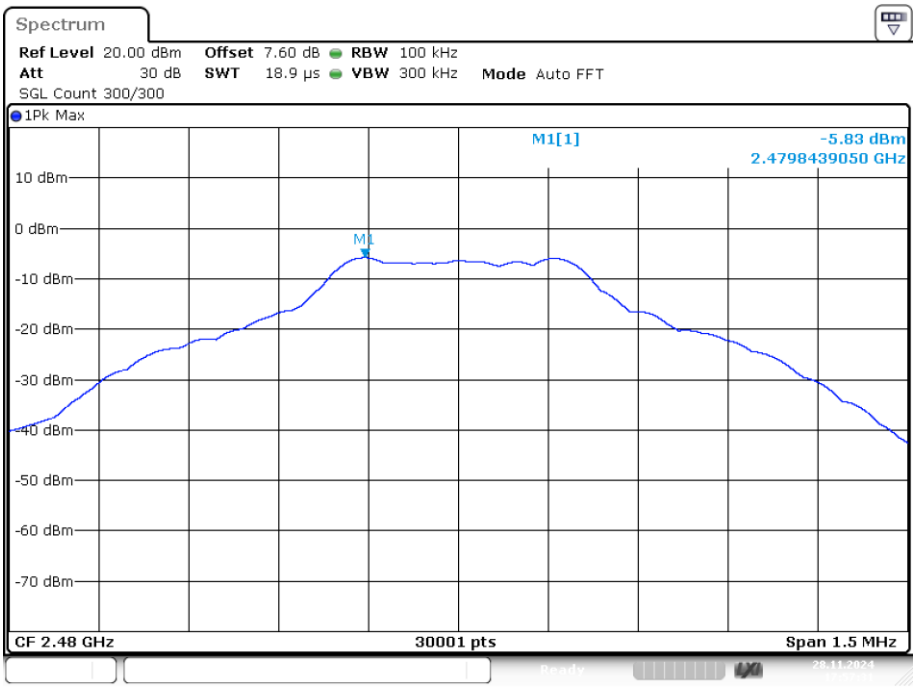
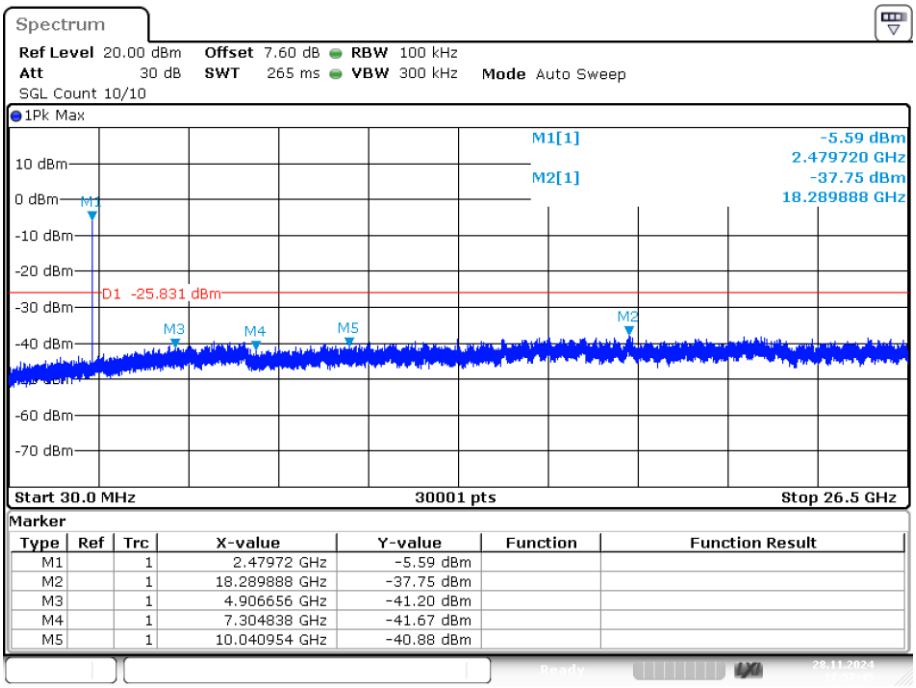
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Ref



Date: 28.NOV.2024 17:57:31

Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Emission

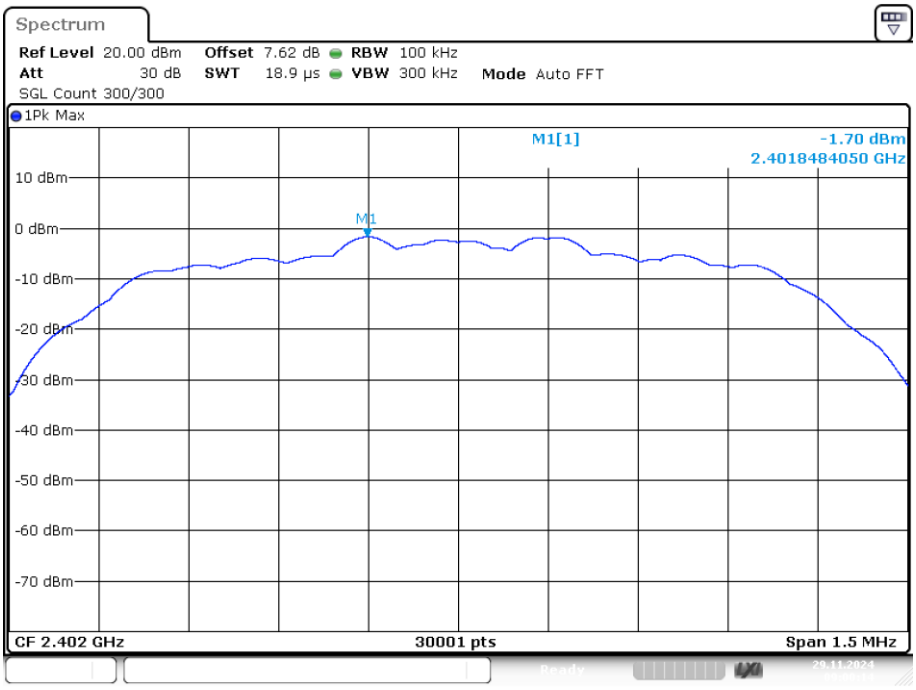


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47972 GHz	-5.59 dBm		
M2		1	18.289888 GHz	-37.75 dBm		
M3		1	4.906656 GHz	-41.20 dBm		
M4		1	7.304838 GHz	-41.67 dBm		
M5		1	10.040954 GHz	-40.88 dBm		

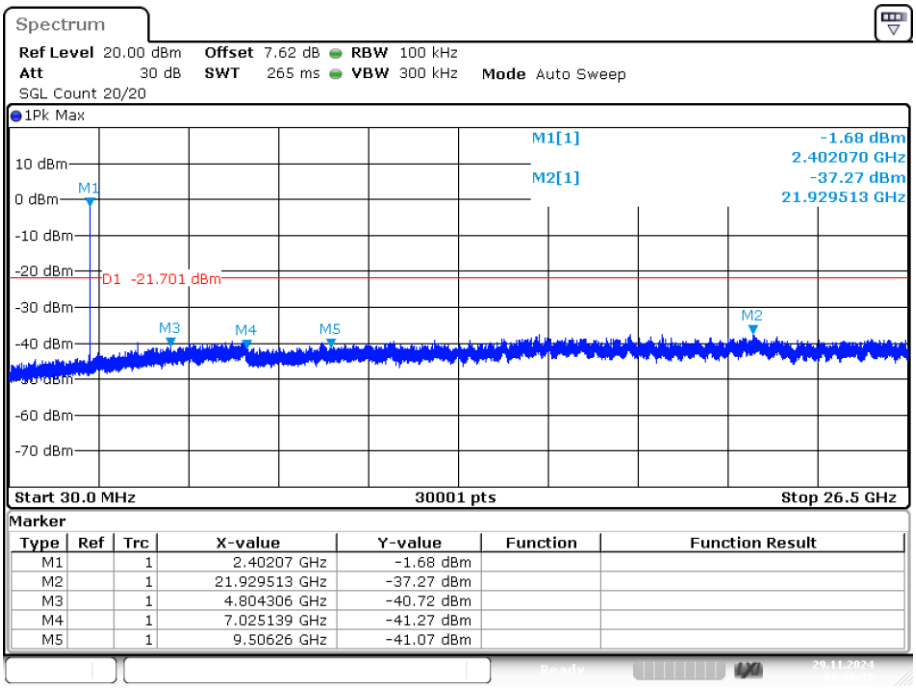
Date: 28.NOV.2024 17:57:45

Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Ref



Date: 29.NOV.2024 09:00:14

Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Emission

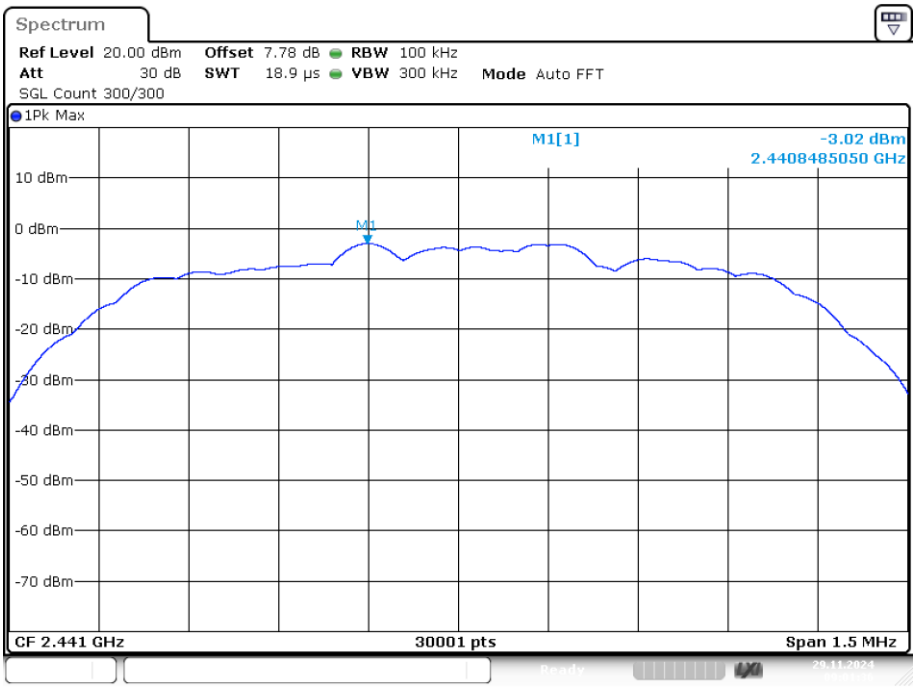


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40207 GHz	-1.68 dBm		
M2		1	21.929513 GHz	-37.27 dBm		
M3		1	4.804306 GHz	-40.72 dBm		
M4		1	7.025139 GHz	-41.27 dBm		
M5		1	9.50626 GHz	-41.07 dBm		

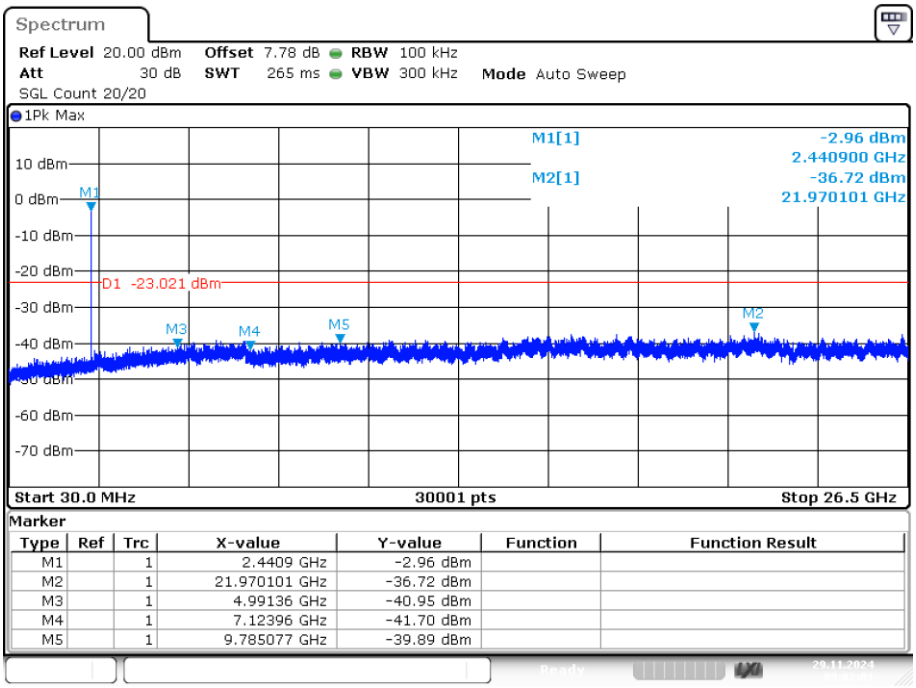
Date: 29.NOV.2024 09:00:38

Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Ref



Date: 29.NOV.2024 09:01:37

Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Emission

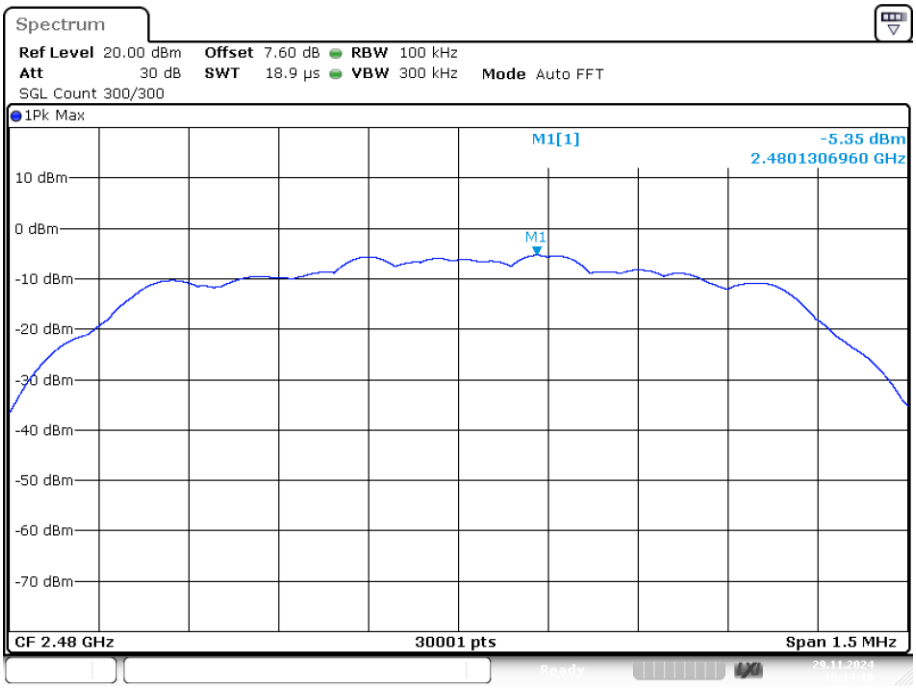


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4409 GHz	-2.96 dBm		
M2		1	21.970101 GHz	-36.72 dBm		
M3		1	4.99136 GHz	-40.95 dBm		
M4		1	7.12396 GHz	-41.70 dBm		
M5		1	9.785077 GHz	-39.89 dBm		

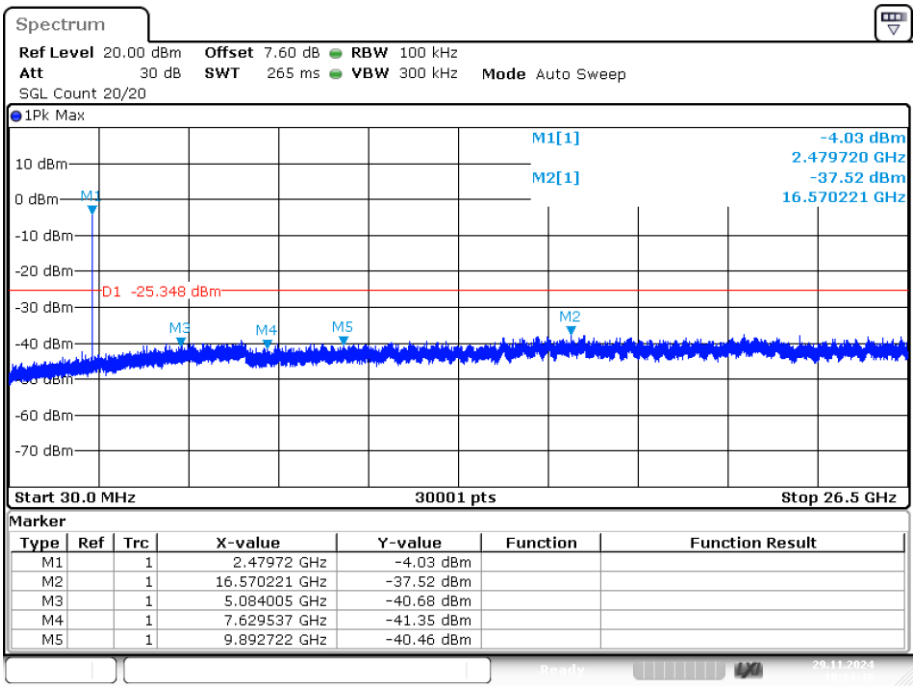
Date: 29.NOV.2024 09:02:01

Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Ref



Date: 29.NOV.2024 10:14:16

Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Emission

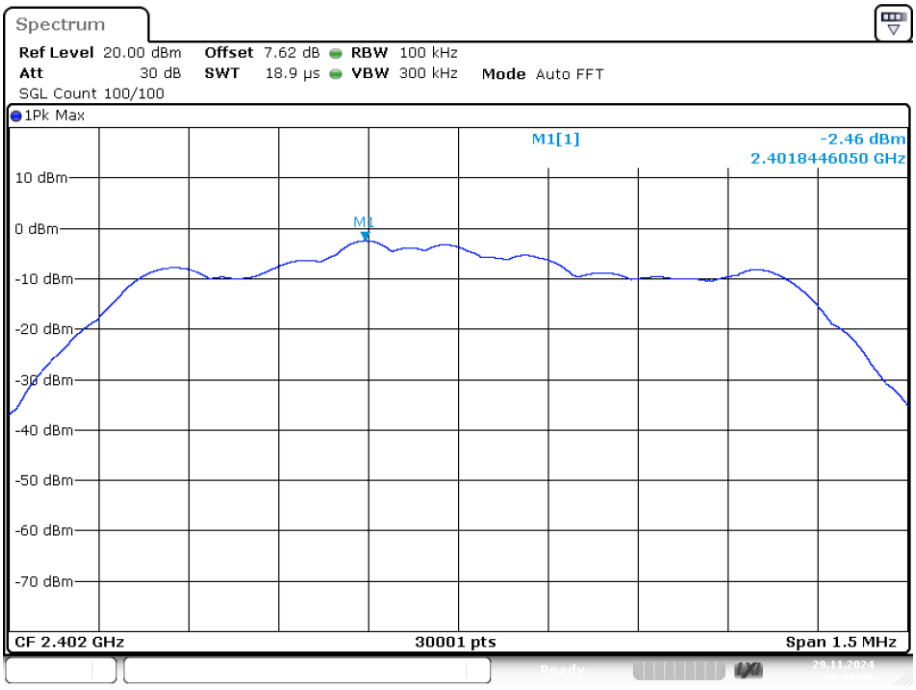


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47972 GHz	-4.03 dBm		
M2		1	16.570221 GHz	-37.52 dBm		
M3		1	5.084005 GHz	-40.68 dBm		
M4		1	7.629537 GHz	-41.35 dBm		
M5		1	9.892722 GHz	-40.46 dBm		

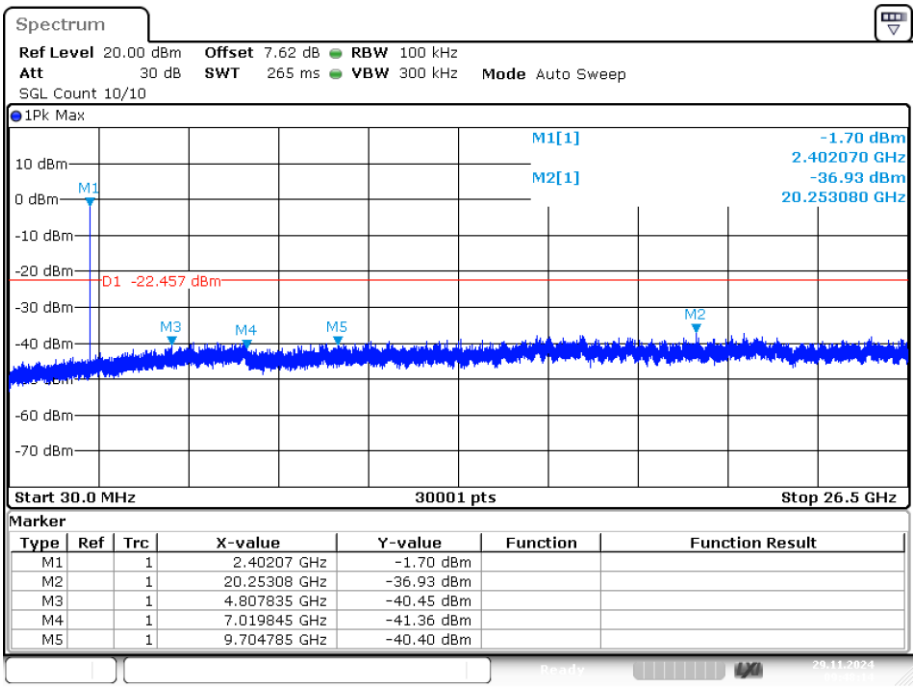
Date: 29.NOV.2024 10:14:40

Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Ref



Date: 29.NOV.2024 09:48:00

Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Emission

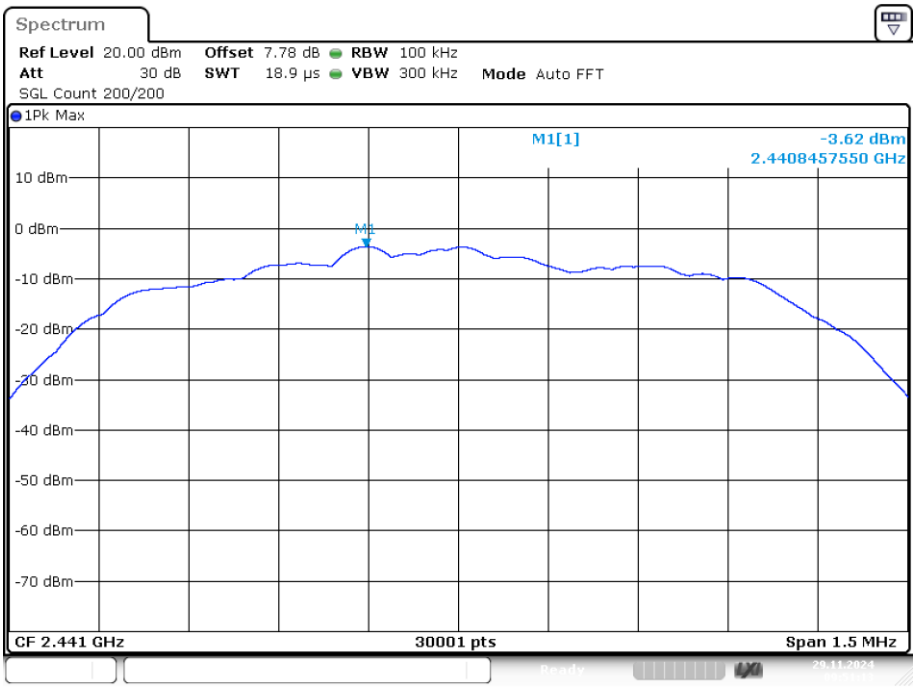


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40207 GHz	-1.70 dBm		
M2		1	20.25308 GHz	-36.93 dBm		
M3		1	4.807835 GHz	-40.45 dBm		
M4		1	7.019845 GHz	-41.36 dBm		
M5		1	9.704785 GHz	-40.40 dBm		

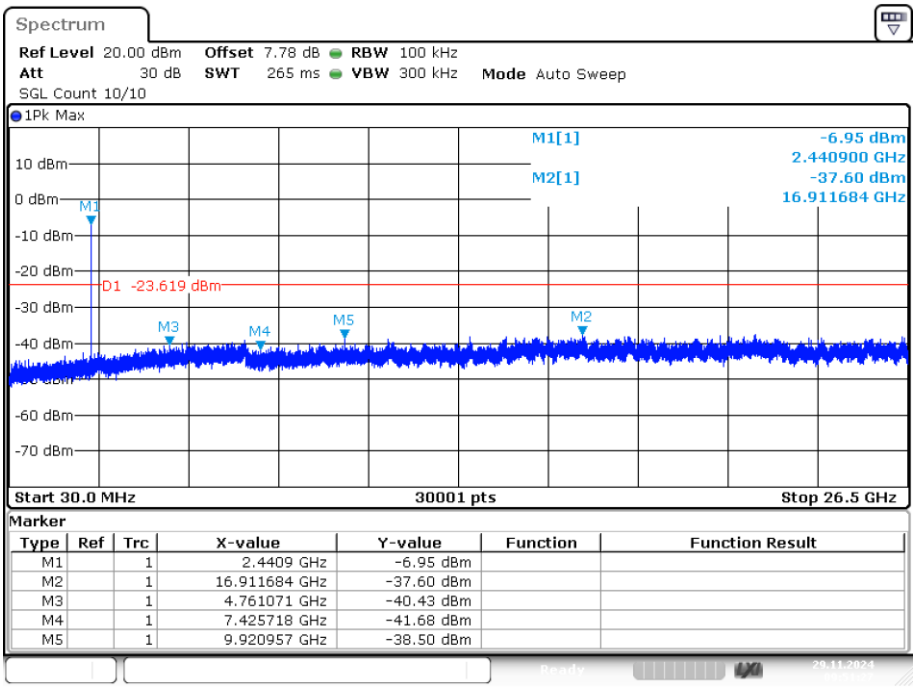
Date: 29.NOV.2024 09:48:13

Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Ref



Date: 29.NOV.2024 09:51:13

Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Emission

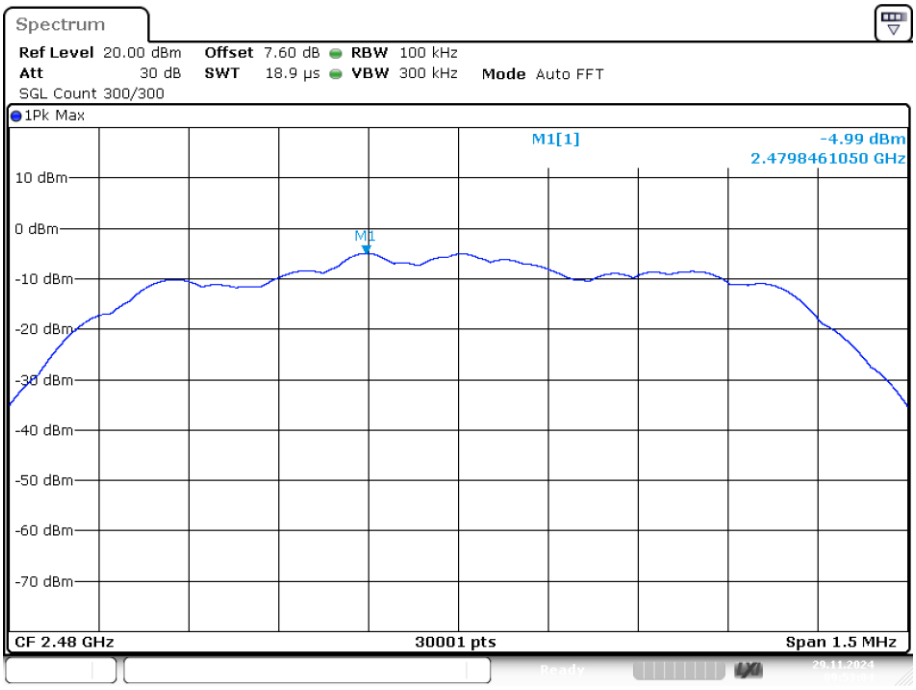


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4409 GHz	-6.95 dBm		
M2		1	16.911684 GHz	-37.60 dBm		
M3		1	4.761071 GHz	-40.43 dBm		
M4		1	7.425718 GHz	-41.68 dBm		
M5		1	9.920957 GHz	-38.50 dBm		

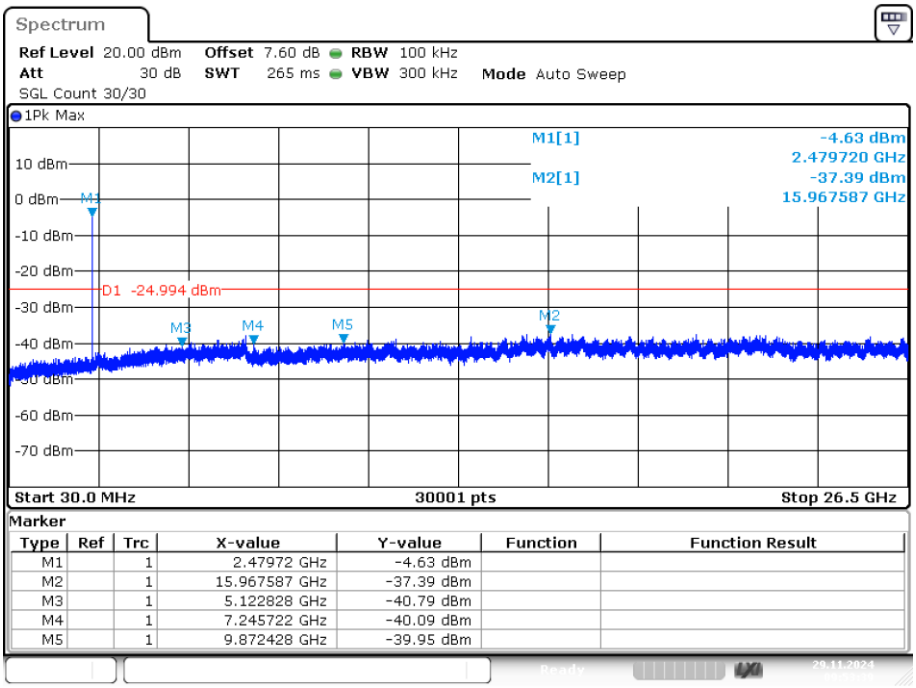
Date: 29.NOV.2024 09:51:27

Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Ref



Date: 29.NOV.2024 09:53:05

Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Emission



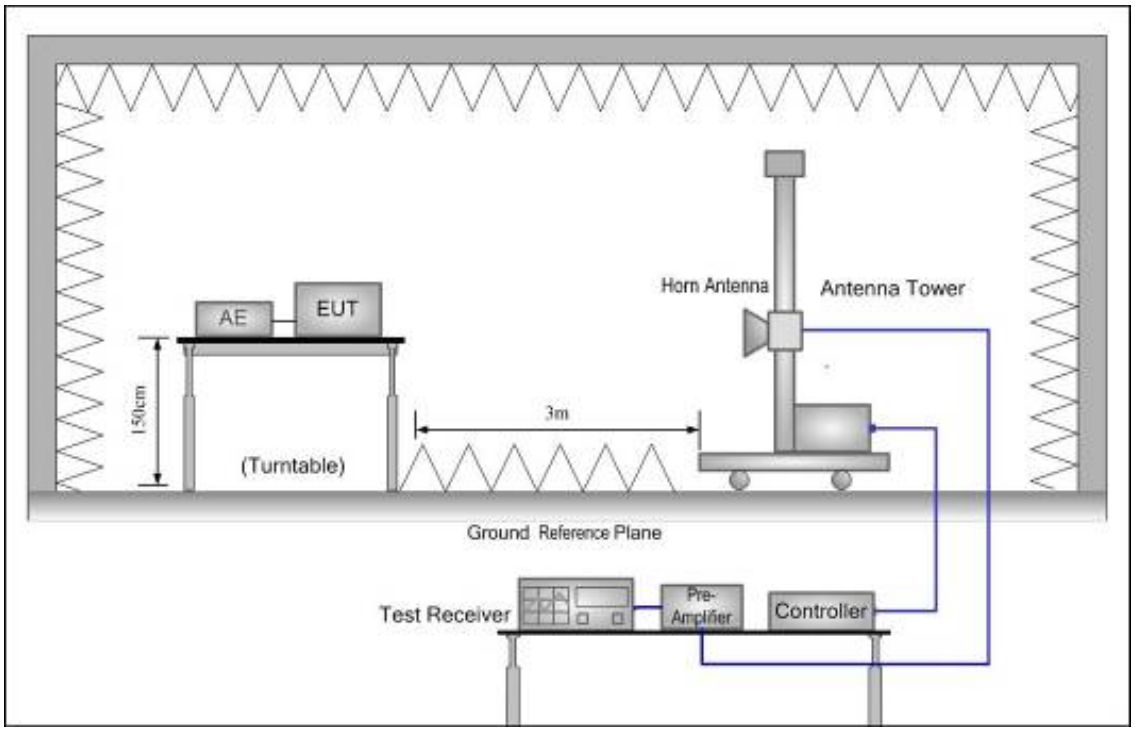
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47972 GHz	-4.63 dBm		
M2		1	15.967587 GHz	-37.39 dBm		
M3		1	5.122828 GHz	-40.79 dBm		
M4		1	7.245722 GHz	-40.09 dBm		
M5		1	9.872428 GHz	-39.95 dBm		

Date: 29.NOV.2024 09:53:39

9. BAND EDGE COMPLIANCE

9.1. Block Diagram of Test Setup



9.2. Limit

All the lower and upper band-edges emissions appearing within restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

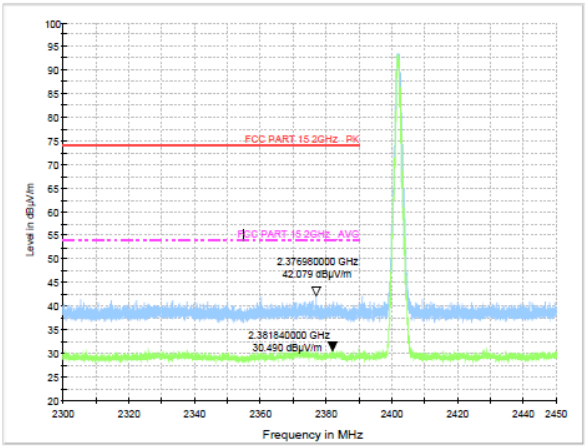
9.3. Test Procedure

All restriction band and non- restriction band have been tested ， only worse case is reported.

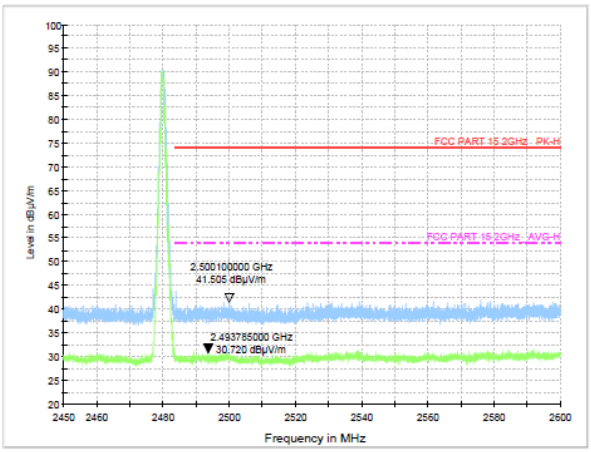
9.4. Test Result

PASS. (See below detailed test data)

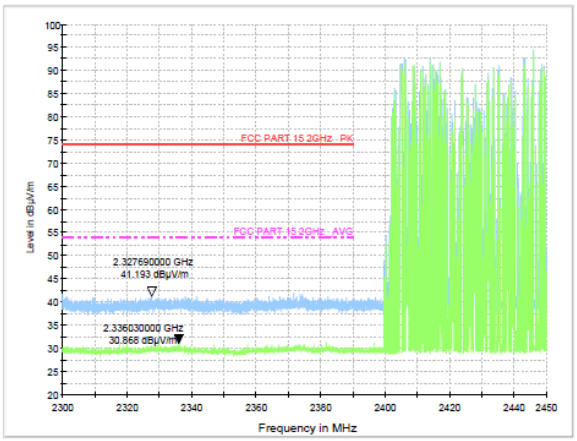
Test Mode: GFSK-Low Hopping-off



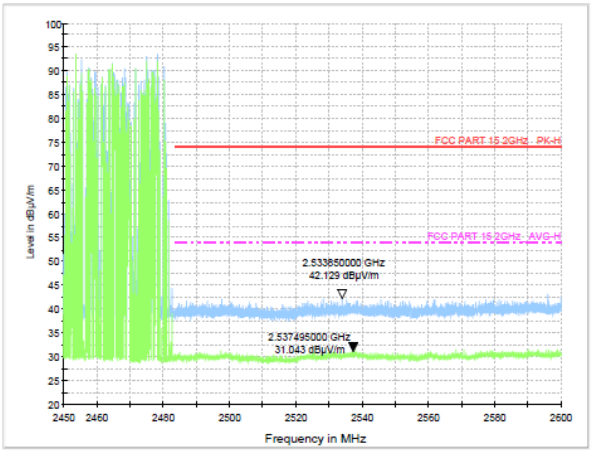
Test Mode: GFSK-High Hopping-off



Test Mode: GFSK-Low Hopping-on



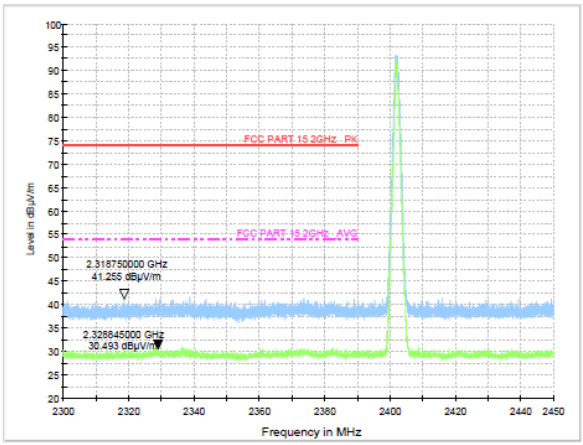
Test Mode: GFSK-High Hopping-on



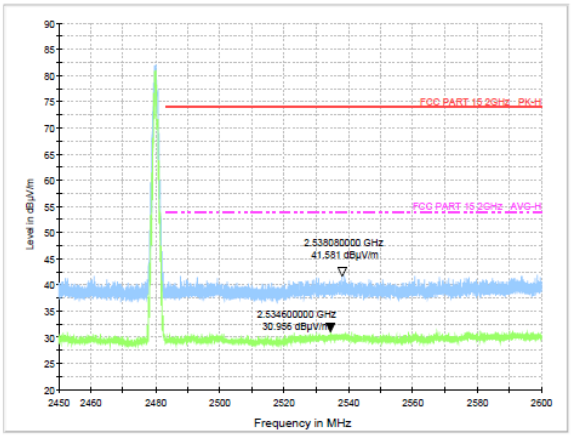
Note: 1. *:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

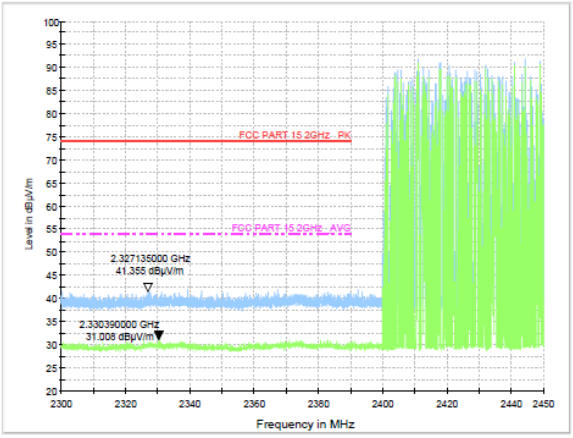
Test Mode: π/4 DQPSK-Low Hopping-off



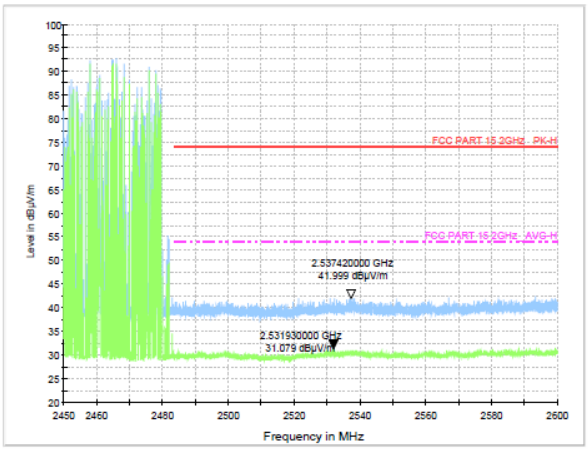
Test Mode: π/4 DQPSK-High Hopping-off



Test Mode: π/4 DQPSK-Low Hopping-on



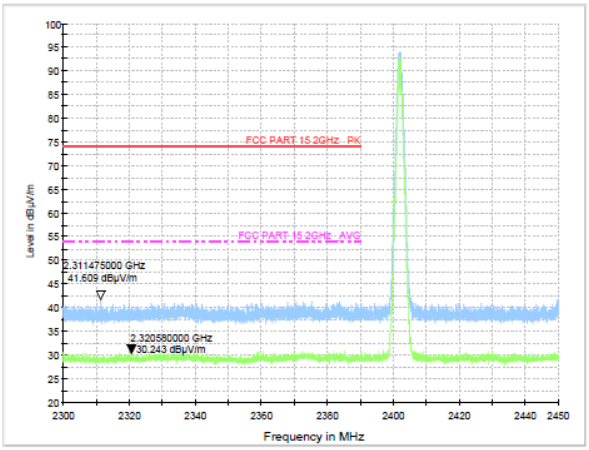
Test Mode: π/4 DQPSK-High Hopping-on



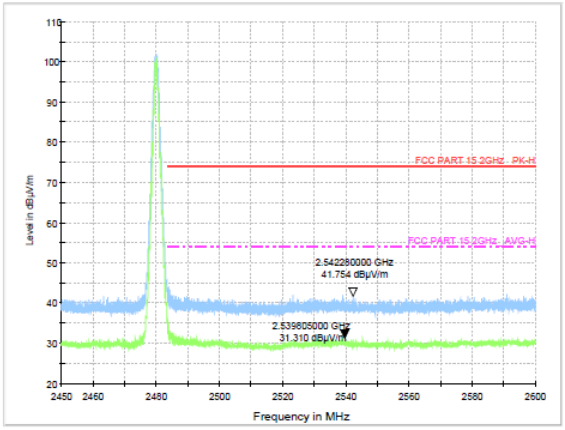
Note: 1. *:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

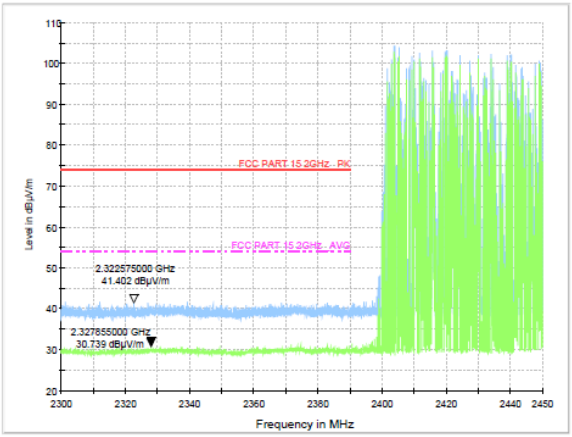
Test Mode: 8-DPSK -Low Hopping-off



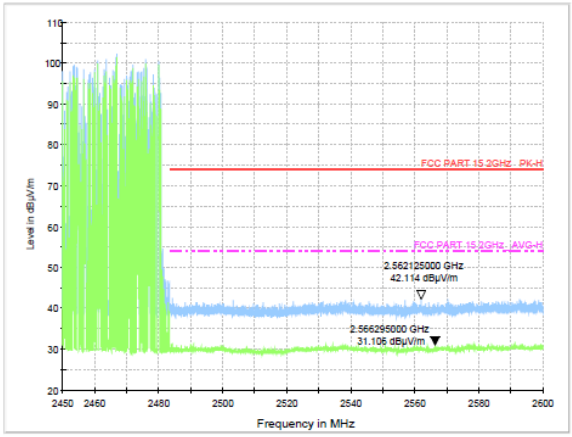
Test Mode: 8-DPSK -High Hopping-off



Test Mode: 8-DPSK-Low Hopping-on

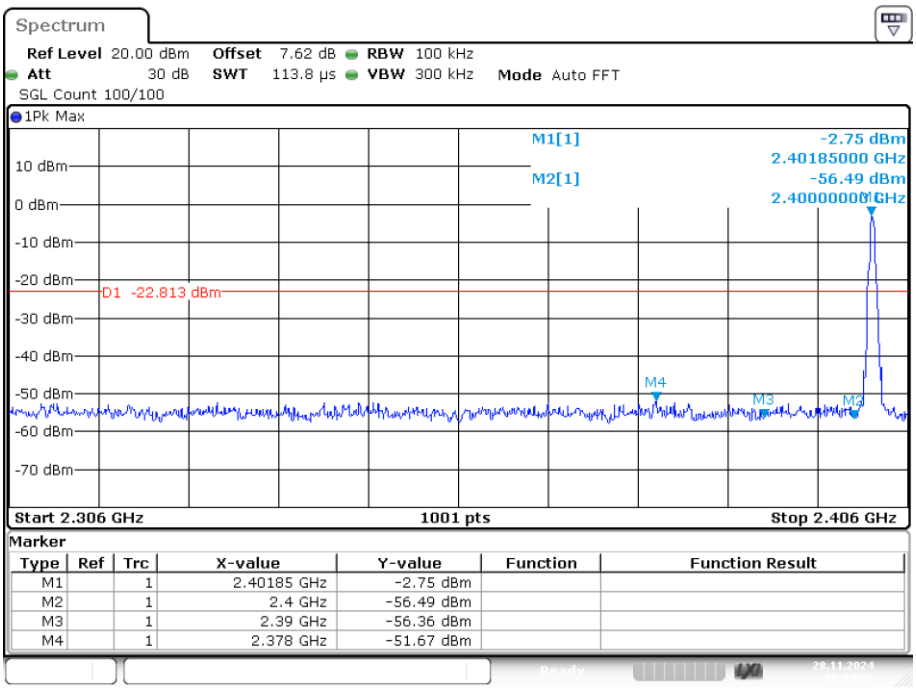


Test Mode: 8-DPSK -High Hopping-on



Conducted Method

Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Emission

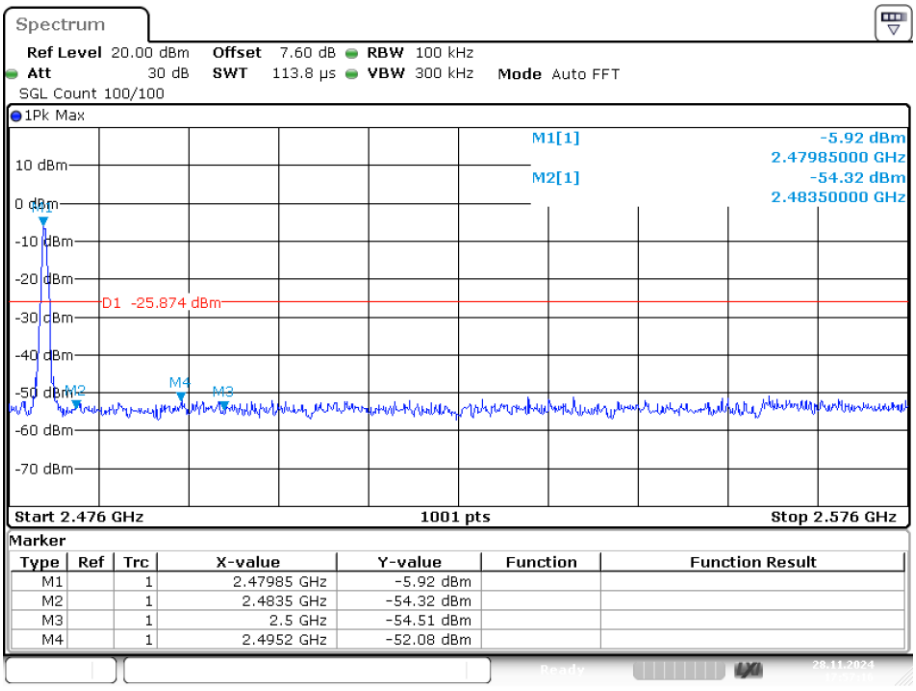


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40185 GHz	-2.75 dBm		
M2		1	2.4 GHz	-56.49 dBm		
M3		1	2.39 GHz	-56.36 dBm		
M4		1	2.378 GHz	-51.67 dBm		

Date: 28.NOV.2024 17:34:36

Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Emission

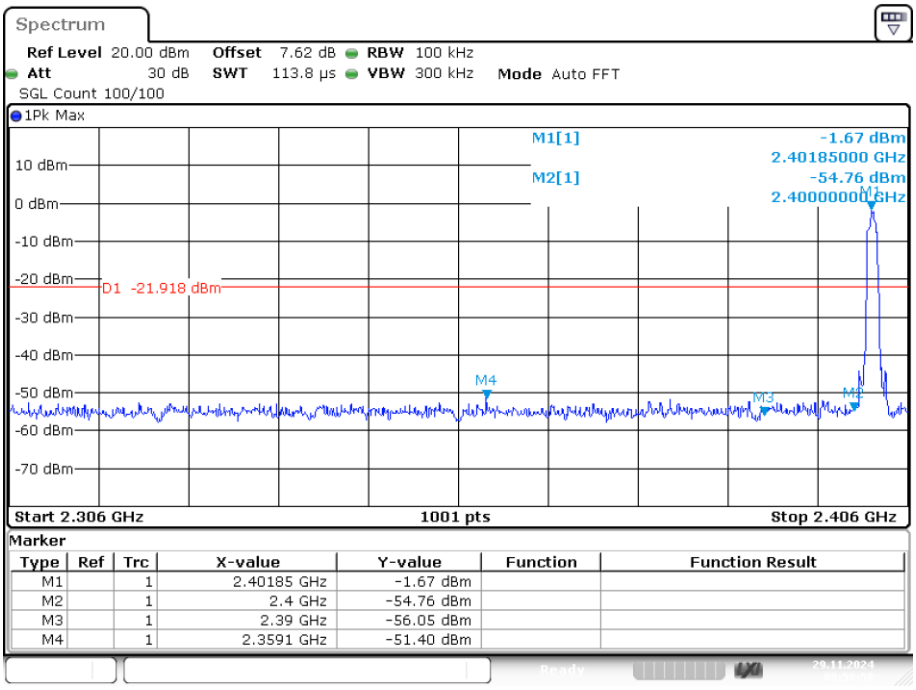


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47985 GHz	-5.92 dBm		
M2		1	2.4835 GHz	-54.32 dBm		
M3		1	2.5 GHz	-54.51 dBm		
M4		1	2.4952 GHz	-52.08 dBm		

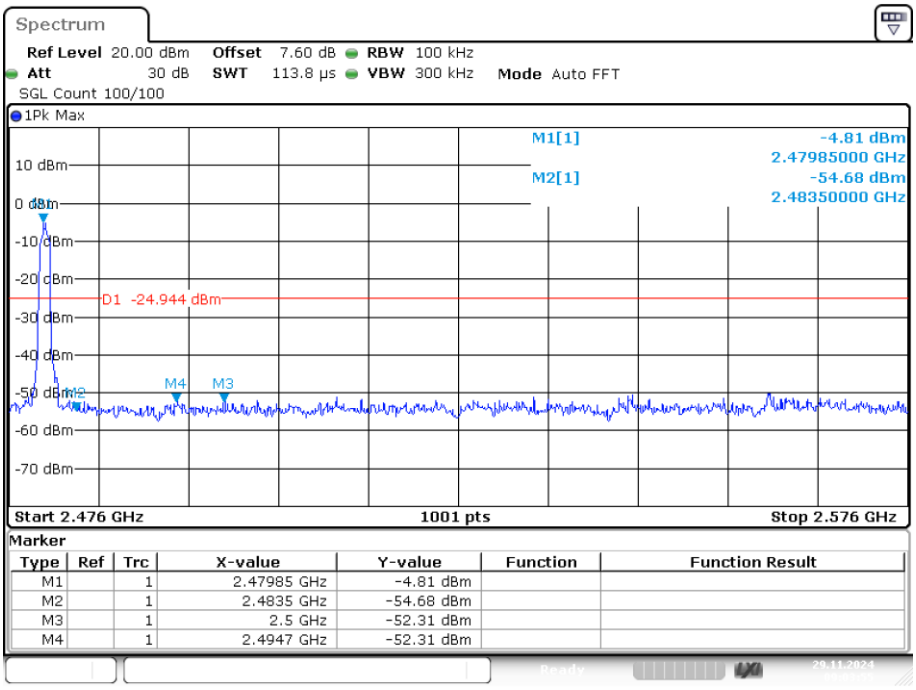
Date: 28.NOV.2024 17:57:16

Band Edge NVNT 2-DH1 2402MHz Ant1 No-Hopping Emission



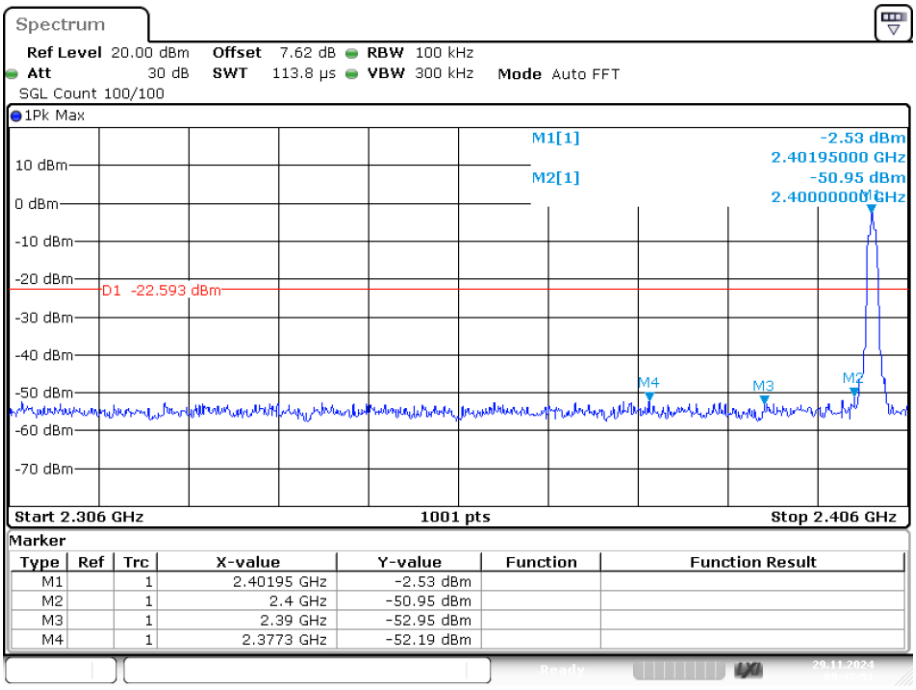
Date: 29.NOV.2024 08:59:58

Band Edge NVNT 2-DH1 2480MHz Ant1 No-Hopping Emission



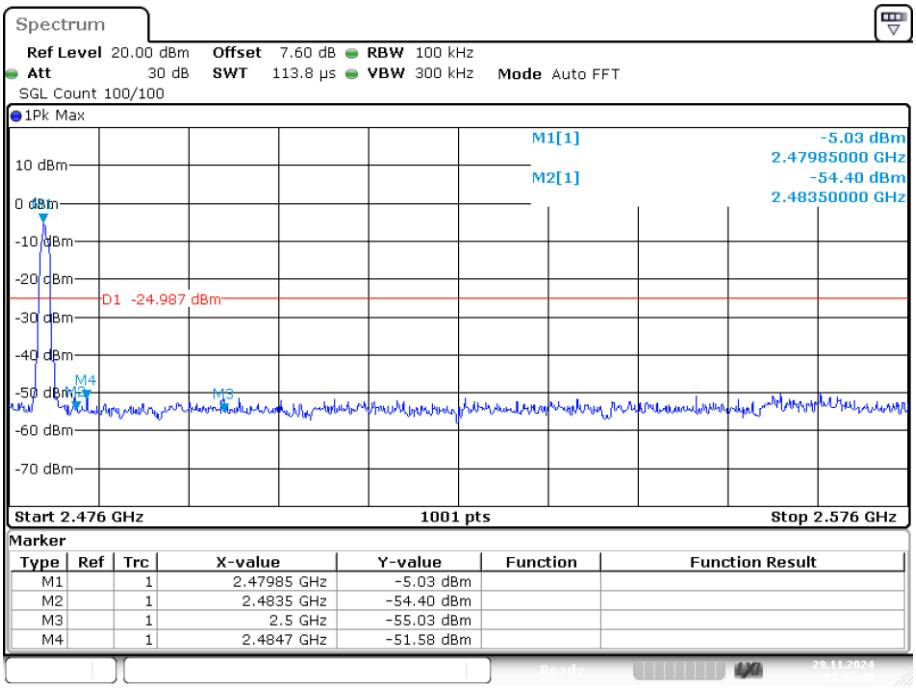
Date: 29.NOV.2024 09:03:55

Band Edge NVNT 3-DH1 2402MHz Ant1 No-Hopping Emission



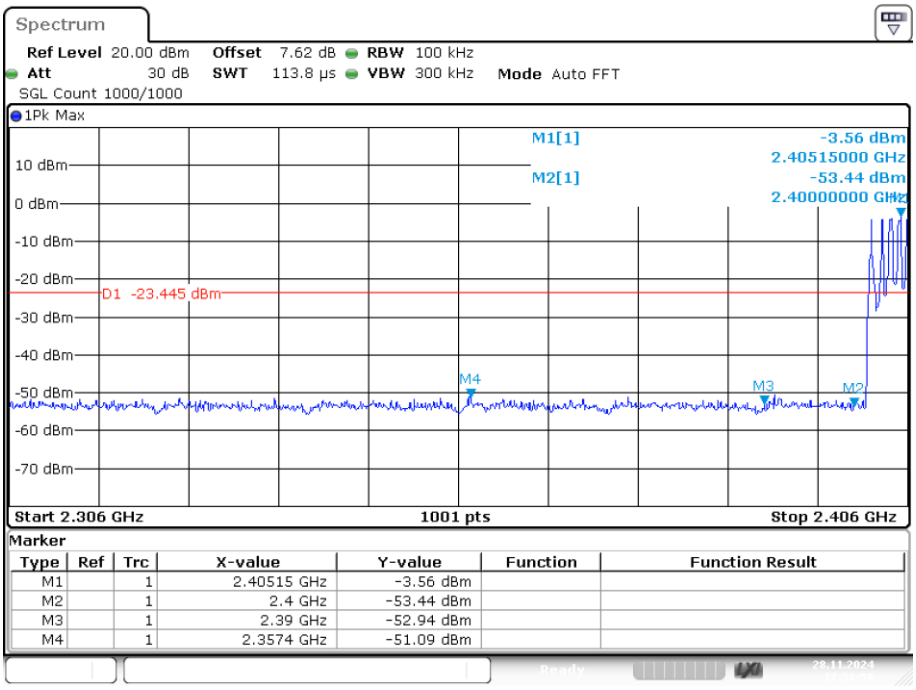
Date: 29.NOV.2024 09:47:50

Band Edge NVNT 3-DH1 2480MHz Ant1 No-Hopping Emission



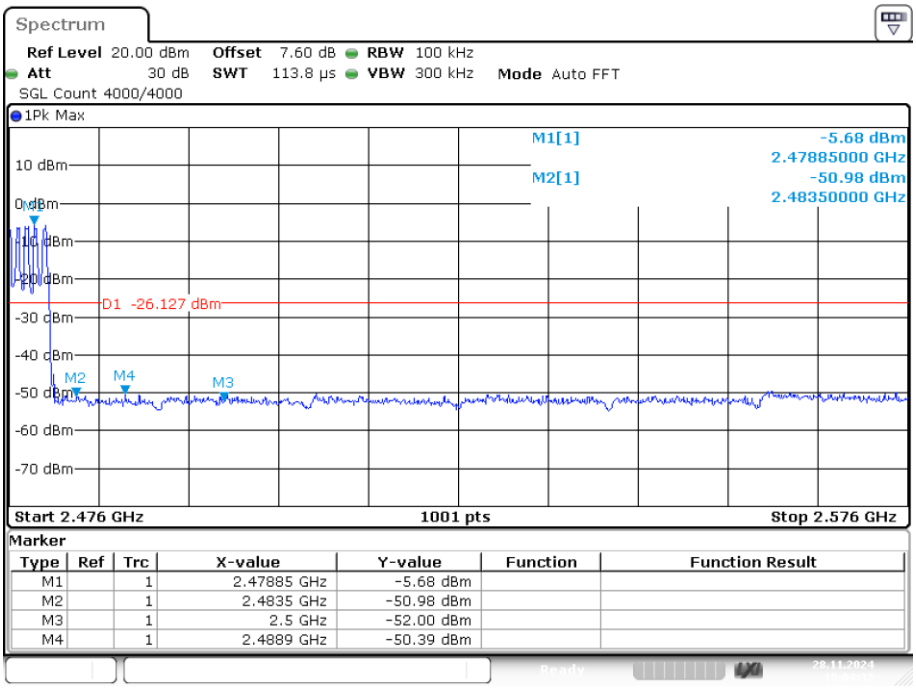
Date: 29.NOV.2024 09:52:49

Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Emission



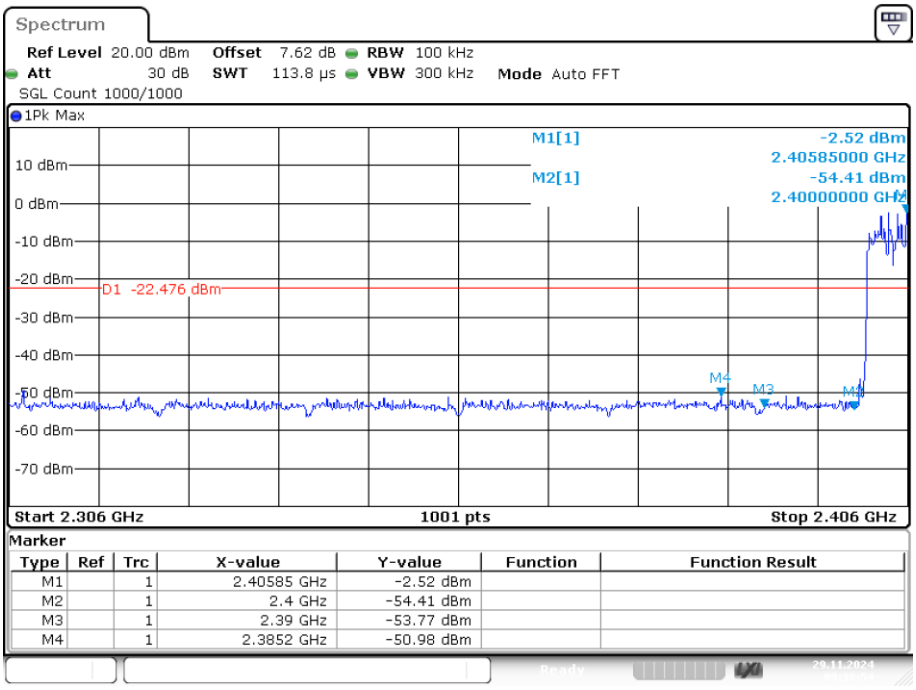
Date: 28.NOV.2024 17:58:58

Band Edge(Hopping) NVNT 1-DH1 2480MHz Ant1 Hopping Emission



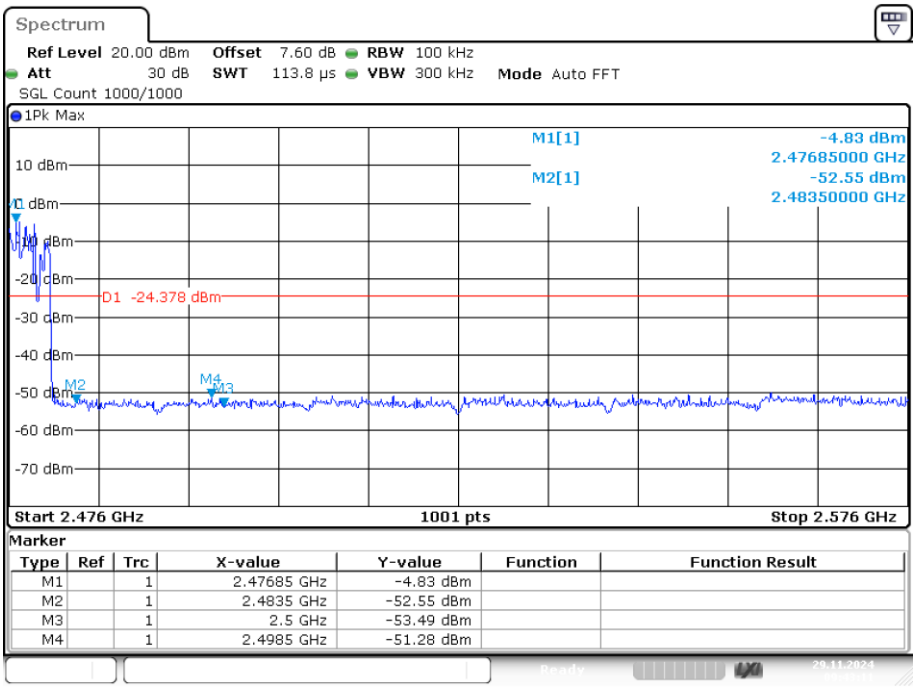
Date: 28.NOV.2024 18:04:32

Band Edge(Hopping) NVNT 2-DH1 2402MHz Ant1 Hopping Emission



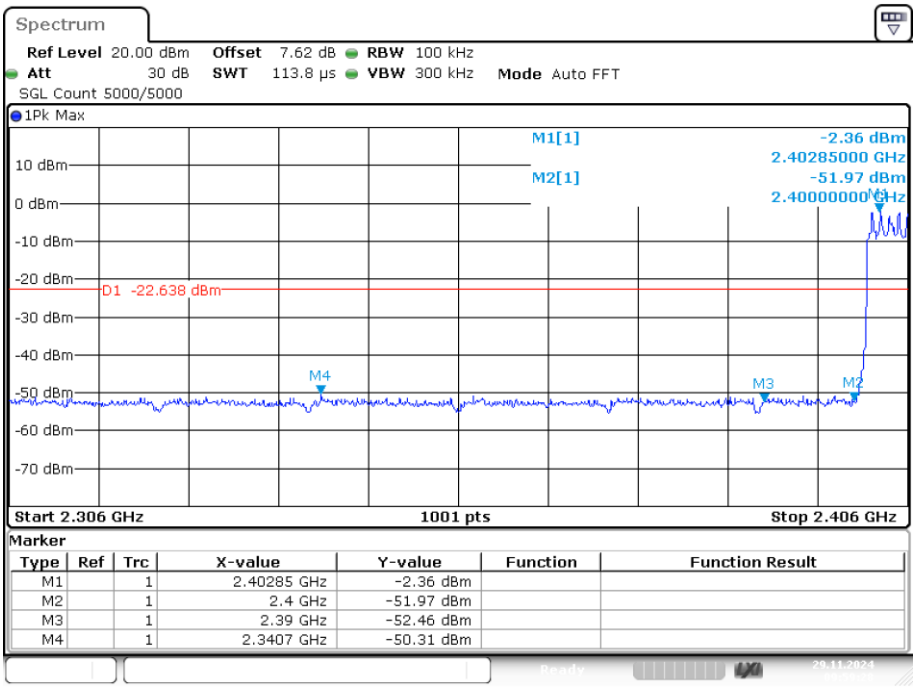
Date: 29.NOV.2024 09:39:54

Band Edge(Hopping) NVNT 2-DH1 2480MHz Ant1 Hopping Emission



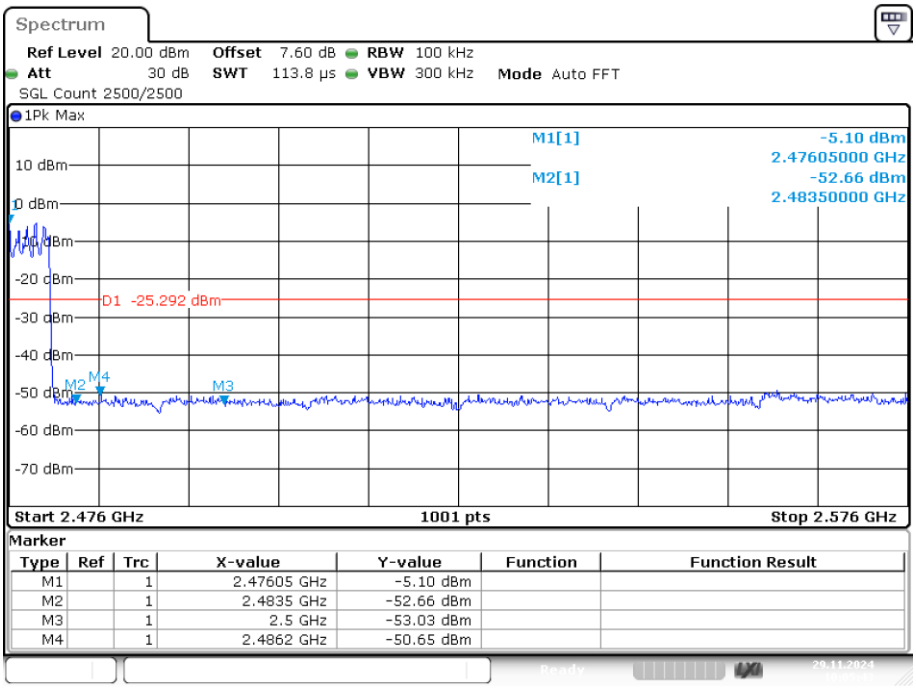
Date: 29.NOV.2024 09:43:11

Band Edge(Hopping) NVNT 3-DH1 2402MHz Ant1 Hopping Emission



Date: 29.NOV.2024 09:59:28

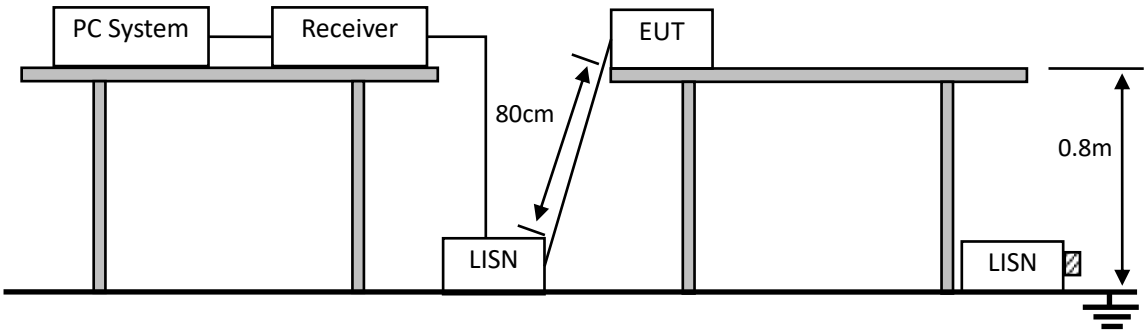
Band Edge(Hopping) NVNT 3-DH1 2480MHz Ant1 Hopping Emission



Date: 29.NOV.2024 10:05:43

10. POWER LINE CONDUCTED EMISSIONS

10.1.Block Diagram of Test Setup



:50Ω Terminator

10.2.Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

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

10.3.Test Procedure

(1) The EUT was placed on a non-metallic table, 80cm above the ground plane.

(2) Setup the EUT and simulator as shown in 10.1

(3) The EUT Power connected to the power mains through a power adapter and a line impedance stabilization network (L.I.S.N1). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N2), this provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10 :2013on conducted Emission test.

(4) The bandwidth of test receiver is set at 10KHz.

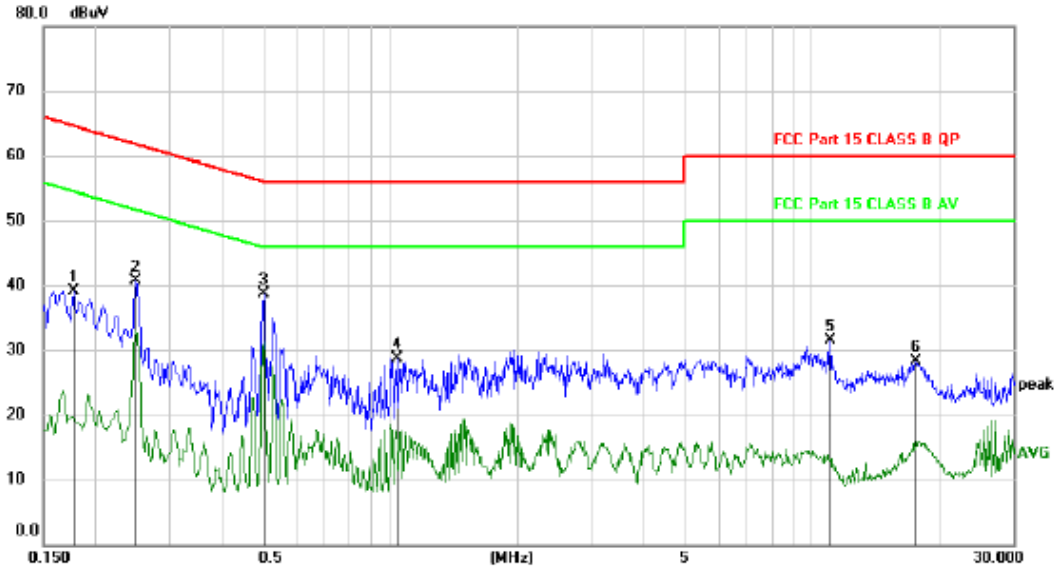
(5) The frequency range from 150 KHz to 30MHz is checked.

10.4.Test Result

PASS. (See below detailed test data)

Note: If peak Result comply with AV limit, QP and AV Result is deemed to comply with AV limit

Line:

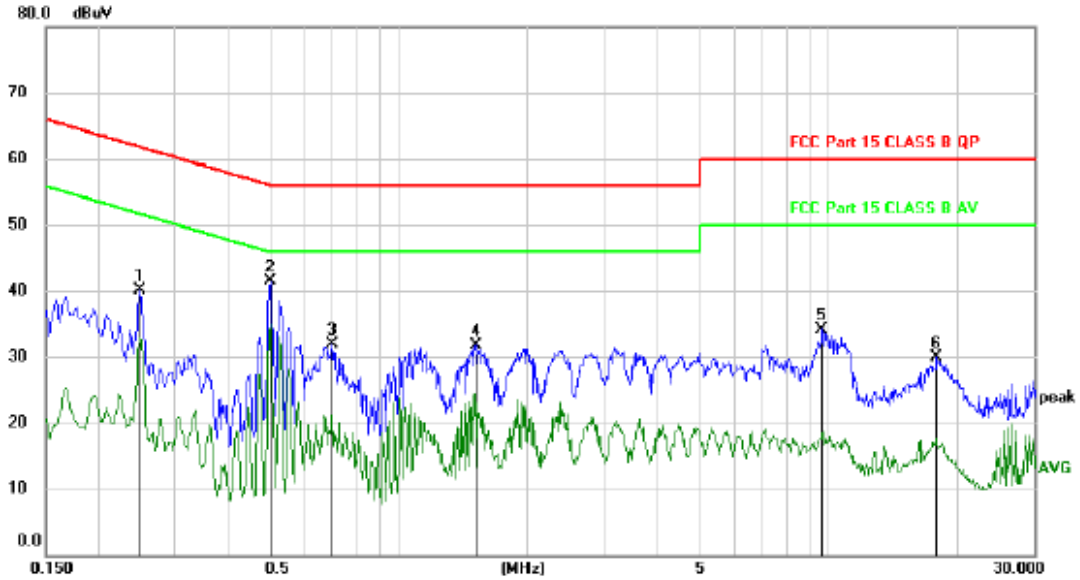


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1770	29.15	9.93	39.08	64.63	-25.55	peak	
2		0.2490	30.67	9.97	40.64	61.79	-21.15	peak	
3	*	0.5010	28.72	9.96	38.68	56.00	-17.32	peak	
4		1.0350	18.83	9.92	28.75	56.00	-27.25	peak	
5		11.0400	21.29	10.23	31.52	60.00	-28.48	peak	
6		17.6490	17.91	10.40	28.31	60.00	-31.69	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

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

Neutral:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2490	30.09	9.97	40.06	61.79	-21.73	peak	
2	*	0.5010	31.45	9.96	41.41	56.00	-14.59	peak	
3		0.6990	22.04	9.93	31.97	56.00	-24.03	peak	
4		1.5060	21.90	9.90	31.80	56.00	-24.20	peak	
5		9.6270	24.00	10.20	34.20	60.00	-25.80	peak	
6		17.8470	19.42	10.41	29.83	60.00	-30.17	peak	

*:Maximum data x:Over limit !:over margin (Reference Only

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

Note: All modes and channels have been tested and only the GFSK 2402MHz mode with the worst data is listed.

11. ANTENNA REQUIREMENTS

11.1.Limit

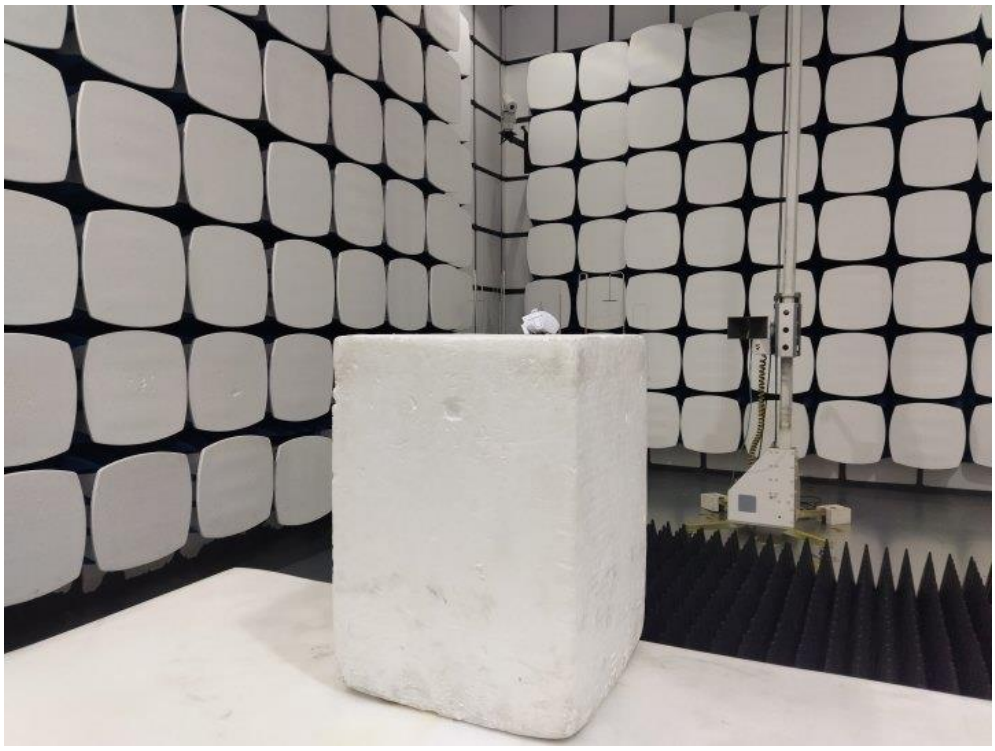
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

11.2.Result

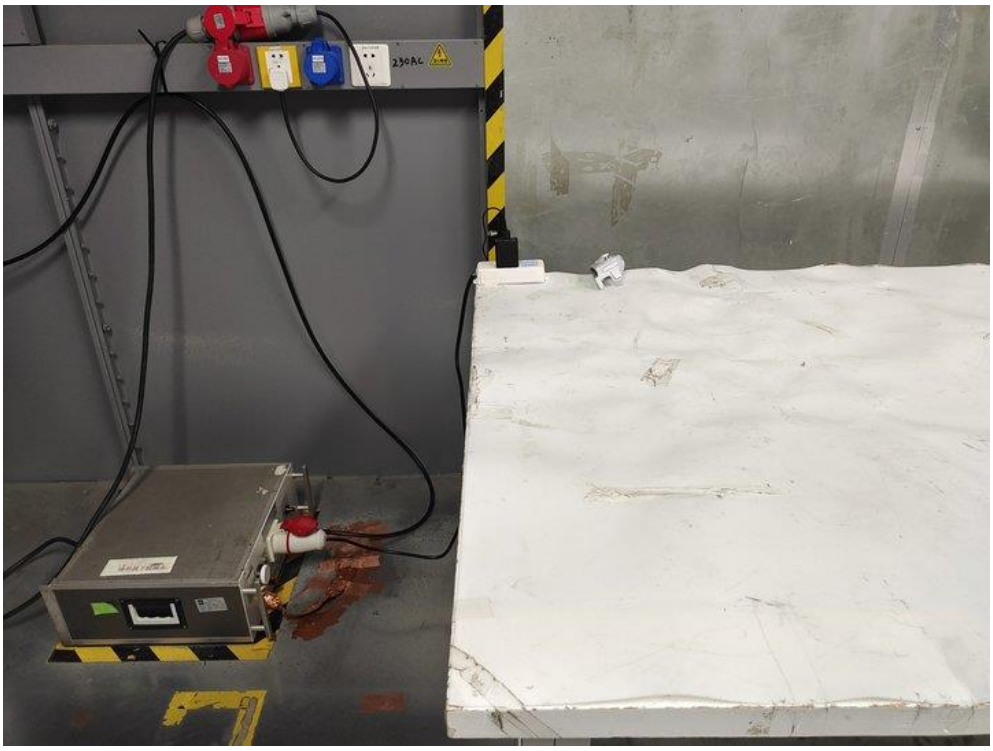
The EUT antenna is Internal Antenna. It complies with the standard requirement.

12. TEST SETUP PHOTO

12.1.Photo of Radiated Emission test



12.2.Photo of Conducted Emission test



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