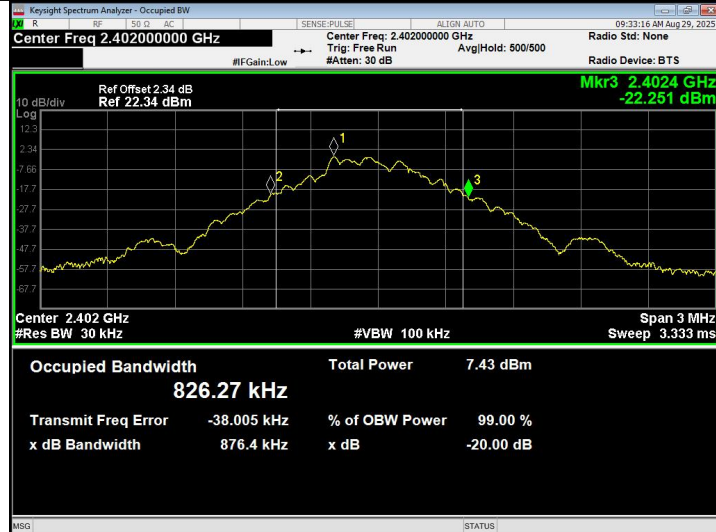




Test Graphs

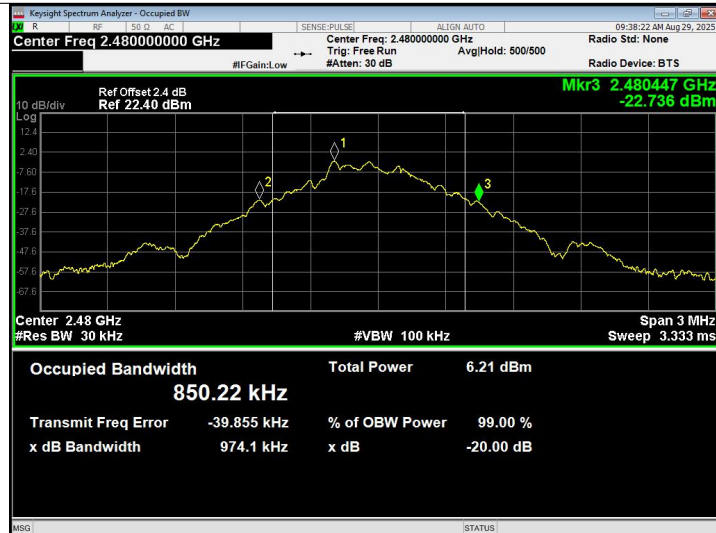
-20dB Bandwidth NVNT 1-DH1 2402MHz

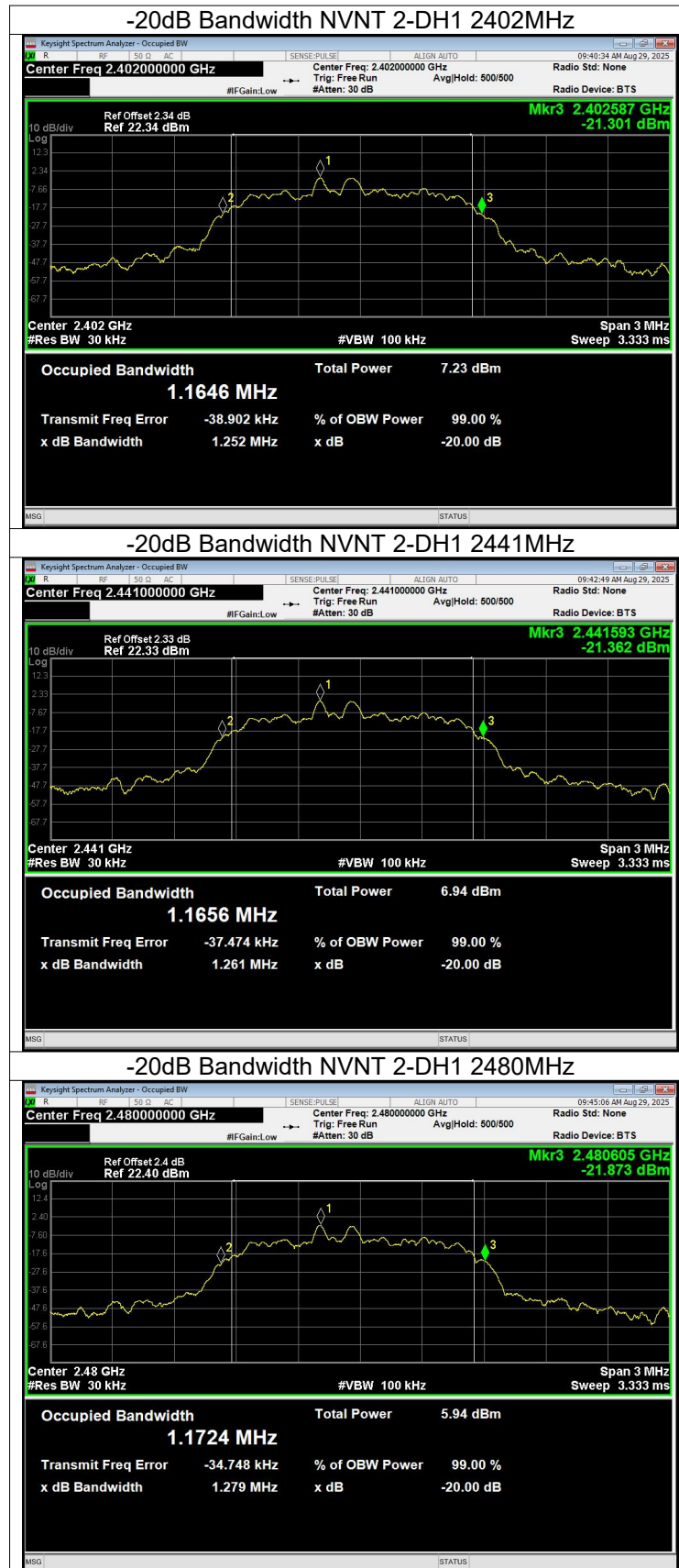


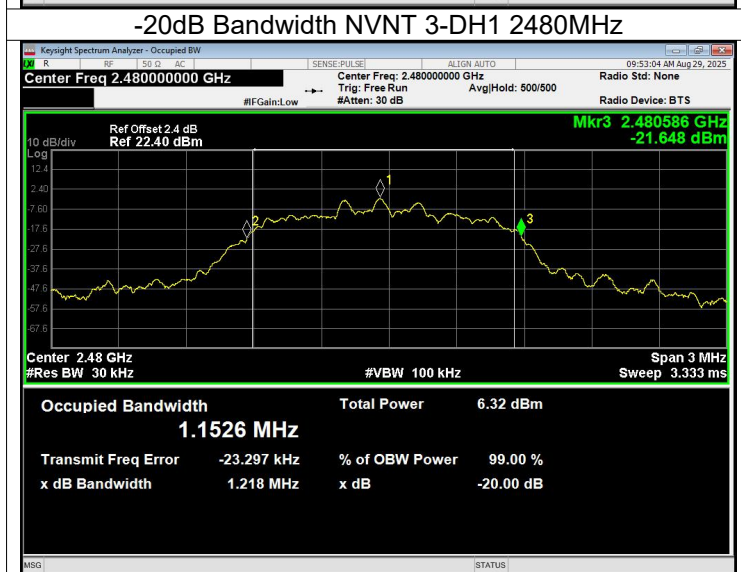
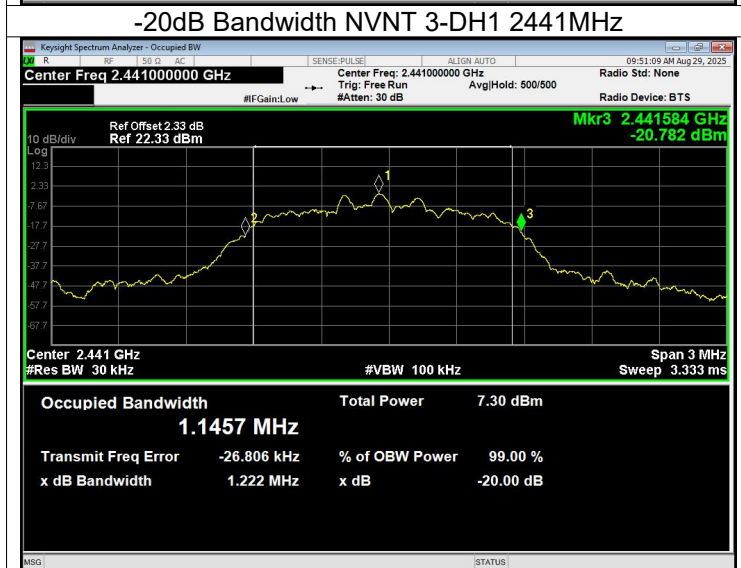
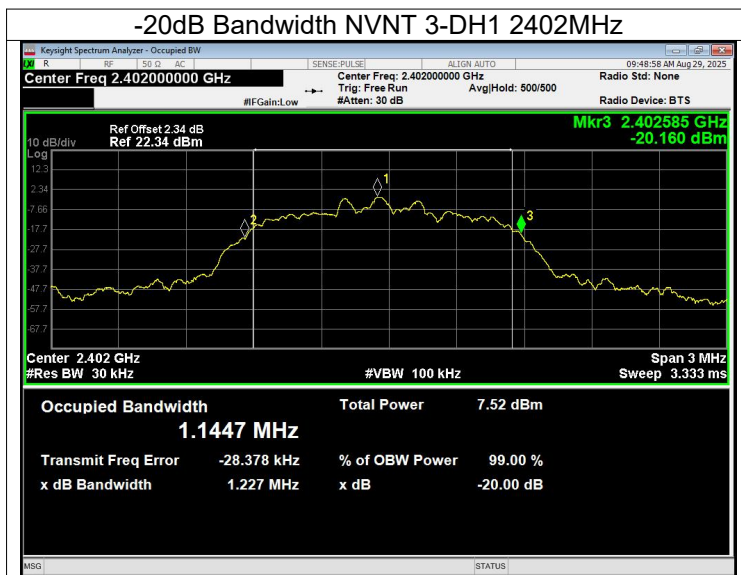
-20dB Bandwidth NVNT 1-DH1 2441MHz



-20dB Bandwidth NVNT 1-DH1 2480MHz









8. Maximum Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(1)
Test Method:	ANSI C63.10:2020
Limit:	GFSK:30 dBm $\pi/4$ -DQPSK & 8-DPSK:20.97 dBm

8.1 Block Diagram Of Test Setup



8.2 Limit

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.

For FHSs operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channels; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channels. The e.i.r.p. shall not exceed 4 W.

8.3 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 = 2MHz. VBW =6MHz. Sweep = auto; Detector Function = Peak.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

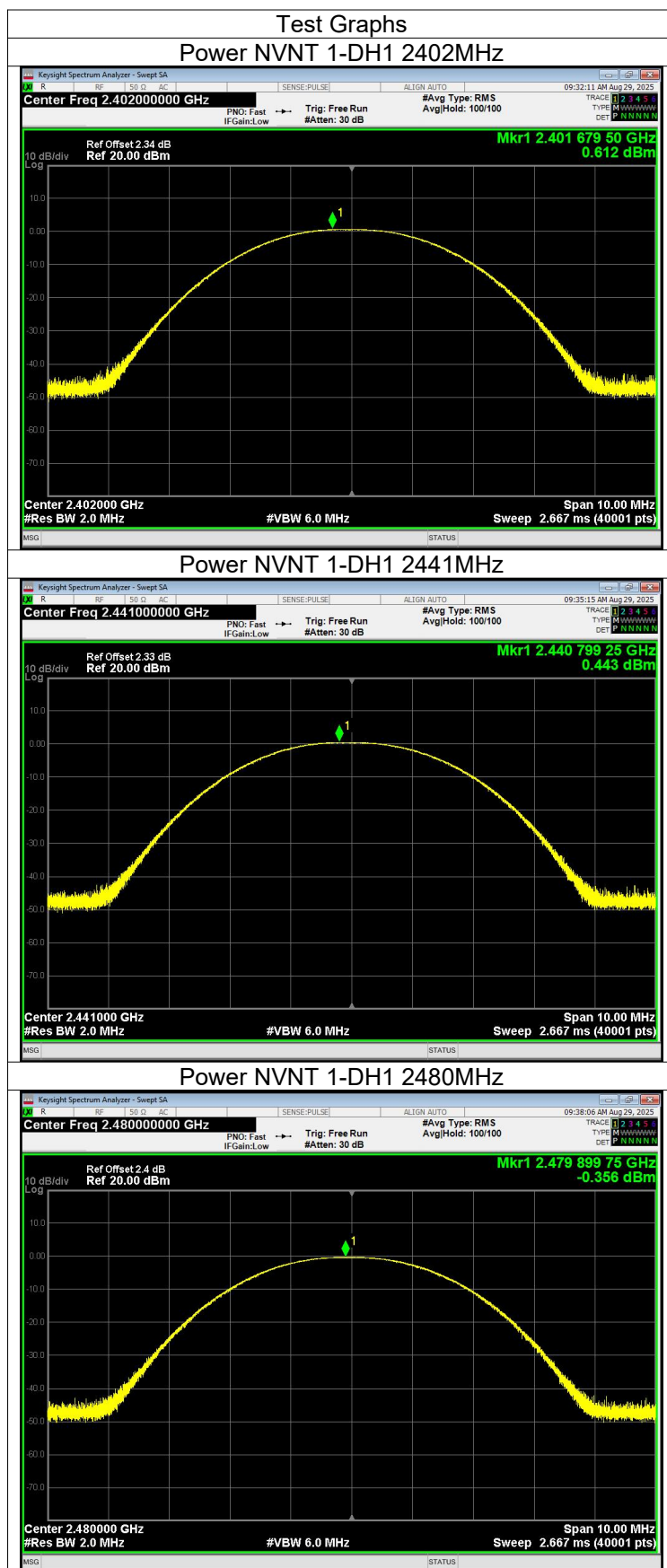
8.4 DEVIATION FROM STANDARD

No deviation.



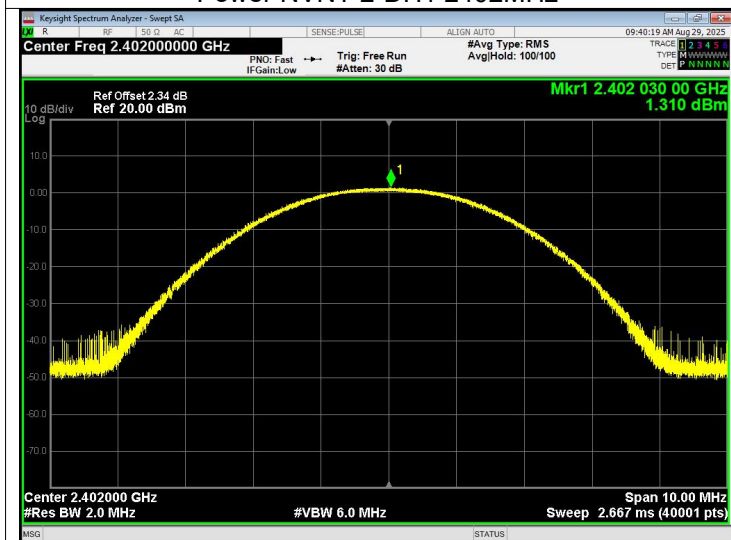
8.5 Test Result

Mode	Test channel	Peak Output Power (dBm)	FCC Limit (dBm)	Result
GFSK	Lowest	0.612	30.00	Pass
	Middle	0.443		
	Highest	-0.356		
$\pi/4$ -DQPSK	Lowest	1.310	21.00	Pass
	Middle	1.117		
	Highest	0.265		
8-DPSK	Lowest	1.884	21.00	Pass
	Middle	1.654		
	Highest	0.865		

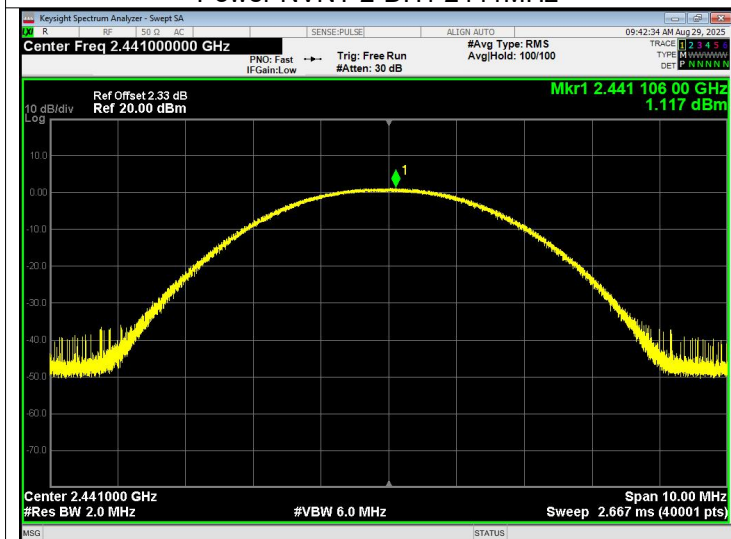




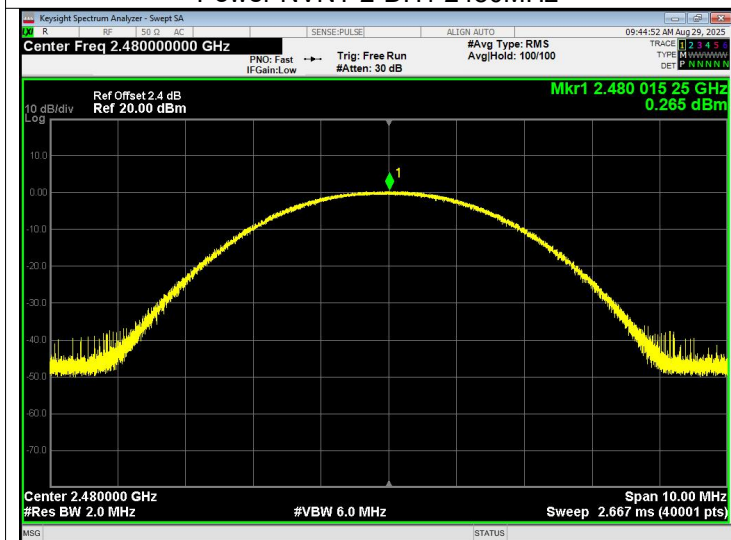
Power NVNT 2-DH1 2402MHz



Power NVNT 2-DH1 2441MHz

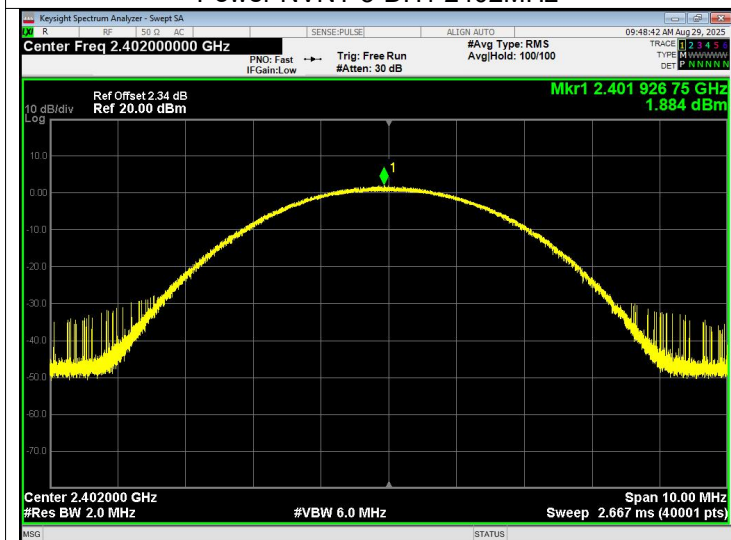


Power NVNT 2-DH1 2480MHz

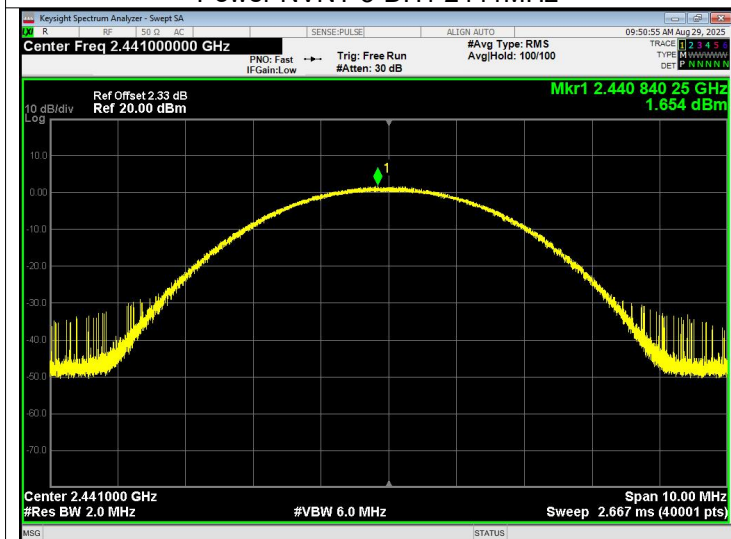




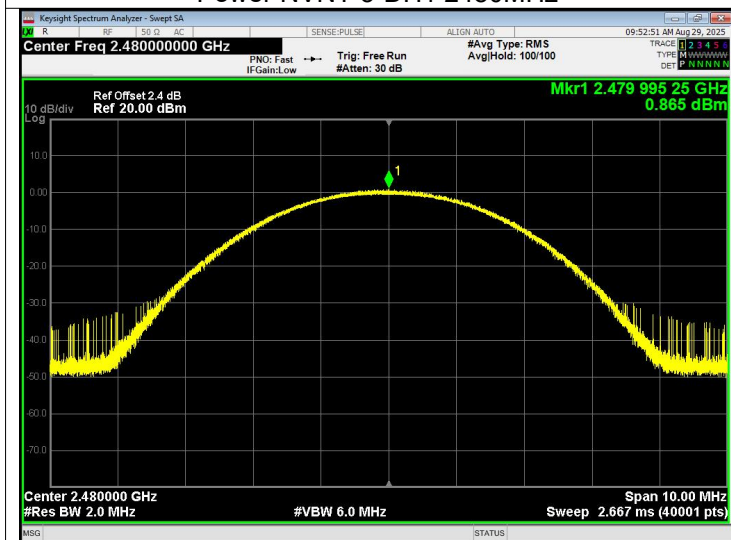
Power NVNT 3-DH1 2402MHz



Power NVNT 3-DH1 2441MHz



Power NVNT 3-DH1 2480MHz





9. HOPPING CHANNEL SEPARATION

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2020
Receiver setup:	RBW=30KHz, VBW=100KHz, detector=Peak
Limit:	GFSK: 20dB bandwidth $\pi/4$ -DQPSK & 8DSK: 0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)

9.1 Test Setup



9.2 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 = 30kHz. VBW = 100kHz , Span = 2.0MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

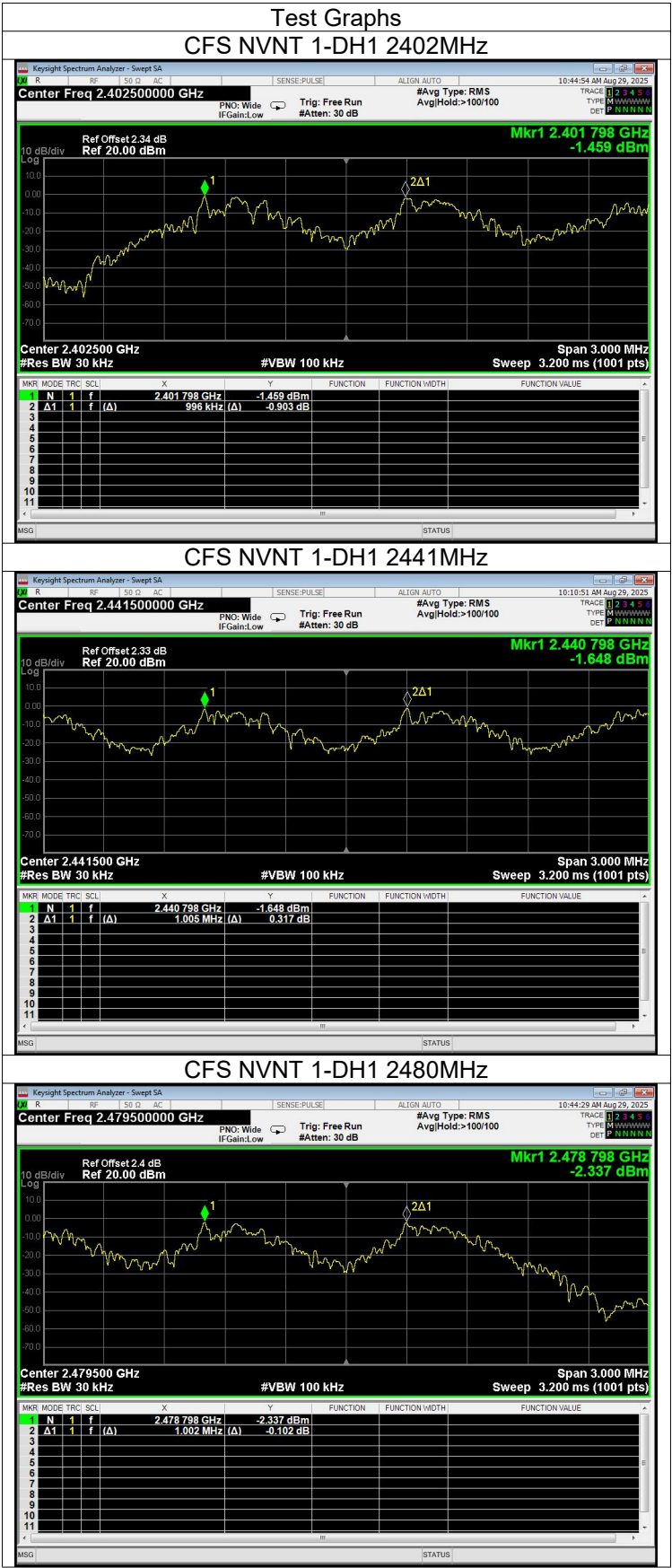
9.3 DEVIATION FROM STANDARD

No deviation.



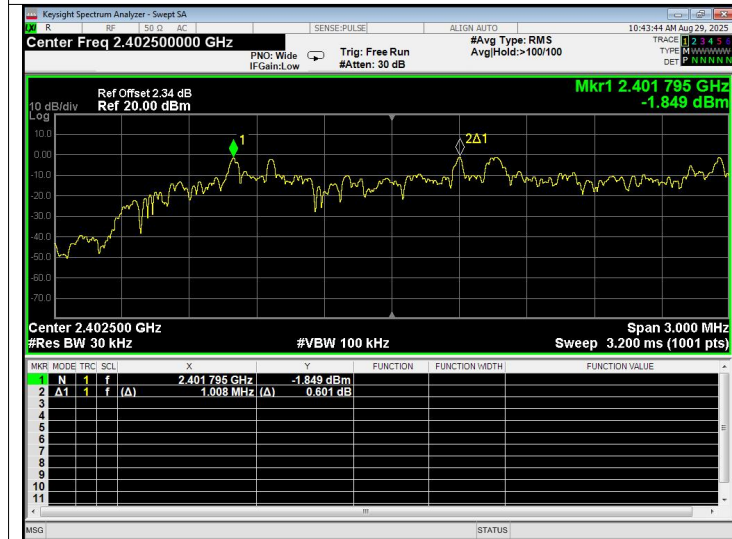
9.4 Test Result

Modulation	Test Channel	Separation (MHz)	Limit(MHz)	Result
GFSK	Low	0.996	0.876	PASS
GFSK	Middle	1.005	0.876	PASS
GFSK	High	1.002	0.974	PASS
$\pi/4$ -DQPSK	Low	1.008	0.835	PASS
$\pi/4$ -DQPSK	Middle	1.002	0.841	PASS
$\pi/4$ -DQPSK	High	0.981	0.853	PASS
8-DPSK	Low	1.152	0.818	PASS
8-DPSK	Middle	1.005	0.815	PASS
8-DPSK	High	0.987	0.812	PASS

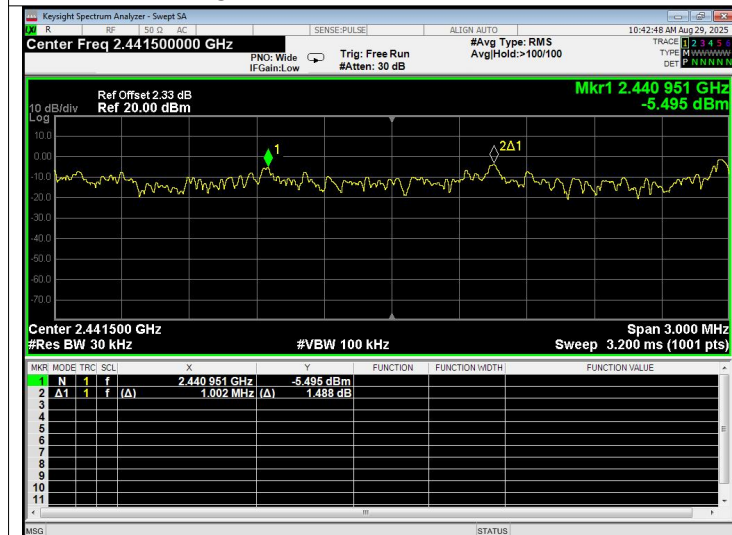




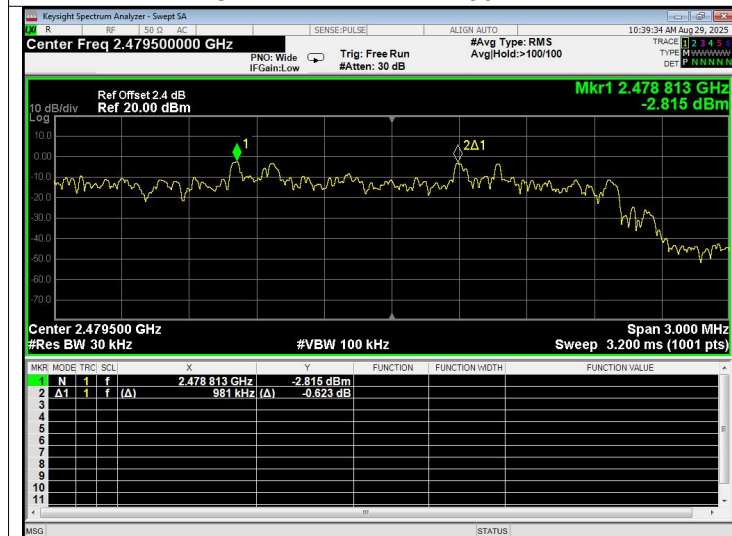
CFS NVNT 2-DH1 2402MHz



CFS NVNT 2-DH1 2441MHz

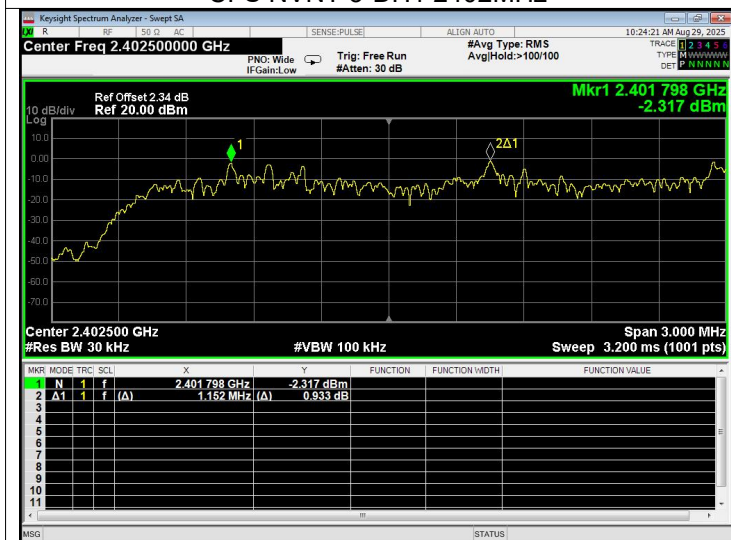


CFS NVNT 2-DH1 2480MHz

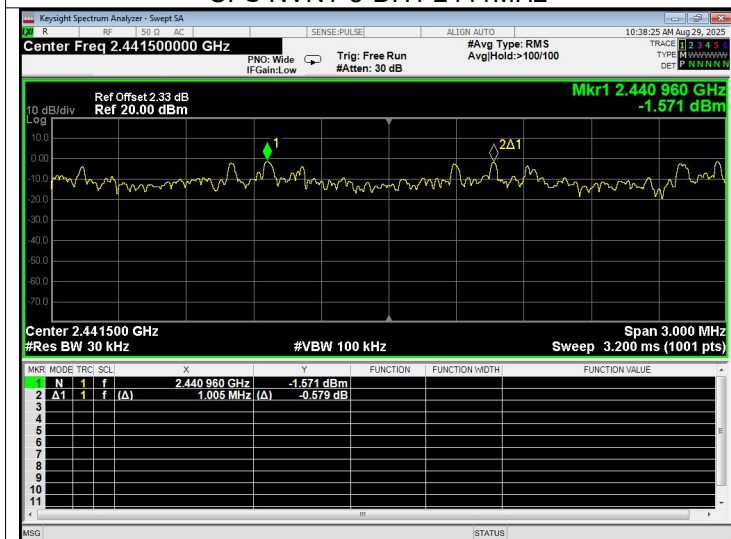




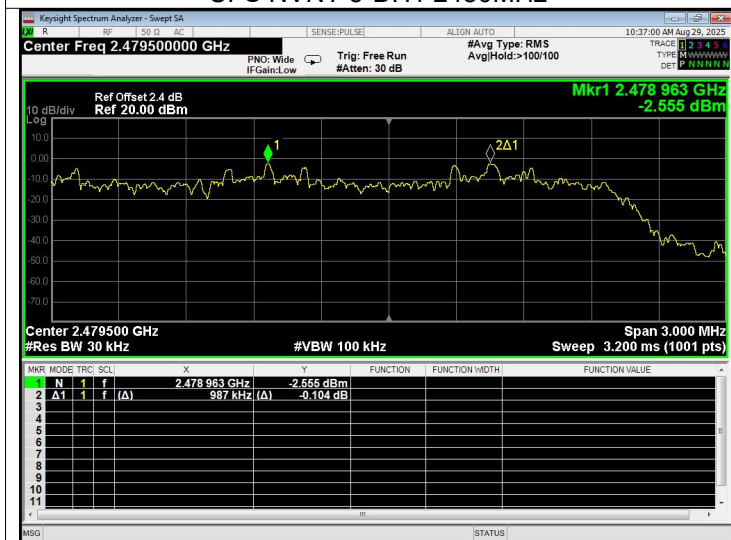
CFS NVNT 3-DH1 2402MHz



CFS NVNT 3-DH1 2441MHz



CFS NVNT 3-DH1 2480MHz





10.NUMBER OF HOPPING FREQUENCY

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Method:	ANSI C63.10:2020
Receiver setup:	RBW=100kHz, VBW=300kHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak
Limit:	GFSK: 75 channels $\pi/4$ -DQPSK, 8-DPSK: 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

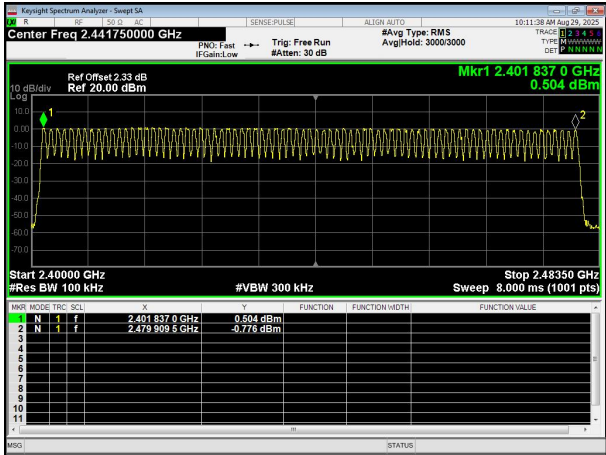
No deviation.

Modulation	Packet	Hopping Number	Limit	Result
GFSK	1-DH1	79	15	Pass
$\pi/4$ -DQPSK	2-DH1	79	15	Pass
8-DPSK	3-DH1	79	15	Pass

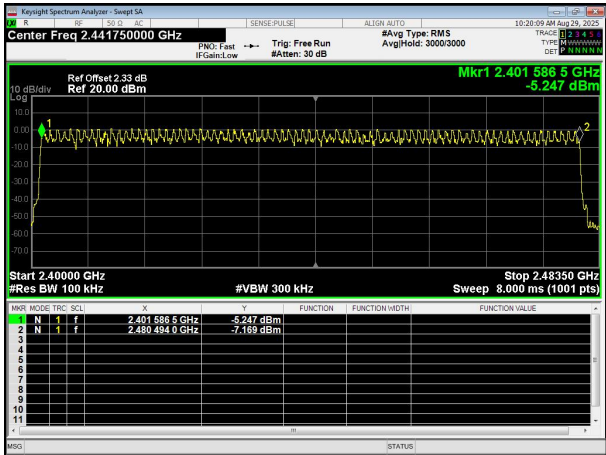


10.4 Test Result

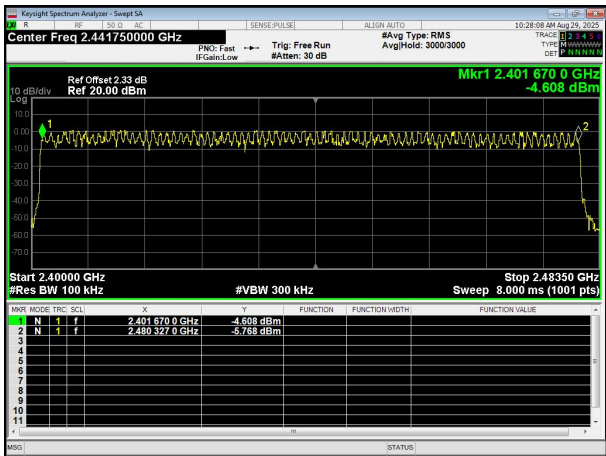
Test Plots:79 Channels in total
GFSK



$\pi/4$ -DQPSK



8-DPSK





11. DWELL TIME

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Method:	ANSI C63.10:2020
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

Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
1-DH1	2441	0.383	122.56	31600	400	Pass
1-DH3	2441	1.639	262.24	31600	400	Pass
1-DH5	2441	2.887	307.947	31600	400	Pass
2-DH1	2441	0.392	125.44	31600	400	Pass
2-DH3	2441	1.644	263.04	31600	400	Pass
2-DH5	2441	2.892	308.48	31600	400	Pass
3-DH1	2441	0.392	125.44	31600	400	Pass
3-DH3	2441	1.642	262.72	31600	400	Pass
3-DH5	2441	2.894	308.693	31600	400	Pass

Remarks:

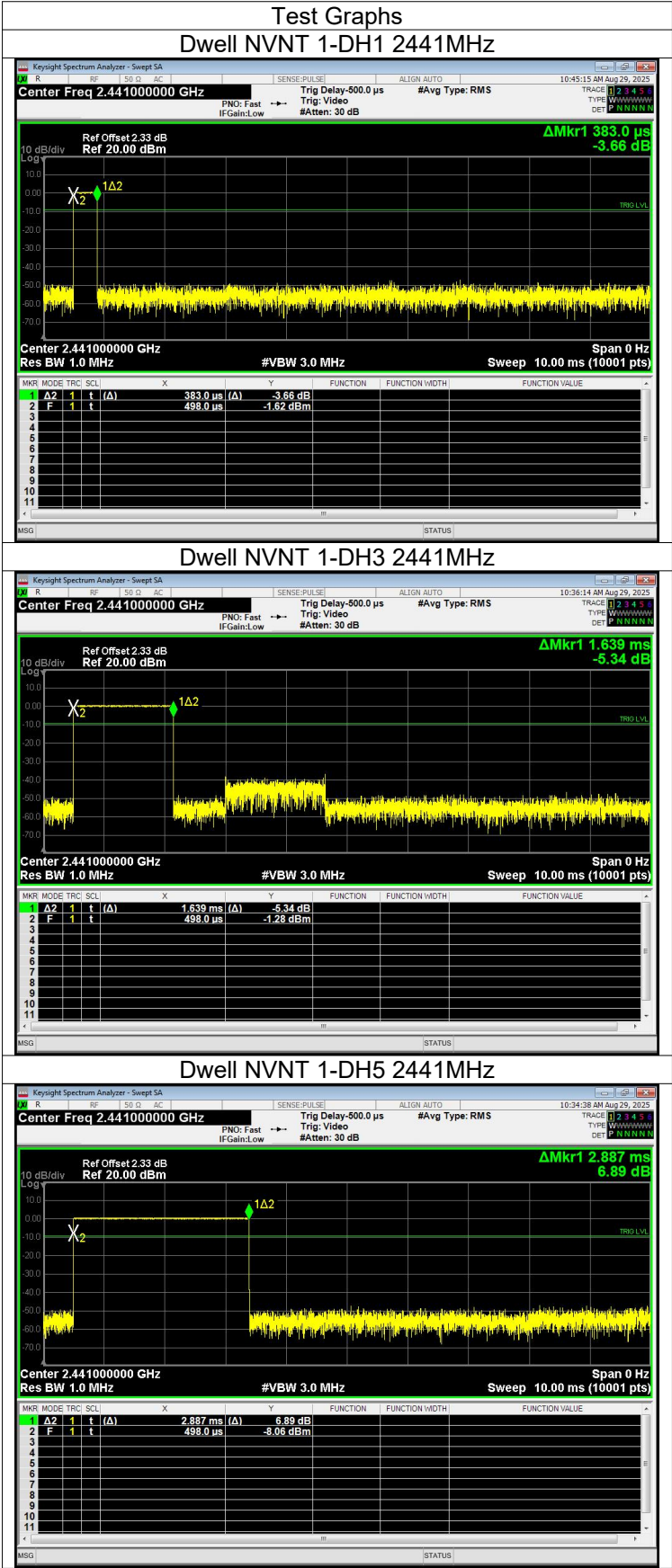
The test period: $T = 0.4 \text{ Second/Channel} \times 79 \text{ Channel} = 31600\text{ms}$

Test channel: as blow

CH:2441MHz time slot=test data(ms)*(1600/ (2*79))*31600ms

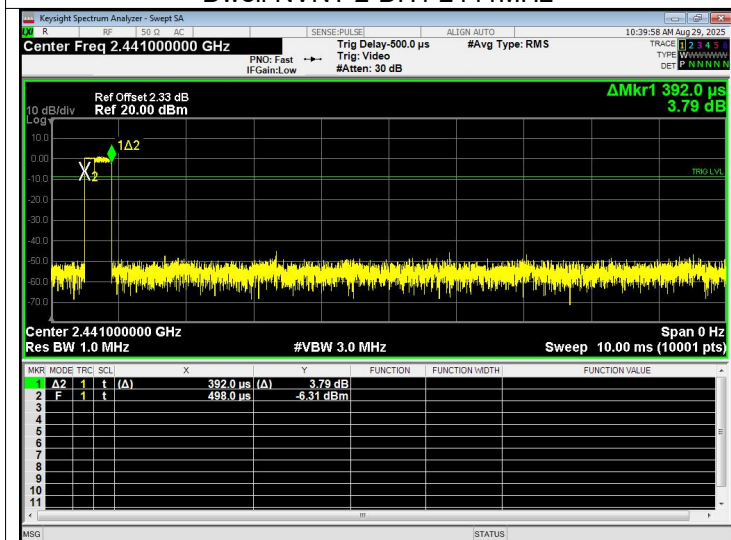
CH:2441MHz time slot=test data(ms)*(1600/ (4*79))*31600ms

CH:2441MHz time slot=test data(ms)*(1600/ (6*79))*31600ms





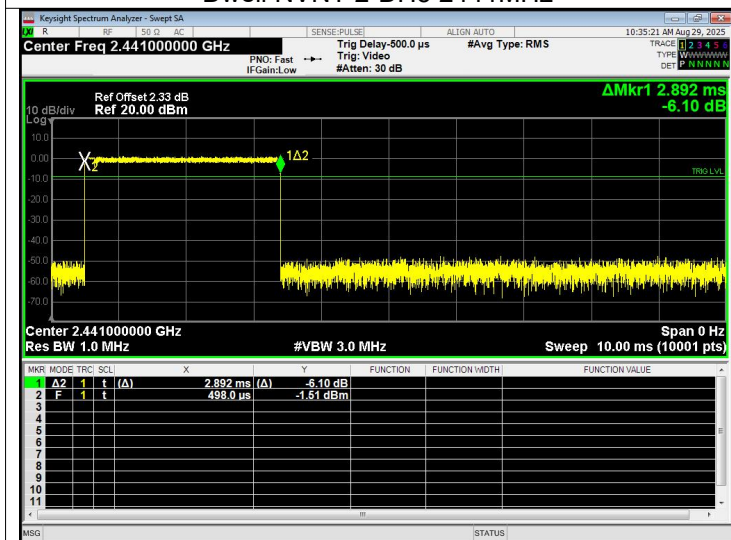
Dwell NVNT 2-DH1 2441MHz

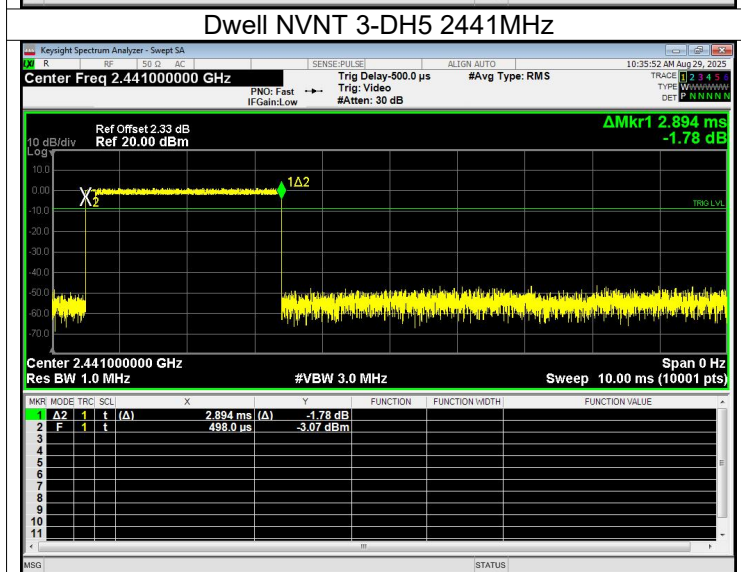
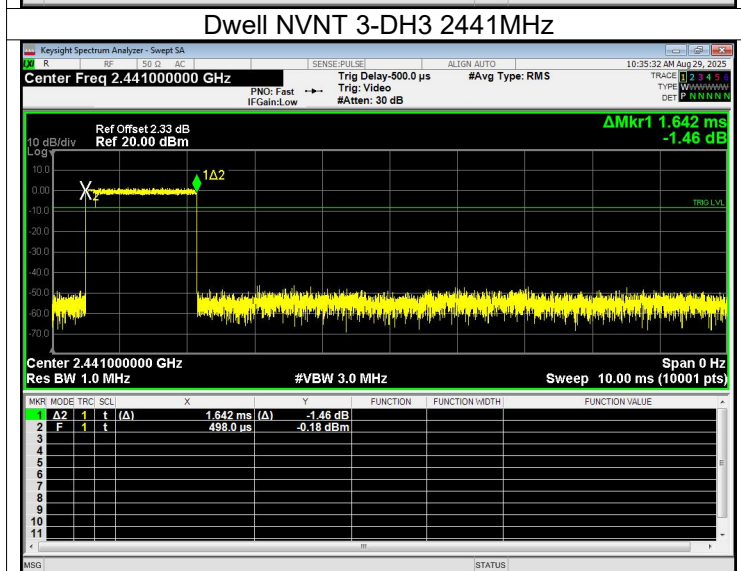
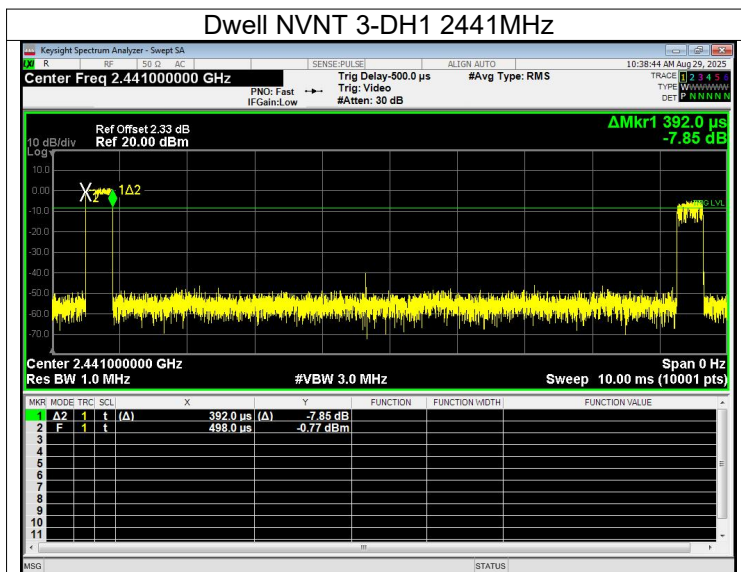


Dwell NVNT 2-DH3 2441MHz



Dwell NVNT 2-DH5 2441MHz





**12. Antenna Requirement**

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
EUT Antenna:	
The antenna is PCB Antenna, the best case gain of the antennas is -1.63 dBi, 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 *****