

Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Marmax TWS

Test Model: ETWS-CE-TJX

Environmental Conditions

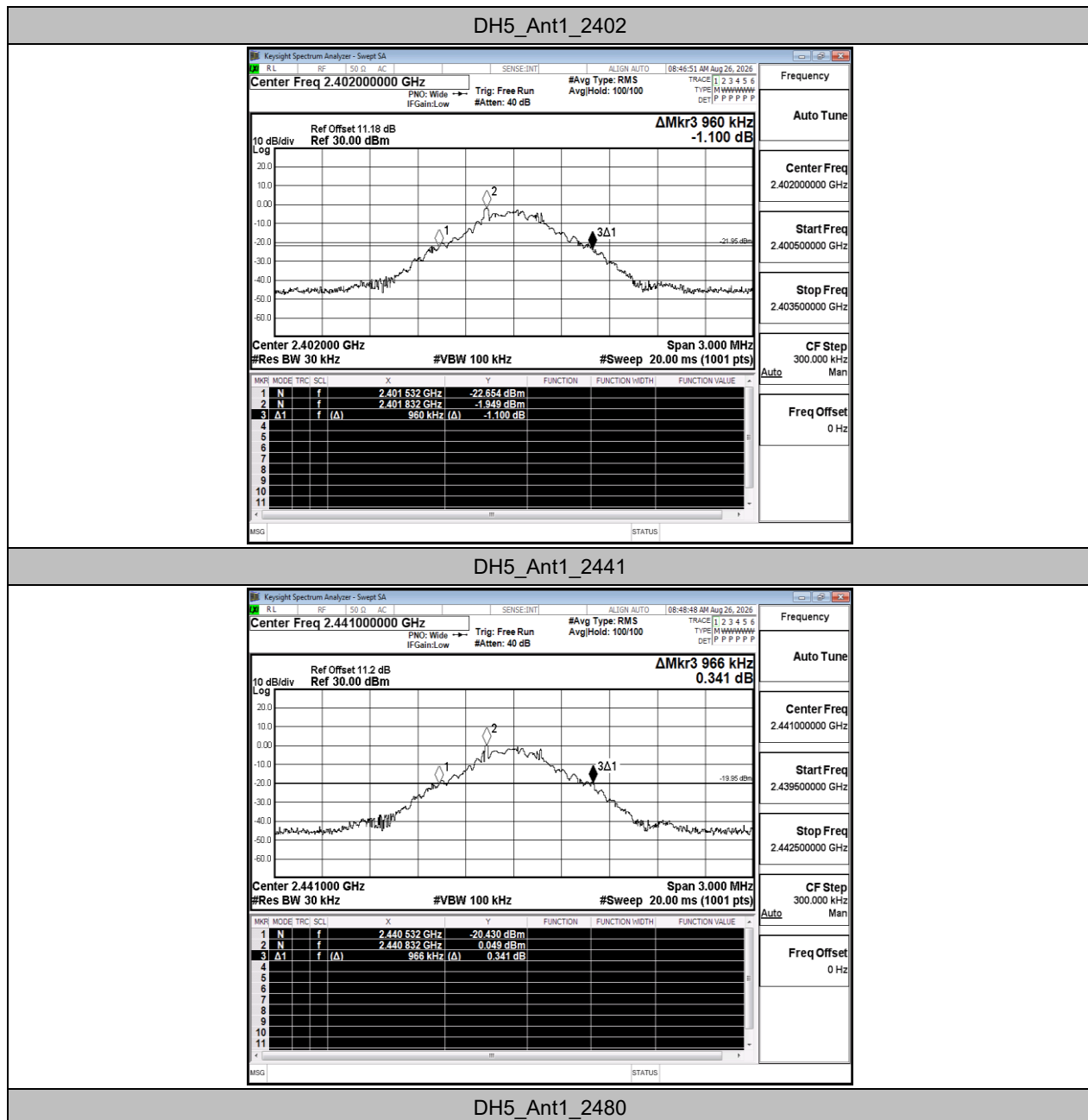
Temperature:	24.5°C
Relative Humidity:	53.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang hai
Supervised by:	Fengliu Tang

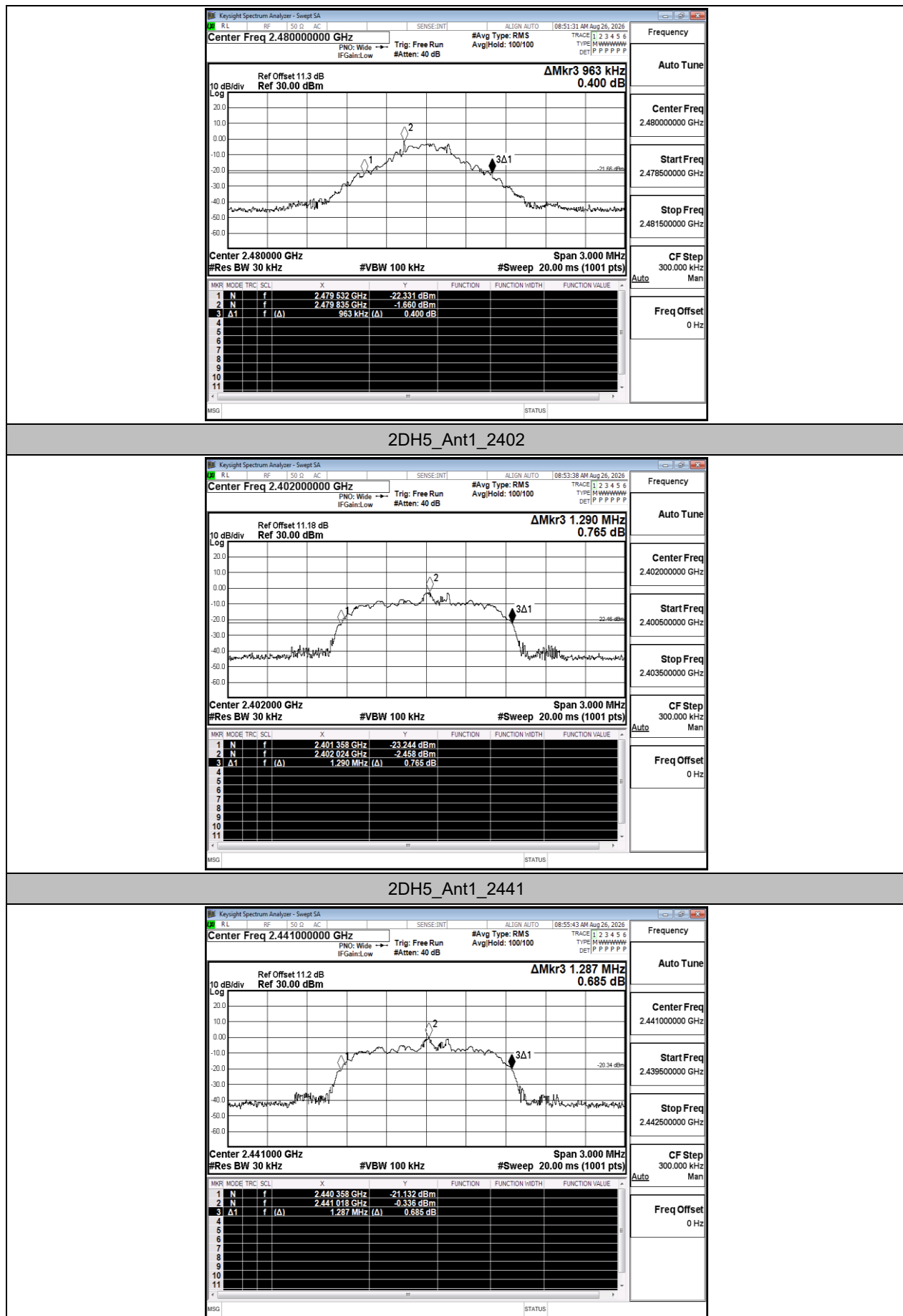
A.1 20dB Emission Bandwidth

Test Result

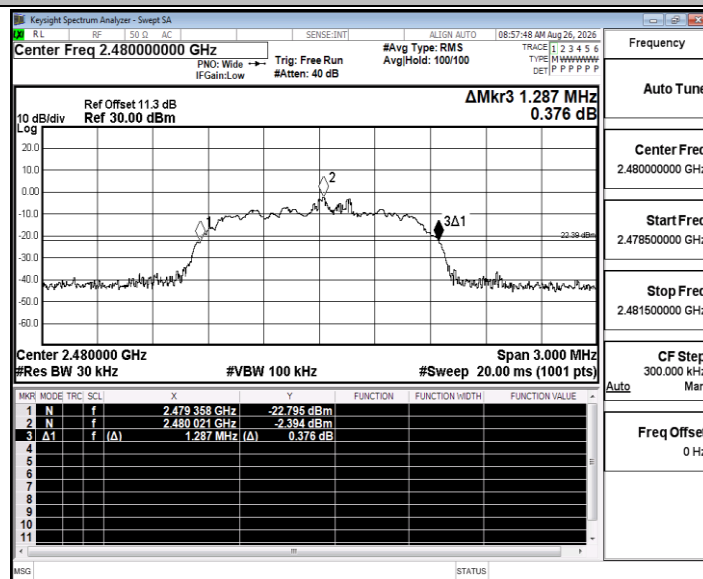
TestMode	Antenna	Freq (MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit [MHz]	Verdict
DH5	Ant1	2402	0.960	2401.532	2402.492	---	---
		2441	0.966	2440.532	2441.498	---	---
		2480	0.963	2479.532	2480.495	---	---
2DH5	Ant1	2402	1.290	2401.358	2402.648	---	---
		2441	1.287	2440.358	2441.645	---	---
		2480	1.287	2479.358	2480.645	---	---
3DH5	Ant1	2402	1.302	2401.346	2402.648	---	---
		2441	1.299	2440.346	2441.645	---	---
		2480	1.299	2479.346	2480.645	---	---

Test Graphs

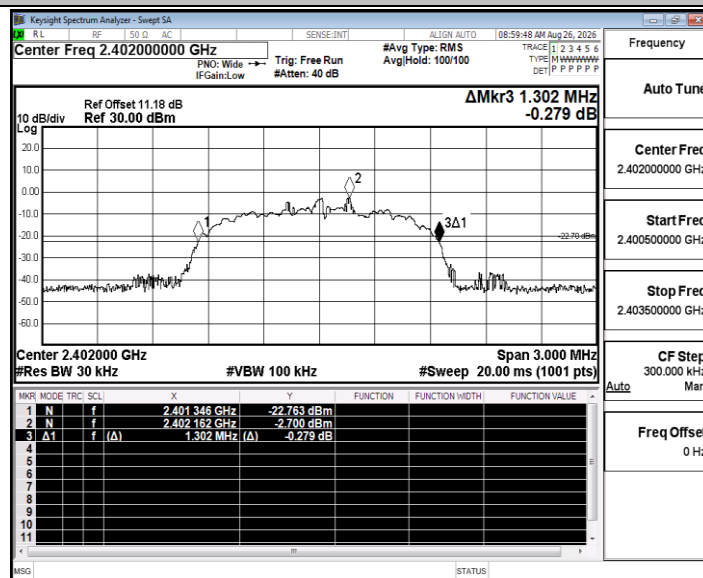




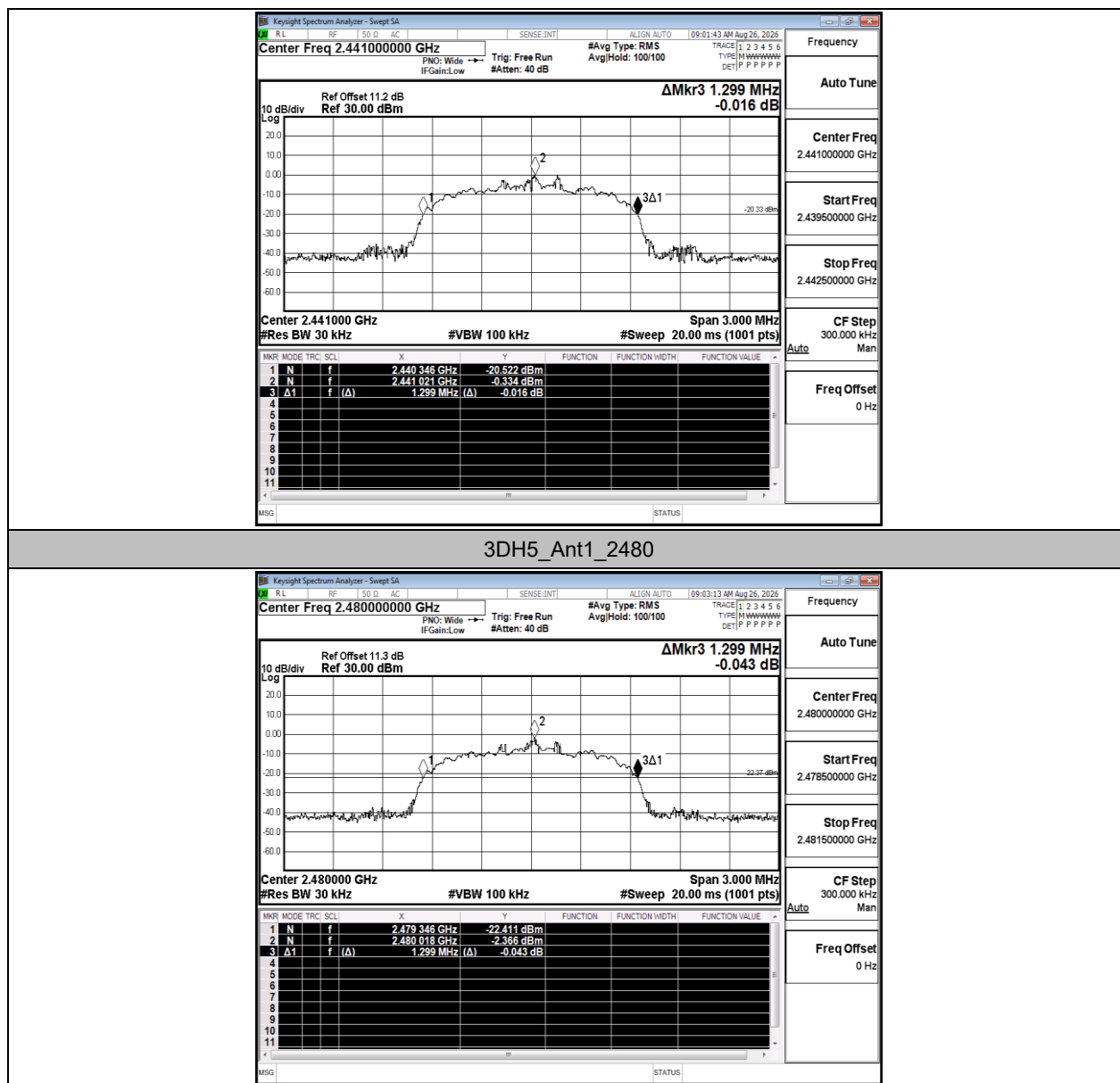
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441

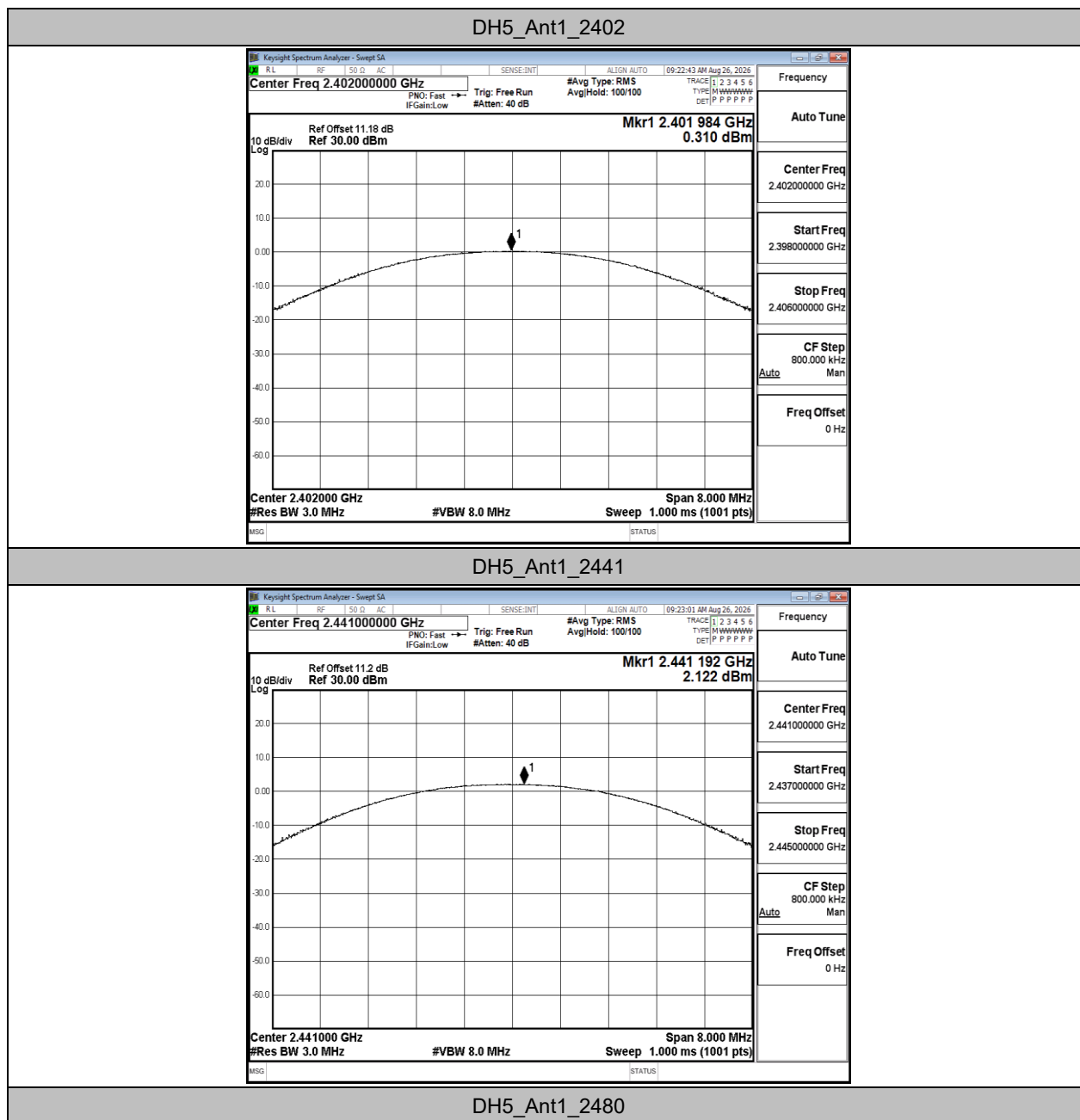


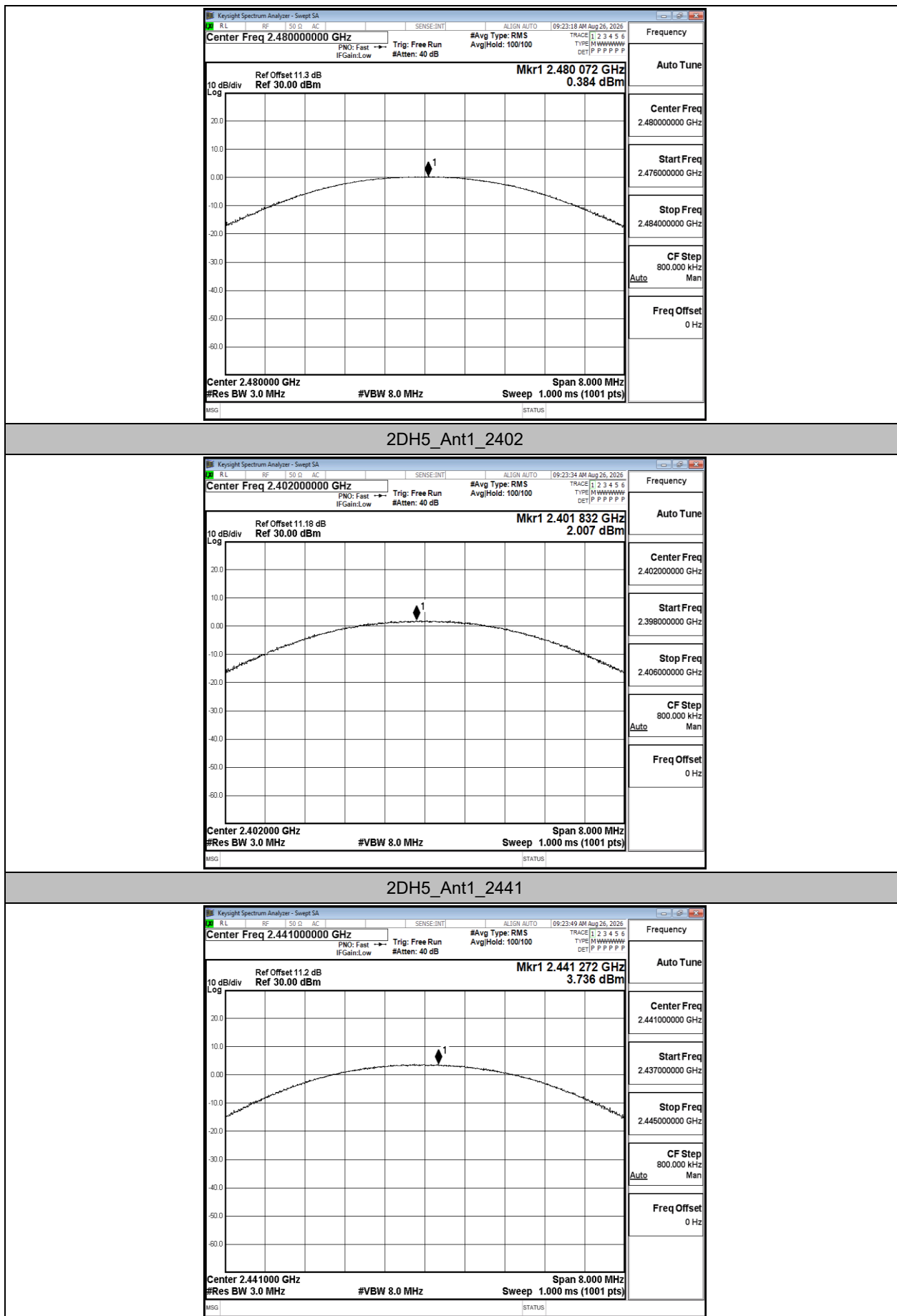
A.2 Maximum Peak conducted output power

Test Result Peak

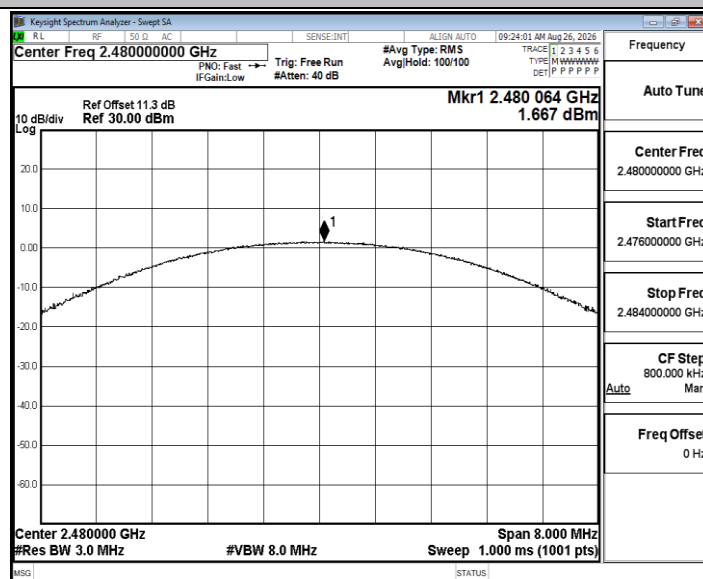
TestMode	Antenna	Freq (MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	0.31	≤30	PASS
		2441	2.12	≤30	PASS
		2480	0.38	≤30	PASS
2DH5	Ant1	2402	2.01	≤20.97	PASS
		2441	3.74	≤20.97	PASS
		2480	1.67	≤20.97	PASS
3DH5	Ant1	2402	2.42	≤20.97	PASS
		2441	4.06	≤20.97	PASS
		2480	1.90	≤20.97	PASS

Test Graphs

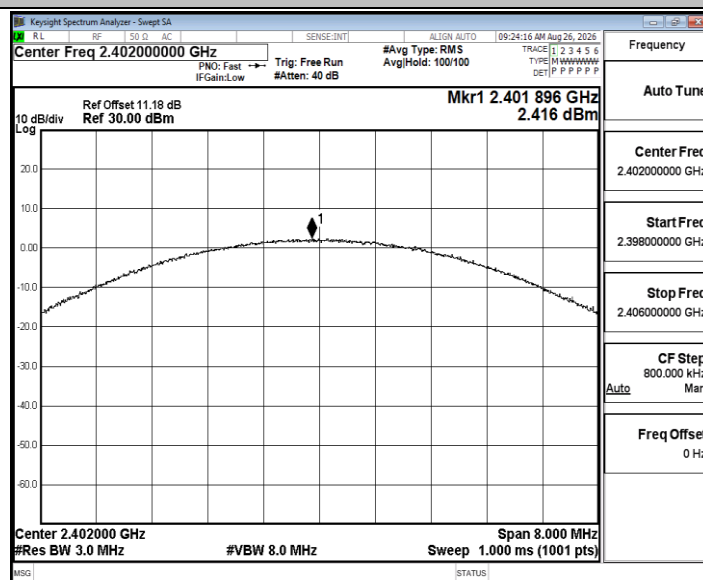




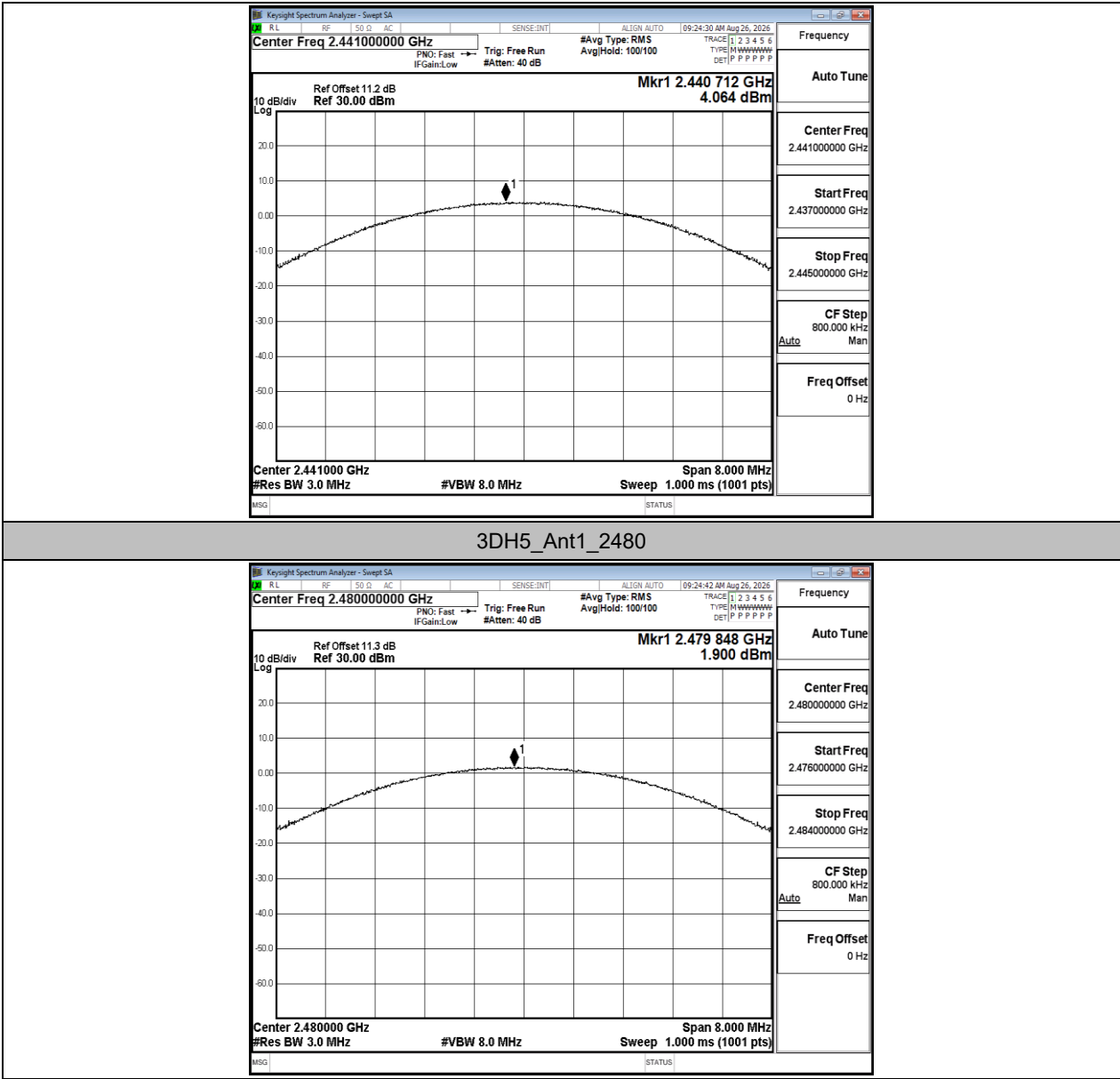
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441

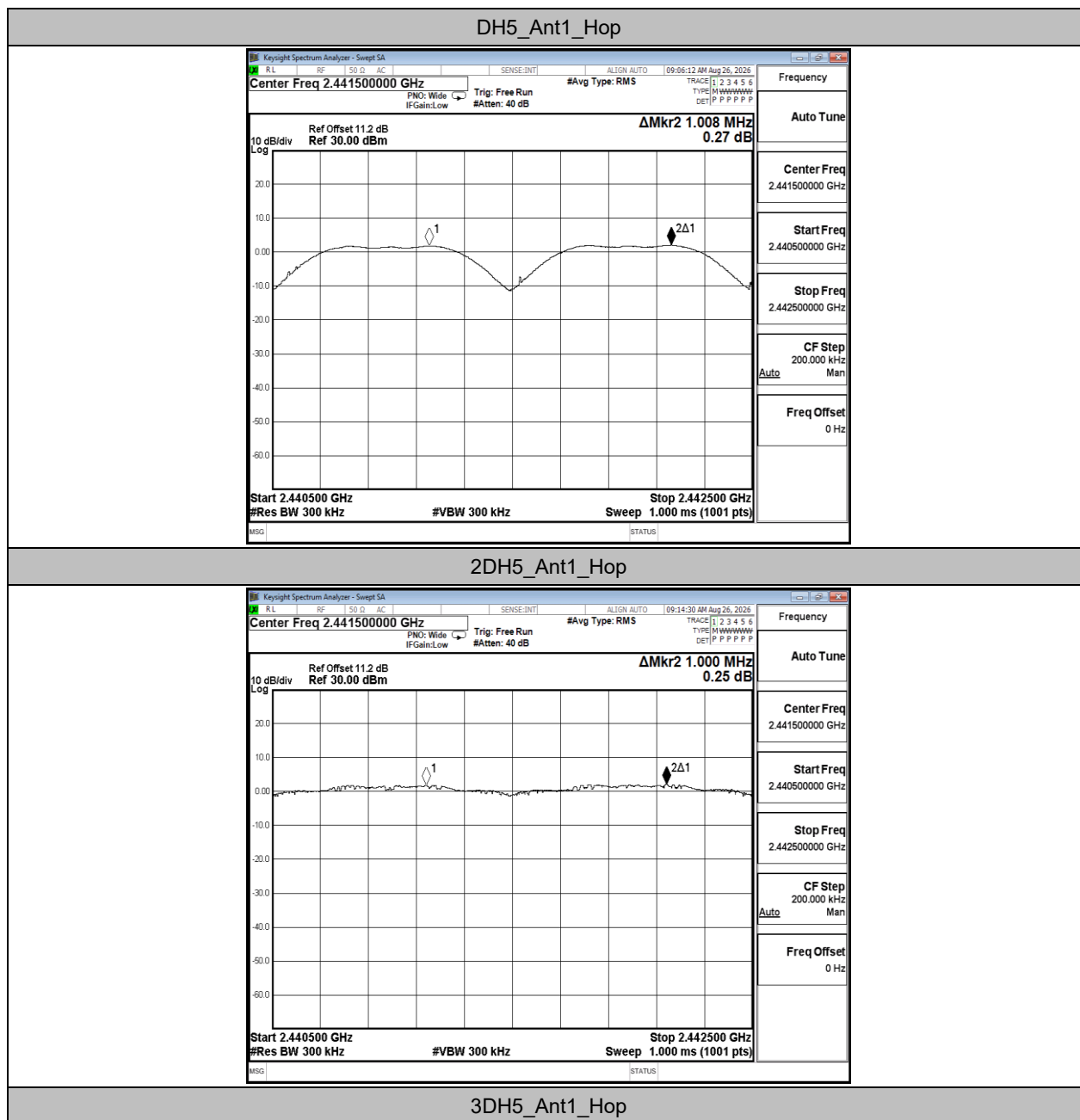


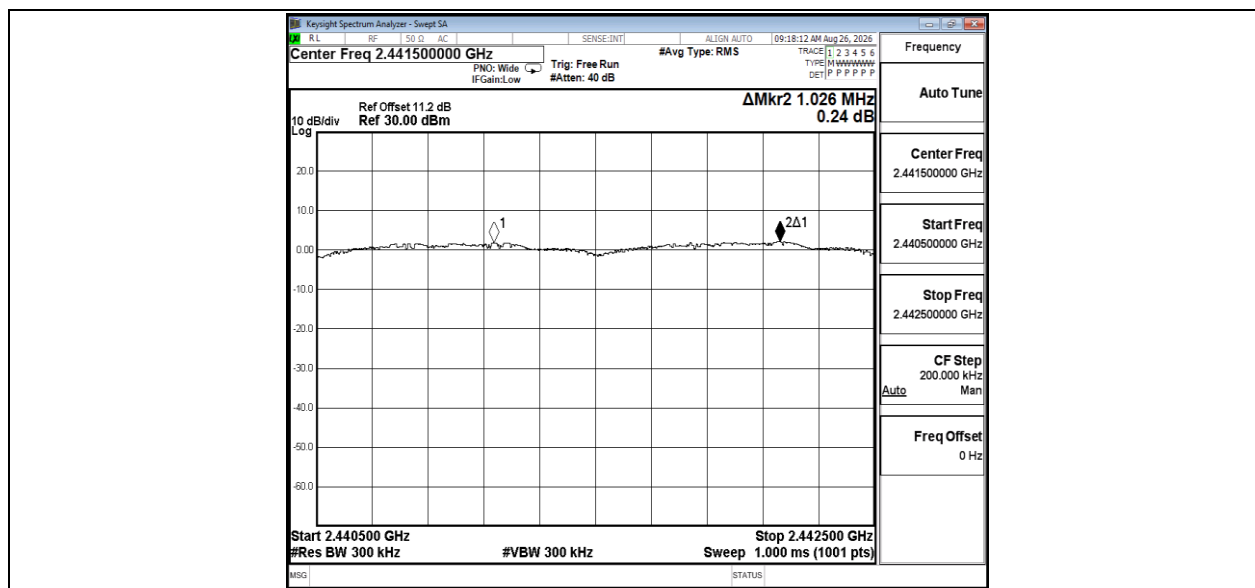
A.3 Carrier frequency separation

Test Result

TestMode	Antenna	Freq (MHz)	Result [MHz]	Limit [MHz]	Verdict
DH5	Ant1	Hop	1.008	≥ 0.644	PASS
2DH5	Ant1	Hop	1	≥ 0.860	PASS
3DH5	Ant1	Hop	1.026	≥ 0.868	PASS

Test Graphs



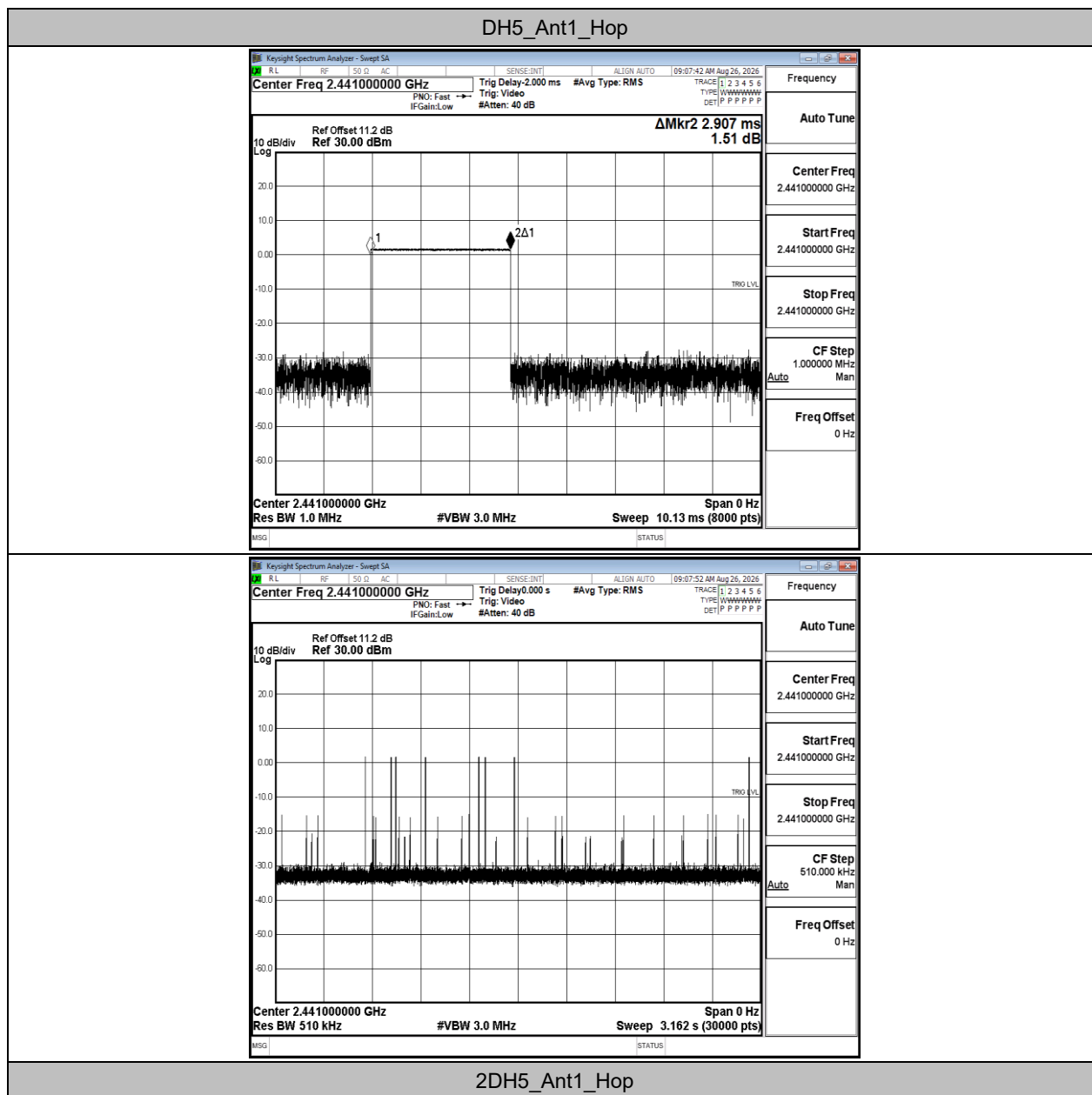


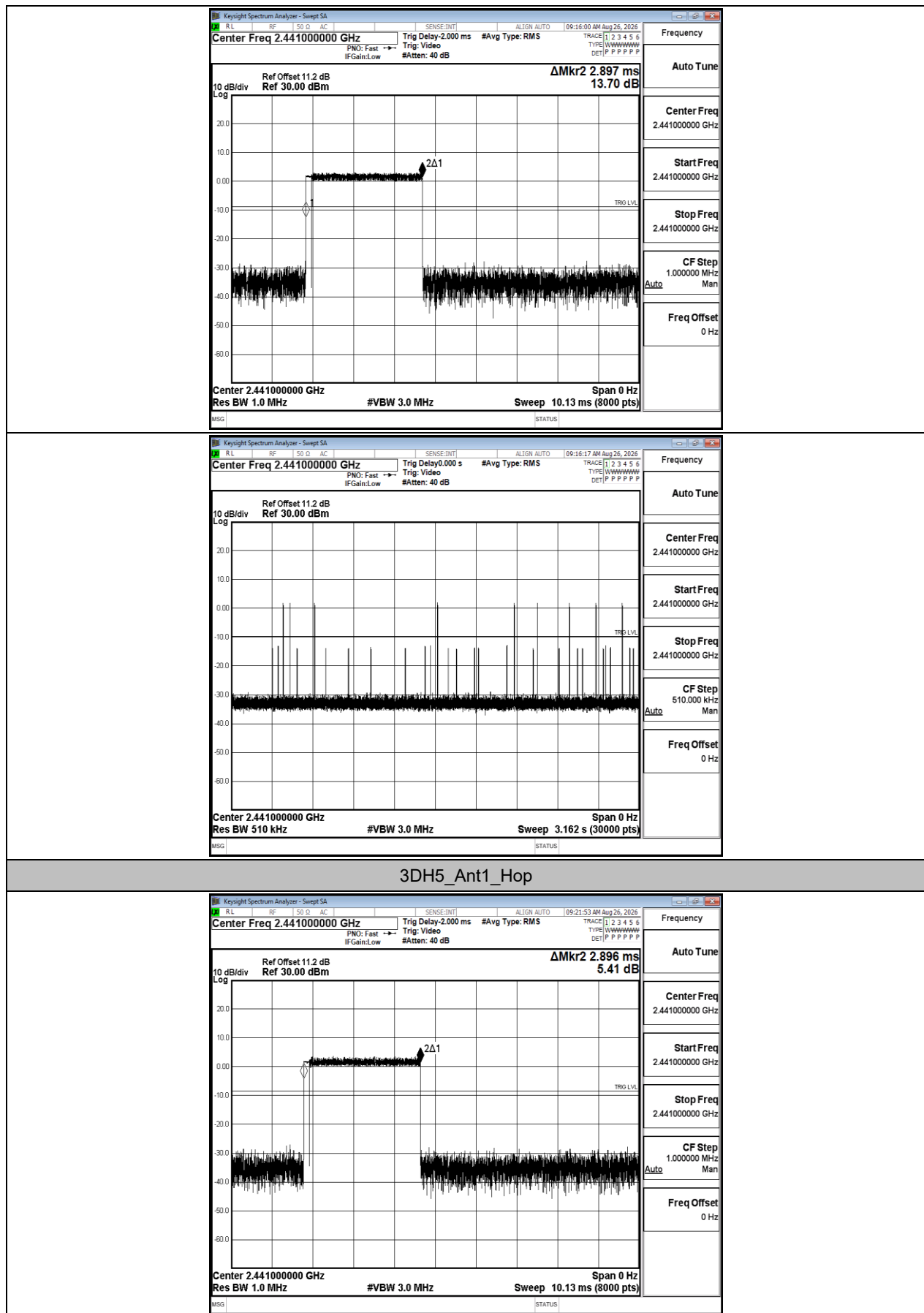
A4 Time of occupancy

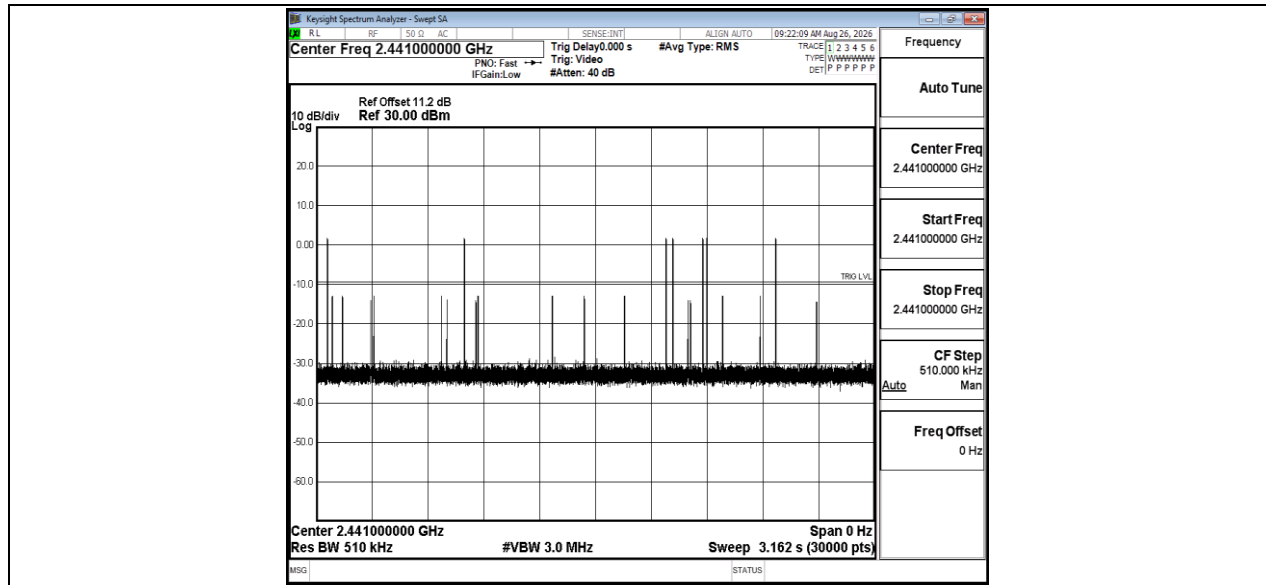
Test Result

TestMode	Antenna	Freq (MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.907	90	0.262	≤0.4	PASS
2DH5	Ant1	Hop	2.897	100	0.29	≤0.4	PASS
3DH5	Ant1	Hop	2.896	80	0.232	≤0.4	PASS

Test Graphs





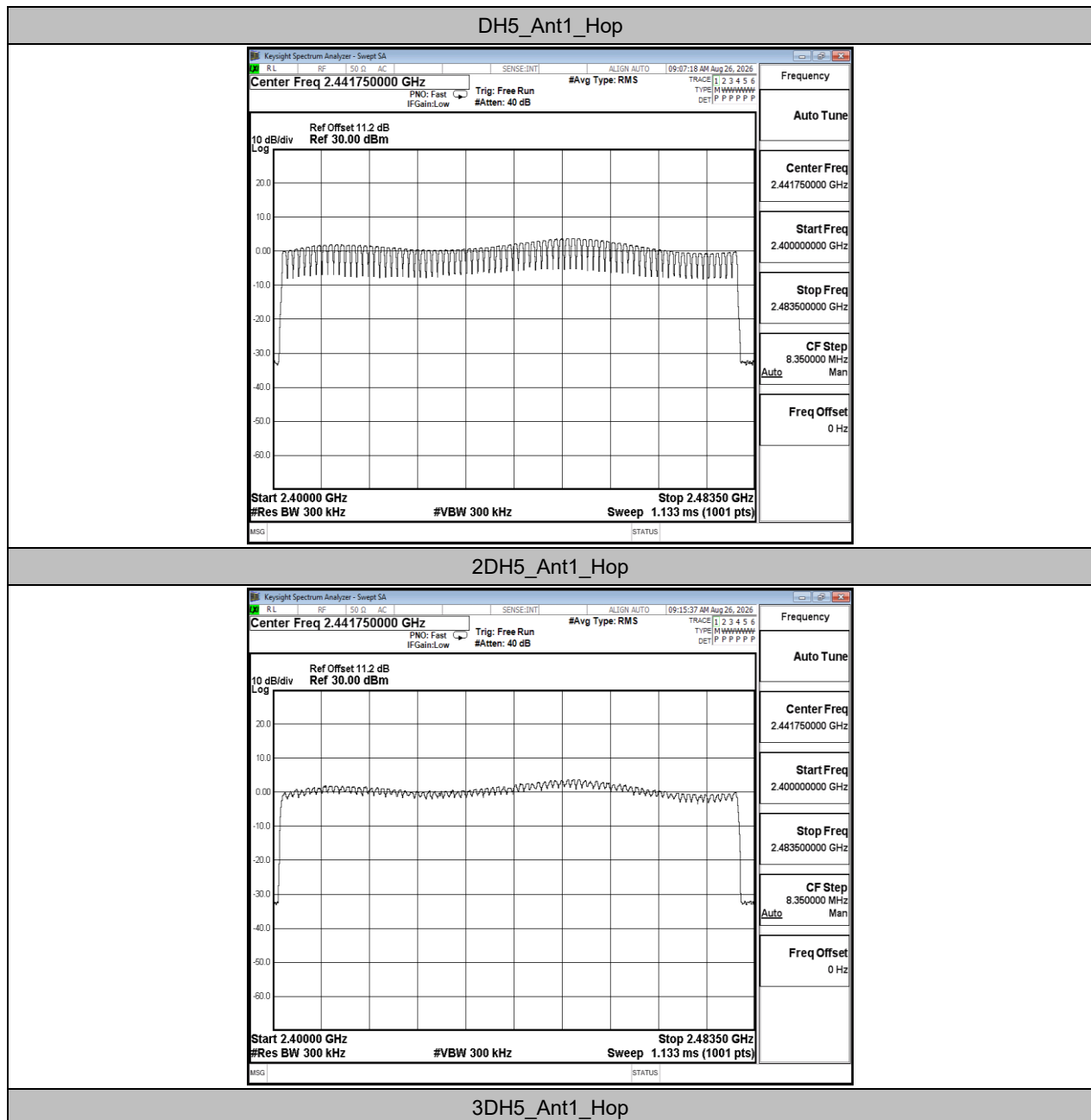


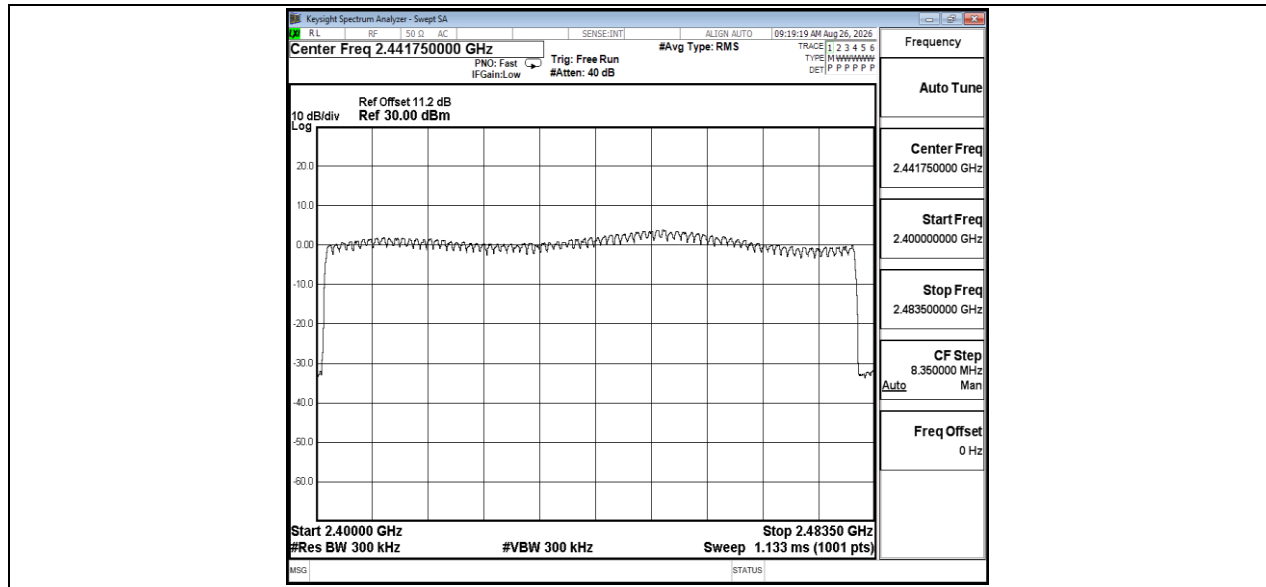
A.5 Number of hopping channels

Test Result

TestMode	Antenna	Freq (MHz)	Result [Num]	Limit [Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

Test Graphs



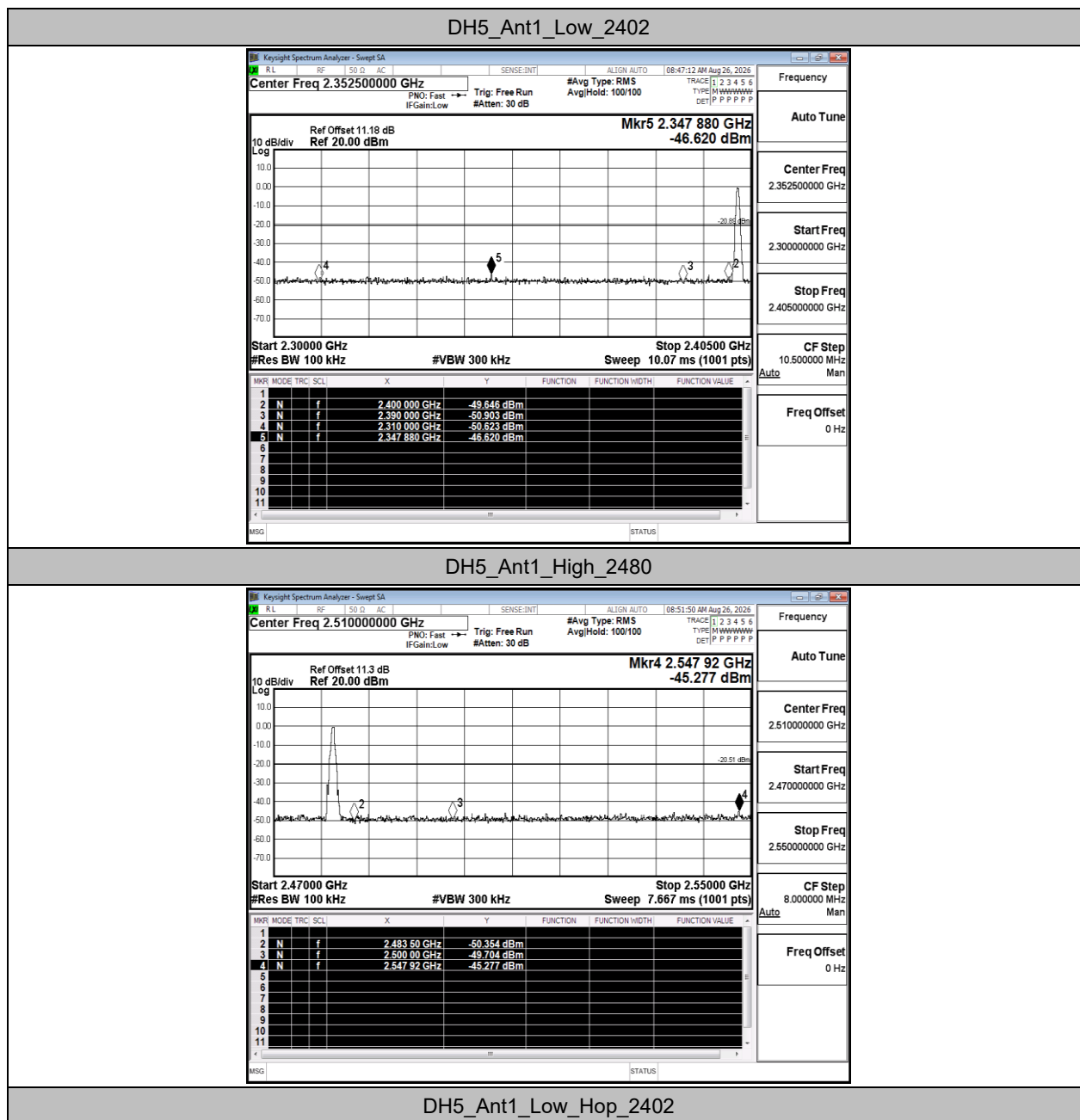


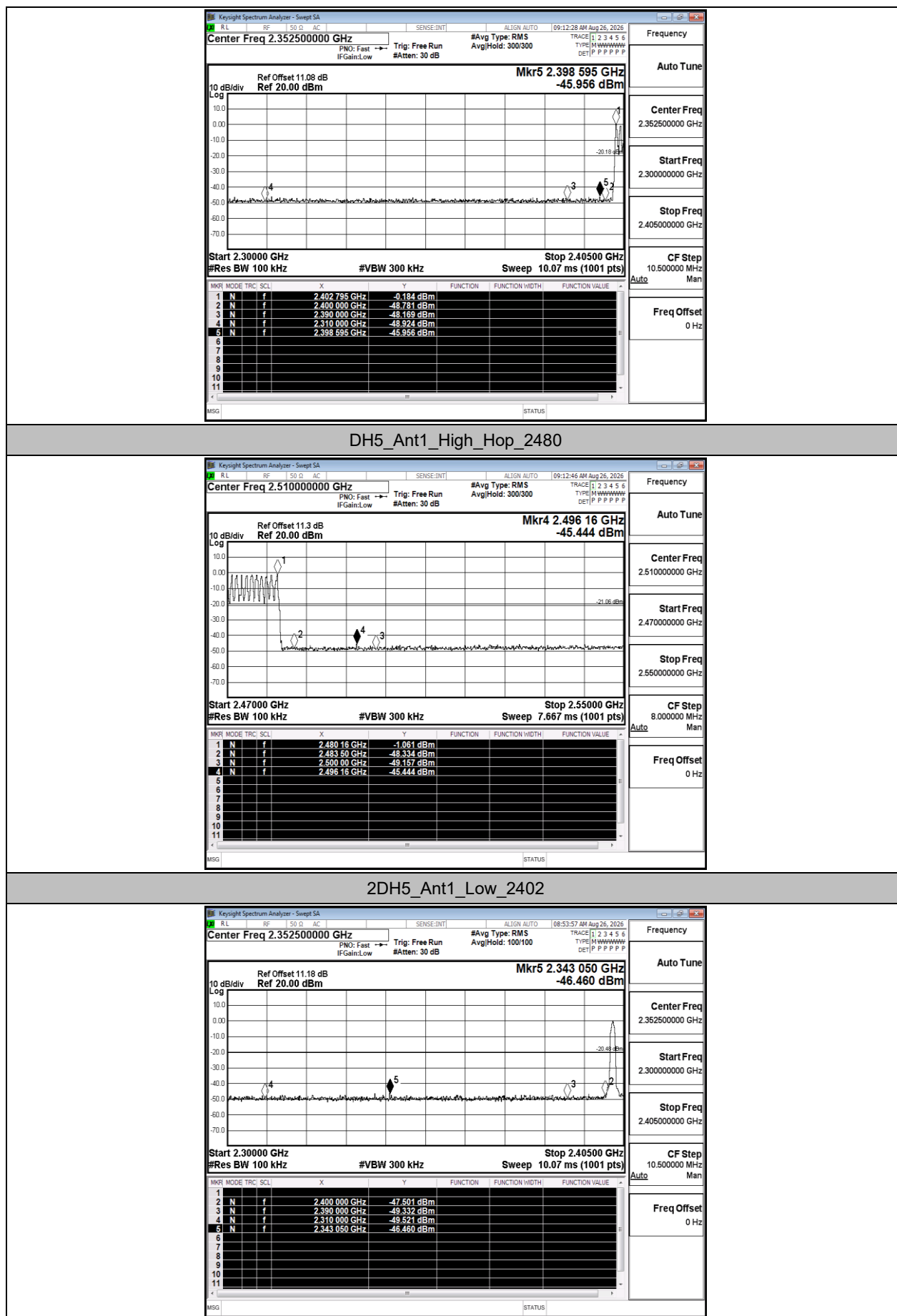
A.6 Band edge measurements

Test Result

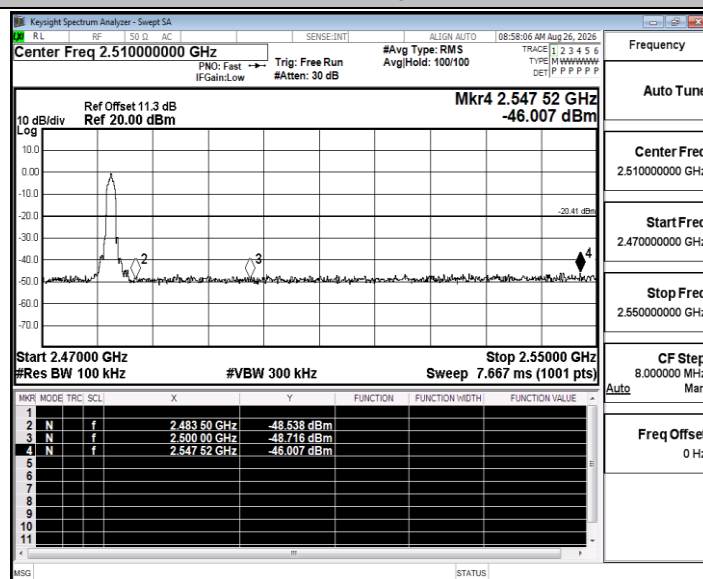
TestMode	Antenna	ChName	Freq (MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-0.89	-46.62	≤ -20.89	PASS
		High	2480	-0.51	-45.28	≤ -20.51	PASS
		Low	Hop_2402	-0.18	-45.96	≤ -20.18	PASS
		High	Hop_2480	-1.06	-45.44	≤ -21.06	PASS
2DH5	Ant1	Low	2402	-0.48	-46.46	≤ -20.48	PASS
		High	2480	-0.41	-46.01	≤ -20.41	PASS
		Low	Hop_2402	-3.31	-46.68	≤ -23.31	PASS
		High	Hop_2480	-3.78	-44.92	≤ -23.78	PASS
3DH5	Ant1	Low	2402	-0.99	-46.99	≤ -20.99	PASS
		High	2480	-0.39	-45.47	≤ -20.39	PASS
		Low	Hop_2402	-3.35	-45.94	≤ -23.35	PASS
		High	Hop_2480	-3.22	-44.28	≤ -23.22	PASS

Test Graphs

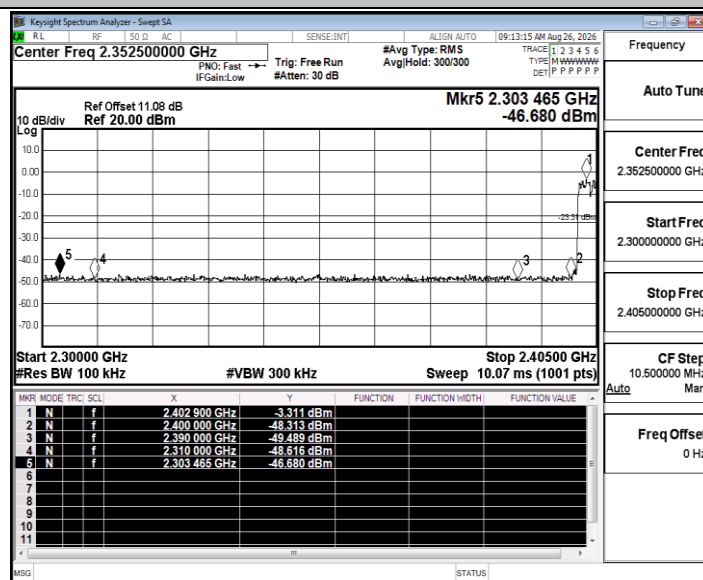




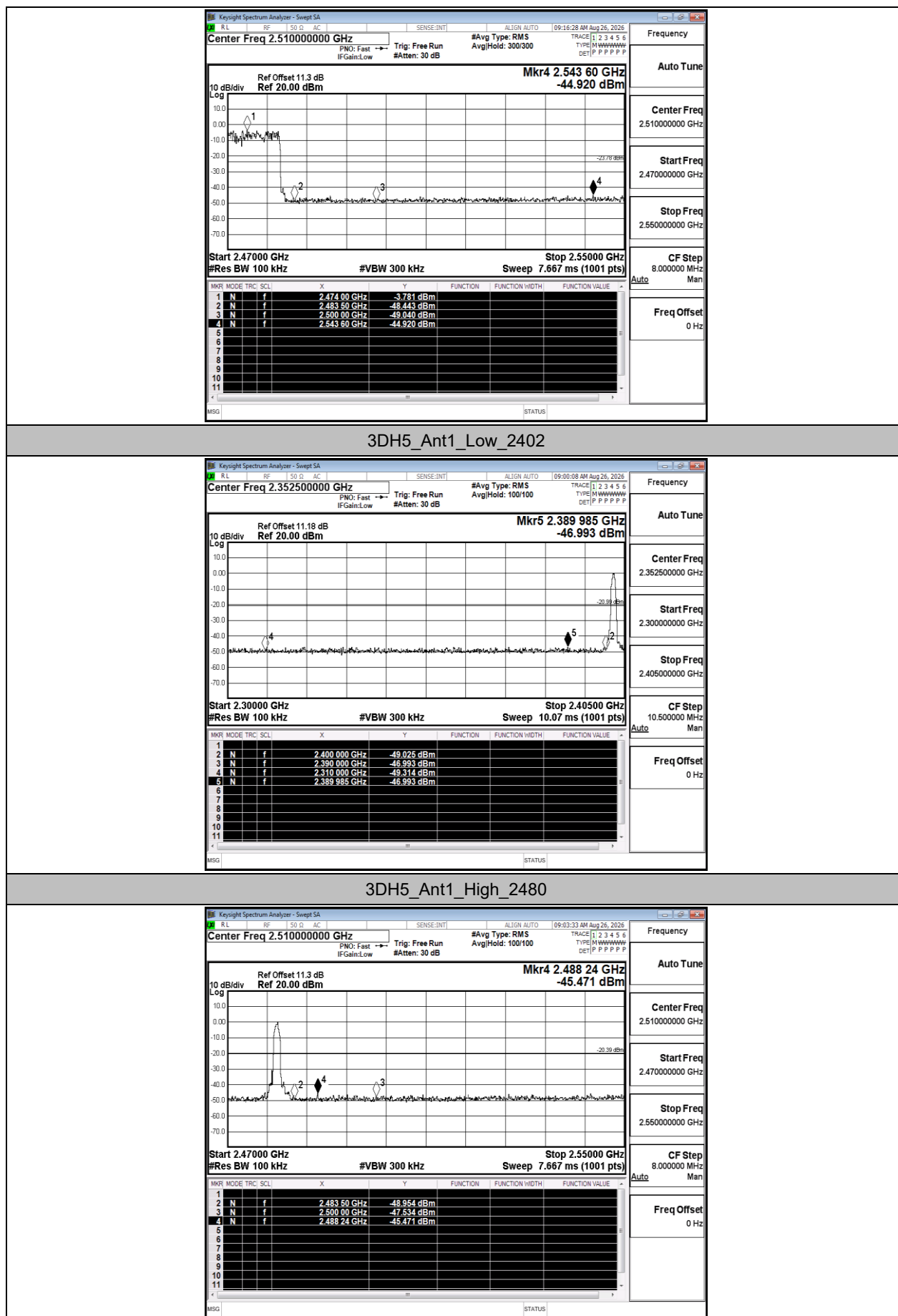
2DH5_Ant1_High_2480



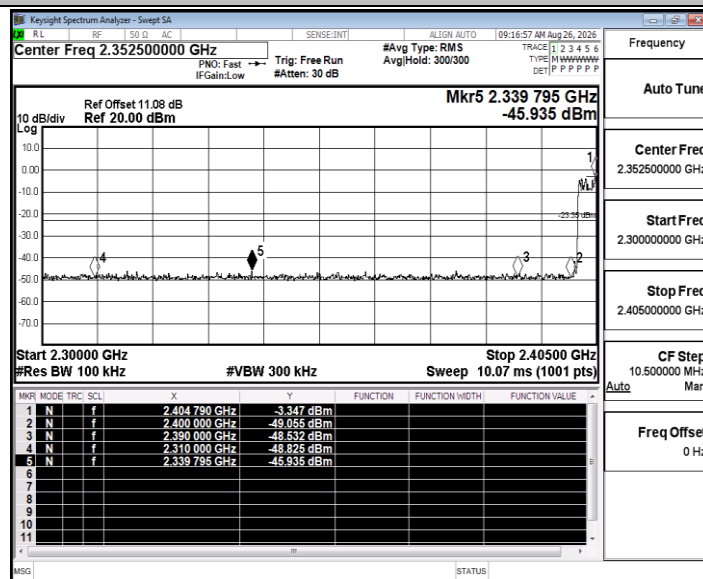
2DH5_Ant1_Low_Hop_2402



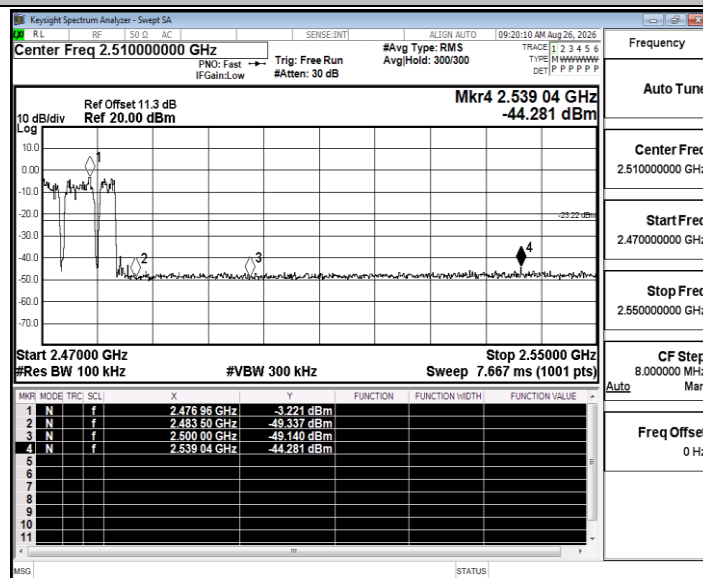
2DH5_Ant1_High_Hop_2480



3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480



A.7 Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq (MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	-0.64	-0.64	---	PASS
			30~1000	-0.64	-68.77	≤-20.64	PASS
			1000~26500	-0.64	-45.7	≤-20.64	PASS
		2441	Reference	1.26	1.26	---	PASS
			30~1000	1.26	-68.63	≤-18.74	PASS
			1000~26500	1.26	-45.39	≤-18.74	PASS
		2480	Reference	-0.30	-0.30	---	PASS
			30~1000	-0.30	-67.16	≤-20.3	PASS
			1000~26500	-0.30	-45.06	≤-20.3	PASS
2DH5	Ant1	2402	Reference	-0.32	-0.32	---	PASS
			30~1000	-0.32	-68.03	≤-20.32	PASS
			1000~26500	-0.32	-45.04	≤-20.32	PASS
		2441	Reference	1.58	1.58	---	PASS
			30~1000	1.58	-67.13	≤-18.42	PASS
			1000~26500	1.58	-44	≤-18.42	PASS
		2480	Reference	-0.34	-0.34	---	PASS
			30~1000	-0.34	-69.05	≤-20.34	PASS
			1000~26500	-0.34	-45.3	≤-20.34	PASS
3DH5	Ant1	2402	Reference	-0.19	-0.19	---	PASS
			30~1000	-0.19	-68.52	≤-20.19	PASS
			1000~26500	-0.19	-44.9	≤-20.19	PASS
		2441	Reference	1.71	1.71	---	PASS
			30~1000	1.71	-67.76	≤-18.29	PASS
			1000~26500	1.71	-44.92	≤-18.29	PASS
		2480	Reference	-0.21	-0.21	---	PASS
			30~1000	-0.21	-68.04	≤-20.21	PASS
			1000~26500	-0.21	-45.01	≤-20.21	PASS

Test Graphs

