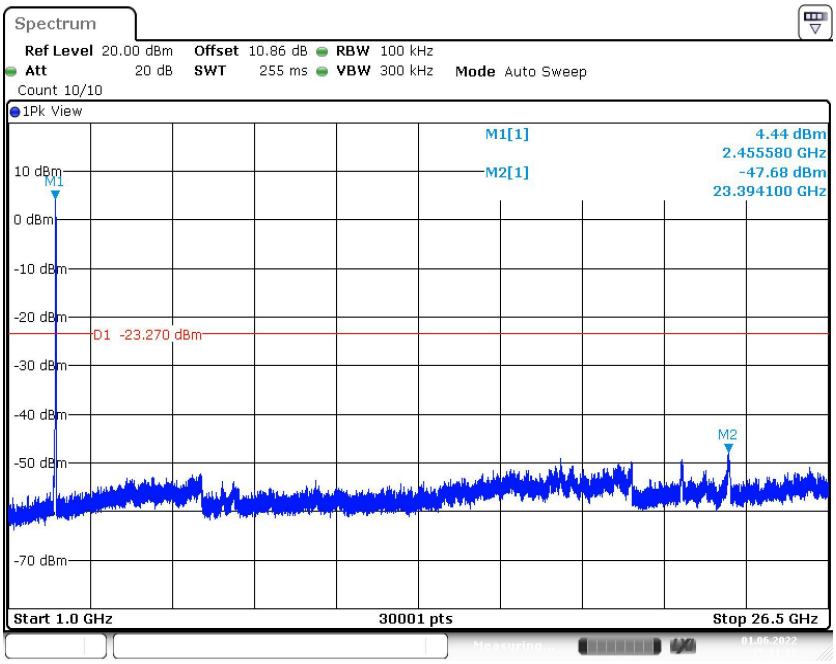

Fig.51 Conducted Spurious Emission (1GHz-26.5GHz, 802.11n-HT20, CH11)

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A.6 Radiated Emission

Method of Measurement: See ANSI C63.10-clause 11.11&11.12

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 below 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
802.11b	CH 1	1 GHz ~18 GHz	Fig.52	**P**
	CH 6	1 GHz ~18 GHz	Fig.53	**P**
	CH 11	1 GHz ~18 GHz	Fig.54	**P**
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.55	**P**
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.56	**P**
802.11g	CH 1	1 GHz ~18 GHz	Fig.57	**P**
	CH 6	1 GHz ~18 GHz	Fig.58	**P**
	CH 11	1 GHz ~18 GHz	Fig.59	**P**
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.60	**P**
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.61	**P**
802.11n-HT20	CH 1	1 GHz ~18 GHz	Fig.62	**P**
	CH 6	1 GHz ~18 GHz	Fig.63	**P**
	CH 11	1 GHz ~18 GHz	Fig.64	**P**
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.65	**P**
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.66	**P**
/	All Channels	9 kHz ~30 MHz	Fig.67	**P**
		30 MHz ~1 GHz	Fig.68	**P**
		18 GHz ~26.5 GHz	Fig.69	**P**

Worst-Case Result:

802.11b CH6 (1-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4874.100000	50.56	74.00	23.44	V	3.7
10455.000000	47.58	74.00	26.42	V	9.0
12215.571429	48.02	74.00	25.98	V	10.9
14876.142857	50.59	74.00	23.41	H	13.0
16607.142857	53.91	74.00	20.09	H	16.9
17131.714286	54.41	74.00	19.59	H	18.4

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4874.100000	42.78	54.00	11.22	V	3.7
10455.000000	35.35	54.00	18.65	V	9.0
12215.571429	35.93	54.00	18.07	V	10.9
14876.142857	38.57	54.00	15.43	H	13.0
16607.142857	41.66	54.00	12.34	H	16.9
17131.714286	42.41	54.00	11.59	H	18.4

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802.11g CH6 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4569.600000	47.27	74.00	26.73	V	4.5
8892.000000	45.46	74.00	28.54	V	6.5
11133.857143	47.95	74.00	26.05	H	9.7
13392.428572	48.69	74.00	25.31	H	11.4
14944.285714	50.76	74.00	23.24	V	12.9
16778.571429	54.67	74.00	19.33	H	17.7

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4569.600000	34.57	54.00	19.43	V	4.5
8892.000000	33.25	54.00	20.75	V	6.5
11133.857143	35.07	54.00	18.93	H	9.7
13392.428572	36.11	54.00	17.89	H	11.4
14944.285714	38.19	54.00	15.81	V	12.9
16778.571429	41.88	54.00	12.12	H	17.7

802.11n-HT20 CH1 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4648.500000	47.13	74.00	26.87	H	4.6
8949.857143	46.60	74.00	27.40	H	6.5
10452.428572	47.75	74.00	26.25	V	9.0
12599.142857	48.17	74.00	25.83	H	11.3
14873.571429	50.52	74.00	23.48	V	13.0
16914.000000	54.62	74.00	19.38	V	18.1

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4648.500000	34.65	54.00	19.35	H	4.6
8949.857143	33.26	54.00	20.74	H	6.5
10452.428572	35.18	54.00	18.82	V	9.0
12599.142857	35.97	54.00	18.03	H	11.3
14873.571429	38.54	54.00	15.46	V	13.0
16914.000000	42.25	54.00	11.75	V	18.1

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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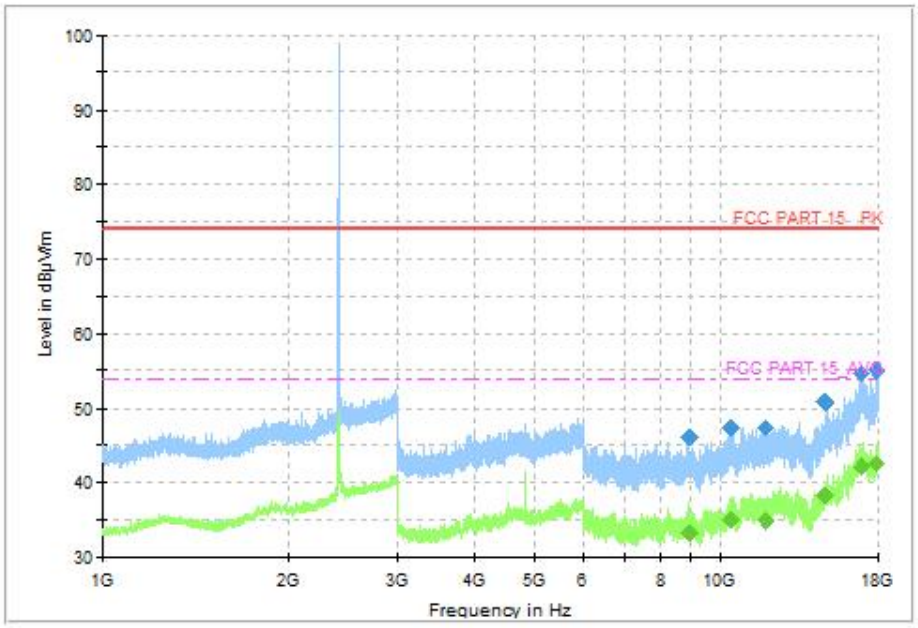

Fig.52 Radiated Spurious Emission (802.11b, CH1, 1 GHz-18GHz)

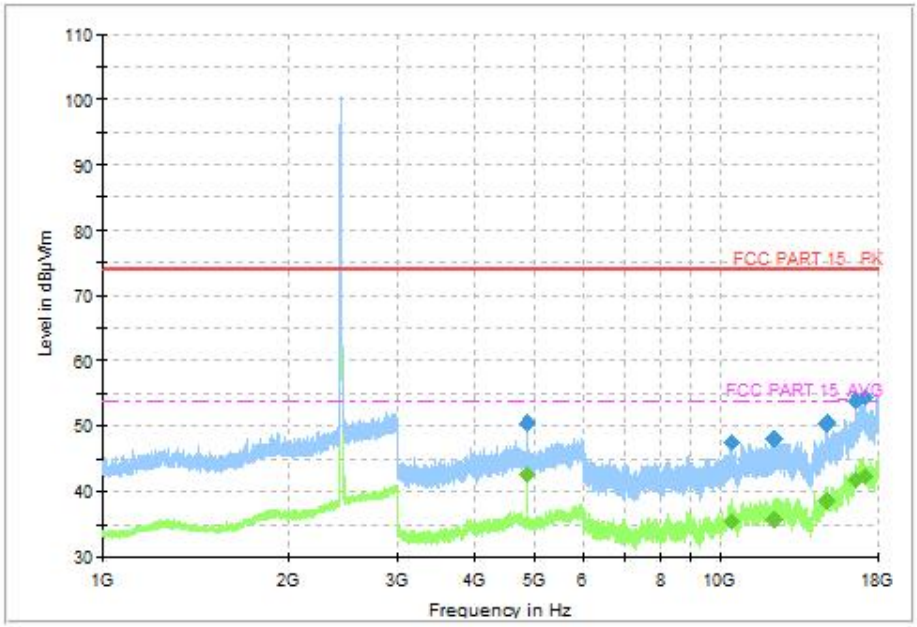

Fig.53 Radiated Spurious Emission (802.11b, CH6, 1 GHz-18GHz)

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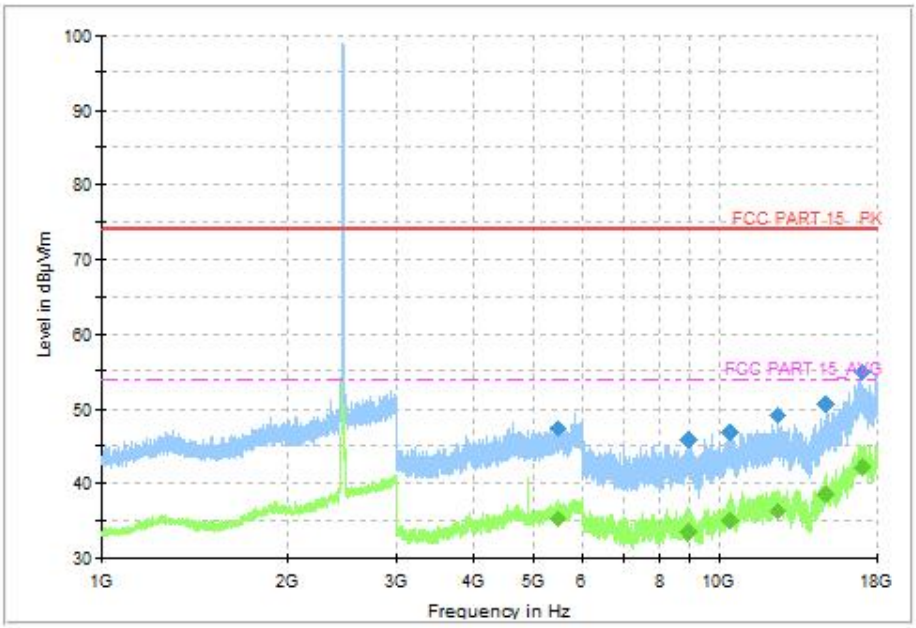

Fig.54 Radiated Spurious Emission (802.11b, CH11, 1 GHz-18GHz)

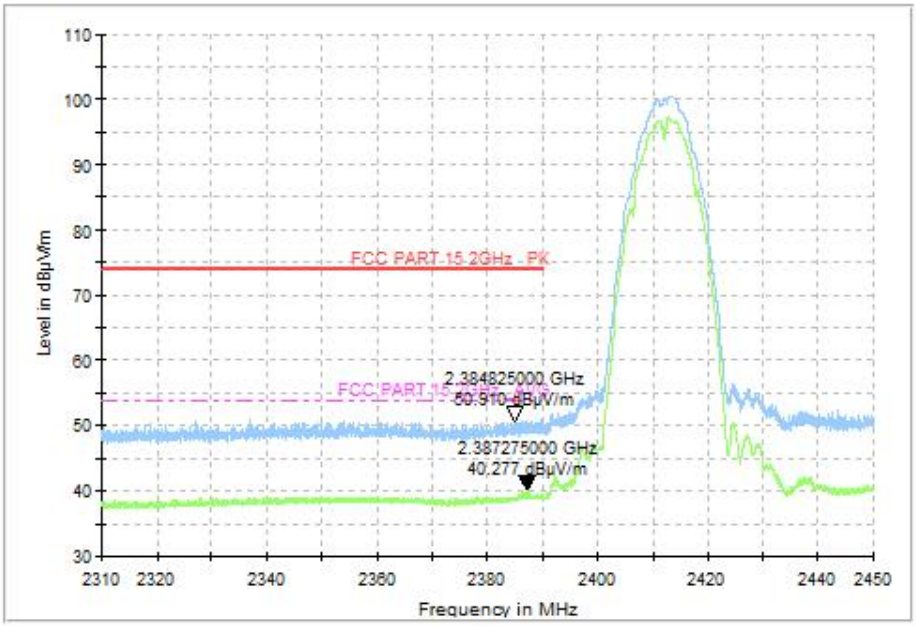

Fig.55 Radiated Restricted Band (802.11b, CH1, 2.38GHz~2.45GHz)

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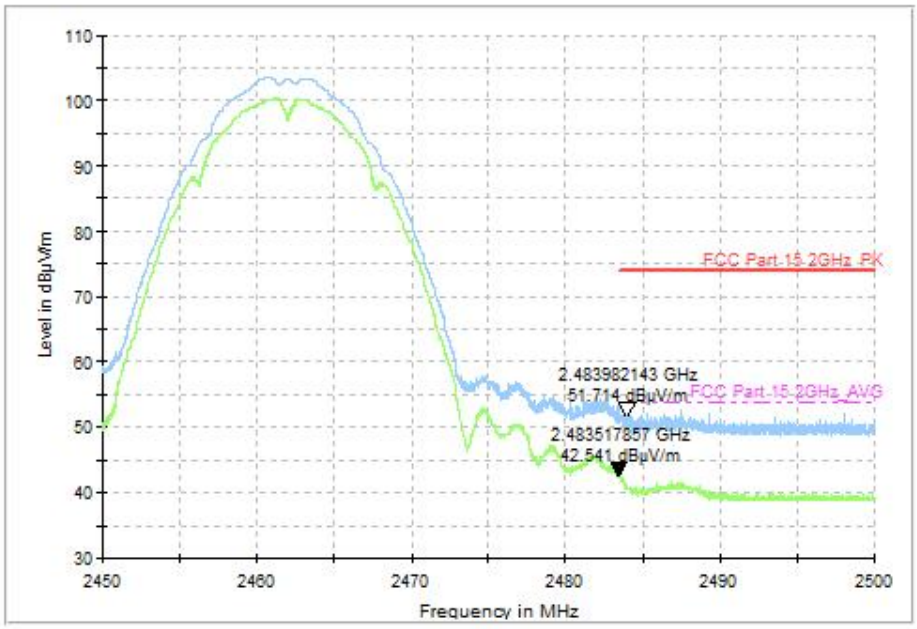

Fig.56 Radiated Restricted Band (802.11b, CH11, 2.45GHz~2.5GHz)

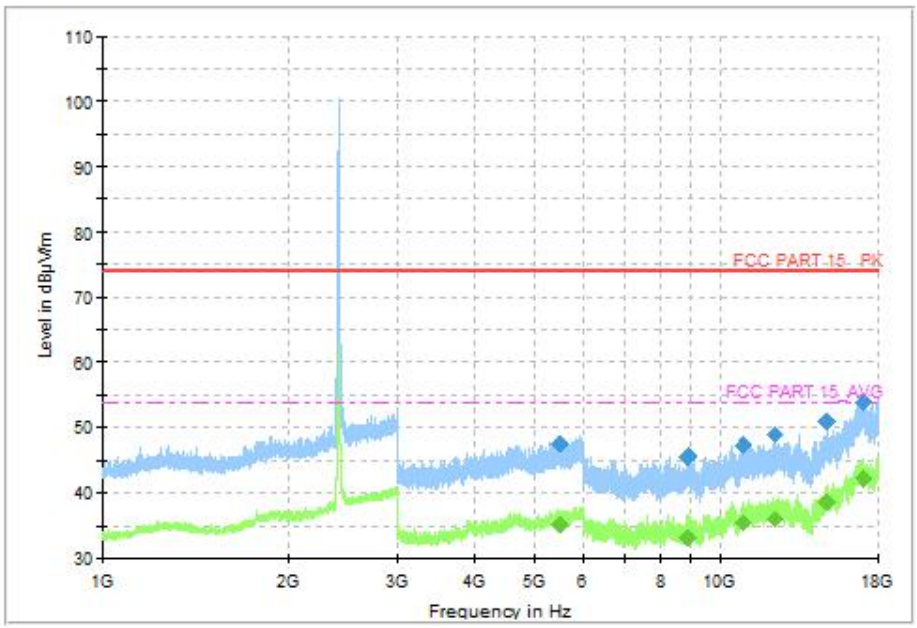

Fig.57 Radiated Spurious Emission (802.11g, CH1, 1 GHz-18 GHz)

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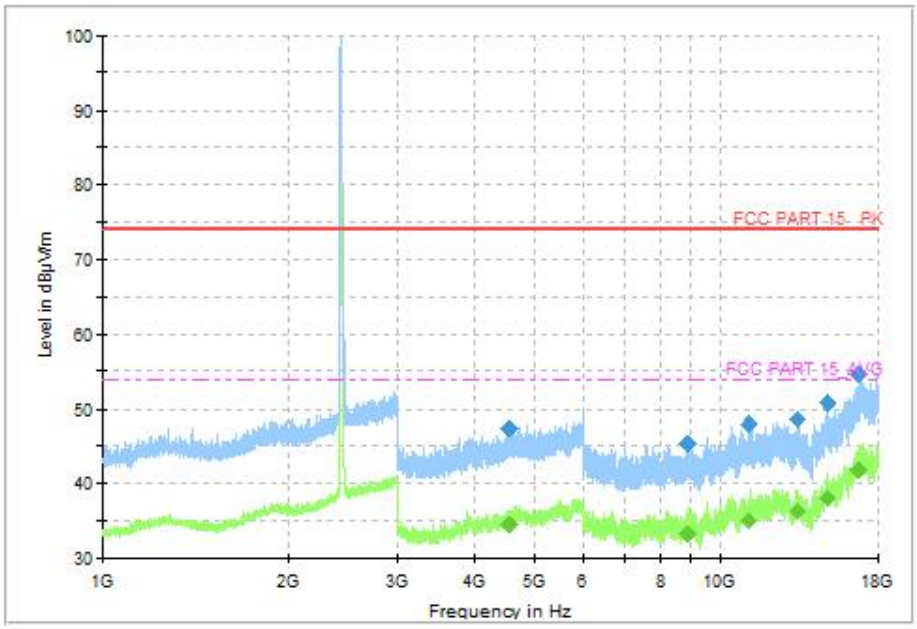

Fig.58 Radiated Spurious Emission (802.11g, CH6, 1 GHz-18 GHz)

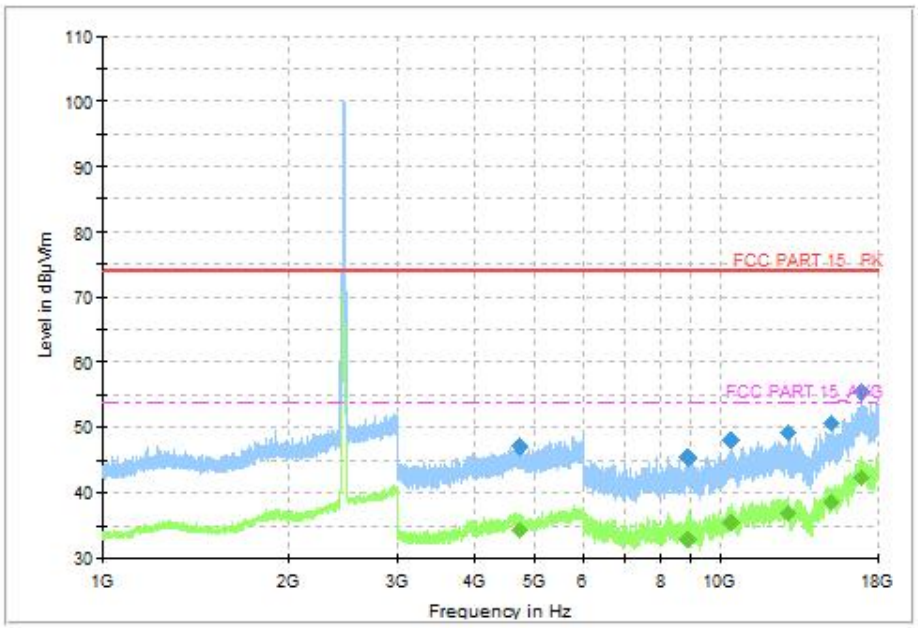

Fig.59 Radiated Spurious Emission (802.11g, CH11, 1 GHz-18 GHz)

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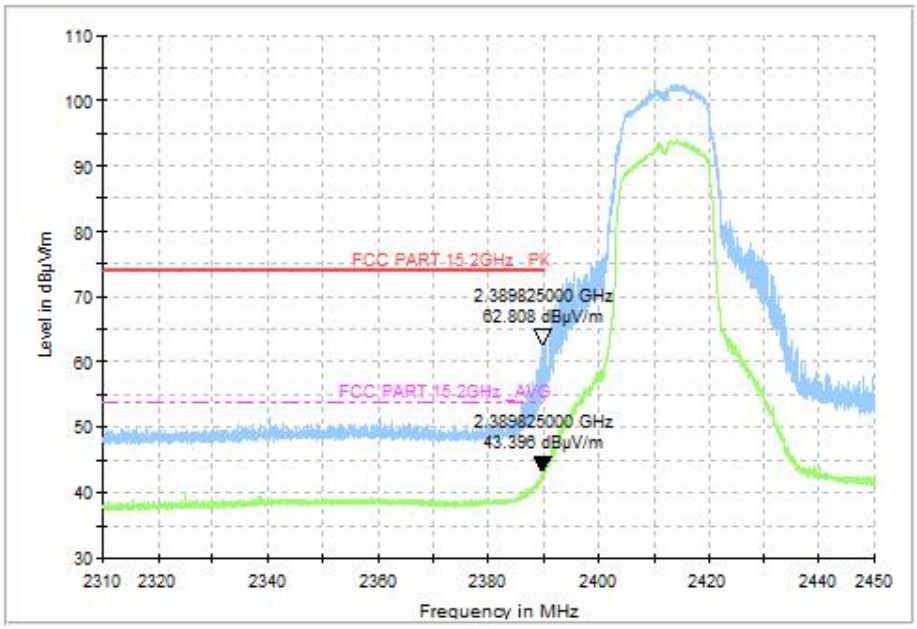

Fig.60 Radiated Restricted Band (802.11g, CH1, 2.38GHz~2.45GHz)

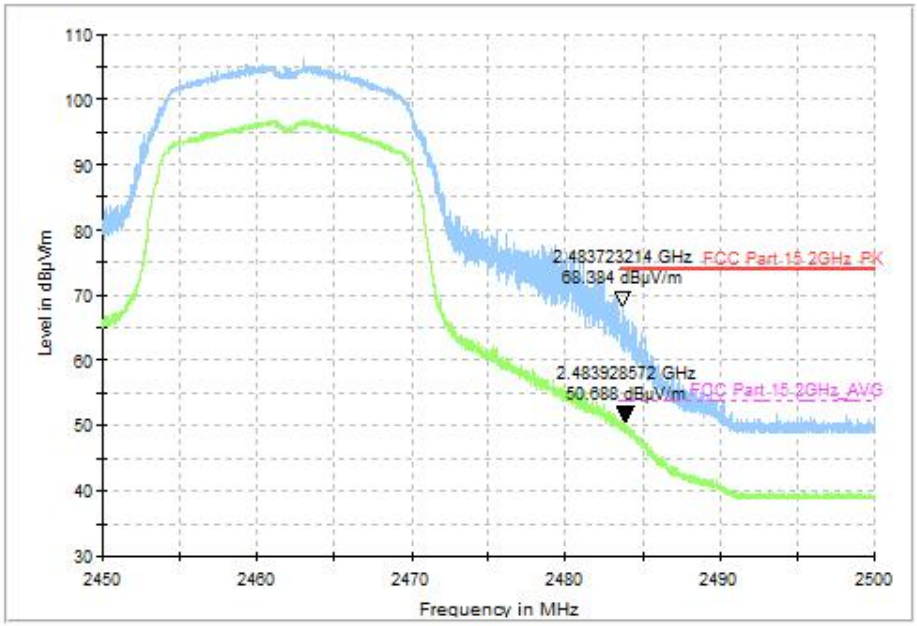

Fig.61 Radiated Restricted Band (802.11g, CH11, 2.45GHz~2.5GHz)

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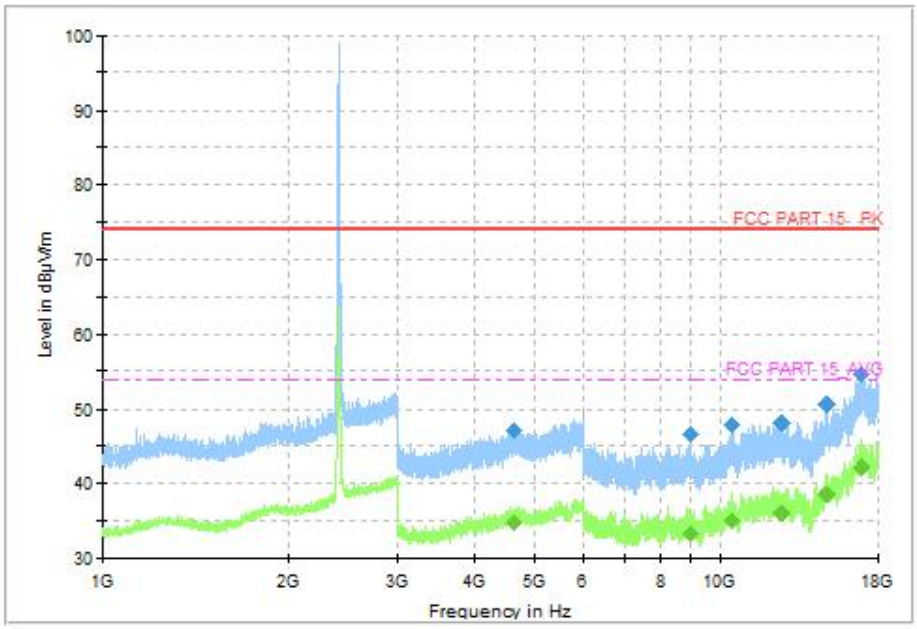

Fig.62 Radiated Spurious Emission (802.11n-HT20, CH1, 1 GHz-18 GHz)

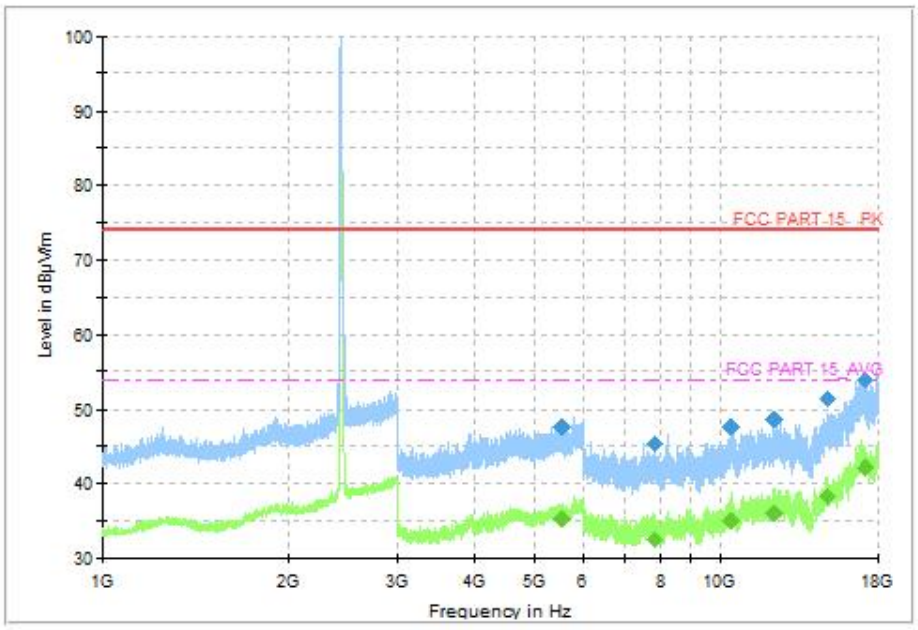

Fig.63 Radiated Spurious Emission (802.11n-HT20, CH6, 1 GHz-18 GHz)

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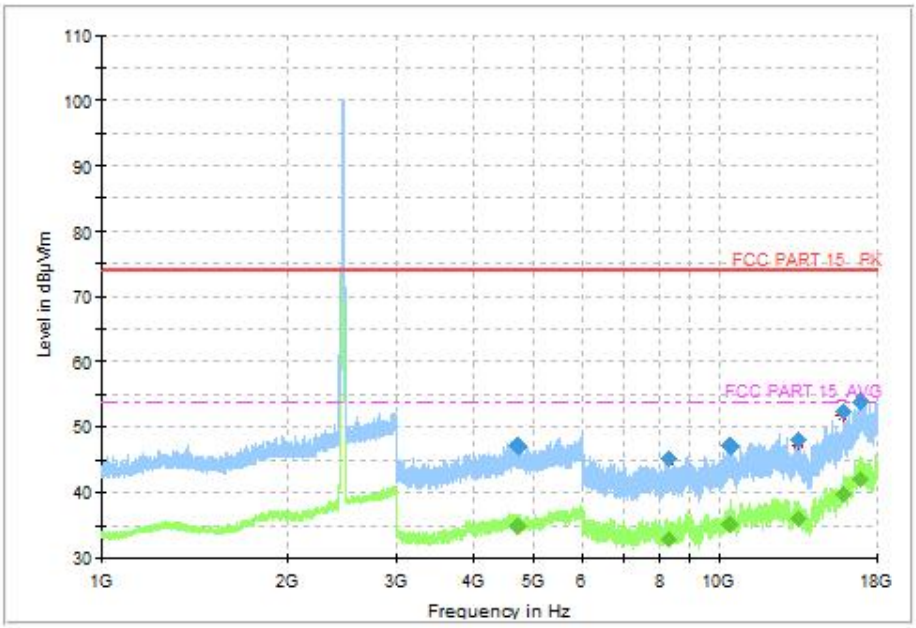

Fig.64 Radiated Spurious Emission (802.11n-HT20, CH11, 1 GHz-18 GHz)

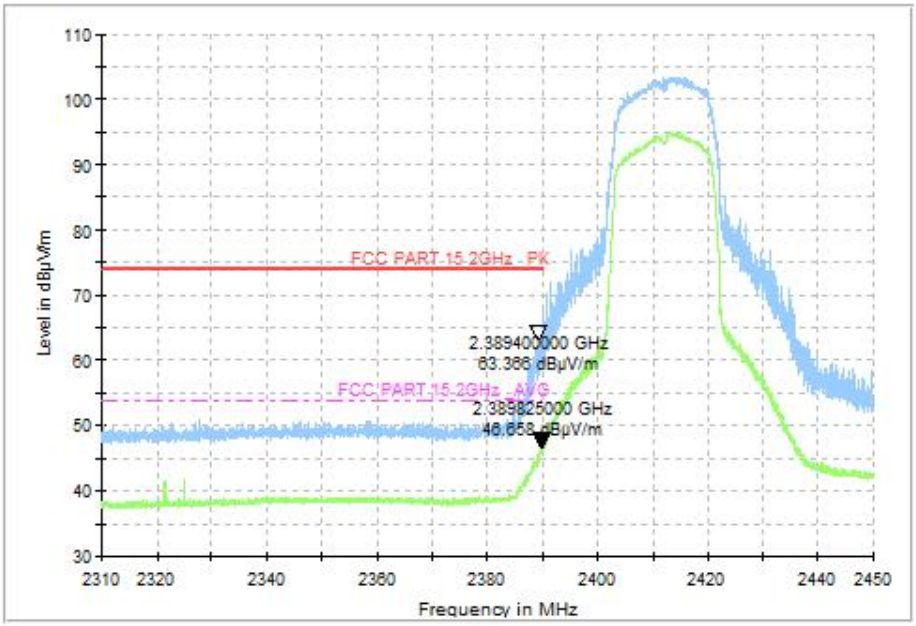

Fig.65 Radiated Restricted Band (802.11n-HT20, CH1, 2.38GHz~2.45GHz)

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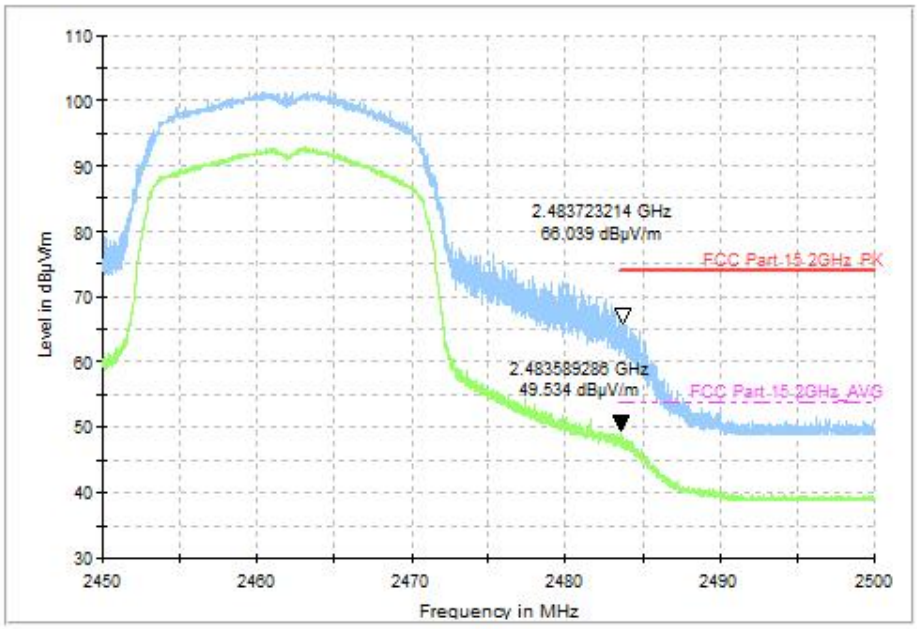

Fig.66 Radiated Spurious Emission (802.11-HT20, CH11, 2.45GHz~2.5GHz)

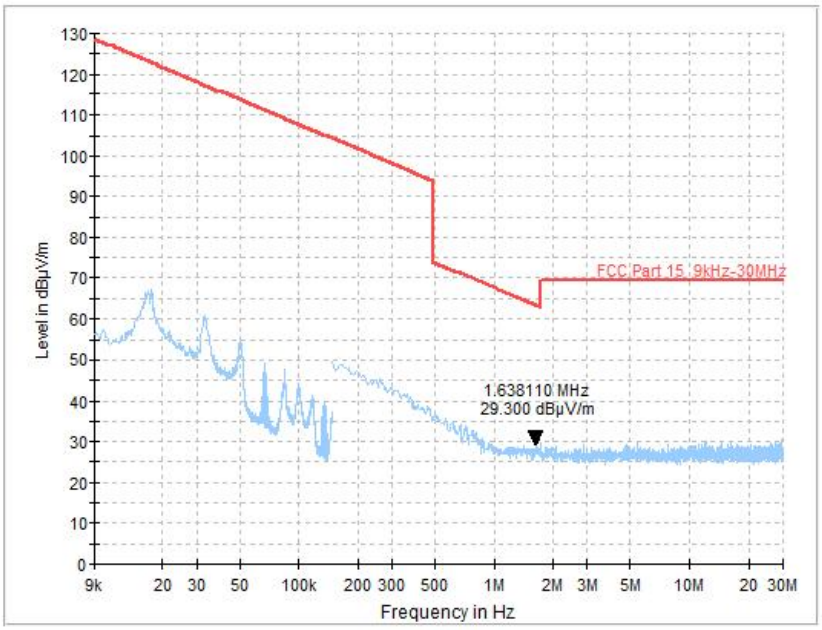

Fig.67 Radiated Spurious Emission (All channel, 9kHz~30MHz)

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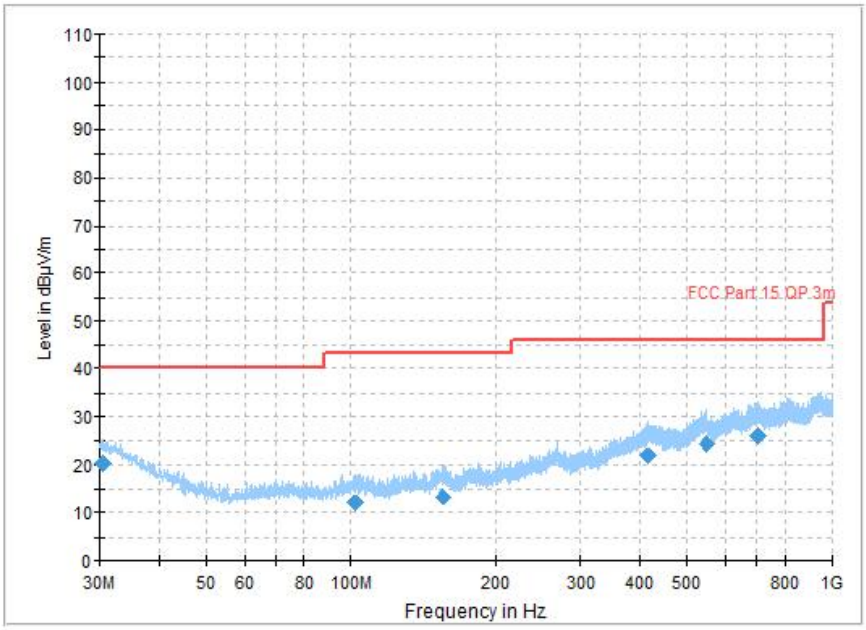

Fig.68 Radiated Spurious Emission (All channel, 30MHz~1GHz)

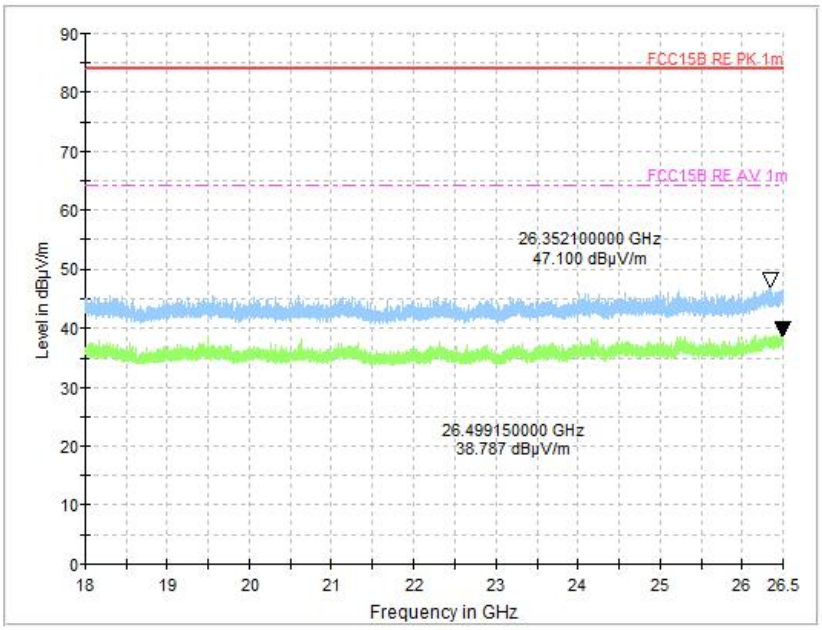

Fig.69 Radiated Spurious Emission (All channel, 18GHz~26.5GHz)

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A.7 AC Power line Conducted Emission

Method of Measurement: See ANSI C63.10-clause 6.2

Test Condition:

Voltage（V）	Frequency（Hz）
120	60

Measurement Result and limit:

WLAN 2.4GHz - 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.70	Fig.71	**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.

See below for test graphs.

Conclusion: PASS

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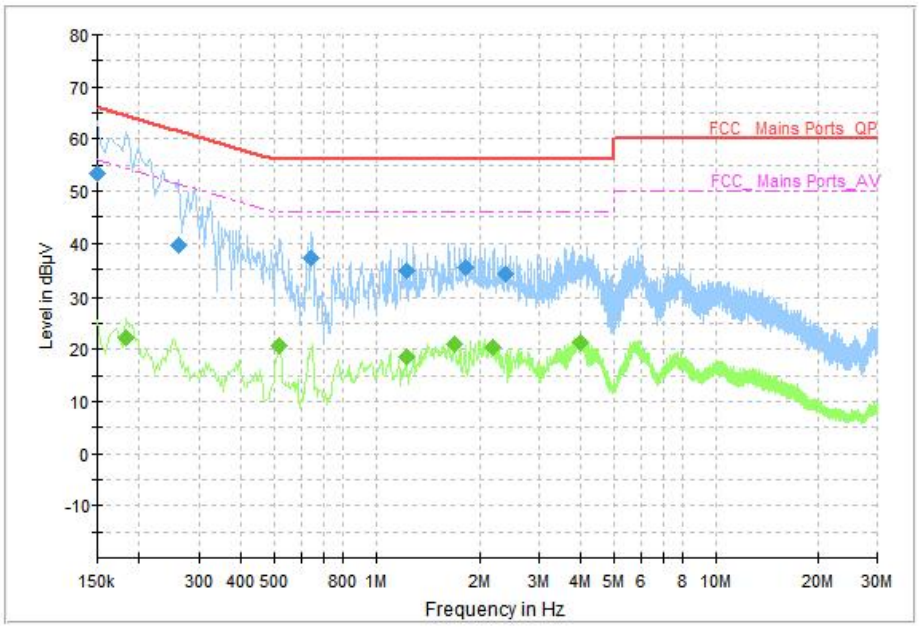

Fig.70 AC Power line Conducted Emission (Traffic)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	53.53	66.00	12.47	L1	ON	10
0.262000	39.58	61.37	21.79	L1	ON	10
0.646000	37.12	56.00	18.88	N	ON	10
1.230000	34.82	56.00	21.18	L1	ON	10
1.814000	35.36	56.00	20.64	N	ON	10
2.398000	34.28	56.00	21.72	N	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.182000	22.13	54.39	32.27	N	ON	10
0.518000	20.69	46.00	25.31	N	ON	10
1.230000	18.55	46.00	27.45	N	ON	10
1.690000	21.11	46.00	24.89	N	ON	10
2.202000	20.34	46.00	25.66	L1	ON	10
3.962000	21.38	46.00	24.62	N	ON	10

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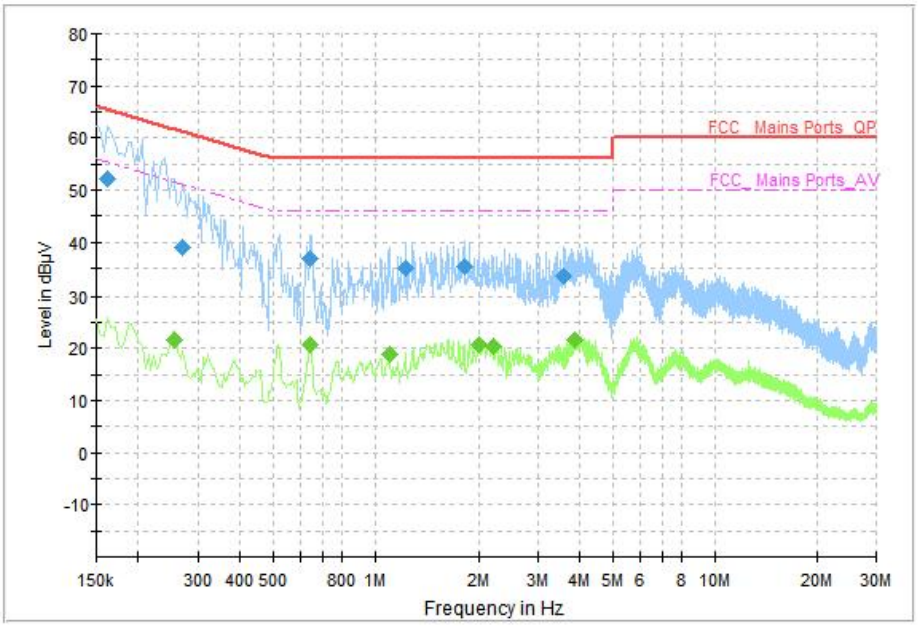

Fig.71 AC Power line Conducted Emission (Idle)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.162000	52.12	65.36	13.24	L1	ON	10
0.270000	38.94	61.12	22.17	L1	ON	10
0.646000	36.84	56.00	19.16	L1	ON	10
1.230000	34.96	56.00	21.04	L1	ON	10
1.814000	35.23	56.00	20.77	N	ON	10
3.562000	33.52	56.00	22.48	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.254000	21.50	51.63	30.13	N	ON	10
0.646000	20.65	46.00	25.35	L1	ON	10
1.102000	18.81	46.00	27.19	N	ON	10
2.002000	20.82	46.00	25.18	L1	ON	10
2.214000	20.23	46.00	25.77	L1	ON	10
3.834000	21.52	46.00	24.48	N	ON	10

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

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