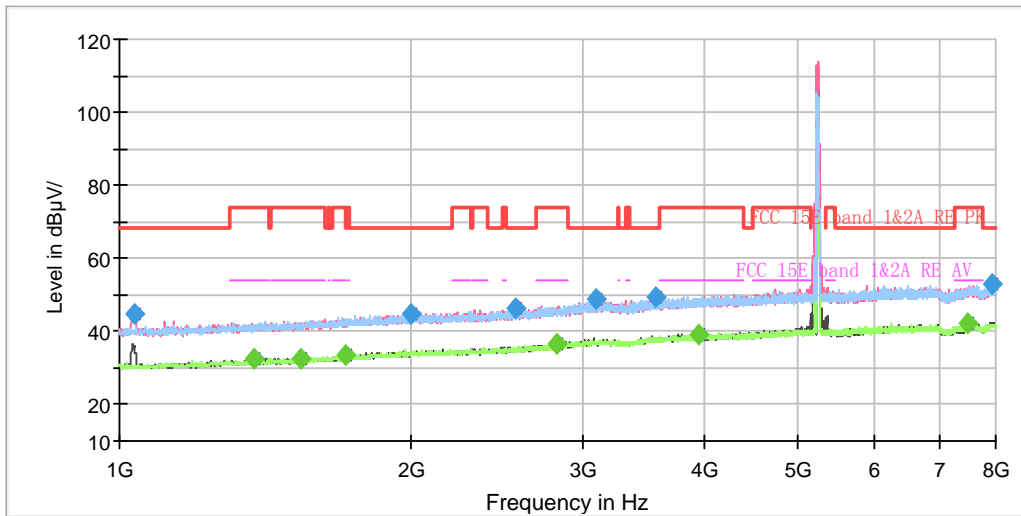
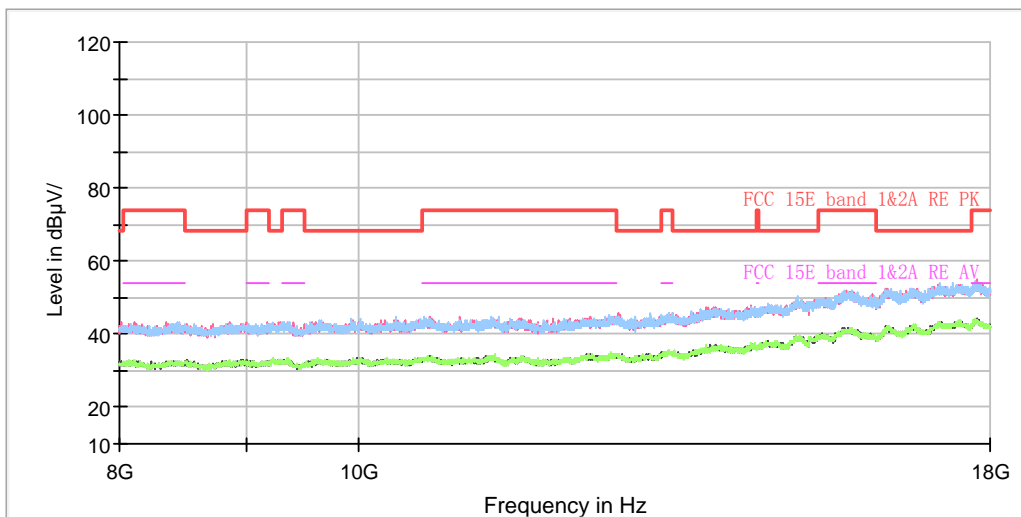


802.11n (HT20) CH48



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



Radiates Emission from 8GHz to 18GHz

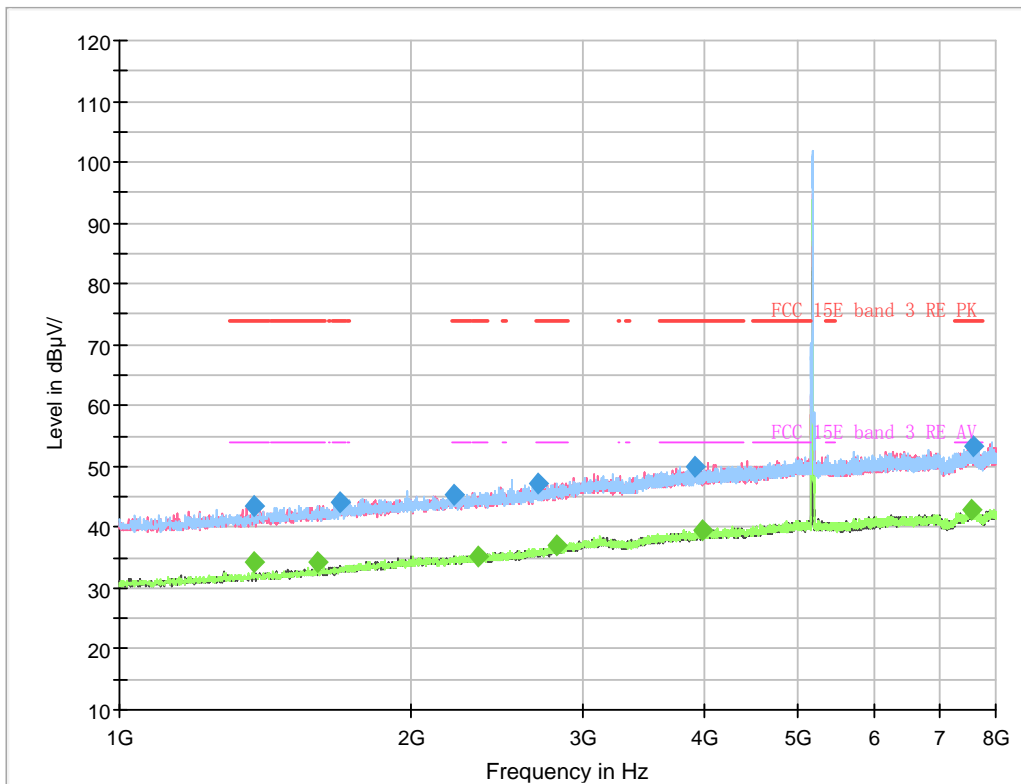


Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1034.125000	44.93	---	68.20	23.27	100.0	V	142.0	-8.5
1374.500000	---	32.42	54.00	21.58	100.0	H	154.0	-6.6
1538.125000	---	32.43	54.00	21.57	200.0	V	307.0	-5.8
1707.875000	---	33.70	54.00	20.30	200.0	H	27.0	-4.8
1994.875000	44.76	---	68.20	23.44	200.0	H	15.0	-3.2
2556.625000	46.35	---	68.20	21.85	100.0	V	26.0	-1.0
2820.000000	---	36.48	54.00	17.52	200.0	V	297.0	0.3
3101.750000	48.91	---	68.20	19.29	200.0	H	198.0	1.8
3576.000000	49.30	---	68.20	18.90	100.0	V	156.0	3.2
3959.250000	---	39.27	54.00	14.73	100.0	H	105.0	4.3
7476.750000	---	42.32	54.00	11.68	100.0	H	298.0	10.1
7925.625000	53.10	---	68.20	15.10	100.0	V	107.0	10.5

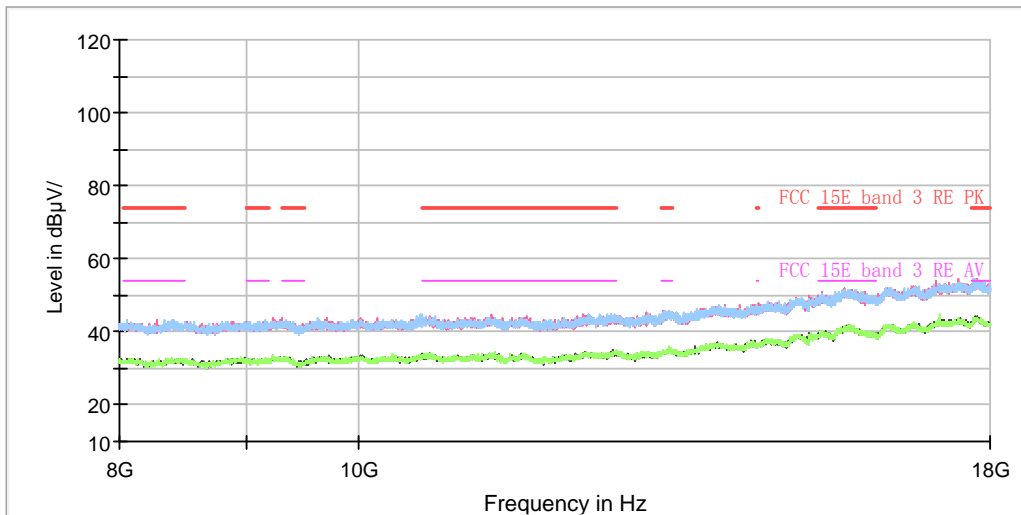
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



802.11n (HT20) CH149



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



Radiates Emission from 8GHz to 18GHz

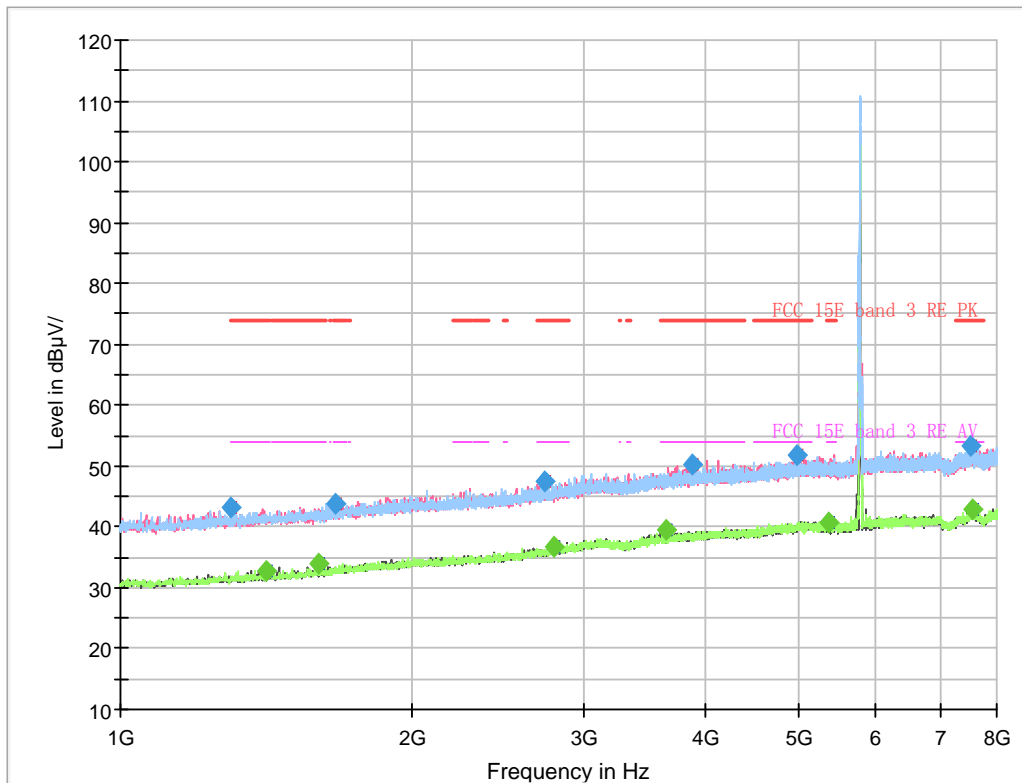


Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1374.500000	---	34.13	54.00	19.87	100.0	H	217.0	-6.6
1375.375000	43.35	---	74.00	30.65	100.0	H	310.0	-6.6
1599.375000	---	34.42	54.00	19.58	100.0	H	234.0	-5.4
1686.875000	44.07	---	74.00	29.93	100.0	H	149.0	-4.9
2207.500000	45.46	---	74.00	28.54	100.0	H	217.0	-3.3
2347.500000	---	35.28	54.00	18.72	100.0	V	91.0	-3.0
2703.625000	47.10	---	74.00	26.90	200.0	V	208.0	-0.4
2821.750000	---	36.90	54.00	17.10	200.0	V	186.0	0.3
3918.125000	50.01	---	74.00	23.99	200.0	H	107.0	4.2
3984.625000	---	39.48	54.00	14.52	200.0	V	275.0	4.3
7545.000000	---	42.83	54.00	11.17	100.0	V	237.0	10.3
7597.500000	53.20	---	74.00	20.80	100.0	H	162.0	10.3

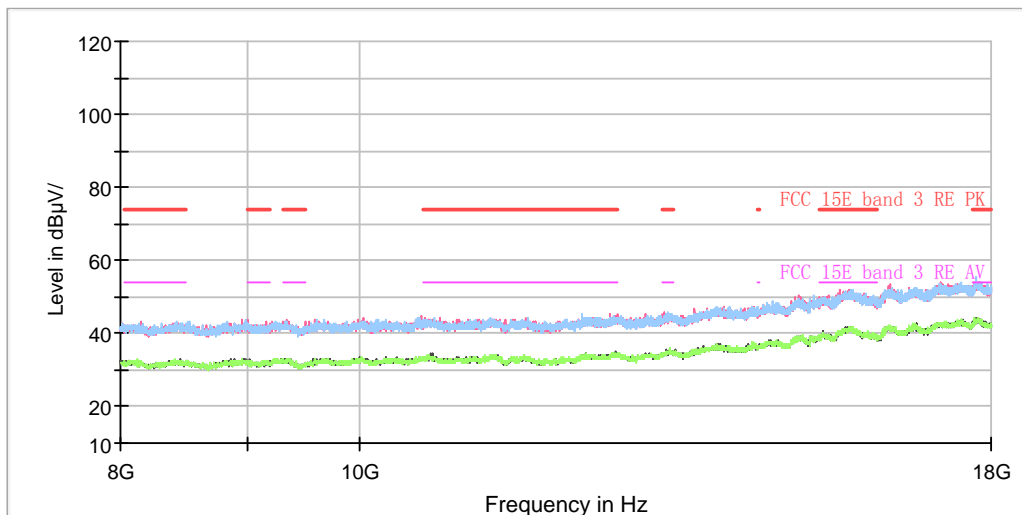
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



802.11n (HT20) CH157



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



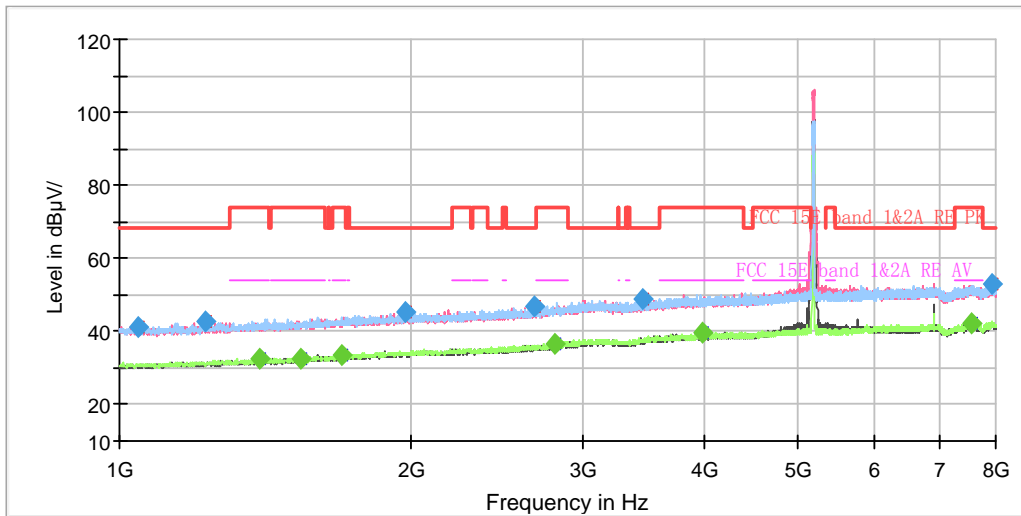
Radiates Emission from 8GHz to 18GHz



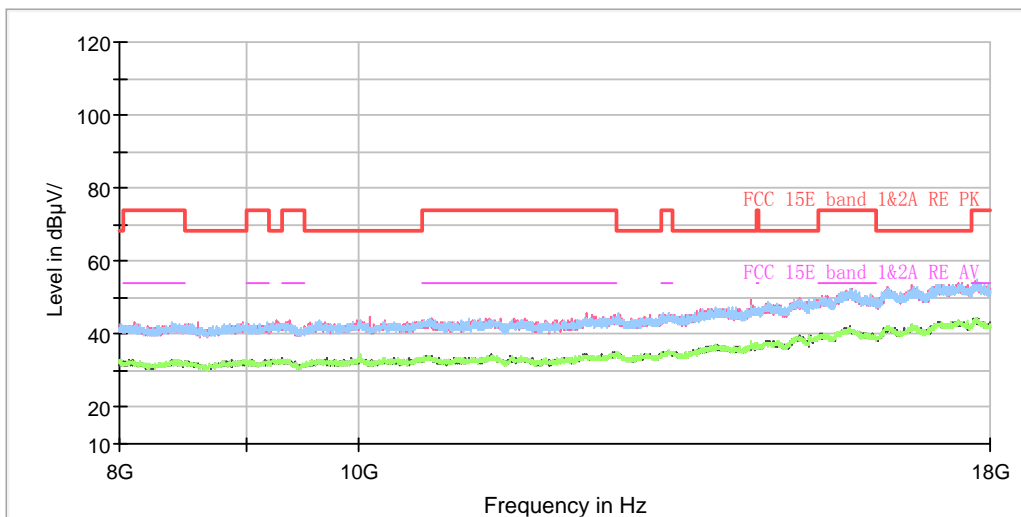
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1300.125000	43.29	---	74.00	30.71	100.0	H	344.0	-7.0
1412.125000	---	32.71	54.00	21.29	200.0	H	264.0	-6.4
1599.375000	---	34.00	54.00	20.00	200.0	H	222.0	-5.4
1664.125000	43.75	---	74.00	30.25	100.0	H	177.0	-5.0
2732.500000	47.38	---	74.00	26.62	200.0	V	184.0	-0.2
2800.750000	---	36.87	54.00	17.13	100.0	V	156.0	0.2
3648.625000	---	39.35	54.00	14.65	200.0	V	231.0	3.4
3881.375000	50.28	---	74.00	23.72	100.0	V	233.0	4.0
4969.875000	51.74	---	74.00	22.26	200.0	H	260.0	6.5
5372.375000	---	40.85	54.00	13.15	100.0	H	151.0	7.1
7514.375000	53.36	---	74.00	20.64	200.0	H	3.0	10.2
7547.625000	---	42.87	54.00	11.13	200.0	H	100.0	10.3

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

802.11n (HT40) CH38



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



Radiates Emission from 8GHz to 18GHz

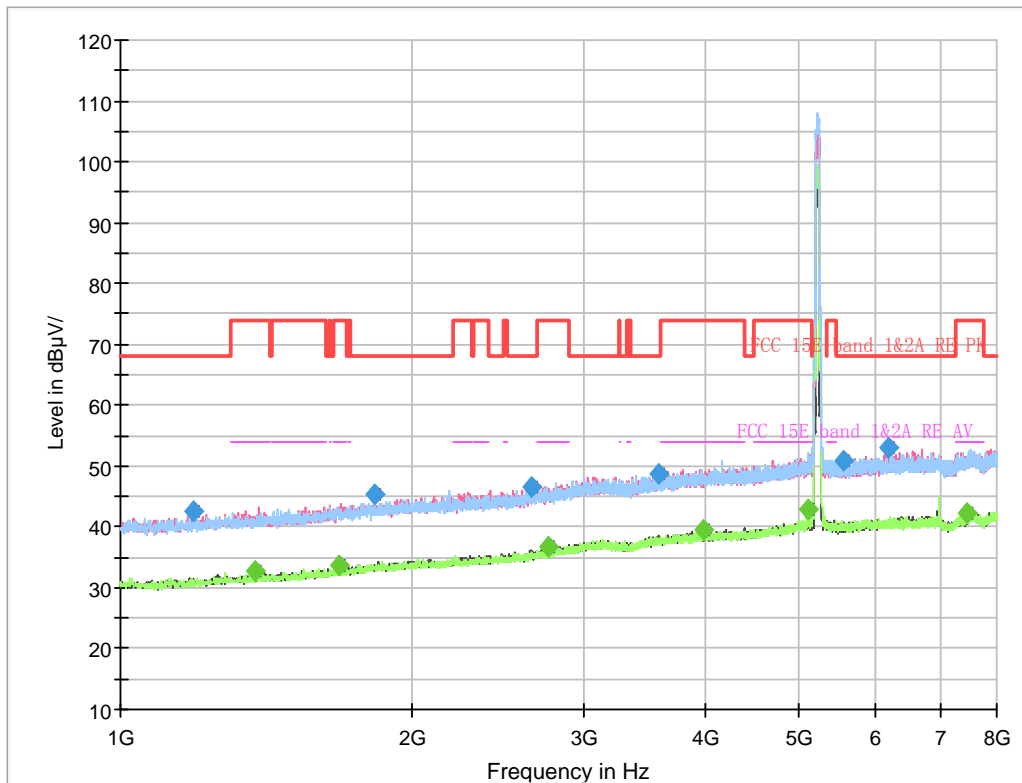


Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1047.250000	41.36	---	68.20	26.84	100.0	H	357.0	-8.4
1227.500000	42.59	---	68.20	25.61	200.0	V	14.0	-7.4
1392.000000	---	32.47	54.00	21.53	100.0	H	23.0	-6.5
1539.000000	---	32.28	54.00	21.72	200.0	V	207.0	-5.8
1691.250000	---	33.71	54.00	20.29	200.0	H	74.0	-4.9
1966.875000	45.42	---	68.20	22.78	100.0	V	295.0	-3.4
2674.750000	46.93	---	68.20	21.27	100.0	V	214.0	-0.5
2815.625000	---	36.73	54.00	17.27	200.0	H	351.0	0.2
3467.500000	48.79	---	68.20	19.41	200.0	V	160.0	2.6
3982.000000	---	39.44	54.00	14.56	200.0	V	294.0	4.3
7535.375000	---	42.46	54.00	11.54	100.0	H	181.0	10.2
7939.625000	53.19	---	68.20	15.01	200.0	H	234.0	10.5

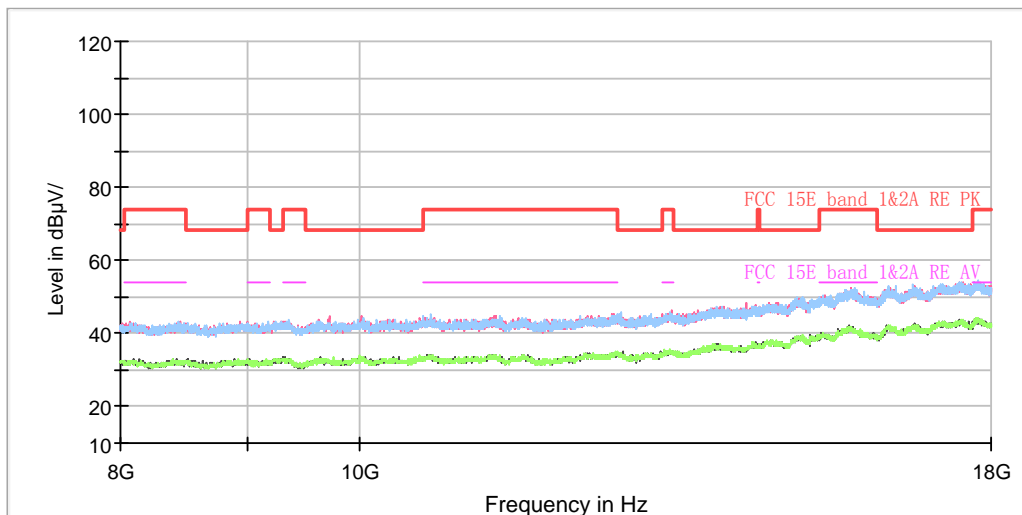
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



802.11n (HT40) CH46



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



Radiates Emission from 8GHz to 18GHz

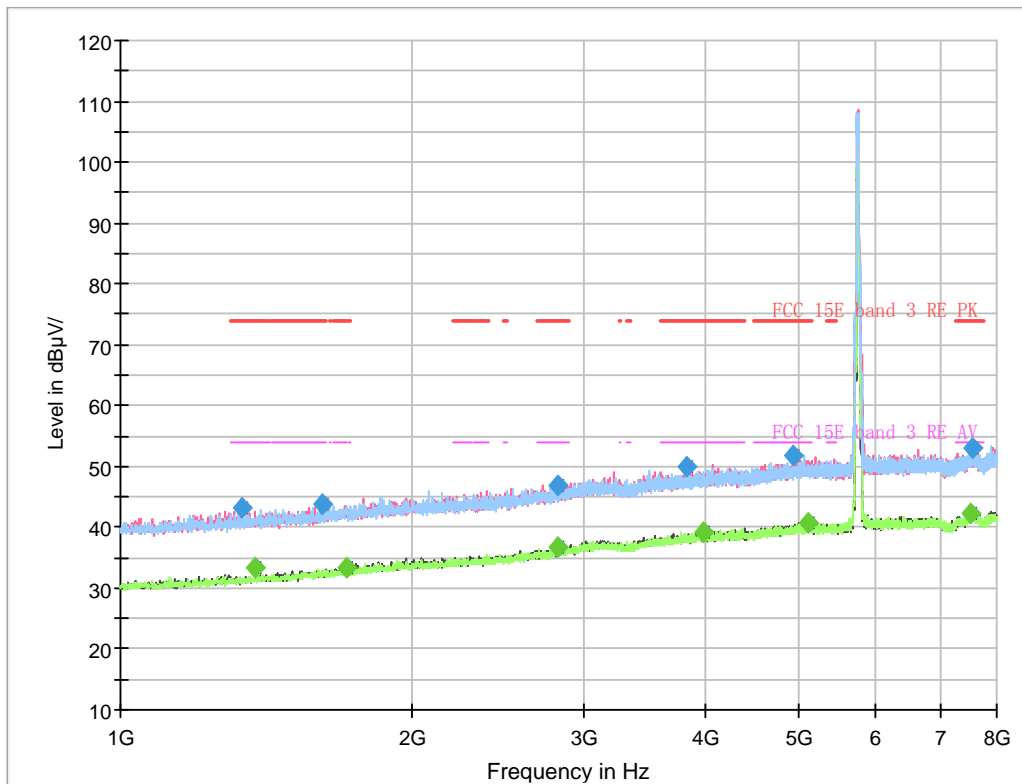


Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1188.125000	42.58	---	68.20	25.62	200.0	H	17.0	-7.7
1374.500000	---	32.66	54.00	21.34	100.0	H	224.0	-6.6
1683.375000	---	33.68	54.00	20.32	100.0	H	310.0	-4.9
1826.000000	45.48	---	68.20	22.72	100.0	V	347.0	-4.1
2654.625000	46.48	---	68.20	21.72	200.0	V	213.0	-0.6
2756.125000	---	36.67	54.00	17.33	100.0	V	225.0	-0.1
3580.375000	48.58	---	68.20	19.62	100.0	H	228.0	3.2
3990.750000	---	39.48	54.00	14.52	200.0	H	109.0	4.3
5120.375000	---	42.76	54.00	11.24	200.0	H	98.0	6.8
5565.750000	50.73	---	68.20	17.47	100.0	H	95.0	7.5
6193.125000	52.91	---	68.20	15.29	200.0	V	278.0	8.4
7467.125000	---	42.37	54.00	11.63	100.0	H	187.0	10.1

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



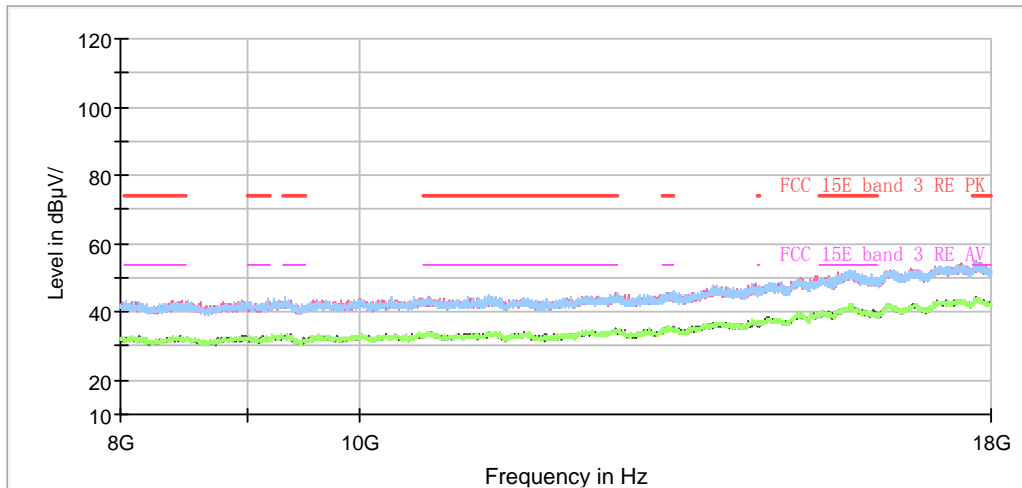
802.11n (HT40) CH151



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

Full Spectrum



Radiates Emission from 8GHz to 18GHz

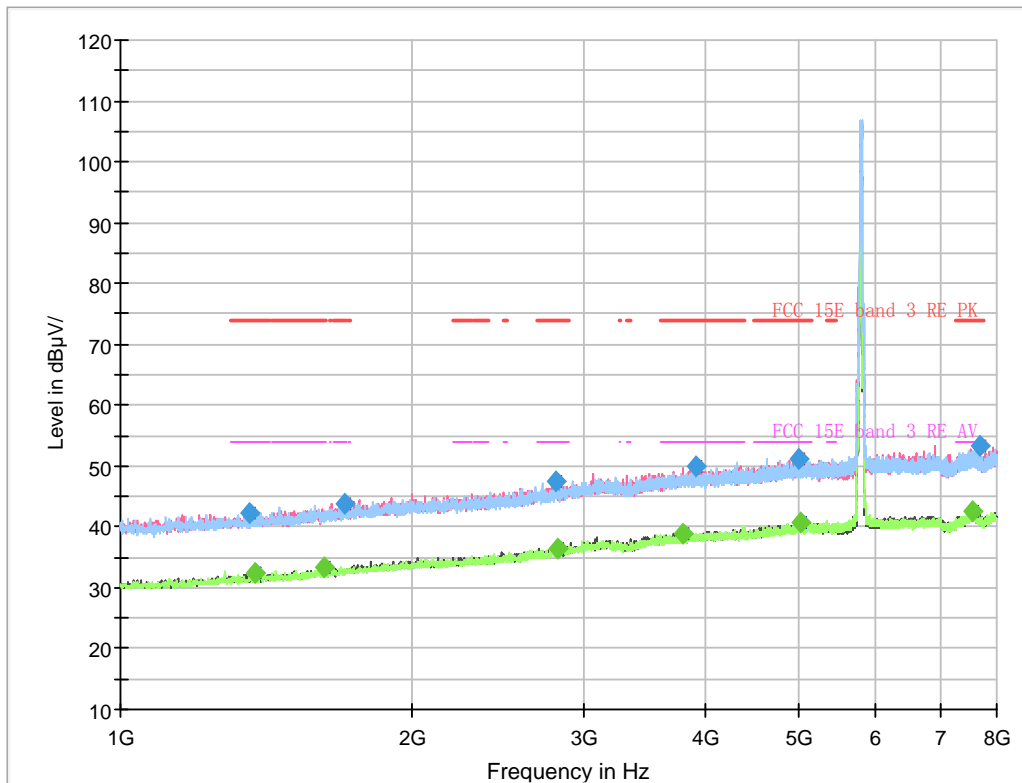


Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1335.125000	43.05	---	74.00	30.95	200.0	V	343.0	-6.9
1374.500000	---	33.39	54.00	20.61	100.0	H	212.0	-6.6
1615.125000	43.72	---	74.00	30.28	200.0	V	126.0	-5.3
1709.625000	---	33.25	54.00	20.75	100.0	H	315.0	-4.8
2819.125000	---	36.63	54.00	17.37	100.0	V	161.0	0.3
2826.125000	46.93	---	74.00	27.07	100.0	H	269.0	0.3
3838.500000	50.03	---	74.00	23.97	200.0	V	346.0	4.0
3996.000000	---	39.19	54.00	14.81	200.0	H	135.0	4.4
4926.125000	51.70	---	74.00	22.30	200.0	H	252.0	6.4
5123.000000	---	40.78	54.00	13.22	100.0	H	262.0	6.8
7517.000000	---	42.31	54.00	11.69	200.0	H	38.0	10.2
7562.500000	53.08	---	74.00	20.92	200.0	H	128.0	10.3

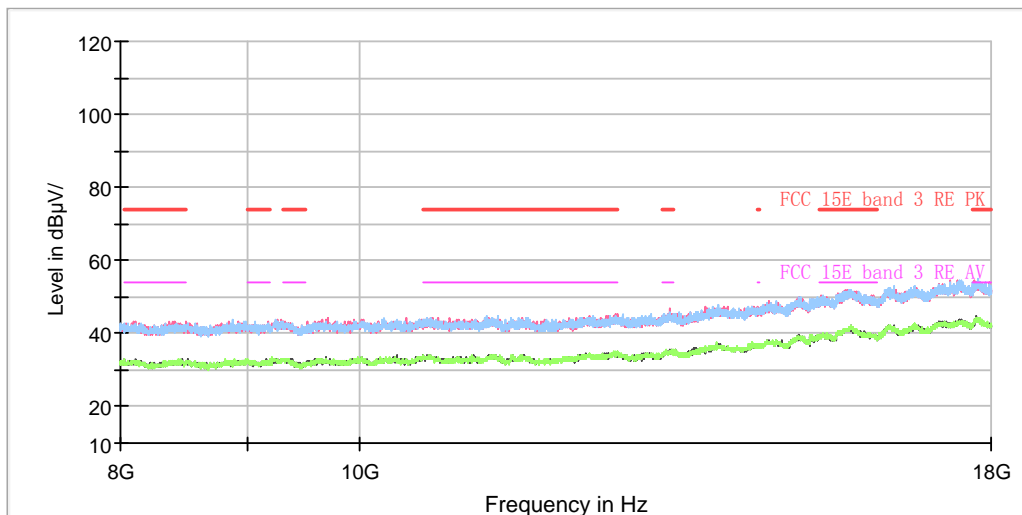
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



802.11n (HT40) CH159



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



Radiates Emission from 8GHz to 18GHz

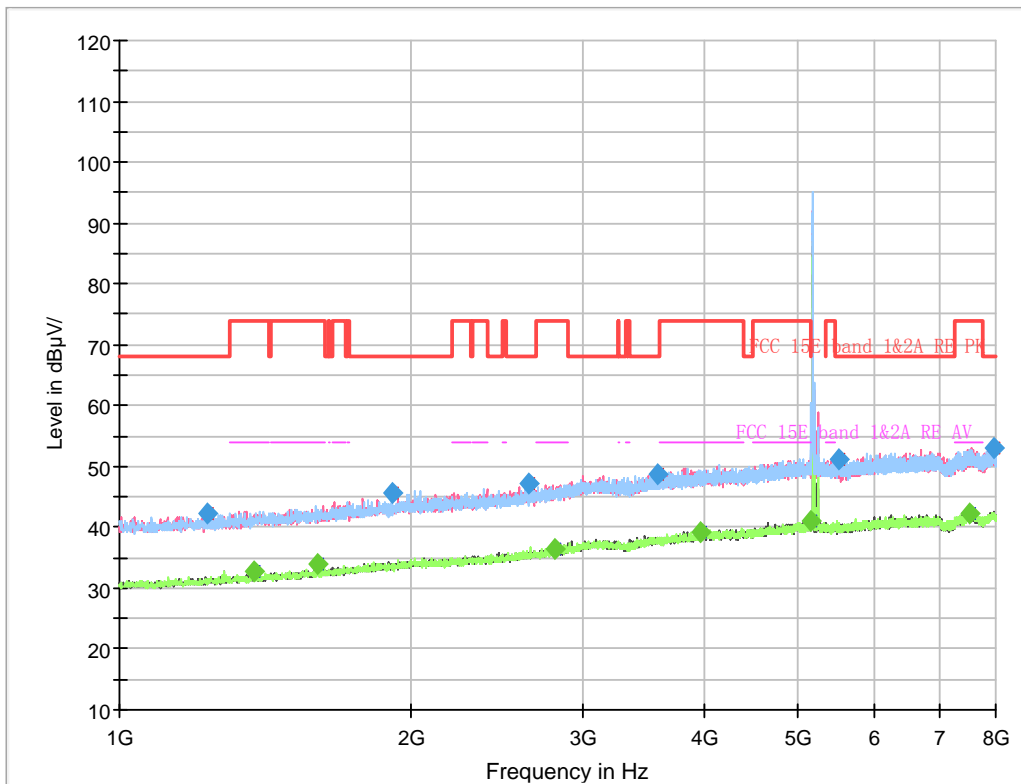


Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1359.625000	42.21	---	74.00	31.79	100.0	V	202.0	-6.7
1374.500000	---	32.58	54.00	21.42	100.0	H	333.0	-6.6
1624.750000	---	33.48	54.00	20.52	100.0	H	241.0	-5.3
1704.375000	43.78	---	74.00	30.22	200.0	H	185.0	-4.8
2813.875000	47.62	---	74.00	26.38	200.0	H	0.0	0.2
2820.000000	---	36.47	54.00	17.53	100.0	V	133.0	0.3
3790.375000	---	38.88	54.00	15.12	200.0	H	200.0	3.8
3923.375000	49.93	---	74.00	24.07	100.0	V	30.0	4.2
5002.250000	51.19	---	74.00	22.81	100.0	H	0.0	6.7
5031.125000	---	40.77	54.00	13.23	100.0	V	265.0	6.7
7559.000000	---	42.43	54.00	11.57	100.0	H	193.0	10.3
7678.875000	53.47	---	74.00	20.53	200.0	V	252.0	10.3

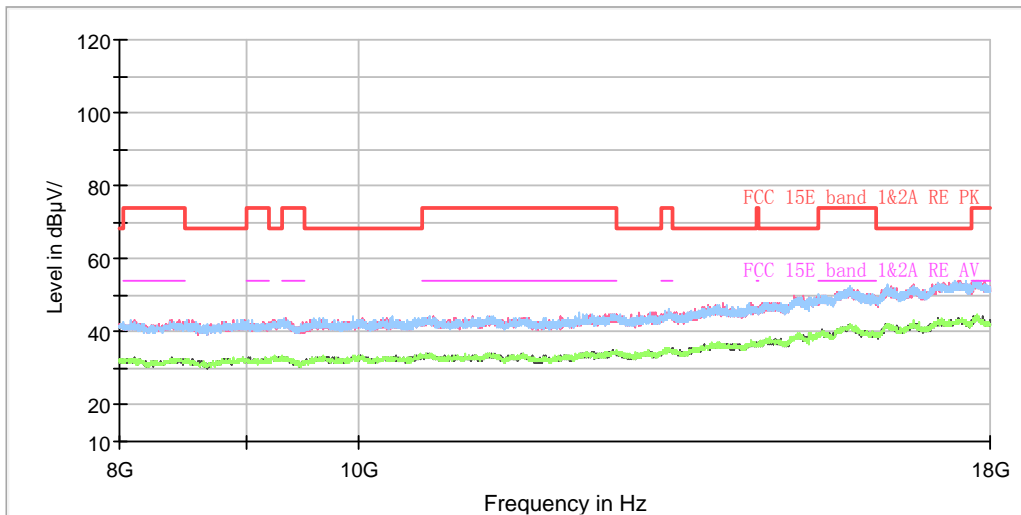
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



802.11ac (HT80) CH42



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



Radiates Emission from 8GHz to 18GHz

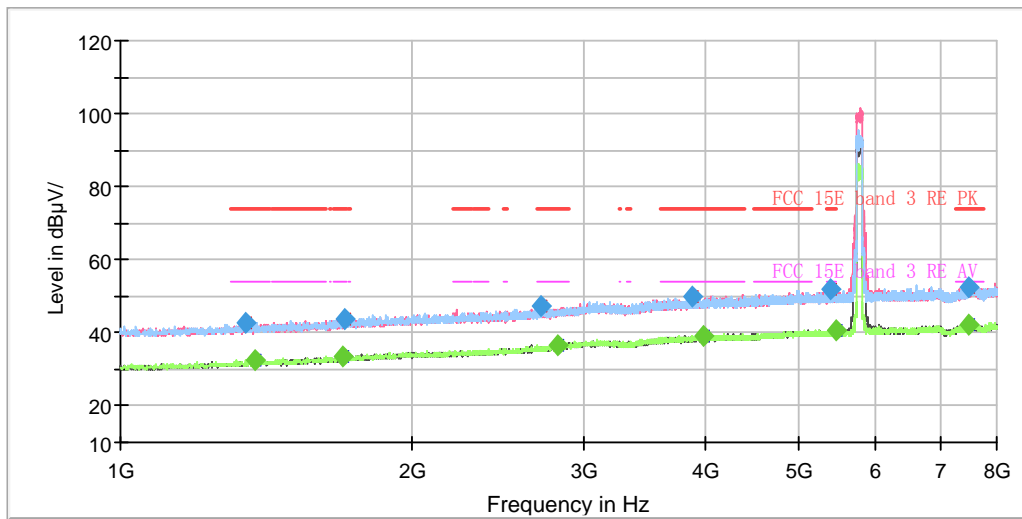


Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1232.750000	42.30	---	68.20	25.90	100.0	V	205.0	-7.4
1374.500000	---	32.70	54.00	21.30	100.0	H	219.0	-6.6
1599.375000	---	33.87	54.00	20.13	200.0	H	135.0	-5.4
1906.500000	45.54	---	68.20	22.66	100.0	H	345.0	-3.7
2642.375000	47.06	---	68.20	21.14	200.0	V	351.0	-0.6
2809.500000	---	36.55	54.00	17.45	100.0	H	272.0	0.2
3584.750000	48.79	---	68.20	19.41	100.0	H	205.0	3.2
3962.750000	---	39.24	54.00	14.76	200.0	V	112.0	4.3
5149.250000	---	41.18	54.00	12.82	200.0	H	25.0	6.8
5503.625000	51.16	---	68.20	17.04	100.0	H	99.0	7.3
7532.750000	---	42.36	54.00	11.64	200.0	H	78.0	10.2
7972.875000	53.00	---	68.20	15.20	200.0	H	278.0	10.5

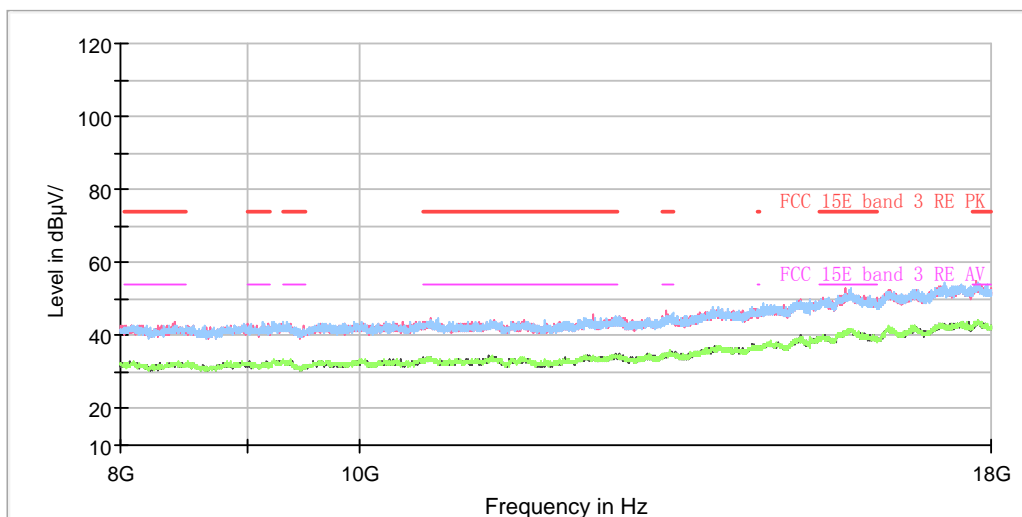
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



802.11ac (HT80) CH155



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



Radiates Emission from 8GHz to 18GHz



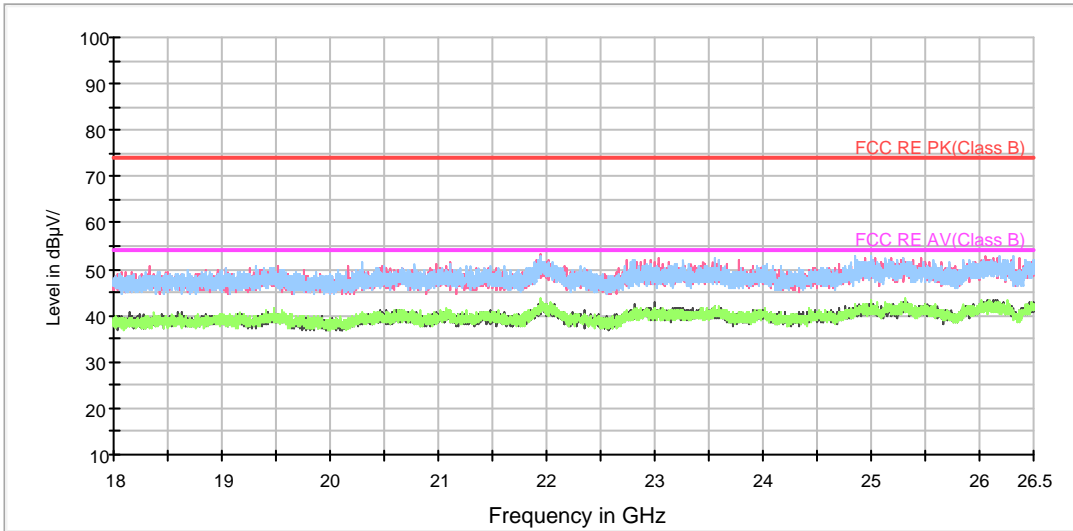
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1344.750000	42.91	---	74.00	31.09	100.0	H	0.0	-6.8
1374.500000	---	32.57	54.00	21.43	200.0	H	283.0	-6.6
1697.375000	---	33.42	54.00	20.58	200.0	H	116.0	-4.9
1705.250000	43.91	---	74.00	30.09	100.0	H	289.0	-4.8
2712.375000	47.31	---	74.00	26.69	200.0	H	46.0	-0.4
2825.250000	---	36.73	54.00	17.27	200.0	H	301.0	0.3
3885.750000	50.00	---	74.00	24.00	100.0	H	321.0	4.0
3983.750000	---	39.27	54.00	14.73	200.0	H	305.0	4.3
5389.875000	51.76	---	74.00	22.24	100.0	V	208.0	7.1
5452.875000	---	40.88	54.00	13.12	100.0	V	0.0	7.3
7495.125000	---	42.37	54.00	11.63	200.0	V	145.0	10.2
7497.750000	52.52	---	74.00	21.48	100.0	V	118.0	10.2

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



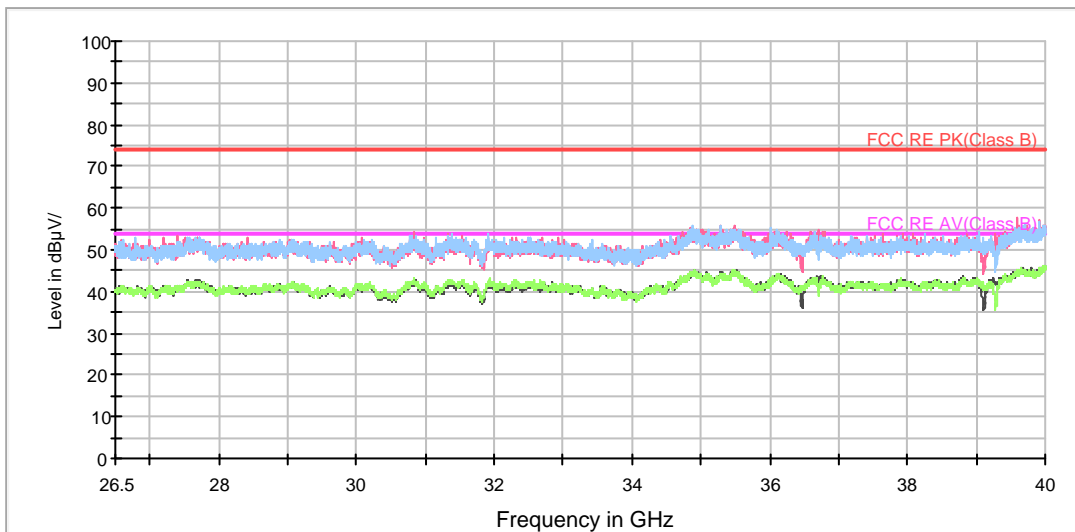
During the test, the Radiates Emission from 18GHz to 40GHz was performed in all modes with all channels, 802.11a, Channel 36 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

RE 18-26.5GHz PK+AV



Radiates Emission from 18GHz to 26.5GHz

RE 26.5-40GHz PK+AV



Radiates Emission from 26.5GHz to 40GHz

5.6. Conducted Emission

Ambient condition

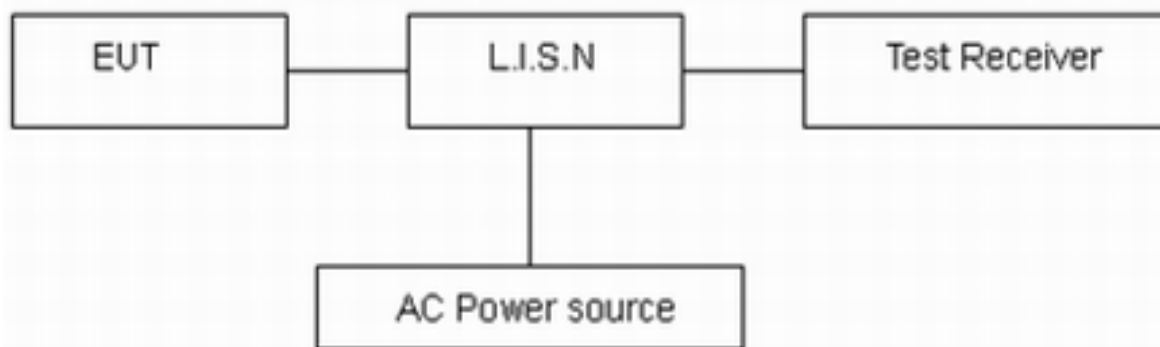
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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 C63.10-2013. Connect the AC power line of the EUT to the LISN Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9kHz, 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

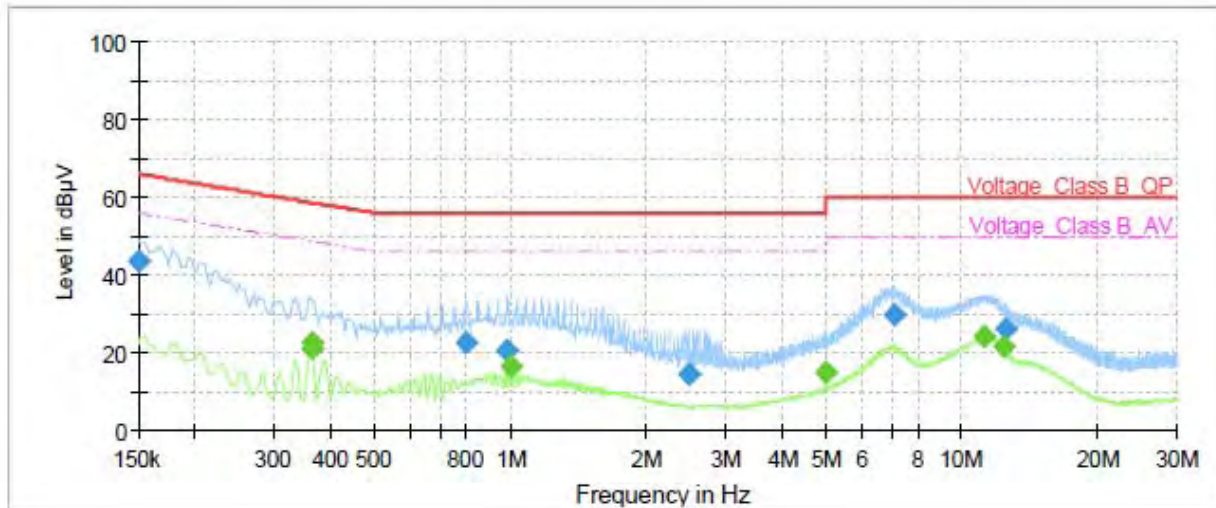
*: Decreases with the logarithm of the frequency.

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:

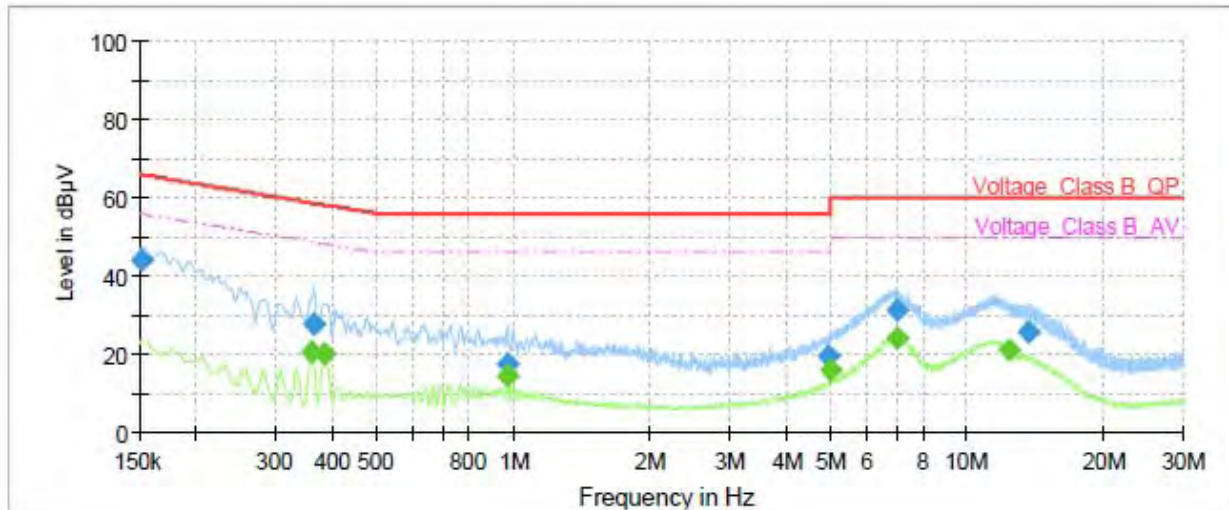
Following plots, Blue trace uses the peak detection and Green trace uses the average detection. During the test, the Conducted Emission was performed in all modes with all channels, 802.11a, Channel 36 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	43.37	---	66.00	22.63	1000.0	9.000	L1	ON	19.06
0.36	---	22.44	48.69	26.25	1000.0	9.000	L1	ON	19.19
0.36	---	20.85	48.64	27.79	1000.0	9.000	L1	ON	19.19
0.80	22.48	---	56.00	33.52	1000.0	9.000	L1	ON	19.24
0.99	20.62	---	56.00	35.38	1000.0	9.000	L1	ON	19.24
1.00	---	16.29	46.00	29.71	1000.0	9.000	L1	ON	19.24
2.49	14.53	---	56.00	41.47	1000.0	9.000	L1	ON	19.02
4.97	---	15.06	46.00	30.94	1000.0	9.000	L1	ON	19.07
7.06	29.99	---	60.00	30.01	1000.0	9.000	L1	ON	19.16
11.25	---	24.27	50.00	25.73	1000.0	9.000	L1	ON	19.36
12.41	---	21.45	50.00	28.55	1000.0	9.000	L1	ON	19.43
12.47	26.31	---	60.00	33.69	1000.0	9.000	L1	ON	19.44

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	44.34	---	65.88	21.54	1000.0	9.000	N	ON	19.07
0.36	---	20.57	48.75	28.18	1000.0	9.000	N	ON	19.18
0.36	27.69	---	58.64	30.95	1000.0	9.000	N	ON	19.19
0.38	---	19.76	48.19	28.43	1000.0	9.000	N	ON	19.23
0.97	17.40	---	56.00	38.60	1000.0	9.000	N	ON	19.24
0.97	---	14.19	46.00	31.81	1000.0	9.000	N	ON	19.24
4.97	19.58	---	56.00	36.42	1000.0	9.000	N	ON	19.07
5.00	---	15.92	46.00	30.08	1000.0	9.000	N	ON	19.08
6.99	---	24.34	50.00	25.66	1000.0	9.000	N	ON	19.16
7.02	31.04	---	60.00	28.96	1000.0	9.000	N	ON	19.16
12.44	---	21.10	50.00	28.90	1000.0	9.000	N	ON	19.41
13.68	25.51	---	60.00	34.49	1000.0	9.000	N	ON	19.45

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
Spectrum Analyzer	R&S	FSV40	15195-01-00	2019-05-19	2020-05-18
EMI Test Receiver	R&S	ESCI	100948	2019-05-19	2020-05-18
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2017-09-26	2019-09-25
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	9163-201	2017-11-18	2019-11-17
Double Ridged Waveguide Horn Antenna	R&S	HF907	100126	2018-07-07	2020-07-06
Standard Gain Horn	ETS-Lindgren	3160-09	00102643	2018-06-20	2020-06-19
Standard Gain Horn	STEATITE	QSH-SL-26-40 -K-15	16779	2017-07-20	2020-07-19
Broadband Horn Antenna	SCHWARZBECK	BBHA 9120D	430	2018-07-07	2020-07-06
EMI Test Receiver	R&S	ESR	101667	2019-05-19	2020-05-18
LISN	R&S	ENV216	101171	2016-12-16	2019-12-15
Spectrum Analyzer	KEYSIGHT	N9020A	MY54420163	2018-12-16	2019-12-15
RF Cable	Agilent	SMA 15cm	0001	2019-06-14	2019-09-13
RF Cable	Agilent	SMA 15cm	0001	2019-09-12	2019-12-11
TEMPERATURE CHAMBER	WEISS	VT4002	582261194500 10	2018-12-16	2019-12-15
AV Power Meter	R&S	NRP	104306	2019-05-19	2020-05-18
Power Probe	R&S	NRP-Z21	104799	2019-05-19	2020-05-18
DC Power Supply	GWINSTEK	GPS-3030D	GEP882653	2019-05-19	2020-05-18
Software	R&S	EMC32	9.26.0	/	/

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