

Case No. : <u>CTA24061300101</u>
Ambient Condition: <u>23 °C, 55 %RH</u>
According Standard: <u>■Part15C</u>
Test Date: <u>2024.5.24</u> Test Engineer: <u>Evan ouyang</u>

Appendix A.1: 20dB Emission Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]
DH1	Ant1	2402	1.017	2401.505	2402.522
		2441	1.035	2440.508	2441.543
		2480	1.041	2479.499	2480.540
2DH1	Ant1	2402	1.356	2401.343	2402.699
		2441	1.356	2440.346	2441.702
		2480	1.344	2479.346	2480.690
3DH1	Ant1	2402	1.320	2401.364	2402.684
		2441	1.284	2440.403	2441.687
		2480	1.320	2479.367	2480.687

Test Graphs

DH1_Ant1_2402



DH1_Ant1_2441



DH1_Ant1_2480



2DH1_Ant1_2402



2DH1_Ant1_2441



2DH1_Ant1_2480



3DH1_Ant1_2402



3DH1_Ant1_2441



3DH1_Ant1_2480

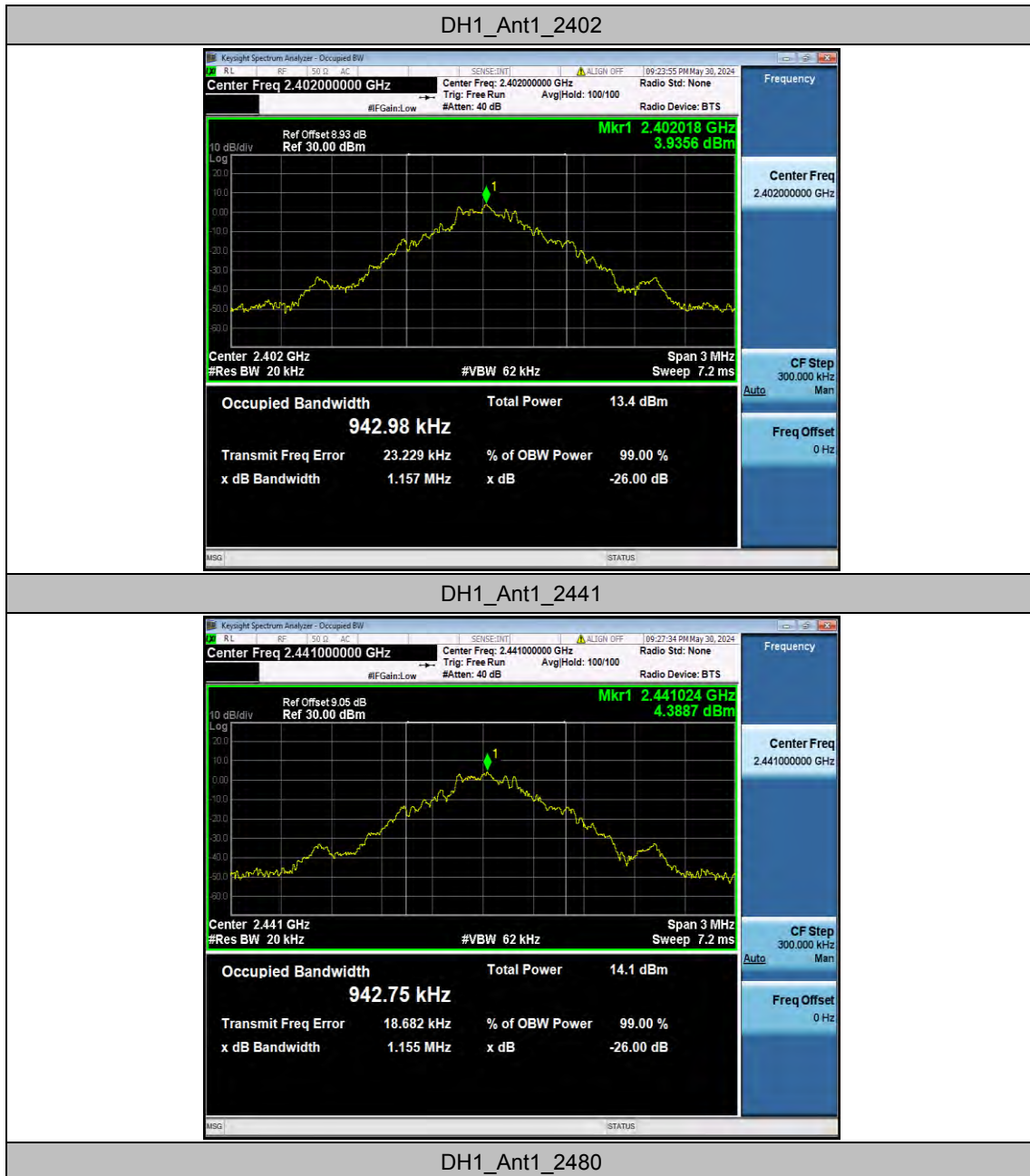


Appendix A.2: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]
DH1	Ant1	2402	0.94298	2401.5517	2402.4947
		2441	0.94275	2440.5473	2441.4901
		2480	0.93444	2479.5482	2480.4826
2DH1	Ant1	2402	1.1847	2401.4161	2402.6008
		2441	1.1993	2440.4092	2441.6085
		2480	1.1947	2479.4086	2480.6033
3DH1	Ant1	2402	1.1821	2401.4418	2402.6239
		2441	1.1788	2440.4439	2441.6227
		2480	1.1820	2479.4380	2480.6200

Test Graphs





2DH1_Ant1_2402



2DH1_Ant1_2441



2DH1_Ant1_2480



3DH1_Ant1_2402



3DH1_Ant1_2441



3DH1_Ant1_2480



Appendix A.3: Maximum conducted output power

Test Result Peak

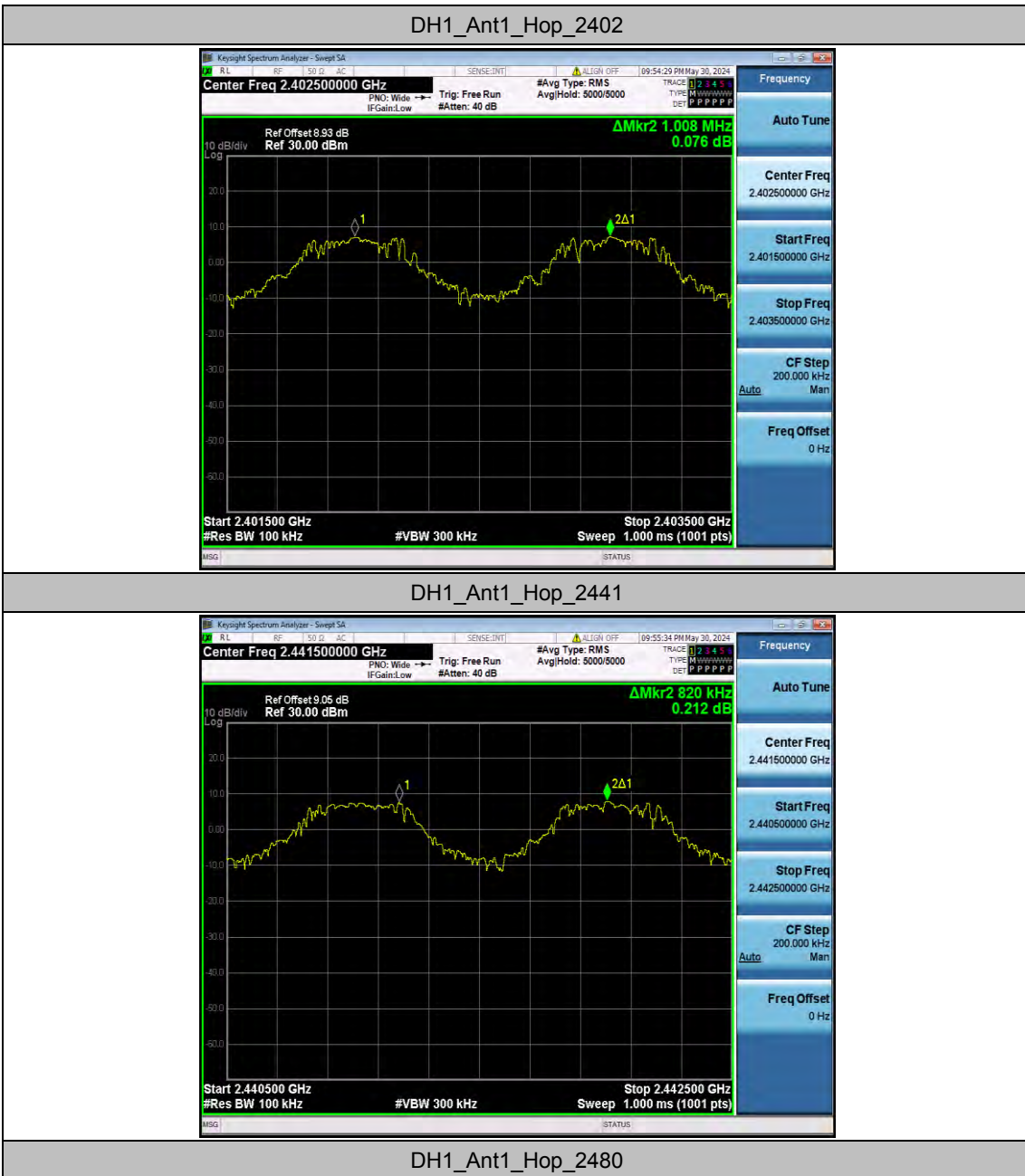
Test Mode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH1	Ant1	2402	7.67	≤20.97	PASS
		2441	8.41	≤20.97	PASS
		2480	7.73	≤20.97	PASS
2DH1	Ant1	2402	4.56	≤20.97	PASS
		2441	5.01	≤20.97	PASS
		2480	4.40	≤20.97	PASS
3DH1	Ant1	2402	4.95	≤20.97	PASS
		2441	5.20	≤20.97	PASS
		2480	4.57	≤20.97	PASS

Appendix A.4: Carrier frequency separation

Test Result

TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Hop_2402	1.008	≥ 0.694	PASS
		Hop_2441	0.82	≥ 0.694	PASS
		Hop_2480	0.986	≥ 0.694	PASS
2DH1	Ant1	Hop_2402	1.13	≥ 0.904	PASS
		Hop_2441	0.994	≥ 0.904	PASS
		Hop_2480	1.146	≥ 0.904	PASS
3DH1	Ant1	Hop_2402	1.106	≥ 0.880	PASS
		Hop_2441	0.998	≥ 0.880	PASS
		Hop_2480	0.946	≥ 0.880	PASS

Test Graphs





2DH1_Ant1_Hop_2402



2DH1_Ant1_Hop_2441



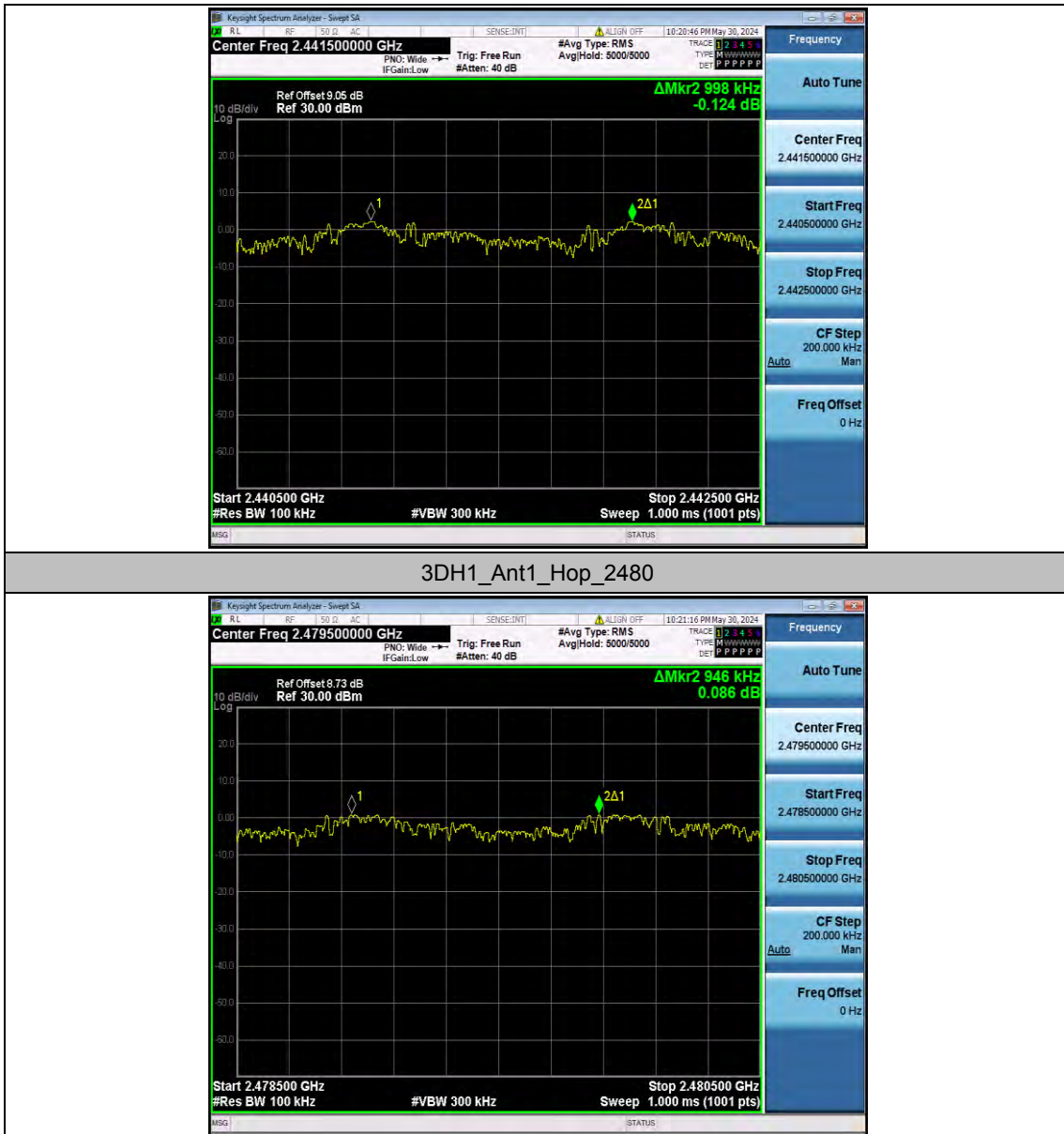
2DH1_Ant1_Hop_2480



3DH1_Ant1_Hop_2402



3DH1_Ant1_Hop_2441

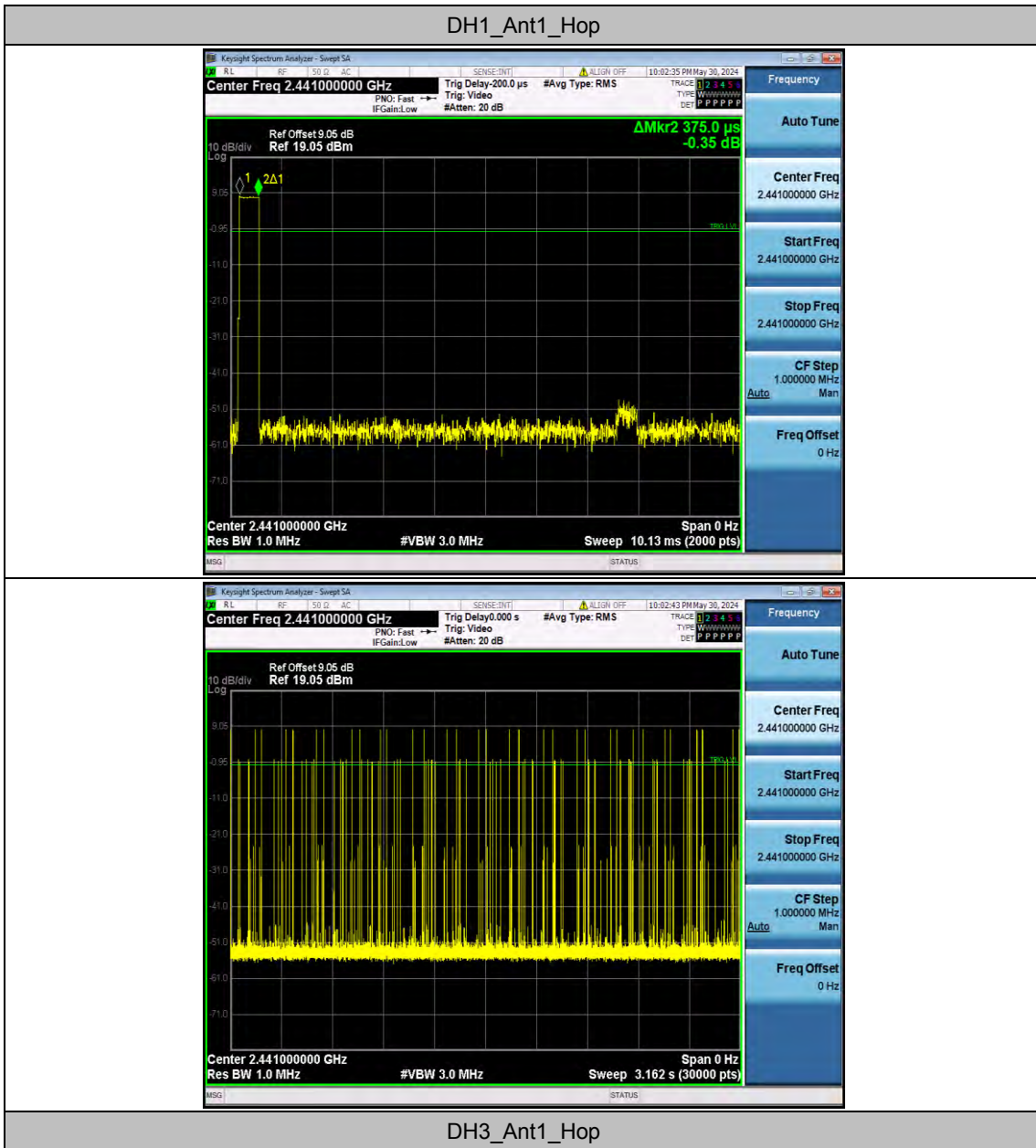


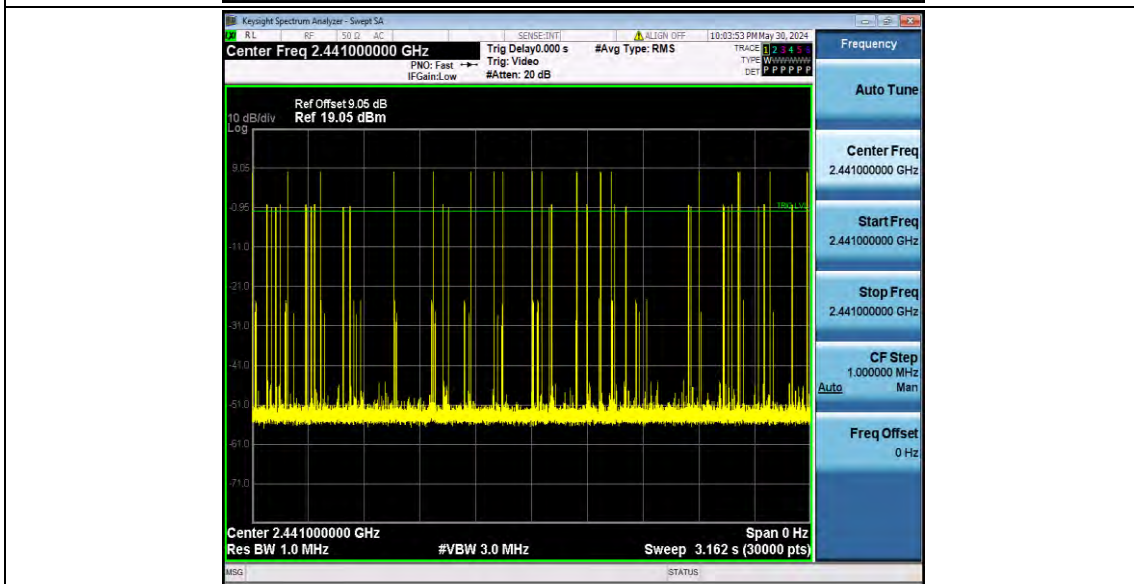
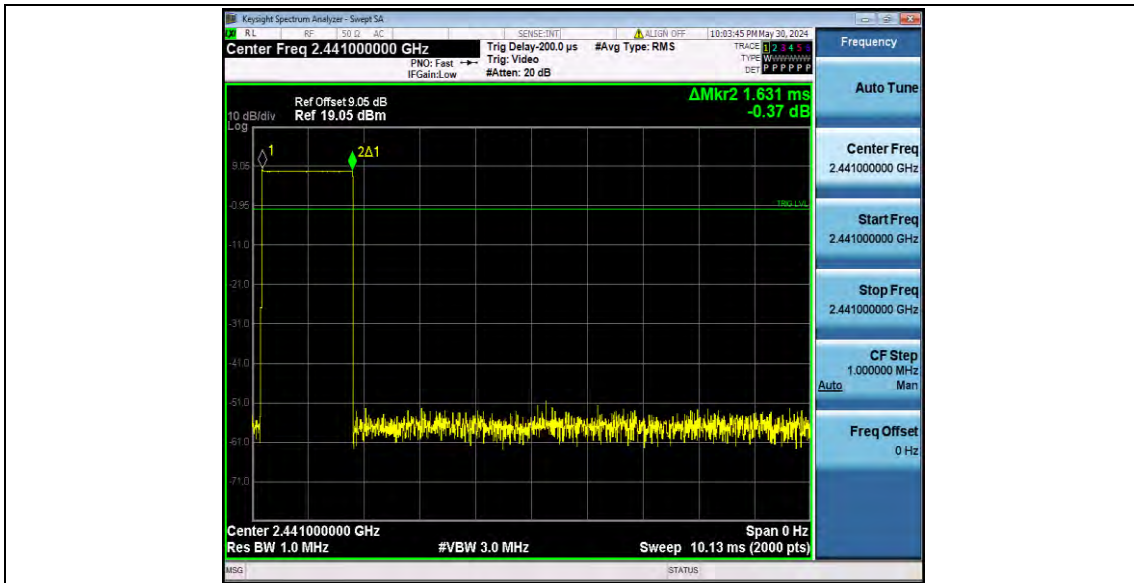
Appendix A.5: Time of occupancy

Test Result

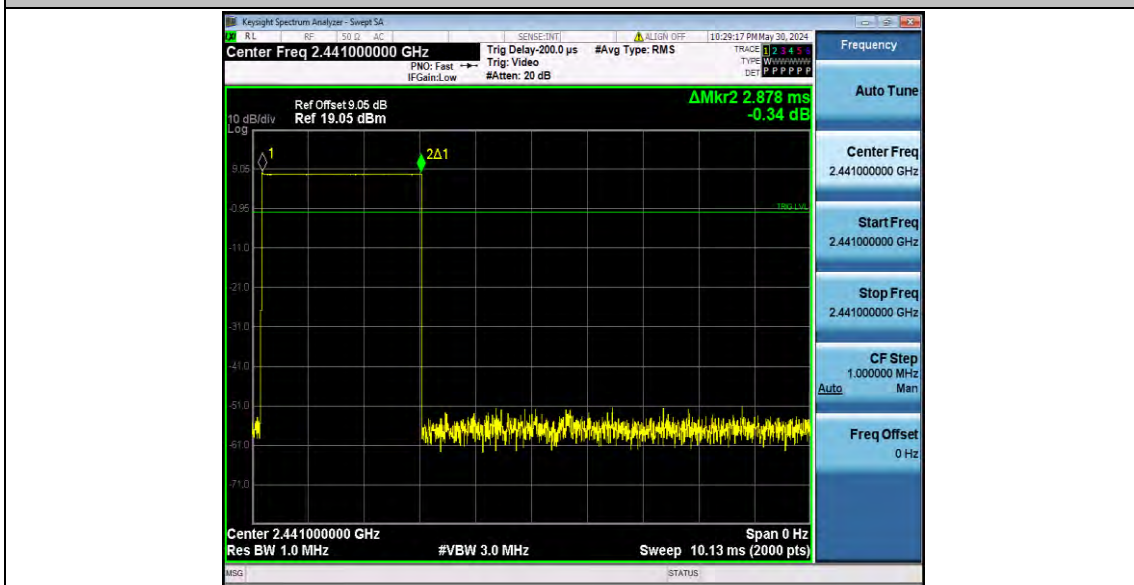
TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.375	330	0.124	≤0.4	PASS
DH3	Ant1	Hop	1.631	180	0.294	≤0.4	PASS
DH5	Ant1	Hop	2.878	110	0.317	≤0.4	PASS
2DH1	Ant1	Hop	0.380	610	0.232	≤0.4	PASS
2DH3	Ant1	Hop	1.631	170	0.277	≤0.4	PASS
2DH5	Ant1	Hop	2.878	120	0.345	≤0.4	PASS
3DH1	Ant1	Hop	0.380	630	0.239	≤0.4	PASS
3DH3	Ant1	Hop	1.631	170	0.277	≤0.4	PASS
3DH5	Ant1	Hop	2.883	90	0.259	≤0.4	PASS

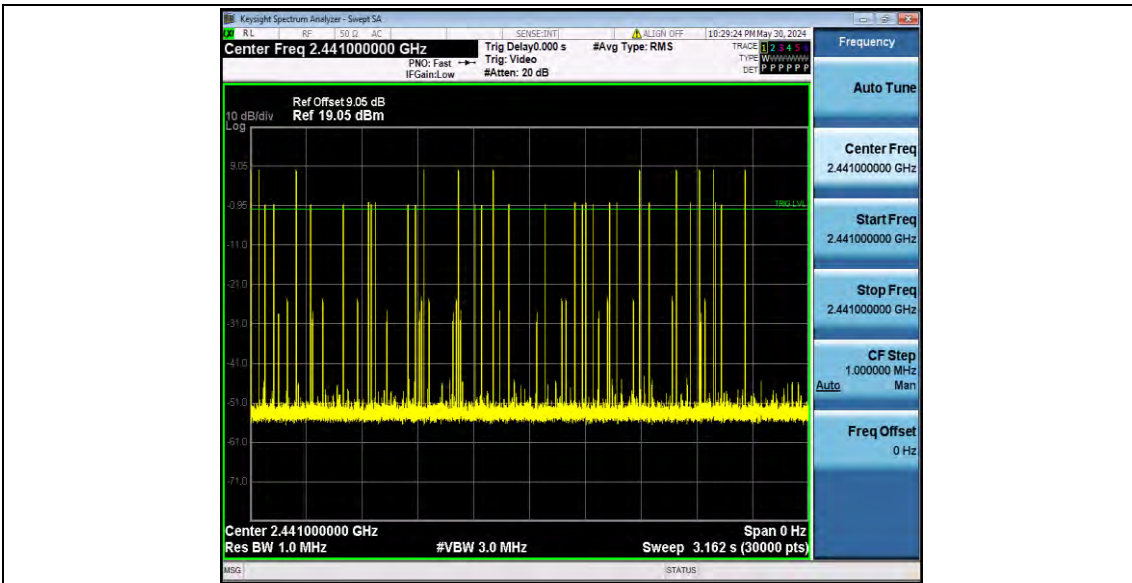
Test Graphs



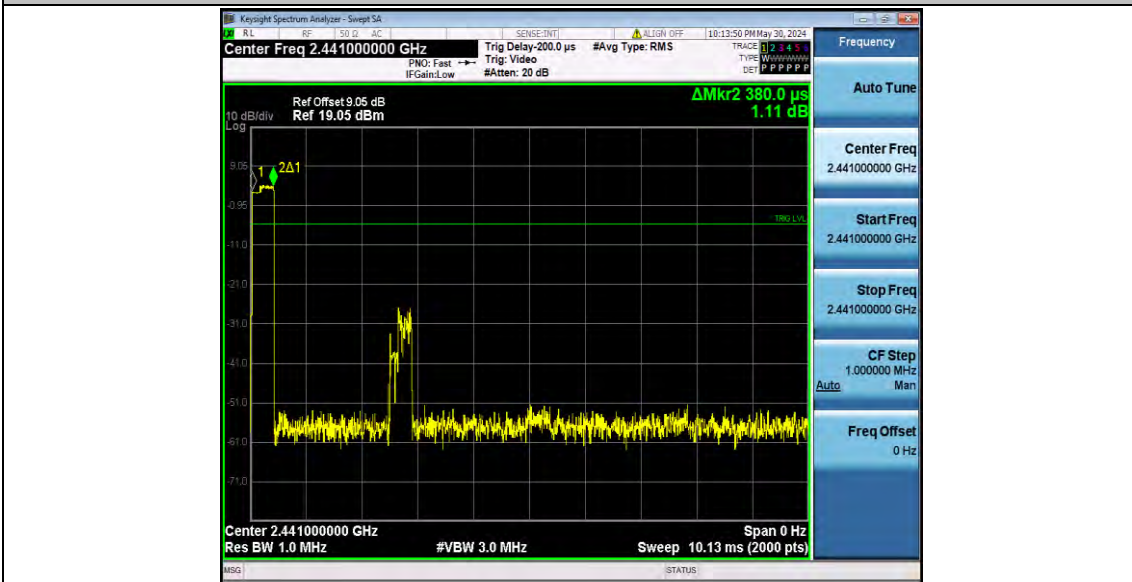


DH5_Ant1_Hop

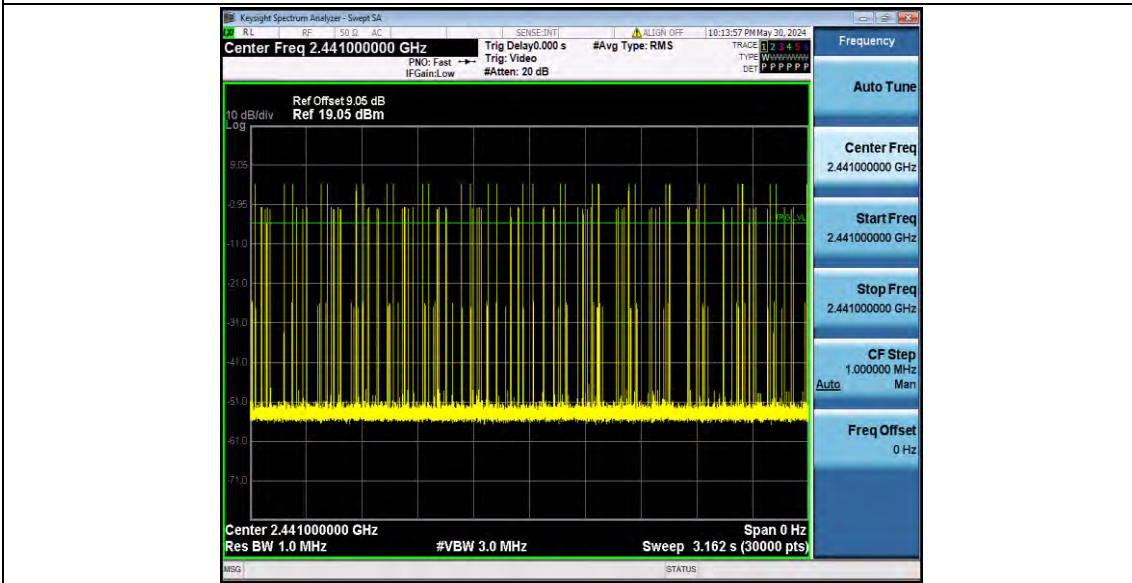


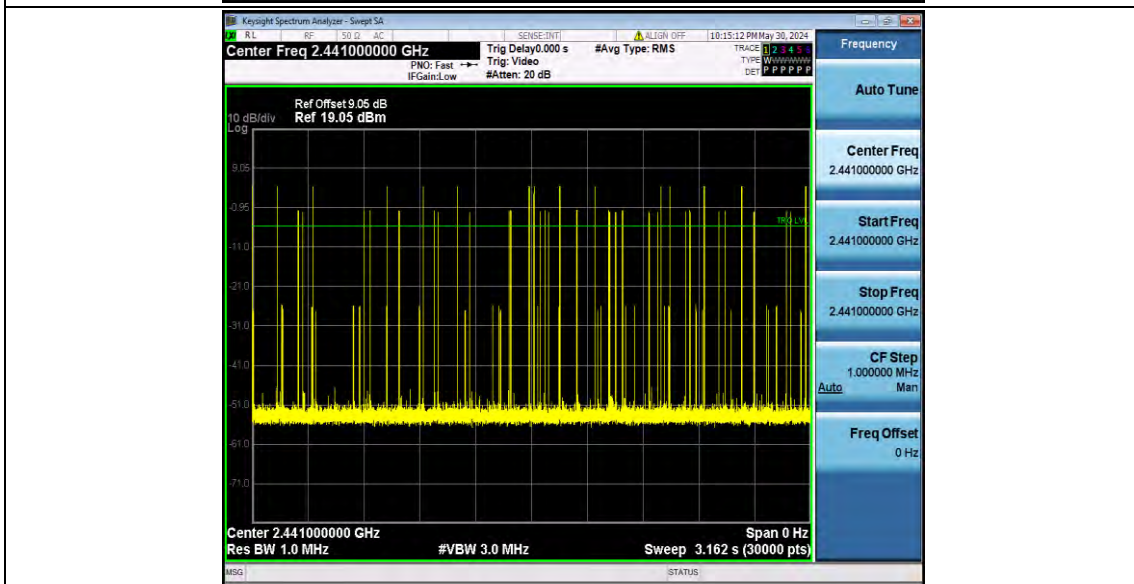
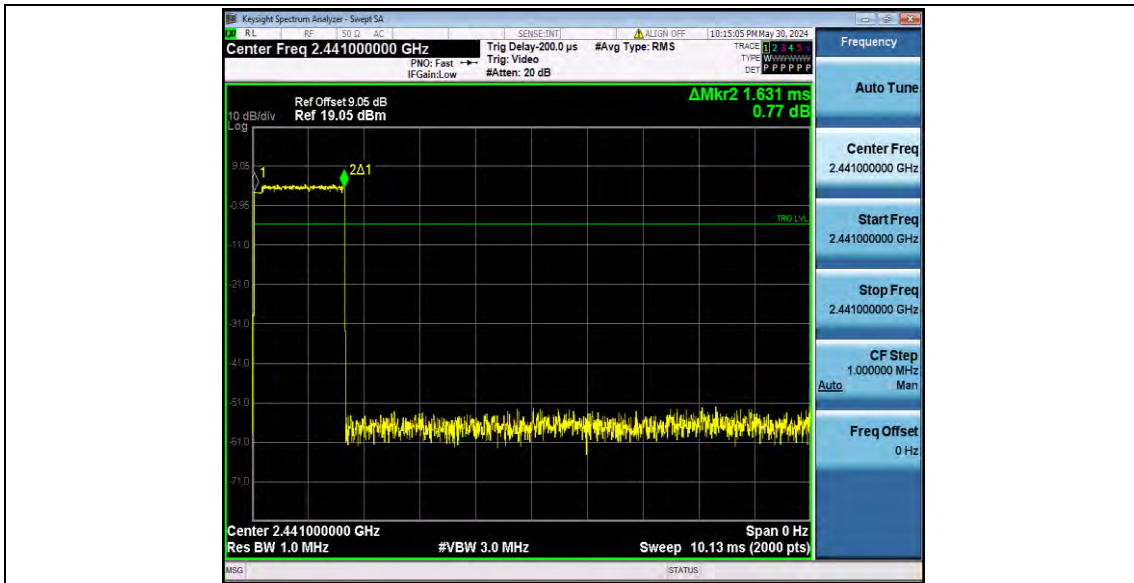


2DH1_Ant1_Hop

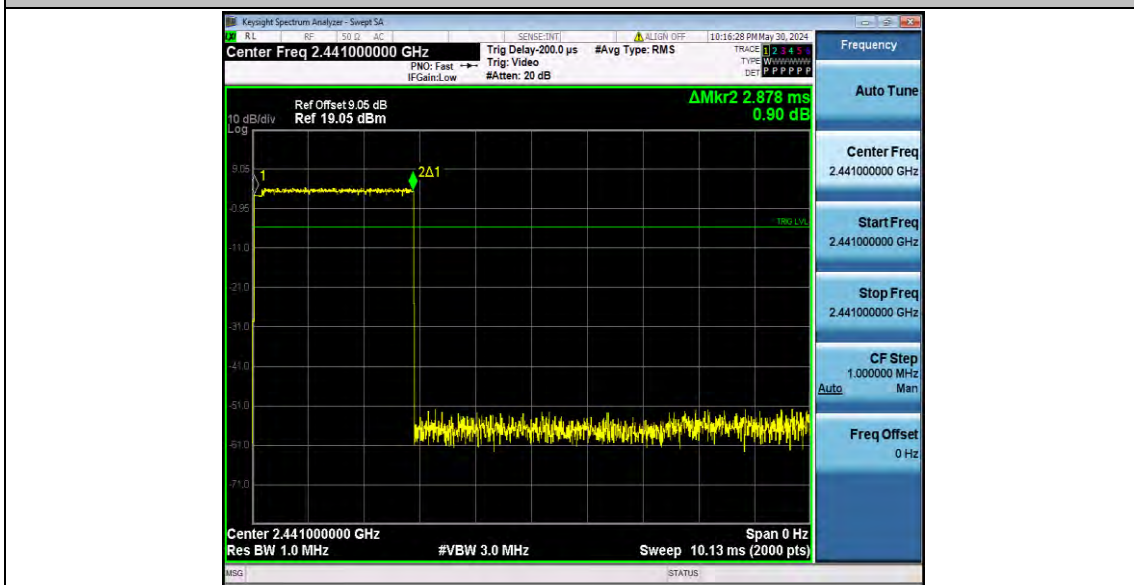


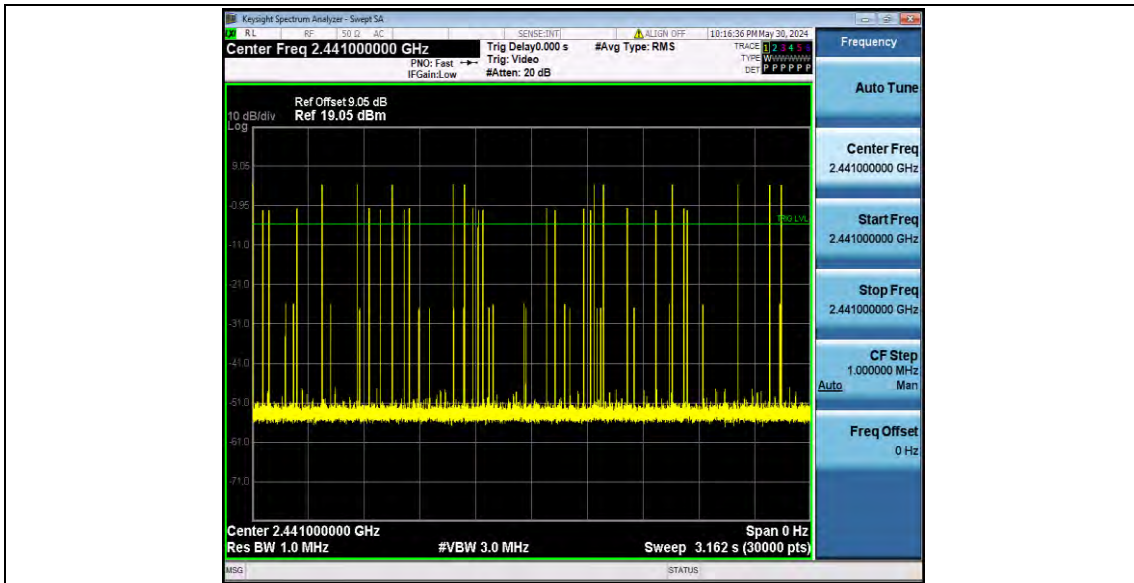
2DH3_Ant1_Hop



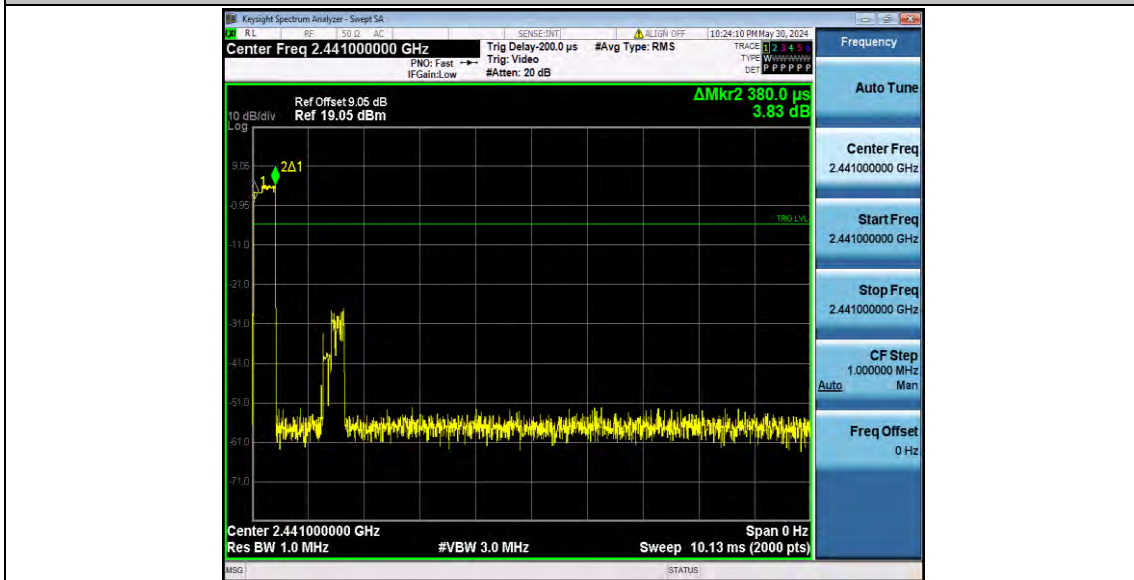


2DH5_Ant1_Hop

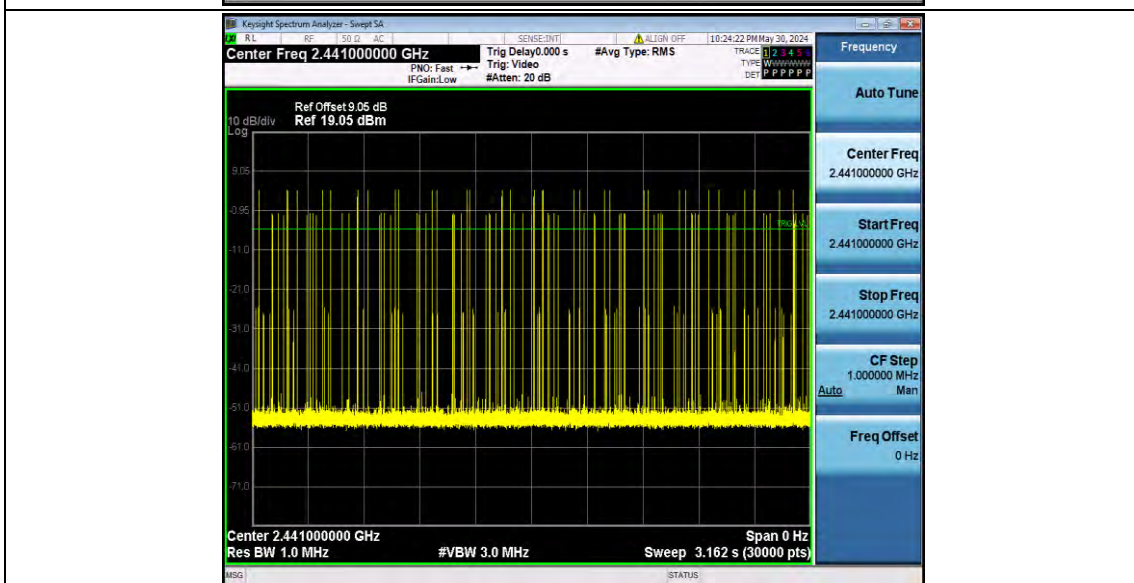


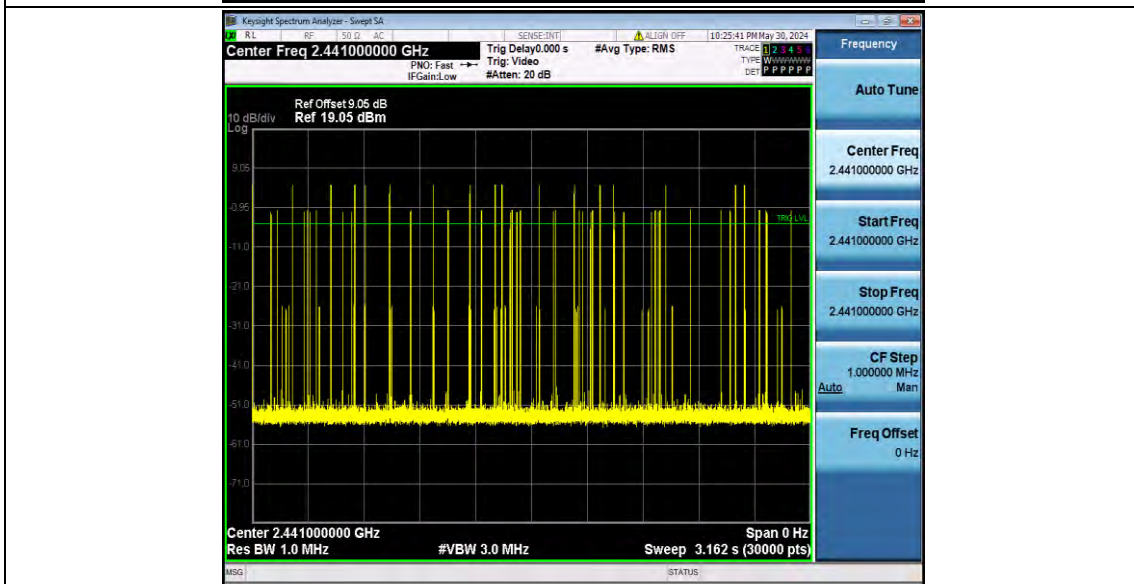
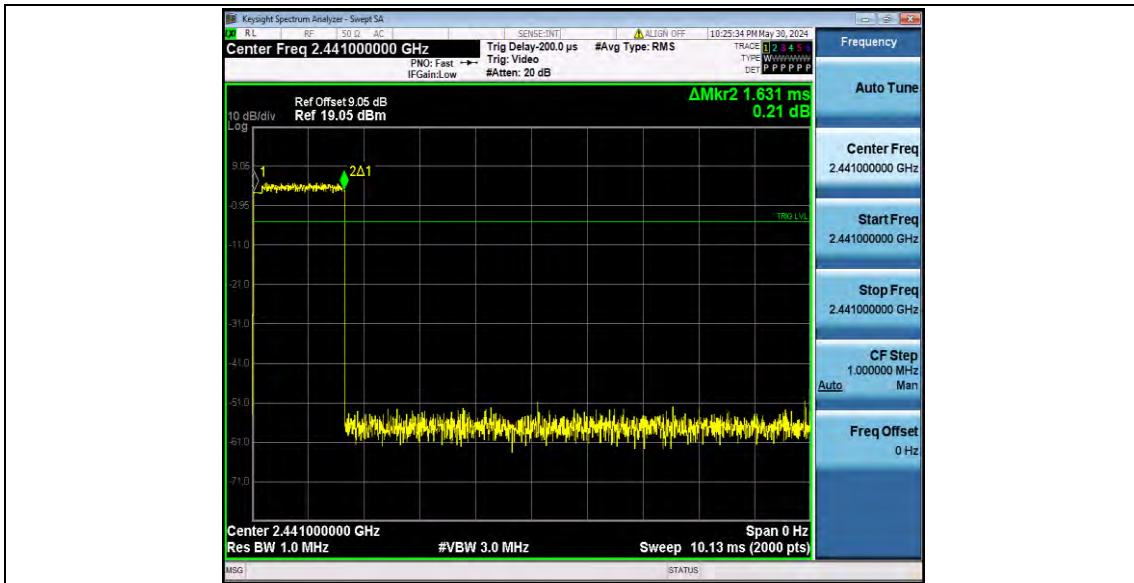


3DH1_Ant1_Hop

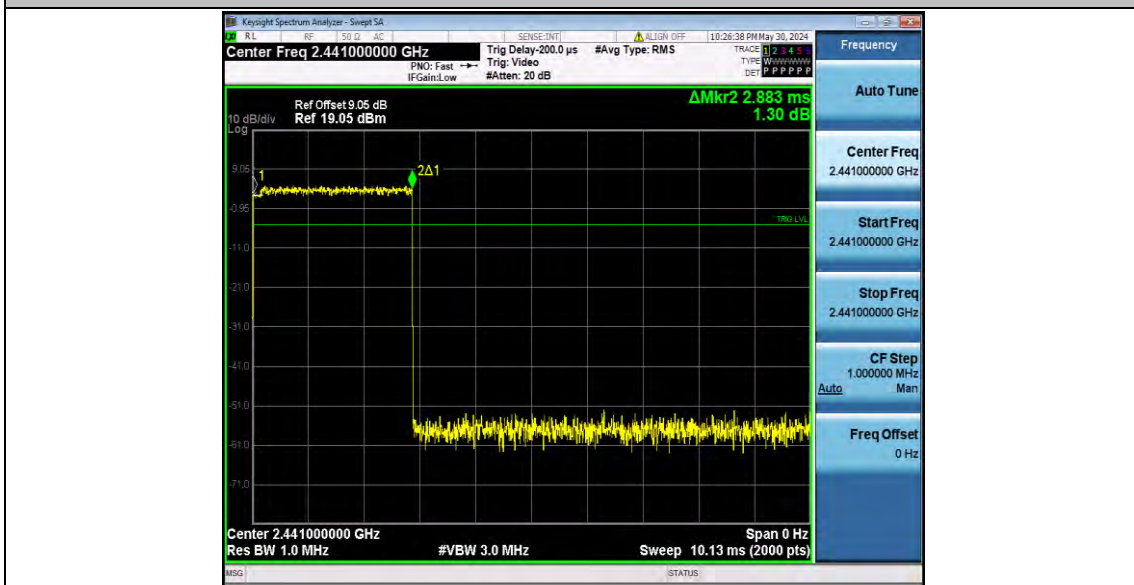


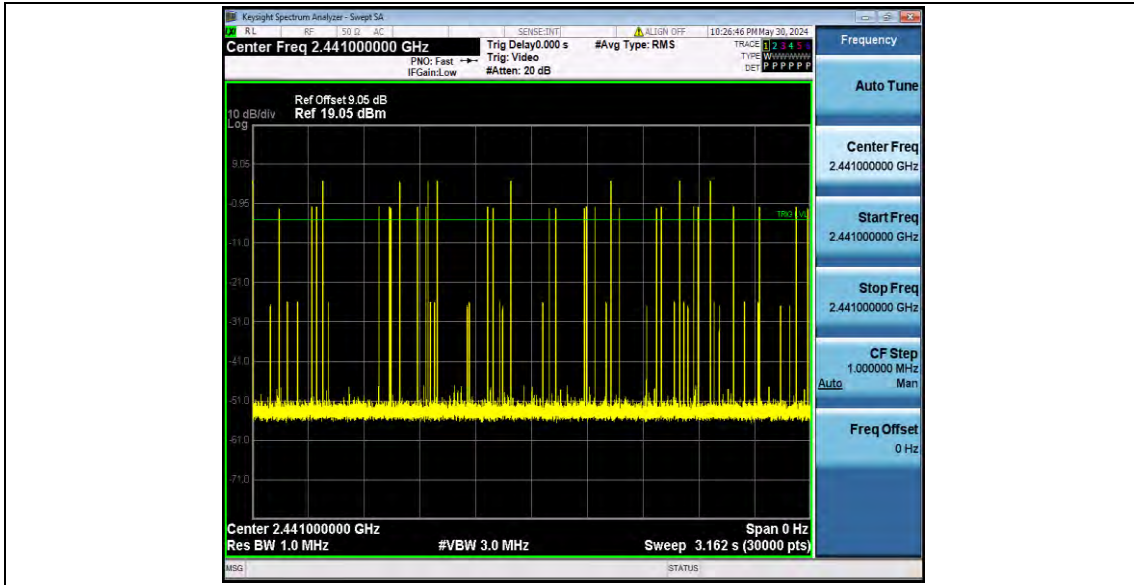
3DH3_Ant1_Hop





3DH5_Ant1_Hop



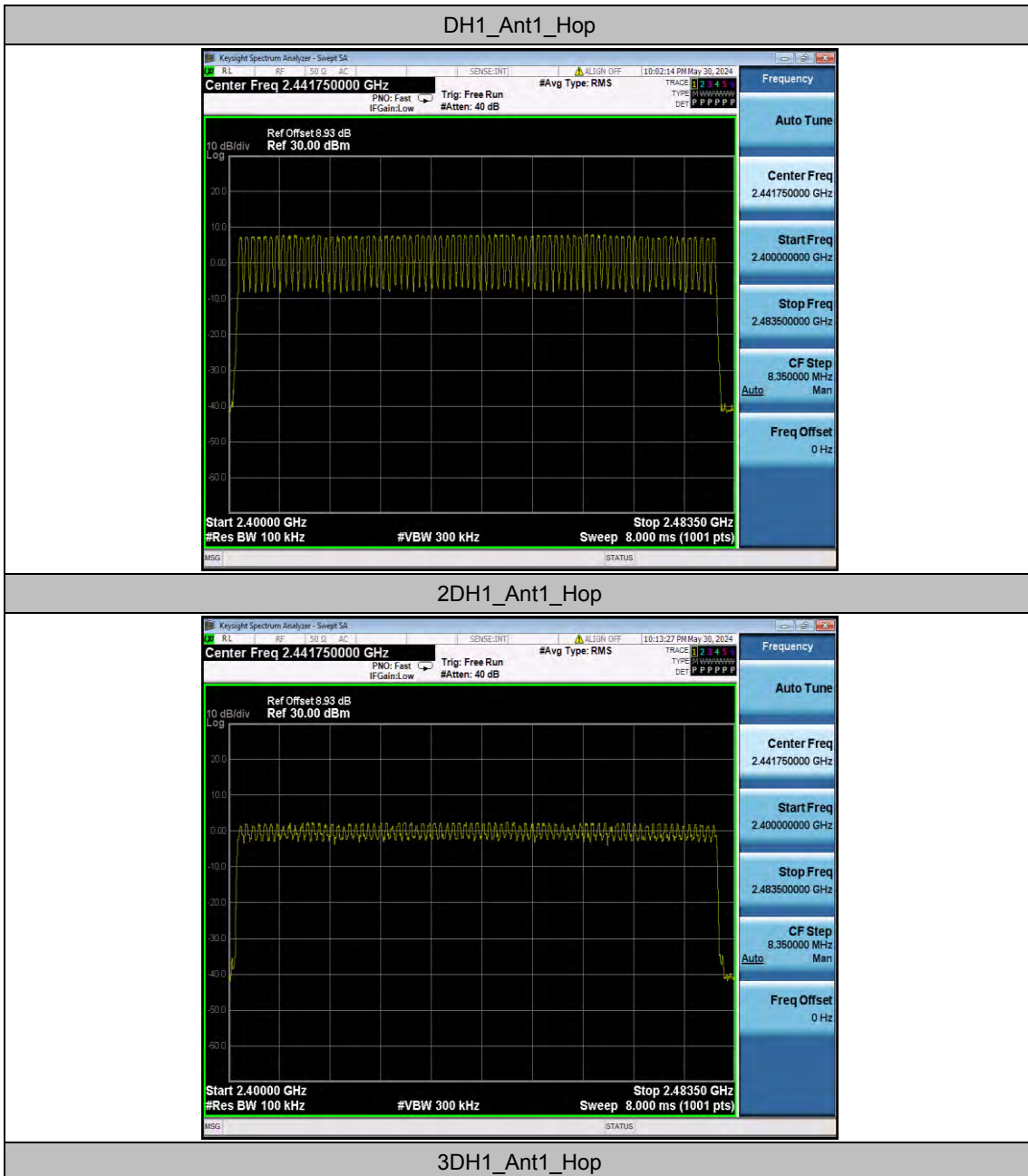


Appendix A.6: Number of hopping channels

Test Result

TestMode	Antenna	Freq(MHz)	Result[Num]	Limit[Num]	Verdict
DH1	Ant1	Hop	79	≥15	PASS
2DH1	Ant1	Hop	79	≥15	PASS
3DH1	Ant1	Hop	79	≥15	PASS

Test Graphs

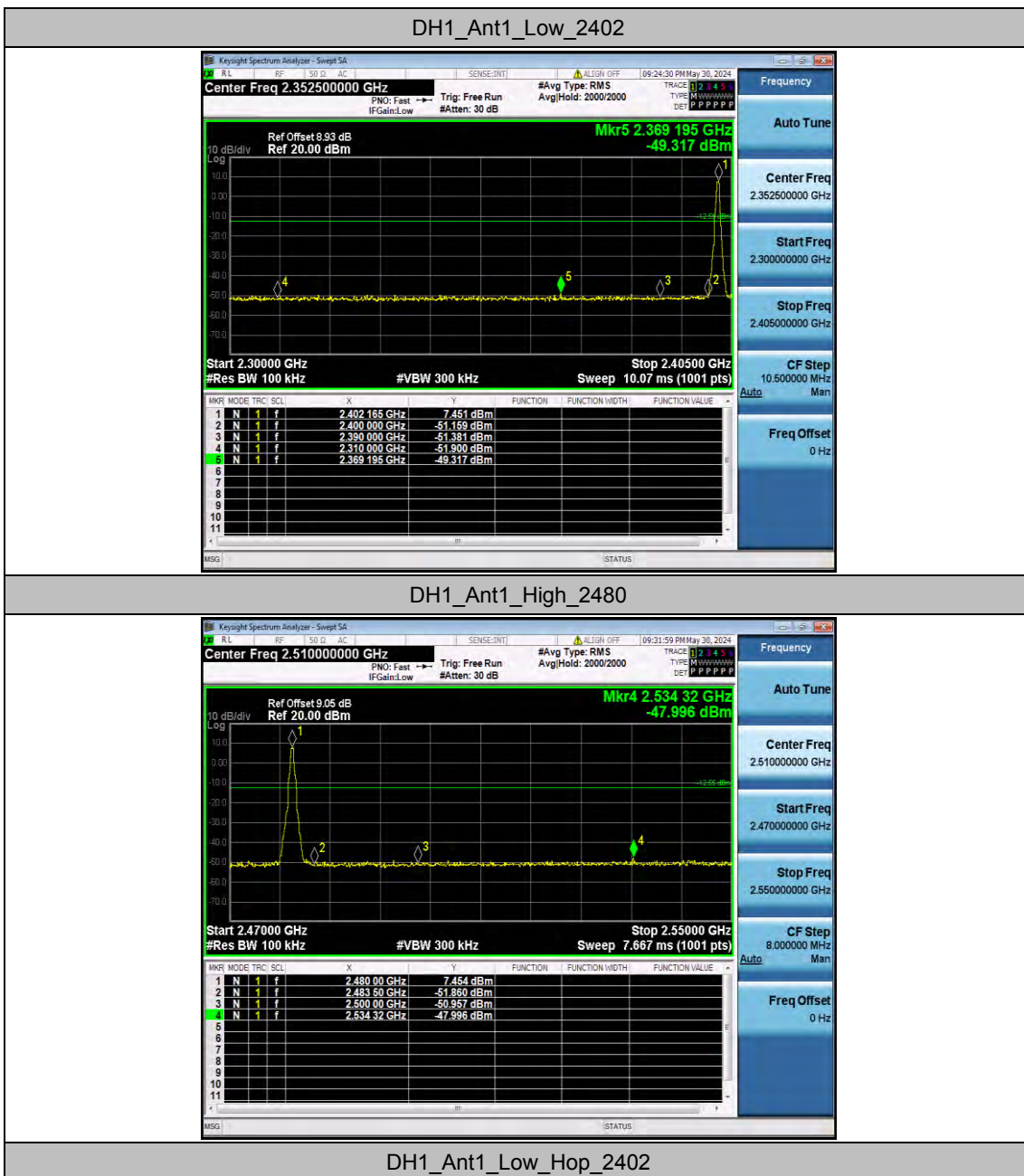


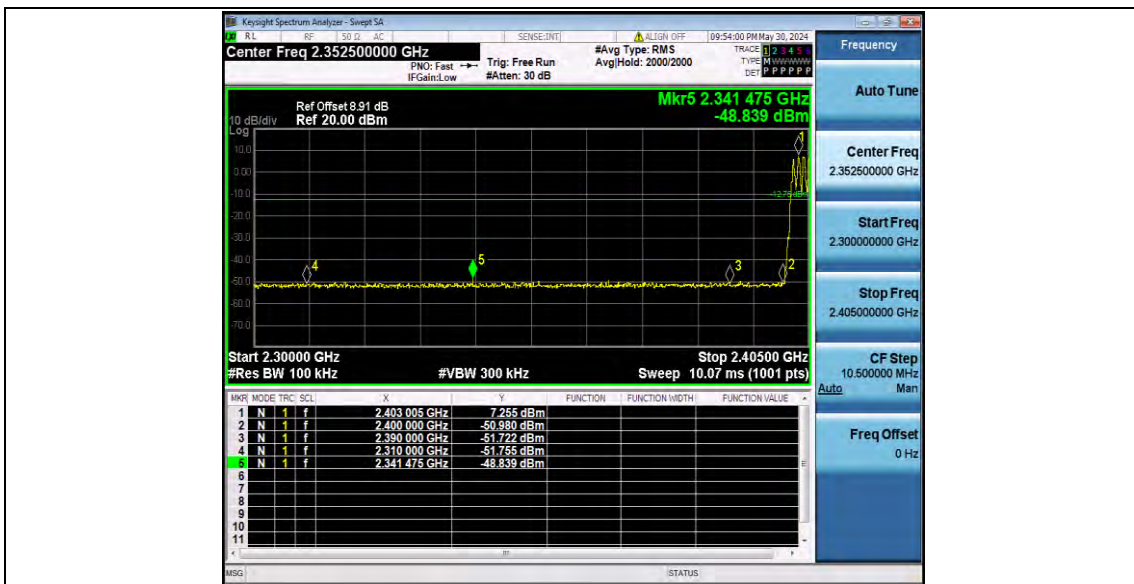
Appendix A.7: Band edge measurements

Test Result

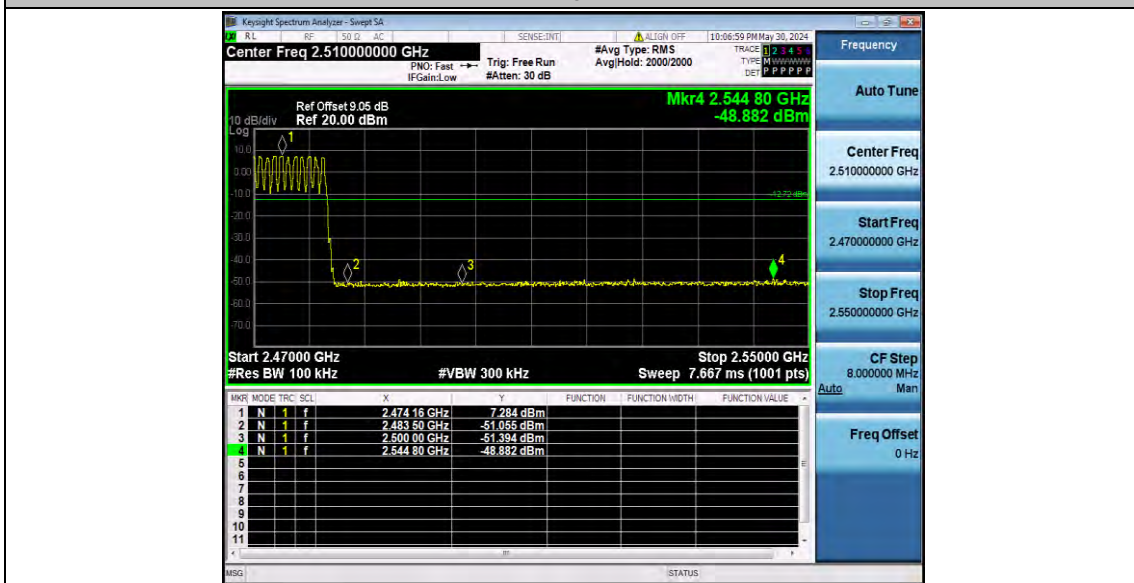
TestMode	Antenna	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	Low	2402	7.45	-49.32	≤-12.55	PASS
		High	2480	7.45	-48	≤-12.55	PASS
		Low	Hop_2402	7.26	-48.84	≤-12.75	PASS
		High	Hop_2480	7.28	-48.88	≤-12.72	PASS
2DH1	Ant1	Low	2402	1.98	-49.25	≤-18.02	PASS
		High	2480	1.96	-48.63	≤-18.04	PASS
		Low	Hop_2402	1.88	-49.21	≤-18.12	PASS
		High	Hop_2480	2.07	-48.75	≤-17.93	PASS
3DH1	Ant1	Low	2402	1.99	-49.25	≤-18.01	PASS
		High	2480	1.88	-48.53	≤-18.12	PASS
		Low	Hop_2402	1.86	-49.56	≤-18.14	PASS
		High	Hop_2480	1.63	-48.39	≤-18.37	PASS

Test Graphs

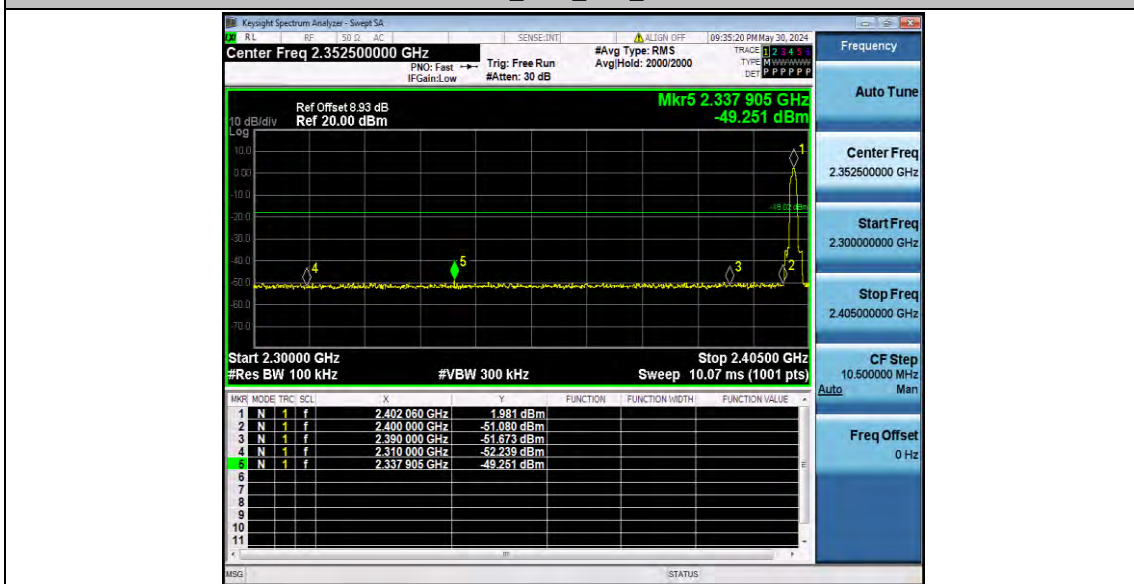




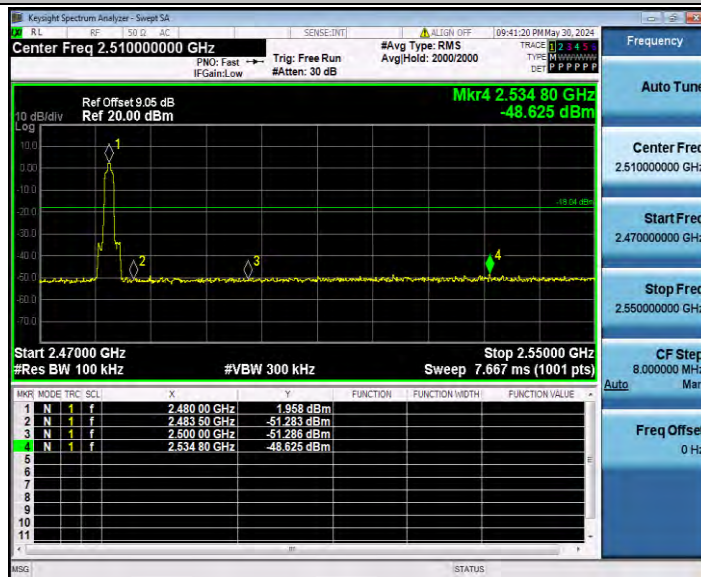
DH1_Ant1_High_Hop_2480



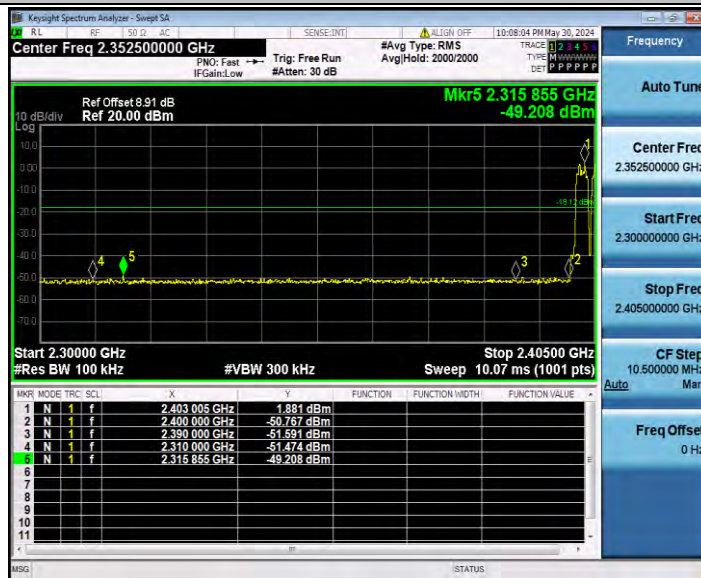
2D11_Ant1_Low_2402



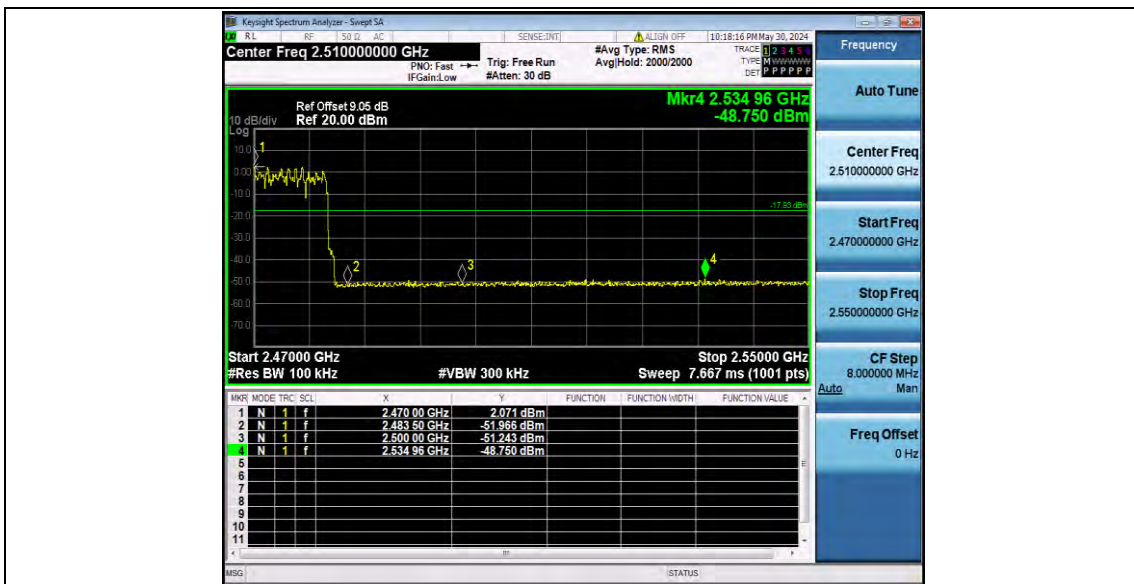
2DH1_Ant1_High_2480



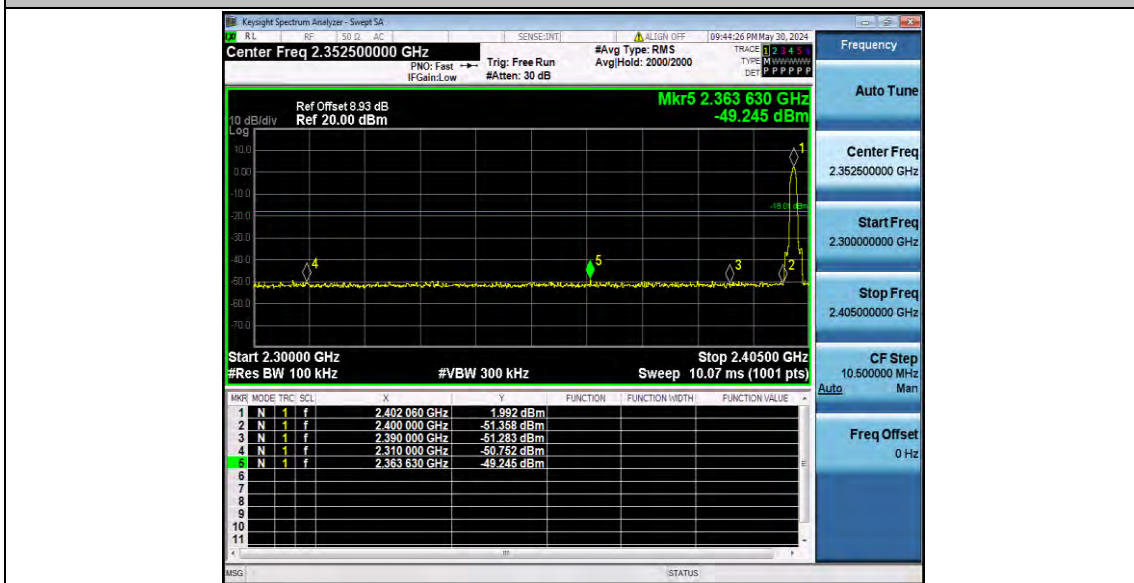
2DH1_Ant1_Low_Hop_2402



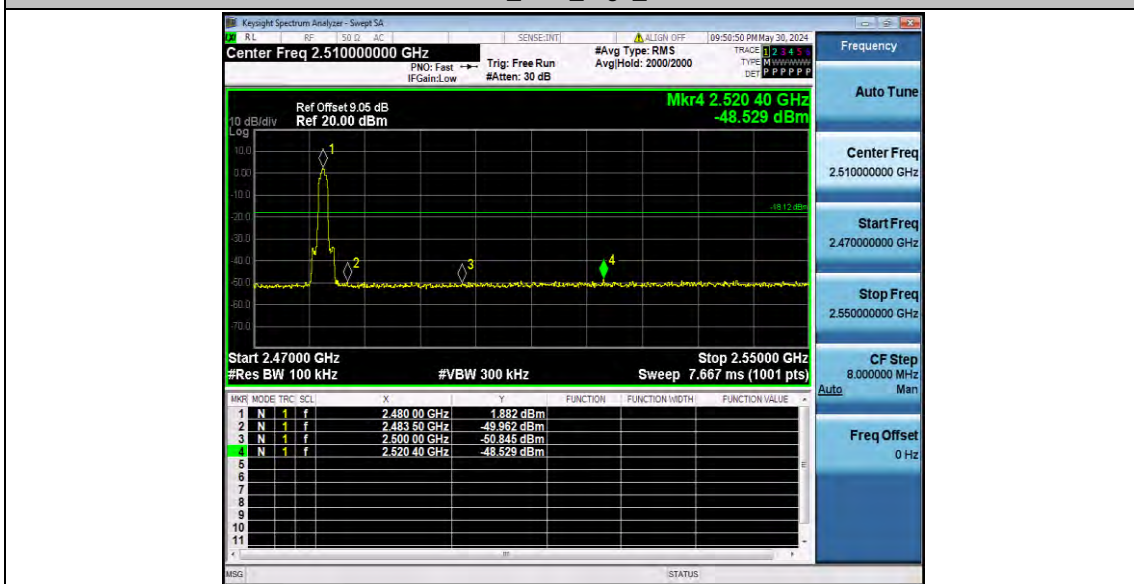
2DH1_Ant1_High_Hop_2480



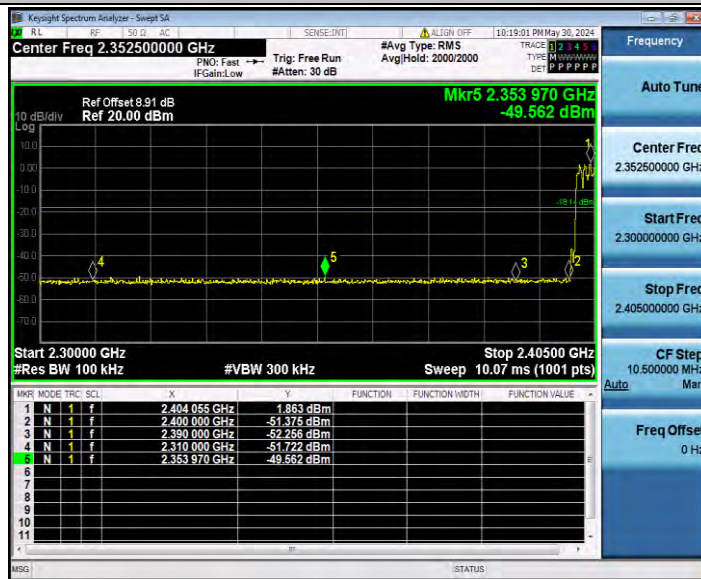
3D H1_Ant1_Low_2402



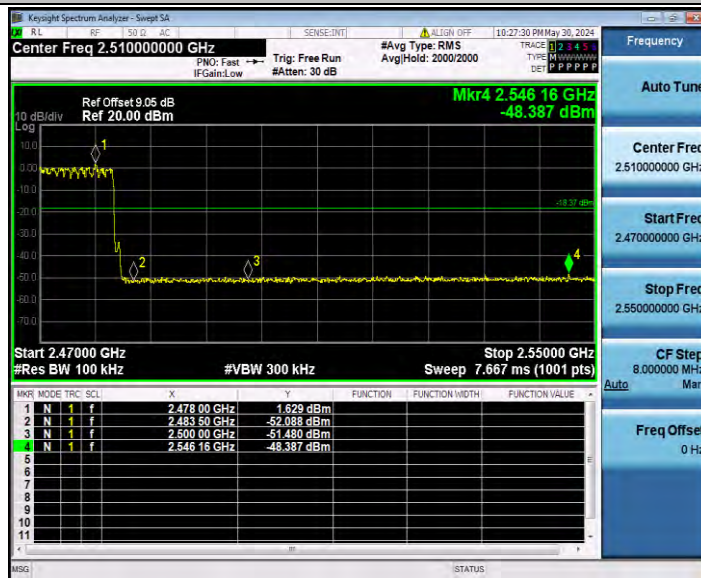
3D H1_Ant1_High_2480



3DH1_Ant1_Low_Hop_2402



3DH1_Ant1_High_Hop_2480

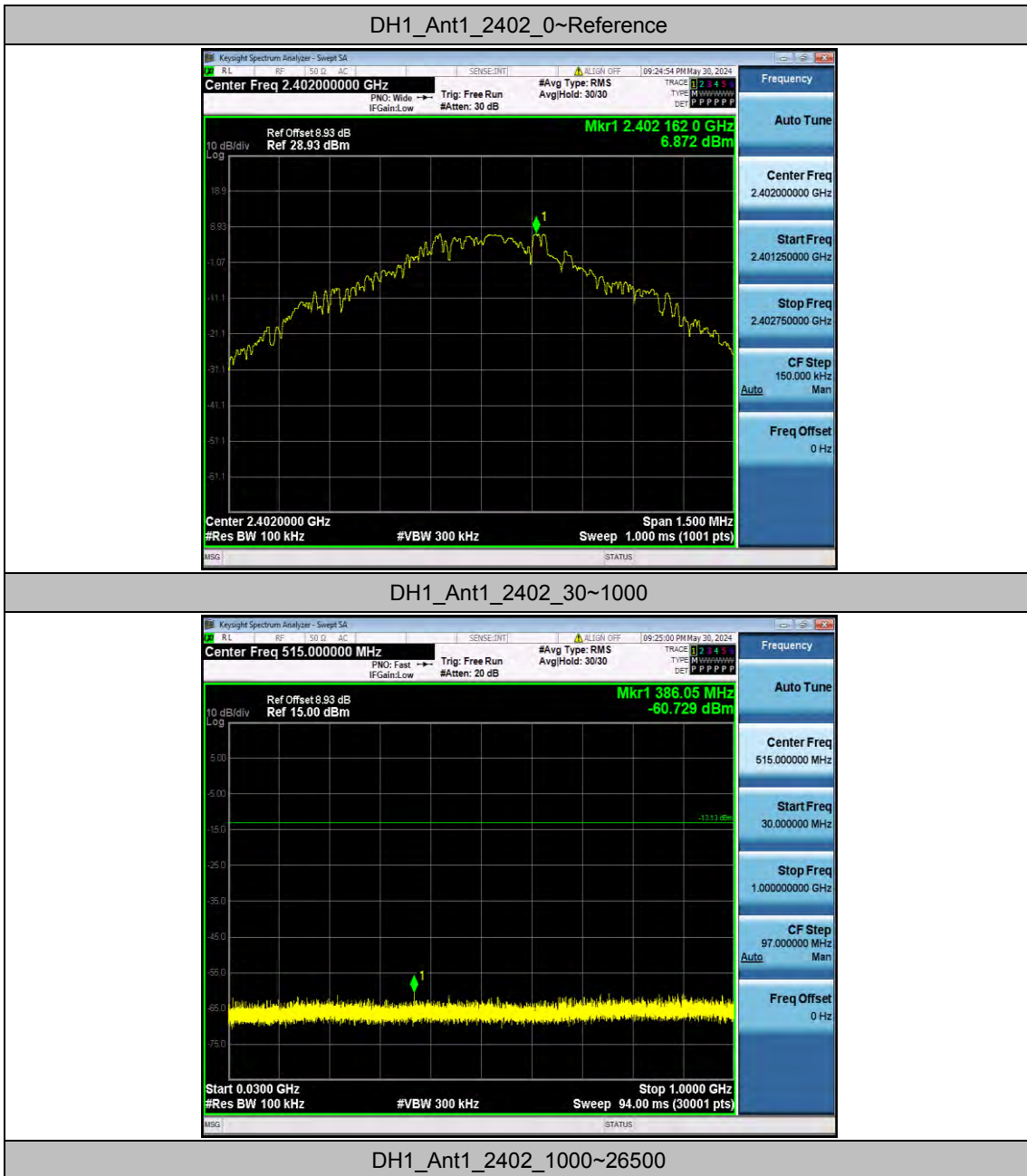


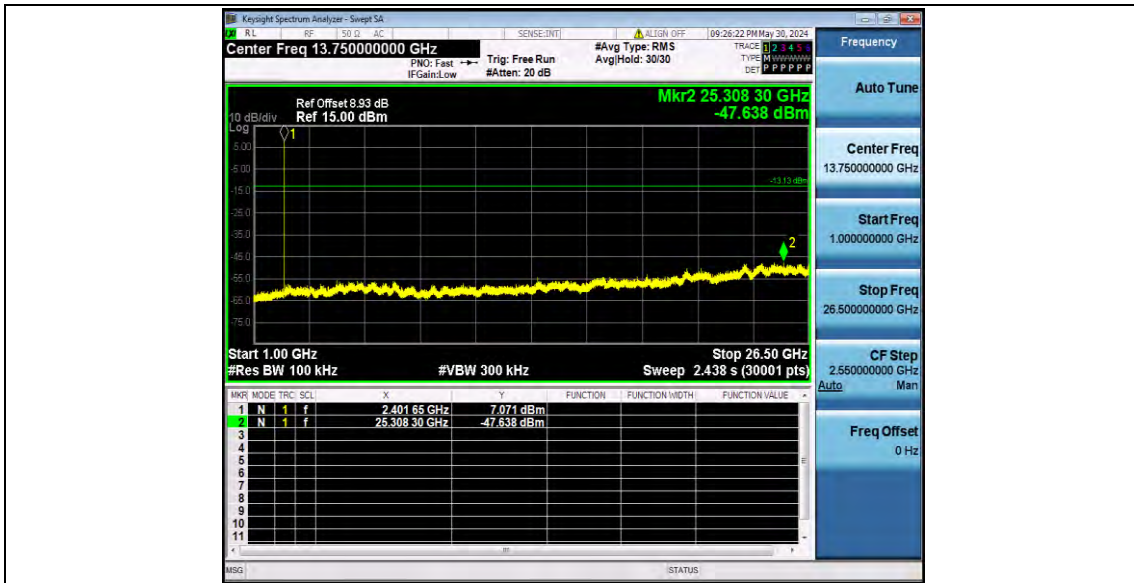
Appendix A.8: Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	2402	Reference	6.87	6.87	---	PASS
			30~1000	6.87	-60.73	≤-13.13	PASS
			1000~26500	6.87	-47.64	≤-13.13	PASS
		2441	Reference	7.53	7.53	---	PASS
			30~1000	7.53	-59.68	≤-12.47	PASS
			1000~26500	7.53	-46.97	≤-12.47	PASS
		2480	Reference	6.86	6.86	---	PASS
			30~1000	6.86	-50.62	≤-13.14	PASS
			1000~26500	6.86	-47.75	≤-13.14	PASS
2DH1	Ant1	2402	Reference	1.75	1.75	---	PASS
			30~1000	1.75	-60.35	≤-18.25	PASS
			1000~26500	1.75	-47.41	≤-18.25	PASS
		2441	Reference	2.26	2.26	---	PASS
			30~1000	2.26	-60.49	≤-17.74	PASS
			1000~26500	2.26	-47.55	≤-17.74	PASS
		2480	Reference	1.65	1.65	---	PASS
			30~1000	1.65	-60.55	≤-18.35	PASS
			1000~26500	1.65	-47.56	≤-18.35	PASS
3DH1	Ant1	2402	Reference	1.47	1.47	---	PASS
			30~1000	1.47	-60.43	≤-18.53	PASS
			1000~26500	1.47	-47.43	≤-18.53	PASS
		2441	Reference	1.58	1.58	---	PASS
			30~1000	1.58	-60	≤-18.42	PASS
			1000~26500	1.58	-47.15	≤-18.42	PASS
		2480	Reference	1.52	1.52	---	PASS
			30~1000	1.52	-60.58	≤-18.48	PASS
			1000~26500	1.52	-46.15	≤-18.48	PASS

Test Graphs

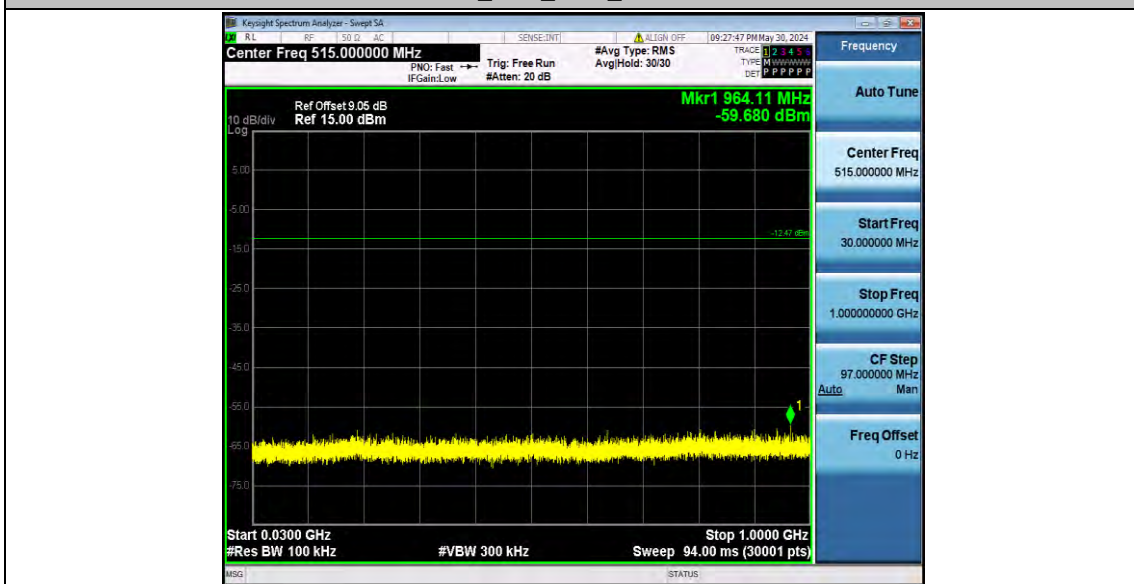




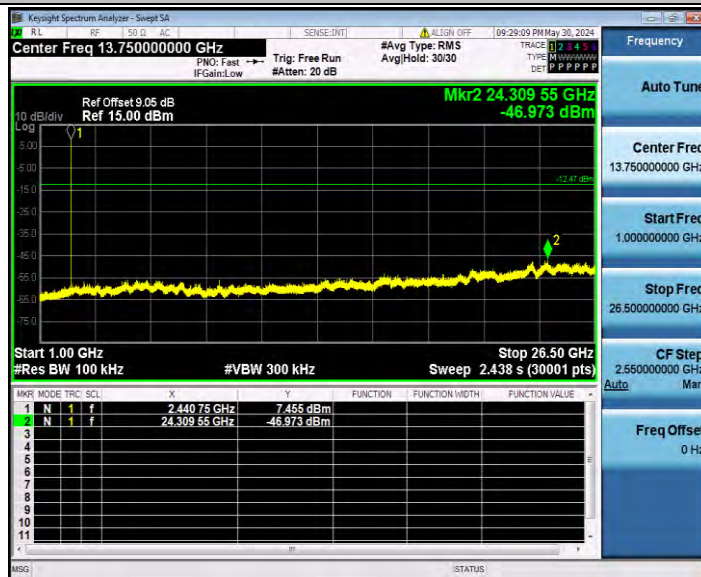
DH1_Ant1_2441_0~Reference



DH1_Ant1_2441_30~1000



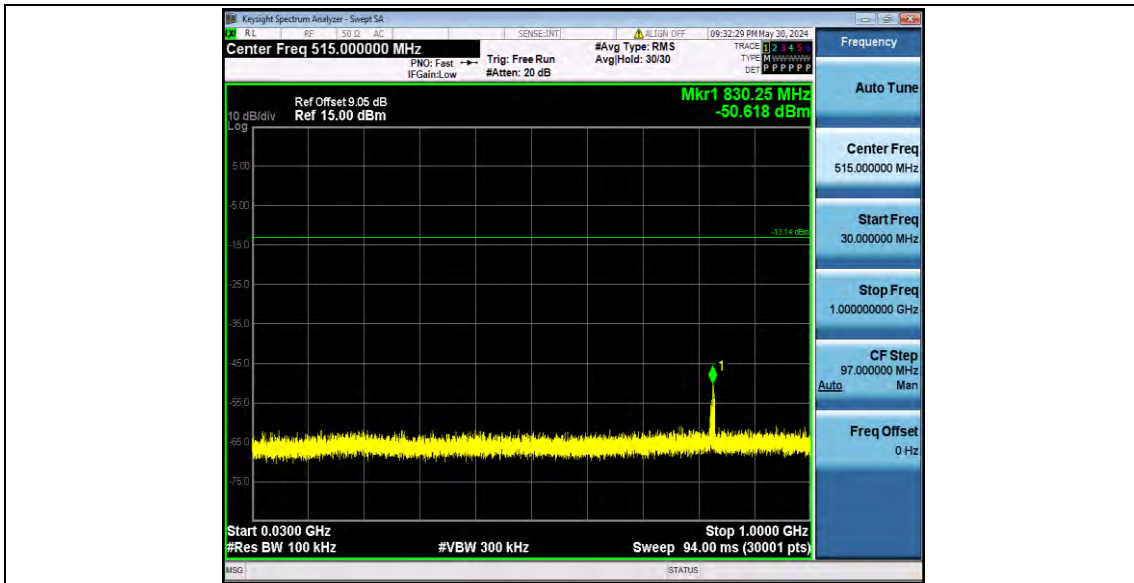
DH1_Ant1_2441_1000~26500



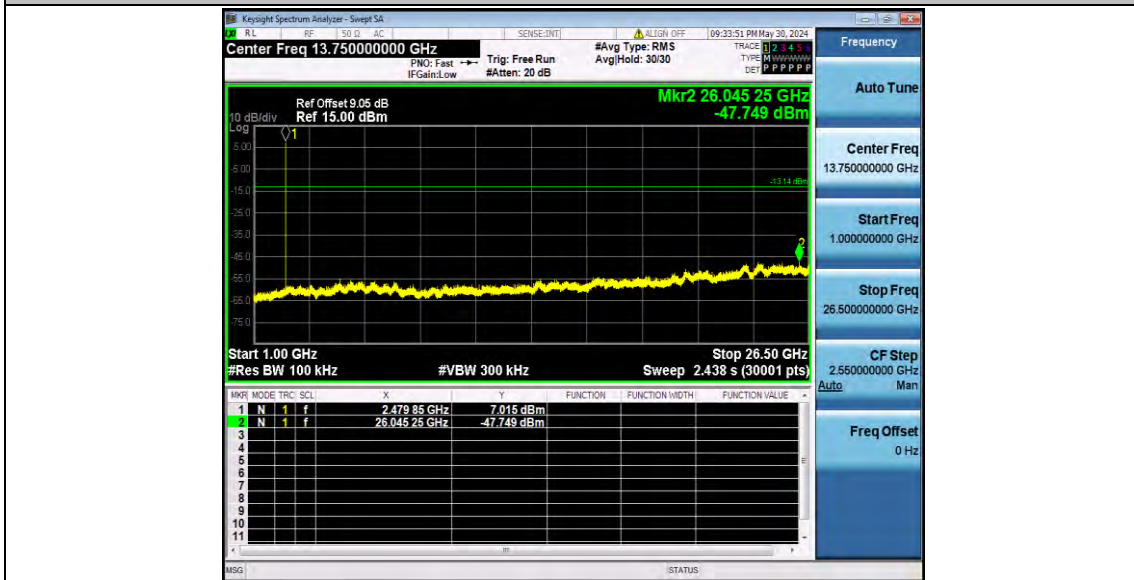
DH1_Ant1_2480_0~Reference



DH1_Ant1_2480_30~1000



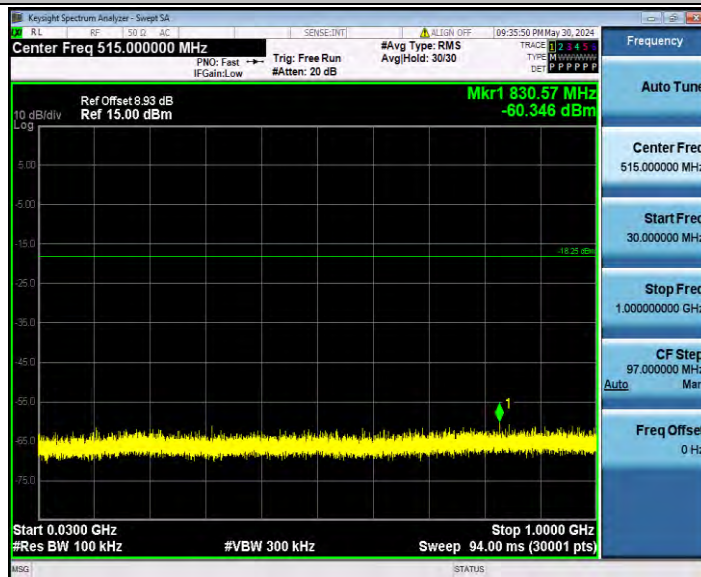
DH1_Ant1_2480_1000~26500



2DH1_Ant1_2402_0~Reference



2DH1_Ant1_2402_30~1000



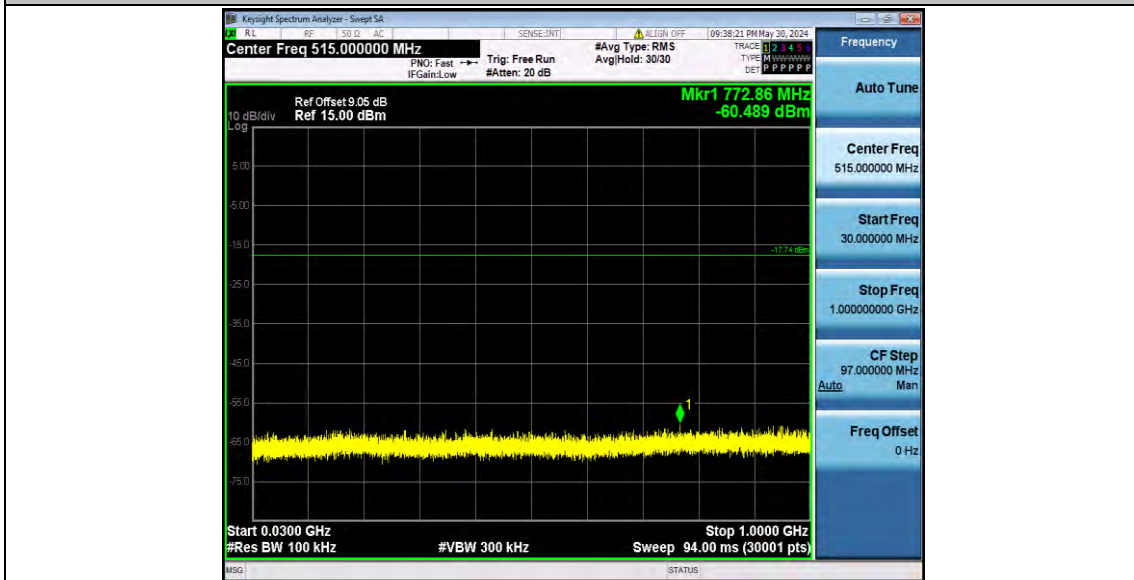
2DH1_Ant1_2402_1000~26500



2DH1_Ant1_2441_0~Reference



2DH1_Ant1_2441_30~100



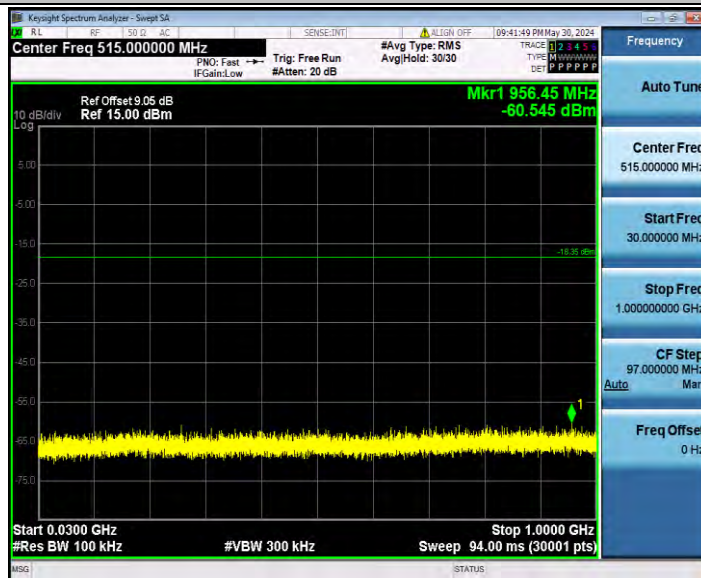
2DH1_Ant1_2441_1000~26500



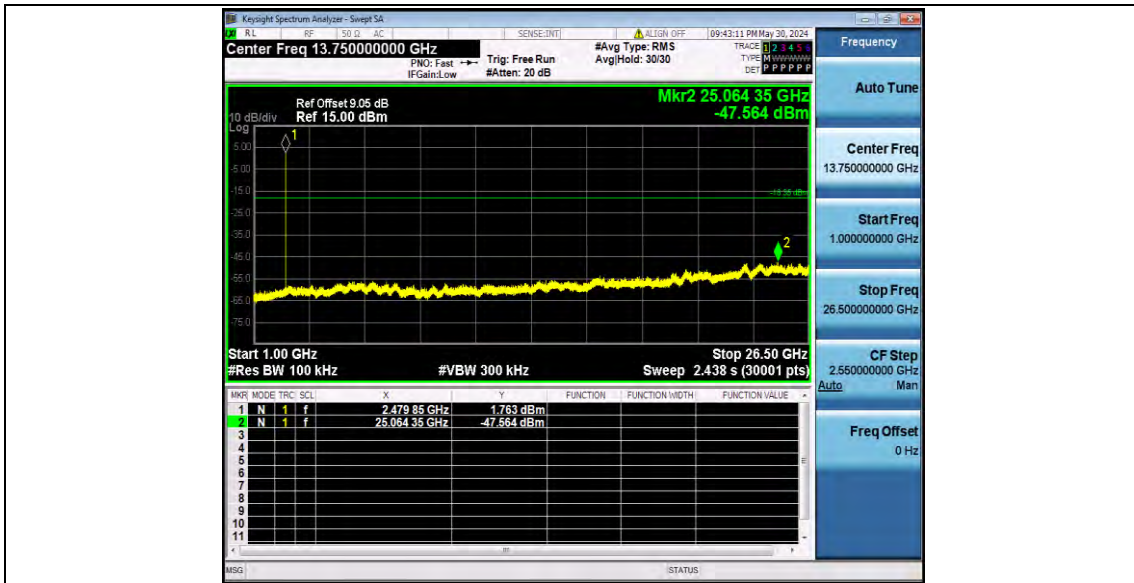
2DH1_Ant1_2480_0~Reference



2DH1_Ant1_2480_30~1000



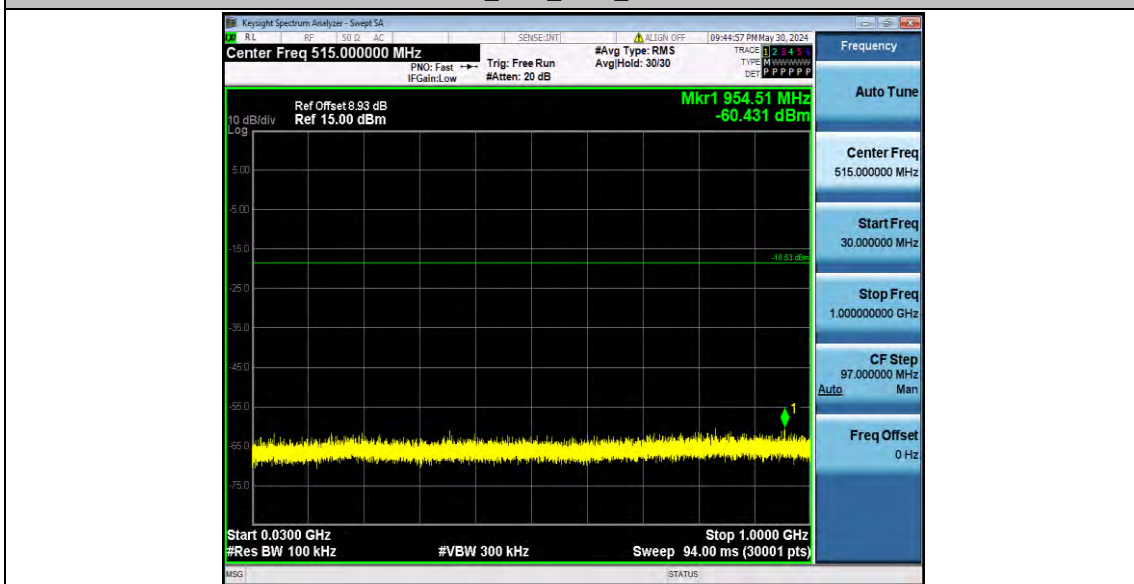
2DH1_Ant1_2480_1000~26500



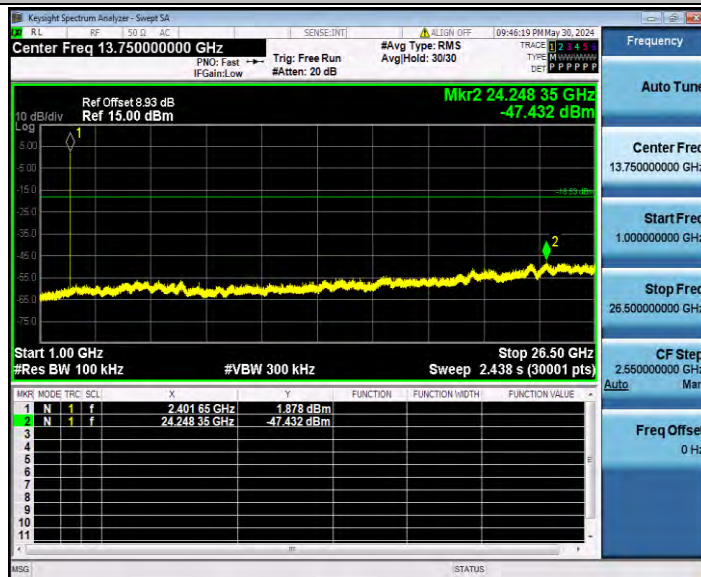
3DH1_Ant1_2402_0~Reference



3DH1_Ant1_2402_30~1000



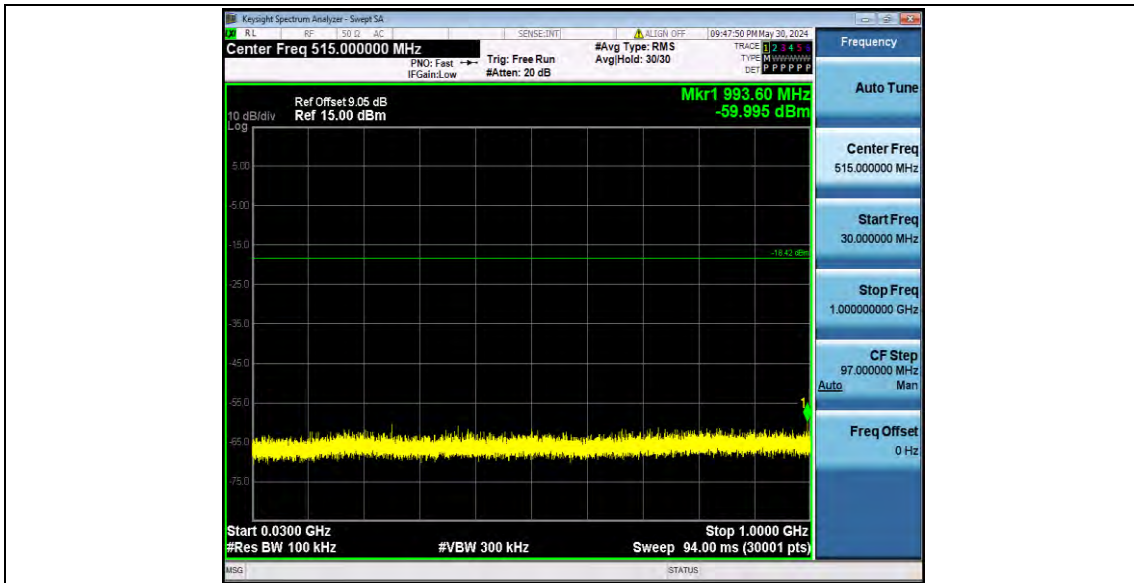
3DH1_Ant1_2402_1000~26500



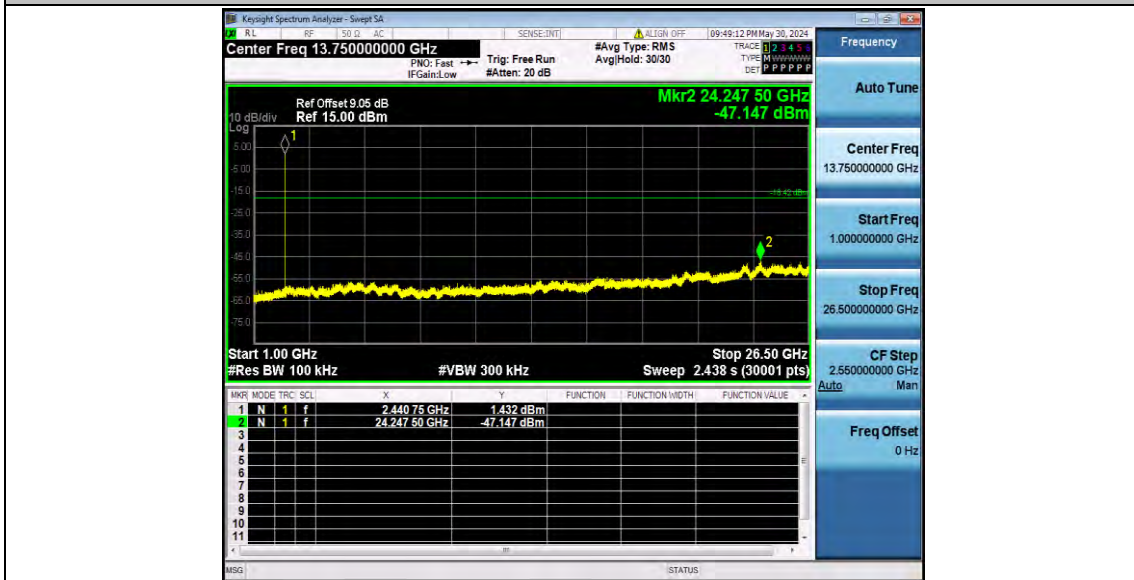
3DH1_Ant1_2441_0~Reference



3DH1_Ant1_2441_30~1000



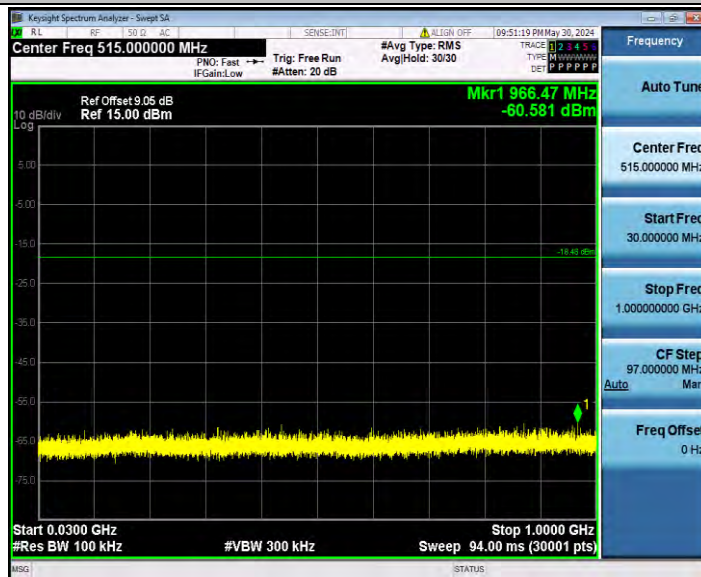
3DH1_Ant1_2441_1000~26500



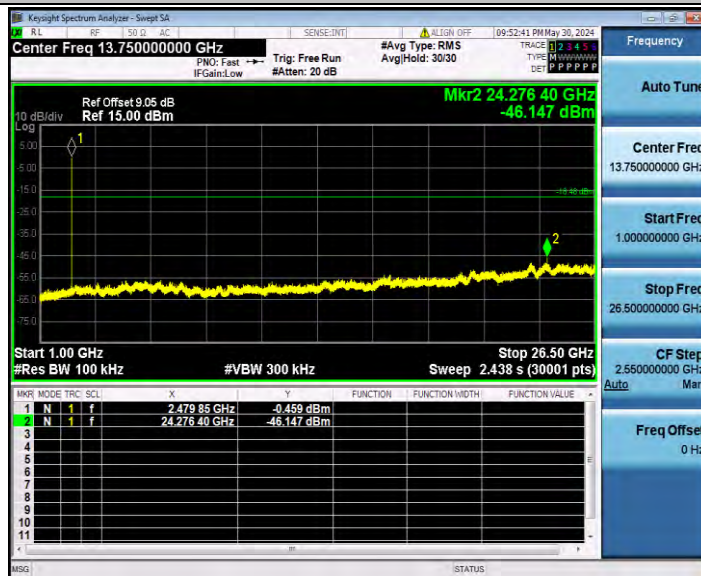
3DH1_Ant1_2480_0~Reference



3DH1_Ant1_2480_30~1000



3DH1_Ant1_2480_1000~26500



Appendix A.9: Emissions in Restricted Bands

Test Result

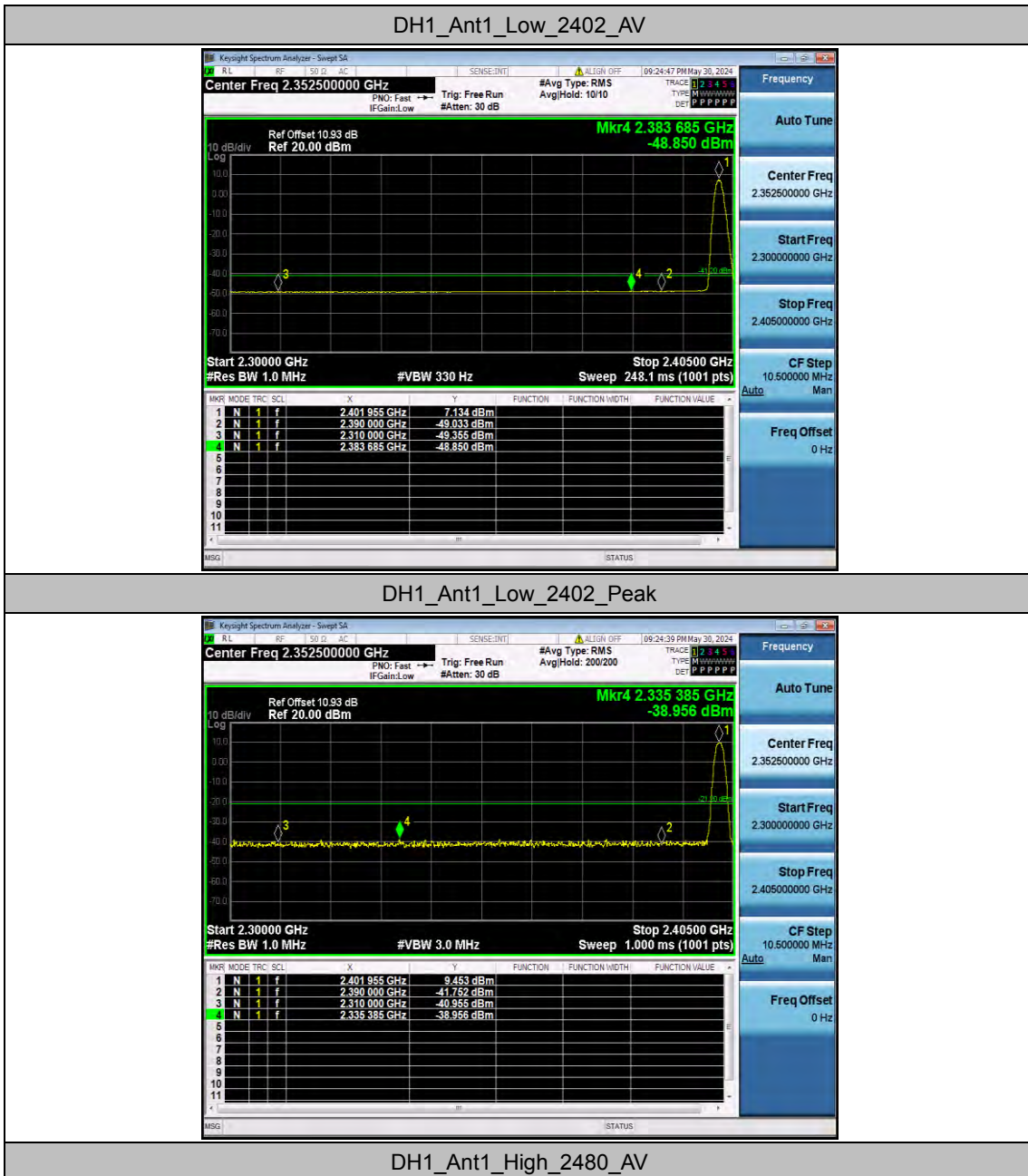
TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH1	Ant1	Low	2402	AV	2310.000	-49.36	≤-41.20	45.84	≤54	PASS
				AV	2383.685	-48.85	≤-41.20	46.35	≤54	PASS
				AV	2390.000	-49.03	≤-41.20	46.17	≤54	PASS
				Peak	2310.000	-40.96	≤-21.20	54.24	≤74	PASS
				Peak	2335.385	-38.96	≤-21.20	56.24	≤74	PASS
				Peak	2390.000	-41.75	≤-21.20	53.45	≤74	PASS
		High	2480	AV	2483.500	-47.77	≤-41.20	47.43	≤54	PASS
				AV	2483.520	-47.77	≤-41.20	47.43	≤54	PASS
				AV	2500.000	-48.66	≤-41.20	46.54	≤54	PASS
				Peak	2483.500	-40.6	≤-21.20	54.60	≤74	PASS
				Peak	2485.360	-38.37	≤-21.20	56.83	≤74	PASS
				Peak	2500.000	-40.57	≤-21.20	54.63	≤74	PASS
2DH1	Ant1	Low	2402	AV	2310.000	-49.23	≤-41.20	45.97	≤54	PASS
				AV	2386.940	-48.89	≤-41.20	46.31	≤54	PASS
				AV	2390.000	-49.01	≤-41.20	46.19	≤54	PASS
				Peak	2310.000	-41.7	≤-21.20	53.50	≤74	PASS
				Peak	2338.220	-38.36	≤-21.20	56.84	≤74	PASS
				Peak	2390.000	-41.48	≤-21.20	53.72	≤74	PASS
		High	2480	AV	2483.500	-48.36	≤-41.20	46.84	≤54	PASS
				AV	2483.520	-48.36	≤-41.20	46.84	≤54	PASS
				AV	2500.000	-48.79	≤-41.20	46.41	≤54	PASS
				Peak	2483.500	-40.26	≤-21.20	54.94	≤74	PASS
				Peak	2499.200	-38.83	≤-21.20	56.37	≤74	PASS
				Peak	2500.000	-40.04	≤-21.20	55.16	≤74	PASS
3DH1	Ant1	Low	2402	AV	2310.000	-49.25	≤-41.20	45.95	≤54	PASS
				AV	2388.620	-48.84	≤-41.20	46.36	≤54	PASS
				AV	2390.000	-48.91	≤-41.20	46.29	≤54	PASS
				Peak	2310.000	-41.79	≤-21.20	53.41	≤74	PASS
				Peak	2314.595	-38.58	≤-21.20	56.62	≤74	PASS
				Peak	2390.000	-41.47	≤-21.20	53.73	≤74	PASS
		High	2480	AV	2483.500	-48.35	≤-41.20	46.85	≤54	PASS
				AV	2483.520	-48.35	≤-41.20	46.85	≤54	PASS
				AV	2500.000	-48.82	≤-41.20	46.38	≤54	PASS
				Peak	2483.500	-41.64	≤-21.20	53.56	≤74	PASS
				Peak	2494.720	-38.72	≤-21.20	56.48	≤74	PASS
				Peak	2494.720	-38.72	≤-21.20	56.48	≤74	PASS

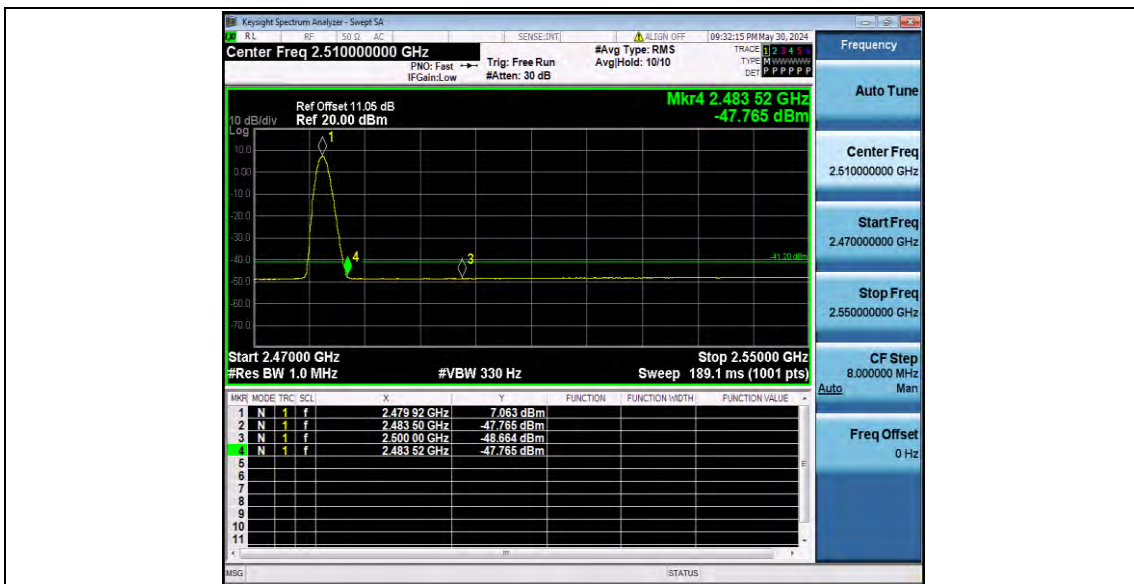
				Peak	2500.000	-41.96	≤-21.20	53.24	≤74	PASS
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Note:

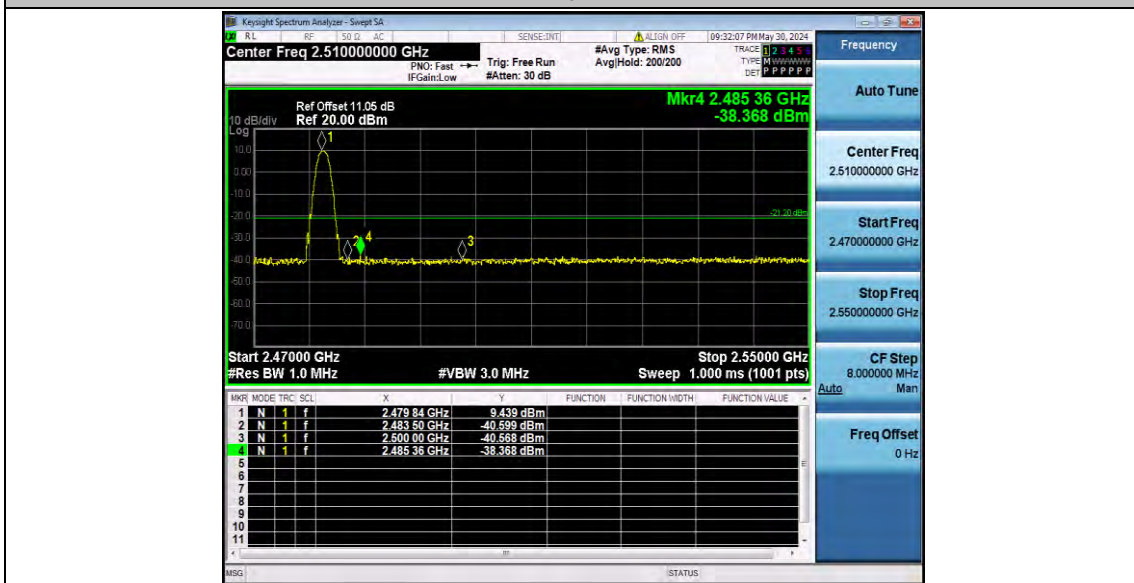
1. The Antenna Gain is compensated in the graph.
2. The Duty Cycle Factor and RBW Factor is compensated in the graph.
3. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs





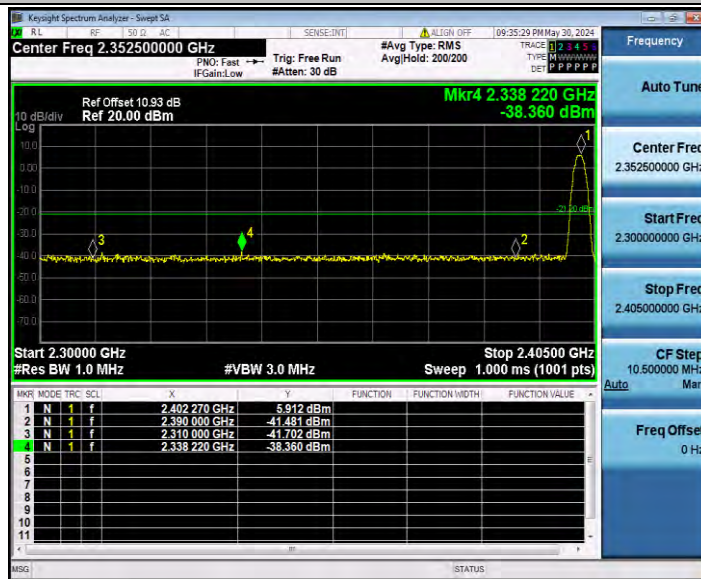
DH1_Ant1_High_2480_Peak



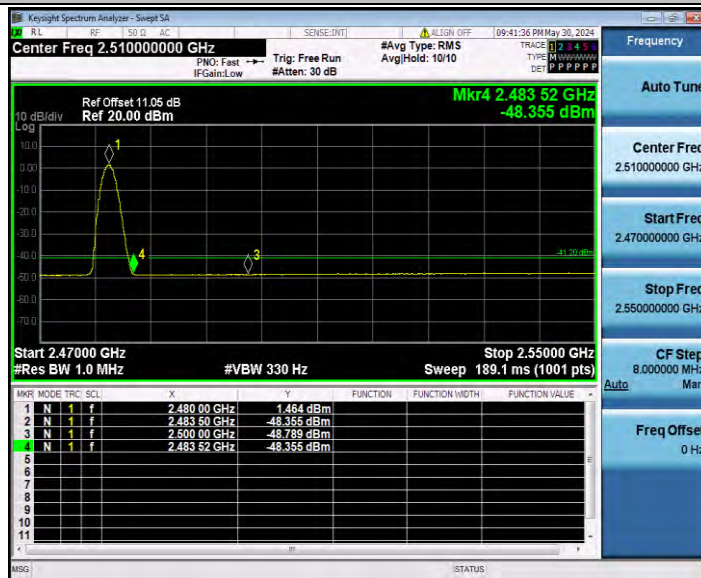
2DH1_Ant1_Low_2402_AV



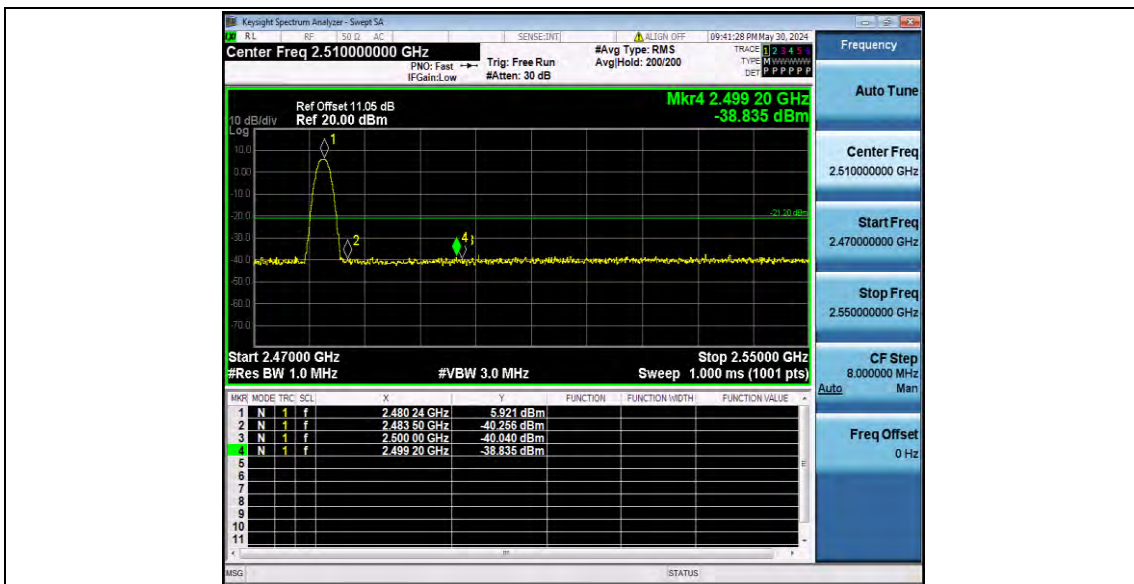
2DH1_Ant1_Low_2402_Peak



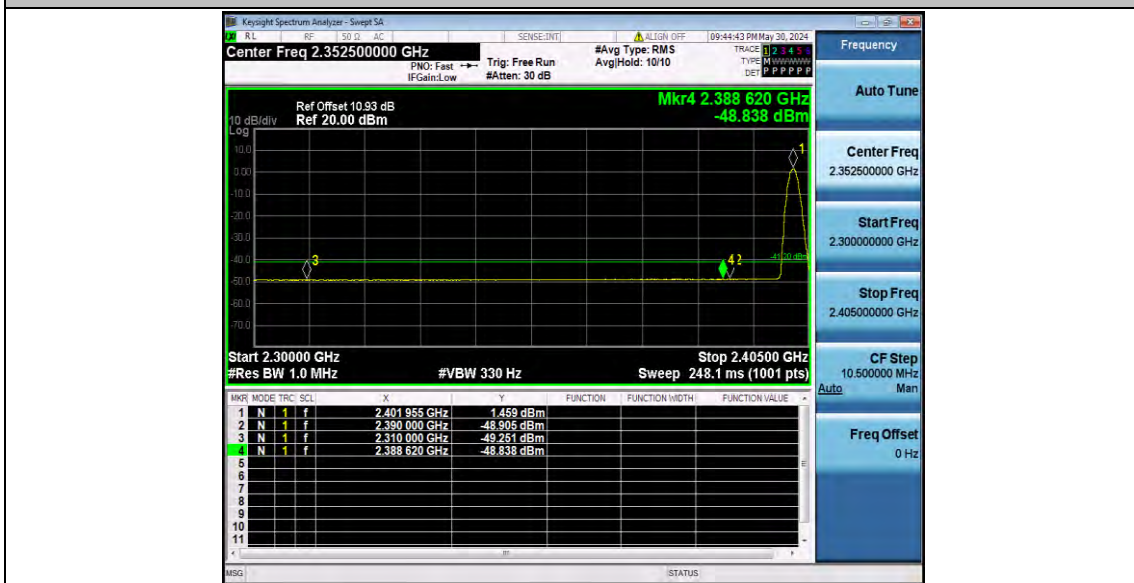
2DH1_Ant1_High_2480_AV



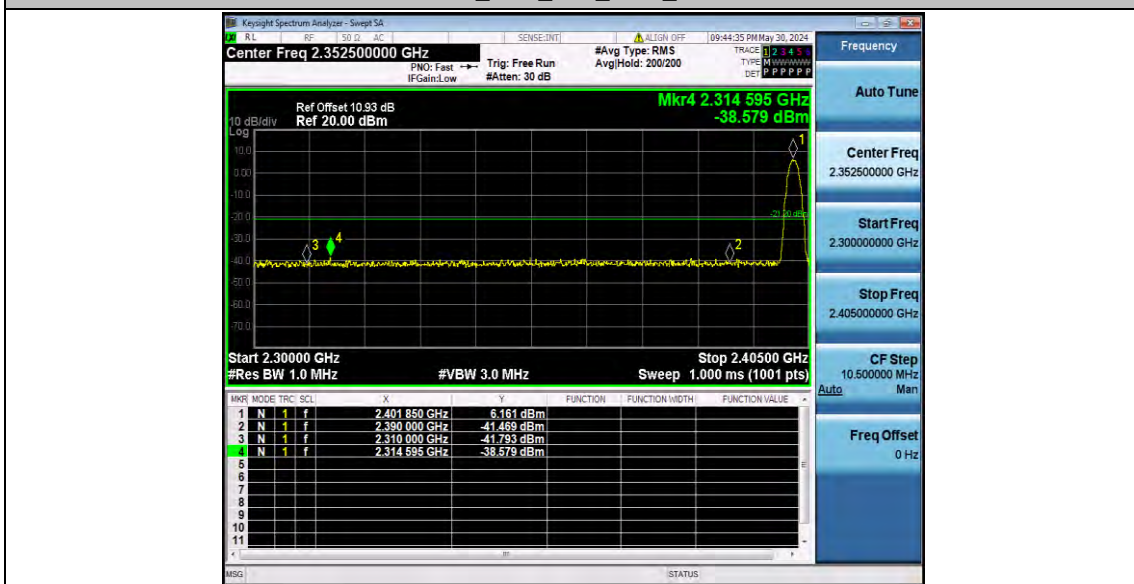
2DH1_Ant1_High_2480_Peak



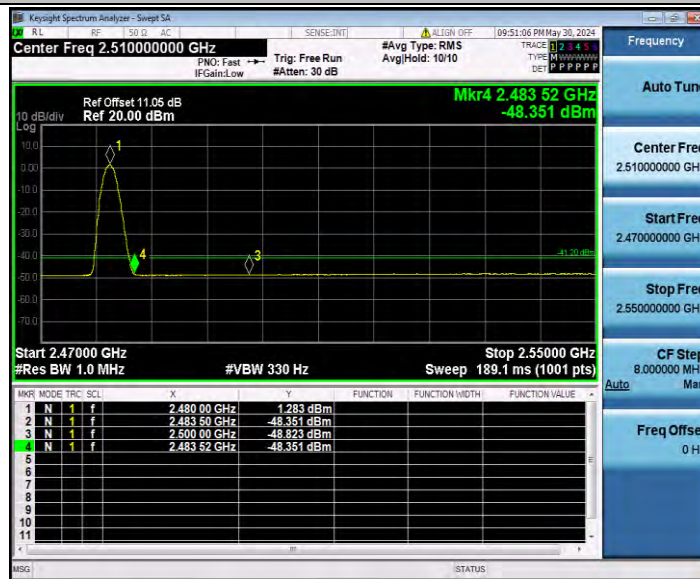
3DH1_Ant1_Low_2402_AV



3DH1_Ant1_Low_2402_Peak



3DH1_Ant1_High_2480_AV



3DH1_Ant1_High_2480_Peak

