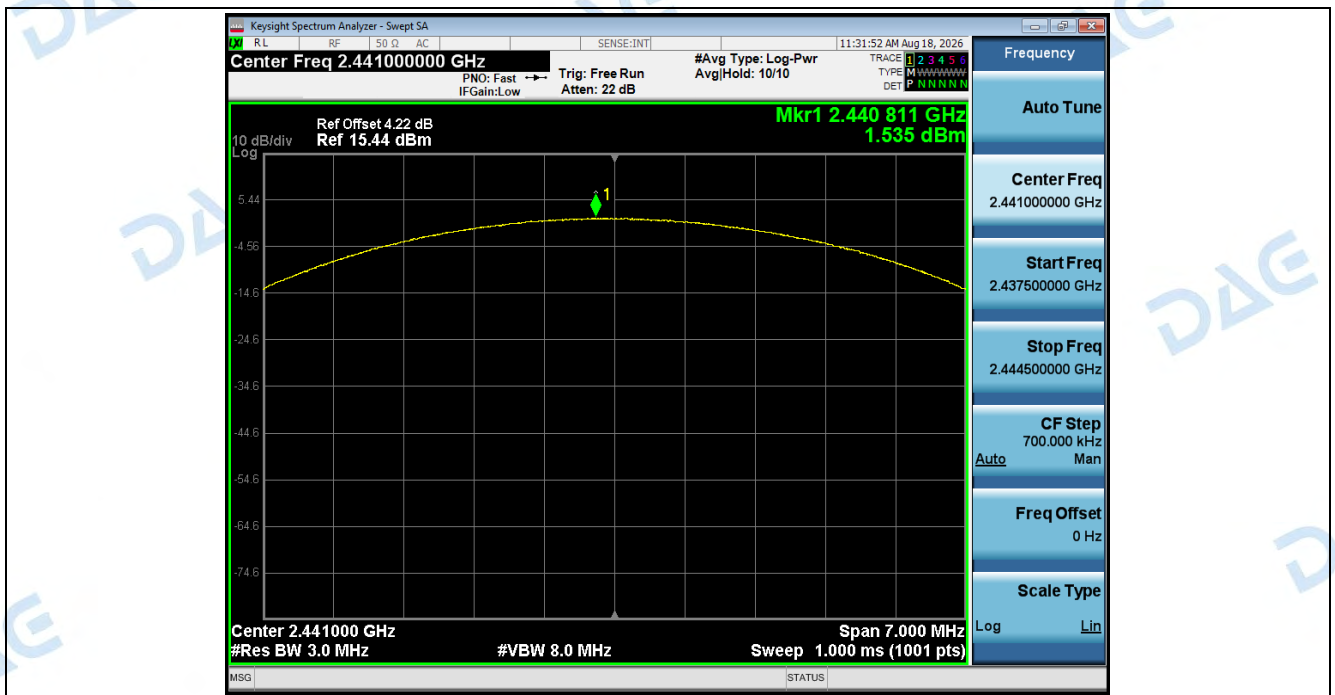
Peak_Output_Power_NVNT_ANT1_2-DH5_2402_00



Peak_Output_Power_NVNT_ANT1_2-DH5_2480_00



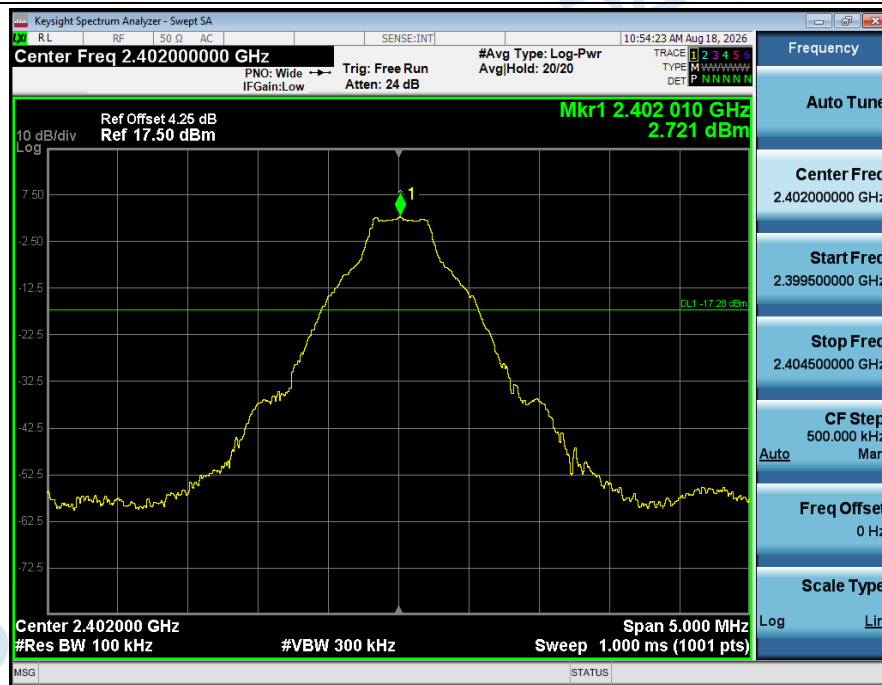
Peak_Output_Power_NVNT_ANT1_3-DH5_2441_00



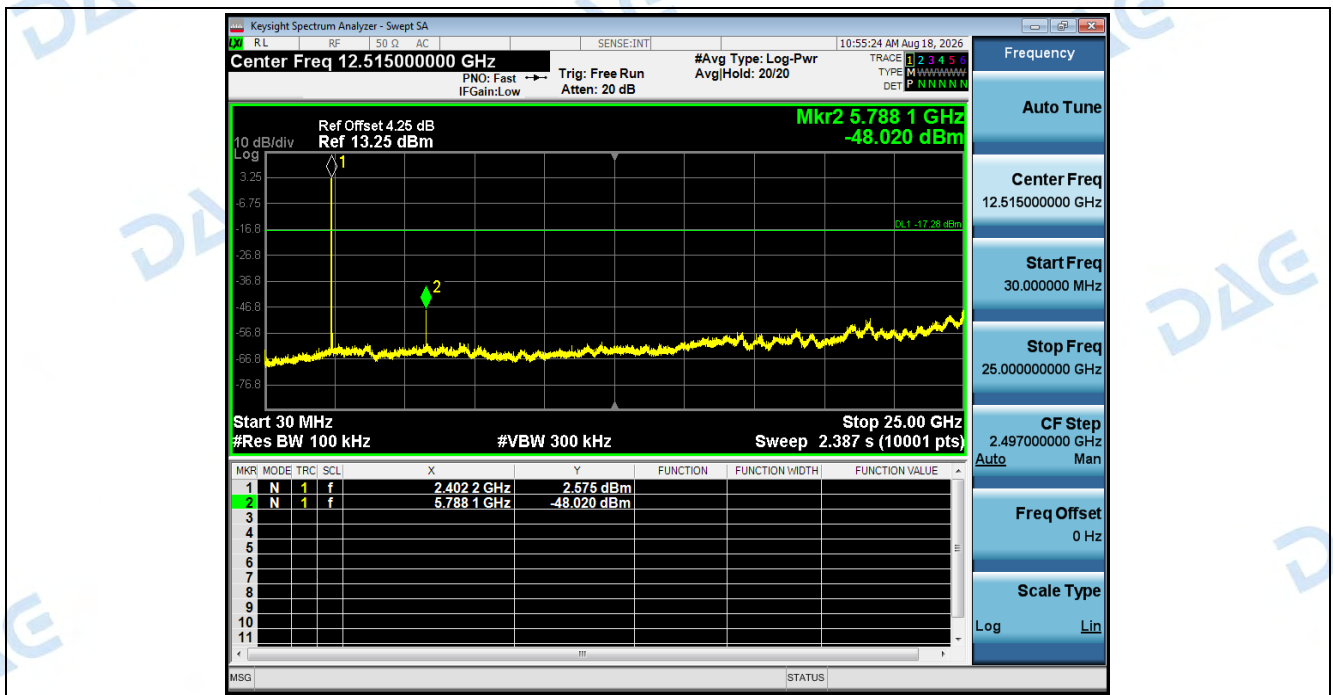
5. Spurious Emissions

Condition	Antenna	Modulation	TX Mode	Ref_level(dBm)	Spurious MAX.Value(dBm)	Limit	Result
NVNT	ANT1	1-DH5	2402.00	2.721	-48.020	-17.279	Pass
NVNT	ANT1	1-DH5	2441.00	1.954	-44.959	-18.046	Pass
NVNT	ANT1	1-DH5	2480.00	2.068	-45.233	-17.932	Pass
NVNT	ANT1	2-DH5	2402.00	-0.222	-46.526	-20.222	Pass
NVNT	ANT1	2-DH5	2441.00	-0.776	-53.690	-20.776	Pass
NVNT	ANT1	2-DH5	2480.00	-0.573	-47.231	-20.573	Pass
NVNT	ANT1	3-DH5	2402.00	-0.067	-46.769	-20.067	Pass
NVNT	ANT1	3-DH5	2441.00	-0.685	-46.881	-20.685	Pass
NVNT	ANT1	3-DH5	2480.00	-0.670	-46.678	-20.670	Pass

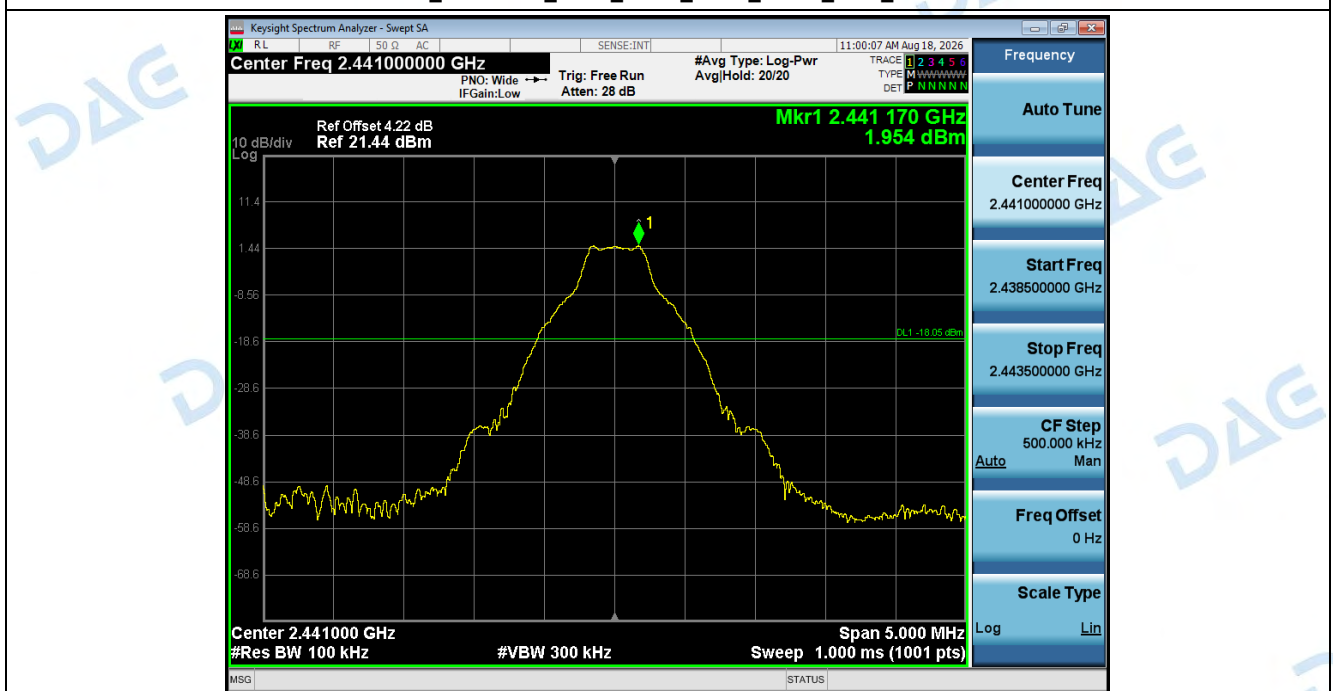
1_Reference_Level_NVNT_ANT1_1-DH5_2402_00



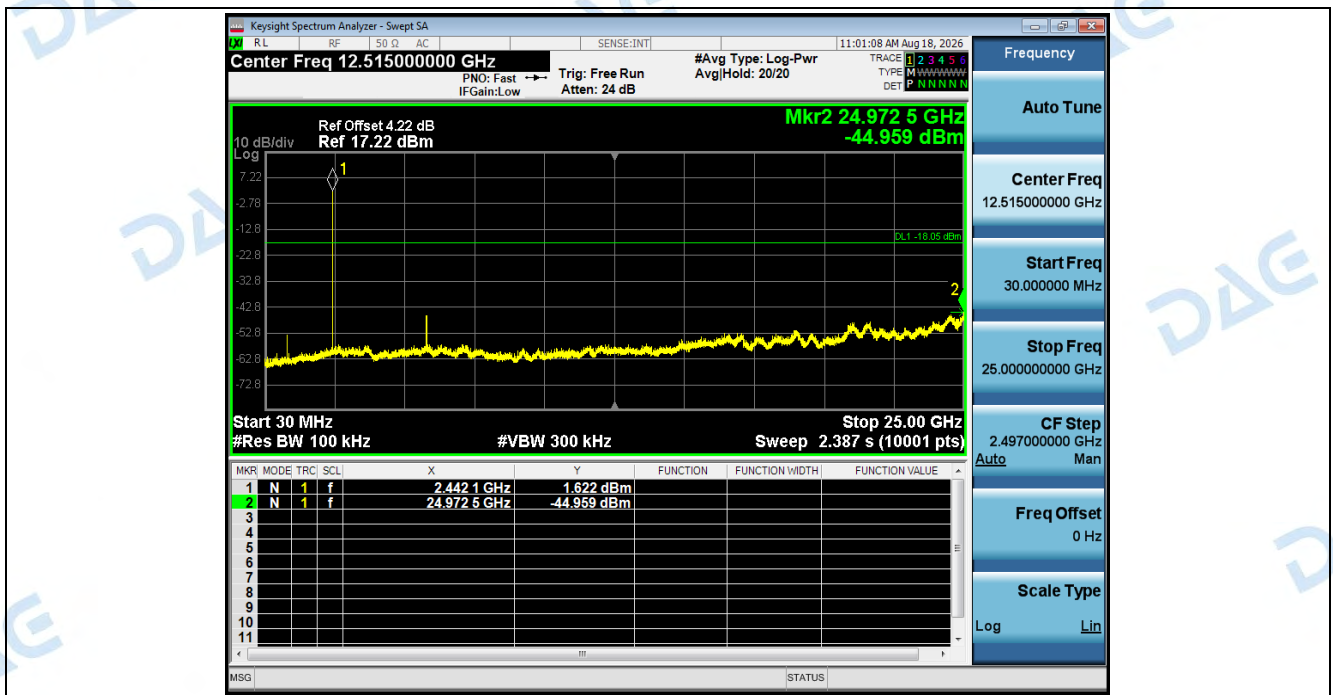
2_Spurious_Emissions_NVNT_ANT1_1-DH5_2402_00



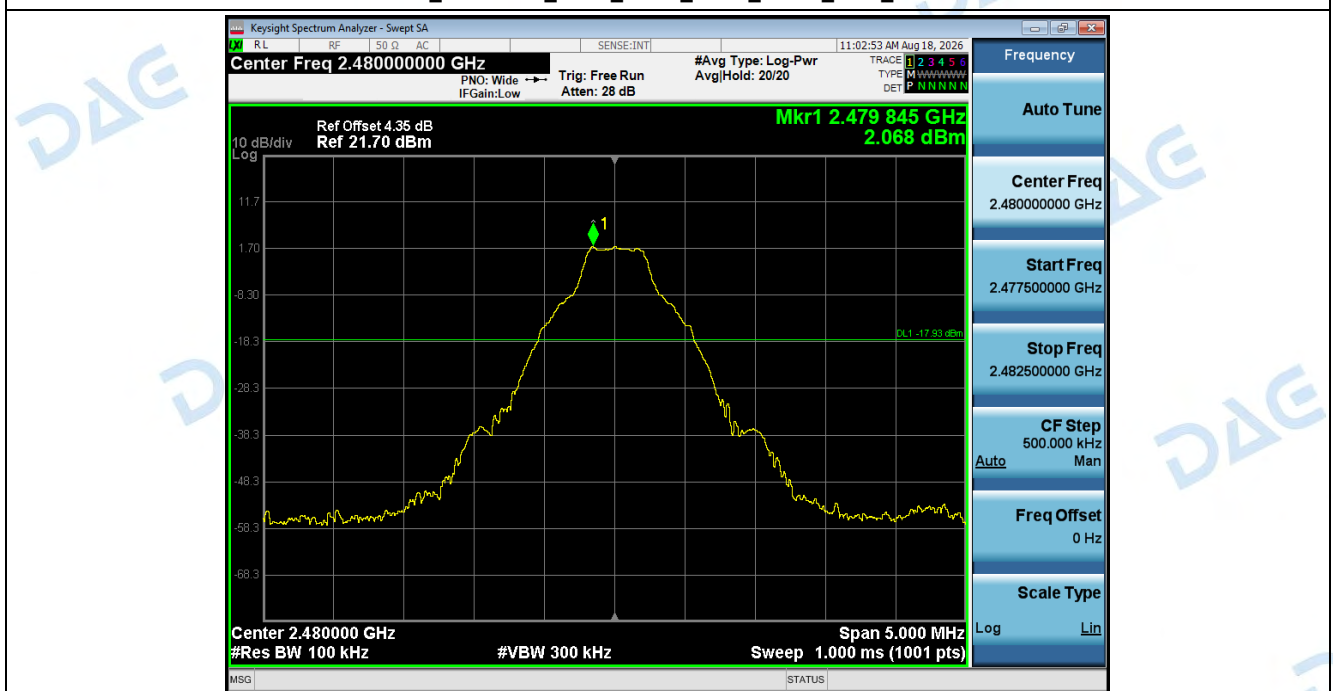
1_Reference_Level_NVNT_ANT1_1-DH5_2441_00



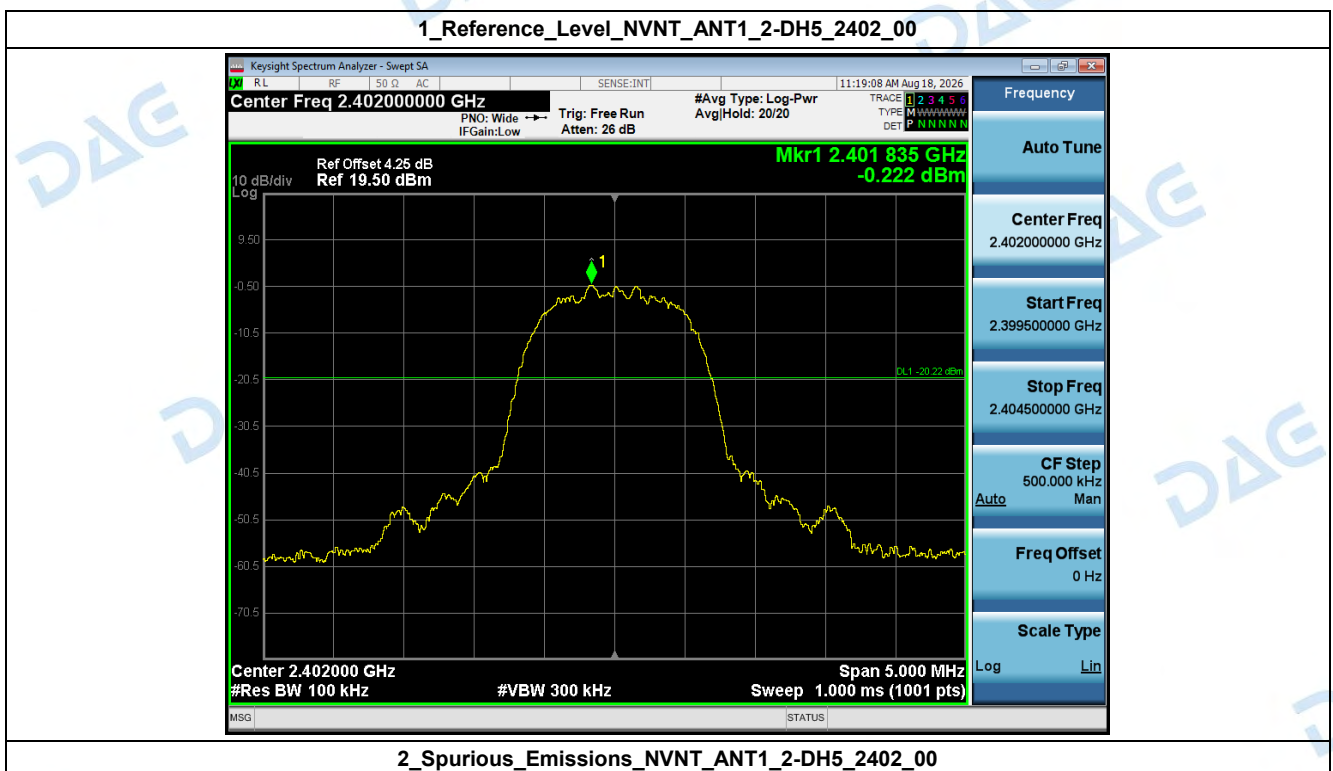
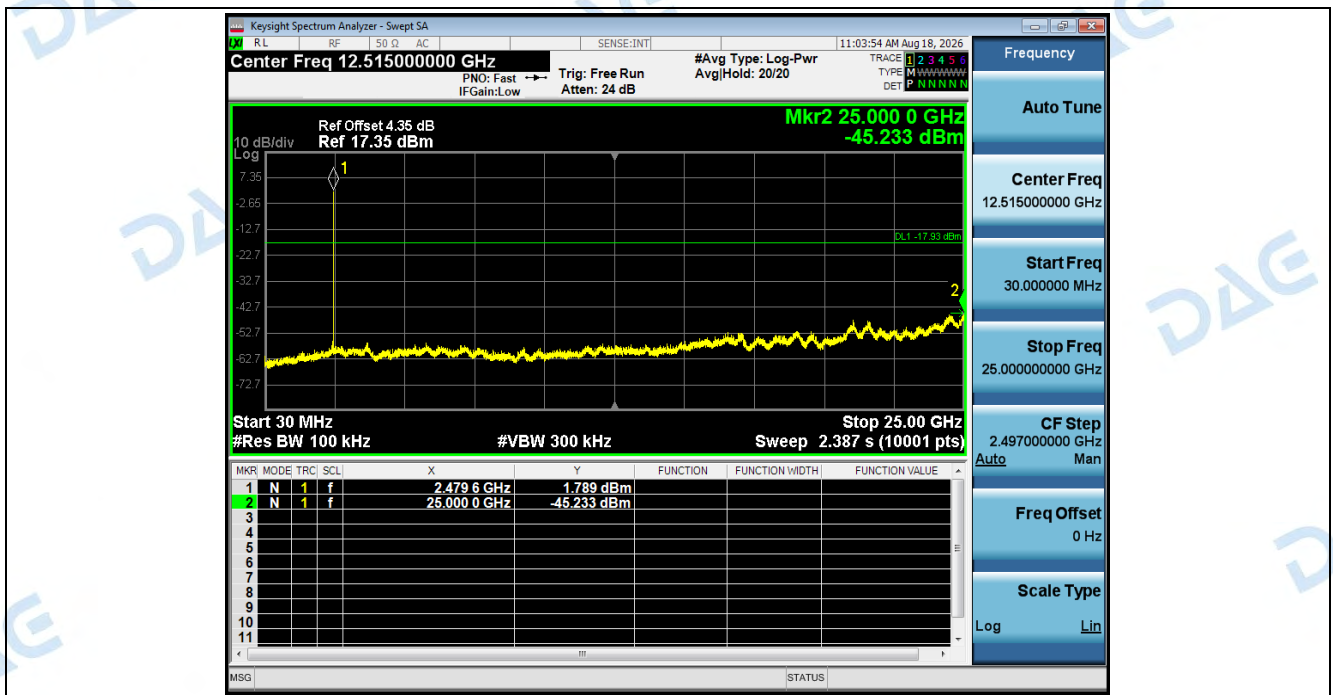
2_Spurious_Emissions_NVNT_ANT1_1-DH5_2441_00



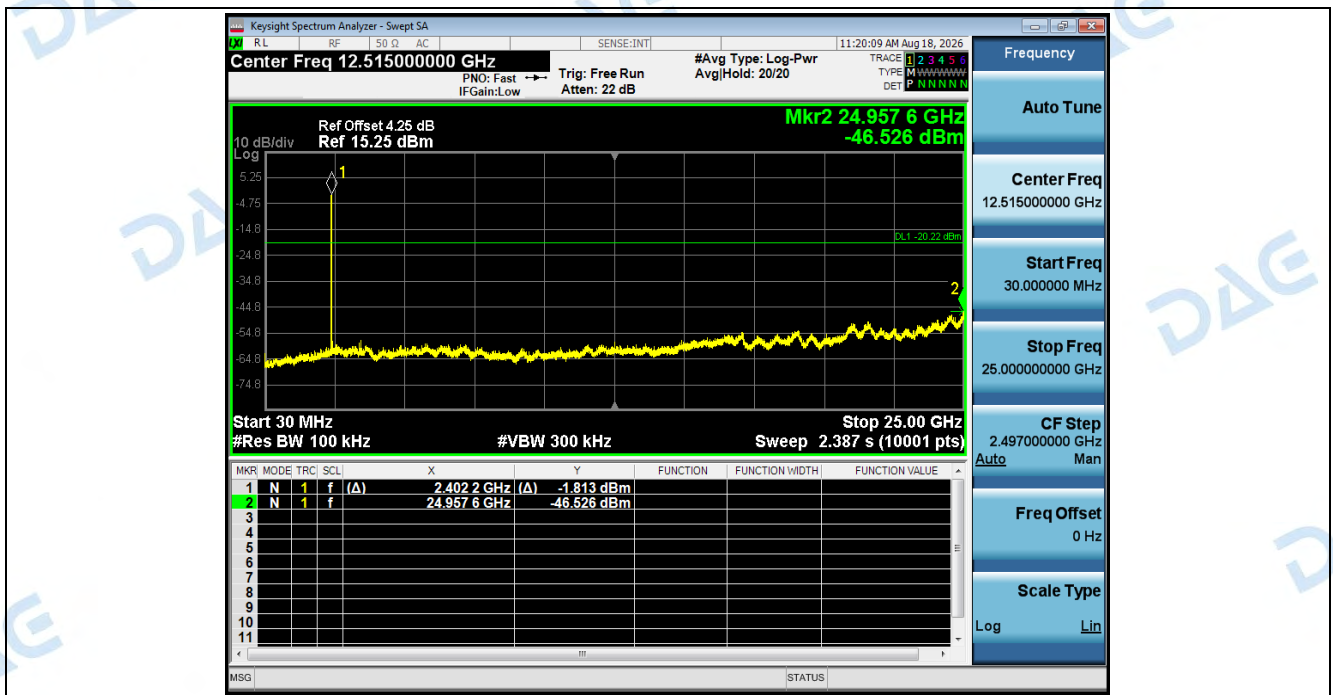
1_Reference_Level_NVNT_ANT1_1-DH5_2480_00



2_Spurious_Emissions_NVNT_ANT1_1-DH5_2480_00



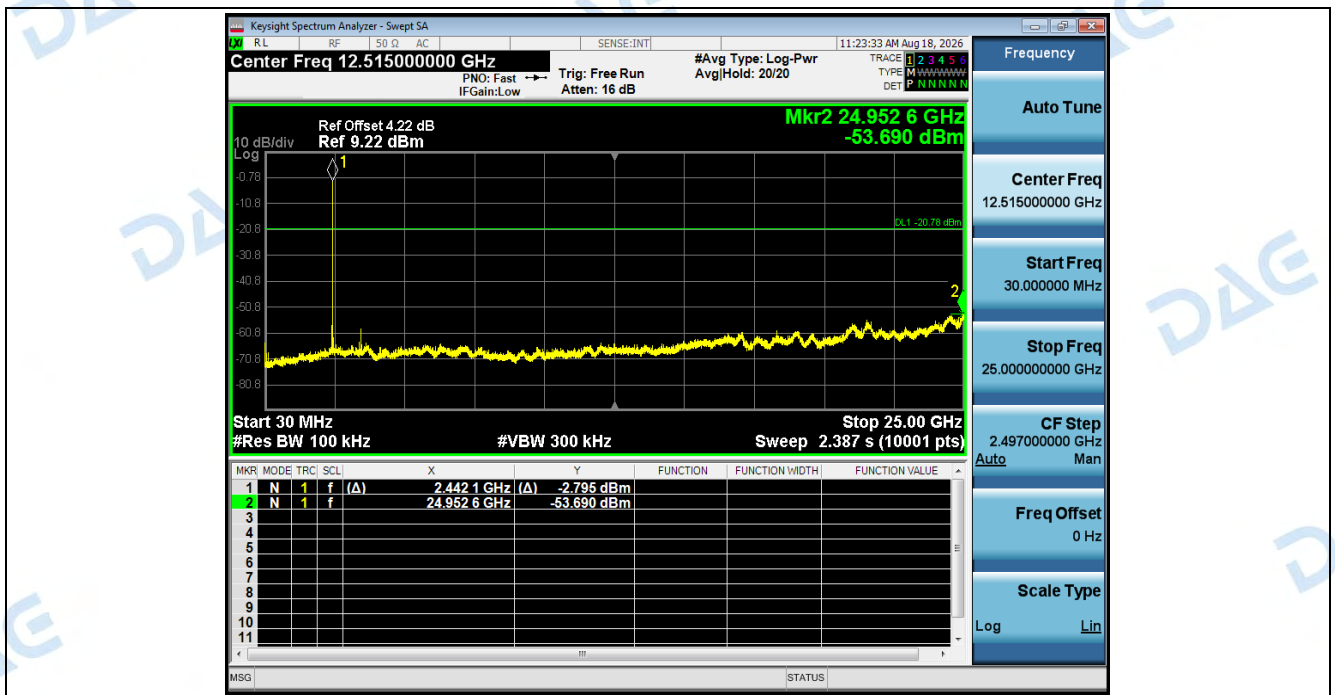
2_Spurious_Emissions_NVNT_ANT1_2-DH5_2402_00



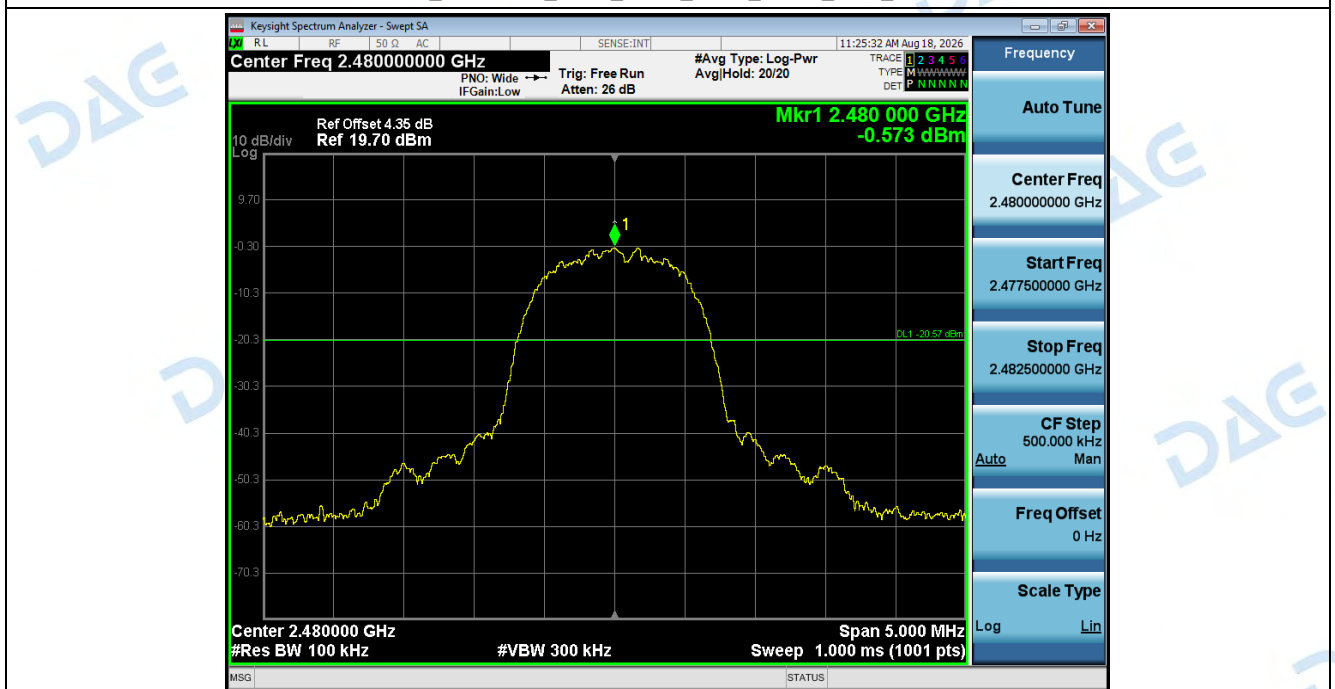
1_Reference_Level_NVNT_ANT1_2-DH5_2441_00



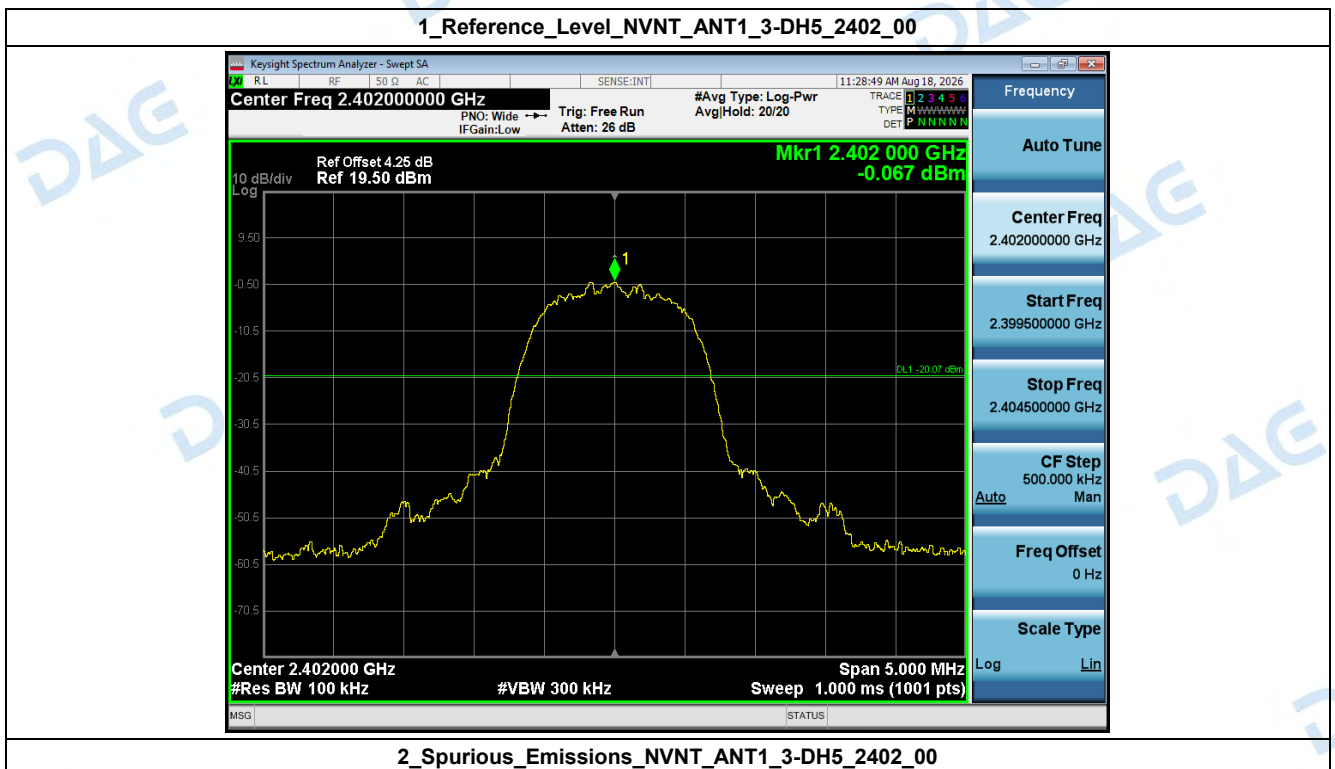
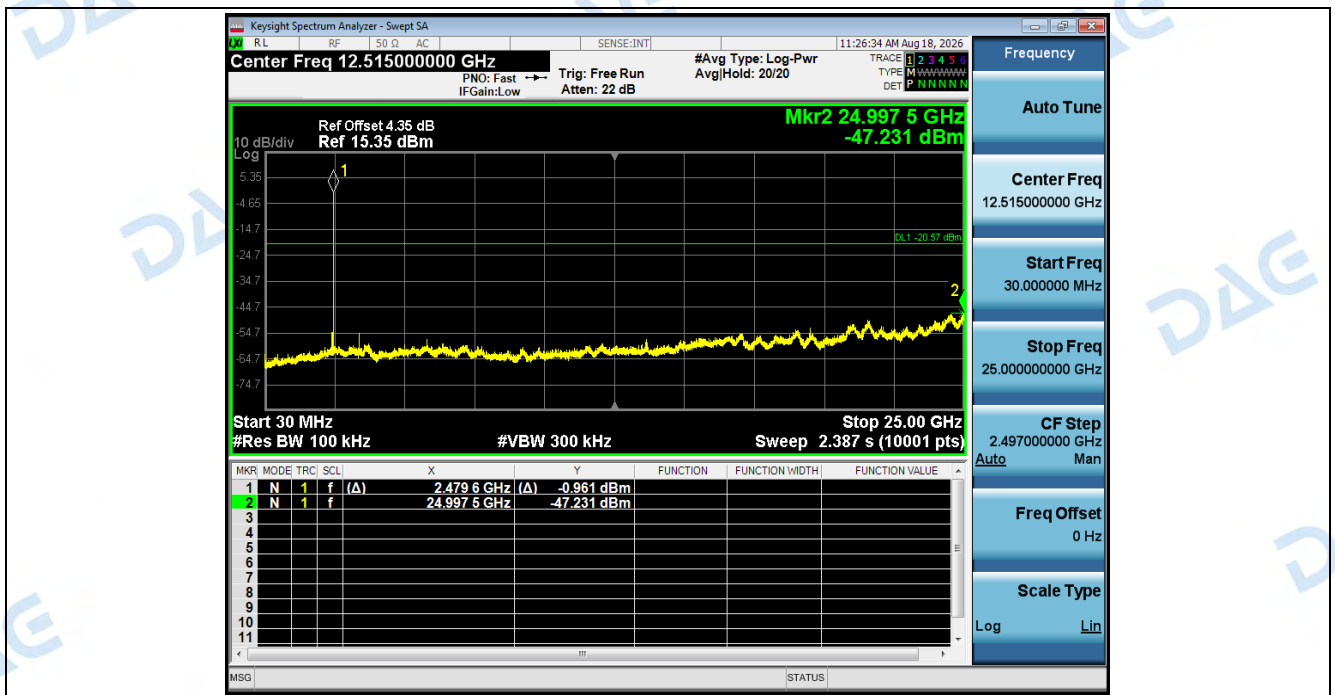
2_Spurious_Emissions_NVNT_ANT1_2-DH5_2441_00



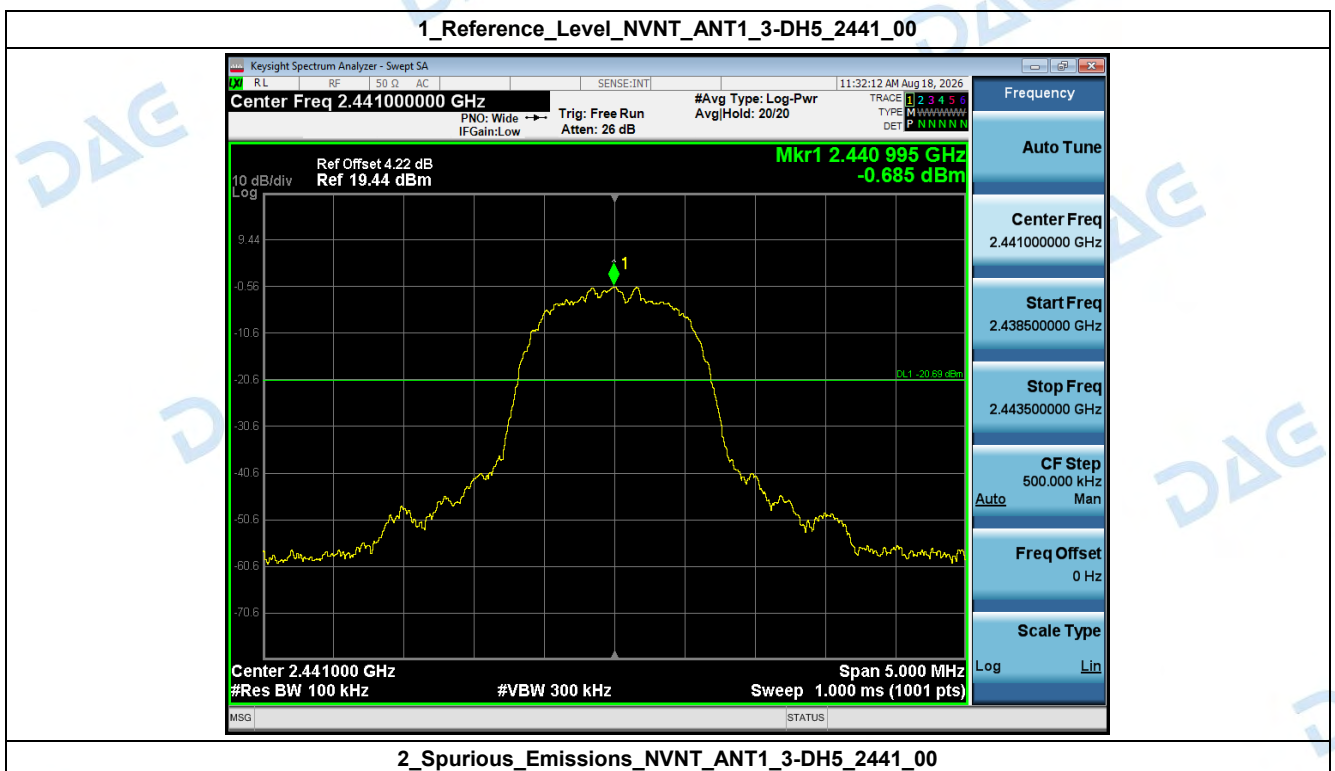
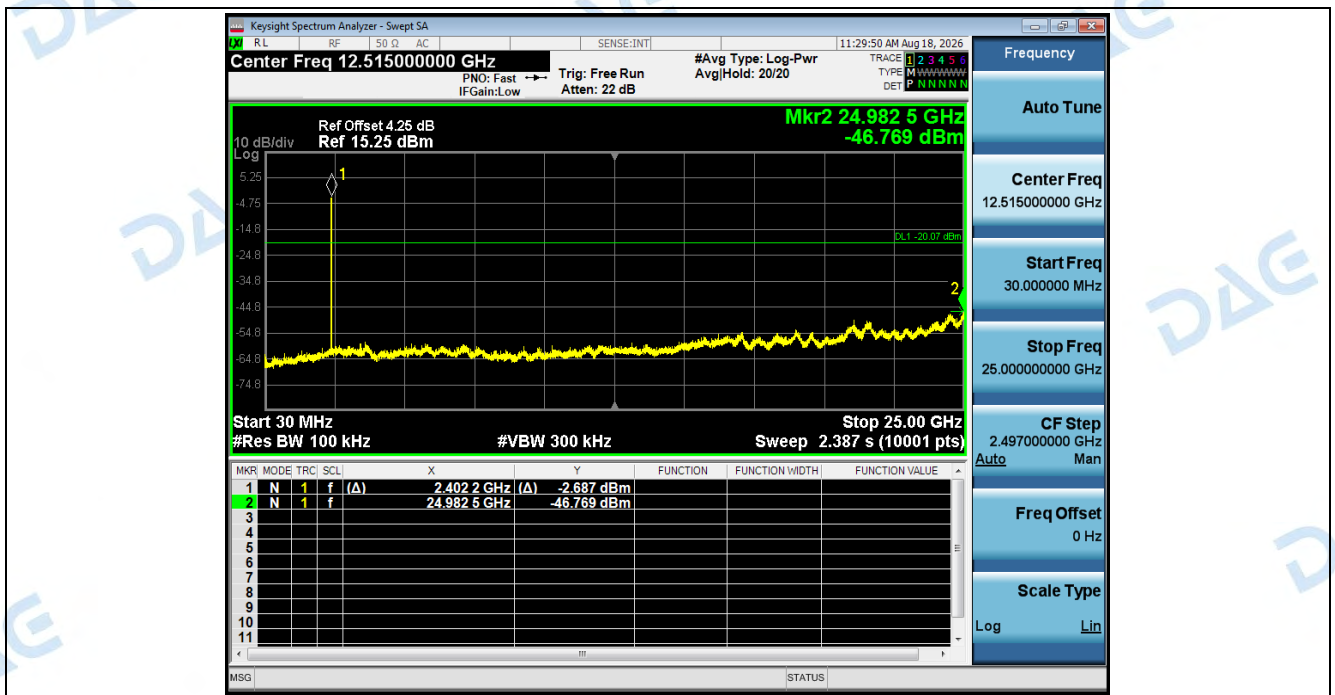
1_Reference_Level_NVNT_ANT1_2-DH5_2480_00



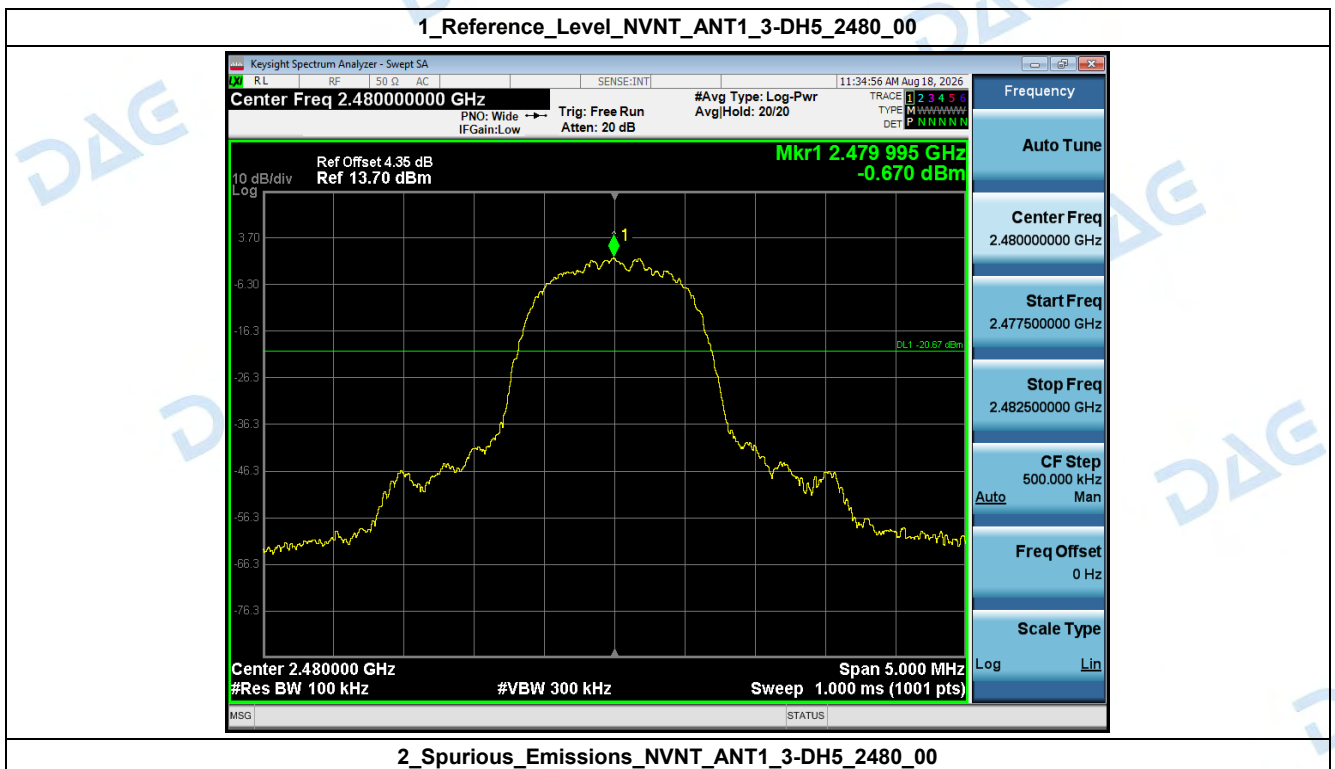
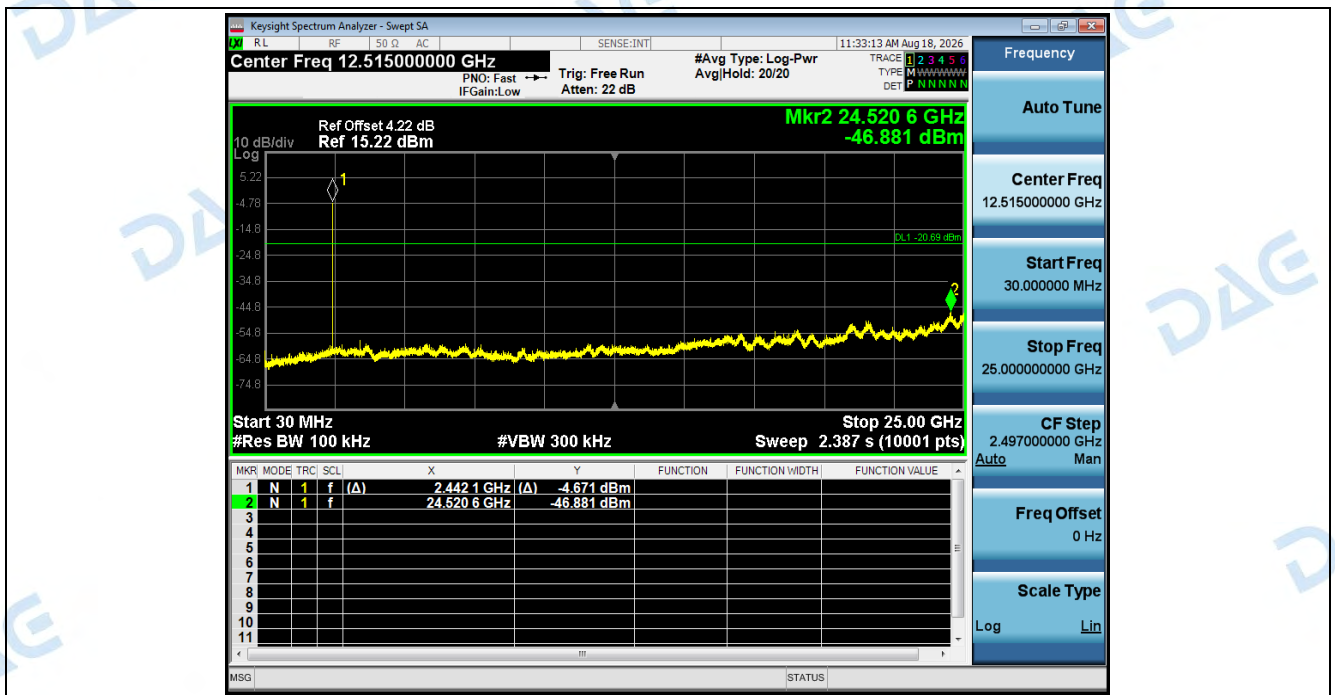
2_Spurious_Emissions_NVNT_ANT1_2-DH5_2480_00

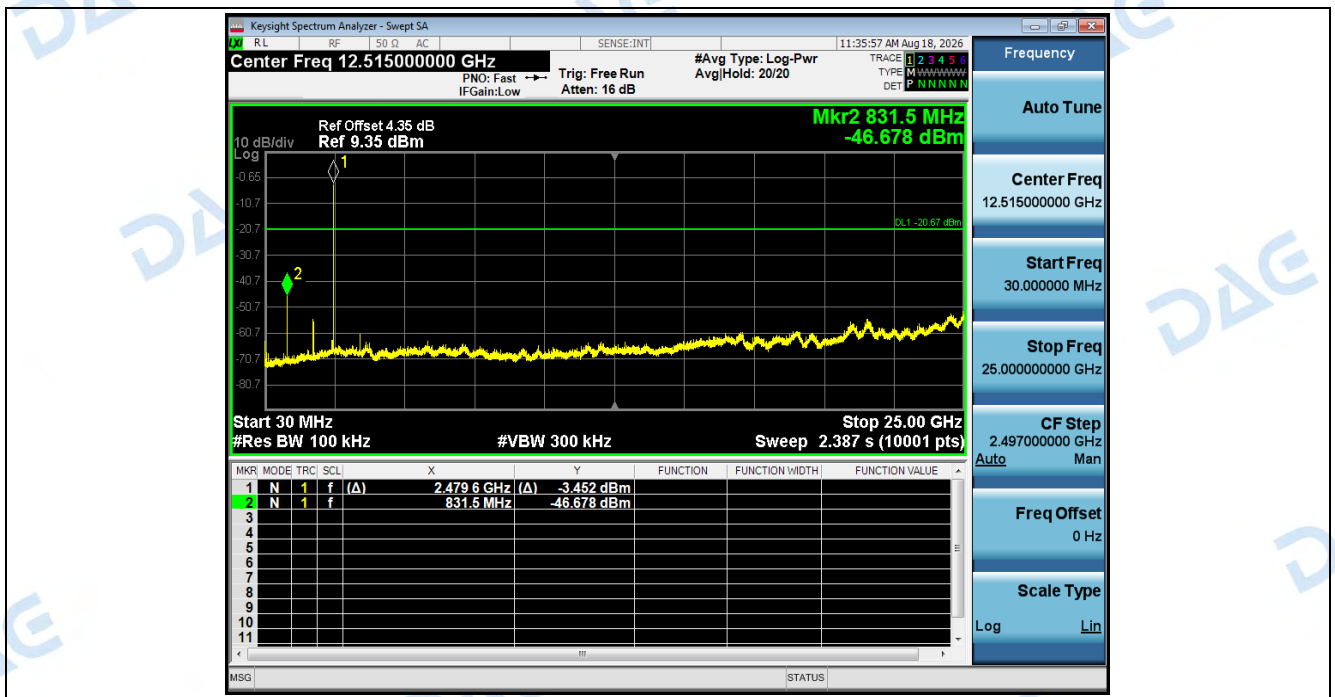


2_Spurious_Emissions_NVNT_ANT1_3-DH5_2402_00



2_Spurious_Emissions_NVNT_ANT1_3-DH5_2441_00

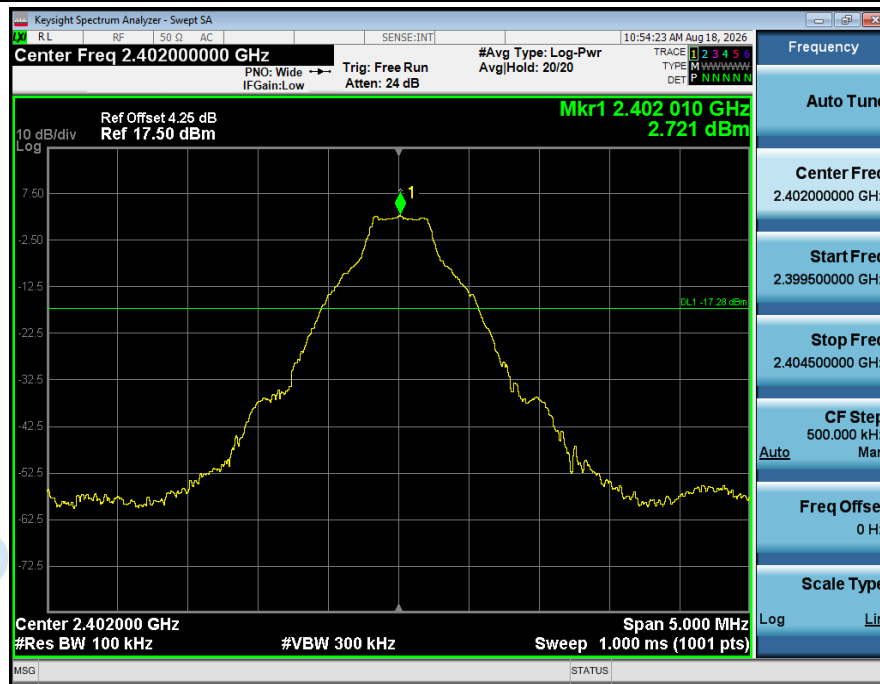




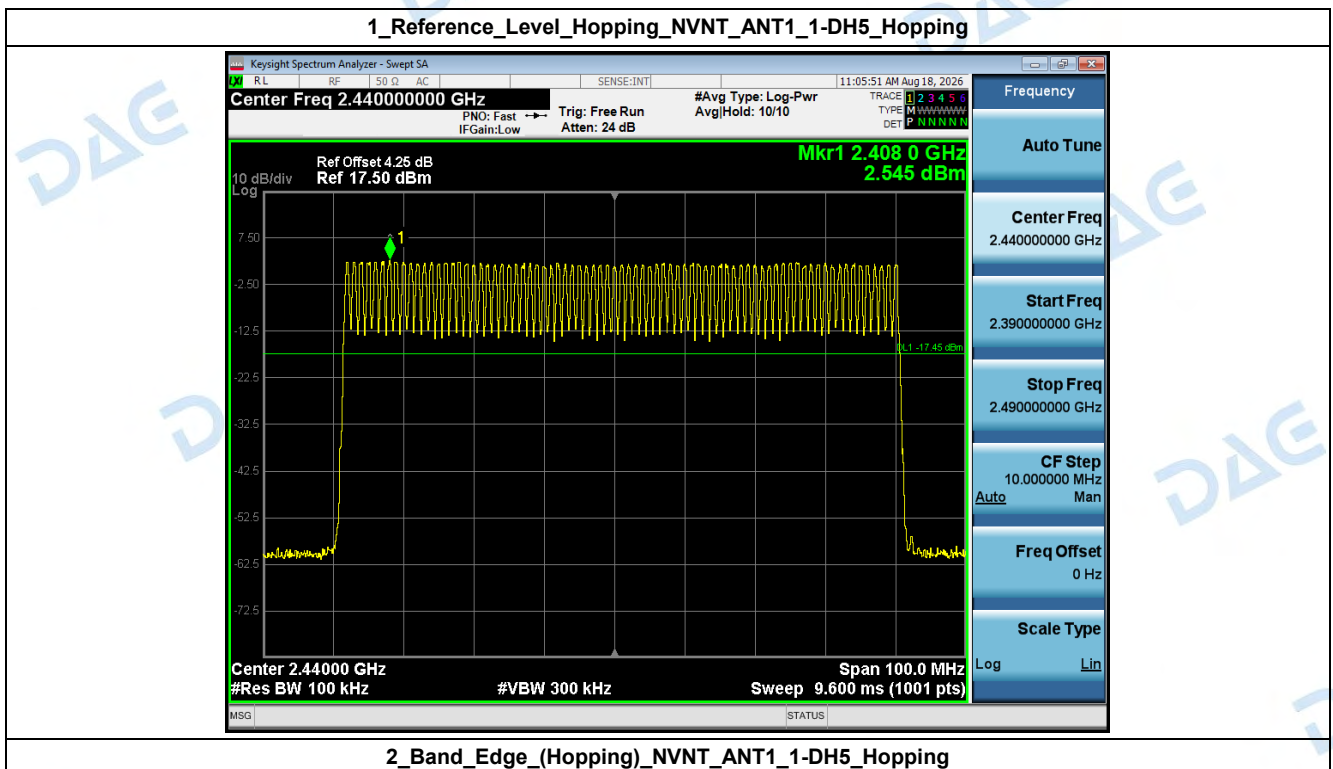
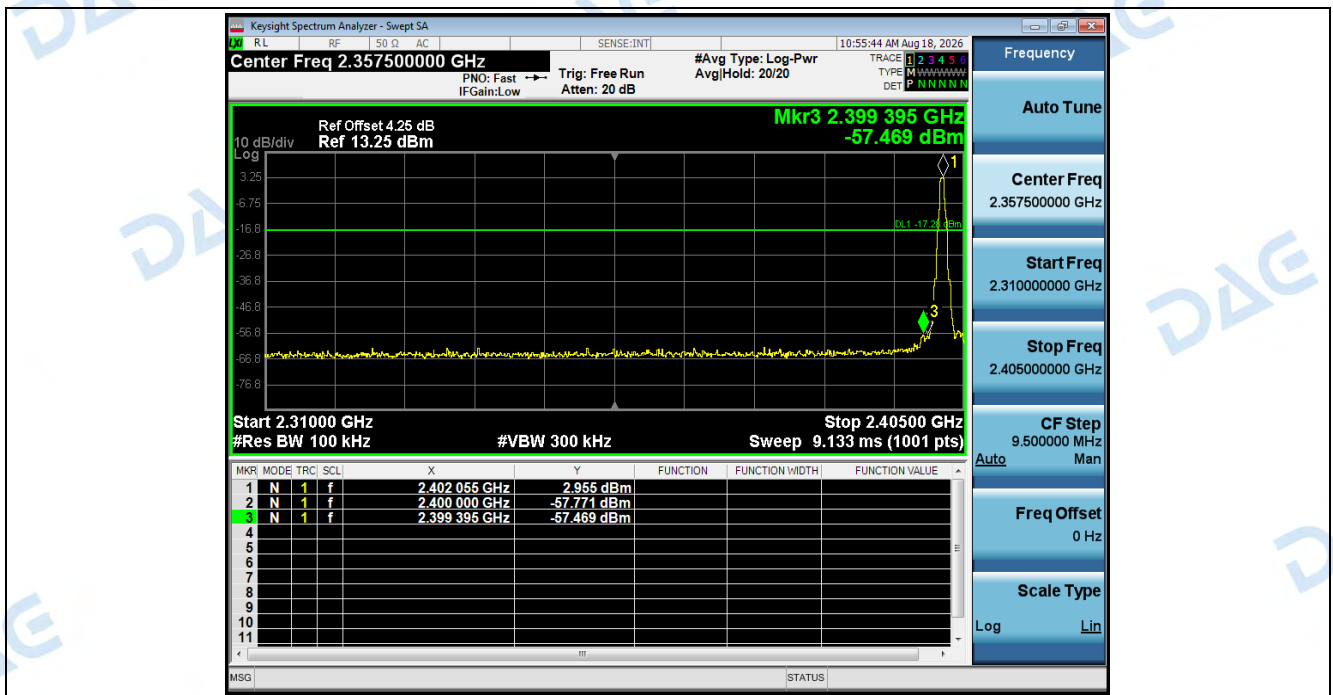
6. Bandedge

Condition	Antenna	Modulation	TX Mode	Ref_level(dBm)	Bandedge MAX.Value	Limit	Result
NVNT	ANT1	1-DH5	2402.00	2.721	-57.469	-17.279	Pass
NVNT	ANT1	1-DH5	Hopping_LCH	2.545	-57.977	-17.455	Pass
NVNT	ANT1	1-DH5	2480.00	2.068	-57.824	-17.932	Pass
NVNT	ANT1	1-DH5	Hopping_HCH	2.542	-58.491	-17.458	Pass
NVNT	ANT1	2-DH5	2402.00	-0.222	-59.710	-20.222	Pass
NVNT	ANT1	2-DH5	Hopping_LCH	-0.460	-59.961	-20.460	Pass
NVNT	ANT1	2-DH5	2480.00	-0.573	-60.475	-20.573	Pass
NVNT	ANT1	2-DH5	Hopping_HCH	-0.393	-60.527	-20.393	Pass
NVNT	ANT1	3-DH5	2402.00	-0.067	-59.358	-20.067	Pass
NVNT	ANT1	3-DH5	Hopping_LCH	-0.008	-60.013	-20.008	Pass
NVNT	ANT1	3-DH5	2480.00	-0.670	-64.495	-20.670	Pass
NVNT	ANT1	3-DH5	Hopping_HCH	0.111	-59.917	-19.889	Pass

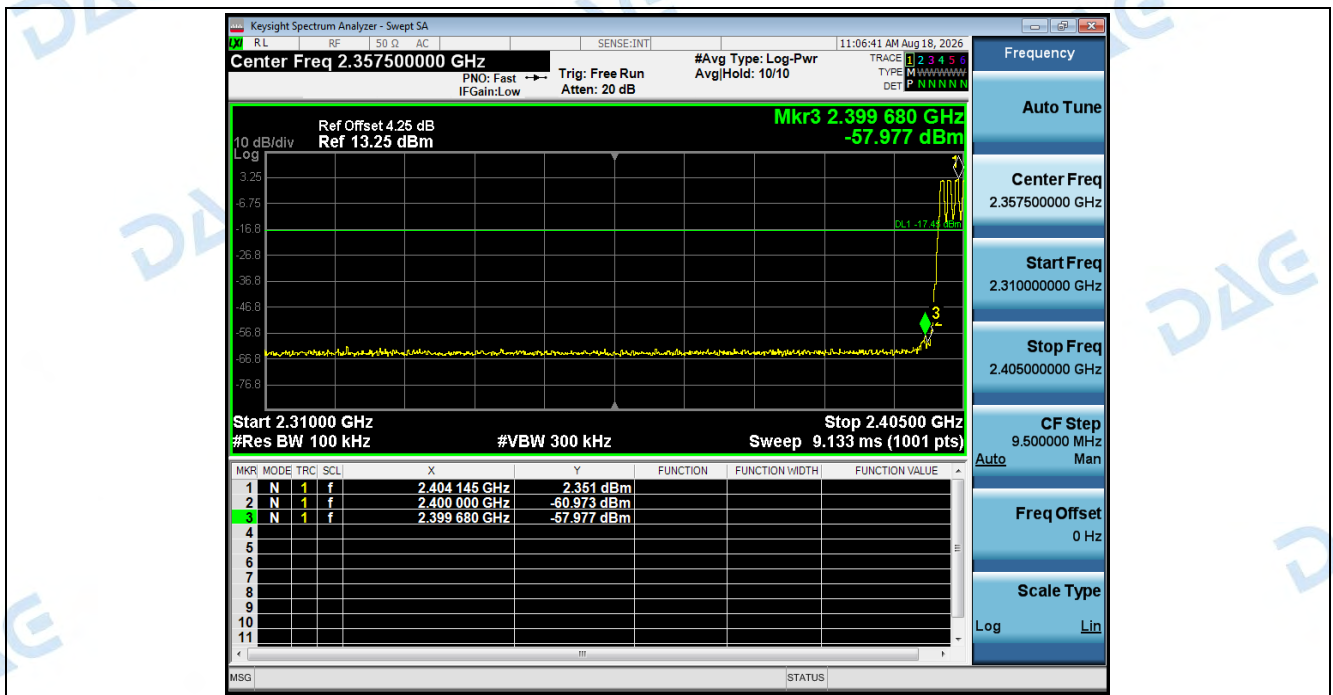
1_Reference_Level_NVNT_ANT1_1-DH5_2402_00



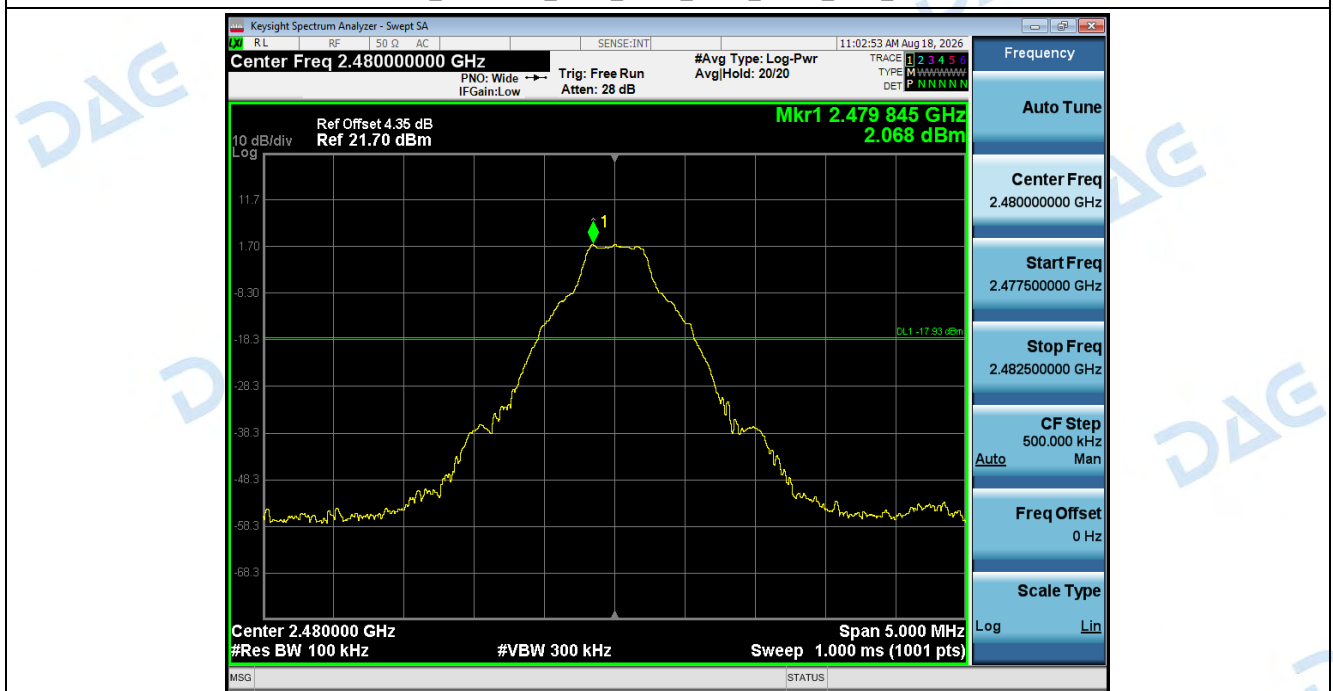
2_Bandedge_NVNT_ANT1_1-DH5_2402_00



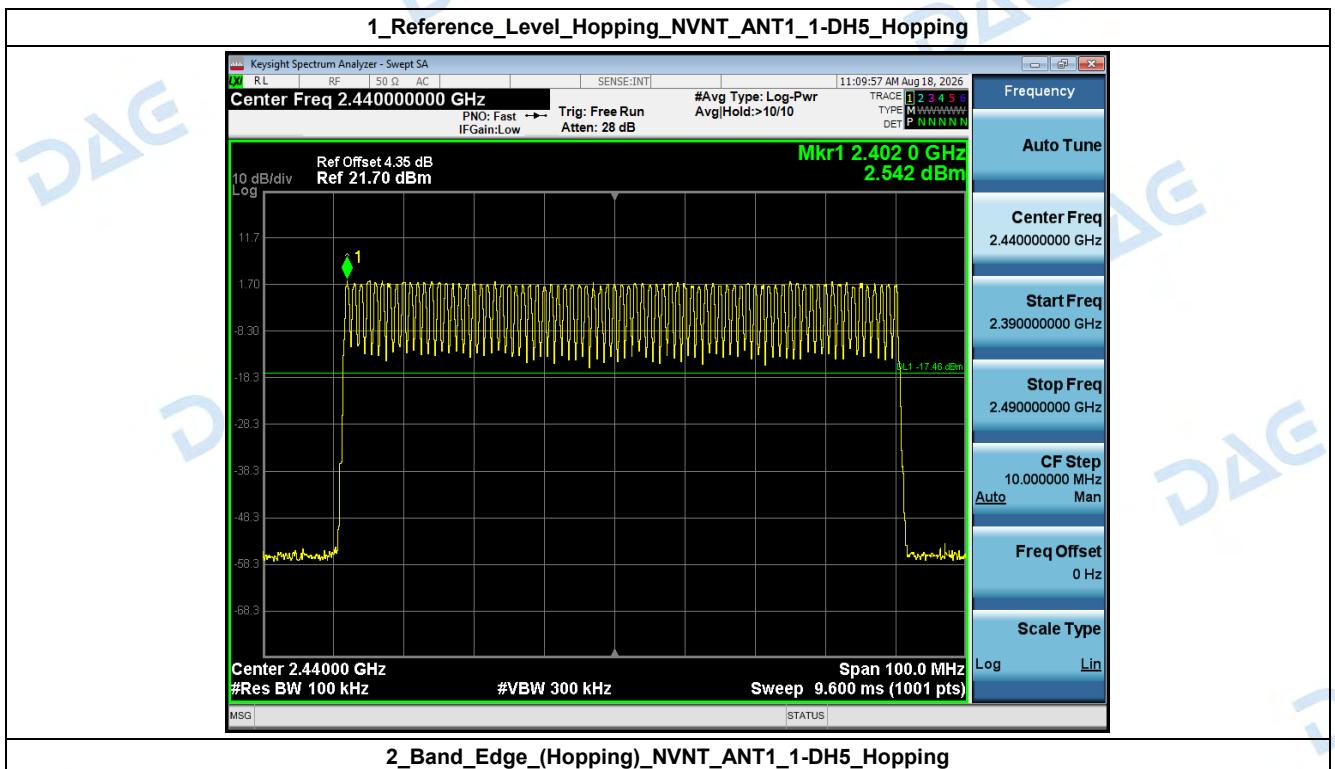
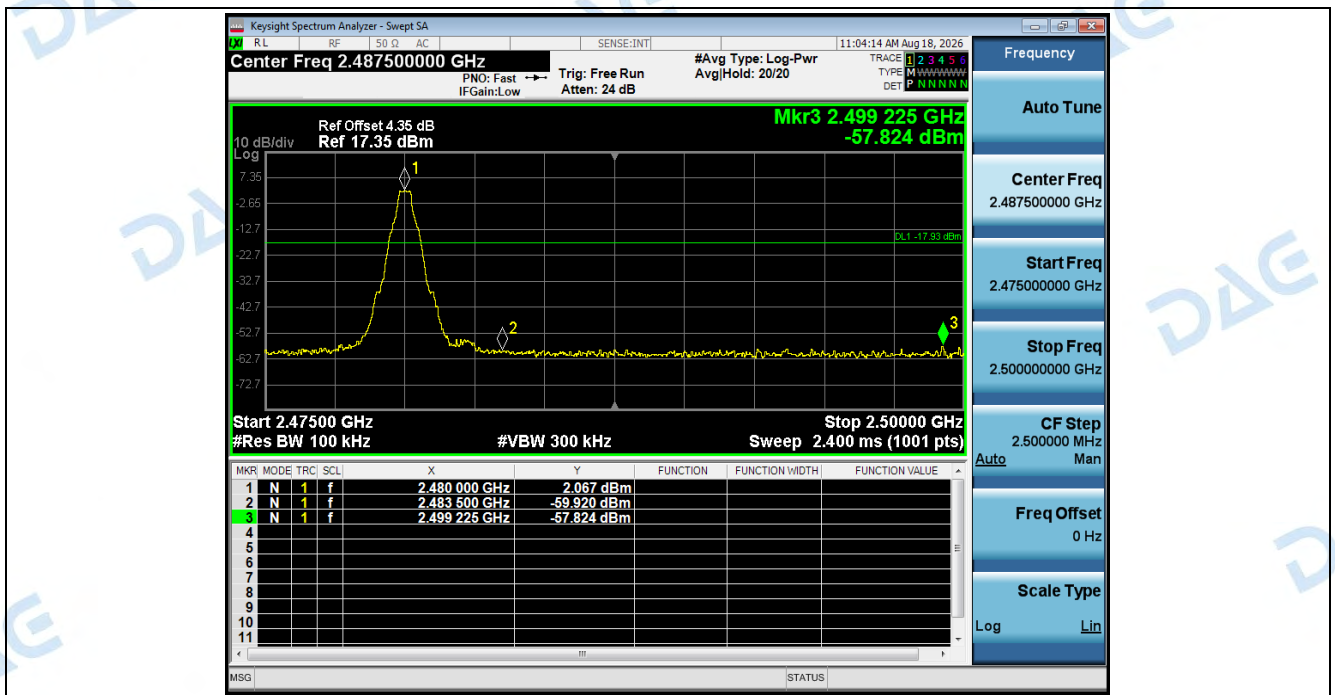
2_Band_Edge_(Hopping)_NVNT_ANT1_1-DH5_Hopping

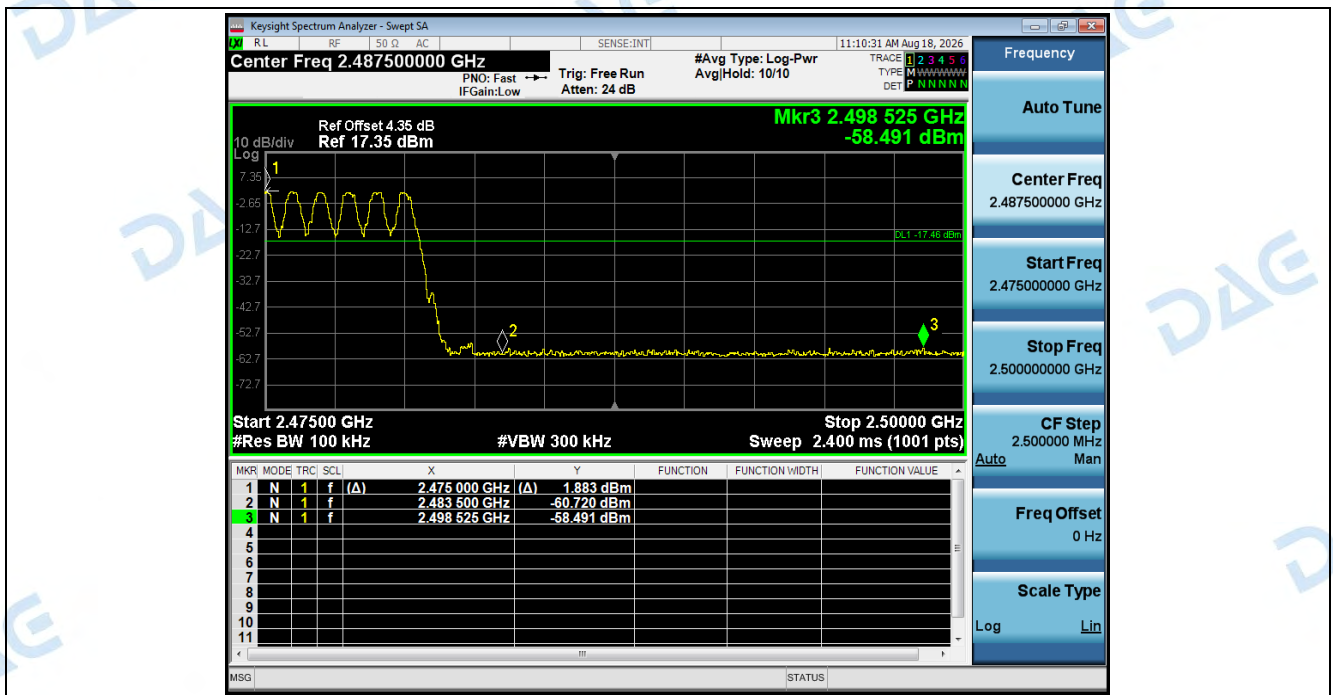


1_Reference_Level_NVNT_ANT1_1-DH5_2480_00



2_Bandedge_NVNT_ANT1_1-DH5_2480_00

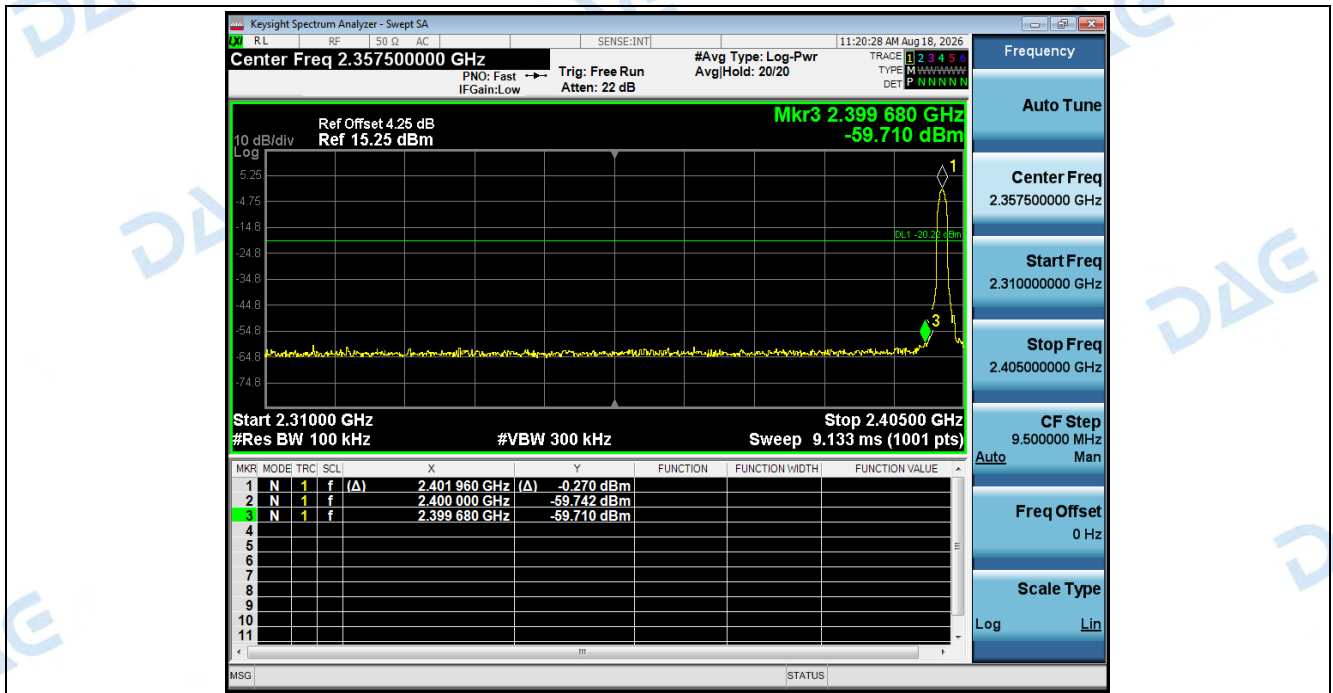




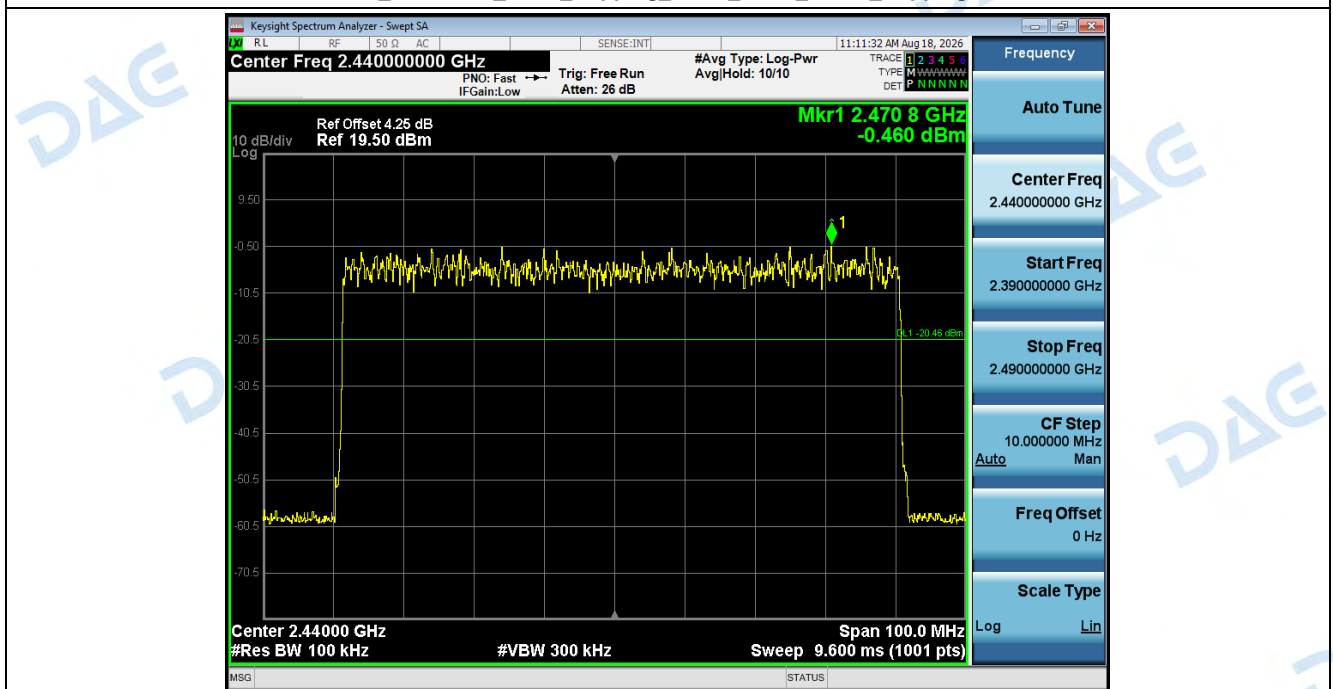
1_Reference_Level_NVNT_ANT1_2-DH5_2402_00



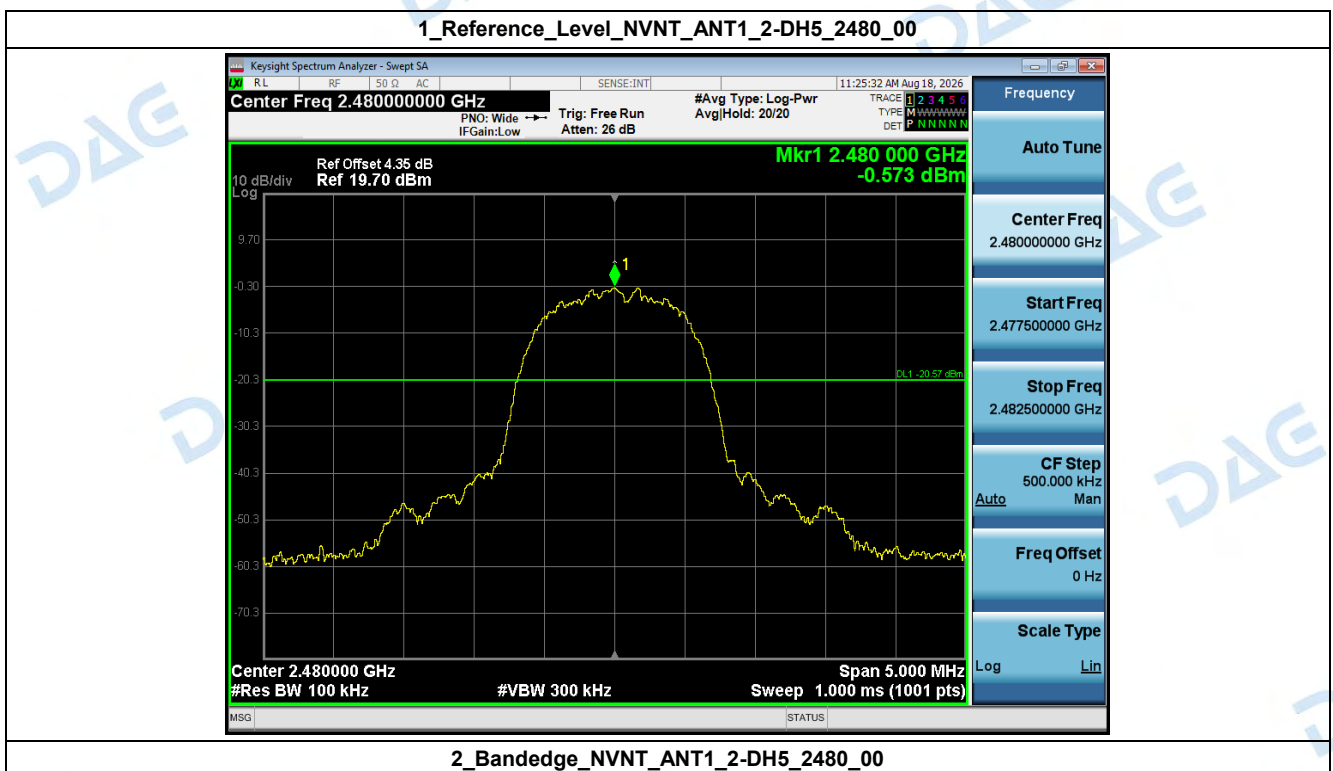
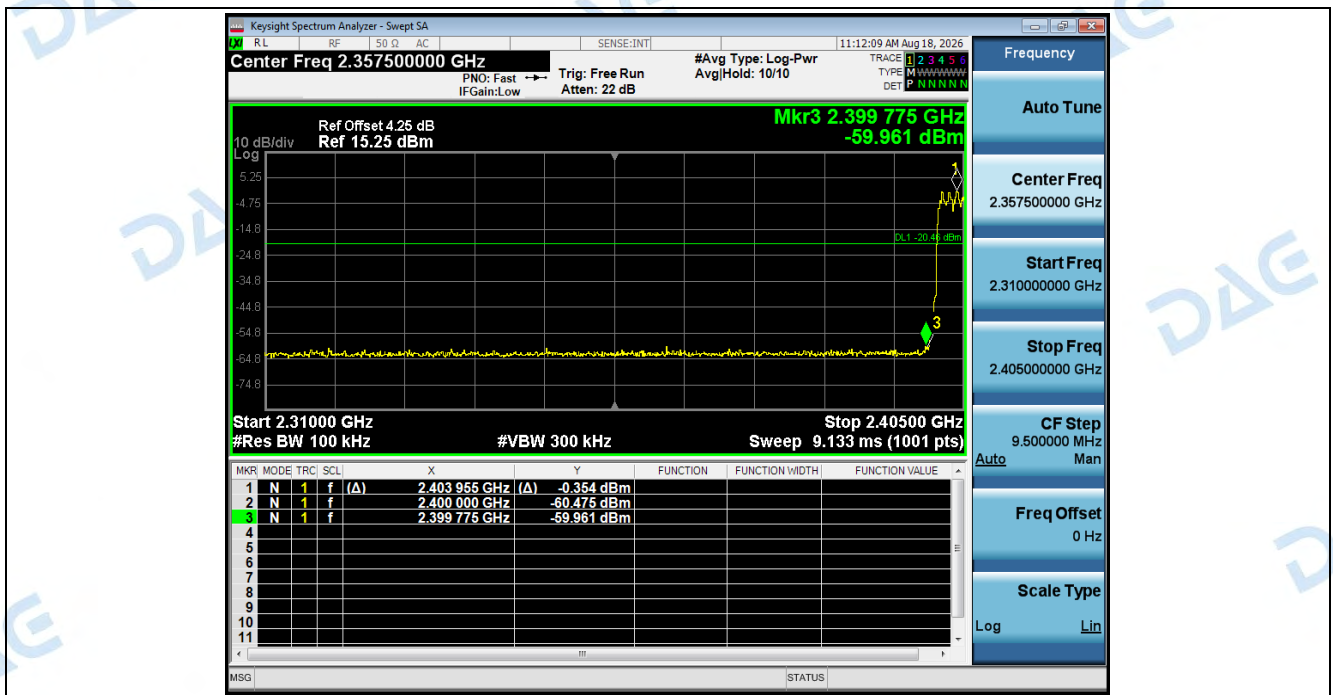
2_Bandedge_NVNT_ANT1_2-DH5_2402_00



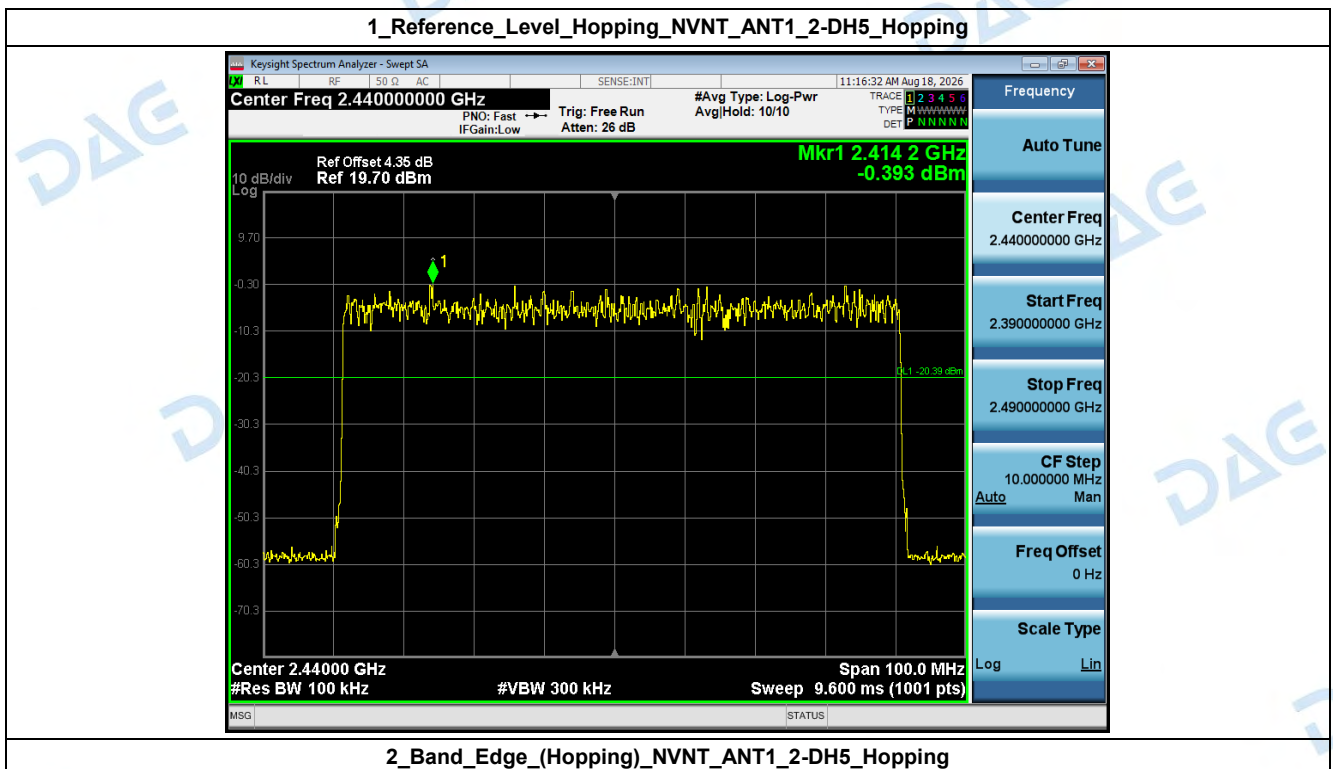
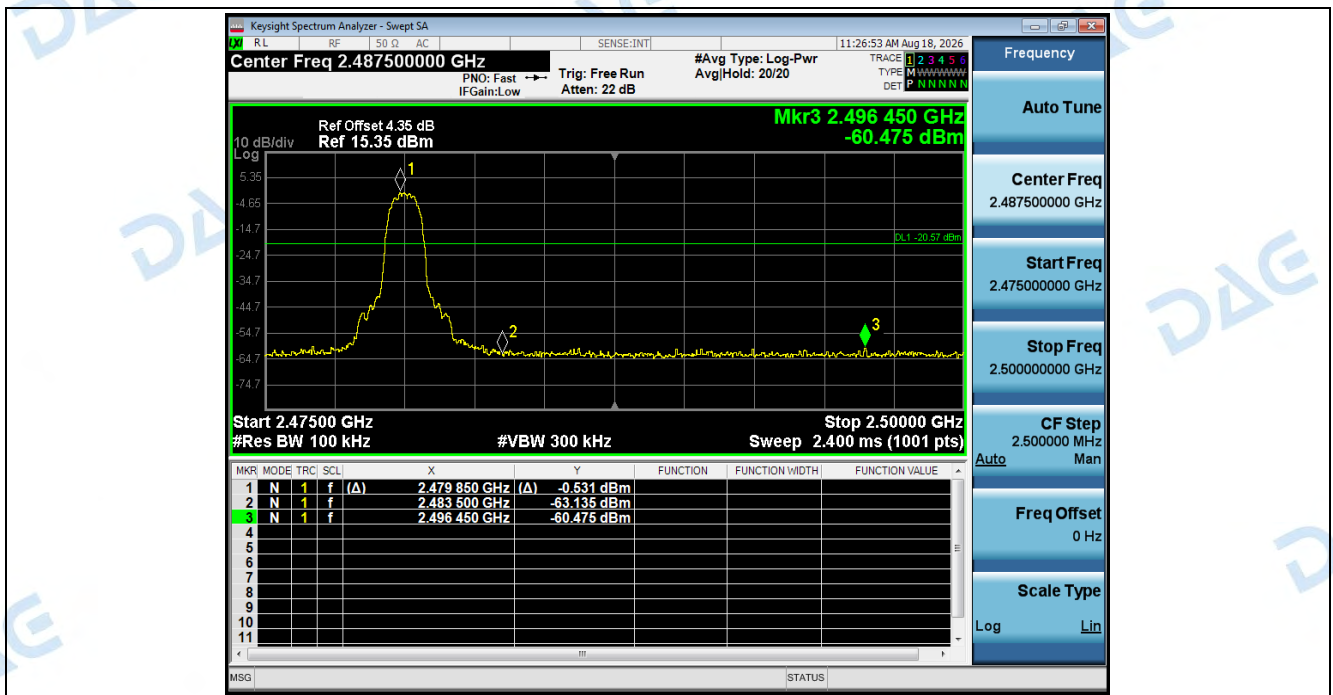
1_Reference_Level_Hopping_NVNT_ANT1_2-DH5_Hopping



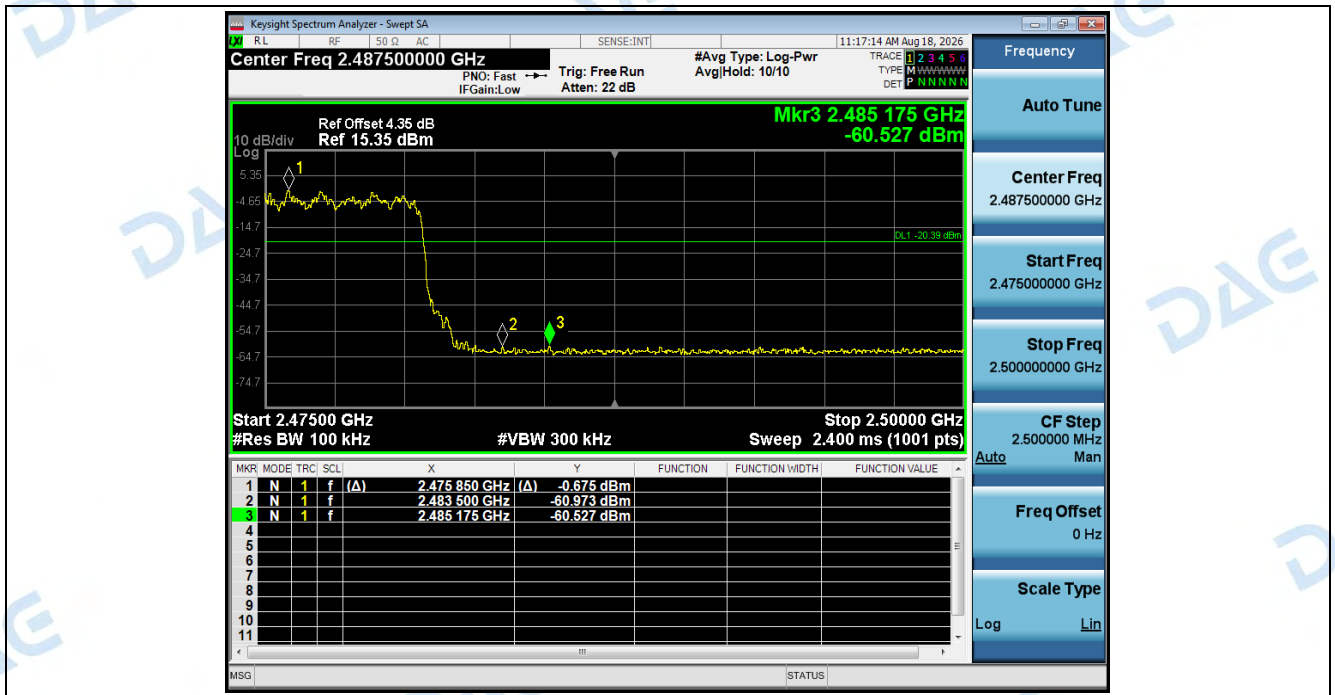
2_Band_Edge_(Hopping)_NVNT_ANT1_2-DH5_Hopping



2_Bandedge_NVNT_ANT1_2-DH5_2480_00



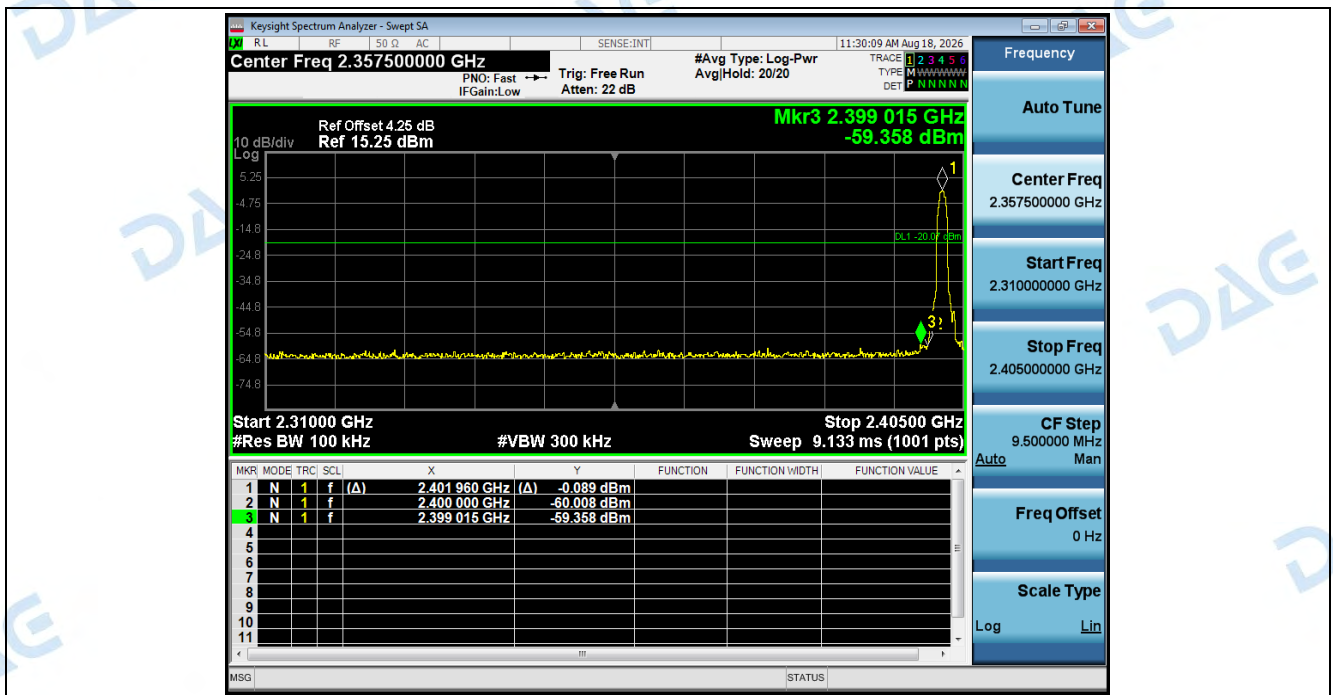
2_Band_Edge_(Hopping)_NVNT_ANT1_2-DH5_Hopping



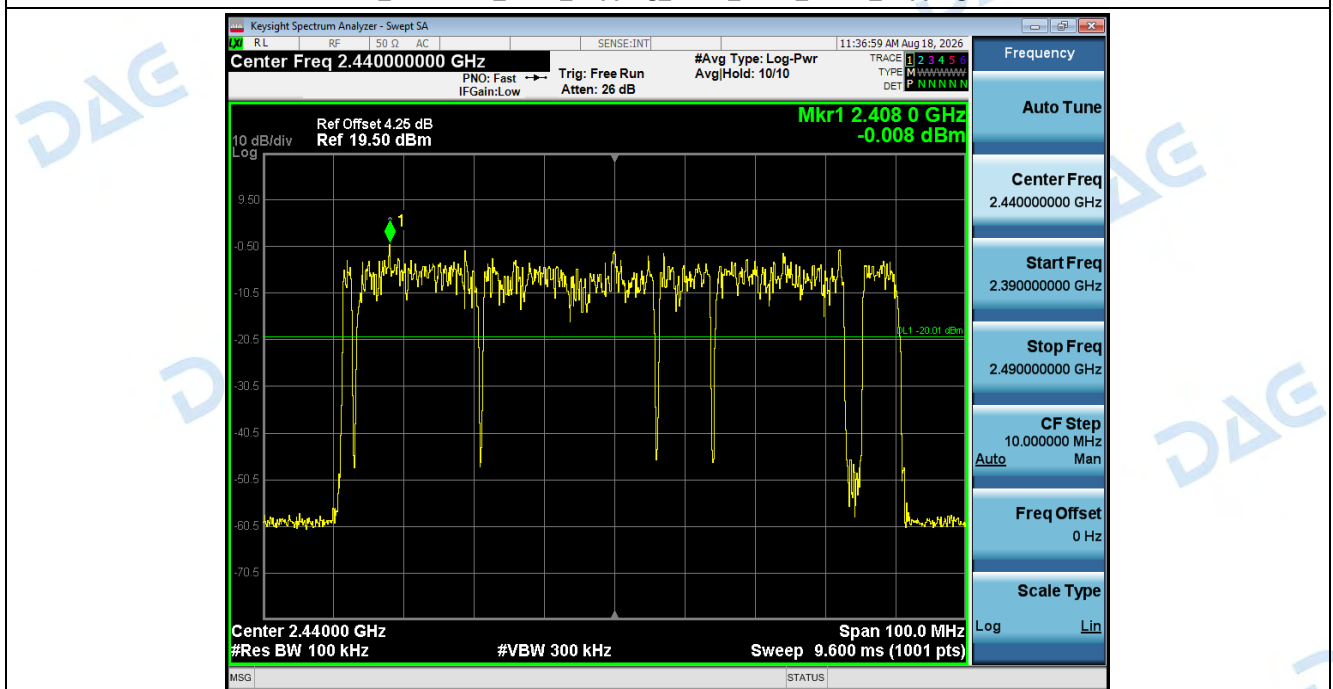
1_Reference_Level_NVNT_ANT1_3-DH5_2402_00



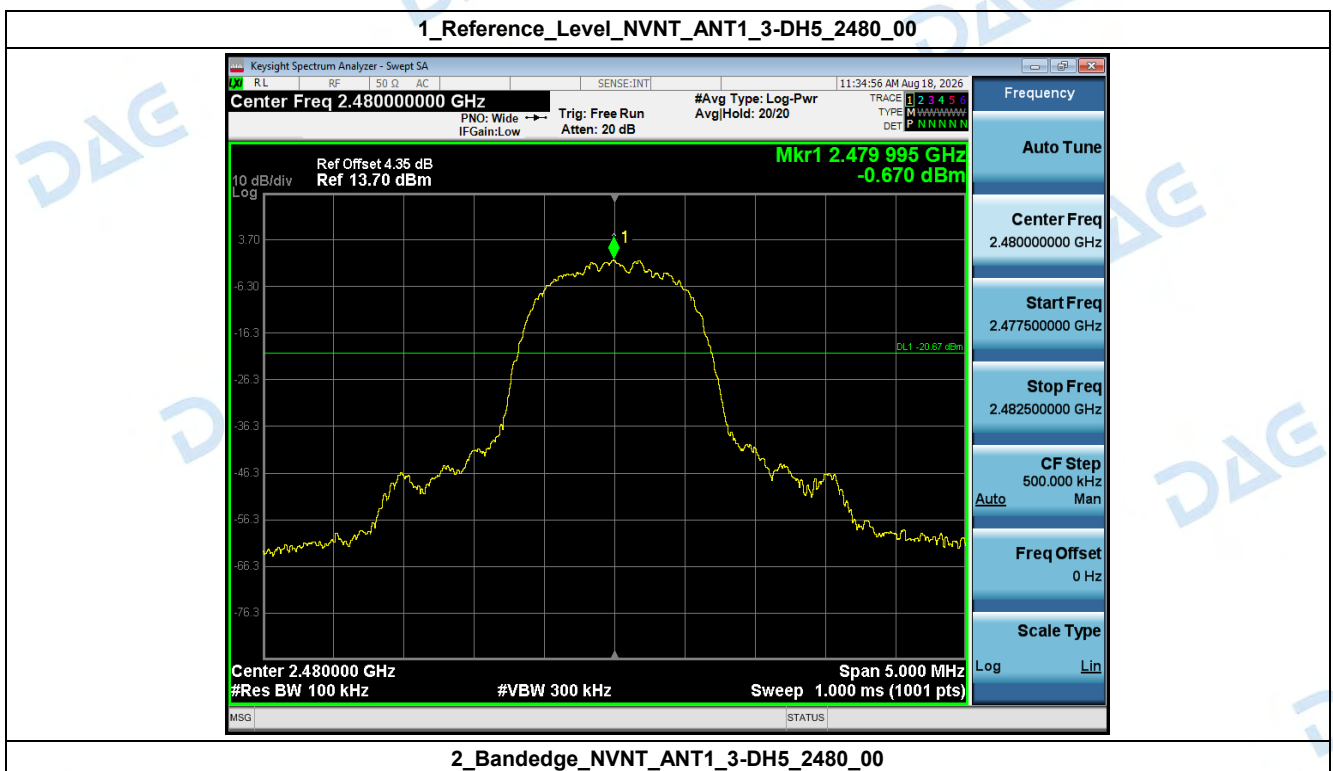
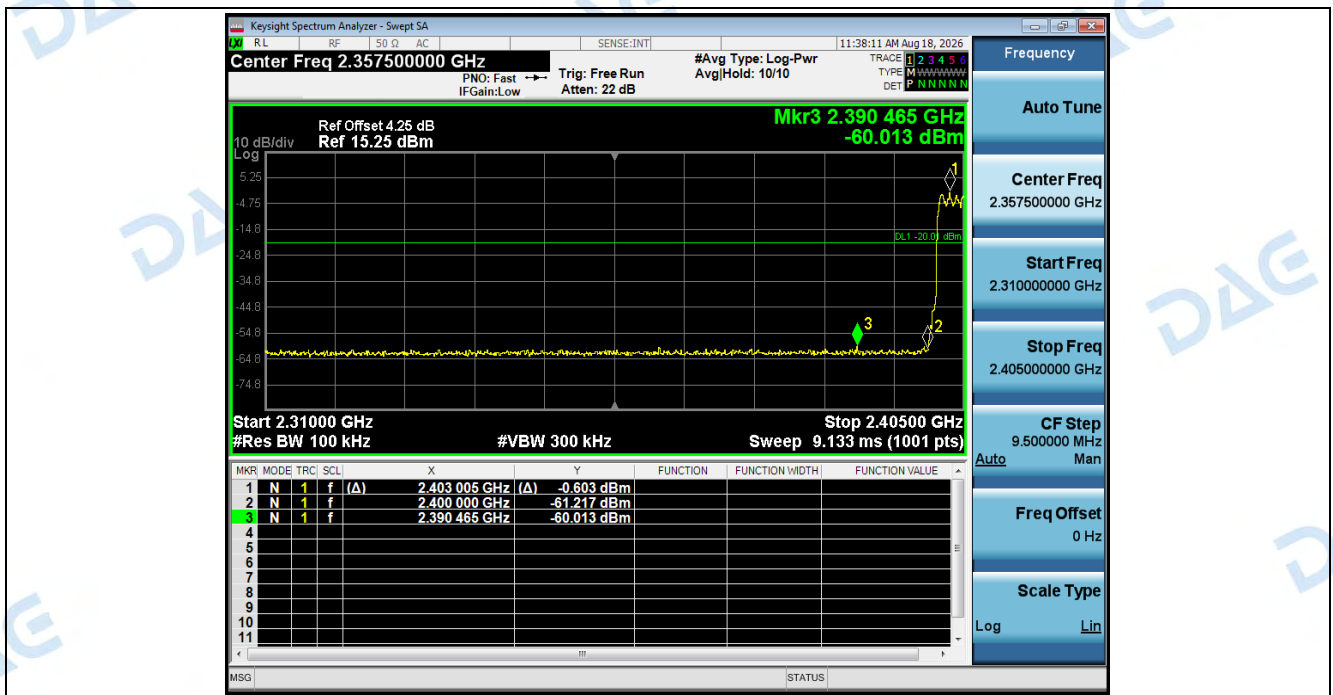
2_Bandedge_NVNT_ANT1_3-DH5_2402_00



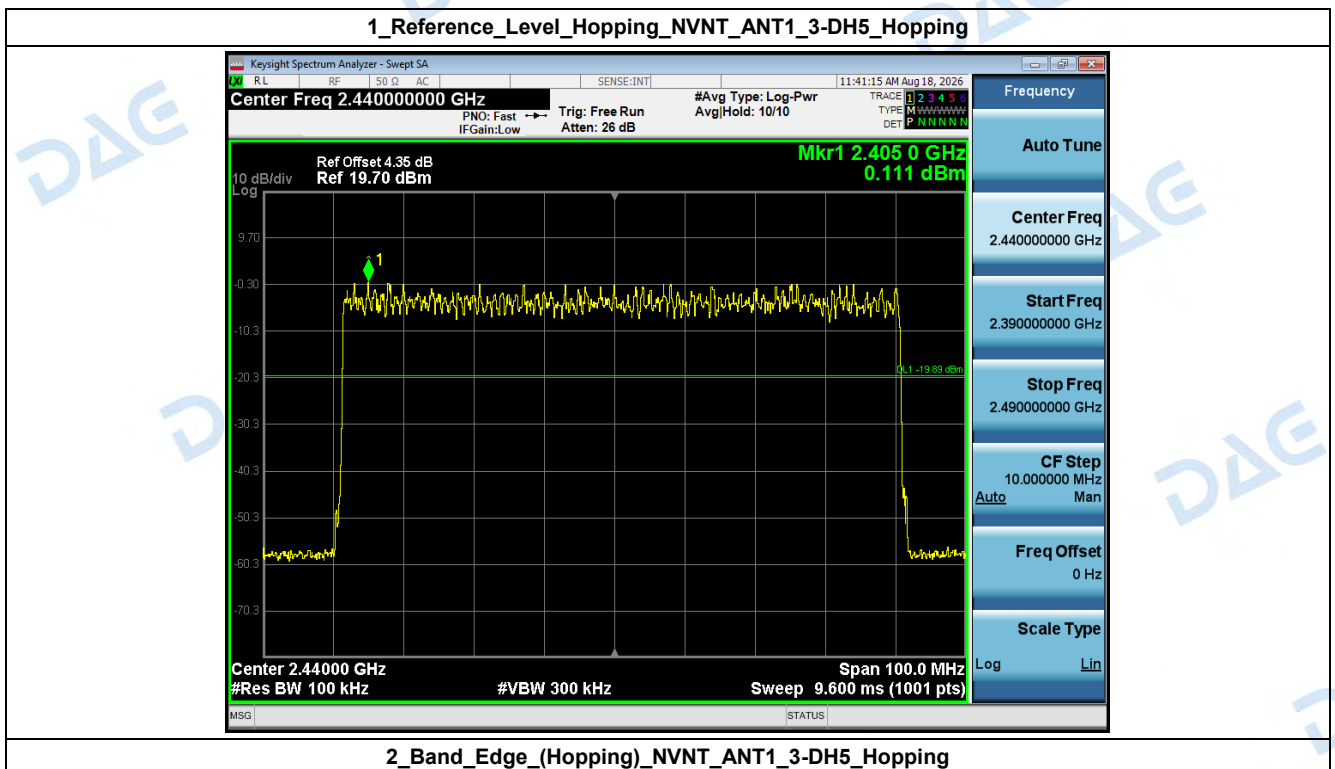
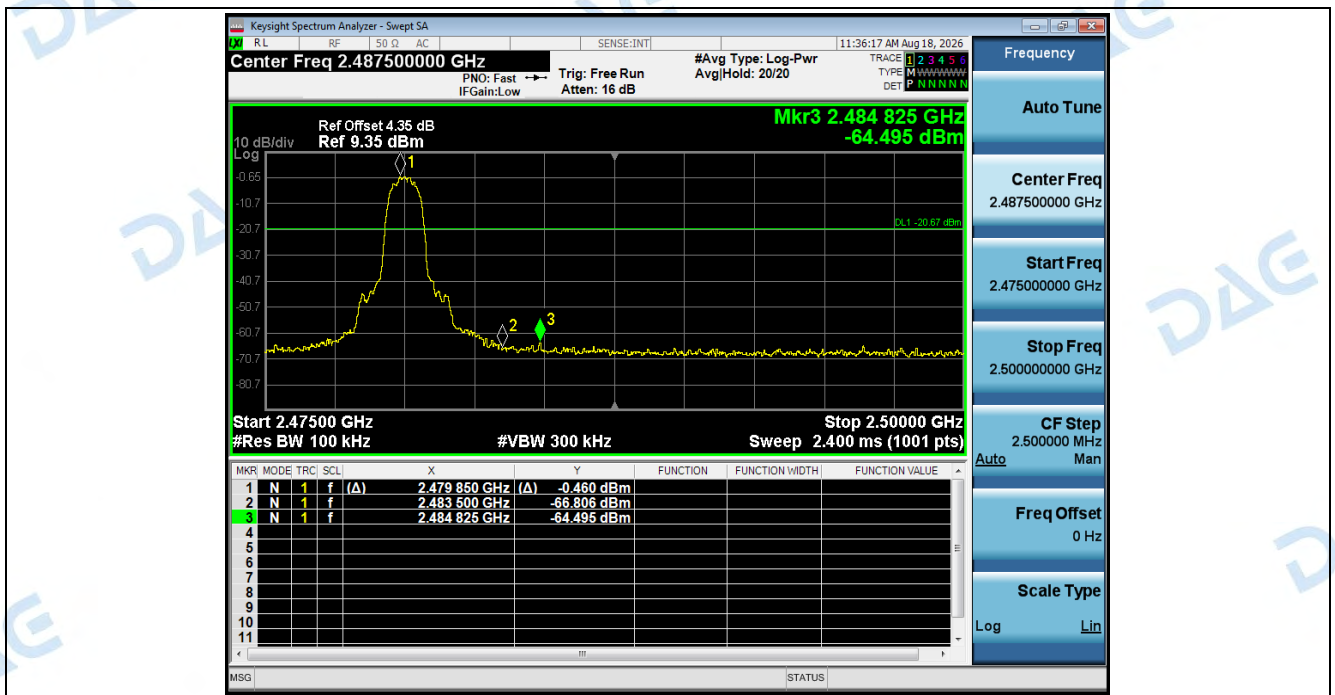
1_Reference_Level_Hopping_NVNT_ANT1_3-DH5_Hopping



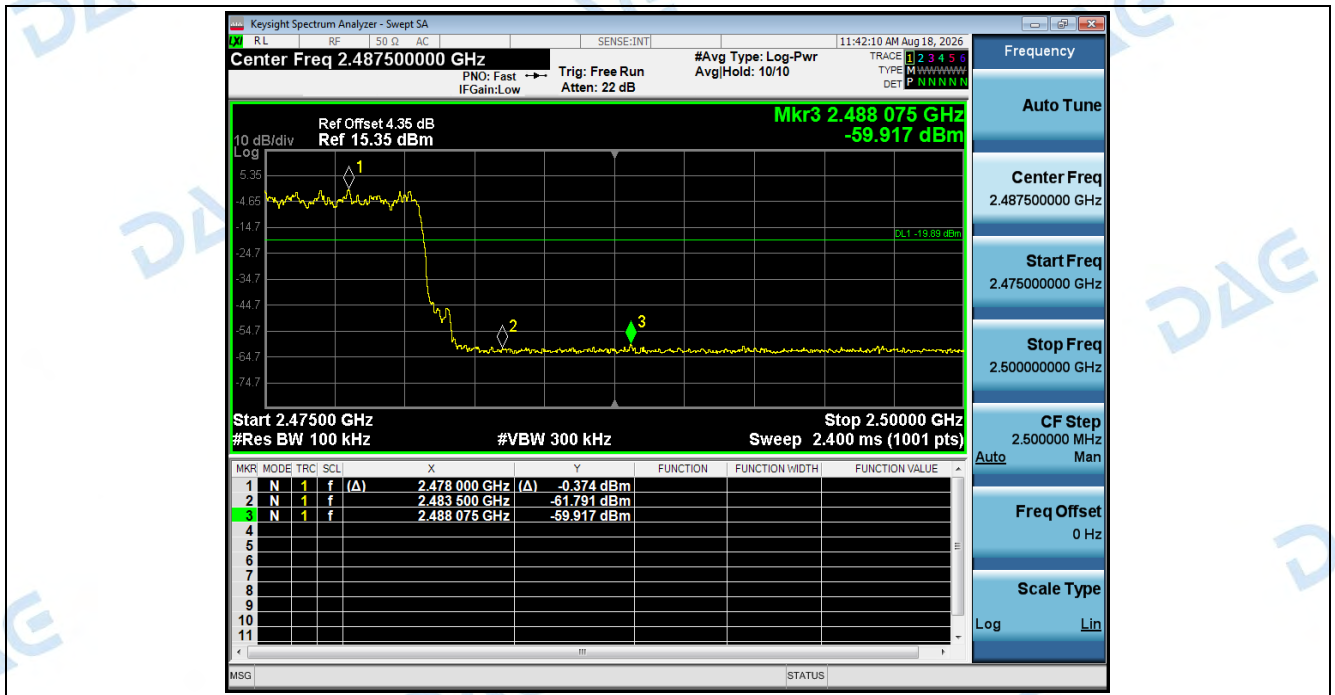
2_Band_Edge_(Hopping)_NVNT_ANT1_3-DH5_Hopping



2_Bandedge_NVNT_ANT1_3-DH5_2480_00



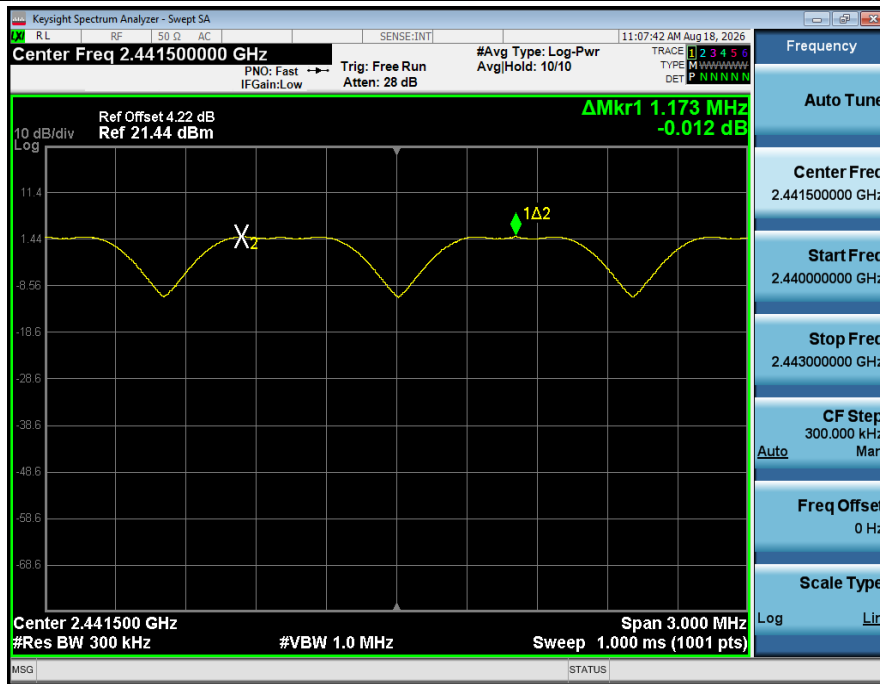
2_Band_Edge_(Hopping)_NVNT_ANT1_3-DH5_Hopping



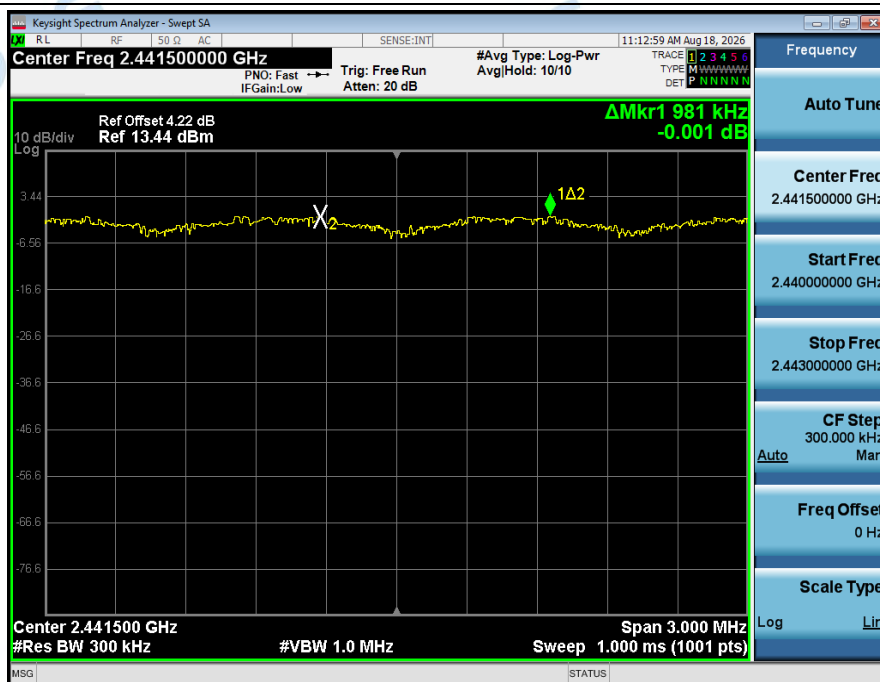
7. Carrier Frequencies Separation (Hopping)

Condition	Antenna	Modulation	Frequency(MHz)	Hopping NO.0 (MHz)	Hopping NO.1 (MHz)	Carrier Frequencies Separation(MHz)	Limit(MHz)	Result
NVNT	ANT1	1-DH5	2441.00	2440.837	2442.010	1.17	0.998	Pass
NVNT	ANT1	2-DH5	2441.00	2441.173	2442.154	0.98	0.869	Fail
NVNT	ANT1	3-DH5	2441.00	2441.029	2442.022	0.99	0.879	Pass

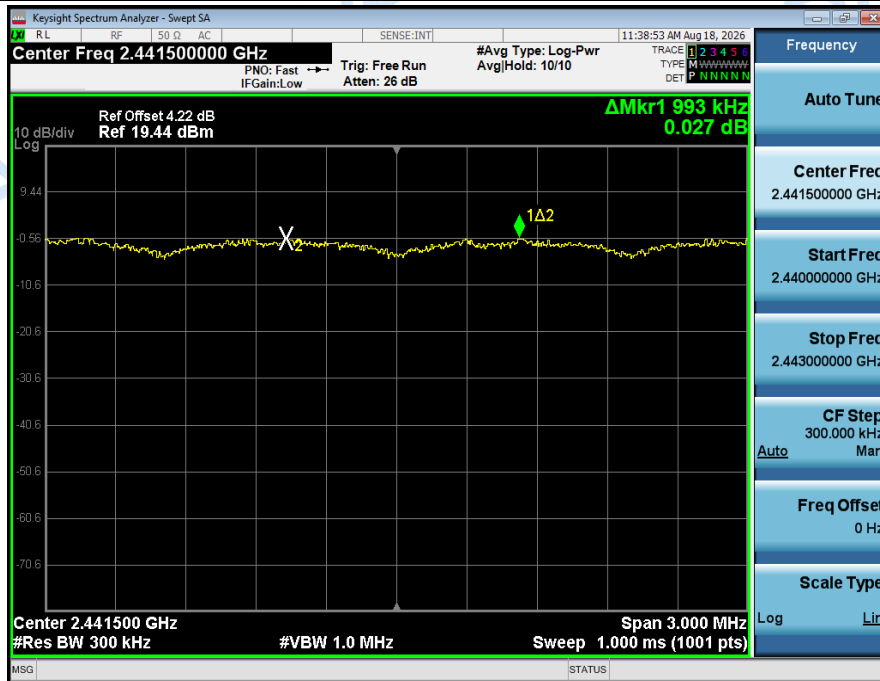
Carrier_Frequencies_Separation_(Hopping)_NVNT_ANT1_1-DH5_Hopping



Carrier_Frequencies_Separation_(Hopping)_NVNT_ANT1_2-DH5_Hopping



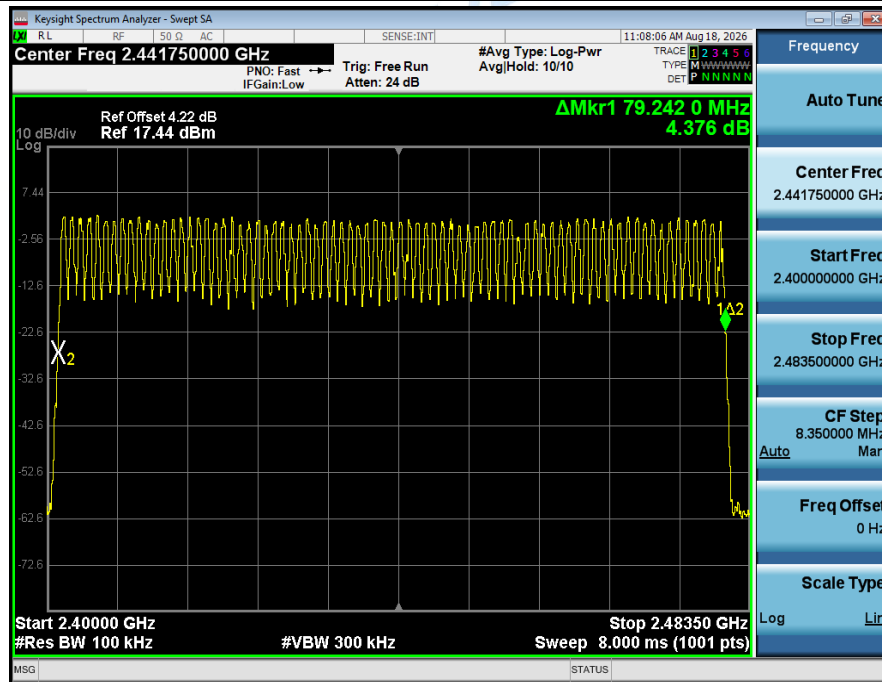
Carrier_Frequencies_Separation_(Hopping)_NVNT_ANT1_3-DH5_Hopping



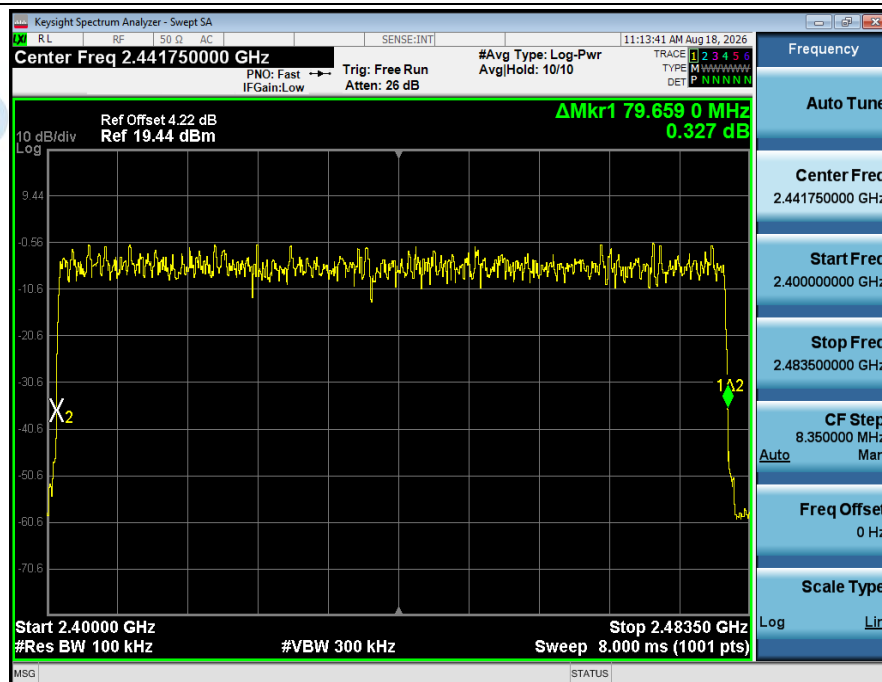
8. Number of Hopping Channel (Hopping)

Condition	Antenna	Modulation	Hopping Num	Limit	Result
NVNT	ANT1	1-DH5	79	15	Pass
NVNT	ANT1	2-DH5	79	15	Pass
NVNT	ANT1	3-DH5	79	15	Pass

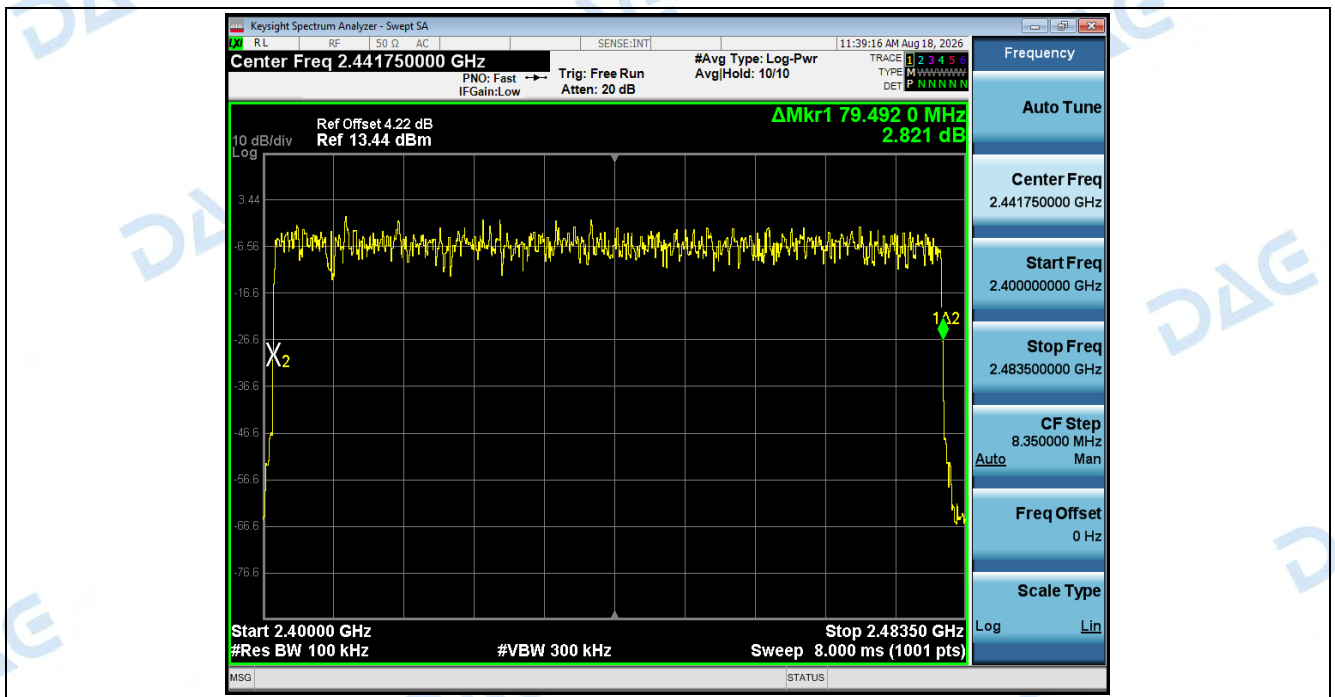
Number_of_Hopping_Channel_(Hopping)_NVNT_ANT1_1-DH5_Hopping



Number_of_Hopping_Channel_(Hopping)_NVNT_ANT1_2-DH5_Hopping



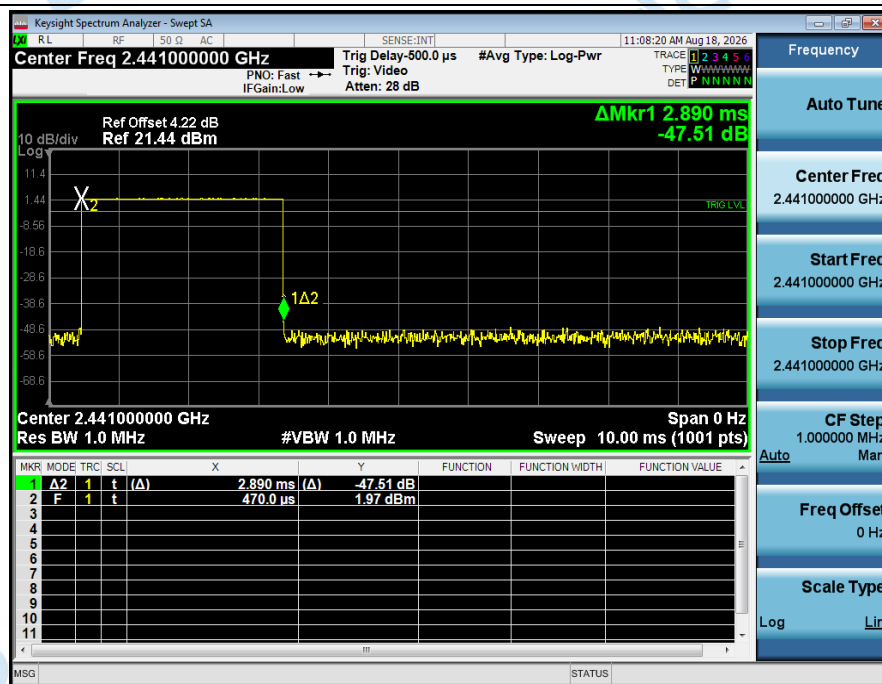
Number_of_Hopping_Channel_(Hopping)_NVNT_ANT1_3-DH5_Hopping



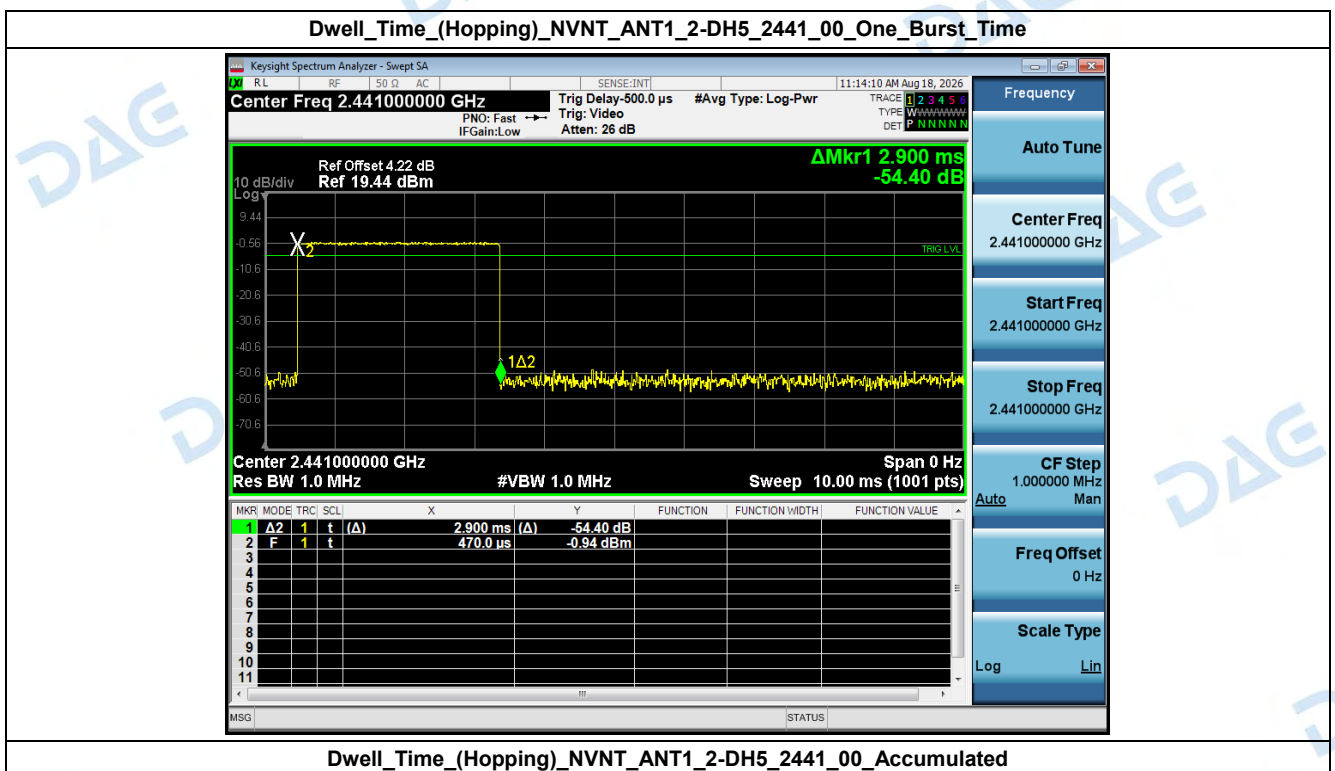
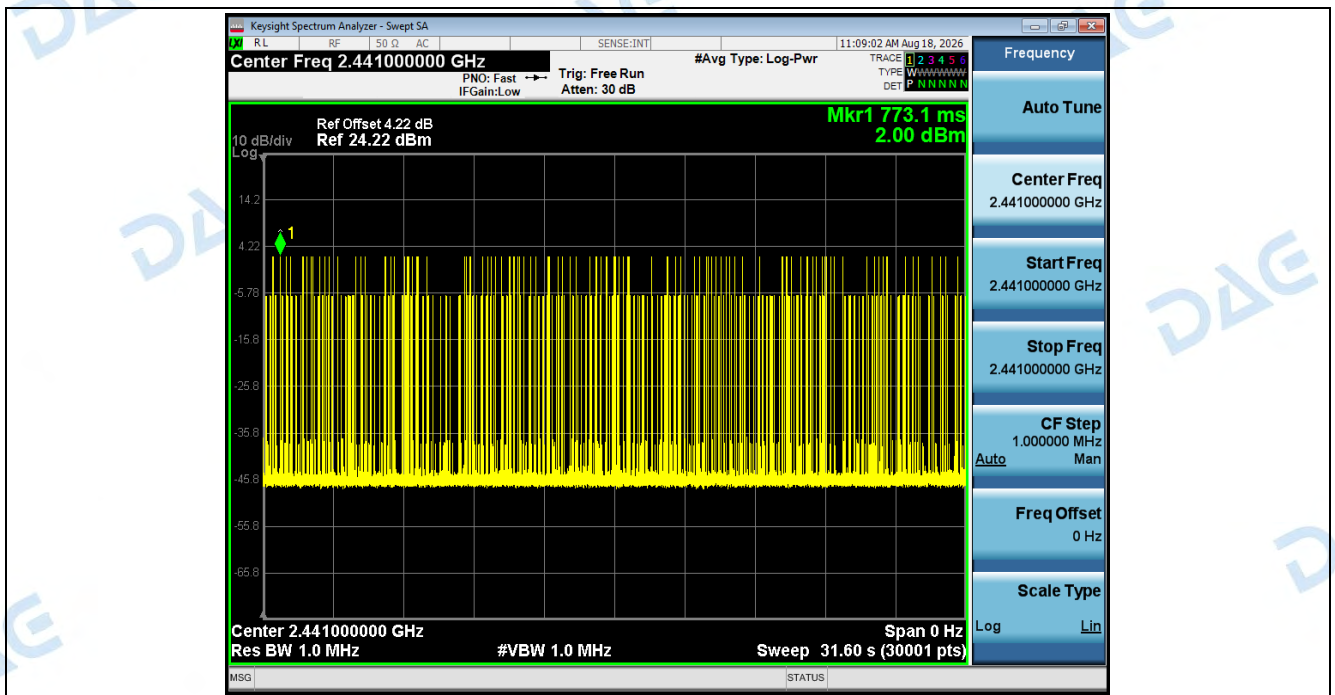
9. Dwell Time (Hopping)

Condition	Antenna	Packet Type	Pulse Time(ms)	Hops	Dwell Time(ms)	Limit(s)	Result
NVNT	ANT1	1-DH5	2.890	102.00	294.780	0.40	Pass
NVNT	ANT1	2-DH5	2.900	113.00	327.700	0.40	Pass
NVNT	ANT1	3-DH5	2.910	111.00	323.010	0.40	Pass
NVNT	ANT1	1-DH1	0.390	320.00	124.800	0.40	Pass
NVNT	ANT1	1-DH3	1.650	149.00	245.850	0.40	Pass
NVNT	ANT1	2-DH1	0.400	320.00	128.000	0.40	Pass
NVNT	ANT1	2-DH3	1.650	156.00	257.400	0.40	Pass
NVNT	ANT1	3-DH1	0.400	320.00	128.000	0.40	Pass
NVNT	ANT1	3-DH3	1.650	163.00	268.950	0.40	Pass

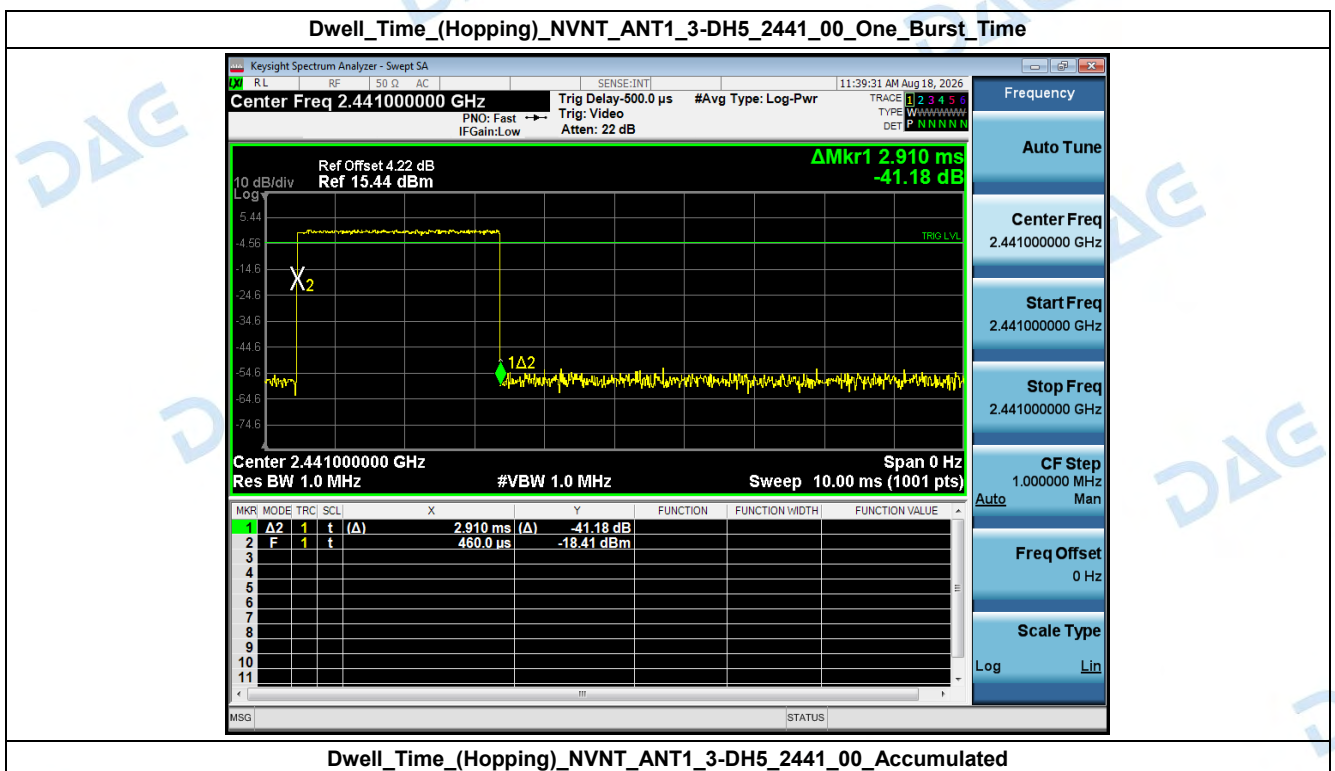
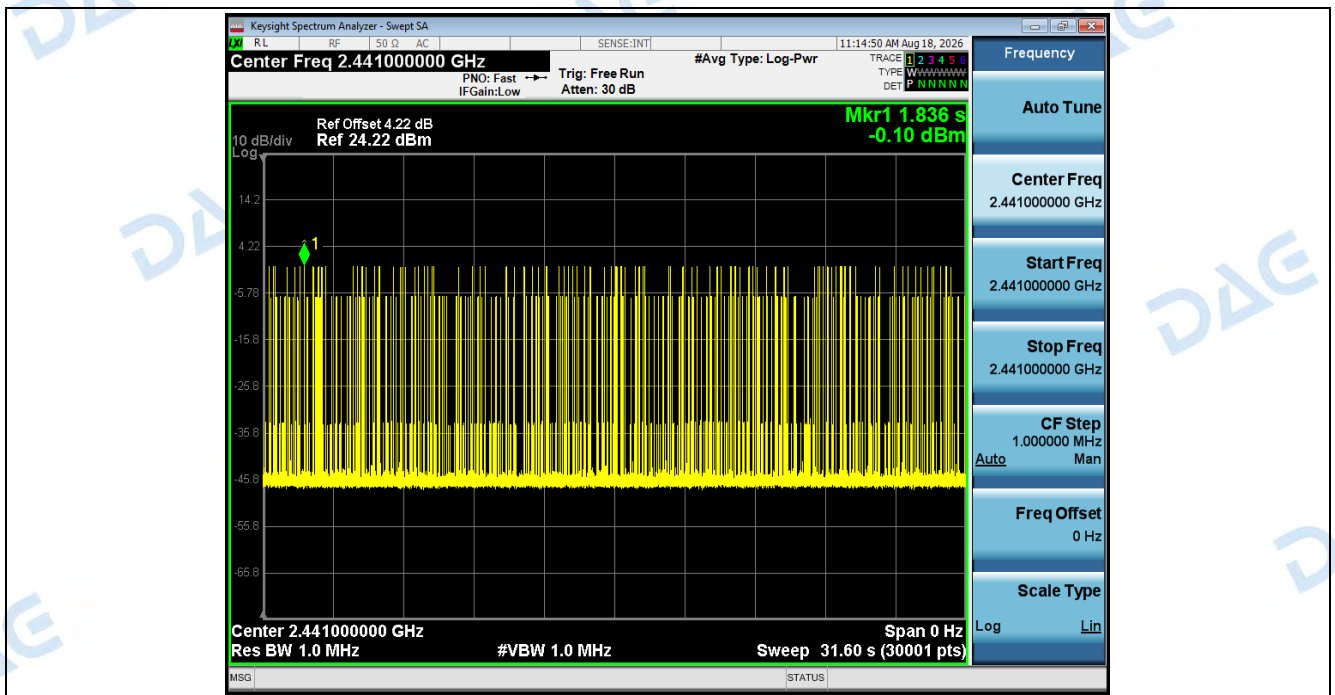
Dwell_Time_(Hopping)_NVNT_ANT1_1-DH5_2441_00_One_Burst_Time



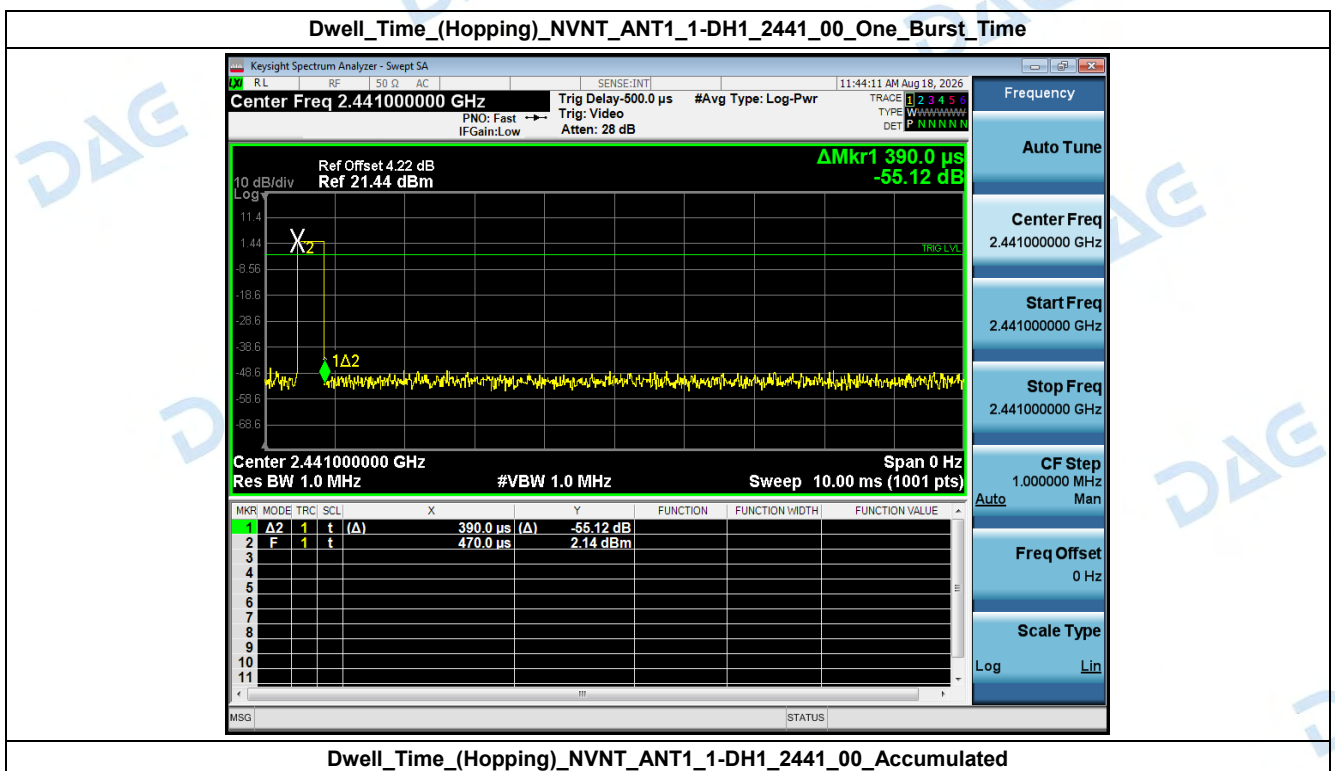
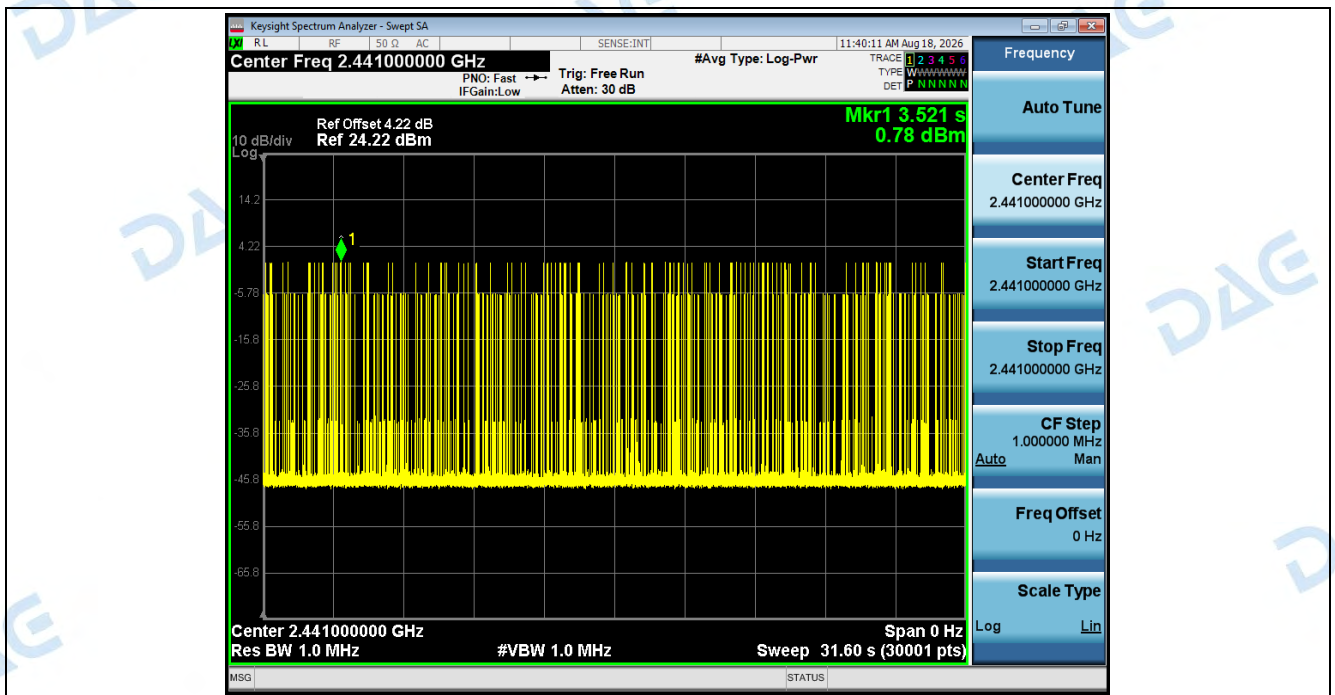
Dwell_Time_(Hopping)_NVNT_ANT1_1-DH5_2441_00_Accumulated



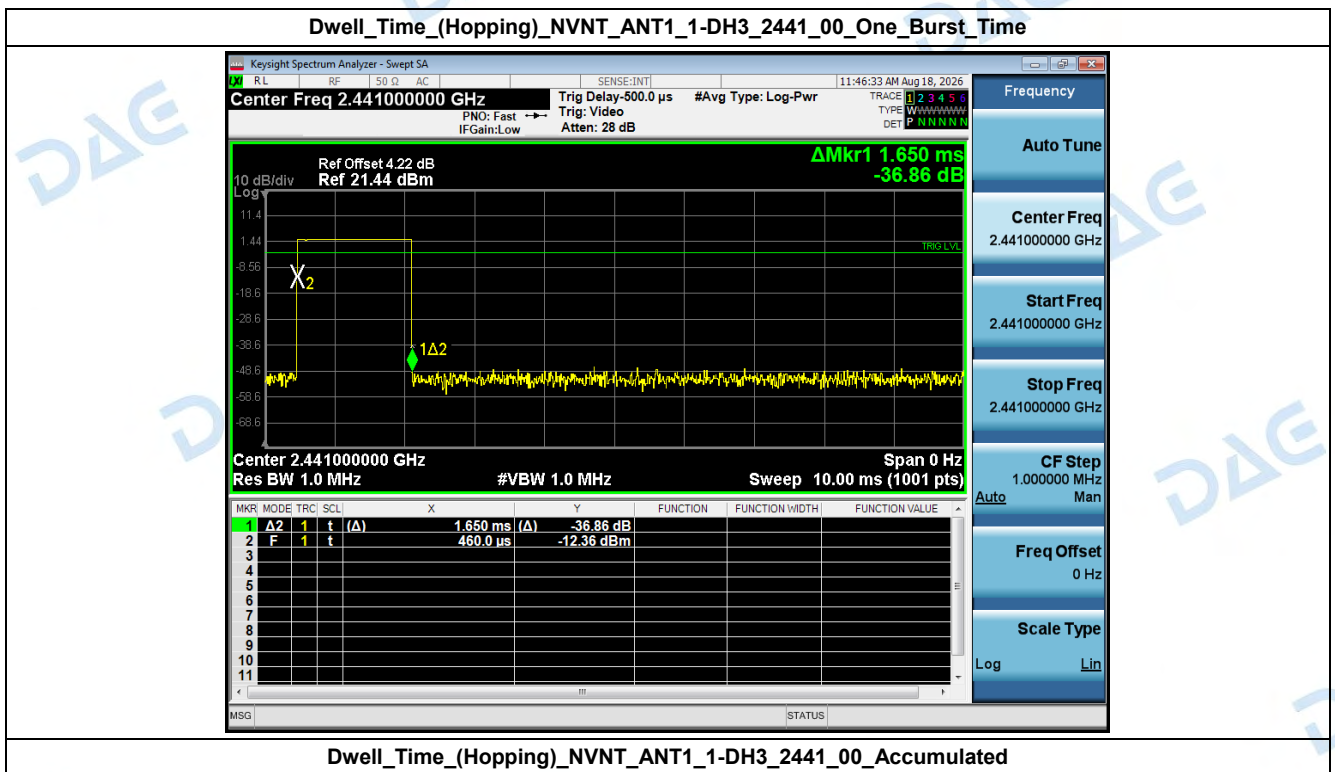
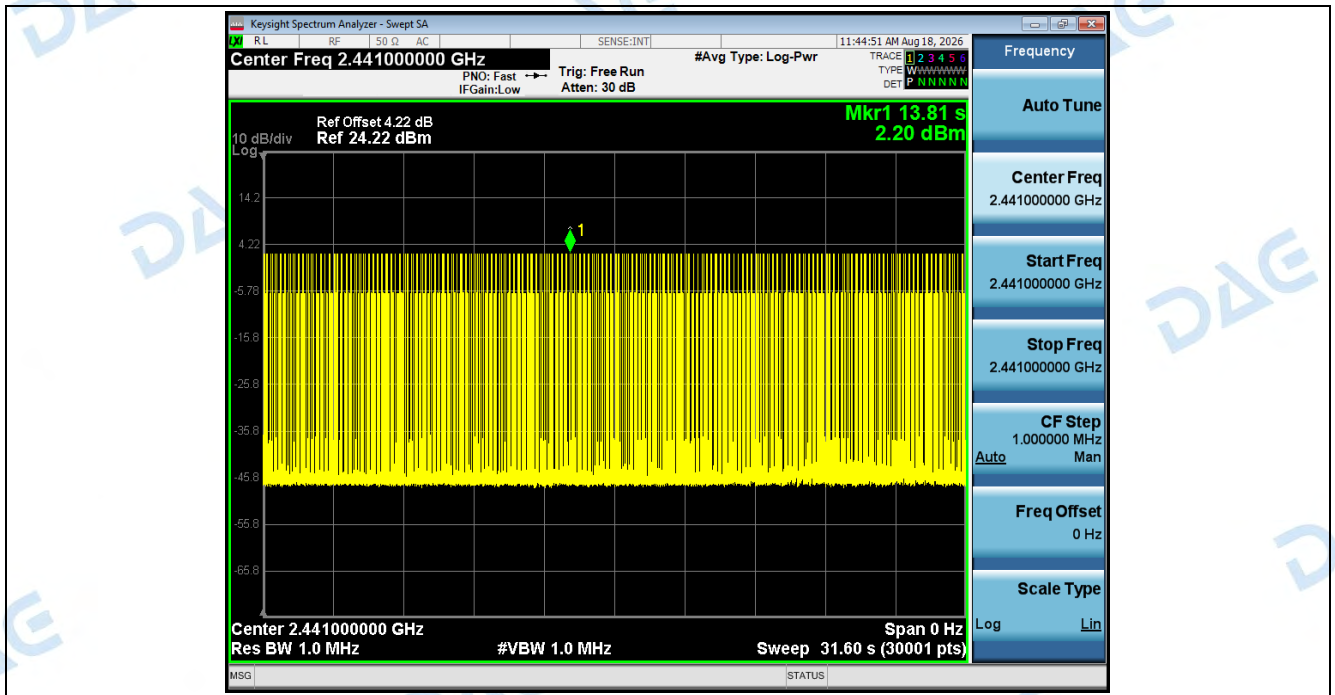
Dwell_Time_(Hopping)_NVNT_ANT1_2-DH5_2441_00_Accumulated

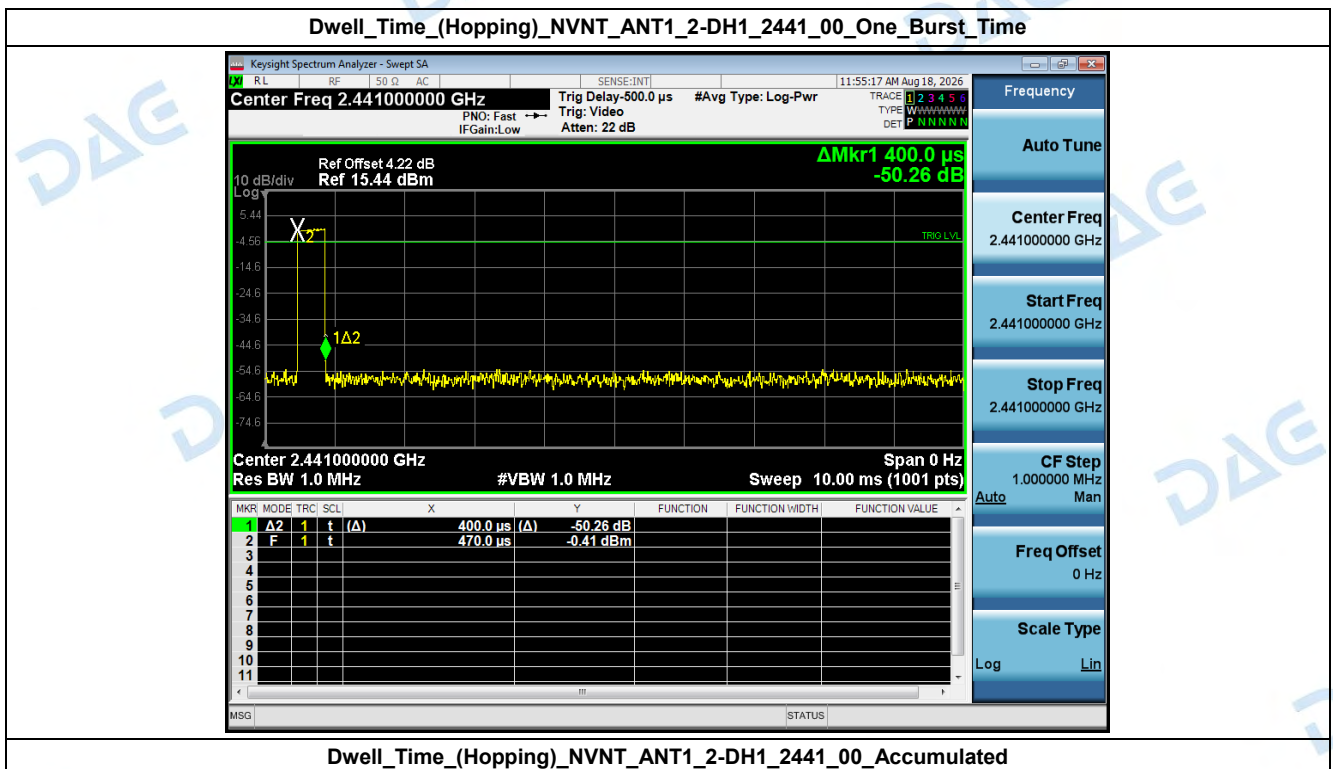
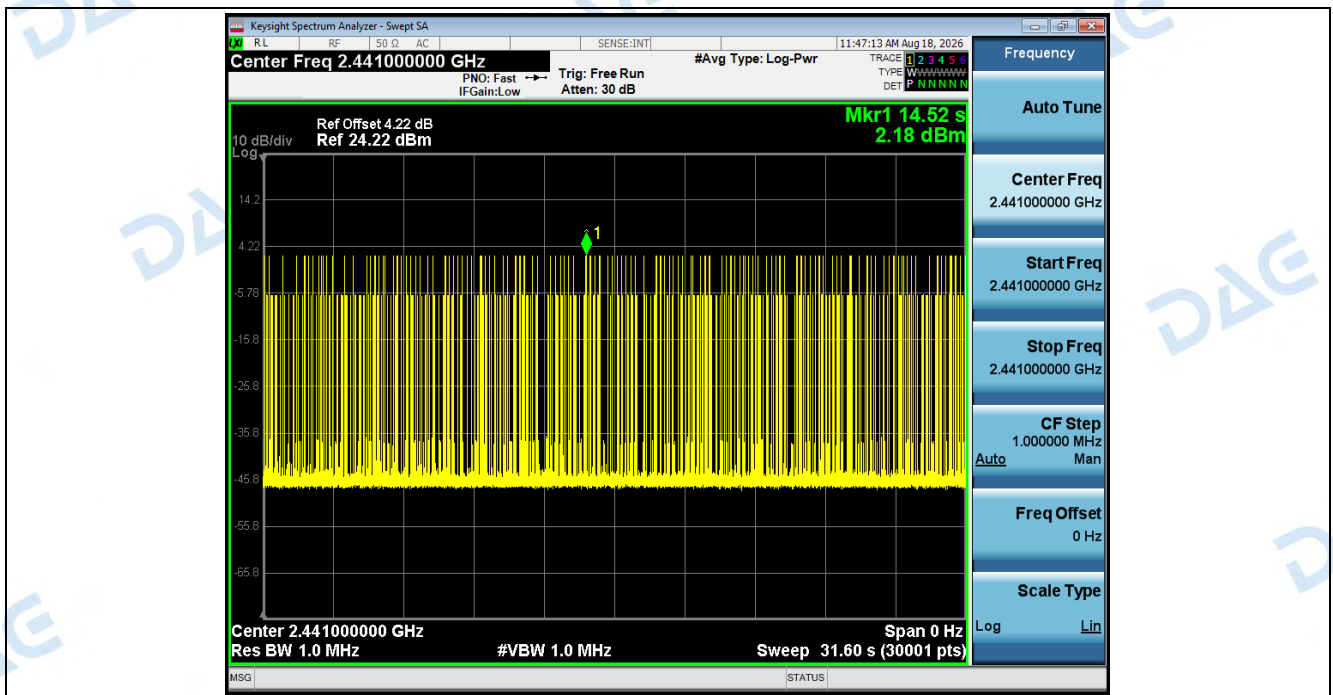


Dwell_Time_(Hopping)_NVNT_ANT1_3-DH5_2441_00_Accumulated

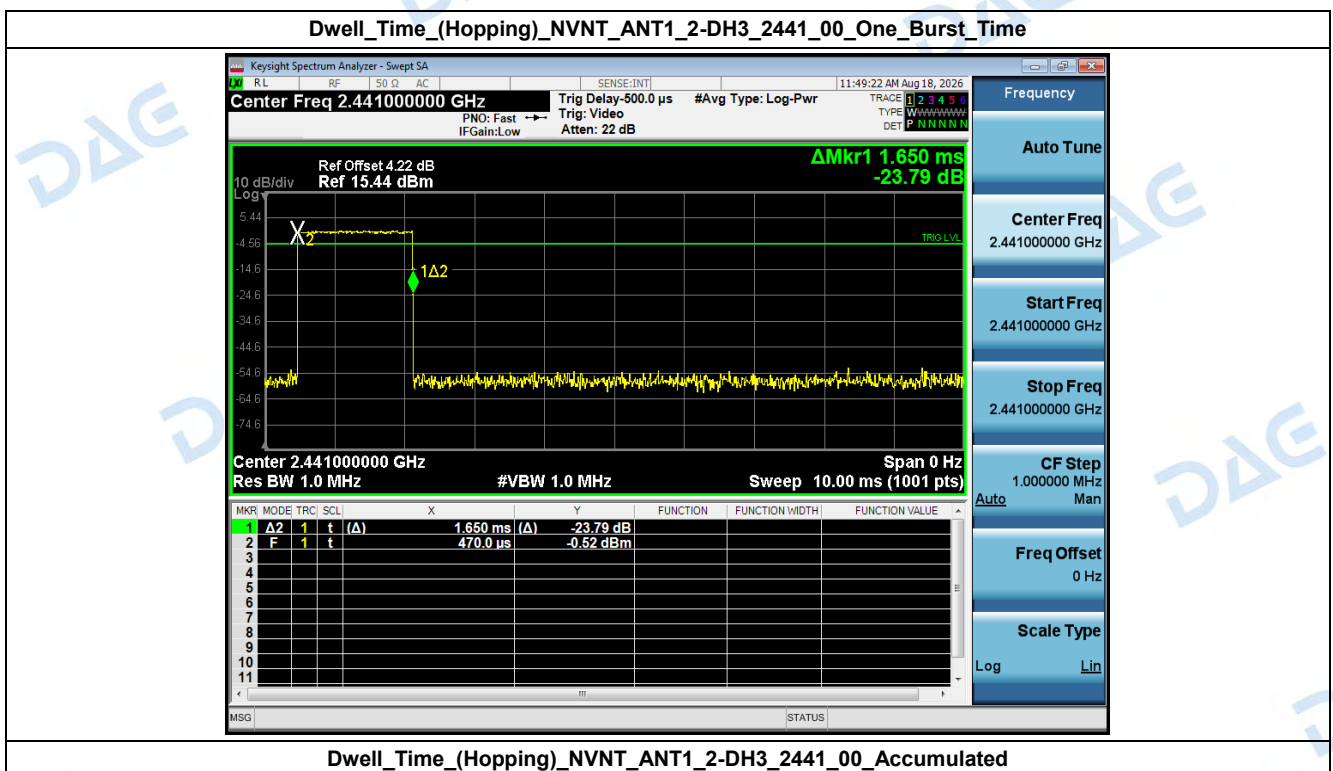
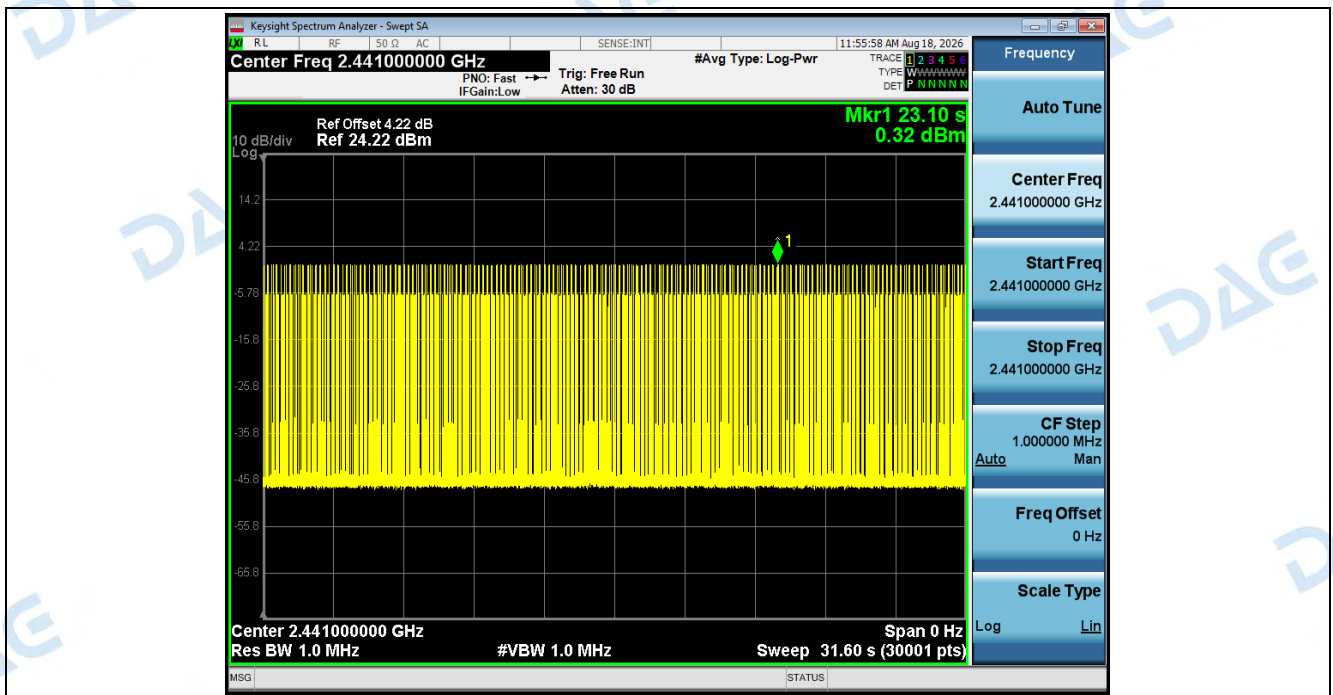


Dwell_Time_(Hopping)_NVNT_ANT1_1-DH1_2441_00_Accumulated

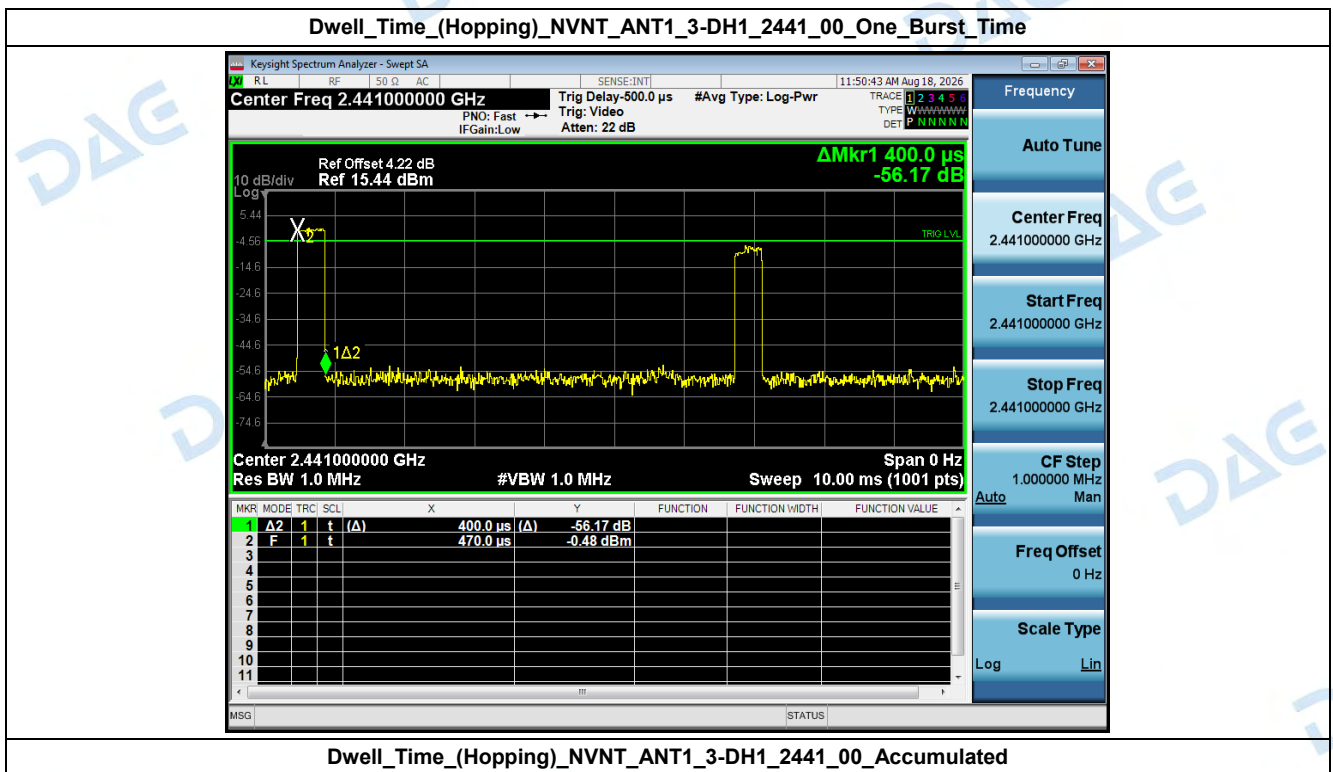
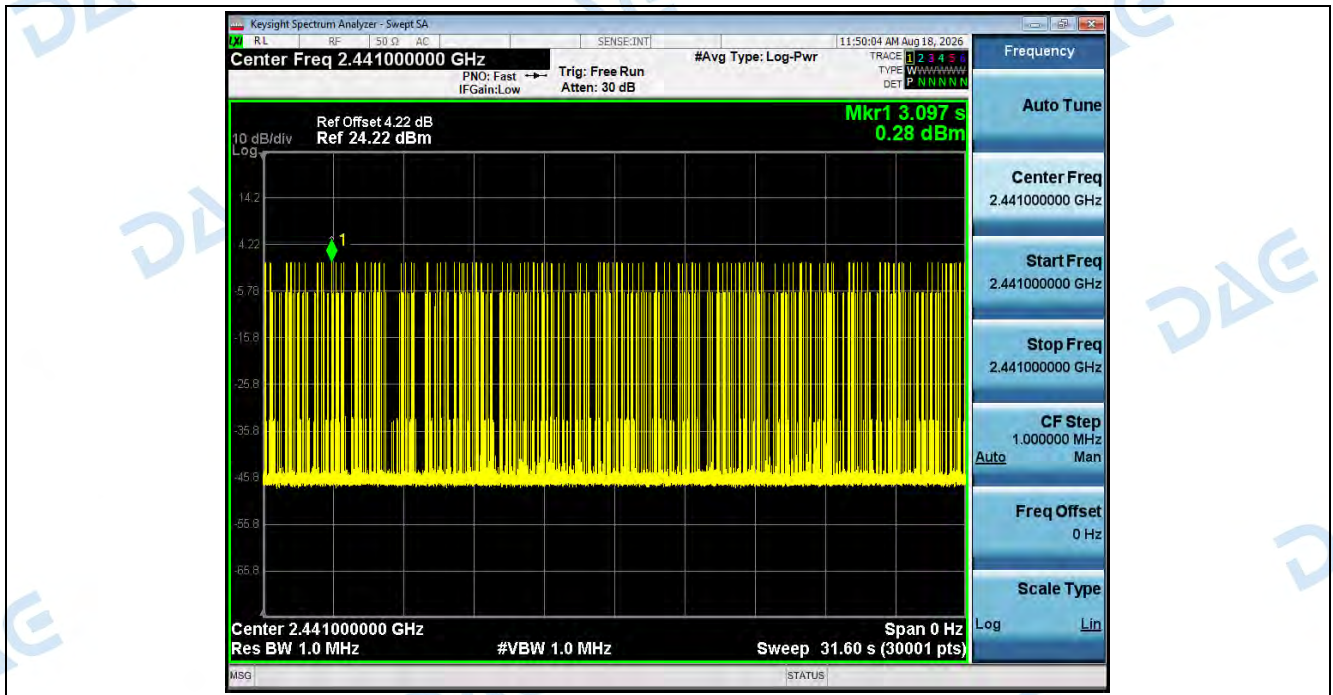


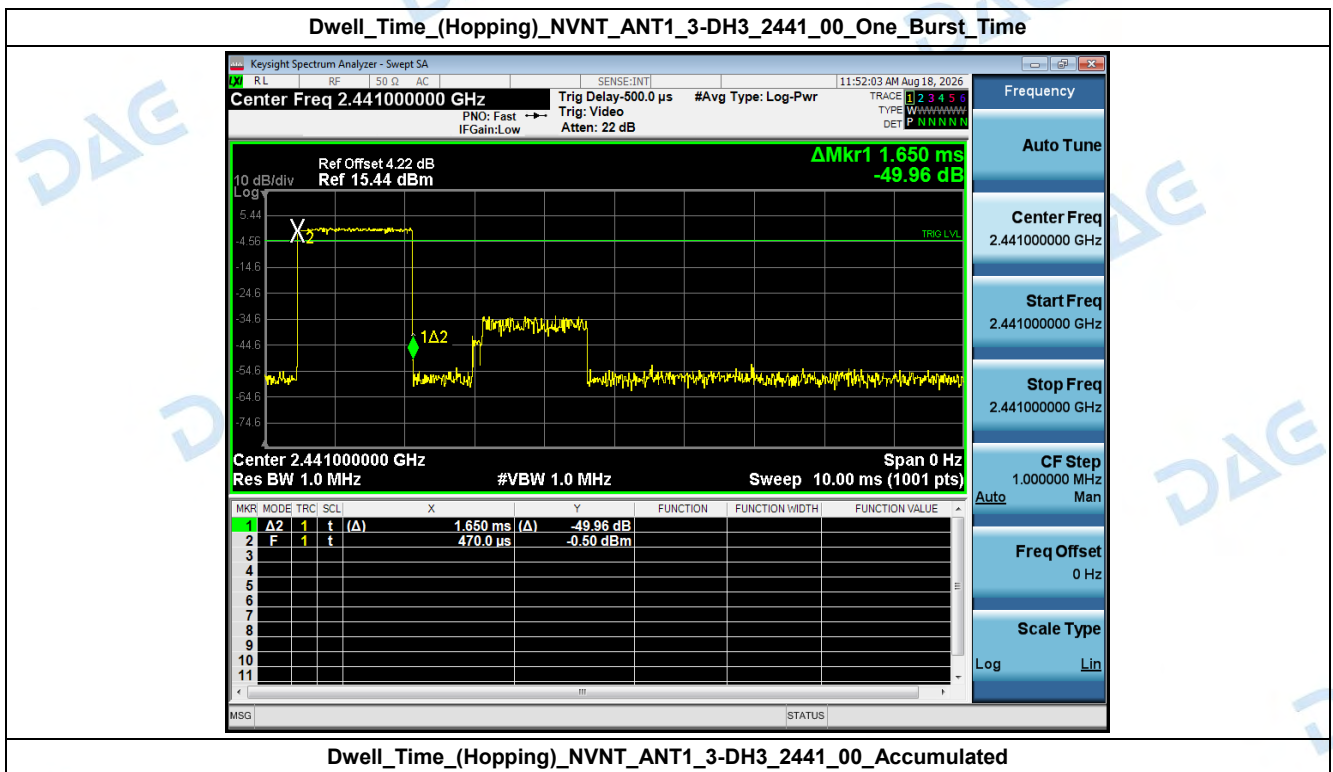
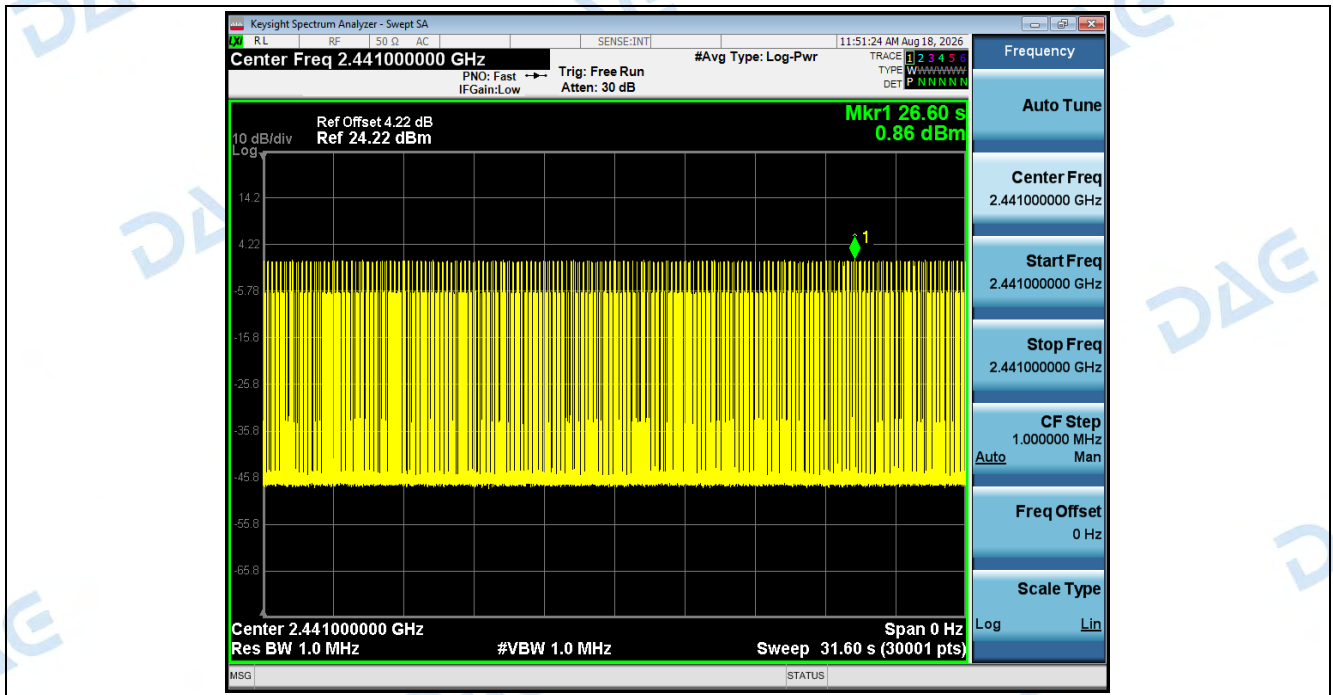


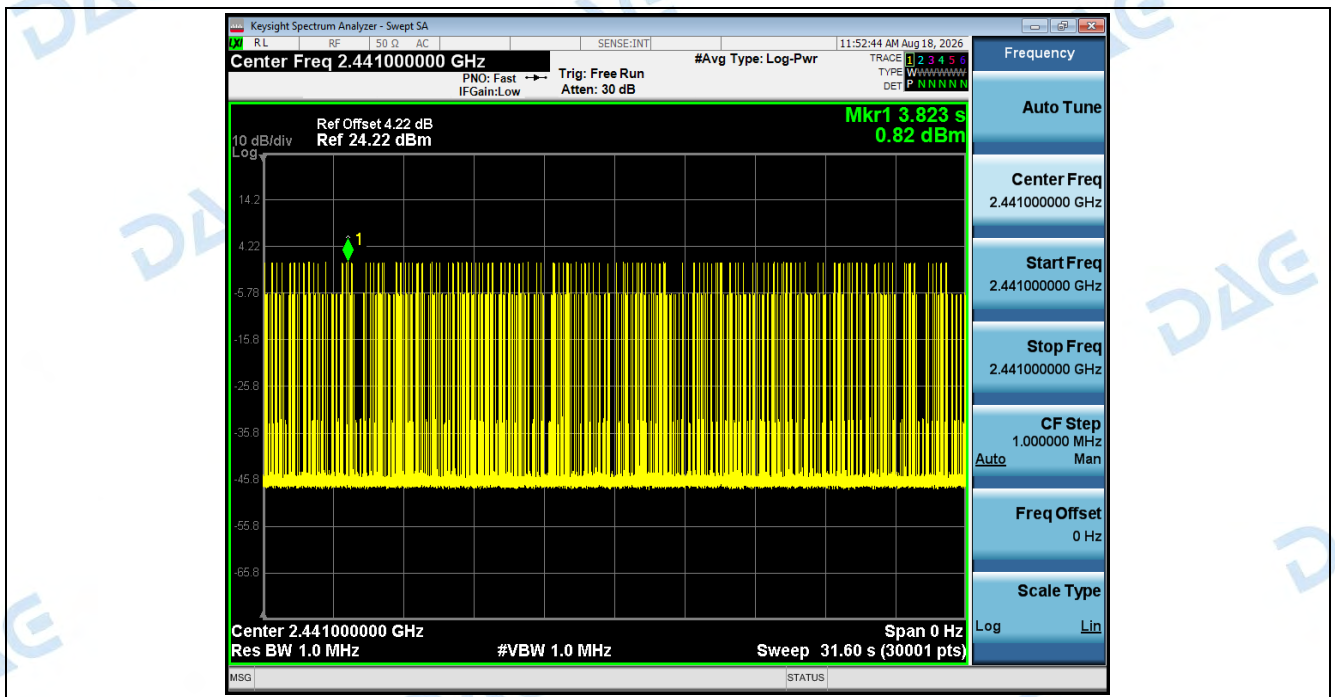
Dwell_Time_(Hopping)_NVNT_ANT1_2-DH1_2441_00_Accumulated



Dwell_Time_(Hopping)_NVNT_ANT1_2-DH3_2441_00_Accumulated







***** End of Report *****