0.15 ㎒ to 30 ㎒	9 ㎑ to 10 ㎑
30 ㎒ to 1 000 ㎒	100 ㎑ to 120 ㎑
> 1 000 ㎒	1 ㎒

Average field strength measurements

Trace averaging with continuous EUT transmission at full power

If the EUT can be configured or modified to transmit continuously (D ≥ 98%), then the average emission levels shall be measured using the following method (with EUT transmitting continuously):

1. RBW = 1 ㎒ (unless otherwise specified).
2. VBW ≥ (3×RBW).
3. Detector = RMS (power averaging), if [span / (# of points in sweep)] ≤ (RBW / 2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
4. Averaging type = power (i.e., rms):
   1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
   2) Some instruments require linear display mode to use linear voltage averaging. Log or ㏈ averaging shall not be used.
5. Sweep time = auto.
6. Perform a trace average of at least 100 traces.

Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT (D ≥ 98%) cannot be achieved and the duty cycle is constant (duty cycle variations are less than ±2%), then the following procedure shall be used:

1. The EUT shall be configured to operate at the maximum achievable duty cycle.
2. Measure the duty cycle D of the transmitter output signal as described in 11.6.
3. RBW = 1 ㎒ (unless otherwise specified).
4. VBW ≥ [3 × RBW].
5. Detector = RMS (power averaging), if [span / (# of points in sweep)] ≤ (RBW / 2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
6. Averaging type = power (i.e., rms):
   1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
   2) Some instruments require linear display mode to use linear voltage averaging. Log or ㏈ averaging shall not be used.
7. Sweep time = auto.
8. Perform a trace average of at least 100 traces.
9. 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 step f), then the applicable correction factor is [10 log (1 / D)], where D is the duty cycle.
   2) If linear voltage averaging mode was used in step f), then the applicable correction factor is [20 log (1 / D)], where D is the duty cycle.
   3) If a specific emission is demonstrated to be continuous (D ≥ 98%) rather than turning ON and OFF with with the transmit cycle, then no duty cycle correction is required for that emission.

Band edge measurements

Integration Method

For maximum emissions measurements, follow the procedures described in II.G.5., “Procedures for unwanted maximum Emissions Measurements above 1000 ㎒. Except for the following changes:

1. Set RBW = 100 ㎑
2. Set VBW ≥ 3 × RBW
3. Perform a band-power integration across the 1 ㎒ bandwidth in which the band edge emission level is to be measured. CAUTION: you must ensure that the spectrum analyzer or EMI receiver is set for peak detection and max-hold for this measurement.

For average emissions measurements, follow the procedures described in II.G.6., “Procedures for average unwanted Emissions Measurements above 1000 ㎒. Except for the following changes:

1. Set RBW = 100 ㎑
2. Set VBW ≥ 3 × RBW
3. Perform a band-power integration across the 1 ㎒ bandwidth in which the band edge emission level is to be measured.

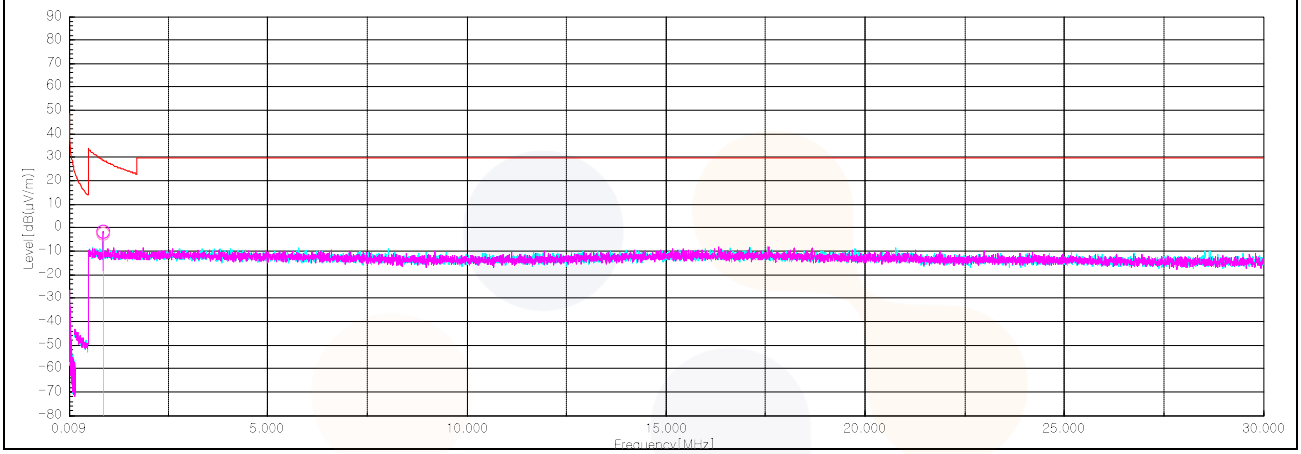
Notes:

1. *f* <30 ㎒, extrapolation factor of 40 ㏈/decade of distance. $F_d = 40\log(D_m/D_s)$
   f ≥30 ㎒, extrapolation factor of 20 ㏈/decade of distance. $F_d = 20\log(D_m/D_s)$
   Where:
   F_d= Distance factor in ㏈
   D_m= Measurement distance in meters
   D_s= Specification distance in meters
2. Factors(㏈) = Antenna factor(㏈/m) + Cable loss(㏈) + or Amp. gain(㏈) + or F_d(㏈)
3. The worst-case emissions are reported however emissions whose levels were not within 20 ㏈ of respective limits were not reported.
4. Average test would be performed if the peak result were greater than the average limit.
5. 1) means restricted band.
6. Above 1 ㎓ the worst results between two antenna polarizations (H and V) were documented in the test report.
7. Below 30 ㎒ frequency range, In order to search for the worst result, all orientations about parallel, perpendicular, and ground-parallel were investigated then reported. when the emission level was higher than 20 ㏈ of the limit, then the following statement shall be made: “No spurious emissions were detected within 20 ㏈ of the limit.”
8. For above 1 ㎓ pre-scan to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 ㎒; the video bandwidth is set to 30 ㎑ for peak measurements.
9. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X ㎑ resulted in a level of Y ㏈㎶/m, which is equivalent to Y - 51.5 = Z ㏈㎂/m, which has the same margin, W ㏈, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

Test results (Below 30 ㎒) – Worst case: 802.11a / UNII-3_5 745 ㎒

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data								
0.87	H	49.40	20.27	-32.50	40.00	-2.83	28.85	31.68

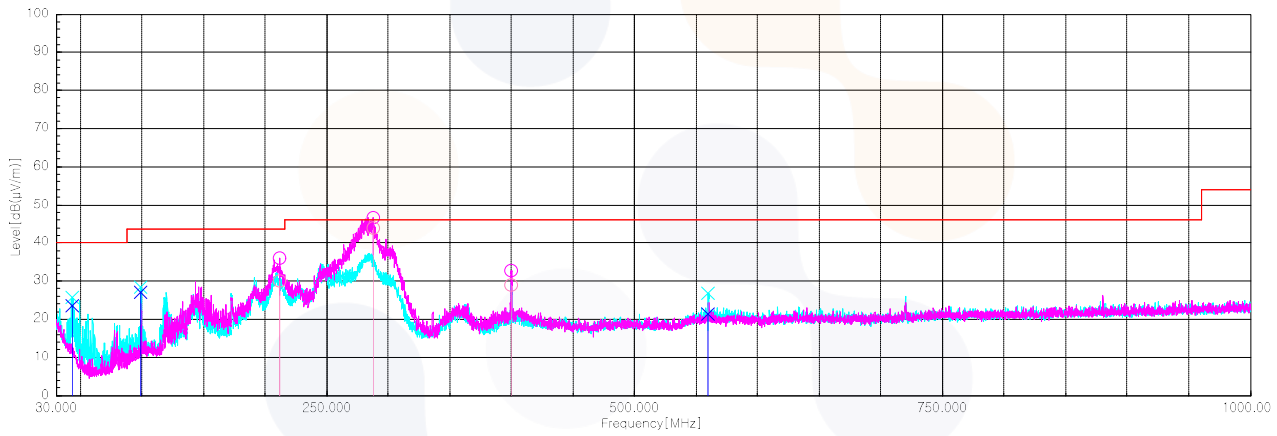
Horizontal/Vertical



Test results (Below 1 000 ㎒) – Worst case: 802.11a / UNII-3_5 745 ㎒

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data								
43.34	V	37.80	17.56	-31.97	-	23.39	40.00	16.61
98.87	V	42.30	16.29	-31.62	-	26.97	43.52	16.55
211.51	H	46.10	14.95	-31.09	-	29.96	43.52	13.56
287.29	H	56.10	18.86	-31.04	-	43.92	46.02	2.10
399.69	H	38.30	21.48	-30.83	-	28.95	46.02	17.07
559.86	V	27.20	24.61	-30.45	-	21.36	46.02	24.66

Horizontal/Vertical



Test results (Above 1 000 ㎒)

UNII-1

802.11a_Lowest Channel (5 180 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 149.85[1)]	H	55.32	33.91	-24.24	-	64.99	74.00	9.01
6 906.33	H	67.54	35.38	-53.01	-	49.91	68.20	18.29
10 360.55	V	64.15	37.19	-48.74	-	52.60	68.20	15.60
15 539.05[1)]	V	62.09	39.59	-47.46	-	54.22	74.00	19.78
Average Data								
5 149.85[1)]	H	40.74	33.91	-24.24	0.27	50.68	54.00	**3.32**
15 539.05[1)]	V	50.84	39.59	-47.46	0.27	43.24	54.00	10.76

802.11a_Middle Channel (5 200 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
6 933.17	H	67.41	35.39	-52.96	-	49.84	68.20	18.36
10 391.60	V	65.18	37.21	-48.75	-	53.64	68.20	14.56
15 599.57[1)]	V	59.76	39.58	-47.32	-	52.02	74.00	21.98
Average Data								
15 599.57[1)]	V	50.43	39.58	-47.32	0.27	42.96	54.00	11.04

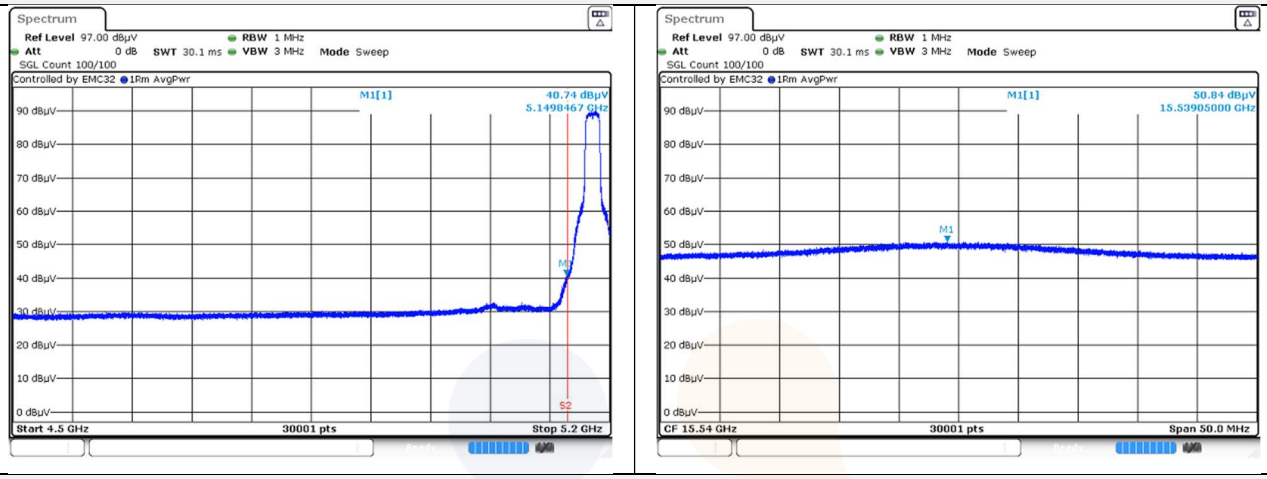
802.11a_Highest Channel (5 240 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
6 986.83	H	66.01	35.40	-52.85	-	48.56	68.20	19.64
10 480.15	V	63.42	37.28	-48.77	-	51.93	68.20	16.27
15 716.12[1)]	V	63.80	39.56	-47.06	-	56.30	74.00	17.70
Average Data								
15 716.12	V	50.90	39.56	-47.06	0.27	43.67	54.00	10.33

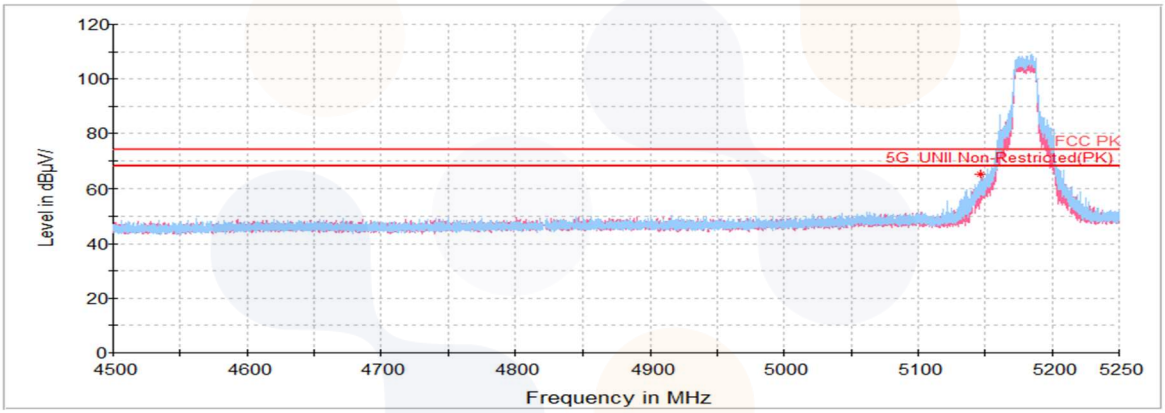
In order to simplify the report, attached plots were only the lowest margin condition

802.11a_Lowest Channel (5 180 ㎒)

Average data



Horizontal/Vertical for Band-edge



802.11n_HT20_Lowest Channel (5 180 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 147.98[1)]	H	53.55	33.91	-24.23	-	63.23	74.00	10.77
6 906.33	H	68.11	35.38	-53.01	-	50.48	68.20	17.72
10 362.85	V	63.61	37.19	-48.74	-	52.06	68.20	16.14
15 539.11[1)]	V	59.75	39.59	-47.46	-	51.88	74.00	22.12
Average Data								
5 147.98[1)]	H	41.58	33.91	-24.23	0.29	51.55	54.00	**2.45**
15 539.11[1)]	V	49.63	39.59	-47.46	0.29	42.05	54.00	11.95

802.11n_HT20_Middle Channel (5 200 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
6 933.17	H	67.74	35.39	-52.96	-	50.17	68.20	18.03
10 401.57	V	63.88	37.22	-48.75	-	52.35	68.20	15.85
15 597.40[1)]	V	59.17	39.58	-47.33	-	51.42	74.00	22.58
Average Data								
15 597.40[1)]	V	49.80	39.58	-47.33	0.29	42.34	54.00	11.66

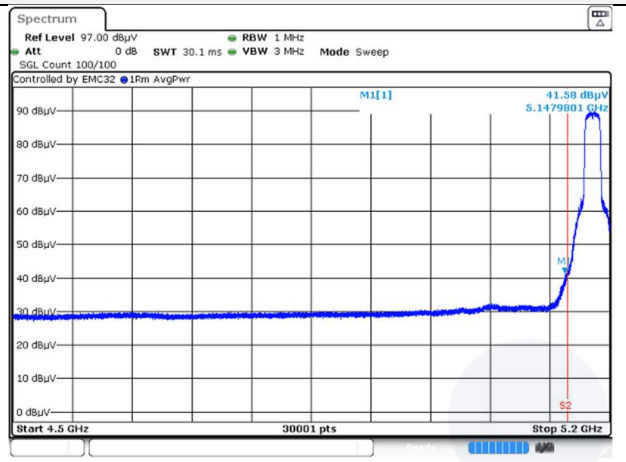
802.11n_HT20_Highest Channel (5 240 ㎒)

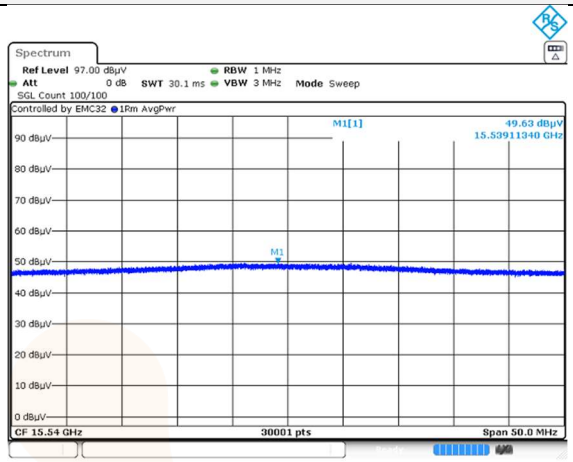
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
6 986.83	H	66.36	35.40	-52.85	-	48.91	68.20	19.29
10 480.15	V	62.26	37.28	-48.77	-	50.77	68.20	17.43
15 716.49[1)]	V	59.61	39.56	-47.06	-	52.11	74.00	21.89
Average Data								
15 716.49[1)]	V	50.52	39.56	-47.06	0.29	43.31	54.00	10.69

In order to simplify the report, attached plots were only the lowest margin condition

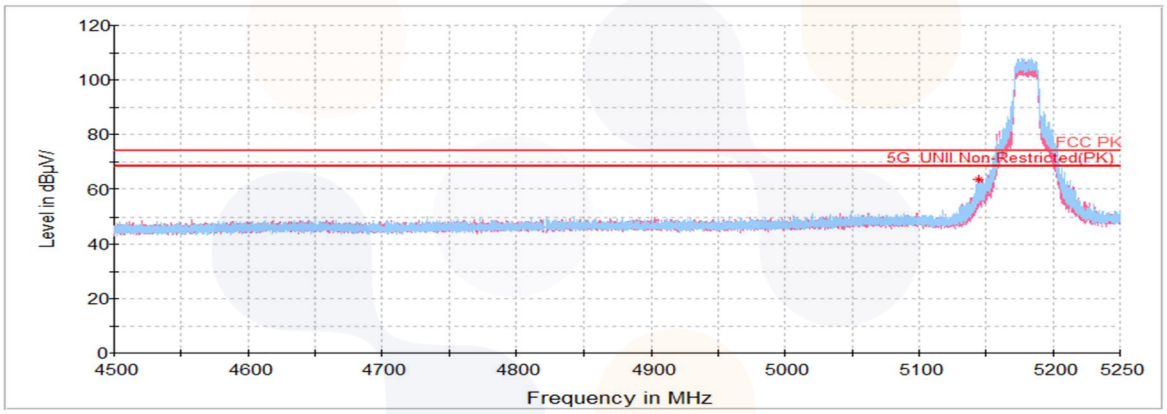
802.11n_HT20_Lowest Channel (5 180 ㎒)

Average data





Horizontal/Vertical for Band-edge

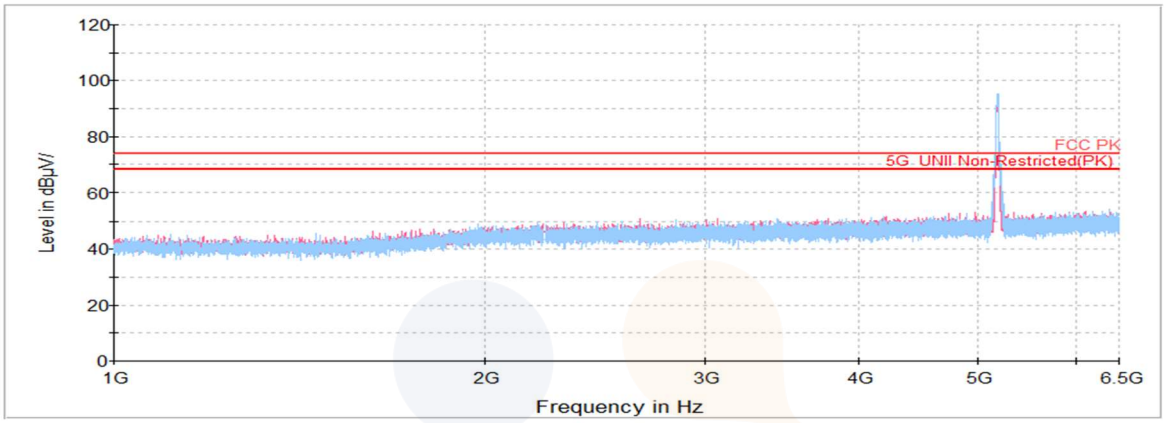


Plot of Harmonics and Spurious Emissions

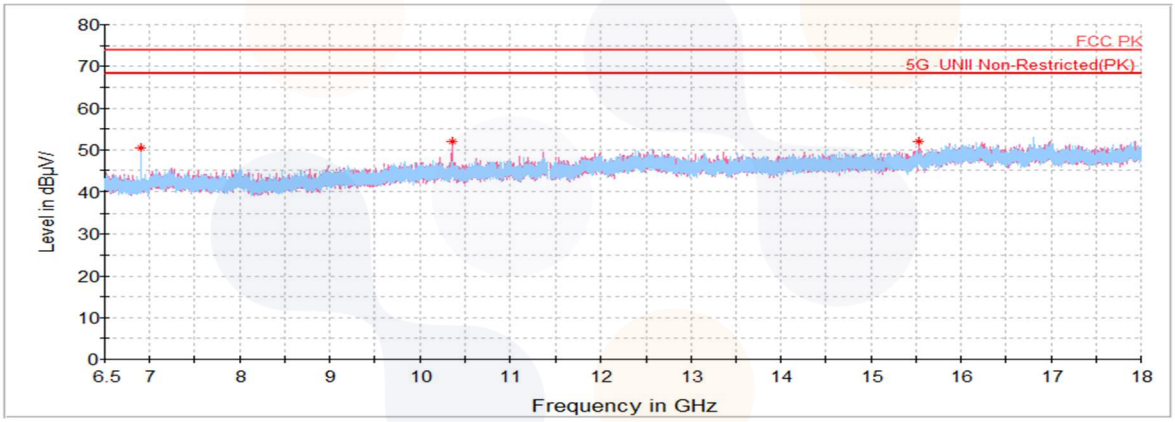
In order to simplify the report, attached plots were only the lowest margin condition

802.11n HT20_UNII-1_ Lowest Channel (5 180 ㎒)

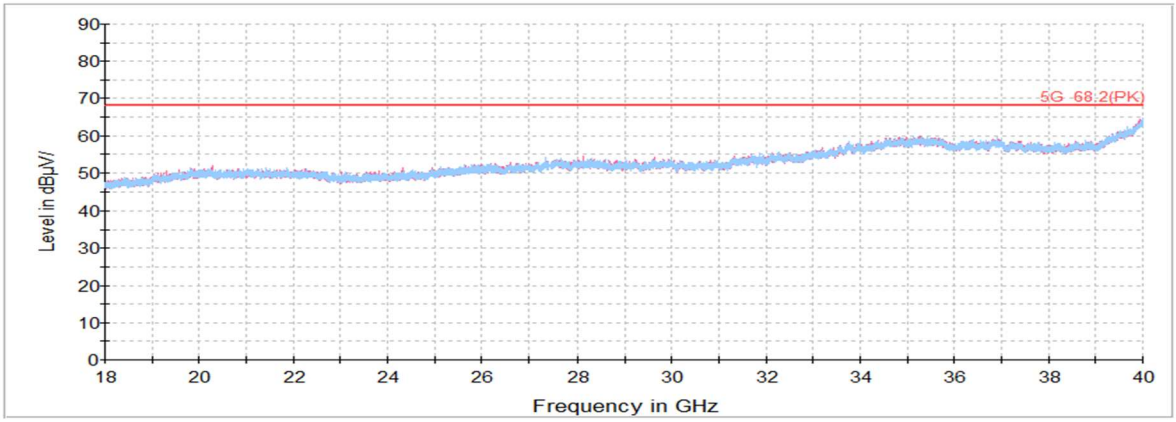
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



UNII-2A

802.11a_Lowest Channel (5 260 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
7 013.28	H	66.84	35.40	-52.82	-	49.42	68.20	18.78
10 514.65	V	62.52	37.31	-48.76	-	51.07	68.20	17.13
15 779.84[1)]	V	62.37	39.54	-46.92	-	54.99	74.00	19.01
Average Data								
15 779.84[1)]	V	53.37	39.54	-46.92	0.27	46.26	54.00	7.74

802.11a_Middle Channel (5 280 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
7 040.12	H	65.87	35.41	-52.82	-	48.46	68.20	19.74
10 562.57	V	62.65	37.36	-48.74	-	51.27	68.20	16.93
15 835.98[1)]	V	64.85	39.53	-46.80	-	57.58	74.00	16.42
Average Data								
15 835.98[1)]	V	52.93	39.53	-46.80	0.27	45.93	54.00	8.07

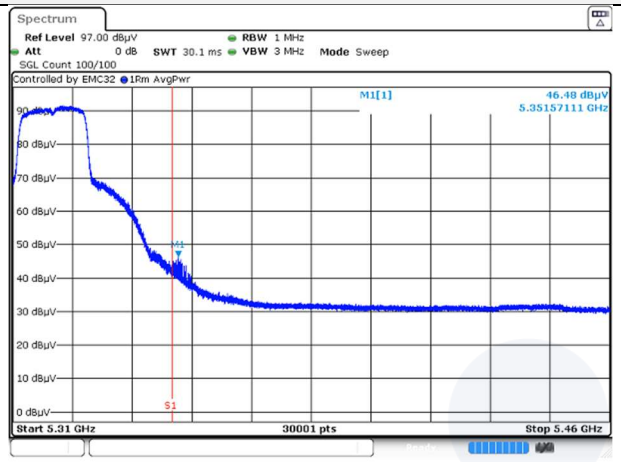
802.11a_Highest Channel (5 320 ㎒)

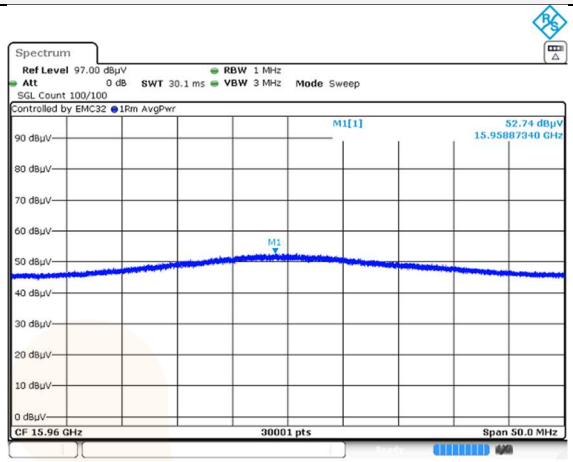
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 350.46[1)]	H	58.82	34.19	-24.20	-	68.81	74.00	5.19
7 093.02	H	64.74	35.42	-52.82	-	47.34	68.20	20.86
10 638.47[1)]	V	61.83	37.44	-48.71	-	50.56	74.00	23.44
15 958.87[1)]	V	61.01	39.51	-46.52	-	54.00	74.00	20.00
Average Data								
5 350.46[1)]	H	41.44	34.19	-24.20	0.27	51.70	54.00	**2.30**
15 958.87[1)]	V	52.74	39.51	-46.52	0.27	46.00	54.00	8.00

In order to simplify the report, attached plots were only the lowest margin condition

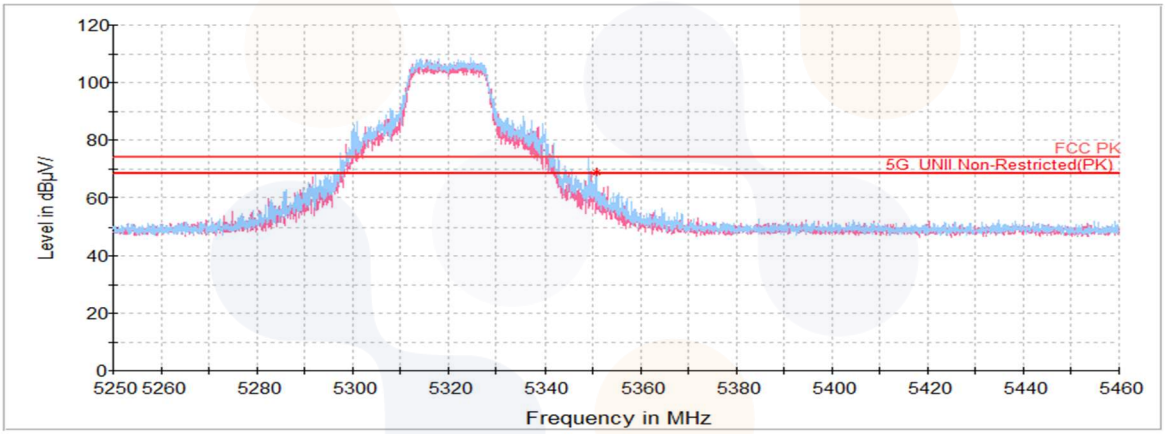
802.11a_Highest Channel (5 320 ㎒)

Average data





Horizontal/Vertical for Band-edge



802.11n_HT20_Lowest Channel (5 260 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
7 013.28	H	68.38	35.40	-52.82	-	50.96	68.20	17.24
10 523.08	V	62.42	37.32	-48.76	-	50.98	68.20	17.22
15 780.93[1)]	V	62.96	39.54	-46.92	-	55.58	74.00	18.42
Average Data								
15 780.93[1)]	V	54.12	39.54	-46.92	0.29	47.03	54.00	6.97

802.11n_HT20_Middle Channel (5 280 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
7 039.73	H	66.98	35.41	-52.82	-	49.57	68.20	18.63
10 561.80	V	65.99	37.36	-48.74	-	54.61	68.20	13.59
15 840.01[1)]	V	63.82	39.53	-46.79	-	56.56	74.00	17.44
Average Data								
15 840.01[1)]	V	52.64	39.53	-46.79	0.29	45.67	54.00	8.33

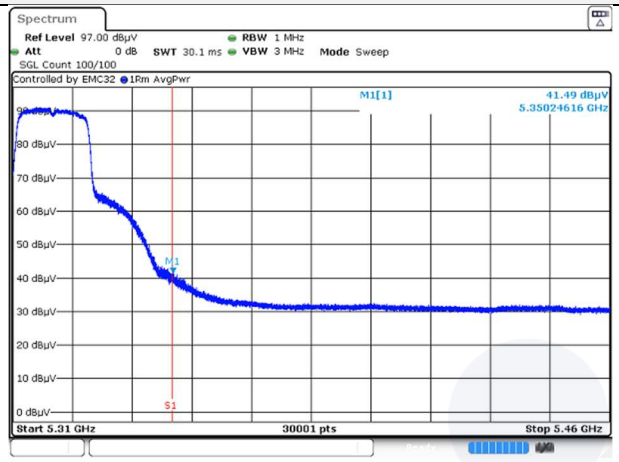
802.11n_HT20_Highest Channel (5 320 ㎒)

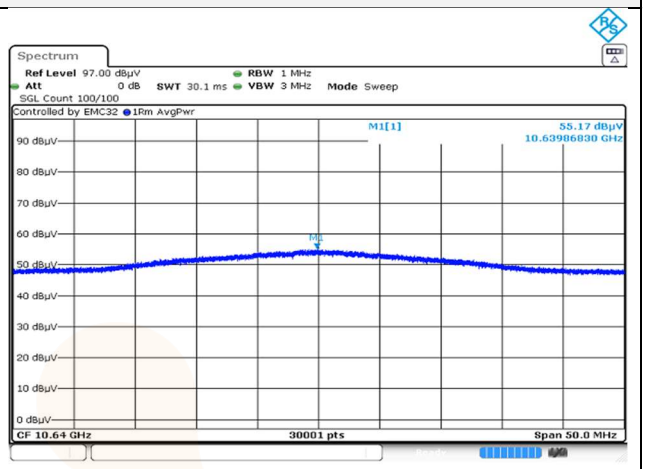
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 350.25[1)]	H	55.75	34.19	-24.20	-	65.74	74.00	8.26
7 093.40	H	65.35	35.42	-52.82	-	47.95	68.20	20.25
10 639.87[1)]	V	62.75	37.44	-48.71	-	51.48	74.00	22.52
15 956.93[1)]	V	63.95	39.51	-46.53	-	56.93	74.00	17.07
Average Data								
5 350.25[1)]	H	41.49	34.19	-24.20	0.29	51.77	54.00	**2.23**
10 639.87[1)]	V	55.17	37.44	-48.71	0.29	44.19	54.00	9.81
15 956.93[1)]	V	53.45	39.51	-46.53	0.29	46.72	54.00	7.28

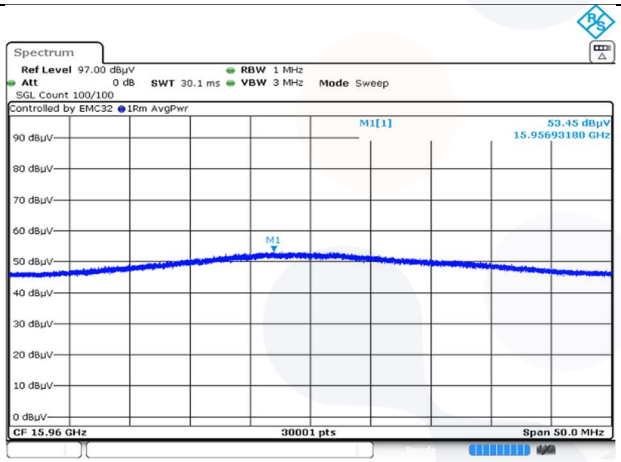
In order to simplify the report, attached plots were only the lowest margin condition

802.11n_HT20_Highest Channel (5 320 ㎒)

Average data

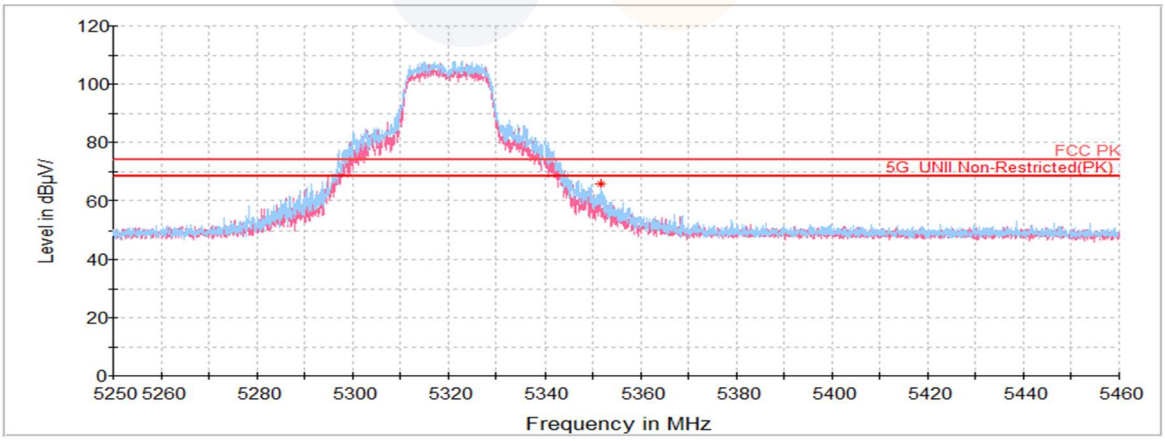






Blank

Horizontal/Vertical for Band-edge

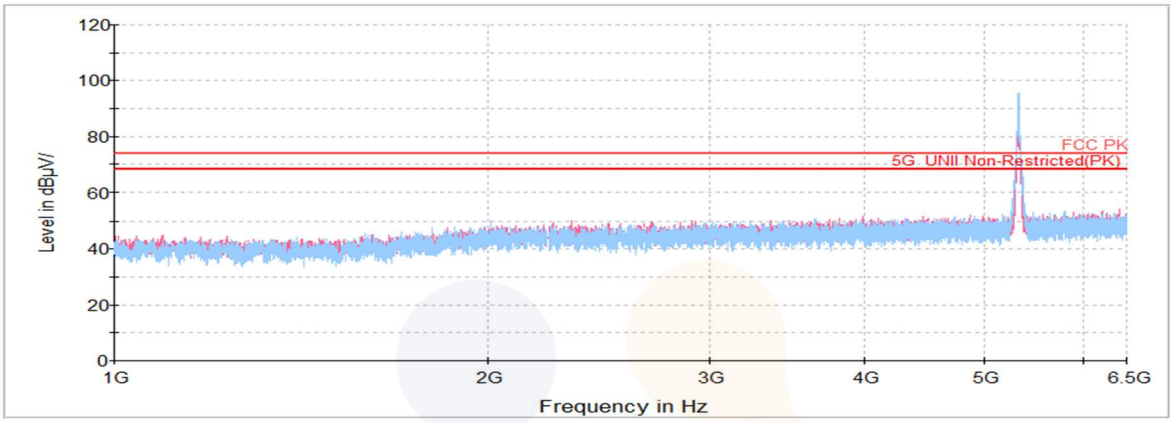


Plot of Harmonics and Spurious Emissions

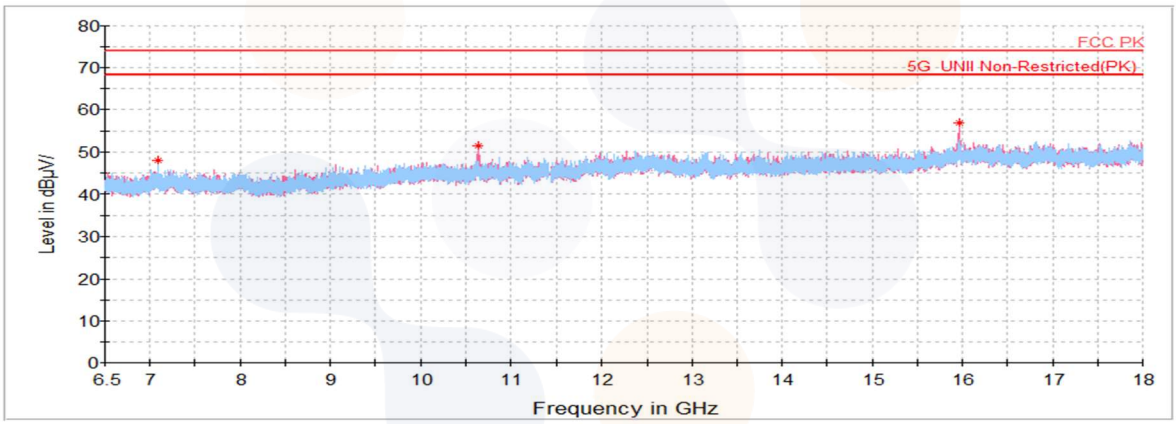
In order to simplify the report, attached plots were only the lowest margin condition

802.11n HT20_UNII-2A_Highest Channel (5 320 ㎒)

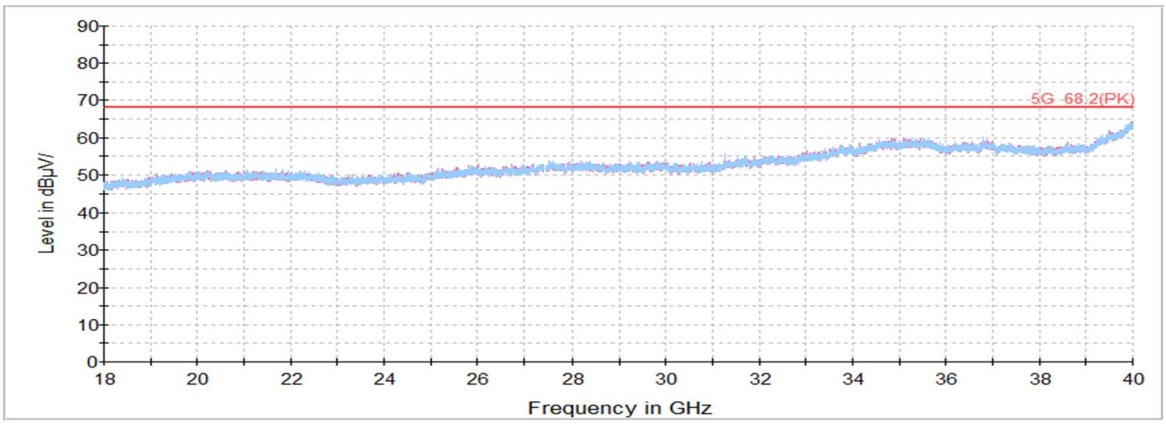
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



UNII-2C

802.11a_Lowest Channel (5 500 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 457.34[1)]	H	43.36	34.34	-23.91	-	53.79	74.00	20.21
11 000.03[1)]	V	62.39	37.80	-48.56	-	51.63	74.00	22.37
16 497.33	V	60.59	41.20	-46.47	-	55.32	68.20	12.88
Average Data								
5 457.34[1)]	H	32.52	34.34	-23.91	0.27	43.22	54.00	**10.78**
11 000.03[1)]	V	50.57	37.80	-48.56	0.27	40.08	54.00	13.92

802.11a_Middle Channel (5 580 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 200.05[1)]	V	60.48	37.96	-48.66	-	49.78	74.00	24.22
16 802.85	V	60.49	41.20	-46.19	-	55.50	68.20	12.90
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

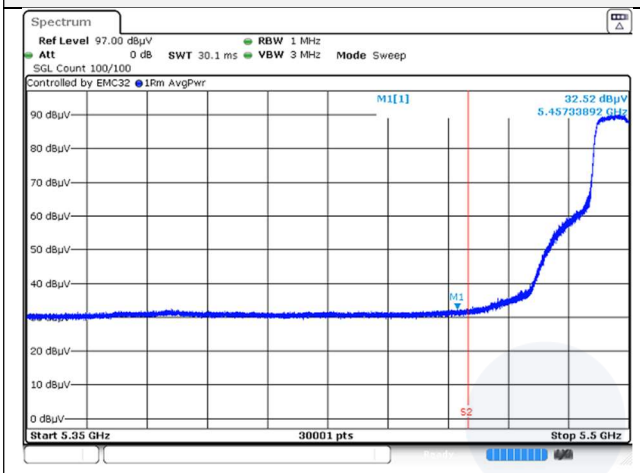
802.11a_Highest Channel (5 720 ㎒)

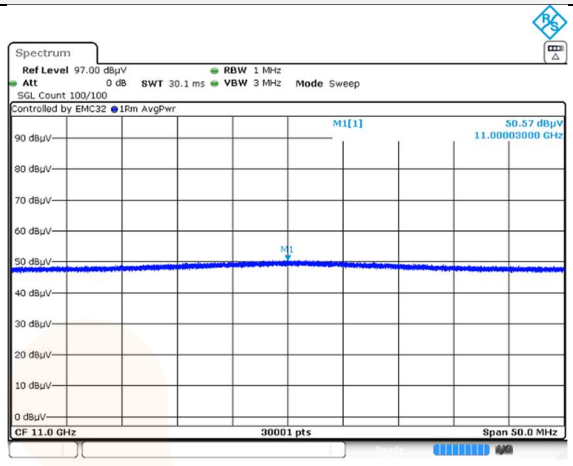
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 442.32[1)]	V	60.56	38.15	-48.78	-	49.93	74.00	24.07
17 159.35	V	58.57	41.03	-46.12	-	53.48	68.20	14.72
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

In order to simplify the report, attached plots were only the lowest margin condition

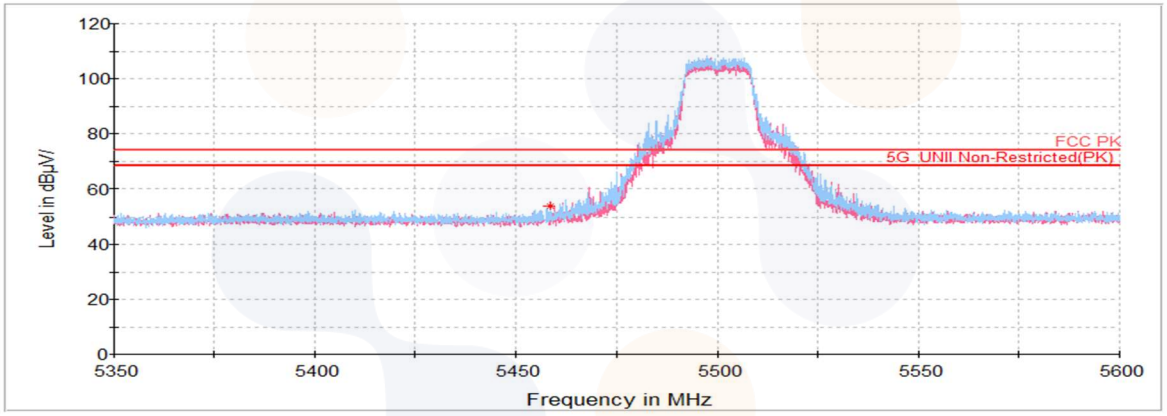
802.11a_Lowest Channel (5 500 ㎒)

Average data





Horizontal/Vertical for Band-edge



802.11n_HT20_Lowest Channel (5 500 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 457.16[1)]	H	42.22	34.34	-23.91	-	52.65	74.00	21.35
11 000.33[1)]	V	59.02	37.80	-48.56	-	48.26	74.00	25.74
16 487.75	V	59.22	41.18	-46.47	-	53.93	68.20	14.27
Average Data								
5 457.16[1)]	H	32.49	34.34	-23.91	0.29	43.21	54.00	**10.79**

802.11n_HT20_Middle Channel (5 580 ㎒)

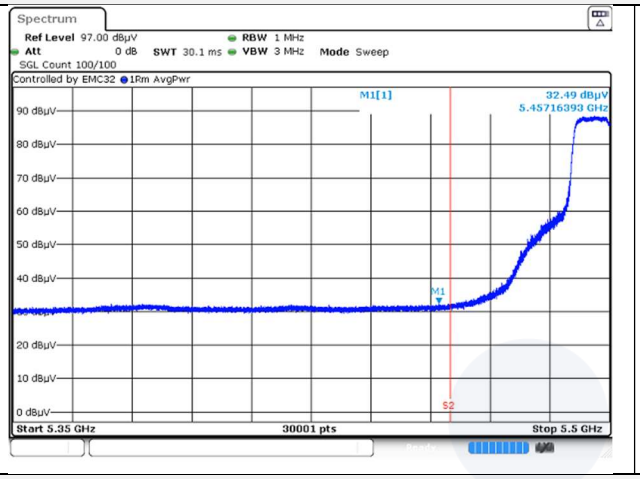
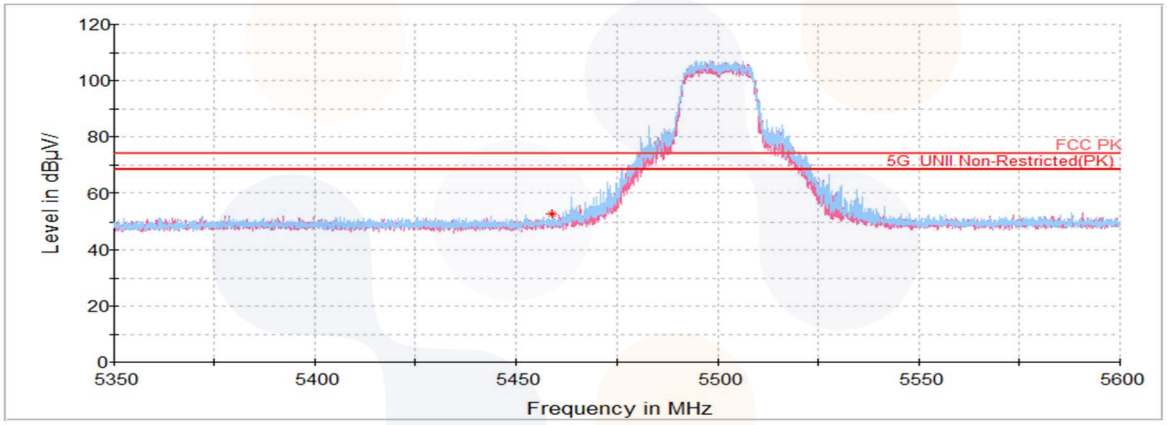
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 195.83[1)]	V	59.67	37.96	-48.66	-	48.97	74.00	25.03
16 792.50	V	59.32	41.19	-46.20	-	54.31	68.20	13.89
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit								

802.11n_HT20_Highest Channel (5 720 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 438.10[1)]	V	58.99	38.15	-48.78	-	48.36	74.00	25.64
17 152.07	V	58.70	41.03	-46.11	-	53.62	68.20	14.58
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

In order to simplify the report, attached plots were only the lowest margin condition

802.11n_HT20_Lowest Channel (5 500 ㎒)

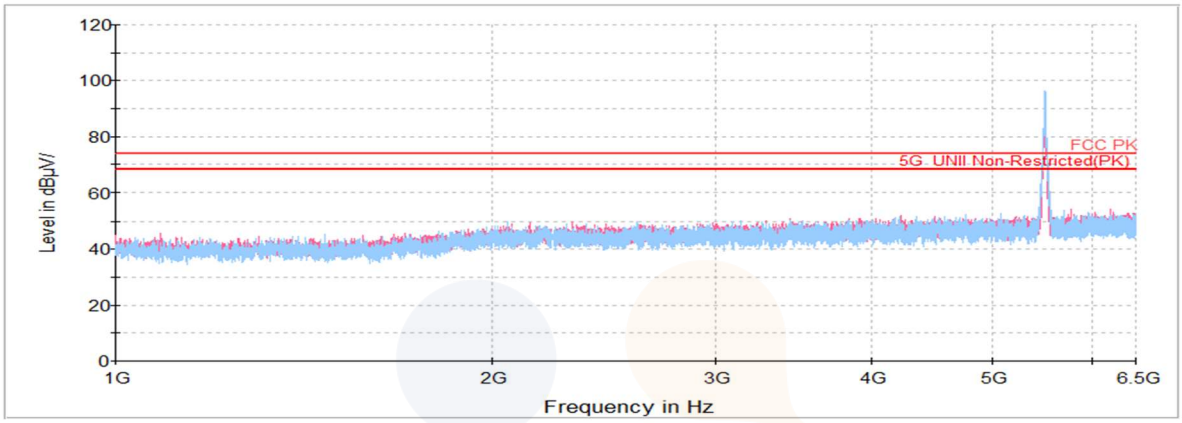
Average data	
	Blank
Horizontal/Vertical for Band-edge	
	

Plot of Harmonics and Spurious Emissions

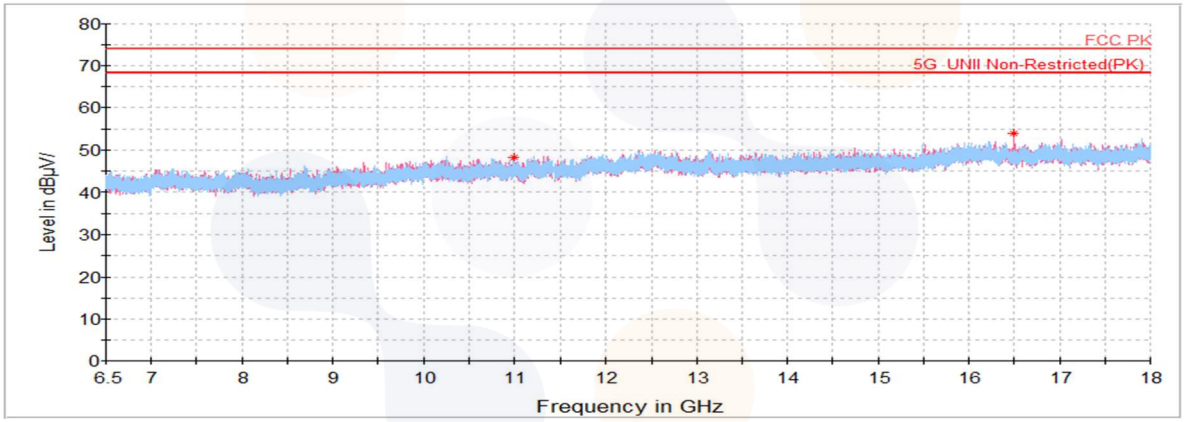
In order to simplify the report, attached plots were only the lowest margin condition

802.11a_UNII-2C_Lowest Channel (5 500 ㎒)

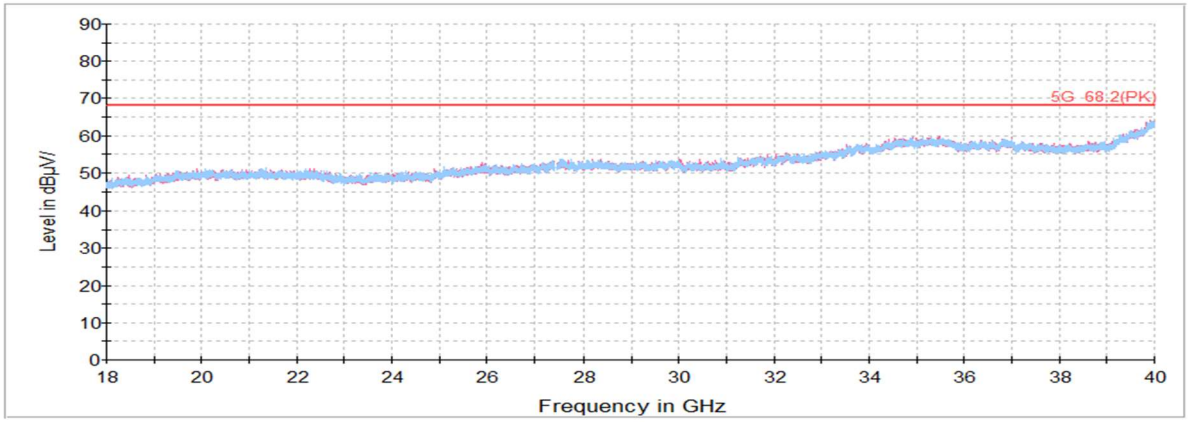
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



UNII-3

802.11a_Lowest Channel (5 745 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 724.47	H	70.01	34.67	-23.24	-	81.44	121.00	39.56
11 489.85[1)]	V	59.24	38.19	-48.80	-	48.63	74.00	25.37
17 243.68	V	62.22	41.05	-46.17	-	57.10	68.20	**11.10**
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

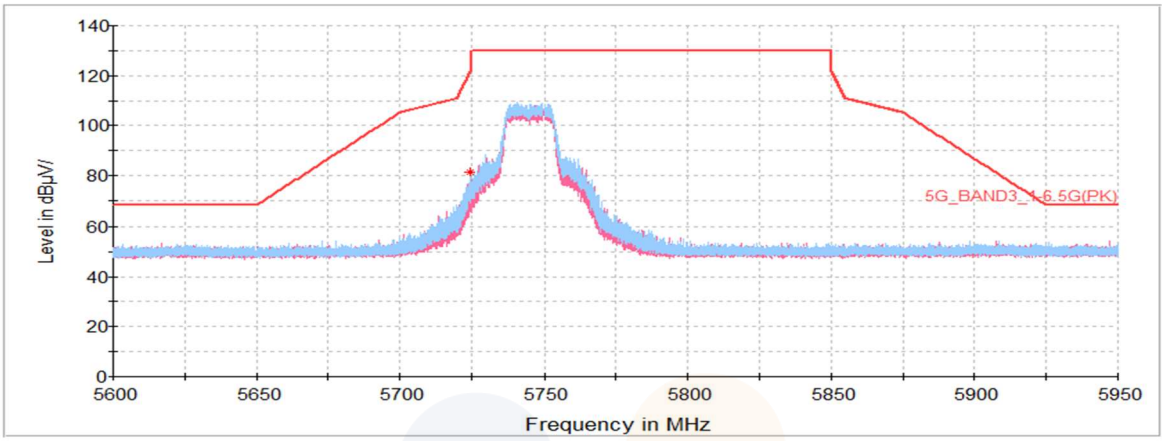
802.11a_Middle Channel (5 785 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 566.52[1)]	V	61.18	38.27	-48.82	-	50.63	74.00	23.37
17 349.10	V	61.92	41.07	-46.25	-	56.74	68.20	11.46
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

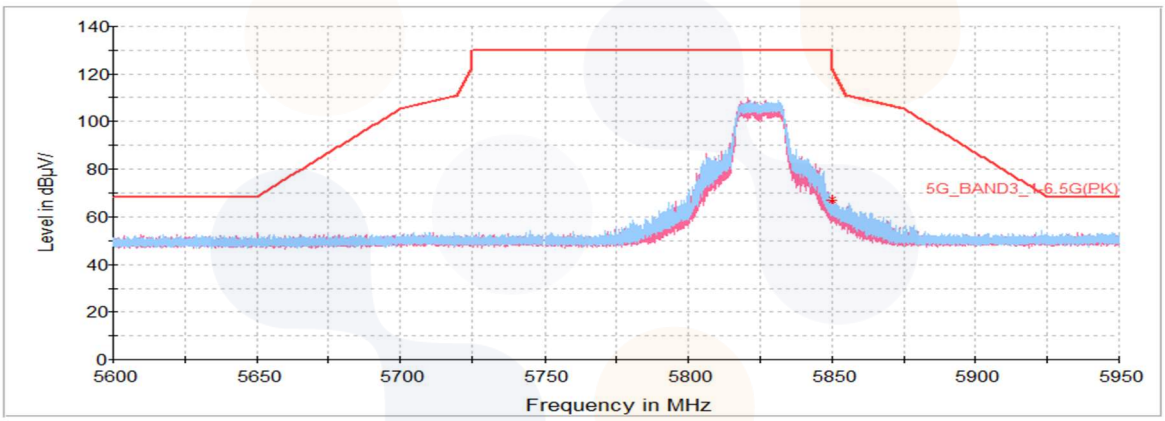
802.11a_Highest Channel (5 825 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 850.13	V	55.75	34.82	-23.29	-	67.28	121.90	54.61
11 649.70[1)]	V	61.28	38.35	-48.84	-	50.79	74.00	23.21
17 477.52	V	61.77	41.10	-46.34	-	56.53	68.20	11.67
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

802.11a_Lowest Channel (5 745 ㎒)

Horizontal/Vertical for Band-edge


802.11a_Highest Channel (5 825 ㎒)

Horizontal/Vertical for Band-edge


802.11n_HT20_Lowest Channel (5 745 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 724.37	H	69.56	34.67	-23.24	-	80.99	120.76	39.76
11 491.77[1)]	V	58.68	38.19	-48.80	-	48.07	74.00	25.93
17 237.55	V	61.64	41.05	-46.17	-	56.52	68.20	11.68
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

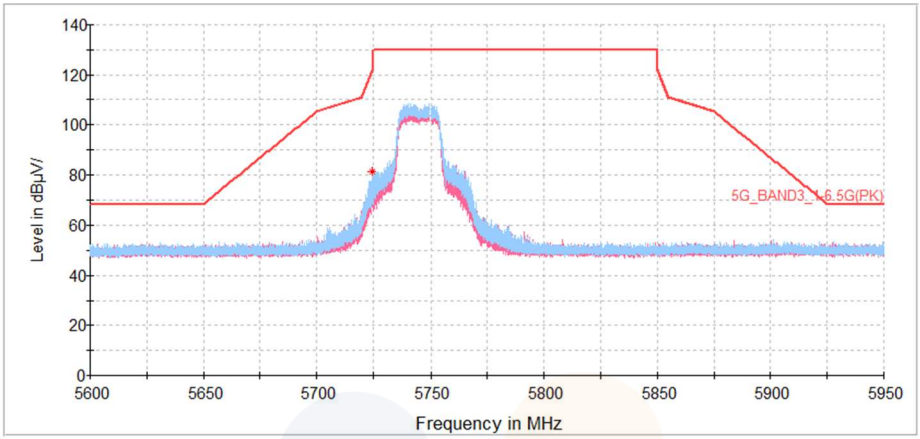
802.11n_HT20_Middle Channel (5 785 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 571.51[1)]	V	63.27	38.27	-48.83	-	52.71	74.00	21.29
17 359.83	V	61.21	41.07	-46.26	-	56.02	68.20	12.18
Average Data								
11 571.51[1)]	V	53.74	38.27	-48.83	0.29	43.47	54.00	**10.53**

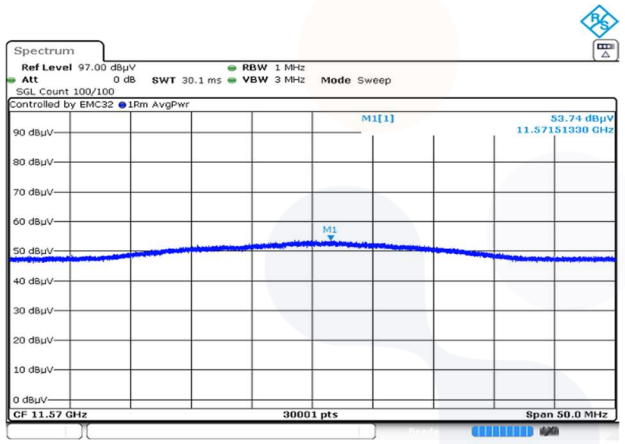
802.11n_HT20_Highest Channel (5 825 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 850.23	H	55.57	34.82	-23.29	-	67.10	121.68	54.59
11 640.88[1)]	V	60.70	38.34	-48.84	-	50.20	74.00	23.80
17 466.78	V	59.24	41.09	-46.33	-	54.00	68.20	14.20
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

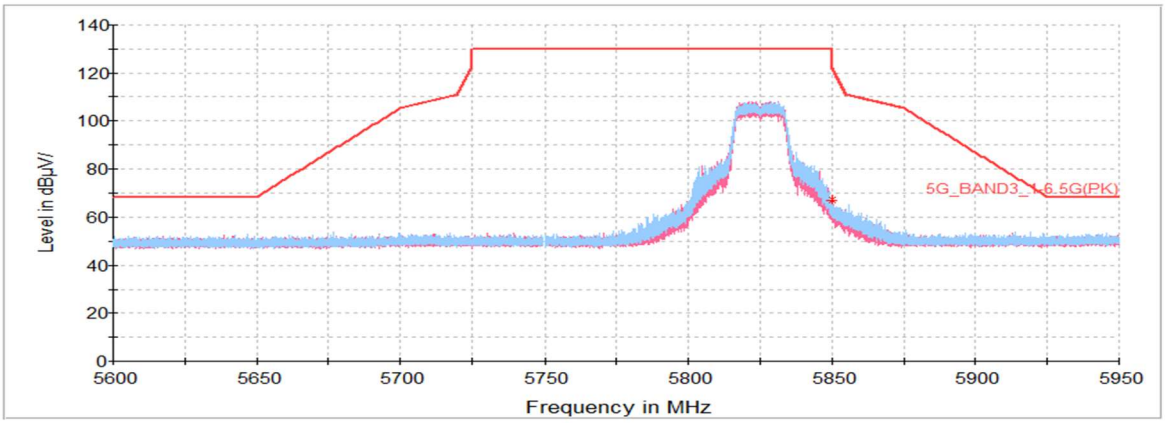
802.11n_HT20_Lowest Channel (5 745 ㎒)

Horizontal/Vertical for Band-edge


802.11n_HT20_Middle Channel (5 785 ㎒)

Average data	
	Blank

802.11n_HT20_Highest Channel (5 825 ㎒)

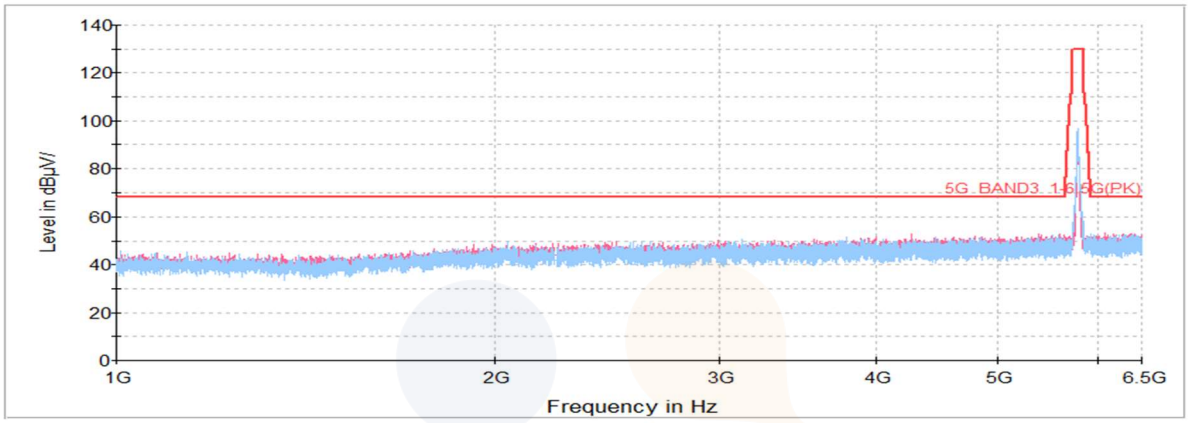
Horizontal/Vertical for Band-edge


Plot of Harmonics and Spurious Emissions

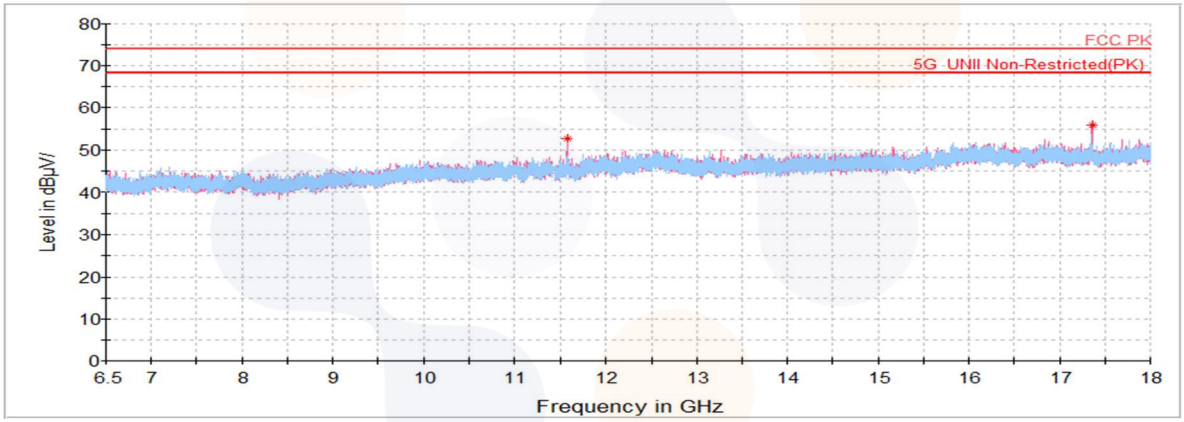
In order to simplify the report, attached plots were only the lowest margin condition

802.11a_UNII-3_ Middle Channel (5 785 ㎒)

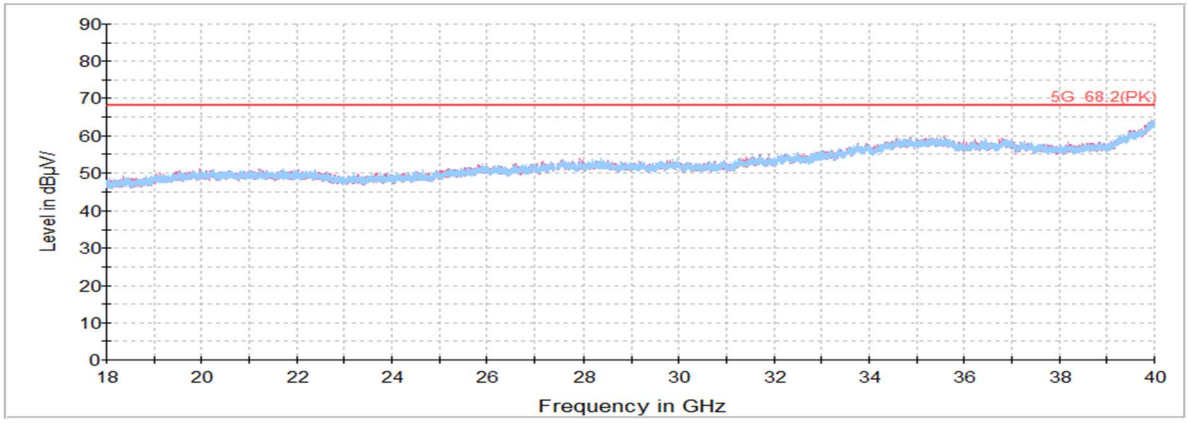
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓

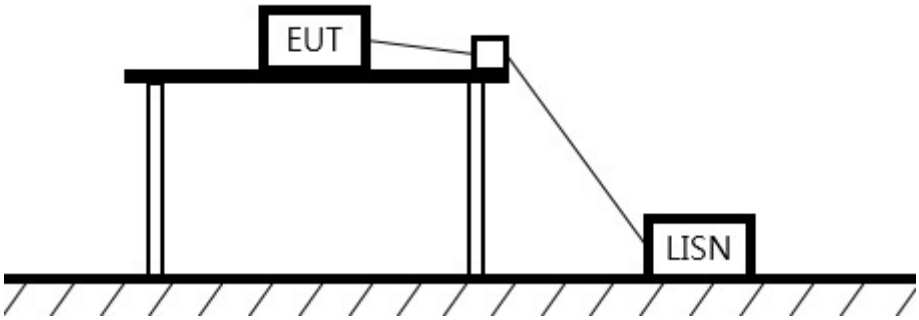


Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



7.6. AC Conducted emission

Test setup



Limit

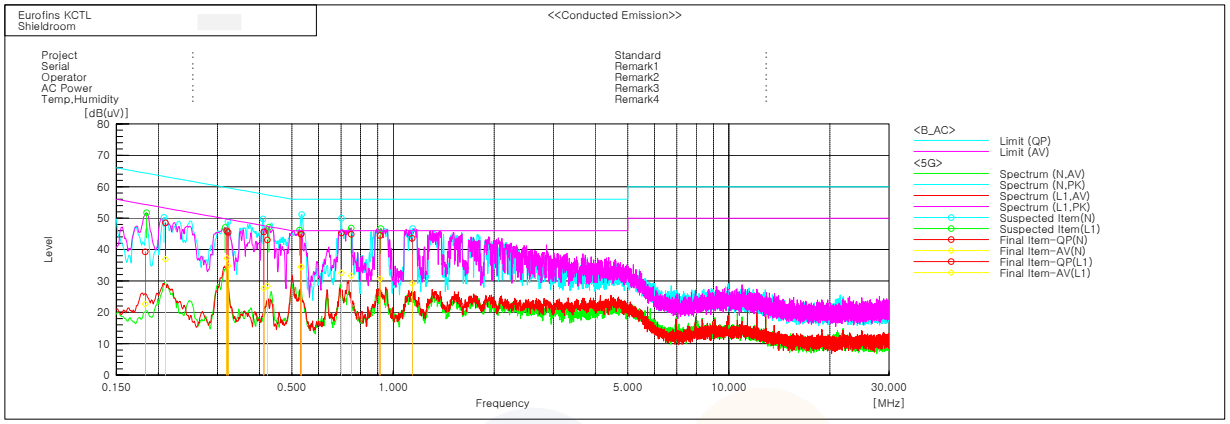
According to 15.207(a) and RSS-Gen(8.8), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 ㎑ to 30 ㎒, shall not exceed the limits in the following table, as measured using a 50uH/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

Frequency of Emission (㎒)	Conducted limit (dBμV/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

Measurement procedure

1. The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 ㎝ in which is located 40 ㎝ away from the vertical wall and 1.5m away from the side wall of the shielded room.
2. Each current-carrying conductor of the EUT power cord was individually connected through a 50Ω/50μH LISN, which is an input transducer to a spectrum analyzer or an EMI/Field Intensity Meter, to the input power source.
3. Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
4. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 ㎒ to 30 ㎒.
5. The measurements were made with the detector set to peak amplitude within a bandwidth of 10 ㎑ or to quasi-peak and average within a bandwidth of 9 ㎑. The EUT was in transmitting mode during the measurements.

Test results- Worst case: 802.11n HT20_UNII-2A_Highest Channel (5 320 ㎒)



Final Result

--- N Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.210	38.6	27.0	9.9	48.5	36.9	63.2	53.2	14.7	16.3
2	0.3226	35.7	25.0	9.8	45.5	34.8	59.6	49.6	14.1	14.8
3	0.41205	35.6	17.6	10.0	45.6	27.6	57.6	47.6	12.0	20.0
4	0.53256	35.0	24.5	10.0	45.0	34.5	56.0	46.0	11.0	11.5
5	0.70231	35.3	22.6	9.9	45.2	32.5	56.0	46.0	10.8	13.5
6	1.13923	33.8	19.3	9.8	43.6	29.1	56.0	46.0	12.4	16.9

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.18263	29.2	12.5	10.1	39.3	22.6	64.4	54.4	25.1	31.8
2	0.31988	36.1	27.4	9.9	46.0	37.3	59.7	49.7	13.7	12.4
3	0.42262	33.1	18.4	10.0	43.1	28.4	57.4	47.4	14.3	19.0
4	0.53147	34.8	24.4	10.0	44.8	34.4	56.0	46.0	11.2	11.6
5	0.75056	35.0	21.7	9.9	44.9	31.6	56.0	46.0	11.1	14.4
6	0.91387	34.5	20.7	10.0	44.5	30.7	56.0	46.0	11.5	15.3

8. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum Analyzer	R&S	FSV3044	101421	25.07.26
DC Power Supply	AGILENT	E3632A	MY40000265	25.04.24
Attenuator	Weinschel ENGINEERING	56-10	51395	26.01.21
Power Sensor	R&S	NRP-Z81	1137.9009.02-106223-bB	25.04.24
Attenuator	HP	8491A	29738	25.10.10
Vector Signal Generator	R&S	SMBV100A	257566	25.07.01
Signal Generator	R&S	SMB100A	176206	26.01.17
Antenna Mast	Innco Systems	MA4640-XP-ET	MA4000/396/30810213/L	-
Controller	Innco Systems	CO3000	1175/45850319/P	-
Spectrum Analyzer	R&S	FSV40	100989	25.10.10
Horn antenna	ETS.lindgren	3117	00251528	26.01.21
Horn antenna	ETS.lindgren	3116	00086635	26.01.21
AMPLIFIER	B&Z Technologies	BZRT-00504000-481055-382525	26299-27735	25.06.24
AMPLIFIER	B&Z Technologies	BZR-0050400-551028-252525	27736	25.06.24
Attenuator	API Inmet	40AH2W-10	12	25.04.30
High pass Filter	WT	WT-A1698-HS	WT160411001	25.04.25
High pass Filter	WT	WT-A1699-HS	WT160411002	25.04.25
Signal Generator	R&S	SMB100A	176206	26.01.17
Controller	INNCO SYSTEMS	CO3000	1441/54370322/P	-
Antenna Mast	INNCO SYSTEMS	MA4640-XP-ET	-	-
Turn Device	INNCO SYSTEMS	DS1200-S-1t	-	-
Spectrum Analyzer	R&S	FSVA40	101575	25.04.24
Spectrum Analyzer	R&S	FSV40	100988	25.05.27
Amplifier	SONOMA INSTRUMENT	310N	421821	25.10.11
Bilog Antenna	Teseq GmbH	CBL 6112D	63756	26.12.11
Loop Antenna	R&S	HFH2-Z2	100355	26.06.25
DC Power Supply	POWERCOM	DCP-50100A	20220610-02	26.01.16
TWO-LINE V - NETWORK	R&S	ENV216	101358	24.09.27
EMI TEST RECEIVER	R&S	ESCI3	100001	24.08.18

End of test report