



TEST REPORT

APPLICANT : BLU Products, Inc.
PRODUCT NAME : Smart Phone
MODEL NAME : N4
BRAND NAME : BOLD
FCC ID : YHLBLU4NC
STANDARD(S) : 47 CFR Part 15 Subpart C
RECEIPT DATE : 2025-07-08
TEST DATE : 2025-07-11 to 2025-08-05
ISSUE DATE : 2025-08-18

Edited by:

Zeng Xiaoying
Zeng Xiaoying (Rapporteur)

Approved by:

Shen Junsheng
Shen Junsheng (Supervisor)

NOTE: This document is issued by Shenzhen Morlab Communications Technology Co., Ltd., the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.





DIRECTORY

- 1. Summary of Test Result4
- 1.1. Testing Applied Standards5
- 1.2. Test Equipment List6
- 1.3. Measurement Uncertainty8
- 1.4. Testing Laboratory8
- 2. General Description9
- 2.1. Information of Applicant and Manufacturer9
- 2.2. Information of EUT9
- 2.3. Channel List of EUT 11
- 2.4. Test Configuration of EUT 12
- 2.5. Test Conditions 12
- 2.6. Test Setup Layout Diagram 12
- 3. Test Results 15
- 3.1. Antenna Requirement 15
- 3.2. Hopping Mechanism 16
- 3.3. Number of Hopping Frequency 17
- 3.4. Duty Cycle of Test Signal 18
- 3.5. Maximum Peak Conducted Output Power 19
- 3.6. Maximum Average Conducted Output Power 20
- 3.7. 20 dB Bandwidth 21
- 3.8. Carried Frequency Separation 22
- 3.9. Time of Occupancy (Dwell time) 23
- 3.10. Conducted Spurious Emissions and Band Edge 24
- 3.11. Conducted Emission 25
- 3.12. Restricted Frequency Bands 26
- 3.13. Radiated Emission 27



Annex A Test Data and Result **29**

Change History		
Version	Date	Reason for change
1.0	2025-08-18	First edition



1. Summary of Test Result

No.	Section	Description	Test Date	Test Engineer	Result	Remark
1	15.203	Antenna Requirement	N/A	N/A	PASS	/
2	15.247(a) 15.247(h)	Hopping Mechanism	N/A	N/A	PASS	/
3	15.247(a)	Number of Hopping Frequency	Jul. 18, 2025	Li Xinpeng	PASS	/
4	ANSI C63.10	Duty Cycle	Jul. 14, 2025	Li Xinpeng	PASS	/
5	15.247(b)	Maximum Peak Conducted Output Power	Jul. 14, 2025	Li Xinpeng	PASS	/
6	15.247(b)	Maximum Average Conducted Output Power	Jul. 14, 2025	Li Xinpeng	PASS	/
7	15.247(a)	20dB Bandwidth	Jul. 14, 2025	Li Xinpeng	PASS	/
8	15.247(a)	Carrier Frequency Separation	Jul. 18, 2025	Li Xinpeng	PASS	/
9	15.247(a)	Time of Occupancy (Dwell time)	Jul. 18, 2025	Li Xinpeng	PASS	/
10	15.247(d)	Conducted Spurious Emission and Band Edge	Jul. 18, 2025	Li Xinpeng	PASS	/
11	15.207	Conducted Emission	Jul. 29, 2025	Wang Yapeng	PASS	/
12	15.247(d)	Restricted Frequency Bands	Jul. 13, 2025	Wang Deyong	PASS	/
13	15.209, 15.247(d)	Radiated Emission	Jul. 15, 2025	Wang Deyong	PASS	/

Note 1: The tests were performed according to the method of measurements prescribed in ANSI C63.10-2020, KDB 558074 D01 v05r02 and DA 00-075.



Note 2: Any additions, deviation, or exclusions from the method shall be noted in the "Remark".

1.1. Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart C Radio Frequency Devices



1.2. Test Equipment List

1.2.1 Conducted Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
EXA Signal Analyzer	MY53470836	N9010A	Agilent	2025.01.15	2026.01.14
RF Cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
SMA Connector	CN01	RF03	HUBER-SUHNER	N/A	N/A

1.2.2 Conducted Emission Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	101052	ESPI	R&S	2025.05.15	2026.05.14
LISN	103131	ENV 216	R&S	2025.03.20	2026.03.19
RF Coaxial Cable (DC-100MHz)	EMC-CE-00514	N/A	N/A	2025.05.06	2026.05.05

1.2.3 List of Software Used

Description	Manufacturer	Software Version
Test System	MaiWei	2.0.0.0
JS32-RE	Tonscend	5.0.0
TS+ -[JS32-CE]	Tonscend	2.5.0.0

**1.2.4 Radiated Test Equipment**

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Signal Analyzer	MY56060145	N9020A	Agilent	2025.05.13	2026.05.12
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2025.06.22	2026.06.21
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2025.05.16	2026.05.15
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2025.06.20	2026.06.19
Test Antenna – Horn	BBHA9170#773	BBHA9170	Schwarzbeck	2025.06.20	2026.06.19
Preamplifier (10MHz-6GHz)	46732	S10M100L3802	LUCIX CORP.	2025.05.13	2026.05.12
Preamplifier (2GHz-18GHz)	61171/61172	S020180L3203	LUCIX CORP.	2025.05.13	2026.05.12
Preamplifier (18GHz-40GHz)	DS77209	DCLNA0118-40C-S	Decentest	2025.05.13	2026.05.12
RF Coaxial Cable (DC-18GHz)	MRE001	PE330	Pasternack	2025.05.13	2026.05.12
RF Coaxial Cable (DC-18GHz)	MRE002	CLU18	Pasternack	2025.05.13	2026.05.12
RF Coaxial Cable (DC-18GHz)	MRE003	CLU18	Pasternack	2025.05.13	2026.05.12
RF Coaxial Cable (DC-40GHz)	22290045	QA360-40-KK-0.5	Qualwave	2024.09.11	2025.09.10
RF Coaxial Cable (DC-40GHz)	22290046	QA360-40-KKF-2	Qualwave	2024.09.11	2025.09.10
RF Coaxial Cable (DC-18GHz)	22120181	QA500-18-NN-5	Qualwave	2024.09.11	2025.09.10
Notch Filter	N/A	WRCG-2400-2483.5-60SS	Wainwright	N/A	N/A
Anechoic Chamber	N/A	9m*6m*6m	CRT	2025.06.21	2028.06.20
Anechoic Chamber	N/A	9m*6m*6m	CRT	2022.11.30	2025.11.29



1.3. Measurement Uncertainty

Test Items	Uncertainty	Remark
Number of Hopping Frequency	±5%	Confidence levels of 95%
Peak Output Power	±2.22dB	Confidence levels of 95%
Bandwidth	±5%	Confidence levels of 95%
Carrier Frequency Separation	±5%	Confidence levels of 95%
Time of Occupancy (Dwell time)	±5%	Confidence levels of 95%
Conducted Spurious Emission	±2.77dB	Confidence levels of 95%
Restricted Frequency Bands	±5%	Confidence levels of 95%
Radiated Emission	±2.95dB	Confidence levels of 95%
Conducted Emission	±2.44dB	Confidence levels of 95%

1.4. Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525
FCC Designation Number:	CN1192
FCC Test Firm Registration Number:	226174



2. General Description

2.1. Information of Applicant and Manufacturer

Applicant:	BLU Products, Inc.
Applicant Address:	8600 NW 36th Street, Suite #300 Miami, FL 33166 USA
Manufacturer:	BLU Products, Inc.
Manufacturer Address:	8600 NW 36th Street, Suite #300 Miami, FL 33166 USA

2.2. Information of EUT

Product Name:	Smart Phone	
Sample No.:	1#, 8#	
Hardware Version:	KX10GF_06	
Software Version:	BOLD_N0090_V15.0.03.00_GENERIC 01-08-2025 21:45	
Equipment Type:	Bluetooth classic	
Bluetooth Version:	5.4	
Modulation Type:	FHSS (GFSK(1Mbps), $\pi/4$ -DQPSK(EDR 2Mbps), 8-DPSK(EDR 3Mbps))	
Operating Frequency Range:	2402MHz-2480MHz	
Antenna Type:	PCB Antenna	
Antenna Gain:	-1.30dBi	
Accessory Information:	Battery	
	Brand Name:	BOLD
	Model No.:	C865255500P
	Serial No.:	N/A
	Capacity:	4900mAh
	Rated Voltage:	3.87V
	Charge Limit:	4.45V
	Manufacturer:	Guangdong Highpower New Energy Technology Co. , Ltd.
	AC Adapter	
	Brand Name:	N/A
	Model No.:	LM-202E-050200U03CE
	Serial No.:	N/A
	Rated Output:	5.0V=2.0A



	Rated Input:	100-240V~50/60Hz, 0.35A
	Manufacturer:	Chongqing Lianmao Electronics Co., Ltd

Note 1: The EUT description presented in the report are provided by applicant and/or manufacturer, and the test laboratory is not responsible for the accuracy of the information. For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



2.3. Channel List of EUT

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

Note 1: The black bold channels were selected for test.

2.4. Test Configuration of EUT

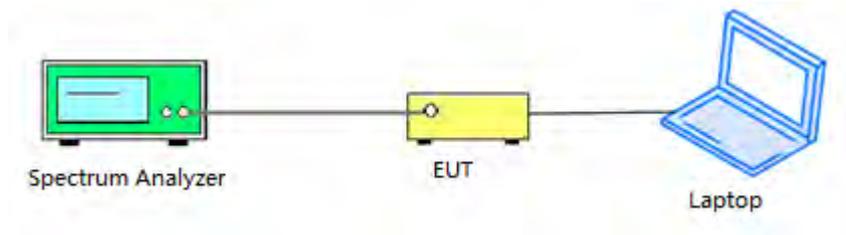
Test mode is used to control the EUT under the maximum power level during test.

2.5. Test Conditions

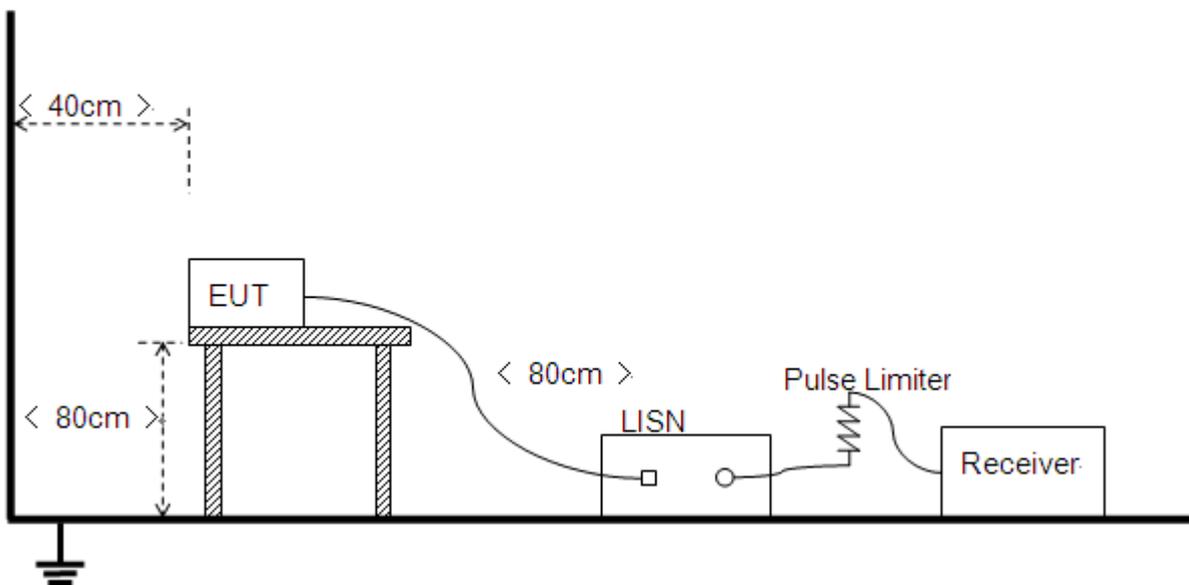
Temperature (°C):	15-35
Relative Humidity (%):	30-60
Atmospheric Pressure (kPa):	86-106

2.6. Test Setup Layout Diagram

2.6.1. Conducted Measurement

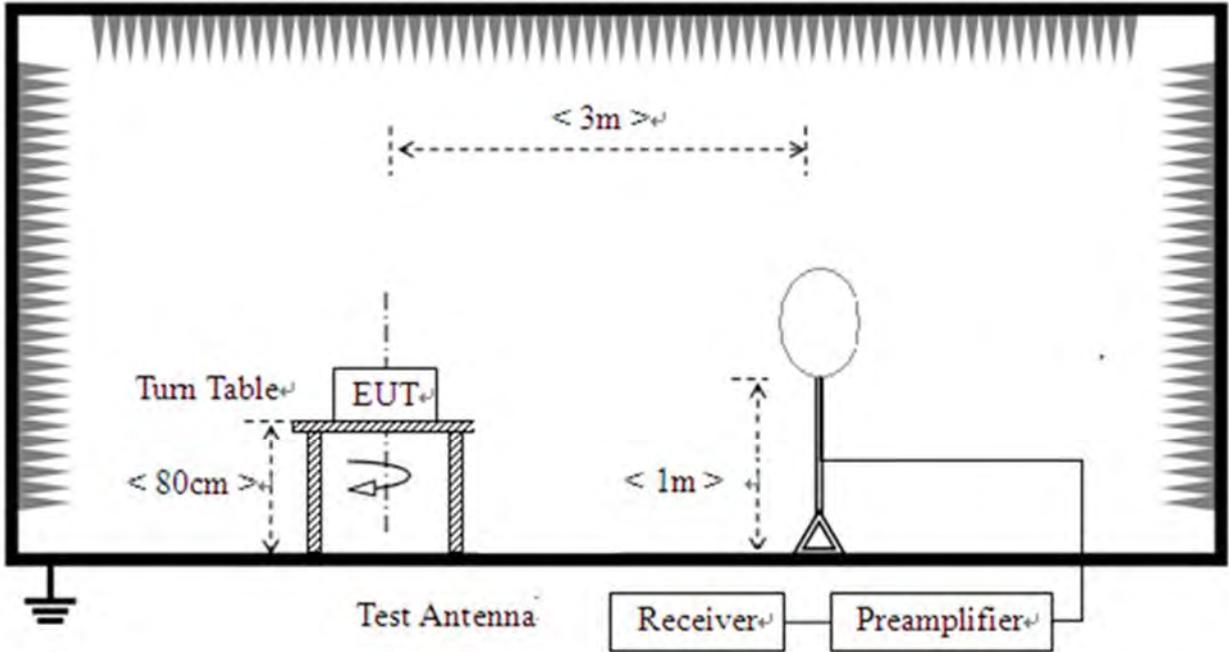


2.6.2. Conducted Emission Measurement

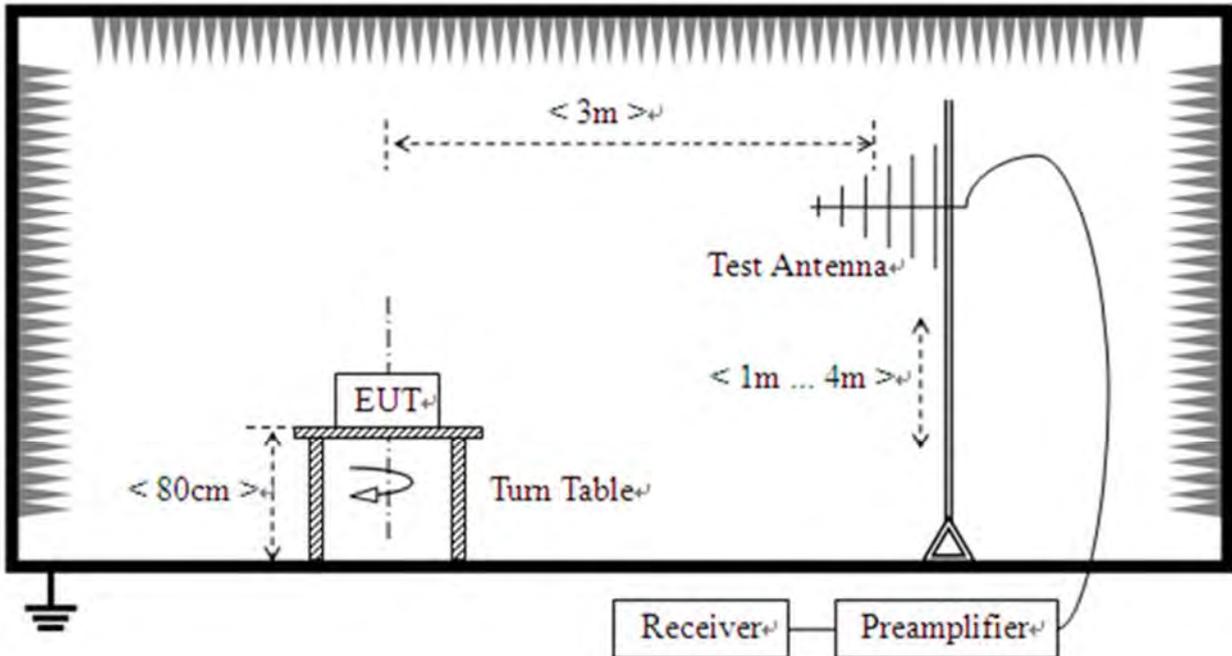


2.6.3. Radiation Measurement

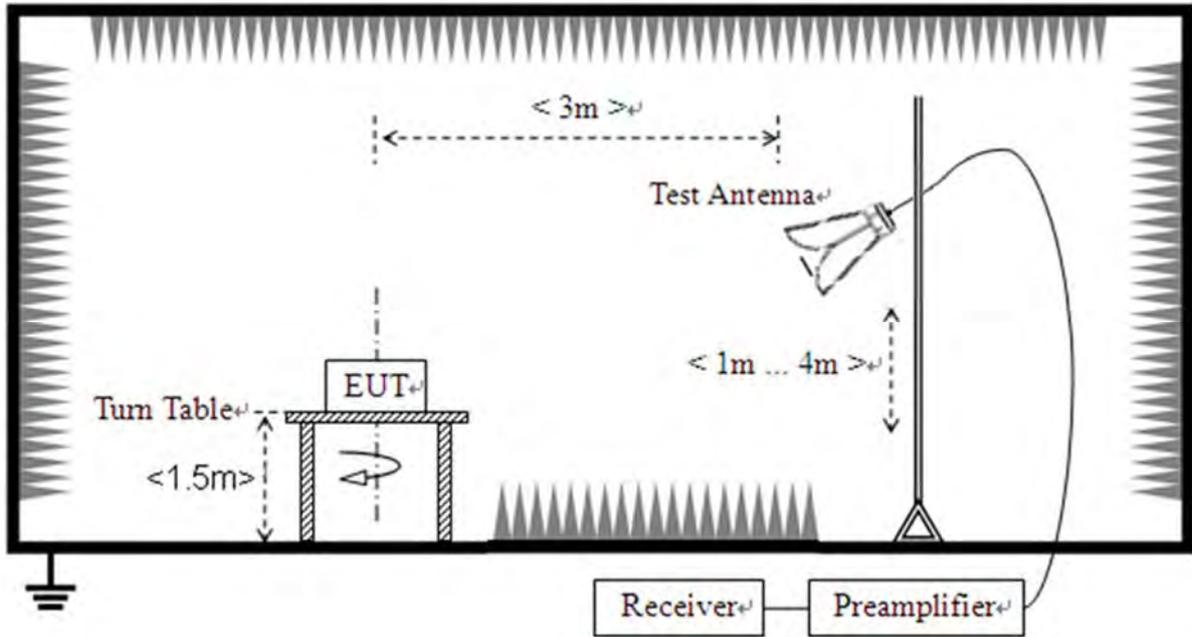
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to 1GHz



3) For radiated emissions above 1GHz





3. Test Results

3.1. Antenna Requirement

3.1.1. Requirement

According to FCC 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.

3.1.2. Test Result

Antenna location	Antenna Type	Coupling Method
<input checked="" type="checkbox"/> Internal <input type="checkbox"/> External	<input type="checkbox"/> FPC Antenna <input type="checkbox"/> Spring Antenna <input type="checkbox"/> Ceramic Antenna <input type="checkbox"/> Integrated Antenna <input type="checkbox"/> Dipole Antenna <input type="checkbox"/> PCB Antenna <input checked="" type="checkbox"/> PIFA Antenna <input type="checkbox"/> ABS Antenna	<input type="checkbox"/> I-PEX Connector <input type="checkbox"/> SMA Connector <input type="checkbox"/> RP-SMA Connector <input checked="" type="checkbox"/> Metal Shrapnel <input type="checkbox"/> Layout



3.2. Hopping Mechanism

3.2.1. Requirement

According to FCC section 15.247(a)(1), a frequency hopping spread spectrum system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

According to FCC section 15.247(h), the incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hop sets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

3.2.2. Test Result

The hopping mechanism of the EUT is in compliance with the document "**Bluetooth core specification v5.1**".



3.3. Number of Hopping Frequency

3.3.1. Requirement

According to FCC section 15.247(a)(1)(iii), frequency hopping systems operating in the 2400MHz to 2483.5MHz bands shall use at least 15 hopping frequencies.

3.3.2. Test Procedures

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = the frequency band of operation

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.

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize

3.3.3. Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.3.4. Test Result

Refer to Annex A.1 in this report.



3.4. Duty Cycle of Test Signal

3.4.1. Requirement

Preferably, all measurements of maximum conducted (average) output power will be performed with the EUT transmitting continuously (i.e., with a duty cycle of greater than or equal to 98%). When continuous operation cannot be realized, then the use of sweep triggering/signal gating techniques can be used to ensure that measurements are made only during transmissions at the maximum power control level. Such sweep triggering/signal gating techniques will require knowledge of the minimum transmission duration (T) over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. Sweep triggering/signal gating techniques can then be used if the measurement/sweep time of the analyzer can be set such that it does not exceed T at any time that data are being acquired (i.e., no transmitter OFF-time is to be considered).

When continuous transmission cannot be achieved and sweep triggering/signal gating cannot be implemented, alternative procedures are provided that can be used to measure the average power; however, they will require an additional measurement of the transmitter duty cycle (D). Within this sub clause, the duty cycle refers to the fraction of time over which the transmitter is ON and is transmitting at its maximum power control level. The duty cycle is considered to be constant if variations are less than $\pm 2\%$; otherwise, the duty cycle is considered to be non constant.

3.4.2. Test Result

Refer to Annex A.2 in this report.



3.5. Maximum Peak Conducted Output Power

3.5.1. Requirement

According to FCC section 15.247(b)(1), for frequency hopping systems that operates in the 2400MHz to 2483.5MHz band employing at least 75 hopping channels, the maximum peak output power of the intentional radiator shall not exceed 1Watt. For all other frequency hopping systems in the 2400MHz to 2483.5MHz band, it is 0.125Watts.

3.5.2. Test Procedures

KDB 558074 Section 8.3.1 was used in order to prove compliance.

3.5.3. Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.5.4. Test Result

Refer to Annex A.3 in this report.



3.6. Maximum Average Conducted Output Power

3.6.1. Requirement

According to FCC section 15.247(b)(1), for frequency hopping systems that operates in the 2400MHz to 2483.5MHz band employing at least 75 hopping channels, the maximum peak output power of the intentional radiator shall not exceed 1Watt. For all other frequency hopping systems in the 2400MHz to 2483.5MHz band, it is 0.125Watts.

3.6.2. Test Procedures

KDB 558074 Section 8.3.2 was used in order to prove compliance.

3.6.3. Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.6.4. Test Result

Refer to Annex A.4 in this report.



3.7.20 dB Bandwidth

3.7.1.Requirement

According to FCC section 15.247(a)(1), the 20 dB bandwidth is known as the 99% emission bandwidth, or 20 dB bandwidth ($10 \cdot \log 1\% = 20$ dB) taking the total RF output power.

3.7.1.Test Procedures

Use the following spectrum analyzer settings:

Span = between 2 to 5 times the OBW, centered on the test channel

RBW= 1% to 5% of the OBW

VBW $\geq 3 \times$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

3.7.2.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.7.3.Test Result

Refer to Annex A.5 in this report.



3.8. Carried Frequency Separation

3.8.1. Requirement

According to FCC section 15.247(a)(1), frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

3.8.2. Test Procedures

The EUT must have its hopping function enabled. According to DA 00-705, use the following spectrum analyzer settings:

Span = wide enough to capture the peaks of two adjacent channels

Resolution (or IF) Bandwidth (RBW) \geq 1% of the span

Video (or Average) Bandwidth (VBW) \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

3.8.3. Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.8.4. Test Result

Refer to Annex A.6 in this report.



3.9. Time of Occupancy (Dwell time)

3.9.1. Requirement

According to FCC section 15.247(a) (1) (iii), frequency hopping systems in the 2400 - 2483.5MHz band shall use at least 15 non-overlapping 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.

3.9.2. Test Procedures

Normal Mode:

DH1: Dwell time equal to Pulse time (ms) $\times (1600 / 2 / 79) \times 31.6$ Millisecond
DH3: Dwell time equal to Pulse time (ms) $\times (1600 / 4 / 79) \times 31.6$ Millisecond
DH5: Dwell time equal to Pulse Time (ms) $\times (1600 / 6 / 79) \times 31.6$ Millisecond

AFH Mode:

DH1: Dwell time equal to Pulse time (ms) $\times (800 / 2 / 20) \times (0.4 \times 20)$ Millisecond
DH3: Dwell time equal to Pulse time (ms) $\times (800 / 4 / 20) \times (0.4 \times 20)$ Millisecond
DH5: Dwell time equal to Pulse Time (ms) $\times (800 / 6 / 20) \times (0.4 \times 20)$ Millisecond.

3.9.3. Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.9.4. Test Result

Refer to Annex A.7 in this report.



3.10. Conducted Spurious Emissions and Band Edge

3.10.1. Requirement

According to FCC section 15.247(d), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

3.10.2. Test Procedures

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 100 kHz

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize.

3.10.3. Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.10.4. Test Result

Refer to Annex A.8 and A.9 in this report.



3.11. Conducted Emission

3.11.1.Requirement

According to FCC section 15.207, 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 within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Frequency Range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

Note:

- (a) The lower limit shall apply at the band edges.
- (b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

3.11.2.Test Procedures

The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10

3.11.3.Test Setup Layout

Refer to chapter 2.6.2 in this report.

3.11.4.Test Result

Refer to Annex A.10 in this report.



3.12. Restricted Frequency Bands

3.12.1. Requirement

According to FCC section 15.247(d), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, 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).

3.12.2. Test Procedures

The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1\text{GHz}$, 100 kHz for $f < 1\text{GHz}$

VBW = 3 MHz

Sweep = auto

Detector function = peak/average

Trace = max hold

Allow the trace to stabilize

3.12.3. Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.12.4. Test Result

Refer to Annex A.11 in this report.



3.13. Radiated Emission

3.13.1.Requirement

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Measurement Distance (m)
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

Note1: For above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

Note2:For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).



3.13.2. Test Procedures

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

3.13.3. Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.13.4. Test Result

Refer to Annex A.12 in this report.



Annex A Test Data and Result

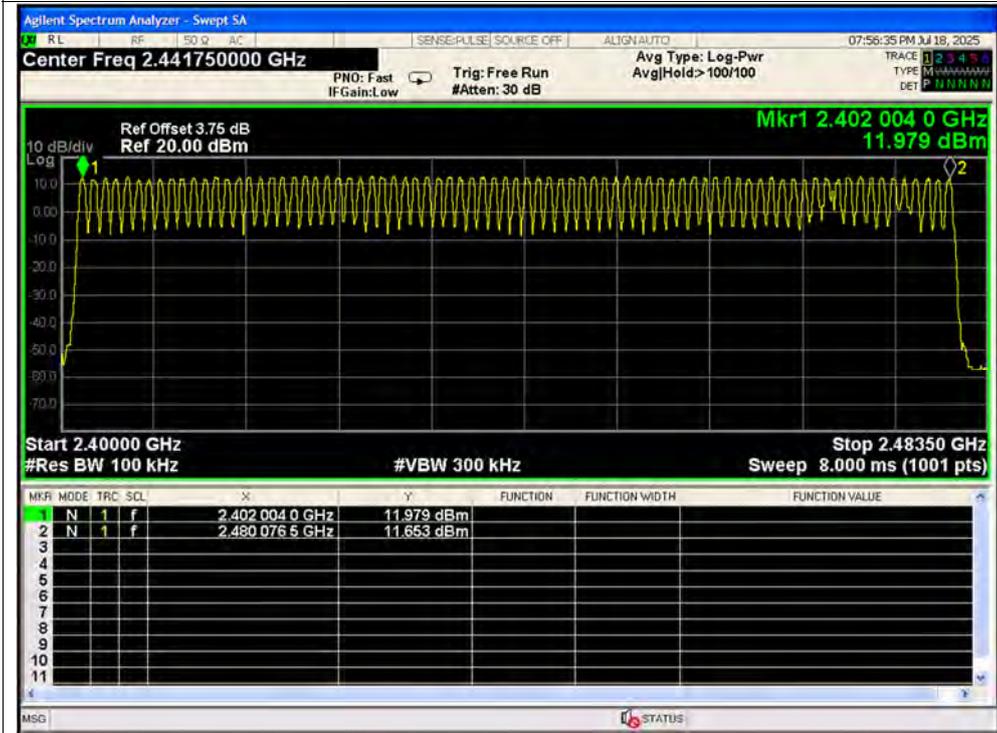
A.1. Number of Hopping Frequency

Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass
NVNT	3-DH5	Ant1	79	15	Pass

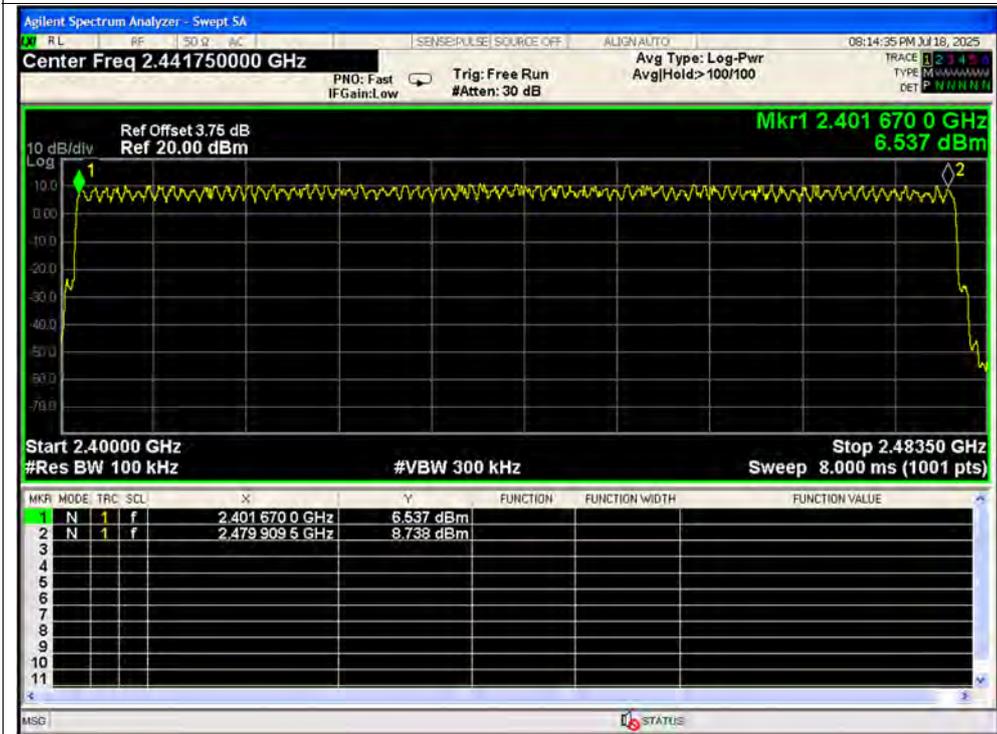


Test Graphs

Hopping No. NVNT 1-DH5 2441MHz Ant1

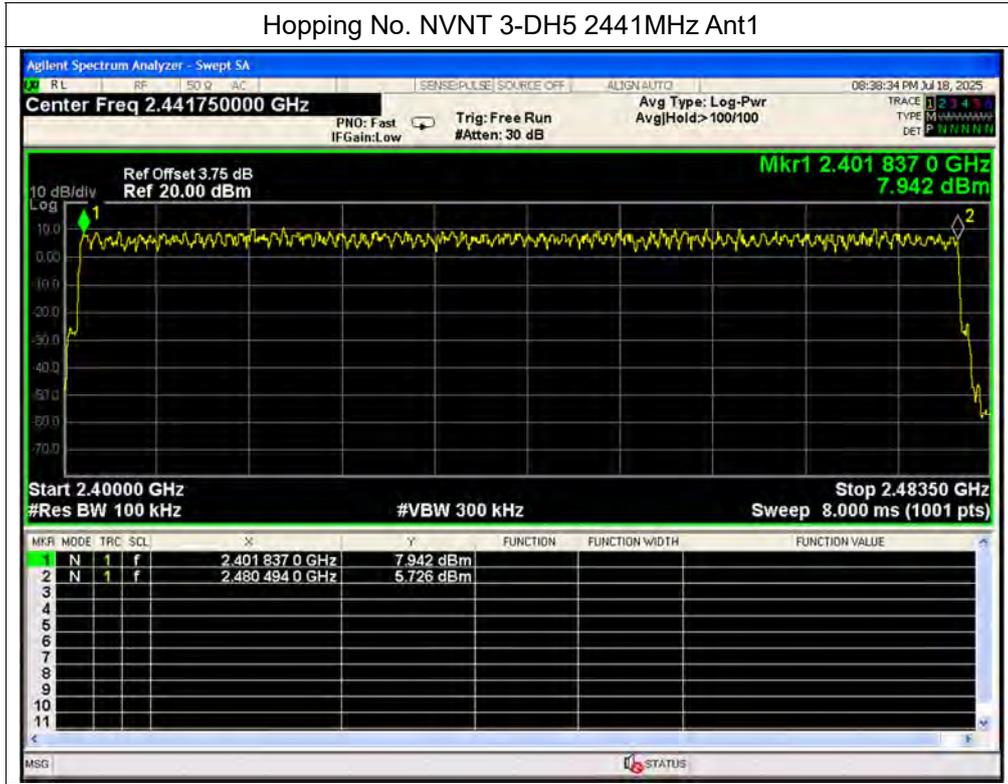


Hopping No. NVNT 2-DH5 2441MHz Ant1





Hopping No. NVNT 3-DH5 2441MHz Ant1





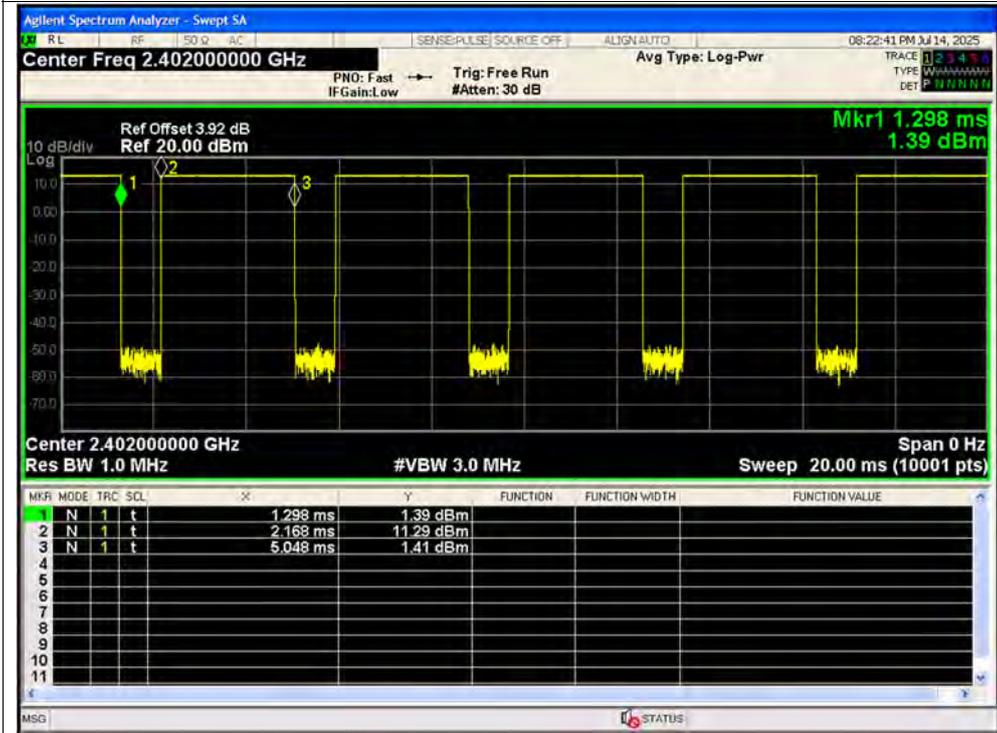
A.2. Duty Cycle of Test Signal

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH5	2402	Ant1	76.8	1.15	0.35
NVNT	1-DH5	2441	Ant1	76.8	1.15	0.35
NVNT	1-DH5	2480	Ant1	76.85	1.14	0.35
NVNT	2-DH5	2402	Ant1	76.96	1.14	0.35
NVNT	2-DH5	2441	Ant1	76.91	1.14	0.35
NVNT	2-DH5	2480	Ant1	76.96	1.14	0.35
NVNT	3-DH5	2402	Ant1	77.01	1.13	0.35
NVNT	3-DH5	2441	Ant1	77.01	1.13	0.35
NVNT	3-DH5	2480	Ant1	76.96	1.14	0.35

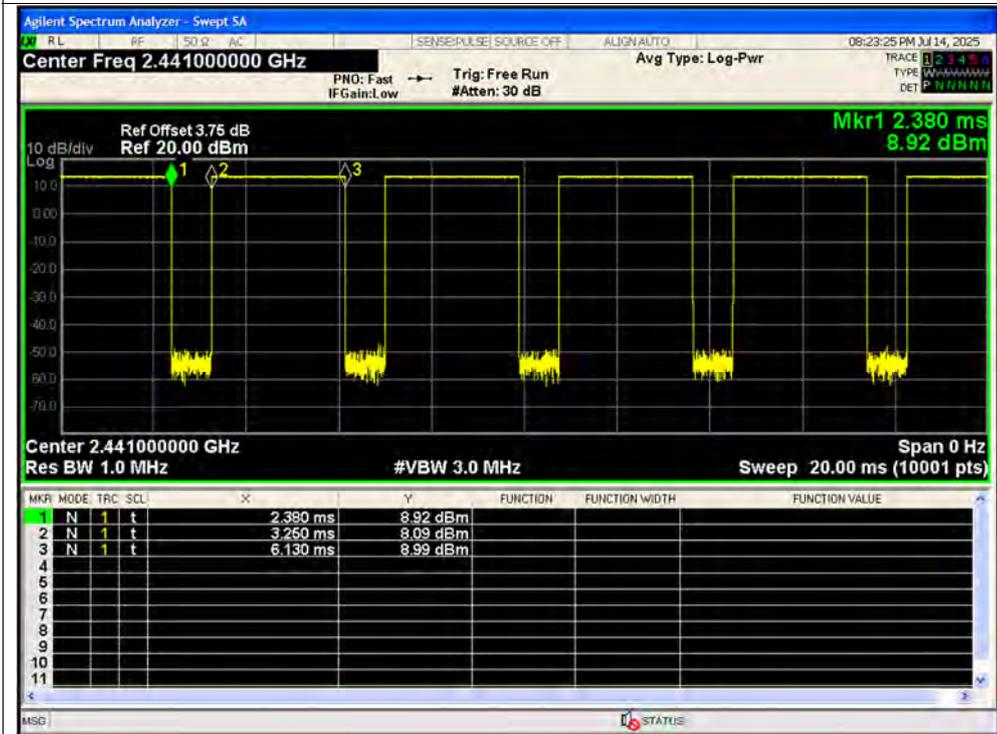


Test Graphs

Duty Cycle NVNT 1-DH5 2402MHz Ant1

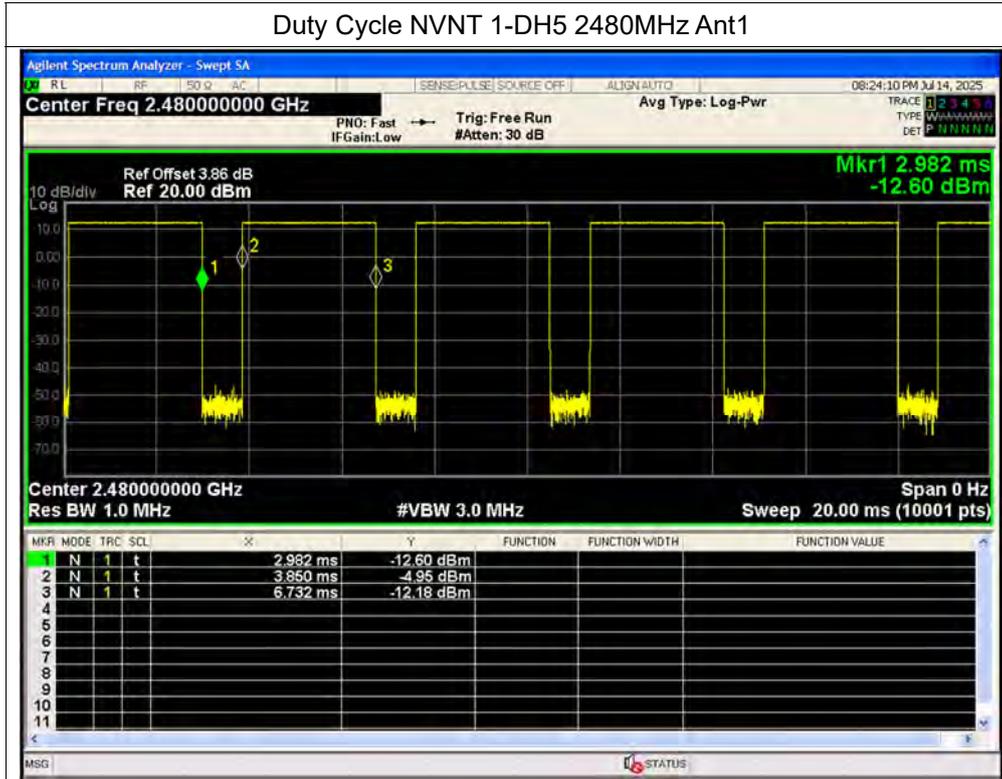


Duty Cycle NVNT 1-DH5 2441MHz Ant1

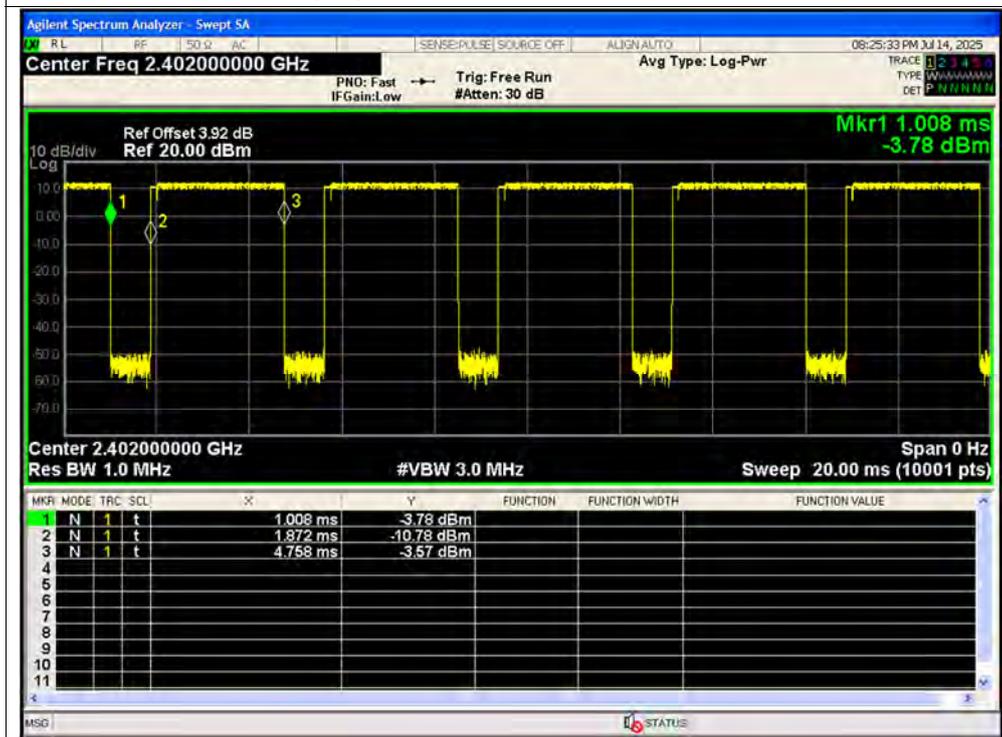




Duty Cycle NVNT 1-DH5 2480MHz Ant1

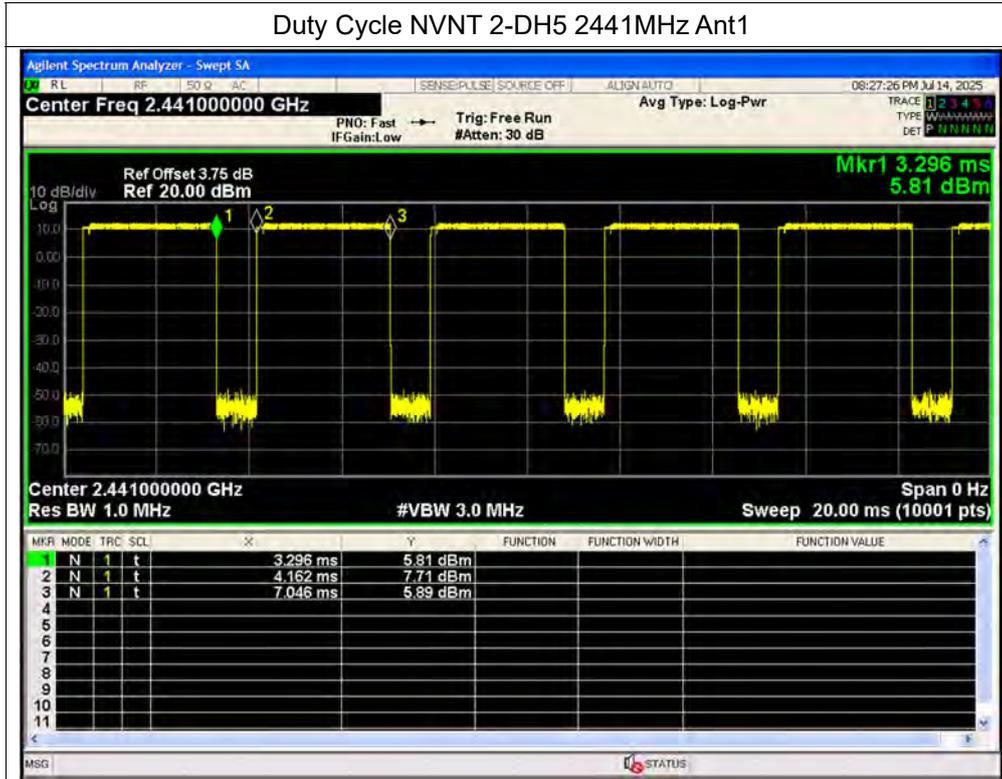


Duty Cycle NVNT 2-DH5 2402MHz Ant1

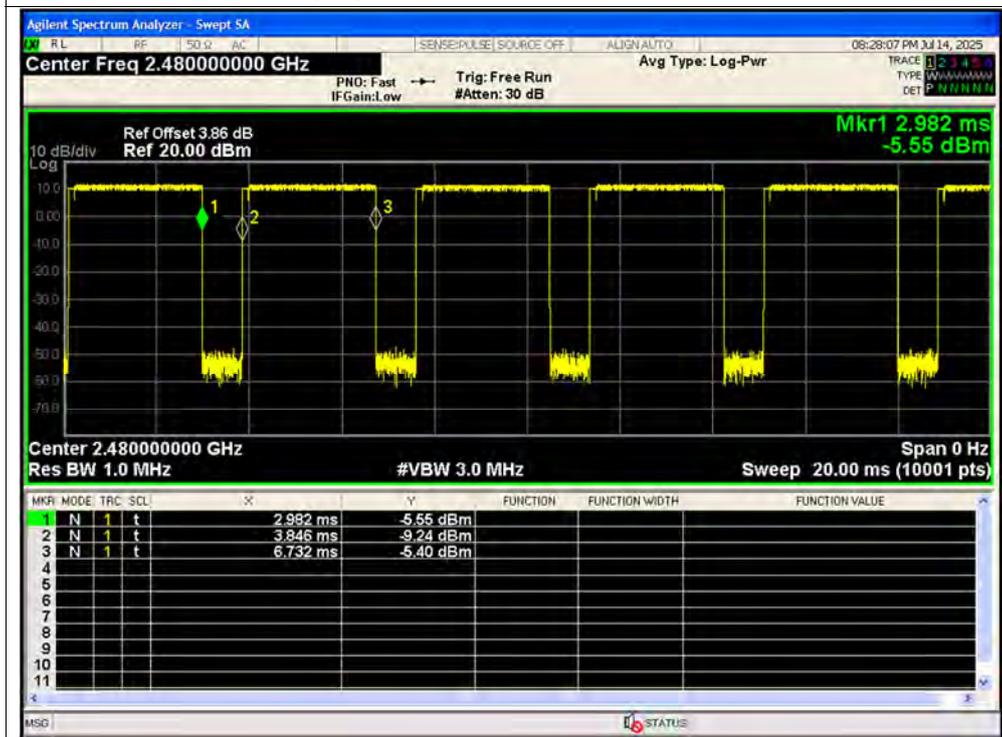




Duty Cycle NVNT 2-DH5 2441MHz Ant1

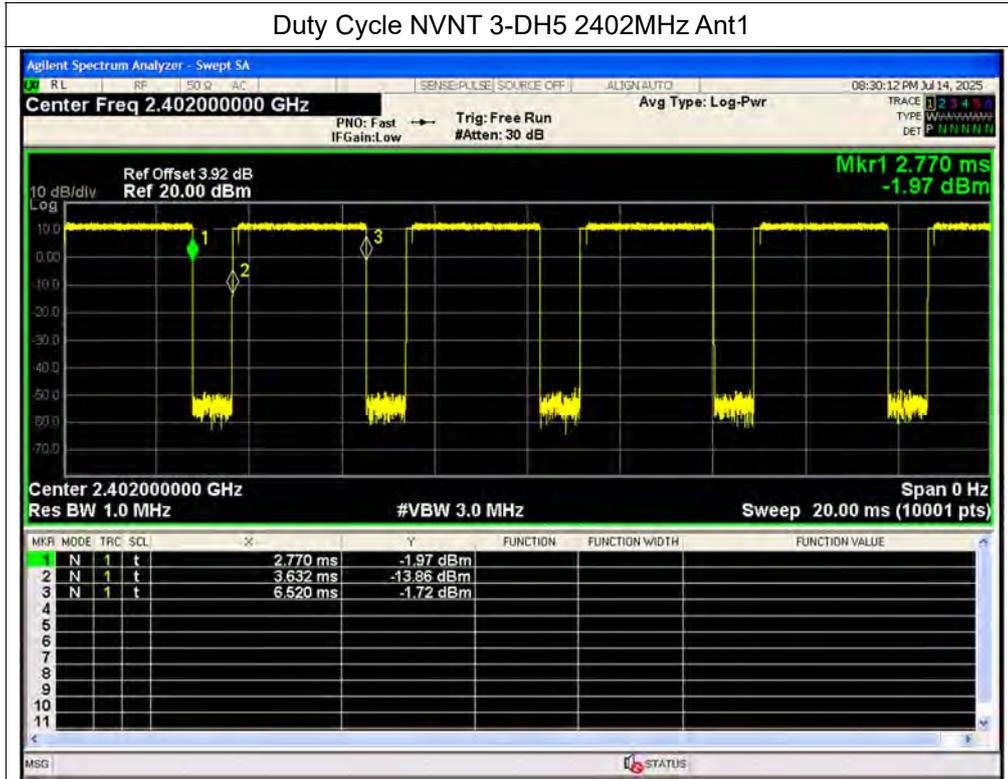


Duty Cycle NVNT 2-DH5 2480MHz Ant1

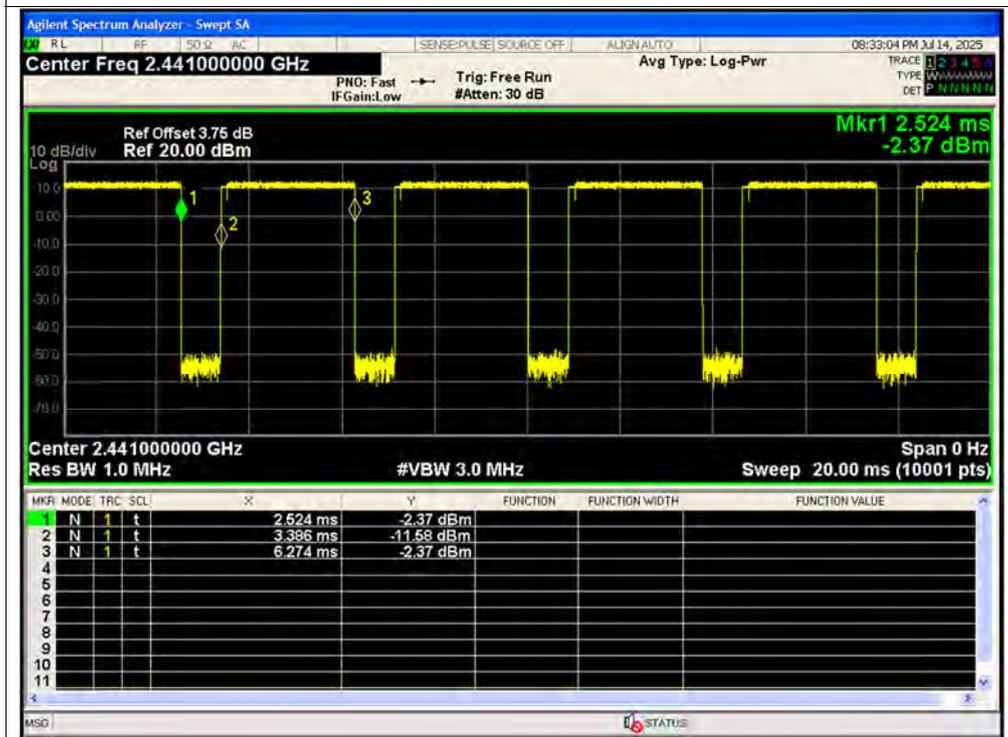




Duty Cycle NVNT 3-DH5 2402MHz Ant1

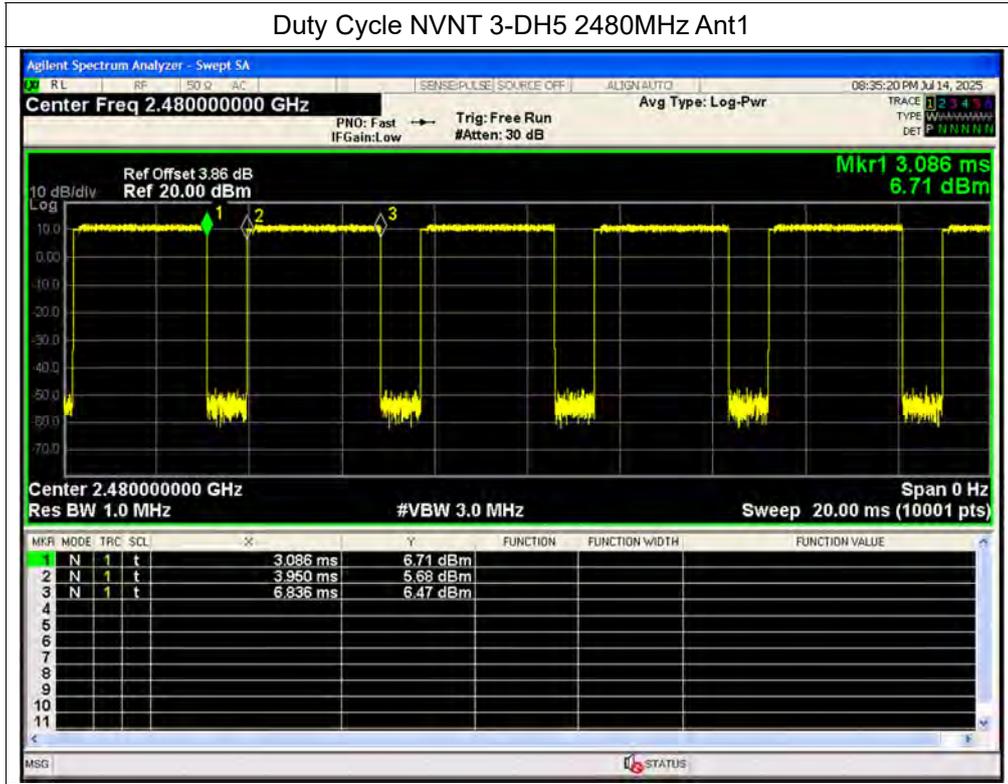


Duty Cycle NVNT 3-DH5 2441MHz Ant1





Duty Cycle NVNT 3-DH5 2480MHz Ant1



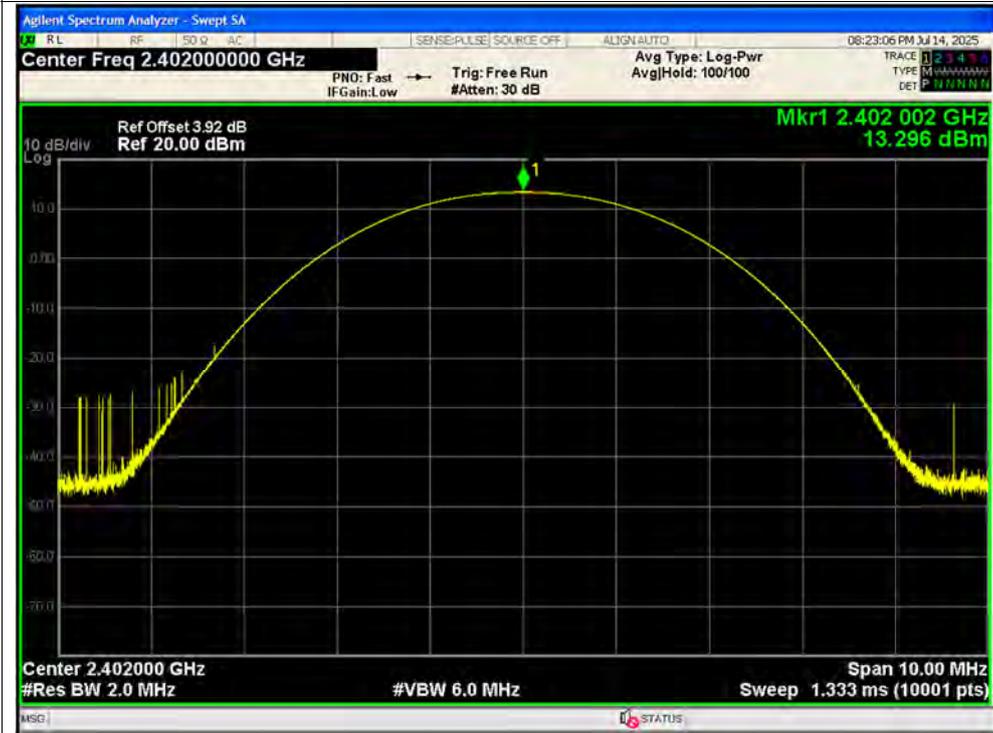
**A.3. Maximum Peak Conducted Output Power**

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Conducted Power (dBm)	Total Conducted Power (W)	Limit Conducted (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	13.3	0	13.3	0.02138	30	Pass
NVNT	1-DH5	2441	Ant1	13.47	0	13.47	0.02223	30	Pass
NVNT	1-DH5	2480	Ant1	12.61	0	12.61	0.01824	30	Pass
NVNT	2-DH5	2402	Ant1	12.54	0	12.54	0.01795	30	Pass
NVNT	2-DH5	2441	Ant1	12.66	0	12.66	0.01845	30	Pass
NVNT	2-DH5	2480	Ant1	11.92	0	11.92	0.01556	30	Pass
NVNT	3-DH5	2402	Ant1	12.77	0	12.77	0.01892	30	Pass
NVNT	3-DH5	2441	Ant1	12.91	0	12.91	0.01954	30	Pass
NVNT	3-DH5	2480	Ant1	12.12	0	12.12	0.01629	30	Pass



Test Graphs

Peak Power NVNT 1-DH5 2402MHz Ant1



Peak Power NVNT 1-DH5 2441MHz Ant1

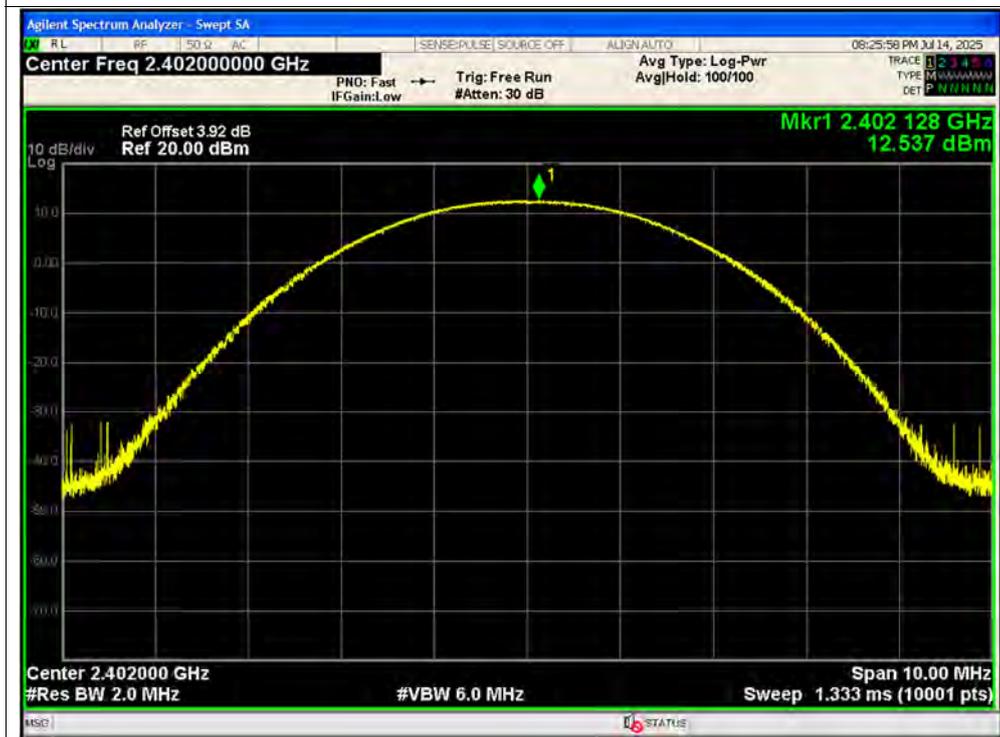




Peak Power NVNT 1-DH5 2480MHz Ant1



Peak Power NVNT 2-DH5 2402MHz Ant1

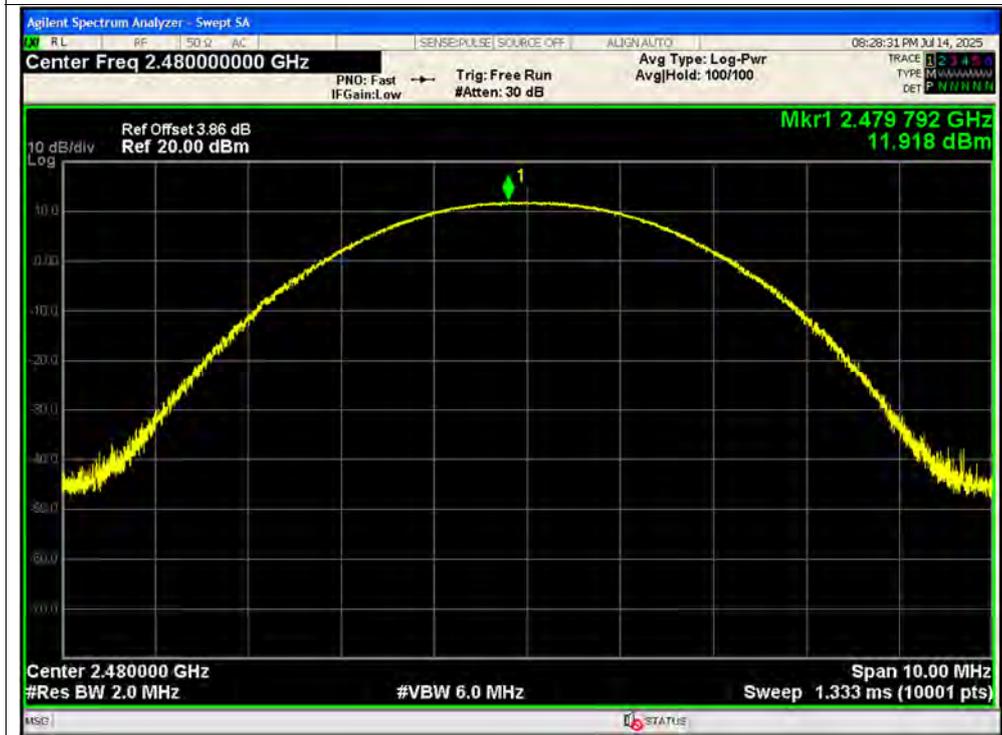




Peak Power NVNT 2-DH5 2441MHz Ant1



Peak Power NVNT 2-DH5 2480MHz Ant1

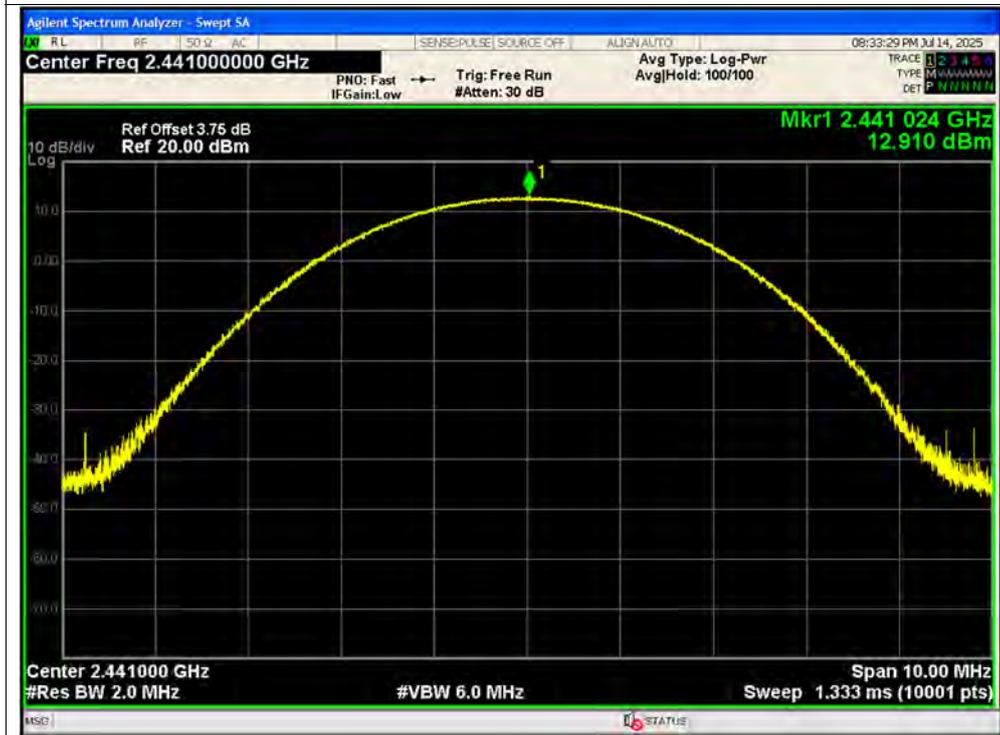




Peak Power NVNT 3-DH5 2402MHz Ant1

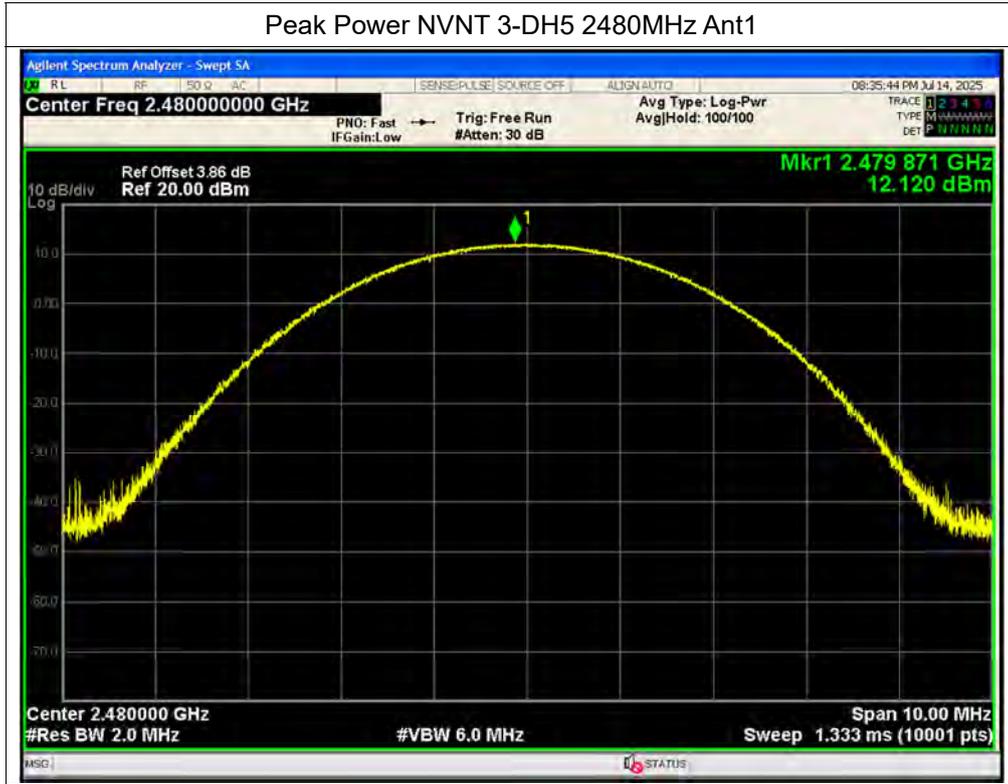


Peak Power NVNT 3-DH5 2441MHz Ant1





Peak Power NVNT 3-DH5 2480MHz Ant1



**A.4. Maximum Average Conducted Output Power**

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Conducted Power (dBm)	Total Conducted Power (W)	Limit Conducted (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	12.1	1.15	13.25	0.02113	30	Pass
NVNT	1-DH5	2441	Ant1	11.81	1.15	12.96	0.01977	30	Pass
NVNT	1-DH5	2480	Ant1	11.5	1.14	12.64	0.01837	30	Pass
NVNT	2-DH5	2402	Ant1	9.17	1.14	10.31	0.01074	30	Pass
NVNT	2-DH5	2441	Ant1	9.44	1.14	10.58	0.01143	30	Pass
NVNT	2-DH5	2480	Ant1	8.75	1.14	9.89	0.00975	30	Pass
NVNT	3-DH5	2402	Ant1	9.19	1.13	10.32	0.01076	30	Pass
NVNT	3-DH5	2441	Ant1	9.54	1.13	10.67	0.01167	30	Pass
NVNT	3-DH5	2480	Ant1	8.71	1.14	9.85	0.00966	30	Pass



Test Graphs

Average Power NVNT 1-DH5 2402MHz Ant1



Average Power NVNT 1-DH5 2441MHz Ant1

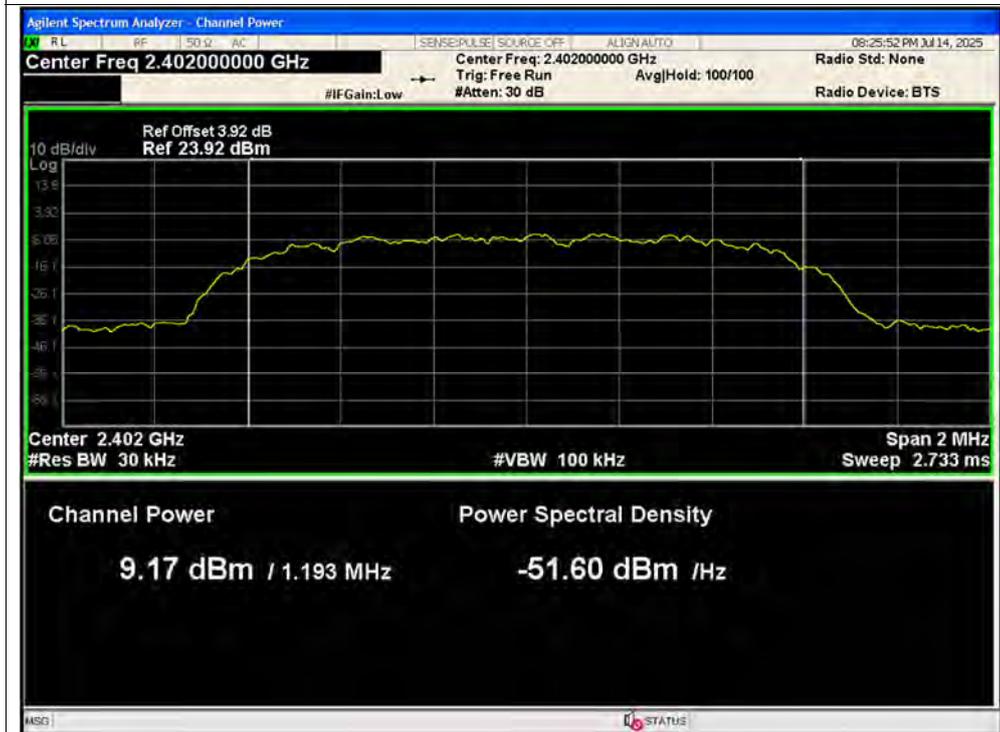




Average Power NVNT 1-DH5 2480MHz Ant1

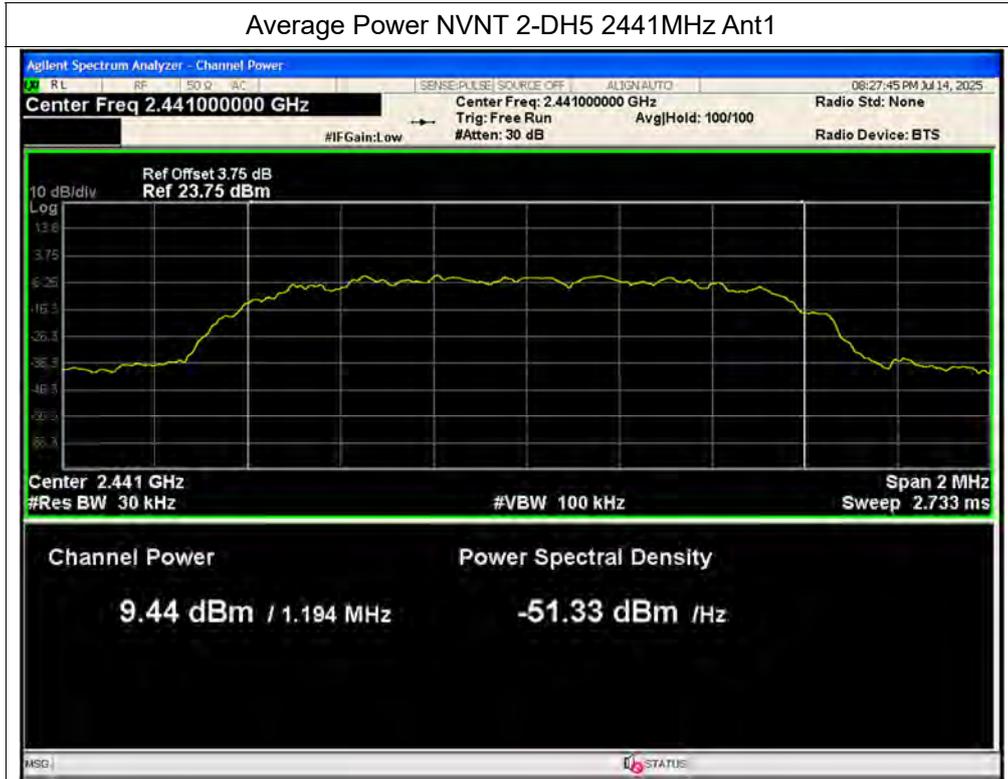


Average Power NVNT 2-DH5 2402MHz Ant1

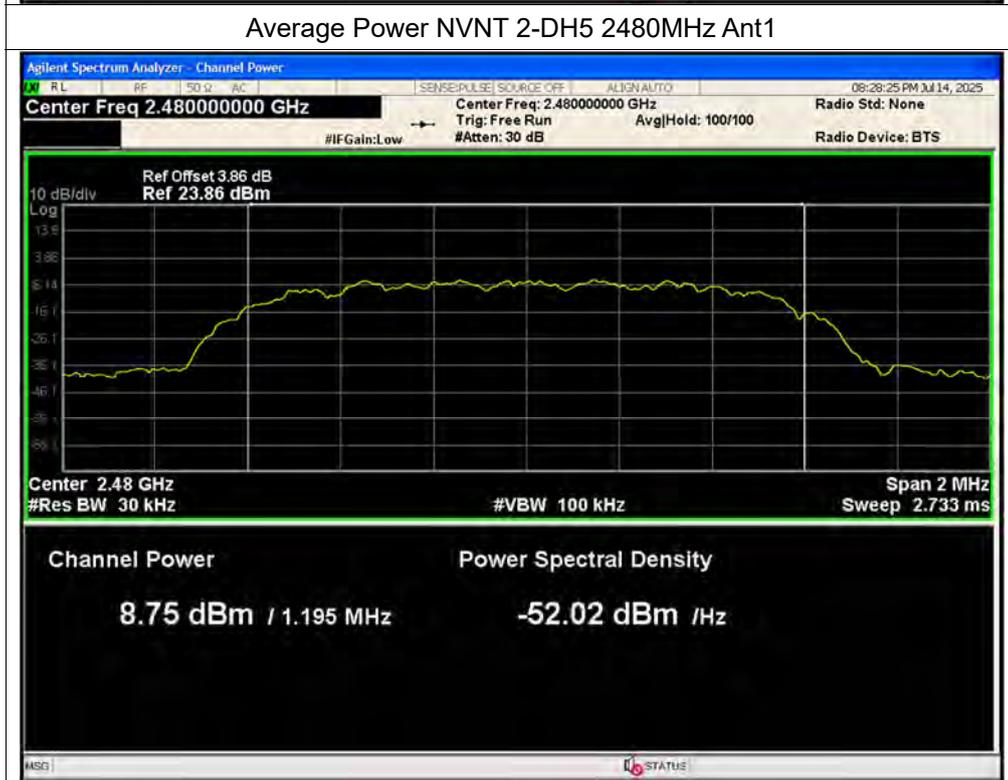




Average Power NVNT 2-DH5 2441MHz Ant1

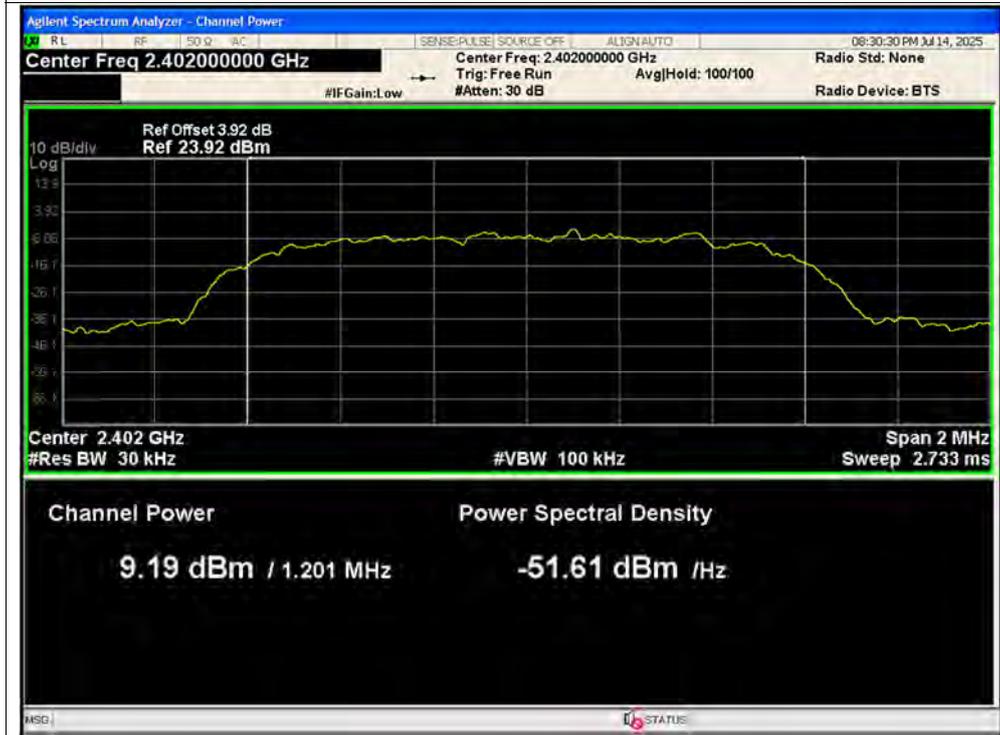


Average Power NVNT 2-DH5 2480MHz Ant1

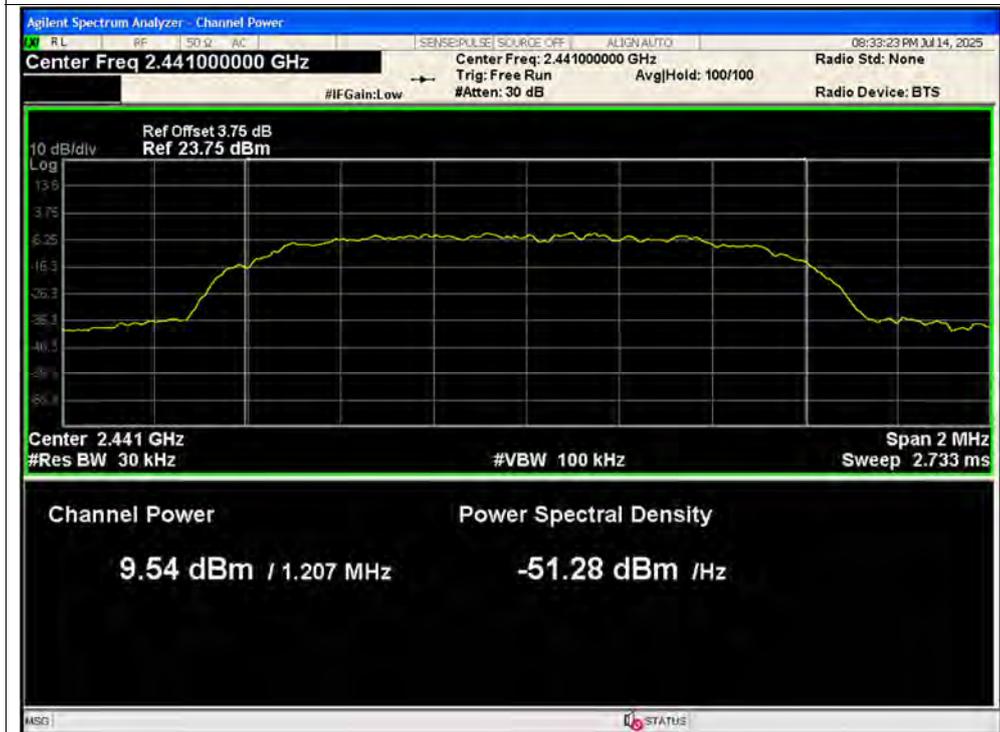


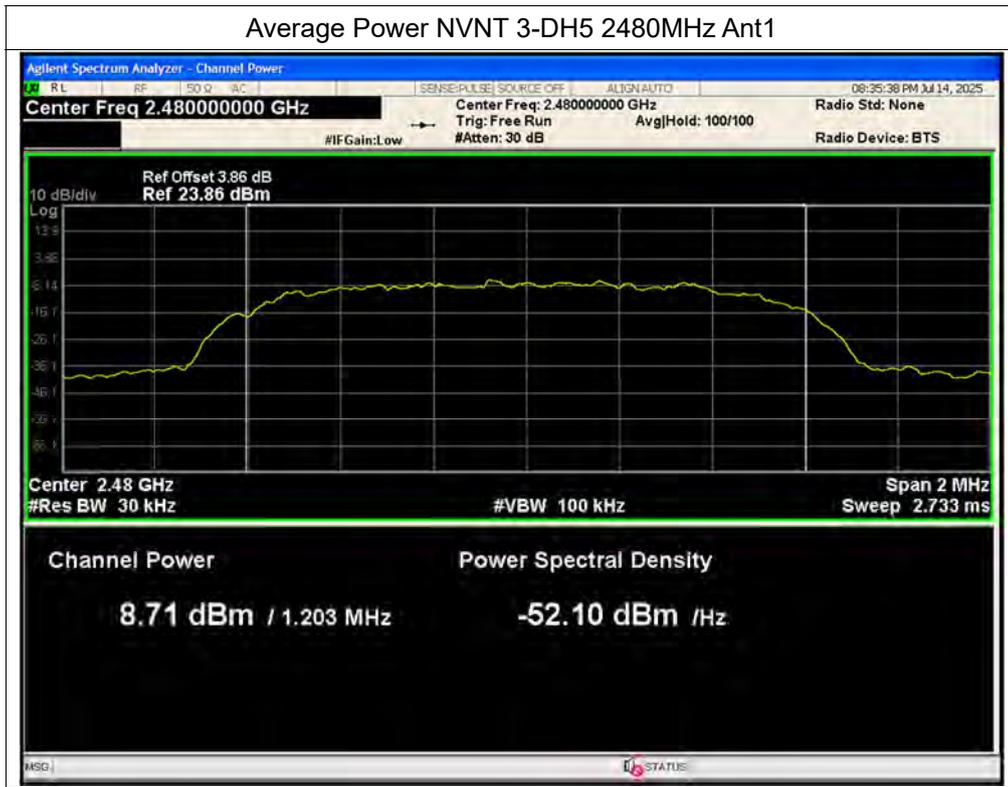


Average Power NVNT 3-DH5 2402MHz Ant1



Average Power NVNT 3-DH5 2441MHz Ant1





**A.5. 20 dB Bandwidth**

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)
NVNT	1-DH5	2402	Ant1	0.8183
NVNT	1-DH5	2441	Ant1	0.8484
NVNT	1-DH5	2480	Ant1	0.8459
NVNT	2-DH5	2402	Ant1	1.333
NVNT	2-DH5	2441	Ant1	1.315
NVNT	2-DH5	2480	Ant1	1.339
NVNT	3-DH5	2402	Ant1	1.299
NVNT	3-DH5	2441	Ant1	1.323
NVNT	3-DH5	2480	Ant1	1.307



Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1





-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1



-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1





-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1

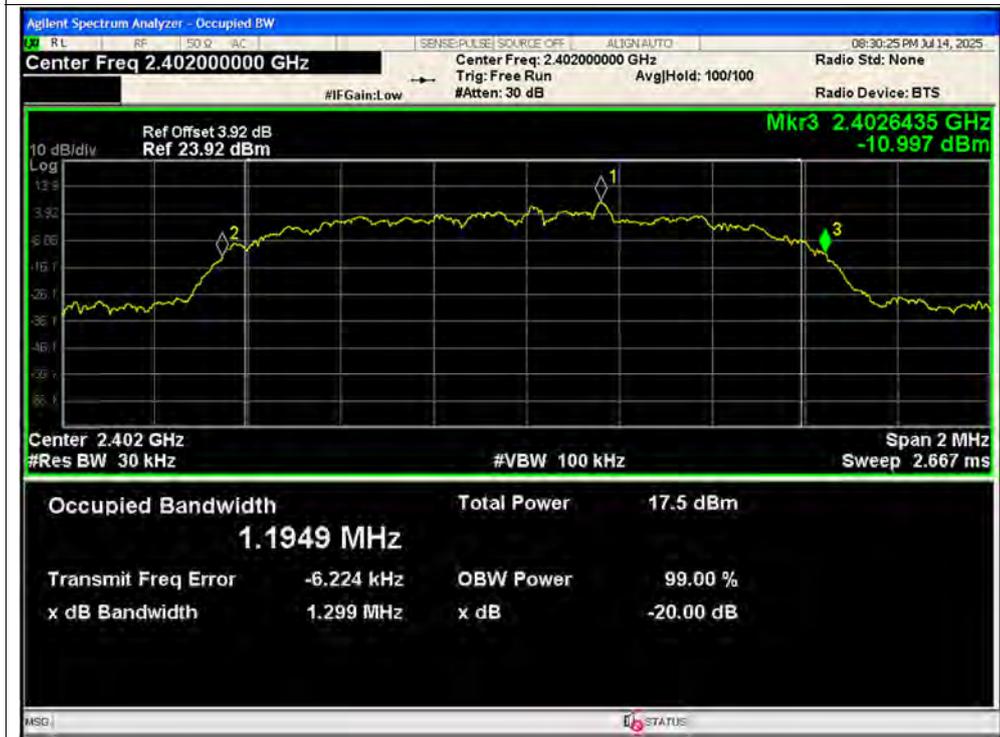


-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1

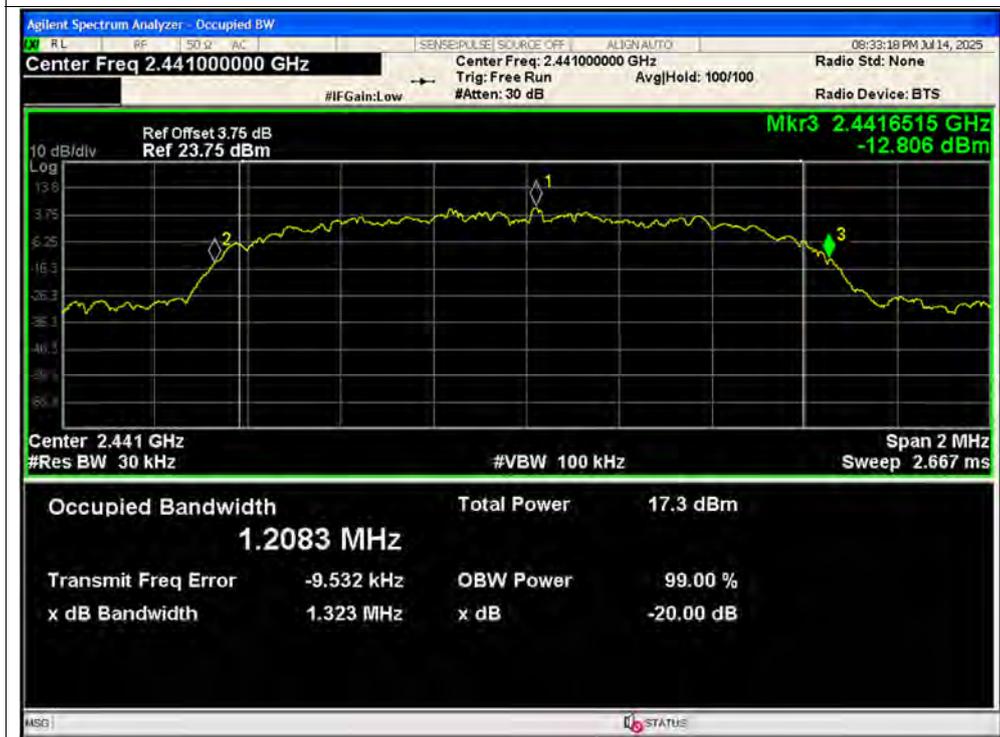


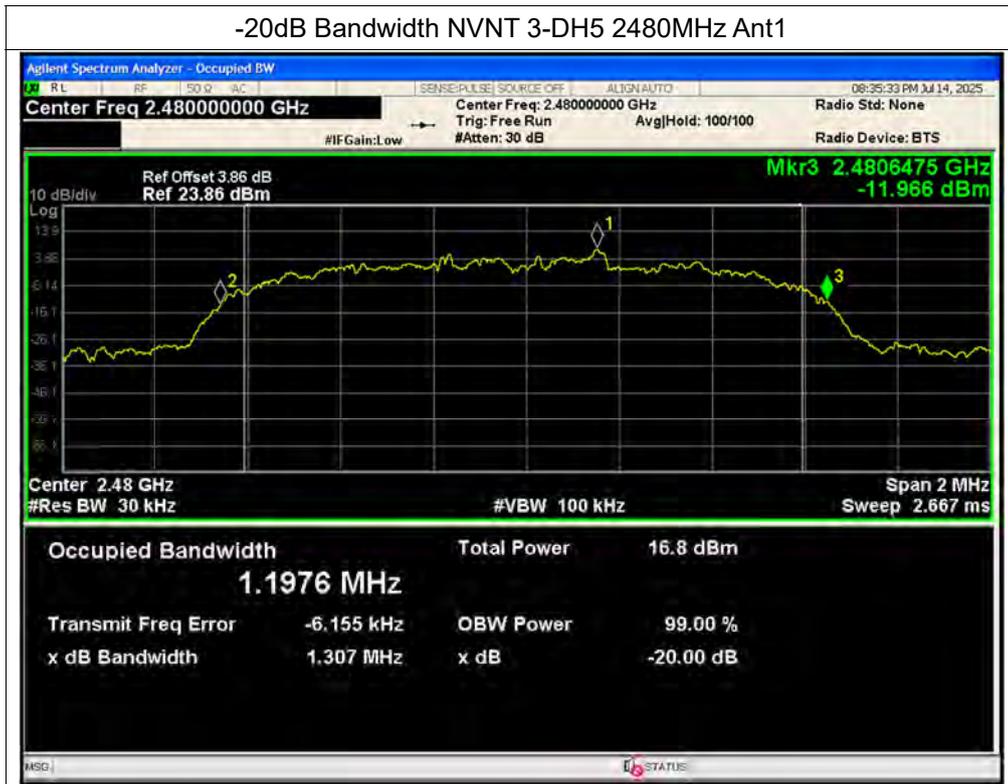


-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1





**A.6. Carried Frequency Separation**

Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2402.014	2403.162	1.148	0.546	Pass
NVNT	1-DH5	Ant1	2440.988	2442.016	1.028	0.566	Pass
NVNT	1-DH5	Ant1	2478.972	2480.164	1.192	0.564	Pass
NVNT	2-DH5	Ant1	2402.01	2403.026	1.016	0.889	Pass
NVNT	2-DH5	Ant1	2441.006	2442.006	1	0.877	Pass
NVNT	2-DH5	Ant1	2479.168	2480.166	0.998	0.893	Pass
NVNT	3-DH5	Ant1	2402.154	2403.156	1.002	0.866	Pass
NVNT	3-DH5	Ant1	2441.164	2442.156	0.992	0.882	Pass
NVNT	3-DH5	Ant1	2479.16	2480.15	0.99	0.871	Pass



Test Graphs

CFS NVNT 1-DH5 2402MHz Ant1



CFS NVNT 1-DH5 2441MHz Ant1

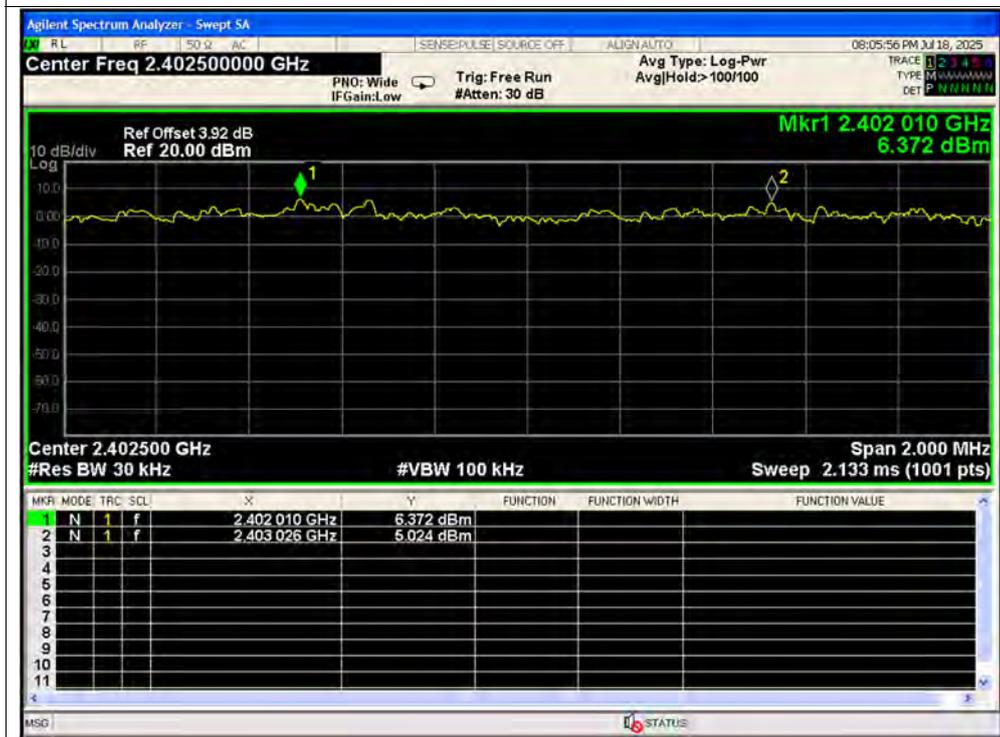




CFS NVNT 1-DH5 2480MHz Ant1

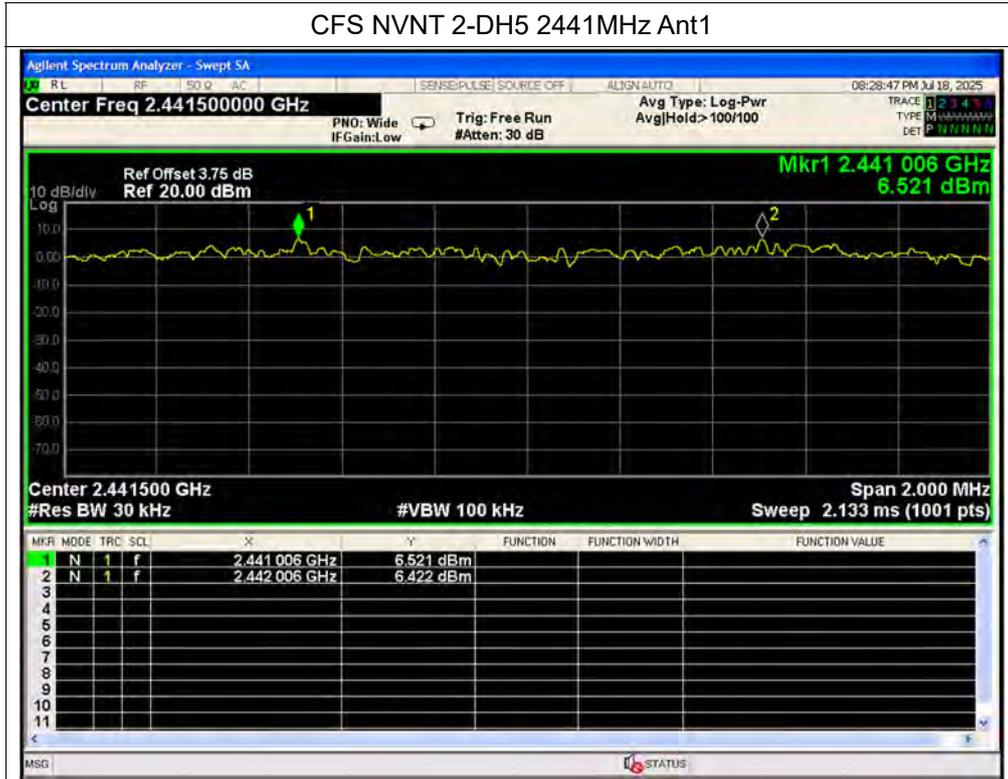


CFS NVNT 2-DH5 2402MHz Ant1

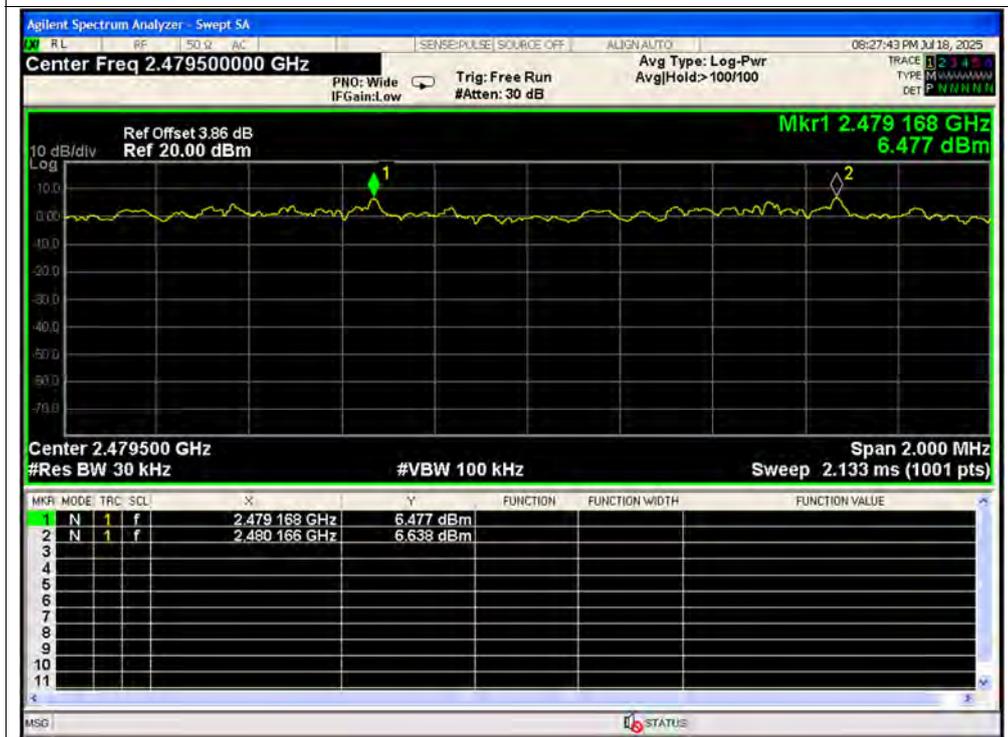




CFS NVNT 2-DH5 2441MHz Ant1

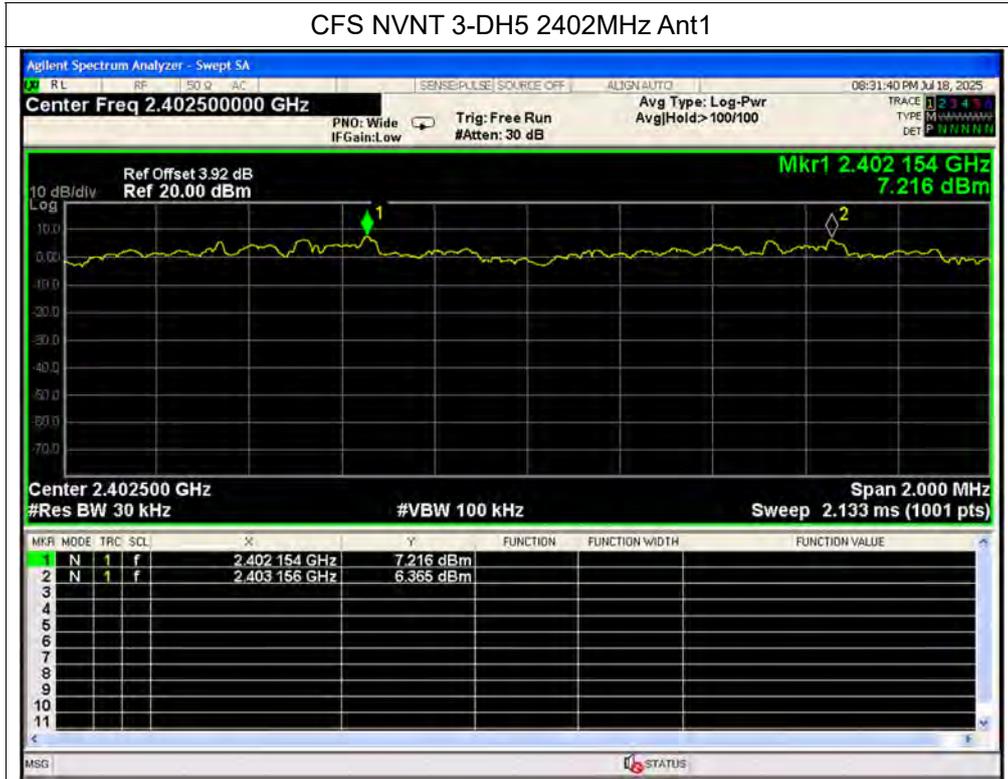


CFS NVNT 2-DH5 2480MHz Ant1



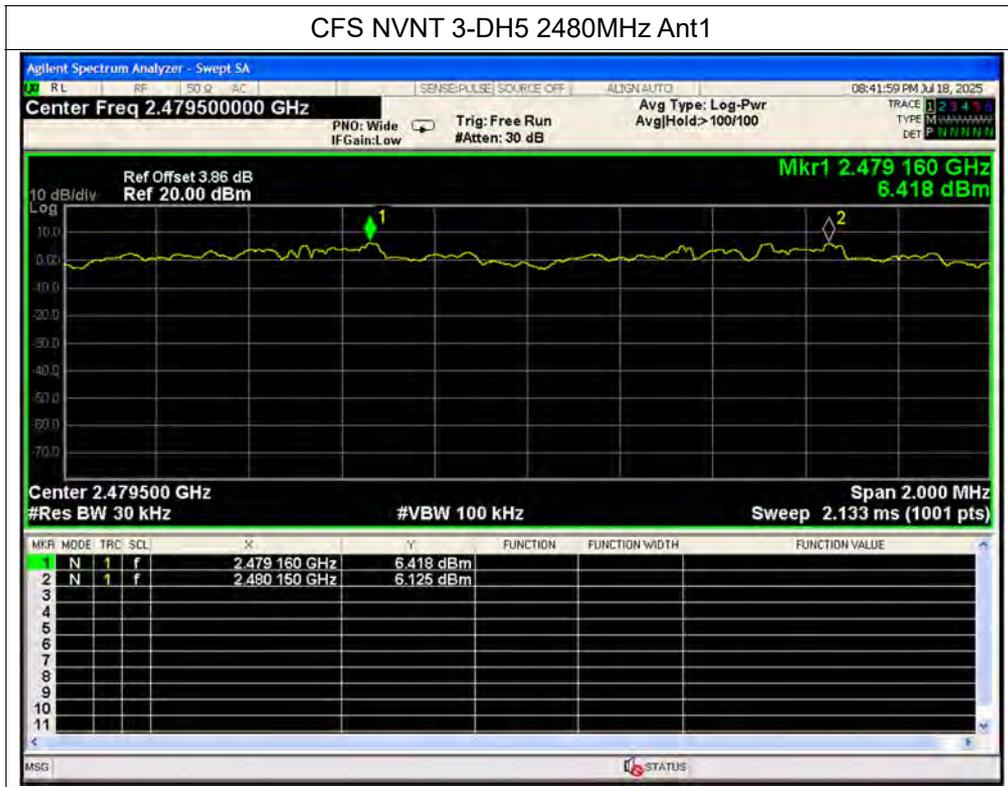


CFS NVNT 3-DH5 2402MHz Ant1



CFS NVNT 3-DH5 2441MHz Ant1





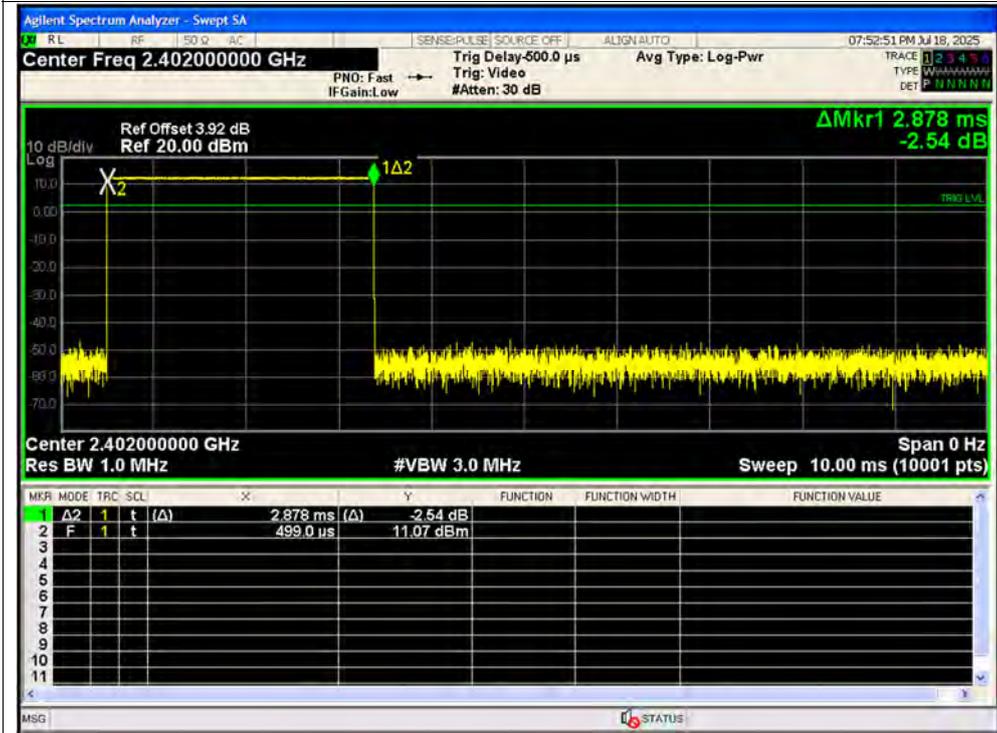
**A.7. Time of Occupancy (Dwell time)**

Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	2.878	293.556	102	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.879	313.811	109	31600	400	Pass
NVNT	1-DH5	2480	Ant1	2.878	316.58	110	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.882	317.02	110	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.882	288.2	100	31600	400	Pass
NVNT	2-DH5	2480	Ant1	2.88	328.32	114	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.884	294.168	102	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.88	308.16	107	31600	400	Pass
NVNT	3-DH5	2480	Ant1	2.884	311.472	108	31600	400	Pass

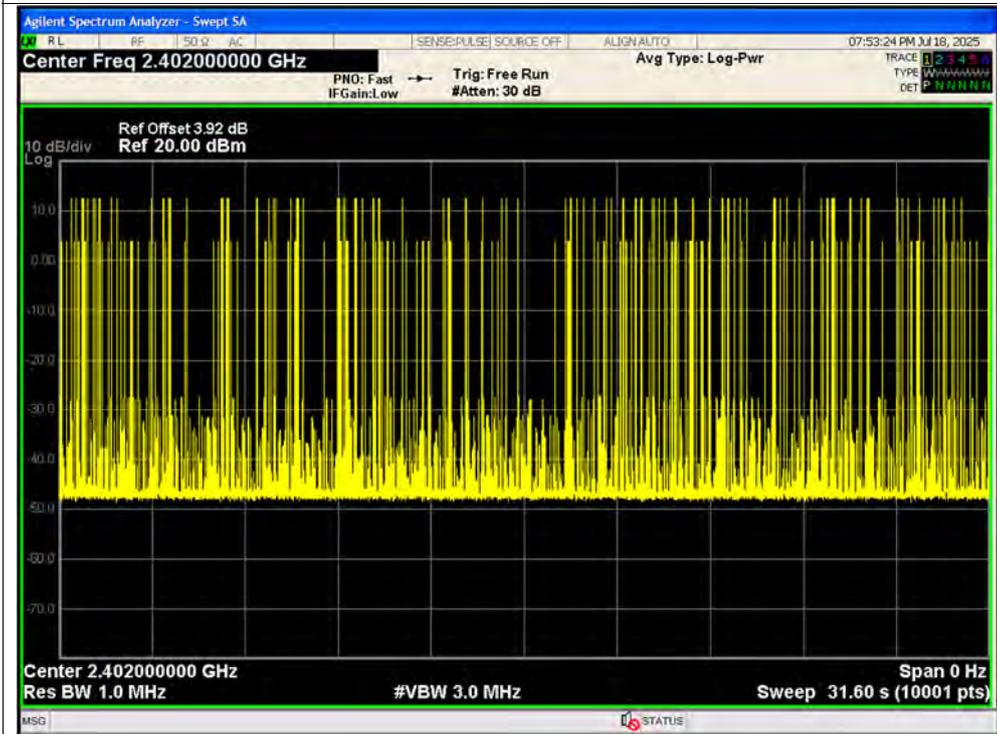


Test Graphs

Dwell NVNT 1-DH5 2402MHz Ant1 One Burst

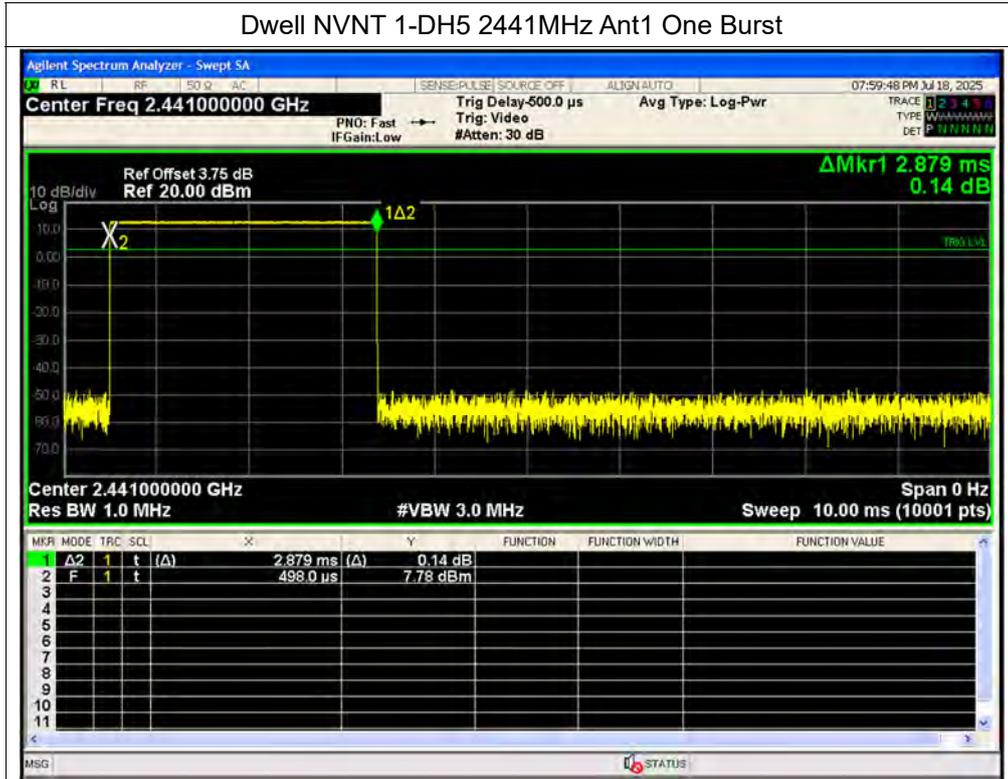


Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated

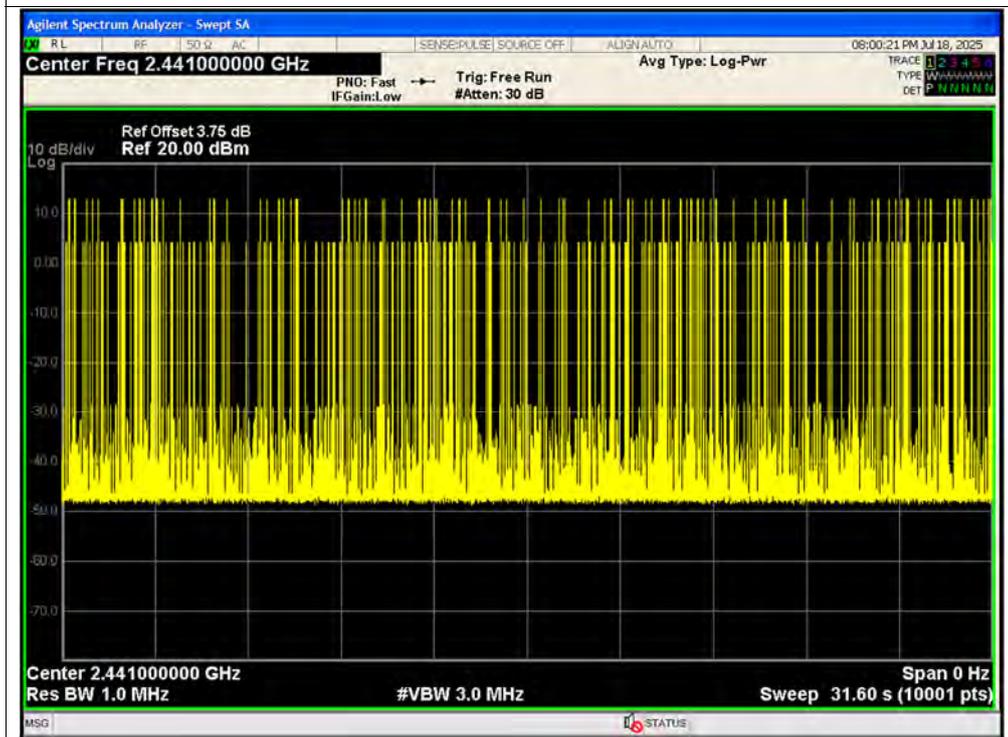




Dwell NVNT 1-DH5 2441MHz Ant1 One Burst

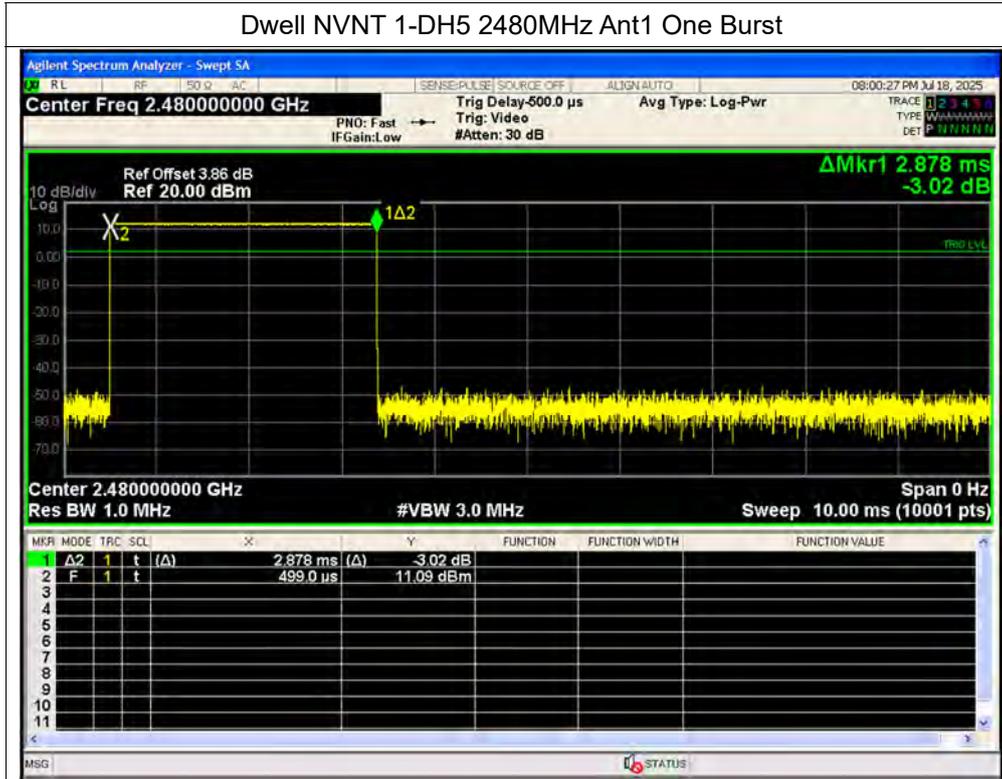


Dwell NVNT 1-DH5 2441MHz Ant1 Accumulated

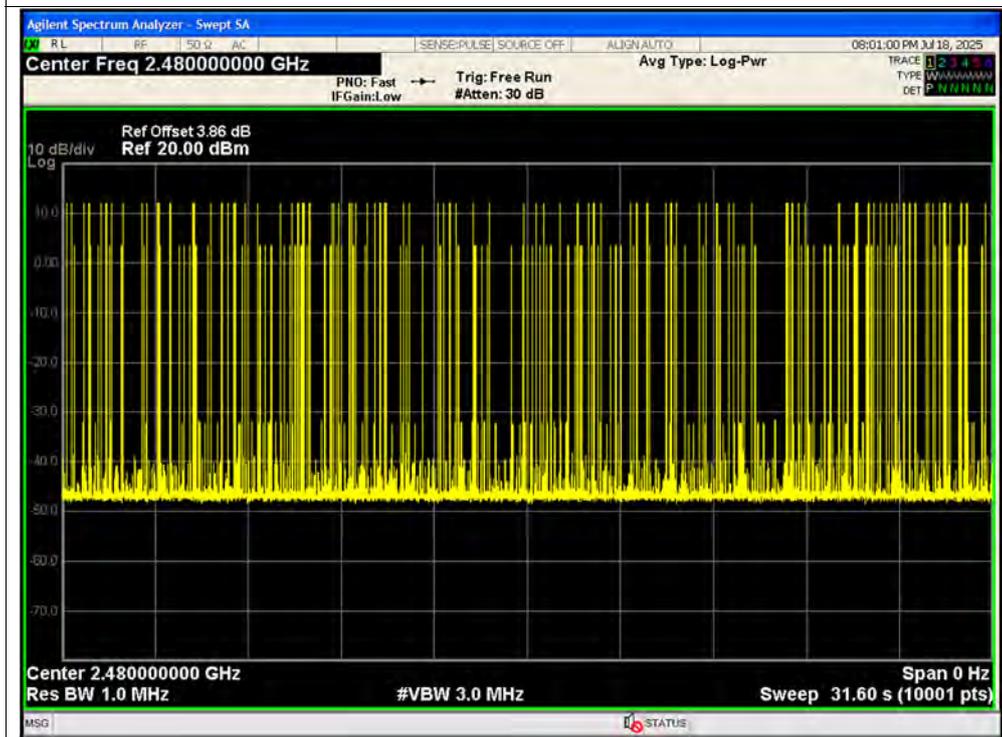




Dwell NVNT 1-DH5 2480MHz Ant1 One Burst

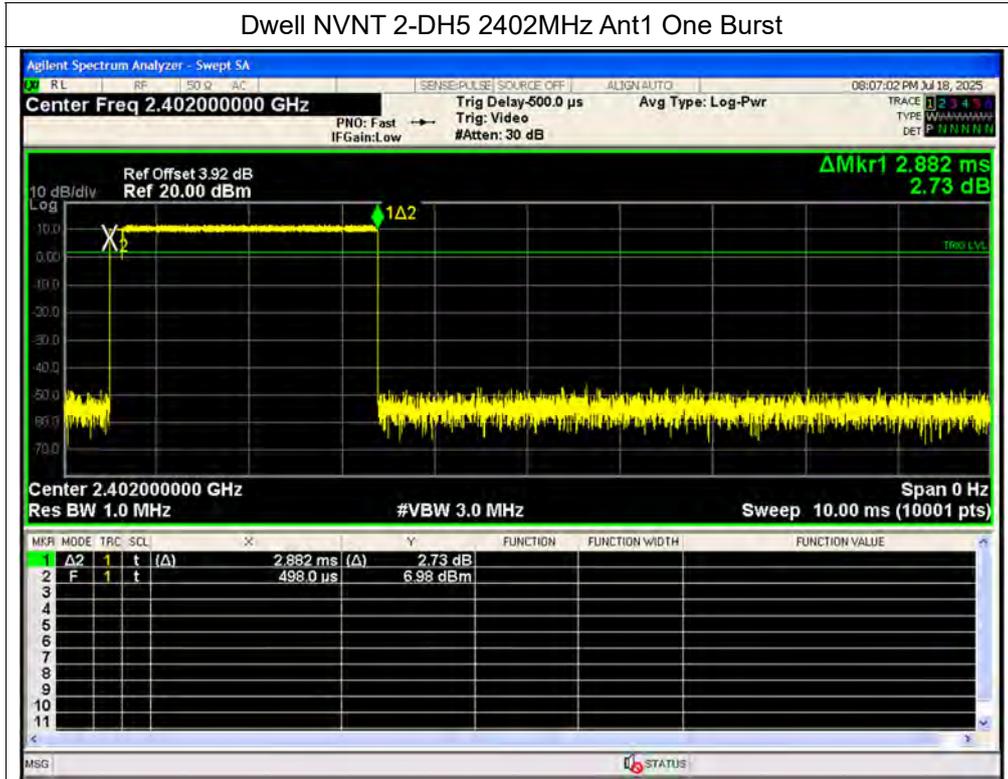


Dwell NVNT 1-DH5 2480MHz Ant1 Accumulated





Dwell NVNT 2-DH5 2402MHz Ant1 One Burst

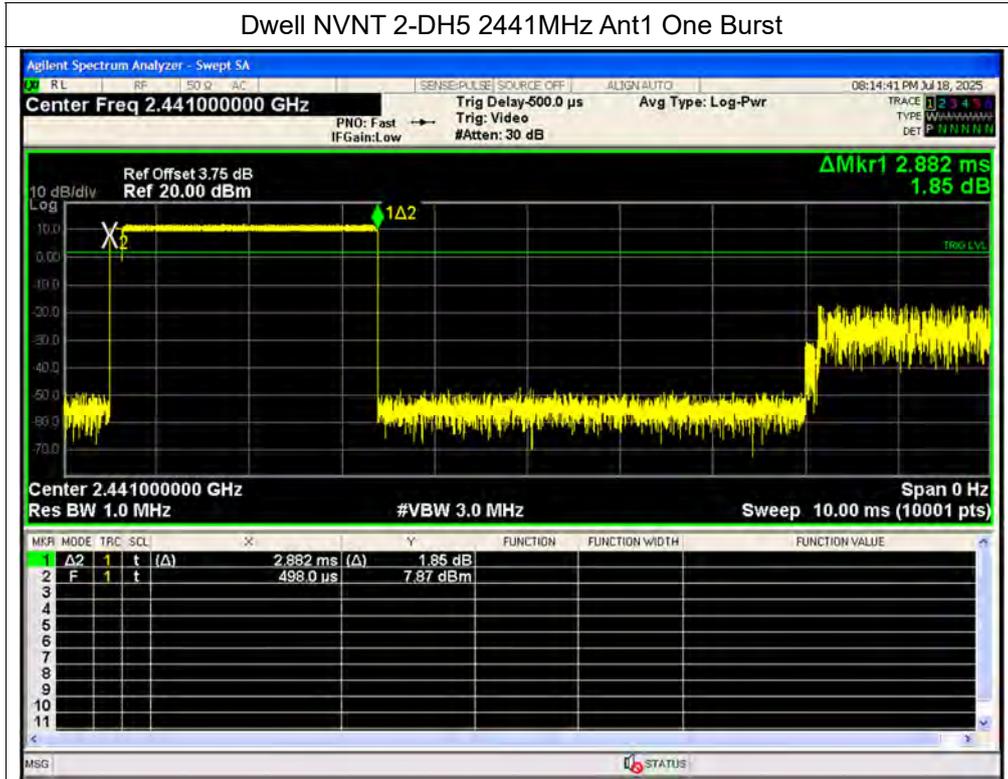


Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated





Dwell NVNT 2-DH5 2441MHz Ant1 One Burst

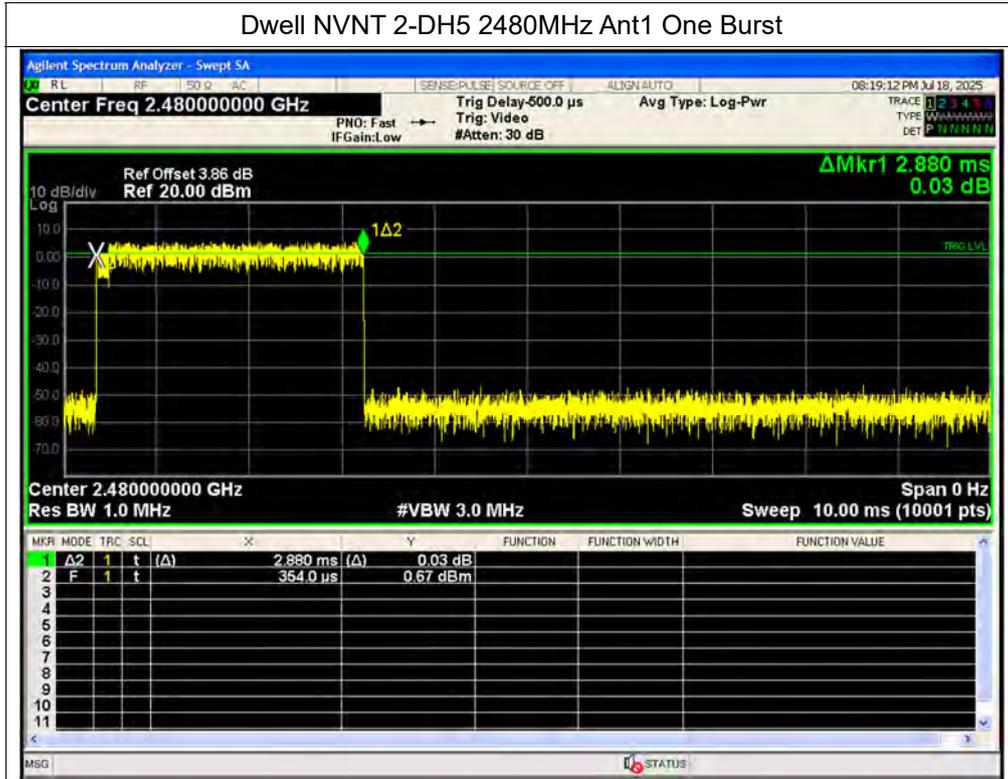


Dwell NVNT 2-DH5 2441MHz Ant1 Accumulated

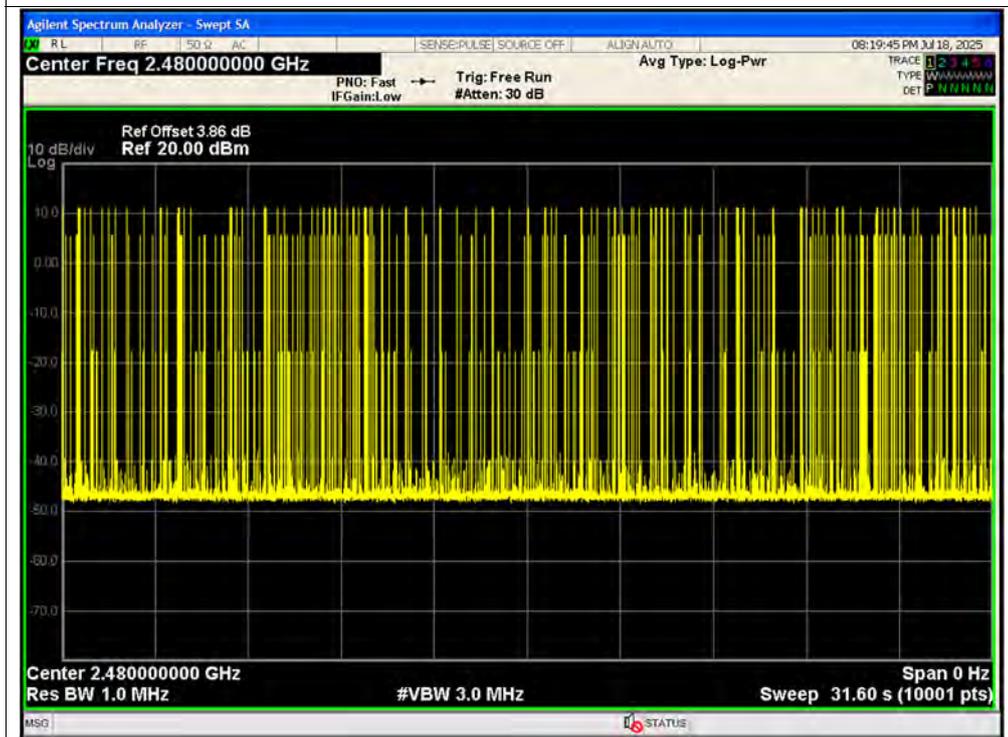




Dwell NVNT 2-DH5 2480MHz Ant1 One Burst

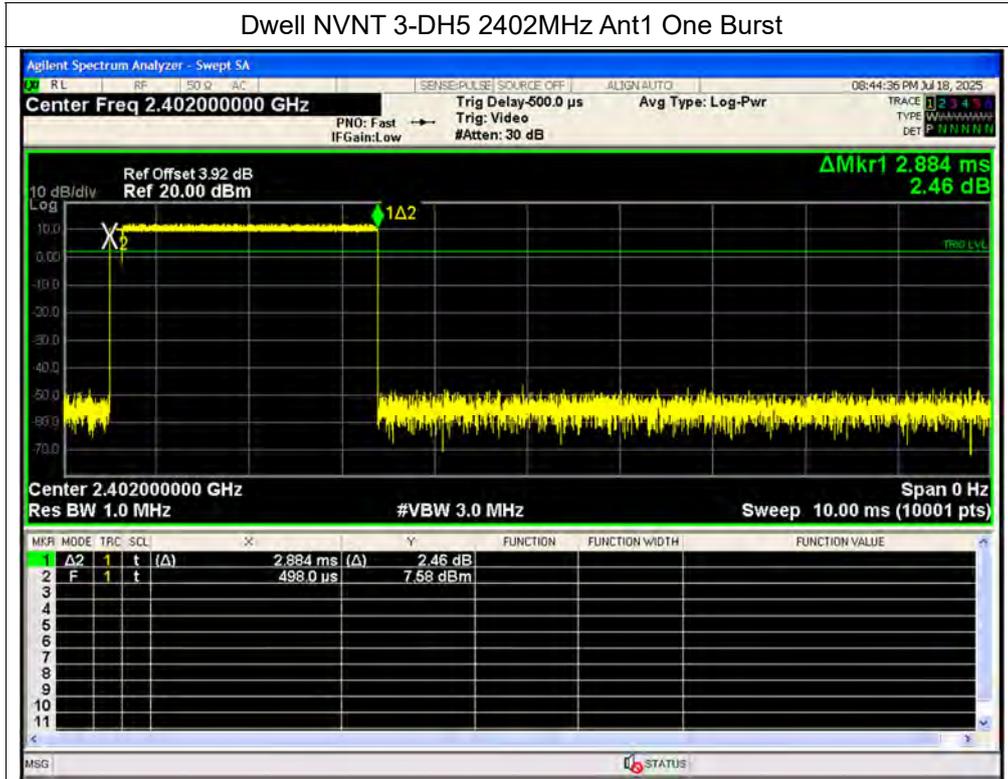


Dwell NVNT 2-DH5 2480MHz Ant1 Accumulated





Dwell NVNT 3-DH5 2402MHz Ant1 One Burst

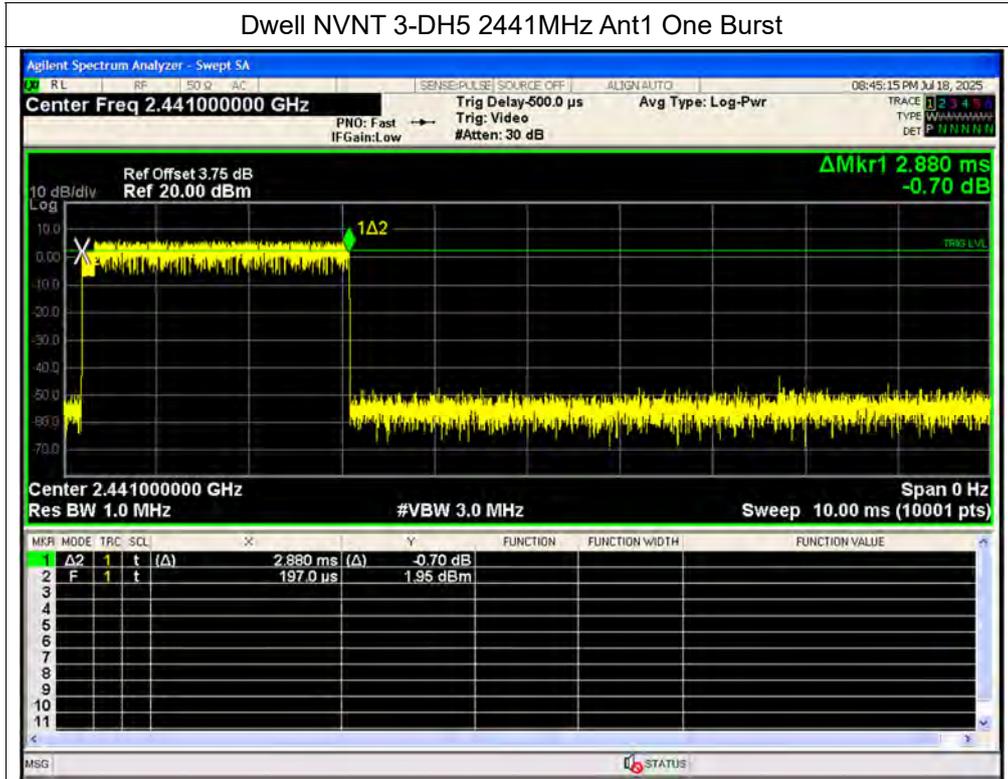


Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

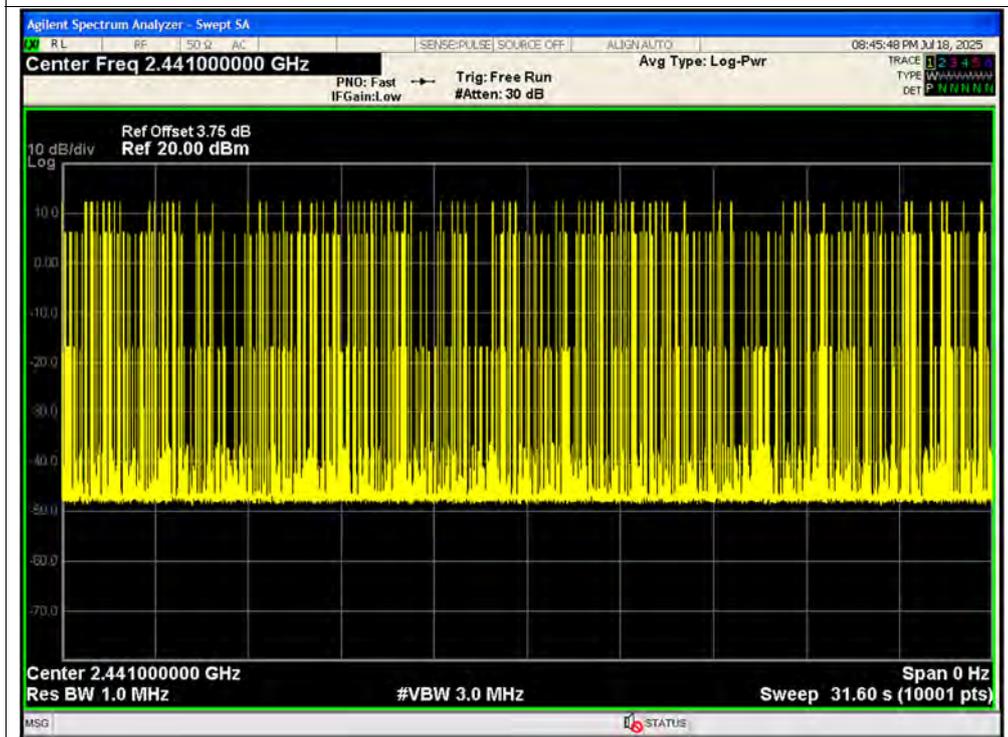




Dwell NVNT 3-DH5 2441MHz Ant1 One Burst

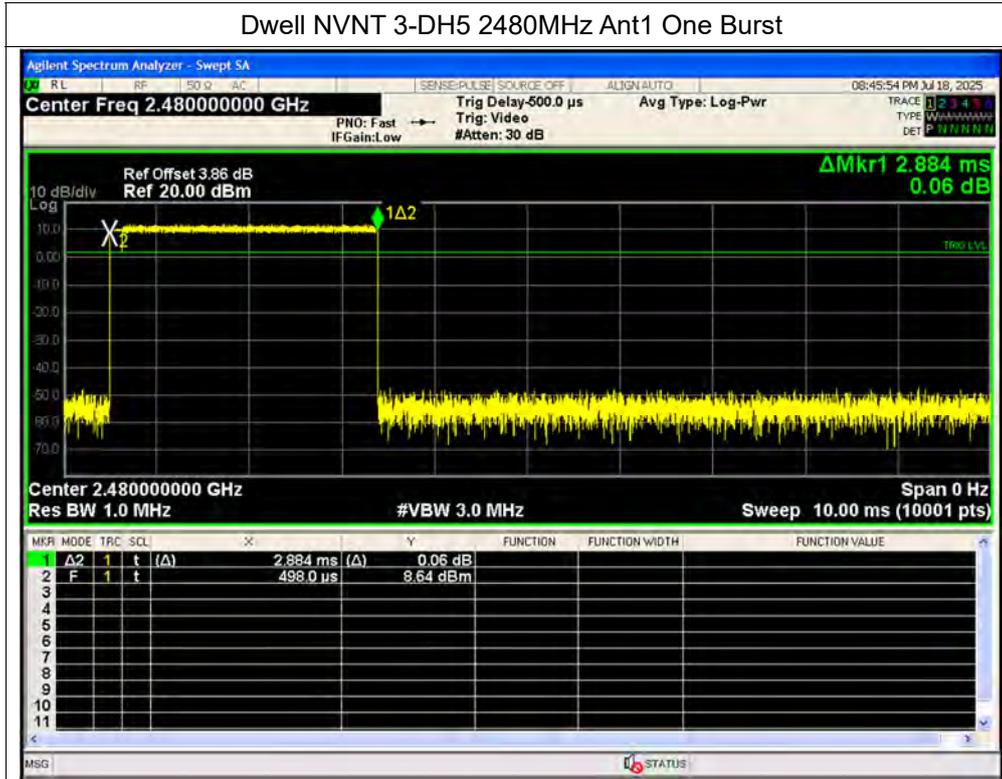


Dwell NVNT 3-DH5 2441MHz Ant1 Accumulated

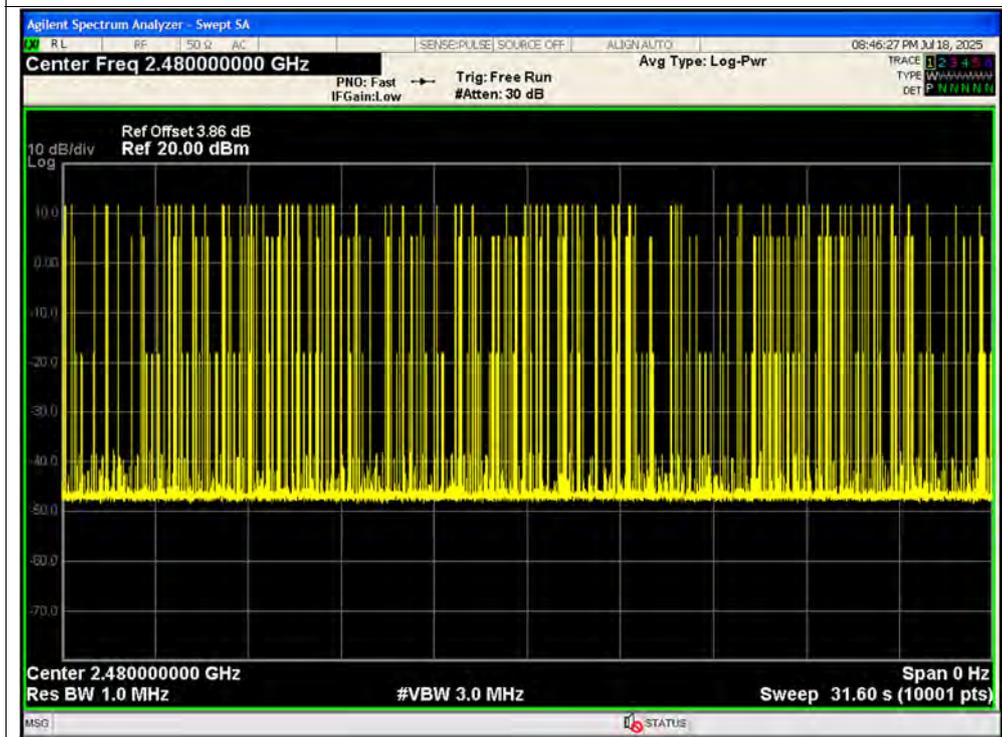




Dwell NVNT 3-DH5 2480MHz Ant1 One Burst



Dwell NVNT 3-DH5 2480MHz Ant1 Accumulated



**A.8. Conducted Spurious Emissions**

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-53.64	-20	Pass
NVNT	1-DH5	2441	Ant1	-53.71	-20	Pass
NVNT	1-DH5	2480	Ant1	-52.79	-20	Pass
NVNT	2-DH5	2402	Ant1	-50.64	-20	Pass
NVNT	2-DH5	2441	Ant1	-51.44	-20	Pass
NVNT	2-DH5	2480	Ant1	-49.61	-20	Pass
NVNT	3-DH5	2402	Ant1	-50.77	-20	Pass
NVNT	3-DH5	2441	Ant1	-51.13	-20	Pass
NVNT	3-DH5	2480	Ant1	-51.17	-20	Pass

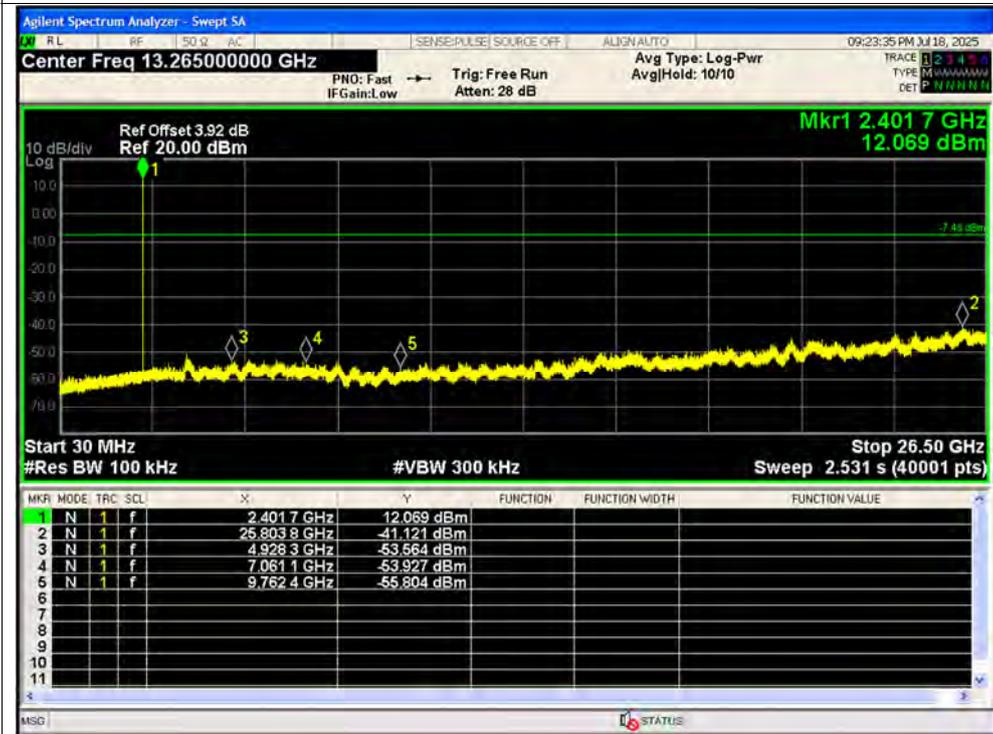


Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref



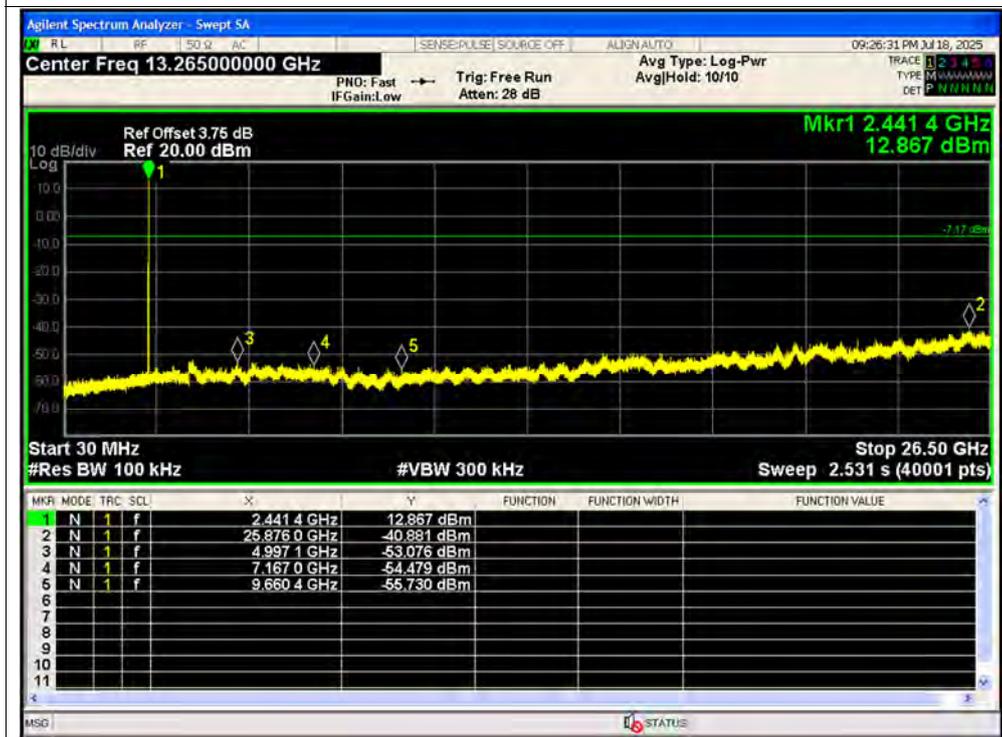
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref



Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission

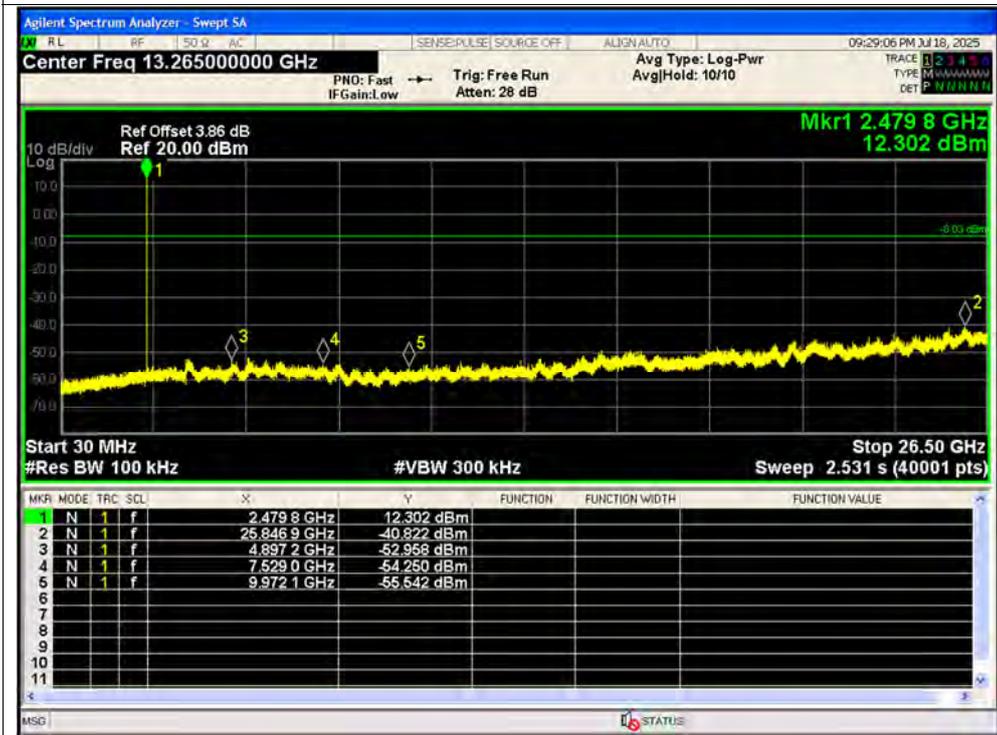




Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission

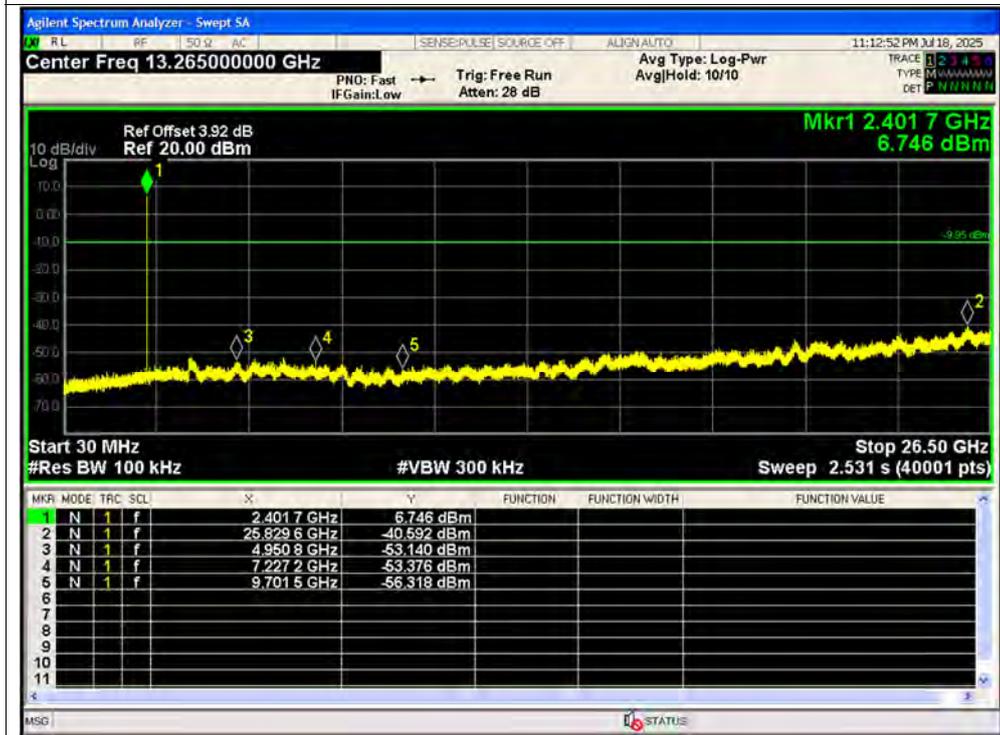




Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref

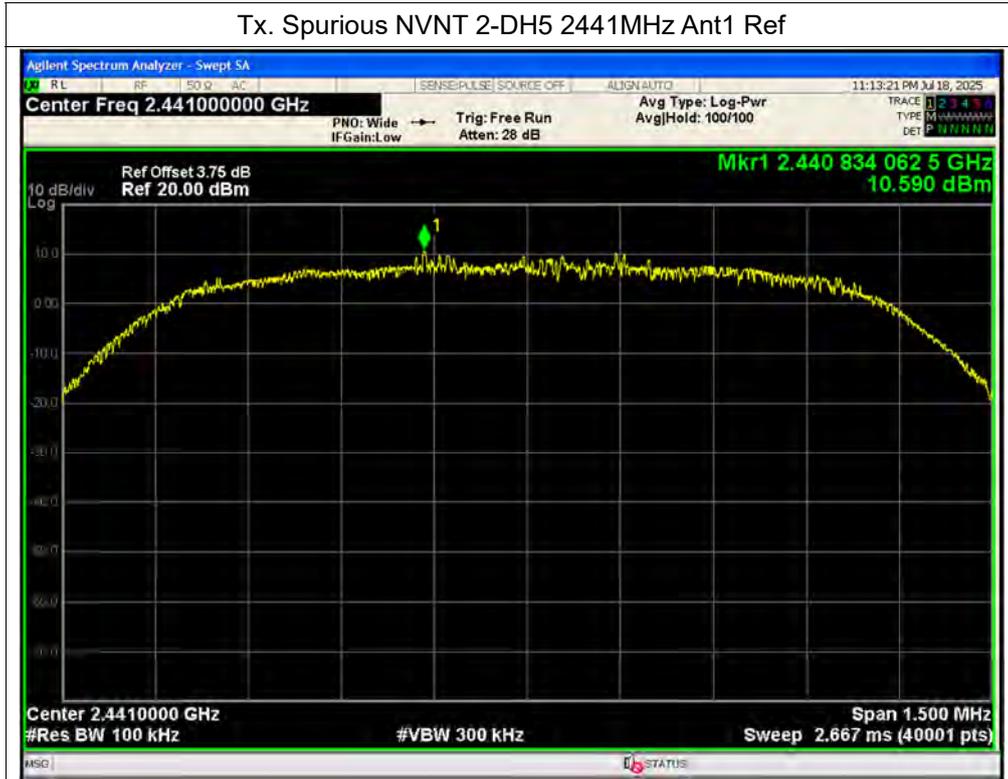


Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission

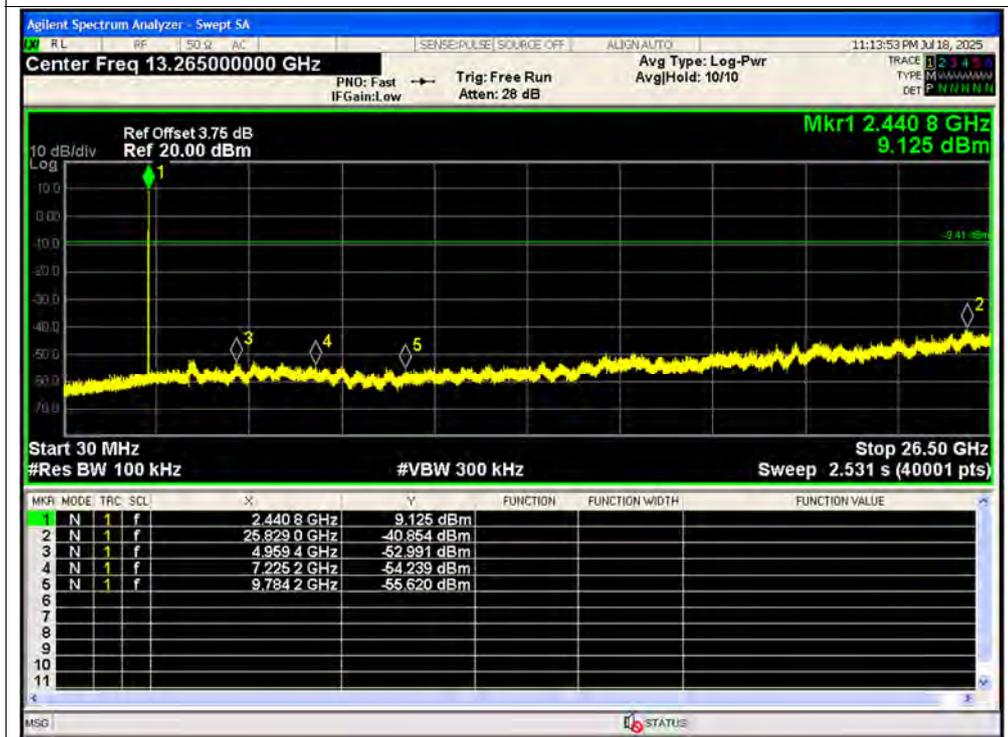




Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission

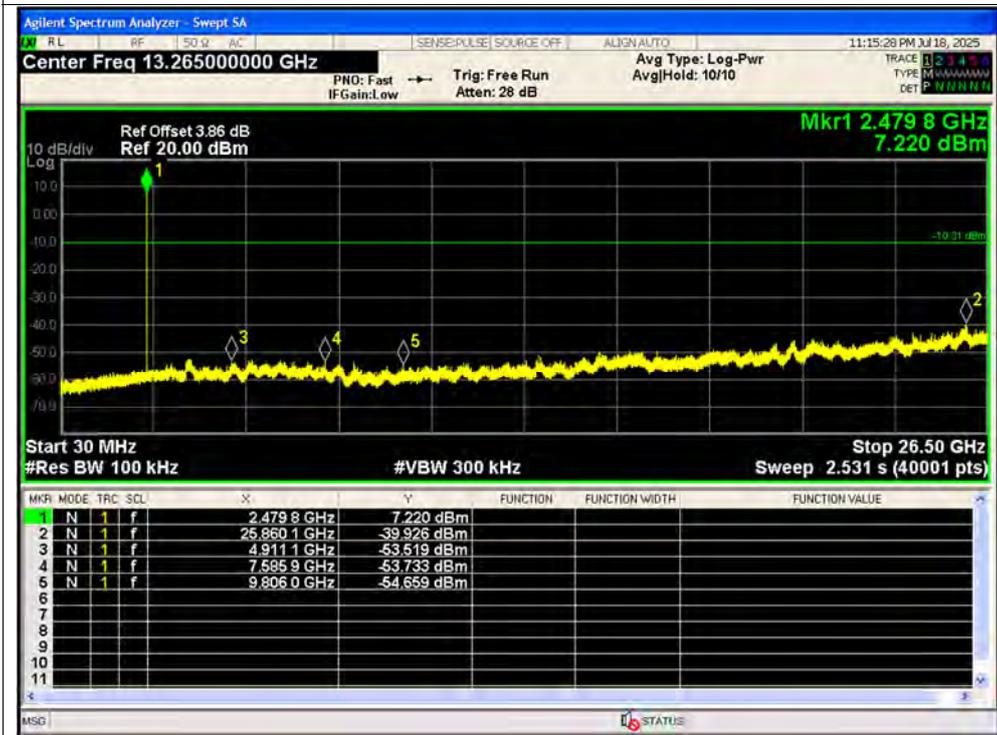




Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref

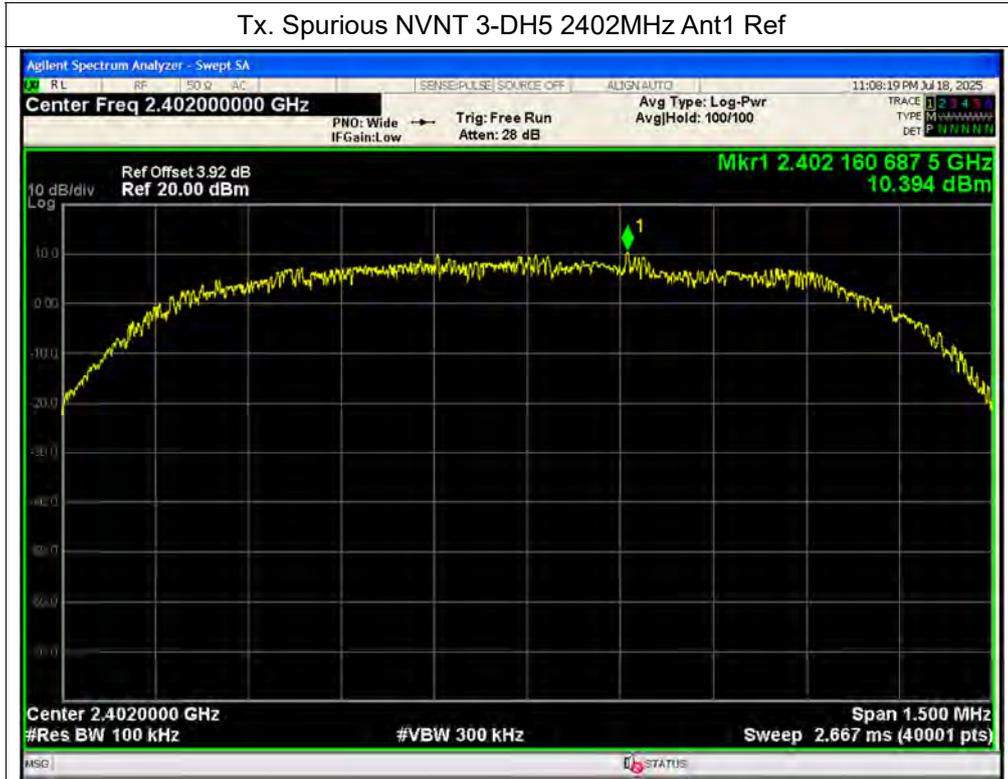


Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission

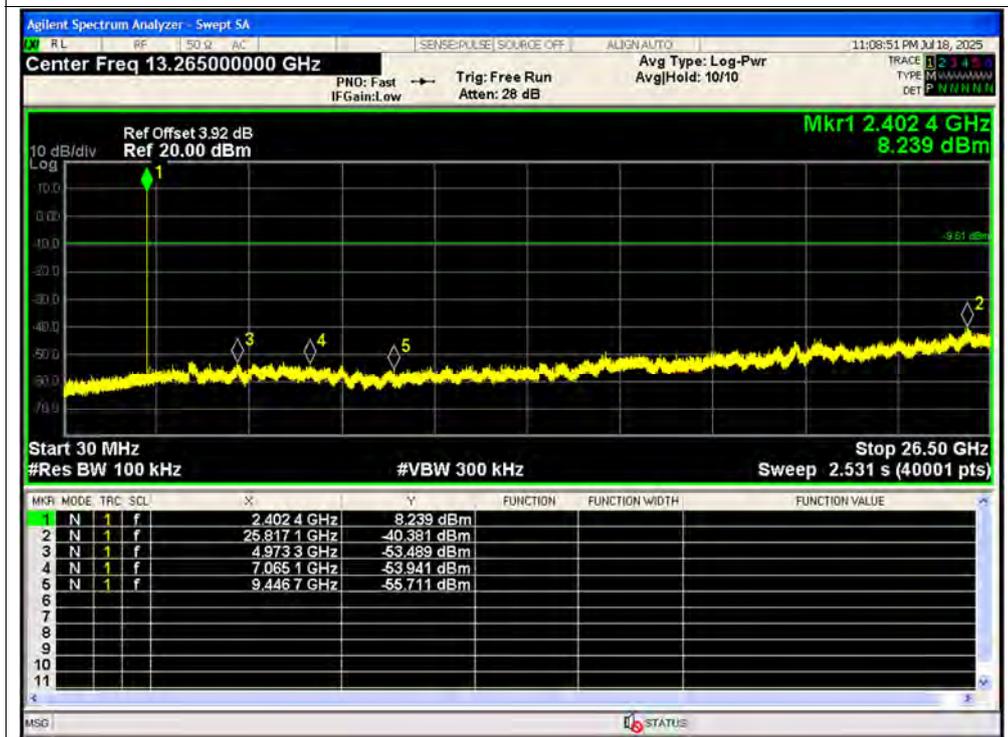




Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Emission

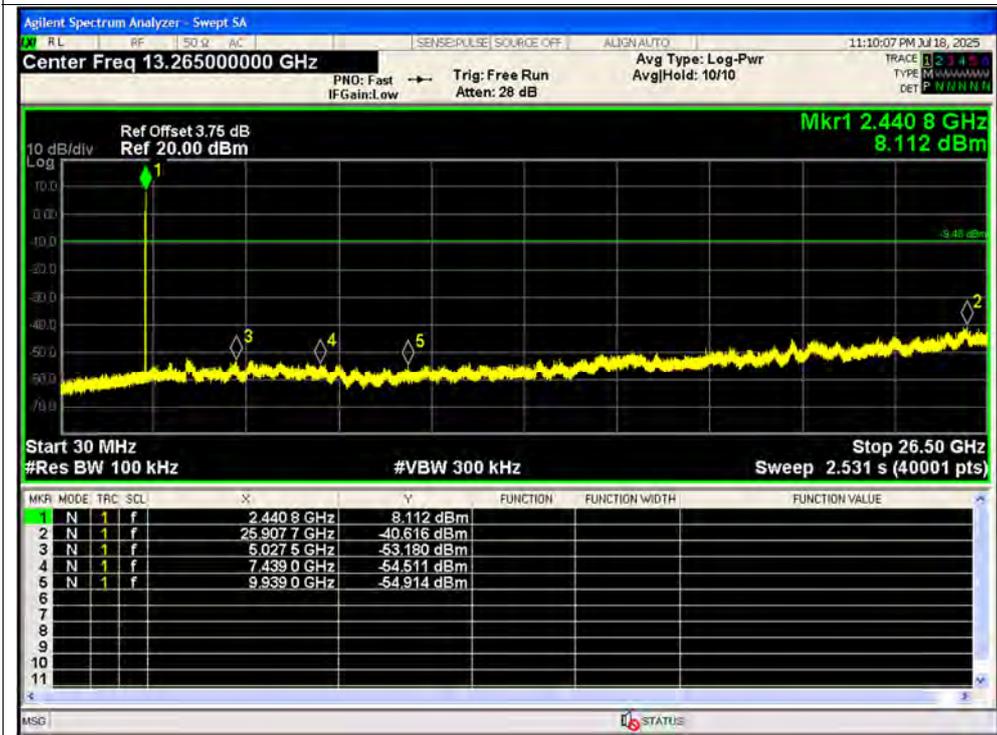




Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission

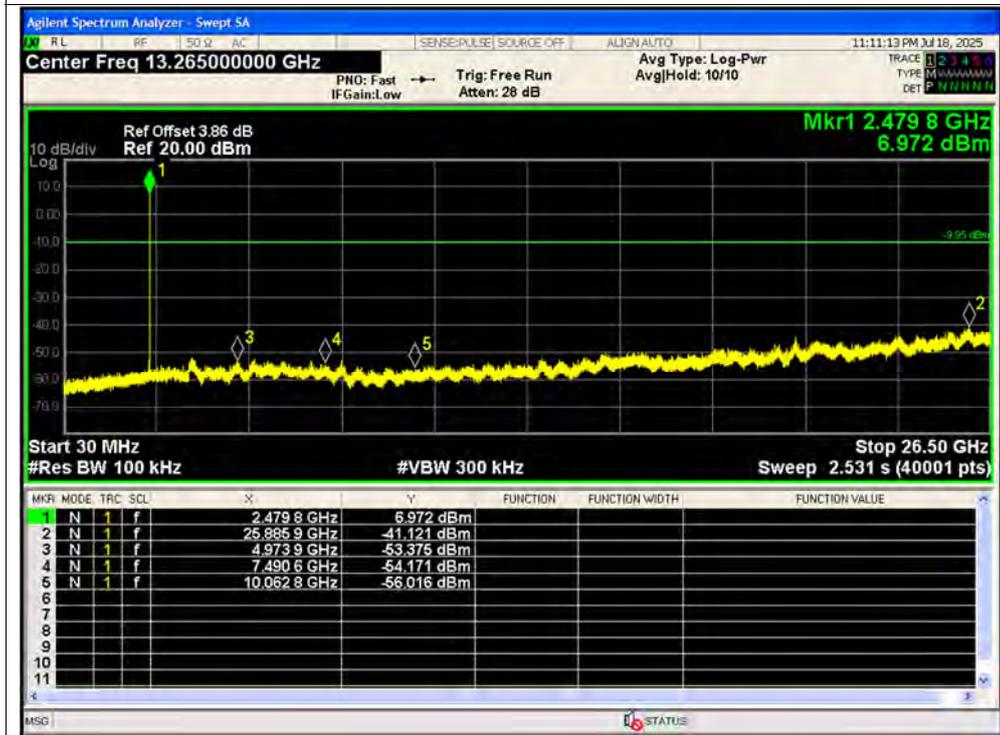




Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission



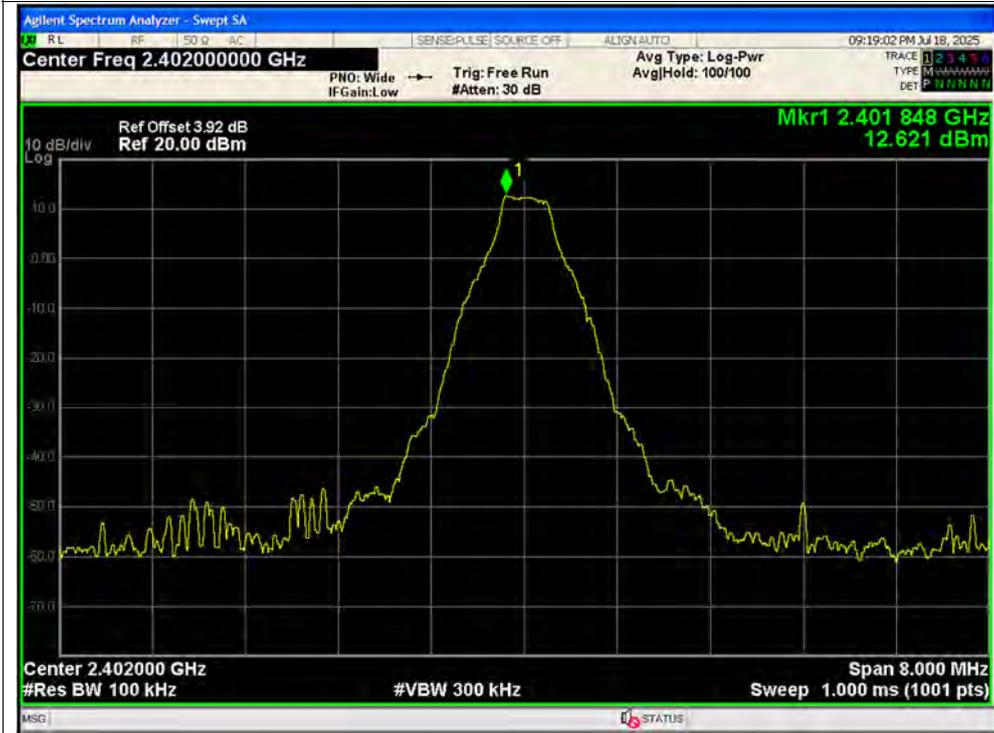
**A.9. Band Edge**

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-61.44	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-67.63	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-53.29	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-64.65	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-54.2	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-63.04	-20	Pass
NVNT	1-DH5	2402	Ant1	Hopping	-66.15	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-56.95	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-65.11	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-42.41	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-64.52	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-63.37	-20	Pass

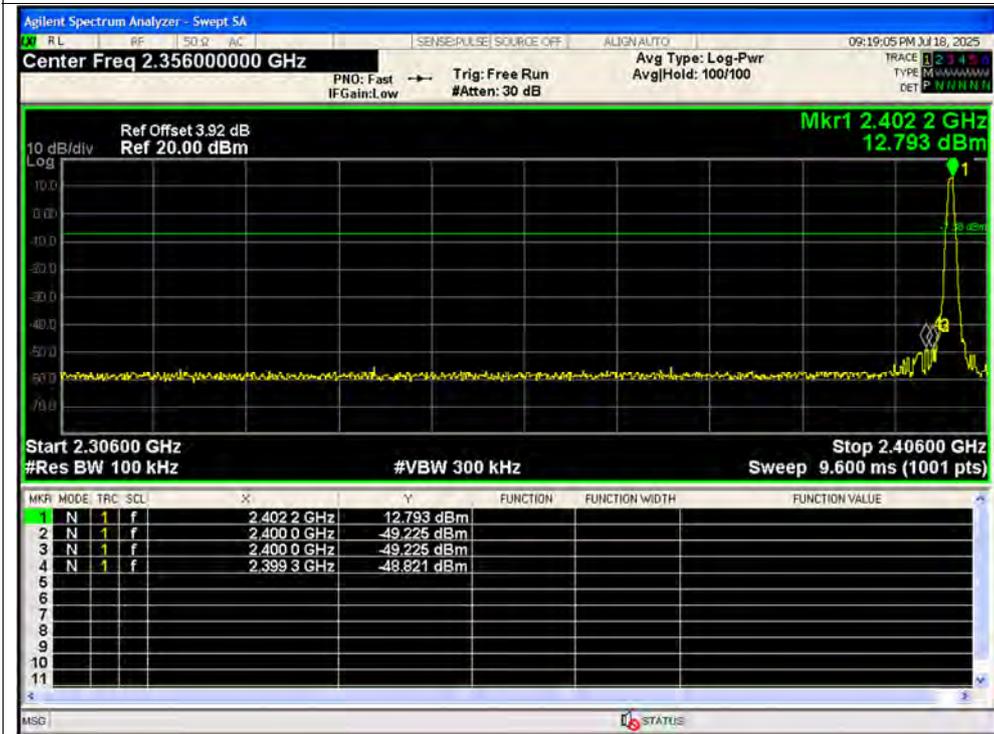


Test Graphs

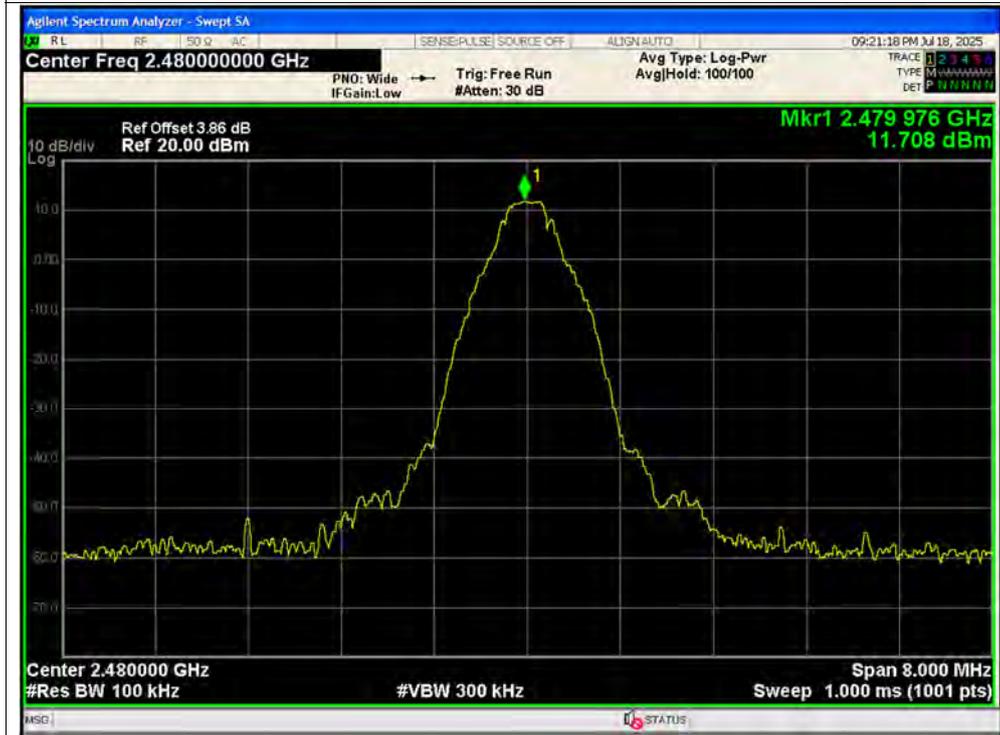
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



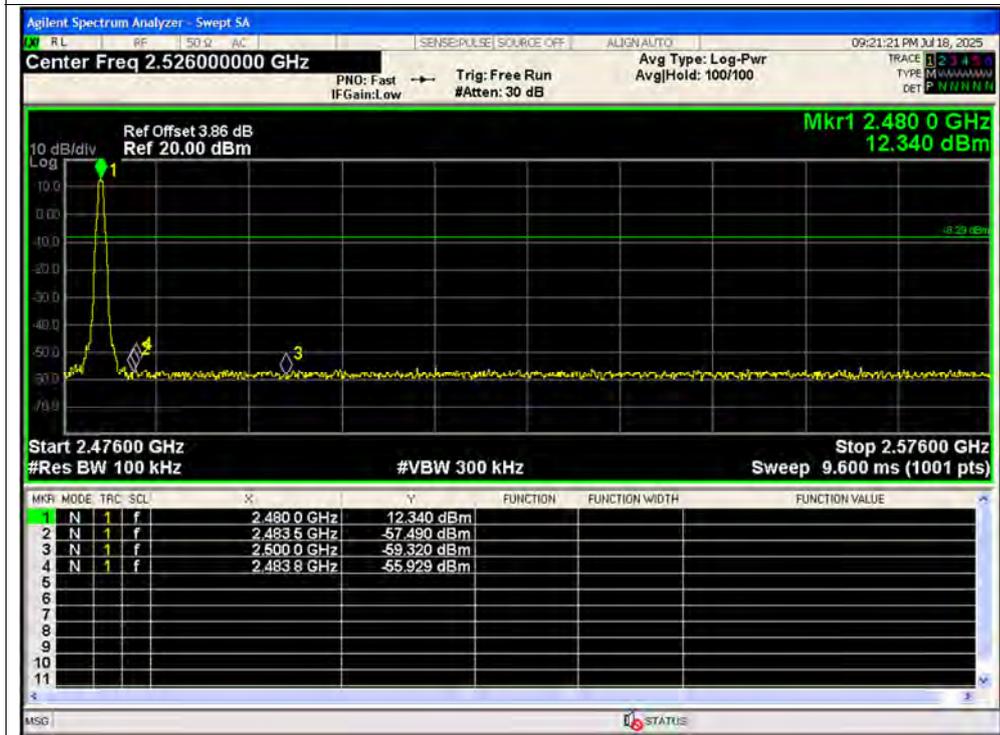
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission



Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref



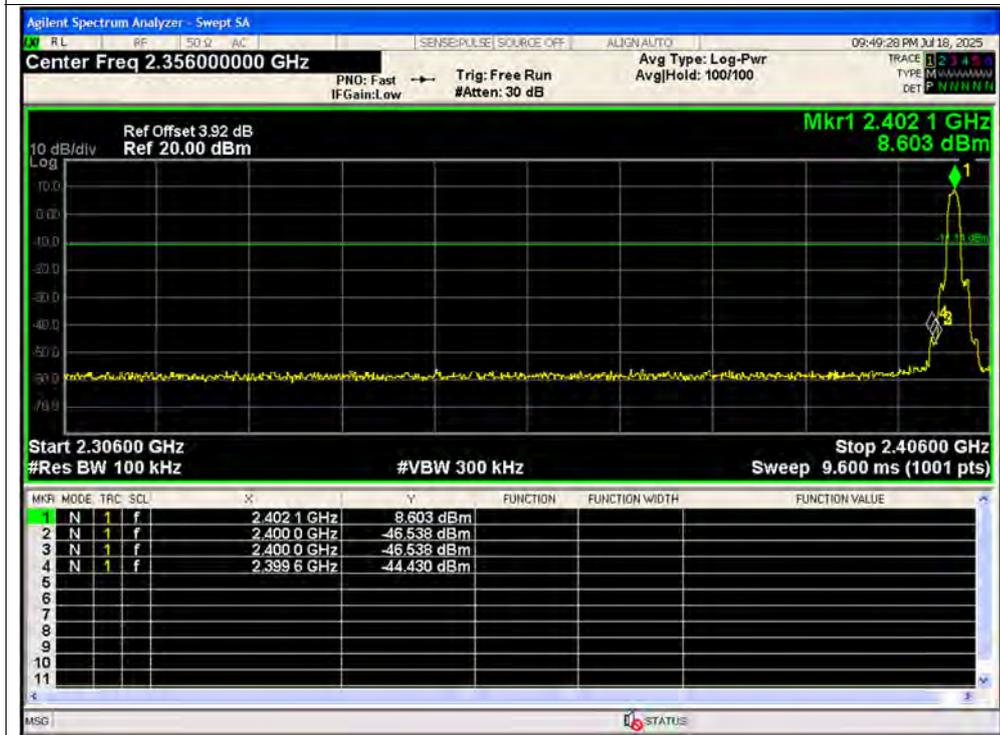
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission

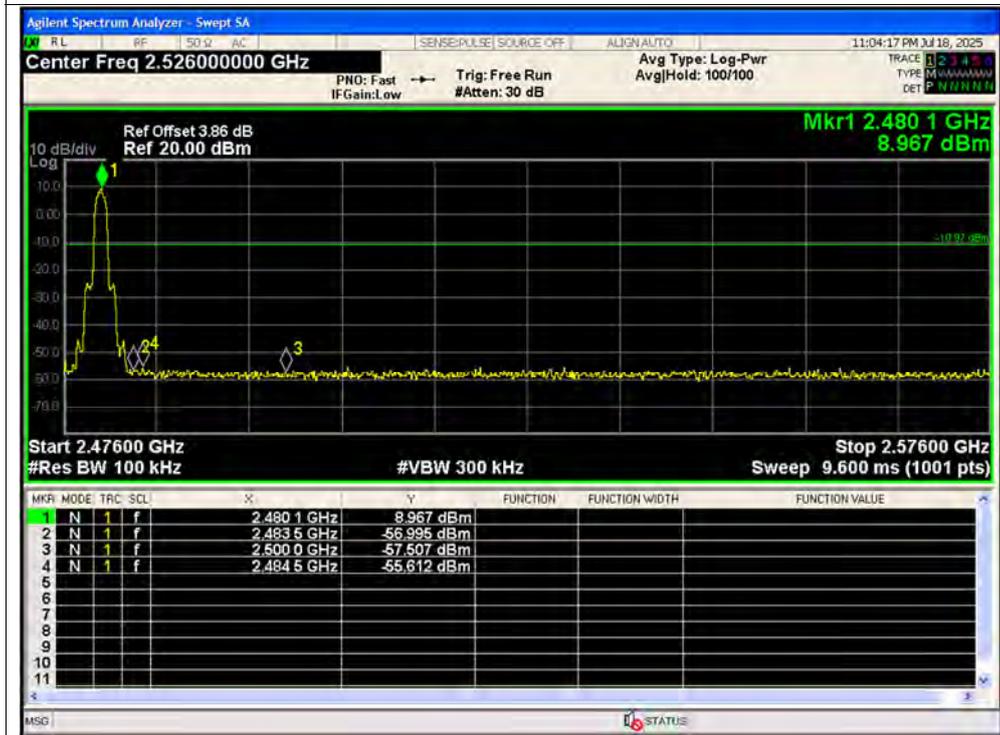




Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref



Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission

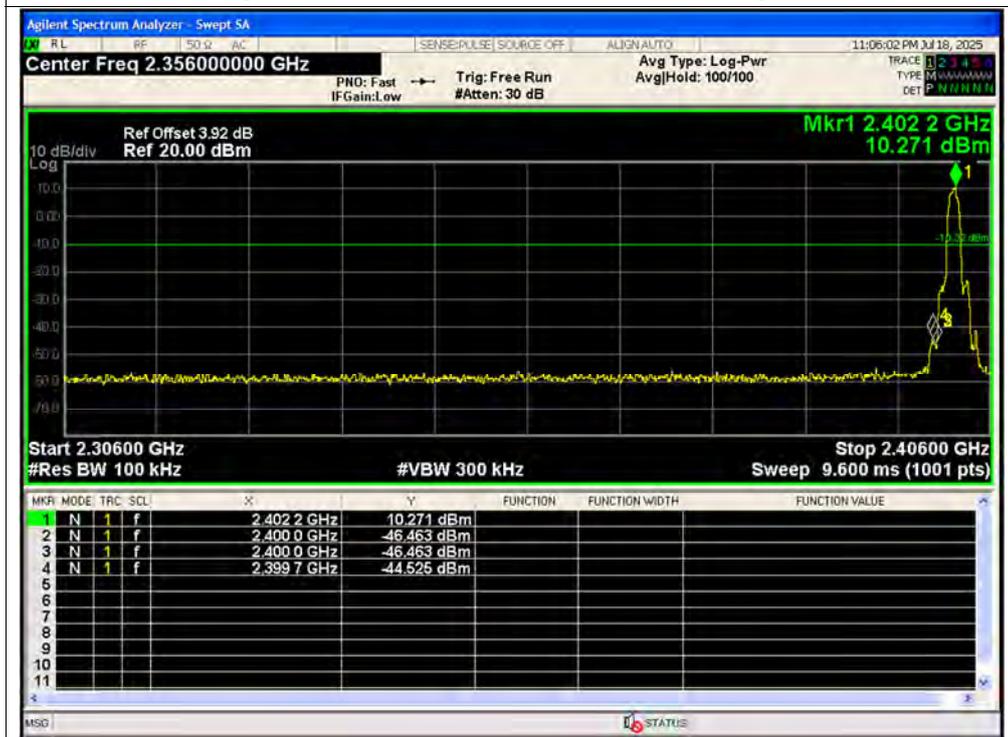




Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref



Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission

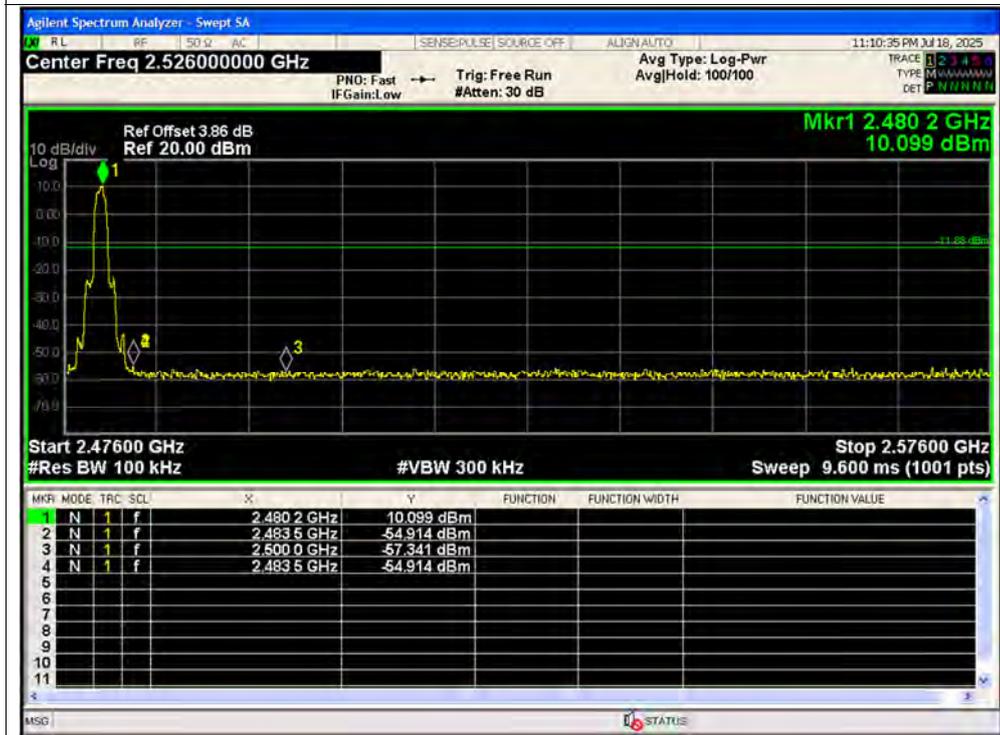




Band Edge NVNT 3-DH5 2480MHz Ant1 No-Hopping Ref



Band Edge NVNT 3-DH5 2480MHz Ant1 No-Hopping Emission



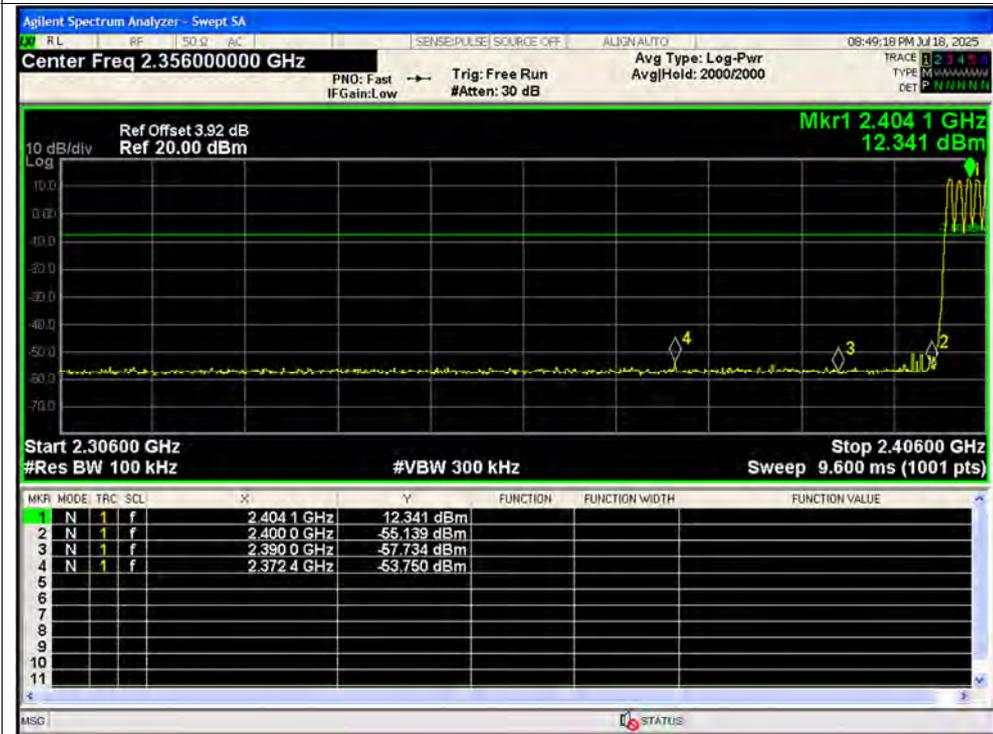


Test Graphs

Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



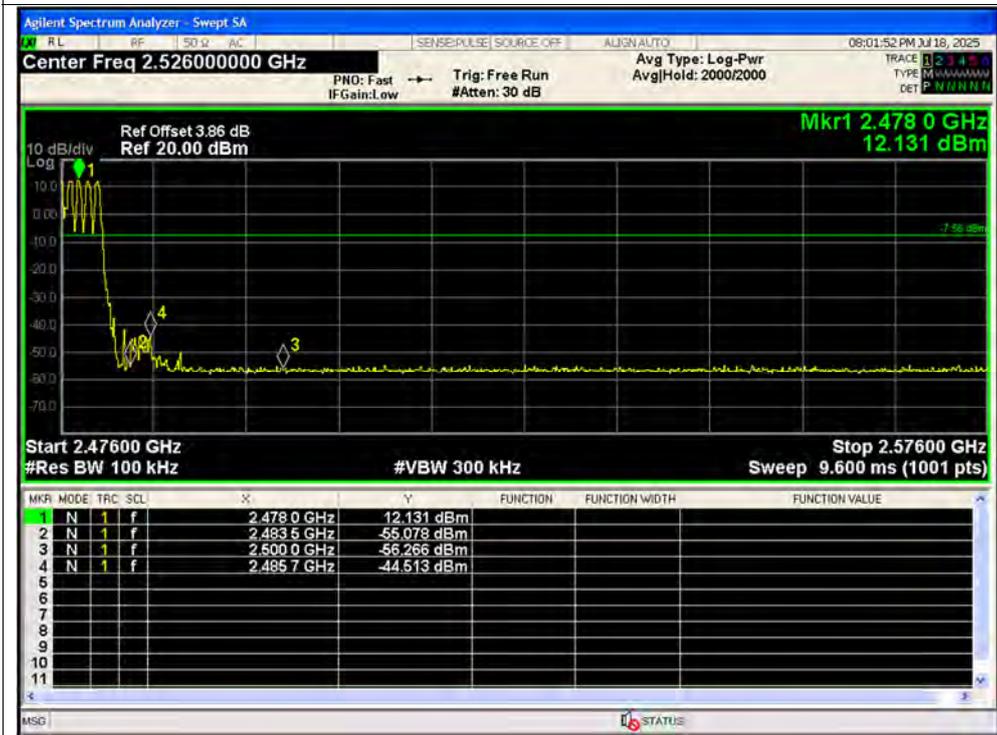
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission

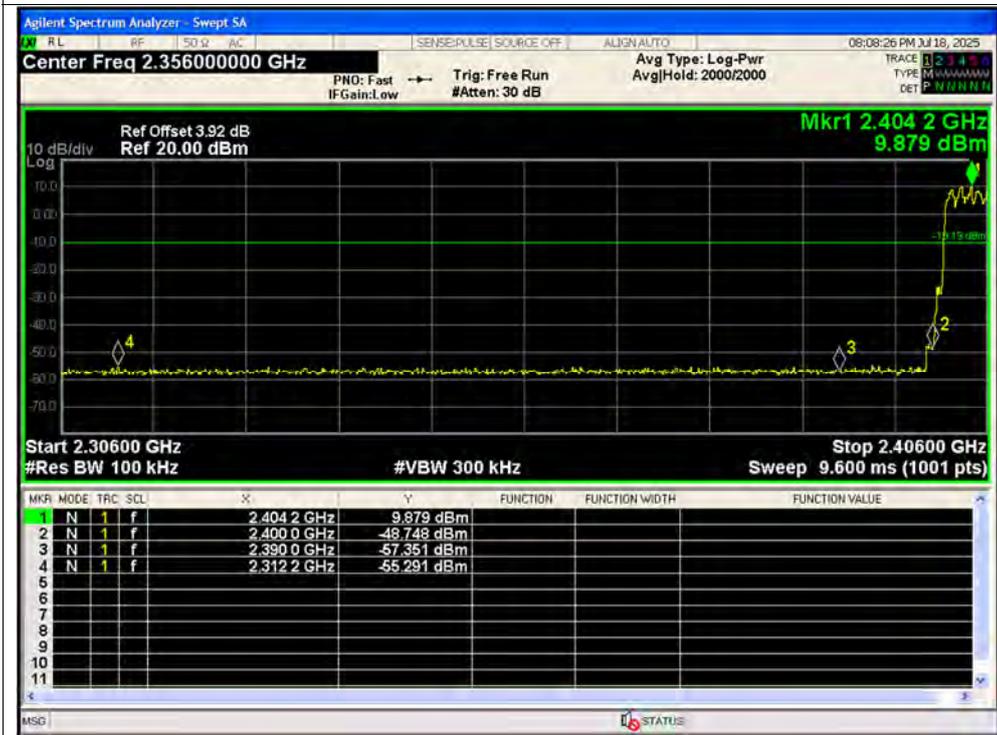




Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref



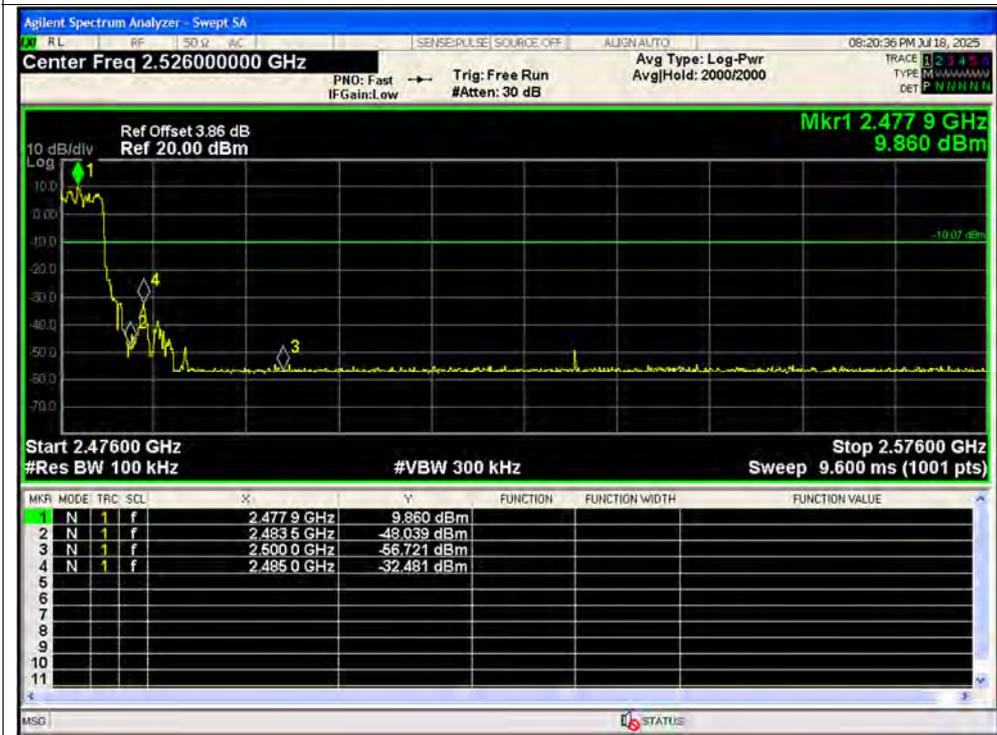
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission

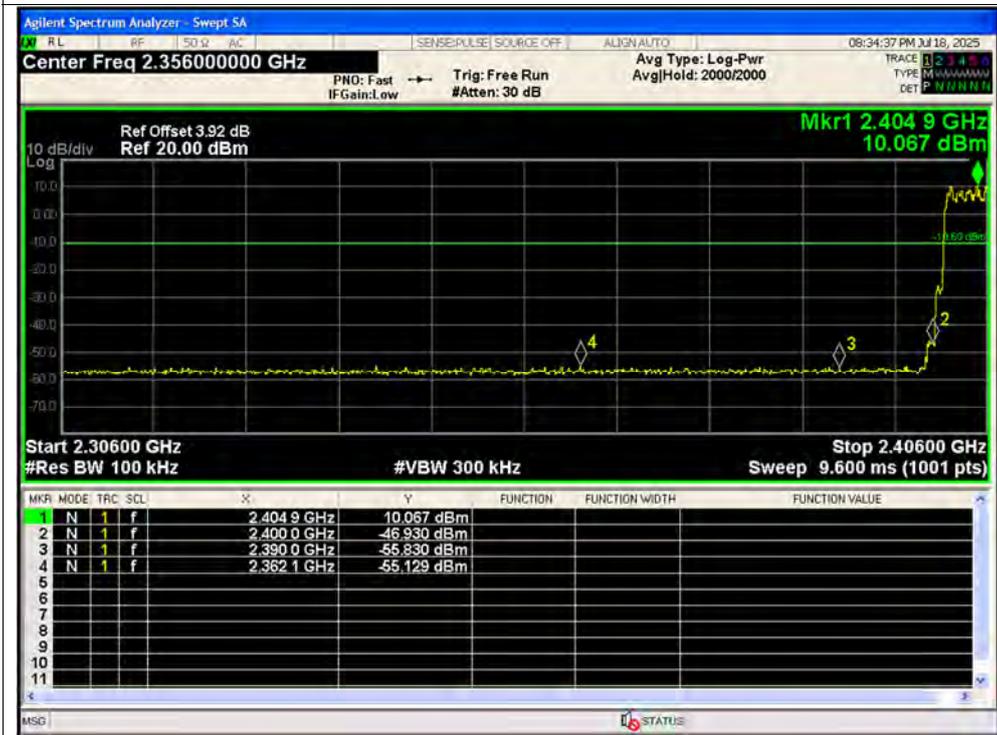




Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref



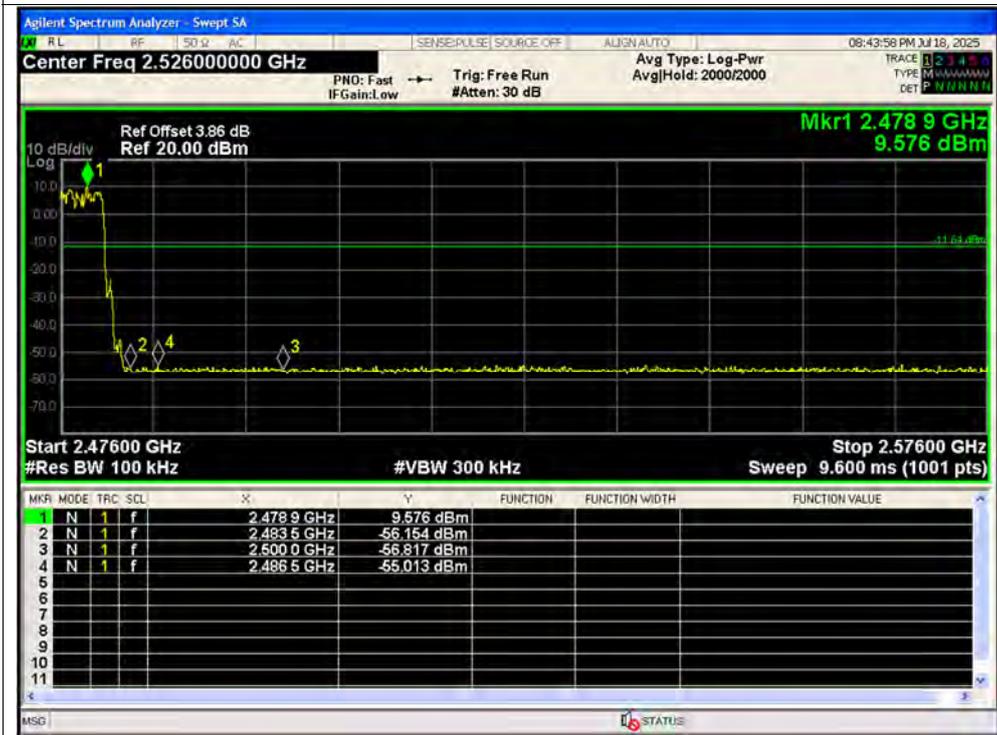
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Ref



Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Emission





A.10. Conducted Emission

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode: EUT+Adapter+Data Cable+BT TX

Test voltage: AC 120V/60Hz

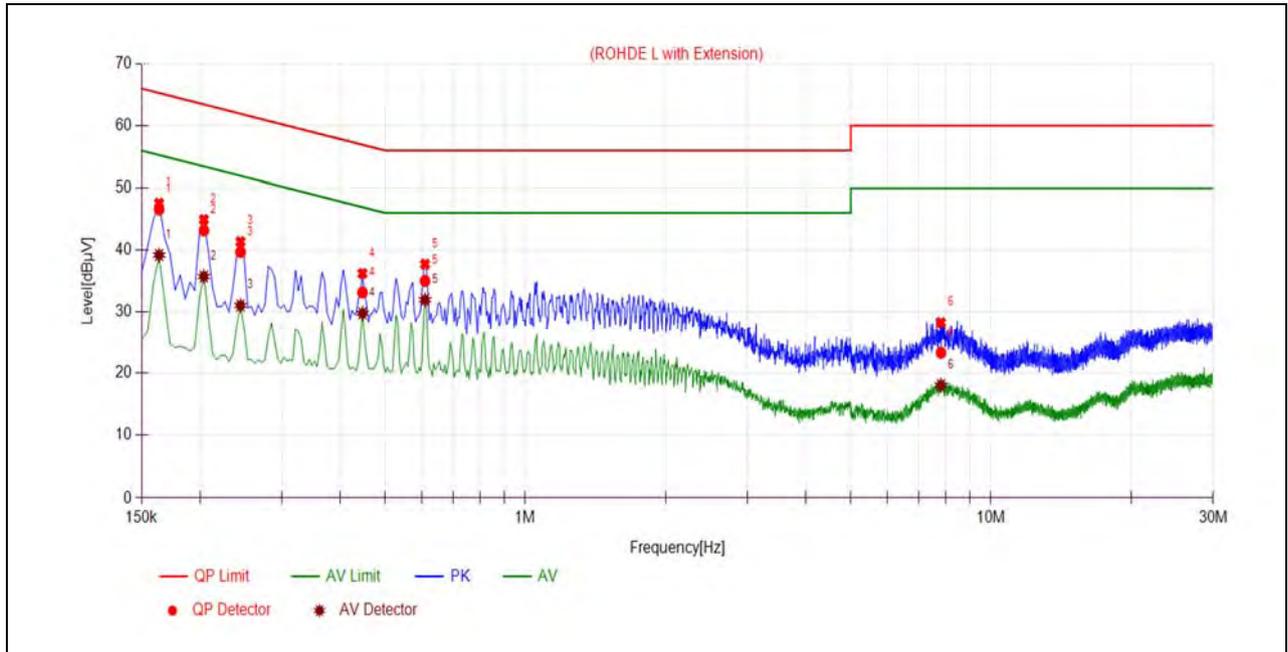
The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V]} = U_R + L_{\text{Cable loss}} \text{ [dB]} + A_{\text{Factor}}$$

U_R : Receiver Reading

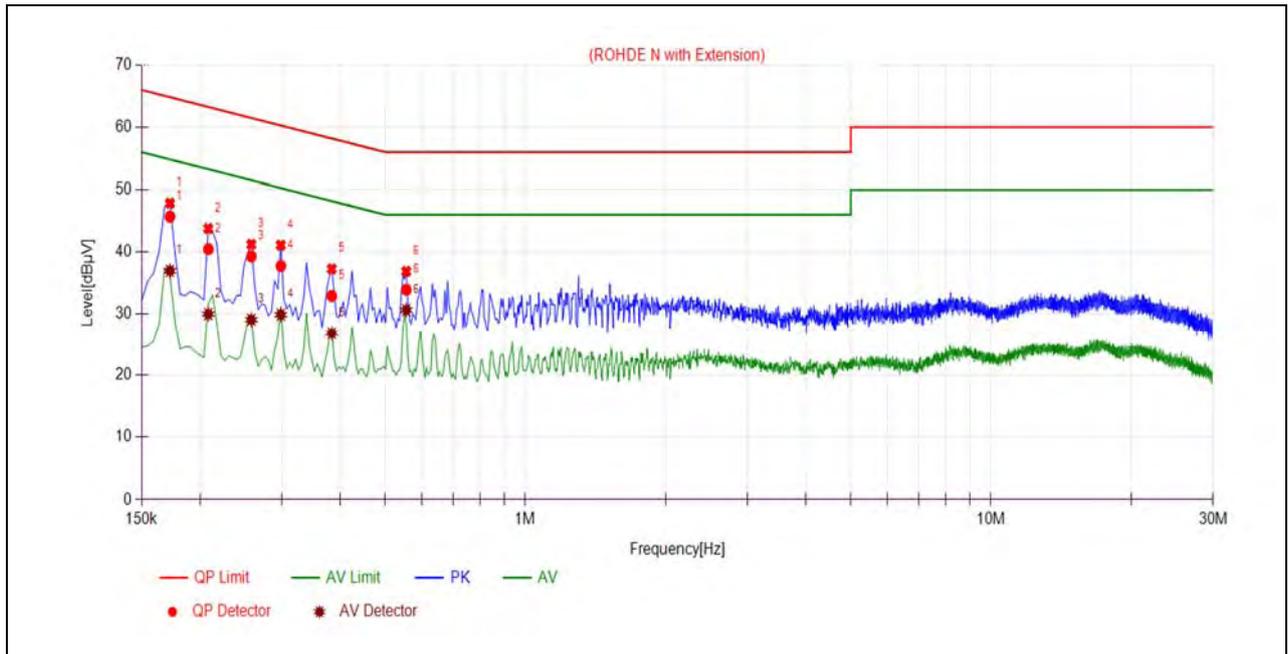
A_{Factor} : Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1635	46.58	39.22	46.58	55.28	Line	PASS
2	0.2040	43.21	35.75	43.21	53.45		PASS
3	0.2445	39.72	31.08	39.72	51.94		PASS
4	0.4470	33.18	29.81	33.18	46.93		PASS
5	0.6090	35.04	31.99	35.04	46.00		PASS
6	7.8093	23.29	18.07	23.29	50.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1725	45.70	36.99	64.84	54.84	Neutral	PASS
2	0.2085	40.49	30.02	63.26	53.26		PASS
3	0.2580	39.31	29.10	61.50	51.50		PASS
4	0.2985	37.77	29.92	60.29	50.29		PASS
5	0.3840	32.95	26.86	58.19	48.19		PASS
6	0.5550	33.94	30.66	56.00	46.00		PASS



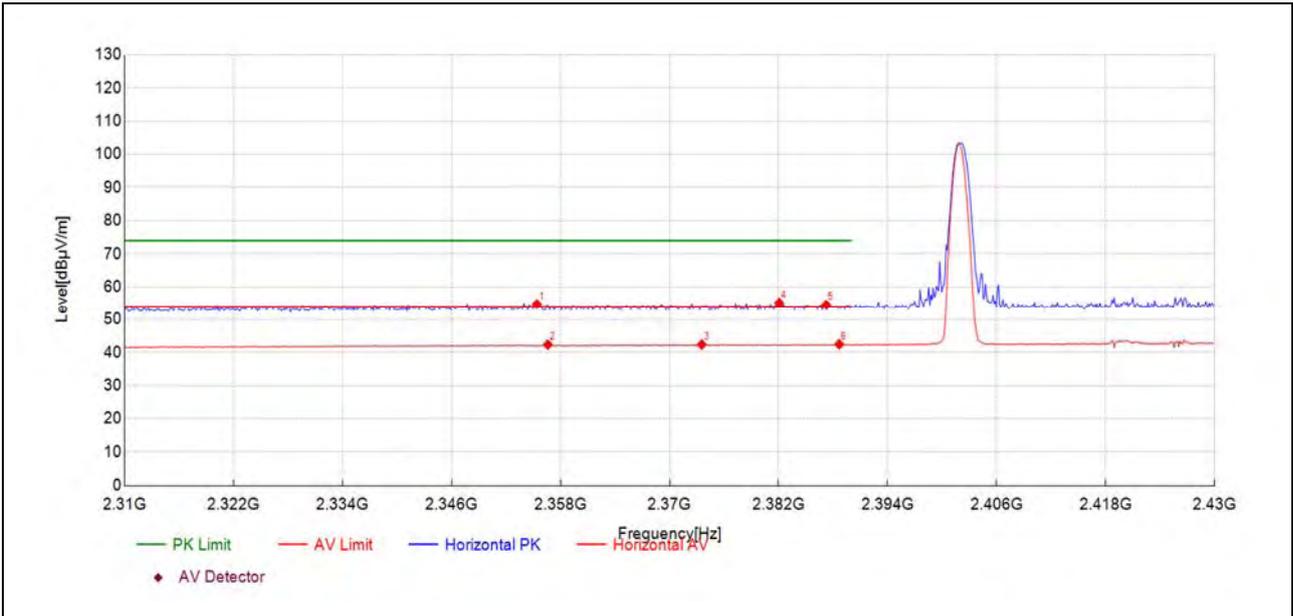
A.11. Restricted Frequency Bands

Note 1: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (Horizontal) was recorded in this test report.

Note 2: All test modes were considered and evaluated respectively by performing full test, only the worst data were recorded.

GFSK Mode

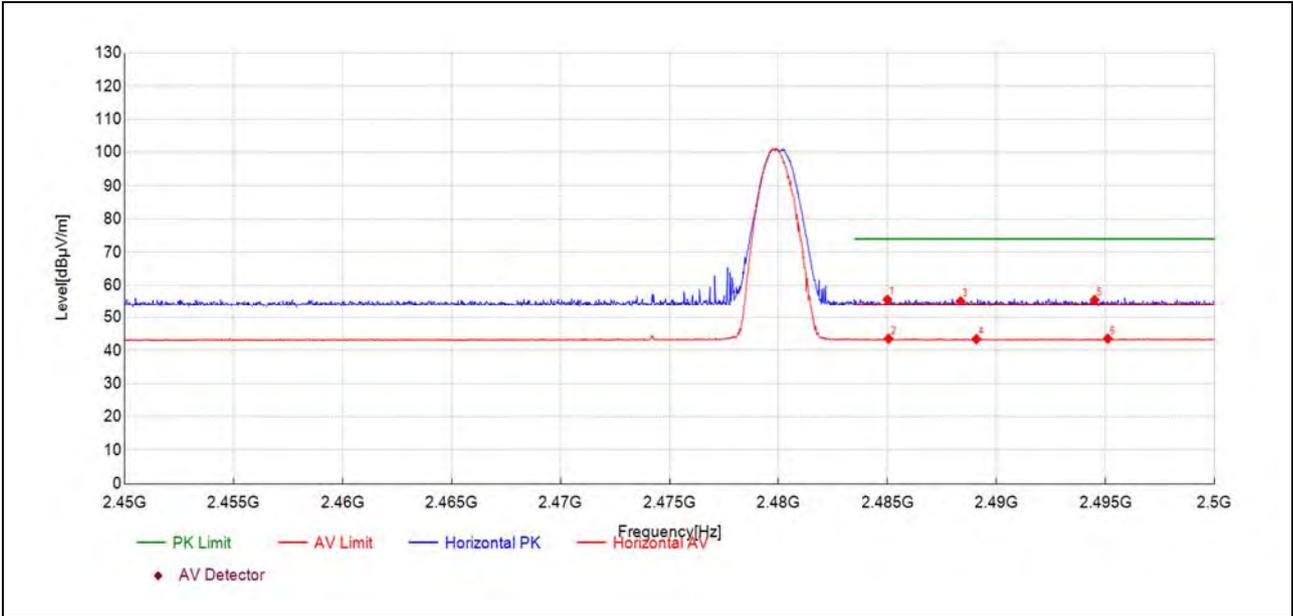
Plot for Channel 0



Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2355.41	22.3	54.74	32.420	74.00	19.26	150	39	PK	PASS
2356.61	9.9	42.31	32.420	54.00	11.69	150	154	AV	PASS
2373.54	9.9	42.35	32.490	54.00	11.65	150	328	AV	PASS
2382.07	22.7	55.17	32.510	74.00	18.83	150	283	PK	PASS
2387.24	22.0	54.55	32.530	74.00	19.45	150	360	PK	PASS
2388.68	9.9	42.43	32.540	54.00	11.57	150	356	AV	PASS



Plot for Channel 78

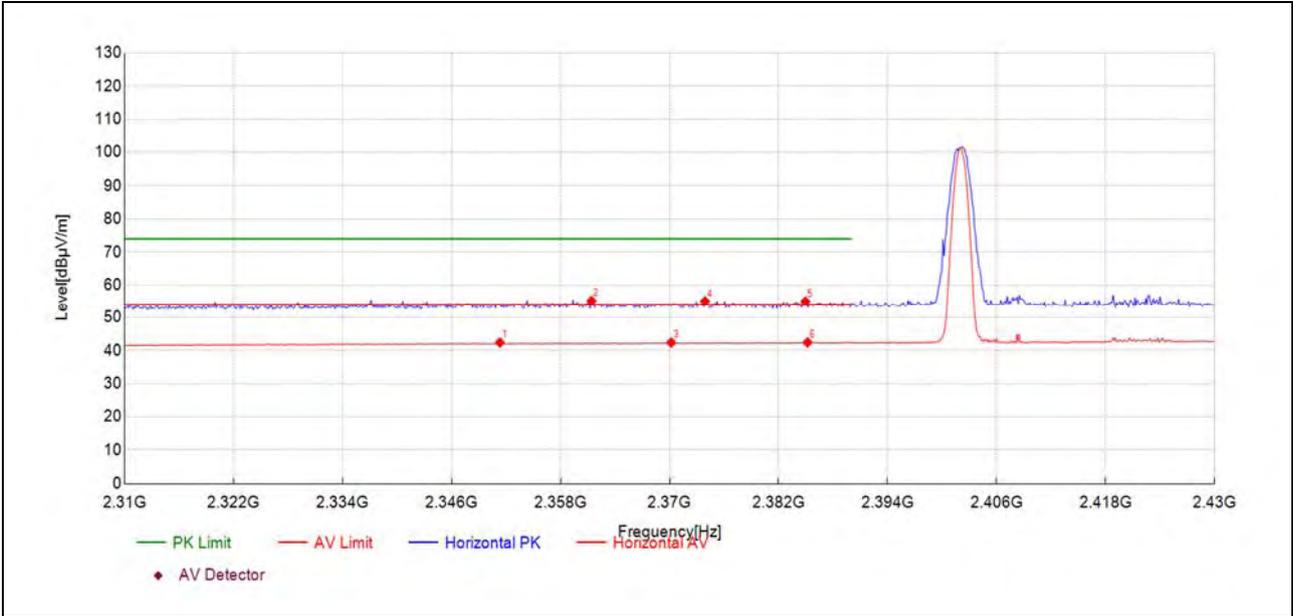


Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2484.99	22.6	55.61	33.030	74.00	18.39	150	360	PK	PASS
2485.04	10.5	43.54	33.030	54.00	10.46	150	293	AV	PASS
2488.34	22.1	55.09	33.020	74.00	18.91	150	34	PK	PASS
2489.07	10.4	43.43	33.020	54.00	10.57	150	156	AV	PASS
2494.50	22.5	55.54	33.010	74.00	18.46	150	147	PK	PASS
2495.10	10.5	43.55	33.010	54.00	10.45	150	263	AV	PASS



8-DPSK Mode

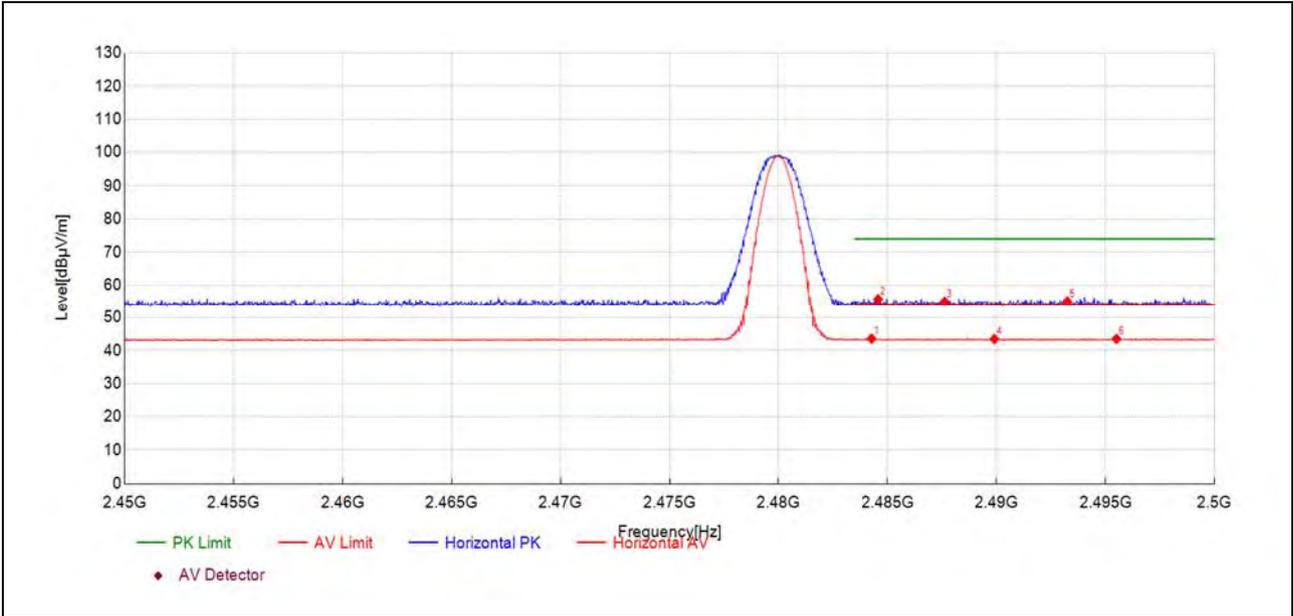
Plot for Channel 0



Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2351.32	10.0	42.37	32.400	54.00	11.63	150	59	AV	PASS
2361.41	22.8	55.19	32.440	74.00	18.81	150	291	PK	PASS
2370.18	9.9	42.36	32.470	54.00	11.64	150	226	AV	PASS
2373.90	22.5	55.03	32.490	74.00	18.97	150	3	PK	PASS
2384.95	22.5	54.98	32.530	74.00	19.02	150	0	PK	PASS
2385.20	9.9	42.42	32.530	54.00	11.58	150	175	AV	PASS



Plot for Channel 78



Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2484.27	10.5	43.56	33.030	54.00	10.44	150	253	AV	PASS
2484.57	22.7	55.69	33.030	74.00	18.31	150	208	PK	PASS
2487.62	21.9	54.94	33.020	74.00	19.06	150	349	PK	PASS
2489.89	10.4	43.45	33.020	54.00	10.55	150	124	AV	PASS
2493.25	22.0	55.03	33.010	74.00	18.97	150	117	PK	PASS
2495.50	10.5	43.49	33.010	54.00	10.51	150	208	AV	PASS



A.12. Radiated Emission

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V/m]} = U_R + A_T + A_{\text{Factor}} \text{ [dB]}; A_T = L_{\text{Cable loss}} \text{ [dB]} - G_{\text{preamp}} \text{ [dB]}$$

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

A_{Factor} : Antenna Factor at 3m

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

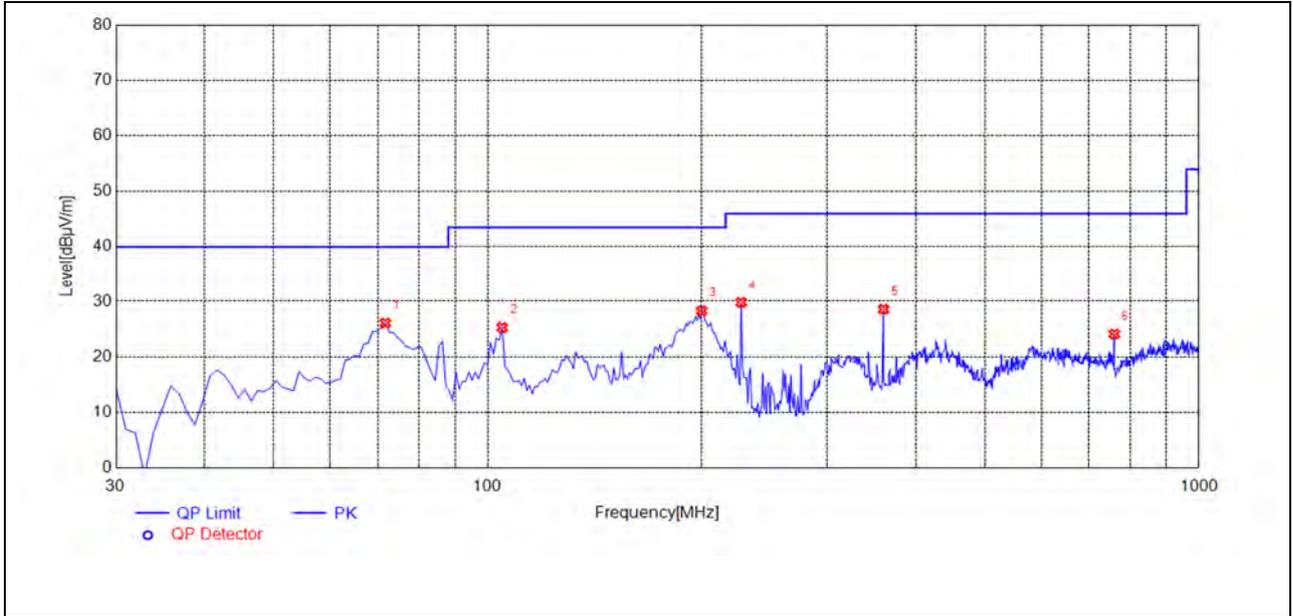
Note3: For the frequency, which started from 18GHz to 10th harmonic of the highest frequency, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note 4: All test modes were considered and evaluated respectively by performing full test, only the worst data were recorded.



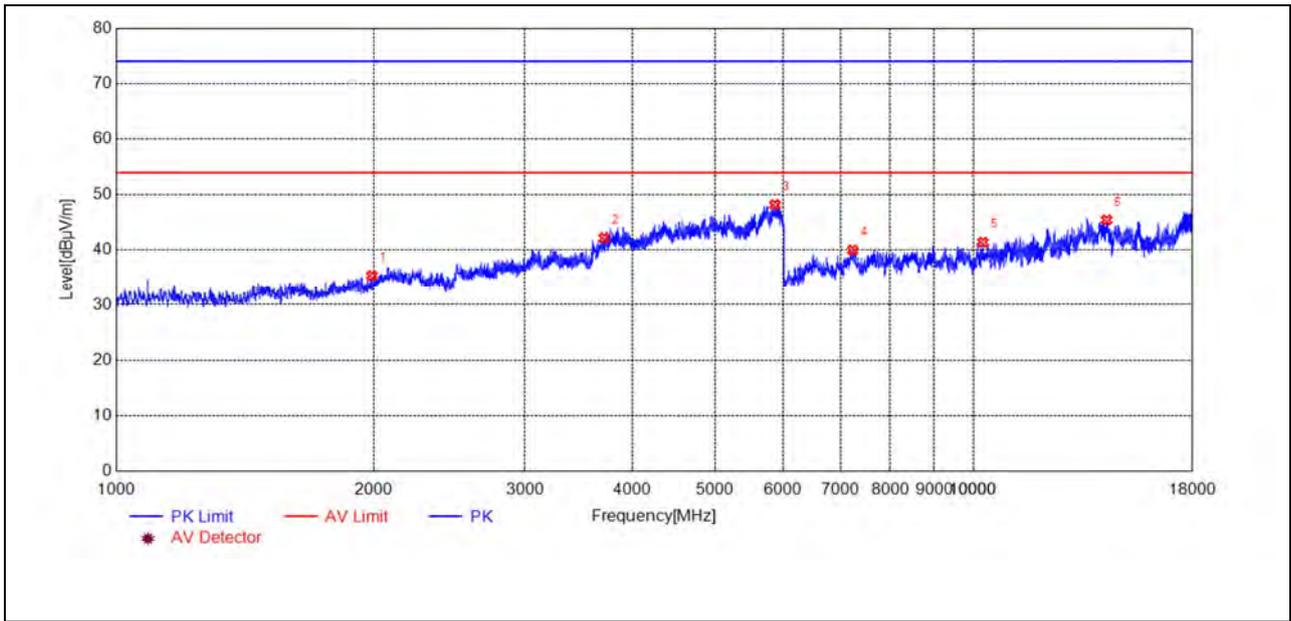
GFSK Mode

Plot for Channel 0



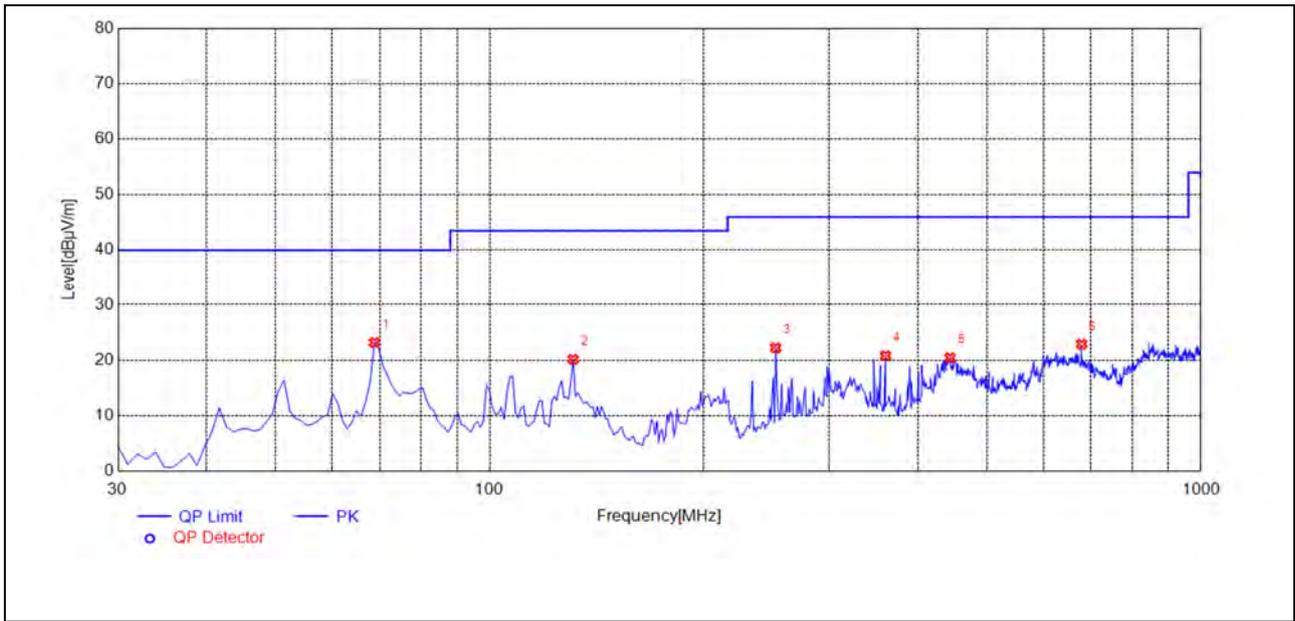
(Antenna Horizontal, 30MHz to 1GHz)

Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
71.7518	26.07	-32.07	40.00	13.93	150	63	Horizontal	PASS
104.7648	25.25	-30.84	43.50	18.25	150	71	Horizontal	PASS
199.9199	28.26	-32.42	43.50	15.24	150	114	Horizontal	PASS
227.1071	29.79	-31.39	46.00	16.21	150	139	Horizontal	PASS
360.1301	28.55	-26.34	46.00	17.45	150	293	Horizontal	PASS
760.1702	24.11	-22.02	46.00	21.89	150	302	Horizontal	PASS



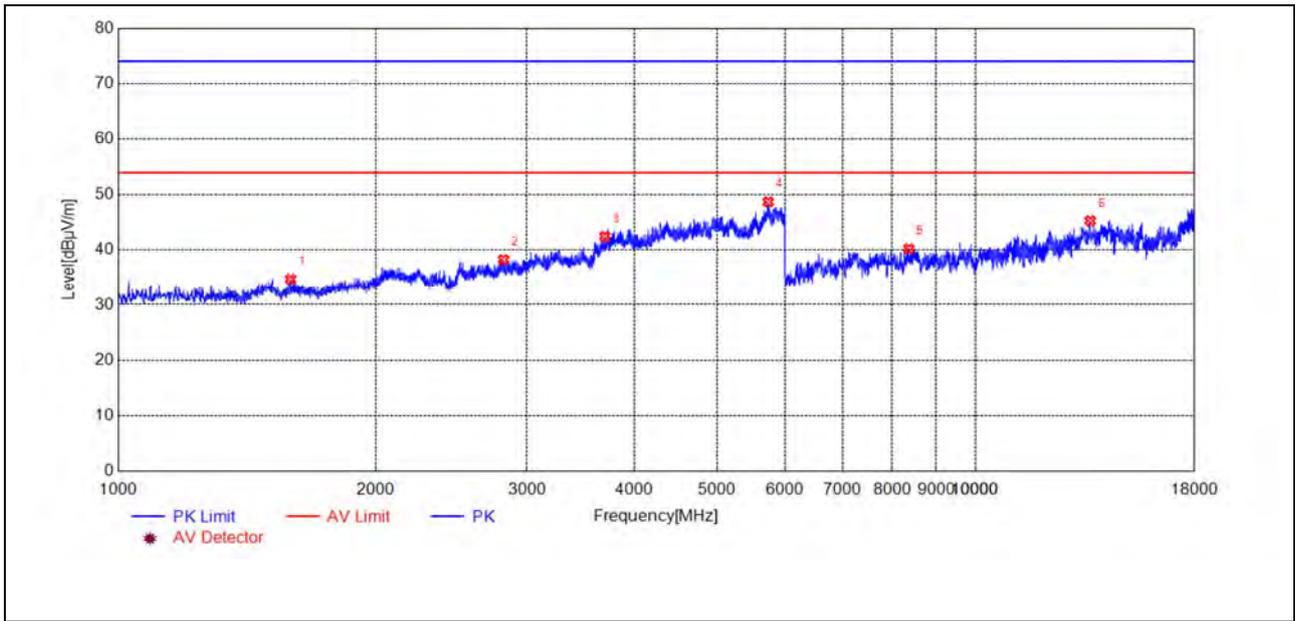
(Antenna Horizontal, 1GHz to 18GHz)

Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1988.1976	35.37	-21.94	74.00	38.63	150	0	Horizontal	PASS
3711.5423	42.21	-15.73	74.00	31.79	150	2	Horizontal	PASS
5868.9738	48.22	-6.96	74.00	25.78	150	292	Horizontal	PASS
7231.4463	40.00	-2.74	74.00	34.00	150	98	Horizontal	PASS
10256.0512	41.42	2.13	74.00	32.58	150	229	Horizontal	PASS
14298.4597	45.47	7.71	74.00	28.53	150	218	Horizontal	PASS



(Antenna Vertical, 30MHz to 1GHz)

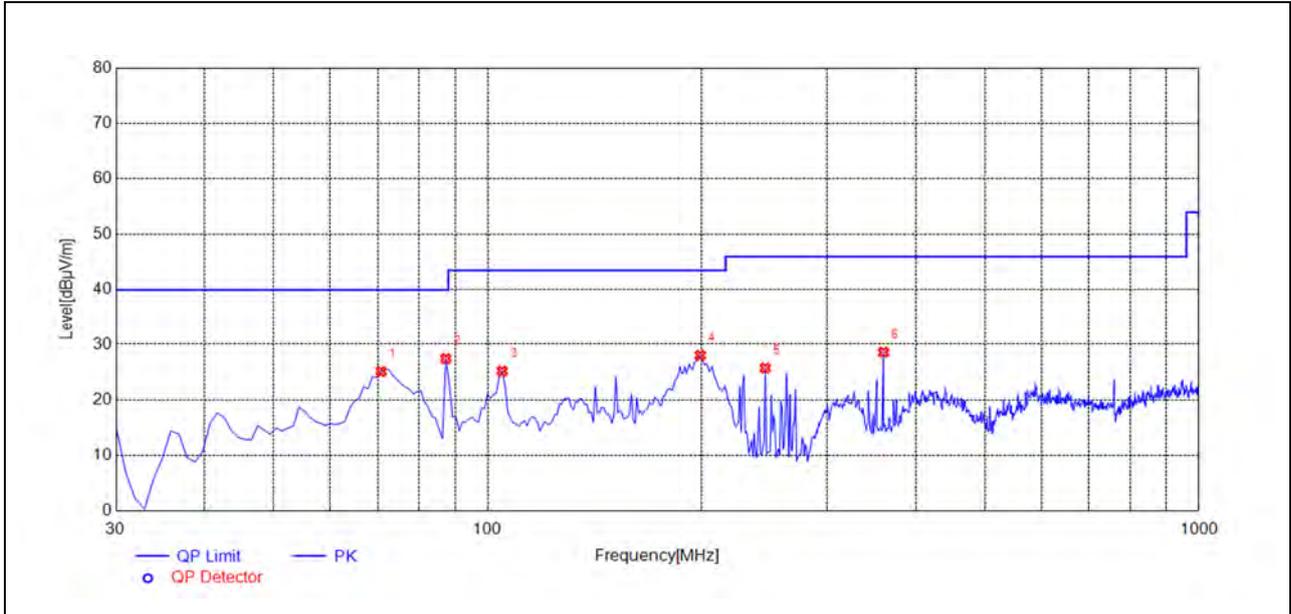
Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
68.8388	23.17	-31.47	40.00	16.83	150	306	Vertical	PASS
130.9810	20.12	-32.82	43.50	23.38	150	91	Vertical	PASS
252.3524	22.20	-30.33	46.00	23.80	150	340	Vertical	PASS
360.1301	20.79	-26.34	46.00	25.21	150	65	Vertical	PASS
443.6336	20.42	-24.65	46.00	25.58	150	194	Vertical	PASS
679.5796	22.88	-21.83	46.00	23.12	150	254	Vertical	PASS



(Antenna Vertical, 1GHz to 18GHz)

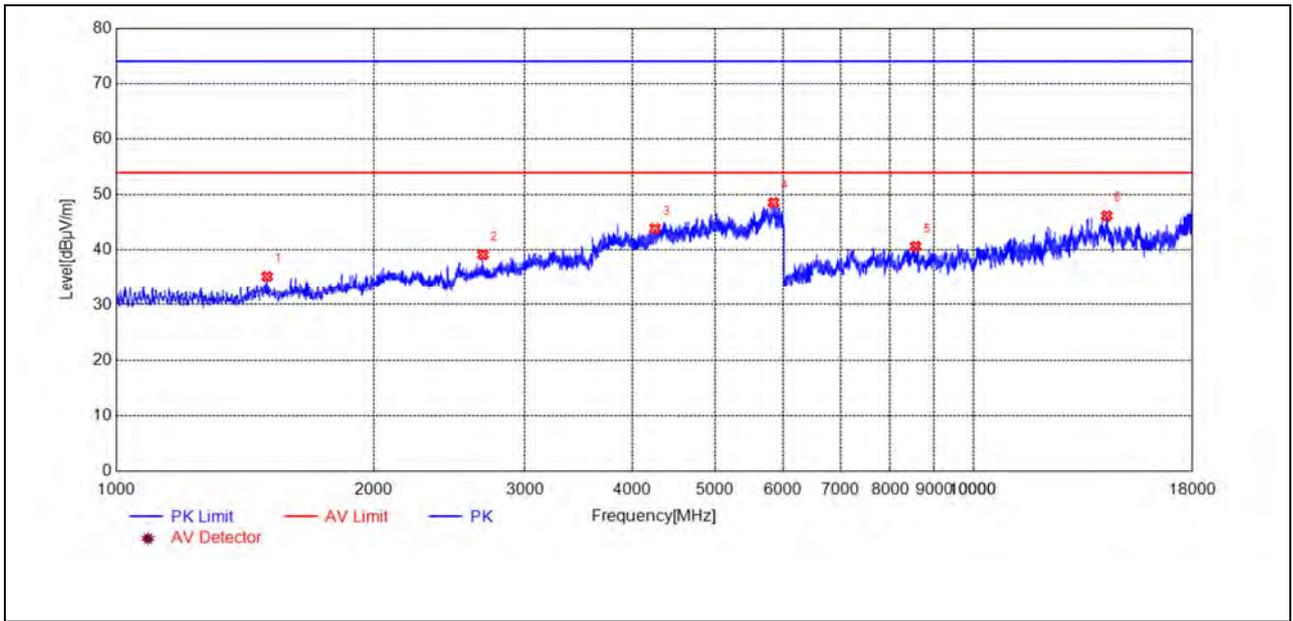
Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1590.1180	34.70	-23.29	74.00	39.30	150	51	Vertical	PASS
2817.3635	38.28	-18.73	74.00	35.72	150	131	Vertical	PASS
3697.5395	42.47	-15.86	74.00	31.53	150	1	Vertical	PASS
5731.9464	48.73	-7.02	74.00	25.27	150	171	Vertical	PASS
8362.0724	40.24	-1.83	74.00	33.76	150	198	Vertical	PASS
13607.1214	45.31	7.27	74.00	28.69	150	179	Vertical	PASS

Plot for Channel 39



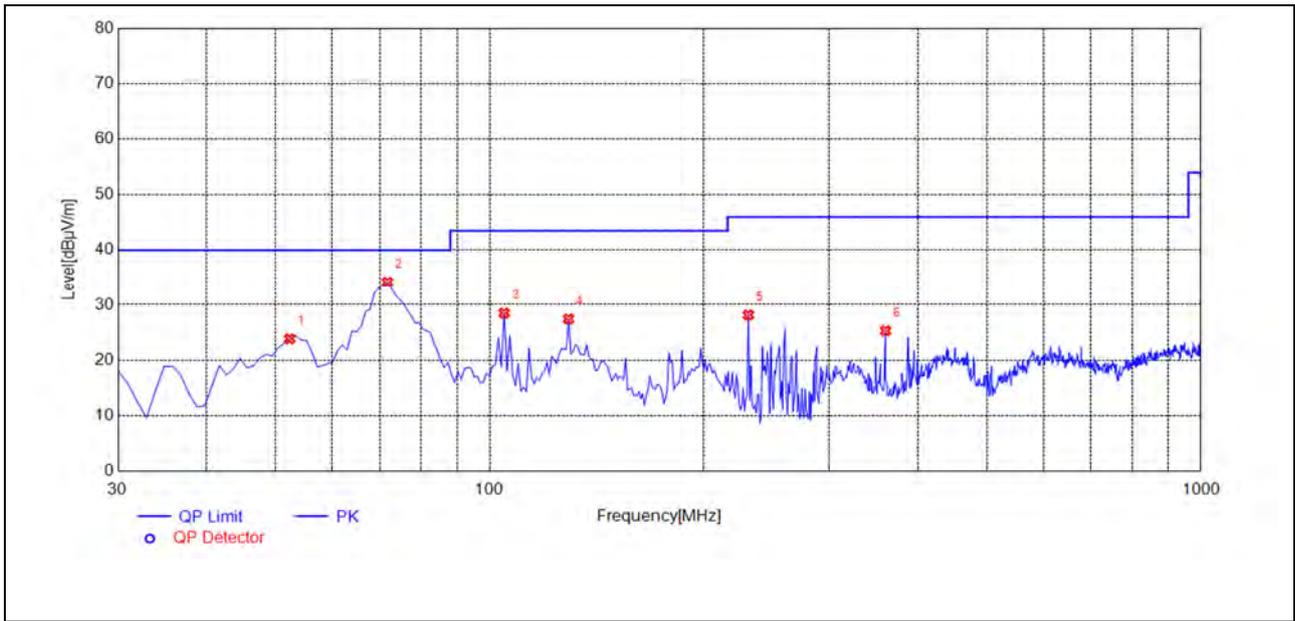
(Antenna Horizontal, 30MHz to 1GHz)

Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
70.7808	25.08	-32.25	40.00	14.92	150	24	Horizontal	PASS
87.2873	27.42	-33.84	40.00	12.58	150	272	Horizontal	PASS
104.7648	25.16	-30.84	43.50	18.34	150	42	Horizontal	PASS
198.9489	27.99	-32.05	43.50	15.51	150	118	Horizontal	PASS
245.5556	25.71	-30.48	46.00	20.29	150	289	Horizontal	PASS
360.1301	28.57	-26.34	46.00	17.43	150	272	Horizontal	PASS



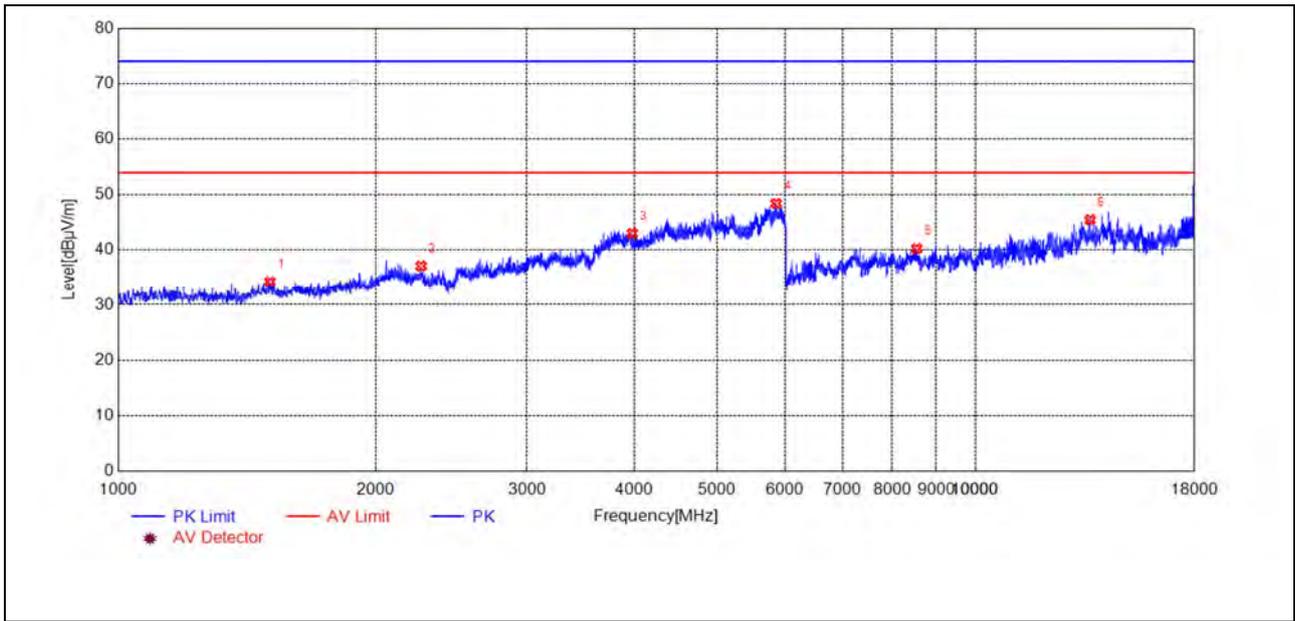
(Antenna Horizontal, 1GHz to 18GHz)

Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1501.1002	35.21	-22.99	74.00	38.79	150	49	Horizontal	PASS
2679.3359	39.18	-19.34	74.00	34.82	150	40	Horizontal	PASS
4251.6503	43.90	-12.81	74.00	30.10	150	272	Horizontal	PASS
5845.9692	48.59	-7.03	74.00	25.41	150	71	Horizontal	PASS
8558.9118	40.68	-1.33	74.00	33.32	150	58	Horizontal	PASS
14305.6611	46.22	7.76	74.00	27.78	150	210	Horizontal	PASS



(Antenna Vertical, 30MHz to 1GHz)

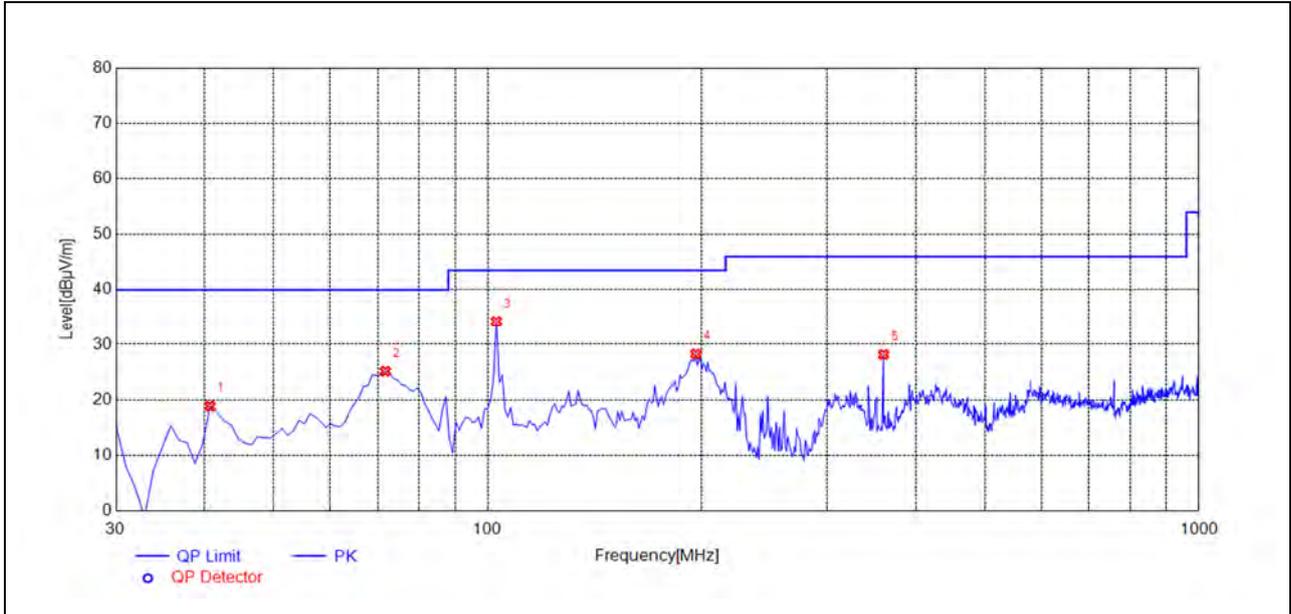
Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
52.3323	23.82	-28.72	40.00	16.18	150	198	Vertical	PASS
71.7518	34.19	-32.07	40.00	5.81	150	354	Vertical	PASS
104.7648	28.47	-30.84	43.50	15.03	150	198	Vertical	PASS
129.0390	27.43	-32.25	43.50	16.07	150	71	Vertical	PASS
230.9910	28.15	-30.70	46.00	17.85	150	139	Vertical	PASS
360.1301	25.30	-26.34	46.00	20.70	150	360	Vertical	PASS



(Antenna Vertical, 1GHz to 18GHz)

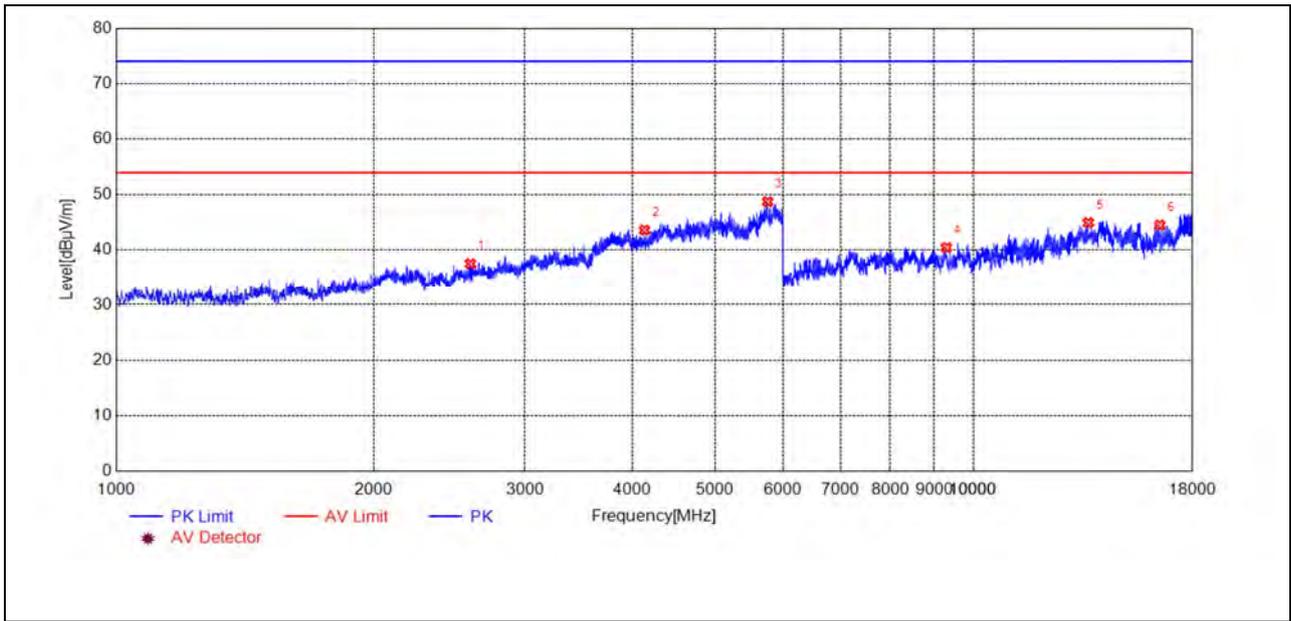
Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1504.1008	34.22	-23.06	74.00	39.78	150	202	Vertical	PASS
2257.2515	37.12	-20.21	74.00	36.88	150	343	Vertical	PASS
3980.5961	43.01	-14.24	74.00	30.99	150	51	Vertical	PASS
5855.9712	48.44	-6.93	74.00	25.56	150	282	Vertical	PASS
8539.7079	40.25	-1.36	74.00	33.75	150	149	Vertical	PASS
13604.7209	45.50	7.40	74.00	28.50	150	118	Vertical	PASS

Plot for Channel 78



(Antenna Horizontal, 30MHz to 1GHz)

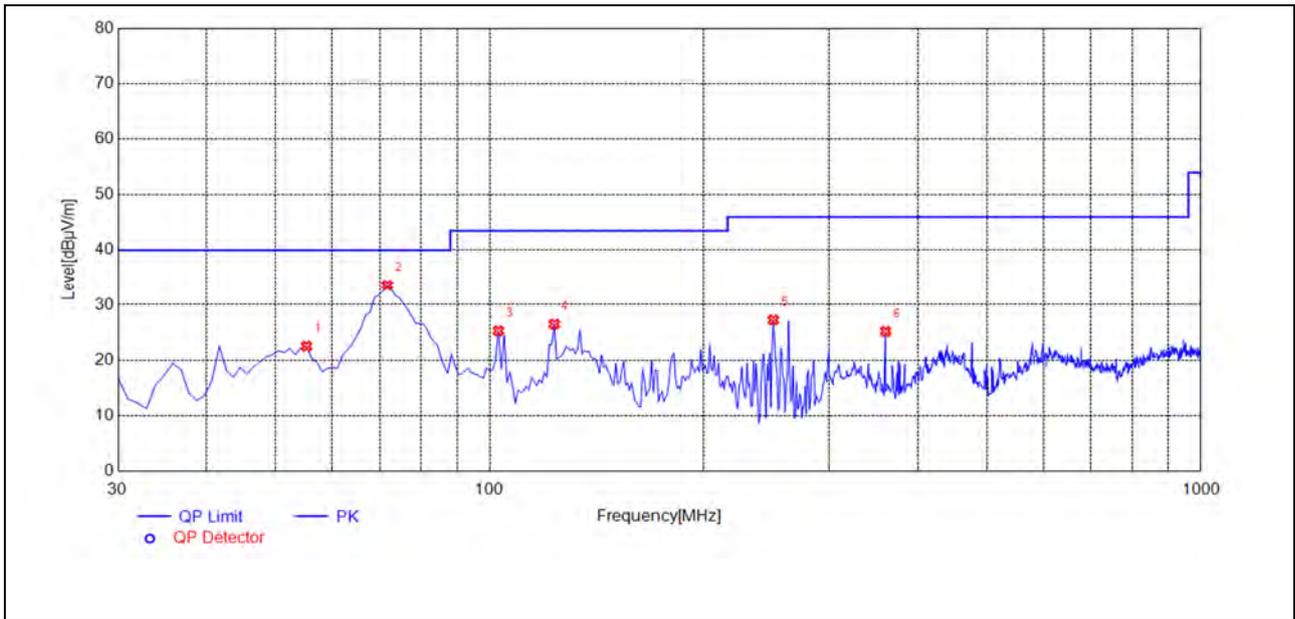
Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
40.6807	18.87	-30.60	40.00	21.13	150	88	Horizontal	PASS
71.7518	25.14	-32.07	40.00	14.86	150	46	Horizontal	PASS
102.8228	34.24	-30.97	43.50	9.26	150	276	Horizontal	PASS
196.0360	28.26	-31.98	43.50	15.24	150	88	Horizontal	PASS
360.1301	28.16	-26.34	46.00	17.84	150	46	Horizontal	PASS



(Antenna Horizontal, 1GHz to 18GHz)

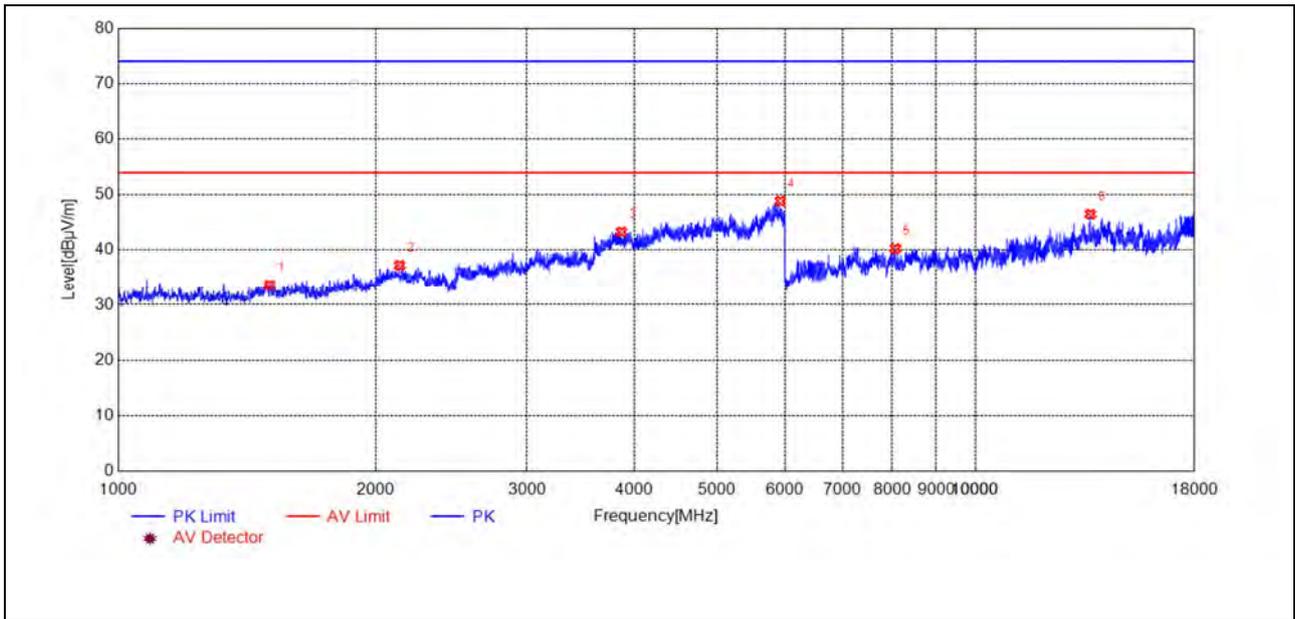
Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
2590.3181	37.54	-19.84	74.00	36.46	150	272	Horizontal	PASS
4133.6267	43.63	-13.92	74.00	30.37	150	343	Horizontal	PASS
5753.9508	48.75	-6.86	74.00	25.25	150	100	Horizontal	PASS
9298.2597	40.48	1.39	74.00	33.52	150	149	Horizontal	PASS
13609.5219	44.97	7.13	74.00	29.03	150	48	Horizontal	PASS
16492.4985	44.53	7.46	74.00	29.47	150	259	Horizontal	PASS

Freq. [MHz]	Factor [dB]	AV Value [dBµV/m]	AV Limit [dBµV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
4959.705	-9.64	45.17	54.00	8.83	150	201	Horizontal



(Antenna Vertical, 30MHz to 1GHz)

Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
55.2452	22.48	-28.97	40.00	17.52	150	340	Vertical	PASS
71.7518	33.60	-32.07	40.00	6.40	150	340	Vertical	PASS
102.8228	25.25	-30.97	43.50	18.25	150	23	Vertical	PASS
123.2132	26.50	-32.53	43.50	17.00	150	14	Vertical	PASS
250.4104	27.24	-30.31	46.00	18.76	150	186	Vertical	PASS
360.1301	25.19	-26.34	46.00	20.81	150	203	Vertical	PASS



(Antenna Vertical, 1GHz to 18GHz)

Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1503.1006	33.60	-23.04	74.00	40.40	150	62	Vertical	PASS
2130.2260	37.23	-20.29	74.00	36.77	150	312	Vertical	PASS
3864.5729	43.29	-14.59	74.00	30.71	150	72	Vertical	PASS
5921.9844	48.88	-6.70	74.00	25.12	150	52	Vertical	PASS
8066.8134	40.24	-2.49	74.00	33.76	150	128	Vertical	PASS
13611.9224	46.50	7.00	74.00	27.50	150	269	Vertical	PASS

————— END OF REPORT —————