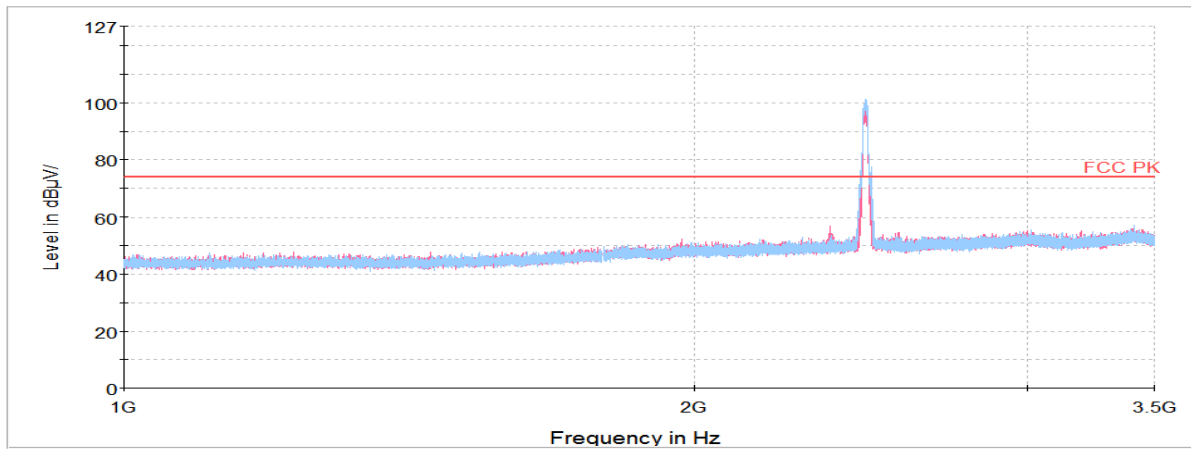
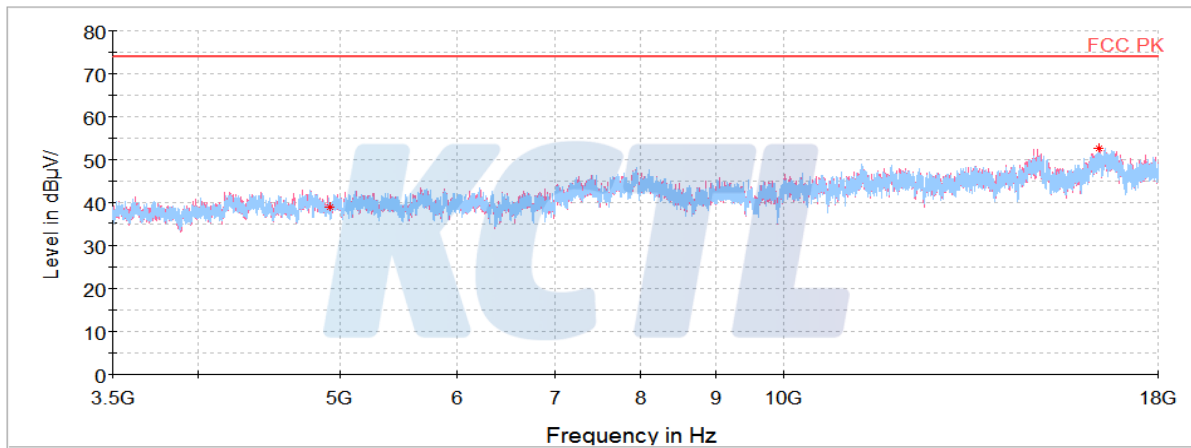
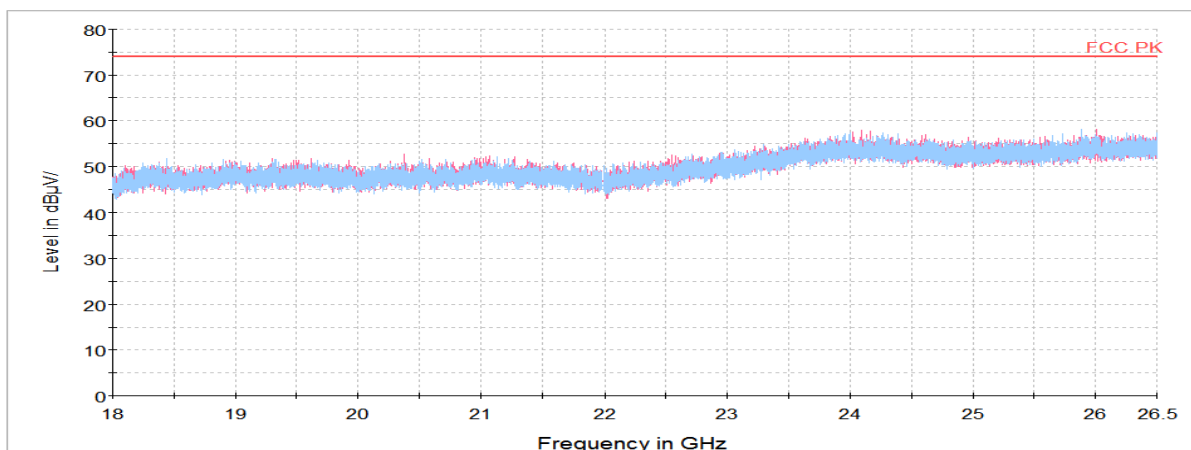
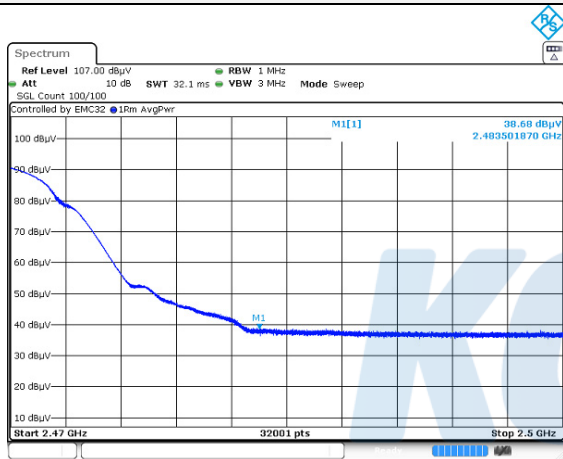
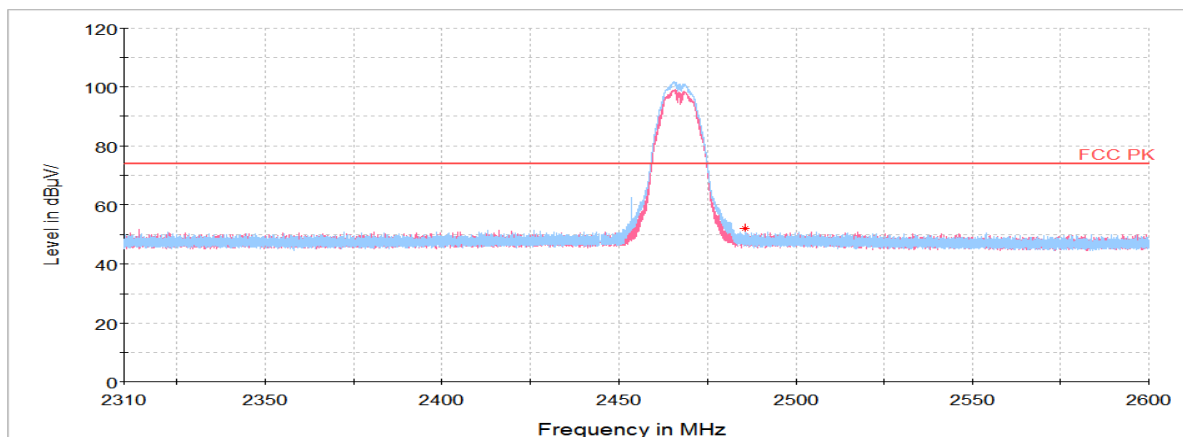
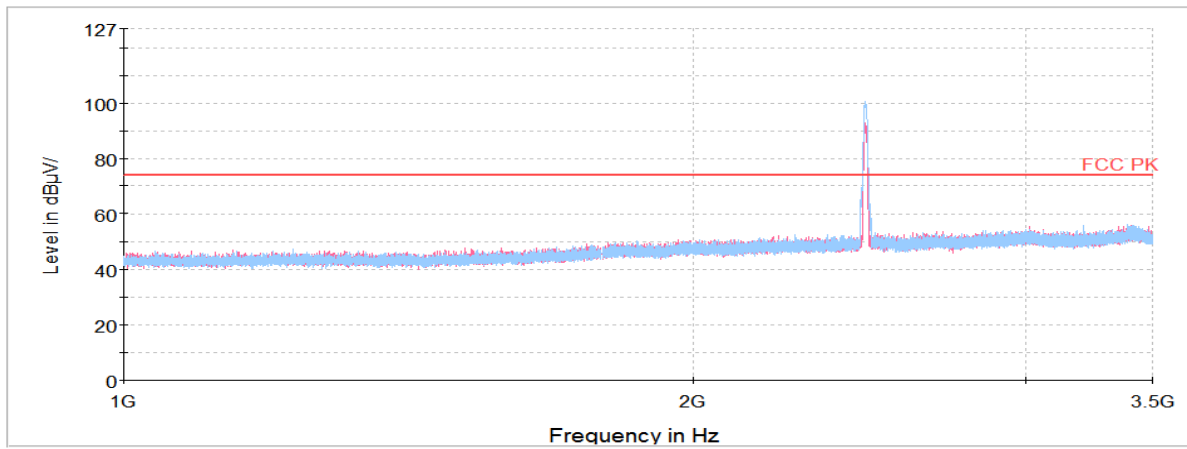
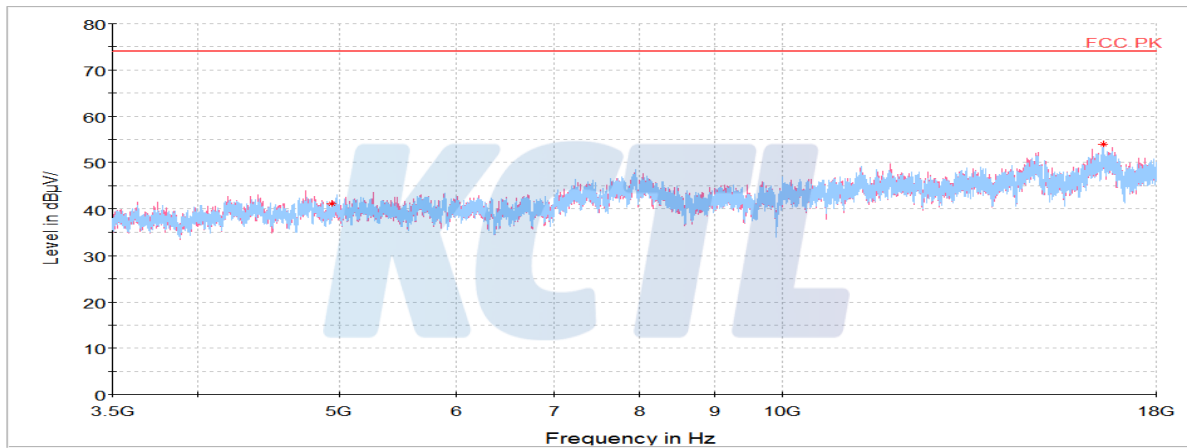
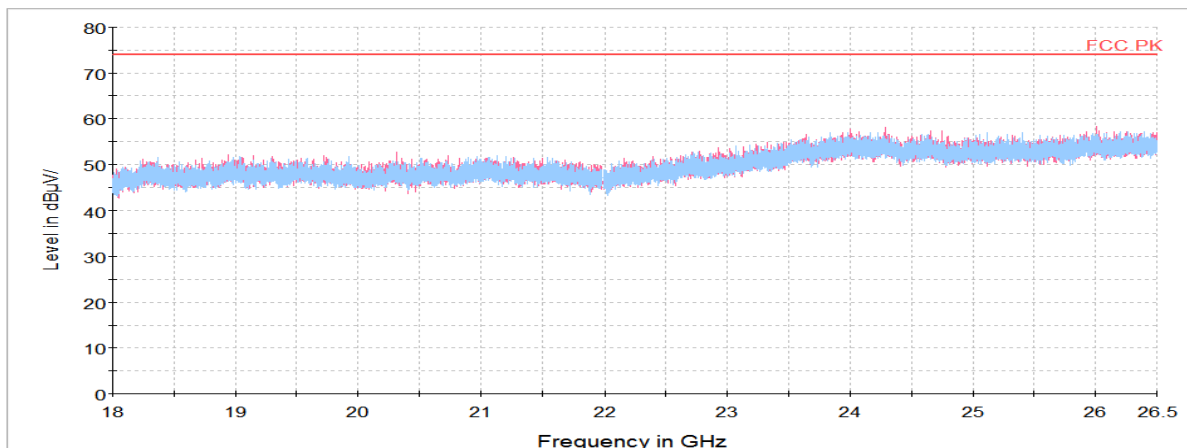


Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

2 467 MHz

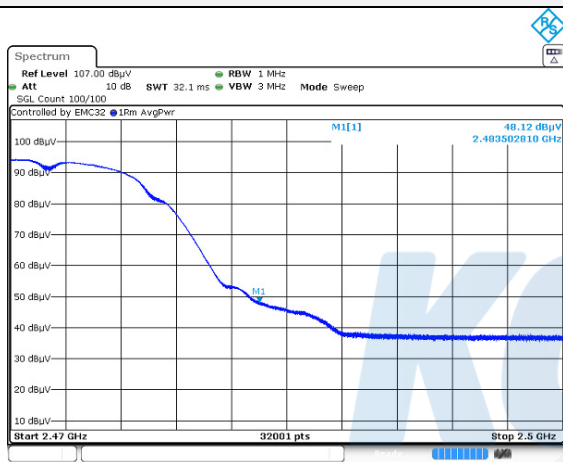
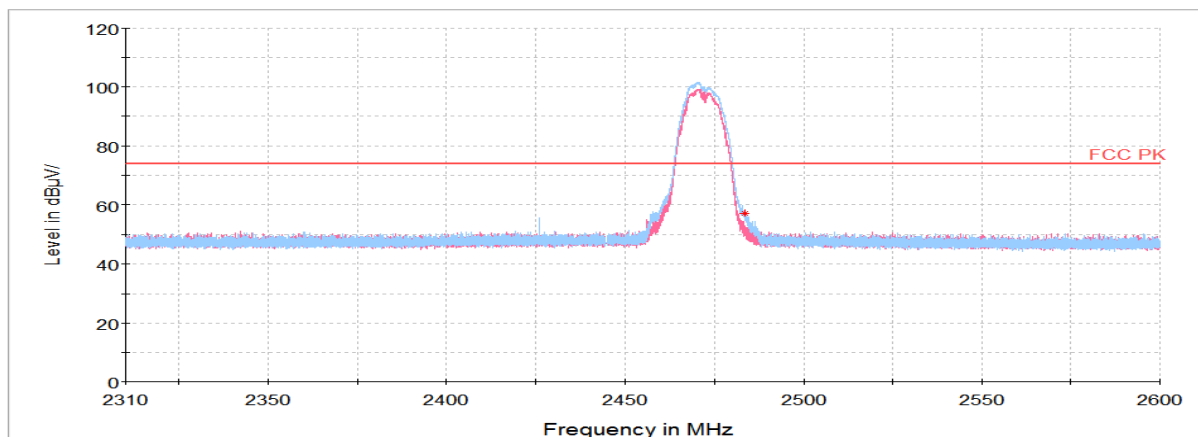
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
2 483.50 ¹⁾	H	49.25	32.07	-29.21	-	52.11	74.00	21.89
4 940.48 ¹⁾	H	62.17	33.98	-55.01	-	41.14	74.00	32.86
16 556.80	H	57.96	41.56	-45.69	-	53.83	74.00	20.17
Average Data								
2 483.50 ¹⁾	H	38.68	32.07	-29.21	-	41.54	54.00	12.46

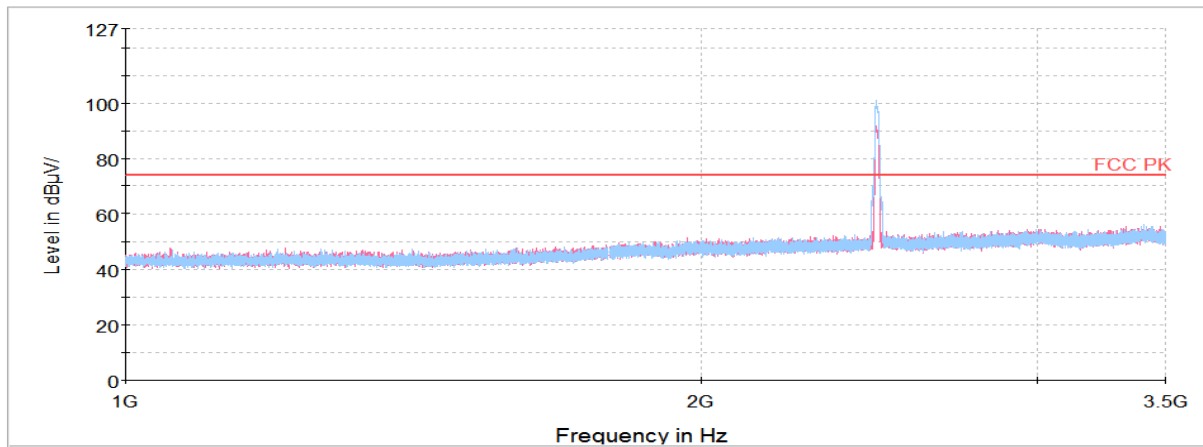
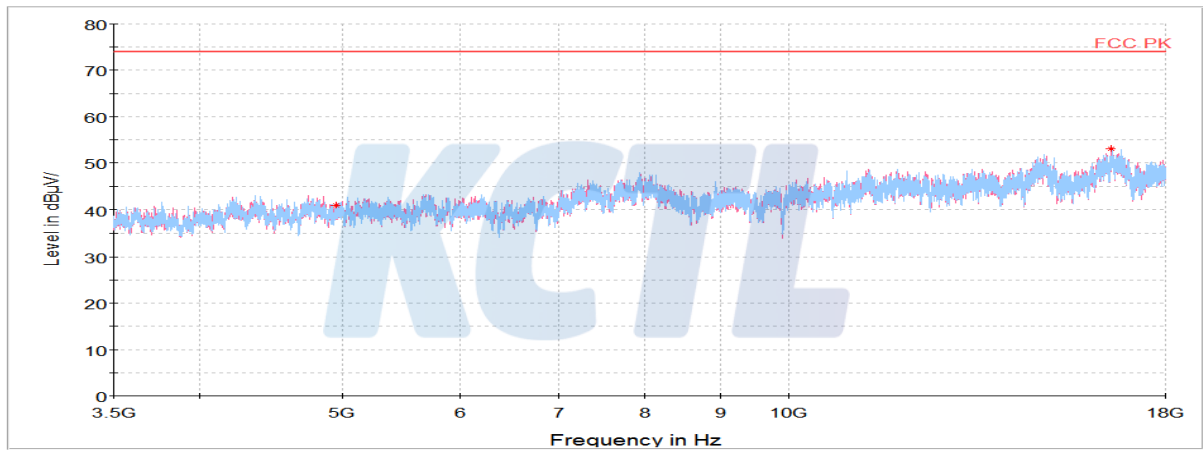
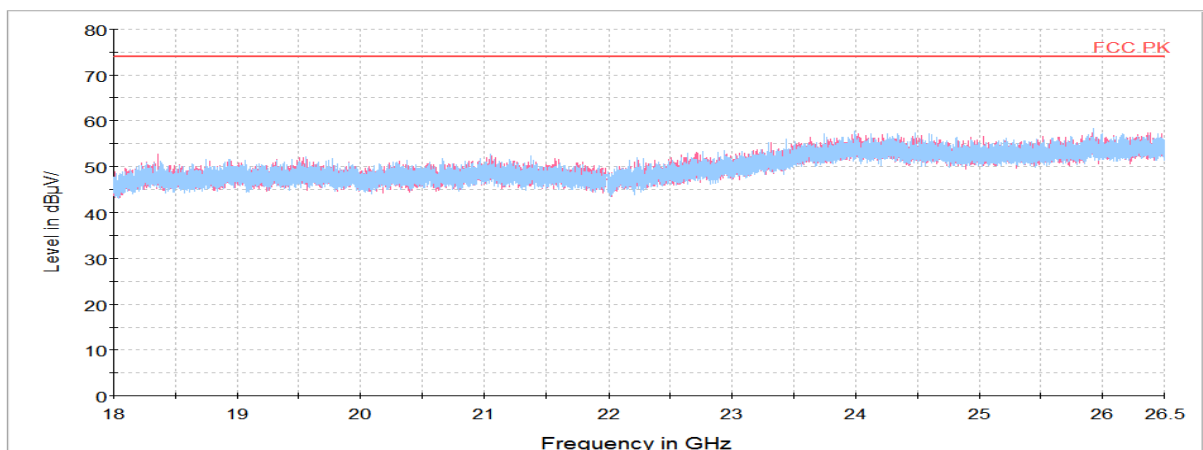
Average data**Horizontal/Vertical for Band-edge**

Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

2 472 MHz

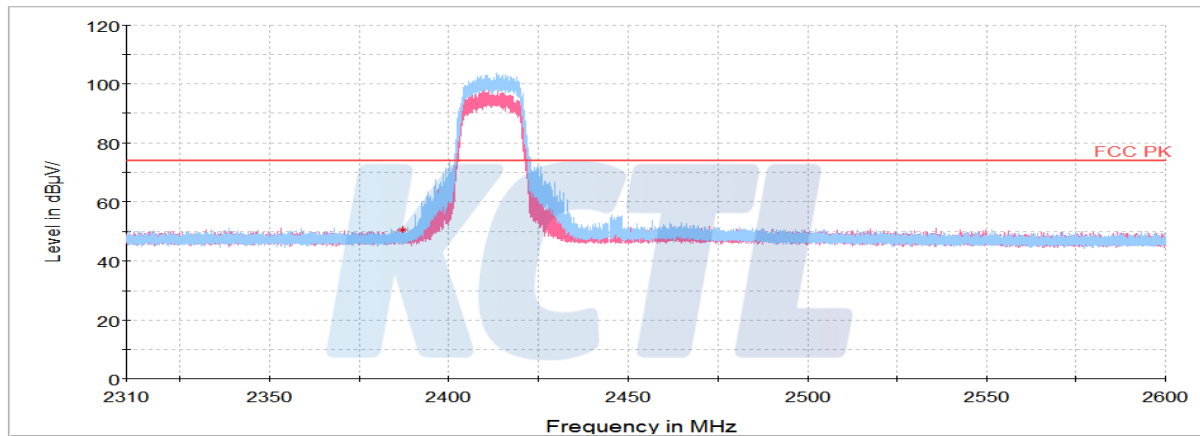
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
2 483.50 ¹⁾	H	54.13	32.07	-29.21	-	56.99	74.00	17.01
4 949.55 ¹⁾	V	61.80	33.98	-54.85	-	40.93	74.00	33.07
16 550.91	V	57.24	41.55	-45.67	-	53.12	74.00	20.88
Average Data								
2 483.50 ¹⁾	H	48.12	32.07	-29.21	-	50.98	54.00	3.02

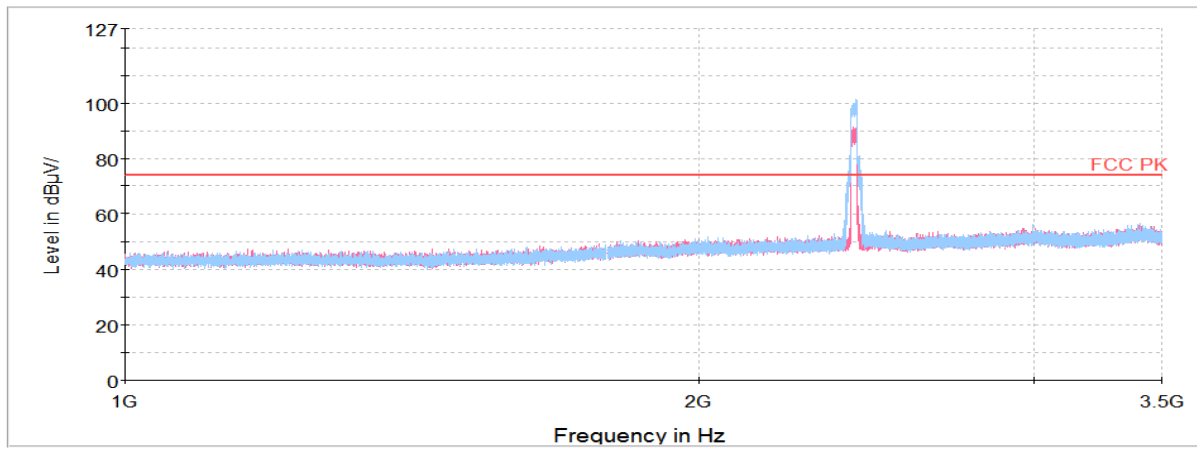
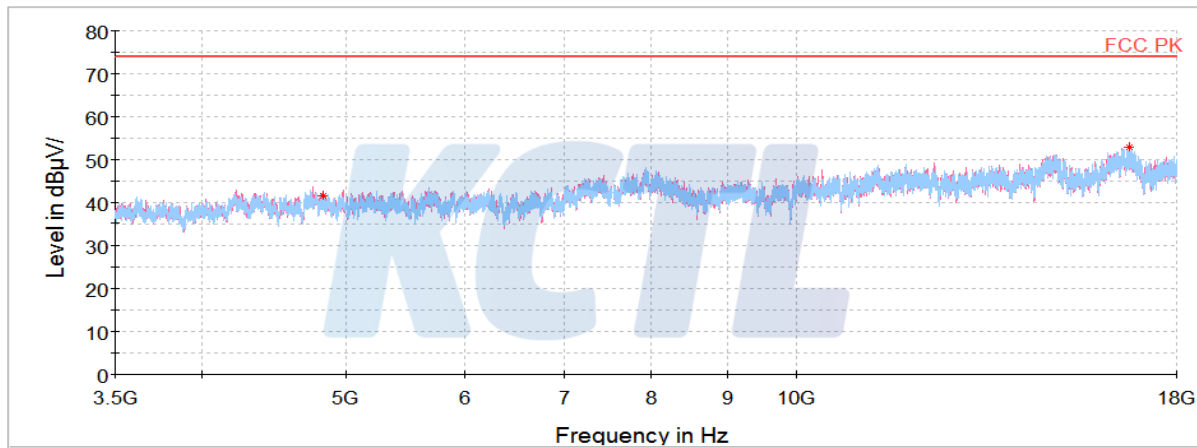
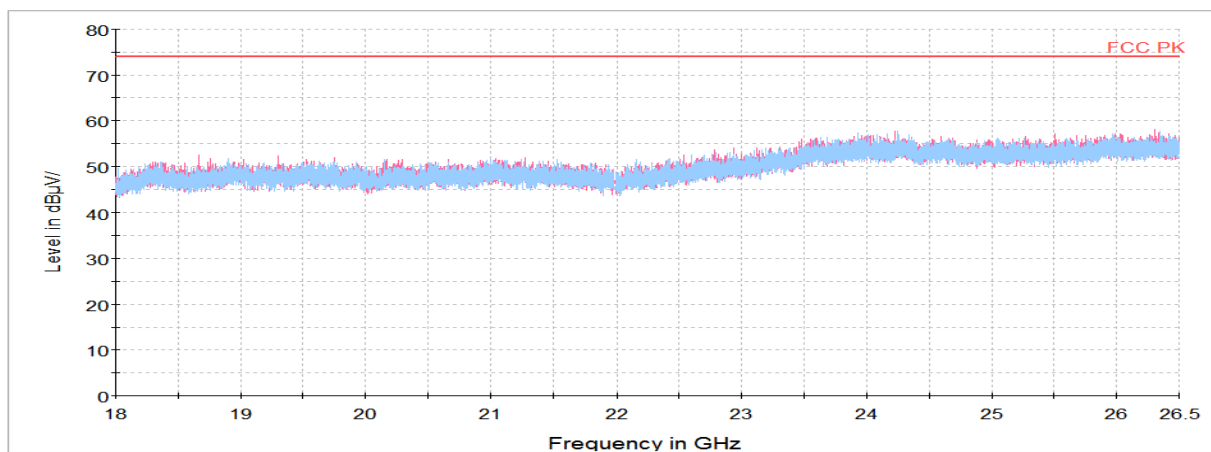
Average data**Horizontal/Vertical for Band-edge**

Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

802.11g**2 412 MHz**

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
2 387.09 ¹⁾	H	47.85	31.87	-29.05	-	50.67	74.00	23.33
4 824.03 ¹⁾	H	61.11	33.93	-53.58	-	41.46	74.00	32.54
16 745.30	H	57.31	41.75	-46.34	-	52.72	74.00	21.28
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

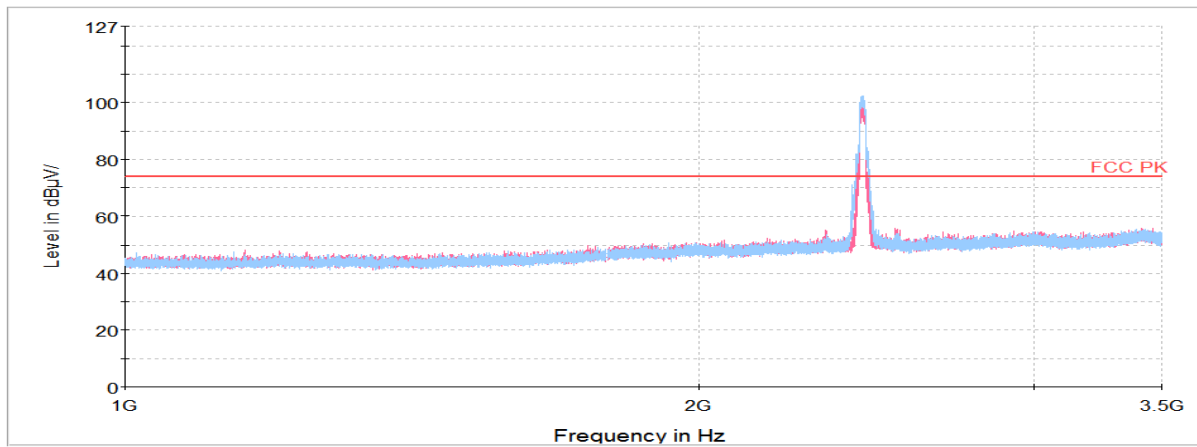
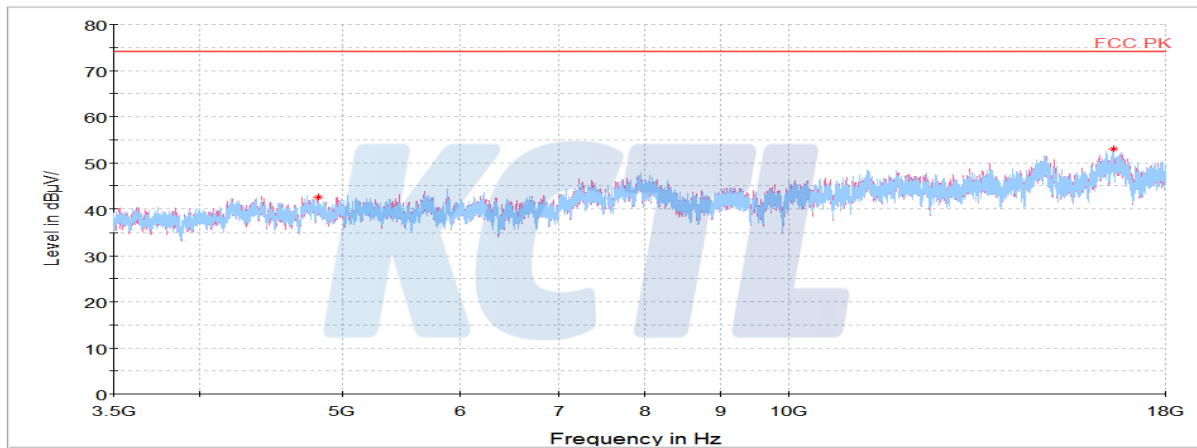
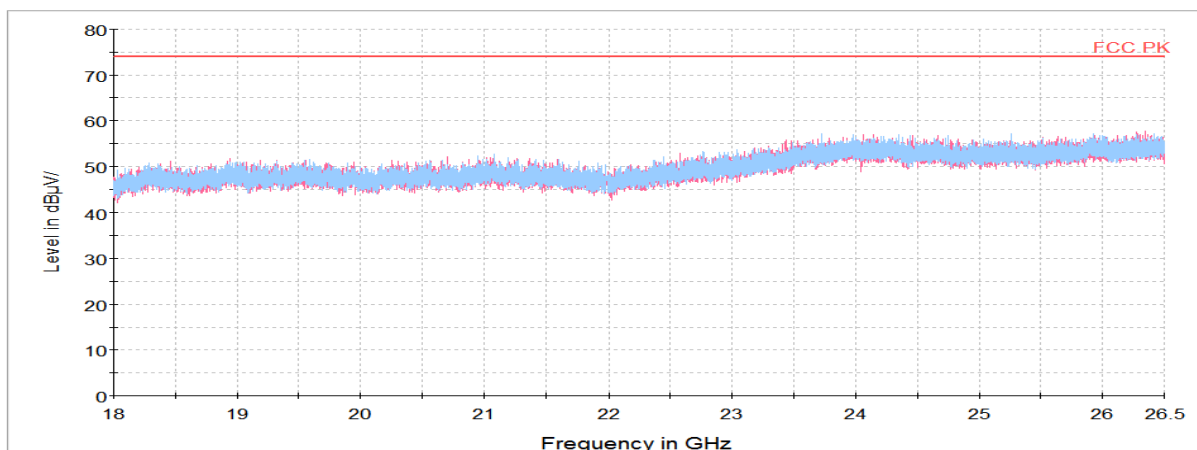
Horizontal/Vertical for Band-edge

Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

2 437 MHz

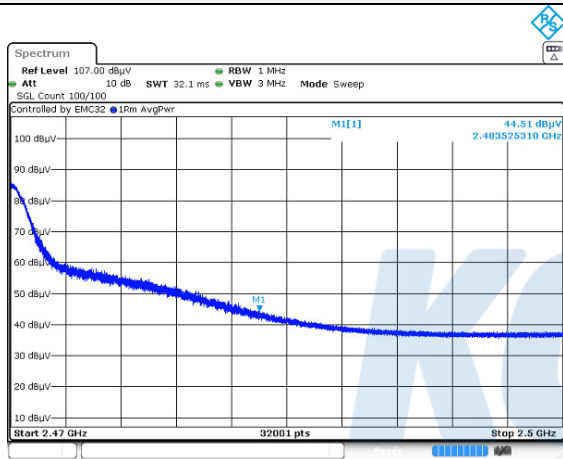
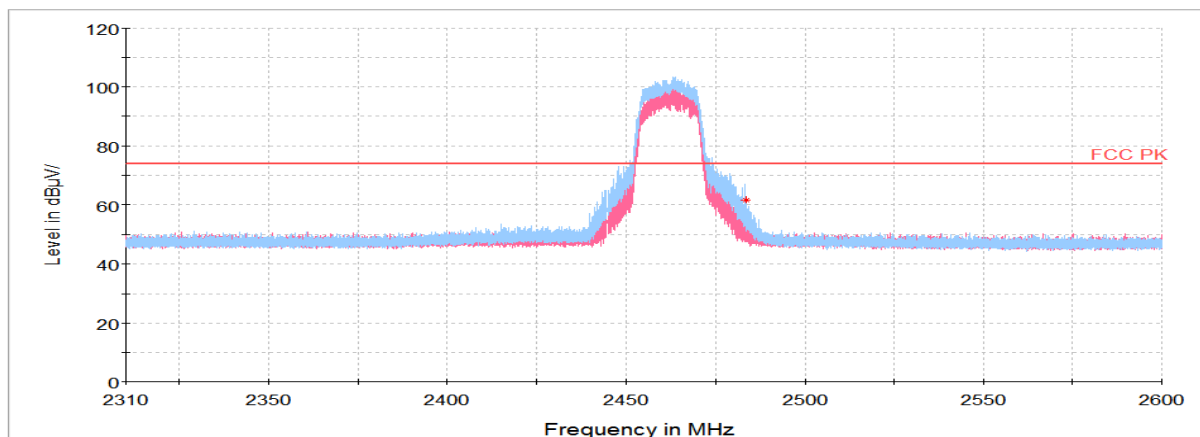
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
4 813.16 ¹⁾	V	61.94	33.93	-53.27	-	42.60	74.00	31.40
16 587.61	H	57.18	41.59	-45.80	-	52.97	74.00	21.03
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

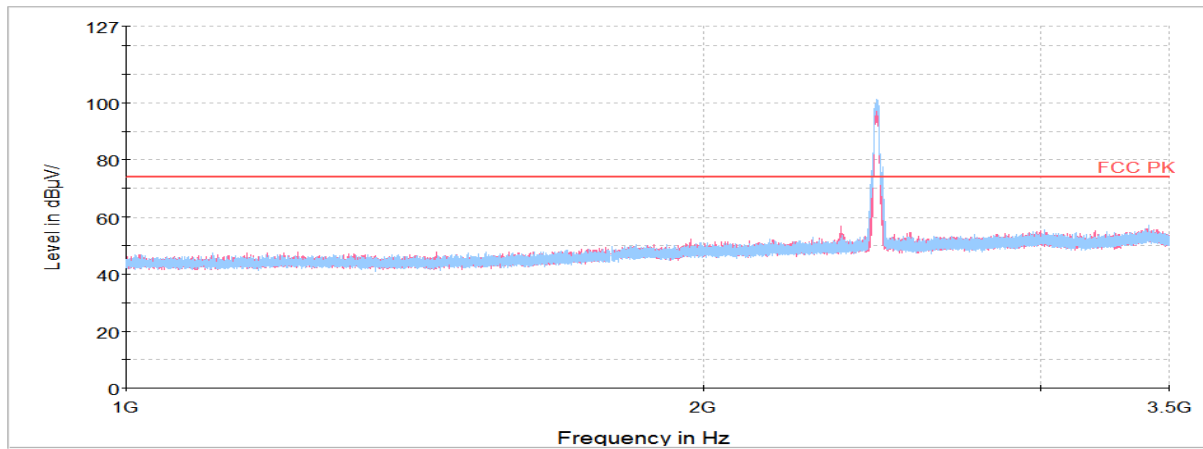
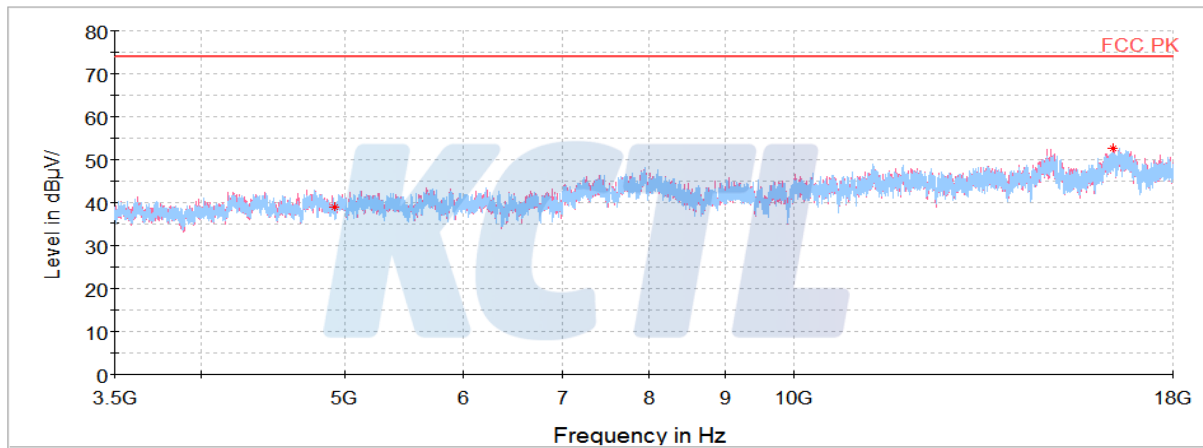
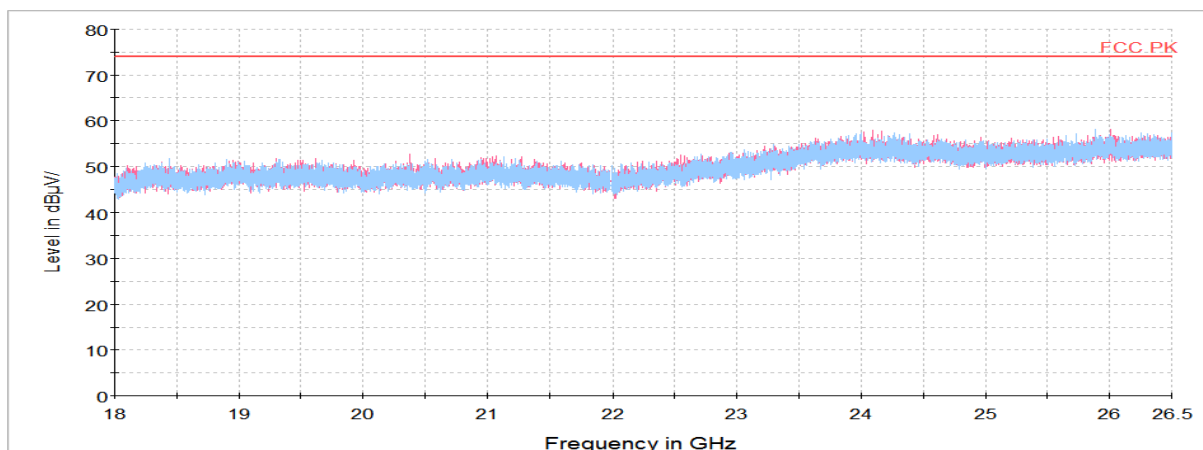
KCTL

Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

2 462 MHz

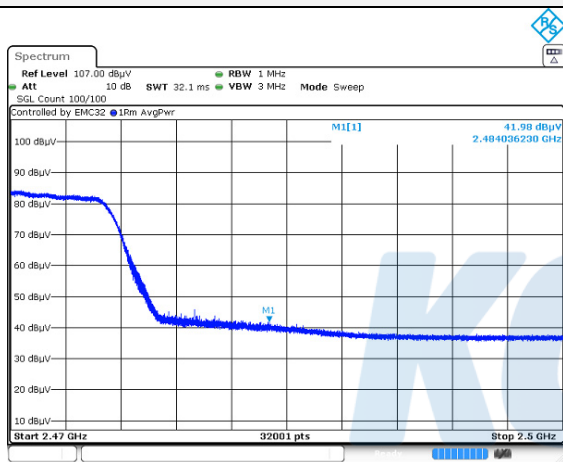
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
2 483.53 ¹⁾	H	58.64	32.07	-29.21	-	61.50	74.00	12.50
4 923.27 ¹⁾	V	60.20	33.97	-55.32	-	38.85	74.00	35.15
16 419.50	H	56.73	41.84	-45.99	-	52.58	74.00	21.42
Average Data								
2 483.53 ¹⁾	H	44.51	32.07	-29.21	0.36	47.73	54.00	6.27

Average data**Horizontal/Vertical for Band-edge**

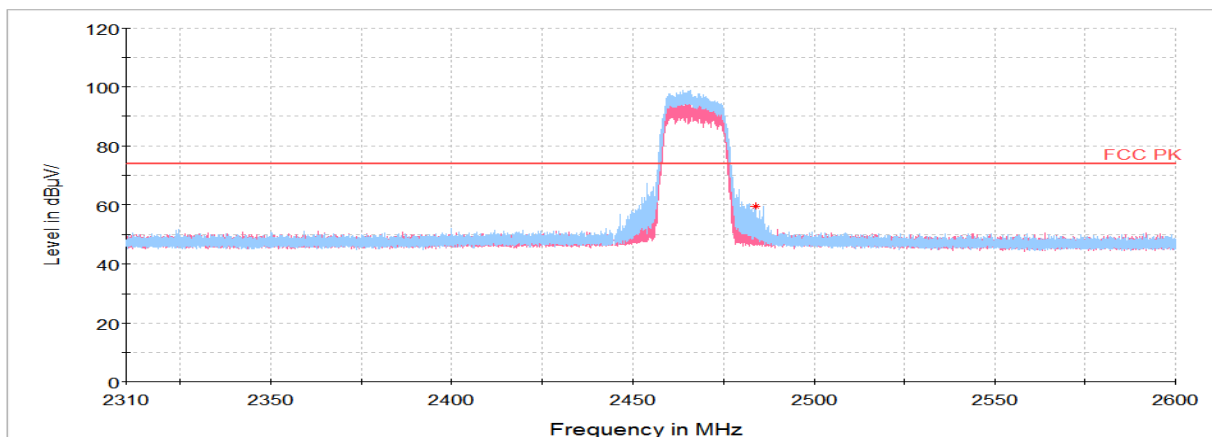
Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

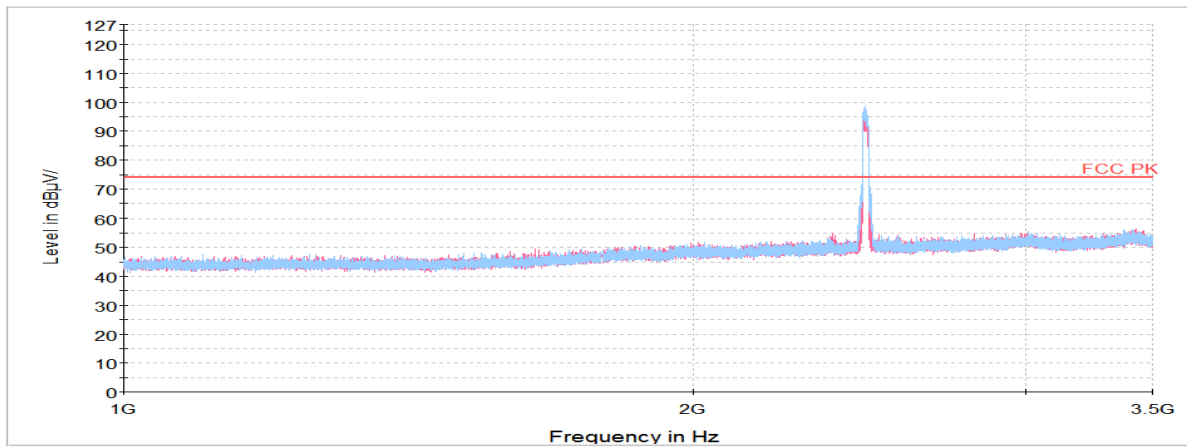
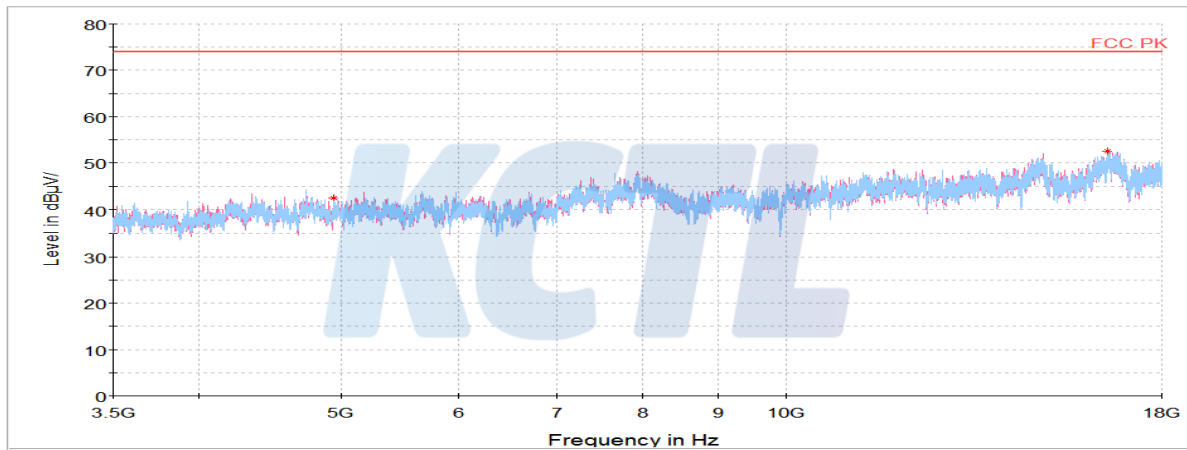
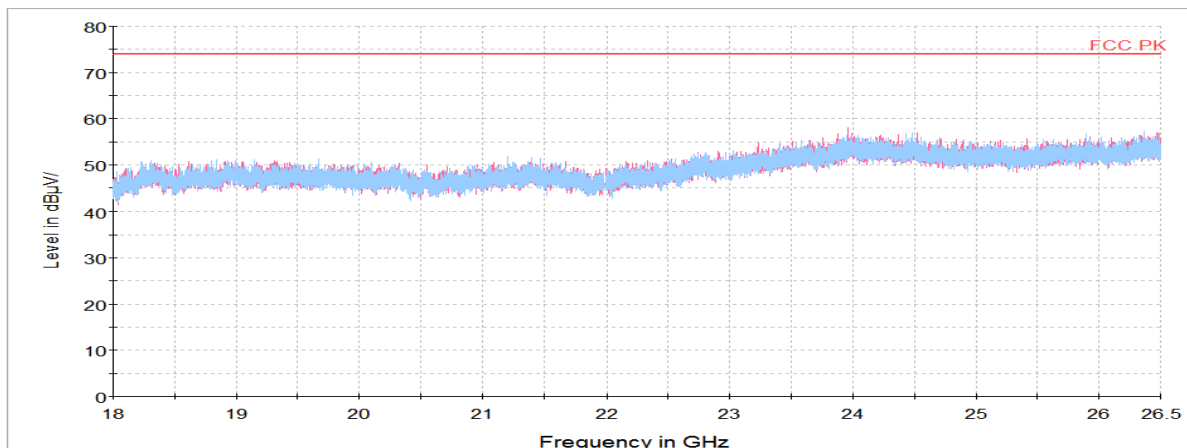
2 467 MHz

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								
2 484.04 ¹⁾	H	56.65	32.07	-29.22	-	59.50	74.00	14.50
4 941.84 ¹⁾	H	63.50	33.98	-54.99	-	42.49	74.00	31.51
16 552.27	V	56.68	41.55	-45.68	-	52.55	74.00	21.45
Average Data								
2 484.04 ¹⁾	H	41.98	32.07	-29.22	0.36	45.19	54.00	8.81

Average data

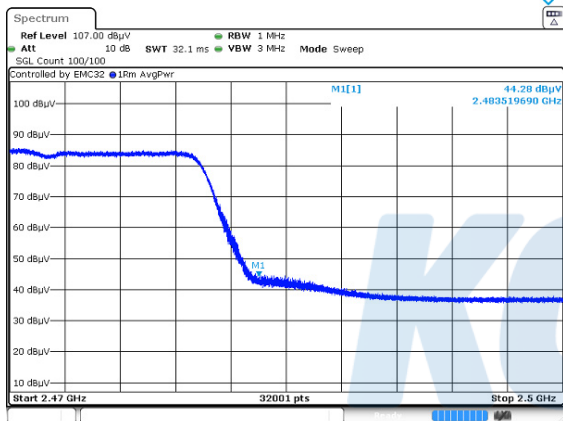
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Horizontal/Vertical for Band-edge

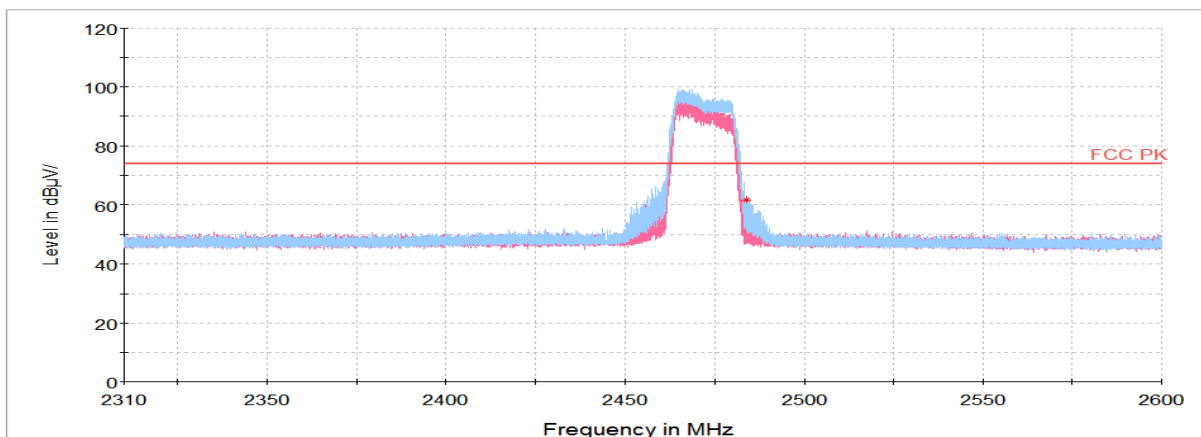
Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

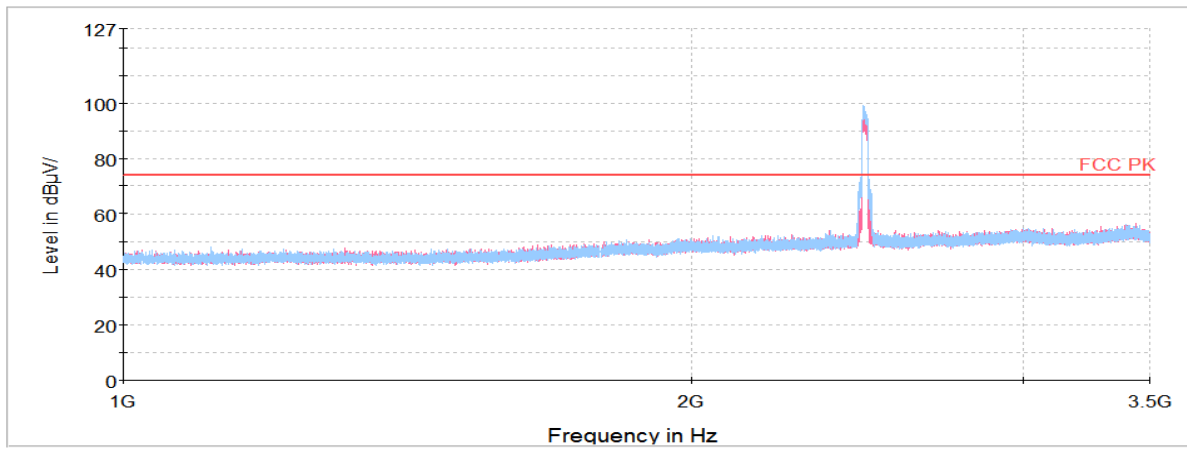
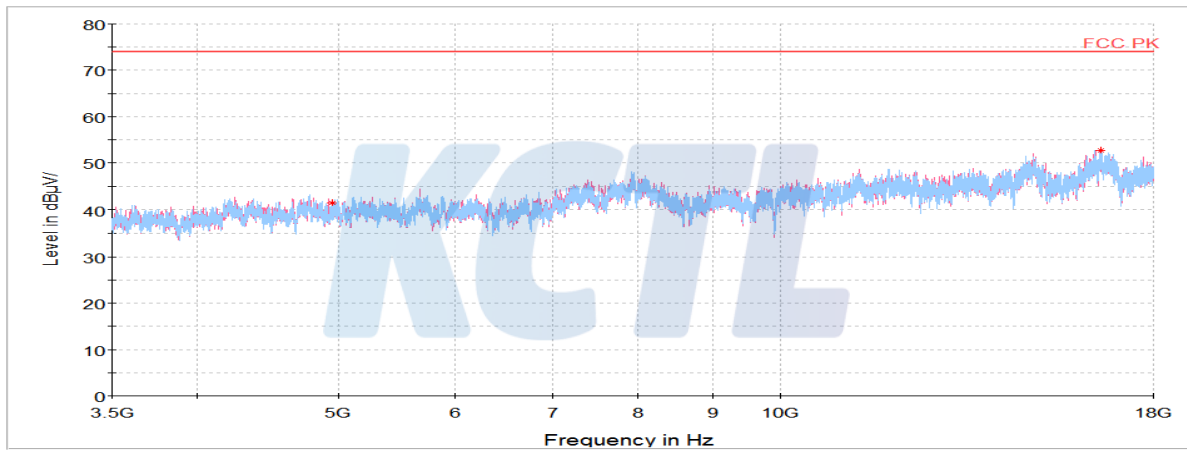
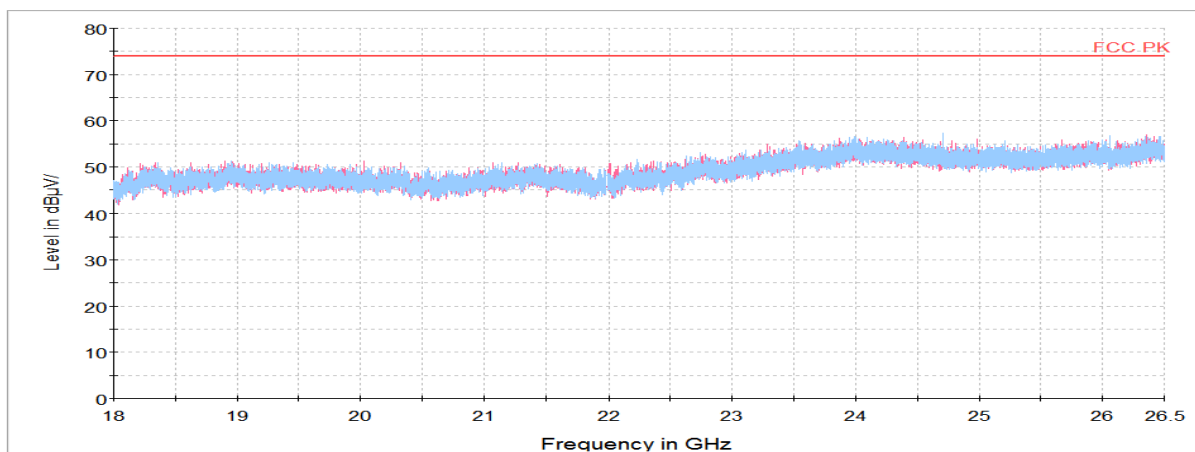
2 472 MHz

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								
2 483.52 ¹⁾	H	58.54	32.07	-29.21	-	61.40	74.00	12.60
4 948.64 ¹⁾	V	62.38	33.98	-54.87	-	41.49	74.00	32.51
16 562.69	H	56.91	41.56	-45.71	-	52.76	74.00	21.24
Average Data								
2 483.52 ¹⁾	H	44.28	32.07	-29.21	0.36	47.50	54.00	6.50

Average data

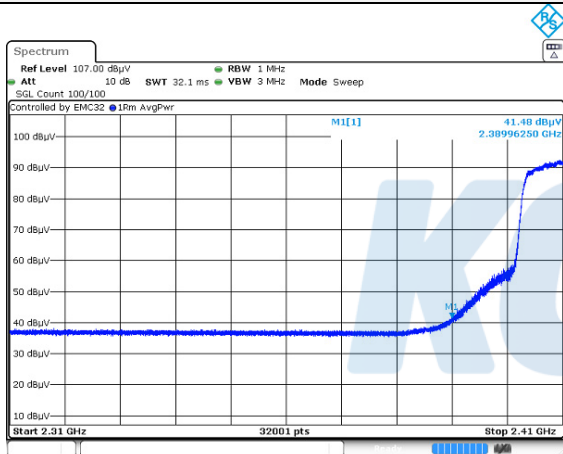
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Horizontal/Vertical for Band-edge

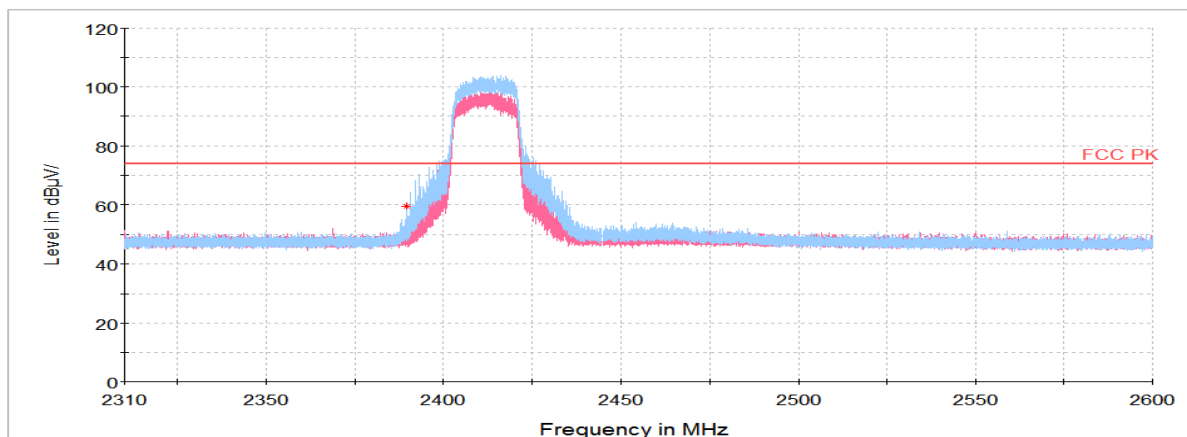
Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

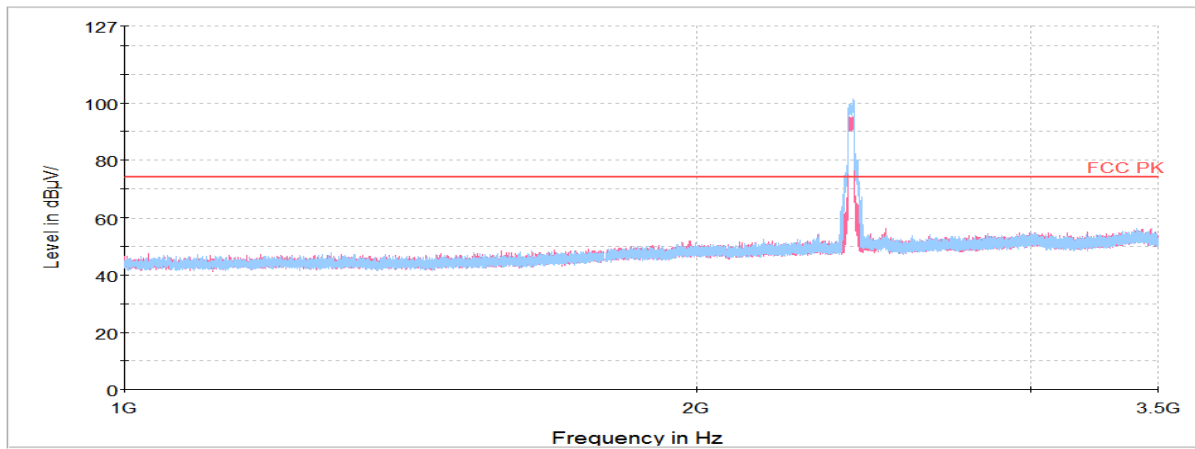
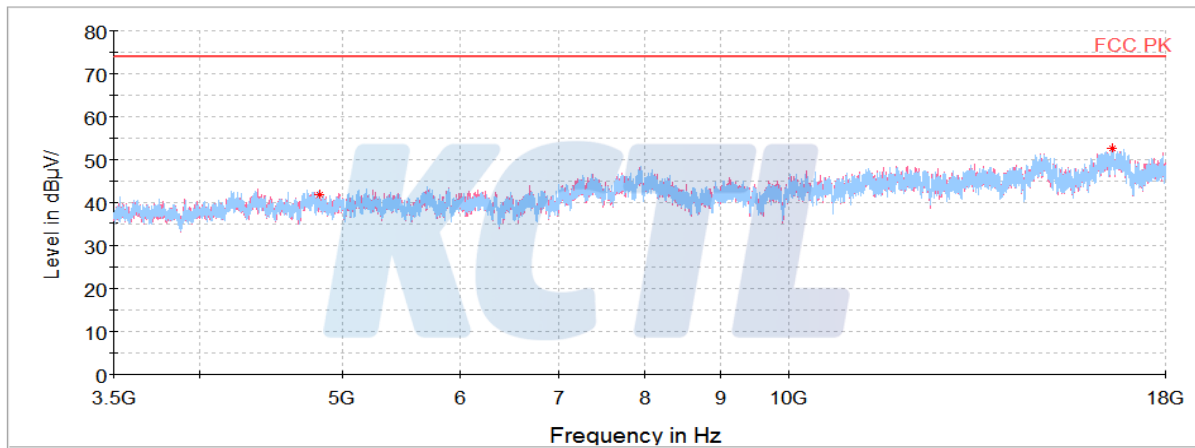
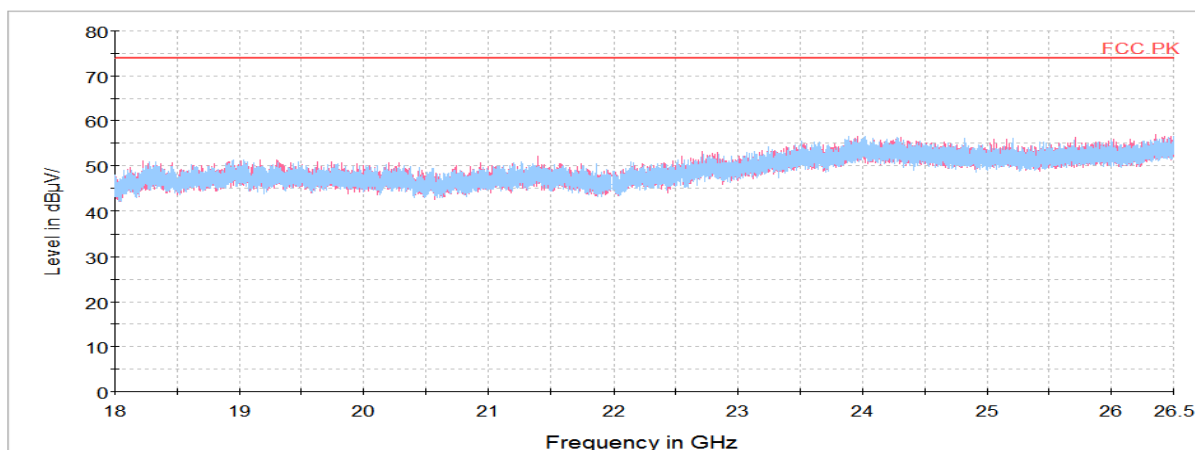
802.11n HT20**2 412 MHz**

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
2 389.96 ¹⁾	H	56.56	31.88	-29.04	-	59.40	74.00	14.60
4 829.02 ¹⁾	H	61.57	33.93	-53.72	-	41.78	74.00	32.22
16 581.72	H	56.64	41.58	-45.78	-	52.44	74.00	21.56
Average Data								
2 389.96 ¹⁾	H	41.48	31.88	-29.04	0.43	44.75	54.00	9.25

Average data

Blank

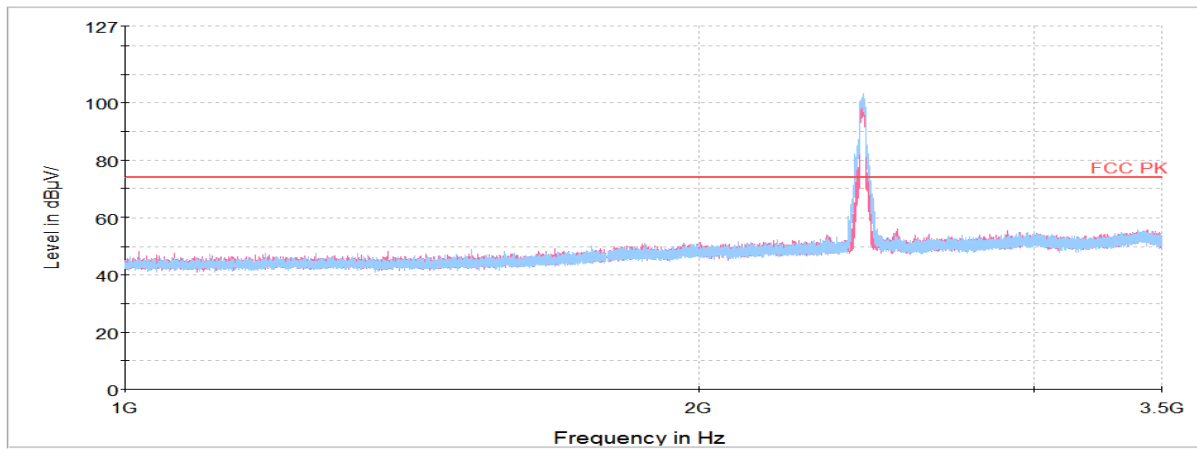
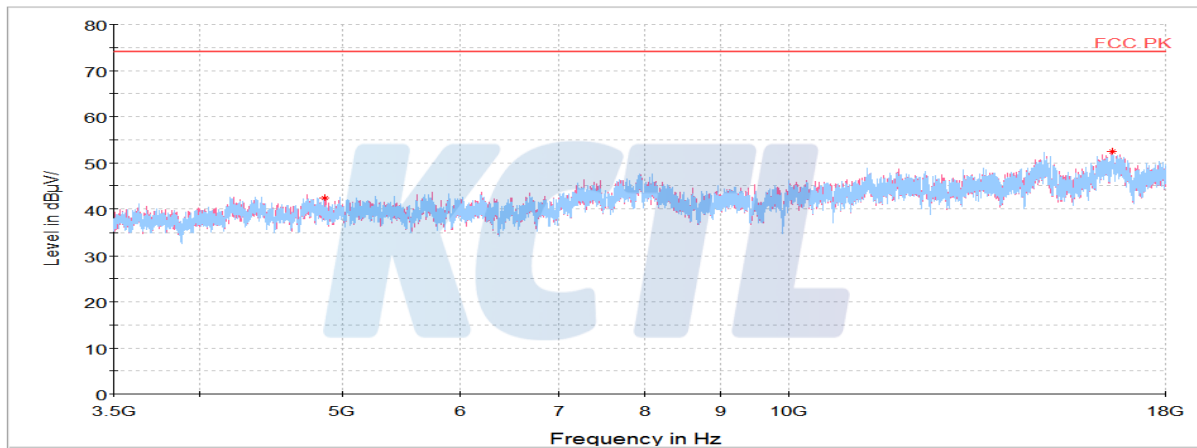
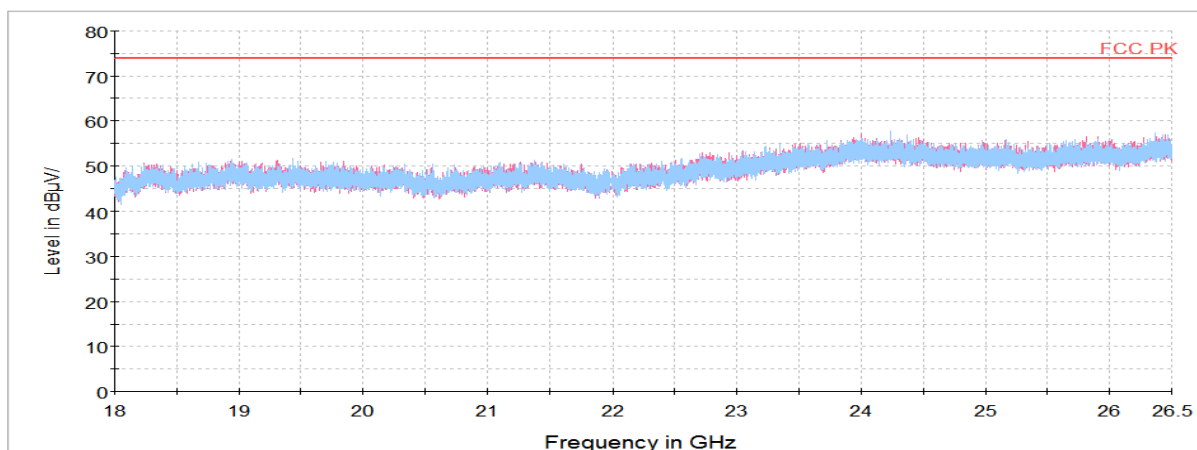
Horizontal/Vertical for Band-edge

Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

2 437 MHz

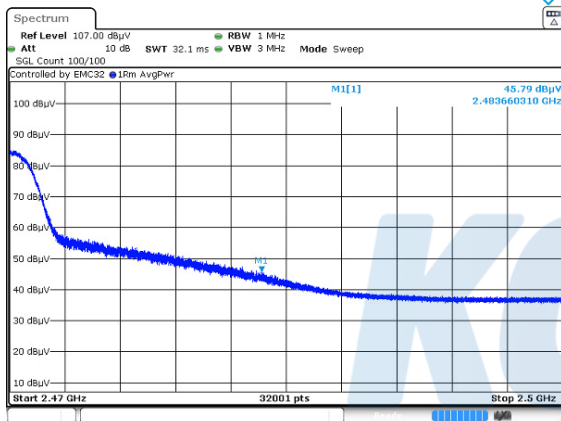
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
4 868.44 ¹⁾	V	63.22	33.95	-54.84	-	42.33	74.00	31.67
16 562.23	V	56.55	41.56	-45.71	-	52.40	74.00	21.60
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

KCTL

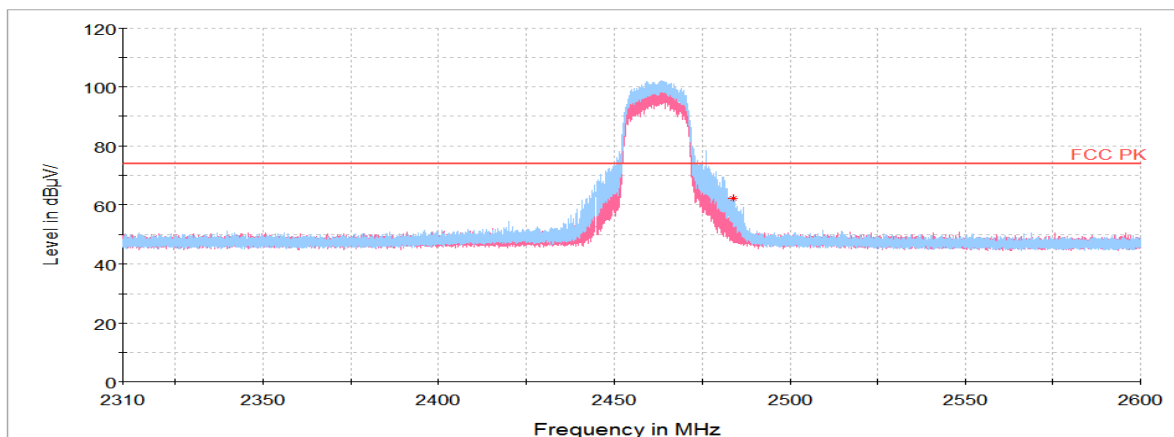
Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

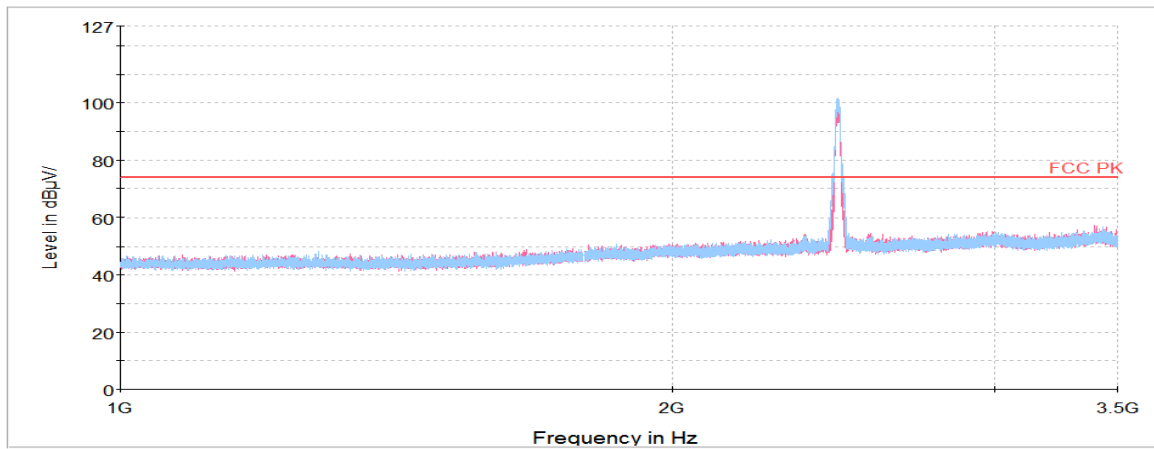
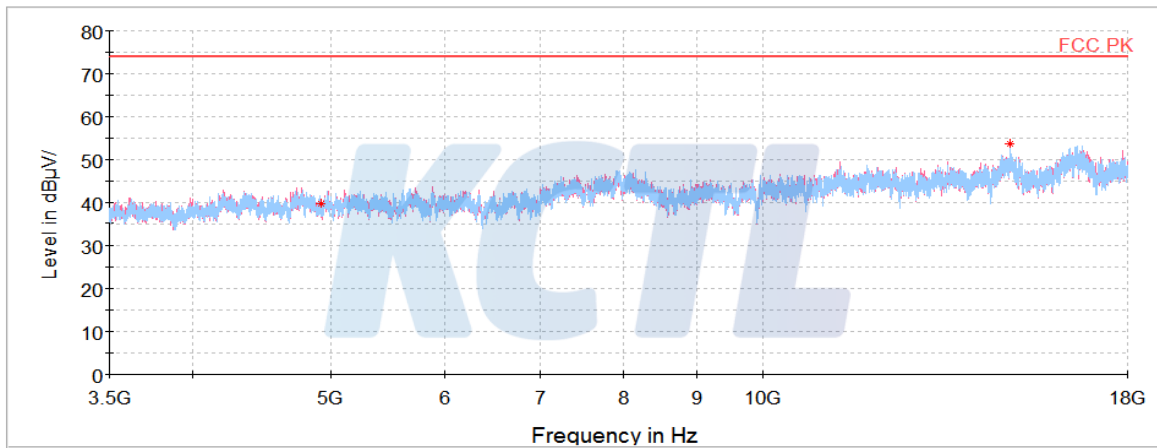
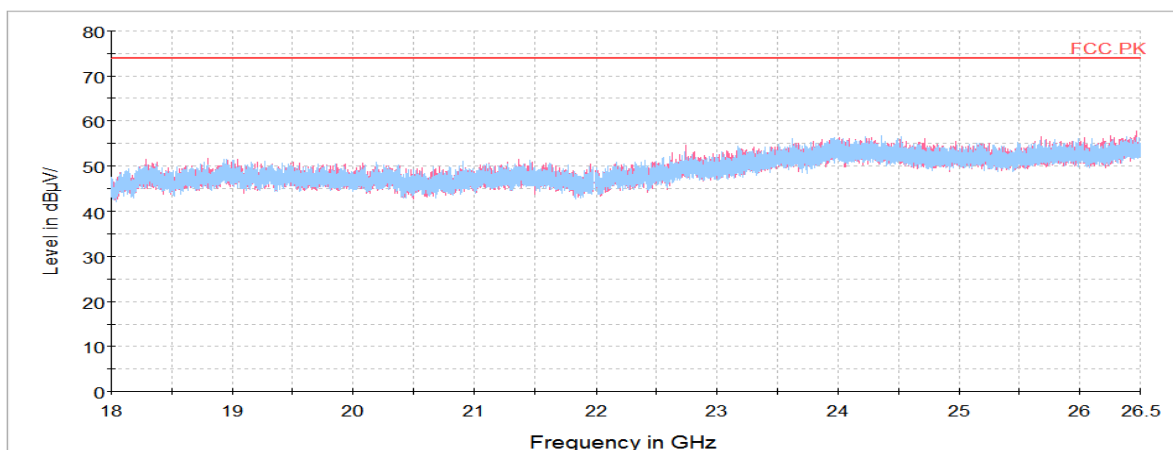
2 462 MHz

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								
2 483.66 ¹⁾	H	59.16	32.07	-29.21	-	62.02	74.00	11.98
4 923.27 ¹⁾	V	60.83	33.97	-55.32	-	39.48	74.00	34.52
14 908.78	V	59.78	40.09	-46.30	-	53.57	74.00	20.43
Average Data								
2 483.66 ¹⁾	H	45.79	32.07	-29.21	0.43	49.08	54.00	4.92

Average data

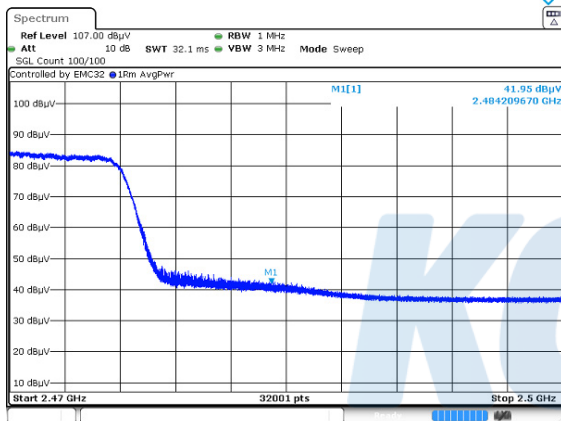
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Horizontal/Vertical for Band-edge

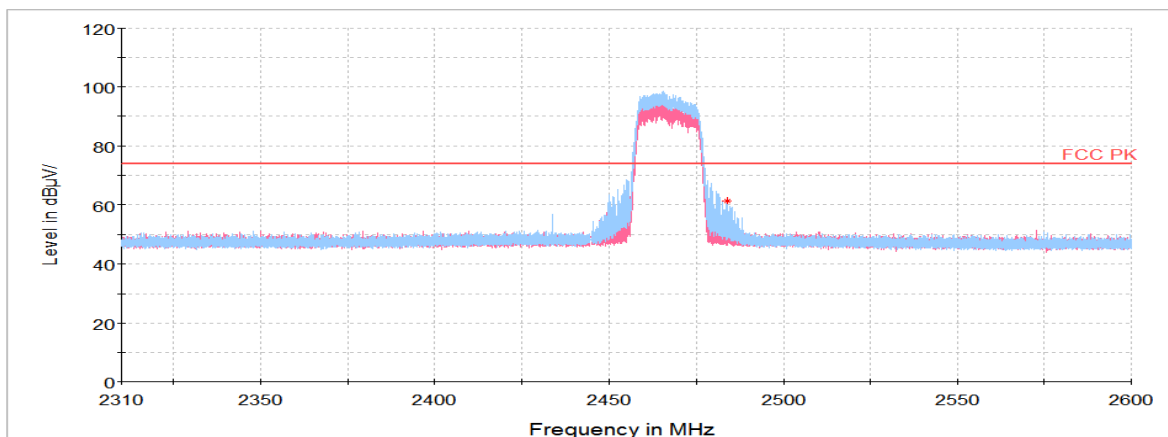
Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

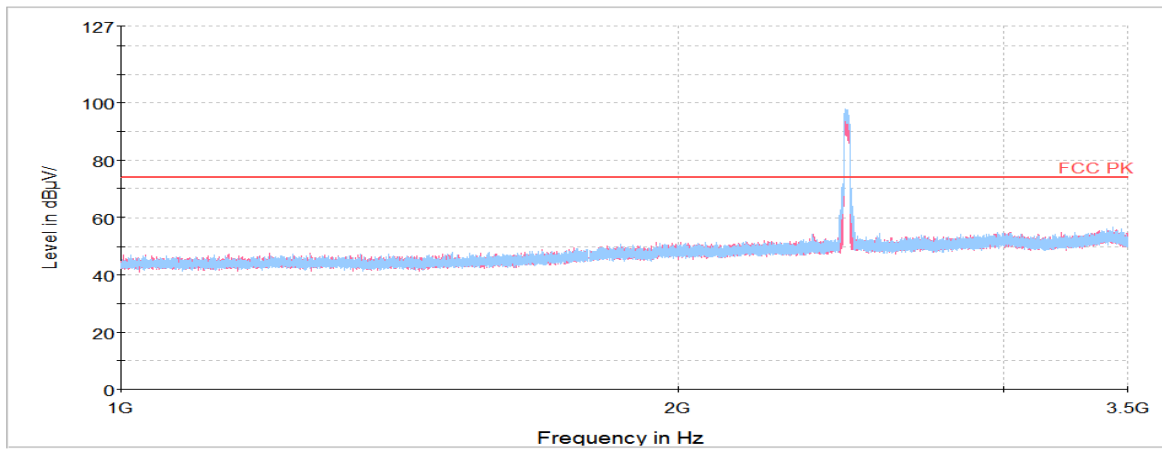
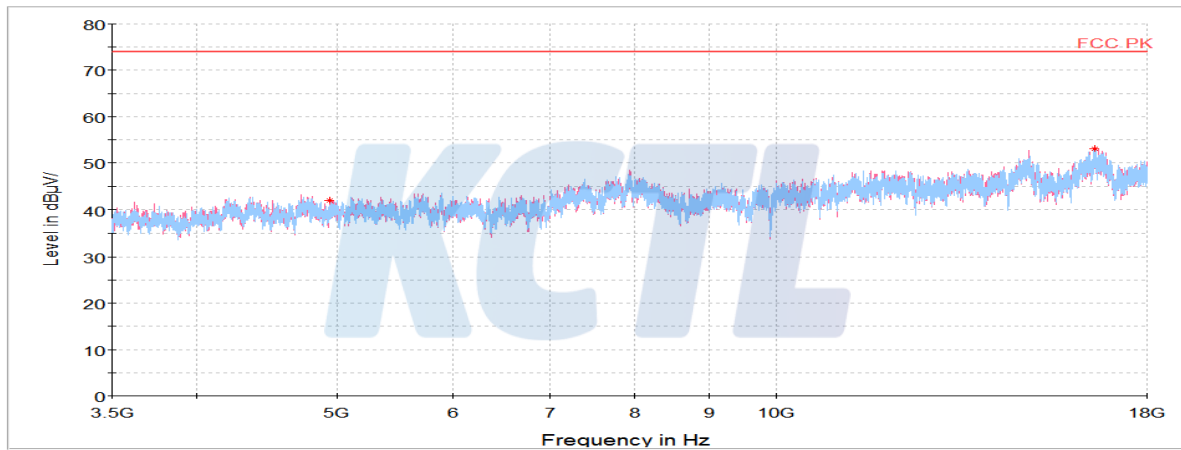
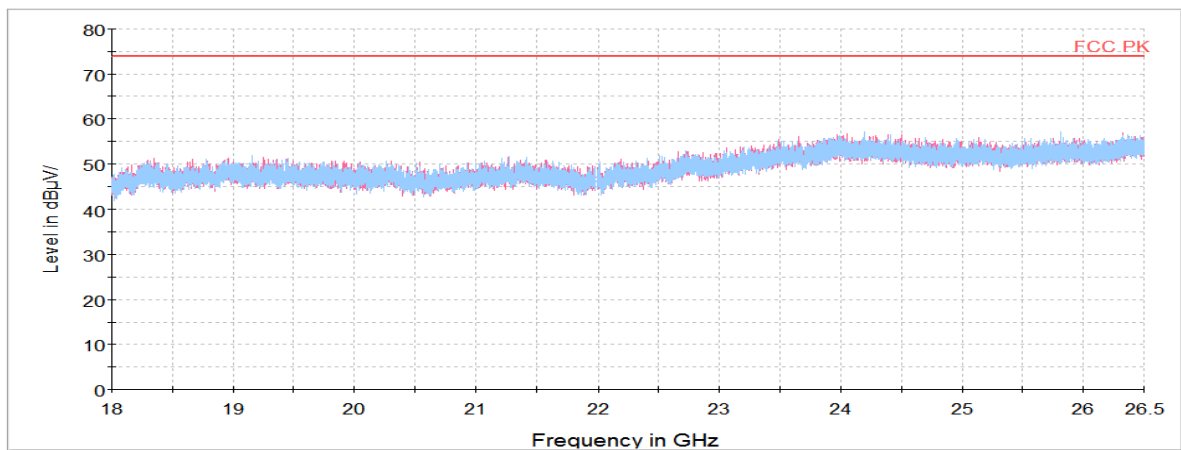
2 467 MHz

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								
2 484.21 ¹⁾	H	58.24	32.07	-29.22	-	61.09	74.00	12.91
4 943.20 ¹⁾	V	62.99	33.98	-54.96	-	42.01	74.00	31.99
16 573.11	H	57.33	41.57	-45.75	-	53.15	74.00	20.85
Average Data								
2 484.21 ¹⁾	H	41.95	32.07	-29.22	0.43	45.23	54.00	8.77

Average data

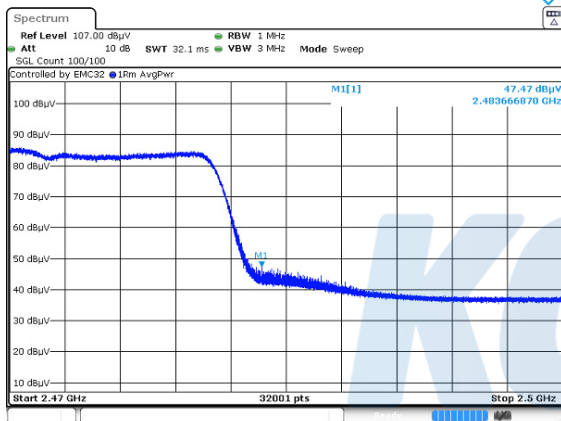
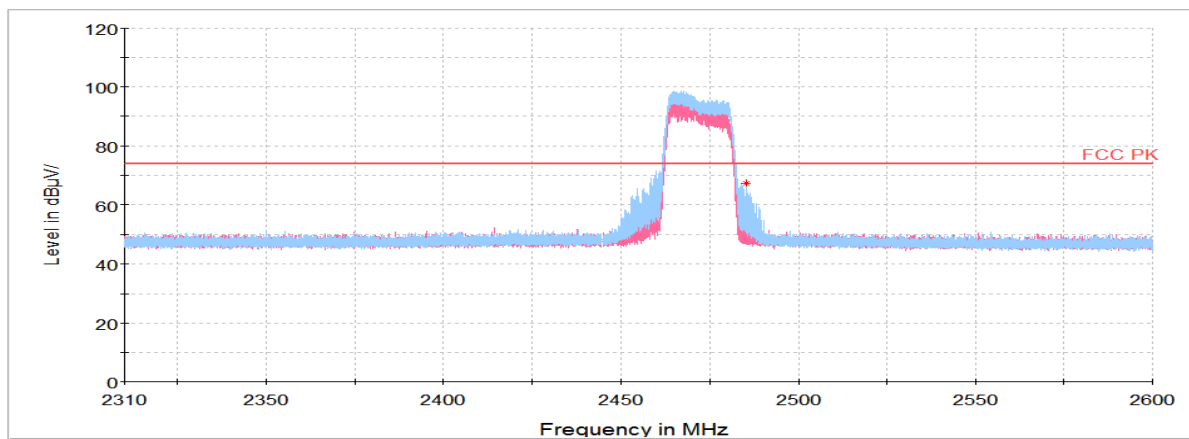
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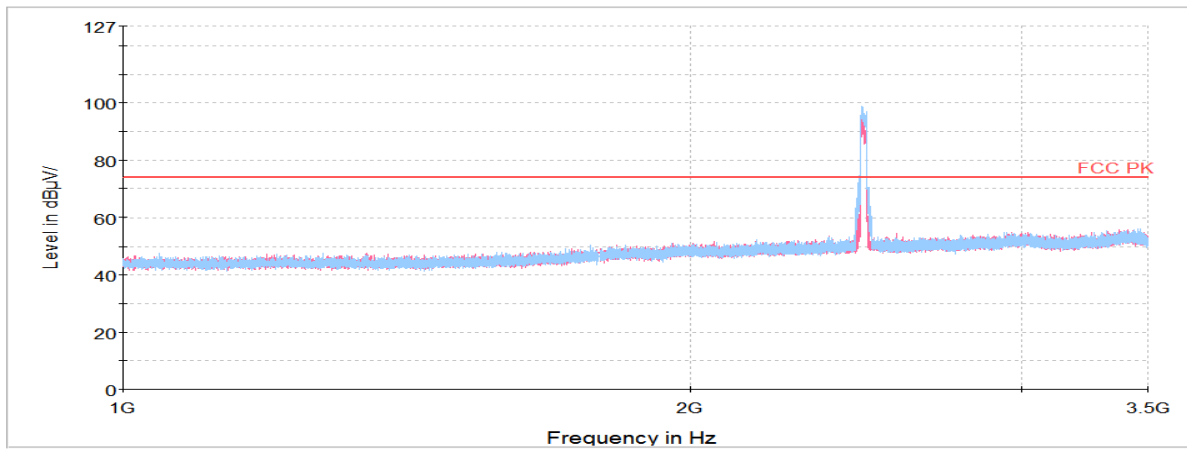
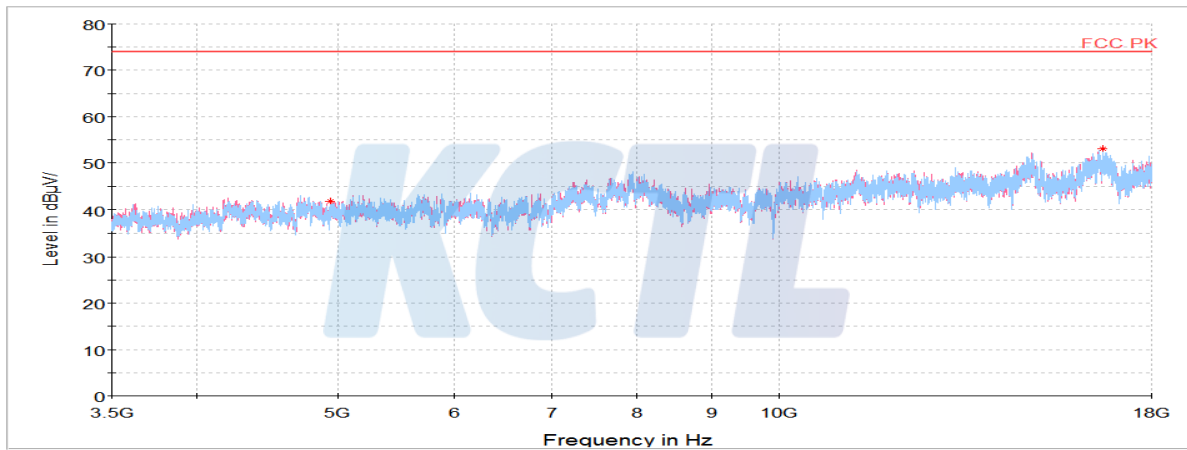
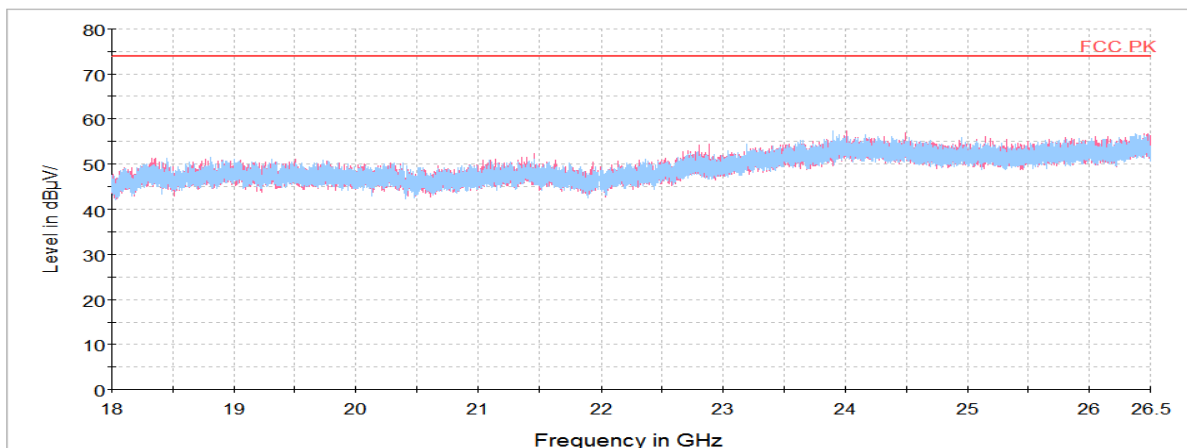
Horizontal/Vertical for Band-edge

Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

2 472 MHz

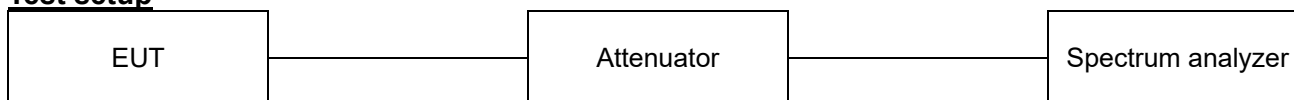
Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
2 483.67 ¹⁾	H	64.23	32.07	-29.21	-	67.09	74.00	6.91
4 944.56 ¹⁾	H	62.67	33.98	-54.94	-	41.71	74.00	32.29
16 668.27	V	57.50	41.67	-46.07	-	53.10	74.00	20.90
Average Data								
2 483.67 ¹⁾	H	47.47	32.07	-29.21	0.43	50.76	54.00	3.24

Average data**Horizontal/Vertical for Band-edge**

Horizontal/Vertical for 1 GHz ~ 3.5 GHz**Horizontal/Vertical for 3.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 26.5 GHz**

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 C63.10-2013 - Section 11.11.3

KDB 558074 D01 v05 - Section 8.5

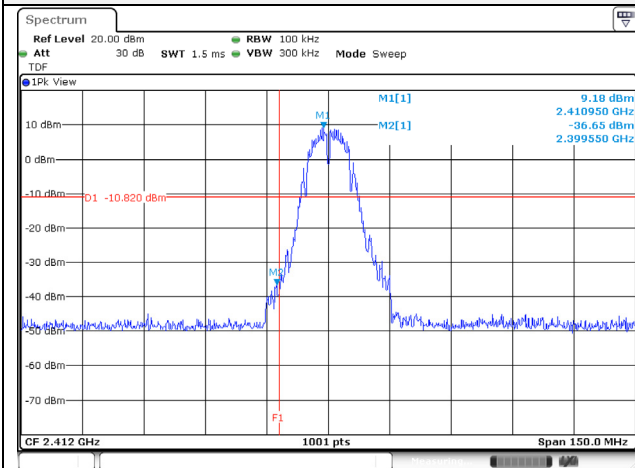
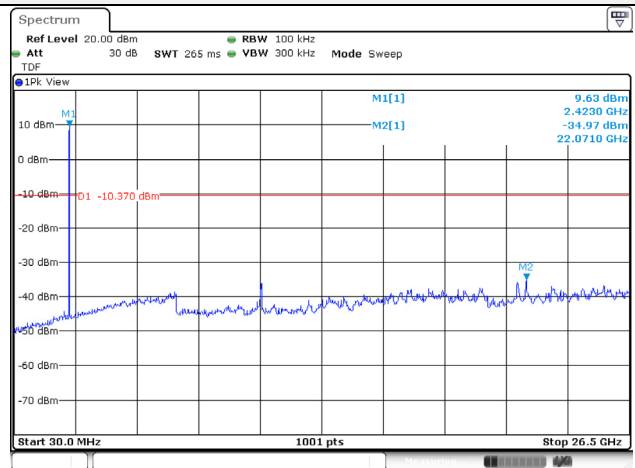
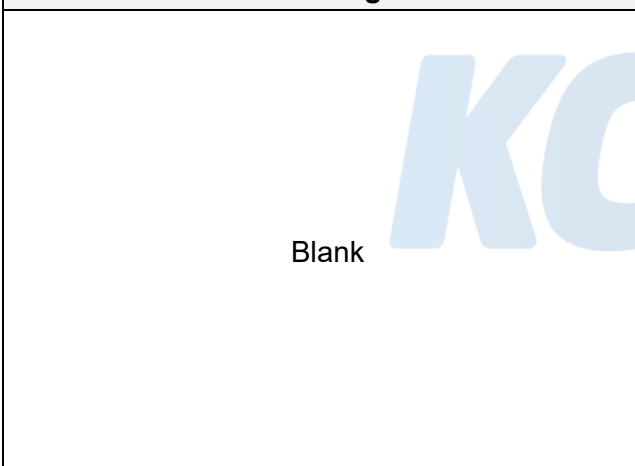
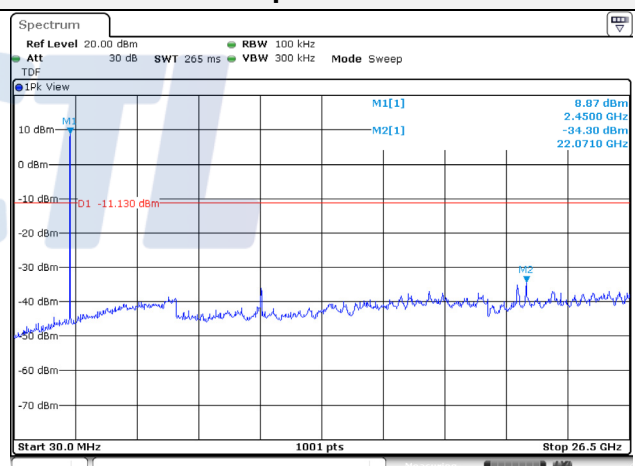
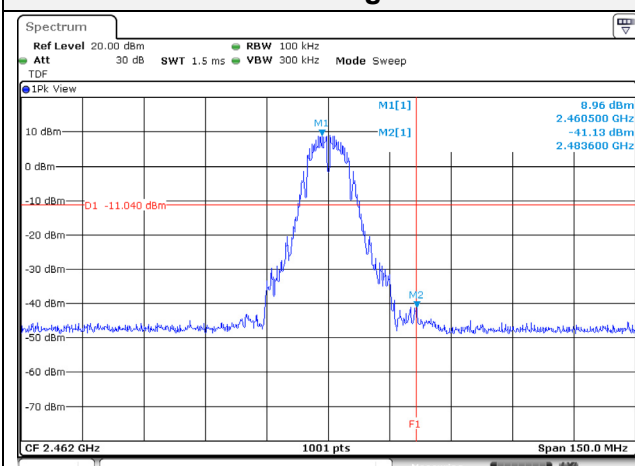
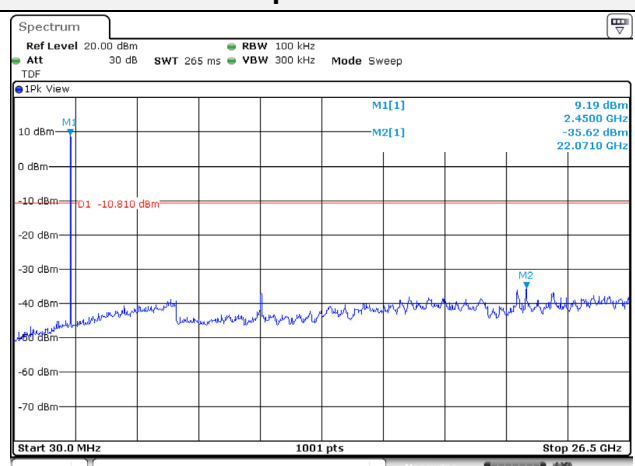
KDB 662911 D01 v02r01 – section (E)(3)(b)

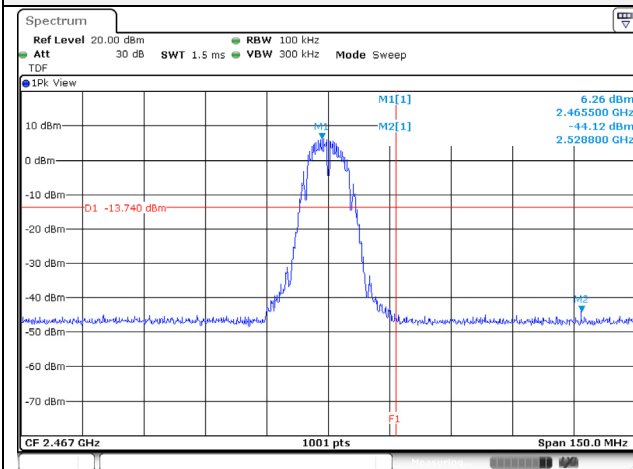
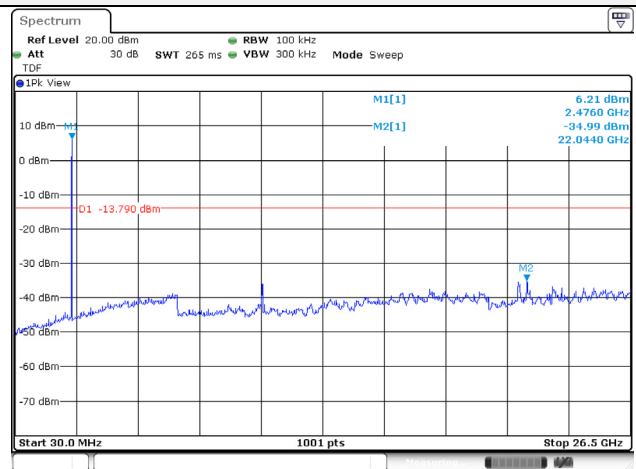
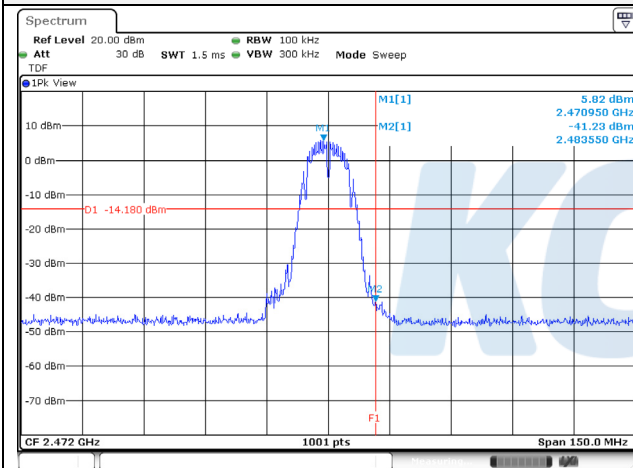
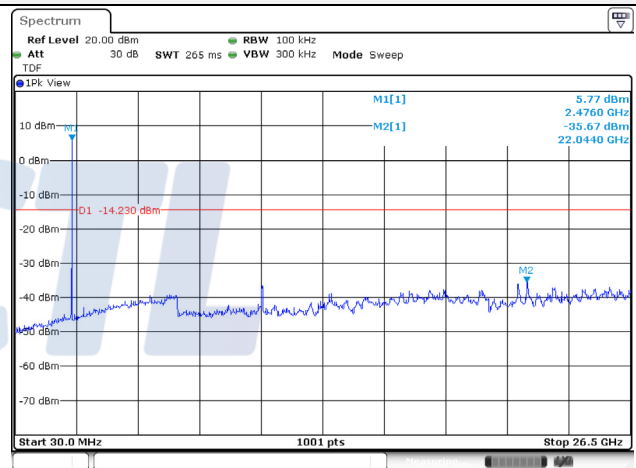
Test settings

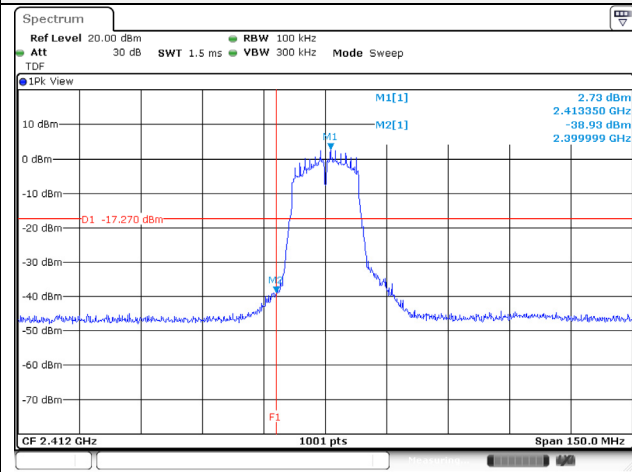
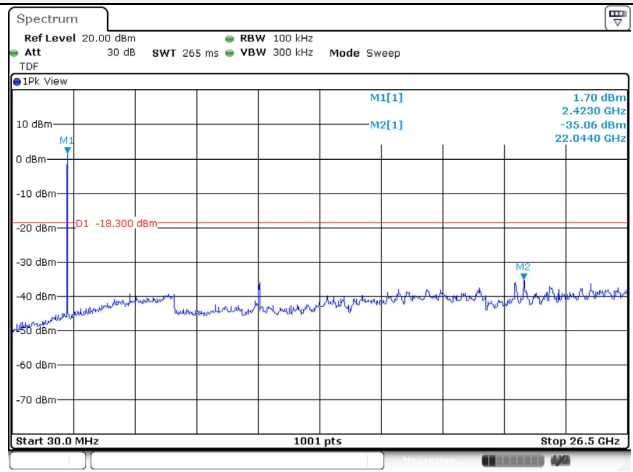
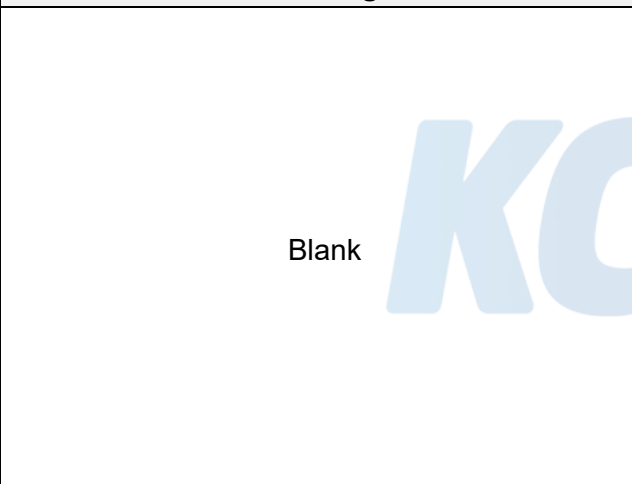
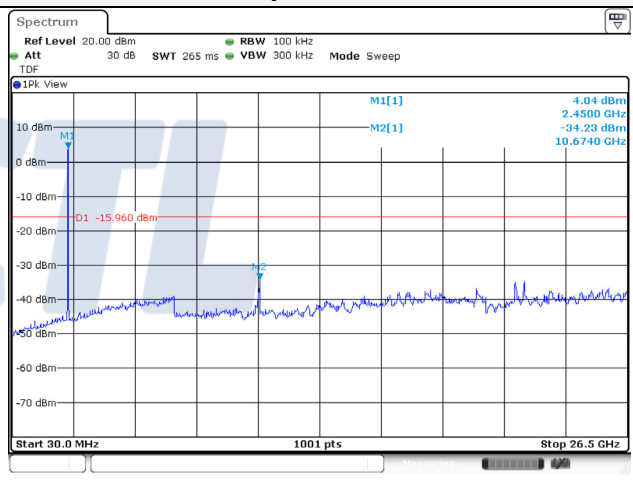
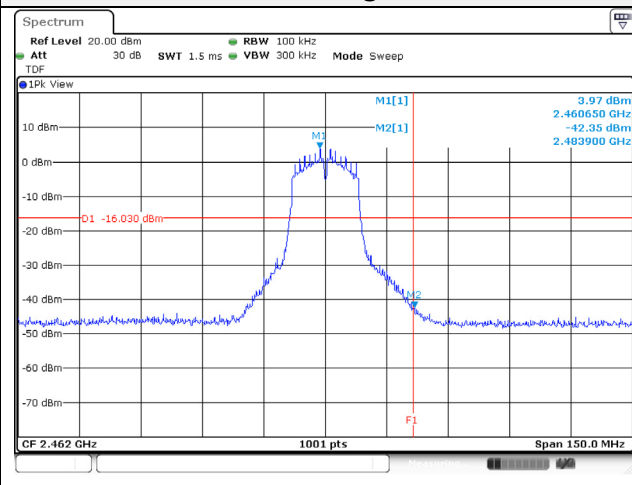
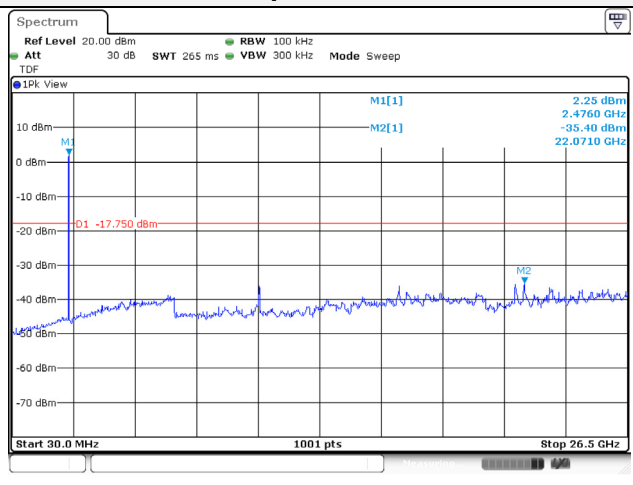
Establish an emission level by using the following procedure:

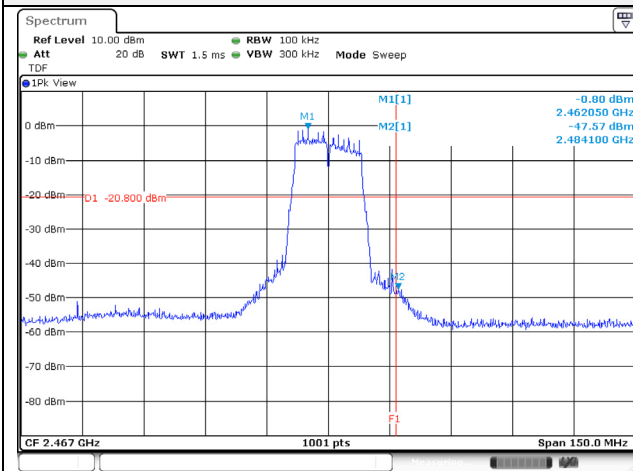
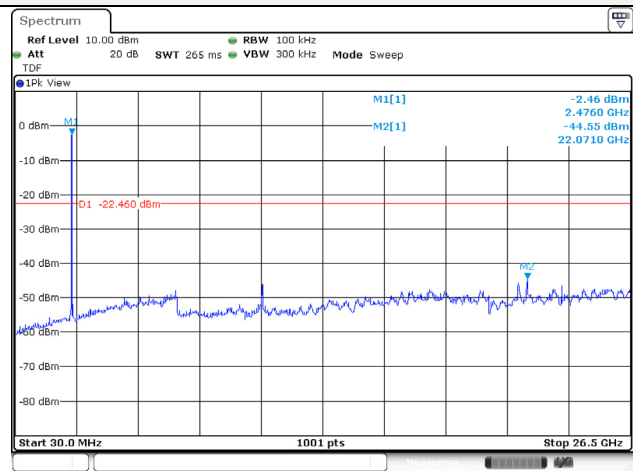
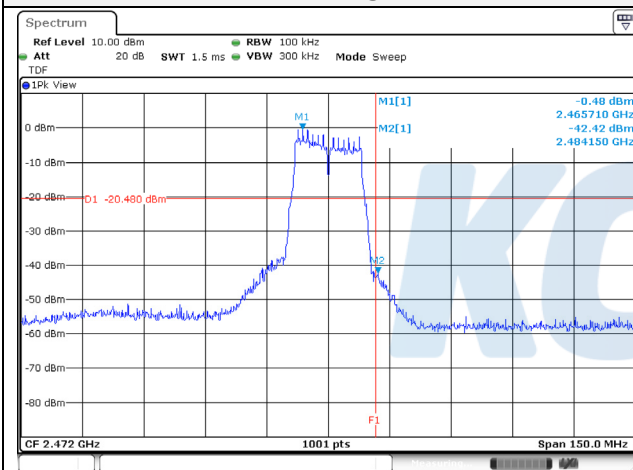
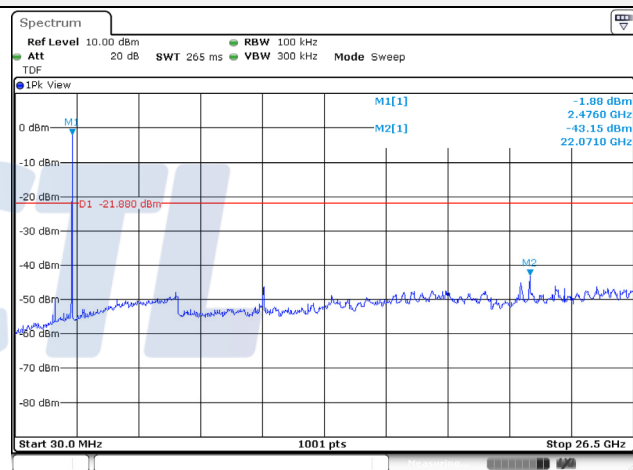
- 1) Set the center frequency and span to encompass frequency range to be measured.
- 2) Set the RBW = 100 kHz
- 3) Set the VBW $\geq [3 \times \text{RBW}]$
- 4) Detector = peak
- 5) Sweep time = auto couple
- 6) Trace mode = max hold
- 7) Allow trace to fully stabilize.
- 8) Use the peak marker function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

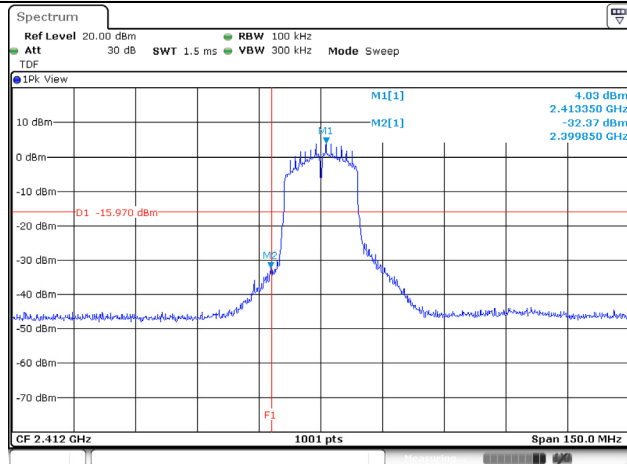
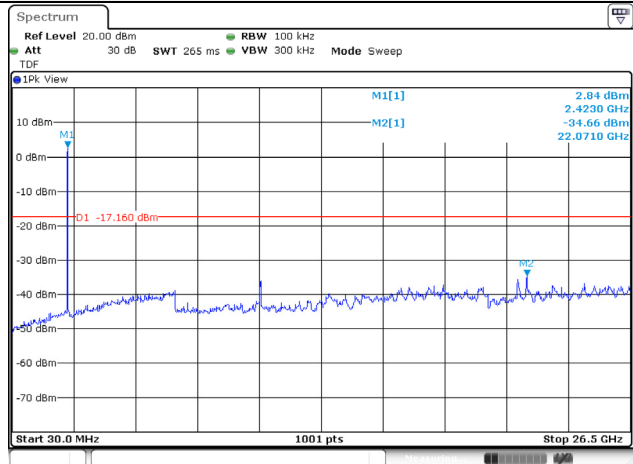
Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

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**

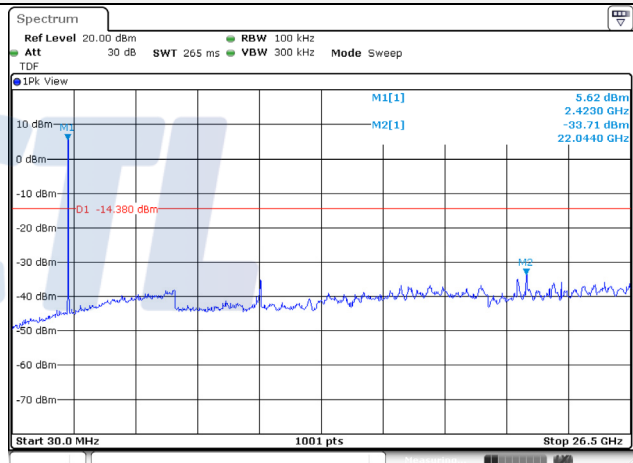
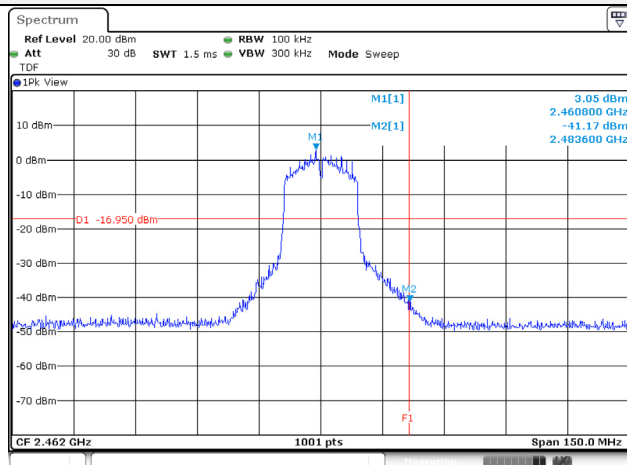
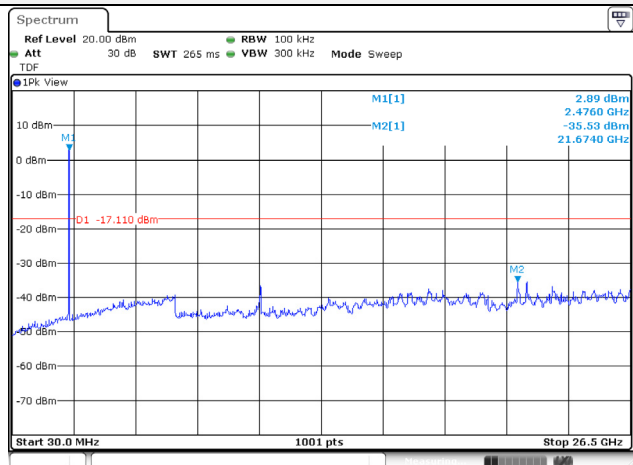
Conducted band-edge / 2 467 MHz**Conducted spurious / 2 467 MHz****Conducted band-edge / 2 472 MHz****Conducted spurious / 2 472 MHz**

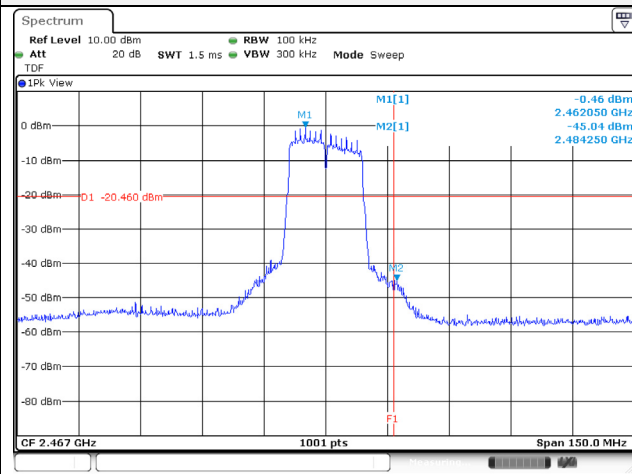
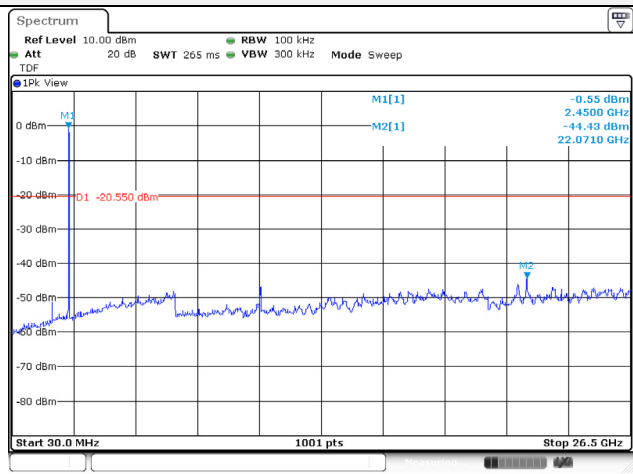
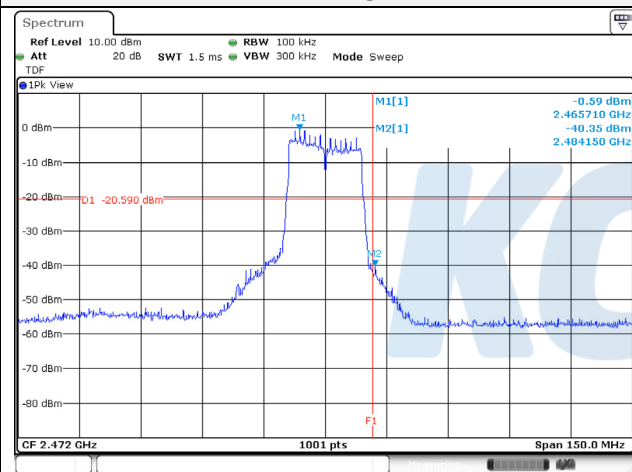
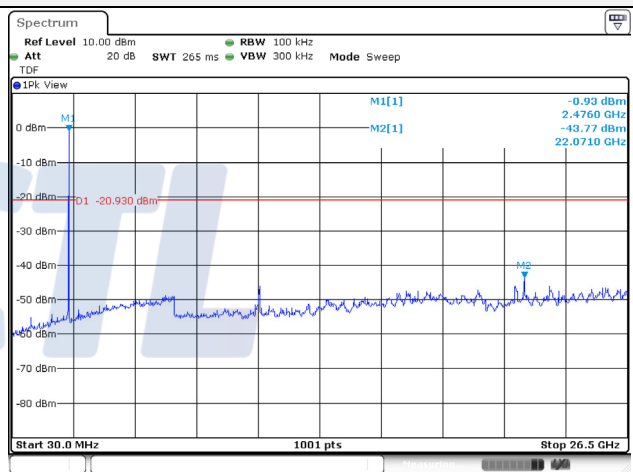
802.11g**Conducted band-edge / 2 412 MHz****Conducted spurious / 2 412 MHz****Conducted band-edge / 2 437 MHz****Conducted spurious / 2 437 MHz****Conducted band-edge / 2 462 MHz****Conducted spurious / 2 462 MHz**

Conducted band-edge / 2 467 MHz**Conducted spurious / 2 467 MHz****Conducted band-edge / 2 472 MHz****Conducted spurious / 2 472 MHz**

802.11n HT20**Conducted band-edge / 2 412 MHz****Conducted spurious / 2 412 MHz****Conducted band-edge / 2 437 MHz**

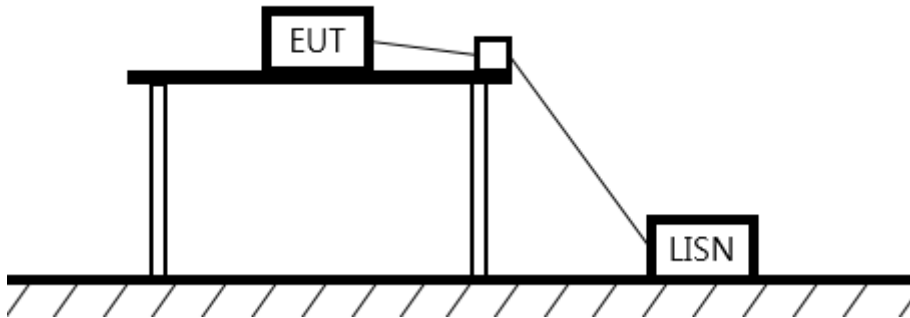
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Conducted spurious / 2 437 MHz**Conducted band-edge / 2 462 MHz****Conducted spurious / 2 462 MHz**

Conducted band-edge / 2 467 MHz**Conducted spurious / 2 467 MHz****Conducted band-edge / 2 472 MHz****Conducted spurious / 2 472 MHz**

7.6. AC Conducted emission

Test setup



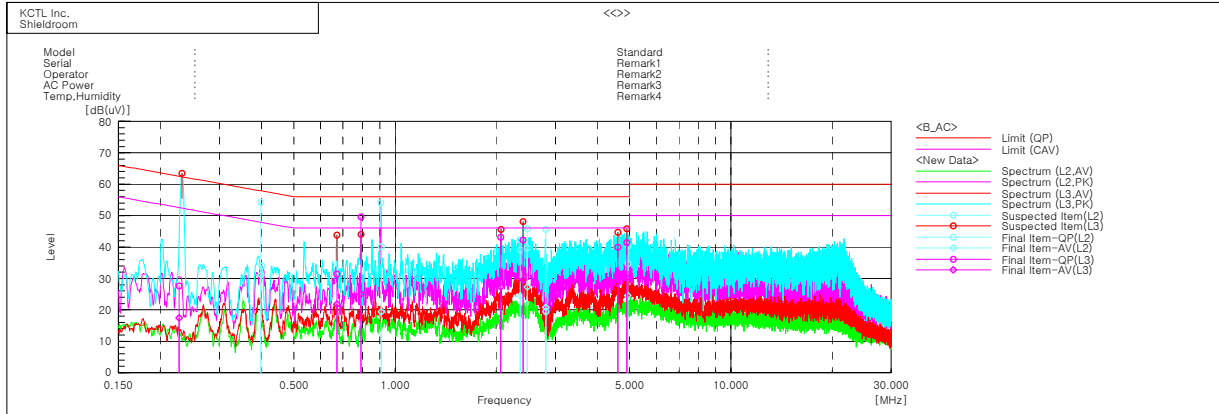
Limit

According to 15.207(a) for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall be on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted limit (dB μ V/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

Measurement procedure

1. The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 cm in which is located 40 cm away from the vertical wall and 1.5m away from the side wall of the shielded room.
2. Each current-carrying conductor of the EUT power cord was individually connected through a 50 Ω /50 μ H LISN, which is an input transducer to a spectrum analyzer or an EMI/Field Intensity Meter, to the input power source.
3. Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
4. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 MHz to 30 MHz.
5. The measurements were made with the detector set to peak amplitude within a bandwidth of 10 kHz or to quasi-peak and average within a bandwidth of 9 kHz. The EUT was in transmitting mode during the measurements.

Test results – Worst case: 802.11 g mode/ 2 437 MHz

Final Result

--- L2 Phase ---

No.	Frequency	Reading QP	Reading CAV	c.f	Result QP	Result CAV	Limit QP	Limit AV	Margin QP	Margin CAV
	[MHz]	[dB(uV)]	[dB(uV)]	[dB]	[dB(uV)]	[dB(uV)]	[dB(uV)]	[dB(uV)]	[dB]	[dB]
1	0.39813	44.0	20.9	10.2	54.2	31.1	57.9	47.9	3.7	16.8
2	0.90899	29.8	9.2	10.2	40.0	19.4	56.0	46.0	16.0	26.6
3	2.35642	28.8	14.1	10.3	39.1	24.4	56.0	46.0	16.9	21.6
4	2.47552	35.5	17.0	10.3	45.8	27.3	56.0	46.0	10.2	18.7
5	2.80804	35.3	10.5	10.3	45.6	20.8	56.0	46.0	10.4	25.2
6	4.93699	24.3	14.1	10.4	34.7	24.5	56.0	46.0	21.3	21.5

--- L3 Phase ---

No.	Frequency	Reading QP	Reading CAV	c.f	Result QP	Result CAV	Limit QP	Limit AV	Margin QP	Margin CAV
	[MHz]	[dB(uV)]	[dB(uV)]	[dB]	[dB(uV)]	[dB(uV)]	[dB(uV)]	[dB(uV)]	[dB]	[dB]
1	0.22743	17.6	7.4	10.0	27.6	17.4	62.5	52.5	34.9	35.1
2	0.67147	21.1	11.6	10.2	31.3	21.8	56.0	46.0	24.7	24.2
3	0.79113	39.4	14.8	10.2	49.6	25.0	56.0	46.0	6.4	21.0
4	2.06463	32.8	16.9	10.3	43.1	27.2	56.0	46.0	12.9	18.8
5	2.40545	31.9	19.2	10.3	42.2	29.5	56.0	46.0	13.8	16.5
6	4.6055	29.6	17.9	10.4	40.0	28.3	56.0	46.0	16.0	17.7
7	4.89996	31.0	19.8	10.4	41.4	30.2	56.0	46.0	14.6	15.8

8. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum Analyzer	R&S	FSV30	100806	20.07.30
Attenuator	Weinschel ENGINEERING	56-10	51395	21.01.22
Signal Generator	R&S	SMB100A	176206	21.01.21
Vector Signal Generator	R&S	SMBV100A	257566	20.07.16
Power Sensor	R&S	NRP-Z81	1137.9009.02- 106223-bB	21.05.25
Attenuator	R&S	DNF Dämpfungsglied 10 dB in N-50 Ohm	31210	21.05.11
DC Power Supply	AGILENT	E3632A	MY40001543	21.05.11
Spectrum Analyzer	R&S	FSV40	100989	21.01.03
EMI TEST RECEIVER	R&S	ESC17	100732	20.08.22
Bi-Log Antenna	TESEQ	CBL 6112D	37876	20.07.20
Amplifier	SONOMA INSTRUMENT	310N	284608	20.08.22
ATTENUATOR	Agilent	8491B	MY39270292	20.07.20
Horn antenna	ETS.lindgren	3117	155787	20.10.24
Horn antenna	ETS.lindgren	3116	00086632	21.02.17
Attenuator	API Inmet	40AH2W-10	12	21.05.12
Broadband PreAmplifier	SCHWARZBECK	BBV9718	216	20.07.30
AMPLIFIER	L-3 Narda-MITEQ	AMF-7D-01001800 -22-10P	2031196	21.02.12
AMPLIFIER	L-3 Narda-MITEQ	JS44-18004000-33-8P	2000996	21.01.22
LOOP Antenna	R&S	HFH2-Z2	100355	20.08.24
Antenna Mast	Innco Systems	MA4640-XP-ET	-	-
Turn Table	Innco Systems	DT2000	79	-
Antenna Mast	Innco Systems	MA4000-EP	303	-
Turn Table	Innco Systems	DT2000	79	-
Highpass Filter	WT	WT-A1698-HS	WT160411001	21.05.11
TWO-LINE V - NETWORK	R&S	ENV216	101358	20.10.02
EMI TEST RECEIVER	R&S	ESCI	100001	20.08.22

End of test report