Appendix E

RF Test Data for 5.8G WIFI (Conducted Measurement)

Product Name: Key cutting machine

Trade Mark: XTOOL

Test Model: KNC81

Environmental Conditions

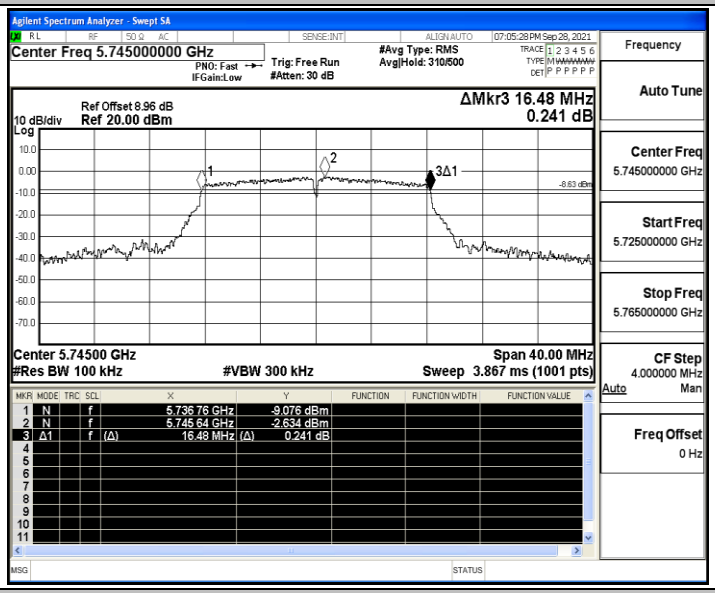
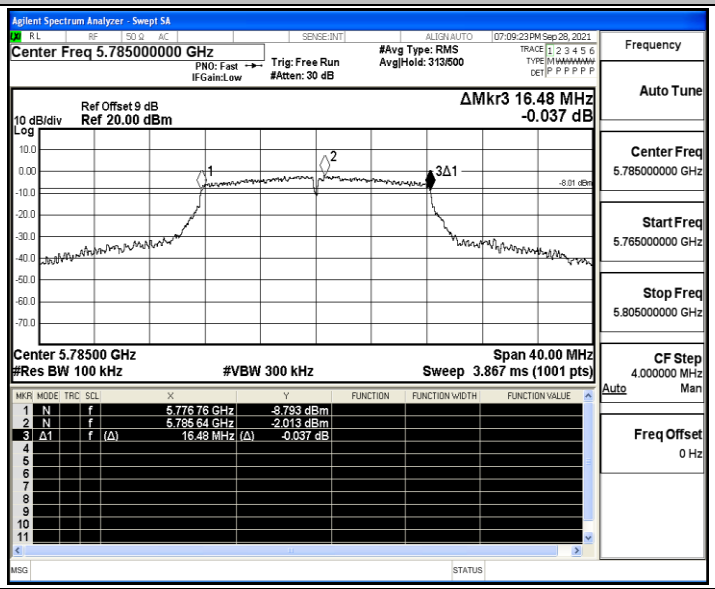
Temperature:	21.1° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Monkey Li
Supervised by:	Li Huan

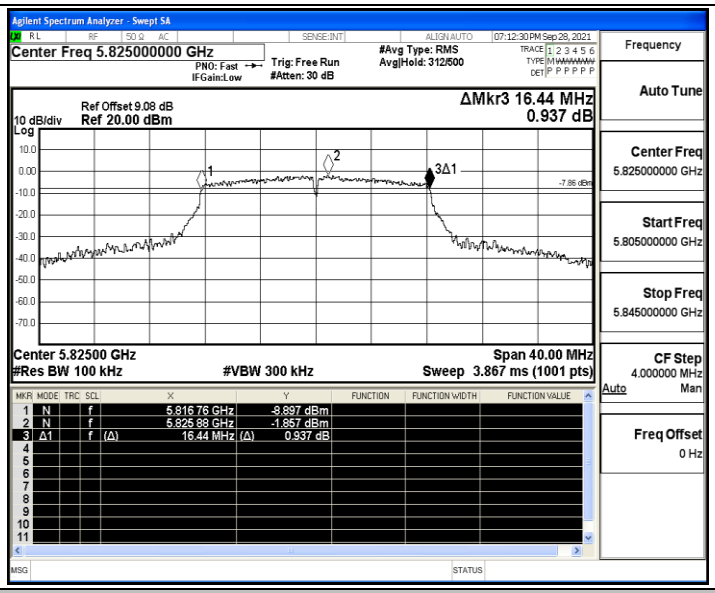
E.1 6dB bandwidth

Test Result

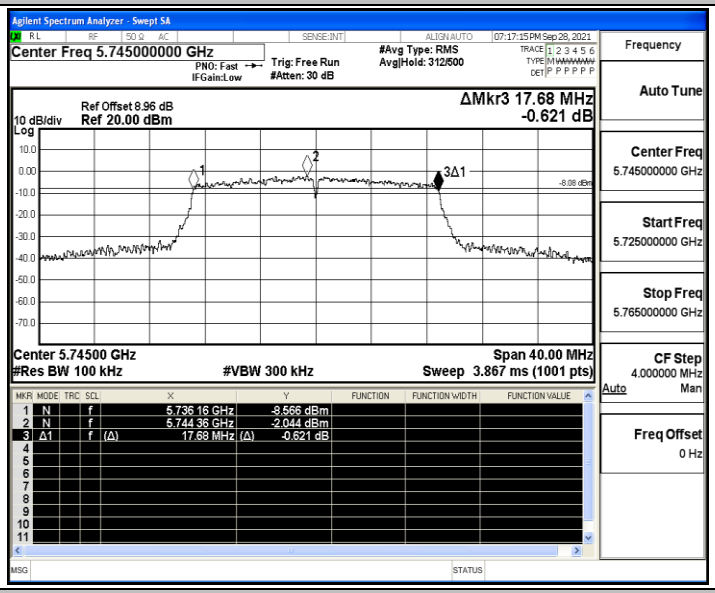
TestMode	Antenna	Channel	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.480	5736.760	5753.240	0.5	PASS
		5785	16.480	5776.760	5793.240	0.5	PASS
		5825	16.440	5816.760	5833.200	0.5	PASS
11N20SISO	Ant1	5745	17.680	5736.160	5753.840	0.5	PASS
		5785	17.680	5776.160	5793.840	0.5	PASS
		5825	17.640	5816.160	5833.800	0.5	PASS
11N40SISO	Ant1	5755	36.480	5736.760	5773.240	0.5	PASS
		5795	36.480	5776.760	5813.240	0.5	PASS
11AC20SISO	Ant1	5745	17.680	5736.160	5753.840	0.5	PASS
		5785	17.680	5776.160	5793.840	0.5	PASS
		5825	17.720	5816.120	5833.840	0.5	PASS
11AC40SISO	Ant1	5755	36.480	5736.760	5773.240	0.5	PASS
		5795	36.480	5776.760	5813.240	0.5	PASS
11AC80SISO	Ant1	5775	76.640	5736.600	5813.240	0.5	PASS

Test Graphs

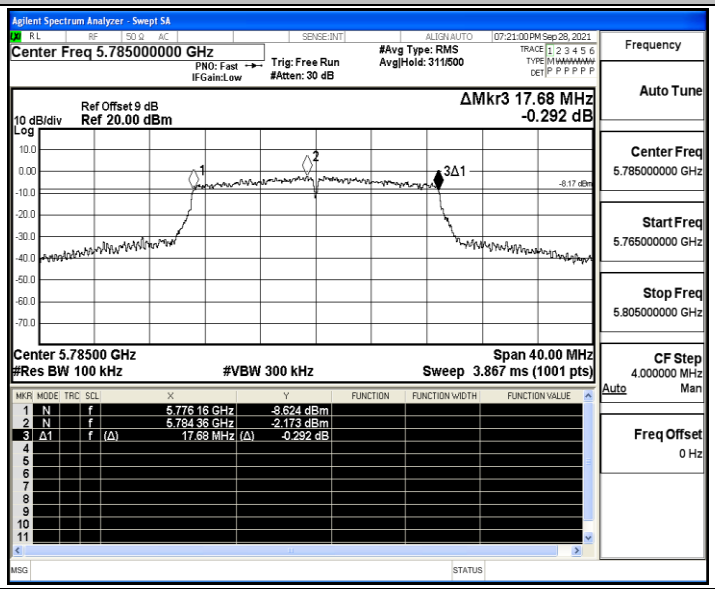
11A_Ant1_5745

11A_Ant1_5785

11A_Ant1_5825



11N20SISO_Ant1_5745



11N20SISO_Ant1_5785



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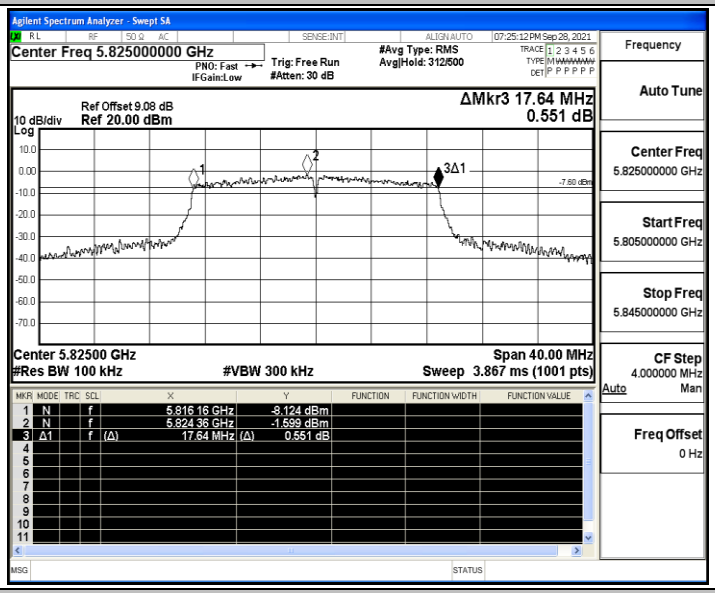
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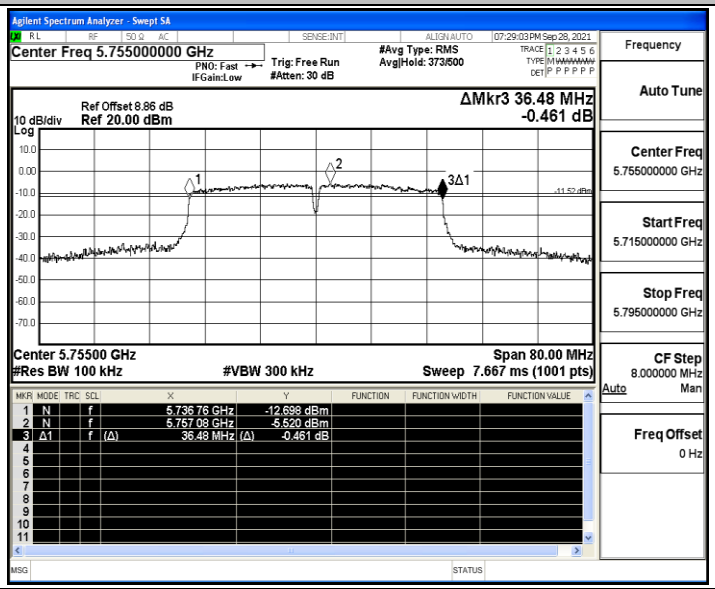
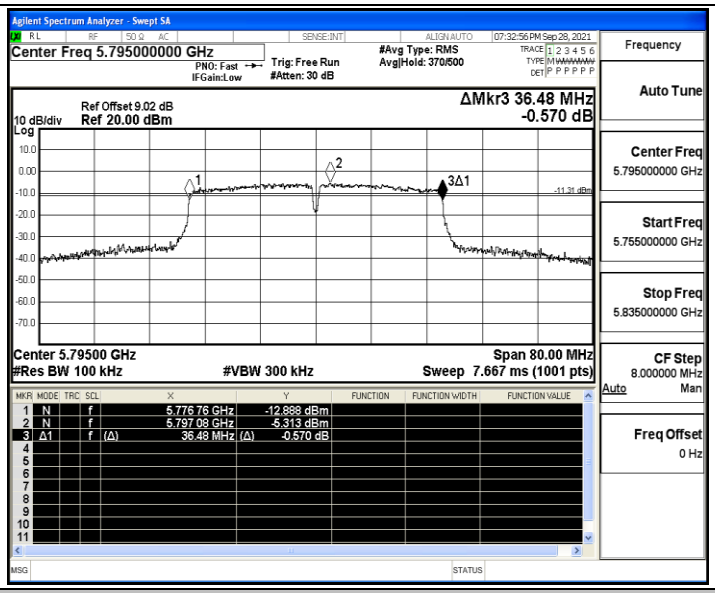
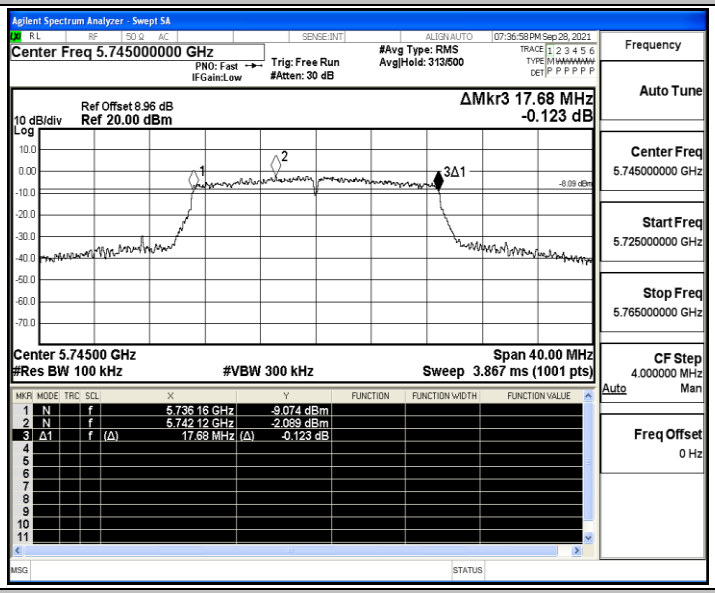
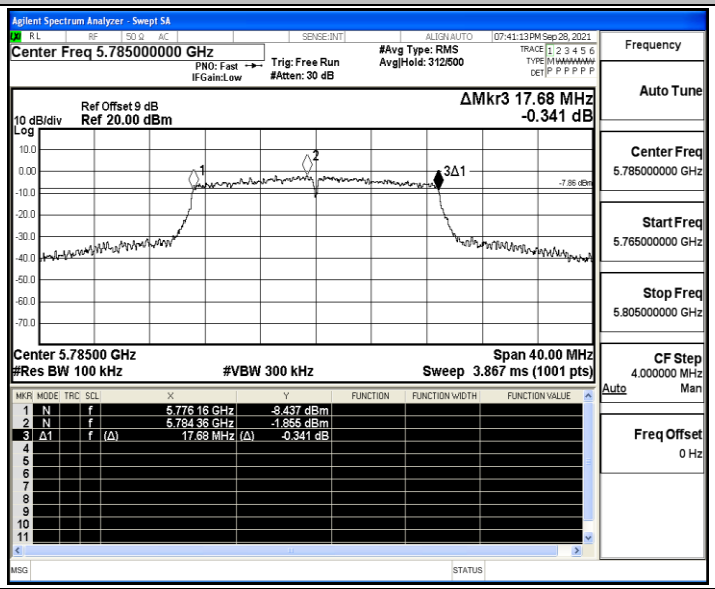

11N40SISO_Ant1_5795



11AC20SISO_Ant1_5745



11AC20SISO_Ant1_5785



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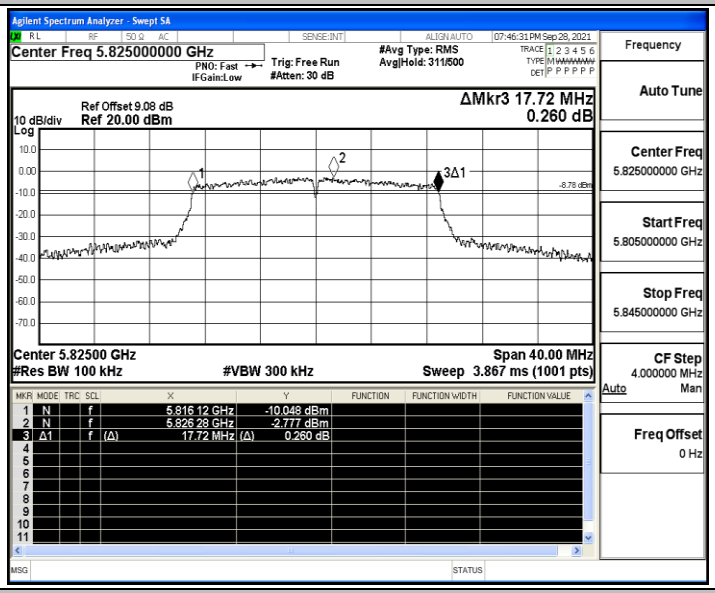
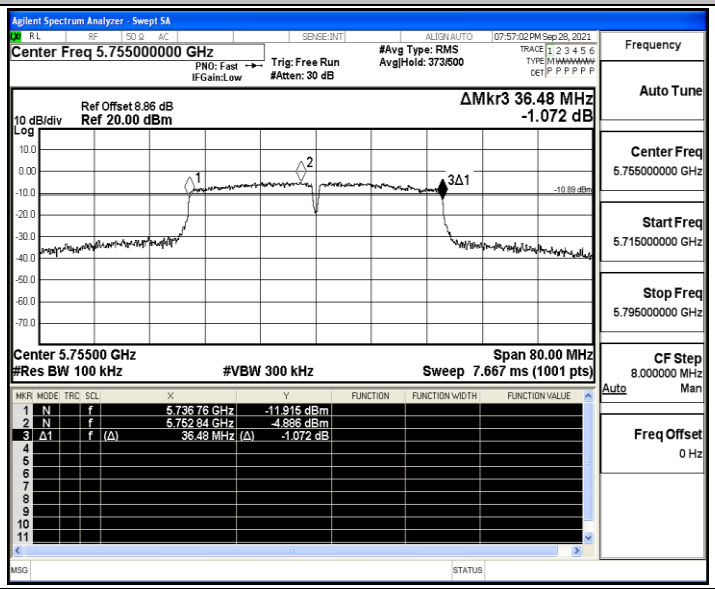
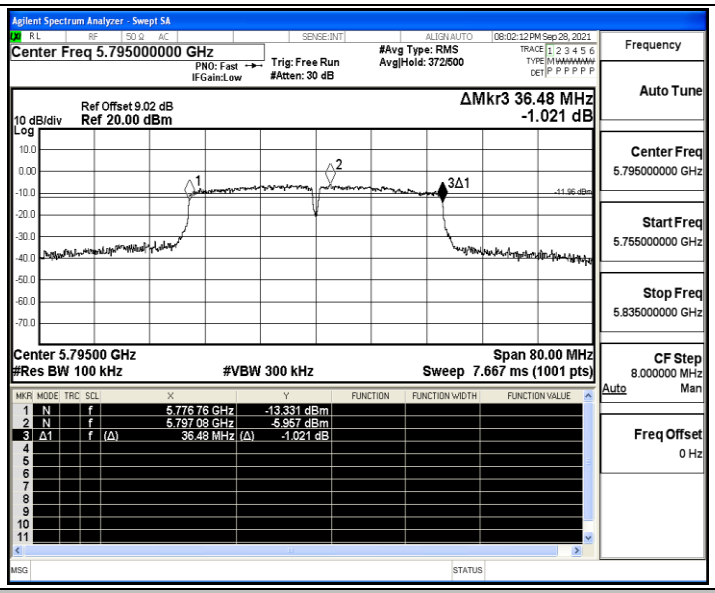
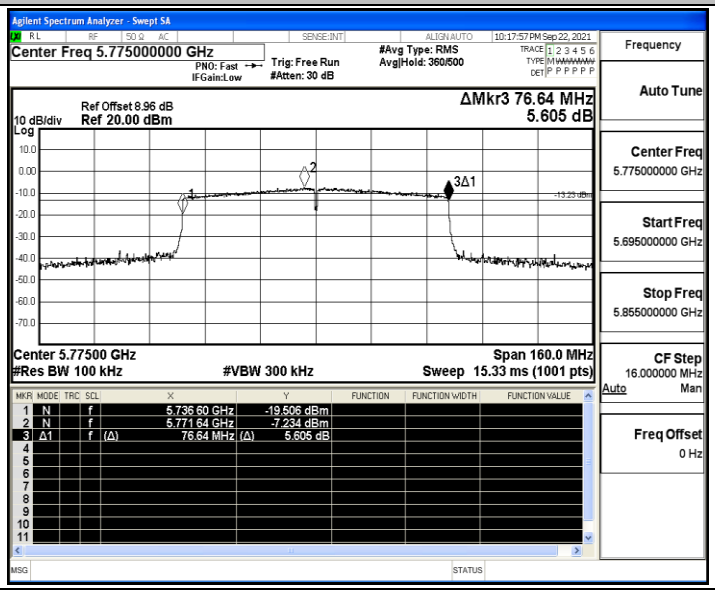

11AC40SISO_Ant1_5755

11AC40SISO_Ant1_5795



11AC80SISO_Ant1_5775



E.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5745	11.05	≤30	PASS
		5785	11.38	≤30	PASS
		5825	11.55	≤30	PASS
11N20SISO	Ant1	5745	11.22	≤30	PASS
		5785	11.21	≤30	PASS
		5825	11.67	≤30	PASS
11N40SISO	Ant1	5755	11.41	≤30	PASS
		5795	11.80	≤30	PASS
11AC20SISO	Ant1	5745	11.18	≤30	PASS
		5785	11.38	≤30	PASS
		5825	10.16	≤30	PASS
11AC40SISO	Ant1	5755	10.14	≤30	PASS
		5795	11.50	≤30	PASS
11AC80SISO	Ant1	5775	11.84	≤30	PASS

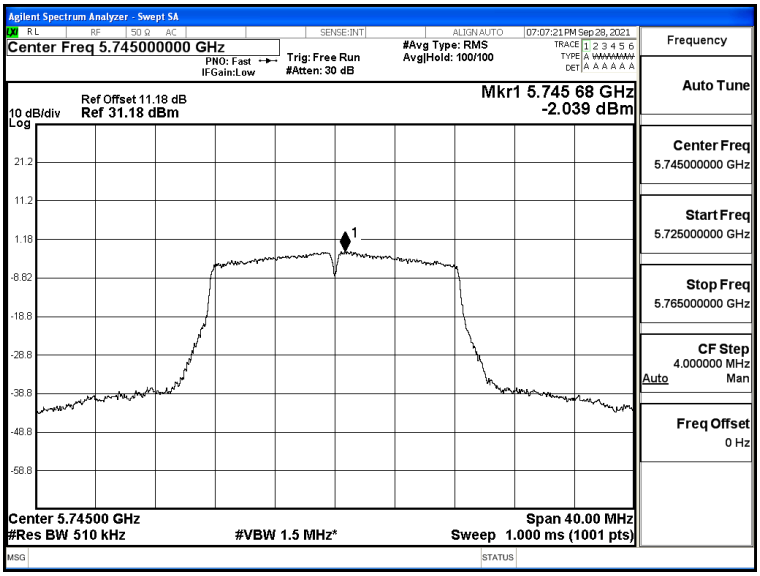
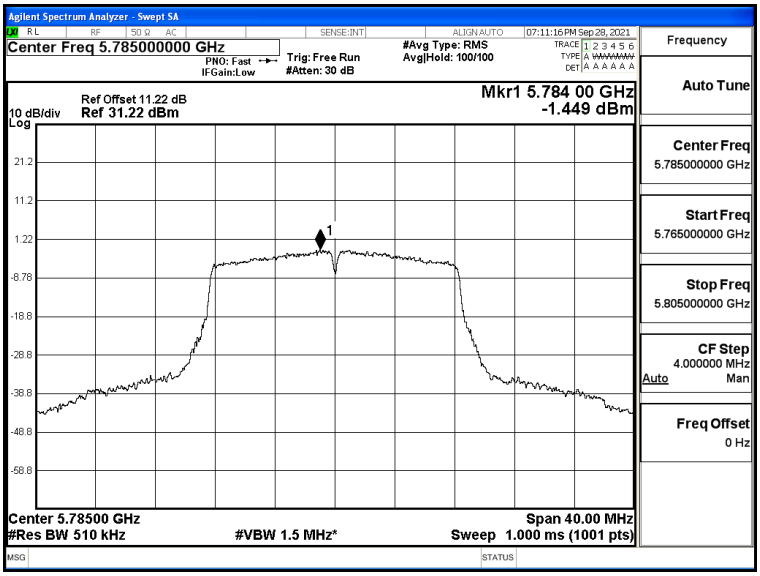
Note：The Duty Cycle Factor is compensated in the graph.

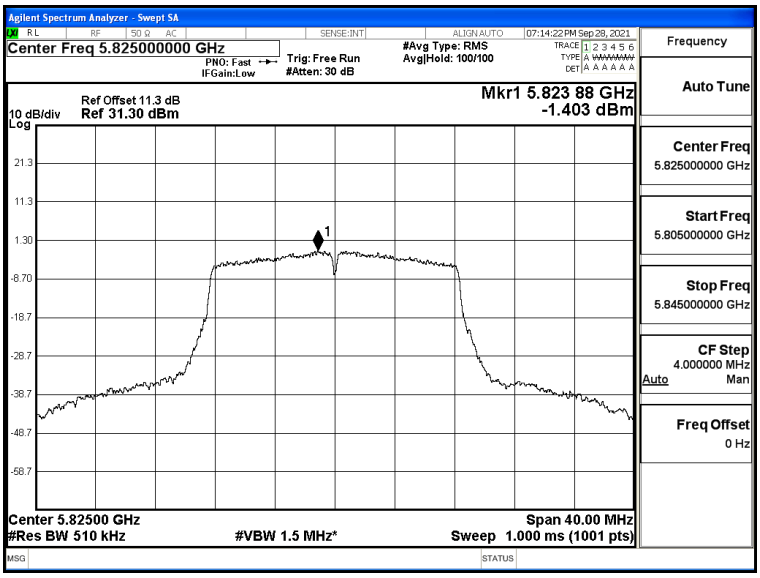
E.3 Maximum power spectral density

Test Result

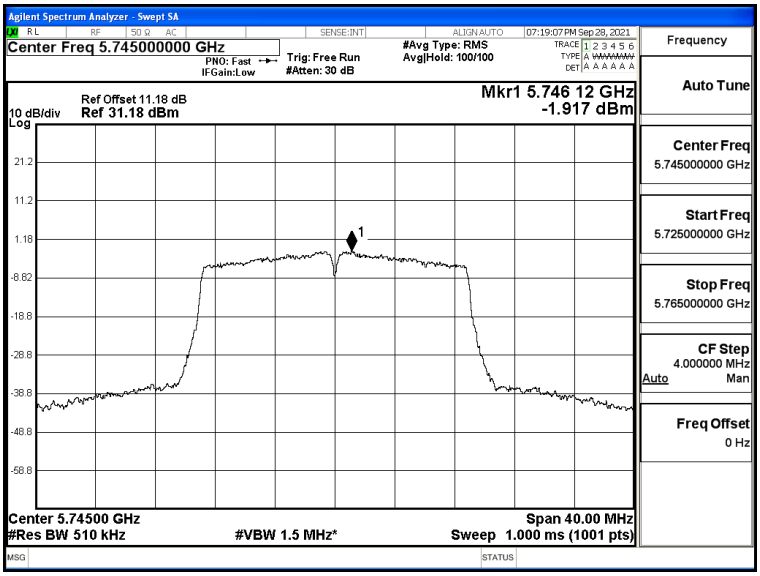
TestMode	Antenna	Channel	Result [dBm/500kHz]	Limit[dBm/500kHz]	Verdict
11A	Ant1	5745	-2.04	≤30	PASS
		5785	-1.45	≤30	PASS
		5825	-1.4	≤30	PASS
11N20SISO	Ant1	5745	-1.92	≤30	PASS
		5785	-1.97	≤30	PASS
		5825	-1.58	≤30	PASS
11N40SISO	Ant1	5755	-5.53	≤30	PASS
		5795	-5.11	≤30	PASS
11AC20SISO	Ant1	5745	-2.02	≤30	PASS
		5785	-2.23	≤30	PASS
		5825	-3.14	≤30	PASS
11AC40SISO	Ant1	5755	-6.24	≤30	PASS
		5795	-5.33	≤30	PASS
11AC80SISO	Ant1	5775	-7.7	≤30	PASS

Test Graphs

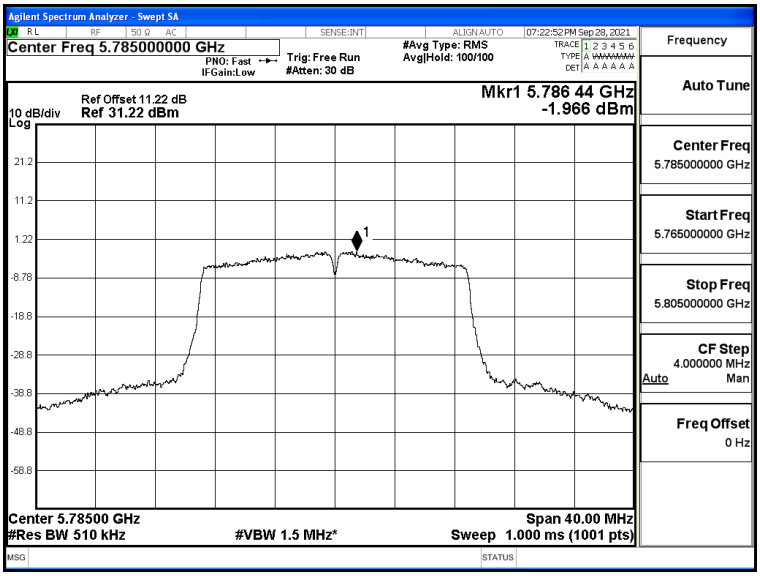
11A_Ant1_5745

11A_Ant1_5785

11A_Ant1_5825

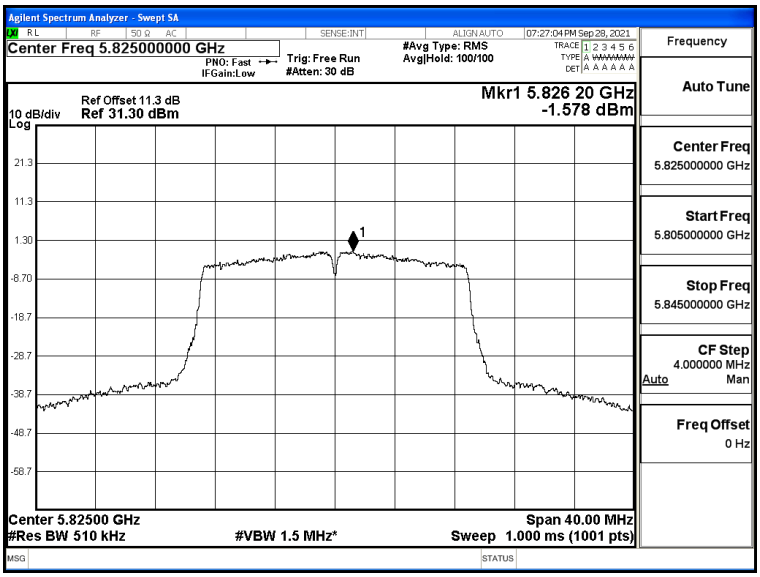
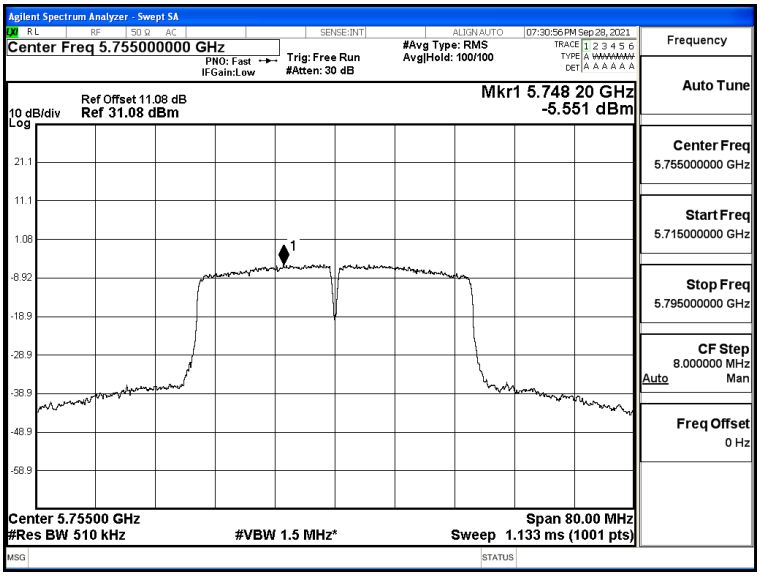


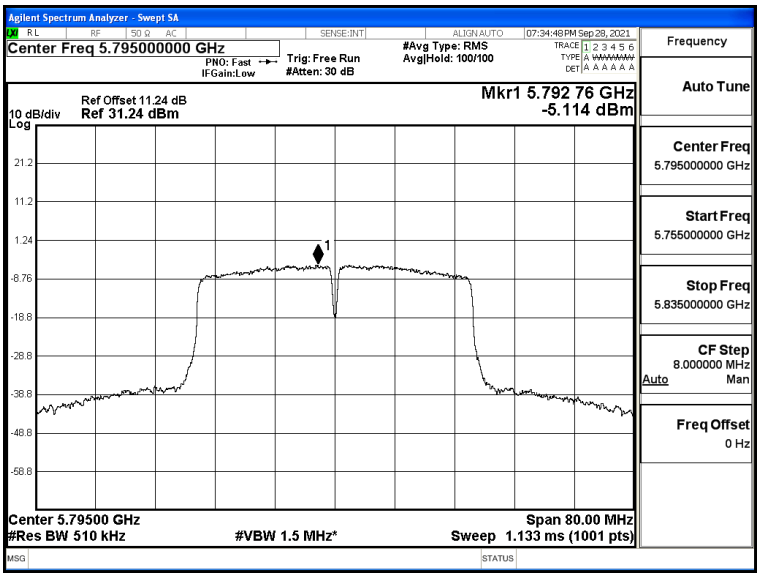
11N20SISO_Ant1_5745



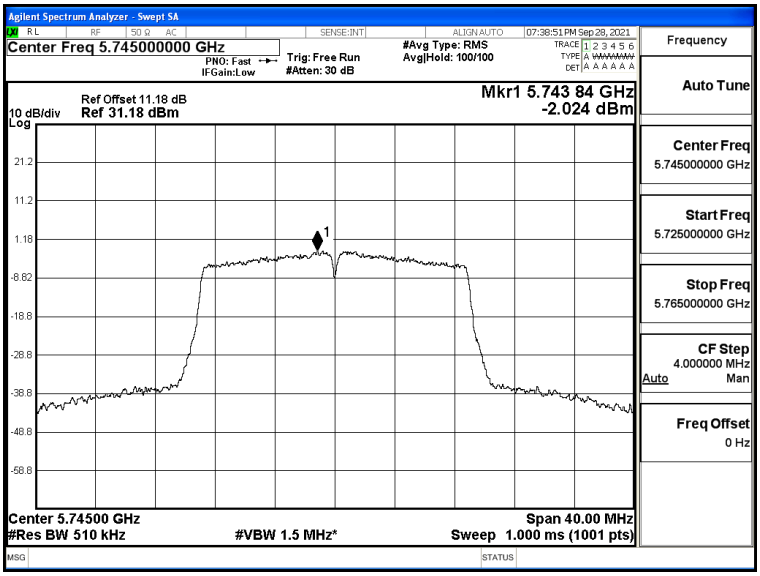
11N20SISO_Ant1_5785



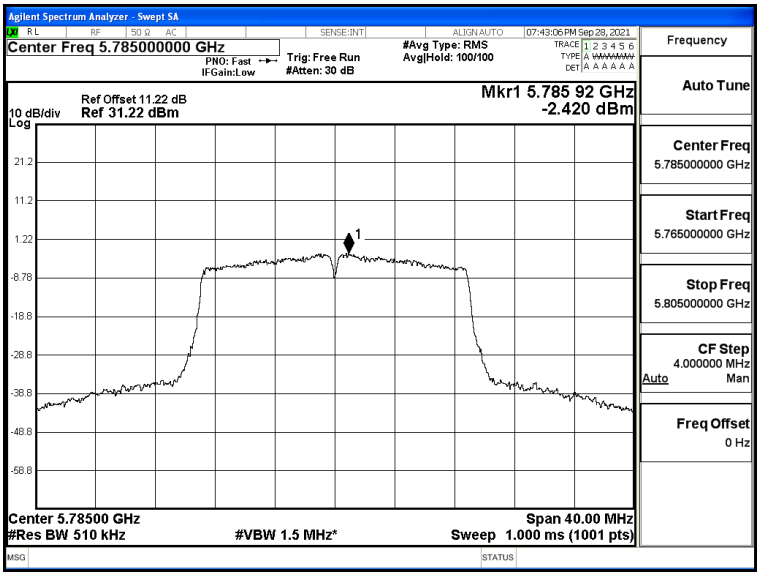
11N20SISO_Ant1_5825

11N40SISO_Ant1_5755

11N40SISO_Ant1_5795

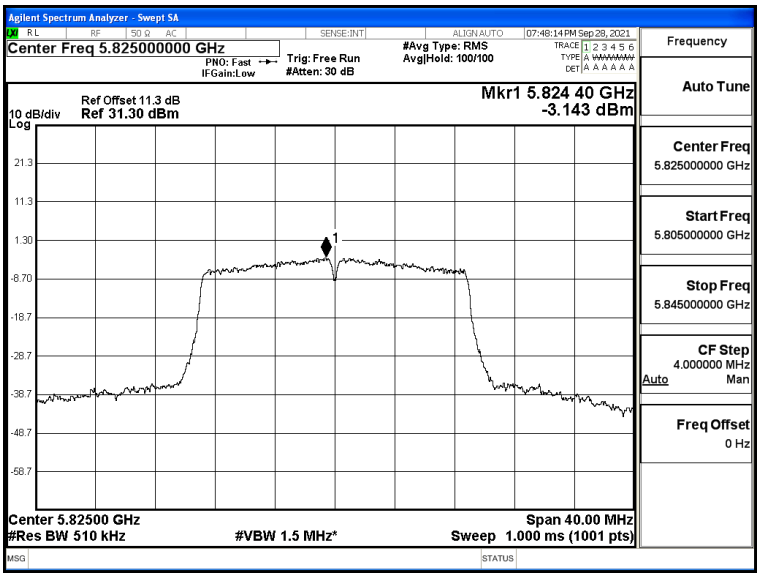
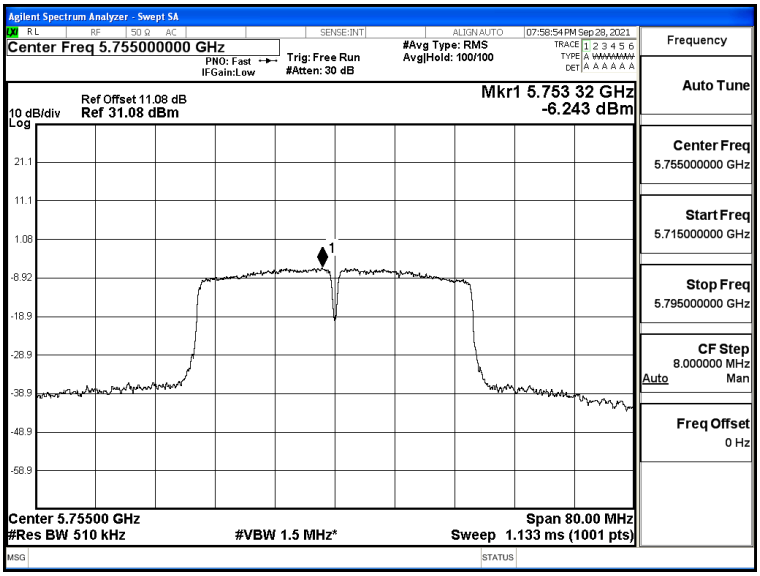


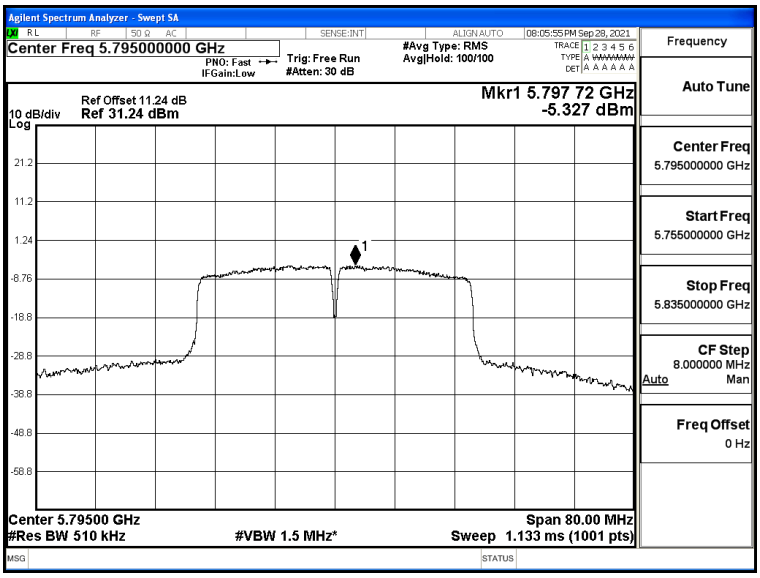
11AC20SISO_Ant1_5745



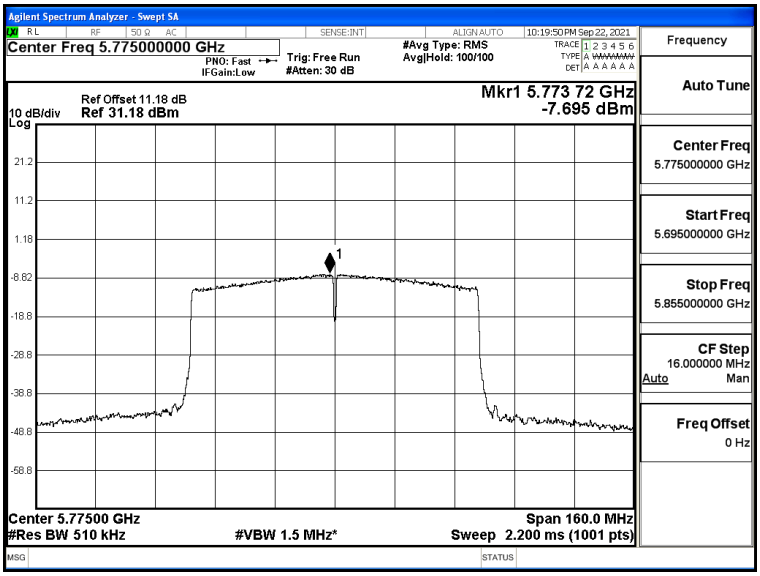
11AC20SISO_Ant1_5785



11AC20SISO_Ant1_5825

11AC40SISO_Ant1_5755

11AC40SISO_Ant1_5795



11AC80SISO_Ant1_5775



E.4 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Verdict
11A	Ant1	Low	5745	Peak	5650.000	-43.083	≤-27.00	PASS
				Peak	5700.000	-40.23	≤10.00	PASS
				Peak	5720.000	-34.45	≤15.60	PASS
				Peak	5725.000	-34.54	≤27.00	PASS
		High	5825	Peak	5850.000	-40.414	≤15.60	PASS
				Peak	5855.000	-38.97	≤27.00	PASS
				Peak	5875.000	-41.21	≤15.60	PASS
				Peak	5925.000	-40.26	≤10.00	PASS
11N20	Ant1	Low	5745	Peak	5650.000	-40.736	≤-27.00	PASS
				Peak	5700.000	-40.89	≤10.00	PASS
				Peak	5720.000	-34	≤15.60	PASS
				Peak	5725.000	-26.6	≤27.00	PASS
		High	5825	Peak	5850.000	-33.28	≤15.60	PASS
				Peak	5855.000	-40.81	≤27.00	PASS
				Peak	5875.000	-41.25	≤15.60	PASS
				Peak	5925.000	-43.03	≤10.00	PASS
11N40	Ant1	Low	5755	Peak	5650.000	-39.921	≤-27.00	PASS
				Peak	5700.000	-38.71	≤10.00	PASS
				Peak	5720.000	-30.41	≤15.60	PASS
				Peak	5725.000	-28.38	≤27.00	PASS
		High	5795	Peak	5850.000	-39.927	≤15.60	PASS
				Peak	5855.000	-37.13	≤27.00	PASS
				Peak	5875.000	-43.79	≤15.60	PASS
				Peak	5925.000	-42.72	≤10.00	PASS
11AC20	Ant1	Low	5745	Peak	5650.000	-42.409	≤-27.00	PASS
				Peak	5700.000	-43.63	≤10.00	PASS
				Peak	5720.000	-35.34	≤15.60	PASS
				Peak	5725.000	-28.63	≤27.00	PASS
		High	5825	Peak	5850.000	-40.8	≤15.60	PASS
				Peak	5855.000	-42.74	≤27.00	PASS
				Peak	5875.000	-44.6	≤15.60	PASS
				Peak	5925.000	-42.33	≤10.00	PASS
11AC40	Ant1	Low	5755	Peak	5650.000	-43.554	≤-27.00	PASS
				Peak	5700.000	-36.99	≤10.00	PASS
				Peak	5720.000	-29.02	≤15.60	PASS
				Peak	5725.000	-30.76	≤27.00	PASS

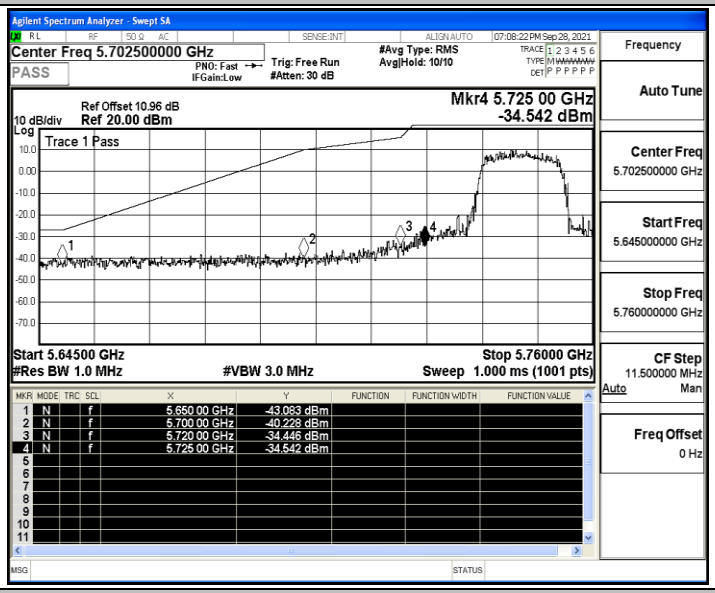
		High	5795	Peak	5850.000	-41.233	≤15.60	PASS
				Peak	5855.000	-37.99	≤27.00	PASS
				Peak	5875.000	-40.92	≤15.60	PASS
				Peak	5925.000	-43.17	≤10.00	PASS
11AC80	Ant1	Low	5775	Peak	5650.000	-41.553	≤-27.00	PASS
				Peak	5700.000	-37.33	≤10.00	PASS
				Peak	5720.000	-33.85	≤15.60	PASS
				Peak	5725.000	-33.9	≤27.00	PASS
		High	5775	Peak	5850.000	-37.036	≤15.60	PASS
				Peak	5855.000	-36.64	≤27.00	PASS
				Peak	5875.000	-37.91	≤15.60	PASS
				Peak	5925.000	-43.41	≤10.00	PASS

Note：

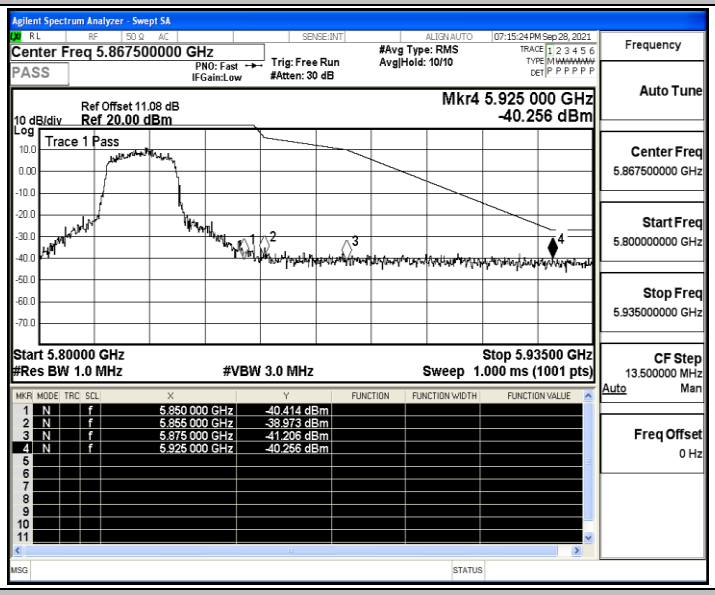
1. The Antenna Gain is compensated in the graph.
2. For transmitters operating in 5150-5350 GHz band and 5470-5725 GHz band: The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

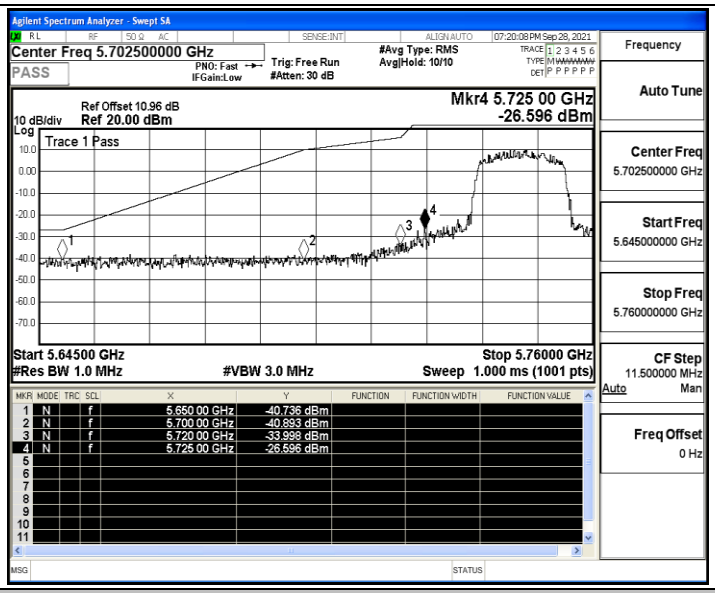
11A_Ant1_Low_5745_Peak



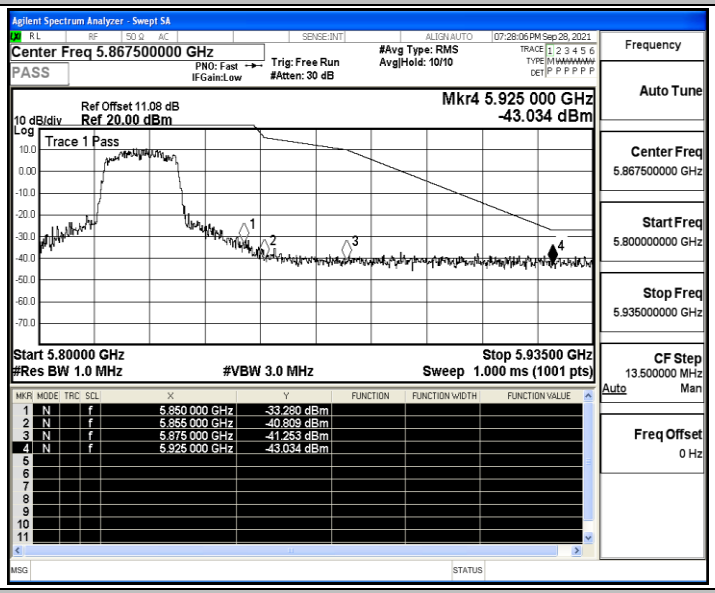
11A_Ant1_High_5825_Peak



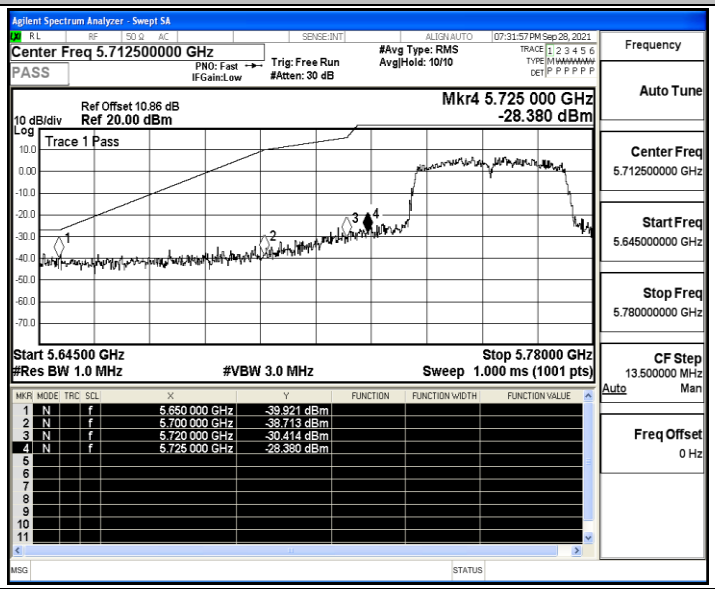
11N20SISO_Ant1_Low_5745_Peak



11N20SISO_Ant1_High_5825_Peak



11N40SISO_Ant1_Low_5755_Peak



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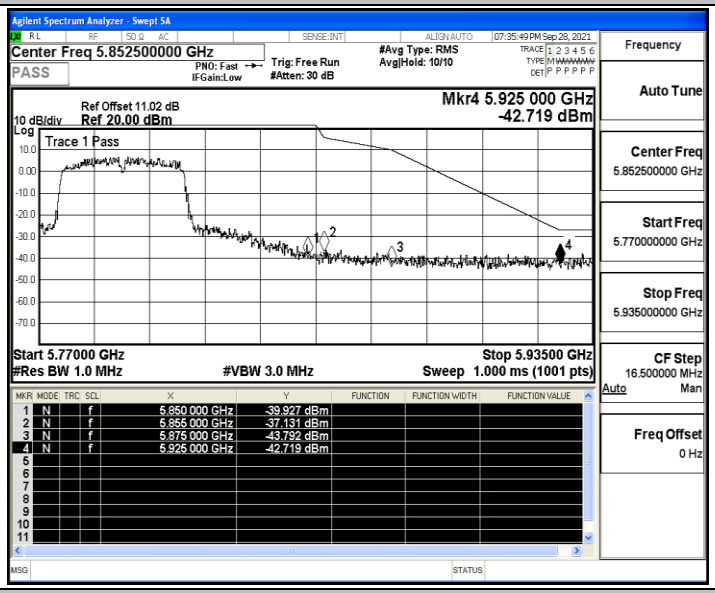
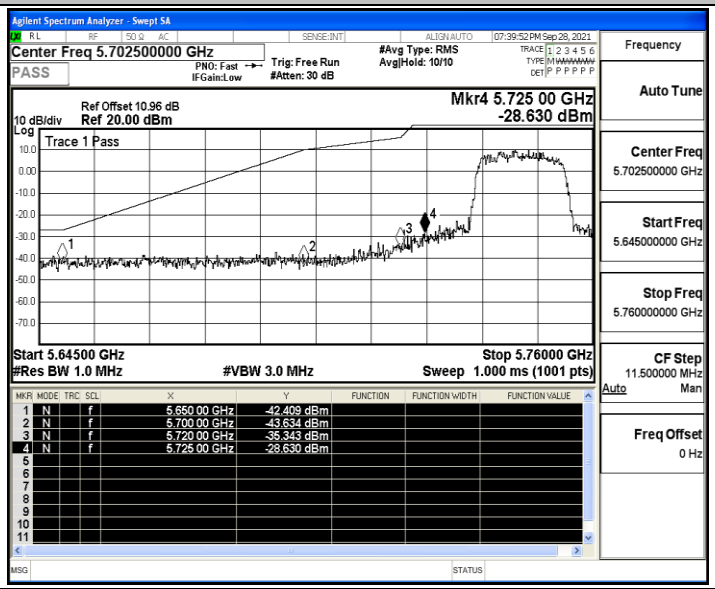
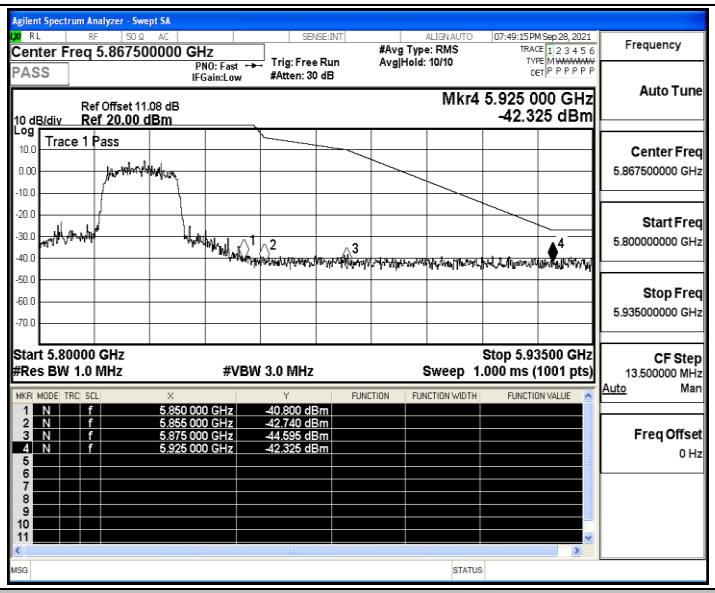
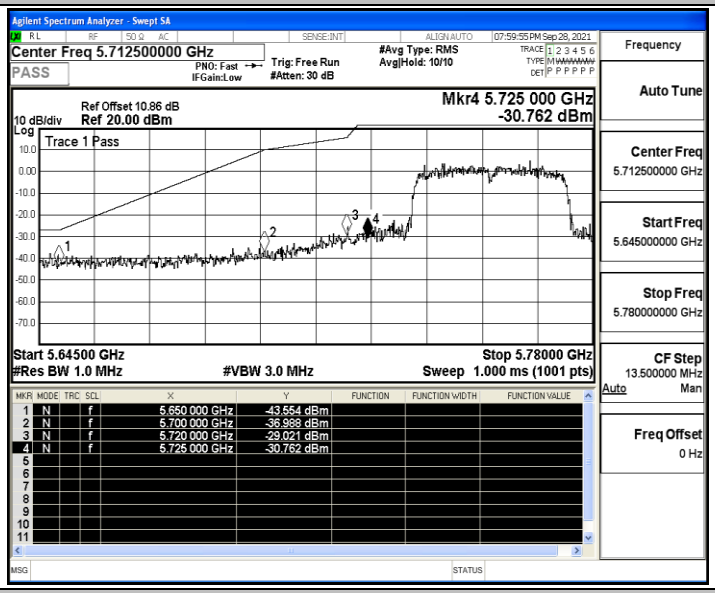
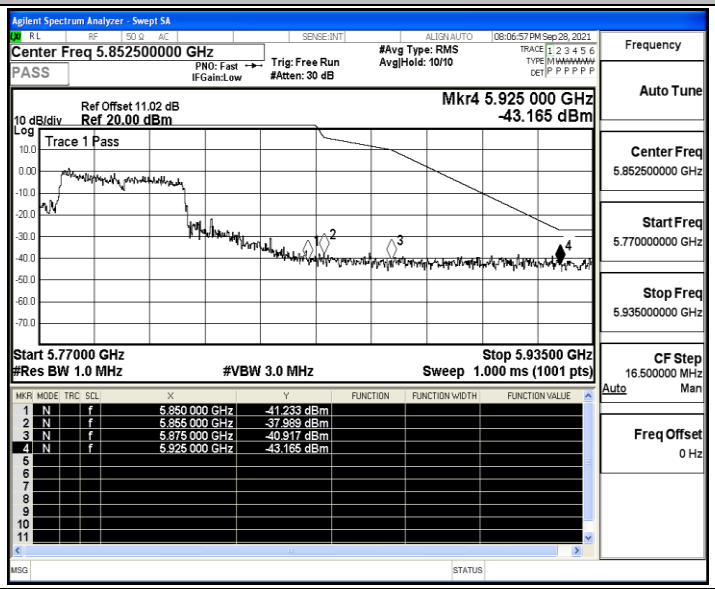

11AC20SISO_Ant1_Low_5745_Peak

11AC20SISO_Ant1_High_5825_Peak

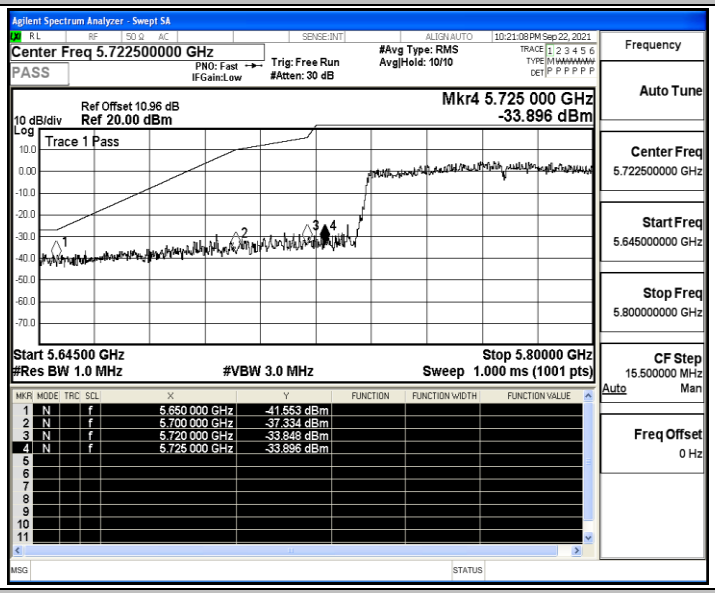


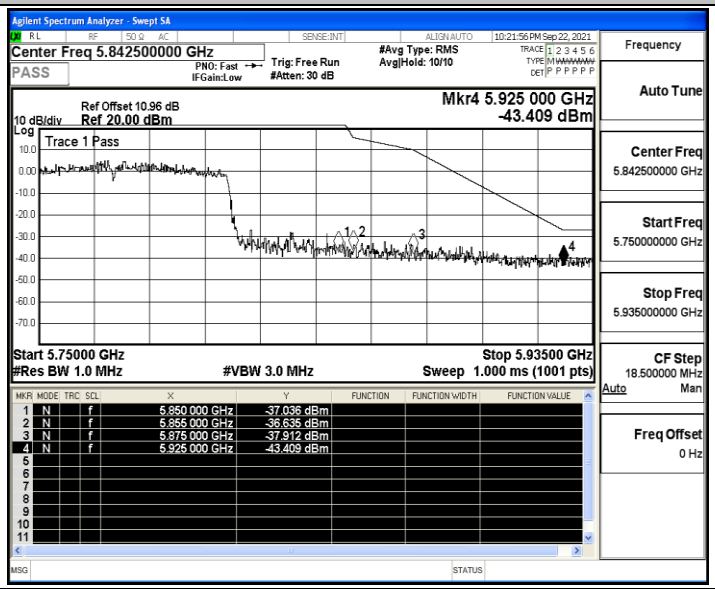
11AC40SISO_Ant1_Low_5755_Peak



11AC40SISO_Ant1_High_5795_Peak



11AC80SISO_Ant1_Low_5775_Peak


11AC80SISO_Ant1_High_5775_Peak


E.5 Frequency Stability

Test Result

Voltage								
TestMode	Antenna	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	Ant1	5745	NV	NT	-12000	-2.088773	20	PASS
			LV	NT	-12000	-2.088773	20	PASS
			HV	NT	-11000	-1.914708	20	PASS
		5785	NV	NT	-11000	-1.901469	20	PASS
			LV	NT	-11000	-1.901469	20	PASS
			HV	NT	-11000	-1.901469	20	PASS
		5825	NV	NT	-11000	-1.888412	20	PASS
			LV	NT	-11000	-1.888412	20	PASS
			HV	NT	-11000	-1.888412	20	PASS
11N20SISO	Ant1	5745	NV	NT	-10000	-1.740644	20	PASS
			LV	NT	-10000	-1.740644	20	PASS
			HV	NT	-10000	-1.740644	20	PASS
		5785	NV	NT	-11000	-1.901469	20	PASS
			LV	NT	-11000	-1.901469	20	PASS
			HV	NT	-11000	-1.901469	20	PASS
		5825	NV	NT	-11000	-1.888412	20	PASS
			LV	NT	-11000	-1.888412	20	PASS
			HV	NT	-11000	-1.888412	20	PASS
11N40SISO	Ant1	5755	NV	NT	-10000	-1.737619	20	PASS
			LV	NT	-10000	-1.737619	20	PASS
			HV	NT	-10000	-1.737619	20	PASS
		5795	NV	NT	-10000	-1.725626	20	PASS
			LV	NT	-10000	-1.725626	20	PASS
			HV	NT	-10000	-1.725626	20	PASS
11AC20SISO	Ant1	5745	NV	NT	-8000	-1.392515	20	PASS
			LV	NT	-8000	-1.392515	20	PASS
			HV	NT	-8000	-1.392515	20	PASS
		5785	NV	NT	-8000	-1.382887	20	PASS
			LV	NT	-8000	-1.382887	20	PASS
			HV	NT	-8000	-1.382887	20	PASS
		5825	NV	NT	-8000	-1.373391	20	PASS
			LV	NT	-8000	-1.373391	20	PASS
			HV	NT	-8000	-1.373391	20	PASS
11AC40SISO	Ant1	5755	NV	NT	-8000	-1.390096	20	PASS
			LV	NT	-8000	-1.390096	20	PASS

			HV	NT	-8000	-1.390096	20	PASS
		5795	NV	NT	-8000	-1.3805	20	PASS
			LV	NT	-9000	-1.553063	20	PASS
			HV	NT	-8000	-1.3805	20	PASS
11AC80SISO	Ant1	5775	NV	NT	-14000	-2.424242	20	PASS
			LV	NT	-15000	-2.597403	20	PASS
			HV	NT	-16000	-2.770563	20	PASS

Temperature								
TestMode	Antenna	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	Ant1	5745	NV	-30	-11000	-1.914708	20	PASS
			NV	-20	-11000	-1.914708	20	PASS
			NV	-10	-11000	-1.914708	20	PASS
			NV	0	-11000	-1.914708	20	PASS
			NV	10	-11000	-1.914708	20	PASS
			NV	20	-11000	-1.914708	20	PASS
			NV	30	-11000	-1.914708	20	PASS
			NV	40	-11000	-1.914708	20	PASS
			NV	50	-11000	-1.914708	20	PASS
		5785	NV	-30	-11000	-1.901469	20	PASS
			NV	-20	-10000	-1.728608	20	PASS
			NV	-10	-11000	-1.901469	20	PASS
			NV	0	-11000	-1.901469	20	PASS
			NV	10	-11000	-1.901469	20	PASS
			NV	20	-11000	-1.901469	20	PASS
			NV	30	-11000	-1.901469	20	PASS
			NV	40	-11000	-1.901469	20	PASS
			NV	50	-11000	-1.901469	20	PASS
		5825	NV	-30	-11000	-1.888412	20	PASS
			NV	-20	-11000	-1.888412	20	PASS
			NV	-10	-11000	-1.888412	20	PASS
			NV	0	-11000	-1.888412	20	PASS
			NV	10	-11000	-1.888412	20	PASS
			NV	20	-11000	-1.888412	20	PASS
			NV	30	-11000	-1.888412	20	PASS
			NV	40	-11000	-1.888412	20	PASS
			NV	50	-11000	-1.888412	20	PASS
11N20SISO	Ant1	5745	NV	-30	-10000	-1.740644	20	PASS
			NV	-20	-10000	-1.740644	20	PASS
			NV	-10	-11000	-1.914708	20	PASS
			NV	0	-11000	-1.914708	20	PASS
			NV	10	-11000	-1.914708	20	PASS

			NV	20	-11000	-1.914708	20	PASS
			NV	30	-11000	-1.914708	20	PASS
			NV	40	-11000	-1.914708	20	PASS
			NV	50	-11000	-1.914708	20	PASS
		5785	NV	-30	-11000	-1.901469	20	PASS
			NV	-20	-11000	-1.901469	20	PASS
			NV	-10	-11000	-1.901469	20	PASS
			NV	0	-11000	-1.901469	20	PASS
			NV	10	-11000	-1.901469	20	PASS
			NV	20	-11000	-1.901469	20	PASS
			NV	30	-11000	-1.901469	20	PASS
			NV	40	-11000	-1.901469	20	PASS
			NV	50	-11000	-1.901469	20	PASS
		5825	NV	-30	-11000	-1.888412	20	PASS
			NV	-20	-11000	-1.888412	20	PASS
			NV	-10	-11000	-1.888412	20	PASS
			NV	0	-11000	-1.888412	20	PASS
			NV	10	-11000	-1.888412	20	PASS
			NV	20	-11000	-1.888412	20	PASS
			NV	30	-10000	-1.716738	20	PASS
			NV	40	-11000	-1.888412	20	PASS
			NV	50	-11000	-1.888412	20	PASS
11N40SISO	Ant1	5755	NV	-30	-10000	-1.737619	20	PASS
			NV	-20	-10000	-1.737619	20	PASS
			NV	-10	-10000	-1.737619	20	PASS
			NV	0	-10000	-1.737619	20	PASS
			NV	10	-10000	-1.737619	20	PASS
			NV	20	-10000	-1.737619	20	PASS
			NV	30	-11000	-1.911381	20	PASS
			NV	40	-10000	-1.737619	20	PASS
			NV	50	-10000	-1.737619	20	PASS
		5795	NV	-30	-10000	-1.725626	20	PASS
			NV	-20	-10000	-1.725626	20	PASS
			NV	-10	-10000	-1.725626	20	PASS
			NV	0	-10000	-1.725626	20	PASS
			NV	10	-10000	-1.725626	20	PASS
			NV	20	-10000	-1.725626	20	PASS
			NV	30	-10000	-1.725626	20	PASS
			NV	40	-10000	-1.725626	20	PASS
			NV	50	-10000	-1.725626	20	PASS
11AC20SISO	Ant1	5745	NV	-30	-8000	-1.392515	20	PASS
			NV	-20	-8000	-1.392515	20	PASS
			NV	-10	-8000	-1.392515	20	PASS

			NV	0	-8000	-1.392515	20	PASS
			NV	10	-8000	-1.392515	20	PASS
			NV	20	-8000	-1.392515	20	PASS
			NV	30	-8000	-1.392515	20	PASS
			NV	40	-8000	-1.392515	20	PASS
			NV	50	-9000	-1.56658	20	PASS
		5785	NV	-30	-8000	-1.382887	20	PASS
			NV	-20	-9000	-1.555748	20	PASS
			NV	-10	-9000	-1.555748	20	PASS
			NV	0	-8000	-1.382887	20	PASS
			NV	10	-8000	-1.382887	20	PASS
			NV	20	-8000	-1.382887	20	PASS
			NV	30	-8000	-1.382887	20	PASS
			NV	40	-8000	-1.382887	20	PASS
			NV	50	-8000	-1.382887	20	PASS
		5825	NV	-30	-9000	-1.545064	20	PASS
			NV	-20	-8000	-1.373391	20	PASS
			NV	-10	-9000	-1.545064	20	PASS
			NV	0	-9000	-1.545064	20	PASS
			NV	10	-8000	-1.373391	20	PASS
			NV	20	-8000	-1.373391	20	PASS
			NV	30	-9000	-1.545064	20	PASS
			NV	40	-9000	-1.545064	20	PASS
			NV	50	-9000	-1.545064	20	PASS
11AC40S ISO	Ant1	5755	NV	-30	-8000	-1.390096	20	PASS
			NV	-20	-8000	-1.390096	20	PASS
			NV	-10	-8000	-1.390096	20	PASS
			NV	0	-8000	-1.390096	20	PASS
			NV	10	-8000	-1.390096	20	PASS
			NV	20	-8000	-1.390096	20	PASS
			NV	30	-8000	-1.390096	20	PASS
			NV	40	-8000	-1.390096	20	PASS
			NV	50	-8000	-1.390096	20	PASS
		5795	NV	-30	-9000	-1.553063	20	PASS
			NV	-20	-8000	-1.3805	20	PASS
			NV	-10	-8000	-1.3805	20	PASS
			NV	0	-9000	-1.553063	20	PASS
			NV	10	-9000	-1.553063	20	PASS
			NV	20	-8000	-1.3805	20	PASS
			NV	30	-8000	-1.3805	20	PASS
			NV	40	-9000	-1.553063	20	PASS
			NV	50	-9000	-1.553063	20	PASS
11AC80S	Ant1	5775	NV	-30	-16000	-2.770563	20	PASS

ISO			NV	-20	-17000	-2.943723	20	PASS
			NV	-10	-16000	-2.770563	20	PASS
			NV	0	-17000	-2.943723	20	PASS
			NV	10	-17000	-2.943723	20	PASS
			NV	20	-17000	-2.943723	20	PASS
			NV	30	-17000	-2.943723	20	PASS
			NV	40	-17000	-2.943723	20	PASS
			NV	50	-17000	-2.943723	20	PASS

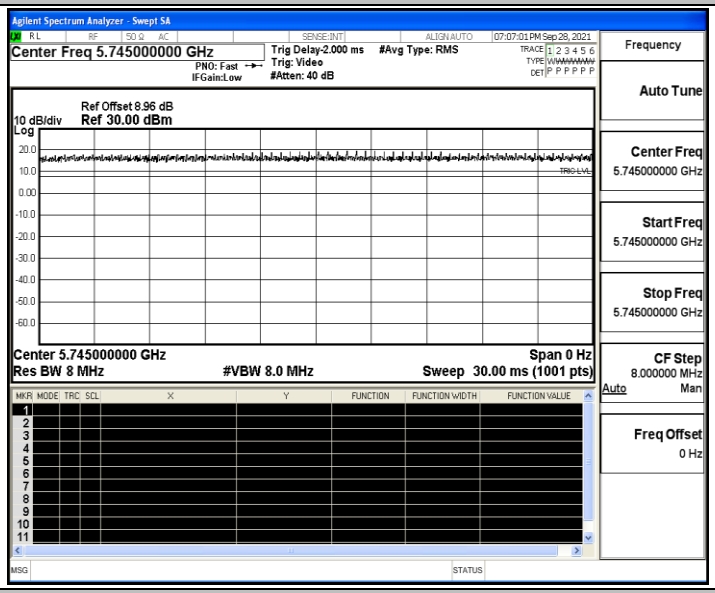
E.6 Duty Cycle

Test Result

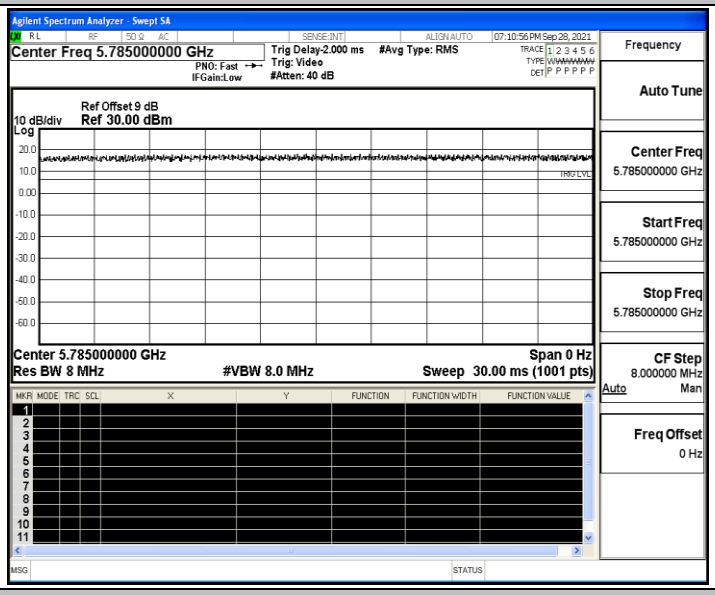
TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11A	Ant1	5745	30.00	30.00	100.00	---	PASS
		5785	30.00	30.00	100.00	---	PASS
		5825	30.00	30.00	100.00	---	PASS
11N20SISO	Ant1	5745	30.00	30.00	100.00	---	PASS
		5785	30.00	30.00	100.00	---	PASS
		5825	30.00	30.00	100.00	---	PASS
11N40SISO	Ant1	5755	30.00	30.00	100.00	---	PASS
		5795	30.00	30.00	100.00	---	PASS
11AC20SISO	Ant1	5745	30.00	30.00	100.00	---	PASS
		5785	30.00	30.00	100.00	---	PASS
		5825	30.00	30.00	100.00	---	PASS
11AC40SISO	Ant1	5755	30.00	30.00	100.00	---	PASS
		5795	30.00	30.00	100.00	---	PASS
11AC80SISO	Ant1	5775	30.00	30.00	100.00	---	PASS

Test Graphs

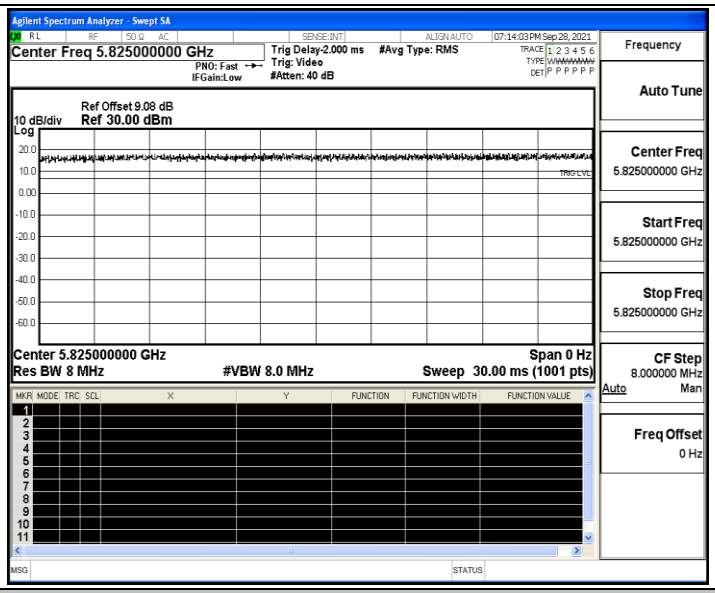
11A_Ant1_5745



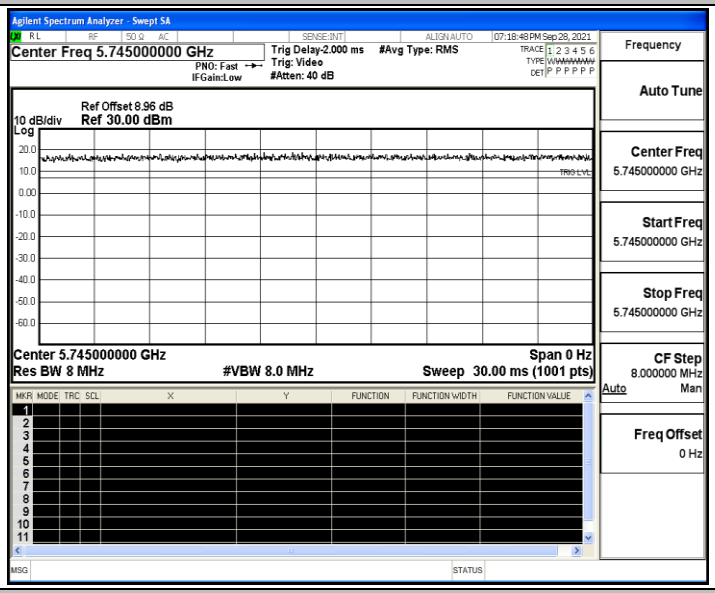
11A_Ant1_5785



11A_Ant1_5825



11N20SISO_Ant1_5745



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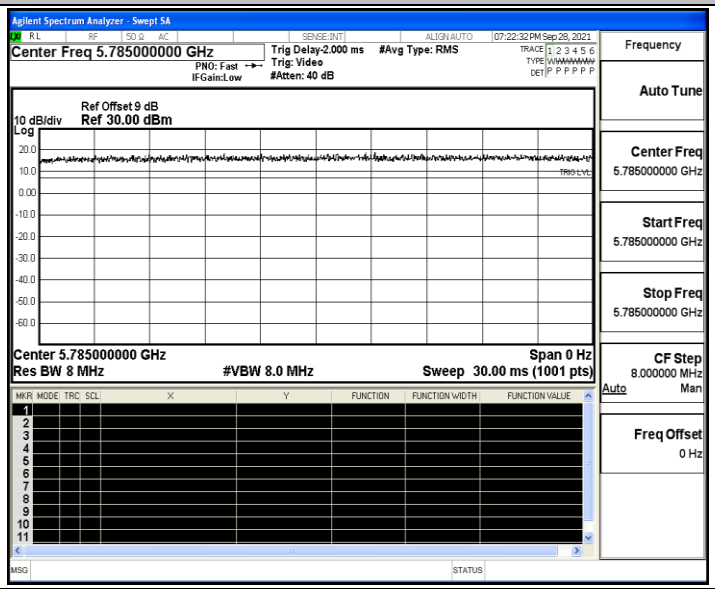

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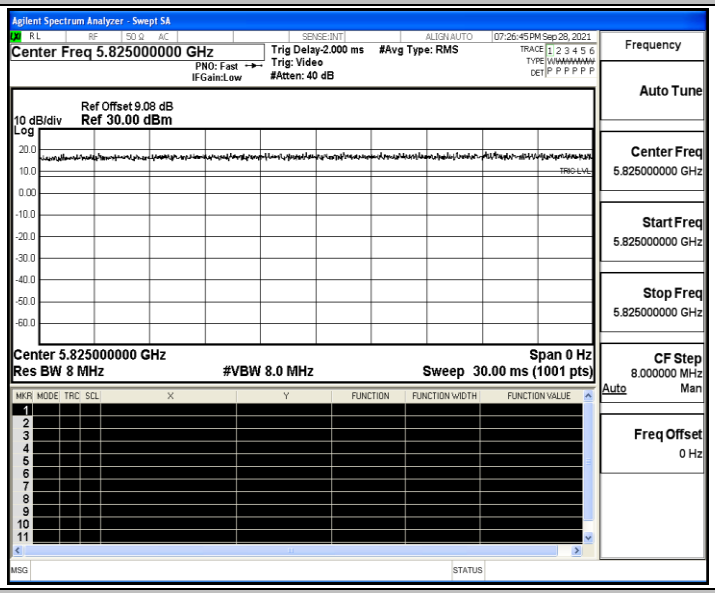
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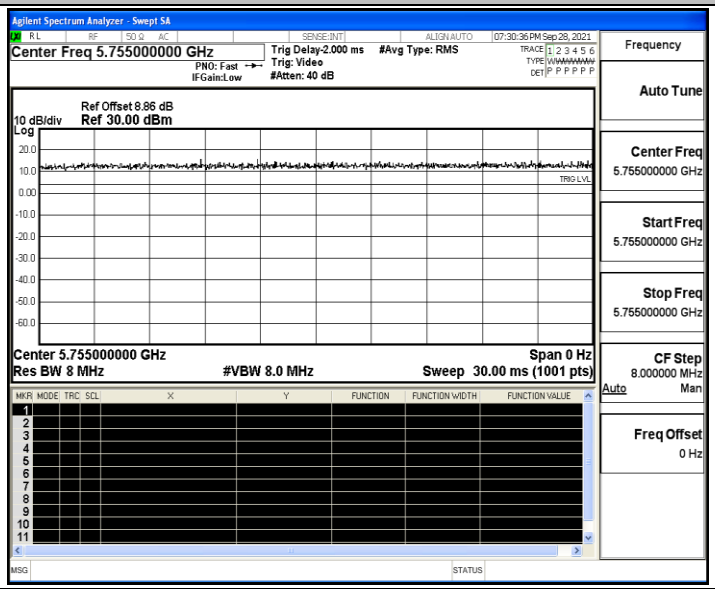
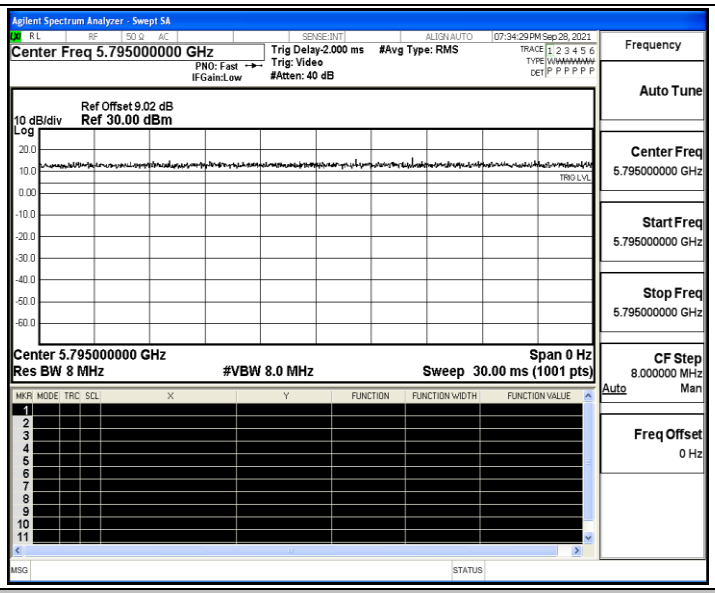
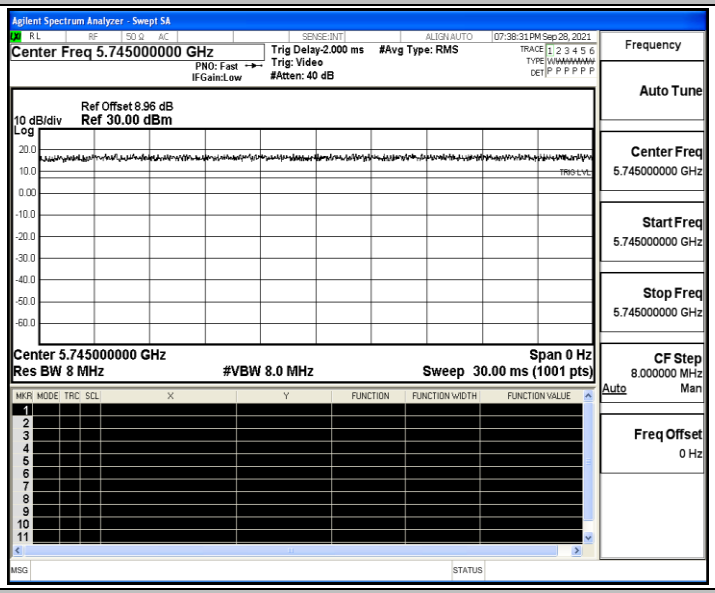
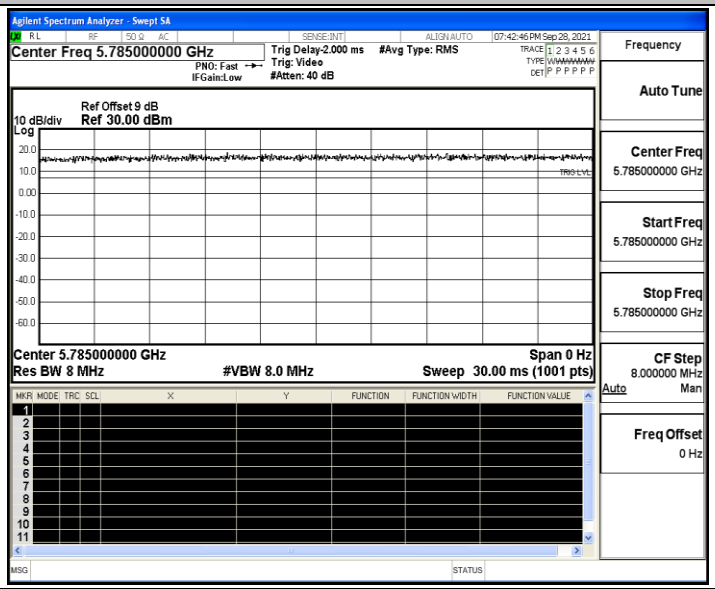

11N40SISO_Ant1_5795



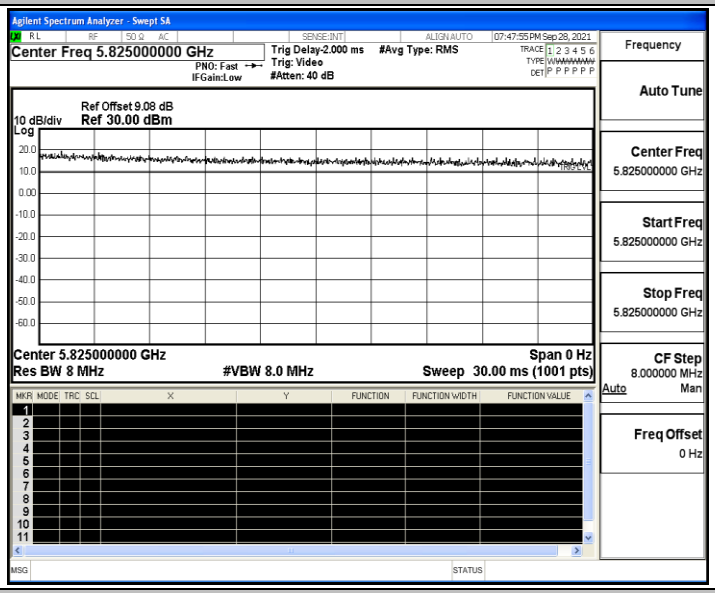
11AC20SISO_Ant1_5745



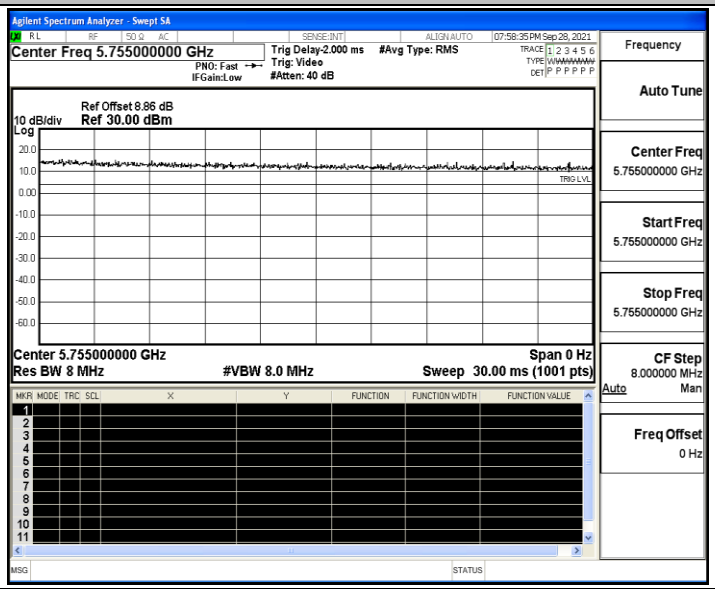
11AC20SISO_Ant1_5785



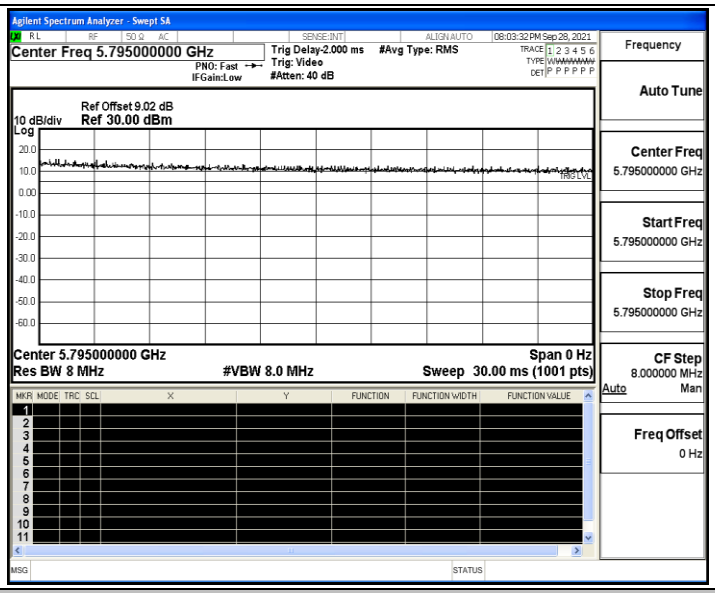
11AC20SISO_Ant1_5825



11AC40SISO_Ant1_5755



11AC40SISO_Ant1_5795



11AC80SISO_Ant1_5775