

Case No. : <u>GTS20231116004-1-1</u>	
Ambient Condition: <u>23</u> °C, <u>49</u> %RH, Atmos100.1Kpa,	
Test Date: <u>2023.12.1</u>	Test Engineer: <u>Evan ouyang</u>

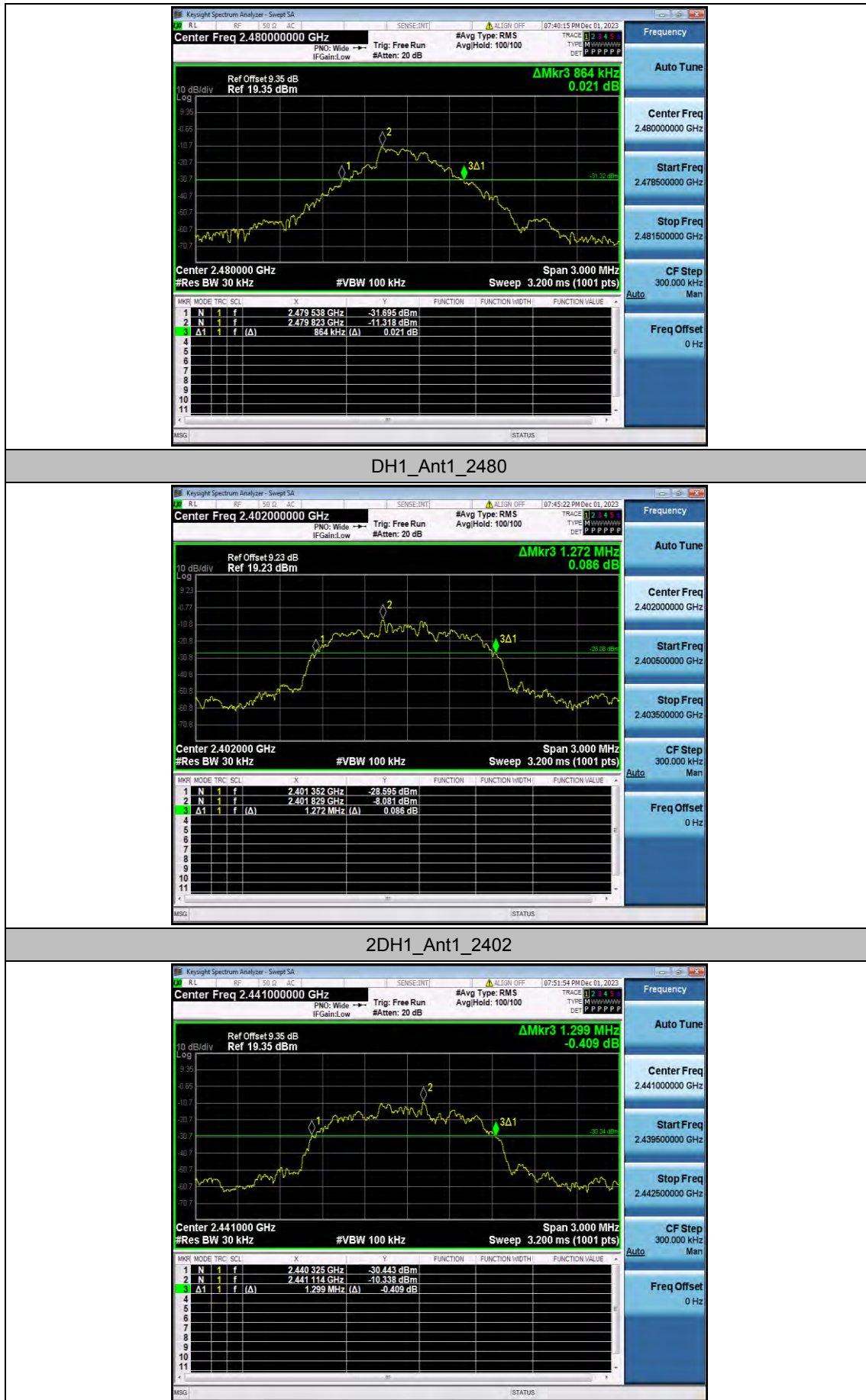
Appendix A.1: 20dB Emission Bandwidth

Test Result

Test Mode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.861	2401.538	2402.399	---	---
		2441	0.882	2440.535	2441.417	---	---
		2480	0.864	2479.538	2480.402	---	---
2DH1	Ant1	2402	1.272	2401.352	2402.624	---	---
		2441	1.299	2440.325	2441.624	---	---
		2480	1.266	2479.355	2480.621	---	---
3DH1	Ant1	2402	1.260	2401.352	2402.612	---	---
		2441	1.248	2440.364	2441.612	---	---
		2480	1.260	2479.352	2480.612	---	---

Test Graphs





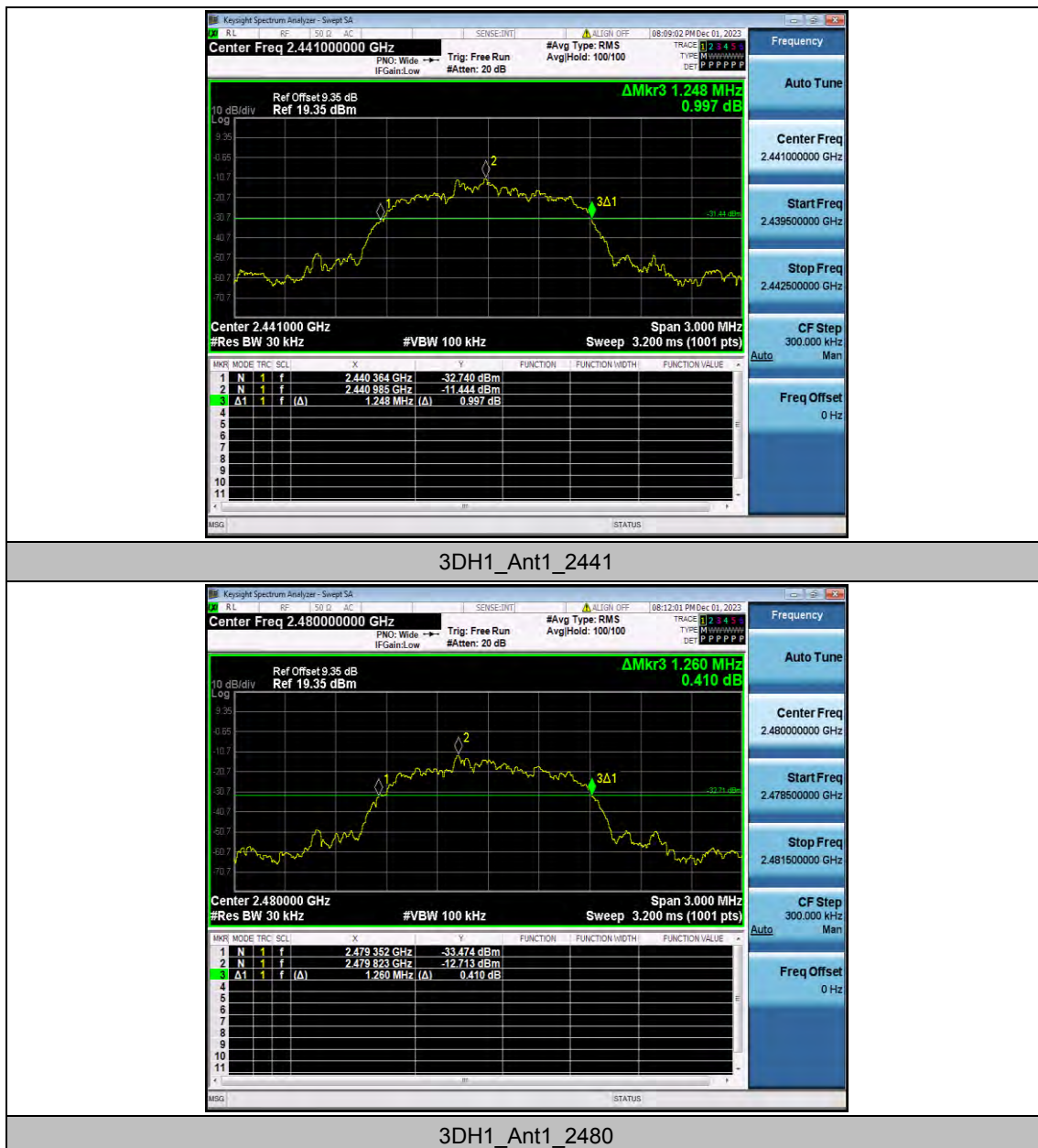
2DH1_Ant1_2441



2DH1_Ant1_2480



3DH1_Ant1_2402

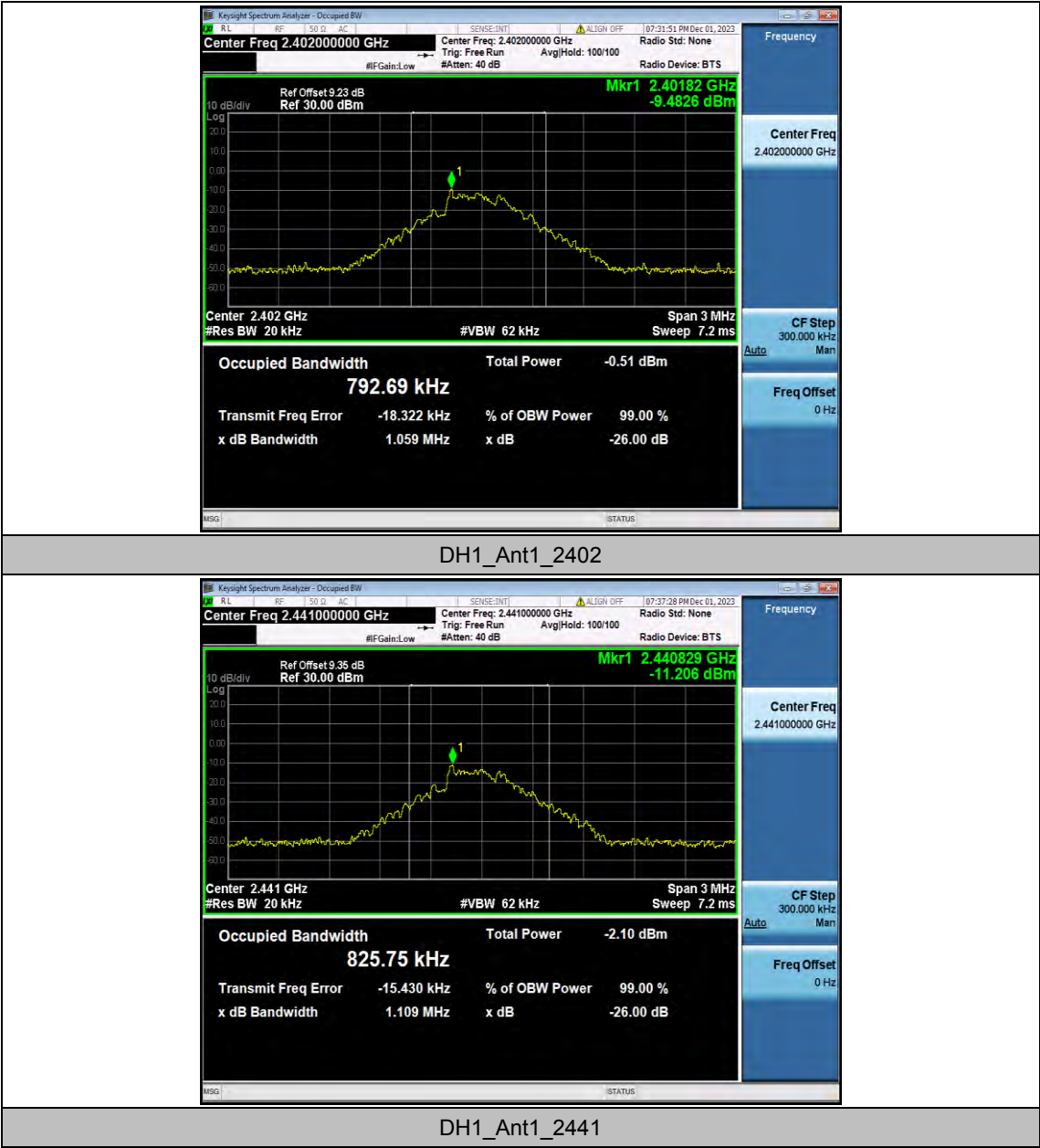


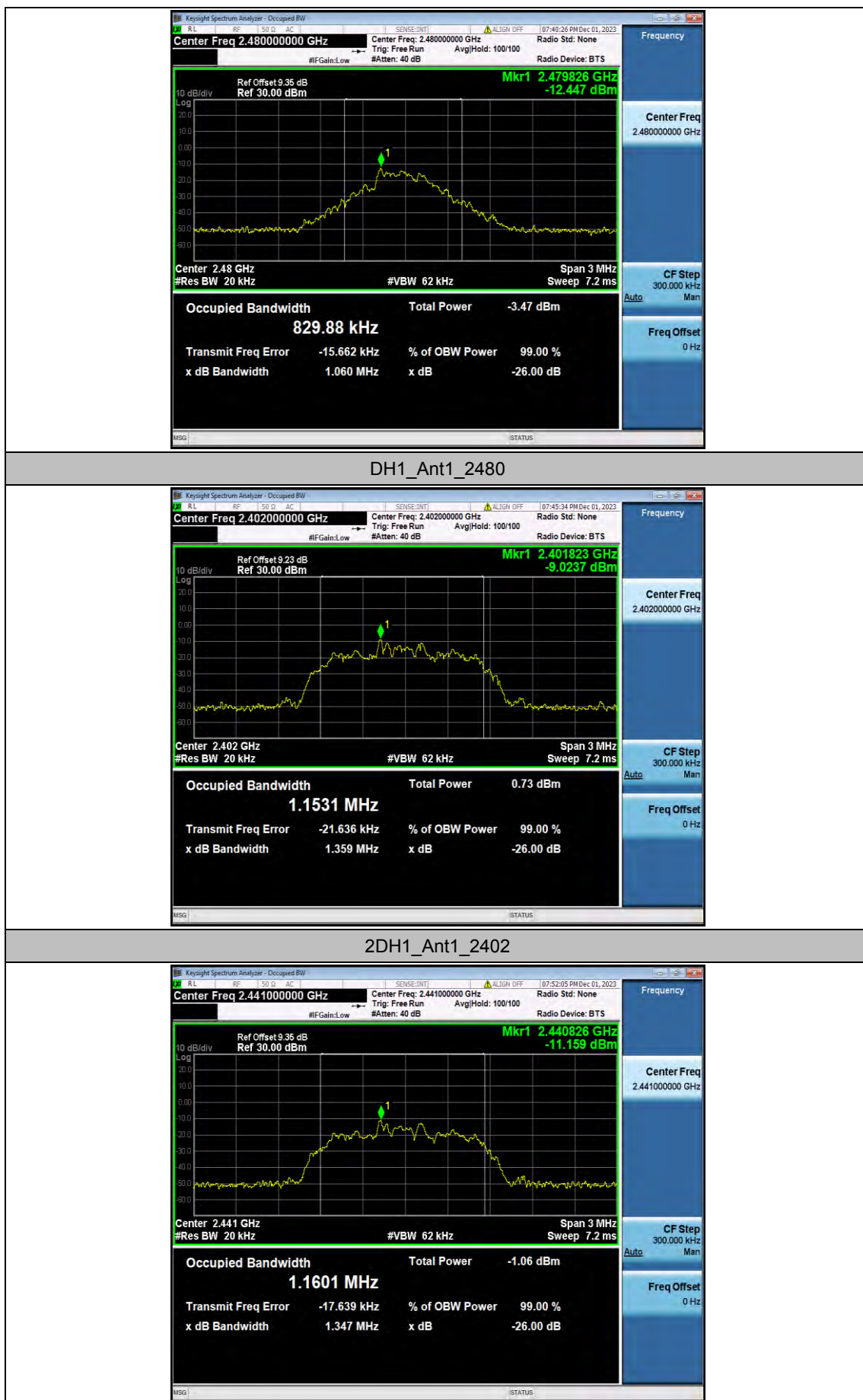
Appendix A.2: Occupied Channel Bandwidth

Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.79269	2401.585	2402.378	---	---
		2441	0.82575	2440.572	2441.397	---	---
		2480	0.82988	2479.569	2480.399	---	---
2DH1	Ant1	2402	1.1531	2401.402	2402.555	---	---
		2441	1.1601	2440.402	2441.562	---	---
		2480	1.1598	2479.403	2480.563	---	---
3DH1	Ant1	2402	1.1559	2401.418	2402.573	---	---
		2441	1.1552	2440.417	2441.572	---	---
		2480	1.1580	2479.419	2480.577	---	---

Test Graphs

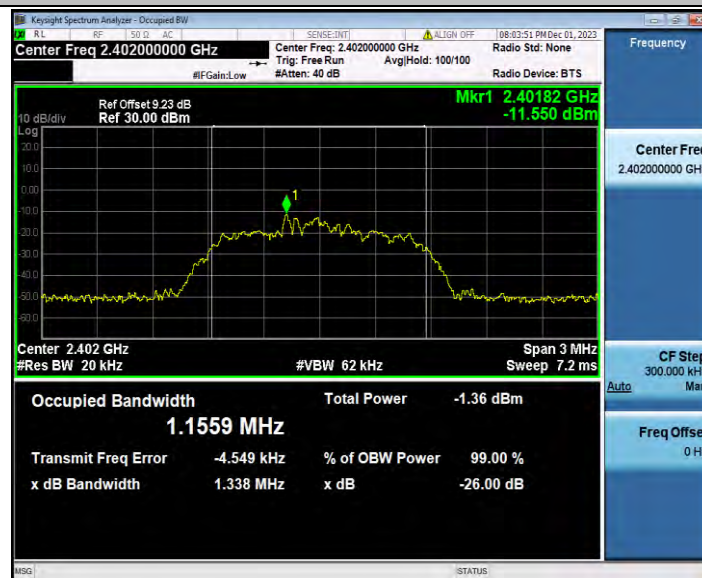




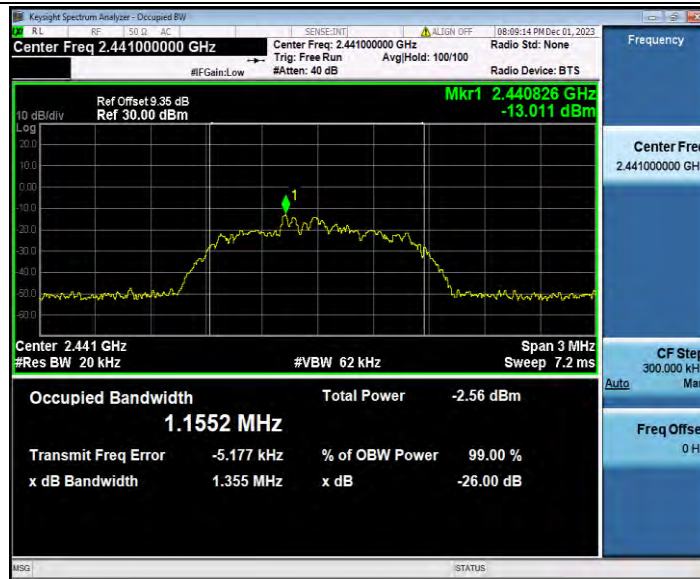
2DH1_Ant1_2441



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	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH1	Ant1	2402	-5.64	≤30.00	PASS
		2441	-7.28	≤30.00	PASS
		2480	-8.61	≤30.00	PASS
2DH1	Ant1	2402	-3.54	≤20.97	PASS
		2441	-5.41	≤20.97	PASS
		2480	-7.31	≤20.97	PASS
3DH1	Ant1	2402	-4.23	≤20.97	PASS
		2441	-5.63	≤20.97	PASS
		2480	-6.84	≤20.97	PASS

Appendix A.4: Carrier frequency separation

Test Result

Test Mode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Hop_2402	0.998	≥ 0.882	PASS
		Hop_2441	1.008	≥ 0.882	PASS
		Hop_2480	1	≥ 0.882	PASS
2DH1	Ant1	Hop_2402	0.99	≥ 0.866	PASS
		Hop_2441	0.994	≥ 0.866	PASS
		Hop_2480	1.28	≥ 0.866	PASS
3DH1	Ant1	Hop_2402	1.17	≥ 0.840	PASS
		Hop_2441	0.994	≥ 0.840	PASS
		Hop_2480	0.842	≥ 0.840	PASS

Test Graphs



[illegible]

Keysight Spectrum Analyzer - Sweep SA

AL RF 1.50 GHz AC SENSE:INT 09:07:09 PM Dec 01, 2023

Center Freq 2.441500000 GHz #Avg Type: RMS

Trig: Free Run #Atten: 40 dB

Ref Offset 9.35 dB
Ref 30.00 dBm

ΔMkr2 994 kHz
-0.01 dB

19 dB/div
Log

Start 2.440500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 1.000 ms (1001 pts)

Stop 2.442500 GHz

Frequency

Auto Tune

Center Freq
2.441500000 GHz

Start Freq
2.440500000 GHz

Stop Freq
2.442500000 GHz

CF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

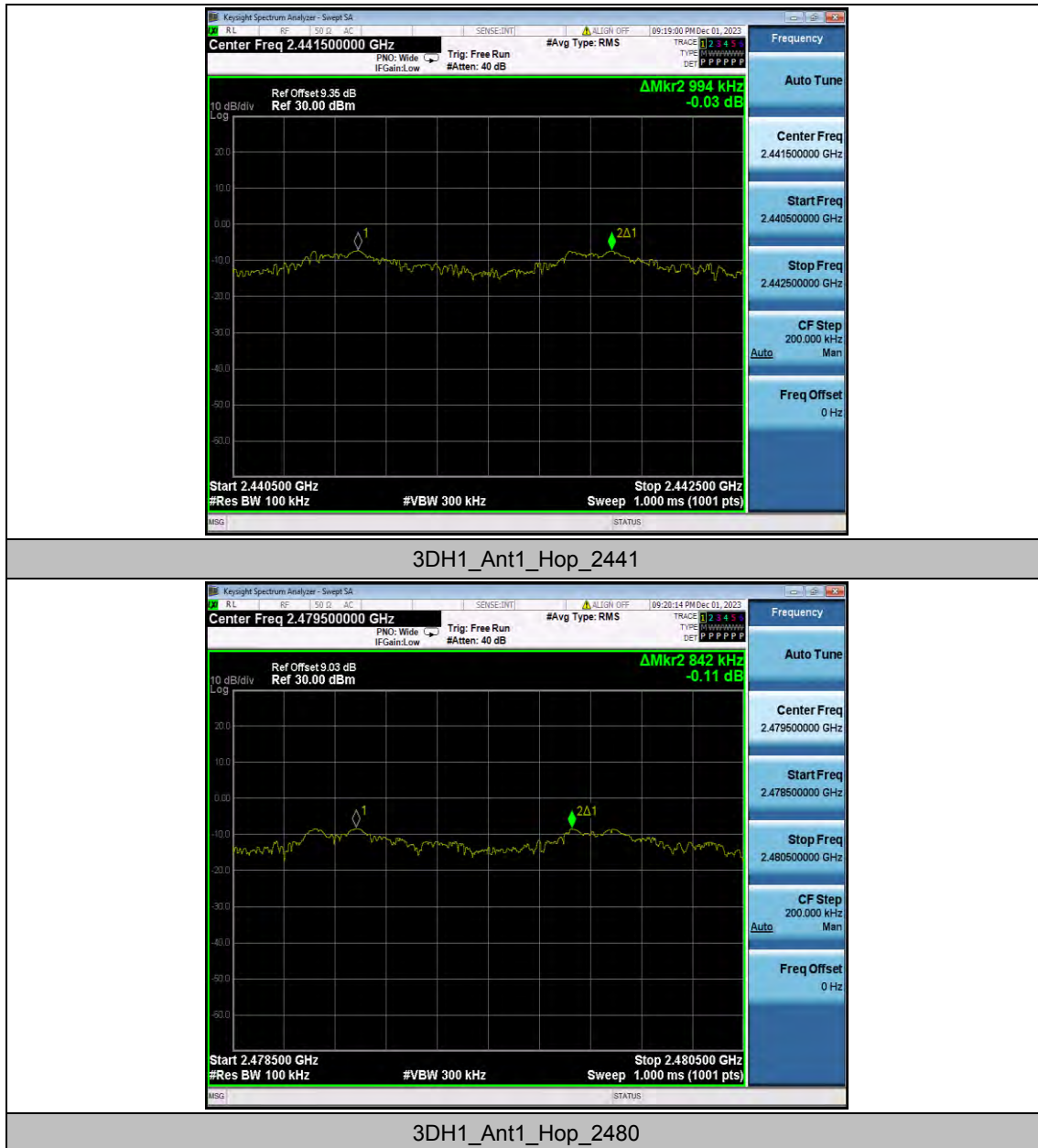
2DH1_Ant1_Hop_2441



2DH1_Ant1_Hop_2480



3DH1_Ant1_Hop_2402

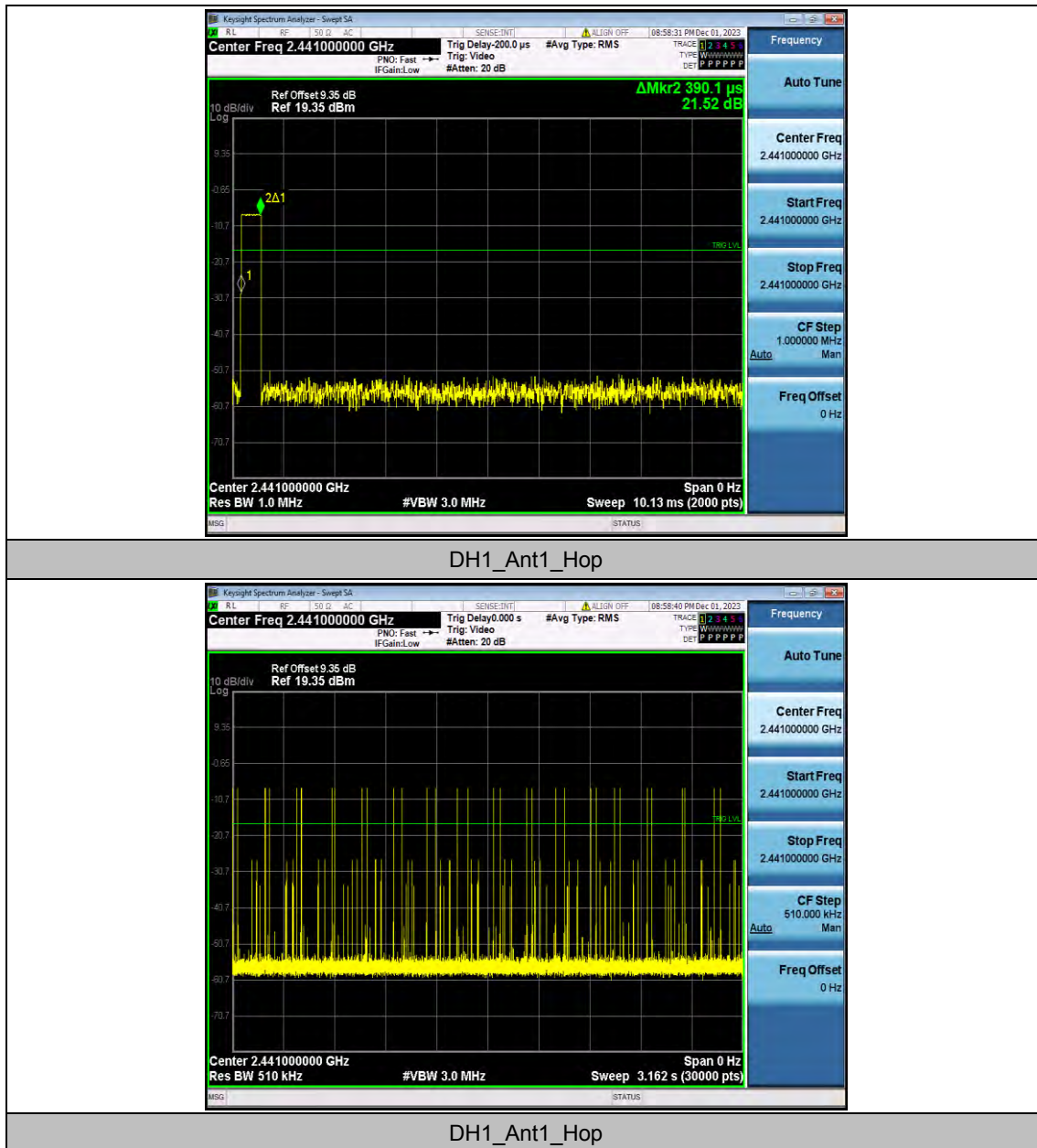


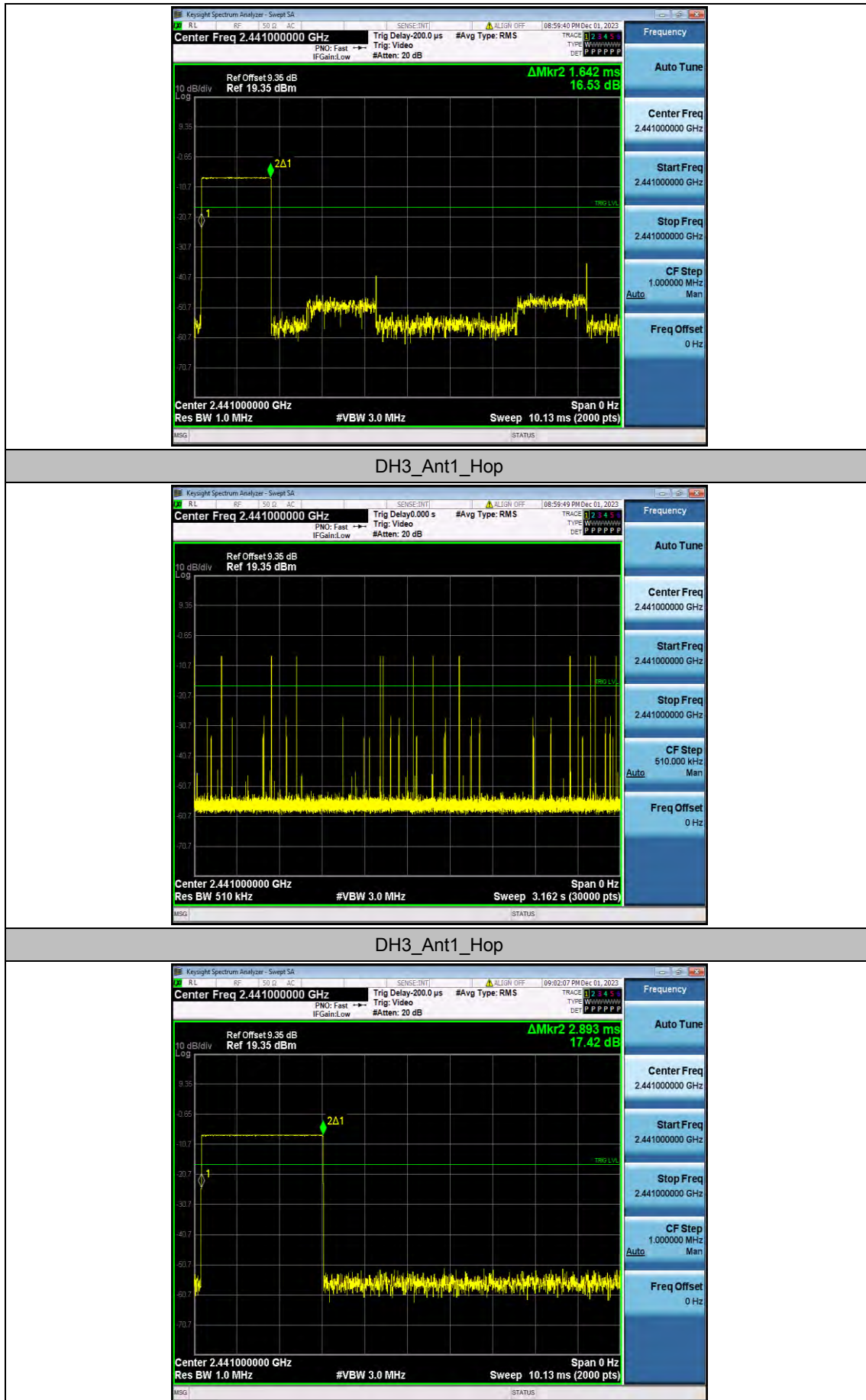
Appendix A.5: Time of occupancy

Test Result

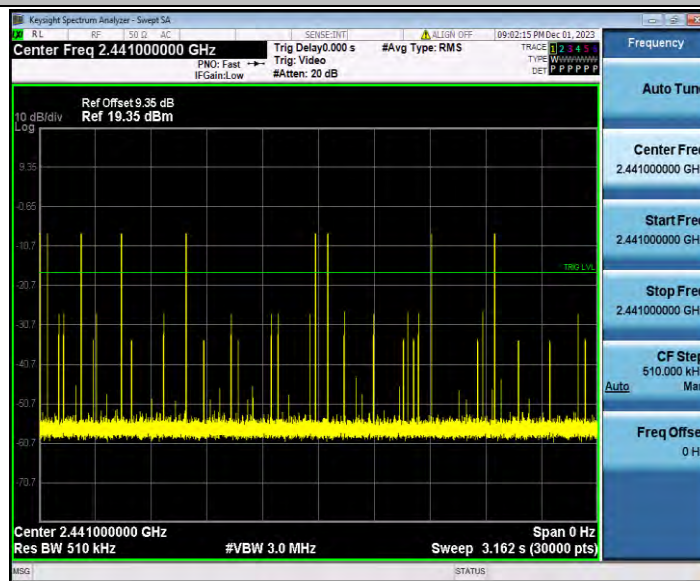
Test Mode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.39	320	0.125	≤0.4	PASS
DH3	Ant1	Hop	1.64	130	0.213	≤0.4	PASS
DH5	Ant1	Hop	2.89	90	0.26	≤0.4	PASS
2DH1	Ant1	Hop	0.40	330	0.13	≤0.4	PASS
2DH3	Ant1	Hop	1.65	160	0.263	≤0.4	PASS
2DH5	Ant1	Hop	2.90	120	0.348	≤0.4	PASS
3DH1	Ant1	Hop	0.38	320	0.121	≤0.4	PASS
3DH3	Ant1	Hop	1.65	190	0.314	≤0.4	PASS
3DH5	Ant1	Hop	2.89	80	0.231	≤0.4	PASS

Test Graphs

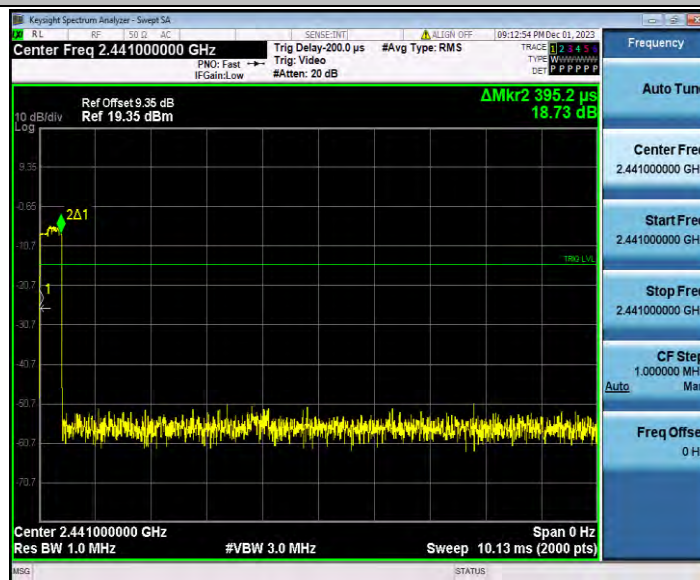




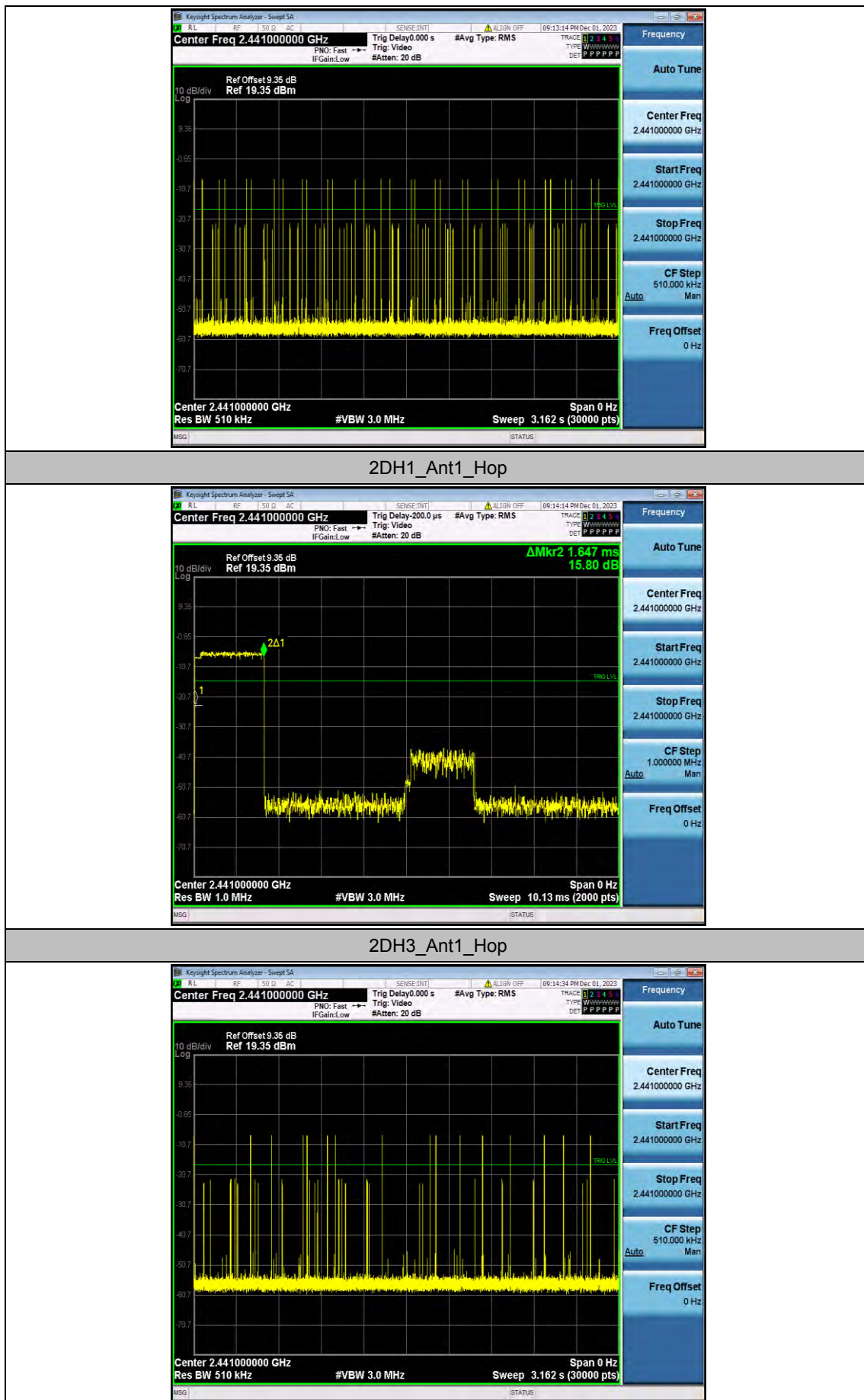
DH5_Ant1_Hop



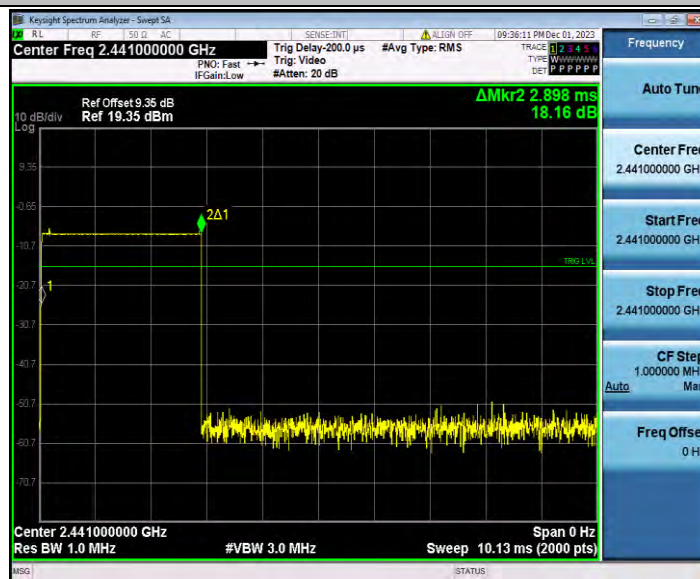
DH5_Ant1_Hop



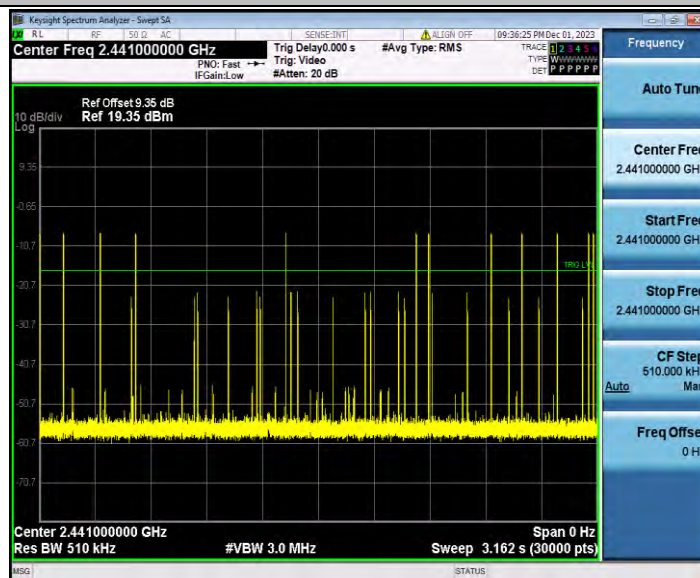
2DH1_Ant1_Hop



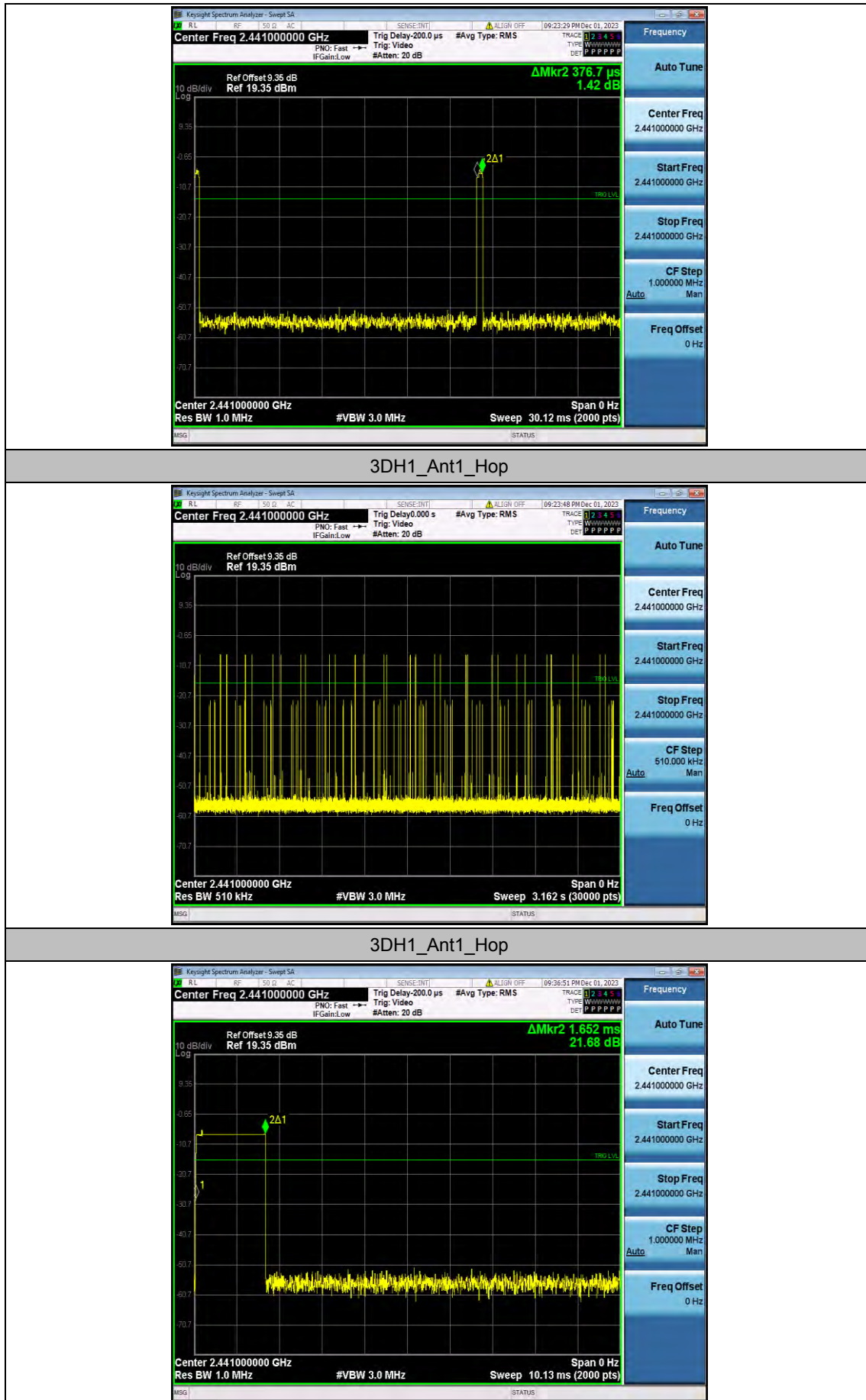
2DH3_Ant1_Hop



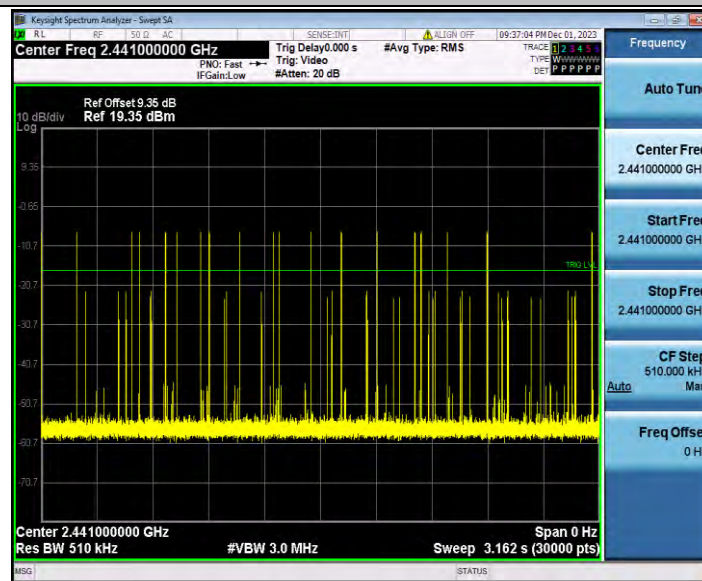
2DH5_Ant1_Hop



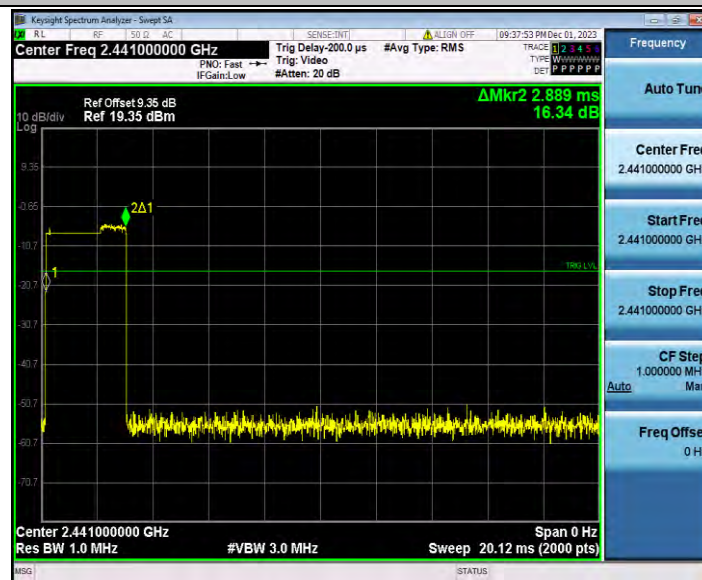
2DH5_Ant1_Hop



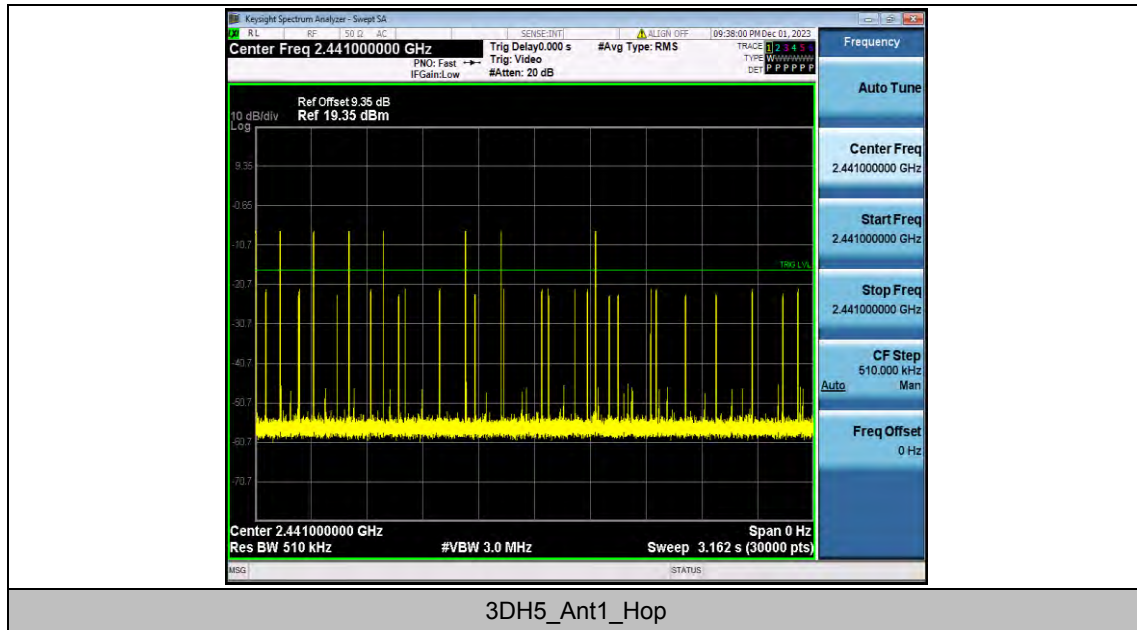
3DH3_Ant1_Hop



3DH3_Ant1_Hop



3DH5_Ant1_Hop

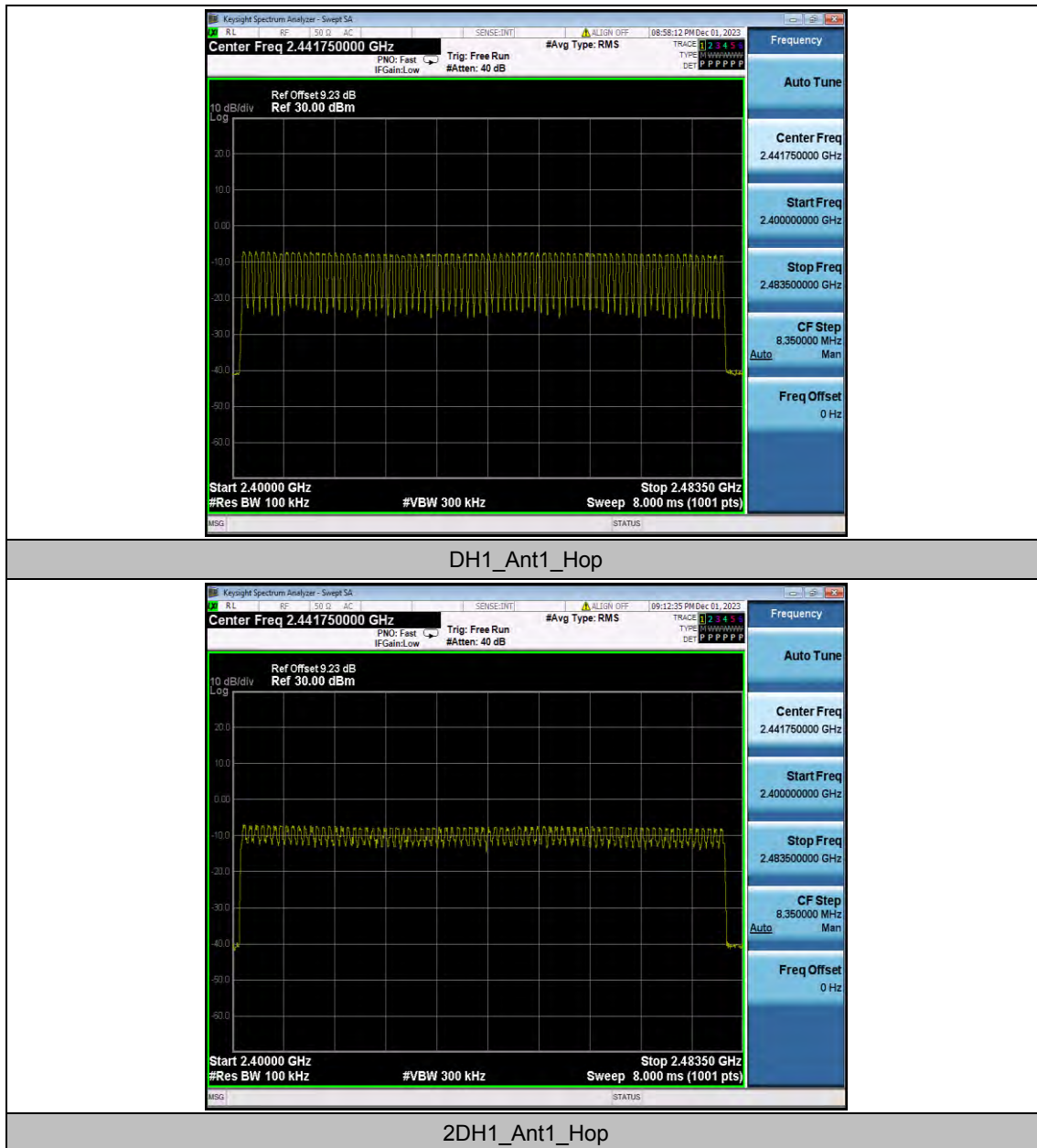


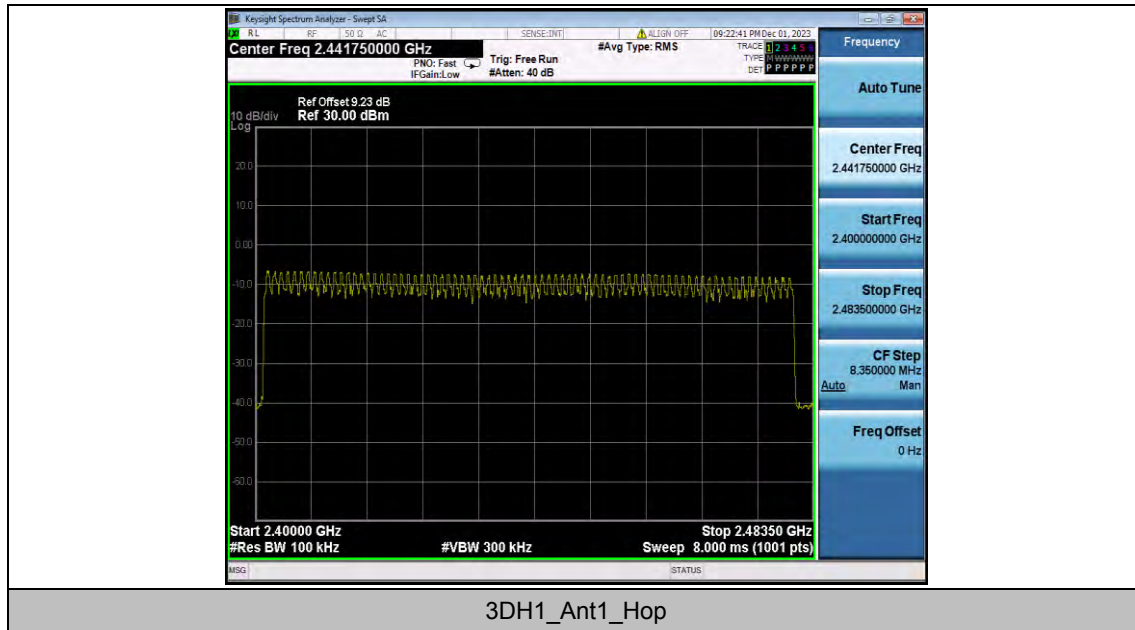
Appendix A.6: Number of hopping channels

Test Result

Test Mode	Antenna	Frequency[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



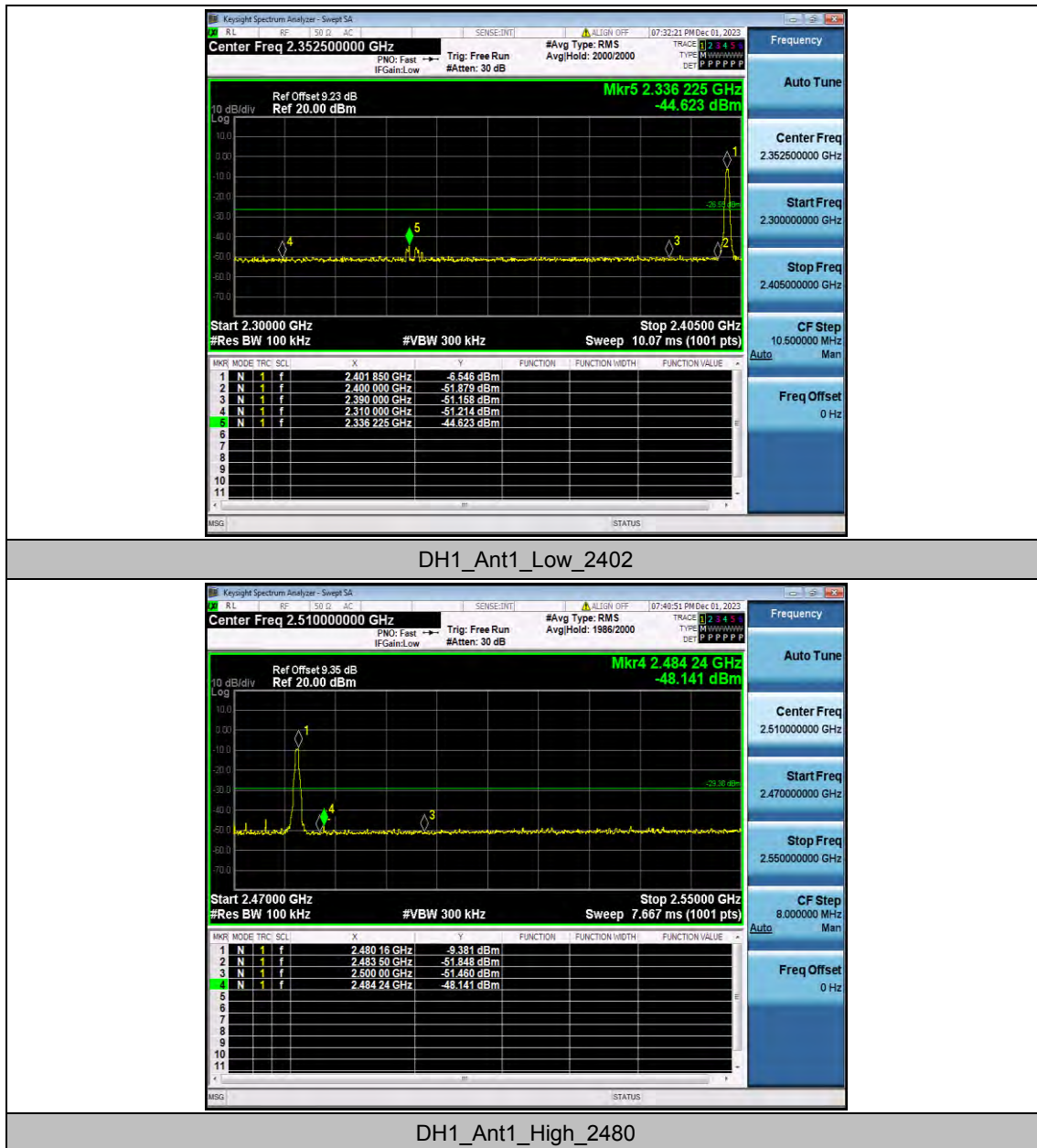


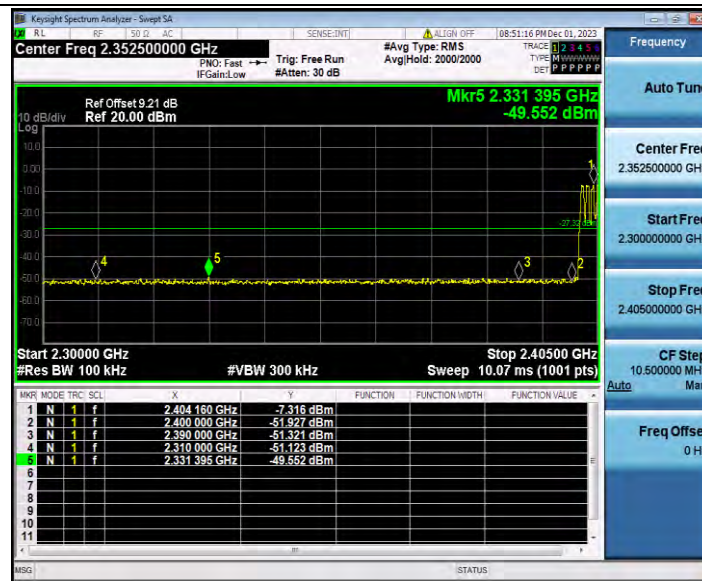
Appendix A.7: Band edge measurements

Test Result

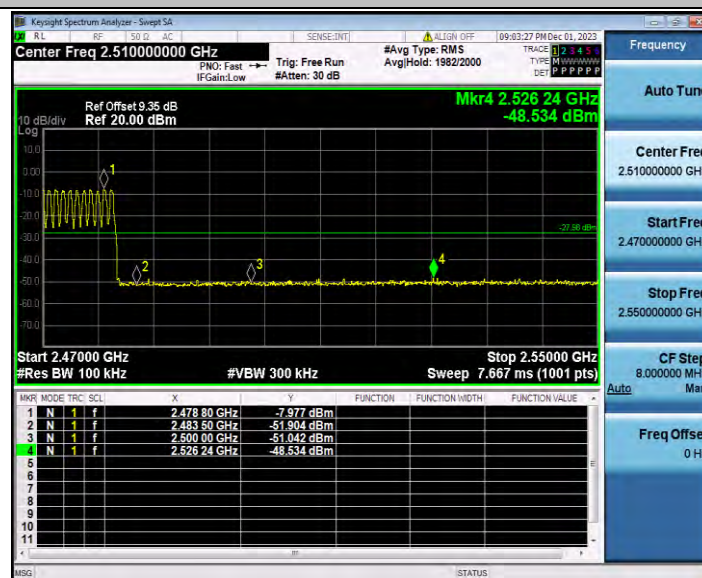
Test Mode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	Low	2402	-6.55	-44.62	≤ -26.55	PASS
		High	2480	-9.38	-48.14	≤ -29.38	PASS
		Low	Hop_2402	-7.32	-49.55	≤ -27.32	PASS
		High	Hop_2480	-7.98	-48.53	≤ -27.98	PASS
2DH1	Ant1	Low	2402	-6.31	-49.39	≤ -26.31	PASS
		High	2480	-10.22	-48.18	≤ -30.22	PASS
		Low	Hop_2402	-6.79	-49.44	≤ -26.79	PASS
		High	Hop_2480	-8.17	-48.47	≤ -28.17	PASS
3DH1	Ant1	Low	2402	-8.05	-45.25	≤ -28.05	PASS
		High	2480	-10.21	-48.42	≤ -30.21	PASS
		Low	Hop_2402	-6.71	-49.59	≤ -26.71	PASS
		High	Hop_2480	-8.29	-48.87	≤ -28.29	PASS

Test Graphs

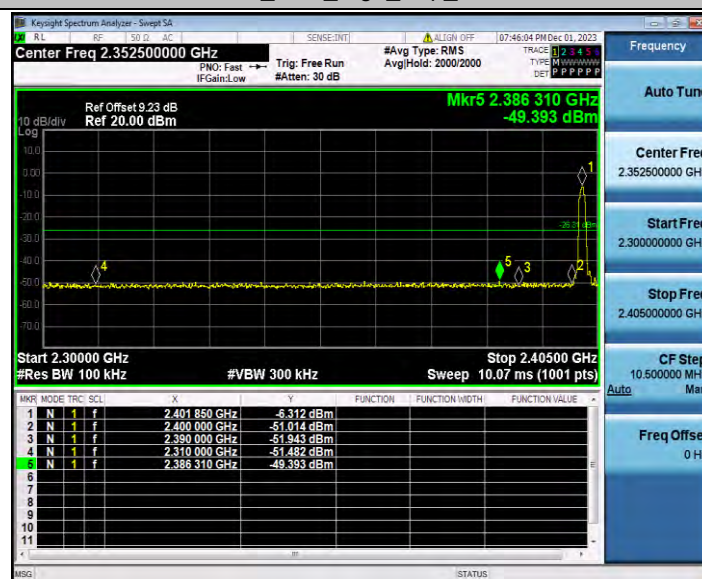




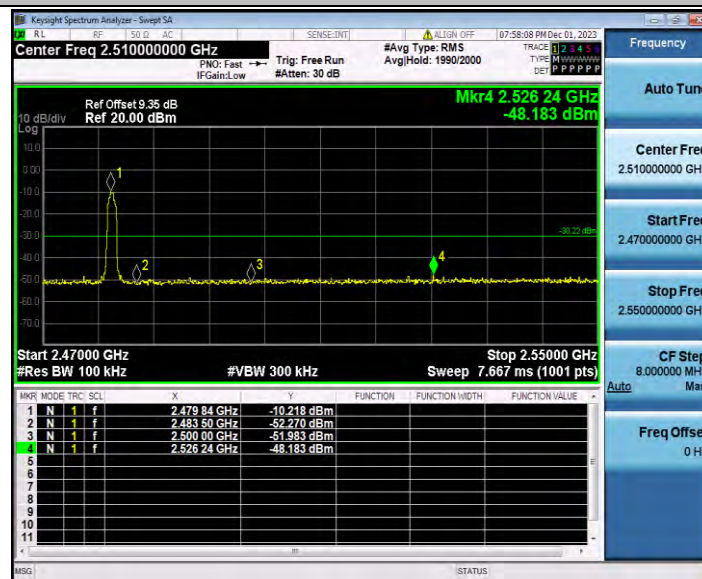
DH1_Ant1_Low_Hop_2402



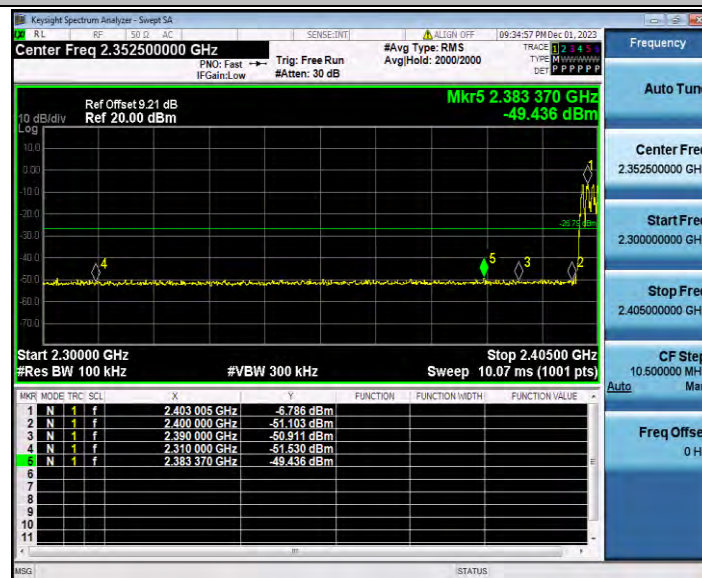
DH1_Ant1_High_Hop_2480



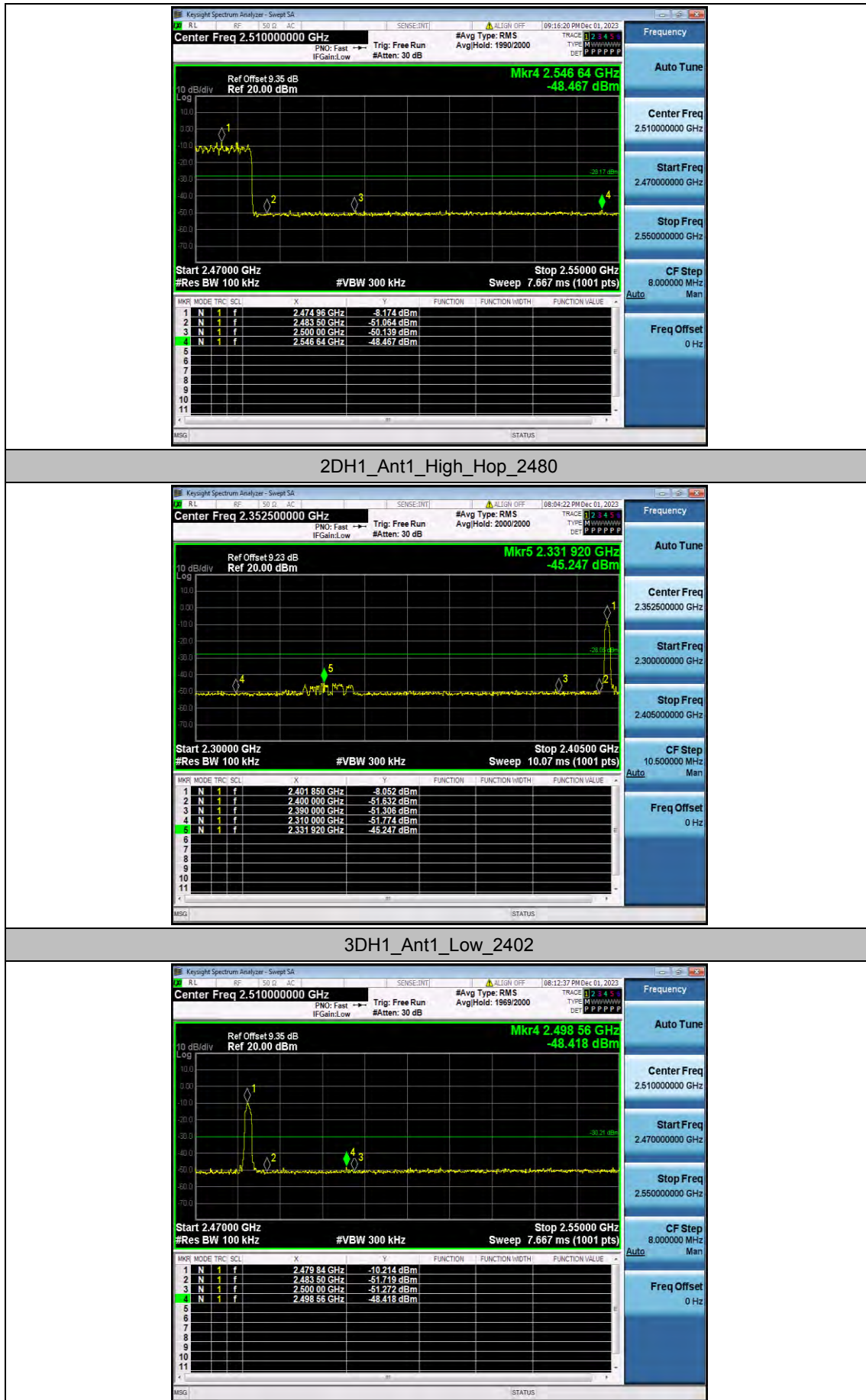
2DH1_Ant1_Low_2402



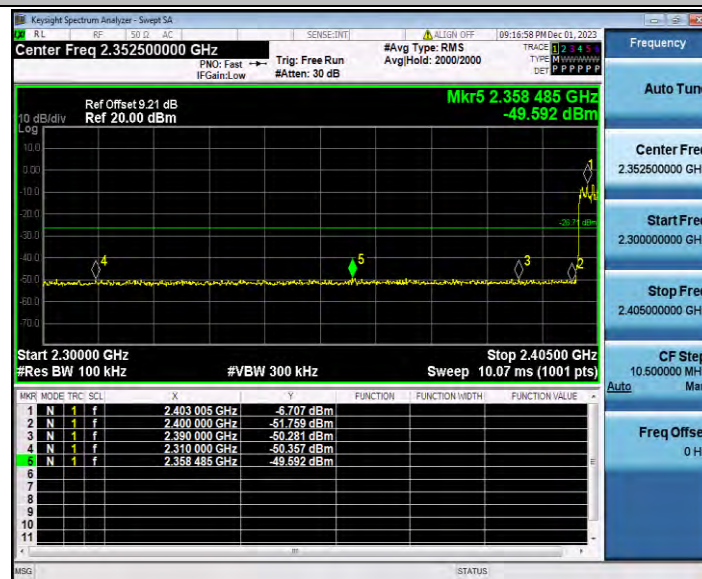
2DH1_Ant1_High_2480



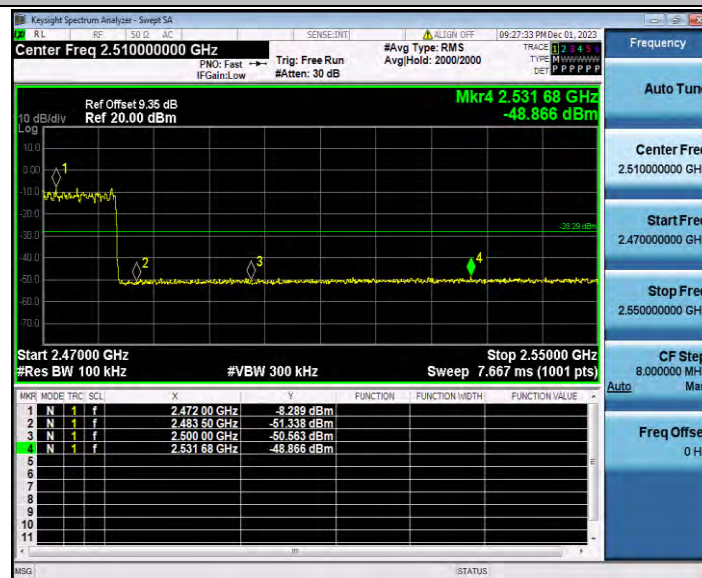
2DH1_Ant1_Low_Hop_2402



3DH1_Ant1_High_2480



3DH1_Ant1_Low_Hop_2402



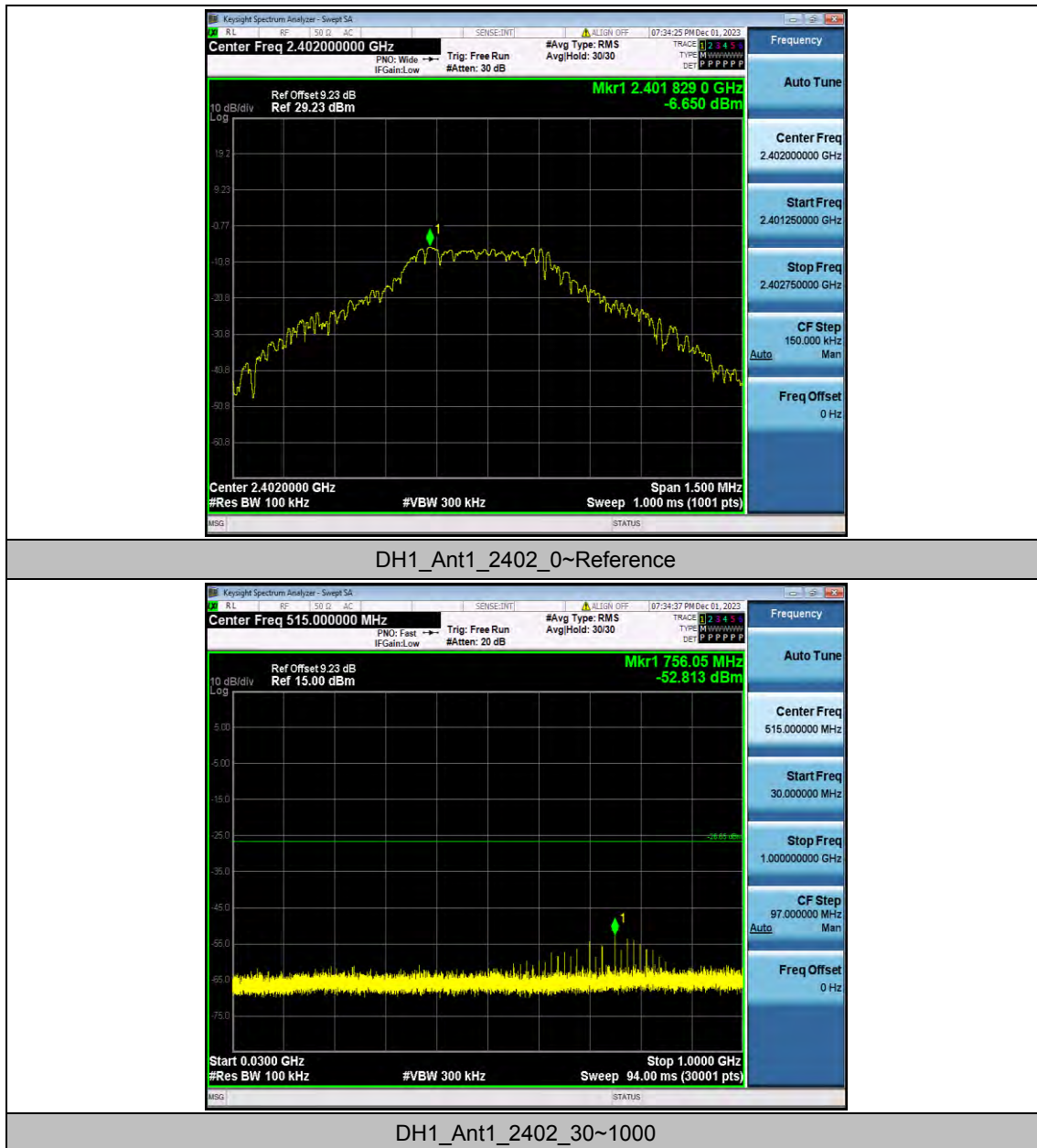
3DH1_Ant1_High_Hop_2480

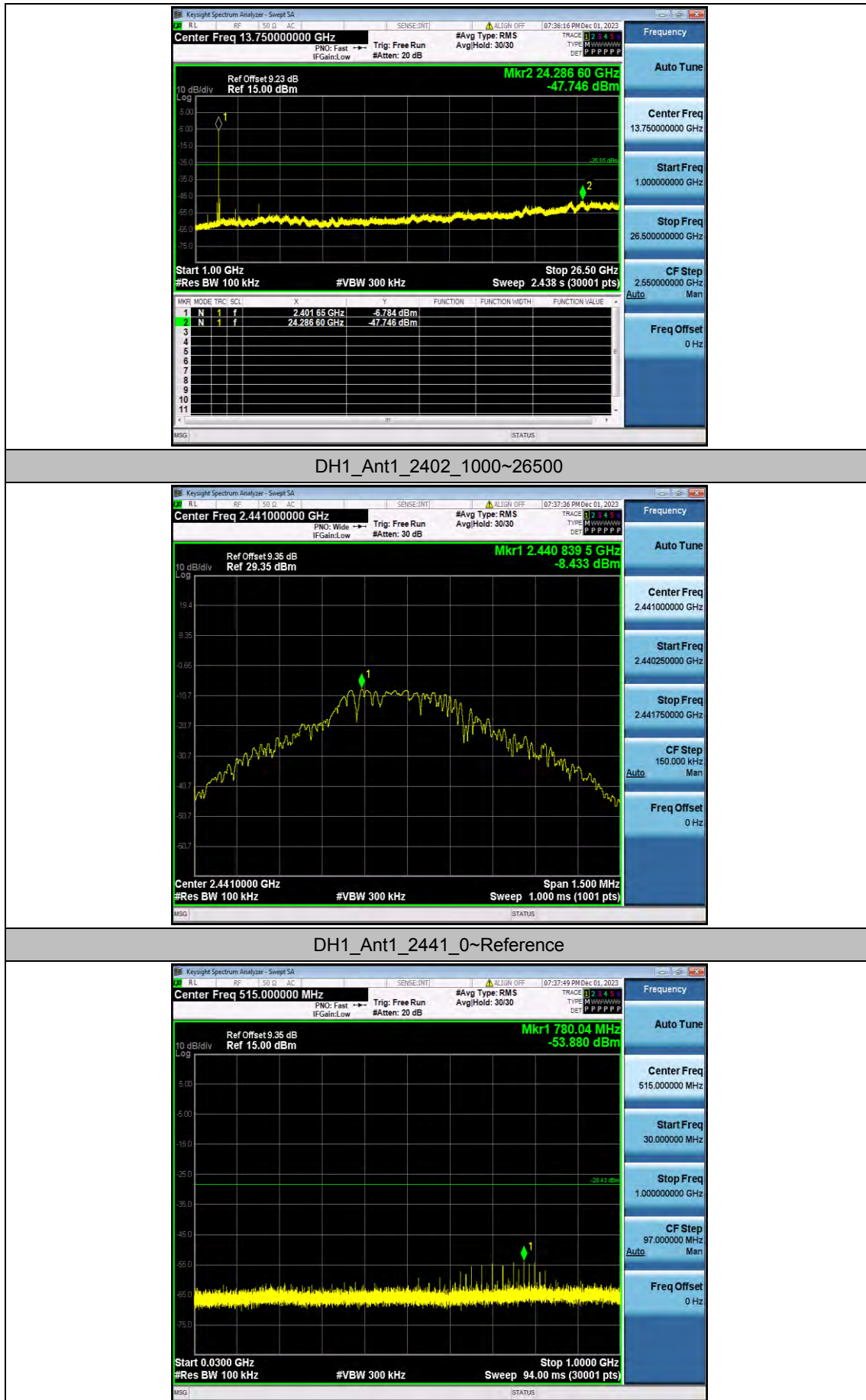
Appendix A.8: Conducted Spurious Emission

Test Result

Test Mode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	2402	Reference	-6.65	-6.65	---	PASS
			30~1000	-6.65	-52.81	≤-26.65	PASS
			1000~26500	-6.65	-47.75	≤-26.65	PASS
		2441	Reference	-8.43	-8.43	---	PASS
			30~1000	-8.43	-53.88	≤-28.43	PASS
			1000~26500	-8.43	-47.37	≤-28.43	PASS
		2480	Reference	-9.57	-9.57	---	PASS
			30~1000	-9.57	-45.48	≤-29.57	PASS
			1000~26500	-9.57	-45.86	≤-29.57	PASS
2DH1	Ant1	2402	Reference	-6.84	-6.84	---	PASS
			30~1000	-6.84	-32.72	≤-26.84	PASS
			1000~26500	-6.84	-47.38	≤-26.84	PASS
		2441	Reference	-8.39	-8.39	---	PASS
			30~1000	-8.39	-30.51	≤-28.39	PASS
			1000~26500	-8.39	-47.02	≤-28.39	PASS
		2480	Reference	-9.89	-9.89	---	PASS
			30~1000	-9.89	-52.12	≤-29.89	PASS
			1000~26500	-9.89	-45.63	≤-29.89	PASS
3DH1	Ant1	2402	Reference	-8.35	-8.35	---	PASS
			30~1000	-8.35	-52.42	≤-28.35	PASS
			1000~26500	-8.35	-47.51	≤-28.35	PASS
		2441	Reference	-9.39	-9.39	---	PASS
			30~1000	-9.39	-42.92	≤-29.39	PASS
			1000~26500	-9.39	-47.57	≤-29.39	PASS
		2480	Reference	-10.37	-10.37	---	PASS
			30~1000	-10.37	-34.58	≤-30.37	PASS
			1000~26500	-10.37	-45.77	≤-30.37	PASS

Test Graphs





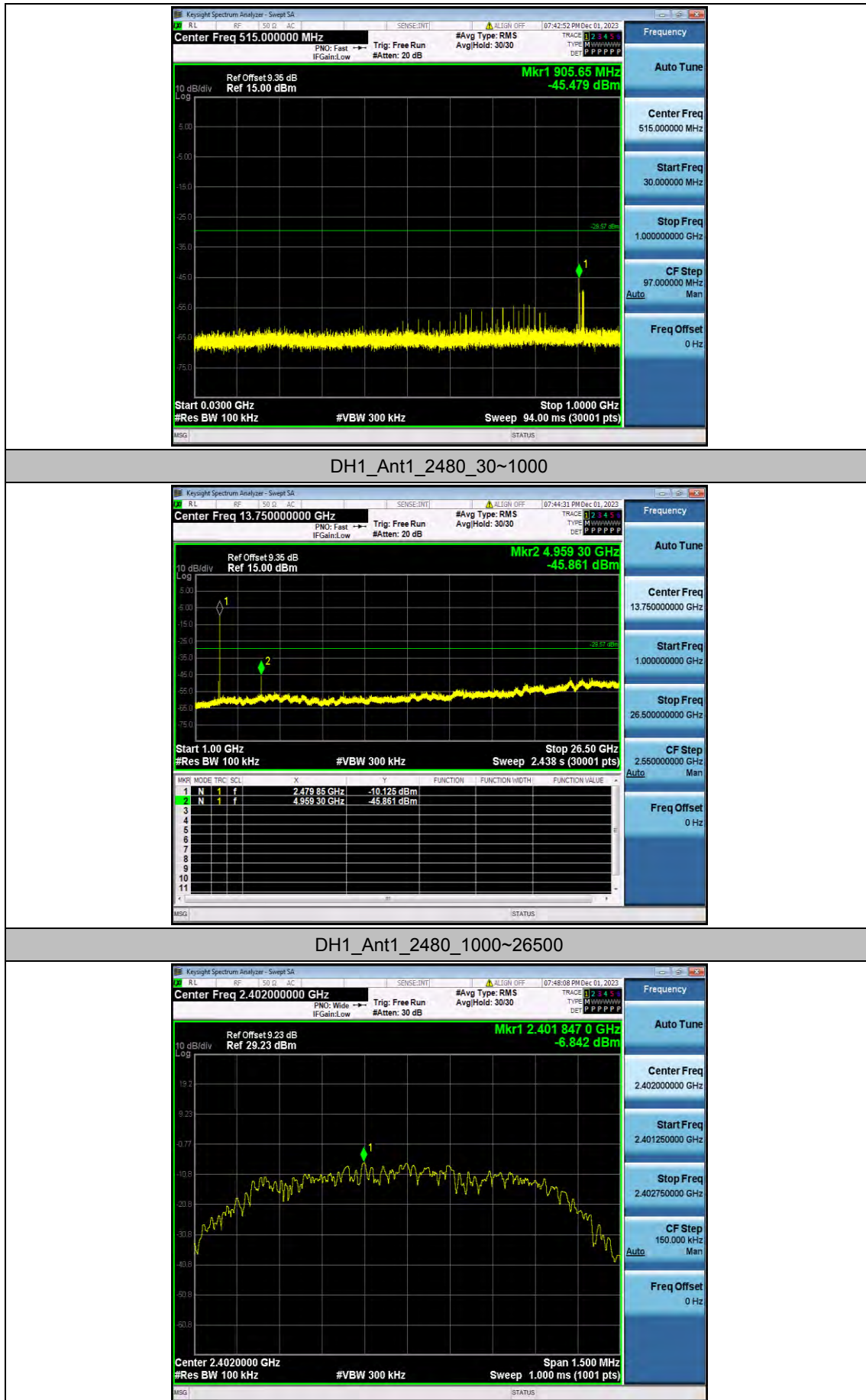
DH1_Ant1_2441_30~1000



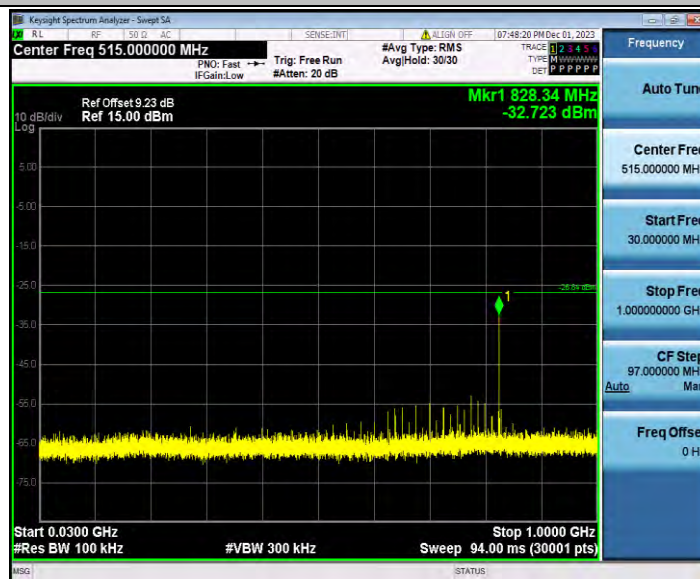
DH1_Ant1_2441_1000~26500



DH1_Ant1_2480_0~Reference



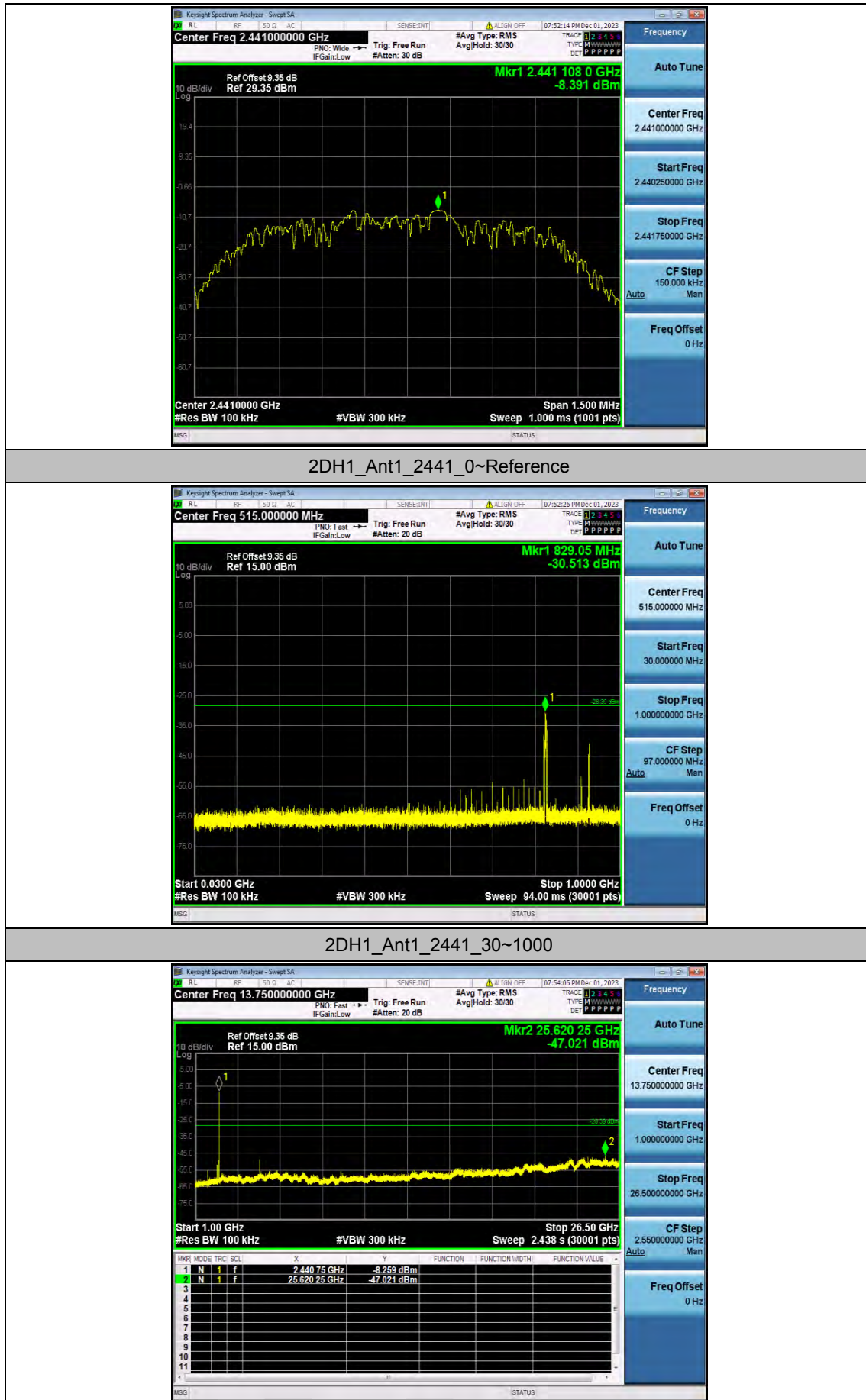
2DH1_Ant1_2402_0~Reference



2DH1_Ant1_2402_30~1000



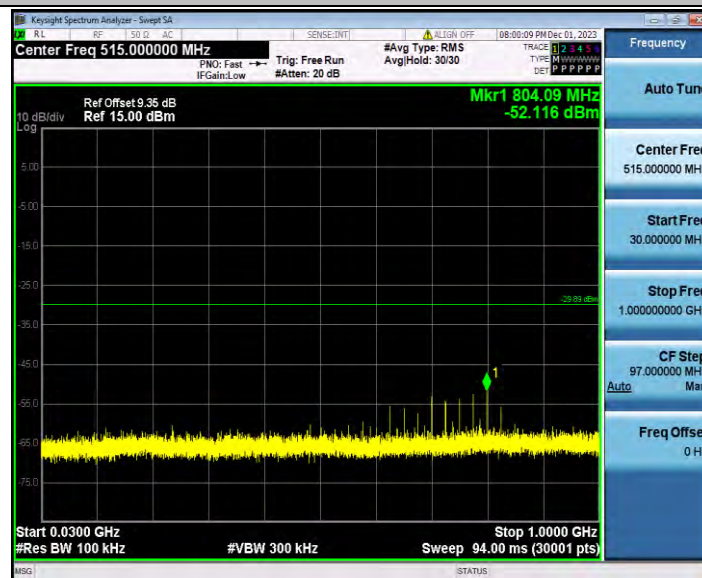
2DH1_Ant1_2402_1000~26500



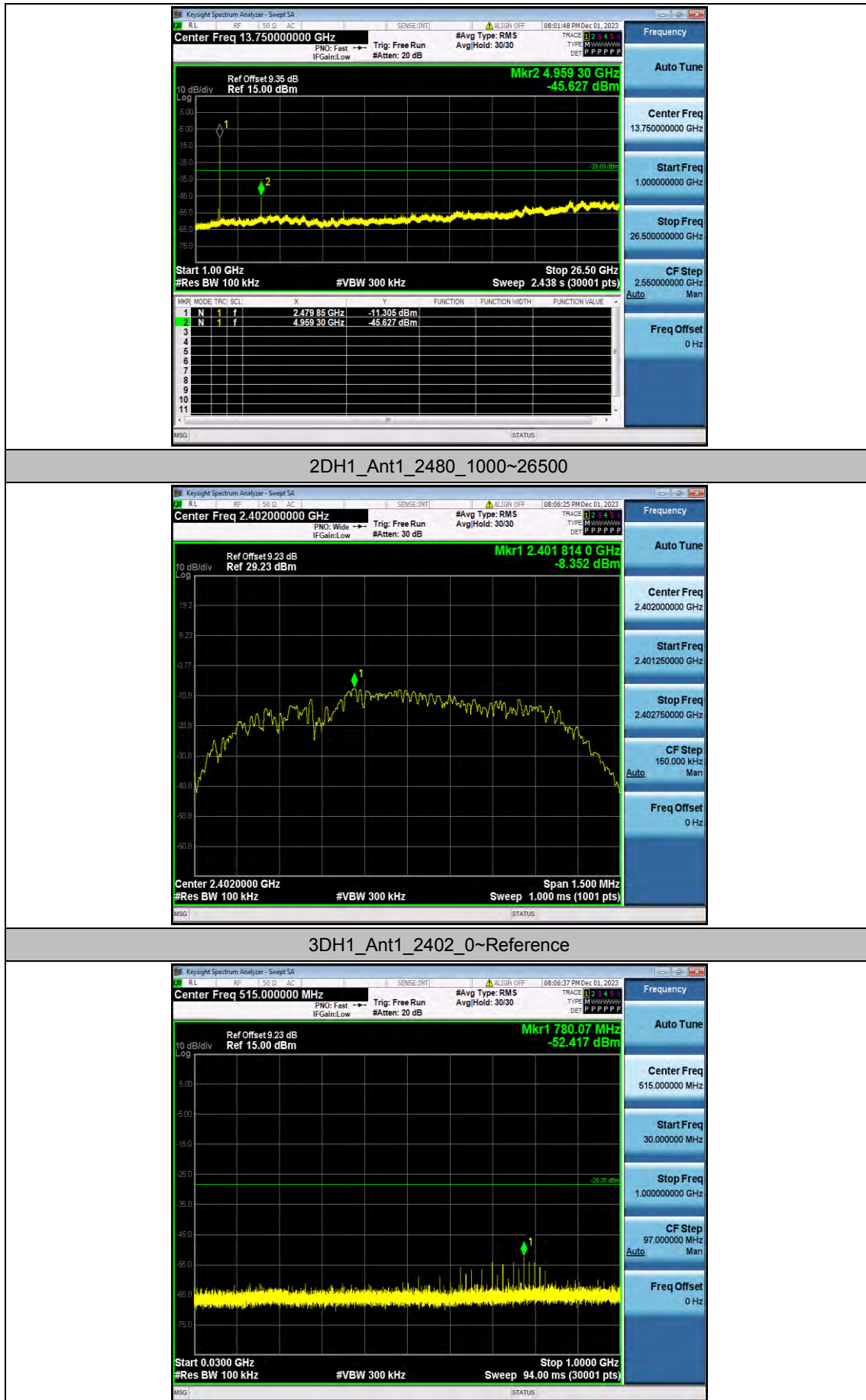
2DH1_Ant1_2441_1000~26500

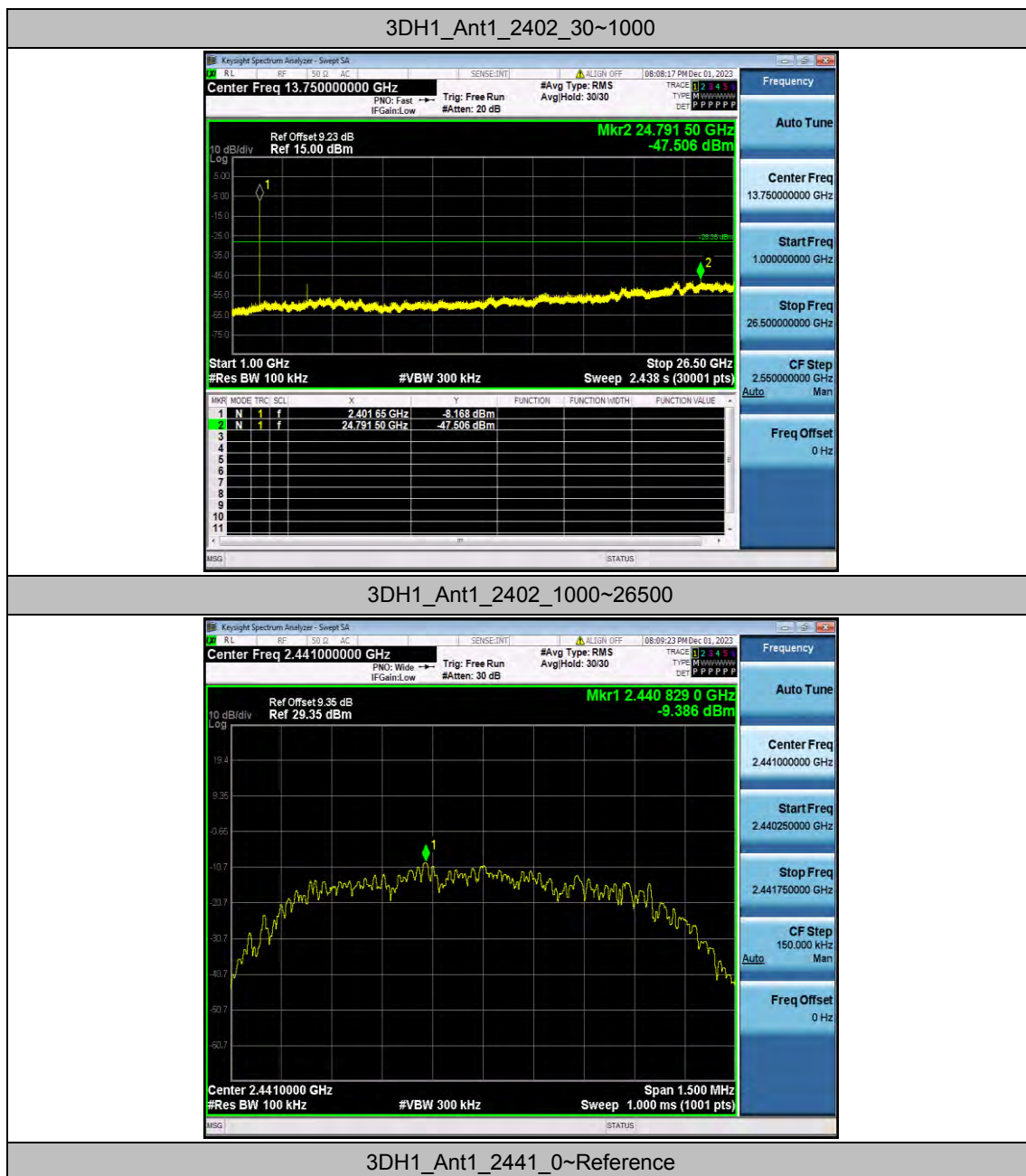


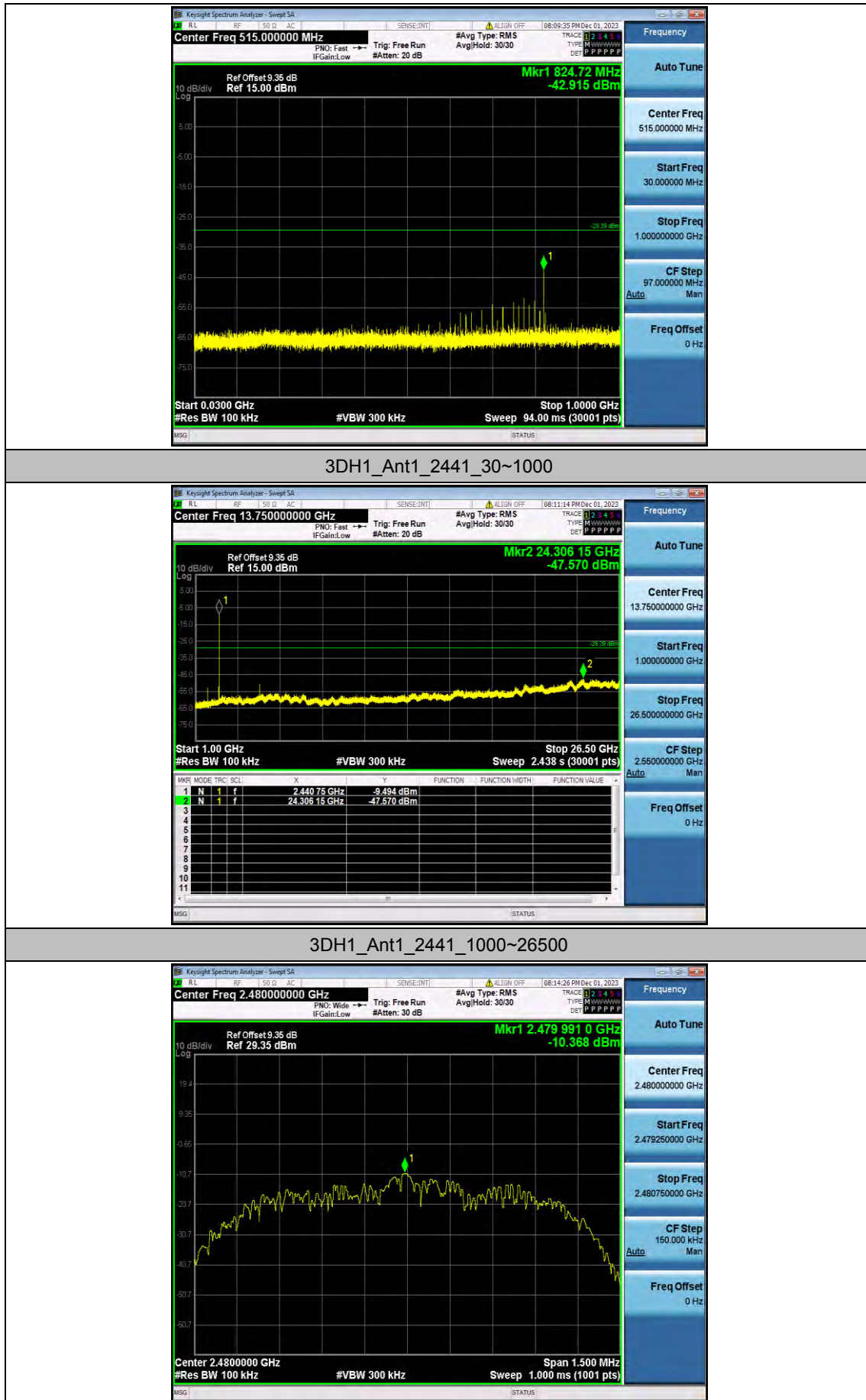
2DH1_Ant1_2480_0~Reference



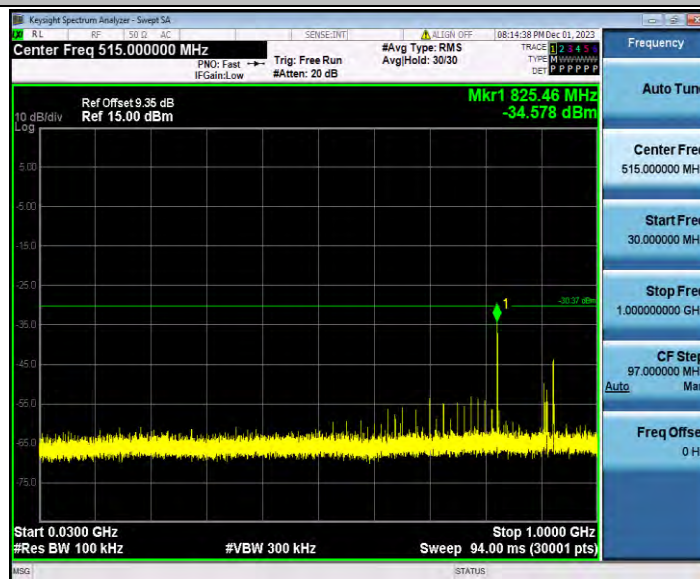
2DH1_Ant1_2480_30~1000







3DH1_Ant1_2480_0~Reference



3DH1_Ant1_2480_30~1000



3DH1_Ant1_2480_1000~26500

Appendix A.9: Emissions in Restricted Bands

Test Result

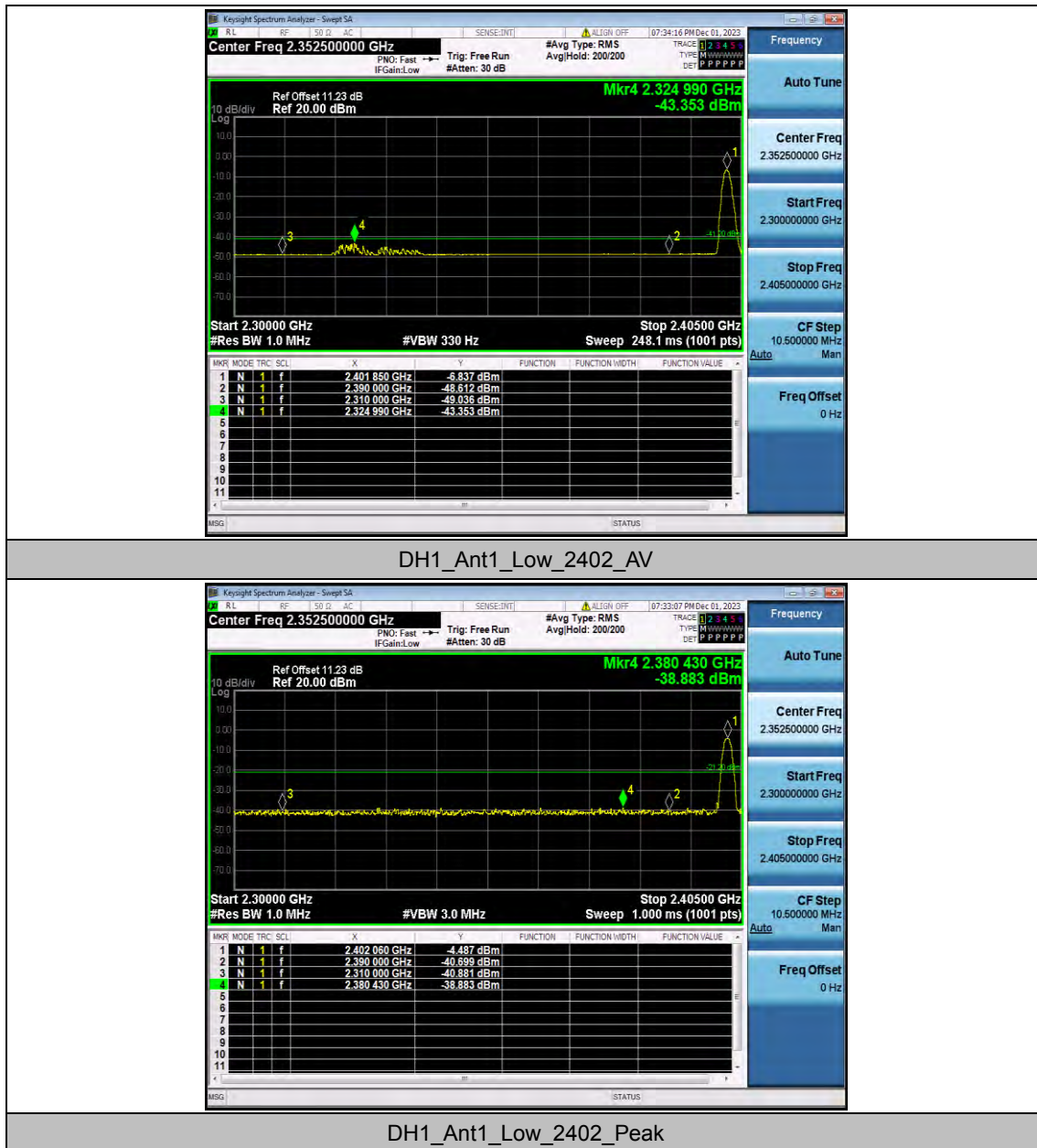
TestMode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH1	Ant1	Low	2402	AV	2310.000	-49.04	≤-41.20	46.16	≤54	PASS
				AV	2324.990	-43.35	≤-41.20	51.85	≤54	PASS
				AV	2390.000	-48.61	≤-41.20	46.59	≤54	PASS
				Peak	2310.000	-40.88	≤-21.20	54.32	≤74	PASS
				Peak	2380.430	-38.88	≤-21.20	56.32	≤74	PASS
				Peak	2390.000	-40.7	≤-21.20	54.50	≤74	PASS
		High	2480	AV	2483.500	-48.57	≤-41.20	46.63	≤54	PASS
				AV	2498.640	-48.22	≤-41.20	46.98	≤54	PASS
				AV	2500.000	-48.39	≤-41.20	46.81	≤54	PASS
				Peak	2483.500	-41.46	≤-21.20	53.74	≤74	PASS
				Peak	2499.760	-38.82	≤-21.20	56.38	≤74	PASS
				Peak	2500.000	-41.32	≤-21.20	53.88	≤74	PASS
2DH1	Ant1	Low	2402	AV	2310.000	-49.06	≤-41.20	46.14	≤54	PASS
				AV	2323.625	-46.47	≤-41.20	48.73	≤54	PASS
				AV	2390.000	-48.65	≤-41.20	46.55	≤54	PASS
				Peak	2310.000	-40.69	≤-21.20	54.51	≤74	PASS
				Peak	2375.600	-37.9	≤-21.20	57.30	≤74	PASS
				Peak	2390.000	-42.28	≤-21.20	52.92	≤74	PASS
		High	2480	AV	2483.500	-48.62	≤-41.20	46.58	≤54	PASS
				AV	2499.360	-48.34	≤-41.20	46.86	≤54	PASS
				AV	2500.000	-48.43	≤-41.20	46.77	≤54	PASS
				Peak	2483.500	-41.68	≤-21.20	53.52	≤74	PASS
				Peak	2495.600	-38.88	≤-21.20	56.32	≤74	PASS
				Peak	2500.000	-40.62	≤-21.20	54.58	≤74	PASS
3DH1	Ant1	Low	2402	AV	2310.000	-49.01	≤-41.20	46.19	≤54	PASS
				AV	2375.915	-48.57	≤-41.20	46.63	≤54	PASS
				AV	2390.000	-48.65	≤-41.20	46.55	≤54	PASS
				Peak	2310.000	-41.49	≤-21.20	53.71	≤74	PASS
				Peak	2323.625	-38.1	≤-21.20	57.10	≤74	PASS
				Peak	2390.000	-40.7	≤-21.20	54.50	≤74	PASS
		High	2480	AV	2483.500	-48.57	≤-41.20	46.63	≤54	PASS
				AV	2498.400	-48.27	≤-41.20	46.93	≤54	PASS
				AV	2500.000	-48.42	≤-41.20	46.78	≤54	PASS
				Peak	2483.500	-41.4	≤-21.20	53.80	≤74	PASS

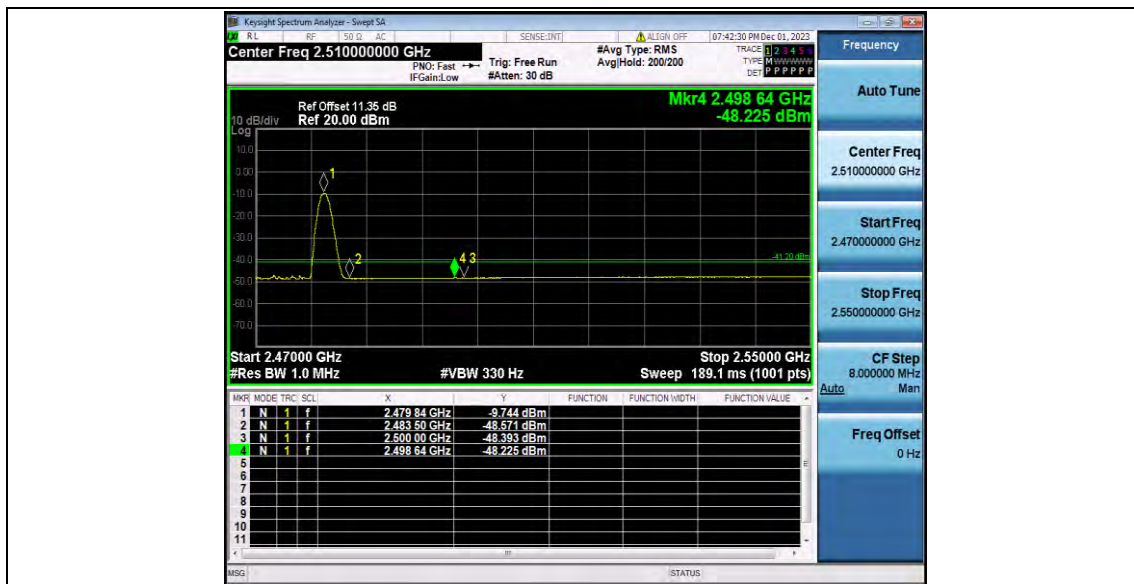
				Peak	2488.800	-37.98	≤ -21.20	57.22	≤ 74	PASS
				Peak	2500.000	-41.55	≤ -21.20	53.65	≤ 74	PASS

Note:

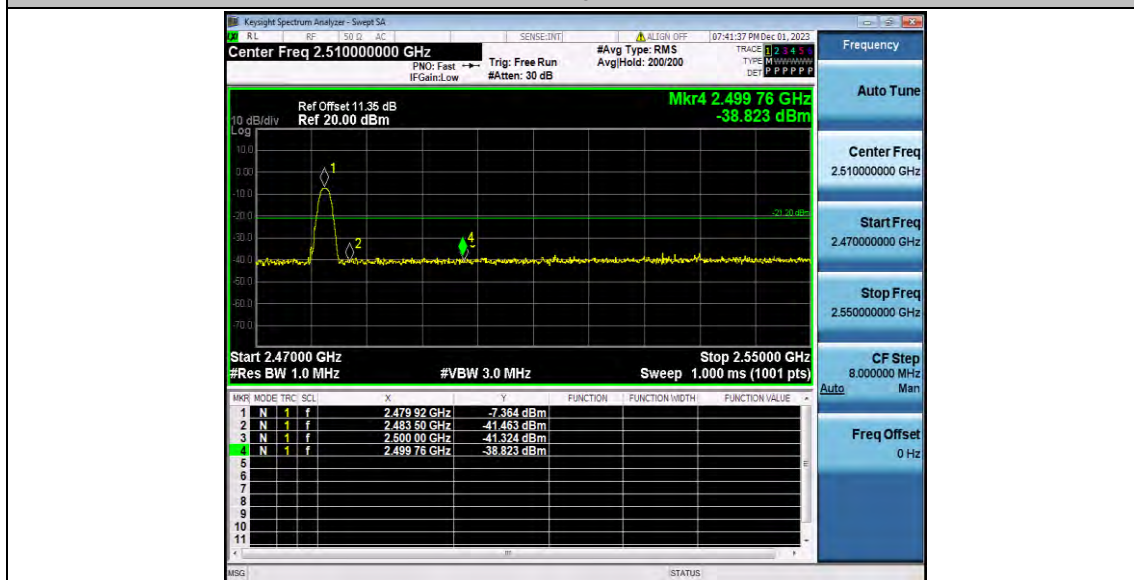
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

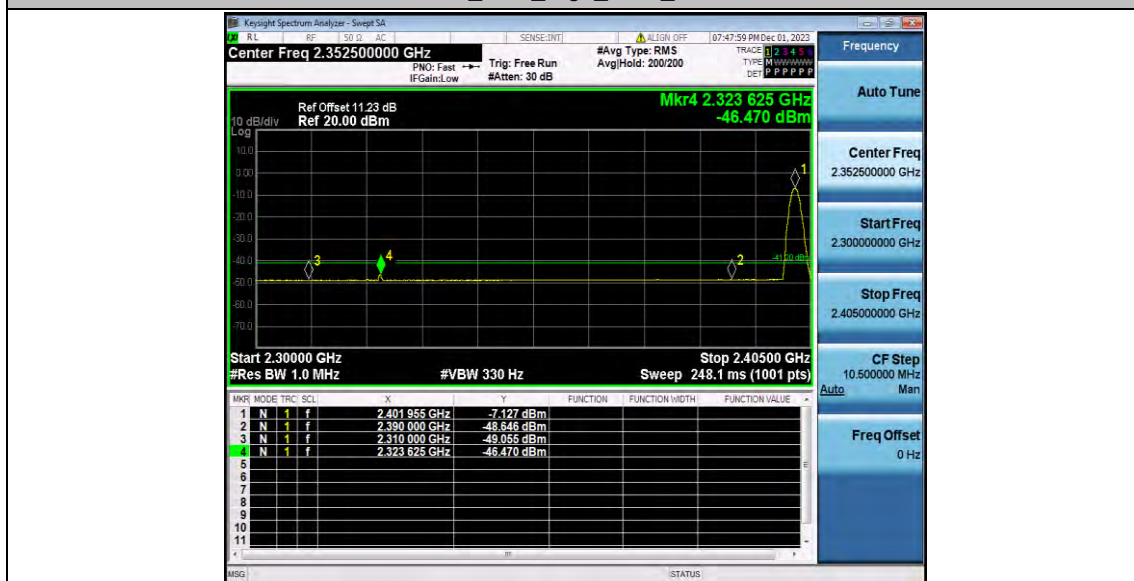




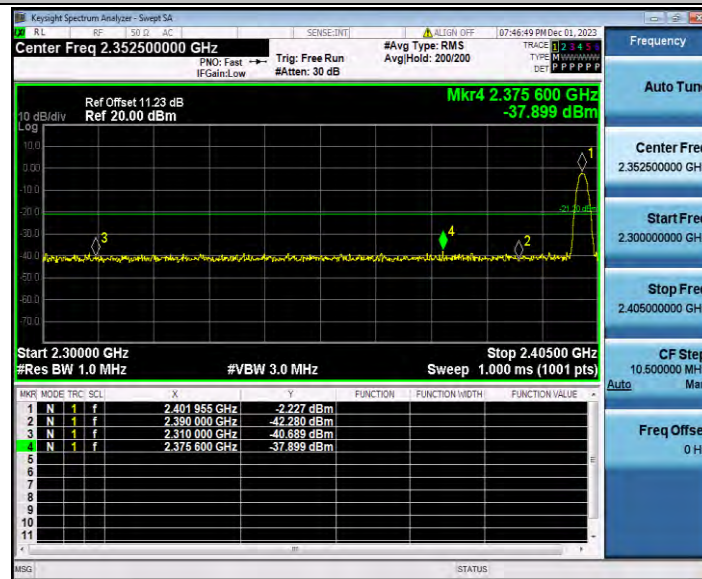
DH1_Ant1_High_2480_AV



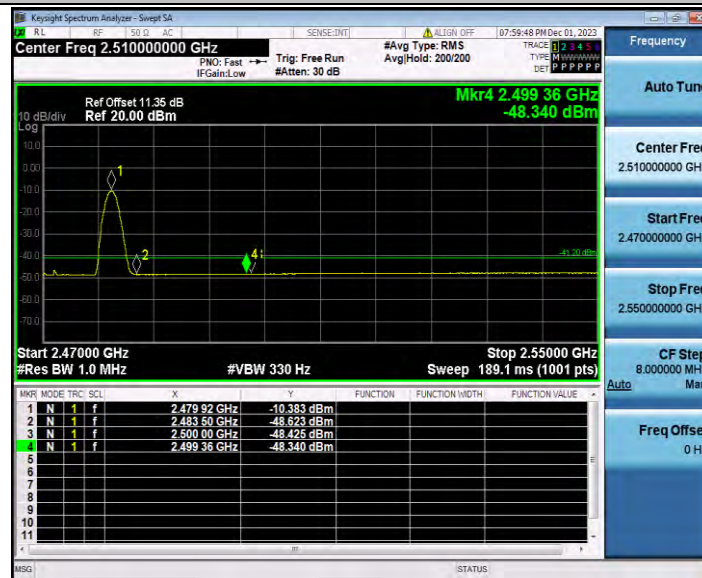
DH1_Ant1_High_2480_Peak



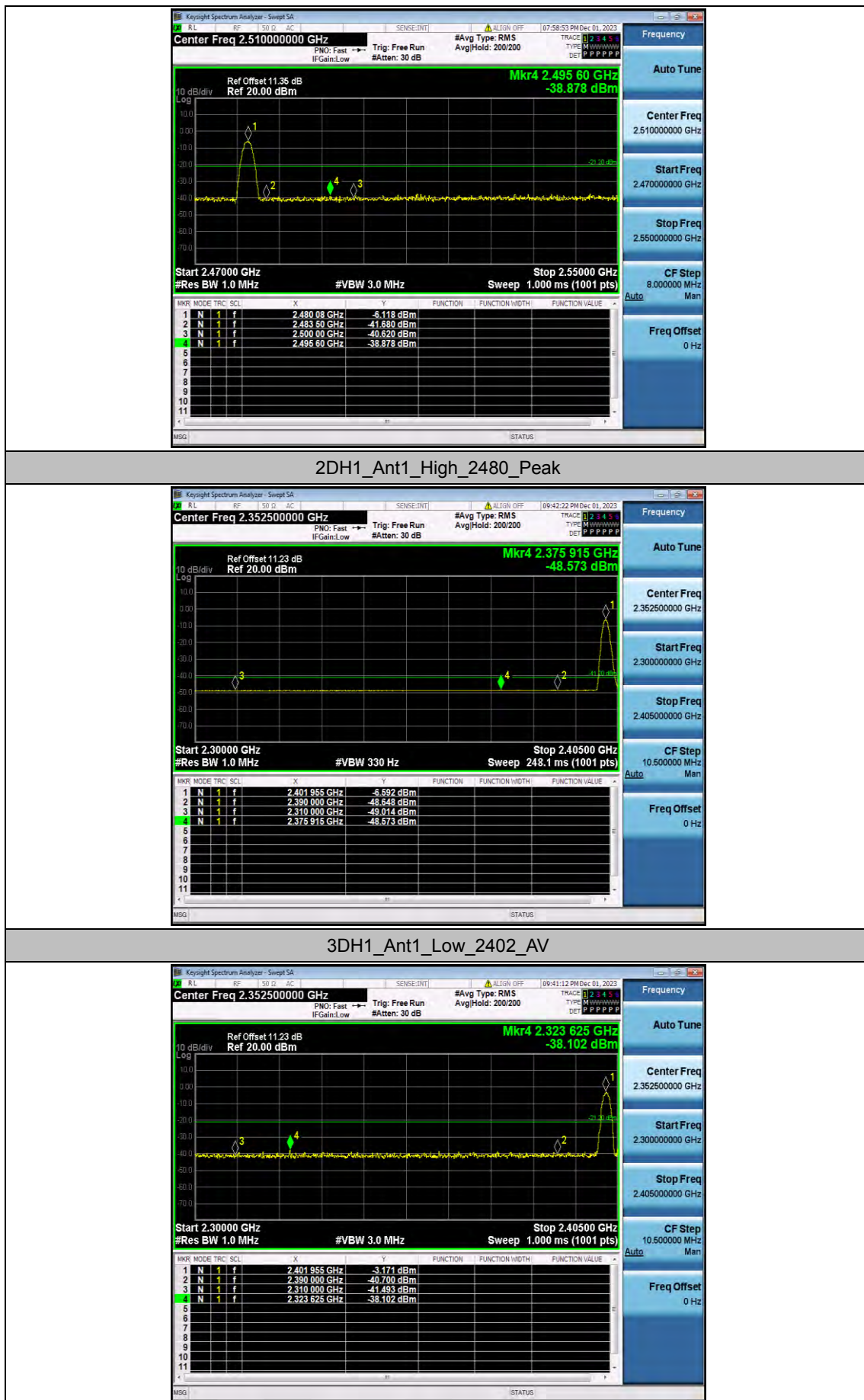
2DH1_Ant1_Low_2402_AV



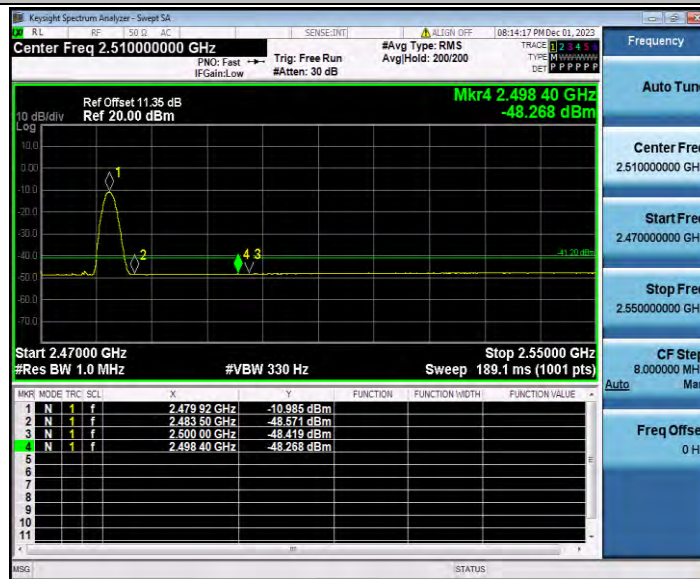
2DH1_Ant1_Low_2402_Peak



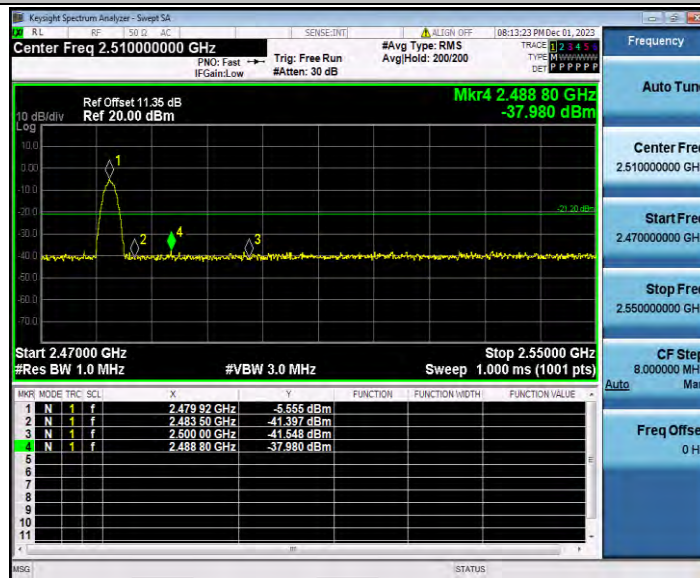
2DH1_Ant1_High_2480_AV



3DH1_Ant1_Low_2402_Peak



3DH1_Ant1_High_2480_AV



3DH1_Ant1_High_2480_Peak