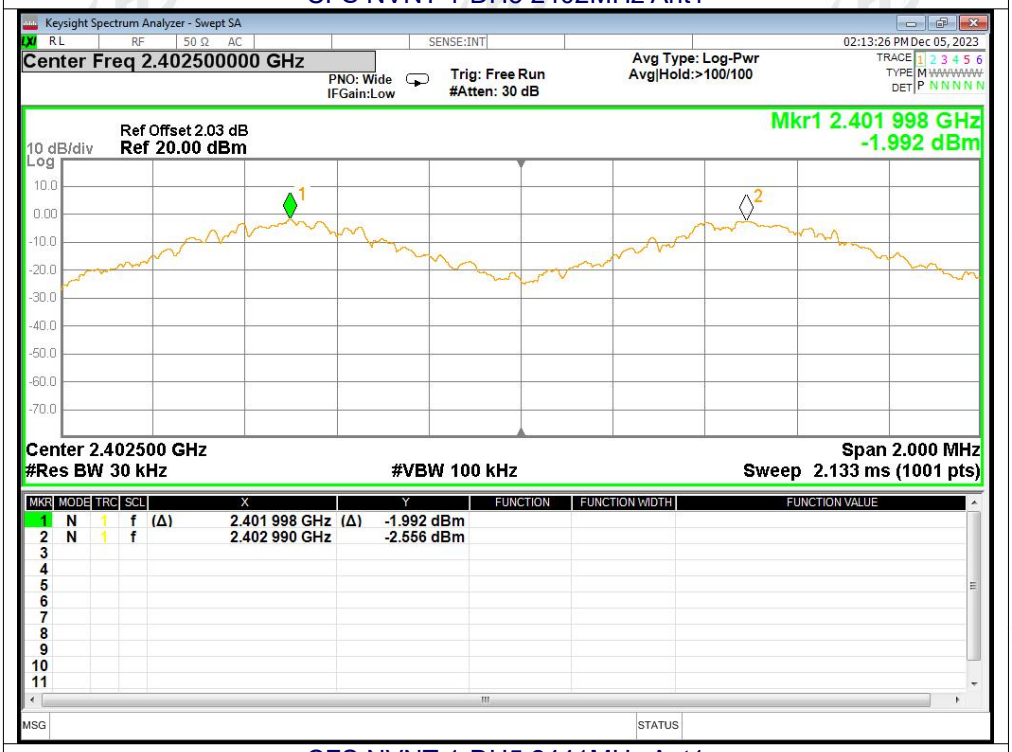
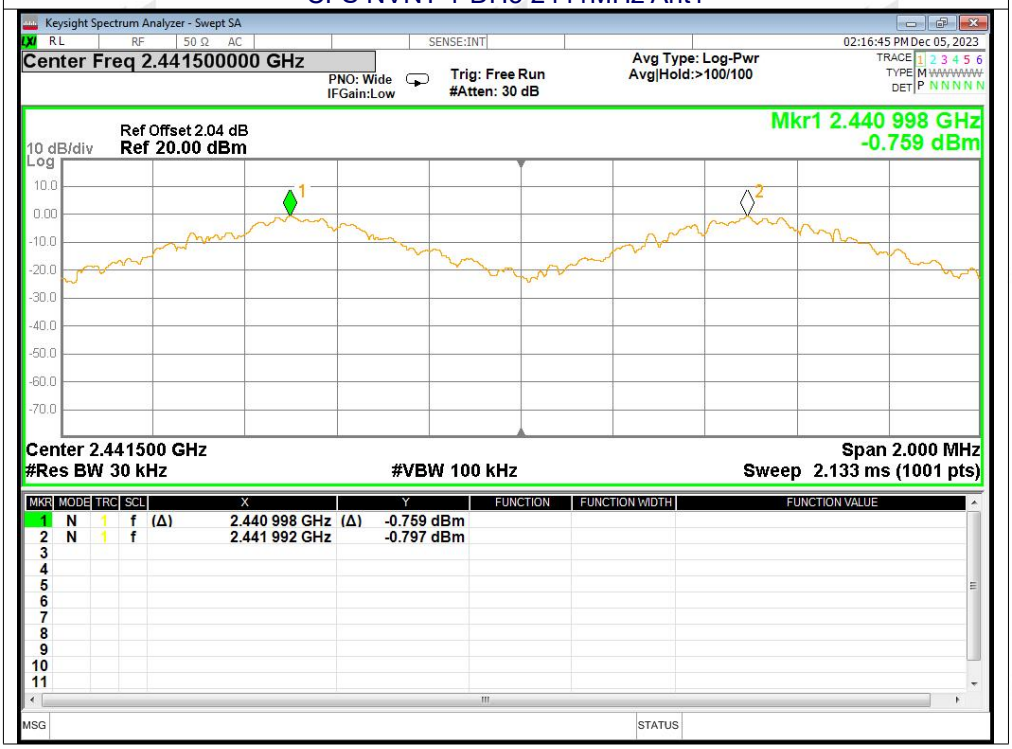
Test Graphs

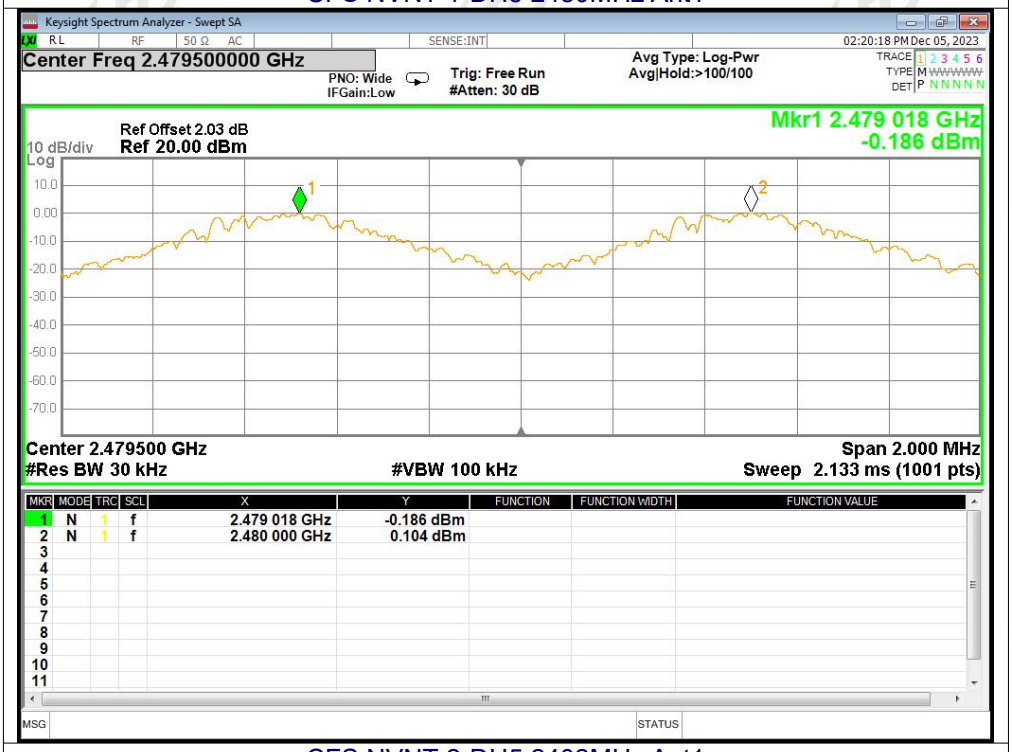
CFS NVNT 1-DH5 2402MHz Ant1



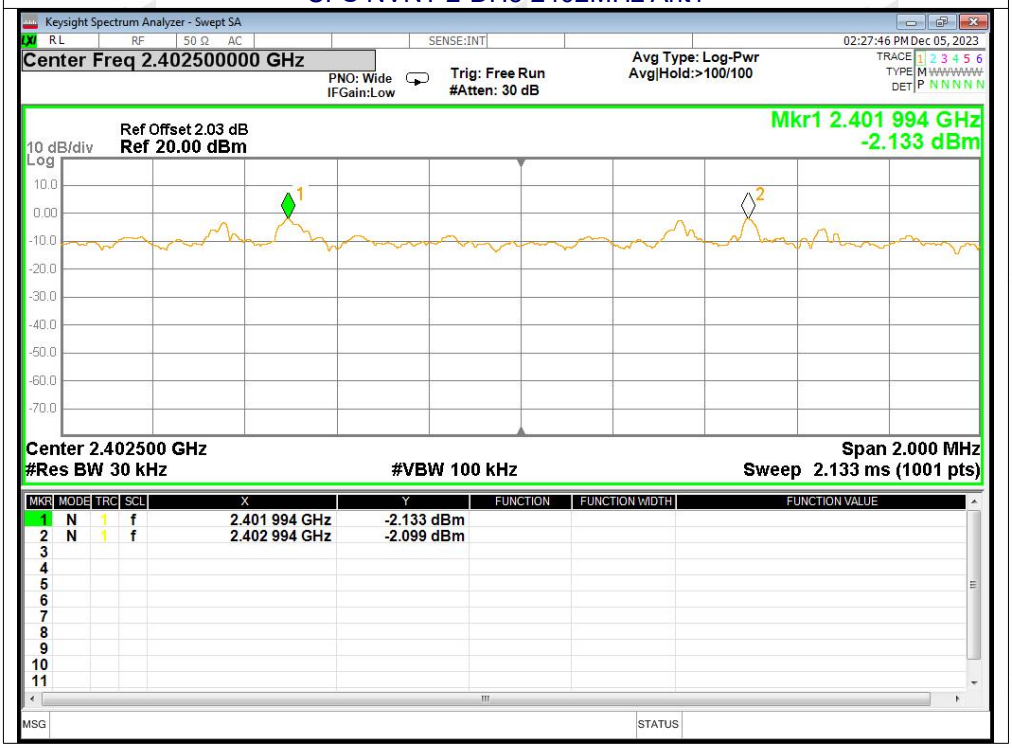
CFS NVNT 1-DH5 2441MHz Ant1



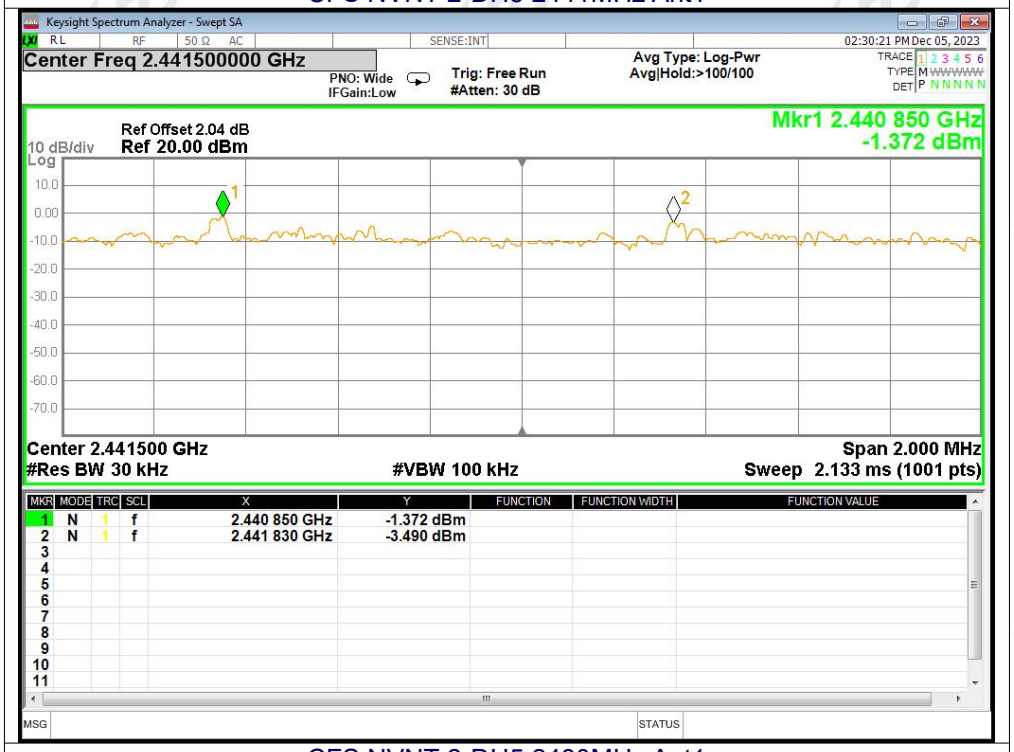
CFS NVNT 1-DH5 2480MHz Ant1



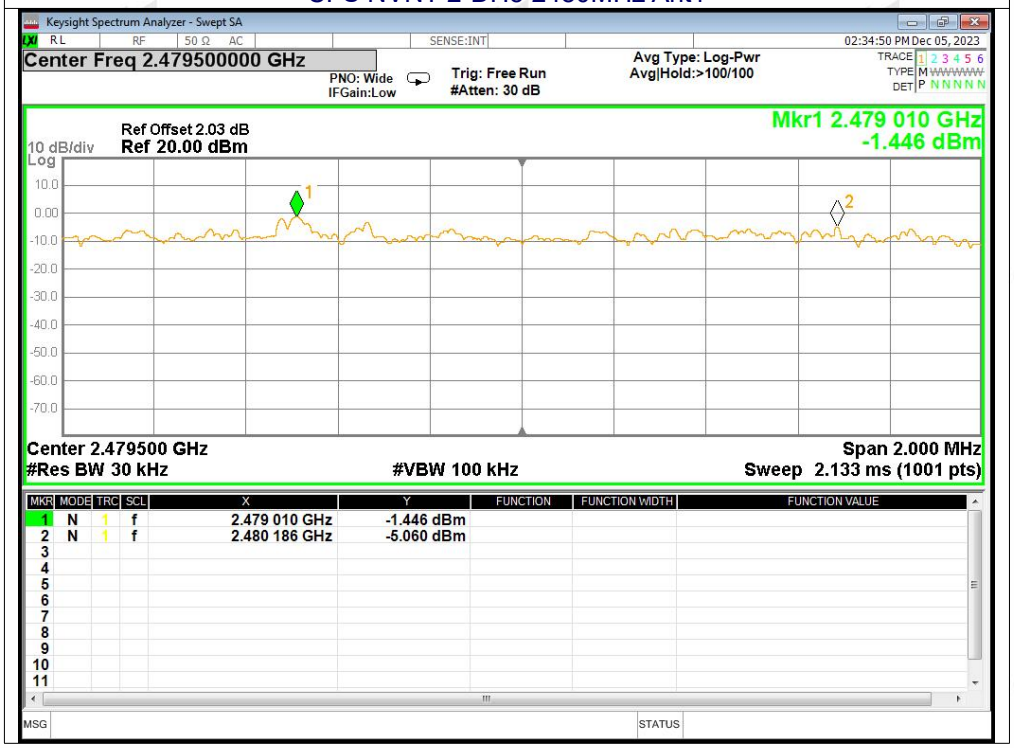
CFS NVNT 2-DH5 2402MHz Ant1



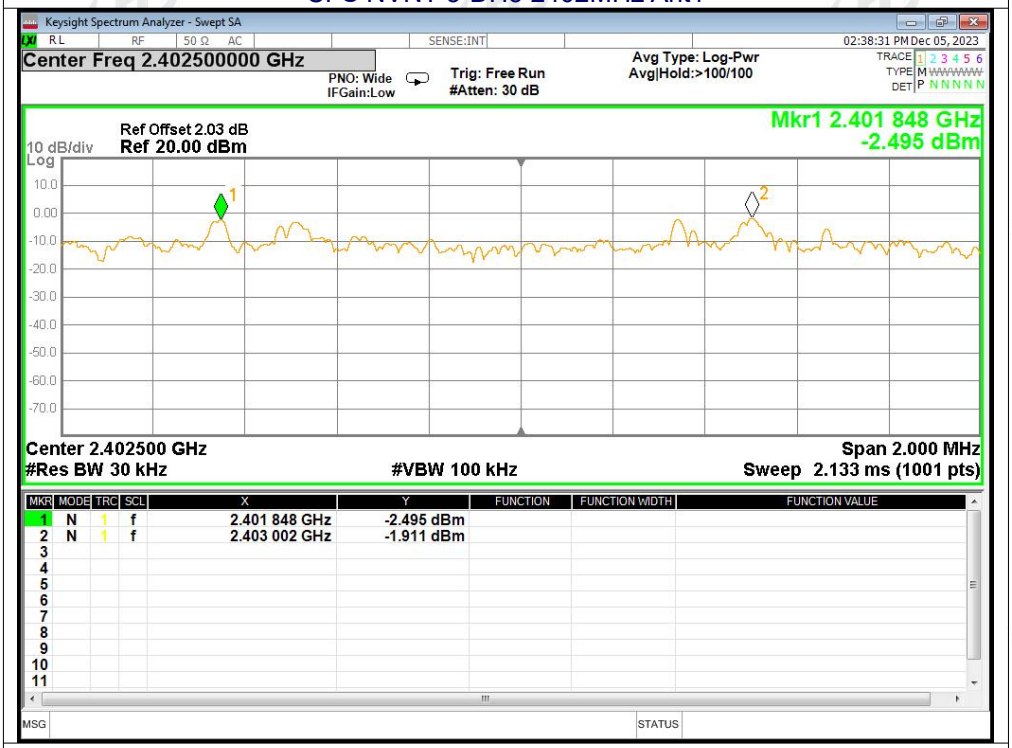
CFS NVNT 2-DH5 2441MHz Ant1



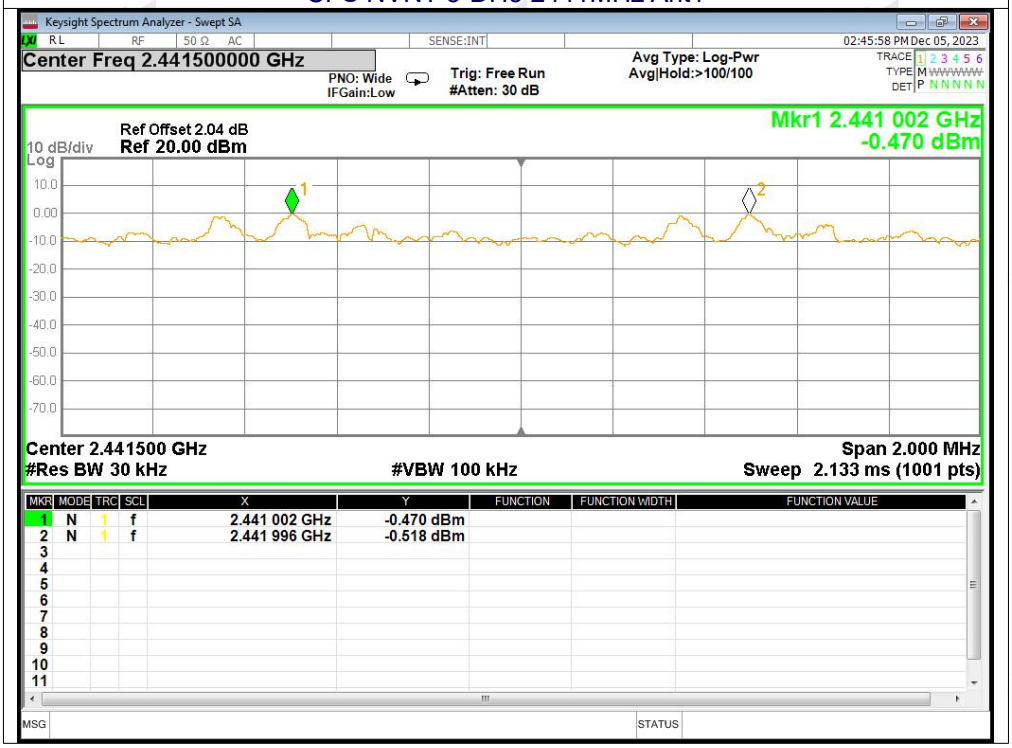
CFS NVNT 2-DH5 2480MHz Ant1



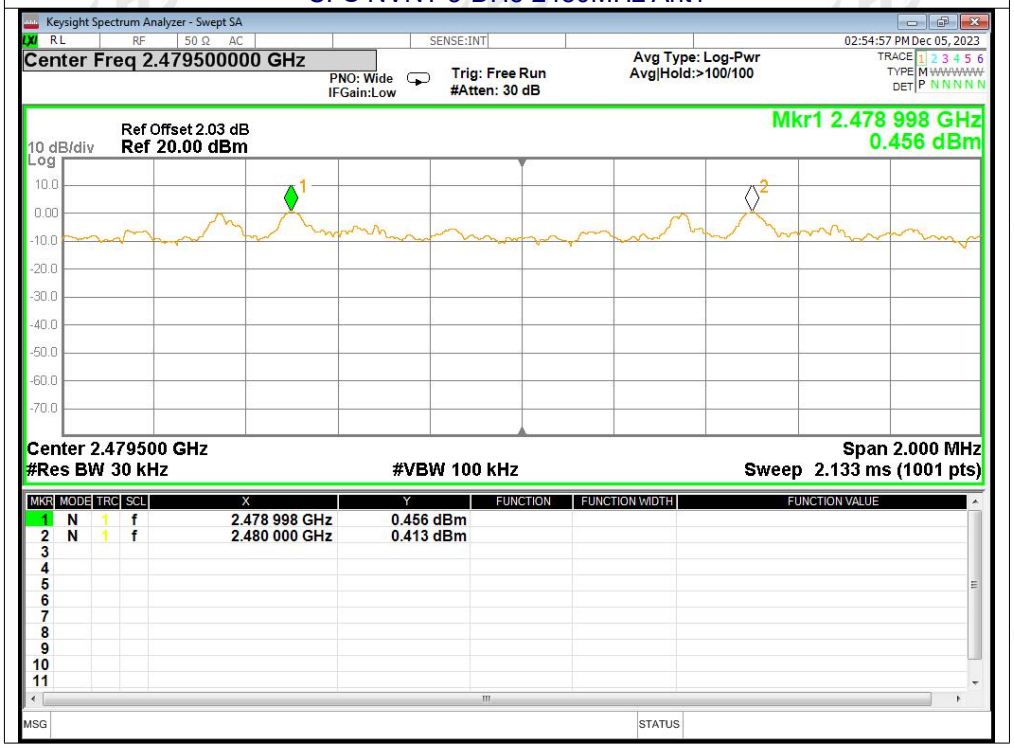
CFS NVNT 3-DH5 2402MHz Ant1



CFS NVNT 3-DH5 2441MHz Ant1



CFS NVNT 3-DH5 2480MHz Ant1



10.NUMBER OF HOPPING FREQUENCY

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100kHz, VBW=300kHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak
Limit:	15 channels

10.1 Test Setup

10.2 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

2. Set the spectrum analyzer: RBW = 100kHz. VBW = 300kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.

4. Set the spectrum analyzer: Start Frequency = 2.4GHz, Stop Frequency = 2.4835GHz. Sweep=auto;

10.3 DEVIATION FROM STANDARD

No deviation.

10.4 Test Result

Mode	Test Channel(MHz)	Antenna	Hopping Number	Limit	Verdict
1-DH5	2402	Ant1	79	15	Pass
	2441	Ant1	79	15	Pass
	2480	Ant1	79	15	Pass
2-DH5	2402	Ant1	79	15	Pass
	2441	Ant1	79	15	Pass
	2480	Ant1	79	15	Pass
3-DH5	2402	Ant1	79	15	Pass
	2441	Ant1	79	15	Pass
	2480	Ant1	79	15	Pass

Test Graphs

Hopping No. NVNT 1-DH5 2402MHz Ant1

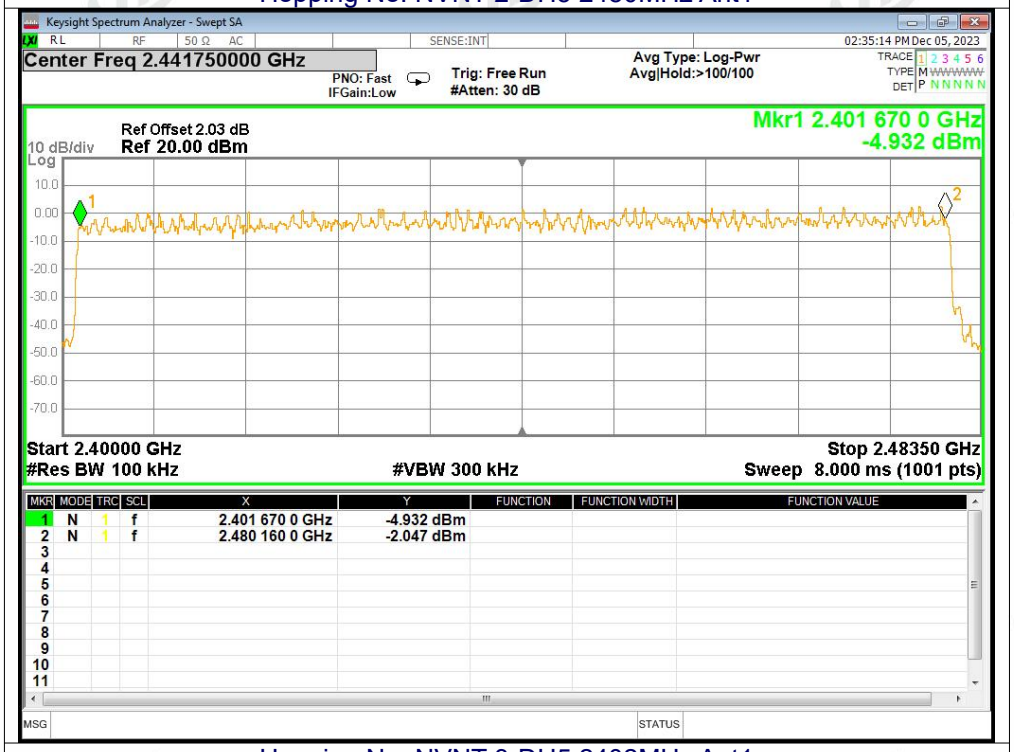
Hopping No. NVNT 1-DH5 2441MHz Ant1

Hopping No. NVNT 1-DH5 2480MHz Ant1

Hopping No. NVNT 2-DH5 2402MHz Ant1

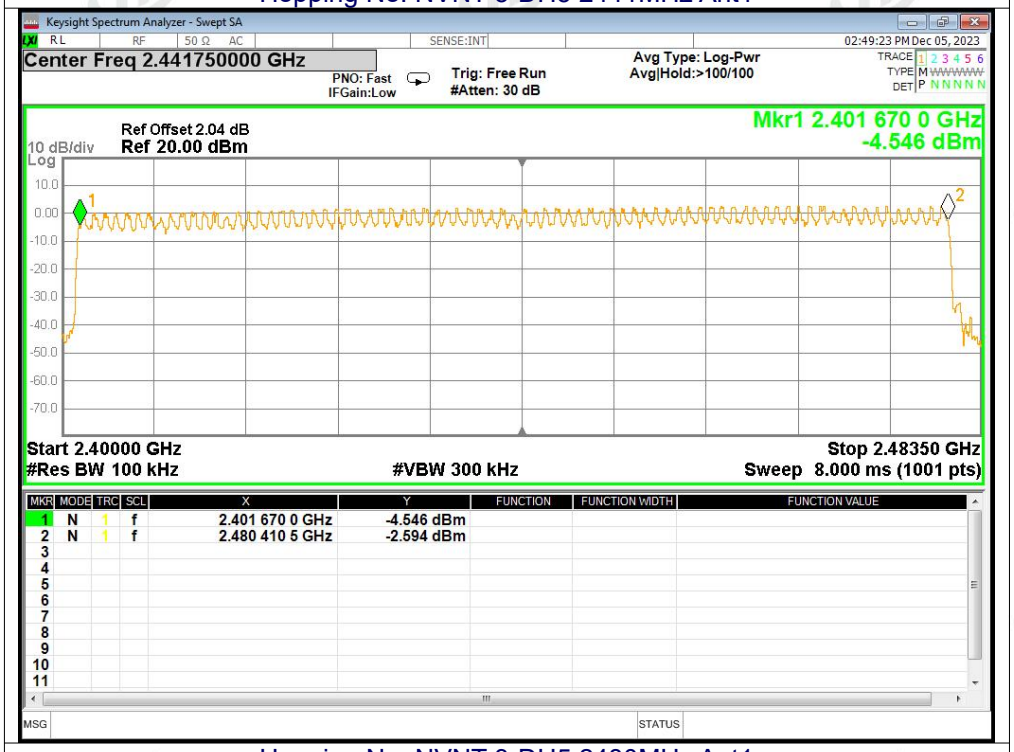
Hopping No. NVNT 2-DH5 2441MHz Ant1

Hopping No. NVNT 2-DH5 2480MHz Ant1

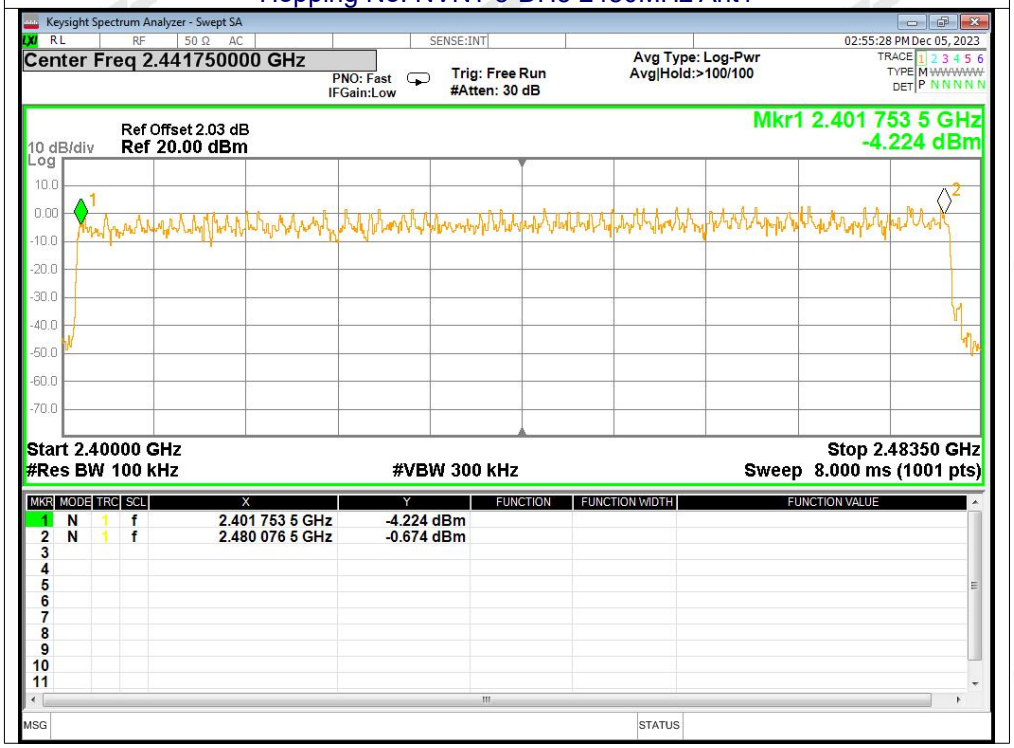


Hopping No. NVNT 3-DH5 2402MHz Ant1

Hopping No. NVNT 3-DH5 2441MHz Ant1



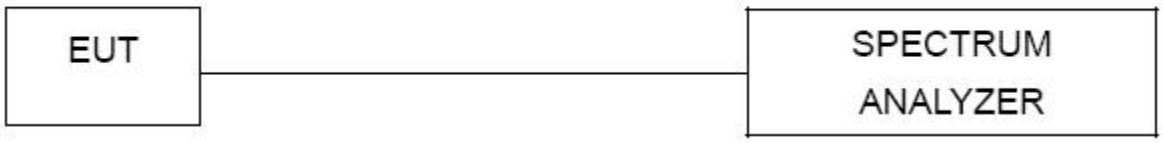
Hopping No. NVNT 3-DH5 2480MHz Ant1



11. DWELL TIME

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=1MHz, VBW=3MHz, Span=0Hz, Detector=Peak
Limit:	0.4 Second

11.1 Test Setup



11.2 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

2. Set spectrum analyzer span = 0Hz;

3. Set RBW = 1MHz and VBW = 3MHz.Sweep = as necessary to capture the entire dwell time per hopping channel. Set the EUT for DH5, DH3 and DH1 packet transmitting.

4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g.. data rate. modulation format. etc.). repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

11.3 DEVIATION FROM STANDARD

No deviation.

11.4 Test Result

Modulation	Frequency	Packet	Pulse Time (ms)	Dwell time (ms)	Limit (ms)	Result
GFSK	2441MHz	1-DH1	0.382	121.858	400	Pass
GFSK	2441MHz	1-DH3	1.64	268.96	400	Pass
GFSK	2441MHz	1-DH5	2.886	317.46	400	Pass
π/4DQPSK	2441MHz	2-DH1	0.393	125.367	400	Pass
π/4DQPSK	2441MHz	2-DH3	1.637	261.92	400	Pass
π/4DQPSK	2441MHz	2-DH5	2.892	303.66	400	Pass
8DPSK	2441MHz	3-DH1	0.392	123.872	400	Pass
8DPSK	2441MHz	3-DH3	1.644	259.752	400	Pass
8DPSK	2441MHz	3-DH5	2.892	349.932	400	Pass

Remarks:

The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

(1 / 2 / 3)-DH1: Dwell time (ms) = Pulse Time (ms) * [1600 / (2 * 79)] * 31.6s

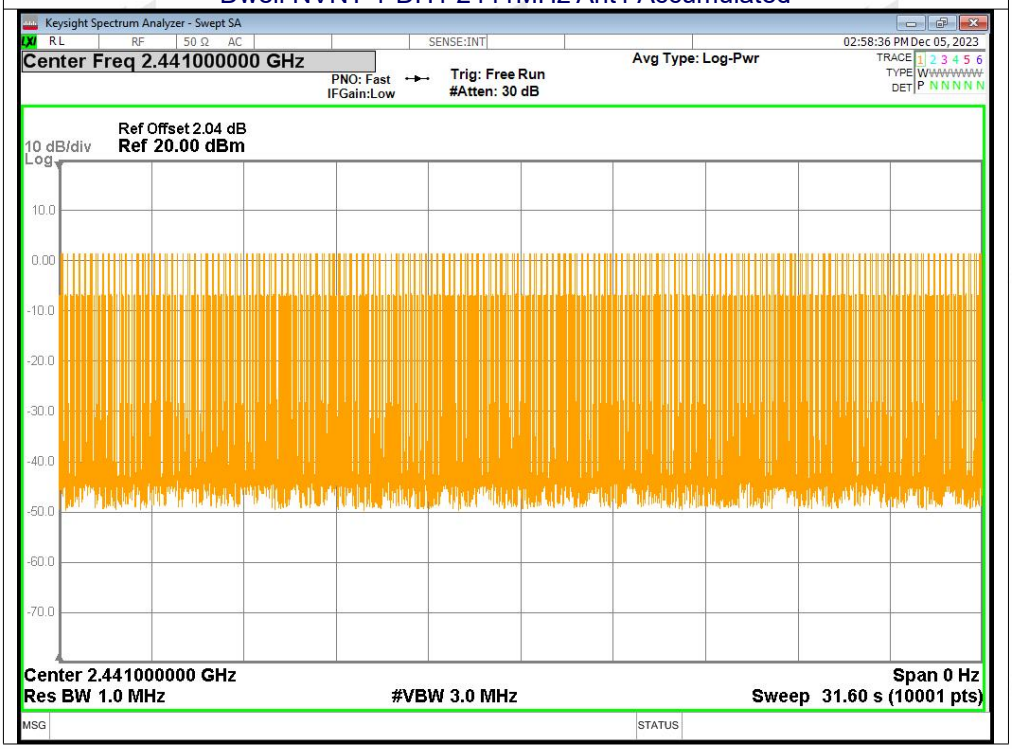
(1 / 2 / 3)-DH3: Dwell time (ms) = Pulse Time (ms) * [1600 / (4 * 79)] * 31.6s

(1 / 2 / 3)-DH5: Dwell time (ms) = Pulse Time (ms) * [1600 / (6 * 79)] * 31.6s

Test Graphs

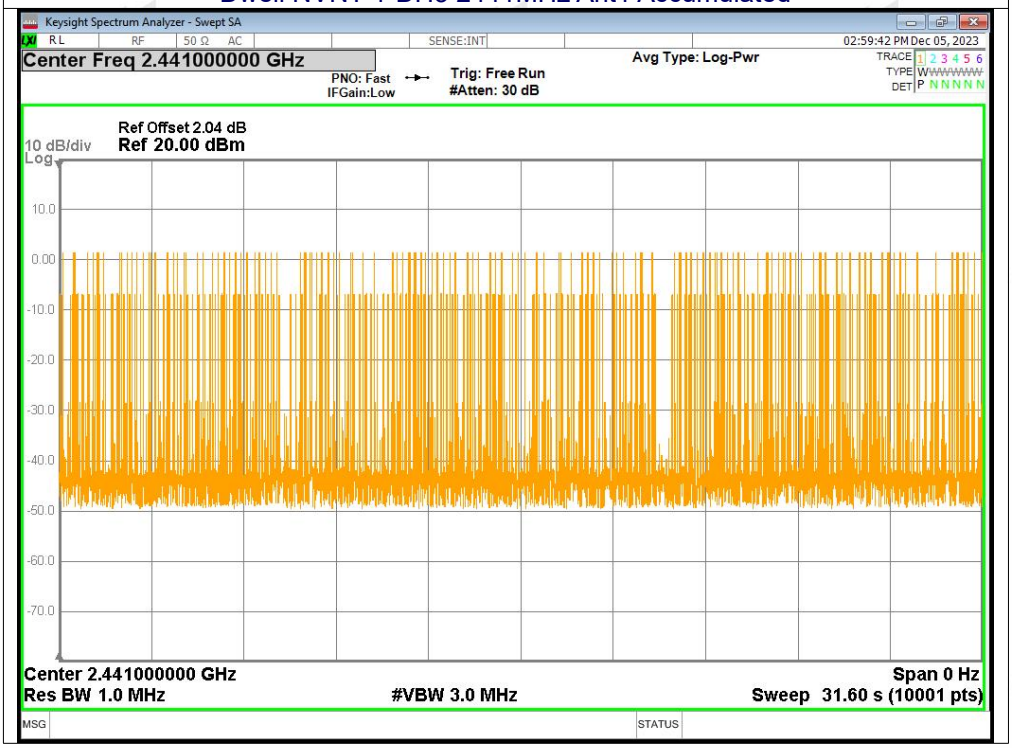
Dwell NVNT 1-DH1 2441MHz Ant1 One Burst

Dwell NVNT 1-DH1 2441MHz Ant1 Accumulated



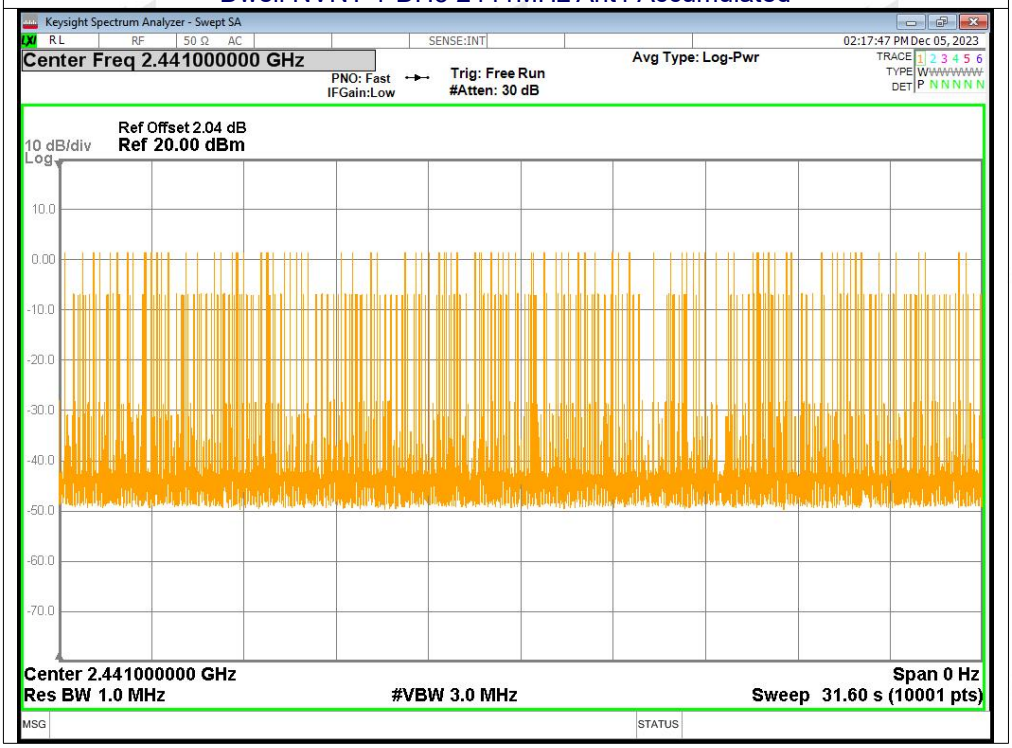
Dwell NVNT 1-DH3 2441MHz Ant1 One Burst

Dwell NVNT 1-DH3 2441MHz Ant1 Accumulated



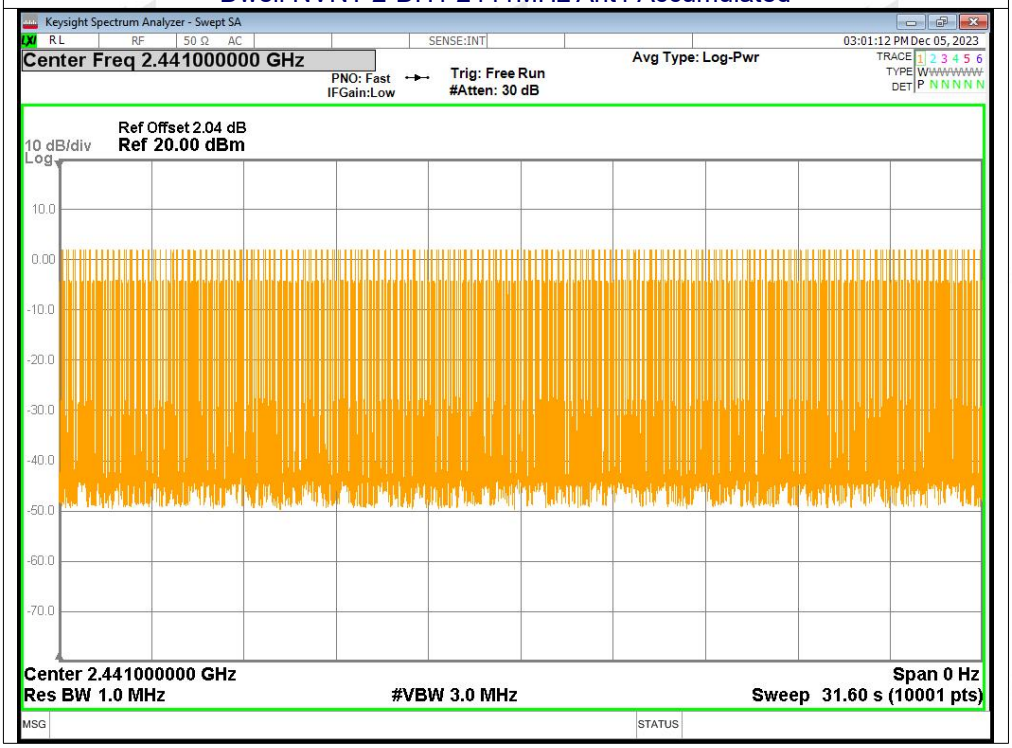
Dwell NVNT 1-DH5 2441MHz Ant1 One Burst

Dwell NVNT 1-DH5 2441MHz Ant1 Accumulated



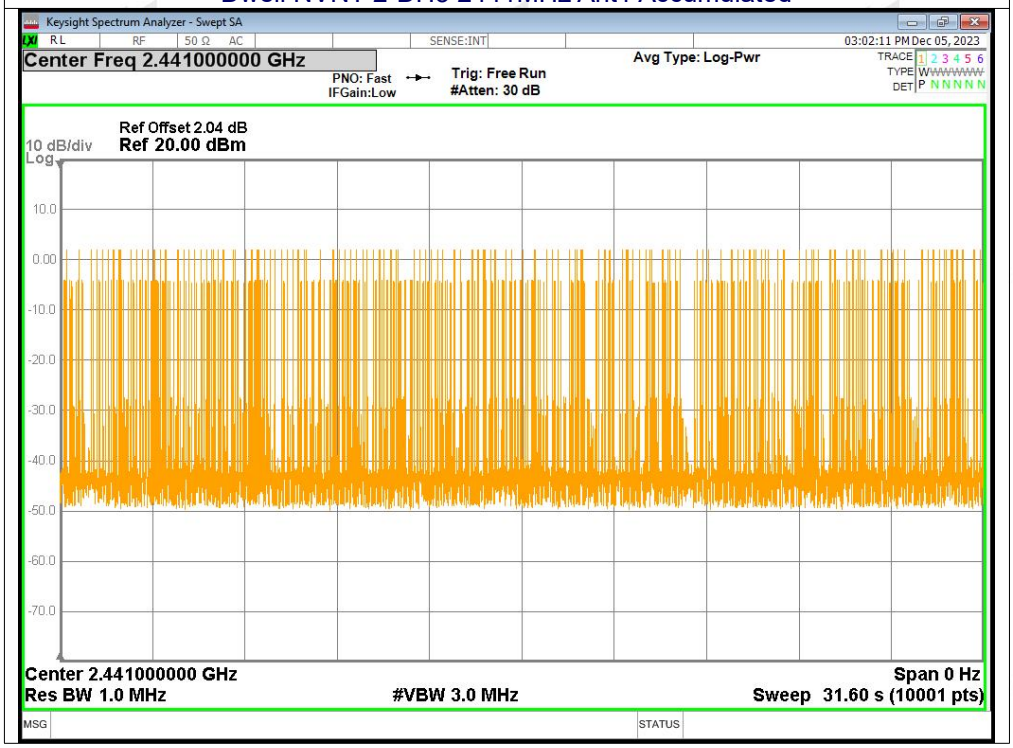
Dwell NVNT 2-DH1 2441MHz Ant1 One Burst

Dwell NVNT 2-DH1 2441MHz Ant1 Accumulated



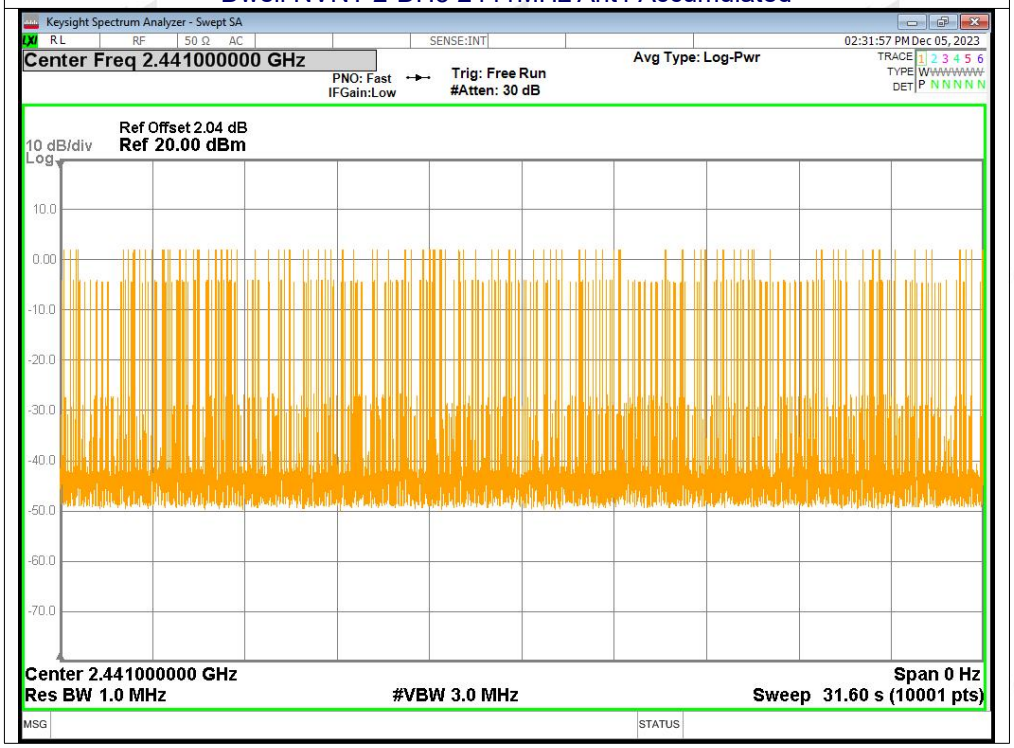
Dwell NVNT 2-DH3 2441MHz Ant1 One Burst

Dwell NVNT 2-DH3 2441MHz Ant1 Accumulated



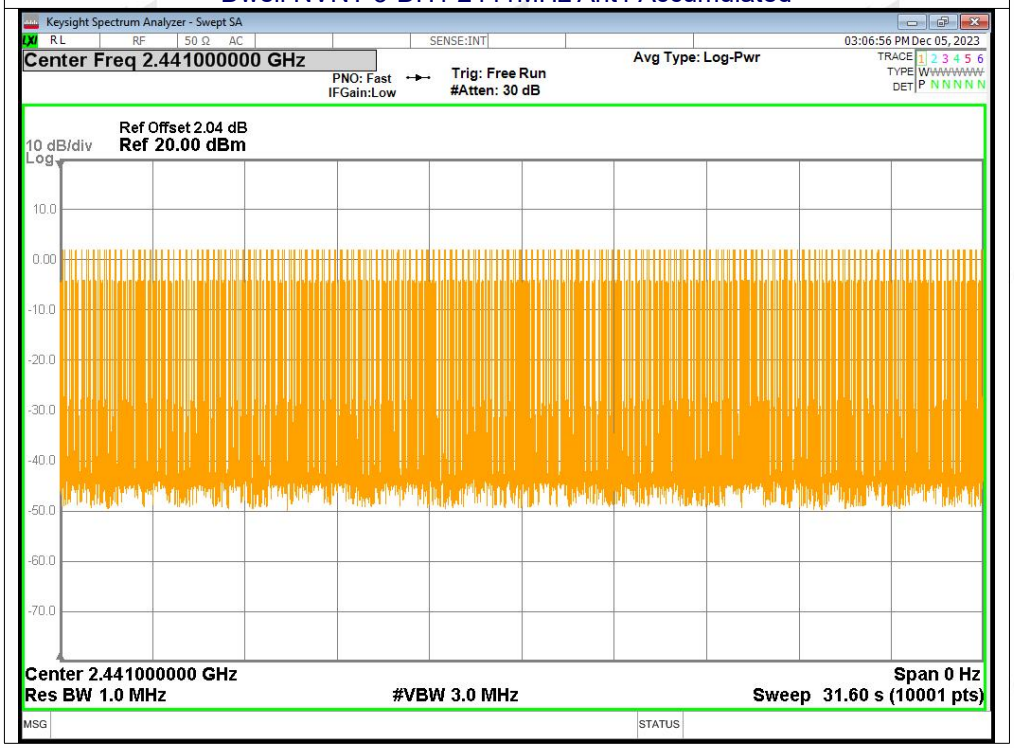
Dwell NVNT 2-DH5 2441MHz Ant1 One Burst

Dwell NVNT 2-DH5 2441MHz Ant1 Accumulated



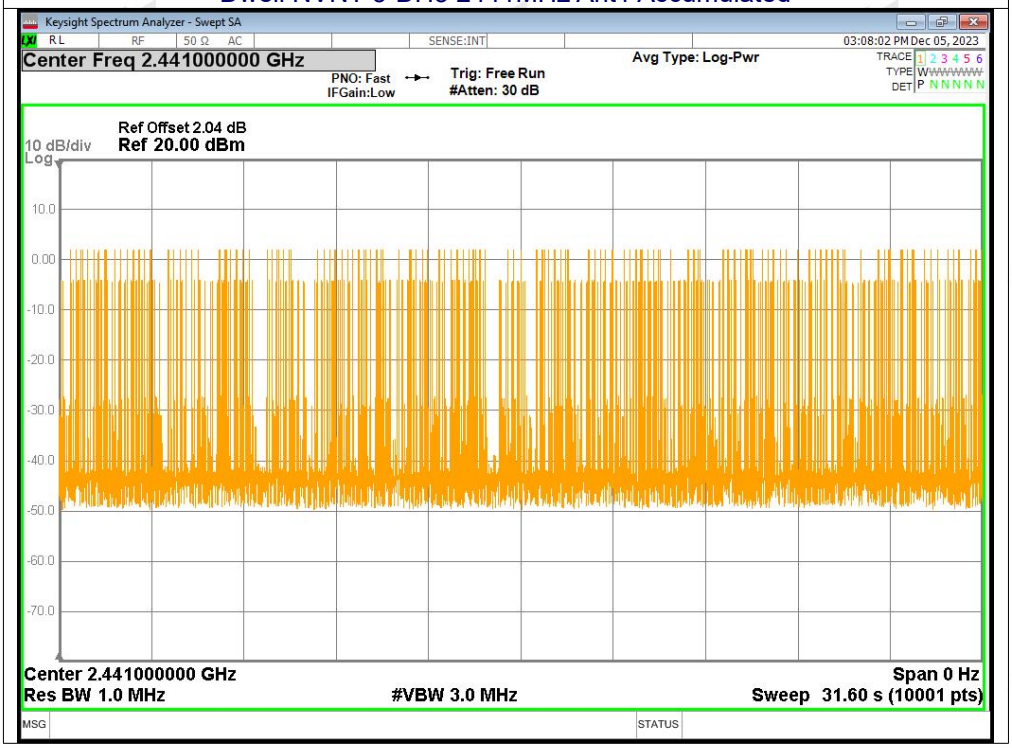
Dwell NVNT 3-DH1 2441MHz Ant1 One Burst

Dwell NVNT 3-DH1 2441MHz Ant1 Accumulated



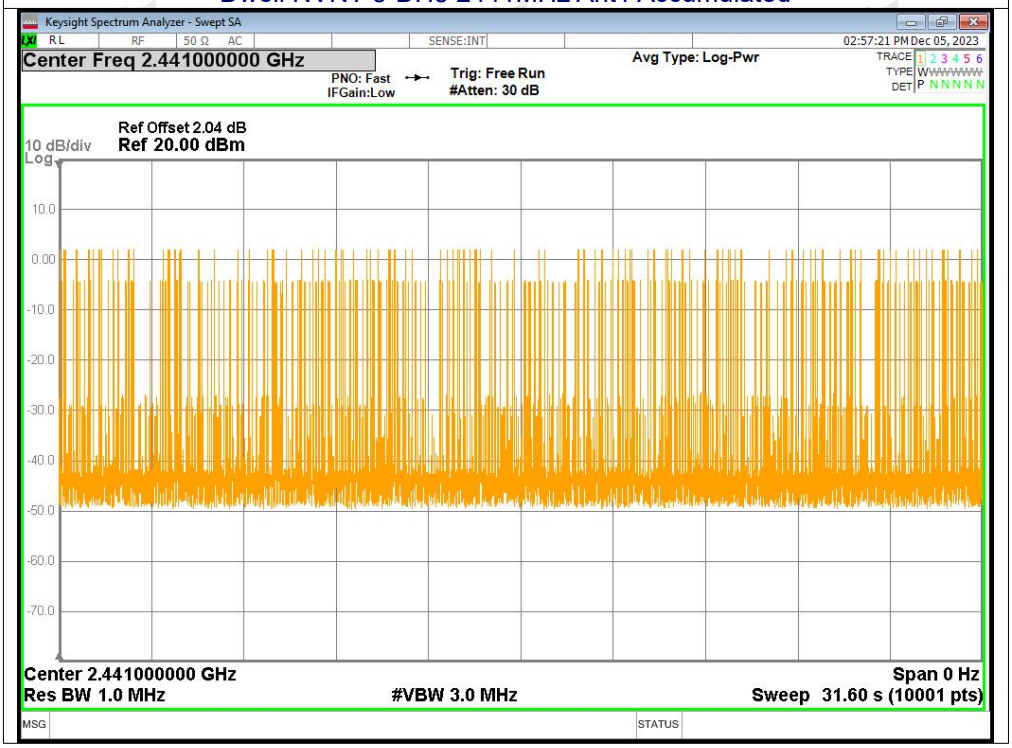
Dwell NVNT 3-DH3 2441MHz Ant1 One Burst

Dwell NVNT 3-DH3 2441MHz Ant1 Accumulated



Dwell NVNT 3-DH5 2441MHz Ant1 One Burst

Dwell NVNT 3-DH5 2441MHz Ant1 Accumulated



12. Antenna Requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(b)(4)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b) (4) requirement: (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
EUT Antenna:	
The antenna is Chip Antenna, the best case gain of the antennas is 1.24dBi, reference to the appendix II for details	

13. Test Setup Photo

Reference to the appendix I for details.

14. EUT Constructional Details

Reference to the appendix II for details.

※※※※※ **END OF REPORT** ※※※※※