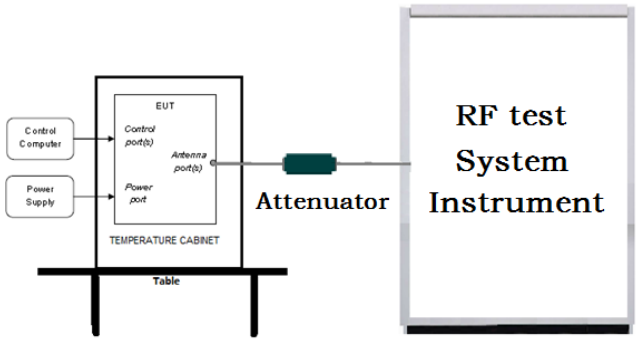
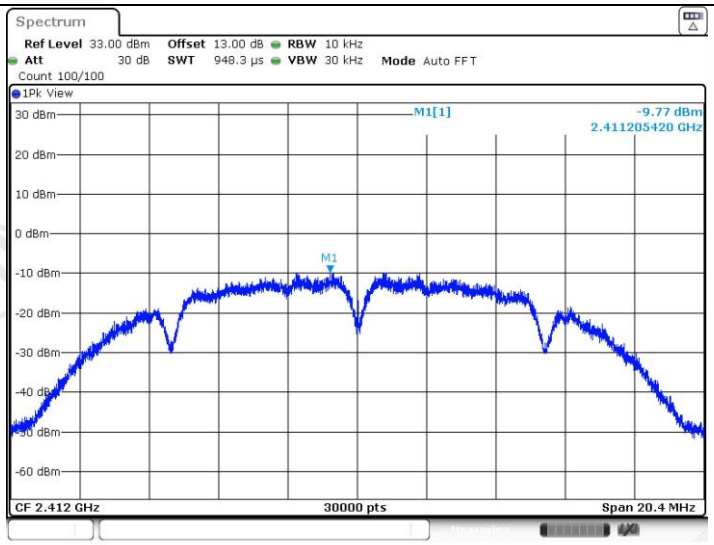
Appendix E): Maximum Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10 2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	a) Set analyzer center frequency to DTS channel center frequency. b) Set the span to 1.5 times the DTS bandwidth. c) Set the RBW to 3 kHz ＜ RBW ＜ 100 kHz. d) Set the VBW ＞ [3 × RBW]. e) Detector = peak. f) Sweep time = auto couple. g) Trace mode = max hold. h) Allow trace to fully stabilize. i) Use the peak marker function to determine the maximum amplitude level within the RBW. j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.
Limit:	≤8.00dBm/3kHz
Test Mode:	Refer to clause 2.2
Test Results:	Pass

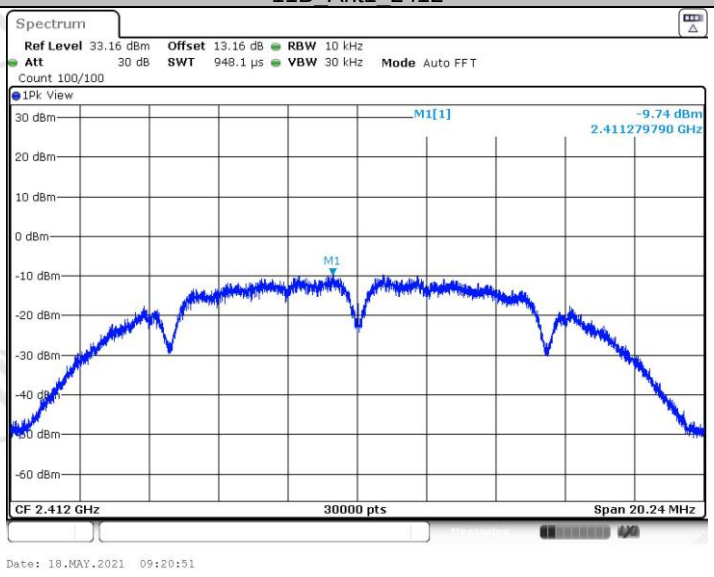
Result Table:

Test Mode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-9.77	<=8	PASS
	Ant2	2412	-9.74	<=8	PASS
	Ant1	2437	-9.32	<=8	PASS
	Ant2	2437	-9.49	<=8	PASS
	Ant1	2462	-10.19	<=8	PASS
	Ant2	2462	-9.91	<=8	PASS
	Total	2412	-6.74	<=8	PASS
		2437	-6.39	<=8	PASS
		2462	-7.04	<=8	PASS
11G	Ant1	2412	-11.43	<=8	PASS
	Ant2	2412	-10.95	<=8	PASS
	Ant1	2437	-11.81	<=8	PASS
	Ant2	2437	-11.13	<=8	PASS
	Ant1	2462	-11.44	<=8	PASS
	Ant2	2462	-11.54	<=8	PASS
	Total	2412	-8.17	<=8	PASS
		2437	-8.45	<=8	PASS
		2462	-8.48	<=8	PASS
11N20	Ant1	2412	-13.48	<=8	PASS
	Ant2	2412	-13.08	<=8	PASS
	Ant1	2437	-13.03	<=8	PASS
	Ant2	2437	-12.98	<=8	PASS
	Ant1	2462	-12.68	<=8	PASS
	Ant2	2462	-12.39	<=8	PASS
	Total	2412	-10.27	<=8	PASS
		2437	-9.99	<=8	PASS
		2462	-9.52	<=8	PASS

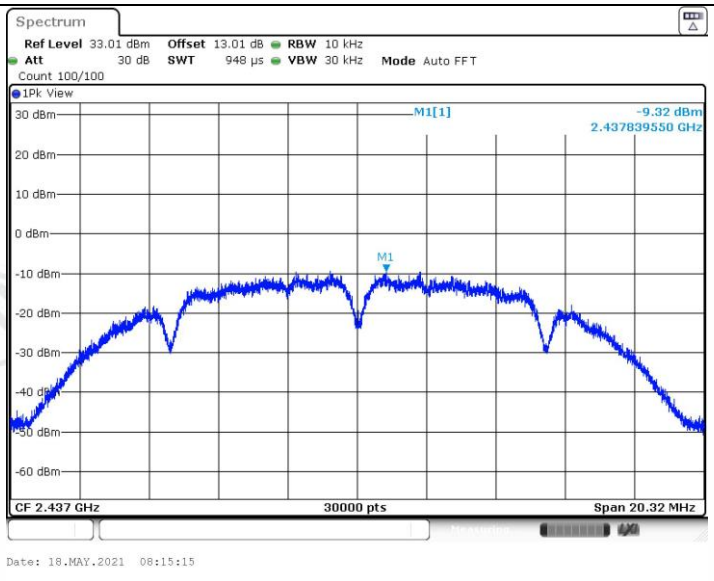
Test Graph:



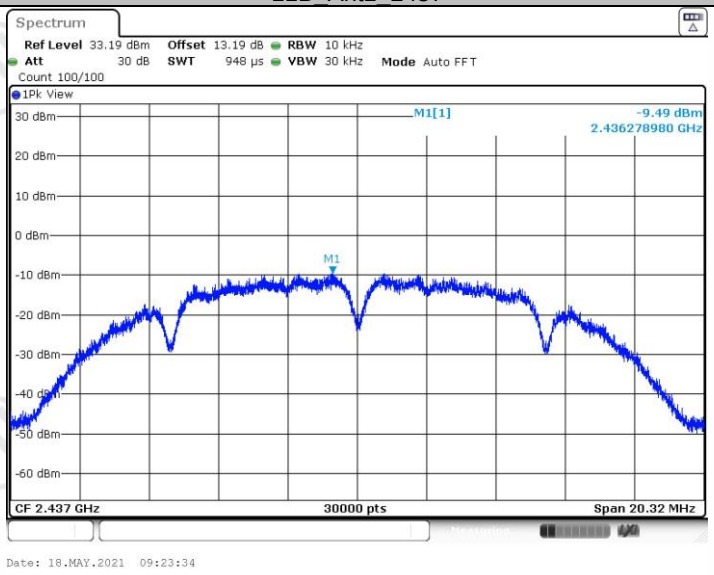
11B_Ant1_2412



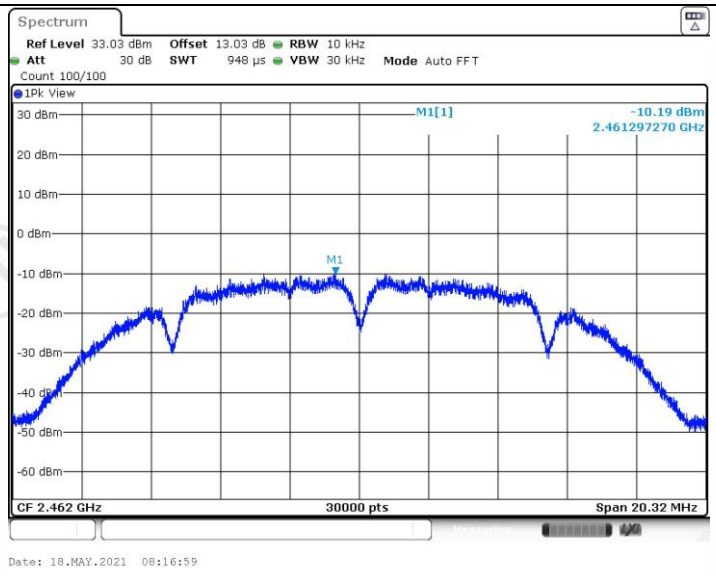
11B_Ant2_2412



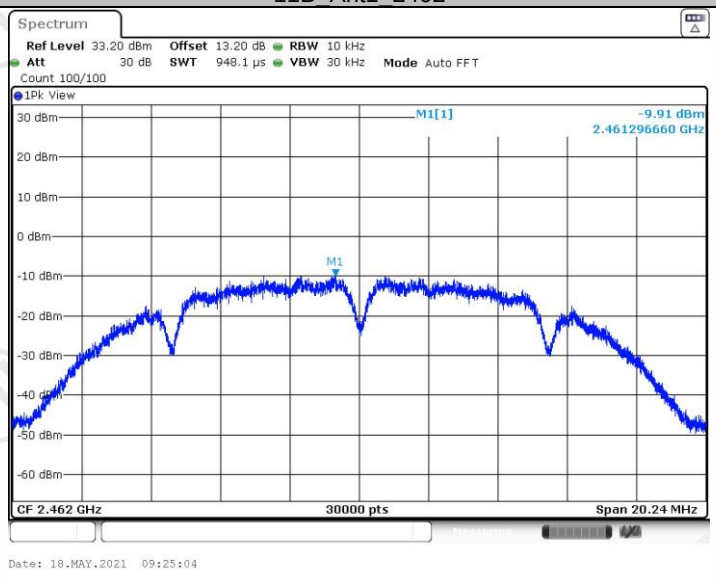
11B_Ant1_2437



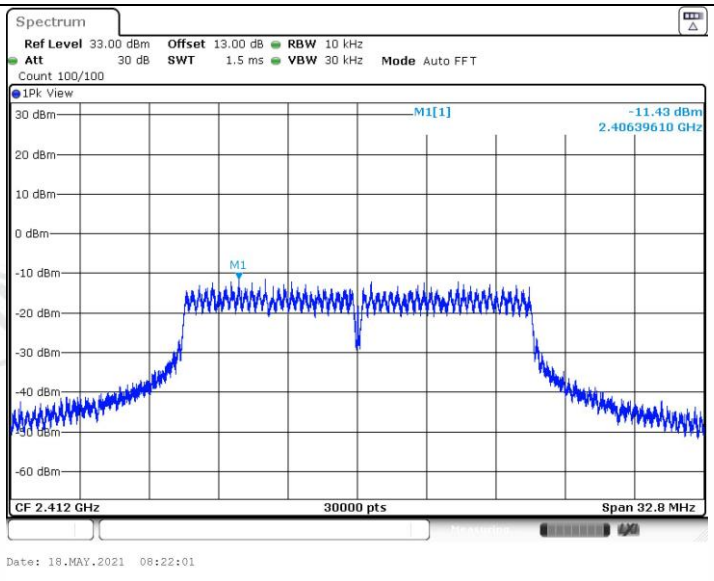
11B_Ant2_2437



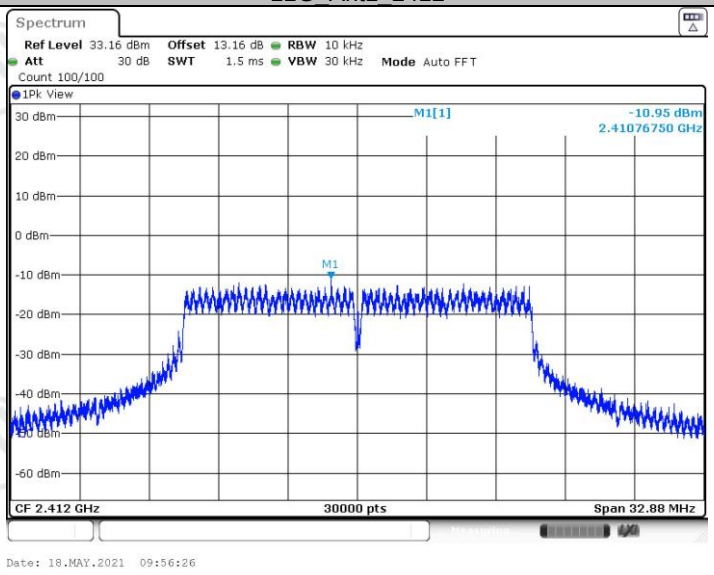
11B_Ant1_2462



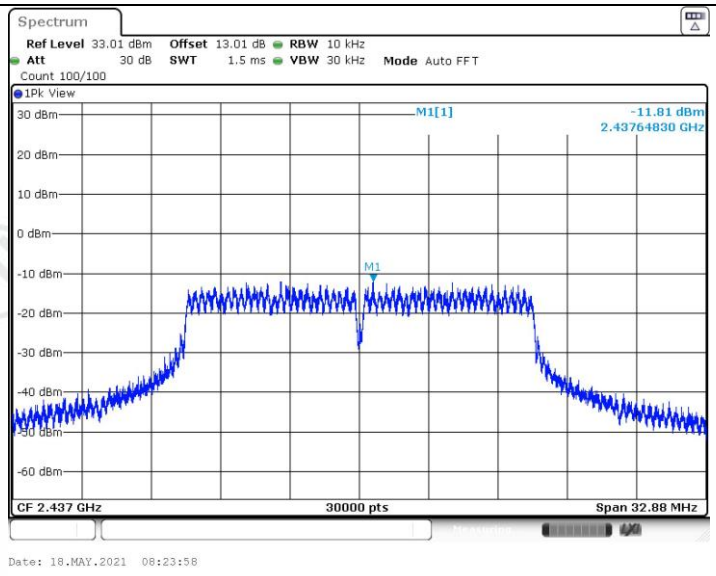
11B_Ant2_2462



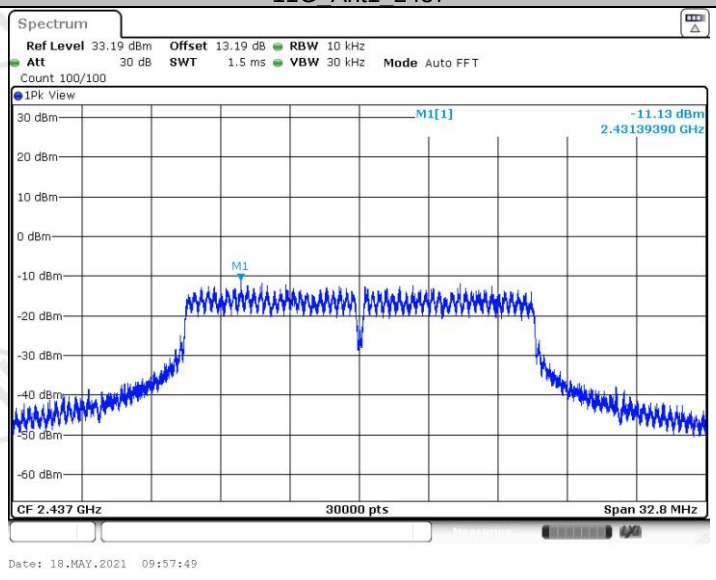
11G_Ant1_2412



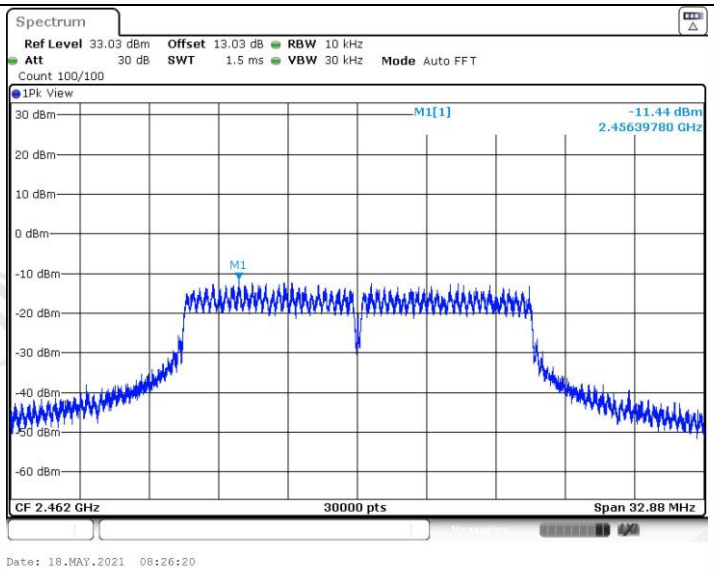
11G_Ant2_2412



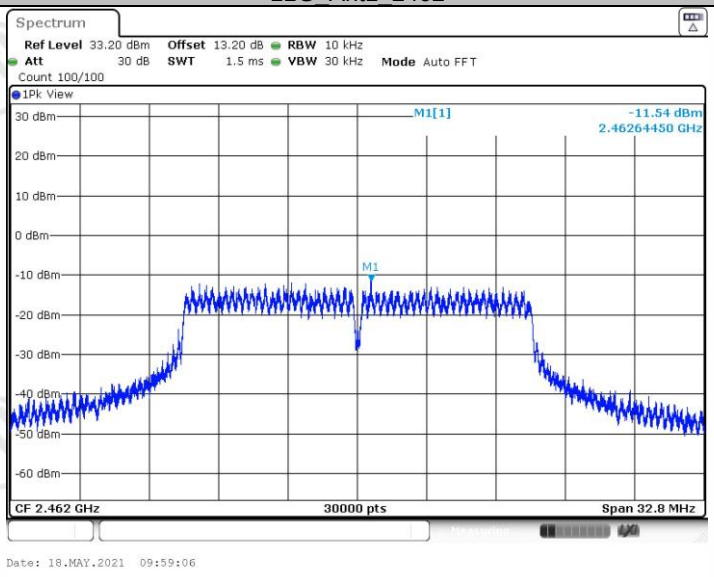
11G_Ant1_2437



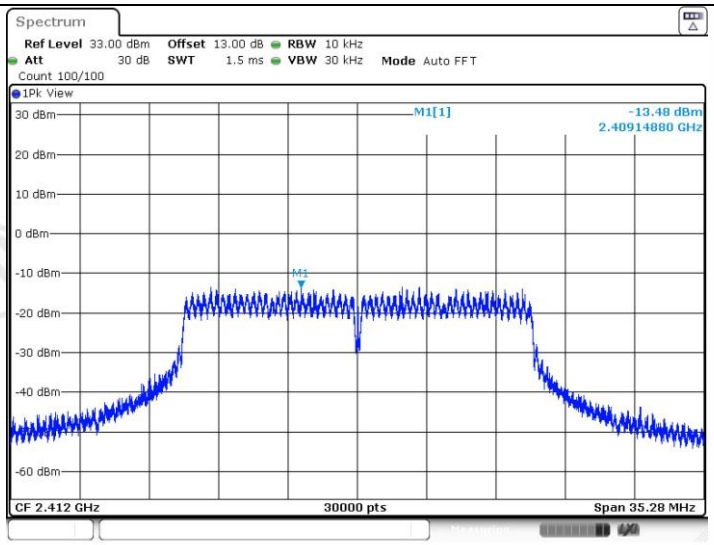
11G_Ant2_2437



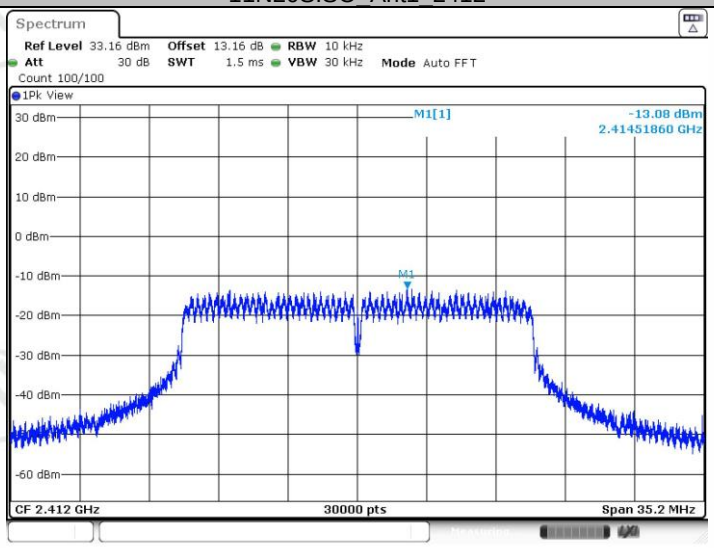
11G_Ant1_2462



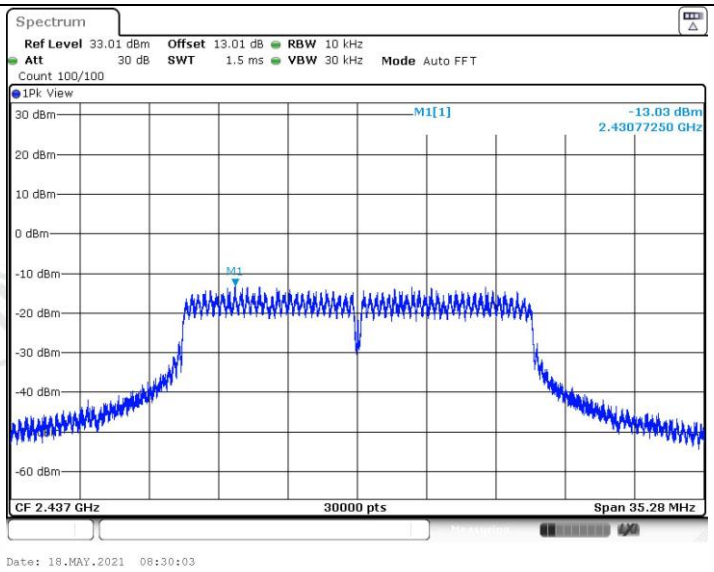
11G_Ant2_2462



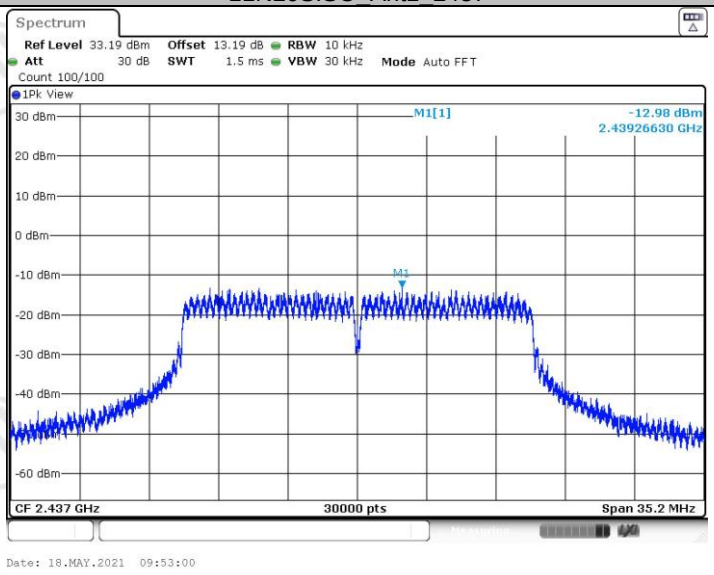
11N20SISO_Ant1_2412



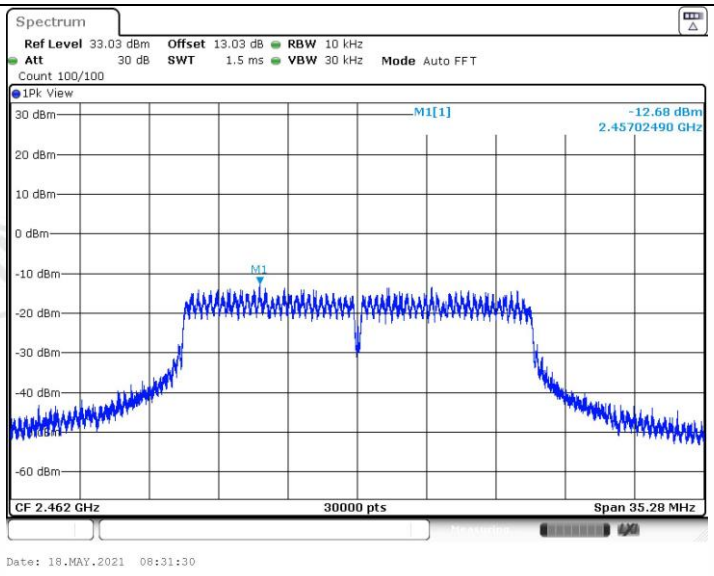
11N20SISO_Ant2_2412



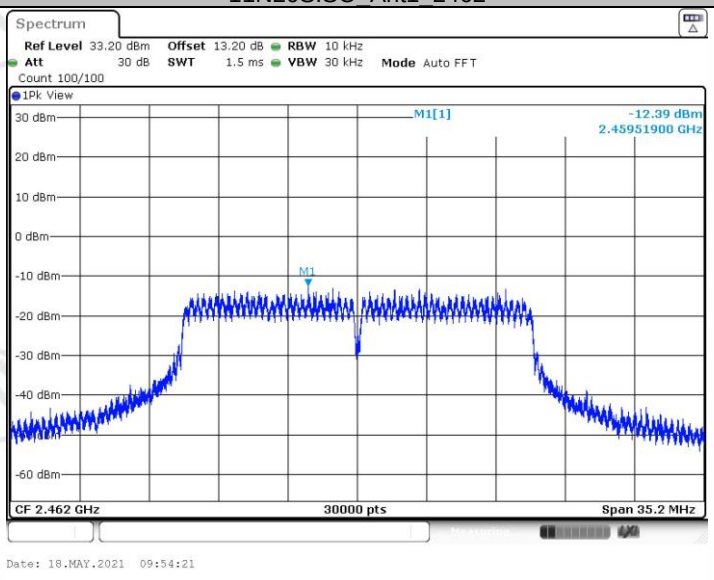
11N20SISO_Ant1_2437



11N20SISO_Ant2_2437

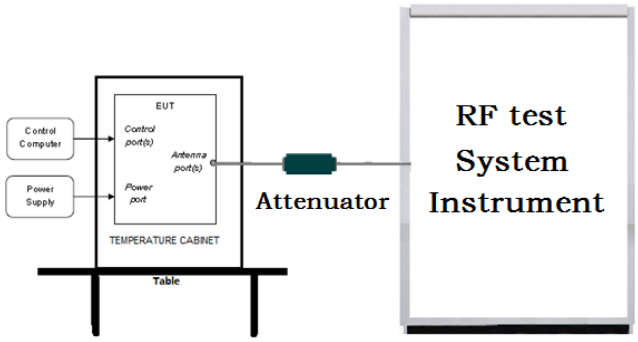


11N20SISO_Ant1_2462



11N20SISO_Ant2_2462

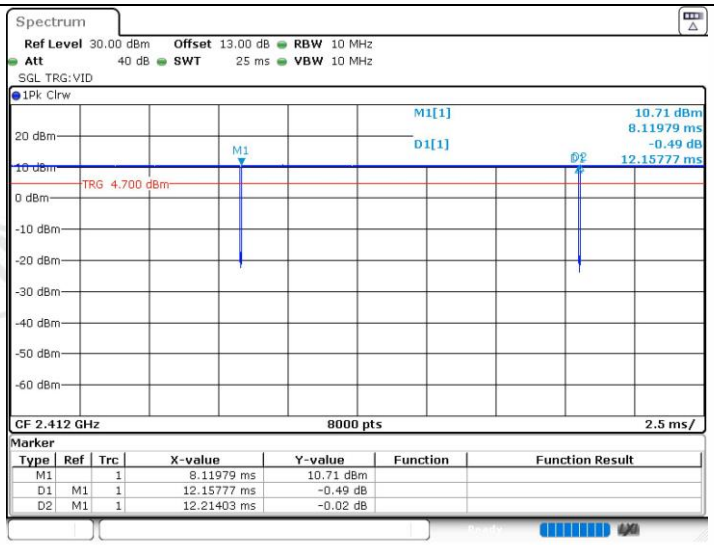
Appendix F): Duty cycle

Test Requirement:	47 CFR Part15C Section 15.35 (c)
Test Method:	ANSI C63.10 2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	a) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. b) Set VBW ≥ RBW. c) detector = peak or average. d) The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:
Limit:	---
Test Mode:	Refer to clause 2.2
Test Results:	Pass

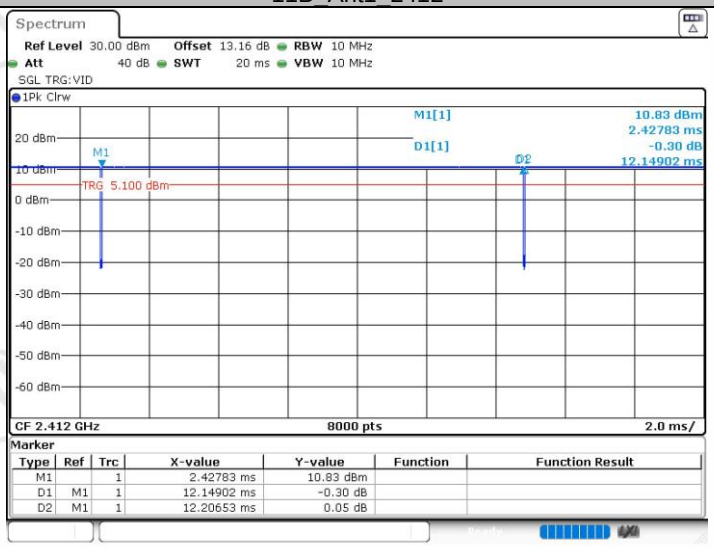
Test Result:

Test Mode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	X Factor	Limit	Verdict
11B	Ant1	2412	12.16	12.21	0.9959	99.59	0.02	---	PASS
	Ant2	2412	12.15	12.21	0.9951	99.51	0.02	---	PASS
	Ant1	2437	12.15	12.21	0.9951	99.51	0.02	---	PASS
	Ant2	2437	12.15	12.21	0.9951	99.51	0.02	---	PASS
	Ant1	2462	12.15	12.21	0.9951	99.51	0.02	---	PASS
	Ant2	2462	12.15	12.21	0.9951	99.51	0.02	---	PASS
11G	Ant1	2412	2.01	2.07	0.9710	97.10	0.13	---	PASS
	Ant2	2412	2.01	2.07	0.9710	97.10	0.13	---	PASS
	Ant1	2437	2.01	2.07	0.9710	97.10	0.13	---	PASS
	Ant2	2437	2.01	2.07	0.9710	97.10	0.13	---	PASS
	Ant1	2462	2.01	2.07	0.9710	97.10	0.13	---	PASS
	Ant2	2462	2.01	2.07	0.9710	97.10	0.13	---	PASS
11N20SISO	Ant1	2412	1.87	1.93	0.9689	96.89	0.14	---	PASS
	Ant2	2412	1.87	1.93	0.9689	96.89	0.14	---	PASS
	Ant1	2437	1.87	1.93	0.9689	96.89	0.14	---	PASS
	Ant2	2437	1.87	1.93	0.9689	96.89	0.14	---	PASS
	Ant1	2462	1.87	1.93	0.9689	96.89	0.14	---	PASS
	Ant2	2462	1.87	1.93	0.9689	96.89	0.14	---	PASS

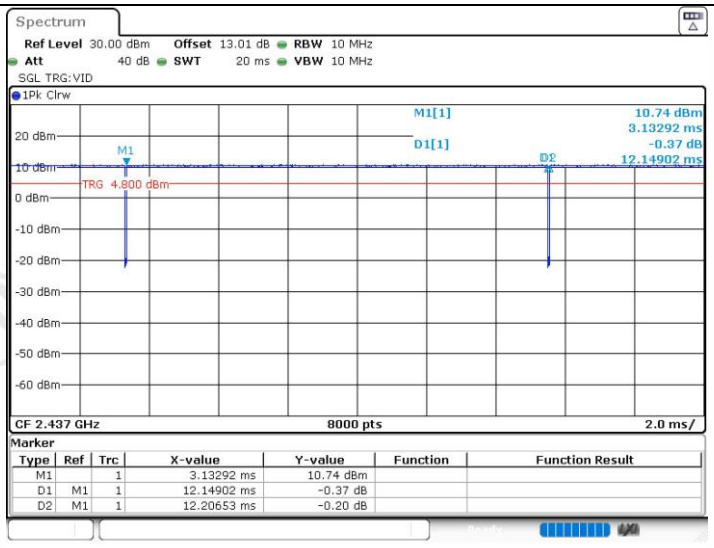
Result Table:



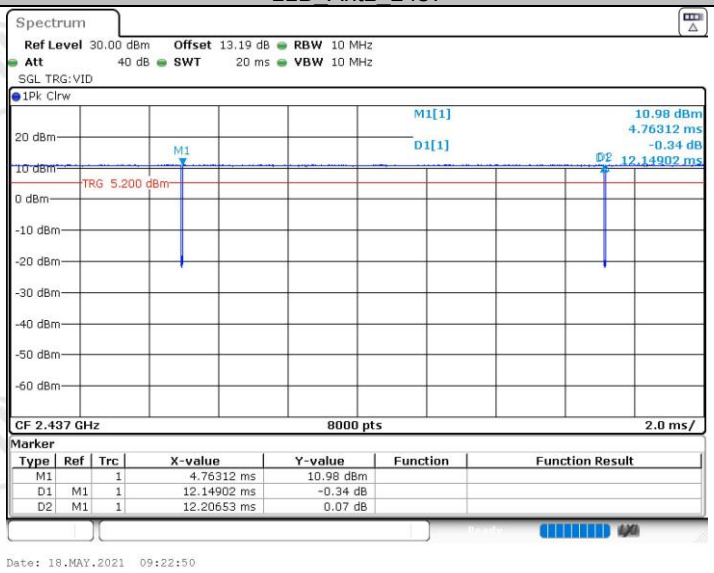
11B_Ant1_2412



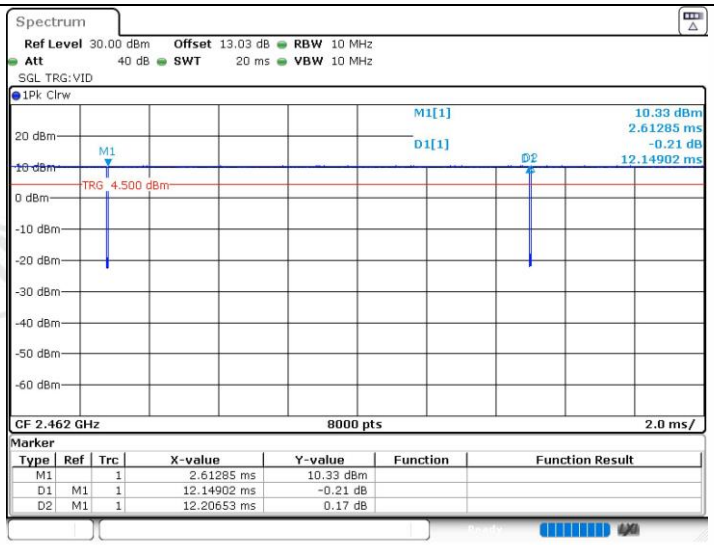
11B_Ant2_2412



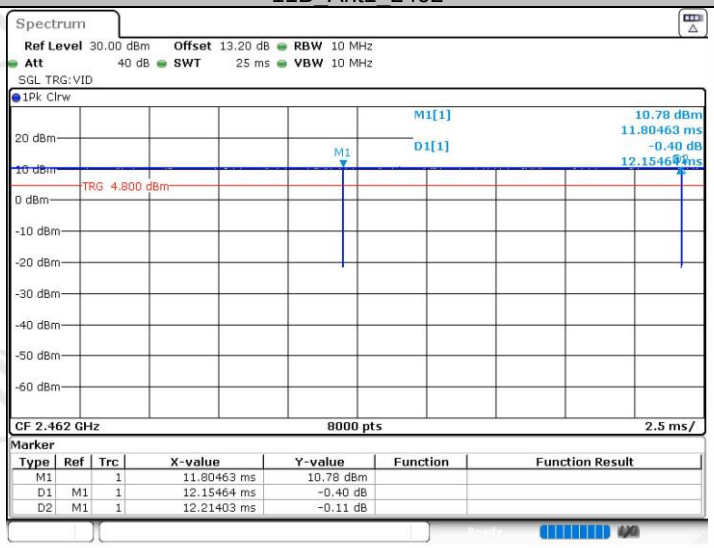
11B_Ant1_2437



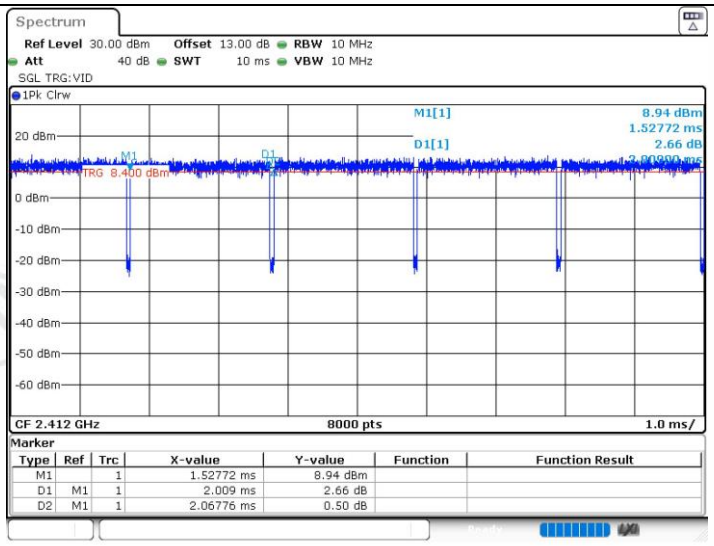
11B_Ant2_2437



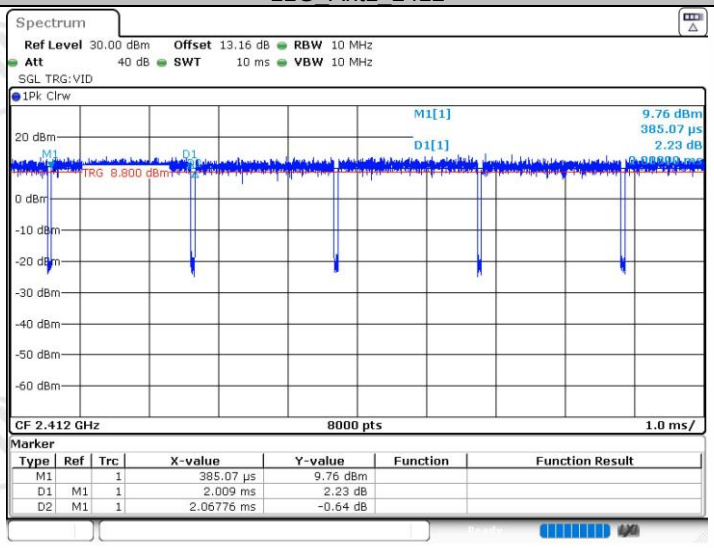
11B_Ant1_2462



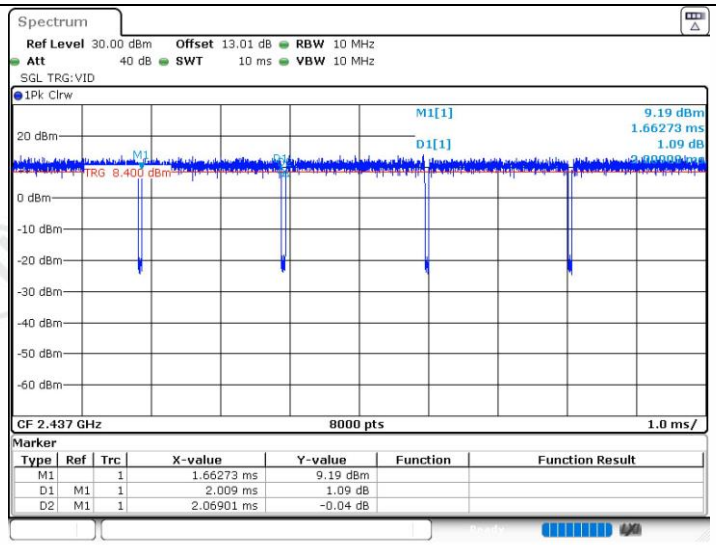
11B_Ant2_2462



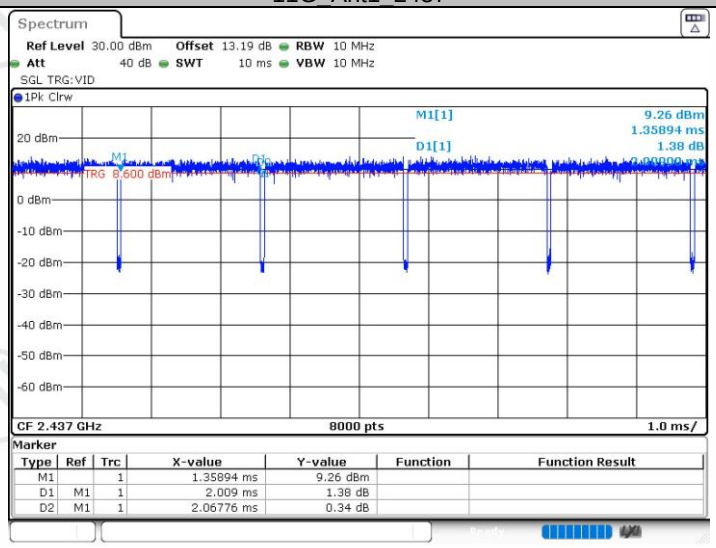
11G_Ant1_2412



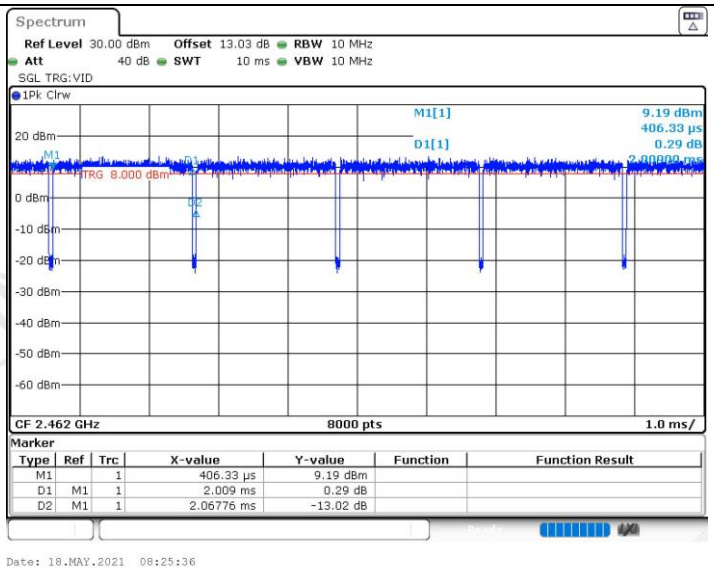
11G_Ant2_2412



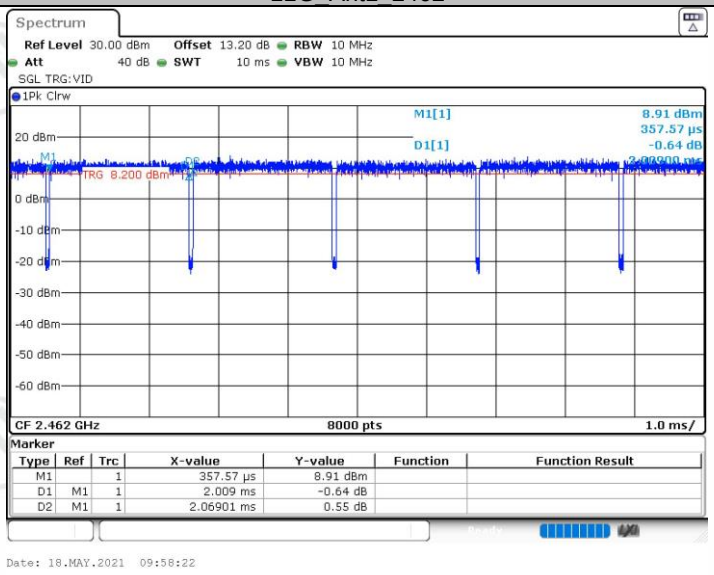
11G_Ant1_2437



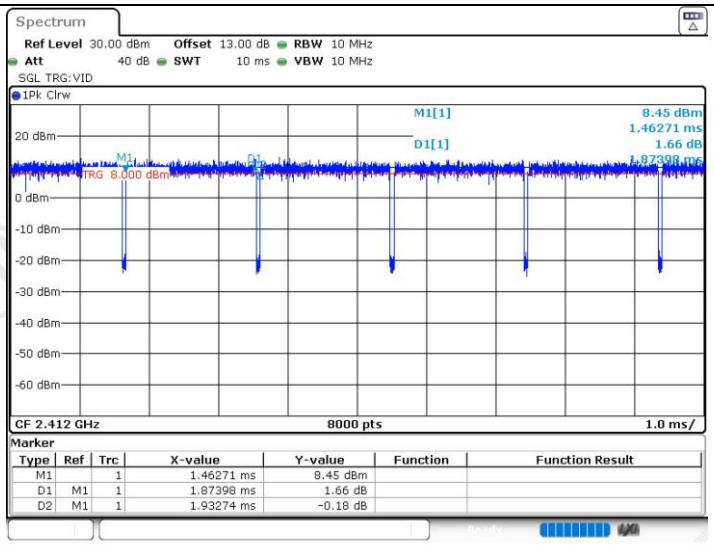
11G_Ant2_2437



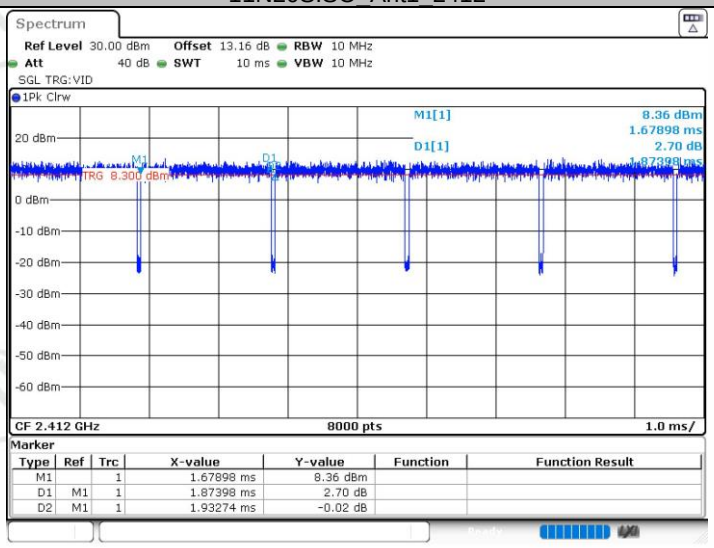
11G_Ant1_2462



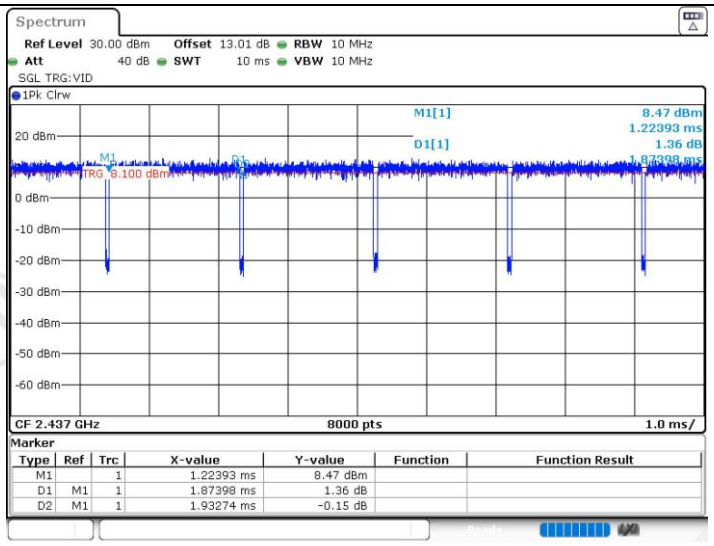
11G_Ant2_2462



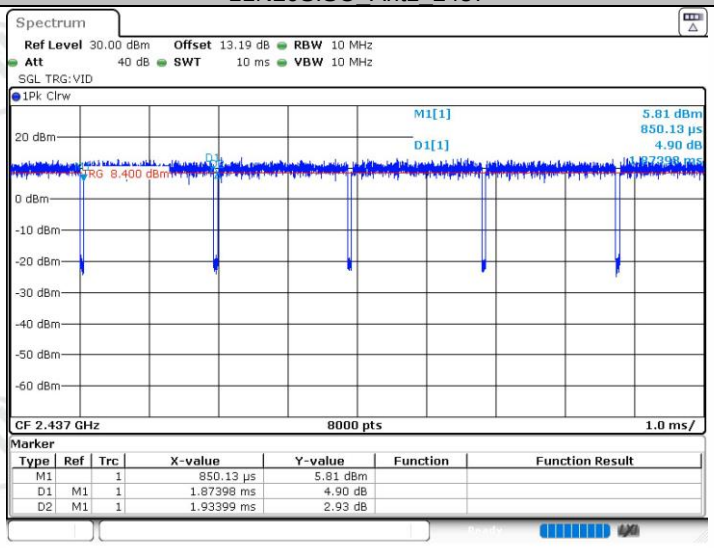
11N20SISO_Ant1_2412



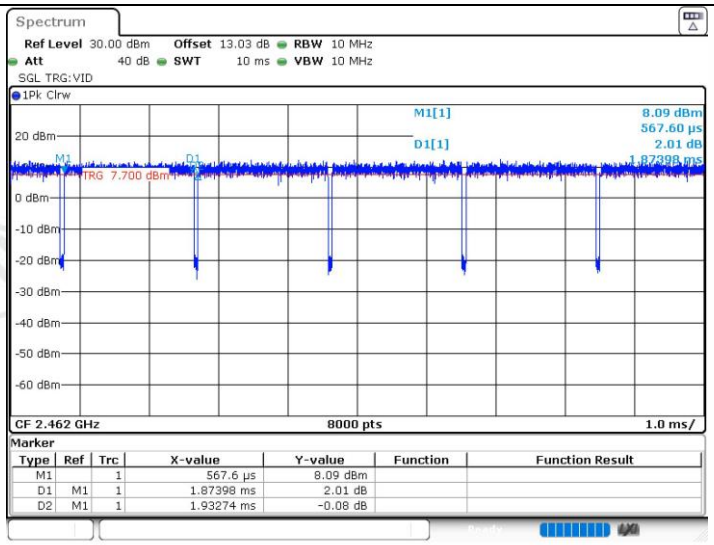
11N20SISO_Ant2_2412



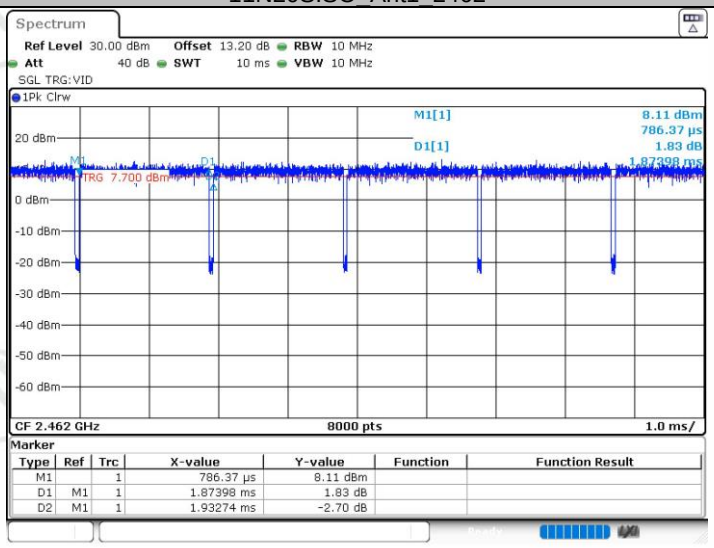
11N20SISO_Ant1_2437



11N20SISO_Ant2_2437



11N20SISO_Ant1_2462



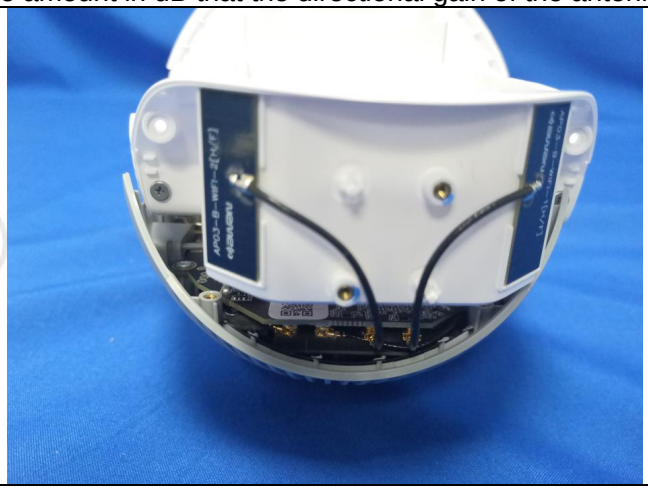
11N20SISO_Ant2_2462

Appendix G): Antenna Requirement

15.203 requirement:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

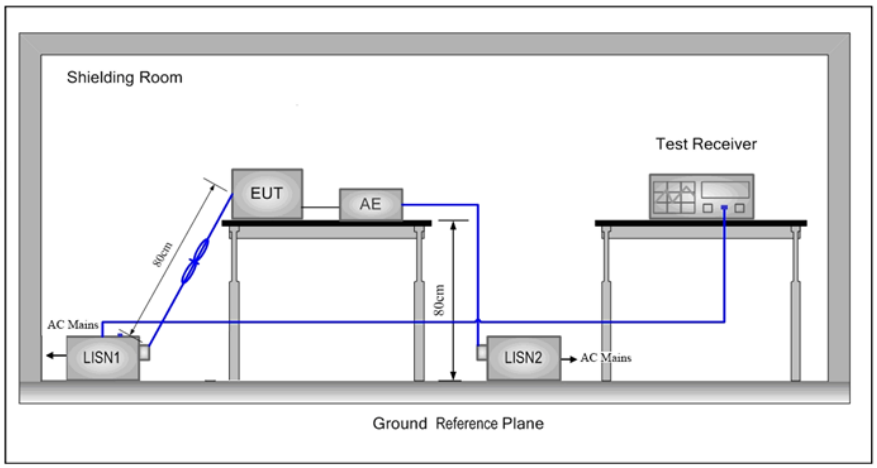
15.247(b) (4) requirement:
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:



The antenna is integrated on the main PCB and no consideration of replacement.

Appendix H): AC Power Line Conducted Emission

Test Requirement:	47 CFR Part 15C Section 15.207
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	150kHz to 30MHz
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto
Limit:	Frequency range (MHz) / Limit (dBuV): Quasi-peak / Average 0.15-0.5: 66 to 56* / 56 to 46* 0.5-5: 56 / 46 5-30: 60 / 50 * Decreases with the logarithm of the frequency.
Test Setup:	
Test Procedure:	1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane. 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.

Test Mode:	/
Test Results:	N/A

Measurement Data

The product is supplied by DC power.

Appendix I): Restricted Bands around Fundamental Frequency (Radiated)

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205
Test Method:	ANSI C63.10 2013
Test Site:	Measurement Distance: 3m (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	10kHz	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

Note: 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:	

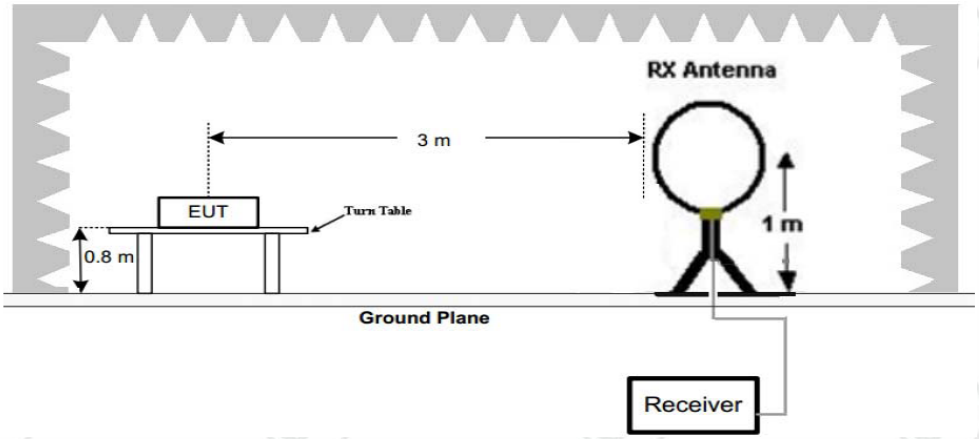


Figure 1. Below 30MHz

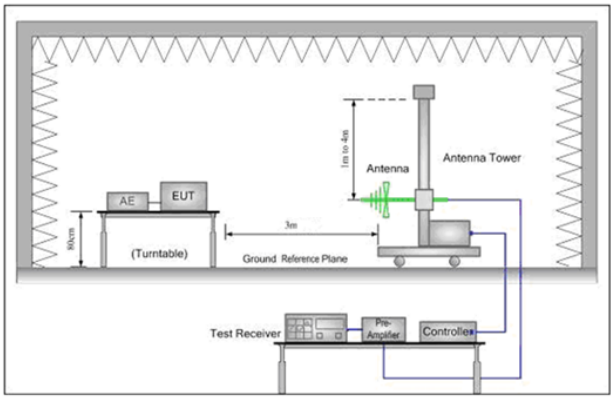


Figure 2. 30MHz to 1GHz

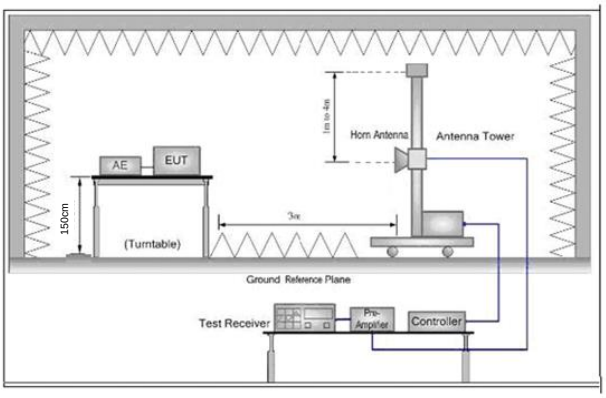


Figure 3. Above 1 GHz

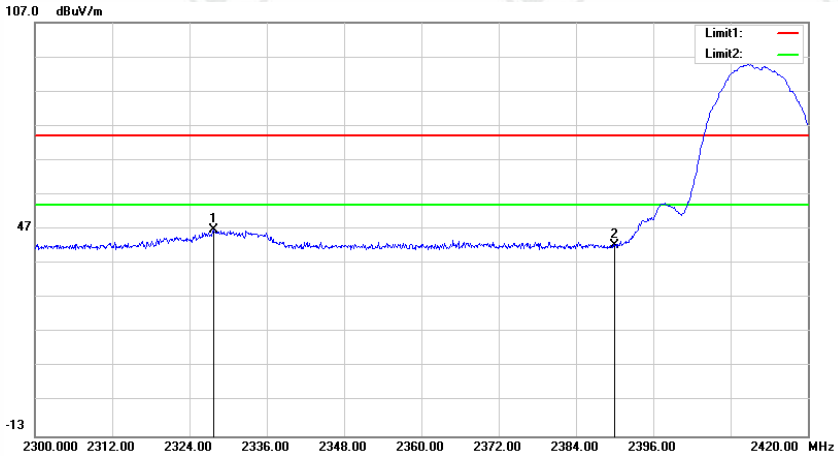
Test Procedure:	a. 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2) Above 1G: The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. Note: For the radiated emission test above 1GHz: Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

	c. 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. d. 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. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. 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. g. Test the EUT in the lowest channel (2402MHz),the middle channel (2440MHz),the Highest channel (2480MHz) h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete.
Test Mode:	Refer to clause 2.2
Test Results:	Pass

Test plot as follows:

Mode:	802.11b Transmitting	Channel:	Low
Remark:	Horizontal		

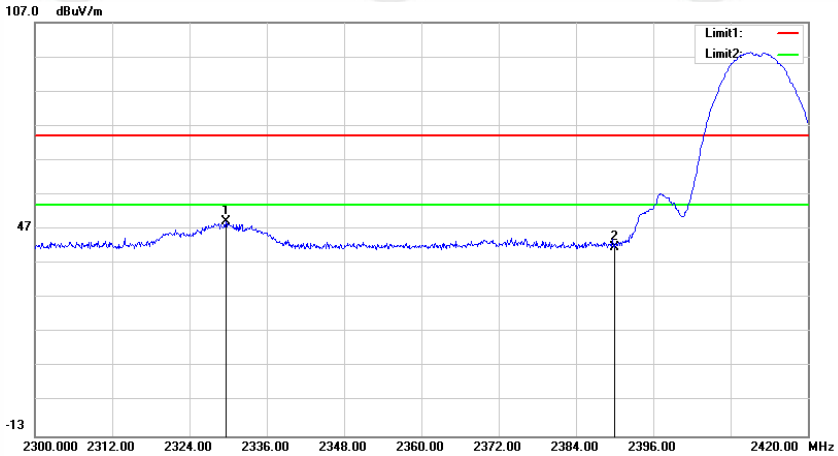
Test Graph



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2327.720	44.28	2.54	46.82	74.00	-27.18	100	134	peak
2	2390.000	39.76	2.71	42.47	74.00	-31.53	200	332	peak

Mode:	802.11b Transmitting	Channel:	Low
Remark:	Vertical		

Test Graph

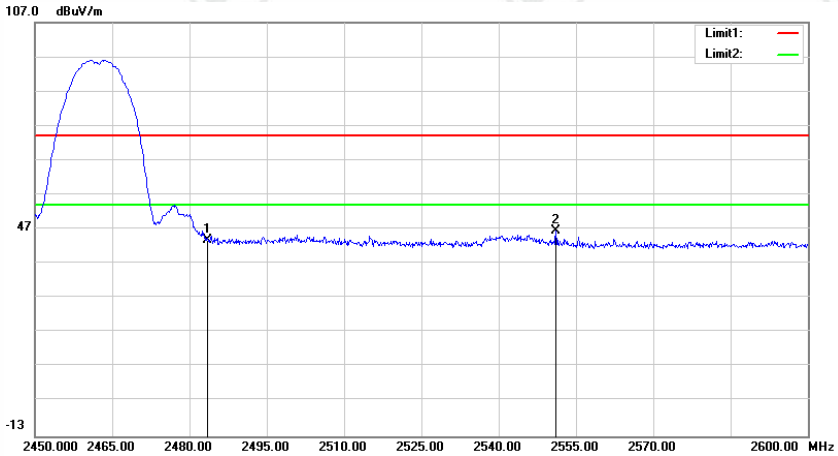


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2329.640	46.59	2.55	49.14	74.00	-24.86	100	217	peak
2	2390.000	38.99	2.71	41.70	74.00	-32.30	200	32	peak

Test plot as follows:

Mode:	802.11b Transmitting	Channel:	High
Remark:	Horizontal		

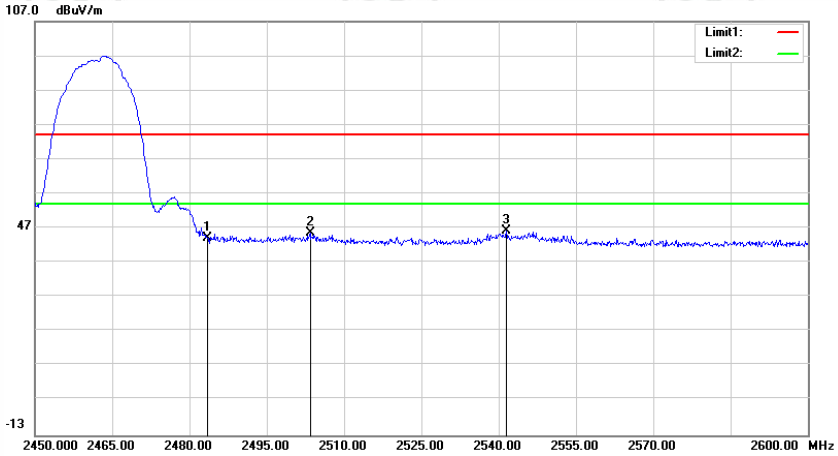
Test Graph



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	40.79	2.92	43.71	74.00	-30.29	200	174	peak
2	2551.100	43.45	3.06	46.51	74.00	-27.49	200	192	peak

Mode:	802.11b Transmitting	Channel:	High
Remark:	Vertical		

Test Graph

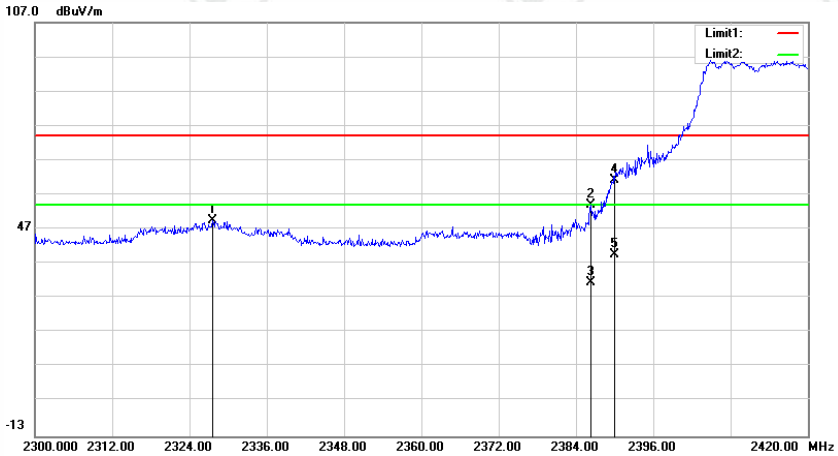


No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	41.18	2.92	44.10	74.00	-29.90	200	210	peak
2	2503.400	42.69	2.96	45.65	74.00	-28.35	100	337	peak
3	2541.500	43.15	3.04	46.19	74.00	-27.81	100	142	peak

Test plot as follows:

Mode:	802.11g Transmitting	Channel:	Low
Remark:	Horizontal		

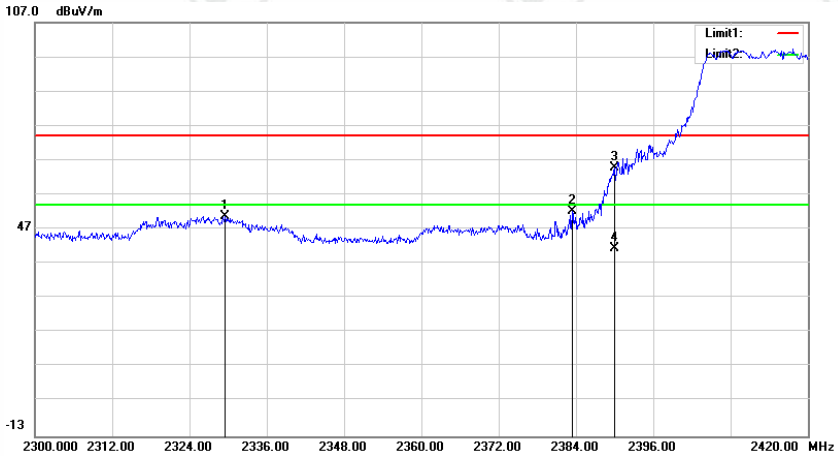
Test Graph



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2327.600	46.93	2.54	49.47	74.00	-24.53	100	132	peak
2	2386.280	51.33	2.70	54.03	74.00	-19.97	200	334	peak
3	2386.280	28.92	2.70	31.62	54.00	-22.38	200	324	AVG
4	2390.000	58.43	2.71	61.14	74.00	-12.86	200	324	peak
5	2390.000	37.04	2.71	39.75	54.00	-14.25	200	324	AVG

Mode:	802.11g Transmitting	Channel:	Low
Remark:	Vertical		

Test Graph

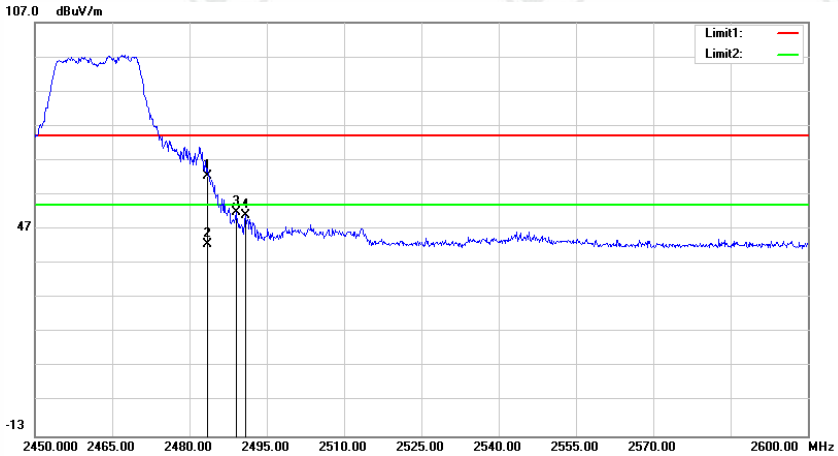


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2329.520	48.07	2.55	50.62	74.00	-23.38	100	222	peak
2	2383.400	49.53	2.70	52.23	74.00	-21.77	200	176	peak
3	2390.000	62.10	2.71	64.81	74.00	-9.19	200	228	peak
4	2390.000	38.73	2.71	41.44	54.00	-12.56	200	228	AVG

Test plot as follows:

Mode:	802.11g Transmitting	Channel:	High
Remark:	Horizontal		

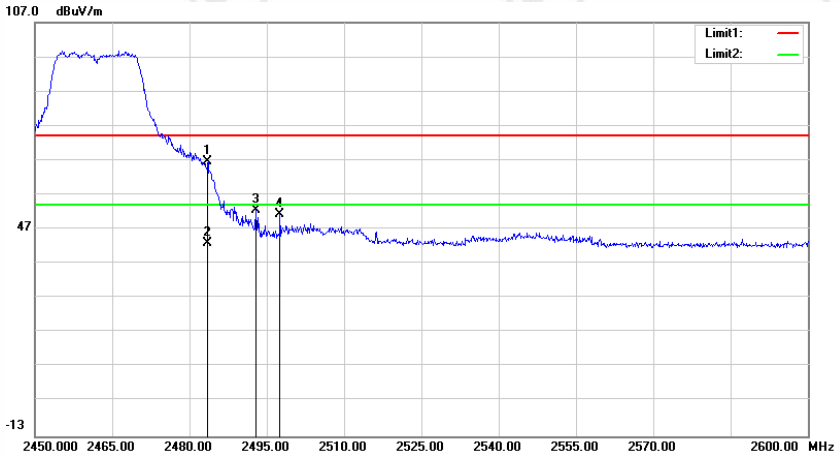
Test Graph



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	59.42	2.92	62.34	74.00	-11.66	200	177	peak
2	2483.500	39.73	2.92	42.65	54.00	-11.35	200	177	AVG
3	2489.000	49.05	2.93	51.98	74.00	-22.02	200	196	peak
4	2490.800	48.20	2.93	51.13	74.00	-22.87	100	195	peak

Mode:	802.11g Transmitting	Channel:	High
Remark:	Vertical		

Test Graph

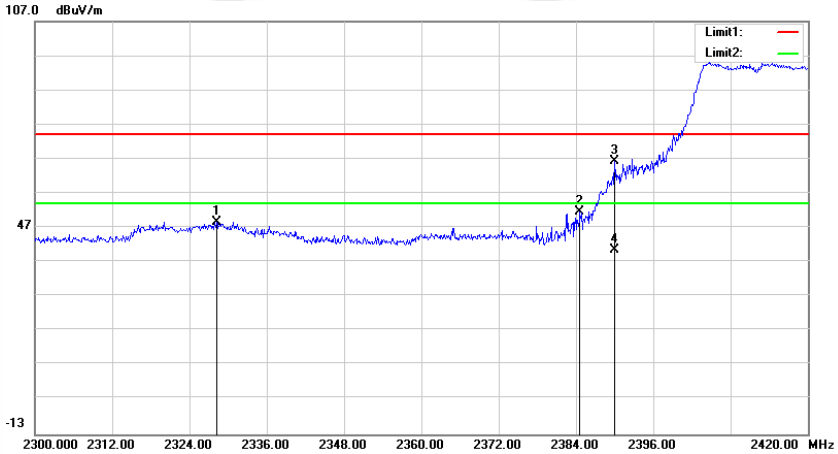


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	63.85	2.92	66.77	74.00	-7.23	100	189	peak
2	2483.500	40.08	2.92	43.00	54.00	-11.00	100	189	AVG
3	2492.900	49.72	2.94	52.66	74.00	-21.34	100	139	peak
4	2497.550	48.29	2.94	51.23	74.00	-22.77	100	144	peak

Test plot as follows:

Mode:	802.11n20 Transmitting	Channel:	Low
Remark:	Horizontal		

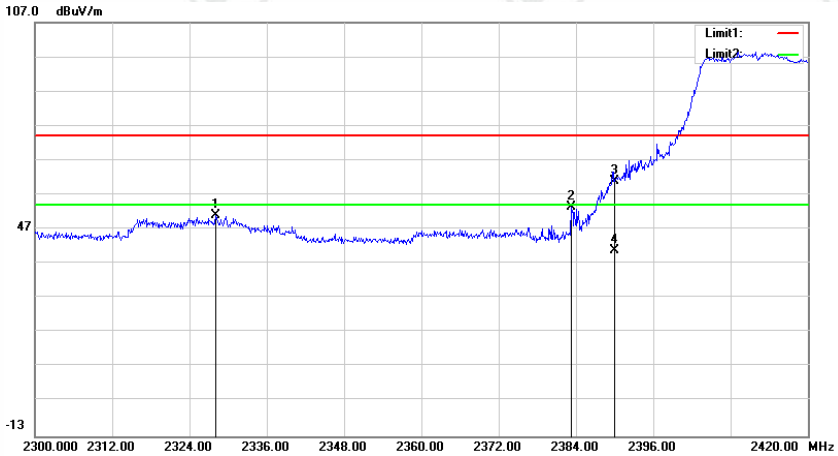
Test Graph



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2328.200	46.08	2.55	48.63	74.00	-25.37	100	141	peak
2	2384.600	48.89	2.70	51.59	74.00	-22.41	100	50	peak
3	2390.000	63.65	2.71	66.36	74.00	-7.64	100	192	peak
4	2390.000	37.98	2.71	40.69	54.00	-13.31	100	192	AVG

Mode:	802.11n20 Transmitting	Channel:	Low
Remark:	Vertical		

Test Graph

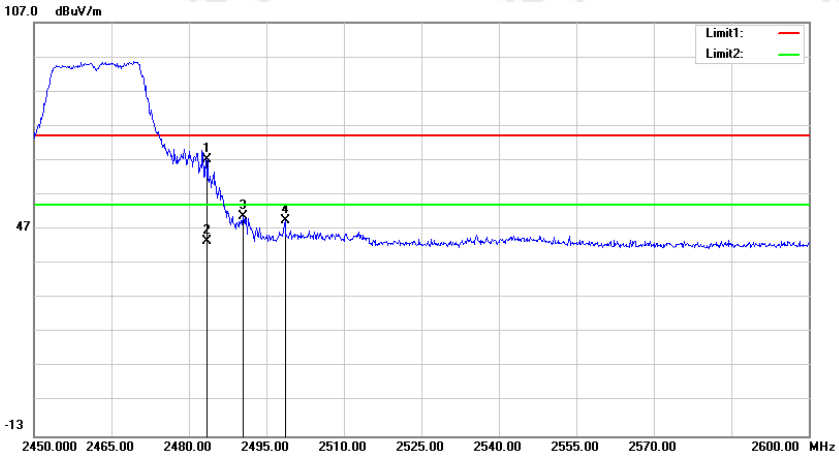


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2328.080	48.36	2.55	50.91	74.00	-23.09	100	215	peak
2	2383.280	50.70	2.69	53.39	74.00	-20.61	200	131	peak
3	2390.000	58.33	2.71	61.04	74.00	-12.96	200	197	peak
4	2390.000	38.07	2.71	40.78	54.00	-13.22	200	197	AVG

Test plot as follows:

Mode:	802.11n20 Transmitting	Channel:	High
Remark:	Horizontal		

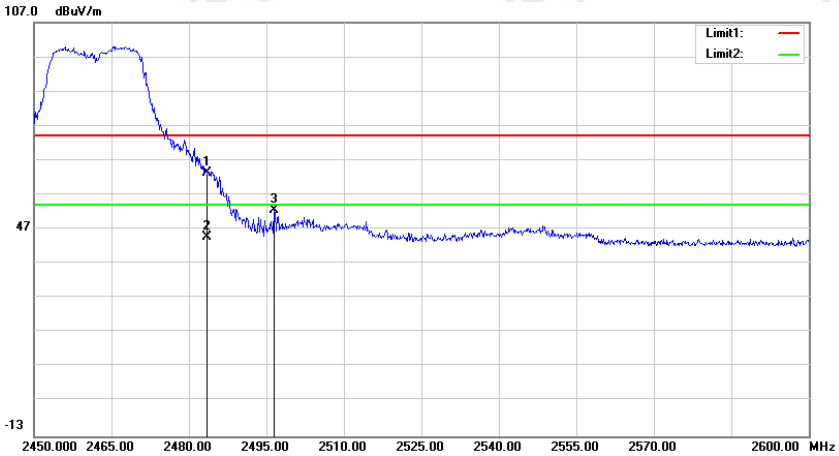
Test Graph



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	64.33	2.92	67.25	74.00	-6.75	200	165	peak
2	2483.500	40.60	2.92	43.52	54.00	-10.48	200	165	AVG
3	2490.500	47.91	2.93	50.84	74.00	-23.16	100	190	peak
4	2498.600	46.56	2.95	49.51	74.00	-24.49	200	206	peak

Mode:	802.11n20 Transmitting	Channel:	High
Remark:	Vertical		

Test Graph



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	60.44	2.92	63.36	74.00	-10.64	100	229	peak
2	2483.500	41.75	2.92	44.67	54.00	-9.33	100	229	AVG
3	2496.500	49.57	2.94	52.51	74.00	-21.49	100	198	peak

1)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 20dB under any condition of modulation. So, only the peak values are measured:

2) The field strength is calculated by adding the correct Factor. The basic equation with a sample calculation is as follows:

Final Test Level = Reading +Correct Factor

Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

Appendix J): Radiated Spurious Emissions

<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15C Section 15.209 and 15.205</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10 2013</td></tr>
<tr><td>Test Site:</td><td>Measurement Distance: 3m (Semi-Anechoic Chamber)</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td>0.009MHz-0.090MHz</td><td>Peak</td><td>10kHz</td><td>30kHz</td><td>Peak</td></tr>
<tr><td>0.009MHz-0.090MHz</td><td>Average</td><td>10kHz</td><td>30kHz</td><td>Average</td></tr>
<tr><td>0.090MHz-0.110MHz</td><td>Quasi-peak</td><td>10kHz</td><td>30kHz</td><td>Quasi-peak</td></tr>
<tr><td>0.110MHz-0.490MHz</td><td>Peak</td><td>10kHz</td><td>30kHz</td><td>Peak</td></tr>
<tr><td>0.110MHz-0.490MHz</td><td>Average</td><td>10kHz</td><td>30kHz</td><td>Average</td></tr>
<tr><td>0.490MHz -30MHz</td><td>Quasi-peak</td><td>10kHz</td><td>30kHz</td><td>Quasi-peak</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100 kHz</td><td>300kHz</td><td>Quasi-peak</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10kHz</td><td>Average</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Field strength (microvolt/meter)</th><th>Limit (dBuV/m)</th><th>Remark</th><th>Measurement distance (m)</th></tr>
<tr><td>0.009MHz-0.490MHz</td><td>2400/F(kHz)</td><td>-</td><td>-</td><td>300</td></tr>
<tr><td>0.490MHz-1.705MHz</td><td>24000/F(kHz)</td><td>-</td><td>-</td><td>30</td></tr>
<tr><td>1.705MHz-30MHz</td><td>30</td><td>-</td><td>-</td><td>30</td></tr>
<tr><td>30MHz-88MHz</td><td>100</td><td>40.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>88MHz-216MHz</td><td>150</td><td>43.5</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>216MHz-960MHz</td><td>200</td><td>46.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>960MHz-1GHz</td><td>500</td><td>54.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>Above 1GHz</td><td>500</td><td>54.0</td><td>Average</td><td>3</td></tr>
</table>
Note: 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.
</td></tr>
</table>

Test Setup:	

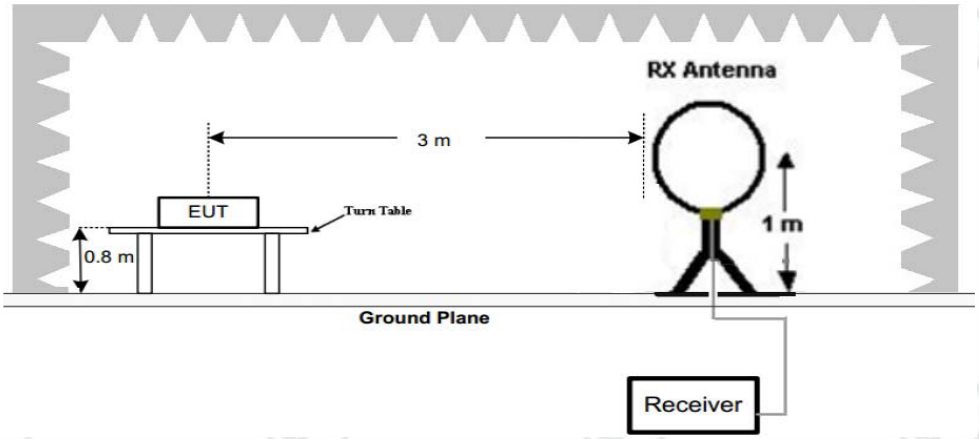


Figure 1. Below 30MHz

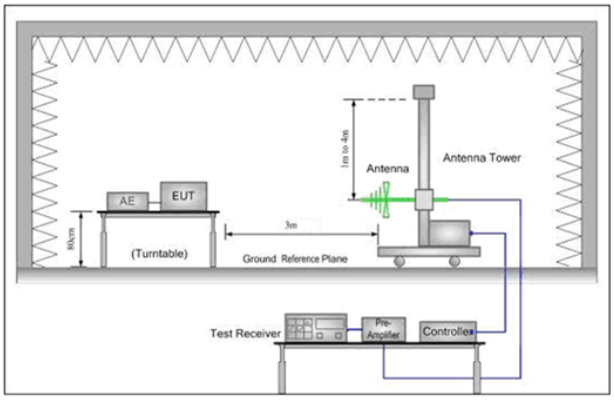


Figure 2. 30MHz to 1GHz

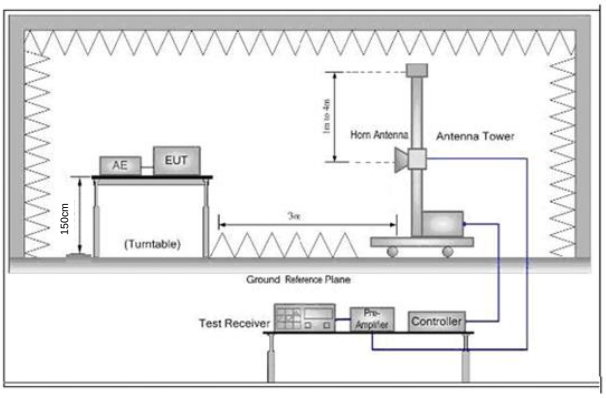


Figure 3. Above 1 GHz

Test Procedure:	a. 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 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. 2) Above 1G: 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. Note: For the radiated emission test above 1GHz: Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

	c. 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. d. 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. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. 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. g. Test the EUT in the lowest channel (2402MHz),the middle channel (2440MHz),the Highest channel (2480MHz) h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete.
Test Mode:	Refer to clause 2.2
Test Results:	Pass

Radiated Spurious Emissions test Data:

Radiated Emission below 1GHz:

Mode:	802.11b Transmitting	Channel:	Low
Remark:			

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
76.5600	V	58.41	-27.96	30.45	40.00	-9.55	QP
143.4900	V	52.49	-23.92	28.57	43.50	-14.93	QP
239.5200	V	51.09	-21.45	29.64	46.00	-16.36	QP
601.3300	V	43.51	-13.48	30.03	46.00	-15.97	QP
800.1800	V	47.21	-11.66	35.55	46.00	-10.45	QP
996.1200	V	49.02	-9.17	39.85	54.00	-14.15	QP
75.5520	H	61.52	-27.71	33.81	40.00	-6.19	QP
144.7500	H	57.54	-24.32	33.22	43.50	-10.28	QP
242.1440	H	56.95	-21.42	35.53	46.00	-10.47	QP
720.6400	H	48.23	-12.64	35.59	46.00	-10.41	QP
800.1800	H	47.51	-11.66	35.85	46.00	-10.15	QP
996.1200	H	47.58	-9.17	38.41	54.00	-15.59	QP

Notes:

1) Through Pre-scan then find the 802.11b-CH1 is the worst case mode and only the worst data was recorded.

Transmitter Emission above 1GHz:

Mode:	802.11b Transmitting	Channel:	Low
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4825.000	43.42	9.20	52.62	74.00	-21.38	100	175	peak
2	8395.000	31.24	13.51	44.75	74.00	-29.25	200	93	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4825.000	47.01	9.20	56.21	74.00	-17.79	100	237	peak
2	4825.000	34.45	9.20	43.65	54.00	-10.35	100	237	AVG
3	8293.000	31.86	13.36	45.22	74.00	-28.78	100	147	peak

Mode:	802.11b Transmitting	Channel:	Mid
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	44.69	9.31	54.00	74.00	-20.00	100	169	peak
2	4876.000	20.46	9.31	29.77	54.00	-24.23	100	169	AVG
3	8395.000	31.16	13.51	44.67	74.00	-29.33	200	13	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	45.95	9.31	55.26	74.00	-18.74	100	227	peak
2	4876.000	21.51	9.31	30.82	54.00	-23.18	100	227	AVG
3	8480.000	30.73	13.63	44.36	74.00	-29.64	200	192	peak

Mode:	802.11b Transmitting	Channel:	High
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4927.000	49.94	9.43	59.37	74.00	-14.63	100	165	peak
2	4927.000	36.19	9.43	45.62	54.00	-8.38	100	165	AVG
3	8752.000	30.47	13.86	44.33	74.00	-29.67	162	0	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4927.000	49.33	9.43	58.76	74.00	-15.24	200	233	peak
2	4927.000	36.25	9.43	45.68	54.00	-8.32	200	233	AVG
3	7987.000	31.48	12.94	44.42	74.00	-29.58	100	360	peak

Mode:	802.11g Transmitting	Channel:	Low
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4825.000	44.17	9.20	53.37	74.00	-20.63	100	177	peak
2	8072.000	32.40	13.05	45.45	74.00	-28.55	100	223	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4825.000	47.63	9.20	56.83	74.00	-17.17	100	233	peak
2	4825.000	34.42	9.20	43.62	54.00	-10.38	100	233	AVG
3	7596.000	32.86	12.47	45.33	74.00	-28.67	200	355	peak

Mode:	802.11g Transmitting	Channel:	Mid
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	44.16	9.31	53.47	74.00	-20.53	100	179	peak
2	8752.000	30.45	13.86	44.31	74.00	-29.69	200	20	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	46.49	9.31	55.80	74.00	-18.20	200	319	peak
2	4876.000	21.59	9.31	30.90	54.00	-23.10	200	319	AVG
3	8565.000	31.73	13.75	45.48	74.00	-28.52	148	0	peak

Mode:	802.11g Transmitting	Channel:	High
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4927.000	50.23	9.43	59.66	74.00	-14.34	100	168	peak
2	4927.000	36.12	9.43	45.55	54.00	-8.45	100	168	AVG
3	8837.000	30.69	13.92	44.61	74.00	-29.39	200	335	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4927.000	49.58	9.43	59.01	74.00	-14.99	200	232	peak
2	4927.000	36.06	9.43	45.49	54.00	-8.51	200	232	AVG
3	8293.000	31.63	13.36	44.99	74.00	-29.01	113	360	peak

Mode:	802.11n Transmitting	Channel:	Low
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4825.000	43.37	9.20	52.57	74.00	-21.43	100	178	peak
2	8310.000	31.71	13.39	45.10	74.00	-28.90	100	338	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4825.000	46.82	9.20	56.02	74.00	-17.98	100	235	peak
2	4825.000	33.63	9.20	42.83	54.00	-11.17	100	235	AVG
3	8480.000	31.45	13.63	45.08	74.00	-28.92	193	360	peak

Mode:	802.11n20 Transmitting	Channel:	Mid
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	42.85	9.31	52.16	74.00	-21.84	100	178	peak
2	9466.000	31.12	14.67	45.79	74.00	-28.21	200	200	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	44.85	9.31	54.16	74.00	-19.84	200	222	peak
2	4876.000	21.79	9.31	31.10	54.00	-22.90	200	222	AVG
3	8225.000	31.18	13.27	44.45	74.00	-29.55	200	173	peak

Mode:	802.11n20 Transmitting	Channel:	High
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4927.000	50.74	9.43	60.17	74.00	-13.83	100	167	peak
2	4927.000	36.03	9.43	45.46	54.00	-8.54	100	167	AVG
3	8395.000	31.69	13.51	45.20	74.00	-28.80	100	41	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4927.000	49.98	9.43	59.41	74.00	-14.59	200	230	peak
2	4927.000	35.62	9.43	45.05	54.00	-8.95	200	230	AVG
3	8565.000	31.44	13.75	45.19	74.00	-28.81	200	166	peak

Note:

1)As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the pe ak 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 values are measured:

2) The field strength is calculated by adding the correct Factor. The basic equation with a sample calculation is as follows:

Final Test Level = Reading +Correct Factor

Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

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