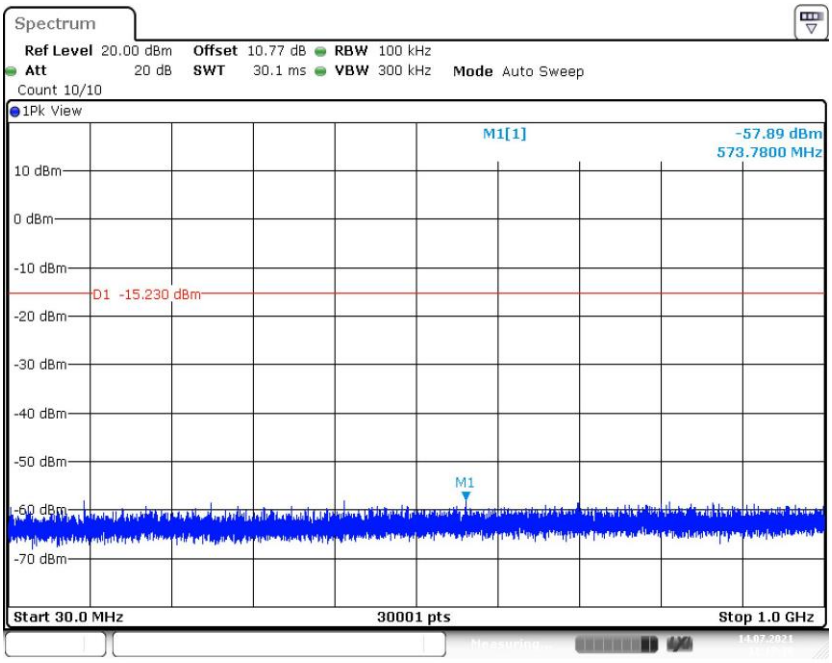

Fig.49 Conducted Spurious Emission (CH39, 30MHz -1GHz), LE 2M

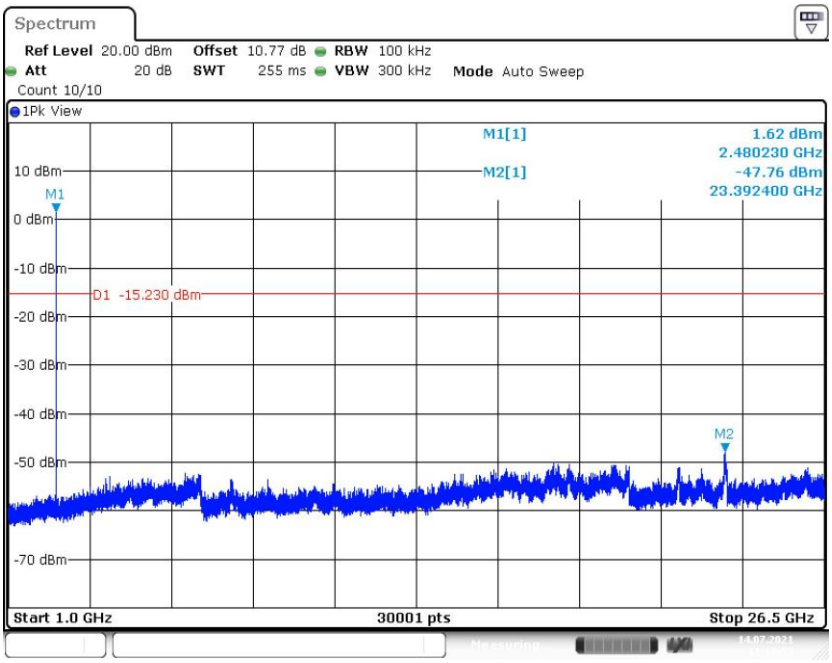

Fig.50 Conducted Spurious Emission (CH39, 1GHz-26.5GHz), LE 2M

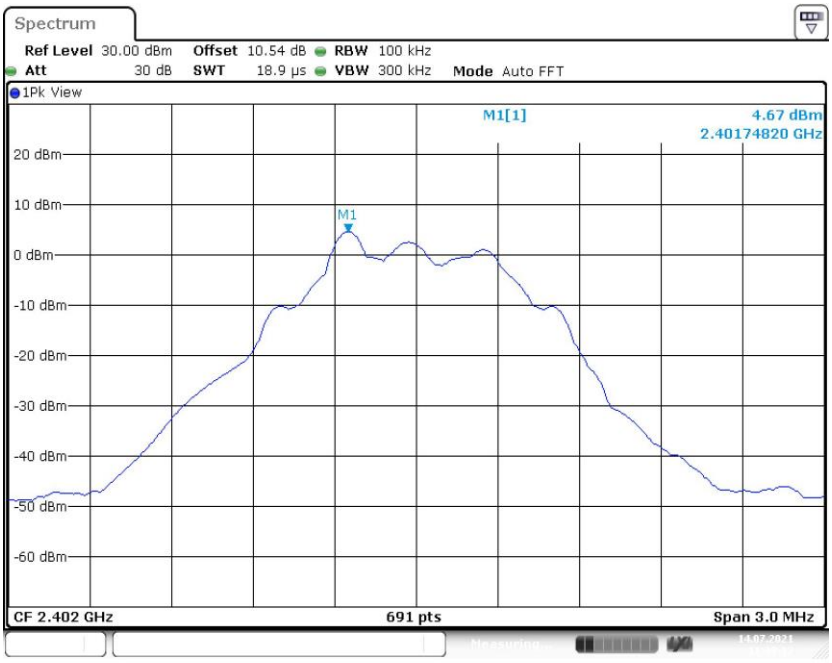

Fig.51 Conducted Spurious Emission (CH0, Center Frequency), LE Coded S=8

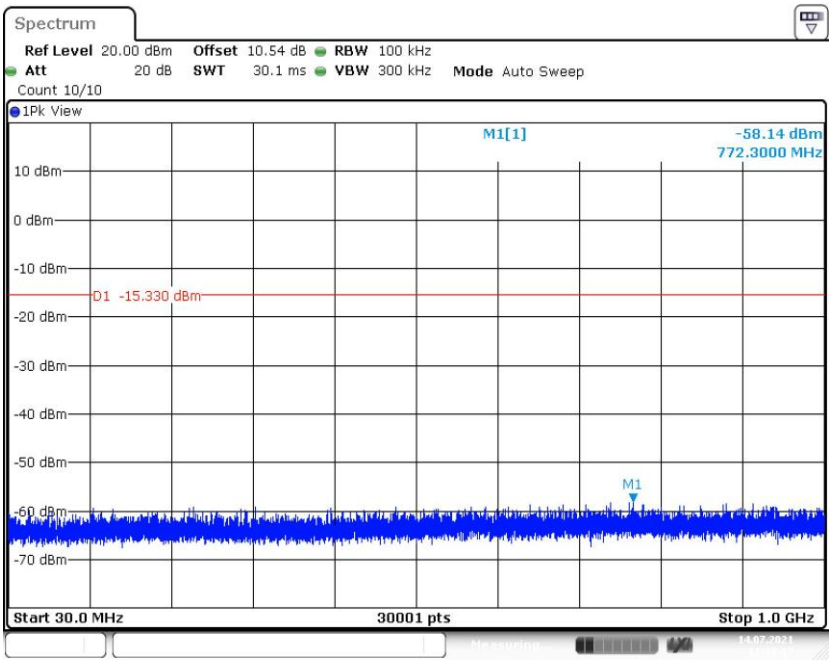

Fig.52 Conducted Spurious Emission (CH0, 30MHz -1GHz), LE Coded S=8

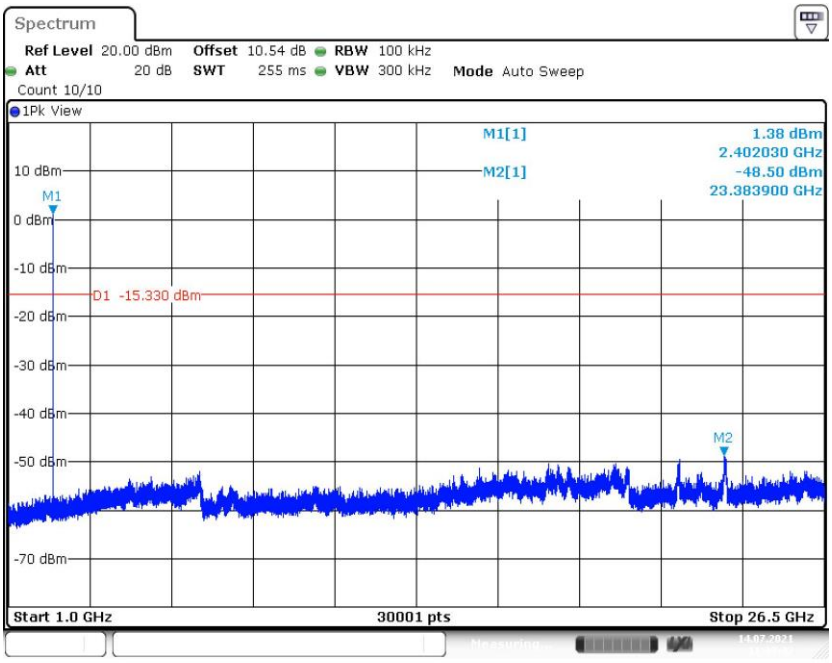

Fig.53 Conducted Spurious Emission (CH0, 1GHz-26.5GHz), LE Coded S=8

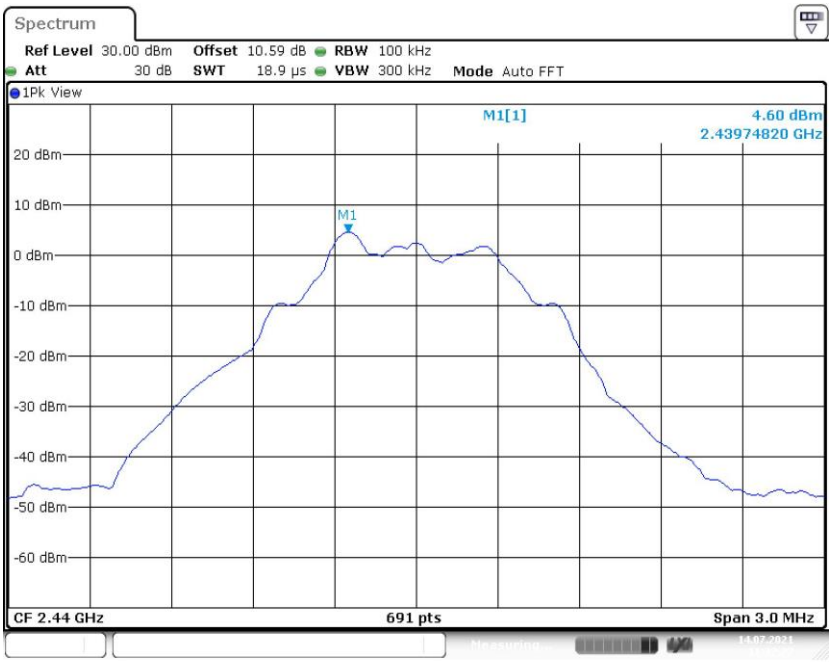

Fig.54 Conducted Spurious Emission (CH19, Center Frequency), LE Coded S=8

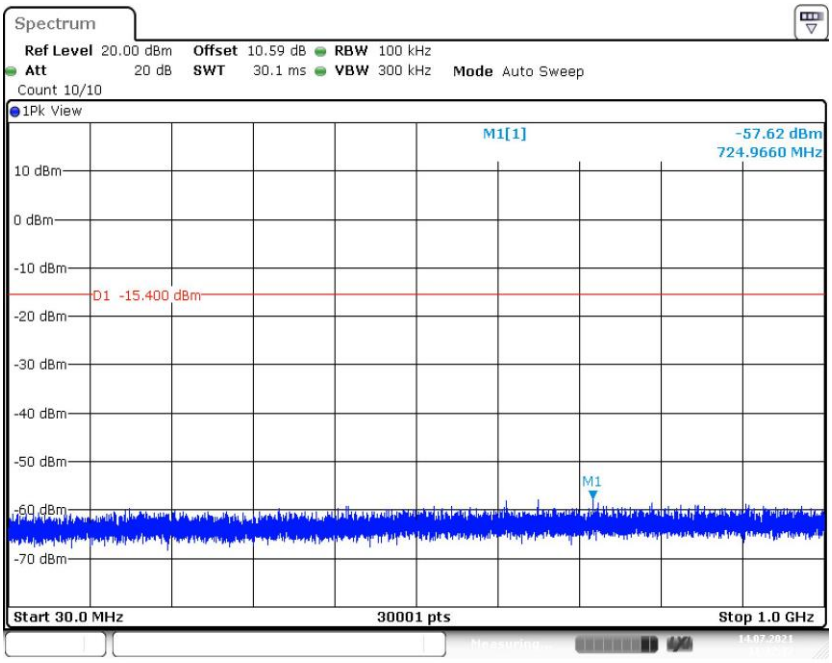

Fig.55 Conducted Spurious Emission (CH19, 30MHz -1GHz), LE Coded S=8

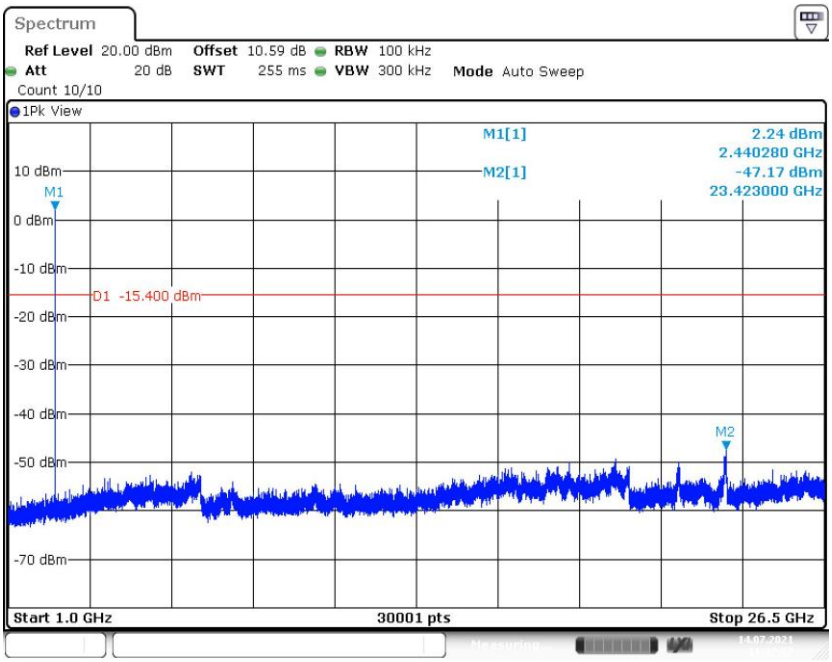

Fig.56 Conducted Spurious Emission (CH19, 1GHz-26.5GHz), LE Coded S=8

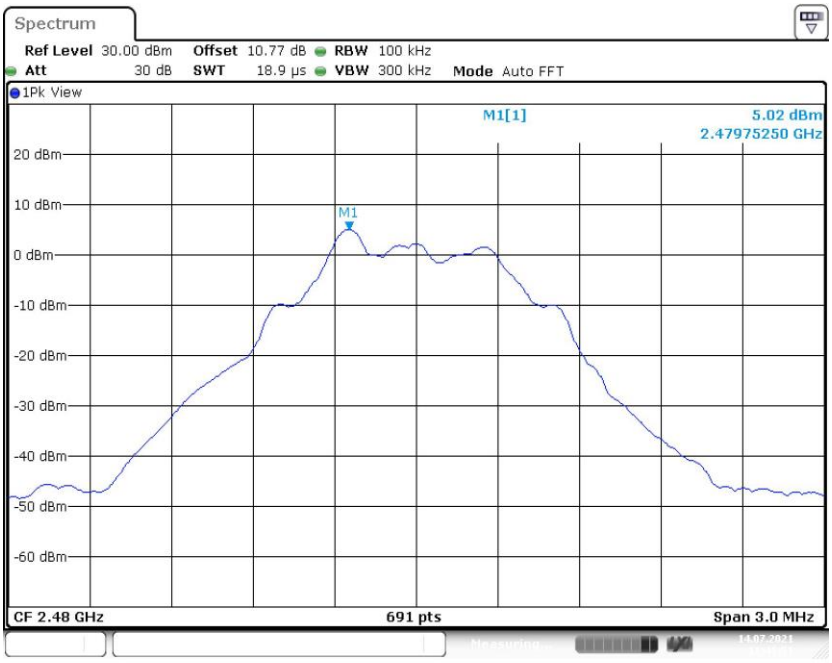

Fig.57 Conducted Spurious Emission (CH39, Center Frequency), LE Coded S=8

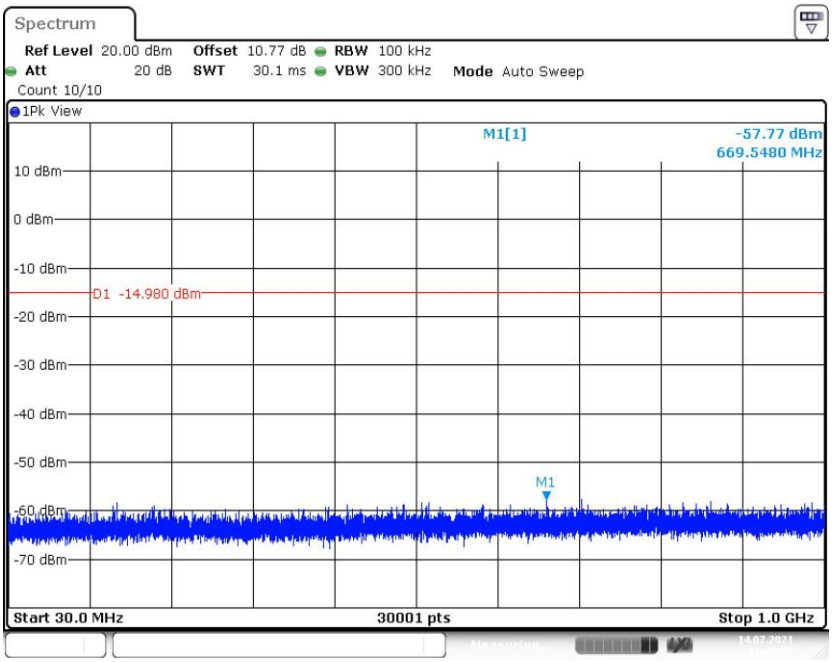

Fig.58 Conducted Spurious Emission (CH39, 30MHz -1GHz), LE Coded S=8

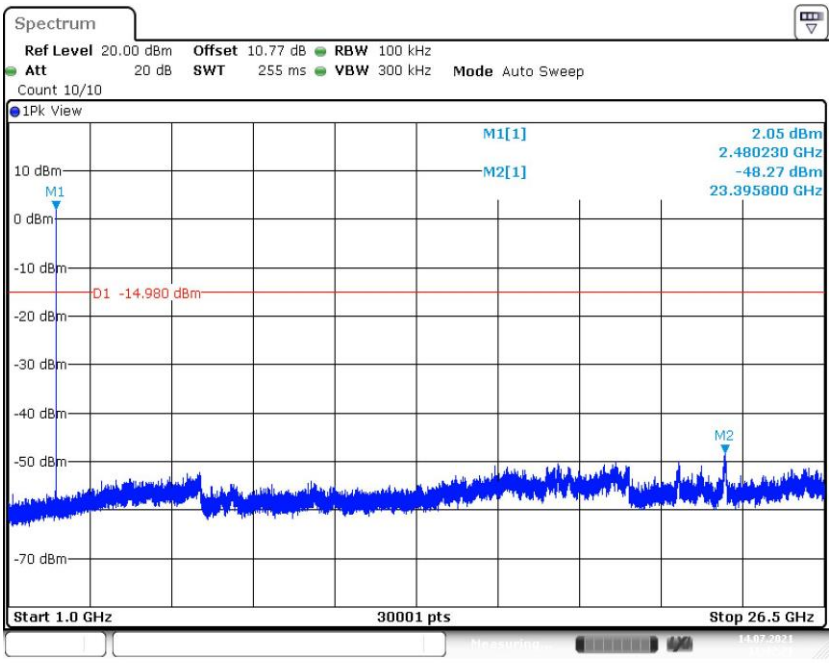

Fig.59 Conducted Spurious Emission (CH39, 1GHz-26.5GHz), LE Coded S=8

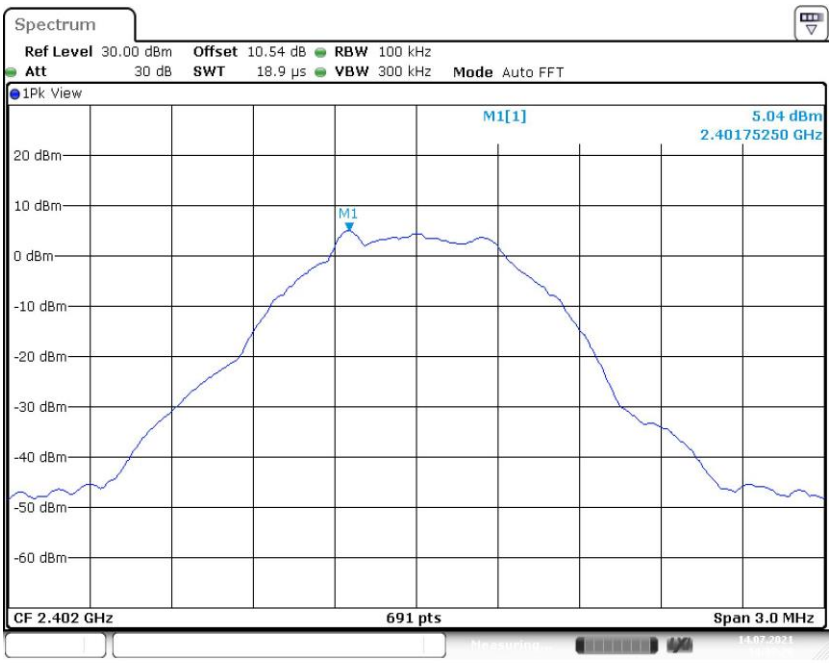

Fig.60 Conducted Spurious Emission (CH0, Center Frequency), LE Coded S=2

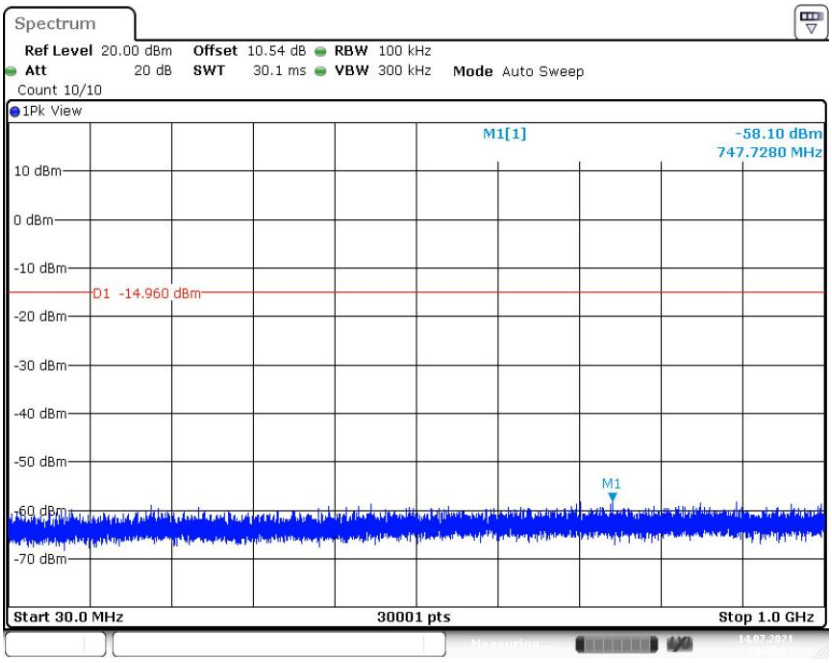

Fig.61 Conducted Spurious Emission (CH0, 30MHz -1GHz), LE Coded S=2

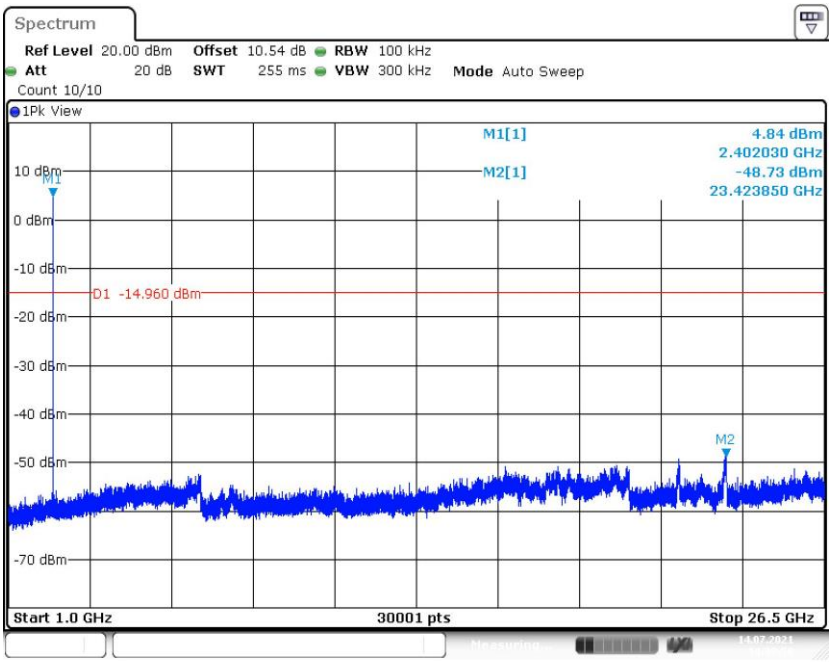

Fig.62 Conducted Spurious Emission (CH0, 1GHz-26.5GHz), LE Coded S=2

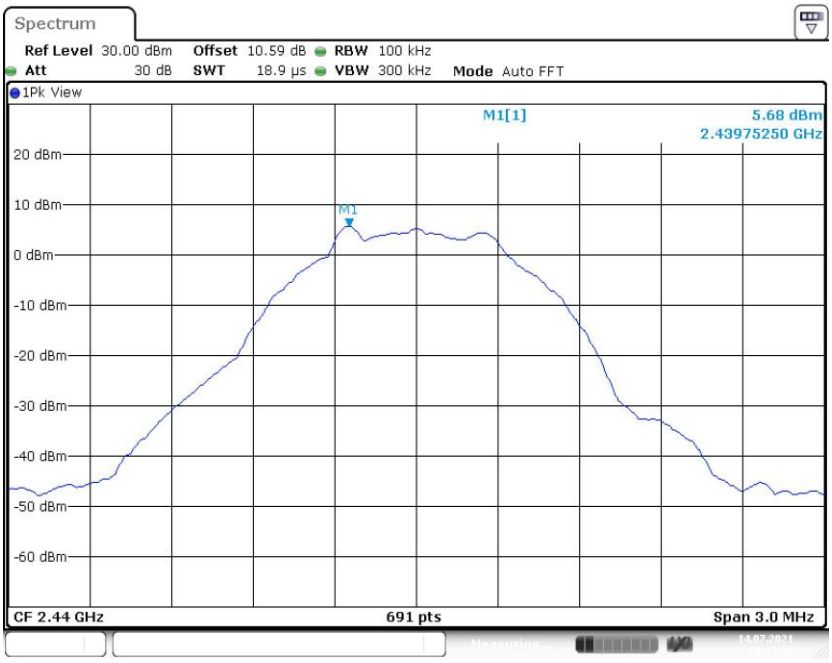

Fig.63 Conducted Spurious Emission (CH19, Center Frequency), LE Coded S=2

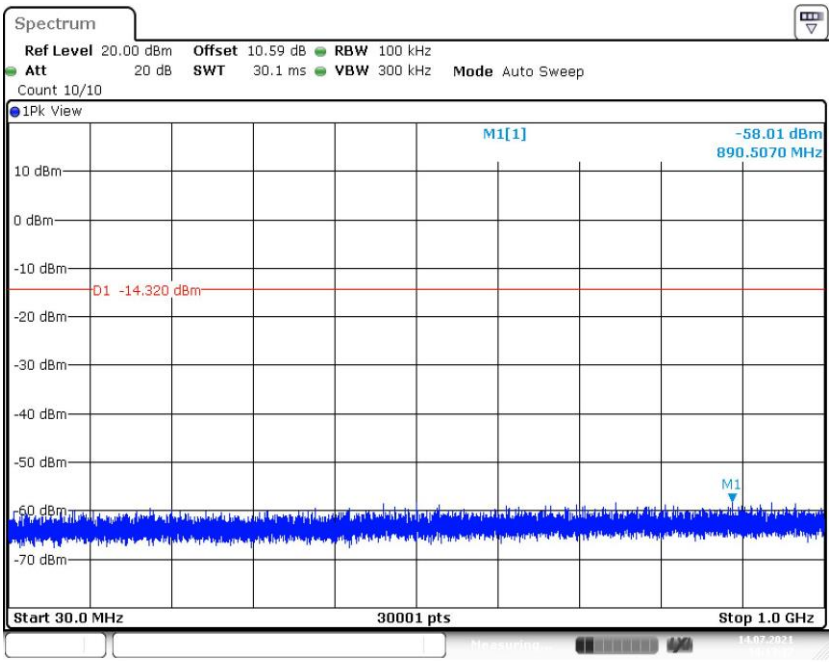

Fig.64 Conducted Spurious Emission (CH19, 30MHz -1GHz), LE Coded S=2

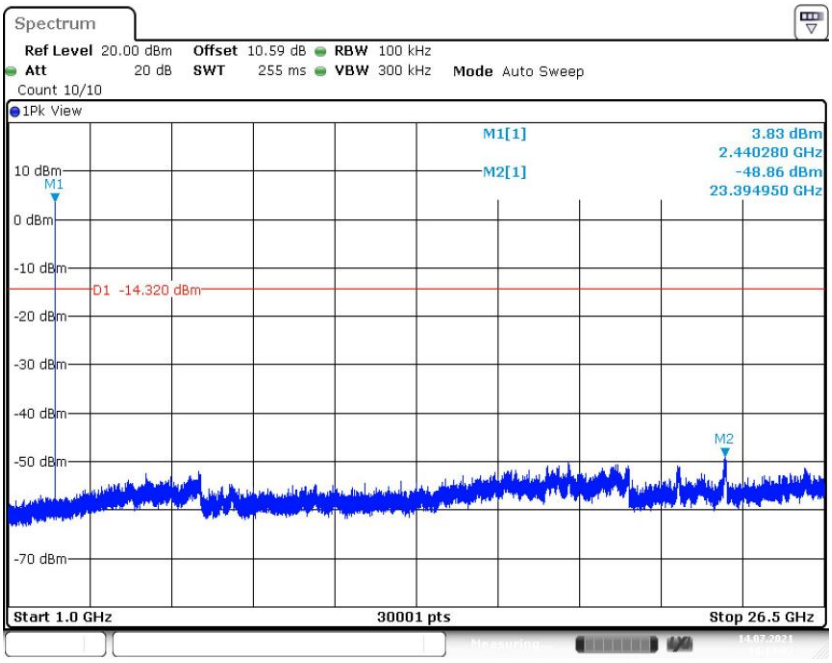

Fig.65 Conducted Spurious Emission (CH19, 1GHz-26.5GHz), LE Coded S=2

Fig.66 Conducted Spurious Emission (CH39, Center Frequency), LE Coded S=2

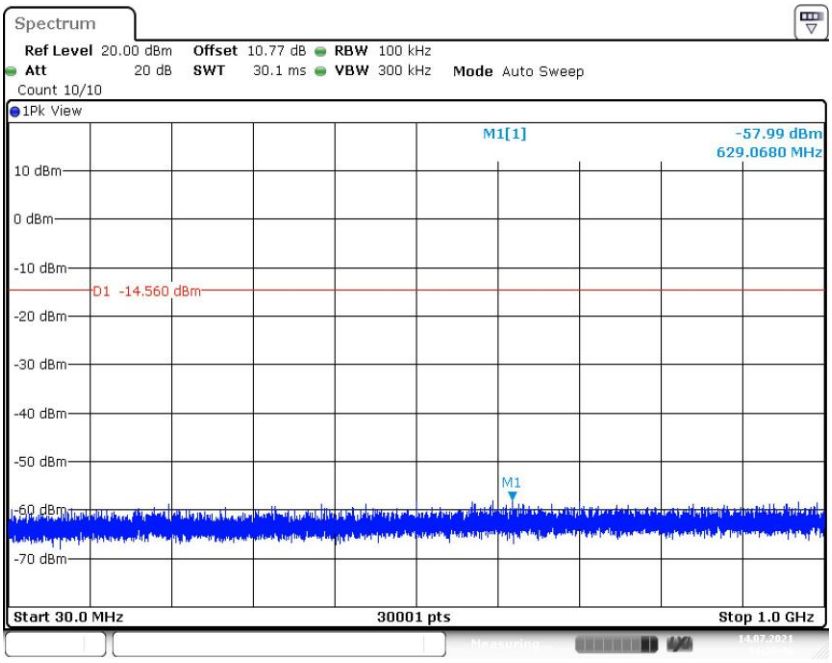

Fig.67 Conducted Spurious Emission (CH39, 30MHz -1GHz), LE Coded S=2

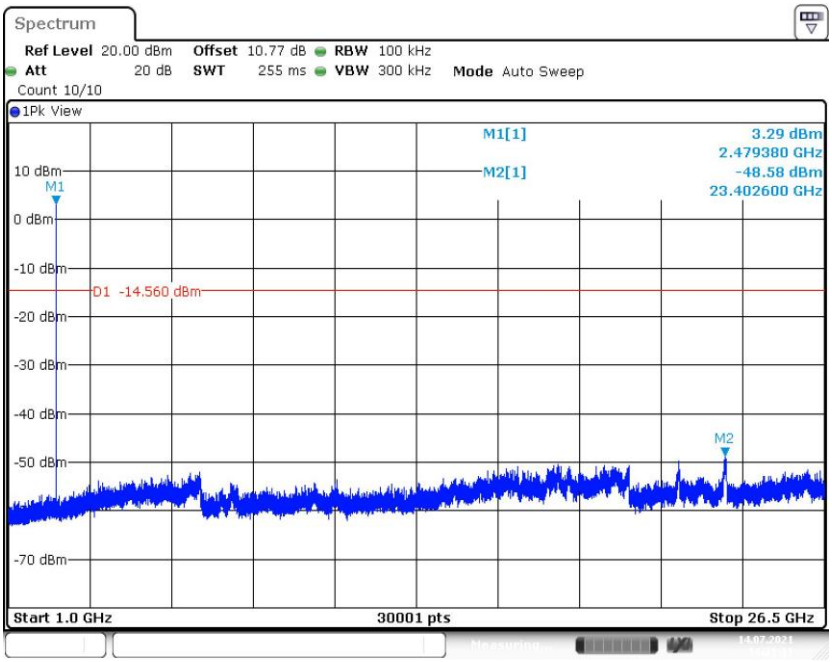

Fig.68 Conducted Spurious Emission (CH39, 1GHz-26.5GHz), LE Coded S=2

A.6 Transmitter Spurious Emission - Radiated

Measurement Limit:

Standard	Limit
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.

Measurement Results:

Mode	Channel	Frequency Range	Test Results	Conclusion
LE 1M	0	1 GHz ~18 GHz	Fig.69	**P**
	19	1 GHz ~18 GHz	Fig.70	**P**
	39	1 GHz ~18 GHz	Fig.71	**P**
	Restricted Band(CH0)	2.38 GHz ~ 2.45 GHz	Fig.72	**P**
	Restricted Band(CH39)	2.45 GHz ~ 2.5 GHz	Fig.73	**P**
	All channels	9 kHz ~30 MHz	Fig.74	**P**
		30 MHz ~1 GHz	Fig.75	**P**
		18 GHz ~ 26.5 GHz	Fig.76	**P**
LE 2M	0	1 GHz ~18 GHz	Fig.77	**P**
	19	1 GHz ~18 GHz	Fig.78	**P**
	39	1 GHz ~18 GHz	Fig.79	**P**
	Restricted Band(CH0)	2.38 GHz ~ 2.45 GHz	Fig.80	**P**
	Restricted Band(CH39)	2.45 GHz ~ 2.5 GHz	Fig.81	**P**
	All channels	9 kHz ~30 MHz	Fig.82	**P**
		30 MHz ~1 GHz	Fig.83	**P**
		18 GHz ~ 26.5 GHz	Fig.84	**P**
LE Coded S=8	0	1 GHz ~18 GHz	Fig.85	**P**
	19	1 GHz ~18 GHz	Fig.86	**P**
	39	1 GHz ~18 GHz	Fig.87	**P**
	Restricted Band(CH0)	2.38 GHz ~ 2.45 GHz	Fig.88	**P**
	Restricted Band(CH39)	2.45 GHz ~ 2.5 GHz	Fig.89	**P**
	All channels	9 kHz ~30 MHz	Fig.90	**P**
		30 MHz ~1 GHz	Fig.91	**P**
		18 GHz ~ 26.5 GHz	Fig.92	**P**
LE Coded S=2	0	1 GHz ~18 GHz	Fig.93	**P**
	19	1 GHz ~18 GHz	Fig.94	**P**
	39	1 GHz ~18 GHz	Fig.95	**P**
	Restricted Band(CH0)	2.38 GHz ~ 2.45 GHz	Fig.96	**P**
	Restricted Band(CH39)	2.45 GHz ~ 2.5 GHz	Fig.97	**P**
	All channels	9 kHz ~30 MHz	Fig.98	**P**
		30 MHz ~1 GHz	Fig.99	**P**
		18 GHz ~ 26.5 GHz	Fig.100	**P**

Worst Case Result

LE 1M CH19 (1-18GHz)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4880.400000	48.23	74.00	25.77	H	3.7
11222.142857	47.84	74.00	26.16	V	9.7
14835.000000	51.31	74.00	22.69	H	12.9
15860.571429	53.57	74.00	20.43	V	14.0
17059.285714	55.12	74.00	18.88	V	18.5
17919.857143	55.41	74.00	18.59	H	18.9

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4880.400000	37.31	54.00	16.69	H	3.7
11222.142857	35.75	54.00	18.25	V	9.7
14835.000000	39.20	54.00	14.80	H	12.9
15860.571429	40.69	54.00	13.31	V	14.0
17059.285714	42.46	54.00	11.54	V	18.5
17919.857143	43.31	54.00	10.69	H	18.9

LE 2M CH19 (1-18GHz)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4879.500000	48.48	74.00	25.52	H	3.7
11044.285714	49.03	74.00	24.97	V	9.8
14899.285714	51.24	74.00	22.76	H	13.0
15894.000000	53.16	74.00	20.84	H	14.0
16890.000000	54.62	74.00	19.38	V	18.0
17979.857143	54.99	74.00	19.01	V	19.1

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4879.500000	36.60	54.00	17.40	H	3.7
11044.285714	36.02	54.00	17.98	V	9.8
14899.285714	39.18	54.00	14.82	H	13.0
15894.000000	40.37	54.00	13.63	H	14.0
16890.000000	42.37	54.00	11.63	V	18.0
17979.857143	42.73	54.00	11.27	V	19.1

LE Coded S=8 CH19 (1-18GHz)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4879.800000	49.18	74.00	24.82	H	3.7
5920.200000	47.93	74.00	26.07	H	4.6
8253.428572	45.99	74.00	28.01	H	5.9
11135.571429	47.99	74.00	26.01	H	9.7
15944.142857	51.95	74.00	22.05	H	14.1
16905.857143	55.47	74.00	18.53	H	18.1

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4879.800000	38.26	54.00	15.74	H	3.7
5920.200000	35.91	54.00	18.09	H	4.6
8253.428572	34.05	54.00	19.95	H	5.9
11135.571429	35.72	54.00	18.28	H	9.7
15944.142857	39.85	54.00	14.15	H	14.1
16905.857143	42.48	54.00	11.52	H	18.1

LE Coded S=2 CH19 (1-18GHz)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4879.800000	48.30	74.00	25.70	H	3.7
11185.285714	47.52	74.00	26.48	H	9.7
12417.428572	48.72	74.00	25.28	H	11.4
14895.857143	51.83	74.00	22.17	H	13.0
15934.714286	52.45	74.00	21.55	H	14.1
17054.142857	55.31	74.00	18.69	H	18.5

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
4879.800000	38.02	54.00	15.98	H	3.7
11185.285714	35.66	54.00	18.34	H	9.7
12417.428572	36.69	54.00	17.31	H	11.4
14895.857143	39.31	54.00	14.69	H	13.0
15934.714286	40.01	54.00	13.99	H	14.1
17054.142857	42.43	54.00	11.57	H	18.5

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

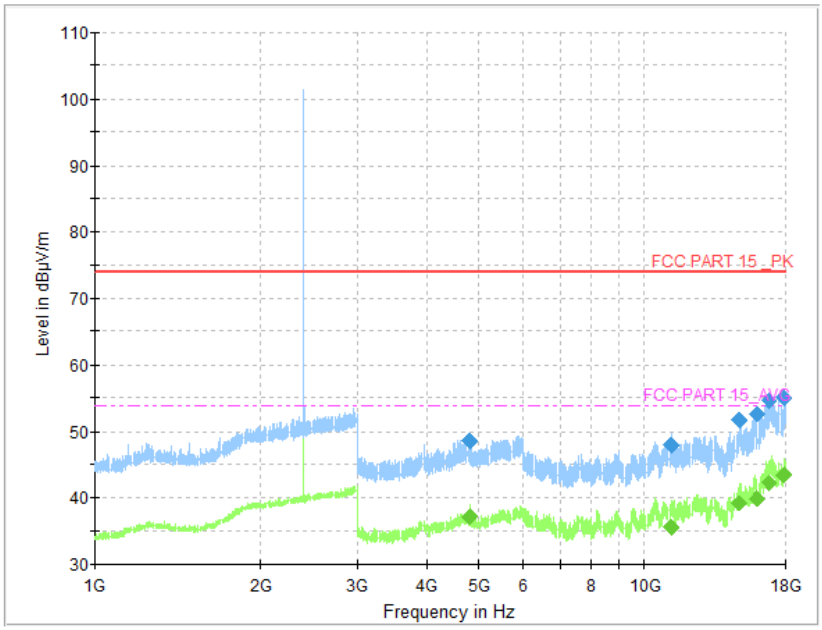

Fig.69 Radiated Spurious Emission (GFSK, Ch0, 1 GHz ~18 GHz), LE 1M

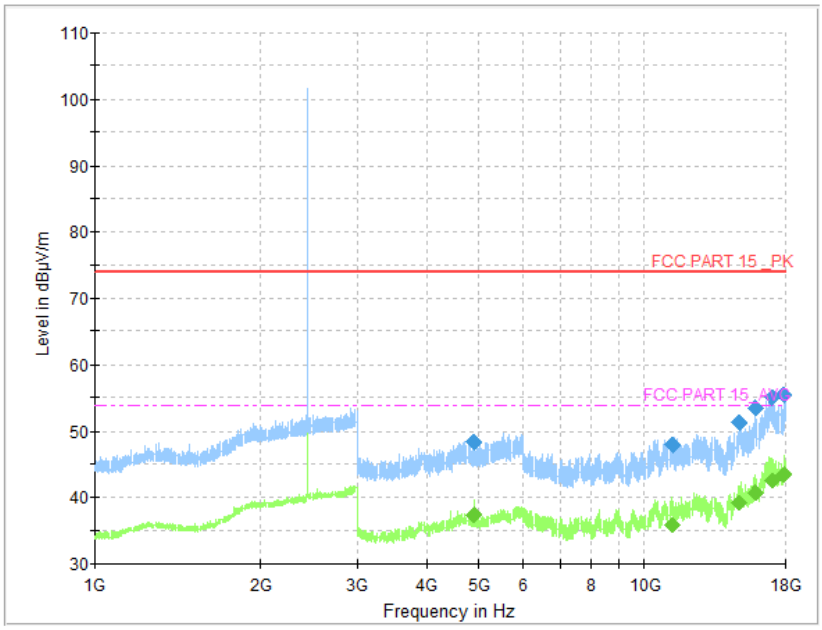

Fig.70 Radiated Spurious Emission (GFSK, Ch19, 1 GHz ~18 GHz), LE 1M

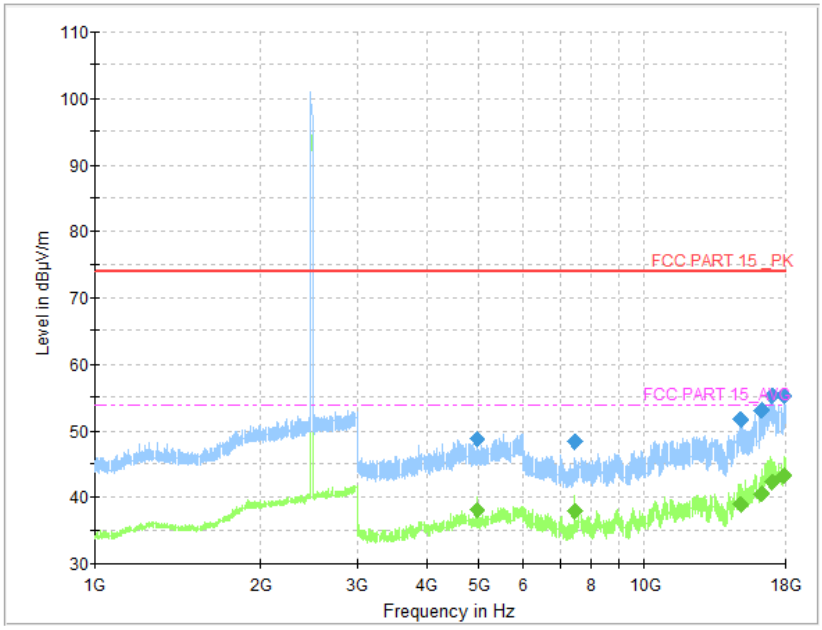

Fig.71 Radiated Spurious Emission (GFSK, Ch39, 1 GHz ~18 GHz), LE 1M

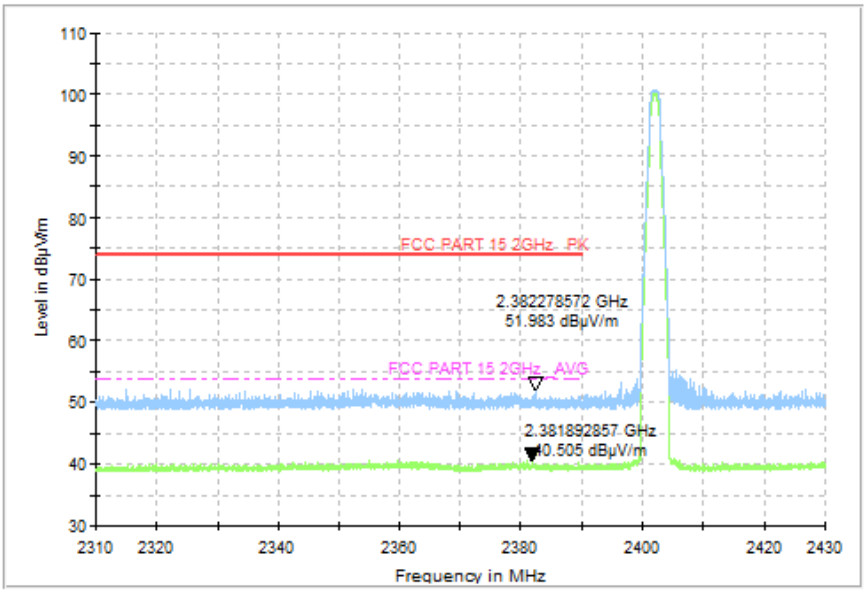

Fig.72 Radiated Band Edges (GFSK, Ch0, 2380GHz~2450GHz), LE 1M

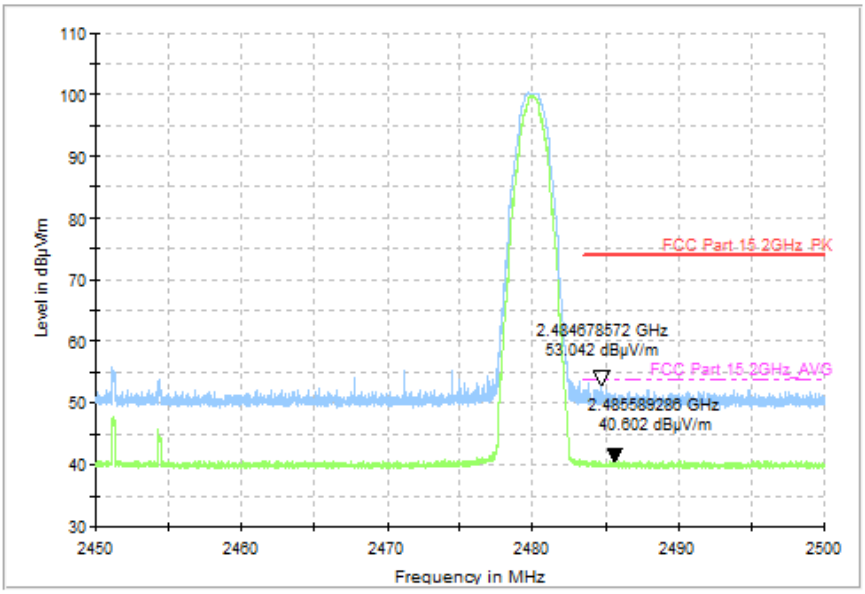

Fig.73 Radiated Band Edges (GFSK, Ch39, 2450GHz~2500GHz), LE 1M

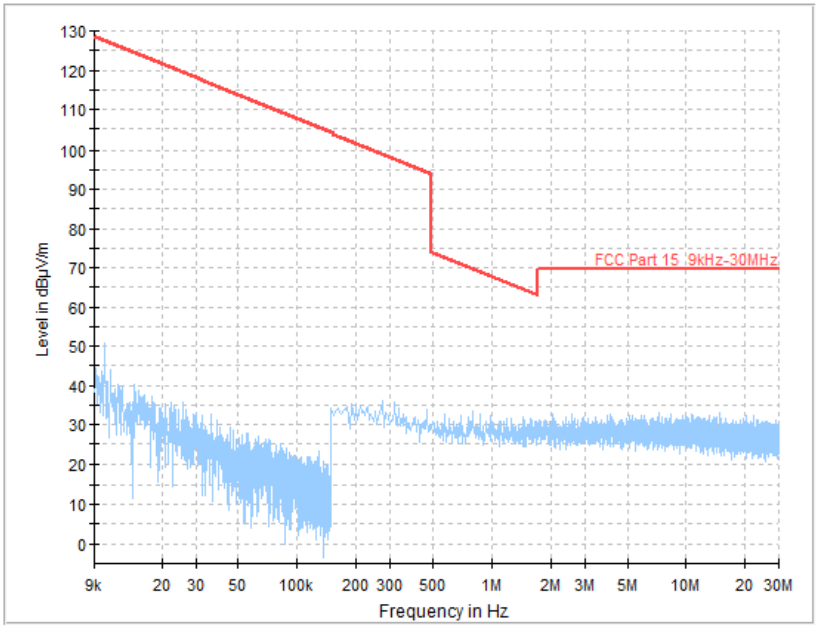

Fig.74 Radiated Spurious Emission (All Channels, 9 kHz-30 MHz), LE 1M

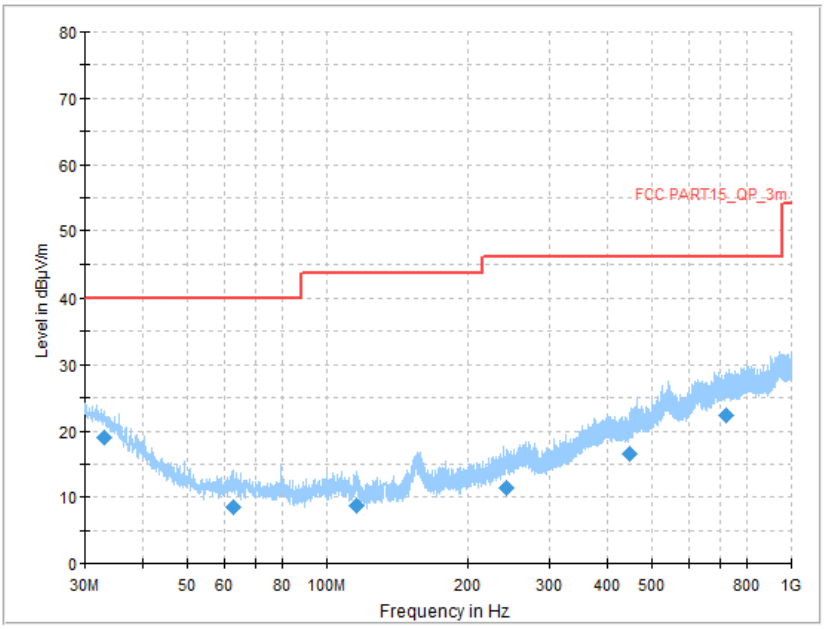

Fig.75 Radiated Spurious Emission (All Channels, 30 MHz-1 GHz), LE 1M

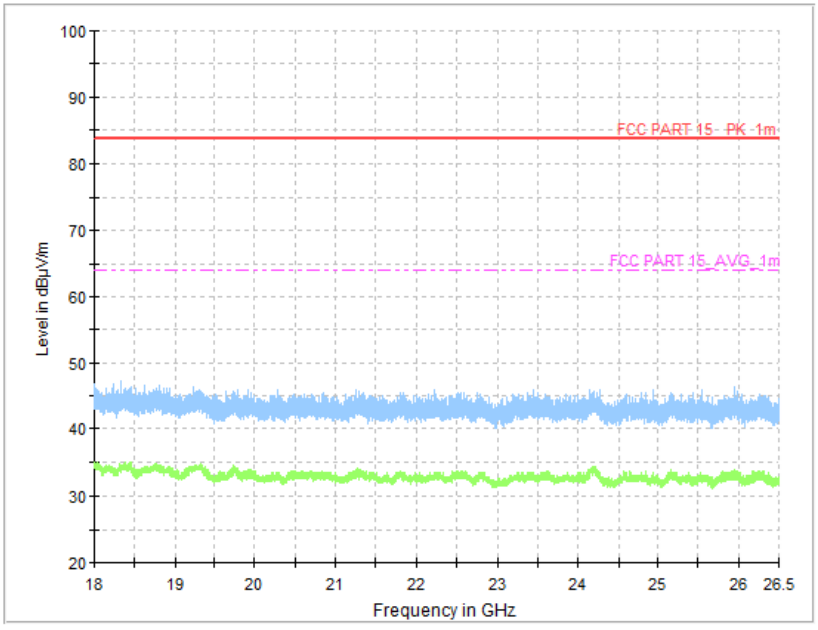

Fig.76 Radiated Spurious Emission (All Channels, 18 GHz-26.5 GHz), LE 1M

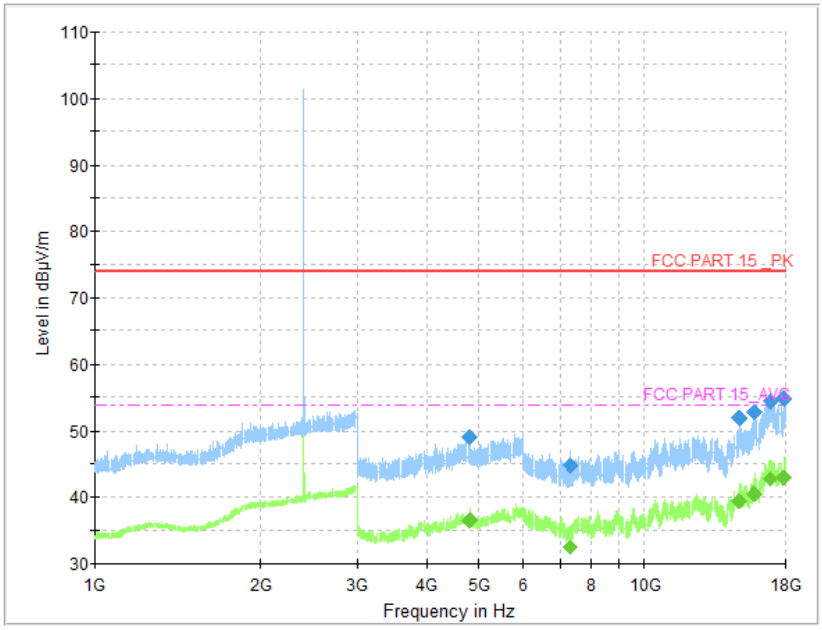

Fig.77 Radiated Spurious Emission (GFSK, Ch0, 1 GHz ~18 GHz), LE 2M

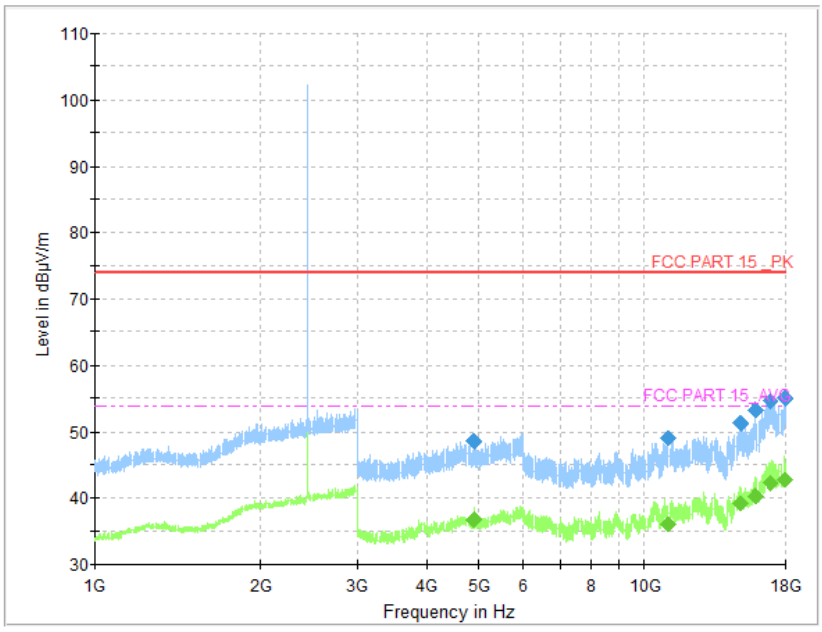

Fig.78 Radiated Spurious Emission (GFSK, Ch19, 1 GHz ~18 GHz), LE 2M

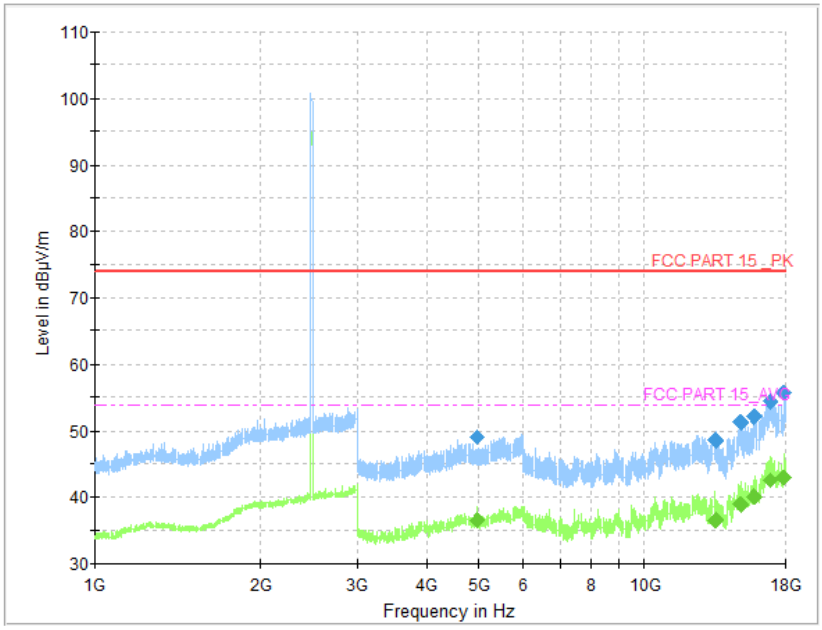

Fig.79 Radiated Spurious Emission (GFSK, Ch39, 1 GHz ~18 GHz), LE 2M

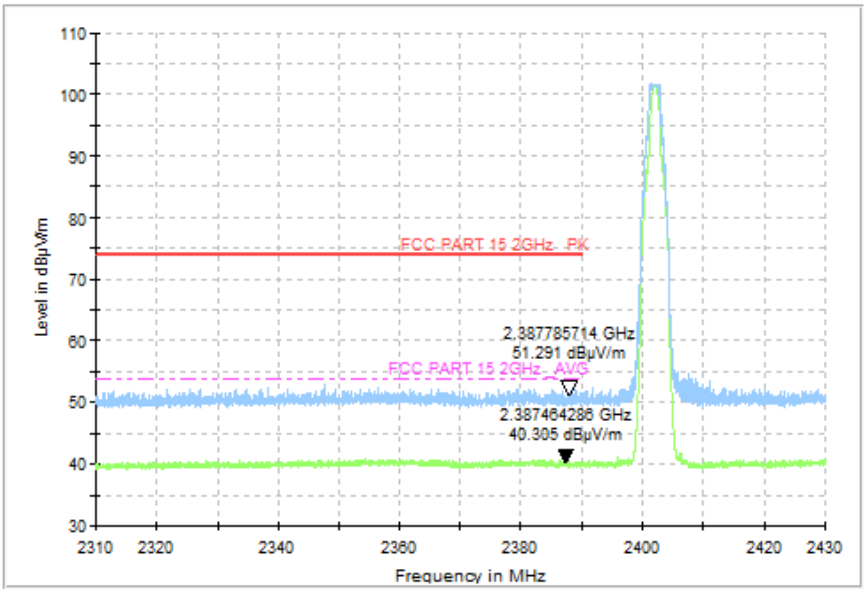

Fig.80 Radiated Band Edges (GFSK, Ch0, 2380GHz~2450GHz), LE 2M

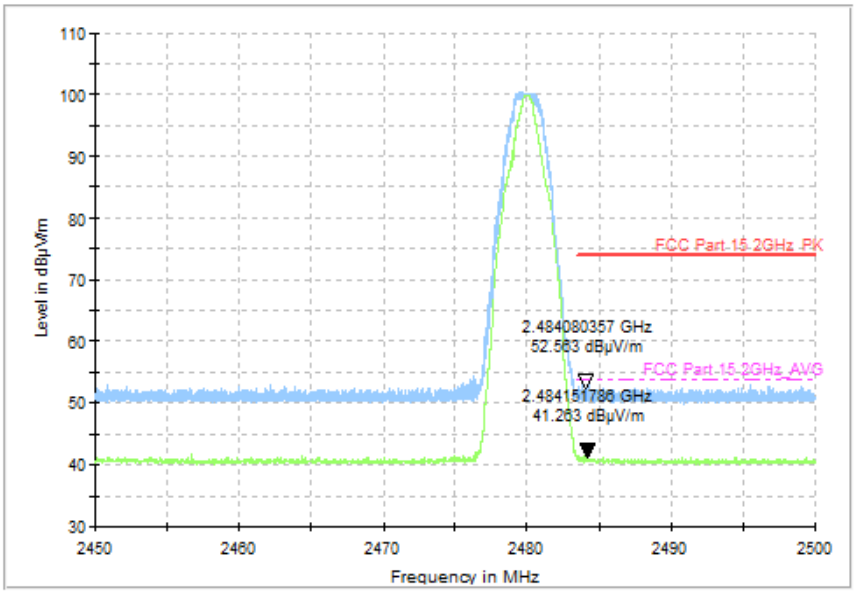

Fig.81 Radiated Band Edges (GFSK, Ch39, 2450GHz~2500GHz), LE 2M

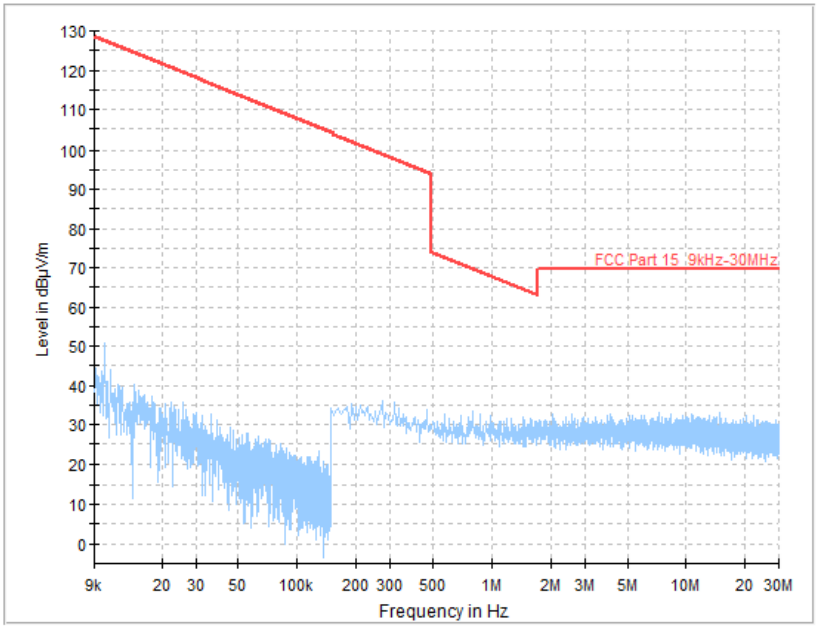

Fig.82 Radiated Spurious Emission (All Channels, 9 kHz-30 MHz), LE 2M

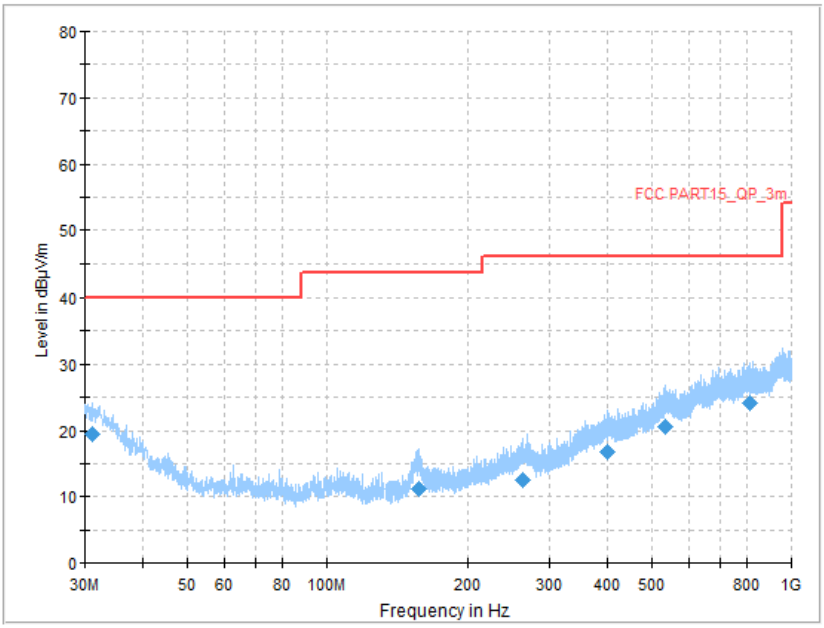

Fig.83 Radiated Spurious Emission (All Channels, 30 MHz-1 GHz), LE 2M

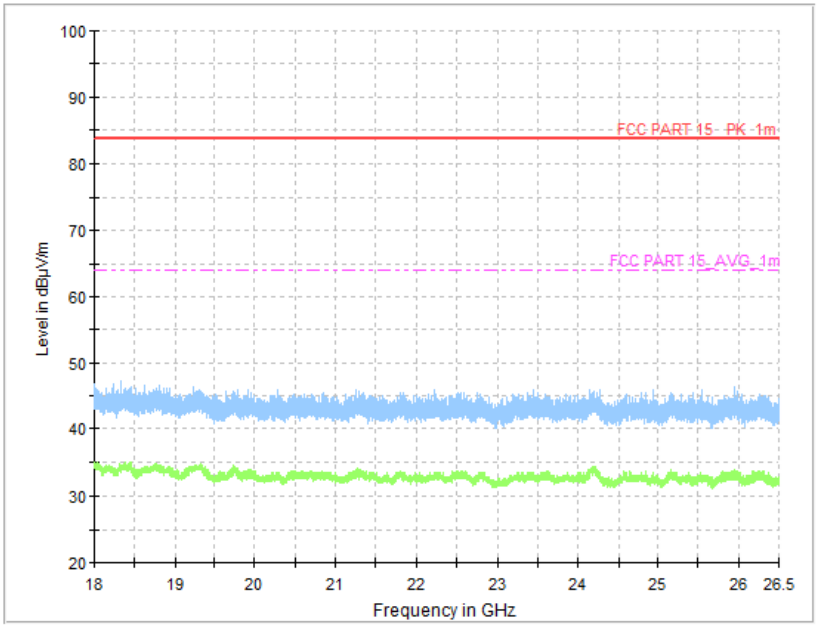

Fig.84 Radiated Spurious Emission (All Channels, 18 GHz-26.5 GHz), LE 2M

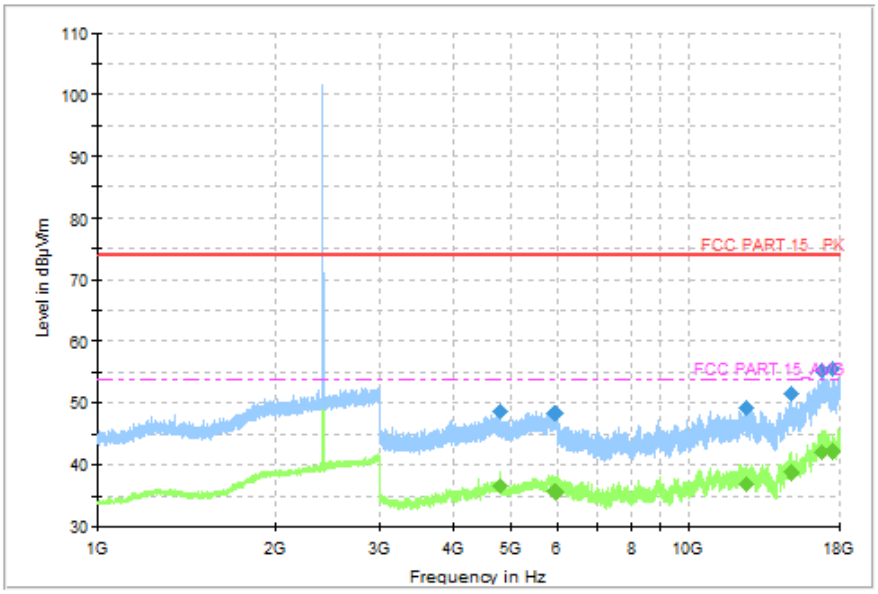

Fig.85 Radiated Spurious Emission (GFSK, Ch0, 1 GHz ~18 GHz), LE Coded S=8

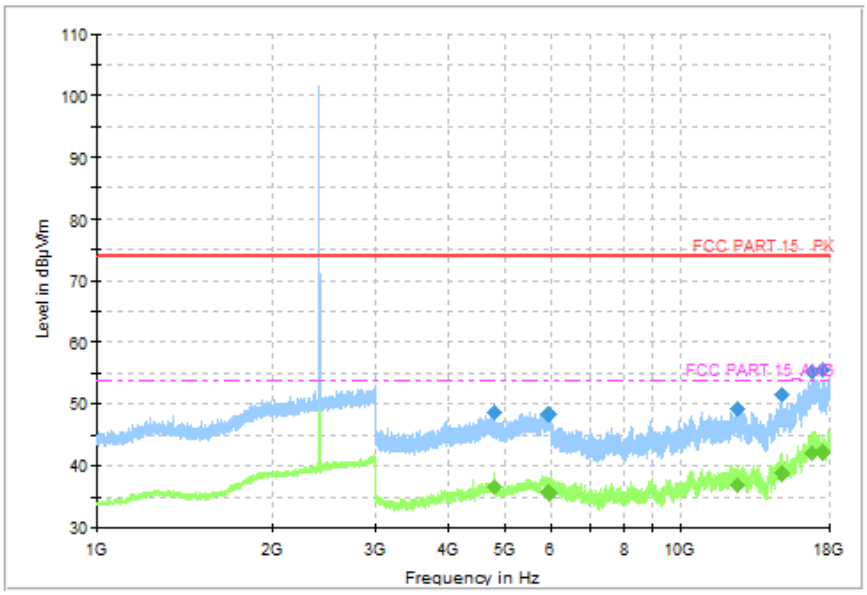

Fig.86 Radiated Spurious Emission (GFSK, Ch19, 1 GHz ~18 GHz), LE Coded S=8

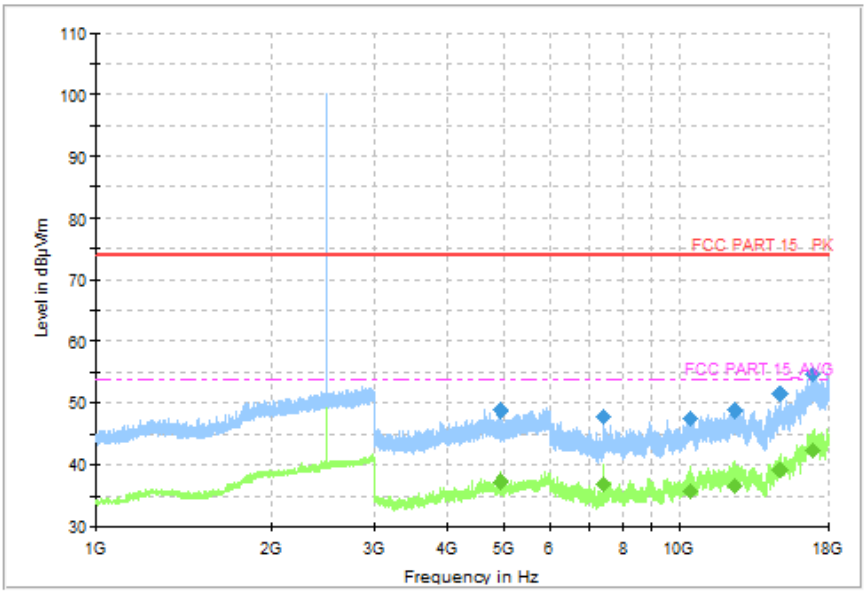

Fig.87 Radiated Spurious Emission (GFSK, Ch39, 1 GHz ~18 GHz), LE Coded S=8

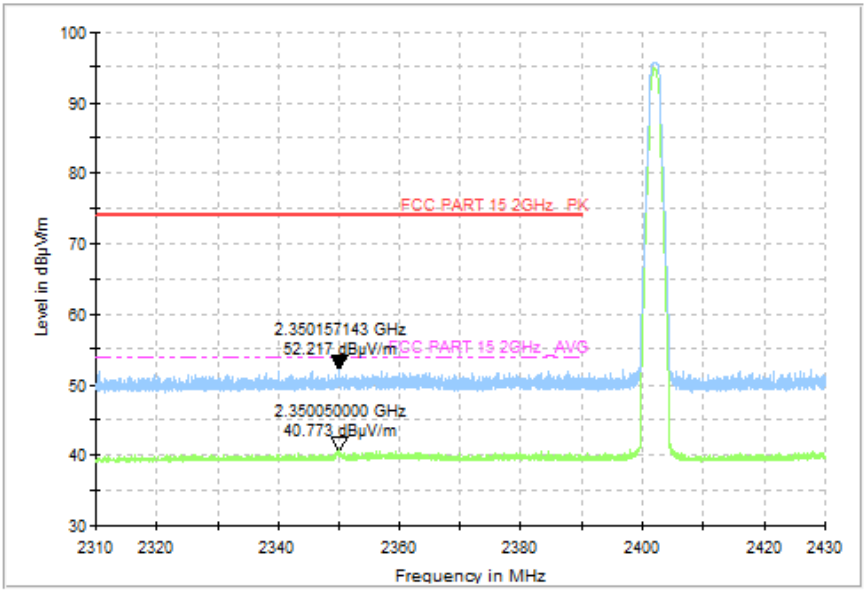

Fig.88 Radiated Band Edges (GFSK, Ch0, 2380GHz~2450GHz), LE Coded S=8

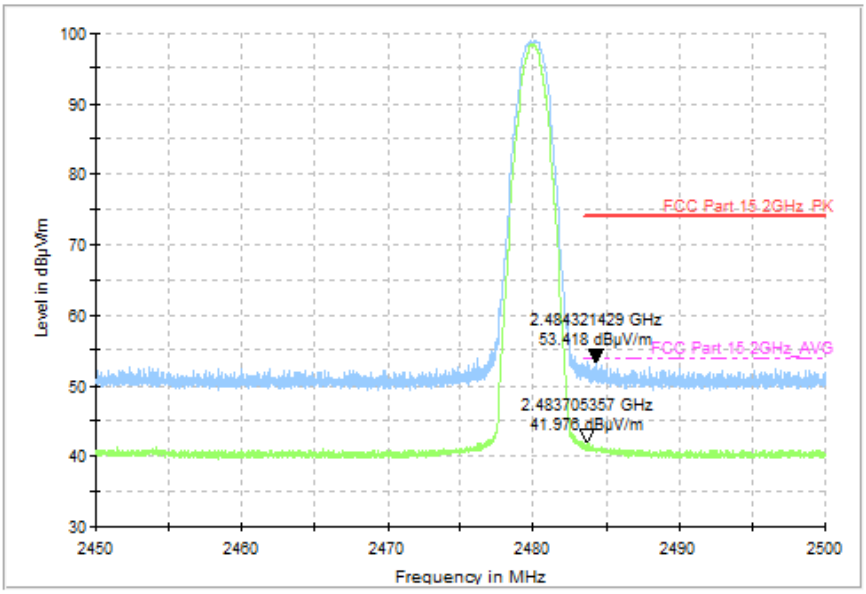

Fig.89 Radiated Band Edges (GFSK, Ch39, 2450GHz~2500GHz), LE Coded S=8

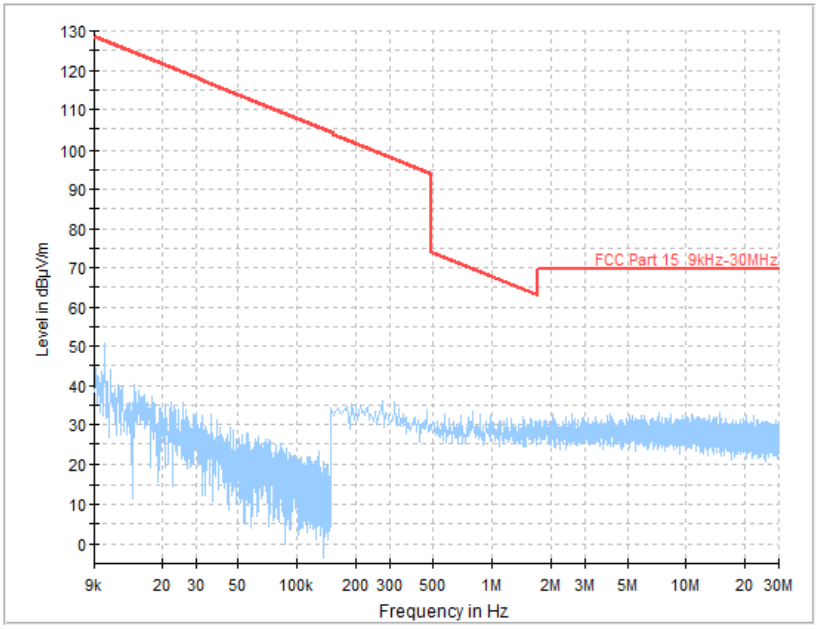

Fig.90 Radiated Spurious Emission (All Channels, 9 kHz-30 MHz), LE Coded S=8

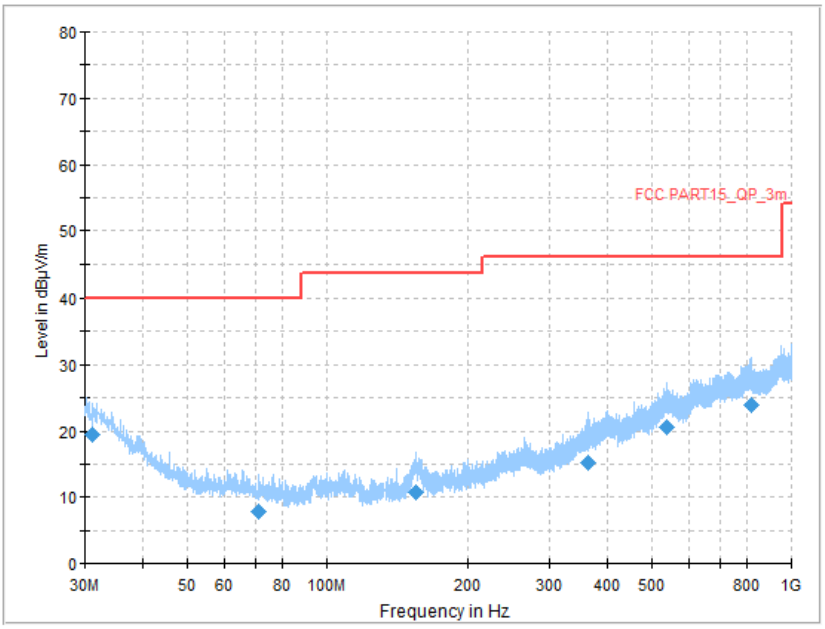

Fig.91 Radiated Spurious Emission (All Channels, 30 MHz-1 GHz), LE Coded S=8

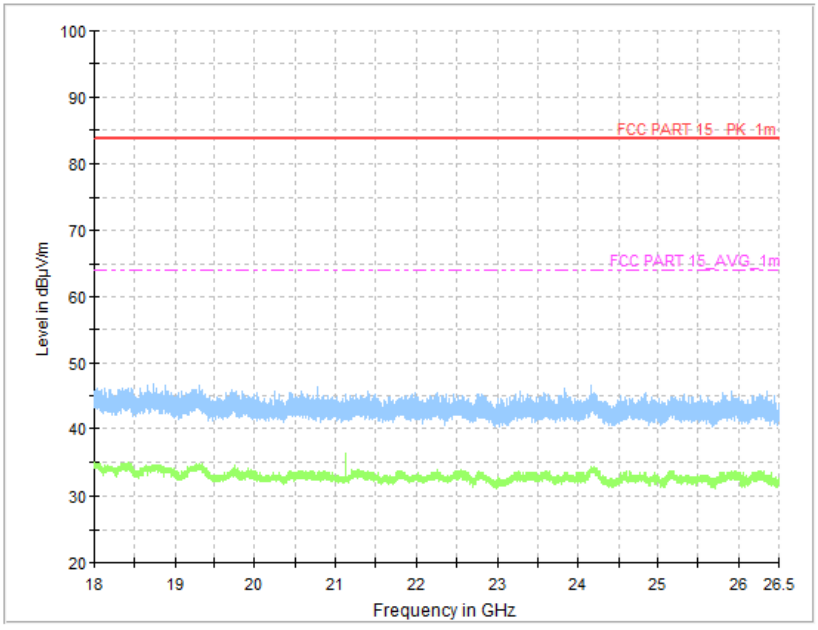

Fig.92 Radiated Spurious Emission (All Channels, 18 GHz-26.5 GHz), LE Coded S=8

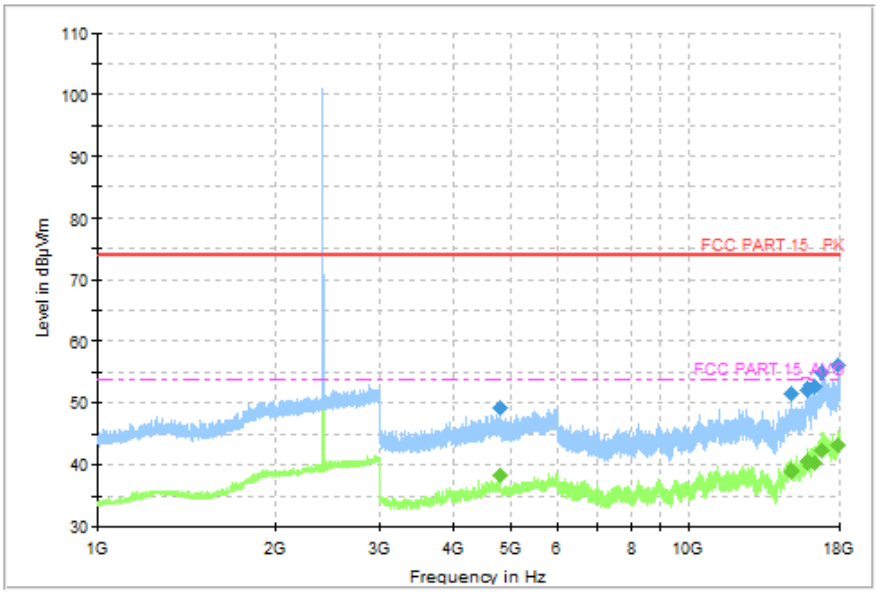

Fig.93 Radiated Spurious Emission (GFSK, Ch0, 1 GHz ~18 GHz), LE Coded S=2

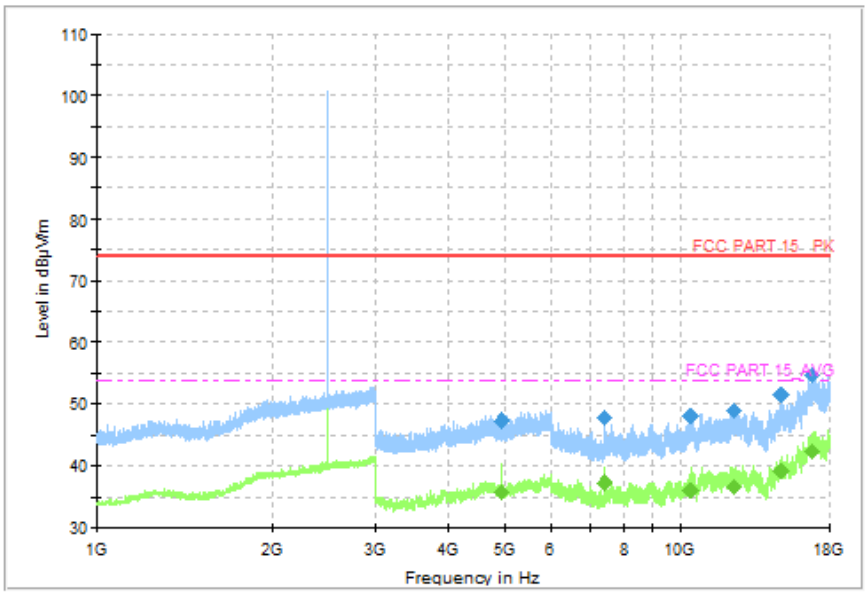

Fig.94 Radiated Spurious Emission (GFSK, Ch19, 1 GHz ~18 GHz), LE Coded S=2

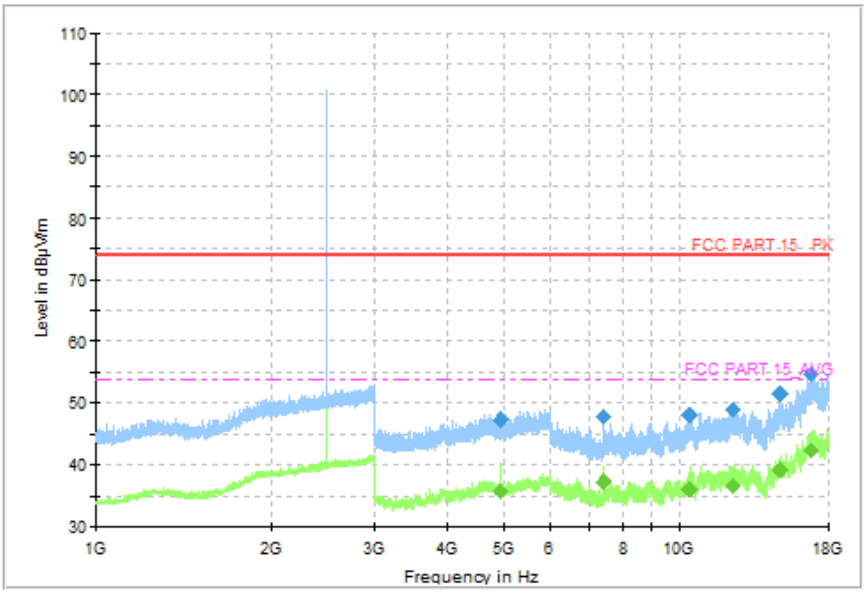

Fig.95 Radiated Spurious Emission (GFSK, Ch39, 1 GHz ~18 GHz), LE Coded S=2

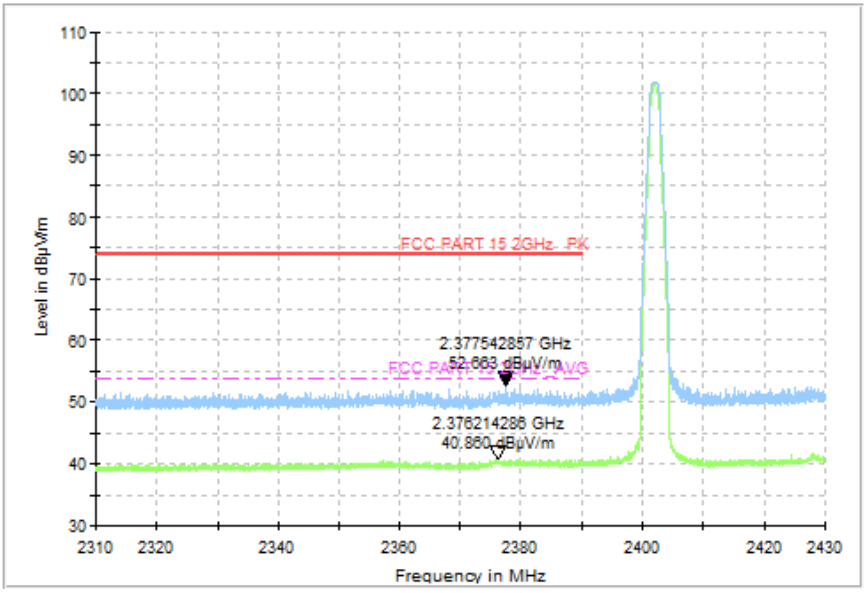

Fig.96 Radiated Band Edges (GFSK, Ch0, 2380GHz~2450GHz), LE Coded S=2

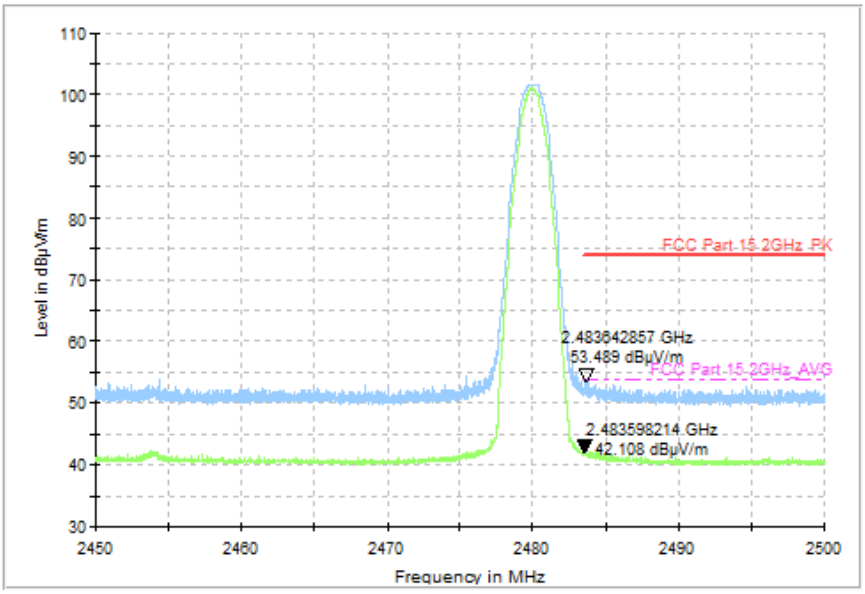

Fig.97 Radiated Band Edges (GFSK, Ch39, 2450GHz~2500GHz), LE Coded S=2

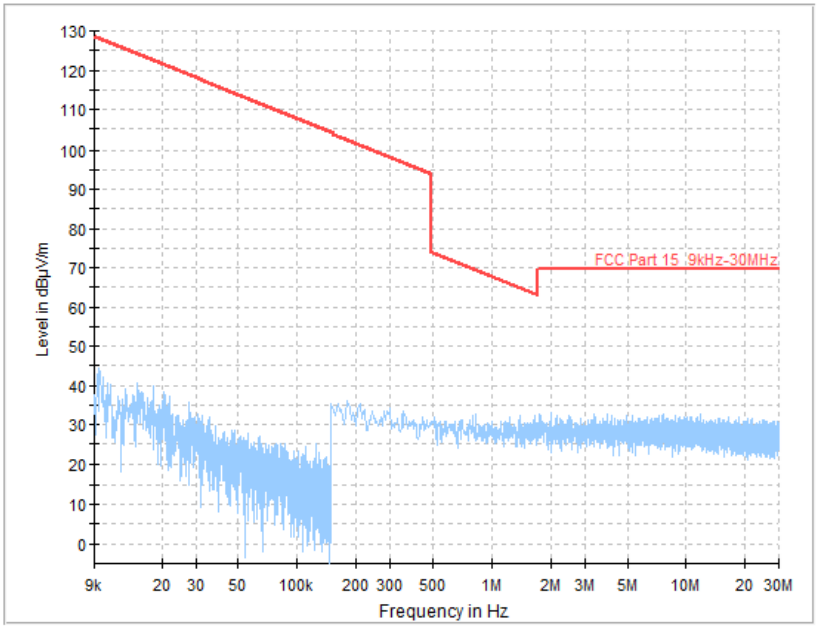

Fig.98 Radiated Spurious Emission (All Channels, 9 kHz-30 MHz), LE Coded S=2

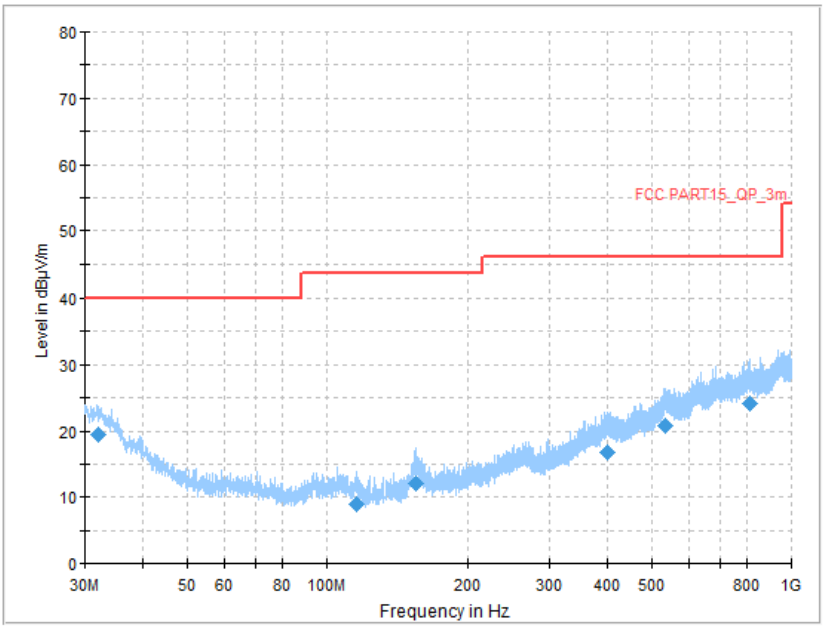

Fig.99 Radiated Spurious Emission (All Channels, 30 MHz-1 GHz), LE Coded S=2

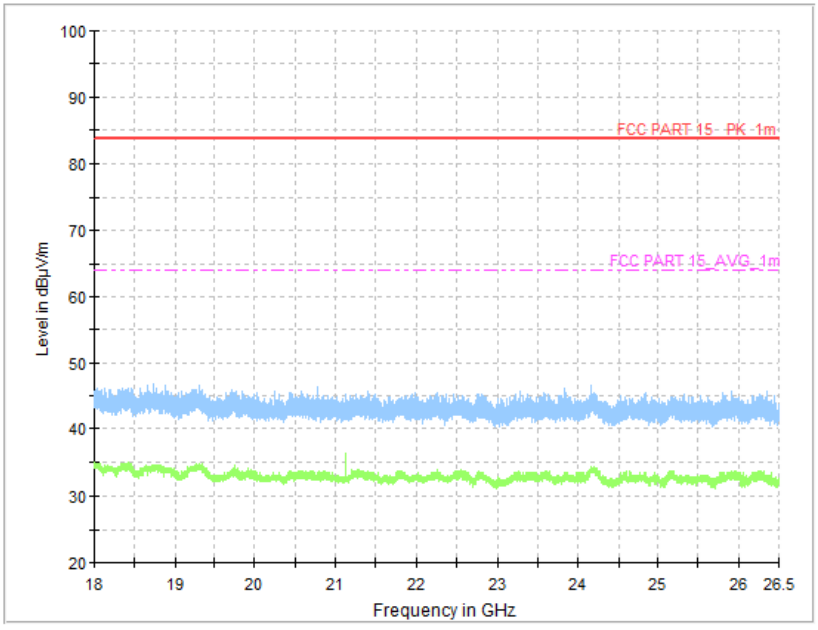

Fig.100 Radiated Spurious Emission (All Channels, 18 GHz-26.5 GHz), LE Coded S=2

A.7 AC Power line Conducted Emission

Test Condition:

Voltage（V）	Frequency（Hz）
120	60

Measurement Result and limit:

LE 1M-AE2, AE3

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average-peak Limit (dBμV)	Result (dBμV)		Conclusion
			Traffic	Idle	
0.15 to 0.5	66 to 56	56 to 46	Fig.101	Fig.102	P
0.5 to 5	56	46			
5 to 30	60	50			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.					

LE 2M-AE2, AE3

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average-peak Limit (dBμV)	Result (dBμV)		Conclusion
			Traffic	Idle	
0.15 to 0.5	66 to 56	56 to 46	Fig.103	Fig.104	P
0.5 to 5	56	46			
5 to 30	60	50			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.					

LE Coded-AE2, AE3

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average-peak Limit (dBμV)	Result (dBμV)		Conclusion
			Traffic	Idle	
0.15 to 0.5	66 to 56	56 to 46	Fig.105	Fig.106	P
0.5 to 5	56	46			
5 to 30	60	50			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.					

Note: The measurement results include the L1 and N measurements.
AE2 was the model with the worst results in the test.

See below for test graphs.

Conclusion: Pass

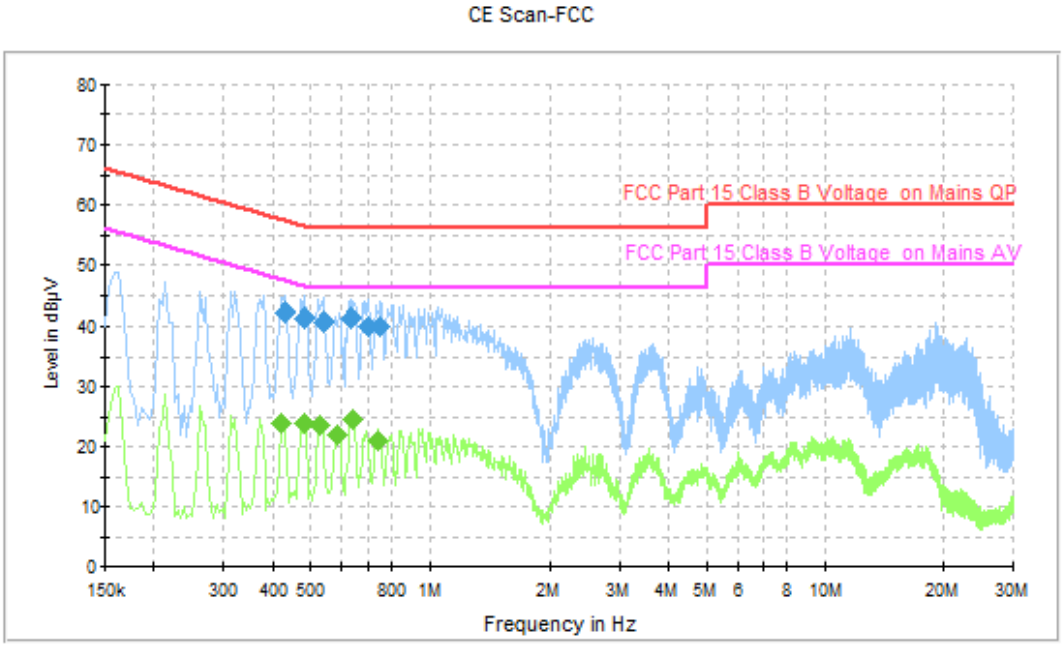

Fig.101 AC Power line Conducted Emission (Traffic), LE 1M

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.430000	42.4	GND	N	9.7	14.9	57.3
0.482000	41.2	GND	N	9.7	15.1	56.3
0.538000	40.8	GND	N	9.7	15.2	56.0
0.630000	41.2	GND	N	9.6	14.8	56.0
0.698000	40.1	GND	N	9.6	15.9	56.0
0.750000	39.9	GND	N	9.6	16.1	56.0

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.422000	24.0	GND	N	9.7	23.4	47.4
0.482000	23.8	GND	N	9.7	22.5	46.3
0.526000	23.5	GND	N	9.7	22.5	46.0
0.582000	22.1	GND	N	9.6	23.9	46.0
0.638000	24.7	GND	N	9.6	21.3	46.0
0.738000	21.0	GND	N	9.6	25.0	46.0

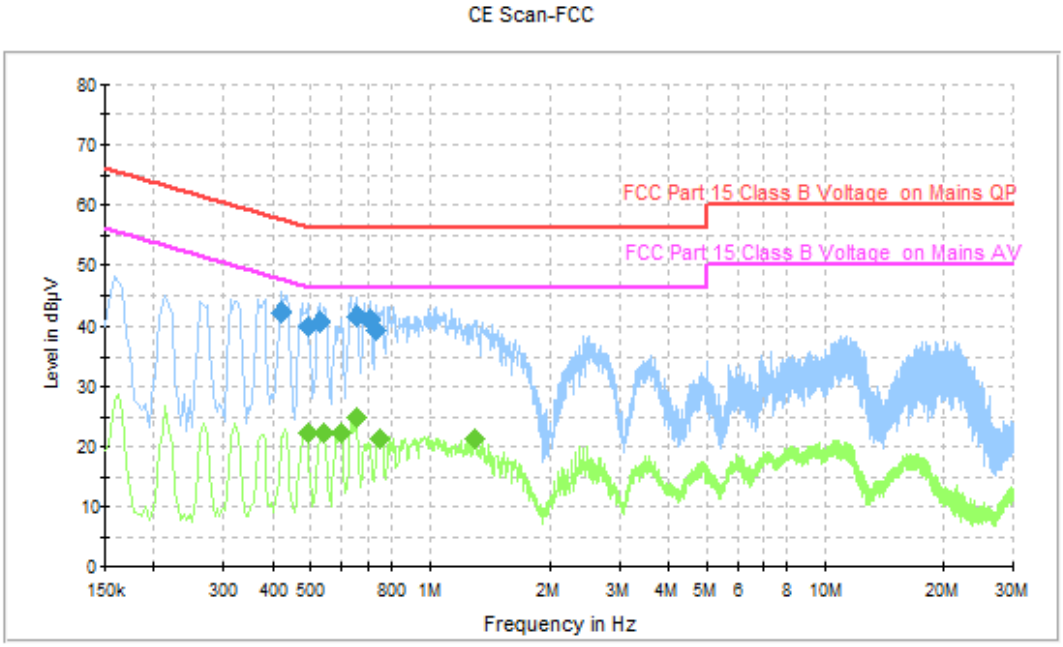

Fig.102 AC Power line Conducted Emission (Idle), LE 1M

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.422000	42.2	GND	N	9.7	15.2	57.4
0.490000	40.0	GND	N	9.7	16.2	56.2
0.526000	40.7	GND	N	9.7	15.3	56.0
0.650000	41.5	GND	N	9.6	14.5	56.0
0.706000	41.1	GND	N	9.6	14.9	56.0
0.734000	39.3	GND	N	9.6	16.7	56.0

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.490000	22.2	GND	N	9.7	24.0	46.2
0.538000	22.2	GND	N	9.7	23.8	46.0
0.598000	22.4	GND	N	9.6	23.6	46.0
0.650000	24.8	GND	N	9.6	21.2	46.0
0.750000	21.4	GND	N	9.6	24.6	46.0
1.310000	21.2	GND	N	9.6	24.8	46.0

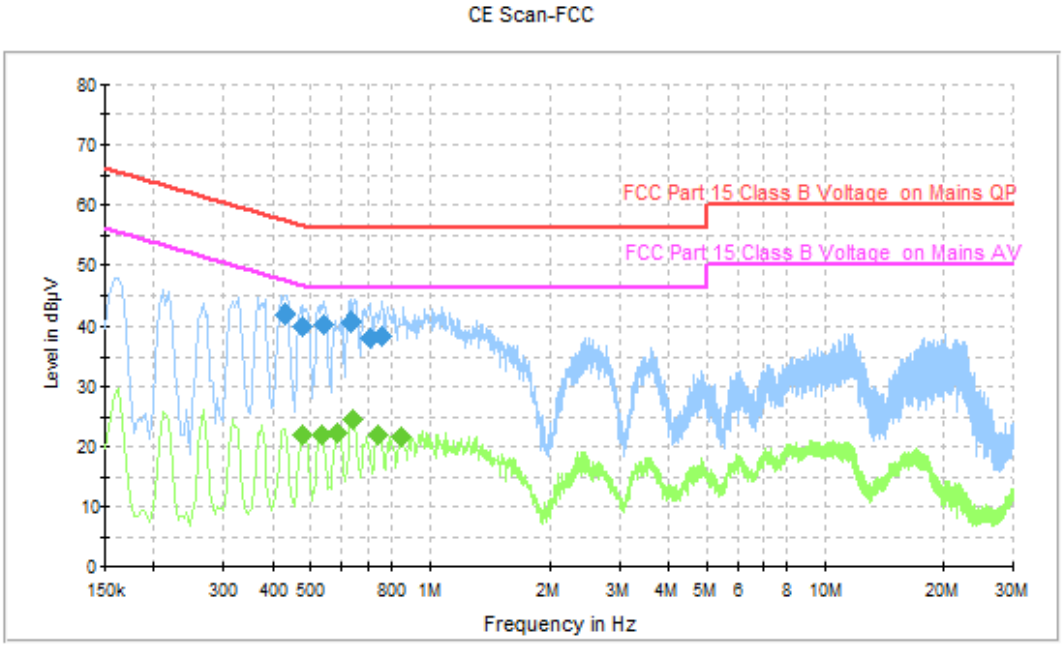

Fig.103 AC Power line Conducted Emission (Traffic), LE 2M

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.430000	42.1	GND	N	9.7	15.2	57.3
0.474000	40.0	GND	N	9.7	16.5	56.4
0.538000	40.4	GND	N	9.7	15.6	56.0
0.630000	40.7	GND	N	9.6	15.3	56.0
0.710000	38.2	GND	N	9.6	17.8	56.0
0.758000	38.4	GND	N	9.6	17.6	56.0

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.474000	22.0	GND	N	9.7	24.5	46.4
0.534000	22.0	GND	N	9.7	24.0	46.0
0.586000	22.4	GND	N	9.6	23.6	46.0
0.642000	24.5	GND	N	9.6	21.5	46.0
0.742000	21.9	GND	N	9.6	24.1	46.0
0.850000	21.6	GND	N	9.6	24.4	46.0

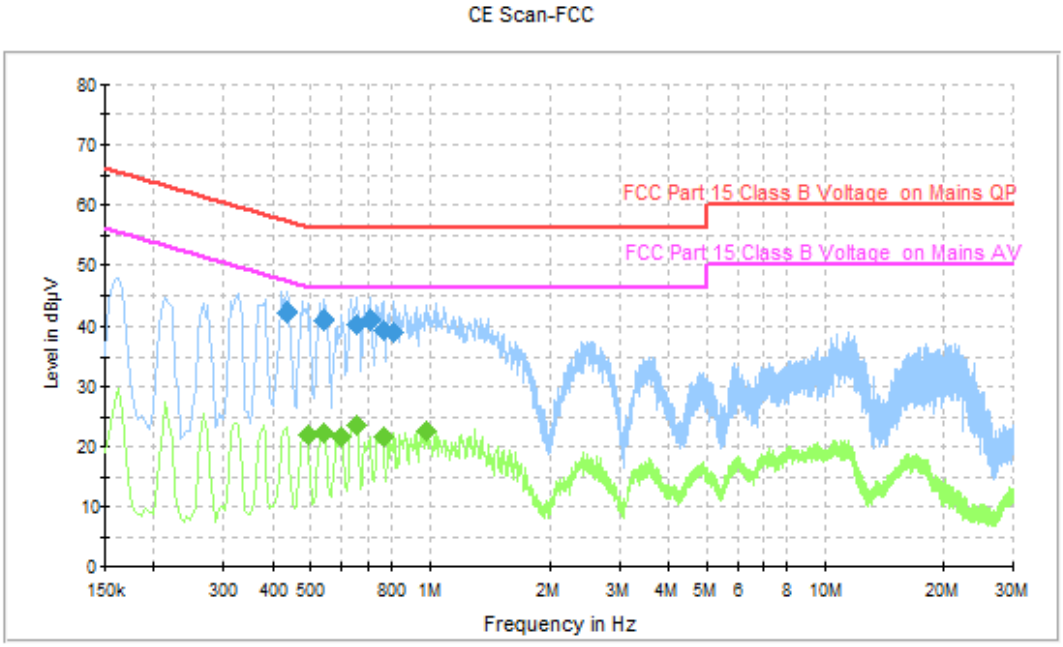

Fig.104 AC Power line Conducted Emission (Idle), LE 2M

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.434000	42.2	GND	N	9.7	15.0	57.2
0.542000	40.9	GND	N	9.7	15.1	56.0
0.654000	40.2	GND	N	9.6	15.8	56.0
0.706000	41.1	GND	N	9.6	14.9	56.0
0.762000	39.4	GND	N	9.6	16.6	56.0
0.814000	39.0	GND	N	9.6	17.0	56.0

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.490000	21.9	GND	N	9.7	24.3	46.2
0.542000	22.3	GND	N	9.7	23.7	46.0
0.598000	21.5	GND	N	9.6	24.5	46.0
0.650000	23.6	GND	N	9.6	22.4	46.0
0.762000	21.5	GND	N	9.6	24.5	46.0
0.978000	22.6	GND	N	9.6	23.4	46.0

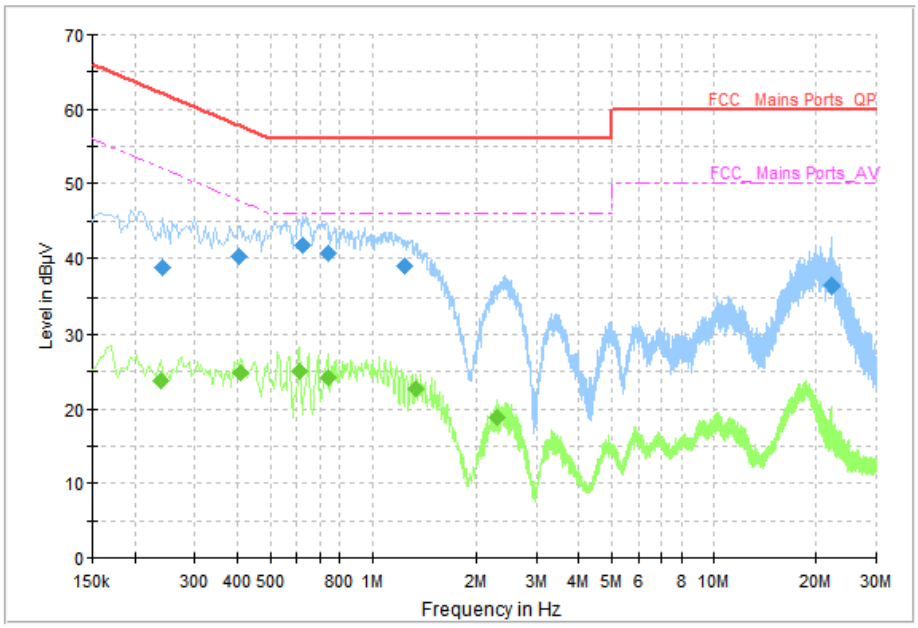

Fig.105 AC Power line Conducted Emission (Traffic), LE Coded

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.242000	38.84	GND	N	10	23.18	62.03
0.406000	40.35	GND	N	10	17.38	57.73
0.626000	41.83	GND	L1	10	14.17	56.00
0.738000	40.75	GND	N	10	15.25	56.00
1.250000	38.88	GND	L1	10	17.12	56.00
22.078000	36.33	GND	N	10	23.67	60.00

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.238000	23.78	GND	N	10	28.38	52.17
0.410000	24.83	GND	L1	10	22.82	47.65
0.610000	25.05	GND	N	10	20.95	46.00
0.738000	24.19	GND	L1	10	21.81	46.00
1.346000	22.63	GND	L1	10	23.37	46.00
2.294000	18.75	GND	L1	10	27.25	46.00

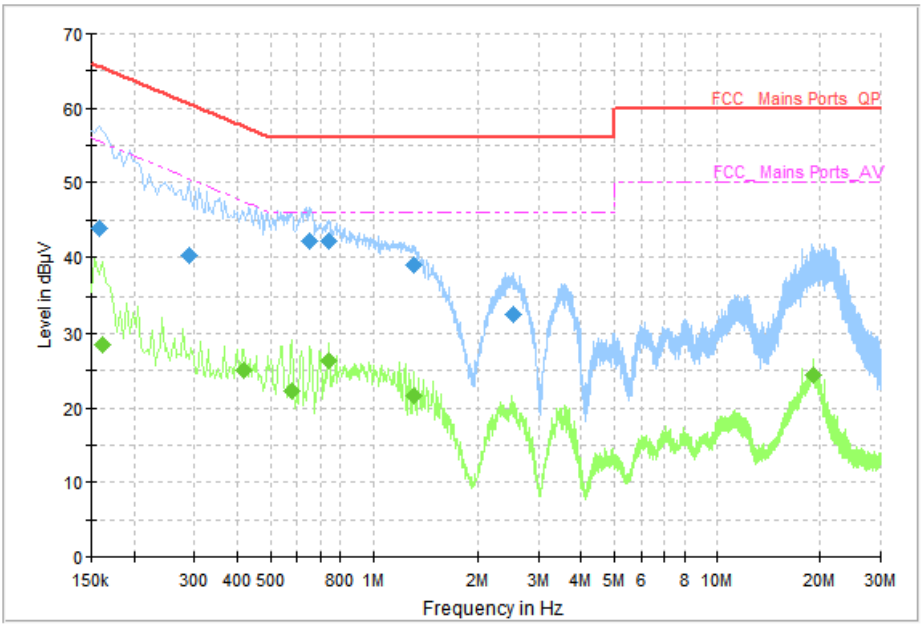

Fig.106 AC Power line Conducted Emission (Idle), LE Coded

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	43.97	GND	N	10	21.60	65.57
0.290000	40.22	GND	N	10	20.30	60.52
0.650000	42.24	GND	N	10	13.76	56.00
0.738000	42.08	GND	N	10	13.92	56.00
1.314000	38.87	GND	L1	10	17.13	56.00
2.538000	32.49	GND	N	10	23.51	56.00

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.162000	28.52	GND	N	10	26.84	55.36
0.418000	25.12	GND	N	10	22.37	47.49
0.578000	22.36	GND	N	10	23.64	46.00
0.738000	26.39	GND	N	10	19.61	46.00
1.314000	21.58	GND	L1	10	24.42	46.00
19.122000	24.43	GND	N	10	25.57	50.00

*****END OF REPORT*****