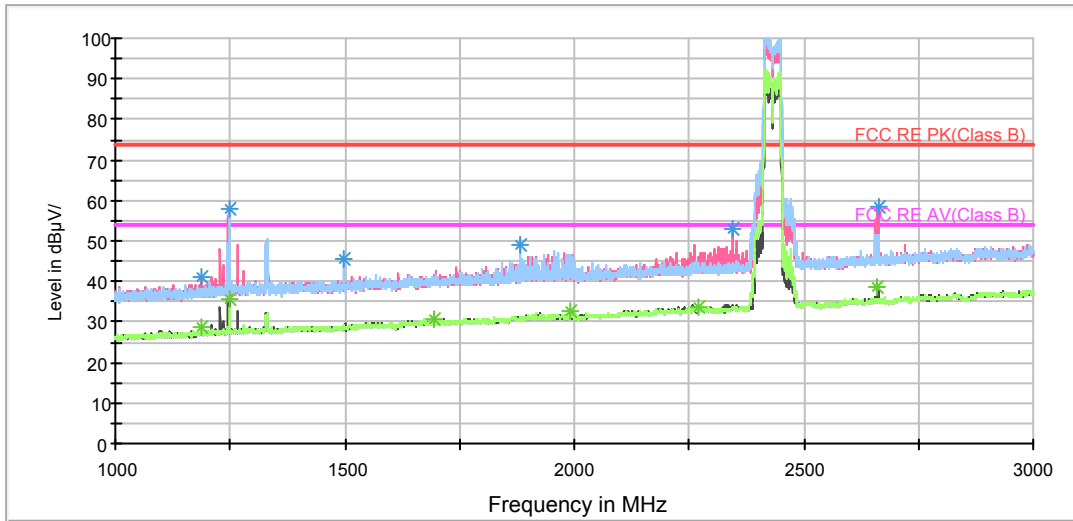


RE 1G-3GHz PK+AV



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1189.250000	41.3	100.0	V	264.0	49.5	-8.2	32.7	74
1246.750000	57.9	100.0	V	221.0	65.9	-8.0	16.1	74
1496.500000	45.5	100.0	H	209.0	52.2	-6.7	28.5	74
1883.750000	48.8	100.0	H	48.0	53.1	-4.3	25.2	74
2344.000000	53.2	100.0	V	212.0	54.5	-1.3	20.8	74
2663.750000	58.5	100.0	V	325.0	58.2	0.3	15.5	74

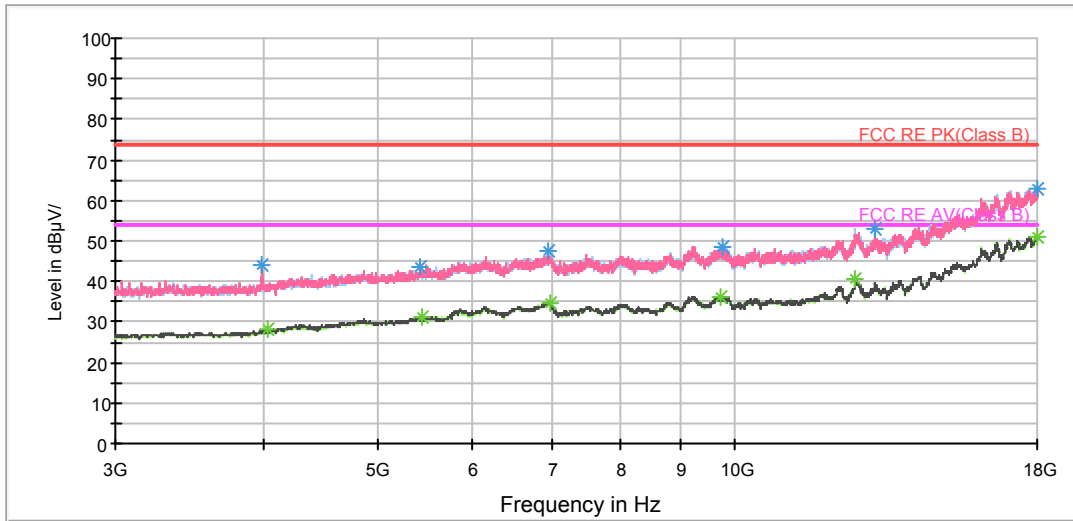
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1189.000000	28.8	100.0	V	212.0	37.0	-8.2	25.2	54
1249.250000	35.8	100.0	V	246.0	43.8	-8.0	18.2	54
1693.750000	30.8	100.0	V	0.0	35.8	-5.0	23.2	54
1991.750000	32.7	100.0	V	0.0	36.0	-3.3	21.3	54
2271.750000	33.4	100.0	H	200.0	35.0	-1.6	20.6	54
2660.250000	38.6	100.0	V	184.0	38.2	0.4	15.4	54

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



RE 3-18GHz PK+AV



Radiates Emission from 3GHz to 18GHz

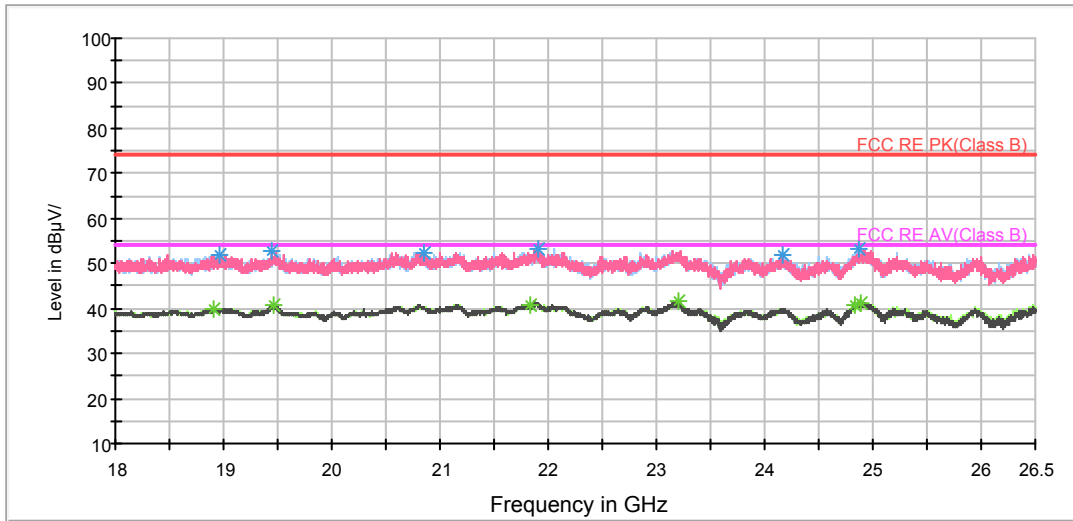
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3993.750000	44.1	100.0	V	10.0	45.2	-1.1	29.9	74
5420.625000	43.3	100.0	H	112.0	40.6	2.7	30.7	74
6945.000000	47.4	100.0	V	28.0	41.3	6.1	26.6	74
9770.625000	48.6	100.0	V	46.0	38.9	9.7	25.4	74
13145.625000	52.9	100.0	H	296.0	38.6	14.3	21.1	74
17971.875000	62.7	100.0	H	350.0	37.8	24.9	11.3	74

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

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4035.000000	28.0	100.0	H	333.0	29.0	-1.0	26.0	54
5450.625000	31.2	100.0	V	82.0	28.4	2.8	22.8	54
6997.500000	34.8	100.0	V	10.0	28.3	6.5	19.2	54
9740.625000	36.4	100.0	H	35.0	26.4	10.0	17.6	54
12639.375000	40.5	100.0	V	0.0	26.0	14.5	13.5	54
18000.000000	51.1	100.0	V	174.0	25.6	25.5	2.9	54

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

RE 18-26.5GHz PK+AV



Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18959.437500	51.9	100.0	H	270.0	51.9	0.0	22.1	74
19439.687500	52.9	100.0	V	204.0	52.9	0.0	21.1	74
20847.500000	52.5	100.0	H	255.0	54.7	-2.2	21.5	74
21906.812500	53.4	100.0	H	265.0	54.9	-1.5	20.6	74
24165.687500	51.8	100.0	V	263.0	52.5	-0.7	22.2	74
24873.312500	53.3	100.0	V	90.0	52.8	0.5	20.7	74

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

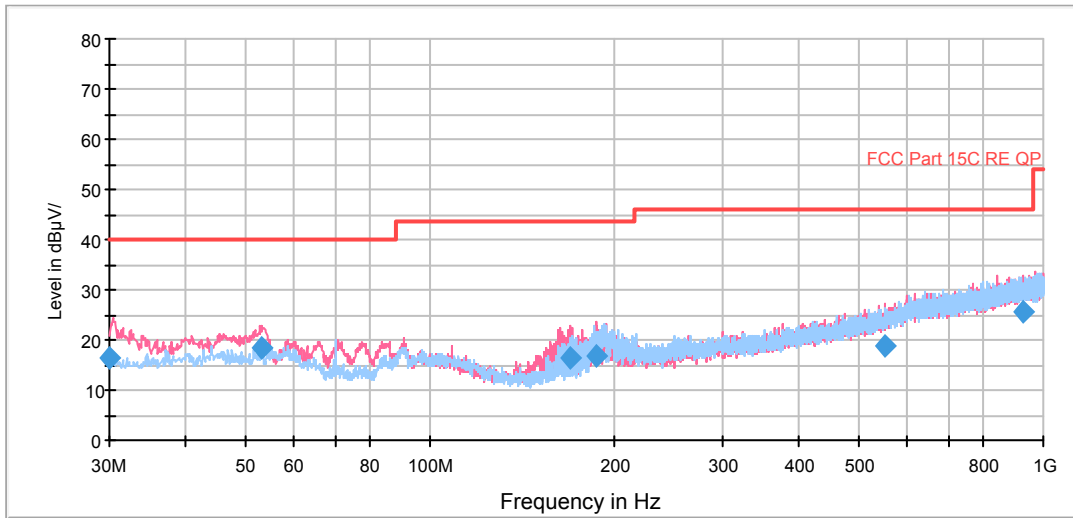
Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18910.562500	40.1	100.0	V	195.0	40.0	0.1	13.9	54
19459.875000	40.6	100.0	V	104.0	40.5	0.1	13.4	54
21827.125000	40.9	100.0	V	131.0	42.8	-1.9	13.1	54
23194.562500	41.6	100.0	H	270.0	41.7	-0.1	12.4	54
24840.375000	40.8	100.0	V	131.0	40.5	0.3	13.2	54
24887.125000	41.4	100.0	H	247.0	40.9	0.5	12.6	54

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



802.11n (HT40) CH8

FCC RE 0.03-1GHz QP Class B

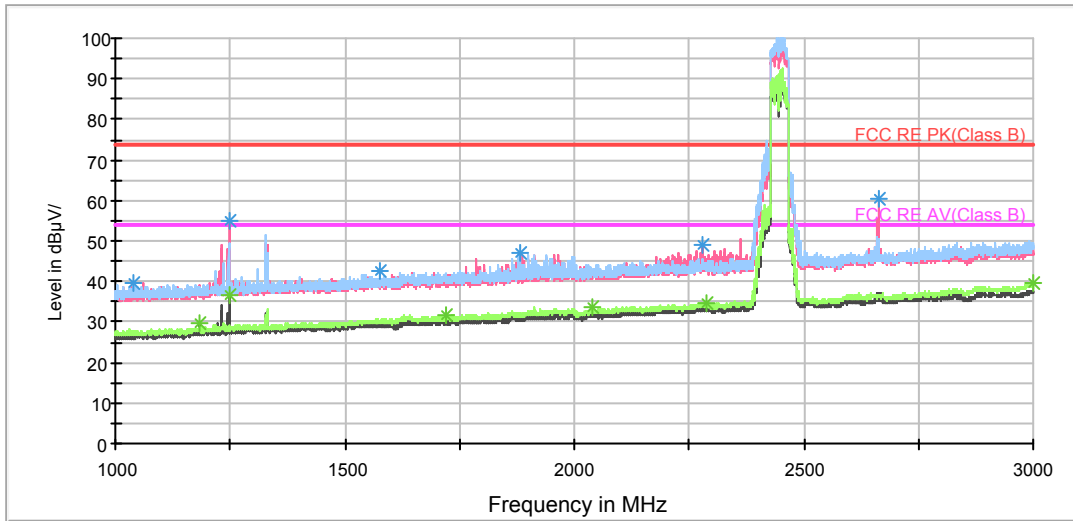


Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
30.000000	16.4	100.0	V	271.0	28.5	-12.1	23.6	40.0
53.286250	18.5	100.0	V	239.0	31.3	-12.8	21.5	40.0
169.113750	16.4	100.0	V	217.0	26.7	-10.3	27.1	43.5
186.612500	16.8	100.0	V	208.0	28.1	-11.3	26.7	43.5
550.931250	18.7	100.0	V	97.0	40.3	-21.6	27.3	46.0
927.650000	25.7	100.0	V	22.0	52.7	-27.0	20.3	46.0

- Remark: 1. Quasi-Peak = Reading value + Correction factor
 2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
 3. Margin = Limit – Quasi-Peak

RE 1G-3GHz PK+AV



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

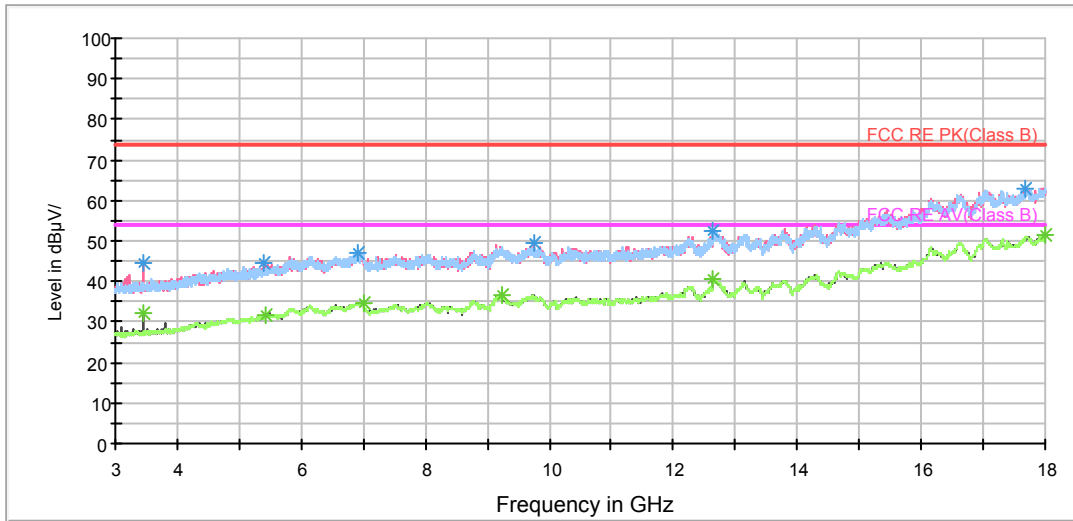
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1040.500000	39.5	100.0	H	49.0	48.6	-9.1	34.5	74
1250.250000	54.9	100.0	V	222.0	62.9	-8.0	19.1	74
1578.250000	42.6	100.0	H	0.0	48.9	-6.3	31.4	74
1882.500000	46.8	100.0	H	39.0	51.0	-4.2	27.2	74
2279.250000	49.2	100.0	V	135.0	50.5	-1.3	24.8	74
2665.500000	60.3	100.0	V	318.0	60.0	0.3	13.7	74

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

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1184.250000	29.9	100.0	V	201.0	38.0	-8.1	24.1	54
1250.250000	36.5	100.0	V	222.0	44.5	-8.0	17.5	54
1721.750000	31.5	100.0	H	1.0	36.4	-4.9	22.5	54
2039.250000	33.6	100.0	H	0.0	36.8	-3.2	20.4	54
2287.750000	34.6	100.0	H	0.0	36.2	-1.6	19.4	54
2998.250000	39.5	100.0	H	0.0	37.2	2.3	14.5	54

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

RE 3-18GHz PK+AV_BELL SWEEP



Radiates Emission from 3GHz to 18GHz

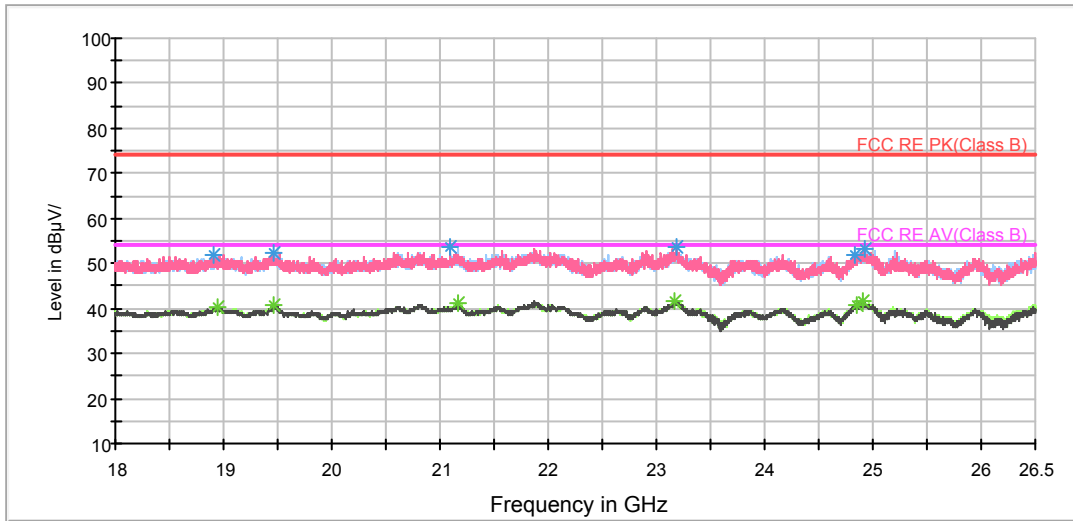
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3450.000000	44.7	105.0	V	115.0	46.9	-2.2	29.3	74
5398.125000	44.3	155.0	V	176.0	41.8	2.5	29.7	74
6920.625000	47.1	105.0	H	131.0	40.9	6.2	26.9	74
9740.625000	49.4	205.0	V	208.0	39.4	10.0	24.6	74
12646.875000	52.4	205.0	H	0.0	38.1	14.3	21.6	74
17683.125000	63.0	155.0	H	321.0	38.4	24.6	11.0	74

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

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3450.000000	32.2	105.0	V	115.0	34.4	-2.2	21.8	54
5439.375000	31.7	155.0	H	298.0	28.8	2.9	22.3	54
6997.500000	34.9	105.0	V	0.0	28.4	6.5	19.1	54
9234.375000	36.7	155.0	V	222.0	26.8	9.9	17.3	54
12641.250000	40.8	205.0	V	230.0	26.3	14.5	13.2	54
17996.250000	51.6	105.0	V	0.0	26.2	25.4	2.4	54

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

RE 18-26.5GHz PK+AV



Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18907.375000	51.9	100.0	V	90.0	51.8	0.1	22.1	74
19457.750000	52.2	100.0	V	94.0	52.2	0.0	21.8	74
21099.312500	53.5	100.0	V	90.0	54.9	-1.4	20.5	74
23177.562500	53.6	100.0	V	94.0	53.7	-0.1	20.4	74
24842.500000	51.7	100.0	V	148.0	51.4	0.3	22.3	74
24919.000000	53.1	100.0	V	103.0	52.4	0.7	20.9	74

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

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18938.187500	40.2	100.0	H	270.0	40.2	0.0	13.8	54
19464.125000	40.6	100.0	H	270.0	40.5	0.1	13.4	54
21157.750000	41.0	100.0	H	248.0	42.5	-1.5	13.0	54
23171.187500	41.5	100.0	V	94.0	41.6	-0.1	12.5	54
24843.562500	40.8	100.0	V	90.0	40.5	0.3	13.2	54
24913.687500	41.5	100.0	H	202.0	40.8	0.7	12.5	54

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

5.8. Conducted Emission

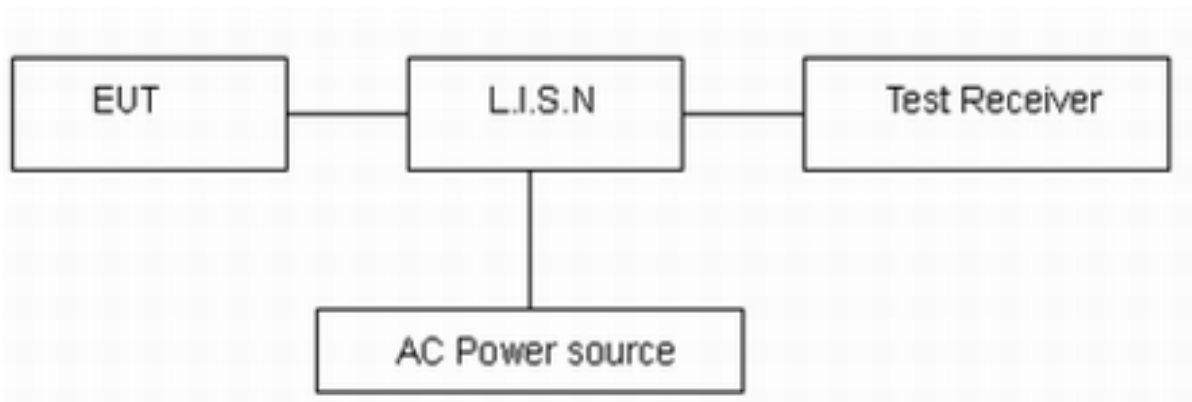
Ambient condition

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 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.



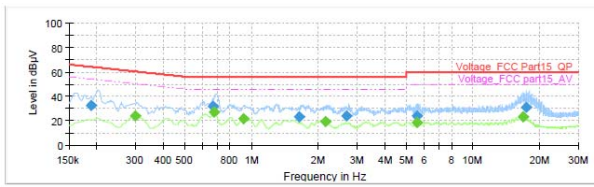
Test Results:

Following plots, Blue trace uses the peak detection and Green trace uses the average detection.

SISO Antenna 2

802.11b, Channel No.: 1

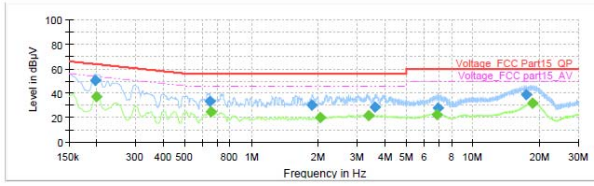
L Line



Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.

N Line

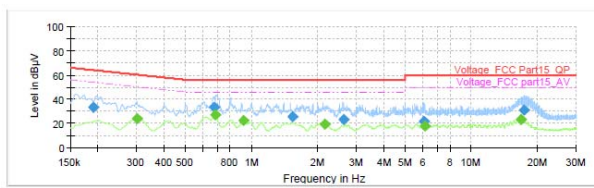


Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.

802.11b, Channel No.: 6

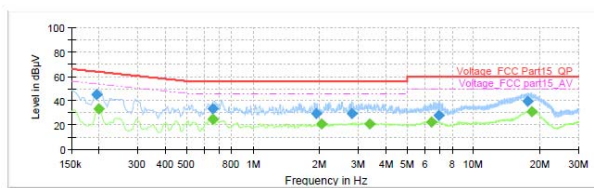
L Line



Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.

N Line

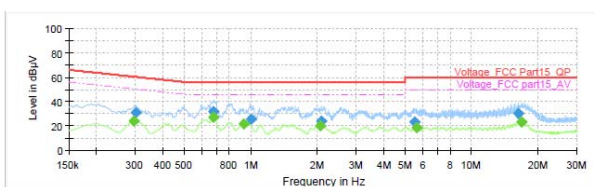


Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.

802.11b, Channel No.: 10

L Line

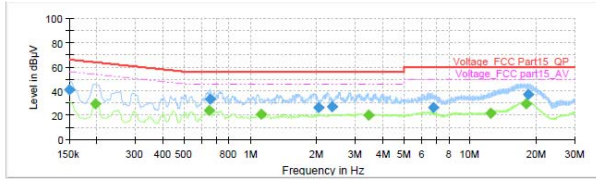


Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.



N Line

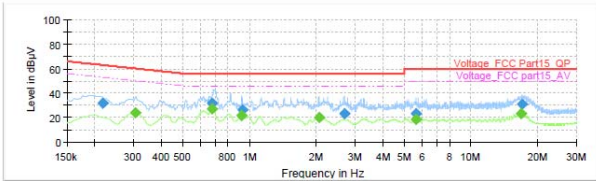


Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 14 rows of test data.

802.11g, Channel No.: 1

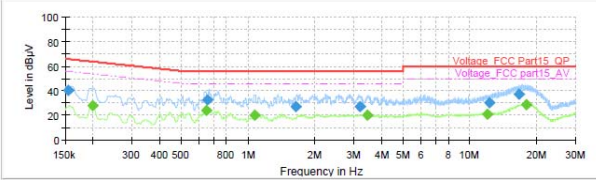
L Line



Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 14 rows of test data.

N Line

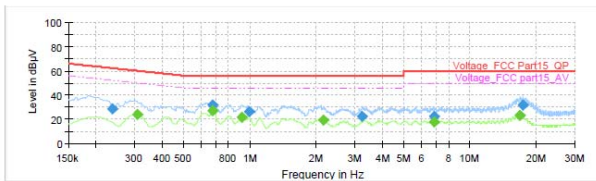


Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 14 rows of test data.

802.11g, Channel No.: 6

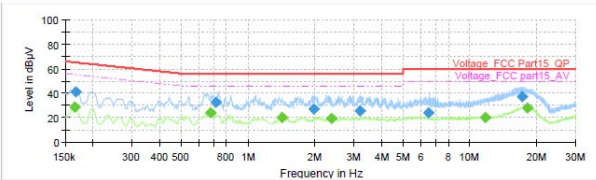
L Line



Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 14 rows of test data.

N Line



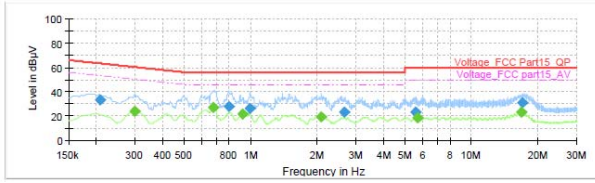
Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 14 rows of test data.



802.11g, Channel No.: 10

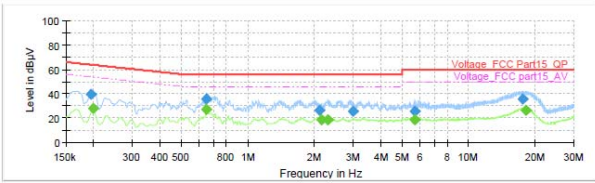
L Line



Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.

N Line



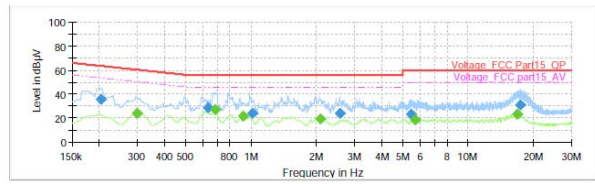
Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.

MIMO

802.11n(HT20), Channel No.: 1

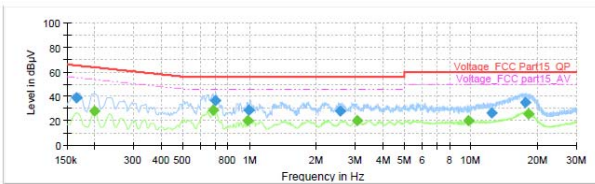
L Line



Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.

N Line



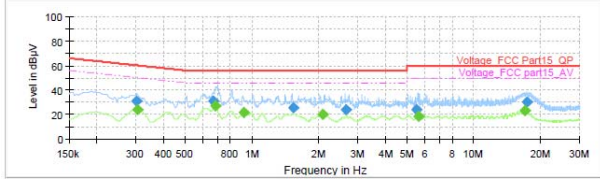
Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.



802.11n(HT20), Channel No.: 6

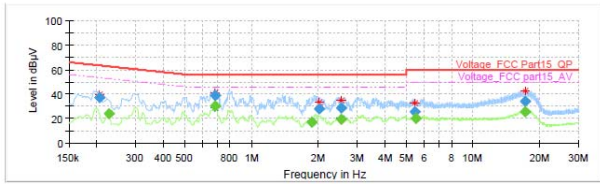
L Line



Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 14 rows of test data.

N Line

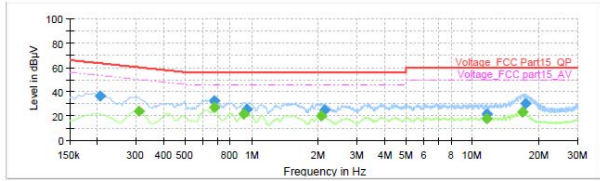


Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 14 rows of test data.

802.11n(HT20), Channel No.: 10

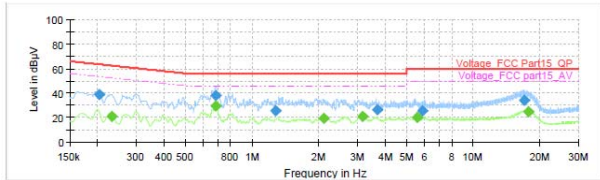
L Line



Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 14 rows of test data.

N Line



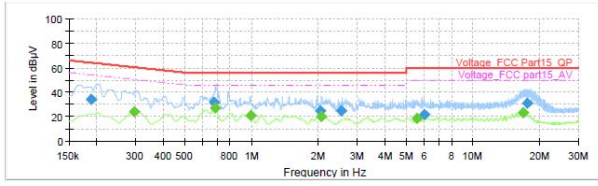
Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 14 rows of test data.



802.11n(HT40), Channel No.: 3

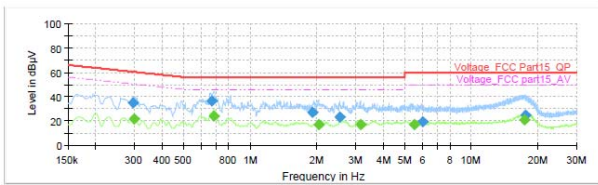
L Line



Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.

N Line

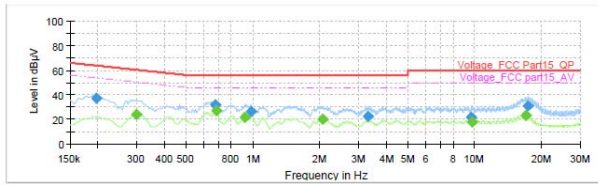


Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.

802.11n(HT40), Channel No.: 5

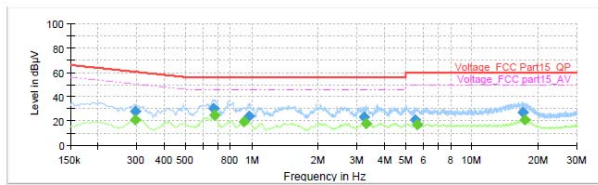
L Line



Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.

N Line



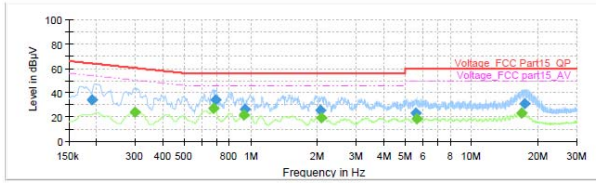
Final Result

Table with 10 columns: Frequency (MHz), QuasiPeak (dBµV), Average (dBµV), Limit (dBµV), Margin (dB), Meas. Time (ms), Bandwidth (kHz), Line, Filter, Corr. (dB). Contains 15 rows of test data.



802.11n(HT40), Channel No.: 8

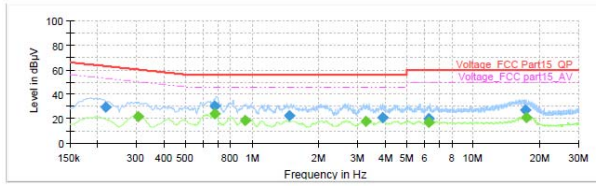
L Line



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.190500	34.36	---	64.02	29.65	1000.0	9.000	L1	ON	19.2
0.298500	---	23.97	50.28	26.32	1000.0	9.000	L1	ON	19.2
0.681000	---	26.89	46.00	19.11	1000.0	9.000	L1	ON	19.3
0.690000	34.32	---	56.00	21.68	1000.0	9.000	L1	ON	19.3
0.926250	---	21.92	46.00	24.08	1000.0	9.000	L1	ON	19.2
0.939750	26.14	---	56.00	29.86	1000.0	9.000	L1	ON	19.2
2.058000	25.80	---	56.00	30.20	1000.0	9.000	L1	ON	19.1
2.078250	---	19.63	46.00	26.37	1000.0	9.000	L1	ON	19.1
5.592750	23.24	---	50.00	36.76	1000.0	9.000	L1	ON	19.1
5.651250	---	18.63	50.00	31.37	1000.0	9.000	L1	ON	19.1
16.869750	---	23.34	50.00	26.66	1000.0	9.000	L1	ON	19.6
17.423250	30.95	---	60.00	29.05	1000.0	9.000	L1	ON	19.6

N Line



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.217500	29.49	---	62.91	33.43	1000.0	9.000	N	ON	19.2
0.395250	---	21.42	50.10	28.68	1000.0	9.000	N	ON	19.2
0.678750	30.39	---	56.00	25.61	1000.0	9.000	N	ON	19.3
0.681000	---	24.37	46.00	21.63	1000.0	9.000	N	ON	19.3
0.926250	---	18.88	46.00	27.12	1000.0	9.000	N	ON	19.2
1.468500	22.64	---	56.00	33.36	1000.0	9.000	N	ON	19.2
3.257250	---	18.10	46.00	27.90	1000.0	9.000	N	ON	19.1
3.878250	21.20	---	56.00	34.80	1000.0	9.000	N	ON	19.0
6.258750	---	16.86	50.00	33.14	1000.0	9.000	N	ON	19.1
6.315000	20.14	---	60.00	39.86	1000.0	9.000	N	ON	19.1
17.274750	27.30	---	60.00	32.70	1000.0	9.000	N	ON	19.5
17.412000	---	21.19	50.00	28.81	1000.0	9.000	N	ON	19.5



6. Main Test Instruments

Name	Type	Manufacturer	Serial Number	Calibration Date	Expiration Time
Spectrum Analyzer	FSV30	R&S	100815	2016-12-16	2017-12-15
EMI Test Receiver	ESCI	R&S	100948	2017-05-20	2018-05-19
TRILOG Broadband Antenna	VULB 9163	Schwarzbeck	9163-201	2014-12-06	2017-12-05
Double Ridged Waveguide Horn Antenna	HF907	R&S	100126	2014-12-06	2017-12-05
Loop Antenna	FMZB1519	SCHWARZBECK	1519-047	2017-02-18	2020-02-17
Standard Gain Horn	3160-09	ETS-Lindgren	00102644	2015-01-30	2018-01-29
EMI Test Receiver	ESCS30	R&S	100138	2016-12-16	2017-12-15
LISN	ENV216	R&S	101171	2016-12-16	2019-12-15
Spectrum Analyzer	N9010A	Agilent	MY47191109	2017-05-20	2018-05-19
RF Cable	SMA 15cm	Agilent	0001	2017-04-03	2017-07-02

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