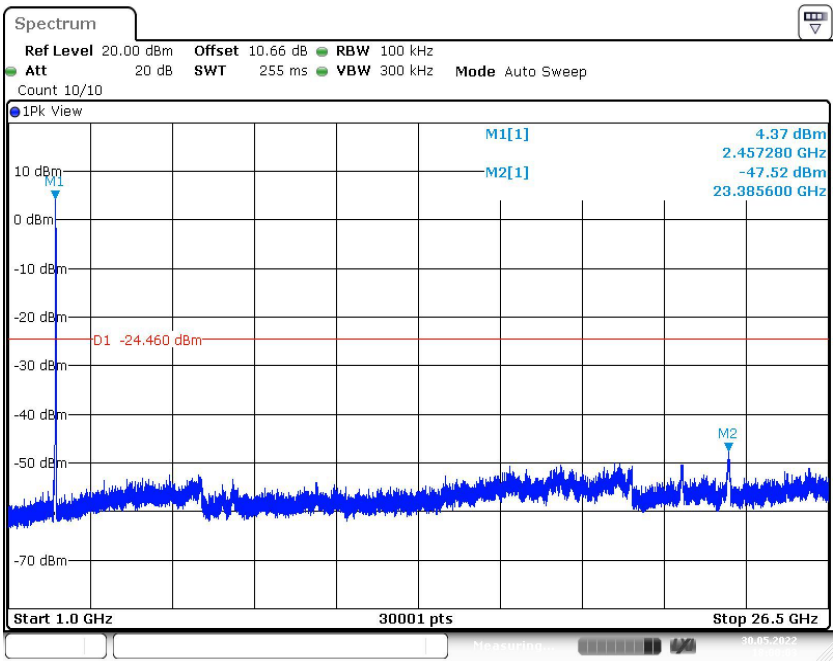

Fig.51 Conducted Spurious Emission (1GHz-26.5GHz, 802.11n-HT20, CH11)

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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	53.28	74.00	20.72	H	3.7
15229.285714	51.02	74.00	22.98	V	12.5
15879.428571	52.68	74.00	21.32	H	14.0
16561.285714	54.24	74.00	19.76	V	16.6
16961.142857	54.56	74.00	19.44	H	18.3
17279.142857	54.27	74.00	19.73	H	18.1

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4874.100000	48.02	54.00	5.98	H	3.7
15229.285714	38.48	54.00	15.52	V	12.5
15879.428571	40.19	54.00	13.81	H	14.0
16561.285714	41.43	54.00	12.57	V	16.6
16961.142857	42.31	54.00	11.69	H	18.3
17279.142857	41.86	54.00	12.14	H	18.1

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802.11g CH1 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4821.300000	49.21	74.00	24.79	H	3.9
10393.285714	48.55	74.00	25.45	V	9.0
15265.285714	51.34	74.00	22.66	V	12.5
16236.857143	52.02	74.00	21.98	H	14.9
16848.000000	54.00	74.00	20.00	V	17.9
17607.857143	54.64	74.00	19.36	H	18.2

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4821.300000	36.97	54.00	17.03	H	3.9
10393.285714	35.10	54.00	18.90	V	9.0
15265.285714	38.63	54.00	15.37	V	12.5
16236.857143	39.84	54.00	14.16	H	14.9
16848.000000	41.83	54.00	12.17	V	17.9
17607.857143	41.93	54.00	12.07	H	18.2

802.11n-HT20 CH6 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4869.600000	48.67	74.00	25.33	H	3.7
11180.142857	47.41	74.00	26.59	V	9.7
14940.000000	51.07	74.00	22.93	H	12.9
16313.142857	52.29	74.00	21.71	V	15.3
16948.285714	54.06	74.00	19.94	V	18.2
17911.714286	54.56	74.00	19.44	H	18.9

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4869.600000	36.13	54.00	17.87	H	3.7
11180.142857	34.94	54.00	19.06	V	9.7
14940.000000	38.65	54.00	15.35	H	12.9
16313.142857	40.06	54.00	13.94	V	15.3
16948.285714	42.06	54.00	11.94	V	18.2
17911.714286	42.53	54.00	11.47	H	18.9

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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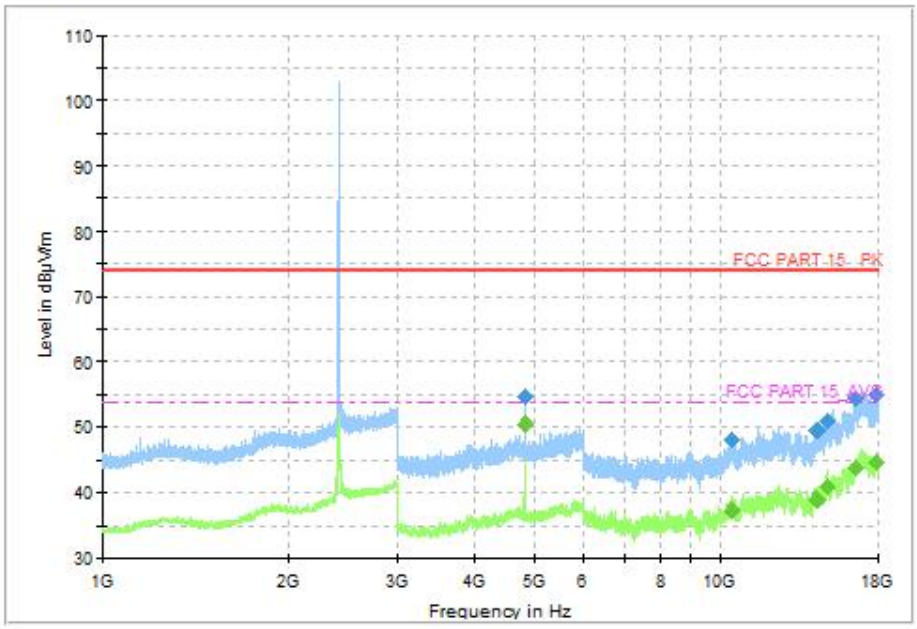

Fig.52 Radiated Spurious Emission (802.11b, CH1, 1 GHz-18GHz)

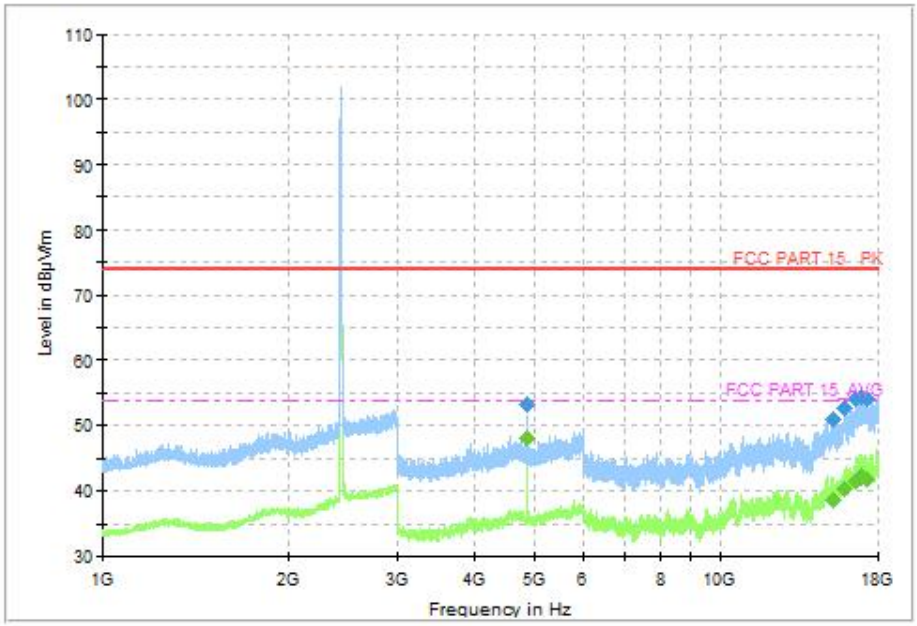

Fig.53 Radiated Spurious Emission (802.11b, CH6, 1 GHz-18GHz)

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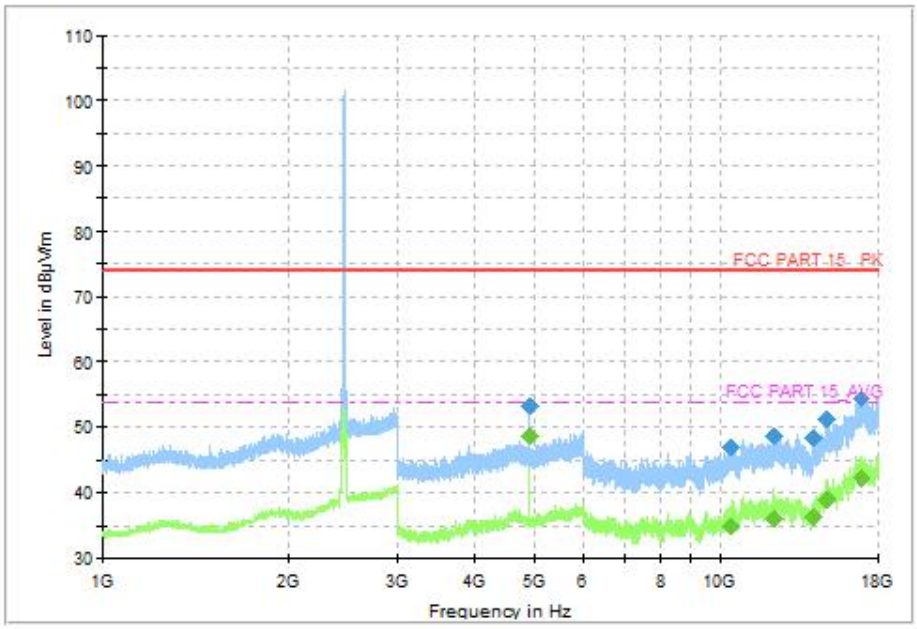

Fig.54 Radiated Spurious Emission (802.11b, CH11, 1 GHz-18GHz)

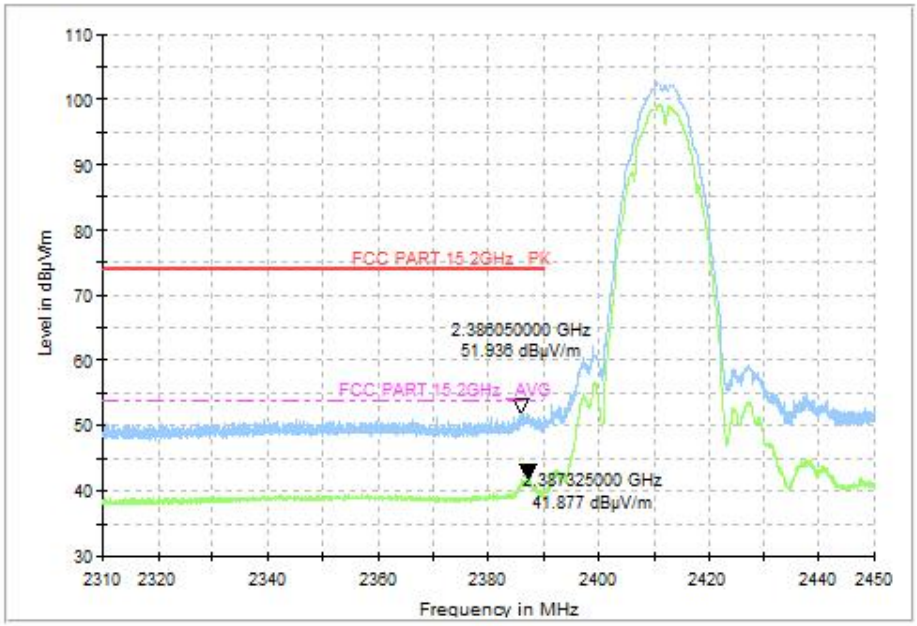

Fig.55 Radiated Restricted Band (802.11b, CH1, 2.38GHz~2.45GHz)

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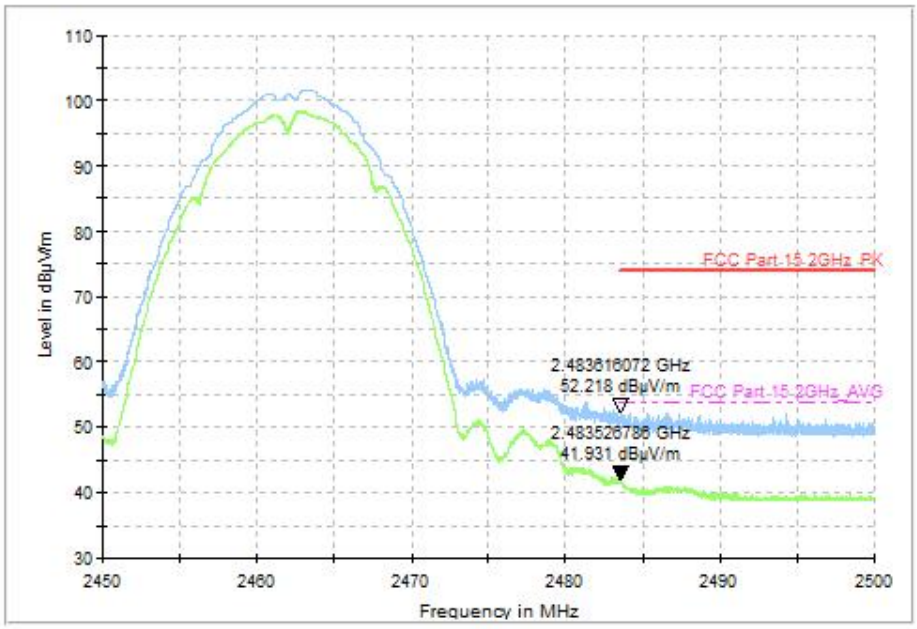

Fig.56 Radiated Restricted Band (802.11b, CH11, 2.45GHz~2.5GHz)

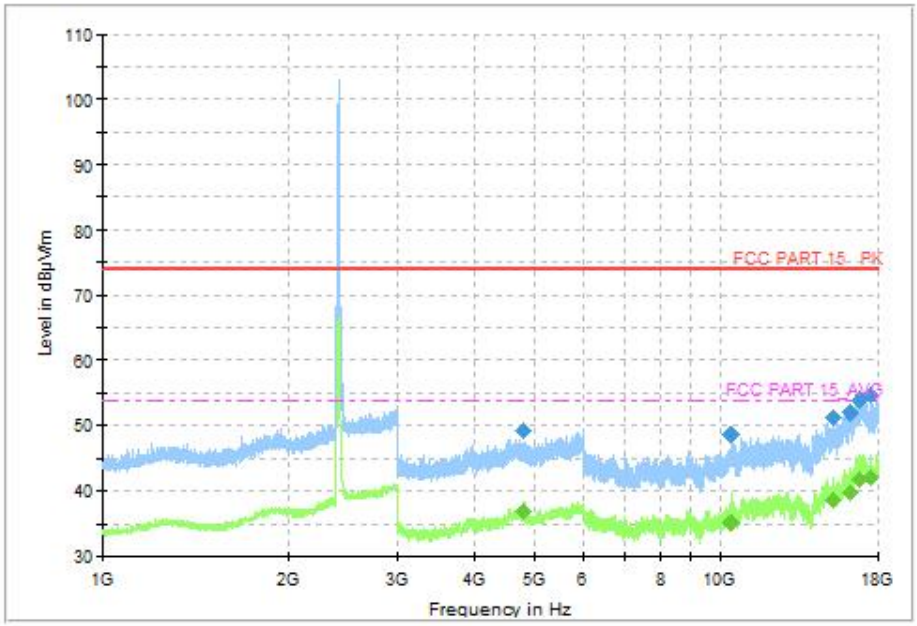

Fig.57 Radiated Spurious Emission (802.11g, CH1, 1 GHz-18 GHz)

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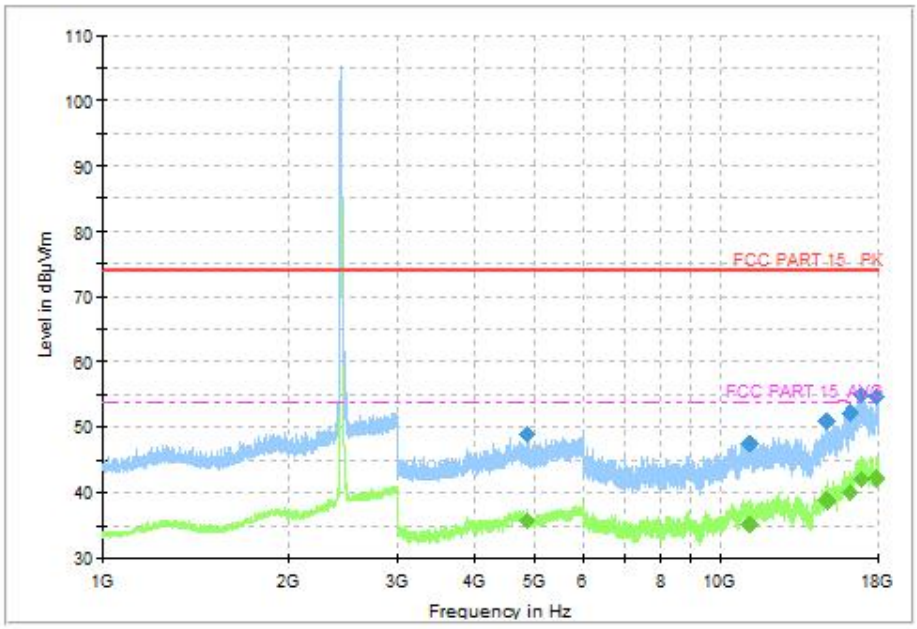

Fig.58 Radiated Spurious Emission (802.11g, CH6, 1 GHz-18 GHz)

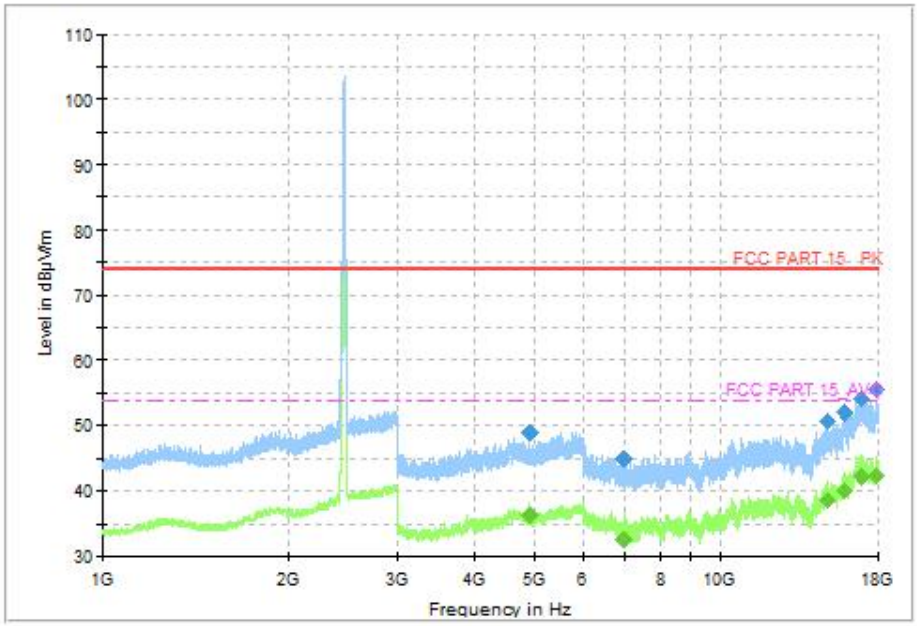

Fig.59 Radiated Spurious Emission (802.11g, CH11, 1 GHz-18 GHz)

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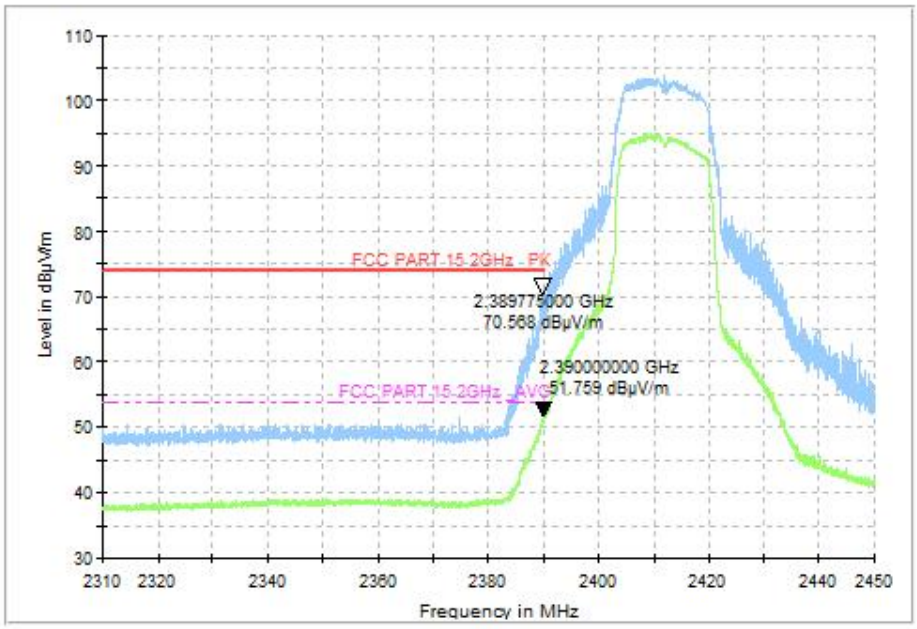

Fig.60 Radiated Restricted Band (802.11g, CH1, 2.38GHz~2.45GHz)

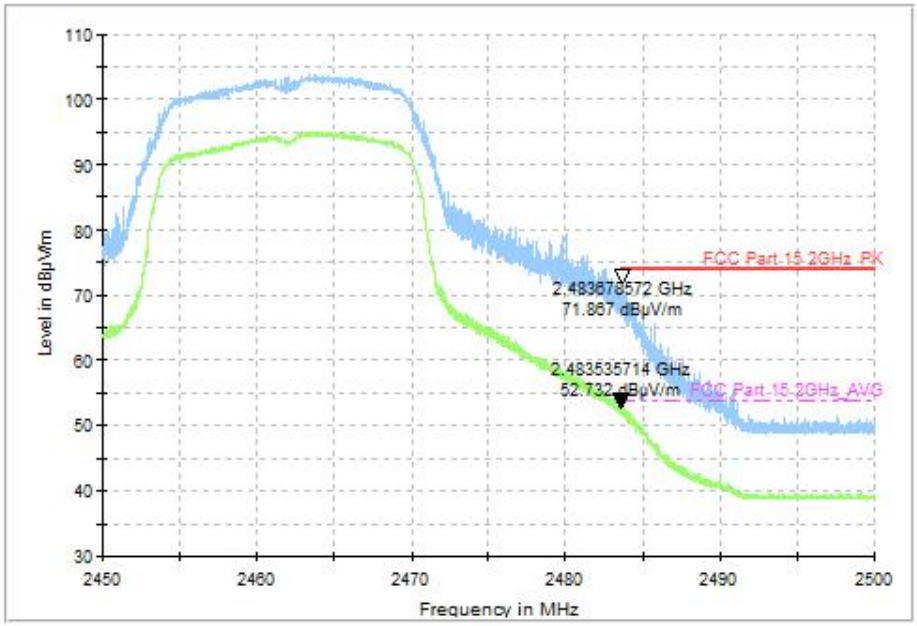

Fig.61 Radiated Restricted Band (802.11g, CH11, 2.45GHz~2.5GHz)

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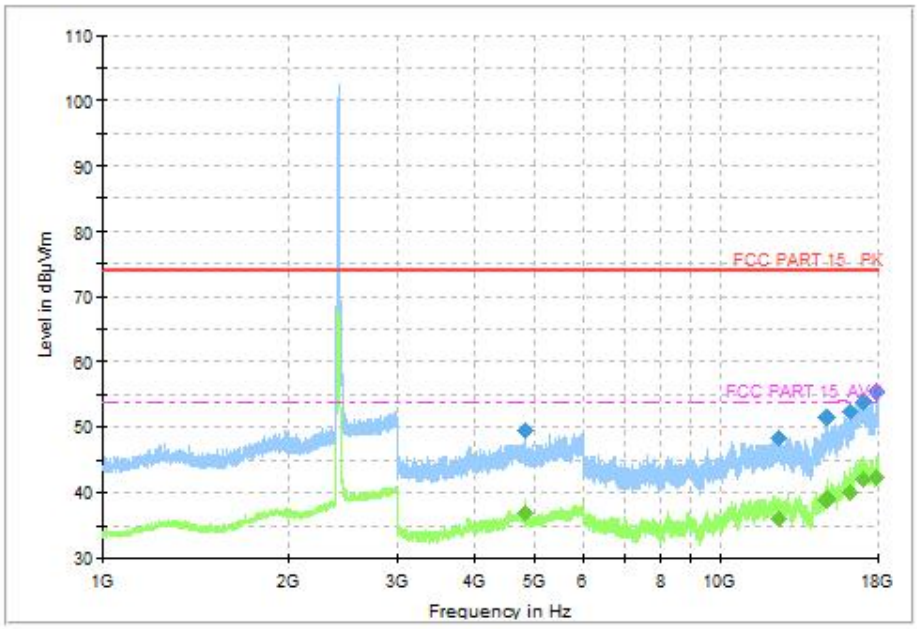

Fig.62 Radiated Spurious Emission (802.11n-HT20, CH1, 1 GHz-18 GHz)

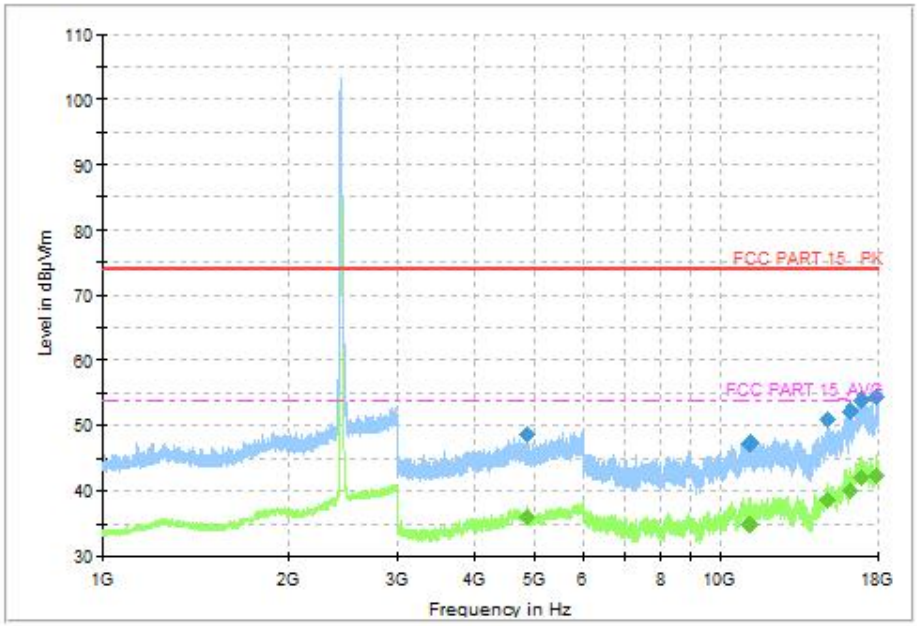

Fig.63 Radiated Spurious Emission (802.11n-HT20, CH6, 1 GHz-18 GHz)

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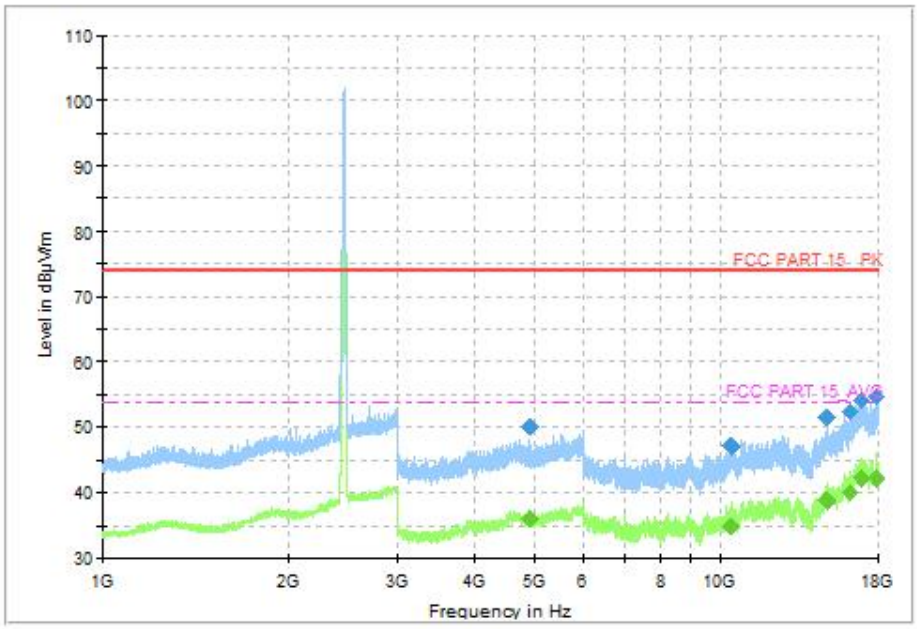

Fig.64 Radiated Spurious Emission (802.11n-HT20, CH11, 1 GHz-18 GHz)

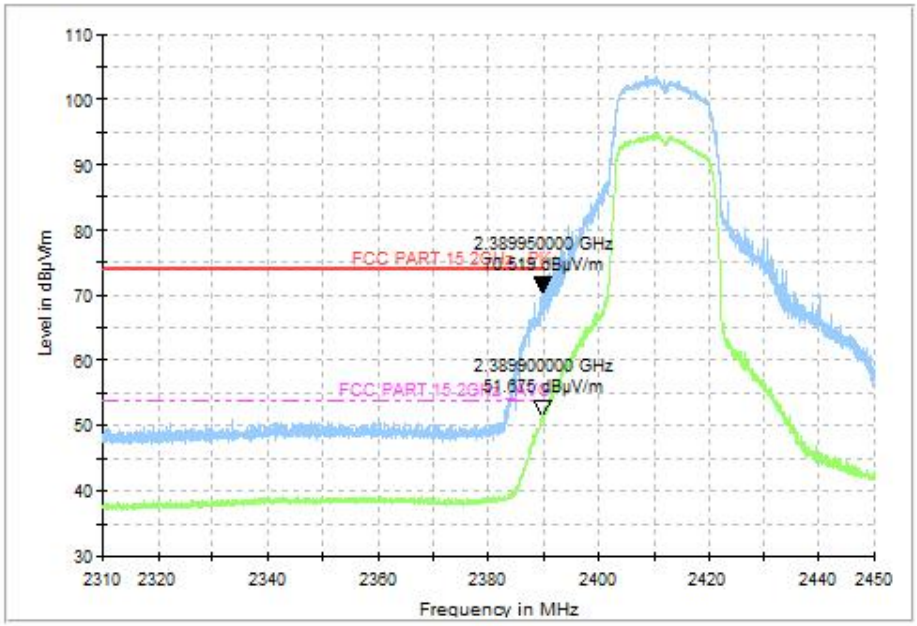

Fig.65 Radiated Restricted Band (802.11n-HT20, CH1, 2.38GHz~2.45GHz)

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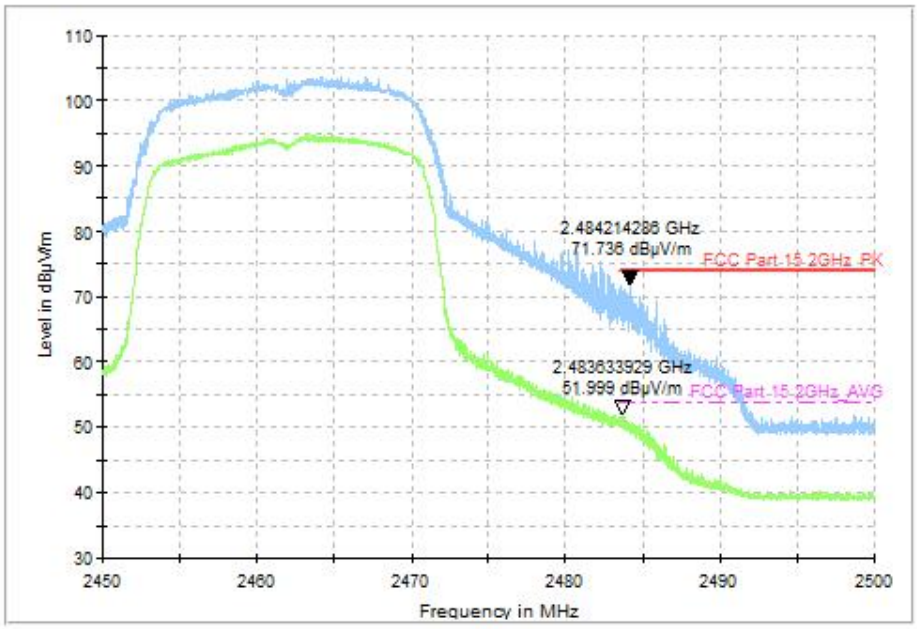

Fig.66 Radiated Restricted Band (802.11n-HT20, CH11, 2.45GHz~2.5GHz)

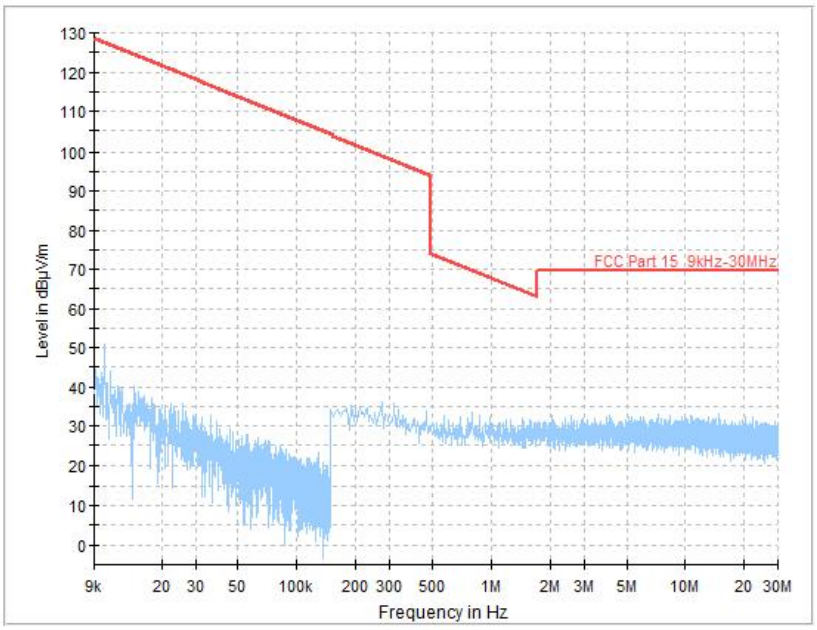

Fig.67 Radiated Spurious Emission (All Channels, 9 kHz-30 MHz)

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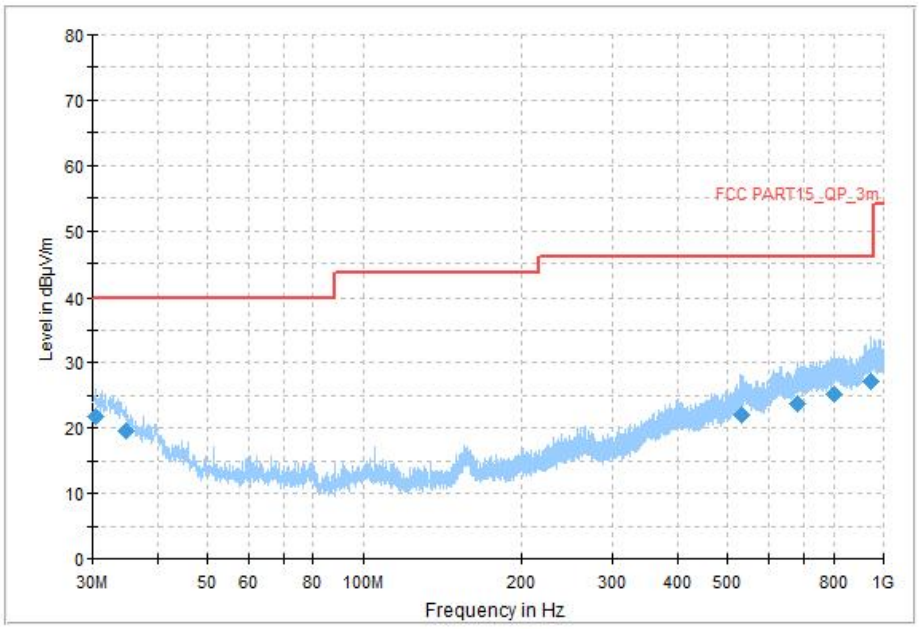

Fig.68 Radiated Spurious Emission (All Channels, 30MHz-1 GHz)

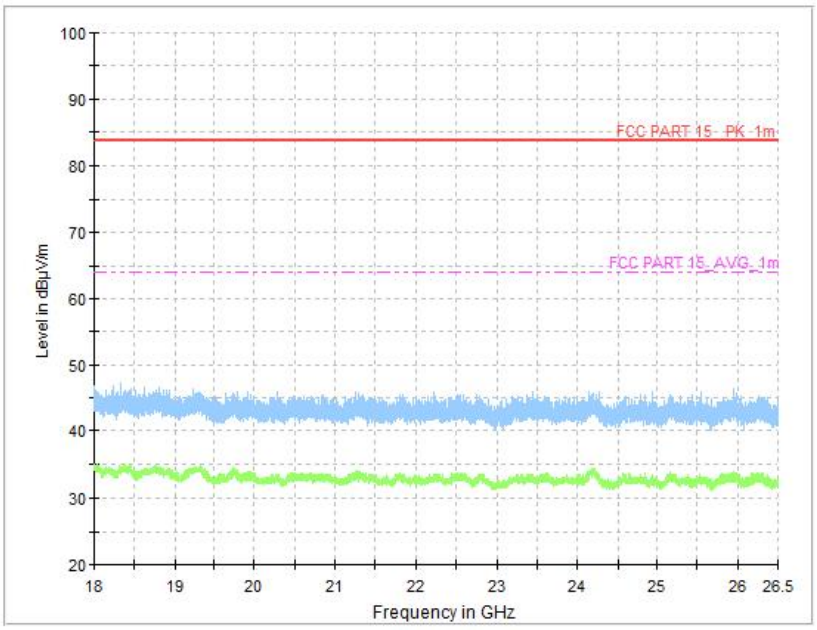

Fig.69 Radiated Spurious Emission (All Channels, 18 GHz-26.5 GHz)

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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

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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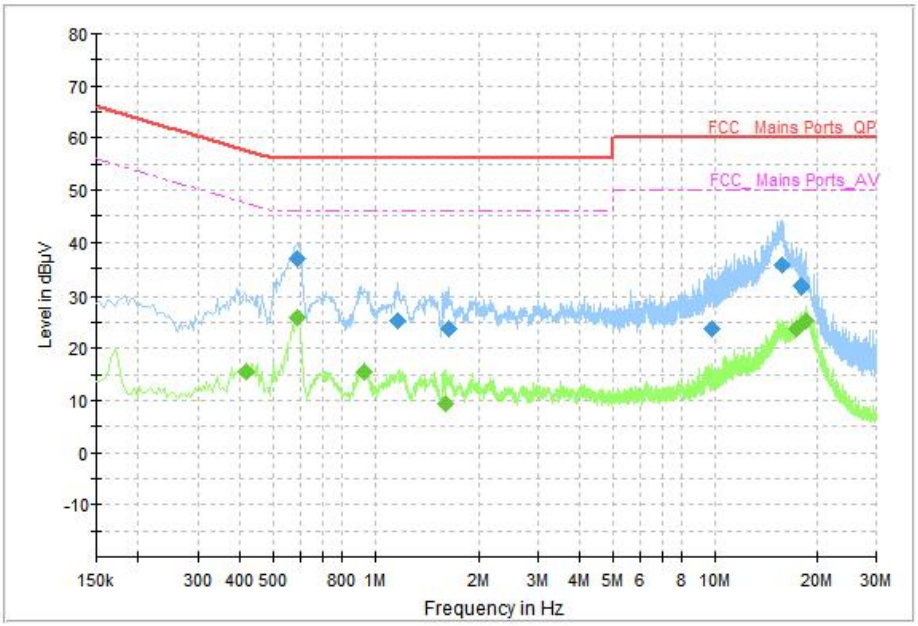

Fig.70 AC Power line Conducted Emission (Traffic)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.590000	36.76	56.00	19.24	N	ON	10
1.166000	25.33	56.00	30.67	N	ON	10
1.634000	23.85	56.00	32.15	N	ON	10
9.798000	23.88	60.00	36.12	N	ON	10
15.846000	35.63	60.00	24.37	L1	ON	10
17.930000	31.76	60.00	28.24	N	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.414000	15.39	47.57	32.18	L1	ON	10
0.590000	25.75	46.00	20.25	N	ON	10
0.926000	15.50	46.00	30.50	N	ON	10
1.606000	9.45	46.00	36.55	N	ON	10
17.466000	23.63	50.00	26.37	N	ON	11
18.554000	25.24	50.00	24.76	N	ON	10

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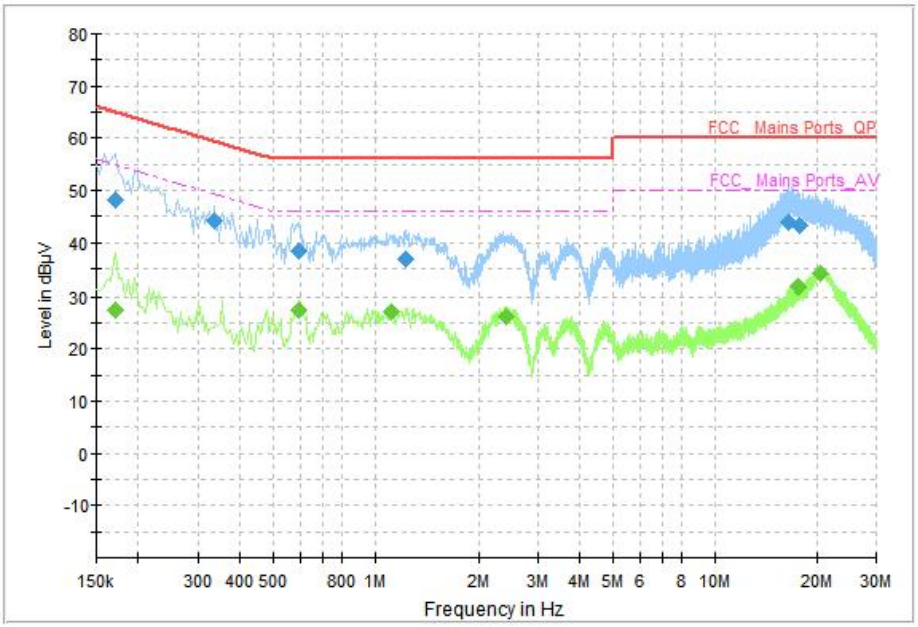

Fig.71 AC Power line Conducted Emission (Idle)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.170000	48.06	64.96	16.90	N	ON	10
0.334000	44.14	59.35	15.21	N	ON	10
0.594000	38.48	56.00	17.52	L1	ON	10
1.226000	36.89	56.00	19.11	N	ON	10
16.586000	43.84	60.00	16.16	L1	ON	10
17.846000	43.38	60.00	16.62	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.170000	27.41	54.96	27.55	N	ON	10
0.598000	27.46	46.00	18.54	L1	ON	10
1.122000	26.96	46.00	19.04	N	ON	10
2.422000	26.03	46.00	19.97	N	ON	10
17.634000	31.61	50.00	18.39	L1	ON	10
20.558000	34.24	50.00	15.76	L1	ON	10

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

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