

Annex for FCC 2.4G WIFI

Test Report No. : CTL2104135021-WF03

Appendix A: DTS Bandwidth

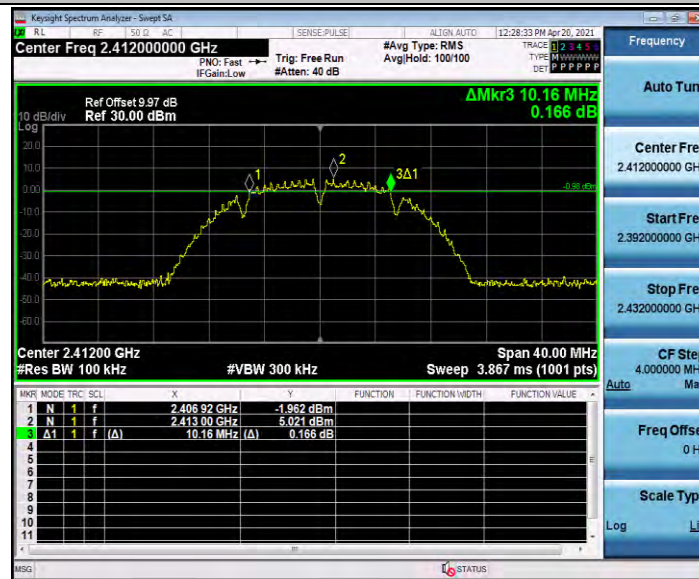
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	10.160	2406.920	2417.080	0.5	PASS
		2437	10.160	2431.920	2442.080	0.5	PASS
		2462	10.160	2456.920	2467.080	0.5	PASS
11G	Ant1	2412	15.360	2404.440	2419.800	0.5	PASS
		2437	16.360	2428.800	2445.160	0.5	PASS
		2462	16.400	2453.800	2470.200	0.5	PASS
11N20SISO	Ant1	2412	15.400	2404.520	2419.920	0.5	PASS
		2437	17.120	2428.200	2445.320	0.5	PASS
		2462	16.320	2454.080	2470.400	0.5	PASS
11N40SISO	Ant1	2422	35.200	2404.400	2439.600	0.5	PASS
		2437	34.400	2419.000	2453.400	0.5	PASS
		2452	34.560	2435.040	2469.600	0.5	PASS

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant2	2412	10.120	2407.000	2417.120	0.5	PASS
		2437	10.120	2431.920	2442.040	0.5	PASS
		2462	10.160	2456.920	2467.080	0.5	PASS
11G	Ant2	2412	15.360	2404.520	2419.880	0.5	PASS
		2437	15.880	2429.080	2444.960	0.5	PASS
		2462	15.320	2454.440	2469.760	0.5	PASS
11N20SISO	Ant2	2412	15.720	2404.480	2420.200	0.5	PASS
		2437	15.760	2429.040	2444.800	0.5	PASS
		2462	16.360	2454.440	2470.800	0.5	PASS
11N40SISO	Ant2	2422	35.200	2404.400	2439.600	0.5	PASS
		2437	35.520	2419.080	2454.600	0.5	PASS
		2452	34.240	2435.600	2469.840	0.5	PASS

Test Graphs

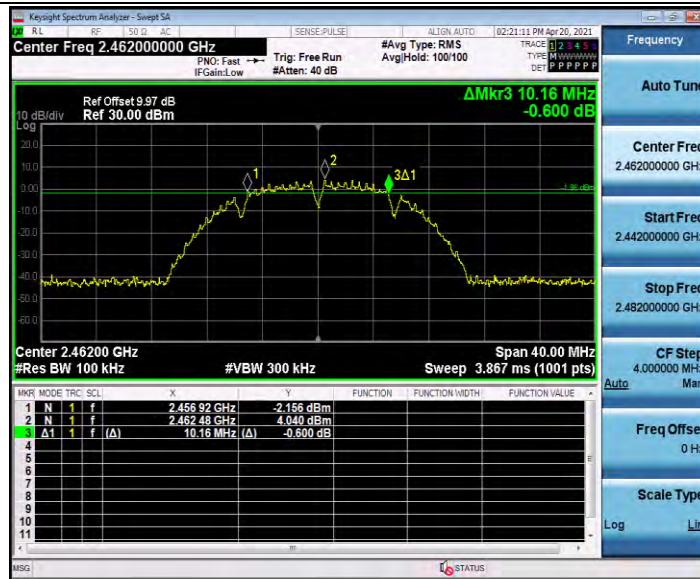
11B_Ant1_2412



11B_Ant1_2437



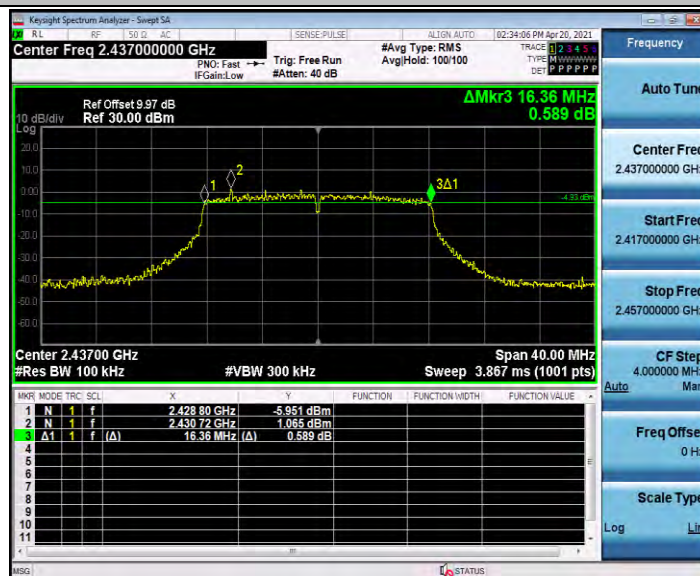
11B_Ant1_2462



11G_Ant1_2412



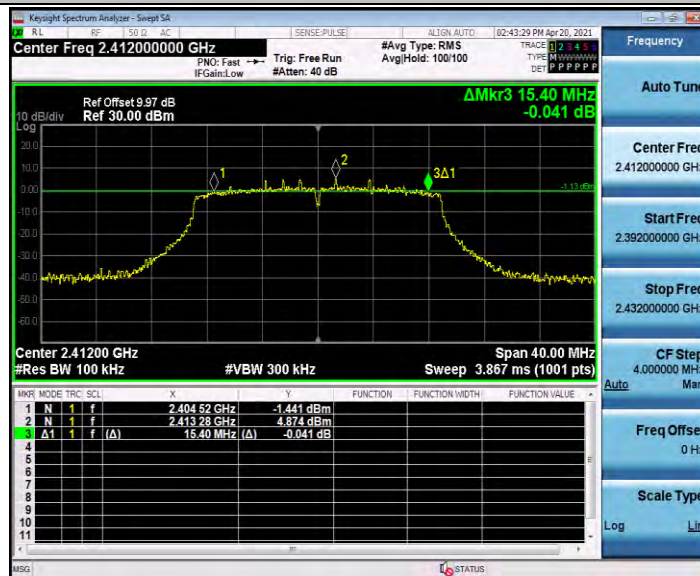
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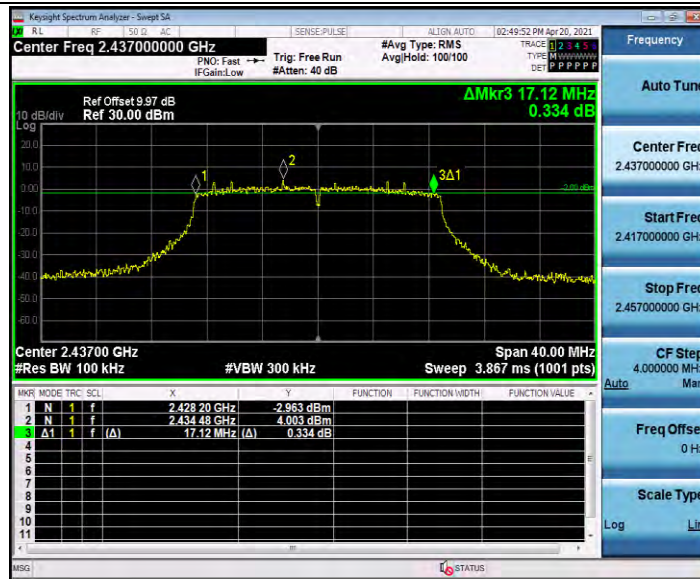
11G_Ant1_2462



11N20SISO_Ant1_2412



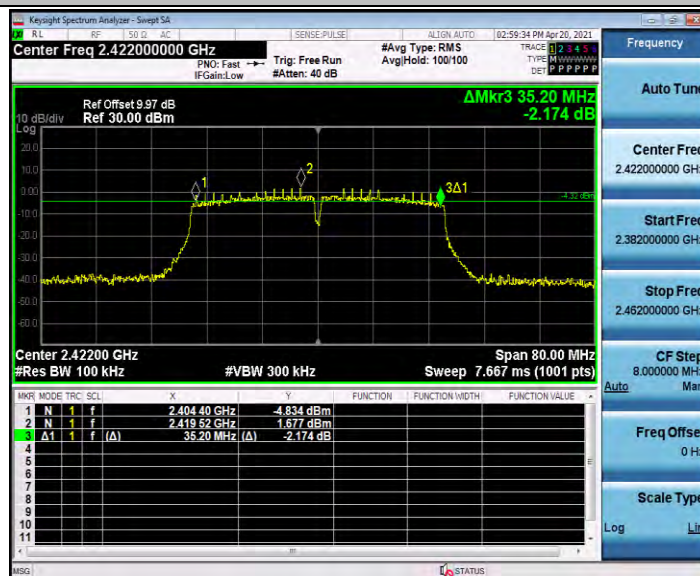
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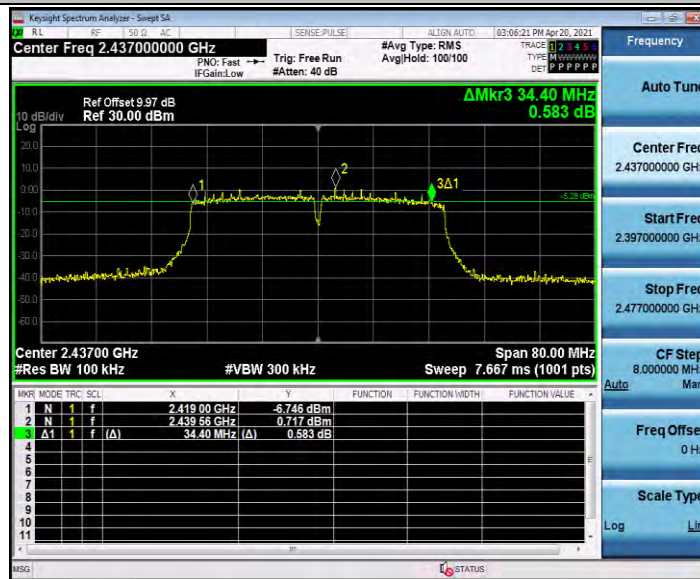
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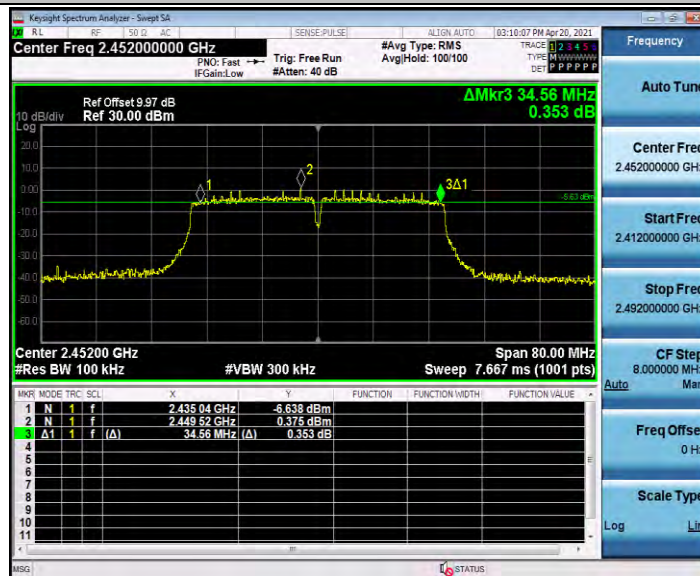
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



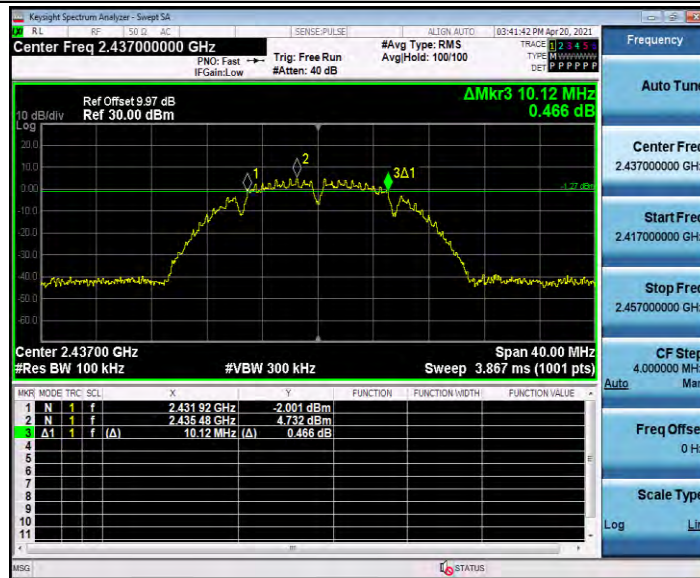
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11B_Ant2_2412



11B_Ant2_2437



11B_Ant2_2462



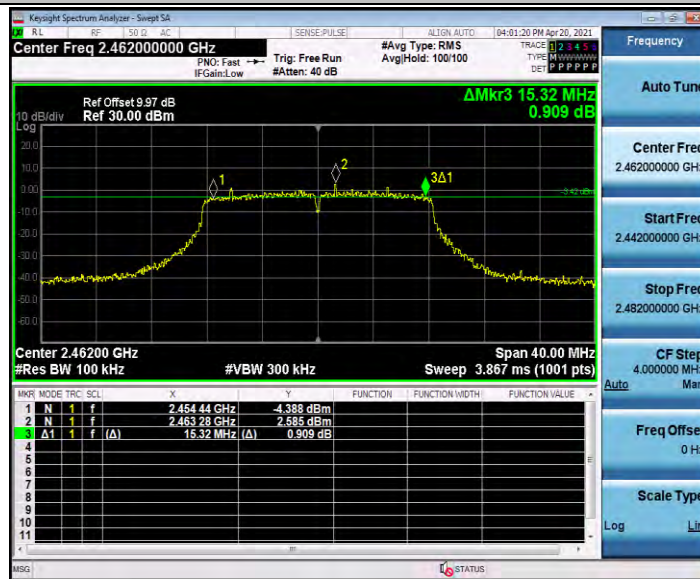
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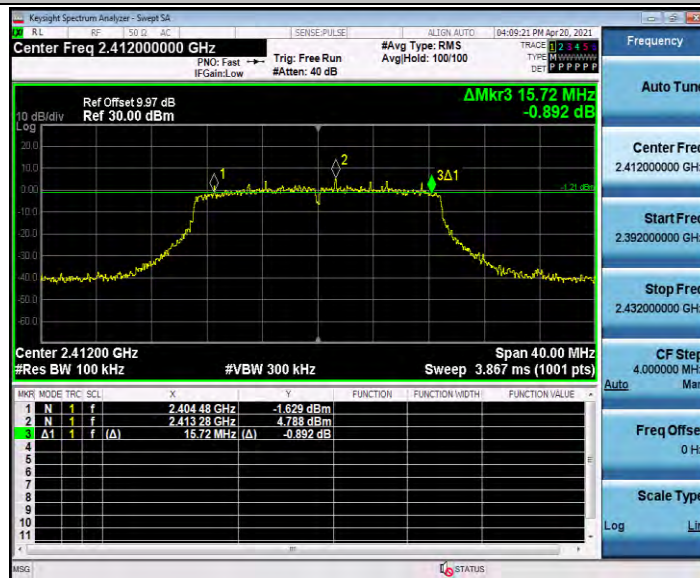
11G_Ant2_2437



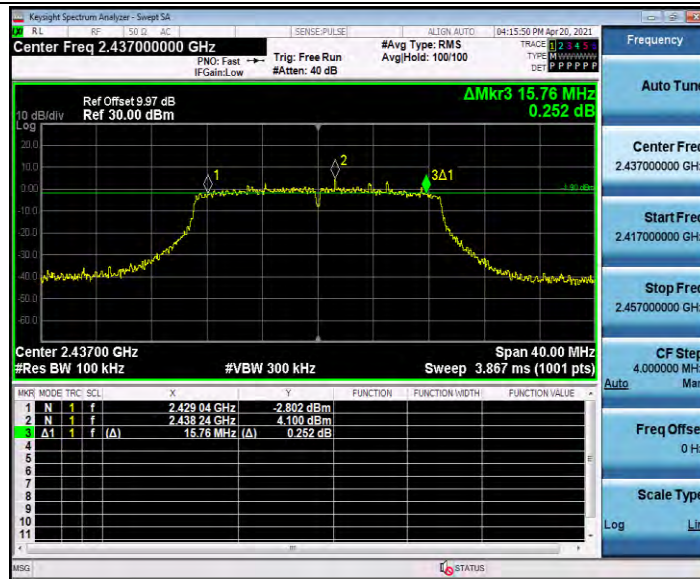
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11N20SISO_Ant2_2412



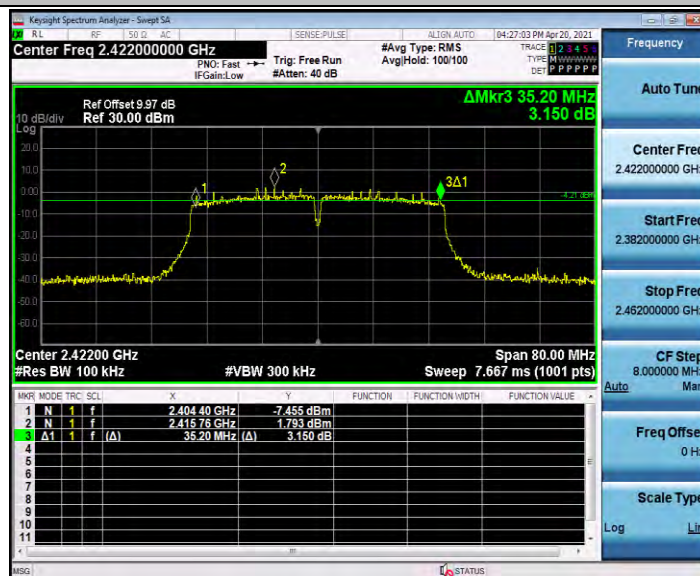
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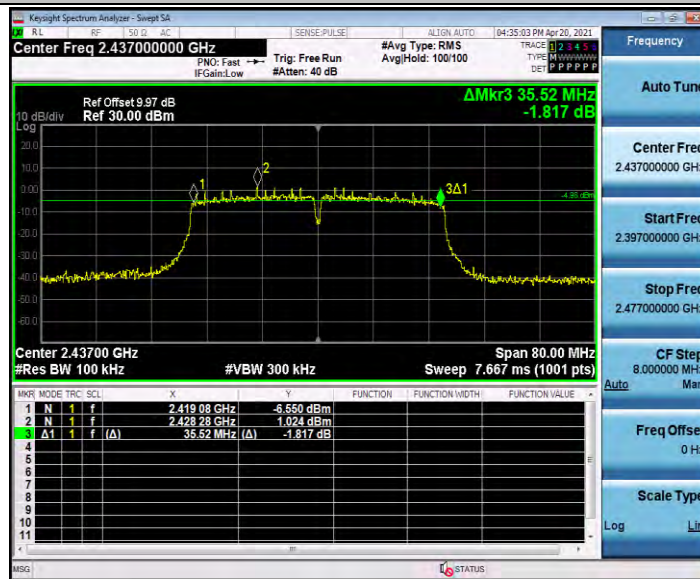
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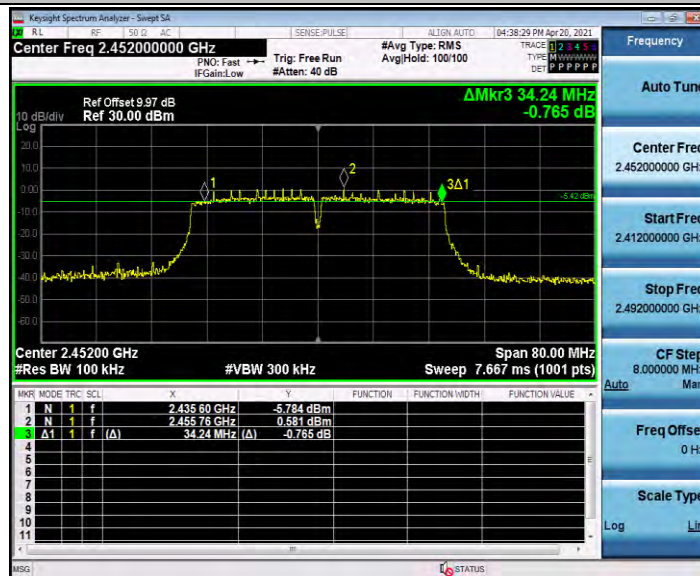
11N40SISO_Ant2_2422



11N40SISO_Ant2_2437



11N40SISO_Ant2_2452



Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	14.551	2404.809	2419.360	---	PASS
		2437	14.636	2429.639	2444.275	---	PASS
		2462	14.743	2454.709	2469.452	---	PASS
11G	Ant1	2412	16.675	2403.701	2420.376	---	PASS
		2437	16.747	2428.651	2445.398	---	PASS
		2462	16.817	2453.676	2470.493	---	PASS
11N20SISO	Ant1	2412	17.947	2403.107	2421.054	---	PASS
		2437	17.835	2428.102	2445.937	---	PASS
		2462	17.878	2453.162	2471.040	---	PASS
11N40SISO	Ant1	2422	36.081	2404.002	2440.083	---	PASS
		2437	36.219	2418.849	2455.068	---	PASS
		2452	36.289	2433.938	2470.227	---	PASS

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant2	2412	14.540	2404.830	2419.370	---	PASS
		2437	14.707	2429.634	2444.341	---	PASS
		2462	14.812	2454.685	2469.497	---	PASS
11G	Ant2	2412	16.734	2403.714	2420.448	---	PASS
		2437	16.742	2428.623	2445.365	---	PASS
		2462	16.758	2453.653	2470.411	---	PASS
11N20SISO	Ant2	2412	17.816	2403.177	2420.993	---	PASS
		2437	17.855	2428.075	2445.930	---	PASS
		2462	17.928	2453.059	2470.987	---	PASS
11N40SISO	Ant2	2422	36.097	2404.062	2440.159	---	PASS
		2437	36.171	2418.874	2455.045	---	PASS
		2452	36.368	2433.898	2470.266	---	PASS

Test Graphs

11B_Ant1_2412



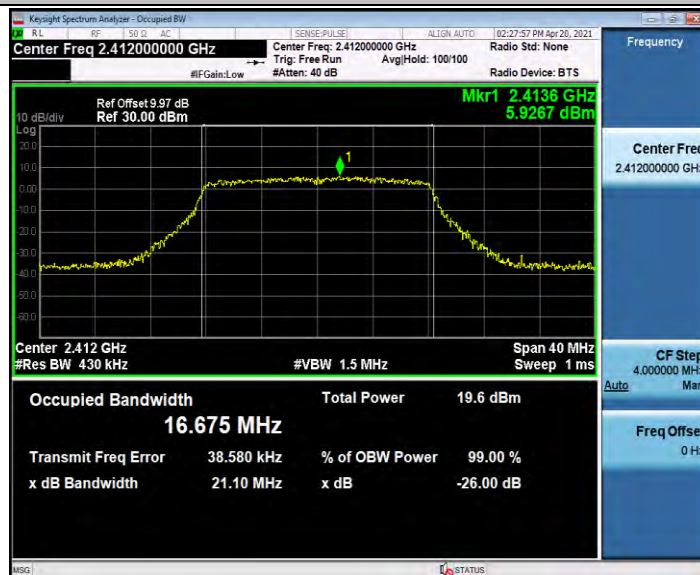
11B_Ant1_2437



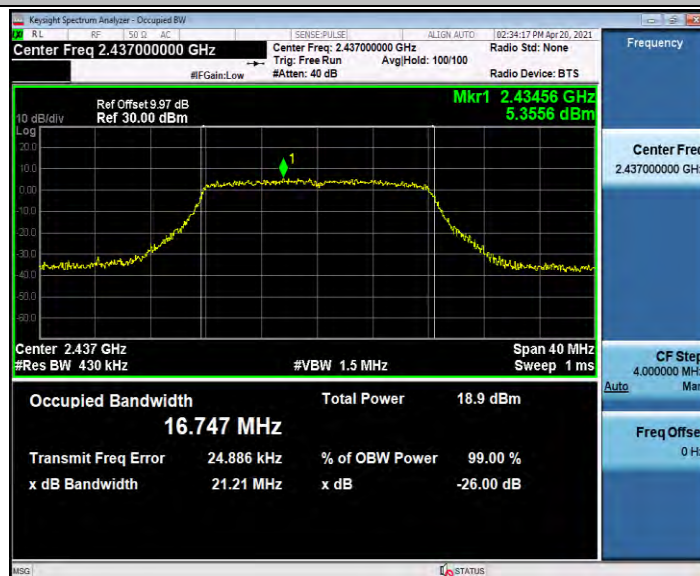
11B_Ant1_2462



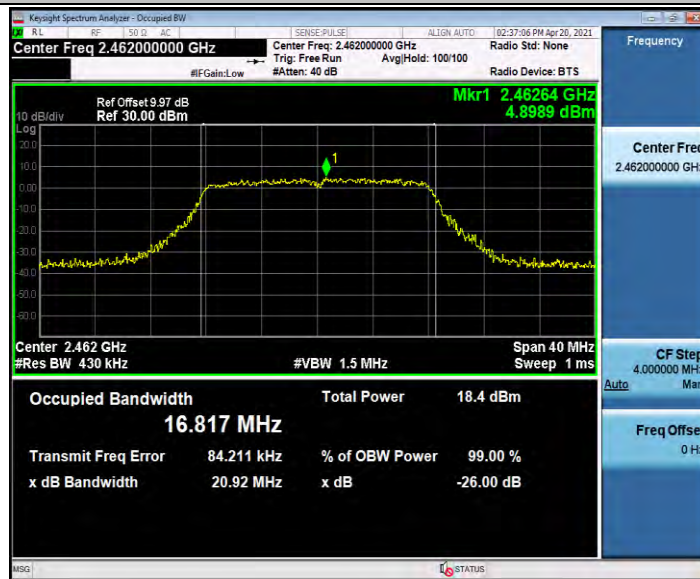
11G_Ant1_2412



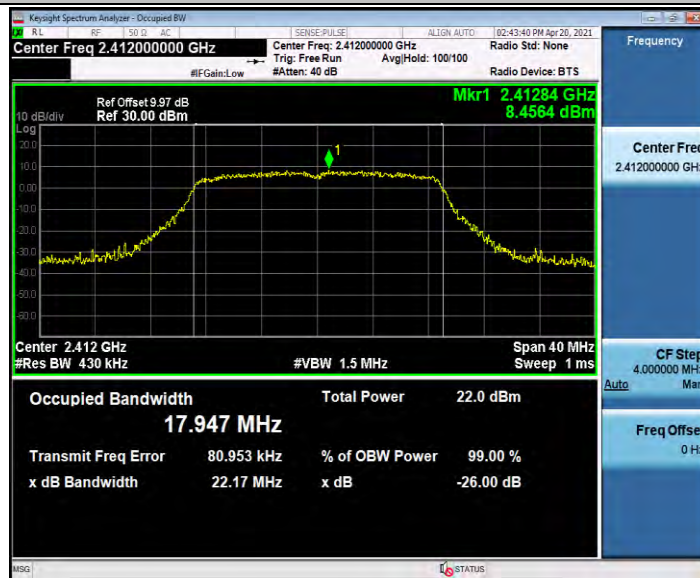
11G_Ant1_2437



11G_Ant1_2462



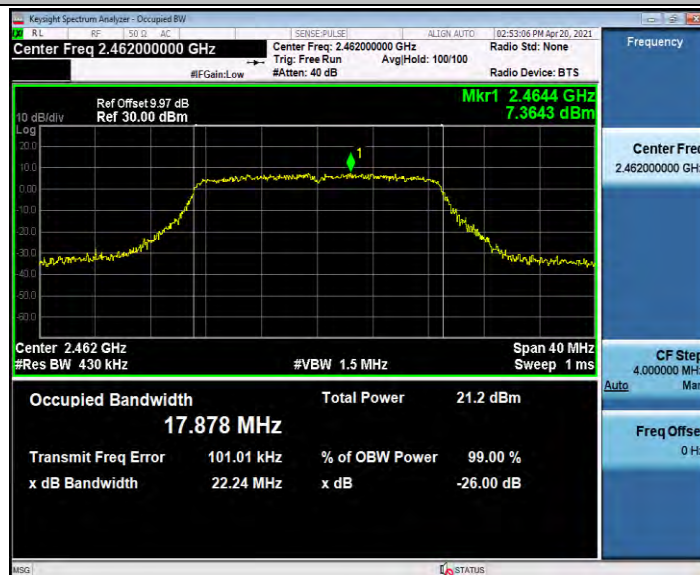
11N20SISO_Ant1_2412



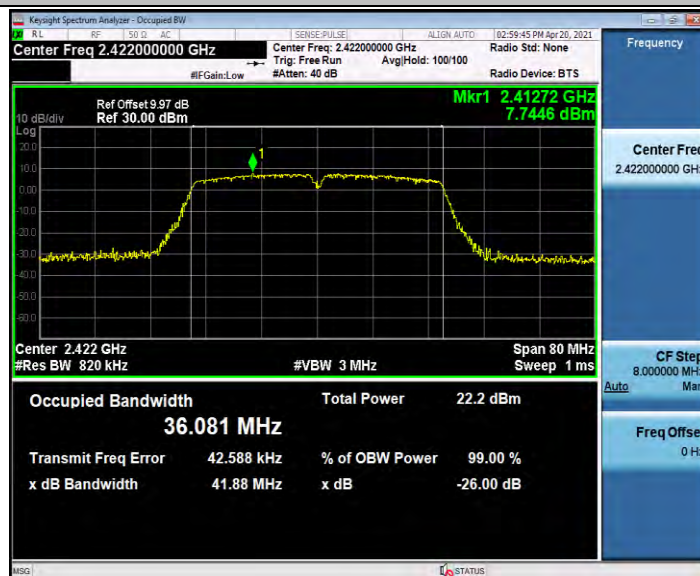
11N20SISO_Ant1_2437



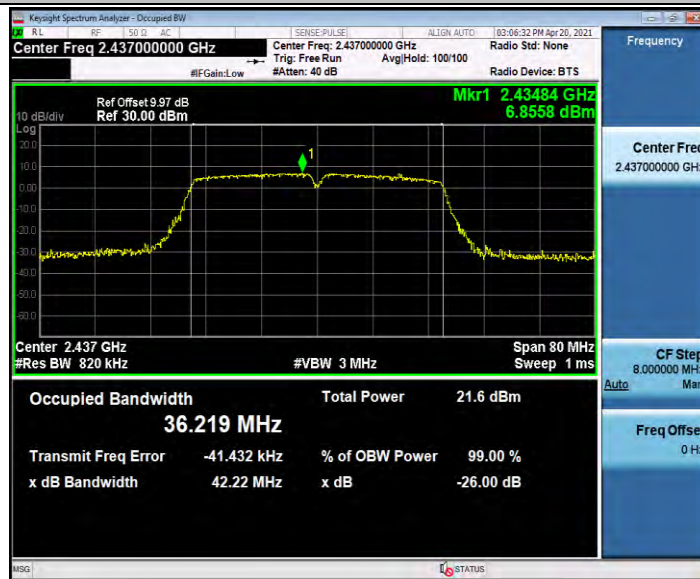
11N20SISO_Ant1_2462



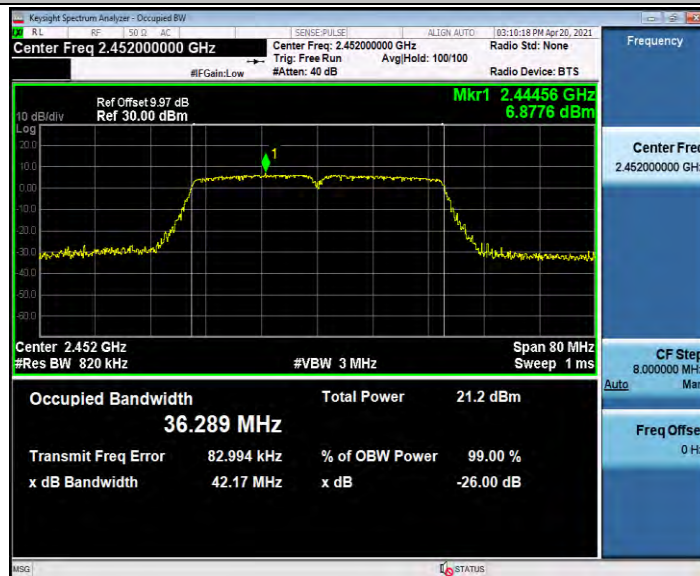
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



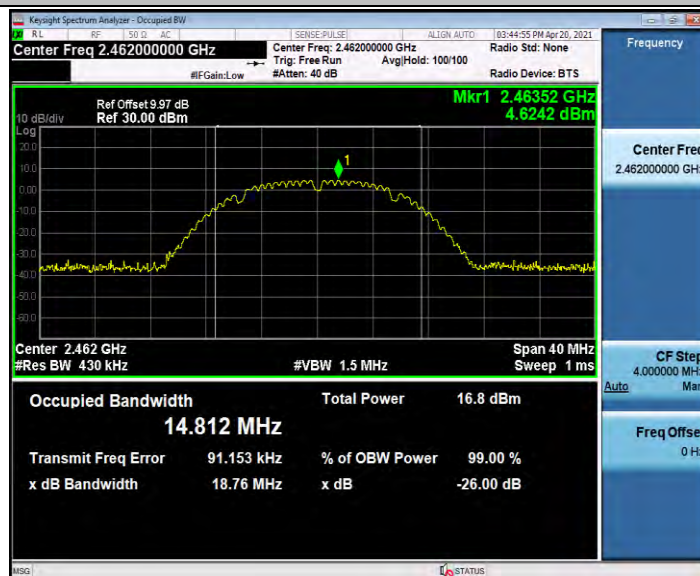
11B_Ant2_2412



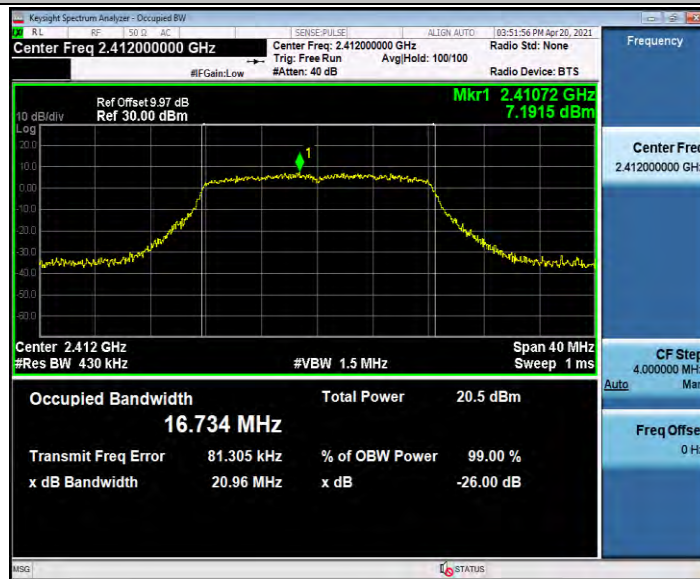
11B_Ant2_2437



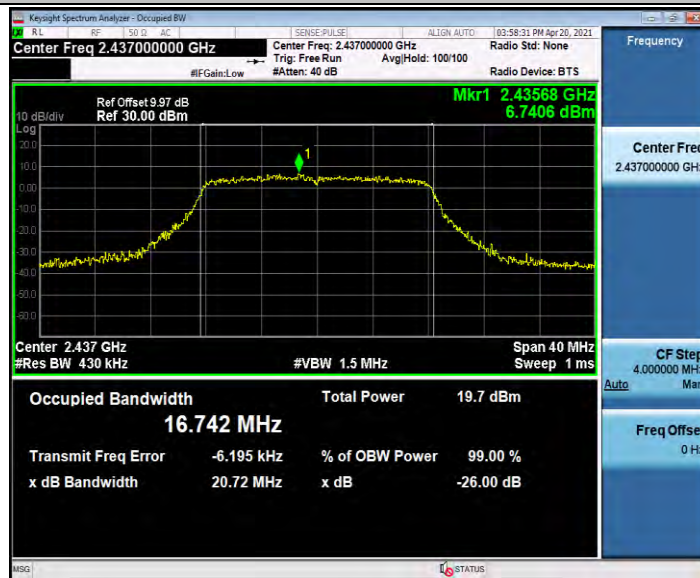
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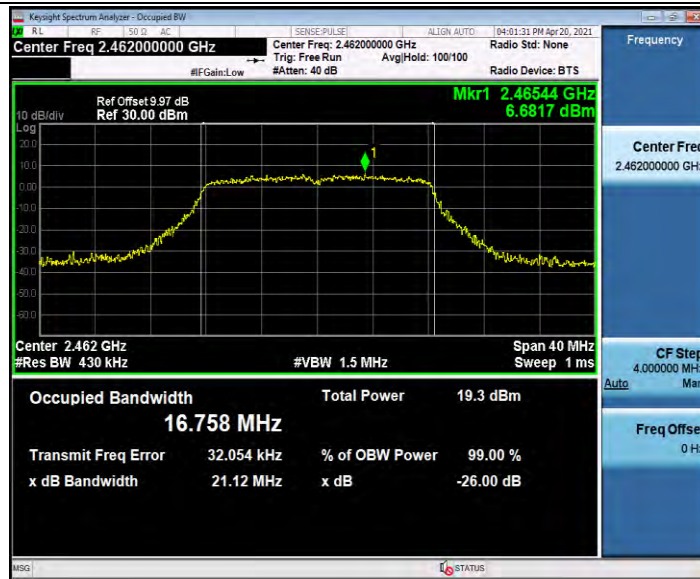
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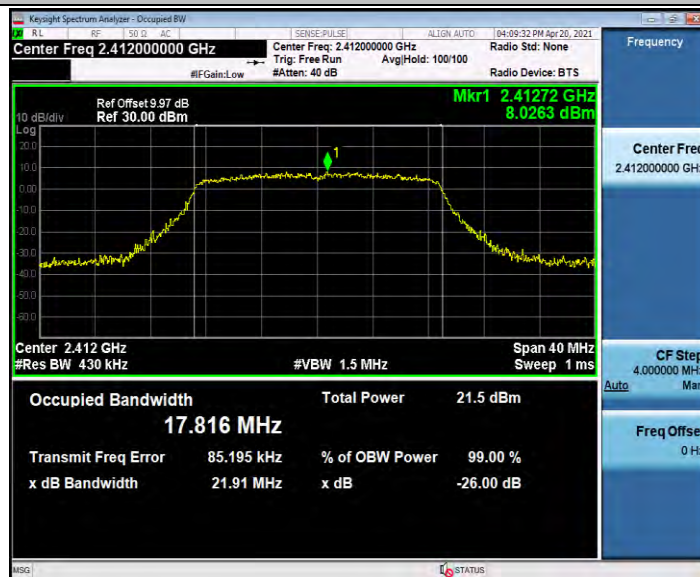
11G_Ant2_2437



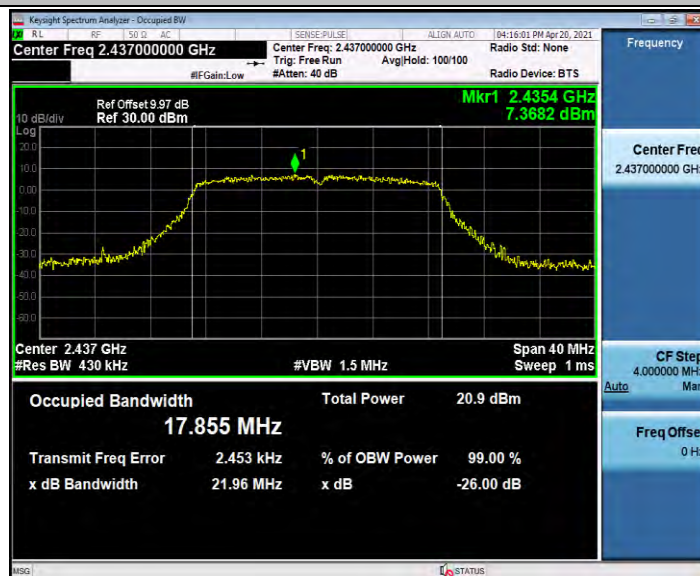
11G_Ant2_2462



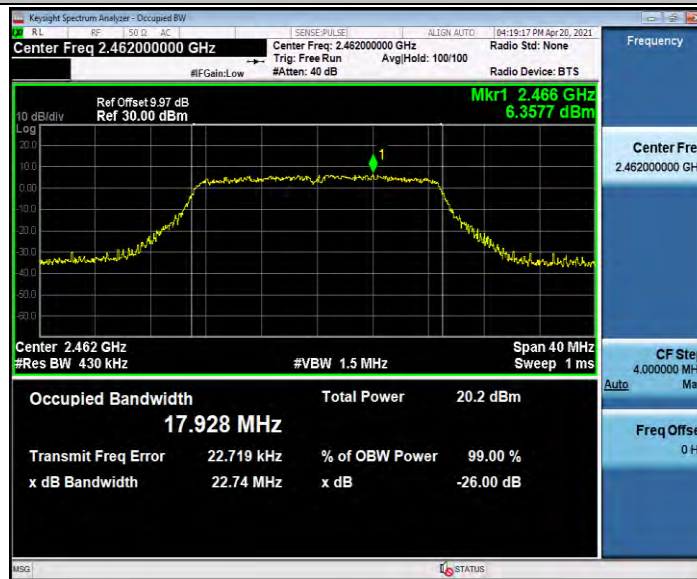
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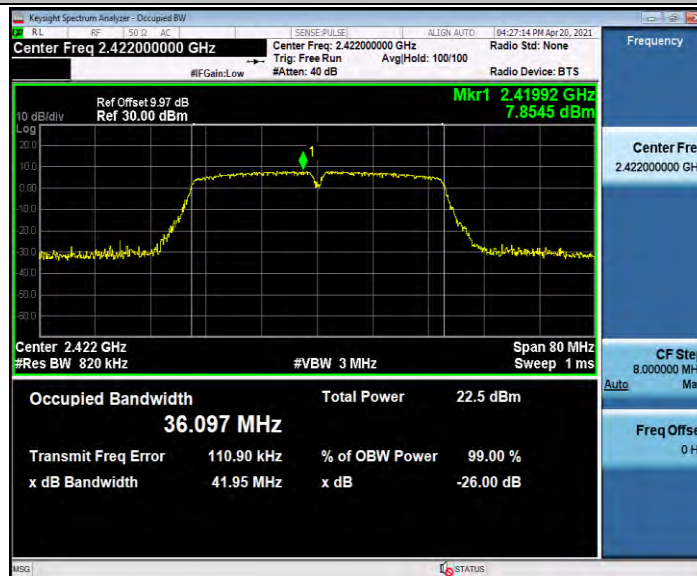
11N20SISO_Ant2_2437



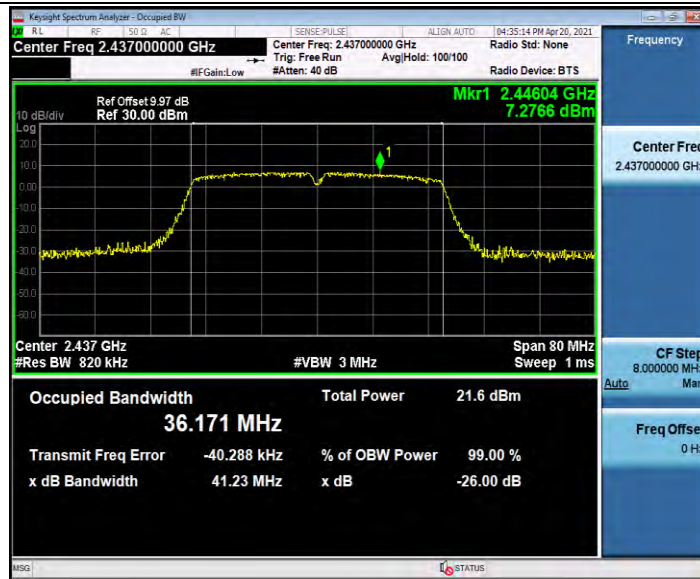
11N20SISO_Ant2_2462



11N40SISO_Ant2_2422



11N40SISO_Ant2_2437



11N40SISO_Ant2_2452



Appendix C: Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	17.10	<=30	PASS
		2437	16.87	<=30	PASS
		2462	16.75	<=30	PASS
11G	Ant1	2412	20.71	<=30	PASS
		2437	20.13	<=30	PASS
		2462	19.90	<=30	PASS
11N20SISO	Ant1	2412	23.27	<=30	PASS
		2437	22.83	<=30	PASS
		2462	22.30	<=30	PASS
11N40SISO	Ant1	2422	22.67	<=30	PASS
		2437	21.97	<=30	PASS
		2452	21.48	<=30	PASS
11B	Ant2	2412	18.04	<=30	PASS
		2437	17.26	<=30	PASS
		2462	17.04	<=30	PASS
11G	Ant2	2412	21.88	<=30	PASS
		2437	21.18	<=30	PASS
		2462	20.34	<=30	PASS
11N20SISO	Ant2	2412	23.02	<=30	PASS
		2437	22.43	<=30	PASS
		2462	21.43	<=30	PASS
11N40SISO	Ant2	2422	22.86	<=30	PASS
		2437	22.24	<=30	PASS
		2452	22.07	<=30	PASS
11N20	MIMO	2412	26.16	<=29.42	PASS
		2437	25.64	<=29.42	PASS
		2462	24.90	<=29.42	PASS
11N40	MIMO	2422	25.78	<=29.42	PASS
		2437	25.12	<=29.42	PASS
		2452	24.80	<=29.42	PASS

Note: The directional gain is 6.58 dBi greater than 6dBi, the power limit of MIMO mode shall reduce 0.58 db.

Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-8.87	<=8	PASS
		2437	-9.58	<=8	PASS
		2462	-10.02	<=8	PASS
11G	Ant1	2412	-10.73	<=8	PASS
		2437	-11.89	<=8	PASS
		2462	-12.49	<=8	PASS
11N20SISO	Ant1	2412	-8.8	<=8	PASS
		2437	-9.52	<=8	PASS
		2462	-9.55	<=8	PASS
11N40SISO	Ant1	2422	-12.42	<=8	PASS
		2437	-12.07	<=8	PASS
		2452	-14.02	<=8	PASS
11B	Ant2	2412	-9.07	<=8	PASS
		2437	-7.83	<=8	PASS
		2462	-8.51	<=8	PASS
11G	Ant2	2412	-9.51	<=8	PASS
		2437	-11.1	<=8	PASS
		2462	-12.07	<=8	PASS
11N20SISO	Ant2	2412	-9.35	<=8	PASS
		2437	-10.13	<=8	PASS
		2462	-11.6	<=8	PASS
11N40SISO	Ant2	2422	-12.37	<=8	PASS
		2437	-13.44	<=8	PASS
		2452	-12.89	<=8	PASS
11N20	MIMO	2412	-6.06	<=7.42	PASS
		2437	-6.80	<=7.42	PASS
		2462	-7.44	<=7.42	PASS
11N40	MIMO	2422	-9.38	<=7.42	PASS
		2437	-9.69	<=7.42	PASS
		2452	-10.41	<=7.42	PASS

Note: The directional gain is 6.58 dBi greater than 6dBi, the PSD limit of MIMO mode shall reduce 0.58 db.

Test Graphs

11B_Ant1_2412



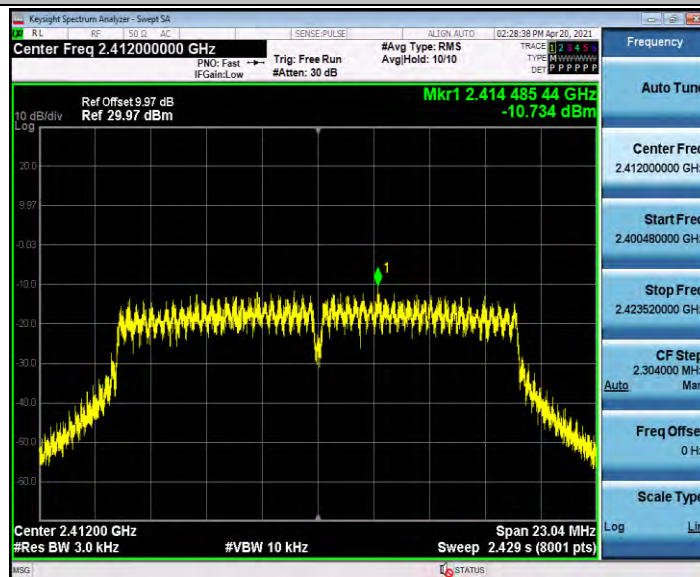
11B_Ant1_2437



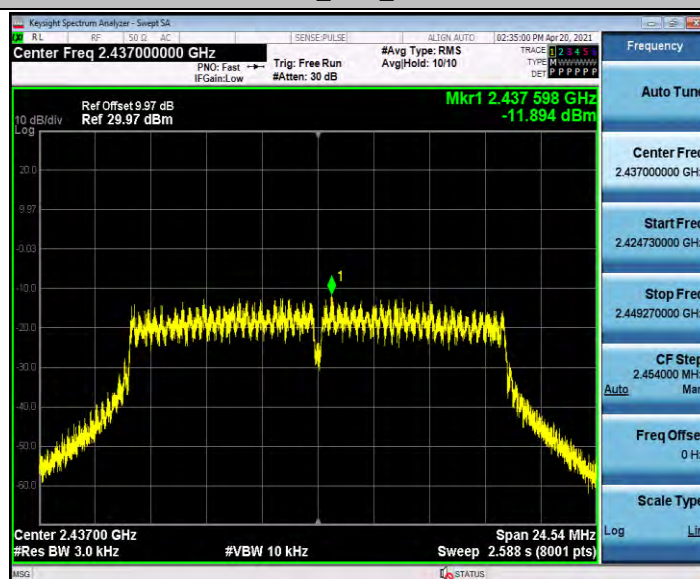
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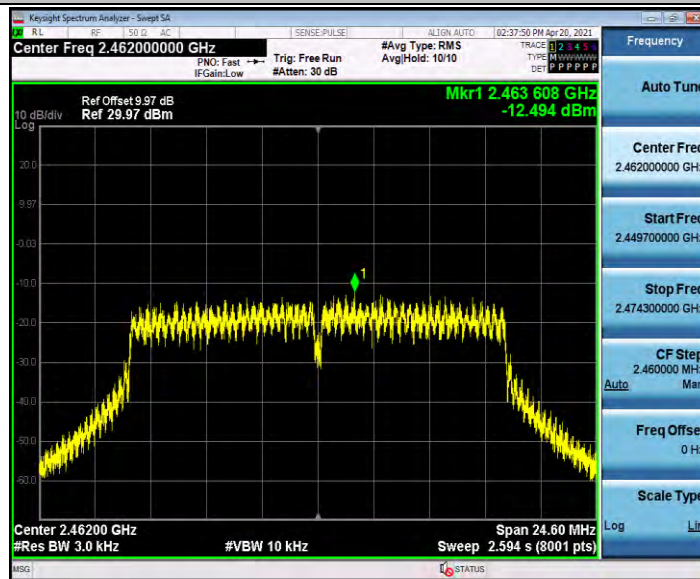
11G_Ant1_2412



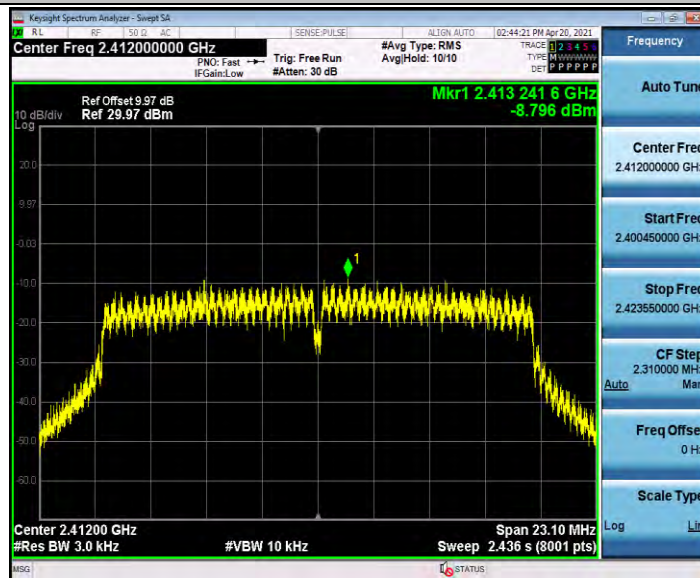
11G_Ant1_2437



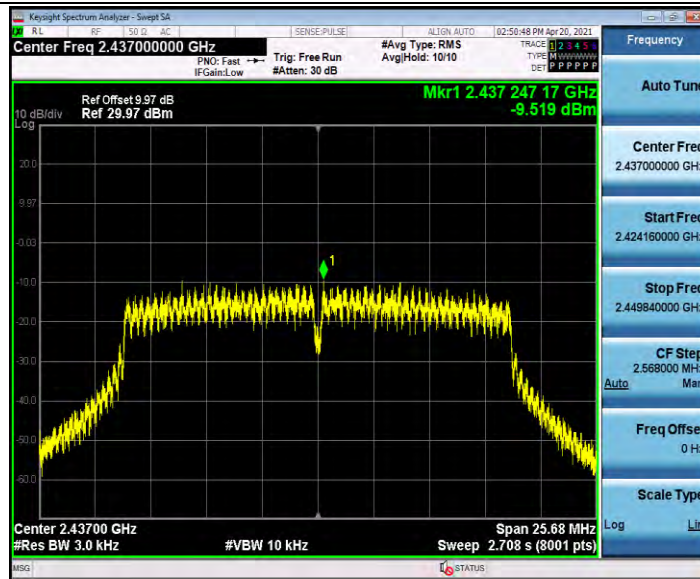
11G_Ant1_2462



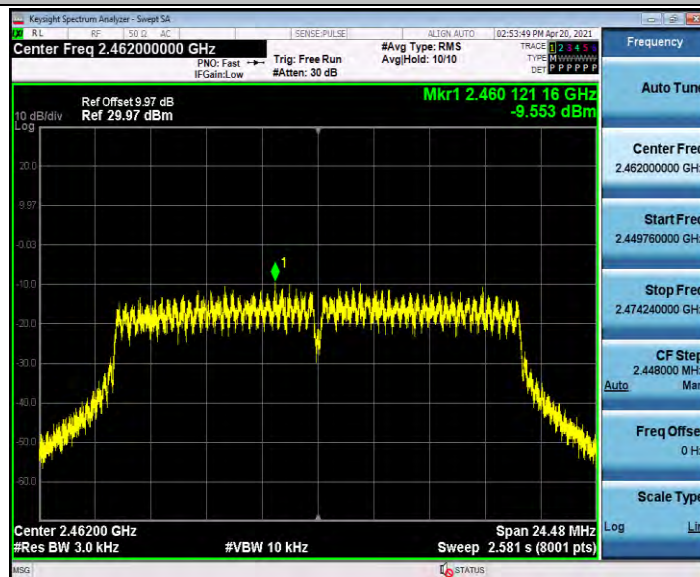
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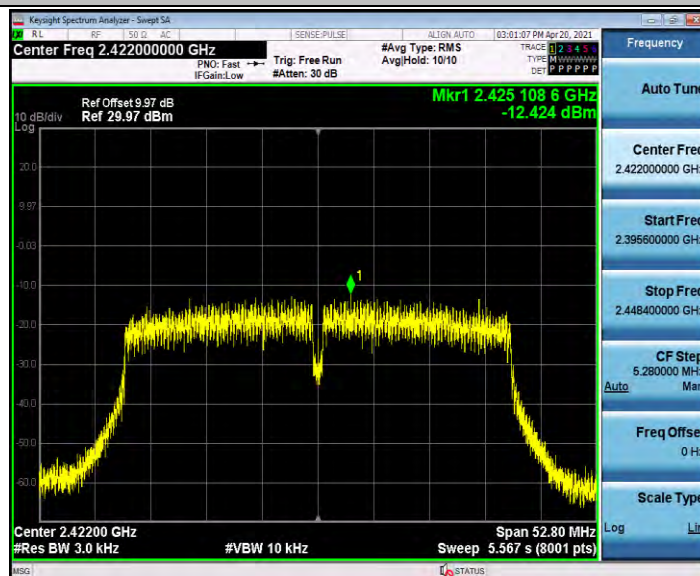
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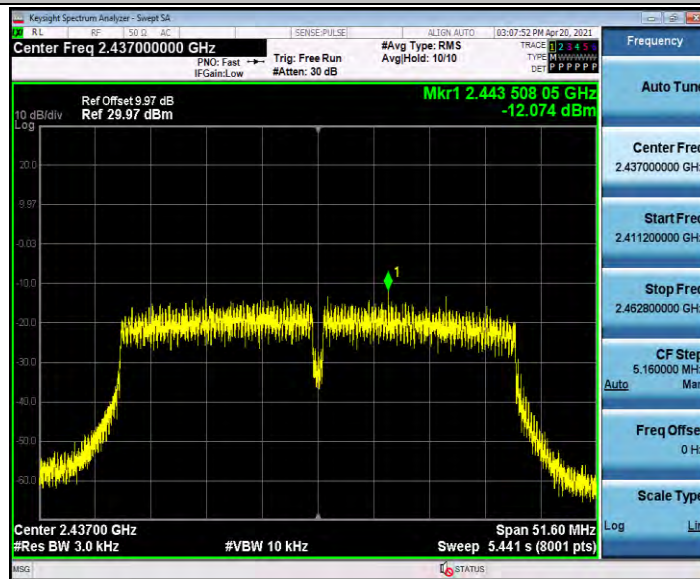
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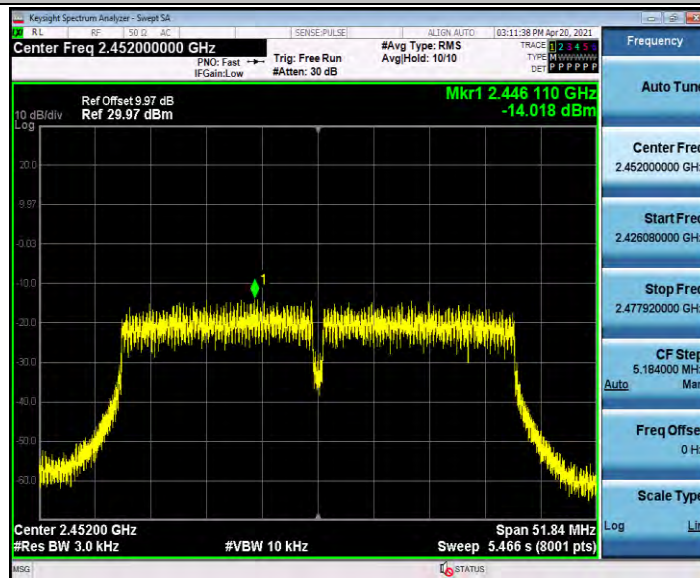
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



11B_Ant2_2412



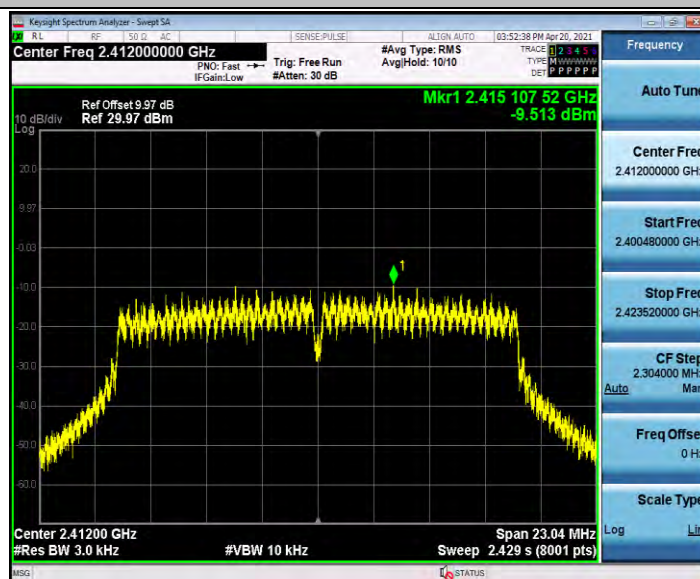
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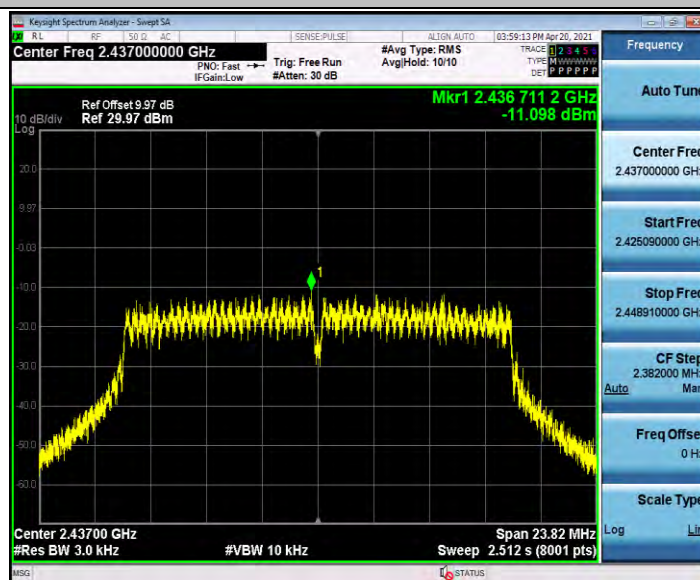
11B_Ant2_2462



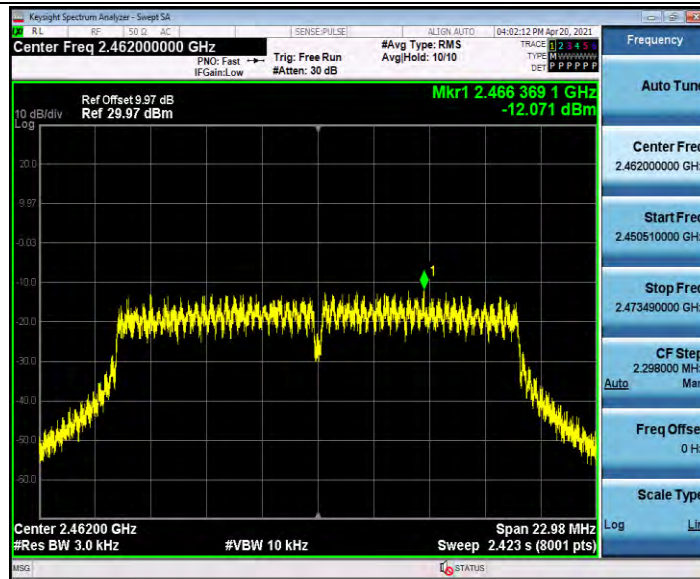
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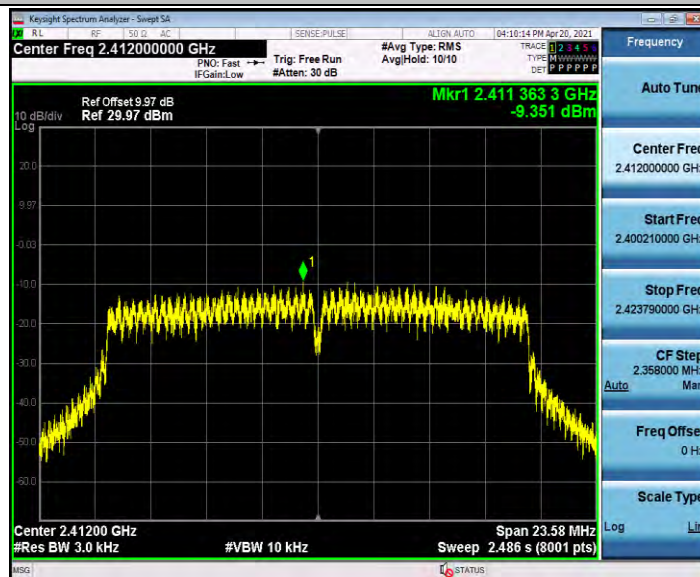
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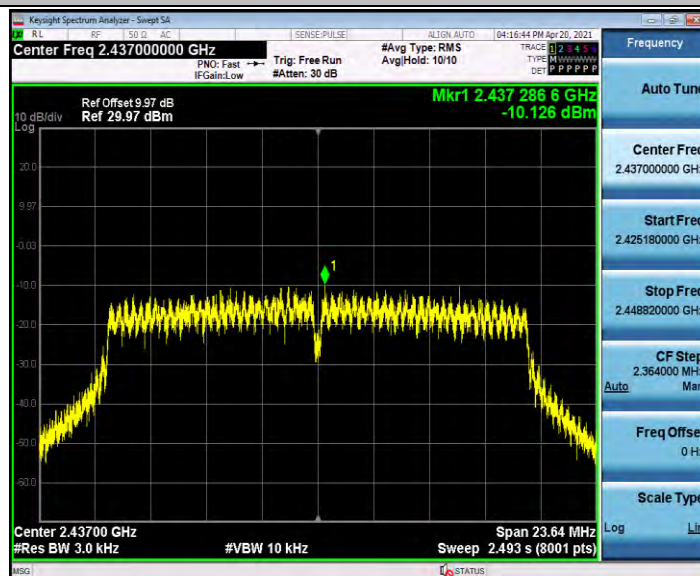
11G_Ant2_2462



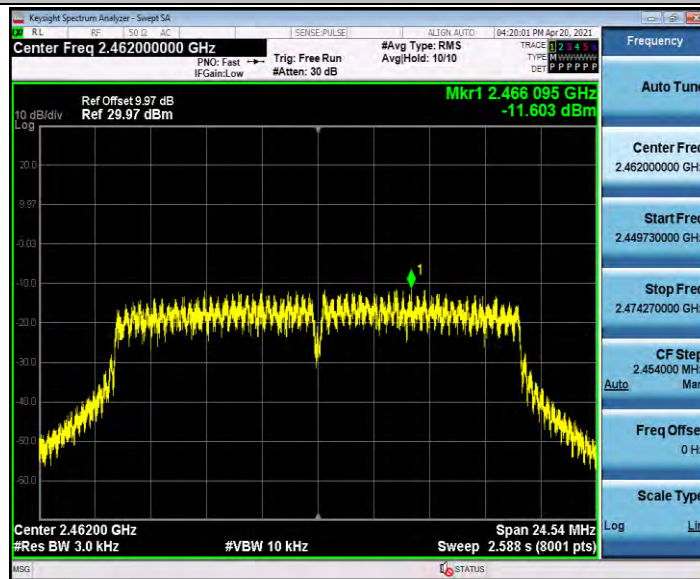
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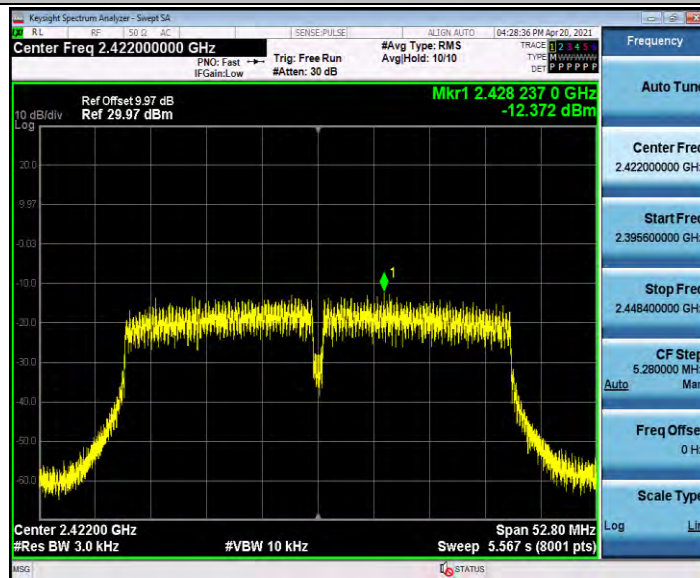
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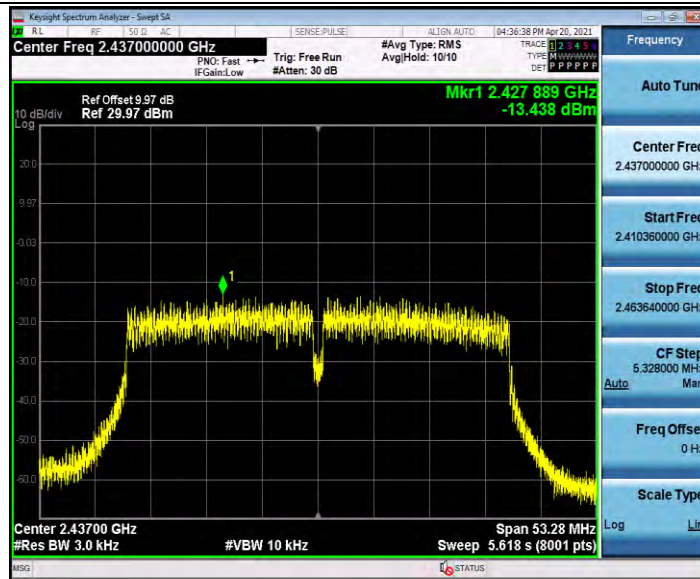
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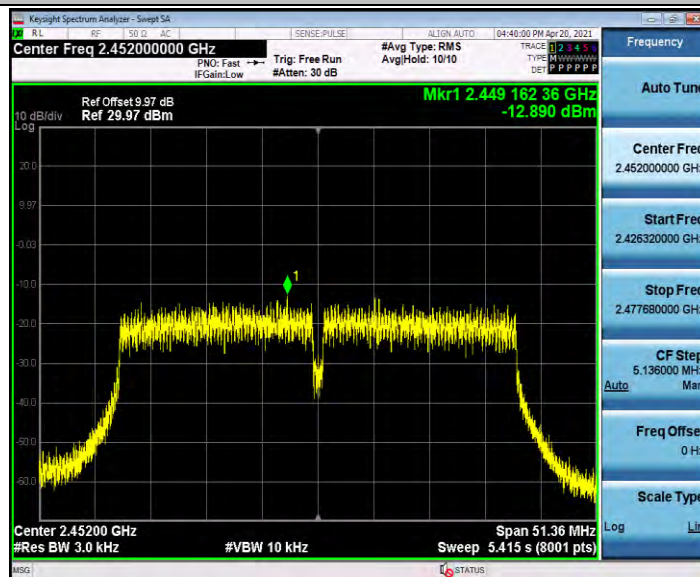
11N40SISO_Ant2_2422



11N40SISO_Ant2_2437



11N40SISO_Ant2_2452



Appendix E: Band edge measurements

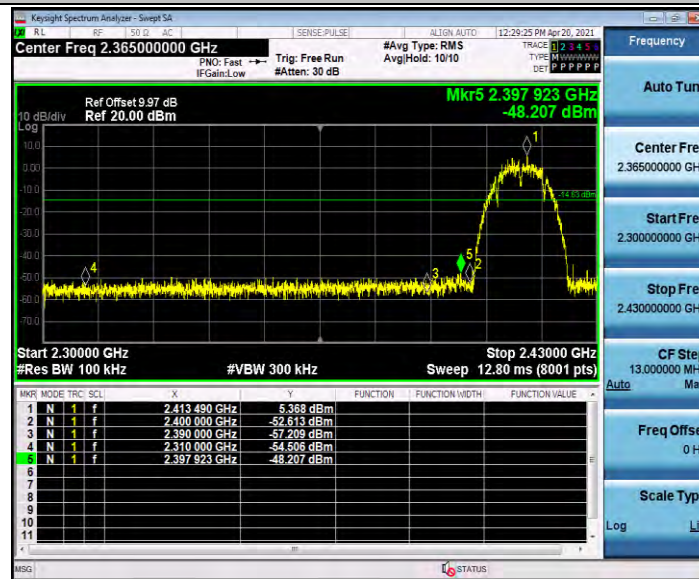
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	5.37	-48.21	<=-14.63	PASS
		High	2462	3.62	-48.63	<=-16.38	PASS
11G	Ant1	Low	2412	-0.31	-39.48	<=-20.31	PASS
		High	2462	-1.73	-48.96	<=-21.73	PASS
11N20SISO	Ant1	Low	2412	4.69	-31.38	<=-15.31	PASS
		High	2462	0.78	-47.74	<=-19.22	PASS
11N40SISO	Ant1	Low	2422	1.81	-37.46	<=-18.2	PASS
		High	2452	-0.33	-40.5	<=-20.33	PASS

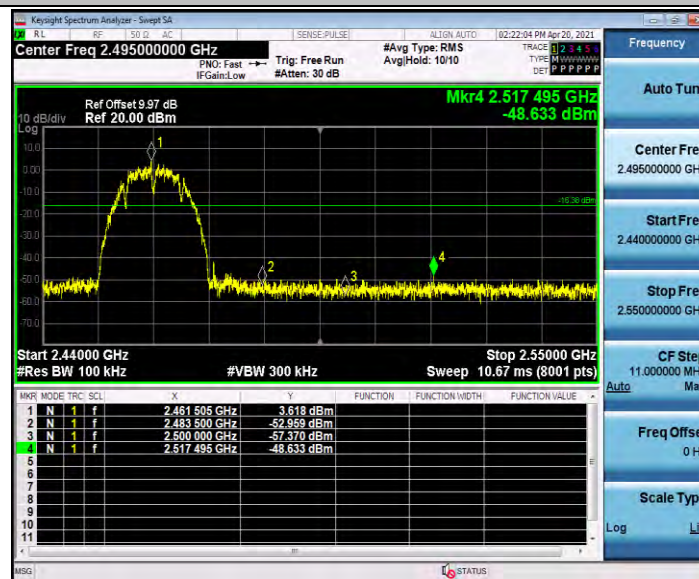
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant2	Low	2412	4.42	-41.51	<=-15.58	PASS
		High	2462	4.30	-49.35	<=-15.7	PASS
11G	Ant2	Low	2412	0.17	-37.02	<=-19.83	PASS
		High	2462	-1.27	-48.68	<=-21.28	PASS
11N20SISO	Ant2	Low	2412	2.18	-36.83	<=-17.82	PASS
		High	2462	-0.01	-45.7	<=-20.01	PASS
11N40SISO	Ant2	Low	2422	1.08	-37.31	<=-18.92	PASS
		High	2452	-0.28	-44.26	<=-20.28	PASS

Test Graphs

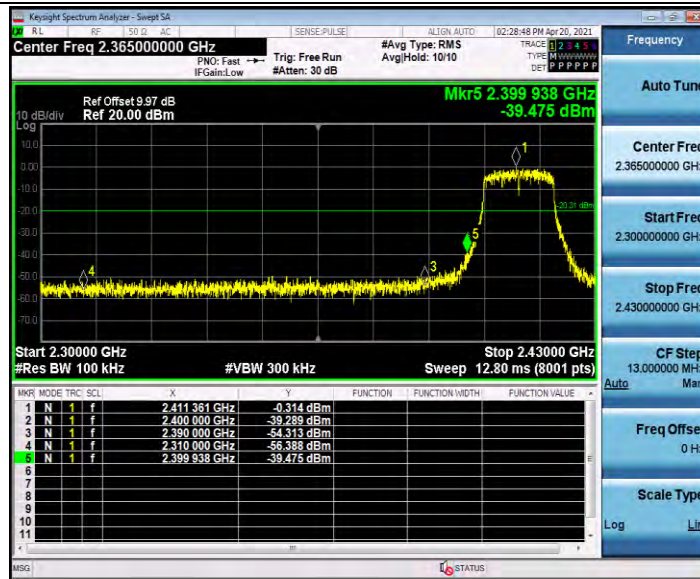
11B_Ant1_Low_2412



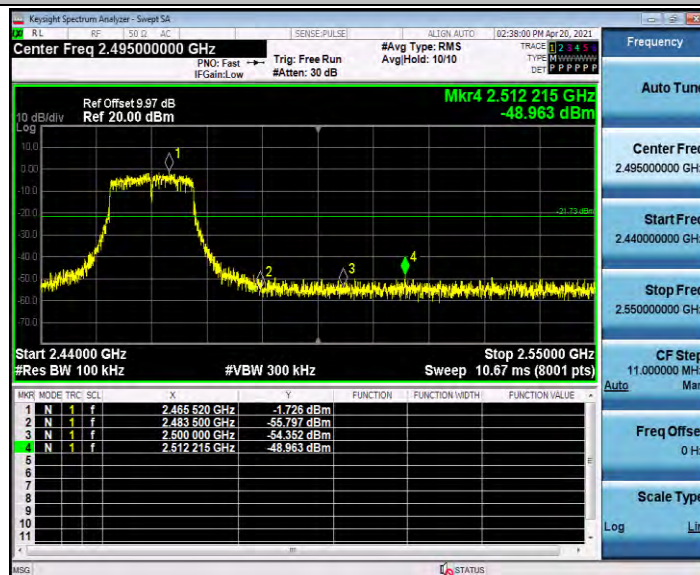
11B_Ant1_High_2462



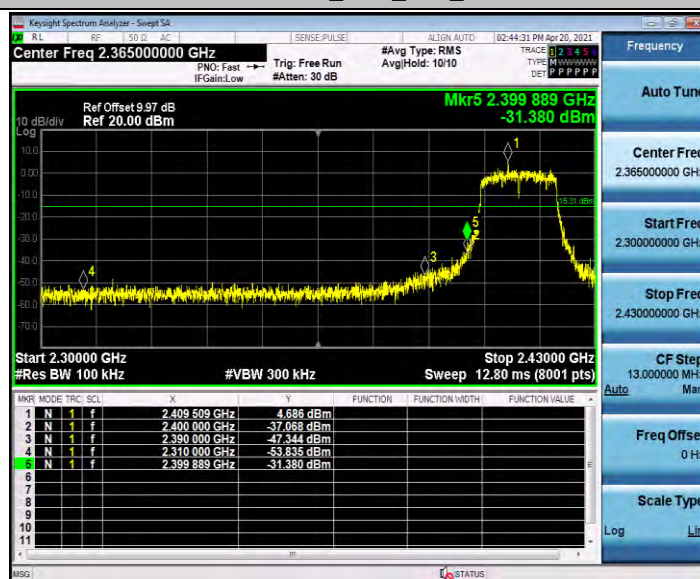
11G_Ant1_Low_2412



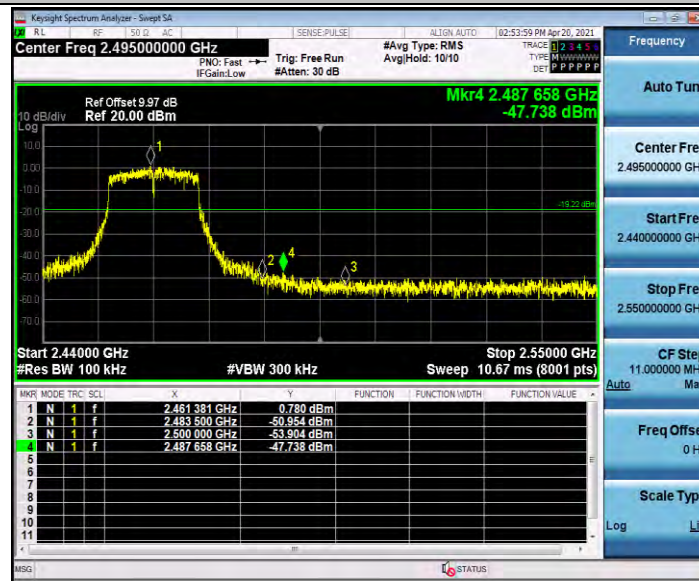
11G_Ant1_High_2462



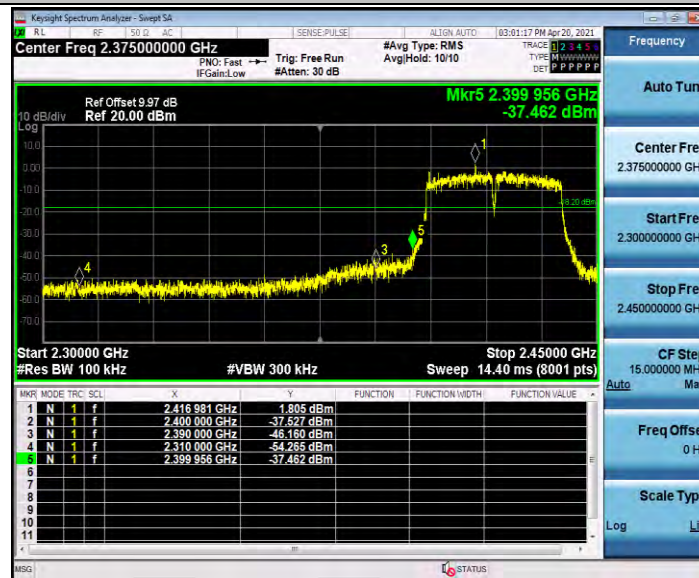
11N20SISO_Ant1_Low_2412



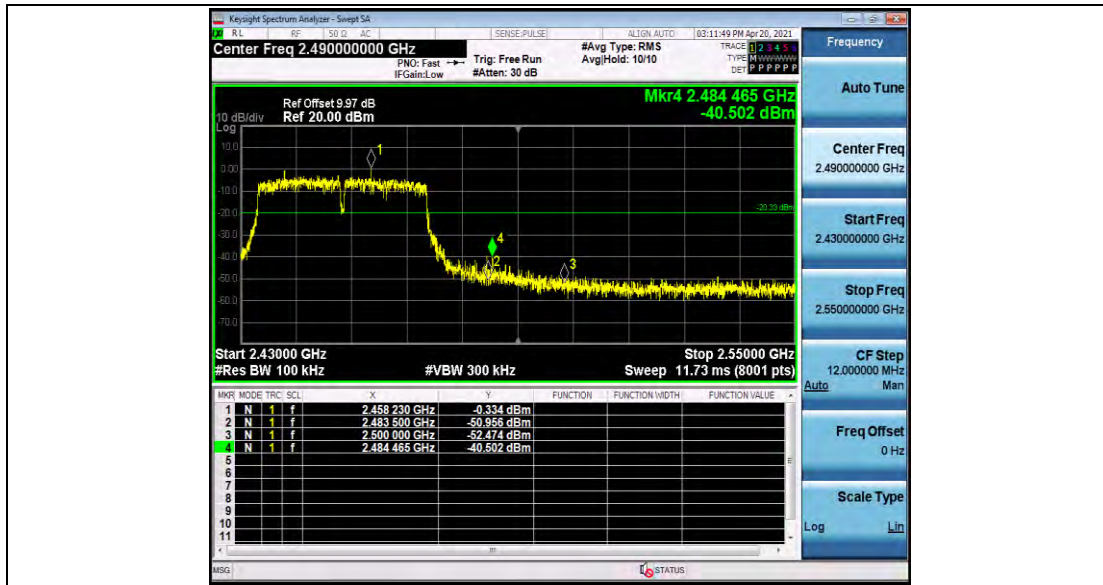
11N20SISO_Ant1_High_2462



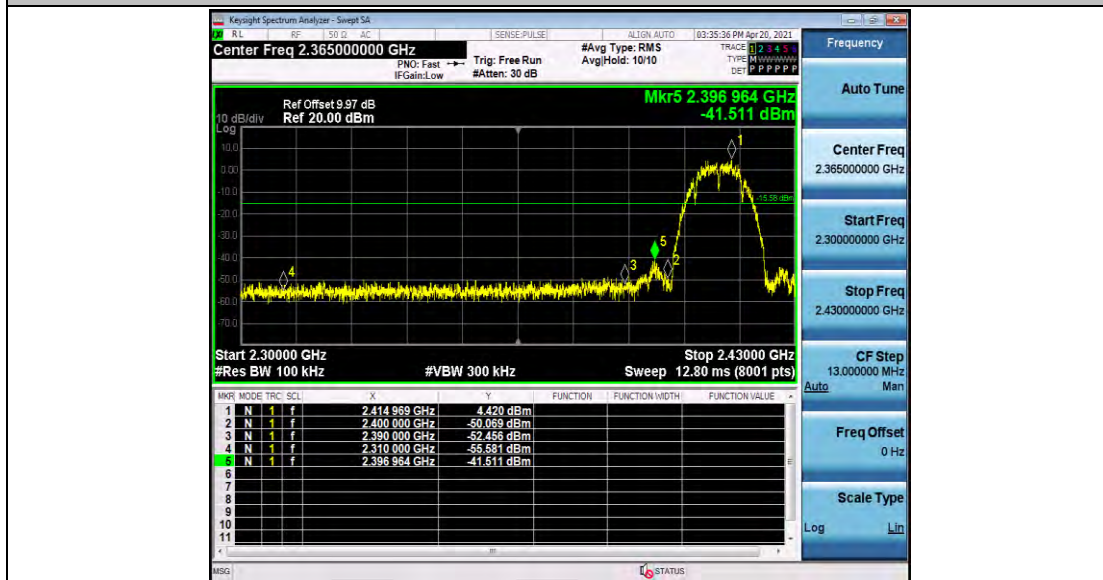
11N40SISO_Ant1_Low_2422



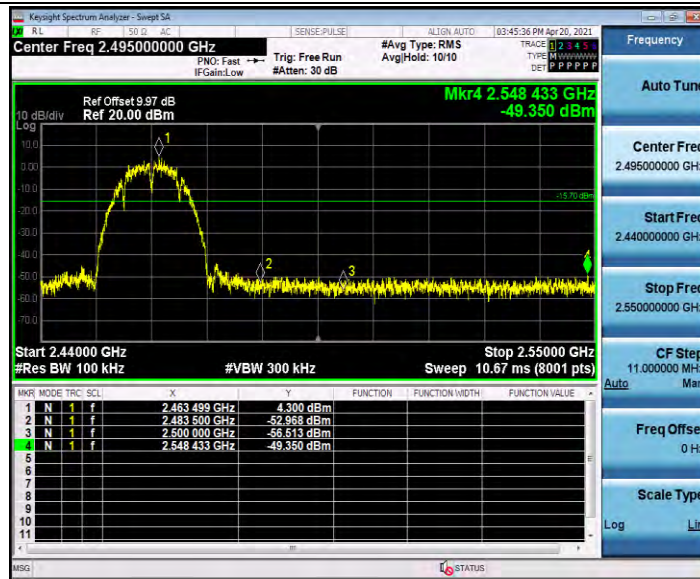
11N40SISO_Ant1_High_2452



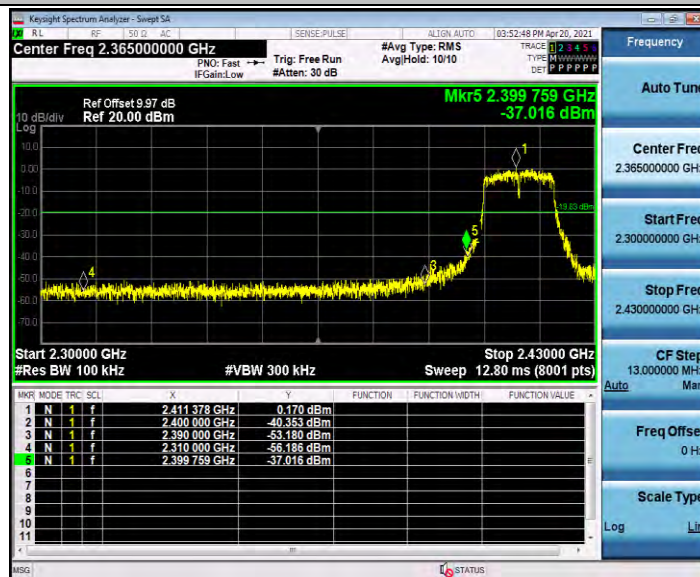
11B_Ant2_Low_2412



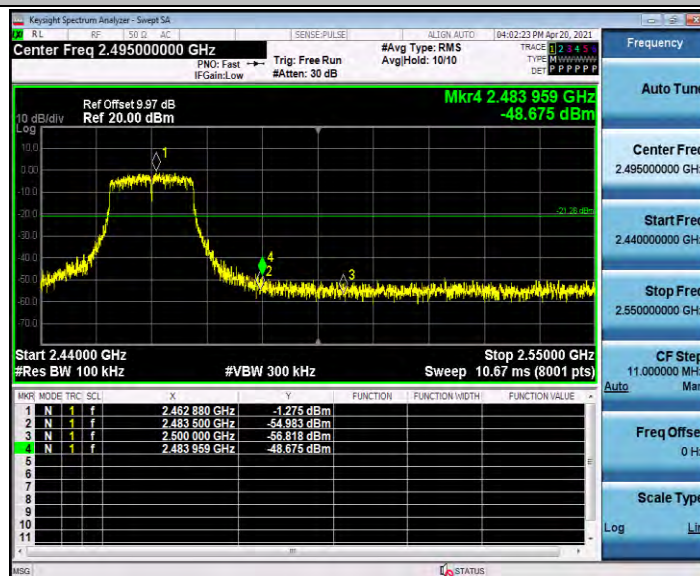
11B_Ant2_High_2462



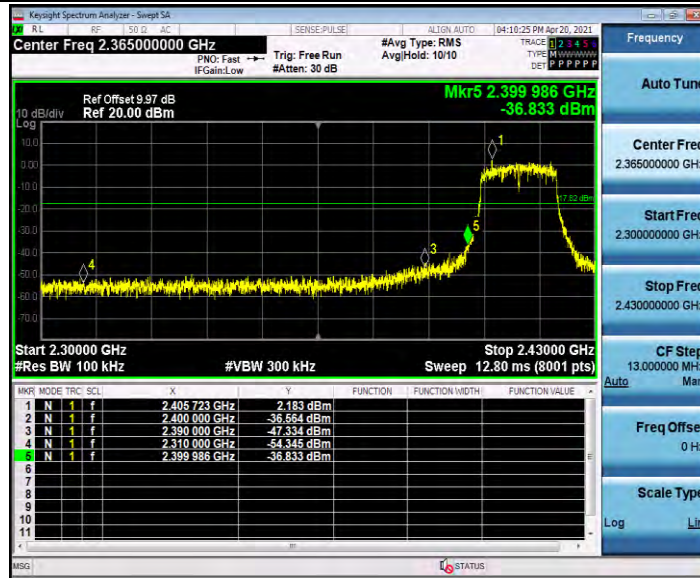
11G_Ant2_Low_2412



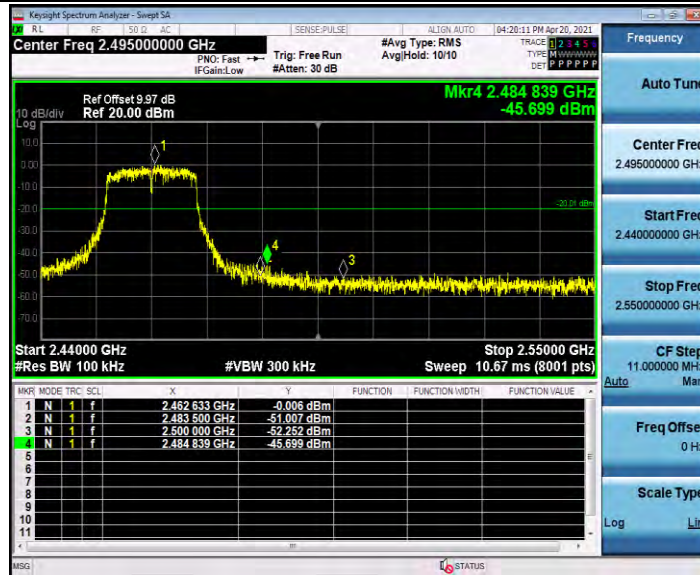
11G_Ant2_High_2462



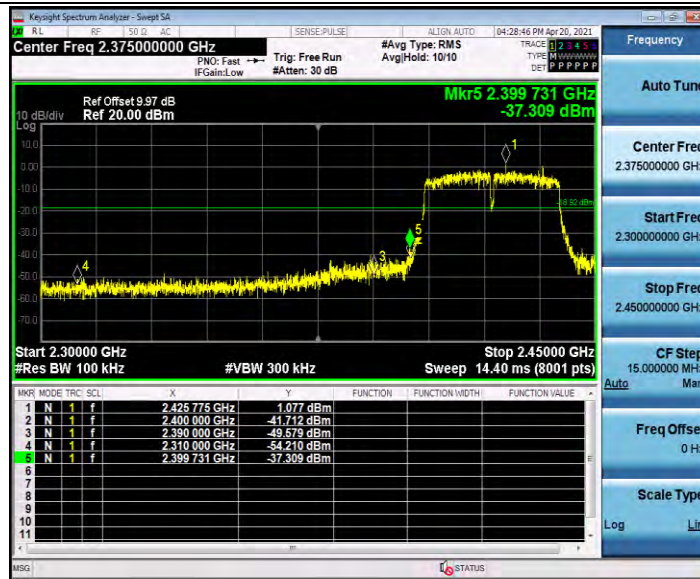
11N20SISO_Ant2_Low_2412



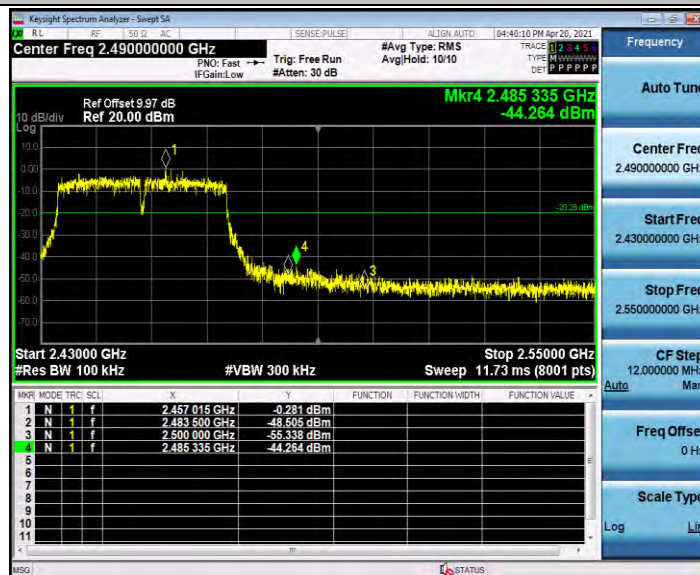
11N20SISO_Ant2_High_2462



11N40SISO_Ant2_Low_2422



11N40SISO_Ant2_High_2452



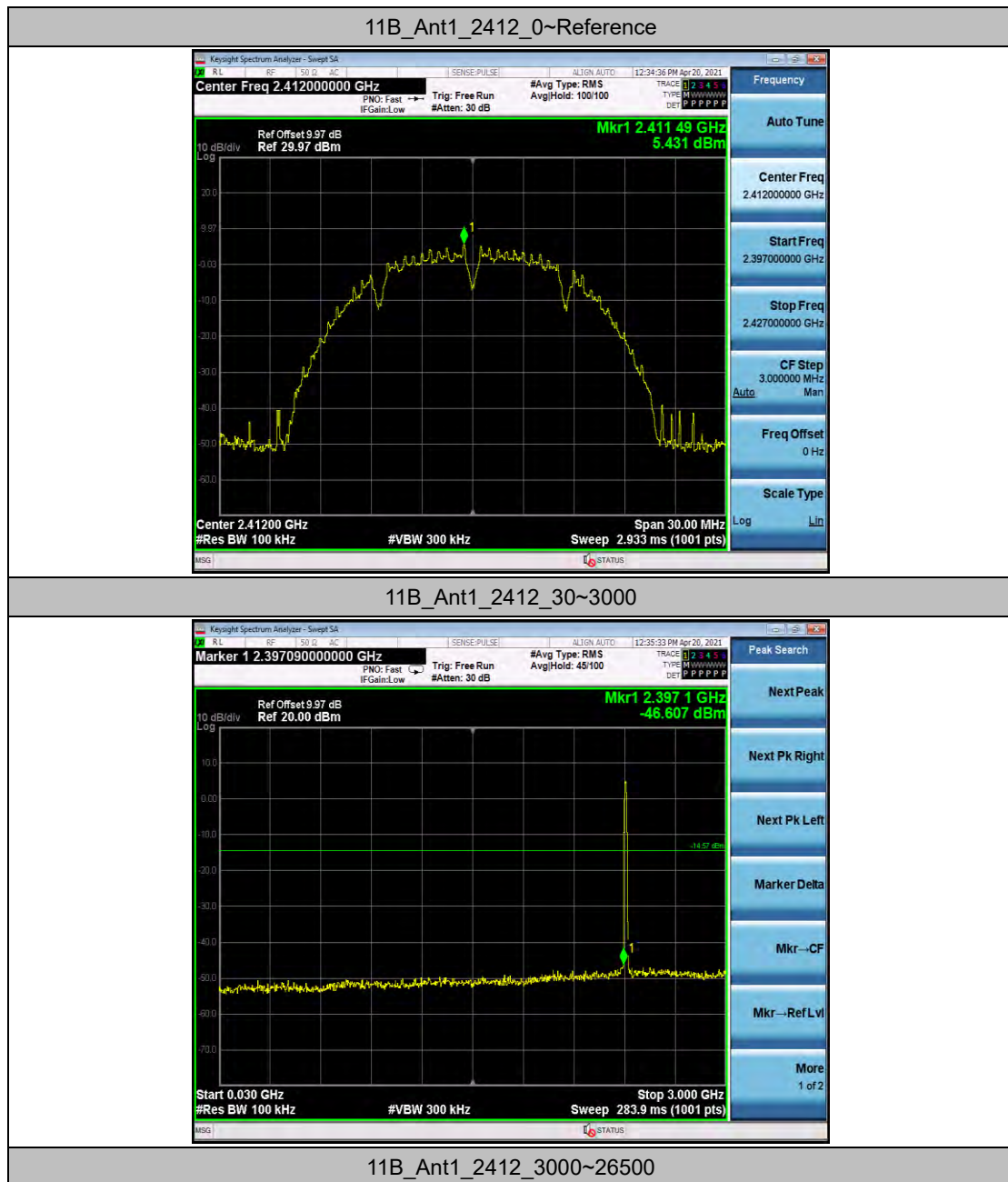
Appendix F: Conducted Spurious Emission

Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	5.43	5.43	---	PASS
			30~3000	30~3000	-46.607	<=-14.569	PASS
			3000~26500	3000~26500	-35.114	<=-14.569	PASS
		2437	Reference	4.84	4.84	---	PASS
			30~3000	30~3000	-46.694	<=-15.159	PASS
			3000~26500	3000~26500	-35.826	<=-15.159	PASS
		2462	Reference	3.94	3.94	---	PASS
			30~3000	30~3000	-46.434	<=-16.065	PASS
			3000~26500	3000~26500	-35.027	<=-16.065	PASS
11G	Ant1	2412	Reference	0.80	0.80	---	PASS
			30~3000	30~3000	-41.271	<=-19.196	PASS
			3000~26500	3000~26500	-35.245	<=-19.196	PASS
		2437	Reference	1.41	1.41	---	PASS
			30~3000	30~3000	-41.575	<=-18.591	PASS
			3000~26500	3000~26500	-35.282	<=-18.591	PASS
		2462	Reference	1.55	1.55	---	PASS
			30~3000	30~3000	-46.677	<=-18.452	PASS
			3000~26500	3000~26500	-35.481	<=-18.452	PASS
11N20SISO	Ant1	2412	Reference	5.30	5.30	---	PASS
			30~3000	30~3000	-38.294	<=-14.697	PASS
			3000~26500	3000~26500	-35.624	<=-14.697	PASS
		2437	Reference	4.20	4.20	---	PASS
			30~3000	30~3000	-45.933	<=-15.802	PASS
			3000~26500	3000~26500	-35.361	<=-15.802	PASS
		2462	Reference	4.57	4.57	---	PASS
			30~3000	30~3000	-45.45	<=-15.43	PASS
			3000~26500	3000~26500	-35.186	<=-15.43	PASS
11N40SISO	Ant1	2422	Reference	1.76	1.76	---	PASS
			30~3000	30~3000	-38.892	<=-18.239	PASS
			3000~26500	3000~26500	-35.438	<=-18.239	PASS
		2437	Reference	0.91	0.91	---	PASS
			30~3000	30~3000	-41.78	<=-19.092	PASS
			3000~26500	3000~26500	-35.547	<=-19.092	PASS
		2452	Reference	0.16	0.16	---	PASS
			30~3000	30~3000	-42.458	<=-19.842	PASS
			3000~26500	3000~26500	-35.476	<=-19.842	PASS

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant2	2412	Reference	5.99	5.99	---	PASS
			30~3000	30~3000	-40.495	<=-14.008	PASS
			3000~26500	3000~26500	-35.669	<=-14.008	PASS
		2437	Reference	5.01	5.01	---	PASS
			30~3000	30~3000	-45.273	<=-14.987	PASS
			3000~26500	3000~26500	-34.905	<=-14.987	PASS
		2462	Reference	4.19	4.19	---	PASS
			30~3000	30~3000	-45.934	<=-15.814	PASS
			3000~26500	3000~26500	-35.611	<=-15.814	PASS
11G	Ant2	2412	Reference	3.44	3.44	---	PASS
			30~3000	30~3000	-39.792	<=-16.563	PASS
			3000~26500	3000~26500	-35.65	<=-16.563	PASS
		2437	Reference	1.77	1.77	---	PASS
			30~3000	30~3000	-46.191	<=-18.227	PASS
			3000~26500	3000~26500	-35.232	<=-18.227	PASS
		2462	Reference	1.84	1.84	---	PASS
			30~3000	30~3000	-46.209	<=-18.158	PASS
			3000~26500	3000~26500	-35.108	<=-18.158	PASS
11N20SISO	Ant2	2412	Reference	4.63	4.63	---	PASS
			30~3000	30~3000	-38.803	<=-15.369	PASS
			3000~26500	3000~26500	-34.764	<=-15.369	PASS
		2437	Reference	3.90	3.90	---	PASS
			30~3000	30~3000	-46.662	<=-16.1	PASS
			3000~26500	3000~26500	-35.446	<=-16.1	PASS
		2462	Reference	3.65	3.65	---	PASS
			30~3000	30~3000	-39.62	<=-16.351	PASS
			3000~26500	3000~26500	-35.219	<=-16.351	PASS
11N40SISO	Ant2	2422	Reference	2.12	2.12	---	PASS
			30~3000	30~3000	-38.765	<=-17.884	PASS
			3000~26500	3000~26500	-35.698	<=-17.884	PASS
		2437	Reference	1.06	1.06	---	PASS
			30~3000	30~3000	-42.43	<=-18.944	PASS
			3000~26500	3000~26500	-35.309	<=-18.944	PASS
		2452	Reference	0.59	0.59	---	PASS
			30~3000	30~3000	-42.716	<=-19.408	PASS
			3000~26500	3000~26500	-34.926	<=-19.408	PASS

Test Graphs





11B_Ant1_2437_0~Reference



11B_Ant1_2437_30~3000



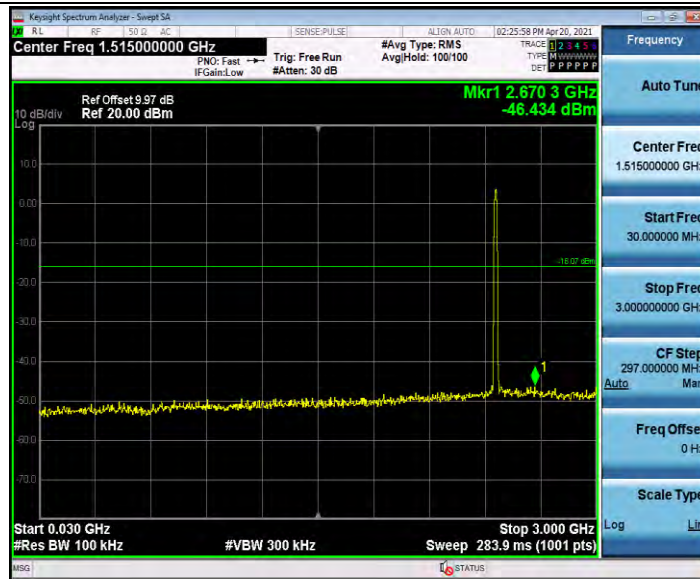
11B_Ant1_2437_3000~26500



11B_Ant1_2462_0~Reference



11B_Ant1_2462_30~3000



11B_Ant1_2462_3000~26500



11G_Ant1_2412_0~Reference



11G_Ant1_2412_30~3000



11G_Ant1_2412_3000~26500



11G_Ant1_2437_0~Reference



11G_Ant1_2437_30~3000



11G_Ant1_2437_3000~26500

