

Fig.A.6.1.275 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch6, 1 GHz-2.5 GHz)

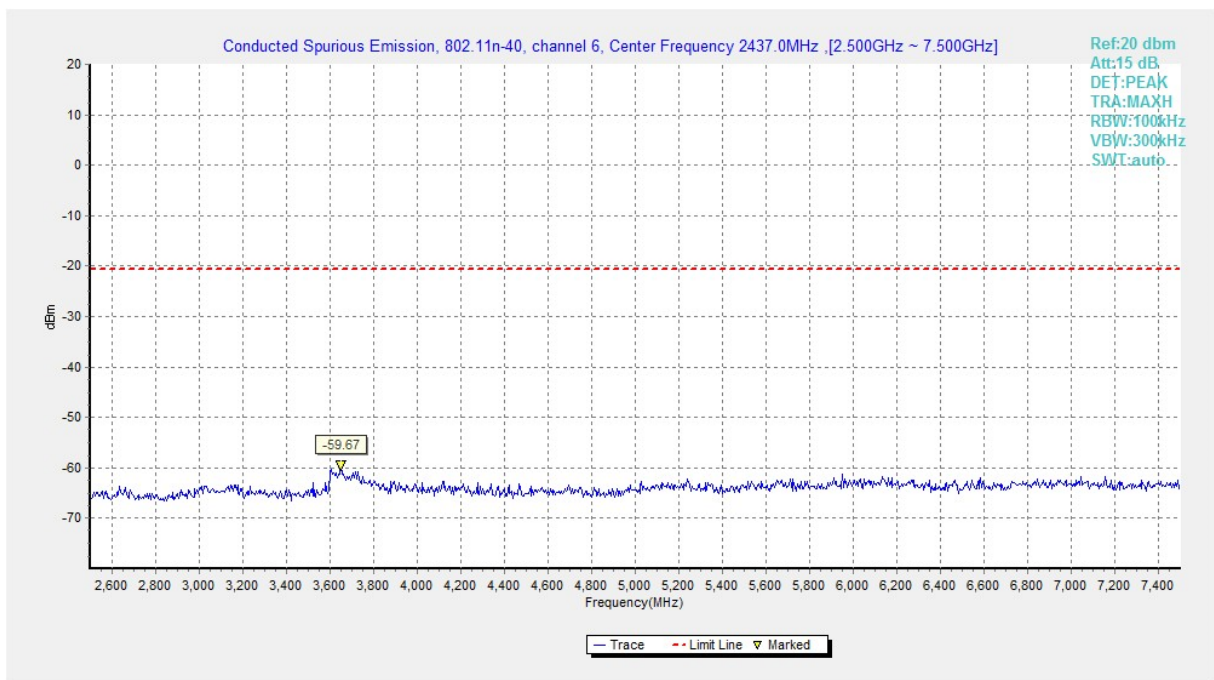


Fig.A.6.1.276 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch6, 2.5 GHz-7.5 GHz)

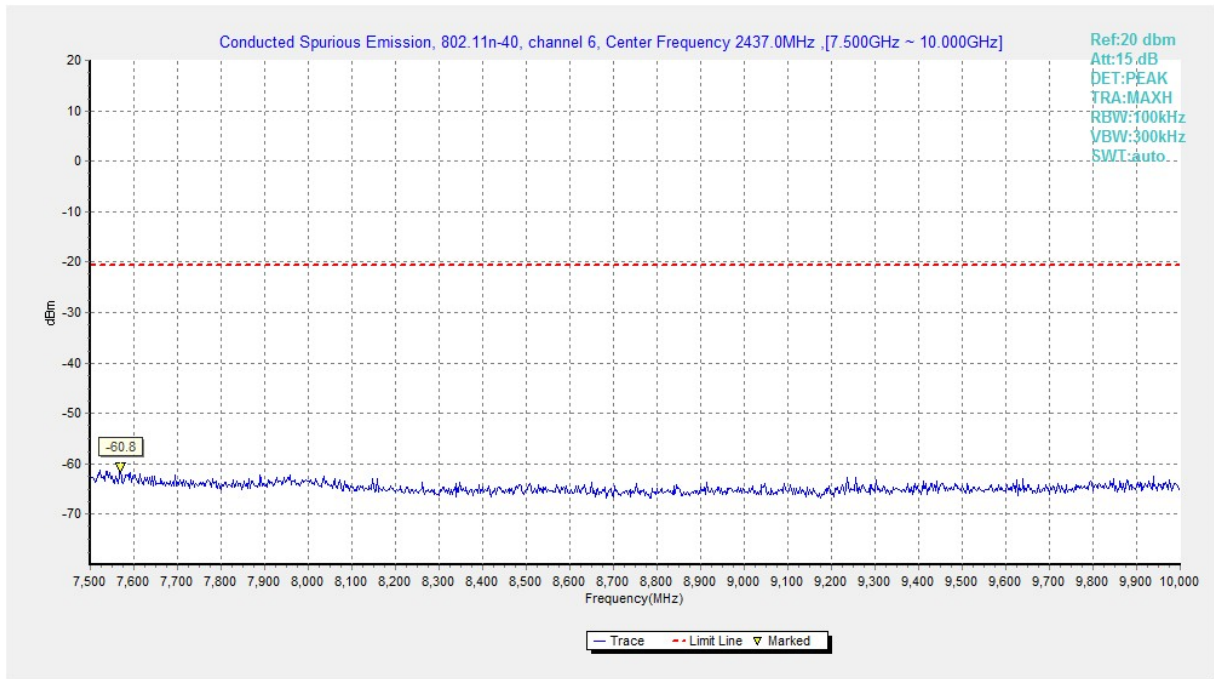


Fig.A.6.1.277 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch6, 7.5 GHz-10 GHz)

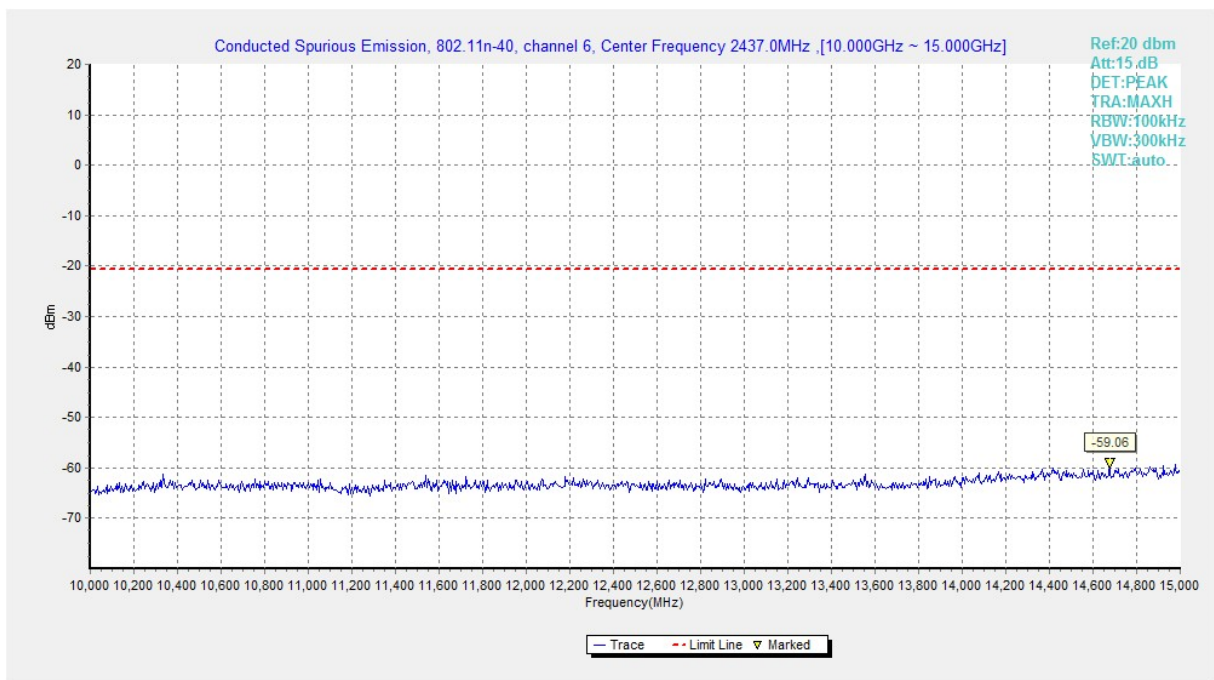


Fig.A.6.1.278 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch6, 10 GHz-15 GHz)

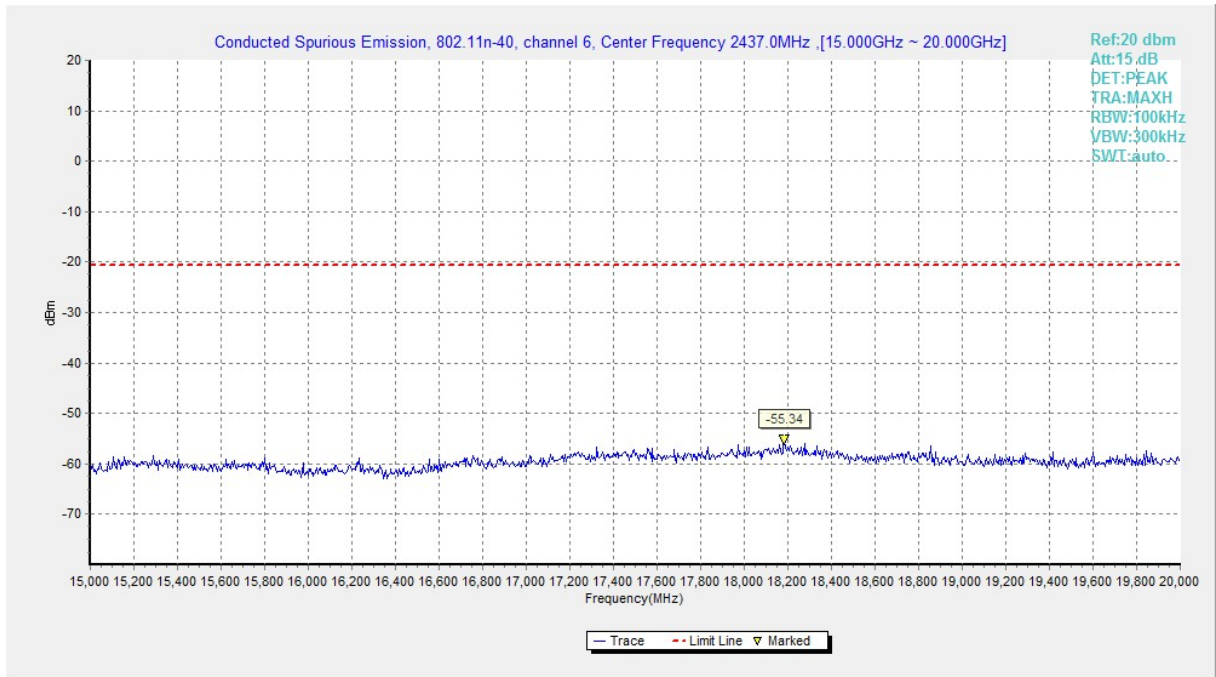


Fig.A.6.1.279 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch6, 15 GHz-20 GHz)

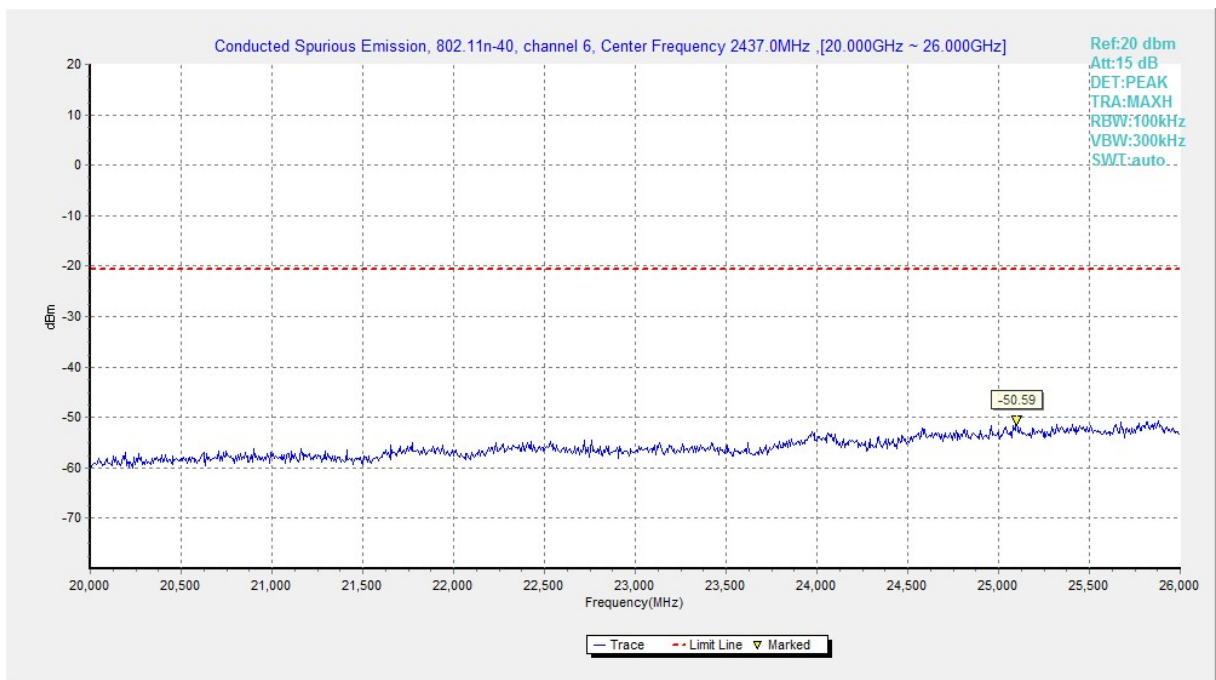


Fig.A.6.1.280 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch6, 20 GHz-26 GHz)

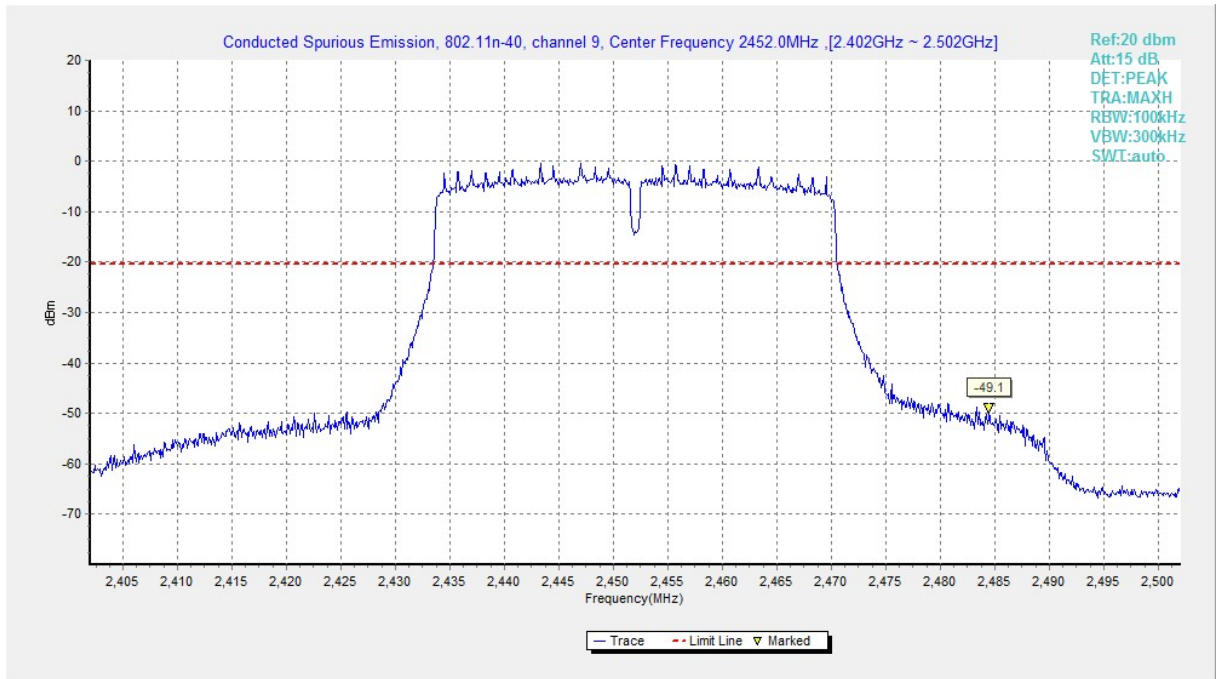


Fig.A.6.1.281 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, Center Frequency)

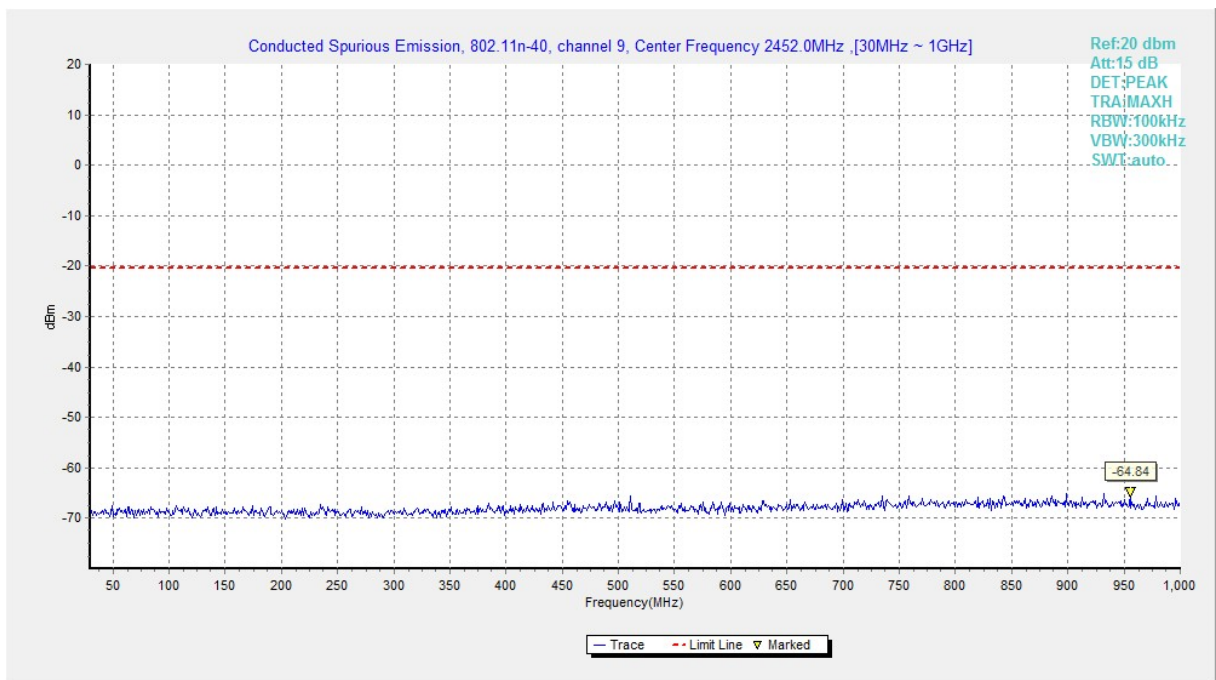


Fig.A.6.1.282 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 30 MHz-1 GHz)

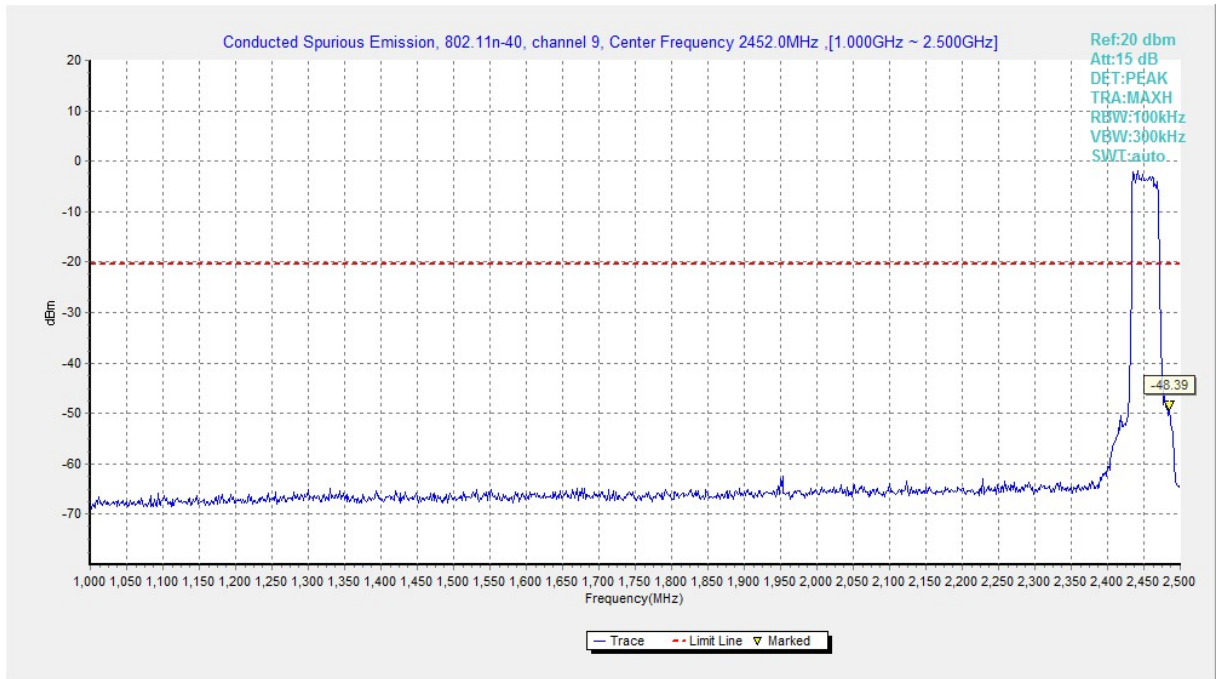


Fig.A.6.1.283 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 1 GHz-2.5 GHz)

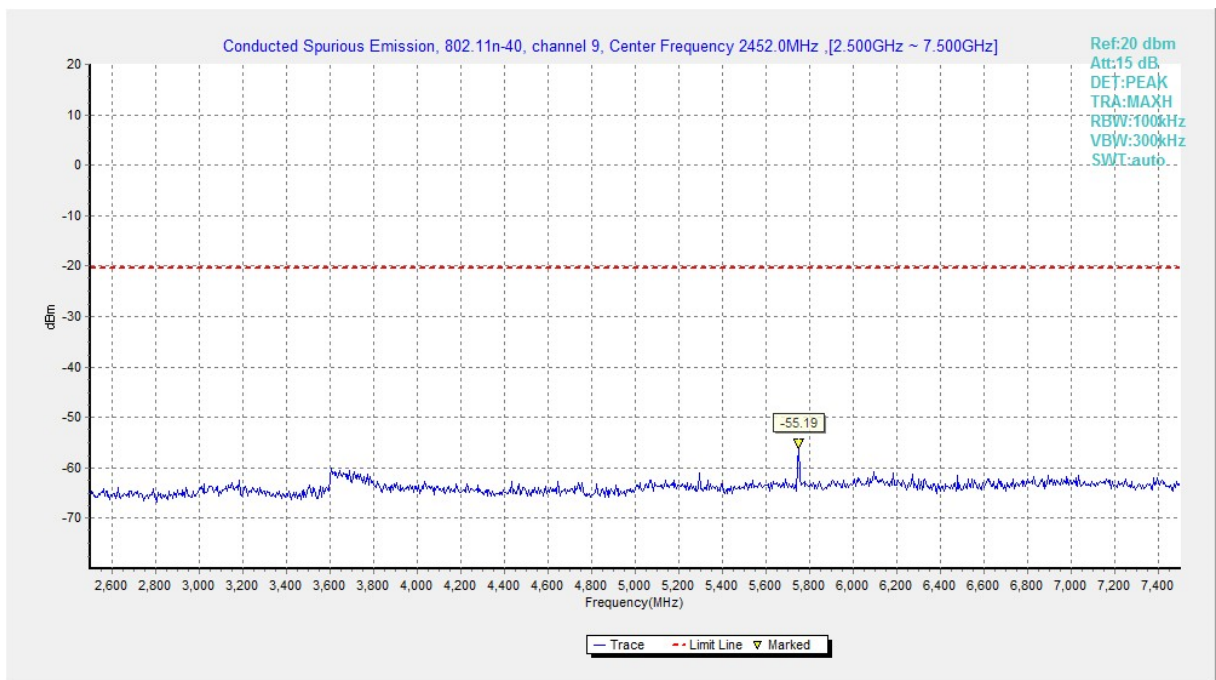


Fig.A.6.1.284 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 2.5 GHz-7.5 GHz)

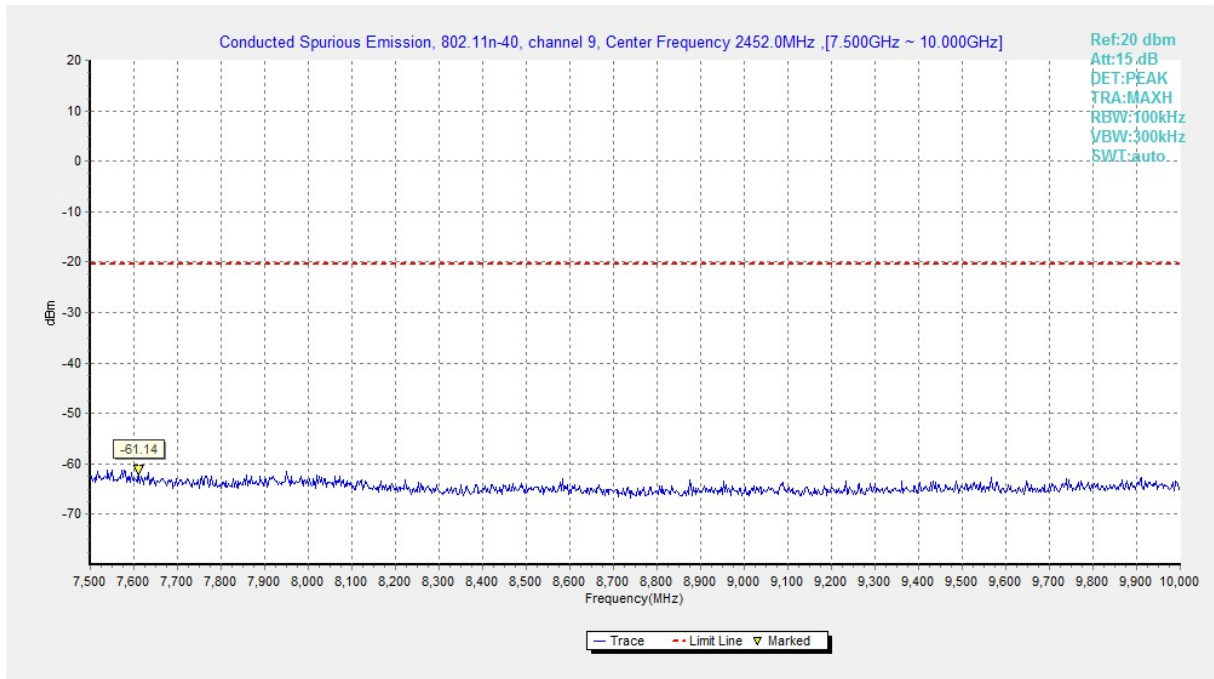


Fig.A.6.1.285 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 7.5 GHz-10 GHz)

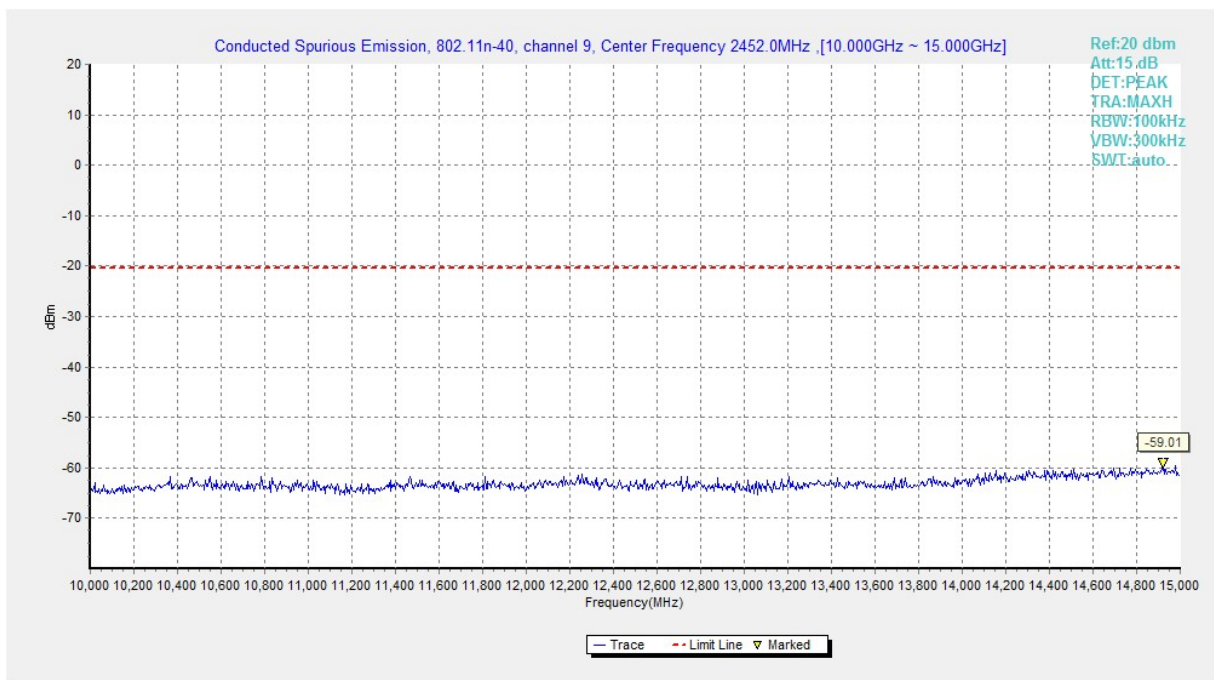


Fig.A.6.1.286 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 10 GHz-15 GHz)

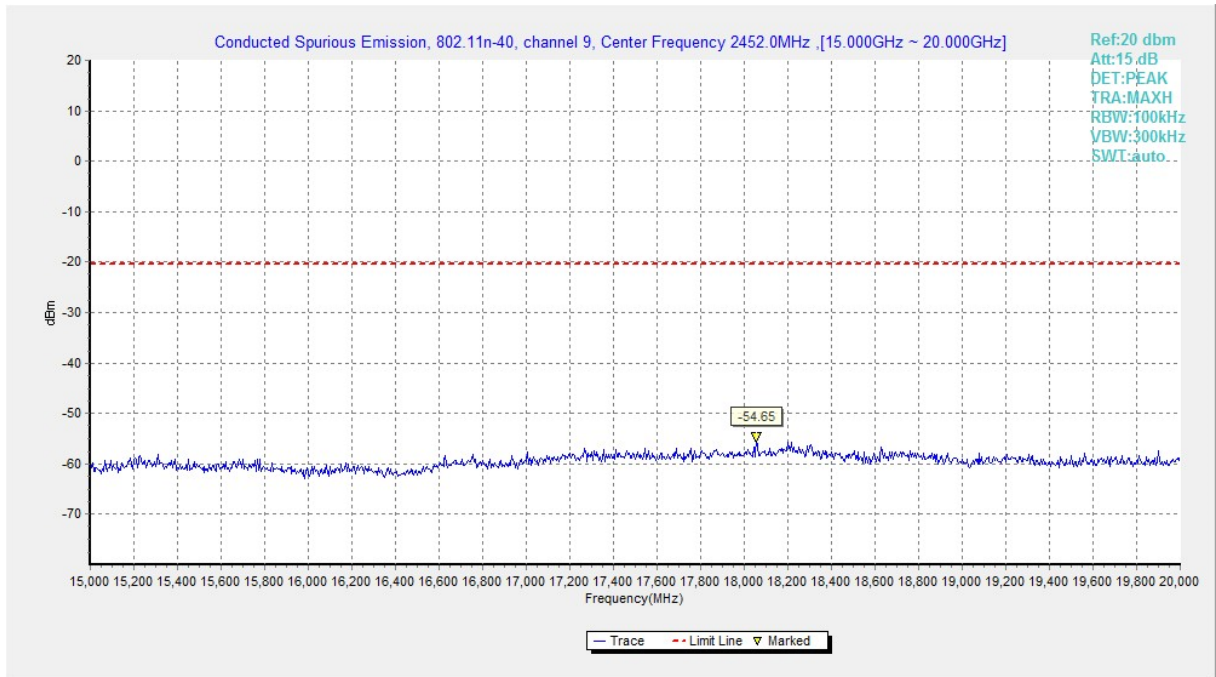


Fig.A.6.1.287 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 15 GHz-20 GHz)

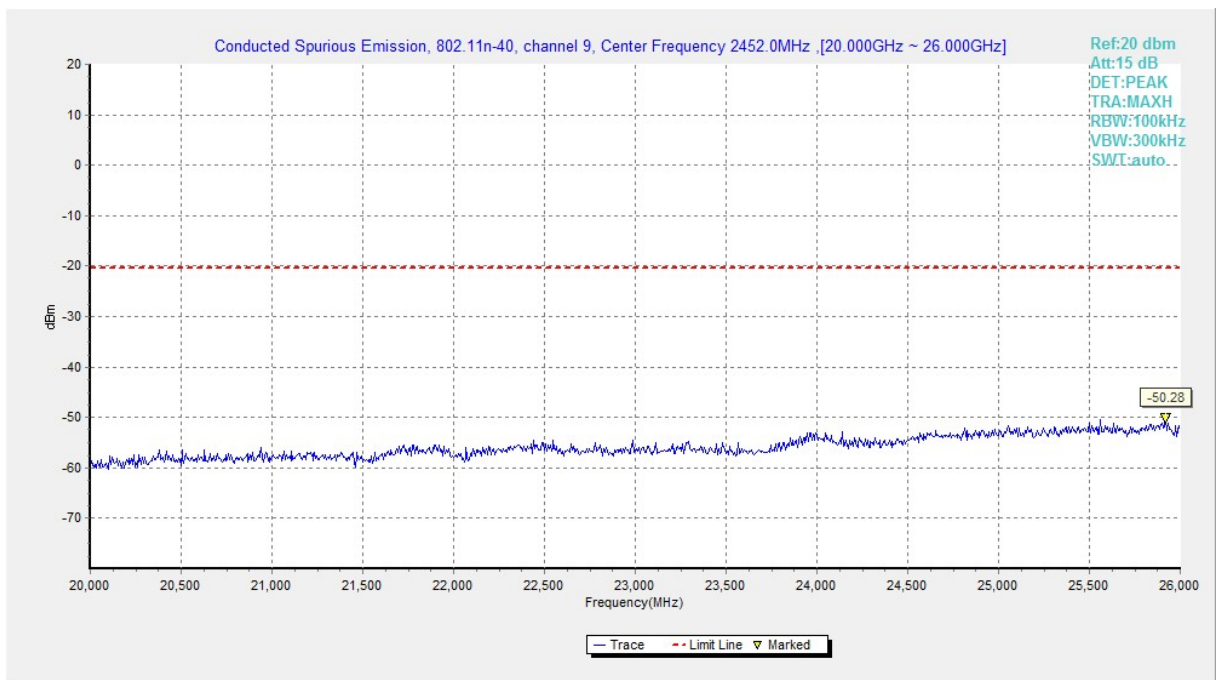


Fig.A.6.1.288 Transmitter Spurious Emission - Conducted (802.11n-HT40, Ch9, 20 GHz-26 GHz)

A.6.2 Transmitter Spurious Emission - Radiated

Method of Measurement: See ANSI C63.10-2013-clause 6.4 & 6.5 & 6.6

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	20dB 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(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Frequency (MHz)	Field strength(μV/m)	Measurement distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30

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	100kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

EUT ID: UT65a

Measurement results for Set.1:
802.11b MIMO mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	1	2.31GHz~2.43GHz---L	Fig.A.6.2.1	P
	11	2.45GHz~2.50GHz---H	Fig.A.6.2.2	P

802.11g MIMO mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11g	1	2.31GHz~2.43GHz---L	Fig.A.6.2.3	P
	10	2.45GHz~2.50GHz---H	Fig.A.6.2.4	P
	11	2.45GHz~2.50GHz---H	Fig.A.6.2.5	P

802.11n-HT20 MIMO mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	1	2.31GHz~2.43GHz---L	Fig.A.6.2.6	P
	10	2.45GHz~2.50GHz---H	Fig.A.6.2.7	P
	11	2.45GHz~2.50GHz---H	Fig.A.6.2.8	P

802.11n-HT40 MIMO mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT40)	3	2.31GHz~2.43GHz---L	Fig.A.6.2.9	P
	9	2.45GHz~2.50GHz---H	Fig.A.6.2.10	P

802.11ax-HT20 MIMO mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	1	2.31GHz~2.43GHz---L	Fig.A.6.2.11	P
	2	2.31GHz~2.43GHz---L	Fig.A.6.2.12	P
	10	2.45GHz~2.50GHz---H	Fig.A.6.2.13	P
	11	2.31GHz~2.43GHz---L	Fig.A.6.2.14	P

802.11ax-HT40 MIMO mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT40)	3	2.31GHz~2.43GHz---L	Fig.A.6.2.15	P
	9	2.45GHz~2.50GHz---H	Fig.A.6.2.16	P

Conclusion: Pass
Measurement results for Set.2:
802.11ax-HT20 MIMO mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	1	2.31GHz~2.43GHz---L	Fig.A.6.2.17	P
	11	2.31GHz~2.43GHz---L	Fig.A.6.2.18	P

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, 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:

$$\text{Result} = P_{Mea} + A_{Rpl} = P_{Mea} + \text{Cable Loss} + \text{Antenna Factor}$$

Peak

802.11b

Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17801.000	52.63	-25.50	46.70	31.43	74.00	21.37	H
14182.000	50.04	-29.00	42.00	37.04	74.00	23.96	V
12817.000	48.86	-30.70	39.10	40.36	74.00	25.14	H
9621.500	45.52	-33.10	38.00	40.62	74.00	28.48	H
7437.500	44.04	-35.20	36.70	42.44	74.00	29.96	V
2381.600	55.00	-20.00	28.10	47.00	74.00	19.00	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17239.000	53.48	-25.90	44.40	35.08	74.00	20.52	V
13748.500	50.15	-29.10	40.90	38.35	74.00	23.85	H
12545.500	47.94	-31.00	39.00	40.04	74.00	26.06	V
9725.500	45.92	-33.00	38.00	40.92	74.00	28.08	H
7686.500	44.47	-34.70	36.90	42.17	74.00	29.53	H
4934.500	39.33	-37.10	33.30	43.13	74.00	34.67	H

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17536.500	52.80	-26.90	45.20	34.40	74.00	21.20	H
14326.000	49.89	-28.40	42.30	35.99	74.00	24.11	V
12834.500	47.70	-30.70	39.10	39.20	74.00	26.30	H
9095.000	45.42	-33.80	38.10	41.02	74.00	28.58	V
7133.000	44.36	-35.40	36.30	43.46	74.00	29.64	H
2499.800	55.17	-20.00	28.40	46.77	74.00	18.83	H

802.11g
Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17587.000	52.18	-25.70	46.00	31.98	74.00	21.82	V
13666.500	50.36	-29.50	40.40	39.46	74.00	23.64	H
12923.500	48.62	-30.50	39.20	39.92	74.00	25.38	V
9693.000	45.86	-33.00	38.00	40.86	74.00	28.14	V
7415.500	44.84	-35.20	36.70	43.24	74.00	29.16	H
2389.800	64.59	-20.00	28.10	56.59	74.00	9.41	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17611.000	52.89	-25.70	46.00	32.69	74.00	21.11	H
13603.500	49.60	-29.50	40.40	38.70	74.00	24.40	V
12557.000	49.14	-31.00	39.00	41.24	74.00	24.86	H
9800.500	45.83	-33.50	38.00	41.33	74.00	28.17	V
7226.000	44.78	-35.50	36.40	43.88	74.00	29.22	H
4791.000	38.96	-37.30	33.00	43.16	74.00	35.04	H

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17608.000	52.50	-25.70	46.00	32.30	74.00	21.50	V
13613.500	50.10	-29.50	40.40	39.20	74.00	23.90	H
12815.000	47.33	-30.70	39.10	38.83	74.00	26.67	V
9210.500	45.36	-33.70	38.00	41.06	74.00	28.64	V
7985.000	44.40	-34.80	37.10	42.10	74.00	29.60	V
2485.400	55.54	-20.00	28.30	47.24	74.00	18.46	H

802.11n-HT20
Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17825.500	52.71	-25.50	46.70	31.51	74.00	21.29	H
13623.500	50.27	-29.50	40.40	39.37	74.00	23.73	H
12857.500	48.05	-30.70	39.10	39.55	74.00	25.95	V
9128.500	45.24	-33.80	38.10	41.04	74.00	28.76	H
7907.500	43.98	-34.90	37.10	41.78	74.00	30.02	V
2389.600	65.74	-20.00	28.10	57.74	74.00	8.26	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17999.000	52.82	-25.50	46.70	31.62	74.00	21.18	H
13767.000	50.81	-29.10	40.90	39.01	74.00	23.19	V
12848.500	48.56	-30.70	39.10	40.06	74.00	25.44	H
9963.000	45.51	-33.60	38.10	41.01	74.00	28.49	H
7223.000	44.39	-35.50	36.40	43.49	74.00	29.61	H
4957.000	39.20	-37.10	33.30	43.00	74.00	34.80	H

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17799.500	52.62	-25.50	46.70	31.42	74.00	21.38	V
13644.500	50.45	-29.50	40.40	39.55	74.00	23.55	V
12858.500	47.86	-30.70	39.10	39.36	74.00	26.14	V
9308.500	45.18	-33.90	38.00	41.08	74.00	28.82	V
7422.000	44.52	-35.20	36.70	42.92	74.00	29.48	V
2485.100	57.00	-20.00	28.30	48.70	74.00	17.00	H

802.11n-HT40
Ch3

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17999.000	52.90	-25.50	46.70	31.70	74.00	21.10	H
14188.500	49.74	-29.00	42.00	36.74	74.00	24.26	H
12438.500	47.52	-31.20	38.90	39.82	74.00	26.48	H
9838.500	45.17	-33.50	38.00	40.67	74.00	28.83	V
7439.500	43.88	-35.20	36.70	42.28	74.00	30.12	V
2389.100	60.08	-20.00	28.10	52.08	74.00	13.92	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17235.000	52.84	-25.90	44.40	34.44	74.00	21.16	H
13860.000	50.15	-29.50	41.30	38.35	74.00	23.85	V
12457.000	47.98	-31.20	38.90	40.28	74.00	26.02	H
9204.000	45.46	-33.70	38.00	41.16	74.00	28.54	H
7786.500	44.40	-35.10	37.00	42.50	74.00	29.60	H
4959.500	39.07	-37.10	33.30	42.87	74.00	34.93	H

Ch9

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17391.000	53.01	-26.90	45.20	34.61	74.00	20.99	H
13652.500	50.28	-29.50	40.40	39.38	74.00	23.72	H
12687.000	47.42	-30.50	39.10	38.82	74.00	26.58	V
8960.000	45.34	-33.30	38.20	40.44	74.00	28.66	H
7260.500	43.87	-35.00	36.50	42.27	74.00	30.13	V
2485.100	57.64	-20.00	28.30	49.34	74.00	16.36	H

802.11ax-HT20

Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17983.100	51.24	-25.50	46.70	30.04	74.00	22.76	V
14000.200	47.12	-29.40	41.70	34.92	74.00	26.88	H
12178.100	46.77	-31.40	39.00	39.17	74.00	27.23	V
7551.100	42.65	-35.00	36.90	40.85	74.00	31.35	H
8060.600	42.42	-34.70	37.20	39.92	74.00	31.58	V
2389.700	58.08	-20.00	28.10	50.08	74.00	15.92	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
16858.100	50.65	-26.60	41.50	35.75	74.00	23.35	H
12813.300	47.14	-30.70	39.10	38.64	74.00	26.86	H
12197.800	46.48	-31.40	39.00	38.88	74.00	27.52	V
7987.000	42.94	-34.80	37.10	40.64	74.00	31.06	H
7457.300	41.93	-35.20	36.70	40.33	74.00	32.07	H
4762.000	37.77	-37.30	33.00	42.07	74.00	36.23	V

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
16836.100	50.63	-26.60	41.50	35.73	74.00	23.37	H
12580.800	46.90	-31.00	39.00	39.00	74.00	27.10	H
12177.700	46.52	-31.40	39.00	38.92	74.00	27.48	V
8015.200	44.33	-34.70	37.20	41.83	74.00	29.67	V
7456.900	41.71	-35.20	36.70	40.11	74.00	32.29	V
2485.000	57.81	-20.00	28.30	49.51	74.00	16.19	H

802.11ax-HT40

Ch3

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17426.000	52.41	-26.90	45.20	34.01	74.00	21.59	H
13670.000	50.33	-29.50	40.40	39.43	74.00	23.67	V
12905.500	47.88	-30.50	39.20	39.18	74.00	26.12	V
9218.000	46.33	-33.70	38.00	42.03	74.00	27.67	V
7895.500	44.19	-34.90	37.10	41.99	74.00	29.81	H
2389.900	61.08	-20.00	28.10	53.08	74.00	12.92	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17779.500	53.45	-25.50	46.70	32.25	74.00	20.55	V
13634.000	50.06	-29.50	40.40	39.16	74.00	23.94	V
12920.000	48.45	-30.50	39.20	39.75	74.00	25.55	H
8825.000	45.45	-33.90	38.10	41.25	74.00	28.55	H
7995.000	44.52	-34.80	37.10	42.22	74.00	29.48	H
4377.000	39.19	-37.90	32.40	44.69	74.00	34.81	V

Ch9

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17738.500	53.76	-25.50	46.70	32.56	74.00	20.24	H
14173.000	50.50	-29.00	42.00	37.50	74.00	23.50	H
12456.500	47.70	-31.20	38.90	40.00	74.00	26.30	V
8831.000	45.31	-33.90	38.10	41.11	74.00	28.69	V
7426.500	43.96	-35.20	36.70	42.36	74.00	30.04	H
2486.300	60.22	-20.00	28.30	51.92	74.00	13.78	H

Average
802.11b
Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17623.500	41.55	-25.70	46.00	21.35	54.00	12.45	V
13647.500	39.08	-29.50	40.40	28.18	54.00	14.92	V
12850.500	36.74	-30.70	39.10	28.24	54.00	17.26	H
8766.000	34.10	-33.90	38.10	29.90	54.00	19.90	H
7998.000	33.10	-34.80	37.10	30.80	54.00	20.90	H
2369.900	43.23	-20.10	28.00	35.23	54.00	10.77	V

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17977.500	41.42	-25.50	46.70	20.22	54.00	12.58	H
13655.500	38.87	-29.50	40.40	27.97	54.00	15.13	H
12451.500	36.54	-31.20	38.90	28.84	54.00	17.46	V
8811.500	34.23	-33.90	38.10	30.03	54.00	19.77	V
7999.500	33.17	-34.80	37.10	30.87	54.00	20.83	V
4934.000	27.86	-37.10	33.30	31.66	54.00	26.14	H

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17624.000	41.46	-25.70	46.00	21.26	54.00	12.54	V
13631.000	39.16	-29.50	40.40	28.26	54.00	14.84	H
12449.000	36.99	-31.20	38.90	29.29	54.00	17.01	V
9715.500	34.16	-33.00	38.00	29.16	54.00	19.84	V
7218.500	32.96	-35.50	36.40	32.06	54.00	21.04	V
2486.200	44.35	-20.00	28.30	36.05	54.00	9.65	H

802.11g

Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17968.500	41.58	-25.50	46.70	20.38	54.00	12.42	V
13660.500	38.97	-29.50	40.40	28.07	54.00	15.03	V
12837.000	36.53	-30.70	39.10	28.03	54.00	17.47	H
9622.000	33.99	-33.10	38.00	29.09	54.00	20.01	V
7031.000	32.92	-35.40	36.20	32.02	54.00	21.08	V
2389.900	51.06	-20.00	28.10	43.06	54.00	2.94	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17614.000	41.54	-25.70	46.00	21.34	54.00	12.46	V
13769.500	38.97	-29.10	40.90	27.17	54.00	15.03	H
12909.000	36.61	-30.50	39.20	27.91	54.00	17.39	V
9310.500	34.56	-33.90	38.00	30.46	54.00	19.44	V
7995.000	32.84	-34.80	37.10	30.54	54.00	21.16	V
4934.500	27.83	-37.10	33.30	31.63	54.00	26.17	V

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17601.500	41.32	-25.70	46.00	21.12	54.00	12.68	V
13649.500	38.82	-29.50	40.40	27.92	54.00	15.18	H
12858.000	36.56	-30.70	39.10	28.06	54.00	17.44	H
9719.500	34.03	-33.00	38.00	29.03	54.00	19.97	H
7326.500	32.98	-35.10	36.60	31.48	54.00	21.02	H
2485.400	44.14	-20.00	28.30	35.84	54.00	9.86	H

802.11n-HT20
Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17802.500	41.43	-25.50	46.70	20.23	54.00	12.57	H
13624.500	38.96	-29.50	40.40	28.06	54.00	15.04	H
12855.500	36.75	-30.70	39.10	28.25	54.00	17.25	H
9717.000	34.21	-33.00	38.00	29.21	54.00	19.79	H
7224.000	32.89	-35.50	36.40	31.99	54.00	21.11	V
2390.000	52.69	-20.00	28.10	44.69	54.00	1.31	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17999.000	41.58	-25.50	46.70	20.38	54.00	12.42	H
13678.000	38.80	-29.50	40.40	27.90	54.00	15.20	H
12994.000	36.59	-30.50	39.20	27.89	54.00	17.41	H
9718.000	34.16	-33.00	38.00	29.16	54.00	19.84	H
7254.500	33.13	-35.00	36.50	31.53	54.00	20.87	V
4890.500	27.93	-37.20	33.20	31.93	54.00	26.07	V

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17993.000	41.65	-25.50	46.70	20.45	54.00	12.35	V
13771.000	38.75	-29.10	40.90	26.95	54.00	15.25	V
12993.000	36.59	-30.50	39.20	27.89	54.00	17.41	H
9230.500	34.35	-33.70	38.00	30.05	54.00	19.65	H
7217.000	32.84	-35.50	36.40	31.94	54.00	21.16	V
2485.300	44.71	-20.00	28.30	36.41	54.00	9.29	H

802.11n-HT40
Ch3

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17706.000	41.32	-25.70	46.00	21.12	54.00	12.68	H
14216.500	38.79	-29.00	42.00	25.79	54.00	15.21	V
12779.000	36.65	-30.70	39.10	28.15	54.00	17.35	V
9234.500	34.15	-33.70	38.00	29.85	54.00	19.85	H
7997.000	32.92	-34.80	37.10	30.62	54.00	21.08	V
2390.000	49.07	-20.00	28.10	41.07	54.00	4.93	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17620.500	41.35	-25.70	46.00	21.15	54.00	12.65	V
13642.500	39.03	-29.50	40.40	28.13	54.00	14.97	V
12557.500	36.50	-31.00	39.00	28.60	54.00	17.50	H
9716.000	34.39	-33.00	38.00	29.39	54.00	19.61	V
7992.000	32.89	-34.80	37.10	30.59	54.00	21.11	H
4811.500	27.96	-37.30	33.00	32.16	54.00	26.04	H

Ch9

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17784.500	41.61	-25.50	46.70	20.41	54.00	12.39	H
13745.000	39.24	-29.10	40.90	27.44	54.00	14.76	H
12992.000	36.58	-30.50	39.20	27.88	54.00	17.42	H
9858.500	34.13	-33.50	38.00	29.63	54.00	19.87	V
7997.000	33.00	-34.80	37.10	30.70	54.00	21.00	H
2486.700	45.35	-20.00	28.30	37.05	54.00	8.65	H

802.11ax-HT20
Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
16861.400	41.33	-26.60	41.50	26.43	54.00	12.67	H
12218.400	37.25	-31.40	39.00	29.65	54.00	16.75	V
12839.500	37.17	-30.70	39.10	28.67	54.00	16.83	H
8008.100	33.60	-34.70	37.20	31.10	54.00	20.40	H
7431.600	32.89	-35.20	36.70	31.29	54.00	21.11	H
2389.900	45.88	-20.00	28.10	37.88	54.00	8.12	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
16864.700	41.46	-26.60	41.50	26.56	54.00	12.54	V
12814.700	37.41	-30.70	39.10	28.91	54.00	16.59	V
12250.300	36.91	-31.40	39.00	29.31	54.00	17.09	V
8004.800	33.16	-34.70	37.20	30.66	54.00	20.84	V
7447.000	32.80	-35.20	36.70	31.20	54.00	21.20	H
4768.600	27.98	-37.30	33.00	32.28	54.00	26.02	H

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
16861.900	41.27	-26.60	41.50	26.37	54.00	12.73	H
12562.000	37.58	-31.00	39.00	29.68	54.00	16.42	H
12216.100	37.02	-31.40	39.00	29.42	54.00	16.98	H
8036.700	33.08	-34.70	37.20	30.58	54.00	20.92	H
7467.200	32.87	-34.50	36.80	30.57	54.00	21.13	V
2485.300	44.94	-20.00	28.30	36.64	54.00	9.06	H

802.11ax-HT40
Ch3

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17997.500	41.37	-25.50	46.70	20.17	54.00	12.63	H
13583.000	38.97	-29.50	40.40	28.07	54.00	15.03	H
12870.500	36.53	-30.70	39.10	28.03	54.00	17.47	V
9312.500	34.42	-33.90	38.00	30.32	54.00	19.58	H
7418.500	32.78	-35.20	36.70	31.18	54.00	21.22	H
2389.800	48.52	-20.00	28.10	40.52	54.00	5.48	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17399.500	41.36	-26.90	45.20	22.96	54.00	12.64	H
13648.500	39.09	-29.50	40.40	28.19	54.00	14.91	H
12886.500	36.74	-30.70	39.10	28.24	54.00	17.26	V
9711.000	34.21	-33.00	38.00	29.21	54.00	19.79	H
7220.500	32.82	-35.50	36.40	31.92	54.00	21.18	V
4683.500	27.91	-37.40	32.90	32.41	54.00	26.09	H

Ch9

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17692.500	41.53	-25.70	46.00	21.33	54.00	12.47	V
13742.500	39.04	-29.10	40.90	27.24	54.00	14.96	H
12913.000	36.62	-30.50	39.20	27.92	54.00	17.38	V
8640.000	34.02	-34.40	37.90	30.42	54.00	19.98	V
7224.500	33.27	-35.50	36.40	32.37	54.00	20.73	H
2485.400	46.24	-20.00	28.30	37.94	54.00	7.76	H

Measurement Results for UT18a MIMO:
Pesk
Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17878.50	52.77	-25.50	46.70	31.57	74.00	21.23	V
14966.50	49.60	-28.60	40.80	37.40	74.00	24.40	H
12074.50	49.16	-31.60	39.00	41.76	74.00	24.84	V
8261.00	43.12	-35.00	37.60	40.52	74.00	30.88	V
7992.00	43.10	-34.80	37.10	40.80	74.00	30.90	V
2389.90	66.73	-20.00	28.10	58.73	74.00	7.27	V

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17962.00	52.52	-25.50	46.70	31.32	74.00	21.48	H
14882.00	50.18	-28.60	40.80	37.98	74.00	23.82	H
12541.50	49.08	-31.00	39.00	41.18	74.00	24.92	V
9282.50	43.48	-33.70	38.00	39.18	74.00	30.52	V
7994.50	42.44	-34.80	37.10	40.14	74.00	31.56	V
4547.50	37.83	-37.50	32.60	42.73	74.00	36.17	V

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17955.50	52.84	-25.50	46.70	31.64	74.00	21.16	V
14762.00	48.89	-28.30	41.30	35.89	74.00	25.11	V
12677.50	48.59	-30.50	39.10	39.99	74.00	25.41	V
8122.00	43.69	-34.60	37.30	40.89	74.00	30.31	V
7983.00	42.70	-34.80	37.10	40.40	74.00	31.30	V
2485.20	61.92	-20.00	28.30	53.62	74.00	12.08	V

Measurement Results for UT18a MIMO:
Average
Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17966.00	42.94	-25.50	46.70	21.74	54.00	11.06	H
14899.50	39.15	-28.60	40.80	26.95	54.00	14.85	H
12561.00	39.05	-31.00	39.00	31.15	54.00	14.95	V
9200.00	33.49	-33.70	38.00	29.19	54.00	20.51	V
7997.00	32.80	-34.80	37.10	30.50	54.00	21.20	V
2389.90	51.97	-20.00	28.10	43.97	54.00	2.03	V

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17871.50	43.00	-25.50	46.70	21.80	54.00	11.00	V
14995.50	39.64	-27.90	40.20	27.24	54.00	14.36	H
12560.00	38.80	-31.00	39.00	30.90	54.00	15.20	V
8173.50	33.38	-35.20	37.40	31.08	54.00	20.62	H
7994.50	33.06	-34.80	37.10	30.76	54.00	20.94	V
4562.00	28.14	-37.50	32.60	33.04	54.00	25.86	V

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17977.50	42.99	-25.50	46.70	21.79	54.00	11.01	V
14911.50	39.42	-28.60	40.80	27.22	54.00	14.58	H
12541.00	38.98	-31.00	39.00	31.08	54.00	15.02	H
8256.00	33.63	-35.00	37.60	31.03	54.00	20.37	H
7991.00	33.05	-34.80	37.10	30.75	54.00	20.95	V
2485.00	49.62	-20.00	28.30	41.32	54.00	4.38	V

Test graphs as below:

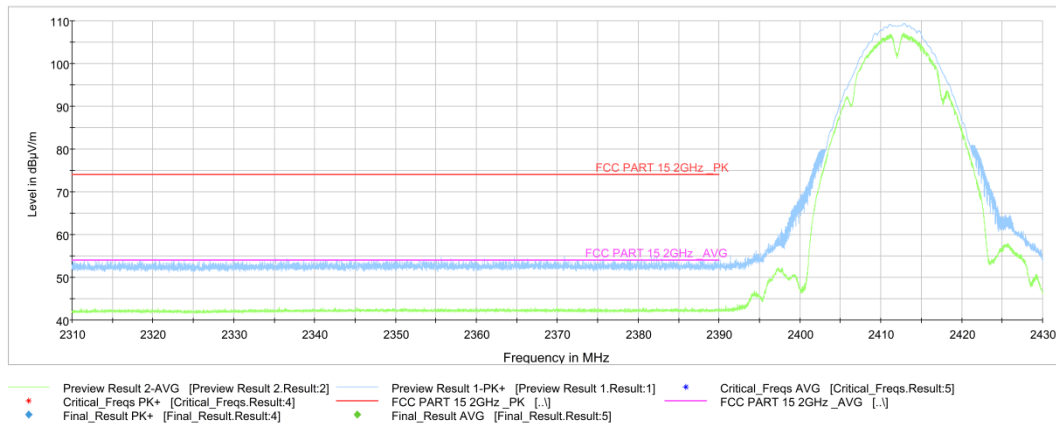


Fig.A.6.2.1 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch1, 2.31 GHz – 2.43GHz

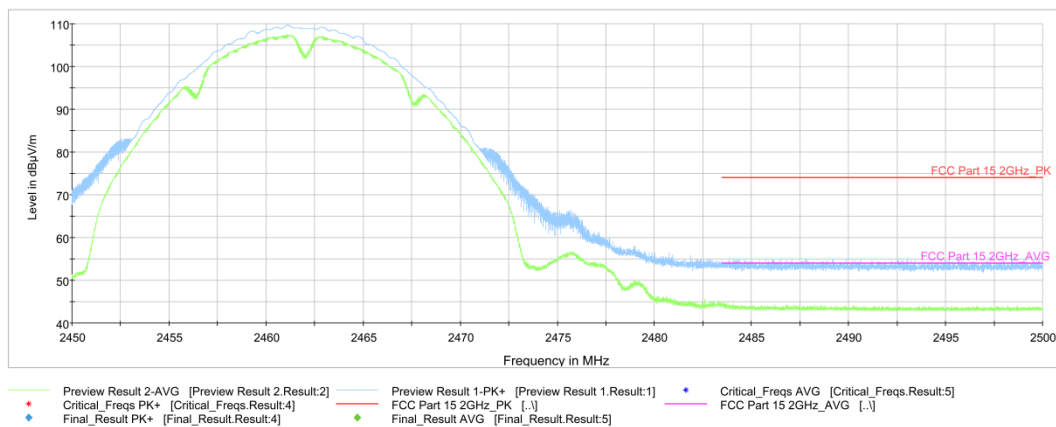


Fig.A.6.2.2 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch11, 2.45 GHz - 2.50GHz

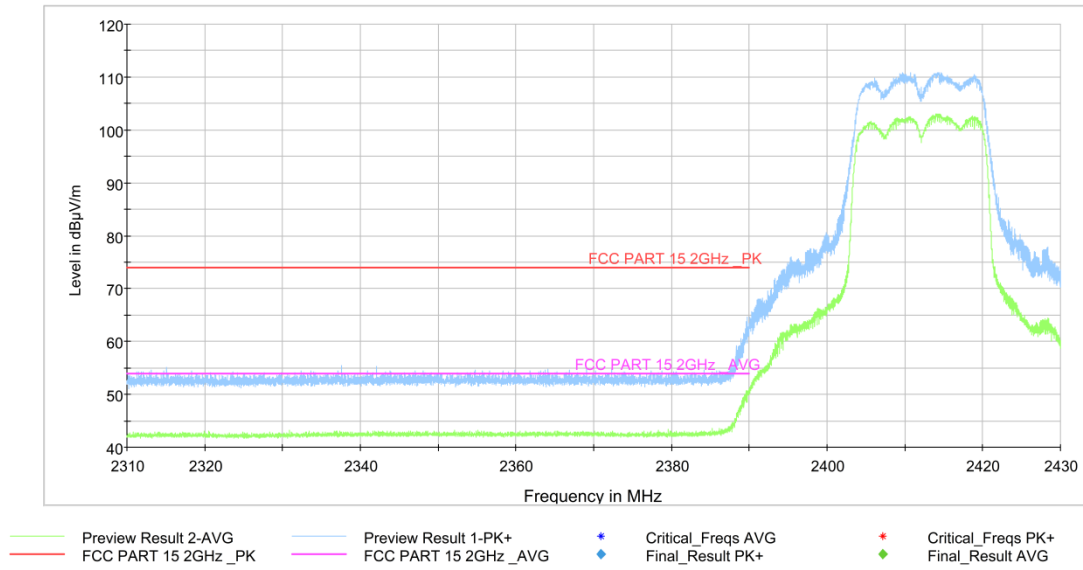


Fig.A.6.2.3 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch1, 2.31 GHz - 2.43GHz

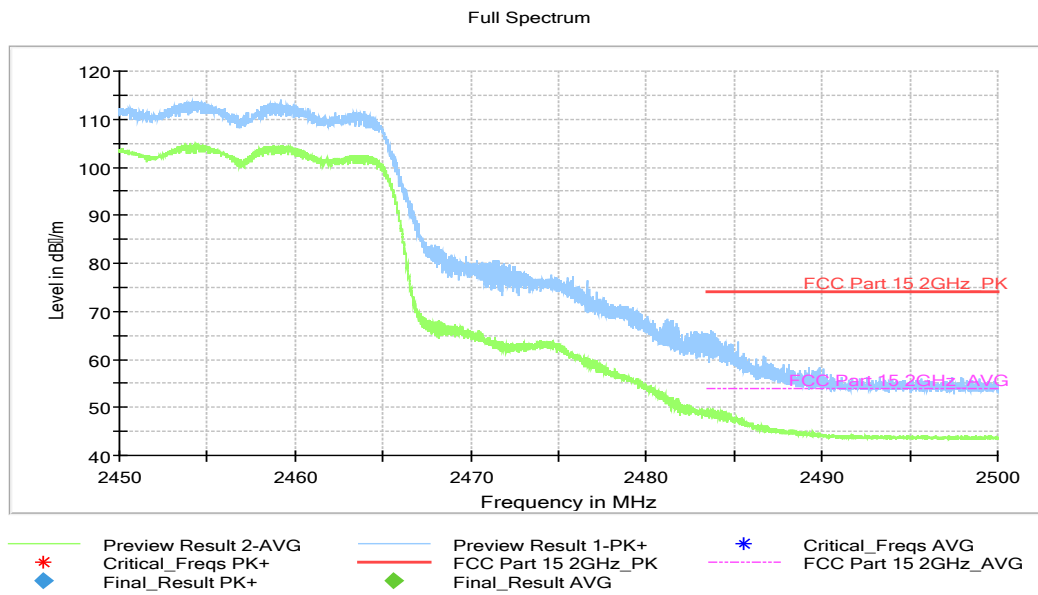


Fig.A.6.2.4 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch10, 2.45 GHz - 2.50GHz

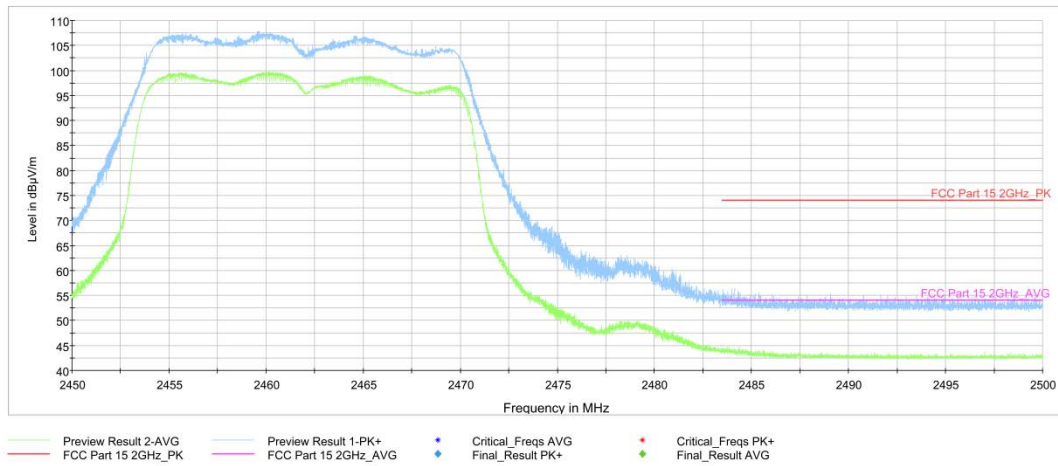


Fig.A.6.2.5 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch11, 2.45 GHz - 2.50GHz

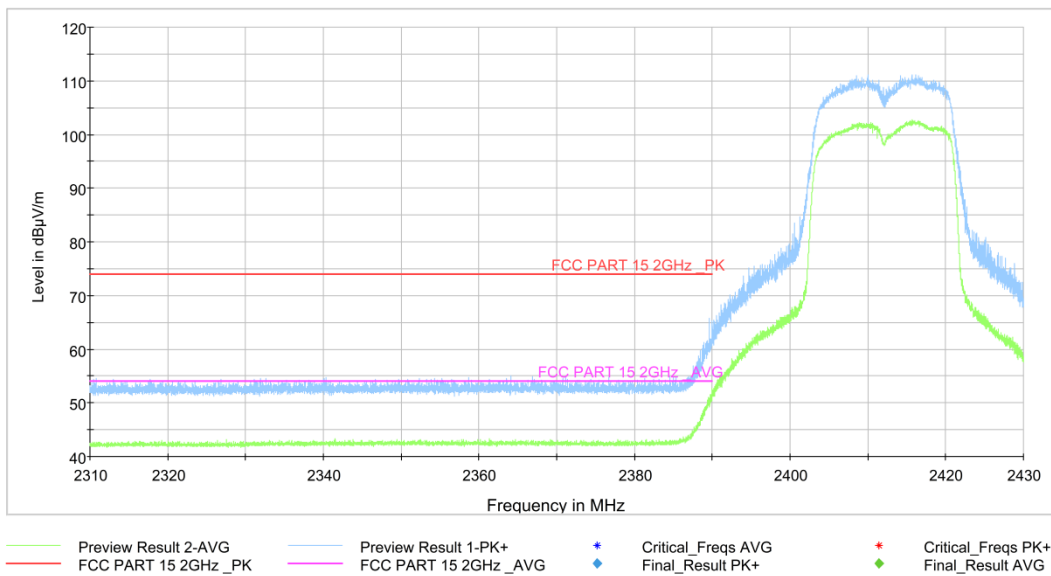


Fig.A.6.2.6 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch1, 2.31 GHz - 2.43GHz

Full Spectrum

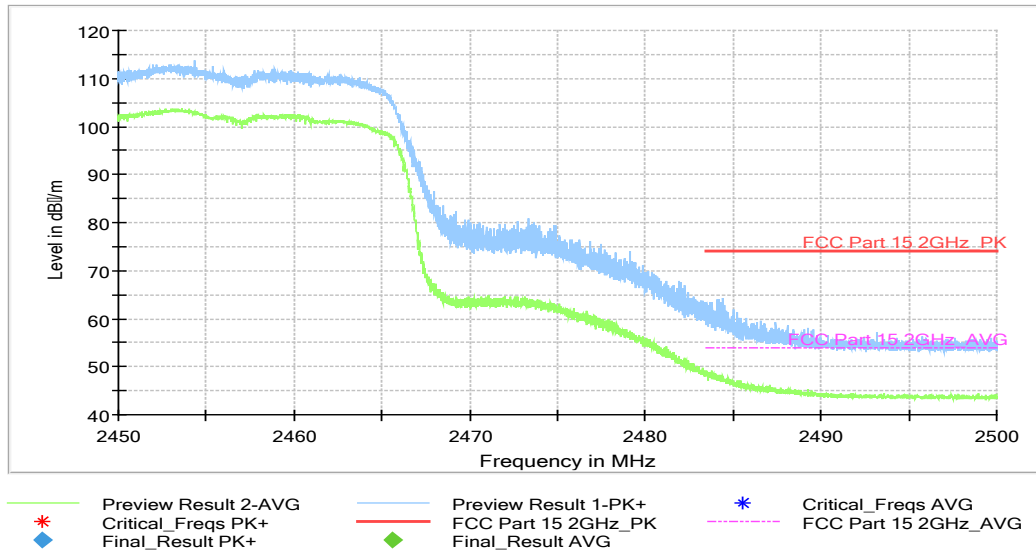


Fig.A.6.2.7 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch10, 2.45 GHz - 2.50GHz

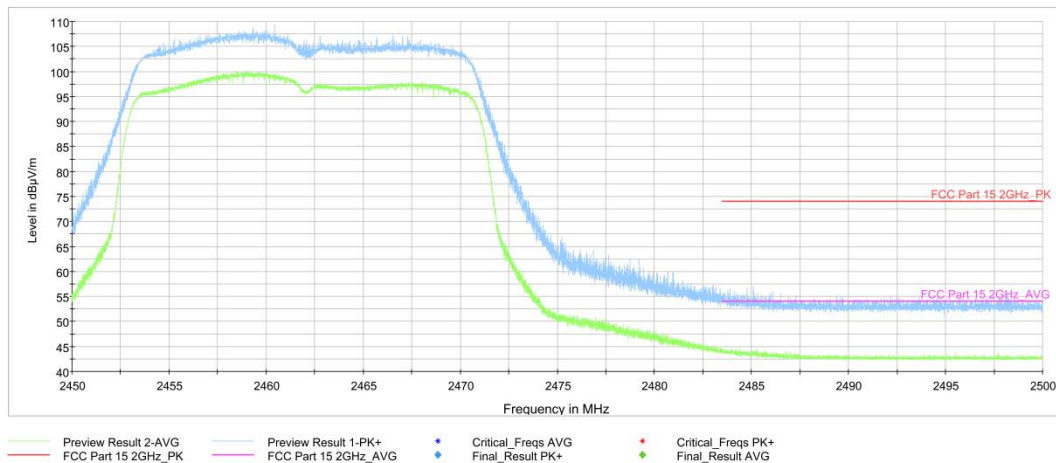


Fig.A.6.2.8 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch11, 2.45 GHz - 2.50GHz

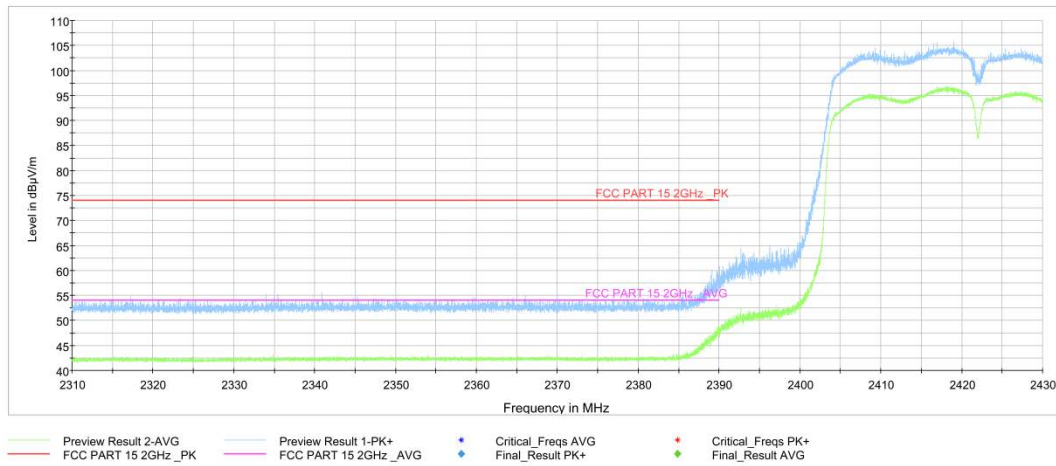


Fig.A.6.2.9 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT40, ch3, 2.31 GHz - 2.43GHz

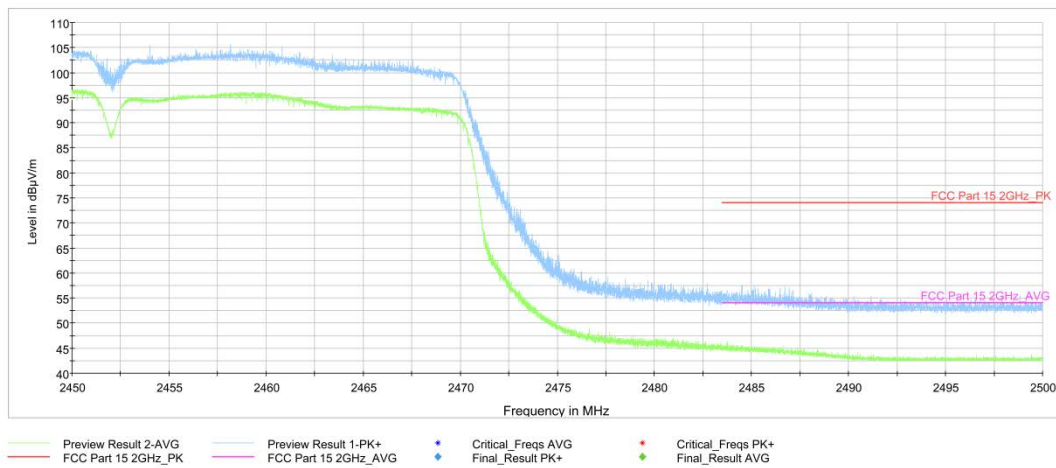


Fig.A.6.2.10 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT40, ch9, 2.45 GHz - 2.50GHz

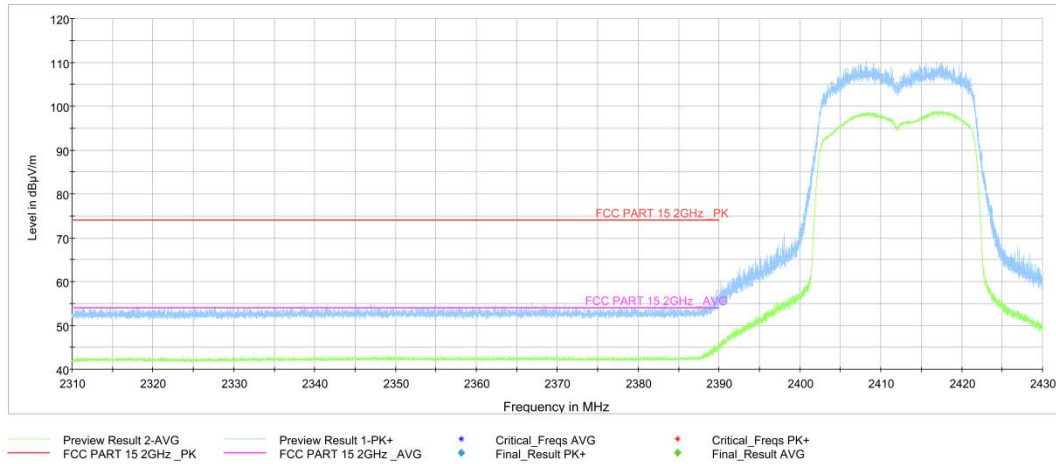


Fig.A.6.2.11 Transmitter Spurious Emission - Radiated (Power): 802.11ax-HT20, ch1, 2.31 GHz - 2.43GHz

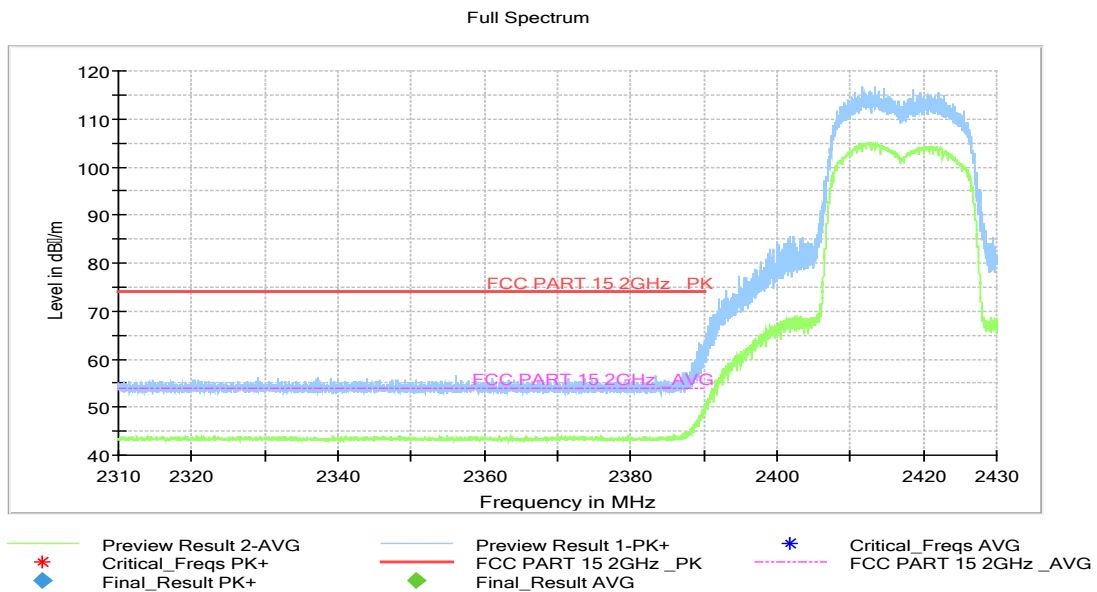


Fig.A.6.2.12 Transmitter Spurious Emission - Radiated (Power): 802.11ax-HT20, ch2, 2.31 GHz - 2.43GHz

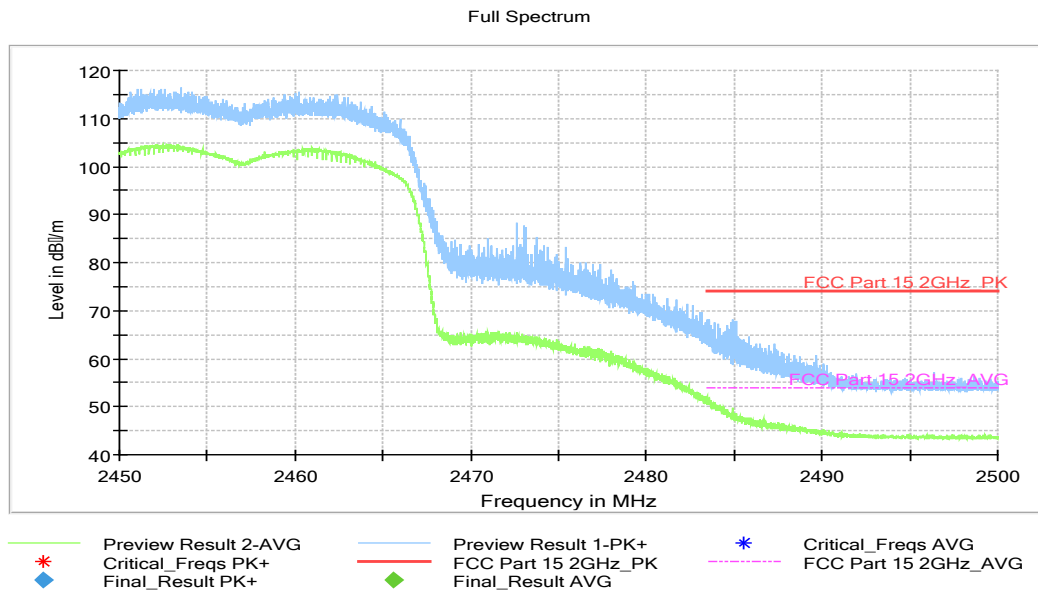


Fig.A.6.2.13 Transmitter Spurious Emission - Radiated (Power): 802.11ax-HT20, ch10, 2.45 GHz - 2.50GHz

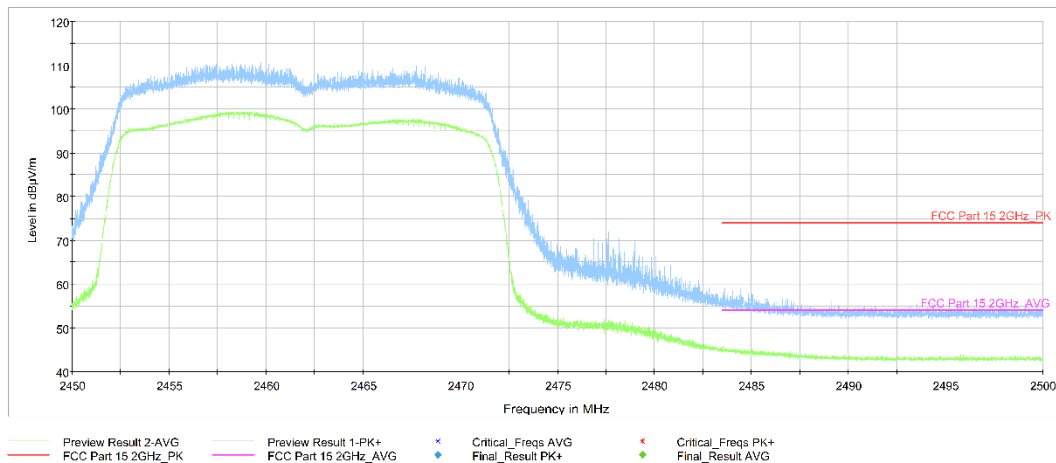


Fig.A.6.2.14 Transmitter Spurious Emission - Radiated (Power): 802.11ax-HT20, ch11, 2.45 GHz - 2.50GHz

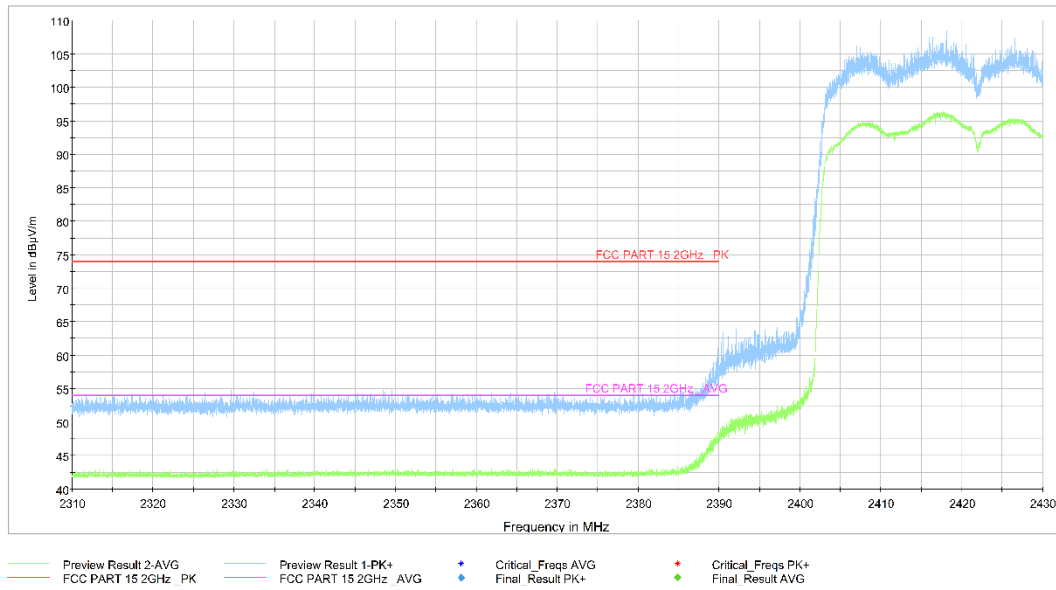


Fig.A.6.2.15 Transmitter Spurious Emission - Radiated (Power): 802.11ax-HT40, ch3, 2.31 GHz - 2.43GHz

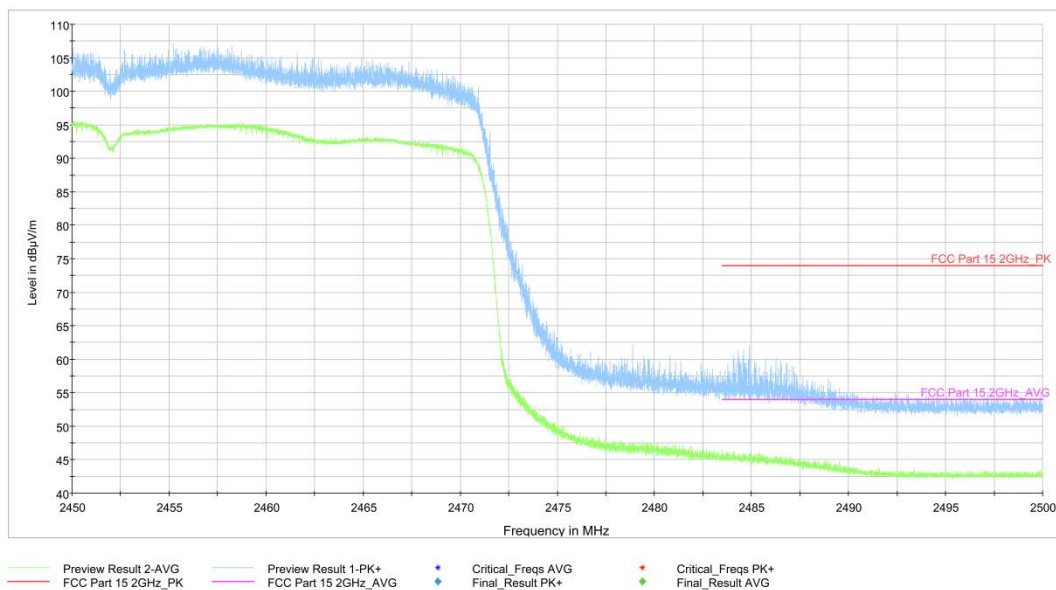


Fig.A.6.2.16 Transmitter Spurious Emission - Radiated (Power): 802.11ax-HT40, ch9, 2.45 GHz - 2.50GHz

Measurement Results for UT18a MIMO:

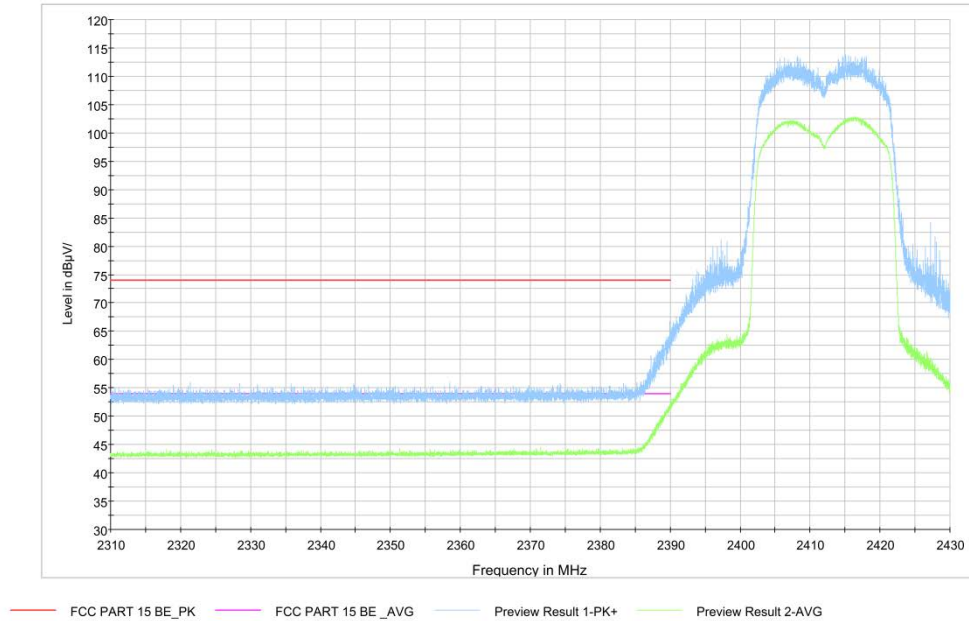


Fig.A.6.2.17 Transmitter Spurious Emission - Radiated (Power): 802.11ax-HT20, ch1, 2.31 GHz - 2.43GHz

Measurement Results for UT18a MIMO:

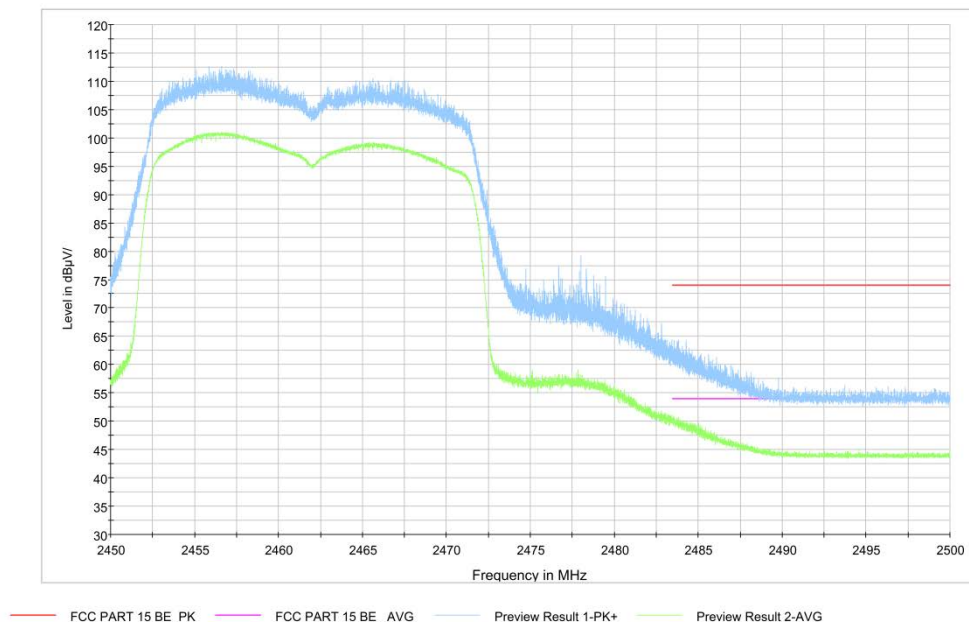


Fig.A.6.2.18 Transmitter Spurious Emission - Radiated (Power): 802.11ax-HT20, ch11, 2.31 GHz - 2.43GHz

A.7. AC Power-line Conducted Emission

Method of Measurement: See ANSI C63.10-2013-clause 6.2

- 1 The one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT.
- 2 If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed.
- 3 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 in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation.
- 4 If the EUT is comprised of equipment units that have their own separate ac power connections, e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network, each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be separately measured. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.
- 5 If the EUT uses a detachable antenna, these measurements shall be made with a suitable dummy load connected to the antenna output terminals; otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended. When measuring the ac conducted emissions from a device that operates between 150 kHz and 30 MHz a non-detachable antenna may be replaced with a dummy load for the measurements within the fundamental emission band of the transmitter, but only for those measurements.³⁶ Record the six highest EUT emissions relative to the limit of each of the current-carrying conductors of the power cords of the equipment that comprises the EUT over the frequency range specified by the procuring or regulatory agency. Diagram or photograph the test setup that was used. See Clause 8 for full reporting requirements.

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		802.11b	Idle	
0.15 to 0.5	66 to 56	Fig.A.7.1	Fig.A.7.2	P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		802.11b	Idle	
0.15 to 0.5	56 to 46	Fig.A.7.1	Fig.A.7.2	P
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Conclusion: Pass

Test graphs as below:

Measurement results for Set.1:

Result for Traffic:

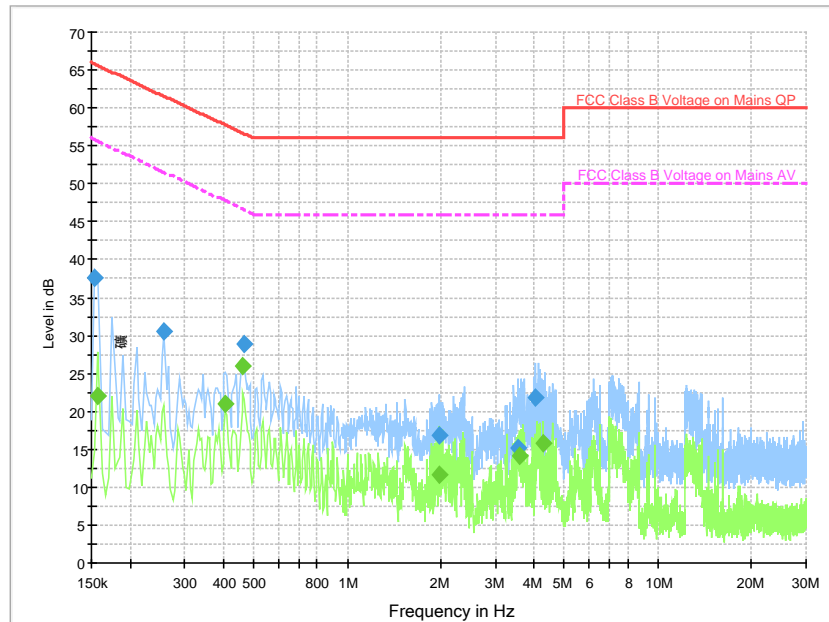


Fig.A.7.1 AC Powerline Conducted Emission-802.11b

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.154000	37.63	5000.0	9.000	On	L1	19.94	28.20	65.78
0.258000	30.51	5000.0	9.000	On	L1	19.82	31.00	61.50
0.466000	28.90	5000.0	9.000	On	N	19.84	27.70	56.58
1.978000	16.75	5000.0	9.000	On	L1	19.56	39.30	56.00
3.542000	15.14	5000.0	9.000	On	L1	19.59	40.90	56.00
4.022000	21.88	5000.0	9.000	On	N	19.58	34.10	56.00

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.158000	22.00	5000.0	9.000	On	L1	19.84	33.60	55.57
0.406000	20.95	5000.0	9.000	On	N	19.77	26.80	47.73
0.462000	25.91	5000.0	9.000	On	N	19.84	20.80	46.66
1.978000	11.58	5000.0	9.000	On	L1	19.56	34.40	46.00
3.566000	14.22	5000.0	9.000	On	N	19.60	31.80	46.00
4.258000	15.76	5000.0	9.000	On	N	19.57	30.20	46.00

Measurement results for Set.1:

Result for Idle:

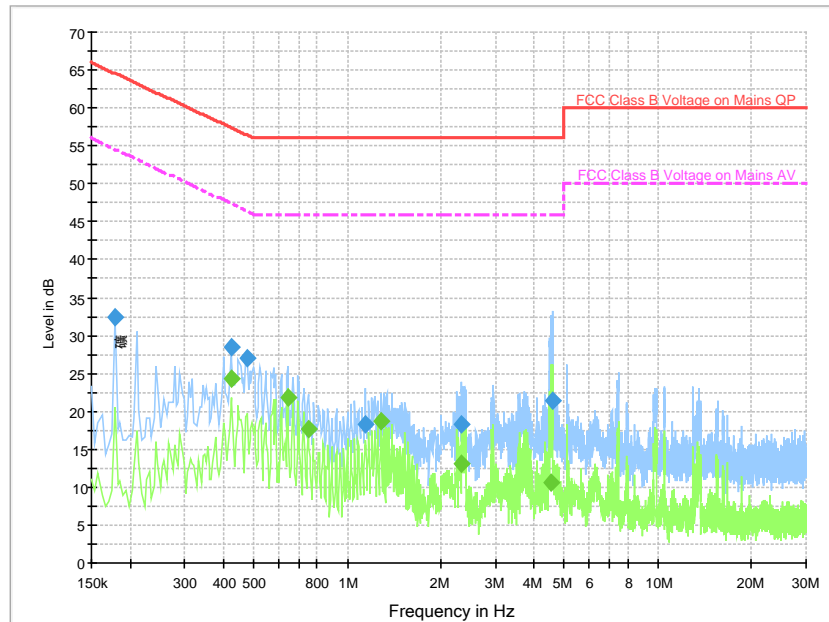


Fig.A.7.2 AC Powerline Conducted Emission-Idle

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.178000	32.31	5000.0	9.000	On	N	19.62	32.30	64.58
0.422000	28.55	5000.0	9.000	On	N	19.79	28.90	57.41
0.474000	26.96	5000.0	9.000	On	L1	19.76	29.50	56.44
1.142000	18.23	5000.0	9.000	On	N	19.60	37.80	56.00
2.334000	18.33	5000.0	9.000	On	L1	19.61	37.70	56.00
4.602000	21.37	5000.0	9.000	On	N	19.52	34.60	56.00

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.422000	24.26	5000.0	9.000	On	N	19.79	23.10	47.41
0.642000	21.91	5000.0	9.000	On	N	19.62	24.10	46.00
0.750000	17.74	5000.0	9.000	On	N	19.60	28.30	46.00
1.282000	18.61	5000.0	9.000	On	N	19.62	27.40	46.00
2.342000	13.12	5000.0	9.000	On	L1	19.61	32.90	46.00
4.514000	10.66	5000.0	9.000	On	N	19.53	35.30	46.00

ANNEX B: EUT parameters

Disclaimer: The antenna gain and worse case provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

ANNEX C: Accreditation Certificate

United States Department of Commerce National Institute of Standards and Technology	
	
<hr/> Certificate of Accreditation to ISO/IEC 17025:2017 <hr/>	
NVLAP LAB CODE: 600118-0	
Telecommunication Technology Labs, CAICT Beijing China	
<i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i>	
Electromagnetic Compatibility & Telecommunications	
<i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).</i>	
<hr/> 2021-09-29 through 2022-09-30 <i>Effective Dates</i>	 <hr/> <i>John S. Haman</i> For the National Voluntary Laboratory Accreditation Program

END OF REPORT