

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

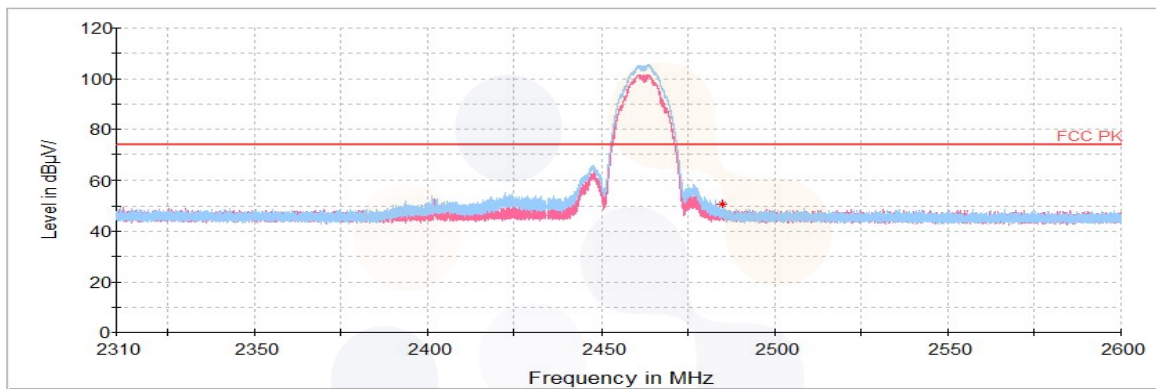
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802.11b_2 462 MHz

Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp. + Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
2 484.92 ¹⁾	H	45.57	32.17	-27.21	-	50.53	74.00	23.47
5 145.75 ¹⁾	V	61.40	33.89	-51.82	-	43.47	74.00	30.53
7 368.78 ¹⁾	V	58.75	35.35	-49.78	-	44.32	74.00	29.68
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for Band-edge



KCTL Inc.

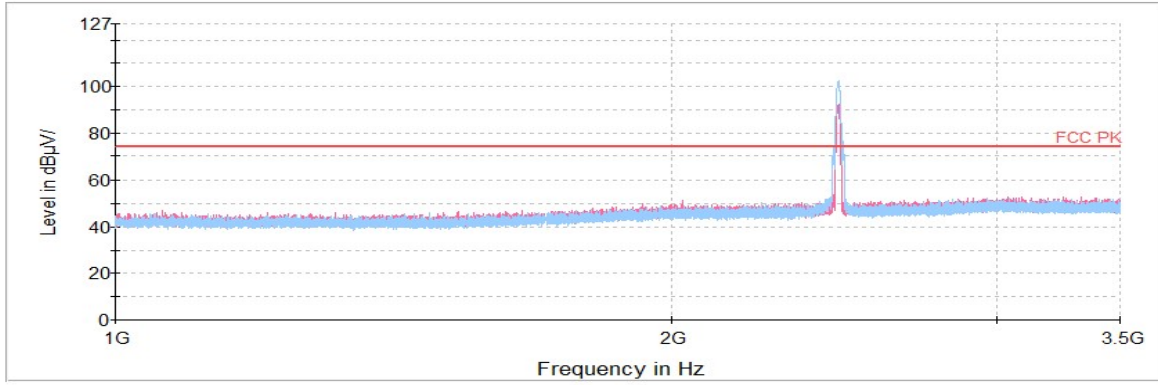
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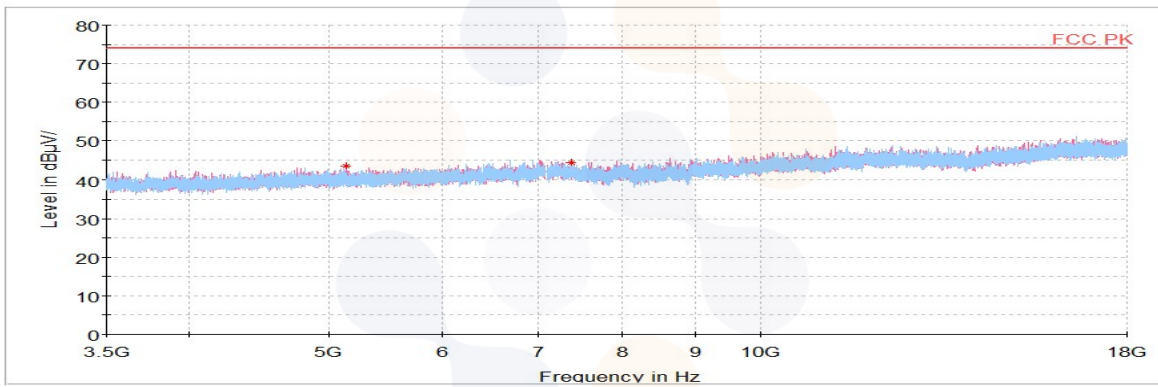


KCTL

Horizontal/Vertical for 1 GHz ~ 3.5 GHz



Horizontal/Vertical for 3.5 GHz ~ 18 GHz



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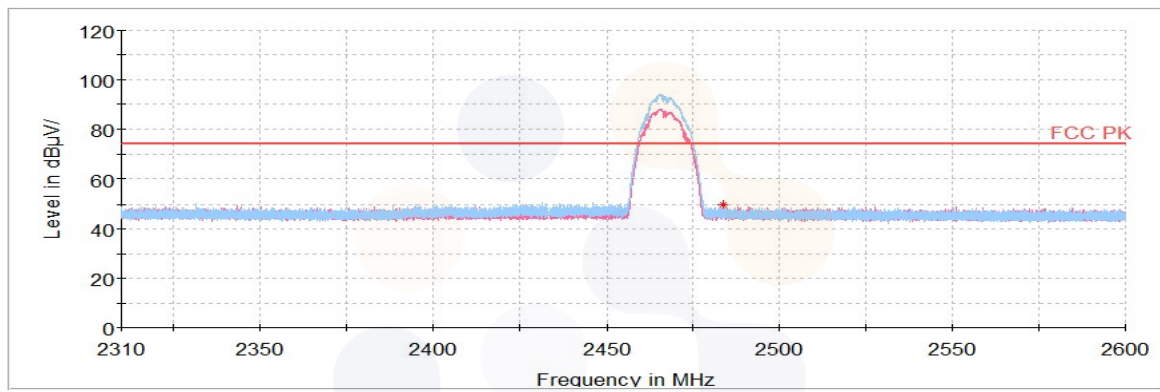
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802.11b_2 467 MHz

Frequency (MHz)	Pol. (V/H)	Reading (dB(μV))	Ant. Factor (dB)	Amp. + Cable (dB)	DCF (dB)	Result (dB(μV/m))	Limit (dB(μV/m))	Margin (dB)
Peak data								
2 483.70 ¹⁾	H	44.90	32.16	-27.21	-	49.85	74.00	24.15
4 980.36 ¹⁾	V	61.13	33.60	-51.73	-	43.00	74.00	31.00
7 228.77	V	59.74	35.41	-49.78	-	45.37	74.00	28.63
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for Band-edge



KCTL Inc.

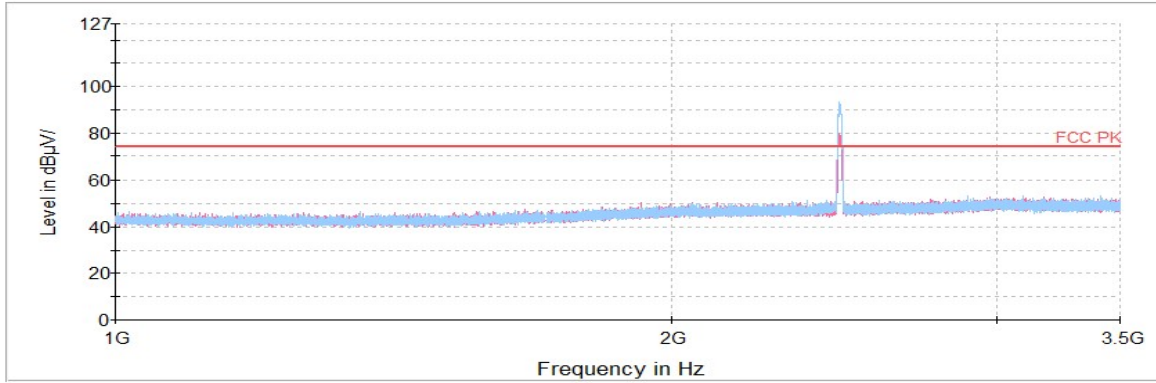
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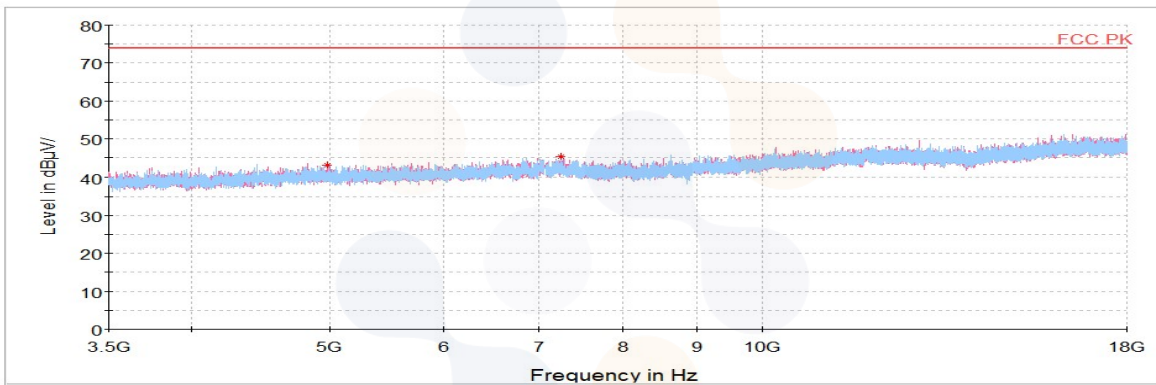


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Horizontal/Vertical for 1 GHz ~ 3.5 GHz



Horizontal/Vertical for 3.5 GHz ~ 18 GHz



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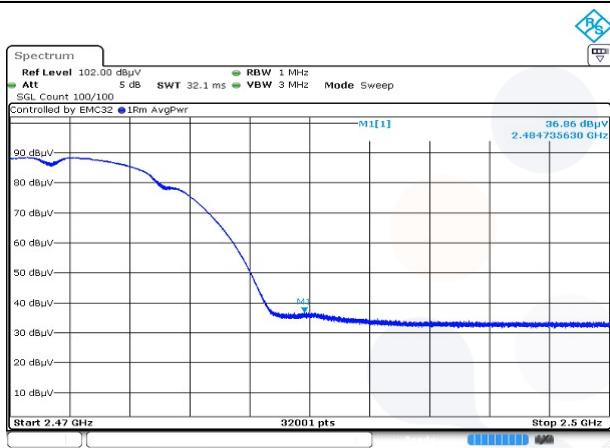


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802.11b_2 472 MHz

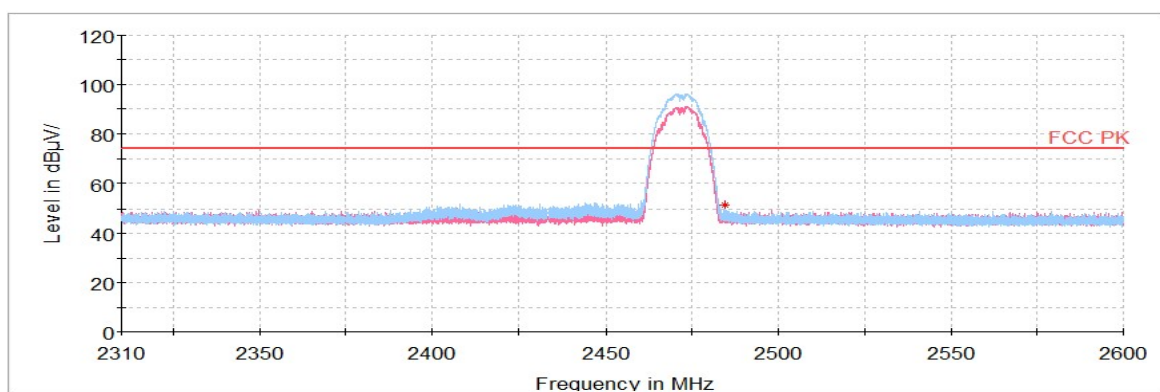
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
2 443.28	H	71.73	32.08	-45.51	-	58.30	74.00	15.70
2 484.74 ¹⁾	H	46.44	32.17	-27.21	-	51.40	74.00	22.60
4 986.25 ¹⁾	V	60.99	33.60	-51.74	-	42.85	74.00	31.15
7 170.31	V	60.24	35.43	-49.78	-	45.89	74.00	28.11
Average Data								
2 484.74 ¹⁾	H	36.86	32.17	-27.21	-	41.82	54.00	12.18

Average data



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Horizontal/Vertical for Band-edge



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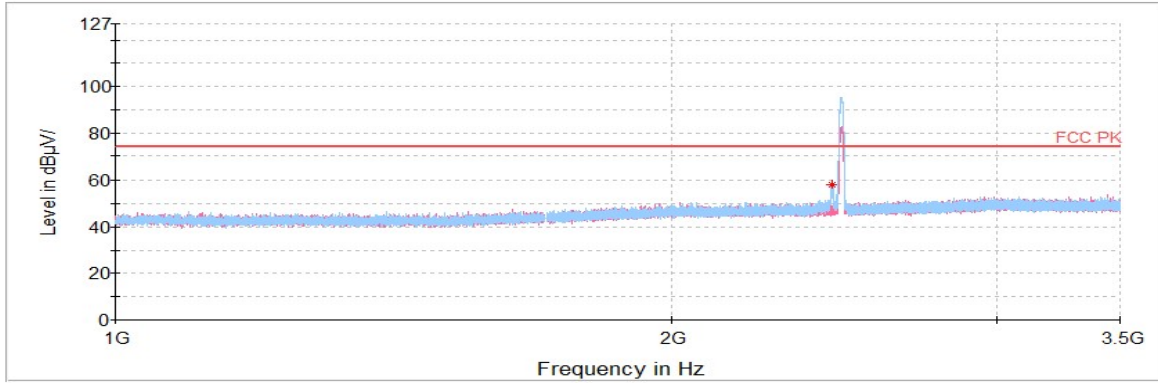
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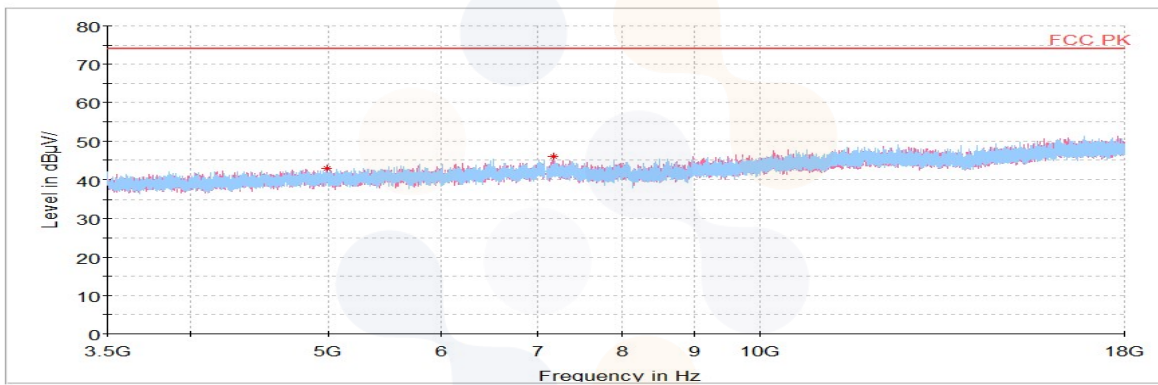


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Horizontal/Vertical for 1 GHz ~ 3.5 GHz



Horizontal/Vertical for 3.5 GHz ~ 18 GHz



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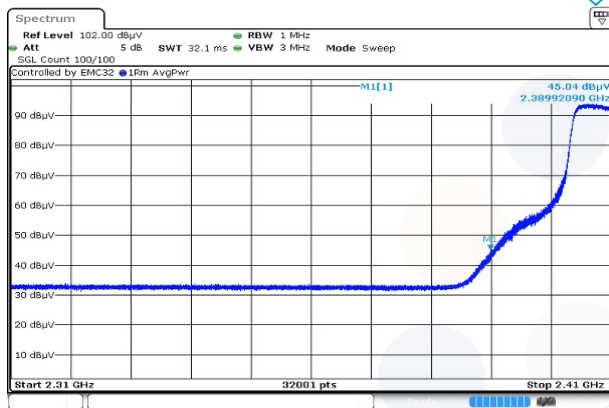
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802.11g_2 412 MHz

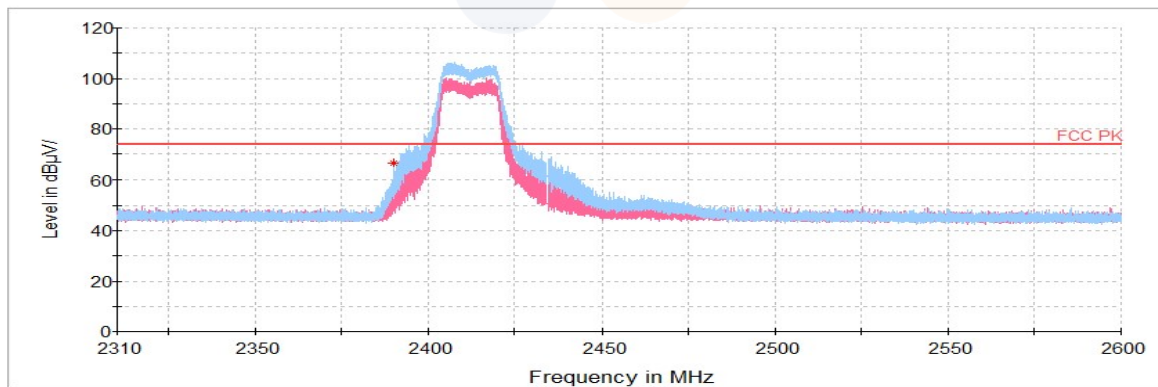
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
2 389.92 ¹⁾	H	61.55	31.96	-26.97	-	66.54	74.00	7.46
4 835.36 ¹⁾	H	60.39	33.63	-51.56	-	42.46	74.00	31.54
7 242.81	H	59.14	35.40	-49.78	-	44.76	74.00	29.24
Average Data								
2 389.92 ¹⁾	H	45.04	31.96	-26.97	0.34	50.37	54.00	3.63

Average data



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Horizontal/Vertical for Band-edge



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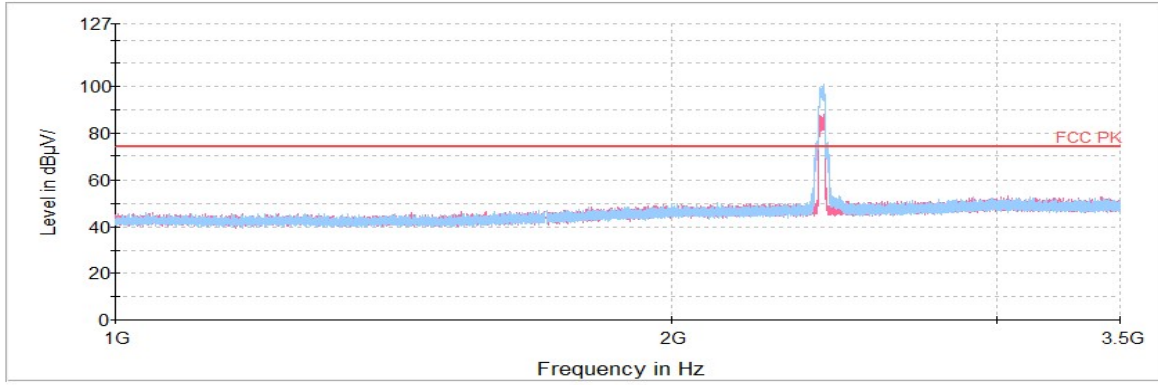
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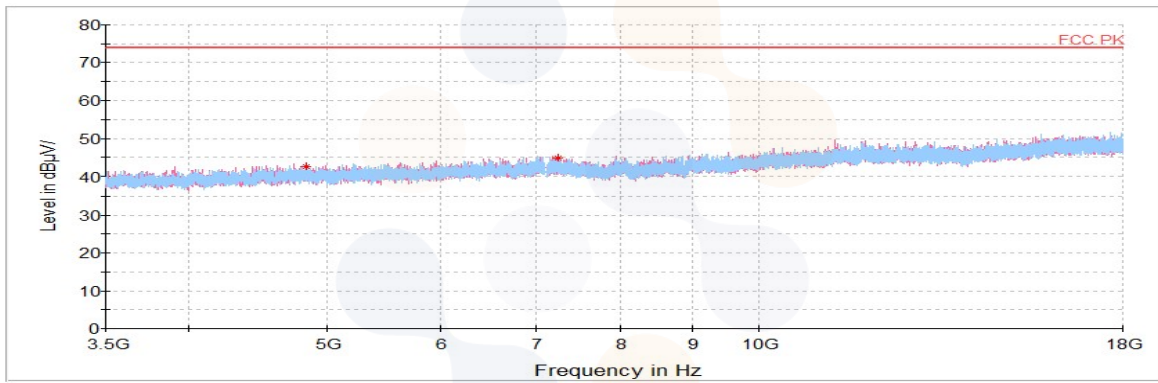


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Horizontal/Vertical for 1 GHz ~ 3.5 GHz



Horizontal/Vertical for 3.5 GHz ~ 18 GHz



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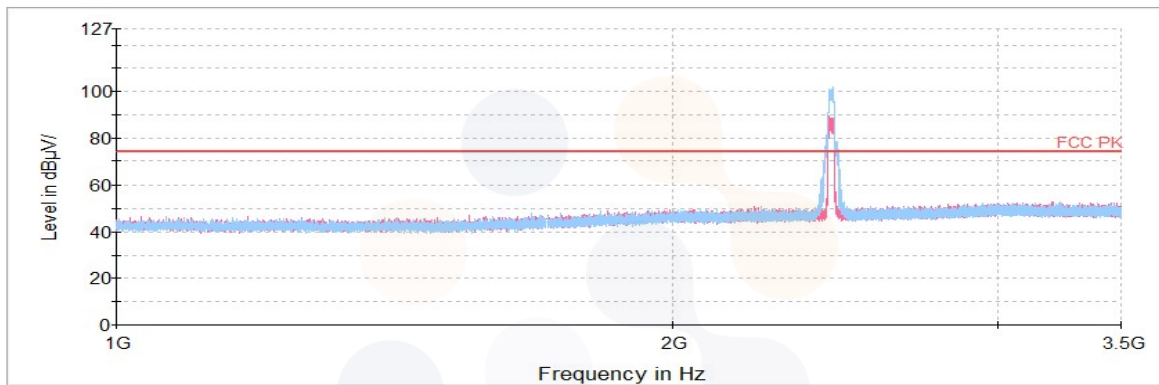
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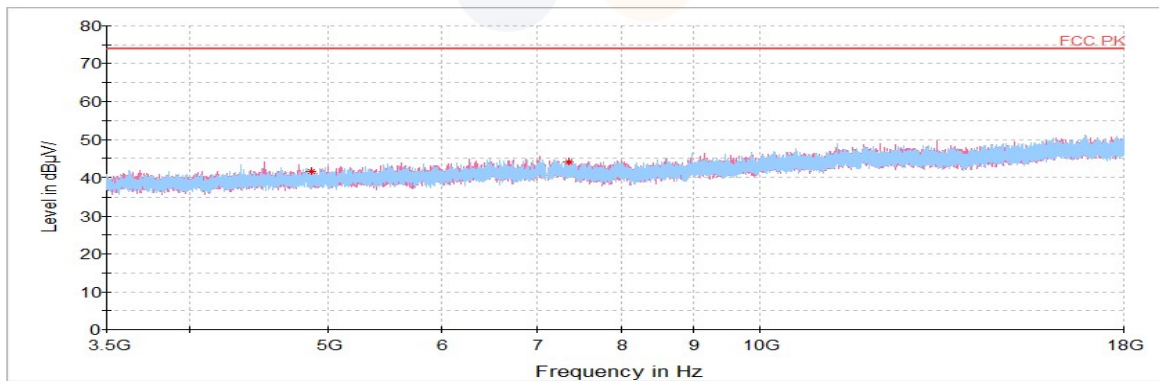
802.11g_2 437 MHz

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
4 872.06 ¹⁾	H	59.49	33.63	-51.54	-	41.58	74.00	32.42
7 354.73 ¹⁾	V	58.57	35.36	-49.78	-	44.15	74.00	29.85
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for 1 GHz ~ 3.5 GHz



Horizontal/Vertical for 3.5 GHz ~ 18 GHz



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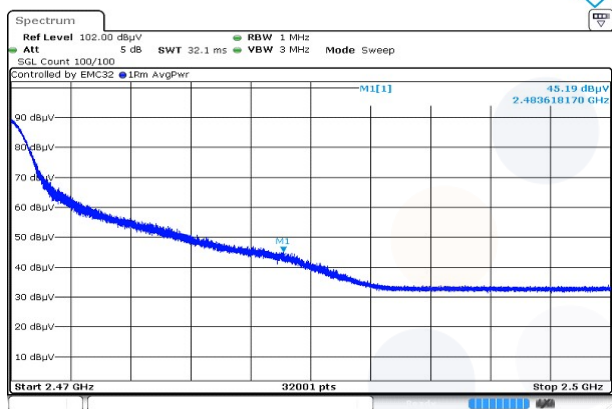


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802.11g_2 462 MHz

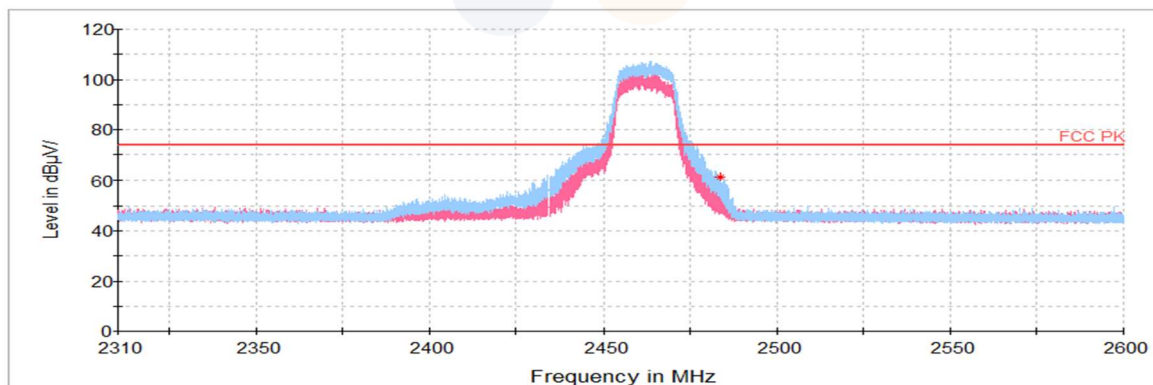
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
2 483.62 ¹⁾	H	55.93	32.16	-27.20	-	60.89	74.00	13.11
4 927.34 ¹⁾	H	59.62	33.61	-51.60	-	41.63	74.00	32.37
7 368.78 ¹⁾	V	58.44	35.35	-49.78	-	44.01	74.00	29.99
Average Data								
2 483.62 ¹⁾	H	45.19	32.16	-27.20	0.34	50.49	54.00	3.51

Average data



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Horizontal/Vertical for Band-edge



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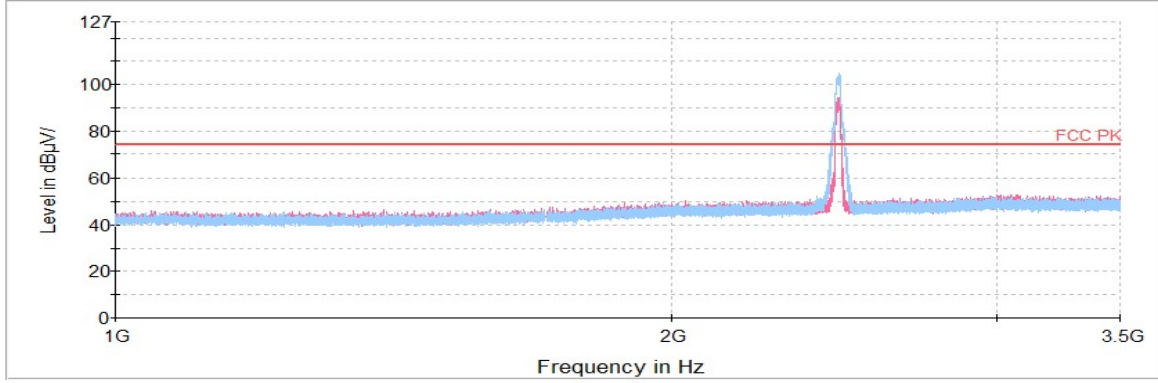
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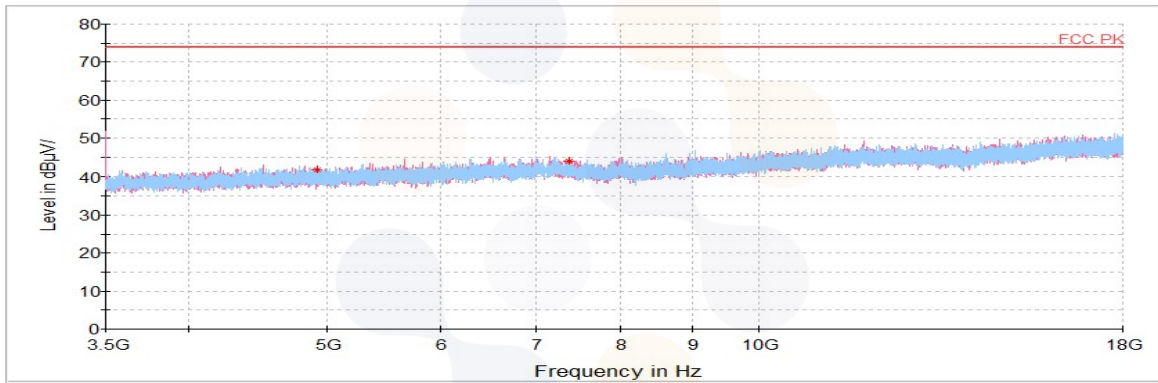


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Horizontal/Vertical for 1 GHz ~ 3.5 GHz



Horizontal/Vertical for 3.5 GHz ~ 18 GHz



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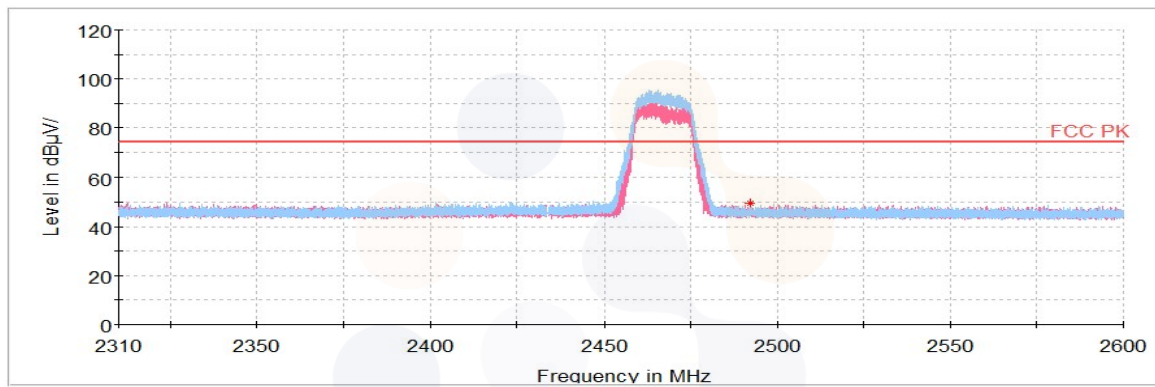
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802.11g_2 467 MHz

Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp. + Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
2 492.21 ¹⁾	V	44.49	32.18	-27.23	-	49.44	74.00	24.56
4 952.27 ¹⁾	V	61.33	33.61	-51.66	-	43.28	74.00	30.72
7 374.67 ¹⁾	V	59.36	35.35	-49.78	-	44.93	74.00	29.07
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for Band-edge



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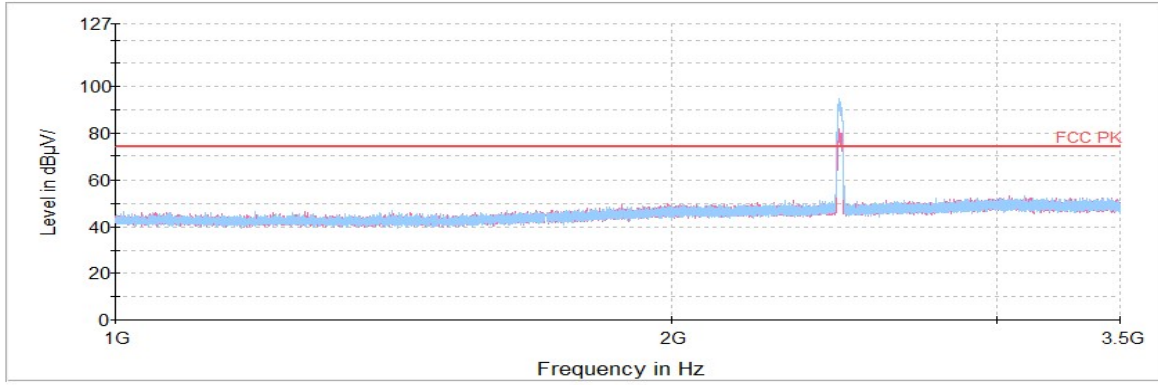
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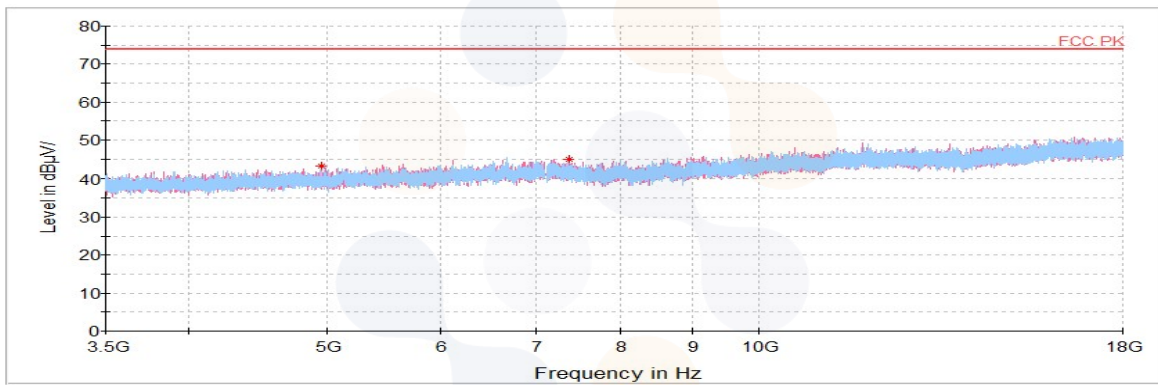


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Horizontal/Vertical for 1 GHz ~ 3.5 GHz



Horizontal/Vertical for 3.5 GHz ~ 18 GHz



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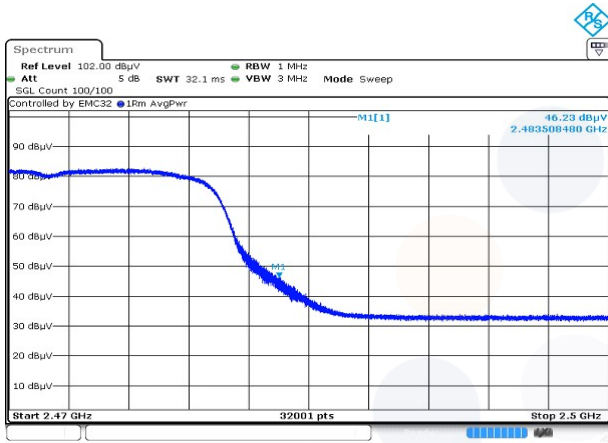
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802.11g_2 472 MHz

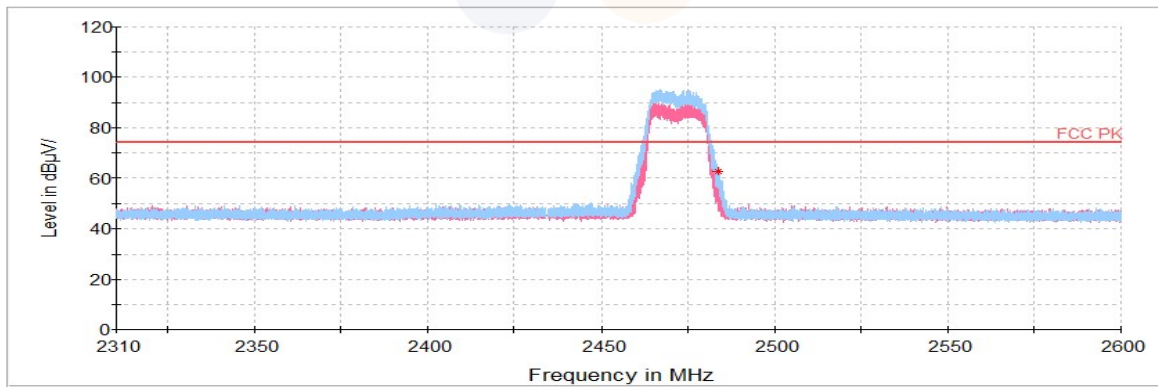
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
2 483.51 ¹⁾	H	57.49	32.16	-27.20	-	62.45	74.00	11.55
4 962.69 ¹⁾	V	60.10	33.61	-51.68	-	42.03	74.00	31.97
7 391.44 ¹⁾	H	59.30	35.34	-49.78	-	44.86	74.00	29.14
Average Data								
2 483.51 ¹⁾	H	46.23	32.16	-27.20	0.34	51.53	54.00	2.47

Average data



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Horizontal/Vertical for Band-edge



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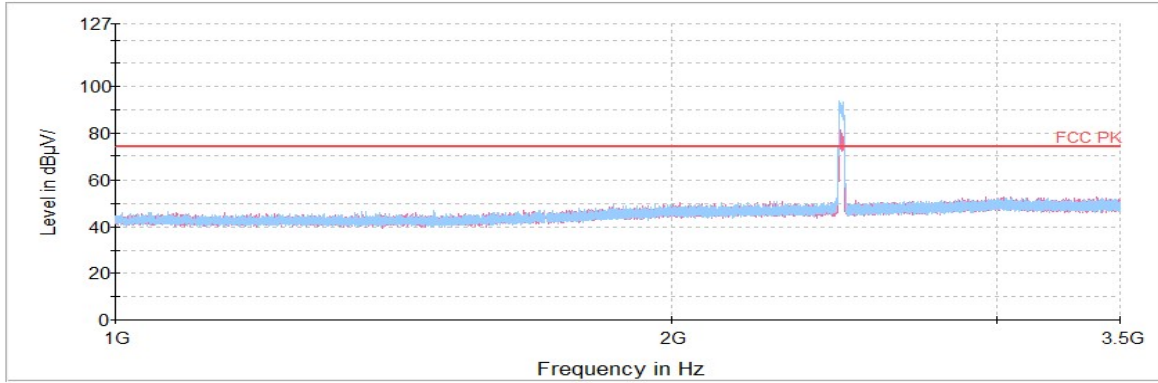
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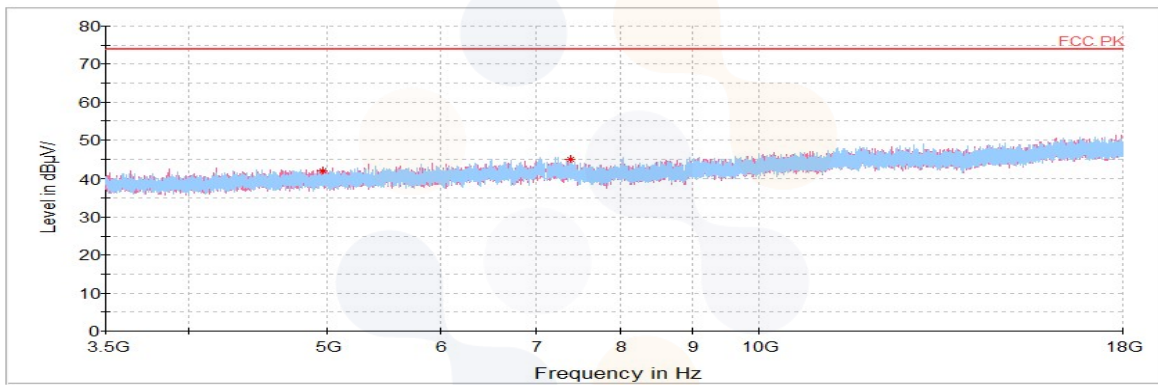


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Horizontal/Vertical for 1 GHz ~ 3.5 GHz



Horizontal/Vertical for 3.5 GHz ~ 18 GHz



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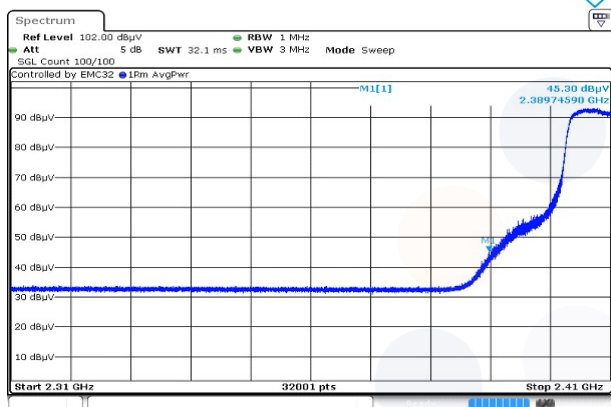


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802.11n HT20_2 412 MHz

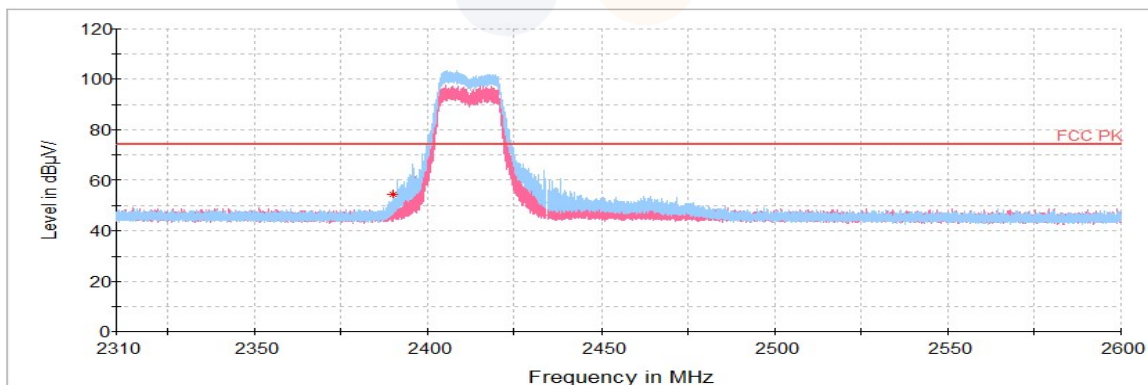
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
2 389.75 ¹⁾	H	49.81	31.96	-26.97	-	54.80	74.00	19.20
4 889.28 ¹⁾	H	61.78	33.62	-51.53	-	43.87	74.00	30.13
7 238.73	V	59.00	35.40	-49.78	-	44.62	74.00	29.38
Average Data								
2 389.75 ¹⁾	H	45.30	31.96	-26.97	0.37	50.66	54.00	3.34

Average data



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Horizontal/Vertical for Band-edge



KCTL Inc.

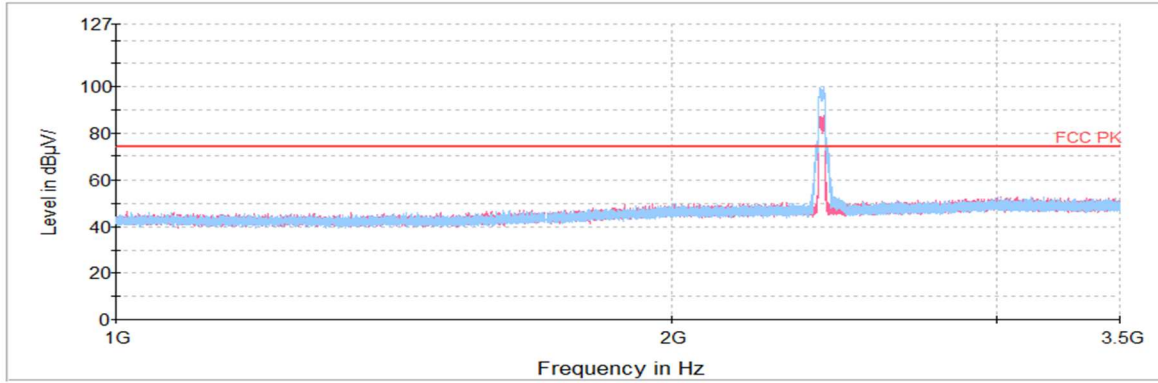
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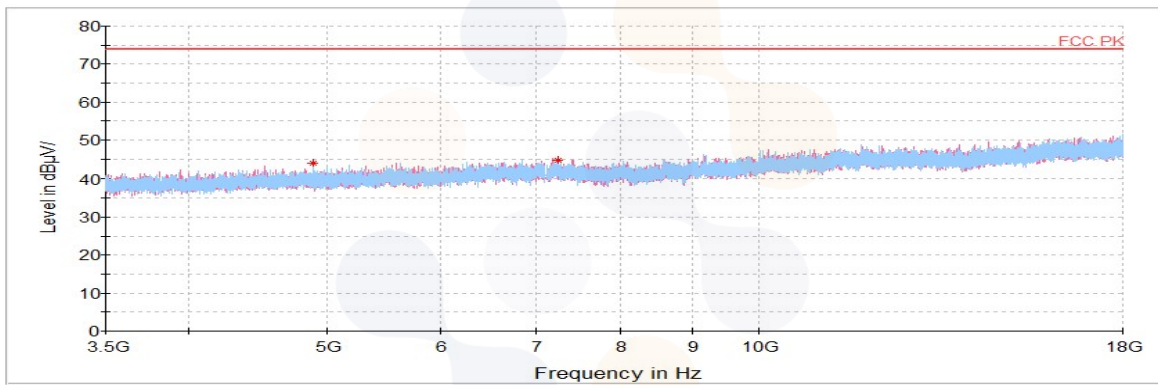


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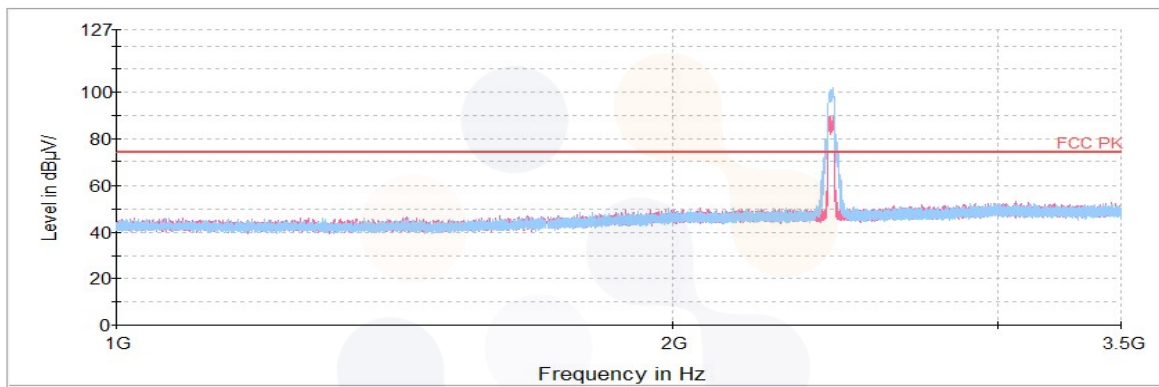
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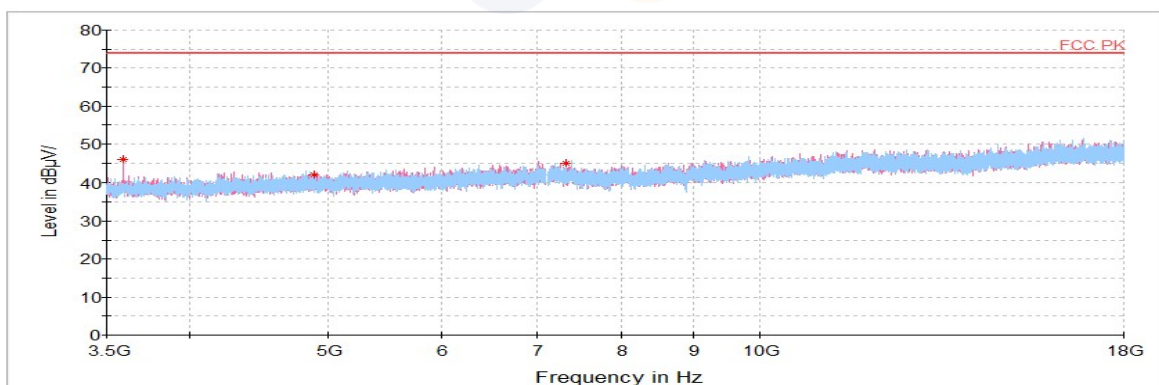
802.11n HT20_2 437 MHz

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
3 594.25	V	65.84	33.16	-53.10	-	45.90	74.00	28.10
4 887.92 ¹⁾	V	59.88	33.62	-51.54	-	41.96	74.00	32.04
7 329.81 ¹⁾	H	59.41	35.37	-49.78	-	45.00	74.00	29.00
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for 1 GHz ~ 3.5 GHz



Horizontal/Vertical for 3.5 GHz ~ 18 GHz



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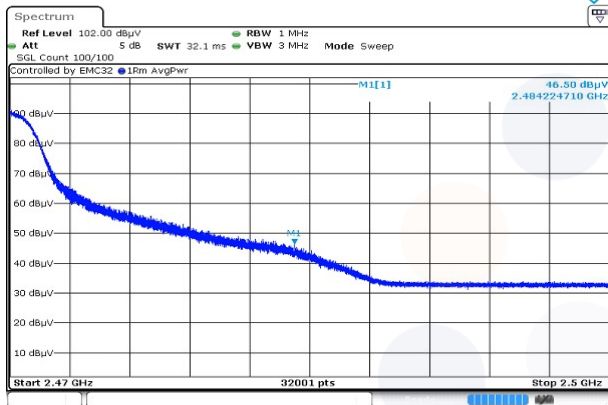
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802.11n HT20_2 462 MHz

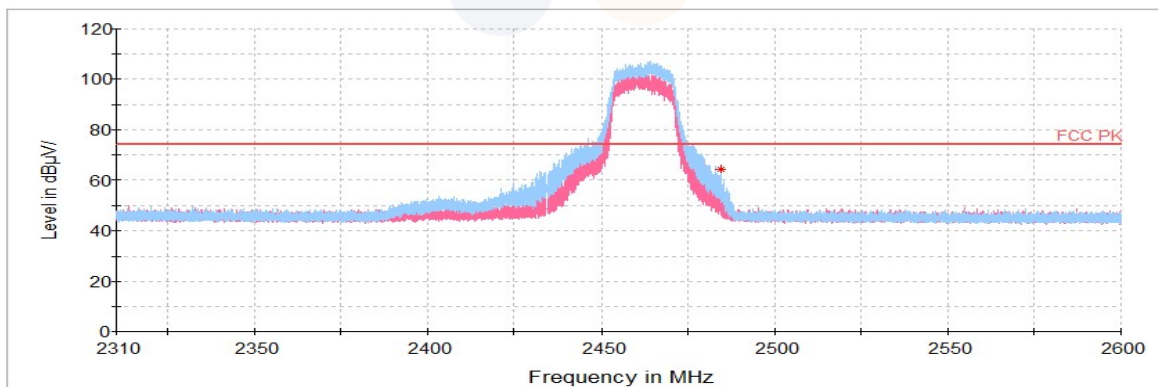
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
2 484.22 ¹⁾	H	59.11	32.17	-27.21	-	64.07	74.00	9.93
4 989.42 ¹⁾	V	61.22	33.60	-51.75	-	43.07	74.00	30.93
7 389.63 ¹⁾	V	58.66	35.34	-49.78	-	44.22	74.00	29.78
Average Data								
2 484.22 ¹⁾	H	46.50	32.17	-27.21	0.37	51.83	54.00	2.17

Average data



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Horizontal/Vertical for Band-edge



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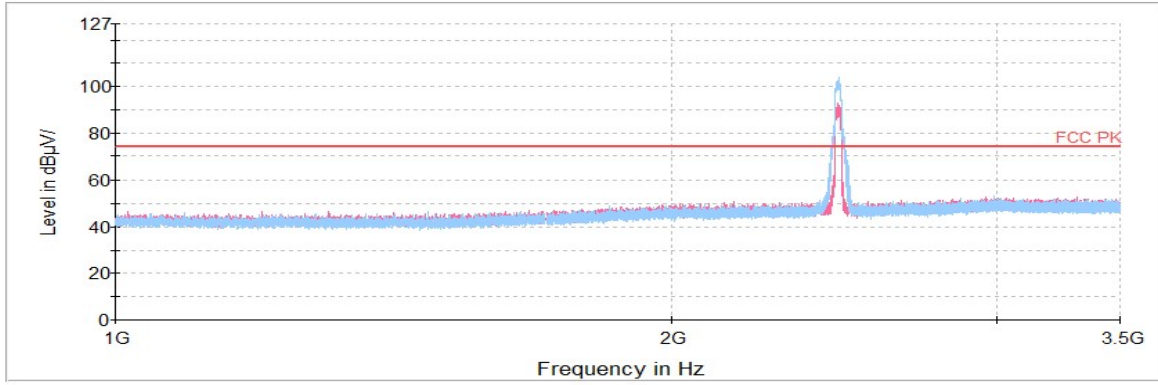
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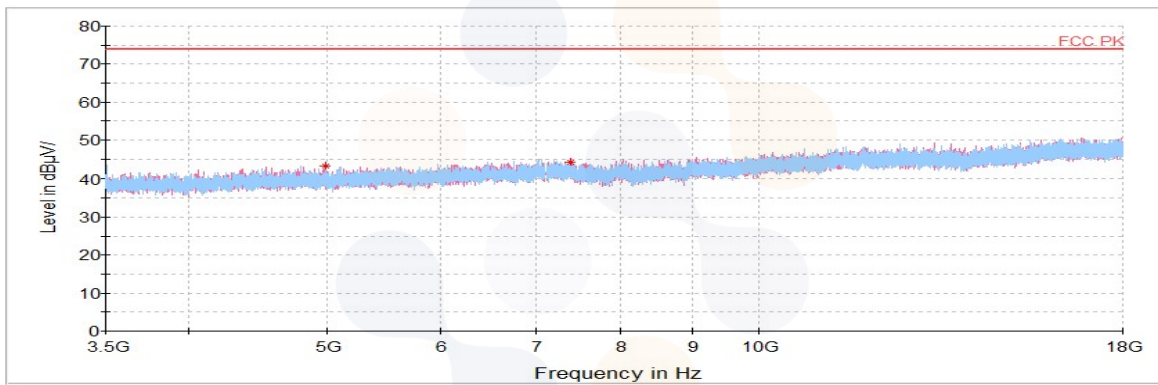


KCTL

Horizontal/Vertical for 1 GHz ~ 3.5 GHz



Horizontal/Vertical for 3.5 GHz ~ 18 GHz



KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

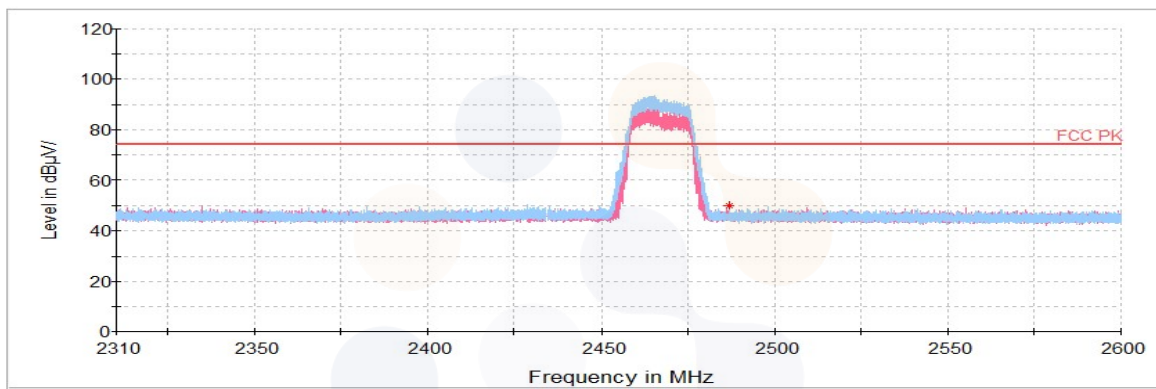
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802.11n HT20_2 467 MHz

Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp. + Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
2 486.87 ¹⁾	H	45.02	32.17	-27.21	-	49.98	74.00	24.02
4 952.27 ¹⁾	H	61.01	33.61	-51.66	-	42.96	74.00	31.04
7 462.13 ¹⁾	H	58.37	35.32	-49.78	-	43.91	74.00	30.09
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for Band-edge



KCTL Inc.

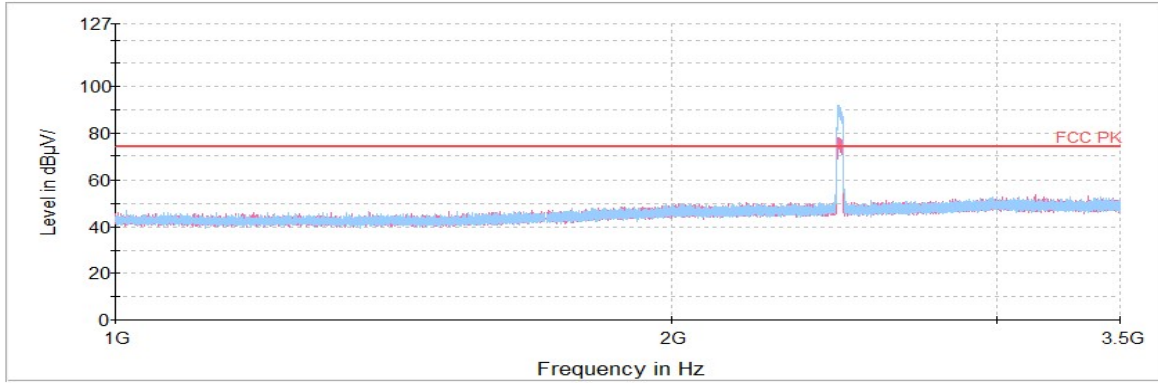
65, Sinwon-ro, Yeongtong-gu,
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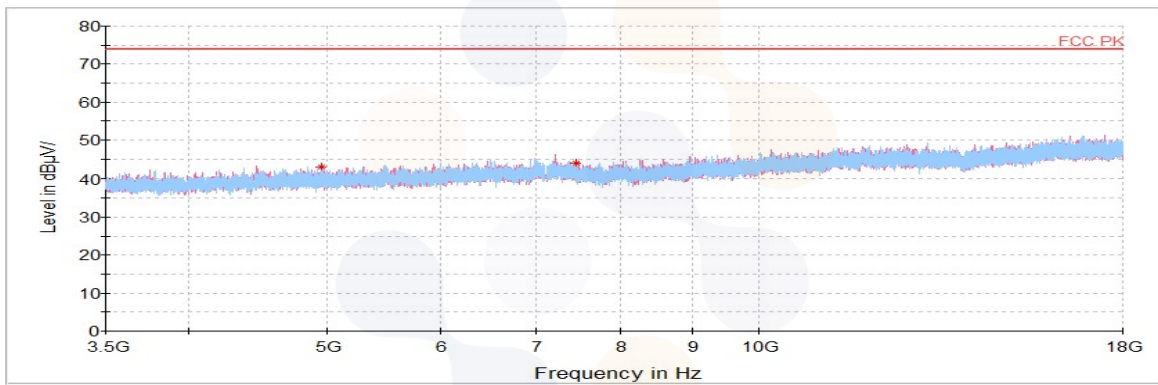


KCTL

Horizontal/Vertical for 1 GHz ~ 3.5 GHz



Horizontal/Vertical for 3.5 GHz ~ 18 GHz



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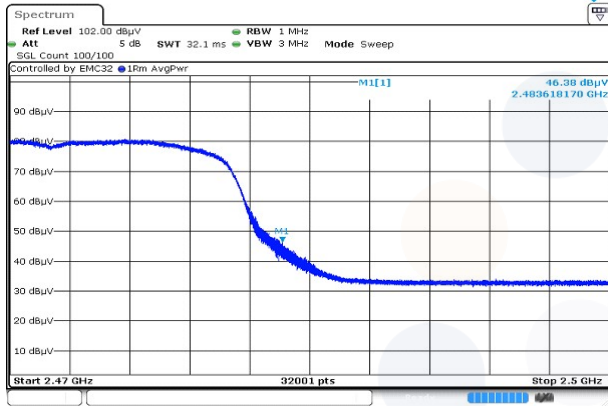
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802.11n HT20_2 472 MHz

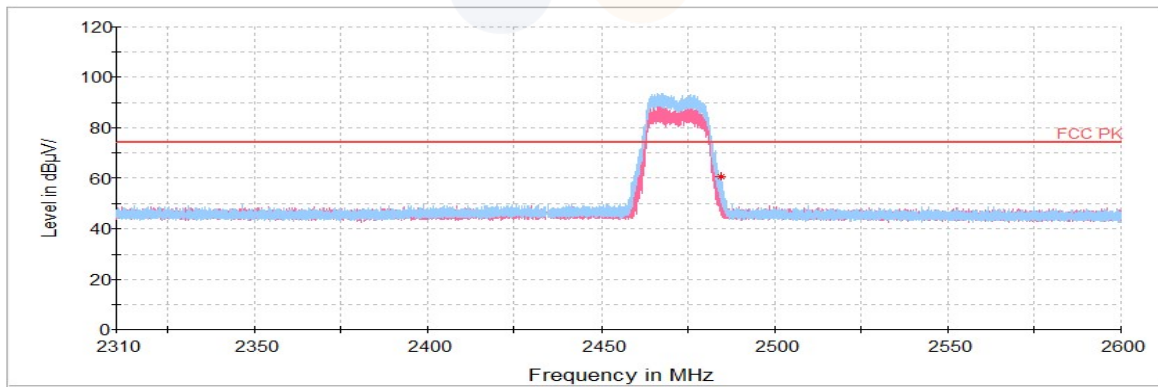
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
2 483.62 ¹⁾	H	55.55	32.16	-27.20	-	60.51	74.00	13.49
4 955.44 ¹⁾	V	61.20	33.61	-51.67	-	43.14	74.00	30.86
7 423.16 ¹⁾	V	58.61	35.33	-49.78	-	44.16	74.00	29.84
Average Data								
2 483.62 ¹⁾	H	46.38	32.16	-27.20	0.37	51.71	54.00	2.29

Average data



Blank

Horizontal/Vertical for Band-edge



KCTL Inc.

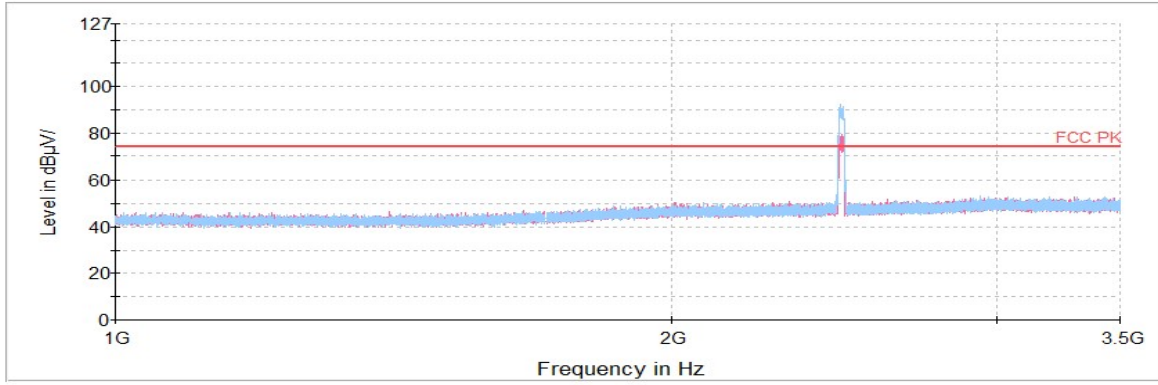
65, Sinwon-ro, Yeongtong-gu,
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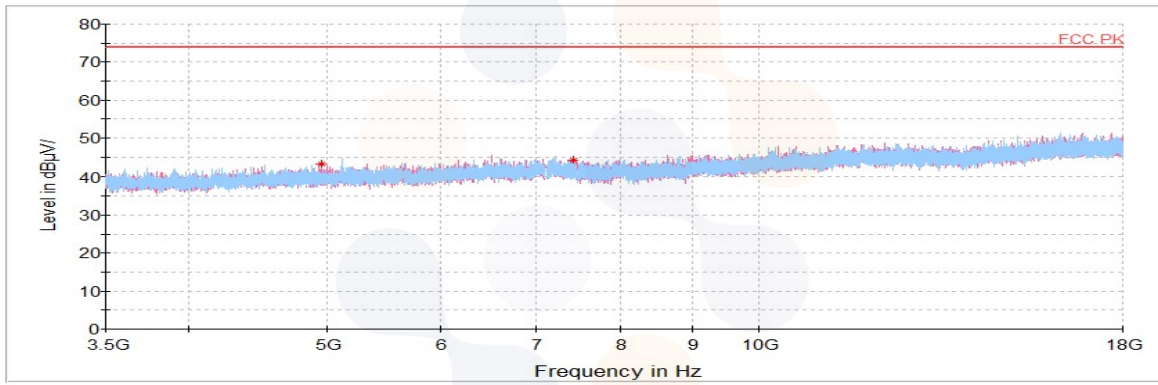


KCTL

Horizontal/Vertical for 1 GHz ~ 3.5 GHz



Horizontal/Vertical for 3.5 GHz ~ 18 GHz



KCTL Inc.

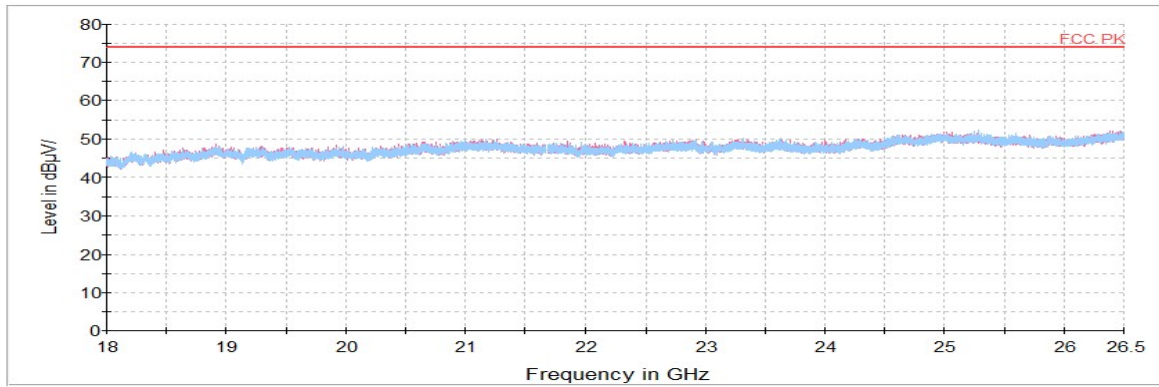
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Test results (Above 18 GHz) – Worst case: 802.11n HT20 mode / 2 462 MHz

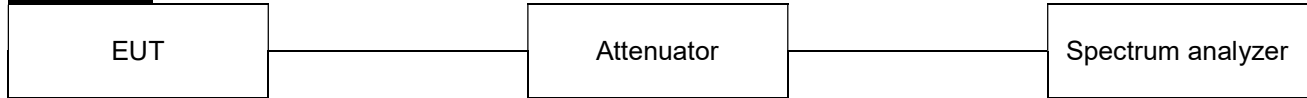
Horizontal/Vertical for 18 GHz ~ 26.5 GHz



Note: The Worst case was based on the lowest margin condition considering Harmonic and Spurious Emission

7.5. Conducted Spurious Emission

Test setup



Limit

According to §15.247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operation, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation specified in §15.209(a) is not required. In addition, radiated emission limits specified in §15.209(a) (see §15.205(c)).

Limit : 20 dBc

Test procedure

ANSI C63.10 - Section 11.11.3, 14.3.3

KDB 558074 D01 v05 - Section 8.5

KDB 662911 D01 v02r01 – section (E)(3)(b)

Test settings

Establish an emission level by using the following procedure:

- 1) Set the center frequency and span to encompass frequency range to be measured.
- 2) Set the RBW = 100 kHz
- 3) Set the VBW \geq [3 × RBW]
- 4) Detector = peak
- 5) Sweep time = auto couple
- 6) Trace mode = max hold
- 7) Allow trace to fully stabilize.
- 8) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

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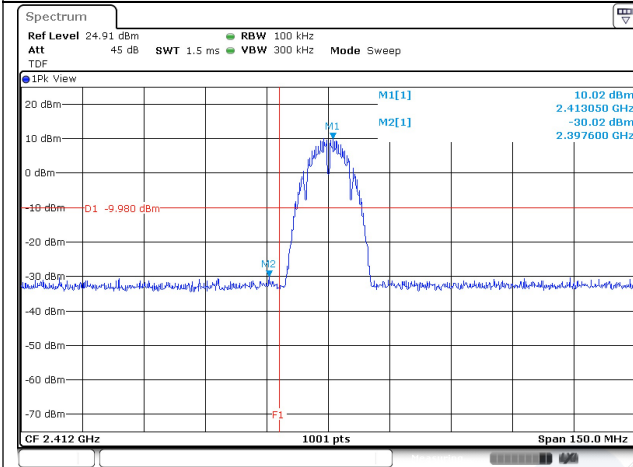


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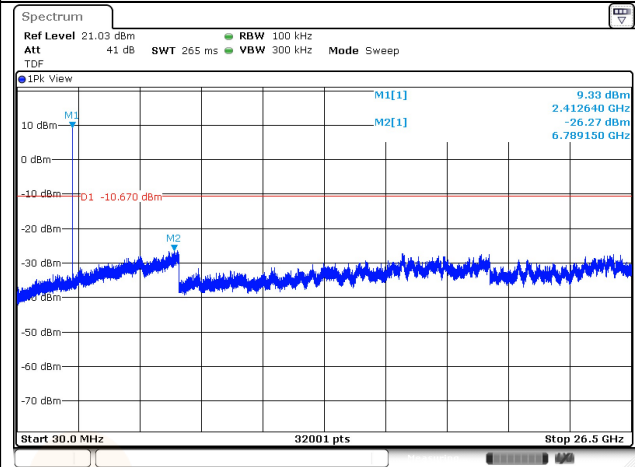
Test results

802.11b

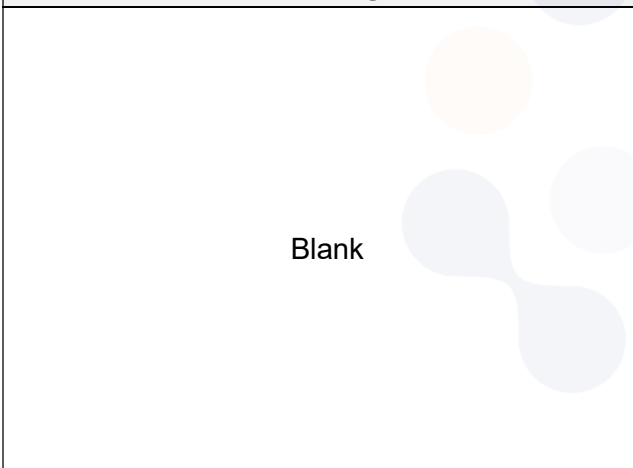
Conducted band-edge / 2 412 MHz



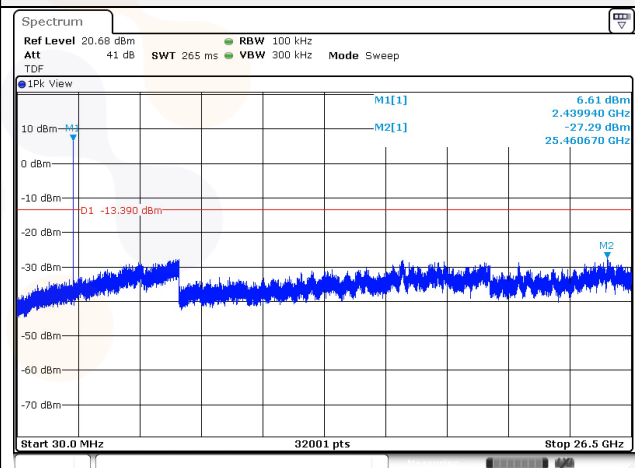
Conducted spurious / 2 412 MHz



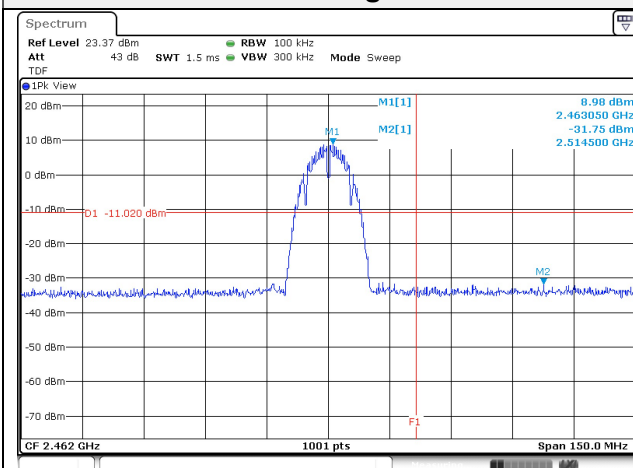
Conducted band-edge / 2 437 MHz



Conducted spurious / 2 437 MHz



Conducted band-edge / 2 462 MHz



Conducted spurious / 2 462 MHz

