

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	48.08	V	33.95	10.18	34.26	57.95	74	-16.05	PK
4804	36.69	V	33.95	10.18	34.26	46.56	54	-7.44	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
4804	44.79	H	33.95	10.18	34.26	54.66	74	-19.34	PK
4804	34.80	H	33.95	10.18	34.26	44.67	54	-9.33	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
Test Mode: $\pi/4$ DQPSK TX Mid									
4882	41.58	V	33.93	10.2	34.29	51.42	74	-22.58	PK
4882	33.28	V	33.93	10.2	34.29	43.12	54	-10.88	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
4882	43.13	H	33.93	10.2	34.29	52.97	74	-21.03	PK
4882	34.61	H	33.93	10.2	34.29	44.45	54	-9.55	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
Test Mode: $\pi/4$ DQPSK TX High									
4960	44.18	V	33.93	10.2	34.29	54.02	74	-19.98	PK
4960	34.11	V	33.93	10.2	34.29	43.95	54	-10.05	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/
4960	44.33	H	33.93	10.2	34.29	54.17	74	-19.83	PK
4960	35.35	H	33.93	10.2	34.29	45.19	54	-8.81	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.									

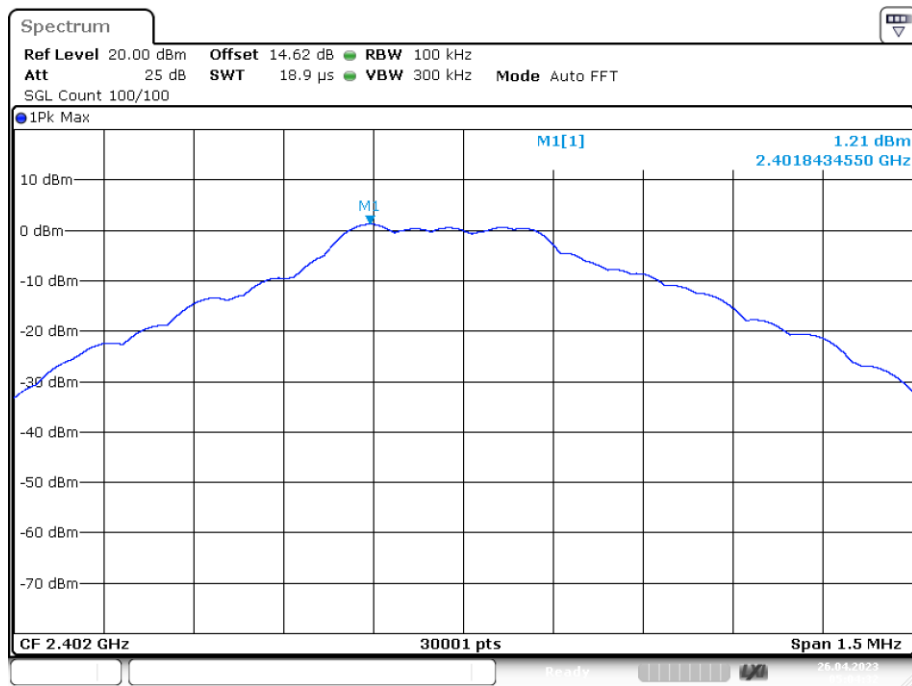
From 1G-25GHz

Test Mode: 8- 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	45.14	V	33.95	10.18	34.26	55.01	74	-18.99	PK
4804	34.75	V	33.95	10.18	34.26	44.62	54	-9.38	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
4804	45.39	H	33.95	10.18	34.26	55.26	74	-18.74	PK
4804	36.71	H	33.95	10.18	34.26	46.58	54	-7.42	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
Test Mode: 8- DQPSK TX Mid									
4882	41.21	V	33.93	10.2	34.29	51.05	74	-22.95	PK
4882	37.02	V	33.93	10.2	34.29	46.86	54	-7.14	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
4882	46.61	H	33.93	10.2	34.29	56.45	74	-17.55	PK
4882	32.84	H	33.93	10.2	34.29	42.68	54	-11.32	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
Test Mode: 8- DQPSK TX High									
4960	44.15	V	33.93	10.2	34.29	53.99	74	-20.01	PK
4960	34.42	V	33.93	10.2	34.29	44.26	54	-9.74	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/
4960	45.19	H	33.93	10.2	34.29	55.03	74	-18.97	PK
4960	33.53	H	33.93	10.2	34.29	43.37	54	-10.63	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.									

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

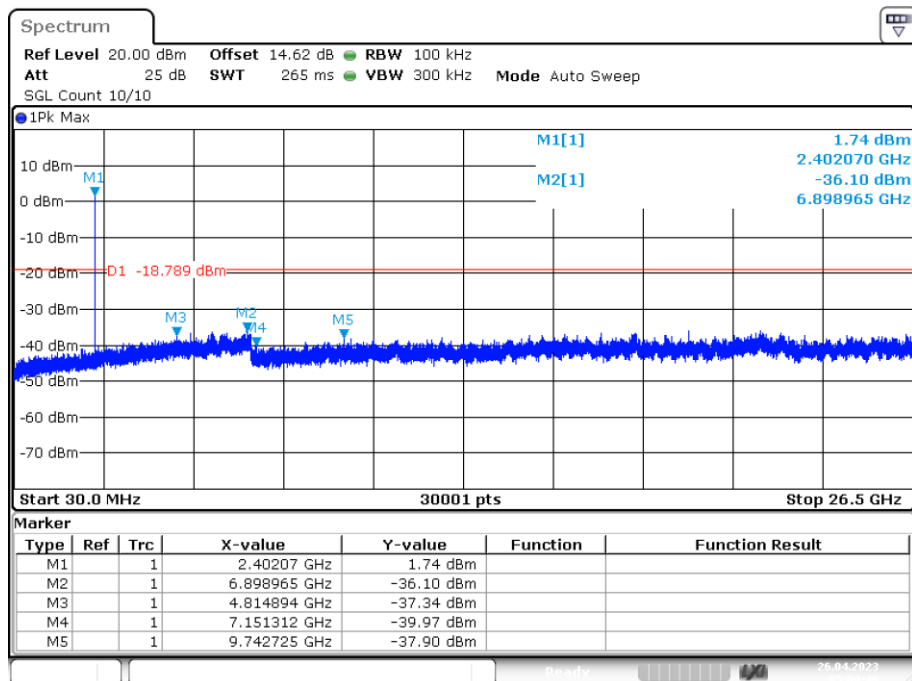
Conducted RF Spurious Emission

Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Ref



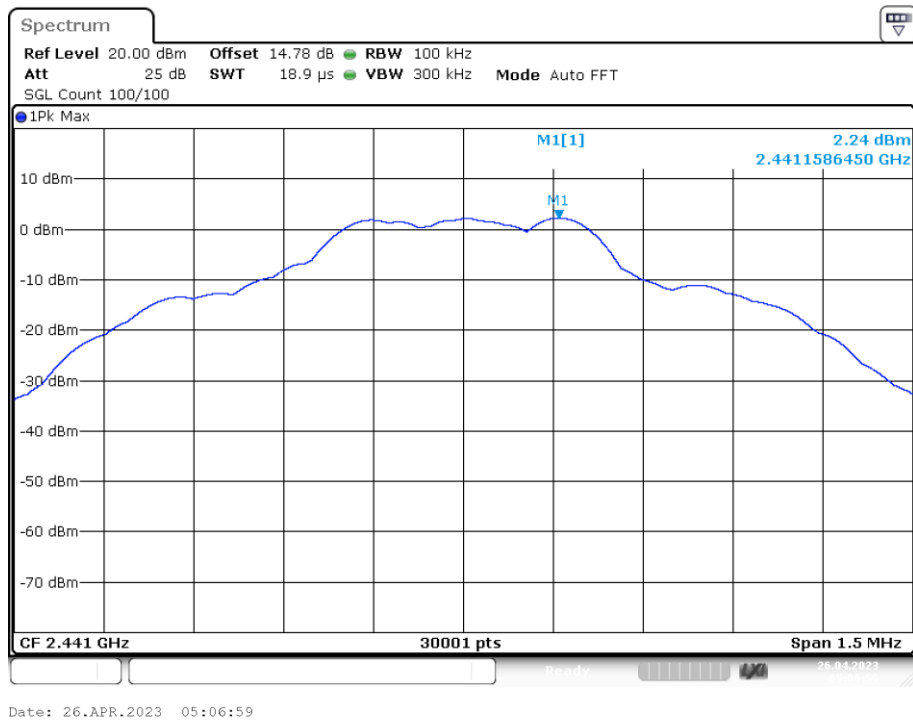
Date: 26.APR.2023 05:04:33

Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Emission

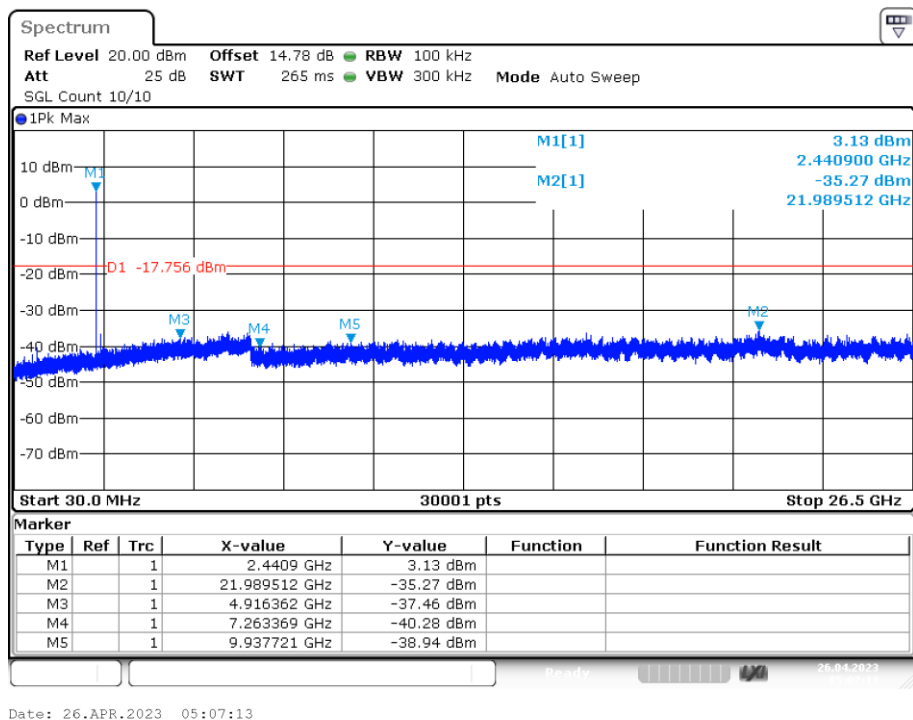


Date: 26.APR.2023 05:04:46

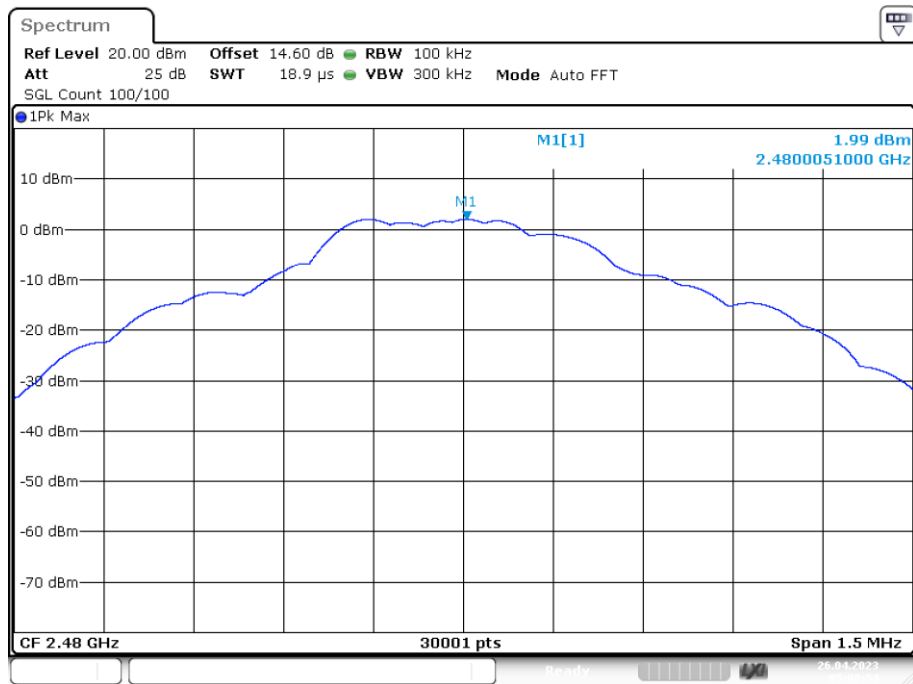
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Ref



Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Emission

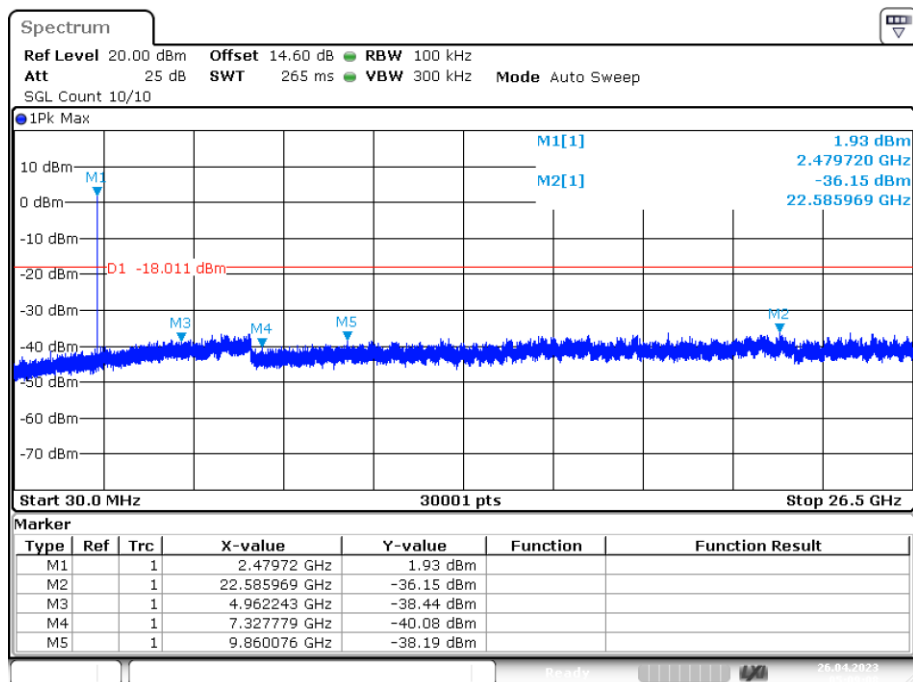


Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Ref



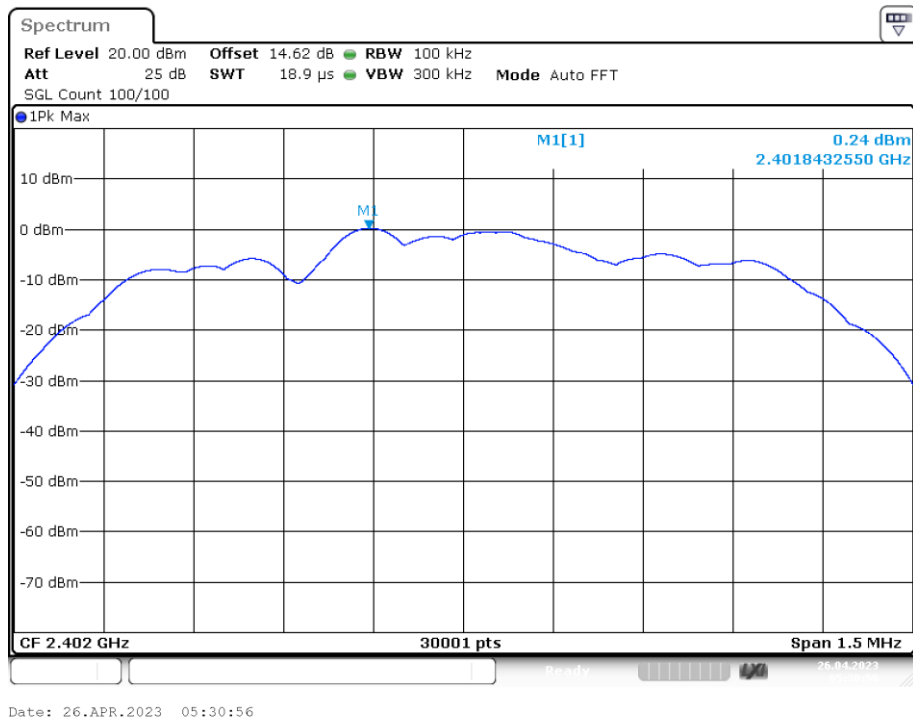
Date: 26.APR.2023 05:08:54

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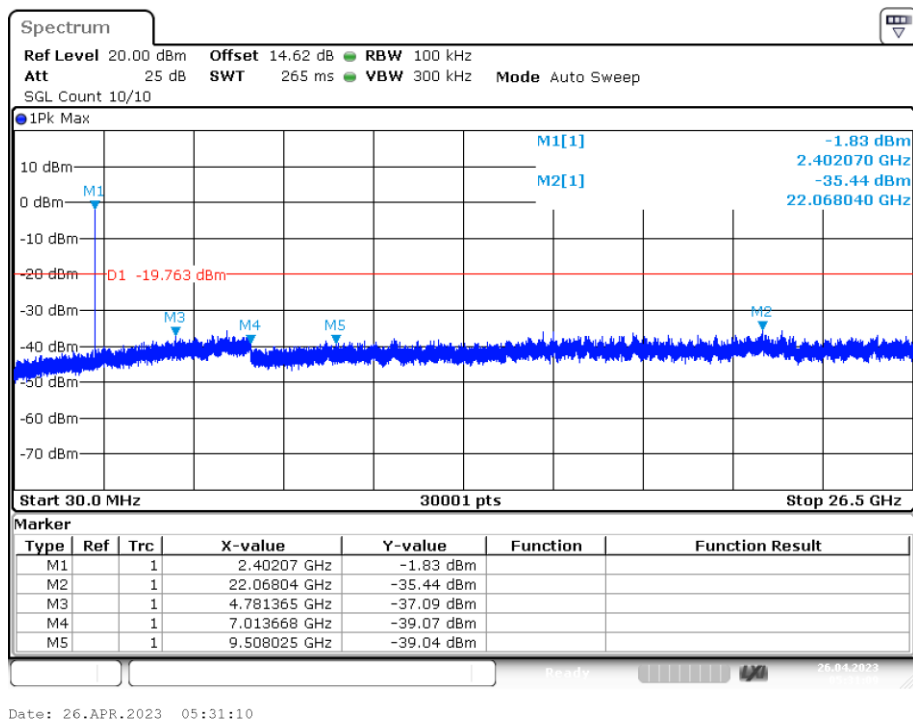


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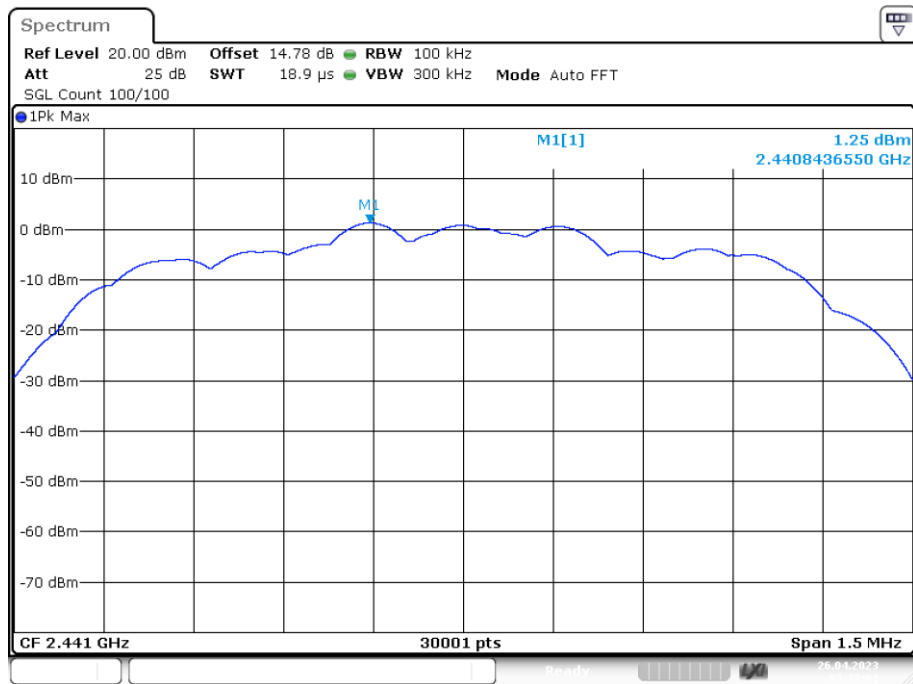
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Ref



Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Emission

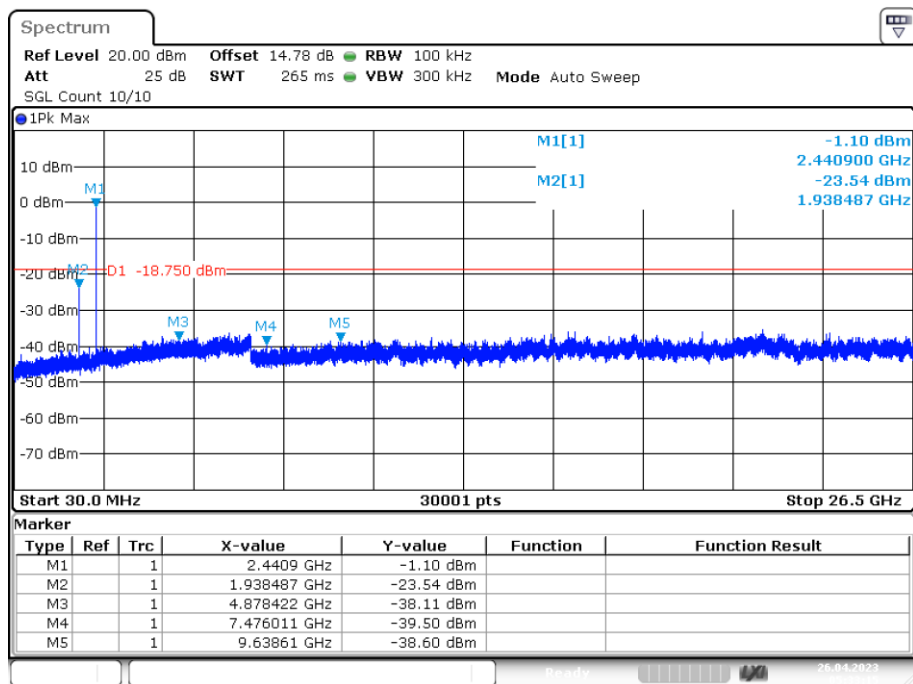


Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Ref



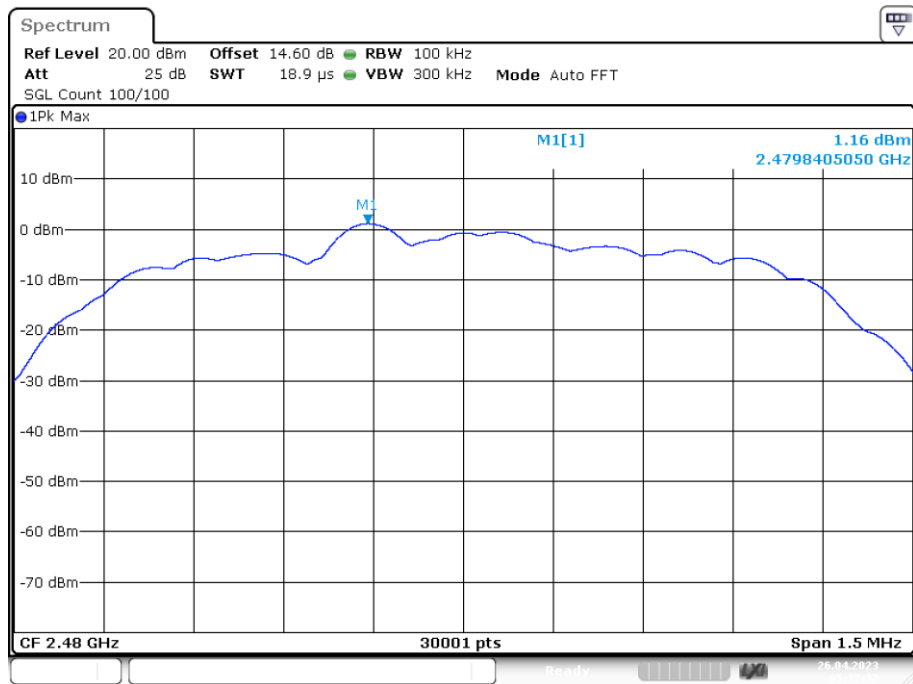
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Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Emission



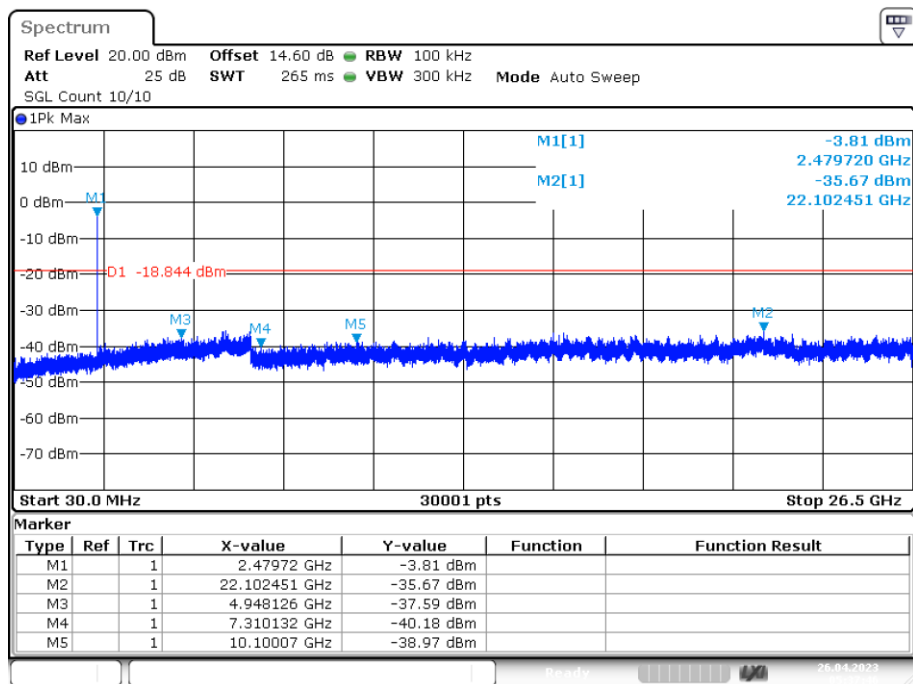
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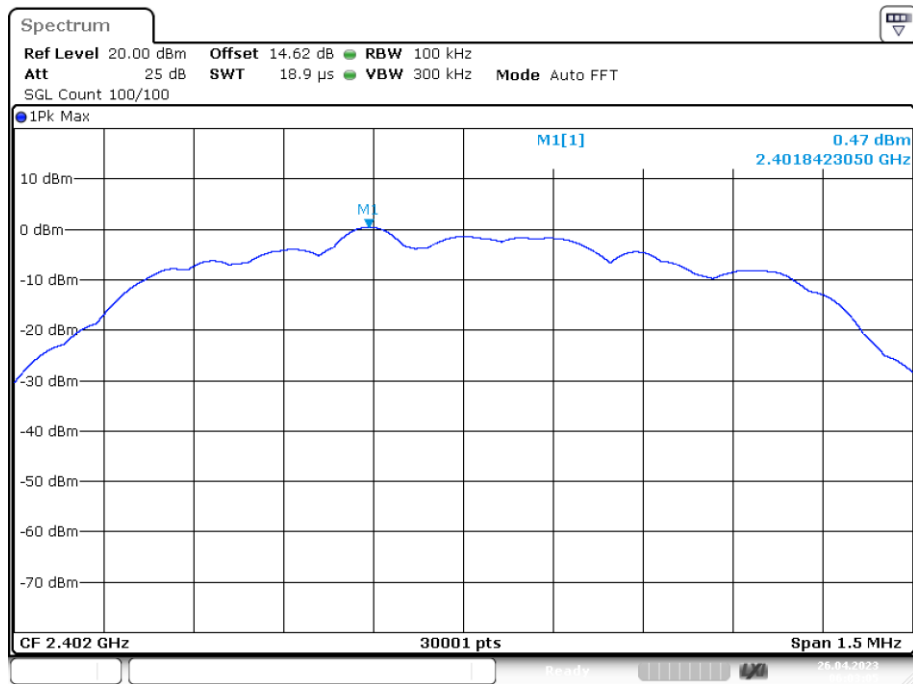
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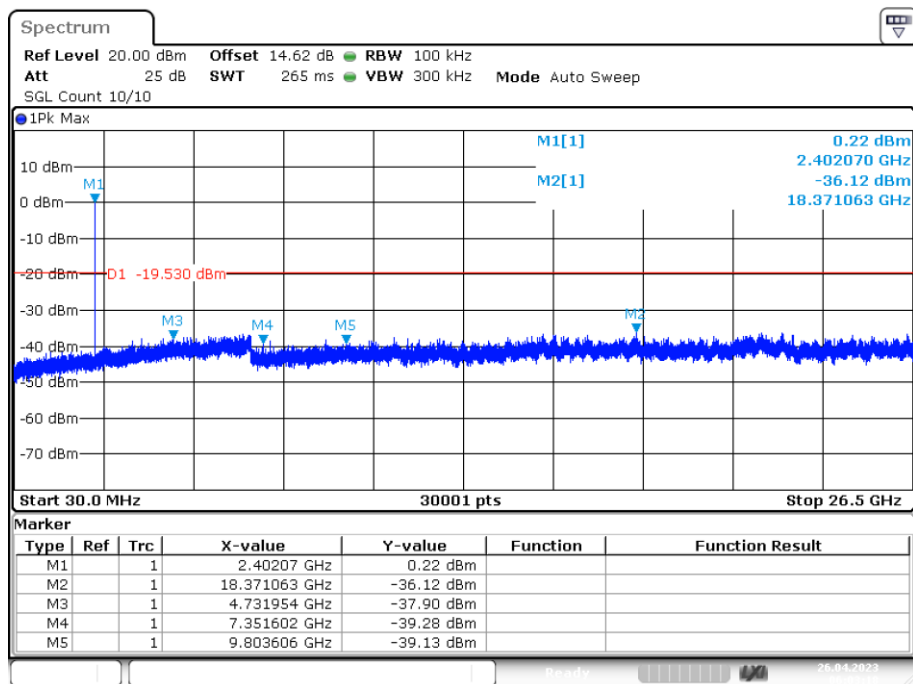


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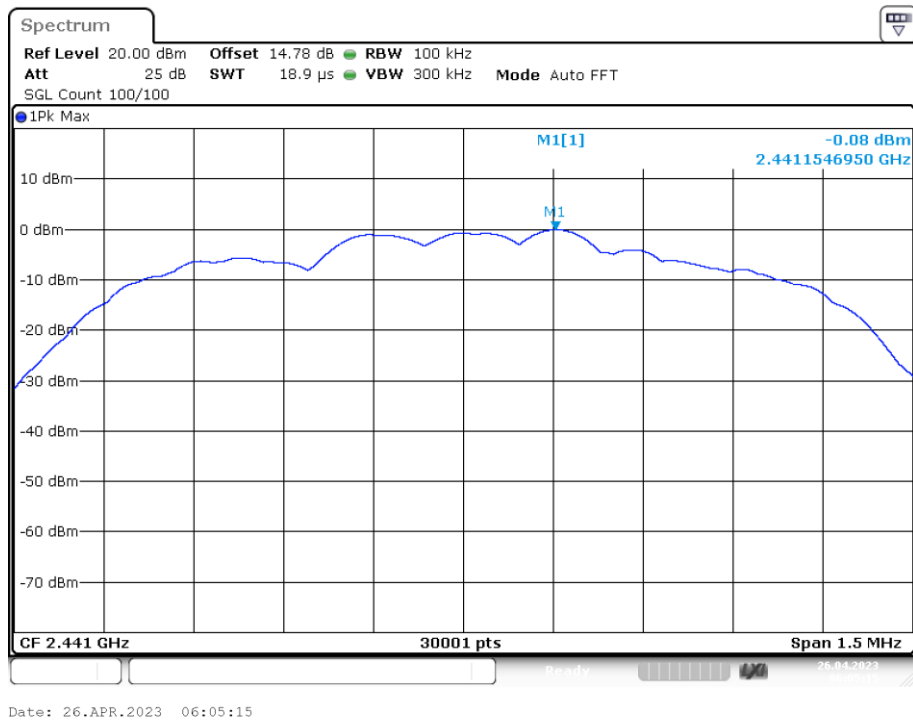
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Ref



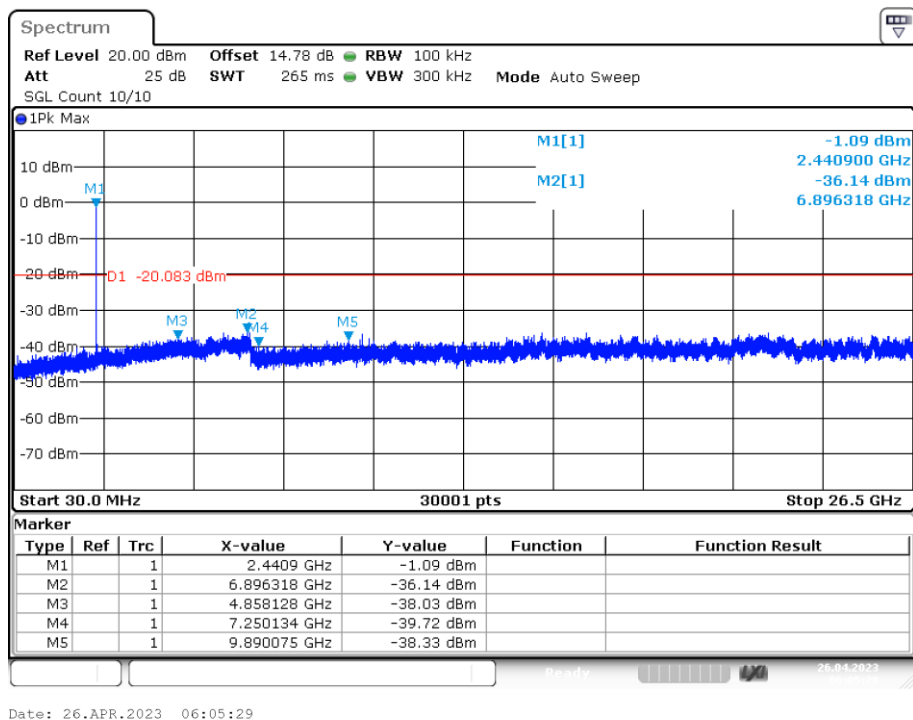
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Emission



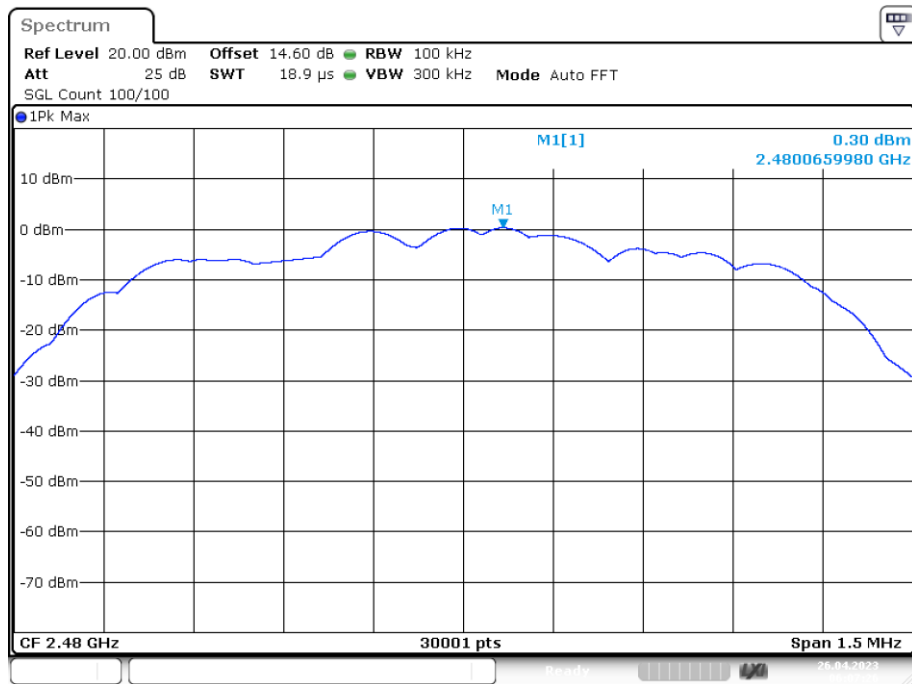
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Ref



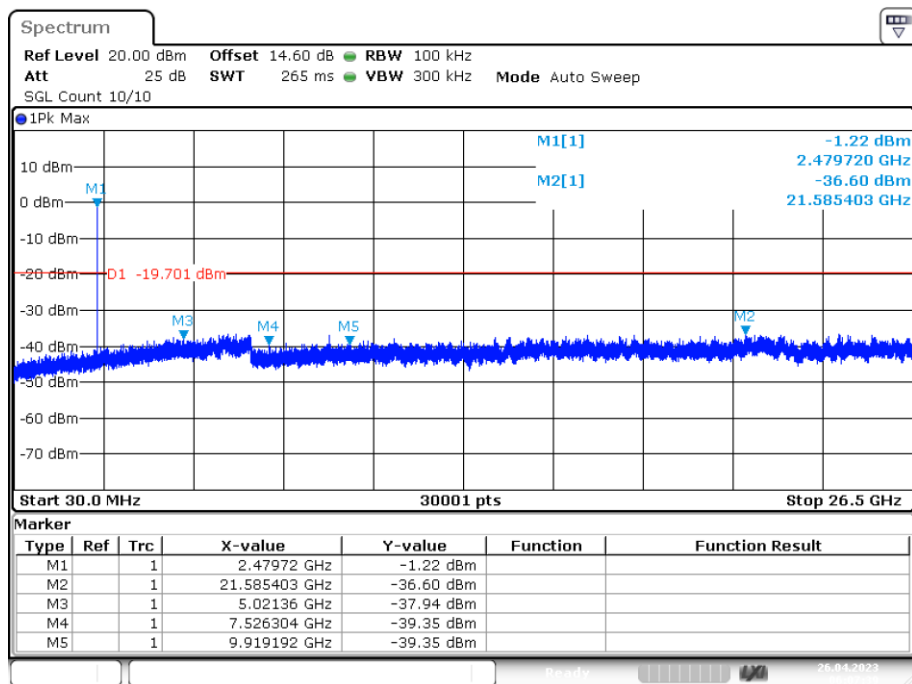
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Ref

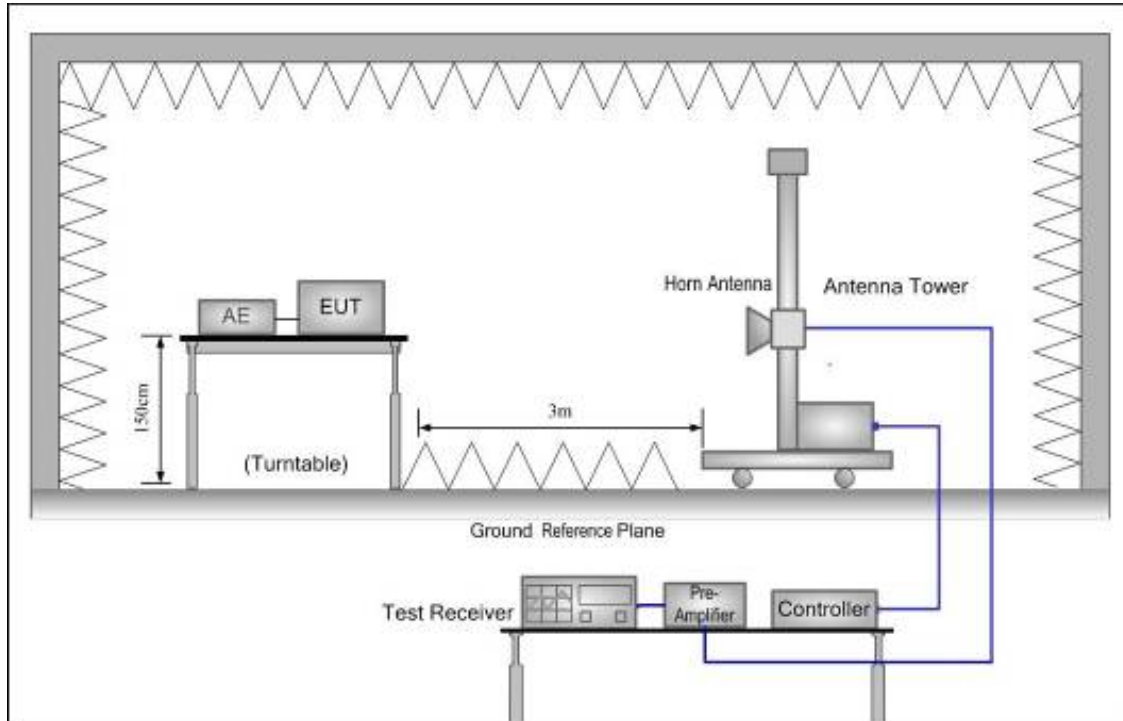


Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Emission



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.

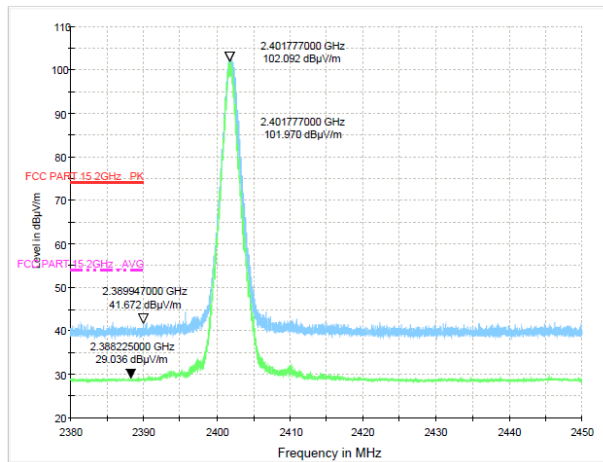
9.3. Test Procedure

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

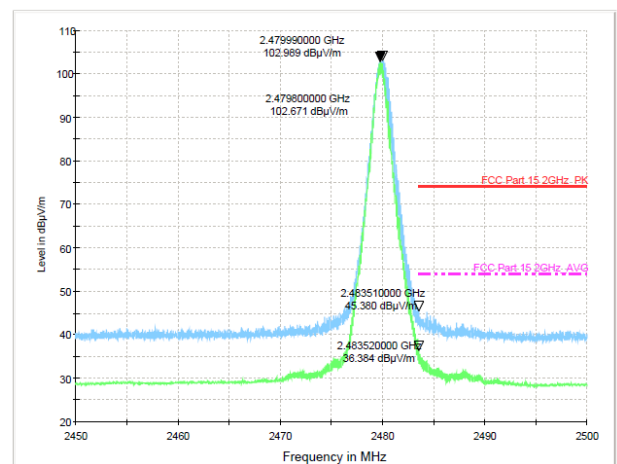
9.4. Test Result

PASS. (See below detailed test data)

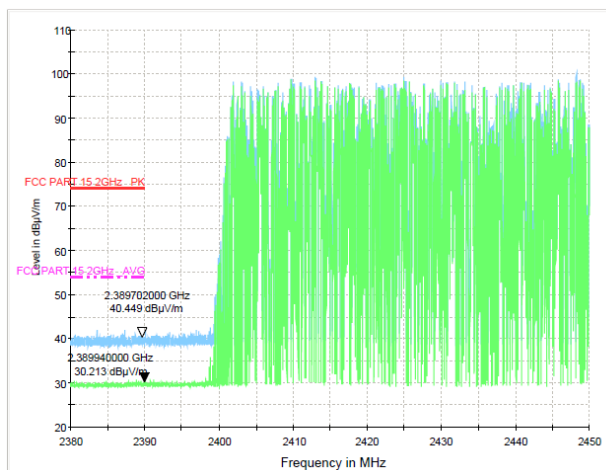
Test Mode: GFSK-Low Hopping-off



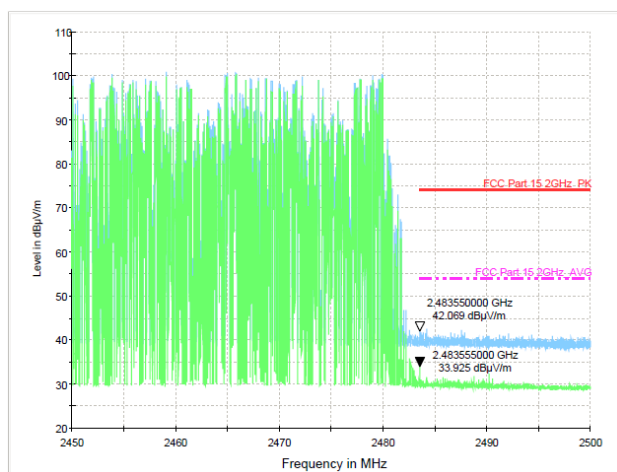
Test Mode: GFSK-High Hopping-off

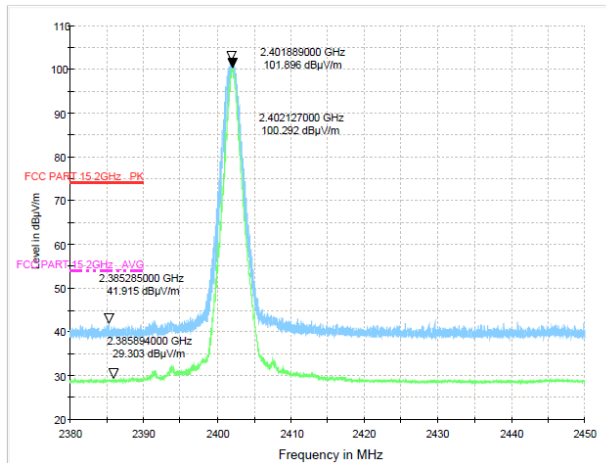
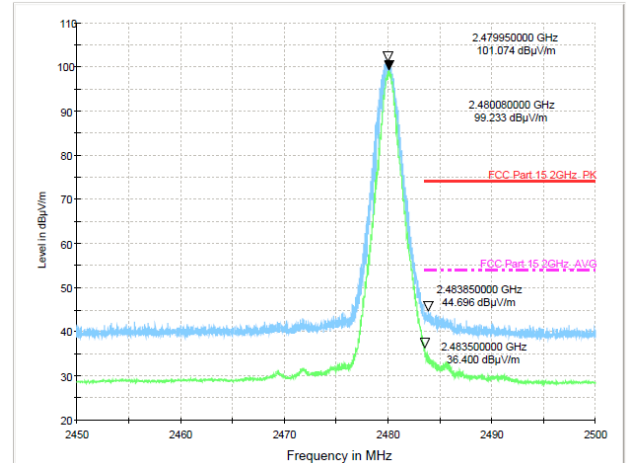
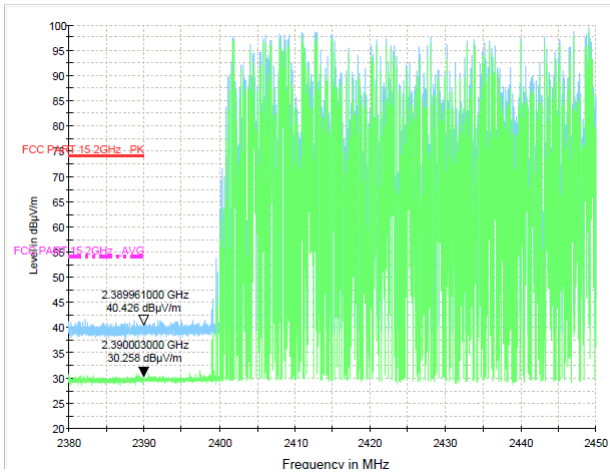
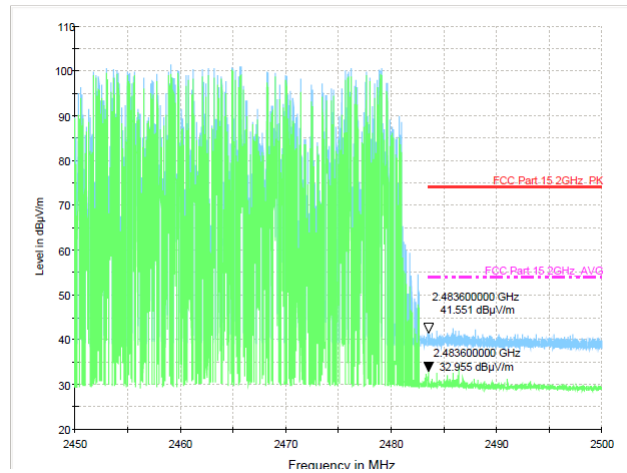


Test Mode: GFSK-Low Hopping-on

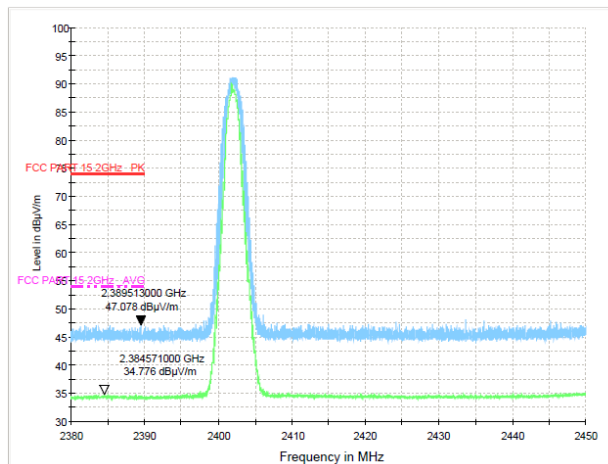


Test Mode: GFSK-High Hopping-on

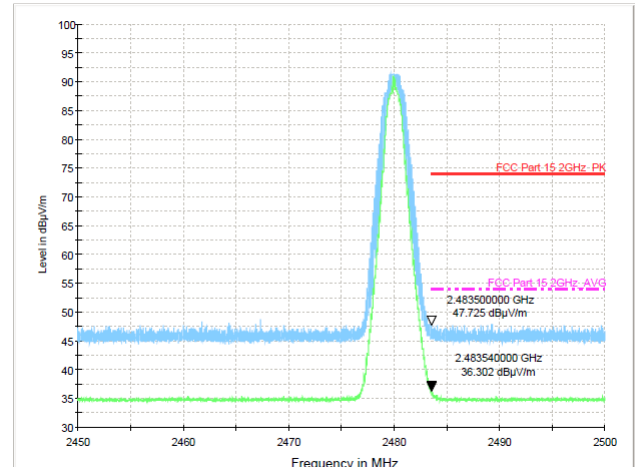


Test Mode: $\pi/4$ DQPSK-Low Hopping-offTest Mode: $\pi/4$ DQPSK-High Hopping-offTest Mode: $\pi/4$ DQPSK-Low Hopping-onTest Mode: $\pi/4$ DQPSK-High Hopping-on

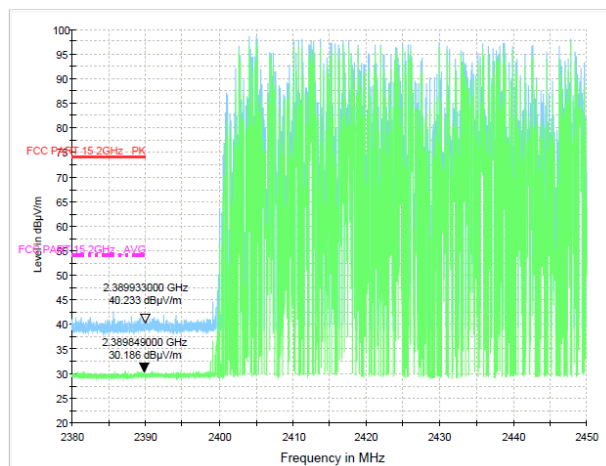
Test Mode: 8DPSK-Low Hopping-off



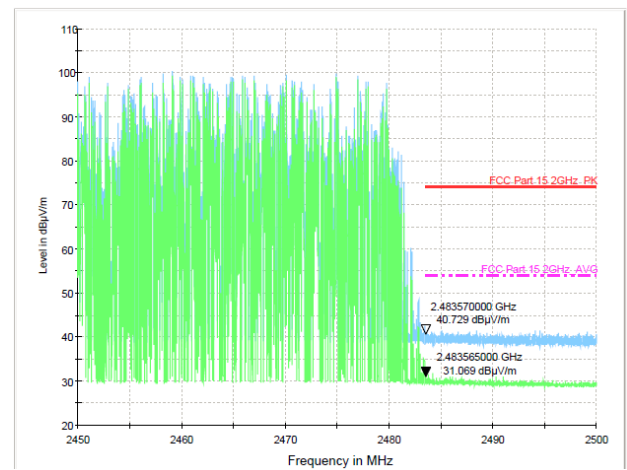
Test Mode: 8DPSK-High Hopping-off



Test Mode: 8DPSK-Low Hopping-on

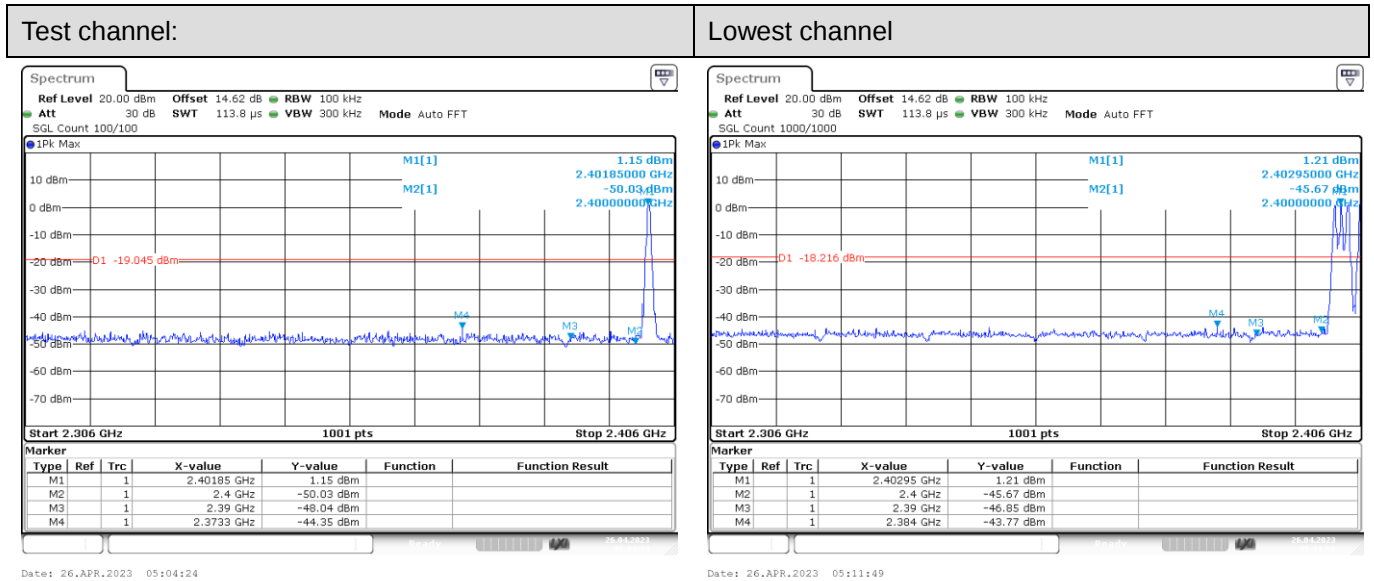


Test Mode: 8DPSK-High Hopping-on



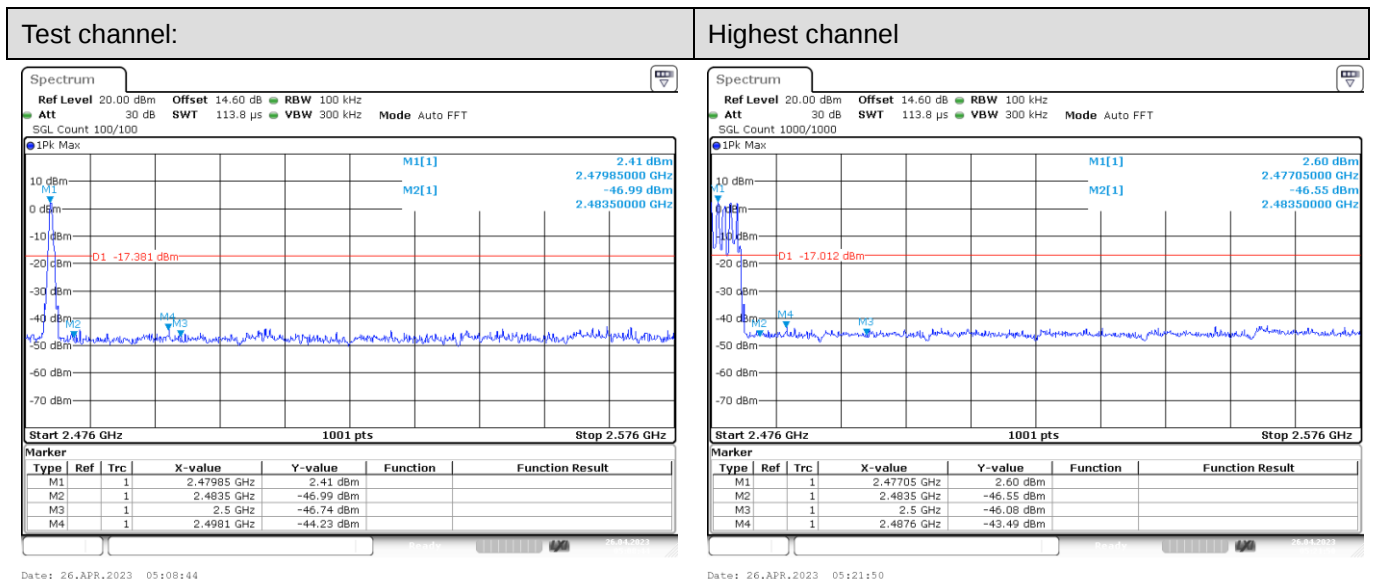
Conducted Method

GFSK Mode:



No-hopping mode

Hopping mode

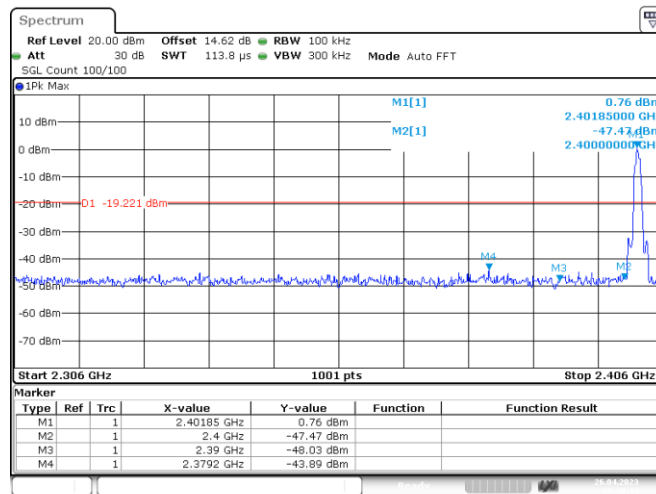


No-hopping mode

Hopping mode

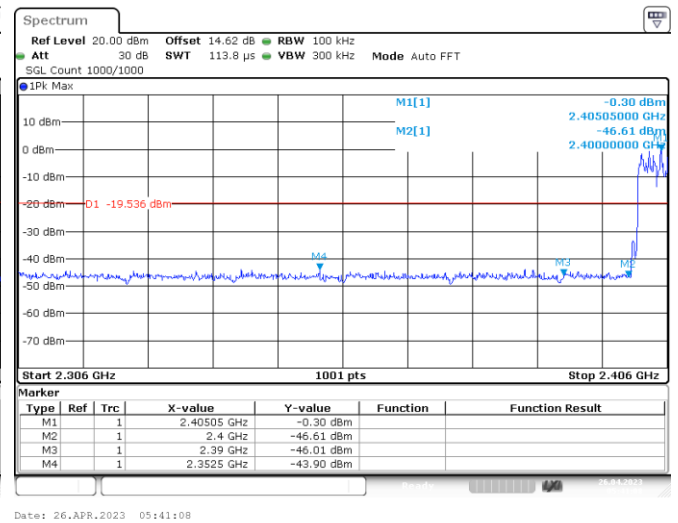
$\pi/4$ DQPSK Mode:

Test channel:



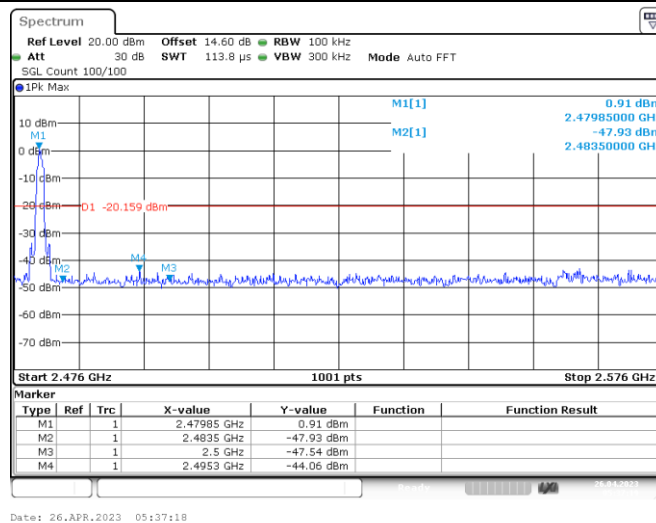
No-hopping mode

Lowest channel



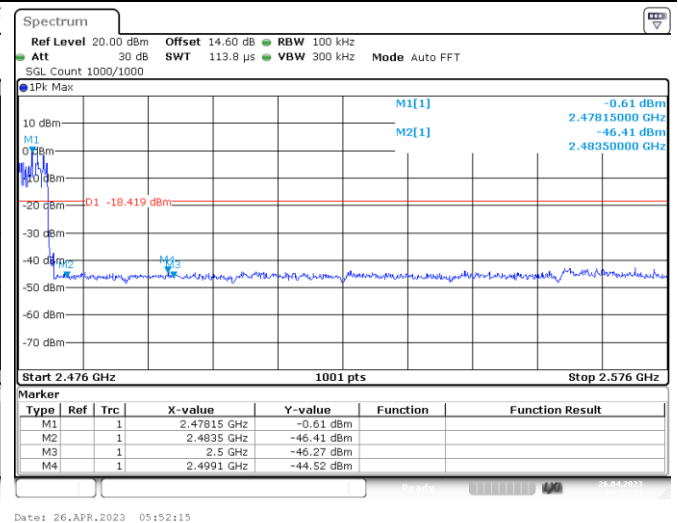
Hopping mode

Test channel:



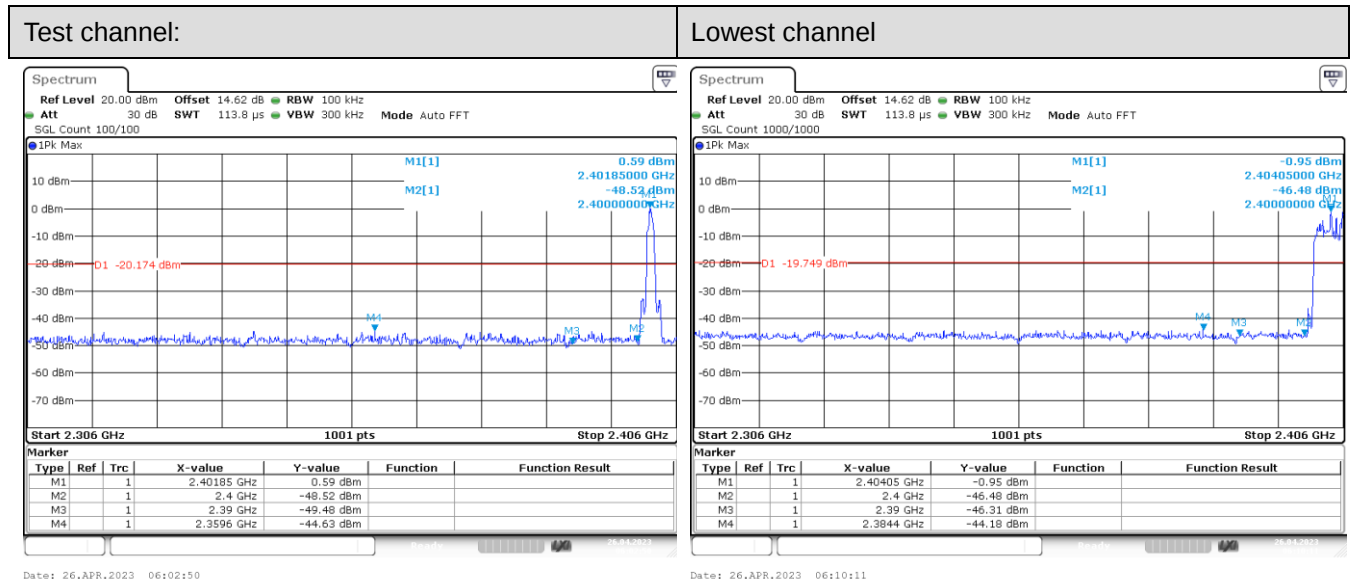
No-hopping mode

Highest channel



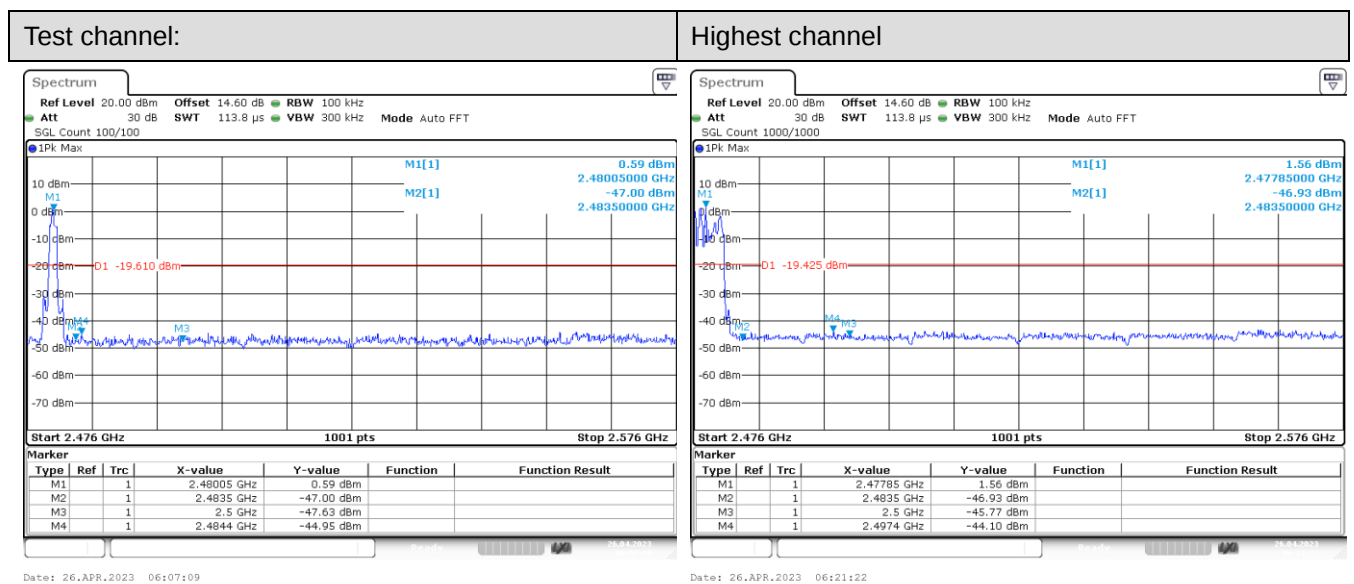
Hopping mode

8DPSK Mode:



No-hopping mode

Hopping mode

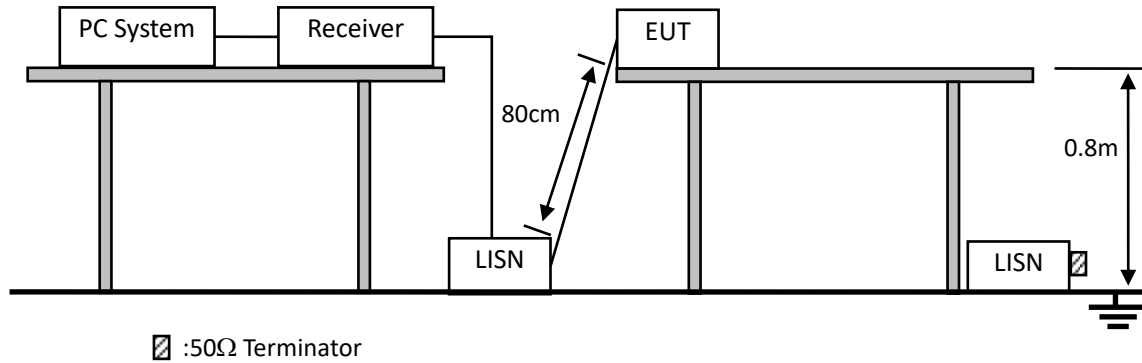


No-hopping mode

Hopping mode

10. POWER LINE CONDUCTED EMISSIONS

10.1. Block Diagram of Test Setup



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

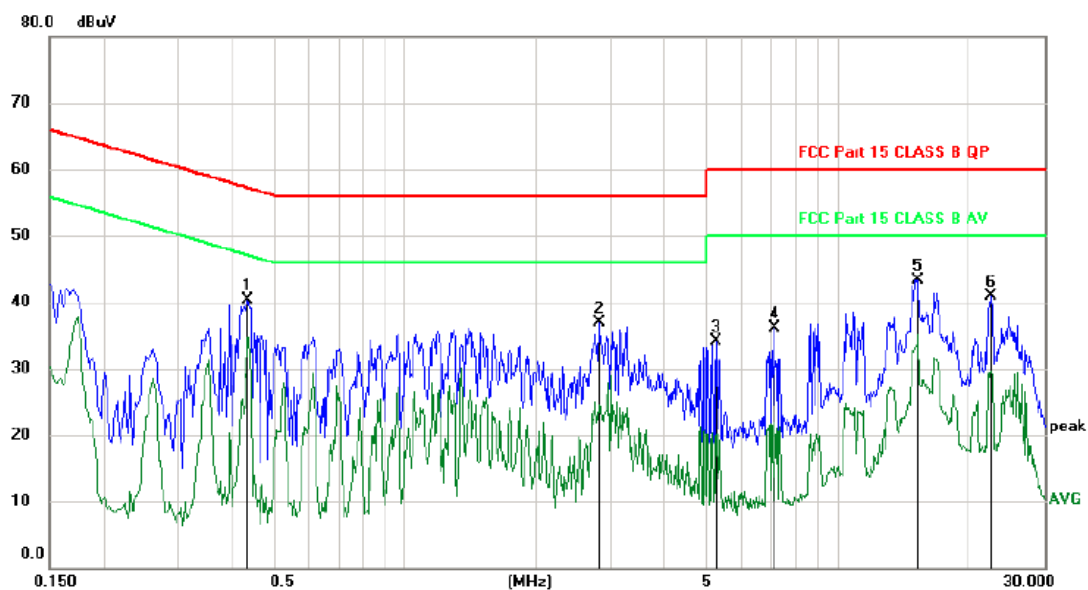
- (1) The EUT was placed on a non-metallic table, 80cm above the ground plane.
- (2) Setup the EUT and simulator as shown in 10.1
- (3) The EUT Power connected to the power mains through a power adapter and a line impedance stabilization network (L.I.S.N1). The other peripheral devices power cord connected 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:



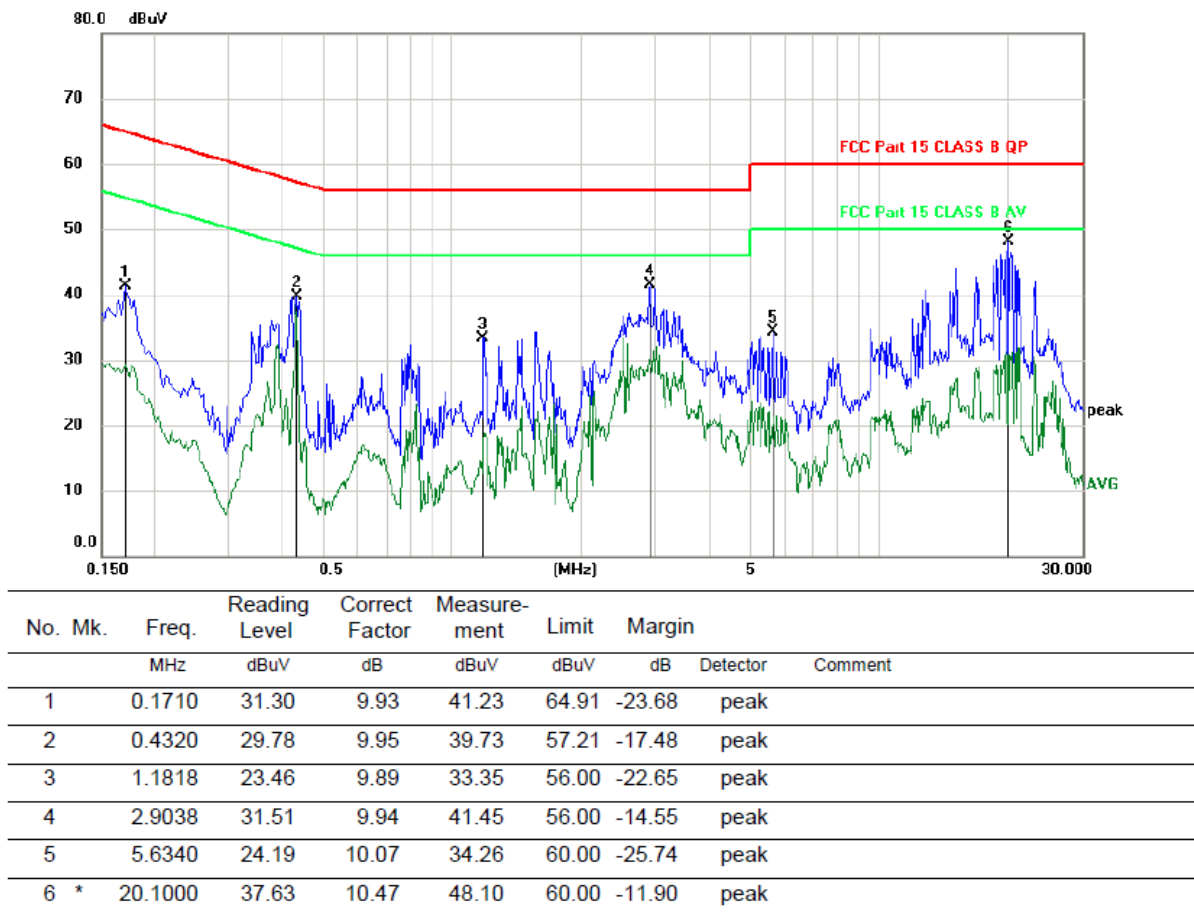
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.4320	30.34	9.95	40.29	57.21	-16.92	peak	
2		2.8079	27.00	9.94	36.94	56.00	-19.06	peak	
3		5.2230	24.01	10.05	34.06	60.00	-25.94	peak	
4		7.1070	25.91	10.12	36.03	60.00	-23.97	peak	
5	*	15.3240	32.96	10.34	43.30	60.00	-16.70	peak	
6		22.6020	30.41	10.46	40.87	60.00	-19.13	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:



*: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

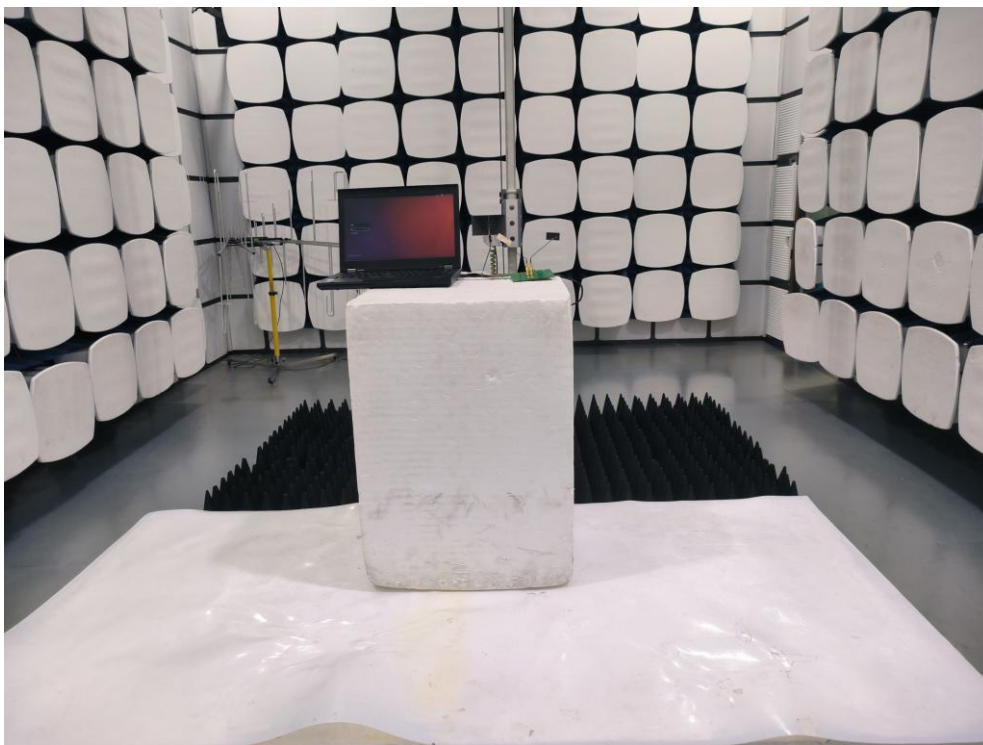
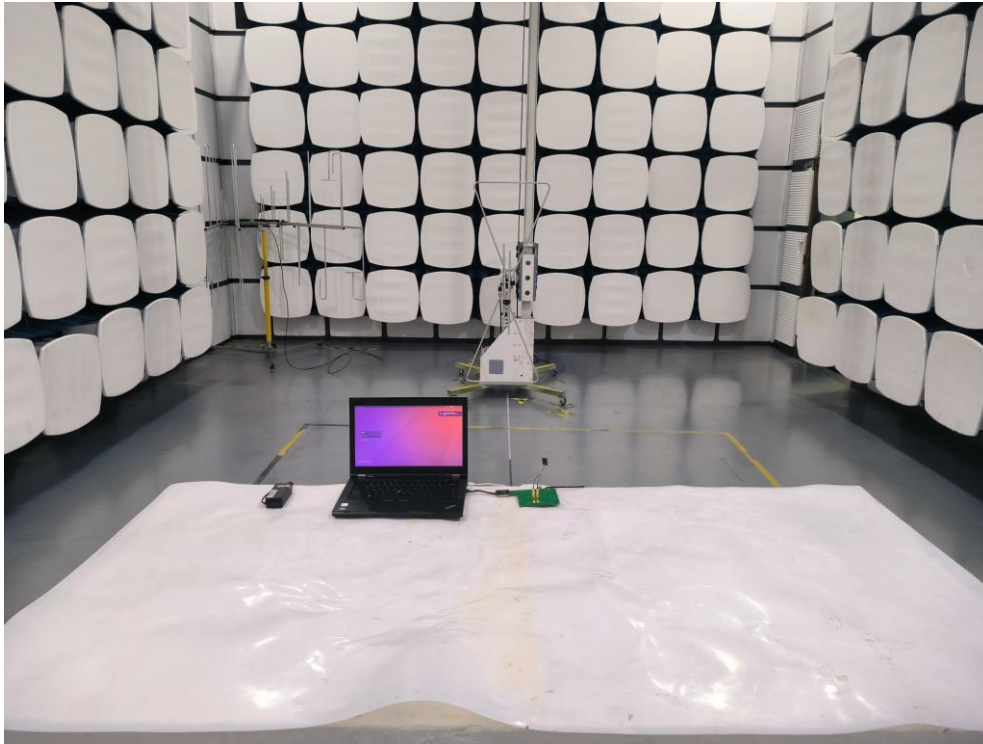
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional 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 use of an antenna that is uniquely coupled to the intended radiator shall be considered sufficient to comply with the provisions of this section.

12. TEST SETUP PHOTO

12.1. Photo of Radiated Emission test



12.2.Photo of Conducted Emission test



-----END OF REPORT-----