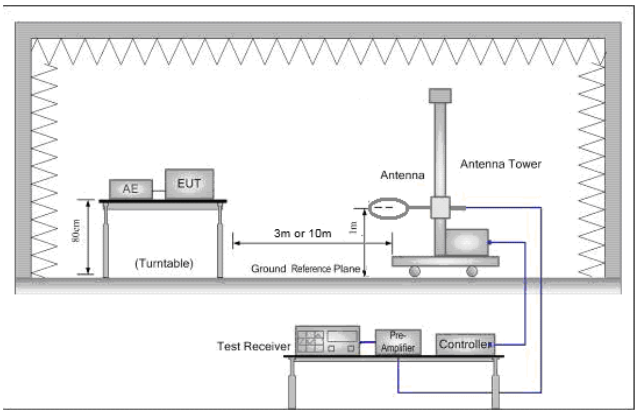

Figure 1. Below 30MHz

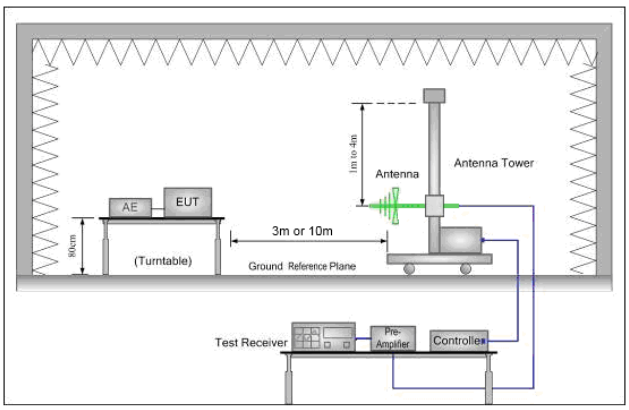

Figure 2. 30MHz to 1GHz

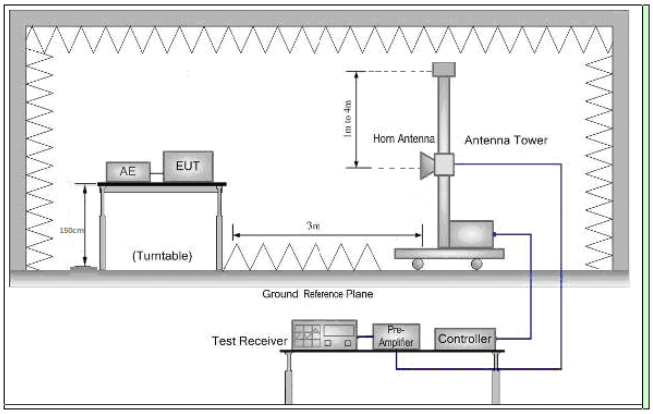

Figure 3. Above 1 GHz

Test Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters(for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified

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	and then reported in a data sheet. h. Test the EUT in the lowest channel, the middle channel ,the Highest channel i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case. j. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.
Final Test Mode:	Pretest the EUT at Charge + Transmitting mode. Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; 6Mbps of rate is the worst case of 802.11G; 6.5Mbps of rate is the worst case of 802.11N(HT20); For below 1GHz, through Pre-scan, find the 1Mbps of rate of 802.11B at lowest channel is the worst case. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

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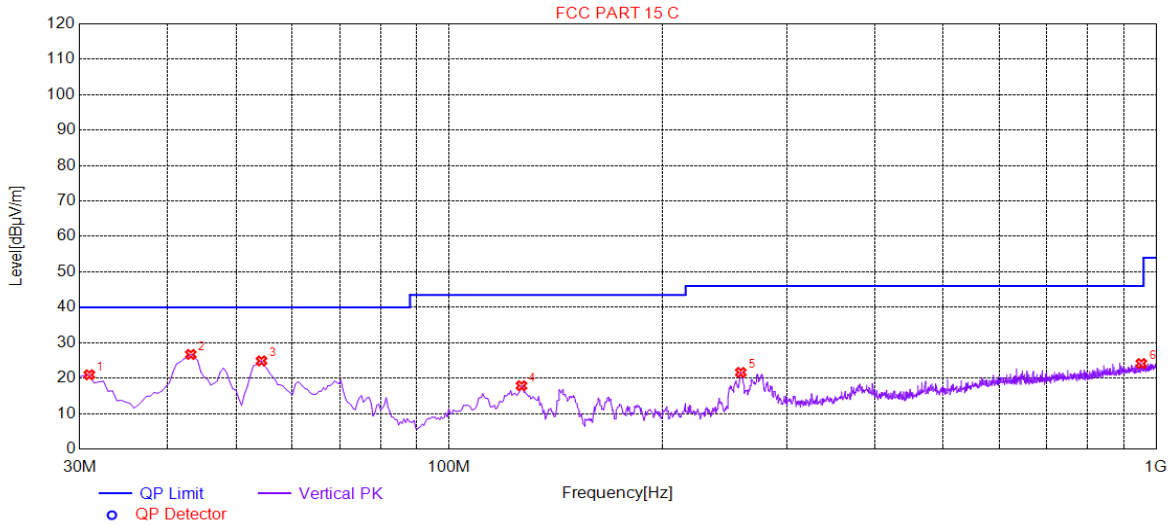
4.9.1 Radiated emission below 1GHz

4.9.1.1 Charge + Transmitting, Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	30.9705	20.96	-32.82	40.00	19.04	277	66	Vertical
2	43.1016	26.69	-30.57	40.00	13.31	221	344	Vertical
3	54.2621	24.87	-30.82	40.00	15.13	160	16	Vertical
4	126.5633	17.87	-34.26	43.50	25.63	177	0	Vertical
5	258.5493	21.62	-28.99	46.00	24.38	197	122	Vertical
6	952.9315	24.14	-14.43	46.00	21.86	161	260	Vertical

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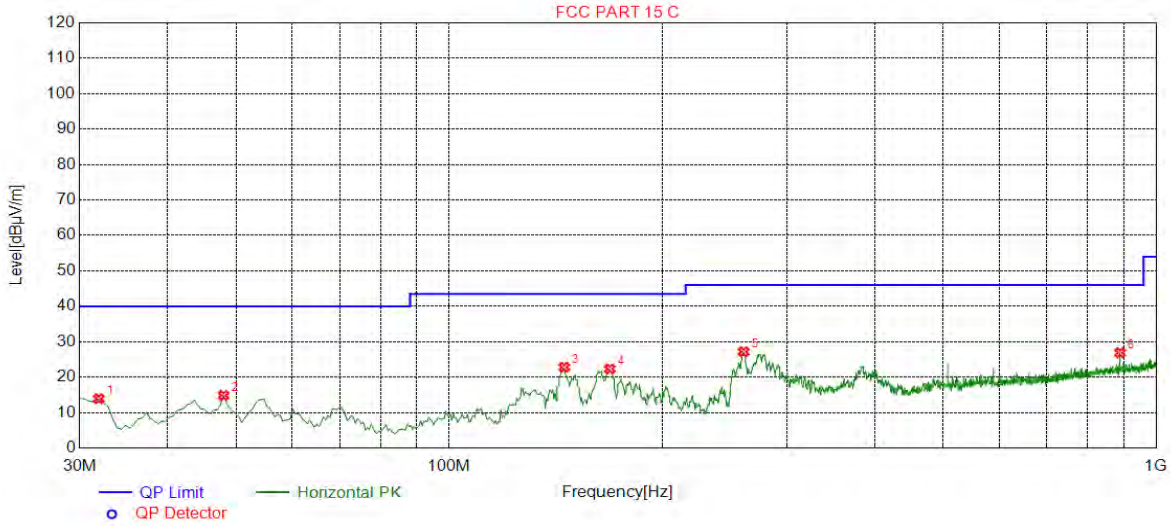
4.9.1.2 Charge + Transmitting, Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	31.9410	13.90	-32.81	40.00	26.10	159	326	Horizontal
2	47.9540	14.85	-30.19	40.00	25.15	150	226	Horizontal
3	145.4877	22.80	-34.97	43.50	20.70	152	273	Horizontal
4	168.7794	22.33	-33.69	43.50	21.17	140	260	Horizontal
5	260.9755	27.15	-28.92	46.00	18.85	107	338	Horizontal
6	889.3647	26.88	-15.40	46.00	19.12	225	1	Horizontal

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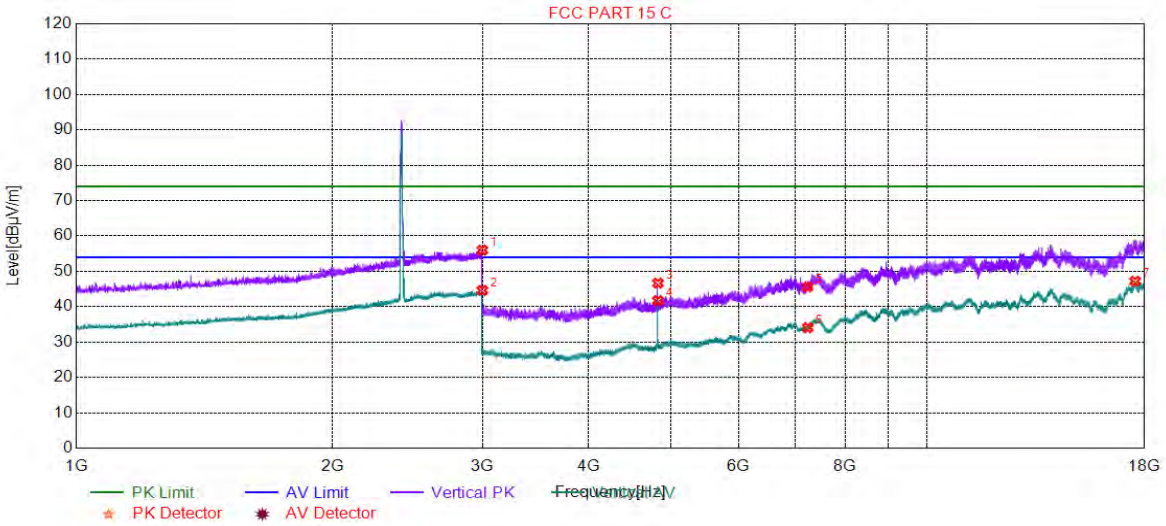
4.9.2 Transmitter emission above 1GHz

4.9.2.1 ANT1

4.9.2.1.1 802.11B_Lowest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2999.499	56.00	9.44	74.00	18.00	252	298	Vertical
2	2999.499	44.59	9.44	54.00	9.41	260	42	Vertical
3	4824.000	46.67	-20.09	74.00	27.33	175	116	Vertical
4	4824.000	41.72	-20.09	54.00	12.28	178	116	Vertical
5	7236.000	45.63	-12.40	74.00	28.37	161	34	Vertical
6	7236.000	34.07	-12.40	54.00	19.93	239	8	Vertical
7	17541.47	47.22	0.88	54.00	6.78	221	226	Vertical

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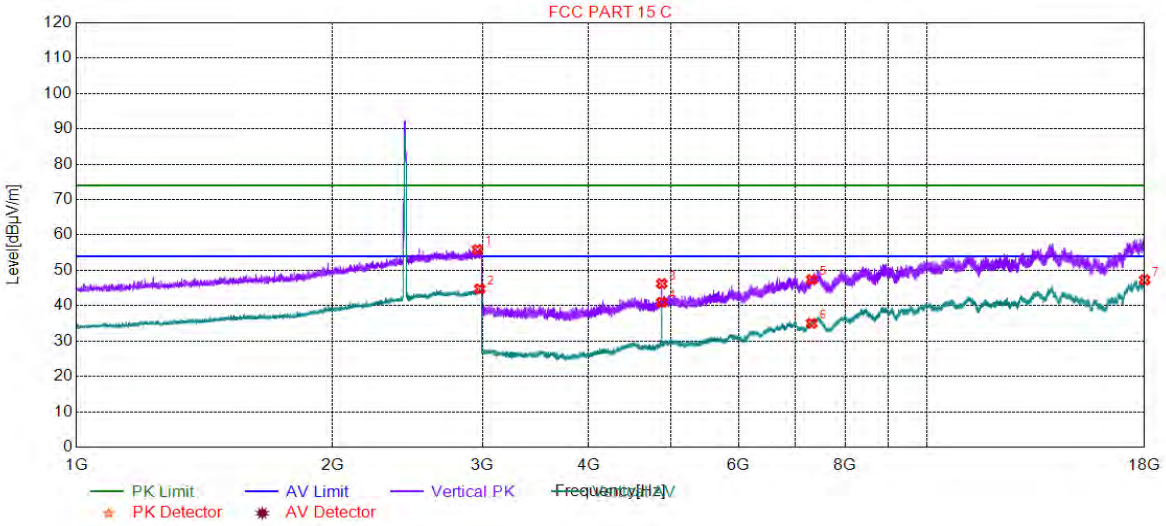
4.9.2.1.2 802.11B_ Middle Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2958.989	55.92	9.39	74.00	18.08	183	257	Vertical
2	2978.494	44.74	9.41	54.00	9.26	255	185	Vertical
3	4874.000	46.24	-19.37	74.00	27.76	277	126	Vertical
4	4874.000	40.95	-19.37	54.00	13.05	157	99	Vertical
5	7311.000	47.36	-11.50	74.00	26.64	244	342	Vertical
6	7311.000	35.01	-11.50	54.00	18.99	283	234	Vertical
7	17999.00	47.32	-0.36	54.00	6.68	163	317	Vertical

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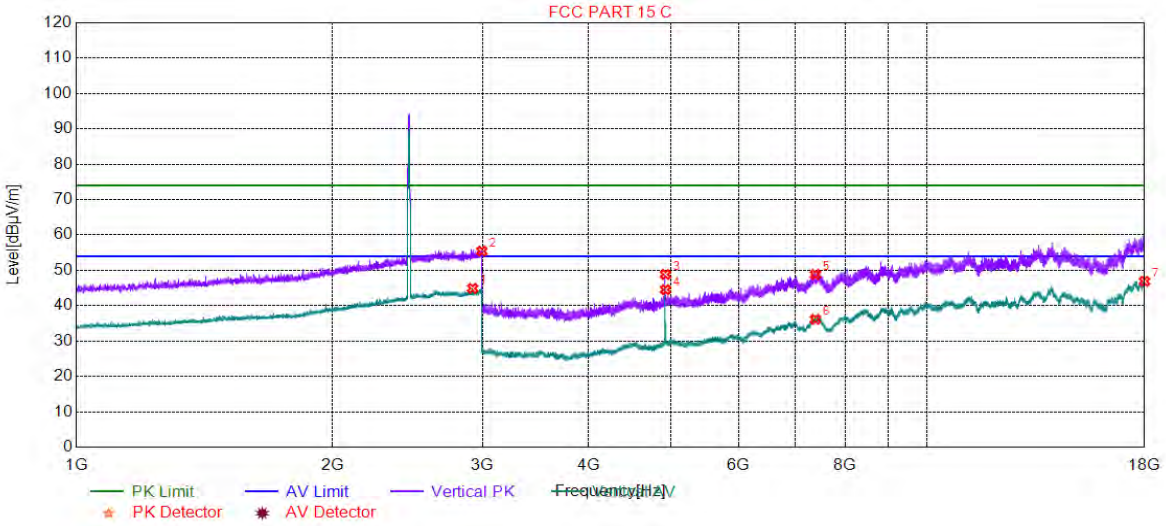
4.9.2.1.3 802.11B_ Highest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2921.980	44.91	9.34	54.00	9.09	189	306	Vertical
2	2995.498	55.44	9.43	74.00	18.56	212	318	Vertical
3	4924.000	48.84	-18.87	74.00	25.16	153	94	Vertical
4	4924.000	44.52	-18.87	54.00	9.48	236	126	Vertical
5	7386.000	48.85	-10.72	74.00	25.15	227	180	Vertical
6	7386.000	36.14	-10.72	54.00	17.86	241	126	Vertical
7	17993.99	46.87	-0.40	54.00	7.13	169	166	Vertical

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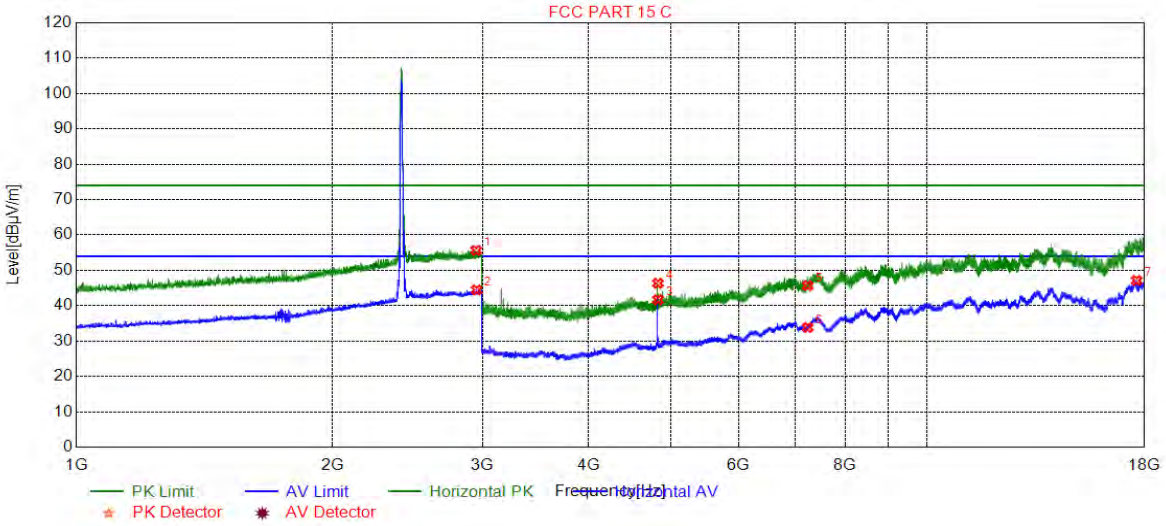
4.9.2.1.4 802.11B_Lowest Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2950.487	55.64	9.38	74.00	18.36	234	184	Horizontal
2	2953.488	44.46	9.38	54.00	9.54	178	37	Horizontal
3	4824.000	41.71	-20.09	54.00	12.29	170	126	Horizontal
4	4824.000	46.35	-20.09	74.00	27.65	191	99	Horizontal
5	7236.000	45.67	-12.40	74.00	28.33	235	315	Horizontal
6	7236.000	33.86	-12.40	54.00	20.14	169	261	Horizontal
7	17614.98	47.15	1.24	54.00	6.85	151	316	Horizontal

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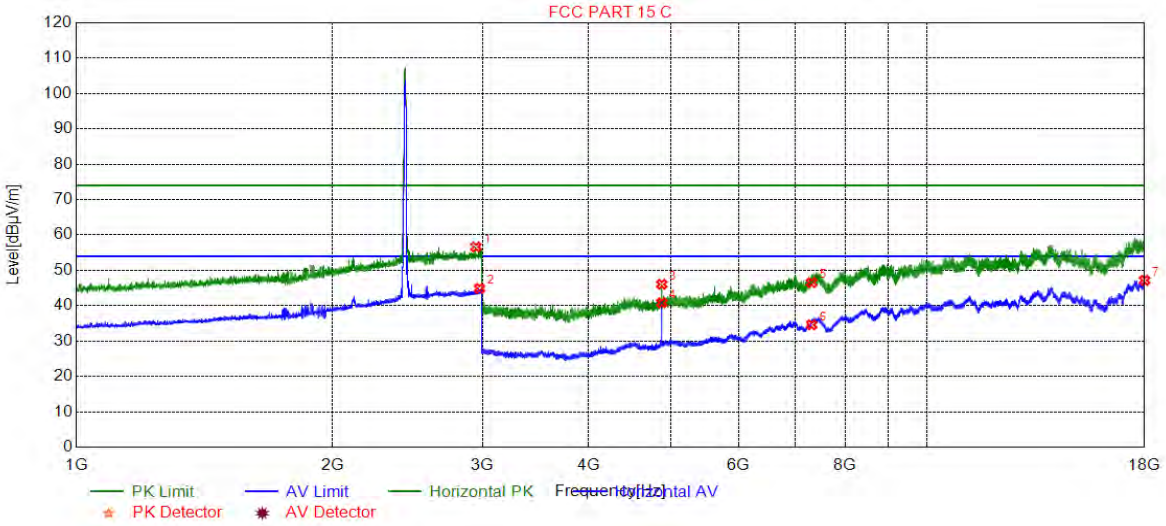
4.9.2.1.5 802.11B_ Middle Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2948.487	56.62	9.37	74.00	17.38	100	17	Horizontal
2	2976.994	44.90	9.41	54.00	9.10	179	66	Horizontal
3	4874.000	46.07	-19.37	74.00	27.93	224	100	Horizontal
4	4874.000	40.82	-19.37	54.00	13.18	238	127	Horizontal
5	7311.000	46.54	-11.50	74.00	27.46	200	287	Horizontal
6	7311.000	34.60	-11.50	54.00	19.40	213	46	Horizontal
7	17997.99	47.17	-0.37	54.00	6.83	220	166	Horizontal

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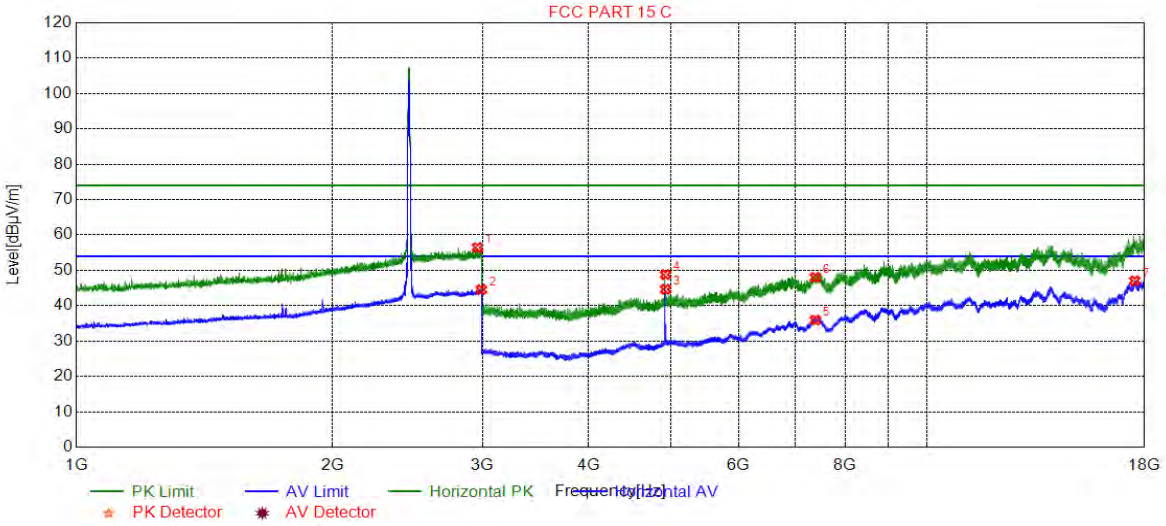
4.9.2.1.6 802.11B_ Highest Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2960.990	56.46	9.39	74.00	17.54	105	274	Horizontal
2	2990.997	44.56	9.43	54.00	9.44	218	200	Horizontal
3	4924.000	44.64	-18.87	54.00	9.36	212	100	Horizontal
4	4924.000	48.80	-18.87	74.00	25.20	216	100	Horizontal
5	7386.000	35.95	-10.72	54.00	18.05	115	261	Horizontal
6	7386.000	48.01	-10.72	74.00	25.99	119	127	Horizontal
7	17528.97	47.05	0.72	54.00	6.95	232	323	Horizontal

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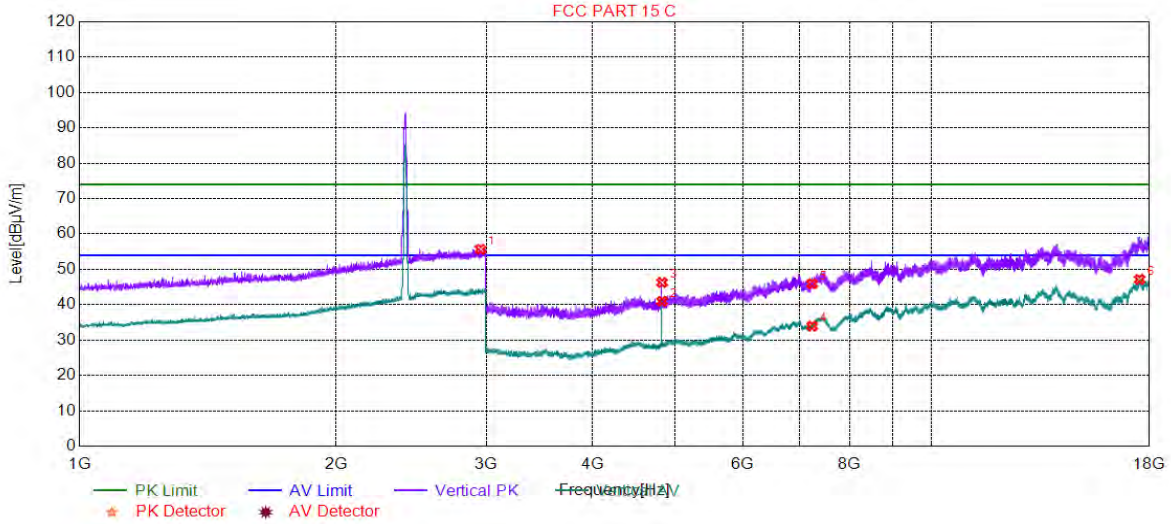
4.9.2.1.7 802.11G_Lowest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2954.988	55.69	9.38	74.00	18.31	169	99	Vertical
2	4824.000	40.99	-20.09	54.00	13.01	164	124	Horizontal
3	4824.000	46.29	-20.09	74.00	27.71	292	126	Vertical
4	7236.000	33.96	-12.40	54.00	20.04	168	151	Horizontal
5	7236.000	45.93	-12.40	74.00	28.07	228	342	Vertical
6	17525.97	47.17	0.68	54.00	6.83	168	117	Horizontal

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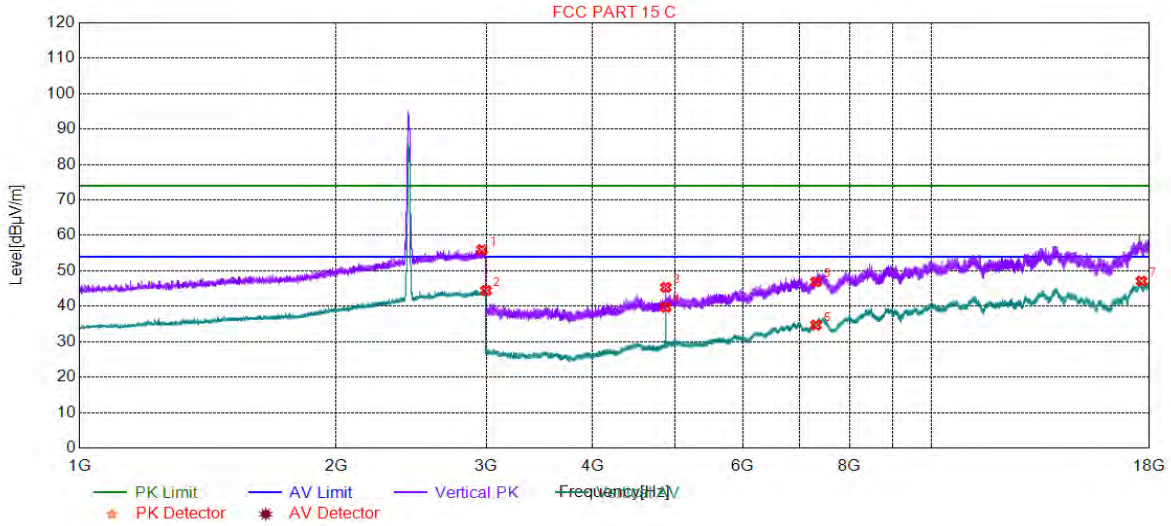
4.9.2.1.8 802.11G_ Middle Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2965.491	55.99	9.40	74.00	18.01	264	343	Vertical
2	2997.999	44.44	9.44	54.00	9.56	222	343	Vertical
3	4874.000	45.35	-19.37	74.00	28.65	232	72	Vertical
4	4874.000	39.73	-19.37	54.00	14.27	157	99	Vertical
5	7311.000	46.85	-11.50	74.00	27.15	258	234	Vertical
6	7311.000	34.70	-11.50	54.00	19.30	198	180	Vertical
7	17613.98	47.10	1.27	54.00	6.90	297	316	Vertical

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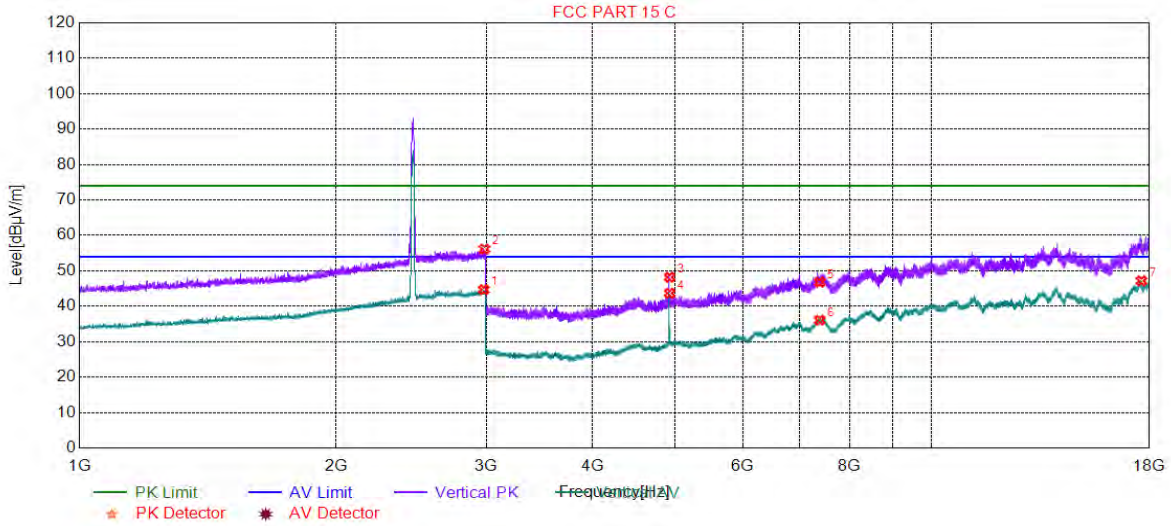
4.9.2.1.9 802.11G_ Highest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2980.495	44.67	9.41	54.00	9.33	237	343	Vertical
2	2985.496	56.17	9.42	74.00	17.83	212	222	Vertical
3	4924.000	48.21	-18.87	74.00	25.79	214	99	Vertical
4	4924.000	43.70	-18.87	54.00	10.30	178	99	Vertical
5	7386.000	46.80	-10.72	74.00	27.20	269	126	Vertical
6	7386.000	36.07	-10.72	54.00	17.93	257	45	Vertical
7	17613.48	47.19	1.28	54.00	6.81	279	216	Vertical

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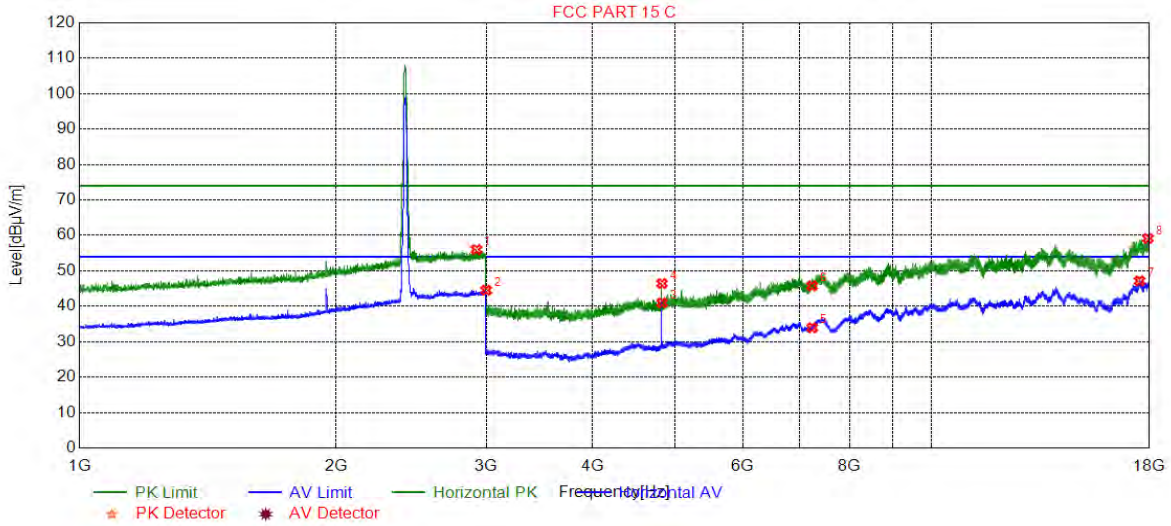
4.9.2.1.10 802.11G_Lowest Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2921.980	56.04	9.34	74.00	17.96	242	188	Horizontal
2	3000.000	44.53	9.44	54.00	9.47	136	298	Horizontal
3	4824.000	40.99	-20.09	54.00	13.01	152	124	Horizontal
4	4824.000	46.45	-20.09	74.00	27.55	192	124	Horizontal
5	7236.000	33.96	-12.40	54.00	20.04	216	151	Horizontal
6	7236.000	45.74	-12.40	74.00	28.26	225	204	Horizontal
7	17525.97	47.17	0.68	54.00	6.83	226	117	Horizontal
8	17923.49	59.16	-0.93	74.00	14.84	223	265	Horizontal

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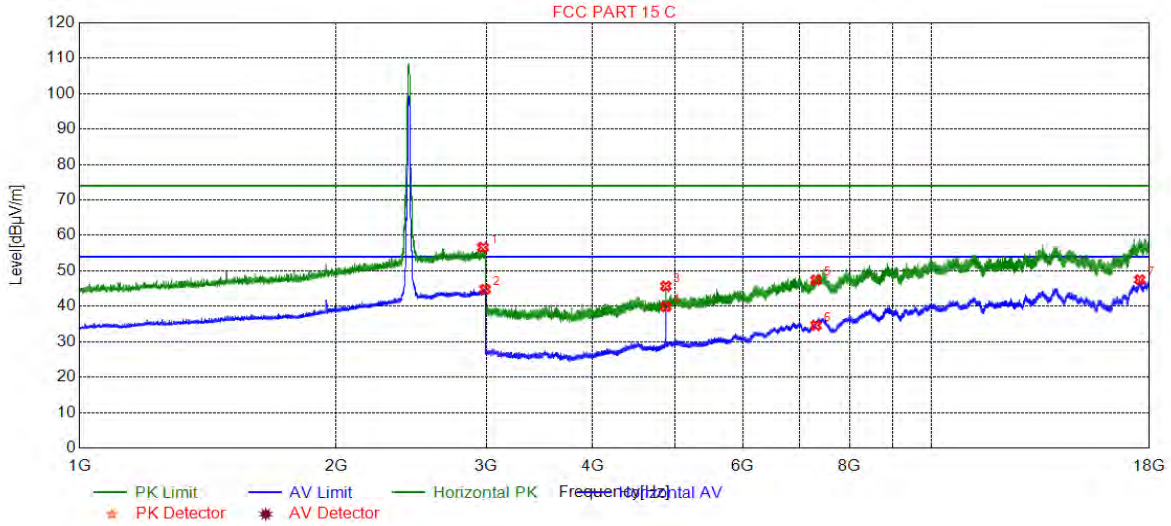
4.9.2.1.11 802.11G_ Middle Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2973.993	56.63	9.41	74.00	17.37	140	17	Horizontal
2	2991.497	44.77	9.43	54.00	9.23	169	285	Horizontal
3	4874.000	45.68	-19.37	74.00	28.32	239	99	Horizontal
4	4874.000	39.89	-19.37	54.00	14.11	101	127	Horizontal
5	7311.000	47.42	-11.50	74.00	26.58	159	45	Horizontal
6	7311.000	34.61	-11.50	54.00	19.39	204	45	Horizontal
7	17534.97	47.50	0.80	54.00	6.50	175	266	Horizontal

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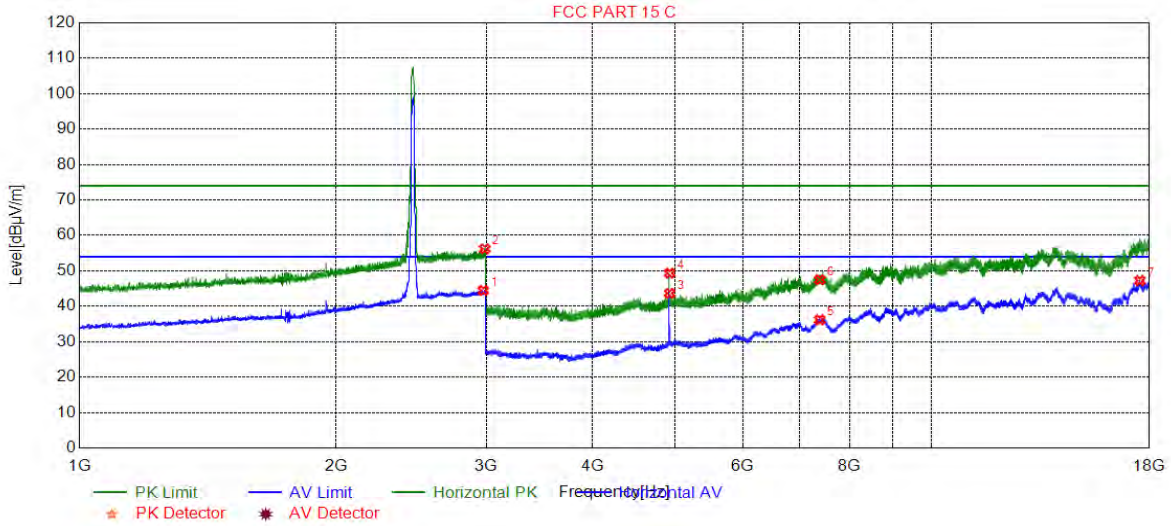
4.9.2.1.12 802.11G_ Highest Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2976.494	44.46	9.41	54.00	9.54	176	29	Horizontal
2	2987.997	56.21	9.42	74.00	17.79	193	139	Horizontal
3	4924.000	43.66	-18.87	54.00	10.34	247	96	Horizontal
4	4924.000	49.34	-18.87	74.00	24.66	210	96	Horizontal
5	7386.000	36.18	-10.72	54.00	17.82	226	231	Horizontal
6	7386.000	47.49	-10.72	74.00	26.51	239	42	Horizontal
7	17535.97	47.25	0.81	54.00	6.75	217	315	Horizontal

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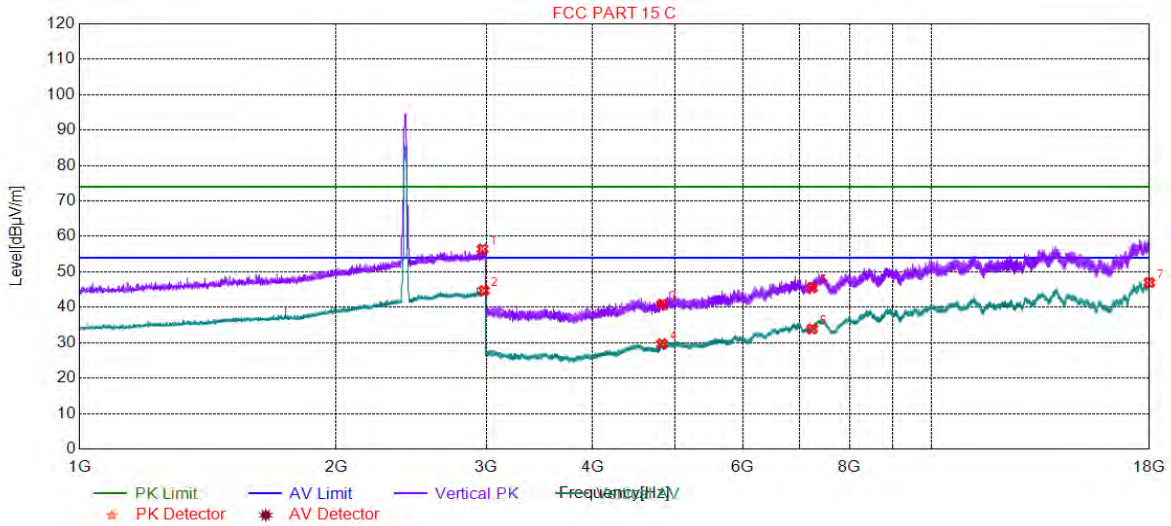
4.9.2.1.13 802.11N20_Lowest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2970.492	56.46	9.40	74.00	17.54	176	184	Vertical
2	2980.495	44.70	9.41	54.00	9.30	170	343	Vertical
3	4824.000	40.85	-20.09	74.00	33.15	203	127	Vertical
4	4824.000	29.70	-20.09	54.00	24.30	202	153	Vertical
5	7236.000	45.52	-12.40	74.00	28.48	257	342	Vertical
6	7236.000	33.92	-12.40	54.00	20.08	249	315	Vertical
7	17989.49	46.96	-0.43	54.00	7.04	235	167	Vertical

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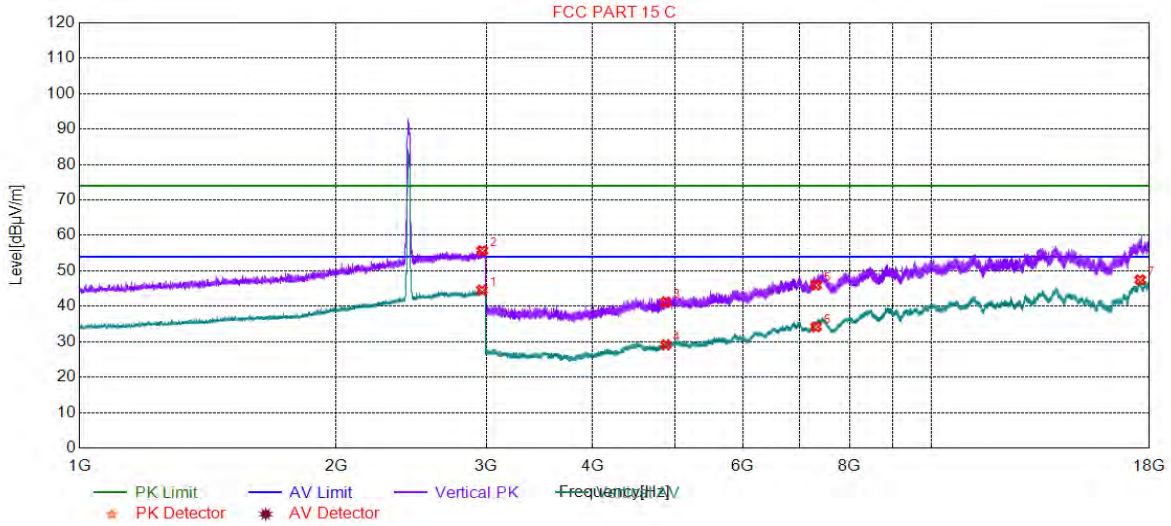
4.9.2.1.14 802.11N20_ Middle Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2965.491	44.58	9.40	54.00	9.42	176	318	Vertical
2	2968.492	55.69	9.40	74.00	18.31	199	134	Vertical
3	4874.000	41.19	-19.37	74.00	32.81	193	127	Vertical
4	4874.000	29.12	-19.37	54.00	24.88	152	154	Vertical
5	7311.000	45.97	-11.50	74.00	28.03	203	100	Vertical
6	7311.000	34.18	-11.50	54.00	19.82	185	100	Vertical
7	17549.97	47.46	0.99	54.00	6.54	174	68	Vertical

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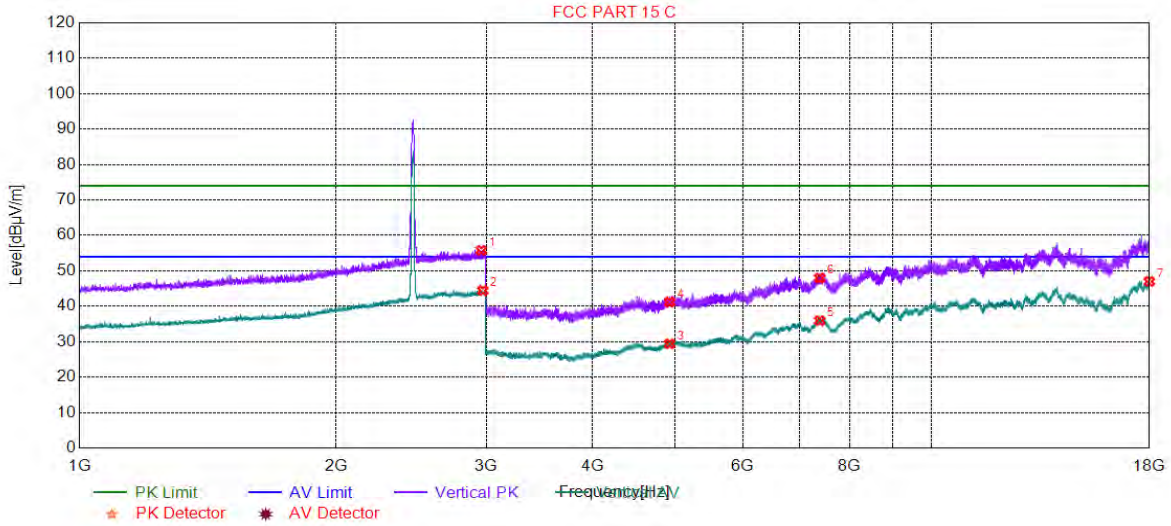
4.9.2.1.15 802.11N20_ Highest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2959.990	55.82	9.39	74.00	18.18	220	87	Vertical
2	2972.493	44.44	9.40	54.00	9.56	190	148	Vertical
3	4924.000	29.41	-18.87	54.00	24.59	153	314	Vertical
4	4924.000	41.19	-18.87	74.00	32.81	232	126	Vertical
5	7386.000	35.94	-10.72	54.00	18.06	151	18	Vertical
6	7386.000	47.96	-10.72	74.00	26.04	219	99	Vertical
7	17991.99	47.02	-0.41	54.00	6.98	217	166	Vertical

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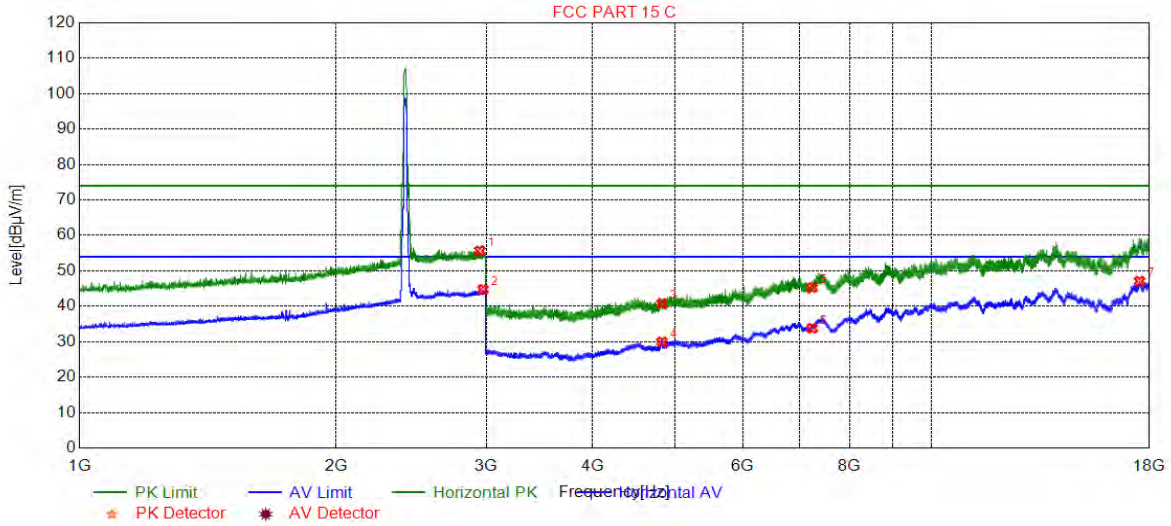
4.9.2.1.16 802.11N20_Lowest Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2948.487	55.64	9.37	74.00	18.36	229	30	Horizontal
2	2974.993	44.76	9.41	54.00	9.24	157	176	Horizontal
3	4824.000	40.81	-20.09	74.00	33.19	247	127	Horizontal
4	4824.000	29.96	-20.09	54.00	24.04	173	127	Horizontal
5	7236.000	45.25	-12.40	74.00	28.75	148	0	Horizontal
6	7236.000	33.79	-12.40	54.00	20.21	128	154	Horizontal
7	17524.97	47.11	0.67	54.00	6.89	169	18	Horizontal

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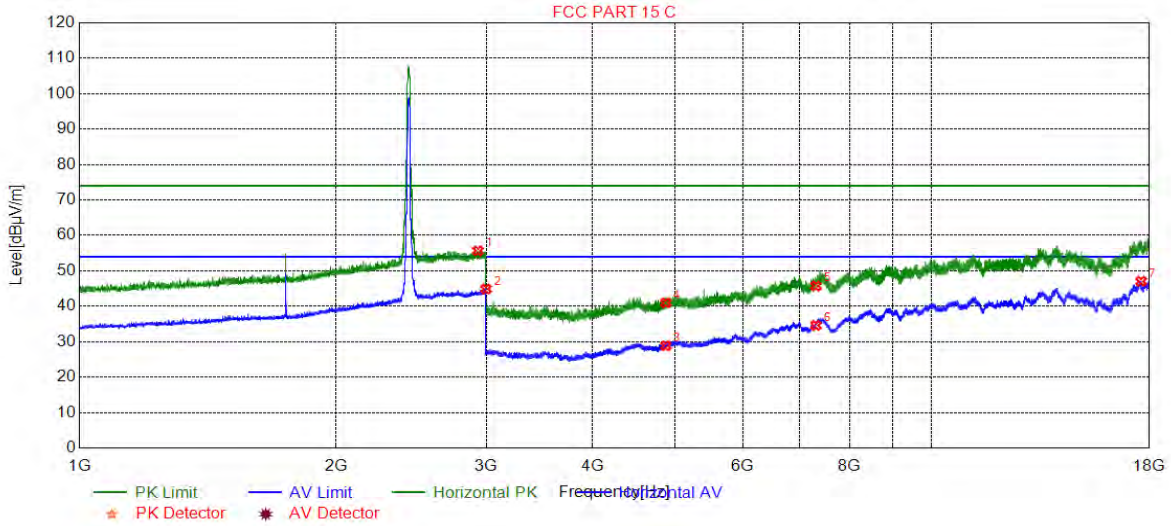
4.9.2.1.17 802.11N20_ Middle Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2933.483	55.66	9.35	74.00	18.34	224	67	Horizontal
2	2998.499	44.87	9.44	54.00	9.13	110	288	Horizontal
3	4874.000	28.85	-19.37	54.00	25.15	109	154	Horizontal
4	4874.000	40.99	-19.37	74.00	33.01	126	261	Horizontal
5	7311.000	45.72	-11.50	74.00	28.28	211	154	Horizontal
6	7311.000	34.59	-11.50	54.00	19.41	149	46	Horizontal
7	17596.97	47.06	1.59	54.00	6.94	165	216	Horizontal

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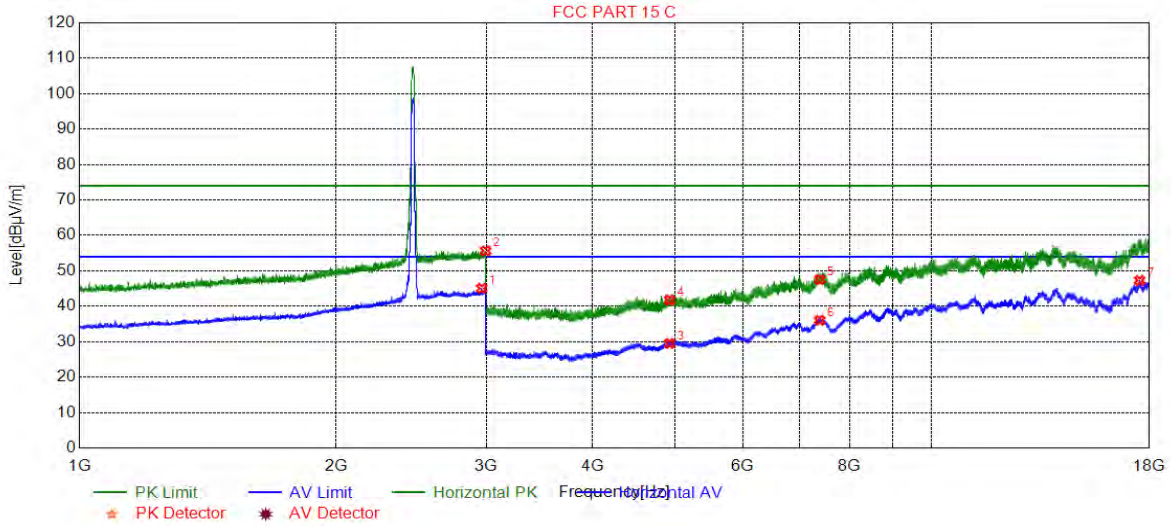
4.9.2.1.18 802.11N20_ Highest Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2964.491	45.06	9.39	54.00	8.94	154	17	Horizontal
2	2995.999	55.63	9.43	74.00	18.37	231	262	Horizontal
3	4924.000	29.51	-18.87	54.00	24.49	214	150	Horizontal
4	4924.000	41.74	-18.87	74.00	32.26	102	150	Horizontal
5	7386.000	47.56	-10.72	74.00	26.44	127	150	Horizontal
6	7386.000	36.05	-10.72	54.00	17.95	205	230	Horizontal
7	17526.97	47.27	0.70	54.00	6.73	201	237	Horizontal

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

   Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

2) Scan from 9kHz to 25GHz, the disturbance between 9KHz to 30MHz and 18GHz to 25GHz was very low, and the above harmonics were the highest point could be found when testing, The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3）As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

4）All Modes have been tested, but only the worst case data displayed in this report.

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4.10 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205		
Test Method:	ANSI C63.10: 2013 Section 11.12		
Test Site:	Measurement Distance: 3m or 10m (Semi-Anechoic Chamber)		
Limit:	Frequency	Limit (dBuV/m @3m)	Remark
	30MHz-88MHz	40.0	Quasi-peak Value
	88MHz-216MHz	43.5	Quasi-peak Value
	216MHz-960MHz	46.0	Quasi-peak Value
	960MHz-1GHz	54.0	Quasi-peak Value
	Above 1GHz	54.0	Average Value
		74.0	Peak Value
Test Setup:			

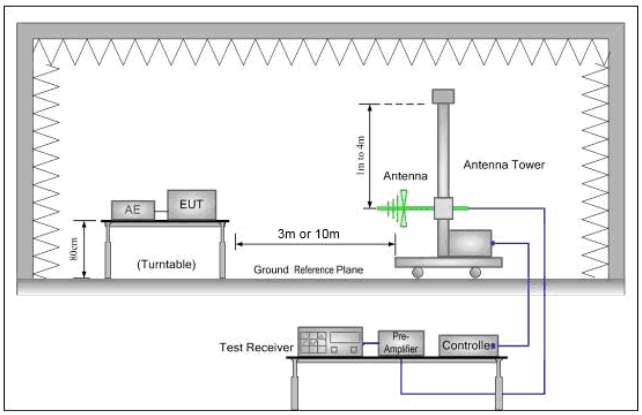

Figure 1. 30MHz to 1GHz

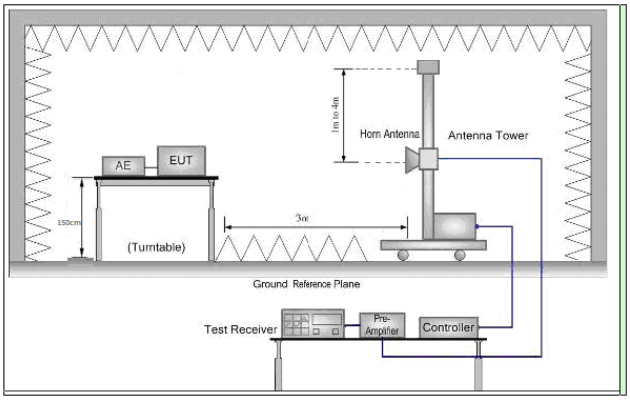

Figure 2. Above 1 GHz

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Test Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel h. Test the EUT in the lowest channel , the Highest channel i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode,And found the X axis positioning which it is worse case. j. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.
Final Test Mode:	Pretest the EUT at Charge +Transmitting mode. Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; 6Mbps of rate is the worst case of 802.11G ; 6.5Mbps of rate is the worst case of 802.11N(HT20); Only the worst case is recorded in the report.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

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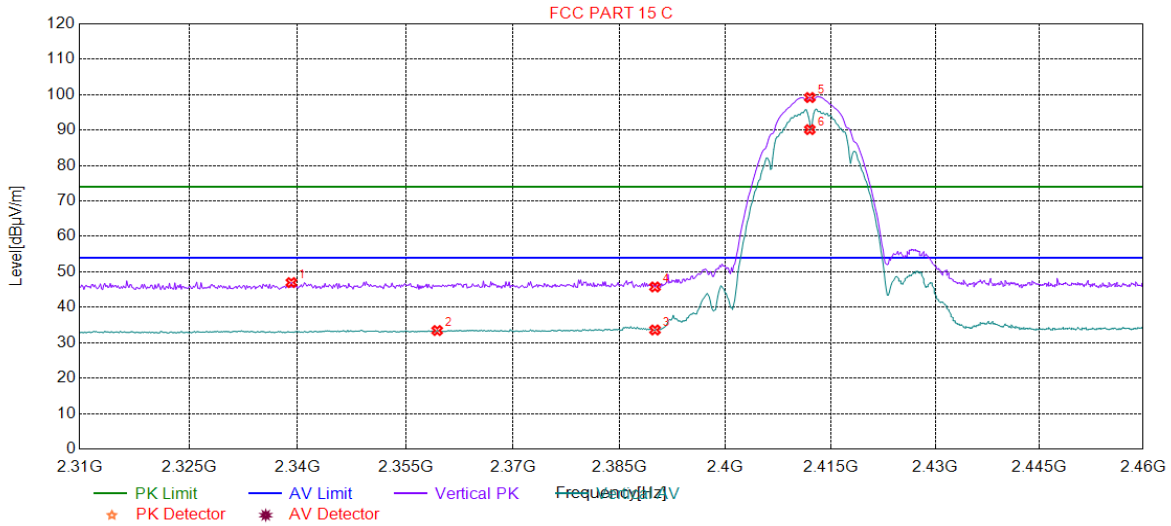
Test plot as follows:

4.10.1 ANT1

4.10.1.1 802.11B_Lowest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2339.129	46.98	7.49	74.00	27.02	282	336	Vertical
2	2359.399	33.44	7.55	54.00	20.56	281	166	Vertical
3	2390.000	33.60	7.64	54.00	20.40	252	336	Vertical
4	2390.000	45.74	7.64	74.00	28.26	211	12	Vertical
5	2412.000	99.20	7.74	74.00	-25.20	288	336	Vertical
6	2412.000	90.15	7.74	54.00	-36.15	263	336	Vertical

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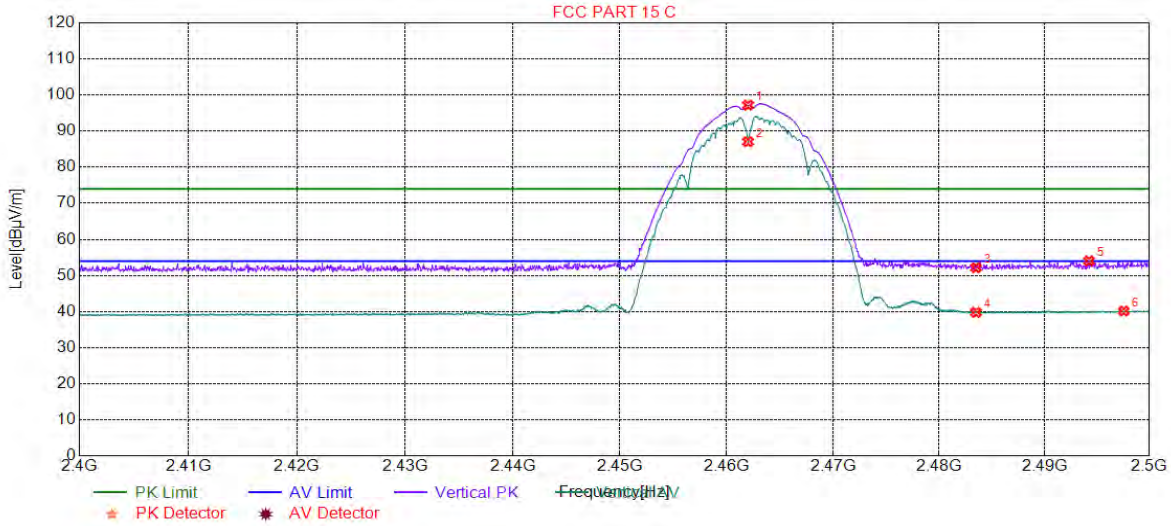
4.10.1.2 802.11B_ Highest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.000	97.19	8.01	74.00	-23.19	194	341	Vertical
2	2462.000	87.05	8.01	54.00	-33.05	252	346	Vertical
3	2483.500	52.16	8.13	74.00	21.84	245	233	Vertical
4	2483.500	39.76	8.13	54.00	14.24	161	190	Vertical
5	2494.247	54.04	8.19	74.00	19.96	279	346	Vertical
6	2497.548	40.15	8.21	54.00	13.85	254	48	Vertical

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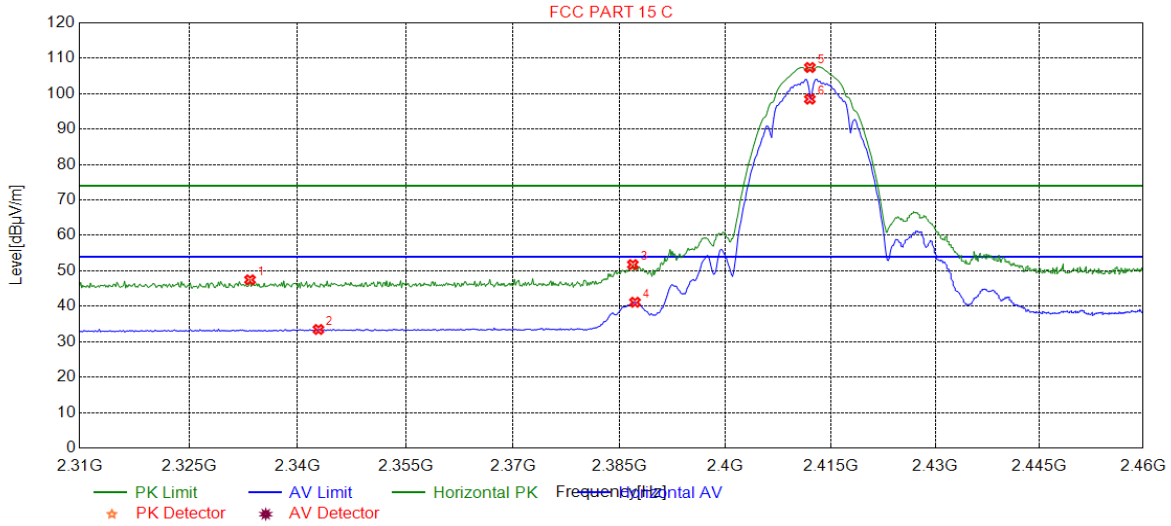
4.10.1.3 802.11B_Lowest Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2333.423	47.48	7.47	74.00	26.52	209	104	Horizontal
2	2342.882	33.46	7.50	54.00	20.54	193	83	Horizontal
3	2386.876	51.77	7.63	74.00	22.23	175	83	Horizontal
4	2387.177	41.14	7.63	54.00	12.86	161	83	Horizontal
5	2412.000	107.40	7.74	74.00	-33.40	159	83	Horizontal
6	2412.000	98.45	7.74	54.00	-44.45	142	104	Horizontal

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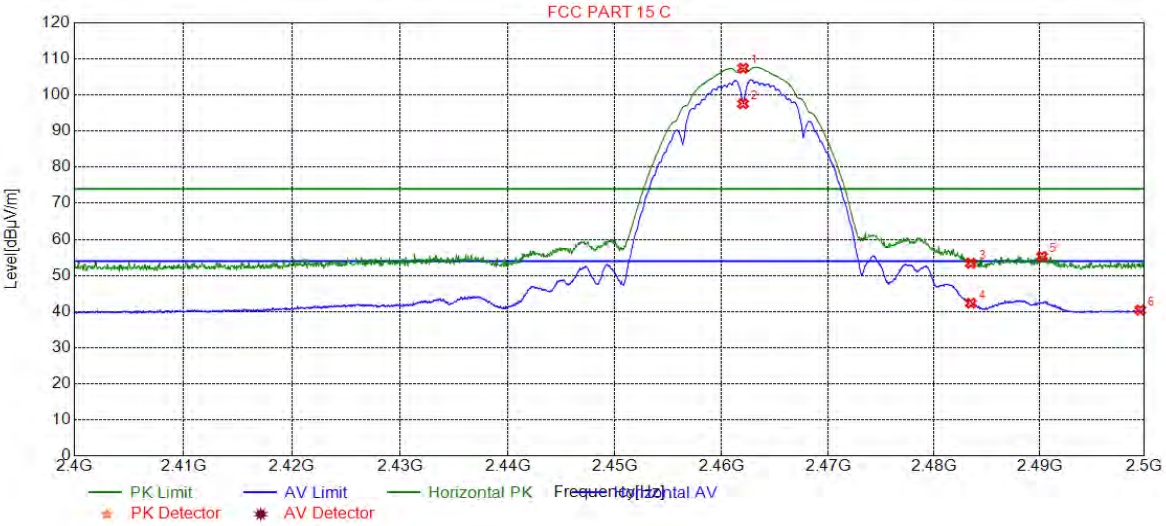
4.10.1.4 802.11B_ Highest Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.000	107.41	8.01	74.00	-33.41	192	80	Horizontal
2	2462.000	97.58	8.01	54.00	-43.58	136	74	Horizontal
3	2483.500	53.39	8.13	74.00	20.61	246	95	Horizontal
4	2483.500	42.32	8.13	54.00	11.68	136	85	Horizontal
5	2490.245	55.29	8.17	74.00	18.71	172	90	Horizontal
6	2499.599	40.41	8.22	54.00	13.59	153	90	Horizontal

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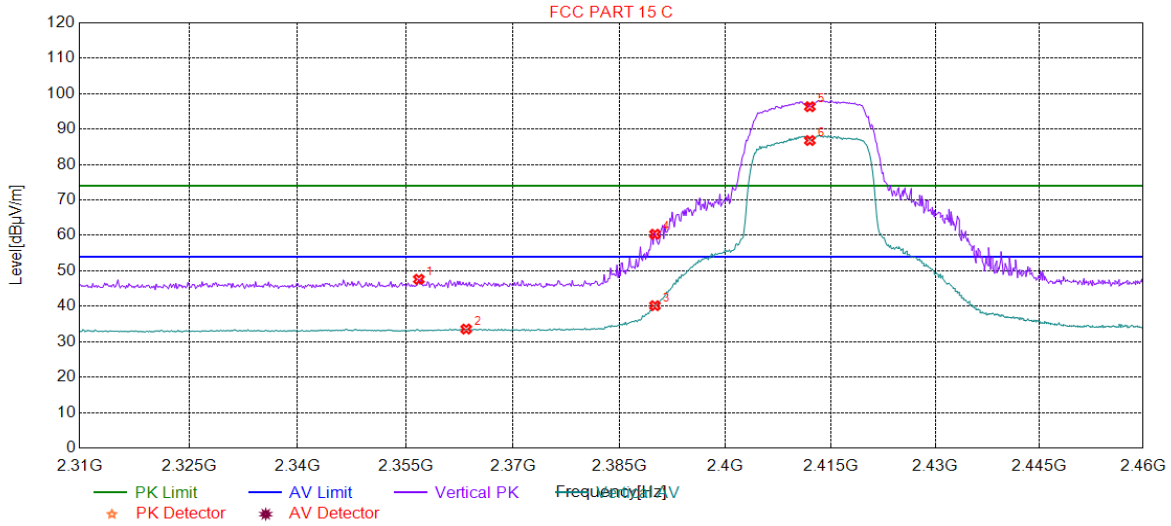
4.10.1.5 802.11G_Lowest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2356.846	47.63	7.54	74.00	26.37	296	64	Vertical
2	2363.453	33.58	7.56	54.00	20.42	245	208	Vertical
3	2390.000	40.17	7.64	54.00	13.83	261	342	Vertical
4	2390.000	60.35	7.64	74.00	13.65	199	342	Vertical
5	2412.000	96.33	7.74	74.00	-22.33	268	329	Vertical
6	2412.000	86.79	7.74	54.00	-32.79	225	329	Vertical

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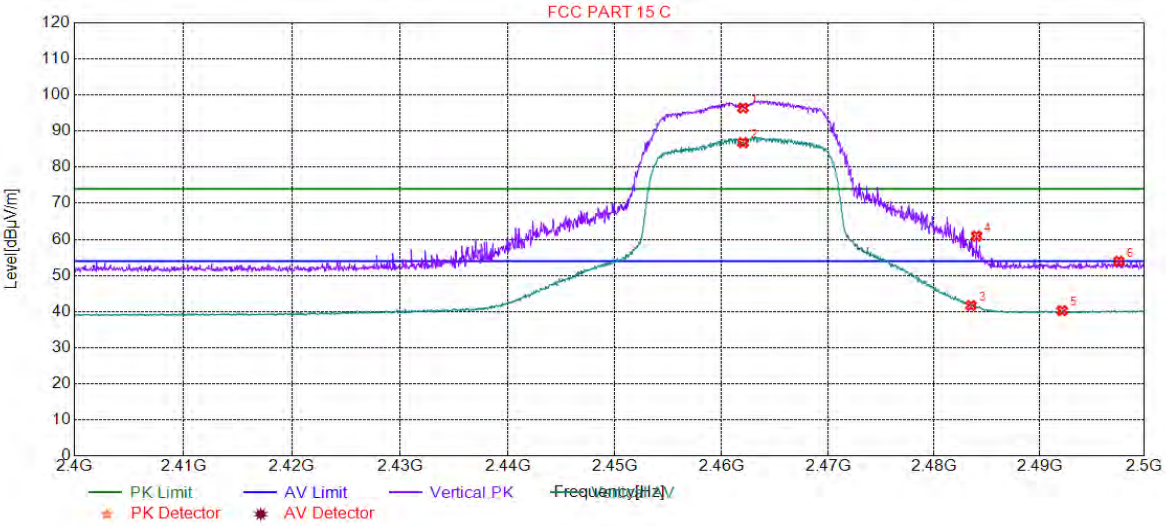
4.10.1.6 802.11G_ Highest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.000	96.42	8.01	74.00	-22.42	173	340	Vertical
2	2462.000	86.80	8.01	54.00	-32.80	236	340	Vertical
3	2483.500	41.67	8.13	54.00	12.33	200	340	Vertical
4	2484.042	60.92	8.13	74.00	13.08	239	340	Vertical
5	2492.146	40.25	8.18	54.00	13.75	158	272	Vertical
6	2497.548	53.98	8.21	74.00	20.02	257	60	Vertical

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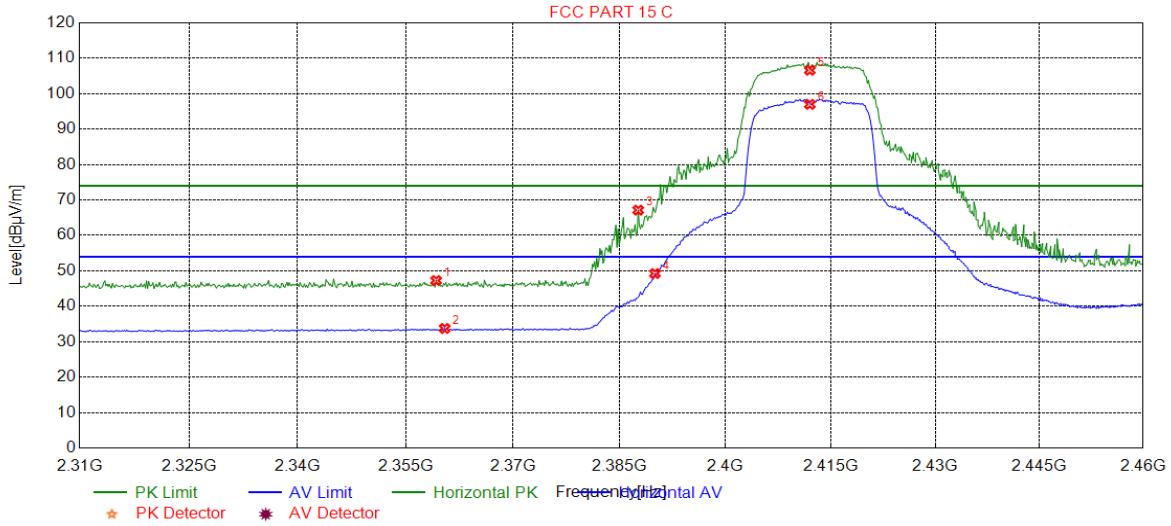
4.10.1.7 802.11G_Lowest Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2359.249	47.27	7.55	74.00	26.73	127	234	Horizontal
2	2360.450	33.75	7.55	54.00	20.25	232	15	Horizontal
3	2387.627	67.14	7.63	74.00	6.86	190	76	Horizontal
4	2390.000	49.25	7.64	54.00	4.75	213	80	Horizontal
5	2412.000	106.62	7.74	74.00	-32.62	202	80	Horizontal
6	2412.000	97.00	7.74	54.00	-43.00	117	76	Horizontal

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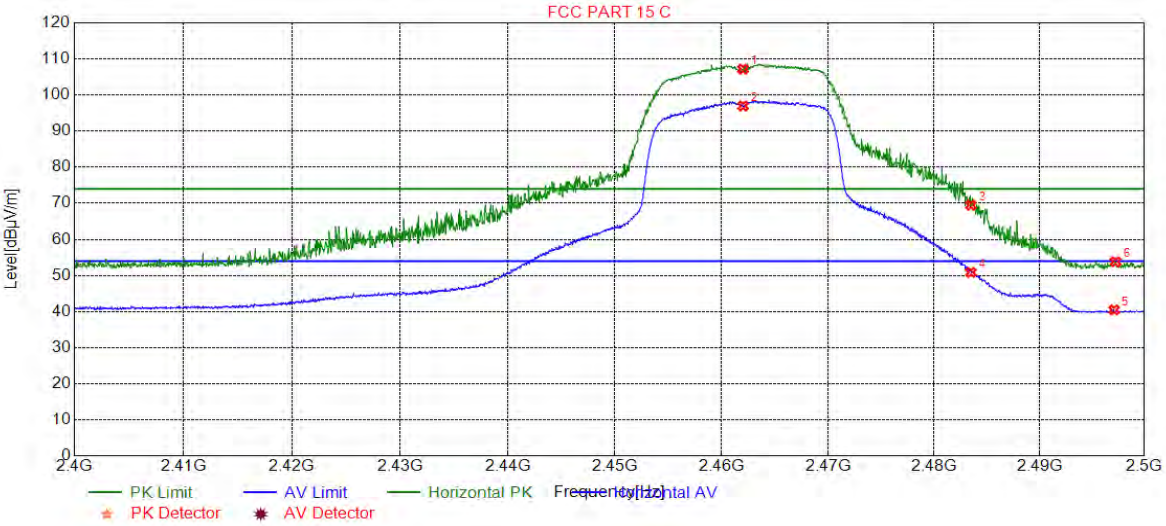
4.10.1.8 802.11G_ Highest Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.000	107.18	8.01	74.00	-33.18	122	76	Horizontal
2	2462.000	96.96	8.01	54.00	-42.96	119	76	Horizontal
3	2483.500	69.49	8.13	74.00	4.51	199	82	Horizontal
4	2483.500	50.84	8.13	54.00	3.16	203	76	Horizontal
5	2497.098	40.47	8.20	54.00	13.53	226	184	Horizontal
6	2497.248	53.80	8.20	74.00	20.20	184	170	Horizontal

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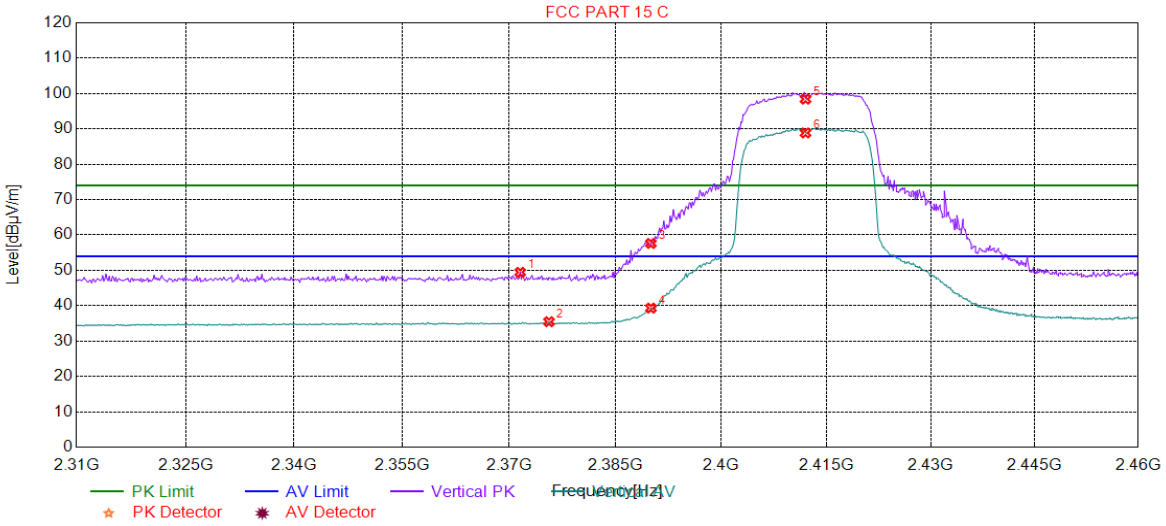
4.10.1.9 802.11N20_Lowest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2371.561	49.45	9.14	74.00	24.55	276	179	Vertical
2	2375.615	35.48	9.15	54.00	18.52	188	250	Vertical
3	2390.000	57.62	9.20	74.00	16.38	265	241	Vertical
4	2390.000	39.33	9.20	54.00	14.67	273	250	Vertical
5	2412.000	98.41	9.27	74.00	-24.41	251	88	Vertical
6	2412.000	88.86	9.27	54.00	-34.86	269	246	Vertical

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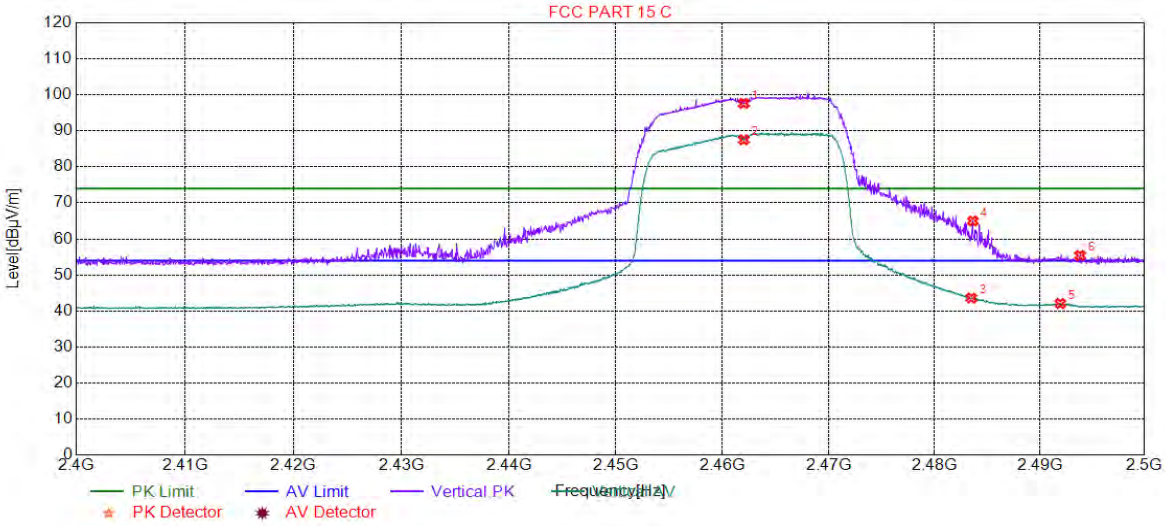
4.10.1.10 802.11N20_ Highest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.000	97.61	9.43	74.00	-23.61	154	78	Vertical
2	2462.000	87.51	9.43	54.00	-33.51	281	244	Vertical
3	2483.500	43.59	9.50	54.00	10.41	254	288	Vertical
4	2483.641	64.99	9.50	74.00	9.01	232	73	Vertical
5	2491.946	42.08	9.52	54.00	11.92	270	293	Vertical
6	2493.846	55.41	9.53	74.00	18.59	235	299	Vertical

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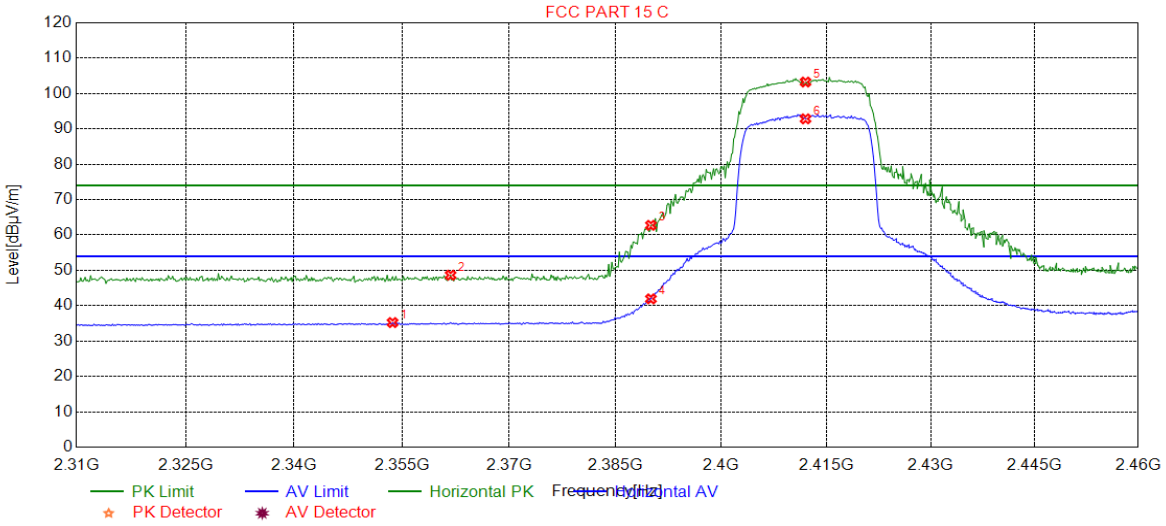
4.10.1.11 802.11N20_Lowest Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2353.693	35.24	9.08	54.00	18.76	107	78	Horizontal
2	2361.801	48.65	9.10	74.00	25.35	102	278	Horizontal
3	2390.000	62.74	9.20	74.00	11.26	190	311	Horizontal
4	2390.000	41.94	9.20	54.00	12.06	102	257	Horizontal
5	2412.000	103.24	9.27	74.00	-29.24	226	253	Horizontal
6	2412.000	92.84	9.27	54.00	-38.84	145	253	Horizontal

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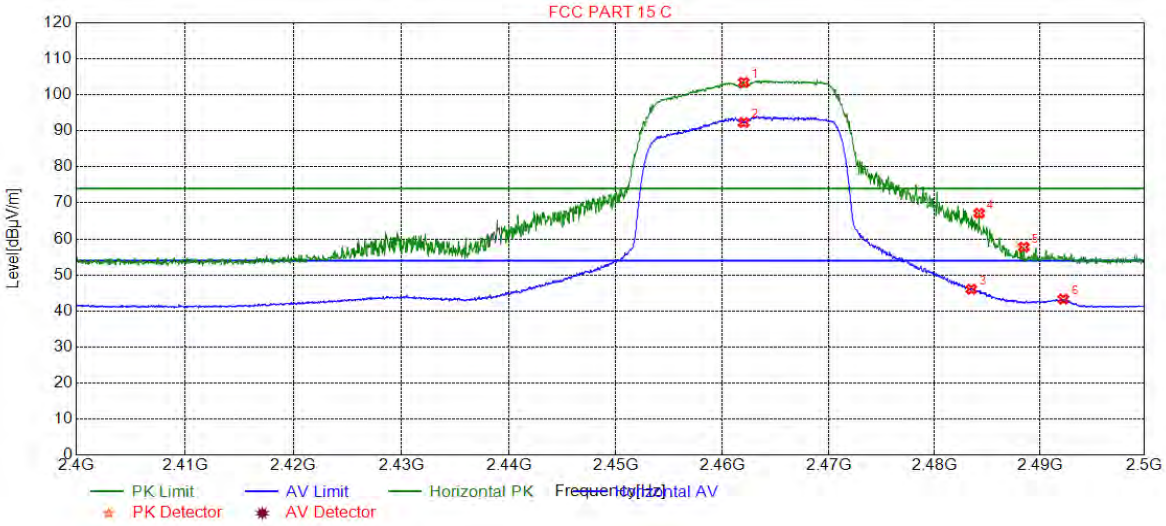
4.10.1.12 802.11N20_ Highest Channel_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.000	103.46	9.43	74.00	-29.46	145	253	Horizontal
2	2462.000	92.29	9.43	54.00	-38.29	104	253	Horizontal
3	2483.500	46.04	9.50	54.00	7.96	159	253	Horizontal
4	2484.242	67.12	9.50	74.00	6.88	178	253	Horizontal
5	2488.494	57.72	9.51	74.00	16.28	235	263	Horizontal
6	2492.246	43.29	9.53	54.00	10.71	107	253	Horizontal

Remark:
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

All Modes have been tested, but only the worst case data displayed in this report.

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5 Measurement Uncertainty (95% confidence levels, k=2)

Lab A:

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	±0.41dB
2	RF power density, conducted	±1.96dB
3	Spurious emissions, conducted	±0.41dB
4	Radio Frequency	$\pm 7.10 \times 10^{-8}$
5	Duty Cycle	±0.49%
6	Occupied Bandwidth	±0.2%

Lab B:

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.0dB (150kHz to 30MHz)
2	Radiated Emission	± 4.8dB (Below 1GHz)
		± 4.8dB (1GHz to 6GHz)
		± 4.5dB (6GHz to 18GHz)
		± 5.02dB (Above 18GHz)

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6 Equipment List

RF conducted					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
Signal Analyzer	Agilent	N9020A	W025-01	2019/6/25	2020/6/24
DC Power Supply	Rohde & Schwarz	HMP2020	W009-08	2018/12/7	2019/12/6
				2019/11/21	2020/11/20
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019/7/14	2020/7/13
Humidity/ Temperature Indicator	MingGao	TH101B	W006-05	2019/6/27	2020/6/26

CE Test System					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Shielding Room	Brilliant-emc	N/A	XAW03-35-01	2019-09-11	2022-09-10
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2019-09-07	2020-09-06
Artificial network	ROHDE&SCHWARZ	ENV216	XAW01-04-01	2019-07-16	2020-07-15
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2018-12-20	2019-12-19
Measurement Software	Tonscend	TS+ CE V2.5	XAW02-05-02	NCR	NCR

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RSE Test System					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Semi-Anechoic Chamber	Brilliant-emc	N/A	XAW03-35-01	2019-09-11	2022-09-10
MXA signal analyzer	Keysight	N9020A	XAW01-06-01	2019-06-27	2020-06-26
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2019-09-07	2020-09-06
Receiving antenna (30MHz-3GHz)	Schwarzbeck	VULB 9163	XAW01-09-01	2019-10-13	2021-10-12
Receiving antenna (1GHz~18GHz)	Schwarzbeck	BBHA 9120D	XAW01-09-02	2019-10-13	2021-10-12
Receiving antenna (15GHz~40GHz)	Schwarzbeck	BBHA 9170	XAW01-09-03	2019-10-13	2021-10-12
Directional antenna rack controller	Max-Full	MF-7802BS	XAW03-03-01	NCR	NCR
High-speed antenna rack controller	Max-Full	MF-7802	XAW03-04-01	NCR	NCR
Filter bank	Tonscend	JS0806-F	XAW03-05-01	NCR	NCR
Filter bank	Tonscend	JS0806s	XAW03-05-02	NCR	NCR
Amplifier	Tonscend	TAP00903040	XAW01-41-01	2018-12-10	2019-12-09
				2019-11-18	2020-11-17
Amplifier	Tonscend	TAP01018048	XAW01-41-02	2018-12-10	2019-12-09
				2019-11-18	2020-11-17
Amplifier	Tonscend	TAP18040048	XAW01-41-03	2019-12-03	2020-12-02
				2018-12-10	2019-12-09
Amplifier	Shanghai Steed	YX28980930	XAW01-41-06	2018-12-10	2019-12-09
				2019-11-18	2020-11-17
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2018-12-20	2019-12-19
Measurement Software	Tonscend	TS+ RSE V3.0.0.2	XAW02-05-01	NCR	NCR

7 Photographs - EUT Constructional Details

Please refer to external and internal photos for details.

The End

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