

Case No. : <u>CTA24071502301</u>
Ambient Condition: <u>23</u> °C, <u>52</u> %RH
According Standard: ■Part15C
Test Date: <u>2024.7.31</u> Test Engineer: <u>Lushan Kong</u>

Appendix A.1: 20dB Emission Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.795	2401.598	2402.393	---	---
		2441	0.858	2440.553	2441.411	---	---
		2480	0.795	2479.604	2480.399	---	---
2DH1	Ant1	2402	1.263	2401.364	2402.627	---	---
		2441	1.248	2440.367	2441.615	---	---
		2480	1.206	2479.376	2480.582	---	---
3DH1	Ant1	2402	1.230	2401.391	2402.621	---	---
		2441	1.221	2440.394	2441.615	---	---
		2480	1.203	2479.397	2480.600	---	---

Test Graphs





2DH1_Ant1_2402



2DH1_Ant1_2441



2DH1_Ant1_2480



3DH1_Ant1_2402



3DH1_Ant1_2441



3DH1_Ant1_2480

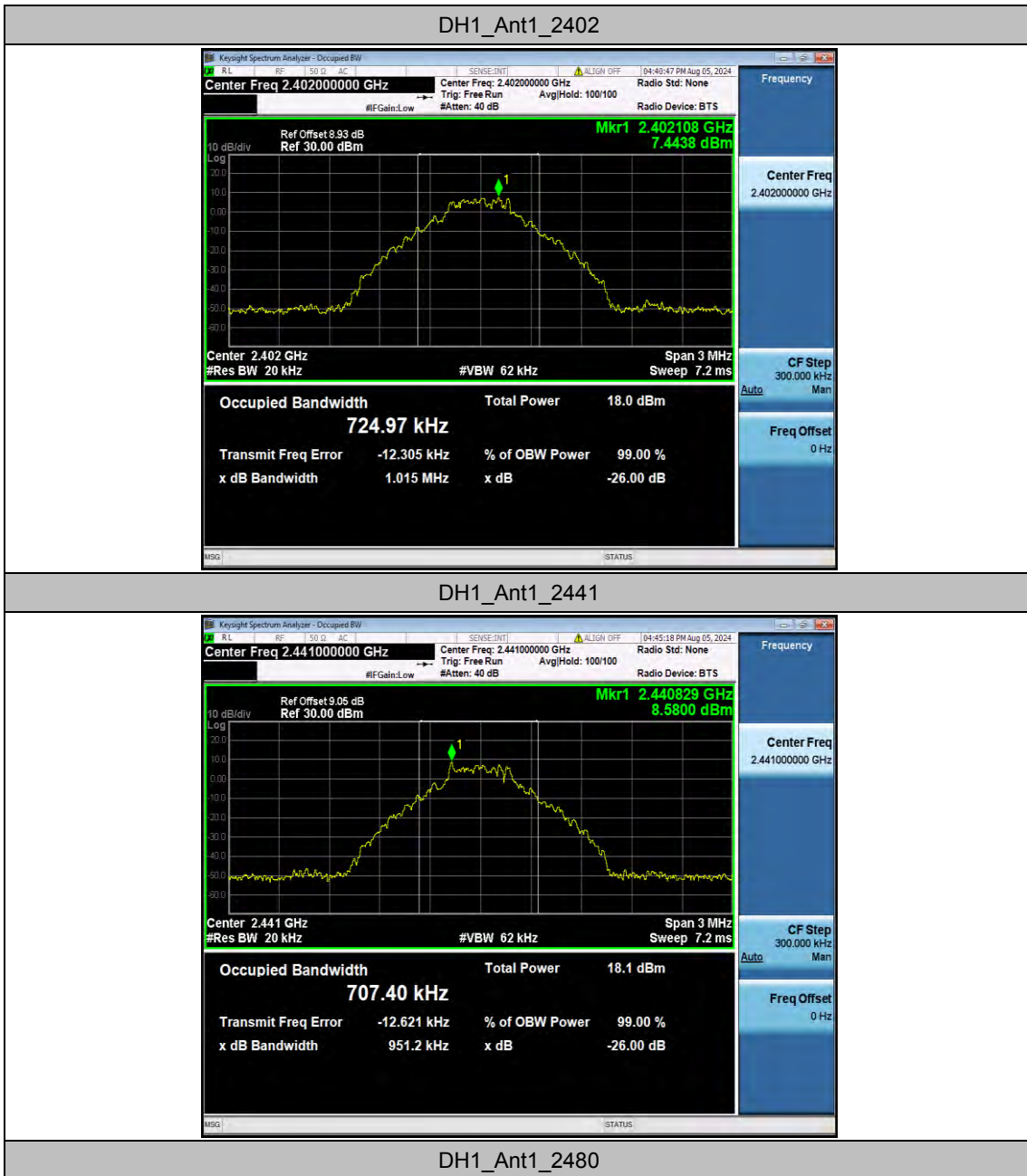


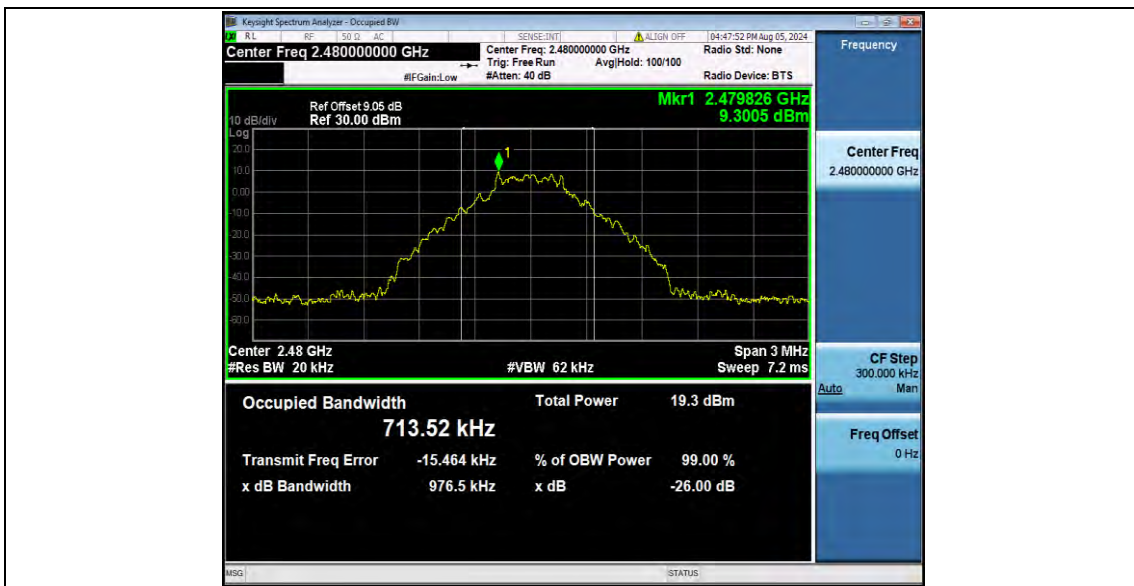
Appendix A.2: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.72497	2401.6252	2402.3502	---	---
		2441	0.70740	2440.6337	2441.3411	---	---
		2480	0.71352	2479.6278	2480.3413	---	---
2DH1	Ant1	2402	1.1266	2401.4294	2402.5560	---	---
		2441	1.1204	2440.4285	2441.5489	---	---
		2480	1.1317	2479.4276	2480.5593	---	---
3DH1	Ant1	2402	1.1302	2401.4372	2402.5674	---	---
		2441	1.1323	2440.4375	2441.5698	---	---
		2480	1.1313	2479.4360	2480.5673	---	---

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

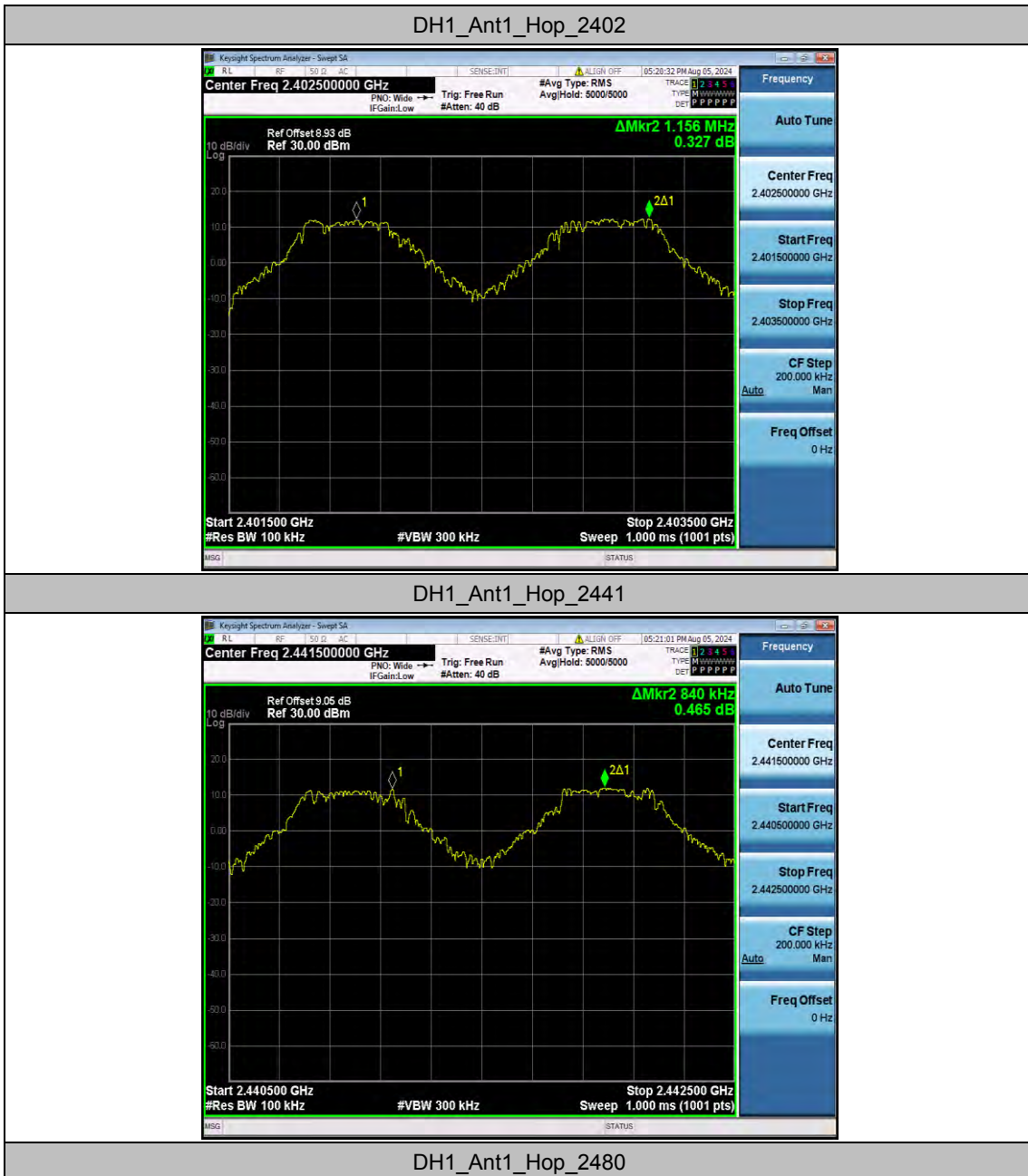
Test Mode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH1	Ant1	2402	12.66	≤20.97	PASS
		2441	12.19	≤20.97	PASS
		2480	13.86	≤20.97	PASS
2DH1	Ant1	2402	11.75	≤20.97	PASS
		2441	11.36	≤20.97	PASS
		2480	12.71	≤20.97	PASS
3DH1	Ant1	2402	11.63	≤20.97	PASS
		2441	11.29	≤20.97	PASS
		2480	12.57	≤20.97	PASS

Appendix A.4: Carrier frequency separation

Test Result

TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Hop_2402	1.156	≥ 0.572	PASS
		Hop_2441	0.84	≥ 0.572	PASS
		Hop_2480	0.864	≥ 0.572	PASS
2DH1	Ant1	Hop_2402	1.226	≥ 0.842	PASS
		Hop_2441	0.988	≥ 0.842	PASS
		Hop_2480	1.02	≥ 0.842	PASS
3DH1	Ant1	Hop_2402	1.012	≥ 0.820	PASS
		Hop_2441	0.994	≥ 0.820	PASS
		Hop_2480	1.002	≥ 0.820	PASS

Test Graphs


DH1_Ant1_Hop_2441
DH1_Ant1_Hop_2480



2DH1_Ant1_Hop_2402



2DH1_Ant1_Hop_2441



2DH1_Ant1_Hop_2480



3DH1_Ant1_Hop_2402



3DH1_Ant1_Hop_2441



3DH1_Ant1_Hop_2480

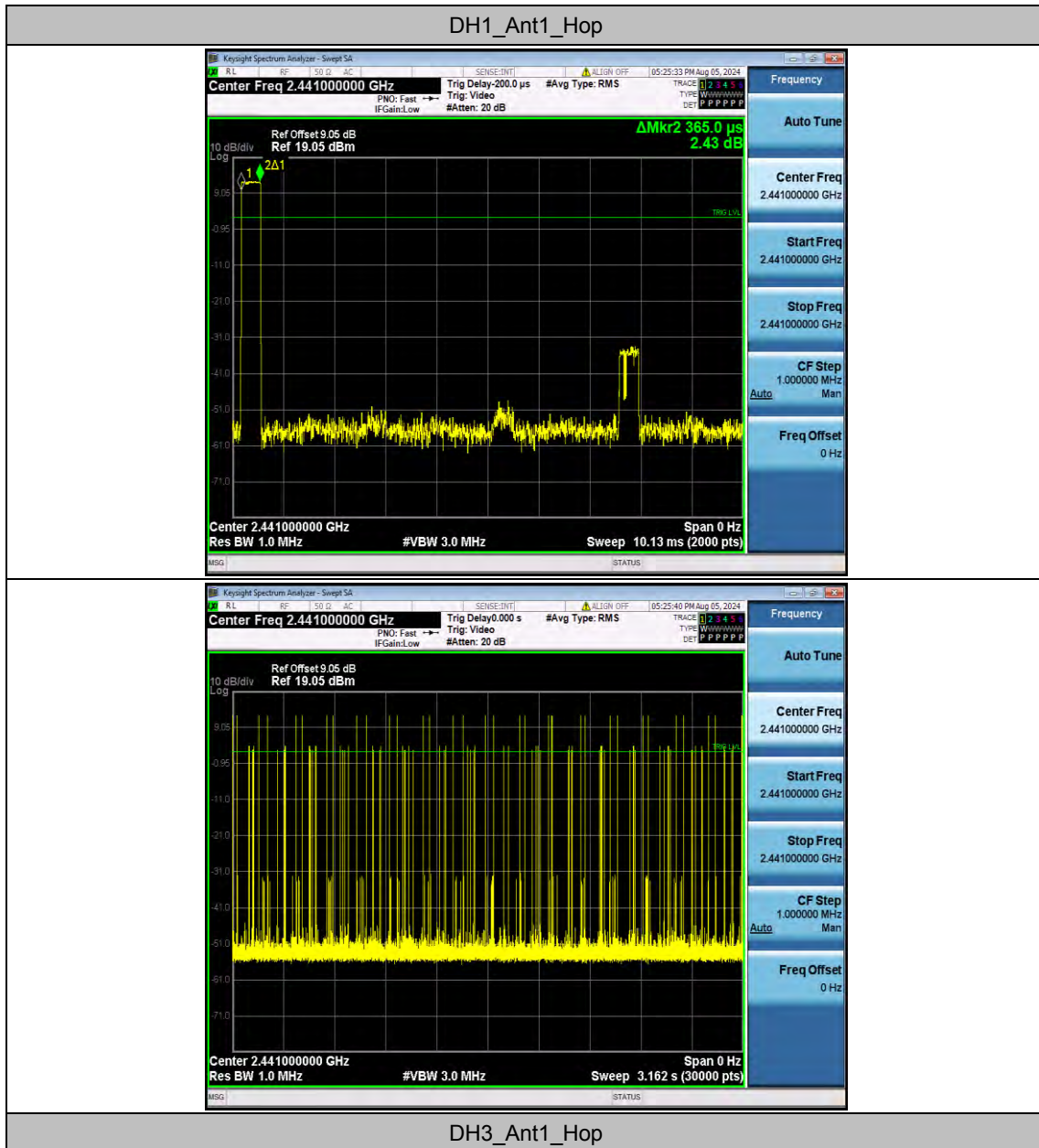


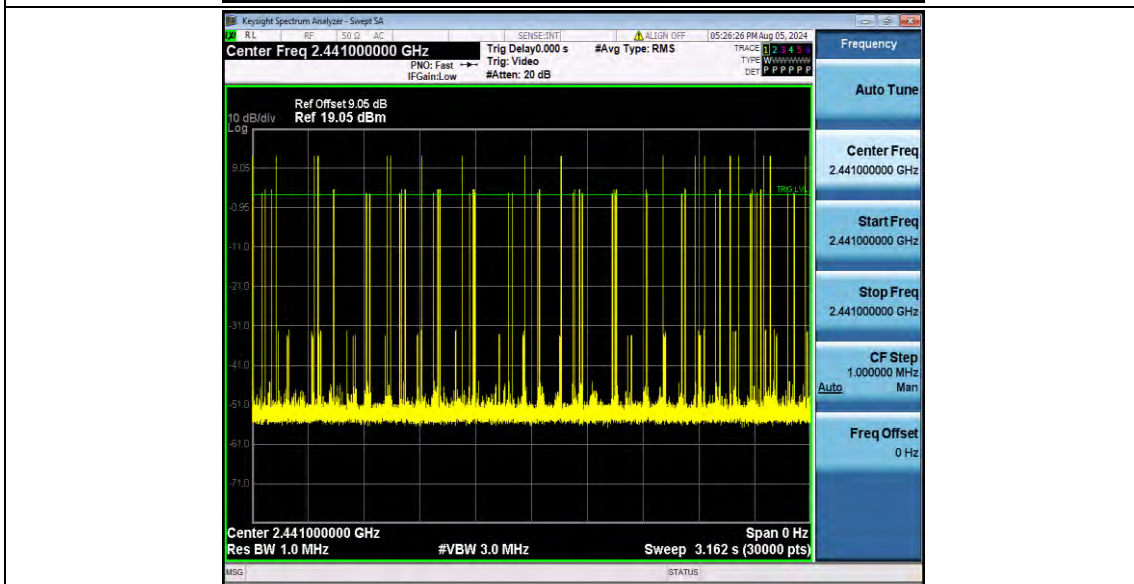
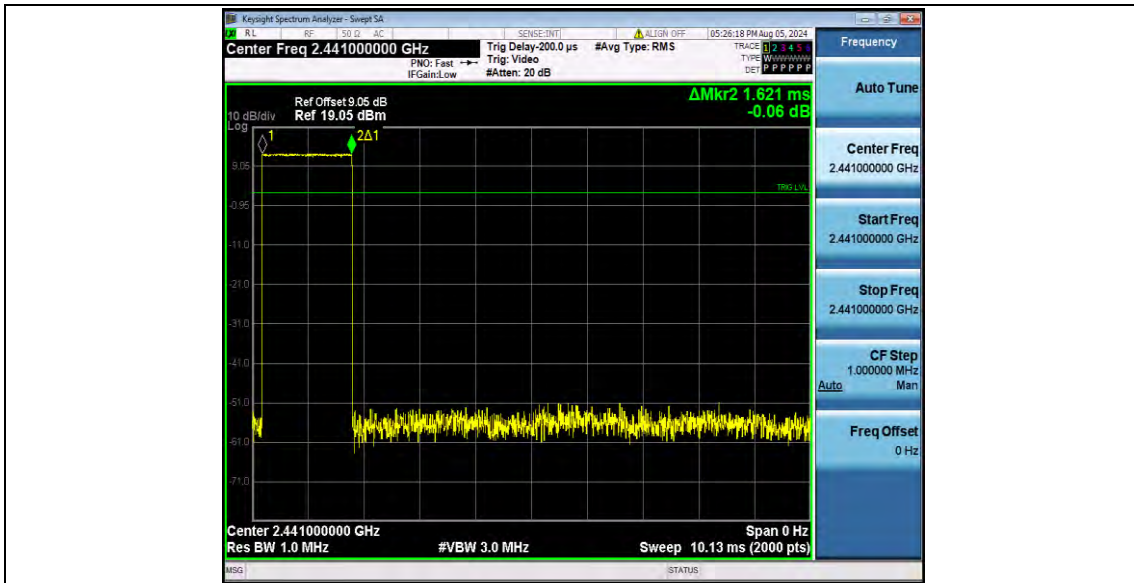
Appendix A.5: Time of occupancy

Test Result

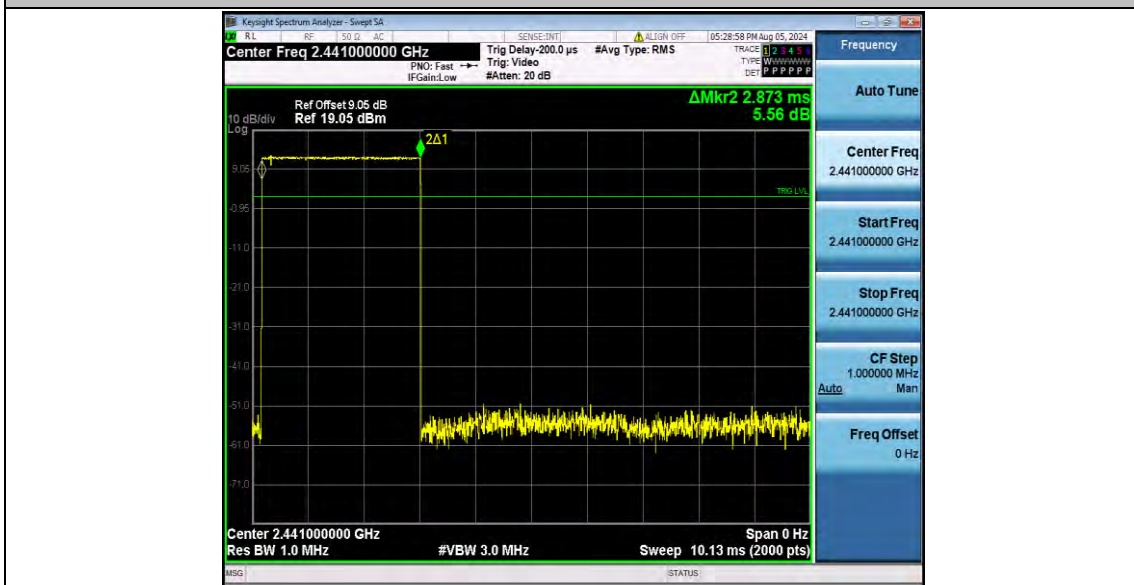
TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.365	330	0.12	≤0.4	PASS
DH3	Ant1	Hop	1.621	180	0.292	≤0.4	PASS
DH5	Ant1	Hop	2.873	80	0.23	≤0.4	PASS
2DH1	Ant1	Hop	0.375	330	0.124	≤0.4	PASS
2DH3	Ant1	Hop	1.626	160	0.26	≤0.4	PASS
2DH5	Ant1	Hop	2.873	120	0.345	≤0.4	PASS
3DH1	Ant1	Hop	0.375	320	0.12	≤0.4	PASS
3DH3	Ant1	Hop	1.626	180	0.293	≤0.4	PASS
3DH5	Ant1	Hop	2.873	110	0.316	≤0.4	PASS

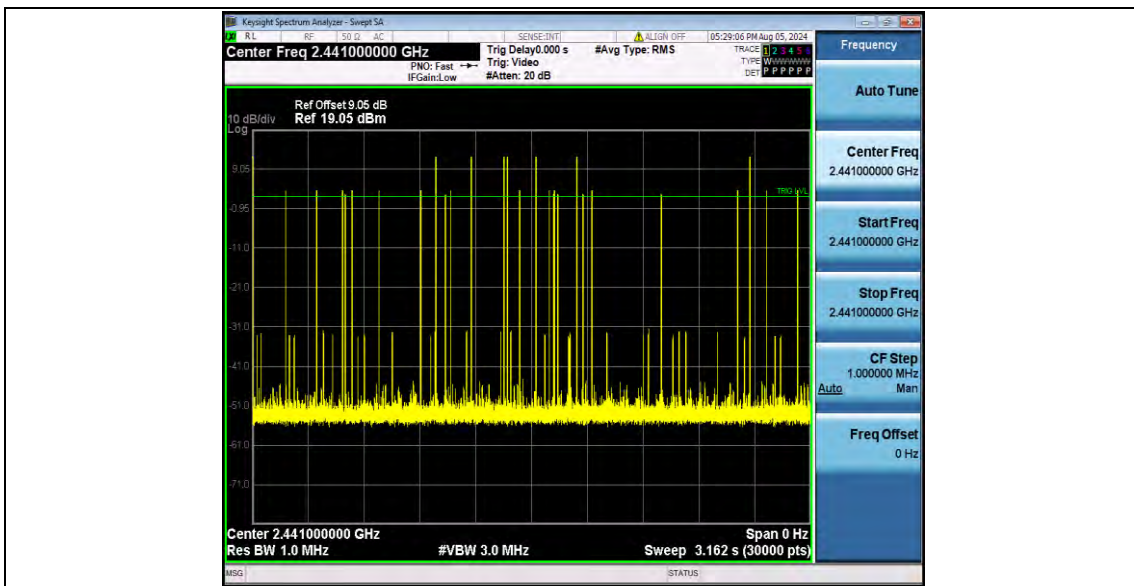
Test Graphs



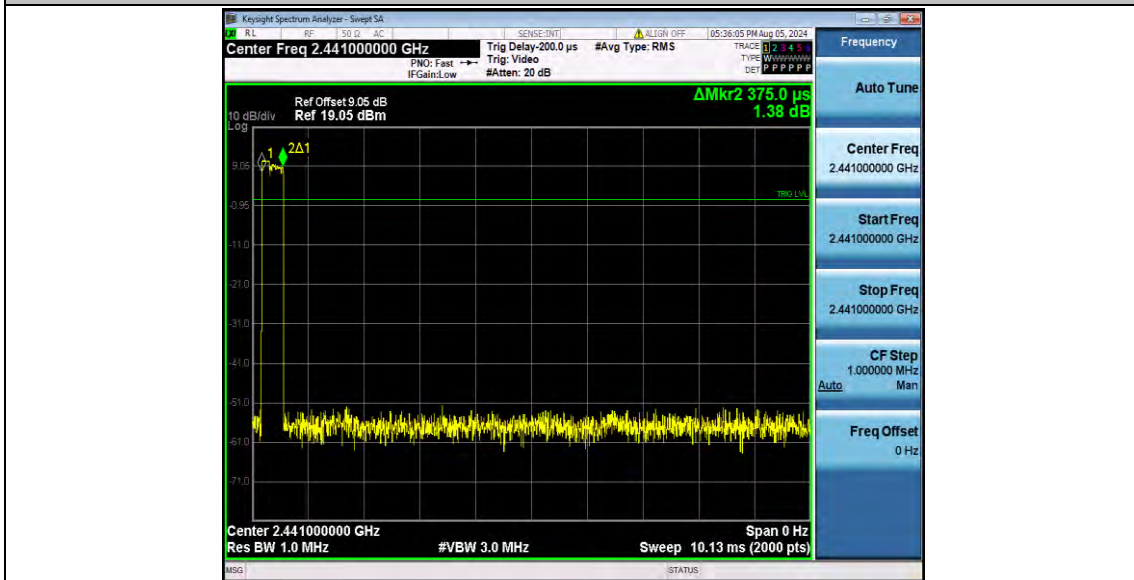


DH5_Ant1_Hop

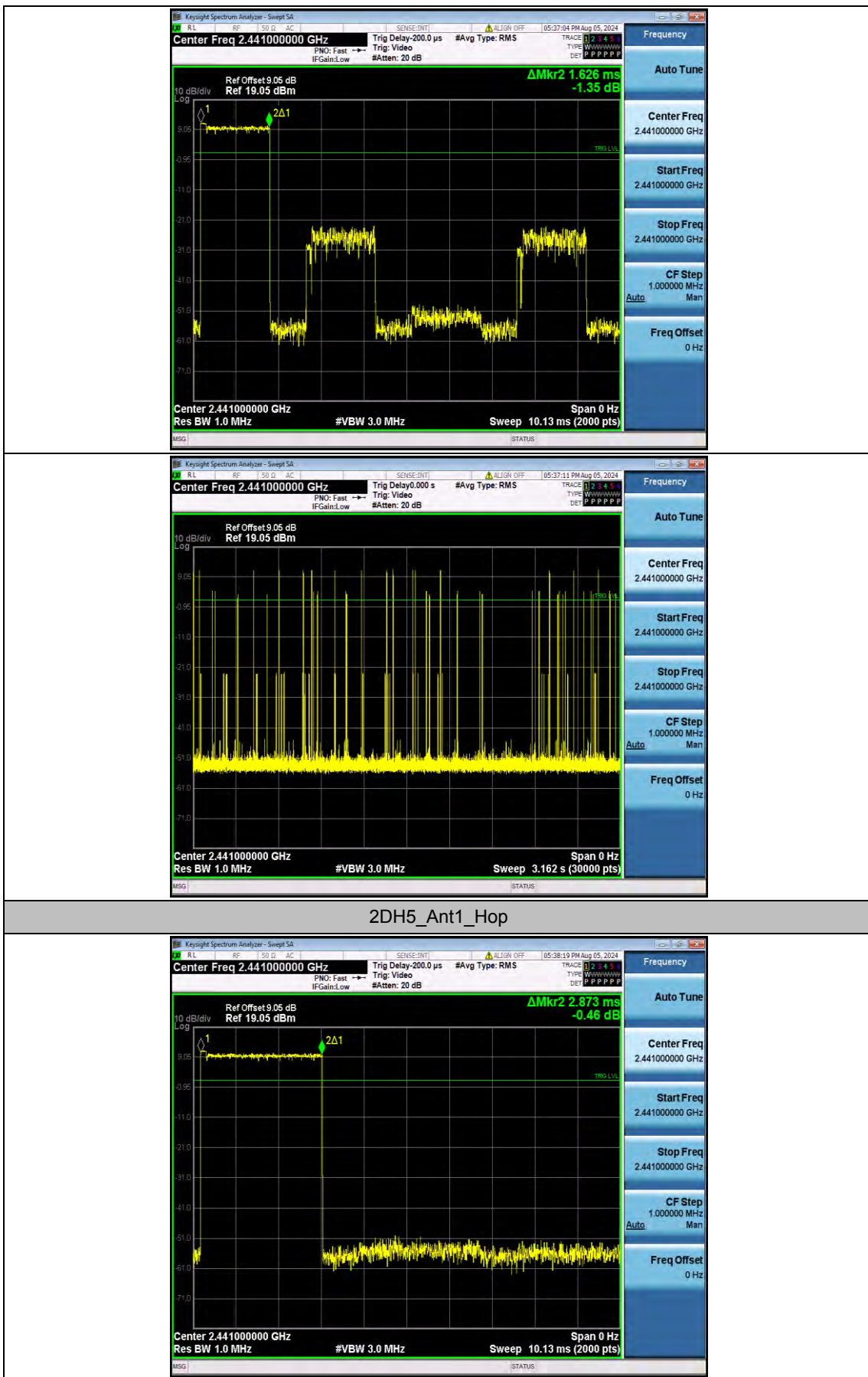




2DH1_Ant1_Hop

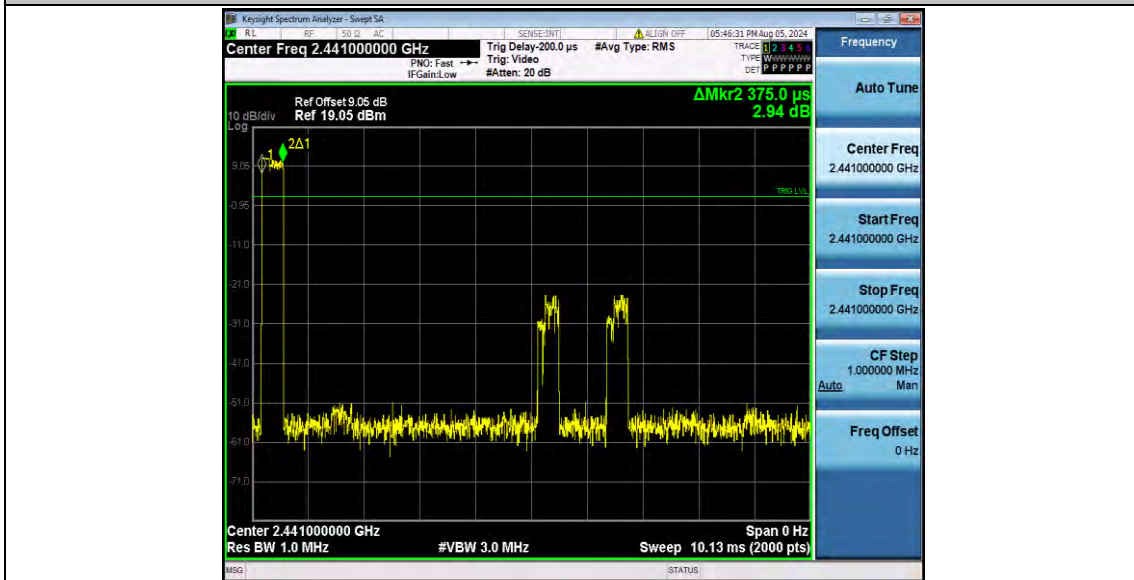


2DH3_Ant1_Hop



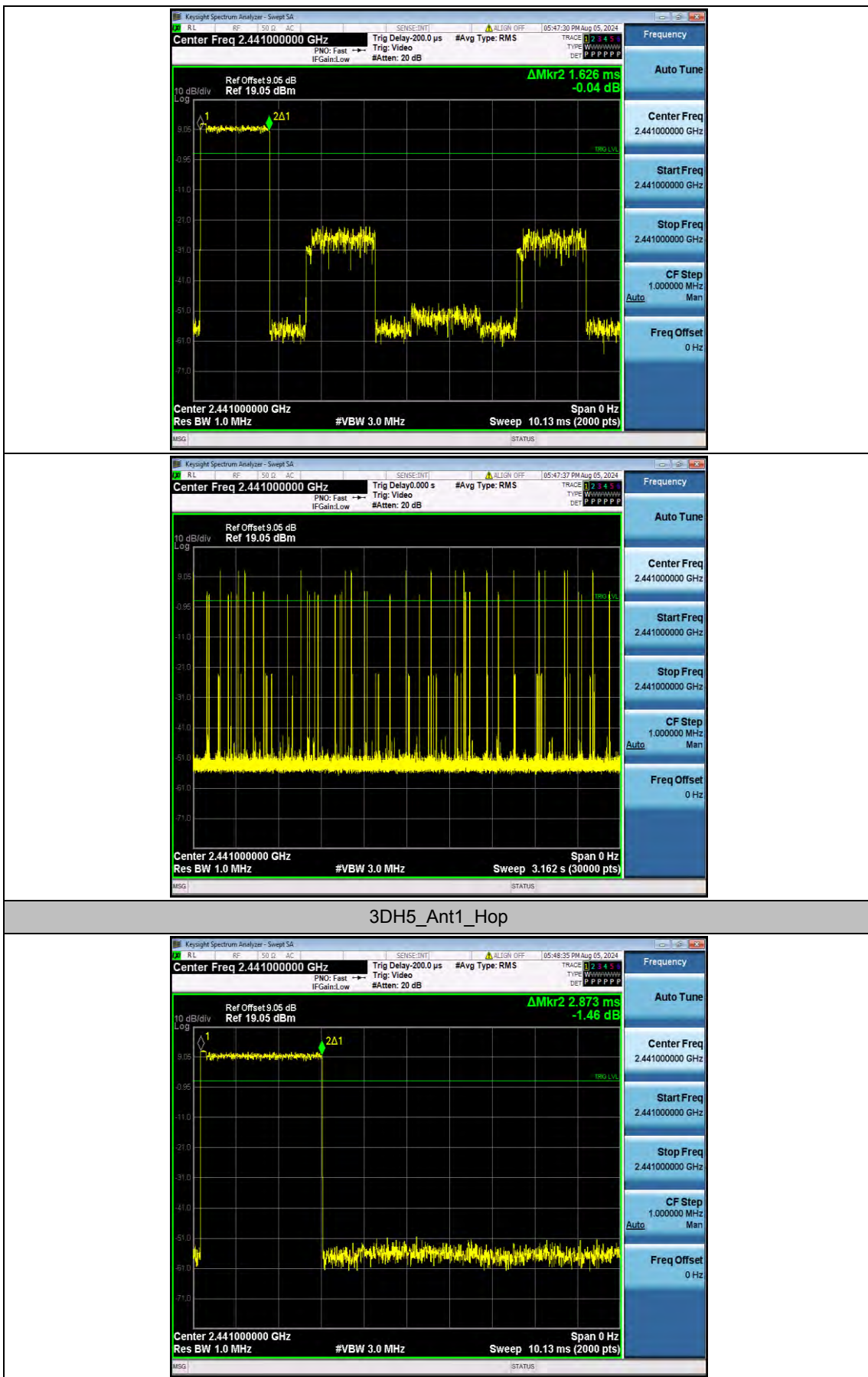


3DH1_Ant1_Hop

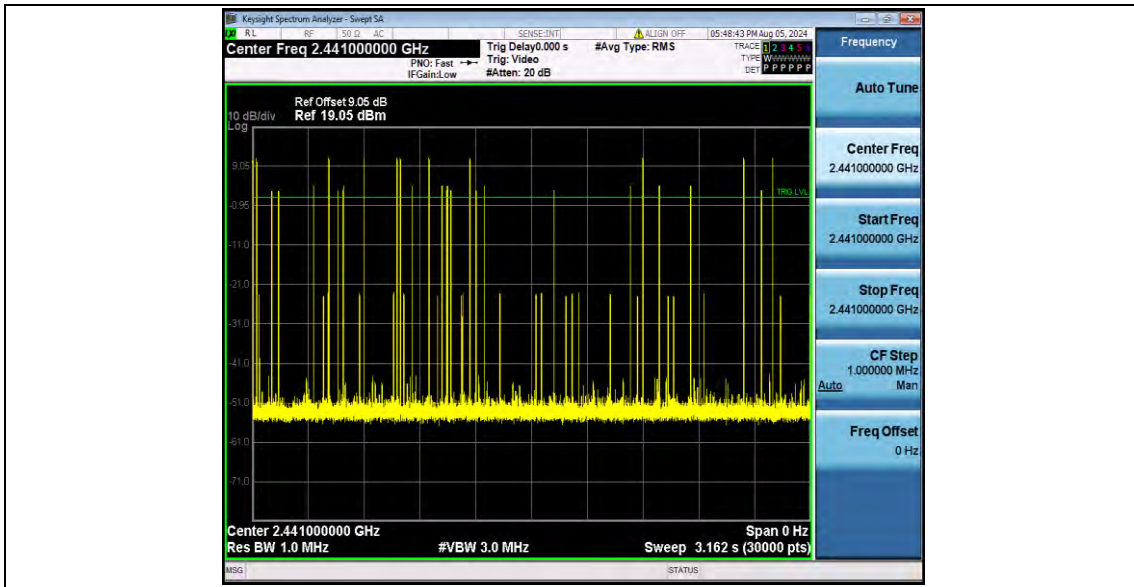


3DH3_Ant1_Hop





3DH5_Ant1_Hop

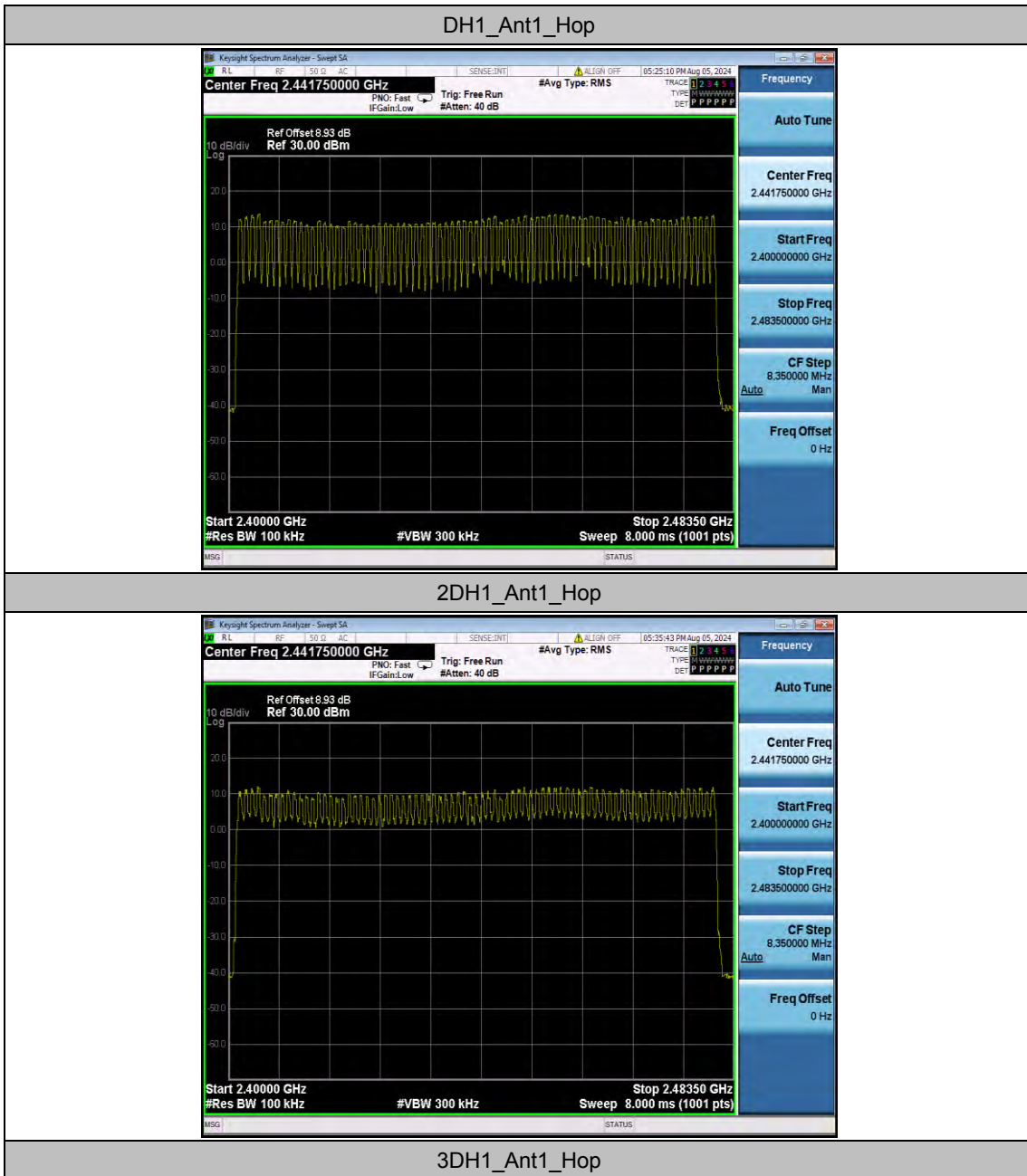


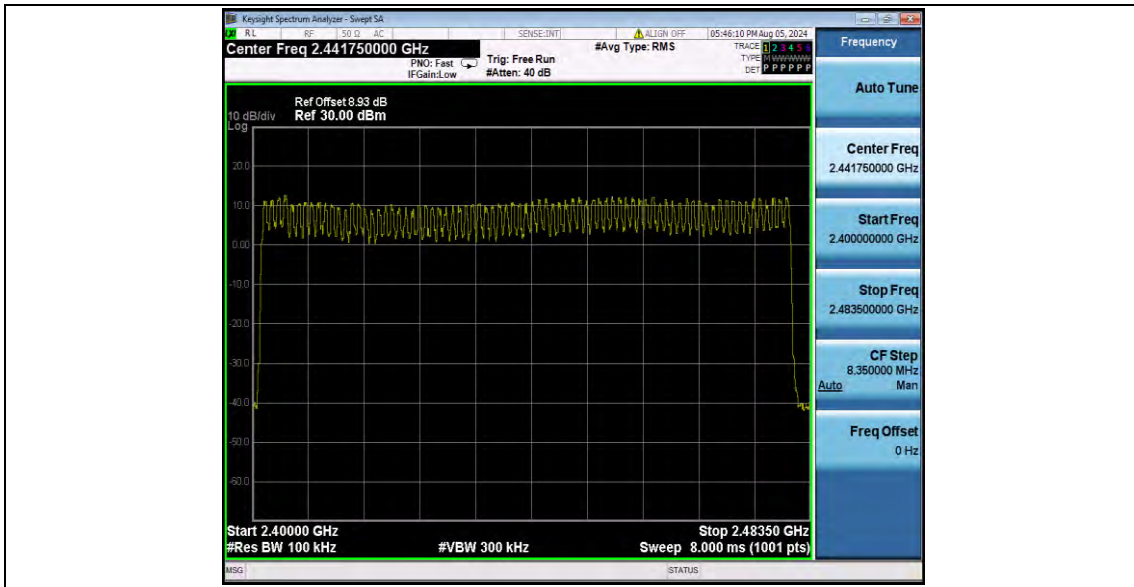
Appendix A.6: Number of hopping channels

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



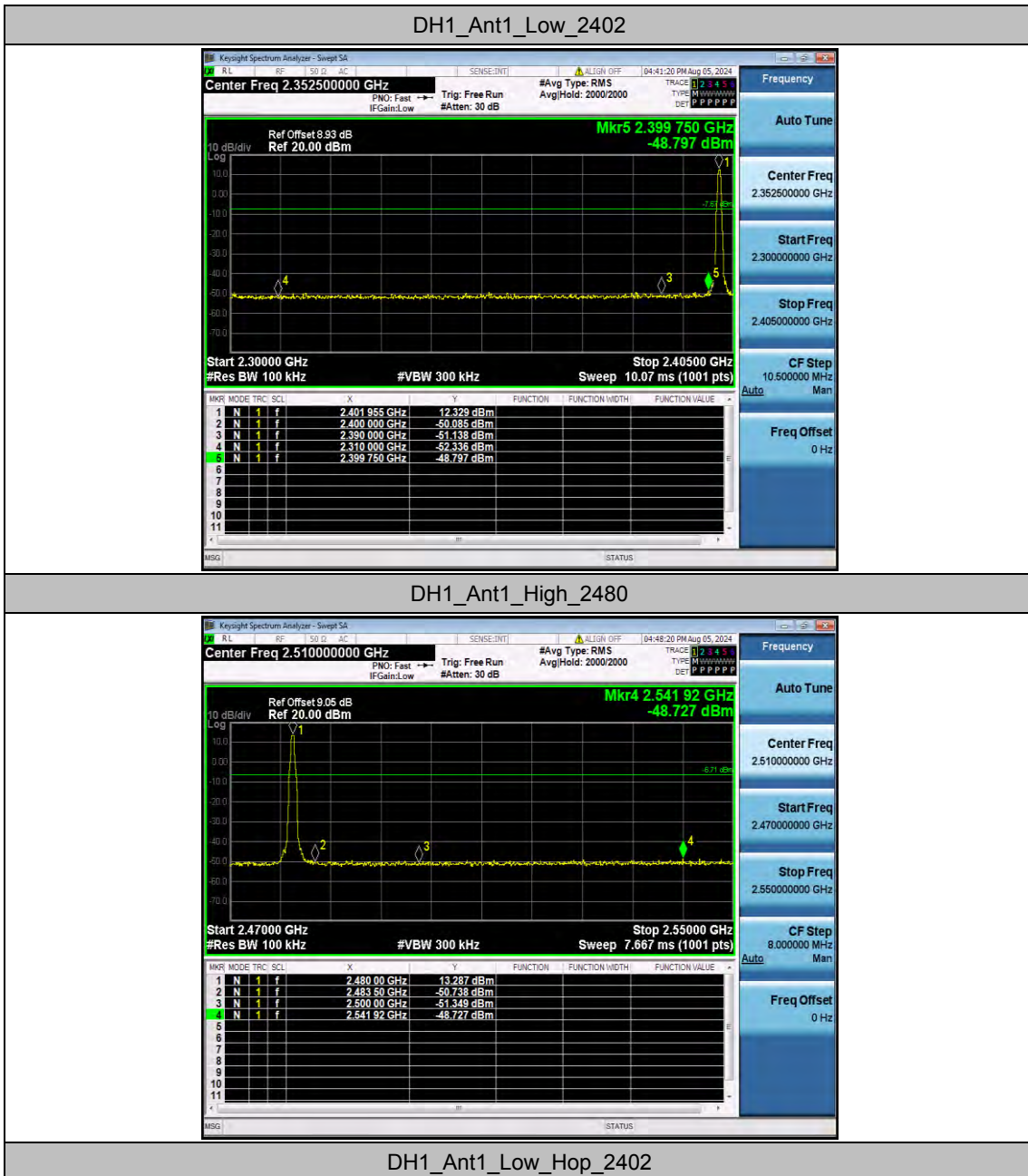


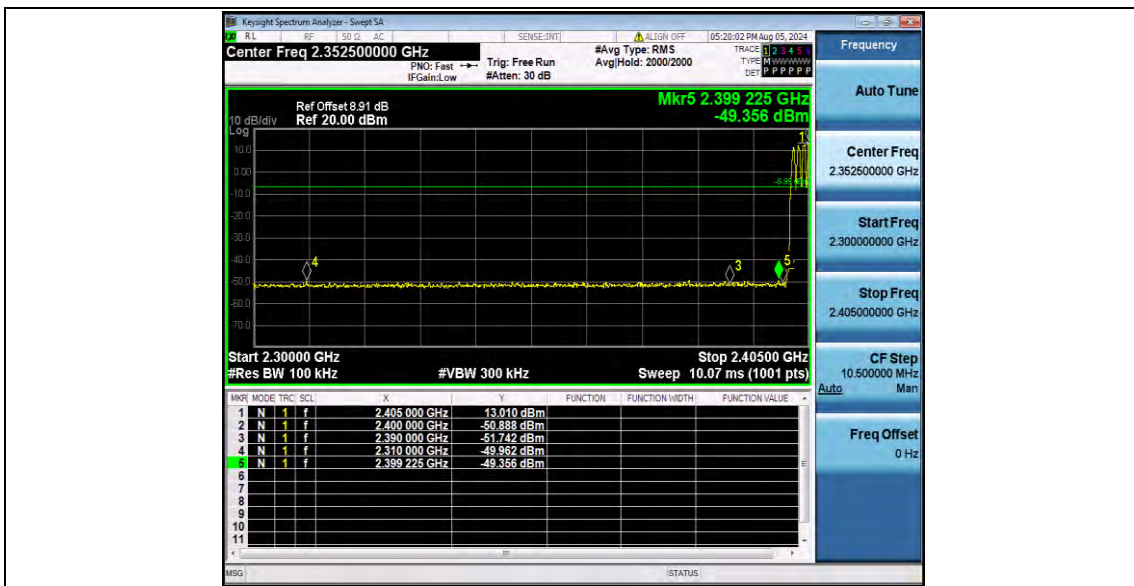
Appendix A.7: Band edge measurements

Test Result

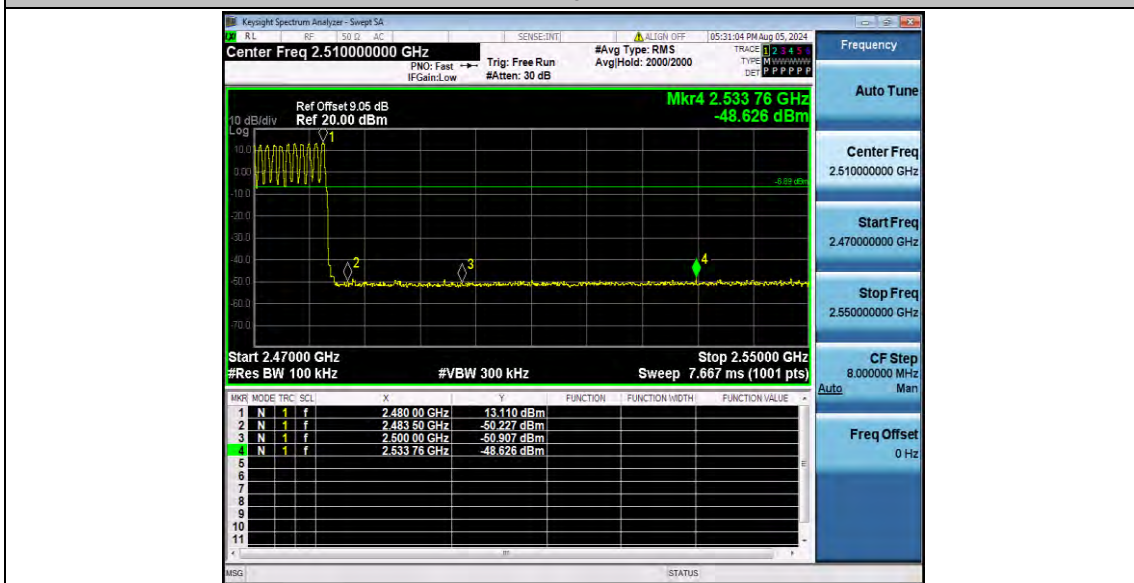
TestMode	Antenna	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	Low	2402	12.33	-48.8	≤ -7.67	PASS
		High	2480	13.29	-48.73	≤ -6.71	PASS
		Low	Hop_2402	13.01	-49.36	≤ -6.99	PASS
		High	Hop_2480	13.11	-48.63	≤ -6.89	PASS
2DH1	Ant1	Low	2402	11.35	-48.89	≤ -8.65	PASS
		High	2480	12.41	-48.46	≤ -7.59	PASS
		Low	Hop_2402	11.48	-49.28	≤ -8.52	PASS
		High	Hop_2480	12.19	-48.01	≤ -7.81	PASS
3DH1	Ant1	Low	2402	11.23	-49.32	≤ -8.77	PASS
		High	2480	12.32	-48.93	≤ -7.68	PASS
		Low	Hop_2402	12.13	-49.76	≤ -7.87	PASS
		High	Hop_2480	12.35	-48.9	≤ -7.66	PASS

Test Graphs

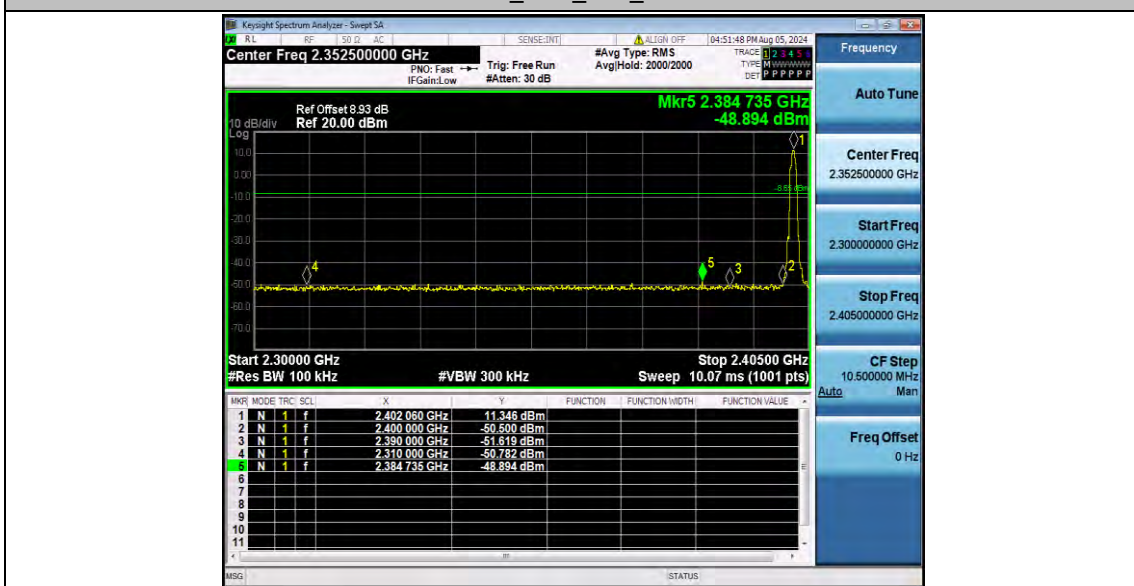




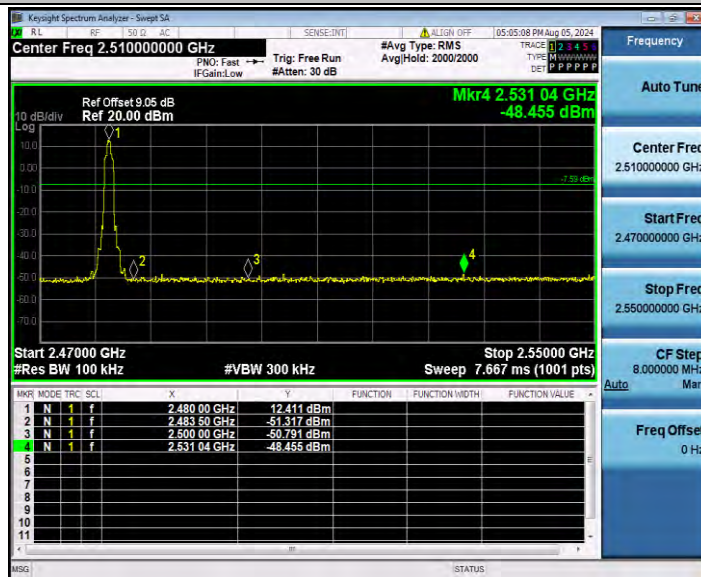
DH1_Ant1_High_Hop_2480



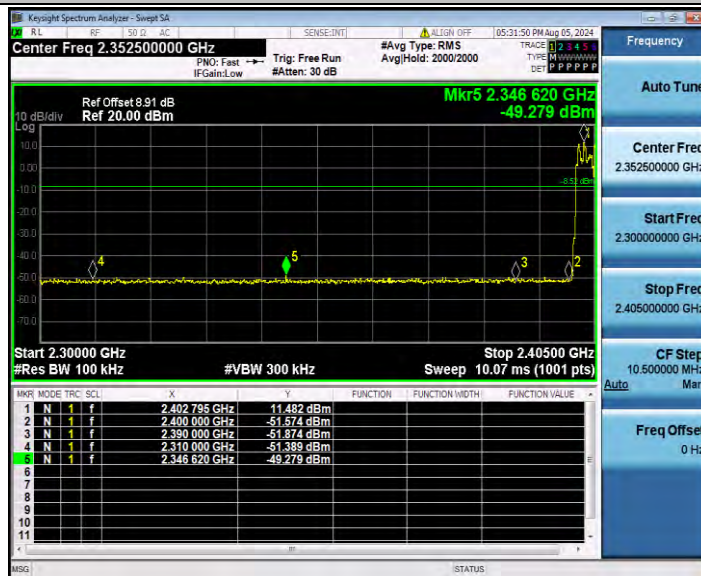
2D11_Ant1_Low_2402



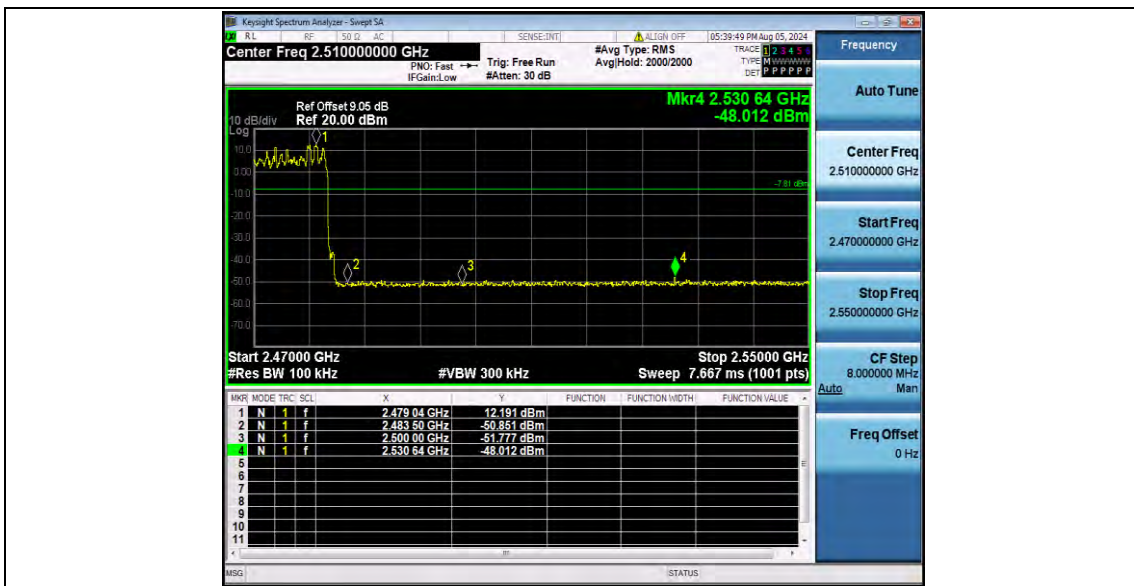
2DH1_Ant1_High_2480



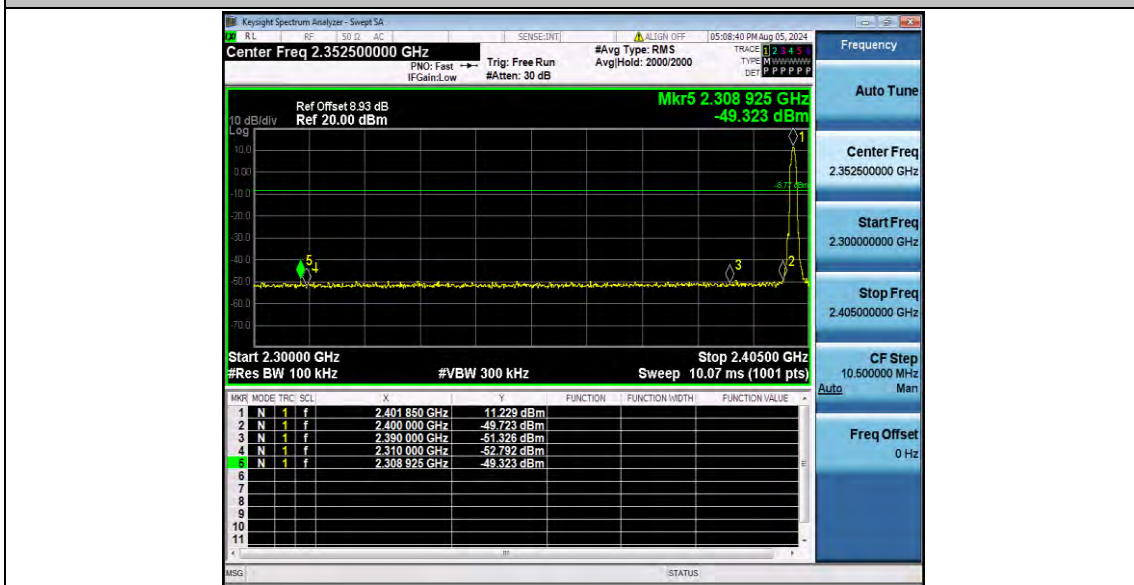
2DH1_Ant1_Low_Hop_2402



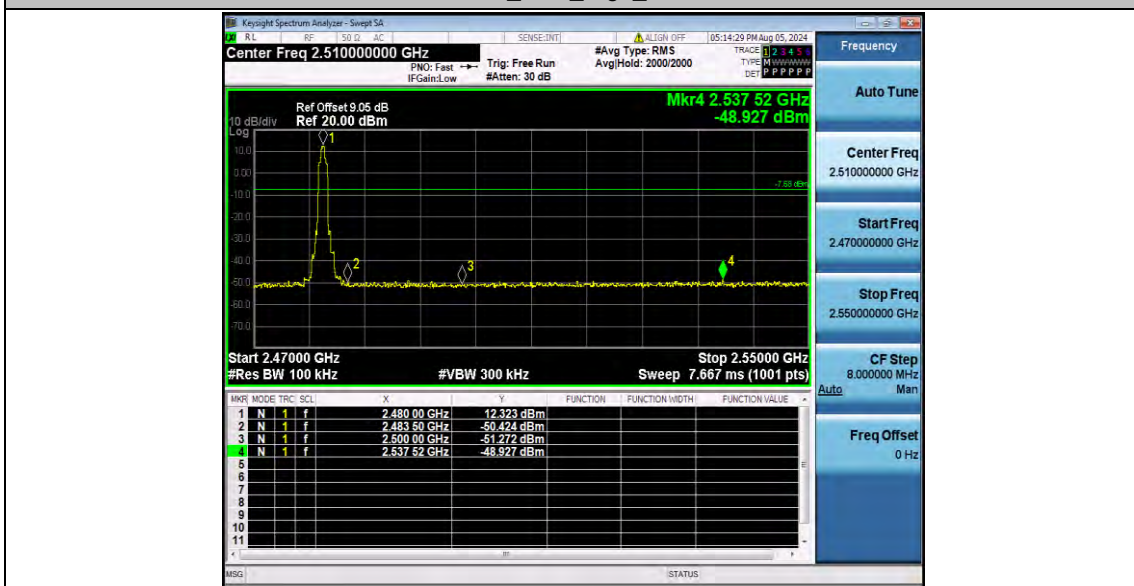
2DH1_Ant1_High_Hop_2480



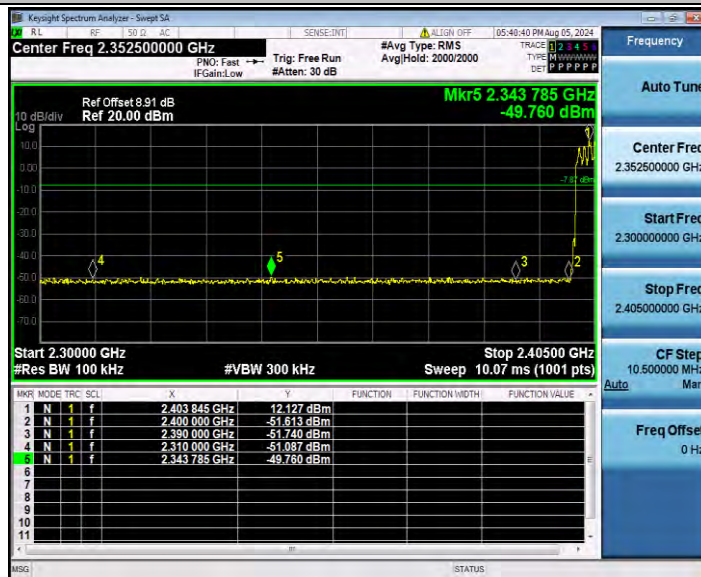
3D H1_Ant1_Low_2402



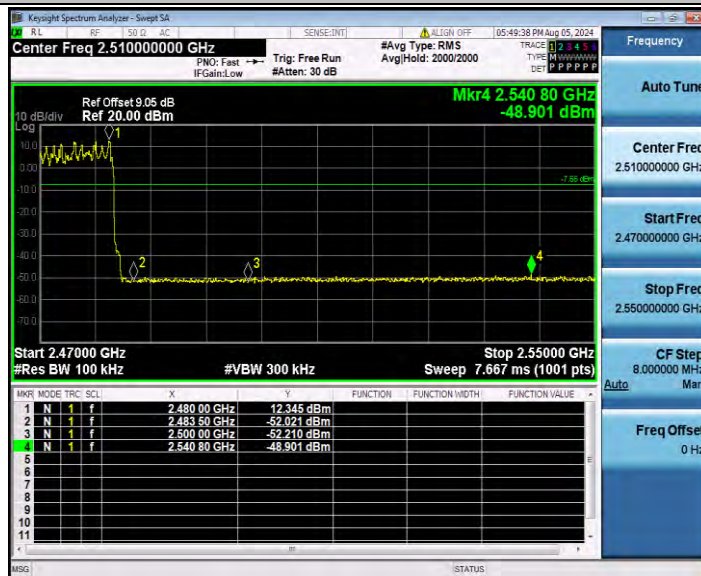
3D H1_Ant1_High_2480



3DH1_Ant1_Low_Hop_2402



3DH1_Ant1_High_Hop_2480

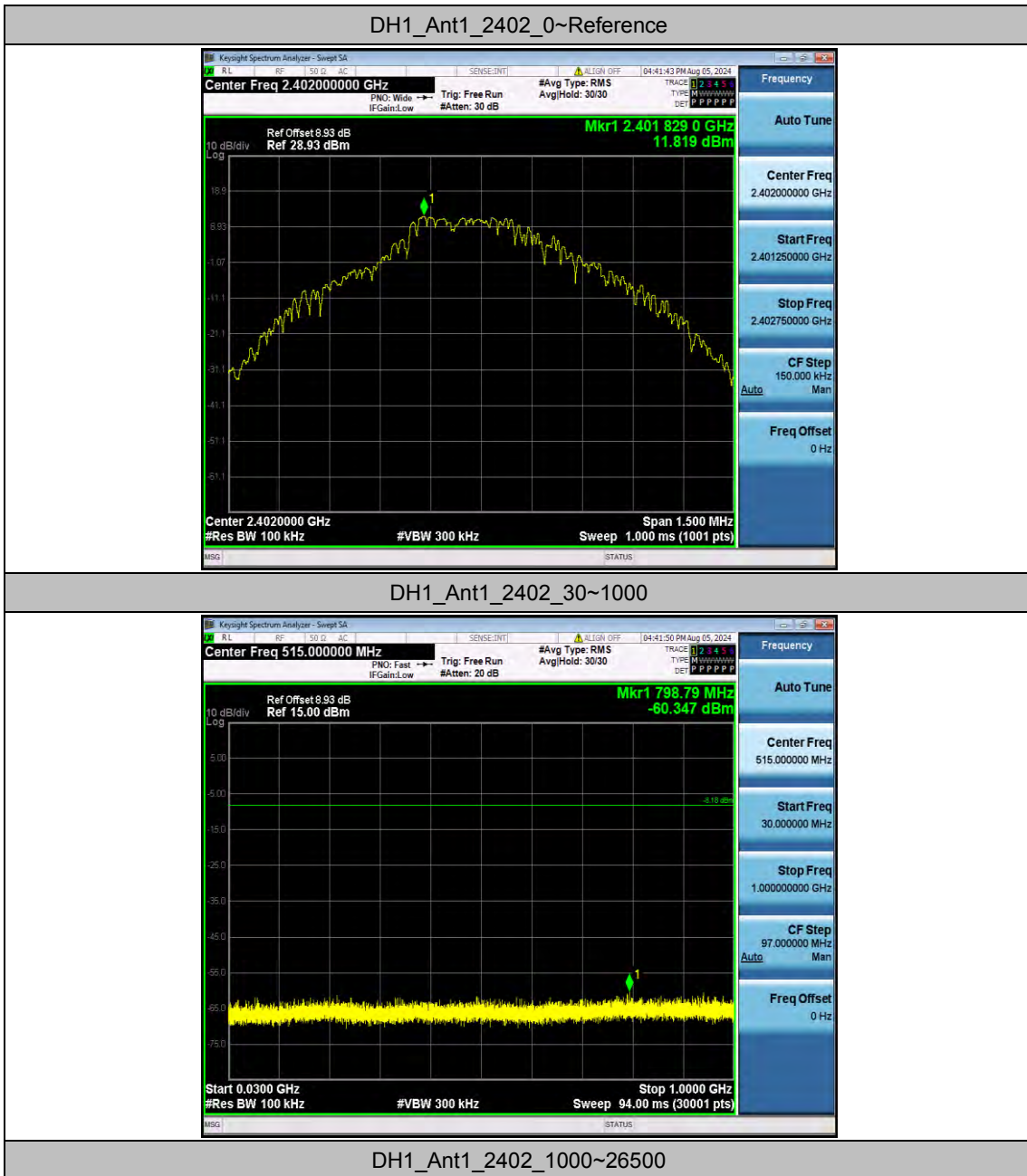


Appendix A.8: Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	2402	Reference	11.82	11.82	---	PASS
			30~1000	11.82	-60.35	≤ -8.18	PASS
			1000~26500	11.82	-47.92	≤ -8.18	PASS
		2441	Reference	11.41	11.41	---	PASS
			30~1000	11.41	-44.19	≤ -8.59	PASS
			1000~26500	11.41	-44.73	≤ -8.59	PASS
		2480	Reference	12.77	12.77	---	PASS
			30~1000	12.77	-42.17	≤ -7.23	PASS
			1000~26500	12.77	-47.37	≤ -7.23	PASS
2DH1	Ant1	2402	Reference	10.76	10.76	---	PASS
			30~1000	10.76	-60.01	≤ -9.24	PASS
			1000~26500	10.76	-48.04	≤ -9.24	PASS
		2441	Reference	10.63	10.63	---	PASS
			30~1000	10.63	-51.24	≤ -9.37	PASS
			1000~26500	10.63	-48.05	≤ -9.37	PASS
		2480	Reference	12.28	12.28	---	PASS
			30~1000	12.28	-60.41	≤ -7.72	PASS
			1000~26500	12.28	-47.52	≤ -7.72	PASS
3DH1	Ant1	2402	Reference	10.66	10.66	---	PASS
			30~1000	10.66	-60.9	≤ -9.34	PASS
			1000~26500	10.66	-48.2	≤ -9.34	PASS
		2441	Reference	10.17	10.17	---	PASS
			30~1000	10.17	-59.84	≤ -9.83	PASS
			1000~26500	10.17	-47.93	≤ -9.83	PASS
		2480	Reference	12.25	12.25	---	PASS
			30~1000	12.25	-53.11	≤ -7.75	PASS
			1000~26500	12.25	-46.93	≤ -7.75	PASS

Test Graphs

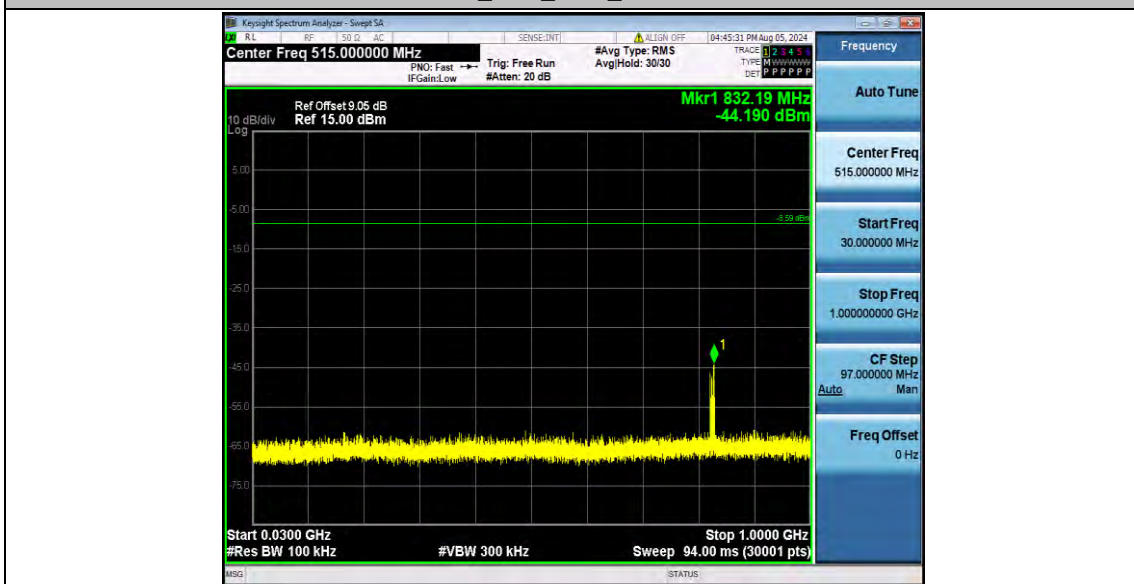




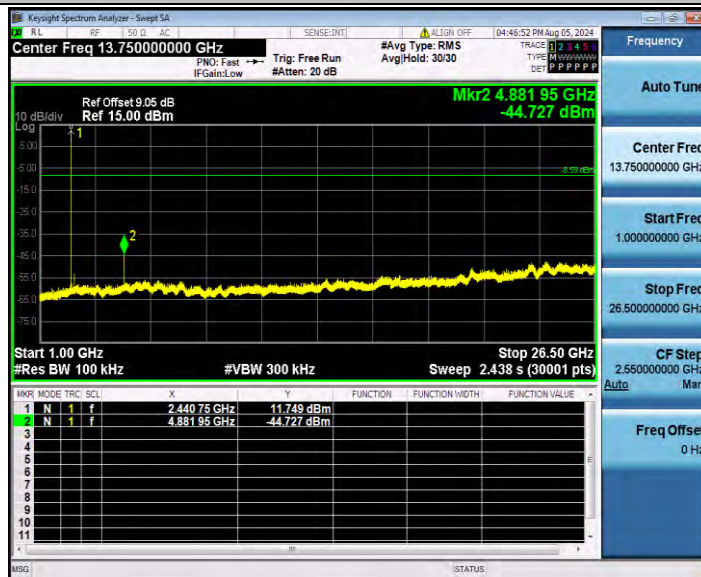
DH1_Ant1_2441_0~Reference



DH1_Ant1_2441_30~1000



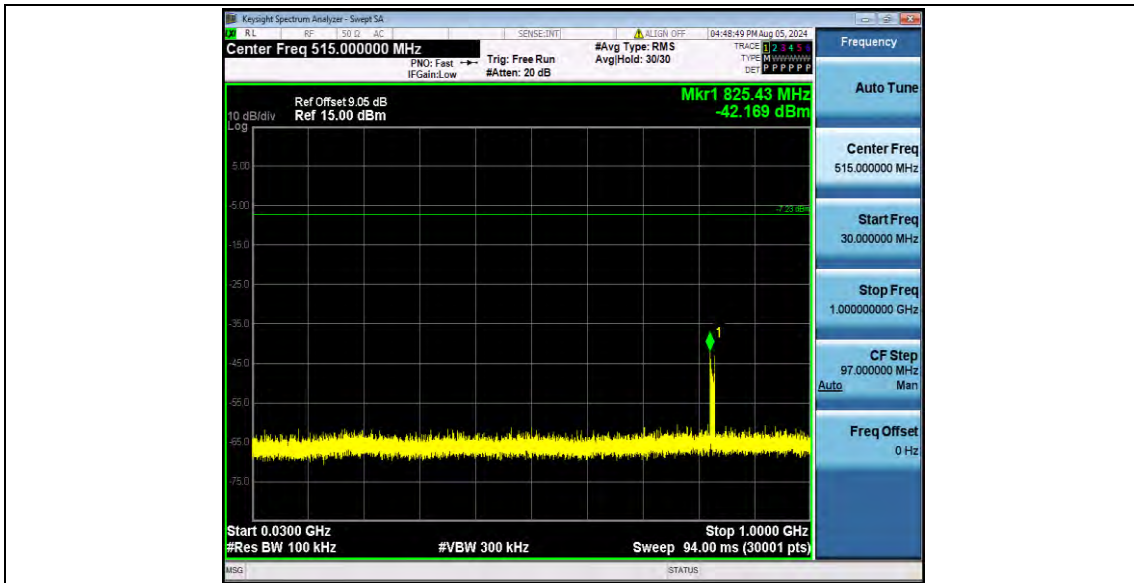
DH1_Ant1_2441_1000~26500



DH1_Ant1_2480_0~Reference



DH1_Ant1_2480_30~1000



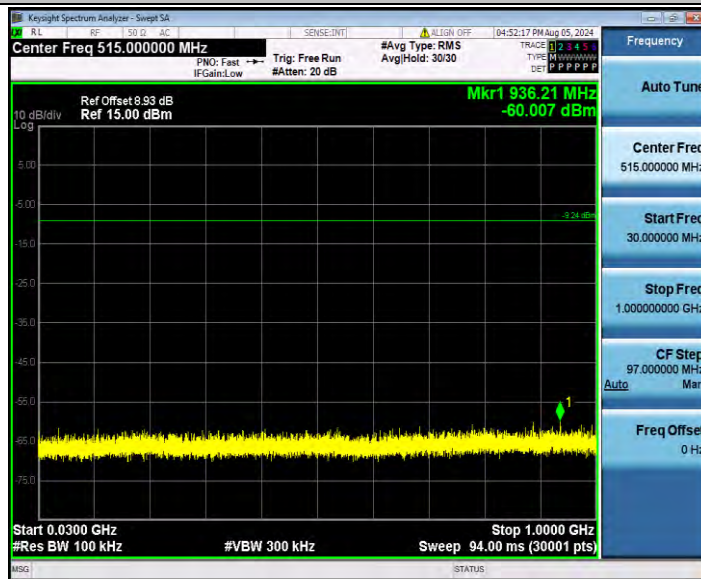
DH1_Ant1_2480_1000~26500



2DH1_Ant1_2402_0~Reference



2DH1_Ant1_2402_30~1000



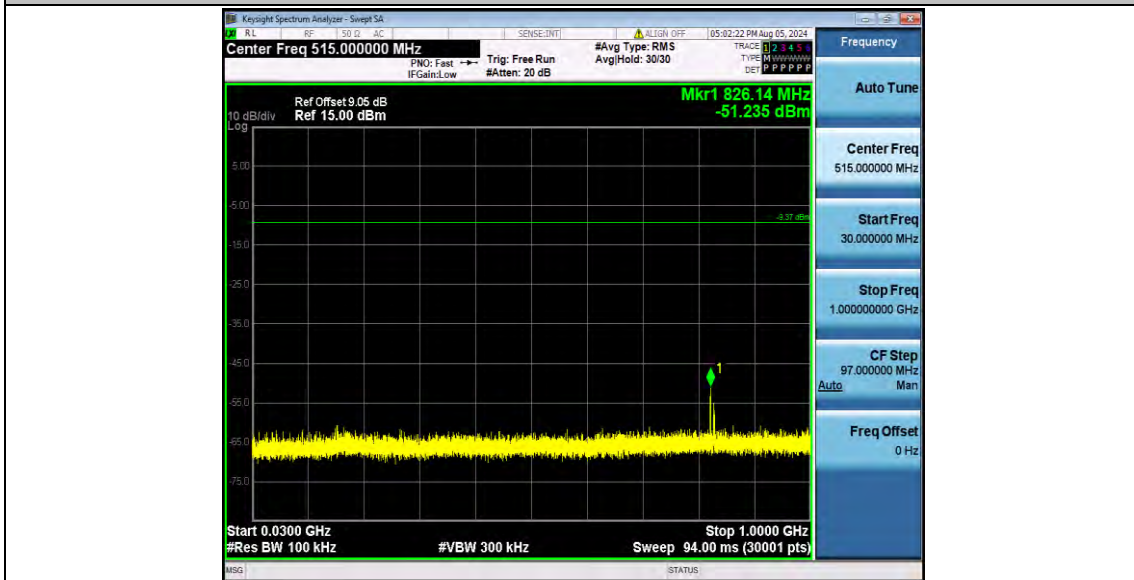
2DH1_Ant1_2402_1000~26500



2DH1_Ant1_2441_0~Reference



2DH1_Ant1_2441_30~100



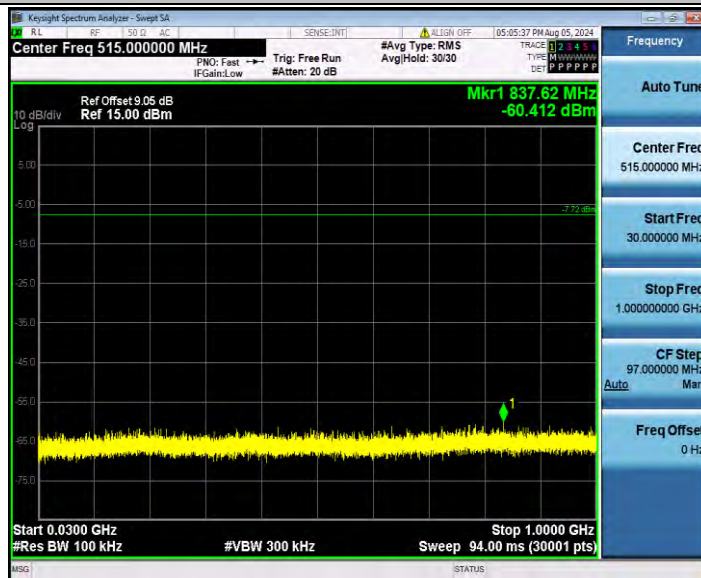
2DH1_Ant1_2441_1000~26500



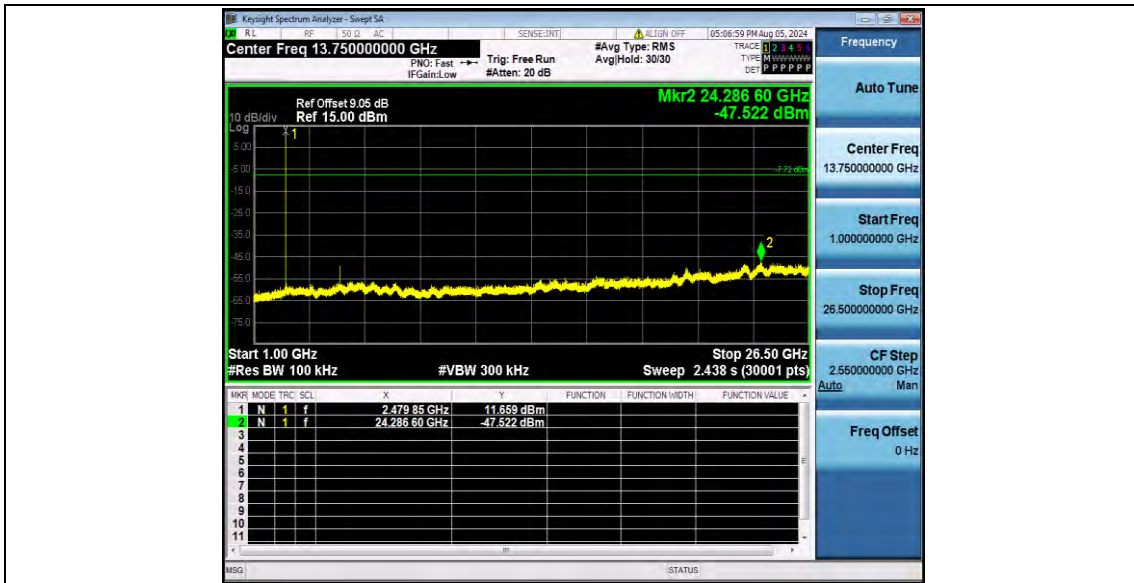
2DH1_Ant1_2480_0~Reference



2DH1_Ant1_2480_30~1000



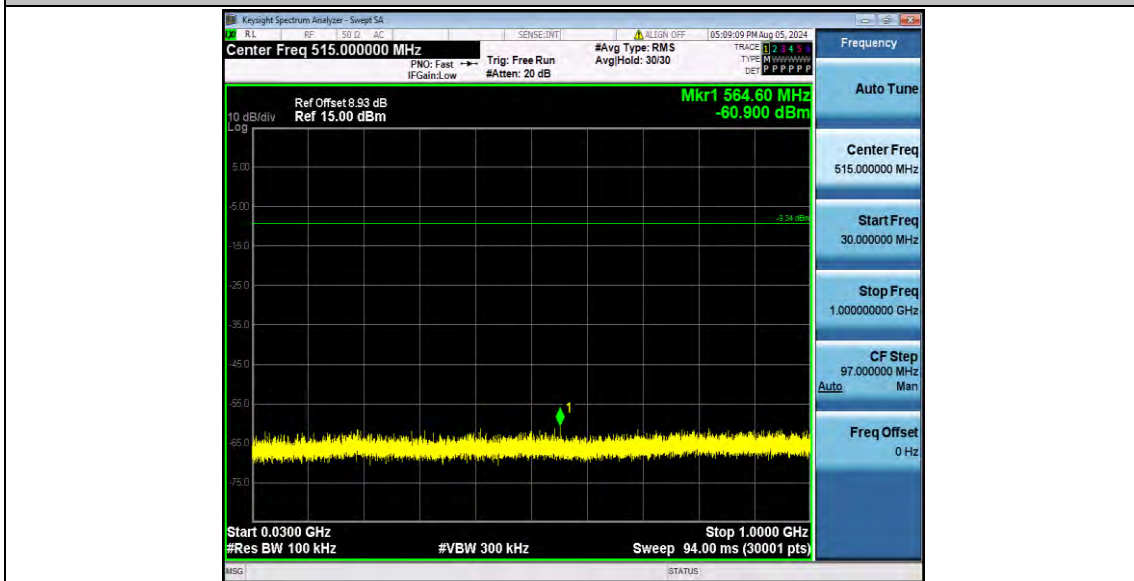
2DH1_Ant1_2480_1000~26500



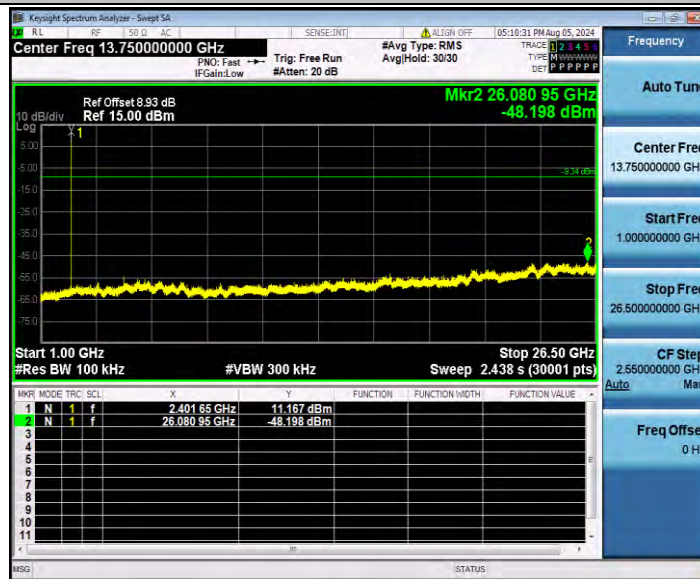
3DH1_Ant1_2402_0~Reference



3DH1_Ant1_2402_30~1000



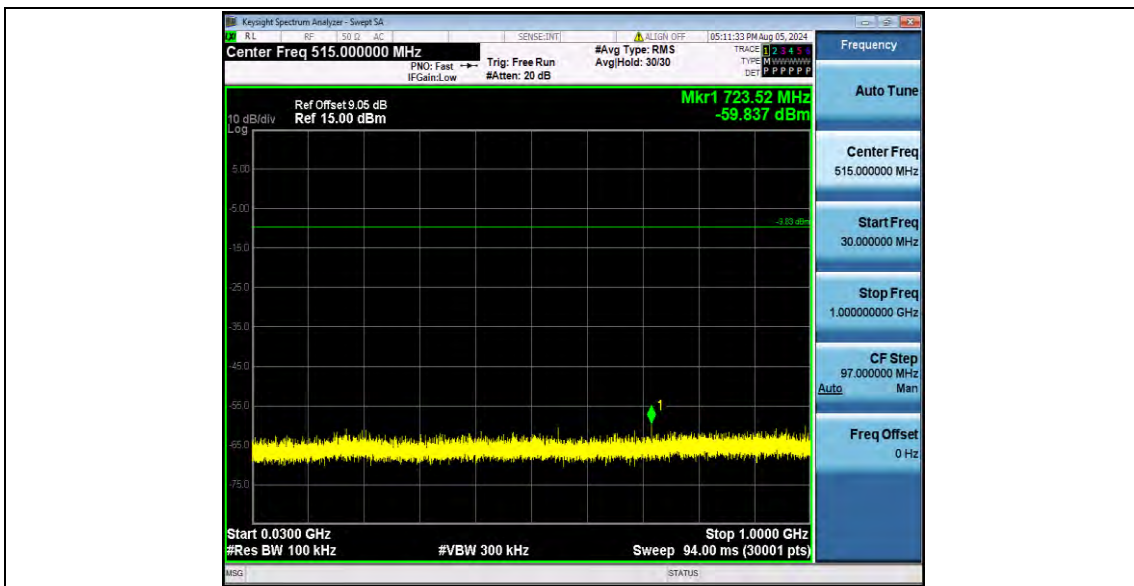
3DH1_Ant1_2402_1000~26500



3DH1_Ant1_2441_0~Reference



3DH1_Ant1_2441_30~1000



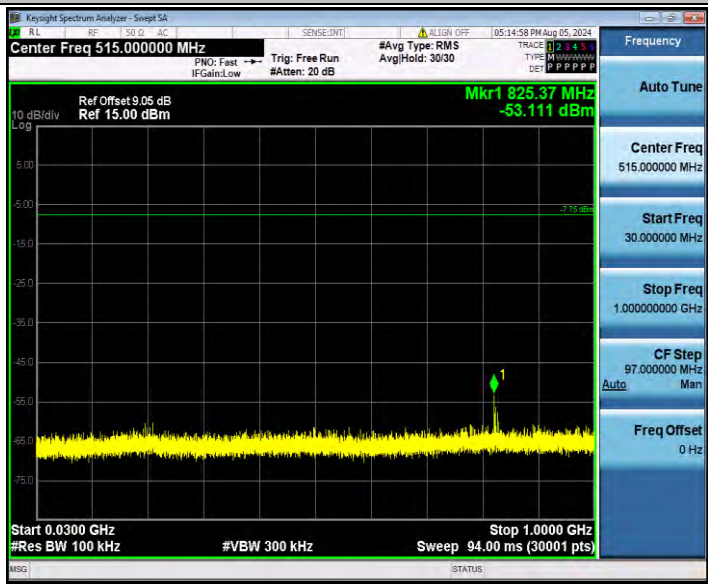
3DH1_Ant1_2441_1000~26500



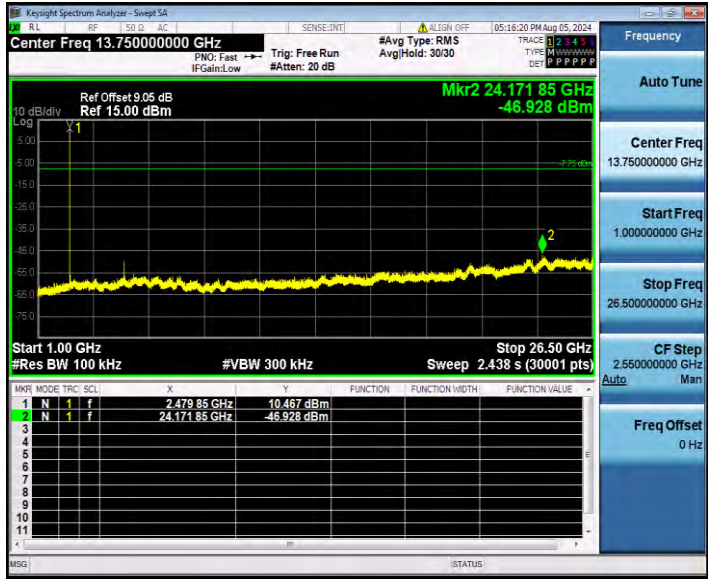
3DH1_Ant1_2480_0~Reference



3DH1_Ant1_2480_30~1000



3DH1_Ant1_2480_1000~26500



Appendix A.9: Emissions in Restricted Bands

Test Result

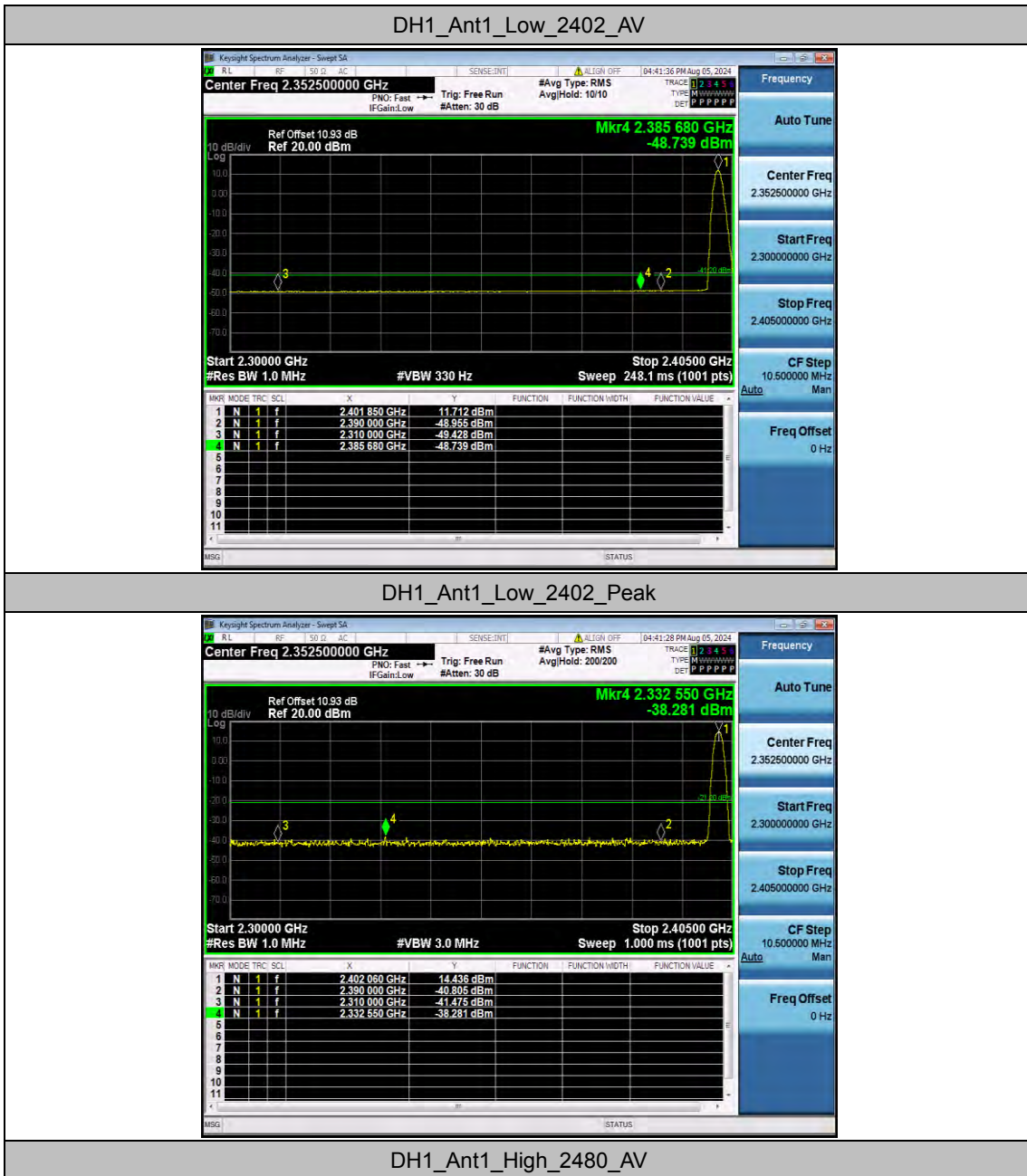
TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH1	Ant1	Low	2402	AV	2310.000	-49.43	≤-41.20	45.77	≤54	PASS
				AV	2385.680	-48.74	≤-41.20	46.46	≤54	PASS
				AV	2390.000	-48.96	≤-41.20	46.24	≤54	PASS
				Peak	2310.000	-41.48	≤-21.20	53.72	≤74	PASS
				Peak	2332.550	-38.28	≤-21.20	56.92	≤74	PASS
				Peak	2390.000	-40.81	≤-21.20	54.39	≤74	PASS
		High	2480	AV	2483.500	-46.21	≤-41.20	48.99	≤54	PASS
				AV	2483.520	-46.21	≤-41.20	48.99	≤54	PASS
				AV	2500.000	-48.75	≤-41.20	46.45	≤54	PASS
				Peak	2483.500	-39.6	≤-21.20	55.60	≤74	PASS
				Peak	2486.000	-38.91	≤-21.20	56.29	≤74	PASS
				Peak	2500.000	-40.73	≤-21.20	54.47	≤74	PASS
2DH1	Ant1	Low	2402	AV	2310.000	-49.45	≤-41.20	45.75	≤54	PASS
				AV	2387.045	-48.87	≤-41.20	46.33	≤54	PASS
				AV	2390.000	-49.02	≤-41.20	46.18	≤54	PASS
				Peak	2310.000	-40.75	≤-21.20	54.45	≤74	PASS
				Peak	2337.170	-39.29	≤-21.20	55.91	≤74	PASS
				Peak	2390.000	-40.66	≤-21.20	54.54	≤74	PASS
		High	2480	AV	2483.500	-46.22	≤-41.20	48.98	≤54	PASS
				AV	2483.520	-46.22	≤-41.20	48.98	≤54	PASS
				AV	2500.000	-48.75	≤-41.20	46.45	≤54	PASS
				Peak	2483.500	-39.84	≤-21.20	55.36	≤74	PASS
				Peak	2484.160	-38.06	≤-21.20	57.14	≤74	PASS
				Peak	2500.000	-41.47	≤-21.20	53.73	≤74	PASS
3DH1	Ant1	Low	2402	AV	2310.000	-49.37	≤-41.20	45.83	≤54	PASS
				AV	2386.205	-48.84	≤-41.20	46.36	≤54	PASS
				AV	2390.000	-49.1	≤-41.20	46.10	≤54	PASS
				Peak	2310.000	-40.6	≤-21.20	54.60	≤74	PASS
				Peak	2330.345	-38.9	≤-21.20	56.30	≤74	PASS
				Peak	2390.000	-41.01	≤-21.20	54.19	≤74	PASS
		High	2480	AV	2483.500	-46.31	≤-41.20	48.89	≤54	PASS
				AV	2483.520	-46.31	≤-41.20	48.89	≤54	PASS
				AV	2500.000	-48.69	≤-41.20	46.51	≤54	PASS
				Peak	2483.500	-41.41	≤-21.20	53.79	≤74	PASS
				Peak	2487.280	-38.01	≤-21.20	57.19	≤74	PASS
				Peak	2487.280	-38.01	≤-21.20	57.19	≤74	PASS

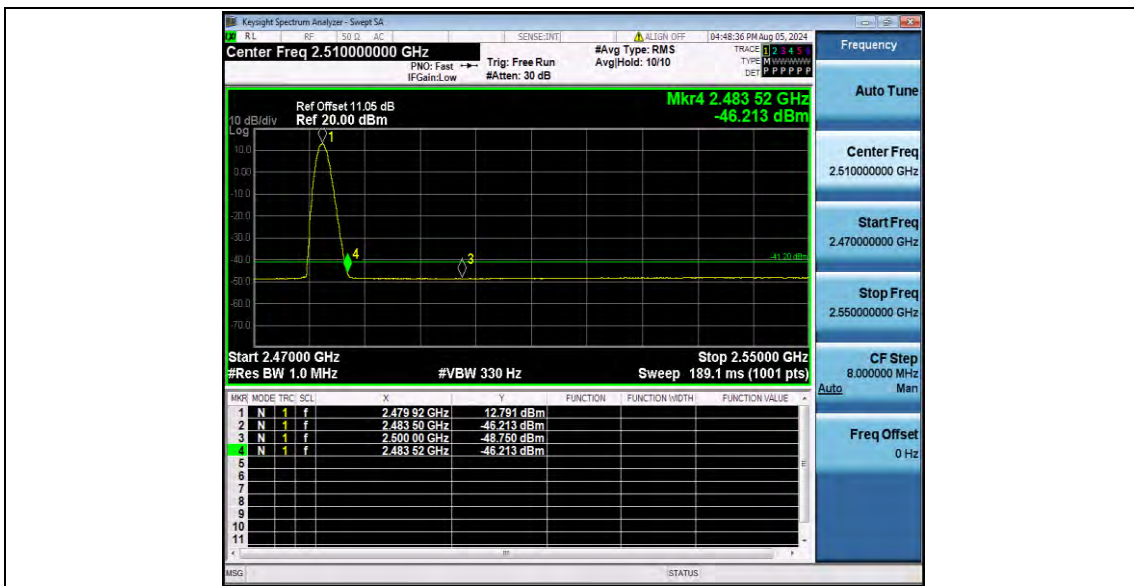
				Peak	2500.000	-39.5	≤-21.20	55.70	≤74	PASS
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Note:

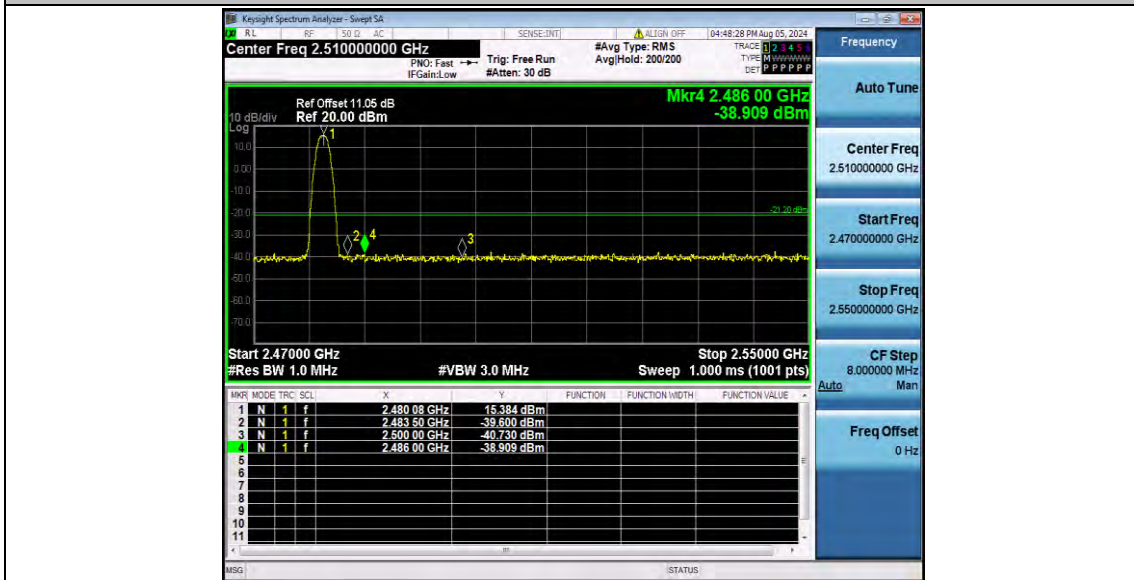
1. The Antenna Gain is compensated in the graph.
2. The Duty Cycle Factor and RBW Factor is compensated in the graph.
3. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

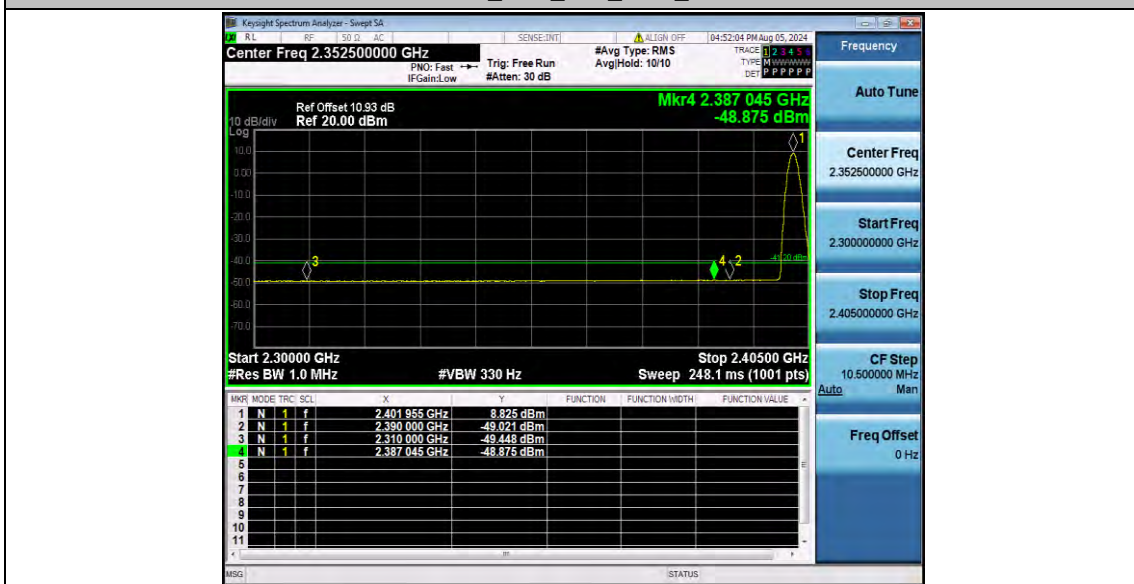




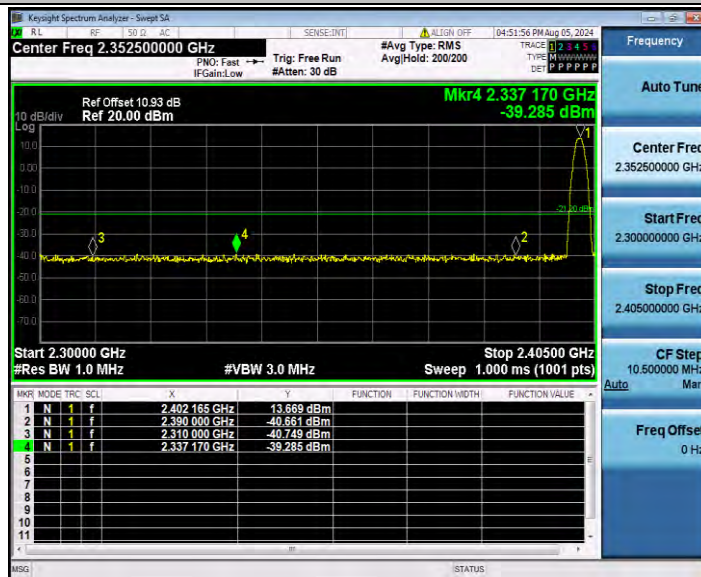
DH1_Ant1_High_2480_Peak



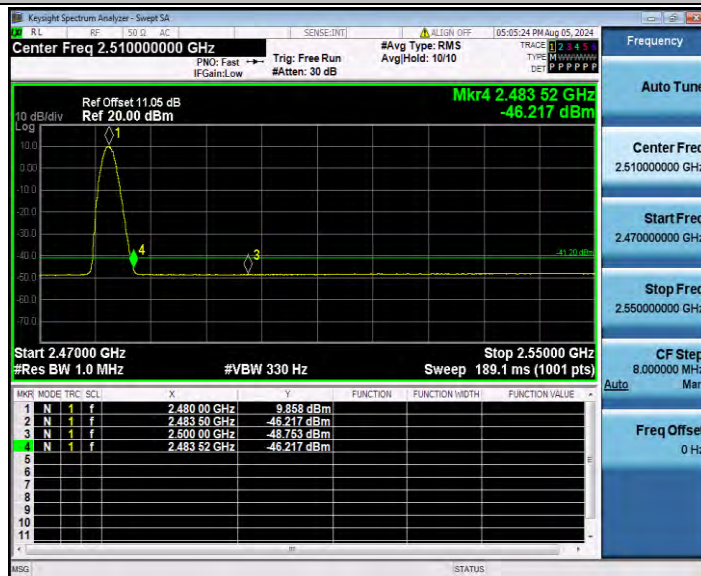
2DH1_Ant1_Low_2402_AV



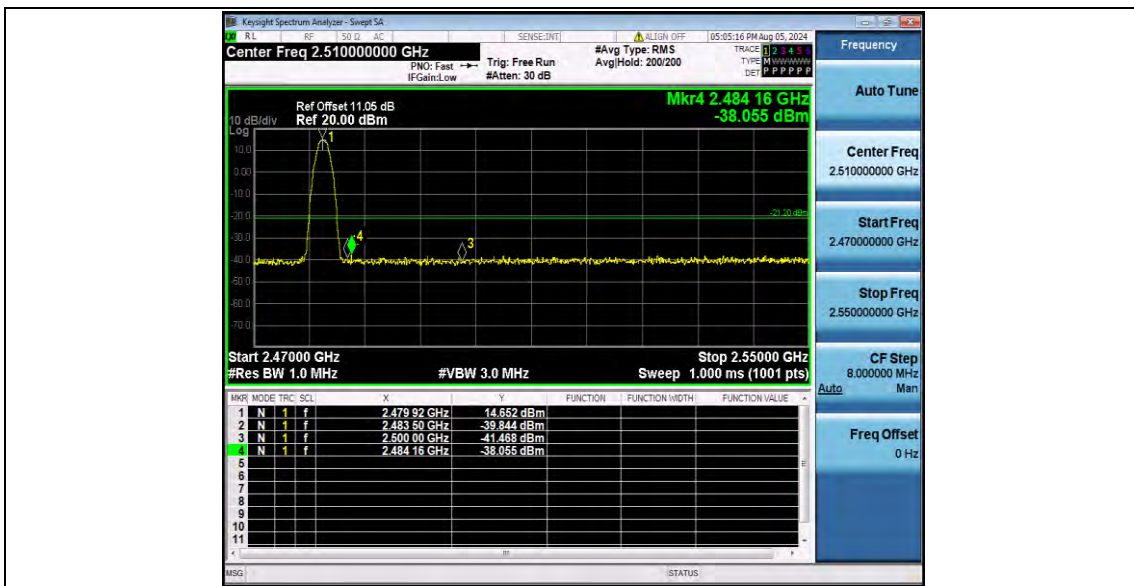
2DH1_Ant1_Low_2402_Peak



2DH1_Ant1_High_2480_AV



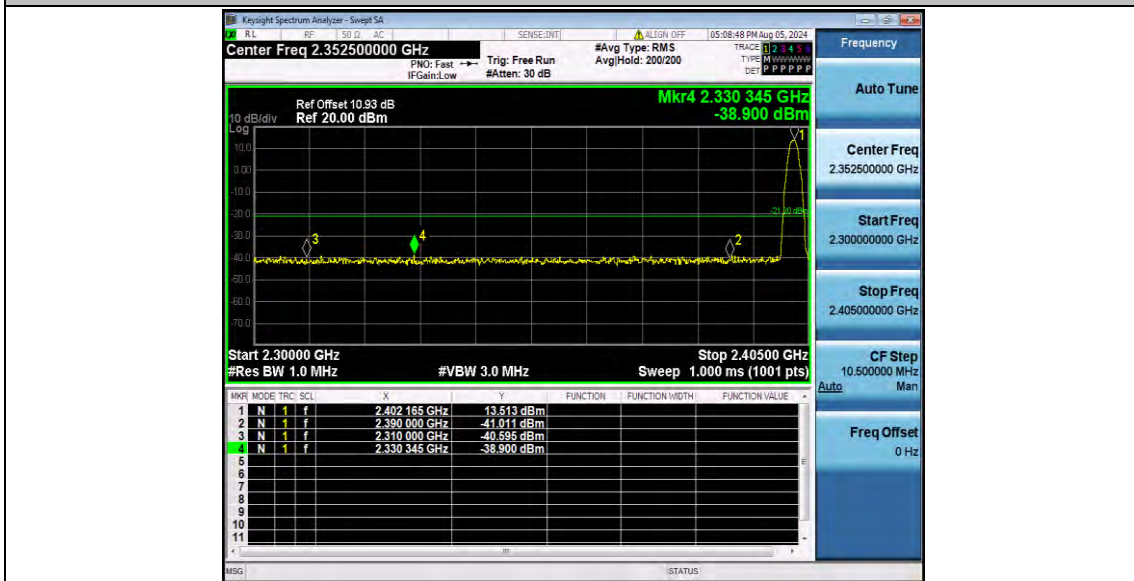
2DH1_Ant1_High_2480_Peak



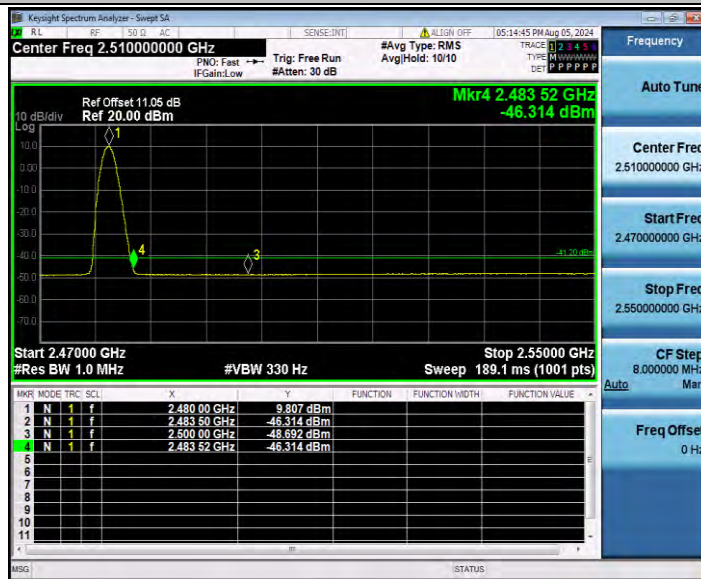
3DH1_Ant1_Low_2402_AV



3DH1_Ant1_Low_2402_Peak



3DH1_Ant1_High_2480_AV



3DH1_Ant1_High_2480_Peak

