



FCC TEST REPORT

FCC ID: 2BMUP-WQ-02

On Behalf of

Ningbo Feiliu paper Products Co., LTD

Label Printer

Model No.: WQ-02

Prepared for : Ningbo Feiliu paper Products Co., LTD
Address : No. 31 Lianzhong Road, Gaoqiao Village, Gaoqiao Town, Haishu
District, Ningbo City, Zhejiang Province

Prepared By : Shenzhen PSI Testing Co., Ltd.
Address : 1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West Road,
Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China

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TEST REPORT DECLARATION

Applicant : Ningbo Feiliu paper Products Co., LTD
Address : No. 31 Lianzhong Road, Gaoqiao Village, Gaoqiao Town, Haishu District, Ningbo City, Zhejiang Province
Manufacturer : Ningbo Feiliu paper Products Co., LTD
Address : No. 31 Lianzhong Road, Gaoqiao Village, Gaoqiao Town, Haishu District, Ningbo City, Zhejiang Province
EUT Description : Label Printer
(A) Model No. : WQ-02
(B) Trademark : N/A

Measurement Standard Used:

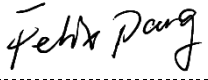
FCC Rules and Regulations Part 15 Subpart C Section 15.247

ANSI C63.10:2013

Test Result: PASS

The device described above is tested by Shenzhen PSI Testing Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test results are contained in this test report and Shenzhen PSI Testing Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the FCC Part 15C requirements.

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

Tested by (name + signature).....: Felix Pang
Test Engineer 

Approved by (name + signature).....: Simple Guan
Project Manager 

Date of issue.....: December 20, 2024

Revision History

Revision	Issue Date	Revisions	Revised By
V0	December 20, 2024	Initial released Issue	Felix Pang



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), RSS-247(5.4 b), ANSI C63.10 :2013	P
Bandwidth	FCC Part 15: 15.215, RSS-247(5.1 a), ANSI C63.10 :2013	P
Carrier Frequency Separation	FCC Part 15: 15.247(a)(1), RSS-247(5.1 b), ANSI C63.10 :2013	P
Number Of Hopping Channel	FCC Part 15: 15.247(a)(1), RSS-247(5.1 d),ANSI C63.10 :2013	P
Dwell Time	FCC Part 15: 15.247(a)(1), RSS-247(5.1 d),ANSI C63.10 :2013	P
Radiated Spurious Emission	FCC Part 15: 15.209, FCC Part 15: 15.247(d), RSS-Gen(8.9), RSS-247(5.5), ANSI C63.10 :2013	P
Out-of-band Emissions	FCC Part 15: 15.247(d), RSS-Gen(8.9), RSS-247(5.5), ANSI C63.10 :2013	P
Radiated Band Edge Emission	FCC Part 15: 15.247(d), RSS-Gen(6.13), RSS-247(5.5), ANSI C63.10 :2013	P
Power Line Conducted Emissions	FCC Part 15: 15.207, RSS-GEN(8.8),ANSI C63.10 :2013	P
Frequency stability	RSS-GEN(6.11)	N/A
Antenna requirement	FCC Part 15: 15.203, RSS-GEN(6.8)	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. Conclusion determination rules of this report: Unless there are clear provisions on measurement uncertainty in the standard or customer requirements, decision by actual test data without considering measurement uncertainty. 5. Measurement method usage KDB 558074 D01 15.247 Meas Guidance v05r02.		

2. General Information

2.1. Description of Device (EUT)

Product Name : Label Printer
Model No. : WQ-02
Diff : N/A
Power supply : DC 5V from Type-C, DC 3.7V from battery.

Radio Technology : Bluetooth V5.2 EDR

Operation frequency : 2402-2480MHz

Channel No. : 79 channels

Channel Separation : 1MHz

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

Antenna Type : Internal antenna, maximum gain is 1.20dBi.

PMN : N/A

HVIN : N/A

Software version : N/A

Hardware version/FVIN : N/A

Note : Antenna information is provided by applicant.
Testing lab is not responsible for the accuracy of the information.

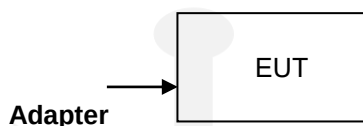
2.2. Accessories of Device (EUT)

Accessories 1 : USB cable
 Manufacturer : N/A
 Model : N/A
 Rating : N/A

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number
1	Adapter	Baseus	CCXFK65CC	N/A
2	Notebook PC	Dell	Latitude 3490	N/A

2.4. Block Diagram of connection between EUT and simulators



2.5. Test Mode Description

The test software used to control EUT work in Continuous TX mode, and select test channel, wireless mode

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
GFSK / Pi/4-DQPSK / 8DPSK Carrier Tx Mode	CH0	2402
	CH39	2441
	CH78	2480
GFSK / Pi/4-DQPSK / 8DPSK hopping on Tx Mode	CH0 to CH78	2402 to 2480
GFSK / Pi/4-DQPSK / 8DPSK hopping off Tx Mode	CH0	2402
	CH39	2441
	CH78	2480

2.6. Software test version and power setting information

Software testing version	BT Tool.exe		
Mode	The client 's preset testing software is used to control the operation of EUT in continuous transmission mode and select the testing channel, wireless mode:		
Power level setup by client			
Mode	Channel	Frequency (MHz)	Soft Set
GFSK, Pi/4-DQPSK, 8DPSK	CH0	2402	TX level is set as defaults value.
	CH39	2441	TX level is set as defaults value.
	CH78	2480	TX level is set as defaults value.

2.7. Test Conditions

Items	Required	Actual
Temperature range:	15-35℃	26℃
Humidity range:	25-75%	54%
Pressure range:	86-106kPa	101kPa

2.8. Test Facility

Shenzhen PSI Testing Co., Ltd.

1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China

September 13, 2023 File on Federal Communication Commission

Registration Number: 916281

2.9. Measurement Uncertainty

(95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for Power point Conducted Emissions Test	2.17dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	2.74dB(Polarize: V)
	2.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 18GHz)	4.29dB(Polarize: V)
	4.82dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (18GHz to 40GHz)	4.31 dB(Polarize: V)
	4.30 dB(Polarize: H)
Uncertainty for radio frequency	48.24KHz
Uncertainty for conducted RF Power	0.41dB

2.10.Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Firmware Version	Last Cal.	Cal. Interval
1.	9*6*6 anechoic chamber	SKET	9*6*6	N/A	/	2022.12.20	3 Year
2.	Test Receiver	Rohde&Schwarz	ESCI 7	101032/003	4.42 SP3	2024.12.18	1 Year
3.	L.I.S.N.#1	Rohde&Schwarz	ENV216	102282	/	2024.12.18	1 Year
4.	L.I.S.N.#2	RFT	NNB111	13835240	/	2024.12.18	1 Year
5.	Loop Antenna	Schwarz beck	FMZB 1519B	00128	/	2023.04.03	2 Year
6.	Bilog Antenna	Schwarz beck	VULB 9168	01448	/	2024.12.18	2 Year
7.	Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101648	3.70	2024.12.18	1 Year
8.	Horn Antenna	Schwarz beck	BBHA 9120 D	02706	/	2024.12.18	2 Year
9.	Amplifier	SKET	LAPA_01G1 8G-45dB	SK20220329 01	/	2024.12.18	1 Year
10.	Horn Antenna	Schwarz beck	BBHA 9170	00946	/	2022.12.25	2 Year
11.	Amplifier	SKET	LNPA_0118 G-45	SK20200108 01	/	2024.12.18	1 Year
12	RF Power Probe	Rohde&Schwarz	NRP-Z11	1138.3004.0 2-1111533-F z	/	2024.12.18	1 Year
13	RF Sensor Unit	Tachoy	TR1029-2	20220428P0 08	/	2024.12.18	1 Year
14	Spectrum Analyzer	Agilent	N9020A	MY51281067	A.14.03	2024.12.18	1 Year
15	Temp. & Humid Chamber	Auchno	9606	/	/	2024.12.18	1 Year
16	Regulated DC Power Supply	Xinouhua	ADC120V10 A	2022112516 38		2024.12.18	1 Year
For Test Software Information							
Item	Software Name	Manufacturer			Version		
RE	EZ_EMC	Farad			PSI-3A1		
CE	EZ_EMC	Farad			PSI-3A1		
RF	RTS	TACHOY			V1.0.0		

3. Maximum Peak Output Power

3.1. Limit

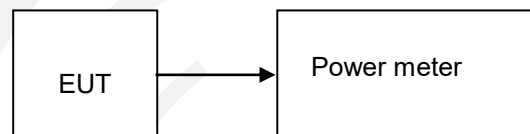
Please refer FCC part 15.247 & RSS-247.

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 Power meter is set to the peak power detection.

3.3. Test Setup



3.4. Test Result

Condition	Antenna	Modulation	Frequency (MHz)	Max. Conducted Power(dBm)	Max. Conducted Power(mW)	Limit(mW)	Result
NVNT	ANT1	1-DH1	2402.00	4.57	2.86	1000	Pass
NVNT	ANT1	1-DH1	2441.00	3.19	2.08	1000	Pass
NVNT	ANT1	1-DH1	2480.00	2.50	1.78	1000	Pass
NVNT	ANT1	2-DH1	2402.00	4.61	2.89	125	Pass
NVNT	ANT1	2-DH1	2441.00	2.51	1.78	125	Pass
NVNT	ANT1	2-DH1	2480.00	1.82	1.52	125	Pass
NVNT	ANT1	3-DH1	2402.00	4.30	2.69	125	Pass
NVNT	ANT1	3-DH1	2441.00	2.58	1.81	125	Pass
NVNT	ANT1	3-DH1	2480.00	1.63	1.46	125	Pass

4. Bandwidth

4.1. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in RSS-GEN, FCC Section 15.247(a)(1), 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	Antenna	Modulation	Frequency (MHz)	-20dB BW(MHz)	if larger than CFS
NVNT	ANT1	1-DH1	2402.00	0.830	No
NVNT	ANT1	1-DH1	2441.00	0.827	No
NVNT	ANT1	1-DH1	2480.00	0.818	No
NVNT	ANT1	2-DH1	2402.00	1.112	Yes
NVNT	ANT1	2-DH1	2441.00	1.112	Yes
NVNT	ANT1	2-DH1	2480.00	1.112	Yes
NVNT	ANT1	3-DH1	2402.00	1.161	Yes
NVNT	ANT1	3-DH1	2441.00	1.164	Yes
NVNT	ANT1	3-DH1	2480.00	1.163	Yes

-20dB_Bandwidth_NVNT_ANT1_1-DH1_2402_00**-20dB_Bandwidth_NVNT_ANT1_1-DH1_2441_00**

-20dB_Bandwidth_NVNT_ANT1_1-DH1_2480_00**-20dB_Bandwidth_NVNT_ANT1_2-DH1_2402_00**

-20dB_Bandwidth_NVNT_ANT1_2-DH1_2441_00**-20dB_Bandwidth_NVNT_ANT1_2-DH1_2480_00**

-20dB_Bandwidth_NVNT_ANT1_3-DH1_2402_00**-20dB_Bandwidth_NVNT_ANT1_3-DH1_2441_00**

-20dB_Bandwidth_NVNT_ANT1_3-DH1_2480_00

Condition	Antenna	Modulation	Frequency (MHz)	99%BW(MHz)
NVNT	ANT1	1-DH1	2402.00	0.857
NVNT	ANT1	1-DH1	2441.00	0.858
NVNT	ANT1	1-DH1	2480.00	0.848
NVNT	ANT1	2-DH1	2402.00	1.053
NVNT	ANT1	2-DH1	2441.00	1.050
NVNT	ANT1	2-DH1	2480.00	1.052
NVNT	ANT1	3-DH1	2402.00	1.087
NVNT	ANT1	3-DH1	2441.00	1.084
NVNT	ANT1	3-DH1	2480.00	1.083

99%_Occupied_Bandwidth_NVNT_ANT1_1-DH1_2402_00



99%_Occupied_Bandwidth_NVNT_ANT1_1-DH1_2441_00



99%_Occupied_Bandwidth_NVNT_ANT1_1-DH1_2480_00



99%_Occupied_Bandwidth_NVNT_ANT1_2-DH1_2402_00



99%_Occupied_Bandwidth_NVNT_ANT1_2-DH1_2441_00



99%_Occupied_Bandwidth_NVNT_ANT1_2-DH1_2480_00



99%_Occupied_Bandwidth_NVNT_ANT1_3-DH1_2402_00



99%_Occupied_Bandwidth_NVNT_ANT1_3-DH1_2441_00



99%_Occupied_Bandwidth_NVNT_ANT1_3-DH1_2480_00



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

Please refer FCC part 15.247 & RSS-247.

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 100kHz RBW and 300kHz VBW.

5.3. Test Result

Condition	Antenna	Modulation	Frequency(MHz)	Hopping NO.0 (MHz)	Hopping NO.1 (MHz)	Carrier Frequencies Separation(MHz)	Limit(MHz)	Result
NVNT	ANT1	1-DH1	2441.00	2440.843	2441.842	1.00	0.827	Pass
NVNT	ANT1	2-DH1	2441.00	2440.843	2441.848	1.00	0.741	Pass
NVNT	ANT1	3-DH1	2441.00	2440.846	2441.851	1.00	0.776	Pass



Carrier_Frequencies_Separation_(Hopping)_NVNT_ANT1_2-DH1_Hopping



Carrier_Frequencies_Separation_(Hopping)_NVNT_ANT1_3-DH1_Hopping



6. Number Of Hopping Channel

6.1. Limit

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

Please refer FCC part 15.247 & RSS-247.

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.

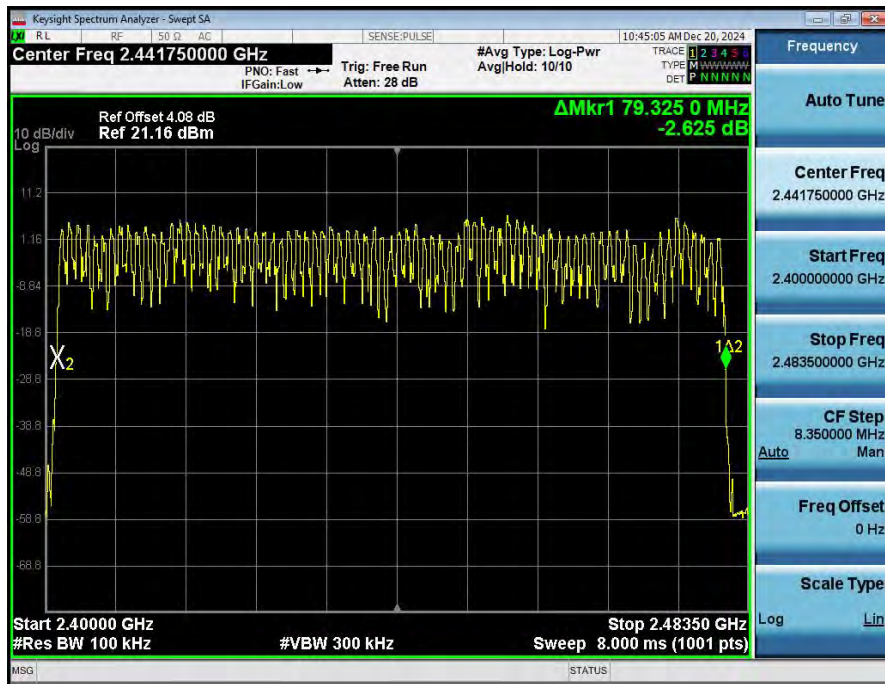
6.3. Test Result

Condition	Antenna	Modulation	Hopping Num	Limit	Result
NVNT	ANT1	1-DH1	7	15	Pass
NVNT	ANT1	2-DH1	79	15	Pass
NVNT	ANT1	3-DH1	79	15	Pass

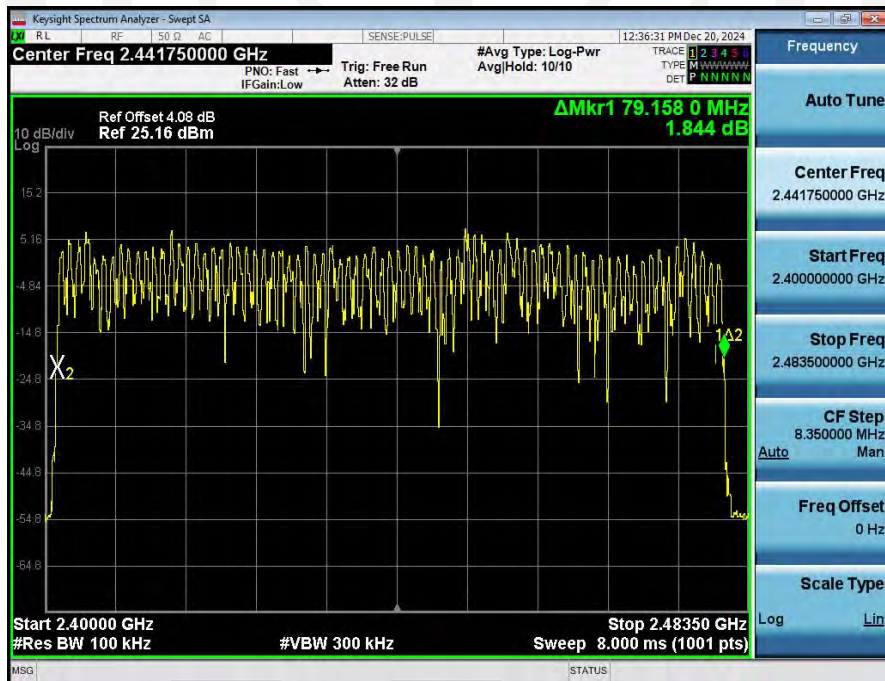
Number_of_Hopping_Channel_(Hopping)_NVNT_ANT1_1-DH1_Hopping



Number_of_Hopping_Channel_(Hopping)_NVNT_ANT1_2-DH1_Hopping



Number_of_Hopping_Channel_(Hopping)_NVNT_ANT1_3-DH1_Hopping



7. Dwell Time

7.1. Test limit

Please refer FCC part 15.247 & RSS-247.

Frequency hopping systems operating in the 2400MHz-2483.5MHz. The average time of occupancy on any frequency shall not greater than 0.4 s within period of 0.4 sec- onds 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=3MHz, Span = 0Hz, Sweep = auto.

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

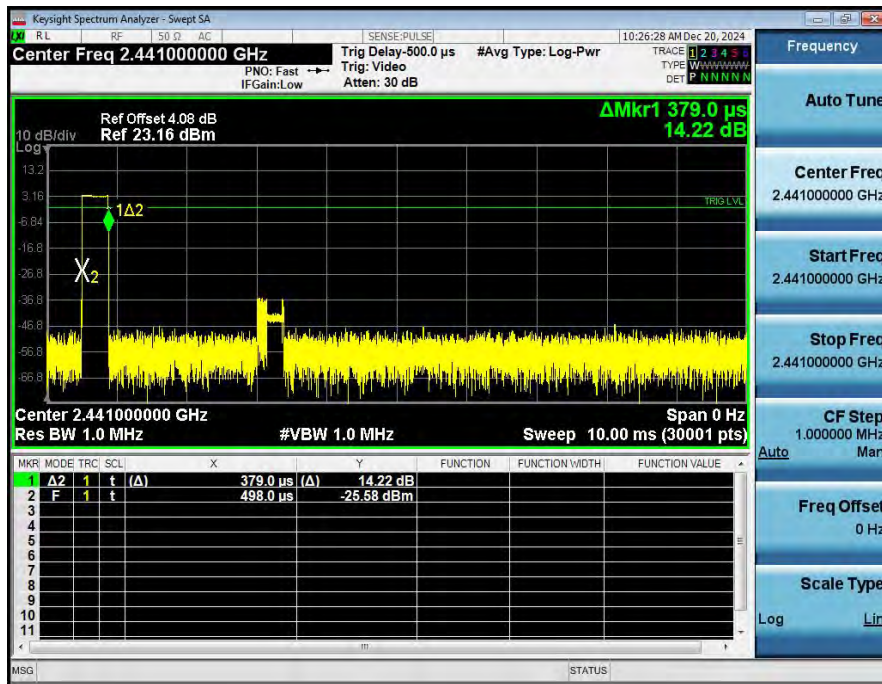
7.2.6. The test period: $T = 0.4 \text{ Second/Channel} \times 79 \text{ Channel} = 31.6 \text{ s}$

7.2.7. Dwell Time=Pulse Time* Hops Number

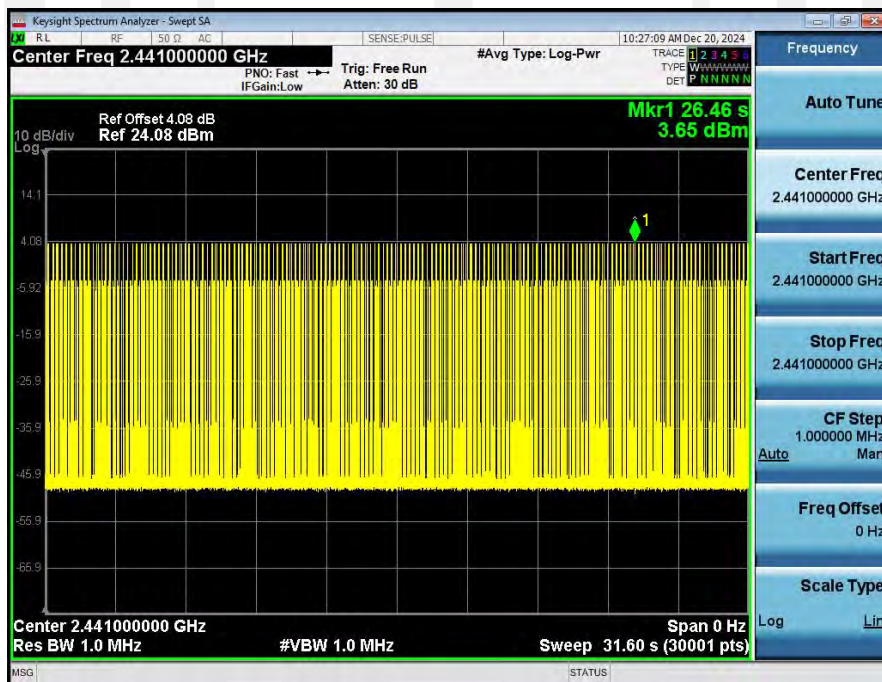
7.3. Test Result

Condition	Antenna	Packet Type	Pulse Time(ms)	Hops	Dwell Time(ms)	Limit(s)	Result
NVNT	ANT1	1-DH1	0.379	320.00	121.280	0.40	Pass
NVNT	ANT1	2-DH1	0.386	320.00	123.520	0.40	Pass
NVNT	ANT1	3-DH1	0.387	320.00	123.840	0.40	Pass
NVNT	ANT1	1-DH3	1.640	161.00	264.040	0.40	Pass
NVNT	ANT1	1-DH5	2.890	103.00	297.670	0.40	Pass
NVNT	ANT1	2-DH3	1.640	156.00	255.840	0.40	Pass
NVNT	ANT1	2-DH5	2.890	106.00	306.340	0.40	Pass
NVNT	ANT1	3-DH3	1.640	174.00	285.360	0.40	Pass
NVNT	ANT1	3-DH5	2.890	94.00	271.660	0.40	Pass

Dwell_Time_(Hopping)_NVNT_ANT1_1-DH1_2441_00_One_Burst_Time



Dwell_Time_(Hopping)_NVNT_ANT1_1-DH1_2441_00_Accumulated



Dwell_Time_(Hopping)_NVNT_ANT1_3-DH1_2441_00_One_Burst_Time

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Trig Delay: 500.0 μ s

#Avg Type: Log-Pwr

Ref Offset 4.08 dB

Ref 17.16 dBm

Δ Mkr1 387.0 μ s

16.73 dB

Center 2.441000000 GHz

Res BW 1.0 MHz

#VBW 1.0 MHz

Sweep 10.00 ms (30001 pts)

Span 0 Hz

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ 2	1	t	(Δ)	387.0 μ s	(Δ)	16.73 dB	
2	F	1	t		498.0 μ s		-24.44 dBm	

Dwell_Time_(Hopping)_NVNT_ANT1_3-DH1_2441_00_Accumulated

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Trig: Free Run

#Avg Type: Log-Pwr

Ref Offset 4.08 dB

Ref 24.08 dBm

Mkr1 15.98 s

2.82 dBm

Center 2.441000000 GHz

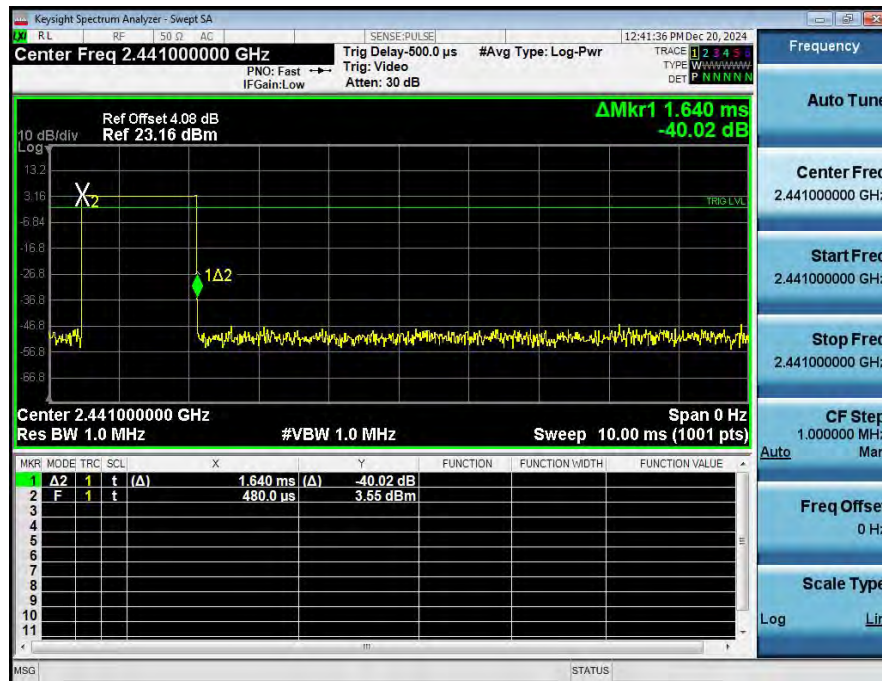
Res BW 1.0 MHz

#VBW 1.0 MHz

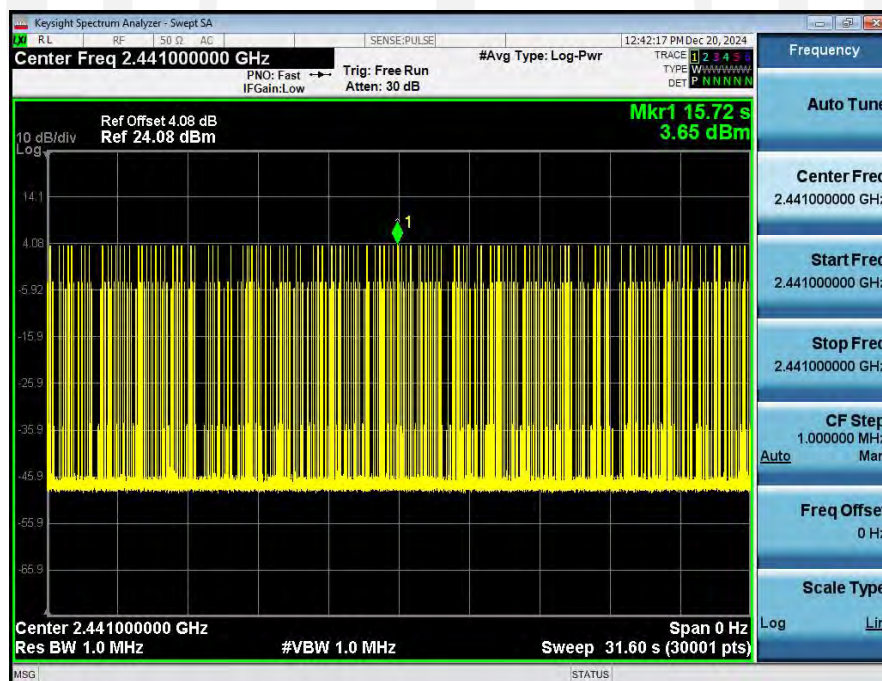
Sweep 31.60 s (30001 pts)

Span 0 Hz

Dwell_Time_(Hopping)_NVNT_ANT1_1-DH3_2441_00_One_Burst_Time



Dwell_Time_(Hopping)_NVNT_ANT1_1-DH3_2441_00_Accumulated



The screenshot shows a Keysight Spectrum Analyzer interface. The main display area shows a spectrum plot with a yellow trace. A green horizontal line indicates the reference level at -40.31 dBm. A peak marker labeled "1Δ2" is positioned at approximately 2.441 GHz and -40.31 dBm. The frequency scale ranges from 2.440 GHz to 2.442 GHz, and the power scale ranges from -60 dBm to 10 dBm/div. The top status bar displays various settings: Center Freq 2.441000000 GHz, Span 0 Hz, Res BW 1.0 MHz, #VBW 1.0 MHz, Sweep 10.0 ms (1001 pts), and other parameters like PNO: Fast IFGain: Low, Trig Delay: 500.0 μs, and Avg Type: Log-Pwr.

Keysight Spectrum Analyzer - Sweep SA

RL RF 50 Ω AC SENSE:PULSE 12:45:55 PM Dec 20, 2024

Center Freq 2.441000000 GHz #Avg Type: Log-Pwr

PNO: Fast IFGain:Low Trig: Free Run Atten: 30 dB

TRACE 1 2 3 4 5 TYPE W W W W W W W W DET 2 N N N N N

Ref Offset 4.08 dB Mkr1 23.32 s
Ref 24.08 dBm 6.06 dBm

10 dB/div Log

Center 2.441000000 GHz Span 0 Hz
Res BW 1.0 MHz #VBW 1.0 MHz Sweep 31.60 s (30001 pts)

Frequency Auto Tune

Center Freq 2.441000000 GHz

Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz

Auto Mar

Freq Offset 0 Hz

Scale Type Log

[illegible]

Keysight Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:PULSE 12:43:35 PM Dec 20, 2024

Center Freq 2.441000000 GHz #Avg Type: Log-Pwr

PNO: Fast IFGain:Low Trig: Free Run Atten: 30 dB

TRACE 1 2 3 4 5 TYPE W W W W W W W W DET 2 N N N N N

Ref Offset 4.08 dB Ref 24.08 dBm

Mkr1 4.597 s 3.65 dBm

10 dB/div Log

Center 2.441000000 GHz Res BW 1.0 MHz #VBW 1.0 MHz Span 0 Hz Sweep 31.60 s (30001 pts)

Auto Tune

Center Freq 2.441000000 GHz

Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz

Auto

Freq Offset 0 Hz

Scale Type

Log

MSG STATUS

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Trig Delay: 500.0 μ s

#Avg Type: Log-Pwr

Ref Offset 4.08 dB

Ref 23.16 dBm

Δ Mkr1 2.890 ms

-40.92 dB

1 Δ 2

Center 2.441000000 GHz

Res BW 1.0 MHz

#VBW 1.0 MHz

Sweep 10.00 ms (1001 pts)

Span 0 Hz

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION W/IDH	FUNCTION VALUE
1	Δ 2	1	t	(Δ)	2.890 ms (Δ)	-40.92 dB		
2	F	1	t		480.0 μ s	3.54 dBm		

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Ref Offset 4.08 dB
Ref 24.08 dBm

10 dB/div
Log

Mkr1 30.79 s
3.62 dBm

Center Freq 2.441000000 GHz

Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz

Freq Offset 0 Hz

Scale Type Log

Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz

Sweep 31.60 s (30001 pts)

Span 0 Hz

MSG STATUS

The screenshot displays a Keysight Spectrum Analyzer interface. The main display shows a spectrum plot with a signal at 2.441 GHz. The signal is marked with a yellow 'X' and a green diamond. The signal level is -40.24 dB, and the duration is 1.640 ms. The plot is labeled 'Center Freq 2.441000000 GHz' and 'Span 0 Hz'. The resolution bandwidth (RBW) is 1.0 MHz, and the video bandwidth (VBW) is 1.0 MHz. The sweep time is 10.00 ms (1001 pts). The plot is labeled 'Log' and 'dBm'. The signal is marked with a yellow 'X' and a green diamond. The signal level is -40.24 dB, and the duration is 1.640 ms. The plot is labeled 'Center Freq 2.441000000 GHz' and 'Span 0 Hz'. The resolution bandwidth (RBW) is 1.0 MHz, and the video bandwidth (VBW) is 1.0 MHz. The sweep time is 10.00 ms (1001 pts). The plot is labeled 'Log' and 'dBm'.

Keysight Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:PULSE 12:44:32 PM Dec 20, 2024

Center Freq 2.441000000 GHz #Avg Type: Log-Pwr

PNO: Fast Trg: Free Run TYPE 1 2 3 4 5
IFGain: Low Atten: 30 dB DET W W W W W W W W
DET N N N N N N

Ref Offset 4.08 dB
Ref 24.08 dBm

**Mkr1 1.151 s
3.66 dBm**

10 dB/div
Log

Center 2.441000000 GHz
Res BW 1.0 MHz

#VBW 1.0 MHz

Sweep 31.60 s (30001 pts)

Span 0 Hz

Auto Tune

Center Freq 2.441000000 GHz

Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz

Auto

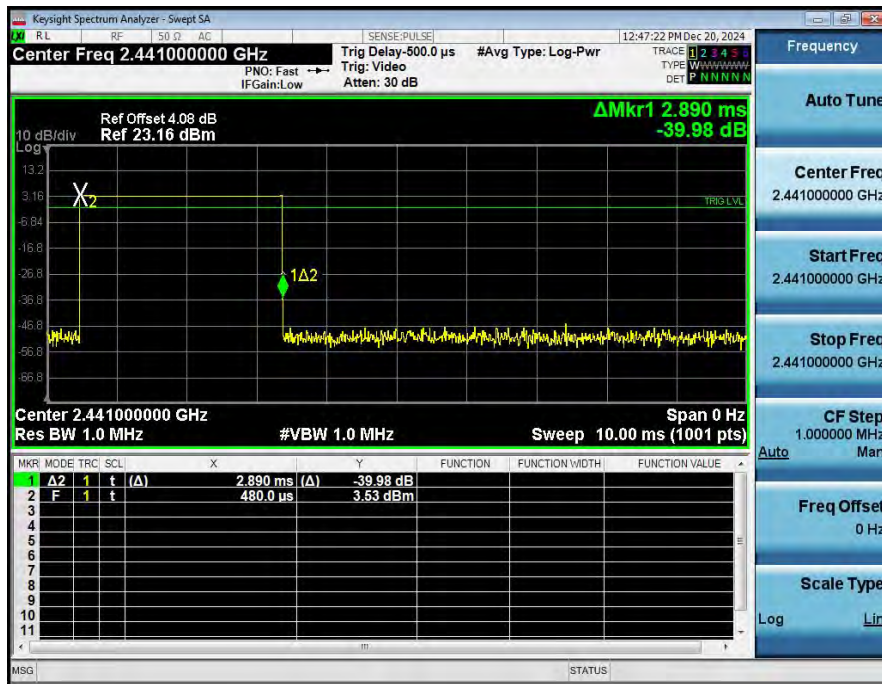
Freq Offset 0 Hz

Scale Type

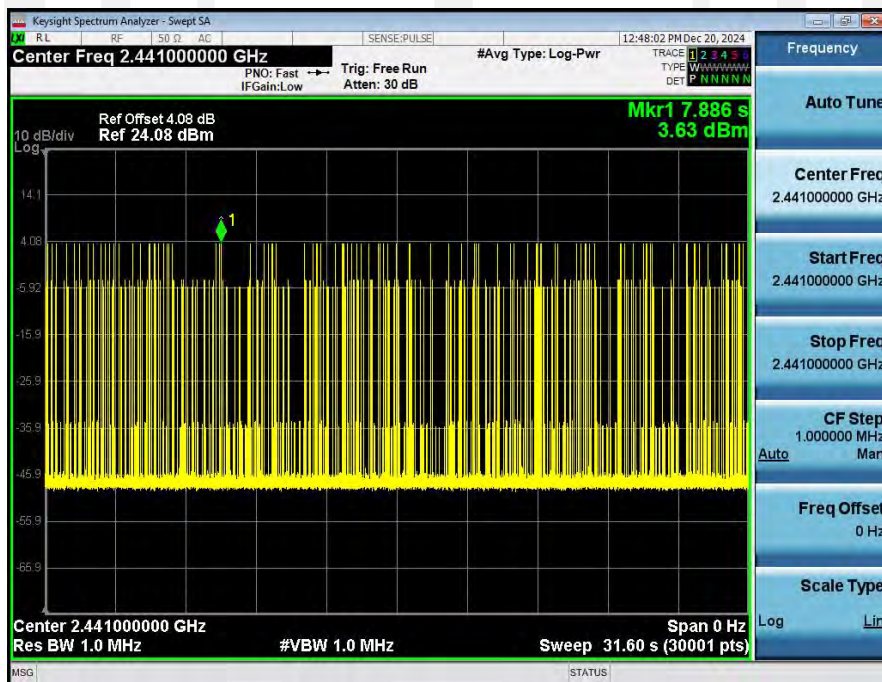
Log

MSG STATUS

Dwell_Time_(Hopping)_NVNT_ANT1_3-DH5_2441_00_One_Burst_Time



Dwell_Time_(Hopping)_NVNT_ANT1_3-DH5_2441_00_Accumulated



8. Out-of-band Emissions

8.1. Test Limits

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 FCC Part 15.209(a) is not required. Please refer section RSS-GEN&15.247.

8.2. Test Procedure

Connect the transmitter output to spectrum analyzer using a low loss RF cable, and set the spectrum analyzer to RBW=100 kHz, VBW= 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, band edge and out-of-band emissions.

8.3. Test Setup



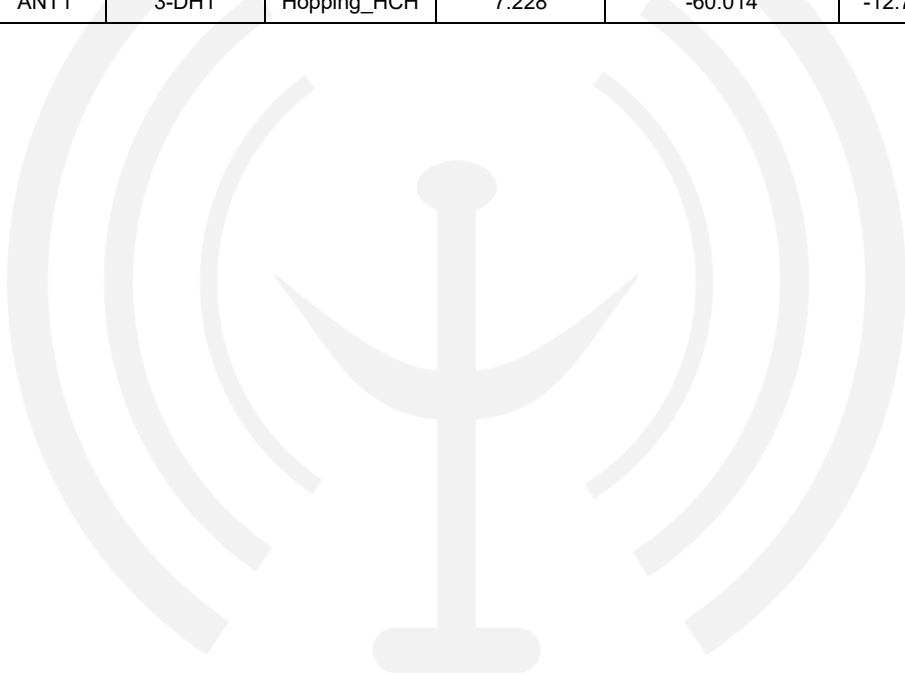
8.4. Test Results

PASS.

The test results are listed in next pages.

Band Edge: Pass

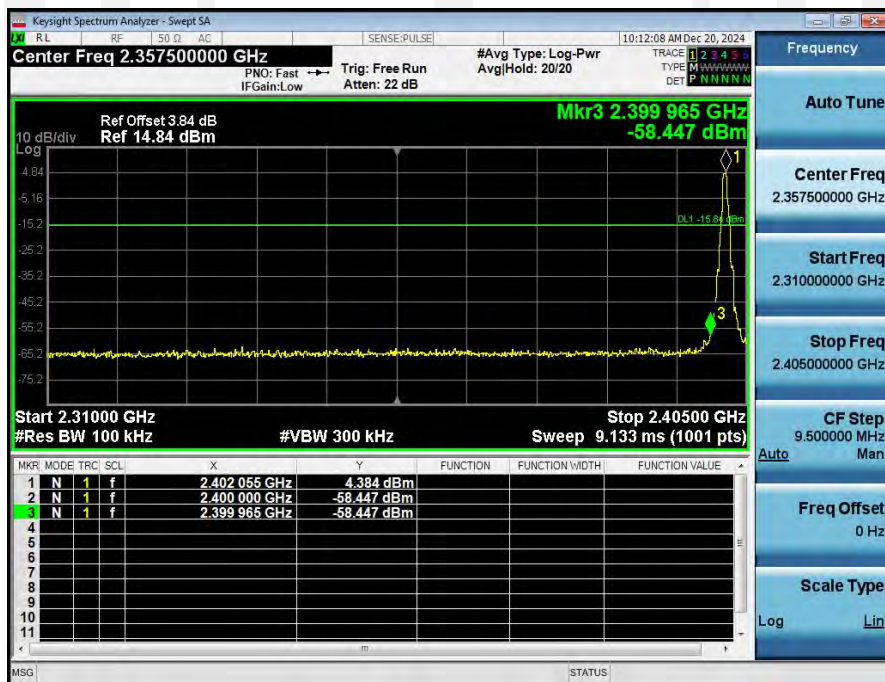
Condition	Antenna	Modulation	TX Mode	Ref_level(dBm)	Bandedge MAX.Value	Limit	Result
NVNT	ANT1	1-DH1	2402.00	4.161	-58.447	-15.839	Pass
NVNT	ANT1	1-DH1	Hopping_LCH	7.642	-54.812	-12.358	Pass
NVNT	ANT1	1-DH1	2480.00	2.327	-63.143	-17.673	Pass
NVNT	ANT1	1-DH1	Hopping_HCH	7.976	-53.516	-12.024	Pass
NVNT	ANT1	2-DH1	2402.00	4.100	-57.361	-15.900	Pass
NVNT	ANT1	2-DH1	Hopping_LCH	5.961	-60.082	-14.039	Pass
NVNT	ANT1	2-DH1	2480.00	1.594	-60.137	-18.406	Pass
NVNT	ANT1	2-DH1	Hopping_HCH	6.696	-53.415	-13.304	Pass
NVNT	ANT1	3-DH1	2402.00	3.738	-58.925	-16.262	Pass
NVNT	ANT1	3-DH1	Hopping_LCH	6.791	-54.937	-13.209	Pass
NVNT	ANT1	3-DH1	2480.00	1.410	-59.936	-18.590	Pass
NVNT	ANT1	3-DH1	Hopping_HCH	7.228	-60.014	-12.772	Pass



1_Reference_Level_NVNT_ANT1_1-DH1_2402_00



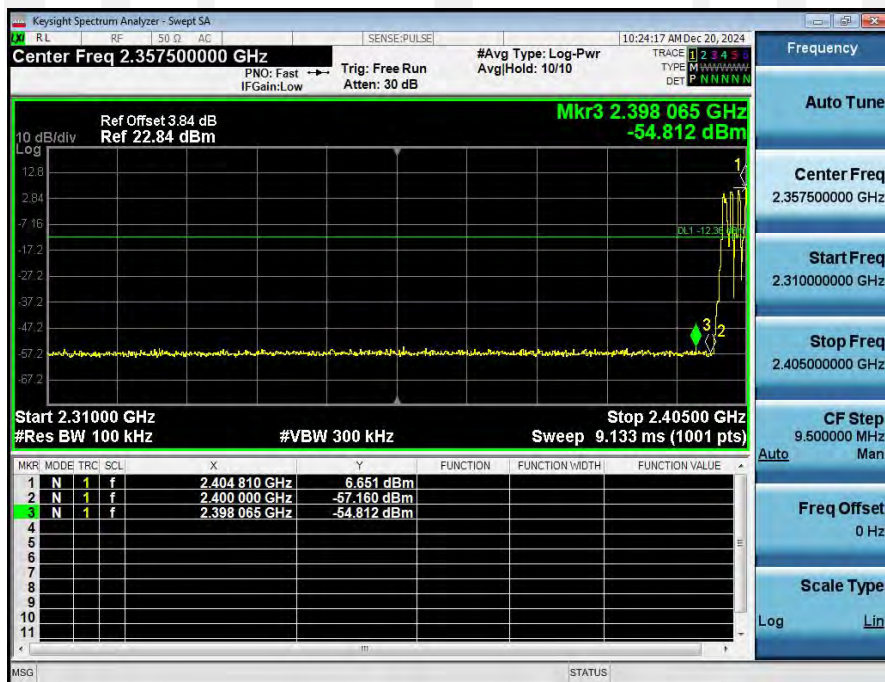
2_Bandedge_NVNT_ANT1_1-DH1_2402_00



1_Reference_Level_Hopping_NVNT_ANT1_1-DH1_Hopping



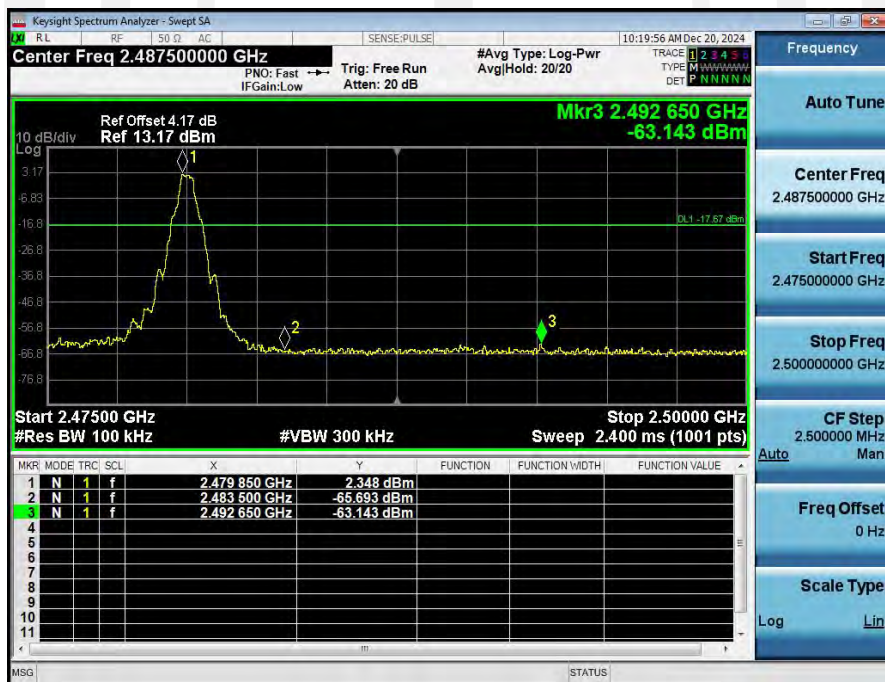
2_Band_Edge_(Hopping)_NVNT_ANT1_1-DH1_Hopping



1_Reference_Level_NVNT_ANT1_1-DH1_2480_00



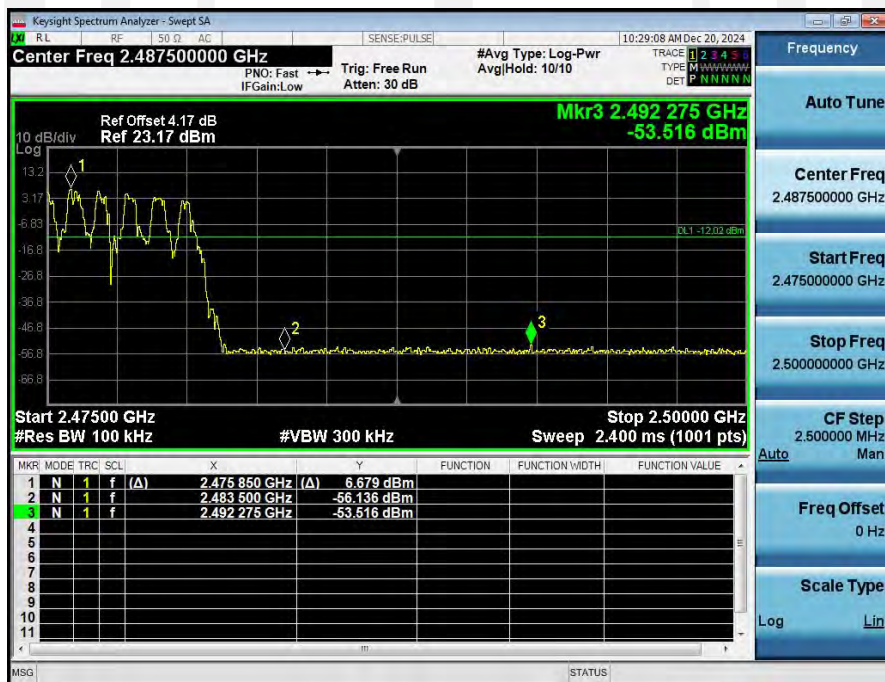
2_Bandedge_NVNT_ANT1_1-DH1_2480_00



1_Reference_Level_Hopping_NVNT_ANT1_1-DH1_Hopping



2_Band_Edge_(Hopping)_NVNT_ANT1_1-DH1_Hopping



1_Reference_Level_NVNT_ANT1_2-DH1_2402_00



2_Bandedge_NVNT_ANT1_2-DH1_2402_00

