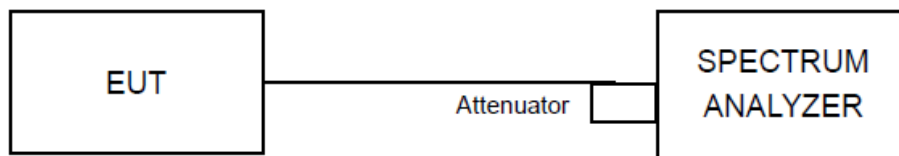


4.6 Conducted Spurious Emissions

4.6.1 Limit

Below 30 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

4.6.2 Test Setup



4.6.3 Test Procedures

The EUT was tested according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance” (clause 11.0) for compliance to FCC 47CFR 15.247 requirements.

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.4 Deviation of Test Standard

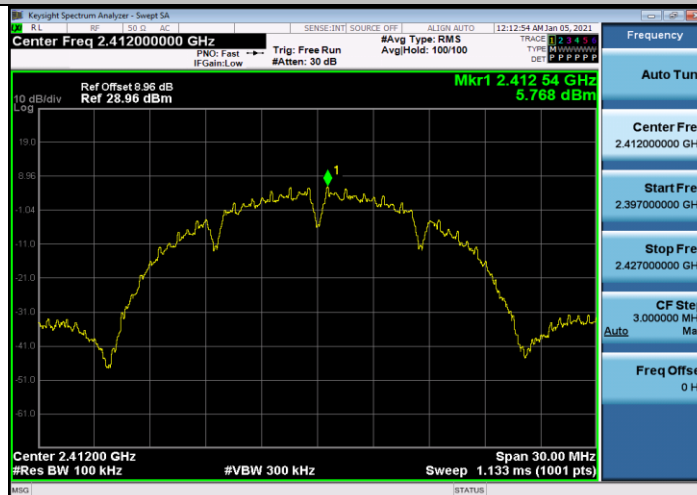
No deviation.

4.6.5 Test Results

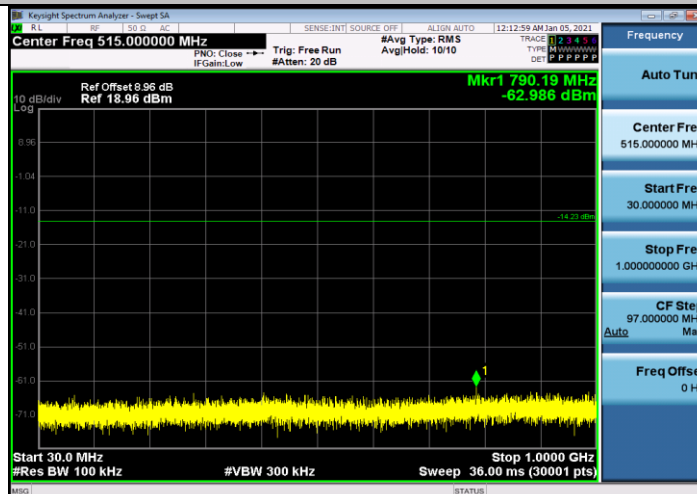
Test Mode	Antenna	Channel [MHz]	FreqRange [MHz]	RefLevel [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	5.77	5.77	---	PASS
			30~1000	30~1000	-62.986	<=-14.232	PASS
			1000~26500	1000~26500	-36.526	<=-14.232	PASS
		2437	Reference	5.77	5.77	---	PASS
			30~1000	30~1000	-63.495	<=-14.232	PASS
			1000~26500	1000~26500	-36.656	<=-14.232	PASS
		2462	Reference	4.72	4.72	---	PASS
			30~1000	30~1000	-63.858	<=-15.276	PASS
			1000~26500	1000~26500	-37.049	<=-15.276	PASS
11G	Ant1	2412	Reference	3.13	3.13	---	PASS
			30~1000	30~1000	-63.386	<=-16.872	PASS
			1000~26500	1000~26500	-35.775	<=-16.872	PASS
		2437	Reference	3.37	3.37	---	PASS
			30~1000	30~1000	-64.021	<=-16.627	PASS
			1000~26500	1000~26500	-35.815	<=-16.627	PASS
		2462	Reference	2.20	2.20	---	PASS
			30~1000	30~1000	-62.818	<=-17.803	PASS
			1000~26500	1000~26500	-36.017	<=-17.803	PASS
11N20SISO	Ant1	2412	Reference	3.23	3.23	---	PASS
			30~1000	30~1000	-63.857	<=-16.773	PASS
			1000~26500	1000~26500	-38.47	<=-16.773	PASS
		2437	Reference	2.68	2.68	---	PASS
			30~1000	30~1000	-63.671	<=-17.321	PASS
			1000~26500	1000~26500	-38.691	<=-17.321	PASS
		2462	Reference	1.37	1.37	---	PASS
			30~1000	30~1000	-64.412	<=-18.63	PASS
			1000~26500	1000~26500	-39.014	<=-18.63	PASS



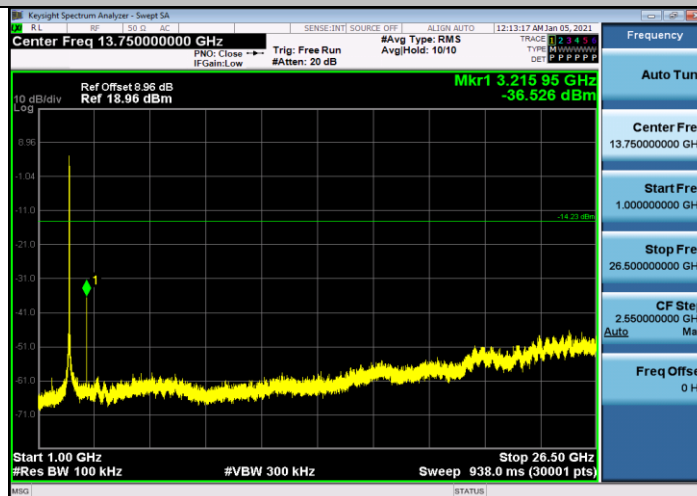
11B_Ant1_2412_0-Reference



11B_Ant1_2412_30-1000

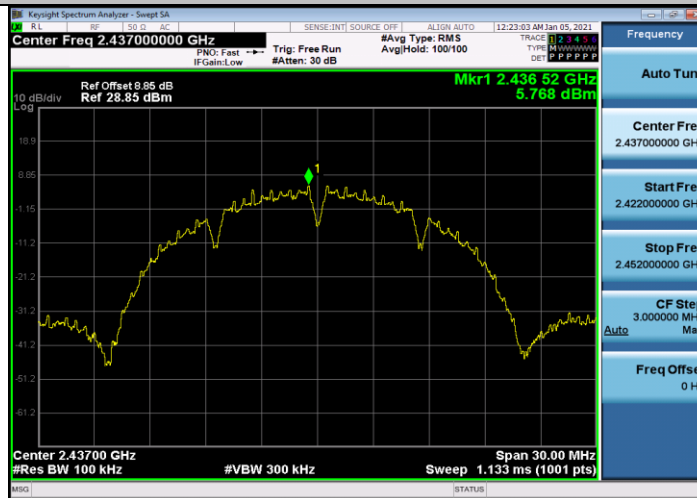


11B_Ant1_2412_1000-26500

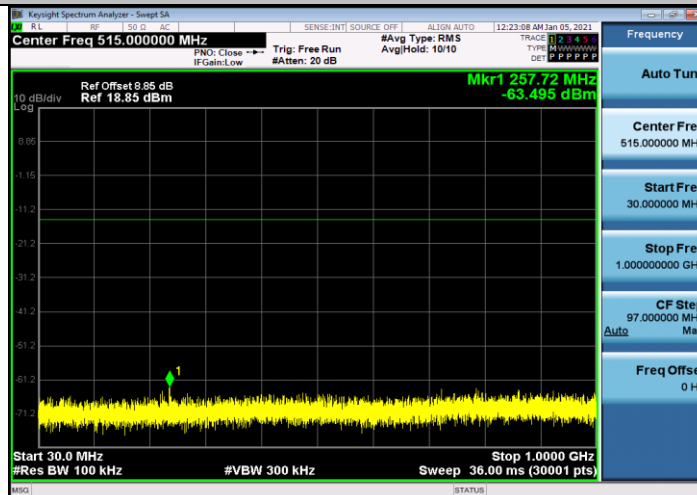




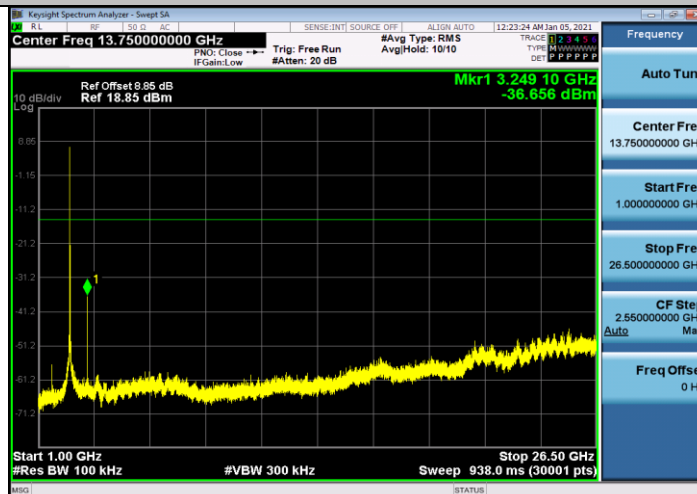
11B_Ant1_2437_0-Reference



11B_Ant1_2437_30-1000



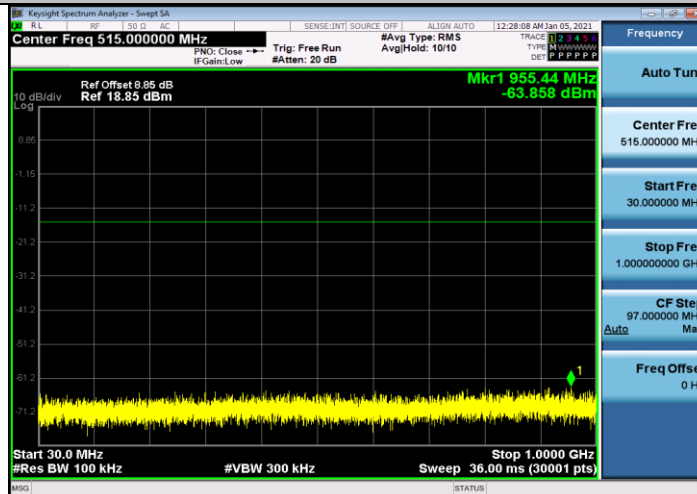
11B_Ant1_2437_1000-26500



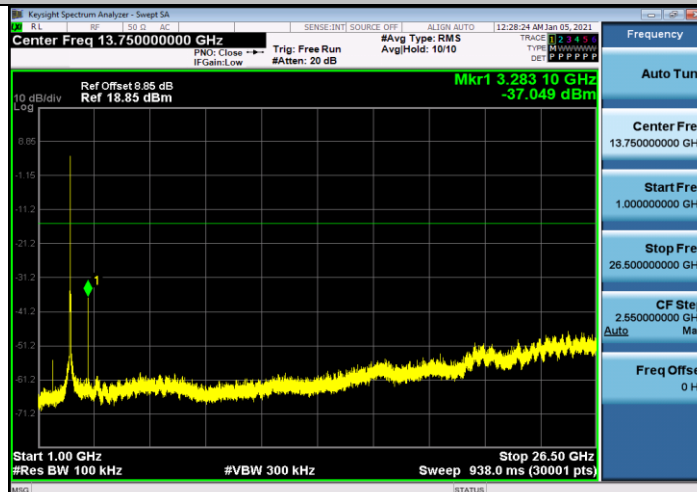
11B_Ant1_2462_0-Reference



11B_Ant1_2462_30~1000

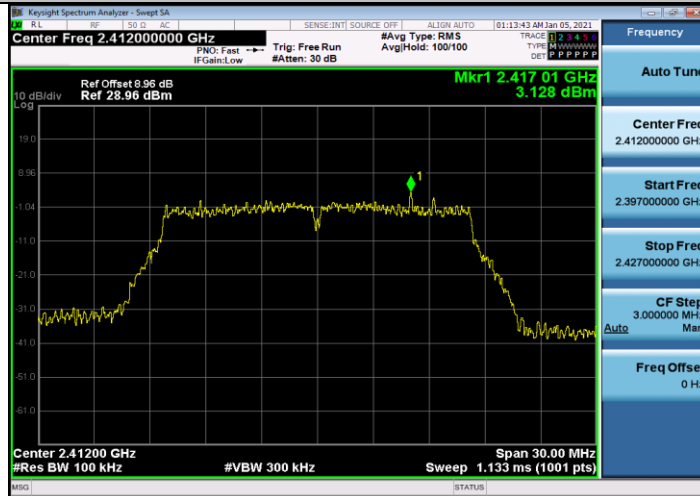


11B_Ant1_2462_1000~26500

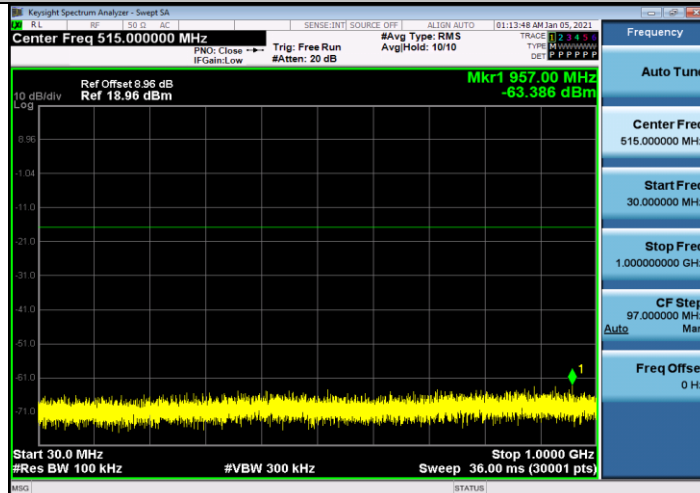




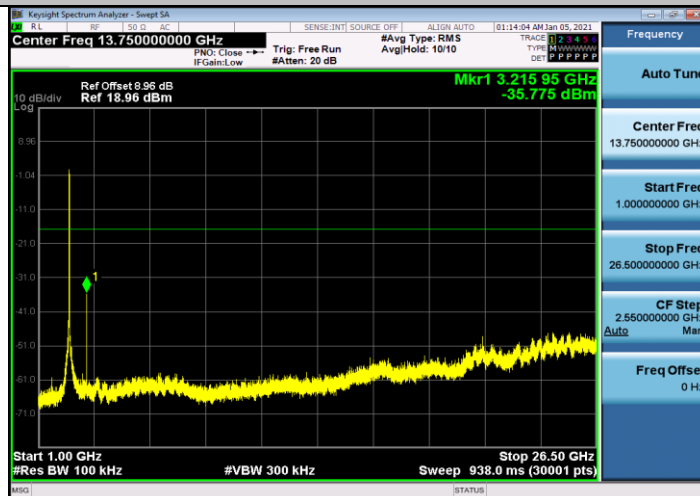
11G_Ant1_2412_0~Reference



11G_Ant1_2412_30~1000



11G_Ant1_2412_1000~26500

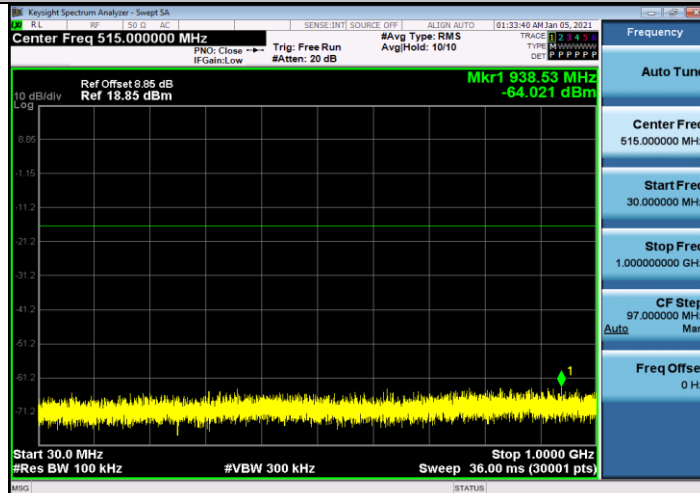




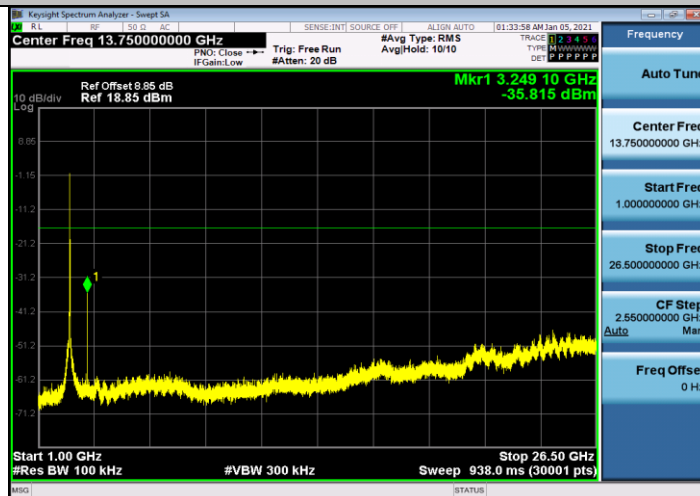
11G_Ant1_2437_0~Reference



11G_Ant1_2437_30~1000

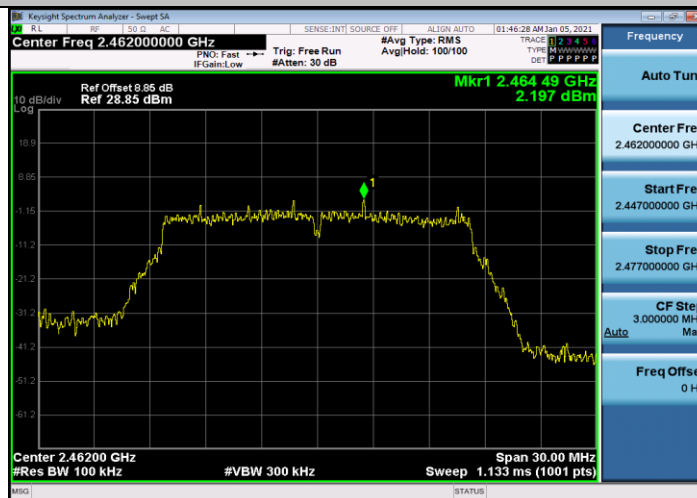


11G_Ant1_2437_1000~26500

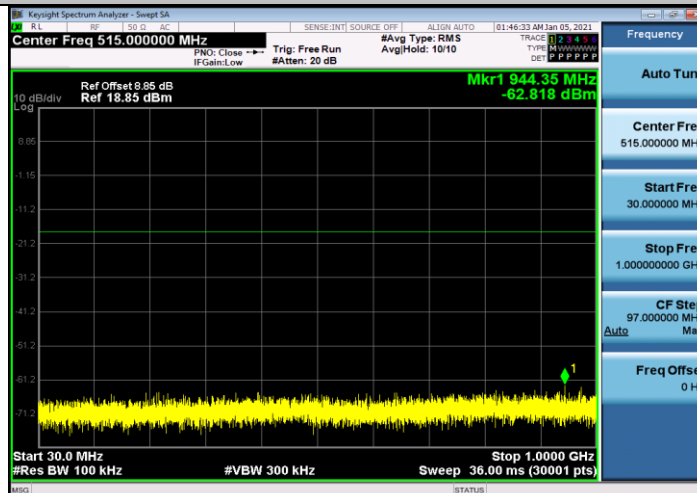




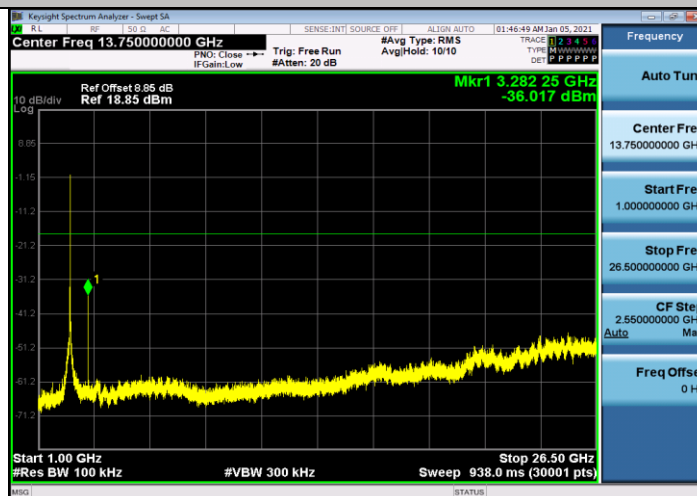
11G_Ant1_2462_0~Reference



11G_Ant1_2462_30~1000

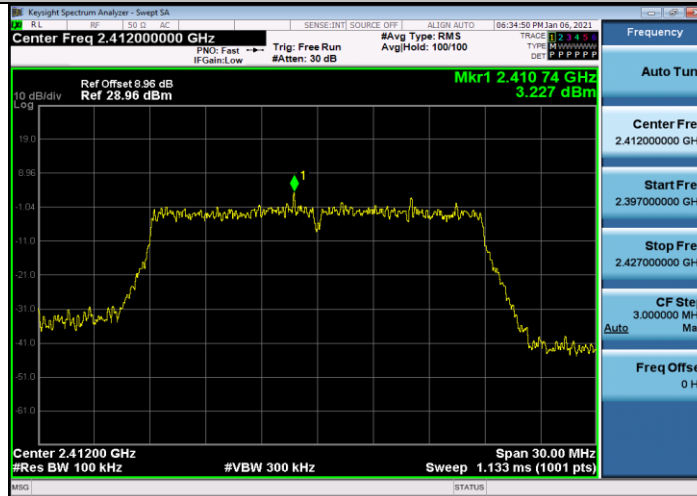


11G_Ant1_2462_1000~26500

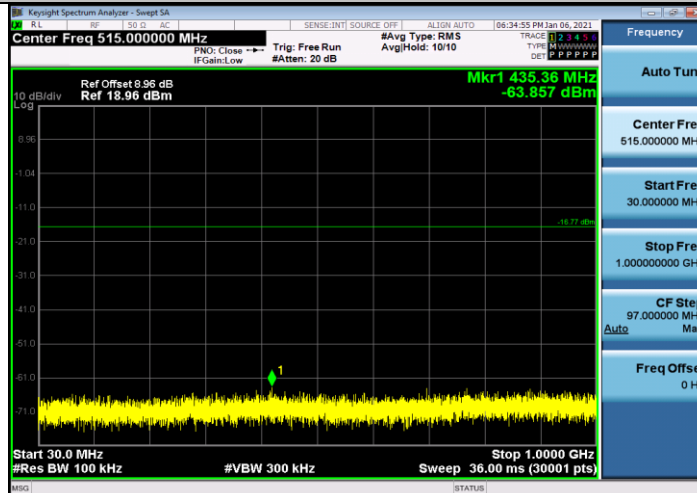




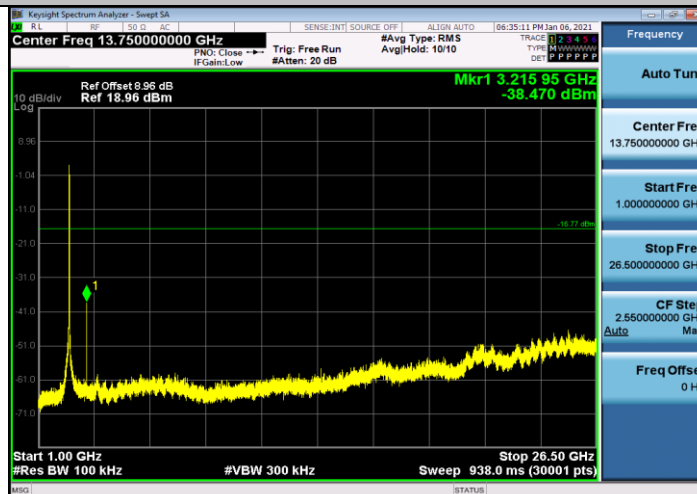
11N20SISO_Ant1_2412_0-Reference



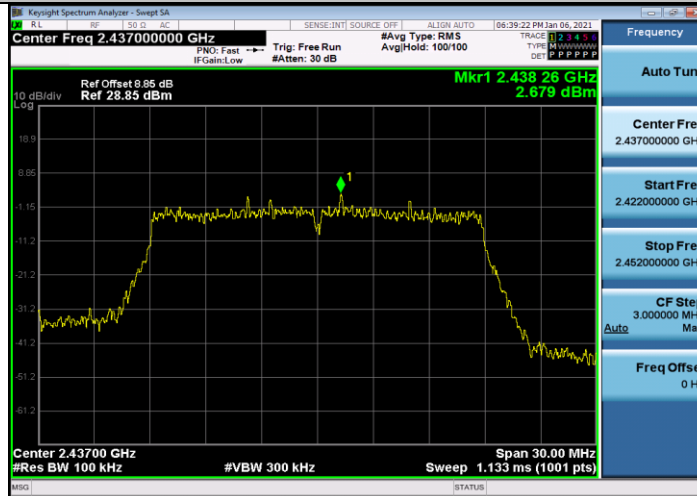
11N20SISO_Ant1_2412_30-1000



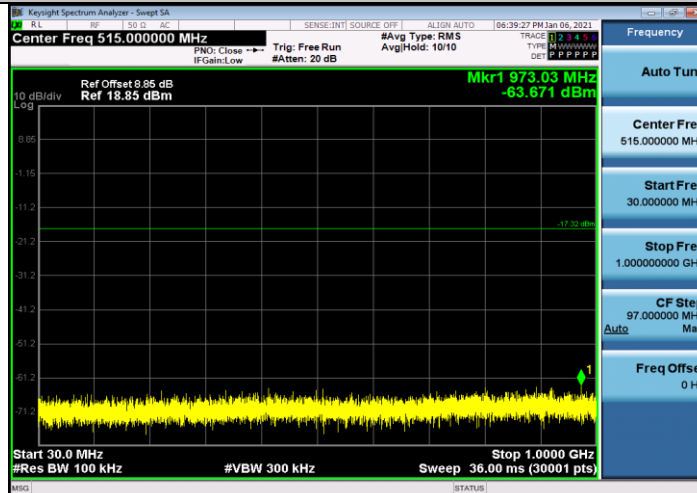
11N20SISO_Ant1_2412_1000-26500



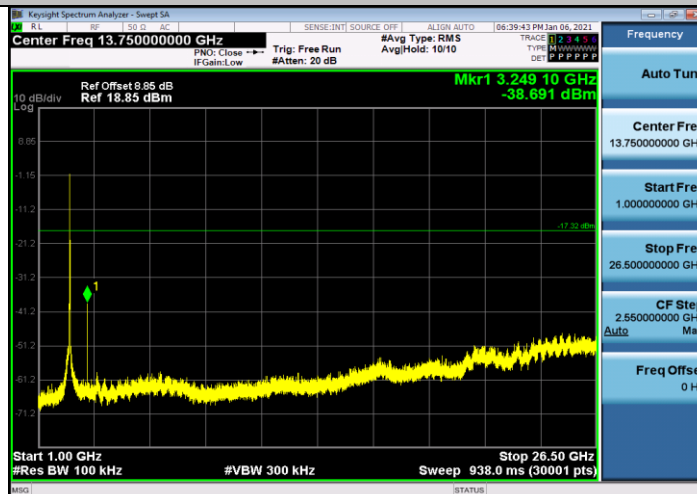
11N20SISO_Ant1_2437_0-Reference



11N20SISO_Ant1_2437_30-1000

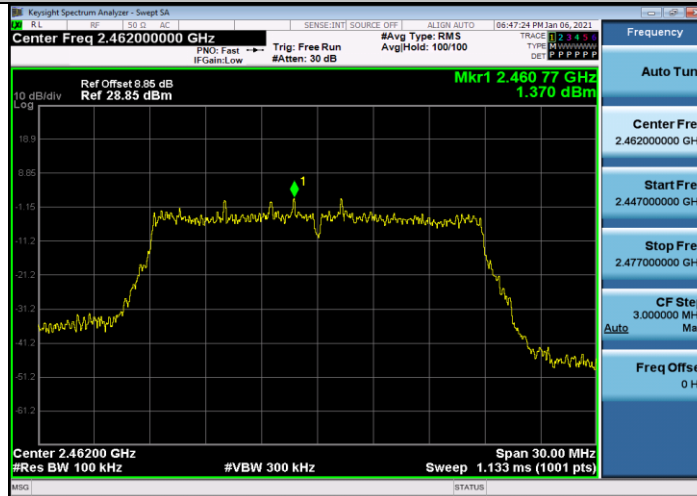


11N20SISO_Ant1_2437_1000-26500

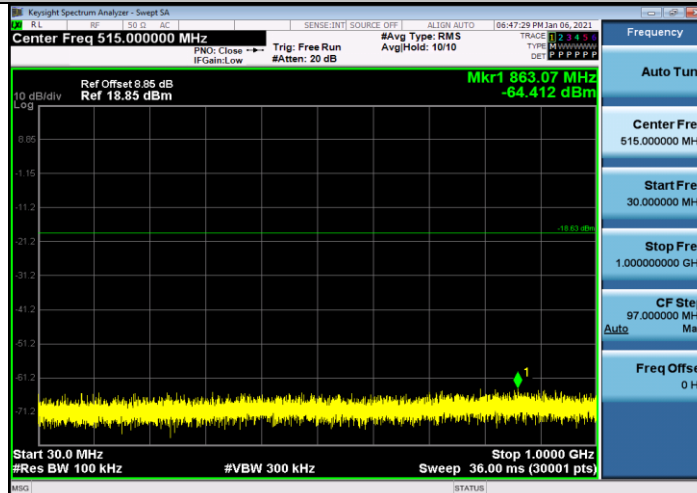




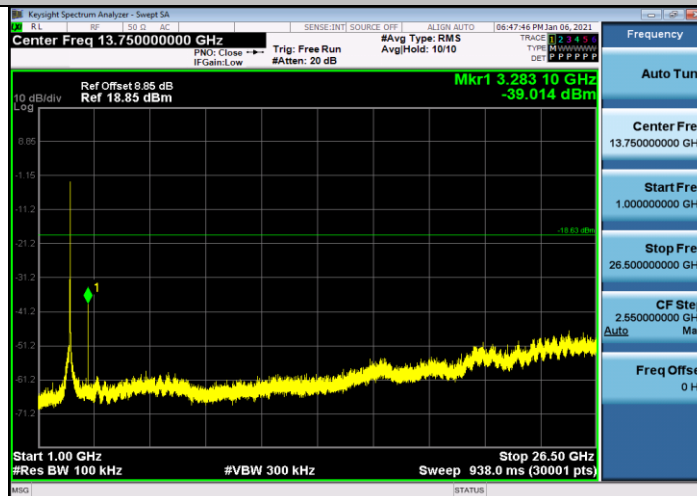
11N20SISO_Ant1_2462_0-Reference



11N20SISO_Ant1_2462_30-1000



11N20SISO_Ant1_2462_1000-26500





4.7 Emissions in restricted frequency bands

4.7.1 Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
1 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(2)
13.36 - 13.41	--	--	--



All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209

Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

4.7.2 Test Procedure Reference

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

4.7.3 Test Procedures

Peak Field Strength Measurements

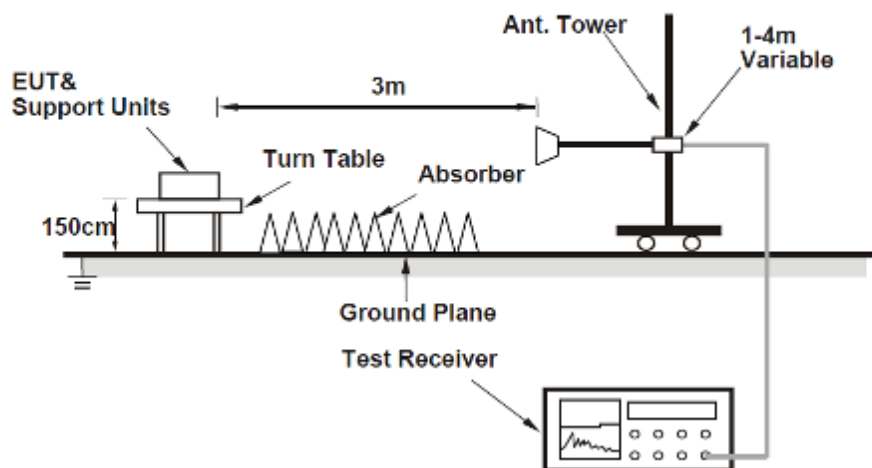
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

8. 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
9. 2. RBW = 1MHz
10. 3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
11. If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
12. 4. Detector = Peak
13. 5. Sweep time = auto
14. 6. Trace mode = max hold
15. 7. Trace was allowed to stabilize

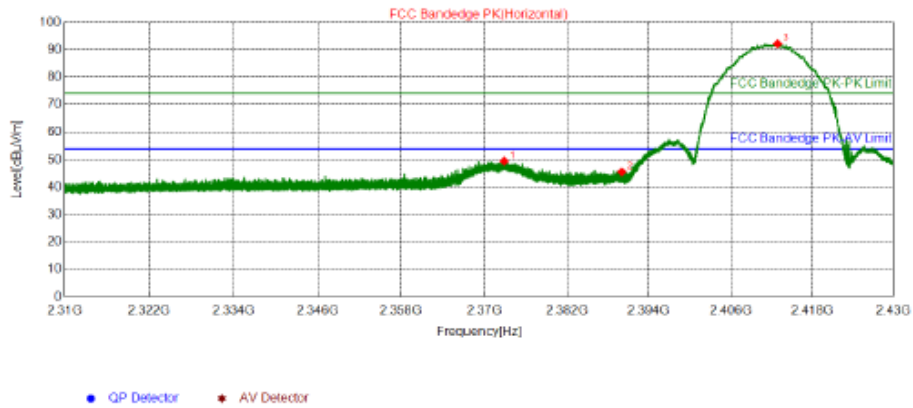
4.7.4 Test Setup

For Radiated emission above 1GHz



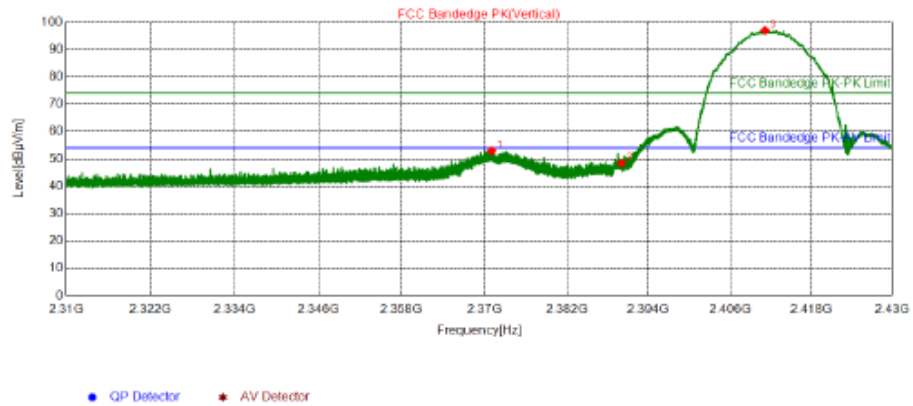
4.7.5 Test Results

802.11b-2412MHz/ Horizontal



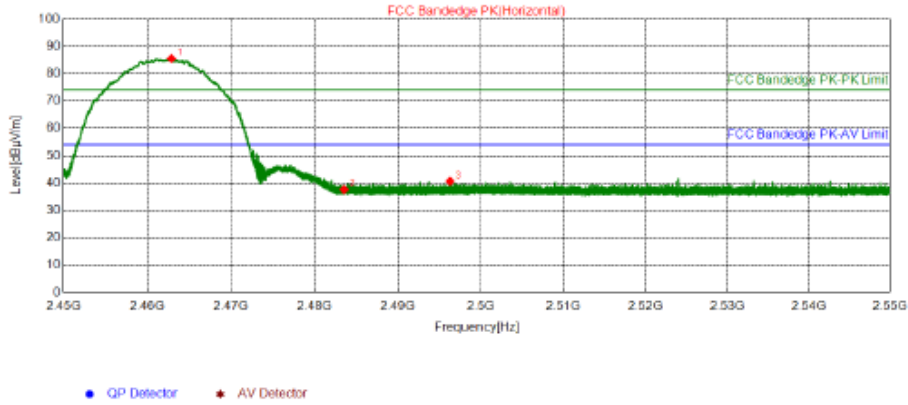
NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2372.6860	51.16	49.49	74.00	24.51	350	313	Horizontal	PK
2	2390.0040	47.13	45.57	74.00	28.43	350	313	Horizontal	PK
3	2412.8760	93.54	92.12	74.00	-18.12	350	313	Horizontal	PK

802.11b-2412MHz/ Vertical



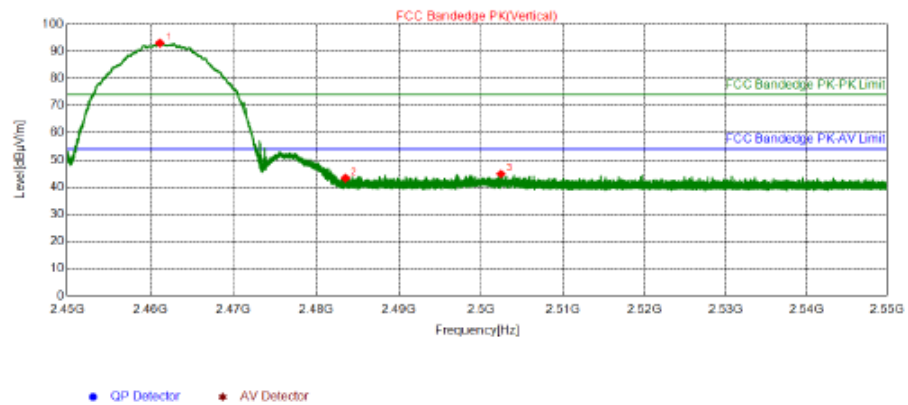
NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2371.0680	54.64	52.95	74.00	21.05	350	5	Vertical	PK
2	2390.0040	49.98	48.42	74.00	25.58	350	162	Vertical	PK
3	2411.1240	98.42	96.99	74.00	-22.99	350	5	Vertical	PK

802.11b-2462MHz/ Horizontal



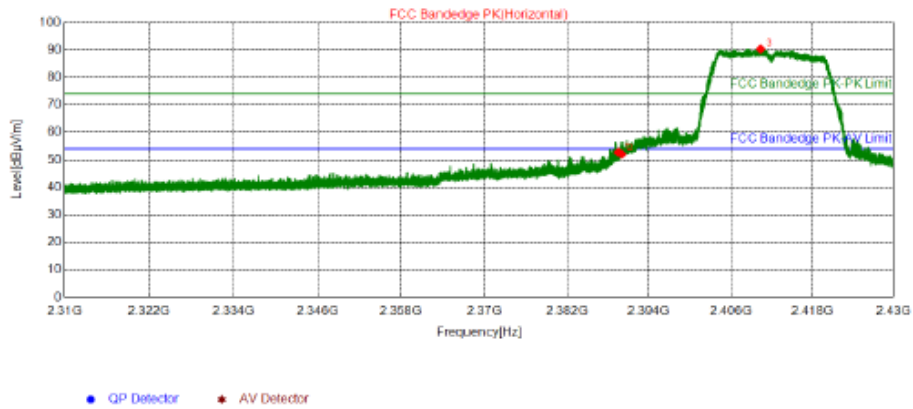
NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2462.8550	86.69	85.53	74.00	-11.53	350	302	Horizontal	PK
2	2483.5000	38.72	37.66	74.00	36.34	350	331	Horizontal	PK
3	2496.2850	41.67	40.67	74.00	33.33	350	331	Horizontal	PK

802.11b-2462MHz/ Vertical



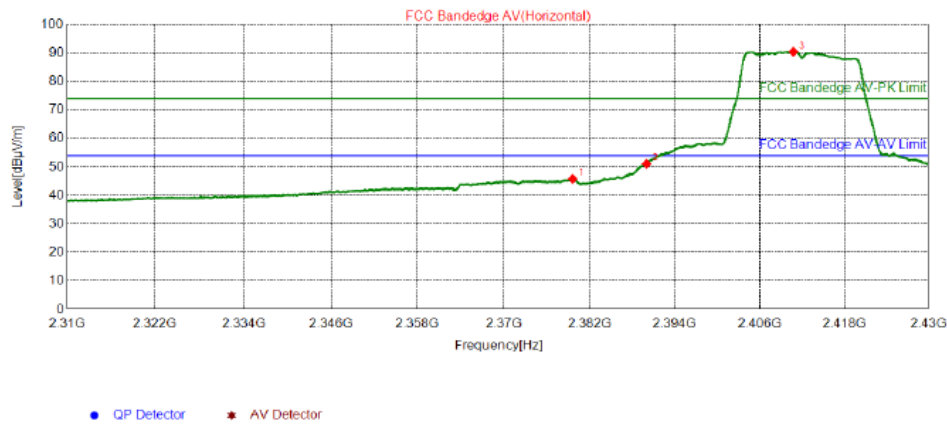
NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2461.1350	94.17	93.00	74.00	-19.00	350	0	Vertical	PK
2	2483.5000	44.38	43.32	74.00	30.68	350	0	Vertical	PK
3	2502.4150	45.86	44.88	74.00	29.12	350	8	Vertical	PK

802.11g-2412MHz/ Horizontal-PK



NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2389.5000	54.30	52.73	74.00	21.27	350	39	Horizontal	PK
2	2390.0040	53.61	52.05	74.00	21.95	350	304	Horizontal	PK
3	2410.3620	91.78	90.35	74.00	-16.35	350	29	Horizontal	PK

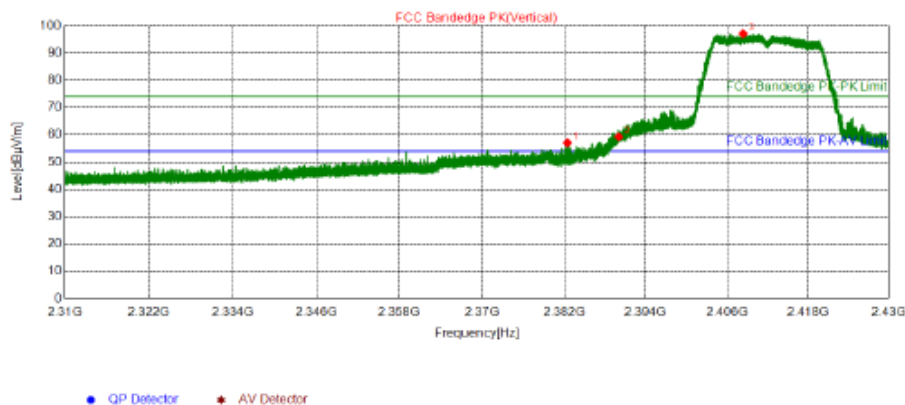
802.11g-2412MHz/ Horizontal-AV



Suspected List

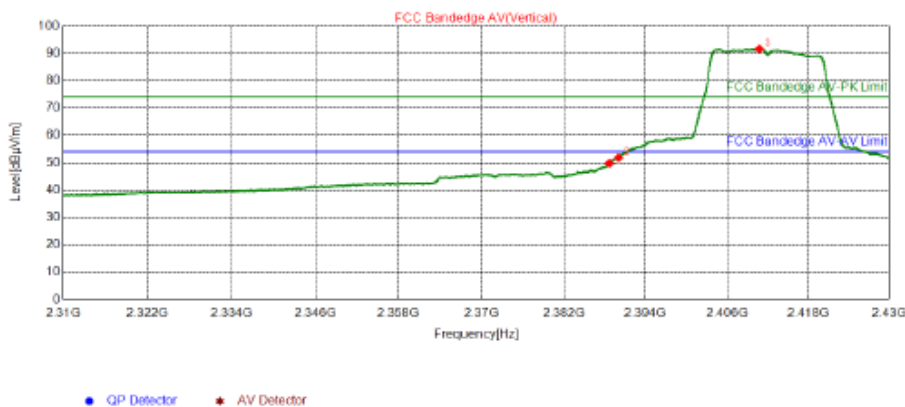
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2379.6150	47.42	45.79	54.00	8.21	350	0	Horizontal	PK
2	2390.0100	52.61	51.05	54.00	2.95	350	2	Horizontal	PK
3	2410.7550	91.84	90.41	54.00	-36.41	350	0	Horizontal	PK

802.11g-2412MHz/ Vertical-PK



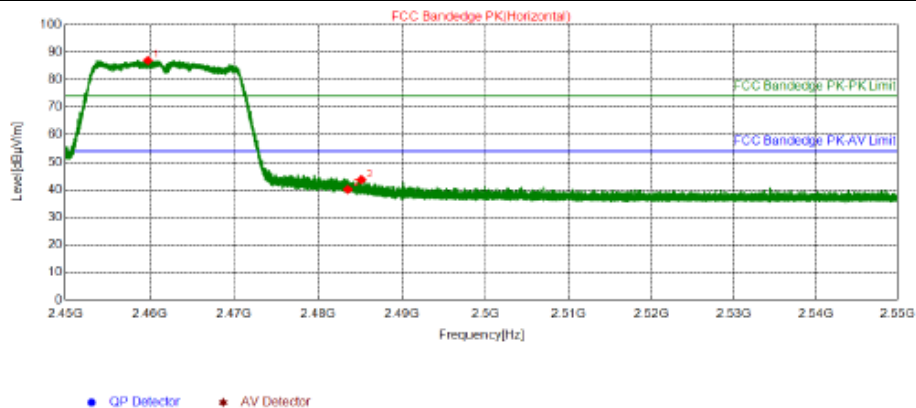
NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2382.4920	58.70	57.09	74.00	16.91	350	1	Vertical	PK
2	2390.0040	60.85	59.29	74.00	14.71	350	344	Vertical	PK
3	2408.3460	98.54	97.09	74.00	-23.09	350	1	Vertical	PK

802.11g-2412MHz/ Vertical-AV



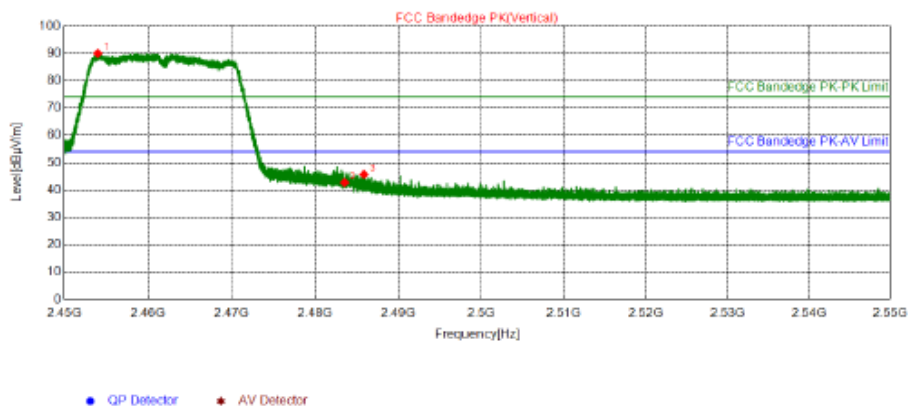
NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2388.6900	51.36	49.79	54.00	4.21	350	0	Vertical	PK
2	2390.0100	53.41	51.85	54.00	2.15	350	2	Vertical	PK
3	2410.7550	93.04	91.61	54.00	-37.61	350	0	Vertical	PK

802.11g-2462MHz/ Horizontal



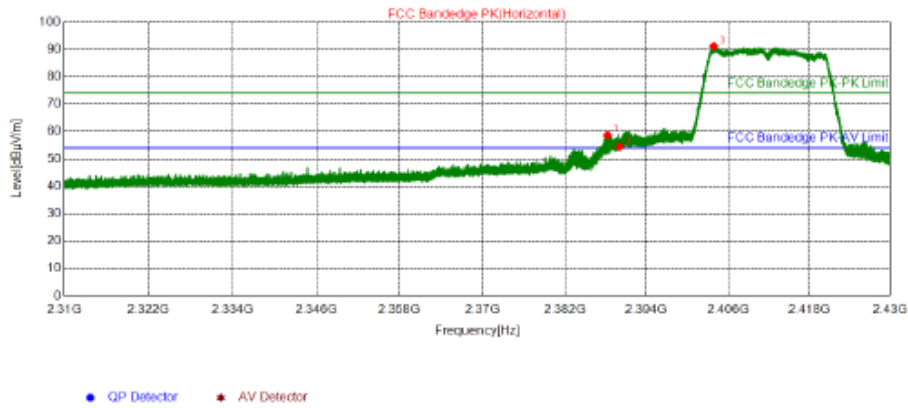
NO	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2459.7600	88.14	86.97	74.00	-12.97	350	27	Horizontal	PK
2	2483.5000	41.20	40.14	74.00	33.86	350	37	Horizontal	PK
3	2485.1350	44.74	43.68	74.00	30.32	350	27	Horizontal	PK

802.11g-2462MHz/ Vertical



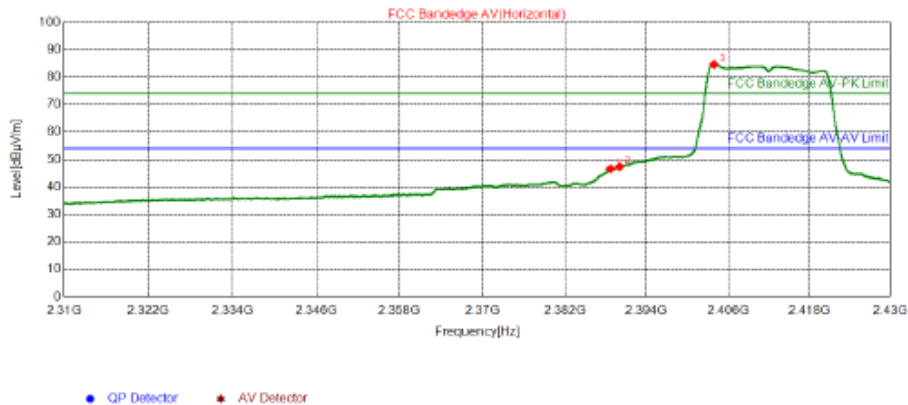
NO	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2454.0200	91.18	89.98	74.00	-15.98	350	360	Vertical	PK
2	2483.5000	43.82	42.76	74.00	31.24	300	0	Vertical	PK
3	2485.8350	46.75	45.70	74.00	28.30	350	351	Vertical	PK

802.11n (HT20)-2412MHz/ Horizontal-PK



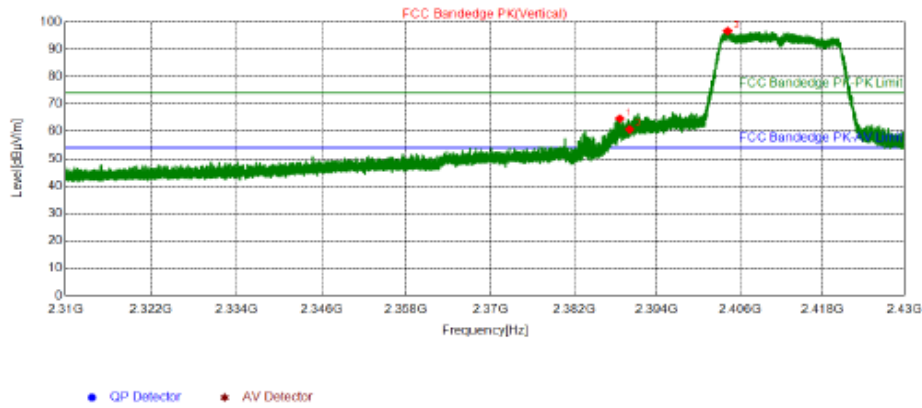
NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2388.2700	60.24	58.66	74.00	15.34	350	27	Horizontal	PK
2	2390.0040	56.05	54.49	74.00	19.51	350	37	Horizontal	PK
3	2403.8760	92.64	91.16	74.00	-17.16	350	27	Horizontal	PK

802.11n (HT20)-2412MHz/ Horizontal-AV



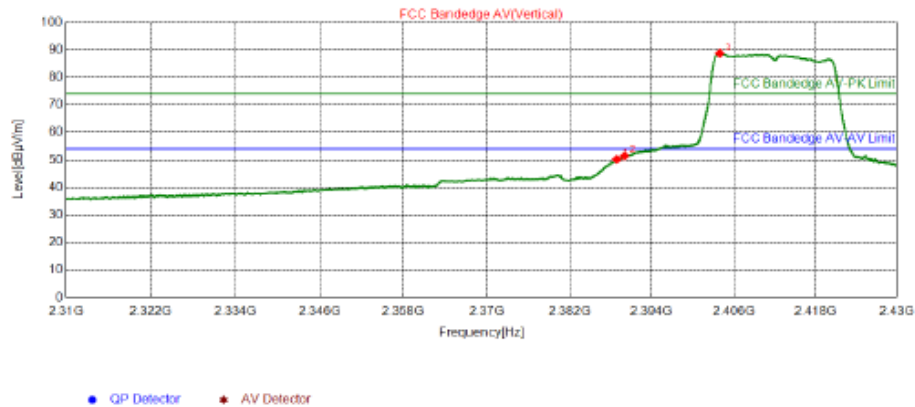
NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2388.7050	48.18	46.61	54.00	7.39	350	314	Horizontal	PK
2	2390.0100	48.98	47.42	54.00	6.58	350	311	Horizontal	PK
3	2403.9000	86.15	84.67	54.00	-30.67	350	31	Horizontal	PK

802.11n (HT20)-2412MHz/ Vertical-PK



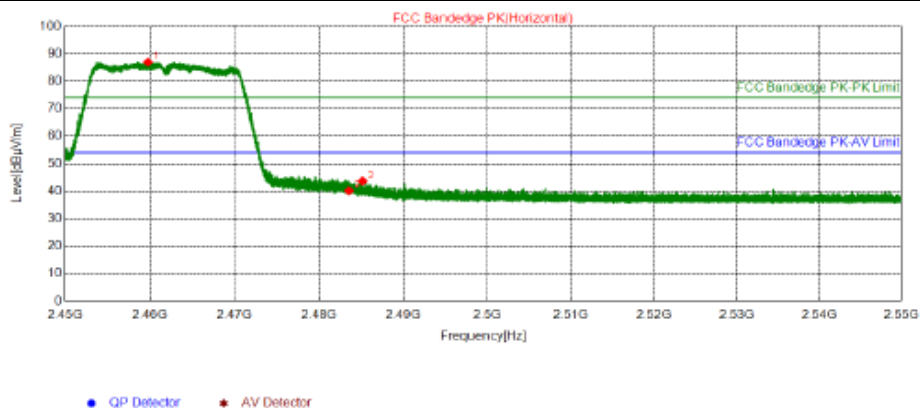
NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2388.6240	66.24	64.67	74.00	9.33	350	0	Vertical	PK
2	2390.0100	62.31	60.75	74.00	13.25	300	359	Vertical	PK
3	2404.2060	98.12	96.65	74.00	-22.65	350	0	Vertical	PK

802.11n (HT20)-2412MHz/ Vertical-AV



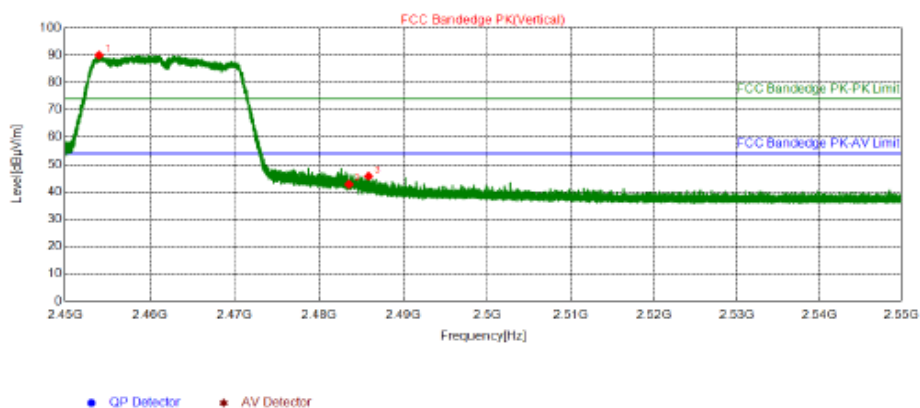
NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2388.8850	51.79	50.22	54.00	3.78	350	2	Vertical	PK
2	2390.0100	53.02	51.46	54.00	2.54	350	0	Vertical	PK
3	2403.9300	90.21	88.73	54.00	-34.73	350	0	Vertical	PK

802.11n (ht20)-2462MHz/ Horizontal



NO	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2459.7600	88.14	86.97	74.00	-12.97	350	27	Horizontal	PK
2	2483.5000	41.20	40.14	74.00	33.86	350	37	Horizontal	PK
3	2485.1350	44.74	43.68	74.00	30.32	350	27	Horizontal	PK

802.11n (HT20)-2462MHz/ Vertical



NO	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2454.0200	91.18	89.98	74.00	-15.98	350	360	Vertical	PK
2	2483.5000	43.82	42.76	74.00	31.24	300	0	Vertical	PK
3	2485.8350	46.75	45.70	74.00	28.30	350	351	Vertical	PK

4.8 Radiated Emission Measurement

4.8.1 Limits

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, 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.

4.8.2 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degree to determine the position of the highest radiation.
- 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. Both X and Y axes of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotate table was turned from 0 degree to 360 degree to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation
- 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 height of antenna 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 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

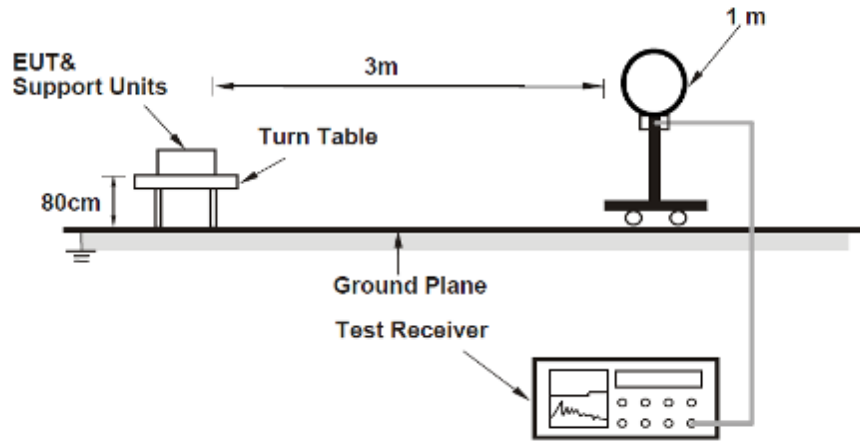
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz & 360 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1/T for RMS Average (Duty cycle < 98 %) for Peak detection at frequency above 1 GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz (Duty cycle $\geq$ 98 %) for Average detection (AV) at frequency above 1 GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.8.3 Deviation from Test Standard

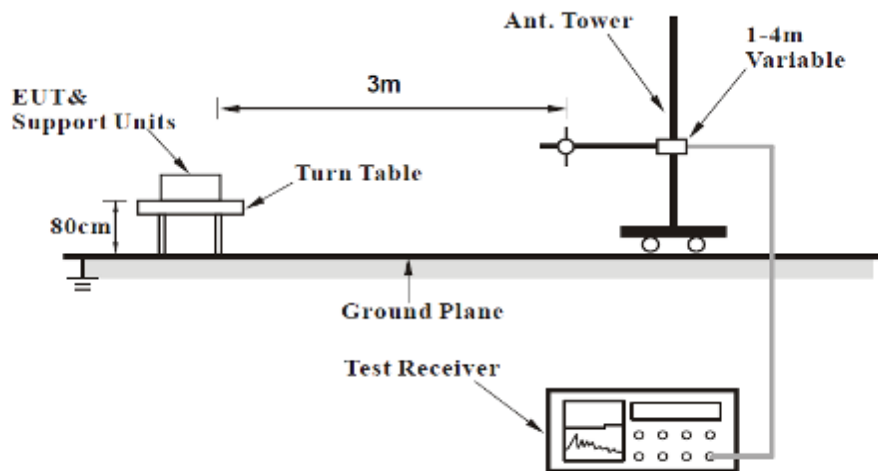
No deviation.

4.8.4 Test Setup

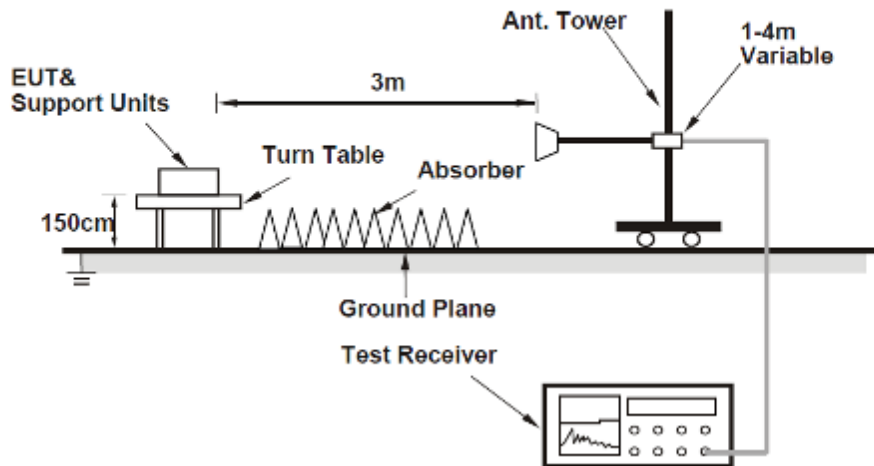
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.8.5 EUT Operating Conditions

- Placed the EUT on a testing table.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.8.6 Test Results

Radiated Emissions Range 9kHz~30MHz

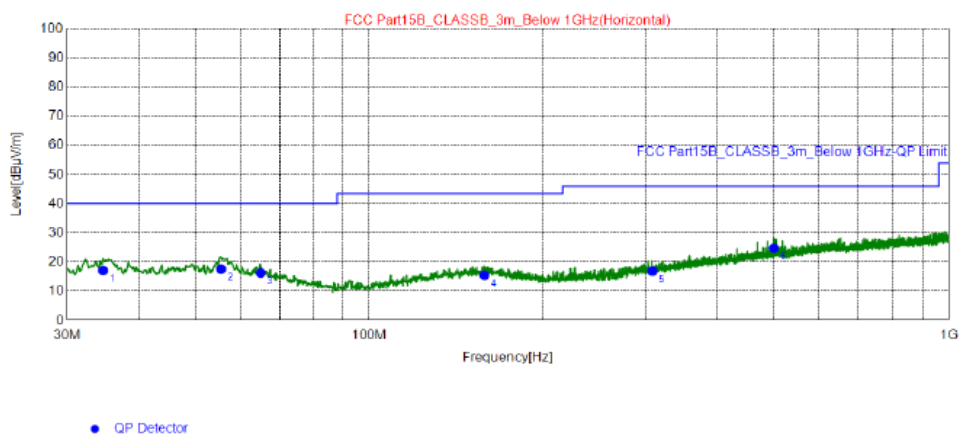
The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Radiated Emissions Range 30MHz~1GHz

Below is the worst test data

Channel	BLE_2402_Low gain Ant	Detector Function	Quasi-Peak (QP)
Frequency Range	30MHz ~ 1GHz	Antenna Polarity	Horizontal

Test Plot:



Final Data List

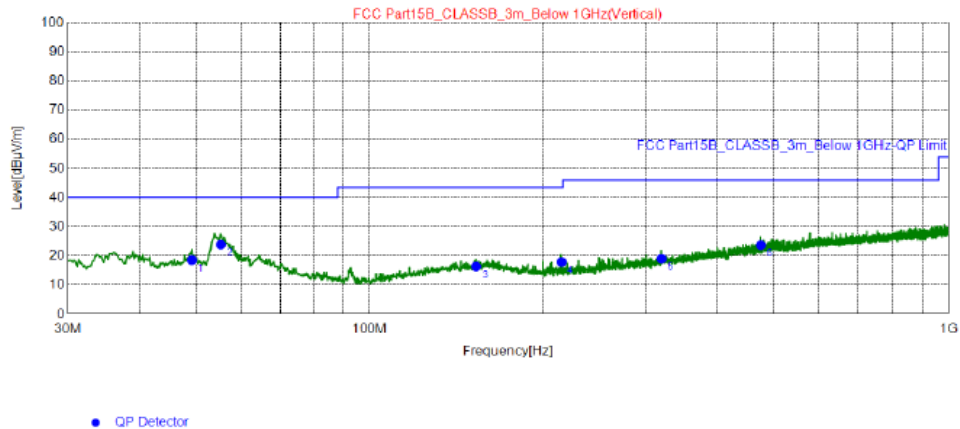
NO.	Freq. [MHz]	QP Reading [dB μV/m]	Factor [dB]	QP Value [dB μV/m]	QP Limit [dB μV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	34.65	28.2	-11.09	17.11	40.00	22.89	200	3	Horizontal
2	55.41	27.63	-10.01	17.62	40.00	22.38	200	227	Horizontal
3	64.92	27.38	-11.15	16.23	40.00	23.77	200	8	Horizontal
4	158.2	25.3	-9.81	15.49	43.50	28.01	200	313	Horizontal
5	308.7	25.27	-8.40	16.87	46.00	29.13	100	189	Horizontal
6	500.6	29.3	-4.53	24.77	46.00	21.23	100	162	Horizontal

REMARKS:

- Emission Level(dBuV/m) = Spectrum reading (dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Limit value – Emission Level

Channel	BLE_2402_Low gain Ant	Detector Function	Quasi-Peak (QP)
Frequency Range	30MHz ~ 1GHz	Antenna Polarity	Vertical

Test Plot:



Final Data List

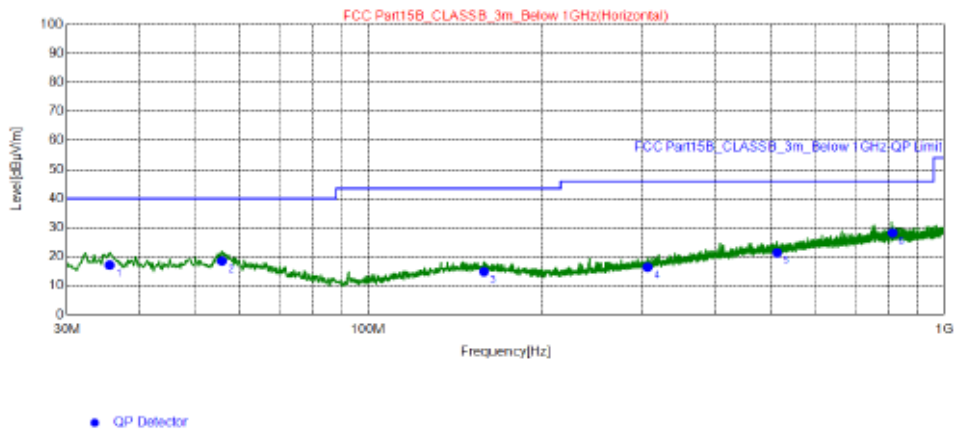
NO.	Freq. [MHz]	QP Reading [dB μ V/m]	Factor [dB]	QP Value [dB μ V/m]	QP Limit [dB μ V/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	49.20	28.33	-9.76	18.57	40.00	21.43	100	192	Vertical
2	55.22	33.86	-10.00	23.86	40.00	16.14	100	139	Vertical
3	152.8	26.32	-9.96	16.36	43.50	27.14	100	278	Vertical
4	214.8	29.77	-11.84	17.93	43.50	25.57	100	80	Vertical
5	320.0	27.1	-8.12	18.98	46.00	27.02	100	62	Vertical
6	475.4	28.49	-4.83	23.66	46.00	22.34	100	188	Vertical

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

Channel	BLE_2402_High gain Ant	Detector Function	Quasi-Peak (QP)
Frequency Range	30MHz ~ 1GHz	Antenna Polarity	Horizontal

Test Plot:



Final Data List

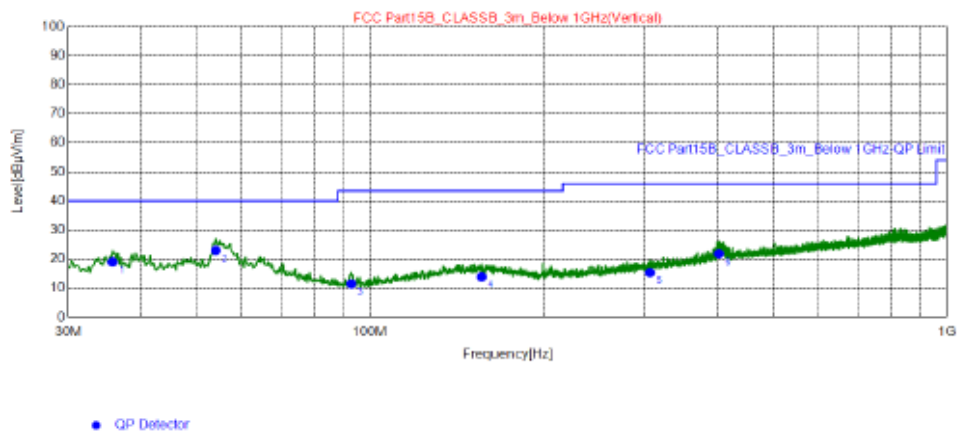
NO.	Freq. [MHz]	QP Reading [dB μ V/m]	Factor [dB]	QP Value [dB μ V/m]	QP Limit [dB μ V/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.62	28.08	-10.97	17.11	40.00	22.89	200	119	Horizontal
2	55.80	28.54	-10.03	18.51	40.00	21.49	200	268	Horizontal
3	159.0	24.7	-9.79	14.91	43.50	28.59	200	151	Horizontal
4	305.6	24.87	-8.48	16.39	46.00	29.61	200	0	Horizontal
5	513.2	25.73	-4.31	21.42	46.00	24.58	200	91	Horizontal
6	813.7	28.28	-0.05	28.23	46.00	17.77	100	91	Horizontal

REMARKS:

1. Emission Level(dBuV/m) = Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

Channel	BLE_2402_High gain Ant	Detector Function	Quasi-Peak (QP)
Frequency Range	30MHz ~ 1GHz	Antenna Polarity	Vertical

Test Plot:



Final Data List

NO.	Freq. [MHz]	QP Reading [dBμV/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.82	29.96	-10.95	19.01	40.00	20.99	100	205	Vertical
2	54.05	32.92	-9.93	22.99	40.00	17.01	100	264	Vertical
3	92.85	27.16	-15.63	11.53	43.50	31.97	100	116	Vertical
4	156.2	23.78	-9.86	13.92	43.50	29.58	200	283	Vertical
5	305.8	23.84	-8.47	15.37	46.00	30.63	100	49	Vertical
6	402.8	28.09	-6.23	21.86	46.00	24.14	100	255	Vertical

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level



Radiated Emission Range 1GHz~10th Harmonic

802.11b

Channel	TX Channel 1	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7237.3000	43.56	74.00	30.44	4.94	H	PK
2	7237.3000	39.04	54.00	14.96	4.94	H	AV
3	7237.3000	38.89	54.00	15.11	4.94	V	PK
4	7237.3000	44.00	74.00	30.00	4.94	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

Channel	TX Channel 6	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7312.1000	41.34	74.00	32.66	4.77	H	PK
2	7312.1000	37.46	54.00	16.54	4.77	H	AV
3	7312.1000	43.63	74.00	30.37	4.77	V	PK
4	7312.1000	38.15	54.00	15.85	4.77	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level



Channel	TX Channel 11	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7386.9000	42.67	74.00	31.33	4.61	H	PK
2	7386.9000	38.03	54.00	15.97	4.61	H	AV
3	7386.9000	43.20	74.00	30.80	4.61	V	PK
4	7386.9000	38.80	54.00	15.20	4.61	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value =Limit value – Emission Level



802.11g

Channel	TX Channel 1	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7237.3000	44.13	74.00	29.87	4.94	H	PK
2	7237.3000	41.48	54.00	12.52	4.94	H	AV
3	7237.3000	44.20	74.00	29.80	4.94	V	PK
4	7237.3000	38.41	54.00	15.59	4.94	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

Channel	TX Channel 6	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7312.1000	45.18	74.00	28.82	4.77	H	PK
2	7312.1000	37.35	54.00	16.65	4.77	H	AV
3	7312.1000	44.69	74.00	29.31	4.77	V	PK
4	7312.1000	42.00	54.00	12.00	4.77	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level



Channel	TX Channel 11	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7386.9000	42.64	74.00	31.36	4.61	H	PK
2	7386.9000	38.29	54.00	15.71	4.61	H	AV
3	7386.9000	43.38	74.00	30.62	4.61	V	PK
4	7386.9000	36.23	54.00	17.77	4.61	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level



802.11n (HT20)

Channel	TX Channel 1	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7237.3000	42.29	74.00	31.71	4.94	H	PK
2	7237.3000	36.03	54.00	17.97	4.94	H	AV
3	7237.3000	44.99	74.00	29.01	4.94	V	PK
4	7237.3000	39.26	54.00	14.74	4.94	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

Channel	TX Channel 6	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7312.1000	44.53	74.00	29.47	4.77	H	PK
2	7312.1000	38.89	54.00	15.11	4.77	H	AV
3	7312.1000	43.36	74.00	30.64	4.77	V	PK
4	7312.1000	37.41	54.00	16.59	4.77	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value =Limit value – Emission Level



Channel	TX Channel 11	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7386.9000	42.54	74.00	31.46	4.61	H	PK
2	7386.9000	36.42	54.00	17.58	4.61	H	AV
3	7386.9000	43.46	74.00	30.54	4.61	V	PK
4	7386.9000	36.84	54.00	17.16	4.61	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

----- END -----