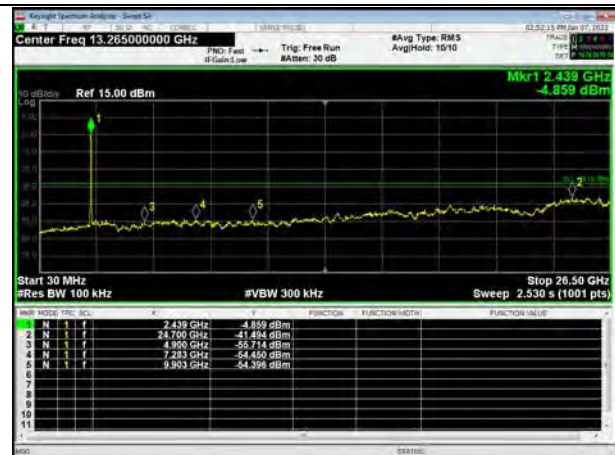


802.11n(HT40), Channel No. 3



802.11n(HT40), Channel No. 6

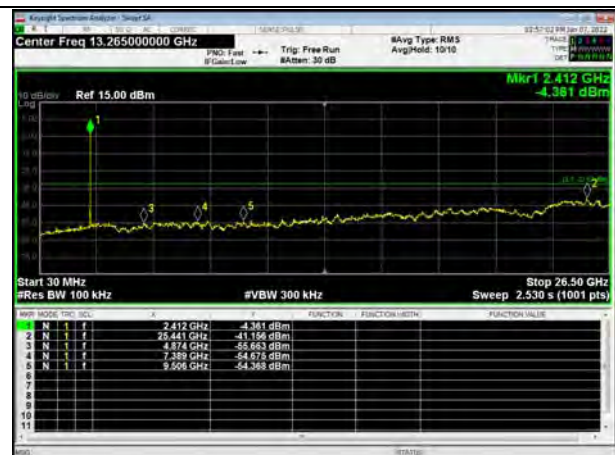


802.11n(HT40), Channel No. 9

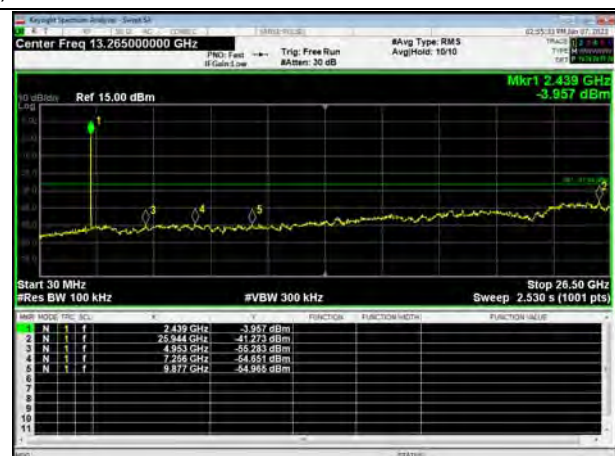




802.11ax(HE20), Channel No.: 1



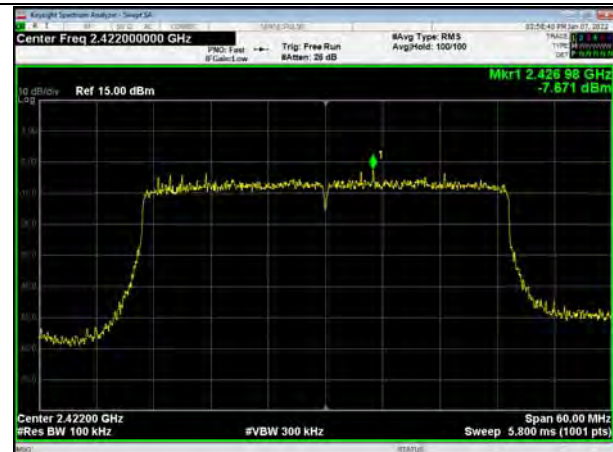
802.11ax(HE20), Channel No.: 6



802.11ax(HE20), Channel No.: 11



802.11ax(HE40), Channel No.: 3



802.11ax(HE40), Channel No.: 6



802.11ax(HE40), Channel No.: 9



5.6. Unwanted Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	102.5kPa

Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.10.

The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna.

The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. Sweep the Restricted Band and the emissions less than 20 dB below the permissible value are reported.

The radiated emissions measurements were made in a typical installation configuration.

Sweep the whole frequency band through the range from 9 kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

This method refer to ANSI C63.10.

The procedure for peak unwanted emissions measurements above 1000 MHz is as follows:

Set the spectrum analyzer in the following:

9kHz~150 kHz

RBW=200Hz, VBW=1kHz/ Sweep=AUTO

150 kHz~30MHz

RBW=9KHz, VBW=30KHz,/ Sweep=AUTO

Below 1GHz

RBW=100kHz / VBW=300kHz / Sweep=AUTO

a) Peak emission levels are measured by setting the instrument as follows:

Above 1GHz

PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO

b) Average emission levels are measured by setting the instrument as follows:

Above 1GHz

AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO

c) Detector: The measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage



averaging. Log or dB averaging shall not be used.)

e) Sweep time = auto.

f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of $1 / D$, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)

g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is $[10 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.

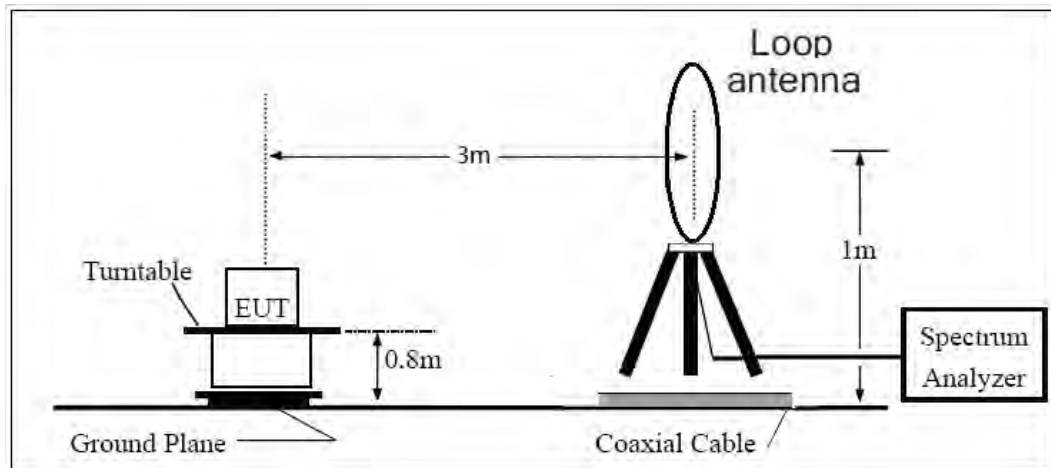
2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is $[20 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.

3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

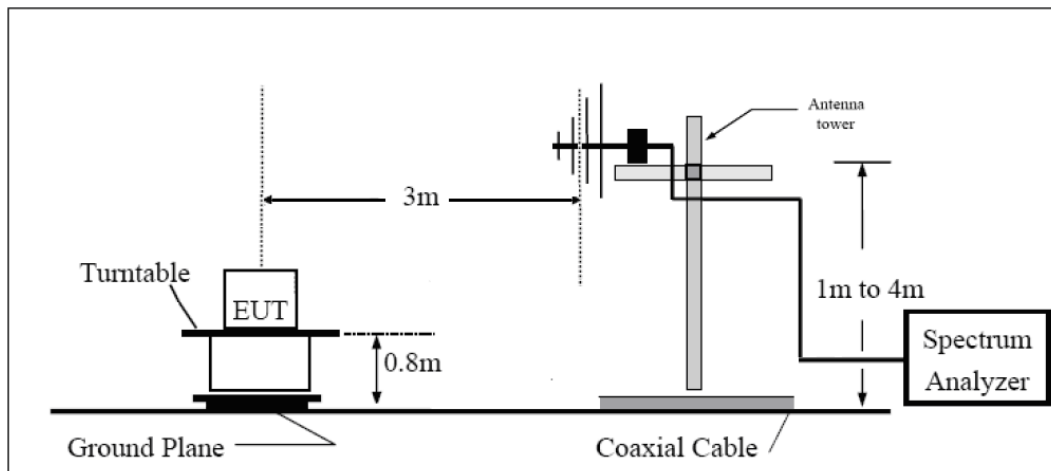
The test is in transmitting mode.

Test setup

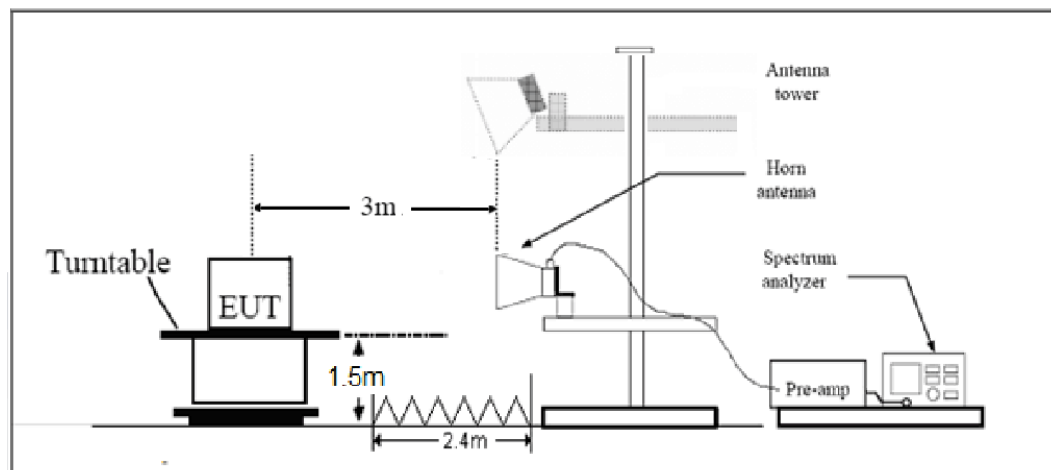
9KHz ~ 30MHz



30MHz ~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits

Rule Part 15.247(d) specifies that “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)
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

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Peak Limit=74 dBuV/m

Average Limit=54 dBuV/m



Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 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			

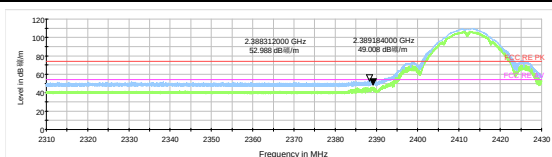
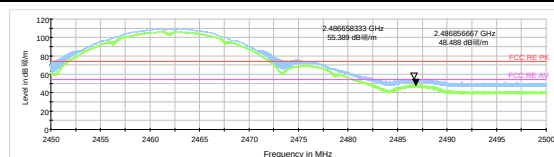
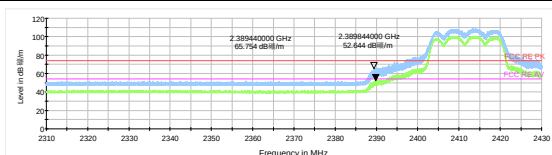
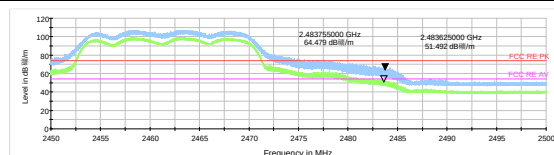
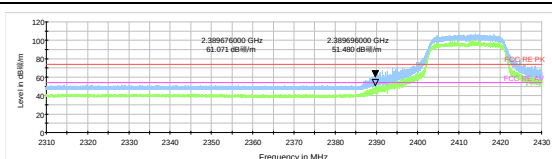
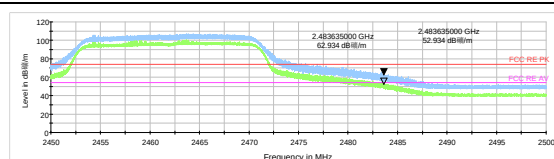
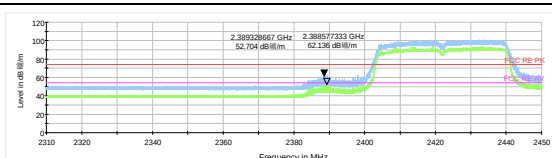
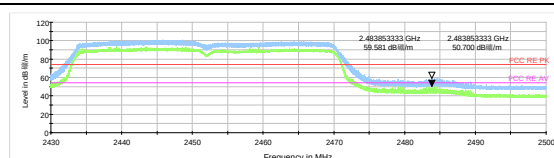
Measurement Uncertainty

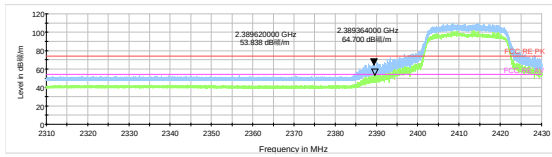
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.17 dB
200MHz-1GHz	4.84 dB
1-18GHz	4.35 dB
18-26.5GHz	5.90 dB
26.5GHz~40GHz	5.92 dB

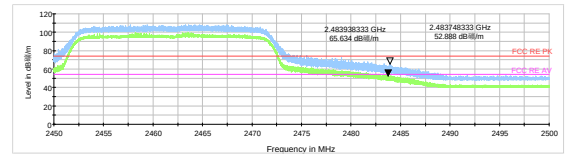
**Test Results:**

A font (dB μ V/m) in the test plot =(dB μ V/m)

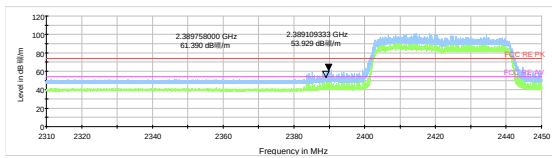
**802.11b-Channel 1 Peak & Average****802.11b-Channel 11 Peak & Average****802.11g-Channel 1 Peak & Average****802.11g-Channel 11 Peak & Average****802.11n HT20 -Channel 1 Peak & Average****802.11n HT20 -Channel 11 Peak & Average****802.11n HT40 -Channel 3 Peak & Average****802.11n HT40 -Channel 9 Peak & Average**



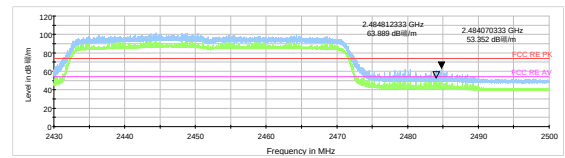
802.11ax HE20 -Channel 1 Peak & Average



802.11ax HE20 -Channel 11 Peak & Average



802.11ax HE40 -Channel 3 Peak & Average



802.11ax HE40 -Channel 9 Peak & Average

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 18GHz-26.5GHz are more than 20dB below the limit are not reported.

The following graphs display the maximum values of horizontal and vertical by software.
For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

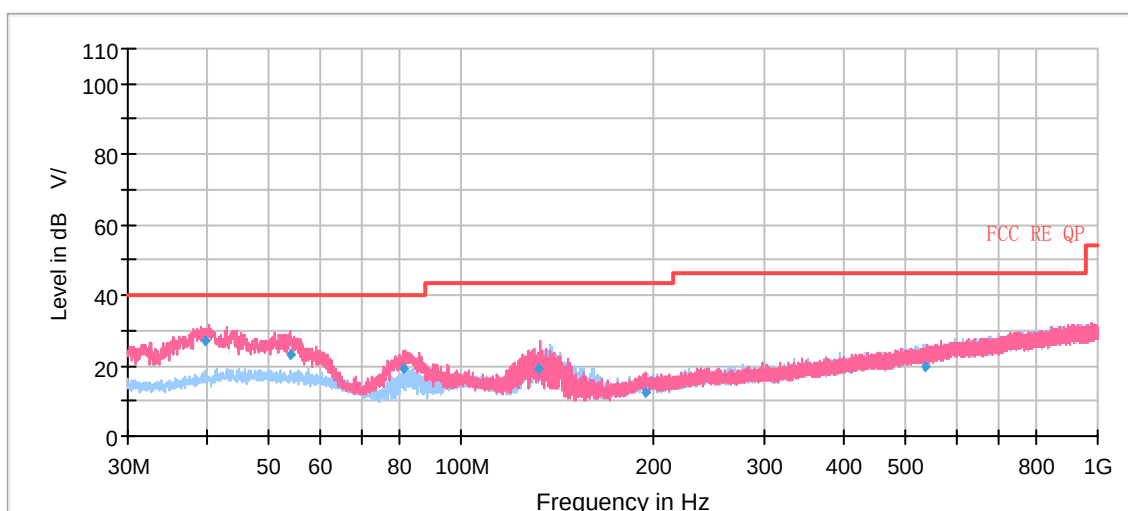
After the pretest, MIMO was selected as the worst antenna.

During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes with all channels, 802.11n (HT40) CH6 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

A font (Level in dB μ V/m) in the test plot =(level in dB μ V/m)

A font (level in dB μ V/m) in the test plot =(level in dB μ V/m)

Continuous TX mode:



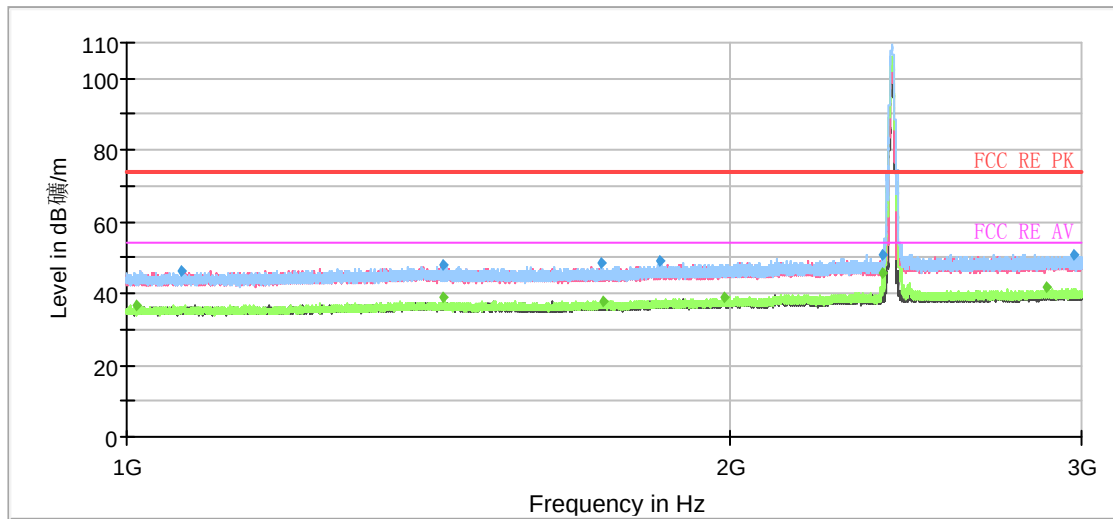
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
39.657333	26.96	100.0	V	0.0	19	13.04	40.00
53.829667	23.27	100.0	V	293.0	20	16.73	40.00
81.489000	19.17	110.0	V	241.0	14	20.83	40.00
132.737333	19.35	100.0	V	197.0	15	24.15	43.50
195.016667	12.67	109.0	V	0.0	19	30.83	43.50
535.191333	19.57	209.0	H	320.0	25	26.43	46.00

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

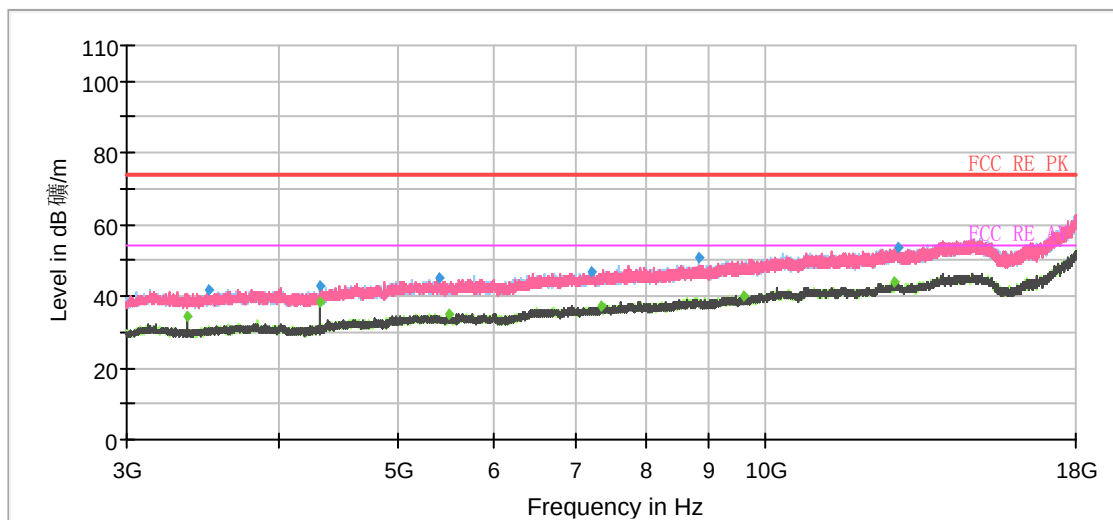
2. Margin = Limit – Quasi-Peak

802.11b CH1



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

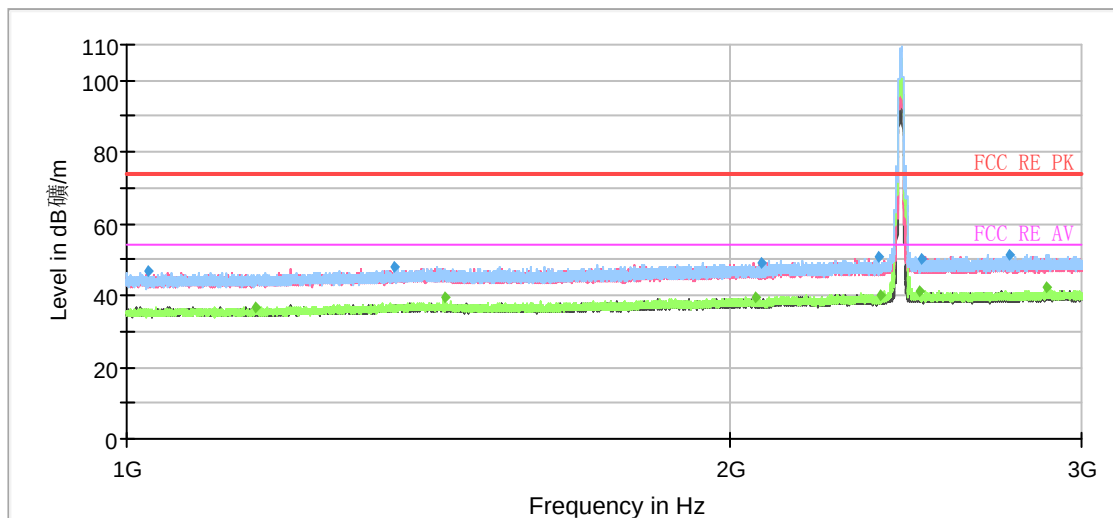


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1011.400000	---	36.92	54.00	17.08	100.0	H	176.0	-10
1065.666667	46.38	---	74.00	27.62	100.0	V	6.0	-9
1438.133333	48.03	---	74.00	25.97	100.0	H	349.0	-7
1440.533333	---	39.13	54.00	14.87	200.0	V	252.0	-7
1726.733333	48.78	---	74.00	25.22	100.0	H	176.0	-6
1728.666667	---	37.86	54.00	16.14	200.0	H	0.0	-6
1846.333333	48.80	---	74.00	25.20	200.0	H	5.0	-5
1990.333333	---	38.88	54.00	15.12	200.0	H	3.0	-5
2385.133333	---	45.54	54.00	8.46	100.0	H	51.0	-4
2385.333333	50.74	---	74.00	23.26	100.0	H	63.0	-4
2881.333333	---	41.80	54.00	12.20	100.0	V	153.0	-3
2973.400000	50.97	---	74.00	23.03	200.0	H	3.0	-3

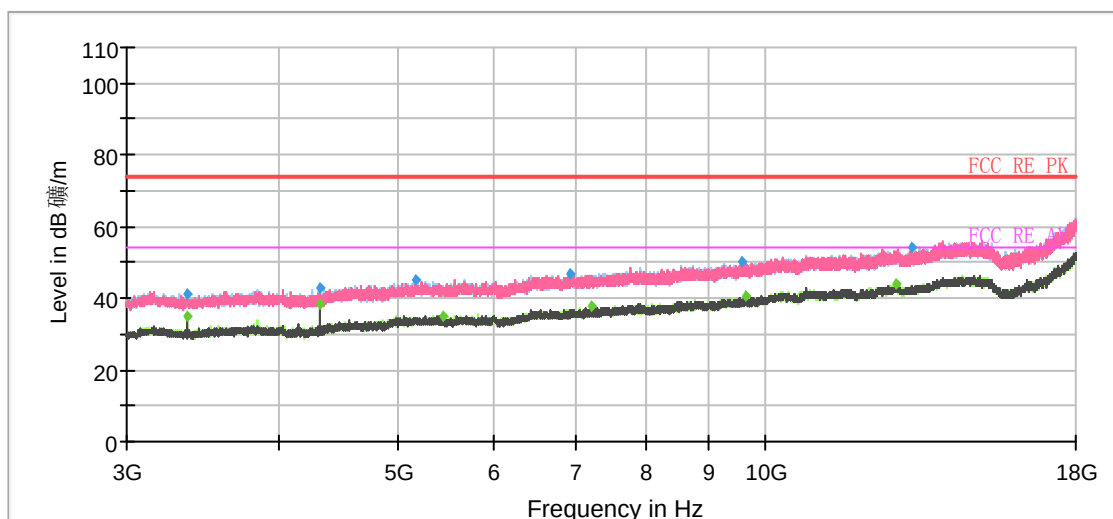
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11b CH6



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



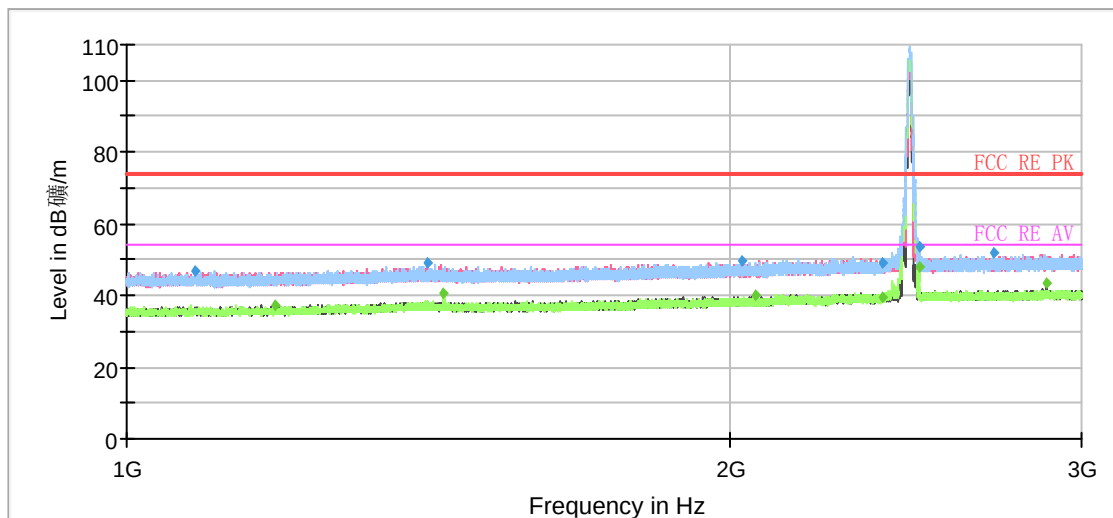
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1025.266667	46.55	---	74.00	27.45	200.0	H	132.0	-10
1160.400000	---	36.83	54.00	17.17	200.0	V	342.0	-9
1359.066667	48.19	---	74.00	25.81	200.0	H	304.0	-7
1440.733333	---	39.64	54.00	14.36	100.0	H	160.0	-7
2062.133333	---	39.29	54.00	14.71	200.0	V	354.0	-5
2073.533333	49.11	---	74.00	24.89	100.0	V	10.0	-5
2374.600000	50.93	---	74.00	23.07	200.0	H	250.0	-4
2382.866667	---	40.06	54.00	13.94	100.0	H	160.0	-4
2491.400000	---	40.90	54.00	13.10	200.0	H	224.0	-4
2496.200000	50.25	---	74.00	23.75	200.0	V	342.0	-4
2759.533333	51.40	---	74.00	22.60	200.0	V	320.0	-4
2881.200000	---	42.26	54.00	11.74	100.0	V	48.0	-3

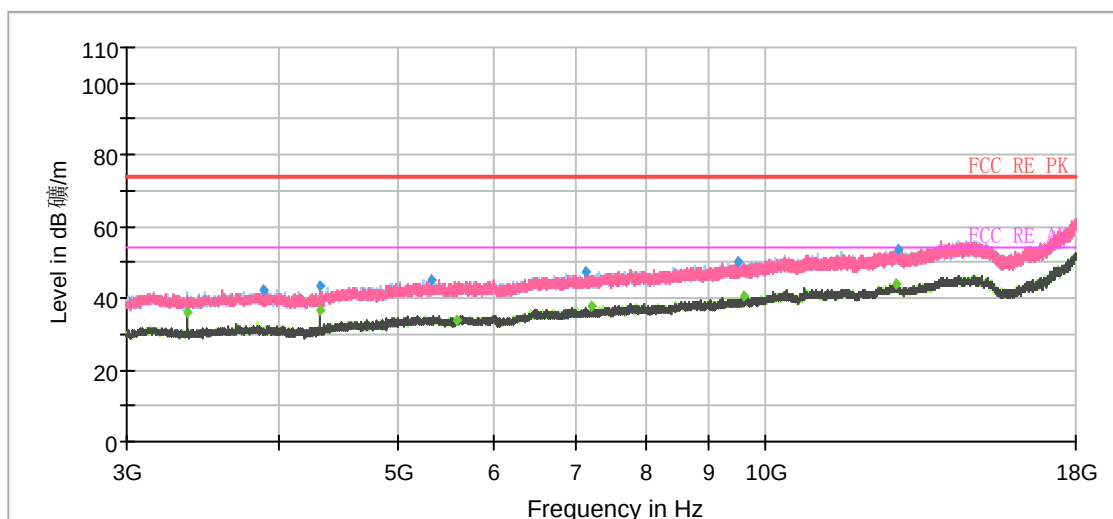
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11b CH11



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



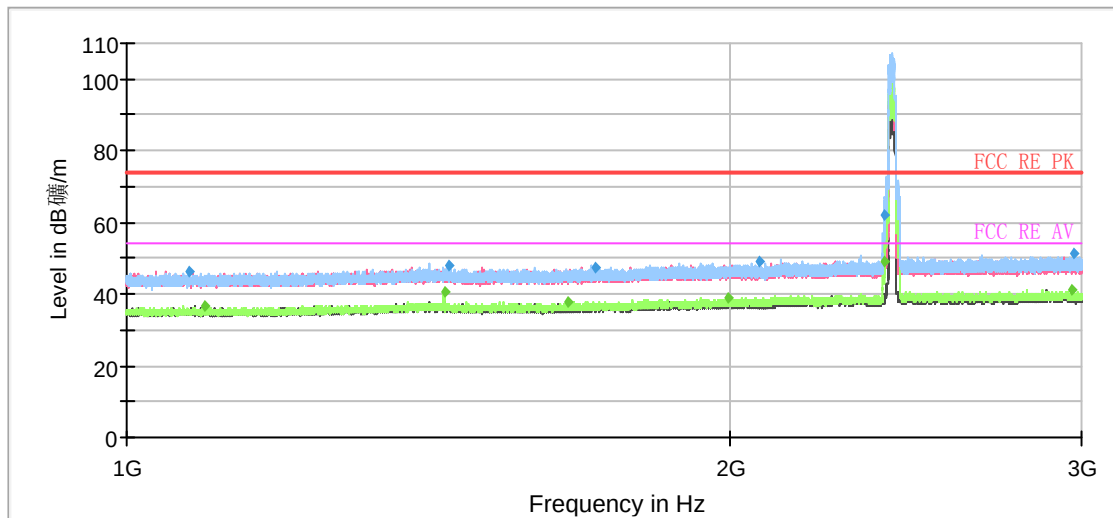
Radiates Emission from 3GHz to 18GHz



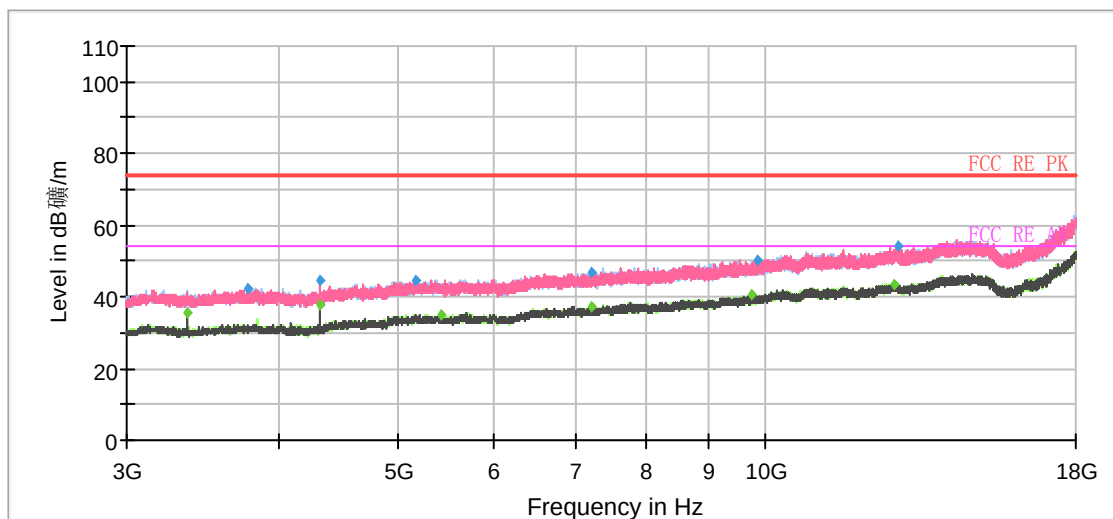
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1082.533333	46.81	---	74.00	27.19	200.0	V	106.0	-9
1187.133333	---	37.26	54.00	16.74	100.0	V	10.0	-9
1414.933333	49.05	---	74.00	24.95	100.0	V	101.0	-7
1440.600000	---	40.82	54.00	13.18	100.0	H	203.0	-7
2029.333333	49.77	---	74.00	24.23	100.0	V	50.0	-5
2062.733333	---	39.86	54.00	14.14	100.0	V	154.0	-5
2387.533333	---	39.72	54.00	14.28	100.0	H	229.0	-4
2388.066667	49.01	---	74.00	24.99	200.0	H	125.0	-4
2486.933333	---	48.15	54.00	5.85	100.0	H	40.0	-4
2487.333333	53.77	---	74.00	20.23	100.0	H	40.0	-4
2710.666667	51.85	---	74.00	22.15	200.0	H	125.0	-4
2881.400000	---	43.19	54.00	10.81	100.0	V	221.0	-3

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

802.11g CH1



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

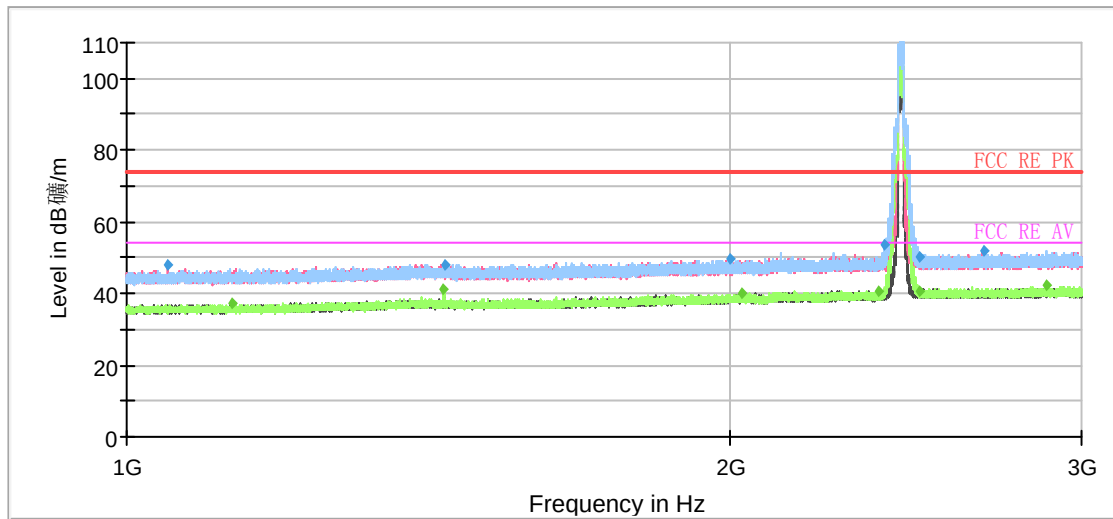


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1074.933333	46.40	---	74.00	27.60	200.0	H	222.0	-9
1094.200000	---	36.59	54.00	17.41	200.0	H	340.0	-9
1440.666667	---	40.37	54.00	13.63	100.0	H	208.0	-7
1448.800000	48.18	---	74.00	25.82	200.0	H	353.0	-7
1660.200000	---	37.83	54.00	16.17	200.0	H	210.0	-6
1713.866667	47.27	---	74.00	26.73	100.0	H	5.0	-6
1997.400000	---	39.00	54.00	15.00	100.0	H	89.0	-5
2071.066667	48.91	---	74.00	25.09	200.0	H	141.0	-5
2389.000000	61.80	---	74.00	12.20	200.0	H	55.0	-4
2389.266667	---	49.08	54.00	4.92	200.0	H	55.0	-4
2964.533333	---	41.27	54.00	12.73	200.0	H	340.0	-3
2974.200000	51.11	---	74.00	22.89	200.0	H	141.0	-3

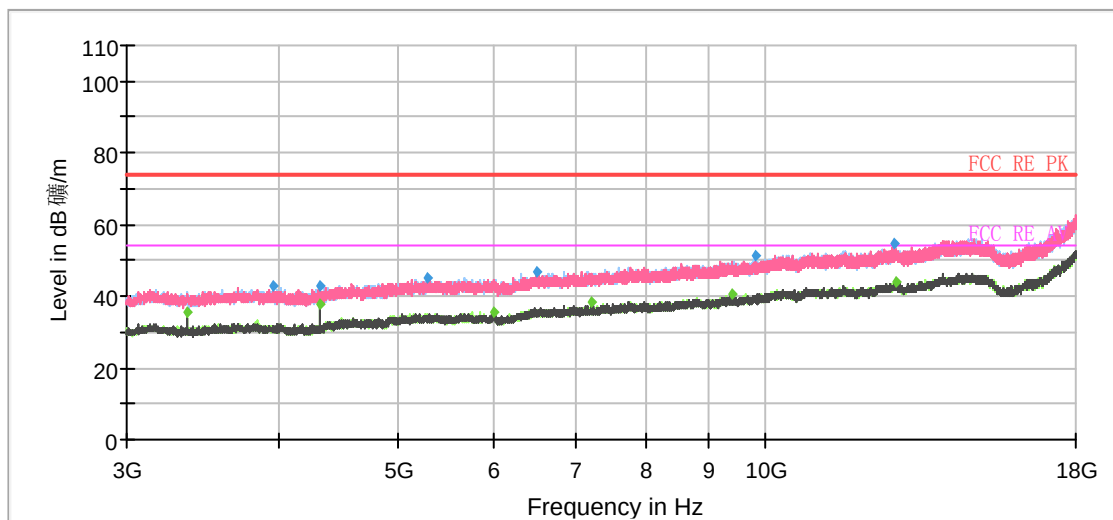
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11g CH6



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



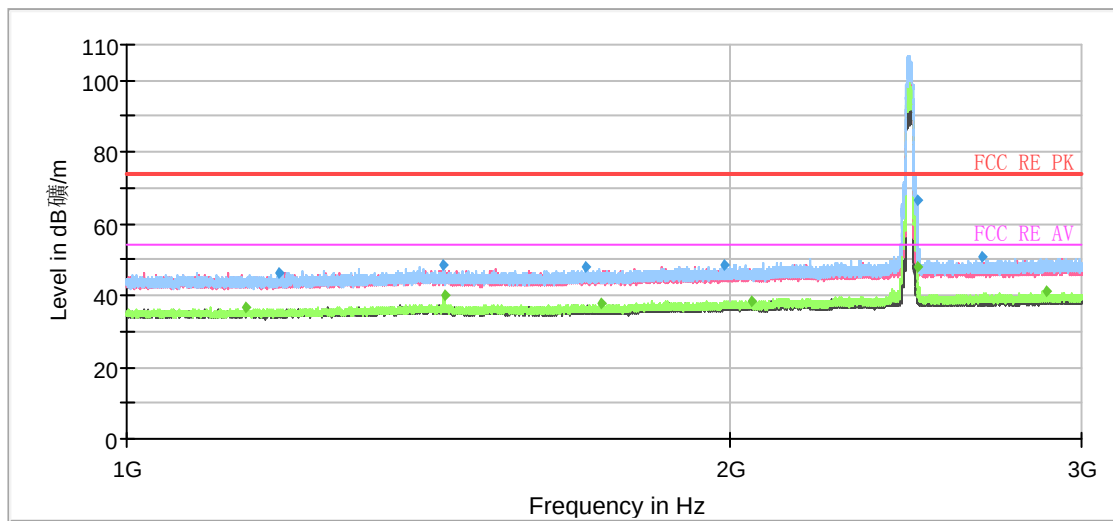
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1047.733333	47.71	---	74.00	26.29	200.0	V	158.0	-9
1127.800000	---	37.41	54.00	16.59	100.0	H	211.0	-9
1440.533333	---	41.03	54.00	12.97	100.0	H	92.0	-7
1440.666667	48.23	---	74.00	25.77	100.0	V	37.0	-7
2002.000000	49.51	---	74.00	24.49	200.0	H	310.0	-5
2031.533333	---	39.94	54.00	14.06	200.0	H	257.0	-5
2375.533333	---	40.78	54.00	13.22	200.0	V	12.0	-4
2389.400000	53.41	---	74.00	20.59	100.0	H	80.0	-4
2491.800000	50.27	---	74.00	23.73	200.0	V	0.0	-4
2492.133333	---	40.42	54.00	13.58	200.0	H	354.0	-4
2681.666667	52.12	---	74.00	21.88	100.0	H	238.0	-3
2881.266667	---	42.27	54.00	11.73	100.0	V	226.0	-3

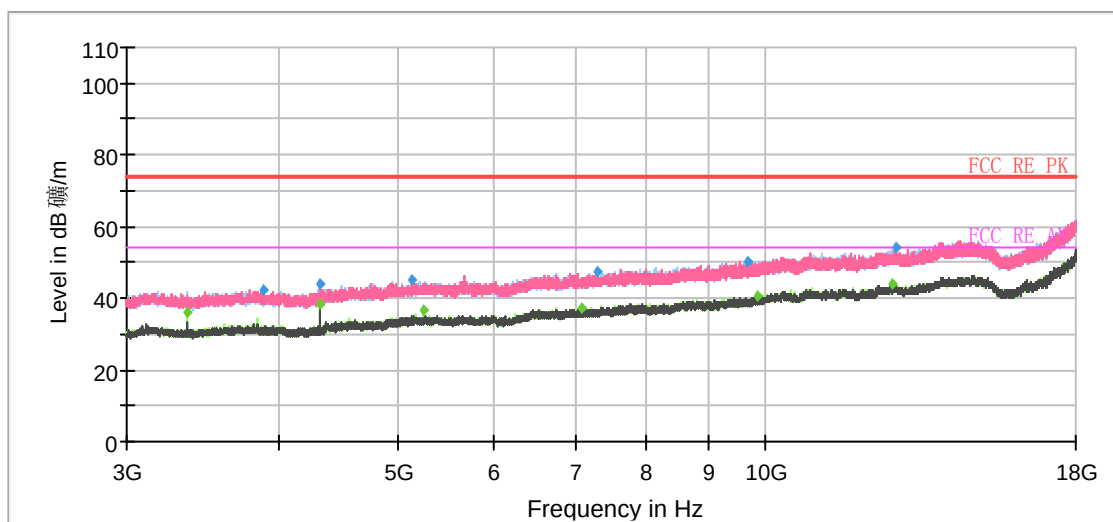
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11g CH11



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



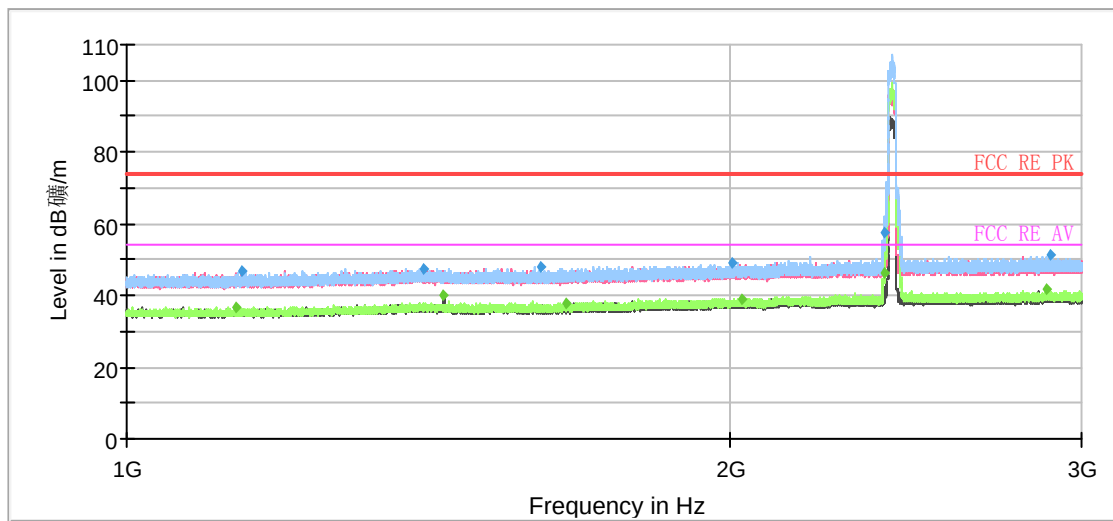
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1146.800000	---	36.73	54.00	17.27	200.0	H	159.0	-9
1192.333333	46.36	---	74.00	27.64	200.0	V	61.0	-9
1440.600000	48.79	---	74.00	25.21	200.0	H	317.0	-7
1440.666667	---	39.98	54.00	14.02	100.0	H	323.0	-7
1697.200000	48.03	---	74.00	25.97	100.0	H	4.0	-6
1724.400000	---	37.77	54.00	16.23	100.0	H	134.0	-6
1988.866667	48.64	---	74.00	25.36	100.0	H	192.0	-5
2051.400000	---	38.54	54.00	15.46	200.0	H	347.0	-5
2483.666667	66.34	---	74.00	7.66	200.0	H	32.0	-4
2484.933333	---	48.20	54.00	5.80	200.0	H	61.0	-4
2675.666667	50.60	---	74.00	23.40	200.0	H	358.0	-3
2881.266667	---	41.18	54.00	12.82	100.0	V	245.0	-3

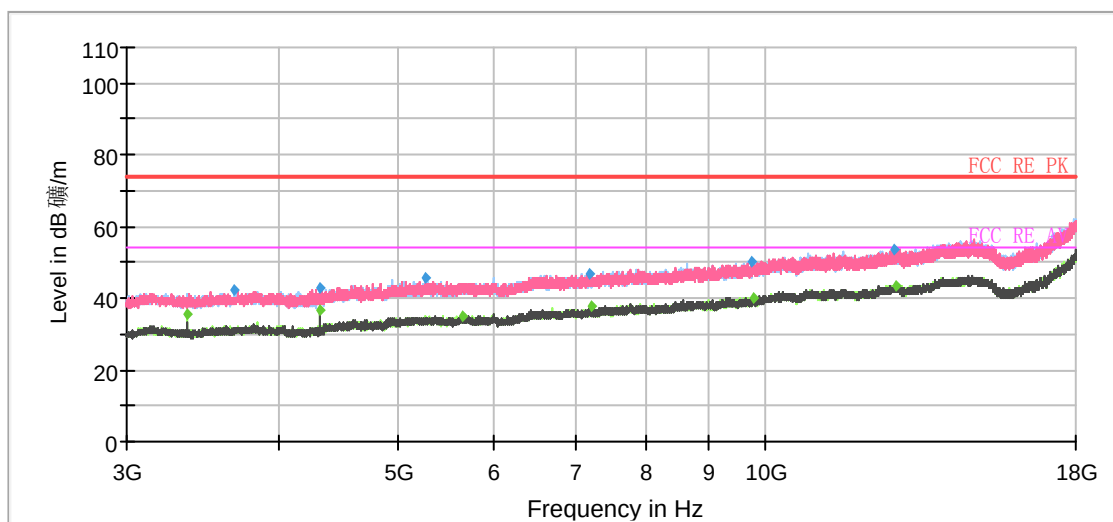
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH1



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



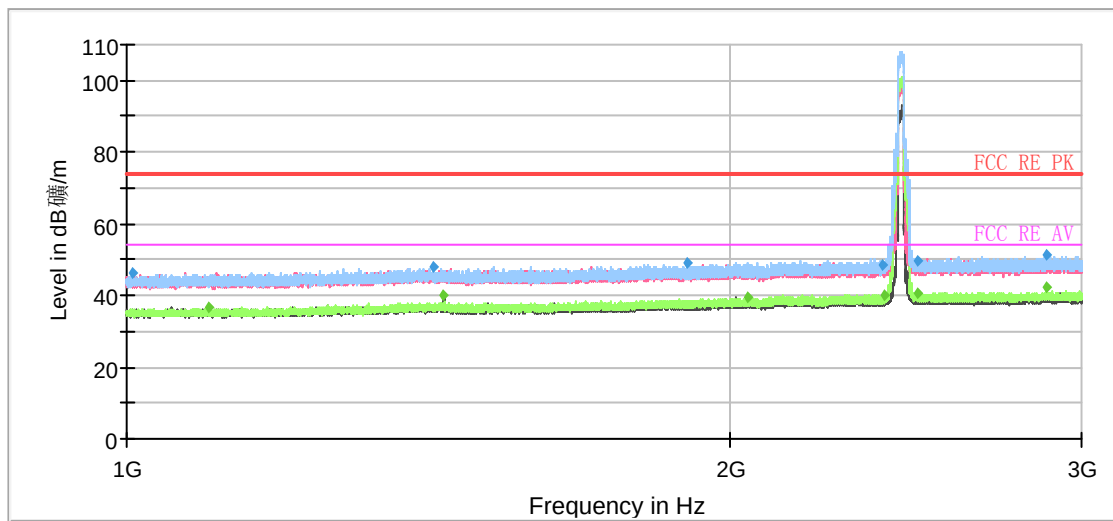
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1133.533333	---	36.79	54.00	17.21	200.0	H	313.0	-9
1141.400000	46.75	---	74.00	27.25	100.0	V	121.0	-9
1406.133333	47.47	---	74.00	26.53	200.0	H	351.0	-7
1440.600000	---	39.80	54.00	14.20	200.0	V	240.0	-7
1609.866667	48.21	---	74.00	25.79	100.0	H	64.0	-6
1659.133333	---	37.95	54.00	16.05	100.0	H	0.0	-6
2008.000000	48.90	---	74.00	25.10	200.0	H	154.0	-5
2030.733333	---	39.20	54.00	14.80	100.0	H	3.0	-5
2389.266667	57.76	---	74.00	16.24	100.0	H	64.0	-4
2389.666667	---	46.17	54.00	7.83	100.0	H	64.0	-4
2881.200000	---	41.87	54.00	12.13	100.0	V	241.0	-3
2893.466667	51.54	---	74.00	22.46	200.0	H	167.0	-3

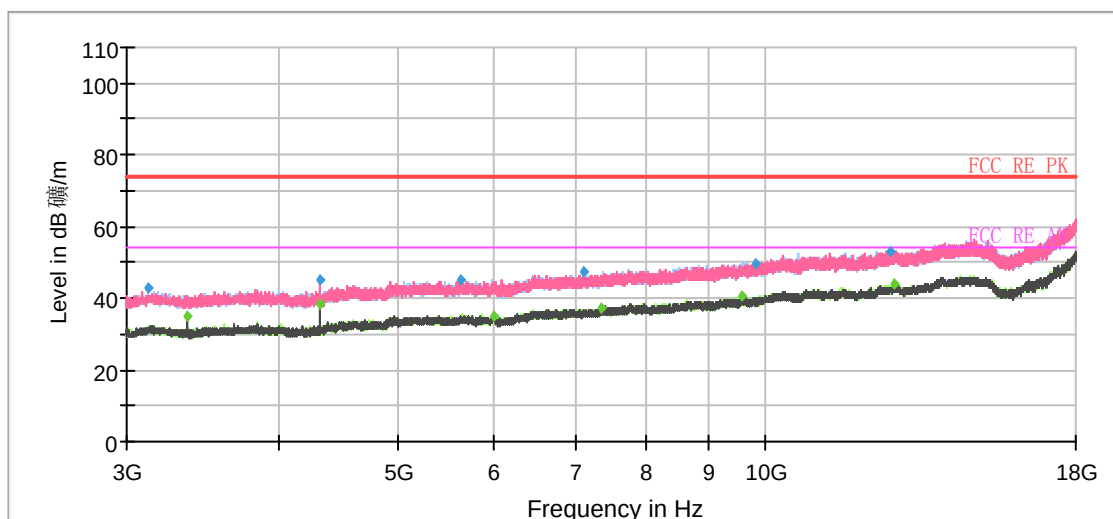
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH6



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



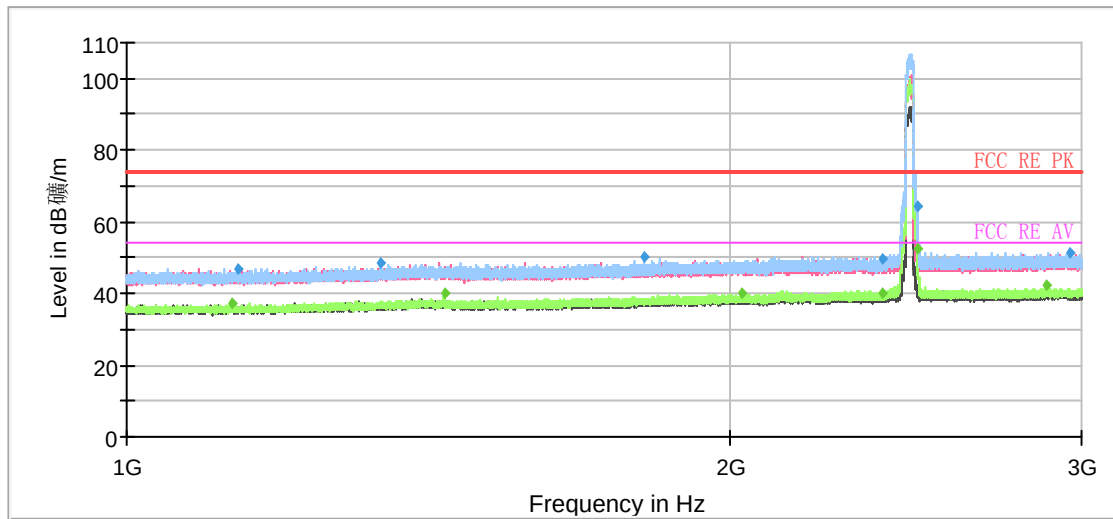
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1006.733333	46.44	---	74.00	27.56	200.0	V	12.0	-10
1098.466667	---	36.73	54.00	17.27	200.0	H	357.0	-9
1423.666667	47.81	---	74.00	26.19	200.0	H	208.0	-7
1440.533333	---	39.88	54.00	14.12	100.0	V	205.0	-7
1904.000000	49.33	---	74.00	24.67	200.0	H	337.0	-5
2044.200000	---	39.40	54.00	14.60	200.0	H	235.0	-5
2387.533333	48.59	---	74.00	25.41	100.0	H	179.0	-4
2388.400000	---	40.14	54.00	13.86	200.0	H	355.0	-4
2485.266667	49.51	---	74.00	24.49	200.0	H	153.0	-4
2486.466667	---	40.60	54.00	13.40	200.0	H	221.0	-4
2881.333333	---	42.18	54.00	11.82	100.0	V	324.0	-3
2881.800000	51.06	---	74.00	22.94	200.0	H	337.0	-3

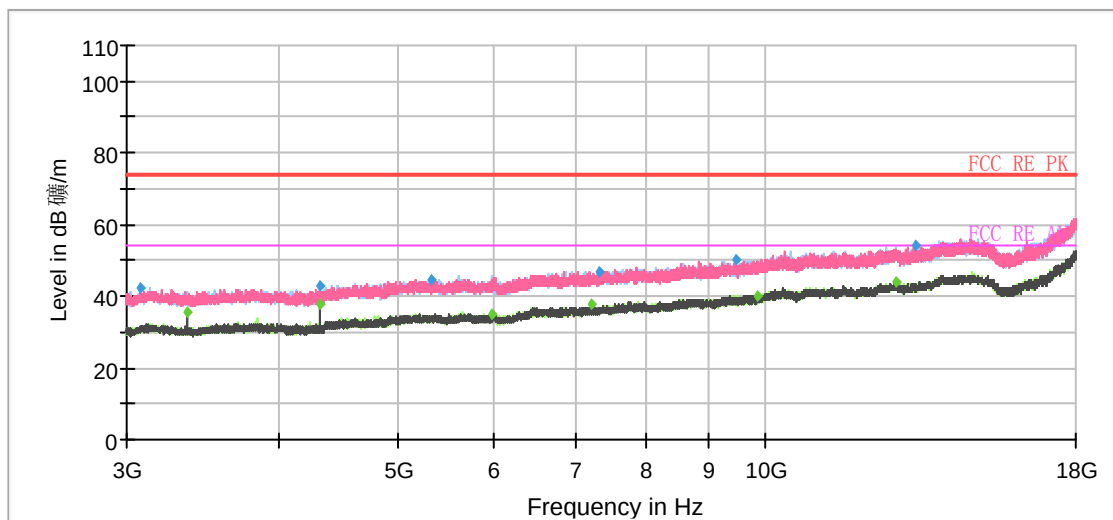
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH11



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

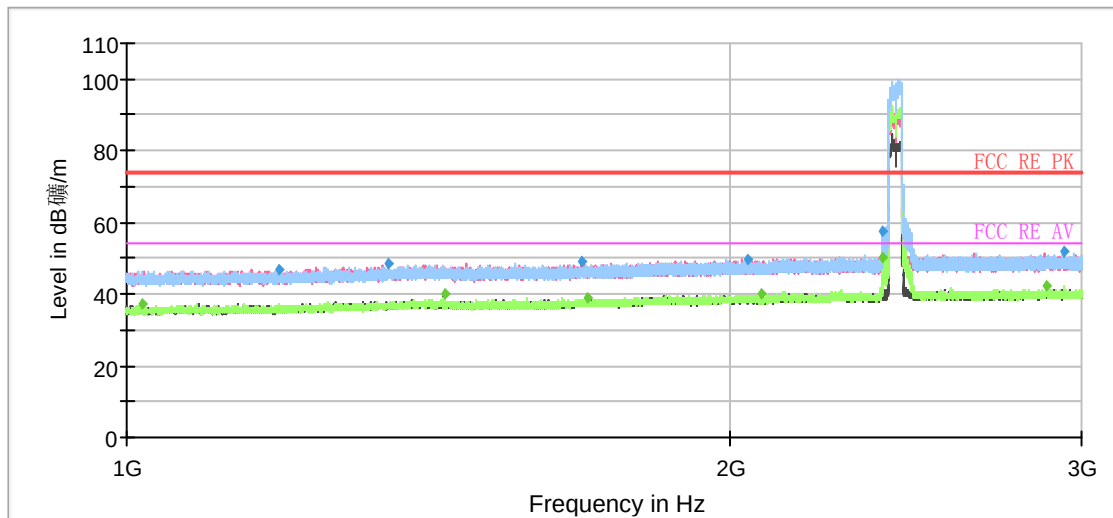


Radiates Emission from 3GHz to 18GHz

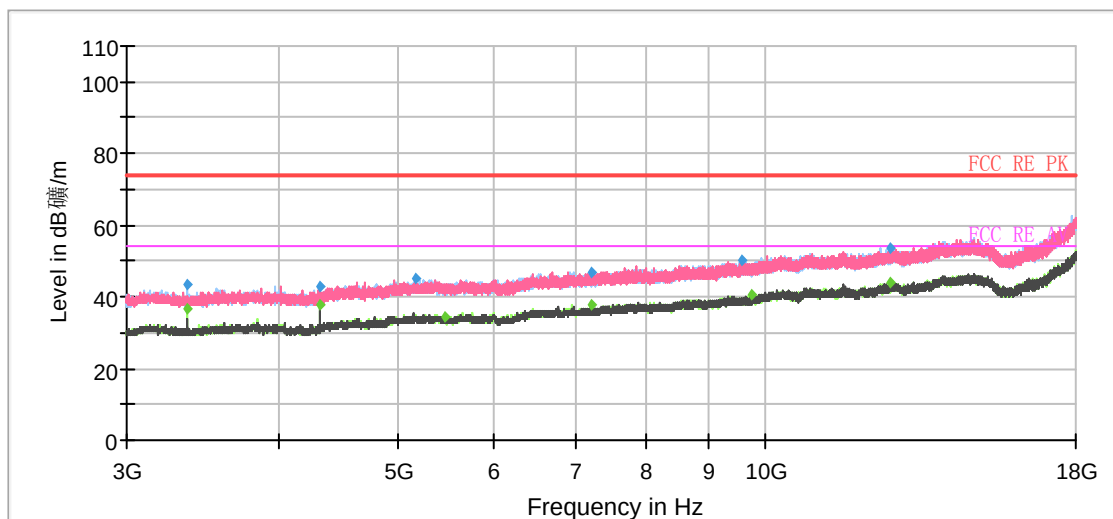
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1127.933333	---	37.44	54.00	16.56	100.0	H	279.0	-9
1137.666667	46.97	---	74.00	27.03	200.0	H	94.0	-9
1339.933333	48.50	---	74.00	25.50	200.0	H	216.0	-8
1440.733333	---	40.10	54.00	13.90	200.0	V	36.0	-7
1815.200000	50.02	---	74.00	23.98	200.0	H	268.0	-6
2031.066667	---	39.78	54.00	14.23	100.0	H	2.0	-5
2388.000000	49.39	---	74.00	24.61	100.0	H	30.0	-4
2388.266667	---	40.02	54.00	13.98	200.0	H	294.0	-4
2484.200000	64.39	---	74.00	9.61	100.0	H	69.0	-4
2484.200000	---	52.67	54.00	1.33	100.0	H	69.0	-4
2881.200000	---	42.41	54.00	11.59	100.0	V	323.0	-3
2956.866667	51.42	---	74.00	22.58	100.0	H	4.0	-3

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

802.11n (HT40) CH3



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz



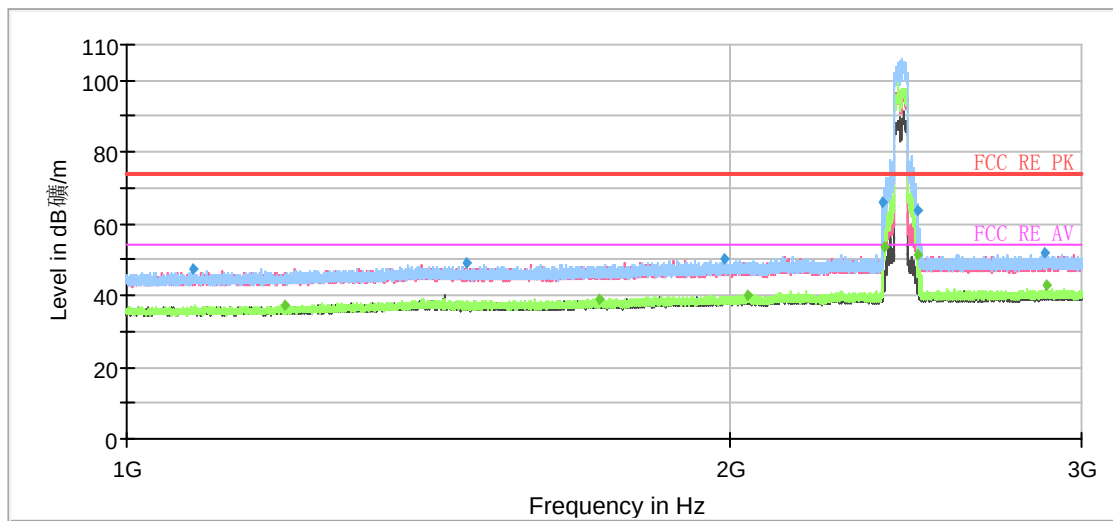
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1017.400000	---	37.26	54.00	16.75	200.0	H	337.0	-10
1192.800000	46.89	---	74.00	27.11	200.0	H	337.0	-9
1350.333333	48.24	---	74.00	25.76	100.0	H	4.0	-7
1440.800000	---	39.88	54.00	14.12	100.0	V	202.0	-7
1686.533333	49.05	---	74.00	24.95	200.0	V	0.0	-6
1699.866667	---	38.77	54.00	15.23	100.0	H	9.0	-6
2044.533333	49.67	---	74.00	24.33	100.0	V	147.0	-5
2075.333333	---	39.85	54.00	14.15	200.0	H	346.0	-5
2388.200000	---	50.03	54.00	3.97	200.0	H	38.0	-4
2388.266667	57.55	---	74.00	16.45	200.0	H	38.0	-4
2881.200000	---	42.56	54.00	11.44	100.0	V	354.0	-3
2941.800000	51.93	---	74.00	22.07	100.0	V	202.0	-3

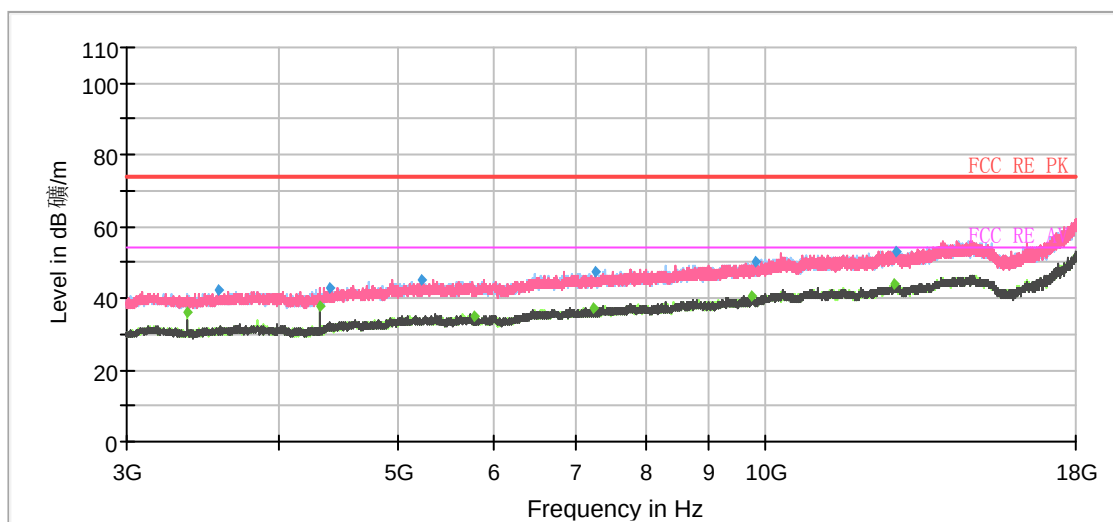
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT40) CH6



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

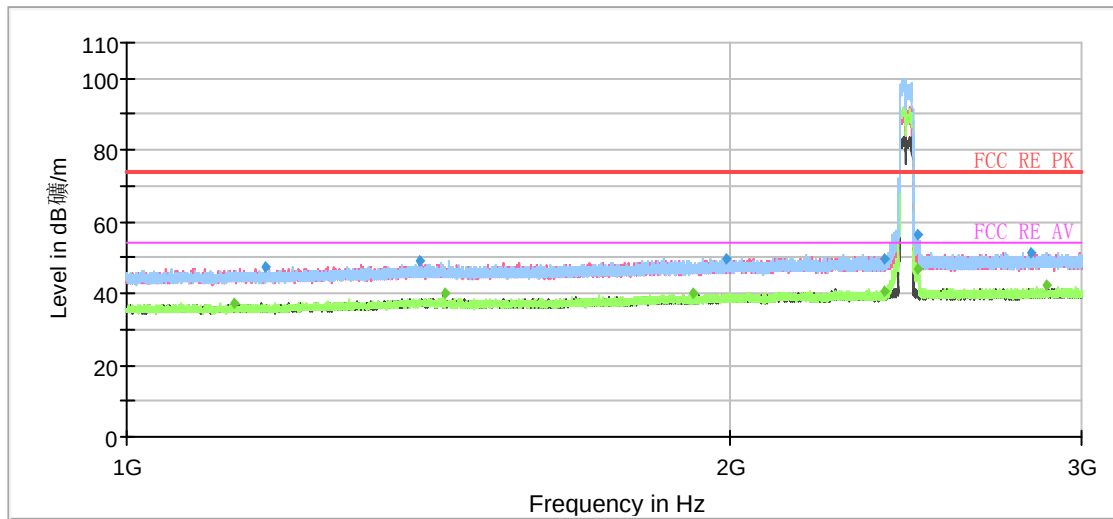


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1078.666667	47.46	---	74.00	26.54	100.0	H	4.0	-9
1199.133333	---	37.42	54.00	16.58	100.0	V	281.0	-9
1479.933333	48.93	---	74.00	25.07	100.0	V	353.0	-7
1721.400000	---	39.00	54.00	15.00	100.0	H	4.0	-6
1989.066667	50.02	---	74.00	23.98	200.0	H	98.0	-5
2041.333333	---	40.09	54.00	13.91	200.0	H	232.0	-5
2388.066667	66.04	---	74.00	7.96	100.0	H	70.0	-4
2389.533333	---	53.69	54.00	0.31	100.0	H	56.0	-4
2483.533333	63.91	---	74.00	10.09	100.0	H	44.0	-4
2483.866667	---	51.31	54.00	2.69	100.0	H	44.0	-4
2874.800000	51.69	---	74.00	22.31	200.0	H	354.0	-3
2881.533333	---	42.65	54.00	11.35	100.0	V	332.0	-3

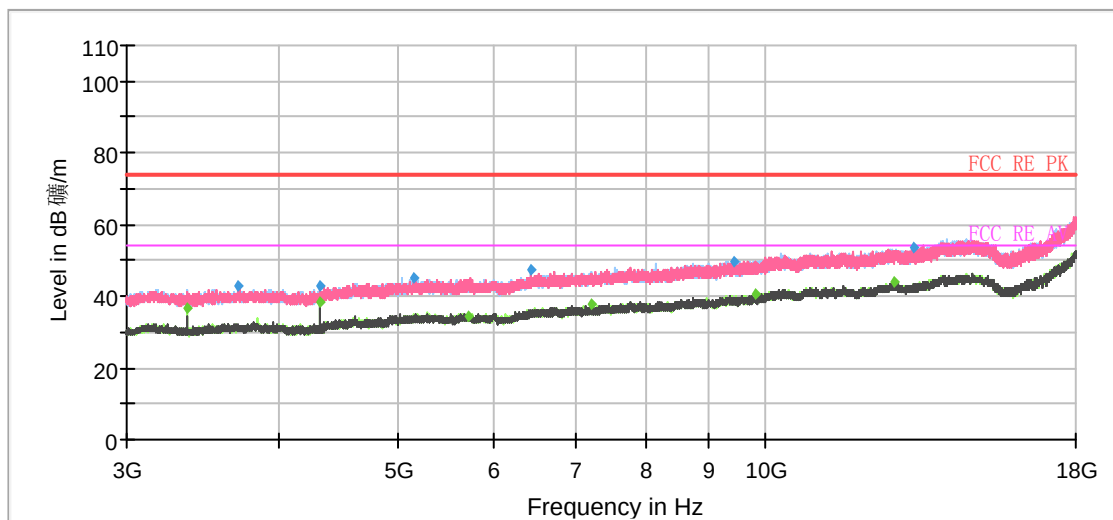
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT40) CH9



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



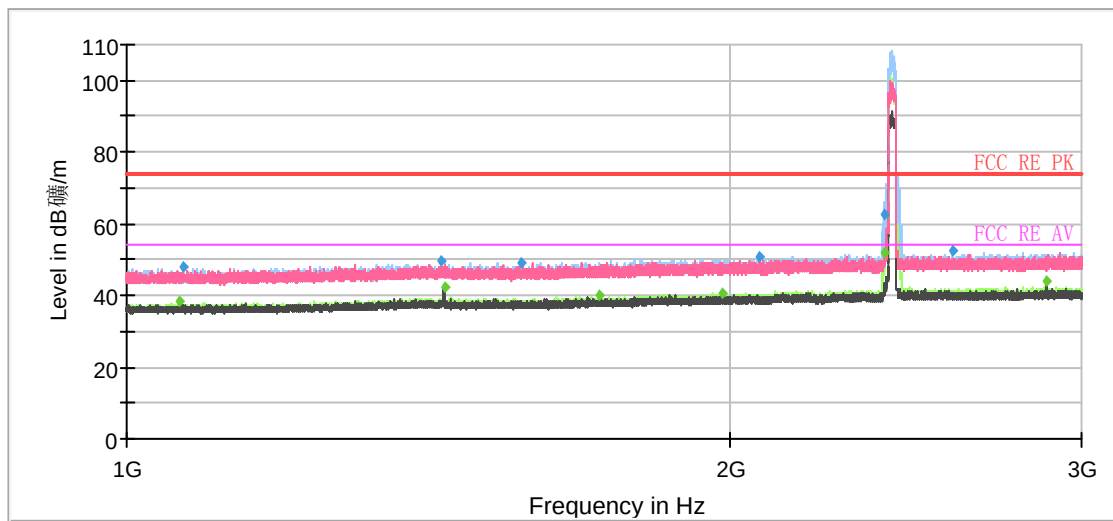
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1130.533333	---	37.40	54.00	16.60	100.0	V	356.0	-9
1172.266667	47.18	---	74.00	26.82	200.0	V	253.0	-9
1402.000000	49.27	---	74.00	24.73	200.0	V	3.0	-7
1440.733333	---	40.24	54.00	13.76	100.0	V	201.0	-7
1920.400000	---	39.94	54.00	14.06	200.0	H	320.0	-5
1991.266667	49.85	---	74.00	24.15	100.0	V	107.0	-5
2389.400000	49.85	---	74.00	24.15	100.0	H	22.0	-4
2389.400000	---	40.59	54.00	13.41	100.0	V	253.0	-4
2484.533333	56.45	---	74.00	17.55	100.0	H	62.0	-4
2486.266667	---	47.00	54.00	7.00	100.0	H	33.0	-4
2832.733333	51.38	---	74.00	22.62	100.0	H	22.0	-3
2881.266667	---	42.31	54.00	11.69	100.0	V	341.0	-3

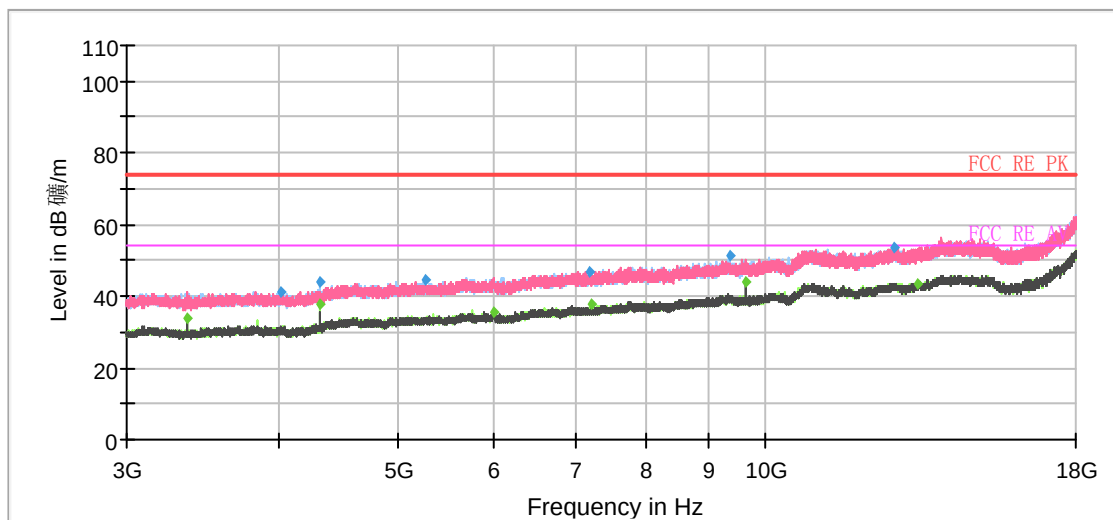
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ax (HE20) CH1



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

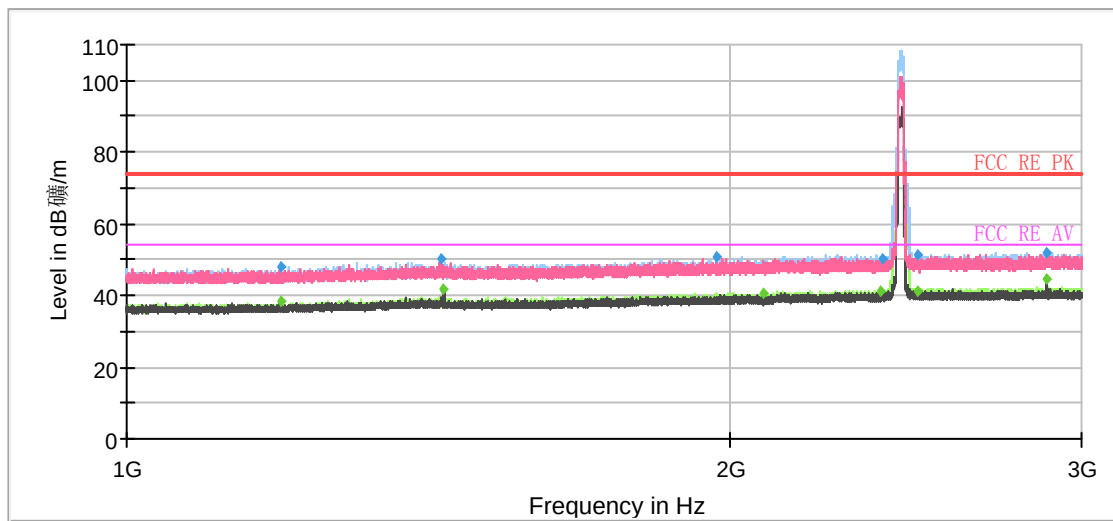


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1061.600000	---	38.33	54.00	15.67	200.0	H	124.0	-9
1067.266667	48.10	---	74.00	25.90	200.0	H	98.0	-9
1436.533333	49.50	---	74.00	24.50	100.0	H	349.0	-7
1440.666667	---	42.38	54.00	11.62	100.0	V	151.0	-7
1575.533333	49.20	---	74.00	24.80	100.0	H	0.0	-6
1723.333333	---	39.83	54.00	14.18	200.0	H	19.0	-6
1985.666667	---	40.56	54.00	13.44	200.0	H	335.0	-5
2070.666667	50.83	---	74.00	23.17	200.0	V	347.0	-5
2388.333333	62.86	---	74.00	11.14	200.0	H	85.0	-4
2388.533333	---	51.92	54.00	2.08	200.0	H	85.0	-4
2585.266667	52.61	---	74.00	21.39	100.0	H	356.0	-4
2881.466667	---	43.94	54.00	10.06	100.0	V	45.0	-3

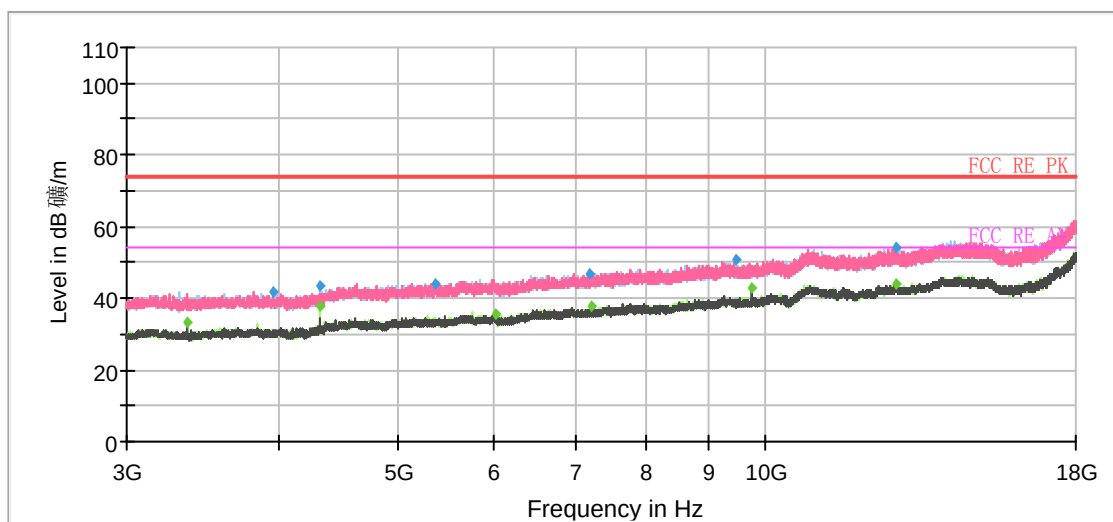
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ax (HE20) CH6



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



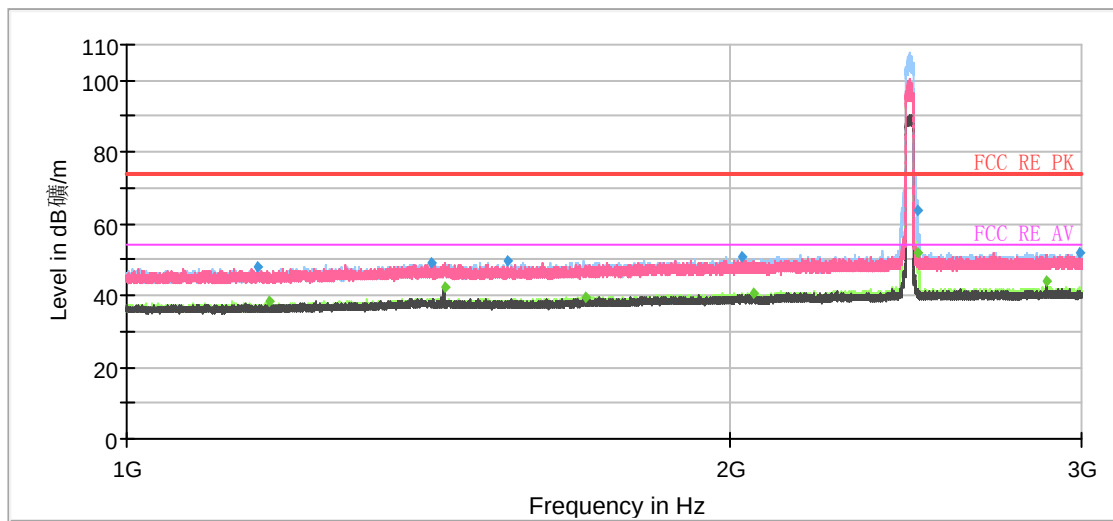
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1194.333333	47.83	---	74.00	26.17	200.0	H	19.0	-9
1195.533333	---	38.14	54.00	15.86	100.0	V	3.0	-9
1434.266667	49.95	---	74.00	24.05	200.0	V	0.0	-7
1440.466667	---	41.69	54.00	12.31	100.0	V	155.0	-7
1972.333333	50.92	---	74.00	23.08	200.0	H	190.0	-5
2079.733333	---	40.65	54.00	13.35	100.0	H	353.0	-5
2382.066667	---	41.38	54.00	12.62	100.0	V	3.0	-4
2386.866667	50.44	---	74.00	23.56	100.0	V	9.0	-4
2485.000000	---	41.34	54.00	12.66	100.0	H	358.0	-4
2486.600000	51.39	---	74.00	22.61	100.0	H	264.0	-4
2881.400000	---	44.68	54.00	9.32	100.0	V	47.0	-3
2881.666667	52.12	---	74.00	21.88	100.0	V	88.0	-3

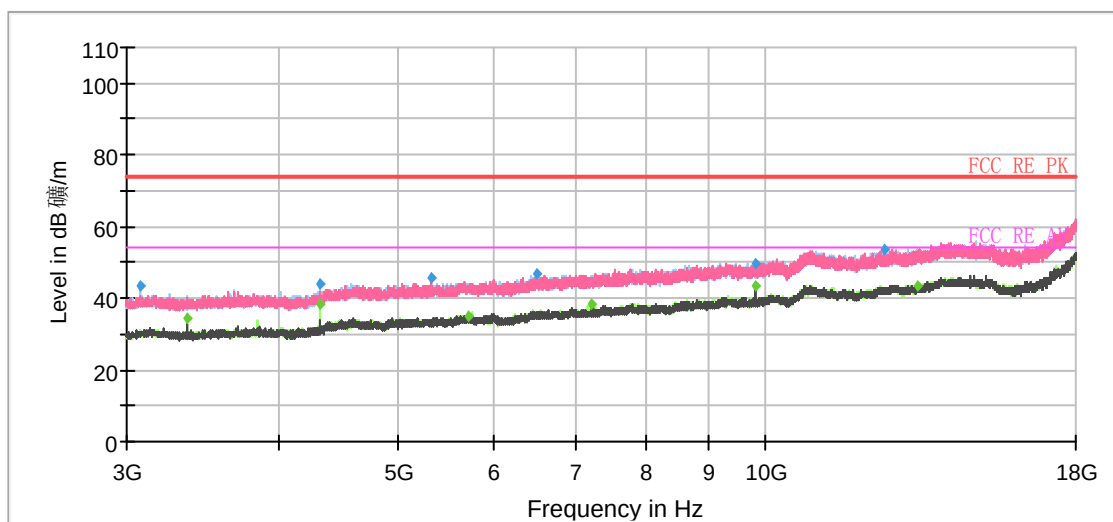
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ax (HE20) CH11



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



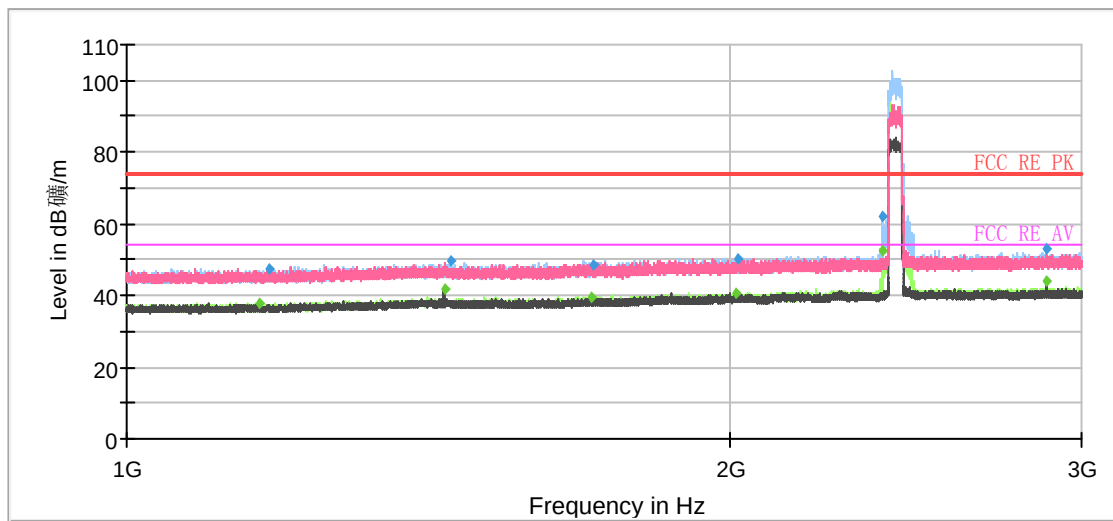
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1161.666667	47.71	---	74.00	26.29	100.0	H	264.0	-9
1178.466667	---	38.25	54.00	15.75	100.0	H	358.0	-9
1419.333333	49.16	---	74.00	24.84	100.0	V	22.0	-7
1440.733333	---	42.48	54.00	11.52	100.0	V	154.0	-7
1551.133333	49.53	---	74.00	24.47	200.0	H	4.0	-7
1696.800000	---	39.61	54.00	14.39	100.0	H	348.0	-6
2029.200000	50.94	---	74.00	23.06	100.0	H	291.0	-5
2055.733333	---	40.49	54.00	13.51	200.0	H	11.0	-5
2484.000000	63.90	---	74.00	10.10	100.0	H	55.0	-4
2484.466667	---	51.84	54.00	2.16	100.0	H	70.0	-4
2881.666667	---	43.87	54.00	10.13	100.0	V	48.0	-3
2995.400000	52.18	---	74.00	21.83	200.0	H	272.0	-3

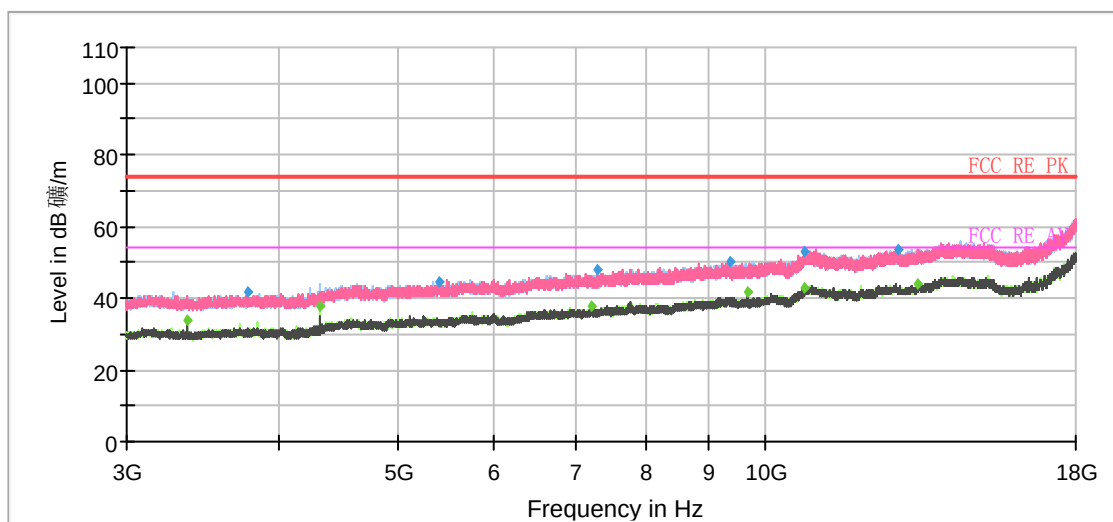
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ax (HE40) CH3



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

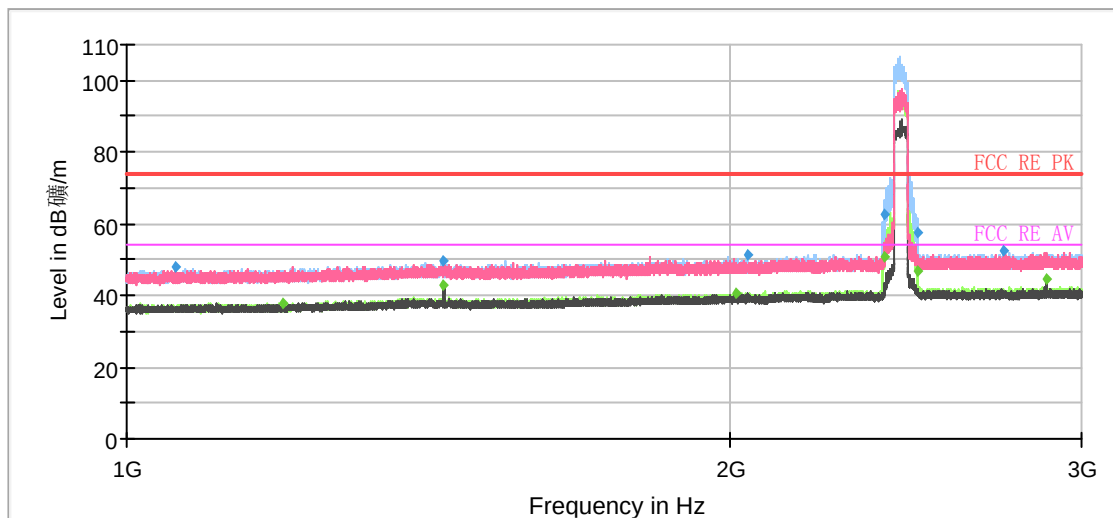


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1165.333333	---	37.86	54.00	16.14	100.0	V	305.0	-9
1177.000000	47.56	---	74.00	26.44	100.0	V	180.0	-9
1440.733333	---	41.92	54.00	12.08	100.0	V	0.0	-7
1452.266667	49.69	---	74.00	24.31	200.0	H	24.0	-7
1708.466667	---	39.69	54.00	14.31	100.0	H	216.0	-6
1709.733333	48.42	---	74.00	25.58	100.0	H	100.0	-6
2017.600000	---	40.69	54.00	13.31	200.0	H	48.0	-5
2020.200000	50.39	---	74.00	23.61	100.0	H	85.0	-5
2387.800000	61.82	---	74.00	12.18	100.0	H	54.0	-4
2387.800000	---	52.59	54.00	1.41	100.0	H	54.0	-4
2878.133333	52.81	---	74.00	21.19	100.0	H	323.0	-3
2881.400000	---	44.22	54.00	9.78	100.0	V	46.0	-3

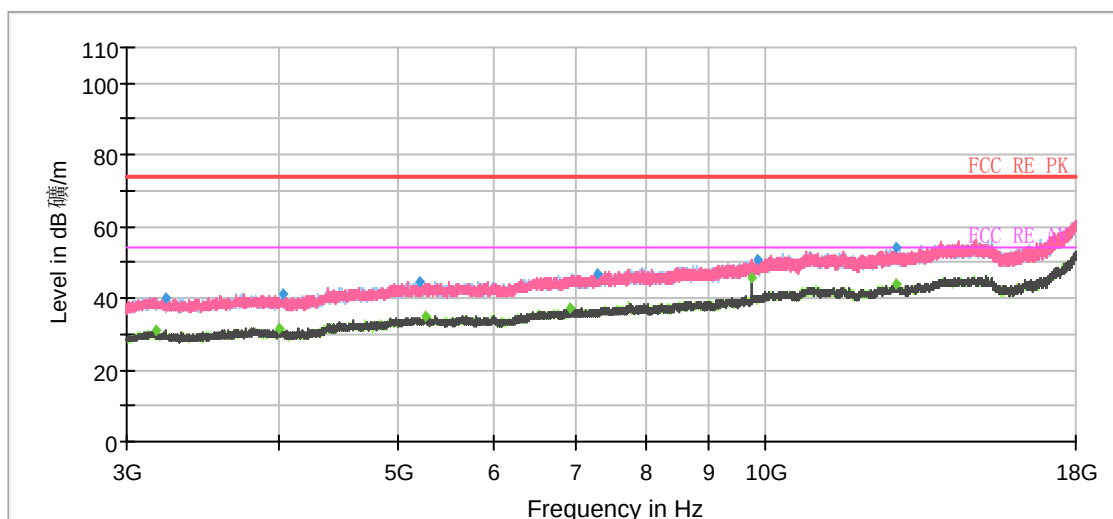
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ax (HE40) CH6



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



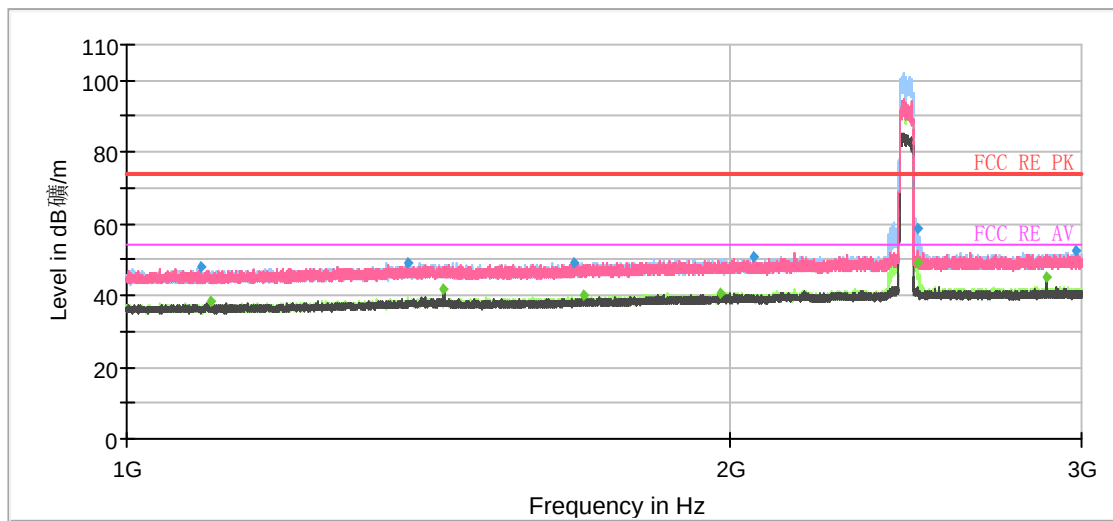
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1057.600000	47.69	---	74.00	26.31	100.0	H	220.0	-9
1196.933333	---	37.85	54.00	16.15	100.0	H	207.0	-9
1440.533333	---	43.05	54.00	10.95	100.0	V	155.0	-7
1440.533333	49.64	---	74.00	24.36	100.0	V	155.0	-7
2013.800000	---	40.69	54.00	13.31	100.0	H	247.0	-5
2043.733333	51.21	---	74.00	22.79	200.0	H	0.0	-5
2389.000000	---	50.83	54.00	3.17	100.0	H	69.0	-4
2389.666667	62.63	---	74.00	11.37	100.0	H	56.0	-4
2484.600000	57.65	---	74.00	16.35	100.0	H	56.0	-4
2484.600000	---	47.06	54.00	6.94	100.0	H	56.0	-4
2741.133333	52.69	---	74.00	21.31	200.0	H	0.0	-4
2881.133333	---	44.73	54.00	9.27	100.0	V	48.0	-3

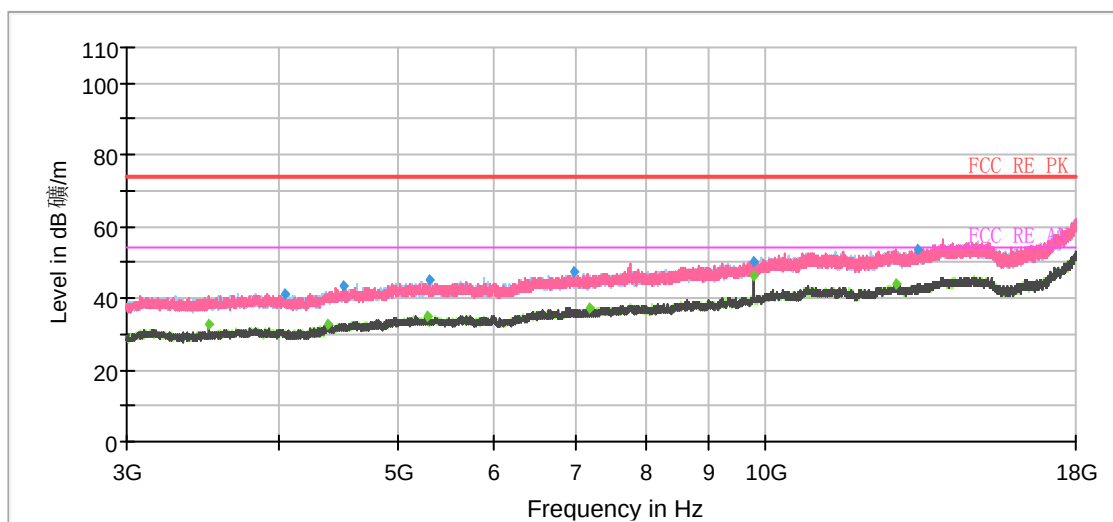
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11x (HE40) CH9



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



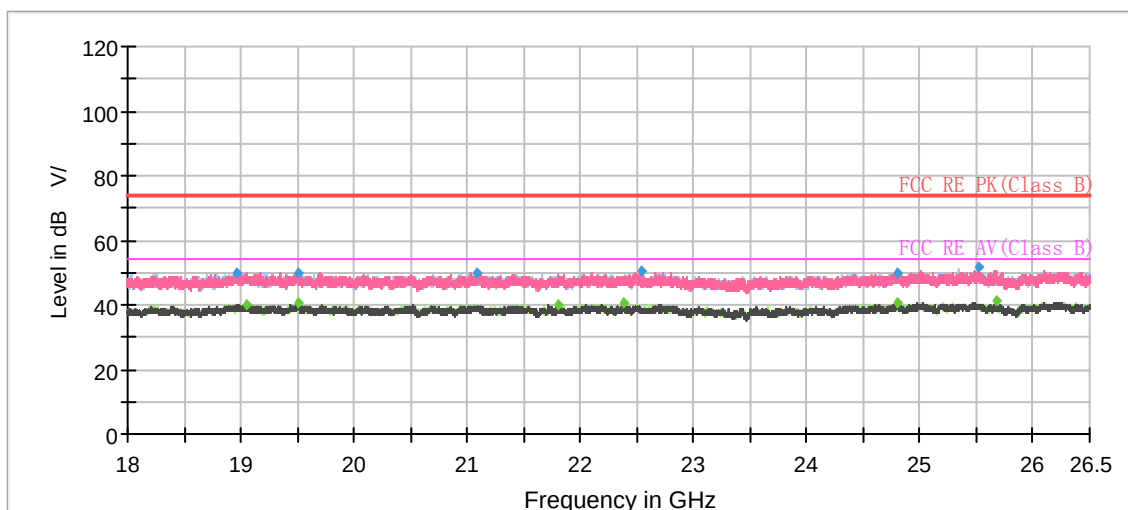
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1089.466667	47.91	---	74.00	26.09	100.0	H	328.0	-9
1101.600000	---	38.22	54.00	15.78	100.0	H	167.0	-9
1380.666667	49.35	---	74.00	24.65	100.0	H	328.0	-7
1440.533333	---	41.76	54.00	12.24	100.0	V	159.0	-7
1672.600000	49.22	---	74.00	24.78	100.0	H	265.0	-6
1692.066667	---	39.78	54.00	14.22	100.0	H	291.0	-6
1980.666667	---	40.70	54.00	13.30	100.0	H	328.0	-5
2054.600000	50.81	---	74.00	23.19	100.0	H	355.0	-5
2483.933333	---	48.84	54.00	5.16	100.0	H	54.0	-4
2484.466667	58.85	---	74.00	15.15	100.0	H	37.0	-4
2881.400000	---	44.98	54.00	9.02	100.0	V	48.0	-3
2980.866667	52.23	---	74.00	21.77	100.0	H	328.0	-3

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

During the test, the Radiates Emission from 18GHz to 26.5GHz was performed in all modes with all channels, 802.11n (HT40) CH6 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.



Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18966.166667	50.03	---	74.00	23.97	100.0	H	67.0	-1
19045.500000	---	40.14	54.00	13.86	200.0	V	355.0	-1
19506.200000	---	40.40	54.00	13.60	100.0	H	231.0	-1
19514.133333	50.00	---	74.00	24.00	100.0	V	9.0	-1
21088.050000	49.80	---	74.00	24.20	100.0	H	116.0	0
21808.283333	---	40.30	54.00	13.70	100.0	H	211.0	1
22381.466667	---	40.35	54.00	13.65	100.0	H	259.0	2
22547.783333	50.40	---	74.00	23.60	200.0	H	167.0	2
24791.500000	---	40.44	54.00	13.56	100.0	H	281.0	3
24794.900000	50.04	---	74.00	23.96	200.0	V	238.0	3
25514.000000	51.45	---	74.00	22.55	100.0	V	251.0	3
25668.983333	---	40.92	54.00	13.08	200.0	V	74.0	3

5.7. Conducted Emission

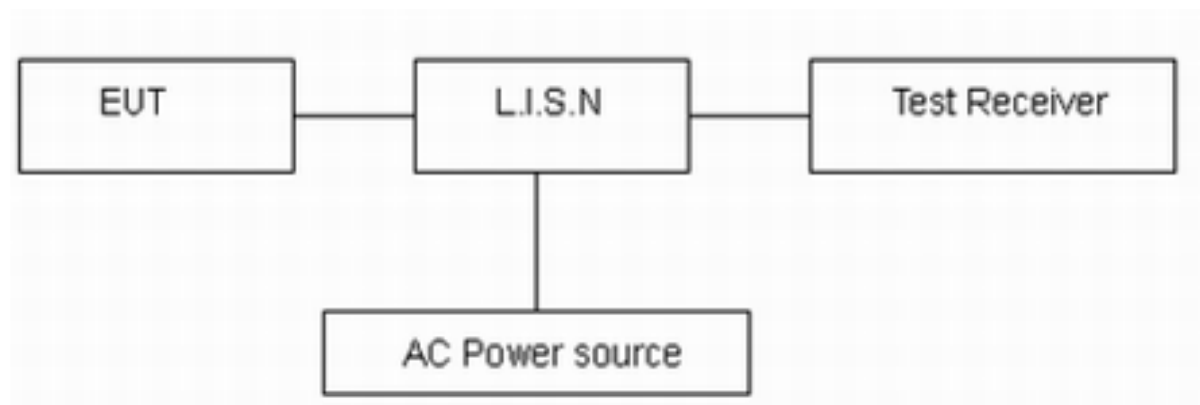
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.10. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line. The test is in transmitting mode.

Test Setup



Note: AC Power source is used to change the voltage 110V/60Hz.

Limits

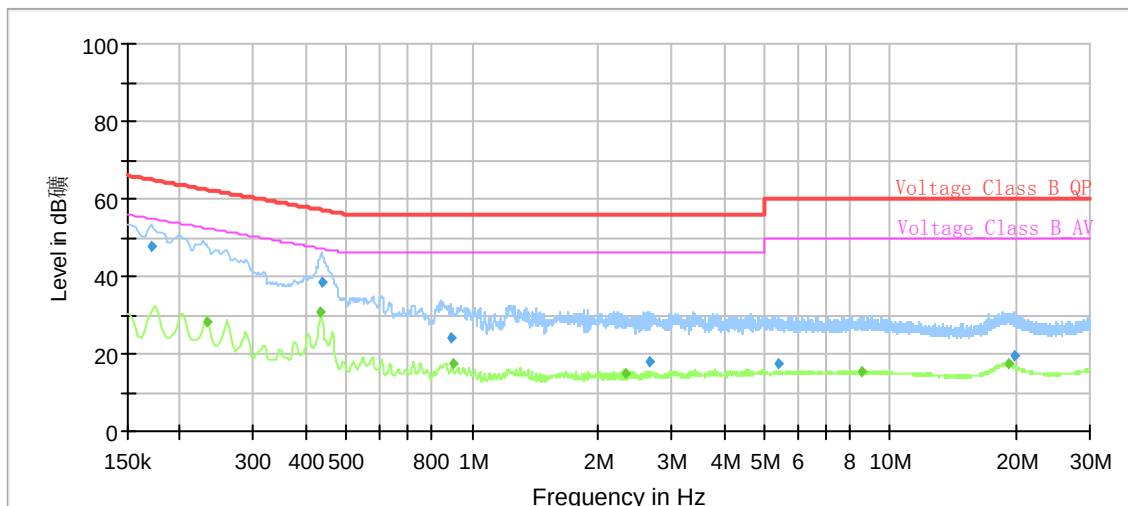
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U = 2.69$ dB.

Test Results:

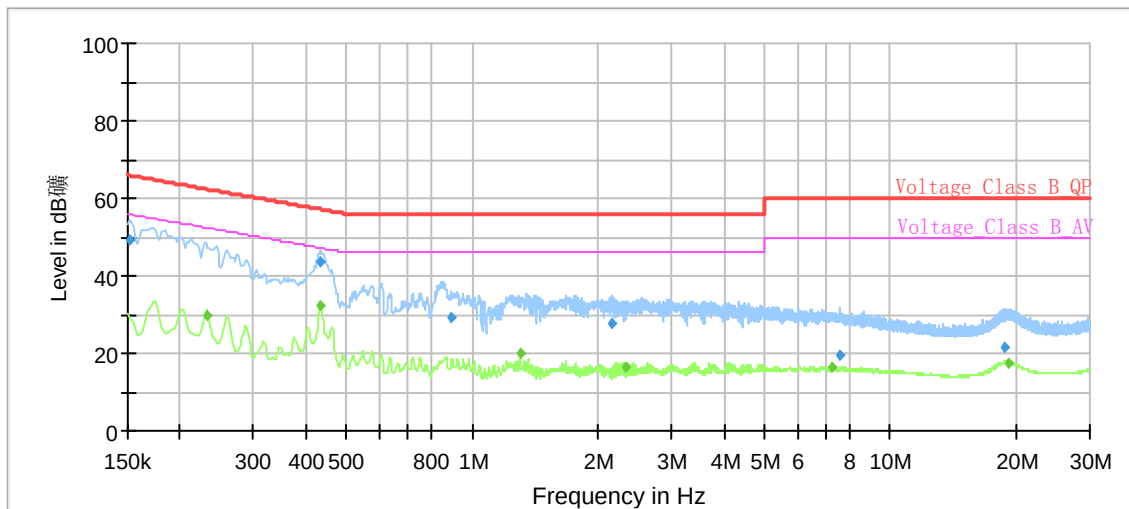
Following plots, Blue trace uses the peak detection and Green trace uses the average detection. During the test, the Conducted Emission was performed in all modes (WIFI 2.4G) with all channels, 802.11n (HT40) CH6 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.



Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.17	47.44	---	64.95	17.51	70.0	9.000	L1	ON	21
0.23	---	28.26	52.41	24.15	70.0	9.000	L1	ON	21
0.43	---	30.52	47.19	16.67	70.0	9.000	L1	ON	20
0.44	38.43	---	57.14	18.71	70.0	9.000	L1	ON	20
0.89	24.04	---	56.00	31.96	70.0	9.000	L1	ON	20
0.90	---	17.42	46.00	28.58	70.0	9.000	L1	ON	20
2.32	---	14.76	46.00	31.24	70.0	9.000	L1	ON	19
2.64	17.95	---	56.00	38.05	70.0	9.000	L1	ON	19
5.39	17.60	---	60.00	42.40	70.0	9.000	L1	ON	19
8.54	---	15.38	50.00	34.62	70.0	9.000	L1	ON	20
19.21	---	17.28	50.00	32.72	70.0	9.000	L1	ON	20
19.86	19.45	---	60.00	40.55	70.0	9.000	L1	ON	20

Remark: Correct factor=cable loss + LISN factor

L line Conducted Emission from 150 KHz to 30 MHz



Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	49.32	---	65.88	16.56	70.0	9.000	N	ON	21
0.23	---	29.83	52.41	22.58	70.0	9.000	N	ON	21
0.43	---	32.13	47.19	15.05	70.0	9.000	N	ON	20
0.43	43.75	---	57.19	13.44	70.0	9.000	N	ON	20
0.89	29.47	---	56.00	26.53	70.0	9.000	N	ON	20
1.30	---	19.82	46.00	26.18	70.0	9.000	N	ON	20
2.15	27.51	---	56.00	28.49	70.0	9.000	N	ON	20
2.32	---	16.61	46.00	29.39	70.0	9.000	N	ON	20
7.23	---	16.30	50.00	33.70	70.0	9.000	N	ON	20
7.56	19.37	---	60.00	40.63	70.0	9.000	N	ON	20
18.83	21.42	---	60.00	38.58	70.0	9.000	N	ON	20
19.24	---	17.61	50.00	32.39	70.0	9.000	N	ON	20

Remark: Correct factor=cable loss + LISN factor

N line Conducted Emission from 150 KHz to 30 MHz



6. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Power Sensor	R&S	NRP18S	101954	2021-05-15	2022-05-14
Spectrum Analyzer	KEYSIGHT	N9020A	MY54420163	2020-12-13	2021-12-12
				2021-12-12	2022-12-11
Signal Analyzer	R&S	FSV40	100815	2021-05-15	2022-05-14
EMI Test Receiver	R&S	ESCI7	100936	2020-12-13	2021-12-13
				2021-12-12	2022-12-11
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2020-04-02	2023-04-01
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	391	2019-12-16	2022-12-15
Horn Antenna	R&S	HF907	102723	2020-08-11	2023-08-10
Horn Antenna	ETS-Lindgren	3160-09	00102643	2021-10-10	2024-10-09
EMI Test Receiver	R&S	ESR	101667	2021-05-16	2022-05-15
LISN	R&S	ENV216	101171	2020-12-13	2022-12-12
Software	R&S	EMC32	9.26.01	/	/

*****END OF REPORT *****



ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.



ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.