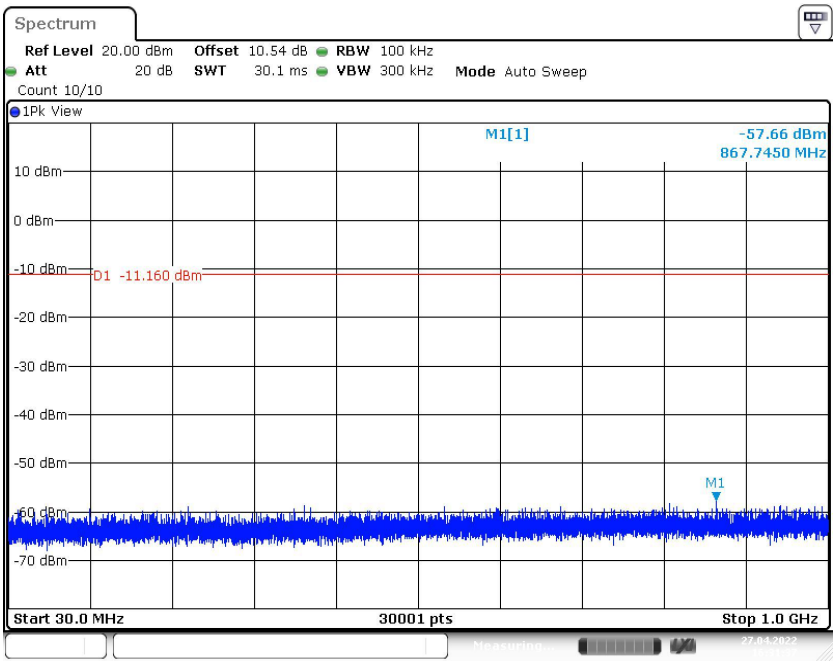

Fig. 23 Conducted Spurious Emission (π/4 DQPSK, CH0, 30MHz -1GHz)

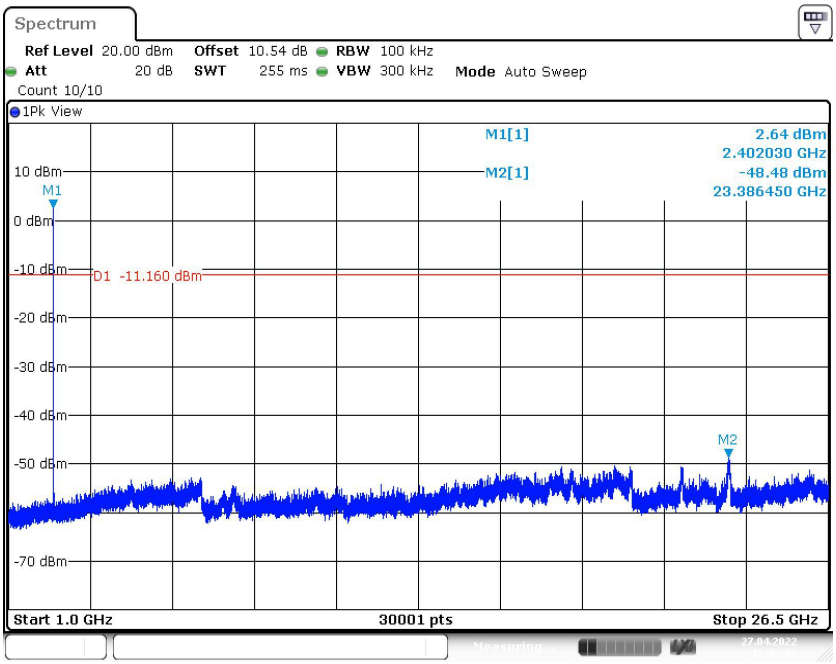

Fig. 24 Conducted Spurious Emission (π/4 DQPSK, CH0, 1GHz-26.5GHz)

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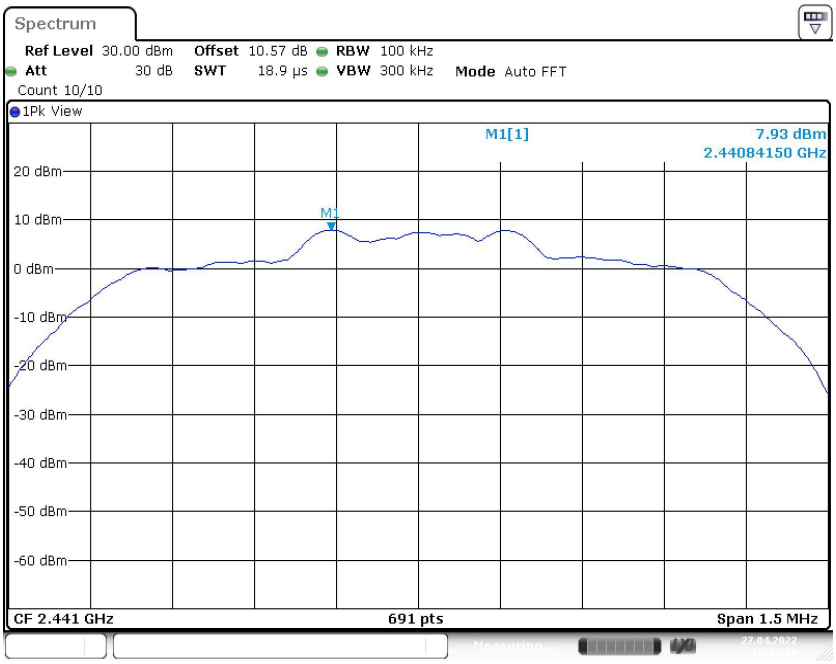

Fig. 25 Conducted Spurious Emission (π/4 DQPSK, CH39, 2.441GHz)

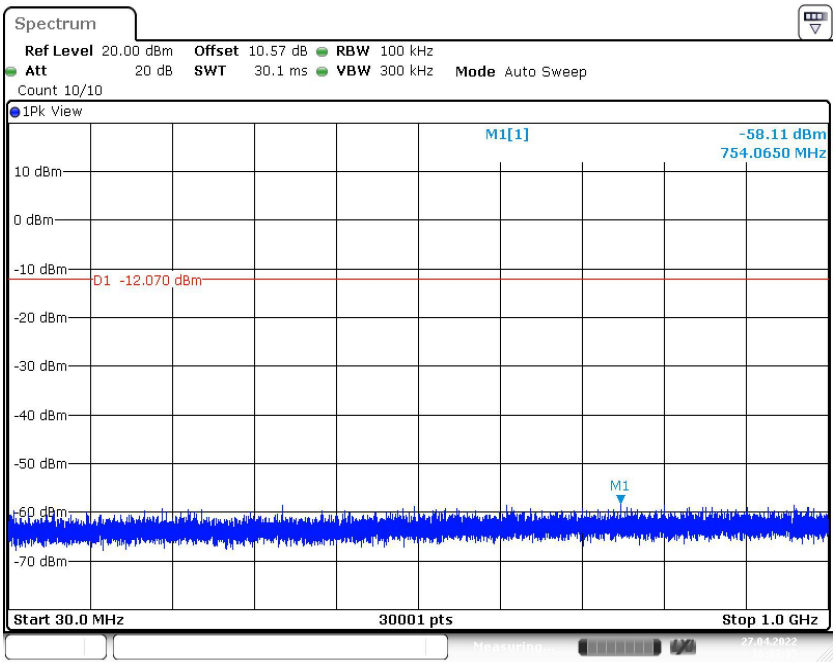

Fig. 26 Conducted Spurious Emission (π/4 DQPSK, CH39, 30MHz -1GHz)

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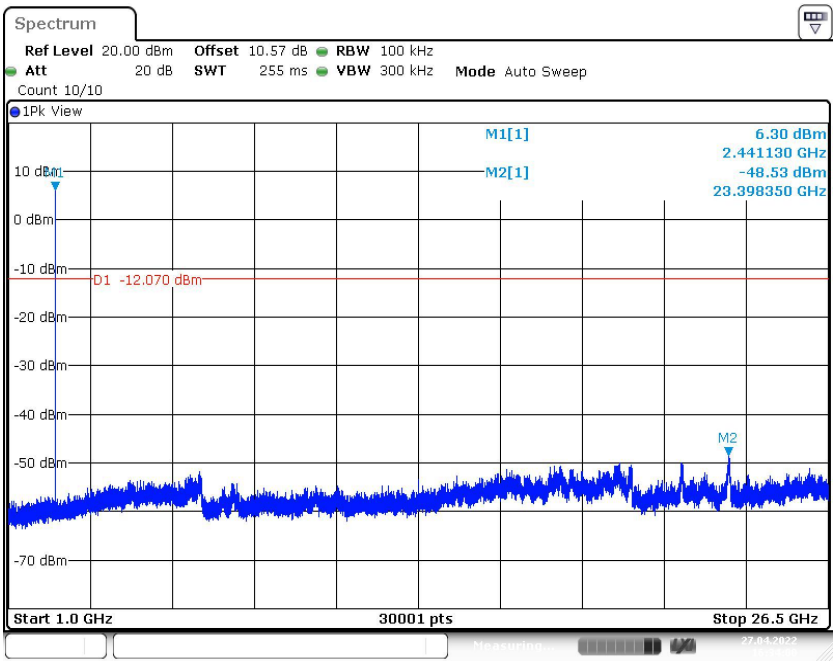

Fig. 27 Conducted Spurious Emission (π/4 DQPSK, CH39, 1GHz-26.5GHz)

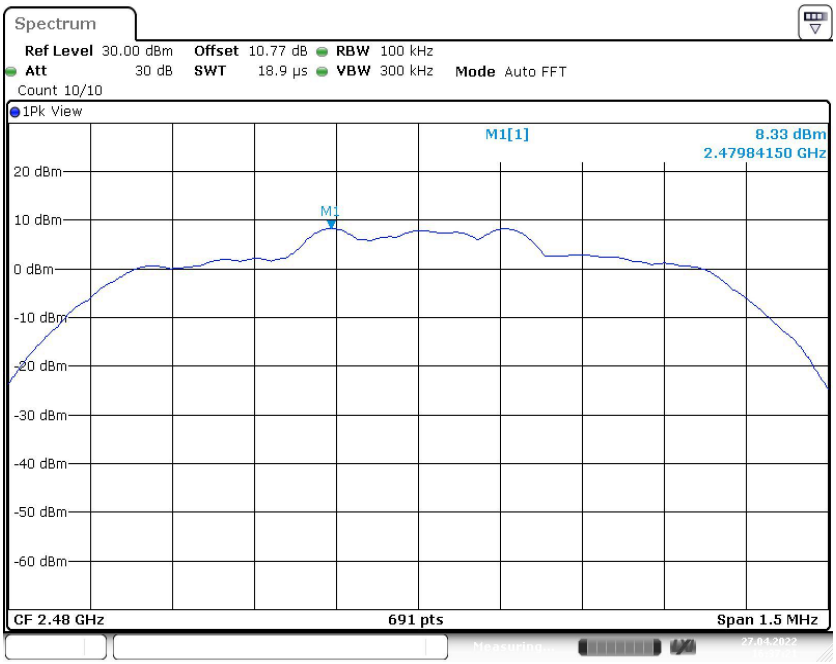

Fig. 28 Conducted Spurious Emission (π/4 DQPSK, CH78, 2.480GHz)

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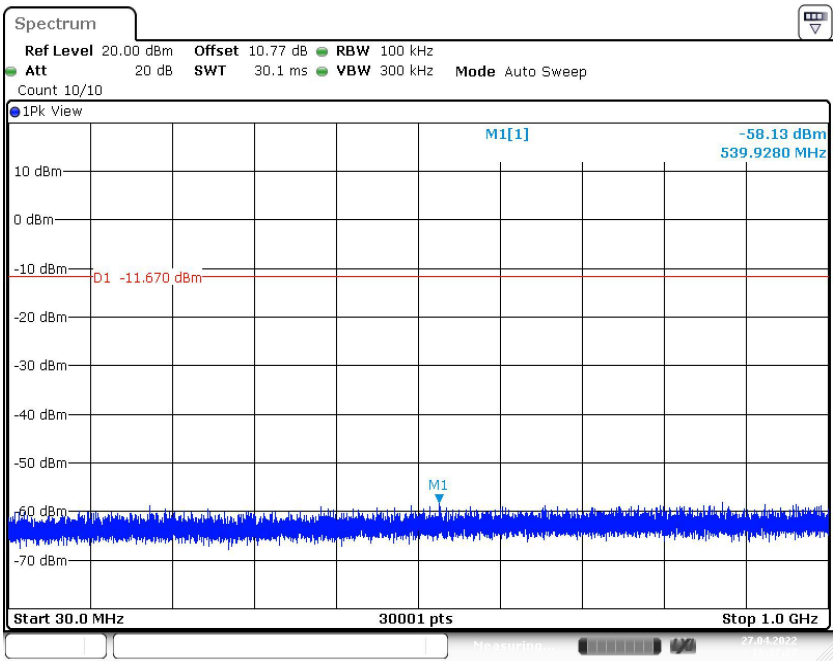

Fig. 29 Conducted Spurious Emission (π/4 DQPSK, CH78, 30MHz -1GHz)

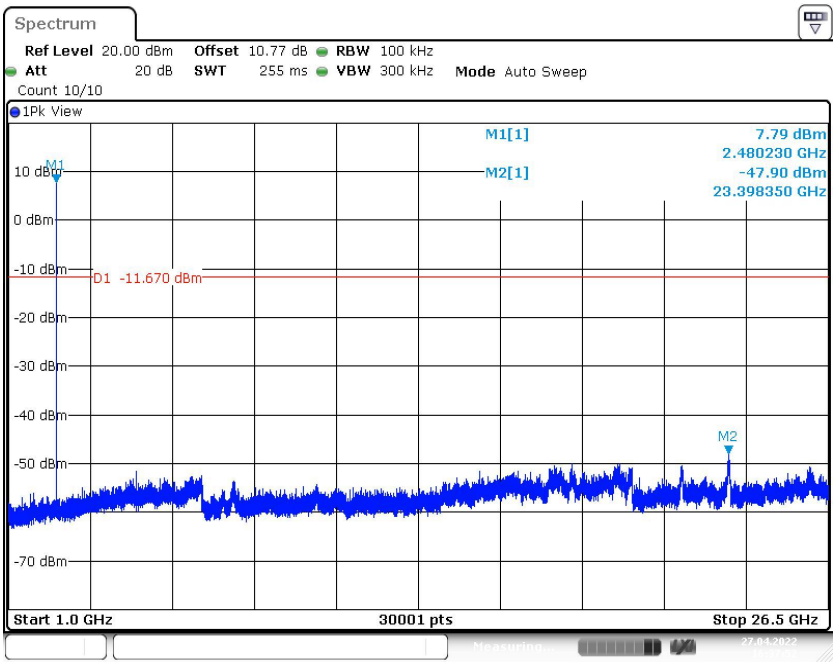

Fig. 30 Conducted Spurious Emission (π/4 DQPSK, CH78, 1GHz-26.5GHz)

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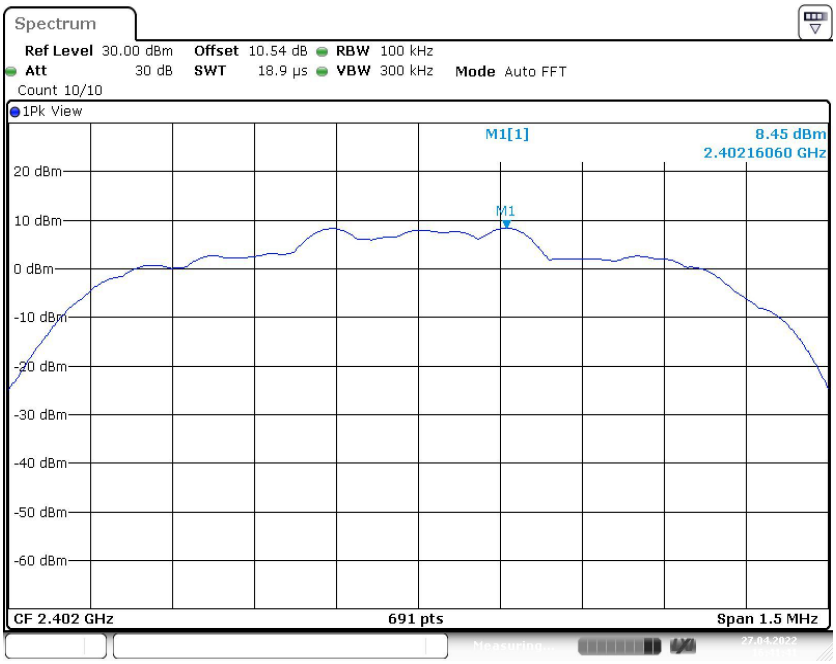

Fig. 31 Conducted Spurious Emission (8DPSK, CH0, 2.402GHz)

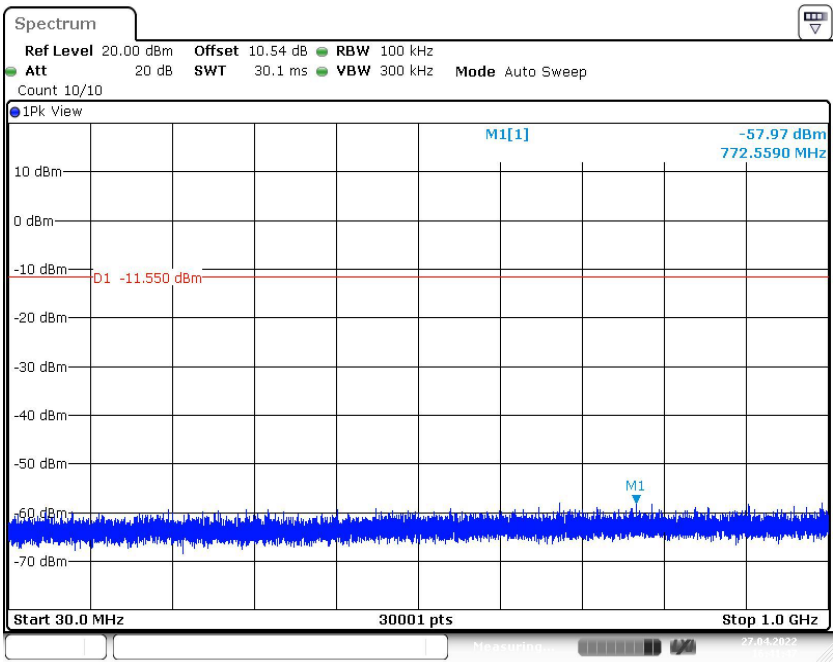

Fig. 32 Conducted Spurious Emission (8DPSK, CH0, 30MHz -1GHz)

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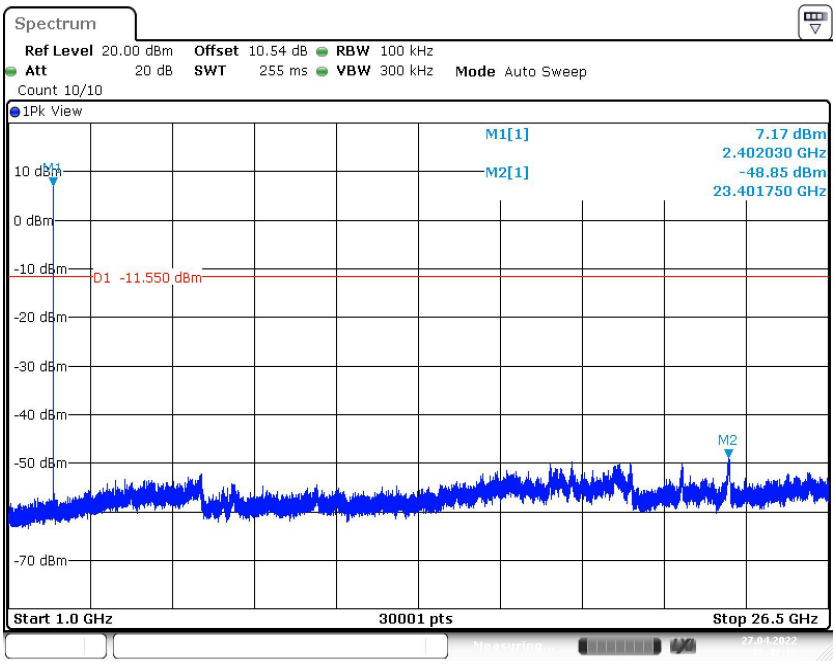

Fig. 33 Conducted Spurious Emission (8DPSK, CH0, 1GHz-26.5GHz)

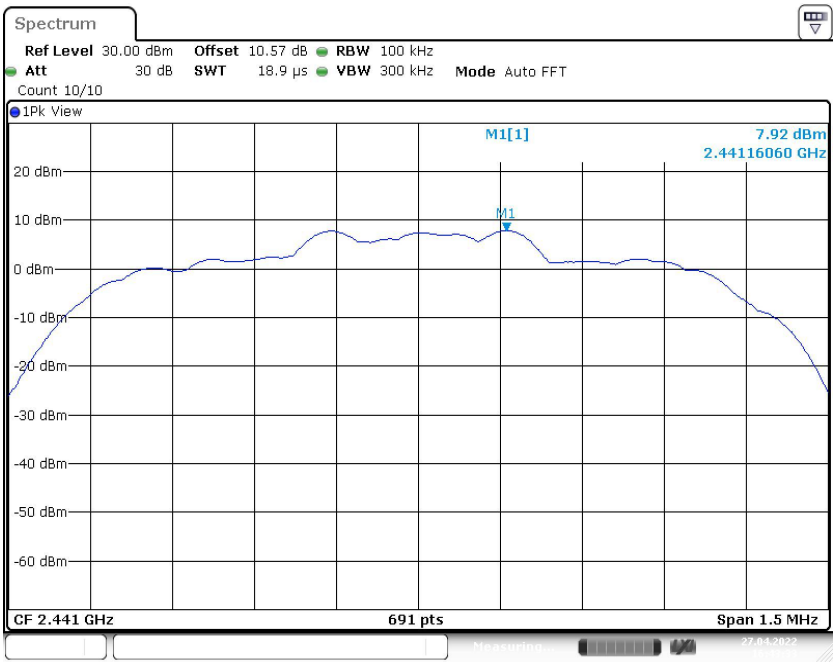

Fig. 34 Conducted Spurious Emission (8DPSK, CH39, 2.441GHz)

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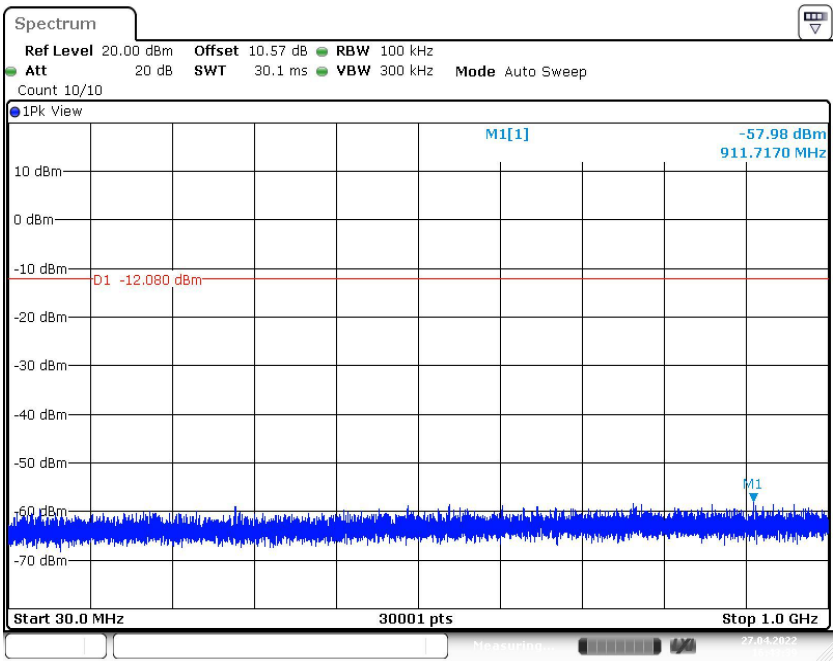

Fig. 35 Conducted Spurious Emission (8DPSK, CH39, 30MHz -1GHz)

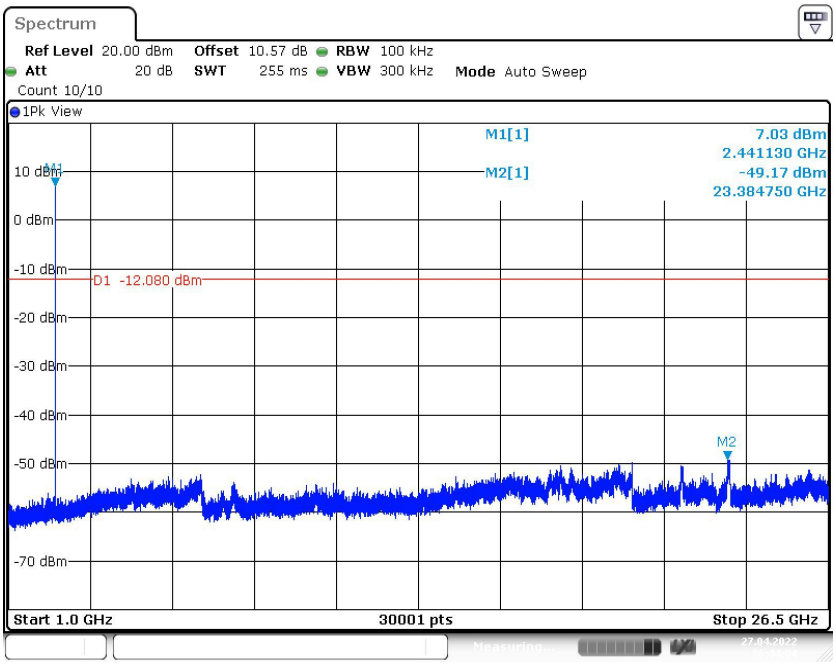

Fig. 36 Conducted Spurious Emission (8DPSK, CH39, 1GHz-26.5GHz)

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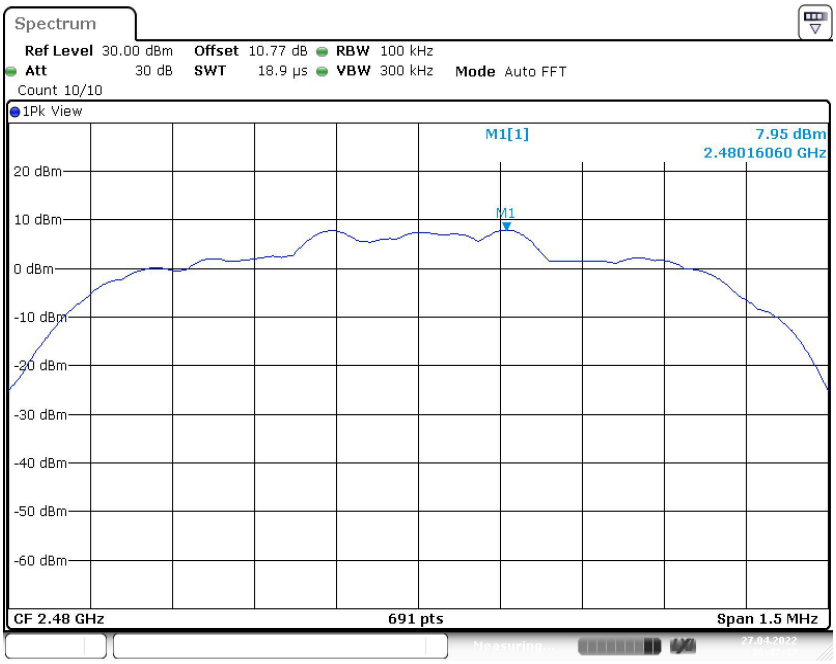

Fig. 37 Conducted Spurious Emission (8DPSK, CH78, 2.480GHz)

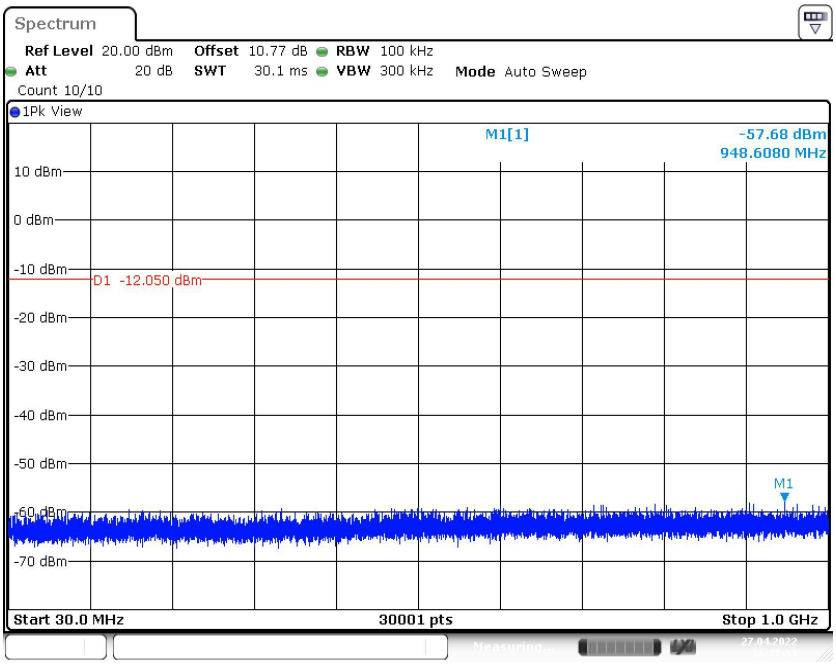

Fig. 38 Conducted Spurious Emission (8DPSK, CH78, 30MHz -1GHz)

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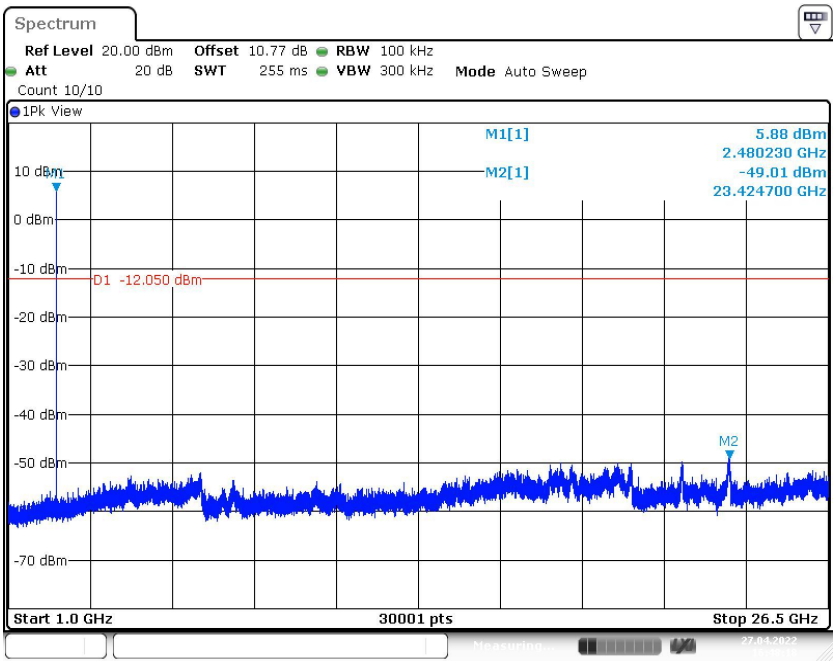

Fig. 39 Conducted Spurious Emission (8DPSK, CH78, 1GHz-26.5GHz)

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A.4 Radiated Emission

Method of Measurement: See ANSI C63.10-clause 6.3&6.4&6.5&6.6.

Measurement Limit:

Standard	Limit (dBm)
FCC 47 CFR Part 15.247, 15.205, 15.209	20dBm below peak output power

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 § 15.209(a) (see § 15.205(c)).

Limit in restricted band:

Frequency of emission (MHz)	Field strength(μV/m)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Condition:

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

Note: According to the performance evaluation, the radiated emission margin of EUT is over 20dB in the band from 9kHz to 30MHz. Therefore, the measurement starts from 30MHz to tenth harmonic.

The measurement results include the horizontal polarization and vertical polarization measurements.

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Measurement Results:

Mode	Channel	Frequency Range	Test Results	Conclusion
GFSK	0	1 GHz ~18 GHz	Fig.40	**P**
	39	1 GHz ~18 GHz	Fig.41	**P**
	78	1 GHz ~18 GHz	Fig.42	**P**
	Restricted Band(CH0)	2.38 GHz ~ 2.45 GHz	Fig.43	**P**
	Restricted Band (CH78)	2.45 GHz ~ 2.5 GHz	Fig.44	**P**
π/4 DQPSK	0	1 GHz ~18 GHz	Fig.45	**P**
	39	1 GHz ~18 GHz	Fig.46	**P**
	78	1 GHz ~18 GHz	Fig.47	**P**
	Restricted Band (CH0)	2.38 GHz ~ 2.45 GHz	Fig.48	**P**
	Restricted Band (CH78)	2.45 GHz ~ 2.5 GHz	Fig.49	**P**
8DPSK	0	1 GHz ~18 GHz	Fig.50	**P**
	39	1 GHz ~18 GHz	Fig.51	**P**
	78	1 GHz ~18 GHz	Fig.52	**P**
	Restricted Band (CH0)	2.38 GHz ~ 2.45 GHz	Fig.53	**P**
	Restricted Band (CH78)	2.45 GHz ~ 2.5 GHz	Fig.54	**P**
/	All channels	9 kHz ~30 MHz	Fig.55	**P**
		30 MHz ~1 GHz	Fig.56	**P**
		18 GHz ~26.5 GHz	Fig.57	**P**

Worst Case Result

GFSK CH39 (1-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4881.900000	49.09	74.00	24.91	H	3.7
7323.428572	46.77	74.00	27.23	H	5.2
10421.571429	48.04	74.00	25.96	V	9.0
14220.857143	50.48	74.00	23.52	H	11.2
17007.428571	54.79	74.00	19.21	H	18.4
17934.000000	55.69	74.00	18.31	V	19.0

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4881.900000	39.76	54.00	14.24	H	3.7
7323.428572	35.94	54.00	18.06	H	5.2
10421.571429	35.72	54.00	18.28	V	9.0
14220.857143	37.08	54.00	16.92	H	11.2
17007.428571	42.57	54.00	11.43	H	18.4
17934.000000	43.20	54.00	10.80	V	19.0

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π/4 DQPSK CH0 (1-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4803.900000	49.29	74.00	24.71	H	4.0
10443.000000	47.90	74.00	26.10	H	9.0
14872.285714	51.84	74.00	22.16	H	13.0
15861.857143	53.21	74.00	20.79	H	14.0
16806.428571	54.89	74.00	19.11	H	17.8
17910.428571	55.83	74.00	18.17	V	18.9

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4803.900000	37.66	54.00	16.34	H	4.0
10443.000000	35.91	54.00	18.09	H	9.0
14872.285714	39.52	54.00	14.48	H	13.0
15861.857143	40.80	54.00	13.20	H	14.0
16806.428571	42.44	54.00	11.56	H	17.8
17910.428571	43.17	54.00	10.83	V	18.9

8DPSK CH0 (1-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4804.200000	49.00	74.00	25.00	H	4.0
14900.571429	51.84	74.00	22.16	V	13.0
15221.142857	51.46	74.00	22.54	V	12.5
15871.714286	53.61	74.00	20.39	H	14.0
17049.428571	55.09	74.00	18.91	V	18.5
17602.714286	55.41	74.00	18.60	V	18.2

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4804.200000	37.55	54.00	16.45	H	4.0
14900.571429	39.26	54.00	14.74	V	13.0
15221.142857	38.99	54.00	15.01	V	12.5
15871.714286	40.66	54.00	13.34	H	14.0
17049.428571	42.63	54.00	11.37	V	18.5
17602.714286	42.36	54.00	11.64	V	18.2

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”, and Antenna Factor, the gain of the preamplifier, the cable loss. P_{Mea} is the field strength recorded from the instrument. The measurement results are obtained as described below:

Result= P_{Mea} +Cable Loss +Antenna Factor-Gain of the preamplifier.

See below for test graphs.

Conclusion: Pass

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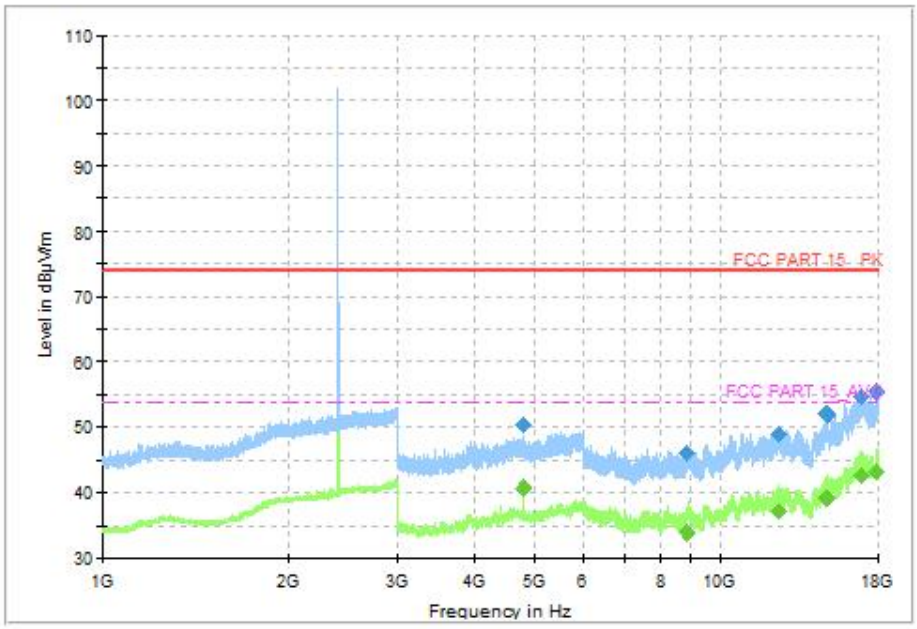

Fig. 40 Radiated Spurious Emission (GFSK, CH0, 1 GHz ~18 GHz)

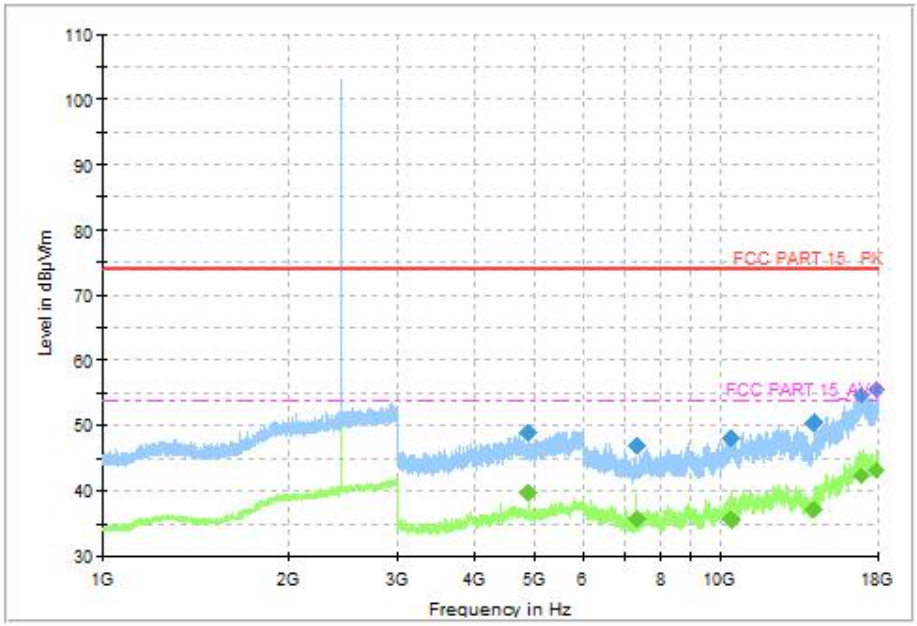

Fig. 41 Radiated Spurious Emission (GFSK, CH39, 1 GHz ~18 GHz)

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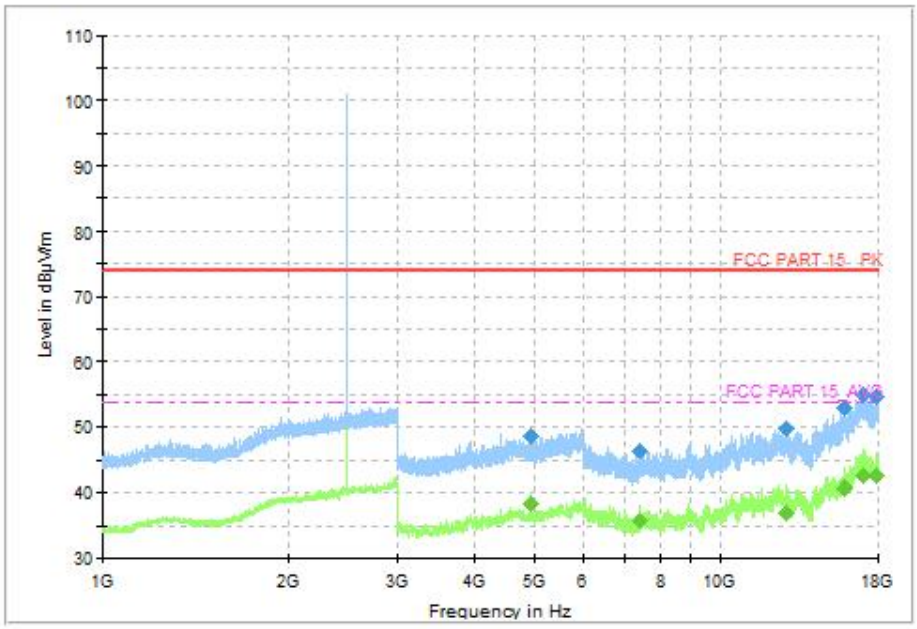

Fig. 42 Radiated Spurious Emission (GFSK, CH78, 1 GHz ~18 GHz)

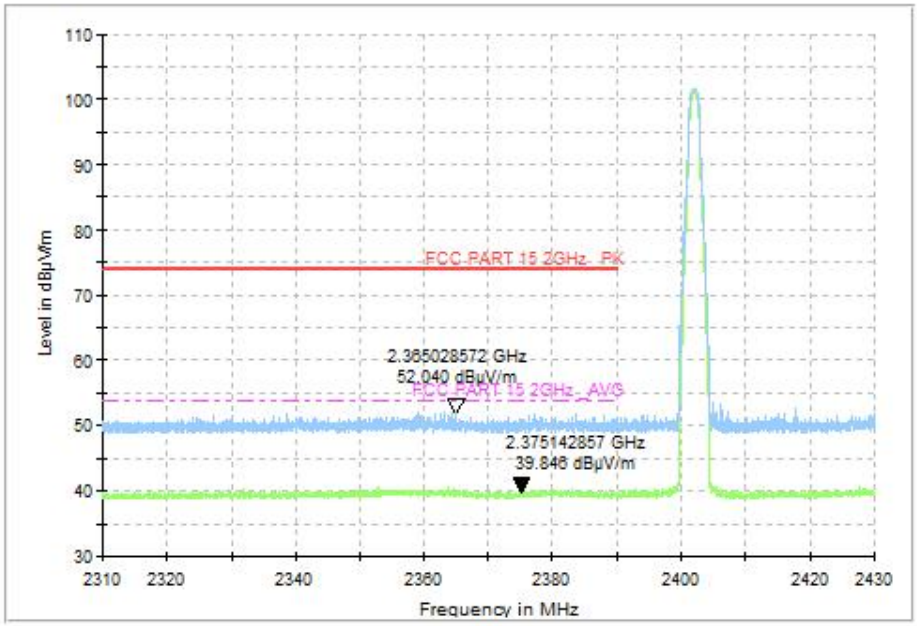

Fig. 43 Radiated Band Edges (GFSK, CH0, 2380GHz~2450GHz)

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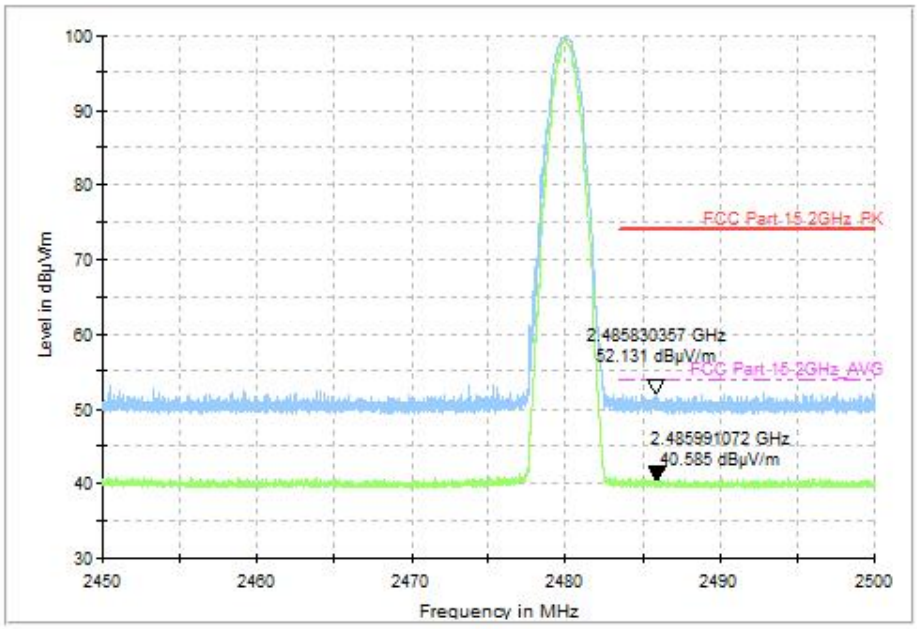

Fig. 44 Radiated Band Edges (GFSK, CH78, 2450GHz~2500GHz)

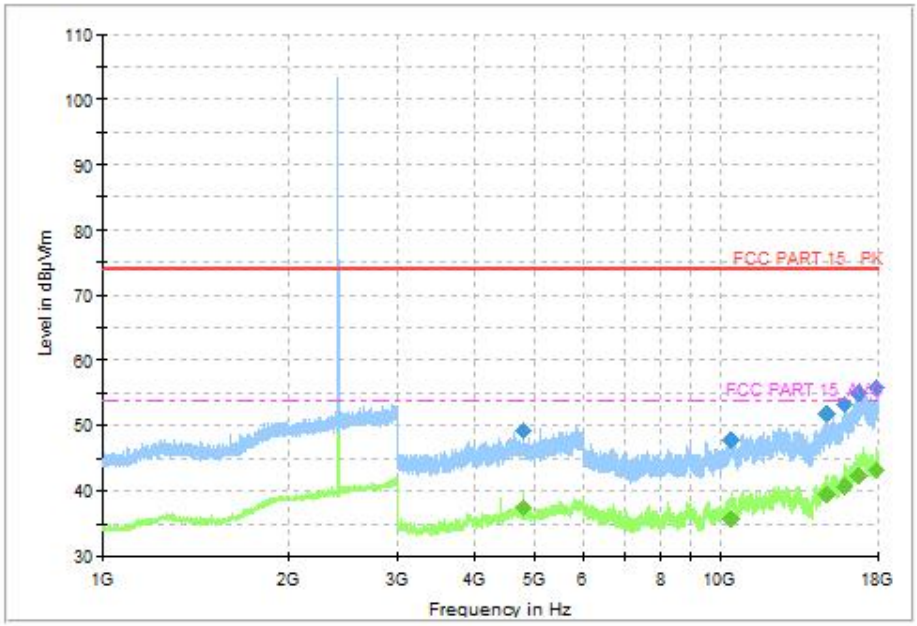

Fig. 45 Radiated Spurious Emission (π/4 DQPSK, CH0, 1 GHz ~18 GHz)

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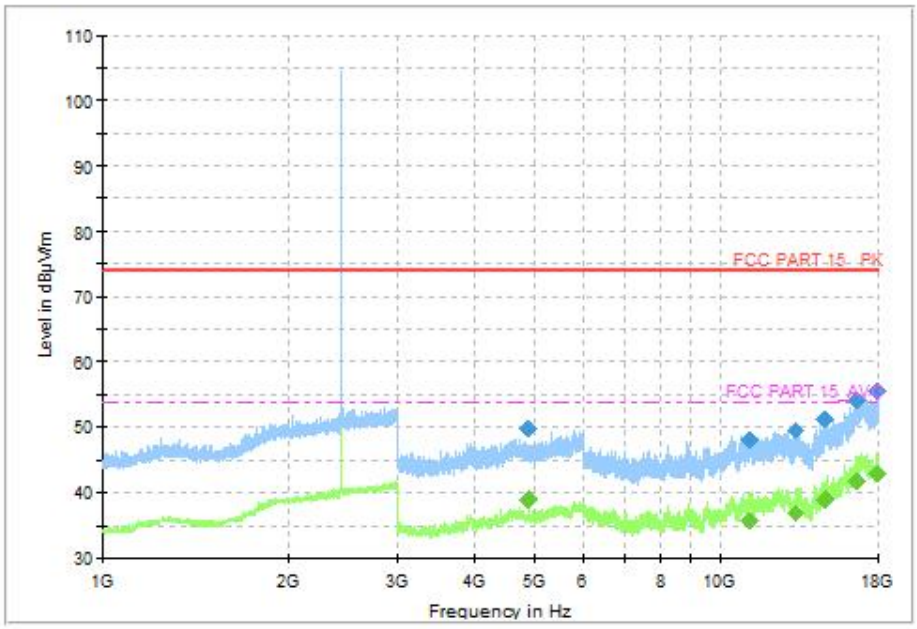

Fig. 46 Radiated Spurious Emission (π/4 DQPSK, CH39, 1 GHz ~18 GHz)

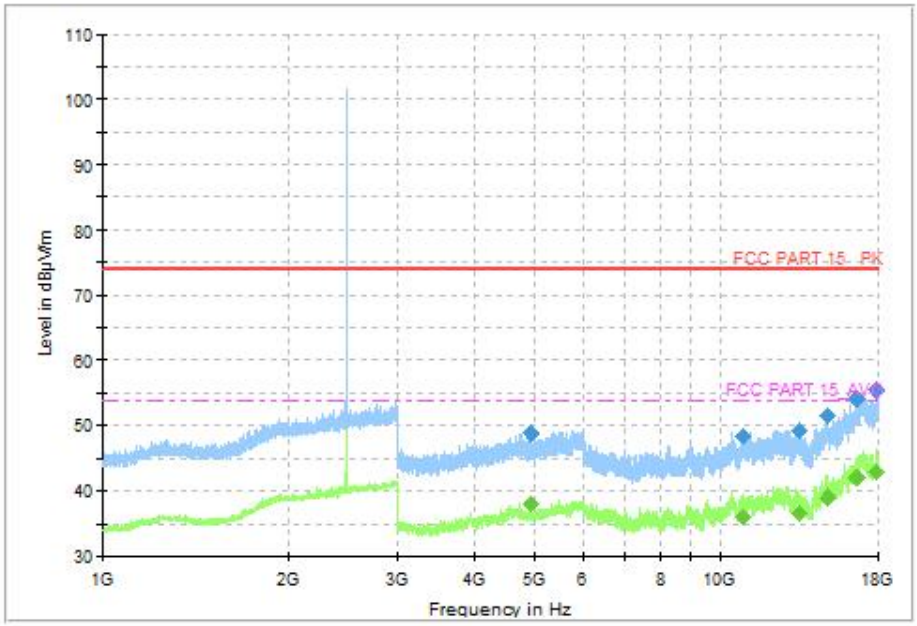

Fig. 47 Radiated Spurious Emission (π/4 DQPSK, CH78, 1 GHz ~18 GHz)

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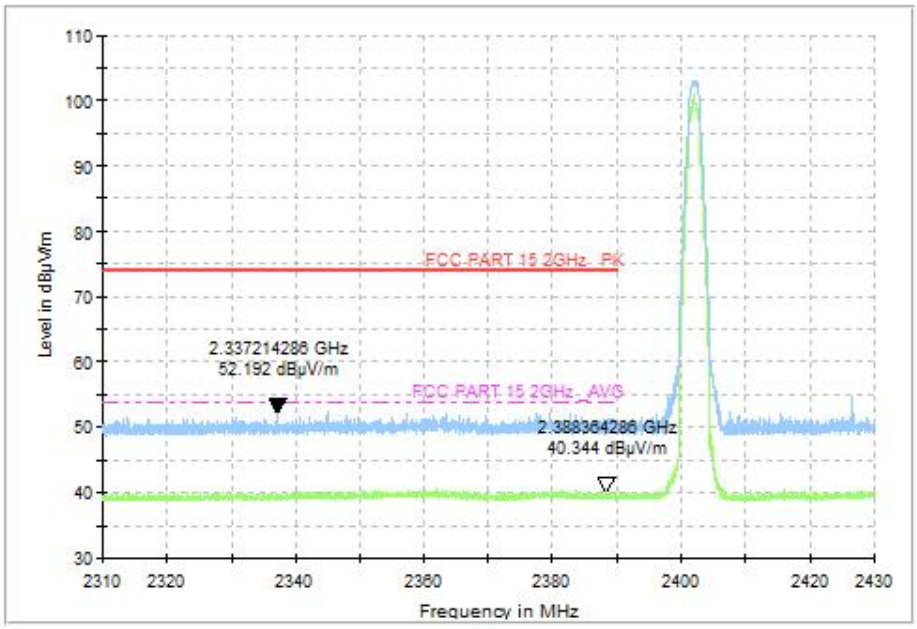

Fig. 48 Radiated Band Edges (π/4 DQPSK, CH0, 2380GHz~2450GHz)

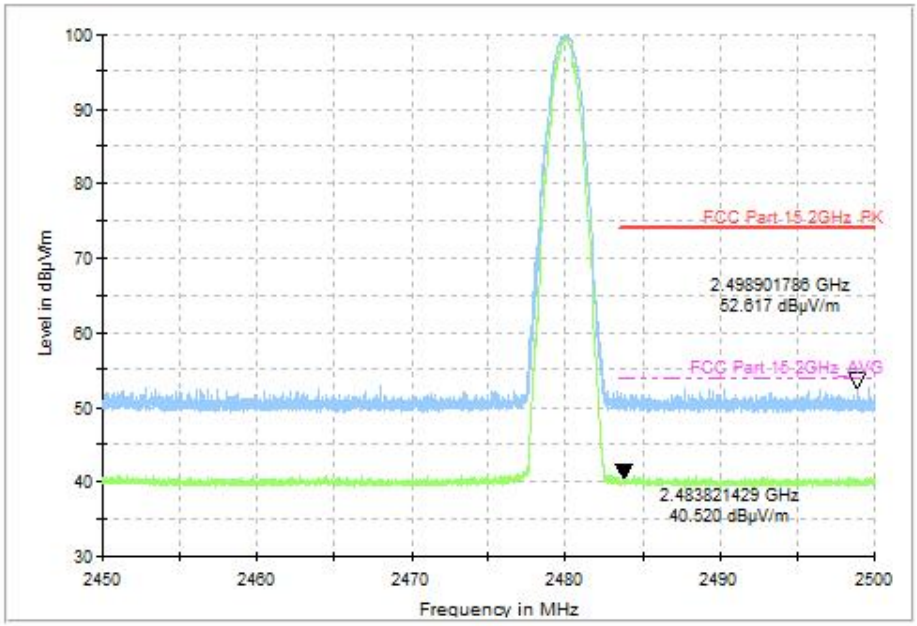

Fig. 49 Radiated Band Edges (π/4 DQPSK, CH78, 2450GHz~2500GHz)

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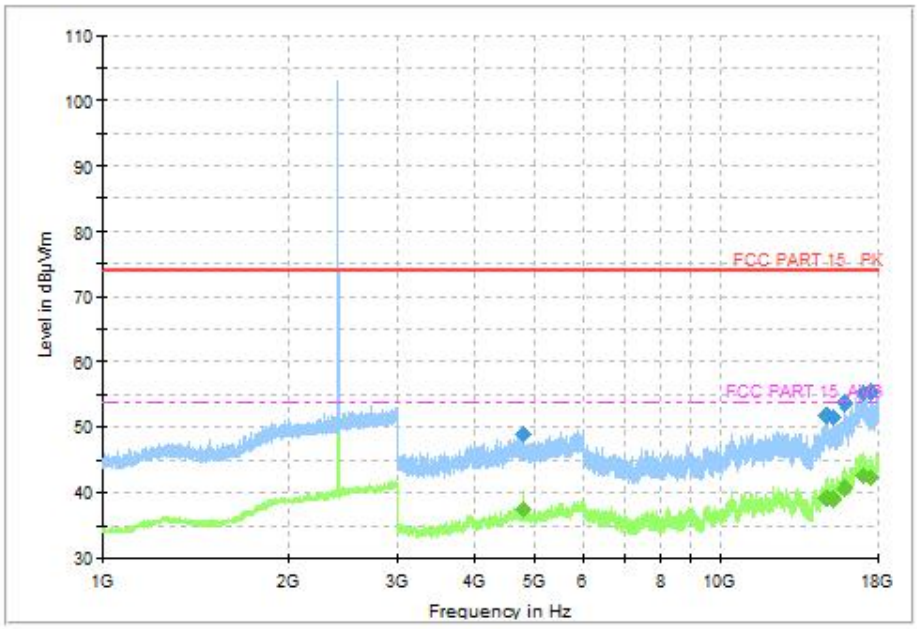

Fig. 50 Radiated Spurious Emission (8DPSK, CH0, 1 GHz ~18 GHz)

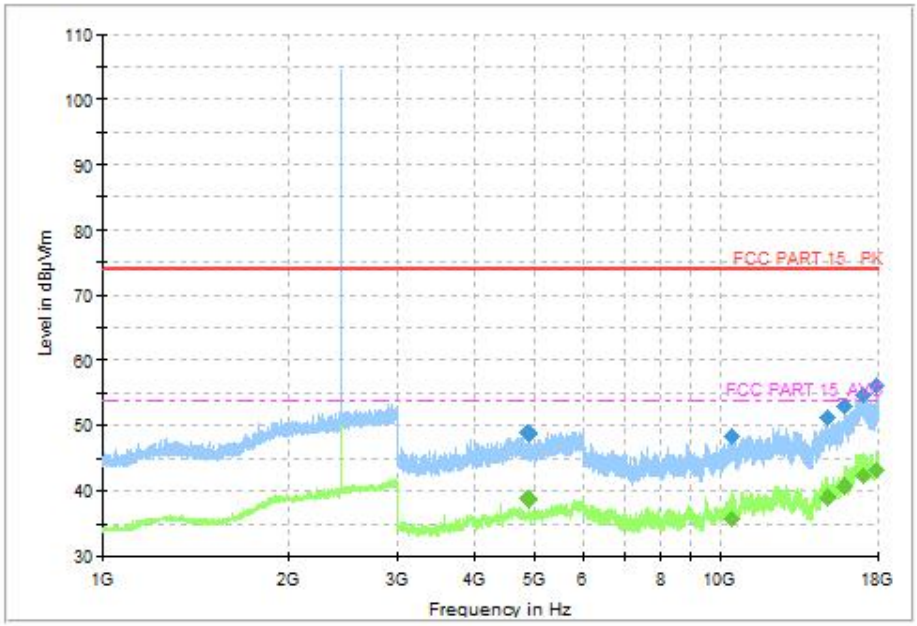

Fig. 51 Radiated Spurious Emission (8DPSK, CH39, 1 GHz ~18 GHz)

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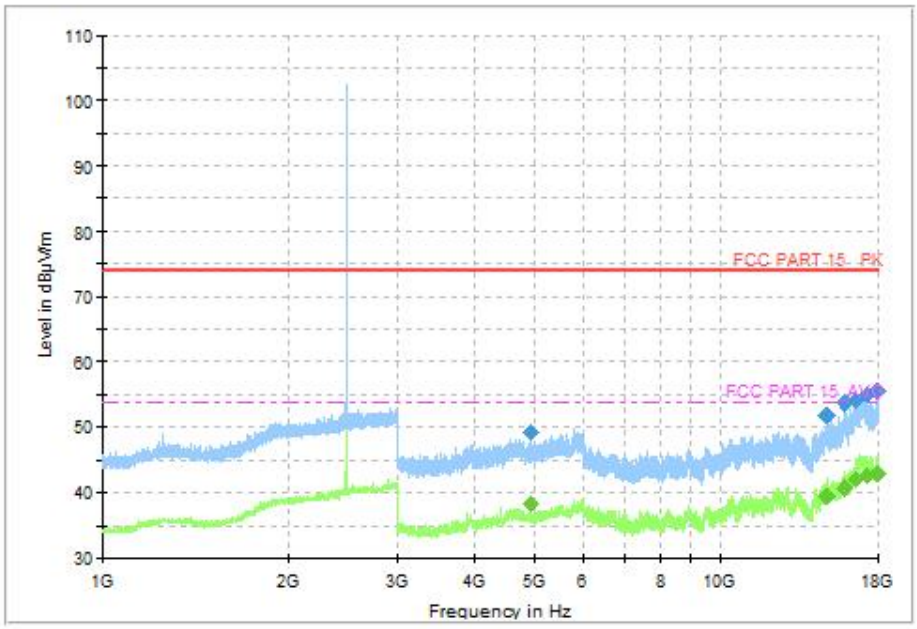

Fig. 52 Radiated Spurious Emission (8DPSK, CH78, 1 GHz ~18 GHz)

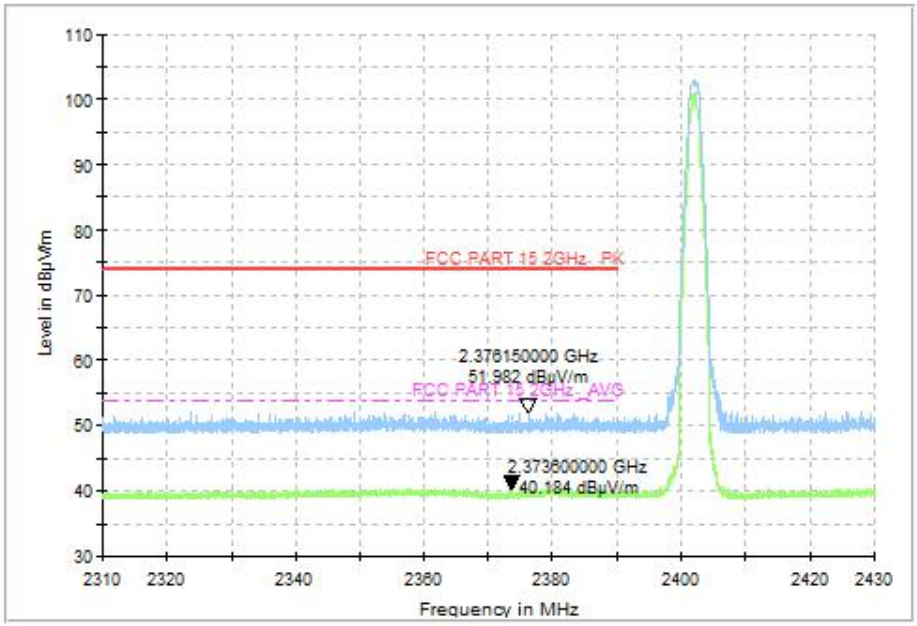

Fig. 53 Radiated Band Edges (8DPSK, CH0, 2380GHz~2450GHz)

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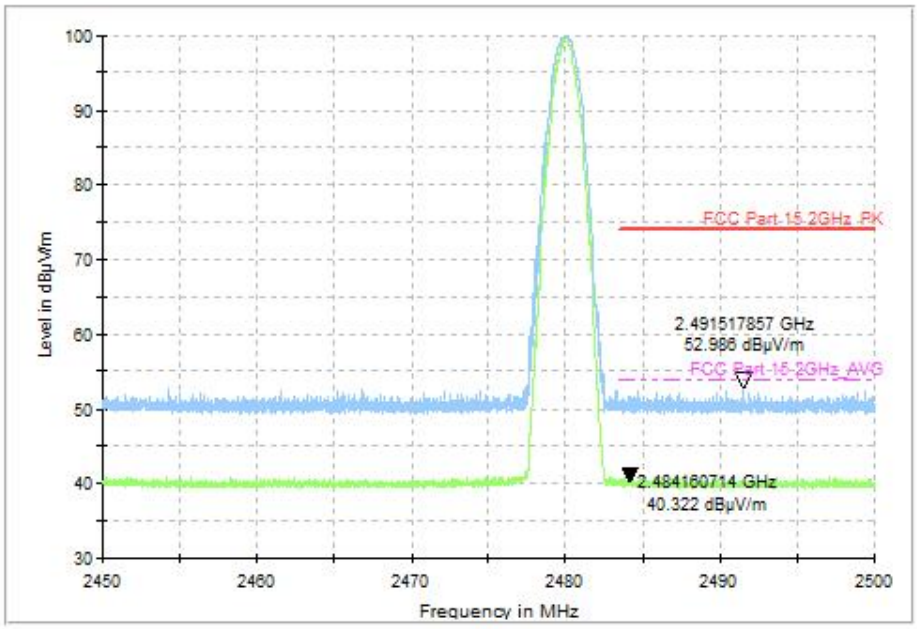

Fig. 54 Radiated Band Edges (8DPSK, CH78, 2450GHz~2500GHz)

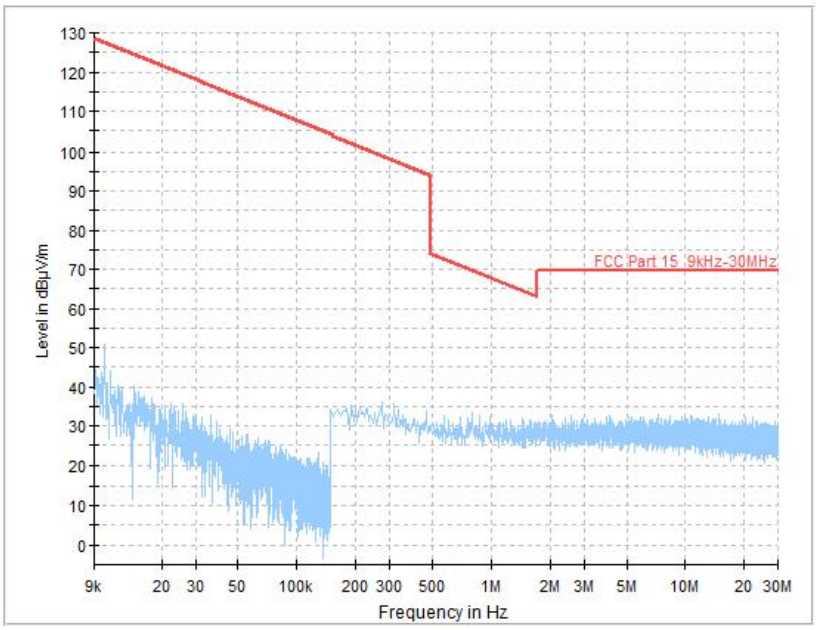

Fig. 55 Radiated Spurious Emission (All Channels, 9 kHz ~30 MHz)

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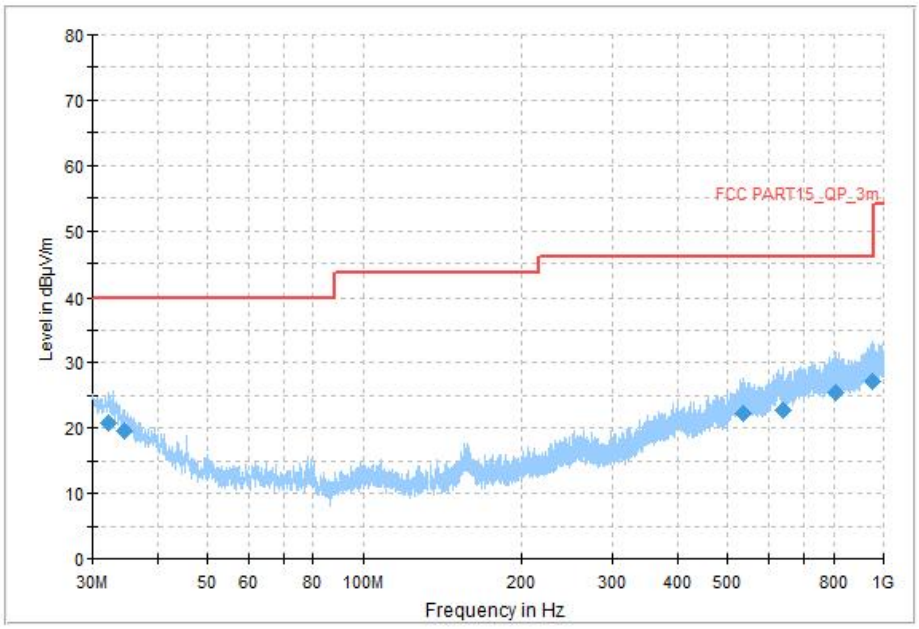

Fig. 56 Radiated Spurious Emission (All Channels, 30 MHz ~1 GHz)

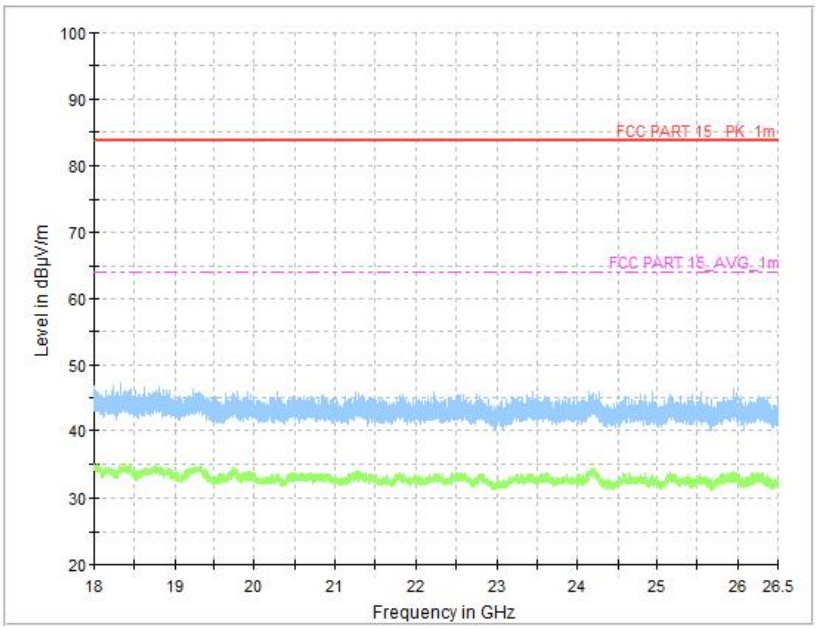

Fig. 57 Radiated Spurious Emission (All Channels, 18 GHz ~26.5 GHz)

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A.5 20dB Bandwidth

Method of Measurement: See ANSI C63.10-clause 7.8.7.

Measurement Limit:

Standard	Limit (MHz)
FCC 47 CFR Part 15.247 (a)	/

Measurement Result:

Mode	Channel	20dB Bandwidth (MHz)		Conclusion
GFSK	0	Fig.58	0.80	/
	39	Fig.59	0.81	
	78	Fig.60	0.81	
π/4 DQPSK	0	Fig.61	1.21	/
	39	Fig.62	1.21	
	78	Fig.63	1.21	
8DPSK	0	Fig.64	1.25	/
	39	Fig.65	1.24	
	78	Fig.66	1.24	

See below for test graphs.

Conclusion: PASS

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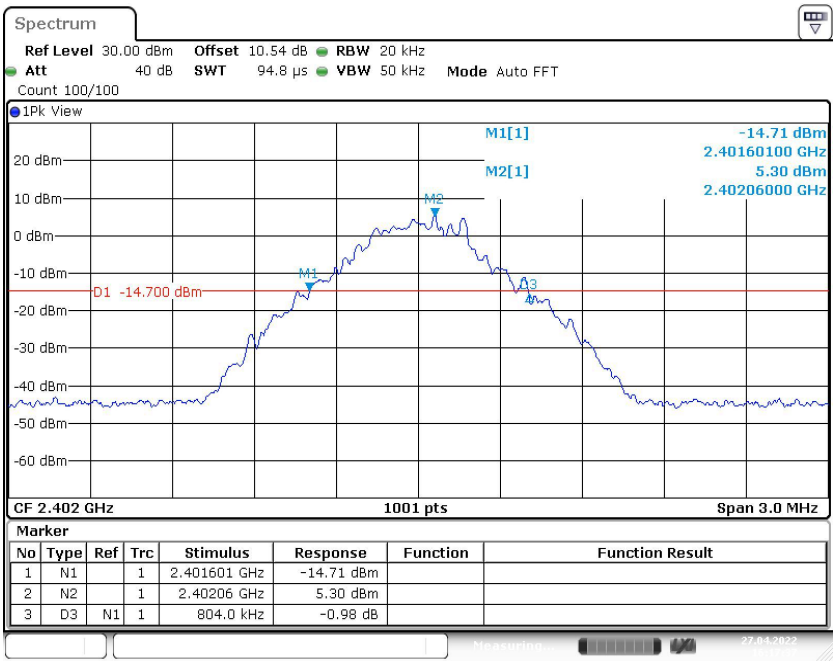

Fig. 58 20dB Bandwidth (GFSK, CH0)

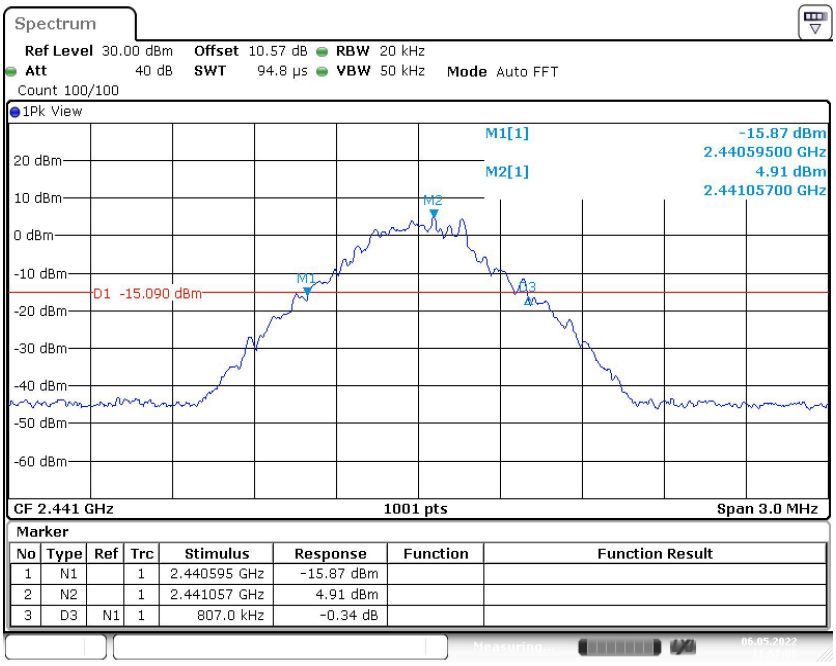

Fig. 59 20dB Bandwidth (GFSK, CH39)

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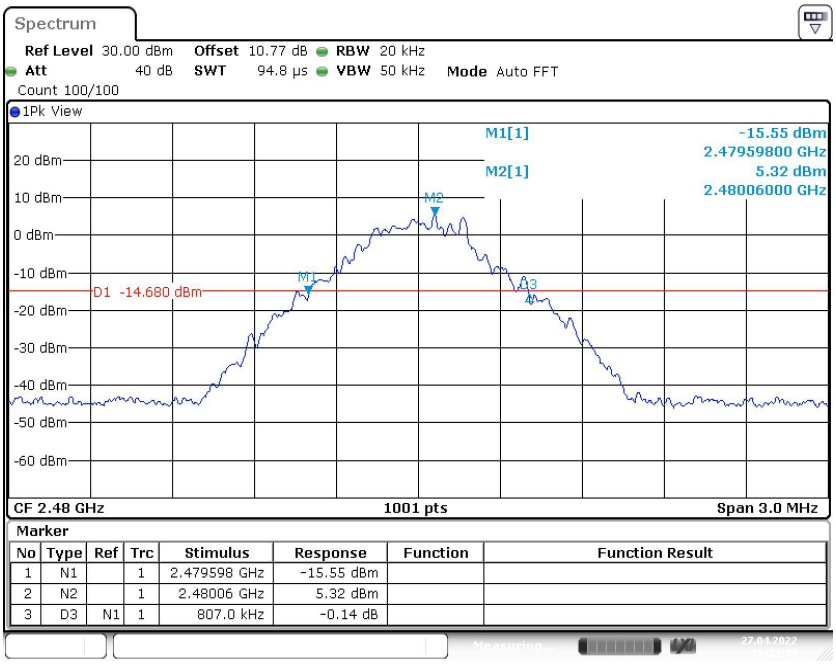

Fig. 60 20dB Bandwidth (GFSK, CH78)

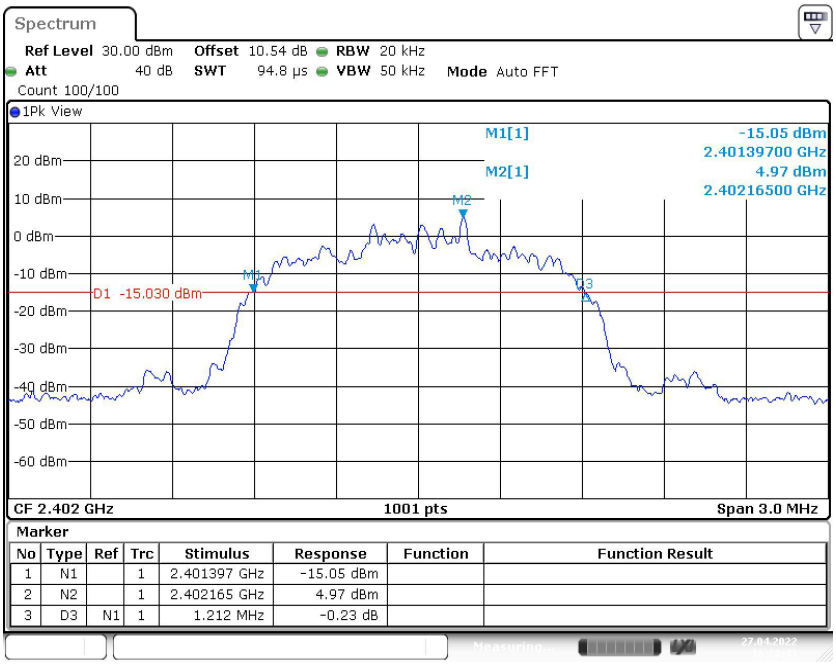

Fig. 61 20dB Bandwidth (π/4 DQPSK, CH0)

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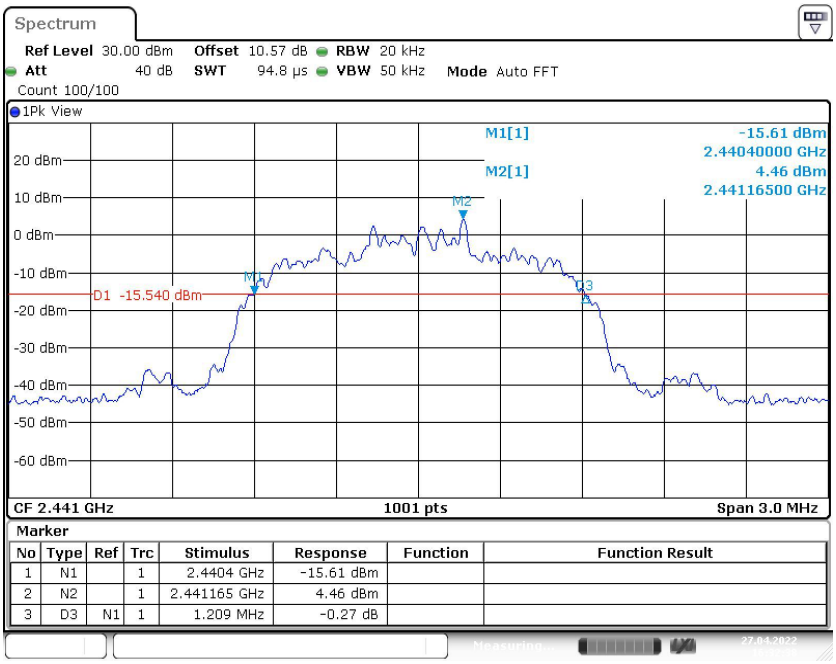

Fig. 62 20dB Bandwidth (π/4 DQPSK, CH39)

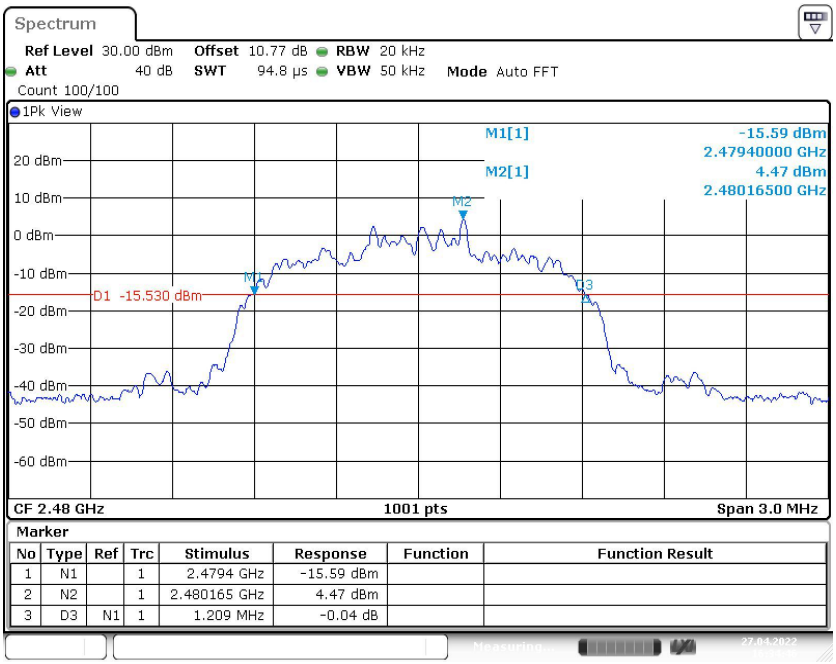

Fig. 63 20dB Bandwidth (π/4 DQPSK, CH78)

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