



FCC TEST REPORT

FCC ID: 2A7ZC-SG7

On Behalf of

GEOMATE POSITIONING PTE. LTD.

Geodetic GNSS Receiver

Model No.: SG7

Prepared for : GEOMATE POSITIONING PTE. LTD.
Address : 71 LORONG 23 GEYLANG, #07-09, WORK + STORE (71G),
SINGAPORE (388386)

Prepared By : Shenzhen Alpha Product Testing Co., Ltd.
Address : Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103,
Shenzhen, Guangdong, China

Report Number : A2204325-C01-R03
Date of Receipt : May 6, 2022
Date of Test : May 6, 2022 – July 8, 2022
Date of Report : July 12, 2022
Version Number : V0

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TEST REPORT DECLARATION

Applicant : GEOMATE POSITIONING PTE. LTD.
Address : 71 LORONG 23 GEYLANG, #07-09, WORK + STORE (71G), SINGAPORE
(388386)
Manufacturer : GEOMATE POSITIONING PTE. LTD.
Address : 71 LORONG 23 GEYLANG, #07-09, WORK + STORE (71G), SINGAPORE
(388386)
EUT Description : Geodetic GNSS Receiver
(A) Model No. : SG7
(B) Trademark : 

Measurement Standard Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247

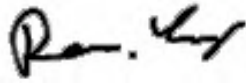
ANSI C63.10:2013

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....: Reak Yang
Project Engineer


.....

Approved by (name + signature).....: Jack Xu
Project Manager


.....

Date of issue.....: July 12, 2022

Revision History

Revision	Issue Date	Revisions	Revised By
V0	July 12, 2022	Initial released Issue	Reak Yang

1. Summary Of Standards And Results

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Test Item	Standards Paragraph	Result
Maximum Peak Output Power	FCC Part 15: 15.247(b)(1) ANSI C63.10 :2013	P
Bandwidth	FCC Part 15: 15.215 ANSI C63.10 :2013	P
Carrier Frequency Separation	FCC Part 15: 15.247(a)(1) ANSI C63.10 :2013	P
Number Of Hopping Channel	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 :2013	P
Dwell Time	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 :2013	P
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.247(d) ANSI C63.10 :2013	P
Band Edge Compliance	FCC Part 15: 15.247(d) ANSI C63.10 :2013	P
Power Line Conducted Emissions	FCC Part 15: 15.207 ANSI C63.10 :2013	P
Antenna requirement	FCC Part 15: 15.203	P
Note: 1. P is an abbreviation for Pass. 2. F is an abbreviation for Fail. 3. N/A is an abbreviation for Not Applicable. 4. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.		

2. General Information

2.1. Description of Device (EUT)

Description : Geodetic GNSS Receiver

Trademark : 

Model Number : SG7

DIFF. : N/A

Test Voltage : DC 7.2V from battery, DC 5V for charging

BT

Radio Technology : Bluetooth (BR+EDR)

Operation frequency : 2402-2480MHz

Channel No. : 79 Channels

Modulation type : GFSK, $\pi/4$ DQPSK, 8-DPSK

Antenna Type : Internal antenna, Maximum Gain is 1.56dBi. (Antenna information is provided by applicant.)

Software version : V1.0

Hardware version : V1.0.1

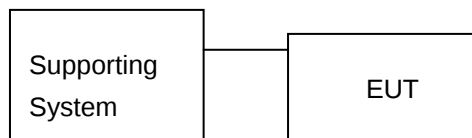
2.2. Accessories of Device (EUT)

Accessories : AC Adapter
Manufacturer : Yisheng Electronics Co., Ltd.
Model : EA1012AVRU-050
Ratings : Input: AC 100-240V, 1.0A, 50-60Hz
 Output: DC 5V,2.4A

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or SDOC
1.	Notebook PC	DELL	Latitude 3490	--	SDOC

2.4. Block Diagram of connection between EUT and simulators



2.5. Test Mode Description

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
GFSK	Low :CH0	2402
	Middle: CH39	2441
	High: CH78	2480
	Hopping	2402-2480
$\pi/4$ DQPSK	Low :CH0	2402
	Middle: CH39	2441
	High: CH78	2480
	Hopping	2402-2480
8-DPSK	Low :CH0	2402
	Middle: CH39	2441
	High: CH78	2480
	Hopping	2402-2480

2.6. Test Conditions

Items	Required	Actual
Temperature range:	15-35°C	24°C
Humidity range:	25-75%	56%
Pressure range:	86-106kPa	98kPa

2.7. Test Facility

Shenzhen Alpha Product Testing Co., Ltd

Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103,
Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission

Registration Number: 293961

Designation Number: CN1236

July 15, 2019 Certificated by IC

Registration Number: CN0085

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for Power point Conducted Emissions Test	1.63dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.74dB(Polarize: V)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	3.76dB(Polarize: H)
	3.77dB(Polarize: V)
	3.80dB(Polarize: H)
Uncertainty for radio frequency	5.06×10^{-8} GHz
Uncertainty for conducted RF Power	0.40dB
Uncertainty for temperature	0.2°C
Uncertainty for humidity	1%
Uncertainty for DC and low frequency voltages	0.06%
Uncertainty for Power point Conducted Emissions Test	1.63dB

2.9. Test Equipment List

Equipment	Manufacture	Model No.	Firmware version	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	CHENYU	9*6*6	/	N/A	2020.09.02	3Year
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	2.3	102137	2021.08.25	1Year
Spectrum analyzer	Agilent	N9020A	A.14.16	MY499100060	2021.08.25	1Year
Receiver	ROHDE&SCHWARZ	ESR	2.28 SP1	1316.3003K03-10 2082-Wa	2021.08.25	1Year
Receiver	R&S	ESCI	4.42 SP1	101165	2021.08.25	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	/	VULB 9168#627	2021.08.30	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	/	2106	2021.08.30	2Year
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	/	00059	2021.08.30	2Year
RF Cable	Resenberger	Cable 1	/	RE1	2021.08.25	1Year
RF Cable	Resenberger	Cable 2	/	RE2	2021.08.25	1Year
RF Cable	Resenberger	Cable 3	/	CE1	2021.08.25	1Year
Pre-amplifier	HP	HP8347A	/	2834A00455	2021.08.25	1Year
Pre-amplifier	Agilent	8449B	/	3008A02664	2021.08.25	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	/	8126-466	2021.08.25	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	/	101043	2021.08.25	1 Year
Horn Antenna	SCHWARZBECK	BBHA9170	/	00946	2021.08.30	2 Year
Preamplifier	SKET	LNPA_1840 -50	/	SK2018101801	2021.08.25	1 Year
Power Meter	Agilent	E9300A	/	MY41496628	2021.08.25	1 Year
Power Sensor	DARE	RPR3006W	/	15100041SNO91	2021.08.25	1 Year
Temp. & Humid. Chamber	Weihuang	WHTH-1000 -40-880	/	100631	2022.04.22	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	/	20140927-6	2021.08.25	1 Year
Adjustable attenuator	MWRFTest	N/A	/	N/A	N/A	N/A
10dB Attenuator	Mini-Circuits	DC-6G	/	N/A	N/A	N/A

Software Information

Test Item	Software Name	Manufacturer	Version
RE	EZ-EMC	farad	Alpha-3A1
CE	EZ-EMC	farad	Alpha-3A1
RF-CE	MTS 8310	MW RF Test	V2.0.0.0

3. Maximum Peak Output Power

3.1. Limit

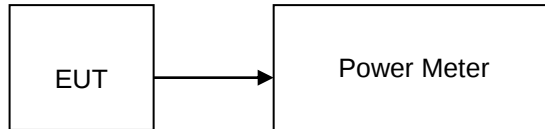
Please refer section 15.247.

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts, the e.i.r.p shall not exceed 4W

3.2. Test Procedure

The transmitter output is connected to the RF Power Meter. The RF Power Meter is set to the peak power detection.

3.3. Test Setup



3.4. Test Result

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	3.596	30	Pass
NVNT	1-DH1	2441	3.983	30	Pass
NVNT	1-DH1	2480	4.045	30	Pass
NVNT	2-DH1	2402	3.889	21	Pass
NVNT	2-DH1	2441	4.398	21	Pass
NVNT	2-DH1	2480	4.201	21	Pass
NVNT	3-DH1	2402	3.982	21	Pass
NVNT	3-DH1	2441	4.167	21	Pass
NVNT	3-DH1	2480	4.42	21	Pass

4. Bandwidth

4.1. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

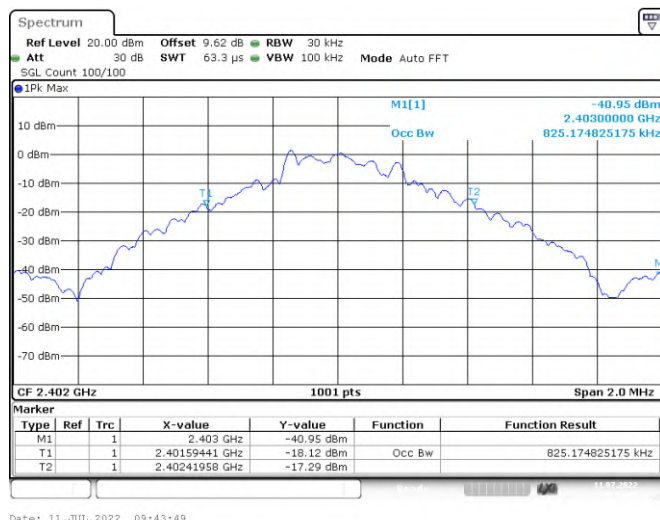
4.2. Test Procedure

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

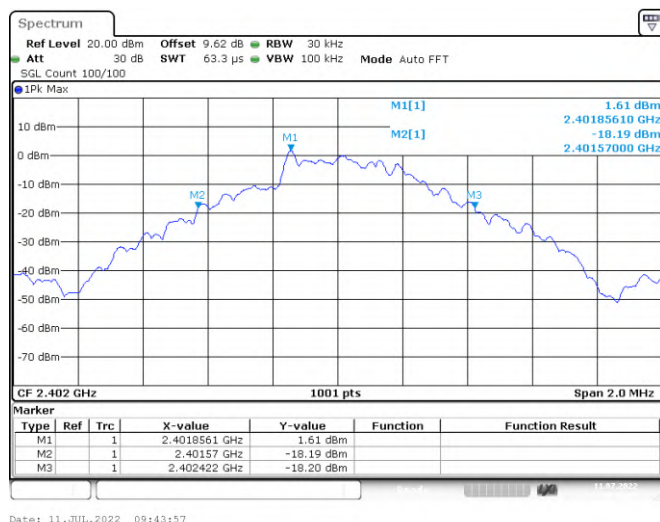
4.3. Test Result

Condition	Mode	Frequency (MHz)	99% OBW (MHz)	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH1	2402	0.825	0.852	/	Pass
NVNT	1-DH1	2441	0.827	0.814	/	Pass
NVNT	1-DH1	2480	0.807	0.846	/	Pass
NVNT	2-DH1	2402	1.157	1.208	/	Pass
NVNT	2-DH1	2441	1.163	1.212	/	Pass
NVNT	2-DH1	2480	1.165	1.224	/	Pass
NVNT	3-DH1	2402	1.165	1.198	/	Pass
NVNT	3-DH1	2441	1.173	1.218	/	Pass
NVNT	3-DH1	2480	1.153	1.226	/	Pass

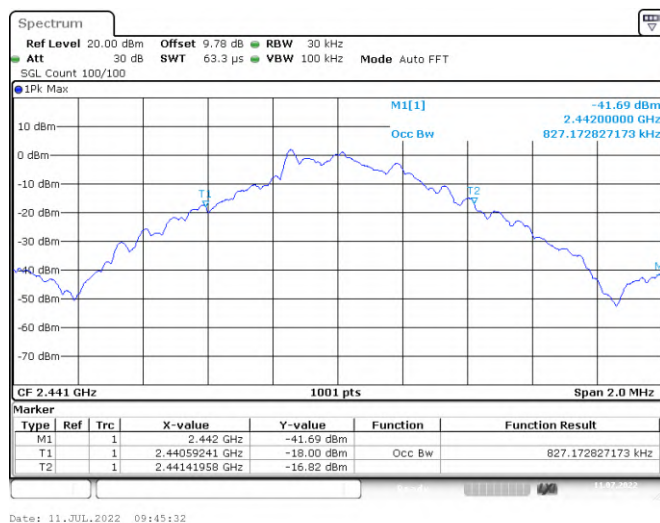
OBW NVNT 1-DH1 2402MHz Ant1



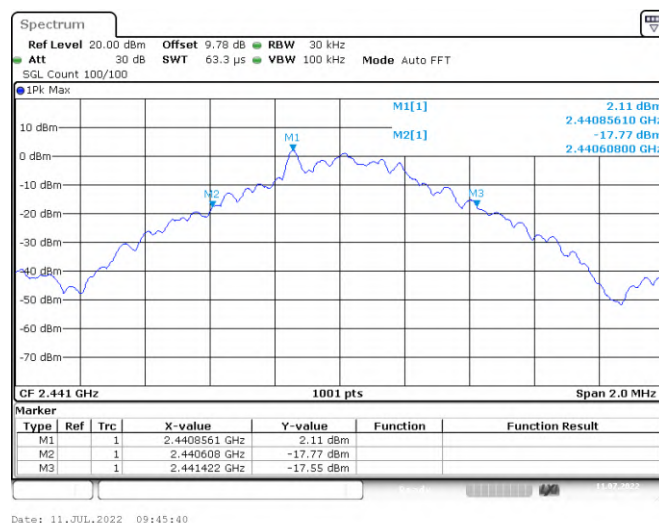
-20 dB BW NVNT 1-DH1 2402MHz Ant1



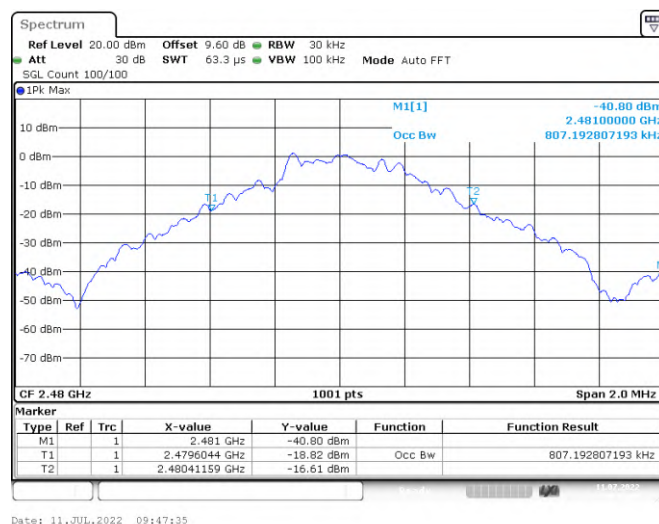
OBW NVNT 1-DH1 2441MHz Ant1



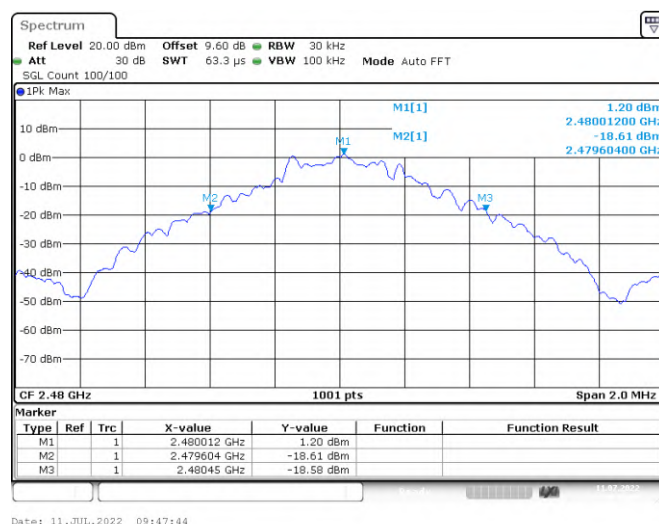
-20 dB BW NVNT 1-DH1 2441MHz Ant1



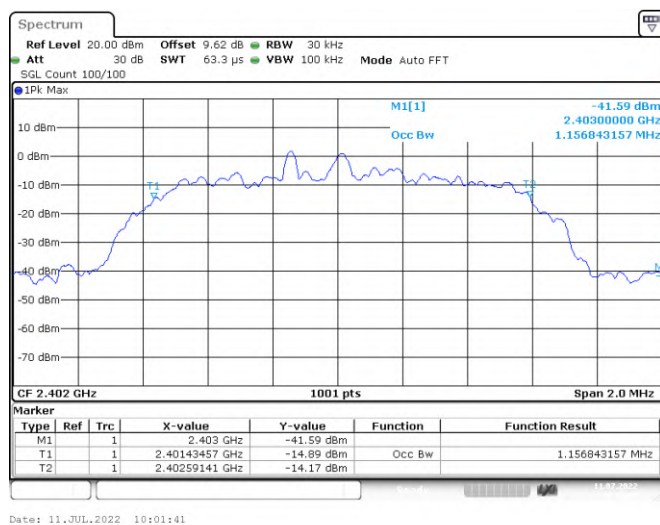
OBW NVNT 1-DH1 2480MHz Ant1



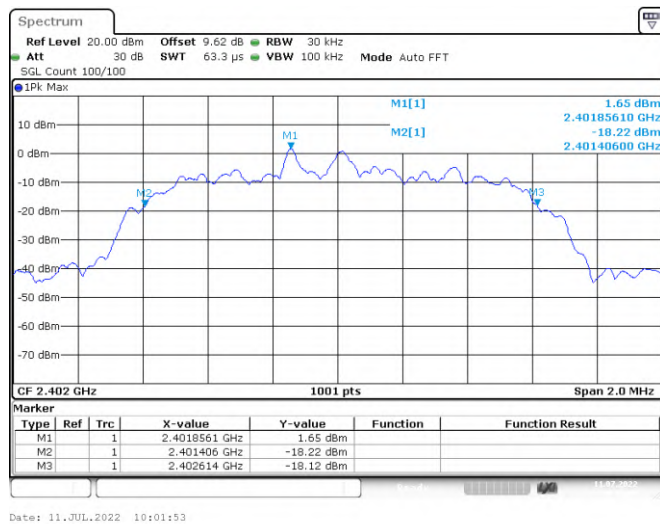
-20 dB BW NVNT 1-DH1 2480MHz Ant1



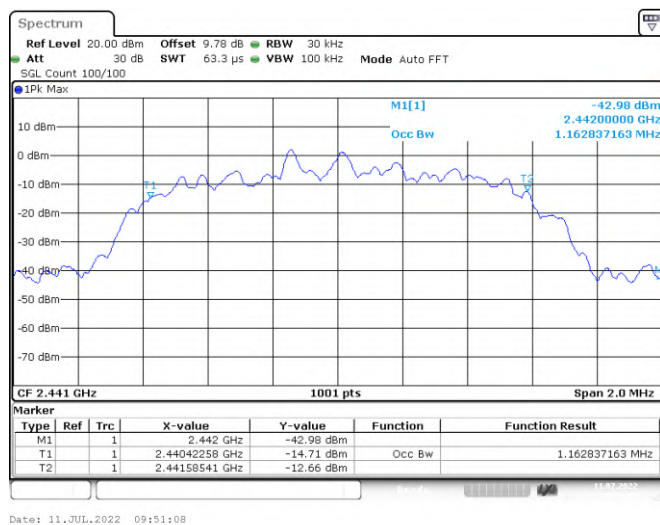
OBW NVNT 2-DH1 2402MHz Ant1



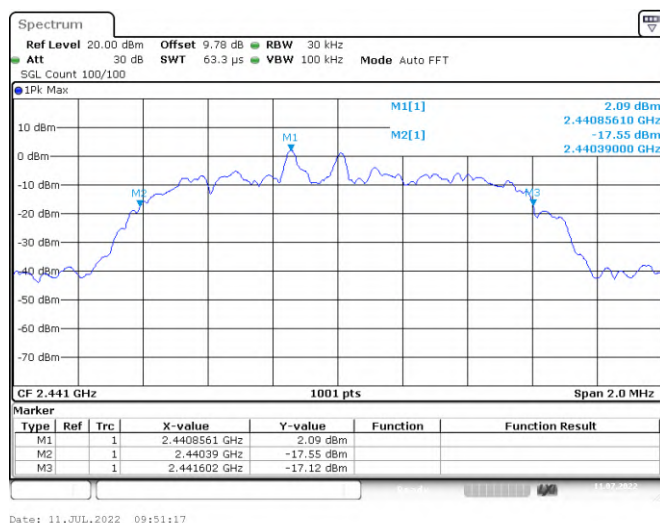
-20 dB BW NVNT 2-DH1 2402MHz Ant1



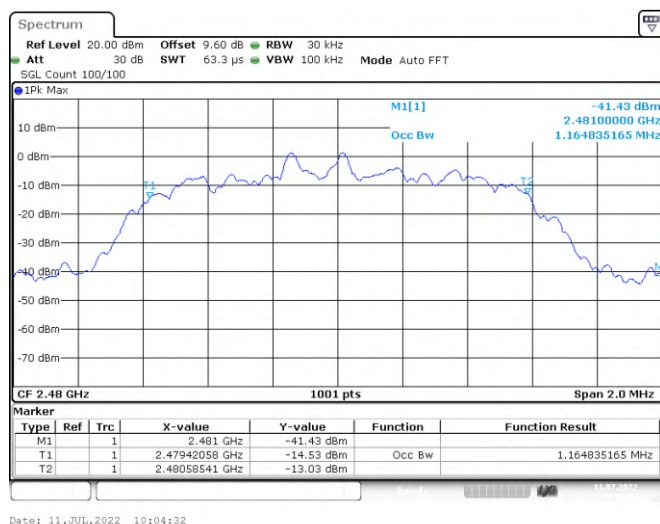
OBW NVNT 2-DH1 2441MHz Ant1



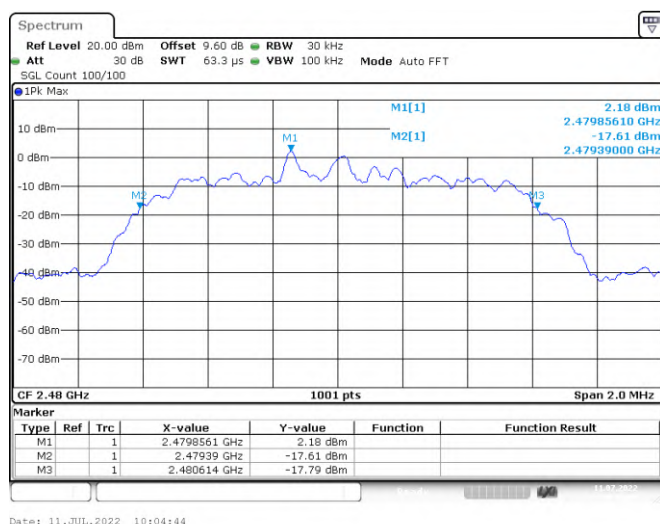
-20 dB BW NVNT 2-DH1 2441MHz Ant1



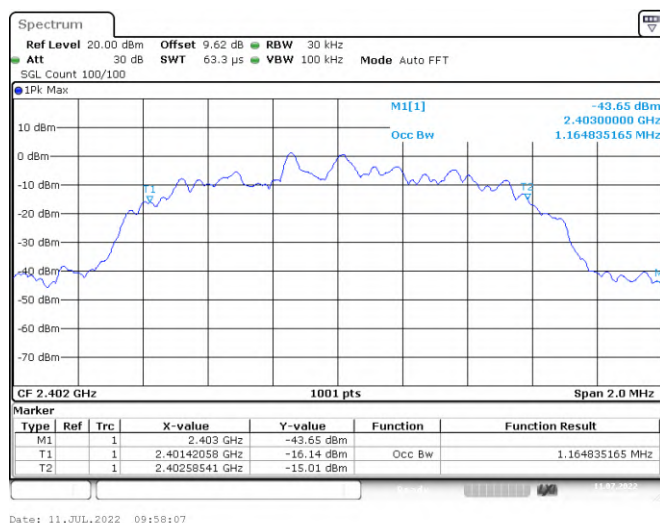
OBW NVNT 2-DH1 2480MHz Ant1



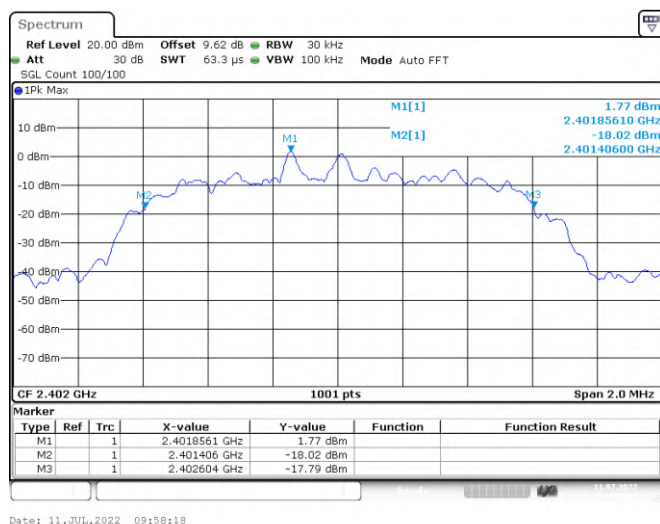
-20 dB BW NVNT 2-DH1 2480MHz Ant1



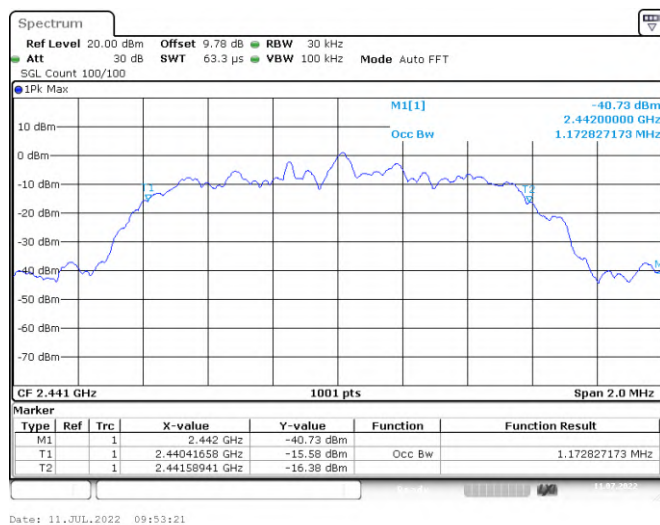
OBW NVNT 3-DH1 2402MHz Ant1



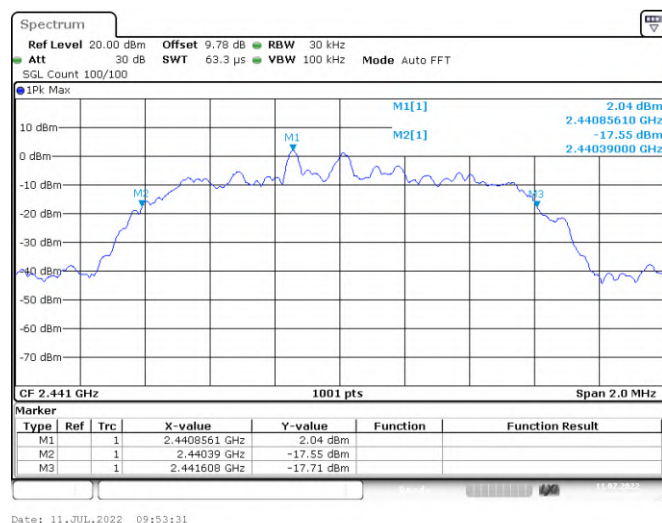
-20 dB BW NVNT 3-DH1 2402MHz Ant1



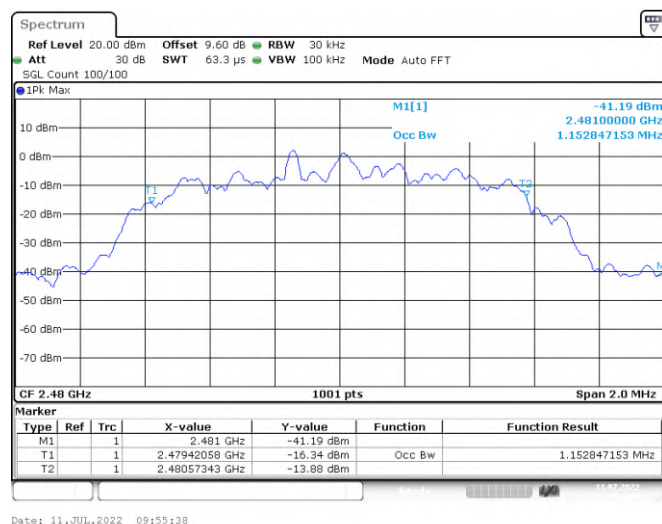
OBW NVNT 3-DH1 2441MHz Ant1



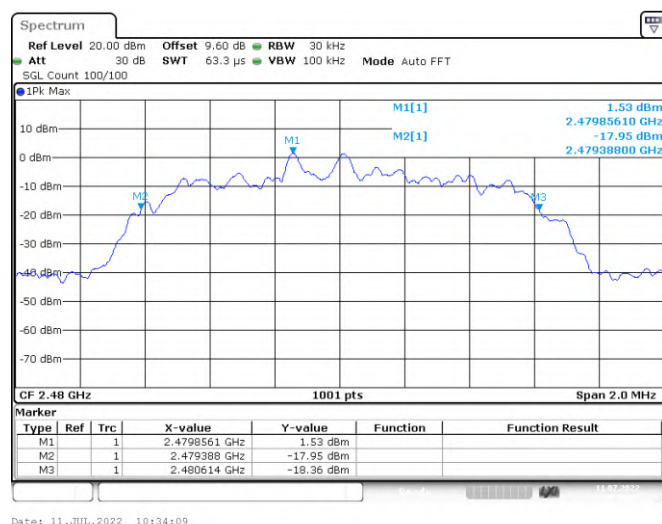
-20 dB BW NVNT 3-DH1 2441MHz Ant1



OBW NVNT 3-DH1 2480MHz Ant1



-20 dB BW NVNT 3-DH1 2480MHz Ant1



5. Carrier Frequency Separation

5.1. 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 125 mW

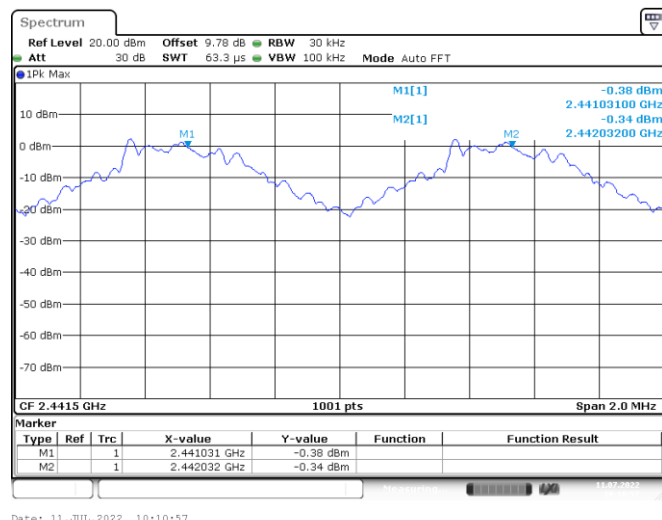
5.2. Test Procedure

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The carrier frequency was measured by spectrum analyzer with 20kHz RBW and 62kHz VBW.

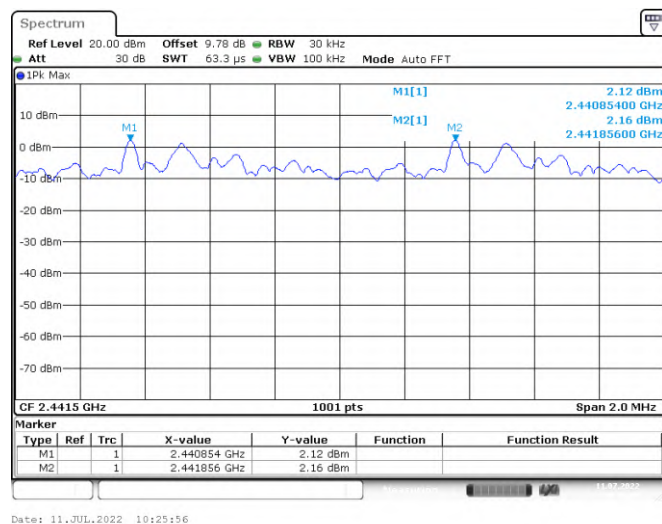
5.3. Test Result

Condition	Mode	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	2441.031	2442.032	1.001	0.814	Pass
NVNT	2-DH1	2440.854	2441.856	1.002	0.808	Pass
NVNT	3-DH1	2440.854	2441.856	1.002	0.812	Pass

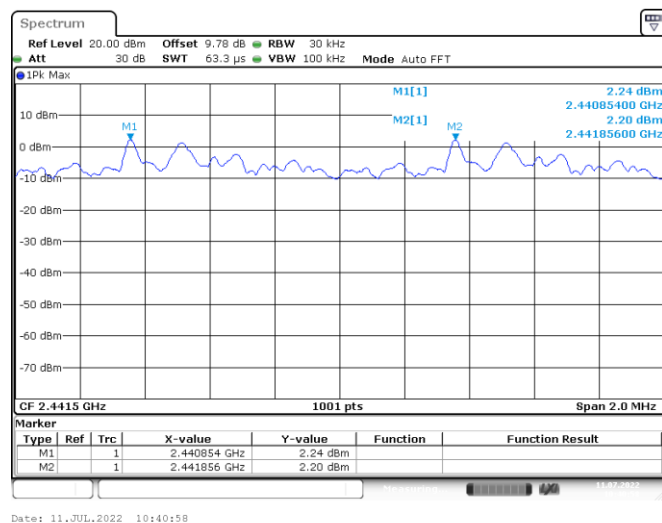
CFS NVNT 1-DH1 2441MHz Ant1



CFS NVNT 2-DH1 2441MHz Ant1



CFS NVNT 3-DH1 2441MHz Ant1



6. Number Of Hopping Channel

6.1. Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels

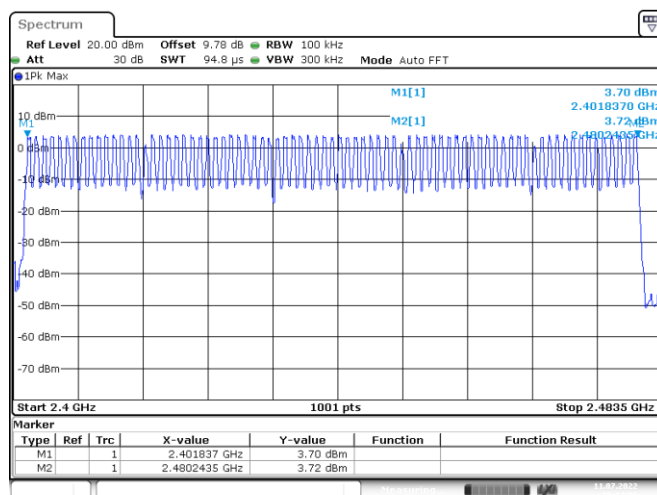
6.2. Test Procedure

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The number of hopping channel was measured by spectrum analyzer with 100kHz RBW and 300KHz VBW.

6.3. Test Result

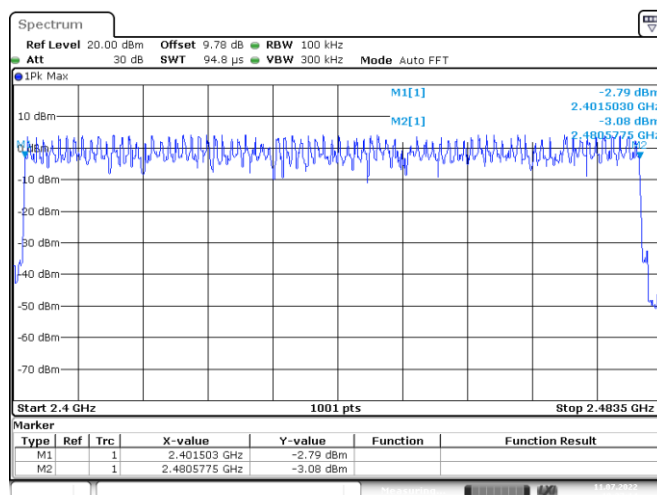
Condition	Mode	Hopping Number	Limit	Verdict
NVNT	1-DH1	79	15	Pass
NVNT	2-DH1	79	15	Pass
NVNT	3-DH1	79	15	Pass

Hopping No. NVNT 1-DH1 2441MHz



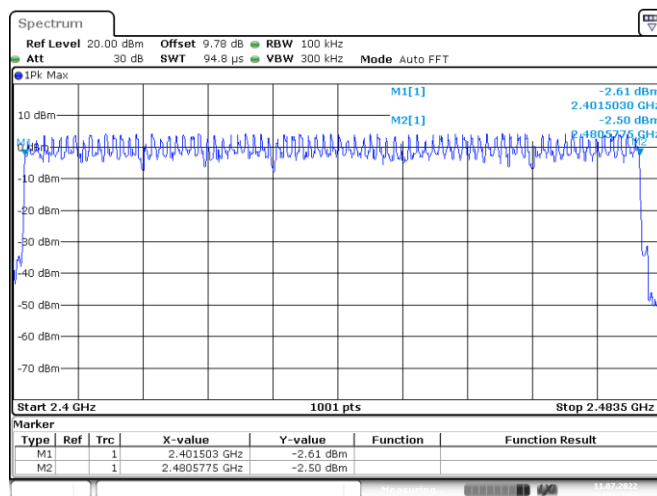
Date: 11.JUL.2022 10:14:00

Hopping No. NVNT 2-DH1 2441MHz



Date: 11.JUL.2022 10:27:14

Hopping No. NVNT 3-DH1 2441MHz



Date: 11.JUL.2022 10:43:07

7. Dwell Time

7.1. Test limit

Please refer section 15.247

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz. The average time of occupancy on any frequency shall not greater than 0.4 s within period of 0.4 seconds multiplied by the number of hopping channel employed.

7.2. Test Procedure

7.2.1. Place the EUT on the table and set it in transmitting mode.

7.2.2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

7.2.3. Set center frequency of spectrum analyzer = operating frequency.

7.2.4. Set the spectrum analyzer as RBW=1MHz, VBW=1MHz, Span = 0Hz, Sweep = auto.

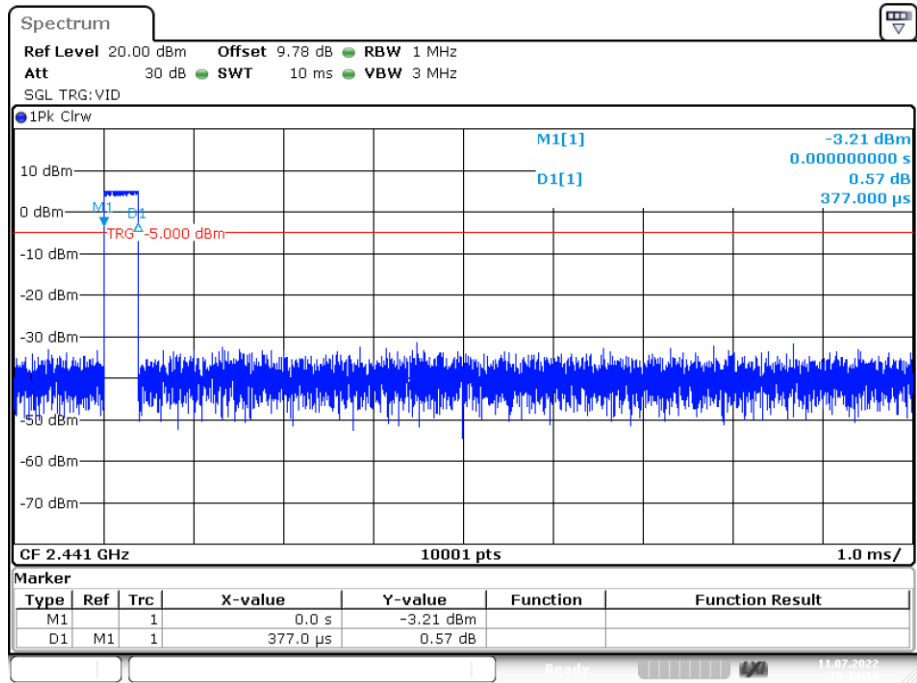
7.2.5. Repeat above procedures until all frequency measured were complete.

7.3. Test Result

PASS.

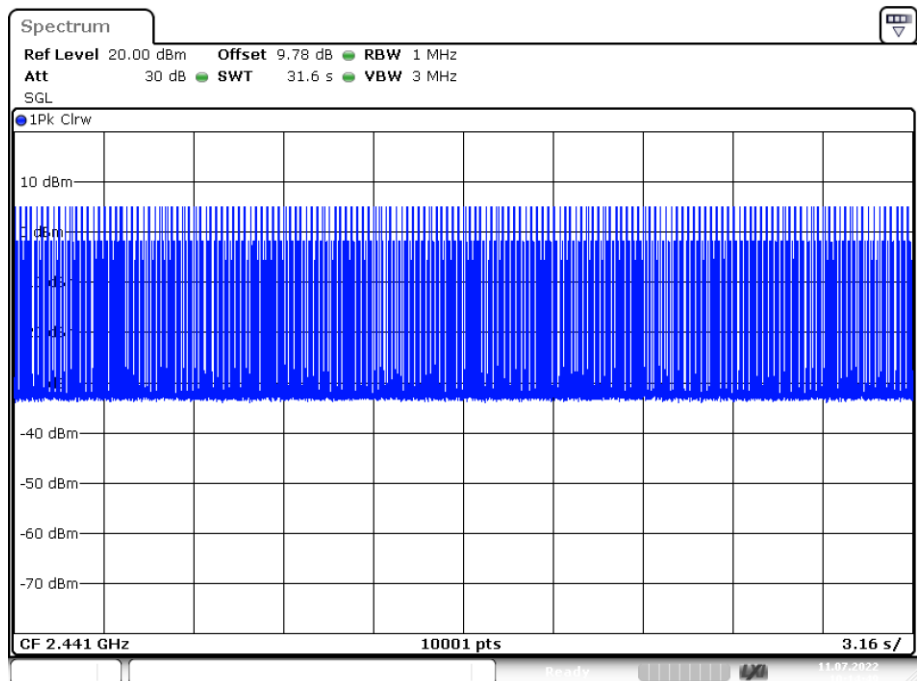
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	Ant1	0.377	119.132	316	31600	400	Pass
NVNT	1-DH3	2441	Ant1	1.633	200.859	123	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.879	184.256	64	31600	400	Pass
NVNT	2-DH1	2441	Ant1	0.386	121.976	316	31600	400	Pass
NVNT	2-DH3	2441	Ant1	1.638	140.868	86	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.885	170.215	59	31600	400	Pass
NVNT	3-DH1	2441	Ant1	0.386	122.748	318	31600	400	Pass
NVNT	3-DH3	2441	Ant1	1.637	189.892	116	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.886	161.616	56	31600	400	Pass

Dwell NVNT 1-DH1 2441MHz Ant1 One Burst



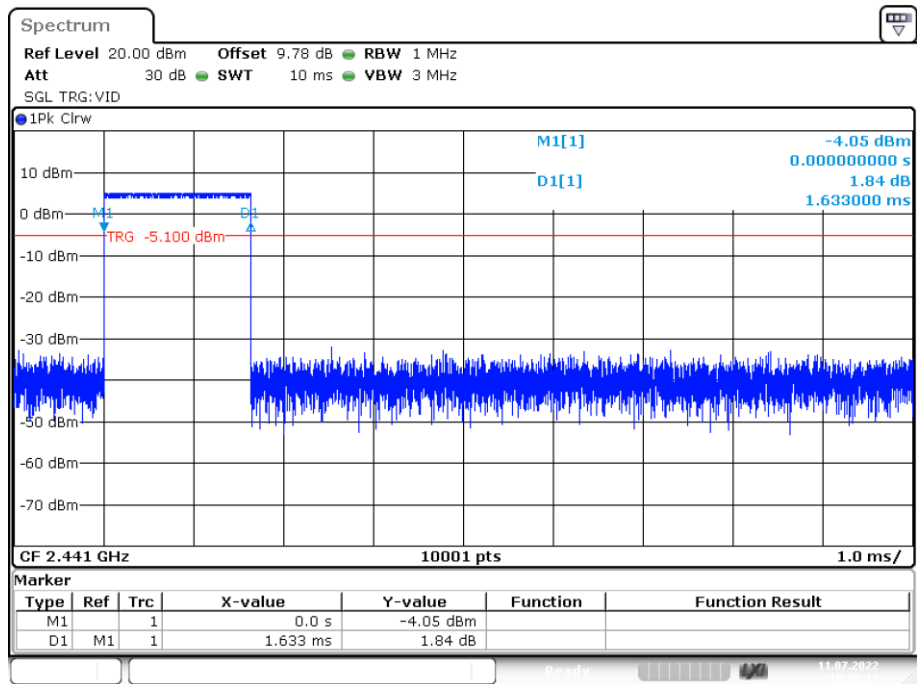
Date: 11.JUL.2022 10:14:15

Dwell NVNT 1-DH1 2441MHz Ant1 Accumulated



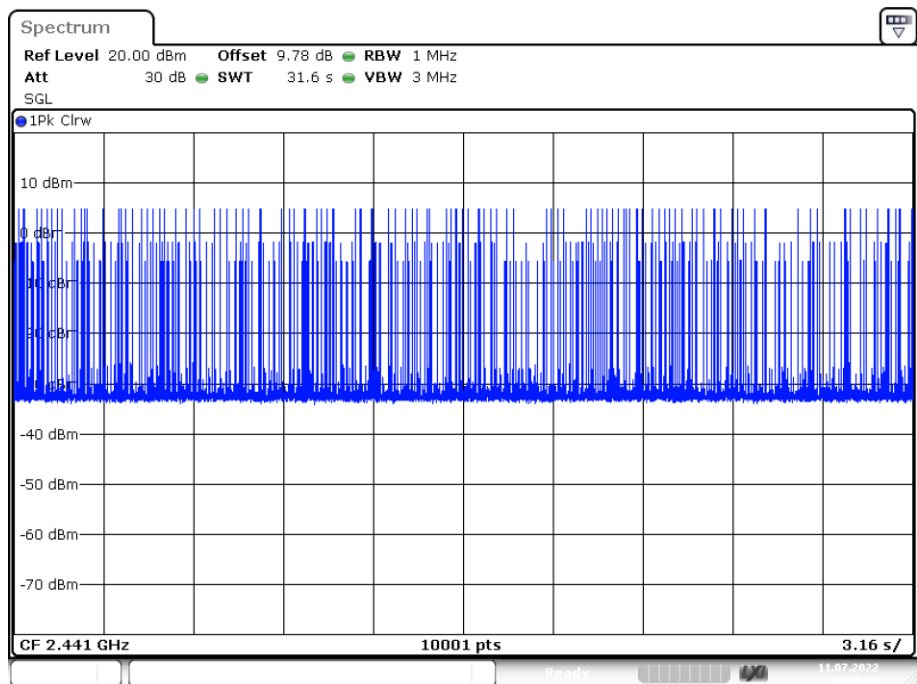
Date: 11.JUL.2022 10:14:49

Dwell NVNT 1-DH3 2441MHz Ant1 One Burst



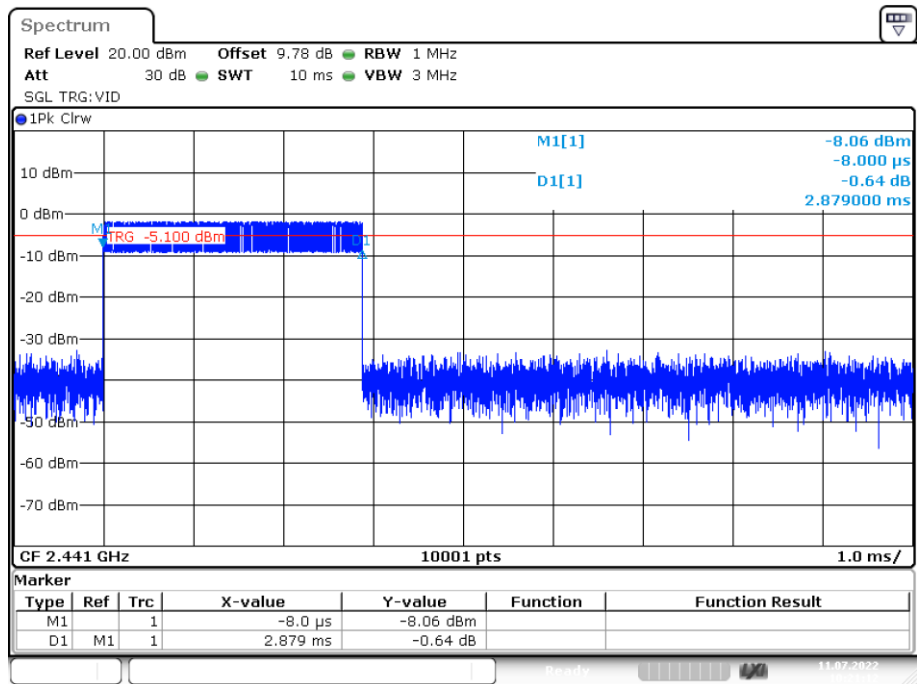
Date: 11.JUL.2022 10:20:14

Dwell NVNT 1-DH3 2441MHz Ant1 Accumulated



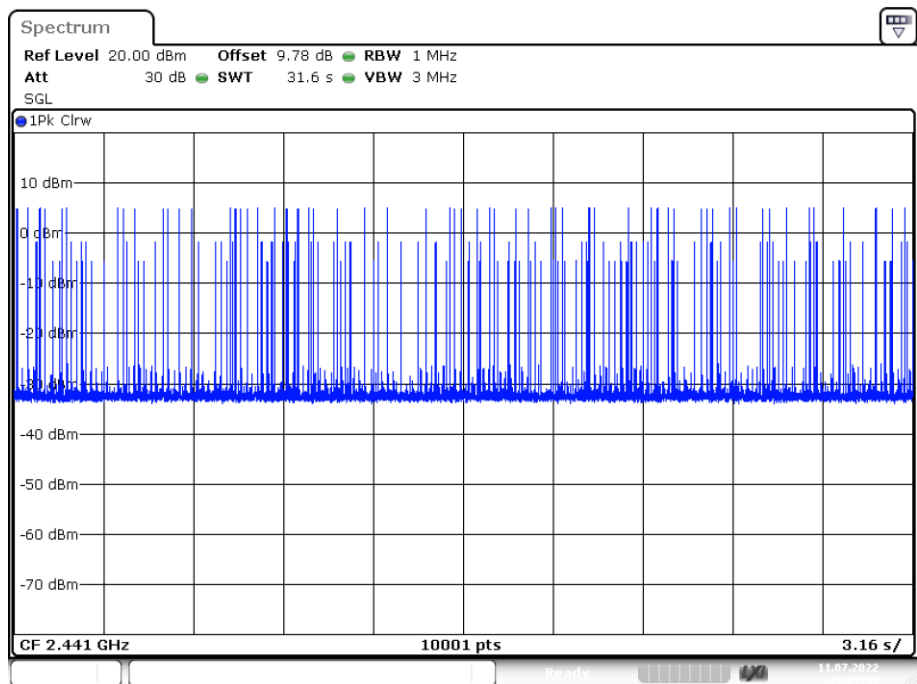
Date: 11.JUL.2022 10:20:49

Dwell NVNT 1-DH5 2441MHz Ant1 One Burst



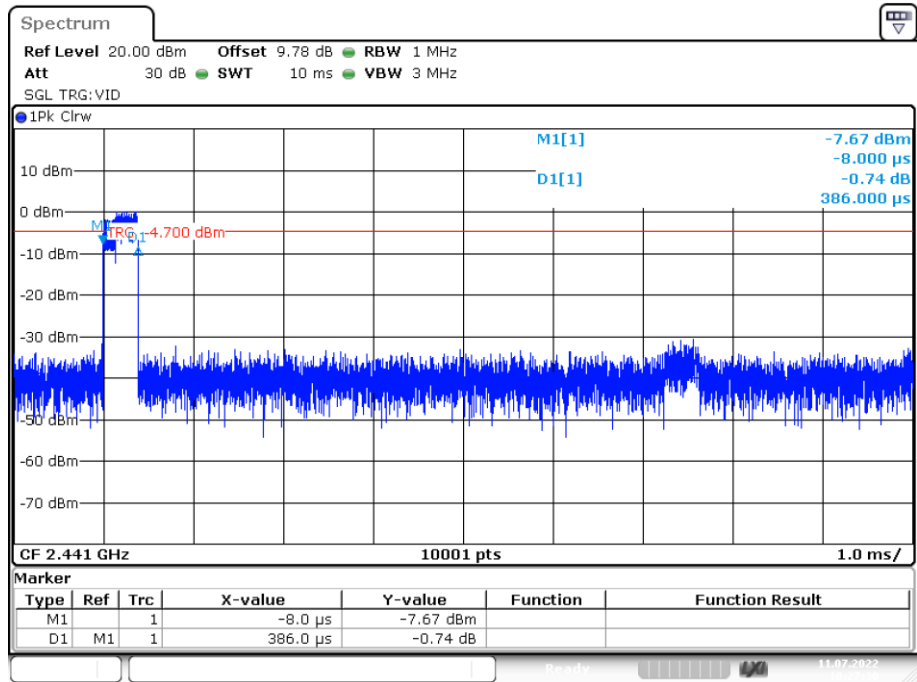
Date: 11.JUL.2022 10:21:11

Dwell NVNT 1-DH5 2441MHz Ant1 Accumulated



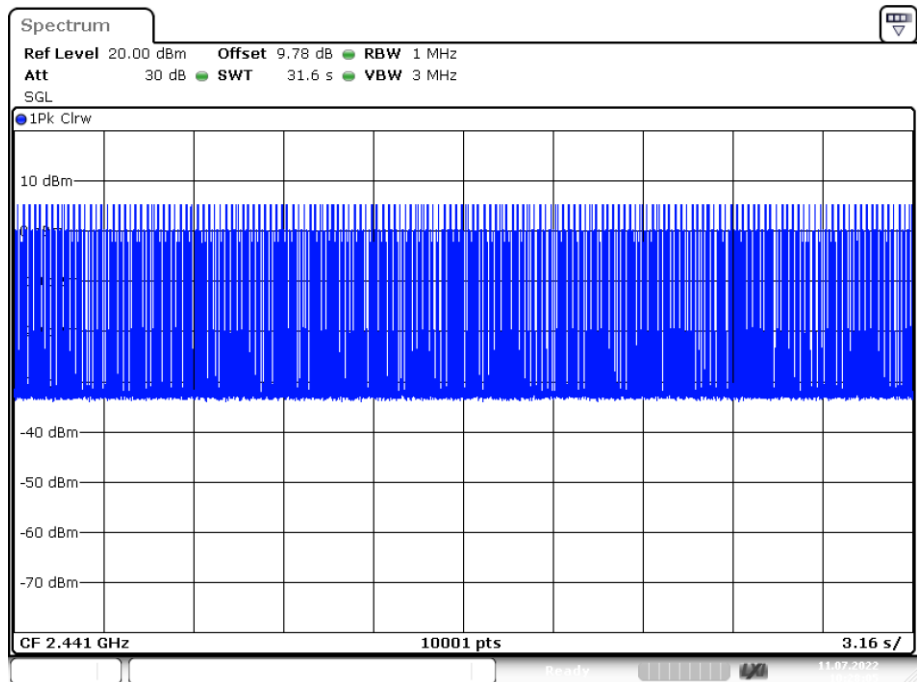
Date: 11.JUL.2022 10:21:46

Dwell NVNT 2-DH1 2441MHz Ant1 One Burst



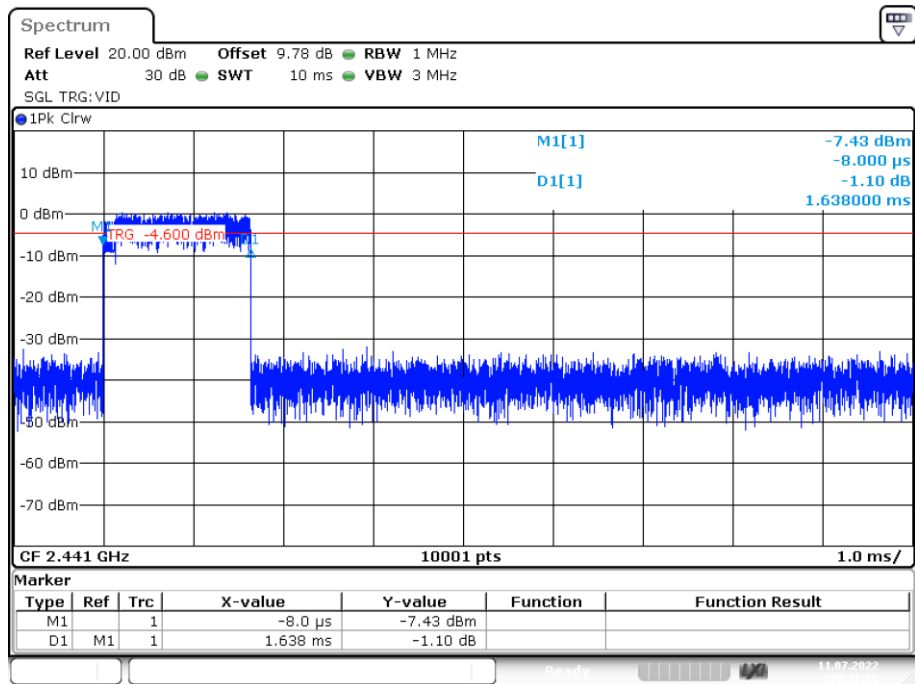
Date: 11.JUL.2022 10:27:30

Dwell NVNT 2-DH1 2441MHz Ant1 Accumulated



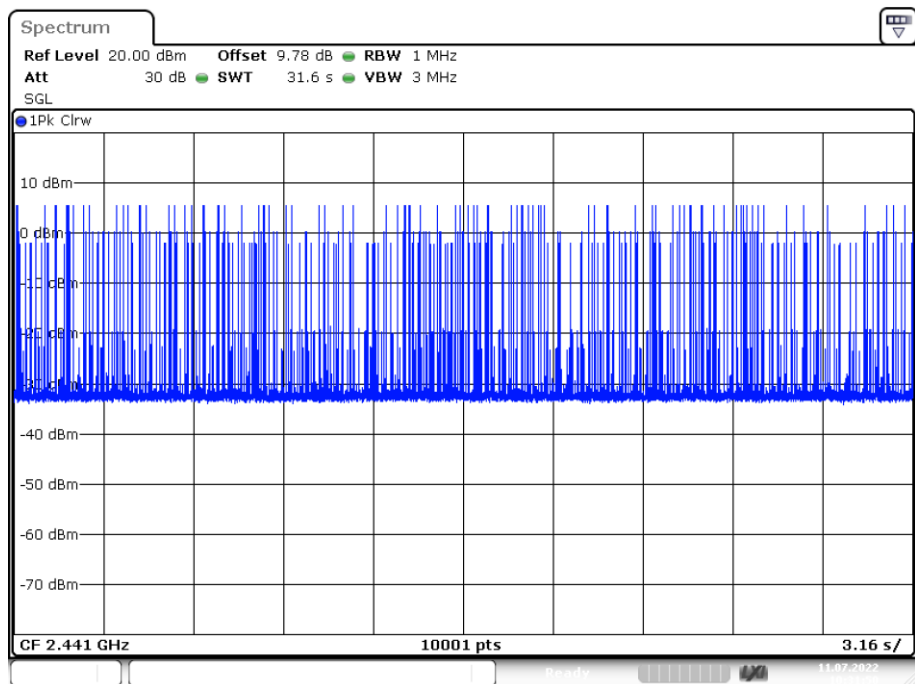
Date: 11.JUL.2022 10:28:04

Dwell NVNT 2-DH3 2441MHz Ant1 One Burst



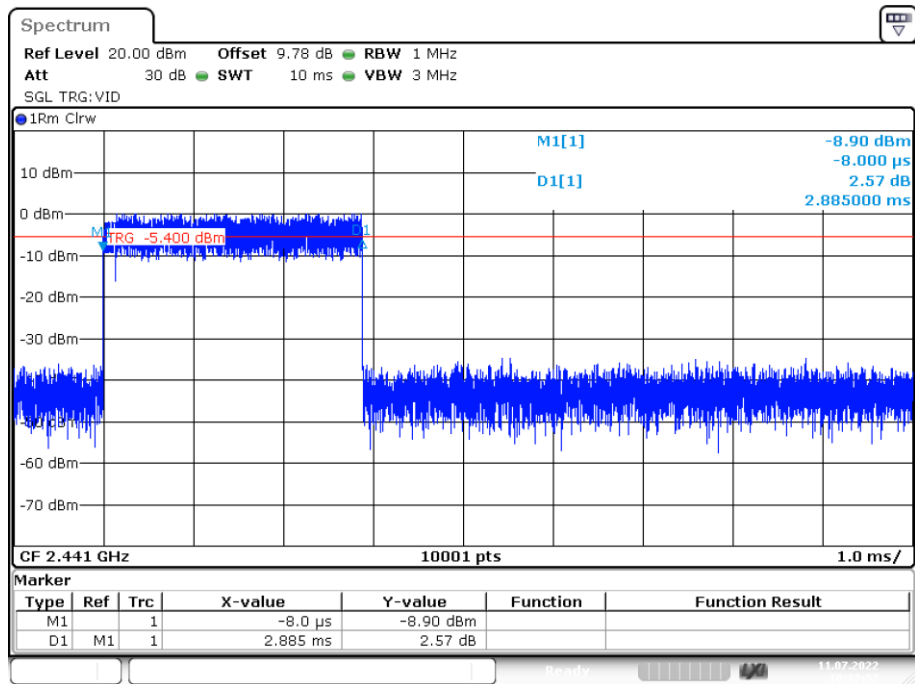
Date: 11.JUL.2022 10:31:16

Dwell NVNT 2-DH3 2441MHz Ant1 Accumulated



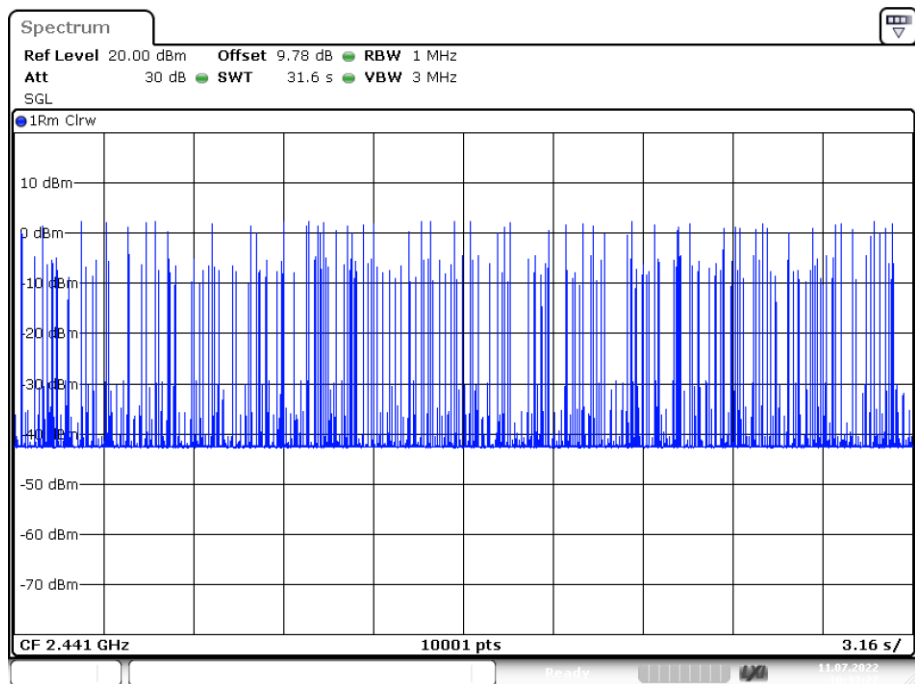
Date: 11.JUL.2022 10:31:50

Dwell NVNT 2-DH5 2441MHz Ant1 One Burst



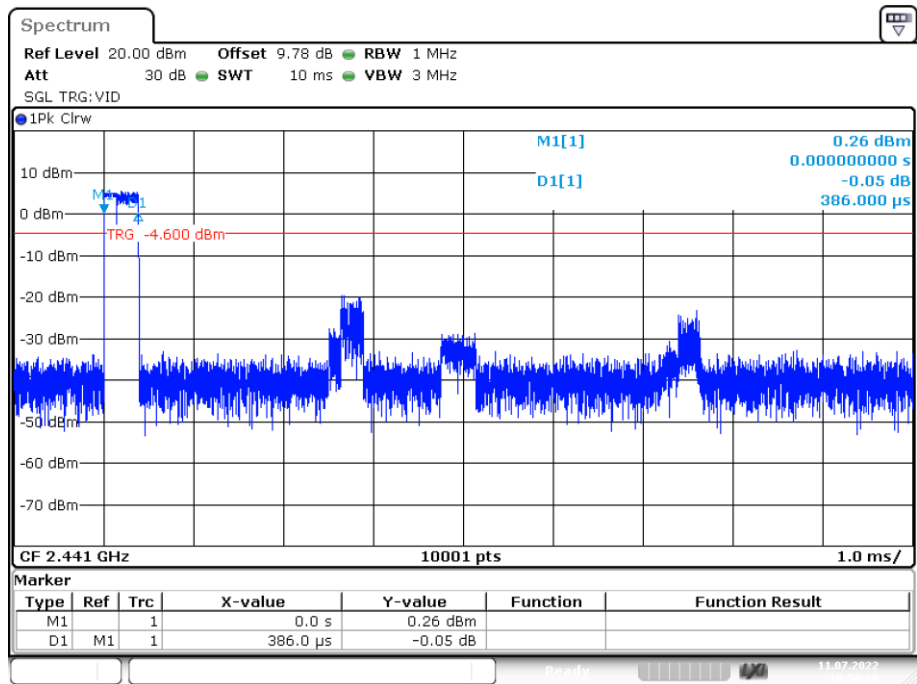
Date: 11.JUL.2022 10:32:52

Dwell NVNT 2-DH5 2441MHz Ant1 Accumulated



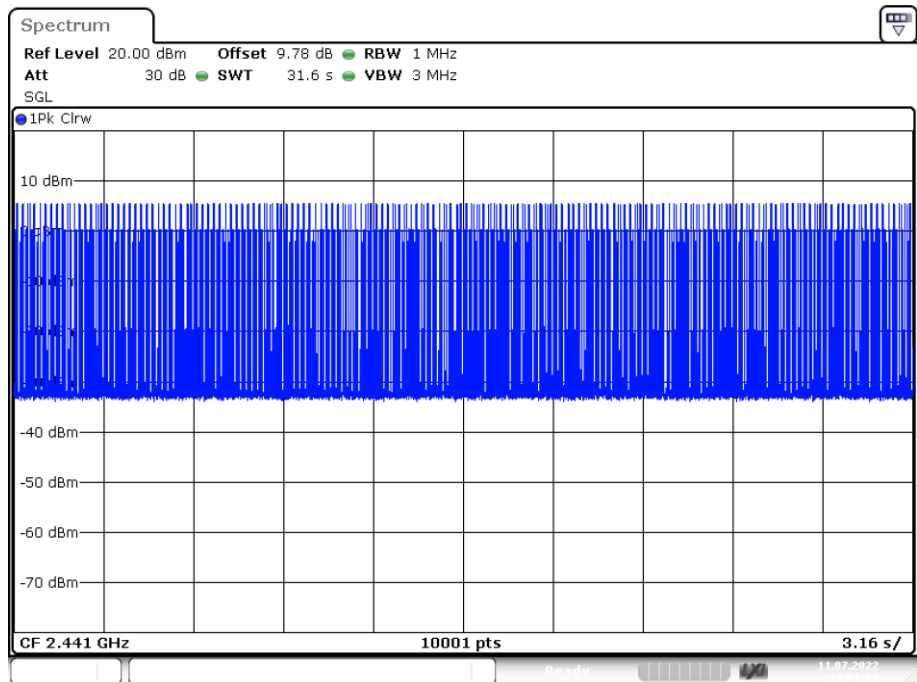
Date: 11.JUL.2022 10:33:27

Dwell NVNT 3-DH1 2441MHz Ant1 One Burst



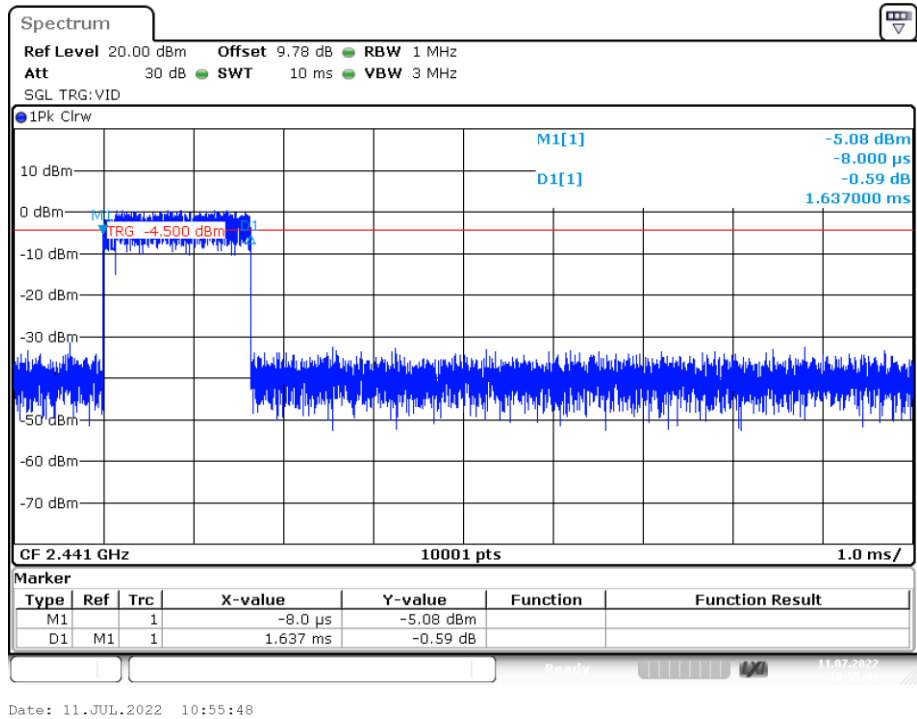
Date: 11.JUL.2022 10:50:26

Dwell NVNT 3-DH1 2441MHz Ant1 Accumulated

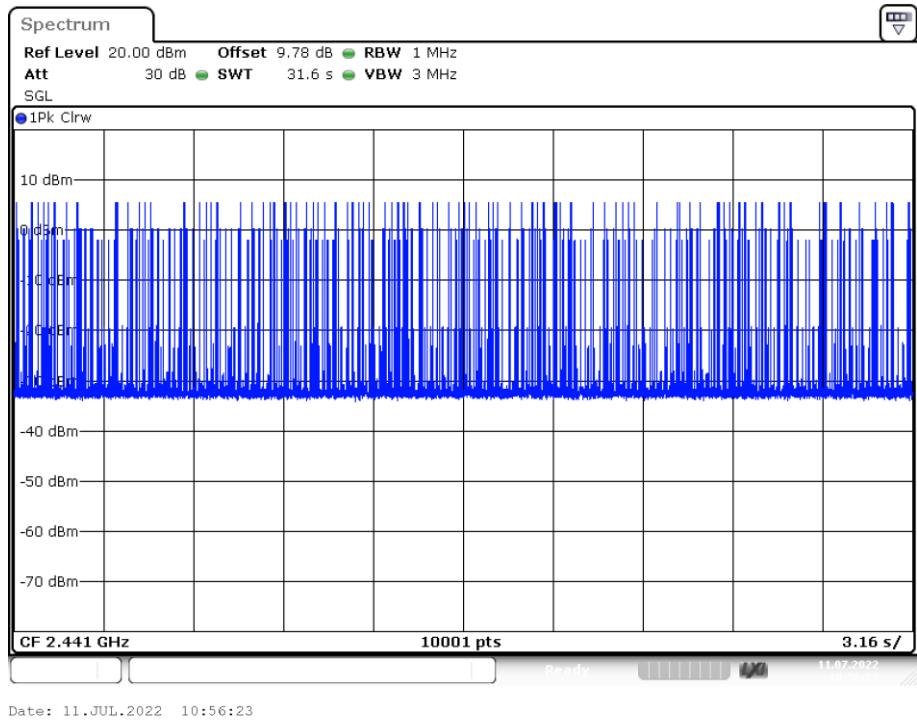


Date: 11.JUL.2022 10:51:01

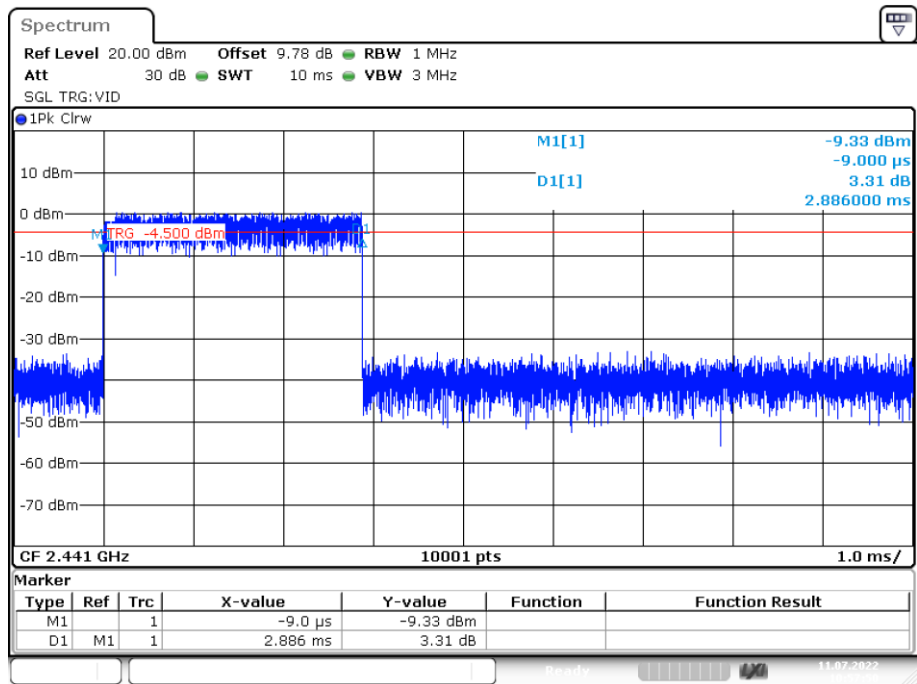
Dwell NVNT 3-DH3 2441MHz Ant1 One Burst



Dwell NVNT 3-DH3 2441MHz Ant1 Accumulated

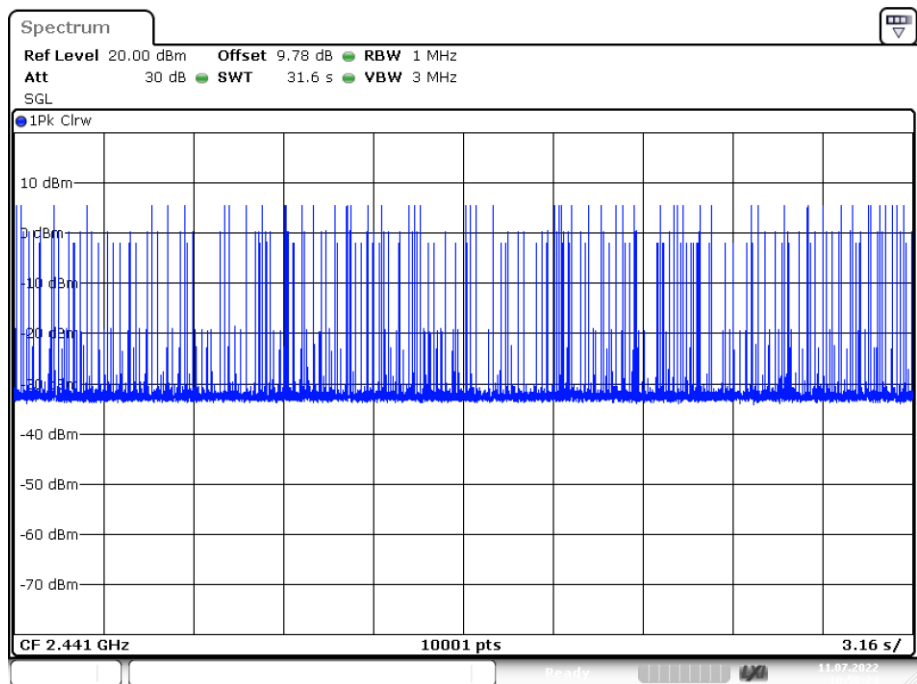


Dwell NVNT 3-DH5 2441MHz Ant1 One Burst



Date: 11.JUL.2022 10:57:50

Dwell NVNT 3-DH5 2441MHz Ant1 Accumulated



Date: 11.JUL.2022 10:58:24

8. Radiated emissions

8.1. Limit

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

15.205 Restricted frequency band

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)

15.209 Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009-0.490	300	2400/F(KHz)	/
0.490-1.705	30	24000/F(KHz)	/
1.705-30	30	30	29.5
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	
Note 1: The peak limit is 20 dB higher than the average limit			

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

8.2. Test Procedure

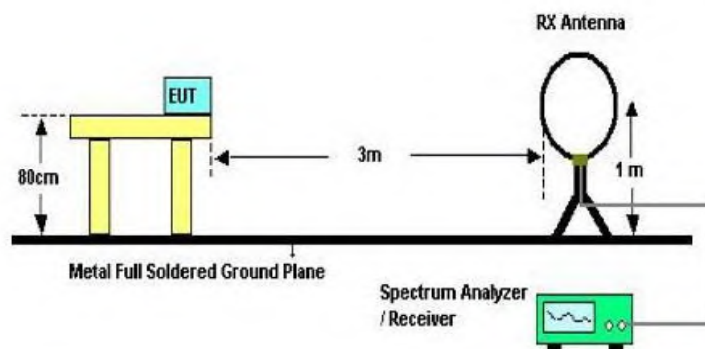
The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1GHz, The EUT was placed on a rotating 0.8 m high above ground for below 1GHz and 1.5m high for above1GHz testing, The table was rotated 360 degrees to determine the position of the highest radiation. The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set of make measurement.

The initial step in collecting conducted emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range. Significant Peaks are then marked. and then Qusia Peak Detector mode premeasured

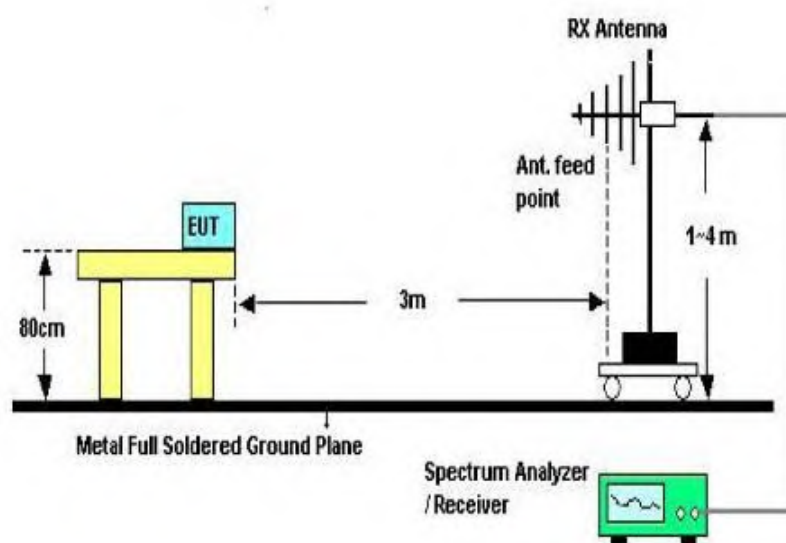
If Peak value comply with QP limit Below 1GHz.The EUT deemed to comply with QP limit. But the Peak value and average value both need to comply with applicable limit above 1GHz.

For the actual test configuration, please see the test setup photo.

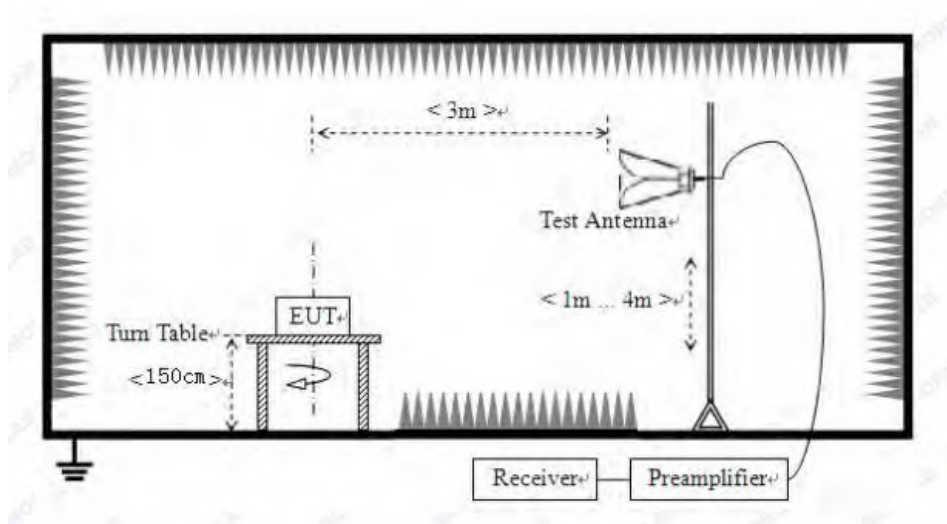
8.3. Block Diagram of Test setup



Below 30MHz Test Setup



Above 30MHz Test Setup



Above 1GHz Test Setup

8.4. Test Result

Test Condition

Continual Transmitting in maximum power.

9KHz~150KHz	RBW200Hz	VBW1KHz
150KHz~30MHz	RBW9KHz	VBW 30KHz
30MHZ~1GHz	RBW120KHz	VBW 300KHz
Above1GHz	RBW1MHz	VBW 3MHz

We have scanned the 10th harmonic from 9KHz to the EUT's highest frequency.

Detailed information please see the following page.

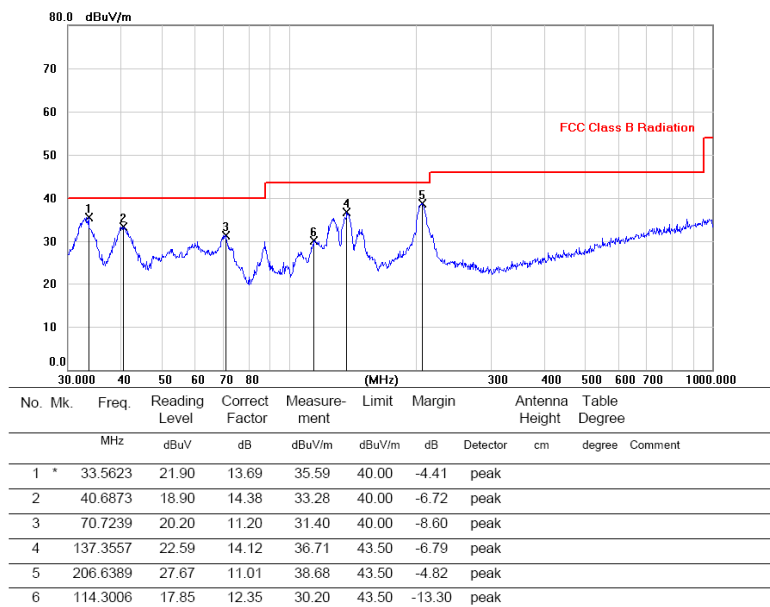
From 9KHz to 30MHz: Conclusion: PASS

Note: 1.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

2.Only show the test data of the worst Channel in this report.

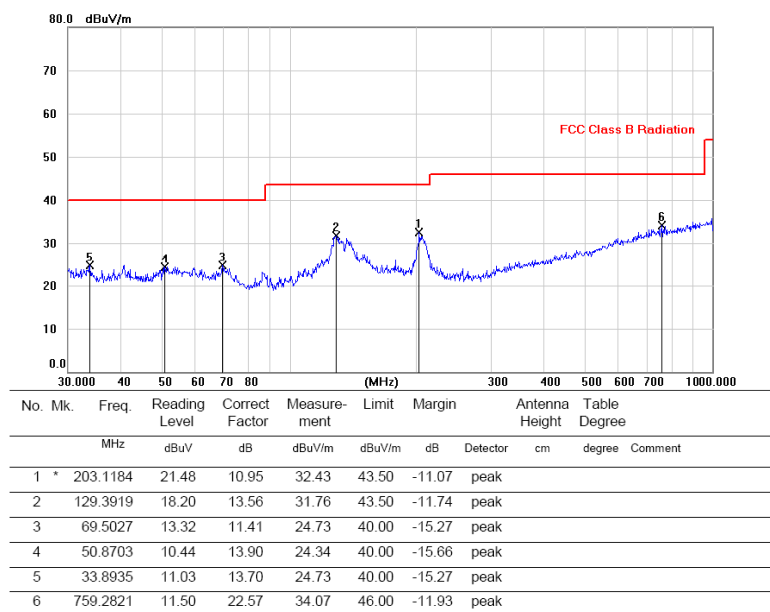
From 30MHz to 1000MHz: Conclusion: PASS

EUT Description	Geodetic GNSS Receiver	Model No.	SG7
Temperature	24°C	Humidity	56%
Pol	Vertical	Test date	2022.05.11
Test Voltage	DC 5V From USB Port	Test mode	GFSK (2441MHz)



Pol

Horizontal



*:Maximum data x:Over limit !:over margin

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Remark: All modes have been tested, and only worst data of GFSK (2441MHz) was listed in this report.

Test Mode: GFSK TX Low									
Freq (MHz)	Read Level (dBuV/m)	Polar (H/V)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4804	44.23	V	33.95	10.18	34.26	54.10	74	-19.90	PK
4804	35.08	V	33.95	10.18	34.26	44.95	54	-9.05	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
4804	42.14	H	33.95	10.18	34.26	52.01	74	-21.99	PK
4804	34.76	H	33.95	10.18	34.26	44.63	54	-9.37	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
Test Mode: GFSK TX Mid									
4882	45.87	V	33.93	10.2	34.29	55.71	74	-18.29	PK
4882	35.41	V	33.93	10.2	34.29	45.25	54	-8.75	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
4882	44.67	H	33.93	10.2	34.29	54.51	74	-19.49	PK
4882	33.41	H	33.93	10.2	34.29	43.25	54	-10.75	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
Test Mode: GFSK TX High									
4960	44.01	V	33.98	10.22	34.25	53.96	74	-20.04	PK
4960	35.70	V	33.98	10.22	34.25	45.65	54	-8.35	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/
4960	47.14	H	33.98	10.22	34.25	57.09	74	-16.91	PK
4960	36.38	H	33.98	10.22	34.25	46.33	54	-7.67	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/

Note:

1, Result = Read level + Antenna factor + cable loss-Amp factor

2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.

From 1G-25GHz

Test Mode: $\pi/4$ DQPSK TX Low									
Freq (MHz)	Read Level (dBuV/m)	Polar (H/V)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4804	44.00	V	33.95	10.18	34.26	53.87	74	-20.13	PK
4804	35.66	V	33.95	10.18	34.26	45.53	54	-8.47	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
4804	42.92	H	33.95	10.18	34.26	52.79	74	-21.21	PK
4804	35.11	H	33.95	10.18	34.26	44.98	54	-9.02	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
Test Mode: $\pi/4$ DQPSK TX Mid									
4882	45.94	V	33.93	10.2	34.25	55.82	74	-18.18	PK
4882	35.51	V	33.93	10.2	34.25	45.39	54	-8.61	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
4882	44.77	H	33.93	10.2	34.29	54.61	74	-19.39	PK
4882	33.56	H	33.93	10.2	34.29	43.40	54	-10.60	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
Test Mode: $\pi/4$ DQPSK TX High									
4960	43.68	V	33.98	10.22	34.25	53.63	74	-20.37	PK
4960	35.60	V	33.98	10.22	34.25	45.55	54	-8.45	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/
4960	47.37	H	33.98	10.22	34.25	57.32	74	-16.68	PK
4960	36.56	H	33.98	10.22	34.25	46.51	54	-7.49	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/

Note:

1, Result = Read level + Antenna factor + cable loss-Amp factor

2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.

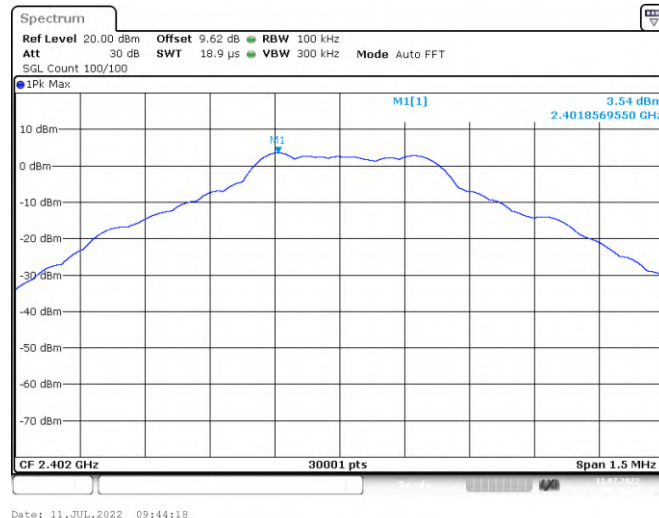
Note:

1, Result = Read level + Antenna factor + cable loss-Amp factor

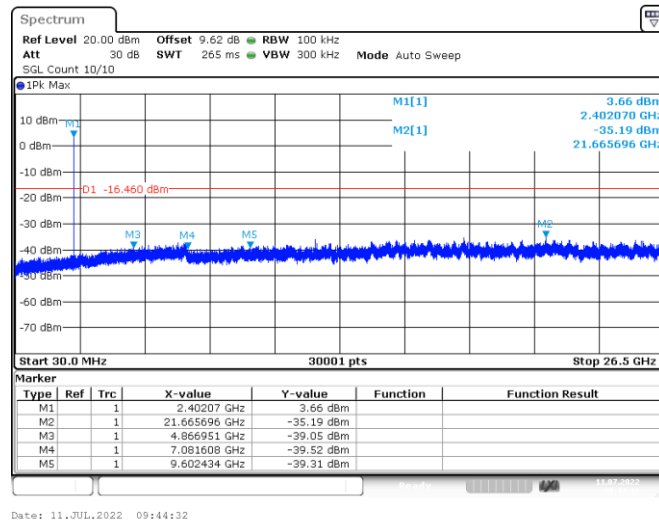
2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.

Conducted RF Spurious Emission

Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Ref



Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Emission



Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Ref

