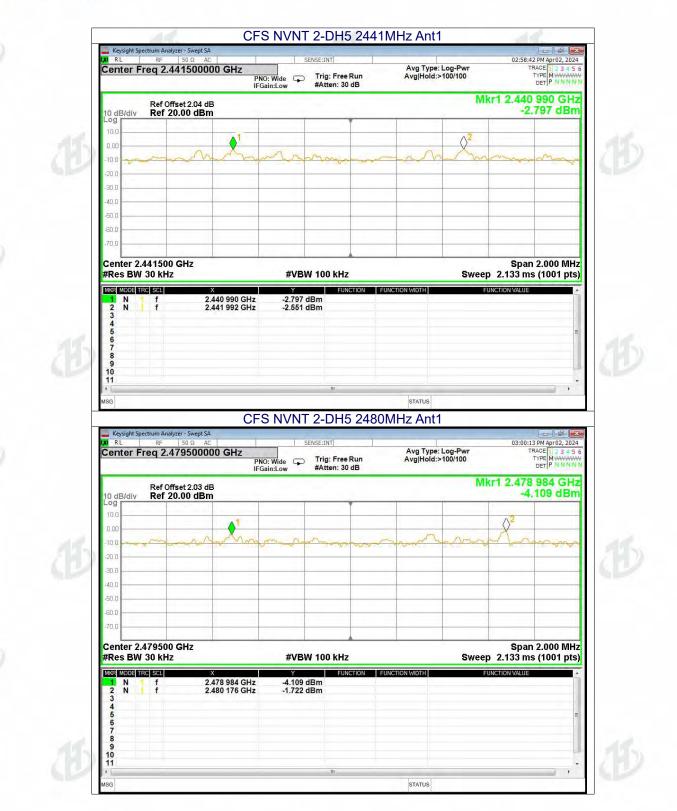


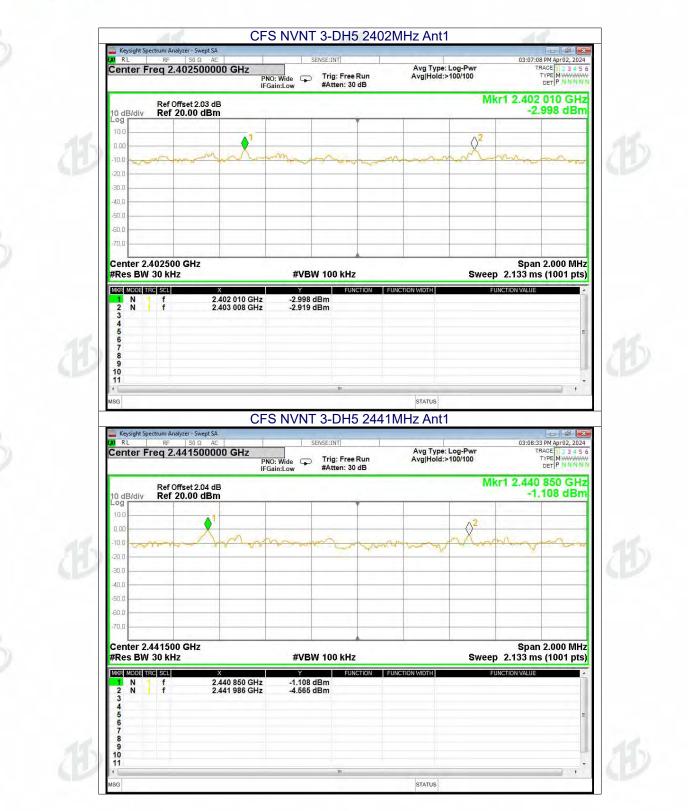
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The second secon







Cer	L RF 50 Ω A ter Freq 2.4795000		D Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100	03:11:18 PM Apr02, 202 TRACE 1 2 3 4 5 TYPE M WWWW DET P N N N	14 6 AN
Log	Ref Offset 2.03 d B/div Ref 20.00 dB	iB m	Ť	M	kr1 2.478 966 GH -5.946 dBr	z
10.0 0.00 -10.0		-	man	www.	mann	
-20.0 -30.0 -40.0						-
-50.0 -60.0 -70.0						-
#Re	ter 2.479500 GHz s BW 30 kHz Mode TRC Scl	X Y	BW 100 kHz		Span 2.000 MH p 2.133 ms (1001 pt unemon value	
1 2 3 4 5	N 1 f	2.478 966 GHz -5.94 2.479 988 GHz -3.08	6 dBm 6 dBm			E
6 7 8 9 10 11						B
MSG			tt.	STATUS	•	

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# **10.NUMBER OF HOPPING FREQUENCY**

FCC Part15 C Section 15.247 (a)(1)(iii)
ANSI C63.10:2013
RBW=100kHz, VBW=300kHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak
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.



### 10.4 Test Result

#### **Test Graphs** Hopping No. NVNT 1-DH5 2402MHz Ant1 R 2:47:13 PM Apr 02, 2024 Center Freq 2.441750000 GHz Avg Type: Log-Pwi Avg|Hold:>100/100 RACE TYPE MW PNO: Fast IFGain:Low Trig: Free Run #Atten: 30 dB $\mathbf{P}$ Mkr1 2.402 087 5 GHz 0.567 dBm Ref Offset 2.03 dB Ref 20.00 dBm 0 dB/div 20 30. 40. 50 Start 2.40000 GHz #Res BW 100 kHz Stop 2.48350 GHz Sweep 8.000 ms (1001 pts) #VBW 300 kHz MKR MODE TRCI SCL ELINCTION 2.402 087 5 GHz 2.479 993 0 GHz 0.567 dBm 0.454 dBm N f 234567891011 STATUS Hopping No. NVNT 1-DH5 2441MHz Ant1 Keysight Spe 02:48:42 PM Apr 02, 2024 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P N N N N RL RL Center Freq 2.441750000 GHz Avg Type: Log-Pwi Avg|Hold:>100/100 Trig: Free Run #Atten: 30 dB PNO: Fast IFGain:Low $\mathbf{r}$ Mkr1 2.402 004 0 GHz -0.123 dBm Ref Offset 2.04 dB Ref 20.00 dBm dB/di 0.00 10. 3fL 40.0 Zn Start 2.40000 GHz Stop 2.48350 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 8.000 ms (1001 pts) MKR MODE TRC SCL FUNCTION FUNCTION WIDTH 2.402 004 0 GHz 2.479 993 0 GHz -0.123 dBm 0.091 dBm NN f 23 4 5 6 7 8 9 10 11 STATUS



Keysight RL

0 dB/div

10

30. 40.0 50.0

NN

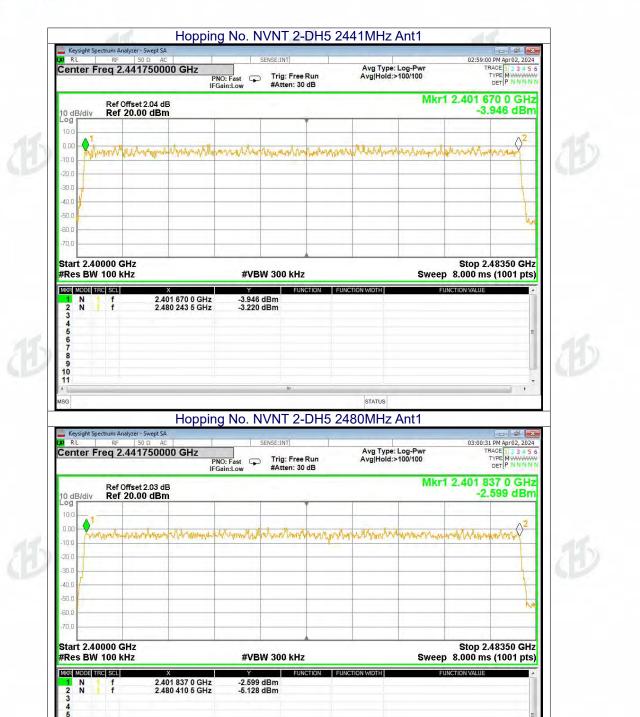


STATUS

## Hopping No. NVNT 2-DH5 2402MHz Ant1

Keysight Spectrum Ana					e P
RL RF	50 Ω AC	SENSE:INT		Avg Type: Log-Pwr	02:57:12 PM Apr 02, 202 TRACE 2 3 4 5
enter Freq 2.	141750000 GHz	: Fast 😱 Trig: Fr		Avg Hold:>100/100	TYPE M WWW
	IFGa	in:Low #Atten:	30 dB		DET P NNN
	ffset 2.03 dB 20.00 dBm			м	kr1 2.401 586 5 GH -4.485 dBr
.og					
A1					$\wedge^2$
10.00 Withmalu	hummananan	manth	www.	wwwwwwwwww	mmmmmm
20.0					
30.0					
40.0					
50.0					
60.0					
70.0					
· · · · · · · · · ·					
Start 2.40000 G Res BW 100 kl		#VBW 300 kH	Iz	Sw	Stop 2.48350 GH eep 8.000 ms (1001 pt
MKR MODE TRC SCL	X	Y F	UNCTION FUNCT	FION WIDTH	FUNCTION VALUE
1 N 1 f 2 N f	2.401 586 5 GHz 2.480 327 0 GHz	-4.485 dBm -2.929 dBm			
3	2.400 327 0 GHZ	-2.929 UBIN			
4 5 6 7					
6					
8					
0					
9					
9					
9 10 11		to			



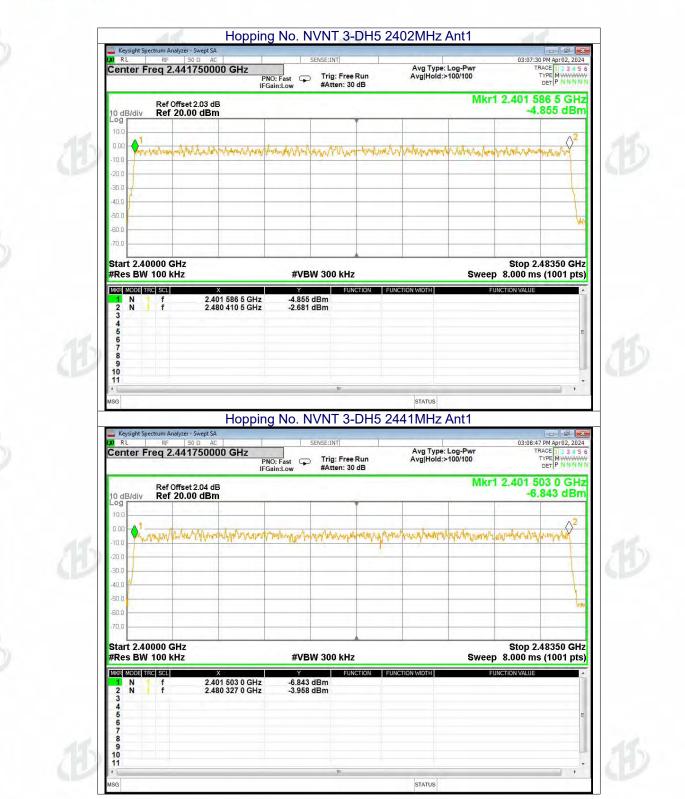


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STATUS





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	A/ 300 kHz	Swee	1 2.401 586 5 GH -6.118 dBn ////////////////////////////////////	B
#VB	A/ 300 kHz	Swee	Stop 2.48350 GH	
XY	FUNCTION FU			
XY	FUNCTION FU			
	dBm	NCTION WIDTH F		
			UNCTION VALUE	
				B
	10	STATUS		
	E.		B B	E E E

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### **11. DWELL TIME**

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=1MHz, VBW=3MHz, Span=0Hz, Detector=Peak
Limit:	0.4 Second

# 11.1 Test Setup

EUT	SPECTRUM
5 188 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ANALYZER

#### 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

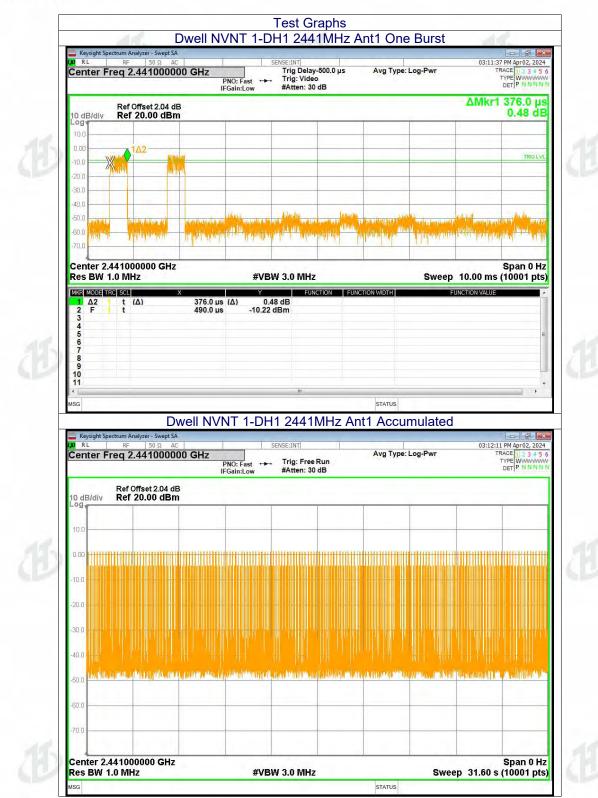
Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict	
1-DH1	2441	0.376	118.816	316	31600	400	Pass	
1-DH3	2441	1.632	256.224	157	31600	400	Pass	
1-DH5	2441	2.879	233.199	81	31600	400	Pass	
2-DH1	2441	0.385	121.66	316	31600	400	Pass	
2-DH3	2441	1.638	271.908	166	31600	400	Pass	
2-DH5	2441	2.886	294.372	102	31600	400	Pass	
3-DH1	2441	0.386	121.204	314	31600	400	Pass	
3-DH3	2441	1.637	253.735	155	31600	400	Pass	
3-DH5	2441	2.887	303.135	105	31600	400	Pass	

### Remarks:

The test period: T = 0.4 Second/Channel x 79 Channel = 31.6 s (1 / 2 / 3)-DH1: Dwell time (ms) = Pulse Time (ms) \* [1600 / (2 \* 79)] \* 31.6s (1 / 2 / 3)-DH3: Dwell time (ms) = Pulse Time (ms) \* [1600 / (4 \* 79)] \* 31.6s (1 / 2 / 3)-DH5: Dwell time (ms) = Pulse Time (ms) \* [1600 / (6 \* 79)] \* 31.6s

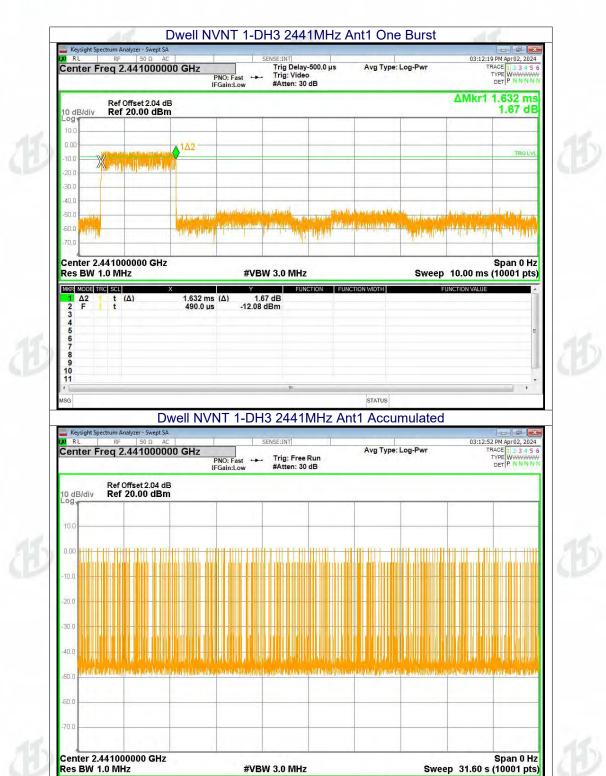
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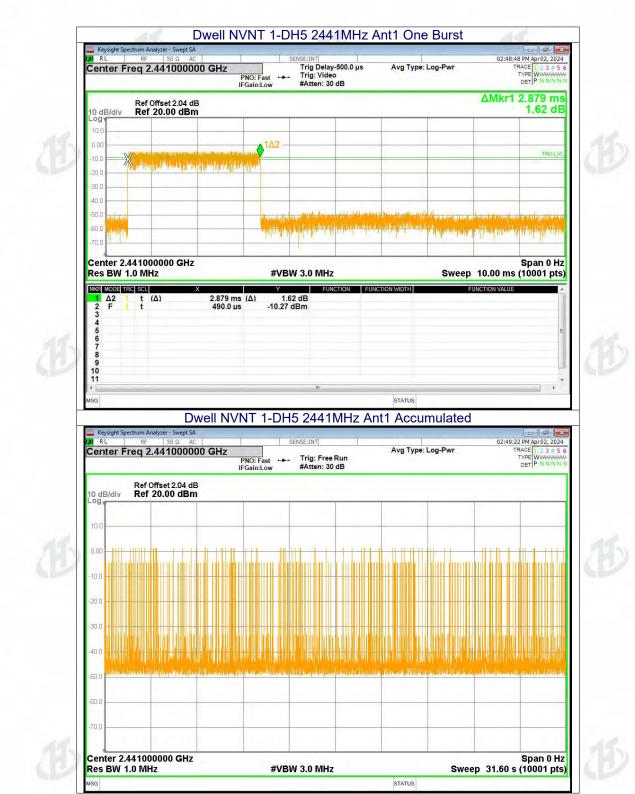




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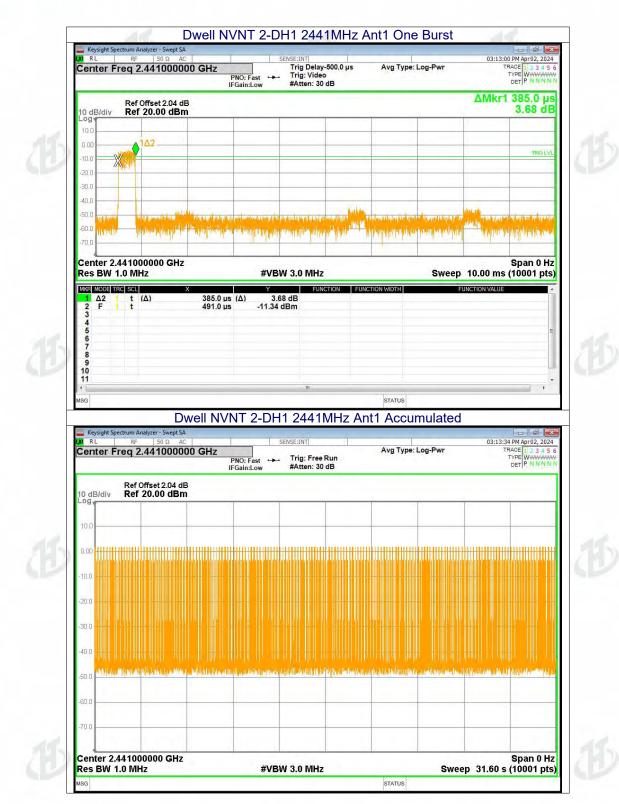
STATUS





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Keysight:

0 dB/div

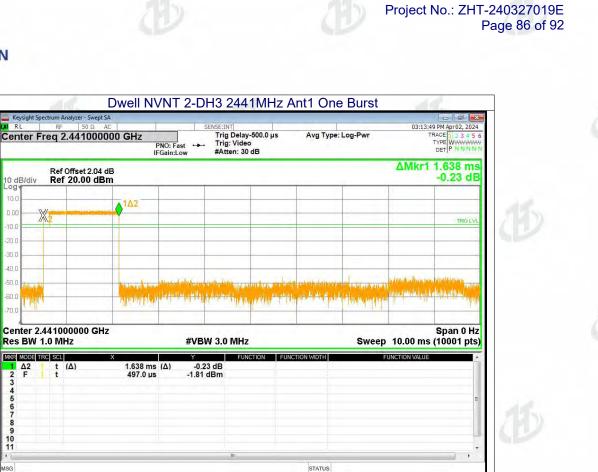
10

30. 40.0 50.0

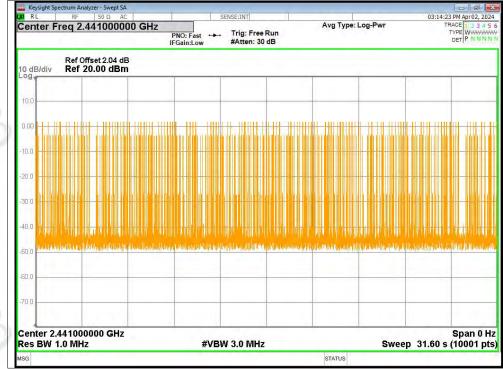
1 Δ2 2 F

23

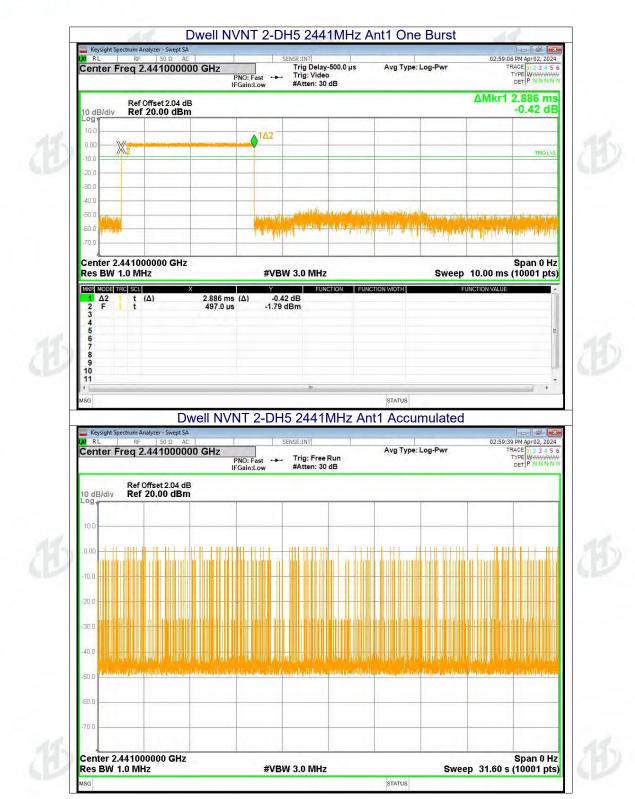
X



### Dwell NVNT 2-DH3 2441MHz Ant1 Accumulated

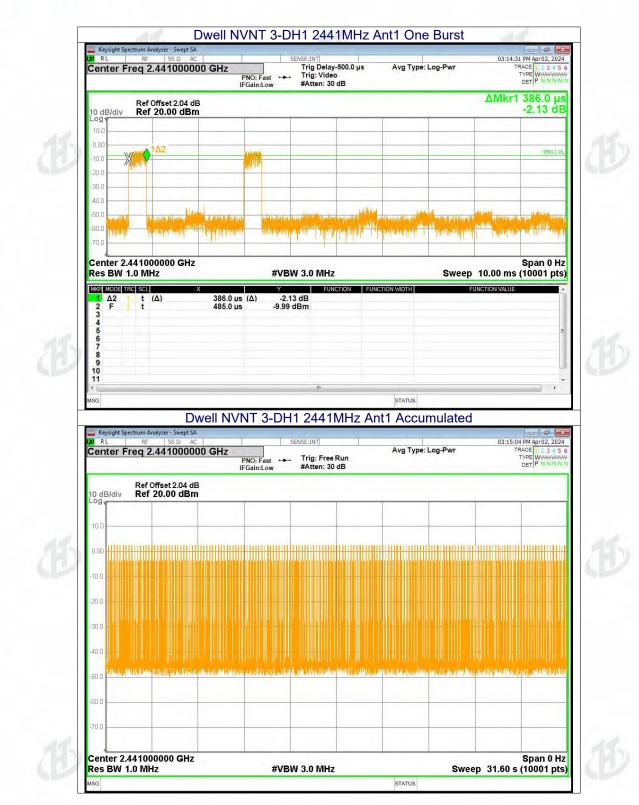




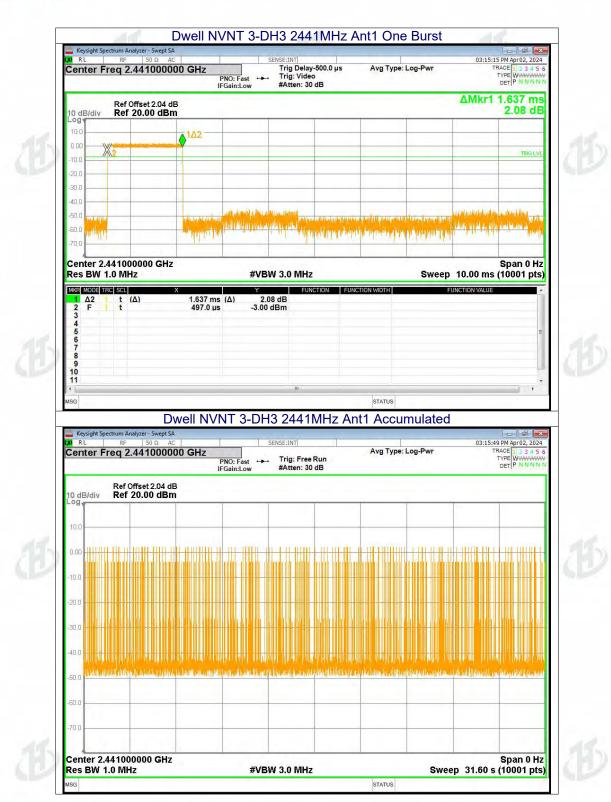


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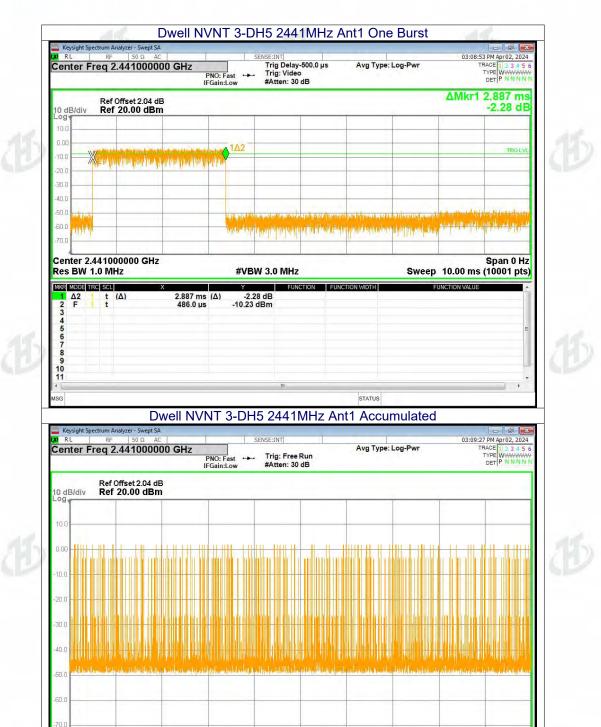






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Span 0 Hz Sweep 31.60 s (10001 pts)

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#VBW 3.0 MHz

STATUS

Center 2.441000000 GHz

Res BW 1.0 MHz







### 12. Antenna Requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(b)(4)				
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(b) (4) requirement:

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### EUT Antenna:

**1** 0755-27782934

The antenna is PCB antenna, the best case gain of the antennas is 2.07dBi, reference to the appendix II for details

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<b>B</b> '		e to the appendi					
1		ructional Details					
			***** EM	Т ※ ※ ※ ※ ※			
				 11		11	