

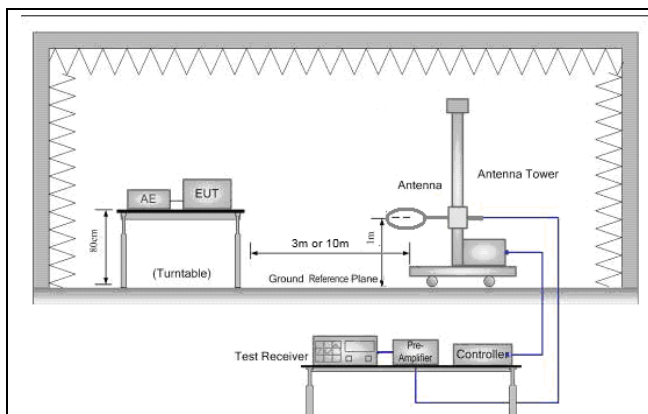


Figure 1. Below 30MHz

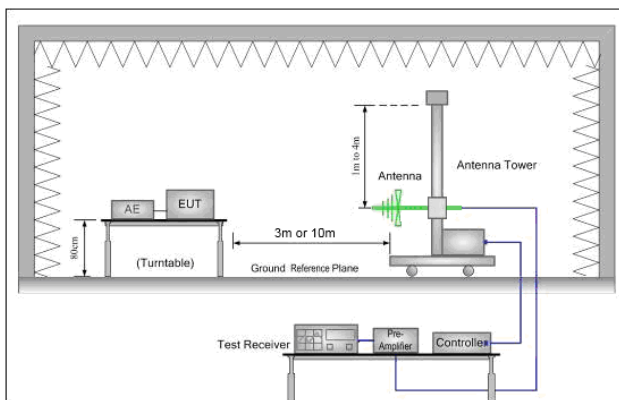


Figure 2. 30MHz to 1GHz

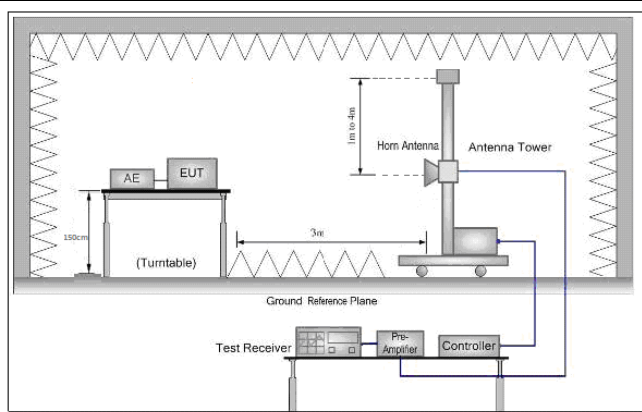


Figure 3. Above 1 GHz

Test Procedure:

- 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 chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 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 chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 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.
- 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.
- 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 rotating table was turned from 0 degrees to 360 degrees to find the maximum reading.
- Use the following spectrum analyzer settings:
 - Span shall wide enough to fully capture the emission being measured;
 - Set RBW=100 kHz for $f < 1$ GHz, RBW=1MHz for $f > 1$ GHz; VBW $\geq$ RBW; Sweep = auto;



	Detector function = peak; Trace = max hold for peak (3) For average measurement: use duty cycle correction factor method per 15.35(c). Duty cycle = On time/100 milliseconds On time = $N_1 * L_1 + N_2 * L_2 + \dots + N_{n-1} * L_{n-1} + N_n * L_n$ Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc. Average Emission Level = Peak Emission Level + $20 * \log(\text{Duty cycle})$ g. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. h. 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. i. Test the EUT in the lowest channel, the middle channel, the Highest channel j. 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. k. 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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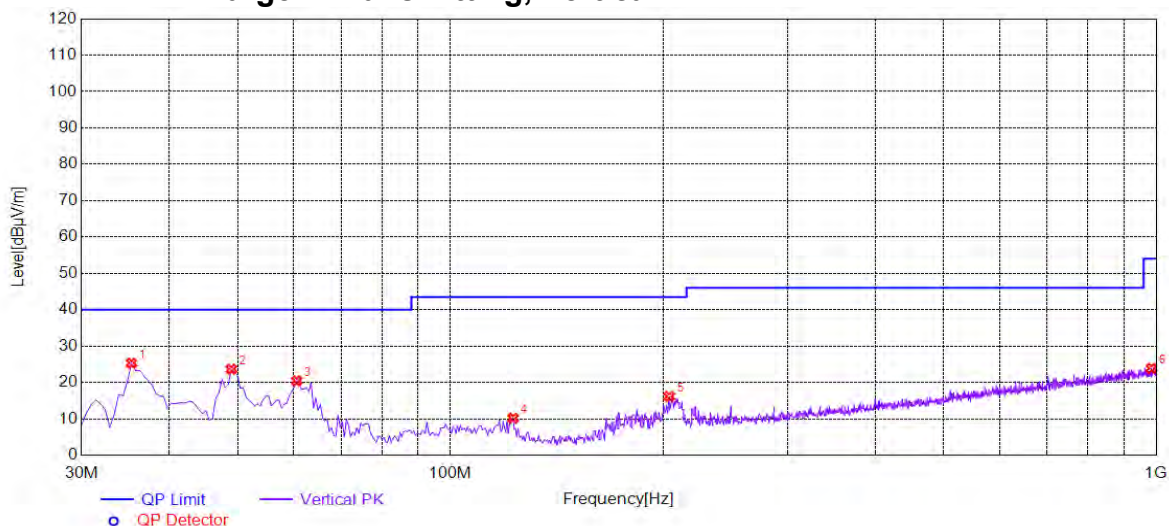
Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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4.9.1 Radiated emission below 1GHz

4.9.1.1 Charge + Transmitting, Vertical

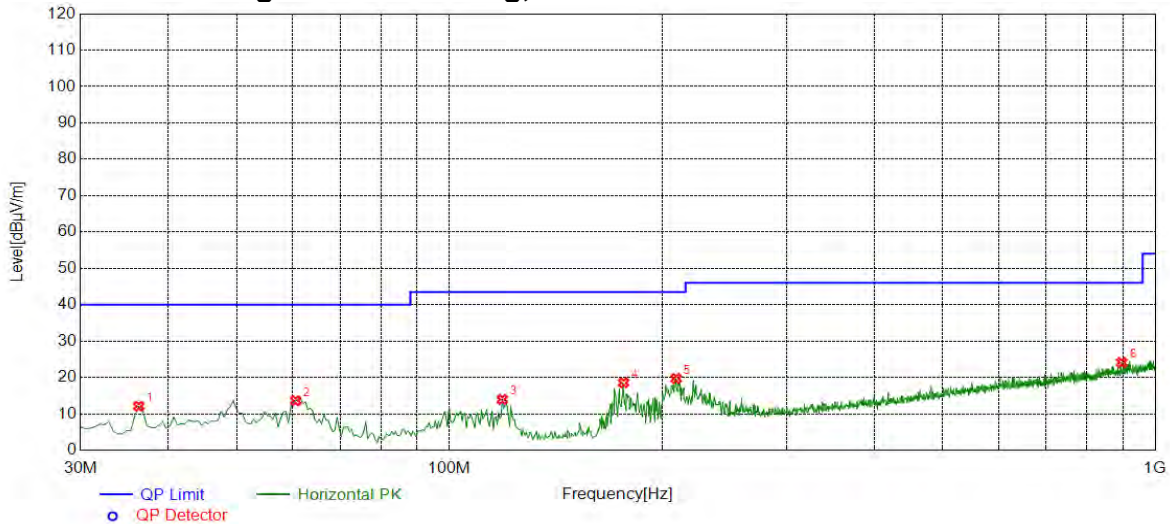


Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.3377	25.32	-32.65	40.00	14.68	164	16	Vertical
2	48.9245	23.65	-30.19	40.00	16.35	190	337	Vertical
3	60.5703	20.44	-31.79	40.00	19.56	288	324	Vertical
4	122.681	10.16	-33.67	43.50	33.34	205	34	Vertical
5	204.202	16.13	-30.73	43.50	27.37	251	315	Vertical
6	984.957	23.90	-14.05	54.00	30.10	219	299	Vertical



4.9.1.2 Charge + Transmitting, Horizontal



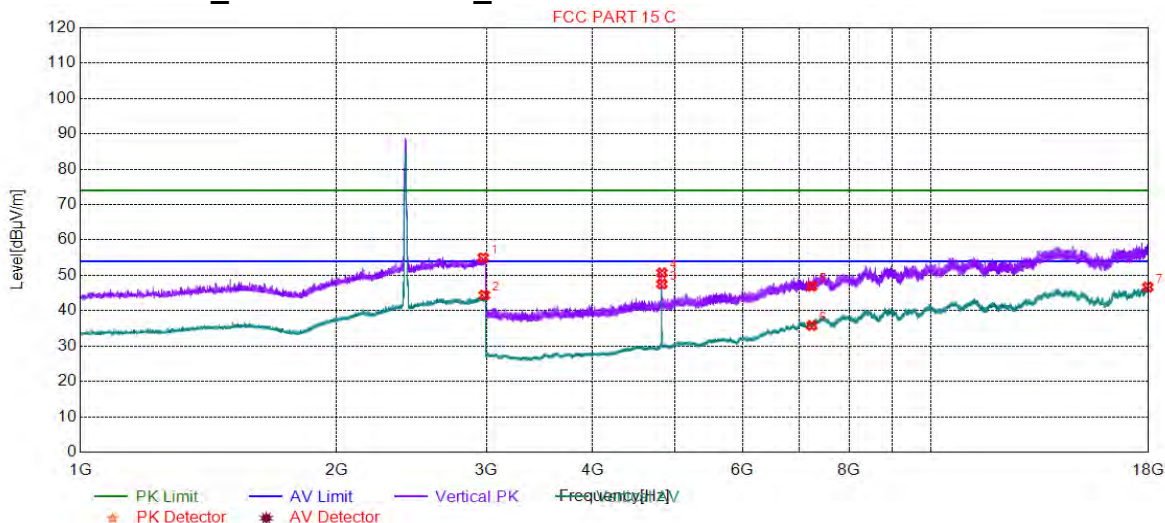
Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.3082	12.09	-32.34	40.00	27.91	142	272	Horizontal
2	60.5703	13.61	-31.79	40.00	26.39	166	134	Horizontal
3	118.799	13.95	-33.07	43.50	29.55	184	238	Horizontal
4	176.543	18.56	-33.15	43.50	24.94	202	222	Horizontal
5	209.539	19.69	-30.63	43.50	23.81	203	297	Horizontal
6	896.643	24.11	-15.28	46.00	21.89	200	328	Horizontal

4.9.2 Transmitter emission above 1GHz

4.9.2.1 ANT1

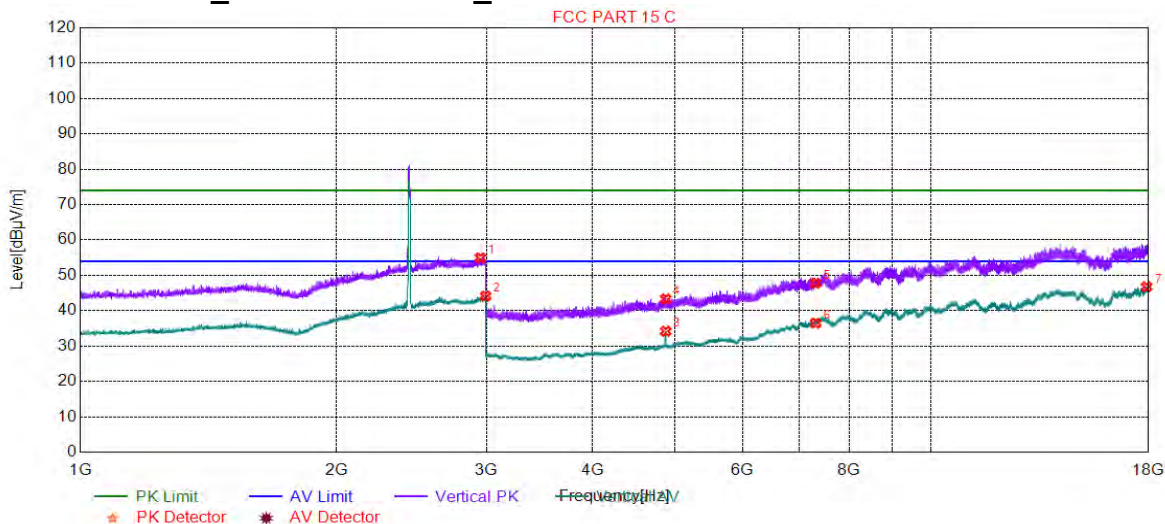
4.9.2.1.1 802.11B_Lowest Channel_ Vertical



Suspected List

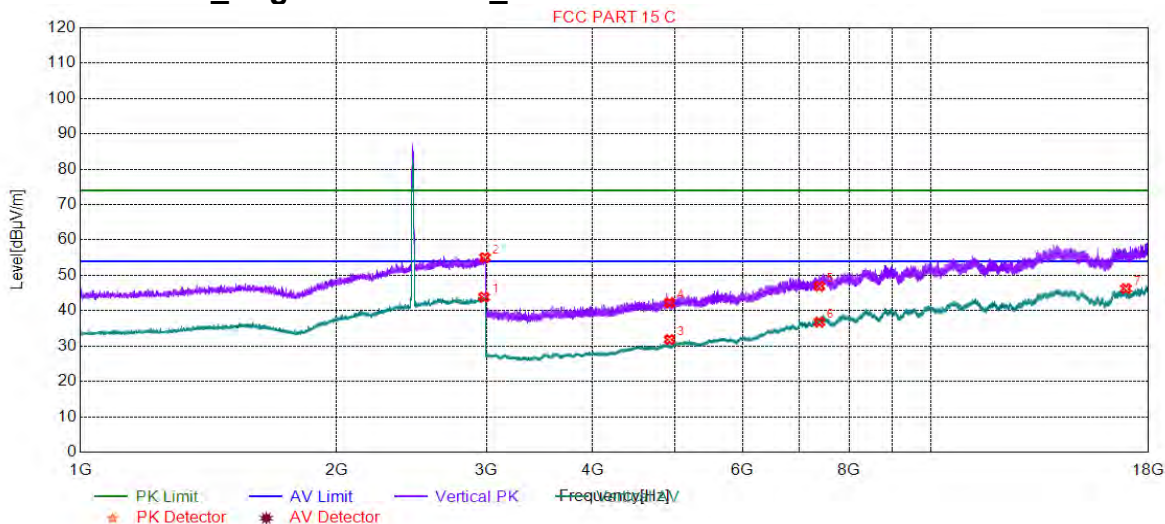
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2973.99	55.00	9.57	74.00	19.00	172	211	Vertical
2	2983.99	44.40	9.52	54.00	9.60	248	239	Vertical
3	4824.00	47.55	-18.21	54.00	6.45	215	232	Vertical
4	4824.00	50.70	-18.21	74.00	23.30	273	232	Vertical
5	7236.00	46.89	-9.99	74.00	27.11	241	18	Vertical
6	7236.00	35.83	-9.99	54.00	18.17	277	119	Vertical
7	17960.3	46.68	0.71	54.00	7.32	276	269	Vertical

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	2952.48	54.96	9.67	74.00	19.04	261	140	Vertical
2	2993.49	44.15	9.48	54.00	9.85	239	264	Vertical
3	4874.00	34.19	-17.99	54.00	19.81	169	261	Vertical
4	4874.00	43.33	-17.99	74.00	30.67	212	288	Vertical
5	7311.00	47.81	-9.74	74.00	26.19	278	68	Vertical
6	7311.00	36.49	-9.74	54.00	17.51	259	119	Vertical
7	17904.2	46.76	0.69	54.00	7.24	296	219	Vertical

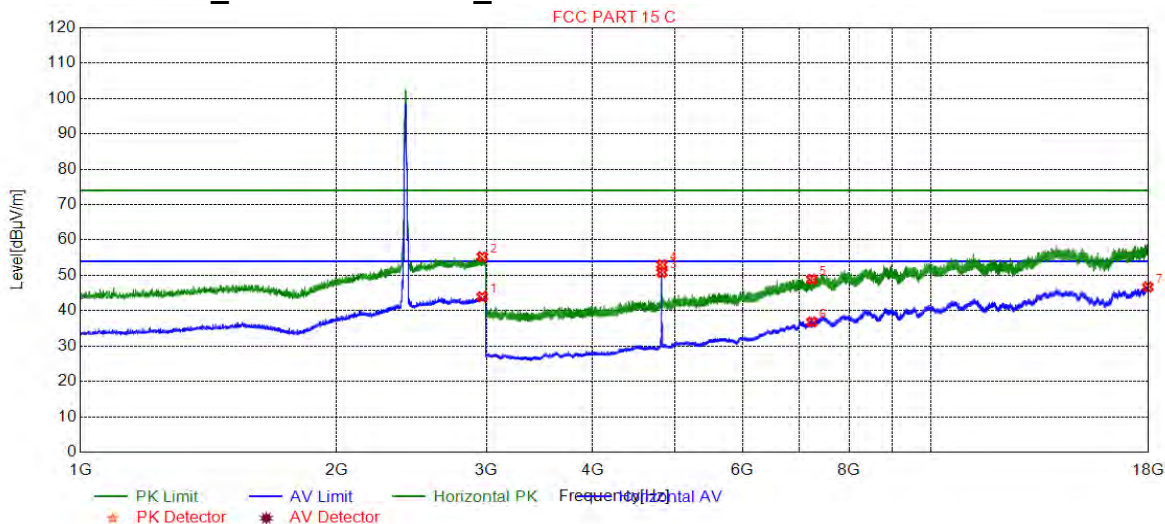
4.9.2.1.3 802.11B_ Highest Channel_ Vertical



Suspected List

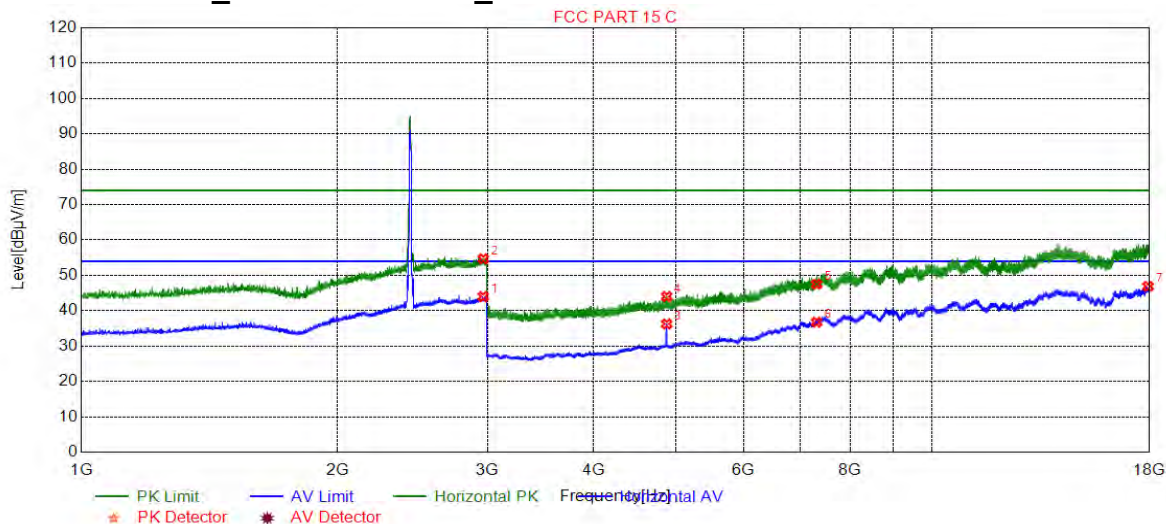
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2981.49	43.86	9.54	54.00	10.14	258	129	Vertical
2	2988.49	55.04	9.50	74.00	18.96	194	197	Vertical
3	4924.00	31.84	-17.72	54.00	22.16	293	260	Vertical
4	4924.00	42.22	-17.72	74.00	31.78	259	205	Vertical
5	7386.00	46.90	-9.55	74.00	27.10	225	320	Vertical
6	7386.00	36.78	-9.55	54.00	17.22	272	320	Vertical
7	16932.3	46.26	0.98	54.00	7.74	295	68	Vertical

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	2965.49	43.95	9.61	54.00	10.05	146	288	Horizontal
2	2966.99	55.26	9.60	74.00	18.74	129	67	Horizontal
3	4824.00	50.80	-18.21	54.00	3.20	105	64	Horizontal
4	4824.00	53.01	-18.21	74.00	20.99	199	64	Horizontal
5	7236.00	48.86	-9.99	74.00	25.14	136	221	Horizontal
6	7236.00	36.79	-9.99	54.00	17.21	148	120	Horizontal
7	17959.2	46.72	0.71	54.00	7.28	112	120	Horizontal

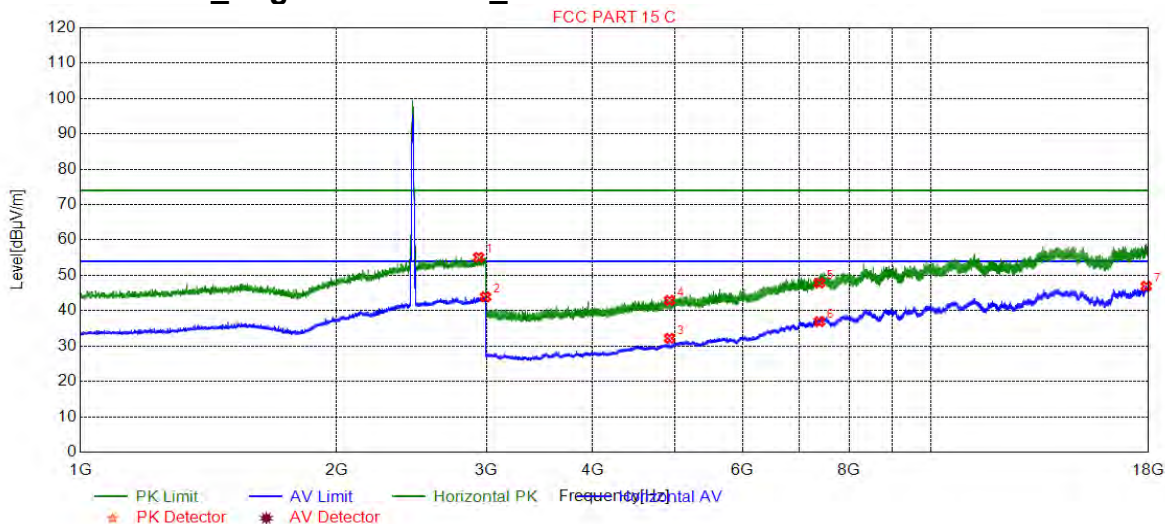
4.9.2.1.5 802.11B_ Middle Channel_ Horizontal



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2965.99	43.99	9.61	54.00	10.01	169	287	Horizontal
2	2966.99	54.68	9.60	74.00	19.32	143	342	Horizontal
3	4874.00	36.25	-17.99	54.00	17.75	164	65	Horizontal
4	4874.00	44.02	-17.99	74.00	29.98	151	65	Horizontal
5	7311.00	47.51	-9.74	74.00	26.49	186	220	Horizontal
6	7311.00	36.76	-9.74	54.00	17.24	173	270	Horizontal
7	17921.8	46.87	0.70	54.00	7.13	125	69	Horizontal

4.9.2.1.6 802.11B_ Highest Channel_ Horizontal

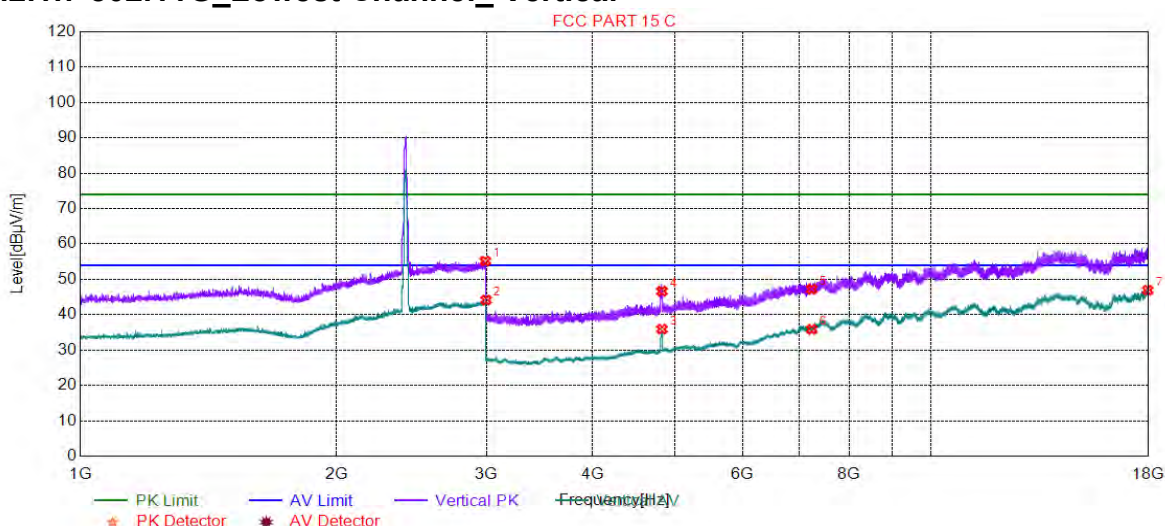


Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2937.98	55.11	9.55	74.00	18.89	177	122	Horizontal
2	2993.49	43.91	9.48	54.00	10.09	245	219	Horizontal
3	4924.00	32.23	-17.72	54.00	21.77	143	70	Horizontal
4	4924.00	42.91	-17.72	74.00	31.09	155	70	Horizontal
5	7386.00	47.85	-9.55	74.00	26.15	161	170	Horizontal
6	7386.00	36.91	-9.55	54.00	17.09	198	69	Horizontal
7	17887.2	46.93	0.52	54.00	7.07	242	170	Horizontal

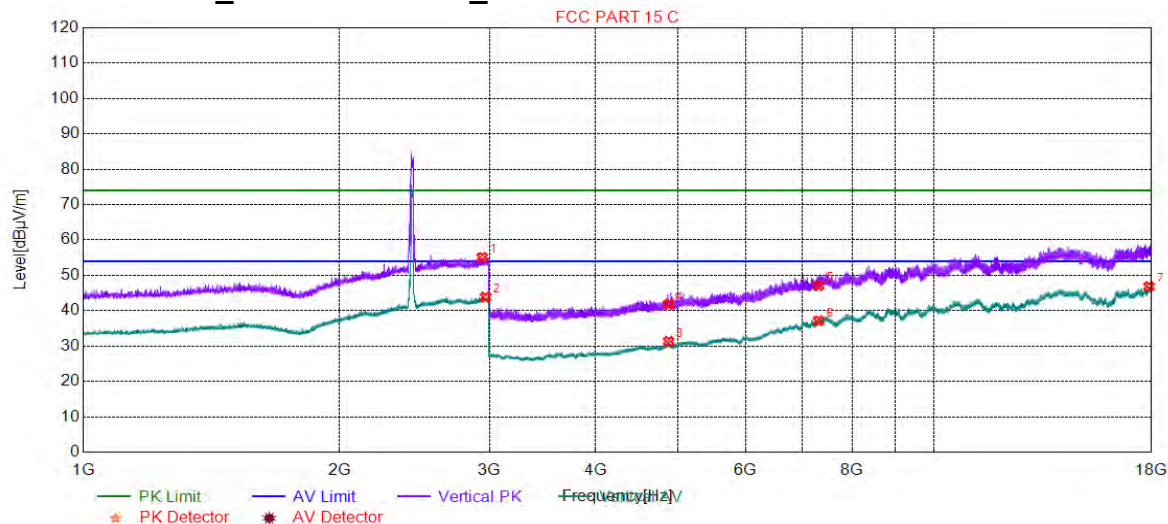


4.9.2.1.7 802.11G_Lowest Channel_Vertical



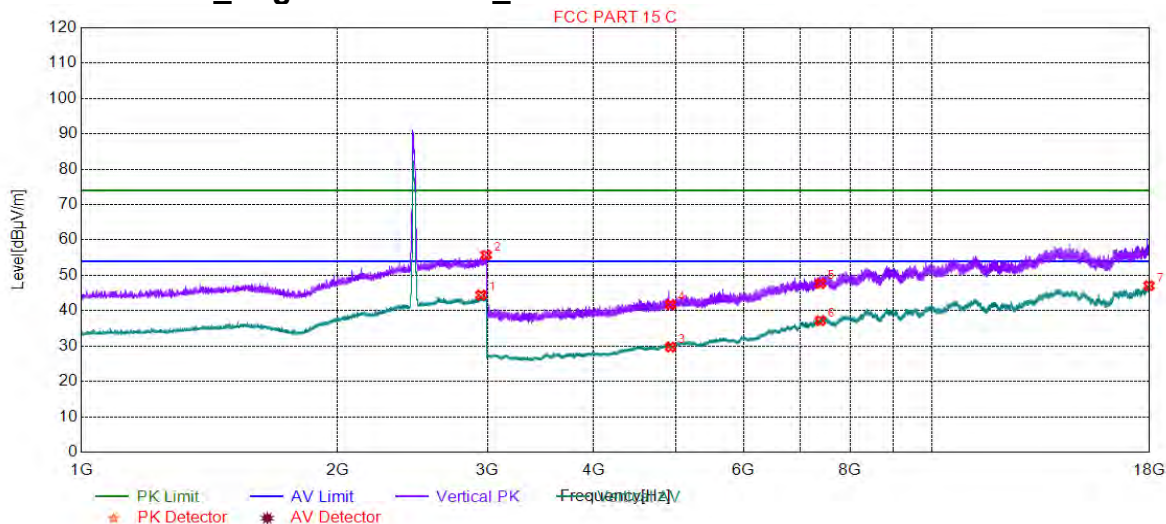
Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2990.99	55.19	9.49	74.00	18.81	263	128	Vertical
2	2997.49	44.15	9.46	54.00	9.85	278	292	Vertical
3	4824.00	35.93	-18.21	54.00	18.07	248	251	Vertical
4	4824.00	46.65	-18.21	74.00	27.35	272	251	Vertical
5	7236.00	47.22	-9.99	74.00	26.78	282	219	Vertical
6	7236.00	35.87	-9.99	54.00	18.13	154	360	Vertical
7	17954.8	46.91	0.71	54.00	7.09	180	169	Vertical

4.9.2.1.8 802.11G_Middle Channel_Vertical



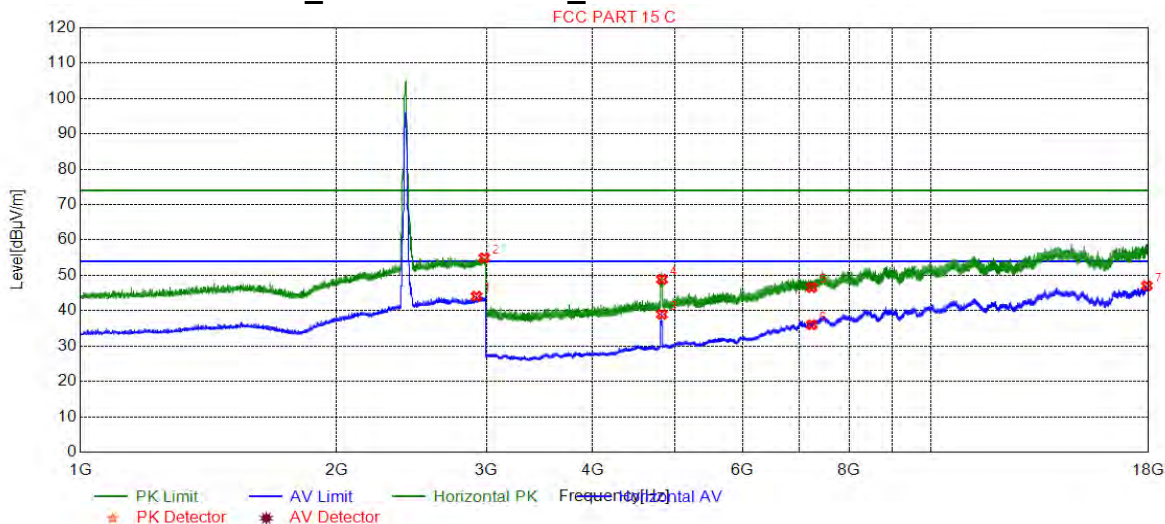
Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2941.98	55.10	9.59	74.00	18.90	211	58	Vertical
2	2968.49	43.85	9.59	54.00	10.15	228	154	Vertical
3	4874.00	31.31	-17.99	54.00	22.69	177	280	Vertical
4	4874.00	41.82	-17.99	74.00	32.18	158	253	Vertical
5	7311.00	47.09	-9.74	74.00	26.91	253	174	Vertical
6	7311.00	37.15	-9.74	54.00	16.85	183	273	Vertical
7	17872.9	46.85	0.33	54.00	7.15	166	324	Vertical

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	2948.98	44.42	9.67	54.00	9.58	280	253	Vertical
2	2989.99	55.74	9.50	74.00	18.26	239	32	Vertical
3	4924.00	29.71	-17.72	54.00	24.29	192	342	Vertical
4	4924.00	41.74	-17.72	74.00	32.26	229	314	Vertical
5	7386.00	47.69	-9.55	74.00	26.31	268	318	Vertical
6	7386.00	37.16	-9.55	54.00	16.84	240	168	Vertical
7	17968.0	47.07	0.71	54.00	6.93	251	168	Vertical

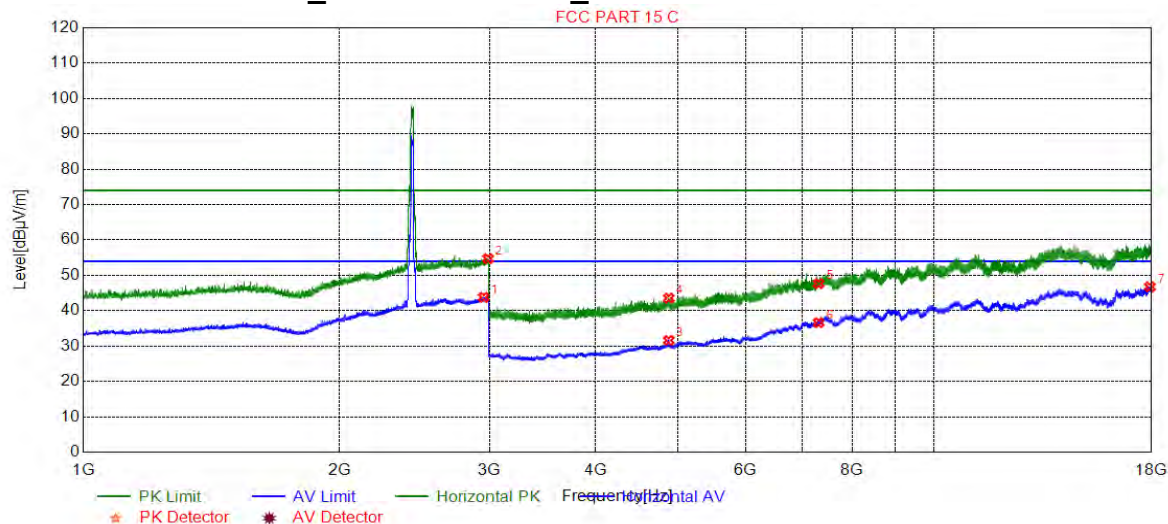
4.9.2.1.10 802.11G_Lowest Channel_ Horizontal



Suspected List

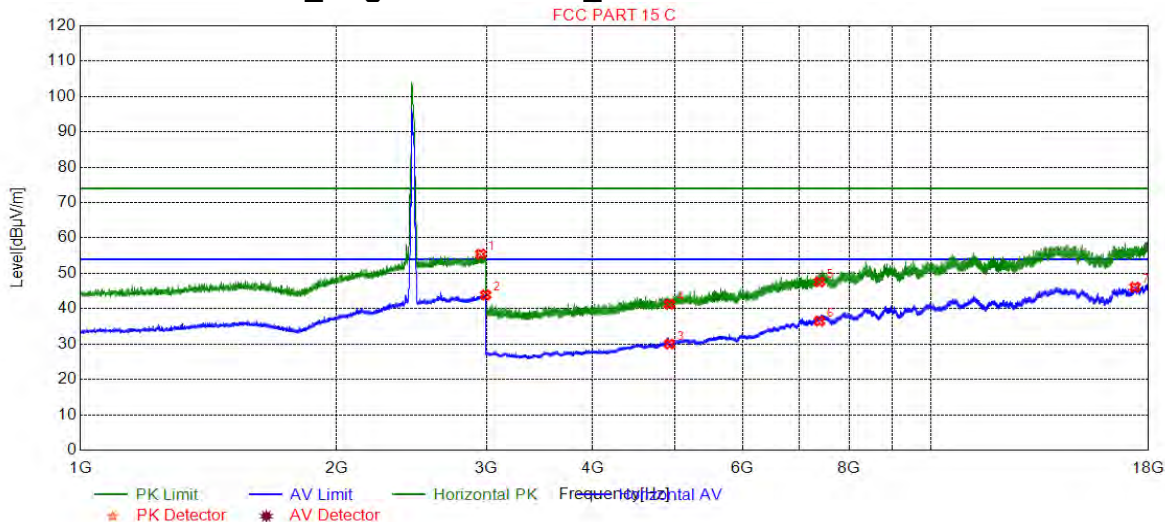
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2920.98	44.07	9.37	54.00	9.93	150	55	Horizontal
2	2982.99	54.96	9.53	74.00	19.04	124	342	Horizontal
3	4824.00	38.97	-18.21	54.00	15.03	212	69	Horizontal
4	4824.00	48.87	-18.21	74.00	25.13	246	42	Horizontal
5	7236.00	46.58	-9.99	74.00	27.42	235	169	Horizontal
6	7236.00	36.01	-9.99	54.00	17.99	180	68	Horizontal
7	17915.8	47.05	0.69	54.00	6.95	171	119	Horizontal

4.9.2.1.11 802.11G_ Middle Channel_ Horizontal



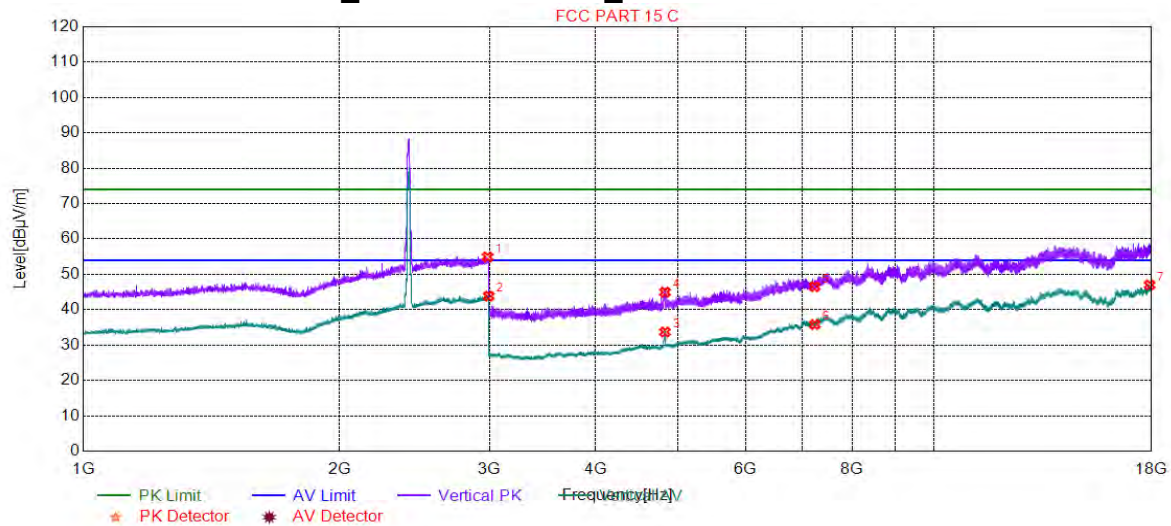
Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2953.98	43.77	9.66	54.00	10.23	157	342	Horizontal
2	2988.99	54.72	9.50	74.00	19.28	180	176	Horizontal
3	4874.00	31.61	-17.99	54.00	22.39	157	67	Horizontal
4	4874.00	43.55	-17.99	74.00	30.45	176	67	Horizontal
5	7311.00	47.66	-9.74	74.00	26.34	128	69	Horizontal
6	7311.00	36.62	-9.74	54.00	17.38	228	69	Horizontal
7	17918.0	46.74	0.70	54.00	7.26	134	118	Horizontal

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	2954.98	55.46	9.66	74.00	18.54	170	329	Horizontal
2	2993.99	43.88	9.48	54.00	10.12	197	303	Horizontal
3	4924.00	30.02	-17.72	54.00	23.98	171	315	Horizontal
4	4924.00	41.27	-17.72	74.00	32.73	242	315	Horizontal
5	7386.00	47.58	-9.55	74.00	26.42	111	269	Horizontal
6	7386.00	36.50	-9.55	54.00	17.50	249	119	Horizontal
7	17349.8	46.09	0.03	54.00	7.91	212	18	Horizontal

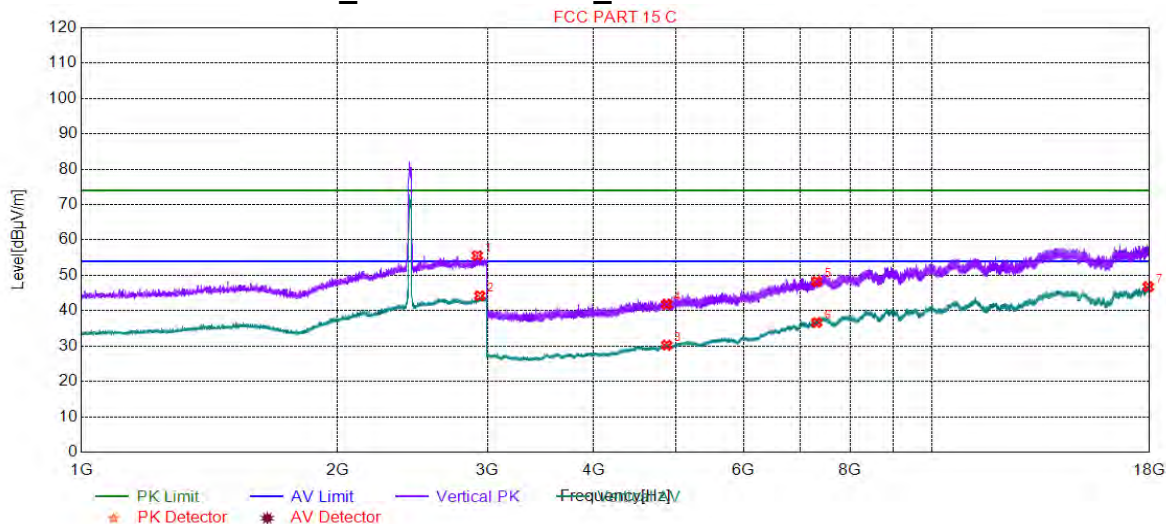
4.9.2.1.13 802.11N20_Lowest Channel_Vertical



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2985.49	54.92	9.52	74.00	19.08	254	217	Vertical
2	2994.49	43.84	9.48	54.00	10.16	240	176	Vertical
3	4824.00	33.69	-18.21	54.00	20.31	157	261	Vertical
4	4824.00	44.97	-18.21	74.00	29.03	161	234	Vertical
5	7236.00	46.53	-9.99	74.00	27.47	262	68	Vertical
6	7236.00	35.83	-9.99	54.00	18.17	223	119	Vertical
7	17902.6	47.00	0.69	54.00	7.00	211	119	Vertical

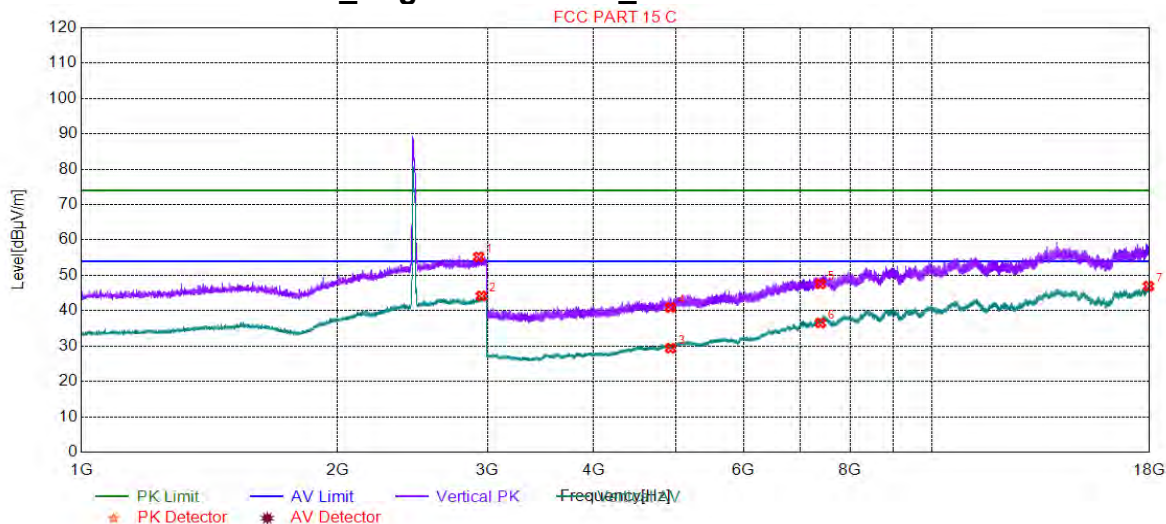
4.9.2.1.14 802.11N20_Middle Channel_Vertical



Suspected List

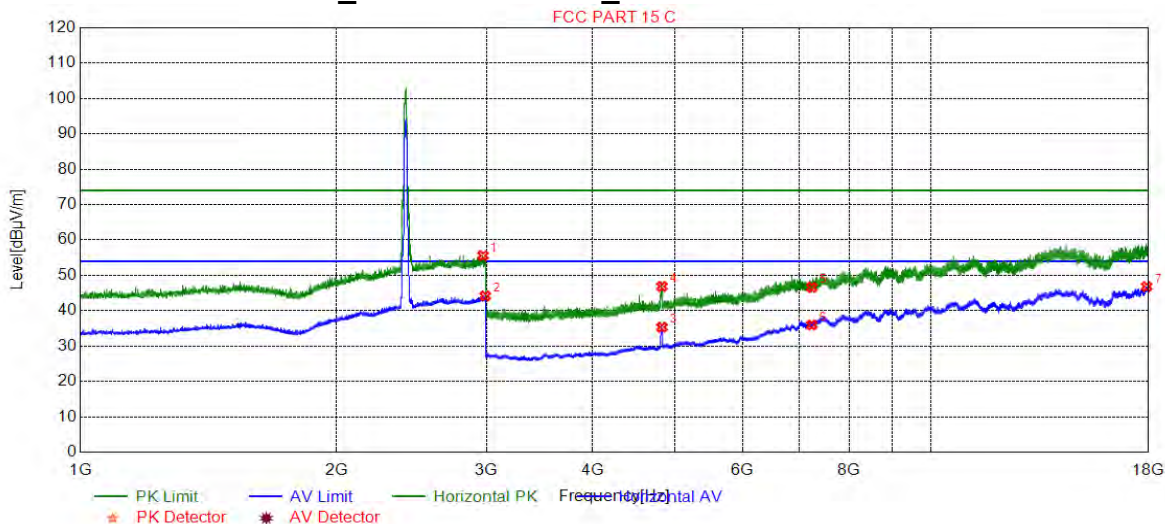
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2918.97	55.58	9.34	74.00	18.42	235	306	Vertical
2	2938.98	44.22	9.56	54.00	9.78	260	358	Vertical
3	4874.00	30.25	-17.99	54.00	23.75	247	259	Vertical
4	4874.00	41.83	-17.99	74.00	32.17	192	259	Vertical
5	7311.00	48.27	-9.74	74.00	25.73	170	360	Vertical
6	7311.00	36.65	-9.74	54.00	17.35	297	360	Vertical
7	17929.5	46.77	0.70	54.00	7.23	287	219	Vertical

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	2929.98	55.23	9.46	74.00	18.77	264	140	Vertical
2	2951.98	44.15	9.67	54.00	9.85	201	346	Vertical
3	4924.00	29.39	-17.72	54.00	24.61	269	260	Vertical
4	4924.00	40.87	-17.72	74.00	33.13	215	69	Vertical
5	7386.00	47.58	-9.55	74.00	26.42	261	69	Vertical
6	7386.00	36.53	-9.55	54.00	17.47	283	168	Vertical
7	17945.5	46.92	0.70	54.00	7.08	220	219	Vertical

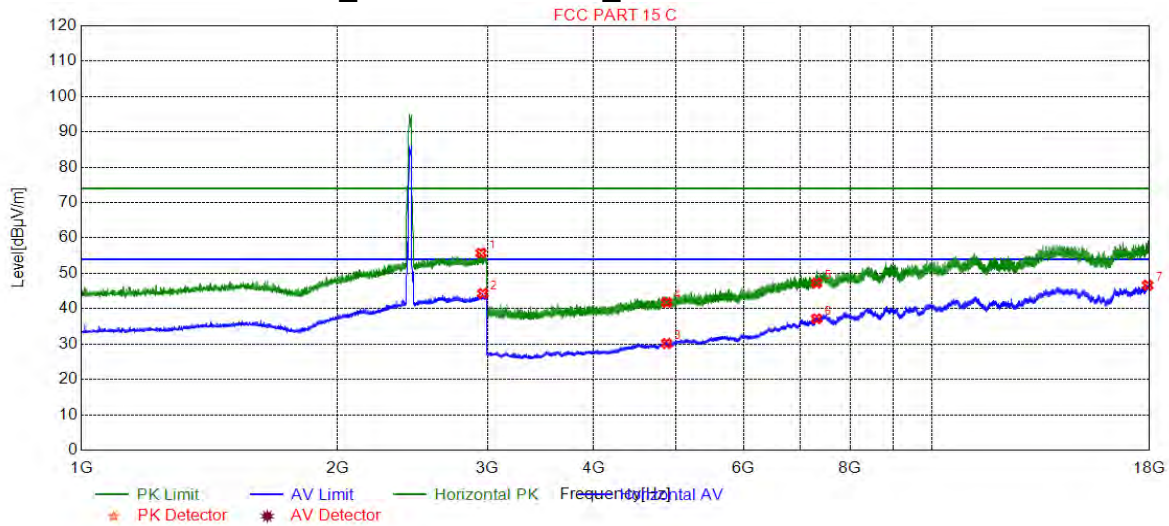
4.9.2.1.16 802.11N20_Lowest Channel_Horizontal



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2971.99	55.58	9.58	74.00	18.42	127	245	Horizontal
2	2990.49	44.17	9.49	54.00	9.83	224	300	Horizontal
3	4824.00	35.33	-18.21	54.00	18.67	212	62	Horizontal
4	4824.00	46.84	-18.21	74.00	27.16	110	62	Horizontal
5	7236.00	46.60	-9.99	74.00	27.40	125	360	Horizontal
6	7236.00	35.96	-9.99	54.00	18.04	188	360	Horizontal
7	17905.9	46.80	0.69	54.00	7.20	126	18	Horizontal

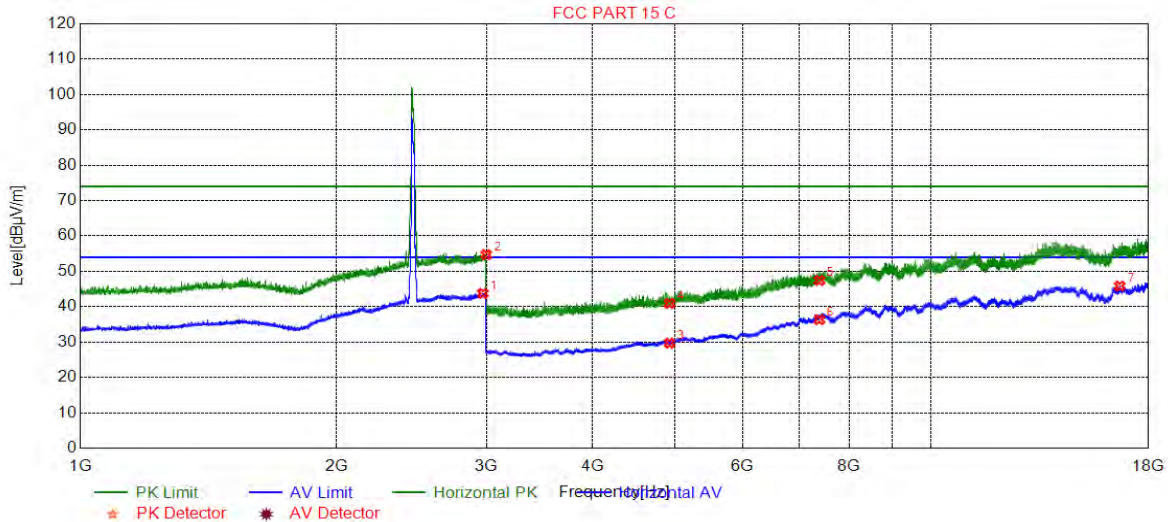
4.9.2.1.17 802.11N20_ Middle Channel_ Horizontal



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2949.48	55.75	9.67	74.00	18.25	188	342	Horizontal
2	2963.49	44.31	9.62	54.00	9.69	170	120	Horizontal
3	4874.00	30.15	-17.99	54.00	23.85	189	233	Horizontal
4	4874.00	41.78	-17.99	74.00	32.22	218	342	Horizontal
5	7311.00	47.27	-9.74	74.00	26.73	100	220	Horizontal
6	7311.00	37.18	-9.74	54.00	16.82	167	360	Horizontal
7	17907.5	46.63	0.69	54.00	7.37	116	270	Horizontal

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	2971.49	43.78	9.58	54.00	10.22	179	125	Horizontal
2	2998.99	54.72	9.45	74.00	19.28	129	97	Horizontal
3	4924.00	29.71	-17.72	54.00	24.29	106	96	Horizontal
4	4924.00	40.92	-17.72	74.00	33.08	149	96	Horizontal
5	7386.00	47.44	-9.55	74.00	26.56	125	321	Horizontal
6	7386.00	36.35	-9.55	54.00	17.65	218	270	Horizontal
7	16650.7	45.85	0.40	54.00	8.15	153	119	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:			

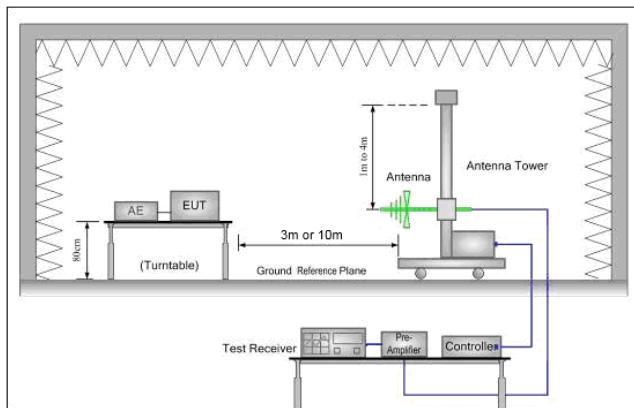


Figure 1. 30MHz to 1GHz

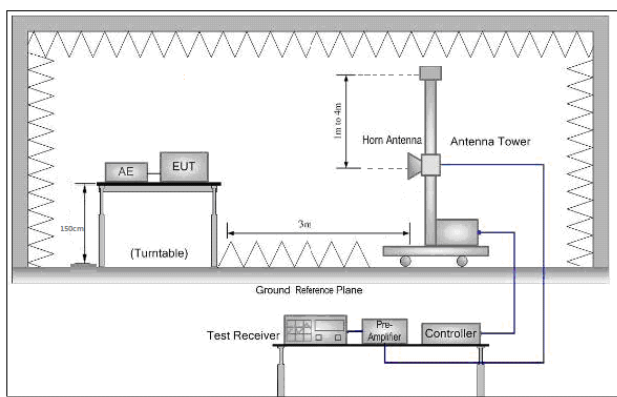


Figure 2. Above 1 GHz



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 chamber. 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 chamber. 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 rotating 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

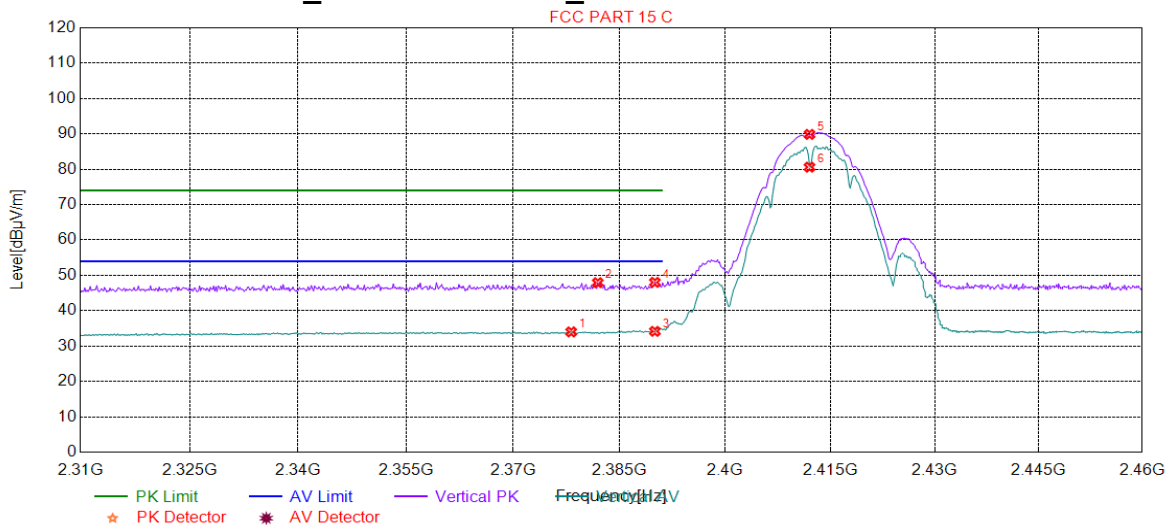




Test plot as follows:

4.10.1 ANT1

4.10.1.1 802.11B_Lowest Channel_ Vertical



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2378.16	34.01	7.78	54.00	19.99	212	223	Vertical
2	2381.92	47.94	7.78	74.00	26.06	193	14	Vertical
3	2390.00	34.17	7.77	54.00	19.83	222	223	Vertical
4	2390.00	48.03	7.77	74.00	25.97	174	29	Vertical
5	2412.00	89.86	7.81	136.99	-	192	14	Vertical
6	2412.00	80.59	7.81	136.99	-	223	14	Vertical

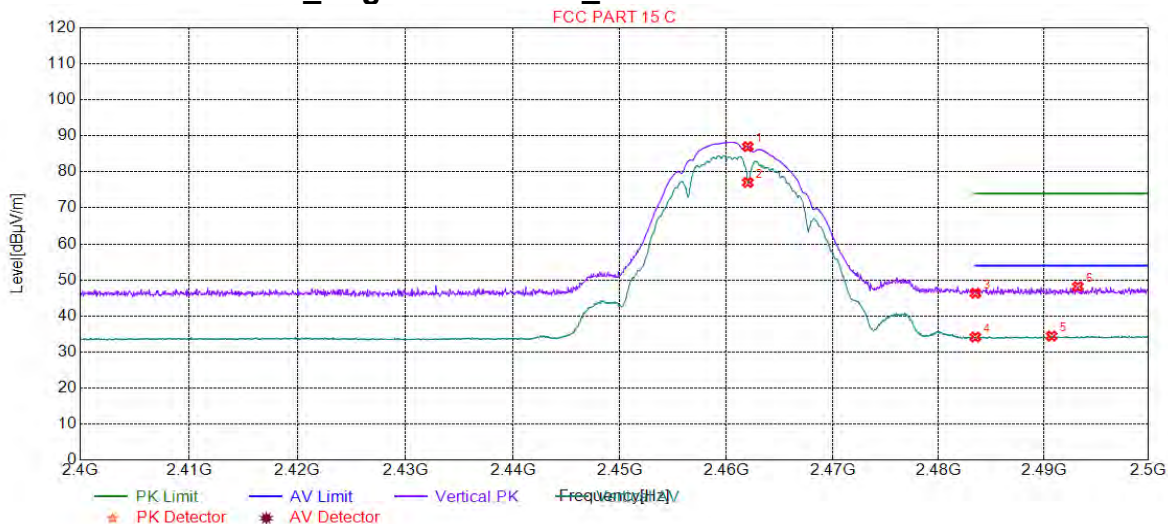


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4.10.1.2 802.11B_ Highest Channel_ Vertical

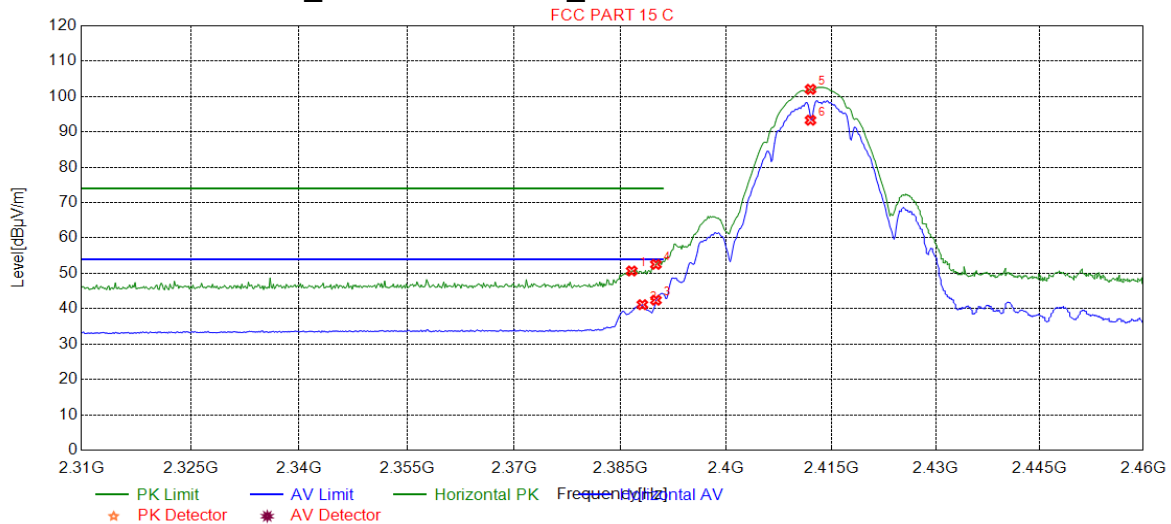


Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.00	87.01	7.98	136.99	-	245	233	Vertical
2	2462.00	77.05	7.98	136.99	-	238	227	Vertical
3	2483.50	46.34	8.01	74.00	27.66	217	105	Vertical
4	2483.50	34.15	8.01	54.00	19.85	197	40	Vertical
5	2490.74	34.43	8.02	54.00	19.57	182	105	Vertical
6	2493.24	48.17	8.02	74.00	25.83	253	14	Vertical



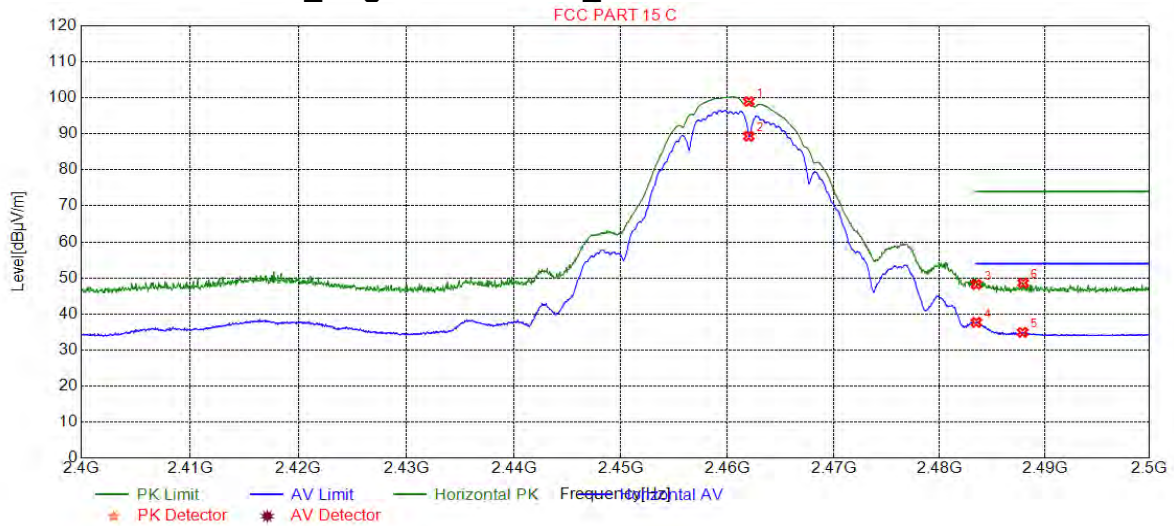
4.10.1.3 802.11B_Lowest Channel_Horizontal



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2386.57	50.67	7.77	74.00	23.33	167	286	Horizontal
2	2388.07	41.15	7.77	54.00	12.85	110	281	Horizontal
3	2390.00	42.42	7.77	54.00	11.58	213	286	Horizontal
4	2390.00	52.53	7.77	74.00	21.47	185	286	Horizontal
5	2412.00	102.03	7.81	136.99	-	102	277	Horizontal
6	2412.00	93.30	7.81	136.99	-	238	281	Horizontal

4.10.1.4 802.11B_ Highest Channel_ Horizontal

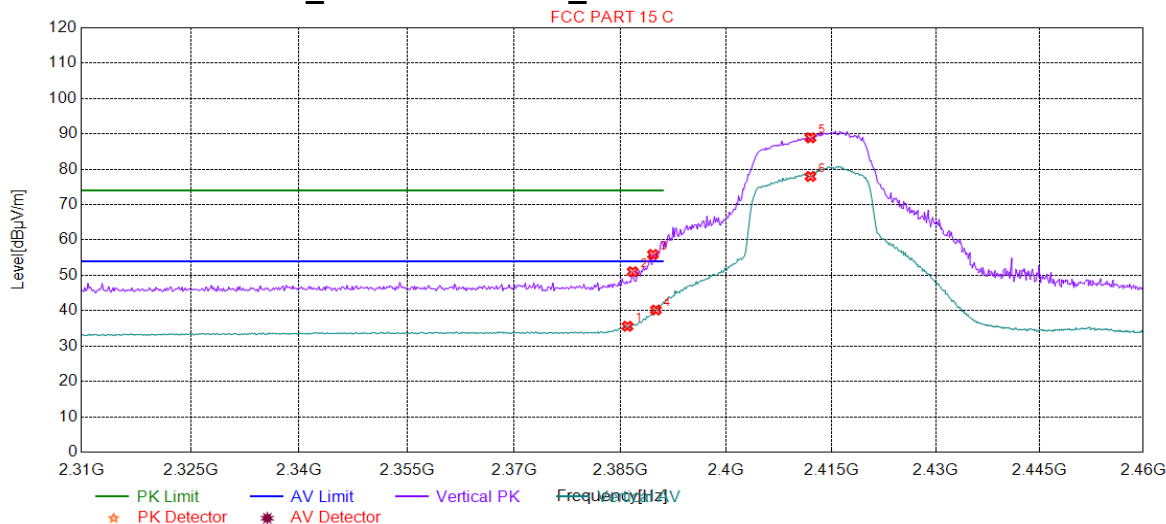


Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.00	98.97	7.98	136.99	-	175	282	Horizontal
2	2462.00	89.34	7.98	136.99	-	108	282	Horizontal
3	2483.50	48.20	8.01	74.00	25.80	209	287	Horizontal
4	2483.50	37.67	8.01	54.00	16.33	218	276	Horizontal
5	2487.89	34.92	8.02	54.00	19.08	109	270	Horizontal
6	2487.94	48.60	8.02	74.00	25.40	229	167	Horizontal



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	2385.97	35.61	7.77	54.00	18.39	237	331	Vertical
2	2386.72	51.04	7.77	74.00	22.96	284	327	Vertical
3	2389.57	55.91	7.77	74.00	18.09	261	210	Vertical
4	2390.00	40.20	7.77	54.00	13.80	191	327	Vertical
5	2412.00	88.89	7.81	136.99	-	267	234	Vertical
6	2412.00	77.96	7.81	136.99	-	223	230	Vertical



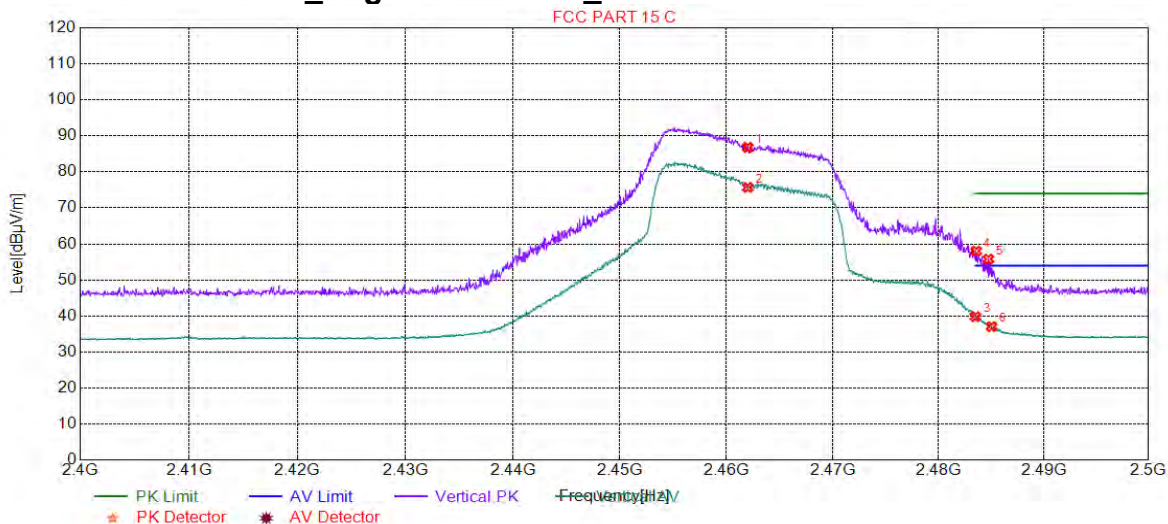
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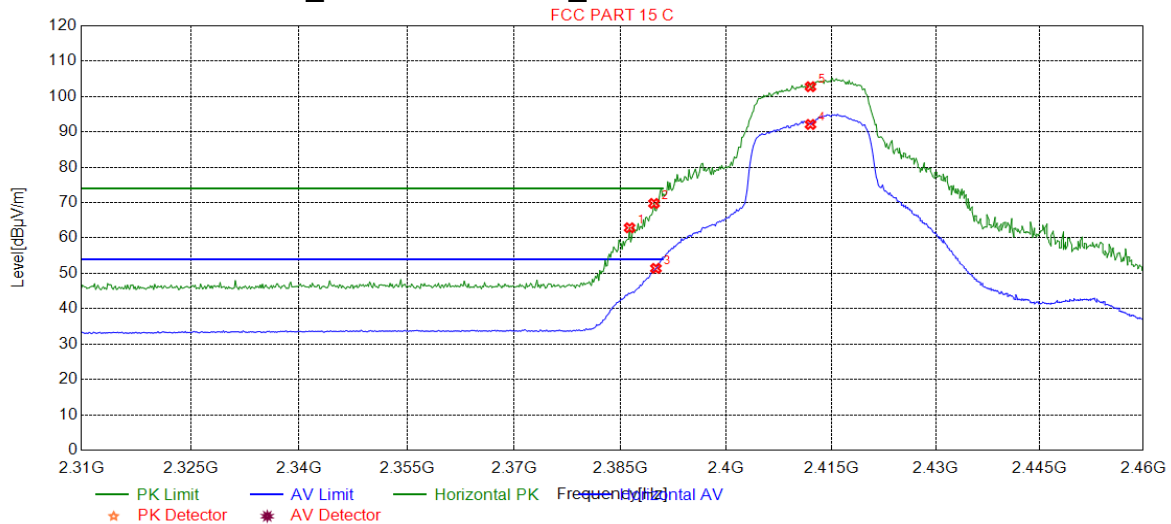
4.10.1.6 802.11G_ Highest Channel_ Vertical



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.00	86.78	7.98	136.99	-	175	227	Vertical
2	2462.00	75.67	7.98	136.99	-	194	227	Vertical
3	2483.50	39.83	8.01	54.00	14.17	240	183	Vertical
4	2483.59	58.02	8.01	74.00	15.98	264	183	Vertical
5	2484.74	55.78	8.01	74.00	18.22	192	183	Vertical
6	2485.04	37.05	8.01	54.00	16.95	178	183	Vertical

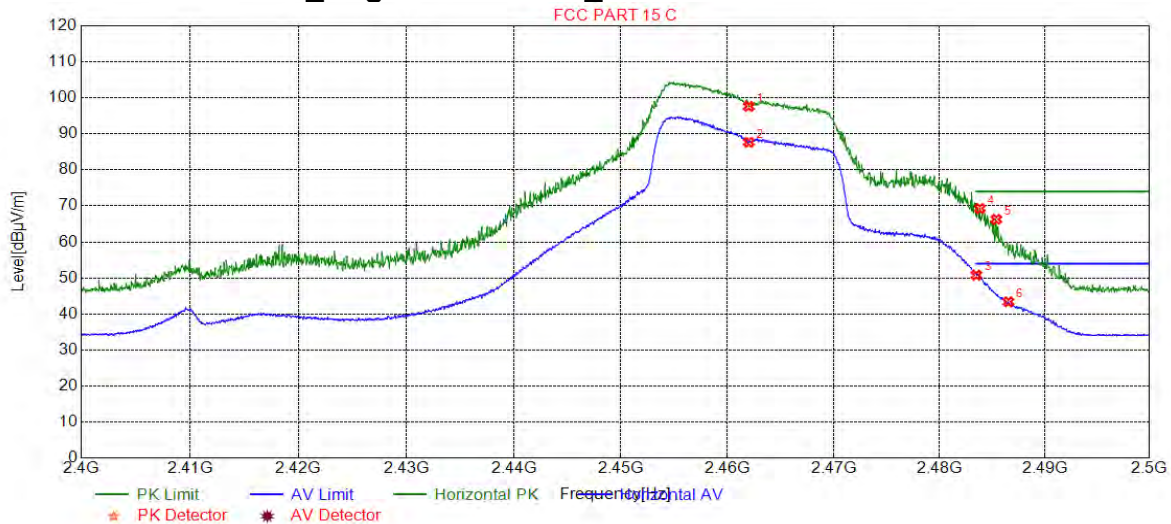
4.10.1.7 802.11G_Lowest Channel_ Horizontal



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2386.27	62.88	7.77	74.00	11.12	175	282	Horizontal
2	2389.72	69.77	7.77	74.00	4.23	194	282	Horizontal
3	2390.00	51.41	7.77	54.00	2.59	240	286	Horizontal
4	2412.00	92.10	7.81	136.99	-	264	282	Horizontal
5	2412.00	102.78	7.81	136.99	-	192	278	Horizontal

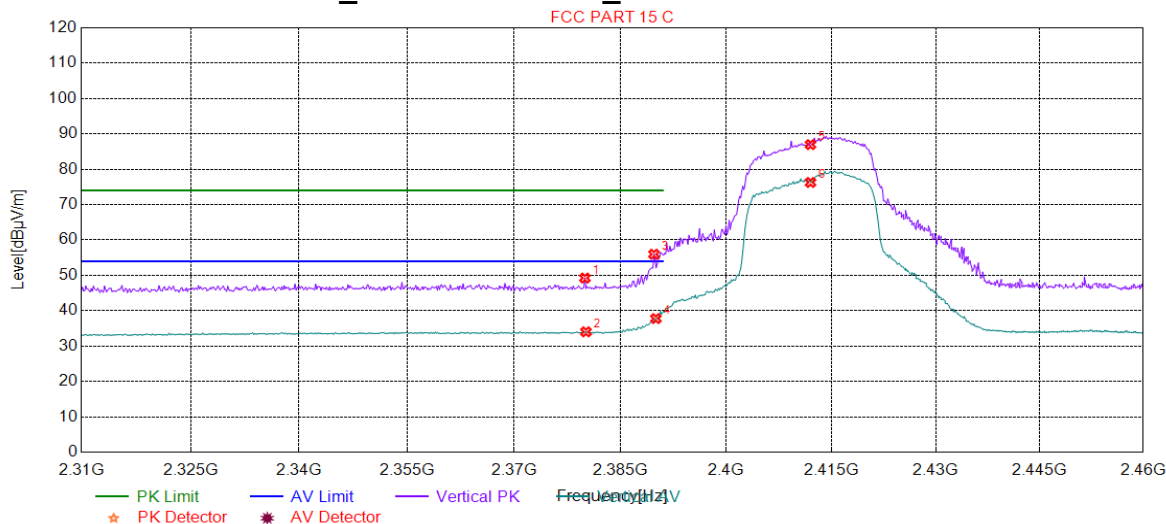
4.10.1.8 802.11G_ Highest Channel_ Horizontal



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.00	97.61	7.98	136.99	-	157	274	Horizontal
2	2462.00	87.67	7.98	136.99	-	139	280	Horizontal
3	2483.50	50.78	8.01	54.00	3.22	163	286	Horizontal
4	2483.84	69.28	8.01	74.00	4.72	211	274	Horizontal
5	2485.39	66.27	8.01	74.00	7.73	154	269	Horizontal
6	2486.54	43.37	8.01	54.00	10.63	131	286	Horizontal

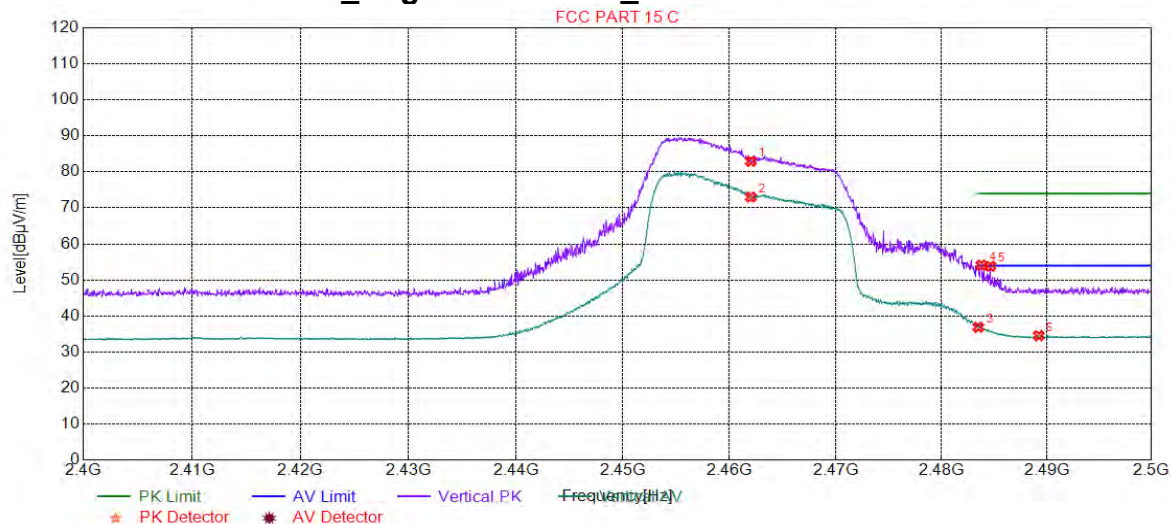
4.10.1.9 802.11N20_Lowest Channel_Vertical



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2379.97	49.24	7.78	74.00	24.76	216	360	Vertical
2	2380.12	34.04	7.78	54.00	19.96	254	50	Vertical
3	2389.72	55.98	7.77	74.00	18.02	203	210	Vertical
4	2390.00	37.78	7.77	54.00	16.22	226	325	Vertical
5	2412.00	86.96	7.81	136.99	-	293	222	Vertical
6	2412.00	76.27	7.81	136.99	-	174	17	Vertical

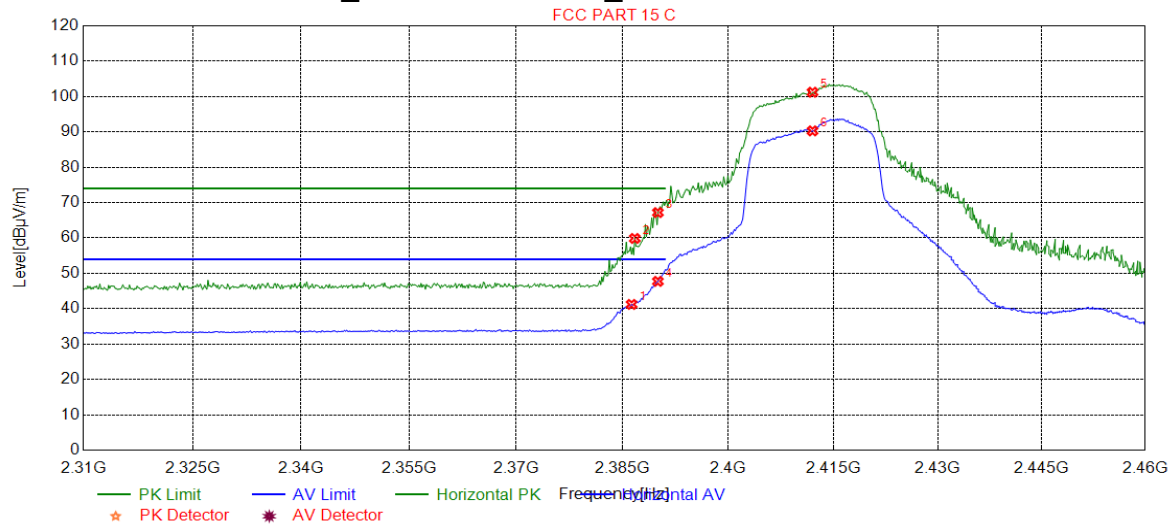
4.10.1.10 802.11N20_ Highest Channel_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.00	82.96	7.98	136.99	-	244	229	Vertical
2	2462.00	73.00	7.98	136.99	-	169	229	Vertical
3	2483.50	36.87	8.01	54.00	17.13	183	178	Vertical
4	2483.79	54.12	8.01	74.00	19.88	264	178	Vertical
5	2484.64	53.80	8.01	74.00	20.20	151	178	Vertical
6	2489.24	34.51	8.02	54.00	19.49	159	145	Vertical



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	2386.27	41.22	7.77	54.00	12.78	142	274	Horizontal
2	2386.72	59.87	7.77	74.00	14.13	224	283	Horizontal
3	2390.00	67.18	7.77	74.00	6.82	146	106	Horizontal
4	2390.00	47.73	7.77	54.00	6.27	168	278	Horizontal
5	2412.00	101.21	7.81	136.99	-	136	283	Horizontal
6	2412.00	90.28	7.81	136.99	-	240	278	Horizontal



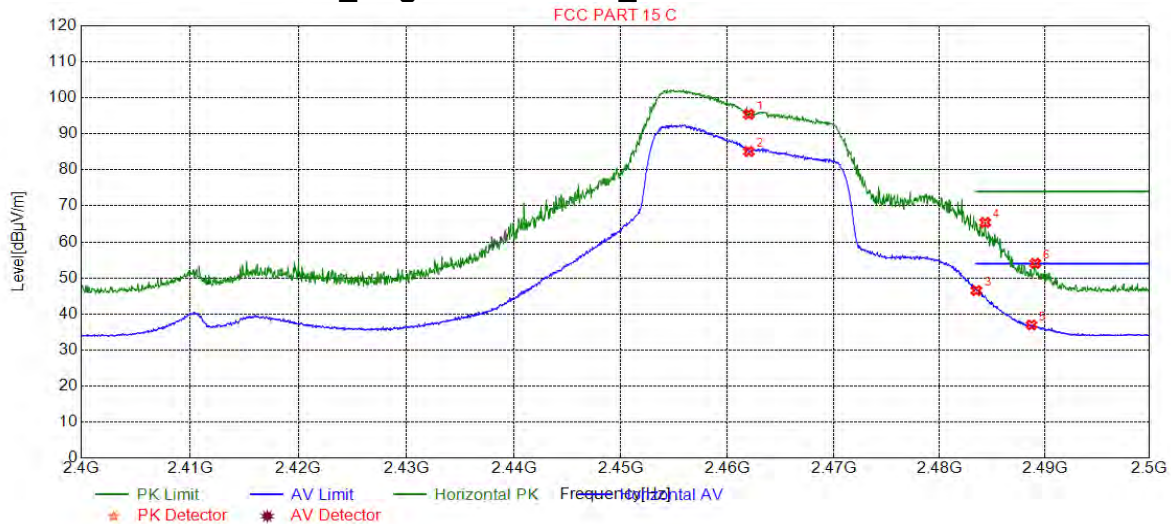
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4.10.1.12 802.11N20_ Highest Channel_ Horizontal



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.00	95.44	7.98	136.99	-	199	276	Horizontal
2	2462.00	85.12	7.98	136.99	-	226	276	Horizontal
3	2483.50	46.51	8.01	54.00	7.49	125	282	Horizontal
4	2484.34	65.38	8.01	74.00	8.62	225	270	Horizontal
5	2488.74	36.97	8.02	54.00	17.03	222	276	Horizontal
6	2489.09	54.04	8.02	74.00	19.96	113	276	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.





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

Lab A:

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	$\pm 0.75\text{dB}$
2	RF power density, conducted	$\pm 2.84\text{dB}$
3	Spurious emissions, conducted	$\pm 0.75\text{dB}$
4	Temperature test	$\pm 1^{\circ}\text{C}$
5	Humidity test	$\pm 3\%$
6	DC and low frequency voltages	$\pm 0.5\%$

Lab B:

No.	Item	Measurement Uncertainty
1	Conduction Emission	$\pm 3.0\text{dB}$ (150kHz to 30MHz)
2	Radiated Emission	$\pm 4.8\text{dB}$ (Below 1GHz)
		$\pm 4.8\text{dB}$ (1GHz to 6GHz)
		$\pm 4.5\text{dB}$ (6GHz to 18GHz)
		$\pm 5.02\text{dB}$ (Above 18GHz)





6 Equipment List

RF conducted test					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date	Cal. Due date
				(yyyy-mm-dd)	(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	2020/1/3	2021/1/2
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	2019/10/27	2020/10/27
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019/7/14	2020/7/14

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	2019-12-06	2020-12-05
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	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	2019-11-18	2020-11-17
Amplifier	Tonscend	TAP01018048	XAW01-41-02	2019-11-18	2020-11-17
Amplifier	Tonscend	TAP18040048	XAW01-41-03	2019-12-03	2020-12-02
Amplifier	Shanghai Steed	YX28980930	XAW01-41-06	2019-11-18	2020-11-17
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2019-12-06	2020-12-05
Measurement Software	Tonscend	TS+ RSE V3.0.0.2	XAW02-05-01	NCR	NCR

7 Photographs - EUT Constructional Details

Refer to Appendix A - Photographs of Set-Up for HR/2020/30023.

The End



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