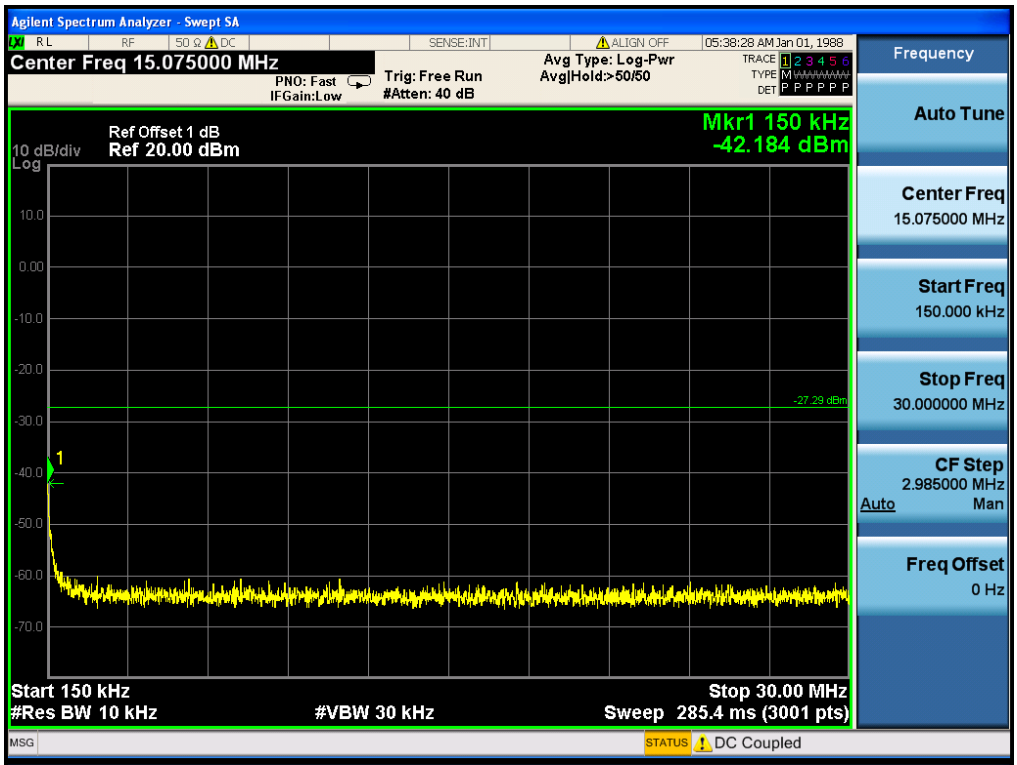

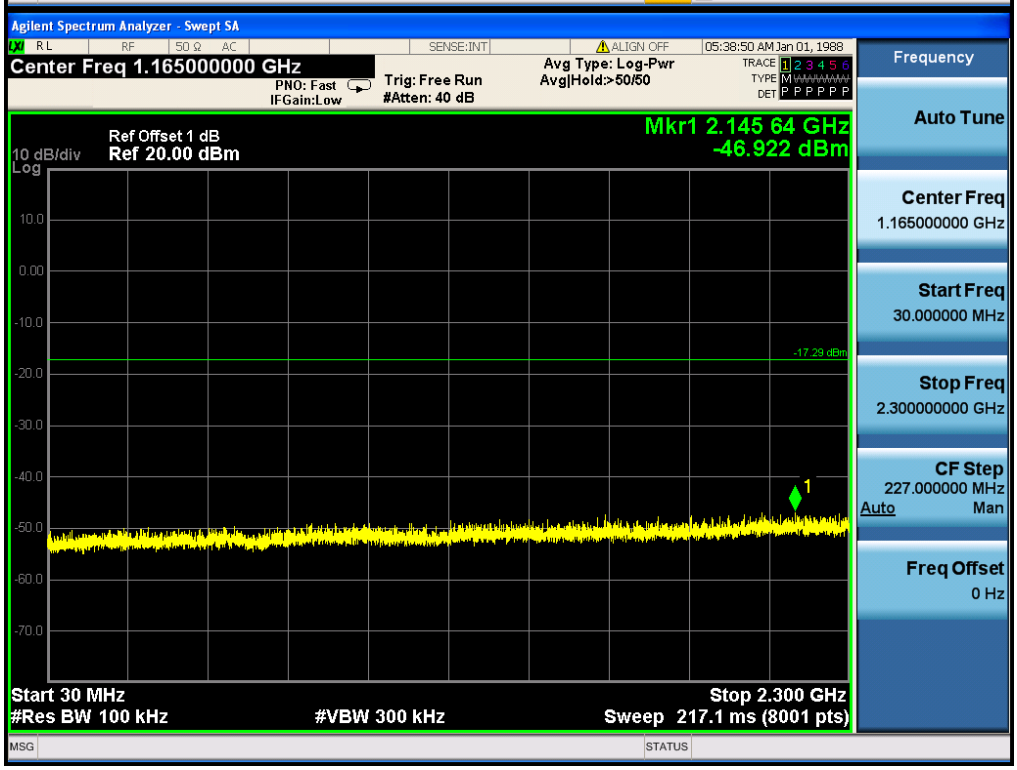

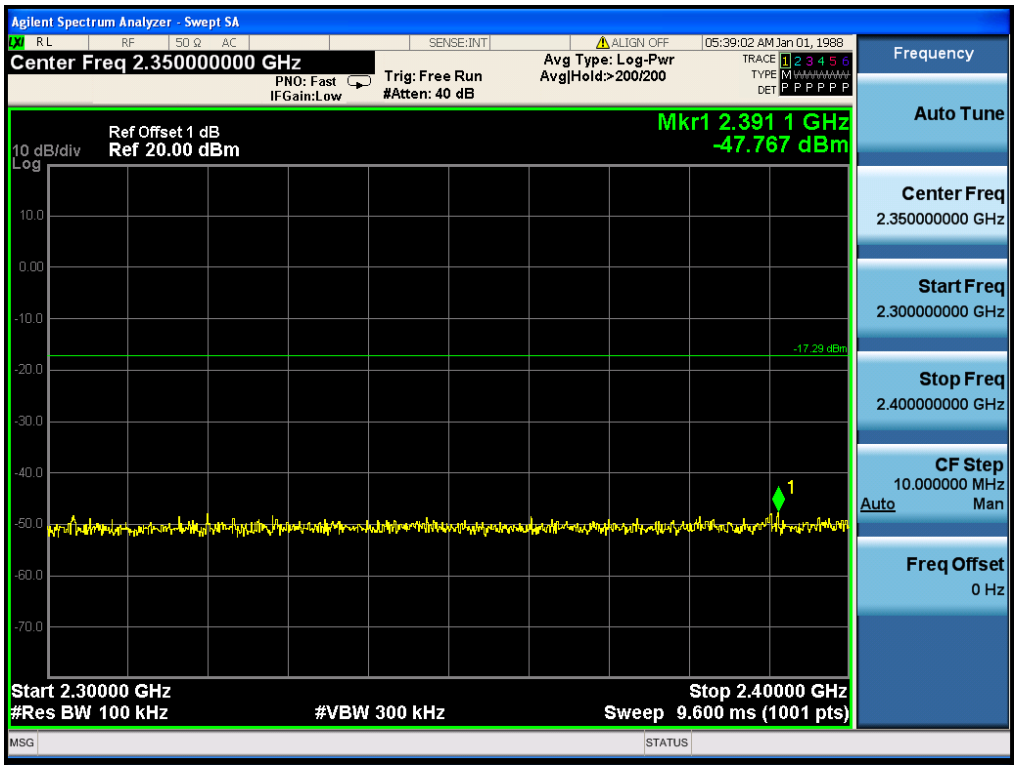

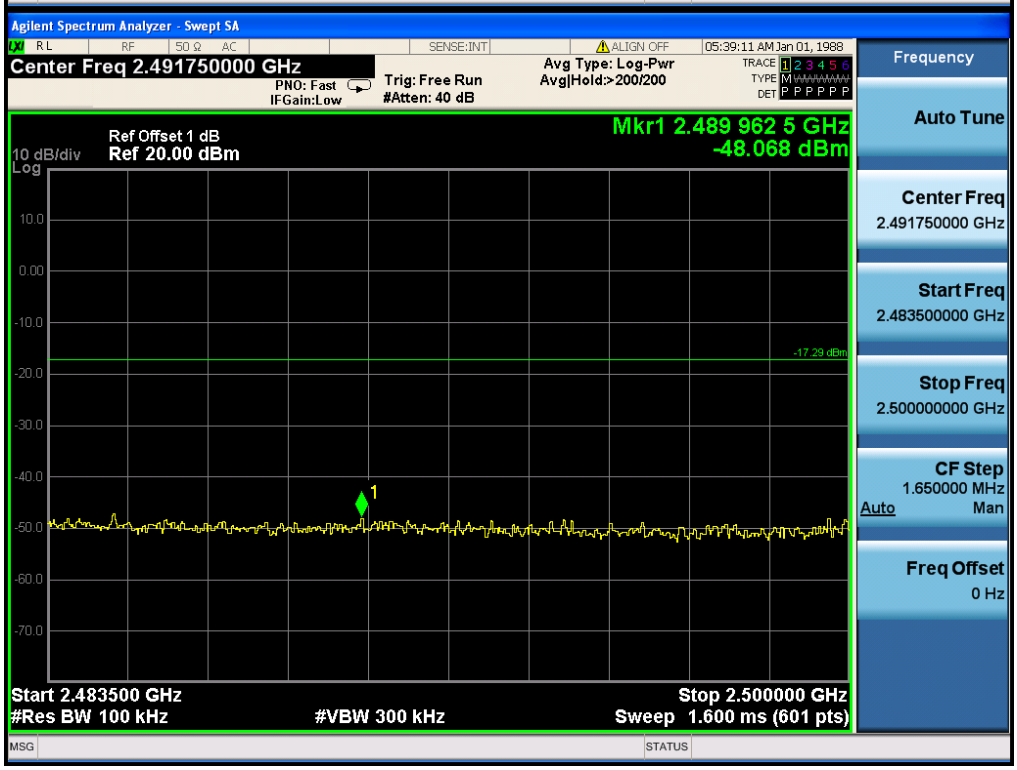

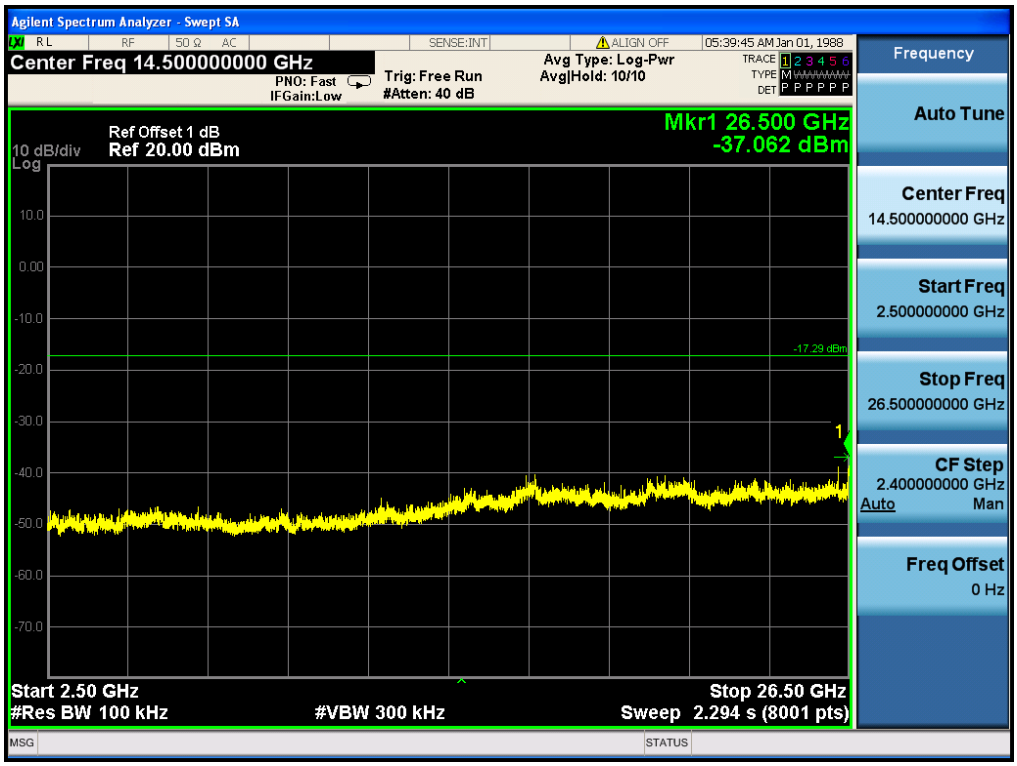

Remark:

Scan from 9kHz to 25GHz, the disturbance between 9KHz to 30MHz 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.

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4.9 Radiated Spurious Emissions

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)				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
	Remark: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.				

Test Setup:	

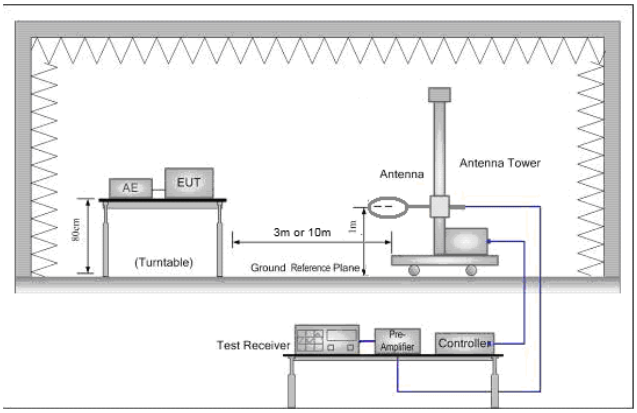


Figure 1. Below 30MHz

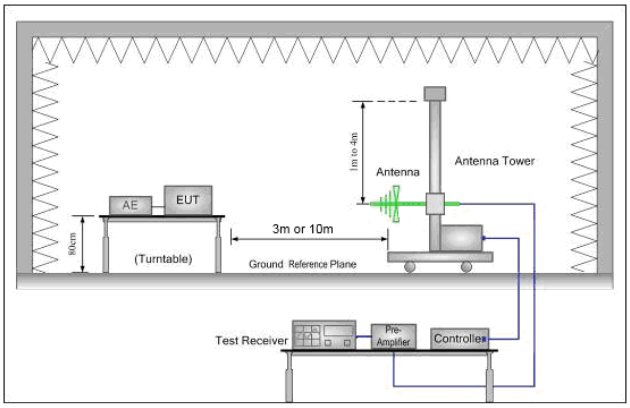


Figure 2. 30MHz to 1GHz

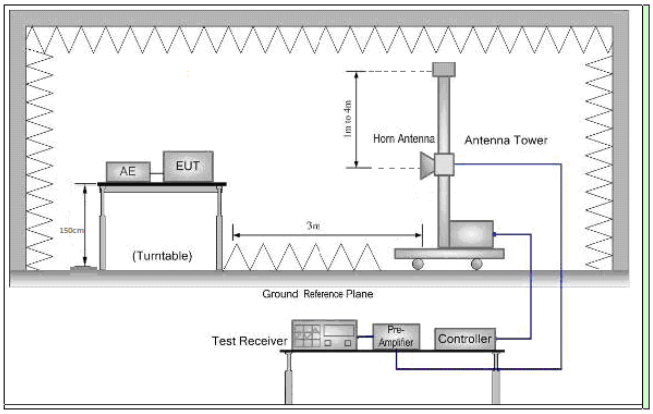


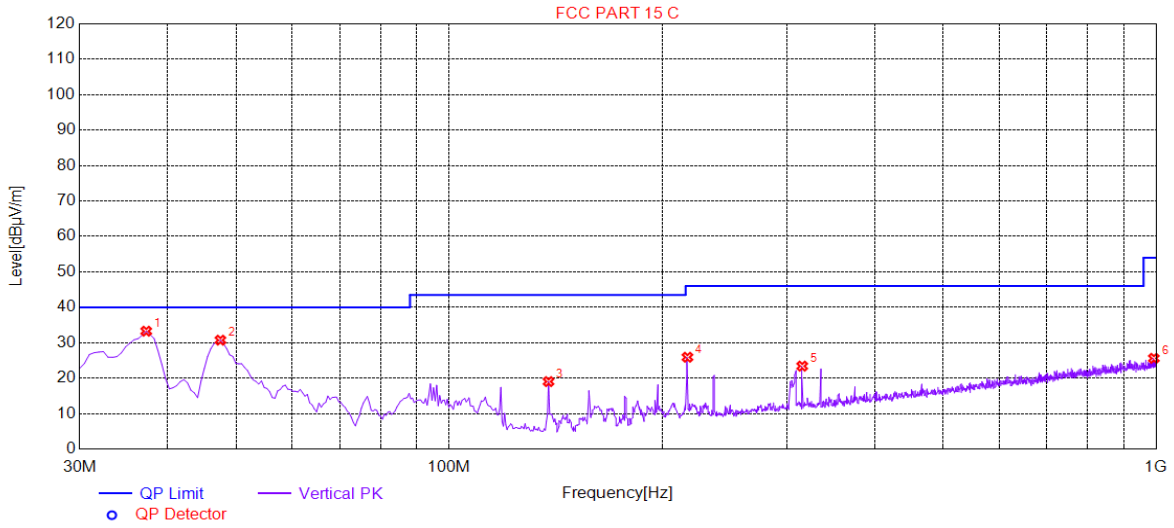
Figure 3. Above 1 GHz

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 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

4.9.1 Radiated emission below 1GHz

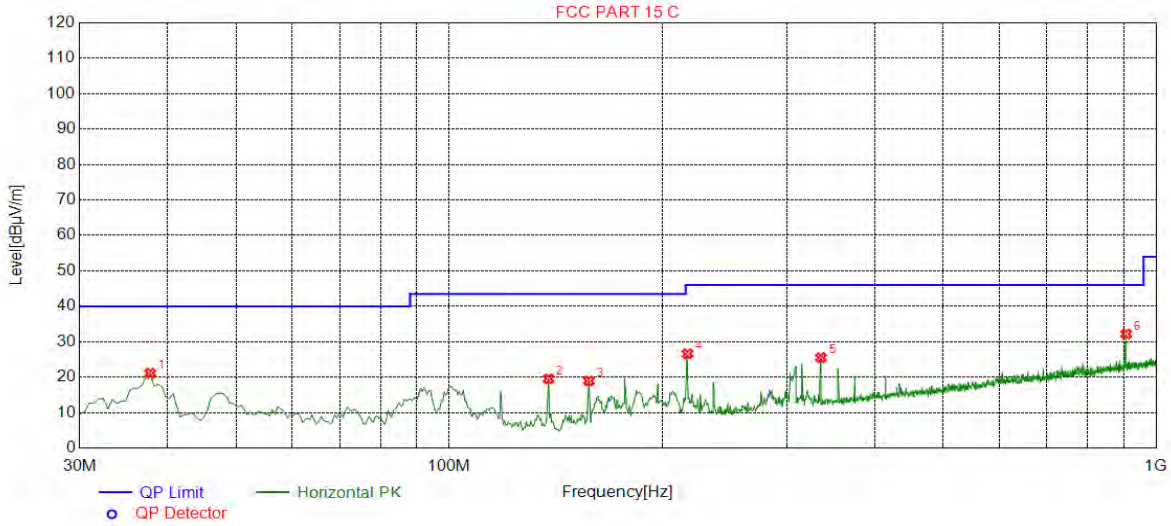
4.9.1.1 Charge + Transmitting, Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	37.2786	33.26	-32.03	40.00	6.74	100	25	Vertical
2	47.4687	30.72	-30.20	40.00	9.28	100	112	Vertical
3	138.2091	19.03	-35.13	43.50	24.47	100	28	Vertical
4	217.3037	25.91	-30.40	46.00	20.09	200	341	Vertical
5	315.8079	23.40	-27.39	46.00	22.60	200	323	Vertical
6	992.7214	25.60	-13.96	54.00	28.40	100	236	Vertical

4.9.1.2 Charge + Transmitting, Horizontal



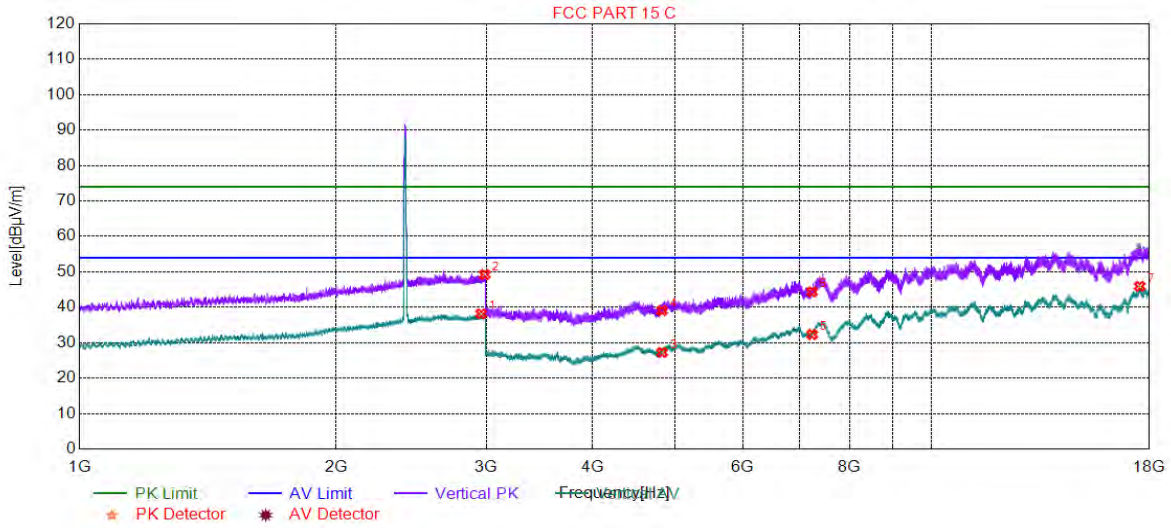
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	37.7639	21.11	-31.88	40.00	18.89	200	6	Horizontal
2	138.2091	19.53	-35.13	43.50	23.97	200	31	Horizontal
3	157.6188	18.92	-34.41	43.50	24.58	200	344	Horizontal
4	217.3037	26.59	-30.40	46.00	19.41	200	286	Horizontal
5	335.7029	25.47	-26.84	46.00	20.53	100	16	Horizontal
6	907.3187	32.18	-15.12	46.00	13.82	100	16	Horizontal

4.9.2 Transmitter emission above 1GHz

4.9.2.1 ANT1

4.9.2.1.1 802.11B_Lowest Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2958.989	38.15	2.30	54.00	15.85	150	343	Vertical
2	2988.997	49.24	2.32	74.00	24.76	150	109	Vertical
3	4824.000	27.24	-20.09	54.00	26.76	150	73	Vertical
4	4824.000	39.07	-20.09	74.00	34.93	150	210	Vertical
5	7236.000	32.32	-12.40	54.00	21.68	150	155	Vertical
6	7236.000	44.36	-12.40	74.00	29.64	150	292	Vertical
7	17530.97	45.92	0.75	54.00	8.08	150	191	Vertical

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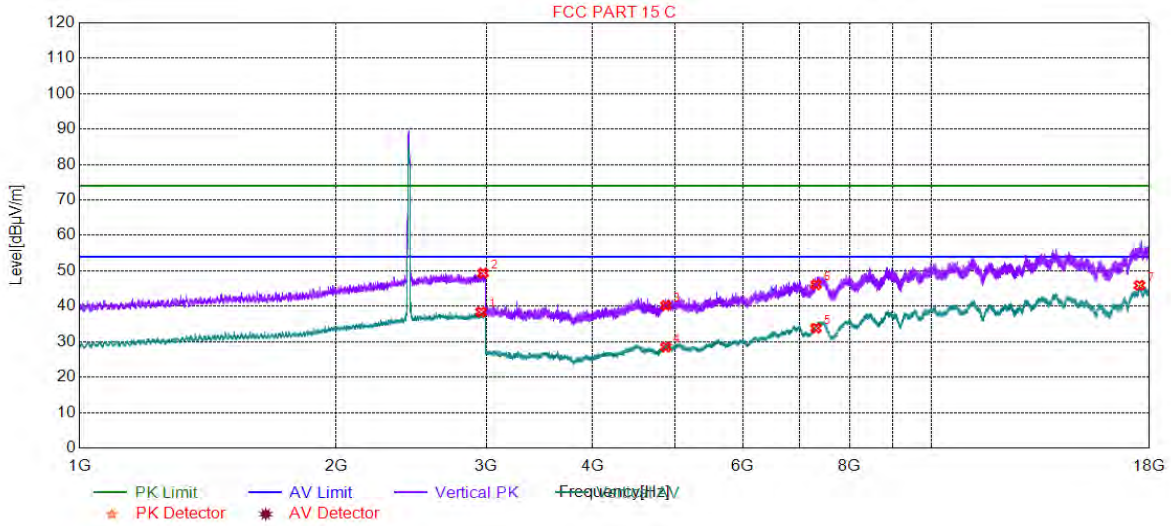
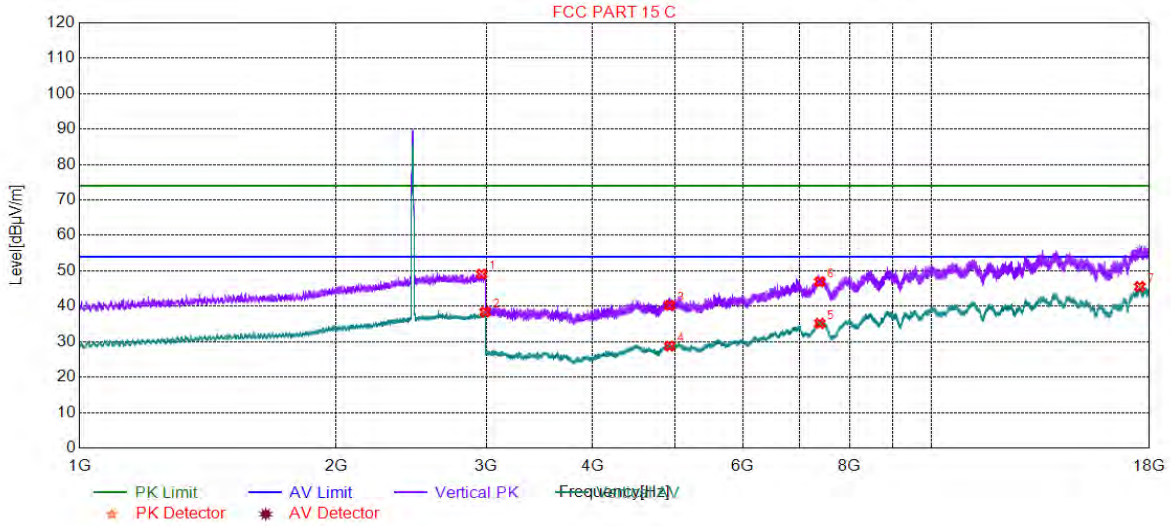
4.9.2.1.2 802.11B_ Middle Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2958.989	38.39	2.30	54.00	15.61	150	133	Vertical
2	2974.993	49.38	2.31	74.00	24.62	150	170	Vertical
3	4874.000	40.21	-19.37	74.00	33.79	150	319	Vertical
4	4874.000	28.50	-19.37	54.00	25.50	150	211	Vertical
5	7311.000	33.84	-11.50	54.00	20.16	150	18	Vertical
6	7311.000	46.12	-11.50	74.00	27.88	150	211	Vertical
7	17523.97	45.91	0.66	54.00	8.09	150	141	Vertical

4.9.2.1.3 802.11B_ Highest Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2962.990	49.08	2.30	74.00	24.92	150	181	Vertical
2	2991.998	38.39	2.32	54.00	15.61	150	181	Vertical
3	4924.000	40.23	-18.87	74.00	33.77	150	210	Vertical
4	4924.000	28.76	-18.87	54.00	25.24	150	128	Vertical
5	7386.000	35.16	-10.72	54.00	18.84	150	18	Vertical
6	7386.000	46.92	-10.72	74.00	27.08	150	183	Vertical
7	17533.97	45.56	0.78	54.00	8.44	150	0	Vertical

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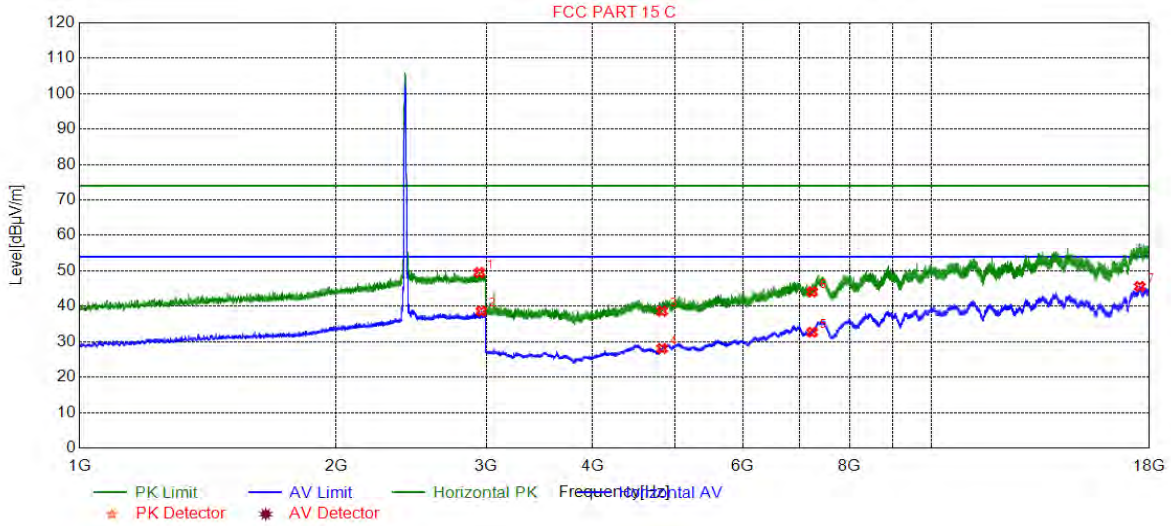
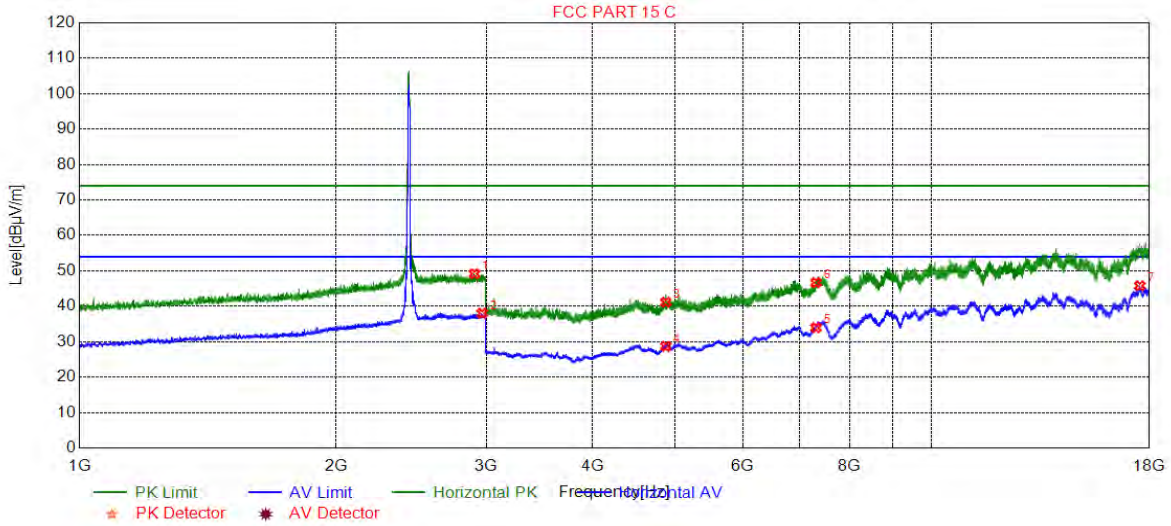
4.9.2.1.4 802.11B_Lowest Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2944.486	49.51	2.29	74.00	24.49	150	17	Horizontal
2	2961.490	38.58	2.30	54.00	15.42	150	154	Horizontal
3	4824.000	38.60	-20.09	74.00	35.40	150	182	Horizontal
4	4824.000	28.09	-20.09	54.00	25.91	150	155	Horizontal
5	7236.000	32.66	-12.40	54.00	21.34	150	345	Horizontal
6	7236.000	44.06	-12.40	74.00	29.94	150	100	Horizontal
7	17533.47	45.58	0.78	54.00	8.42	150	42	Horizontal

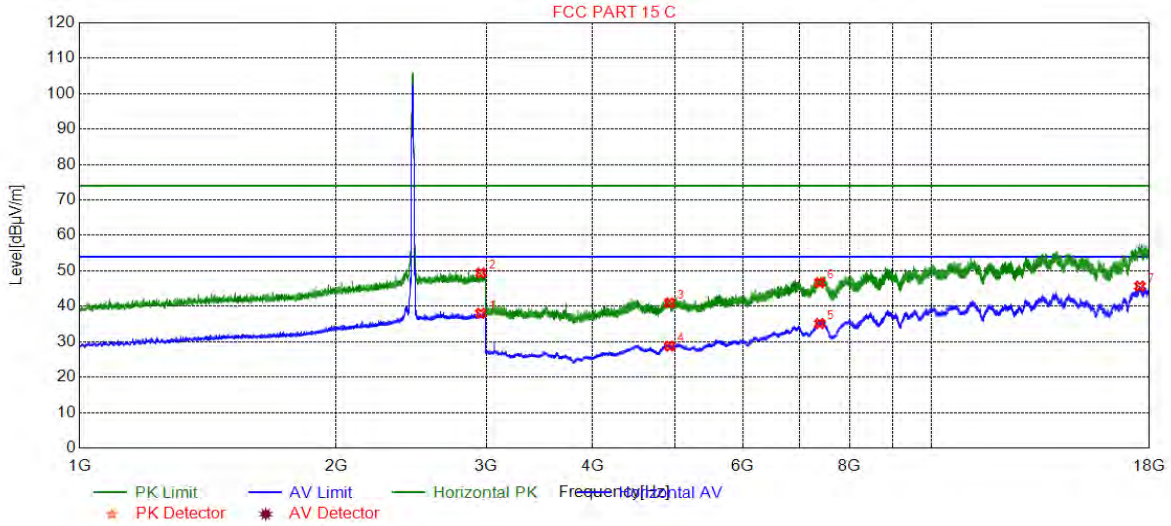
4.9.2.1.5 802.11B_ Middle Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2905.976	49.18	2.26	74.00	24.82	150	42	Horizontal
2	2967.491	38.02	2.31	54.00	15.98	150	300	Horizontal
3	4874.000	41.15	-19.37	74.00	32.85	150	193	Horizontal
4	4874.000	28.69	-19.37	54.00	25.31	150	18	Horizontal
5	7311.000	33.96	-11.50	54.00	20.04	150	220	Horizontal
6	7311.000	46.66	-11.50	74.00	27.34	150	138	Horizontal
7	17535.97	45.77	0.81	54.00	8.23	150	342	Horizontal

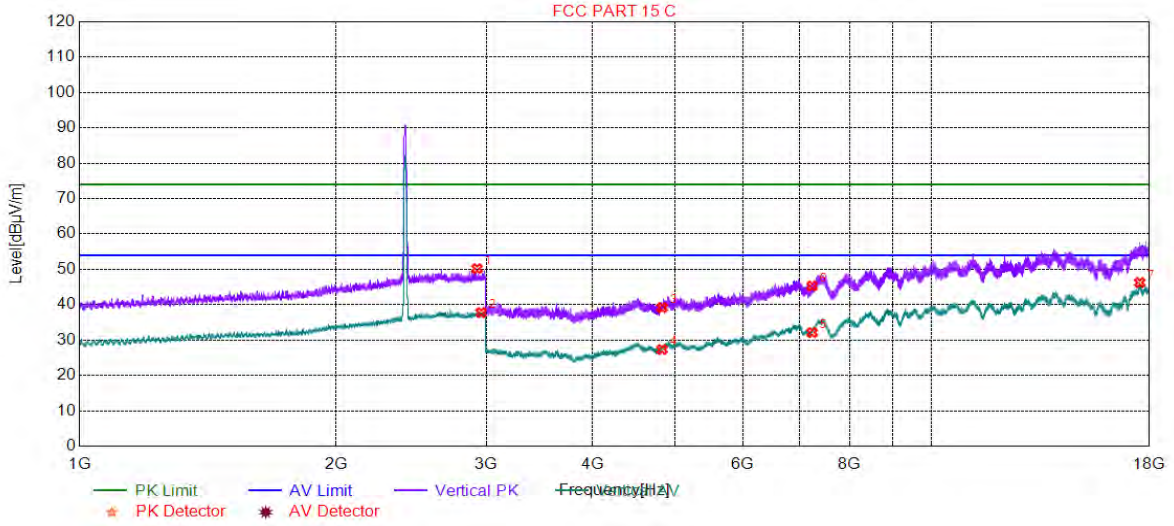
4.9.2.1.6 802.11B_ Highest Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2956.489	38.00	2.30	54.00	16.00	150	326	Horizontal
2	2957.489	49.39	2.30	74.00	24.61	150	140	Horizontal
3	4924.000	40.95	-18.87	74.00	33.05	150	46	Horizontal
4	4924.000	28.77	-18.87	54.00	25.23	150	155	Horizontal
5	7386.000	35.13	-10.72	54.00	18.87	150	182	Horizontal
6	7386.000	46.66	-10.72	74.00	27.34	150	18	Horizontal
7	17540.47	45.68	0.87	54.00	8.32	150	242	Horizontal

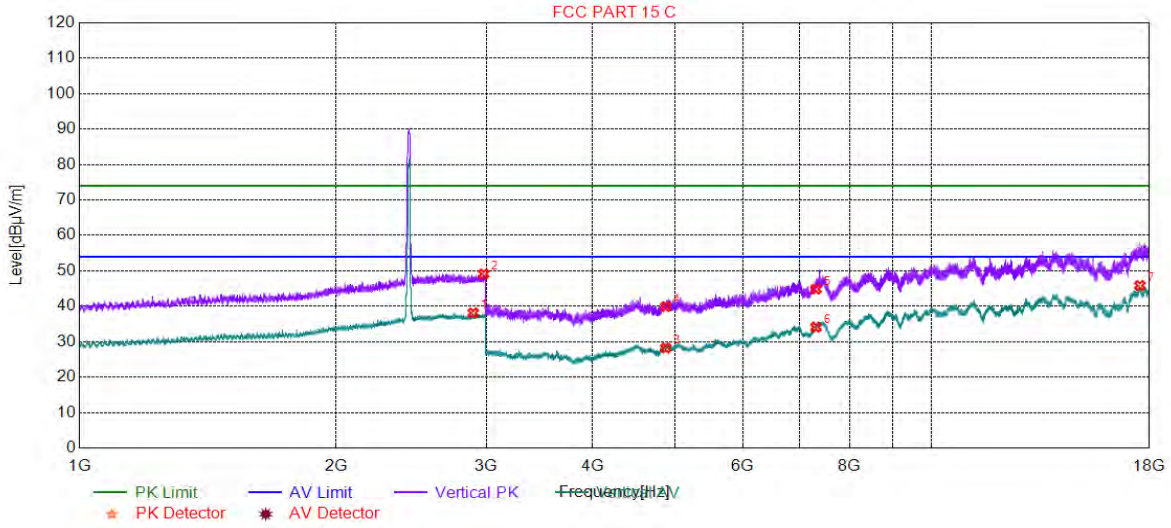
4.9.2.1.7 802.11G_Lowest Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2926.481	50.20	2.28	74.00	23.80	150	97	Vertical
2	2959.489	37.79	2.30	54.00	16.21	150	208	Vertical
3	4824.000	39.17	-20.09	74.00	34.83	150	237	Vertical
4	4824.000	27.33	-20.09	54.00	26.67	150	265	Vertical
5	7236.000	32.11	-12.40	54.00	21.89	150	128	Vertical
6	7236.000	45.31	-12.40	74.00	28.69	150	73	Vertical
7	17531.97	46.25	0.76	54.00	7.75	150	342	Vertical

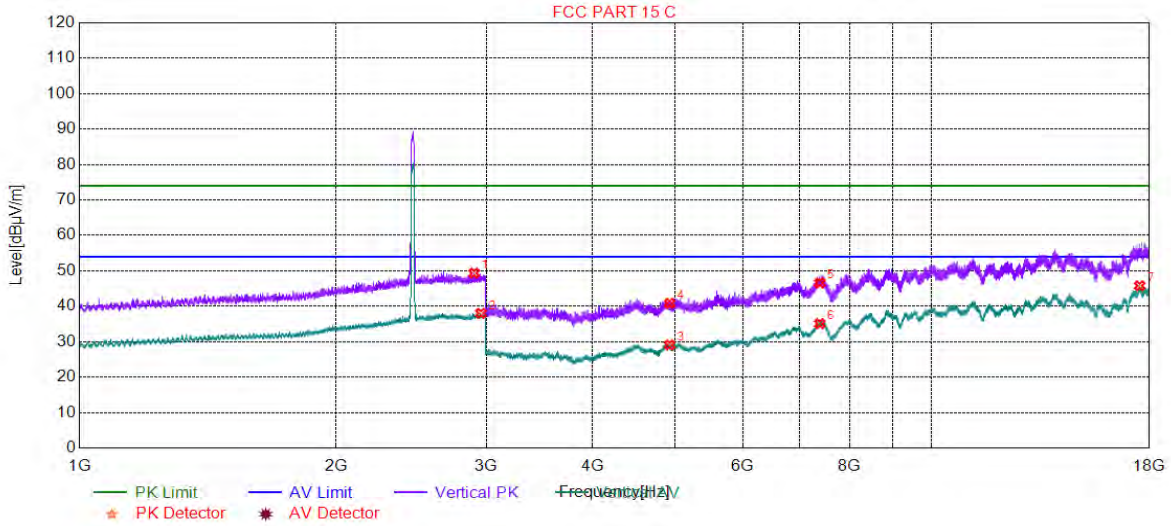
4.9.2.1.8 802.11G_ Middle Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2896.474	38.11	2.26	54.00	15.89	150	305	Vertical
2	2980.495	49.11	2.32	74.00	24.89	150	169	Vertical
3	4874.000	28.21	-19.37	54.00	25.79	150	265	Vertical
4	4874.000	39.92	-19.37	74.00	34.08	150	293	Vertical
5	7311.000	44.86	-11.50	74.00	29.14	150	73	Vertical
6	7311.000	34.12	-11.50	54.00	19.88	150	100	Vertical
7	17535.97	45.87	0.81	54.00	8.13	150	91	Vertical

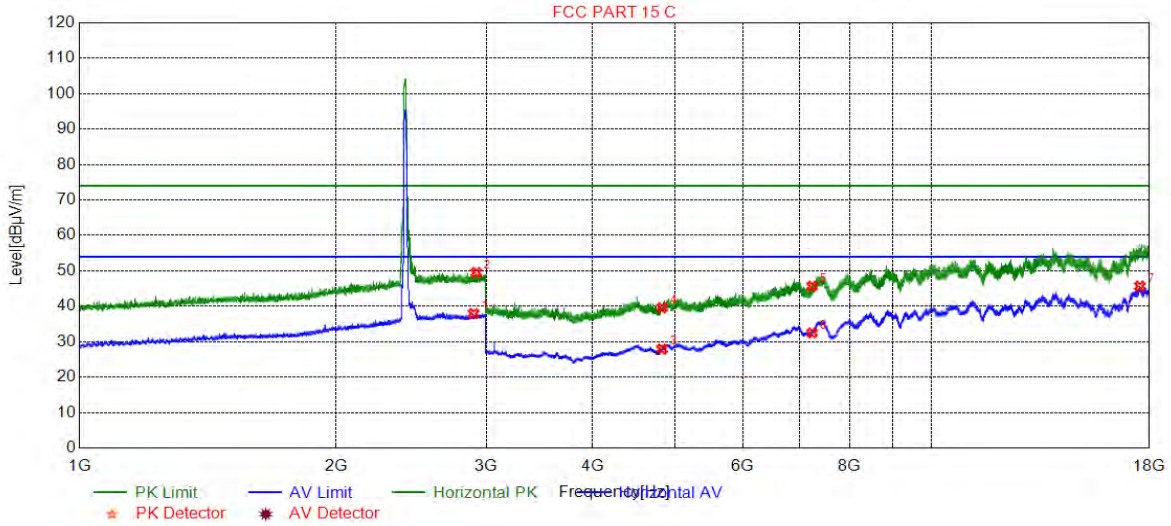
4.9.2.1.9 802.11G_ Highest Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2903.475	49.37	2.26	74.00	24.63	150	268	Vertical
2	2956.989	38.02	2.30	54.00	15.98	150	11	Vertical
3	4924.000	29.09	-18.87	54.00	24.91	150	101	Vertical
4	4924.000	40.82	-18.87	74.00	33.18	150	360	Vertical
5	7386.000	46.60	-10.72	74.00	27.40	150	209	Vertical
6	7386.000	35.11	-10.72	54.00	18.89	150	291	Vertical
7	17530.97	45.80	0.75	54.00	8.20	150	90	Vertical

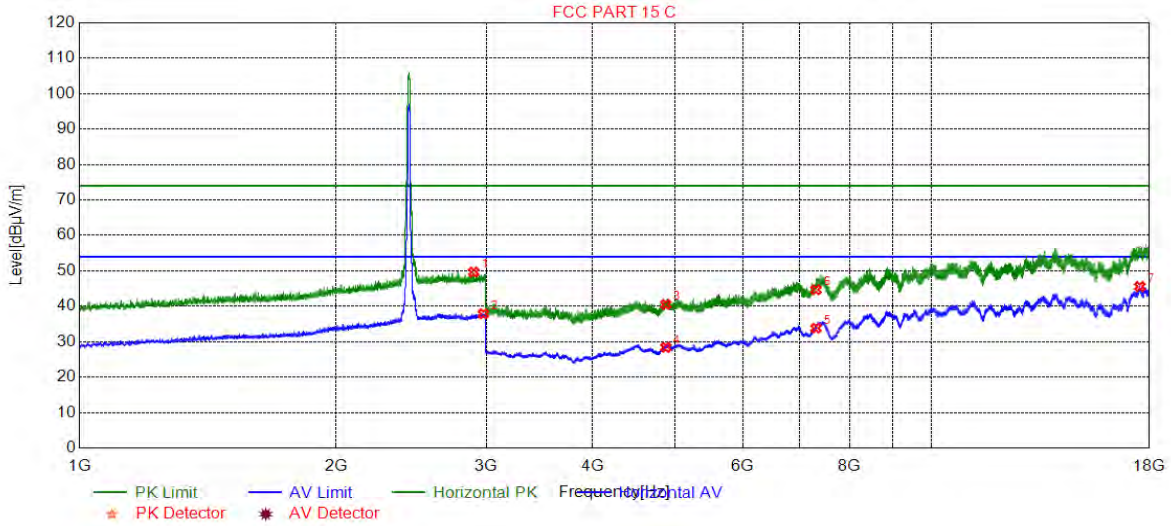
4.9.2.1.10 802.11G_Lowest Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2899.474	37.95	2.26	54.00	16.05	150	54	Horizontal
2	2919.980	49.53	2.27	74.00	24.47	150	91	Horizontal
3	4824.000	27.93	-20.09	54.00	26.07	150	100	Horizontal
4	4824.000	39.59	-20.09	74.00	34.41	150	72	Horizontal
5	7236.000	45.67	-12.40	74.00	28.33	150	18	Horizontal
6	7236.000	32.50	-12.40	54.00	21.50	150	292	Horizontal
7	17540.47	45.68	0.87	54.00	8.32	150	242	Horizontal

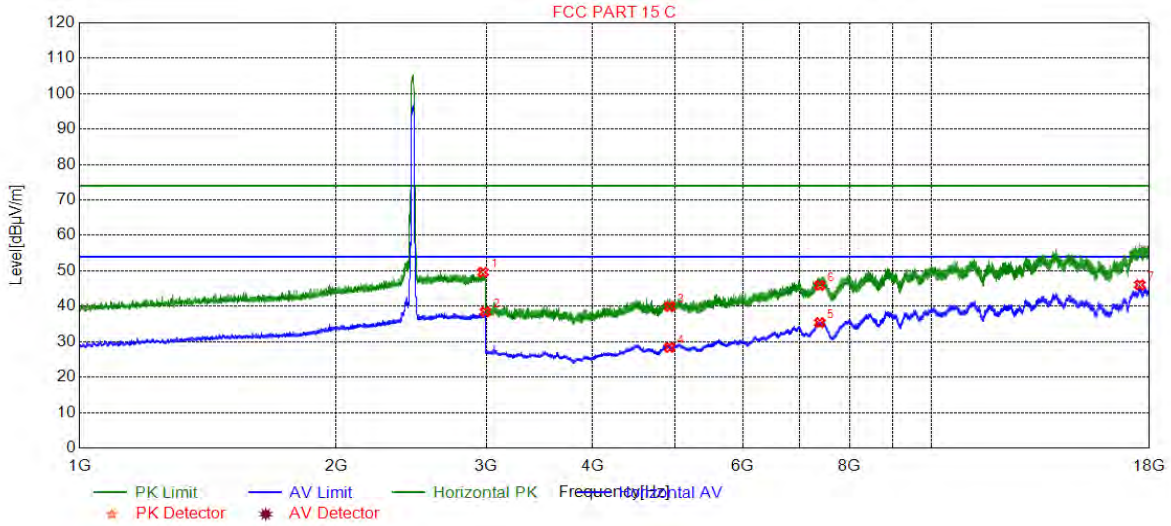
4.9.2.1.11 802.11G_ Middle Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2900.475	49.66	2.26	74.00	24.34	150	94	Horizontal
2	2976.994	37.86	2.31	54.00	16.14	150	354	Horizontal
3	4874.000	40.52	-19.37	74.00	33.48	150	317	Horizontal
4	4874.000	28.41	-19.37	54.00	25.59	150	360	Horizontal
5	7311.000	33.83	-11.50	54.00	20.17	150	73	Horizontal
6	7311.000	44.65	-11.50	74.00	29.35	150	235	Horizontal
7	17536.47	45.56	0.82	54.00	8.44	150	342	Horizontal

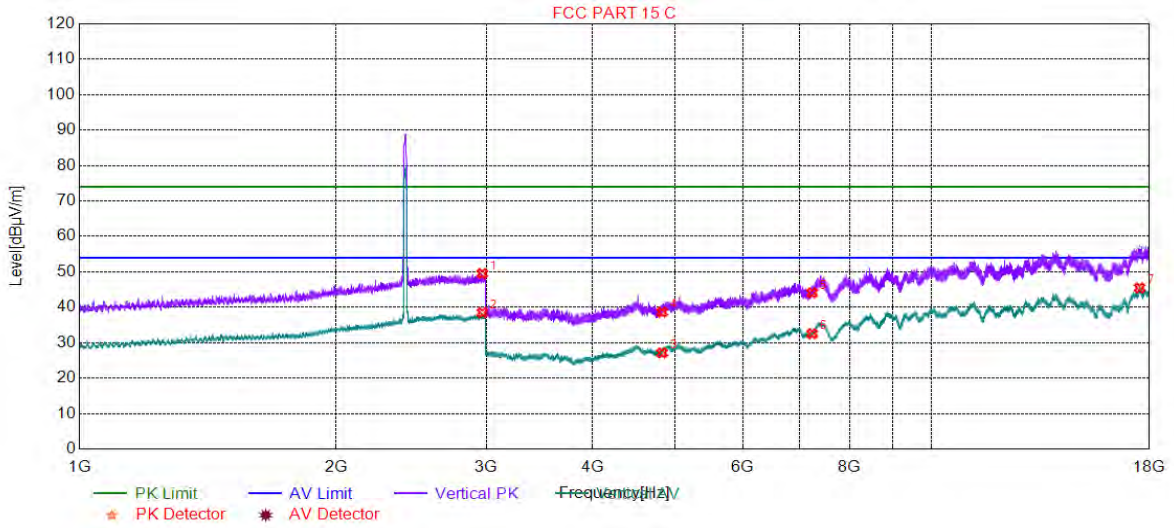
4.9.2.1.12 802.11G_ Highest Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2973.493	49.59	2.31	74.00	24.41	150	311	Horizontal
2	2992.998	38.41	2.33	54.00	15.59	150	347	Horizontal
3	4924.000	39.94	-18.87	74.00	34.06	150	210	Horizontal
4	4924.000	28.38	-18.87	54.00	25.62	150	237	Horizontal
5	7386.000	35.37	-10.72	54.00	18.63	150	237	Horizontal
6	7386.000	45.87	-10.72	74.00	28.13	150	292	Horizontal
7	17535.97	46.05	0.81	54.00	7.95	150	142	Horizontal

4.9.2.1.13 802.11N20_Lowest Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2967.992	49.54	2.31	74.00	24.46	150	47	Vertical
2	2968.492	38.48	2.31	54.00	15.52	150	47	Vertical
3	4824.000	27.14	-20.09	54.00	26.86	150	100	Vertical
4	4824.000	38.63	-20.09	74.00	35.37	150	360	Vertical
5	7236.000	44.06	-12.40	74.00	29.94	150	46	Vertical
6	7236.000	32.54	-12.40	54.00	21.46	150	18	Vertical
7	17525.97	45.47	0.68	54.00	8.53	150	190	Vertical

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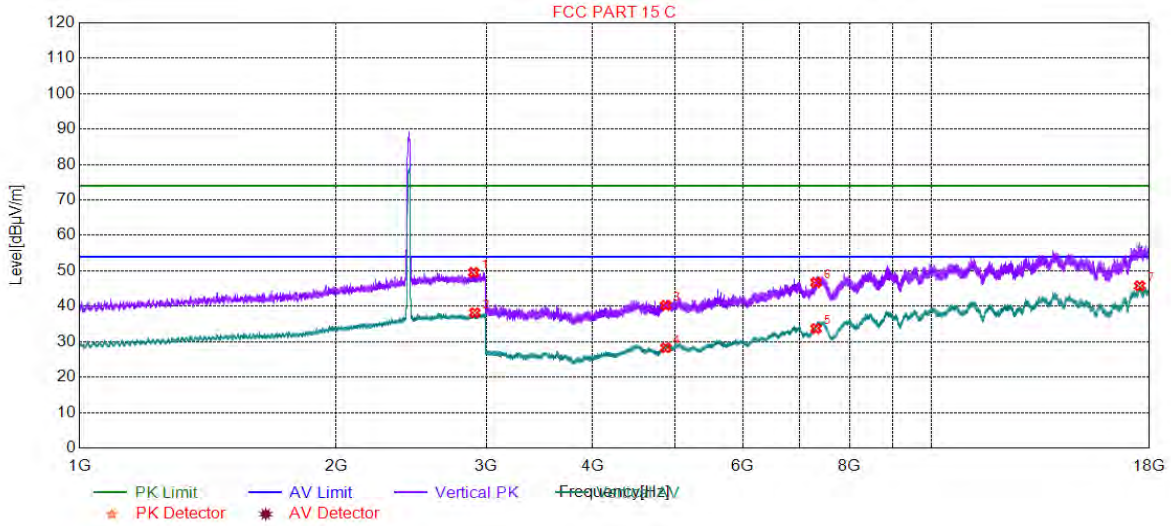
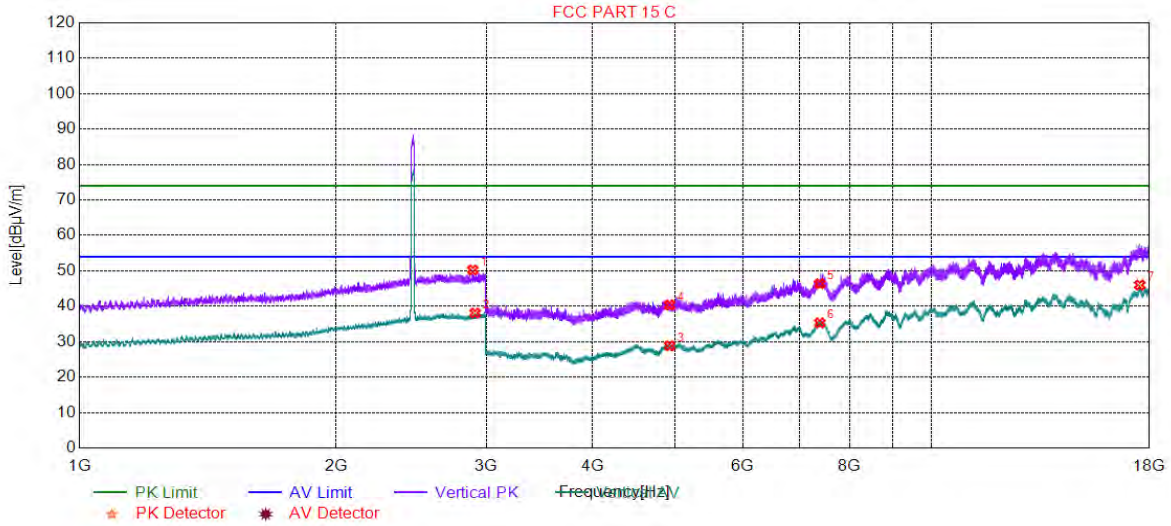
4.9.2.1.14 802.11N20_ Middle Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2900.475	49.54	2.26	74.00	24.46	150	2	Vertical
2	2908.477	38.17	2.27	54.00	15.83	150	97	Vertical
3	4874.000	40.25	-19.37	74.00	33.75	150	264	Vertical
4	4874.000	28.28	-19.37	54.00	25.72	150	18	Vertical
5	7311.000	33.69	-11.50	54.00	20.31	150	18	Vertical
6	7311.000	46.70	-11.50	74.00	27.30	150	360	Vertical
7	17533.47	45.76	0.78	54.00	8.24	150	0	Vertical

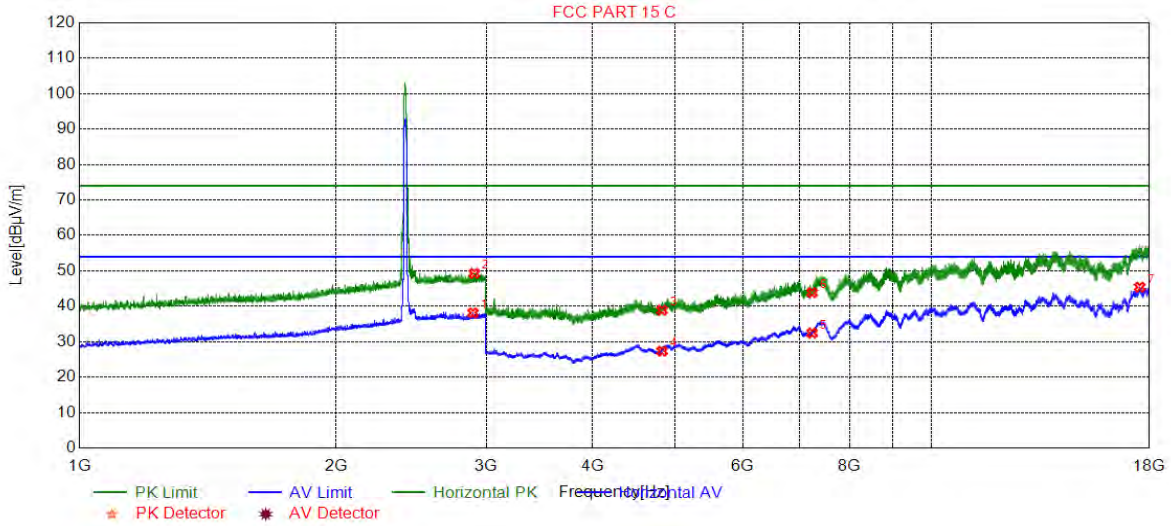
4.9.2.1.15 802.11N20_ Highest Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2892.973	50.27	2.25	74.00	23.73	150	32	Vertical
2	2910.977	38.08	2.27	54.00	15.92	150	132	Vertical
3	4924.000	28.86	-18.87	54.00	25.14	150	319	Vertical
4	4924.000	40.35	-18.87	74.00	33.65	150	346	Vertical
5	7386.000	46.35	-10.72	74.00	27.65	150	182	Vertical
6	7386.000	35.30	-10.72	54.00	18.70	150	100	Vertical
7	17532.97	46.01	0.77	54.00	7.99	150	0	Vertical

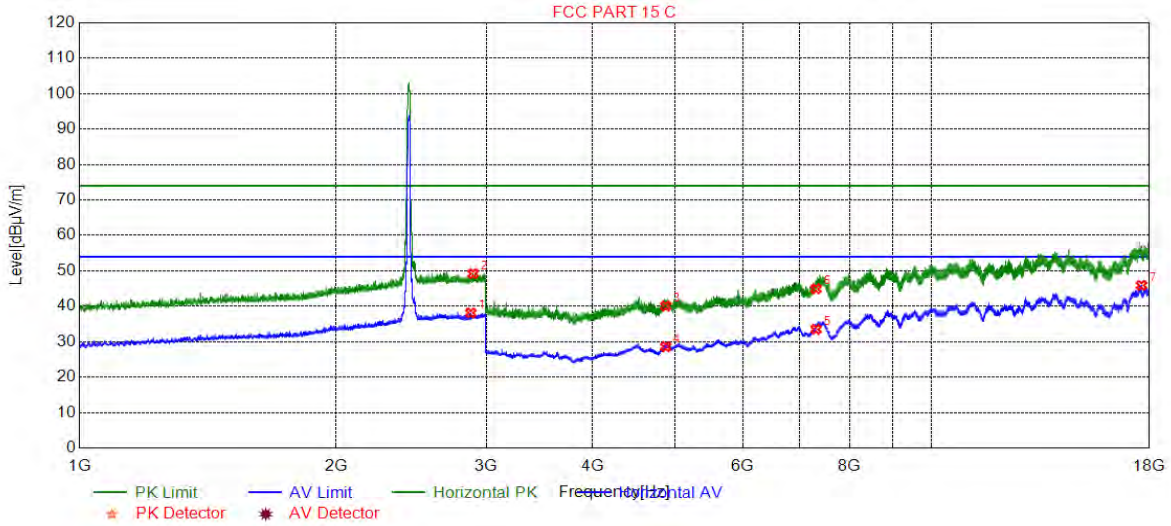
4.9.2.1.16 802.11N20_Lowest Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2894.973	38.15	2.25	54.00	15.85	150	338	Horizontal
2	2905.476	49.29	2.26	74.00	24.71	150	301	Horizontal
3	4824.000	38.90	-20.09	74.00	35.10	150	293	Horizontal
4	4824.000	27.33	-20.09	54.00	26.67	150	211	Horizontal
5	7236.000	32.44	-12.40	54.00	21.56	150	266	Horizontal
6	7236.000	43.85	-12.40	74.00	30.15	150	211	Horizontal
7	17532.97	45.41	0.77	54.00	8.59	150	90	Horizontal

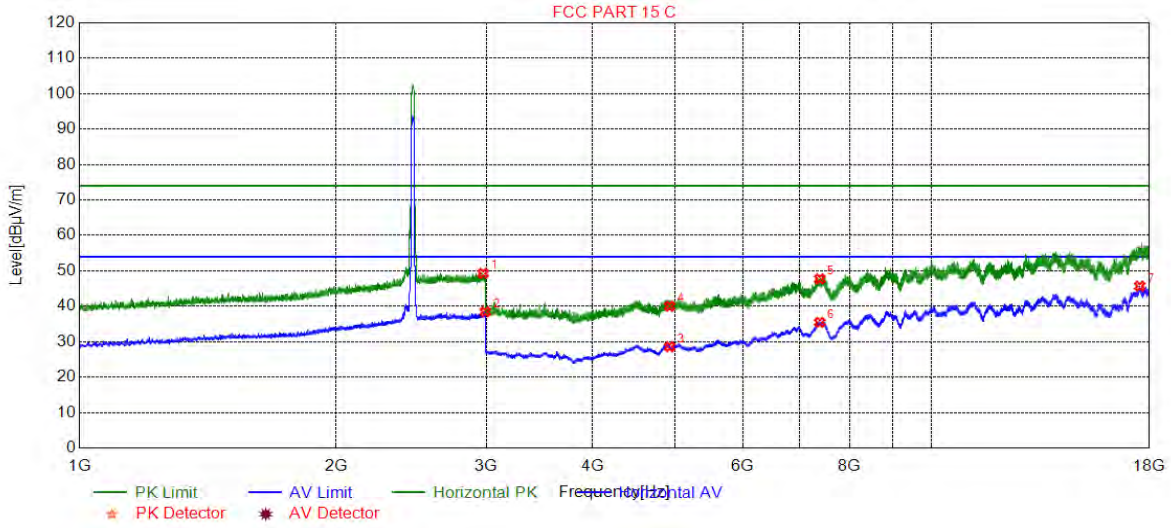
4.9.2.1.17 802.11N20_ Middle Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2877.969	38.10	2.23	54.00	15.90	150	54	Horizontal
2	2895.974	49.22	2.26	74.00	24.78	150	153	Horizontal
3	4874.000	40.08	-19.37	74.00	33.92	150	105	Horizontal
4	4874.000	28.60	-19.37	54.00	25.40	150	105	Horizontal
5	7311.000	33.50	-11.50	54.00	20.50	150	45	Horizontal
6	7311.000	44.94	-11.50	74.00	29.06	150	105	Horizontal
7	17614.48	45.91	1.25	54.00	8.09	150	41	Horizontal

4.9.2.1.18 802.11N20_ Highest Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2974.993	49.29	2.31	74.00	24.71	150	228	Horizontal
2	2991.497	38.44	2.32	54.00	15.56	150	277	Horizontal
3	4924.000	28.59	-18.87	54.00	25.41	150	133	Horizontal
4	4924.000	40.03	-18.87	74.00	33.97	150	102	Horizontal
5	7386.000	47.72	-10.72	74.00	26.28	150	351	Horizontal
6	7386.000	35.46	-10.72	54.00	18.54	150	161	Horizontal
7	17531.97	45.68	0.76	54.00	8.32	150	0	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.

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:			

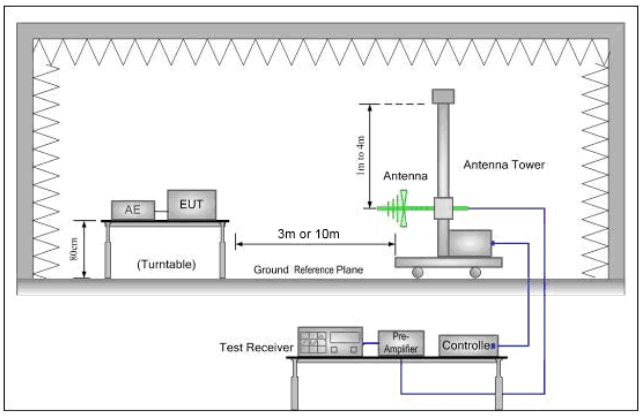


Figure 1. 30MHz to 1GHz

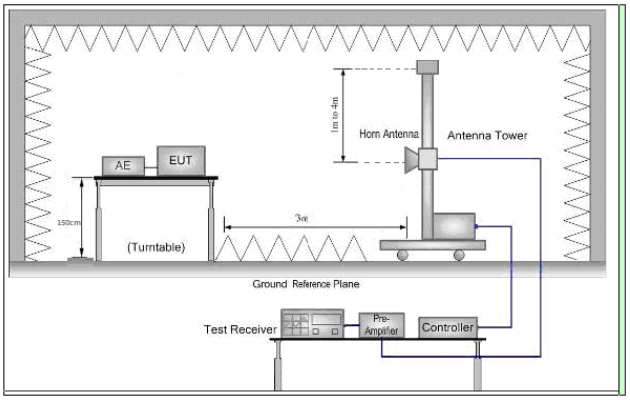


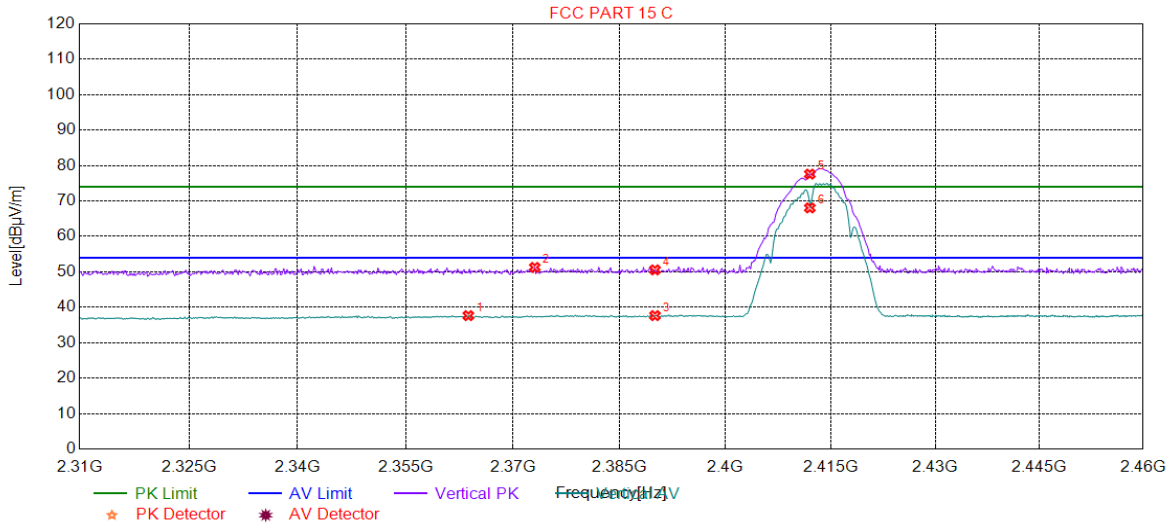
Figure 2. Above 1 GHz

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

Test plot as follows:

4.10.1 ANT1

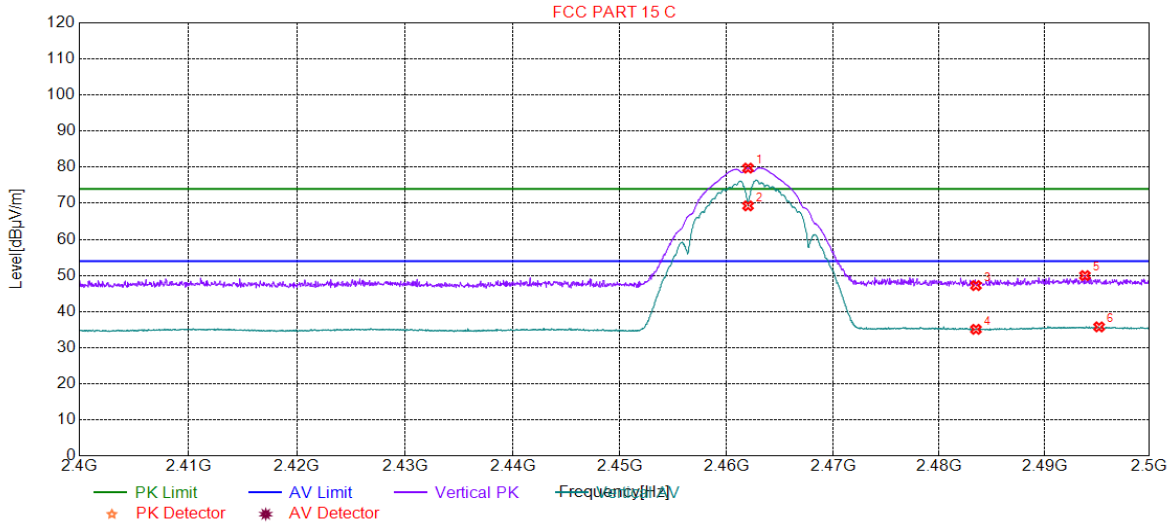
4.10.1.1 802.11B_Lowest Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2363.753	37.65	1.13	54.00	16.35	150	149	Vertical
2	2373.063	51.26	1.17	74.00	22.74	150	125	Vertical
3	2390.000	37.66	1.25	54.00	16.34	150	23	Vertical
4	2390.000	50.56	1.25	74.00	23.44	150	227	Vertical
5	2412.000	77.59	1.32	74.00	-3.59	150	289	Vertical
6	2412.000	68.05	1.32	54.00	-14.05	150	289	Vertical

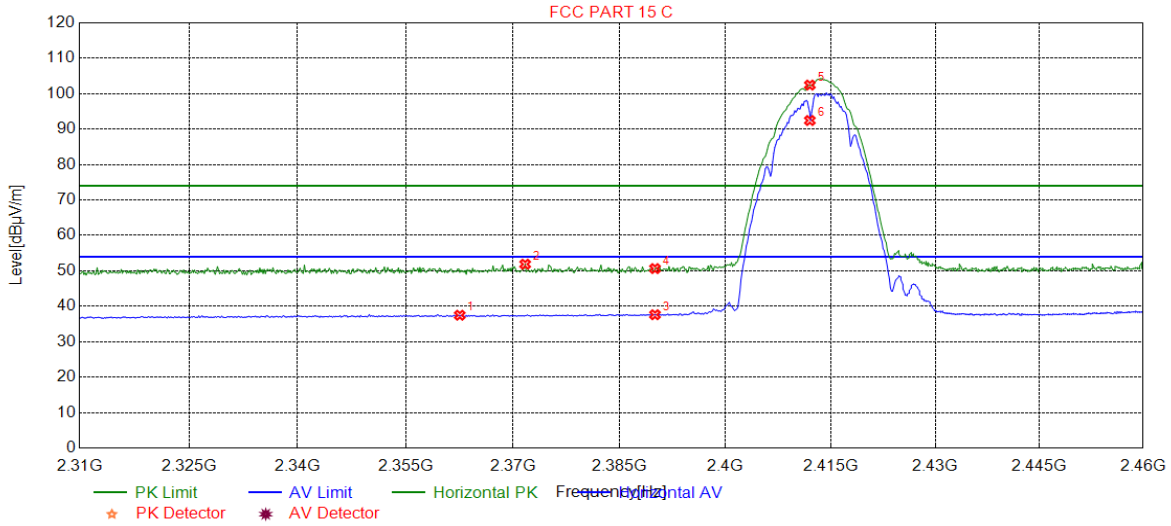
4.10.1.2 802.11B_ Highest Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.000	79.75	1.46	74.00	-5.75	150	270	Vertical
2	2462.000	69.29	1.46	54.00	-15.29	150	270	Vertical
3	2483.500	47.21	1.52	74.00	26.79	150	61	Vertical
4	2483.500	35.08	1.52	54.00	18.92	150	160	Vertical
5	2493.846	49.97	1.55	74.00	24.03	150	132	Vertical
6	2495.197	35.76	1.56	54.00	18.24	150	182	Vertical

4.10.1.3 802.11B_Lowest Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2362.552	37.48	1.13	54.00	16.52	150	14	Horizontal
2	2371.711	51.88	1.17	74.00	22.12	150	154	Horizontal
3	2390.000	37.62	1.25	54.00	16.38	150	344	Horizontal
4	2390.000	50.65	1.25	74.00	23.35	150	42	Horizontal
5	2412.000	102.44	1.32	74.00	-28.44	150	14	Horizontal
6	2412.000	92.43	1.32	54.00	-38.43	150	18	Horizontal

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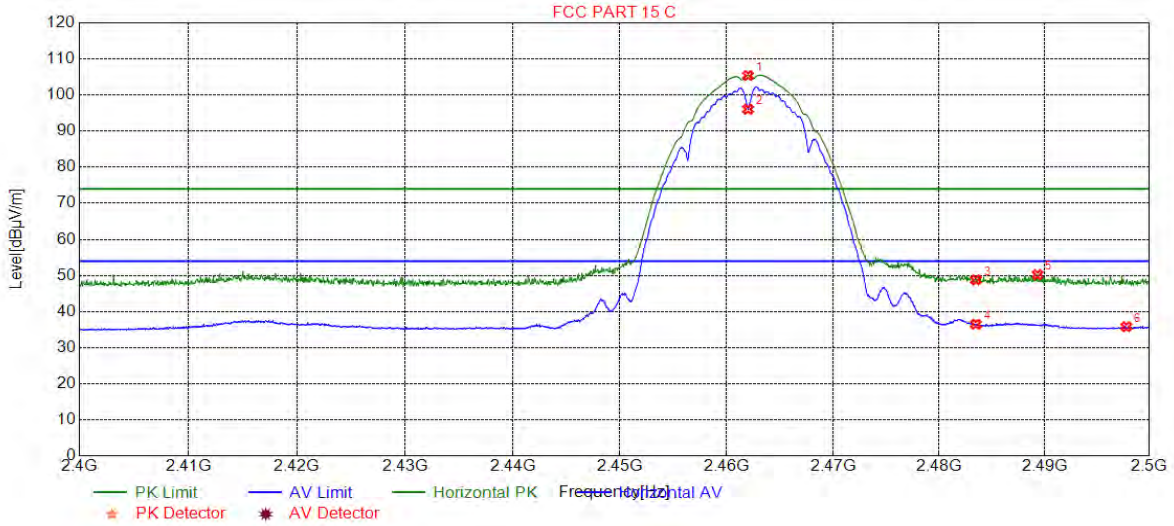
4.10.1.4 802.11B_ Highest Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.000	105.40	1.46	74.00	-31.40	150	26	Horizontal
2	2462.000	96.05	1.46	54.00	-42.05	150	26	Horizontal
3	2483.500	48.79	1.52	74.00	25.21	150	254	Horizontal
4	2483.500	36.49	1.52	54.00	17.51	150	37	Horizontal
5	2489.344	50.25	1.54	74.00	23.75	150	330	Horizontal
6	2497.798	35.80	1.56	54.00	18.20	150	104	Horizontal

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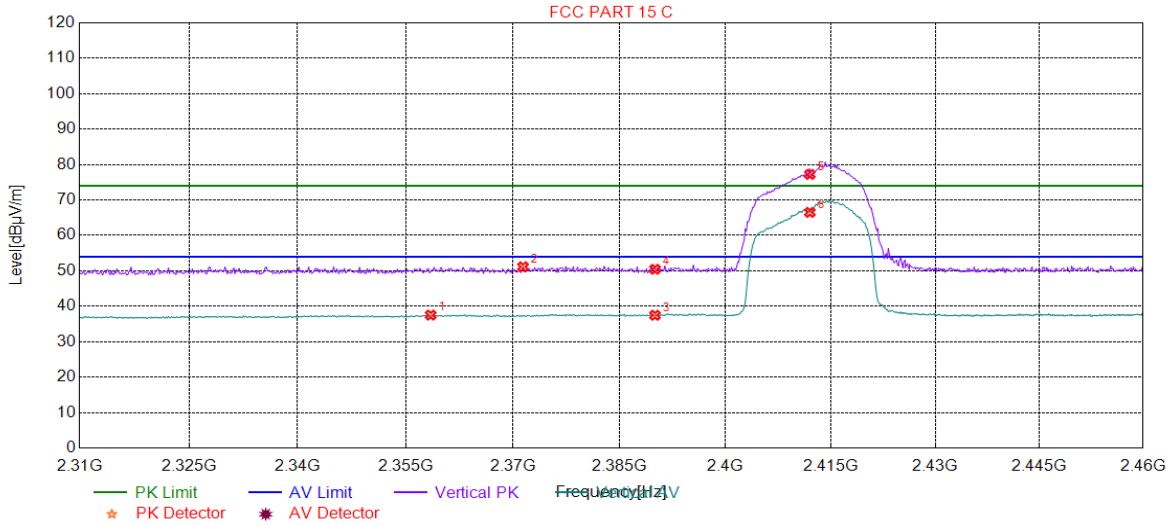
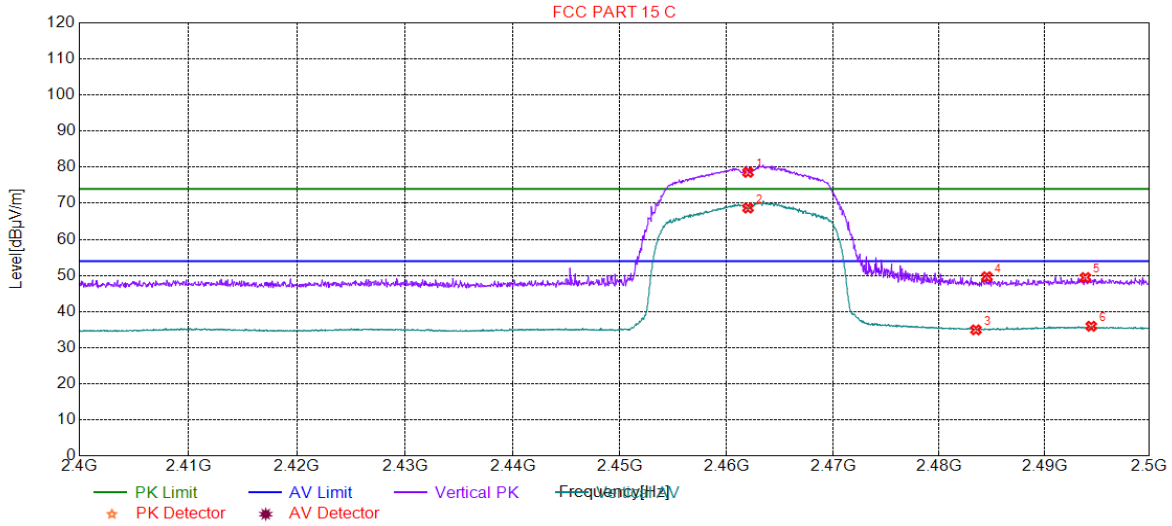
4.10.1.5 802.11G_Lowest Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2358.498	37.52	1.11	54.00	16.48	150	220	Vertical
2	2371.411	51.16	1.16	74.00	22.84	150	248	Vertical
3	2390.000	37.47	1.25	54.00	16.53	150	104	Vertical
4	2390.000	50.46	1.25	74.00	23.54	150	319	Vertical
5	2412.000	77.22	1.32	74.00	-3.22	150	117	Vertical
6	2412.000	66.51	1.32	54.00	-12.51	150	113	Vertical

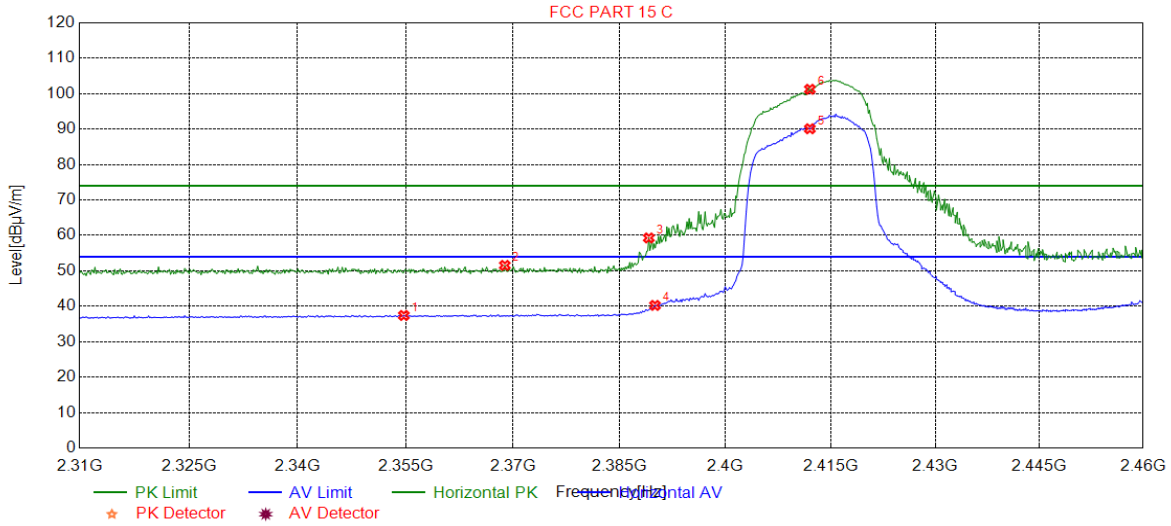
4.10.1.6 802.11G_ Highest Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.000	78.58	1.46	74.00	-4.58	150	286	Vertical
2	2462.000	68.68	1.46	54.00	-14.68	150	292	Vertical
3	2483.500	34.93	1.52	54.00	19.07	150	325	Vertical
4	2484.542	49.64	1.53	74.00	24.36	150	172	Vertical
5	2493.896	49.43	1.55	74.00	24.57	150	222	Vertical
6	2494.447	35.94	1.55	54.00	18.06	150	166	Vertical

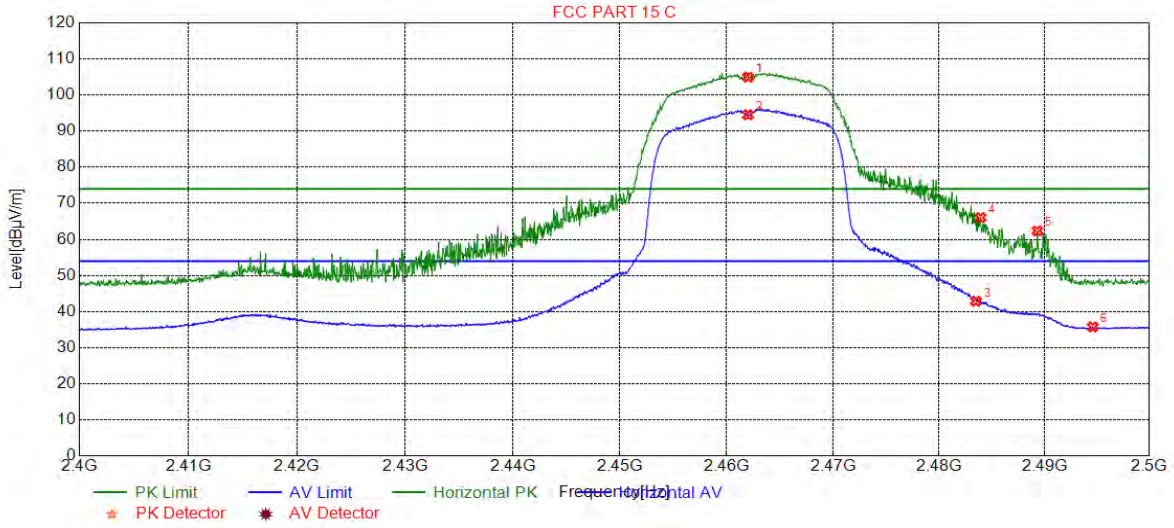
4.10.1.7 802.11G_Lowest Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2354.744	37.42	1.09	54.00	16.58	150	316	Horizontal
2	2368.858	51.55	1.15	74.00	22.45	150	329	Horizontal
3	2389.129	59.29	1.24	74.00	14.71	150	58	Horizontal
4	2390.000	40.25	1.25	54.00	13.75	150	153	Horizontal
5	2412.000	90.11	1.32	54.00	-36.11	150	214	Horizontal
6	2412.000	101.25	1.32	74.00	-27.25	150	218	Horizontal

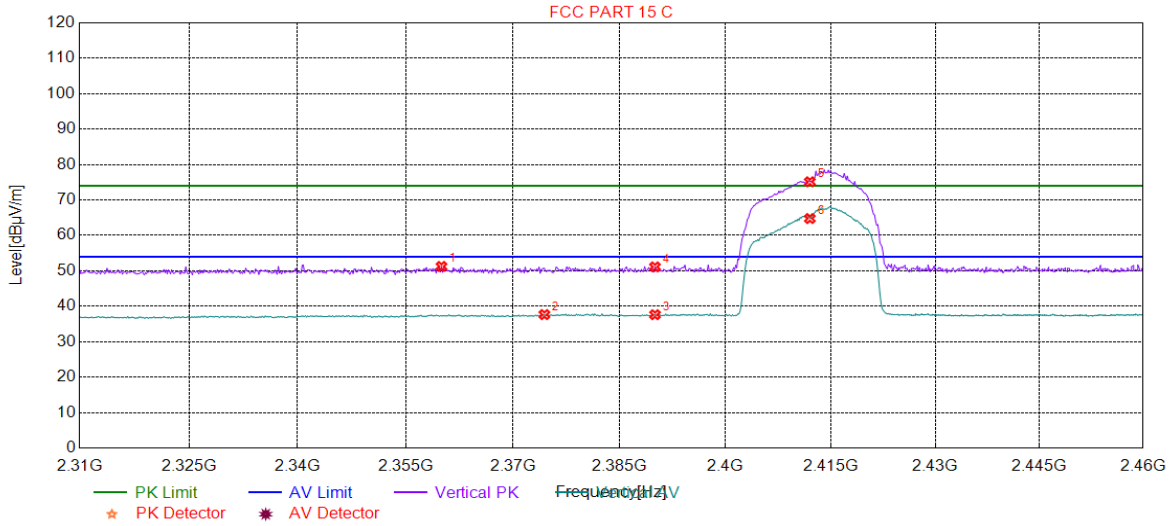
4.10.1.8 802.11G_ Highest Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.000	104.94	1.46	74.00	-30.94	150	207	Horizontal
2	2462.000	94.51	1.46	54.00	-40.51	150	207	Horizontal
3	2483.500	42.87	1.52	54.00	11.13	150	207	Horizontal
4	2483.942	66.03	1.53	74.00	7.97	150	202	Horizontal
5	2489.344	62.35	1.54	74.00	11.65	150	212	Horizontal
6	2494.597	35.75	1.55	54.00	18.25	150	124	Horizontal

4.10.1.9 802.11N20_Lowest Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2360.000	51.25	1.11	74.00	22.75	150	298	Vertical
2	2374.414	37.66	1.18	54.00	16.34	150	171	Vertical
3	2390.000	37.63	1.25	54.00	16.37	150	120	Vertical
4	2390.000	51.12	1.25	74.00	22.88	150	265	Vertical
5	2412.000	75.13	1.32	74.00	-1.13	150	120	Vertical
6	2412.000	64.77	1.32	54.00	-10.77	150	115	Vertical

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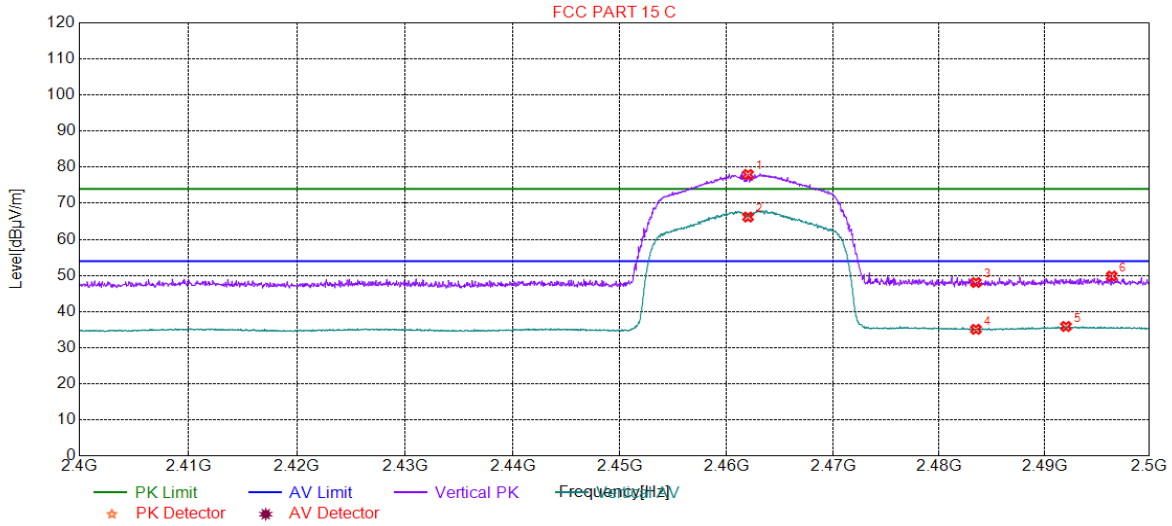
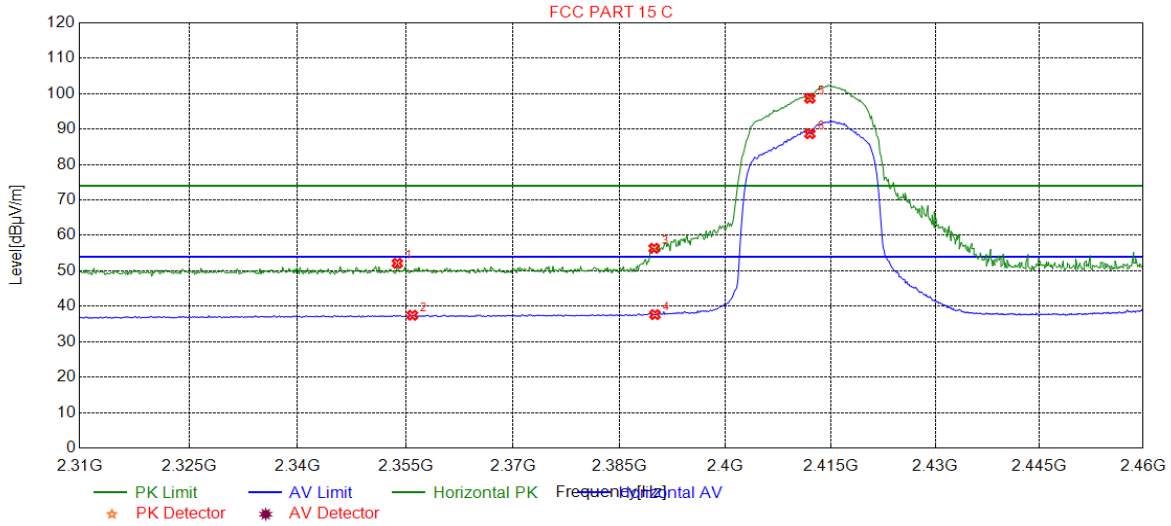
4.10.1.10 802.11N20_ Highest Channel_ Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.000	78.00	1.46	74.00	-4.00	150	109	Vertical
2	2462.000	66.20	1.46	54.00	-12.20	150	114	Vertical
3	2483.500	48.06	1.52	74.00	25.94	150	179	Vertical
4	2483.500	35.09	1.52	54.00	18.91	150	184	Vertical
5	2492.046	35.88	1.55	54.00	18.12	150	206	Vertical
6	2496.398	49.84	1.56	74.00	24.16	150	28	Vertical

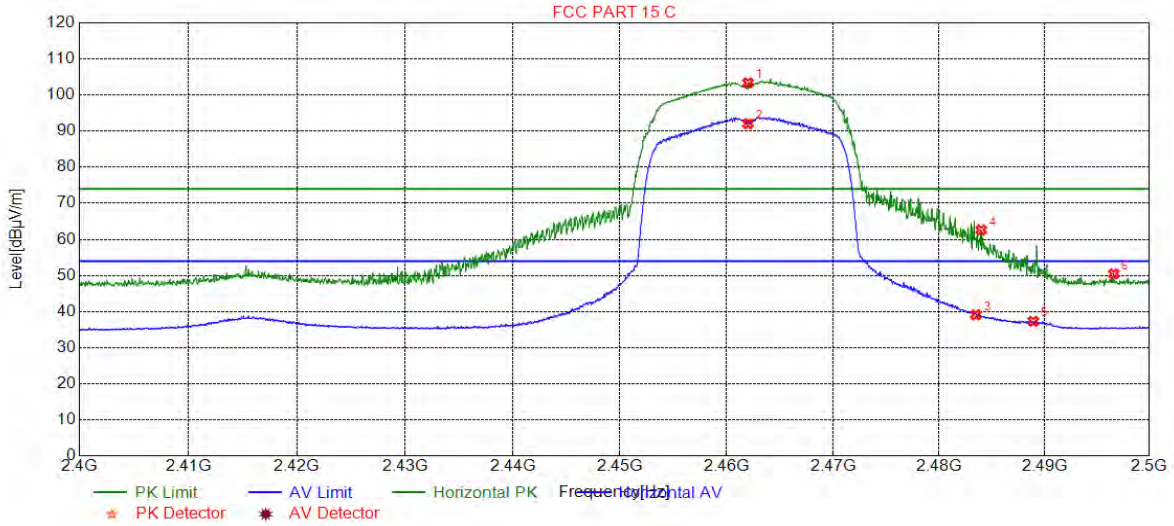
4.10.1.11 802.11N20_Lowest Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2353.843	52.13	1.09	74.00	21.87	150	283	Horizontal
2	2355.945	37.47	1.10	54.00	16.53	150	246	Horizontal
3	2389.879	56.36	1.25	74.00	17.64	150	152	Horizontal
4	2390.000	37.66	1.25	54.00	16.34	150	58	Horizontal
5	2412.000	98.69	1.32	74.00	-24.69	150	209	Horizontal
6	2412.000	88.69	1.32	54.00	-34.69	150	209	Horizontal

4.10.1.12 802.11N20_ Highest Channel_ Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.000	103.39	1.46	74.00	-29.39	150	205	Horizontal
2	2462.000	92.07	1.46	54.00	-38.07	150	216	Horizontal
3	2483.500	39.08	1.52	54.00	14.92	150	211	Horizontal
4	2483.992	62.61	1.53	74.00	11.39	150	205	Horizontal
5	2488.944	37.32	1.54	54.00	16.68	150	211	Horizontal
6	2496.598	50.47	1.56	74.00	23.53	150	350	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)

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	±0.75dB
2	RF power density, conducted	±2.84dB
3	Spurious emissions, conducted	±0.75dB
4	Radiated Spurious emission test	±4.5dB (30MHz-1GHz)
		±4.8dB (1GHz-25GHz)
5	Conduct emission test	±3.12 dB (9KHz- 30MHz)
6	Temperature test	±1°C
7	Humidity test	±3%
8	DC and low frequency voltages	±0.5%

6 Equipment List

Conducted Emission					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Duedate (yyyy-mm-dd)
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2017/5/10	2020/5/9
LISN	Rohde & Schwarz	ENV216	SEM007-01	2019/7/14	2020/7/14
LISN	ETS-LINDGREN	Feb-16	SEM007-02	2019/4/1	2020/3/31
Measurement Software	AUDIX	e3 V5.4.1221d	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2019/6/12	2020/6/11
2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	EMC0122	2019/2/11	2020/2/10
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2019/3/2	2020/3/1

RF conducted test					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Duedate (yyyy-mm-dd)
DC Power Supply	Agilent Technologies Inc	66311B	W009-09	2019/7/15	2020/7/15
Signal Analyzer	Rohde & Schwarz	FSV	W025-05	2019/1/13	2020/1/12
Coaxial Cable	SGS	N/A	SEM031-01	2019/6/12	2020/6/11
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019/7/14	2020/7/14
Temperature Chamber	GIANT FORCE	ICT-150-40-CP-AR	W027-03	2018/11/27	2019/11/27
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019/7/14	2020/7/14

RE in Chamber					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017/8/5	2020/8/4
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2019/6/12	2020/6/11
MXE EMI Receiver (20Hz-8.4GHz)	Agilent Technologies	N9038A	SEM004-05	2019/7/14	2020/7/14
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017/6/27	2020/6/26
Pre-amplifier (0.1-1.3GHz)	Agilent Technologies	8447D	SEM005-01	2019/3/2	2020/3/1

RE in Chamber					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018/3/13	2021/3/12
Measurement Software	AUDIX	e3V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2019/6/12	2020/6/11
EXA Signal Analyzer (10Hz-26.5GHz)	Agilent Technologies Inc	N9010A	SEM004-09	2019/3/12	2020/3/11
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2017/6/27	2020/6/26
Horn Antenna (0.8-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018/4/13	2021/4/12
Pre-amplifier(0.1-1.3GHz)	HP	8447D	SEM005-02	2019/7/14	2020/7/14
Low Noise Amplifier(100MHz-18GHz)	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2019/9/3	2020/9/2
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017/10/17	2020/10/16
Pre-amplifier(18-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2019/3/2	2020/3/1
Band filter	N/A	N/A	SEM023-01	N/A	N/A

RE in Chamber					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2018/3/31	2021/3/30
EMI Test Receiver (9k-7GHz)	Rohde & Schwarz	ESR	SEM004-03	2019/3/2	2020/3/1
Trilog-Broadband Antenna(25M-2GHz)	Schwarzbeck	VULB9168	SEM003-18	2018/3/15	2020/3/14
Pre-amplifier (9k-1GHz)	Sonoma	310N	SEM005-03	2019/3/12	2020/3/11
Loop Antenna (9kHz-30MHz)	ETS-Lindgren	6502	SEM003-08	2017/8/22	2020/8/21
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2019/6/12	2020/6/11

7 Photographs - EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for ZR/2019/A0006.

The End

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