

Case No. : <u>CTA24050902301</u>
Ambient Condition: <u>23 °C, 49 %RH</u>
According Standard: <u>■Part15C</u>
Test Date: <u>2024.4.24</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]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.933	2401.556	2402.489	---	---
		2441	0.882	2440.556	2441.438	---	---
		2480	0.861	2479.562	2480.423	---	---
2DH1	Ant1	2402	1.248	2401.394	2402.642	---	---
		2441	1.233	2440.379	2441.612	---	---
		2480	1.269	2479.376	2480.645	---	---
3DH1	Ant1	2402	1.218	2401.409	2402.627	---	---
		2441	1.254	2440.385	2441.639	---	---
		2480	1.227	2479.406	2480.633	---	---

Test Graphs





2D11_Ant1_2402



2D11_Ant1_2441



2DH1_Ant1_2480



3DH1_Ant1_2402



3DH1_Ant1_2441



3DH1_Ant1_2480

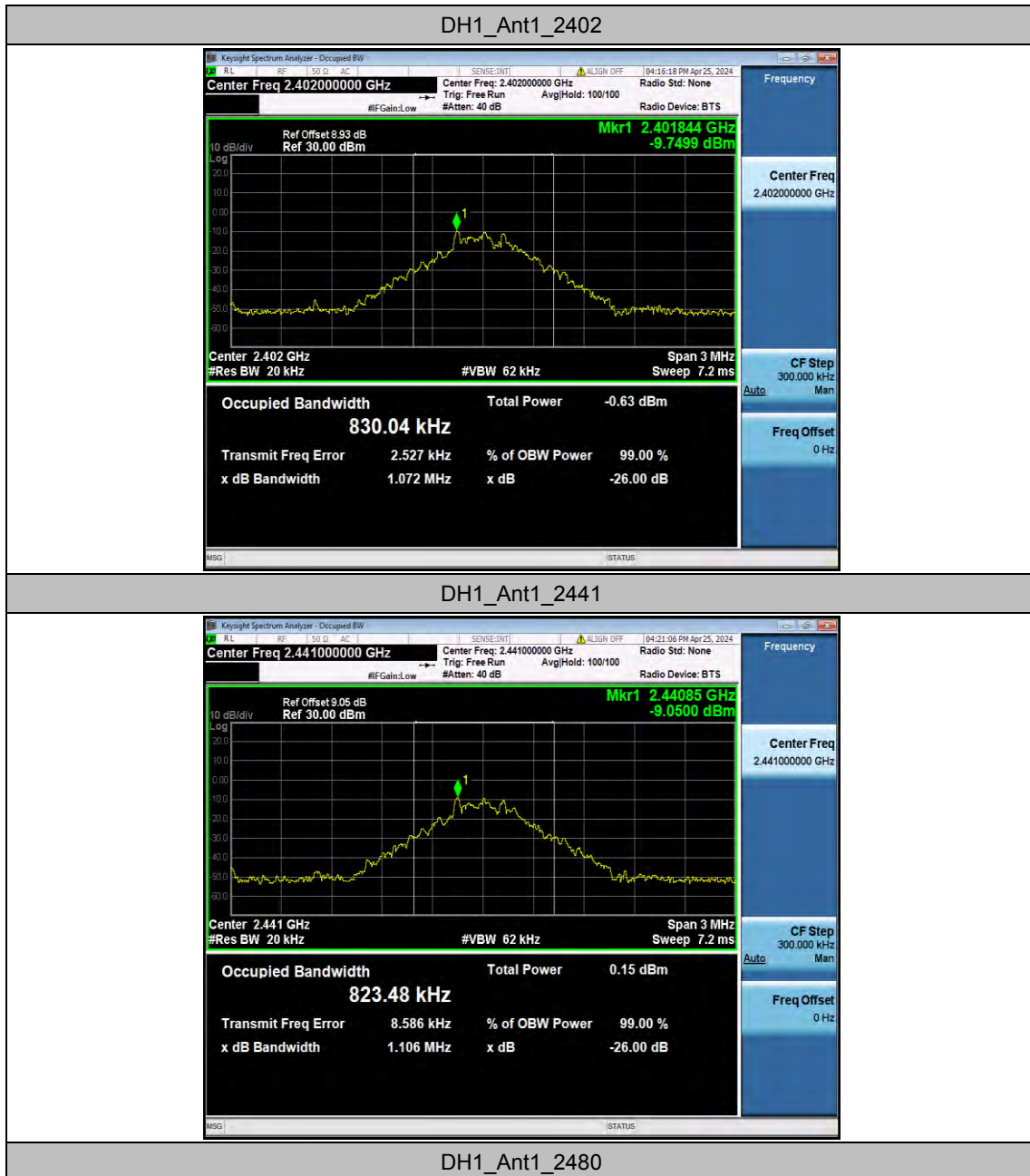


Appendix A.2: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.83004	2401.5875	2402.4176	---	---
		2441	0.82348	2440.5969	2441.4203	---	---
		2480	0.83102	2479.5919	2480.4229	---	---
2DH1	Ant1	2402	1.1636	2401.4216	2402.5852	---	---
		2441	1.1560	2440.4264	2441.5824	---	---
		2480	1.1628	2479.4229	2480.5857	---	---
3DH1	Ant1	2402	1.1550	2401.4400	2402.5950	---	---
		2441	1.1504	2440.4407	2441.5911	---	---
		2480	1.1552	2479.4402	2480.5954	---	---

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

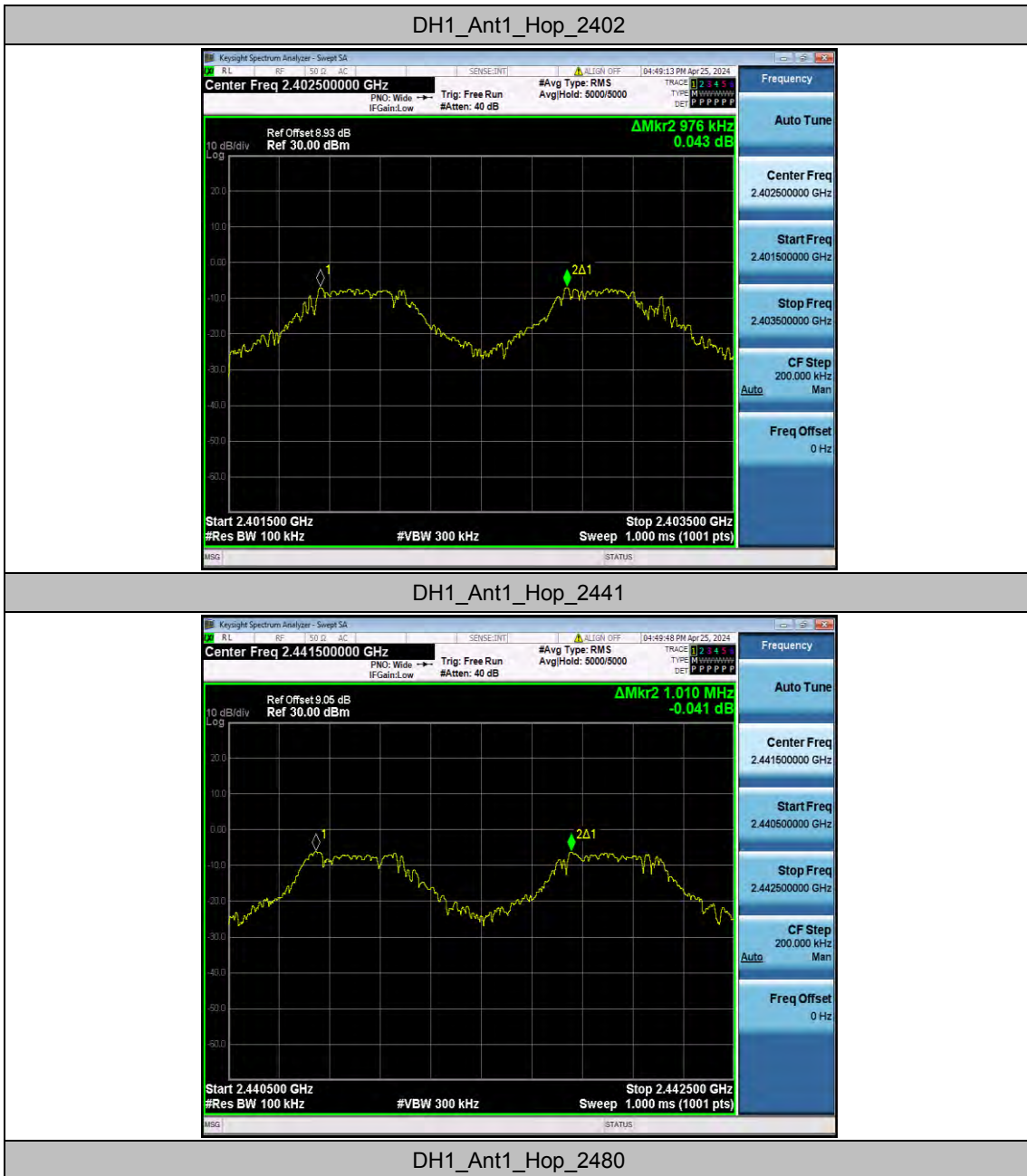
Test Mode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH1	Ant1	2402	-6.22	≤30.00	PASS
		2441	-5.71	≤30.00	PASS
		2480	-6.32	≤30.00	PASS
2DH1	Ant1	2402	-5.69	≤20.97	PASS
		2441	-4.81	≤20.97	PASS
		2480	-5.70	≤20.97	PASS
3DH1	Ant1	2402	-5.09	≤20.97	PASS
		2441	-4.41	≤20.97	PASS
		2480	-5.17	≤20.97	PASS

Appendix A.4: Carrier frequency separation

Test Result

TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Hop_2402	0.976	≥ 0.933	PASS
		Hop_2441	1.01	≥ 0.933	PASS
		Hop_2480	0.99	≥ 0.933	PASS
2DH1	Ant1	Hop_2402	1.152	≥ 0.846	PASS
		Hop_2441	0.992	≥ 0.846	PASS
		Hop_2480	1.004	≥ 0.846	PASS
3DH1	Ant1	Hop_2402	0.992	≥ 0.836	PASS
		Hop_2441	0.99	≥ 0.836	PASS
		Hop_2480	1	≥ 0.836	PASS

Test Graphs





2DH1_Ant1_Hop_2402



2DH1_Ant1_Hop_2441



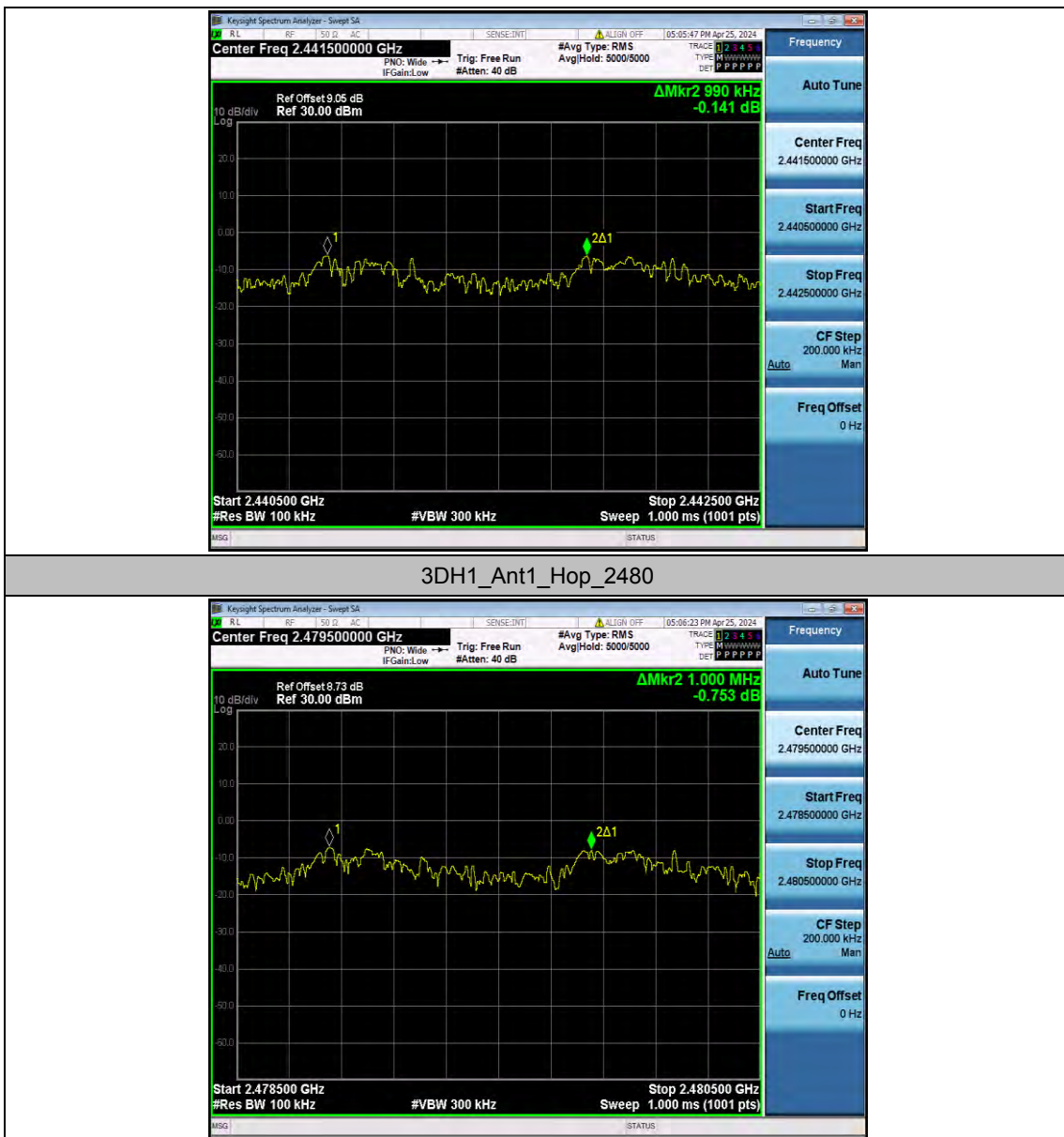
2DH1_Ant1_Hop_2480



3DH1_Ant1_Hop_2402



3DH1_Ant1_Hop_2441

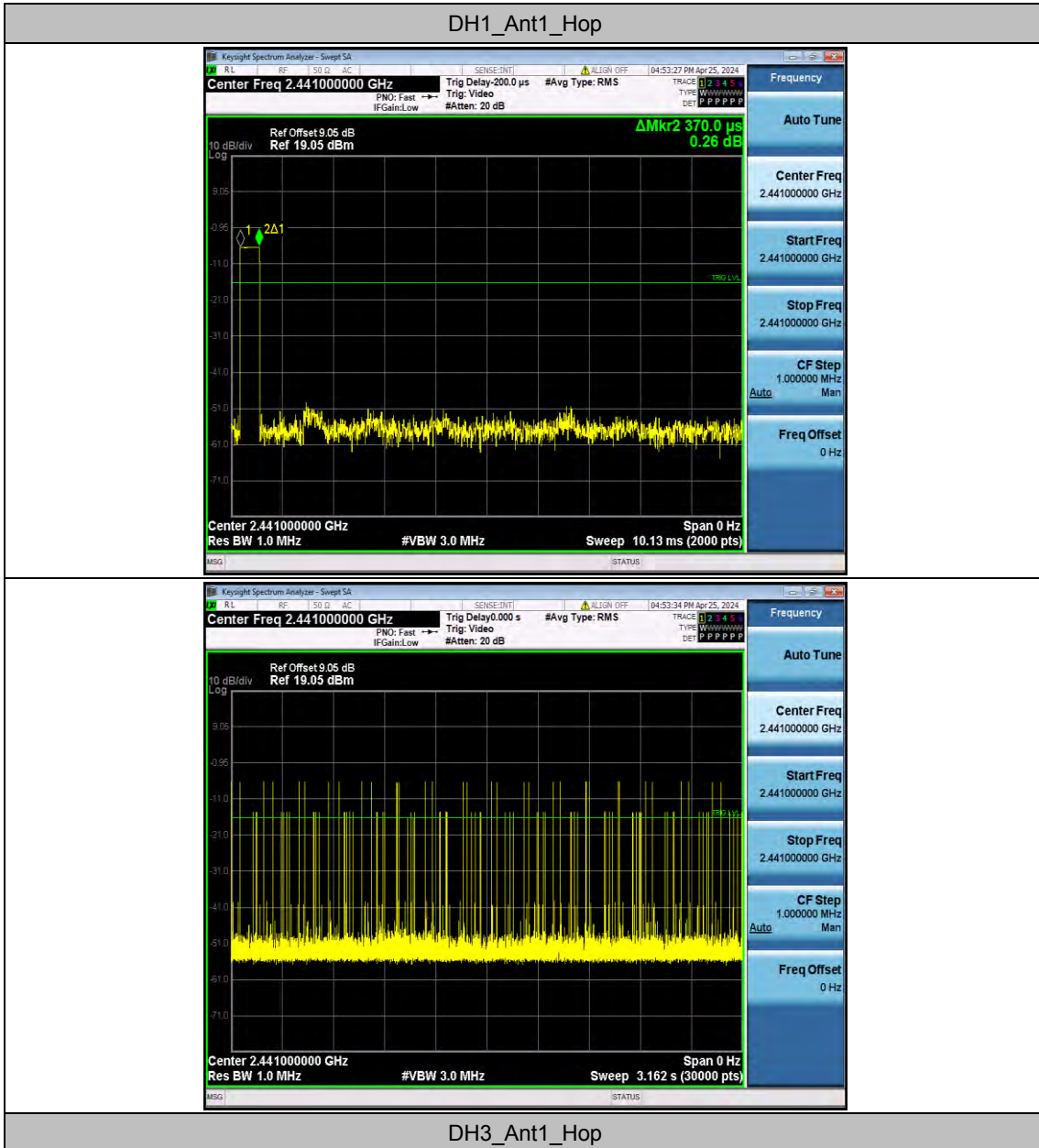


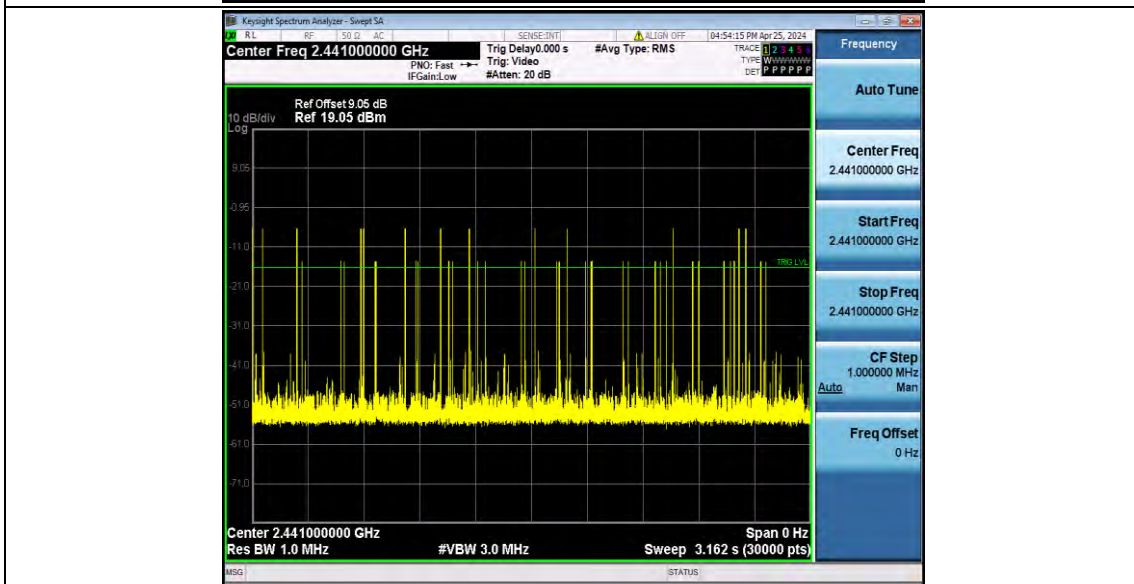
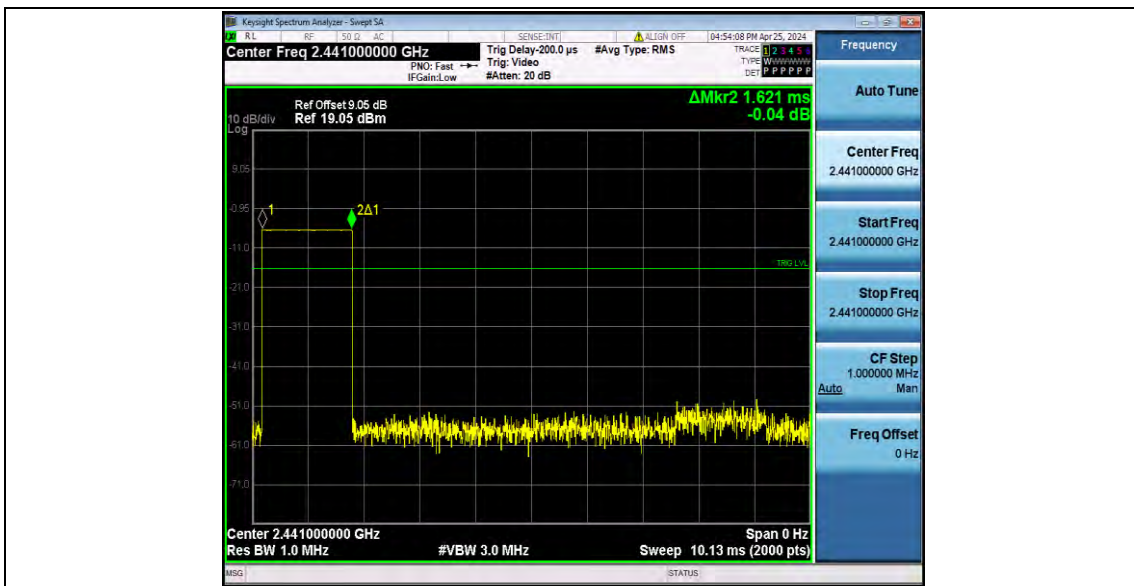
Appendix A.5: Time of occupancy

Test Result

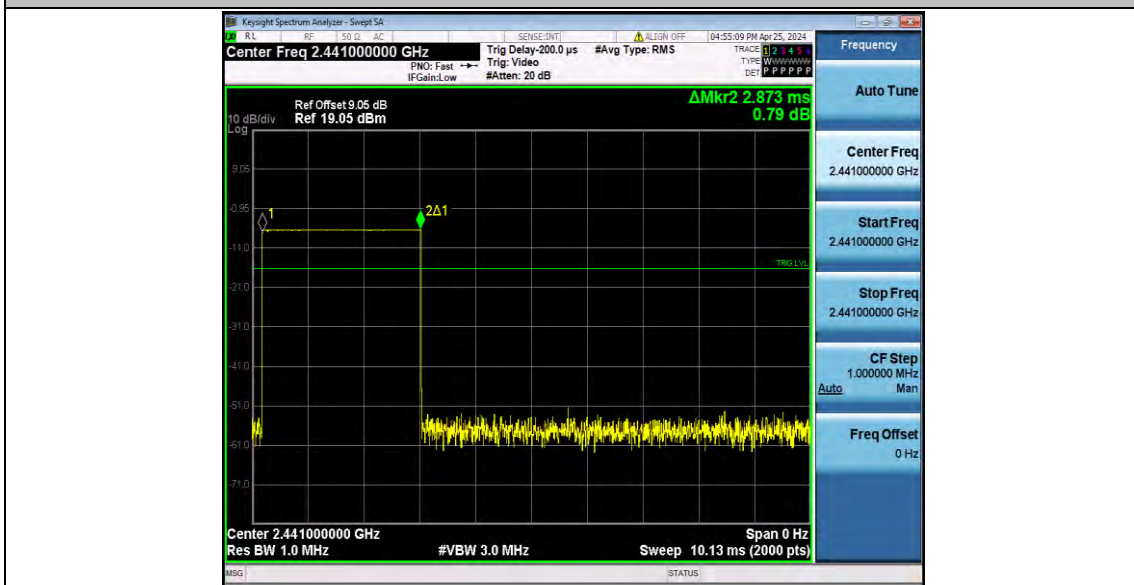
TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.370	320	0.118	≤0.4	PASS
DH3	Ant1	Hop	1.621	140	0.227	≤0.4	PASS
DH5	Ant1	Hop	2.873	100	0.287	≤0.4	PASS
2DH1	Ant1	Hop	0.380	330	0.125	≤0.4	PASS
2DH3	Ant1	Hop	1.631	180	0.294	≤0.4	PASS
2DH5	Ant1	Hop	2.878	100	0.288	≤0.4	PASS
3DH1	Ant1	Hop	0.362	310	0.112	≤0.4	PASS
3DH3	Ant1	Hop	1.631	210	0.343	≤0.4	PASS
3DH5	Ant1	Hop	2.878	100	0.288	≤0.4	PASS

Test Graphs



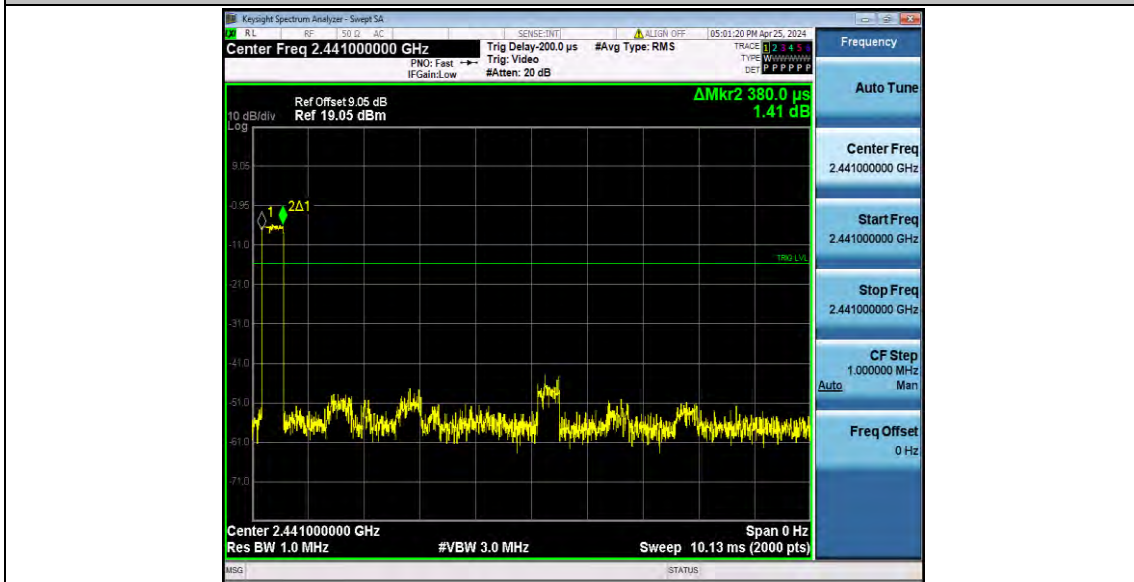


DH5_Ant1_Hop

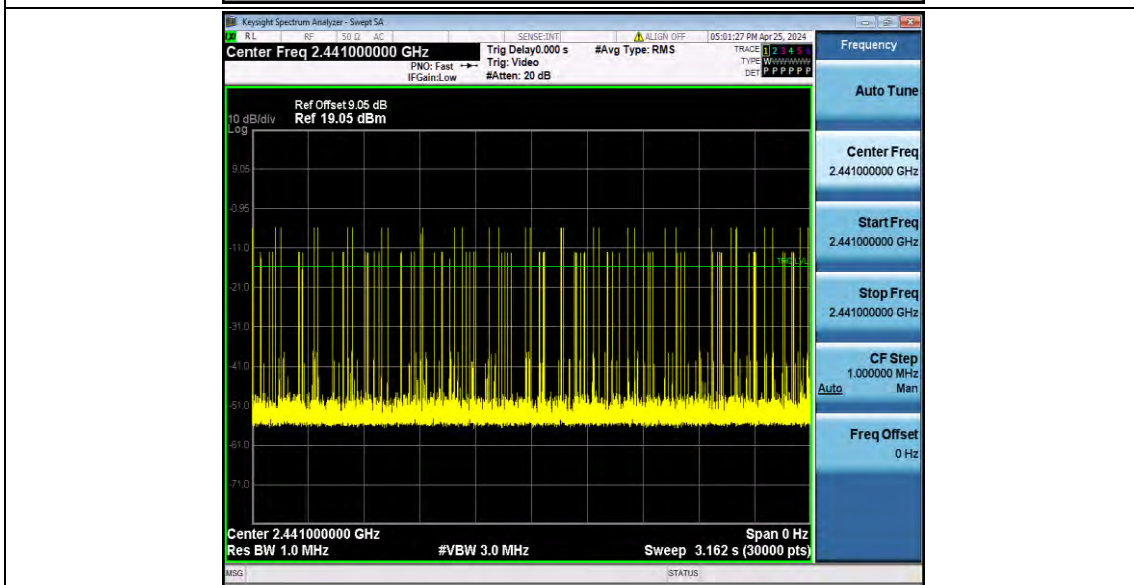


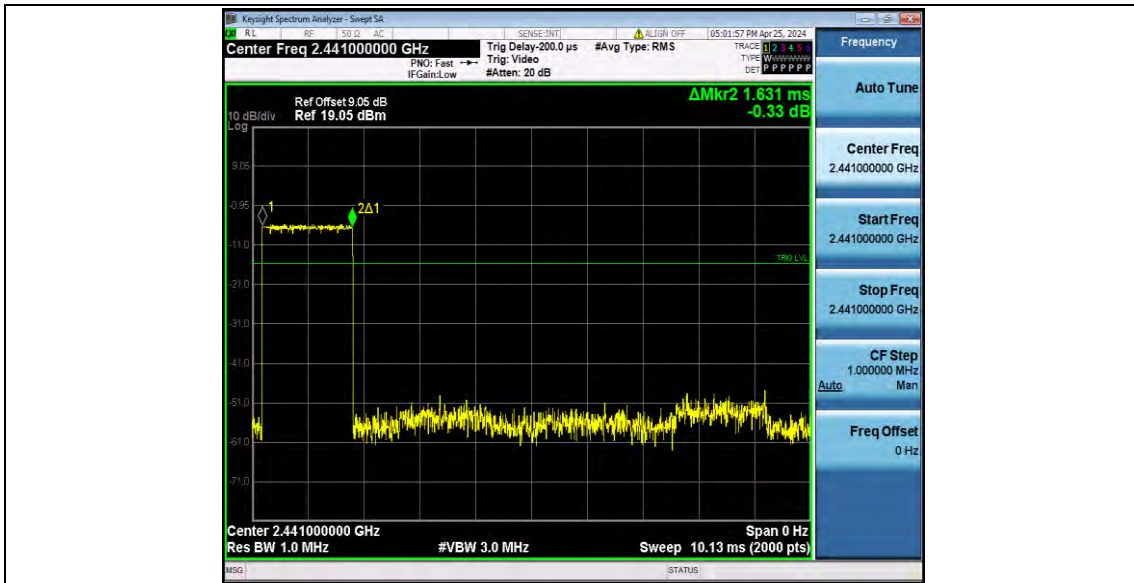


2DH1_Ant1_Hop

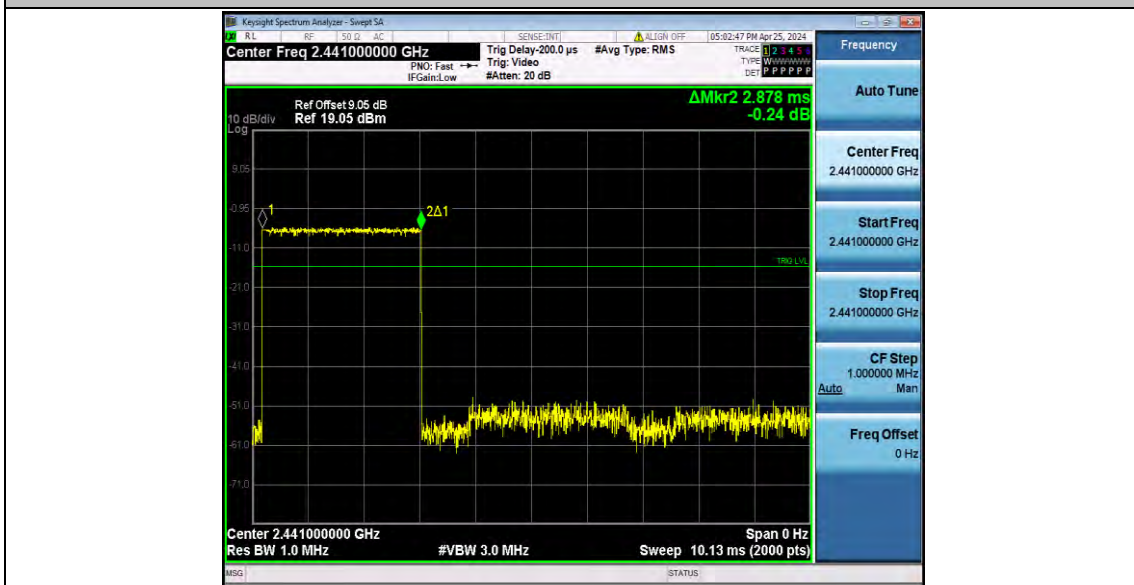


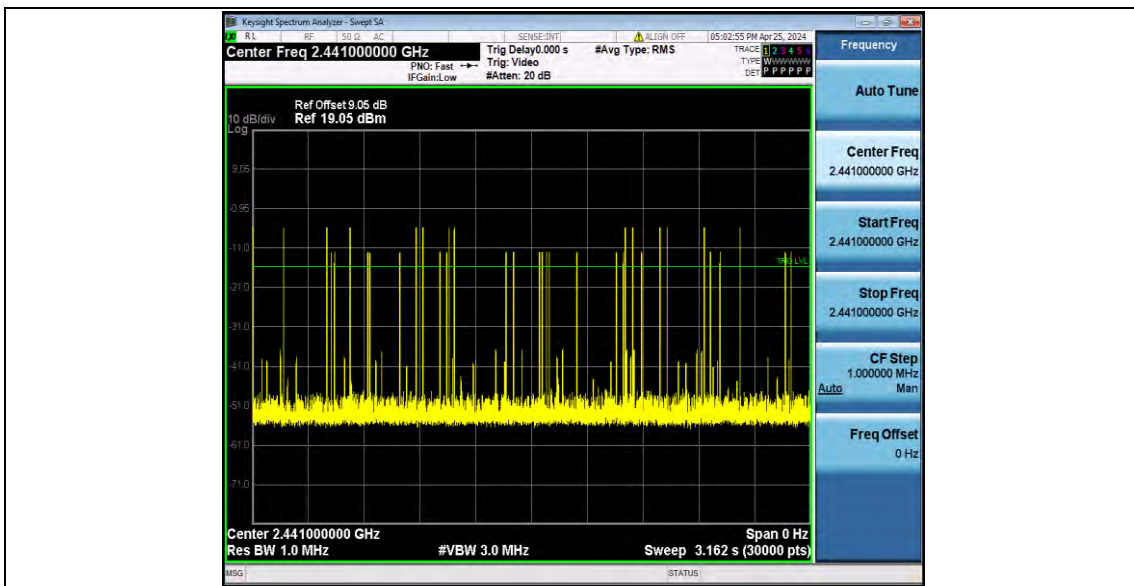
2DH3_Ant1_Hop



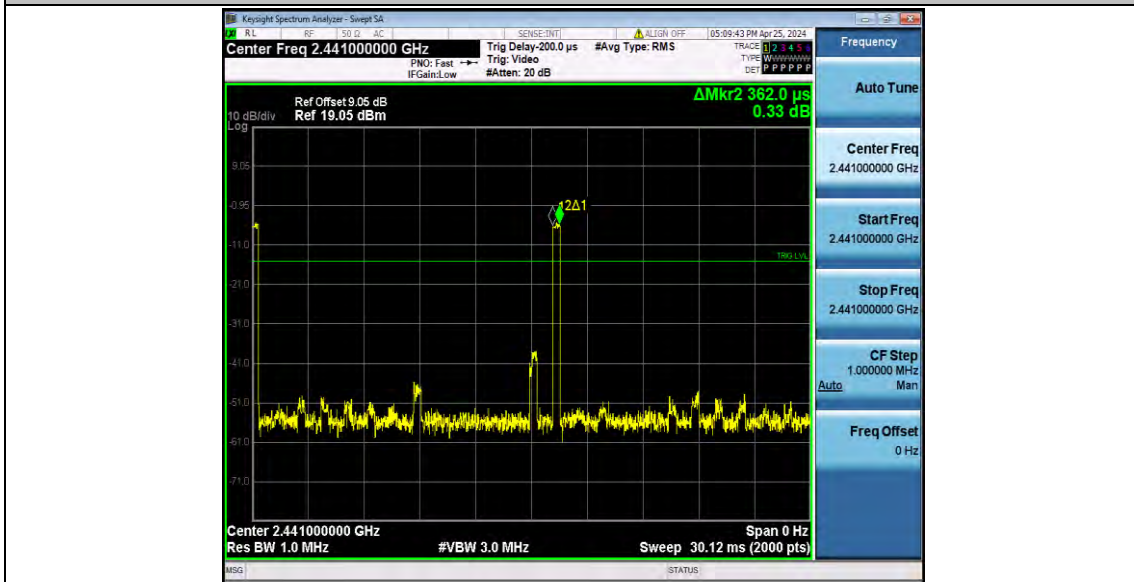


2DH5_Ant1_Hop

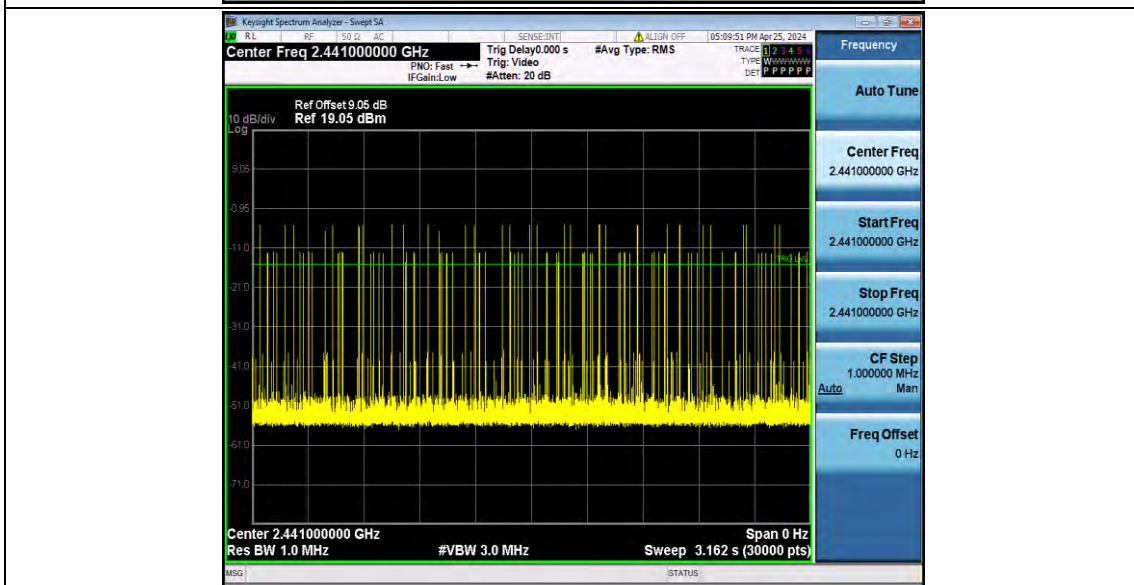


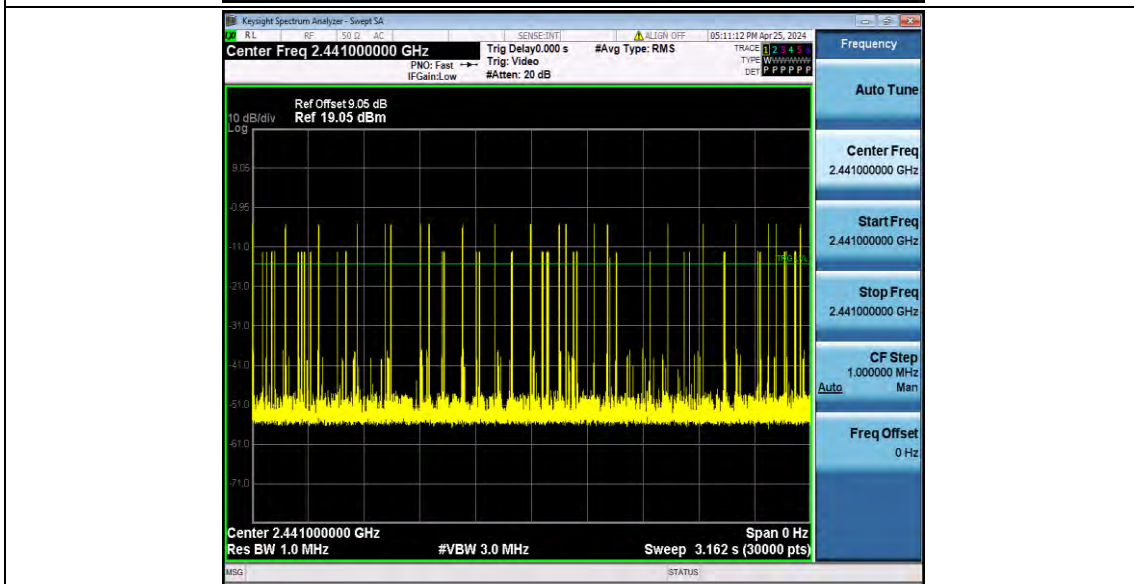
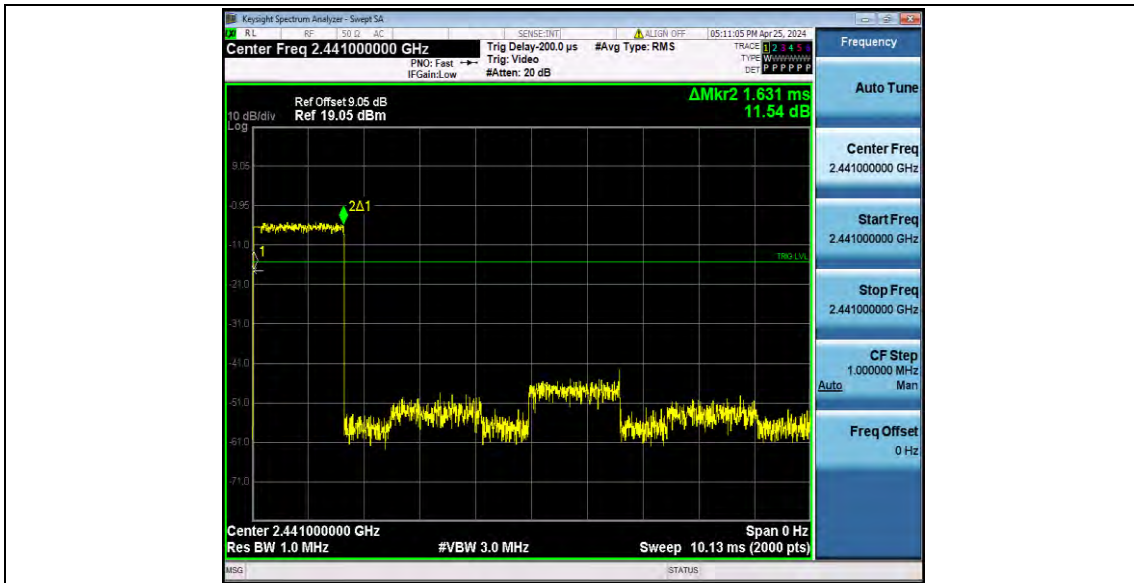


3DH1_Ant1_Hop

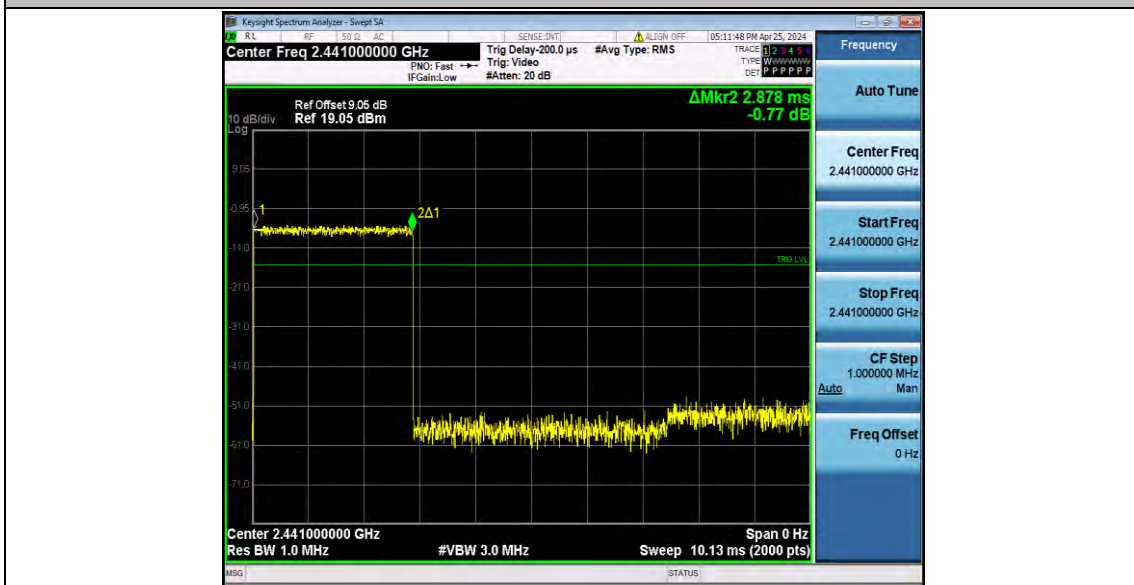


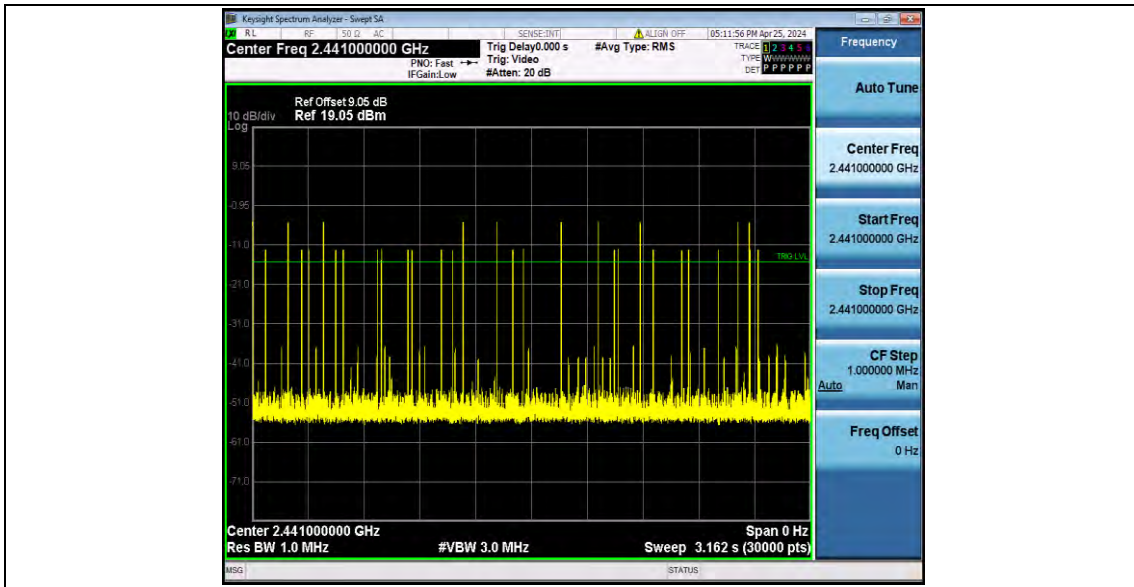
3DH3_Ant1_Hop





3DH5_Ant1_Hop



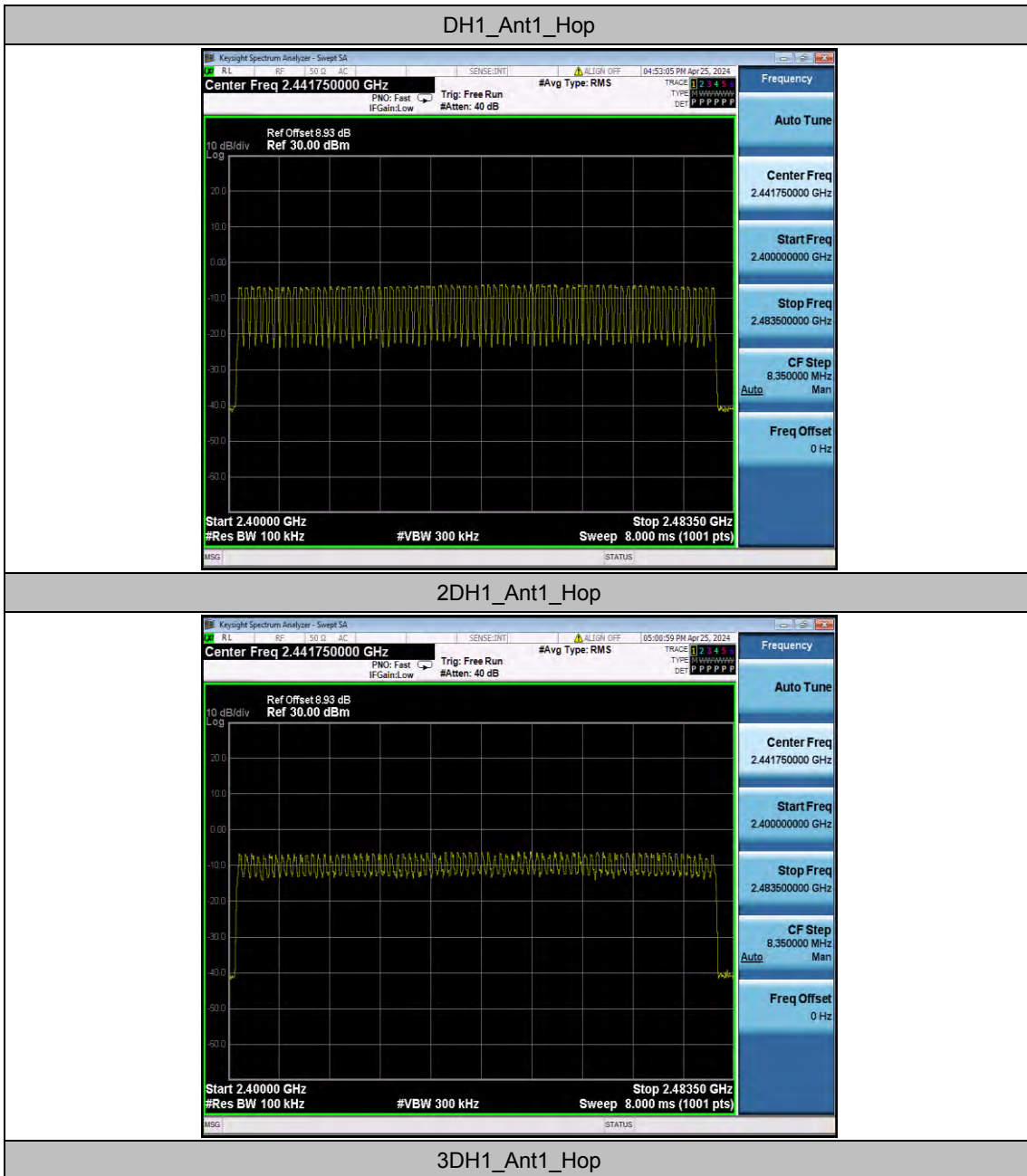


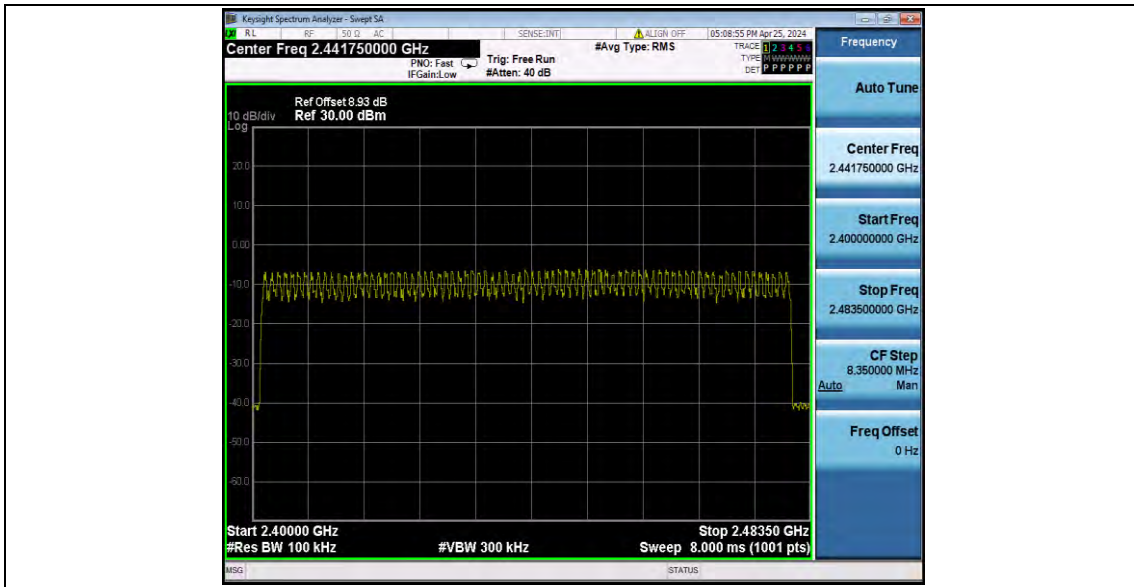
Appendix A.6: Number of hopping channels

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



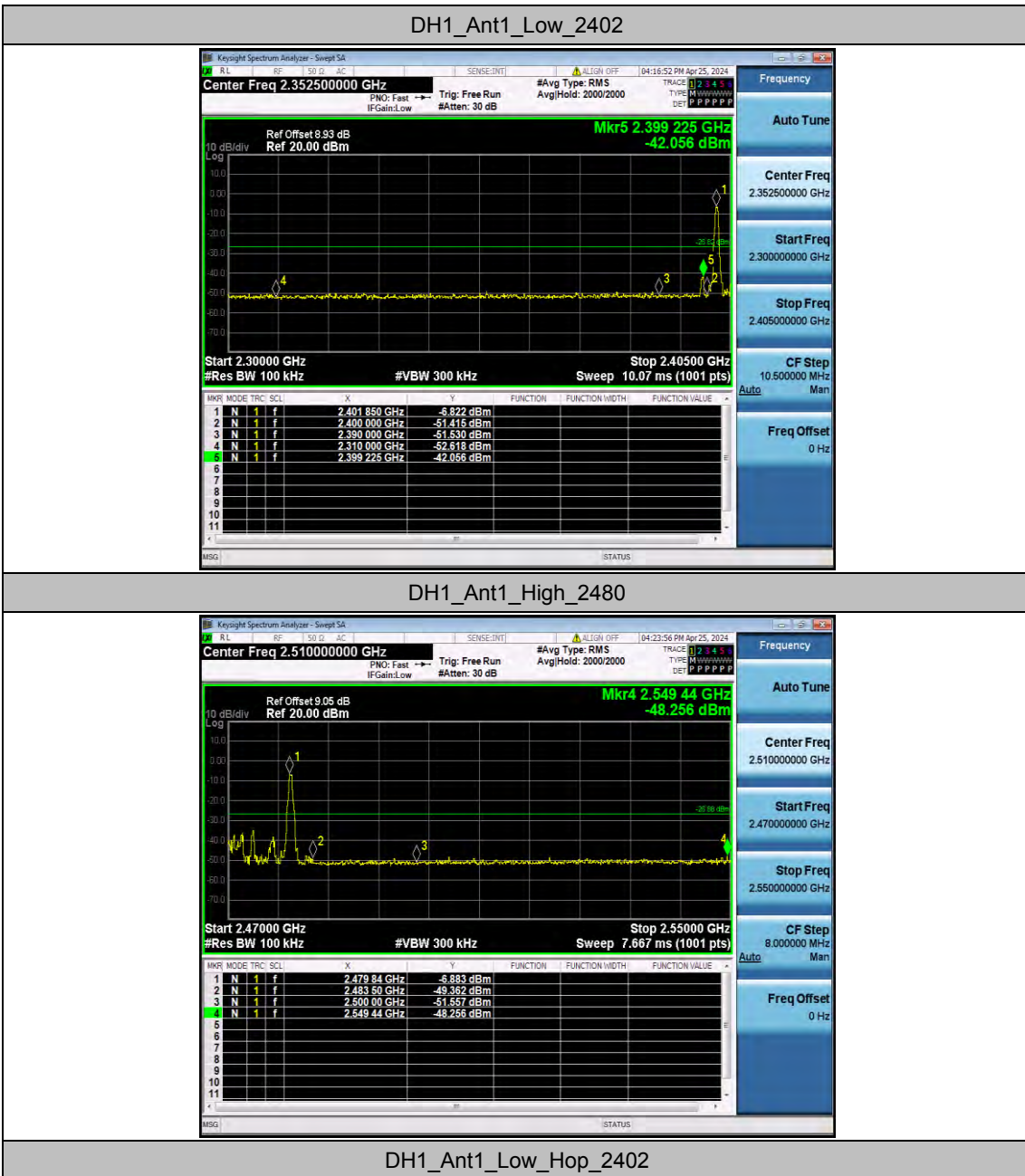


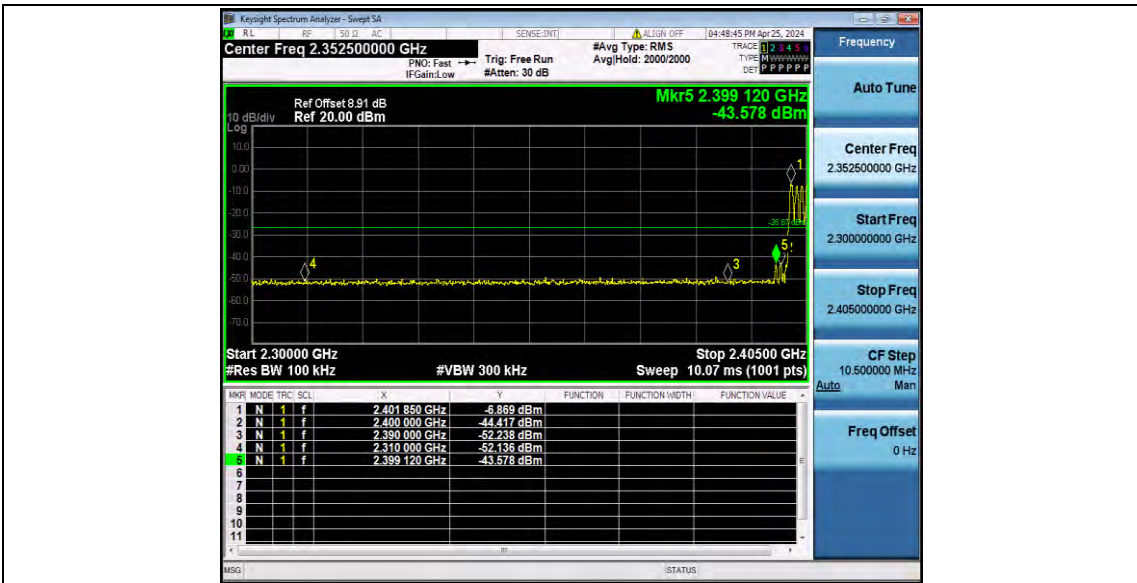
Appendix A.7: Band edge measurements

Test Result

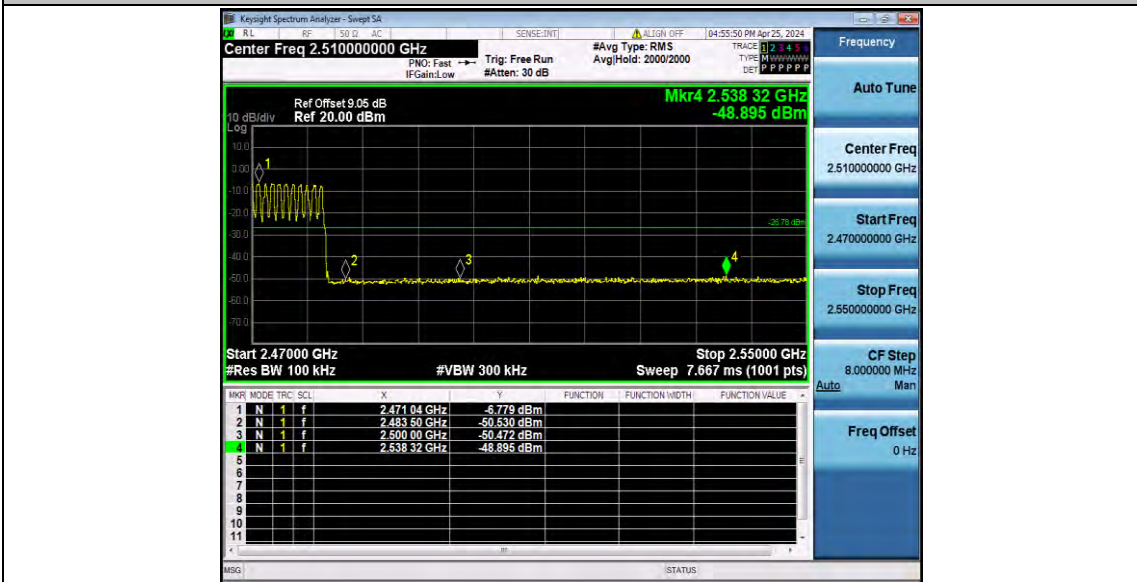
TestMode	Antenna	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	Low	2402	-6.82	-42.06	≤-26.82	PASS
		High	2480	-6.88	-48.26	≤-26.88	PASS
		Low	Hop_2402	-6.87	-43.58	≤-26.87	PASS
		High	Hop_2480	-6.78	-48.9	≤-26.78	PASS
2DH1	Ant1	Low	2402	-6.82	-41.61	≤-26.82	PASS
		High	2480	-6.87	-48.75	≤-26.87	PASS
		Low	Hop_2402	-7.72	-43.69	≤-27.72	PASS
		High	Hop_2480	-6.94	-48.15	≤-26.94	PASS
3DH1	Ant1	Low	2402	-6.85	-42.67	≤-26.85	PASS
		High	2480	-6.86	-48.37	≤-26.86	PASS
		Low	Hop_2402	-8.43	-43.38	≤-28.43	PASS
		High	Hop_2480	-6.91	-48.67	≤-26.91	PASS

Test Graphs

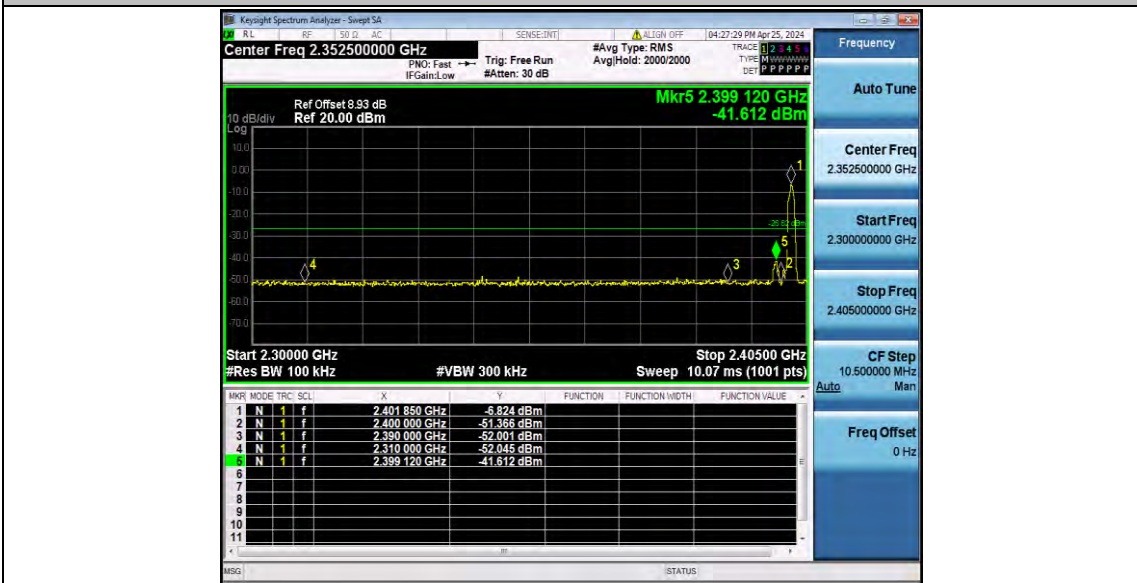




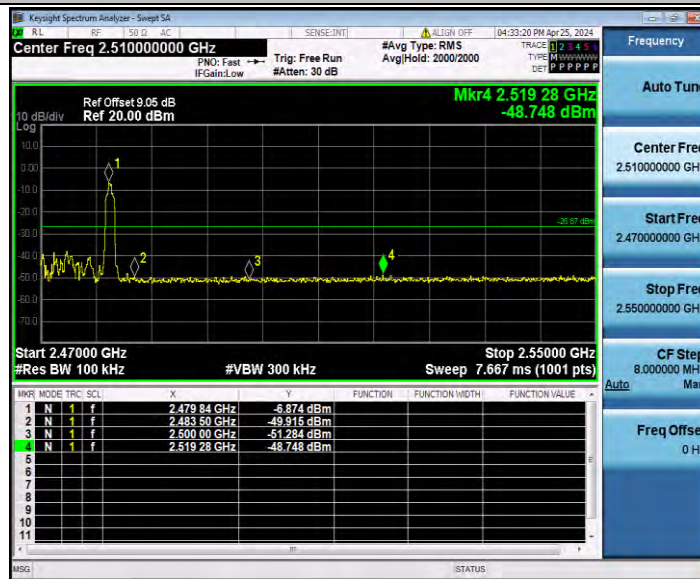
DH1_Ant1_High_Hop_2480



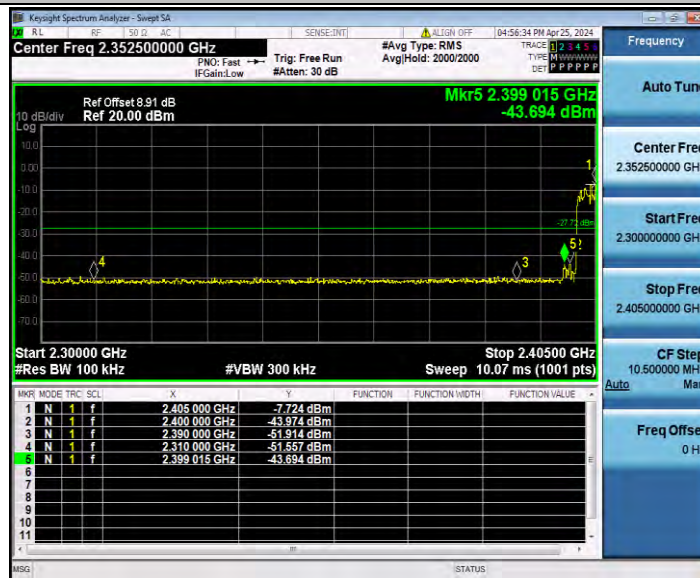
2D11_Ant1_Low_2402



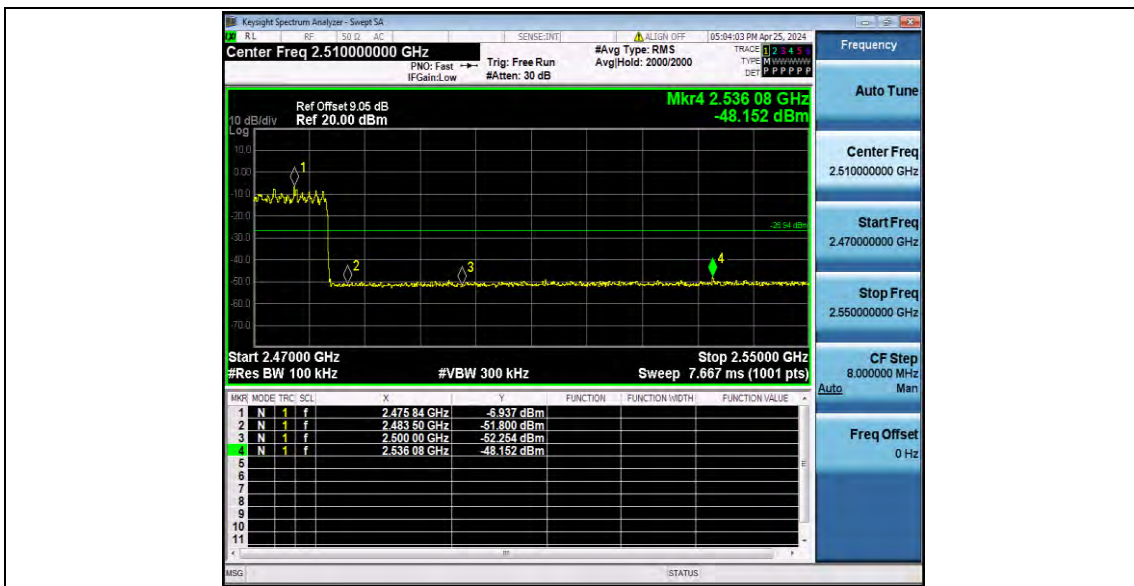
2DH1_Ant1_High_2480



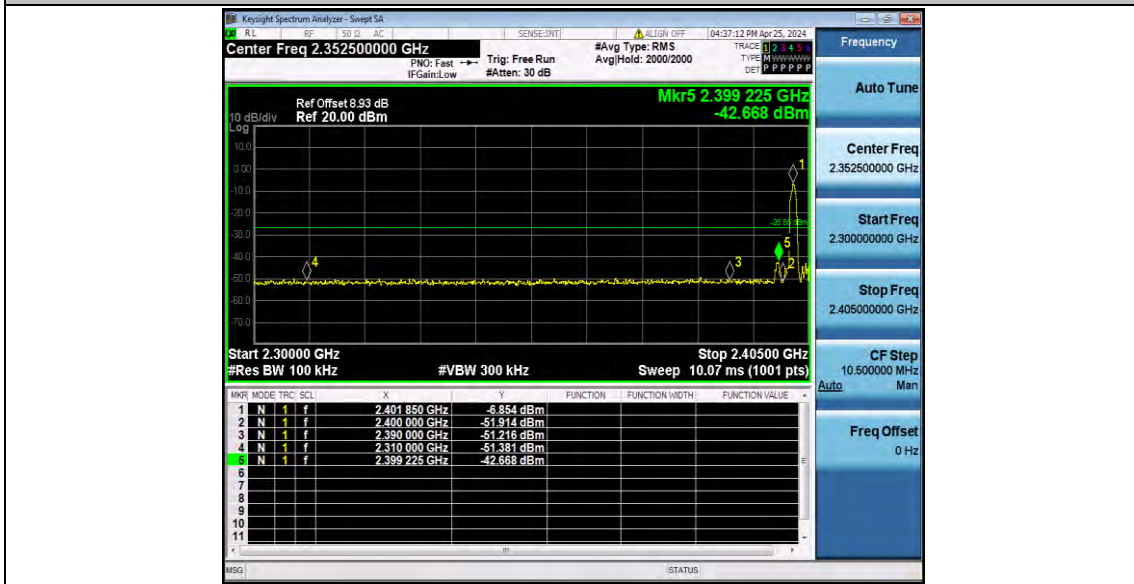
2DH1_Ant1_Low_Hop_2402



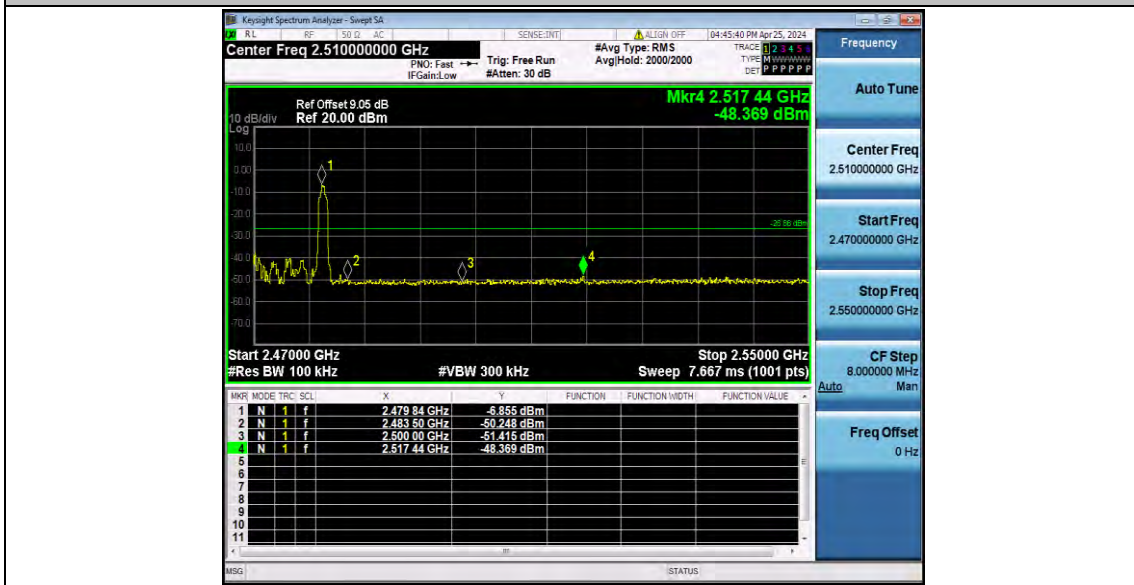
2DH1_Ant1_High_Hop_2480



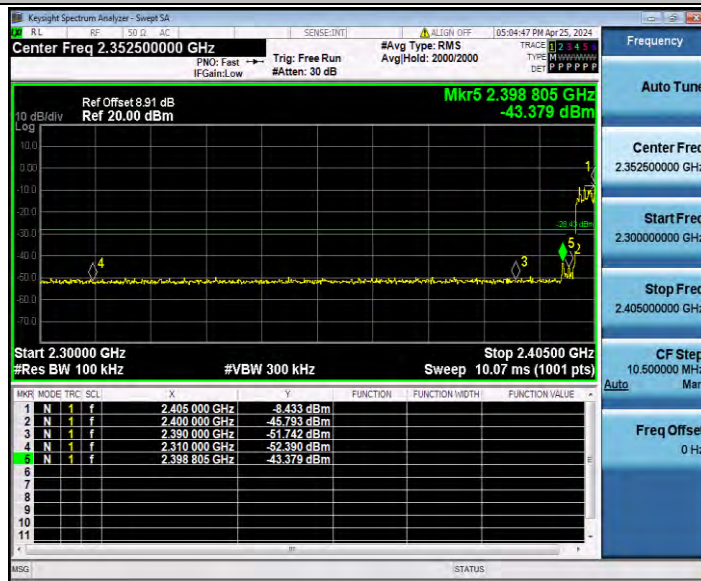
3D H1_Ant1_Low_2402



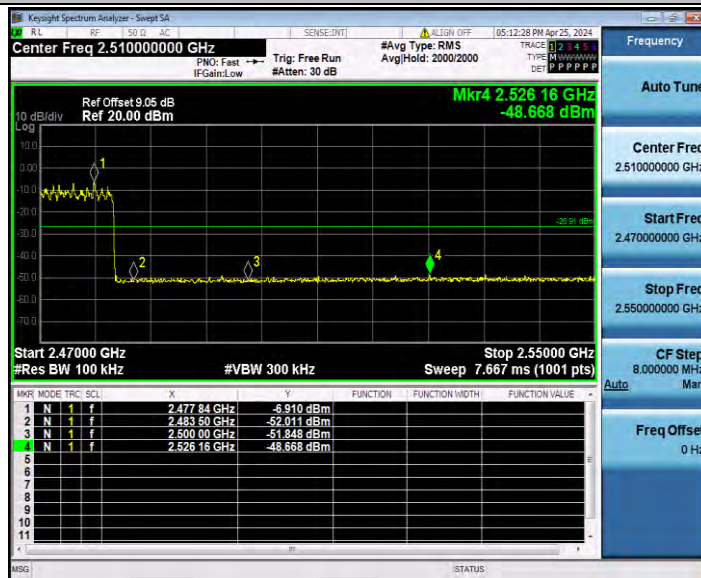
3D H1_Ant1_High_2480



3DH1_Ant1_Low_Hop_2402



3DH1_Ant1_High_Hop_2480

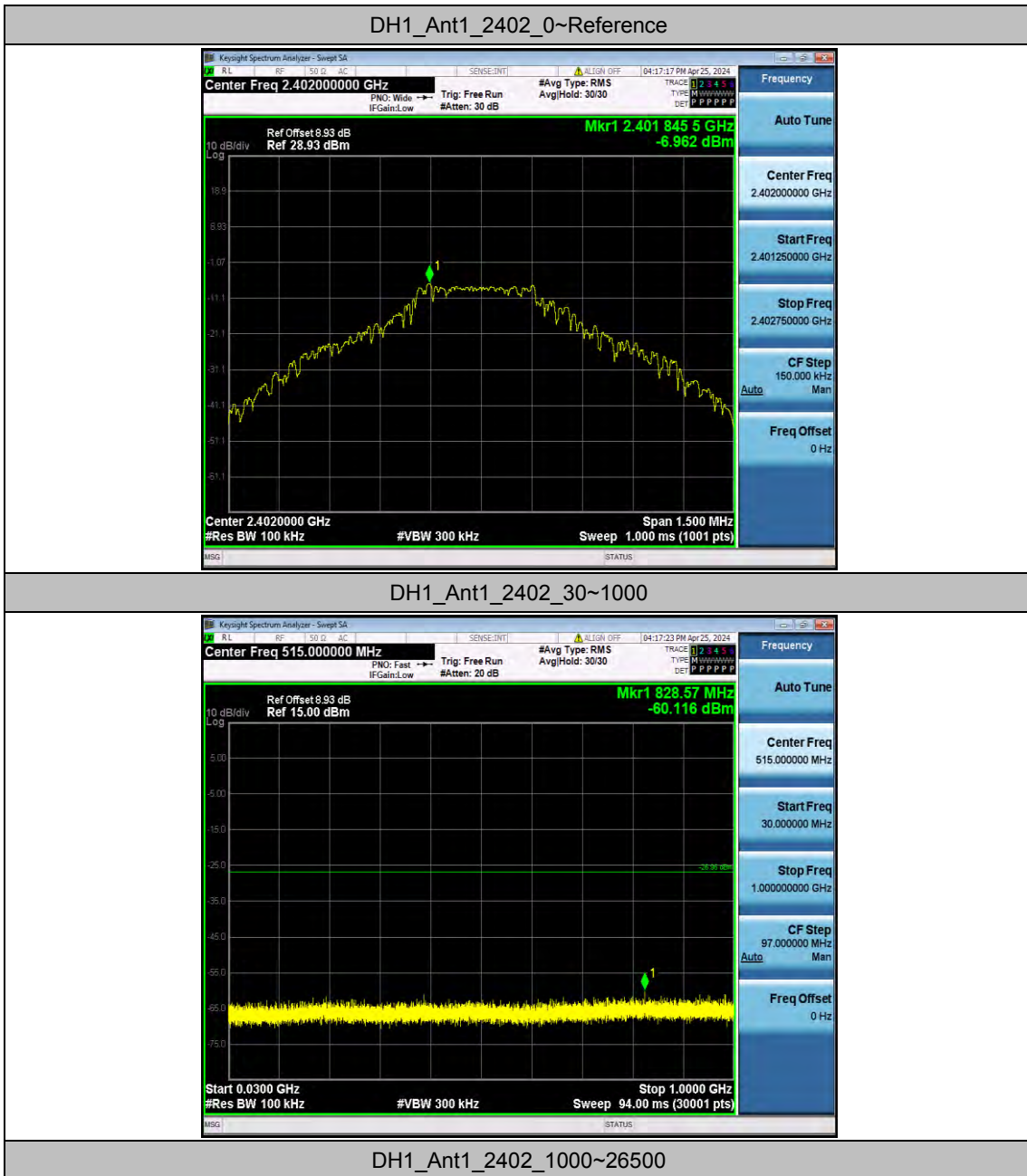


Appendix A.8: Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	2402	Reference	-6.96	-6.96	---	PASS
			30~1000	-6.96	-60.12	≤-26.96	PASS
			1000~26500	-6.96	-47.76	≤-26.96	PASS
		2441	Reference	-6.28	-6.28	---	PASS
			30~1000	-6.28	-29.44	≤-26.28	PASS
			1000~26500	-6.28	-47.32	≤-26.28	PASS
		2480	Reference	-7.28	-7.28	---	PASS
			30~1000	-7.28	-60.9	≤-27.28	PASS
			1000~26500	-7.28	-47.34	≤-27.28	PASS
2DH1	Ant1	2402	Reference	-6.99	-6.99	---	PASS
			30~1000	-6.99	-61.17	≤-26.99	PASS
			1000~26500	-6.99	-47.27	≤-26.99	PASS
		2441	Reference	-7.40	-7.40	---	PASS
			30~1000	-7.40	-56.37	≤-27.4	PASS
			1000~26500	-7.40	-47.9	≤-27.4	PASS
		2480	Reference	-7.10	-7.10	---	PASS
			30~1000	-7.10	-59.79	≤-27.1	PASS
			1000~26500	-7.10	-47.48	≤-27.1	PASS
3DH1	Ant1	2402	Reference	-7.67	-7.67	---	PASS
			30~1000	-7.67	-60.53	≤-27.67	PASS
			1000~26500	-7.67	-48.2	≤-27.67	PASS
		2441	Reference	-6.79	-6.79	---	PASS
			30~1000	-6.79	-60.19	≤-26.79	PASS
			1000~26500	-6.79	-47.79	≤-26.79	PASS
		2480	Reference	-7.82	-7.82	---	PASS
			30~1000	-7.82	-58.6	≤-27.82	PASS
			1000~26500	-7.82	-48.11	≤-27.82	PASS

Test Graphs

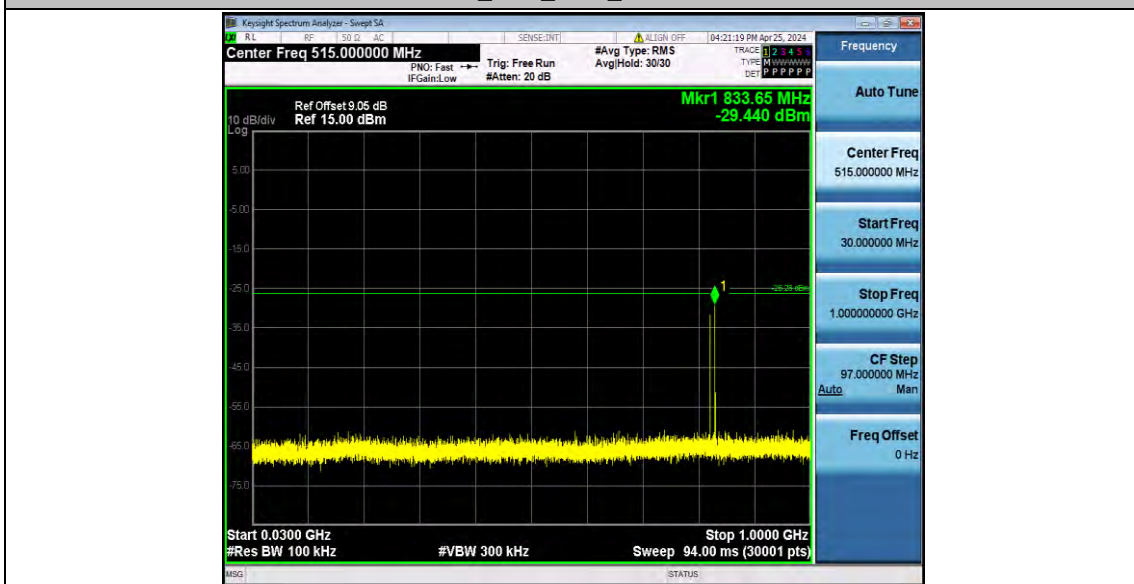




DH1_Ant1_2441_0~Reference



DH1_Ant1_2441_30~1000



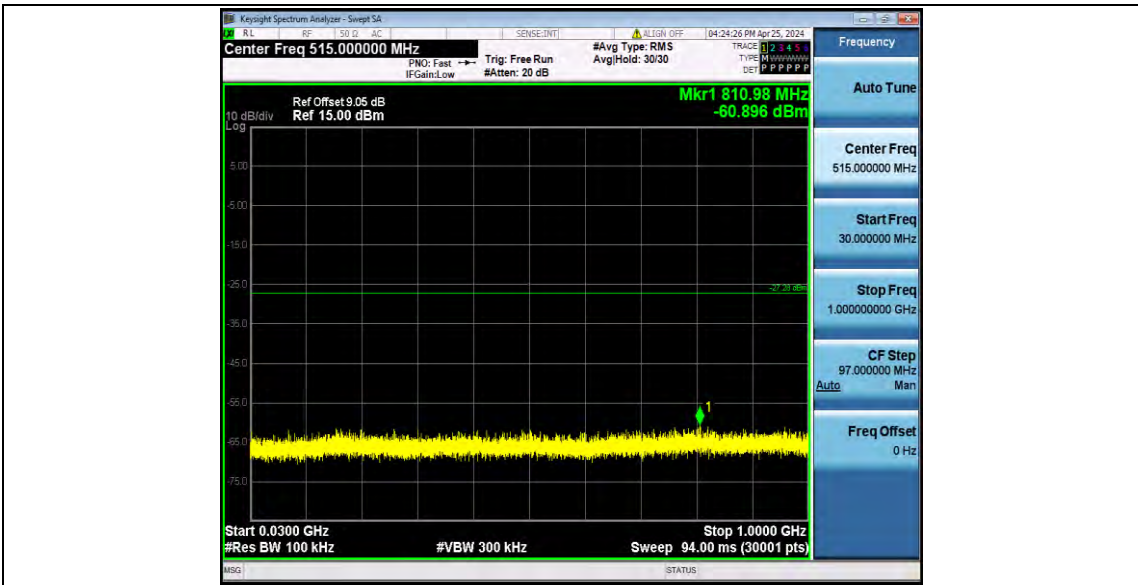
DH1_Ant1_2441_1000~26500



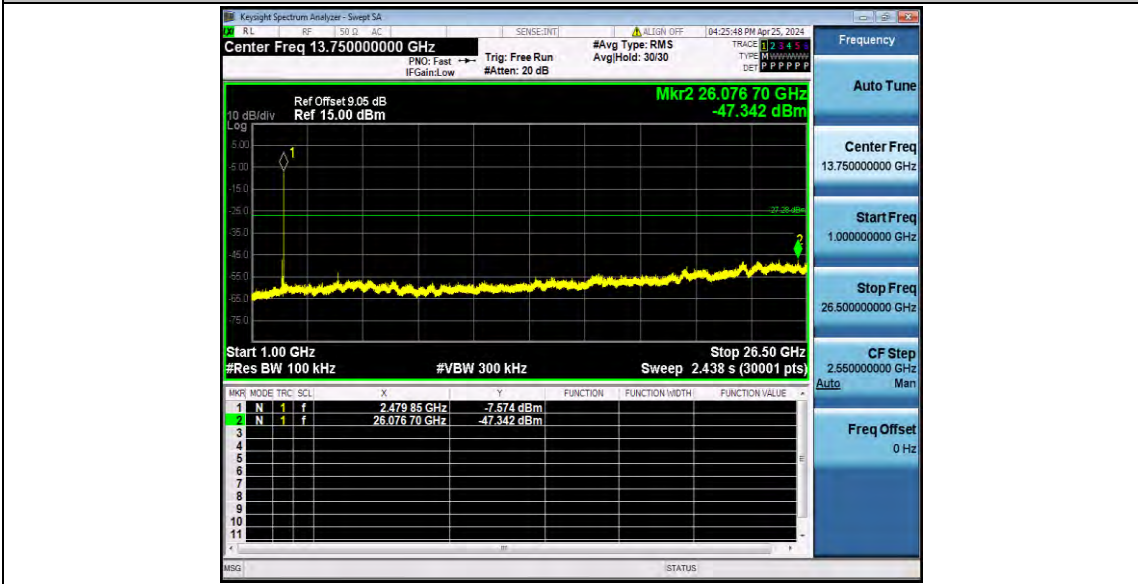
DH1_Ant1_2480_0~Reference



DH1_Ant1_2480_30~1000



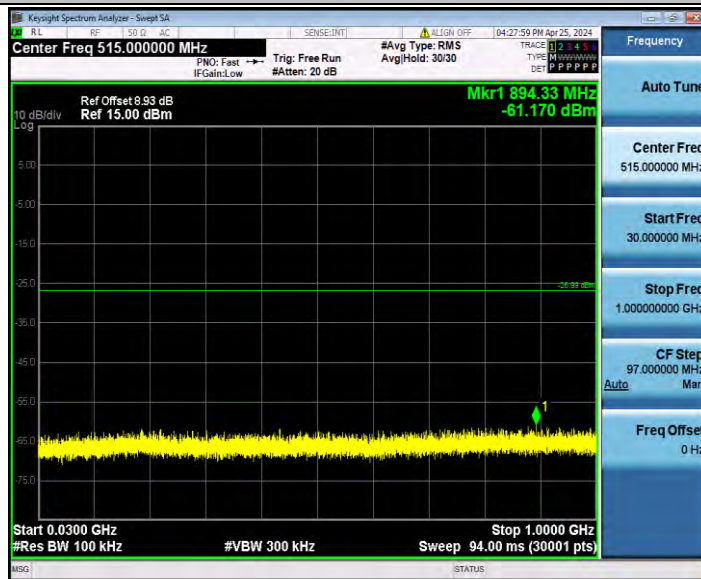
DH1_Ant1_2480_1000~26500



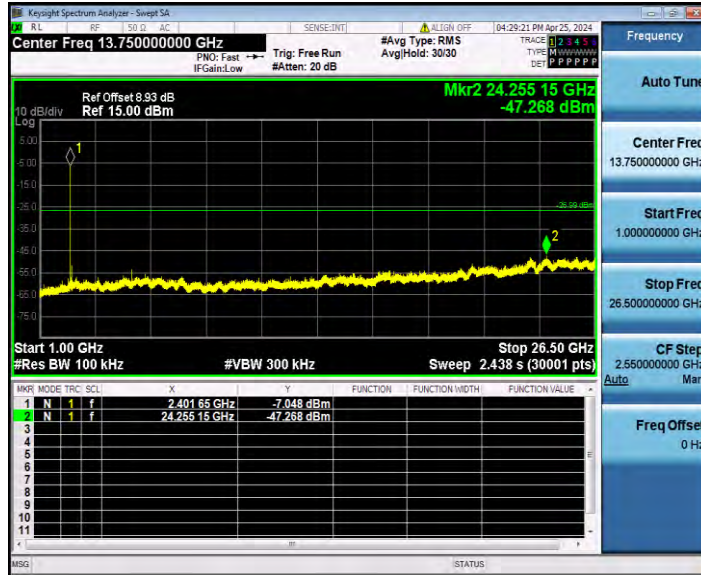
2DH1_Ant1_2402_0~Reference



2DH1_Ant1_2402_30~1000



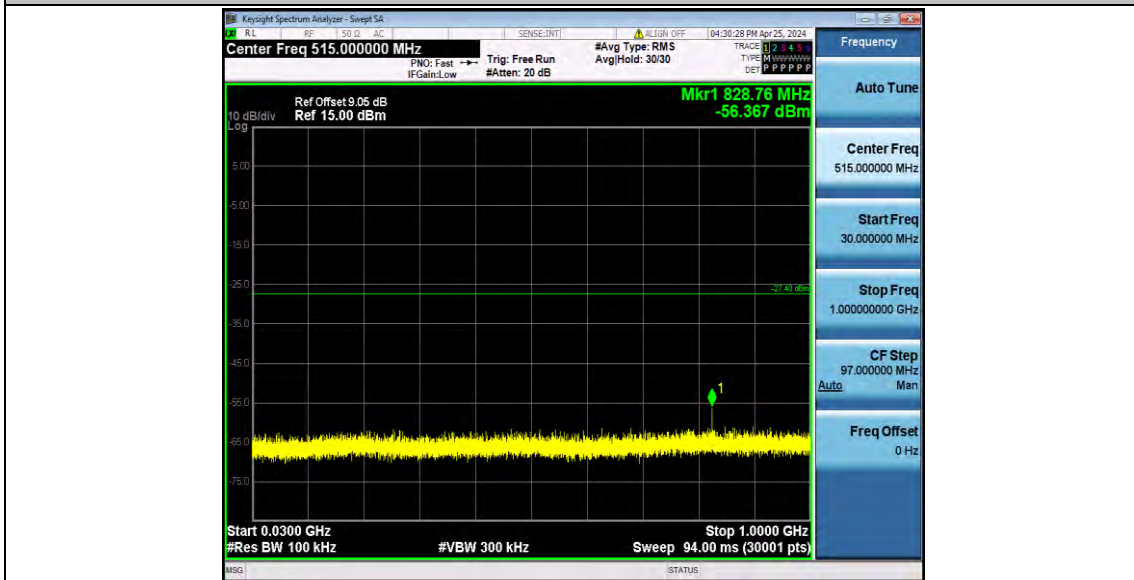
2DH1_Ant1_2402_1000~26500



2DH1_Ant1_2441_0~Reference



2DH1_Ant1_2441_30~100



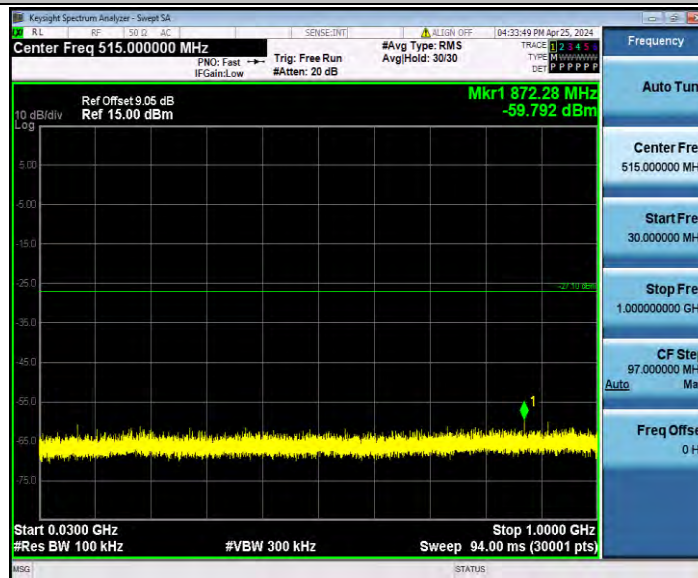
2DH1_Ant1_2441_1000~26500



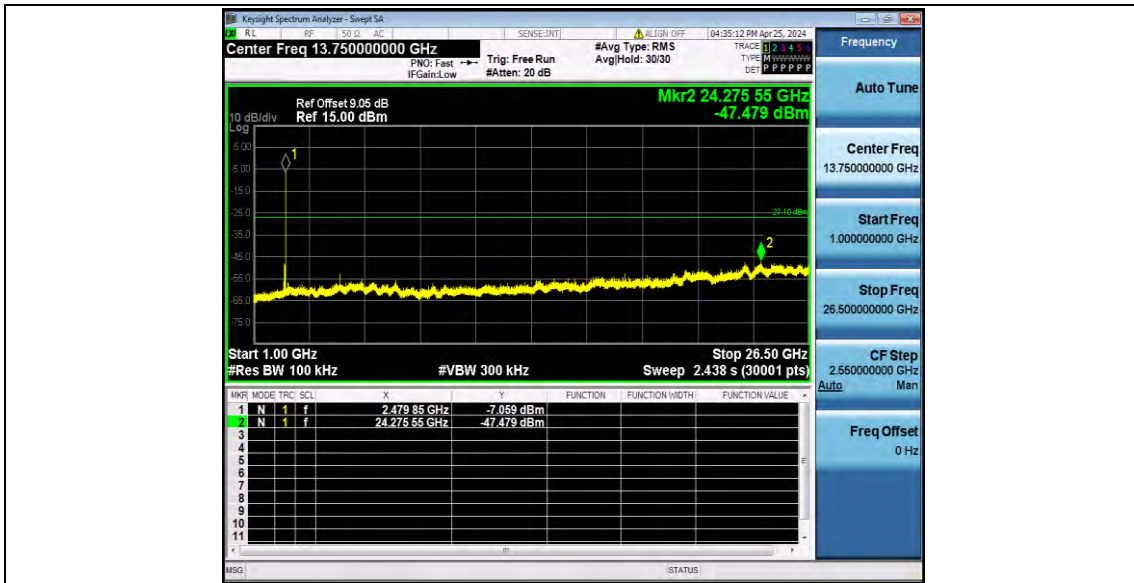
2DH1_Ant1_2480_0~Reference



2DH1_Ant1_2480_30~1000



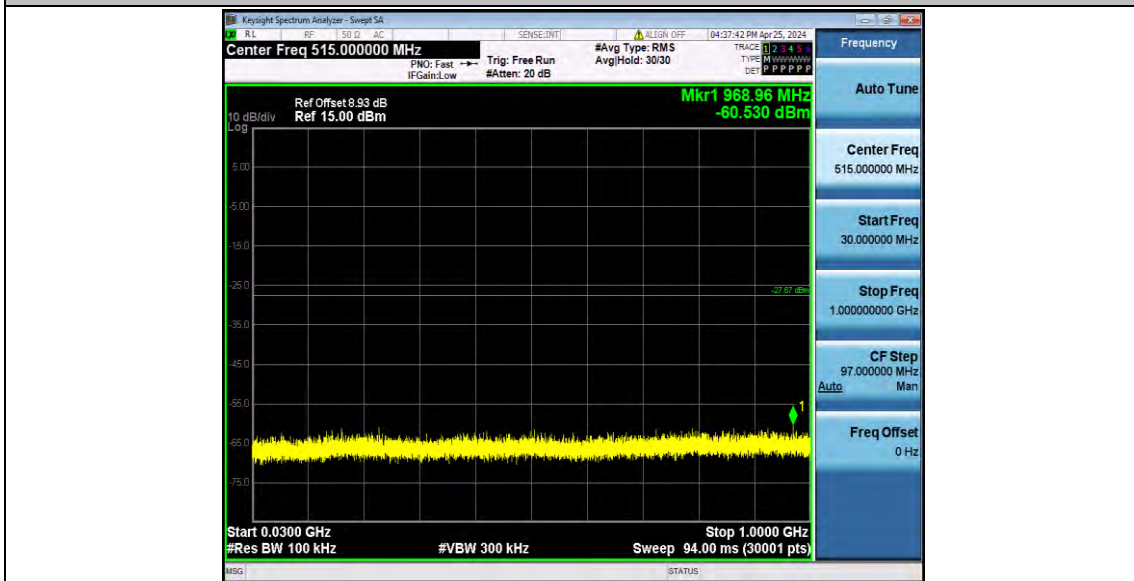
2DH1_Ant1_2480_1000~26500



3DH1_Ant1_2402_0~Reference



3DH1_Ant1_2402_30~1000



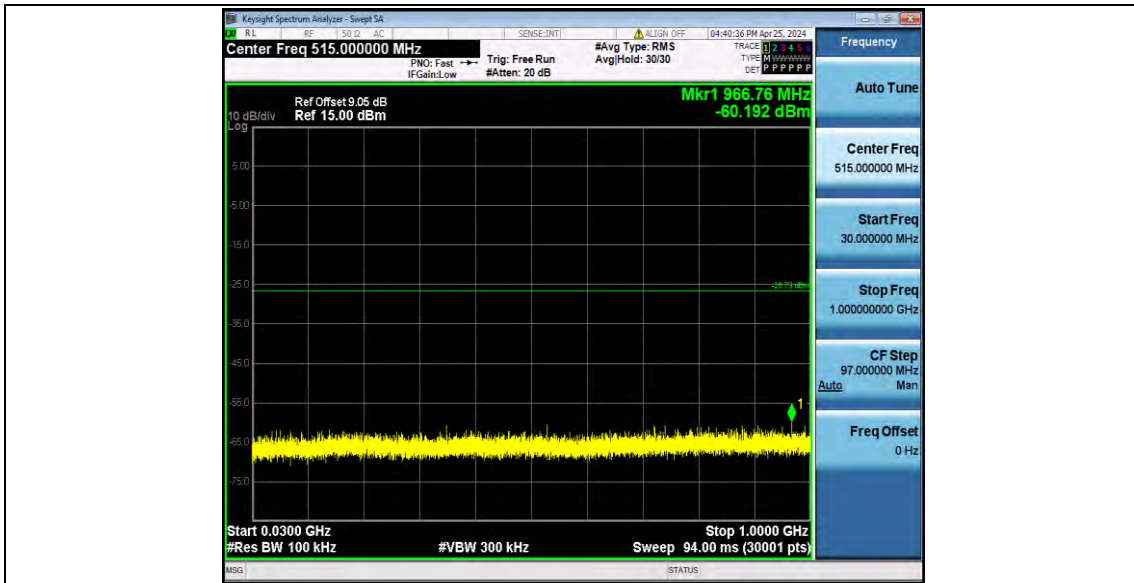
3DH1_Ant1_2402_1000~26500



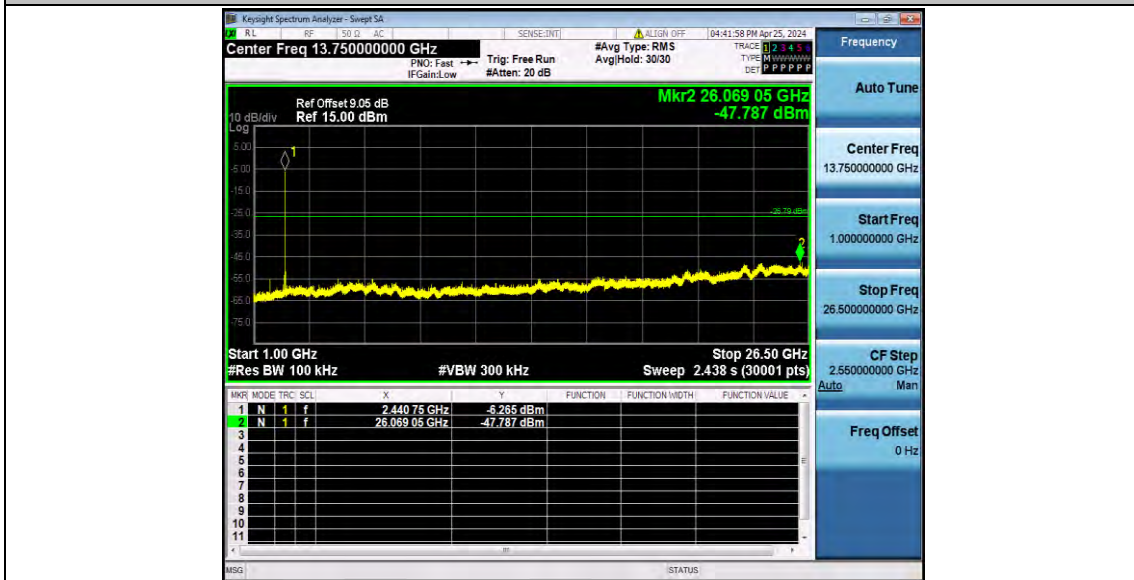
3DH1_Ant1_2441_0~Reference



3DH1_Ant1_2441_30~1000



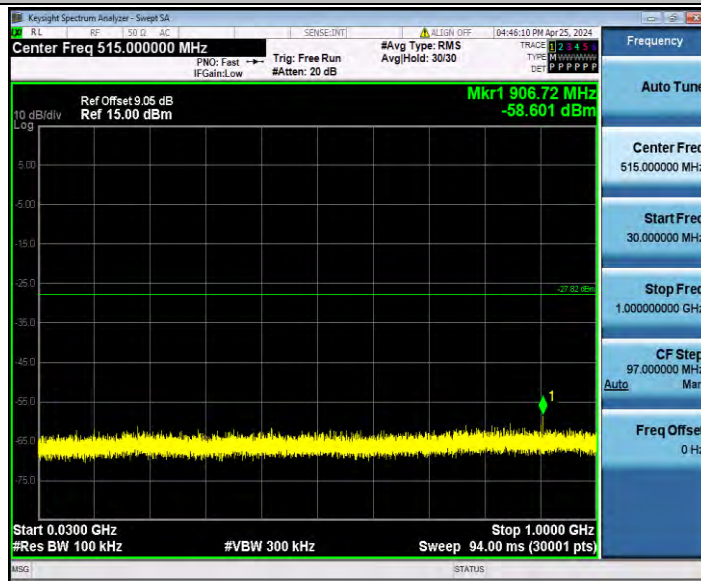
3DH1_Ant1_2441_1000~26500



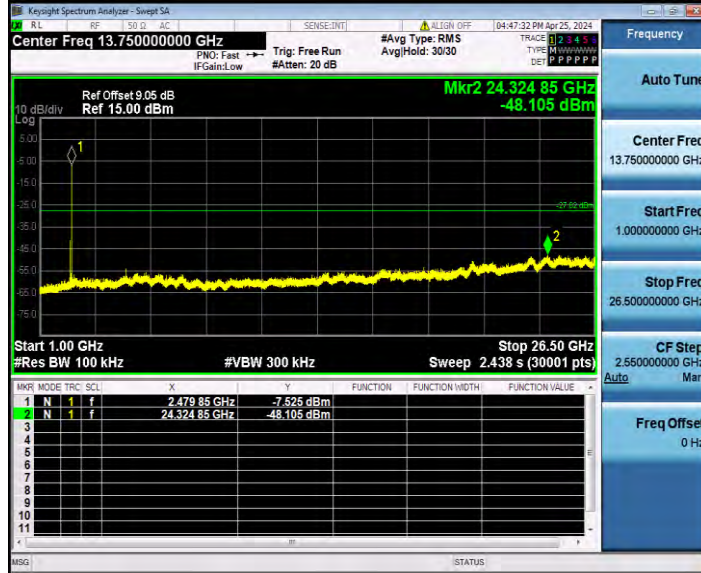
3DH1_Ant1_2480_0~Reference



3DH1_Ant1_2480_30~1000



3DH1_Ant1_2480_1000~26500



Appendix A.9: Emissions in Restricted Bands

Test Result

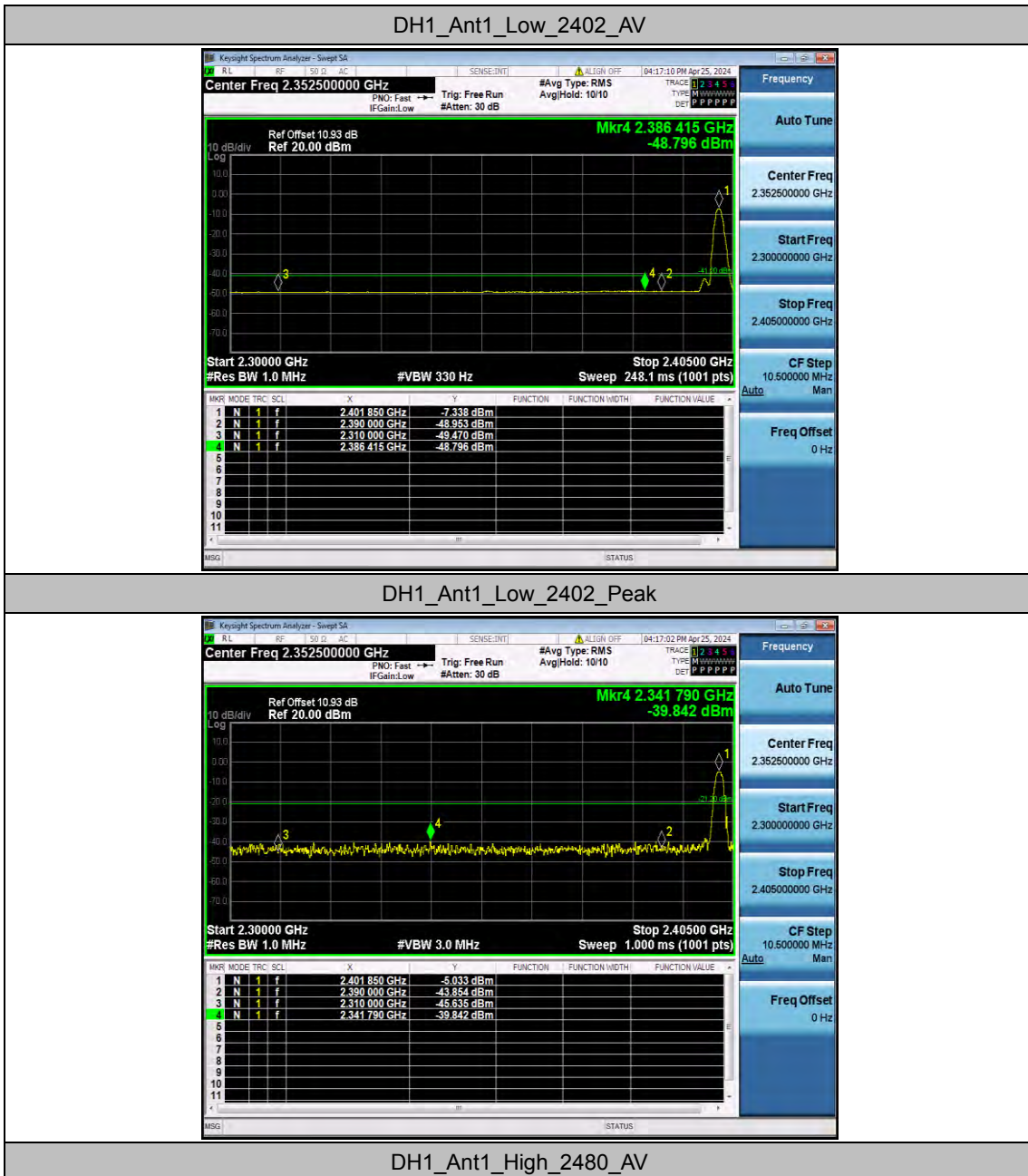
TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH1	Ant1	Low	2402	AV	2310.000	-49.47	≤-41.20	45.73	≤54	PASS
				AV	2386.415	-48.8	≤-41.20	46.40	≤54	PASS
				AV	2390.000	-48.95	≤-41.20	46.25	≤54	PASS
				Peak	2310.000	-45.64	≤-21.20	49.56	≤74	PASS
				Peak	2341.790	-39.84	≤-21.20	55.36	≤74	PASS
				Peak	2390.000	-43.85	≤-21.20	51.35	≤74	PASS
		High	2480	AV	2483.500	-48.72	≤-41.20	46.48	≤54	PASS
				AV	2499.520	-48.57	≤-41.20	46.63	≤54	PASS
				AV	2500.000	-48.68	≤-41.20	46.52	≤54	PASS
				Peak	2483.500	-40.64	≤-21.20	54.56	≤74	PASS
				Peak	2485.440	-38.42	≤-21.20	56.78	≤74	PASS
				Peak	2500.000	-40.44	≤-21.20	54.76	≤74	PASS
2DH1	Ant1	Low	2402	AV	2310.000	-49.49	≤-41.20	45.71	≤54	PASS
				AV	2378.645	-48.71	≤-41.20	46.49	≤54	PASS
				AV	2390.000	-48.99	≤-41.20	46.21	≤54	PASS
				Peak	2310.000	-41.75	≤-21.20	53.45	≤74	PASS
				Peak	2354.810	-38.5	≤-21.20	56.70	≤74	PASS
				Peak	2390.000	-41.2	≤-21.20	54.00	≤74	PASS
		High	2480	AV	2483.500	-48.61	≤-41.20	46.59	≤54	PASS
				AV	2483.520	-48.61	≤-41.20	46.59	≤54	PASS
				AV	2500.000	-48.68	≤-41.20	46.52	≤54	PASS
				Peak	2483.500	-41.24	≤-21.20	53.96	≤74	PASS
				Peak	2496.240	-38.46	≤-21.20	56.74	≤74	PASS
				Peak	2500.000	-41.21	≤-21.20	53.99	≤74	PASS
3DH1	Ant1	Low	2402	AV	2310.000	-49.54	≤-41.20	45.66	≤54	PASS
				AV	2382.845	-48.77	≤-41.20	46.43	≤54	PASS
				AV	2390.000	-49.07	≤-41.20	46.13	≤54	PASS
				Peak	2310.000	-41.6	≤-21.20	53.60	≤74	PASS
				Peak	2343.995	-37.99	≤-21.20	57.21	≤74	PASS
				Peak	2390.000	-40.35	≤-21.20	54.85	≤74	PASS
		High	2480	AV	2483.500	-48.6	≤-41.20	46.60	≤54	PASS
				AV	2483.520	-48.6	≤-41.20	46.60	≤54	PASS
				AV	2500.000	-48.8	≤-41.20	46.40	≤54	PASS
				Peak	2483.500	-41.11	≤-21.20	54.09	≤74	PASS
Peak	2486.720	-38.53	≤-21.20	56.67	≤74	PASS				

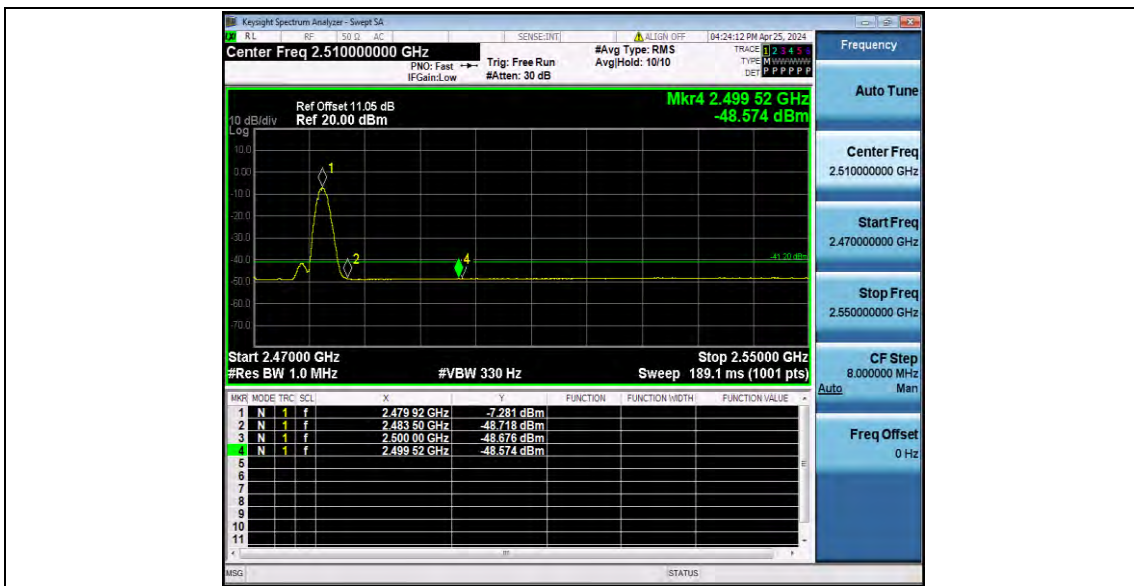
				Peak	2500.000	-39.33	≤-21.20	55.87	≤74	PASS
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Note:

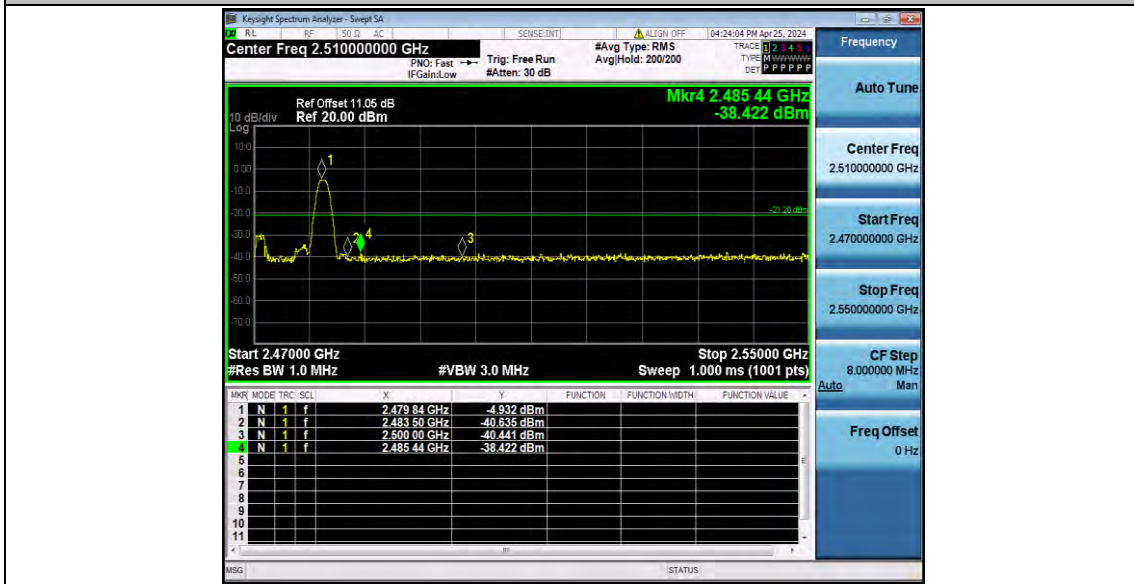
1. The Antenna Gain is compensated in the graph.
2. The Duty Cycle Factor and RBW Factor is compensated in the graph.
3. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

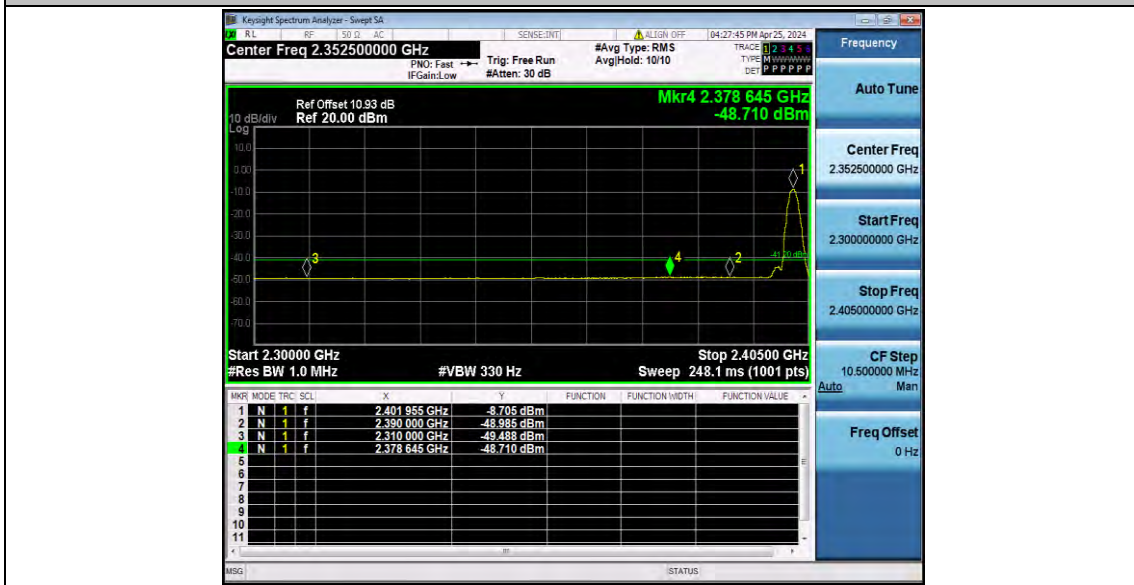




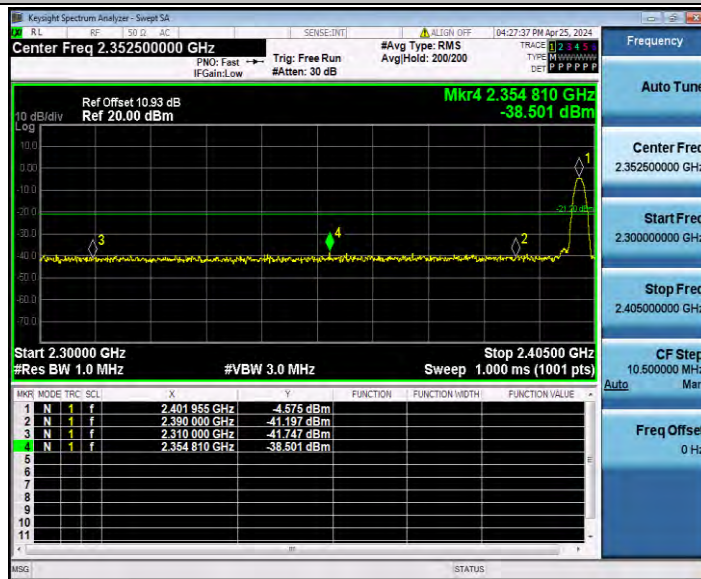
DH1_Ant1_High_2480_Peak



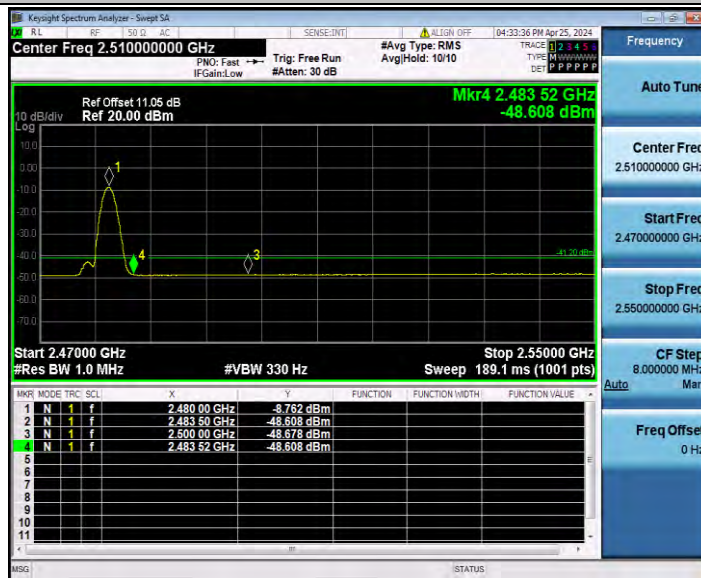
2DH1_Ant1_Low_2402_AV



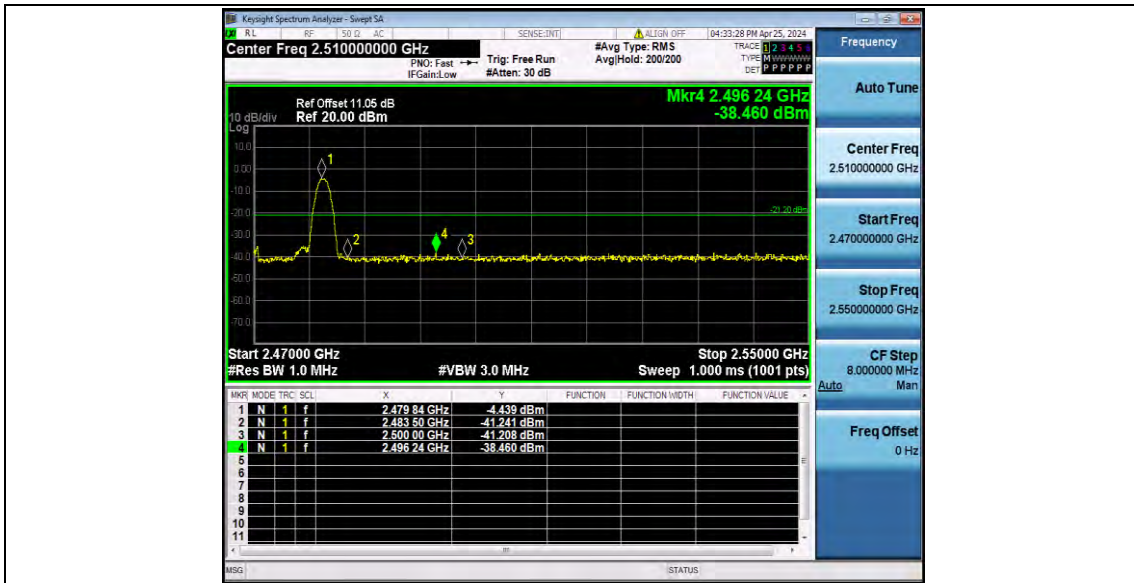
2DH1_Ant1_Low_2402_Peak



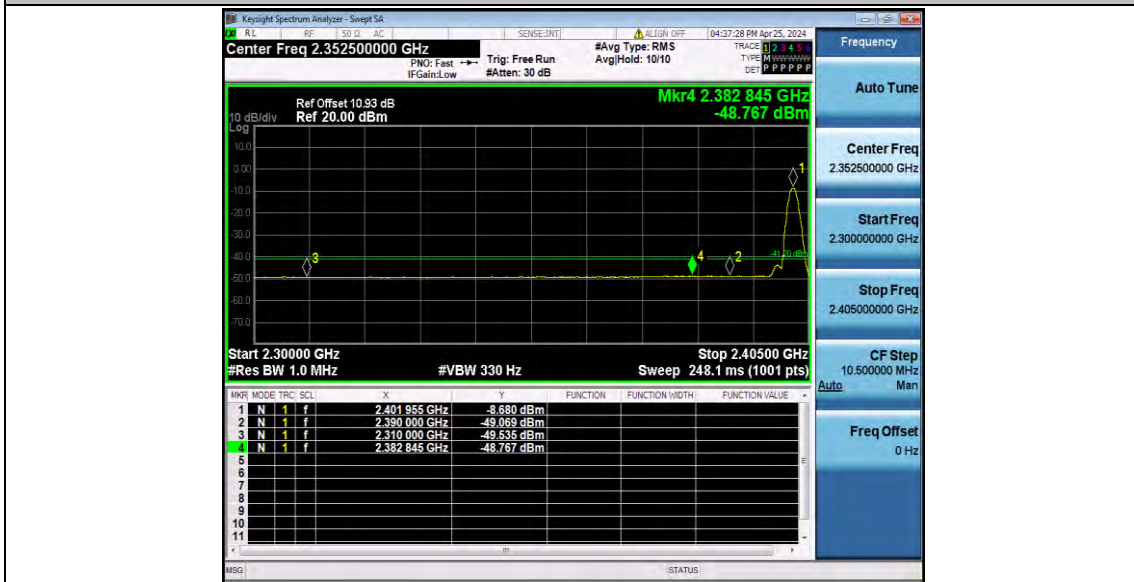
2DH1_Ant1_High_2480_AV



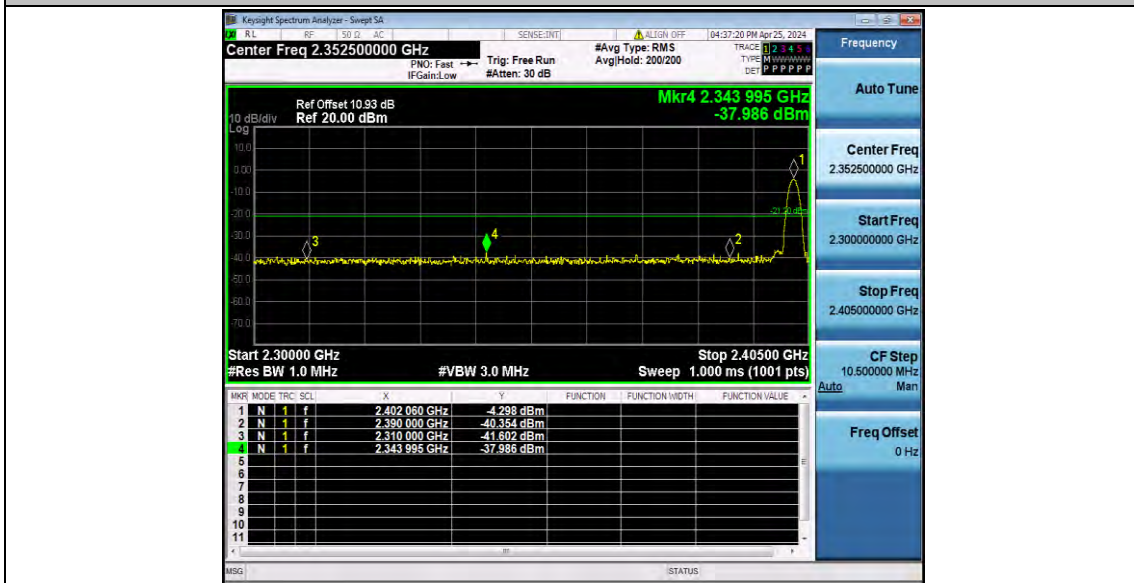
2DH1_Ant1_High_2480_Peak



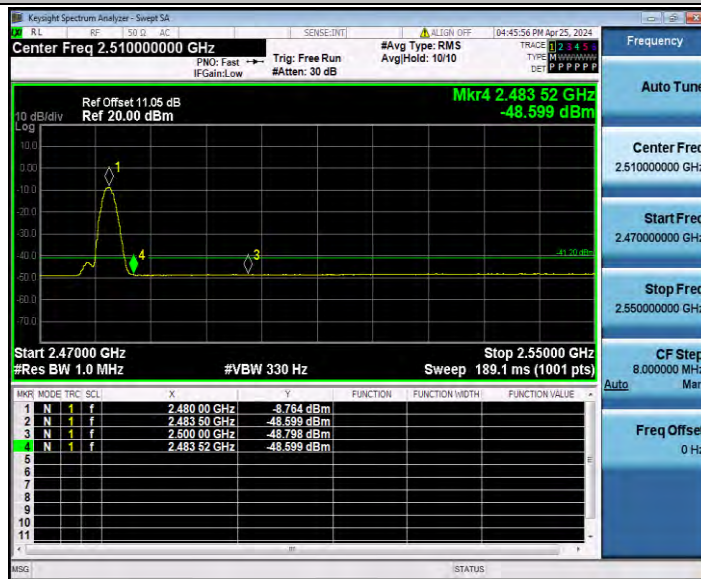
3DH1_Ant1_Low_2402_AV



3DH1_Ant1_Low_2402_Peak



3DH1_Ant1_High_2480_AV



3DH1_Ant1_High_2480_Peak

