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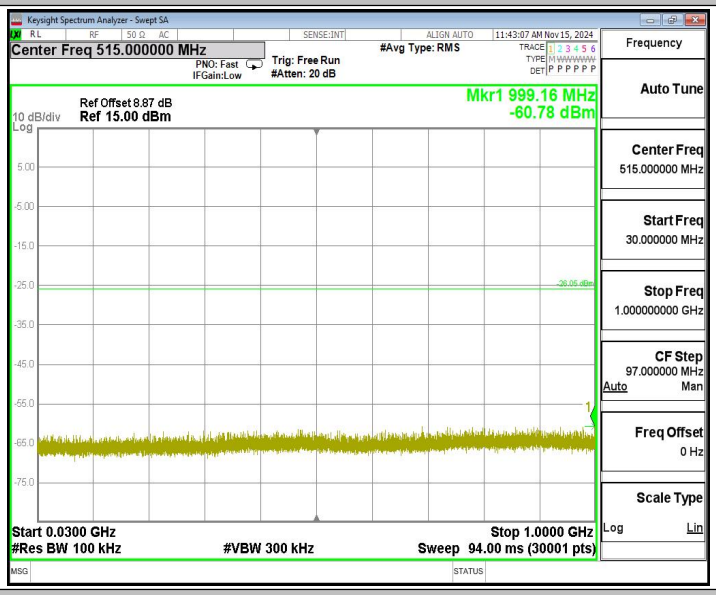

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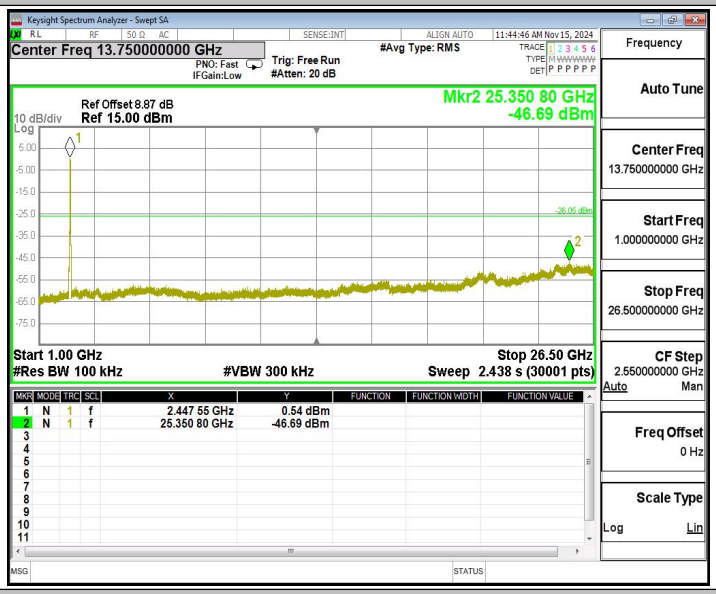

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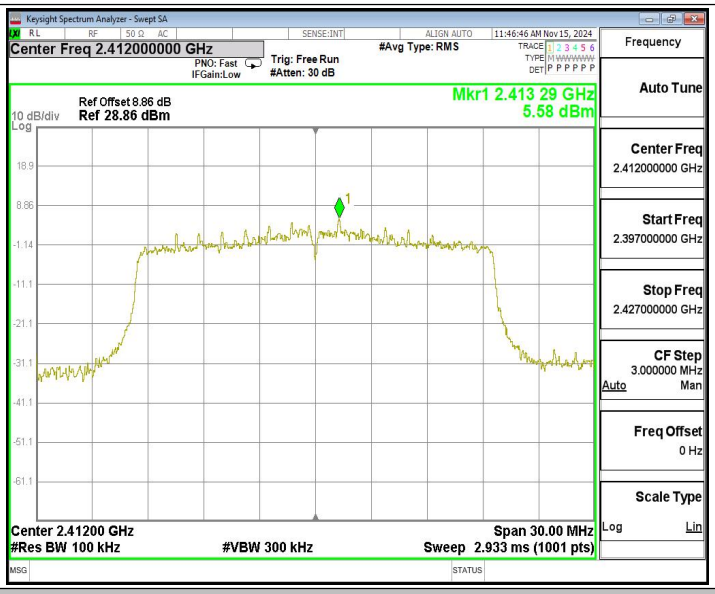

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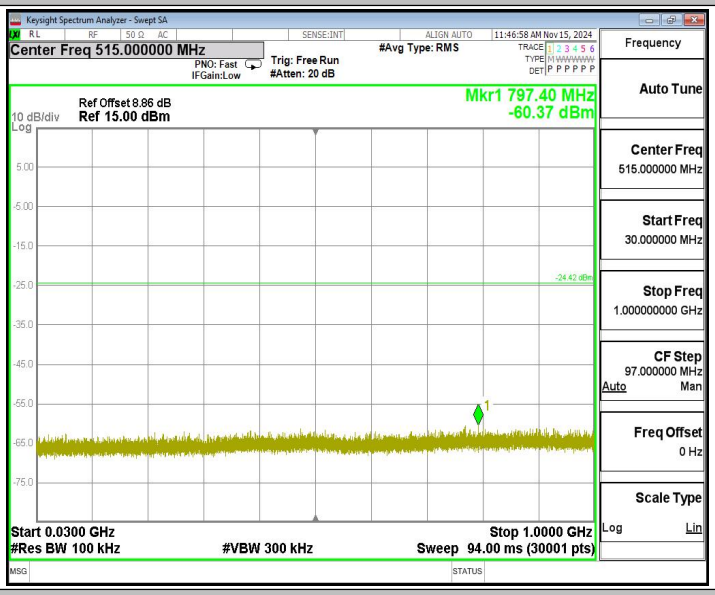

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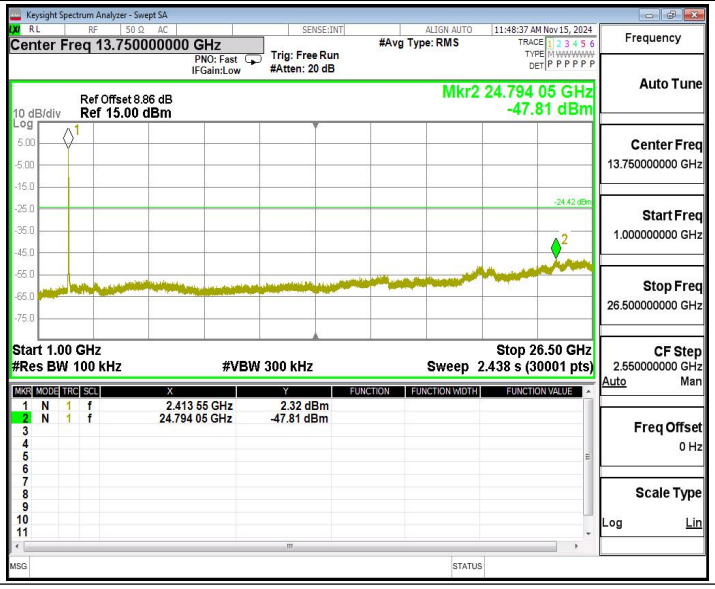

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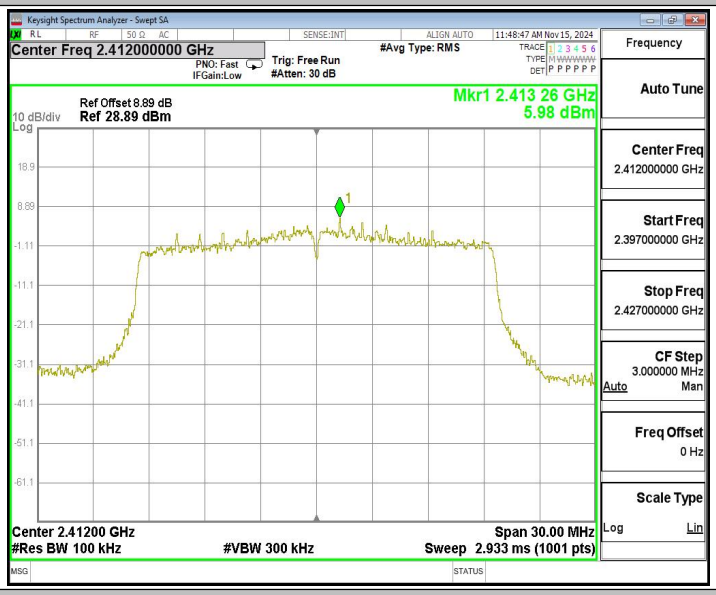

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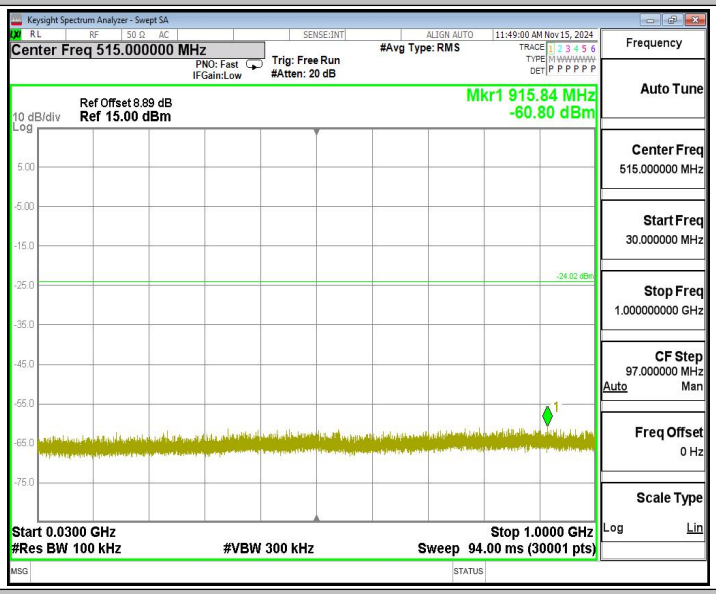

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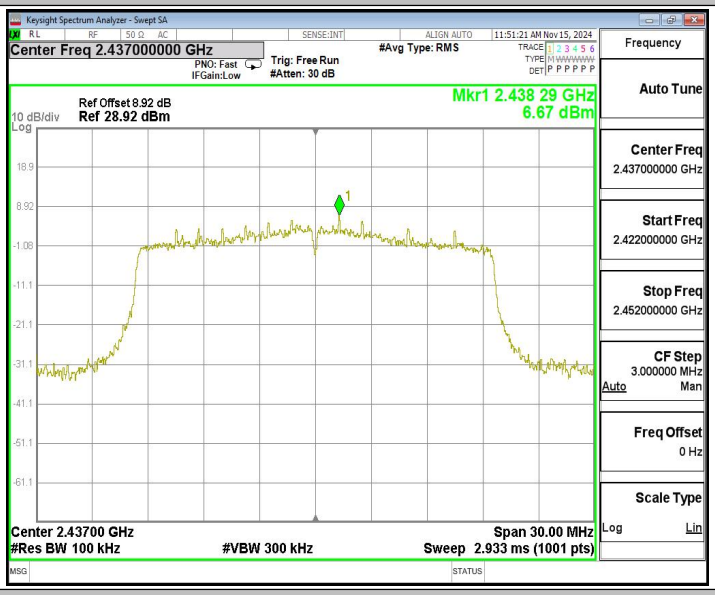

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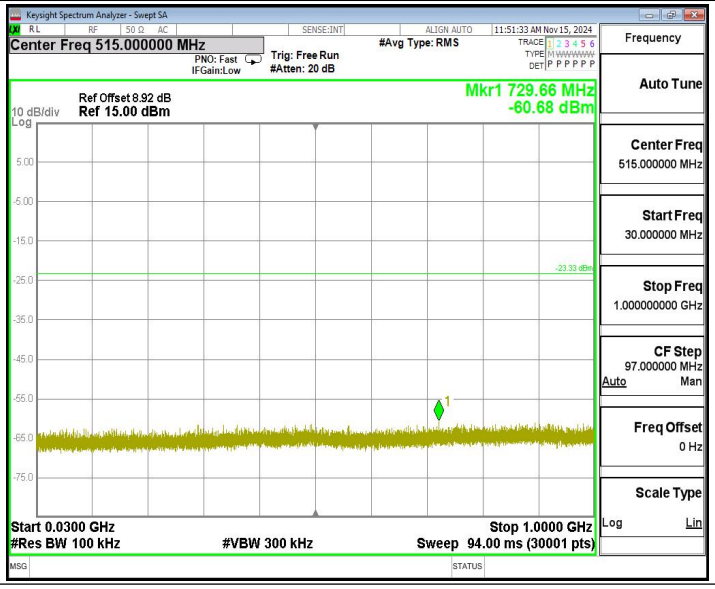

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11AX20MIMO_Ant8_2437_1000~26500

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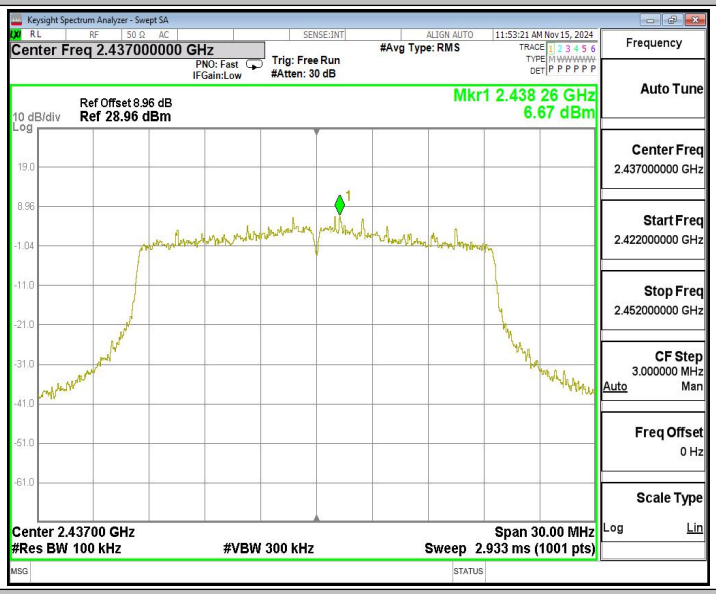

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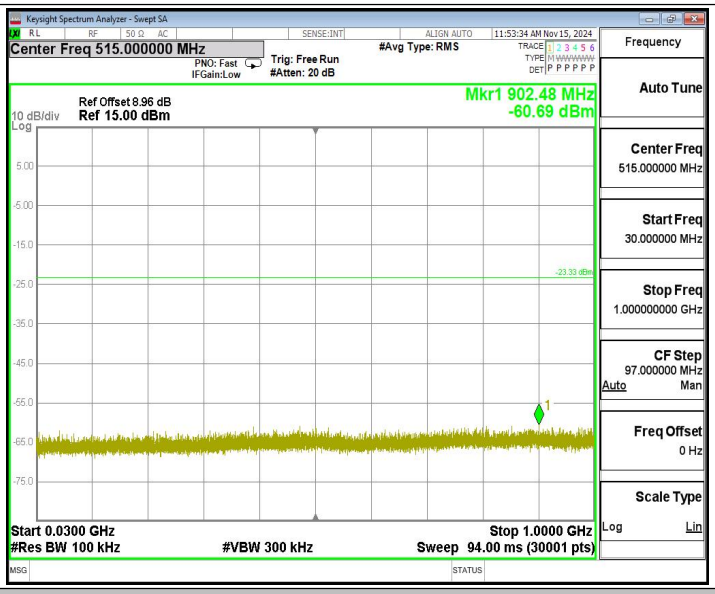

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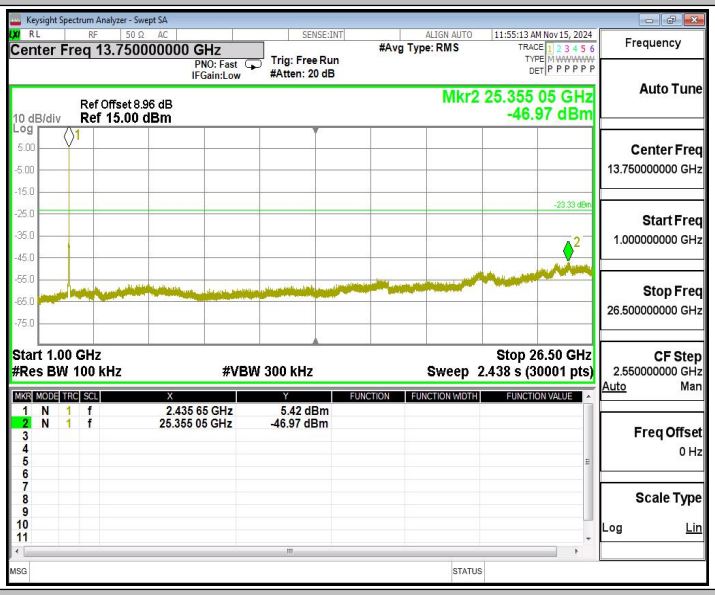

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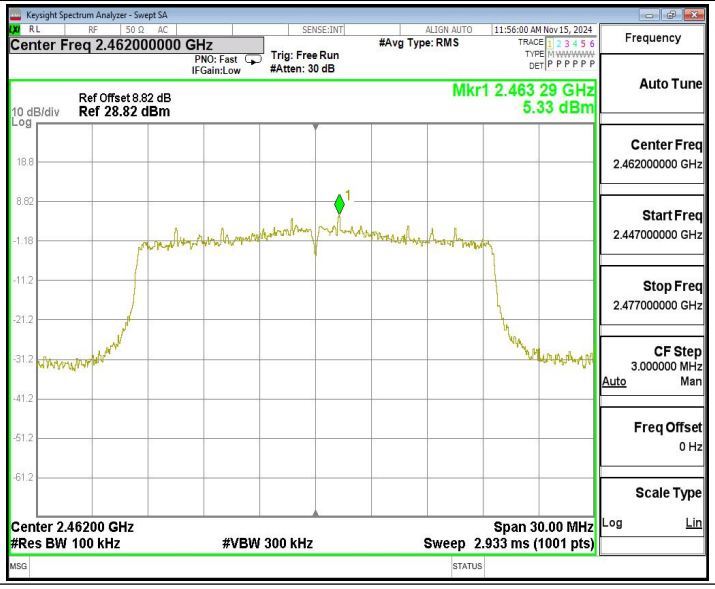

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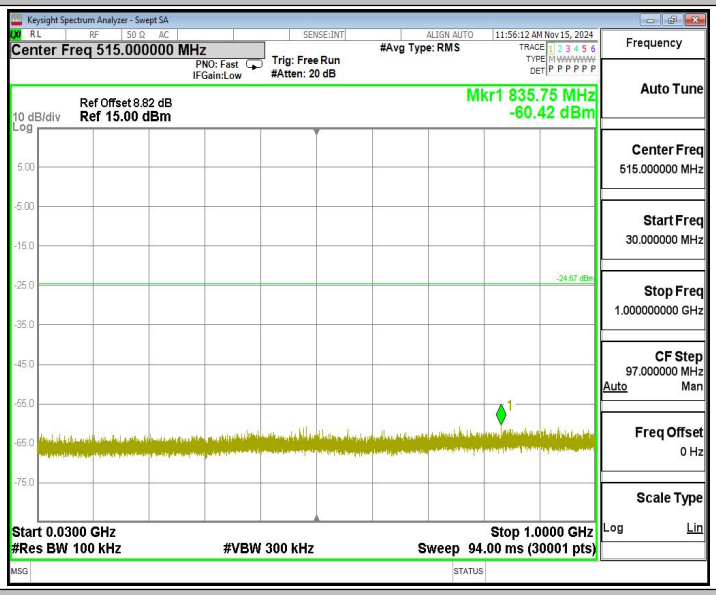

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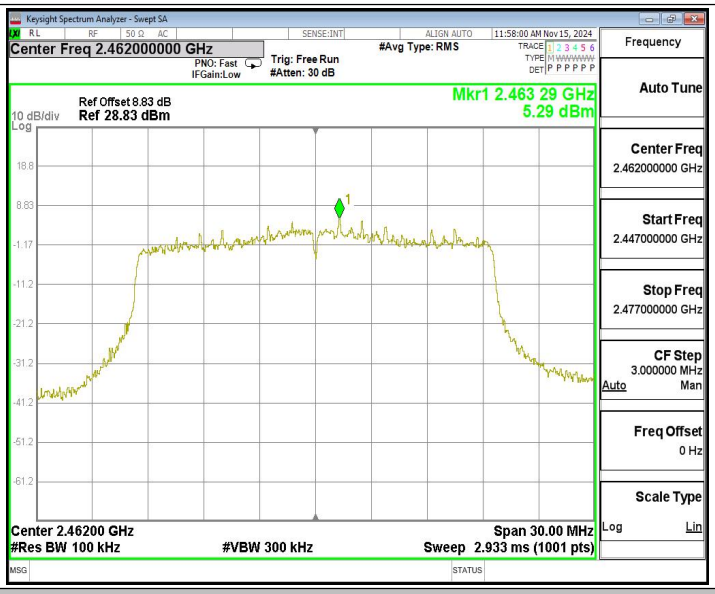

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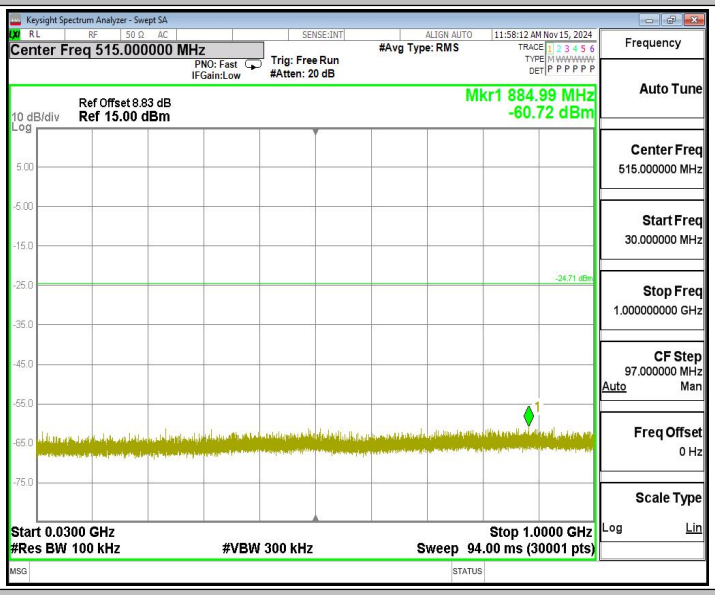

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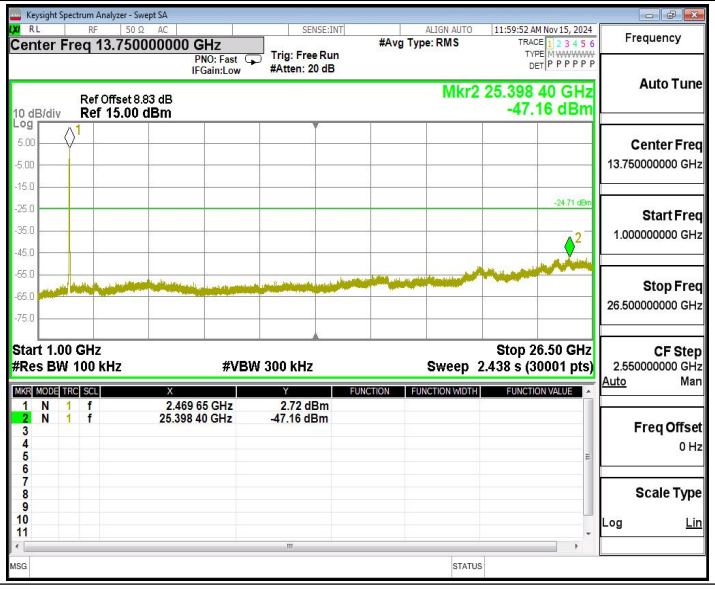

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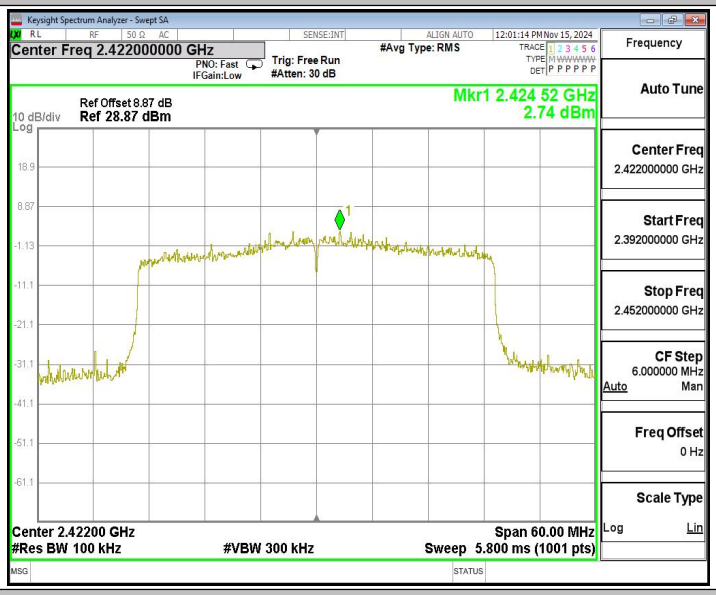

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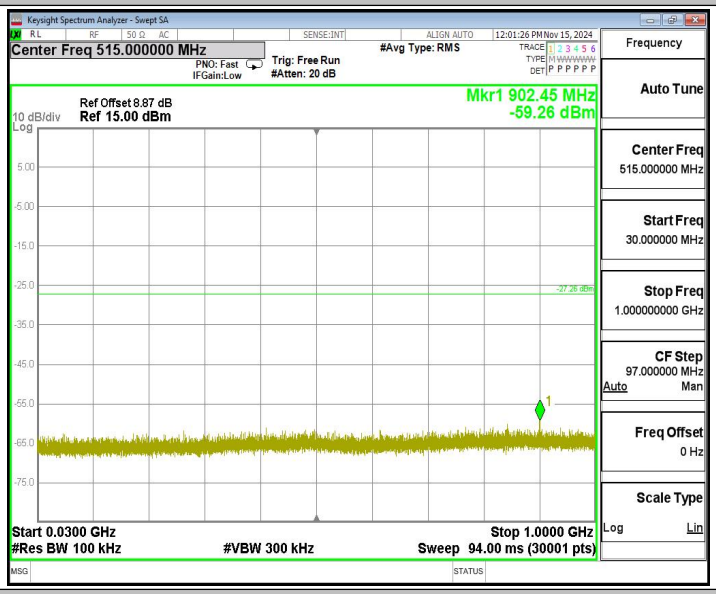

11AX40MIMO_Ant8_2422_1000~26500

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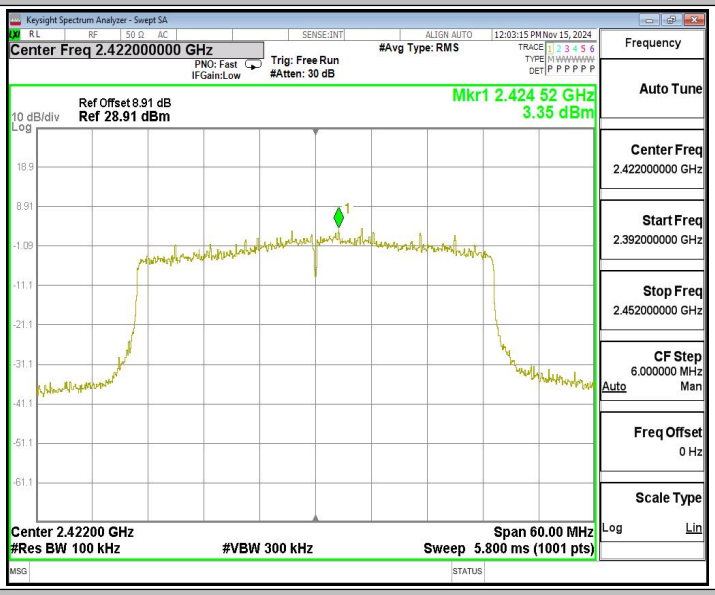

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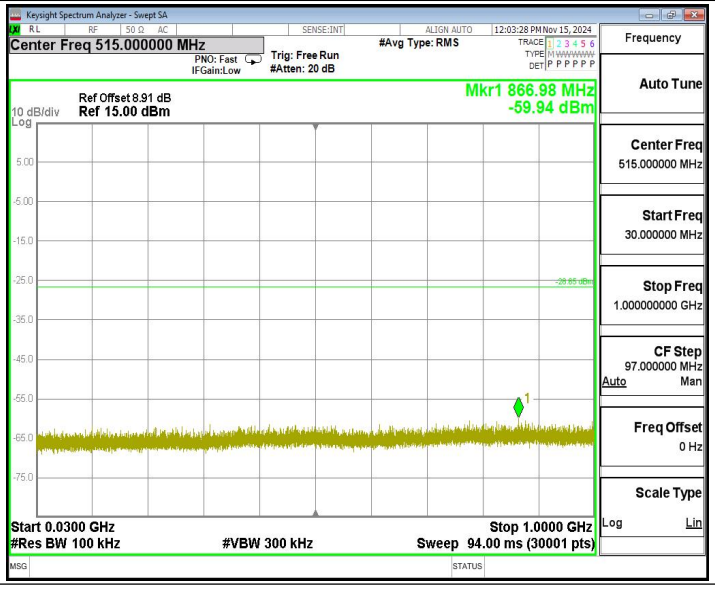

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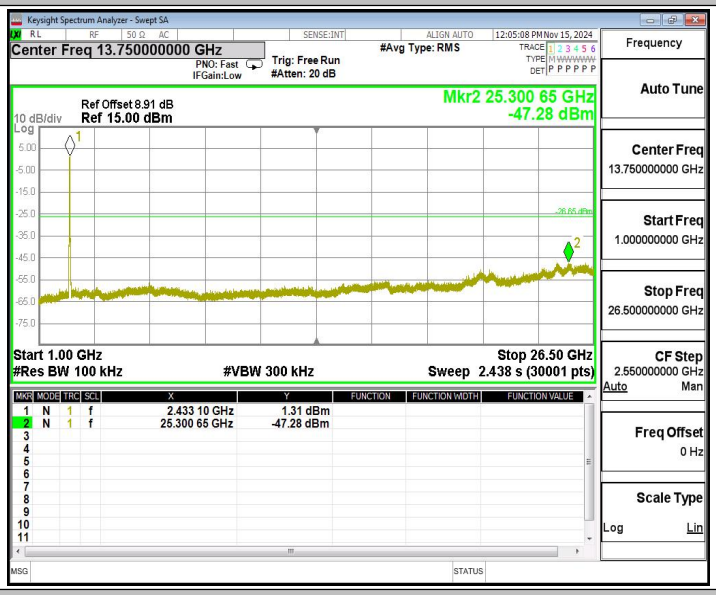

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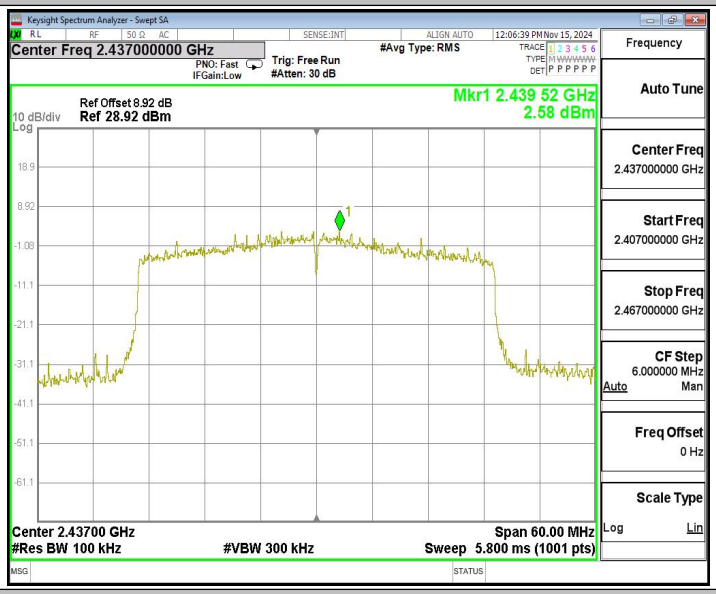

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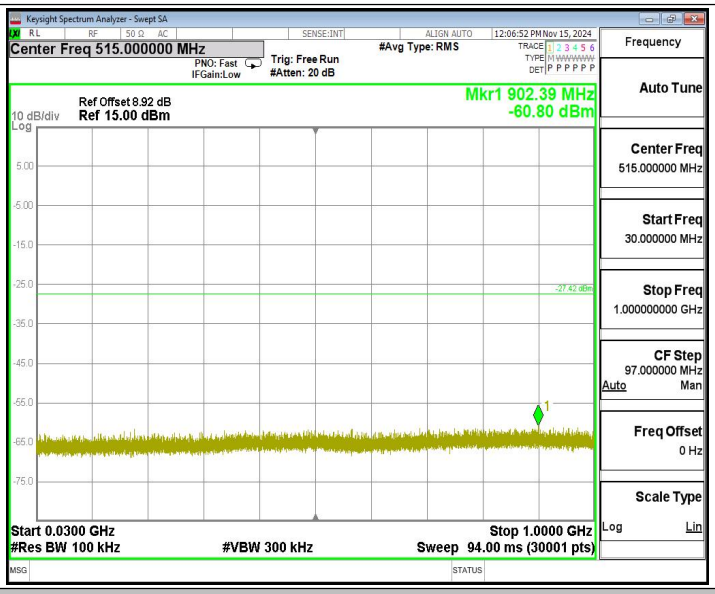

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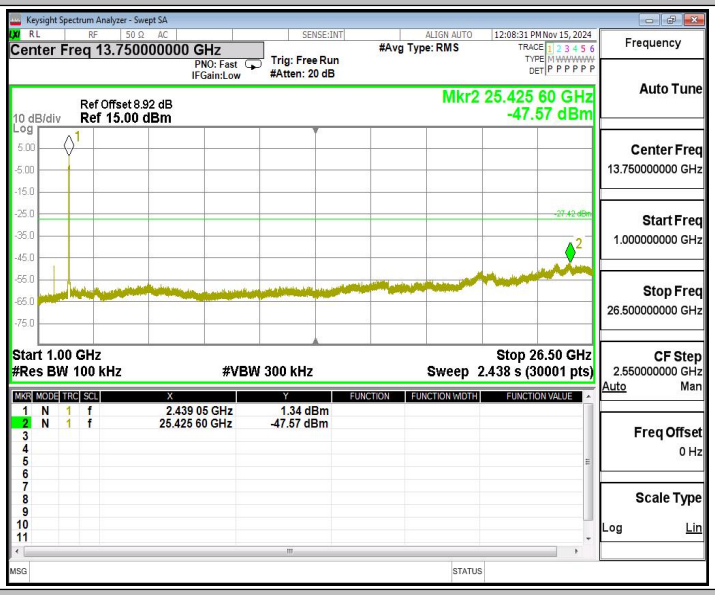

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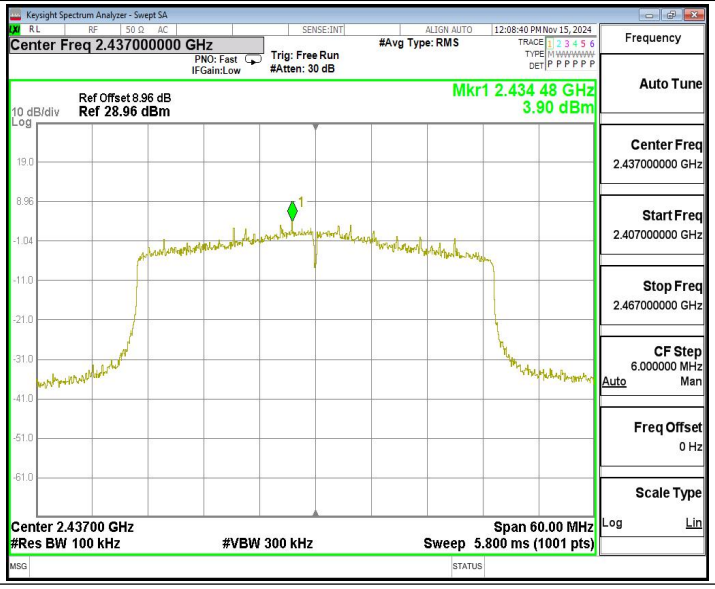

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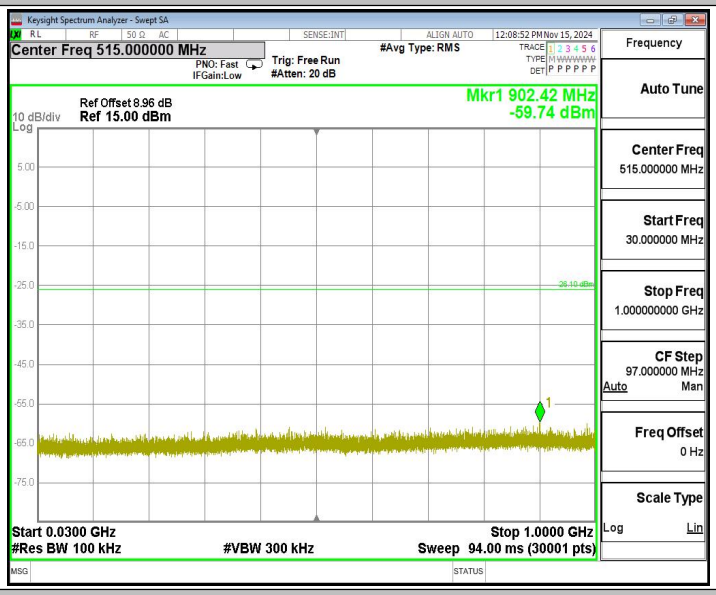

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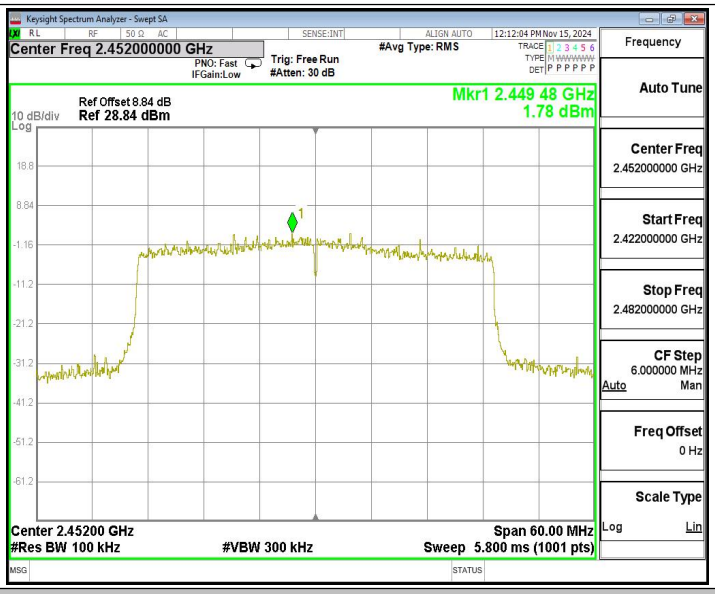

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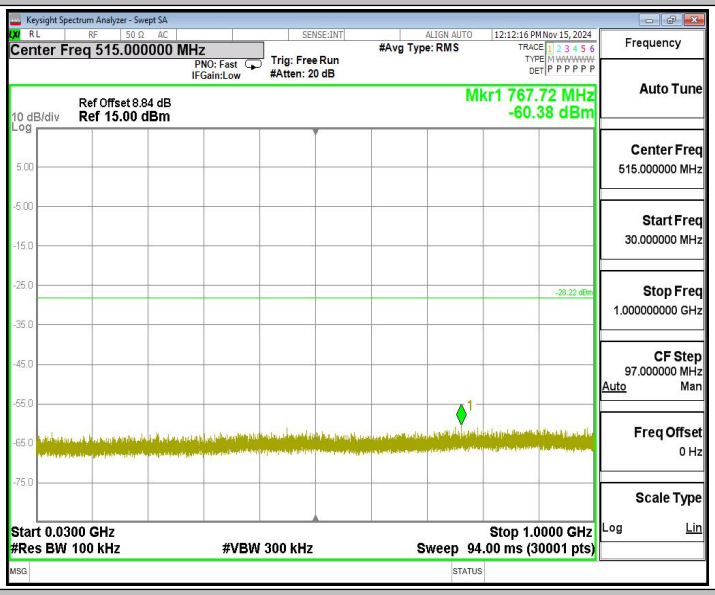

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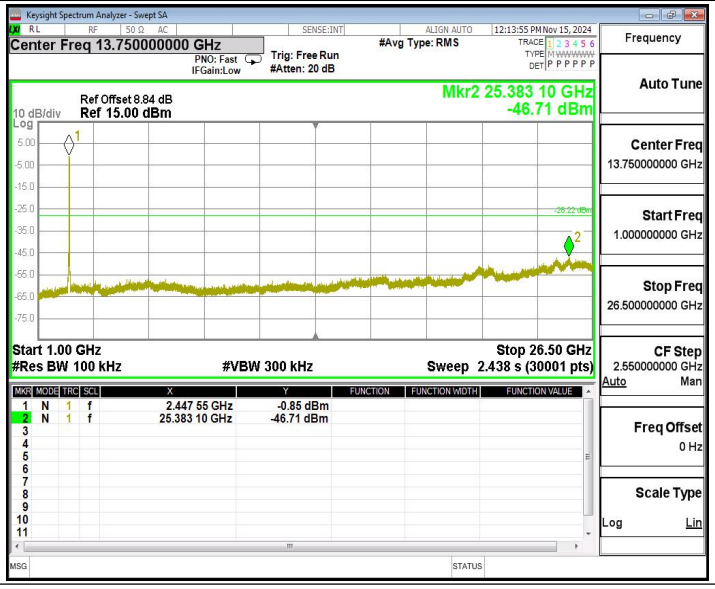

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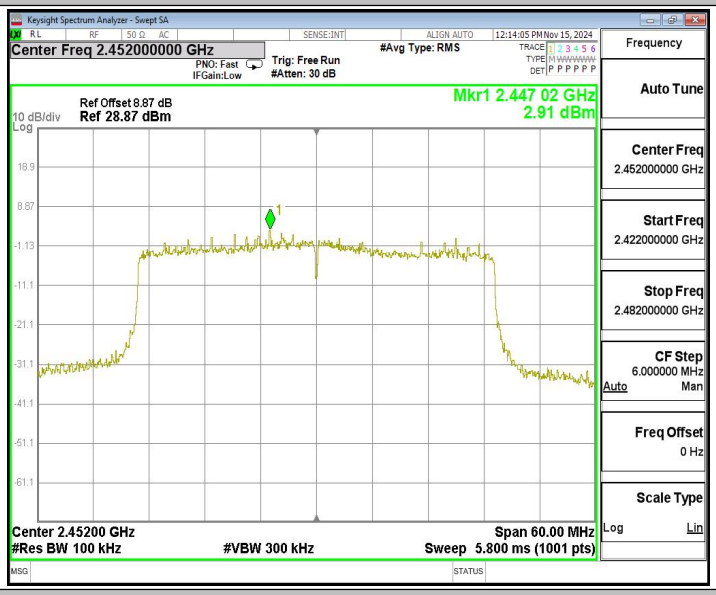

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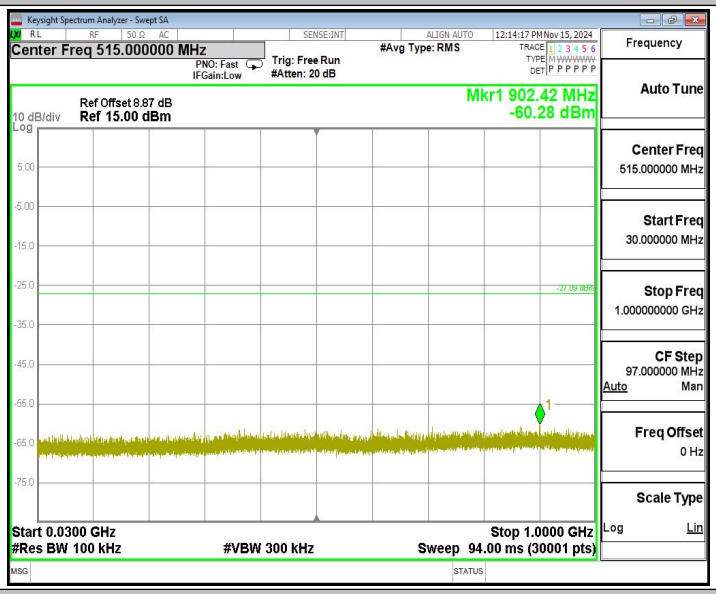

11AX40MIMO_Ant9_2452_1000~26500

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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 & RSS-247 section 5.5/RSS-Gen section 6.13	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. For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases were recorded in this report.

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Measurement Results:

Mode	Frequency (MHz)	Frequency Range	Test Results	Conclusion
802.11n-HT20	2412(CH1)	1 GHz ~18 GHz	Fig.1	**P**
	2437(CH6)	1 GHz ~18 GHz	Fig.2	**P**
	2462(CH11)	1 GHz ~18 GHz	Fig.3	**P**
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.4	**P**
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.5	**P**
802.11ax -HE20	2412(CH1)	1 GHz ~18 GHz	Fig.6	**P**
	2437(CH6)	1 GHz ~18 GHz	Fig.7	**P**
	2462(CH11)	1 GHz ~18 GHz	Fig.8	**P**
	Restricted Band (CH1)	2.38 GHz ~ 2.45 GHz	Fig.9	**P**
	Restricted Band (CH11)	2.45 GHz ~ 2.5 GHz	Fig.10	**P**
802.11n-HT40	2422(CH3)	1 GHz ~18 GHz	Fig.11	**P**
	2437(CH6)	1 GHz ~18 GHz	Fig.12	**P**
	2452(CH9)	1 GHz ~18 GHz	Fig.13	**P**
	Restricted Band (CH3)	2.38 GHz ~ 2.45 GHz	Fig.14	**P**
	Restricted Band (CH9)	2.45 GHz ~ 2.5 GHz	Fig.15	**P**
802.11ax -HE40	2422(CH3)	1 GHz ~18 GHz	Fig.16	**P**
	2437(CH6)	1 GHz ~18 GHz	Fig.17	**P**
	2452(CH9)	1 GHz ~18 GHz	Fig.18	**P**
	Restricted Band (CH3)	2.38 GHz ~ 2.45 GHz	Fig.19	**P**
	Restricted Band (CH9)	2.45 GHz ~ 2.5 GHz	Fig.20	**P**
/	All Channels	9 kHz ~30 MHz	Fig.21	**P**
		30 MHz ~1 GHz	Fig.22	**P**
		18 GHz ~26.5 GHz	Fig.23	**P**

Between SISO and MIMO, the MIMO of 11n and11ax is the worst type.

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Worst-Case Result:

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

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
3456.600000	45.03	74.00	28.97	V	0.4
5428.800000	50.55	74.00	23.45	H	7.5
7493.571429	46.39	74.00	27.61	V	7.0
10496.142857	46.66	74.00	27.34	V	9.7
14994.857143	50.95	74.00	23.05	V	14.5
16675.714286	54.55	74.00	19.45	H	19.0

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
3456.600000	32.97	54.00	21.03	V	0.4
5428.800000	38.28	54.00	15.72	H	7.5
7493.571429	34.02	54.00	19.98	V	7.0
10496.142857	34.87	54.00	19.13	V	9.7
14994.857143	38.92	54.00	15.08	V	14.5
16675.714286	42.28	54.00	11.72	H	19.0

802.11ax-HE20 CH6 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4009.800000	45.97	74.00	28.03	H	2.6
5482.800000	50.86	74.00	23.14	H	7.2
6959.571429	49.56	74.00	24.44	H	8.3
8766.000000	46.22	74.00	27.78	V	7.5
12358.285714	49.33	74.00	24.67	V	12.8
16629.857143	54.94	74.00	19.06	V	18.9

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
4009.800000	34.03	54.00	19.97	H	2.6
5482.800000	38.33	54.00	15.67	H	7.2
6959.571429	41.15	54.00	12.85	H	8.3
8766.000000	33.87	54.00	20.13	V	7.5
12358.285714	37.48	54.00	16.52	V	12.8
16629.857143	41.83	54.00	12.17	V	18.9

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802.11n-HT40 CH6 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
5388.900000	51.83	74.00	22.17	V	7.2
6960.000000	49.44	74.00	24.57	V	8.3
9214.714286	46.96	74.00	27.04	V	7.9
11766.428572	49.62	74.00	24.38	V	12.4
13492.714286	49.12	74.00	24.88	V	13.0
16749.000000	54.63	74.00	19.37	H	18.8

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
5388.900000	38.19	54.00	15.81	V	7.2
6960.000000	39.16	54.00	14.84	V	8.3
9214.714286	34.40	54.00	19.60	V	7.9
11766.428572	36.39	54.00	17.61	V	12.4
13492.714286	37.31	54.00	16.69	V	13.0
16749.000000	42.59	54.00	11.41	H	18.8

802.11ax-HE40 CH6 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
5477.100000	51.45	74.00	22.55	V	7.2
7544.142857	45.86	74.00	28.14	V	6.7
10696.285714	47.66	74.00	26.34	H	9.8
12786.857143	49.56	74.00	24.44	V	12.8
14973.857143	50.49	74.00	23.51	H	14.7
17693.142857	55.40	74.00	18.60	H	20.6

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
5477.100000	38.39	54.00	15.61	V	7.2
7544.142857	33.42	54.00	20.58	V	6.7
10696.285714	35.35	54.00	18.65	H	9.8
12786.857143	37.12	54.00	16.88	V	12.8
14973.857143	38.26	54.00	15.74	H	14.7
17693.142857	43.36	54.00	10.64	H	20.6

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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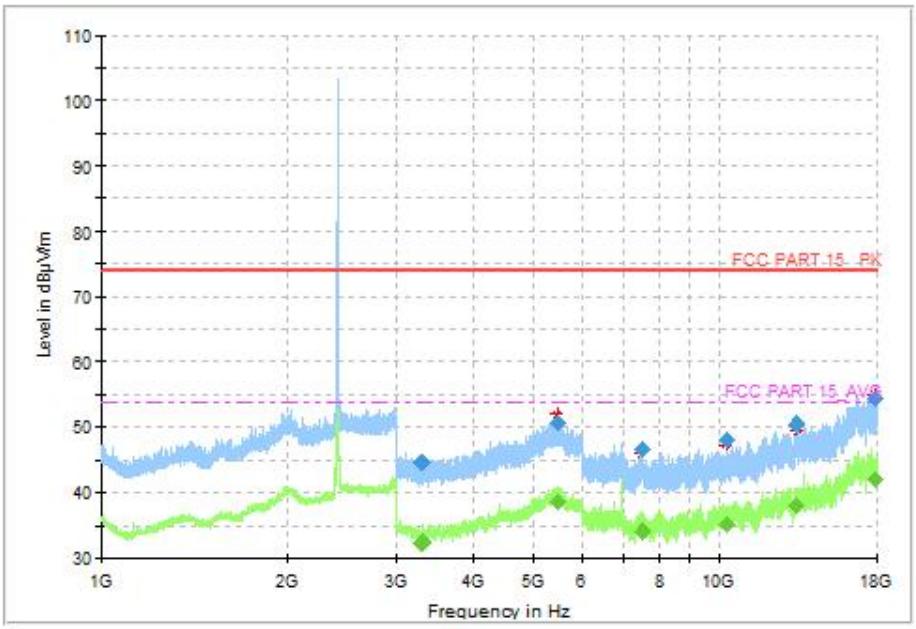

Fig.1 Radiated Spurious Emission (802.11n-HT20, CH1, 1GHz-18GHz, MIMO)

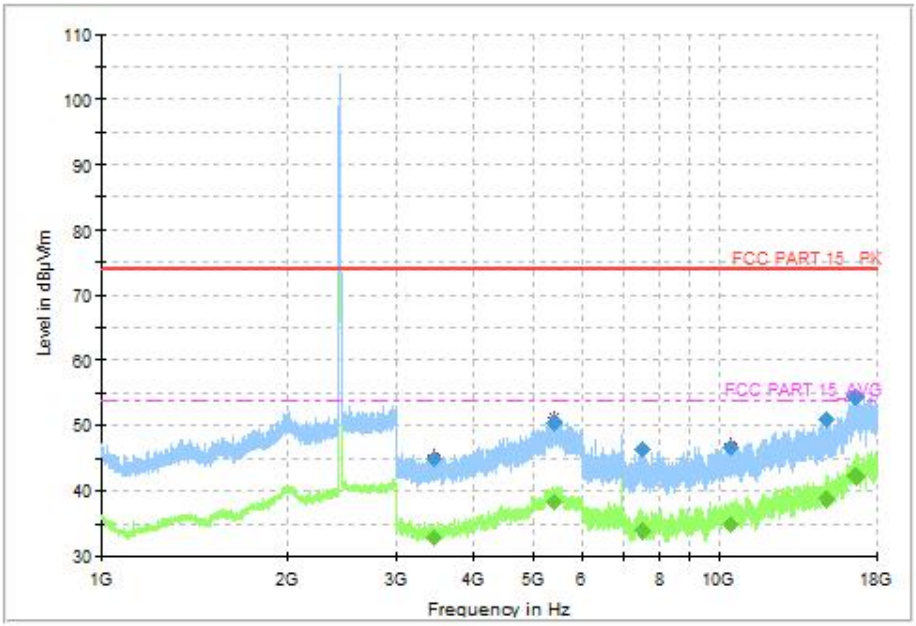

Fig.2 Radiated Spurious Emission (802.11n-HT20, CH6, 1GHz-18GHz, MIMO)

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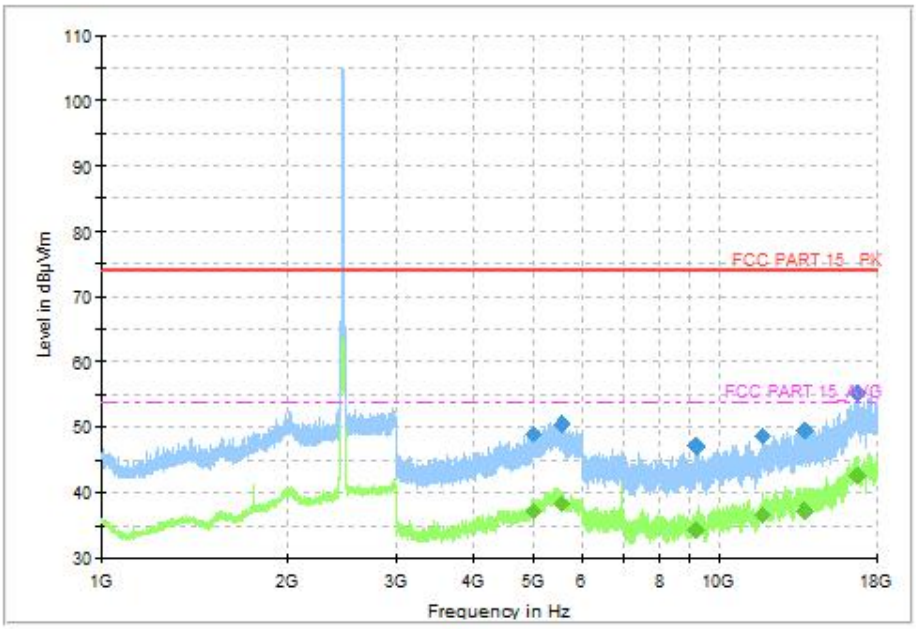

Fig.3 Radiated Spurious Emission (802.11n-HT20, CH11, 1GHz-18GHz, MIMO)

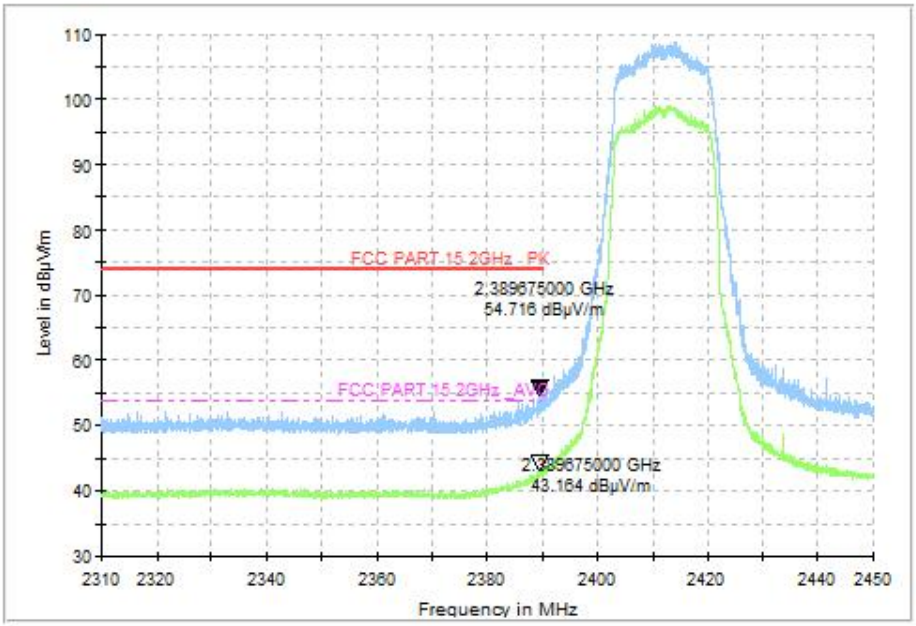

Fig.4 Radiated Restricted Band (802.11n-HT20, CH1, 2.38GHz~2.45GHz, MIMO)

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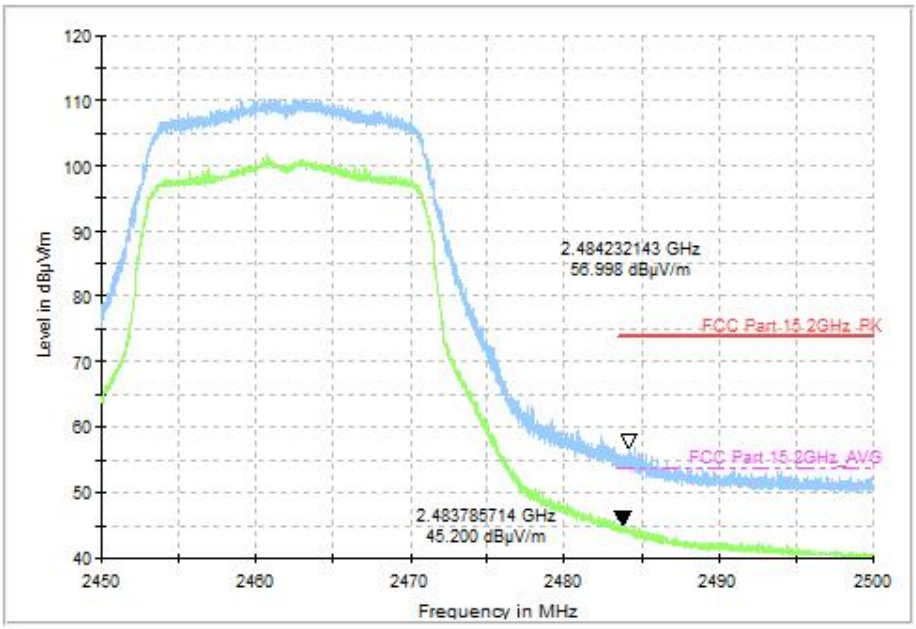

Fig.5 Radiated Restricted Band (802.11n-HT20, CH11, 2.45GHz~2.50GHz, MIMO)

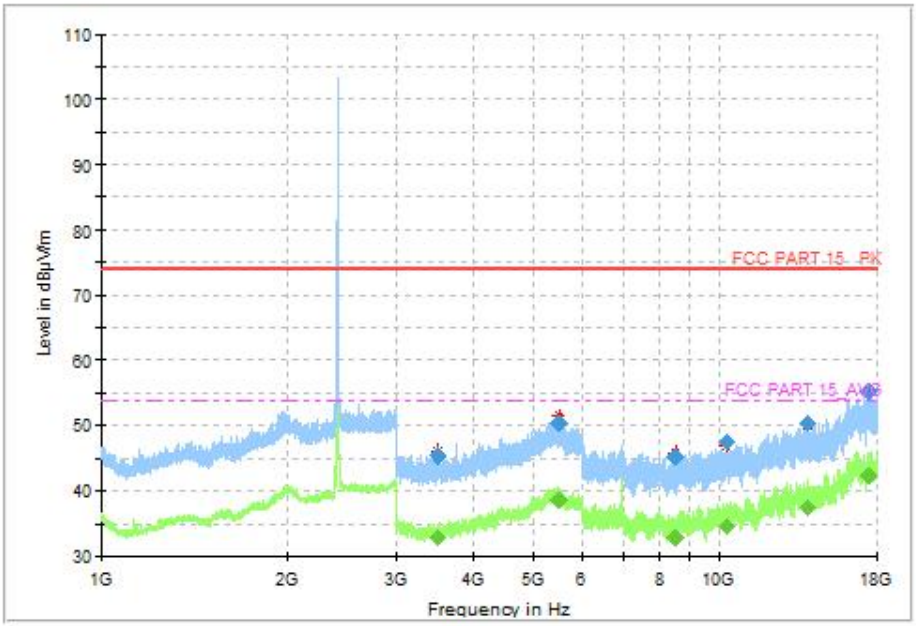

Fig.6 Radiated Spurious Emission (802.11ax-HE20, CH1, 1GHz-18GHz, MIMO)

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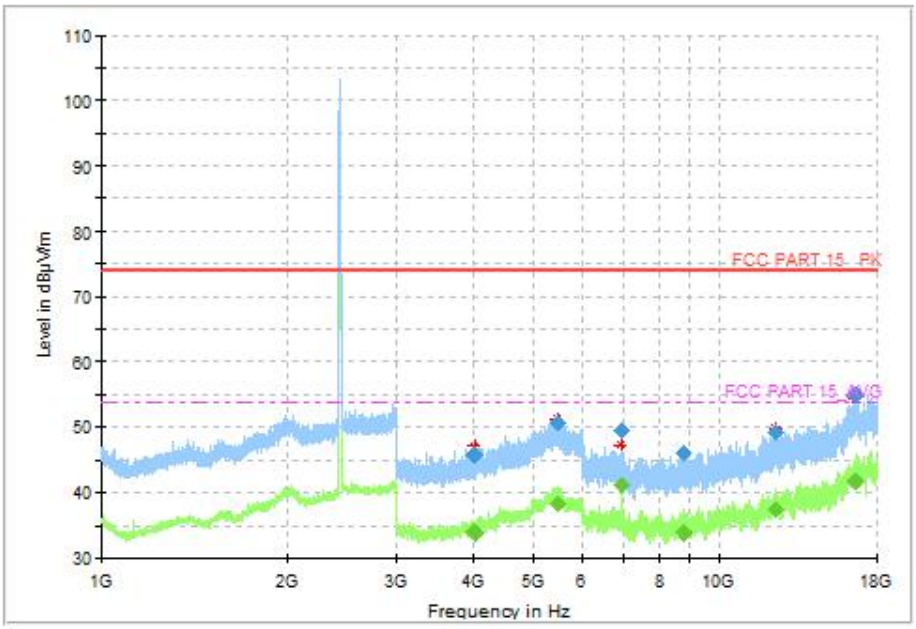

Fig.7 Radiated Spurious Emission (802.11ax-HE20, CH6, 1GHz-18GHz, MIMO)

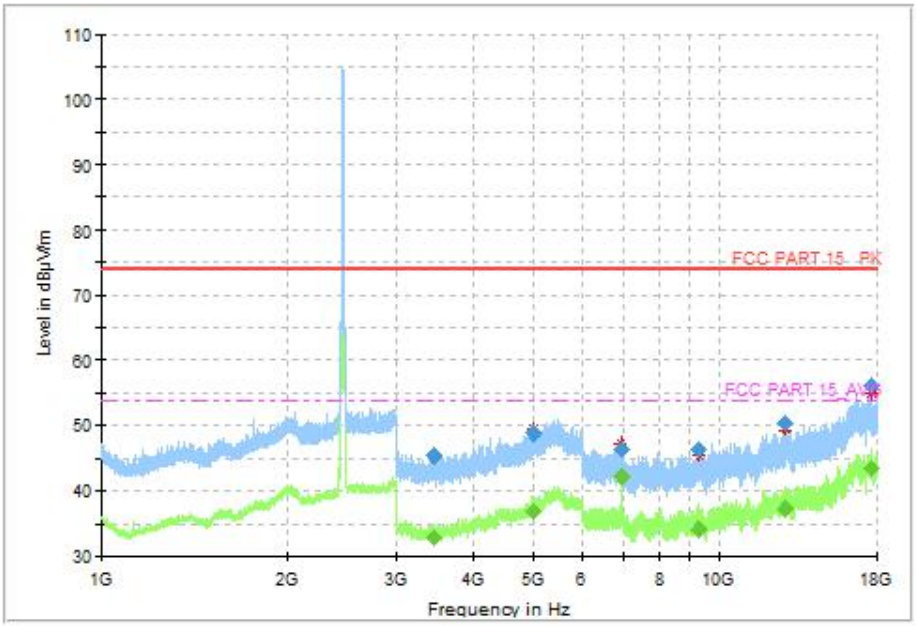

Fig.8 Radiated Spurious Emission (802.11ax-HE20, CH11, 1GHz-18GHz, MIMO)

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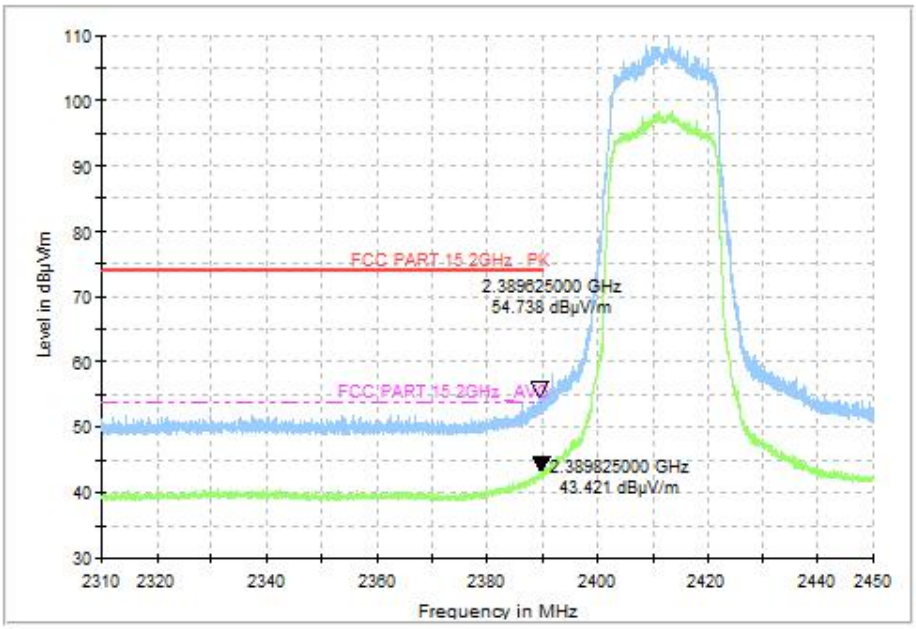

Fig.9 Radiated Restricted Band (802.11ax-HE20, CH1, 2.38GHz~2.45GHz, MIMO)

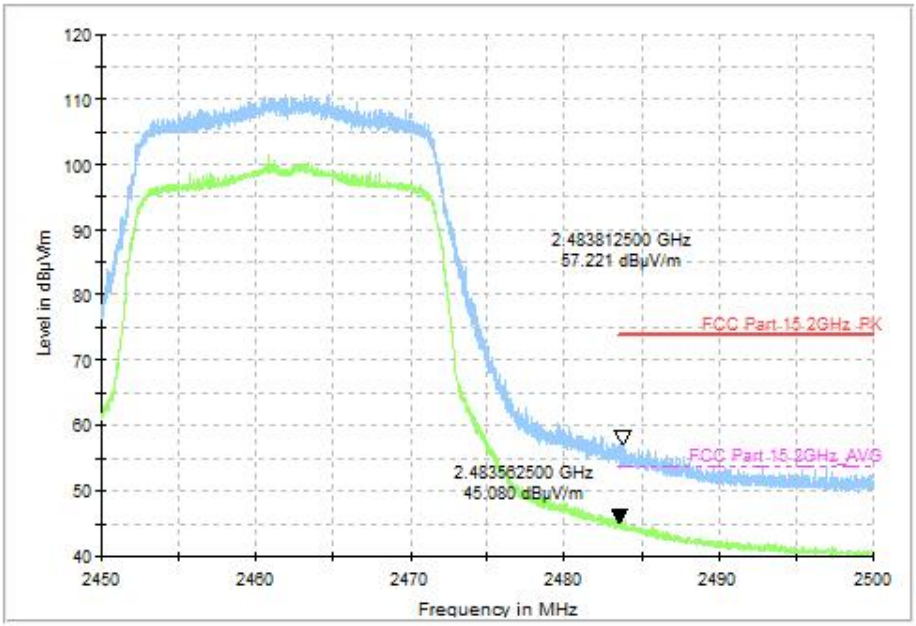

Fig.10 Radiated Restricted Band (802.11ax-HE20, CH11, 2.45GHz~2.50GHz, MIMO)

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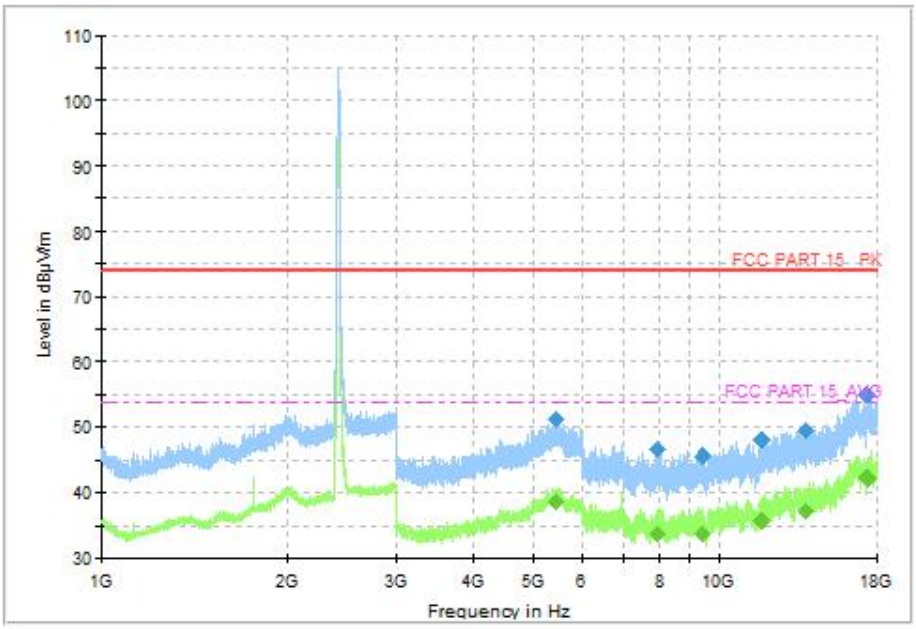

Fig.11 Radiated Spurious Emission (802.11n-HT40, CH3, 1GHz-18GHz, MIMO)

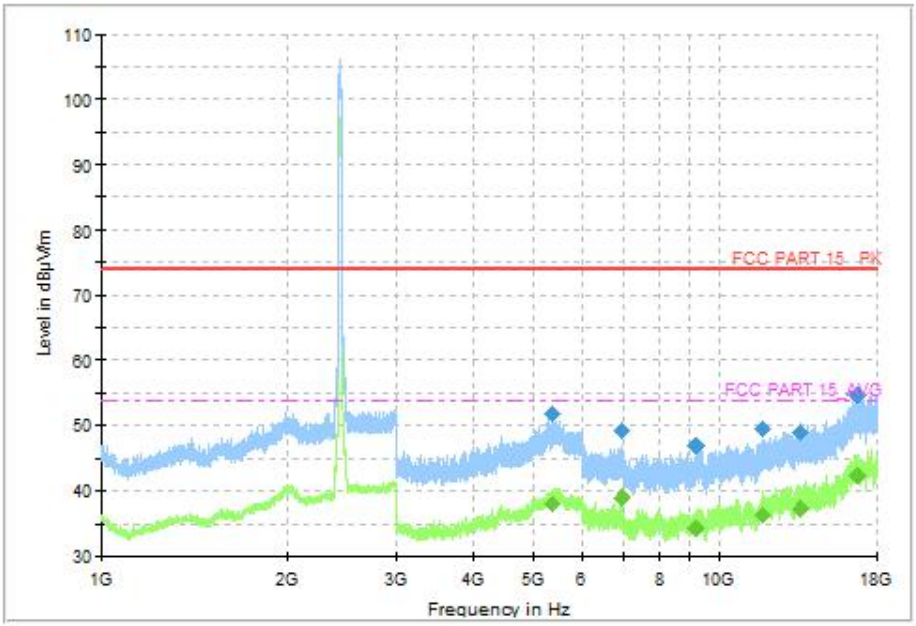

Fig.12 Radiated Spurious Emission (802.11n-HT40, CH6, 1GHz-18GHz, MIMO)

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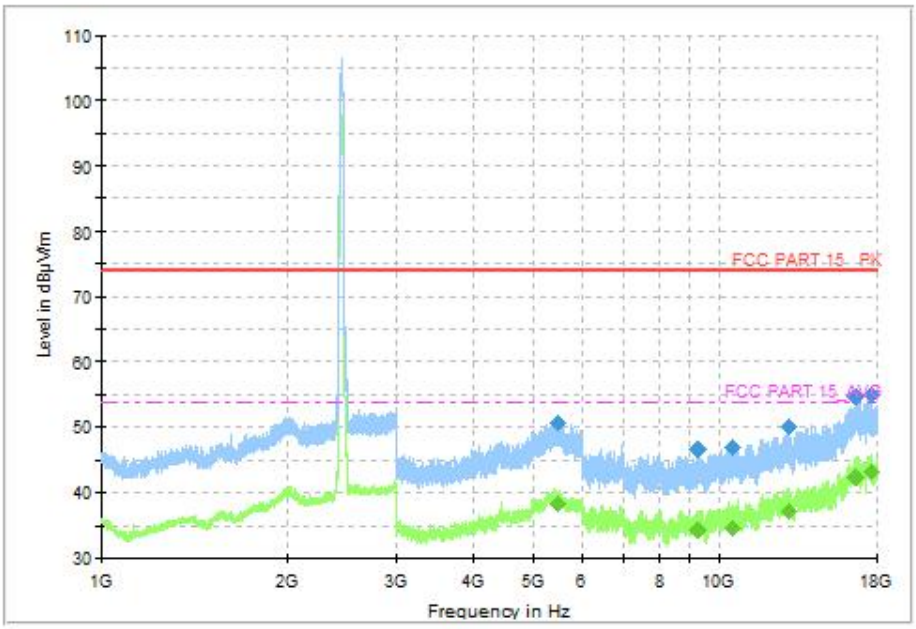

Fig.13 Radiated Spurious Emission (802.11n-HT40, CH9, 1GHz-18GHz, MIMO)

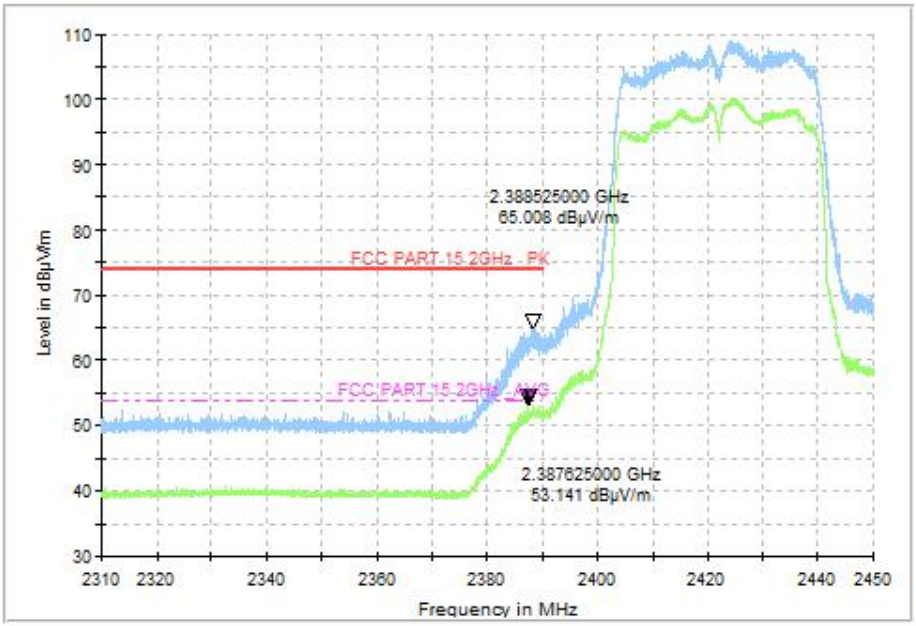

Fig.14 Radiated Restricted Band (802.11n-HT40, CH3, 2.38GHz~2.45GHz, MIMO)

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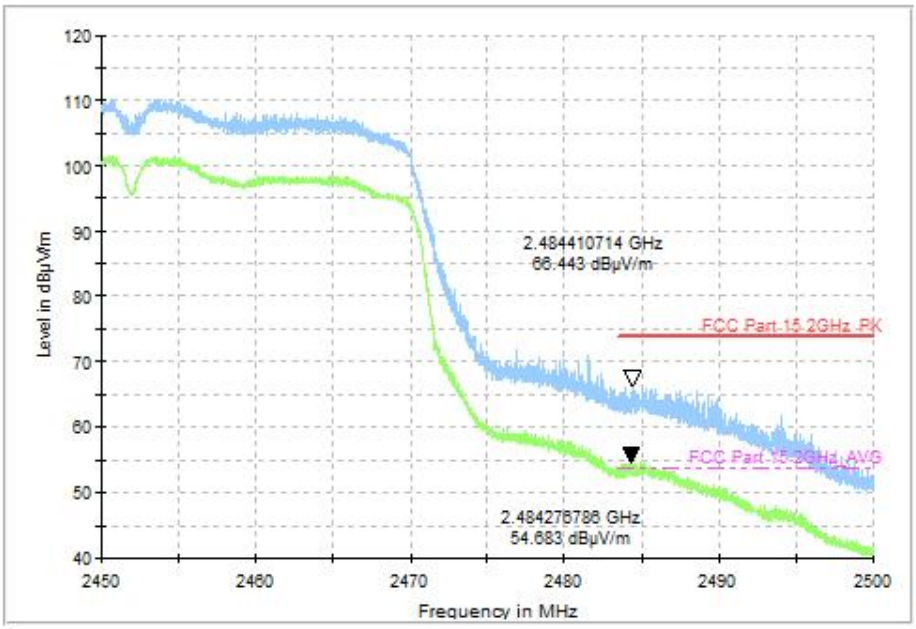

Fig.15 Radiated Restricted Band (802.11n-HT40, CH9, 2.45GHz~2.50GHz, MIMO)

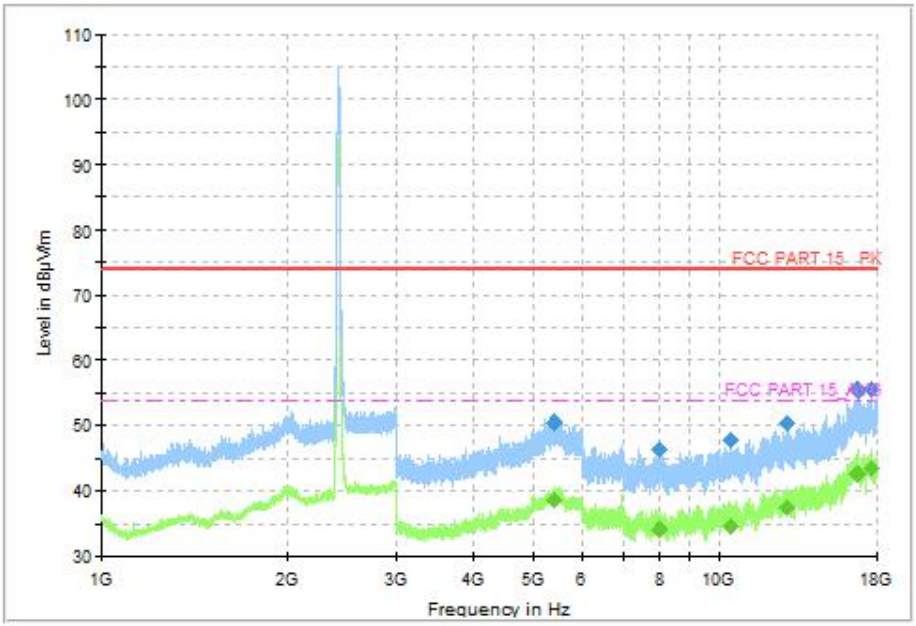

Fig.16 Radiated Spurious Emission (802.11ax-HE40, CH3, 1GHz-18GHz, MIMO)

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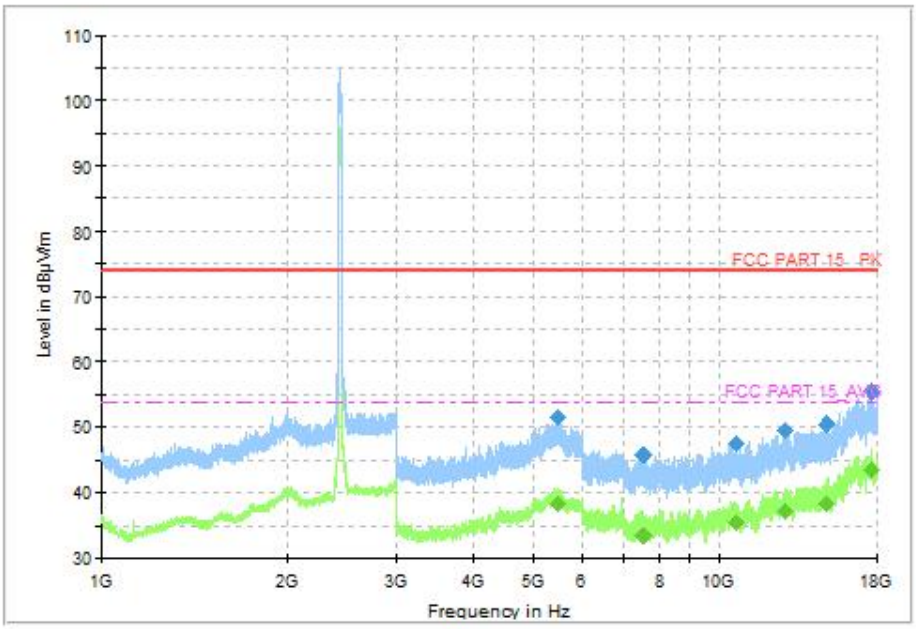

Fig.17 Radiated Spurious Emission (802.11ax-HE40, CH6, 1GHz-18GHz, MIMO)

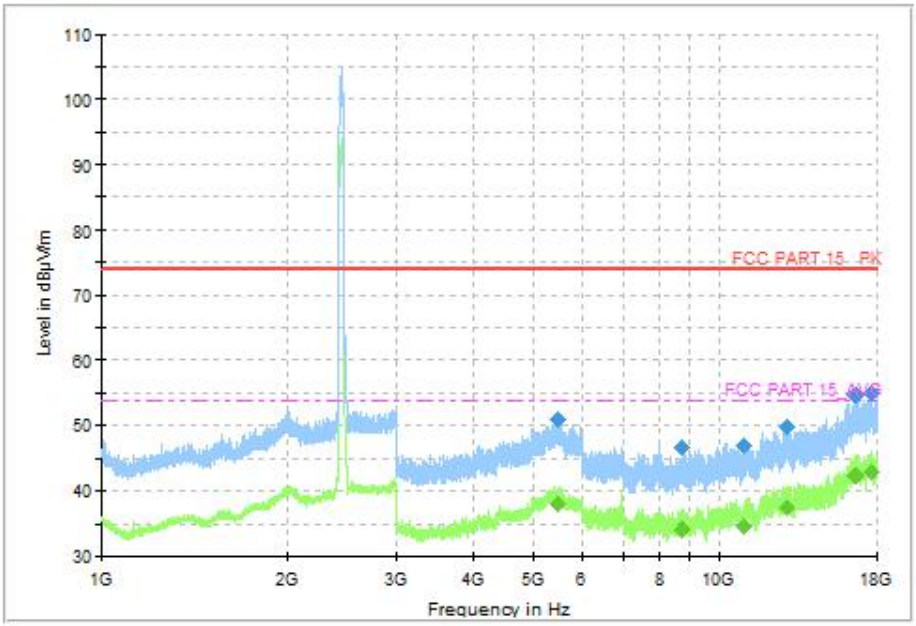

Fig.18 Radiated Spurious Emission (802.11ax-HE40, CH9, 1GHz-18GHz, MIMO)

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