

TEST REPORT

Report No.:	BCTC2206634854-1E
Applicant:	ROCKPI TRADING LIMITED
Product Name:	ROCK Pi 4/ROCK 4
Model/Type reference:	ROCK 4 SE
Tested Date:	2022-06-30 to 2022-07-05
Issued Date:	2022-07-05
She	nzhen BEFEGesting Co., Ltd.
No.: BCTC/RF-EMC-007	Page: 1 of 80 Edition: A.4



FCC ID: 2A3PA-ROCK4SE

Product Name:	ROCK Pi 4/ROCK 4
Trademark:	N/A
Model/Type Reference:	ROCK 4 SE ROCK Pi 4 A, ROCK Pi 4 B, ROCK Pi 4 A+, ROCK Pi 4 B+, ROCK 4 SE, ROCK 4 A, ROCK 4 B, ROCK 4 A+, ROCK 4 B+
Prepared For:	ROCKPI TRADING LIMITED
Address:	Room 11, 27 / f, Ga wah international centre, 191 Javaroad, north point, Hong Kong
Manufacturer:	ROCKPI TRADING LIMITED
Address:	Room 11, 27 / f, Ga wah international centre, 191 Javaroad, north point, Hong Kong
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2022-06-30
Sample tested Date:	2022-06-30 to 2022-07-05
Issue Date:	2022-07-05
Report No.:	BCTC2206634854-1E
Test Standards	FCC Part15.247 ANSI C63.10-2013
Test Results	PASS
Remark:	This is Bluetooth Classic radio test report.

Tested by:

VONE

Brave Zeng/ Project Handler

Approved by:

Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

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(Note: N/A Means Not Applicable)

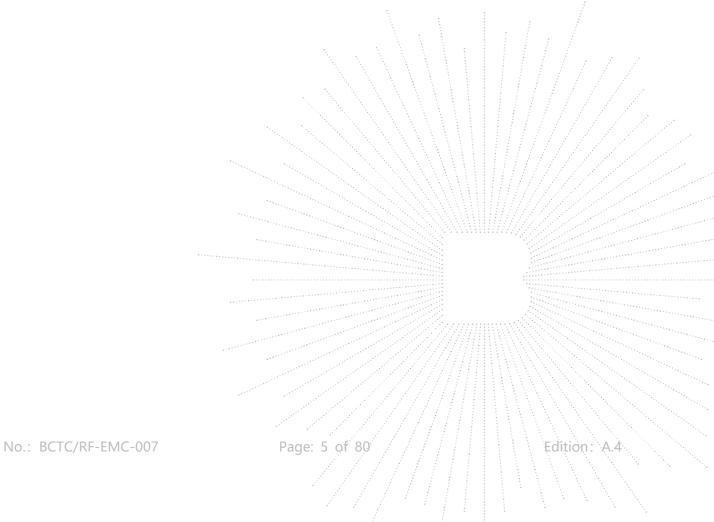
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1. Version

Report No.	Issue Date	Description	Approved
BCTC2206634854-1E	2022-07-05	Original	Valid





2. Test Summary

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No.	Results
1	Conducted emission AC power port	§15.207	PASS
2	Conducted peak output power for FHSS	§15.247(b)(1)	PASS
3	20dB Occupied bandwidth	§15.247(a)(1)	PASS
4	Number of hoppingfrequencies	§15.247(a)(1)(iii)	PASS
5	Dwell Time	§15.247(a)(1)(iii)	PASS
6	Spurious RF conducted emissions	§15.247(d)	PASS
7	Band edge	§15.247(d)	PASS
8	Spurious radiated emissions for transmitter	§15.247(d) & §15.209 & §15.205	PASS
9	Antenna Requirement	15.203	PASS



3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.3dB
2	3m chamber Radiated spurious emission(9KHz-30MHz)	U=3.7dB
3	3m chamber Radiated spurious emission(1GHz-18GHz)	U=4.5dB
4	3m chamber Radiated spurious emission(18GHz-40GHz)	U=3.34dB
5	Conducted Emission (150kHz-30MHz)	U=3.20dB
6	Conducted Adjacent channel power	U=1.38dB
7	Conducted output power uncertainty Above 1G	U=1.576dB
8	Conducted output power uncertainty below 1G	U=1.28dB
9	humidity uncertainty	U=5.3%
10	Temperature uncertainty	U≠0.59°C



4. Product Information And Test Setup

4.1 Product Information

ROCK 4 SE ROCK Pi 4 A, ROCK Pi 4 B, ROCK Pi 4 A+, ROCK Pi 4 B+, ROCK 4 SE, ROCK 4 A, ROCK 4 B, ROCK 4 A+, ROCK 4 B+
All the model are the same circuit and RF module, except model names.
5.0
N/A
N/A
2402-2480MHz
GFSK, π/ 4 DQPSK, 8DPSK
79CH
Chip antenna
2 dBi
DC 5V From adapter

4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

Conducted Emission:



Radiated Spurious Emission

E-1 C-1 EUT	E-2 A Adapter			

			////	
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4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-1	ROCK Pi 4/ROCK 4	N/A	ROCK 4 SE	N/A	EUT
E-2	Adapter	N/A	BCTC001	N/A	Auxiliary

ltem	Shielded Type	Ferrite Core	Length	Note
C-1	N/A	N/A	0.3M	DC cable unshielded

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Channel List

СН	Frequency (MHz)	СН	Frequency (MHz)	СН	Frequency (MHz)	СН	Frequency (MHz)
0	2402	1	2403	2	2404	3	2405
4	2406	5	2407	6	2408	7	2409
8	2410	9	2411	10	2412	11	2413
12	2414	13	2415	14	2416	15	2417
16	2418	17	2419	18	2420	19	2421
20	2422	21	2423	22	2424	23	2425
24	2426	25	2427	26	2428	27	2429
28	2430	29	2431	30	2432	31	2433
32	2434	33	2435	34	2436	35	2437
36	2438	37	2439	38	2440	39	2441
40	2442	41	2443	42	2444	43	2445
44	2446	45	2447	46	2448	47	2449
48	2450	49	2451	50	2452	51	2453
52	2454	53	2455	54	2456	55	2457
56	2458	57	2459	58	2460	59	2461
60	2462	61	2463	62	2464	63	2465
64	2466	65	2467	66	2468	67	2469
68	2470	69	2471	70	2472	71	2473
72	2474	73	2475	74	2476	75	2477
76	2478	77	2479	78	2480	79	



4.5 Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test Mode	Test mode	Low channel	Middle channel	High channel		
1	Transmitting(GFSK)	2402MHz	2441MHz	2480MHz		
2	Transmitting(π/ 4 DQPSK)	2402MHz	2441MHz	2480MHz		
3	Transmitting(8DPSK) 2402MHz 2441MHz 2480MHz					
4	Transmitting (Conducted emission & Radiated emission)					

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

(2) Fully-charged battery is used during the test

4.6 Table Of Parameters Of Text Software Setting

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters



5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards. FCC Test Firm Registration Number: 712850 IC Registered No.: 23583

5.2 Test Instrument Used

Conducted Emissions Test								
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.			
Receiver	R&S	ESR3	102075	May 24, 2022	May 23, 2023			
LISN	R&S	ENV216	101375	May 24, 2022	May 23, 2023			
Software	Frad	EZ-EMC	EMC-CON 3A1	١	1			
Attenuator	1	10dB DC-6GHz	1650	May 24, 2022	May 23, 2023			

RF Conducted Test								
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.			
Power Metter	Keysight	E4419		May 24, 2022	May 23, 2023			
Power Sensor (AV)	Keysight	E9300A		May 24, 2022	May 23, 2023			
Signal Analyzer20kH z-26.5GHz	Keysight	N9020A	MY49100060	May 24, 2022	May 23, 2023			
Spectrum Analyzer9kHz- 40GHz	R&S	FSP40	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	May 24, 2022	May 23, 2023			



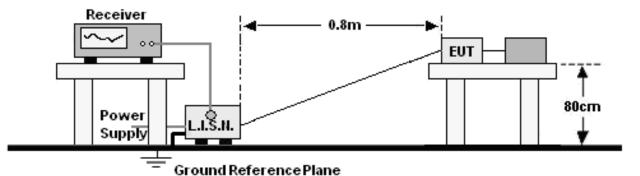
Radiated Emissions Test (966 Chamber)							
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.		
966 chamber	ChengYu	ChengYu 966 Room		Jun. 06. 2020	Jun. 05, 2023		
Receiver	R&S	ESR3 102075		May 24, 2022	May 23, 2023		
Receiver	R&S	ESRP	101154	May 24, 2022	May 23, 2023		
Amplifier	SKET	LAPA_01G18 G-45dB	١	May 24, 2022	May 23, 2023		
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 24, 2022	May 23, 2023		
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	May 26, 2022	May 25, 2023		
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 24, 2022	May 23, 2023		
Horn Antenn(18GHz -40GHz)	Schwarzbeck	BBHA9170	00822	May 24, 2022	May 23, 2023		
Amplifier(18G Hz-40GHz)	MITEQ	TTA1840-35- HG	2034381	May 24, 2022	May 23, 2023		
Loop Antenna(9KHz -30MHz)	Schwarzbeck	FMZB1519B	00014	May 26, 2022	May 25, 2023		
RF cables1(9kHz- 30MHz)	Huber+Suhnar	9kHz-30MHz	B1702988-000 8	May 26, 2022	May 25, 2023		
RF cables2(30MH z-1GHz)	Huber+Suhnar	30MHz-1GHz	1486150	May 26, 2022	May 25, 2023		
RF cables3(1GHz -40GHz)	Huber+Suhnar	1GHz-40GHz	1607106	May 24, 2022	May 23, 2023		
Power Metter	Keysight	E4419		May 26, 2022	May 25, 2023		
Power Sensor (AV)	Keysight	E9300A		May 26, 2022	May 25, 2023		
Signal Analyzer20kH z-26.5GHz	Keysight	N9020A	MY49100060	May 26, 2022	May 25, 2023		
Spectrum Analyzer9kHz- 40GHz	R&S	FSP40		May 26, 2022	May 25, 2023		
Software	Frad	EZ-EMC	FA-03A2 RE	l			

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6. Conducted Emissions

6.1 Block Diagram Of Test Setup



6.2 Limit

	Limit (d	dBuV)
Frequency (MHz)	Quas-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

2. The lower limit shall apply at the transition frequencies.

6.3 Test procedure

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).

b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.

c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

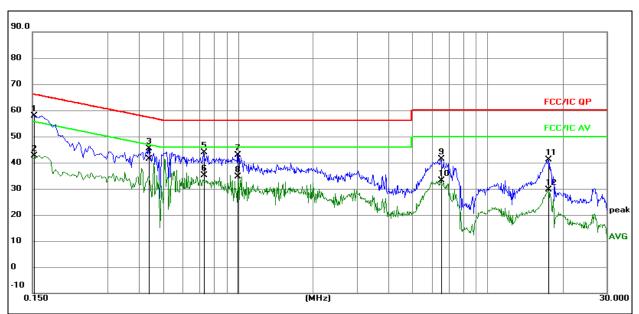
6.4 EUT operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



6.5 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	L
Test Mode:	Mode 1	Test Voltage :	DC 5V from adapter



Remark:

1. All readings are Quasi-Peak and Average values.

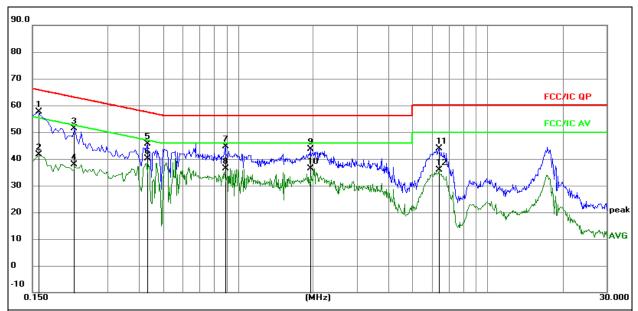
2. Factor = Insertion Loss + Cable Loss.

- 3. Measurement = Reading Level + Correct Factor
- 4. Over = Measurement Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1524	38.29	19.68	57.97	65.87	-7.90	QP
2		0.1524	23.04	19.68	42.72	55.87	-13.15	AVG
3		0.4380	25.52	19.74	45.26	57.10	-11.84	QP
4	*	0.4380	21.57	19.74	41.31	47.10	-5.79	AVG
5		0.7304	24.10	19.74	43.84	56.00	-12.16	QP
6		0.7304	15.42	19.74	35.16	46.00	-10.84	AVG
7		0.9960	23.18	19.76	42.94	56.00	-13.06	QP
8		0.9960	14.90	19.76	34.66	46.00	-11.34	AVG
9		6.5130	21.13	20.17	41.30	60.00	-18.70	QP
10		6.5130	12.96	20.17	33.13	50.00	-16.87	AVG
11		17.5470	20.82	20.40	41.22	60.00	-18.78	QP
12		17.5470	9.26	20.40	29.66	50.00	-20.34	AVG



Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Ν
Test Mode:	Mode 1	Test Voltage :	DC 5V from adapter



Remark:

1. All readings are Quasi-Peak and Average values.

2. Factor = Insertion Loss + Cable Loss.

3. Measurement = Reading Level + Correct Factor

4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1582	38.02	19.69	57.71	65.56	-7.85	QP
2		0.1582	21.90	19.69	41.59	55.56	-13.97	AVG
3		0.2208	31.55	19.79	51.34	62.79	-11.45	QP
4		0.2208	18.06	19.79	37.85	52.79	-14.94	AVG
5		0.4328	25.84	19.74	45.58	57.20	-11.62	QP
6	*	0.4328	20.51	19.74	40.25	47.20	-6.95	AVG
7		0.8897	24.92	19.75	44.67	56.00	-11.33	QP
8		0.8897	16.64	19.75	36.39	46.00	-9.61	AVG
9		1.9489	23.79	19.87	43.66	56.00	-12.34	QP
10		1.9489	16.52	19.87	36.39	46.00	-9.61	AVG
11		6.3859	23.71	20.16	43.87	60.00	-16.13	QP
12		6.3859	15.67	20.16	35.83	50.00	-14.17	AVG

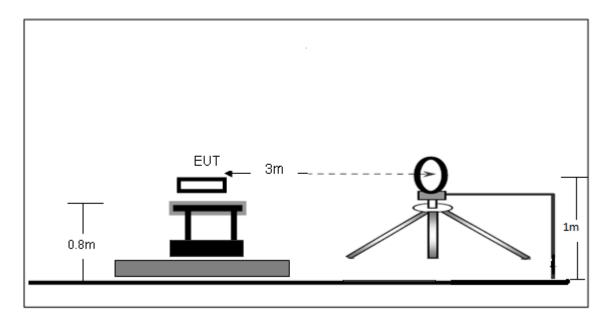
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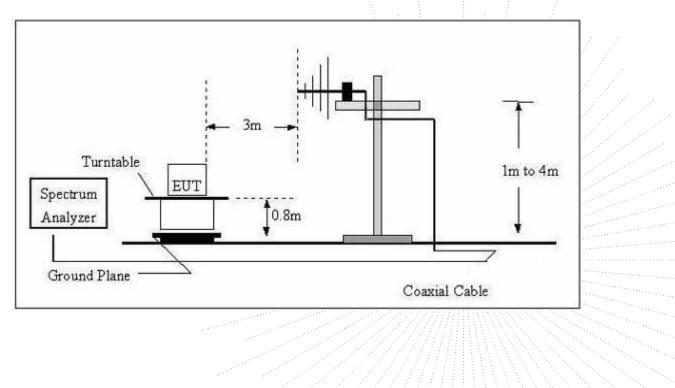
7. Radiated emissions

7.1 Block Diagram Of Test Setup

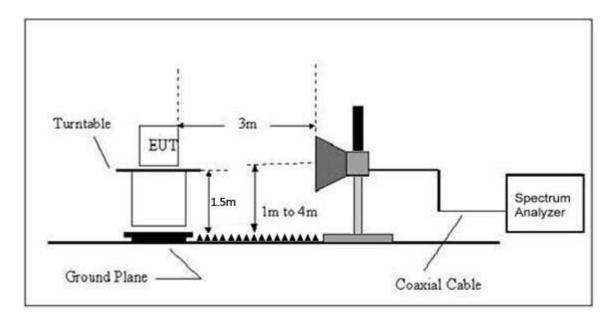
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz







(C) Radiated Emission Test-Up Frequency Above 1GHz

7.2 Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency	Field Strength	Distance	Field Strength Limit at 3m Distance		
(MHz)	uV/m	(m)	uV/m	dBuV/m	
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	20log ^{(2400/F(kHz))} + 80	
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	20log ^{(24000/F(kHz))} + 40	
1.705 ~ 30	30	30 .	100 * 30	20log ⁽³⁰⁾ + 40	
30 ~ 88	100	3	100	20log ⁽¹⁰⁰⁾	
88 ~ 216	150	3	150	20log ⁽¹⁵⁰⁾	
216 ~ 960	200 •	3	200	20log ⁽²⁰⁰⁾	
Above 960	500	3	500	20log ⁽⁵⁰⁰⁾	

Limits Of Radiated Emission Measurement (Above 1000MHz)

	Limit (dBuV/m) (at 3M)	
Frequency (MHz)	Peak	Average
Above 1000		54

Notes:

(1)The limit for radiated test was performed according to FCC PART 15C

(2)The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).



Frequency Range Of Radiated Measurement

(a) For an intentional radiator the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in this paragraph:

(1) If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

(2) If the intentional radiator operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.

(3) If the intentional radiator operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.

(4) If the intentional radiator operates at or above 95 GHz: To the third harmonic of the highest fundamental frequency or to 750 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.
 (5) If the intentional radiator contains a digital device, regardless of whether this digital device controls the

(b) If the intentional radiator contains a digital device, regardless of whether this digital device controls the functions of the intentional radiator or the digital device is used for additional control or function purposes other than to enable the operation of the intentional radiator, the frequency range shall be investigated up to the range specified in paragraphs (a) (1)through (4) of this section or the range applicable to the digital device, as shown in paragraph (b)(1) of this section, whichever is the higher frequency range of investigation.

7.3 Test procedure

Receiver Parameter	Setting
Attenuation	Auto
9kHz~150kHz	RBW 200Hz for QP
150kHz~30MHz	RBW 9kHz for QP
30MHz~1000MHz	RBW 120kHz for QP

Spectrum Parameter	Setting
1-25GHz	RBW 1 MHz /VBW 1 MHz for Peak, RBW 1 MHz / VBW 10Hz for Average

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.



Above 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b.The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c.The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d.For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.

e.The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel, the middlest channel, the Highest channel. Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

7.4 EUT operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

7.5 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	DC 5V from adapter
Test Mode:	Mode 1	Polarization :	

Below 30MHz

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
				PASS
		· · · · · · · · · · · · · · · · · · ·		PASS

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

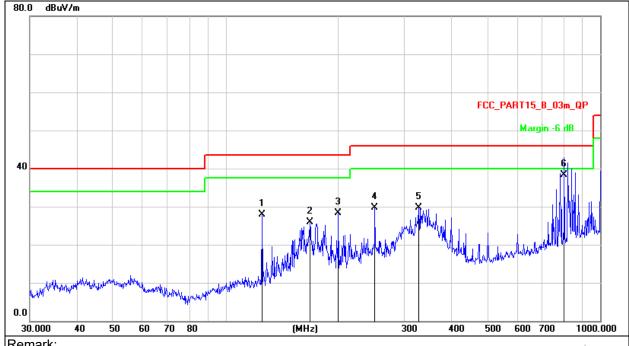
Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.



Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Mode:	Mode 1	Test Voltage :	DC 5V from adapter





Remark:

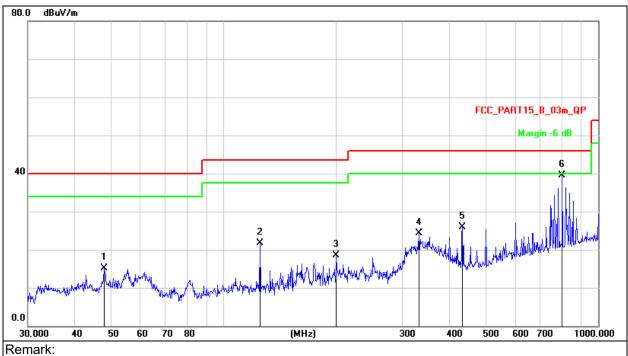
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
 Measurement = Reading Level + Correct Factor

3. Over = Measurement - Limit

No.	Mk.	.	Freq.		eading evel		rrect actor		asure- ent	Lin	nit	Ov	/er		
			MHz	(dBuV		dB	dBu	ıV/m	dB	8/m	d	В	Deteo	tor
1		125.	0066	4	5.80	-17	7.89	27	.91	43.	50	-15	.59	QP	
2		167.	8243	4	4.24	-18	3.36	25	.88	43.	50	-17	.62	QP	
3		199.	9856	4	4.62	-16	6.30	28	.32	43.	50	-15	.18	QP	
4		250.	3012	4	4.85	-15	5.14	29	.71	46.	00	-16	.29	QP	
5		327.	8873	4	2.47	-12	2.84	29	.63	46.	00	-16	.37	QP	
6	*	799.	9683	4	1.96	-3	3.64	38	.32	46.	00	-7.	68	QP	



Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Test Mode:	Mode 1	Test Voltage :	DC 5V from adapter



1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

2. Measurement = Reading Level + Correct Factor

			0
3.	Over =	Measurement -	Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		47.9940	30.05	-14.96	15.09	40.00	-24.91	QP
2		125.0066	39.64	-17.89	21.75	43.50	-21.75	QP
3		199.9856	34.75	-16.30	18.45	43.50	-25.05	QP
4	;	332.5187	37.05	-12.71	24.34	46.00	-21.66	QP
5	4	434.0651	36.33	-10.33	26.00	46.00	-20.00	QP
6	* (801.7863	43.16	-3.60	39.56	46.00	-6.44	QP



Polar	Frequency	Reading Level	Correct Factor	Measure- ment	Limits	Over	Detector
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	Туре
			GFSK Low ch	annel	· ·		
V	4804.00	53.83	-0.43	53.40	74.00	-20.60	PK
V	4804.00	44.29	-0.43	43.86	54.00	-10.14	AV
V	7206.00	43.86	8.31	52.17	74.00	-21.83	PK
V	7206.00	33.28	8.31	41.59	54.00	-12.41	AV
Н	4804.00	52.74	-0.43	52.31	74.00	-21.69	PK
Н	4804.00	42.80	-0.43	42.37	54.00	-11.63	AV
Н	7206.00	41.80	8.31	50.11	74.00	-23.89	PK
Н	7206.00	33.60	8.31	41.91	54.00	-12.09	AV
		G	FSK Middle c	hannel			
V	4882.00	52.15	-0.38	51.77	74.00	-22.23	PK
V	4882.00	43.41	-0.38	43.03	54.00	-10.97	AV
V	7323.00	41.20	8.83	50.03	74.00	-23.97	PK
V	7323.00	31.28	8.83	40.11	54.00	-13.89	AV
Н	4882.00	49.73	-0.38	49.35	74.00	-24.65	PK
Н	4882.00	39.39	-0.38	39.01	54.00	-14.99	AV
Н	7323.00	39.34	8.83	48.17	74.00	-25.83	PK
Н	7323.00	32.12	8.83	40.95	54.00	-13.05	AV
			GFSK High ch	annel			
V	4960.00	53.67	-0.32	53.35	74.00	-20.65	PK
V	4960.00	42.75	-0.32	42.43	54.00	-11.57	AV
V	7440.00	44.76	9.35	54.11	74.00	-19.89	PK
V	7440.00	33.76	9.35	43.11	54.00	-10.89	AV
Н	4960.00	51.09	-0.32	50.77	74.00	-23.23	PK
Н	4960.00	41.35	-0.32	41.03	54.00	-12.97	AV
Н	7440.00	42.71	9.35	52.06	74.00	-21.94	РК
Н	7440.00	35.17	9.35	44.52	54.00	-9.48	AV

Between 1GHz – 25GHz

Remark:

1.Emission Level = Meter Reading + Factor, Factor = Antenna Factor + Cable Loss – Pre-amplifier. Over= Emission Level - Limit

2.If peak below the average limit, the average emission was no test.

3. In restricted bands of operation, The spurious emissions below the permissible value more than 20dB4. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

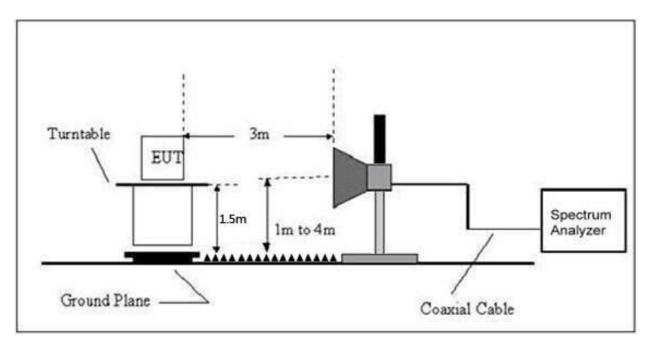
5.All the Modulation are test, the worst mode is GFSK, the data recording in the report.



8. Radiated Band Emission Measurement And Restricted Bands Of Operation

8.1 Block Diagram Of Test Setup

Radiated Emission Test-Up Frequency Above 1GHz



8.2 Limit

FCC Part15 C Section 15.209 and 15.205

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			



Limits Of Radiated Emission Measurement (Above 1000MHz)

	Limit (d	BuV/m) (at 3M)
Frequency (MHz)	Peak	Average
Above 1000	74	54

Notes:

(1)The limit for radiated test was performed according to FCC PART 15C.

(2)The tighter limit applies at the band edges.

(3)Emission level (dBuV/m)=20log Emission level (uV/m).

8.3 Test procedure

Receiver Parameter	Setting
Attenuation	Auto
Start Frequency	2300MHz
Stop Frequency	2520
RB / VB (Emission In Restricted Band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Above 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b.The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c.The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d.For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.

e.The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel, the middlest channel, the Highest channel.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

8.4 EUT operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



8.5 Test Result

Test mode	Polar (H/V)	Frequency (MHz)	Reading Level	Correct Factor	Measure- ment (dBuV/m)	Lin (dBu	nits V/m)	Result
	(Π/V)		(dBuV/m)	(dB)	PK	PK	AV	
		L	Low	Channel 24	102MHz			1
	Н	2390.00	53.29	-6.70	46.59	74.00	54.00	PASS
	Н	2400.00	56.88	-6.71	50.17	74.00	54.00	PASS
	V	2390.00	53.53	-6.70	46.83	74.00	54.00	PASS
OF OK	V	2400.00	57.91	-6.71	51.20	74.00	54.00	PASS
GFSK			High	Channel 24	480MHz			
	Н	2483.50	57.75	-6.79	50.96	74.00	54.00	PASS
	Н	2500.00	51.39	-6.81	44.58	74.00	54.00	PASS
	V	2483.50	56.23	-6.79	49.44	74.00	54.00	PASS
	V	2500.00	51.60	-6.81	44.79	74.00	54.00	PASS
			Low	Channel 24	102MHz			
	Н	2390.00	53.50	-6.70	46.80	74.00	54.00	PASS
	Н	2400.00	58.33	-6.71	51.62	74.00	54.00	PASS
	V	2390.00	54.11	-6.70	47.41	74.00	54.00	PASS
	V	2400.00	58.43	-6.71	51.72	74.00	54.00	PASS
π/4DQPSK			High	Channel 24	480MHz			•
	Н	2483.50	57.62	-6.79	50.83	74.00	54.00	PASS
	Н	2500.00	52.22	-6.81	45.41	74.00	54.00	PASS
	V	2483.50	57.12	-6.79	50.33	74.00	54.00	PASS
	V	2500.00	52.68	-6.81	45.87	74.00	54.00	PASS
			Low	Channel 24	102MHz			
	Н	2390.00	53.42	-6.70	46.72	74.00	54.00	PASS
	Н	2400.00	58.14	-6.71	51.43	74.00	54.00	PASS
	V	2390.00	53.32	-6.70	46.62	74.00	54.00	PASS
	V	2400.00	57.31	-6.71	50.60	74.00	54.00	PASS
8DPSK		*.	High	Channel 24	480MHz			
	Н	2483.50	57.24	-6.79	50.45	74.00	54.00	PASS
	Н	2500.00	52.87	-6.81	46.06	74.00	54.00	PASS
	V	2483.50	56.04	-6.79	49.25	74.00	54.00	PASS
	V	2500.00	52.82	-6.81	46.01	74.00	54.00	PASS

1. Emission Level = Meter Reading + Factor, Factor = Antenna Factor + Cable Loss – Pre-amplifier. Over= Emission Level – Limit

2. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

3 In restricted bands of operation, The spurious emissions below the permissible value more than 20dB 4. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



9. Spurious RF Conducted Emissions

9.1 Block Diagram Of Test Setup



9.2 Limit

Regulation 15.247 (d),In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.205(c))

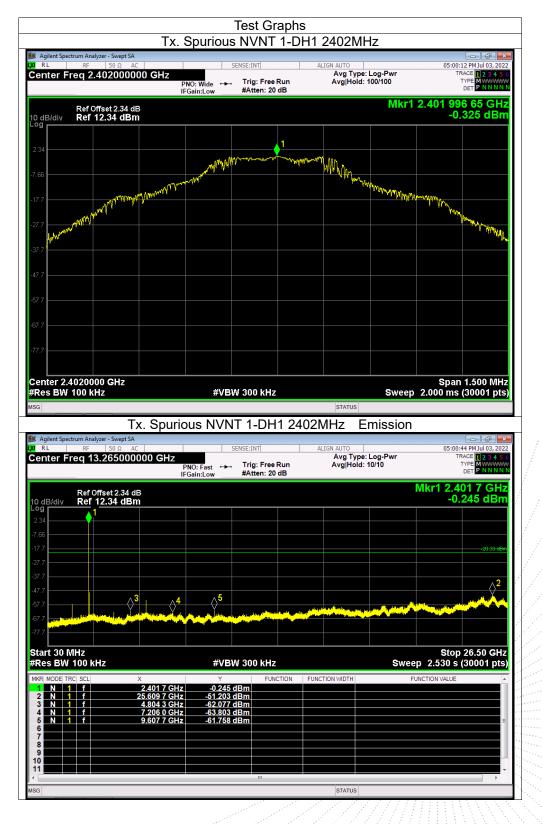
9.3 Test procedure

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: Below 30MHz: RBW = 100kHz, VBW = 300kHz, Sweep = auto Detector function = peak, Trace = max hold Above 30MHz: RBW = 100KHz, VBW = 300KHz, Sweep = auto Detector function = peak, Trace = max hold



9.4 Test Result



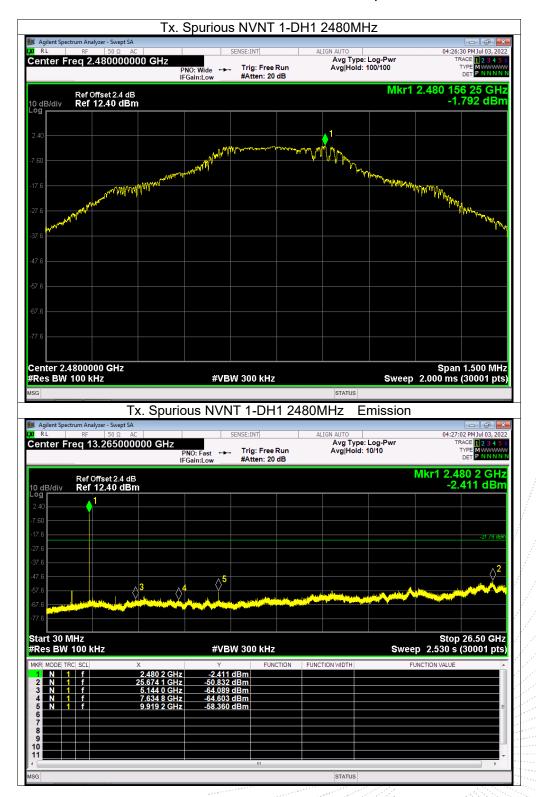
No.: BCTC/RF-EMC-007

Edition: A.4



Agilent Spectrum Analyzer - Swep		Spurious NVI				- ē i
RL RF 50 Ω Senter Freq 2.44100		SENSE:INT		ALIGN AUTO Avg Type: Lo	og-Pwr	04:25:06 PM Jul 03, 202 TRACE 1 2 3 4 5
onter 1100 2,44100	Р	NO:Wide ↔ Trig:I	Free Run n: 20 dB	Avg Hold: 10	0/100	
		Ganheow miller			Mkr1.2	.440 996 90 GH
Ref Offset 2.3 D dB/div Ref 12.36 c	dBm					-0.521 dBn
og						
2.36			1			
		warren franklighter and an and an	or a marked	MMM		
.64		waywatt		1 7506		
7.6	Amount of the second of the				way way and a second	1-11/1-
All and a first	Arrowy Dy Margaret Nationarched					All marine and all all all all all all all all all al
27.6						1 1 A Way way way and
Augentian the second						'W
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enter 2.4410000 GHz	z					Span 1.500 MH
Res BW 100 kHz		#VBW 300	kHz		Sweep 2	2.000 ms (30001 pt
SG						
				STATUS		
		ous NVNT 1-[DH1 2441		nission	
	pt SA	DUS NVNT 1-E	DH1 2441		nission	
RL RF 50 Ω	AC 000000 GHz	SENSE:INT		ALIGN AUTO Avg Type: Lo	og-Pwr	04:25:38 PM Jul 03, 202 TRACE 1 2 3 4 5
RL RF 50 Ω	ot SA AC 000000 GHz	SENSE:INT	DH1 2441	ALIGN AUTO	og-Pwr /10	04:25:38 PM Jul 03, 202 TRACE 1 2 3 4 5 TYPE MWWW DET P NNNN
RL RF 50 Ω enter Freq 13.2650 Ref Offset 2.3	AC A	SENSE:INT	Free Run	ALIGN AUTO Avg Type: Lo	og-Pwr /10	04:25:38 PM Jul 03, 202 TRACE 1 2 3 4 5 TYPE MWWW DET P NNNN
RL RF 50 Ω enter Freq 13.2650 Ref Offset 2.3 0 dB/div Ref 12.36 0	AC A	SENSE:INT	Free Run	ALIGN AUTO Avg Type: Lo	og-Pwr /10	04:25:38 PM Jul 03, 202 TRACE 1 2 3 4 5 TYPE MWWW DET P NNNN
RE RF 50 0 enter Freq 13.2650 Ref Offset 2.3 0 dB/div Ref 12.36 0 9 41	AC A	SENSE:INT	Free Run	ALIGN AUTO Avg Type: Lo	og-Pwr /10	04:25:38 PM Jul 03, 202 TRACE 1 2 3 4 5 TYPE MWWW DET P NNNN
RL RF 50 Ω enter Freq 13.2650 Ref Offset 2.3 0 dB/div Ref 12.36 d 23 7 64	AC A	SENSE:INT	Free Run	ALIGN AUTO Avg Type: Lo	og-Pwr /10	04:25:38 PM Jul 03, 202 TRACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Ref Offset 2.3 9 0 0B/div Ref 12.36 0 9 1 7 64 1 7 64 1 7 64 1 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	AC A	SENSE:INT	Free Run	ALIGN AUTO Avg Type: Lo	og-Pwr /10	04:25:38 PM Jul 03, 202 TRACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Ref Offset 2.3 0 dB/div 23 7.64 17.64 27.64	AC A	SENSE:INT	Free Run	ALIGN AUTO Avg Type: Lo	og-Pwr /10	04:25:38 PMJul 03, 202 TRACE 12:23 4 5 TYPE MUNU DET P NNNN kr1 2:441 4 GH: -1.765 dBn
Ref Offset 2.3 0 dB/div Ref 12.36 0 2.36 7.64	AC A	SENSE:INT PNO: Fast → Trig: Gain:Low #Atter	Free Run	ALIGN AUTO Avg Type: Lo	og-Pwr /10	04:25:38 PM Jul 03, 202 TRACE 1 2 3 4 5 TYPE MWWWW DET P N N NN Kr1 2.441 4 GH
Ref Offset 2.3 0 dB/div Ref 12.36 0 2.36 7.64	AC A	SENSE:INT	Free Run	ALIGN AUTO Avg Type: Lo	og-Pwr /10	04:25:38 PM Jul 03, 202 TRACE 1 2 3 4 5 TYPE MWWWW DET P N N NN Kr1 2.441 4 GH
Ref Offset 2.3 Ref Offset 2.3 0 dB/div Ref 12.36 d 2 36 7 64 1 7 6 4 7 6 57 6	AC A	SENSE:INT PNO: Fast → Trig: Gain:Low #Atter	Free Run	ALIGN AUTO Avg Type: Lo	og-Pwr /10	04:25:38 PM Jul 03, 202 TRACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Ref Offset 2.36 0 dB/div Ref 12.36 0 7.64 17.64 7.64 47.66 1 1 1 1 1 1 1 1 1 1 1 1 1	AC A	SENSE:INT PNO: Fast → Trig: Gain:Low #Atter	Free Run	ALIGN AUTO Avg Type: Lo	og-Pwr /10	04:25:38 PM Jul 03, 202 TRACE 1 2 3 4 5 TYPE MWWWW DET P N N NN Kr1 2.441 4 GH
Ref Offset 2.3 0 dB/div Ref 12.36 d 2.36 7 64 47.6 37.6 6 7 6 7 6 8 7 6 1 1 1 1 1 1 1 1 1 1 1 1 1	AC A	SENSE:INT PNO: Fast → Trig: Gain:Low #Atter	Free Run	ALIGN AUTO Avg Type: Lo	og-Pwr /10	04:25:38 PM Jul 03, 202 TRACE 23:4 S TYPE 23:4 S TYPE 23:4 S DET 14 GH2 -1.765 dBn -20:52:48 -20:52:48 -20:52:48
Ref Offset 2.36 0 dB/div Ref 12.36 c 2.36 7.64 1.7	AC A	SENSE:INT PNO: Fast → Trig: Gain:Low #Atter	Free Run 1: 20 dB	ALIGN AUTO Avg Type: Lo	pg-Pwr 10 M	04:25:38 PM Jul 03, 202 TRACE 1 2 3 4 5 TYPE MWWWW DET P N N NN Kr1 2.441 4 GH
Ref S0 0 Genter Freq 13.2650 Ref Offset 2.3 1 7.64 1 7.76 1 1	AC A	PNO: Fast Trig: Gain:Low #Atter	Free Run 1: 20 dB	ALIGN AUTO Avg Type: Lo	pg-Pwr 10 M Sweep	04:25:39 FMJUI03,202 TRACE [] 22:4 S TYPE [] 23:4 S DET [] 12:4 S DET [] 14:14 CH 12:441 4 GH -1.765 dBn -20:52:69 20:52:52:52:52:52:52:52:52:52:52
Ref Offset 2.3 Genter Freq 13.2650 0 dB/div Ref Offset 2.3 2.36 1 7.64 1 7.64 1 7.64 1 7.64 1 7.64 1 7.64 1 7.64 1 7.64 1 7.64 1 7.64 1 7.64 1 7.64 1 7.64 1 7.64 1 7.64 1 7.65 1 7.76 1 7.76 1 7.76 1 7.76 1 7.76 1 7.76 1 7.77 1 7.76 1	AC 000000 GHz F	PNO: Fast Gain:Low → Trig: #Atter 5 5 4 gr d. d. mad Jd. d. #VBW 300	Free Run 1: 20 dB	ALIGN AUTO Avg Type: Lc Avg Jype: Lc Avg	pg-Pwr 10 M Sweep	04:25:38 PMJul 03, 202 TRACE 22:4-5 TYPE PMININ kr1 2.441 4 GH; -1.765 dBn -20:52 dB -20:52 d
Ref Offset 2.3 0 dB/div Ref Offset 2.3 0 dB/div Ref 12.36 d 2.36 1 7.64 1 7.75 1 7.76	AC AC AC AC AC AC AC AC AC AC	SENSE:INT SENSE:INT Control Contro Control Control Control Control	Free Run 1: 20 dB	ALIGN AUTO Avg Type: Lc Avg Jype: Lc Avg	pg-Pwr 10 M Sweep	04:25:38 PMJul 03, 202 TRACE 22:4-5 TYPE PMININ kr1 2.441 4 GH; -1.765 dBn -20:52 dB -20:52 d
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Ref S0 0 center Freq 30 0 Ref Offset 2.3 0 0 B/div Ref 12.36 d 0 B/div Ref 12.36 d 0 1 1 1 7 6 1 1 7 6 1 1 1 7 6 1 <th1< th=""> <th1< th=""> 1 <t< td=""><td>AC AC AC AC AC AC AC AC AC AC</td><td>PNO: Fast → Trig: Gain:Low → Trig: #Atter \$5 \$5 \$5 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7</td><td>Free Run 1: 20 dB</td><td>ALIGN AUTO Avg Type: Lc Avg Jype: Lc Avg</td><td>pg-Pwr 10 M Sweep</td><td>04:25:38 PMJul03.202 TRACE 2:3:4:5 TYPE 2:3:4:5 OFT P NINNN kr1 2:4414 GH; -1.765 dBn -20:2:45 2:0:45 2:0:45 2</td></t<></th1<></th1<>	AC AC AC AC AC AC AC AC AC AC	PNO: Fast → Trig: Gain:Low → Trig: #Atter \$5 \$5 \$5 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7	Free Run 1: 20 dB	ALIGN AUTO Avg Type: Lc Avg Jype: Lc Avg	pg-Pwr 10 M Sweep	04:25:38 PMJul03.202 TRACE 2:3:4:5 TYPE 2:3:4:5 OFT P NINNN kr1 2:4414 GH; -1.765 dBn -20:2:45 2:0:45 2:0:45 2
RL RF 50 0. enter Freq 13.2650 Ref Offset 2.3 0 0 dB/div Ref 12.36 d 0 2.36 1 1 7 64 1 1 7 7 6 1 1 7 7 6 1 1 7 7 6 1 1 7 7 6 1 1 17 8 1 1 17 9 1 1 1 17 1 1 1 1 18 1 1 1	AC AC AC AC AC AC AC AC AC AC	PNO: Fast → Trig: Gain:Low → Trig: #Atter \$5 \$5 \$5 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7	Free Run 1: 20 dB	ALIGN AUTO Avg Type: Lc Avg Jype: Lc Avg	pg-Pwr 10 M Sweep	04:25:38 PMJul03.202 TRACE 2:3:4:5 TYPE 2:3:4:5 OFT P NINNN kr1 2:4414 GH; -1.765 dBn -20:2:45 2:0:45 2:0:45 2







Agilent Spectrum Analyzer - Swe	pt SA	Spurious NVN			
RL RF 50 G enter Freq 2.4020		SENSE:INT	ALIG	AVITO Avg Type: Log-Pwr	04:27:57 PM Jul 03, 20 TRACE 1 2 3 4 5
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Agilent Spectrum Analyzer - Swep R L RF 50 Ω	AC A	US NVNT 2-[SENSE:INT NO: Fast ++ Trig:	DH1 2480)MHz Er	nission _{og-Pwr}	04:31:11 PM Jul 03, 20 TRACE 10, 24
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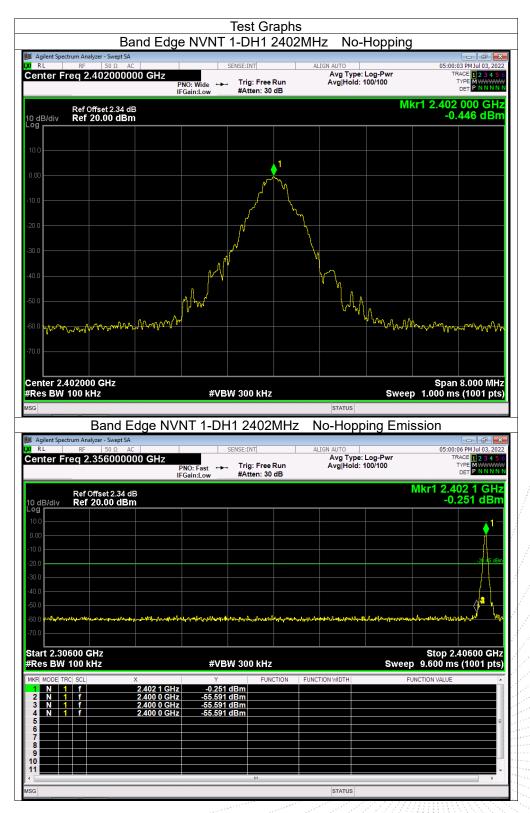


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Agilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC		SENSE:INT	11 2441MH	STATUS IZ Emissior AUTO Avg Type: Log-Pwr	04:34:06 PM Jul 03, 20 TRACE 2 3 4 TYPE M WWW DET P NNN
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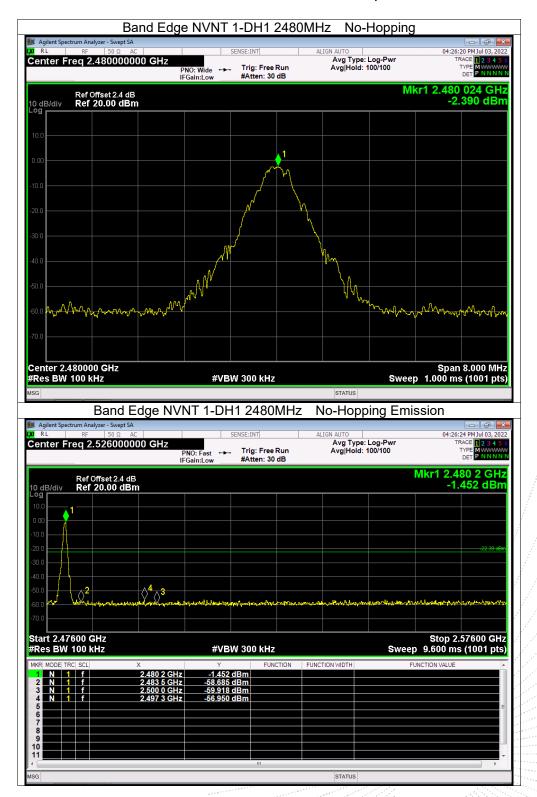




Edition: A.4

No.: BCTC/RF-EMC-007



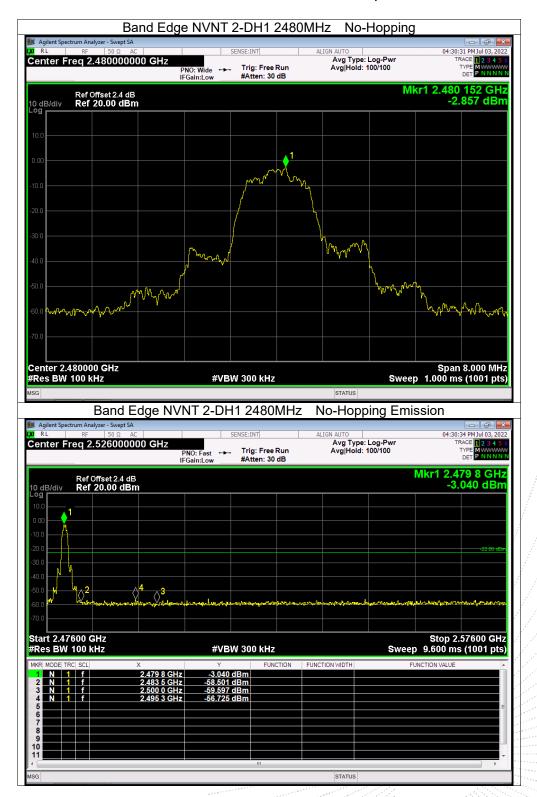


No.: BCTC/RF-EMC-007





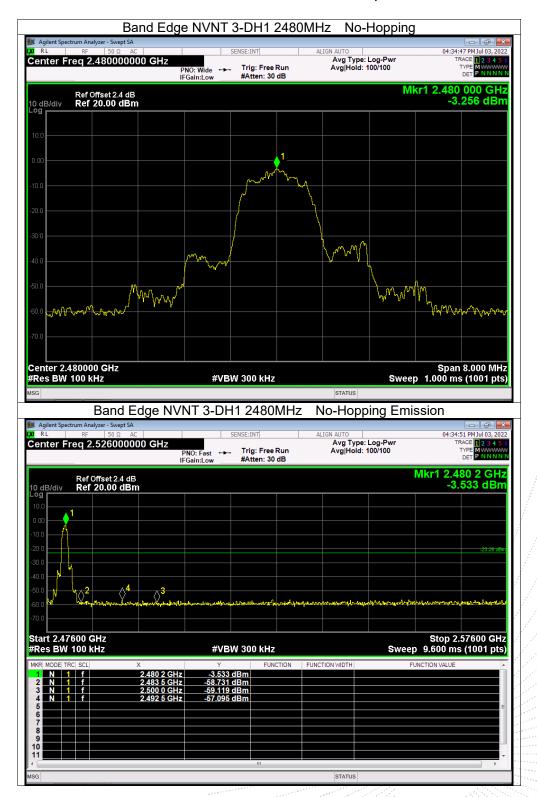






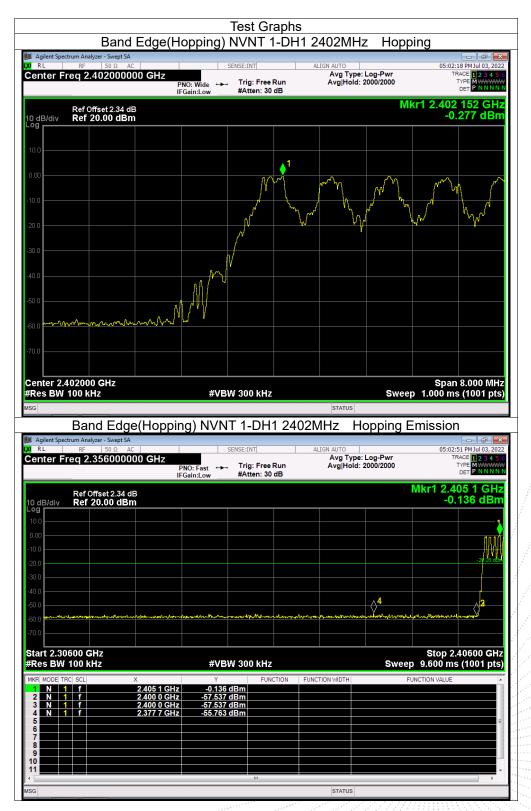






No.: BCTC/RF-EMC-007





Edition: A.4

No.: BCTC/RF-EMC-007







Da	na Eage(H	lopping) l	NVINT Z-DF	11 2402MHz	Hopping	
Agilent Spectrum Analyzer - Swe RL RF 50 Ω		S	ENSE:INT	ALIGN AUTO		04:47:20 PM Jul 03, 20
enter Freq 2.40200	00000 GHz	PNO: Wide ↔→ FGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Lo Avg Hold: 20	og-Pwr 00/2000	TRACE 1 2 3 4 TYPE MWWW DET P N N N
Ref Offset 2.3 dB/div Ref 20.00	34 dB d B m				Mkr1	2.404 000 GH -1.487 dB
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0.00			ስይሮስ	<u></u>		-11
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enter 2.402000 GHz Res BW 100 kHz		#VBV	V 300 kHz		Sweep 1.	Span 8.000 MI 000 ms (1001 pt
3				STATUS		
	<u> </u>	ng) NVN	Г 2-DH1 24	02MHz Ho	pping Emi	
Agilent Spectrum Analyzer - Swe RL RF 50 Ω enter Freq 2.35600	AC	S	ENSE:INT	ALIGN AUTO Avg Type: Lo	og-Pwr	04:47:53 PM Jul 03, 20 TRACE 1 2 3 4
enter Freq 2.3500		PNO: Fast ↔→ FGain:Low	Trig: Free Run	Avg Hold: 20		
		rGalli:LOW	#Atten: 30 dB		00/2000	DET PNNN
Ref Offset 2.		PGain:Low	#Atten: 30 dB			1 2.404 1 GH
dB/div Ref 20.00			#Atten: 30 dB			1 2.404 1 GH
0 dB/div Ref 20.00			#Atten: 30 dB			1 2.404 1 GF
dB/div Ref 20.00						1 2.404 1 GH -1.366 dB
dB/div Ref 20.00						1 2.404 1 GH -1.366 dB
dB/div Ref 20.00 99						1 2.404 1 GH
Bill Ref 20.00 9 9 9 00 9 9 00 9 9 00 9 9 00 9 9 00 9 9 00 9 9 00 9 9 00 9 9 00 9 9 00 9 9 00 9 9 00 9 9						1 2.404 1 GH -1.366 dB
dB/div Ref 20.00 99					Mkr	1 2.404 1 GH -1.366 dB
dB/div Ref 20.00 99	dBm dBm dBm dBm dBm dBm dBm dBm	#VBV	V 300 kHz		Mkr	1 2.404 1 GH -1.366 dBi
dB/div Ref 20.00 9	X 2.400 1 GHz 2.400 0 GHz	#VBV -1.366 -4.9016 c	V 300 kHz		Mkr	1 2.404 1 GH -1.366 dBi
dB/div Ref 20.00 9	dBm میں بار میں اور می	#VBV	V 300 kHz IBm IBm		Mkr	top 2.40600 GF
All All F All 1 1 All 1 1	X 2.404 1 GHz 2.400 0 GHz 2.400 0 GHz	#VBV 	V 300 kHz IBm IBm		Mkr	1 2.404 1 GH -1.366 dBi
AB/div Ref 20.00 9	X 2.404 1 GHz 2.400 0 GHz 2.400 0 GHz	#VBV 	V 300 kHz IBm IBm		Mkr	1 2.404 1 GH -1.366 dBi







	Band Edge(H	lopping) NV	'NT 3-DH	1 2402MHz	Hopping	
Agilent Spectrum Analyzer	50 Ω AC	SENSE	INT	ALIGN AUTO		5:05:40 PM Jul 03, 20
Center Freq 2.40			ig: Free Run Atten: 30 dB	Avg Type: Lo Avg Hold: 200	g-Pwr 00/2000	TRACE 1 2 3 4 5 TYPE MWWW DET PNNN
0 dB/div Ref 20.	et 2.34 dB 00 dBm					02 000 GH -1.604 dBr
-og						
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20.0		<u></u> ^	м			
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	www.					
70.0						
enter 2.402000 G Res BW 100 kHz	iHz	#VBW 30)0 kHz		Sp Sweep 1.000	oan 8.000 MH
G				STATUS	ancep noo	ino (roor pe
	Edge(Hoppi	ng) NVNT 3	-DH1 24	02MHz Hop	oping Emissi	
Agilent Spectrum Analyzer RL RF enter Freq 2.35	50 Ω AC	SENSE	INT	ALIGN AUTO Avg Type: Lo		5:06:13 PM Jul 03, 20 TRACE 1 2 3 4 5
			ig: Free Run Atten: 30 dB	Avg Hold: 200	00/2000	
	et 2.34 dB 00 dBm					2.403 1 GH -1.302 dBr
og 0.0						
0.00						>
						/\/\
0.0						
20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				Jan 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 19	Right by Mining a first may	
200				4,737.6 / 2,496.4 / Mm-1 4 A		2.40600 GH
0.0		#VBW 30		FUNCTION WIDTH	Stop Sweep 9.600	2.40600 GH ms (1001 pt
0.0	X 2.403 1 GHz 2.400 0 GHz	z z z	FUNCTION	FUNCTION WIDTH	Sweep 9.600	2.40600 GH ms (1001 pt
200	× 2.403 1 GHz	y z <u>-1.302 dBm</u> z <u>-49.506 dBm</u> z <u>-49.506 dBm</u>	FUNCTION	FUNCTION WIDTH	Sweep 9.600	2.40600 GH ms (1001 pt
20.0 30.0 40.0 50.0	× 2.403 1 GHz 2.400 0 GHz 2.400 0 GHz	y z <u>-1.302 dBm</u> z <u>-49.506 dBm</u> z <u>-49.506 dBm</u>	FUNCTION	FUNCTION WIDTH	Sweep 9.600	2.40600 GH ms (1001 pts
200	× 2.403 1 GHz 2.400 0 GHz 2.400 0 GHz	y z <u>-1.302 dBm</u> z <u>-49.506 dBm</u> z <u>-49.506 dBm</u>	FUNCTION	FUNCTION WIDTH	Sweep 9.600	2.40600 GH ms (1001 pt
0	× 2.403 1 GHz 2.400 0 GHz 2.400 0 GHz	y z <u>-1.302 dBm</u> z <u>-49.506 dBm</u> z <u>-49.506 dBm</u>	FUNCTION	FUNCTION WIDTH	Sweep 9.600	2.40600 GF ms (1001 pt





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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.

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10.4 Test Result

Condition	Mode	Frequency (MHz)	-20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH1	2402	1.04	Pass
NVNT	1-DH1	2441	1.011	Pass
NVNT	1-DH1	2480	1.045	Pass
NVNT	2-DH1	2402	1.341	Pass
NVNT	2-DH1	2441	1.337	Pass
NVNT	2-DH1	2480	1.353	Pass
NVNT	3-DH1	2402	1.323	Pass
NVNT	3-DH1	2441	1.309	Pass
NVNT	3-DH1	2480	1.301	Pass

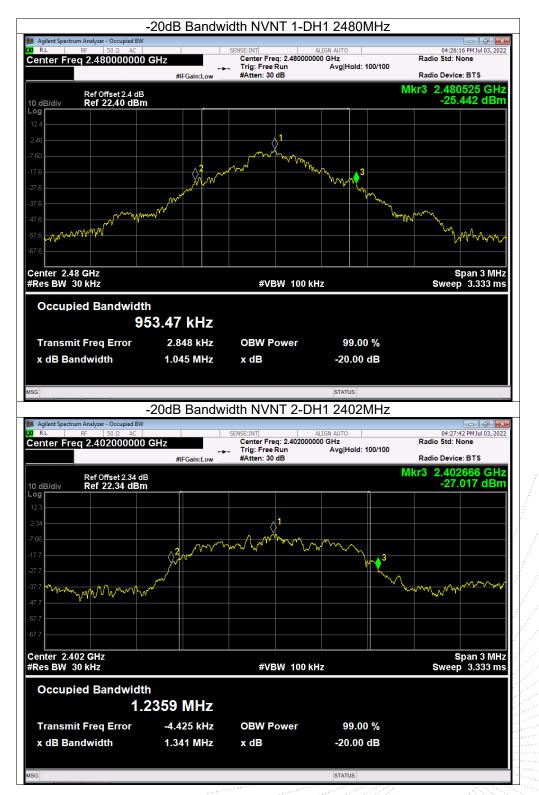
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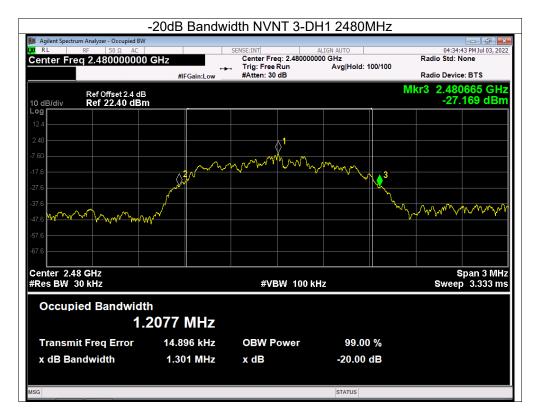












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11. Maximum Peak Output Power

11.1 Block Diagram Of Test Setup



11.2 Limit

FCC Part15 (15.247) , Subpart C						
Section	tion 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.

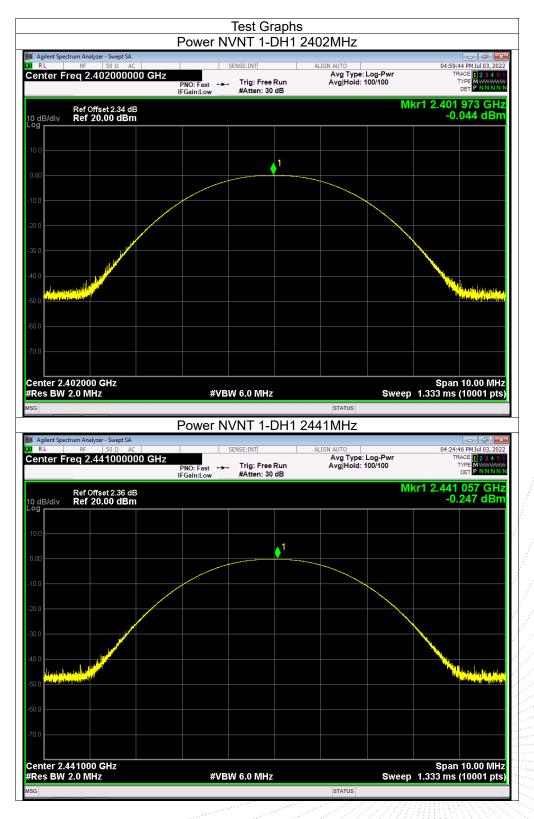
2. Set the spectrum analyzer: RBW = 3MHz. VBW = 3MHz. Sweep = auto; Detector Function = Peak.

3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

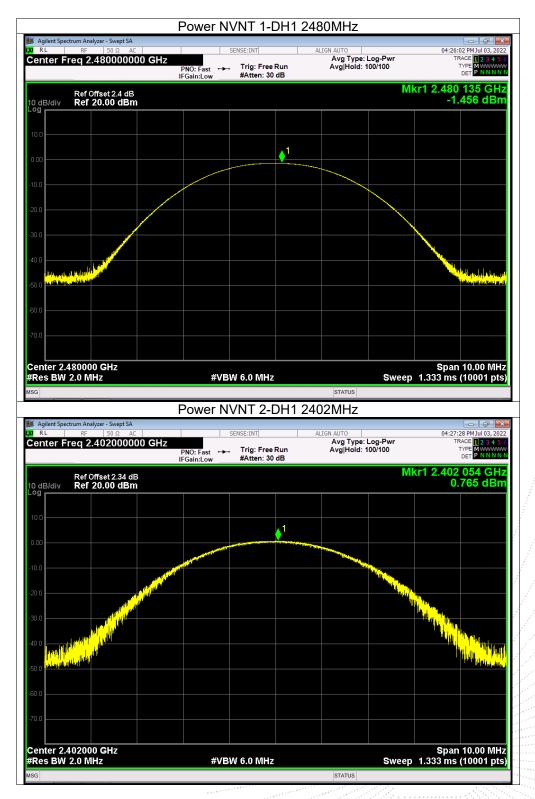
11.4 Test Result

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	-0.04	21	Pass
NVNT	1-DH1	2441	-0.25	21	Pass
NVNT	1-DH1	2480	-1.46	21	Pass
NVNT	2-DH1	2402	0.77	21	Pass
NVNT	2-DH1	2441	0.41	21	Pass
NVNT	2-DH1	2480	-0.64	21	Pass
NVNT	3-DH1	2402	0.99	21	Pass
NVNT	3-DH1	2441	0.81	21	Pass
NVNT	3-DH1	2480	-0.55	21	Pass

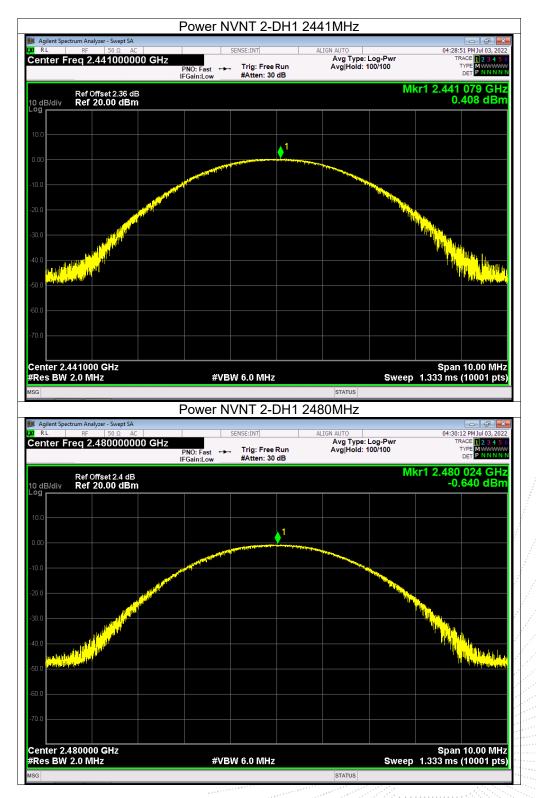




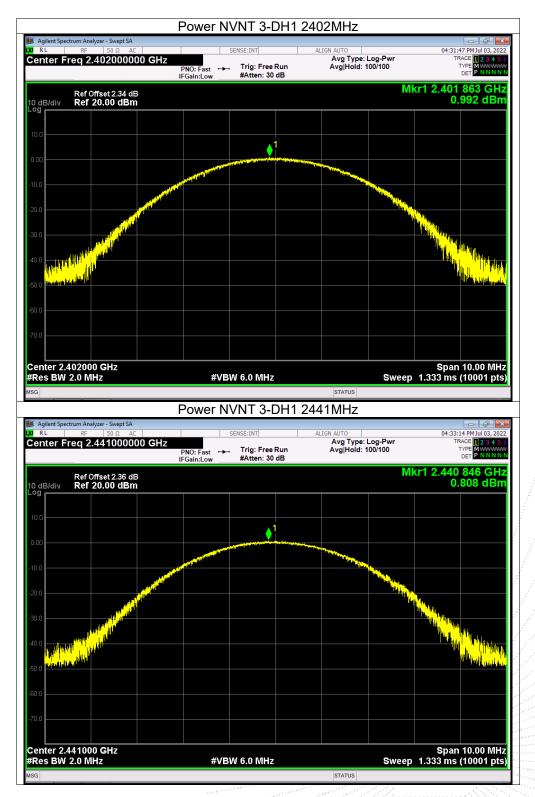




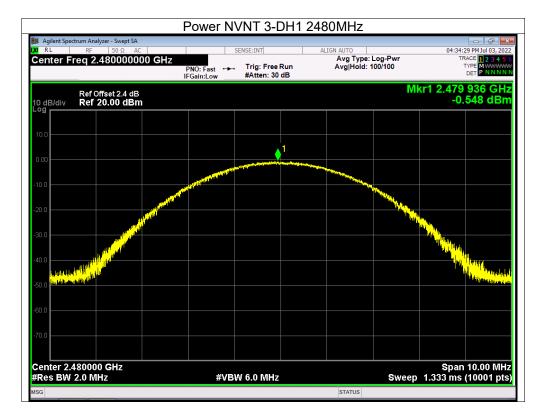












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12. Hopping Channel Separation

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	2401.89	2402.992	1.102	0.693	Pass
NVNT	1-DH1	2441	2441.998	0.998	0.674	Pass
NVNT	1-DH1	2479.006	2480.008	1.002	0.697	Pass
NVNT	2-DH1	2401.996	2403	1.004	0.894	Pass
NVNT	2-DH1	2441.002	2442.002	1	0.891	Pass
NVNT	2-DH1	2479.008	2480	0.992	0.902	Pass
NVNT	3-DH1	2402	2402.998	0.998	0.882	Pass
NVNT	3-DH1	2441.006	2442.006	1	0.873	Pass
NVNT	3-DH1	2479.004	2480.006	1.002	0.867	Pass

12.4 Test Result

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Agilent Spectrum Analyzer - 3 RL RF 5 enter Freq 2.402	^{50 Ω} AC 2500000 GHz	SENSE:INT	e Run	GN AUTO Avg Type: Log Avg Hold:>100		05:02:01 PM JU TRACE 1 TYPE M DET P	2345
Ref Offset	IFGai t 2.34 dB	in:Low #Atten: 3	0 dB		Mkr1	2.401 890 -3.088	GH
0 dB/div Ref 20.0							
.00		<u>∧_</u>		~~~	\sim	J. J.	
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			- John Strand	<u></u>
0.0							
1.0 1.0							
enter 2.402500 Gl							0.0411
Res BW 30 kHz		#VBW 100 kH				Span 2.00 2.133 ms (100	0 MHz 11 pts
R MODE TRC SCL 1 N 1 f 2 N 1 f	X 2.401 890 GHz 2.402 992 GHz	Y FU -3.088 dBm -2.607 dBm	NCTION FUNCT	ION WIDTH	FUNC	TION VALUE	
3 4 5							
6 <b></b> 7 <b></b> 8 <b></b>							
9 D							
		III		STATUS			⊢ F
	U	FS NVNT 1-E	DH1 2441	MHz			
RL RF 5	Swept SA 50 Ω AC	FS NVN1 1-L		GN AUTO	_	04:41:15 PM Ju	💣 🗾
RL RF 5	Swept SA 50 Ω AC <b>1500000 GHz</b> PNO:		ALI e Run		g-Pwr )/100		1 03, 202
RL RF 5 enter Freq 2.441 Ref Offset	Swept SA 50 Ω AC   I 5000000 GHz PNO: IFGai t 2.36 dB	SENSE:INT	ALI e Run	GN AUTO	)/100	04:41:15 PM Ju TRACE 1 TYPE M DET P 2.441 000	GH2
RL RF 5 enter Freq 2.441 Ref Offset dB/div Ref 20.0	Swept SA 50 Q AC       500000 GHz     FGal 12.36 dB 10 dBm	SENSE:INT	ALI e Run	GN AUTO	0/100 Mkr1	04:41:15 PM JU TRACE 1 TYPE M DET P	GH2
RL RF S enter Freq 2.441 Ref Offset dB/div Ref 20.0	Swept SA 50 Ω AC   I 5000000 GHz PNO: IFGai t 2.36 dB	SENSE:INT	ALI e Run	GN AUTO	)/100	04:41:15 PM Ju TRACE 1 TYPE M DET P 2.441 000	GH2
Ref Offset Ref 2.441	Swept SA 50 Q AC       500000 GHz     FGal 12.36 dB 10 dBm	SENSE:INT	ALI e Run	GN AUTO	0/100 Mkr1	04:41:15 PM Ju TRACE 1 TYPE M DET P 2.441 000	GH2
RL RF S enter Freq 2.441 Ref Offset dB/div Ref 20.0	Swept SA 50 Q AC       500000 GHz     FGal 12.36 dB 10 dBm	SENSE:INT	ALI e Run	GN AUTO	0/100 Mkr1	04:41:15 PM Ju TRACE 1 TYPE M DET P 2.441 000	GH2
RL         RF         S           enter Freq 2.441         Ref Offset         Bef Offset           dB/div         Ref 20.0         Ref 20.0           00         0         0           00         0         0           00         0         0           00         0         0           00         0         0	Swept SA 50 Q AC       500000 GHz     FGal 12.36 dB 10 dBm	SENSE:INT	ALI e Run	GN AUTO	0/100 Mkr1	04:41:15 PM Ju TRACE 1 TYPE M DET P 2.441 000	GH2
RL         RF         S           enter Freq 2.441         Ref Offset         Benter Freq 2.441           dB/div         Ref 20.0         Ref 20.0           00         00         00           00         00         00           00         00         00           00         00         00           00         00         00           00         00         00           00         00         00	Swept SA 50 Q AC       500000 GHz     FGal 12.36 dB 10 dBm	SENSE:INT	ALI e Run	GN AUTO	0/100 Mkr1	04:41:15 PM Ju TRACE 1 TYPE M DET P 2.441 000	GH2
RL         RF         S           enter Freq 2.441         Ref Offset         B           dB/div         Ref 20.0         B           00         0         C           00         0         C <tr< td=""><td>Swept SA 50 92 AC                                    </td><td>SENSE:INT</td><td>e Run 0 dB</td><td>GN AUTO</td><td></td><td>04:41:15 PMJU TRACE 10 TYPE M DET P 2.441 000 -2.441</td><td>0 MH:</td></tr<>	Swept SA 50 92 AC	SENSE:INT	e Run 0 dB	GN AUTO		04:41:15 PMJU TRACE 10 TYPE M DET P 2.441 000 -2.441	0 MH:
RL RF S enter Freq 2.441 Ref Offset dB/div Ref 20.0 99 90 90 90 90 90 90 90 90 90 90 90 90	Swept SA 50 Q AC 1500000 GHz PNO: IFGal t2.36 dB 00 dBm 1 1 1 1 1 1 1 1 1 1 1 1 1	SENSE:INT	e Run 0 dB	GN AUTO	Mkr1	04:41:15 PMJU TRACE IN TRACE IN DET P	0 MH:
RL         RF         S           enter Freq 2.441         Ref Offset         B/div         Ref 20.0           B/div         Ref 20.0         B/div         B/div           R         Ref 20.0         B/div         B/div           R         MODE TRC SCL         B/div         B/div           N         1         F         B/div         B/div	Swept SA 1500000 GHz PNO: IFGa 12.36 dB 10 dBm 10 dBm 1	SENSE:INT	e Run 0 dB	GN AUTO	Mkr1	04:41:15 PMJU TRACE 11 TYPE M DET P 2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.14100 -2.14100 -2.1410 -2.14100 -2	0 MH:
RL RF S enter Freq 2.441 Ref Offset dB/div Ref 20.0 Ref 20.0 Ref 0 Ref 0	Swept SA 10 0 AC 1500000 GHz PNO: IFGal 12.36 dB 10 dBm 12.36 dB 10 dBm 14.36 dB 15 dB 16 dB 16 dB 17 dB 18 dB 18 dB 19 dB 19 dB 10	SENSE:INT	e Run 0 dB	GN AUTO	Mkr1	04:41:15 PMJU TRACE 11 TYPE M DET P 2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.441 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.141 000 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.1410 -2.14100 -2.14100 -2.1410 -2.14100 -2	0 MH:



Agilent Spectrum Analyzer - Swept	ton l						
RL RF 50 Ω enter Freq 2.47950	AC 0000 GHz	SENSE:INT		ALIGN AUTO Avg Type:		04:44: TI	:03 PM Jul 03, 202 RACE 1 2 3 4 5
	PNO: IFGai		ree Run : 30 dB	Avg Hold:>			RACE 12345 TYPE MWWWW DET PNNNN
Ref Offset 2.4					Mk	r1 2.479	006 GHz
0 dB/div Ref 20.00 d	IBm					-3.	.753 dBm
10.0					. 7		
0.00					2 ²		
0.0	when we are	m			· · · · · · · · · · · · · · · · · · ·	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1
20.0		- www					Jum
40.0							
50.0							
60.0							
70.0							
enter 2.479500 GHz						Span	1 2.000 MHz
Res BW 30 kHz		#VBW 100 k	Hz		Sweep		s (1001 pts)
KR MODE TRC SCL	X		FUNCTION   FU	INCTION WIDTH	FU	NCTION VALUE	
2 N 1 f	2.479 006 GHz 2.480 008 GHz	-3.753 dBm -3.962 dBm					
3 4							
5 6							
8							
9							
G							
				STATUS			
	CI	-S NVNT 2-	DH1 24				
Agilent Spectrum Analyzer - Swept	t SA		DH1 24	02MHz			- 6 <b>-</b>
Agilent Spectrum Analyzer - Swept RL RF 50 Ω enter Freq 2.40250	AC 0000 GHz	SENSE:INT		02MHz	Log-Pwr	TI	:04 PM Jul 03, 202
RL RF 50 Ω	AC 0000 GHz	SENSE:INT	ree Run	02MHz	Log-Pwr 100/100	TI	:04 PM Jul 03, 202
RL RF 50 Ω	t SA AC     0000 GHz IFGain	SENSE:INT	ree Run	02MHz	100/100	r1 2.401	104 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE M DET P NNNN 996 GH2
RL         RF         50 Ω           enter Freq 2.402500	AC AC OOOO GHZ PNO: IFGair 4 dB	SENSE:INT	ree Run	02MHz	100/100	r1 2.401	12 3 4 5 TYPE M WWWW DET P NNNN 996 GH2
RL RF 50 Ω enter Freq 2.402500 	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run	02MHz	100/100 Mik	r1 2.401	04 PMJul 03, 2022 RACE    2 3 4 5 DET PNNNN 996 GH2 669 dBm
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset 2.3/           Ref Offset 2.3/         Ref 2.0.00 d           0 dB/div         Ref 20.00 d	AC AC OOOO GHZ PNO: IFGair 4 dB	SENSE:INT	ree Run	02MHz	100/100	r1 2.401	12 3 4 5 TYPE M WWWW DET P NNNN 996 GH2
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset 2.30           0 dB/div         Ref Offset 2.30           0 000         Ref 2.000 d	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run	02MHz	100/100 Mik	r1 2.401	12 3 4 5 TYPE M WWWW DET P NNNN 996 GH2
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset 2.3           0 dB/div         Ref 20.00 d           9         0           0.00         0           0.00         0           0.00         0	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run	02MHz	100/100 Mik	r1 2.401	12 3 4 5 TYPE M WWWW DET P NNNN 996 GH2
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset 2.3           0 dB/div         Ref 20.00 d           0 00         000           0.00         000           0.00         000	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run	02MHz	100/100 Mik	r1 2.401	12 3 4 5 TYPE M WWWW DET P NNNN 996 GH2
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset2.3           0 dB/div         Ref 20.00 d           0 00         000           0 00         000           0 00         000           0 00         000           0 00         000	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run	02MHz	100/100 Mik	r1 2.401	104 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE M DET P NNNN 996 GH2
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset 2.3           0 dB/div         Ref 20.00 d           0 00         000           0.00         000           0.00         000	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run	02MHz	100/100 Mik	r1 2.401	104 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE M DET P NNNN 996 GH2
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset2.3           0 dB/div         Ref 20.00 d           0 00         000           0 000         000           0 000         000           0 000         000           0 000         000           0 000         000           0 000         000           0 000         000           0 000         000           0 000         000	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run	02MHz	100/100 Mik	r1 2.401	104 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE M DET P NNNN 996 GH2
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset 2.3           0 dB/div         Ref 20.00 d           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run	02MHz	100/100 Mik	r1 2.401 -3.	0.0 P0Jul03, 2022 RACE [] 2 3 4 5 17PE MUMUU DET PNNNN 996 GH2 669 dBm
RL         RF         50 Ω           enter Freq 2.402500	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run 30 dB	02MHz	100/100 Mk	r1 2.401 -3.	0.4 PM Jul 03, 2022 RACE 12, 23, 45, 5 TYPE MINIMU 996 GHz 669 dBm
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset 2.3         Ref Offset 2.3           0 dB/div         Ref 20.00 d         Ref 20.00 d           0 dB/div         Ref 20.00 d         Ref 20.00 d <td>tSA AC DOUDO GHZ PNO: IFGeit 4 dB Bm</td> <td>SENSE:INT Wide Trig: Fr #Atten: #VBW 100 kt</td> <td>ree Run 30 dB</td> <td>02MHz</td> <td>100/100 Mk</td> <td>r1 2.401 -3.</td> <td>12 3 4 5 TYPE M WWWW DET P NNNN 996 GH2</td>	tSA AC DOUDO GHZ PNO: IFGeit 4 dB Bm	SENSE:INT Wide Trig: Fr #Atten: #VBW 100 kt	ree Run 30 dB	02MHz	100/100 Mk	r1 2.401 -3.	12 3 4 5 TYPE M WWWW DET P NNNN 996 GH2
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset 2.3           0 dB/div         Ref 20.00 d           0 g	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run 30 dB	ALIGN AUTO Avg Type: Avg Hold:>	100/100 Mk	r1 2.401 -3.	0.4 PM Jul 03, 2022 RACE 12, 23, 45, 5 TYPE MINIMU 996 GHz 669 dBm
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset 2.3         Ref Offset 2.3           0 dB/div         Ref 20.00 d         Ref 20.00 d           0 0 0	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT Wide Trig: Fr #Atten: #VBW 100 kt	ree Run 30 dB	ALIGN AUTO Avg Type: Avg Hold:>	100/100 Mk	r1 2.401 -3.	0.4 PM Jul 03, 2022 RACE 12, 23, 45, 5 TYPE MINIMU 996 GHz 669 dBm
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset 2.3           0 dB/div         Ref 20.00 d           0 dB/div         Soft           0 dB/div         Ref 20.00 d           0 dB/div         Ref 20.00 d           0 dB/div         Soft           0 dB/div         Soft           1 N         1 f           2 N         1 f           3 d         4 f	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run 30 dB	ALIGN AUTO Avg Type: Avg Hold:>	100/100 Mk	r1 2.401 -3.	0.4 PM Jul 03, 2022 RACE 12, 23, 45, 5 TYPE MINIMU 996 GHz 669 dBm
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset 2.3           0 dB/div         Ref 20.00 d           0 dB/div         Ref 20.00 d           0 000	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run 30 dB	ALIGN AUTO Avg Type: Avg Hold:>	100/100 Mk	r1 2.401 -3.	0.4 P0 Jul 03, 2022 RACE 12 3 4 5 TYPE D 13 4 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
RL         RF         50 Ω           enter Freq 2.402500         Ref Offset 2.3           0 dB/div         Ref 20.00 d           0 d0	tSA AC   PNO: IFGain 4 dB Bm	SENSE:INT	ree Run 30 dB	ALIGN AUTO Avg Type: Avg Hold:>	100/100 Mk	r1 2.401 -3.	04 PM Jul 03, 202 RACE 12, 34 5 TYPE M VIENT DET P NNNN 996 GH2 669 dBm



Agilent Spectrum Analyzer - Sw			eel -				
RL RF 50 Senter Freg 2.4415		SENSE:IN			: Log-Pwr	04:49 T	:37 PM Jul 03, 202 RACE 1 2 3 4 5
	PN		j: Free Run ten: 30 dB	Avg Hold	:>100/100		
Ref Offset 2	36 dB				M	kr1 2.441	002 GHz
dB/div Ref 20.00						-3	.676 dBm
10.0							
1.00	<b>∮</b> 1				2 ²		
0.0 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Mar mu	$\sim$	vunn	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m
20.0							
0.0							
0.0							
60.0							
0.0							
antar 2 444500 CH						Onor	2 000 MU
enter 2.441500 GHz Res BW 30 kHz		#VBW 100	) kHz		Swee		n 2.000 MH; s (1001 pts
KR MODE TRC SCL	X	Y		FUNCTION WIDTH		UNCTION VALUE	
1 N 1 f 2 N 1 f	2.441 002 GHz 2.442 002 GHz	-3.676 dBm -3.788 dBm					
3							
5 6							
7 8							
9							
1							
G				STATUS			•
G							
		CFS NVNT					
Agilent Spectrum Analyzer - Sw RL RF 50 9	rept SA Ω AC		2-DH1 2	480MHz Align Auto		04:58	:01 PM Jul 03, 202
Agilent Spectrum Analyzer - Sw RL RF 50 9	rept SA Ω AC       000000 GHz PN	SENSE:IN O: Wide	2-DH1 2 ग : Free Run	480MHz Align Auto	:: Log-Pwr >100/100	04:58 T	:01 PM Jul 03, 202 RACE 1 2 3 4 5
Agilent Spectrum Analyzer - Sw RL RF 50 9 enter Freq 2.4795	rept SA Ω AC     000000 GHz PN IFG	SENSE:IN	2-DH1 2	480MHz Align Auto Avg Type	:>100/100	Т	:01 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE MWWW DET P N N N
Agilent Spectrum Analyzer - Sw RL RF 501 enter Freq 2.4795 Ref Offset 2 0 dB/div Ref 20.00	ept SA Ω AC PN 000000 GHz PN IFG 2.4 dB	SENSE:IN O: Wide	2-DH1 2 ग : Free Run	480MHz Align Auto Avg Type	:>100/100	kr1 2.479	101 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Agilent Spectrum Analyzer - Sw RL RF 501 enter Freq 2.4795 Ref Offset 2 0 dB/div Ref 20.00	ept SA Ω AC PN 000000 GHz PN IFG 2.4 dB	SENSE:IN O: Wide	2-DH1 2 ग : Free Run	480MHz Align Auto Avg Type	:>100/100	kr1 2.479	101 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Agilent Spectrum Analyzer - Sw RL RF 50 enter Freq 2.4795 Ref Offset 2 d B/div Ref 20.00	ept SA Ω AC PN 000000 GHz PN IFG 2.4 dB	SENSE:IN O: Wide	2-DH1 2 ग : Free Run	480MHz Align Auto Avg Type	:>100/100	kr1 2.479	101 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Agilent Spectrum Analyzer - Sw RL RF 50 enter Freq 2.4795 Ref Offset 2 d B/div Ref 20.00 og 00 00	ept SA Ω AC     1000000 GHz PN IFG 2.4 dB dBm	SENSE:IN O: Wide	2-DH1 2 ग : Free Run	480MHz Align Auto Avg Type	:>100/100	kr1 2.479	101 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Agilent Spectrum Analyzer - Sw RL RF 501 enter Freq 2.4795 0 dB/div Ref Offset 2 0 dB/div Ref 20.00	ept SA Ω AC     1000000 GHz PN IFG 2.4 dB dBm	SENSE:IN O: Wide	2-DH1 2 ग : Free Run	480MHz Align Auto Avg Type	:>100/100	kr1 2.479	101 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Agilent Spectrum Analyzer - Sw RL RF 501 enter Freq 2.4795 Ref Offset 2 0 dB/div Ref 20.00 00 00 00 00 00	ept SA Ω AC     1000000 GHz PN IFG 2.4 dB dBm	SENSE:IN O: Wide	2-DH1 2 ग : Free Run	480MHz Align Auto Avg Type	:>100/100	kr1 2.479	101 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Agilent Spectrum Analyzer - Sw RL RF 501 enter Freq 2.4795 Ref Offset 2 0 dB/div Ref 20.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ept SA Ω AC     1000000 GHz PN IFG 2.4 dB dBm	SENSE:IN O: Wide	2-DH1 2 ग : Free Run	480MHz Align Auto Avg Type	:>100/100	kr1 2.479	101 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Agilent Spectrum Analyzer - Sw RL RF 501 enter Freq 2.4795 Ref Offset 2 0 dB/div Ref 20.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ept SA Ω AC     1000000 GHz PN IFG 2.4 dB dBm	SENSE:IN O: Wide	2-DH1 2 ग : Free Run	480MHz Align Auto Avg Type	:>100/100	kr1 2.479	101 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Agilent Spectrum Analyzer - Sw RL RF 501 enter Freq 2.4795 Ref Offset 2 0 dB/div Ref 20.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ept SA Ω AC     1000000 GHz PN IFG 2.4 dB dBm	SENSE:IN O: Wide	2-DH1 2 ग : Free Run	480MHz Align Auto Avg Type	:>100/100	kr1 2.479	101 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Agilent Spectrum Analyzer - Sw RL RF 501 enter Freq 2.4795 Ref Offset 2 0 dB/div Ref 20.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ept SA Ω AC     1000000 GHz PN IFG 2.4 dB dBm	SENSE:IN O: Wide	2-DH1 2 ग : Free Run	480MHz Align Auto Avg Type	:>100/100	kr1 2.479	101 PM Jul 03, 202 RACE 1 2 3 4 5 TYPE MWWW DET P NNNN
Agilent Spectrum Analyzer - Sw RL RF 501 enter Freq 2.4795 0 dB/div Ref 20.00 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0	ept SA Q AC PN 1000000 GHz PN PN PN PN PN PN PN PN PN PN	SENSE:IN C: Wide Trig ain:Low #Att	2-DH1 2 TIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	480MHz Align Auto Avg Type		kr1 2.479 -5	101 PUJU 03, 202 RACE 12 3 4 5 TYPE WINNIN 0008 GH2 386 dBm
Agilent Spectrum Analyzer - Sw RL RF 501 enter Freq 2.4795 0 dB/div Ref 20.00 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0	ept SA Q AC PN 1000000 GHz PN PN PN PN PN PN PN PN PN PN	SENSE:IN O: Wide	2-DH1 2	480MHz	>100/100	kr1 2.479 -5	101 PUJU 03, 202 RACE 12 3 4 5 TYPE WINNIN 0008 GH2 386 dBm
Agilent Spectrum Analyzer - Sw RL RF 50 enter Freq 2.4795 0 dB/div Ref 20.00 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0	A AC PNU	SENSE:IN O: Wide Trig ain:Low #Att	2-DH1 2 TIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	480MHz Align Auto Avg Type	>100/100	kr1 2.479 -5	0008 GH2 386 dBm 0008 GH2 386 dBm
Agilent Spectrum Analyzer - Sw           Ref Offset 2           center Freq 2.4795           Ref Offset 2           o dB/div         o dB/div           <	ept SA Q AC PN PN PN PN PN PN PN PN PN PN	SENSE:IN O: Wide ain:Low Trig #Att #Att #VBW 100 Y	2-DH1 2	480MHz	>100/100	kr1 2.479 -5	101 PUJU 03, 202 RACE 12 3 4 5 TYPE WINNIN 0008 GH2 386 dBm
Agilent Spectrum Analyzer - Sw           RL         RF         S0           enter Freq 2.4795         S0         S0           odB/div         Ref Offset 2         S0           0 dB/div         Ref 20.00         S0           90         Ref 20.00         S0           91         Ref 20.00         S0           92         Ref 20.00         S0           93         Ref 20.00         S0           94         Ref 20.00         S0           95         Ref 20.00         S0           90         Ref 20.00         Ref 20.00           90         Ref 20.00         Ref 20.00           90         Ref 20.00	A AC PNU	SENSE:IN O: Wide Trig ain:Low #Att	2-DH1 2	480MHz	>100/100	kr1 2.479 -5	101 PU JU 03, 202 RACE 12 3 4 5 TYPE D NNNN 0008 GH2 386 dBm
Agilent Spectrum Analyzer - Sw           RL         RF         501           enter Freq 2.4795           Ref Offset 2         0           0 dB/div         Ref Offset 2           0 dB/div         Ref 20.00           9         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           90         0           91         1           92         1         1           93         1         1	A AC PNU	SENSE:IN O: Wide Trig ain:Low #Att	2-DH1 2	480MHz	>100/100	kr1 2.479 -5	101 PUJU 03, 202 RACE 12 3 4 5 TYPE WINNIN 0008 GH2 386 dBm
Ref Offset 2           Ref Offset 2         Ref Offset 2           0 dB/div         Ref 20.00           99         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0           000         0	A AC PNU	SENSE:IN O: Wide Trig ain:Low #Att	2-DH1 2	480MHz	>100/100	kr1 2.479 -5	101 PU JU 03, 202 RACE 12 3 4 5 TYPE D NNNN 0008 GH2 386 dBm
Agilent Spectrum Analyzer - Sw         RL       PF       So 1         enter Freq 2.4795         Ref Offset 2       Ref Offset 2         o dB/div       Ref 20.00         og       Ref 20.00         Ref 20.00       Ref 20.00         Ref 20.00       Ref 20.00         Ref 20.00       Ref 20.00	A AC PNU	SENSE:IN O: Wide Trig ain:Low #Att	2-DH1 2	480MHz	>100/100	kr1 2.479 -5	101 PU JU 03, 202 RACE 12 3 4 5 TYPE D NNNN 0008 GH2 386 dBm



Agilent Spectrum Analyzer - Sw RL RF 50 S		OF NOT-THE			05:05:24 DM 3:4 02, 2022
RL RF 50 G enter Freq 2.4025	00000 GHz	SENSE:INT	ALIGN AUTO Avg Type: L		05:05:24 PM Jul 03, 202 TRACE 1 2 3 4 5
		D: Wide Trig: Free Run ain:Low #Atten: 30 dB	Avg Hold:>1	00/100	TYPE MWWWW DET PNNNN
Ref Offset 2				Mkr1 2.	402 000 GHz
0 dB/div Ref 20.00	dBm				-3.671 dBm
10.0	<u> </u>			<mark>2</mark>	
	$\sim$			Amon.	
20.0					N . Www
30.0					
40.0					
50.0					
70.0					
enter 2.402500 GHz	,				Span 2.000 MHz
Res BW 30 kHz		#VBW 100 kHz			3 ms (1001 pts)
IKR MODE TRC SCL	X	Y FUNCTION	N FUNCTION WIDTH	FUNCTION	VALUE 🔺
1 N 1 f 2 N 1 f 3	2.402 000 GHz 2.402 998 GHz	-3.671 dBm -3.493 dBm			
4					
6					
8					
10					
		m			۱.
G					
	_		STATUS		
		FS NVNT 3-DH			
RL RF 50 9	ept SA Ω AC	FS NVNT 3-DH1	1 2441MHz	-	05:07:21 PM Jul 03, 2022
RL RF 50 9	ept SA Ω AC 00000 GHz PNC	SENSE:INT	1 2441MHz	og-Pwr 00/100	05:07:21 PM Jul 03, 2022
enter Freq 2.4415	ept SA Ω AC       000000 GHz PNC IFG	SENSE:INT	1 2441MHz	00/100	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 TYPE MWWWW DET P NNNN
RL RF 50 9	ept SA Ω AC 000000 GHz PNC IFG .36 dB	SENSE:INT	1 2441MHz	00/100	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 TYPE MWWWW DET P NNNN
RL RF 503 Renter Freq 2.4415 Ref Offset 2 0 dB/div Ref 20.00	ept SA 2 AC     00000 GHz PNC IFG 36 dB dBm	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 ( TYPE MWWWW DET P N N N N
RL         RF         50.4           enter Freq 2.4415           Ref Offset 2           0 dB/div         Ref Offset 2           0 dD/div         Ref 20.00           90         0           0.00         0	ept SA Ω AC 000000 GHz PNC IFG .36 dB	SENSE:INT	1 2441MHz	00/100	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MWWWW DET P NNNN
RL RF 50.4 enter Freq 2.4415 Ref Offset 2 0 dB/div Ref 20.00	ept SA 2 AC     00000 GHz PNC IFG 36 dB dBm	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MWWWW DET P NNNN
RL         RF         50.4           enter Freq 2.4415           Ref Offset 2           0 dB/div         Ref Offset 2           0 dD/div         Ref 20.00           90         0           0.00         0	ept SA 2 AC     00000 GHz PNC IFG 36 dB dBm	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MWWWW DET P NNNN
RL RF 50.4 enter Freq 2.4415 0 dB/div Ref 20.00 9 10.0 0.00 10.0 20.0	ept SA 2 AC     00000 GHz PNC IFG 36 dB dBm	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	441 006 GHz
RL RF 50.4 enter Freq 2.4415 0 dB/div Ref 20.00 9 0.00 0.00 0.00 0.00 0.00 0.00 0.	ept SA 2 AC     00000 GHz PNC IFG 36 dB dBm	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MWWWW DET P NNNN
RL         RF         50.4           enter Freq 2.4415         Ref Offset2           0 dB/div         Ref 20.00           0 g	ept SA 2 AC     00000 GHz PNC IFG 36 dB dBm	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MWWWW DET P NNNN
RL         RF         50.4           enter Freq 2.4415         Ref Offset2           0 dB/div         Ref 20.00           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0	ept SA 2 AC     00000 GHz PNC IFG 36 dB dBm	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MWWWW DET P NNNN
RL         PF         50.4           enter Freq 2.4415         Ref Offset 2           0 dB/div         Ref 20.00           0 g	ept SA 2 AC PN 00000 GHz PN IFG 36 dB dBm 1 1 1 1 1 1 1 1 1 1 1 1 1	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MININA 441 006 GHz -4.510 dBm
RL         PF         50.4           enter Freq 2.4415         Ref Offset 2           0 dB/div         Ref 20.00           9	ept SA 2 AC PROVIDENT PROVIDA PROVIDA PROVIDA PROVIDA PROVIDA PROVIDA PROVIDA PROVIDA	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MININA 441 006 GHz -4.510 dBm -4.510 dBm -4.510 dBm -4.510 dBm -5.510
RL         PF         50.2           enter Freq 2.4415         Ref Offset 2           0 dB/div         Ref 20.00           10.0         Ref 20.00	ept SA 2. AC	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MININA 441 006 GHz -4.510 dBm -4.510 dBm -5.510
RL         RF         50.4           enter Freq 2.4415         Ref Offset 2           0 dB/div         Ref 20.00           0 d	ept SA 2 AC PRO PAC PRO PRO PRO PRO PRO PRO PRO PRO	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MININA 441 006 GHz -4.510 dBm -4.510 dBm -5.510
RL         PF         50.4           enter Freq 2.4415         Ref Offset 2           0 dB/div         Ref 20.00           0 g	ept SA 2. AC	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MININA 441 006 GHz -4.510 dBm -4.510 dBm -5.510
RL         PF         50.4           enter Freq 2.4415         Ref Offset 2           0 dB/div         Ref 20.00           9	ept SA 2. AC	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MININA 441 006 GHz -4.510 dBm -4.510 dBm -5.510
RL         PF         S0.4           enter Freq 2.4415         Ref Offset 2           0 dB/div         Ref 20.00           100         Ref 20.00 <td>ept SA 2. AC                                    </td> <td>SENSE:INT</td> <td>1 2441MHz</td> <td>00/100 Mkr1 2.</td> <td>05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MININA 441 006 GHz -4.510 dBm -4.510 dBm -5.510 dBm -5.510</td>	ept SA 2. AC	SENSE:INT	1 2441MHz	00/100 Mkr1 2.	05:07:21 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MININA 441 006 GHz -4.510 dBm -4.510 dBm -5.510



	CFS NVNT 3-DH1 24	80MHz	
	SENSE:INT PNO: Wide Trig: Free Run IFGain:Low #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	05:09:14 PM Jul 03, 202 TRACE 1 2 3 4 5 TYPE MWWWW DET P NNNN
Ref Offset 2.4 dB 10 dB/div Ref 20.00 dBm		Mkr	2.479 004 GHz -5.284 dBm
Log 10.0 0.00 -10.0		2 mm mm	
-20.0			
-50.0			
Center 2.479500 GHz #Res BW 30 kHz	#VBW 100 kHz	Sweep 2	Span 2.000 MHz 2.133 ms (1001 pts
MKR         MODE         TRC         SCL         X           1         N         1         f         2.479         004         GHz           2         N         1         f         2.480         006         GHz           3         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         - </td <td>-5.284 dBm</td> <td>UNCTION WIDTH FUNC</td> <td>TION VALUE</td>	-5.284 dBm	UNCTION WIDTH FUNC	TION VALUE
5 6 7 8 9 9 10			
11 ISG	m	STATUS	

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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;

### 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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		ing No. NVNT	aphs 1-DH1 2441M⊦	lz	
Agilent Spectrum Analyzer - Sv RL RF 50 Center Freg 2.4417	Ω AC	SENSE:INT	ALIGN AUTO Avg Type:	Log-Pwr	5:03:40 PM Jul 03, 2022 TRACE 1 2 3 4 5 (
	PN	D: Fast 😱 Trig: Free F ain:Low #Atten: 30 o		100/100	
Ref Offset 2 0 dB/div Ref 20.00	2.36 dB ) dBm				2 004 0 GHz -0.682 dBm
.og 10.0					^ <b>2</b>
	AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	AADAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	ነለቢስለቢስስሲስስሲስሲ	ለለልስለለለበብለስለለ	ANANANÁ
20.0	A L A A A A A A A A A A A A A A A A A A	l An a ka ka ka ƙa ƙa ƙa ƙa ƙa ƙa ƙa	annshaafikafiafia.	A A A A A A A A A A A A A A A A A A A	IAAAAAAA
40.0					
50.0					\
70.0					
Start 2.40000 GHz Res BW 100 kHz		#VBW 300 kHz		Stop Sweep 8.000	o 2.48350 GHz ms (1001 pts)
	× 2.402 004 0 GHz	Y FUNC -0.682 dBm	TION FUNCTION WIDTH	FUNCTION VAL	
2 N 1 f	2.479 993 0 GHz	-1.923 dBm			
4 5 6					=E
7 8 9					
10					
3G			STATUS		,
		ing No. NVNT	2-DH1 2441MF	z	
RL RF 50	Ω AC	SENSE:INT	ALIGN AUTO Avg Type:	Log-Pwr	4:52:01 PM Jul 03, 2022 TRACE 1 2 3 4 5 (
RL RF 50	Ω AC 750000 GHz PN0	SENSE:INT D: Fast Trig: Free F ain:Low #Atten: 30 o	Avg Type: Run Avg Hold:>	Log-Pwr 100/100	4:52:01 PM Jul 03, 2022 TRACE 1 2 3 4 5 ( TYPE MWWWW DET P NNNN
RL RF 50 center Freq 2.4417 Ref Offset 2 0 dB/div Ref 20.00	Ω AC 750000 GHz PN0 IFGa 2.36 dB	D: Fast 😱 Trig: Free F	Avg Type: Run Avg Hold:>	Log-Pwr 100/100 Mkr1 2.401	4:52:01 PM Jul 03, 2022
Ref Offset 2 0 dB/div Ref 20.00	Ω AC 750000 GHz PN0 IFGa 2.36 dB	D: Fast 😱 Trig: Free F	Avg Type: Run Avg Hold:>	Log-Pwr 100/100 Mkr1 2.401	4:52:01 PM Jul 03, 2022 TRACE 1 2 3 4 5 0 TYPE MWWWW DET PNNNN
Ref Offset 2 0 dB/div Ref 2.0.00	Ω AC 750000 GHz PN IFG 2.36 dB 0 dBm	D: Fast Trig: Free F sin:Low #Atten: 30 d	Avg Type: Run Avg Hold:>	Log-Pwr 100/100 Mkr1 2.401	4:52:01 PMJul 03, 2022 TRACE 12 3 4 5 6 TYPE MULTIC 12 3 4 5 6 PT P NINNI
Ref Offset 0 dB/div Ref 20.00	Ω AC 750000 GHz PN IFG 2.36 dB 0 dBm	D: Fast Trig: Free F sin:Low #Atten: 30 d	Avg Type: Run Avg Hold:> dB	Log-Pwr 100/100 Mkr1 2.401	4:52:01 PMJul 03, 2022 TRACE 12 3 4 5 6 TYPE MULTIC 12 3 4 5 6 PT P NINNI
Ref Offset / 0 dB/div Ref 2.4417 0 dB/div Ref 20.00	Ω AC 750000 GHz PN IFG 2.36 dB 0 dBm	D: Fast Trig: Free F sin:Low #Atten: 30 d	Avg Type: Run Avg Hold:> dB	Log-Pwr 100/100 Mkr1 2.401	4:52:01 PMJul 03, 2022 TRACE 12 3 4 5 6 TYPE MULTIC 12 3 4 5 6 PT P NINNI
Ref Offset2 0 dB/div Ref 20.00 000 000 000 000 000 000 000 000 00	Ω AC 750000 GHz PN IFG 2.36 dB 0 dBm	D: Fast Trig: Free F sin:Low #Atten: 30 d	Avg Type: Run Avg Hold:> dB	Log-Pwr 100/100 Mkr1 2.401	4:52:01 PMJul 03, 2022 TRACE 12 3 4 5 6 TYPE MULTIC 12 3 4 5 6 PT P NINNI
Ref Offset 0 dB/div 0	Ω AC 750000 GHz PN IFG 2.36 dB 0 dBm	D: Fast Trig: Free F sin:Low #Atten: 30 d	Avg Type: Run Avg Hold:> dB	Log-Pwr 100/100 Mkr1 2.401	4:52:01 PMJul 03, 2022 TRACE 12 3 4 5 6 TYPE MULTIC 12 3 4 5 6 PT P NINNI
Ref Offset 3 0 dB/div Ref 20.00 0 dB/div Ref	Ω AC 750000 GHz PN IFG 2.36 dB 0 dBm	D: Fast Trig: Free R #Atten: 30 d	Avg Type: Run Avg Hold:> dB	Log-Pwr 100/100 Mkr1 2.401 AAMMINA AAMIN AAMMINA AAMIN Stoj	4:52:01 PMJul 03, 2022 TRACE 1 2 3 4 5 0 TYPE P NNNM 1 503 0 GHz -5.856 dBm 2 2 2 2 2 2 2 2 2 2 2 2 2
Ref Offset 3 0 dB/div Ref 20.00 0 dB/div Ref	Ω         AC           750000 GHz         PN           IFG         2.36 dB           0 dBm         I           Λ/Λ,Λ/Λ/Λ/Λ/Λ         I           Λ/Λ,Λ/Λ/Λ/Λ         I           Λ/Λ,Λ/Λ         I           Λ/Λ         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I           Ι         I	Trig: Free F #Atten: 30 C	Avg Type: Avg Hold:> dB	Log-Pwr 100/100 Mkr1 2.401	4:52:01 PMJul 03, 2022 TRACE 1 2 3 4 5 0 TYPE P NNNN 503 0 GHz -5.856 dBm 2 2 4 4 2 4 4 5 2 4 5 0 2 4 5 0 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 0 1 2 4 5 0 0 1 2 4 5 0 0 1 2 4 5 0 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1
RL         RF         50           Center Freq 2.4417         Ref Offset         Sector           0 dB/div         Ref Offset         Ref Offset           0 dB/div         Ref 20.00         Ref 20.00           0 dB/div         Ref 20.00	Ω AC 750000 GHz PN0 PN0 PN0 PN0 PN0 PN0 PN0 PN0	Trig: Free R #Atten: 30 d	Avg Type: Avg Hold:> dB	Log-Pwr 100/100 Mkr1 2.401 AVVVVVVVVVVV AVVVVVVVVVVVV AVVVVVVVVVV	4:52:01 PMJul 03, 2022 TRACE 1 2 3 4 5 0 TYPE P NNNN 503 0 GHz -5.856 dBm 2 2 4 4 2 4 4 5 2 4 5 0 2 4 5 0 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 0 1 2 4 5 0 0 1 2 4 5 0 0 1 2 4 5 0 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1
Rt         Rt         50           Center Freq 2.4417         Ref Offset3         Ref Offset3           0 dB/div         Ref Offset3         Ref Offset3           0 dD	2.36 dB 0 dBm	Trig: Free F #Atten: 30 d #VBW 300 kHz	Avg Type: Avg Hold:> dB	Log-Pwr 100/100 Mkr1 2.401 AVVVVVVVVVVV AVVVVVVVVVVVV AVVVVVVVVVV	4:52:01 PMJul 03, 2022 TRACE 1 2 3 4 5 0 TYPE P NNNN 503 0 GHz -5.856 dBm 2 2 4 4 2 4 4 5 2 4 5 0 2 4 5 0 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 0 1 2 4 5 0 0 1 2 4 5 0 0 1 2 4 5 0 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1
Ref Offset: 0 dB/div Ref 20.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2.36 dB 0 dBm	Trig: Free F #Atten: 30 d #VBW 300 kHz	Avg Type: Avg Hold:> dB	Log-Pwr 100/100 Mkr1 2.401 AVVVVVVVVVVV AVVVVVVVVVVVV AVVVVVVVVVV	4:52:01 PMJul 03, 2022 TRACE 1 2 3 4 5 0 TYPE P NNNN 503 0 GHz -5.856 dBm 2 2 4 4 2 4 4 5 2 4 5 0 2 4 5 0 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 1 2 4 5 0 0 1 2 4 5 0 0 1 2 4 5 0 0 1 2 4 5 0 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1



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📜 Agilent Spect	trum Analyzer - Sv RF 50	wept SA 0 Ω AC		ENSE:INT		IGN AUTO		04:57	42 PM Jul 05, 202
		750000 GHz	PNO: Fast	Trig: Free R #Atten: 30 d	un	Avg Typ	e: Log-Pwr I:>100/100	TF	ACE 1 2 3 4 5 TYPE MWWWW DET P NNNN
10 dB/div Log	Ref Offset Ref 20.0						Mkr	1 2.401 5 -7.	03 0 GHz 604 dBm
10.0									<u>^2</u>
-10.0	ᢣᢉᢦᡘᡊᢧᡘ᠕ᡧ	ᡃᡁᡅᠬᢇᡃᠧᡁ᠋ᡕᢧᡊᠣᠺᡁᡝᡎᡃ᠘ᢉᠶᢐᠮ᠉	ᠬ᠕ᡘ᠕ᡁᡎᠩ᠕ᠮ	WYALWAR	᠕᠕᠕᠕ᡁᠬ	<del>አሳሌሌ የ</del> ታም	$\mathcal{W}$	<u>እ</u> ሉለአላላሲ በላ	www
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Start 2.40 #Res BW			#VBV	V 300 kHz			Swee	5.00 Z. 5 8.000 ms	48350 GHz 6 (1001 pts
MKR MODE TF		× 2.401 503 0 GHz 2.479 993 0 GHz			ION FUNCT	ION WIDTH	FL	JNCTION VALUE	
3 4 5									
6 7 8									
9 10 11									-
ISG						STATUS			

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### 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

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:

-

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Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (s)	Limit (s)	Verdict
NVNT	1-DH1	2441	0.384	0.123	0.4	Pass
NVNT	1-DH3	2441	1.639	0.262	0.4	Pass
NVNT	1-DH5	2441	2.887	0.308	0.4	Pass
NVNT	2-DH1	2441	0.389	0.124	0.4	Pass
NVNT	2-DH3	2441	1.641	0.263	0.4	Pass
NVNT	2-DH5	2441	2.889	0.308	0.4	Pass
NVNT	3-DH1	2441	0.39	0.125	0.4	Pass
NVNT	3-DH3	2441	1.64	0.262	0.4	Pass
NVNT	3-DH5	2441	2.891	0.308	0.4	Pass

	Dwel	I NVNT 1-C	โest Graph DH1 2441N		Burst		
Agilent Spectrum Analyzer - RL RF 5 enter Freq 2.441	0Ω AC	PNO: Fast	NSE:INT Trig Delay-500.0 Trig: Video #Atten: 30 dB	ALIGN AUTO µs Avg Typ	e: Log-Pwr	т	21 PM Jul 03, 20 RACE 1 2 3 4 5 TYPE WWWWW DET P NNNN
Ref Offse 0 dB/div Ref 20.0						ΔMkr1	384.0 μ 2.01 dl
							TRIG LV
0.0 <b></b> <del></del>	al na 110 kultur al 1 ani al 10 Ani al 2000 kultur al 1 ani al 10	ne di serengan kala Mani pakén di pinaké kala				n de de la della della della della della della della della del Nacional de la della d	n period i fer faring finn Vinne    [12   100   12 <mark>10   10   10</mark>
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enter 2.44100000 es BW 1.0 MHz RR MODE TRC SCL 1 $\Delta 2$ 1 t ( $\Delta$ ) 2 F 1 t	1 4 1 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	#*************************************	3.0 MHz	<mark>ord the bank world of a day of the star</mark> for a	Sweep	10.00 ms	Span 0 H

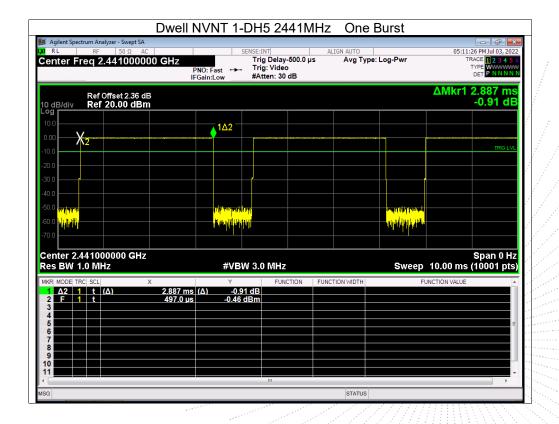
Edition: A.4

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	Dwell N	VNT 1-DH	13 2441N	/Hz One	e Burst	
Agilent Spectrum Analyzer - Swept SA AGI RL RF 50 Ω AC Center Freq 2.44100000	PNO	DEast +++ T	:INT rig Delay-500.0 µ rig: Video Atten: 30 dB	ALIGN AUTO IS Avg Ty	pe: Log-Pwr	05:10:28 PM Jul 03, 20 TRACE 1 2:34 TYPE WWWWW DET P NNN
Ref Offset 2.36 dB 10 dB/div Ref 20.00 dBm						ΔMkr1 1.639 m 2.89 d
10.0	1∆2					
-10.0 22						TRO L
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-400	n an an third ding. An third part of the		and a part of the second s		ng ka ka matar Ing p <mark>a ja</mark> ng sa matar	
Center 2.441000000 GHz Res BW 1.0 MHz		#VBW 3	.0 MHz		Sweep	Span 0 <del> </del> 10.00 ms (10001 pt
MKR MODE TRC SCL X		Y	FUNCTION	FUNCTION WIDTH	FL	JNCTION VALUE
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1.639 ms (/ 497.0 µs	<u>2.89 dE</u> -3.34 dBn				
4 5 6						
7 8 9 10						
11 •						•
ISG				STATUS	;	



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RL       RF       SO Ω       AC       SENSE:INT       ALIGN AUTO       04:52:06 PM Jul 03:02         enter Freq 2.441000000 GHz       PNO: Fast PFGain:Low       Trig Delay-500.0 µs       Avg Type: Log-Pwr       TRACE       12:34         PNO: Fast PFGain:Low       PNO: Fast PFGain:Low       Trig Delay-500.0 µs       Avg Type: Log-Pwr       TRACE       12:34         Ref Offset 2.36 dB       CAMKr1 389.0 µ       -2.40 d       -2.40 d       -2.40 d         Odd       PNO: Fast PFGain:Low       PNO: Fast PFGain:Low       PNO: Fast PFGain:Low       PNO: Fast PFGain:Low       Autor PFGain:Low       Avg Type: Log-Pwr       TRACE       12:34         No dB/div       Ref Offset 2.36 dB       CAMkr1 389.0 µ       -2.40 d       -2.40 d <t< th=""><th></th><th>Dwell N</th><th>NVNT 2-DH</th><th>11 2441M</th><th>Hz One</th><th>Burst</th><th></th><th></th></t<>		Dwell N	NVNT 2-DH	11 2441M	Hz One	Burst		
No.Frast     Trig: Video       PNO: Fast     #Atten: 30 dB	RL RF 50 Ω	AC						06 PM Jul 03, 20
A μα 1 Δ2     The part of t	enter Freq 2.44100	P	NO: Fast +++ Tr	ig: Video	Avg Type	: Log-Pwr	1	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	0 dB/div Ref 20.00 d						ΔMkr1	389.0 μ -2.40 d
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	-							
NO         X         Y         Function         Function         Span 0 H           2         F         1         t         446.0 μs         -11.34 dBm         -	D.00							
0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0								TRIG L
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A2         1         t         A389.0 μs         (Δ)         -2.40 dB         Function         Function value           1         A2         1         t         (Δ)         -240 dB         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         - <td< th=""><th></th><th>dalater a link of barren street</th><th></th><th>turbin du di di mon</th><th>uteritering deriver</th><th></th><th></th><th>i jatel og store angel</th></td<>		dalater a link of barren street		turbin du di di mon	uteritering deriver			i jatel og store angel
Δ2       1       t       Δ2       389.0 µs       (Δ)       -2.40 dB         2       F       1       t       446.0 µs       -11.34 dBm         3       I       -11.34 dBm       -11.34 dBm         4       I       I       -11.34 dBm         5       I       I       -11.34 dBm         6       I       I       I         7       I       I       I         8       I       I       I         9       I       I       I         I       I       I       I       I		de contrato de provenano Estado de la provenano Estado de la provenano						tan papaganat Ng tang tang tang tang
2     F     1     t     446.0 µs     -11.34 dBm       3     4     4     4     4       5     4     4     4       6     4     4     4       9     4     4     4       1     4     4     4	50.0 (1990)	n an				un al a ta t	in print the part of the	Span 0 H
	50.0 (1999) 50.0	Hz X	#VBW 3.	0 MHz	a detta, jago de de la carte, ja Antini, jago de la carte, jago de la ca	Sweep	10.00 ms (	Span 0 H
	0.0 μαρθ μαρθ enter 2.441000000 Gi es BW 1.0 MHz KRI MOBETRCI SCL 1 Δ2 1 t (Δ) 2 F 1 t	Hz 389.0 µs	(д) -2.40 dB	O MHz	a detta, jago de de la carte, ja Antini, jago de la carte, jago de la ca	Sweep	10.00 ms (	Span 0 H
	0.0         interfeet         git/jeanledt           0.0         git/jeanledt         git/jeanledt           enter 2.441000000 Gi         es BW 1.0 MHz           KR         MODE         TCC           1         Δ2         1         t           2         7         t         t           3         4         4         1	Hz 389.0 µs	(д) -2.40 dB	O MHz	a detta, jago de de la carte, ja Antini, jago de la carte, jago de la ca	Sweep	10.00 ms (	Span 0 H
	50.0         Interplete	Hz 389.0 µs	(д) -2.40 dB	O MHz	a detta, jago de de la carte, ja Antini, jago de la carte, jago de la ca	Sweep	10.00 ms (	Span 0 H
	0.0         μμ         μ	Hz 389.0 µs	(д) -2.40 dB	O MHz	a detta, ja ja a detta da a detta a detta ja	Sweep	10.00 ms (	Span 0 H
	0.0         μμμ         μμμμ         μμμμμ           0.0         μμμμμ         μμμμμμ         μμμμμμμμμμμμμμμμμμμμμμμμμμμμμμμμμμμμ	Hz 389.0 µs	(д) -2.40 dB	O MHz	a detta, ja ja a detta da a detta a detta ja	Sweep	10.00 ms (	Span 0 H
	0.0         Interference         Interference           0.0         Interference         Interference           enter 2.441000000 Gi         Interference         Interference           Interference         Interfere	Hz 389.0 µs	(д) -2.40 dB	O MHz	a detta, ja ja a detta da a detta a detta ja	Sweep	10.00 ms (	Span 0 H

Dwell NVNT 2-DH3 2441MHz One Burst 📕 Agilent Spectrum Analyzer - Si 📈 R.L RF 50 10:18:42 AM Jul 05, 202 ALIGN AUTO Avg Type: Log-Pwr ENSE:INT Trig Delay-500.0 μs Trig: Video #Atten: 30 dB Center Freq 2.441000000 GHz PNO: Fast IFGain:Low ΔMkr1 1.641 ms Ref Offset 2.36 dB Ref 20.00 dBm 2.72 dB 0 dB/div 1Δ2 X Shiling in physical a Physical a i (in the state of t an temporthy participant and providing dependent of a static temperature produced and delika pologitik kala ya polokuka akaba popula pologika b Center 2.441000000 GHz Res BW 1.0 MHz Span 0 Hz Sweep 10.00 ms (10001 pts) #VBW 3.0 MHz <u>Δ2 1 t (Δ)</u> F <u>1 t</u> 1.641 ms (Δ) 353.0 μs 2.72 dB -14.41 dBm 2 3 4 5 6 7 8 9 10 ISG



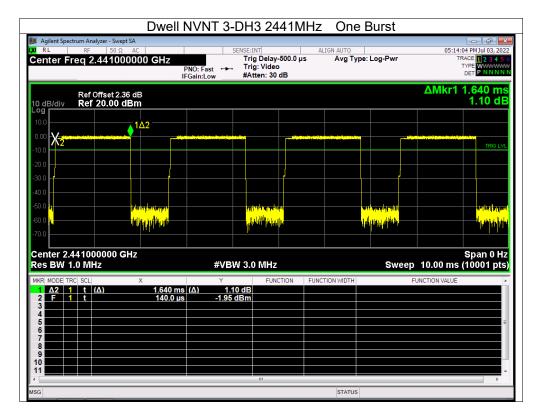
	Dwell NVNT 2-DH	5 2441MHz	One Burst	
I Agilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC Center Freq 2.44100000	PNO East +++ Tri	INT AL g Delay-500.0 μs g: Video tten: 30 dB	IGN AUTO Avg Type: Log-Pwr	05:13:00 PM Jul 03, 20 TRACE 1 2 3 4 TYPE WWWWW DET P N N N
Ref Offset 2.36 dE 0 dB/div Ref 20.00 dBm				ΔMkr1 2.889 m 3.47 d
	1Δ2			
10.0 X2				TRIG L
80.0				
0.0				
0.0 <mark>µ</mark>	hanning di parte			
enter 2.441000000 GHz es BW 1.0 MHz	#VBW 3.1	0 MHz	Sweep	Span 0 F 10.00 ms (10001 pt
KR MODE TRC SCL			ION WIDTH F	UNCTION VALUE
1         Δ2         1         t         (Δ)           2         F         1         t         4           3         4         4         4         4	2.889 ms (Δ) 3.47 dB 114.0 μs -4.04 dBm			
5 6 7 8				
9				
		m		4
G			STATUS	

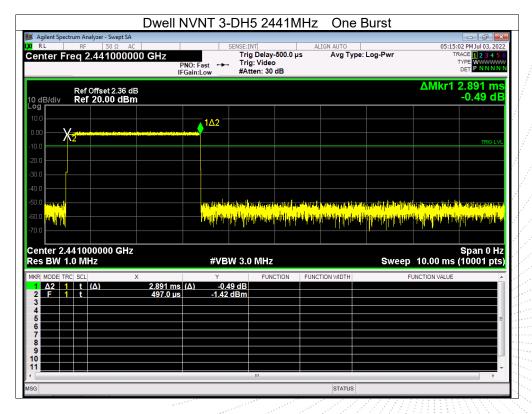
	Dwell IN	IVNT 3-I	DH1 24	41MHZ	One	Burst		
Agilent Spectrum Analyzer - Swept SA     RL RF 50 Ω AC     Center Freq 2.44100000	PN	IO: Fast ↔ Gain:Low	ENSE:INT Trig Delay- Trig: Video #Atten: 30	500.0 µs	LIGN AUTO Avg Type	: Log-Pwr	TF	27 PM Jul 03, 2022 RACE 1 2 3 4 5 6 TYPE DET P N N N N
Ref Offset 2.36 dE 10 dB/div Ref 20.00 dBm							ΔMkr1	390.0 μs 2.92 dB
Log 10.0 <b>Δ</b> 1Δ2								
-10.0 X2								TRIG LVL
-20.0								
-40.0				1. ht		1	and the second state	
			alided even inded	a hi wak	with the state of the state of	alahan samu s	di decisión la bio	a second the strategy
-70.0			alahili sa si iski i	r det and	all lan al mur e		մ. <b>մ</b> եստերեր	
			V 3.0 MHz	. htl	11. 19. 19. 19. 19. 19. 19. 19. 19. 19.			Span 0 Hz (10001 pts)
-70.0 Center 2.441000000 GHz		#VBV	V 3.0 MHz		TION WIDTH	Sweep		Span 0 Hz
Center 2.441000000 GHz Res BW 1.0 MHz	(	#VBV	V 3.0 MHz			Sweep	10.00 ms	Span 0 Hz
70.0         Center 2.4410000000 GHz           Res BW 1.0 MHz         MKR MODE TRC SCI           1         Δ2         1         t           2         F         1         t           3         4         5         5	< 390.0 µs (/	#VBV	V 3.0 MHz			Sweep	10.00 ms	Span 0 Hz
TO.0         Center 2.441000000 GHz           Res BW 1.0 MHz         MKR MODE TRC SCL           1         Δ2         1         t         (Δ)           2         F         1         t         4           5         5         5         5           6         -         -         -         -	< 390.0 µs (/	#VBV	V 3.0 MHz			Sweep	10.00 ms	Span 0 Hz
70.0     Center 2.441000000 GHz       Res BW 1.0 MHz     MkR MODE TRC SCL       MkR MODE TRC SCL     >       Δ2     1     t       Δ3     4       6     6       7     8       9     9	< 390.0 µs (/	#VBV	V 3.0 MHz			Sweep	10.00 ms	Span 0 Hz
70.0	< 390.0 µs (/	#VBV	V 3.0 MHz			Sweep	10.00 ms	Span 0 Hz

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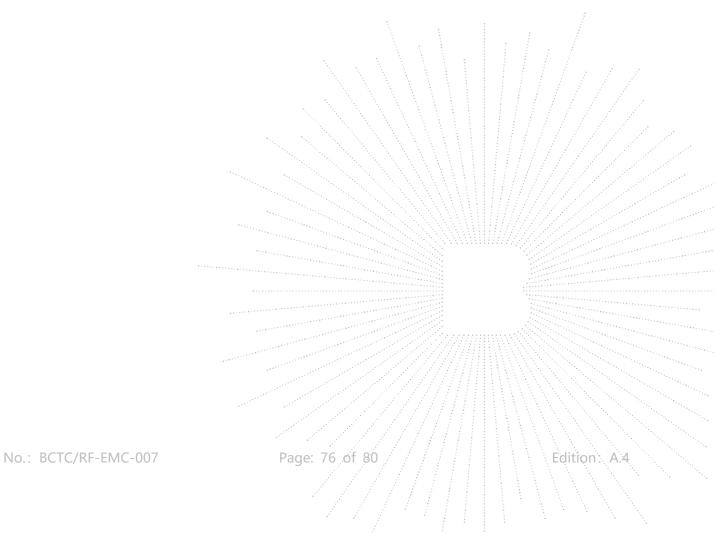
### 15. Antenna Requirement

### 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

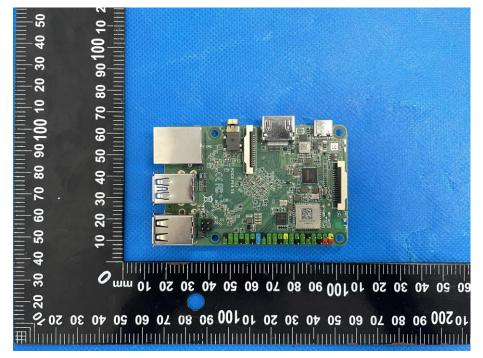
The EUT antenna is Chip antenna, fulfill the requirement of this section.





### 16. EUT Photographs

EUT Photo 1



**EUT Photo 2** 



No.: BCTC/RF-EMC-007

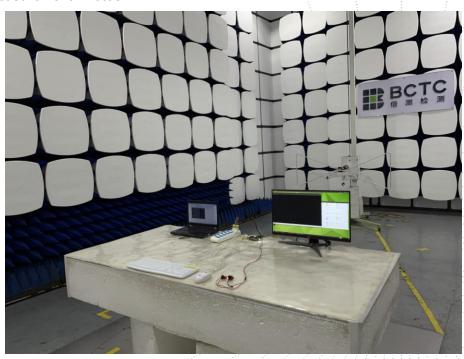


# 17. EUT Test Setup Photographs

#### **Conducted emissions Photo**



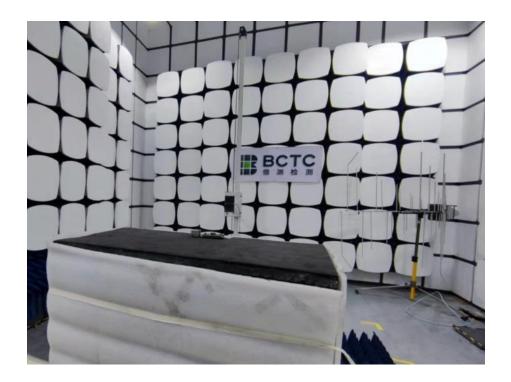
**Radiated Measurement Photos** 



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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 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 *****

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