

**Limits**

- (1) For transmitters operating in the 5725-5850 MHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- (2) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz(68.2dBμV/m).
- (3) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz(68.2dBμV/m).
- (4) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz(68.2dBμV/m).

Note: the following formula is used to convert the EIRP to field strength

§1、 $E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] - 20 \log(d[\text{meters}]) + 104.77$, where E = field strength and

d = distance at which field strength limit is specified in the rules;

§2、 $E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2$, for d = 3 meters

- (5) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table.

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54



MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.02 dB
200MHz-1GHz	3.28 dB
1GHz-18G	3.70 dB
18GHz-26.5GHz	5.78 dB
26.5G-40GHz	5.82 dB



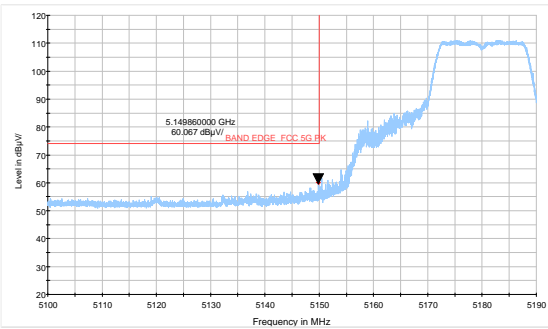
Test Results:

The modulation and bandwidth are similar for 802.11n mode for 20MHz/40MHz and 802.11ac mode for V20MHz/V40MHz, therefore investigated worst case to representative mode in test report.

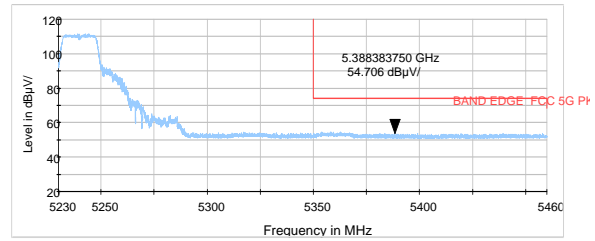
The signal beyond the limit is carrier.

U-NII-1

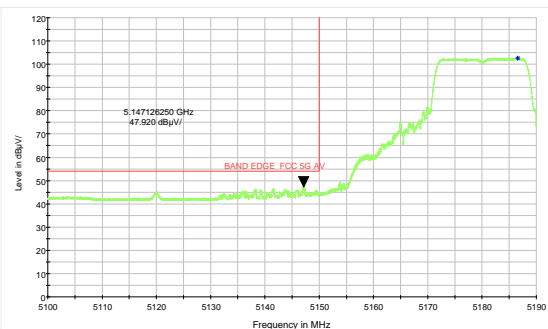
802.11a-Channel 36: Peak



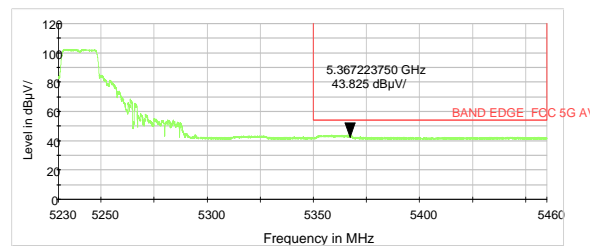
802.11a-Channel 48: Peak



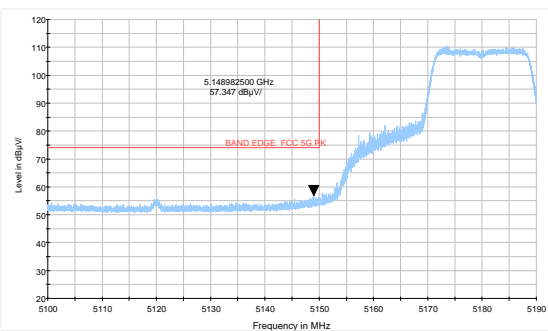
802.11a-Channel 36: Average



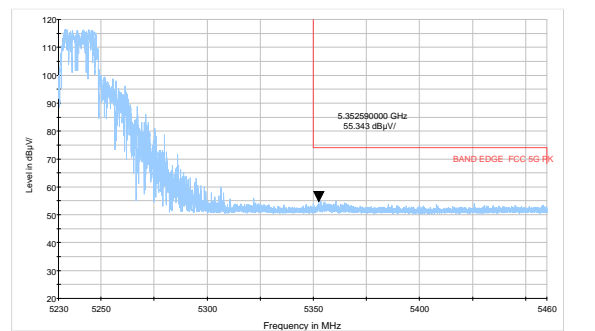
802.11a-Channel 48: Average



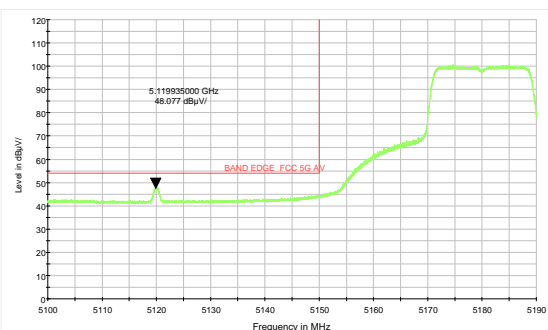
802.11n HT20-Channel 36: Peak



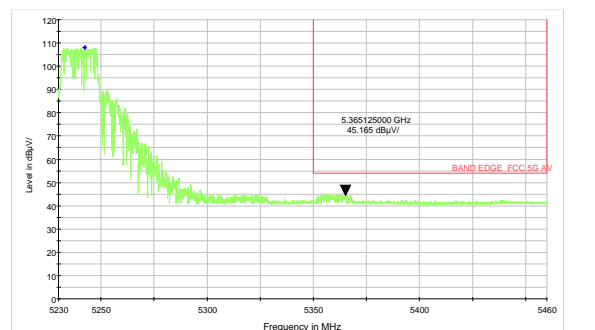
802.11n HT20-Channel 48: Peak



802.11n HT20-Channel 36: Average

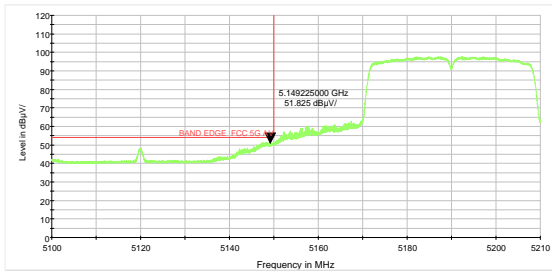


802.11n HT20-Channel 48: Average

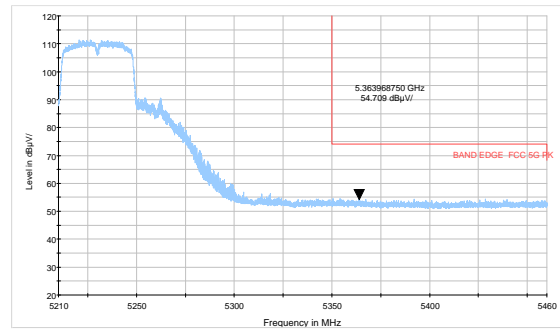




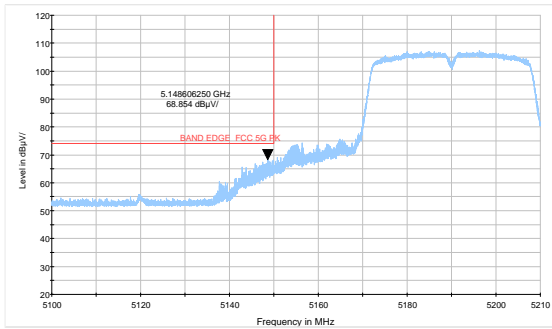
802.11n HT40-Channel 38: Peak



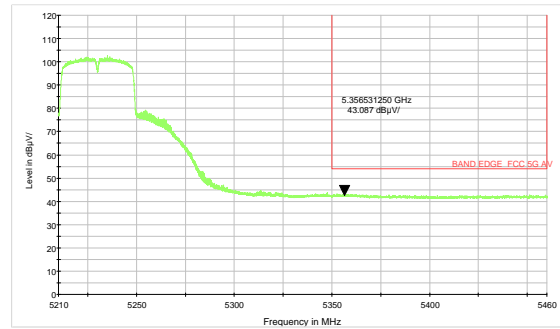
802.11n HT40-Channel 46: Peak



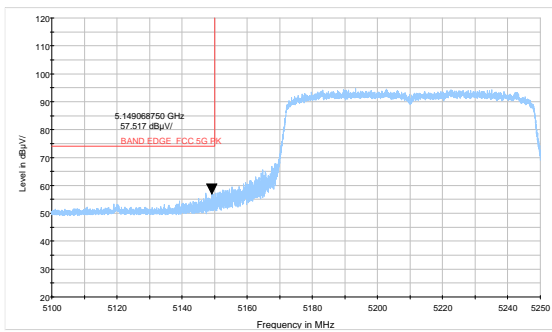
802.11n HT40-Channel 38: Average



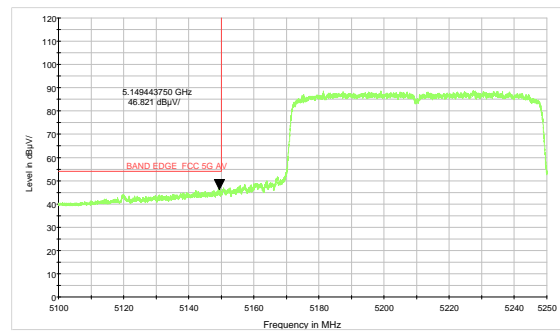
802.11n HT40-Channel 46: Average



802.11ac VHT80 -Channel 42: Peak



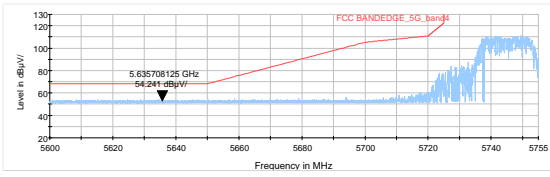
802.11ac VHT80- Channel 42: Average



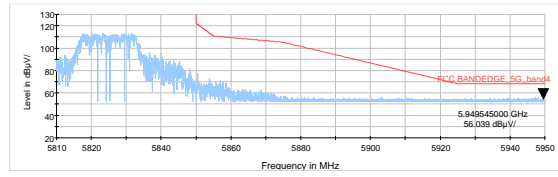


U-NII-3

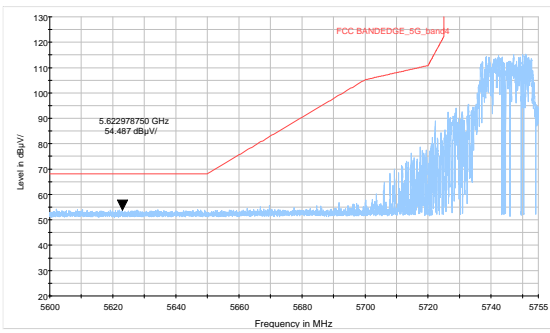
802.11a-Channel 149: Peak



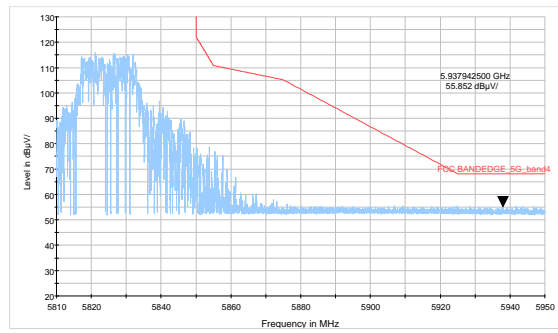
802.11a-Channel 165: Peak



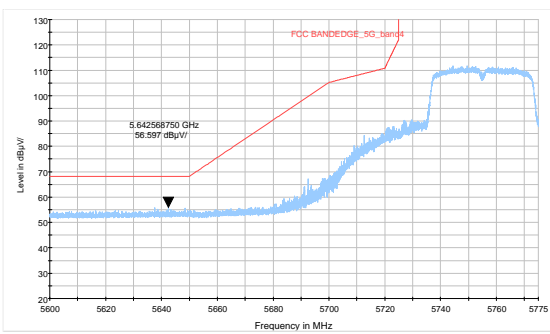
802.11n HT20-Channel 149: Peak



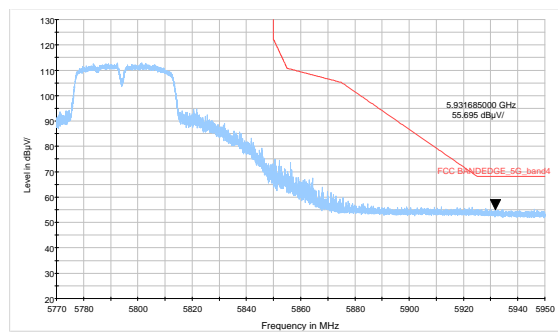
802.11n HT20-Channel 165: Peak



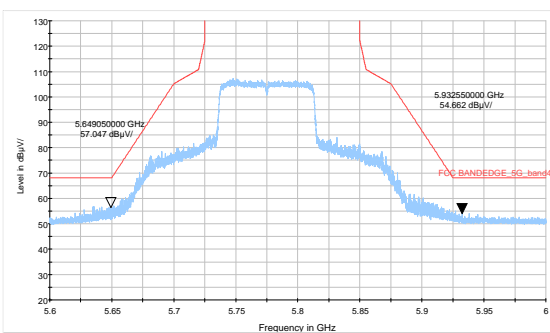
802.11n HT40-Channel 151: Peak



802.11n HT40-Channel 159: Peak



802.11ac VHT80- Channel 155: Peak





Result of RE

Test result

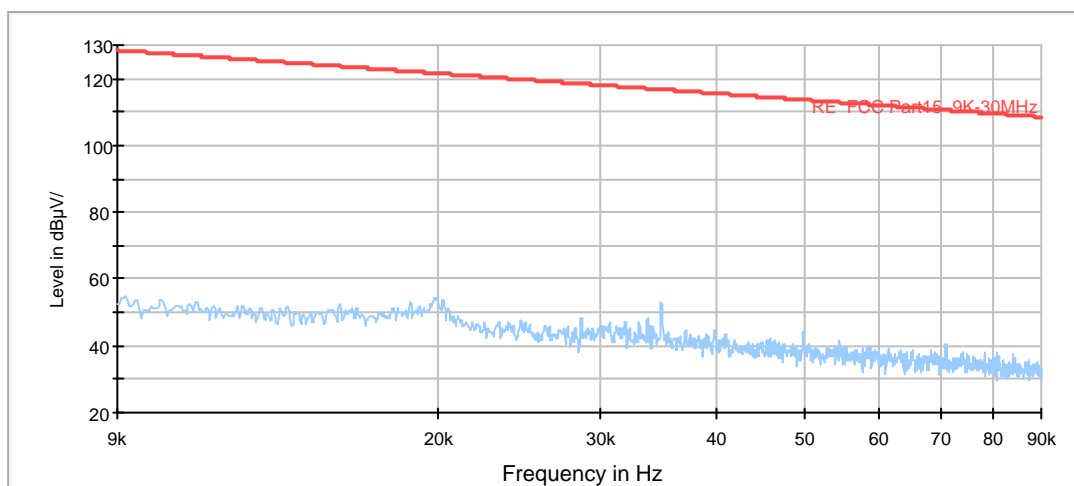
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the Emissions in the frequency band 9kHz-30MHz and 26.5GHz-40GHz are more than 20dB below the limit are not reported.

After the pretest, MIMO was selected as the worst antenna. SISO Antenna 2 was selected as the worst SISO antenna.

During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes with all channels, 802.11a, Channel 36 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

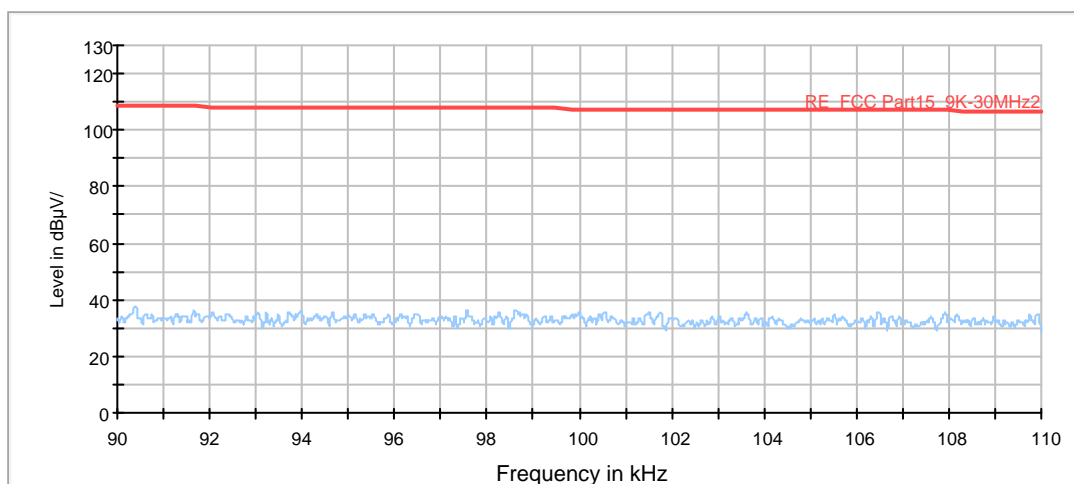
Continuous TX mode:

FCC RE 9K-90KHz AV



Radiates Emission from 9KHz to 90KHz

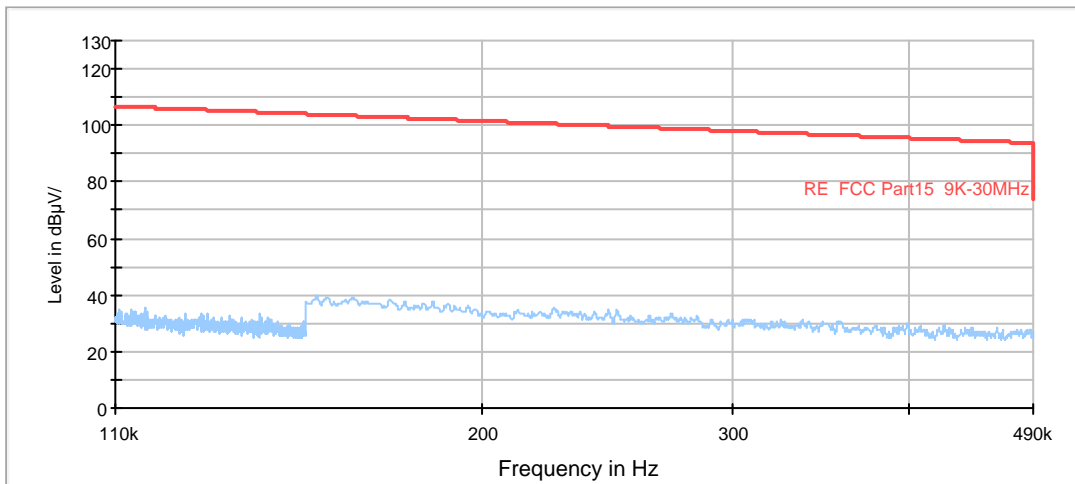
FCC RE 90K-110KHz QP



Radiates Emission from 90KHz to 110KHz

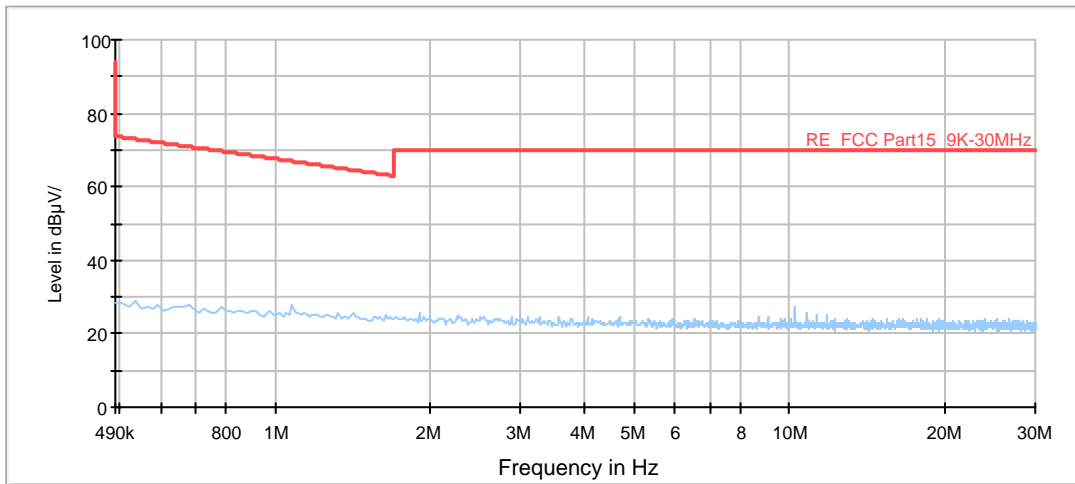


FCC RE 110K-490KHz AV

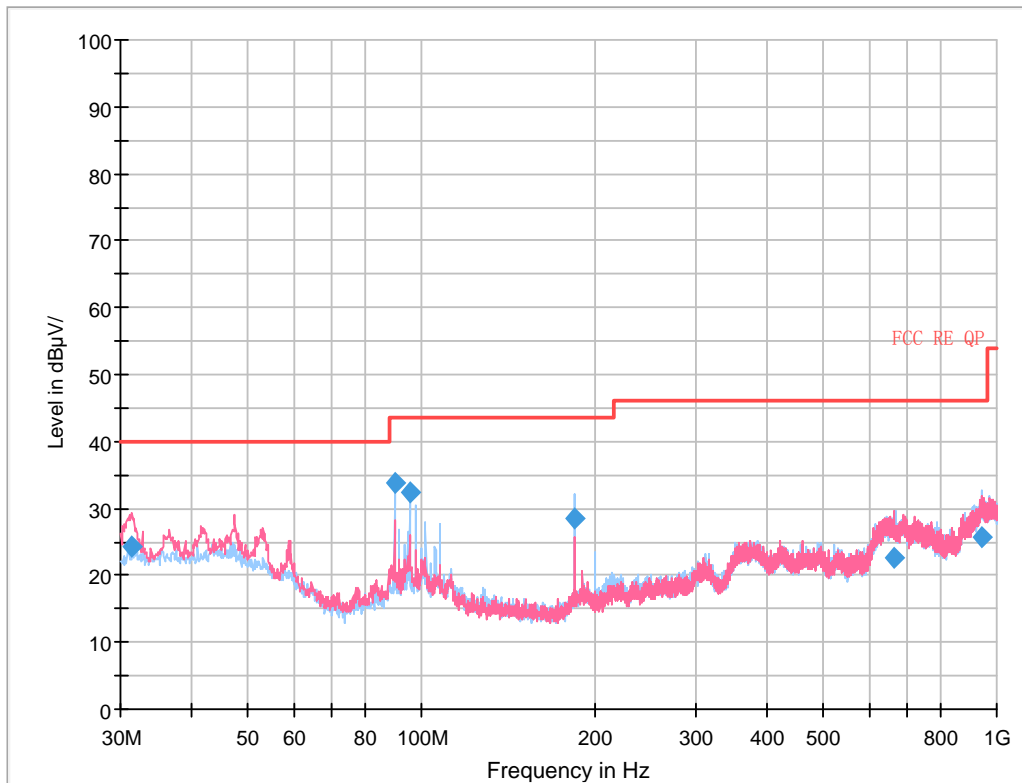


Radiates Emission from 110KHz to 490KHz

FCC RE 490K-30MHz QP



Radiates Emission from 490KHz to 30MHz



Radiates Emission from 30MHz to 1GHz

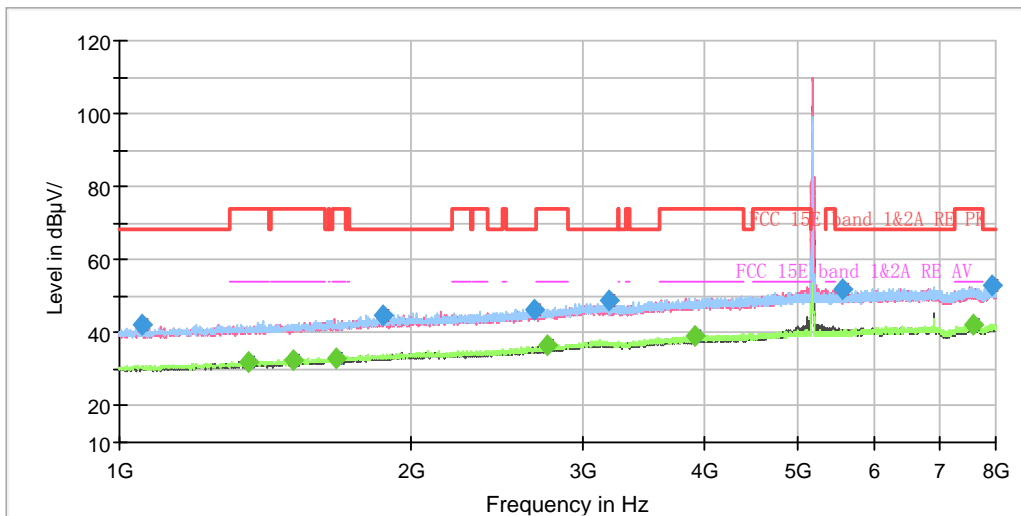
Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
31.416363	24.41	100.0	V	270.0	-3.1	15.59	40.00
89.912756	33.69	198.0	H	274.0	-10.4	9.81	43.50
95.516313	32.53	197.0	H	273.0	-10.2	10.97	43.50
184.249425	28.38	109.0	H	51.0	-13.0	15.12	43.50
660.577250	22.57	109.0	V	172.0	-1.7	23.43	46.00
942.605500	25.77	175.0	H	125.0	2.0	20.23	46.00

Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

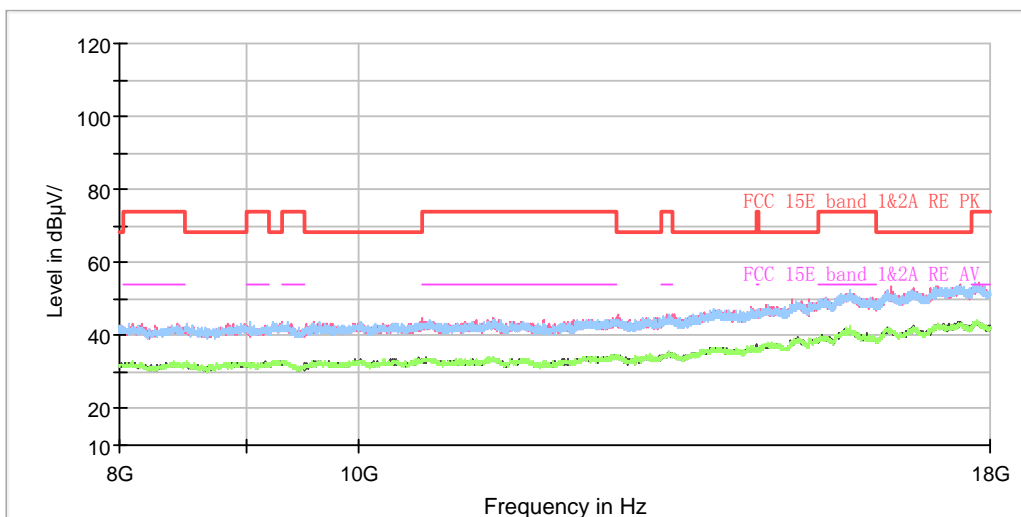
2. Margin = Limit – Quasi-Peak



802.11a CH36



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

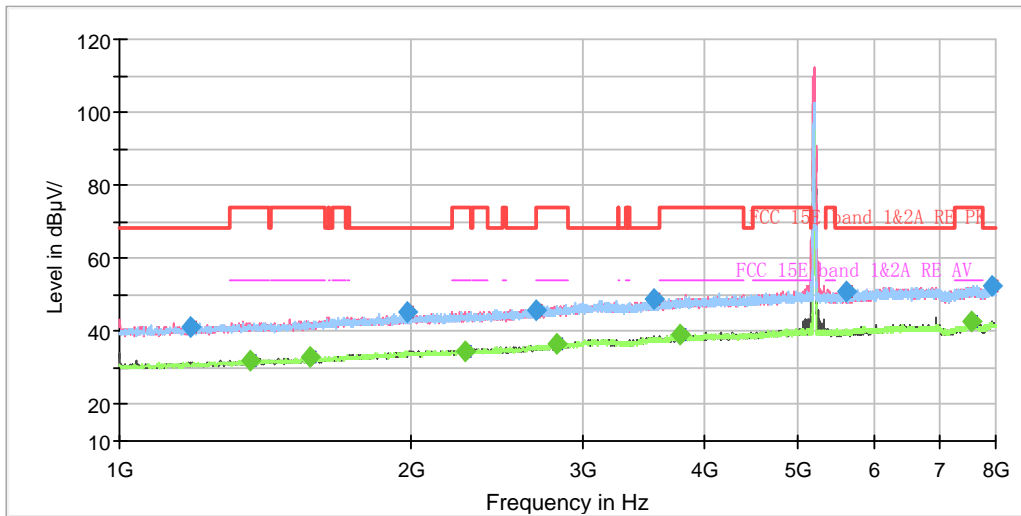


Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1056.000000	42.26	---	68.20	25.94	200.0	H	32.0	-8.4
1359.625000	---	32.18	54.00	21.82	200.0	H	224.0	-6.7
1511.875000	---	32.33	54.00	21.67	200.0	V	354.0	-5.9
1672.000000	---	33.17	54.00	20.83	100.0	H	224.0	-5.0
1869.750000	44.94	---	68.20	23.26	100.0	H	82.0	-3.9
2672.125000	46.45	---	68.20	21.75	200.0	V	36.0	-0.5
2763.125000	---	36.67	54.00	17.33	100.0	H	341.0	-0.1
3191.000000	48.72	---	68.20	19.48	200.0	V	358.0	1.9
3925.125000	---	38.92	54.00	15.08	200.0	H	202.0	4.2
5571.000000	51.78	---	68.20	16.42	200.0	V	196.0	7.5
7600.125000	---	42.44	54.00	11.56	100.0	H	0.0	10.3
7938.750000	52.76	---	68.20	15.44	200.0	H	299.0	10.5

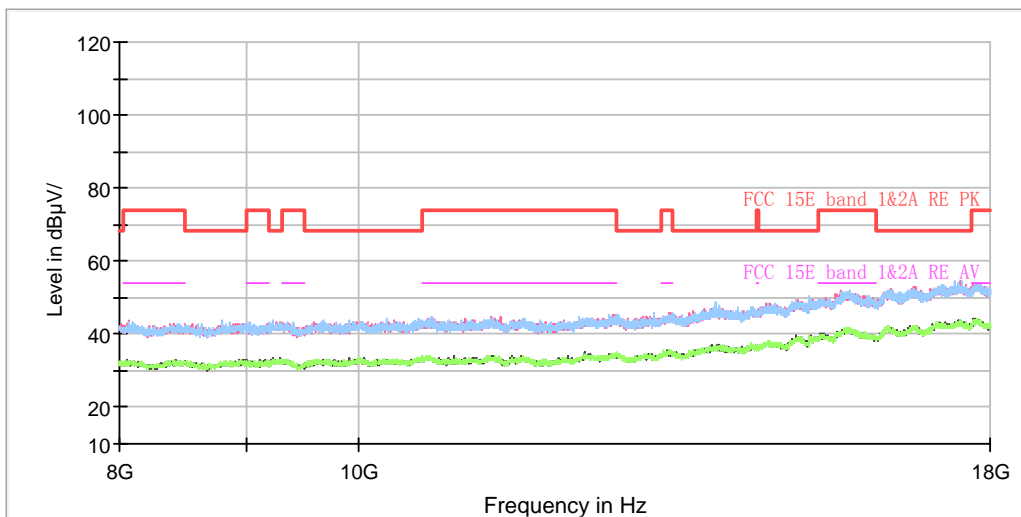
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



802.11a CH40



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

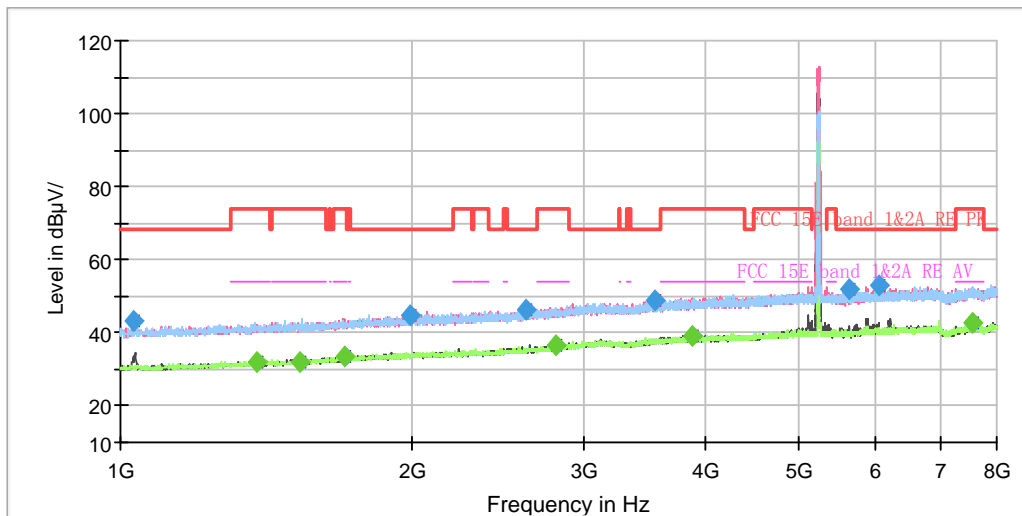


Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1181.125000	41.37	---	68.20	26.83	200.0	V	249.0	-7.7
1361.375000	---	31.76	54.00	22.24	100.0	V	139.0	-6.7
1574.000000	---	33.24	54.00	20.76	100.0	V	231.0	-5.6
1982.625000	45.06	---	68.20	23.14	100.0	V	277.0	-3.3
2269.625000	---	34.55	54.00	19.45	200.0	V	316.0	-2.2
2686.125000	46.05	---	68.20	22.15	200.0	H	338.0	-0.5
2822.625000	---	36.55	54.00	17.45	200.0	H	282.0	0.3
3561.125000	48.94	---	68.20	19.26	200.0	H	5.0	3.1
3789.500000	---	39.02	54.00	14.98	100.0	H	156.0	3.8
5617.375000	50.80	---	68.20	17.40	100.0	V	298.0	7.4
7567.750000	---	42.58	54.00	11.42	200.0	H	260.0	10.3
7934.375000	52.70	---	68.20	15.50	100.0	H	145.0	10.5

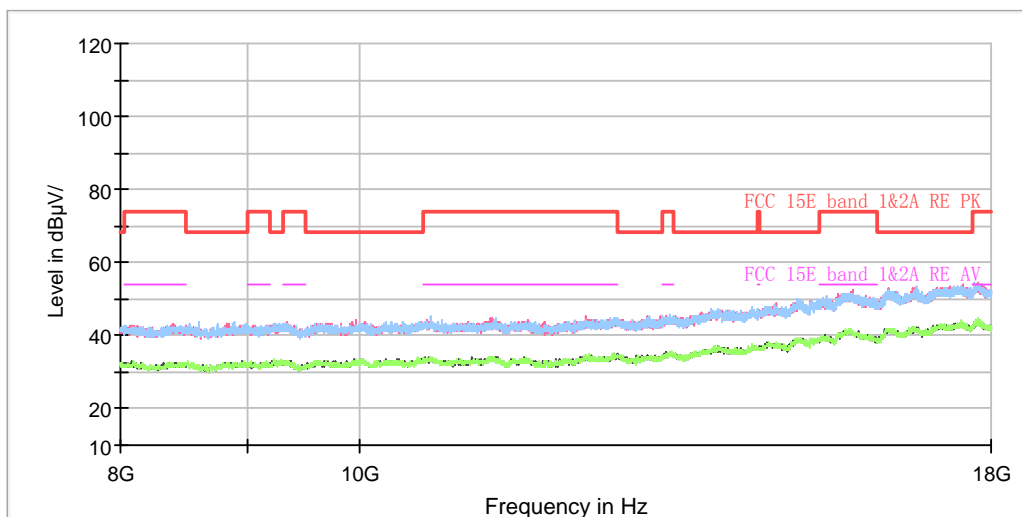
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



802.11a CH48



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

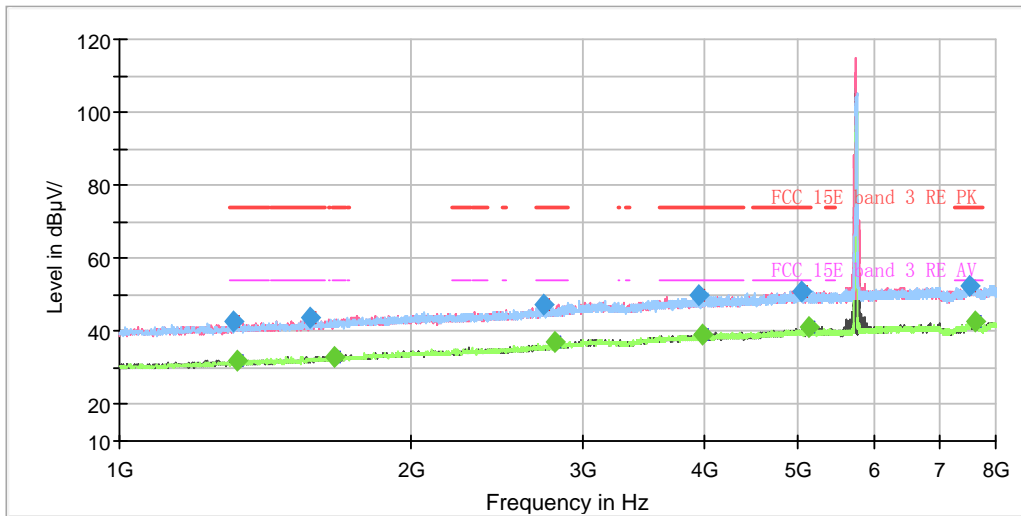


Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1032.375000	43.49	---	68.20	24.71	100.0	V	19.0	-8.5
1381.500000	---	32.09	54.00	21.91	200.0	V	120.0	-6.6
1531.125000	---	32.16	54.00	21.84	100.0	V	37.0	-5.8
1702.625000	---	33.45	54.00	20.55	200.0	V	167.0	-4.8
1988.750000	44.87	---	68.20	23.33	100.0	H	216.0	-3.2
2611.750000	46.31	---	68.20	21.89	100.0	V	9.0	-0.8
2809.500000	---	36.84	54.00	17.16	100.0	H	170.0	0.2
3555.000000	48.85	---	68.20	19.35	100.0	V	330.0	3.0
3875.250000	---	39.19	54.00	14.81	100.0	H	138.0	4.0
5636.625000	52.14	---	68.20	16.06	200.0	H	306.0	7.5
6051.375000	53.10	---	68.20	15.10	200.0	V	238.0	8.2
7546.750000	---	42.49	54.00	11.51	200.0	H	0.0	10.3

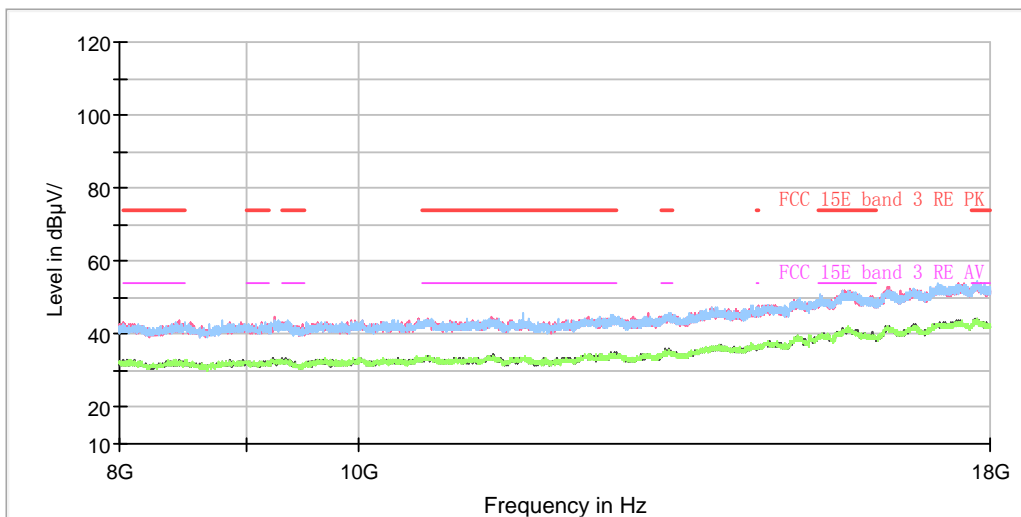
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



802.11a CH149



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz



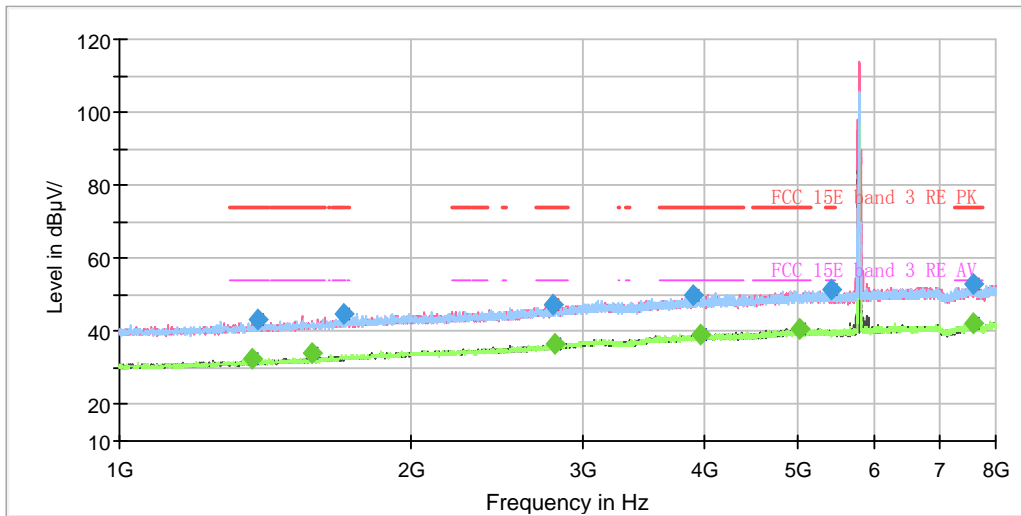
Radiates Emission from 8GHz to 18GHz



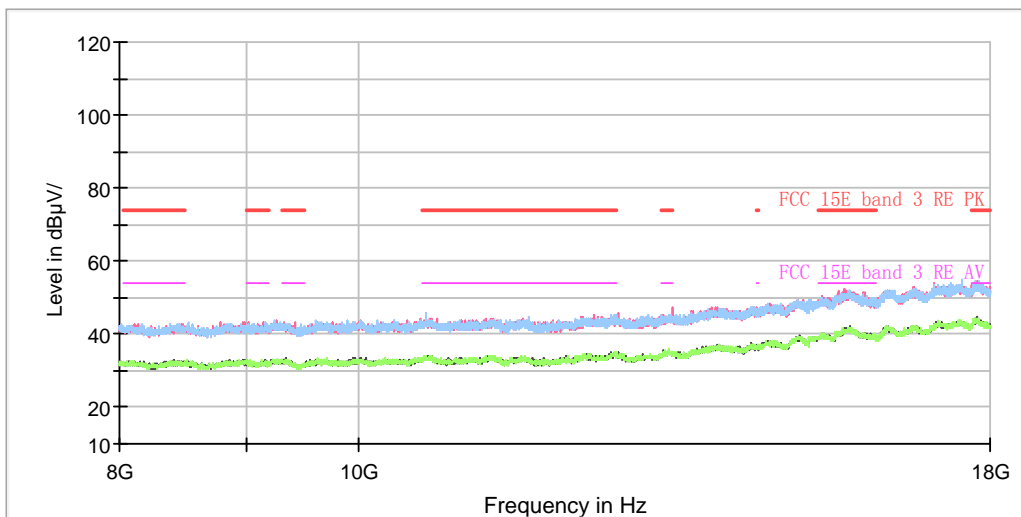
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1313.250000	42.60	---	74.00	31.40	100.0	V	80.0	-7.0
1319.375000	---	32.17	54.00	21.83	100.0	H	99.0	-6.9
1570.500000	43.71	---	74.00	30.29	100.0	V	126.0	-5.6
1662.375000	---	33.28	54.00	20.72	100.0	V	170.0	-5.0
2741.250000	47.15	---	74.00	26.85	200.0	V	320.0	-0.2
2806.000000	---	37.01	54.00	16.99	100.0	H	232.0	0.2
3961.000000	50.06	---	74.00	23.94	100.0	V	286.0	4.3
3995.125000	---	39.35	54.00	14.65	200.0	H	358.0	4.4
5053.000000	51.03	---	74.00	22.97	200.0	V	128.0	6.7
5128.250000	---	41.02	54.00	12.98	100.0	H	135.0	6.8
7517.875000	52.43	---	74.00	21.57	200.0	H	270.0	10.2
7610.625000	---	42.49	54.00	11.51	100.0	H	288.0	10.3

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH157



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz



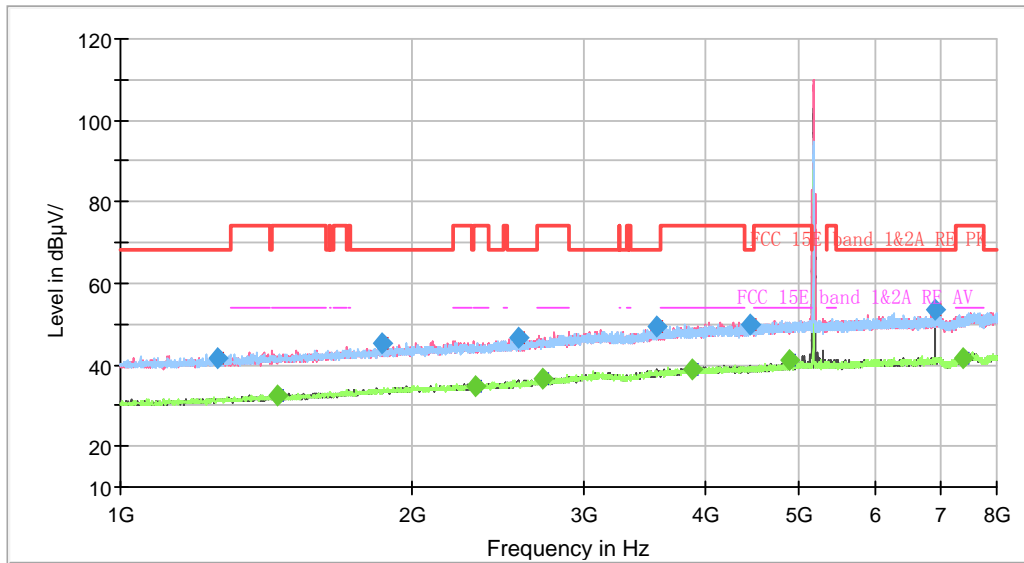
Radiates Emission from 8GHz to 18GHz



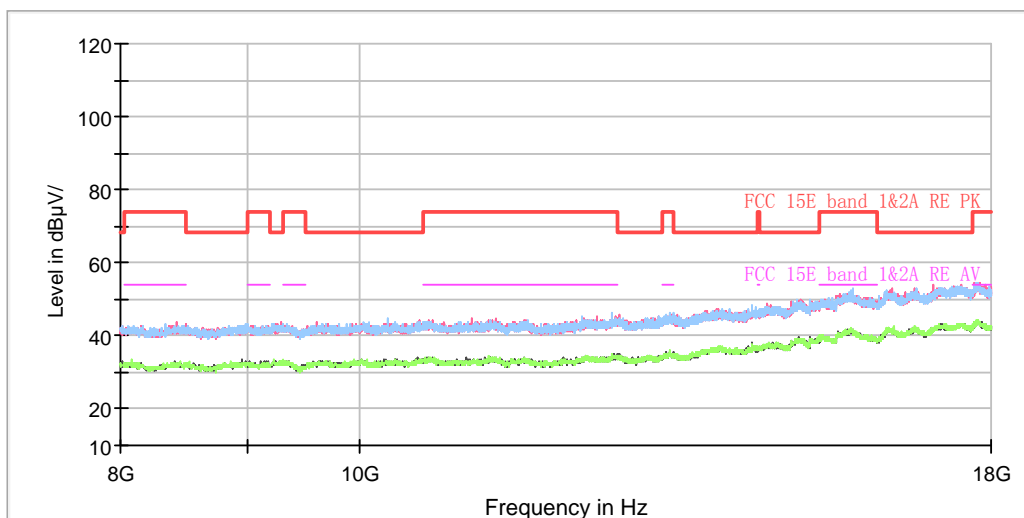
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1370.125000	---	32.31	54.00	21.69	100.0	H	30.0	-6.6
1387.625000	43.34	---	74.00	30.66	200.0	H	214.0	-6.5
1581.000000	---	33.97	54.00	20.03	200.0	V	341.0	-5.5
1701.750000	44.78	---	74.00	29.22	100.0	V	209.0	-4.8
2792.875000	47.33	---	74.00	26.67	100.0	H	52.0	0.1
2806.875000	---	36.62	54.00	17.38	200.0	H	167.0	0.2
3899.750000	49.73	---	74.00	24.27	200.0	V	171.0	4.0
3978.500000	---	39.20	54.00	14.80	200.0	H	86.0	4.3
5017.125000	---	40.82	54.00	13.18	100.0	V	288.0	6.7
5419.625000	51.22	---	74.00	22.78	100.0	V	242.0	7.1
7571.250000	---	42.24	54.00	11.76	200.0	V	106.0	10.3
7582.625000	52.76	---	74.00	21.24	100.0	H	333.0	10.3

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH36



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz



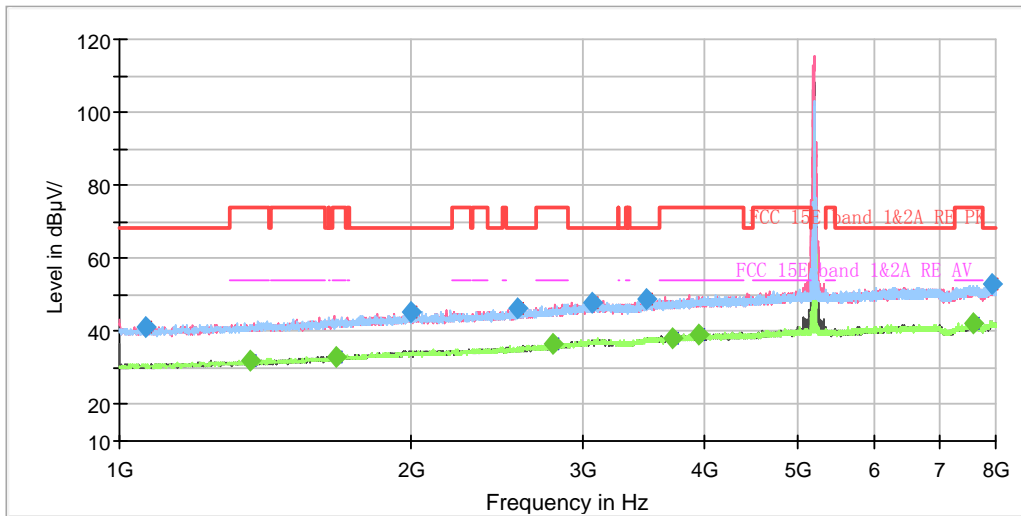
Radiates Emission from 8GHz to 18GHz



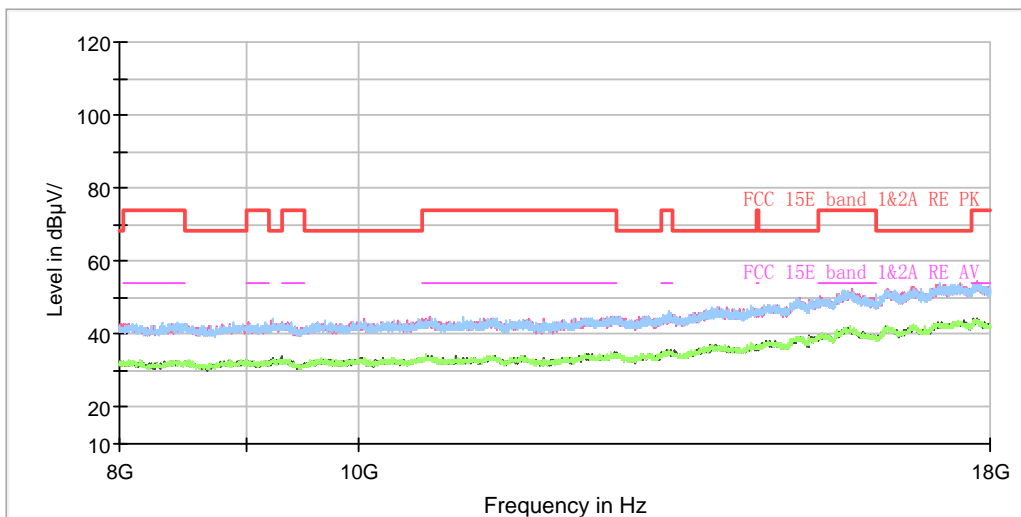
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1259.875000	41.59	---	68.20	26.61	200.0	H	23.0	-7.3
1450.625000	---	32.54	54.00	21.46	100.0	V	145.0	-6.2
1857.500000	45.10	---	68.20	23.10	200.0	V	309.0	-3.9
2323.875000	---	34.92	54.00	19.08	200.0	V	316.0	-1.9
2567.125000	46.50	---	68.20	21.70	100.0	V	13.0	-0.9
2722.000000	---	36.42	54.00	17.58	200.0	H	126.0	-0.3
3576.875000	49.53	---	68.20	18.67	200.0	H	164.0	3.2
3879.625000	---	39.03	54.00	14.97	200.0	V	349.0	4.0
4457.125000	50.08	---	68.20	18.12	100.0	V	177.0	5.1
4897.250000	---	41.15	54.00	12.85	100.0	V	35.0	6.4
6907.125000	53.69	---	68.20	14.51	200.0	V	195.0	9.1
7392.750000	---	41.51	54.00	12.49	100.0	V	99.0	10.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH40



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz



Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1063.000000	41.43	---	68.20	26.77	200.0	H	45.0	-8.4
1362.250000	---	32.17	54.00	21.83	200.0	H	295.0	-6.7
1671.125000	---	33.13	54.00	20.87	200.0	H	273.0	-5.0
1994.875000	45.16	---	68.20	23.04	100.0	H	342.0	-3.2
2575.000000	46.41	---	68.20	21.79	200.0	V	268.0	-0.9
2798.125000	---	36.55	54.00	17.45	200.0	V	65.0	0.2
3075.500000	48.09	---	68.20	20.11	200.0	H	108.0	1.7
3489.375000	48.90	---	68.20	19.30	100.0	H	346.0	2.7
3716.875000	---	38.10	54.00	15.90	100.0	V	141.0	3.6
3945.250000	---	39.40	54.00	14.60	200.0	V	104.0	4.3
7572.125000	---	42.36	54.00	11.64	200.0	V	188.0	10.3
7920.375000	52.94	---	68.20	15.26	200.0	V	335.0	10.5

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)