











10. 20 dB Bandwidth

10.1 Block Diagram Of Test Setup



10.2 Limit

N/A

10.3 Test procedure

- 1. Set RBW = 30kHz.
- 2. Set the video bandwidth (VBW) \ge 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

Condition	Mode	Frequency (MHz)	-20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH1	2402	0.929	Pass
NVNT	1-DH1 *****	2441	1.012	Pass
NVNT	1-DH1	2480	0.879	Pass
NVNT	2-DH1	2402	1.19	Pass
NVNT	2-DH1	2441	1.174	Pass
NVNT	2-DH1	2480	1.165	Pass
NVNT	3-DH1	2402	1.116	Pass
NVNT	3-DH1	2441	1.14	Pass
NVNT	3-DH1	2480	1.175	Pass

,TC

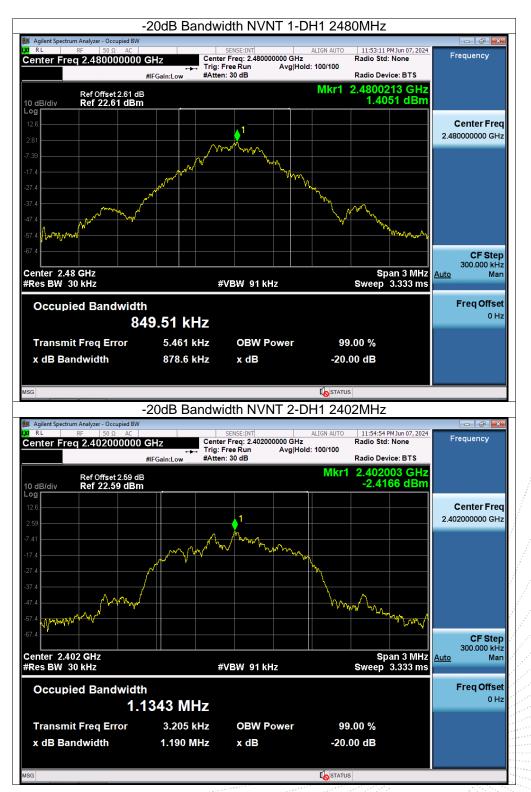
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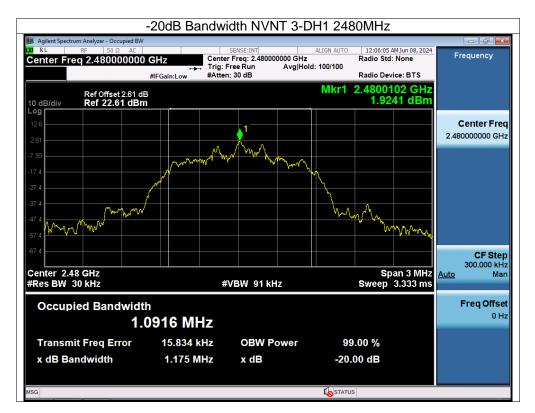
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11. Maximum Peak Output Power

11.1 Block Diagram Of Test Setup

EUT	SPECTRUM
	ANALYZER

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

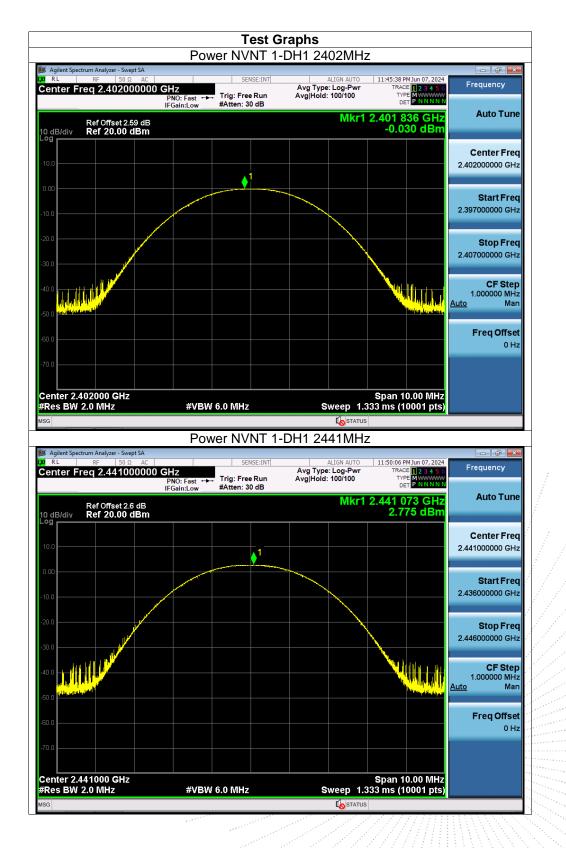
Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	-0.03	21	Pass
NVNT	1-DH1	2441	2.78	21	Pass
NVNT	1-DH1	2480	3.88	21	Pass
NVNT	2-DH1	2402	0.01	21	Pass
NVNT	2-DH1	2441	2.81	21	Pass
NVNT	2-DH1	2480	3.9	21	Pass
NVNT	3-DH1	2402	-0.07	21	Pass
NVNT	3-DH1	2441	2.77	21	Pass
NVNT	3-DH1		3.82	21	Pass

,TC

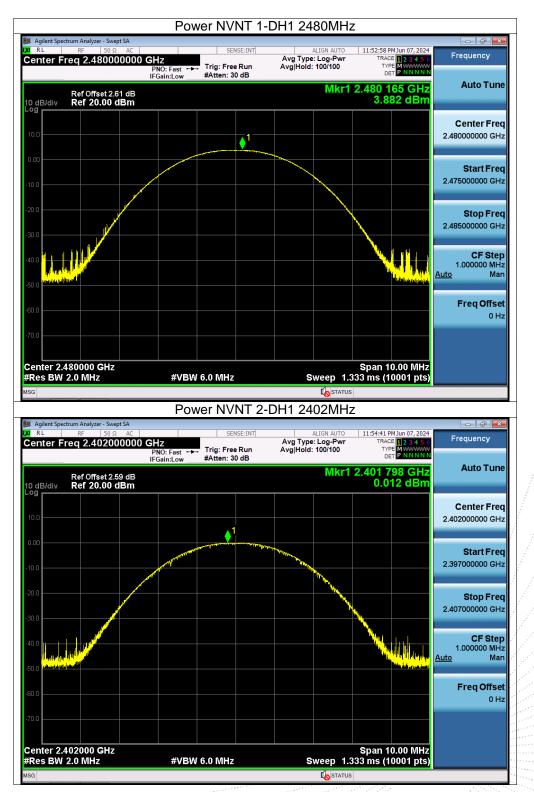
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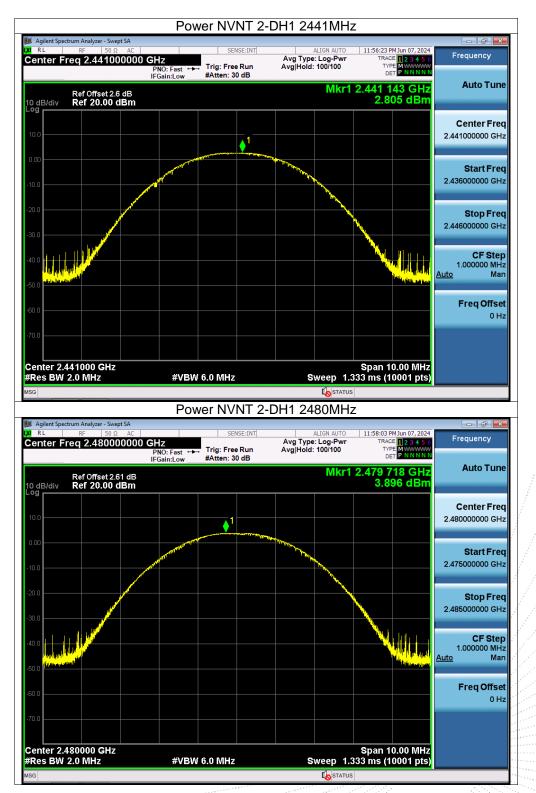




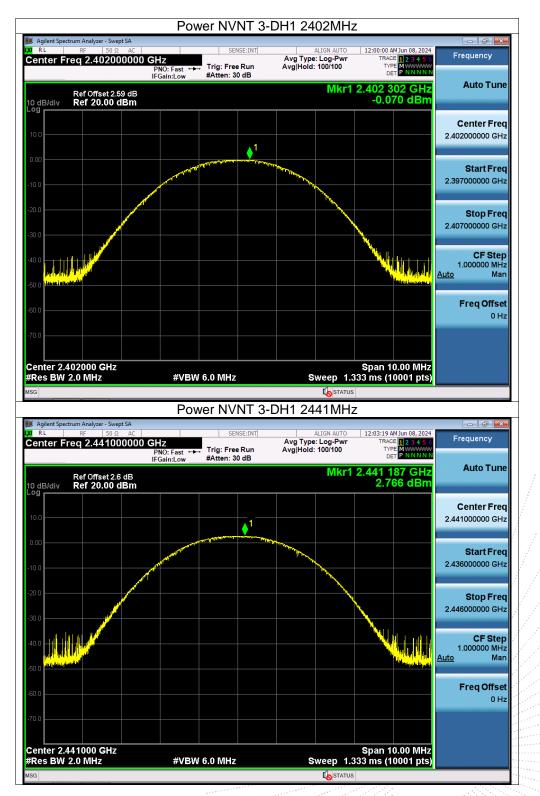






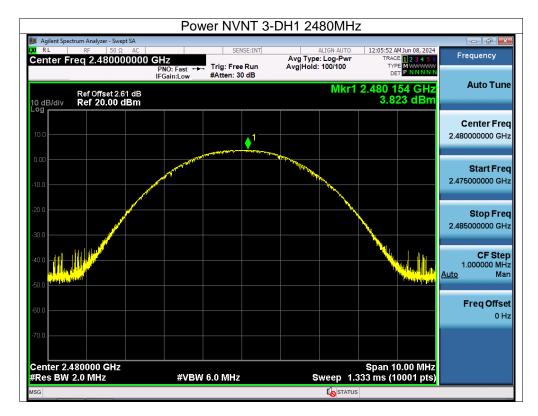






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12. Hopping Channel Separation

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.

Condition	Mode	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	2402.012	2403.01	0.998	0.619	Pass
NVNT	1-DH1	2441.01	2442.01	1	0.675	Pass
NVNT	1-DH1	2479.012	2480.014	1.002	0.586	Pass
NVNT	2-DH1	2402.01	2403.012	1.002	0.793	Pass
NVNT	2-DH1	2441.01	2442.01	1	0.783	Pass
NVNT	2-DH1	2479.012	2480.01	0.998	0.777	Pass
NVNT	3-DH1	2402.012	2403.012	1	0.744	Pass
NVNT	3-DH1	2441.01	2442.01	1	0.76	Pass
NVNT	3-DH1	2479.008	2480.014	1.006	0.783	Pass

12.4 Test Result

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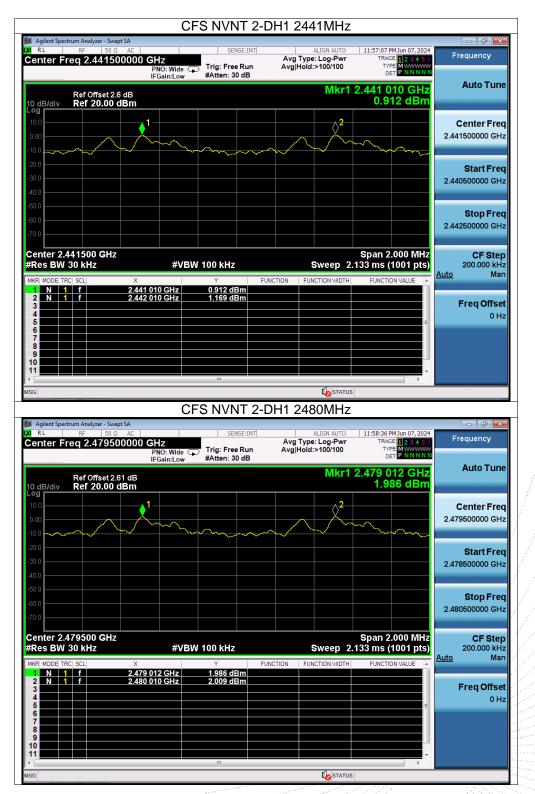










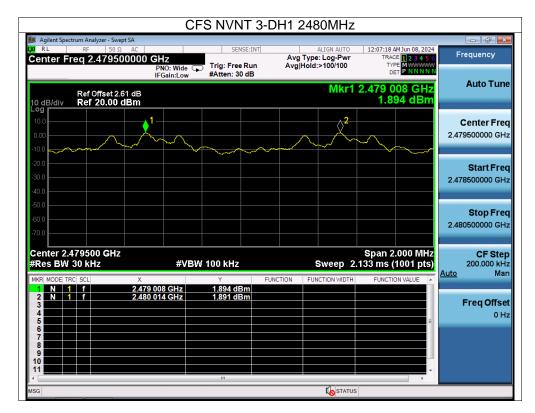














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13. Number Of Hopping Frequency

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;

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

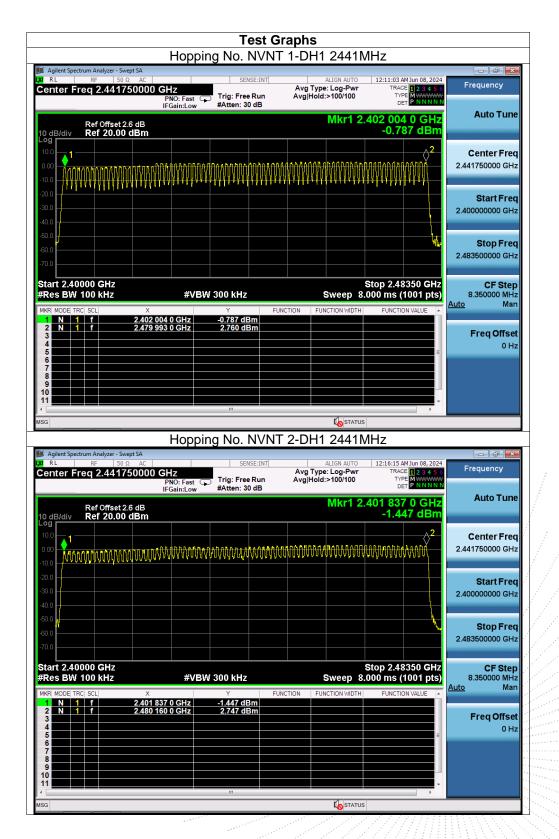
13.4 Test Result

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	Hopping No. NVN	T 3-DH1 2441N	MHz	
Agilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC Center Freq 2.441750000 G		ALIGN AUTO Avg Type: Log-Pwr AvalHold:>100/100	12:21:19 AM Jun 08, 2024 TRACE 1 2 3 4 5 6 TYPE M WWWWW	Frequency
	PNO: Fast Trig: Free Run IFGain:Low #Atten: 30 dB	5,	401 837 0 GHz -1.997 dBm	Auto Tune
10.0 - 1	MUMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM	MMMMMMMMM		Center Free 2.441750000 GH:
-20.0				Start Free 2.400000000 GH:
-60.0			<u> </u>	Stop Free 2.483500000 GH
Start 2.40000 GHz #Res BW 100 kHz	#VBW 300 kHz	Sweep 8	Stop 2.48350 GHz .000 ms (1001 pts)	CF Step 8.350000 MH Auto Mar
MKR MODE TRC SCL X 1 N 1 f 2.401 837 2 N 1 f 2.480 494 3 4 5 5	7 0 GHz -1.997 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offse
6 7 8 9 10				
MSG	m		×	



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14. Dwell Time

14.1 Block Diagram Of Test Setup



14.2 Limit

≤0.4 Second

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.

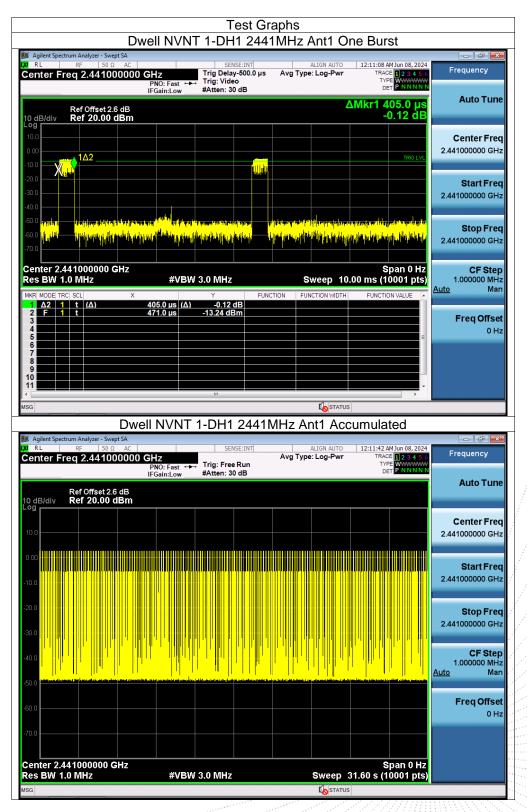
4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

14.4 Test Result

Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	0.405	128.385	317	31600	400	Pass
NVNT	1-DH3	2441	1.66	270.58	163	31600	400	Pass
NVNT	1-DH5	2441	2.91	343.38	118	31600	400	Pass
NVNT	2-DH1	2441	0.416	132.704	319	31600	400	Pass
NVNT	2-DH3	2441	1.667	266.72	160	31600	400	Pass
NVNT	2-DH5	2441	2.915	288.585	99	31600	400	Pass
NVNT	3-DH1	2441	0.415	131.555	317	31600	400	Pass
NVNT	3-DH3	2441	1.664	266.24	160	31600	400	Pass
NVNT	3-DH5	2441	2.917	338.372	116	31600	400	Pass

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

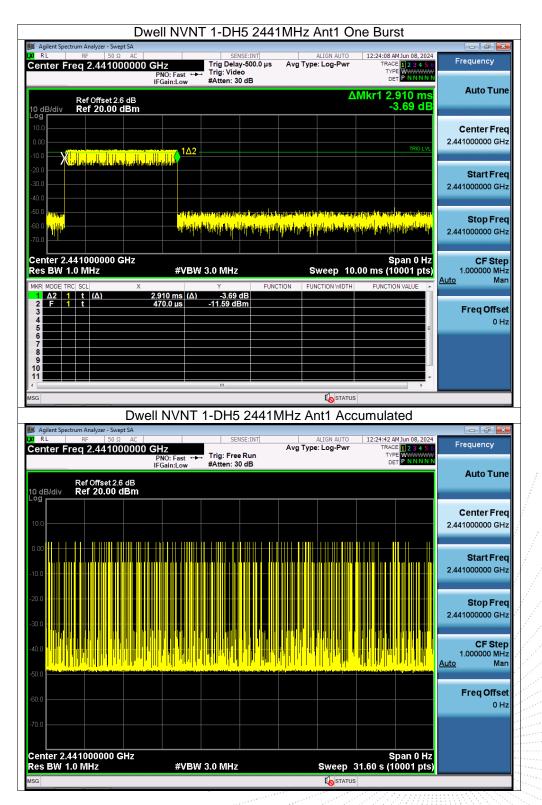






	well NVNT 1-DH3 244	1MHz Ant1 On	e Burst	
M gilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC Center Freq 2.441000000	PNO: Fast ++++ Irig: Video	ALIGN AUTO Avg Type: Log-Pwr	12:23:14 AM Jun 08, 2024 TRACE 1 2 3 4 5 6 TYPE WWWWW DET P N N N N N	Frequency
Ref Offset 2.6 dB 10 dB/div Ref 20.00 dBm	IFGain:Low #Atten: 30 dB	ΔN	lkr1 1.660 ms -5.02 dB	Auto Tune
			TRIG LVL	Center Freq 2.441000000 GHz
-10.0 -20.0 -30.0				Start Freq
-40.0	tra hea soviet je osu terperiori ka vetra konjupit pila konstane bije og a	na fraing and dataine in grane spectar g	معمله بهاره الاردان ومتعلماً مارا والم	2.441000000 GHz Stop Freq
-60.0 <mark> , n /)</mark> -70.0	liniti et foataarikire perenyaa hiraa hiraana tara	<mark>i a filo filo filo da se a se publicante de serva</mark>	an a	2.441000000 GHz
Center 2.441000000 GHz Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 10.0	Span 0 Hz 0 ms (10001 pts) FUNCTION VALUE	CF Step 1.000000 MHz <u>Auto</u> Man
1 Δ2 1 t (Δ) 2 F 1 t 3 4 <td>1.660 ms (Δ) -5.02 dB 472.0 μs -10.39 dBm</td> <td></td> <td></td> <td>Freq Offset 0 Hz</td>	1.660 ms (Δ) -5.02 dB 472.0 μs -10.39 dBm			Freq Offset 0 Hz
5 6 7 8 9				
10 11 <				
MSG	ell NVNT 1-DH3 2441	MHz Ant1 Accu	imulated	
Agilent Spectrum Analyzer - Swept SA XX RL RF 50 Ω AC	SENSE:INT	ALIGN AUTO	12:23:48 AM Jun 08, 2024	
Center Freq 2.44100000		Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE WWWWW DET P N N N N N	Frequency
Ref Offset 2.6 dB 10 dB/div Ref 20.00 dBm				Auto Tune
10.0				Center Freq 2.441000000 GHz
0.00				Start Freq 2.441000000 GHz
-20.0				Stop Freq
-30.0				2.441000000 GHz
-40.0				CF Step 1.000000 MHz <u>Auto</u> Man
-60.0				Freq Offset 0 Hz
-70.0				
Center 2.441000000 GHz Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 31	Span 0 Hz .60 s (10001 pts)	
MSG		I STATUS		

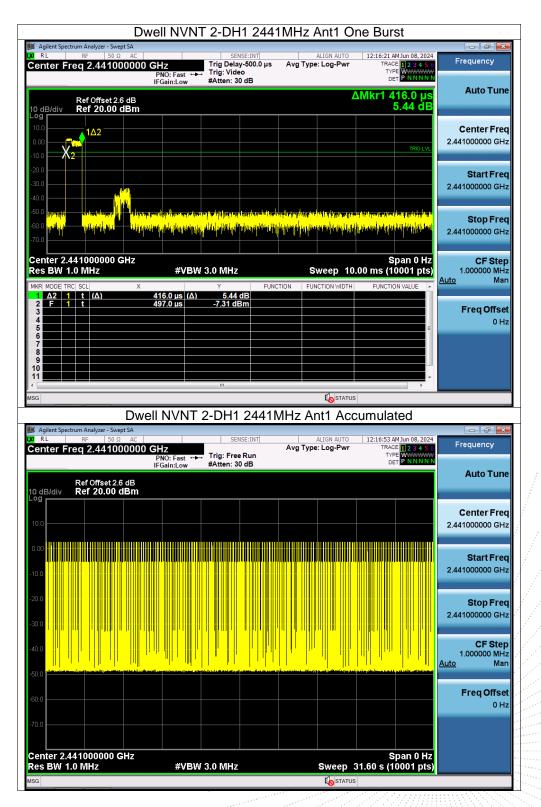




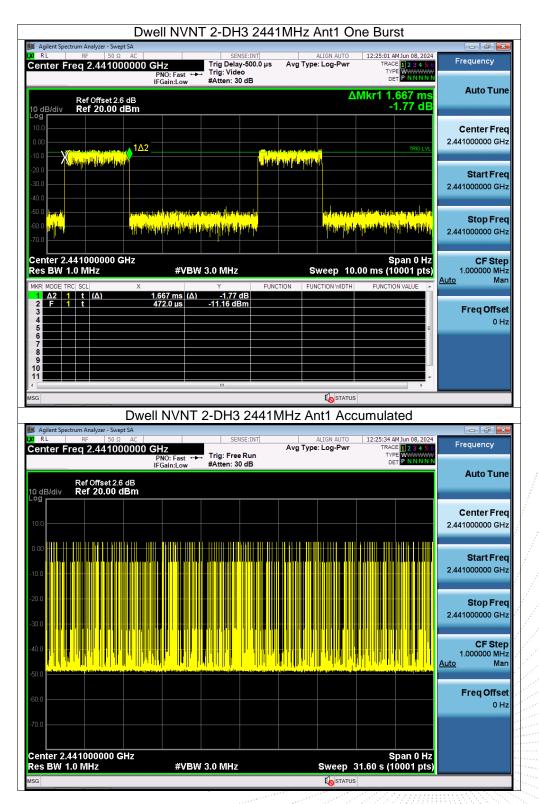
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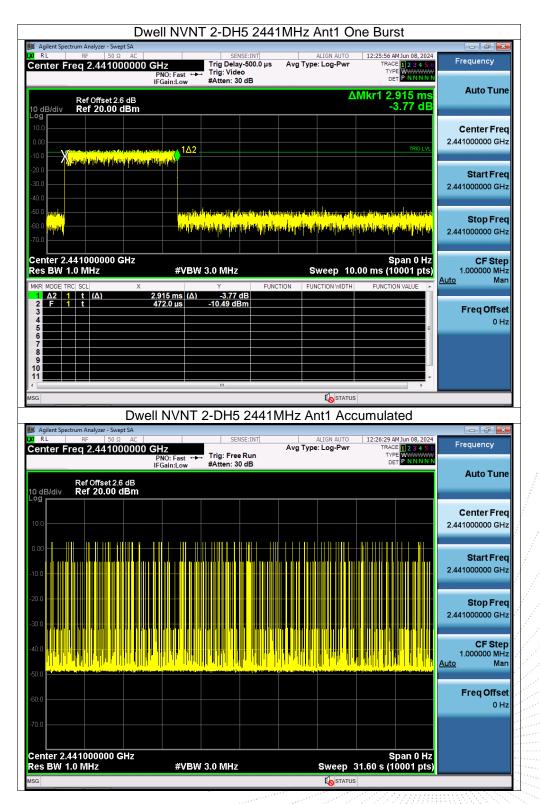














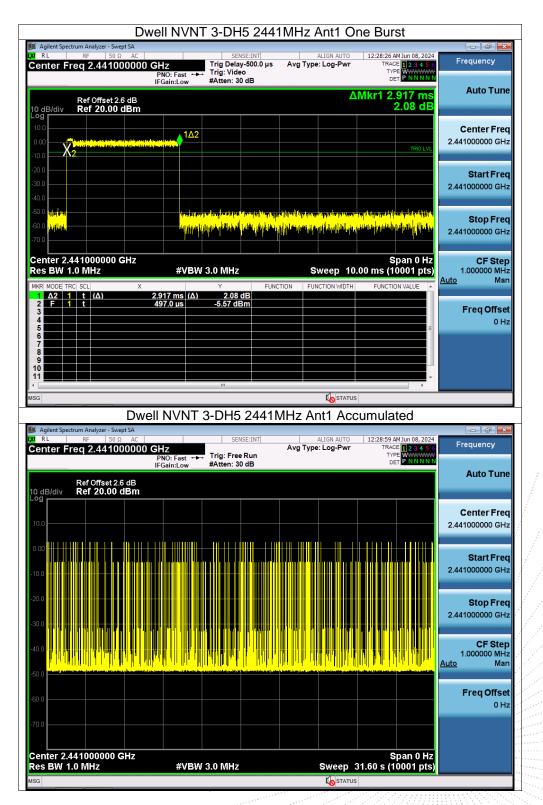
	NVNT 3-DH1 244	11MHz Ant1 Or	ne Burst	
	SENSE:INT Trig Delay-500.0 µs Fast ↔ Trig: Video	ALIGN AUTO Avg Type: Log-Pwr	12:21:24 AM Jun 08, 2024 TRACE 1 2 3 4 5 6 TYPE WWWWWW DET P NNNNN	Frequency
IFGain Ref Offset 2.6 dB 10 dB/div Ref 20.00 dBm	:Low #Atten: 30 dB	Δ	Mkr1 415.0 μs -0.44 dB	Auto Tune
Log 10.0 0.00 1Δ2 1Δ2			TRIG LVL	Center Freq 2.441000000 GHz
-20.0				Start Freq 2.441000000 GHz
	ally follow in the second s The following second			Stop Freq 2.441000000 GHz
Center 2.441000000 GHz Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 10.0	Span 0 Hz 00 ms (10001 pts)	CF Step 1.000000 MHz Auto Man
2 F 1 t 498.0 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	μs (Δ) -0.44 dB	NCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz
6 7 8 9 10				
۲ مراجع المراجع		I STATUS	4	
Dwell N	VNT 3-DH1 2441	MHz Ant1 Acc	umulated	
Agilent Spectrum Analyzer - Swept SA Ν RF 50 Ω AC Control of The cont	SENSE:INT	ALIGN AUTO		- ¢ 💌
	Fast ↔ Trig: Free Run	Avg Type: Log-Pwr	12:21:57 AM Jun 08, 2024 TRACE 1 2 3 4 5 6 TYPE	Frequency
PNO: IFGain Ref Offset 2.6 dB 10 dB/div Ref 20.00 dBm			TRACE 1 2 3 4 5 6	Frequency Auto Tune
PNO: IFGain Ref Offset 2.6 dB 10 dB/div Ref 20.00 dBm			TRACE 1 2 3 4 5 6	
PNO: IFGain 10 dB/div Ref 20.00 dBm			TRACE 1 2 3 4 5 6	Auto Tune Center Freq
IFGain Ref Offset 2.6 dB 10 dB/div Ref 20.00 dBm 10 0 10.0 0 00			TRACE 1 2 3 4 5 6	Auto Tune Center Freq 2.441000000 GHz Start Freq
PNO: IFGain 10 dEJ/div Ref Offset 2.6 dB 10 0 0 00 -10 0 -20 0 -30 0 -40 0 -40 0 -PNO:			TRACE 1 2 3 4 5 6	Auto Tune Center Freq 2.44100000 GHz Start Freq 2.441000000 GHz Stop Freq
PNO: IFGain 10 dB/div Ref Offset 2.6 dB 0 00 0 00			TRACE 1 2 3 4 5 6	Start Freq 2.441000000 GHz Start Freq 2.441000000 GHz Stop Freq 2.441000000 GHz Stop Freq 2.441000000 GHz
PNO: IFGain 10 d E3/div Ref Offset 2.6 dB 10 0 0 00 0 00 				Auto Tune Center Freq 2.441000000 GHz Start Freq 2.441000000 GHz 2.441000000 GHz 1.000000 MHz Auto Man
PNO: IFGain 10 dB/div Ref Offset 2.6 dB 10 0 10 0 10 0 		Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6	Auto Tune Center Freq 2.44100000 GHz Start Freq 2.44100000 GHz Stop Freq 2.441000000 GHz L00000 MHz Auto Man





Dw Agilent Spectrum Analyzer - Swept SA	ell NVNT 3-DH3 244	1MHz Ant1 One	e Burst	- 8 💌
RL RF 50 Ω AC enter Freq 2.441000000 0	PNO: Fast ++++ Trig: Video	ALIGN AUTO Avg Type: Log-Pwr	12:27:39 AM Jun 08, 2024 TRACE 1 2 3 4 5 6 TYPE WWWWWW DET P NNNNN	Frequency
Ref Offset 2.6 dB 0 dB/div Ref 20.00 dBm	IFGain:Low #Atten: 30 dB	ΔΜ	kr1 1.664 ms -2.72 dB	Auto Tune
			TRIG LVL	Center Fred 2.441000000 GHz
				Start Fre 2.441000000 GH
0.0 <mark>pt gelt </mark>	na dina ponti ke pong padapatan pondisi di pada basa pada Ing dina kapatan kapatan kapatan pada pada basa pada pada pada pada pada pada pada p			Stop Fre 2.441000000 GH
enter 2.441000000 GHz es BW 1.0 MHz	#VBW 3.0 MHz	Sweep 10.00	Span 0 Hz) ms (10001 pts)	CF Ste j 1.000000 MH <u>Auto</u> Ma
2 F 1 t 3 4 5 5 6 8	1.664 ms (Δ) -2.72 dB 471.0 μs -10.64 dBm	CTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offse
7 8 9 9 0 1				
	II NVNT 3-DH3 2441	STATUS	mulated	
Agilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC	SENSE:INT		12:28:13 AM Jun 08, 2024	
enter Freq 2.441000000	CHZ PNO: Fast ← → Trig: Free Run IFGain:Low #Atten: 30 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE WWWWW DET P N N N N N	Frequency
Ref Offset 2.6 dB dB/div Ref 20.00 dBm				Auto Tun
0.0				Center Fre 2.441000000 GH
				Start Fre 2.441000000 GH
00				Stop Fre 2.441000000 GH
10 				CF Ste 1.000000 MH <u>Auto</u> Ma
0.0				Freq Offse 0 H
enter 2.441000000 GHz			Span 0 Hz	







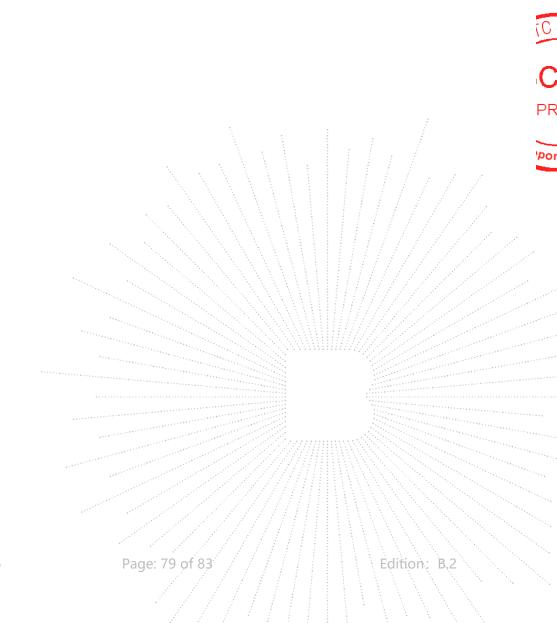
15. Antenna Requirement

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.

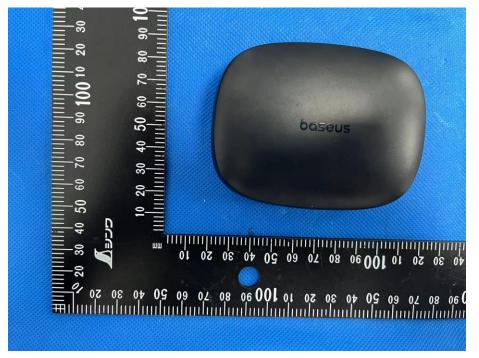


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16. EUT Photographs

EUT Photo 1



EUT Photo 2



NOTE: Appendix-Photographs Of EUT Constructional Details.

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17. EUT Test Setup Photographs

Conducted Measurement Photo



Radiated Measurement Photos



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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

TEL: 400-788-9558

P.C.: 518103

FAX: 0755-33229357

Website: http://www.chnbctc.com

Consultation E-mail: bctc@bctc-lab.com.cn.

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

***** END *****

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