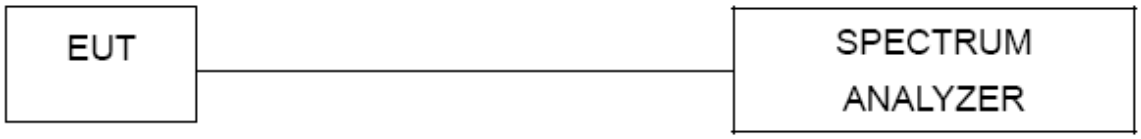
11. Maximum Peak Output Power

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 = 3MHz. VBW = 3MHz. 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

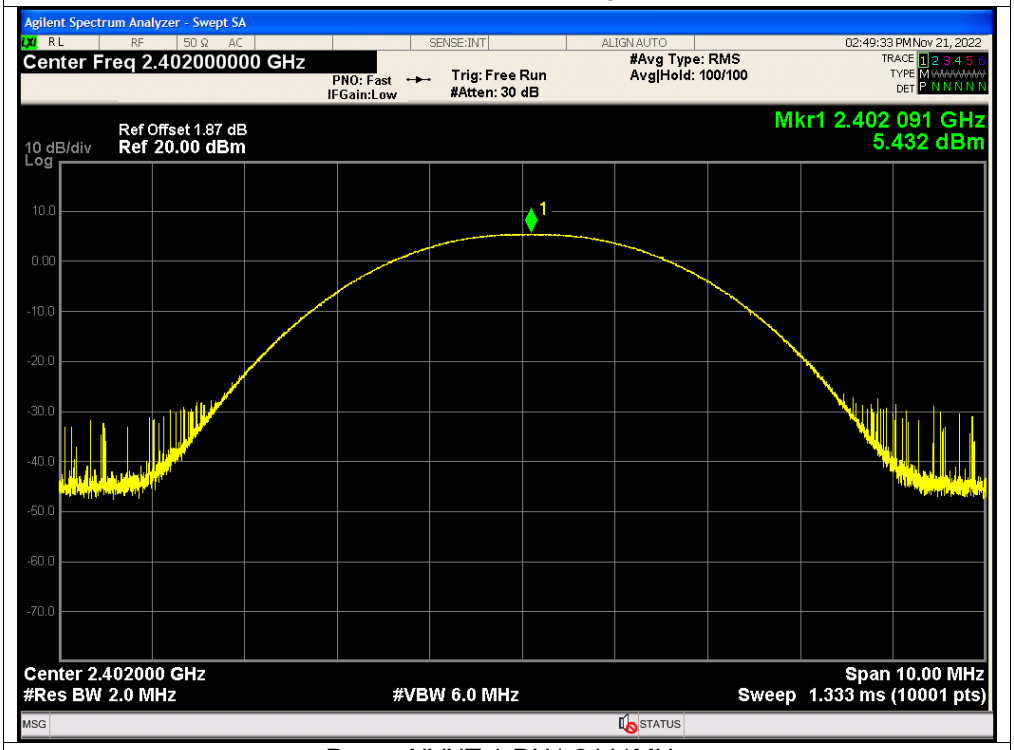
Temperature：	26℃	Relative Humidity：	54%
Test Voltage ：	DC 29V	Remark:	N/A

Left

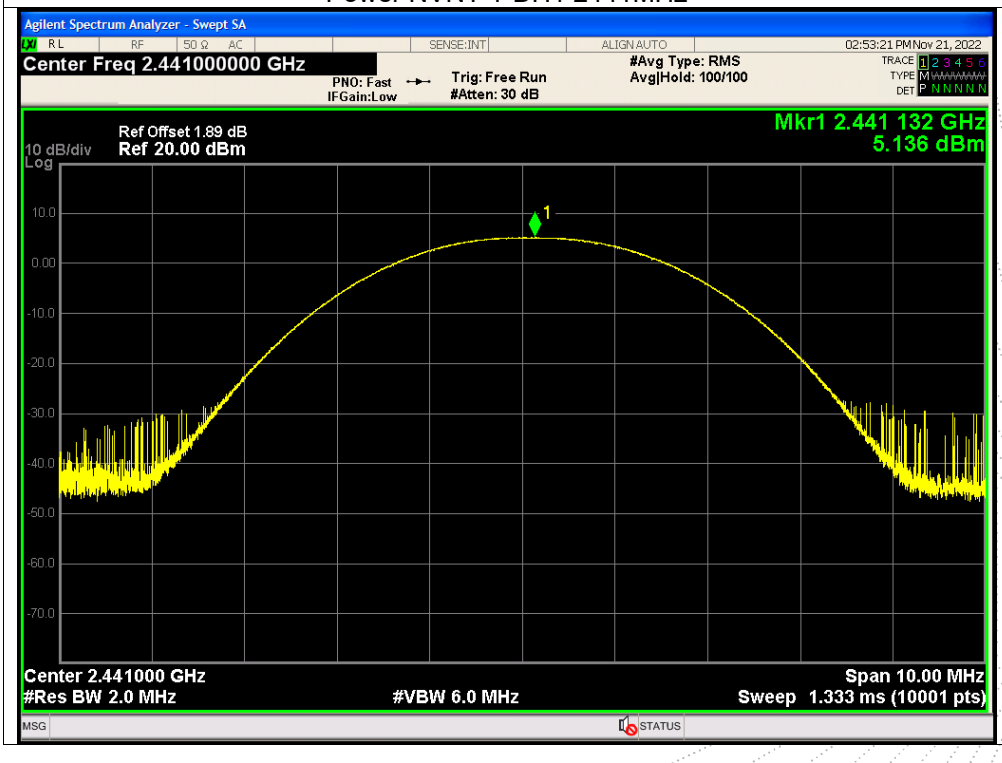
Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	5.43	21	Pass
NVNT	1-DH1	2441	5.14	21	Pass
NVNT	1-DH1	2480	4.11	21	Pass
NVNT	2-DH1	2402	7.41	21	Pass
NVNT	2-DH1	2441	7.12	21	Pass
NVNT	2-DH1	2480	6.22	21	Pass

Test Graphs

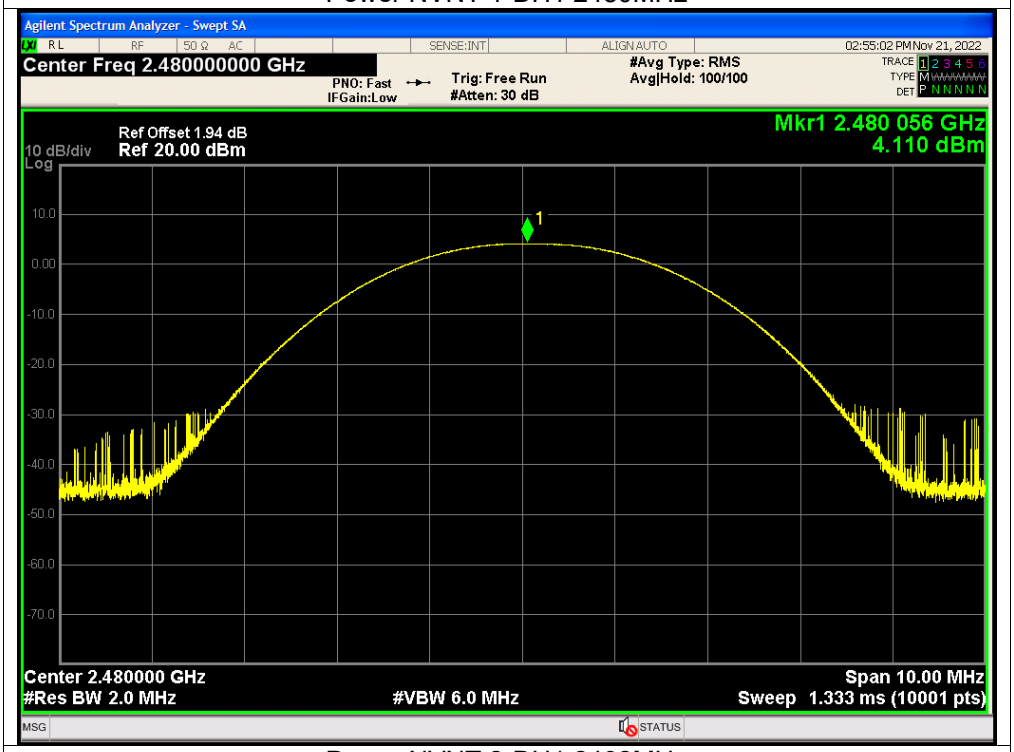
Power NVNT 1-DH1 2402MHz



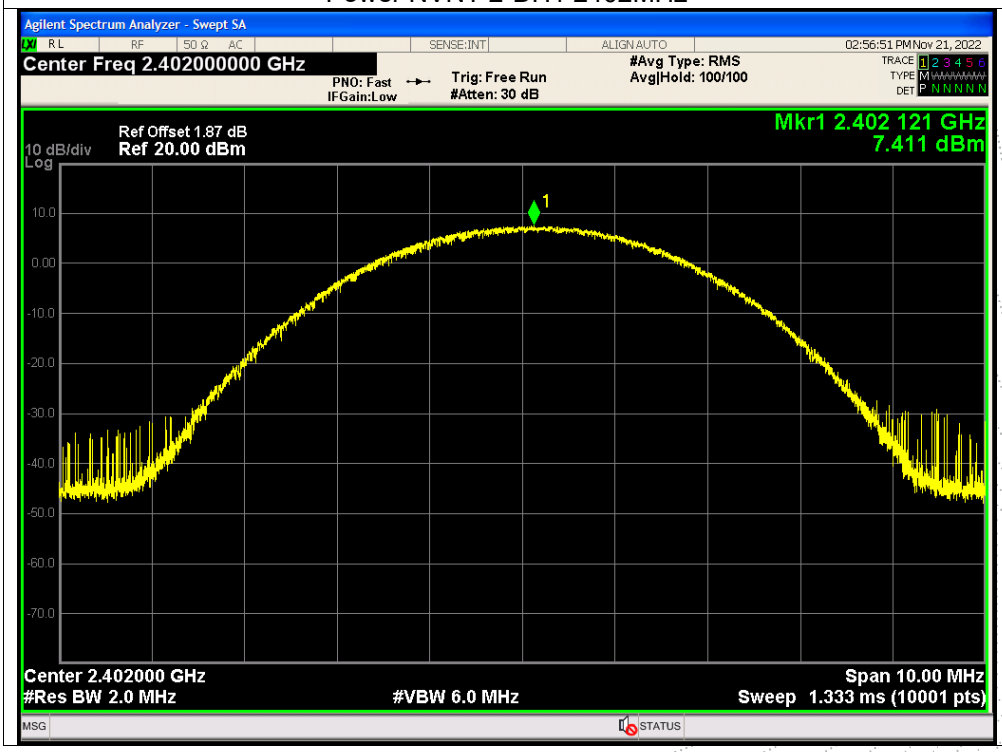
Power NVNT 1-DH1 2441MHz



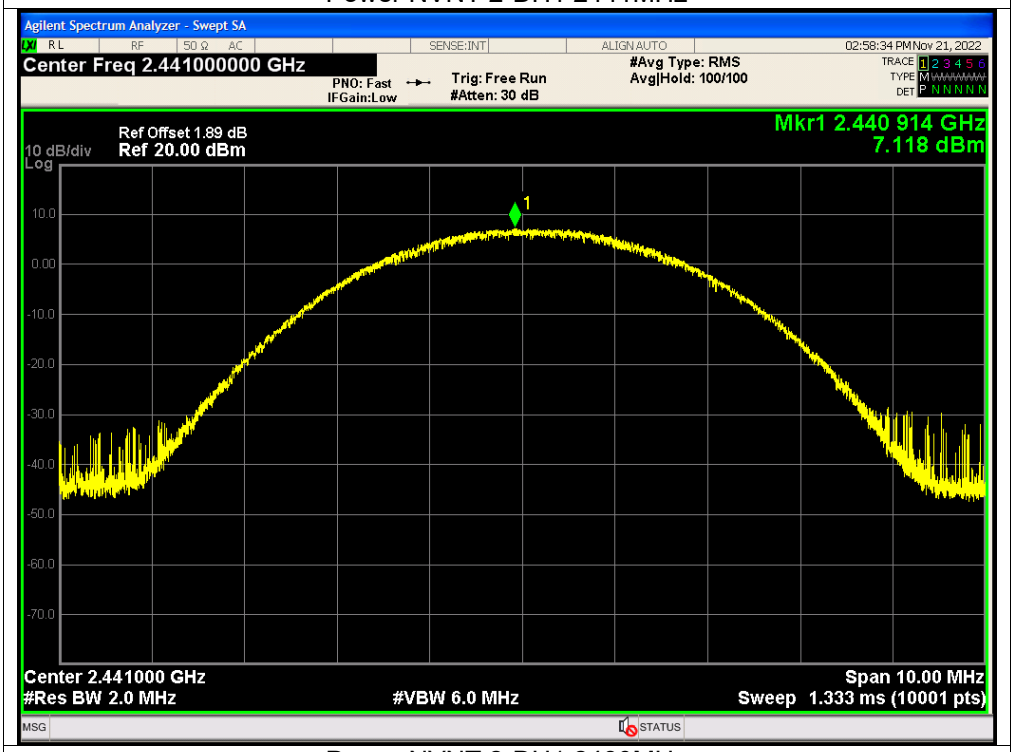
Power NVNT 1-DH1 2480MHz



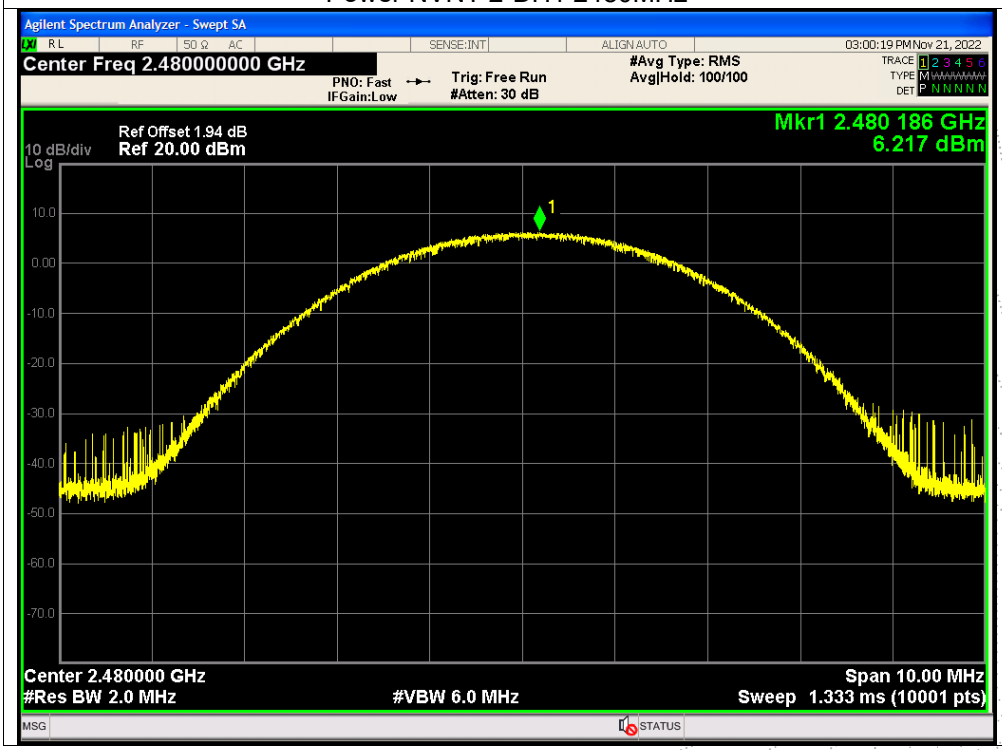
Power NVNT 2-DH1 2402MHz



Power NVNT 2-DH1 2441MHz



Power NVNT 2-DH1 2480MHz

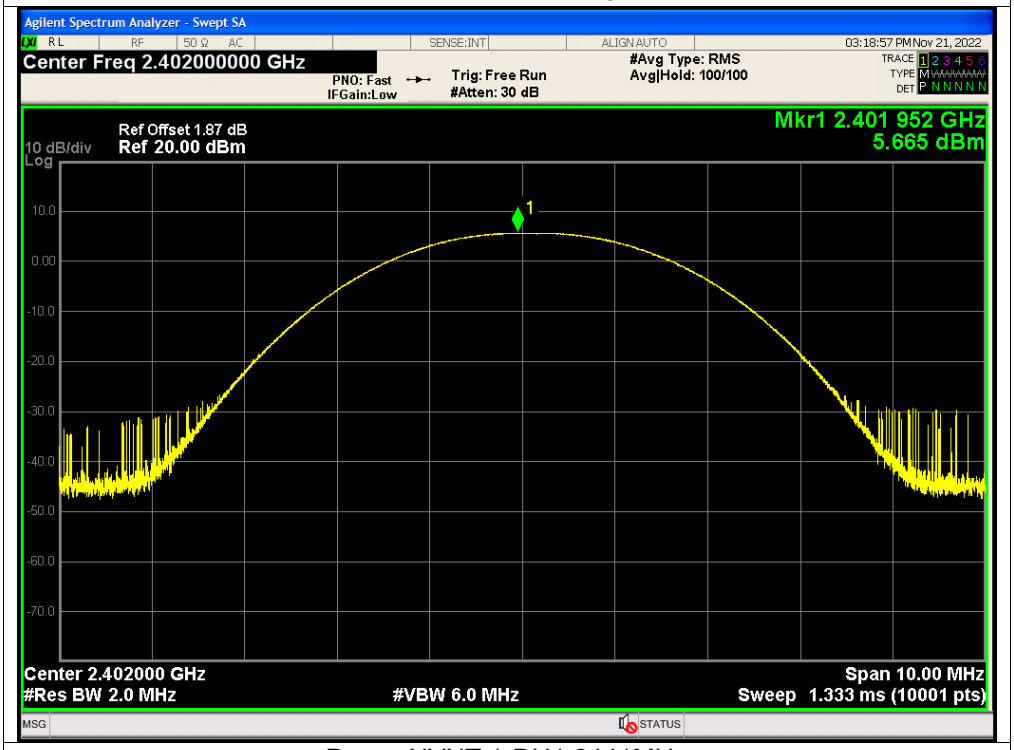


Right

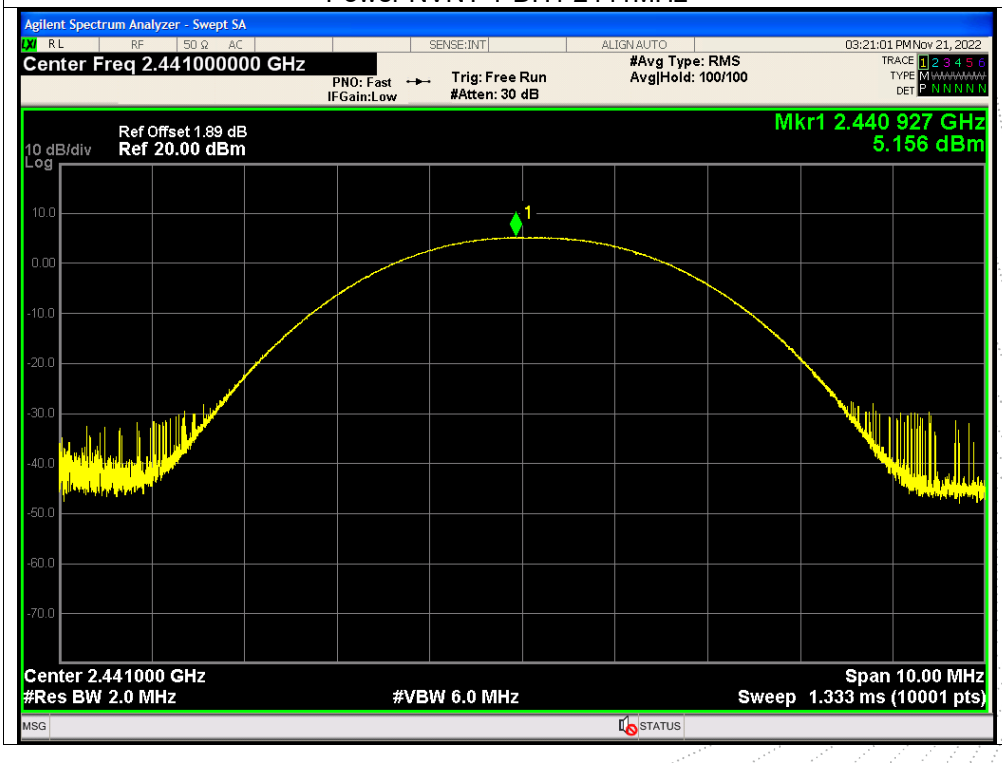
Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	5.67	21	Pass
NVNT	1-DH1	2441	5.16	21	Pass
NVNT	1-DH1	2480	3.66	21	Pass
NVNT	2-DH1	2402	7.72	21	Pass
NVNT	2-DH1	2441	7.18	21	Pass
NVNT	2-DH1	2480	5.75	21	Pass

Test Graphs

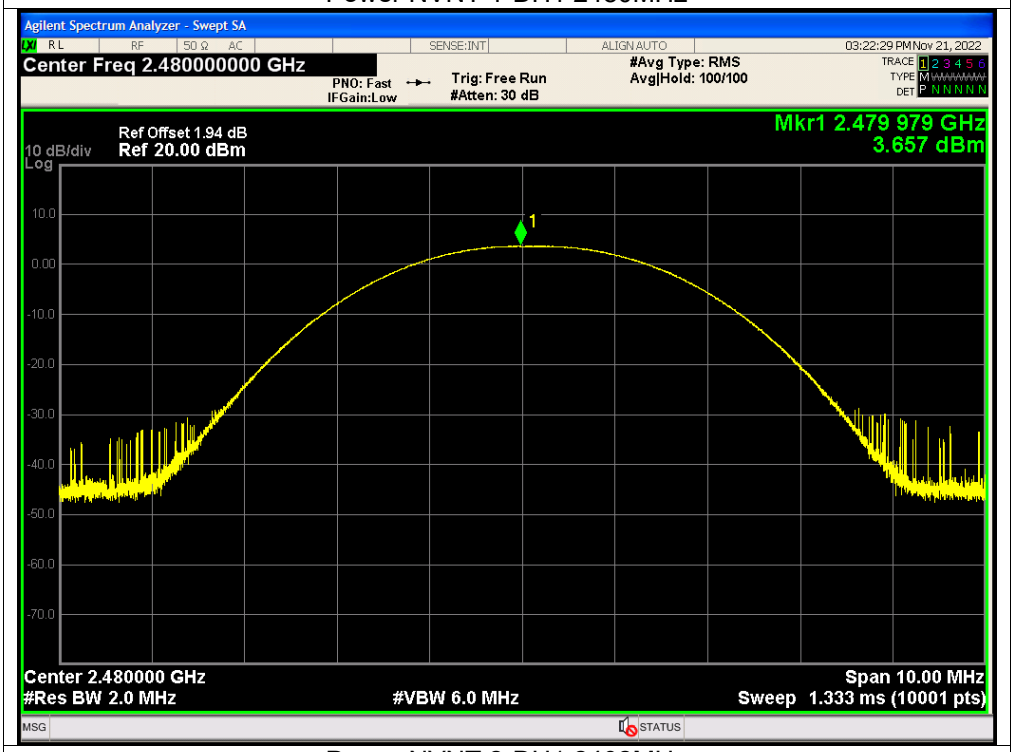
Power NVNT 1-DH1 2402MHz



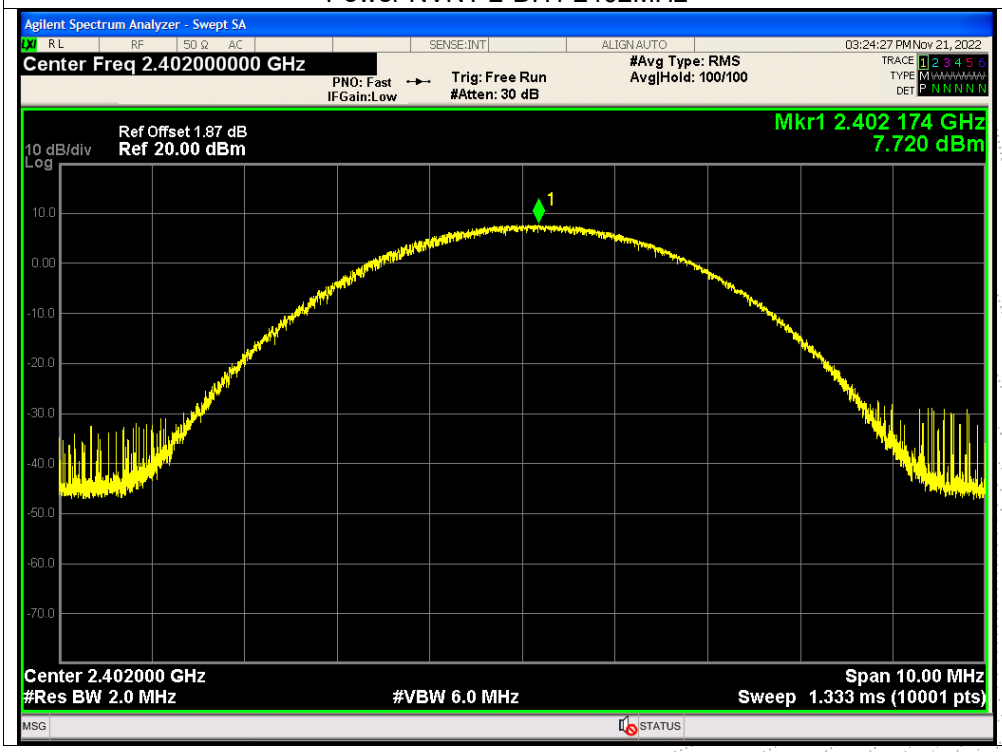
Power NVNT 1-DH1 2441MHz



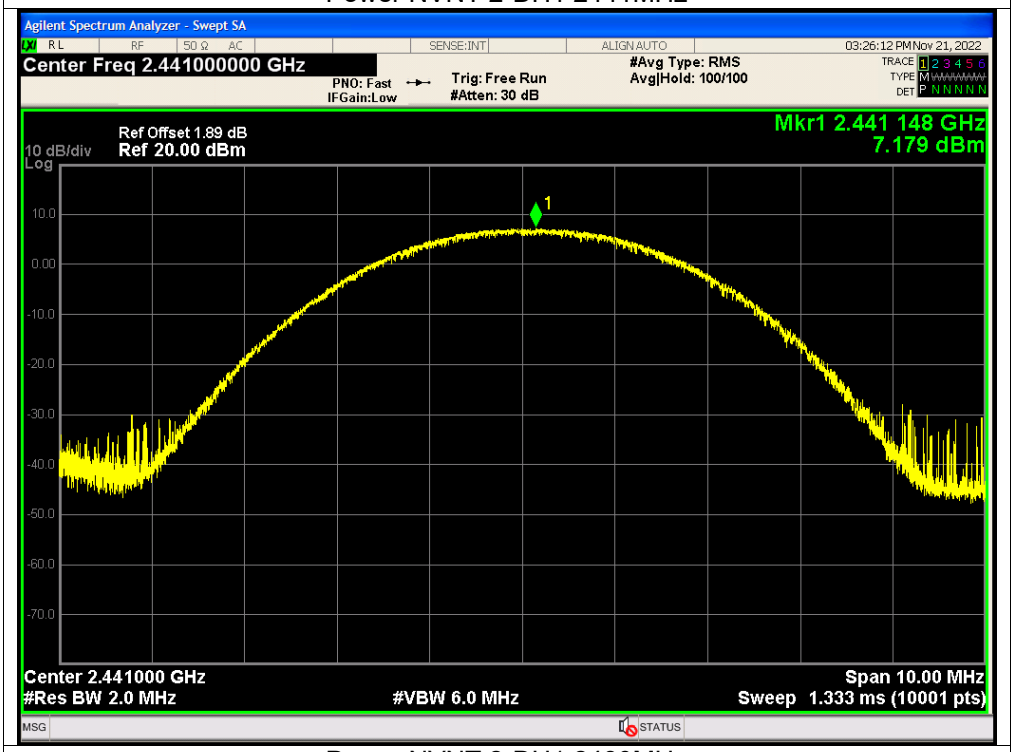
Power NVNT 1-DH1 2480MHz



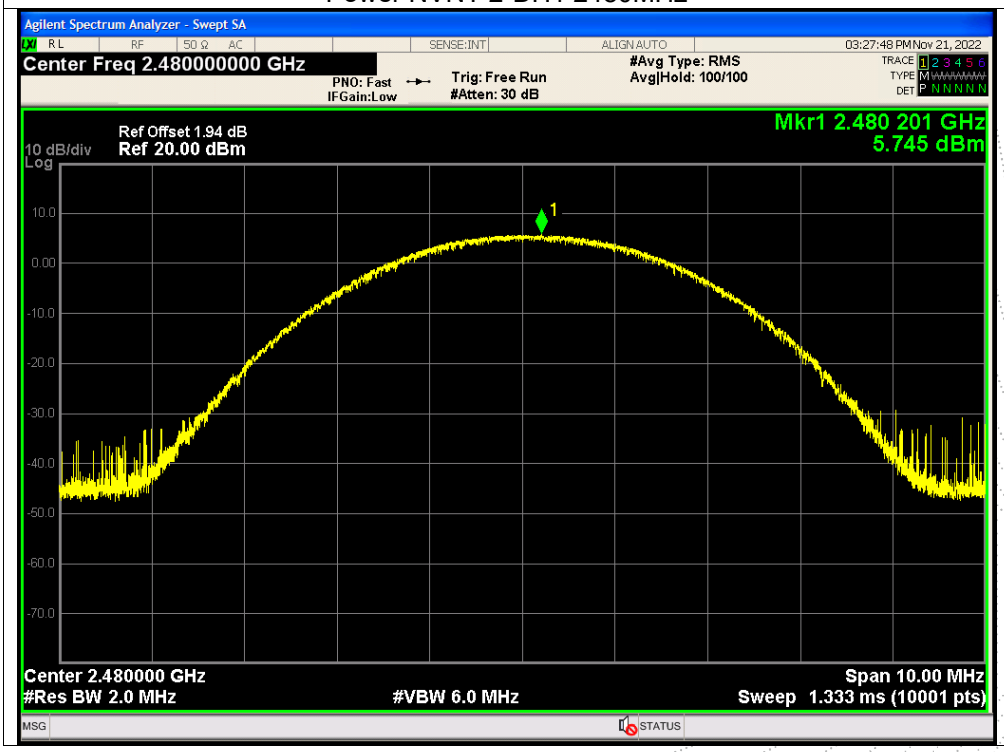
Power NVNT 2-DH1 2402MHz



Power NVNT 2-DH1 2441MHz

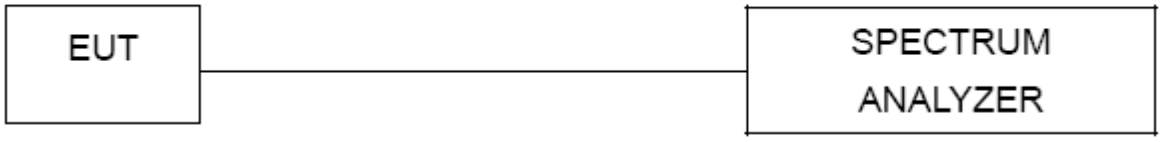


Power NVNT 2-DH1 2480MHz



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.

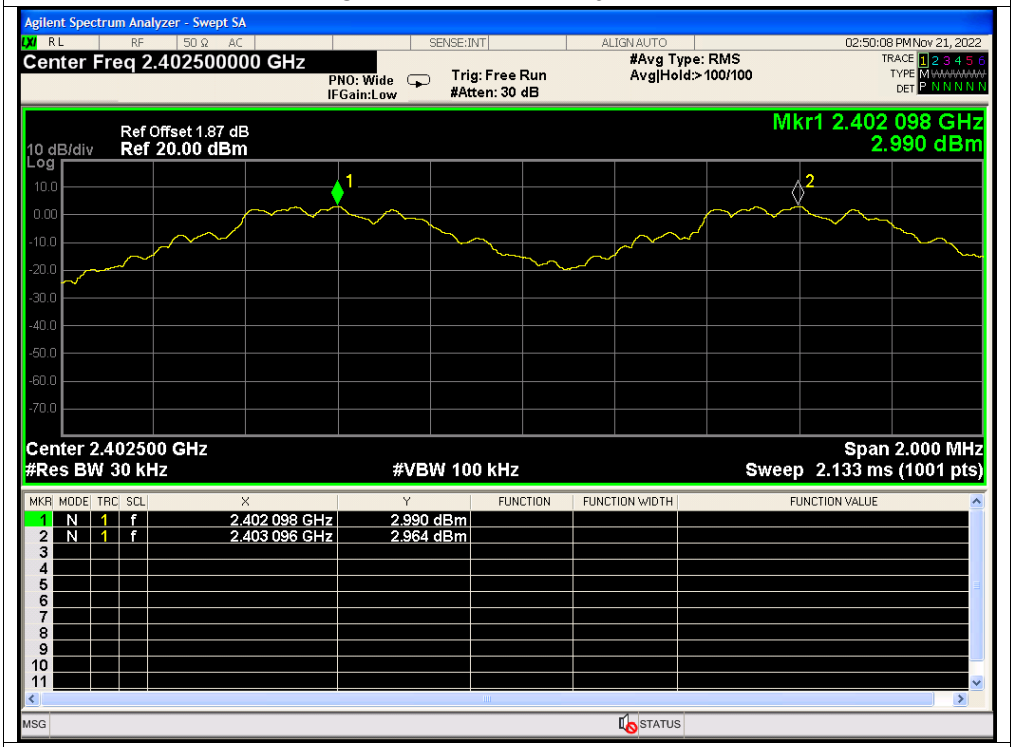
12.4 Test Result

Left

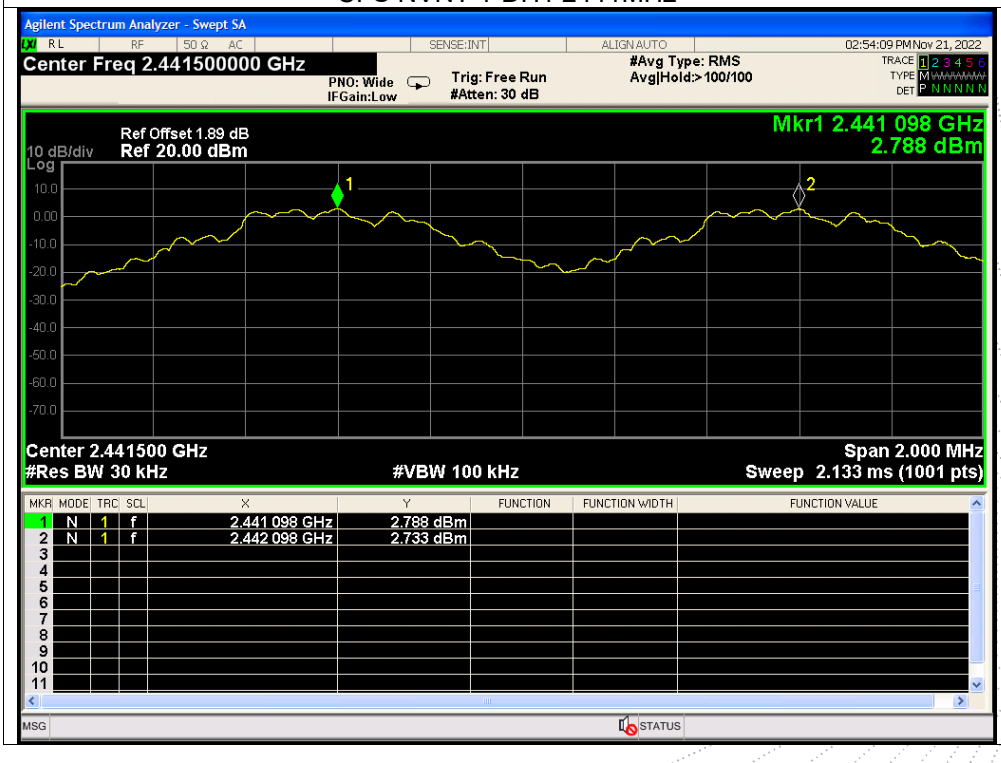
Condition	Mode	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	2402.098	2403.096	0.998	0.934	Pass
NVNT	1-DH1	2441.098	2442.098	1	0.922	Pass
NVNT	1-DH1	2479.098	2480.1	1.002	0.930	Pass
NVNT	2-DH1	2402.22	2403.218	0.998	0.850	Pass
NVNT	2-DH1	2441.22	2442.218	0.998	0.841	Pass
NVNT	2-DH1	2479.224	2480.224	1	0.848	Pass

Test Graphs

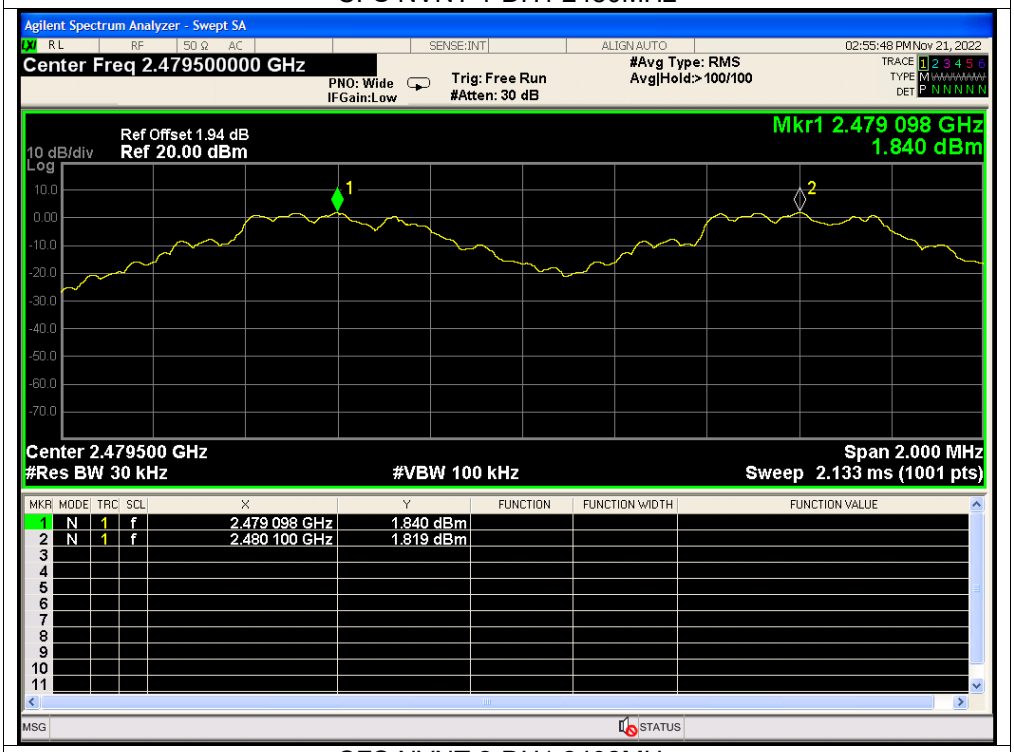
CFS NVNT 1-DH1 2402MHz



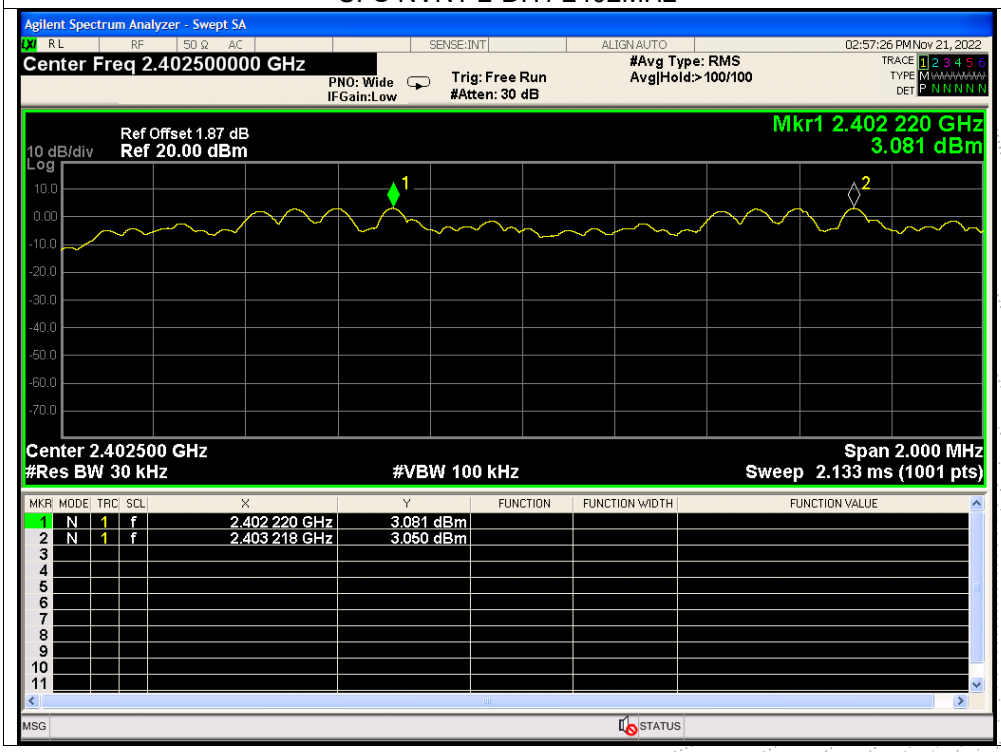
CFS NVNT 1-DH1 2441MHz



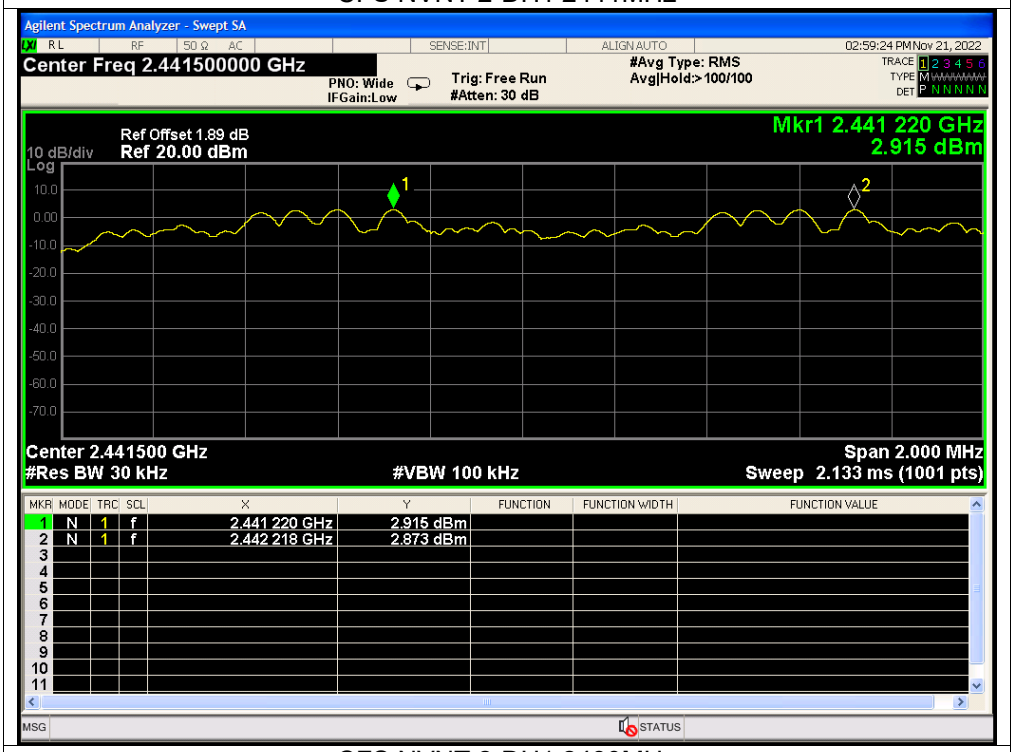
CFS NVNT 1-DH1 2480MHz



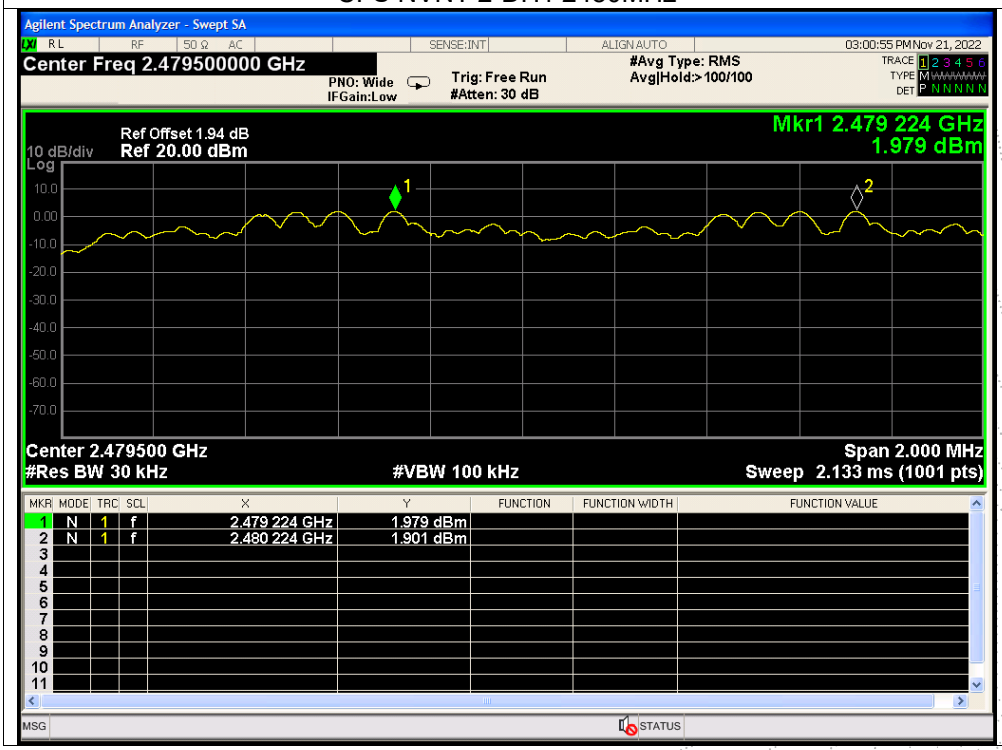
CFS NVNT 2-DH1 2402MHz



CFS NVNT 2-DH1 2441MHz



CFS NVNT 2-DH1 2480MHz

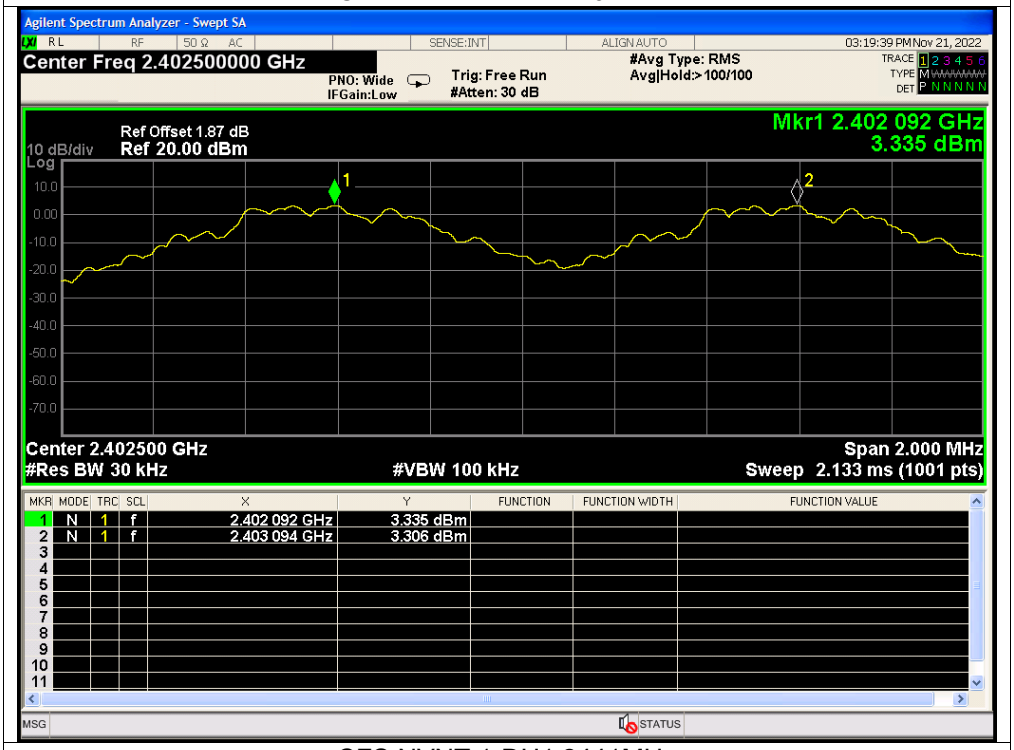


Right

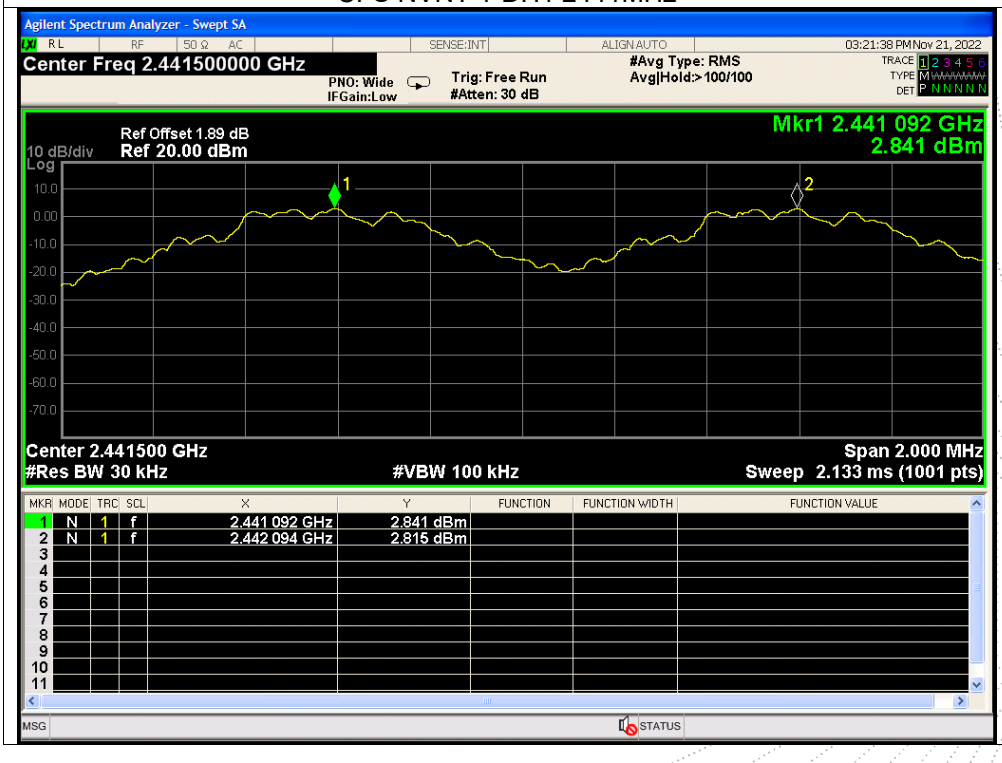
Condition	Mode	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	2402.092	2403.094	1.002	0.923	Pass
NVNT	1-DH1	2441.092	2442.094	1.002	0.929	Pass
NVNT	1-DH1	2479.098	2480.096	0.998	0.915	Pass
NVNT	2-DH1	2402.214	2403.216	1.002	0.847	Pass
NVNT	2-DH1	2441.214	2442.214	1	0.834	Pass
NVNT	2-DH1	2479.218	2480.218	1	0.853	Pass

Test Graphs

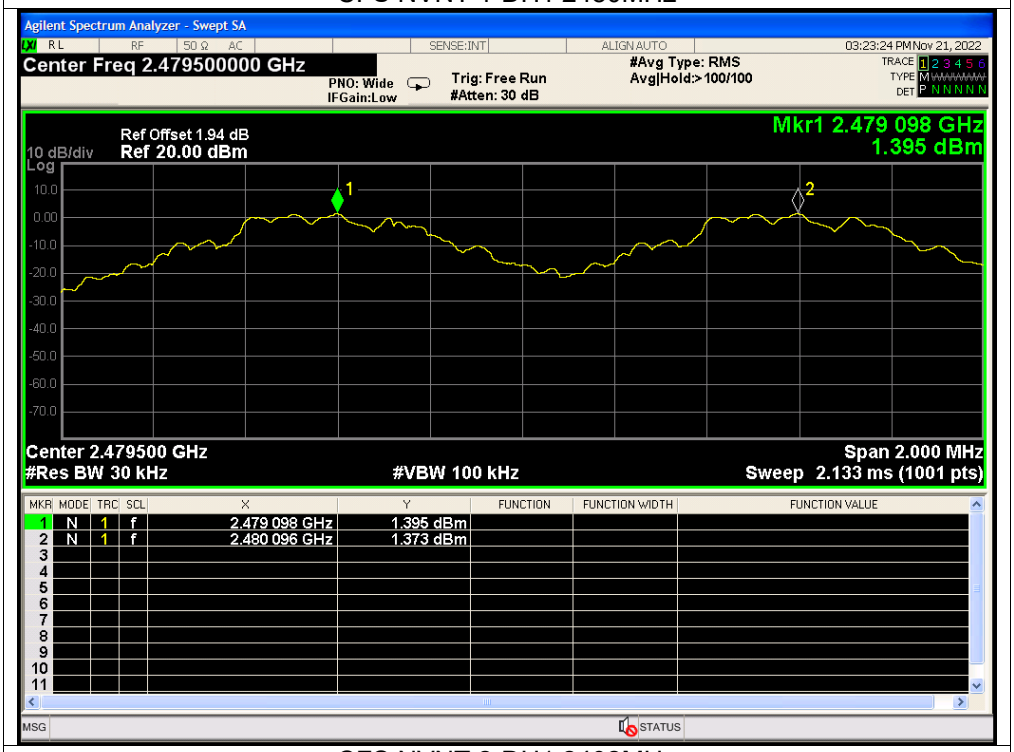
CFS NVNT 1-DH1 2402MHz



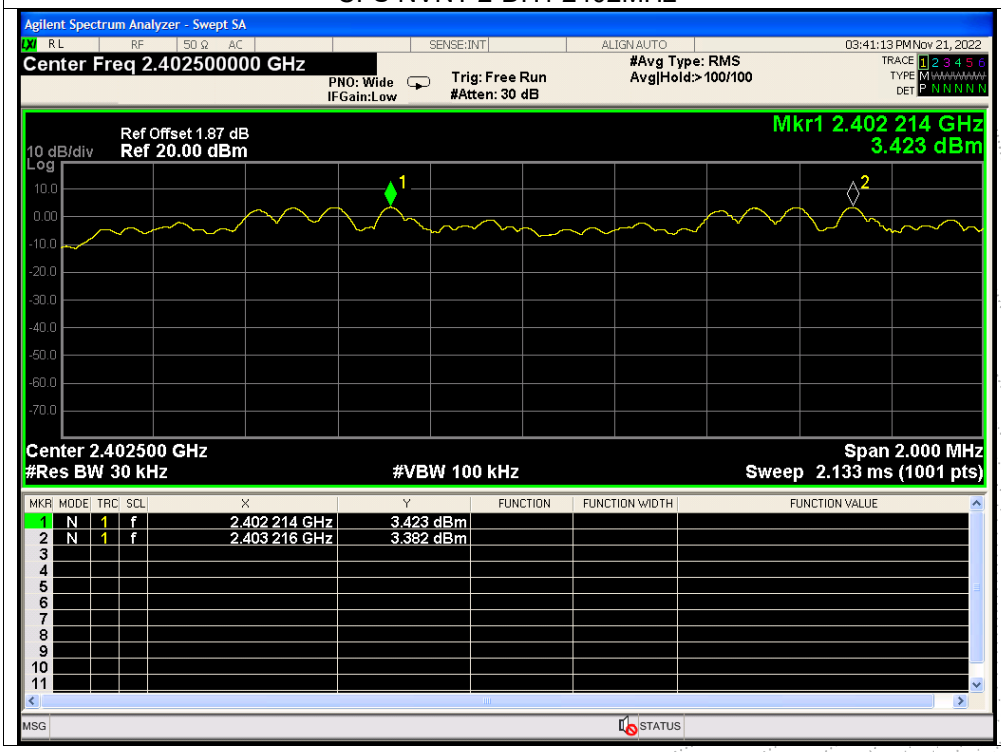
CFS NVNT 1-DH1 2441MHz



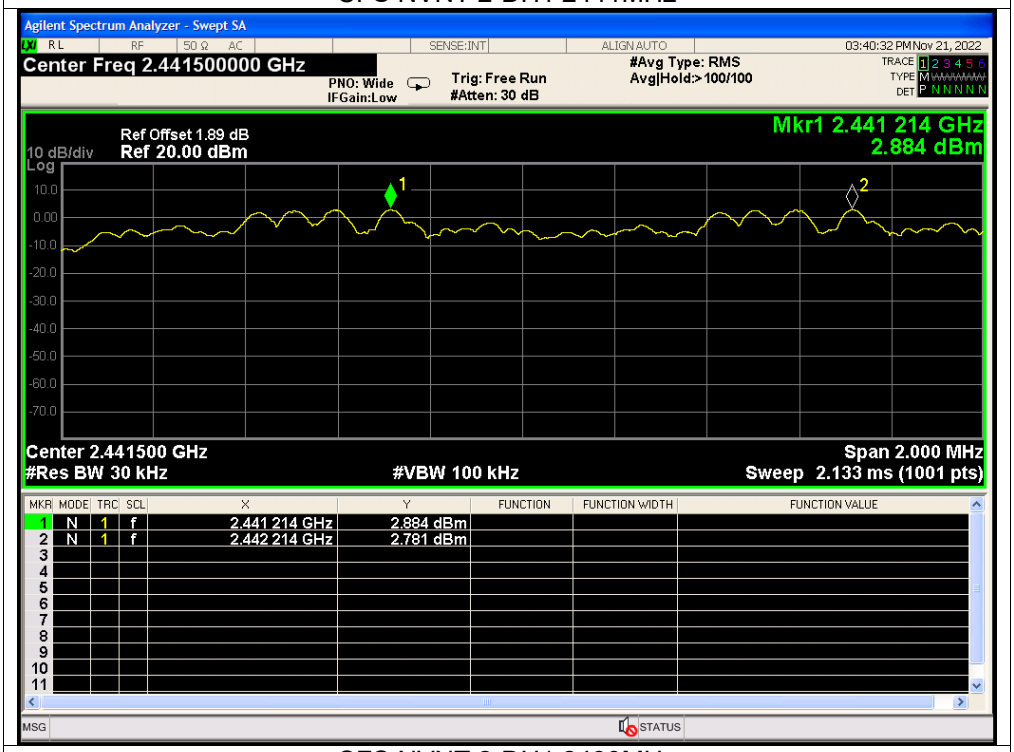
CFS NVNT 1-DH1 2480MHz



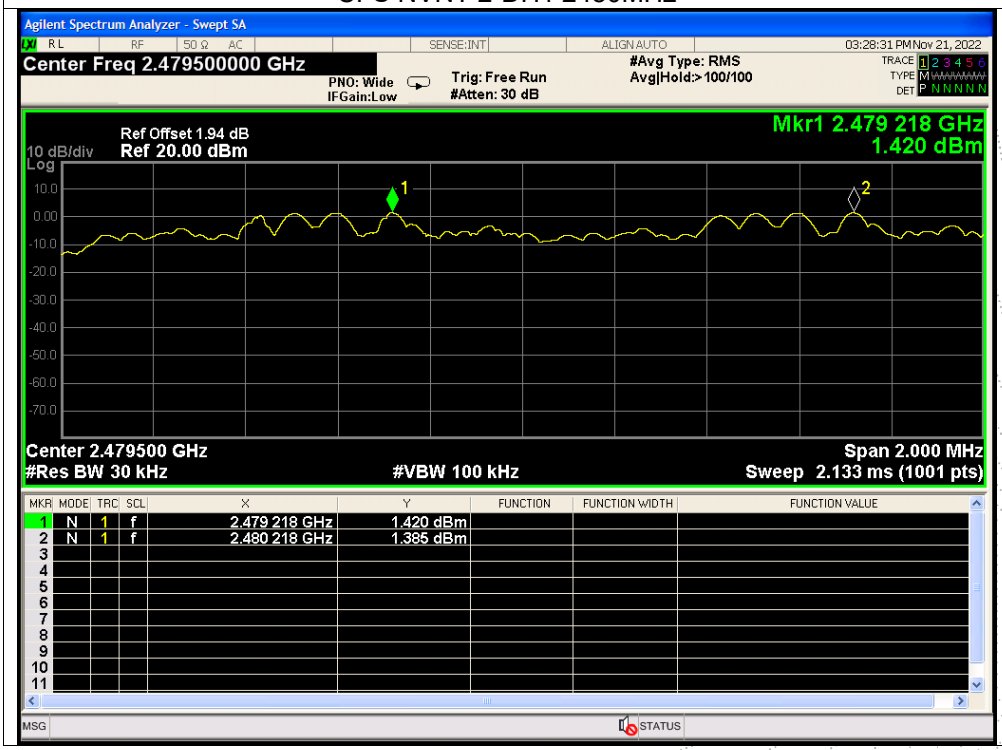
CFS NVNT 2-DH1 2402MHz



CFS NVNT 2-DH1 2441MHz

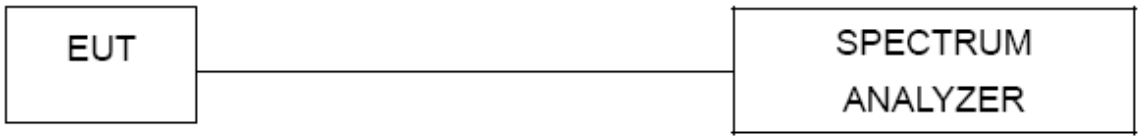


CFS NVNT 2-DH1 2480MHz



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.

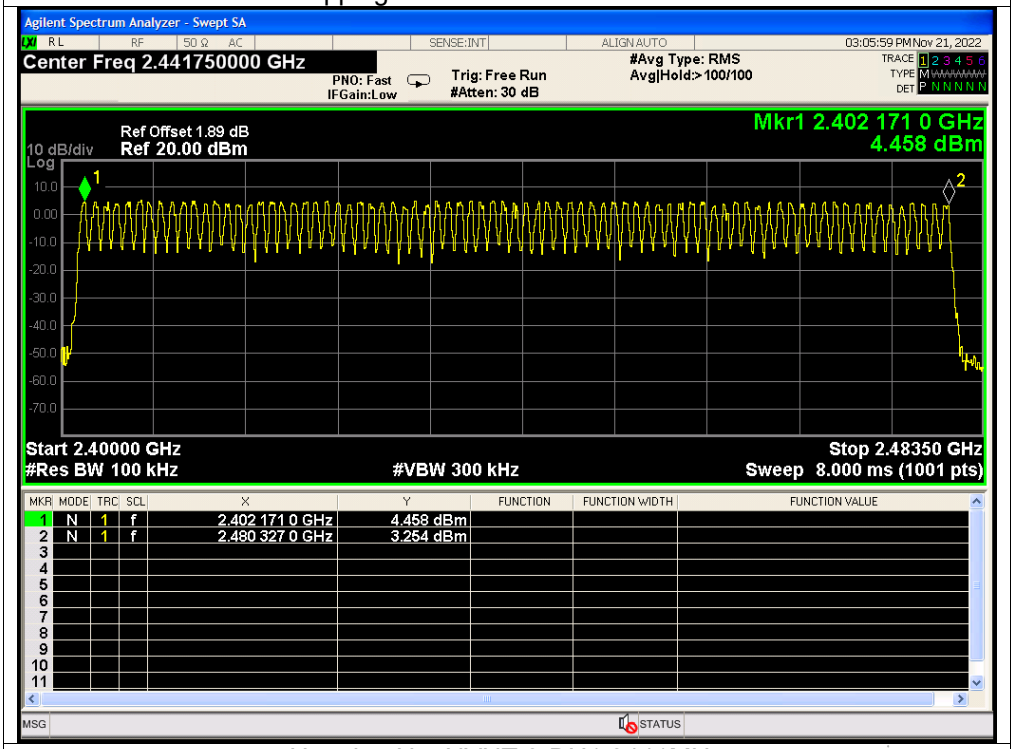
4. Set the spectrum analyzer: Start Frequency = 2.4GHz, Stop Frequency = 2.4835GHz. Sweep=auto;

13.4 Test Result

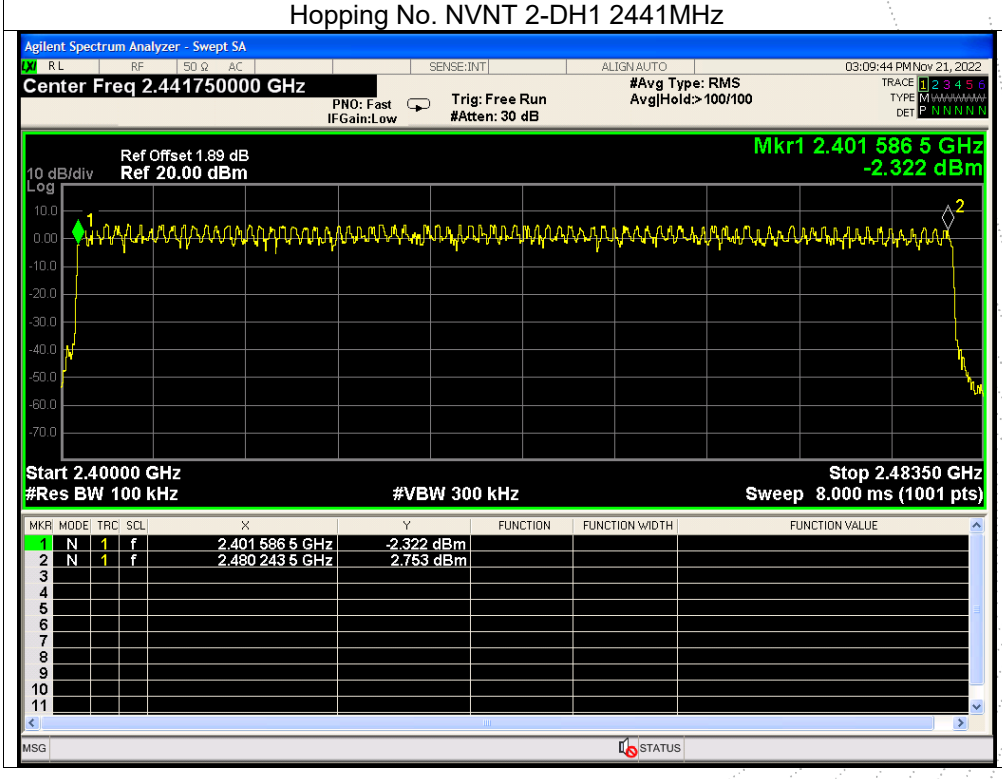
Condition	Mode	Hopping Number	Limit	Verdict
NVNT	1-DH1	79	15	Pass
NVNT	2-DH1	79	15	Pass

Left

Test Graphs
Hopping No. NVNT 1-DH1 2441MHz

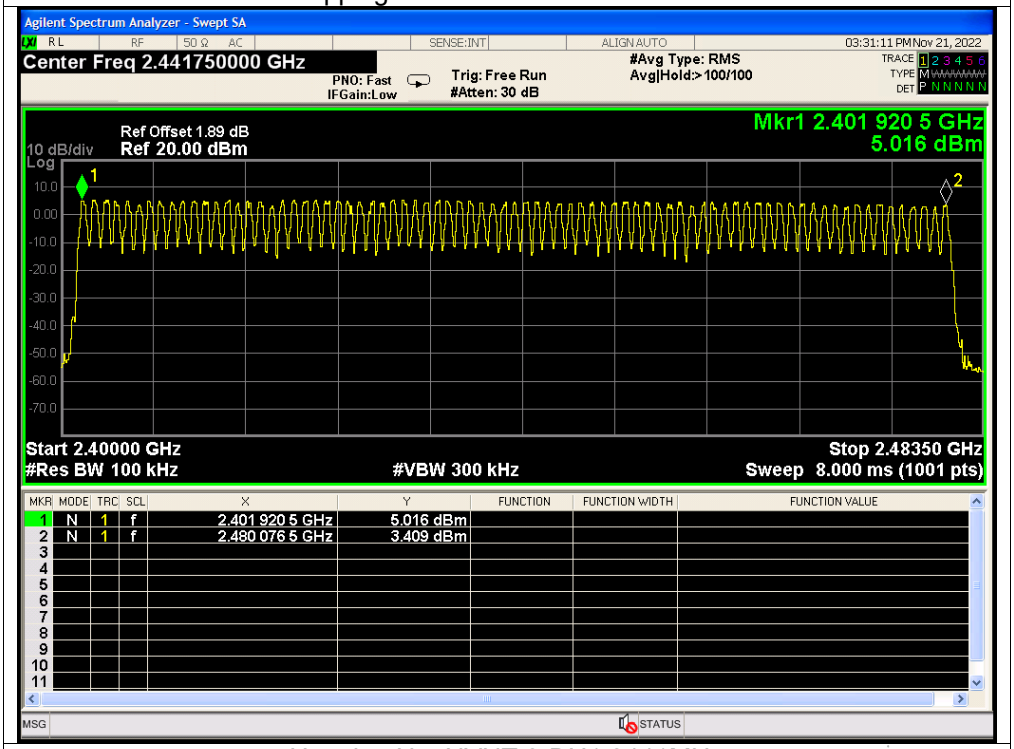


Hopping No. NVNT 2-DH1 2441MHz

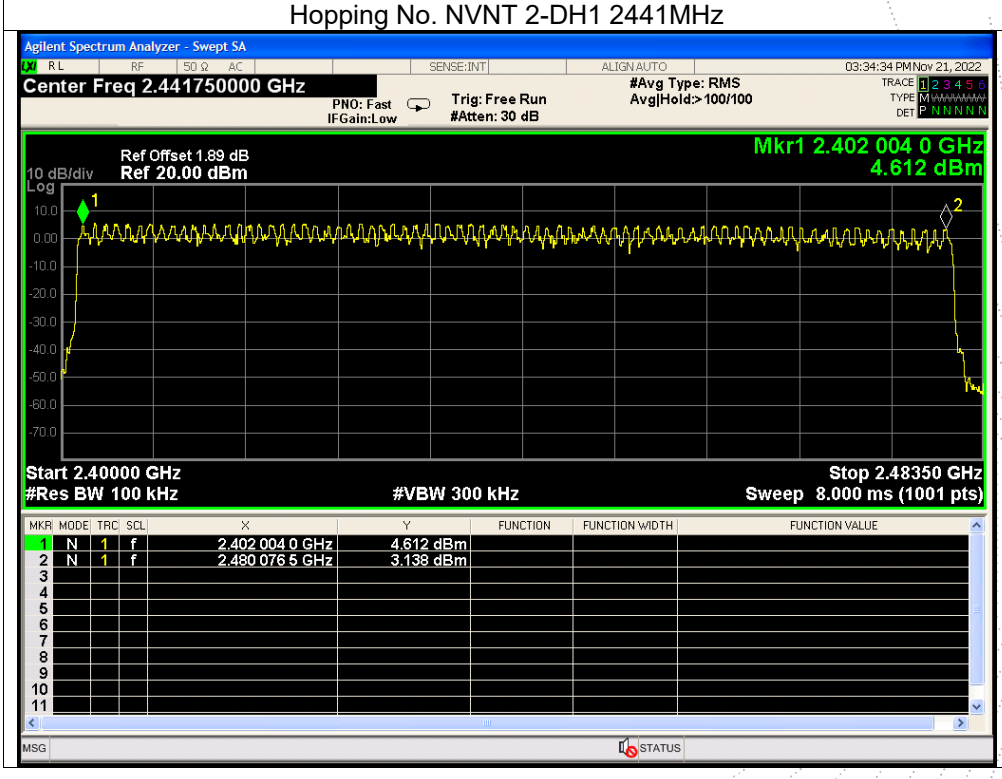


Right

Test Graphs
Hopping No. NVNT 1-DH1 2441MHz

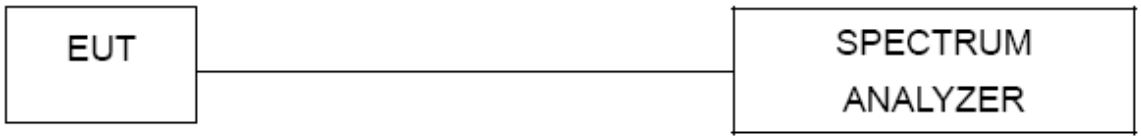


Hopping No. NVNT 2-DH1 2441MHz



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).

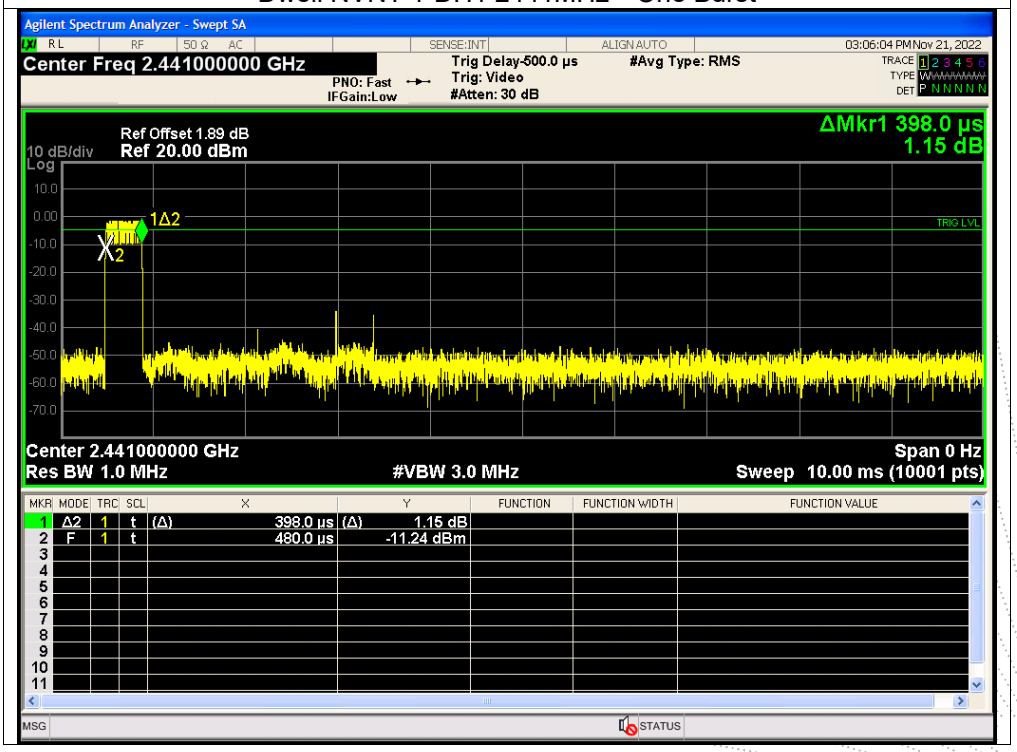
14.4 Test Result

Left

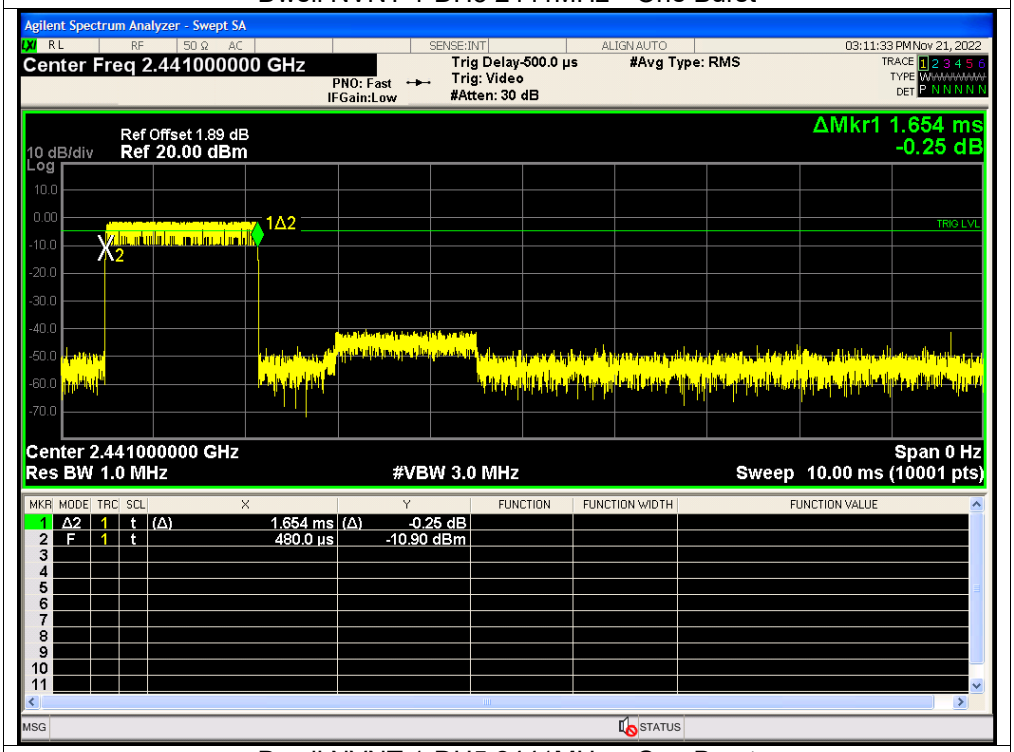
Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	0.398	0.127	400	Pass
NVNT	1-DH3	2441	1.654	0.265	400	Pass
NVNT	1-DH5	2441	2.904	0.310	400	Pass
NVNT	2-DH1	2441	0.409	0.131	400	Pass
NVNT	2-DH3	2441	1.661	0.266	400	Pass
NVNT	2-DH5	2441	2.908	0.310	400	Pass

Test Graphs

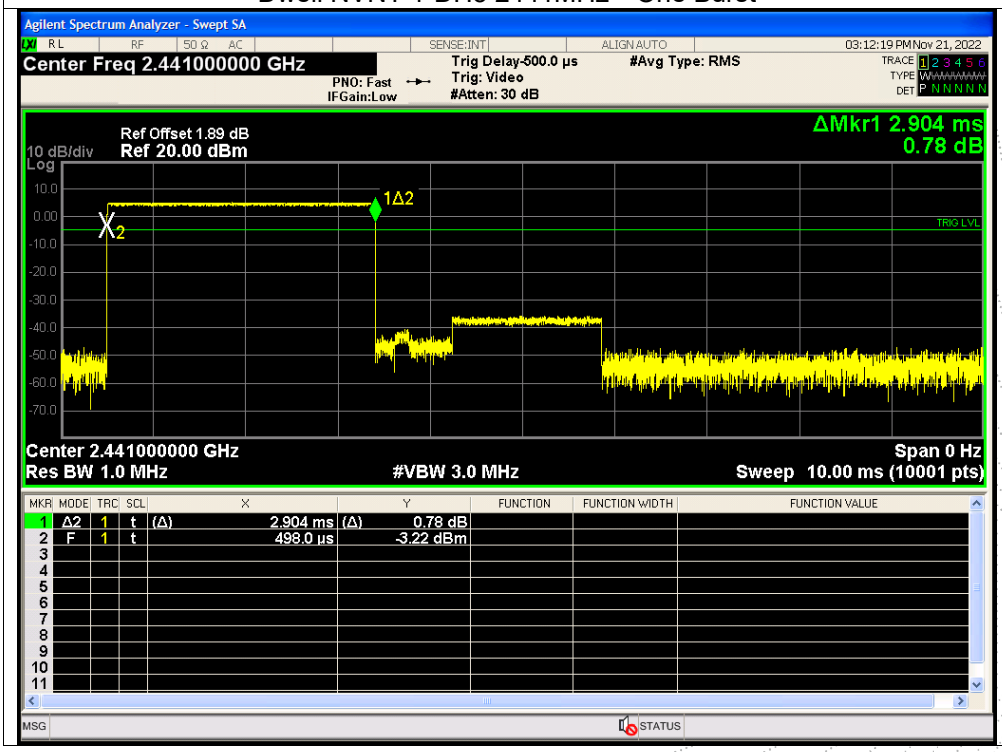
Dwell NVNT 1-DH1 2441MHz One Burst



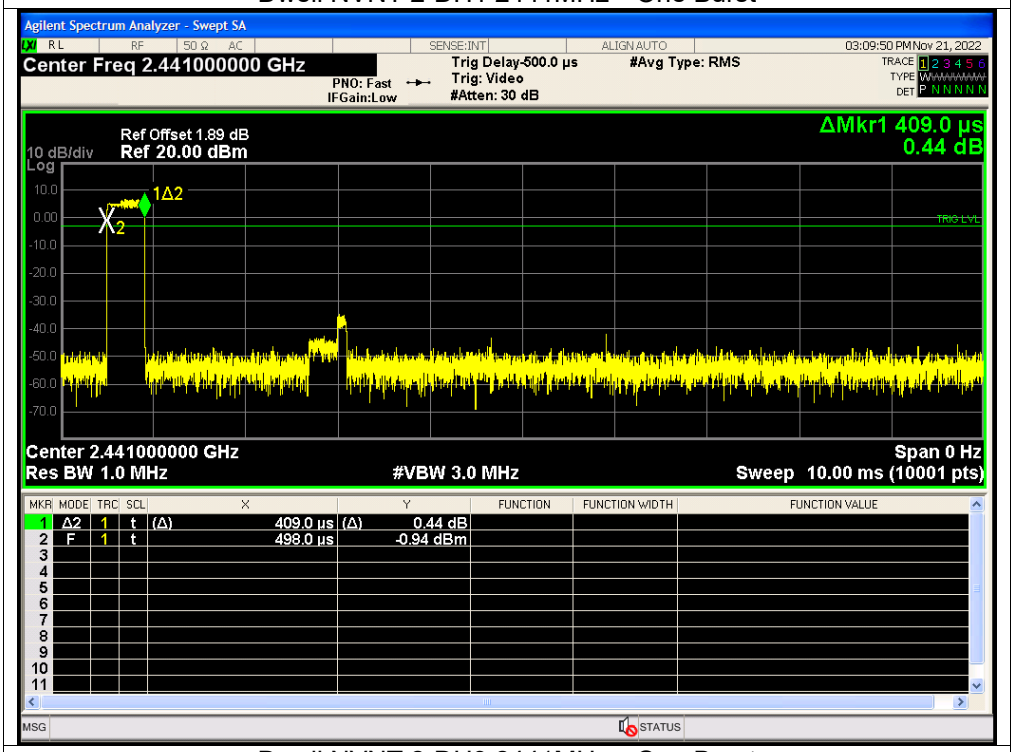
Dwell NVNT 1-DH3 2441MHz One Burst



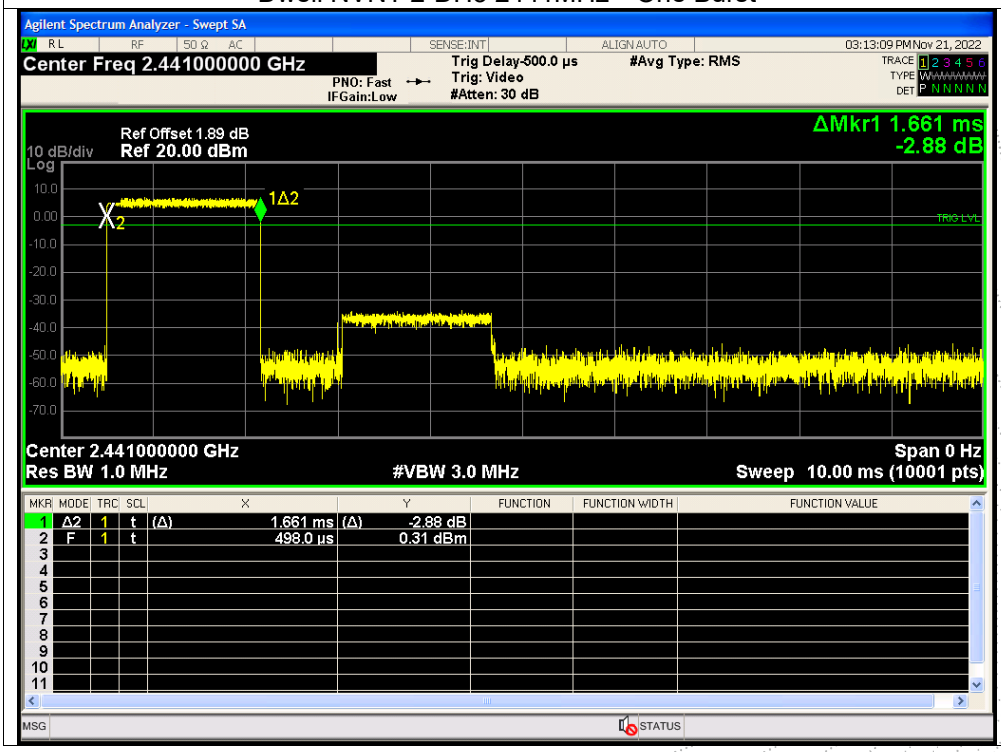
Dwell NVNT 1-DH5 2441MHz One Burst



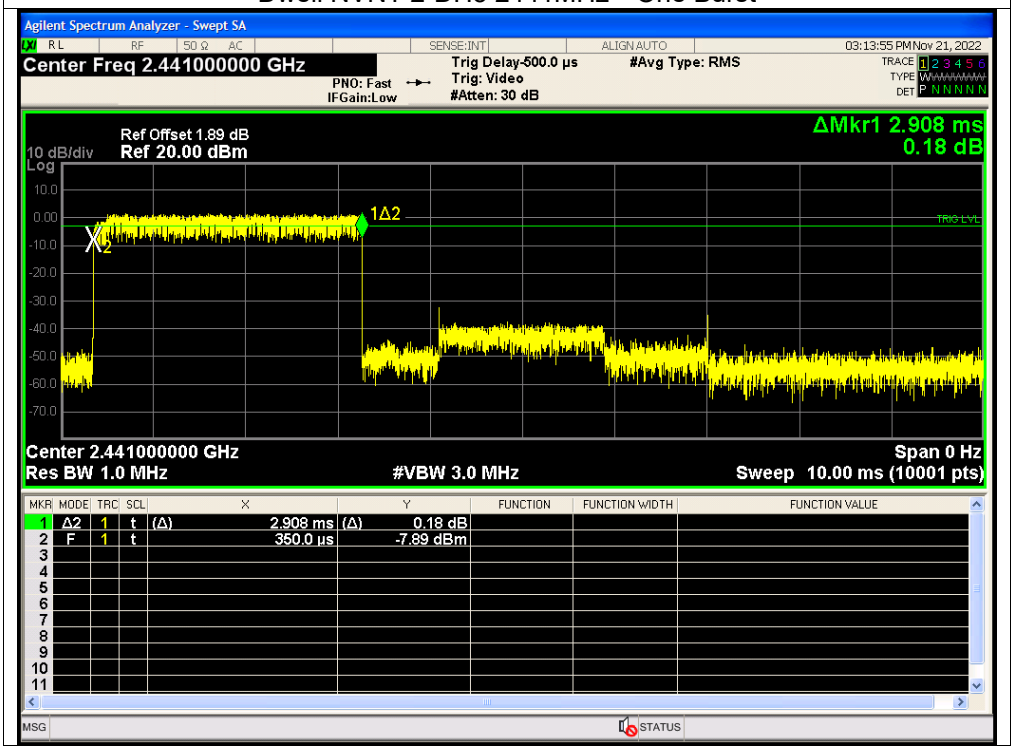
Dwell NVNT 2-DH1 2441MHz One Burst



Dwell NVNT 2-DH3 2441MHz One Burst



Dwell NVNT 2-DH5 2441MHz One Burst

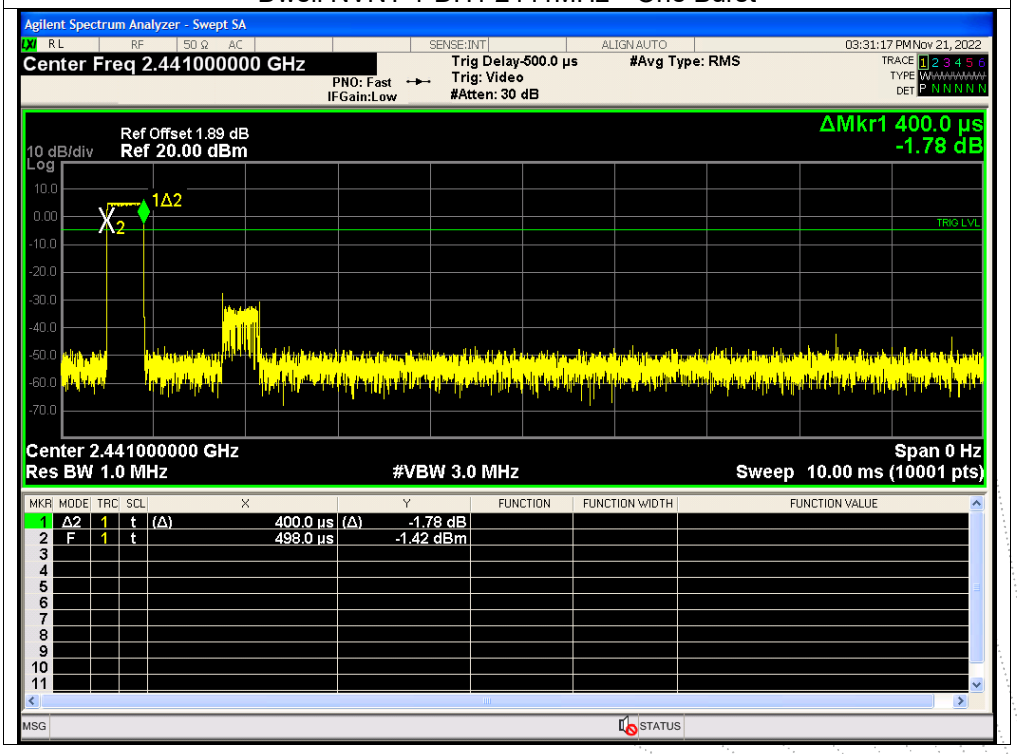


Right

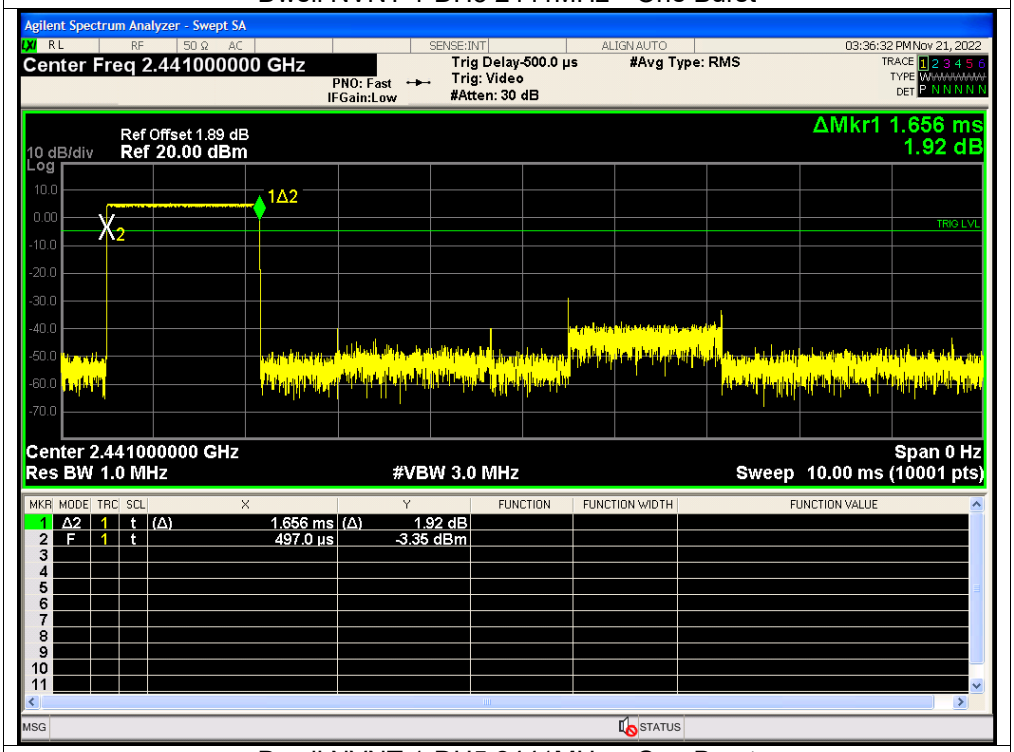
Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	0.4	0.128	400	Pass
NVNT	1-DH3	2441	1.656	0.265	400	Pass
NVNT	1-DH5	2441	2.904	0.310	400	Pass
NVNT	2-DH1	2441	0.409	0.131	400	Pass
NVNT	2-DH3	2441	1.661	0.266	400	Pass
NVNT	2-DH5	2441	2.89	0.308	400	Pass

Test Graphs

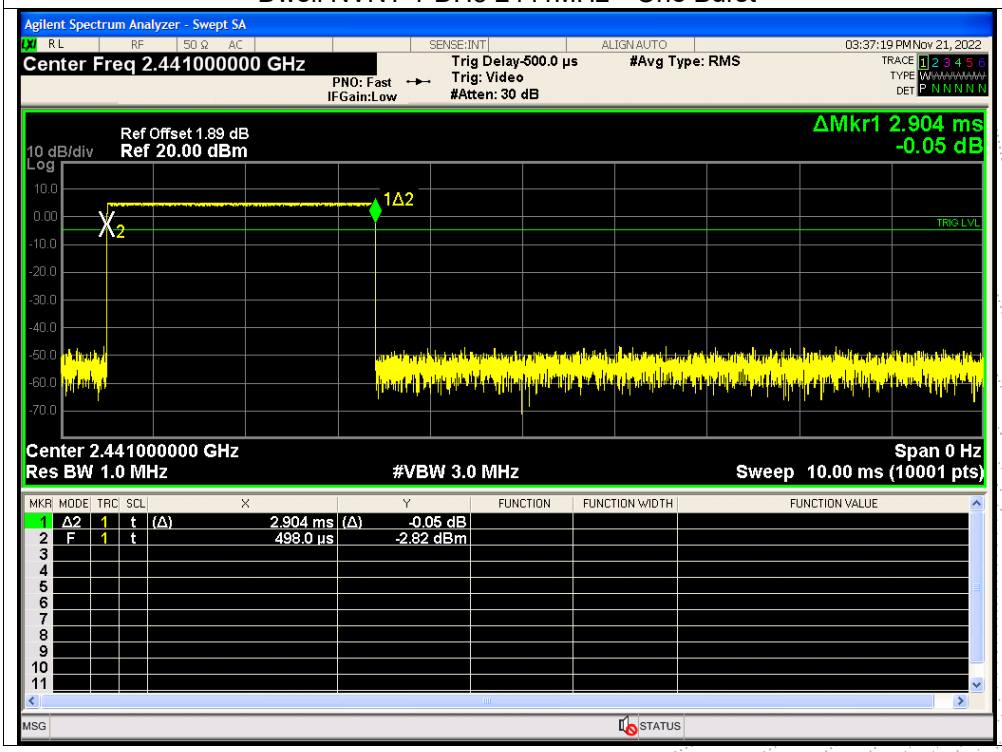
Dwell NVNT 1-DH1 2441MHz One Burst



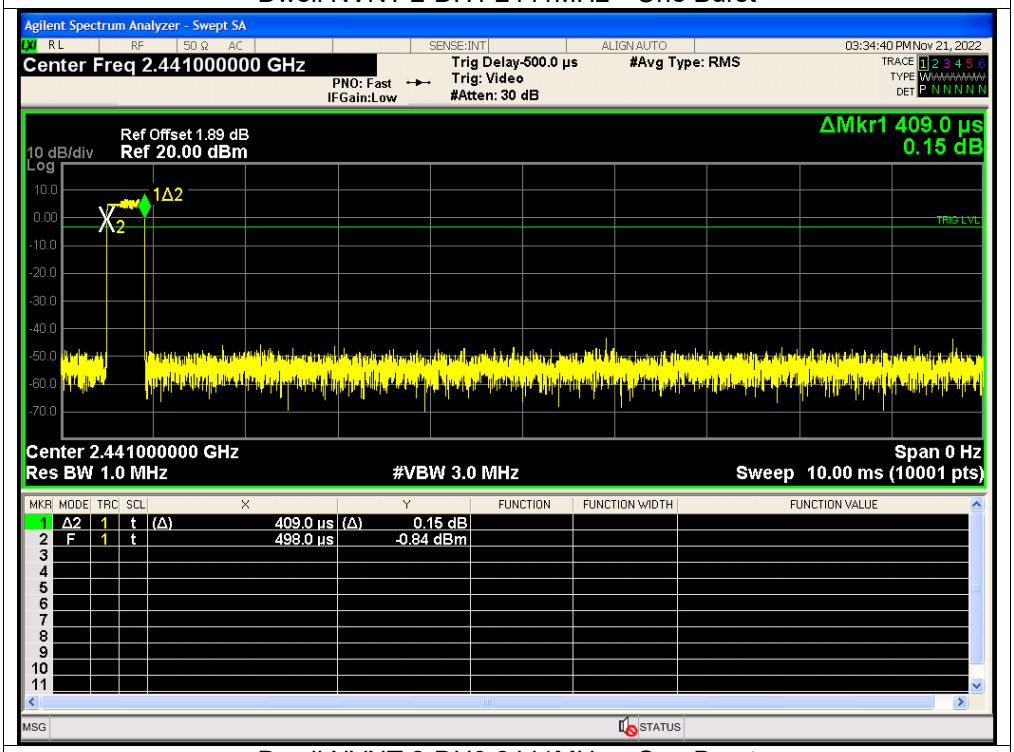
Dwell NVNT 1-DH3 2441MHz One Burst



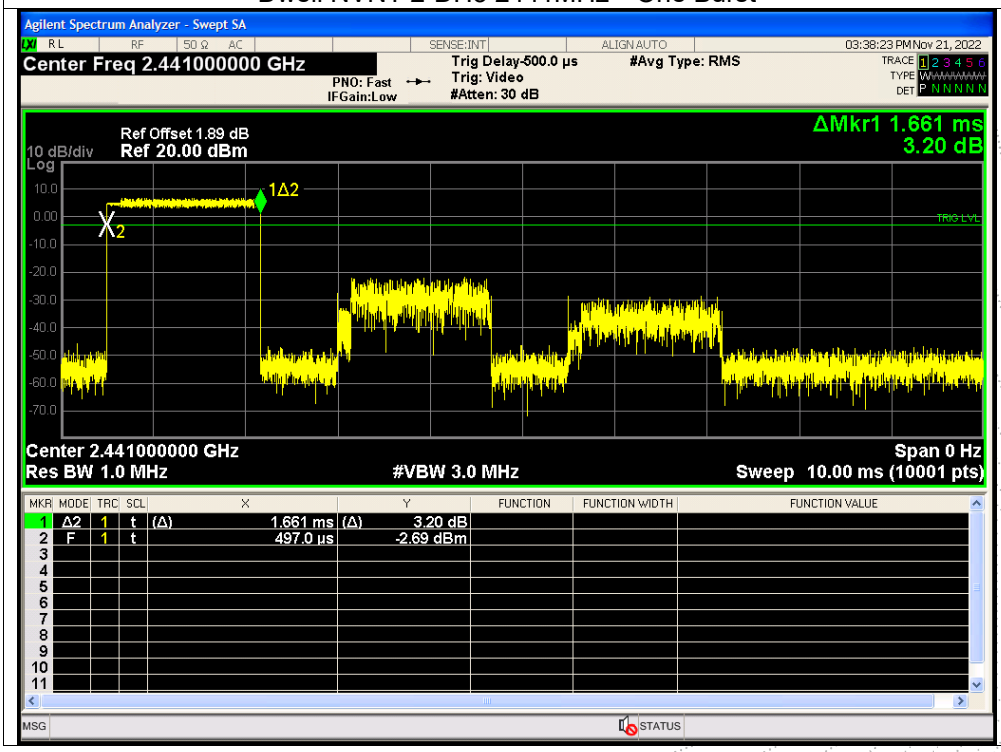
Dwell NVNT 1-DH5 2441MHz One Burst



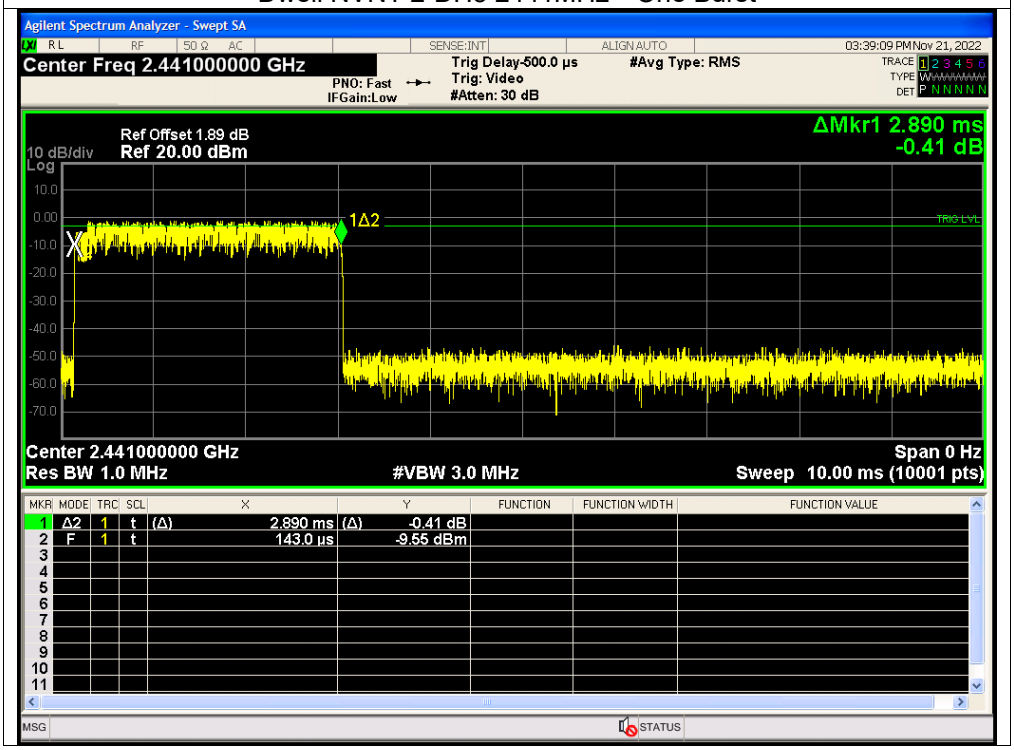
Dwell NVNT 2-DH1 2441MHz One Burst



Dwell NVNT 2-DH3 2441MHz One Burst



Dwell NVNT 2-DH5 2441MHz One Burst



15. Antenna Requirement

15.1 Limit

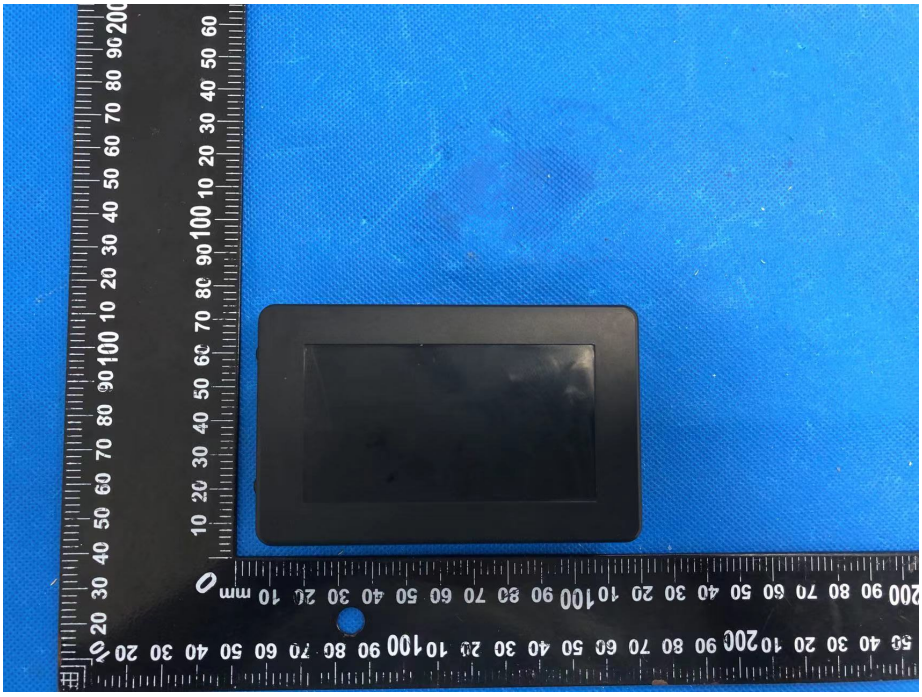
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

15.2 Test Result

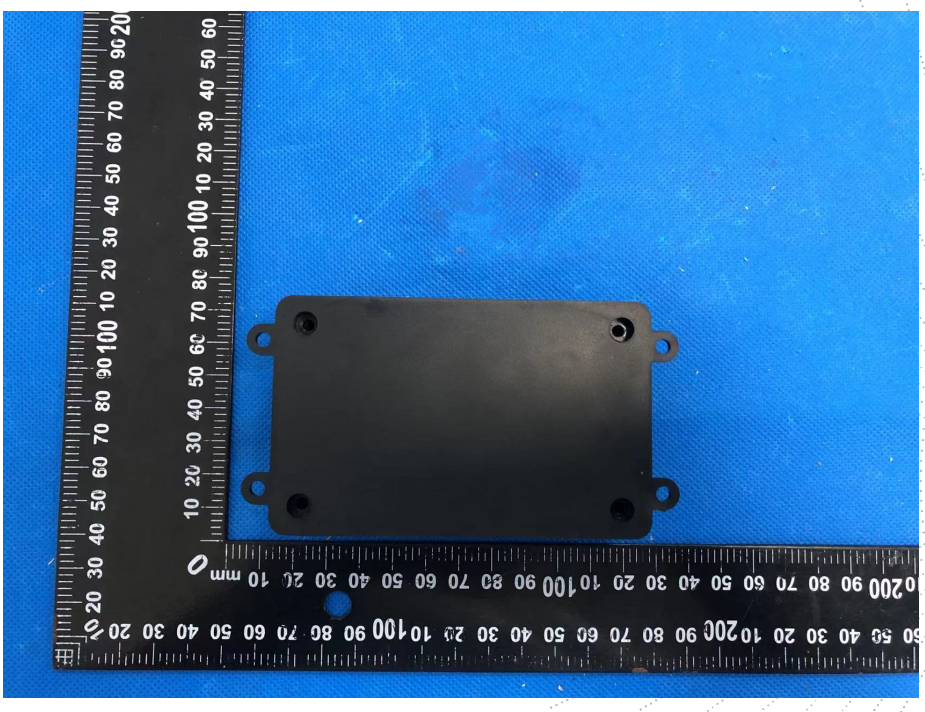
The EUT antenna is PCB antenna, fulfill the requirement of this section.

16. EUT Photographs

EUT Photo 1



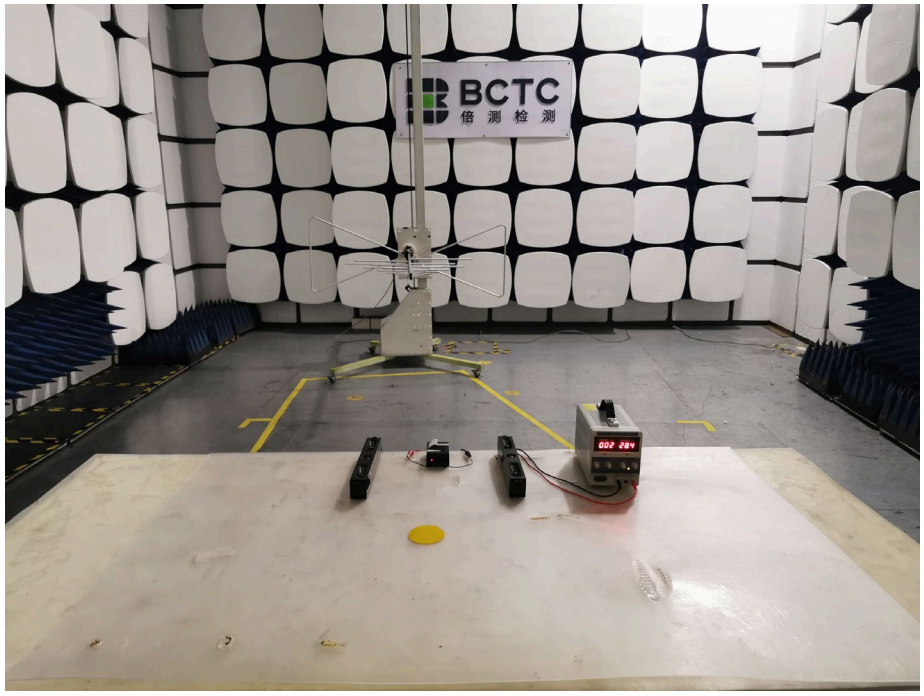
EUT Photo 2

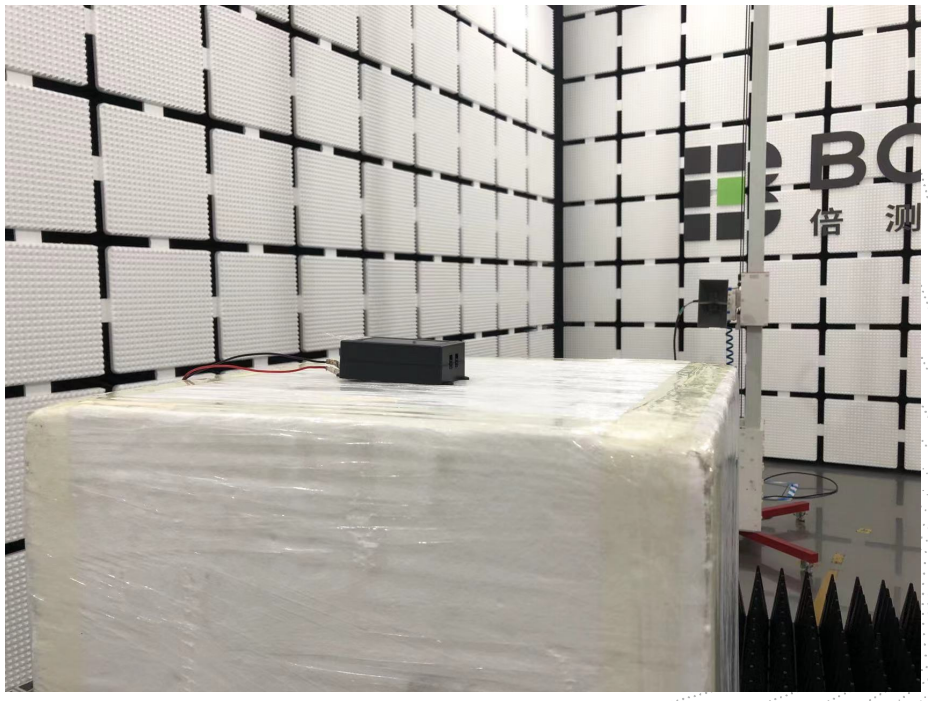


17. EUT Test Setup Photographs

Conducted emissions

Radiated Measurement Photos





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 the "special seal for inspection and testing".

4. The test report is invalid without the signature of the approver.

5. The test process and test result is only related to the Unit Under Test.

6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.

7. The test report without CMA mark is only used for scientific research, teaching, enterprise product development and internal quality control purposes.

8. The quality system of our laboratory is in accordance with ISO/IEC17025.

9. If there is any objection to this test 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, Zhancheng, 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** ※※※※※