

11. Maximum Peak Output Power

11.1 Block Diagram Of Test Setup



11.2 Limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(1)	Peak Output Power	0.125 watt or 21dBm	2400-2483.5	PASS

11.3 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.

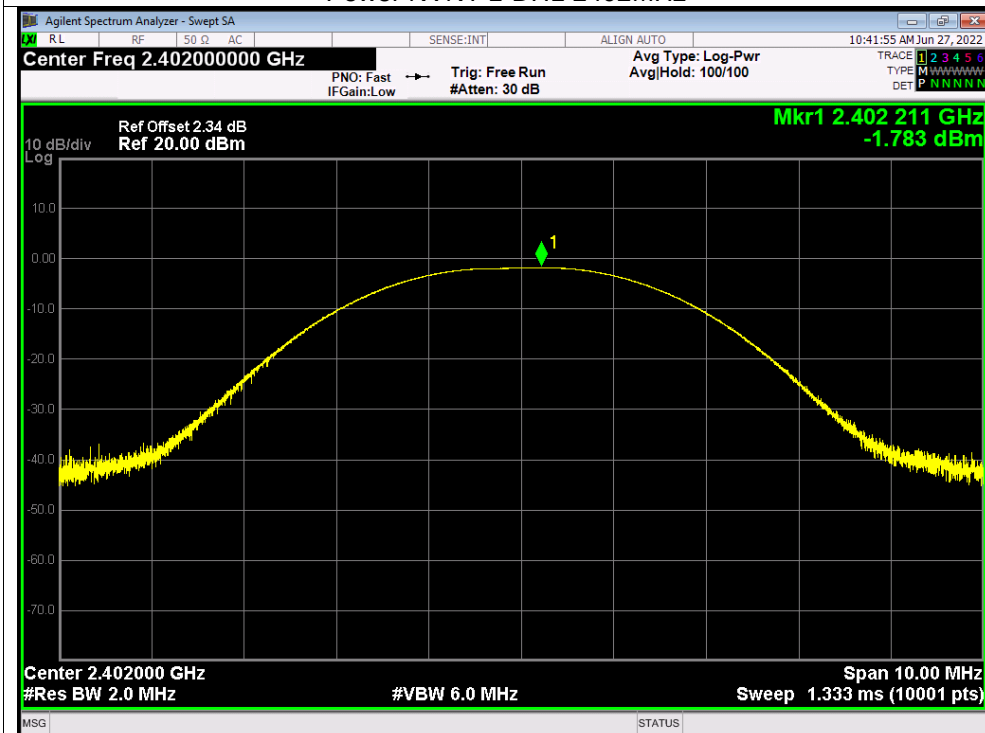
11.4 Test Result

Data	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
Left	1-DH1	2402	-1.78	21	Pass
	1-DH1	2441	-2.24	21	Pass
	1-DH1	2480	-2.76	21	Pass
	2-DH1	2402	-0.99	21	Pass
	2-DH1	2441	-1.51	21	Pass
	2-DH1	2480	-1.93	21	Pass
Right	1-DH1	2402	-1.75	21	Pass
	1-DH1	2441	-2.26	21	Pass
	1-DH1	2480	-2.73	21	Pass
	2-DH1	2402	-0.94	21	Pass
	2-DH1	2441	-1.41	21	Pass
	2-DH1	2480	-1.89	21	Pass

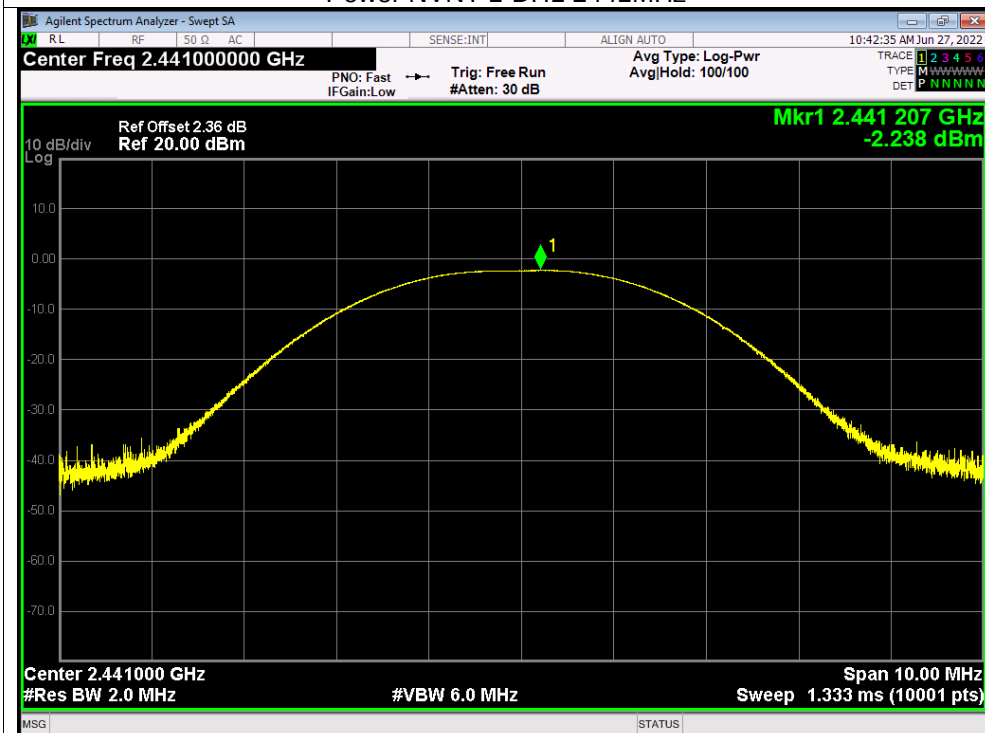
Left

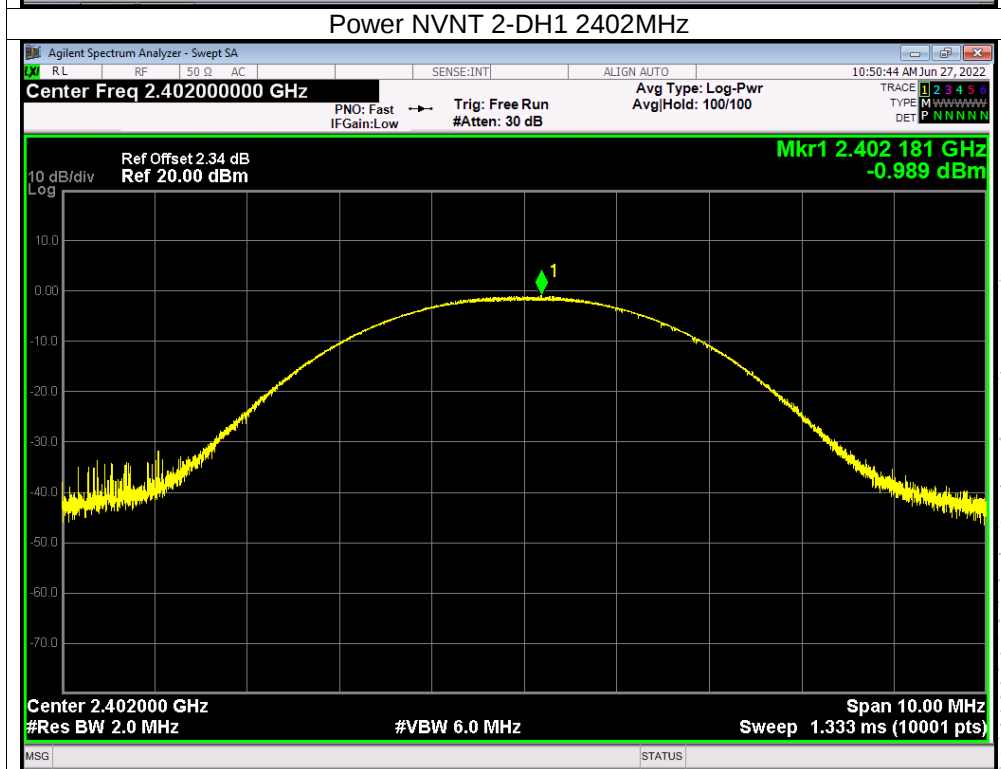
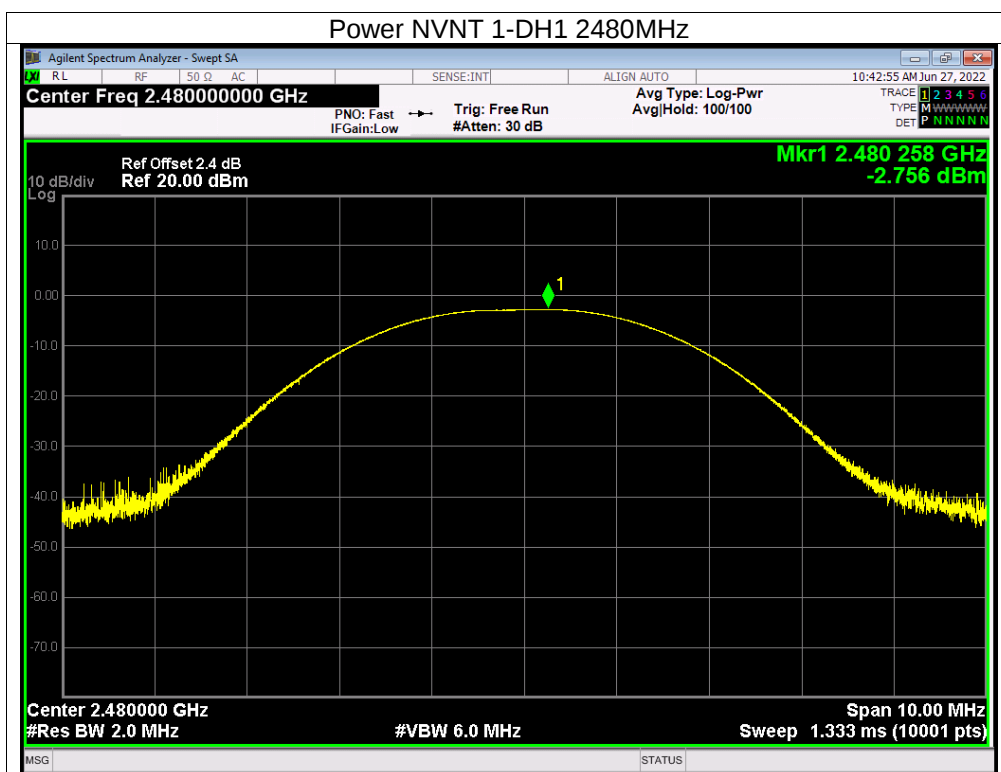
Test Graphs

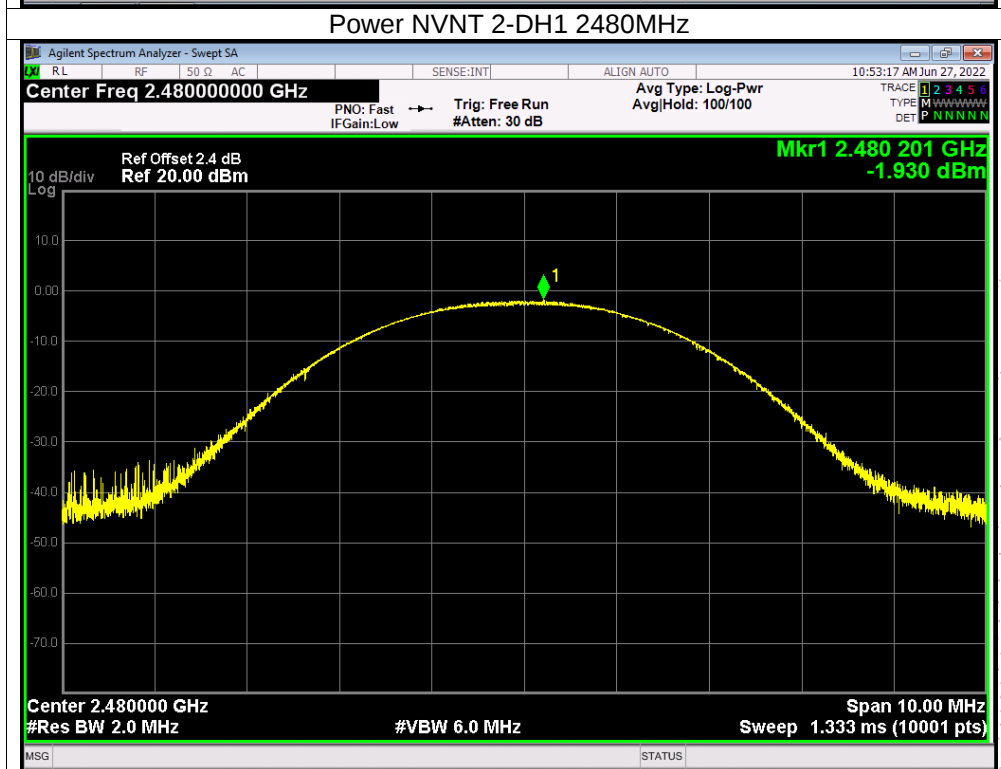
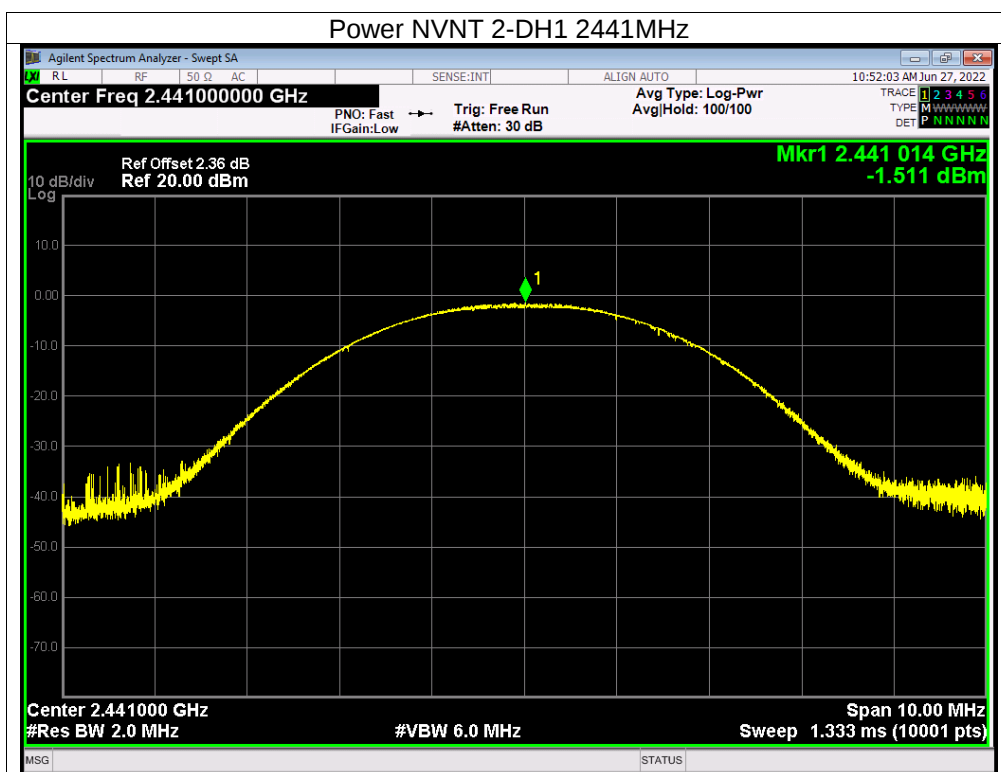
Power NVNT 1-DH1 2402MHz



Power NVNT 1-DH1 2441MHz



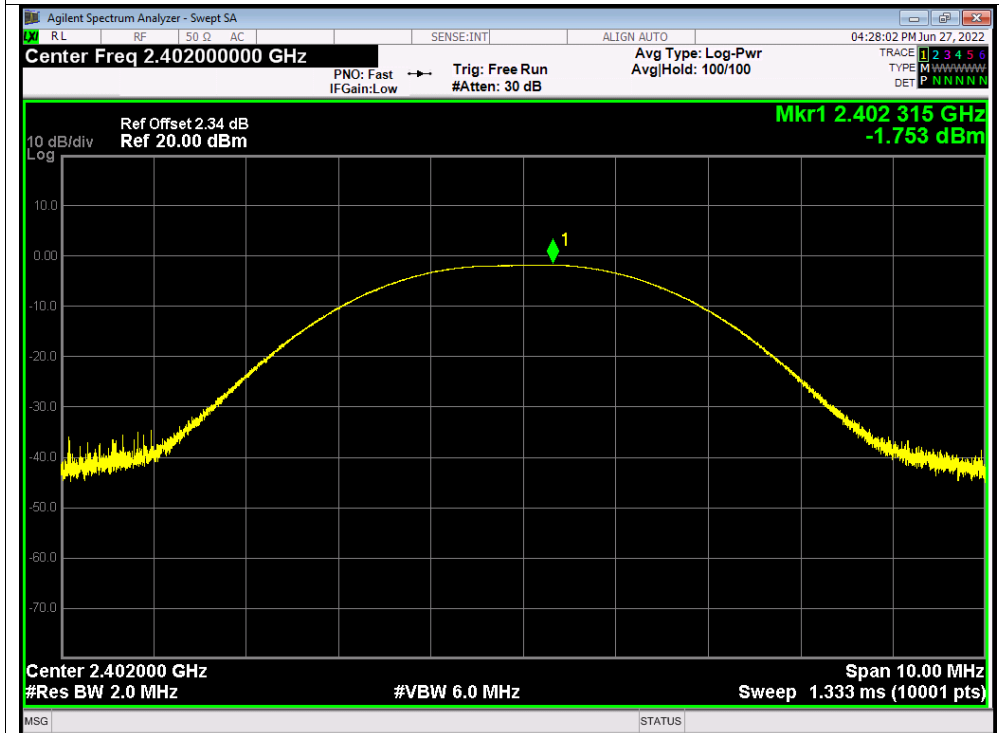




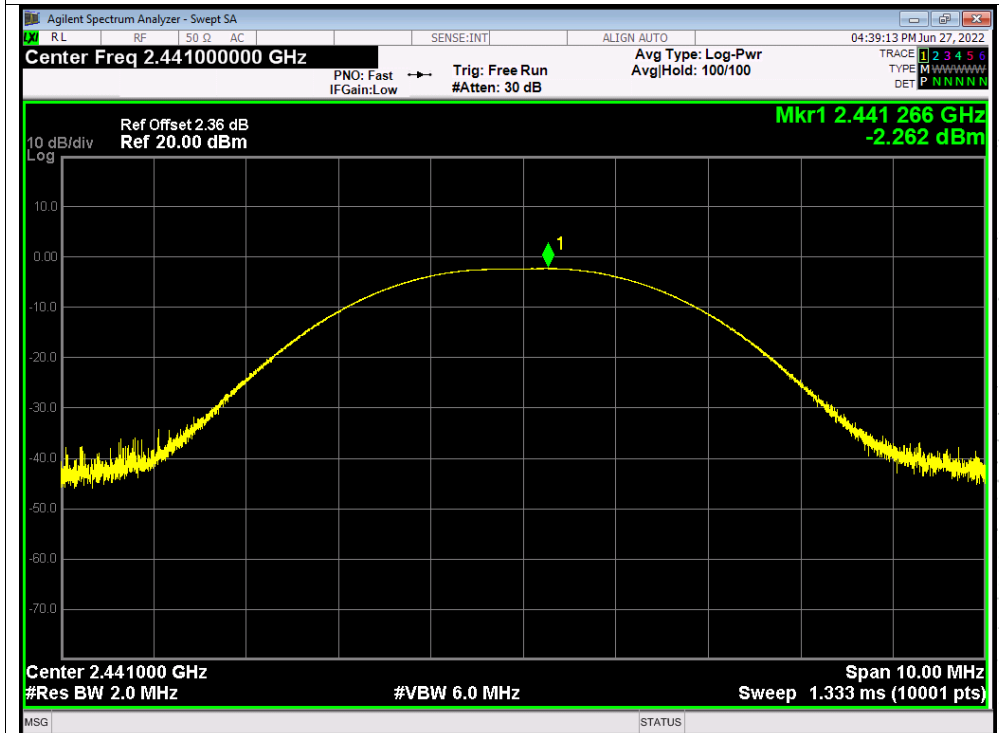
Right

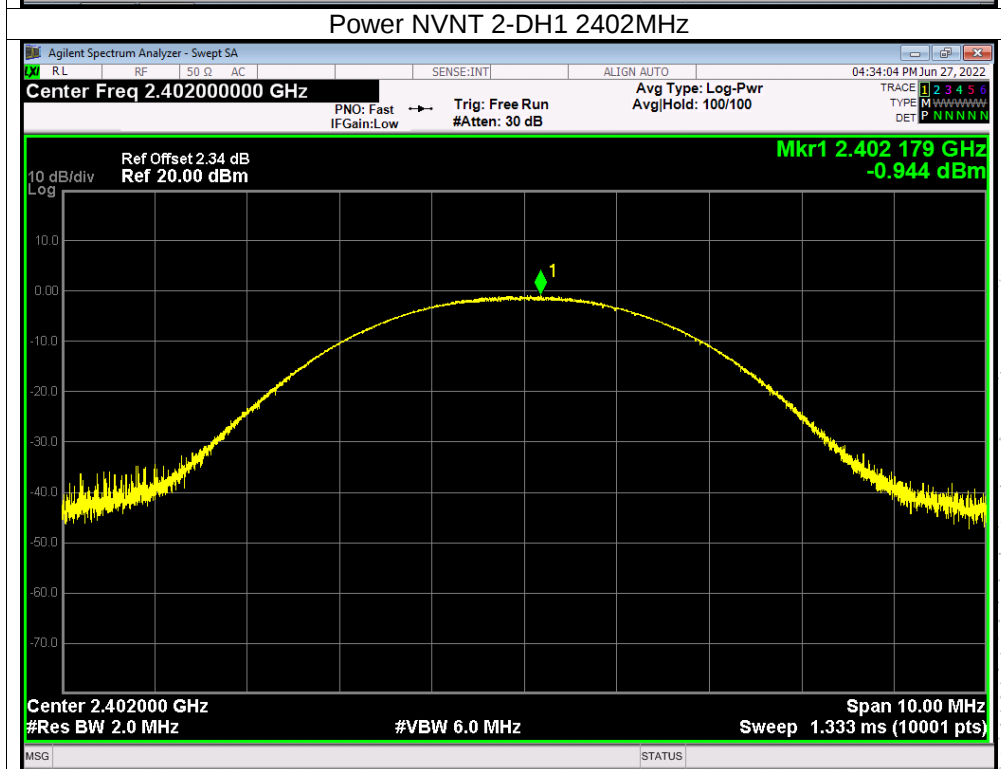
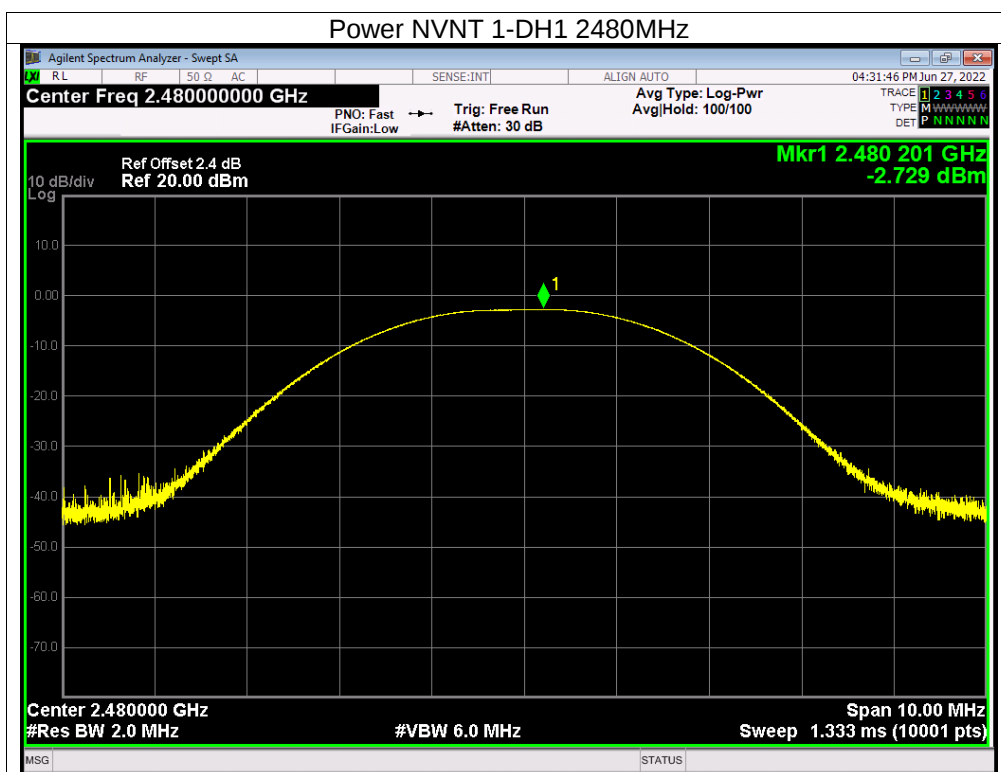
Test Graphs

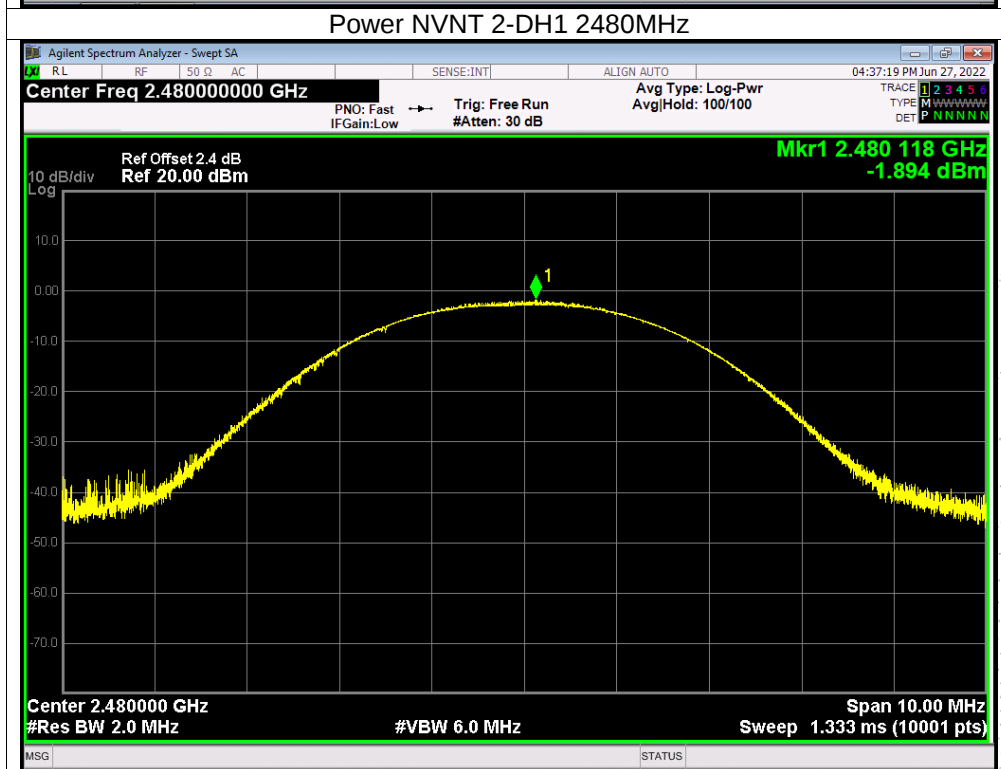
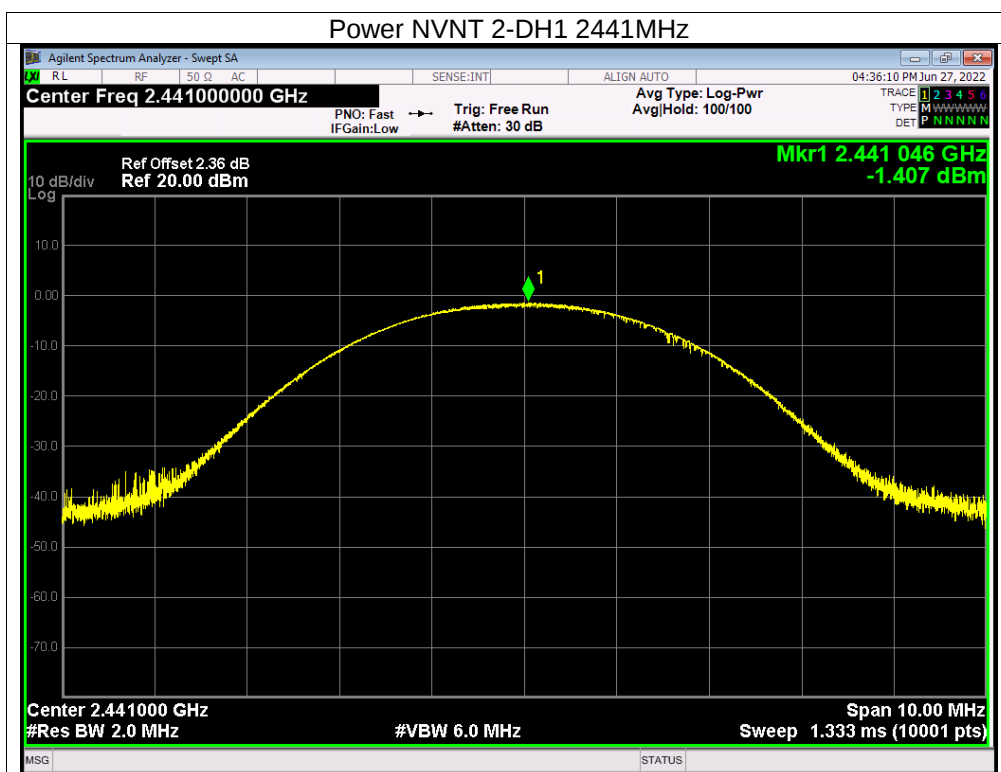
Power NVNT 1-DH1 2402MHz



Power NVNT 1-DH1 2441MHz







12. Hopping Channel Separation

12.1 Block Diagram Of Test Setup



12.2 Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 0.125W.

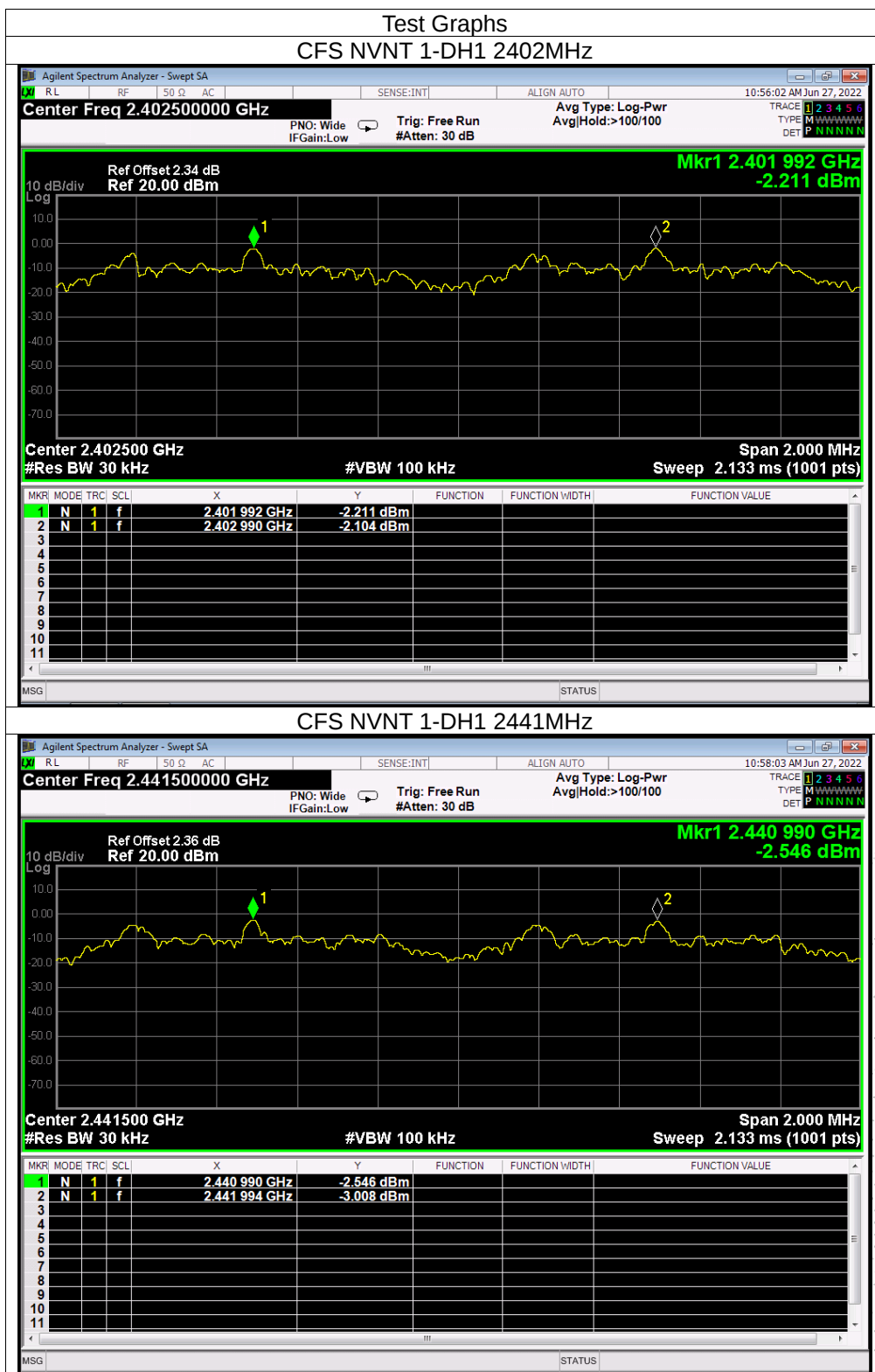
12.3 Test procedure

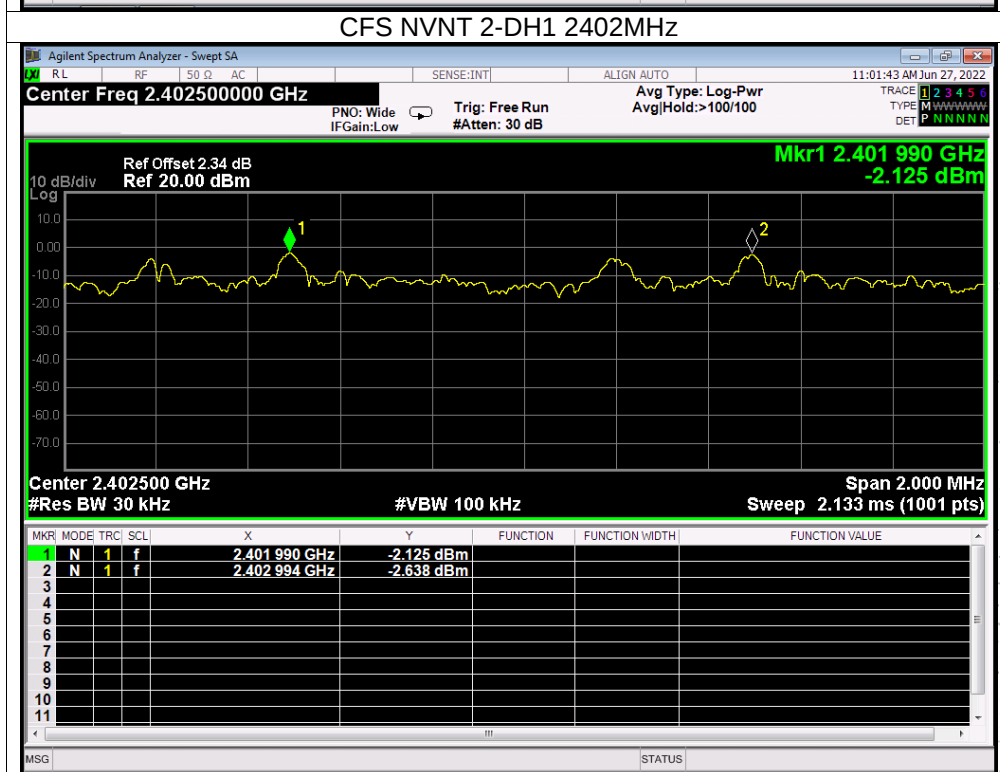
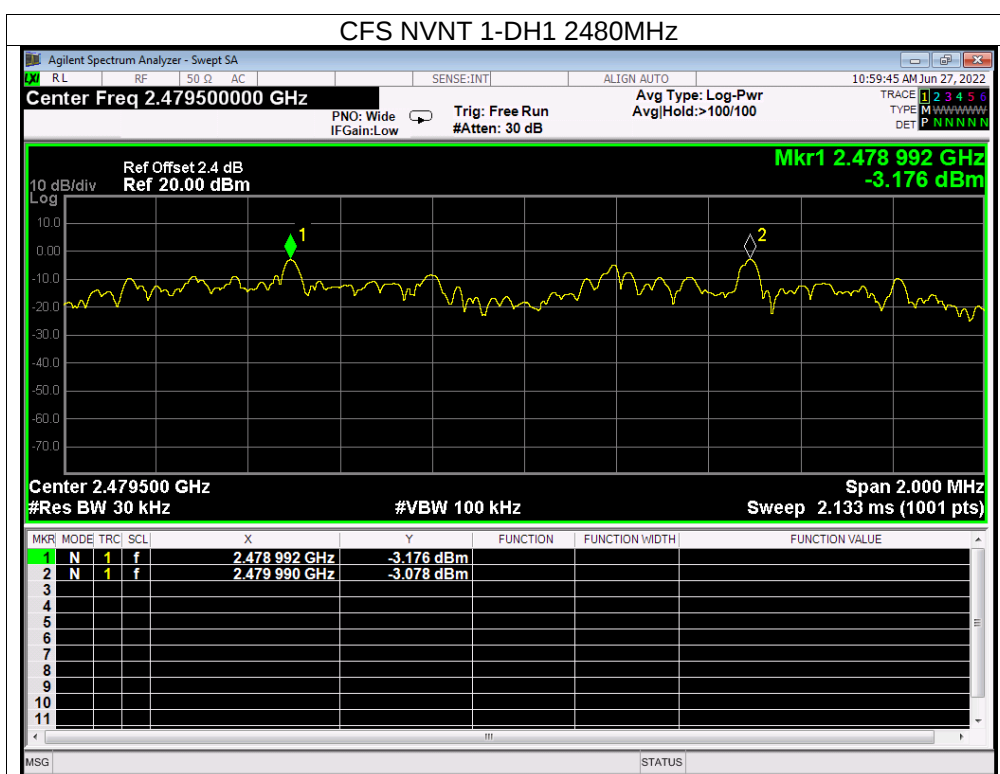
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 30kHz. VBW = 100kHz , Span = 2.0MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to 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.

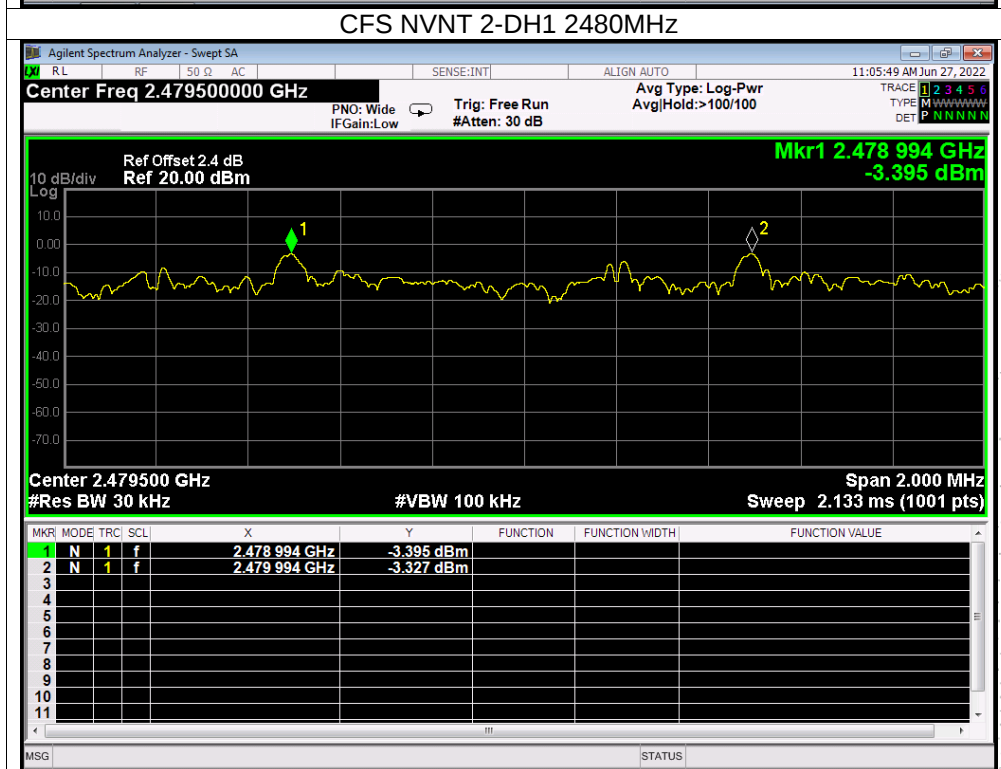
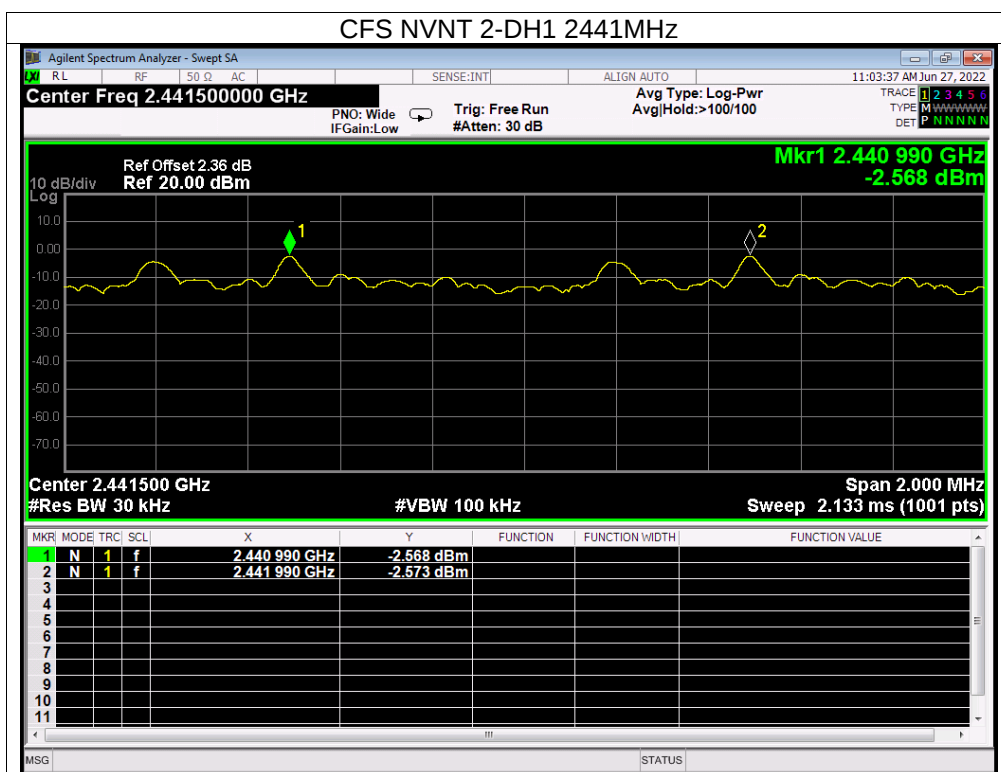
12.4 Test Result

Data	Condition	Mode	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
Left	NVNT	1-DH1	2401.992	2402.990	0.998	0.733	Pass
	NVNT	1-DH1	2440.990	2441.994	1.004	0.723	Pass
	NVNT	1-DH1	2478.992	2479.990	0.998	0.711	Pass
	NVNT	2-DH1	2401.990	2402.994	1.004	0.758	Pass
	NVNT	2-DH1	2440.990	2441.990	1.000	0.819	Pass
	NVNT	2-DH1	2478.994	2479.994	1.000	0.806	Pass
Right	NVNT	1-DH1	2401.988	2402.988	1.000	0.724	Pass
	NVNT	1-DH1	2440.988	2441.988	1.000	0.722	Pass
	NVNT	1-DH1	2478.988	2479.988	1.000	0.725	Pass
	NVNT	2-DH1	2401.986	2402.988	1.002	0.818	Pass
	NVNT	2-DH1	2440.990	2441.990	1.000	0.777	Pass
	NVNT	2-DH1	2478.988	2479.984	0.996	0.782	Pass

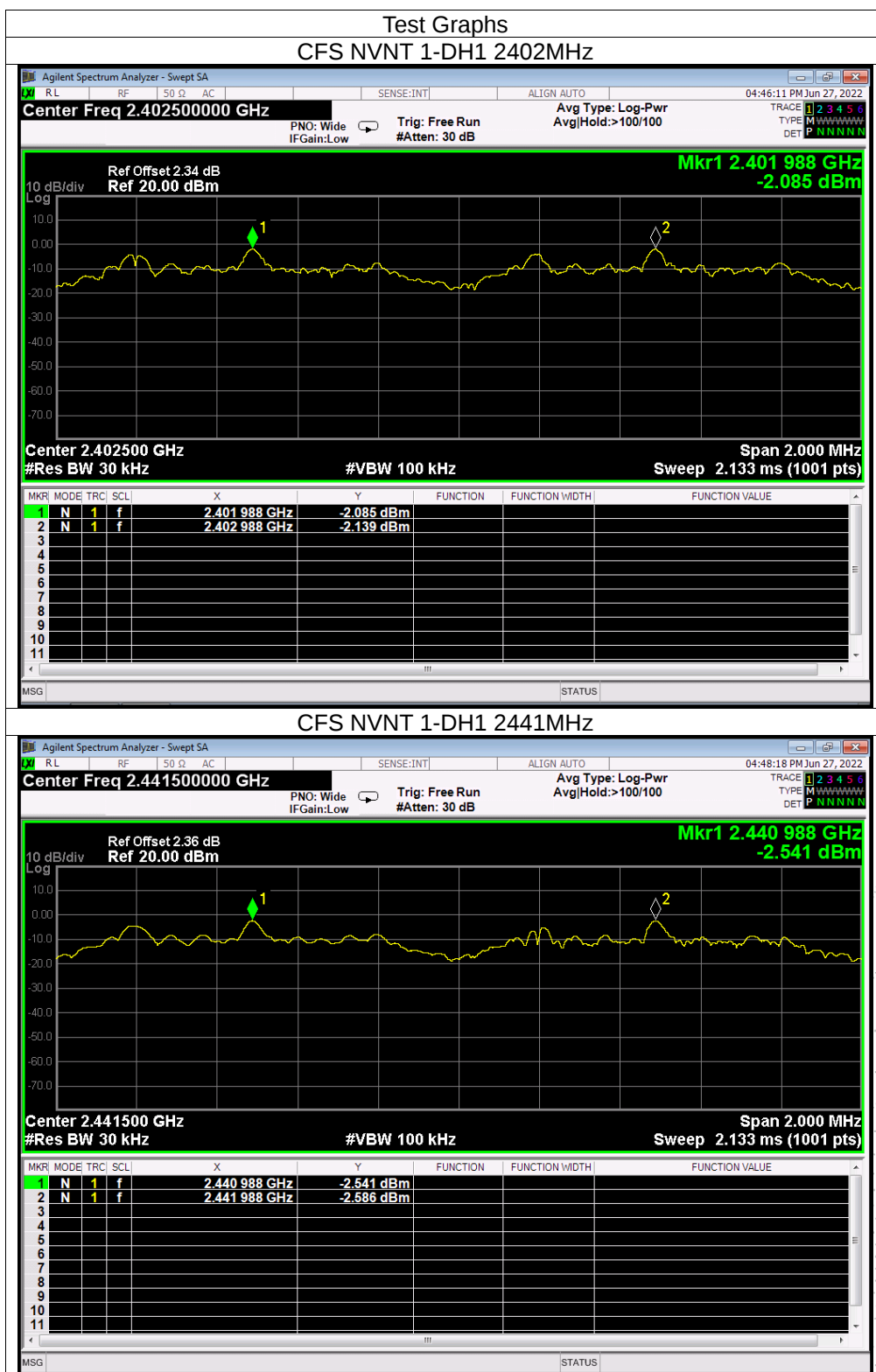
Left

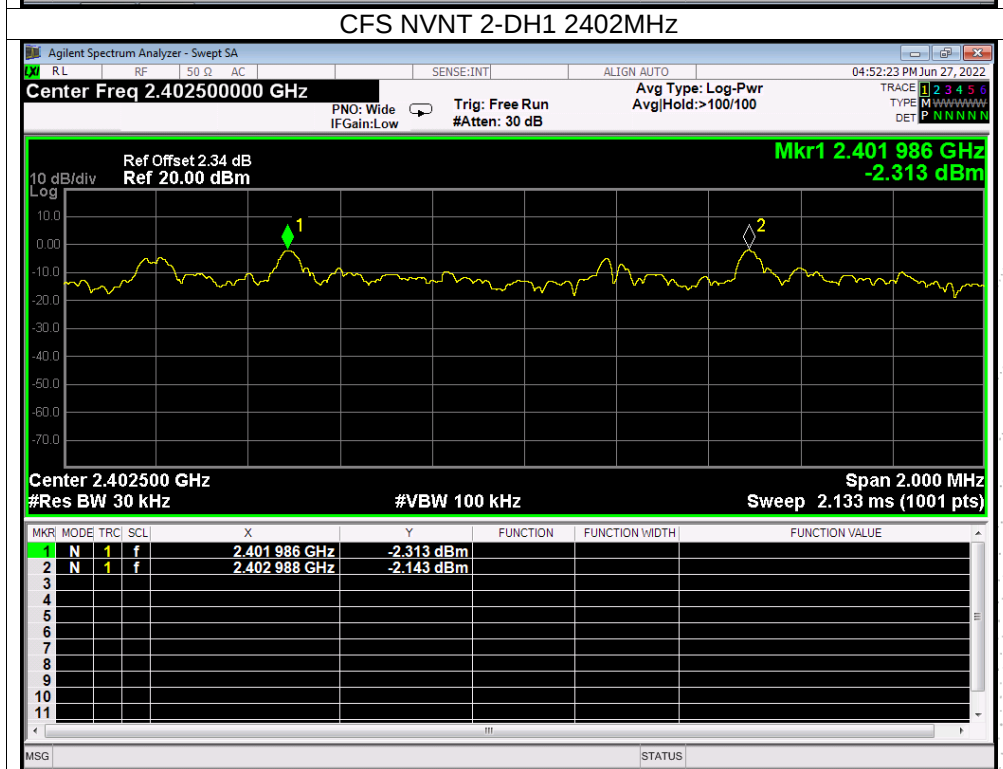
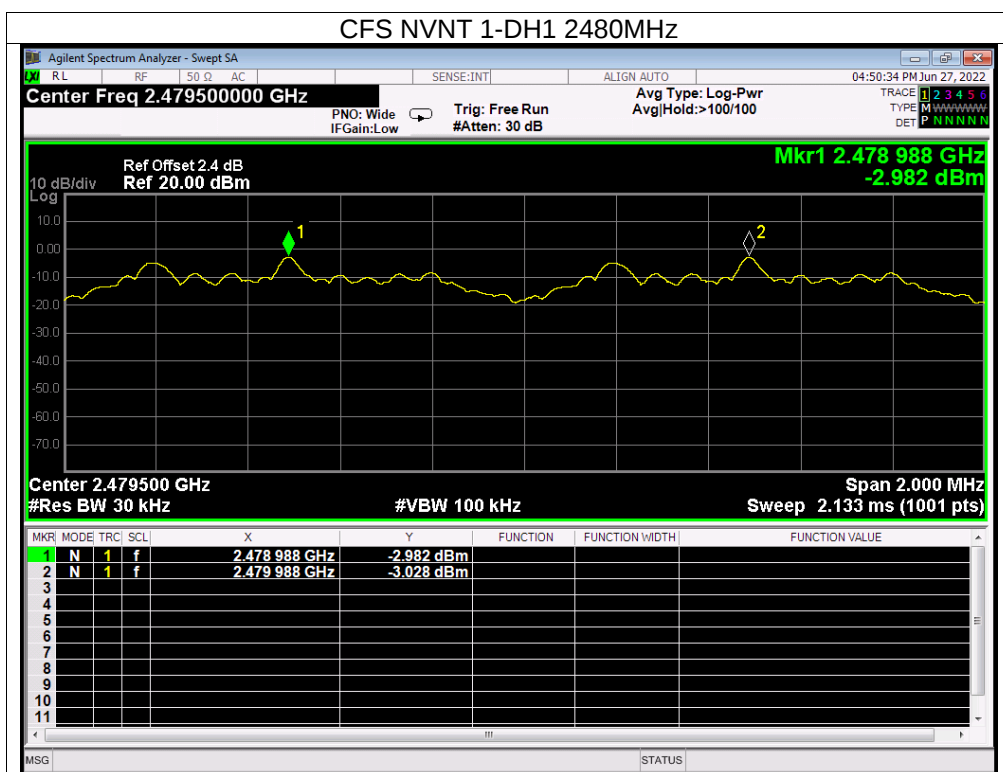


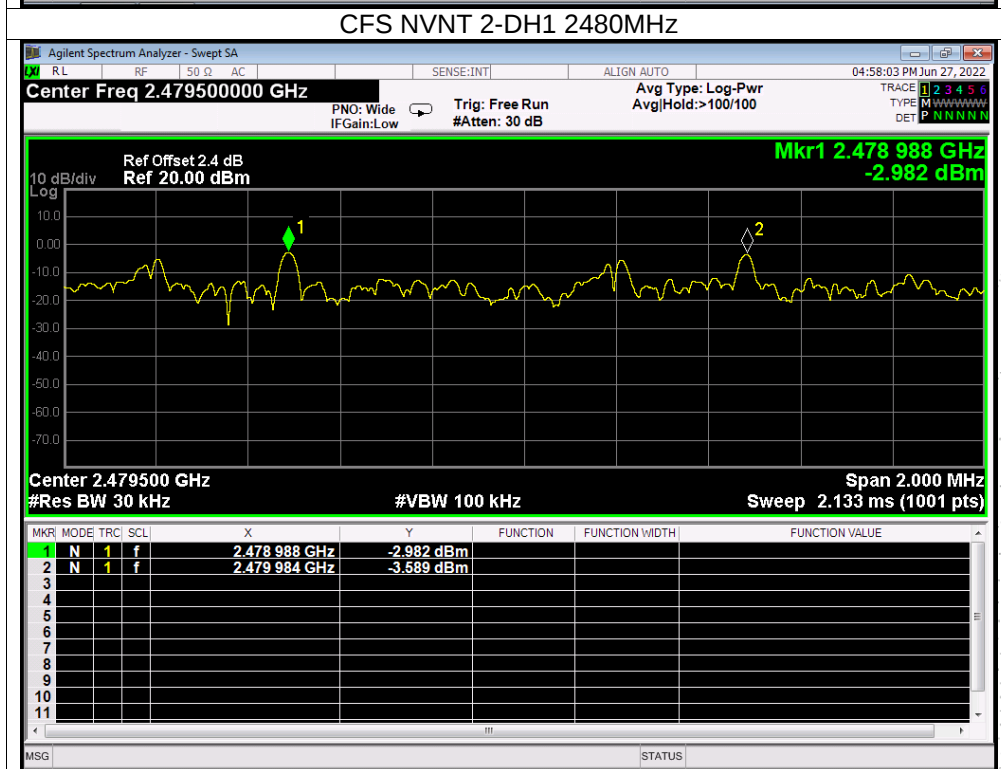
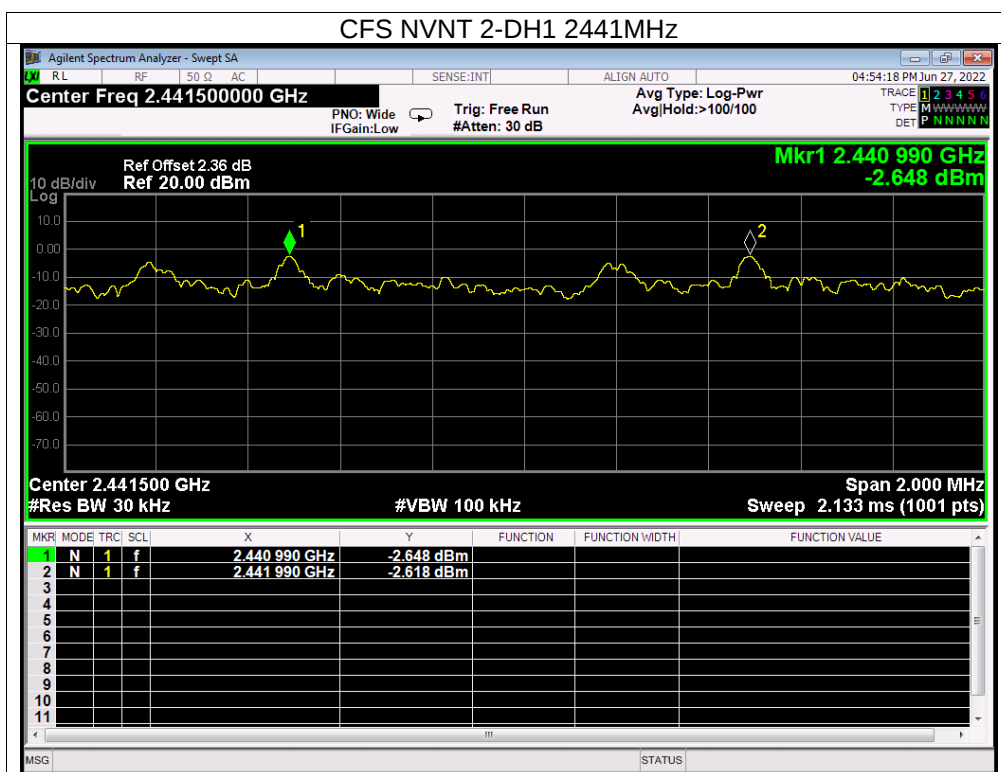




Right

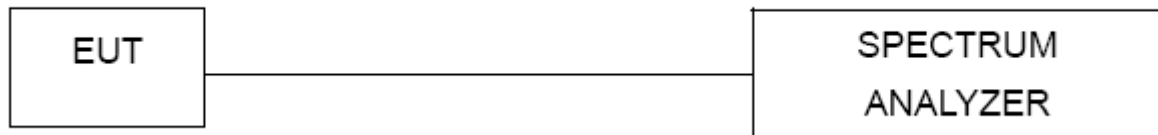






13. Number Of Hopping Frequency

13.1 Block Diagram Of Test Setup



13.2 Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

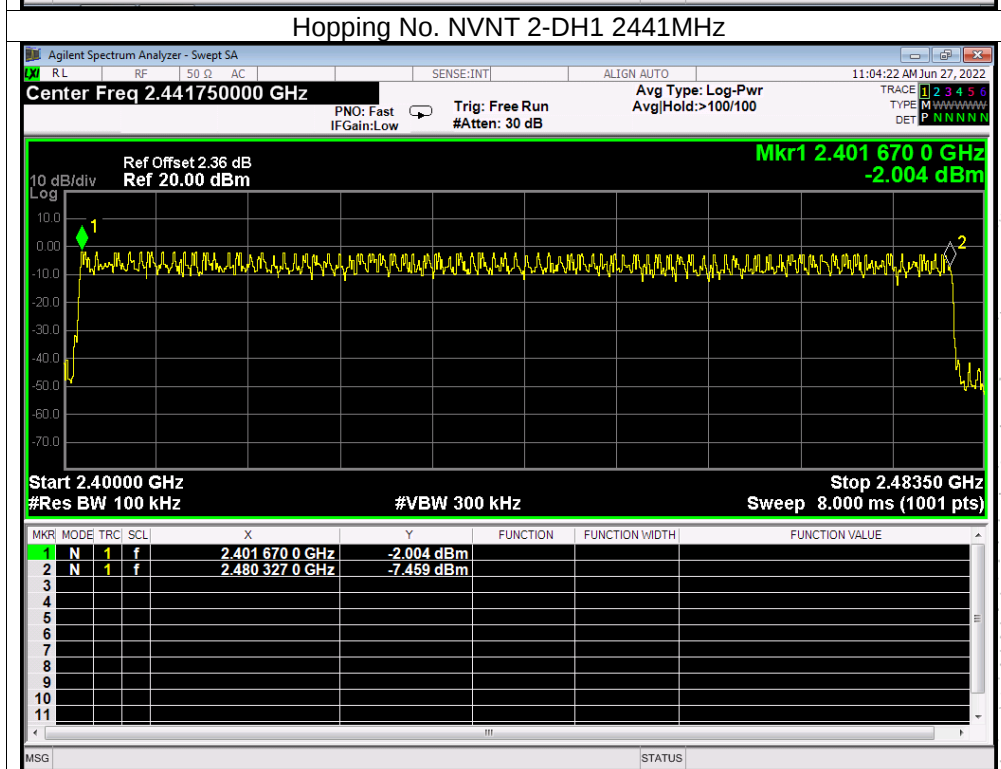
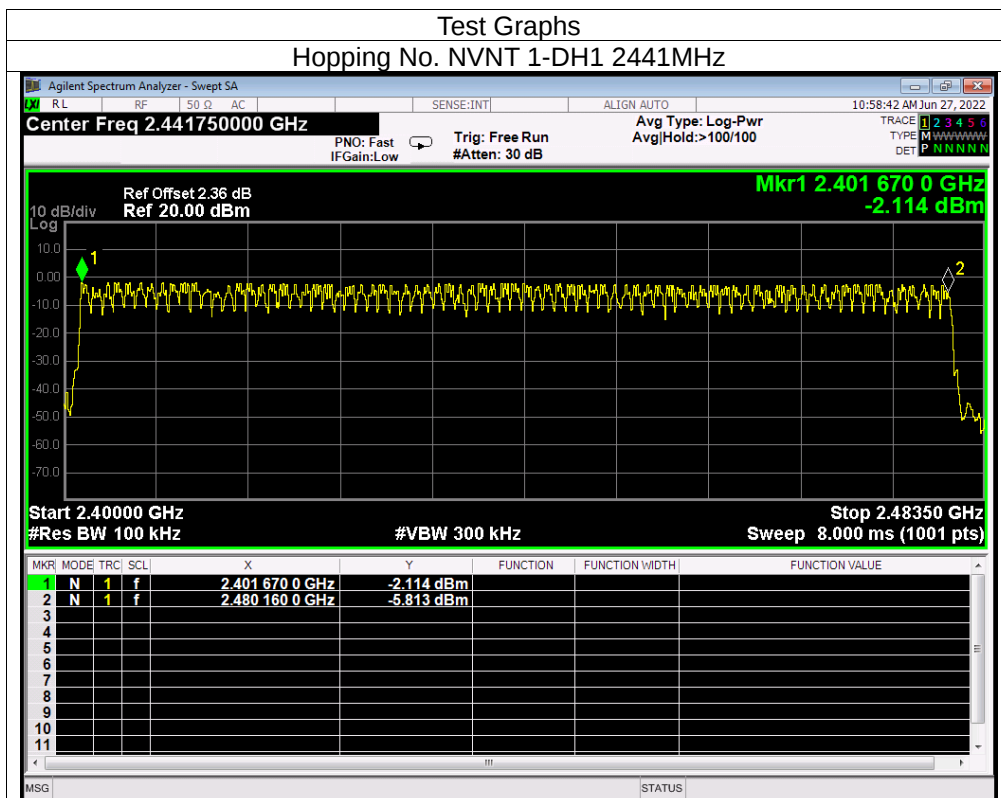
13.3 Test procedure

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 = 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;

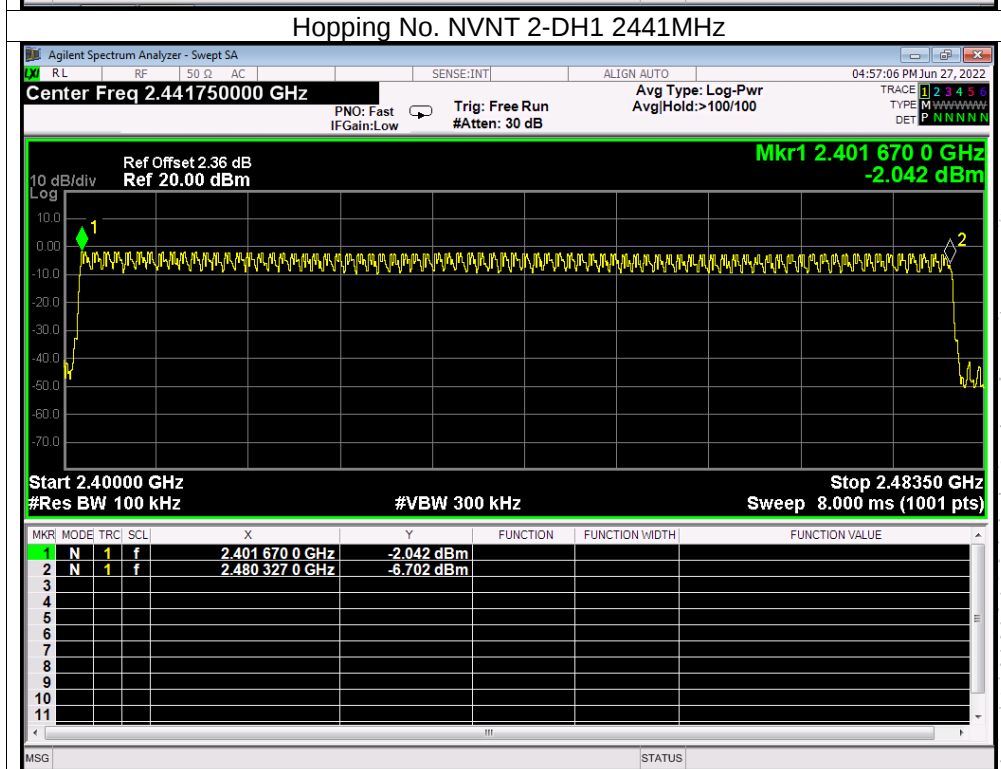
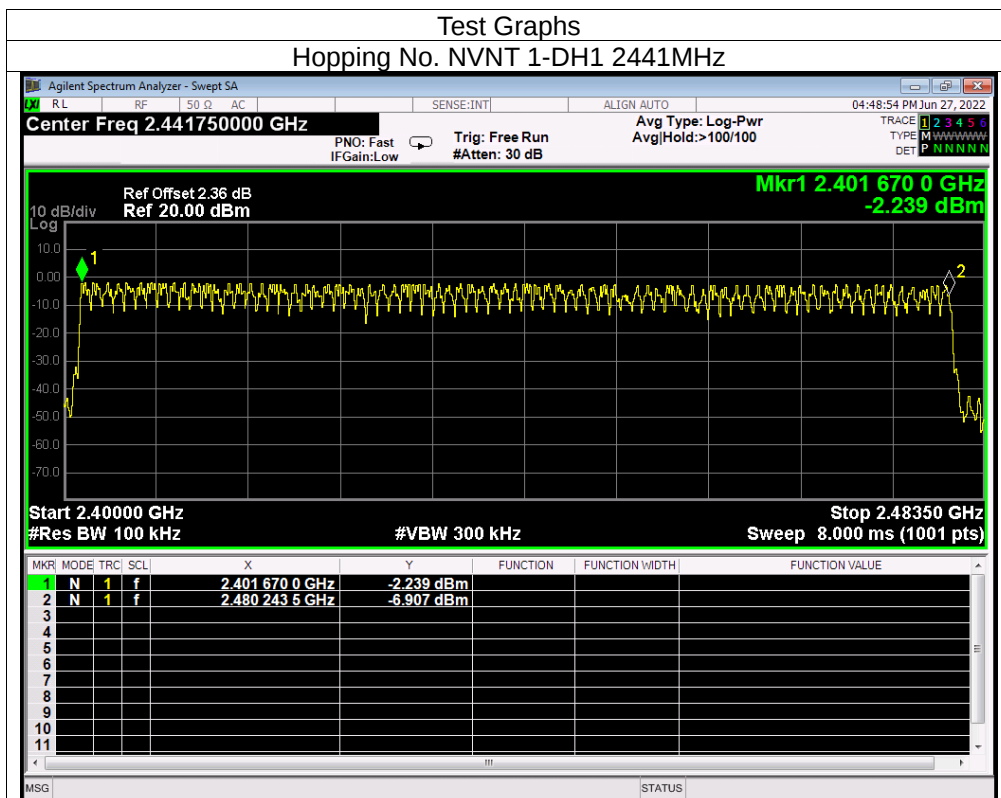
13.4 Test Result

Data	Condition	Mode	Hopping Number	Limit	Verdict
Left	NVNT	1-DH1	79	15	Pass
	NVNT	2-DH1	79	15	Pass
Right	NVNT	1-DH1	79	15	Pass
	NVNT	2-DH1	79	15	Pass

Left

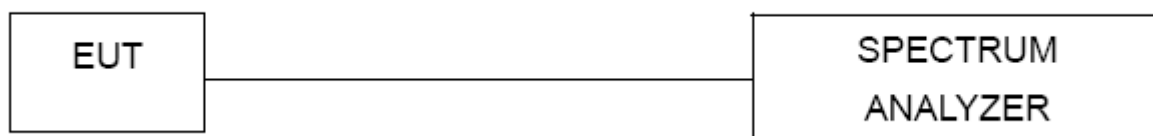


Right



14. Dwell Time

14.1 Block Diagram Of Test Setup



14.2 Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

14.3 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 spectrum analyzer span = 0. Centred on a hopping channel;
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).

14.4 Test Result

DH5 Packet permit maximum $1600 / 79 / 6$ hops per second in each channel
(5 time slots RX, 1 time slot TX).

DH3 Packet permit maximum $1600 / 79 / 4$ hops per second in each channel
(3 time slots RX, 1 time slot TX).

DH1 Packet permit maximum $1600 / 79 / 2$ hops per second in each channel
(1 time slot RX, 1 time slot TX). So, the Dwell Time can be calculated as follows:

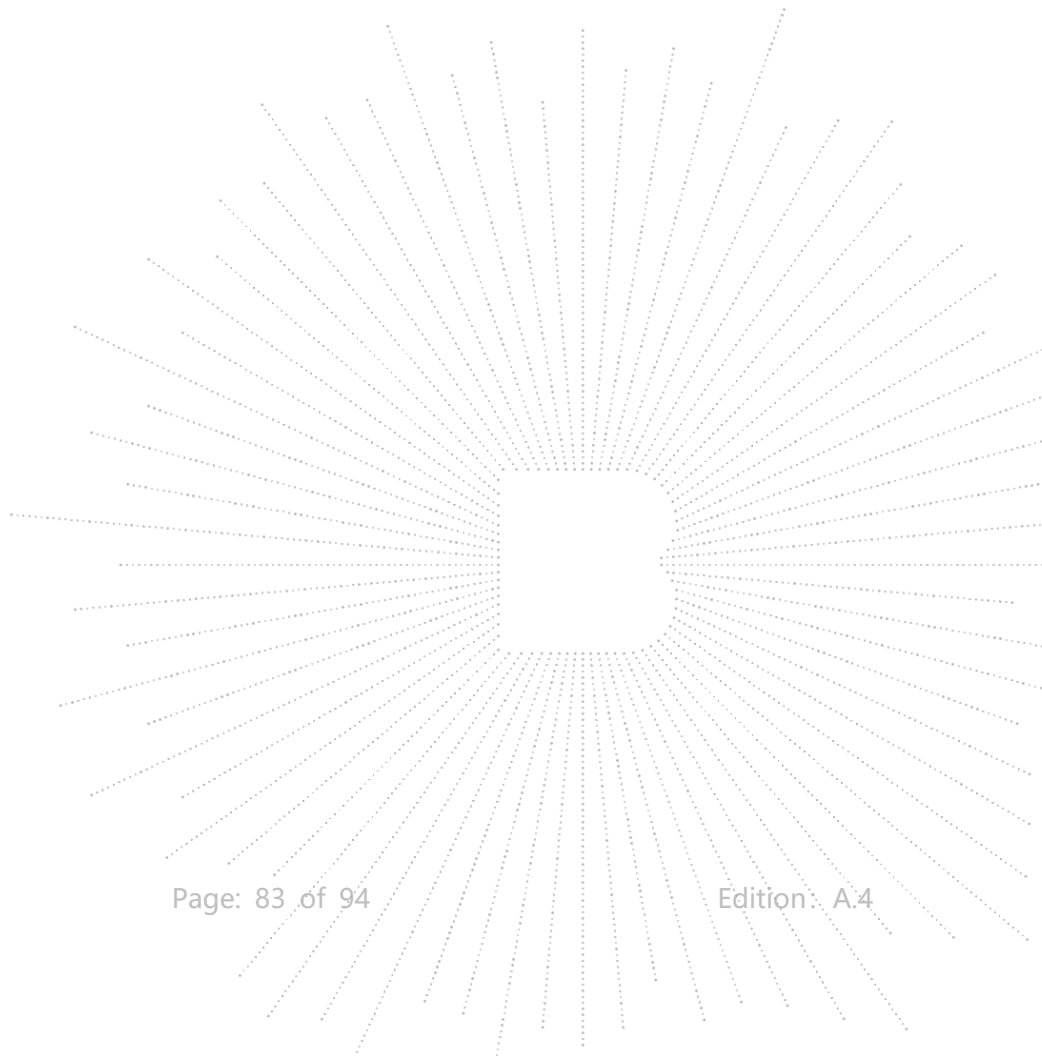
DH5: $1600/79/6*0.4*79*(MkrDelta)/1000$

DH3: $1600/79/4*0.4*79*(MkrDelta)/1000$

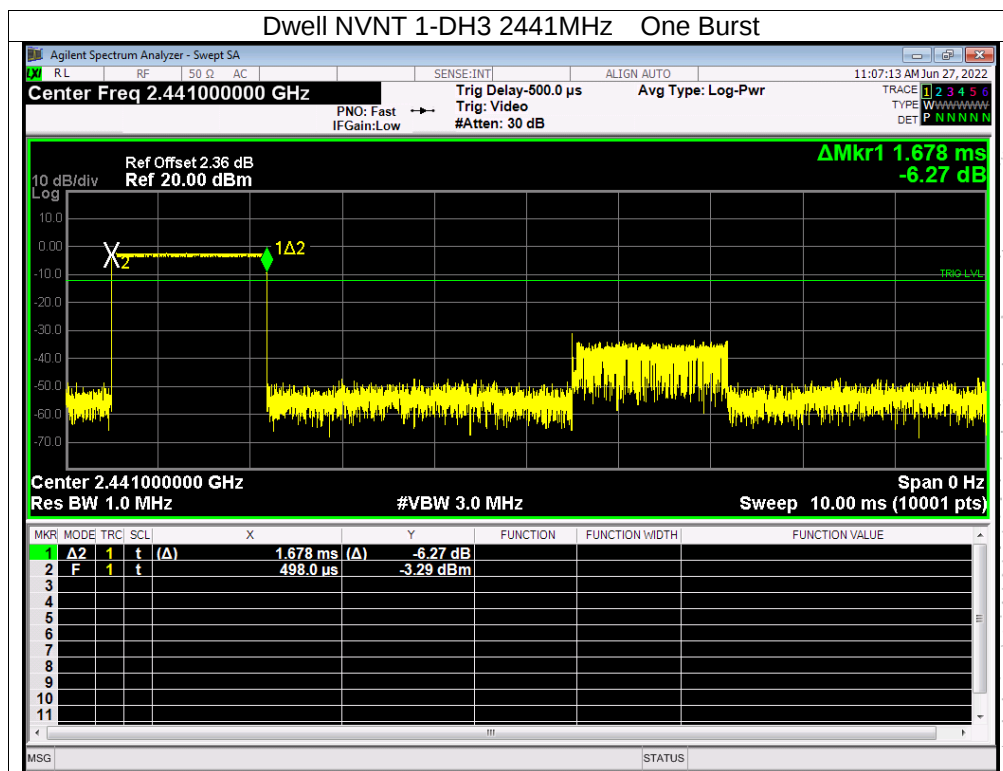
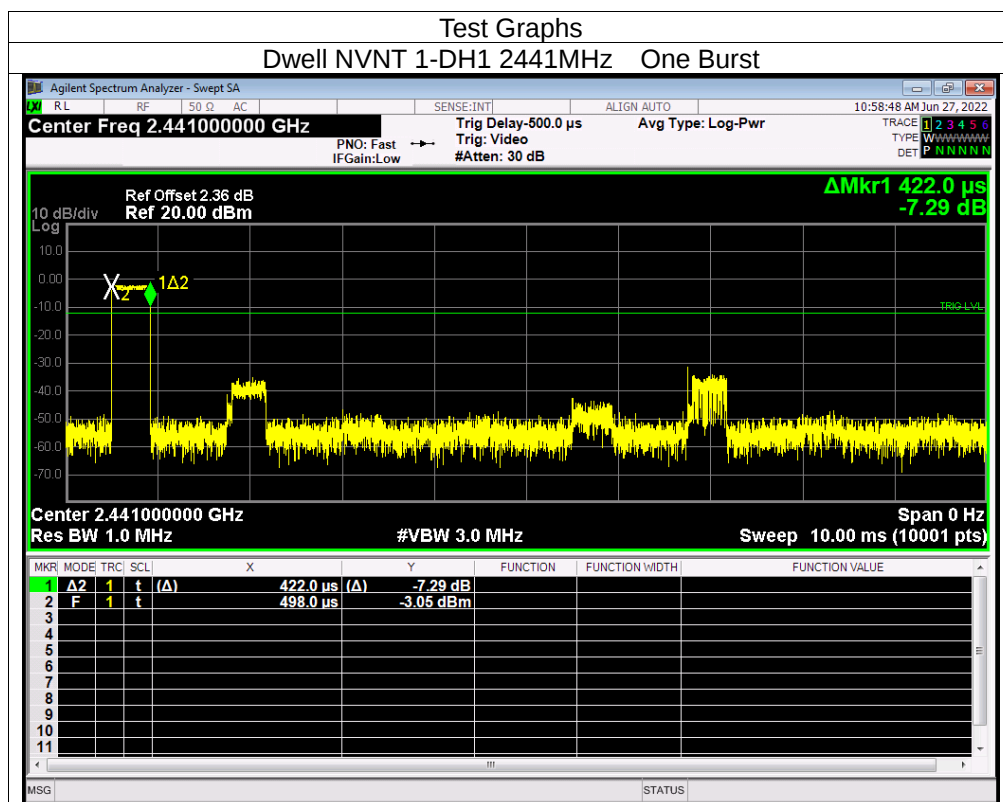
DH1: $1600/79/2*0.4*79*(MkrDelta)/1000$

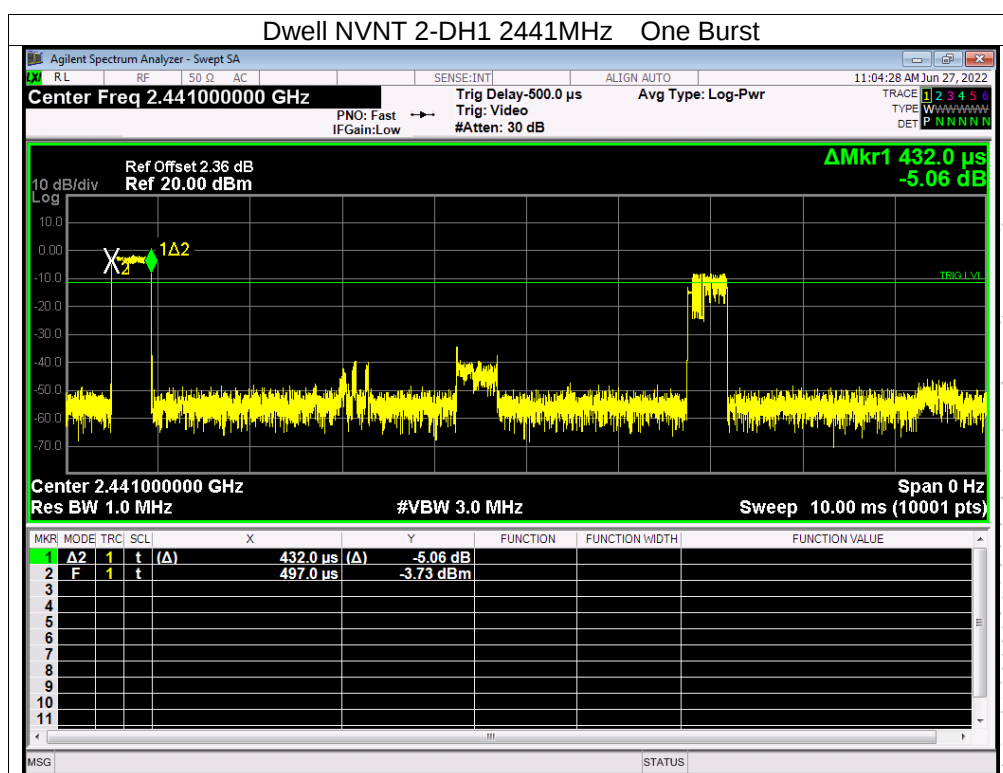
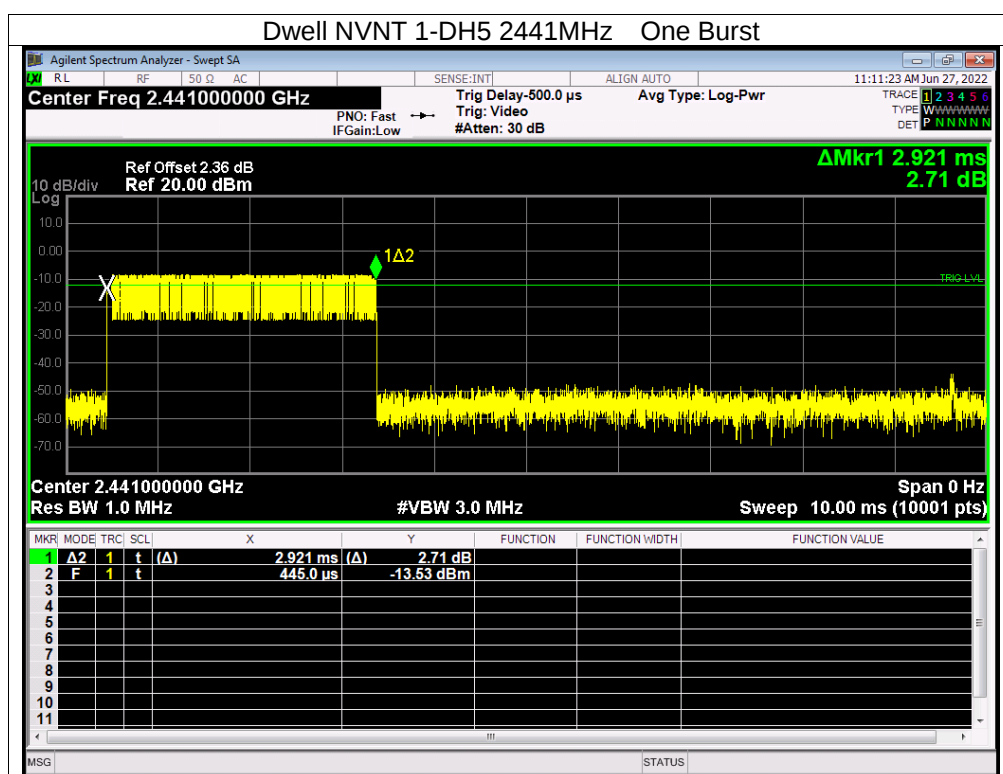
Remark: Mkr Delta is once pulse time.

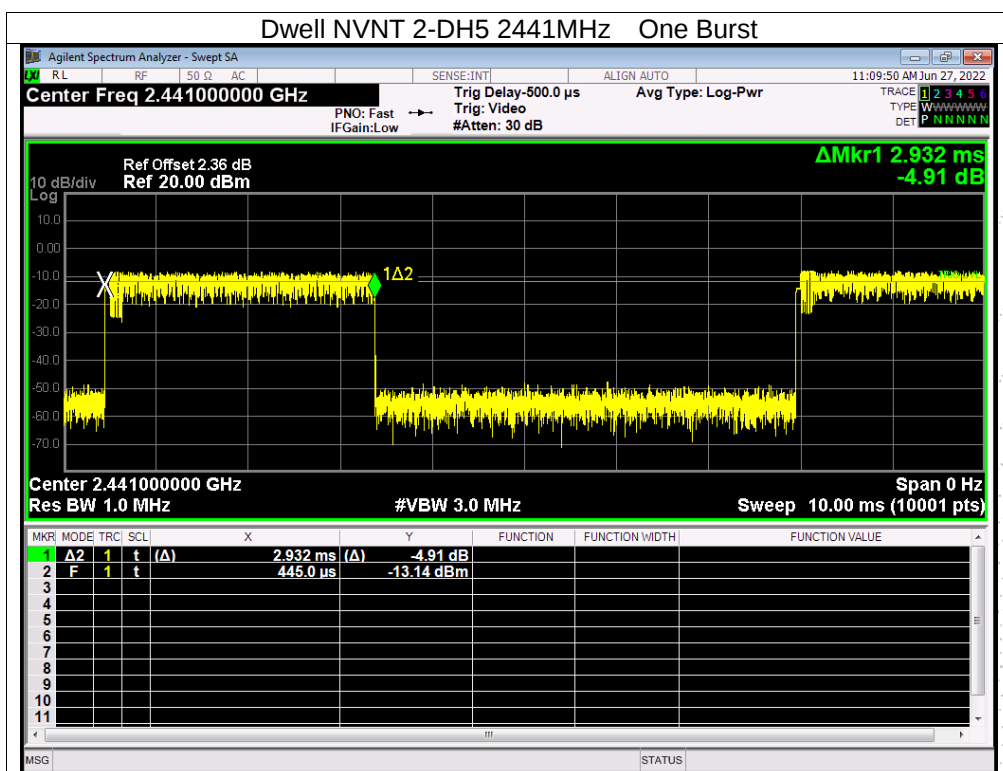
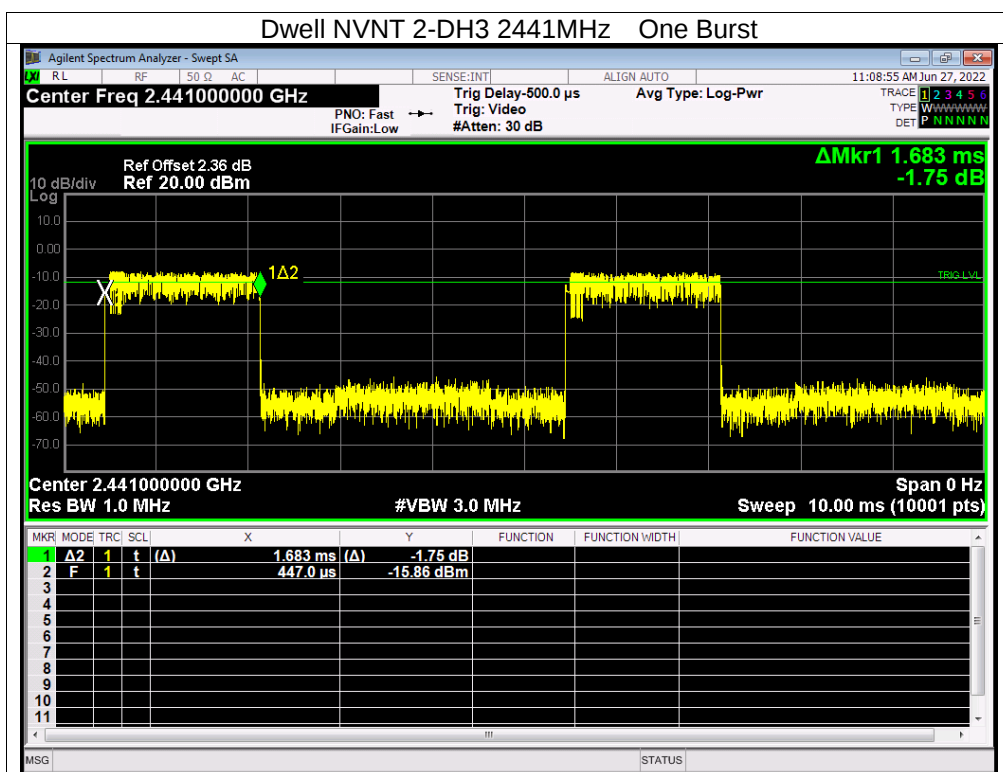
Data	Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Limit (ms)	Verdict
Left	NVNT	1-DH1	2441	0.422	132.930	400	Pass
	NVNT	1-DH3	2441	1.678	273.514	400	Pass
	NVNT	1-DH5	2441	2.921	300.863	400	Pass
	NVNT	2-DH1	2441	0.432	136.512	400	Pass
	NVNT	2-DH3	2441	1.683	269.280	400	Pass
	NVNT	2-DH5	2441	2.932	319.588	400	Pass
Right	NVNT	1-DH1	2441	0.422	132.086	400	Pass
	NVNT	1-DH3	2441	1.673	269.353	400	Pass
	NVNT	1-DH5	2441	2.925	301.275	400	Pass
	NVNT	2-DH1	2441	0.432	135.648	400	Pass
	NVNT	2-DH3	2441	1.682	274.166	400	Pass
	NVNT	2-DH5	2441	2.931	337.065	400	Pass



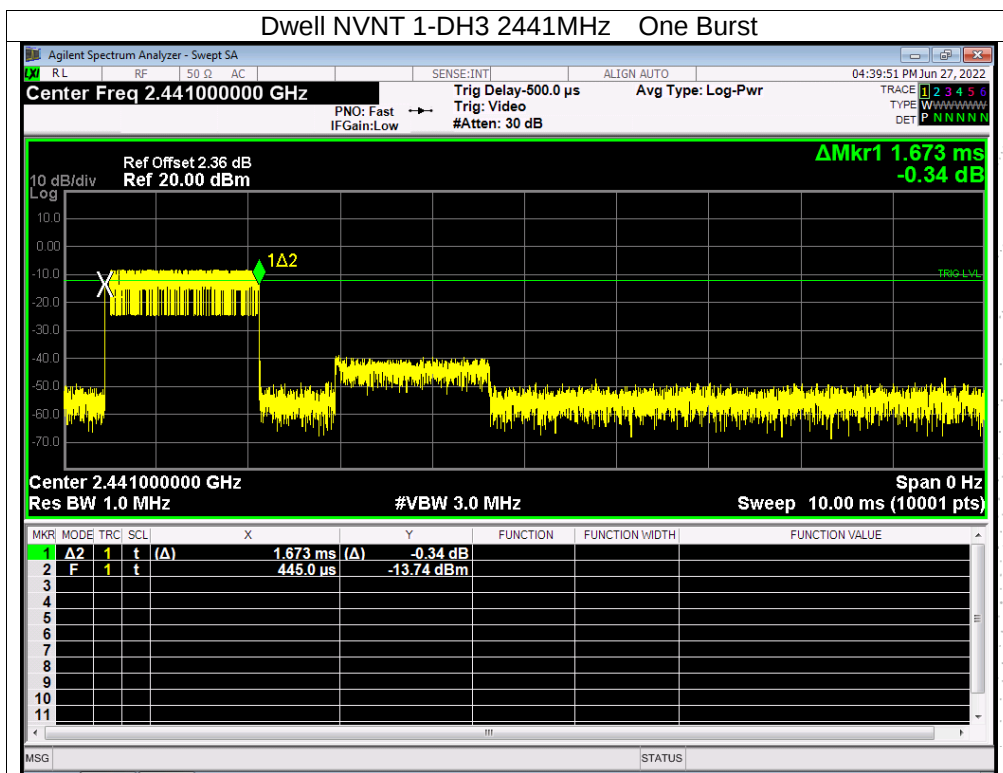
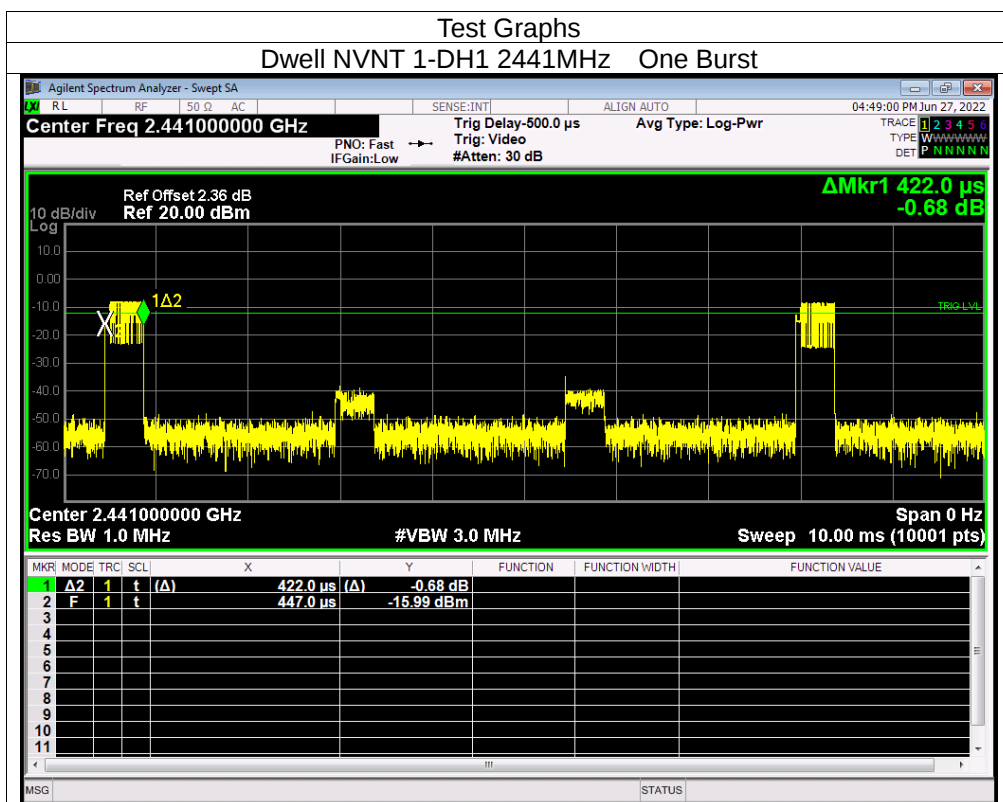
Left

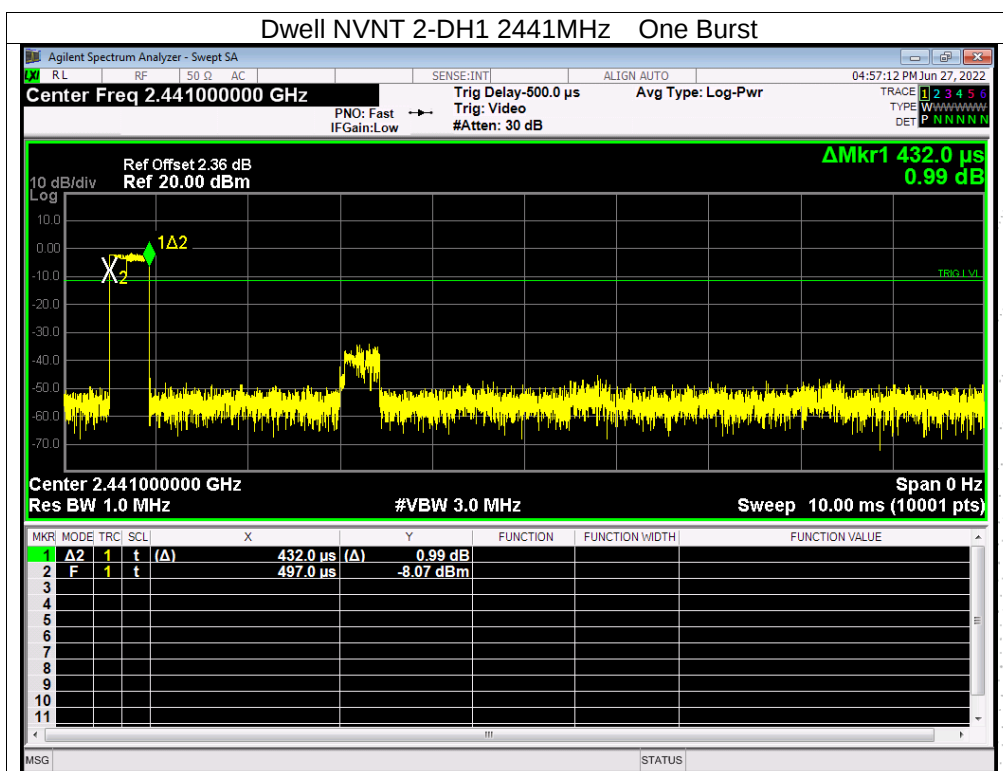
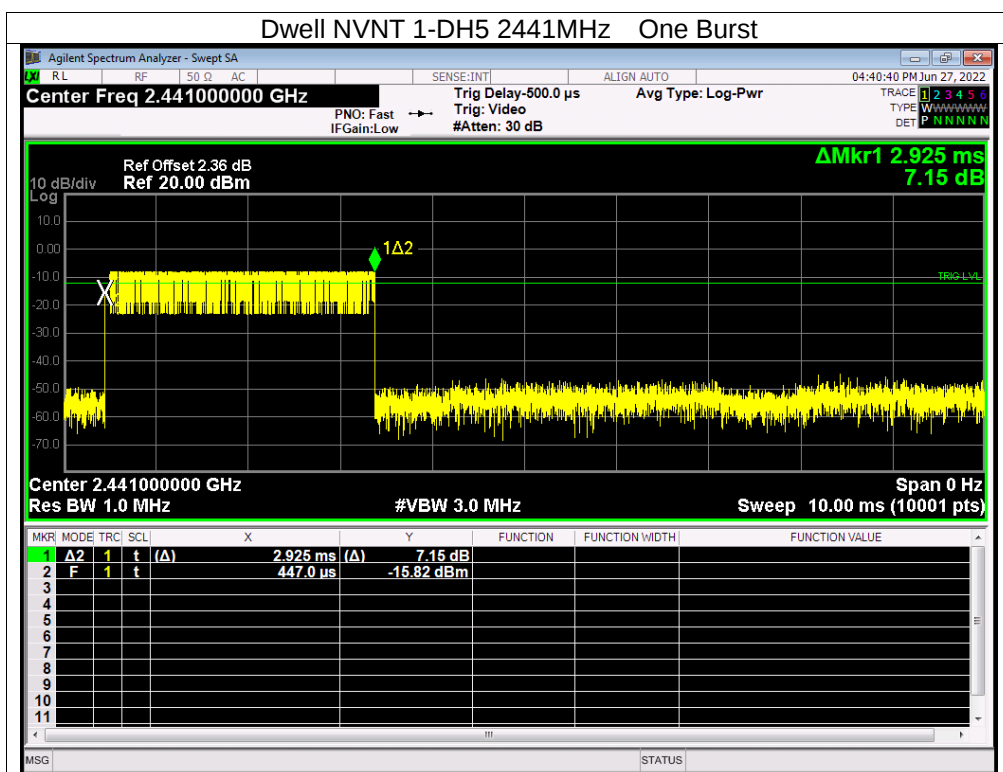


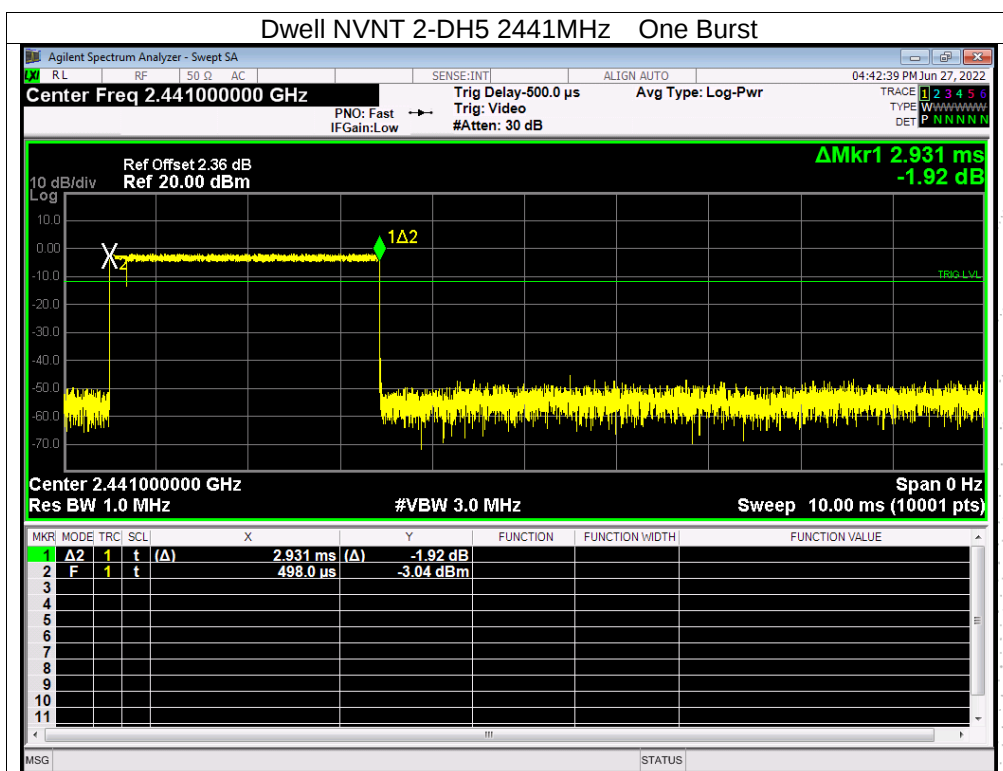
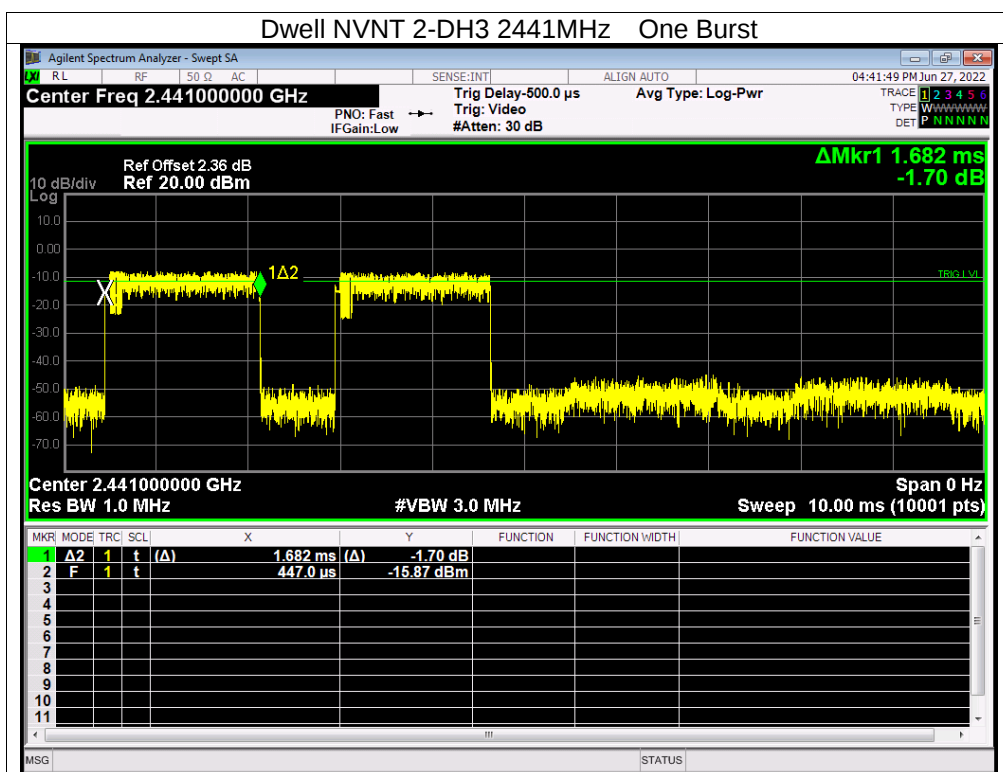




Right







15. Antenna Requirement

15.1 Limit

15.203 requirement: For intentional device, according to 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.

15.2 Test Result

The EUT antenna is Chip antenna, fulfill the requirement of this section.

16. EUT Photographs

EUT Photo



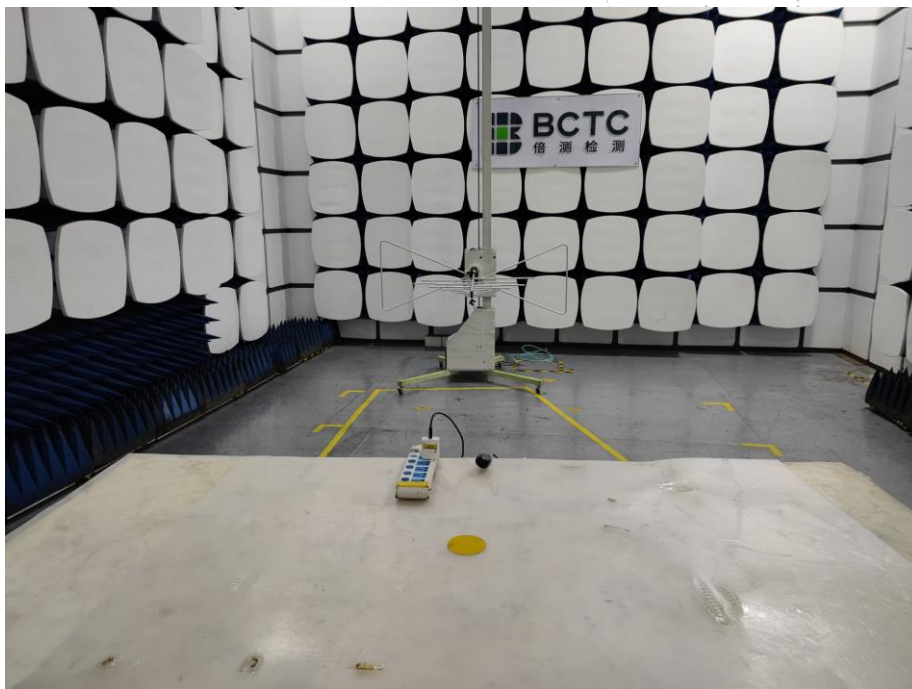
NOTE: Appendix-Photographs Of EUT Constructional Details

17. EUT Test Setup Photographs

Conducted emissions



Radiated Measurement Photos



Left



Right



STATEMENT

- 1.The equipment lists are traceable to the national reference standards.
- 2.The test report can not be partially copied unless prior written approval is issued from our lab.
- 3.The test report is invalid without stamp of laboratory.
- 4.The test report is invalid without signature of person(s) testing and authorizing.
- 5.The test process and test result is only related to the Unit Under Test.
- 6.The quality system of our laboratory is in accordance with ISO/IEC17025.
- 7.If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:

1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL: 400-788-9558

P.C.: 518103

FAX: 0755-33229357

Website: <http://www.chnbctc.com>

E-Mail: bctc@bctc-lab.com.cn

***** END *****