

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 20 dB relative to the maximum level measured in the fundamental emission.

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8DPSK

Report No.: BCTC2202673384E

1.222

10.4 Test Result

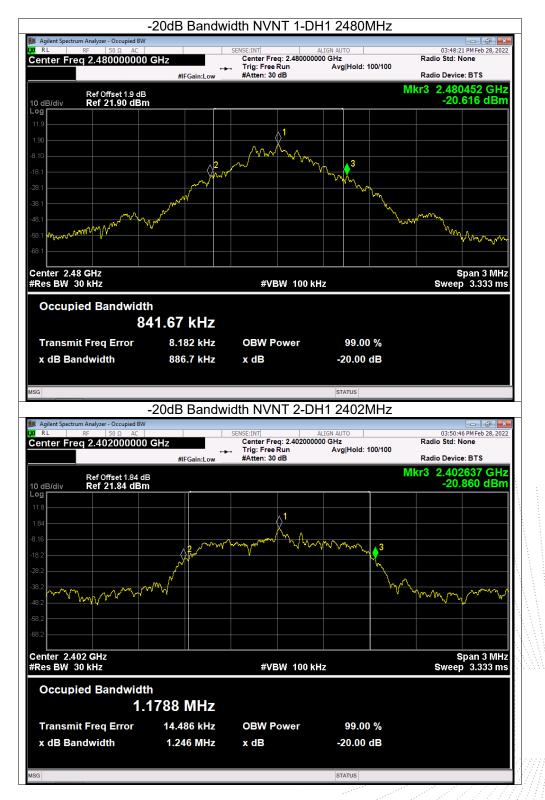
Temperature :	26 ℃		Relative Humidity :	54%
Test Voltage :	DC 3.7V		Remark	N/A
Modulation		Test Cha	annel	Bandwidth(MHz)
GFSK		Low	,	0.861
GFSK		Middl	e	0.878
GFSK		High	1	0.887
π/4DQPSK		Low	,	1.246
π/4DQPSK		Middl	e	1.24
π/4DQPSK		High	1	1.243
8DPSK		Low	,	1.244
8DPSK		Middl	e	1.22

High





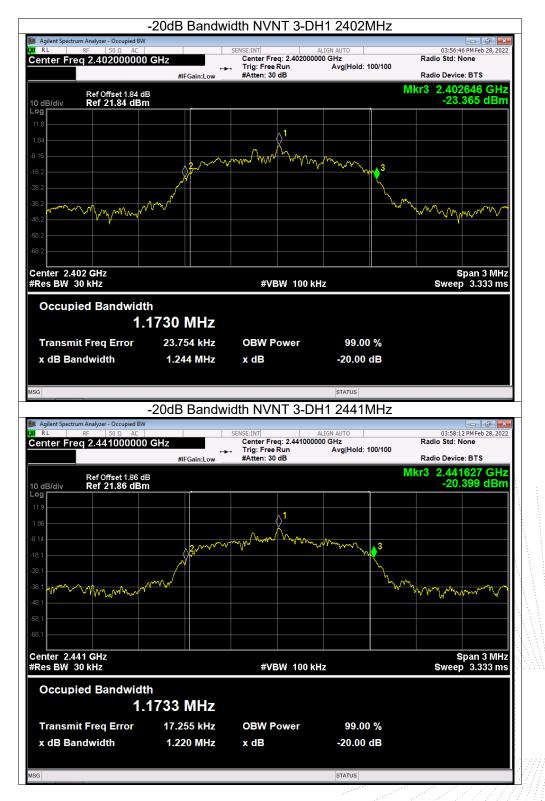




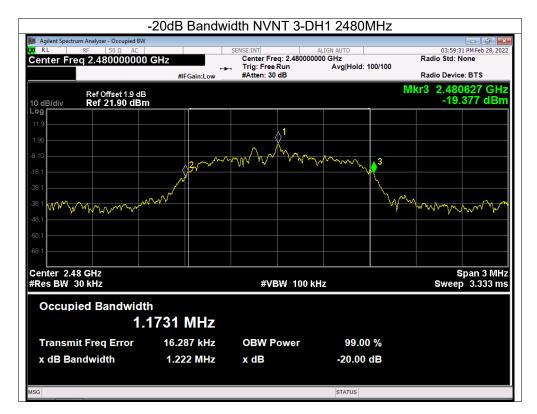














11. Maximum Peak Output Power

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.

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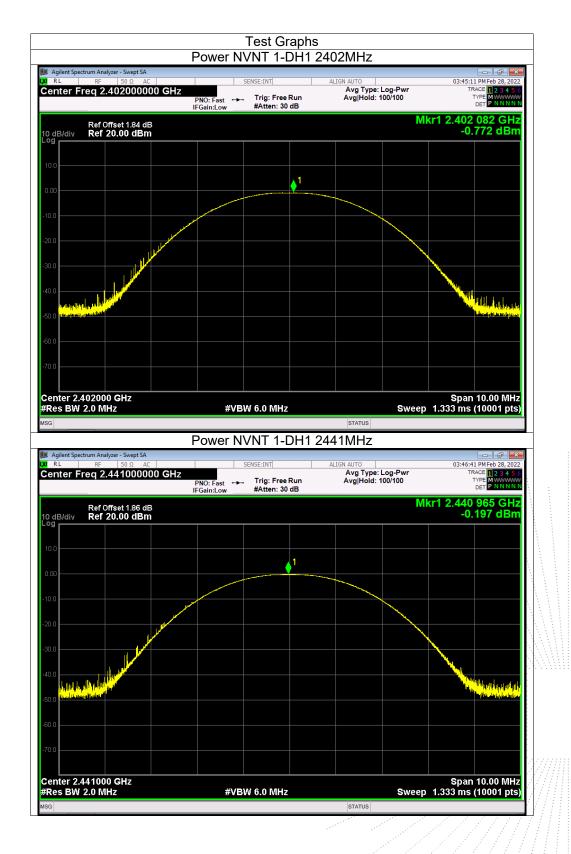


11.4 Test Result

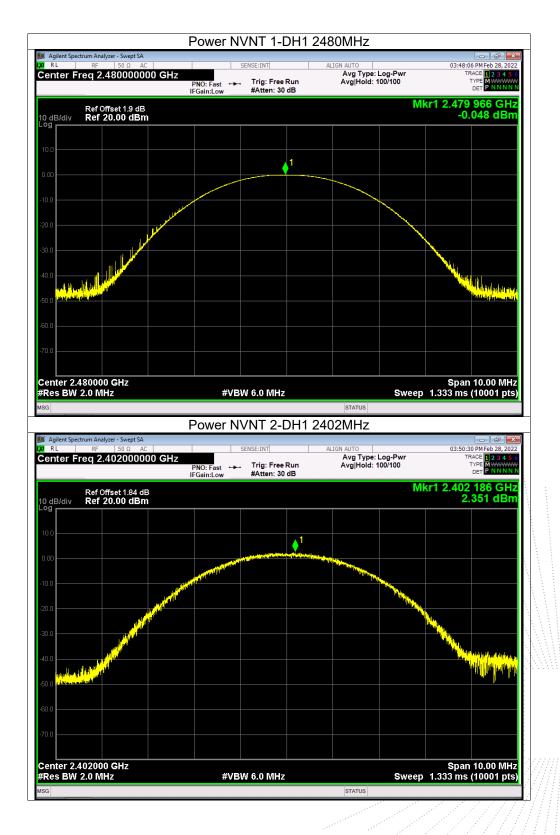
Temperature :	26 ℃	Relative Humidity :	54%	
Test Voltage :	DC 3.7V	Remark:	N/A	
	1			
Modulation	Test Channel	Output Power (dBm)		Limit (dBm)
GFSK	Low	-0.77		21
GFSK	Middle	-0.2		21
GFSK	High	-0.05		21
π/4DQPSK	Low	2.35		21
π/4DQPSK	Middle	3.19		21
π/4DQPSK	High	3.4		21
8DPSK	Low	2.96		21
8DPSK	Middle	3.85		21
8DPSK	High	4.06		21



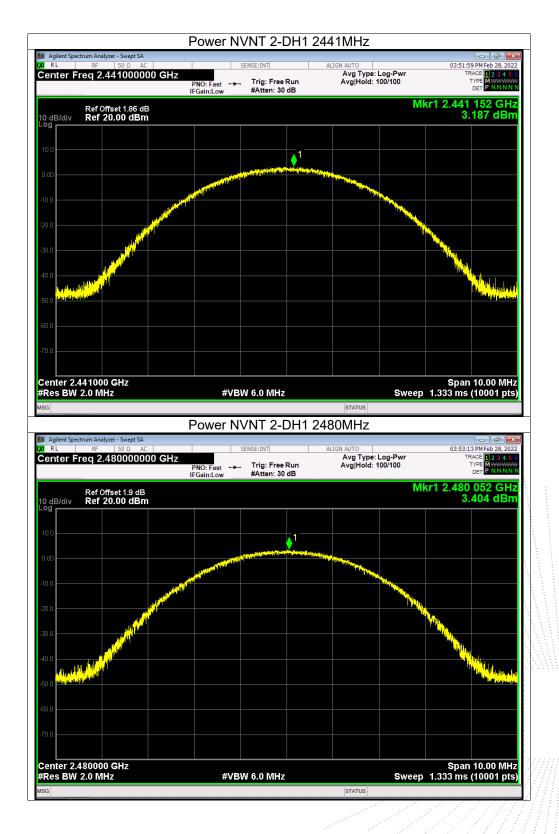




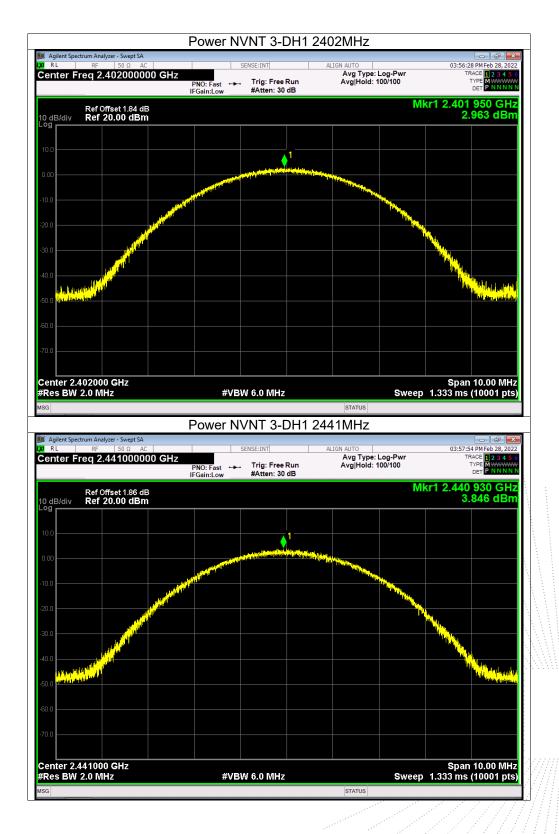




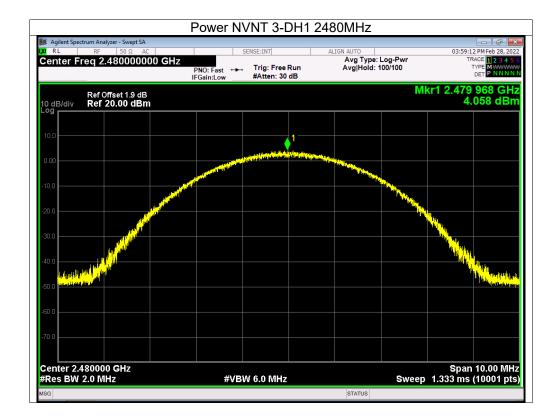














12. Hopping Channel Separation

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.

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12.4 Test Result

Modulation	Test Channel	Separation (MHz)	Limit(MHz)	Result
GFSK	Low	1.002	0.574	PASS
GFSK	Middle	0.998	0.585	PASS
GFSK	High	1	0.591	PASS
π/4DQPSK	Low	1.002	0.831	PASS
π/4DQPSK	Middle	1	0.827	PASS
π/4DQPSK	High	1	0.829	PASS
8DPSK	Low	1	0.829	PASS
8DPSK	Middle	1	0.813	PASS
8DPSK	High	1	0.815	PASS



🖡 Agilent Spectrum Analyzer - Sv		FS NVNT 1-	Graphs DH1 2402N	ЛНz		- 6 ×
RL RF 50 Center Freq 2.402	Ω AC	SENSE:INT		AUTO Avg Type: Log-Pwr	04:38:33 TRA	PM Feb 28, 2022
	PNO:	Wide Trig: Fr n:Low #Atten:		Avg Hold:>100/100	עד ם	
Ref Offset 0 dB/div Ref 20.00	1.84 dB			N	1kr1 2.402 (-1.5)10 GHz 85 dBm
0 dB/div Ref 20.00						
0.00						
20.0				~		^
30.0			~~~~			
40.0						
50.0 60.0						
70.0						
Center 2.402500 GH Res BW 30 kHz	Z	#VBW 100 kł		O		2.000 MHz
	X				ep 2.133 ms ((1001 pts)
1 N 1 f 2 N 1 f	2.402 010 GHz 2.403 012 GHz	-1.585 dBm -1.655 dBm				
3 4 5						_
6 7						
8 9						
10 11						
SG		III		STATUS		• •
	CI	" FS NVNT 1-	DH1 2441N			•
SG Agilent Spectrum Analyzer - Sv RL RF 50	wept SA Ω AC		ALIGN	/Hz	04:47:54	PM Feb 28, 2022
SG Agilent Spectrum Analyzer - Sv	wept SA Ω AC 500000 GHz PNO:	FS NVNT 1-	ee Run ALIGN	ИНz	04:47:54	PM Feb 28, 2022
Agilent Spectrum Analyzer - So RL RF So Senter Freq 2.441	wept SA Ω AC 5000000 GHz IFGai	FS NVNT 1-	ee Run ALIGN	AUTO Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY D I kr1 2.441 (PM Feb 28, 2022 CE 1 2 3 4 5 6 PE MWWWW ET P NNNNN 010 GHz
Agilent Spectrum Analyzer - Si RL RF 50 Renter Freq 2.441	wept SA Ω AC 5000000 GHz PNO: IFGai 1.96 dB	FS NVNT 1-	ee Run ALIGN	AUTO Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY D I kr1 2.441 (PM Feb 28, 2022 CE 1 2 3 4 5 6 PE MWWWWW ET P N N N N
Agilent Spectrum Analyzer - So RL RF 50 ienter Freq 2.441 Ref Offset 0 dB/div Ref 20.00	wept SA Ω AC 5000000 GHz PNO: IFGai 1.96 dB	FS NVNT 1-	ee Run ALIGN	AUTO Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY D I kr1 2.441 (PM Feb 28, 2022 CE 123456 PE MWWWW ET PNNNNN 010 GHz
Agilent Spectrum Analyzer - Sv RL RF S0 ienter Freq 2.441 Ref Offset 0 dB/div Ref 20.00	wept SA Ω AC 5000000 GHz PNO: IFGai 1.96 dB	FS NVNT 1-	ee Run ALIGN	AUTO Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY D I kr1 2.441 (PM Feb 28, 2022 CE 123456 PE MWWWW ET PNNNNN 010 GHz
Agilent Spectrum Analyzer - Sv RL RF 50 center Freq 2.441! Ref Offset 0 dB/div Ref 20.00 0 0 0.00	wept SA Ω AC 5000000 GHz PNO: IFGai 1.96 dB	FS NVNT 1-	ee Run ALIGN	AUTO Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY D I kr1 2.441 (PM Feb 28, 2022 CE 123456 PE MWWWW ET PNNNNN 010 GHz
SG Relent Spectrum Analyzer - St RL RF SG Center Freq 2.4411 Ref Offset 0 dB/div Ref 20.00 00 00 00 00 00 00	wept SA Ω AC 5000000 GHz PNO: IFGai 1.96 dB	FS NVNT 1-	ee Run ALIGN	AUTO Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY D I kr1 2.441 (PM Feb 28, 2022 CE 123456 PE MWWWW ET PNNNNN 010 GHz
SG Agilent Spectrum Analyzer - Sc RL RF SG Center Freq 2.4411 Ref Offset 0 dB/div Ref 20.00 0 0 0 0 0 0 0 0 0 0 0 0	wept SA Ω AC 5000000 GHz PNO: IFGai 1.96 dB	FS NVNT 1-	ee Run ALIGN	AUTO Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY D I kr1 2.441 (PM Feb 28, 2022 CE 123456 PE MWWWW ET PNNNNN 010 GHz
SG Rel Rel Spectrum Analyzer - Sv RL RF 50 Center Freq 2.441! Ref Offset 0 0 dB/div Ref 20.00 0 10 0 0 0 0 20 0 0 0 0 0 0 00 0 <td>wept SA Ω AC 5000000 GHz PNO: IFGai 1.96 dB</td> <td>FS NVNT 1-</td> <td>ee Run ALIGN</td> <td>AUTO Avg Type: Log-Pwr Avg Hold:>100/100</td> <td>04:47:54 TRA TY D Ikr1 2.441 (</td> <td>PM Feb 28, 2022 CE 123456 PE MWWWW ET PNNNNN 010 GHz</td>	wept SA Ω AC 5000000 GHz PNO: IFGai 1.96 dB	FS NVNT 1-	ee Run ALIGN	AUTO Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY D I kr1 2.441 (PM Feb 28, 2022 CE 123456 PE MWWWW ET PNNNNN 010 GHz
SG Agilent Spectrum Analyzer - Sk RL RF SS Senter Freq 2.4411 Ref Offset 0 dB/div Ref 20.00 00	AC PNO: AC PNO: IS66 dB OdBm	FS NVNT 1-	ee Run ALIGN	AUTO Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY Ikr1 2.441 (-0.8	PMFeb 28, 2022 CE II 2 3 4 5 0 PP M M M M M P N N N N N 110 GHz 61 dBm
SG Rel Rel Spectrum Analyzer - St. RL RF 50 Center Freq 2.441! Ref Offset 0 0 dB/div Ref 20.00 0 10 0 0 0 0 20 0 0 0 0 0 0 dB/div Ref 20.00 0	AC PNO: AC PNO: IS66 dB OdBm	FS NVNT 1-	ee Run 30 dB	AUTO Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY Ikr1 2.441 (-0.8	2.000 MHz
SG Ref Ref SG RL RF SD SD Center Freq 2.441! Ref Offset SD SD Code Ref Offset SD SD SD Code Ref Offset SD SD SD SD Code Ref Offset SD	xept SA Q AC SOUCCO GHZ PNO: IFGai 1.86 dB 0 dBm 1 1.86 dB 1 2 2 2 X	FS NVNT 1-	ee Run 30 dB	AHZ Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY Ikr1 2.441 (-0.8	2.000 MHz
Ref Offset 0.00 Ref 0.00 0.00 Ref 0.00 0.00 0.00 0.00 0.00 </td <td>xept SA 2 AC 500000 GHz PNO: IFGai 1.86 dB 0 dBm 1.96 dB 1.96 dB 1</td> <td>FS NVNT 1-</td> <td>ee Run 2 30 dB</td> <td>AHZ Avg Type: Log-Pwr Avg Hold:>100/100</td> <td>04:47:54 TRA TY Ikr1 2.441 (-0.8</td> <td>2.000 MHz</td>	xept SA 2 AC 500000 GHz PNO: IFGai 1.86 dB 0 dBm 1.96 dB 1.96 dB 1	FS NVNT 1-	ee Run 2 30 dB	AHZ Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY Ikr1 2.441 (-0.8	2.000 MHz
SG R RF SG RL RF SG Center Freq 2.441! Ref Offset 0 dB/div Ref 20.00 9	xept SA 2 AC 500000 GHz PNO: IFGai 1.86 dB 0 dBm 1 1.86 dB 1 2 2 2 2 4 2 4 4 1 4 5 1 1 1 1 1 1 1 1 1 1 1 1 1	FS NVNT 1-	ee Run 2 30 dB	AHZ Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY Ikr1 2.441 (-0.8	2.000 MHz
SG Rejlent Spectrum Analyzer - Sk RL RF 50 Center Freq 2.441! Ref Offset 0 dB/div Ref 20.00 0 0	xept SA 2 AC 500000 GHz PNO: IFGai 1.86 dB 0 dBm 1 1.86 dB 1 2 2 2 2 4 2 4 4 1 4 5 1 1 1 1 1 1 1 1 1 1 1 1 1	FS NVNT 1-	ee Run 2 30 dB	AHZ Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY Ikr1 2.441 (-0.8	2.000 MHz
SG Ref Ref SG RL RF SO Senter Freq 2.4415 Ref Offset SG 0 dB/div Ref 20.00 SG 0 dB/div Ref 20.00 SG 0 00 SG SG 1 0 SG SG 1 1 <	xept SA 2 AC 500000 GHz PNO: IFGai 1.86 dB 0 dBm 1 1.86 dB 1 2 2 2 2 4 2 4 4 1 4 5 1 1 1 1 1 1 1 1 1 1 1 1 1	FS NVNT 1-	ee Run 2 30 dB	AHZ Avg Type: Log-Pwr Avg Hold:>100/100	04:47:54 TRA TY Ikr1 2.441 (-0.8	2.000 MHz



Agilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC enter Freq 2.479500000 GH	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	04:40:30 PM Feb 28, 202: TRACE 1 2 3 4 5
	PNO: Wide Trig: Free Ru IFGain:Low #Atten: 30 dE	n Avg Hold:>100/100	TRACE 12345 TYPE MWWWW DET PNNNN
Ref Offset 1.9 dB		Mk	1 2.479 008 GHz -0.537 dBm
0.0	1		
0.0			
0.0			
0.0			
enter 2.479500 GHz Res BW 30 kHz	#VBW 100 kHz	Sweep	Span 2.000 MHz 2.133 ms (1001 pts)
R MODE TRC SCL X 1 N 1 f 2.479 00 2 N 1 f 2.480 00	Y FUNCTION 8 GHz -0.537 dBm 8 GHz -0.621 dBm	DN FUNCTION WIDTH FU	ICTION VALUE
2 			
B B			
1		STATUS	
3	CFS NVNT 2-DH		
Agilent Spectrum Analyzer - Swept SA R L RF 50 Ω AC	SENSE:INT	ALIGN AUTO	04:41:09 PM Feb 28, 2022
enter Freq 2.402500000 Gl	PNO: Wide Trig: Free Ru IFGain:Low #Atten: 30 dE		TRACE 1 2 3 4 5 TYPE MWWWW DET P NNNN
Ref Offset 1.84 dB		Mk	r1 2.402 010 GHz -1.514 dBm
0.0 0.0			
0.0			
).0			
enter 2.402500 GHz Res BW 30 kHz	#VBW 100 kHz	Sween	Span 2.000 MHz 2.133 ms (1001 pts)
R MODE TRC SCL X 1 N 1 f 2.402 01	Y FUNCTION		ICTION VALUE
2 N 1 f 2.403 01	2 GHz -1.484 dBm		
4 5 6 6 6			E
7 B			
D			
		STATUS	1



	Ω AC	SENSE:INT	ALIGN AUTO	04:41:46 PM Feb 28, 2022
enter Freq 2.441	PNO	: Wide Trig: Free Rur in:Low #Atten: 30 dB	Avg Type: Log-Pwr n Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N
Ref Offset 0 dB/div Ref 20.00	1.86 dB) dBm		Mk	r1 2.441 010 GHz -0.891 dBm
og 10.0	1			
	\sim		\sim	~~~~~~
20.0				~
10.0 				
50.0				
70.0				
enter 2.441500 GH Res BW 30 kHz	Z	#VBW 100 kHz	Sweer	Span 2.000 MHz 2.133 ms (1001 pts)
KR MODE TRC SCL	× 2.441 010 GHz	Y FUNCTIO		NCTION VALUE
2 N 1 f	2.442 010 GHz	-0.849 dBm		
5 6				E
7 8 9				
0				
G			STATUS	
Agilent Spectrum Analyzer - S		FS NVNT 2-DH	1 2480MHz	
	Ω AC 500000 GHz	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	04:42:18 PM Feb 28, 2022 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N
	PNO IFGa	:Wide Trig:FreeRur in:Low #Atten:30 dB		r1 2.479 006 GHz
Ref Offset O dB/div Ref 20.00	1.9 dB) dBm			-0.563 dBm
	1			
	\sim		\sim	\sim
20.0				
40.0				
50.0 60.0				
0.0				
enter 2.479500 GH Res BW 30 kHz	Z	#VBW 100 kHz	Sweep	Span 2.000 MHz 2.133 ms (1001 pts)
KR MODE TRC SCL	× 2.479 006 GHz	Y FUNCTIO	N FUNCTION WIDTH FU	NCTION VALUE
2 N 1 f 3 4	2.480 006 GHz	-0.638 dBm		
5				=
8				

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Agilent Spectrum Analyzer - Sv	vept SA	FS NVNT 3-DH	-	
enter Freq 2.402	PNO	SENSE:INT		04:43:03 PM Feb 28, 2022 TRACE 1 2 3 4 5 TYPE MWWWW DET P N N N N
	IFGa	in:Low #Atten: 30 dB		r1 2.402 012 GHz
Ref Offset 7	1.84 dB I dBm			-1.554 dBm
)g 0.0	1		A2	
.00			\sim	
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
0.0				
0.0				
D.0				
D.0				
enter 2.402500 GH	7			Span 2.000 MHz
Res BW 30 kHz		#VBW 100 kHz	Sweep	2.133 ms (1001 pts)
R MODE TRC SCL	× 2.402 012 GHz	Y FUNCTIO	DN FUNCTION WIDTH FU	ICTION VALUE
2 N 1 f	2.403 012 GHz	-1.527 dBm		
4 5 				=
6 7 8				
9				
1				
3			STATUS	
	С	FS NVNT 3-DH	1 2441MHz	
Agilent Spectrum Analyzer - Sv R L RF 50	Ω AC	SENSE:INT	ALIGN AUTO	04:43:49 PM Feb 28, 2022
enter Freq 2.441	PNO	: Wide 😱 Trig: Free Ru		TRACE 1 2 3 4 5 TYPE M WWWW DET P N N N N
		in:Low #Atten: 30 dB		r1 2.441 010 GHz
Ref Offset 7 dB/div Ref 20.00	1.86 dB I dBm			-0.879 dBm
2 <b>9</b> 0.0	1			
.00				
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
0.0				
0.0				
0.0				
0.0				
enter 2.441500 GH				Snon 2 000 Milia
enter 2.441500 GH Res BW 30 kHz	Z	#VBW 100 kHz	Sweep	Span 2.000 MHz 2.133 ms (1001 pts)
R MODE TRC SCL		Y FUNCTIO	DN FUNCTION WIDTH FUI	ICTION VALUE
1 N 1 f 2 N 1 f 3	2.441 010 GHz 2.442 010 GHz	-0.879 dBm -0.864 dBm		
4 5				=
6 7				
8				
9				
9		m		



	CFS NVNT 3	3-DH1 2480MHz		
II Agilent Spectrum Analyzer - Swept SA II RL RF 50 Ω AC Center Freq 2.479500000 GH;	PNO: Wide D Irig:	Avg T	ype: Log-Pwr old:>100/100	04:44:31 PM Feb 28, 202 TRACE 1 2 3 4 5 TYPE MWWWW DET P NNNN
Ref Offset 1.9 dB 10 dB/div Ref 20.00 dBm			Mkr1 2	.479 006 GH -0.526 dBn
- og 10.0 0.00 -10.0 -20.0 -30.0	1		2 ²	~~~~~
-40 0 -40 0 -50 0 -60 0 -70 0				
Center 2.479500 GHz #Res BW 30 kHz	#VBW 100	kHz	Sweep 2.1	Span 2.000 MH 33 ms (1001 pts
MKR MODE TRC SCL X 1 N 1 f 2.479.006 2 N 1 f 2.479.006 3 - - - 4 - - - 5 - - - 6 - - - 7 - - - 8 - - - 9 - - - 10 - - -	Y GHz -0.626 dBm GHz -0.635 dBm	FUNCTION FUNCTION WIDTH	FUNCTION	VALUE
sg		" STATU	s	•



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.

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

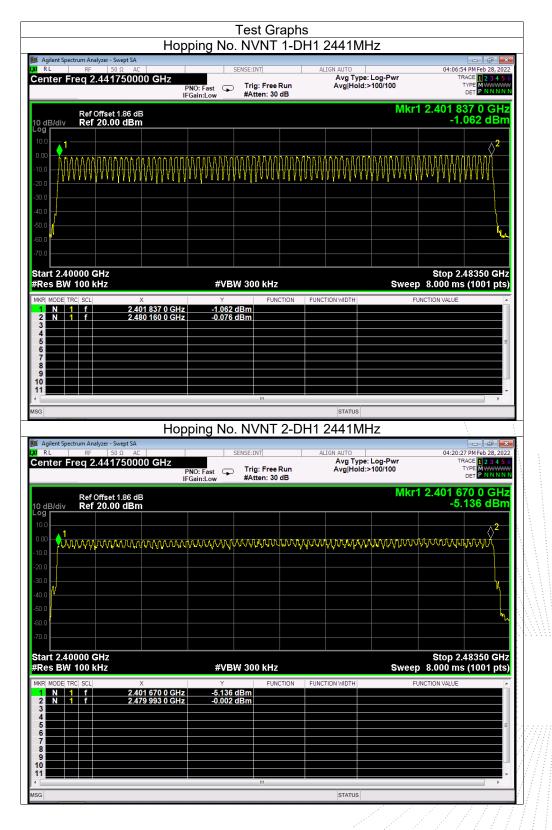
No.: BCTC/RF-EMC-005

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13.4 Test Result







	trum Analyzer - :									- ē 💌
RL		Ω AC		SENSE:	NT	AL	IGN AUTO			5 PM Feb 28, 2022
enter F	req 2.441	750000 GHz	PNO: Fast (IFGain:Low		g: Free Run tten: 30 dB		Avg Type: Avg Hold:>		T	ACE 12345 TYPE M DET PNNNN
0 dB/div	Ref Offset Ref 20.0							Mkr1		37 0 GHz 176 dBm
.og	Rei 20.0									
10.0 - 1 -										
0.00						60 N 8 4		1000000000		
10.0	RARANNA	<u>ላ</u> ሎሌሌሌሌሌ እስለ እስለ እስለ እስ	มือสโปกังหม	NAAAA	v ላ ካ ዮ ስ ጎ ኮ ሐ .	៴៴៴៴៴	<i>ԳԽԳ</i> ապեդեմ	ኯኯኇኯቑኯቚ፼ኯ	֎֎֎֎֎֎֎֎֎֎֎֎֎֎֎֎֎֎	นพұพษฐ
20.0										
30.0										ĥ
40.0										
50.0										
60.0										4 ₂
70.0										
	0000 GHz 100 kHz		#\	/BW 30	0 kHz			Sweep	Stop 2. 8.000 ms	48350 GHz (1001 pts)
	RC SCL	х	Y		FUNCTION	FUNCT	ION WIDTH	FU	NCTION VALUE	
	f	2.401 837 0 GH 2.480 410 5 GH		76 dBm 50 dBm						
2 N 1 3		2.480 410 5 GH	z -3.3	30 aBM						
4 5										
6										
7 8										
9										
10										
										*

No.: BCTC/RF-EMC-005



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).

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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.

Modulation	Channel Data	Packet	pulse time(ms)	Dwell Time(s)	Limits(s)
		DH1	0.408	0.131	0.4
GFSK	Middle	DH3	1.664	0.266	0.4
		DH5	2.912	0.311	0.4
		2DH1	0.417	0.133	0.4
π/4DQPSK	Middle	2DH3	1.669	0.267	0.4
		2DH5	2.897	0.309	0.4
		3DH1	0.419	0.134	0.4
8DPSK	Middle	3DH3	1.668	0.267	0.4
		3DH5	2.921	0.312	0.4



Agilent Spectrum Analyzer - Swept R L RF 50 Ω			0H1 2441	ALIGN AUTO		04:08	:00 PM Feb 28, 202
enter Freq 2.44100	0000 GHz	0:Fast 1	Frig Delay-500.0 Frig: Video Atten: 30 dB		Type: Log-Pwr		TYPE WWWWWW DET PNNNN
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dB/div Ref 20.00 d							
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enter 2.441000000 G							0
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AR MODE TRC SCL 1 Δ2 1 t (Δ) 2 F 1 t	× 408.0 μs (/ 472.0 μs	Y <u>6.88 d</u> -16.34 dBr	FUNCTION B	FUNCTION WIDT	TH I	FUNCTION VALUE	^
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	Dwell N	IVNT 1-D)H3 2441	stat MHz On			
RL RF 50 Ω	AC	SENS	EINT		e Burst	04:30	34 PM Feb 28, 202
RL RF 50 Ω	AC 0000 GHz	SENS 1 0: Fast ↔ 1			e Burst	04:30	:34 PM Feb 28, 2022
RL RF 50 Ω enter Freq 2.441000 Ref Offset 1.80	AC AC 00000 GHz PN IFG 6 dB	SENS 1 0: Fast ↔ 1	E:INT Frig Delay-500.0 Frig: Video		e Burst		34 PM Feb 28, 2022 TRACE 1 2 3 4 5 (TYPE W
RL RF 50 Ω enter Freq 2.441000 Ref Offset 1.88 Ref Offset 1.88 Ref 20.00 d 0 dB/div Ref 20.00 d	AC AC 00000 GHz PN IFG 6 dB	SENS 1 0: Fast ↔ 1	E:INT Frig Delay-500.0 Frig: Video		e Burst		34 PM Feb 28, 2023 TRACE 1 2 3 4 5 0 TYPE PNNNN 1.664 ms
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RL RF 50 0 enter Freq 2.44100 Ref Offset 1.80 Ref 2.000 d	AC AC OOOOO GHZ PNN IFG 6 dB Bm	SENS 1 0: Fast ↔ 1	E:INT Frig Delay-500.0 Frig: Video		e Burst		1.664 ms -2.53 dB
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RL RF 50.0 enter Freq 2.44100 Ref Offset 1.8 dB/div Ref 20.00 d 0 Ref 0.00 d 0	15A AC AC AC PN IFG 6 dB Bm 1Δ2 γ/((a u), b) γ/((a u), b) γ/((a u), b) Hz X 1.664 ms (4	SENS O: Fast in:Low #	EINT Trig Delay-50.0 () Trig: Video Atten: 30 dB		e Burst	AMkr1	34 PM Feb 28, 2022 TARACE 12 2 3 4 5 1 TYPE VIEW DET P NNNNN 1.664 ms -2.53 dB TRIO LVL
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Dwe	ell NVNT 1-DH5 24	41MHz One Burst	
RL RF 50 Ω AC enter Freq 2.441000000 GHz	SENSE:INT Trig Delay-5 PNO: Fast ↔ Trig: Video IFGain:Low #Atten: 30 dl		04:31:28 PM Feb 28, 2022
Ref Offset 1.86 dB 0 dB/div Ref 20.00 dBm			ΔMkr1 2.912 ms -2.71 dB
	1Δ2		TRIG LVL
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50.0 <mark>with the second s</mark>		eden ander beiden auf der	en produktivní konstantov (se podlavi se stati se podravno se produktivní se podravno se produktivné se podrav Na stran je podravna se podravna stran se podravní se podravna se se podravna se se podravna se se podravna se s
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Dwe	ell NVNT 2-DH1 24	41MHz One Burst	
l Agilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC	SENSE:INT	ALIGN AUTO	04:20:38 PM Feb 28, 2022
Center Freq 2.441000000 GHz	Trig Delay-5 PNO: Fast +++ Trig: Video IFGain:Low #Atten: 30 dl		WT TRACE 1 2 3 4 5 6 TYPE WWWWWW DET P NNNN
Ref Offset 1.86 dB 0 dB/div Ref 20.00 dBm			ΔMkr1 417.0 μs 3.04 dB
0 dB/div Ref 20.00 dBm			
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			ון אין איז
	laine ar brail a' frainn a' frainn an brail an thair an t	kan na bara ni na maharana ha	<mark>na hinin kanan jugi kanan k Kanan kanan kana</mark>
Center 2.441000000 GHz Res BW 1.0 MHz	#VBW 3.0 MHz		Span 0 Hz weep 10.00 ms (10001 pts)
IKR MODE TRC SCL X	Y FUNCT		FUNCTION VALUE
2 F 1 t 342.0			
4 5 6			11
7			
SG		STATUS	4



enter	RF 50 Ω Freq 2.44100	0000 GHz	East +++ Trig:	Delay-500.0 μs Video en: 30 dB	ALIGN AUTO Avg Type:	Log-Pwr	TRAC	PM Feb 28, 202 CE 1 2 3 4 5 PE WWWWWWWWW ET P N N N N
) dB/div	Ref Offset 1.8 • Ref 20.00 d	6 dB Bm					ΔMkr1 1	.669 ms 2.94 dE
	V Rei 20.00 u							
		1 <u>Δ</u> 2						TRIG LVL
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	2.441000000 G / 1.0 MHz	Hz	#VBW 3.01	MHz		Sween	s 10.00 ms (1	Span 0 Hz
KR MODE		X 4.660 mg //	Y		NCTION WIDTH		NCTION VALUE	é a construction de la construct
2 F 3	1 t	<u>1.669 ms (/</u> 343.0 µs	-12.23 dBm					
4 5 6								
7 8 9								
0								
3					STATUS			
Agilent S	Spectrum Analyzer - Swep		IVNT 2-DH	5 2441MF	Iz One B	urst		- 6
RL enter	RF 50 Ω Freq 2.44100			Delay-500.0 μs Video	ALIGN AUTO Avg Type:	Log-Pwr	TRAC	PM Feb 28, 202 CE 1 2 3 4 5 PE WWWWWW ET P N N N N
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dB/div	Ref Offset 1.8 • Ref 20.00 d	6 dB I Bm						4.15 dE
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o.o 💾	2.441000000 G	<u>Ш</u> -7						span 0 Hz
	/ 1.0 MHz	112	#VBW 3.0				10.00 ms (1	
	TRC SCL	X 2.897 ms (/ 341.0 μs	Y 4.15 dB -12.20 dBm	FUNCTION FUI	NCTION WIDTH	FU	NCTION VALUE	
1 Δ2	1 t							
1 Δ2 2 F 3 4								
1 Δ2								



c 100 GHz	SENSE:INT Trig Delay-500.0 µs	ALIGN AUTO Avg Type: Lo		7:06 PM Feb 28, 202 TRACE 1 2 3 4 5
PNO: Fast IFGain:Low	Trig: Video #Atten: 30 dB			DET PNNN
IB			ΔΜκι	⁻¹ 419.0 με -0.82 dE
<u>n</u>				-0.82 0E
				TRIG LVL
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			postantally is a first all a standing.	a na shi na s
2			Sween 10.00 m	Span 0 Hz
X	Y FUNCTION	FUNCTION WIDTH	-	· ·
419.0 μs (Δ) 341.0 μs -1	-0.82 dB 2.17 dBm			
	m	2117472		•
			ret	
00 GHz	Trig Delay-500.0 µs			5:37 PM Feb 28, 202 TRACE 1 2 3 4 5 TYPE W
PNO: Fast IFGain:Low	#Atten: 30 dB			DET PNNN
iB			ΔMkr	1 1.668 ms 0.53 dE
14.2				
<u> </u>				TRIG LVL
		a lay na kasar ka ka ka ka	a baara daga da babara ya na kata da she da	ally fact by provide the results
2	≇VBW 3.0 MHz		Sweep 10.00 m	Span 0 Hz s (10001 pts
x	Y FUNCTION	FUNCTION WIDTH		
1.668 ms (Δ) 341.0 μs -1	0.53 dB 2.68 dBm			
	С 00 GHz PNO: Fast IFGain:Low B m 2 2 3 419.0 µs 3 419.0 µs 419.0 µs 410.0	C SENSE:INT Trig Delay-500.0 µs Trig Delay-500.0 µs Trig Delay-500.0 µs #Atten: 30 dB B M	C SERVEE'INT ALIGN AUTO PNO: Fast → IFGalin:Low PNO: Fast → IFGalin:Low PNO: Fast → IFGalin:Low PNO: Fast → IFGalin:Low IFGalin:Low IFGalin:Low IFGalin:Low IFGalin:Low IFGalin:Low IFGalin:Low IFGALIN:Low IFFGALIN:Low IFG	C SWEETING ALON AUTO 042 PNO: Fast → Trig Delay-500 Jus Avg Type: Log-Pwr Fige init.ow → Fige Delay-500 Jus Avg Type: Log-Pwr Fige Delay-500 Jus Avg Type



	ctrum Analyzer -										- F
RL		0Ω AC			SE	ENSE:INT Trig Delay	500.0.0.0	ALIGN AUTO	pe: Log-Pwr		33 PM Feb 28, 20 RACE 1 2 3 4
enter F	req 2.441	000000			st ↦	Trig: Vide		Avgity	pe: Log-Pwr		TYPE WWWW DET P NNN
				FGain:Lo		#Atten: 30	dB				DET P NNN
	D-608	4.00 10								ΔMkr1	2.921 m
0 dB/div	Ref Offsei Ref 20.0										2.18 d
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50.0 50.0	44100000 1.0 MHz	0 GHz			#VBW	V 3.0 MHz	n fi filling filmiget :		Sweep	nin or an an	Span 0 H
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	44100000 1.0 MHz		2.921 ms	(Δ)	#VBW	V 3.0 MHz	n fi filling filmiget :	ulai, e plingulain A	Sweep	10.00 ms	Span 0 H
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	44100000 1.0 MHz RC SCL 1 t (Δ)		<u>2.921 ms</u> 497.0 µs	(Δ)	#VBW	V 3.0 MHz	n fi filling filmiget :	ulai, e din	Sweep	10.00 ms	Span 0 H
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60.0 Manual enter 2 . es BW KR MODE T 1 A 2 2 F 3 4 5 6 6	44100000 1.0 MHz RC SCL 1 t (Δ)			(Δ)	#VBW	V 3.0 MHz	n fi filling filmiget :	ulai, e din	Sweep	10.00 ms	Span 0 H



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, The antenna gain is 0dBi, fulfill the requirement of this section.

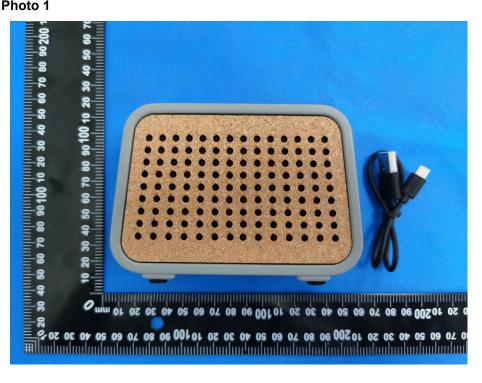
Edition:

No.: BCTC/RF-EMC-005



16. EUT Photographs

EUT Photo 1



EUT Photo 2





17. EUT Test Setup Photographs

Conducted Measurement Photos



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 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 *****

No.: BCTC/RF-EMC-005

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