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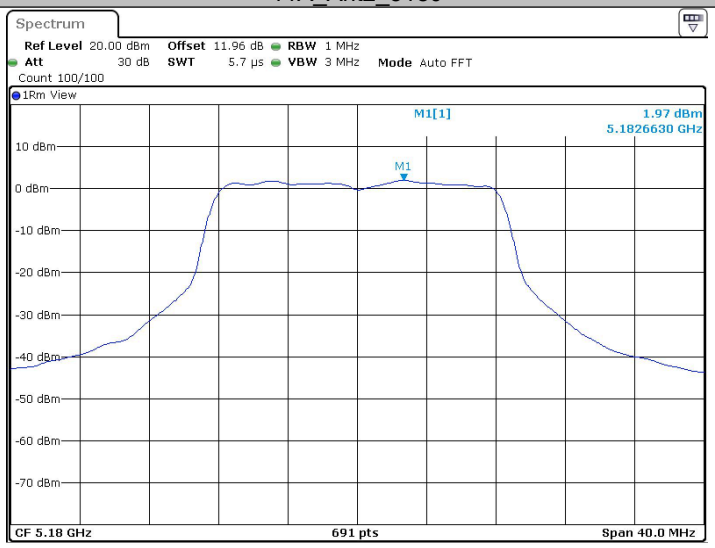

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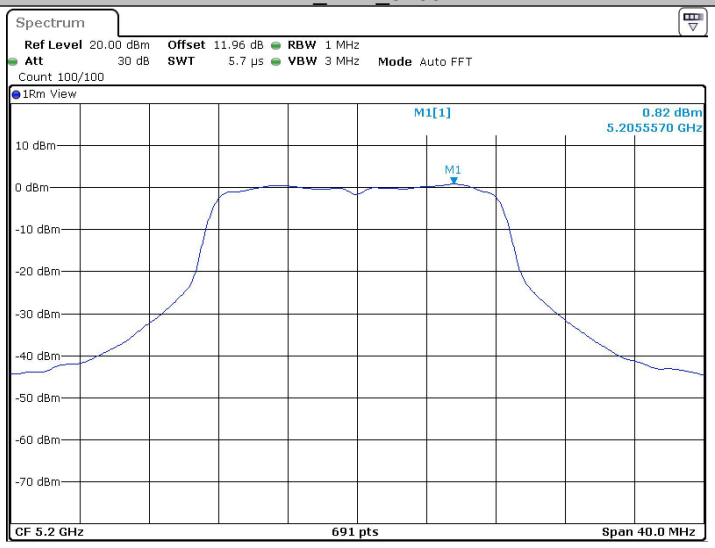

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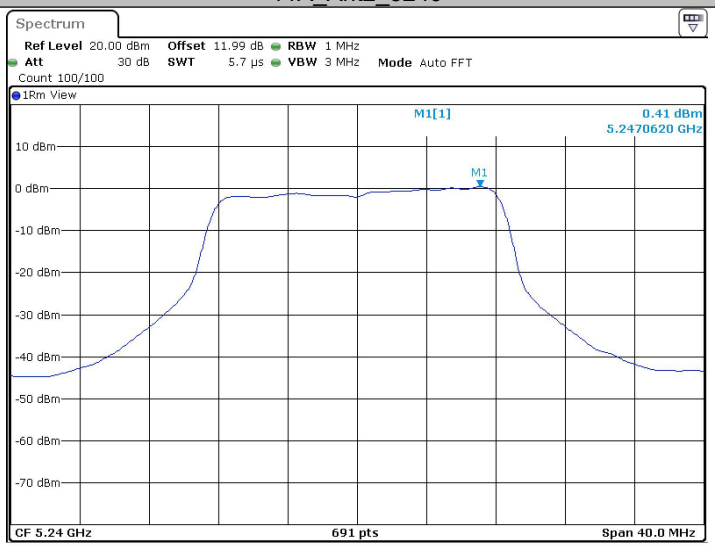

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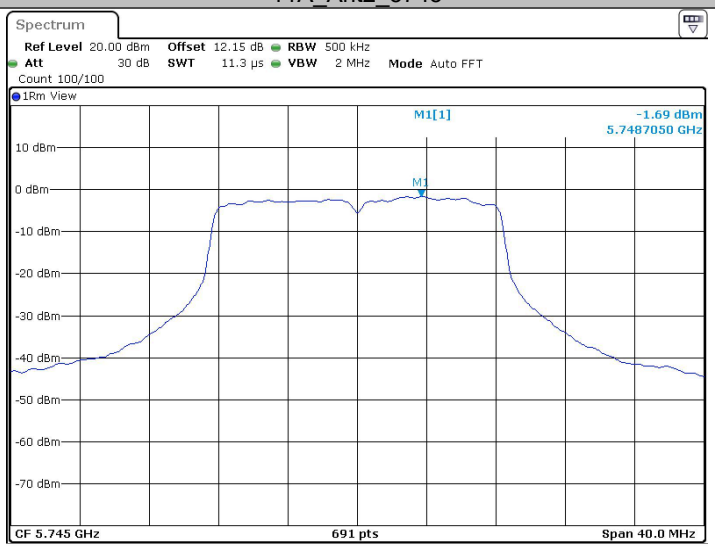

Date: 12.SEP.2023 15:31:50

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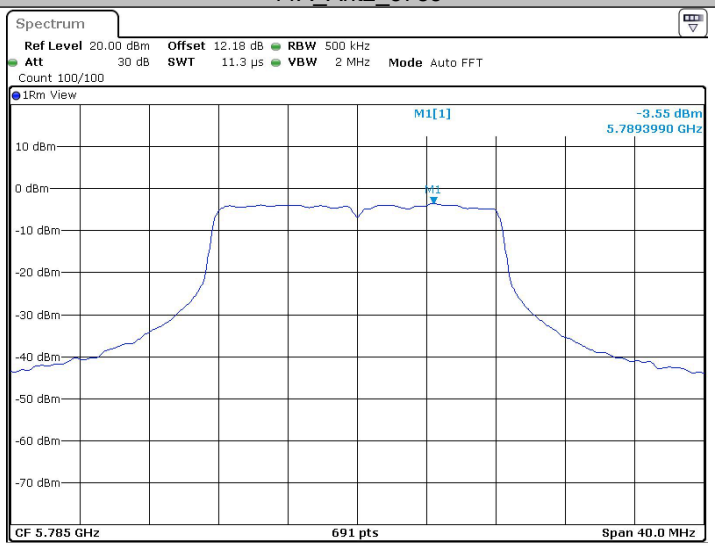

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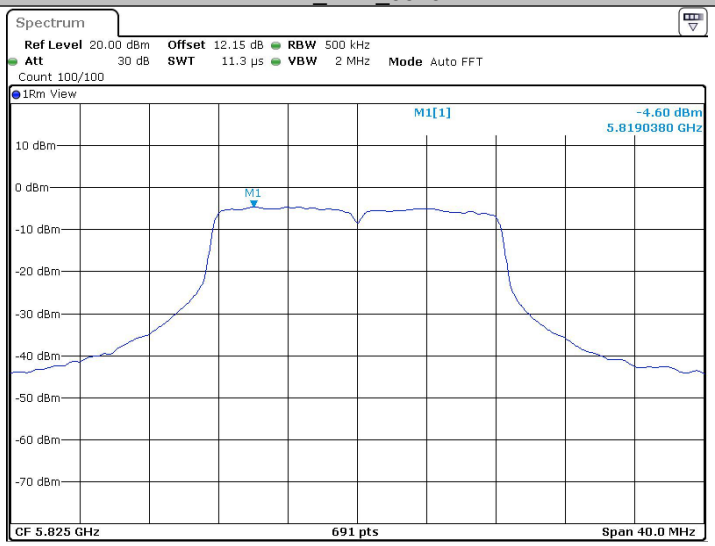
11A_Ant2_5825



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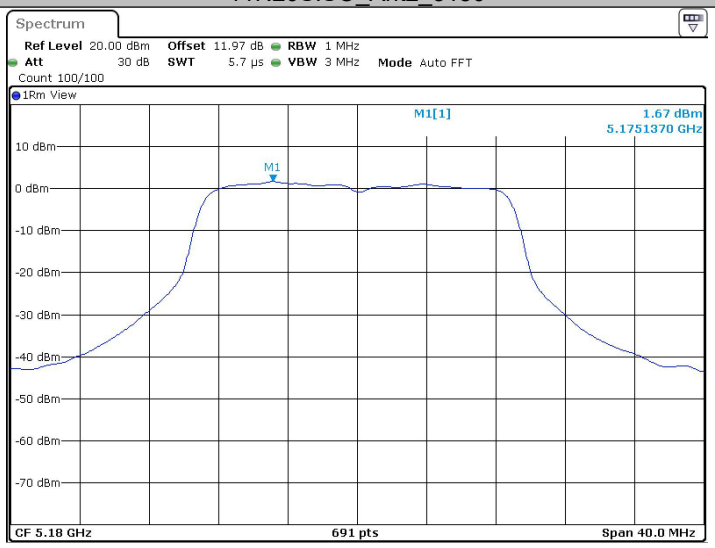

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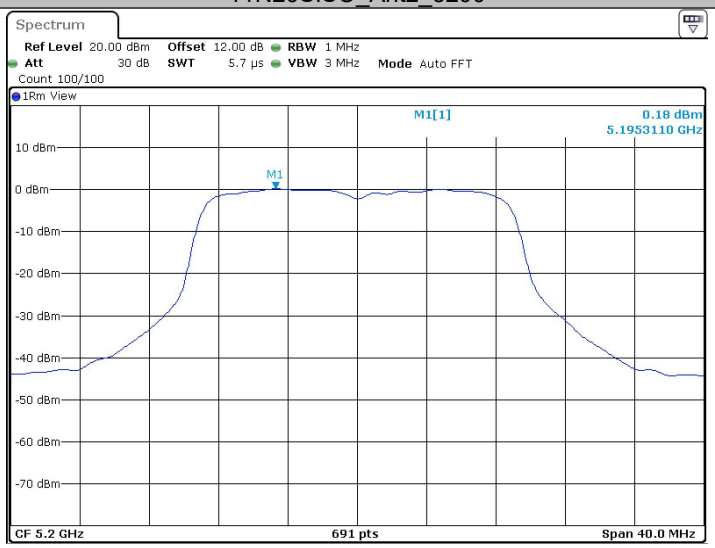

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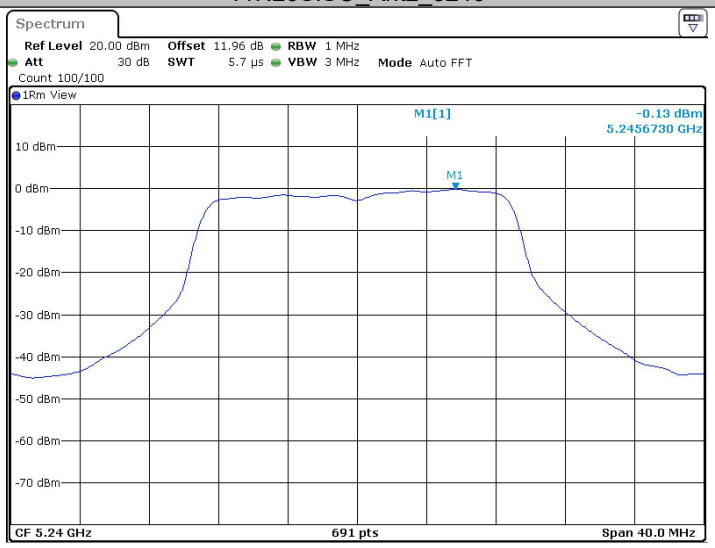
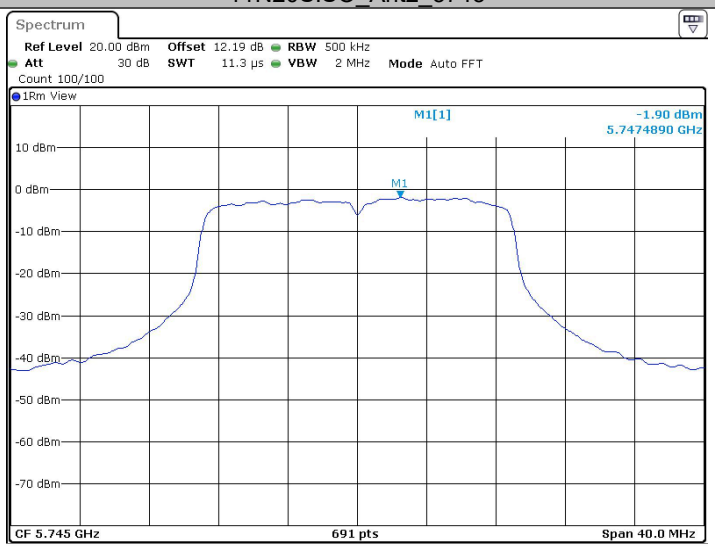


Date: 12.SEP.2023 15:43:07

11N20SISO_Ant2_5745



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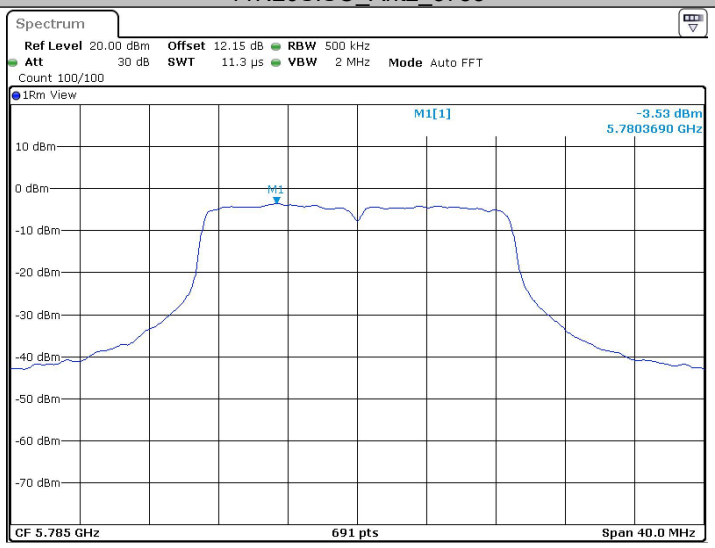
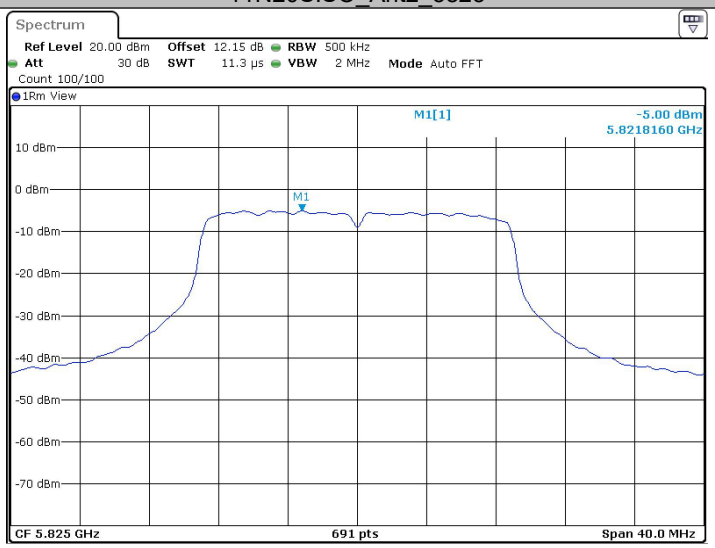


Date: 12.SEP.2023 15:48:51

11N20SISO_Ant2_5825



Date: 12.SEP.2023 15:50:21

Appendix D): Band Edge Measurements

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.407(b)

Test Method: KDB 789033 D02 II G

Test Procedure:

1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.

2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

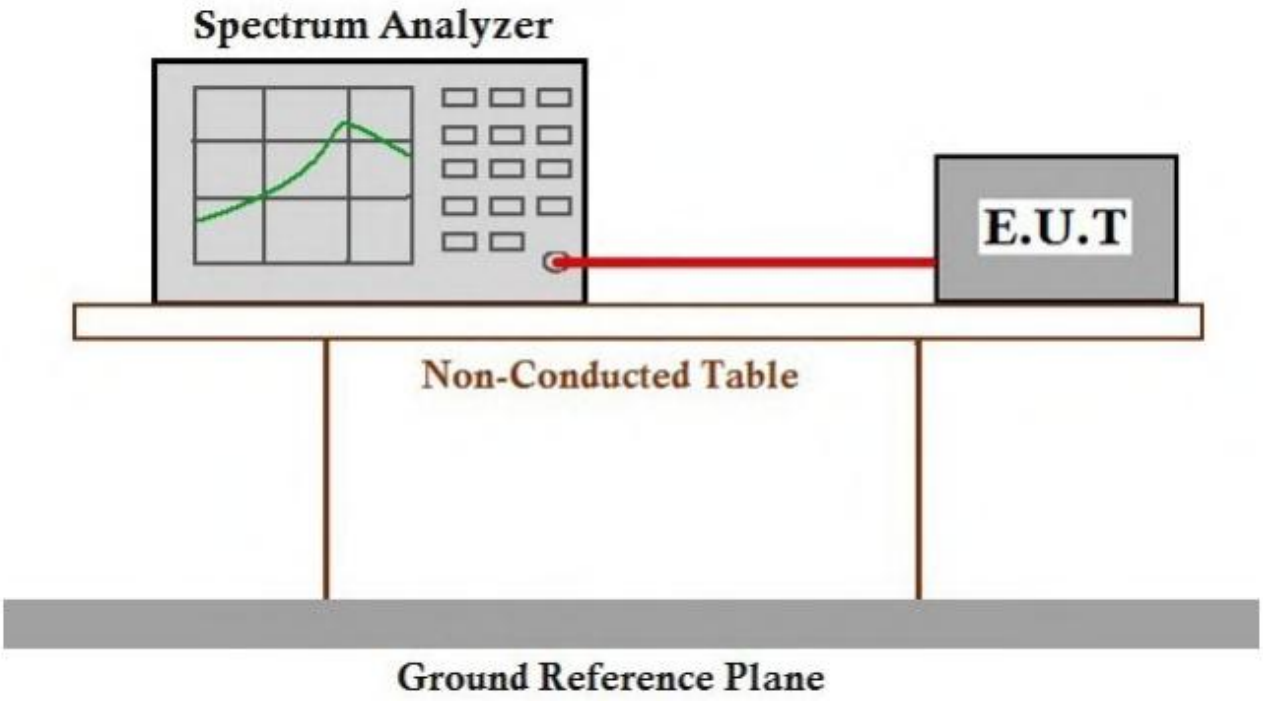
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz ; VBW=1/on time(1KHz) / Sweep=AUTO

Limit:

For transmitters operating in the 5.15-5.25 GHz band:	All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz (68.2dBuV/m).
For transmitters operating in the 5.25-5.35 GHz band:	All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz (68.2dBuV/m).
For transmitters operating in the 5.47-5.725 GHz band:	All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz (68.2dBuV/m).
For transmitters operating in the 5.725-5.85 GHz band:	(i) All emissions shall be limited to a level of −27 dBm/MHz (68.2dBuV/m) at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz (105.2dBuV/m) at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz (110.8dBuV/m) at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz (122.2dBuV/m) at the band edge.

Test Setup Diagram



Test Result:

Ant1:

TestMode	ChName	Freq(MHz)	Result[dBm]	Limit[dBm]	Verdict
11A	Low	5180	-42.67	≤-27	PASS
	High	5240	-42.92	≤-27	PASS
11N20SISO	Low	5180	-41.91	≤-27	PASS
	High	5240	-42.71	≤-27	PASS

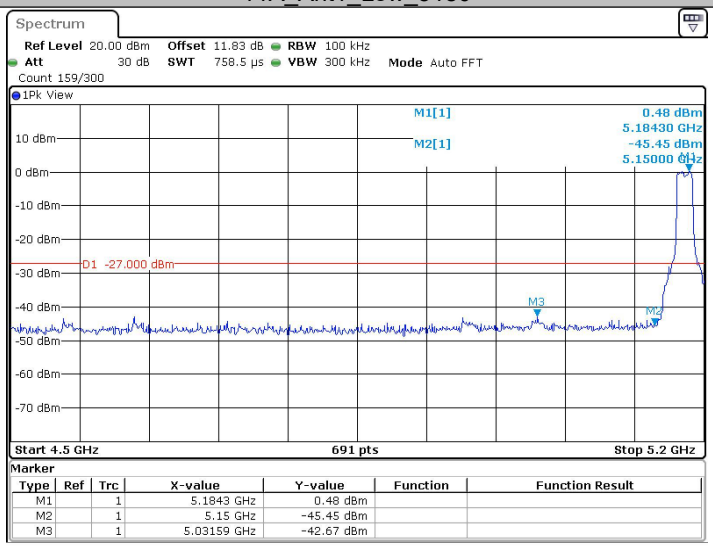
TestMode	ChName	Freq(MHz)	FreqRange [MHz]	Result [dBm]	Limit [dBm]	Verdict
11A	Low	5745	5650~5700	-42.11	≤-22.56	PASS
			5700~5720	-37.96	≤15.60	PASS
			5720~5725	-33.68	≤27.00	PASS
			5760~5650	-42.22	≤-27	PASS
	High	5825	5850~5855	-42.6	≤21.60	PASS
			5855~5875	-41.98	≤14.16	PASS
			5875~5925	-42.02	≤-8.23	PASS
			5925~5935	-41.25	≤-27	PASS
11N20SISO	Low	5745	5650~5700	-42.63	≤0.01	PASS
			5700~5720	-38.55	≤15.04	PASS
			5720~5725	-35.2	≤26.62	PASS
			5760~5650	-43.68	≤-27	PASS
	High	5825	5850~5855	-41.84	≤19.37	PASS
			5855~5875	-41.64	≤10.71	PASS
			5875~5925	-41.2	≤-12.14	PASS
			5925~5935	-42.12	≤-27	PASS

Ant2:

TestMode	ChName	Freq(MHz)	Result[dBm]	Limit[dBm]	Verdict
11A	Low	5180	-42.53	≤-27	PASS
	High	5240	-43.82	≤-27	PASS
11N20SISO	Low	5180	-43.16	≤-27	PASS
	High	5240	-43	≤-27	PASS

TestMode	ChName	Freq(MHz)	FreqRange [MHz]	Result [dBm]	Limit [dBm]	Verdict
11A	Low	5745	5650~5700	-41.85	≤-4.80	PASS
			5700~5720	-42.2	≤15.60	PASS
			5720~5725	-39.04	≤27.00	PASS
			5760~5650	-43.84	≤-27	PASS
	High	5825	5850~5855	-42.34	≤25.17	PASS
			5855~5875	-41.09	≤11.97	PASS
			5875~5925	-41.49	≤-3.45	PASS
			5925~5935	-41.41	≤-27	PASS
11N20SISO	Low	5745	5650~5700	-41.55	≤-4.80	PASS
			5700~5720	-40.81	≤15.41	PASS
			5720~5725	-38.68	≤23.58	PASS
			5760~5650	-43	≤-27	PASS
	High	5825	5850~5855	-40.99	≤18.92	PASS
			5855~5875	-41.11	≤13.77	PASS
			5875~5925	-41.64	≤-13.15	PASS
			5925~5935	-41.73	≤-27	PASS

11A_Ant1_Low_5180

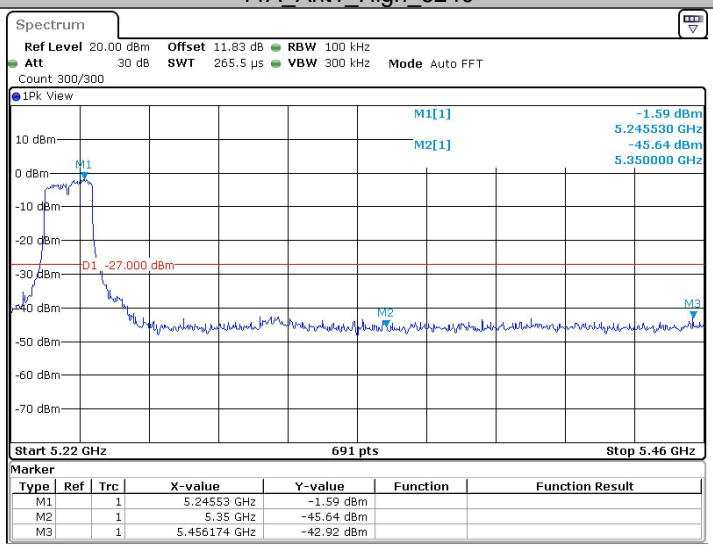


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.1843 GHz	0.48 dBm		
M2		1	5.15 GHz	-45.45 dBm		
M3		1	5.03159 GHz	-42.67 dBm		

Date: 28.AUG.2023 13:57:22

11A_Ant1_High_5240

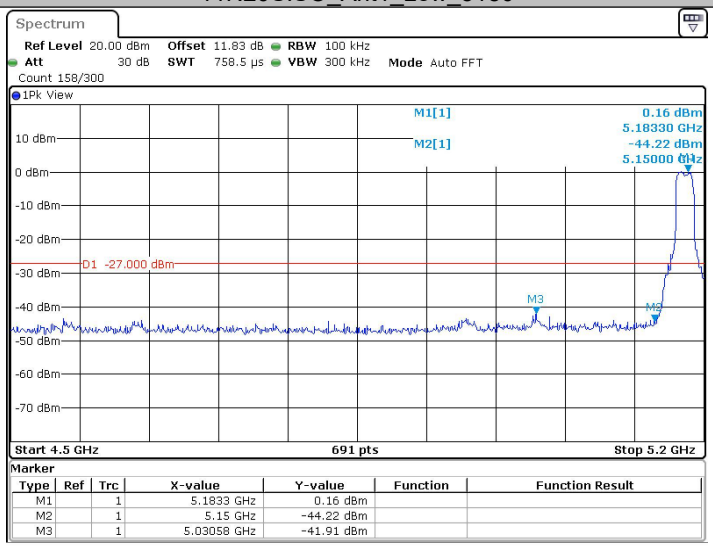


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.24553 GHz	-1.59 dBm		
M2		1	5.35 GHz	-45.64 dBm		
M3		1	5.456174 GHz	-42.92 dBm		

Date: 28.AUG.2023 14:09:50

11N20SISO_Ant1_Low_5180

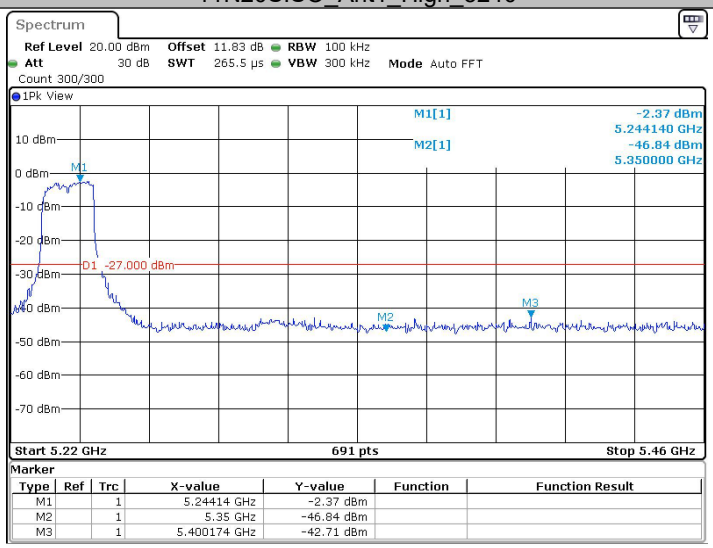


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.1833 GHz	0.16 dBm		
M2		1	5.15 GHz	-44.22 dBm		
M3		1	5.03058 GHz	-41.91 dBm		

Date: 28.AUG.2023 14:43:03

11N20SISO_Ant1_High_5240

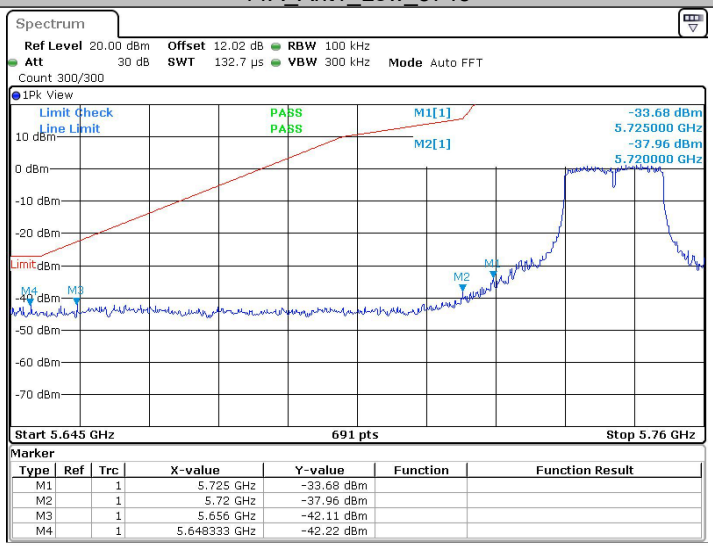


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.24414 GHz	-2.37 dBm		
M2		1	5.35 GHz	-46.84 dBm		
M3		1	5.400174 GHz	-42.71 dBm		

Date: 28.AUG.2023 15:09:41

11A_Ant1_Low_5745

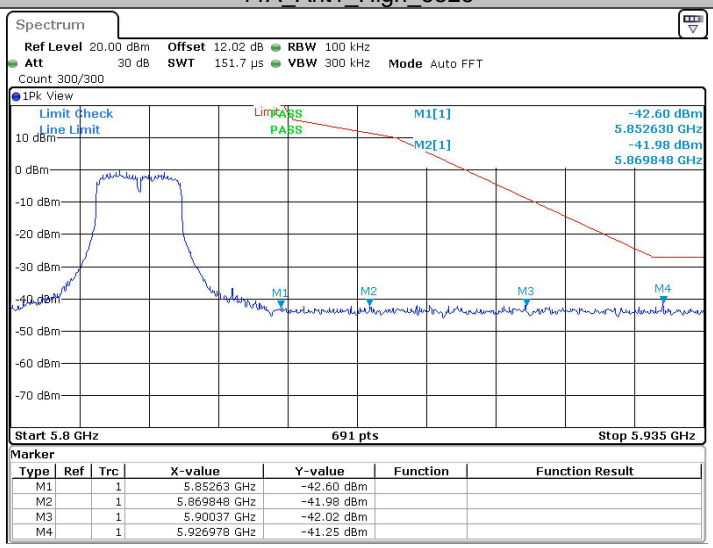


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.725 GHz	-33.68 dBm		
M2		1	5.72 GHz	-37.96 dBm		
M3		1	5.656 GHz	-42.11 dBm		
M4		1	5.648333 GHz	-42.22 dBm		

Date: 28.AUG.2023 14:15:38

11A_Ant1_High_5825



Marker

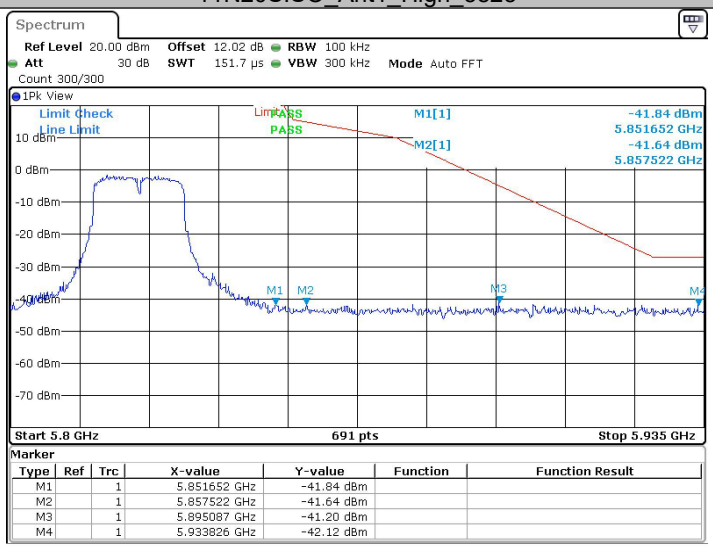
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.85263 GHz	-42.60 dBm		
M2		1	5.869848 GHz	-41.98 dBm		
M3		1	5.90037 GHz	-42.02 dBm		
M4		1	5.926978 GHz	-41.25 dBm		

Date: 28.AUG.2023 14:30:20

11N20SISO_Ant1_Low_5745

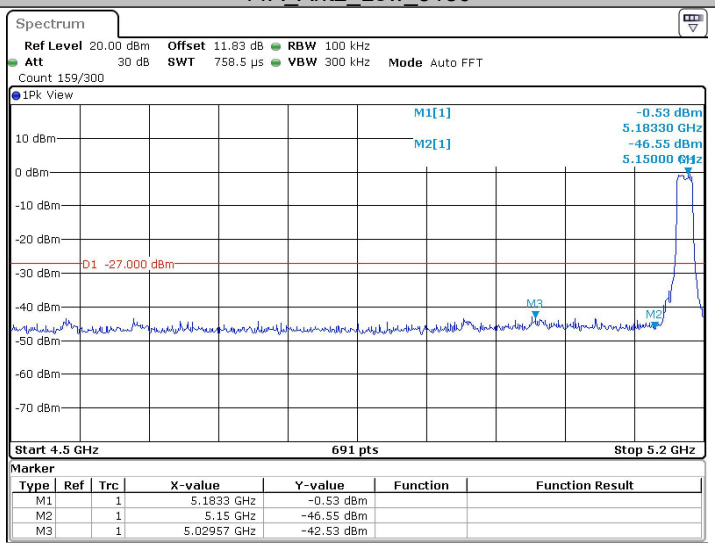
Date: 28.AUG.2023 15:15:48

11N20SISO_Ant1_High_5825



Date: 28.AUG.2023 15:28:59

11A_Ant2_Low_5180

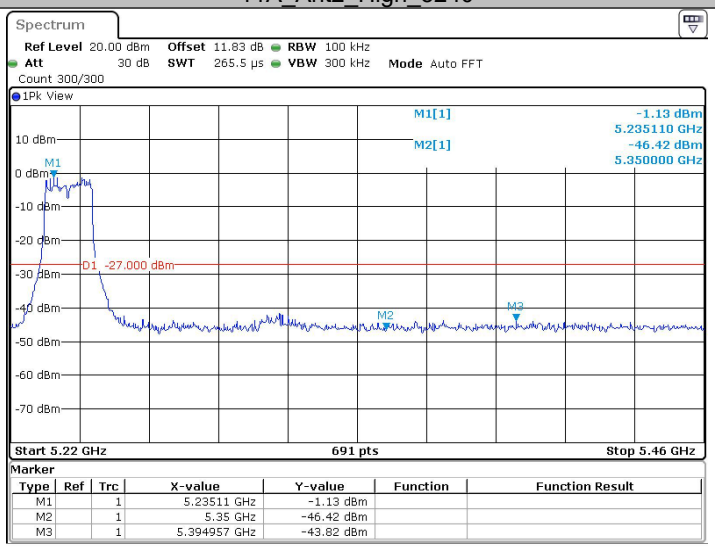


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.1833 GHz	-0.53 dBm		
M2		1	5.15 GHz	-46.55 dBm		
M3		1	5.02957 GHz	-42.53 dBm		

Date: 12.SEP.2023 15:25:07

11A_Ant2_High_5240

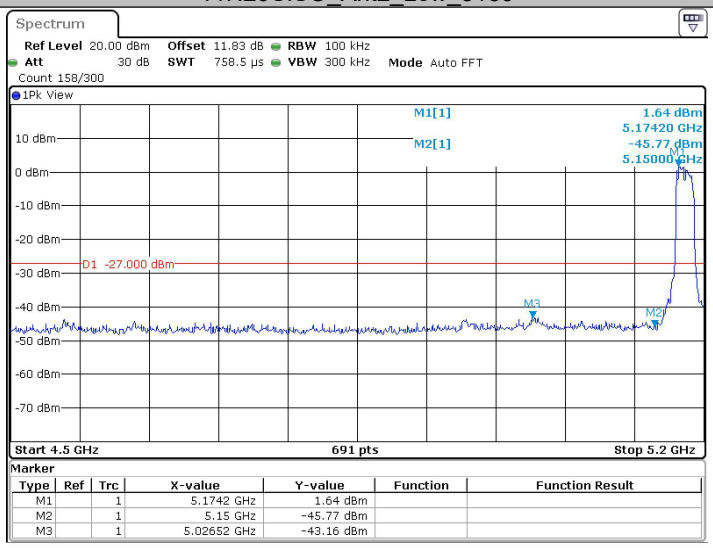


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.23511 GHz	-1.13 dBm		
M2		1	5.35 GHz	-46.42 dBm		
M3		1	5.394957 GHz	-43.82 dBm		

Date: 12.SEP.2023 15:29:12

11N20SISO_Ant2_Low_5180

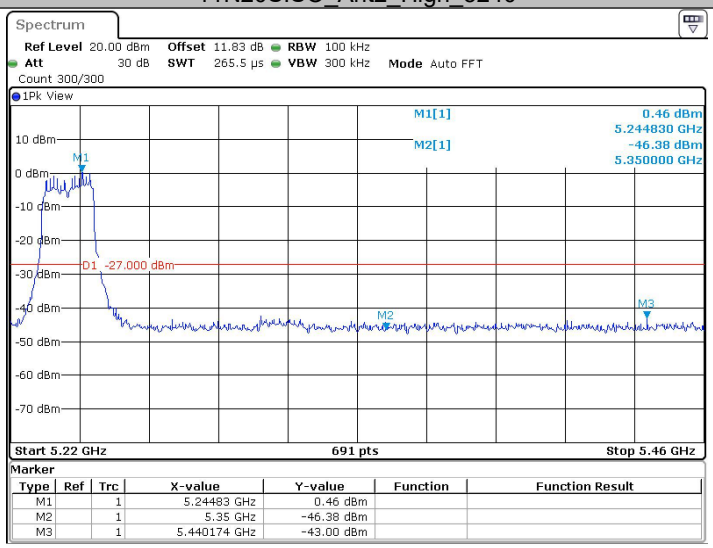


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.1742 GHz	1.64 dBm		
M2		1	5.15 GHz	-45.77 dBm		
M3		1	5.02652 GHz	-43.16 dBm		

Date: 12.SEP.2023 15:38:51

11N20SISO_Ant2_High_5240

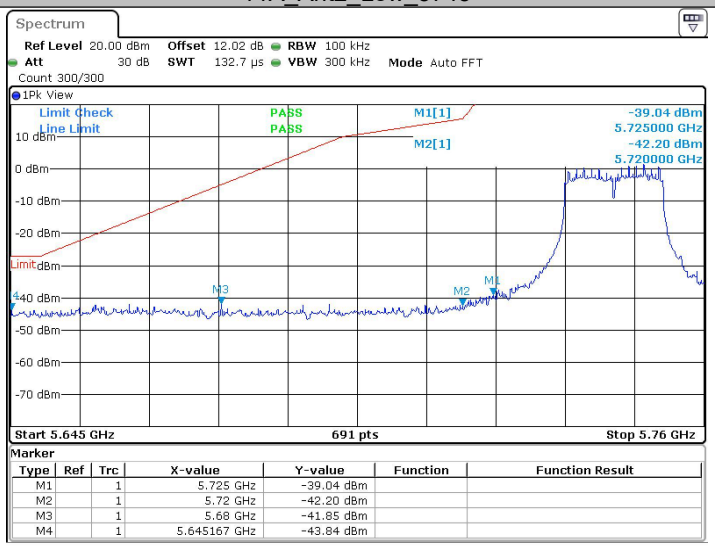


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.24483 GHz	0.46 dBm		
M2		1	5.35 GHz	-46.38 dBm		
M3		1	5.440174 GHz	-43.00 dBm		

Date: 12.SEP.2023 15:43:21

11A_Ant2_Low_5745



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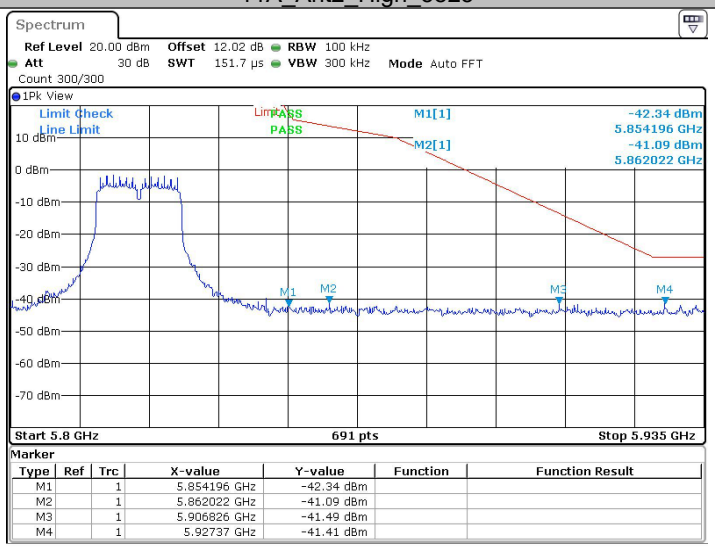
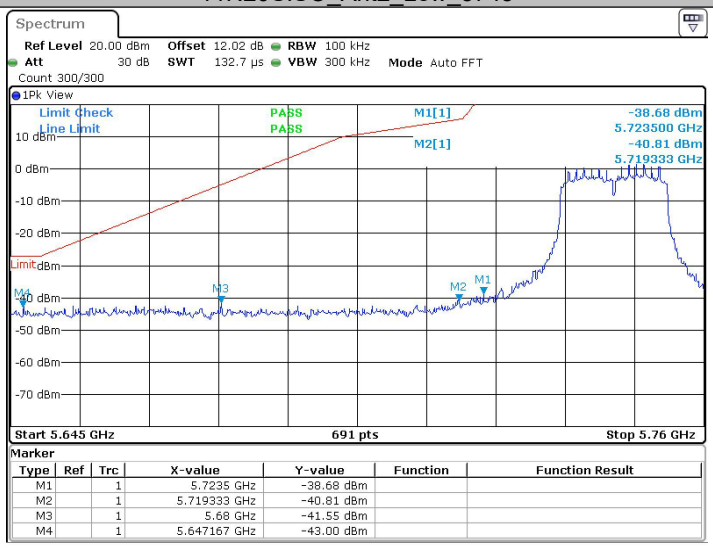
11A_Ant2_High_5825



Date: 12.SEP.2023 15:36:04

11N20SISO_Ant2_Low_5745

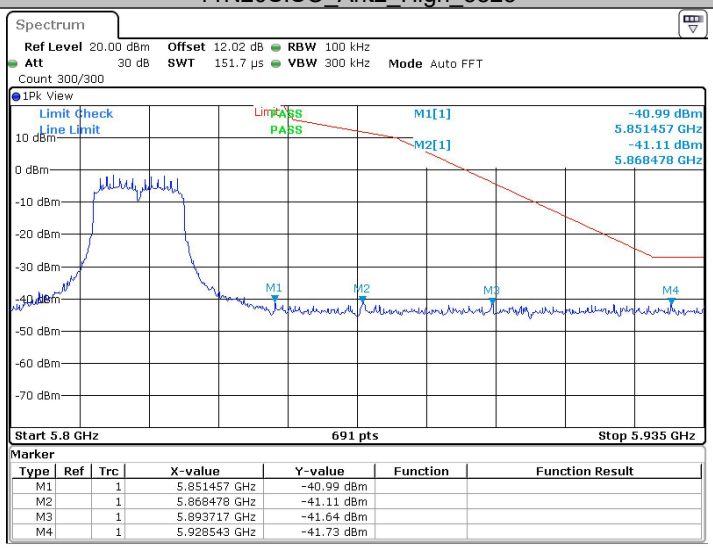


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.7235 GHz	-38.68 dBm		
M2		1	5.719333 GHz	-40.81 dBm		
M3		1	5.68 GHz	-41.55 dBm		
M4		1	5.647167 GHz	-43.00 dBm		

Date: 12.SEP.2023 15:46:09

11N20SISO_Ant2_High_5825



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.851457 GHz	-40.99 dBm		
M2		1	5.868478 GHz	-41.11 dBm		
M3		1	5.893717 GHz	-41.64 dBm		
M4		1	5.928543 GHz	-41.73 dBm		

Date: 12.SEP.2023 15:50:35

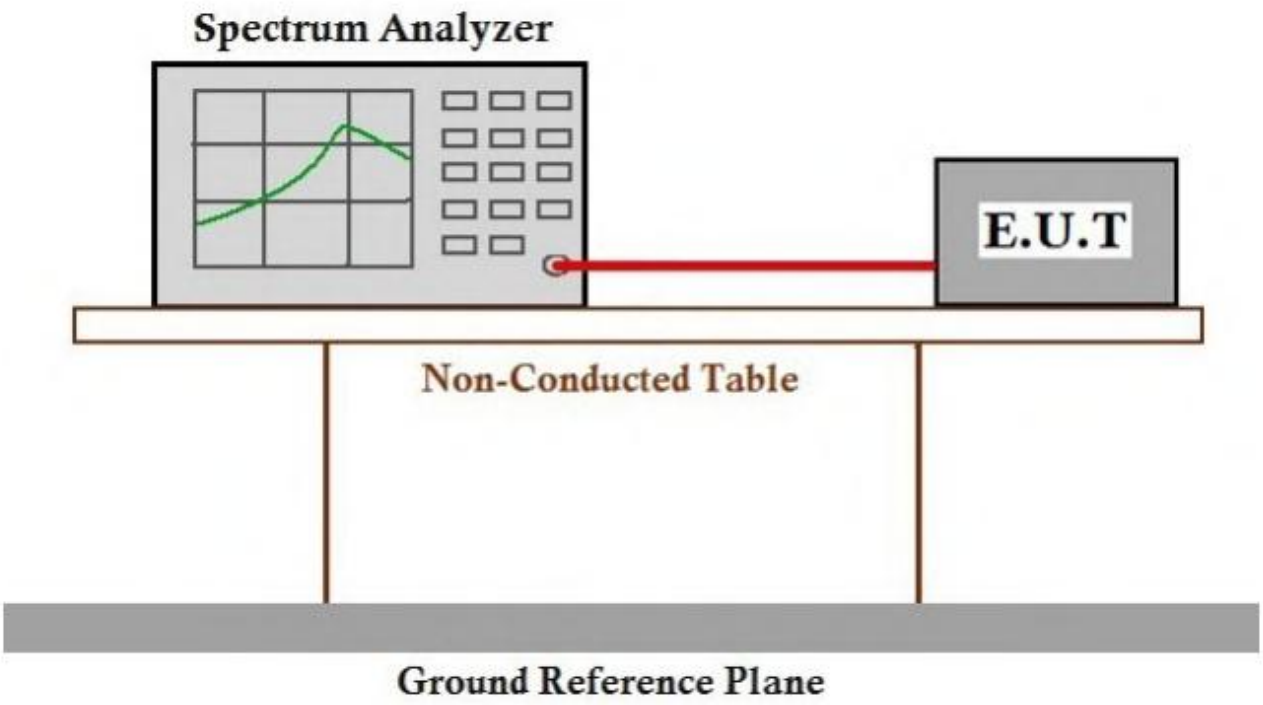
Appendix E): Frequency Stability

Test Requirement 47 CFR Part 15, Subpart C 15.407 (g)

Test Method: ANSI C63.10 (2013) Section 6.8

Limit:The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

Test Setup Diagram



Measurement Data

Voltage								
TestMode	Antenna	Freq(MHz)	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	Ant1	5180	NV	NT	-33000.00	-6.370656	20	PASS
			LV	NT	-33000.00	-6.370656	20	PASS
			HV	NT	-33000.00	-6.370656	20	PASS
		5200	NV	NT	-33000.00	-6.346154	20	PASS
			LV	NT	-33000.00	-6.346154	20	PASS
			HV	NT	-33000.00	-6.346154	20	PASS
		5240	NV	NT	-33000.00	-6.297710	20	PASS
			LV	NT	-33000.00	-6.297710	20	PASS
			HV	NT	-33000.00	-6.297710	20	PASS
		5745	NV	NT	-35000.00	-6.092254	20	PASS
			LV	NT	-36000.00	-6.266319	20	PASS
			HV	NT	-36000.00	-6.266319	20	PASS
		5785	NV	NT	-36000.00	-6.222990	20	PASS
			LV	NT	-37000.00	-6.395851	20	PASS
			HV	NT	-37000.00	-6.395851	20	PASS
		5825	NV	NT	-38000.00	-6.523605	20	PASS
			LV	NT	-37000.00	-6.351931	20	PASS
			HV	NT	-38000.00	-6.523605	20	PASS
11N20SISO	Ant1	5180	NV	NT	-33000.00	-6.370656	20	PASS
			LV	NT	-33000.00	-6.370656	20	PASS
			HV	NT	-33000.00	-6.370656	20	PASS
		5200	NV	NT	-33000.00	-6.346154	20	PASS
			LV	NT	-34000.00	-6.538462	20	PASS
			HV	NT	-33000.00	-6.346154	20	PASS
		5240	NV	NT	-33000.00	-6.297710	20	PASS
			LV	NT	-33000.00	-6.297710	20	PASS
			HV	NT	-33000.00	-6.297710	20	PASS
		5745	NV	NT	-42000.00	-7.310705	20	PASS
			LV	NT	-42000.00	-7.310705	20	PASS
			HV	NT	-42000.00	-7.310705	20	PASS
		5785	NV	NT	-42000.00	-7.260156	20	PASS
			LV	NT	-42000.00	-7.260156	20	PASS
			HV	NT	-42000.00	-7.260156	20	PASS

		5825	NV	NT	-43000.00	-7.381974	20	PASS
			LV	NT	-43000.00	-7.381974	20	PASS
			HV	NT	-43000.00	-7.381974	20	PASS

Temperature								
TestMode	Antenna	Freq(MHz)	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	Ant1	5180	NV	-30	-33000.00	-6.370656	20	PASS
			NV	-20	-33000.00	-6.370656	20	PASS
			NV	-10	-33000.00	-6.370656	20	PASS
			NV	0	-33000.00	-6.370656	20	PASS
			NV	10	-33000.00	-6.370656	20	PASS
			NV	20	-33000.00	-6.370656	20	PASS
			NV	30	-33000.00	-6.370656	20	PASS
			NV	40	-33000.00	-6.370656	20	PASS
			NV	50	-33000.00	-6.370656	20	PASS
		5200	NV	-30	-33000.00	-6.346154	20	PASS
			NV	-20	-33000.00	-6.346154	20	PASS
			NV	-10	-33000.00	-6.346154	20	PASS
			NV	0	-33000.00	-6.346154	20	PASS
			NV	10	-33000.00	-6.346154	20	PASS
			NV	20	-33000.00	-6.346154	20	PASS
			NV	30	-33000.00	-6.346154	20	PASS
			NV	40	-33000.00	-6.346154	20	PASS
			NV	50	-33000.00	-6.346154	20	PASS
		5240	NV	-30	-33000.00	-6.297710	20	PASS
			NV	-20	-34000.00	-6.488550	20	PASS
			NV	-10	-34000.00	-6.488550	20	PASS
			NV	0	-33000.00	-6.297710	20	PASS
			NV	10	-34000.00	-6.488550	20	PASS
			NV	20	-34000.00	-6.488550	20	PASS
			NV	30	-34000.00	-6.488550	20	PASS
			NV	40	-34000.00	-6.488550	20	PASS
			NV	50	-33000.00	-6.297710	20	PASS
		5745	NV	-30	-37000.00	-6.440383	20	PASS
			NV	-20	-37000.00	-6.440383	20	PASS
			NV	-10	-37000.00	-6.440383	20	PASS

			NV	0	-37000.00	-6.440383	20	PASS
			NV	10	-37000.00	-6.440383	20	PASS
			NV	20	-37000.00	-6.440383	20	PASS
			NV	30	-37000.00	-6.440383	20	PASS
			NV	40	-37000.00	-6.440383	20	PASS
			NV	50	-37000.00	-6.440383	20	PASS
		5785	NV	-30	-37000.00	-6.395851	20	PASS
			NV	-20	-37000.00	-6.395851	20	PASS
			NV	-10	-37000.00	-6.395851	20	PASS
			NV	0	-37000.00	-6.395851	20	PASS
			NV	10	-37000.00	-6.395851	20	PASS
			NV	20	-37000.00	-6.395851	20	PASS
			NV	30	-37000.00	-6.395851	20	PASS
			NV	40	-37000.00	-6.395851	20	PASS
			NV	50	-37000.00	-6.395851	20	PASS
		5825	NV	-30	-38000.00	-6.523605	20	PASS
			NV	-20	-38000.00	-6.523605	20	PASS
			NV	-10	-38000.00	-6.523605	20	PASS
			NV	0	-38000.00	-6.523605	20	PASS
			NV	10	-38000.00	-6.523605	20	PASS
			NV	20	-38000.00	-6.523605	20	PASS
			NV	30	-38000.00	-6.523605	20	PASS
			NV	40	-38000.00	-6.523605	20	PASS
			NV	50	-38000.00	-6.523605	20	PASS
11N20SISO	Ant1	5180	NV	-30	-33000.00	-6.370656	20	PASS
			NV	-20	-33000.00	-6.370656	20	PASS
			NV	-10	-33000.00	-6.370656	20	PASS
			NV	0	-33000.00	-6.370656	20	PASS
			NV	10	-34000.00	-6.563707	20	PASS
			NV	20	-34000.00	-6.563707	20	PASS
			NV	30	-33000.00	-6.370656	20	PASS
			NV	40	-34000.00	-6.563707	20	PASS
			NV	50	-34000.00	-6.563707	20	PASS
		5200	NV	-30	-34000.00	-6.538462	20	PASS
			NV	-20	-33000.00	-6.346154	20	PASS
			NV	-10	-33000.00	-6.346154	20	PASS
			NV	0	-34000.00	-6.538462	20	PASS

			NV	10	-33000.00	-6.346154	20	PASS
			NV	20	-34000.00	-6.538462	20	PASS
			NV	30	-34000.00	-6.538462	20	PASS
			NV	40	-34000.00	-6.538462	20	PASS
			NV	50	-33000.00	-6.346154	20	PASS
		5240	NV	-30	-34000.00	-6.488550	20	PASS
			NV	-20	-34000.00	-6.488550	20	PASS
			NV	-10	-33000.00	-6.297710	20	PASS
			NV	0	-34000.00	-6.488550	20	PASS
			NV	10	-33000.00	-6.297710	20	PASS
			NV	20	-34000.00	-6.488550	20	PASS
			NV	30	-34000.00	-6.488550	20	PASS
			NV	40	-34000.00	-6.488550	20	PASS
			NV	50	-34000.00	-6.488550	20	PASS
		5745	NV	-30	-42000.00	-7.310705	20	PASS
			NV	-20	-43000.00	-7.484769	20	PASS
			NV	-10	-42000.00	-7.310705	20	PASS
			NV	0	-42000.00	-7.310705	20	PASS
			NV	10	-42000.00	-7.310705	20	PASS
			NV	20	-42000.00	-7.310705	20	PASS
			NV	30	-43000.00	-7.484769	20	PASS
			NV	40	-42000.00	-7.310705	20	PASS
			NV	50	-42000.00	-7.310705	20	PASS
		5785	NV	-30	-42000.00	-7.260156	20	PASS
			NV	-20	-43000.00	-7.433016	20	PASS
			NV	-10	-42000.00	-7.260156	20	PASS
			NV	0	-43000.00	-7.433016	20	PASS
			NV	10	-42000.00	-7.260156	20	PASS
			NV	20	-43000.00	-7.433016	20	PASS
			NV	30	-43000.00	-7.433016	20	PASS
			NV	40	-42000.00	-7.260156	20	PASS
			NV	50	-42000.00	-7.260156	20	PASS
		5825	NV	-30	-43000.00	-7.381974	20	PASS
			NV	-20	-43000.00	-7.381974	20	PASS
			NV	-10	-43000.00	-7.381974	20	PASS
			NV	0	-43000.00	-7.381974	20	PASS
			NV	10	-43000.00	-7.381974	20	PASS

			NV	20	-43000.00	-7.381974	20	PASS
			NV	30	-43000.00	-7.381974	20	PASS
			NV	40	-43000.00	-7.381974	20	PASS
			NV	50	-43000.00	-7.381974	20	PASS

Voltage								
TestMode	Antenna	Freq(MHz)	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	Ant2	5180	NV	NT	-33000.00	-6.370656	20	PASS
			LV	NT	-33000.00	-6.370656	20	PASS
			HV	NT	-33000.00	-6.370656	20	PASS
		5200	NV	NT	-33000.00	-6.346154	20	PASS
			LV	NT	-34000.00	-6.538462	20	PASS
			HV	NT	-34000.00	-6.538462	20	PASS
		5240	NV	NT	-34000.00	-6.488550	20	PASS
			LV	NT	-35000.00	-6.679389	20	PASS
			HV	NT	-34000.00	-6.488550	20	PASS
		5745	NV	NT	-38000.00	-6.614447	20	PASS
			LV	NT	-38000.00	-6.614447	20	PASS
			HV	NT	-37000.00	-6.440383	20	PASS
		5785	NV	NT	-38000.00	-6.568712	20	PASS
			LV	NT	-38000.00	-6.568712	20	PASS
			HV	NT	-38000.00	-6.568712	20	PASS
		5825	NV	NT	-39000.00	-6.695279	20	PASS
			LV	NT	-38000.00	-6.523605	20	PASS
			HV	NT	-38000.00	-6.523605	20	PASS
11N20SISO	Ant2	5180	NV	NT	-34000.00	-6.563707	20	PASS
			LV	NT	-34000.00	-6.563707	20	PASS
			HV	NT	-34000.00	-6.563707	20	PASS
		5200	NV	NT	-34000.00	-6.538462	20	PASS
			LV	NT	-34000.00	-6.538462	20	PASS
			HV	NT	-34000.00	-6.538462	20	PASS
		5240	NV	NT	-34000.00	-6.488550	20	PASS
			LV	NT	-34000.00	-6.488550	20	PASS
			HV	NT	-34000.00	-6.488550	20	PASS
		5745	NV	NT	-31000.00	-5.395997	20	PASS
			LV	NT	-33000.00	-5.744125	20	PASS

			HV	NT	-33000.00	-5.744125	20	PASS
		5785	NV	NT	-37000.00	-6.395851	20	PASS
			LV	NT	-37000.00	-6.395851	20	PASS
			HV	NT	-38000.00	-6.568712	20	PASS
		5825	NV	NT	-38000.00	-6.523605	20	PASS
			LV	NT	-38000.00	-6.523605	20	PASS
			HV	NT	-38000.00	-6.523605	20	PASS

Appendix F): 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.

15.407(a)(1) (2) requirement:

The conducted output power limit specified in paragraph (a) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (a) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:	

The antenna is External antenna with ipex connector.The best case gain of the 5G WiFi antenna is
ANT1:0.18dBi@5GHz: Wi-Fi: U-NII-1, -0.14dBi@5GHz: Wi-Fi: U-NII-3
ANT2:0.18dBi@5GHz: Wi-Fi: U-NII-1, -0.14dBi@5GHz: Wi-Fi: U-NII-3

Appendix G): Operation in the absence of information to the transmit

15.407(c) requirement: The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signal ling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.
Operation in the absence of information to the transmit
While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission. (manufacturer declare)

Appendix H): AC Power Line Conducted Emission

<table>
<tr><td>Test Procedure:</td><td>Test frequency range :150KHz-30MHz
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 on conducted measurement.</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr>
<tr><th>Quasi-peak</th><th>Average</th></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
* The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.
NOTE : The lower limit is applicable at the transition frequency</td></tr>
</table>

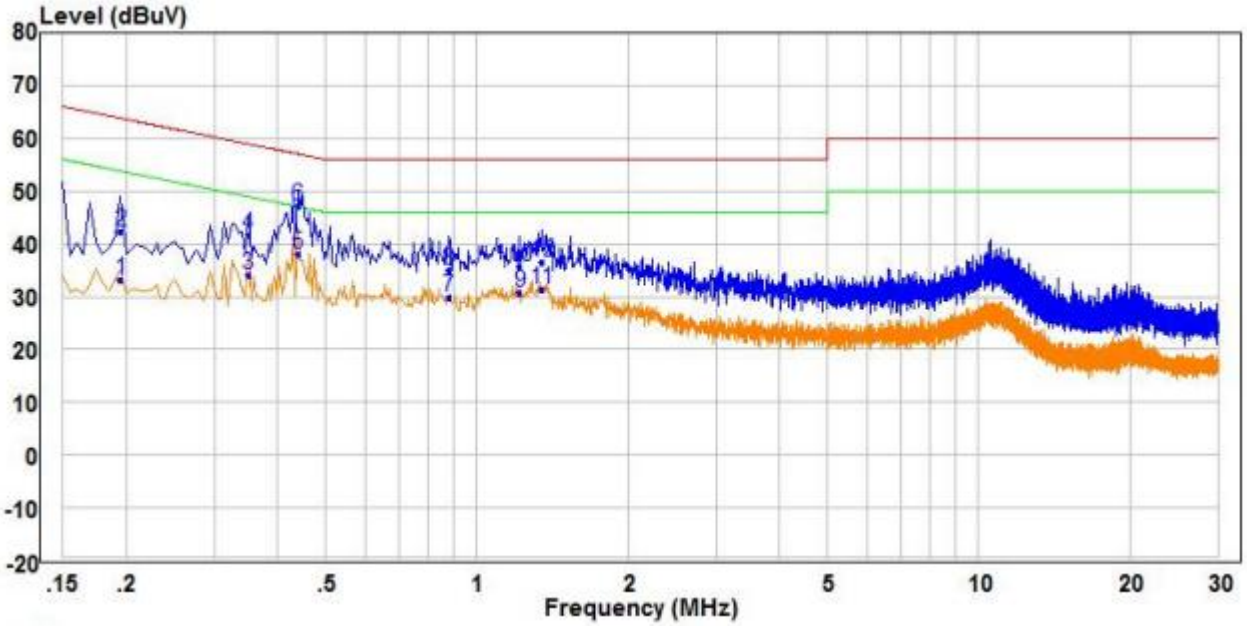
Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

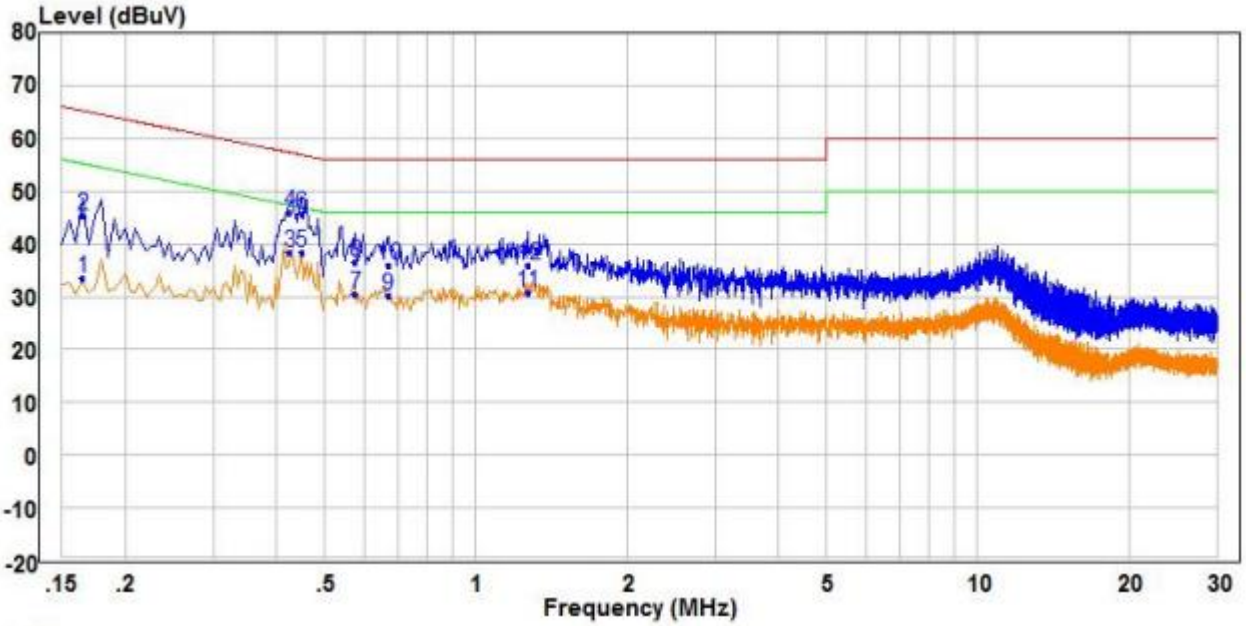
Ant1:

Live line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.195	23.71	9.62	33.33	53.82	-20.49	Average	Line
2		0.195	32.85	9.62	42.47	63.82	-21.35	QP	Line
3		0.350	24.42	9.55	33.97	48.96	-14.99	Average	Line
4		0.350	32.17	9.55	41.72	58.96	-17.24	QP	Line
5	PP	0.440	28.41	9.65	38.06	47.06	-9.00	Average	Line
6	QP	0.440	37.39	9.65	47.04	57.06	-10.02	QP	Line
7		0.880	20.03	9.78	29.81	46.00	-16.19	Average	Line
8		0.880	25.26	9.78	35.04	56.00	-20.96	QP	Line
9		1.220	20.38	10.26	30.64	46.00	-15.36	Average	Line
10		1.220	25.36	10.26	35.62	56.00	-20.38	QP	Line
11		1.345	20.73	10.53	31.26	46.00	-14.74	Average	Line
12		1.345	25.91	10.53	36.44	56.00	-19.56	QP	Line

Neutral line:



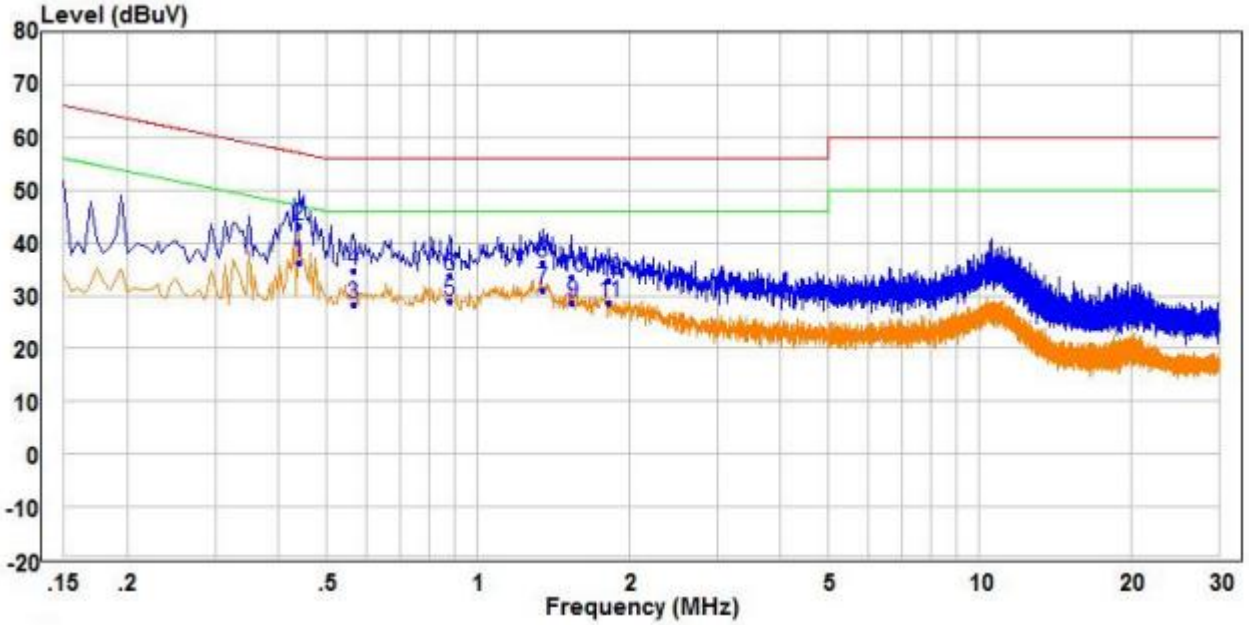
		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.165	23.81	9.67	33.48	55.21	-21.73	Average	Neutral
2		0.165	35.67	9.67	45.34	65.21	-19.87	QP	Neutral
3		0.425	28.87	9.63	38.50	47.35	-8.85	Average	Neutral
4		0.425	36.25	9.63	45.88	57.35	-11.47	QP	Neutral
5	PP	0.450	28.74	9.65	38.39	46.88	-8.49	Average	Neutral
6	QP	0.450	35.91	9.65	45.56	56.88	-11.32	QP	Neutral
7		0.575	20.75	9.78	30.53	46.00	-15.47	Average	Neutral
8		0.575	26.79	9.78	36.57	56.00	-19.43	QP	Neutral
9		0.670	20.43	9.87	30.30	46.00	-15.70	Average	Neutral
10		0.670	26.11	9.87	35.98	56.00	-20.02	QP	Neutral
11		1.270	21.09	9.71	30.80	46.00	-15.20	Average	Neutral
12		1.270	26.33	9.71	36.04	56.00	-19.96	QP	Neutral

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. The 6Mbps of rate of 802.11A_5240 is the worst case, only the worst data recorded in the report.

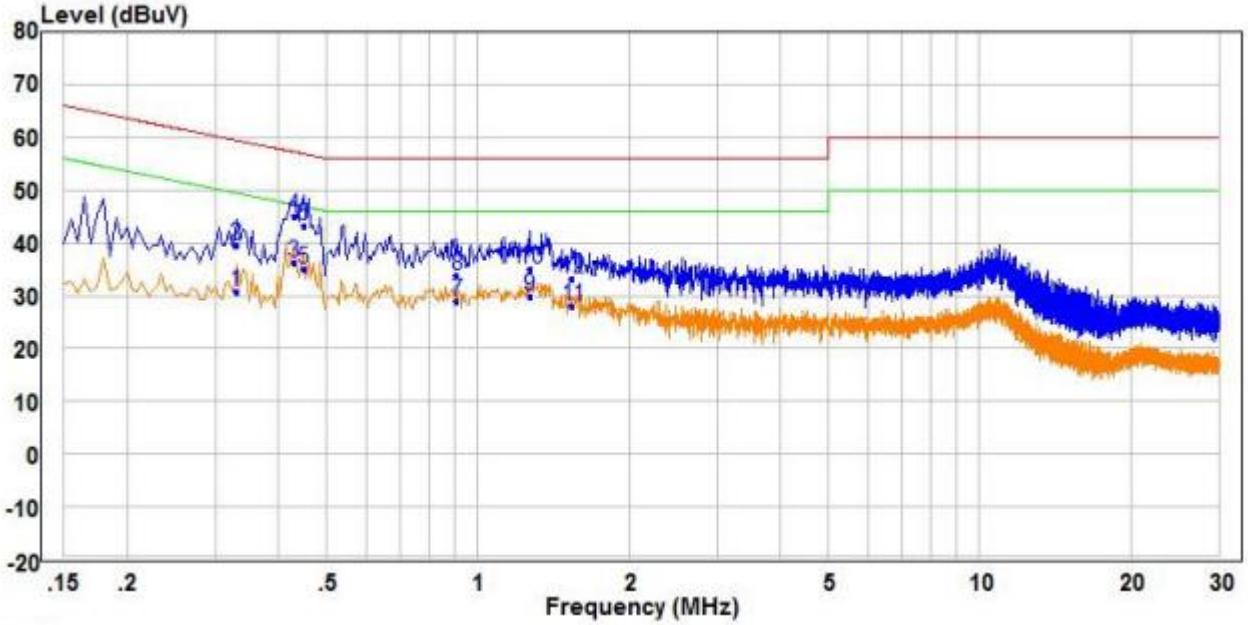
Ant2:

Live line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1	PP	0.440	26.67	9.65	36.32	47.06	-10.74	Average	Line
2	QP	0.440	33.67	9.65	43.32	57.06	-13.74	QP	Line
3		0.565	18.69	9.77	28.46	46.00	-17.54	Average	Line
4		0.565	25.01	9.77	34.78	56.00	-21.22	QP	Line
5		0.880	19.08	9.78	28.86	46.00	-17.14	Average	Line
6		0.880	23.89	9.78	33.67	56.00	-22.33	QP	Line
7		1.345	20.55	10.53	31.08	46.00	-14.92	Average	Line
8		1.345	25.65	10.53	36.18	56.00	-19.82	QP	Line
9		1.540	17.79	10.91	28.70	46.00	-17.30	Average	Line
10		1.540	22.74	10.91	33.65	56.00	-22.35	QP	Line
11		1.825	17.13	11.39	28.52	46.00	-17.48	Average	Line
12		1.825	21.56	11.39	32.95	56.00	-23.05	QP	Line

Neutral line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.330	21.29	9.52	30.81	49.45	-18.64	Average	Neutral
2		0.330	30.18	9.52	39.70	59.45	-19.75	QP	Neutral
3	PP	0.430	26.67	9.64	36.31	47.25	-10.94	Average	Neutral
4	QP	0.430	35.42	9.64	45.06	57.25	-12.19	QP	Neutral
5		0.450	25.39	9.65	35.04	46.88	-11.84	Average	Neutral
6		0.450	33.71	9.65	43.36	56.88	-13.52	QP	Neutral
7		0.910	19.19	9.76	28.95	46.00	-17.05	Average	Neutral
8		0.910	24.03	9.76	33.79	56.00	-22.21	QP	Neutral
9		1.270	20.23	9.71	29.94	46.00	-16.06	Average	Neutral
10		1.270	25.28	9.71	34.99	56.00	-21.01	QP	Neutral
11		1.545	18.37	9.73	28.10	46.00	-17.90	Average	Neutral
12		1.545	23.33	9.73	33.06	56.00	-22.94	QP	Neutral

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. The 6Mbps of rate of 802.11A_5240 is the worst case, only the worst data recorded in the report.

Appendix I): Restricted bands around fundamental frequency (Radiated Emission)

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Test Procedure:

Below 1GHz test procedure as below:

a. 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.
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 and the rotatable 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. 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

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
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.

Limit:

Frequency	Limit (dBμV/m @3cm)	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 plot as follows:
Ant1:

Worse case mode:		802.11a(6Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	52.62	-3.63	48.99	74	-25.01	peak	H
5150.00	36.41	-3.63	32.78	54	-21.22	AVG	H
5150.00	51.75	-3.63	48.12	74	-25.88	peak	V
5150.00	38.78	-3.63	35.15	54	-18.85	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		48	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	55.69	-3.59	52.10	74	-21.90	peak	H
5350.00	38.56	-3.59	34.97	54	-19.03	AVG	H
5350.00	50.88	-3.59	47.29	74	-26.71	peak	V
5350.00	35.54	-3.59	31.95	54	-22.05	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		149	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5725	51.86	-3.44	48.42	74	-25.58	peak	H
5725	36.26	-3.44	32.82	54	-21.18	AV	H
5725	49.58	-3.44	46.14	74	-27.86	peak	V
5725	36.62	-3.44	33.18	54	-20.82	AV	V

Worse case mode:		802.11a(6Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5850	52.78	-3.42	49.36	74	-24.64	peak	H
5850	36.20	-3.42	32.78	54	-21.22	AV	H
5850	50.19	-3.42	46.77	74	-27.23	peak	V
5850	36.82	-3.42	33.40	54	-20.60	AV	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	52.31	-3.63	48.68	74	-25.32	peak	H
5150.00	36.63	-3.63	33.00	54	-21.00	AVG	H
5150.00	50.94	-3.63	47.31	74	-26.69	peak	V
5150.00	38.81	-3.63	35.18	54	-18.82	AVG	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		48	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	54.67	-3.59	51.08	74	-22.92	peak	H
5350.00	38.79	-3.59	35.20	54	-18.80	AVG	H
5350.00	50.33	-3.59	46.74	74	-27.26	peak	V
5350.00	35.30	-3.59	31.71	54	-22.29	AVG	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		149	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5725	52.18	-3.44	48.74	74	-25.26	peak	H
5725	37.48	-3.44	34.04	54	-19.96	AV	H
5725	49.78	-3.44	46.34	74	-27.66	peak	V
5725	36.27	-3.44	32.83	54	-21.17	AV	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5850	52.50	-3.42	49.08	74	-24.92	peak	H
5850	37.51	-3.42	34.09	54	-19.91	AV	H
5850	49.36	-3.42	45.94	74	-28.06	peak	V
5850	35.67	-3.42	32.25	54	-21.75	AV	V

Ant2:

Worse case mode:		802.11a(6Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	52.70	-3.63	49.07	74	-24.93	peak	H
5150.00	36.80	-3.63	33.17	54	-20.83	AVG	H
5150.00	52.02	-3.63	48.39	74	-25.61	peak	V
5150.00	37.61	-3.63	33.98	54	-20.02	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		48	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	55.54	-3.59	51.95	74	-22.05	peak	H
5350.00	39.26	-3.59	35.67	54	-18.33	AVG	H
5350.00	51.41	-3.59	47.82	74	-26.18	peak	V
5350.00	35.75	-3.59	32.16	54	-21.84	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		149	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5725	51.34	-3.44	47.90	74	-26.10	peak	H
5725	37.14	-3.44	33.70	54	-20.30	AV	H
5725	49.48	-3.44	46.04	74	-27.96	peak	V
5725	36.14	-3.44	32.70	54	-21.30	AV	V

Worse case mode:		802.11a(6Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5850	53.27	-3.42	49.85	74	-24.15	peak	H
5850	37.02	-3.42	33.60	54	-20.40	AV	H
5850	49.32	-3.42	45.90	74	-28.10	peak	V
5850	36.80	-3.42	33.38	54	-20.62	AV	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	52.97	-3.63	49.34	74	-24.66	peak	H
5150.00	36.50	-3.63	32.87	54	-21.13	AVG	H
5150.00	52.22	-3.63	48.59	74	-25.41	peak	V
5150.00	37.53	-3.63	33.90	54	-20.10	AVG	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		48	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	54.38	-3.59	50.79	74	-23.21	peak	H
5350.00	39.06	-3.59	35.47	54	-18.53	AVG	H
5350.00	50.88	-3.59	47.29	74	-26.71	peak	V
5350.00	36.09	-3.59	32.50	54	-21.50	AVG	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		149	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5725	52.34	-3.44	48.90	74	-25.10	peak	H
5725	36.53	-3.44	33.09	54	-20.91	AV	H
5725	49.41	-3.44	45.97	74	-28.03	peak	V
5725	35.91	-3.44	32.47	54	-21.53	AV	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5850	52.80	-3.42	49.38	74	-24.62	peak	H
5850	37.28	-3.42	33.86	54	-20.14	AV	H
5850	49.49	-3.42	46.07	74	-27.93	peak	V
5850	36.26	-3.42	32.84	54	-21.16	AV	V

Note:
1) Through Pre-scan transmitting mode with all kind of modulation and data rate, Only the worst case is recorded in the report.
2) 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 - Correct Factor
Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

Appendix J): Radiated Spurious Emissions

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	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Test Procedure:

Below 1GHz test procedure as below:

a. 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.
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 rota 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.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre)
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
j. Repeat above procedures until all frequencies measured was complete.

Limit:

Frequency	Field strength (microvolt/meter)	Limit (dBμV/cm)	Remark	Measurement distance (cm)
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.

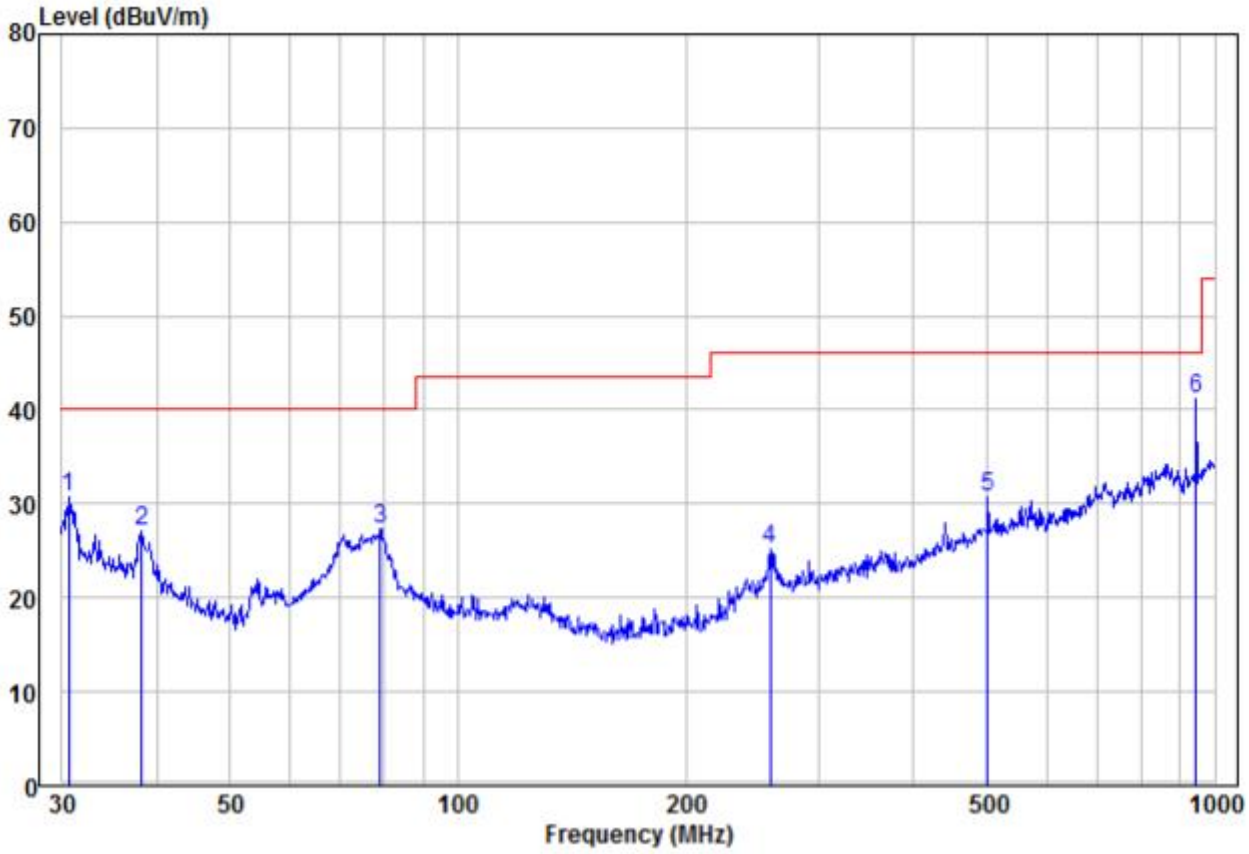
Test result: PASS

Test Data:

Radiated Emission below 1GHz

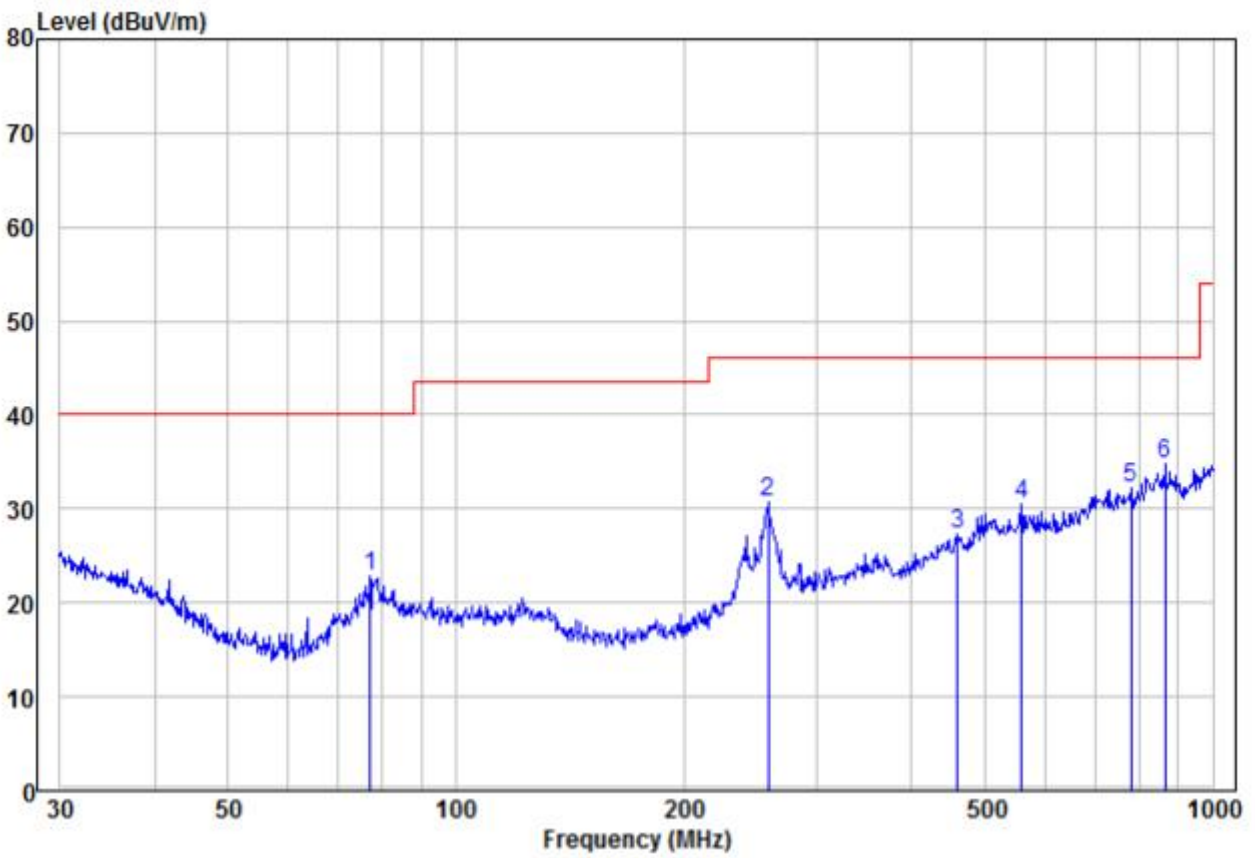
ANT1:

30MHz~1GHz		
Test mode:	Transmitting (802.11a 36CH)	Vertical



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	30.64	15.07	15.74	30.81	40.00	-9.19	Peak	VERTICAL
2	38.21	13.57	13.44	27.01	40.00	-12.99	Peak	VERTICAL
3	78.97	17.79	9.61	27.40	40.00	-12.60	Peak	VERTICAL
4	258.33	12.90	12.36	25.26	46.00	-20.74	Peak	VERTICAL
5	501.18	12.52	18.29	30.81	46.00	-15.19	Peak	VERTICAL
6 pp	945.44	17.65	23.62	41.27	46.00	-4.73	Peak	VERTICAL

Test mode:	Transmitting (802.11a 36CH)	Horizontal



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	77.05	13.61	9.31	22.92	40.00	-17.08	Peak	HORIZONTAL
2	258.33	18.31	12.36	30.67	46.00	-15.33	Peak	HORIZONTAL
3	460.73	10.34	17.06	27.40	46.00	-18.60	Peak	HORIZONTAL
4	558.73	11.52	18.89	30.41	46.00	-15.59	Peak	HORIZONTAL
5	779.61	10.08	22.16	32.24	46.00	-13.76	Peak	HORIZONTAL
6 pp	866.09	10.86	23.98	34.84	46.00	-11.16	Peak	HORIZONTAL