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10. 20 dB Bandwidth

10.1 Block Diagram Of Test Setup

EUT	SPECTRUM		
	ANALYZER		

10.2 Limit

N/A

10.3 Test procedure

- 1. Set RBW = 30kHz.
- 2. Set the video bandwidth (VBW) \geq 3 x RBW.
- 3. Detector = Peak.
- 4. Trace mode = max hold.
- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.
- 7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

10.4 Test Result

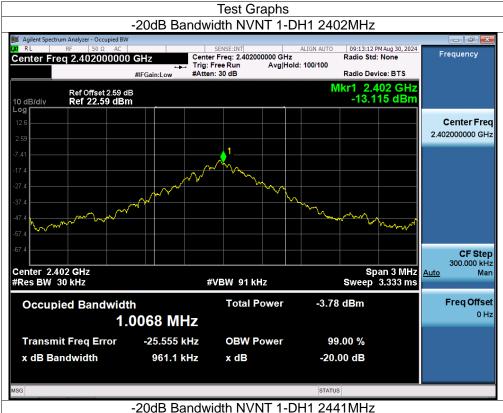
Temperature:	26 ℃	Relative Humidity:	54%RH
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz

Condition	Mode	Frequency (MHz)	-20dB Bandwidth (MHz)	Verdict
NVNT	1-DH1	2402	0.961	Pass
NVNT	1-DH1	2441	0.957	Pass
NVNT	1-DH1	2480	0.961	Pass
NVNT	2-DH1	2402	1.274	Pass
NVNT	2-DH1	2441	1.270	Pass
NVNT	2-DH1	2480	1.268	Pass
NVNT	3-DH1	2402	1.226	Pass
NVNT	3-DH1	2441	1.254	Pass
NVNT	3-DH1	2480	1,249	Pass

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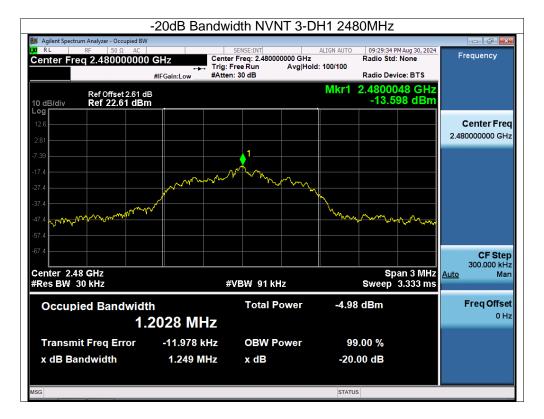


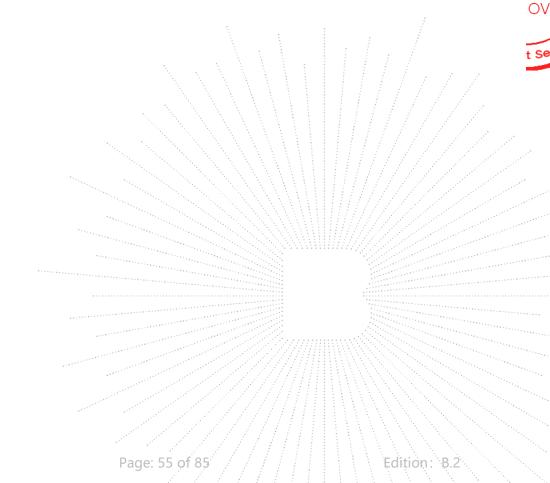
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11. Maximum Peak Output Power

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

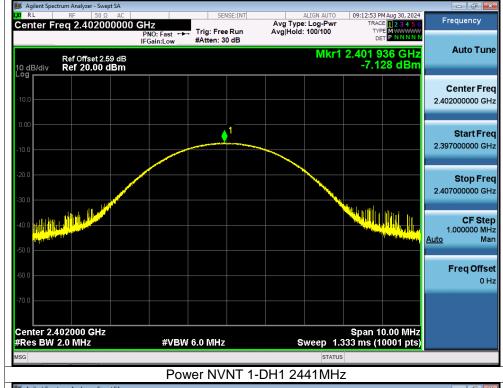
- 1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
- 2. Set the spectrum analyzer: RBW = 2MHz. VBW = 6MHz. Sweep = auto; Detector Function = Peak.
- 3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

11.4 Test Result

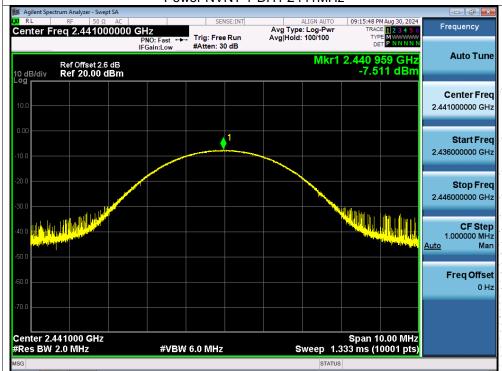
Temperature:	26 ℃	Relative Humidity:	54%RH	
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz	

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	-7.13	21	Pass
NVNT	1-DH1	2441	-7.51	21	Pass
NVNT	1-DH1	2480	-7.63	21	Pass
NVNT	2-DH1	2402	-7.19	21	Pass
NVNT	2-DH1	2441	-7.55	21	Pass
NVNT	2-DH1	2480	-7.64	21	Pass
NVNT	3-DH1	2402	-6.83	21	Pass
NVNT	3-DH1	2441	-7.25	21	Pass
NVNT	3-DH1	2480	-7.32	21	Pass

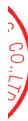
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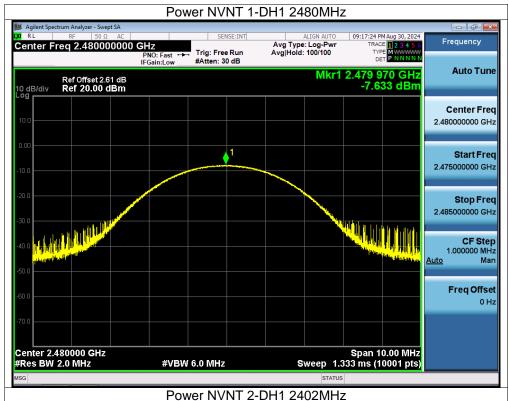
Test Graphs
Power NVNT 1-DH1 2402MHz

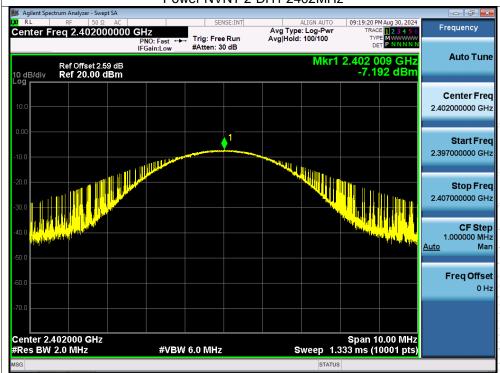


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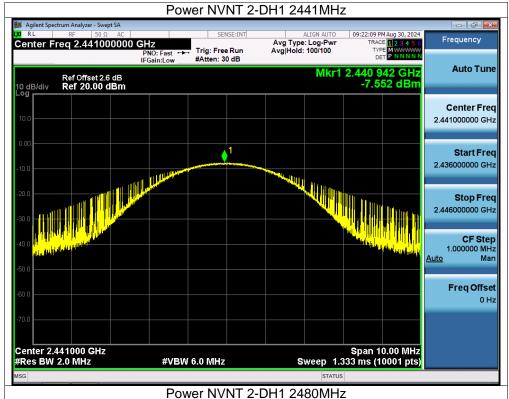


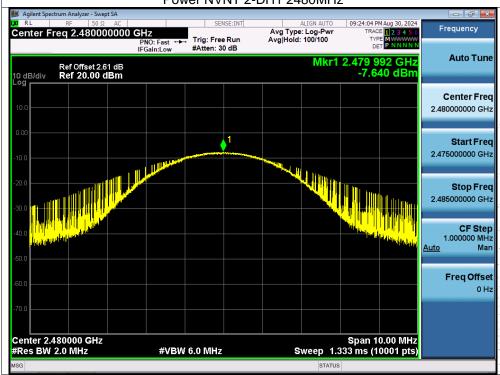




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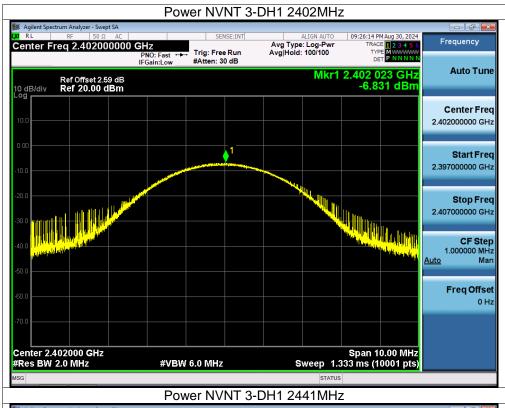


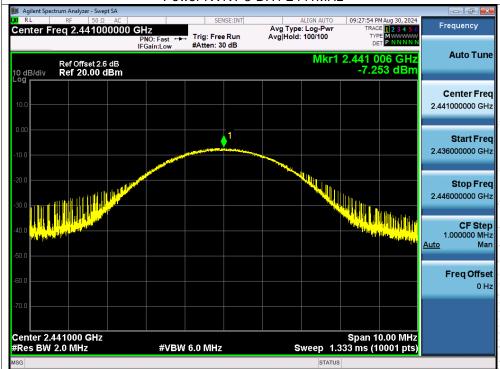




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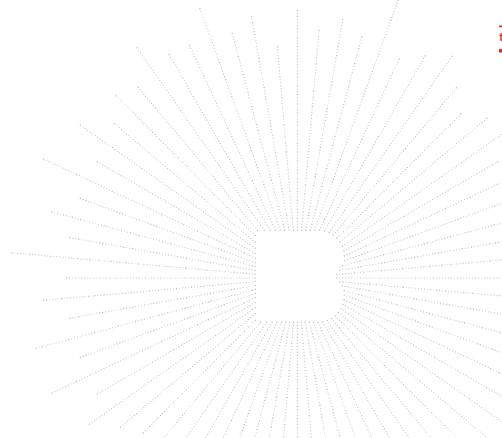
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12. Hopping Channel Separation

12.1 Block Diagram Of Test Setup

EUT SPECTRUM ANALYZER

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

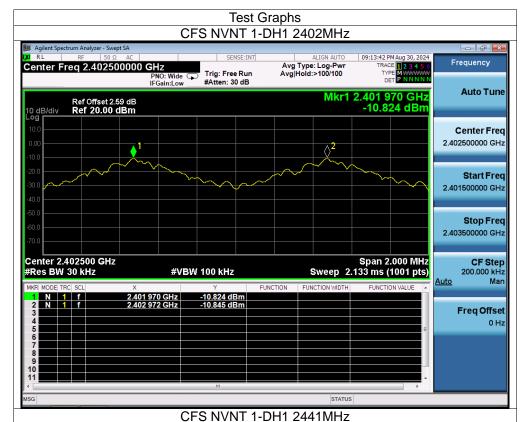
- 1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
- 2. Set the spectrum analyzer: RBW = 30kHz. VBW = 100kHz , Span = 2.0MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
- 3. Allow the trace to stabilize. Use the marker-delta function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

Mode	Test Channel	Separation (MHz)	Limit(MHz)	Result
1-DH1	Low	1.002	0.641	PASS
1-DH1	Middle	1.006	0.638	PASS
1-DH1	High	0.998	0.641	PASS
2-DH1	Low	1.002	0.849	PASS
2-DH1	Middle	0.996	0.847	PASS
2-DH1	High	1.002	0.845	PASS
3-DH1	Low	0.982	0.817	PASS
3-DH1	Middle	0.998	0.836	PASS
3-DH1	High	0.998	0.833	PASS

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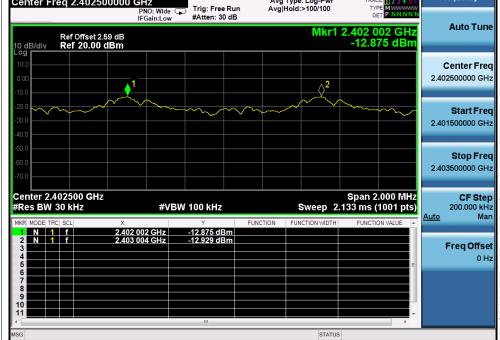






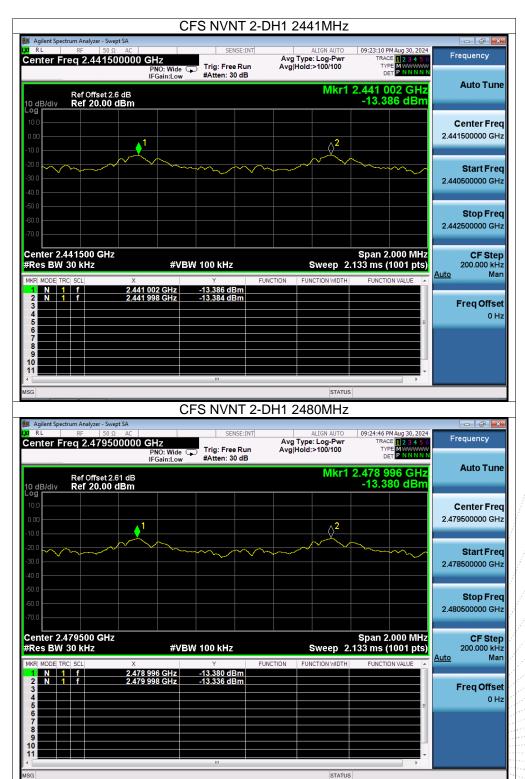






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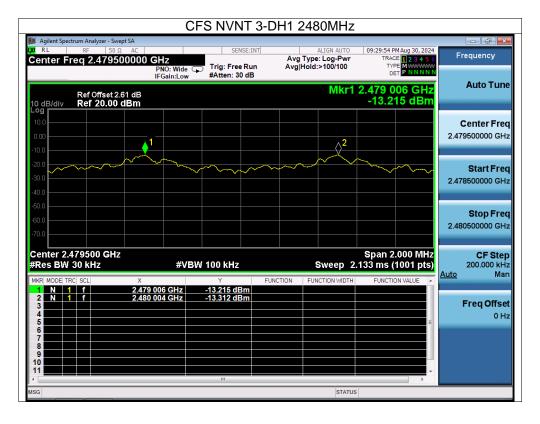


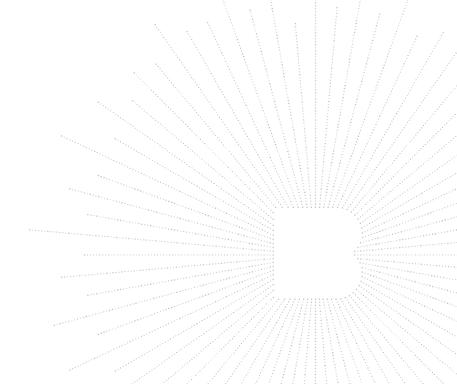
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13. Number Of Hopping Frequency

13.1 Block Diagram Of Test Setup

EUT SPECTRUM ANALYZER

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;

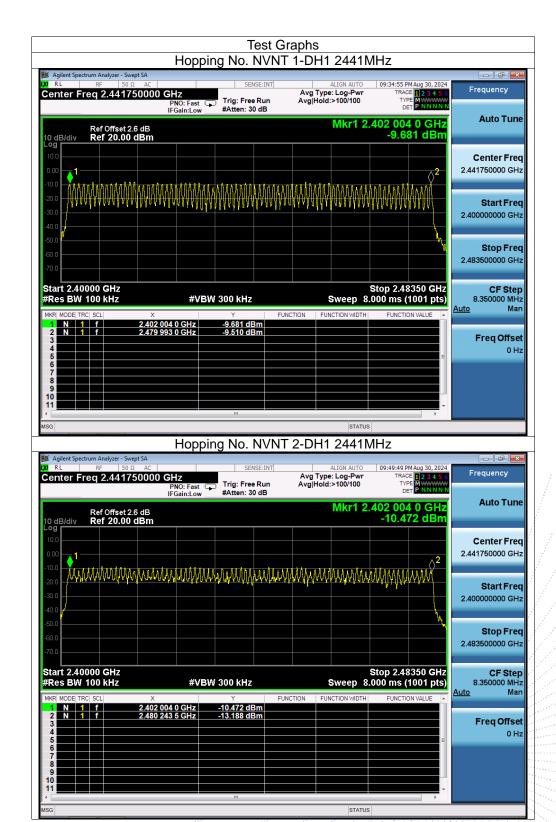
13.4 Test Result

Condition	Mode	Hopping Number	Limit	Verdict
NVNT	1-DH1	79	15	Pass
NVNT	2-DH1	79	15	Pass
NVNT	3-DH1	79	15	Pass

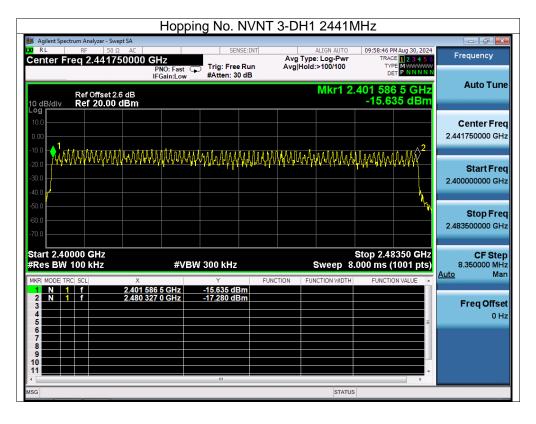
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14. Dwell Time

14.1 Block Diagram Of Test Setup

EUT	SPECTRUM
	ANALYZER

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

Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
1-DH1	2441	0.376	118.816	316	31600	400	Pass
1-DH3	2441	1.632	262.752	161	31600	400	Pass
1-DH5	2441	2.88	334.08	116	31600	400	Pass
2-DH1	2441	0.386	122.748	318	31600	400	Pass
2-DH3	2441	1.637	266.831	163	31600	400	Pass
2-DH5	2441	2.886	300.144	104	31600	400	Pass
3-DH1	2441	0.387	123.066	318	31600	400	Pass
3-DH3	2441	1.636	253.58	155	31600	400	Pass
3-DH5	2441	2.887	308.909	107	31600	400	Pass

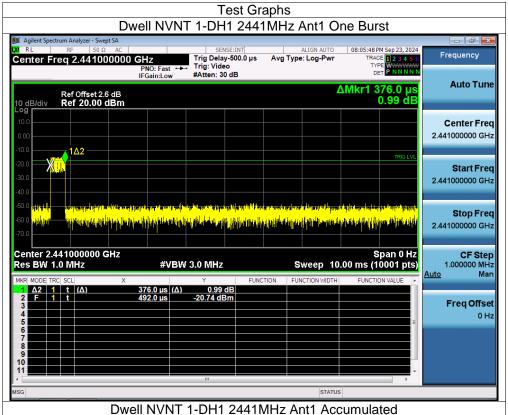
Note: Total Dwell Time (ms) = Pulse Time (ms)*Burst Count

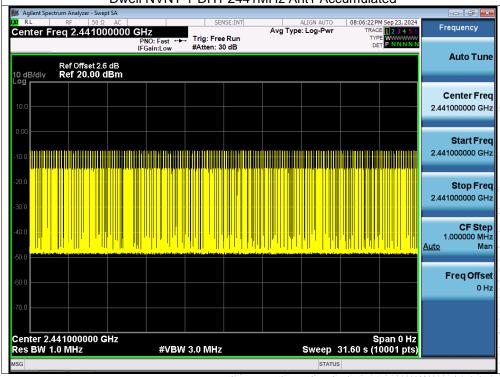
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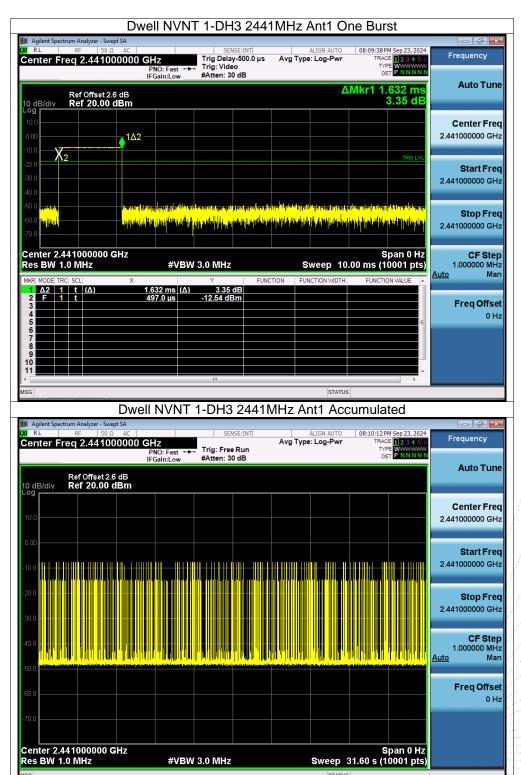
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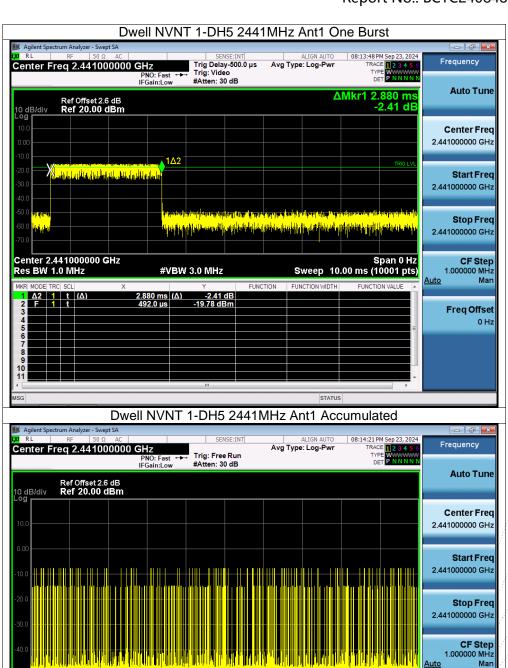
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Center 2.441000000 GHz Res BW 1.0 MHz Report No.: BCTC2408481528-1E

Freq Offset 0 Hz

Span 0 Hz Sweep 31.60 s (10001 pts)

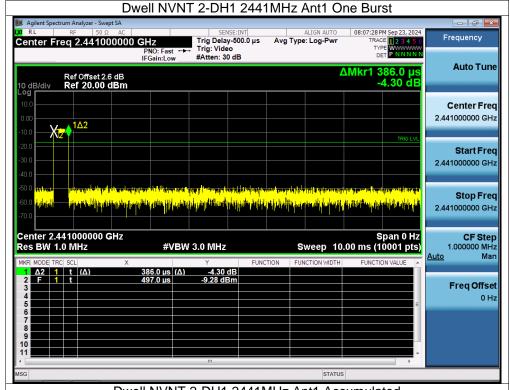


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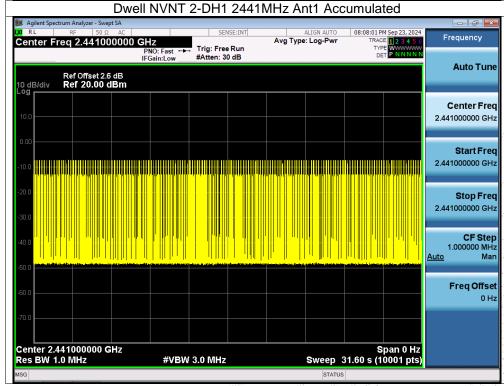
#VBW 3.0 MHz





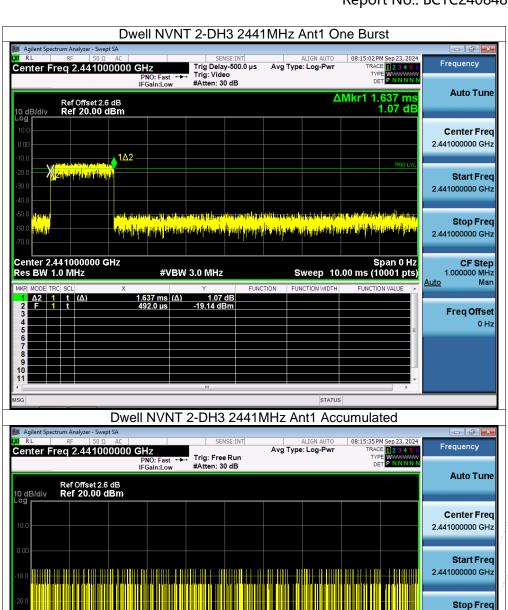


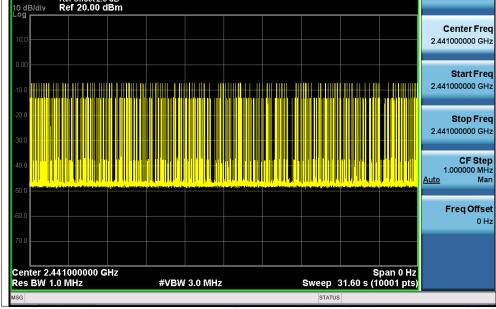
BCTC



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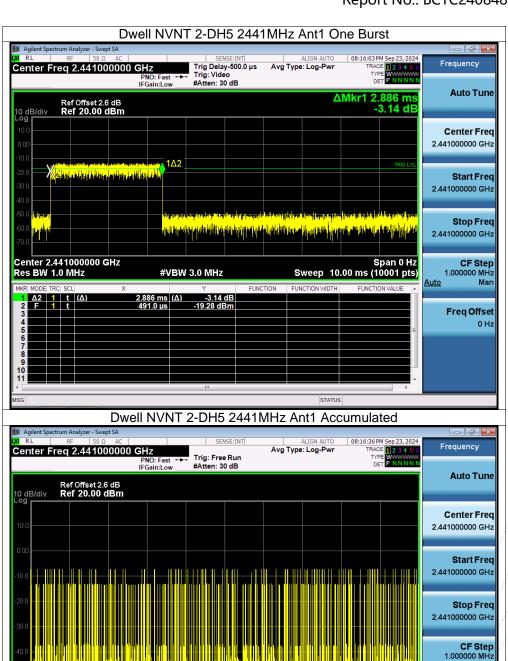


Center 2.441000000 GHz Res BW 1.0 MHz Report No.: BCTC2408481528-1E

Mar

Freq Offset 0 Hz

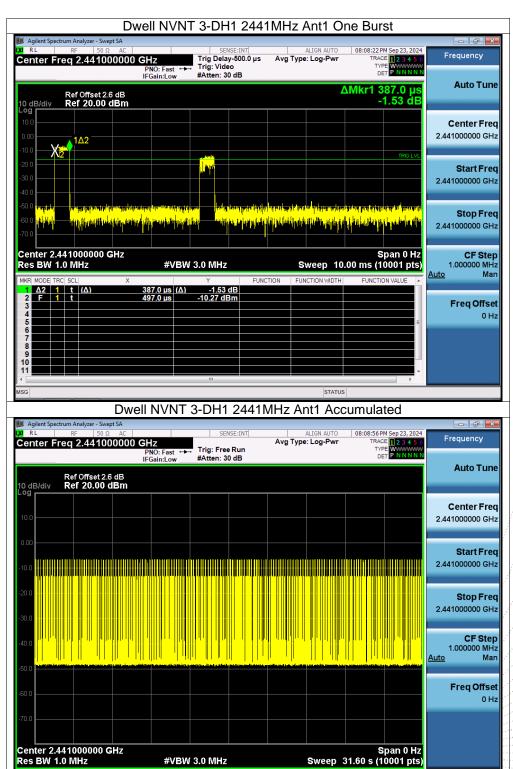
Span 0 Hz Sweep 31.60 s (10001 pts)



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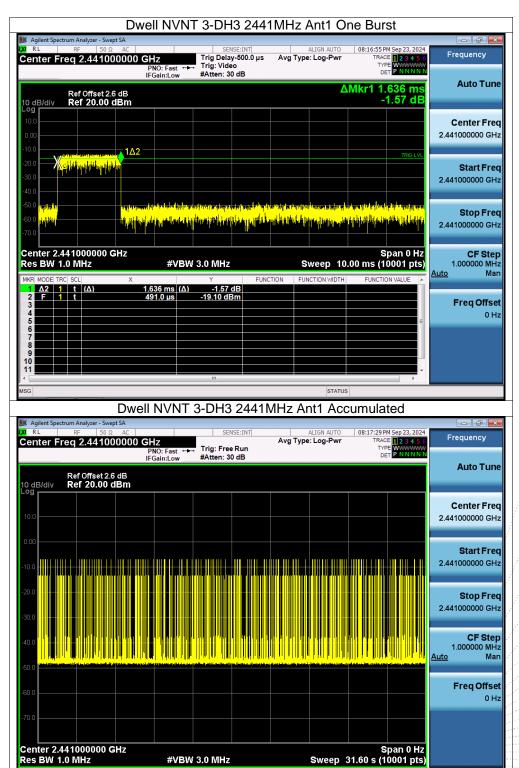
#VBW 3.0 MHz





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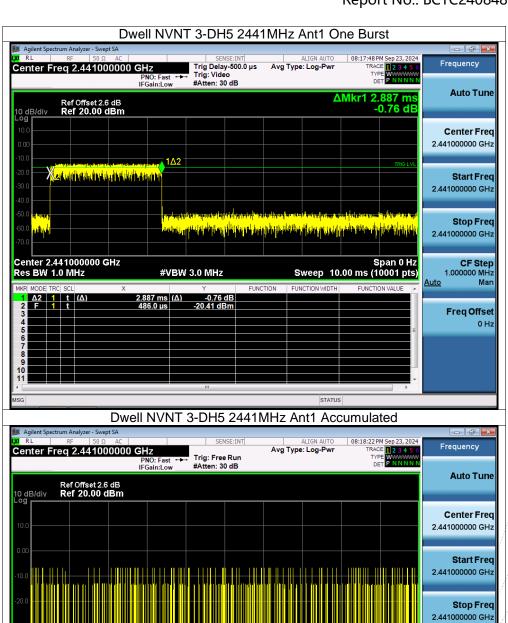


Center 2.441000000 GHz Res BW 1.0 MHz Report No.: BCTC2408481528-1E

CF Step 1.000000 MHz Man

Freq Offset 0 Hz

Span 0 Hz Sweep 31.60 s (10001 pts)





#VBW 3.0 MHz



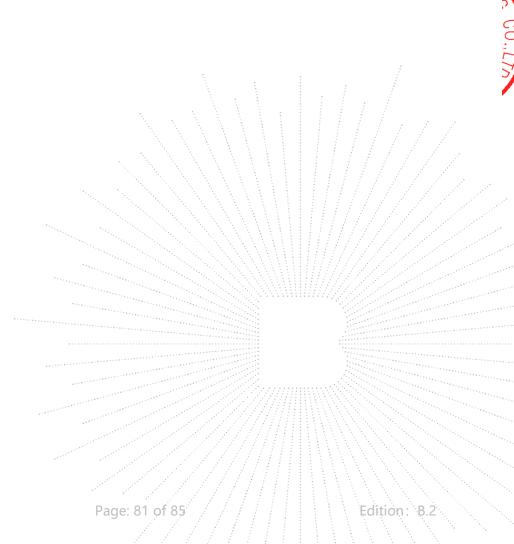
15. Antenna Requirement

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 Internal antenna, fulfill the requirement of this section.



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16. EUT Photographs

EUT Photo



NOTE: Appendix-Photographs Of EUT Constructional Details





17. EUT Test Setup Photographs

Conducted emissions



Radiated Measurement Photos



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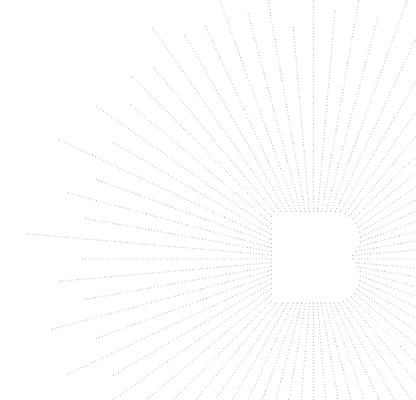
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STATEMENT

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

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Complaint/Advice E-mail: advice@bctc-lab.com.cn

**** END ****

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