

Case No. : <u>GTS20230302021-1-1</u>	
Ambient Condition: <u>23</u> °C, <u>48</u> %RH, Atmos100.1Kpa,	
Test Date: <u>2023.4.3</u>	Test Engineer: <u>Jenny zeng</u>

Appendix A.1: 20dB Emission Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	1.035	2401.478	2402.513	---	---
		2441	1.035	2440.478	2441.513	---	---
		2480	1.035	2479.478	2480.513	---	---
2DH1	Ant1	2402	1.347	2401.313	2402.660	---	---
		2441	1.350	2440.313	2441.663	---	---
		2480	1.347	2479.310	2480.657	---	---
3DH1	Ant1	2402	1.296	2401.331	2402.627	---	---
		2441	1.296	2440.331	2441.627	---	---
		2480	1.296	2479.331	2480.627	---	---

Test Graphs

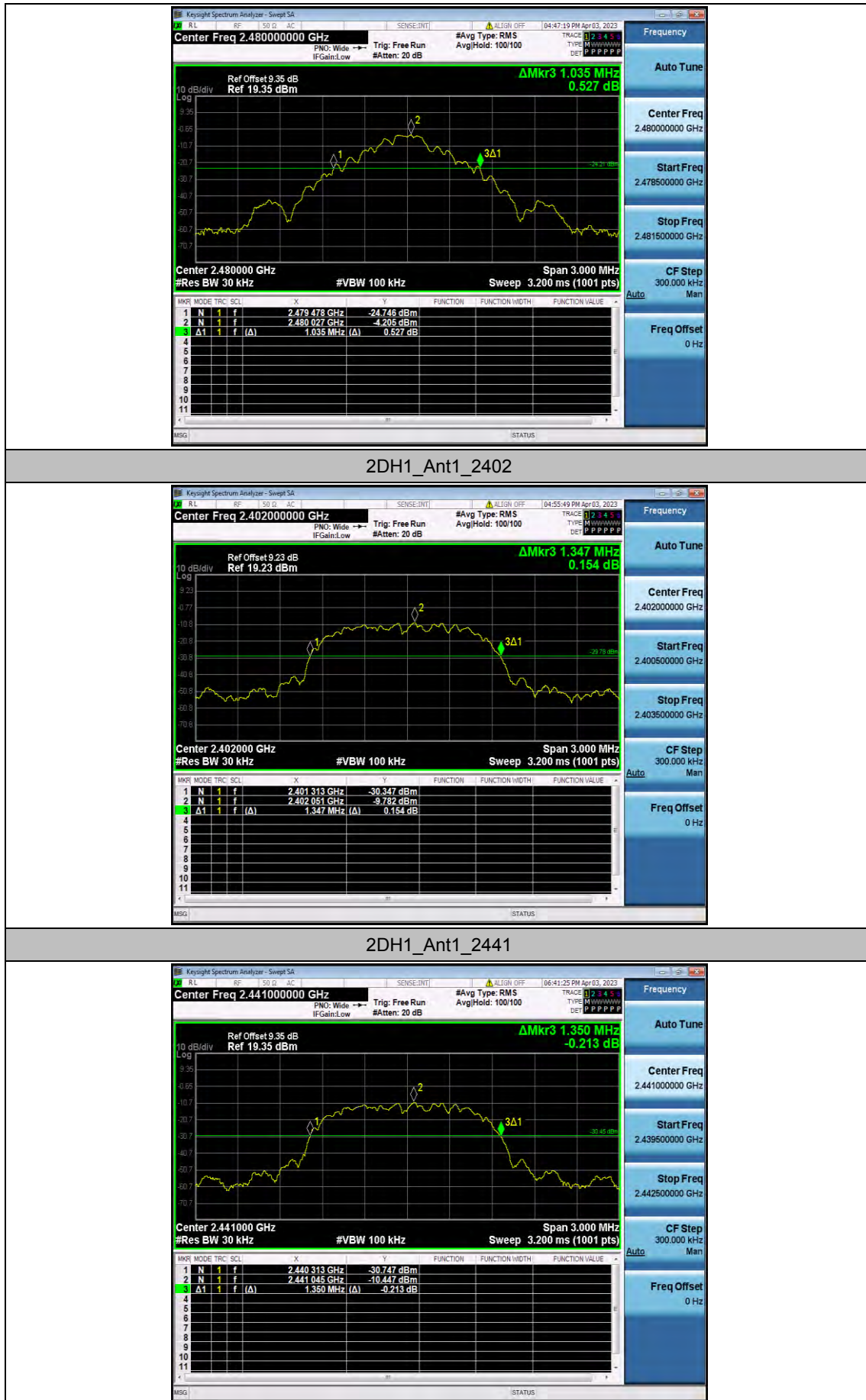
DH1_Ant1_2402



DH1_Ant1_2441



DH1_Ant1_2480



2DH1_Ant1_2480



3DH1_Ant1_2402



3DH1_Ant1_2441

Keysight Spectrum Analyzer - Sweep SA

RF 50.0 dB AC SENSE INT ALIGN DEF 04:57:48 PM Apr 03, 2023

Center Freq 2.480000000 GHz

PNO: Wide Trig: Free Run #Avg Type: RMS AvgHold: 100/100

IFGain: Low #Atten: 20 dB

TRACE 1 2 3 4 5 TYPE M WWWWWW DET P P P P P

Ref Offset 9.35 dB
Ref 19.35 dBm

Δ Mkr3 1.296 MHz
-0.275 dBm

10 dB/div

1 2 3 4 5 6 7 8 9 10 11

Center 2.480000 GHz Span 3.000 MHz
#Res BW 30 kHz #VBW 100 kHz Sweep 3.200 ms (1001 pts)

MKR	MODE	TRC	SCL	F	F	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.478 331 GHz	-26.576 dBm			
2	N	1	f	2.478 868 GHz	-5.106 dBm			
3	Δ	1	f	1.296 MHz (Δ)	-0.275 dB			
4								
5								
6								
7								
8								
9								
10								
11								

Auto Tune

Center Freq
2.480000000 GHz

Start Freq
2.478500000 GHz

Stop Freq
2.481500000 GHz

CF Step
300.000 kHz

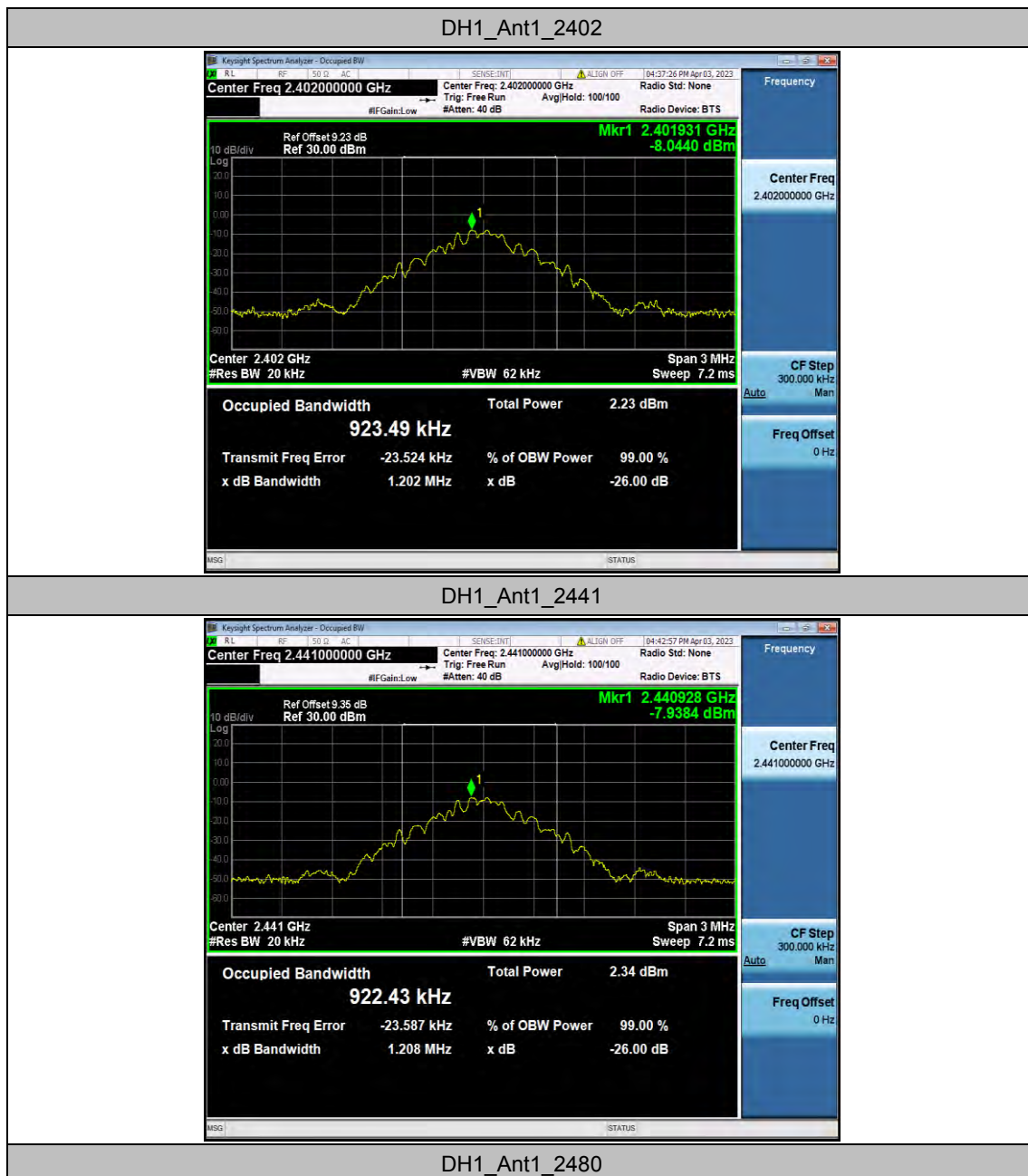
Freq Offset
0 Hz

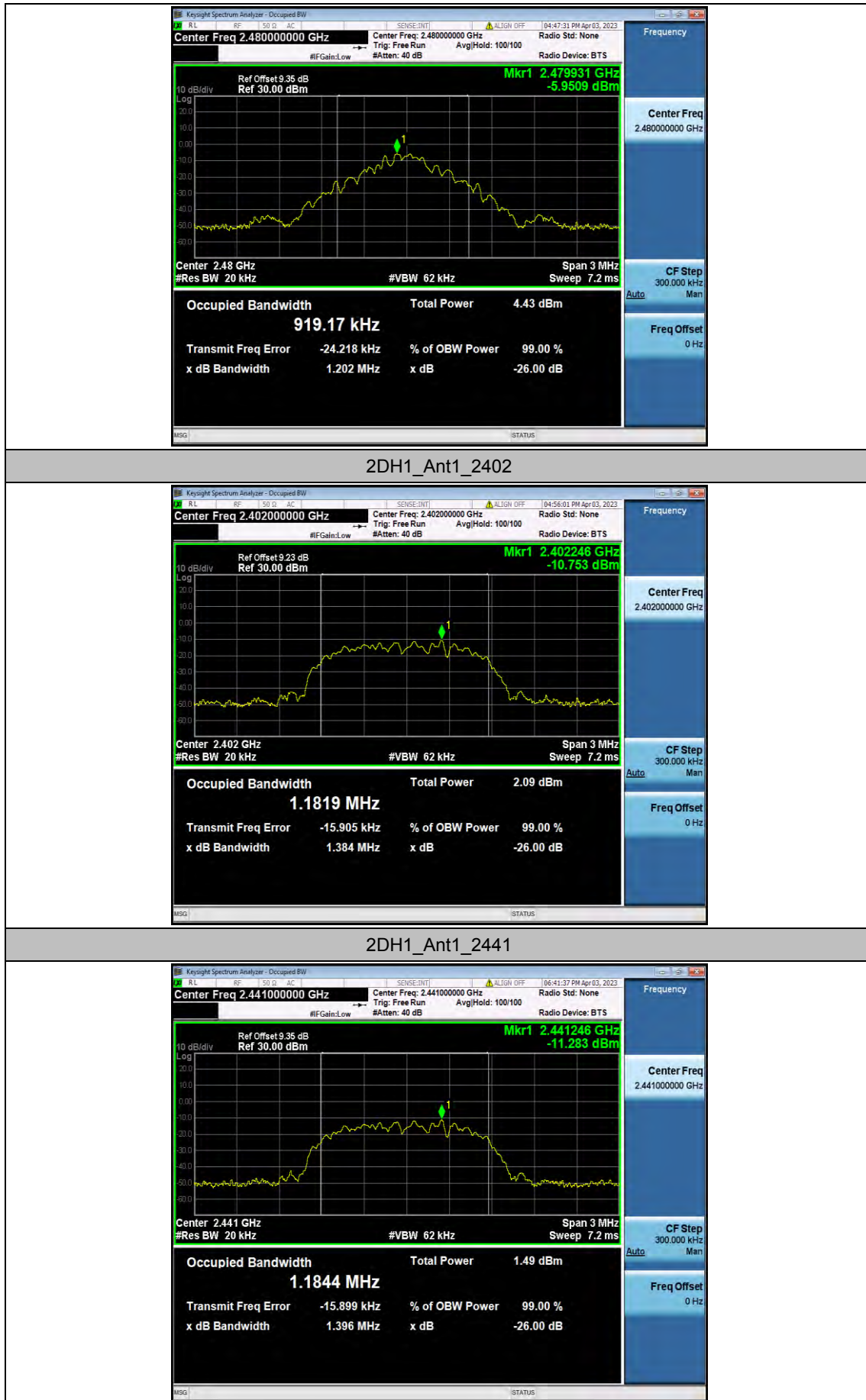
Appendix A.2: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.92349	2401.515	2402.438	---	---
		2441	0.92243	2440.515	2441.438	---	---
		2480	0.91917	2479.516	2480.435	---	---
2DH1	Ant1	2402	1.1819	2401.393	2402.575	---	---
		2441	1.1844	2440.392	2441.576	---	---
		2480	1.1814	2479.393	2480.574	---	---
3DH1	Ant1	2402	1.1657	2401.405	2402.571	---	---
		2441	1.1662	2440.405	2441.571	---	---
		2480	1.1643	2479.406	2480.570	---	---

Test Graphs





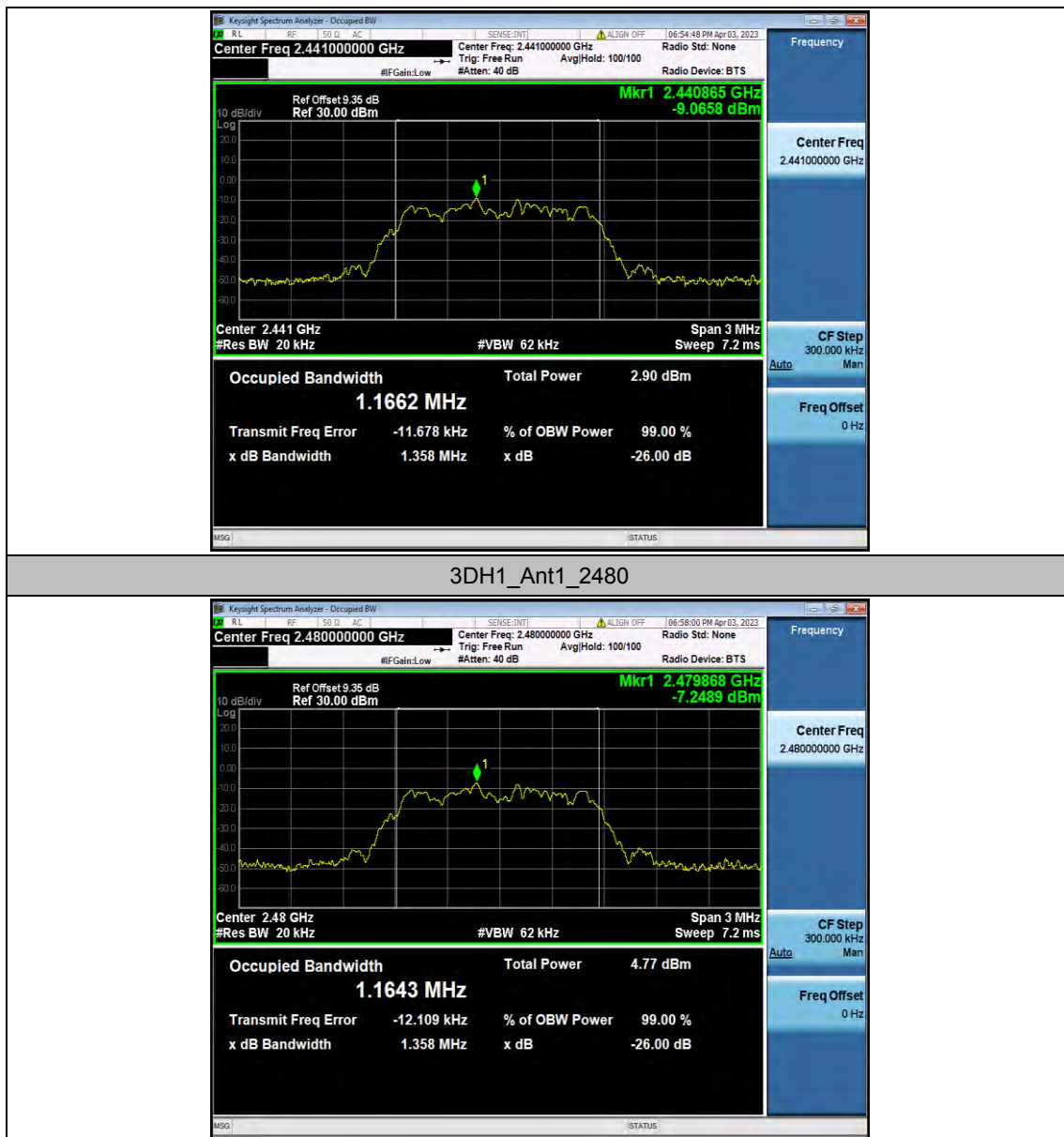
2DH1_Ant1_2480



3DH1_Ant1_2402



3DH1_Ant1_2441



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	-1.76	≤ 20.97	PASS
		2441	-1.72	≤ 20.97	PASS
		2480	0.31	≤ 20.97	PASS
2DH1	Ant1	2402	0.48	≤ 20.97	PASS
		2441	-0.54	≤ 20.97	PASS
		2480	3.01	≤ 20.97	PASS
3DH1	Ant1	2402	2.01	≤ 20.97	PASS
		2441	1.31	≤ 20.97	PASS
		2480	3.18	≤ 20.97	PASS

Appendix A.4: Carrier frequency separation

Test Result

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Hop_2402	1.002	≥ 0.690	PASS
		Hop_2441	1.316	≥ 0.690	PASS
		Hop_2480	1.188	≥ 0.690	PASS
2DH1	Ant1	Hop_2402	1	≥ 0.900	PASS
		Hop_2441	1.004	≥ 0.900	PASS
		Hop_2480	0.998	≥ 0.900	PASS
3DH1	Ant1	Hop_2402	1.004	≥ 0.864	PASS
		Hop_2441	1.33	≥ 0.864	PASS
		Hop_2480	1	≥ 0.864	PASS

Test Graphs

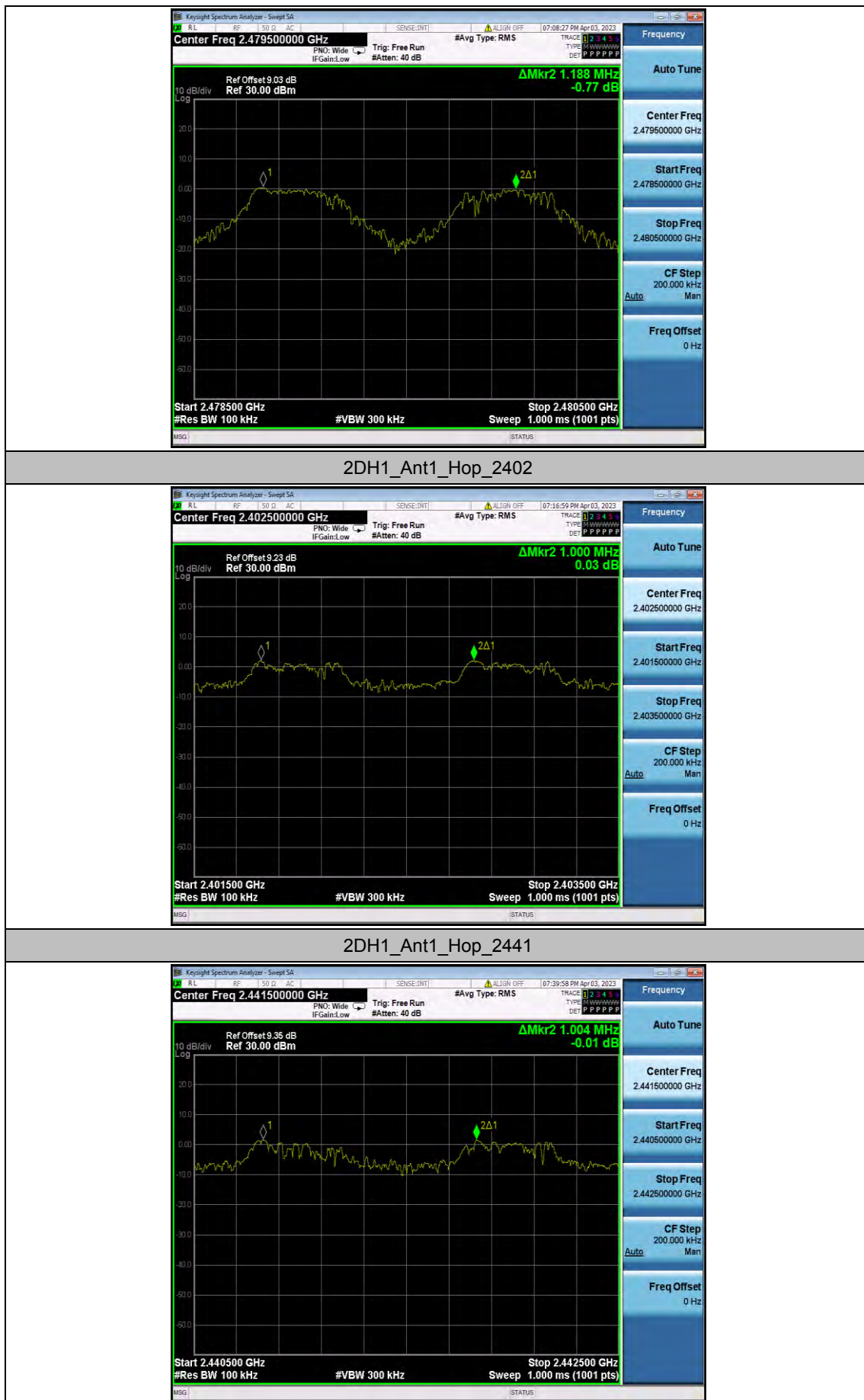
DH1_Ant1_Hop_2402



DH1_Ant1_Hop_2441



DH1_Ant1_Hop_2480



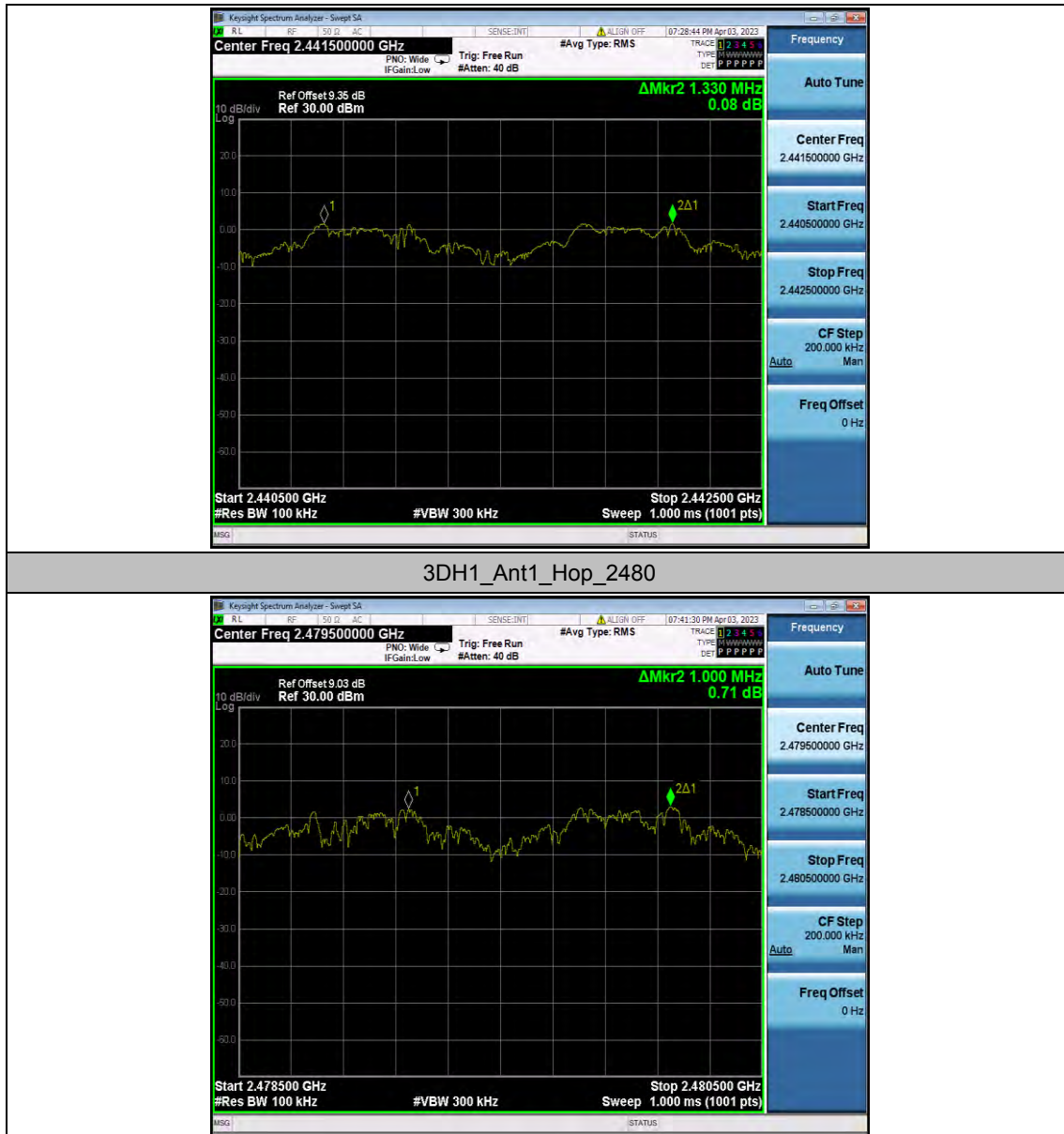
2DH1_Ant1_Hop_2480



3DH1_Ant1_Hop_2402



3DH1_Ant1_Hop_2441

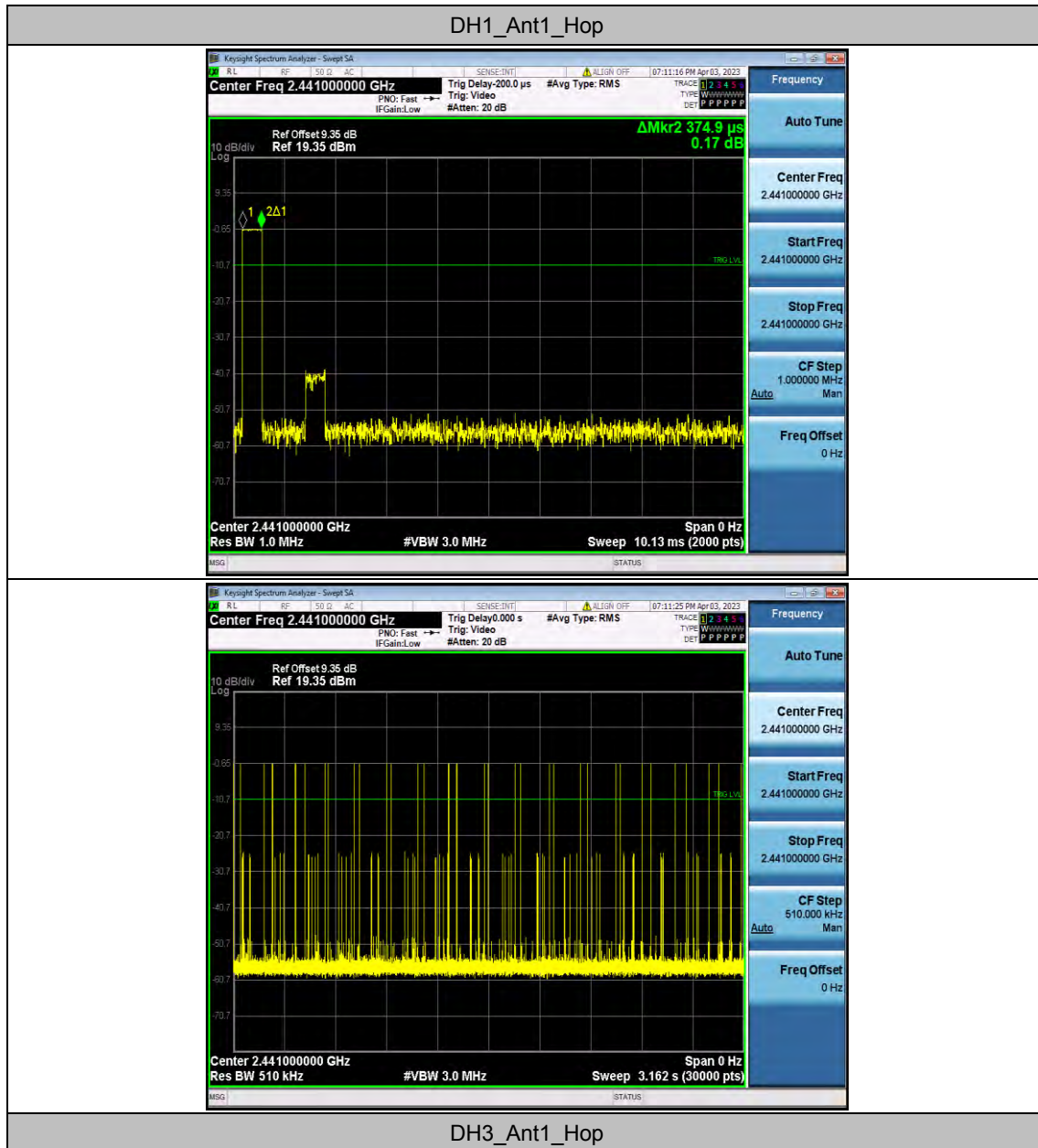


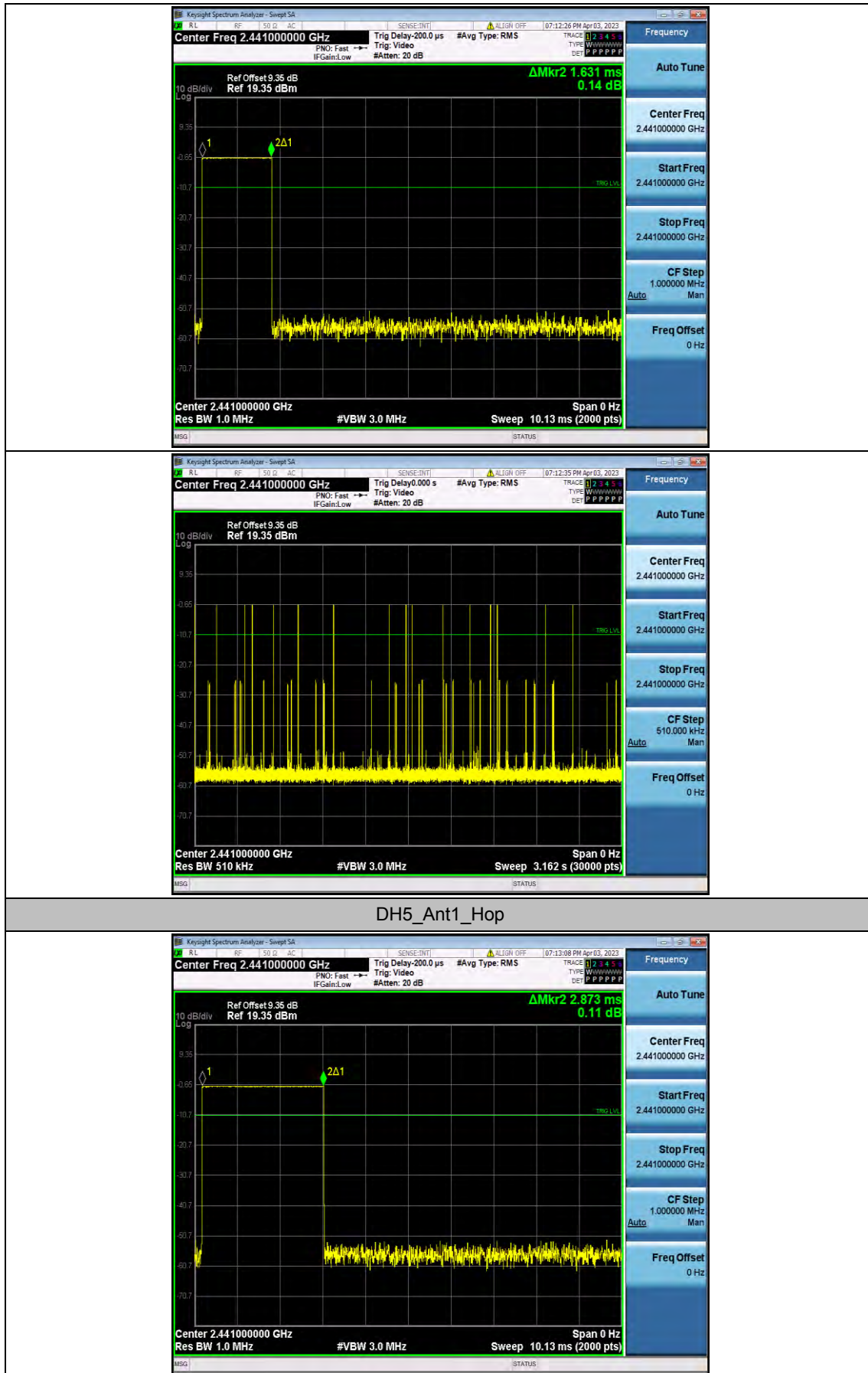
Appendix A.5: Time of occupancy

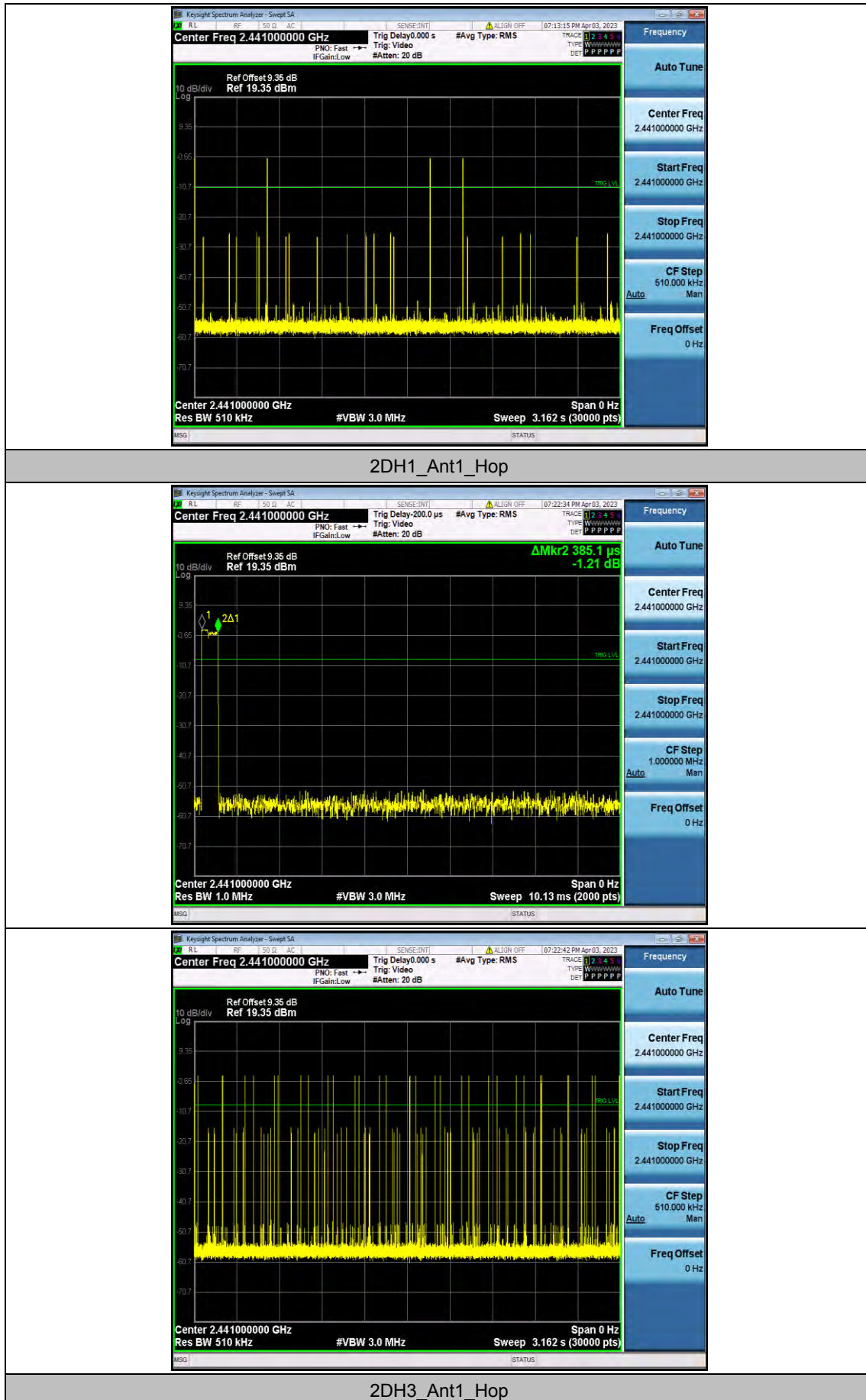
Test Result

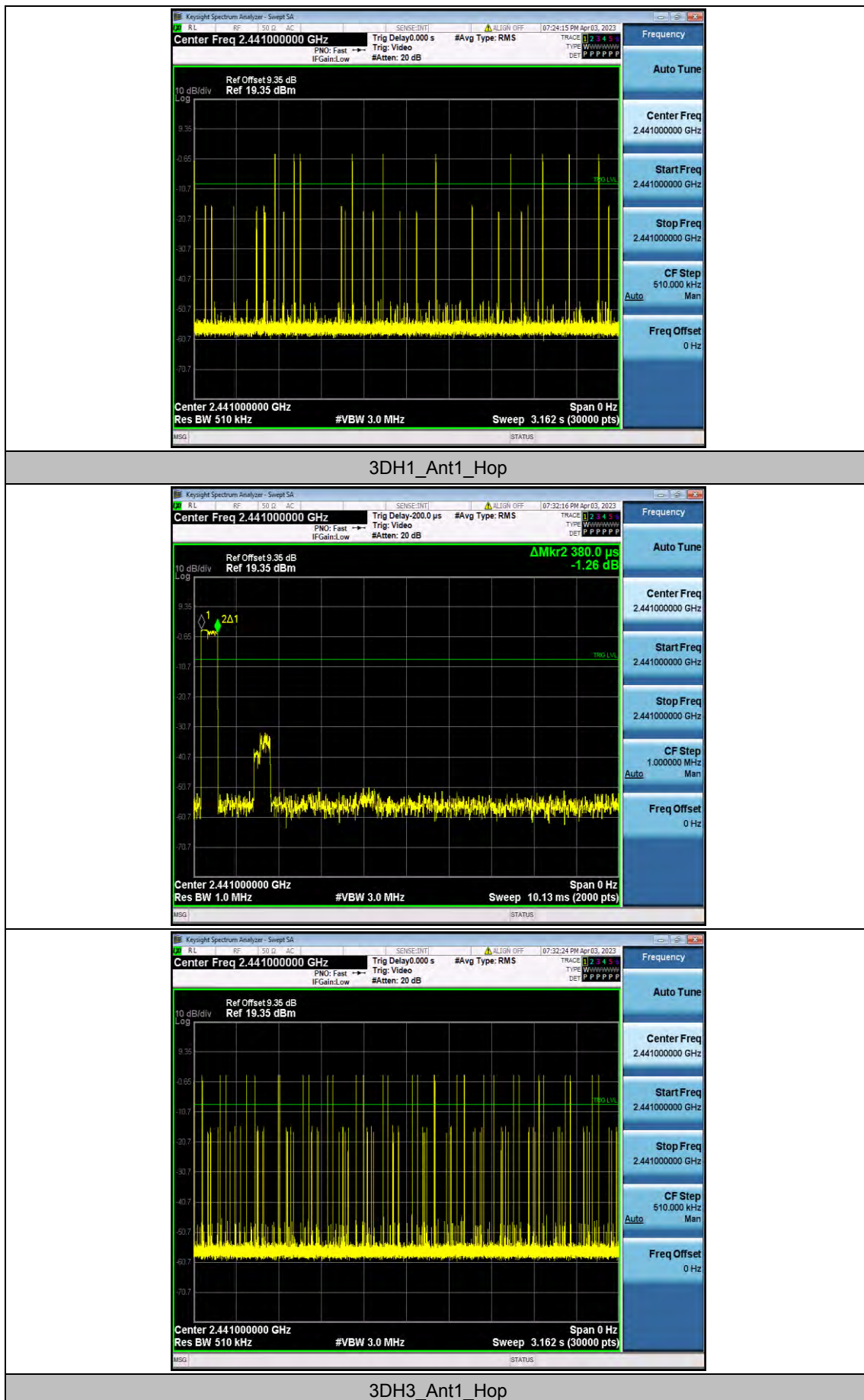
TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.37	330	0.124	≤0.4	PASS
DH3	Ant1	Hop	1.63	170	0.277	≤0.4	PASS
DH5	Ant1	Hop	2.87	40	0.115	≤0.4	PASS
2DH1	Ant1	Hop	0.39	330	0.127	≤0.4	PASS
2DH3	Ant1	Hop	1.63	210	0.343	≤0.4	PASS
2DH5	Ant1	Hop	2.88	110	0.317	≤0.4	PASS
3DH1	Ant1	Hop	0.38	320	0.122	≤0.4	PASS
3DH3	Ant1	Hop	1.63	160	0.261	≤0.4	PASS
3DH5	Ant1	Hop	2.89	120	0.347	≤0.4	PASS

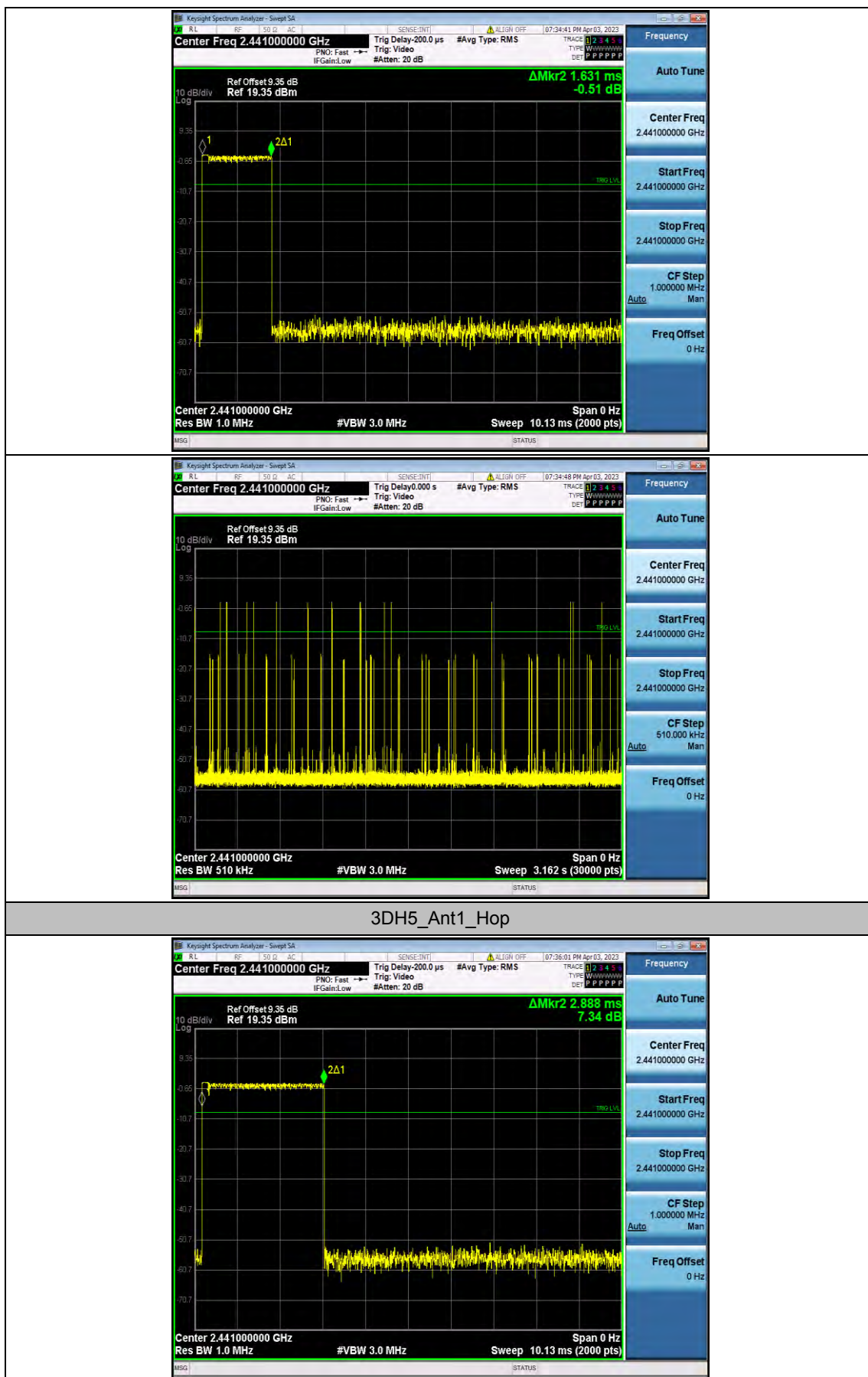
Test Graphs

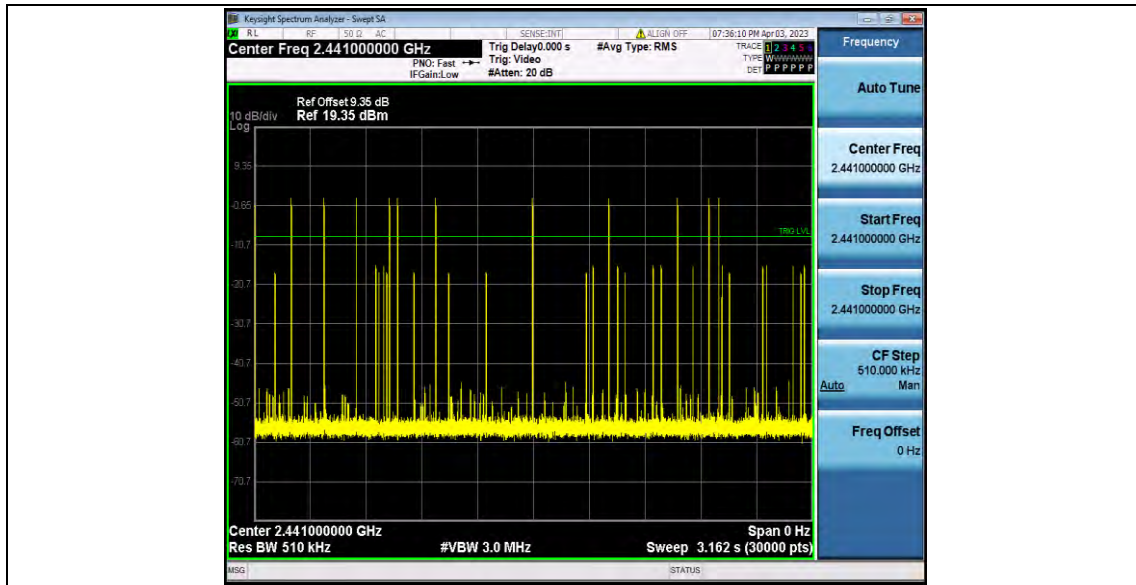










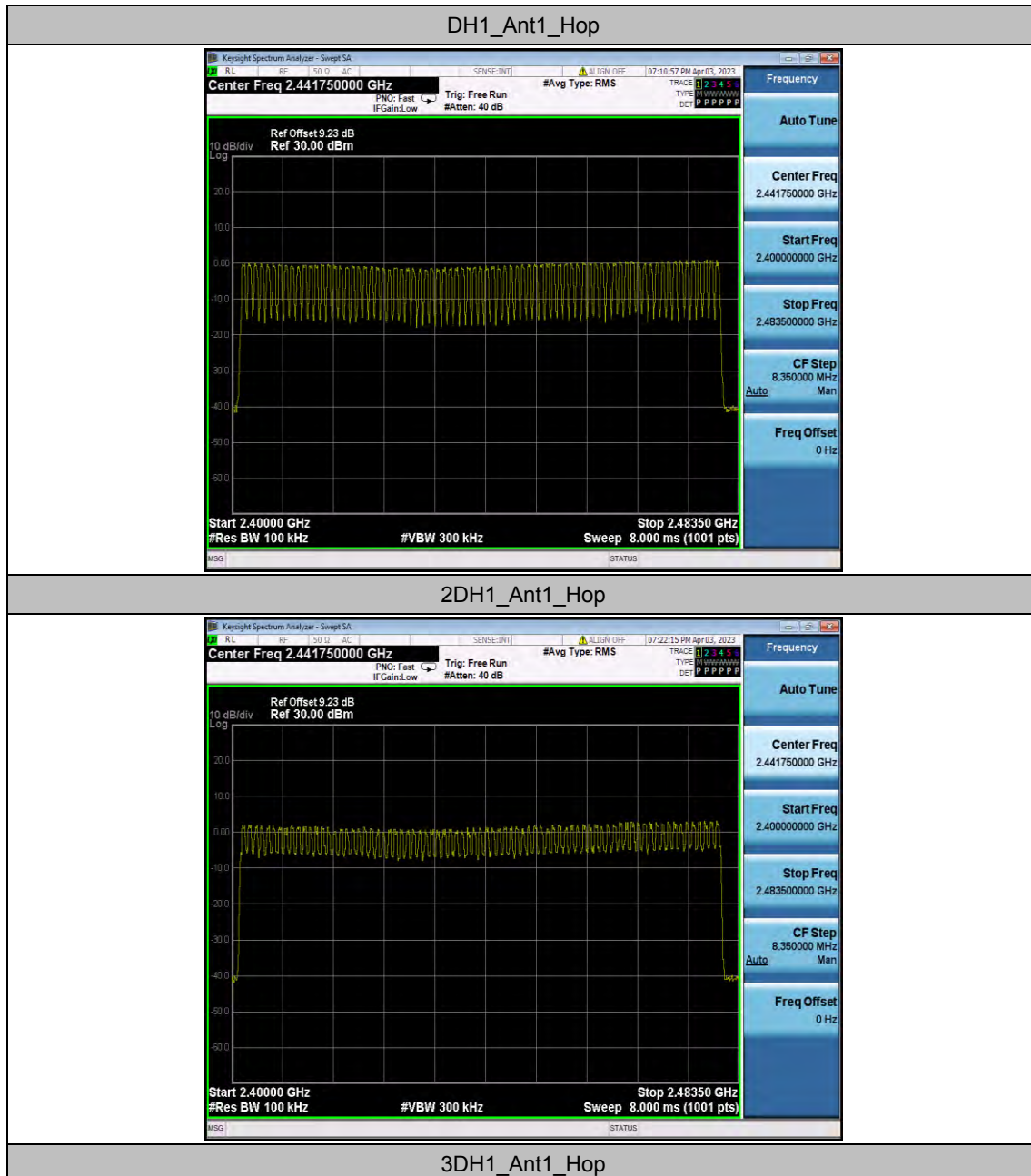


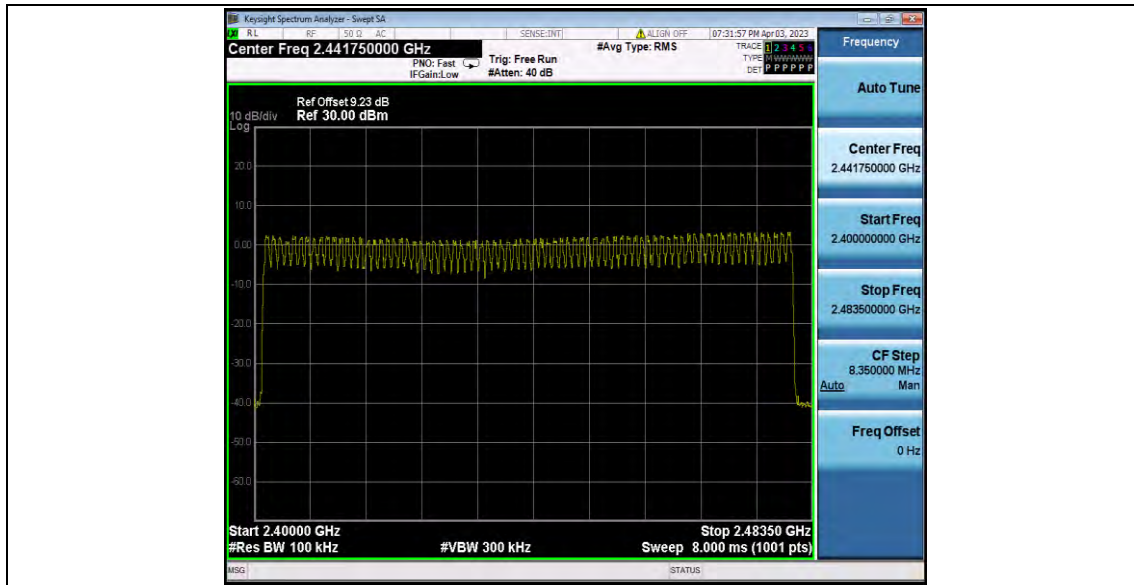
Appendix A.6: Number of hopping channels

Test Result

TestMode	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





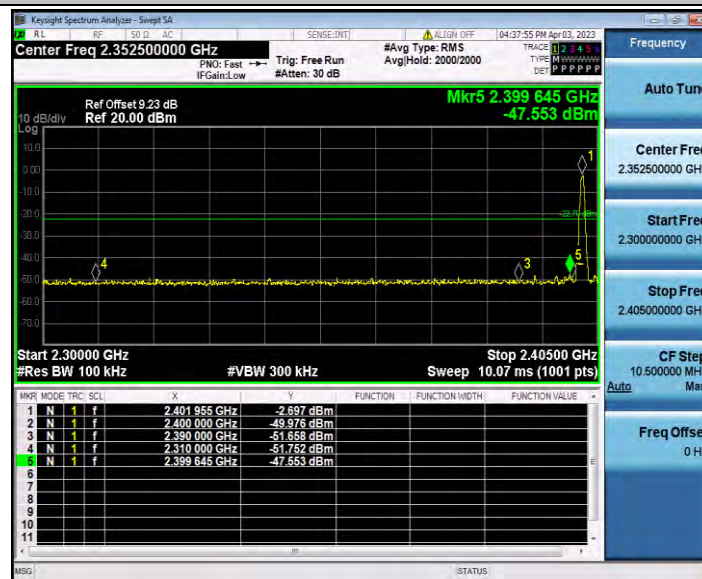
Appendix A.7: Band edge measurements

Test Result

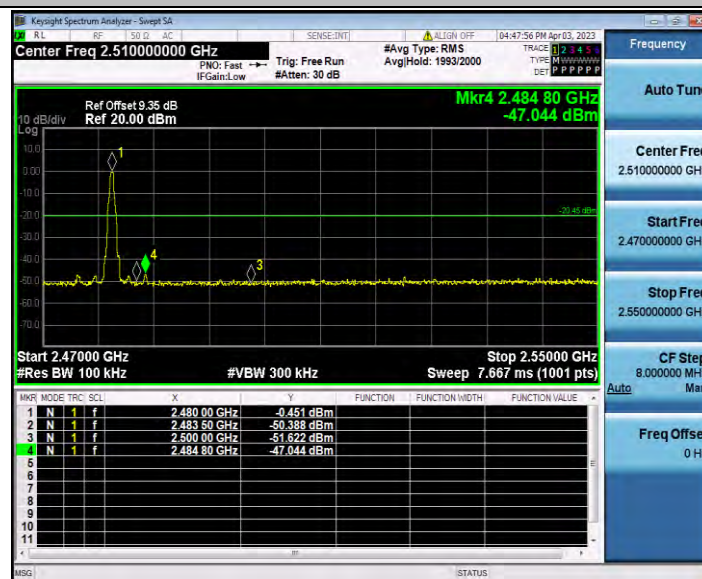
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	Low	2402	-2.70	-47.55	≤ -22.7	PASS
		High	2480	-0.45	-47.04	≤ -20.45	PASS
		Low	Hop_2402	-0.46	-49.57	≤ -20.46	PASS
		High	Hop_2480	0.81	-48	≤ -19.19	PASS
2DH1	Ant1	Low	2402	-4.82	-48.86	≤ -24.82	PASS
		High	2480	-1.86	-47.58	≤ -21.86	PASS
		Low	Hop_2402	1.73	-49.06	≤ -18.27	PASS
		High	Hop_2480	2.45	-48.88	≤ -17.55	PASS
3DH1	Ant1	Low	2402	-2.52	-48.37	≤ -22.52	PASS
		High	2480	-1.83	-47.3	≤ -21.83	PASS
		Low	Hop_2402	2.12	-48.81	≤ -17.88	PASS
		High	Hop_2480	2.99	-48.61	≤ -17.01	PASS

Test Graphs

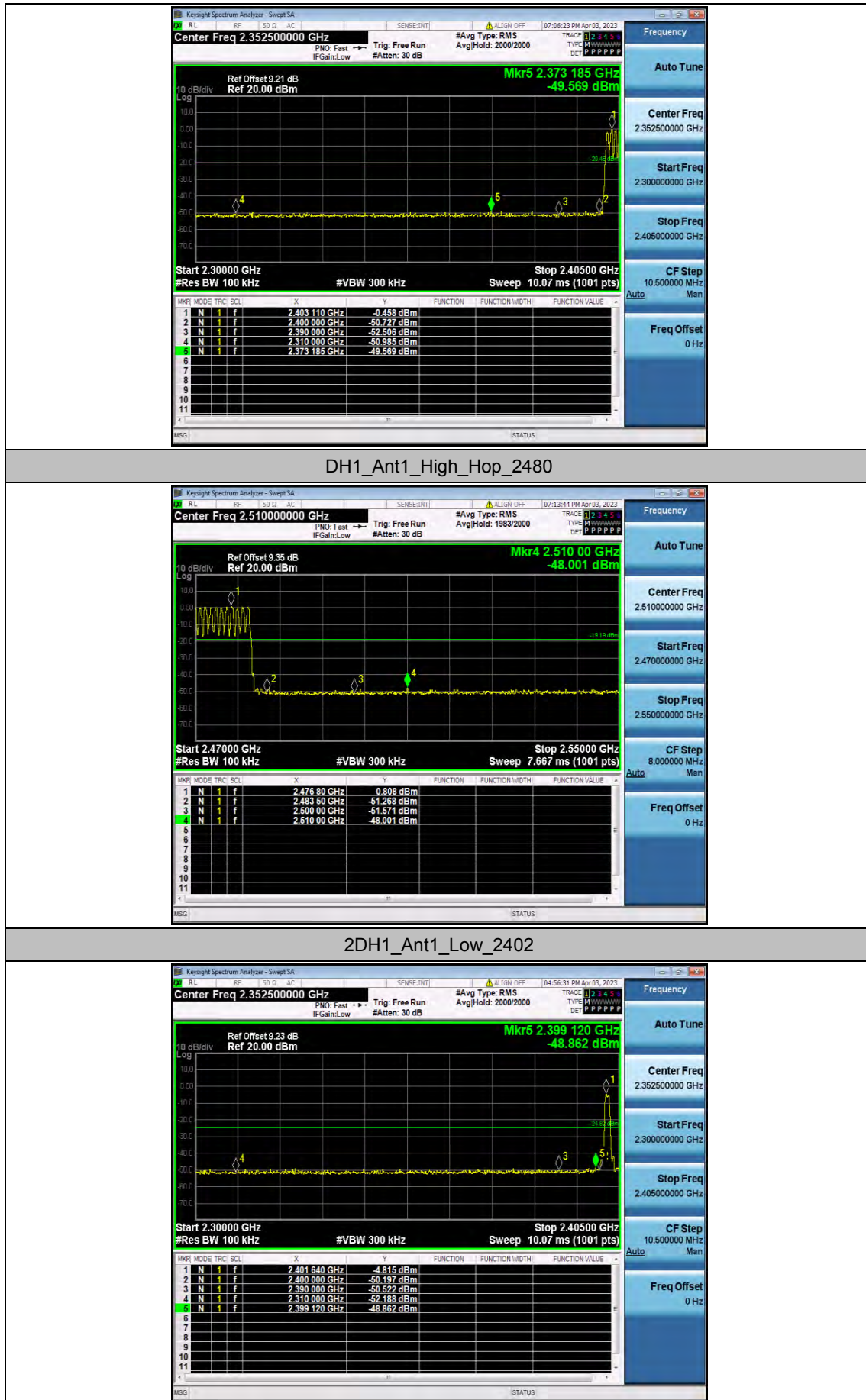
DH1_Ant1_Low_2402



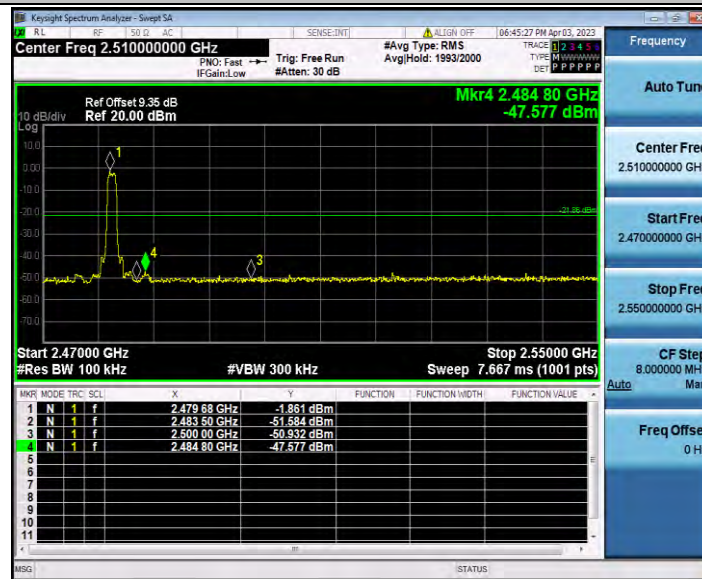
DH1_Ant1_High_2480



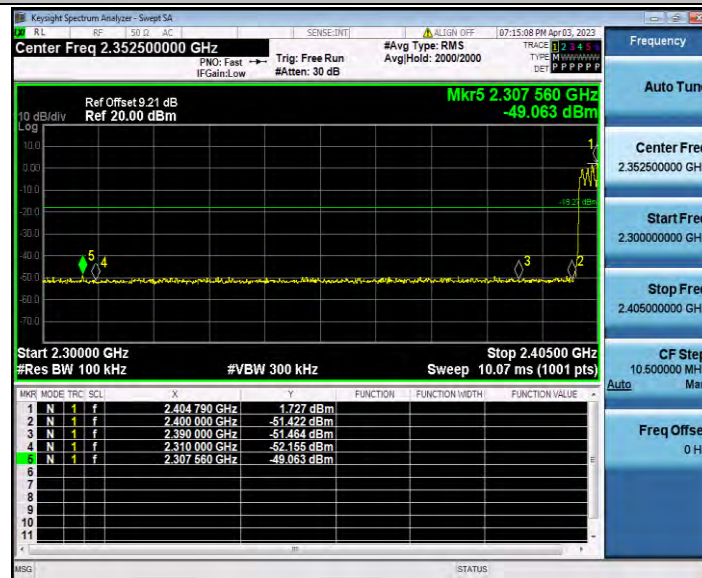
DH1_Ant1_Low_Hop_2402



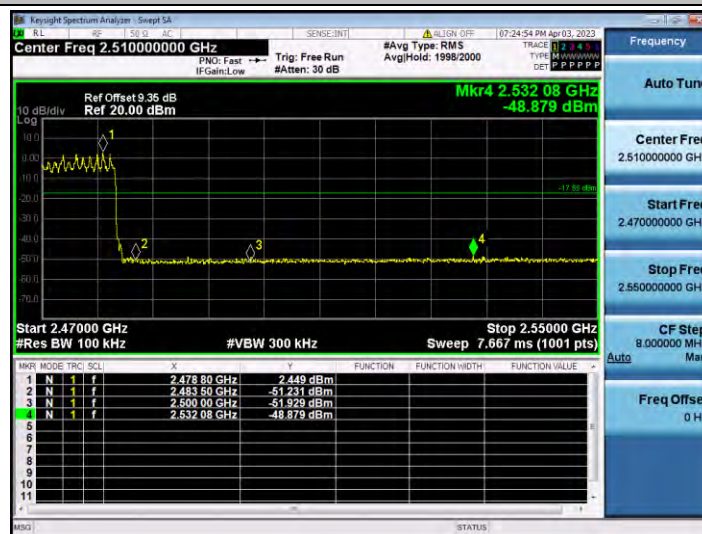
2DH1_Ant1_High_2480



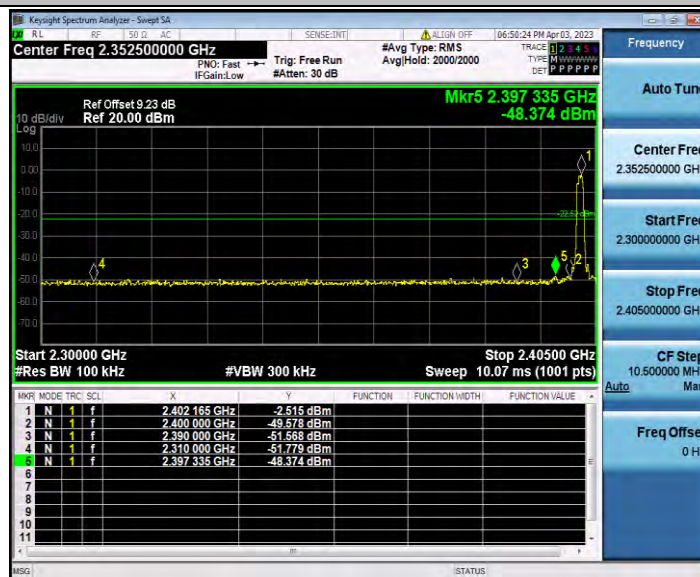
2DH1_Ant1_Low_Hop_2402



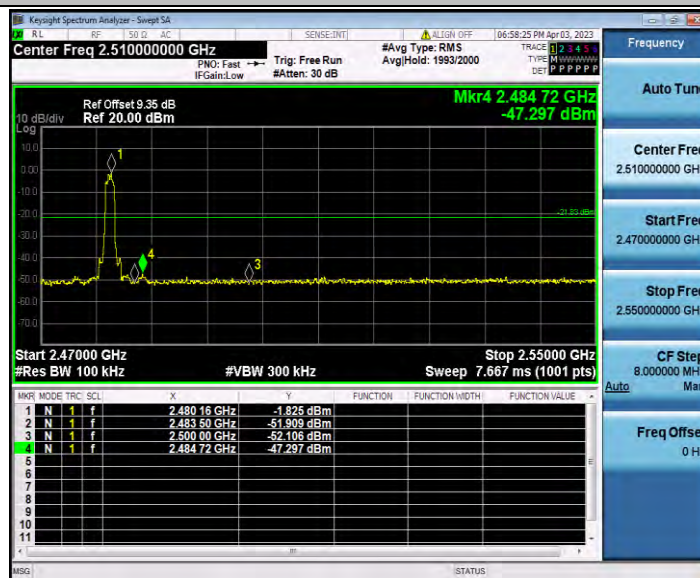
2DH1_Ant1_High_Hop_2480



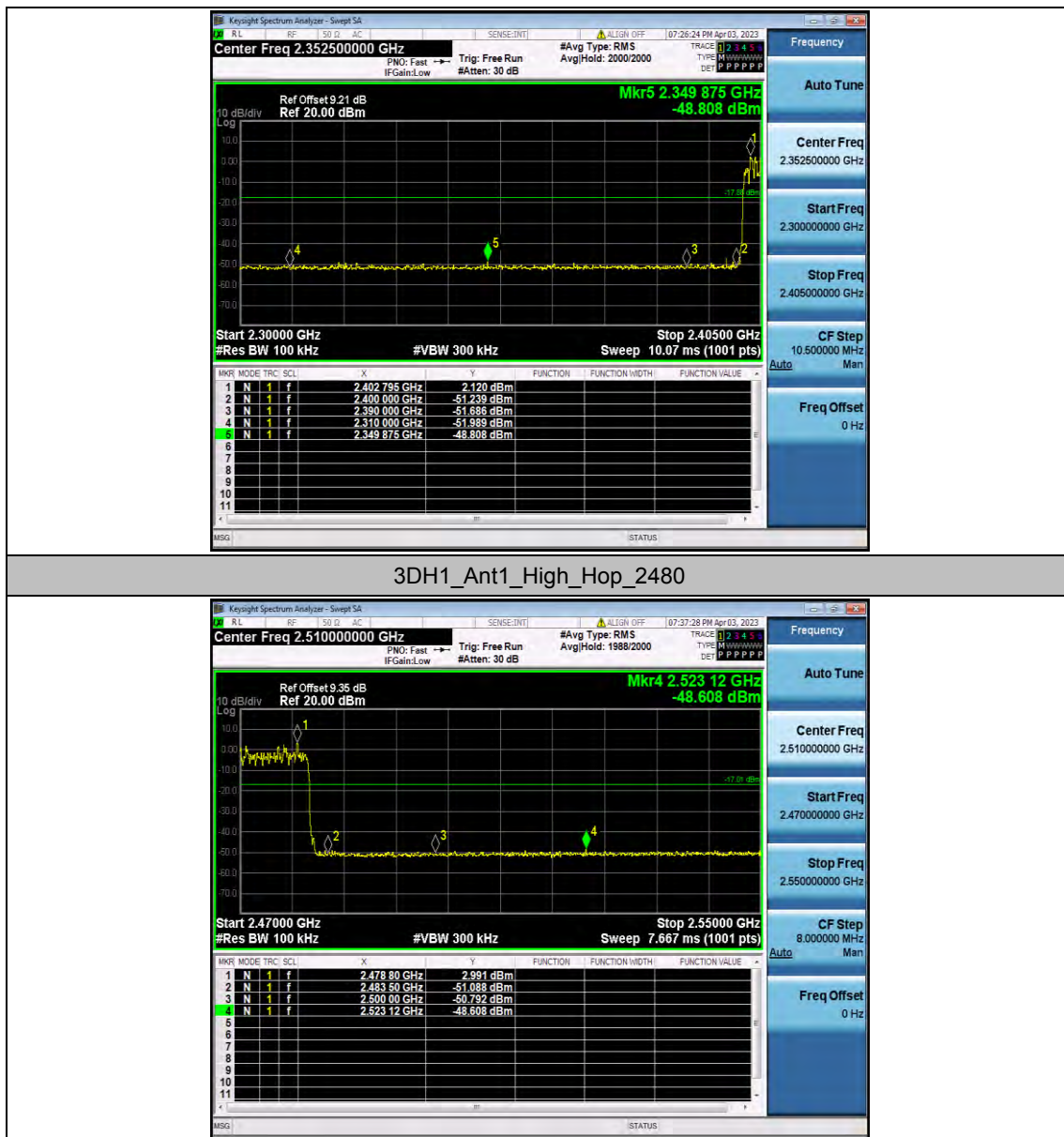
3DH1_Ant1_Low_2402



3DH1_Ant1_High_2480



3DH1_Ant1_Low_Hop_2402

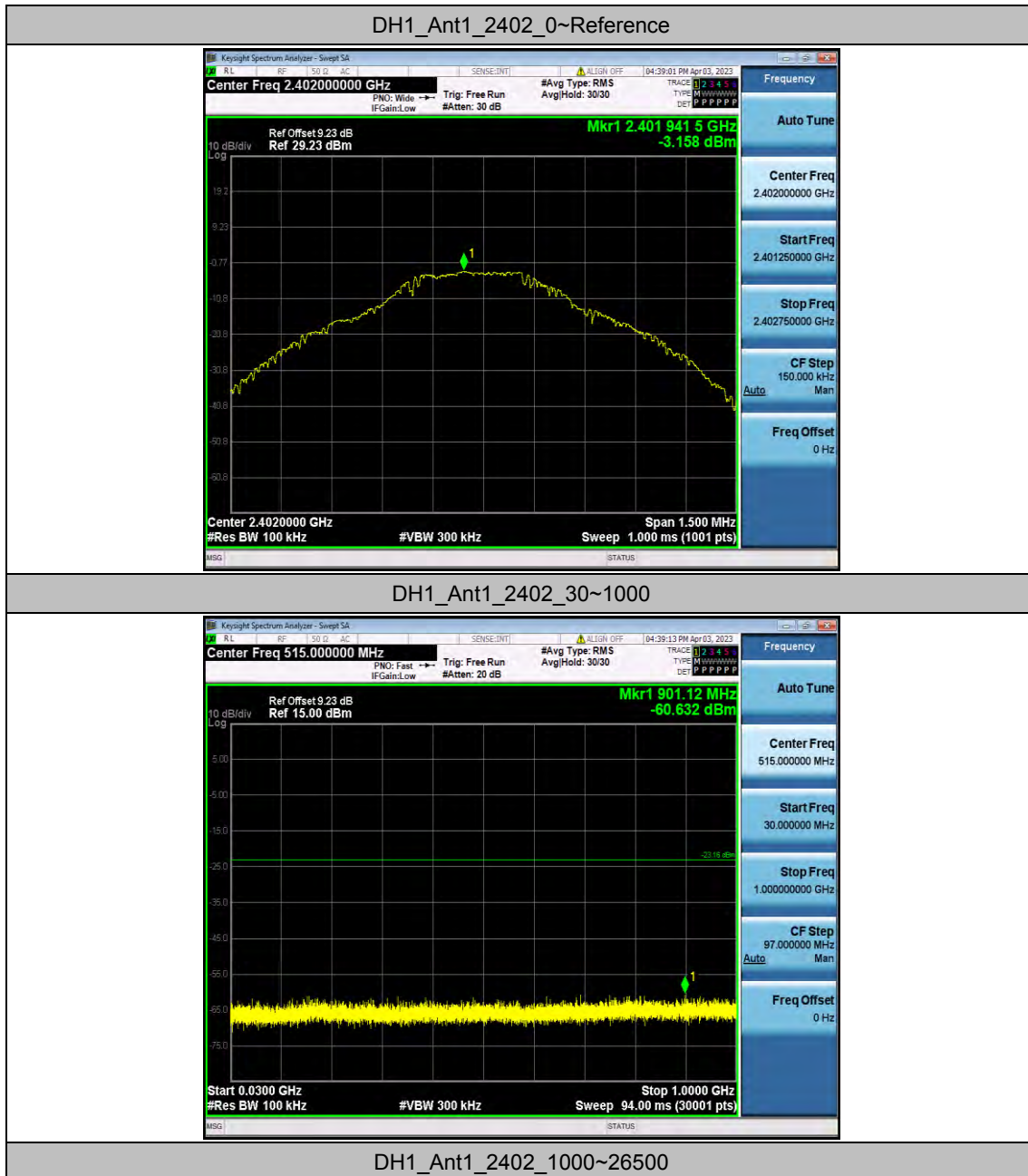


Appendix A.8: Conducted Spurious Emission

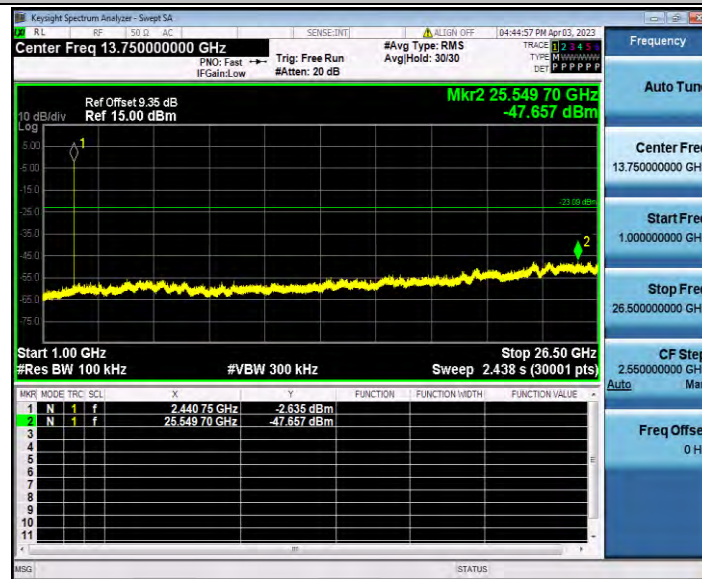
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	2402	Reference	-3.16	-3.16	---	PASS
			30~1000	-3.16	-60.63	≤ -23.16	PASS
			1000~26500	-3.16	-47.57	≤ -23.16	PASS
		2441	Reference	-3.09	-3.09	---	PASS
			30~1000	-3.09	-60.82	≤ -23.09	PASS
			1000~26500	-3.09	-47.66	≤ -23.09	PASS
		2480	Reference	-0.95	-0.95	---	PASS
			30~1000	-0.95	-60.39	≤ -20.95	PASS
			1000~26500	-0.95	-47.44	≤ -20.95	PASS
2DH1	Ant1	2402	Reference	-5.09	-5.09	---	PASS
			30~1000	-5.09	-57.94	≤ -25.09	PASS
			1000~26500	-5.09	-46.91	≤ -25.09	PASS
		2441	Reference	-5.77	-5.77	---	PASS
			30~1000	-5.77	-60.68	≤ -25.77	PASS
			1000~26500	-5.77	-47.92	≤ -25.77	PASS
		2480	Reference	-2.26	-2.26	---	PASS
			30~1000	-2.26	-60.01	≤ -22.26	PASS
			1000~26500	-2.26	-46.78	≤ -22.26	PASS
3DH1	Ant1	2402	Reference	-3.02	-3.02	---	PASS
			30~1000	-3.02	-59.93	≤ -23.02	PASS
			1000~26500	-3.02	-47.3	≤ -23.02	PASS
		2441	Reference	-4.18	-4.18	---	PASS
			30~1000	-4.18	-60.61	≤ -24.18	PASS
			1000~26500	-4.18	-47.58	≤ -24.18	PASS
		2480	Reference	-2.37	-2.37	---	PASS
			30~1000	-2.37	-59.36	≤ -22.37	PASS
			1000~26500	-2.37	-47.55	≤ -22.37	PASS

Test Graphs



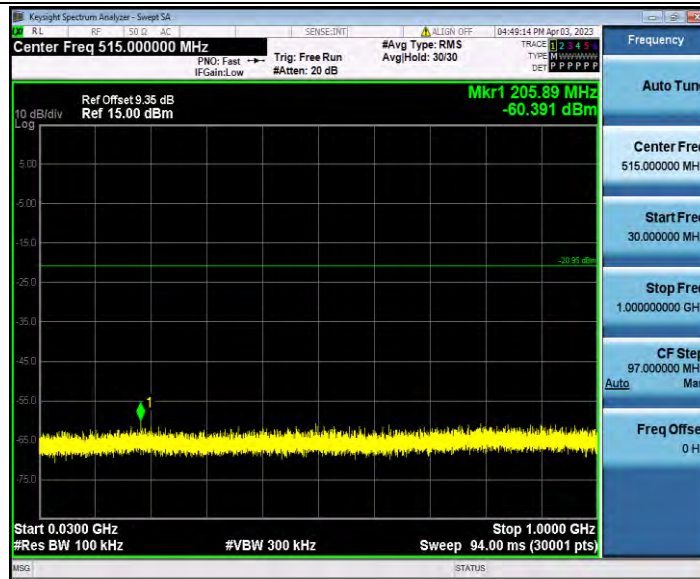
DH1_Ant1_2441_1000~26500



DH1_Ant1_2480_0~Reference



DH1_Ant1_2480_30~1000

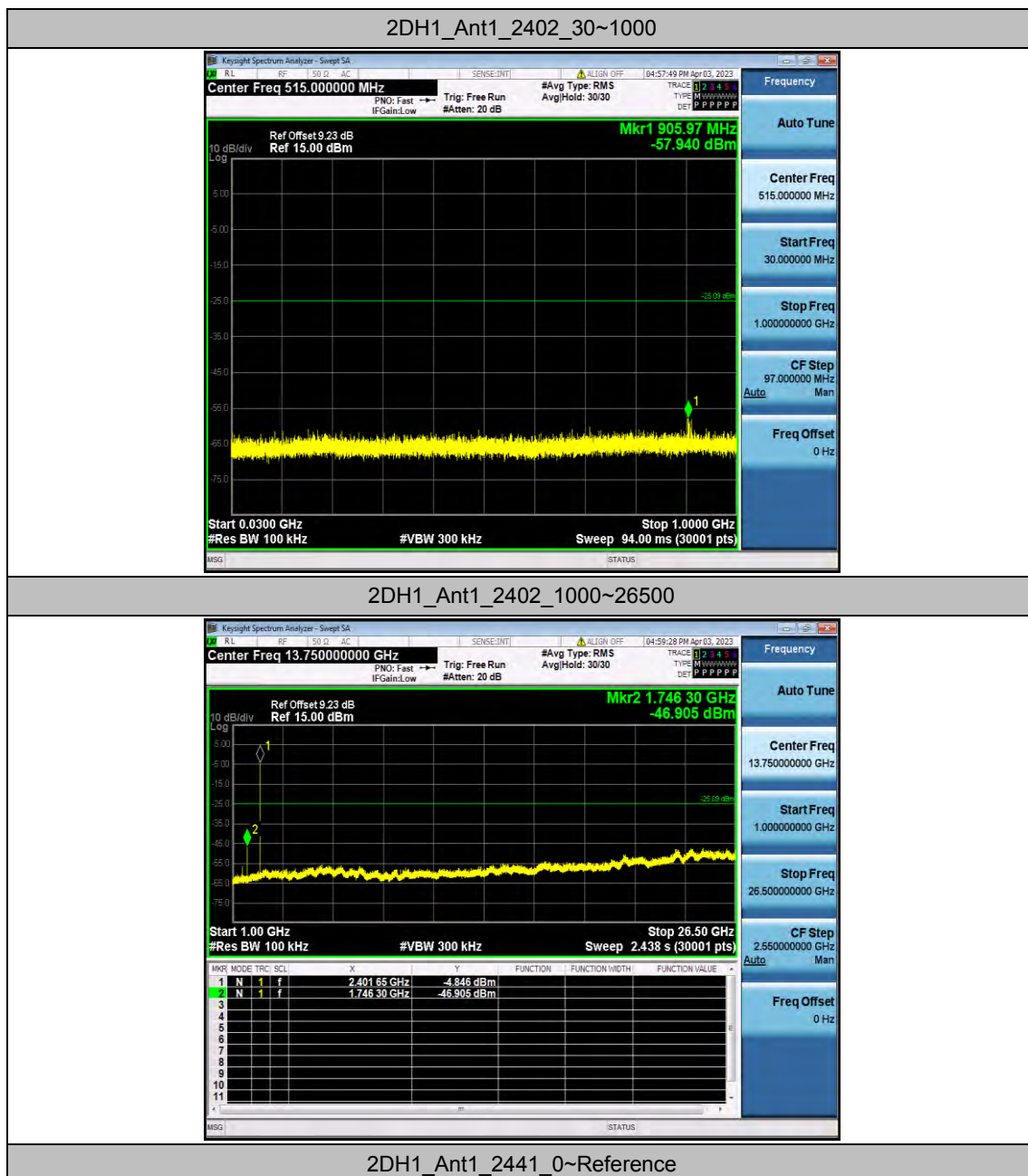


DH1_Ant1_2480_1000~26500



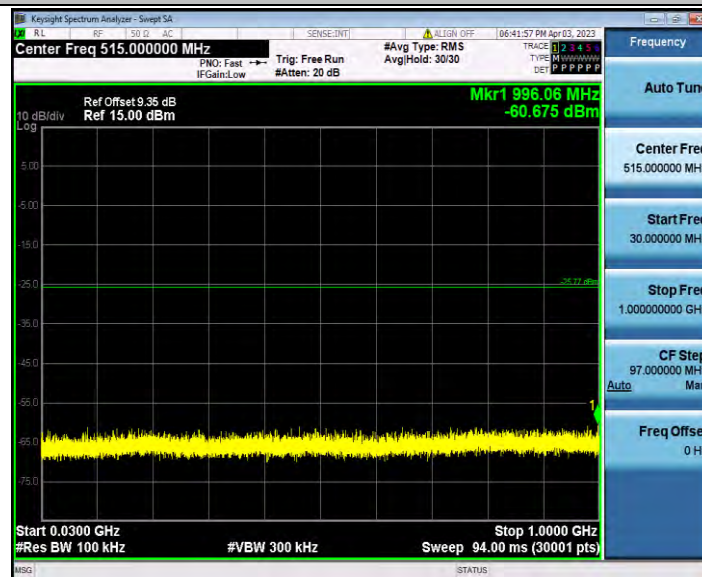
2DH1_Ant1_2402_0~Reference







2DH1_Ant1_2441_30~1000



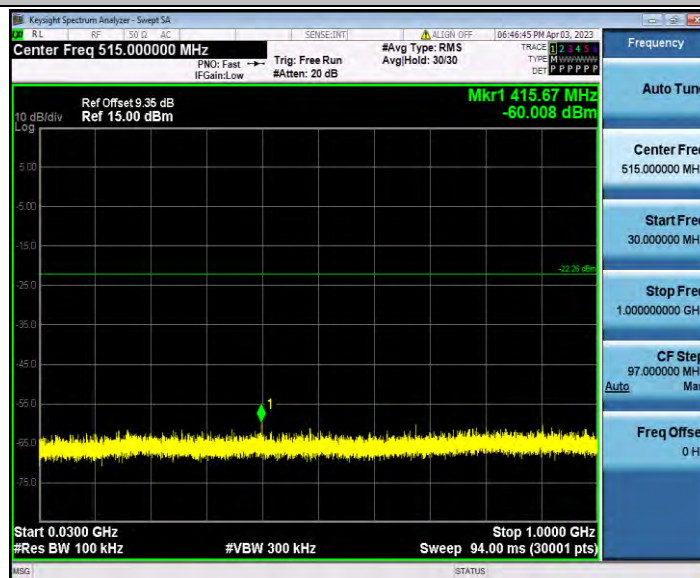
2DH1_Ant1_2441_1000~26500



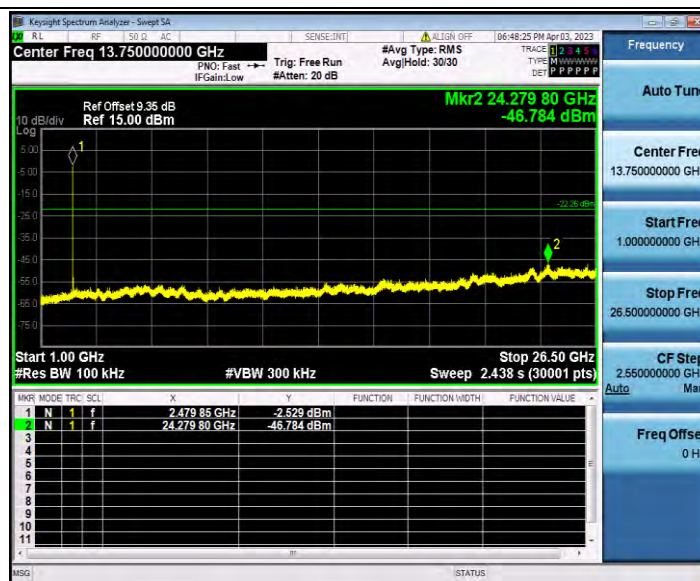
2DH1_Ant1_2480_0~Reference



2DH1_Ant1_2480_30~1000



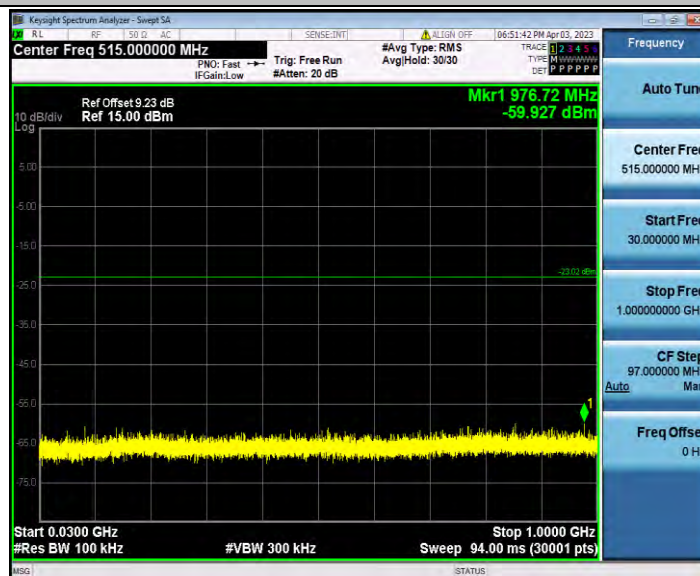
2DH1_Ant1_2480_1000~26500



3DH1_Ant1_2402_0~Reference



3DH1_Ant1_2402_30~1000



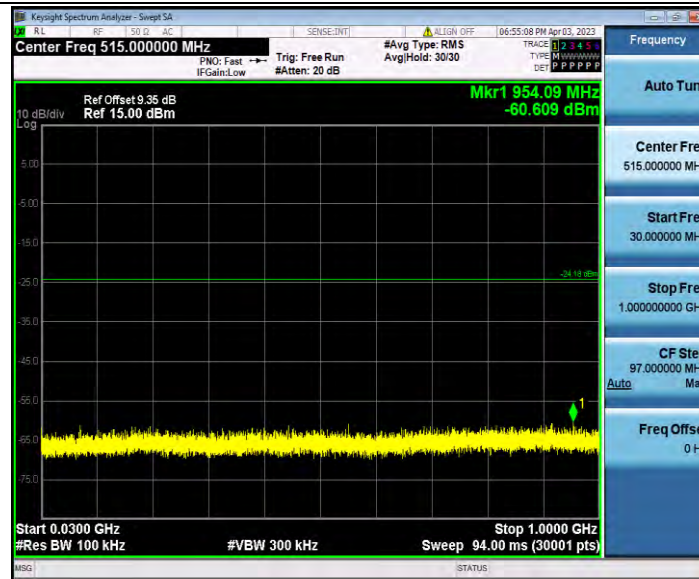
3DH1_Ant1_2402_1000~26500



3DH1_Ant1_2441_0~Reference



3DH1_Ant1_2441_30~1000



3DH1_Ant1_2441_1000~26500



3DH1_Ant1_2480_0~Reference



