

Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Bluetooth speaker

Test Model: OS-2121

Environmental Conditions

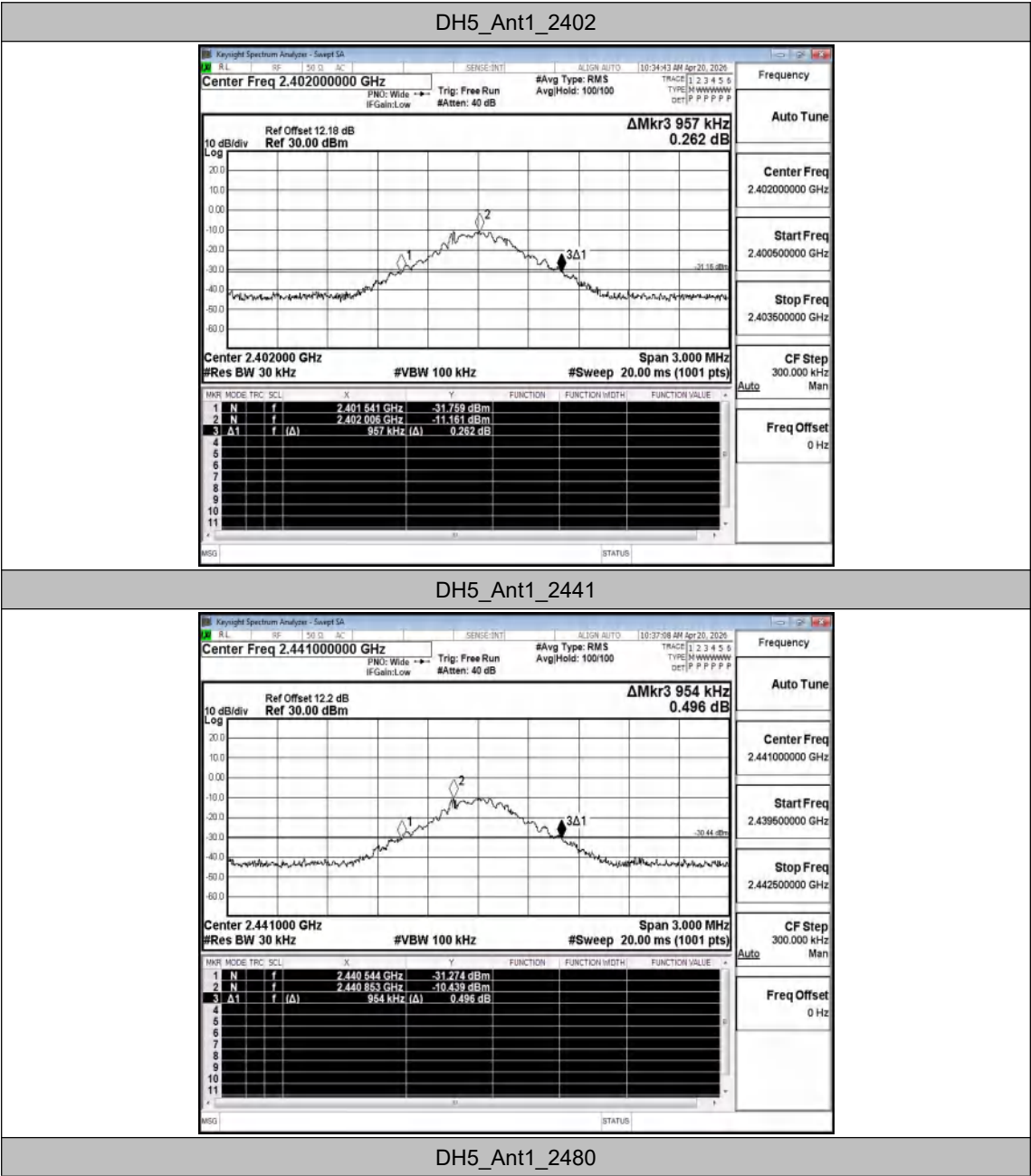
Temperature:	24.3°C
Relative Humidity:	54.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang hai
Supervised by:	Fengliu Tang

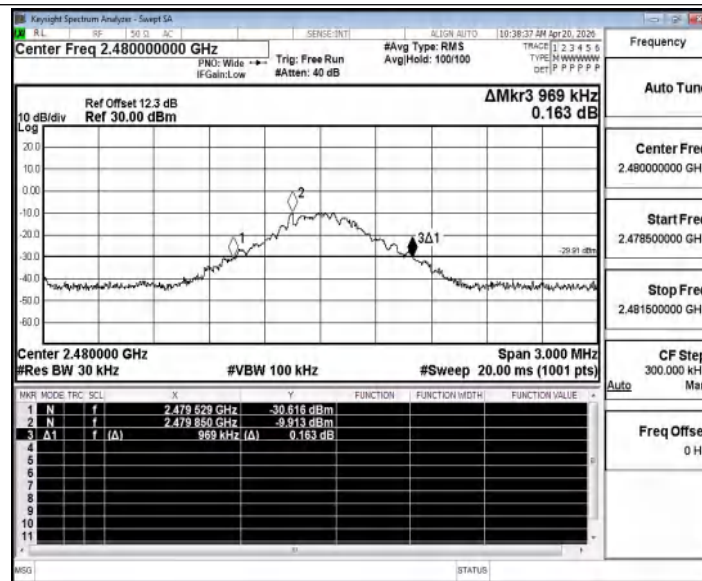
A.1 20dB Emission Bandwidth

Test Result

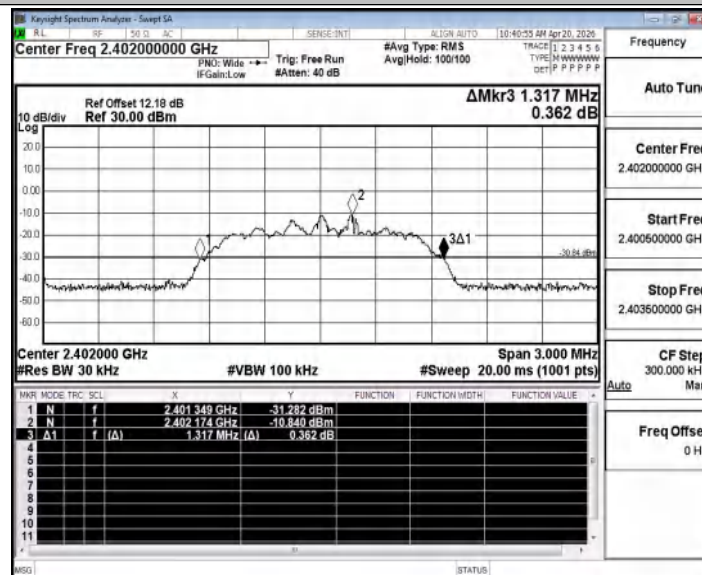
TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.957	2401.541	2402.498	---	---
		2441	0.954	2440.544	2441.498	---	---
		2480	0.969	2479.529	2480.498	---	---
2DH5	Ant1	2402	1.317	2401.349	2402.666	---	---
		2441	1.320	2440.349	2441.669	---	---
		2480	1.311	2479.355	2480.666	---	---
3DH5	Ant1	2402	1.299	2401.367	2402.666	---	---
		2441	1.299	2440.364	2441.663	---	---
		2480	1.296	2479.367	2480.663	---	---

Test Graphs

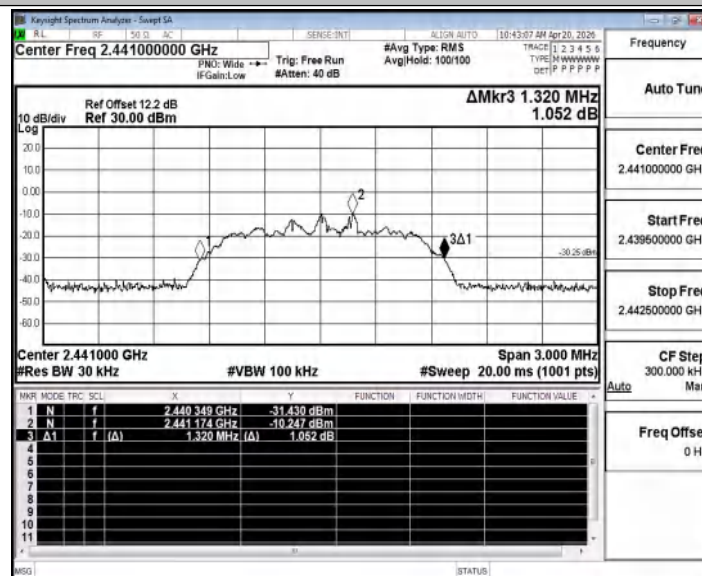




2DH5_Ant1_2402



2DH5_Ant1_2441

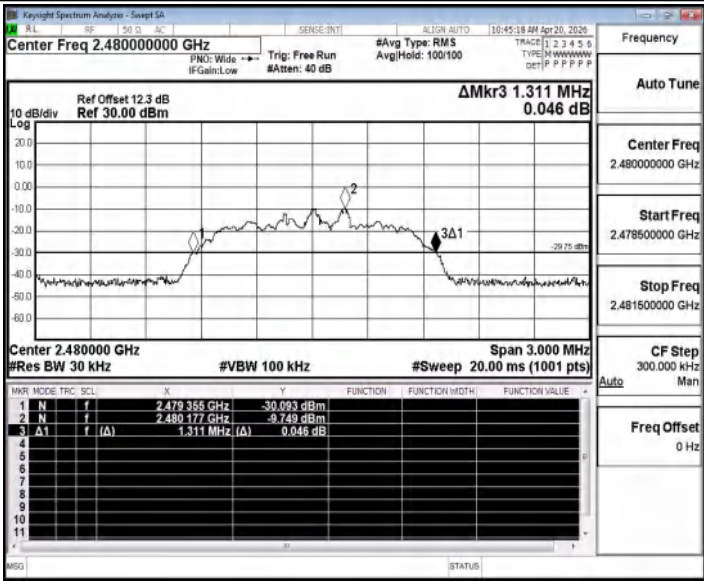


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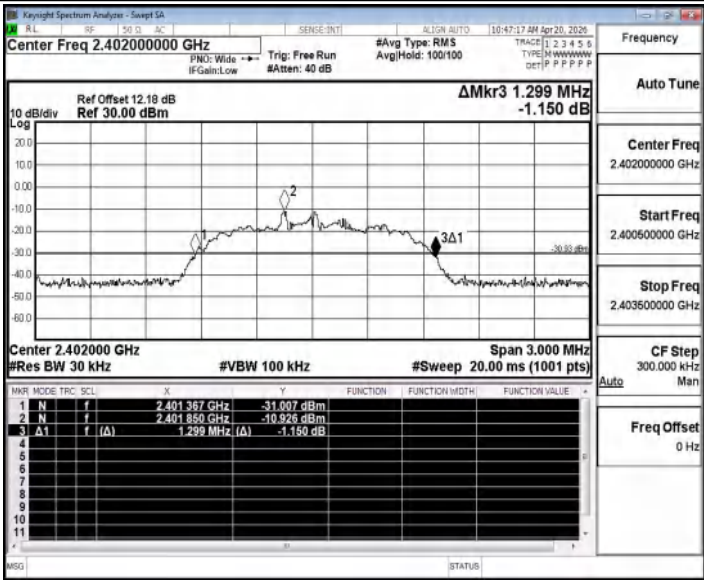
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Tel: +(86) 020-39166689 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

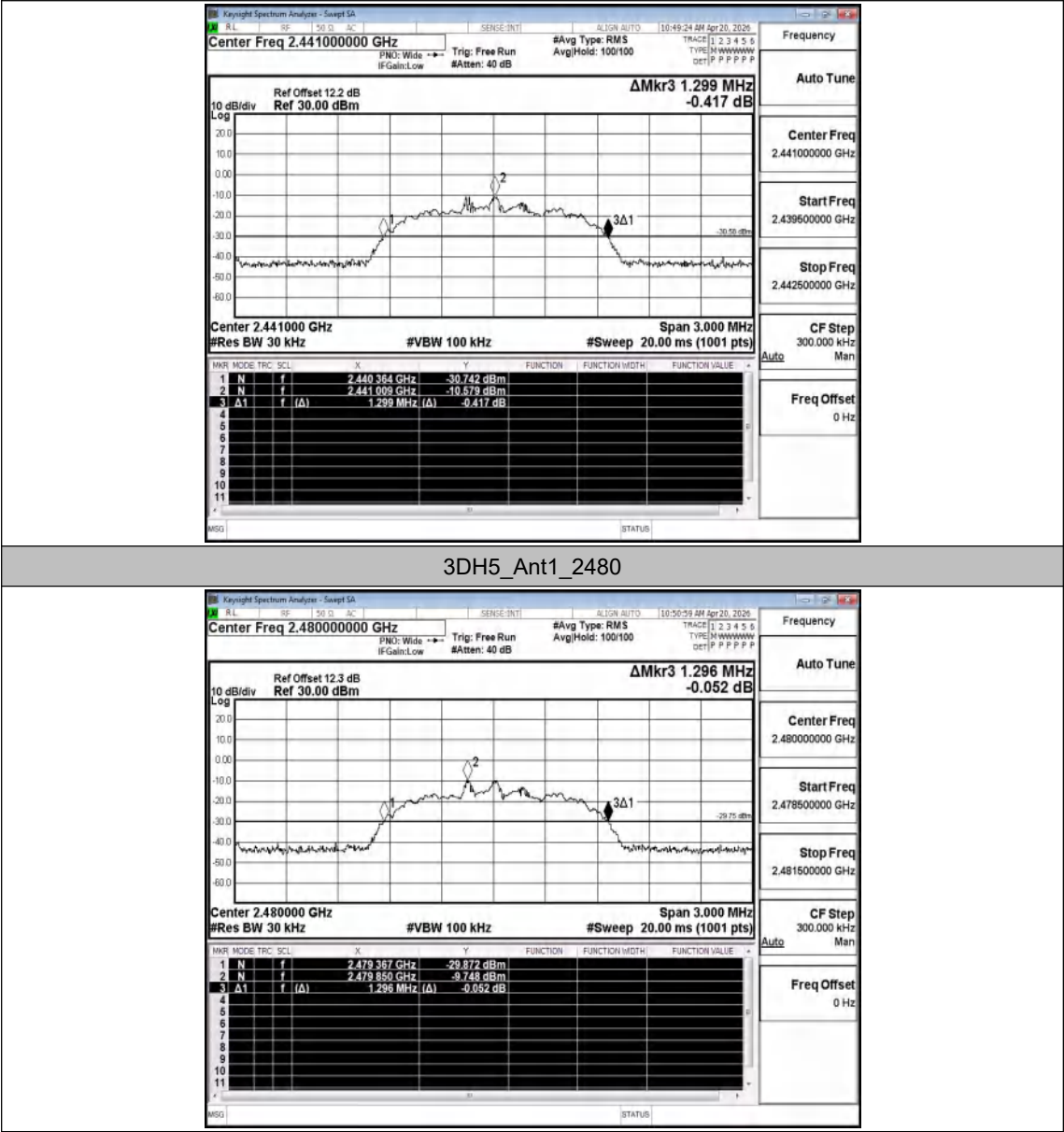
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441

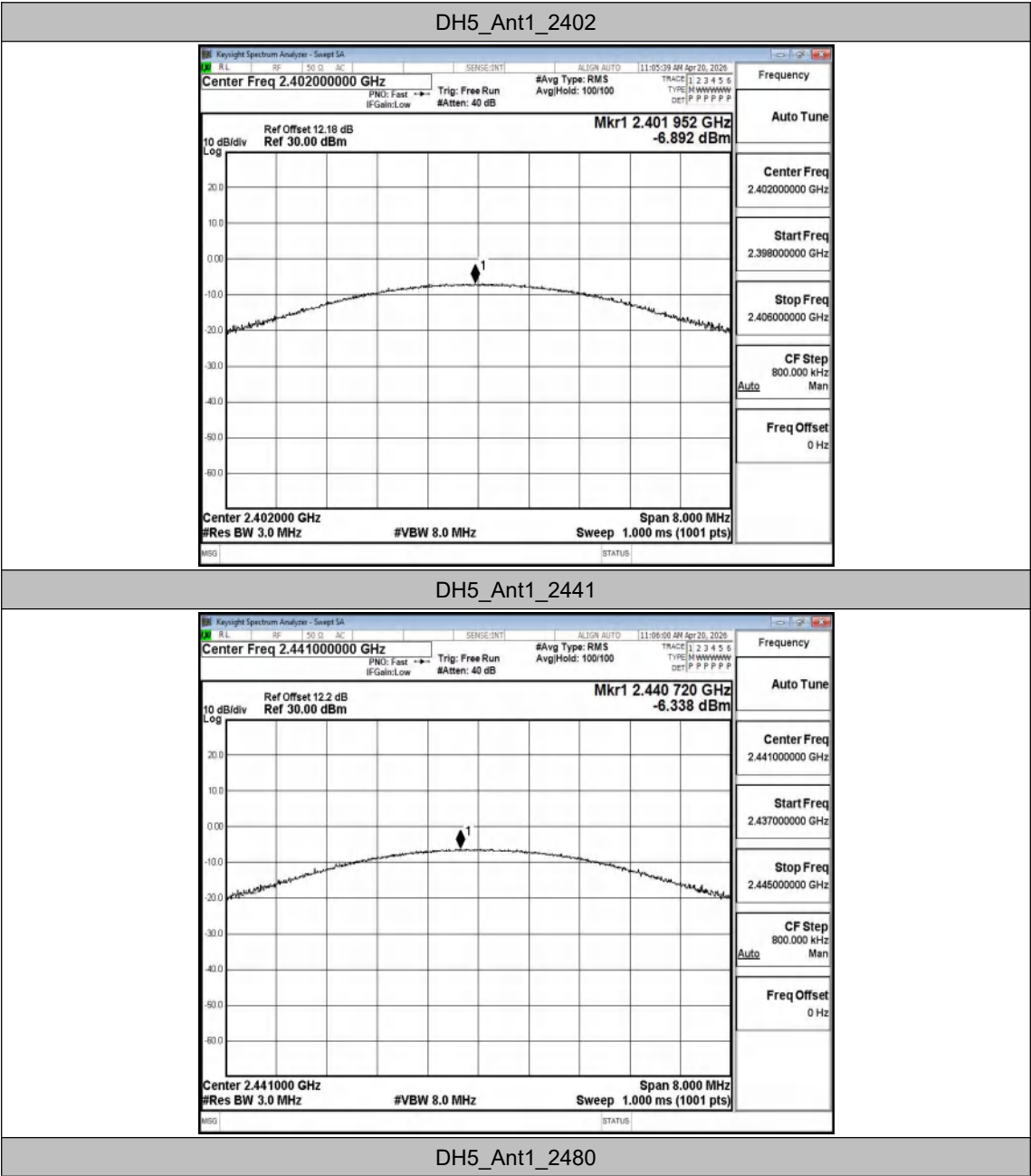


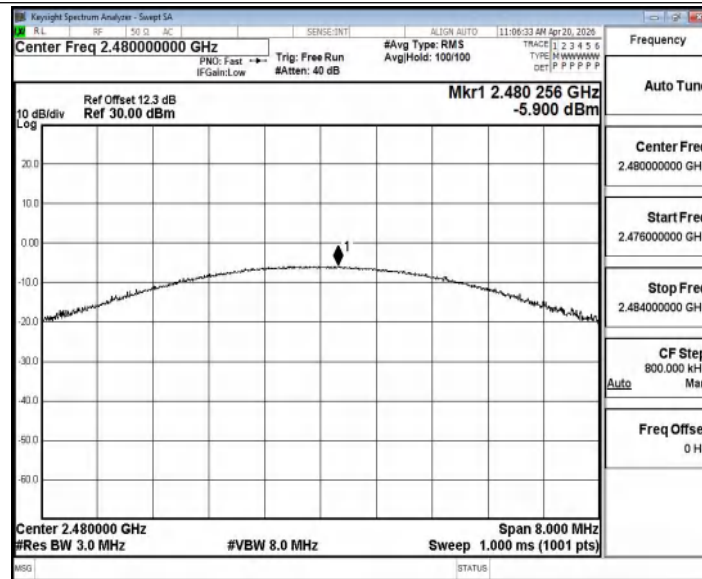
A.2 Maximum Peak conducted output power

Test Result Peak

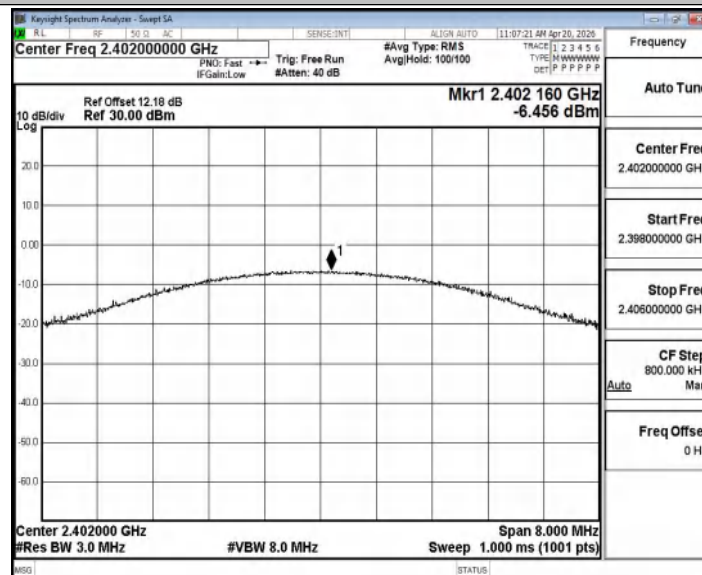
Test Mode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	-6.89	≤30	PASS
		2441	-6.34	≤30	PASS
		2480	-5.90	≤30	PASS
2DH5	Ant1	2402	-6.46	≤30	PASS
		2441	-5.78	≤30	PASS
		2480	-5.37	≤30	PASS
3DH5	Ant1	2402	-6.24	≤30	PASS
		2441	-5.54	≤30	PASS
		2480	-5.26	≤30	PASS

Test Graphs

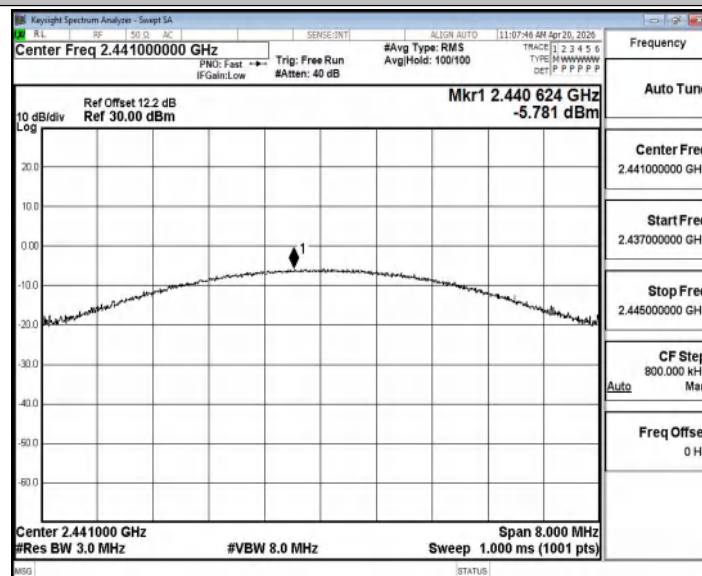




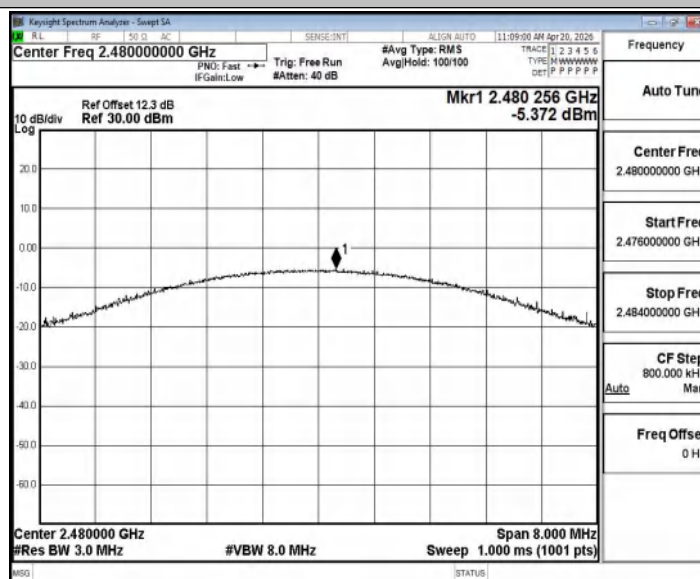
2DH5_Ant1_2402



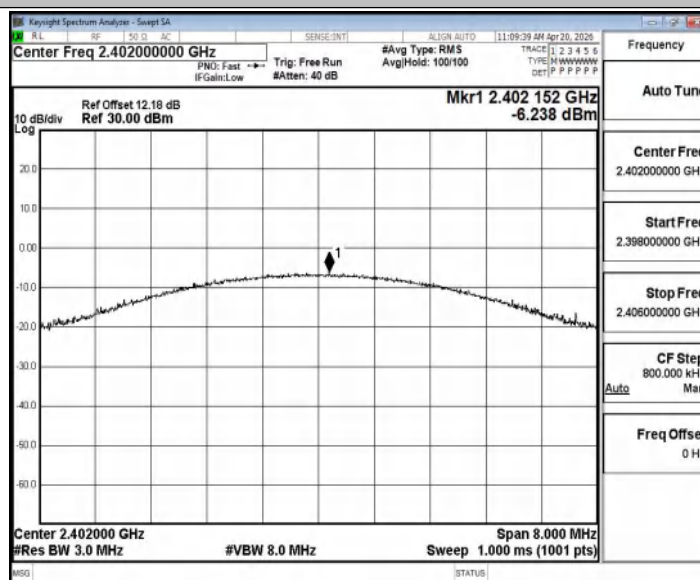
2DH5_Ant1_2441



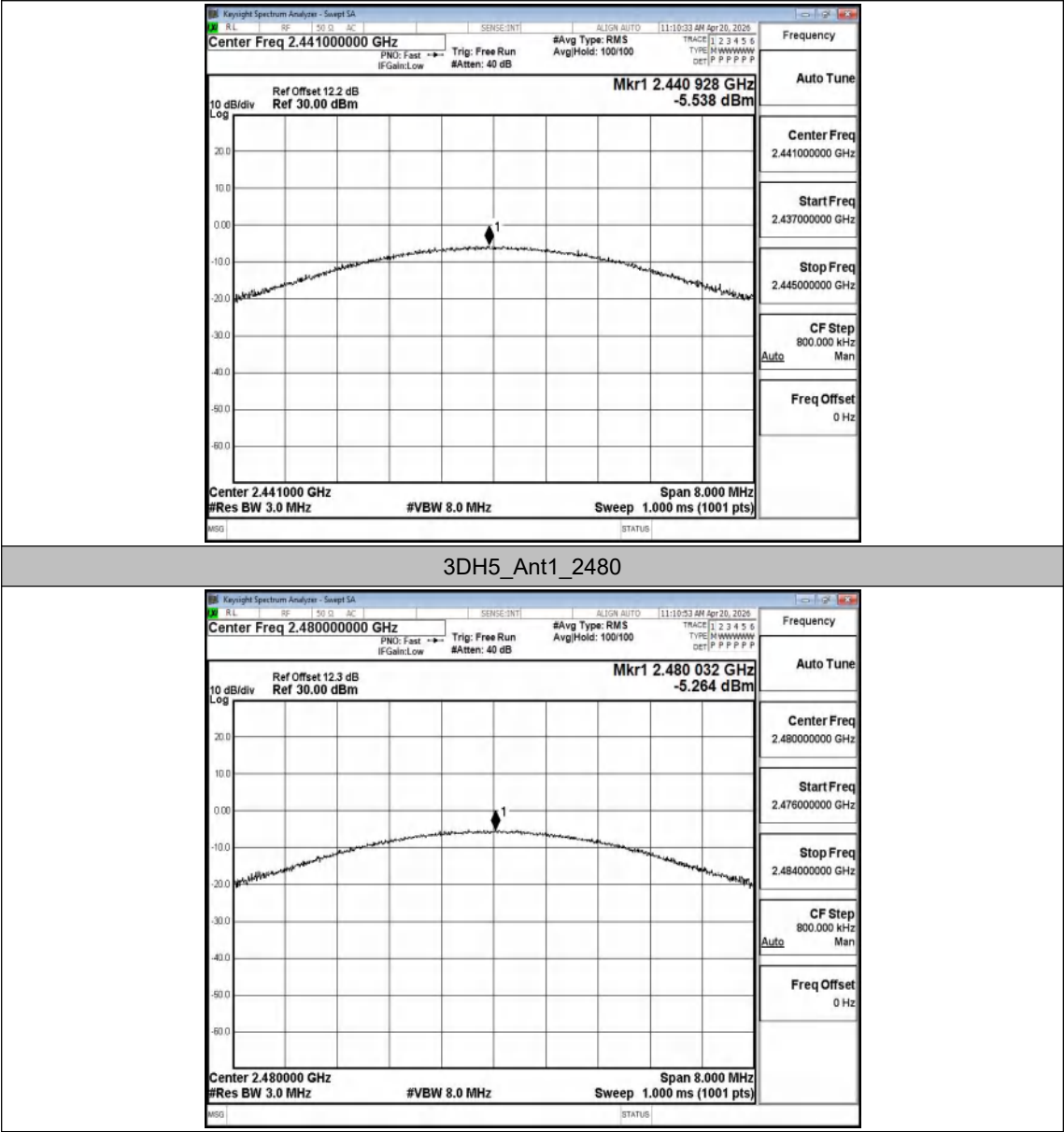
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441

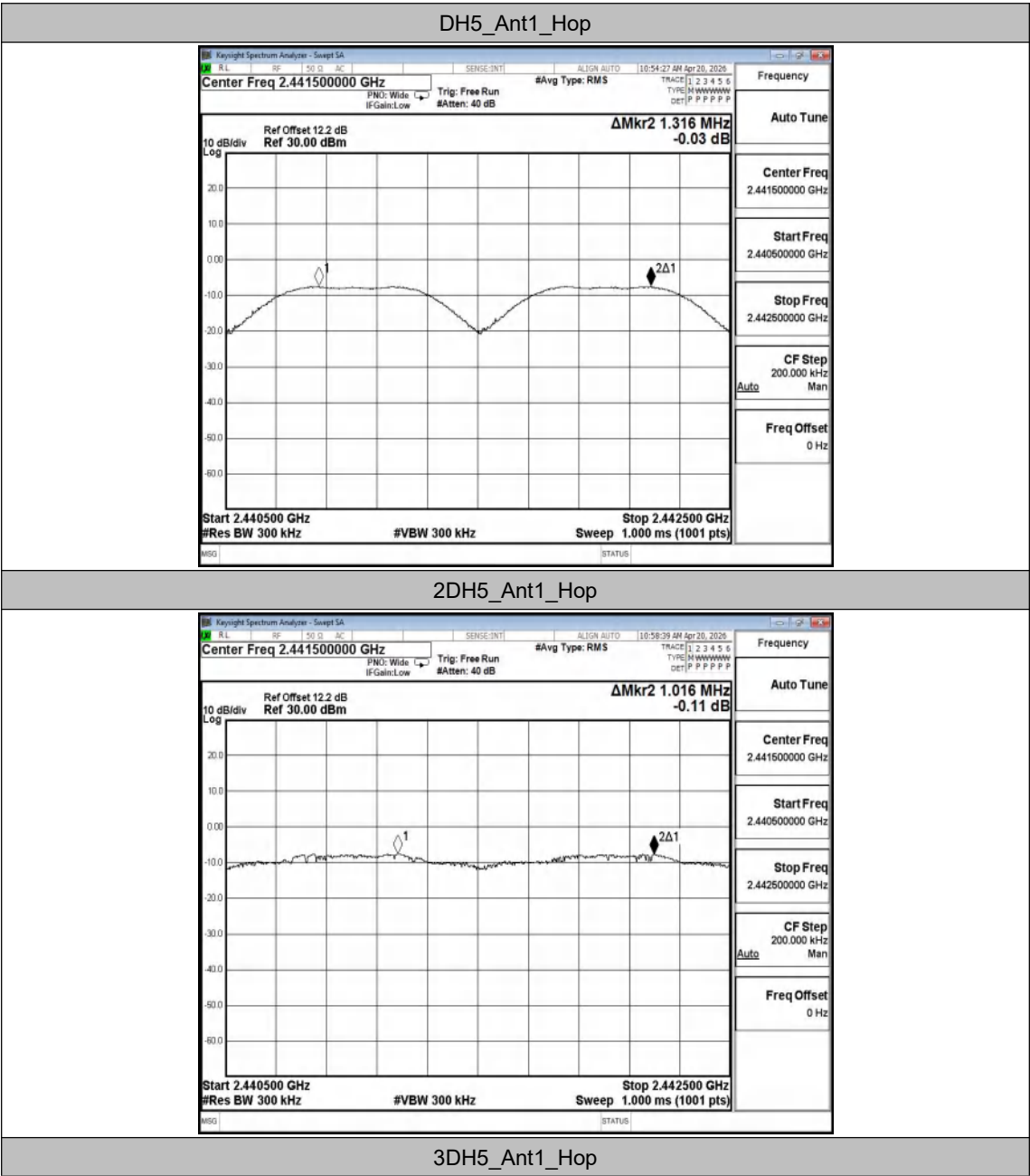


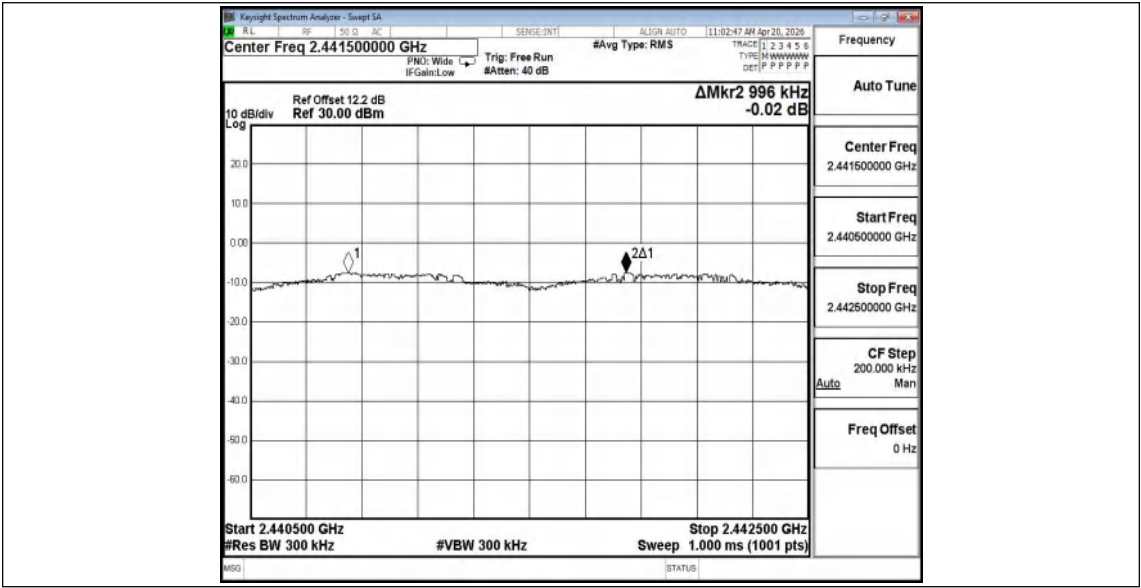
A.3 Carrier frequency separation

Test Result

TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.316	≥0.969	PASS
2DH5	Ant1	Hop	1.016	≥0.880	PASS
3DH5	Ant1	Hop	0.996	≥0.866	PASS

Test Graphs



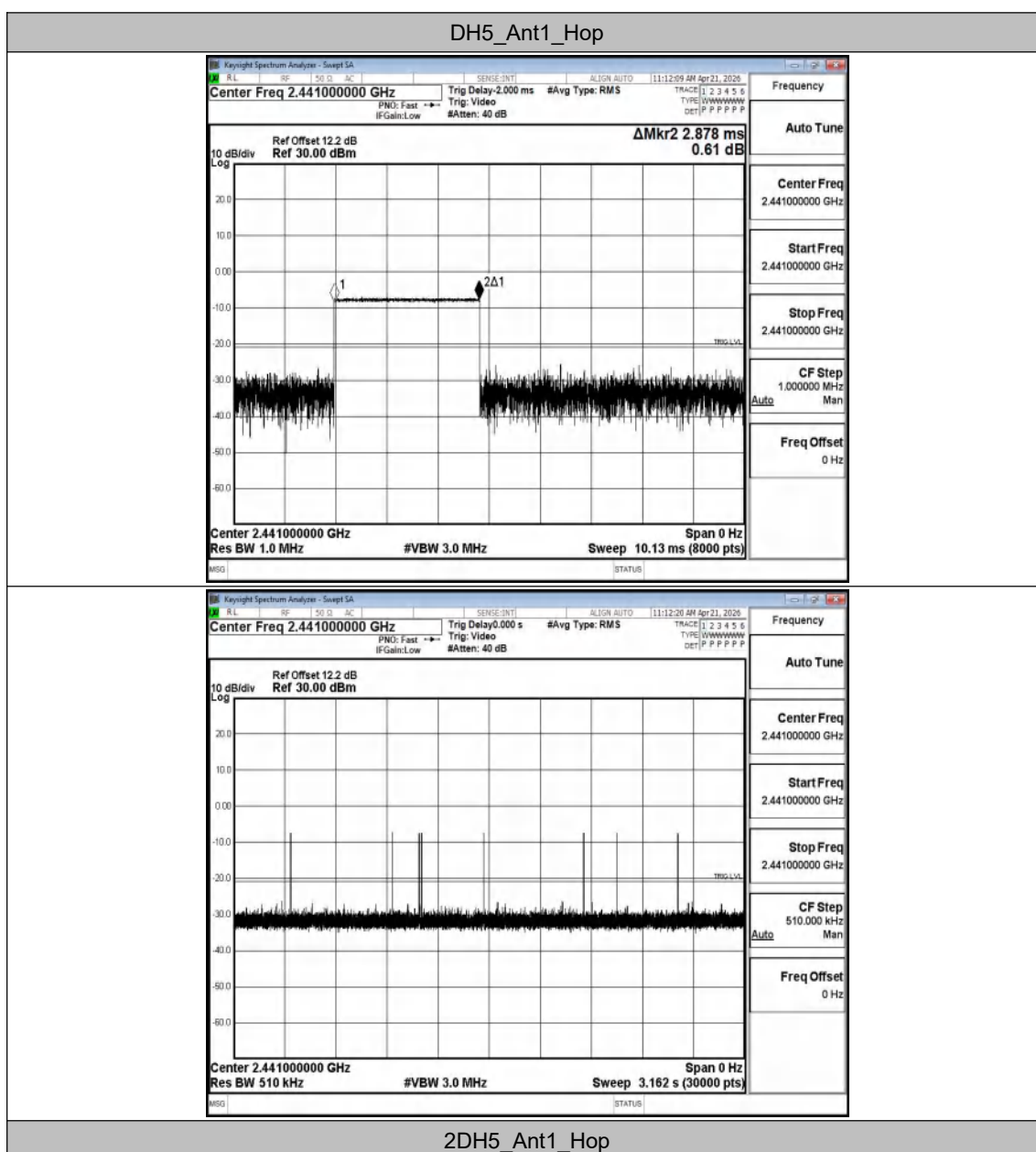


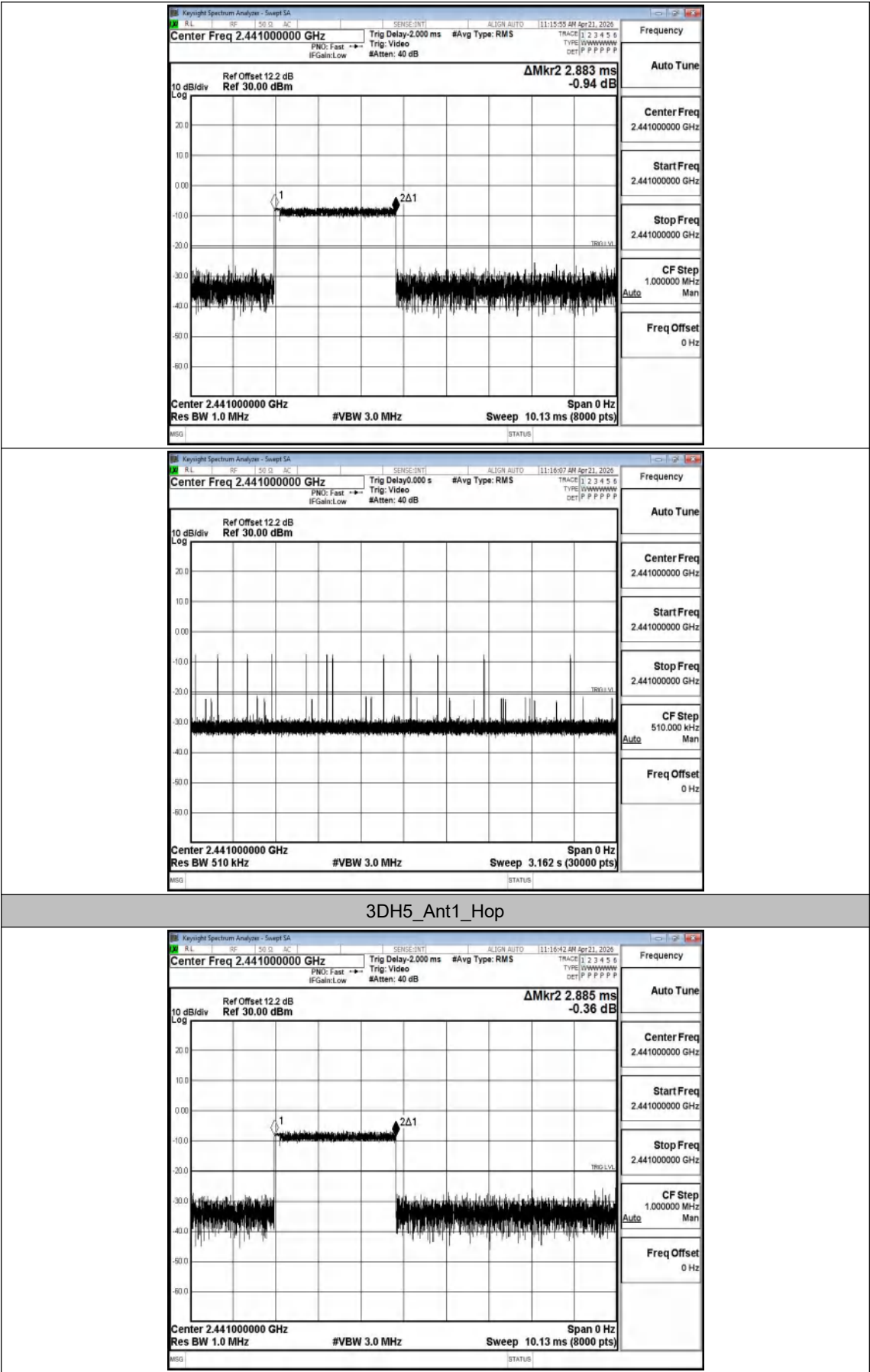
A.4 Time of occupancy

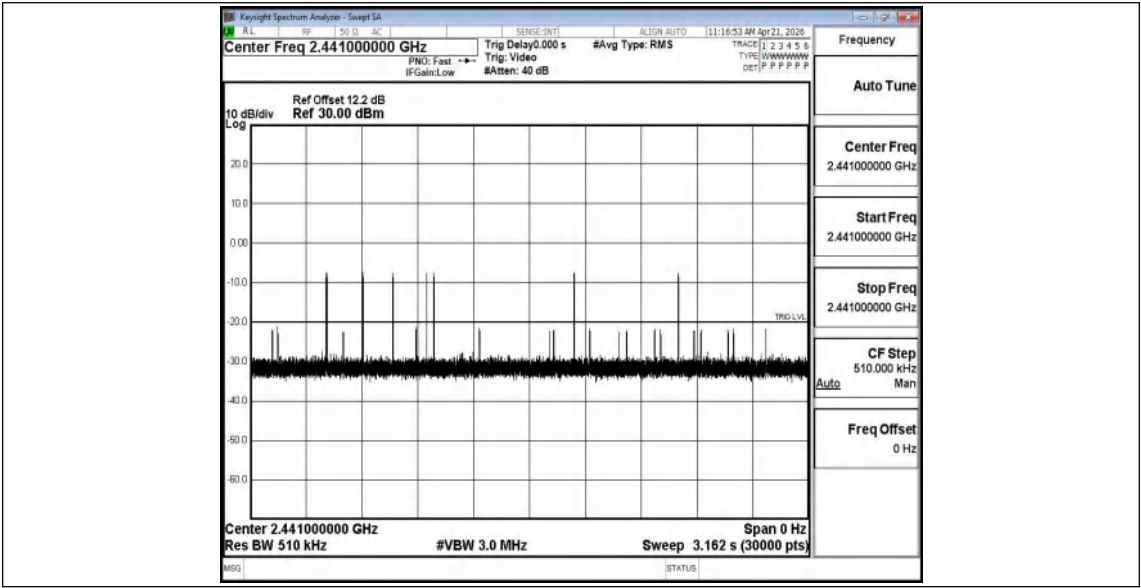
Test Result

TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.878	90	0.259	≤0.4	PASS
2DH5	Ant1	Hop	2.883	130	0.375	≤0.4	PASS
3DH5	Ant1	Hop	2.885	90	0.26	≤0.4	PASS

Test Graphs





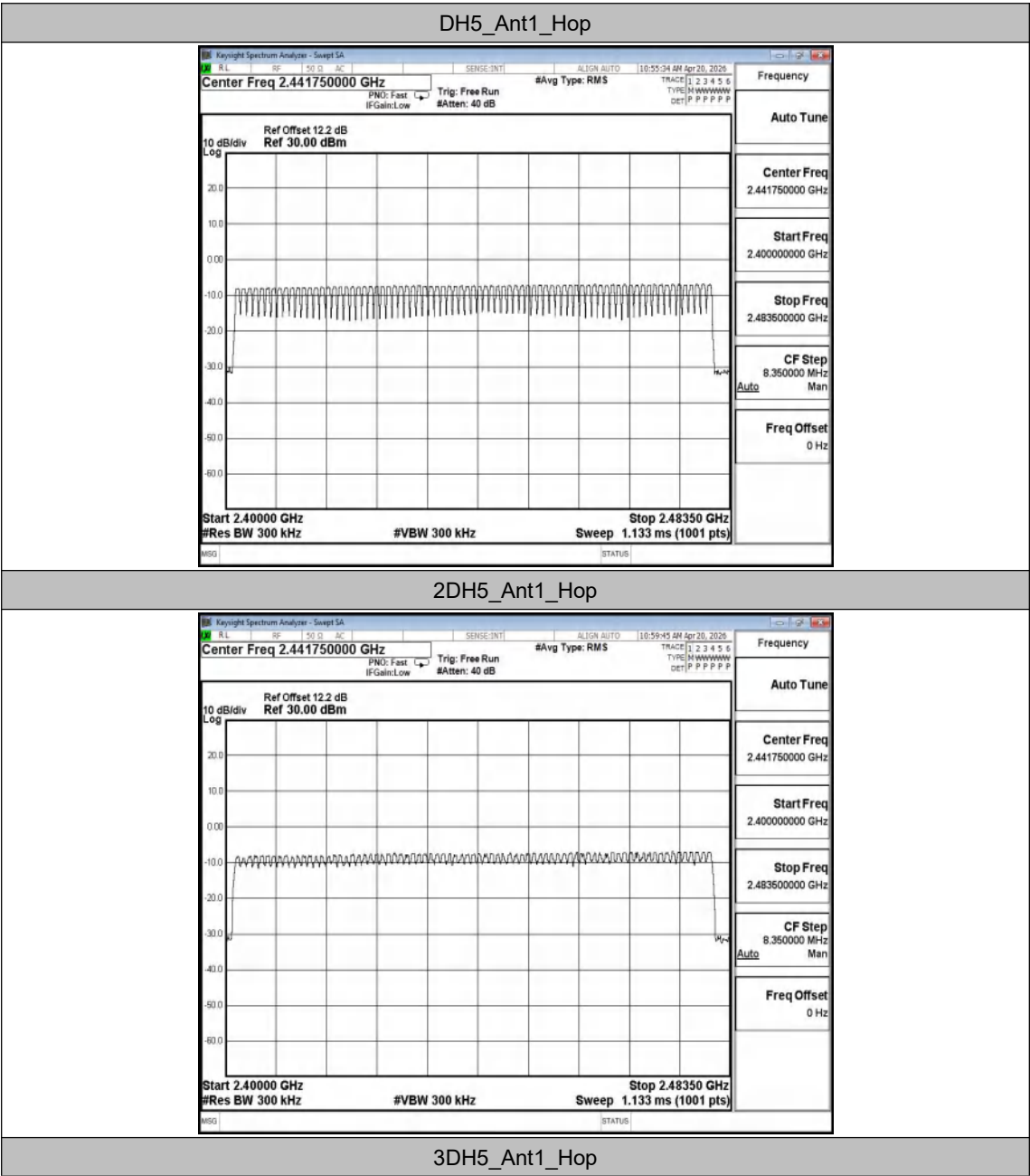


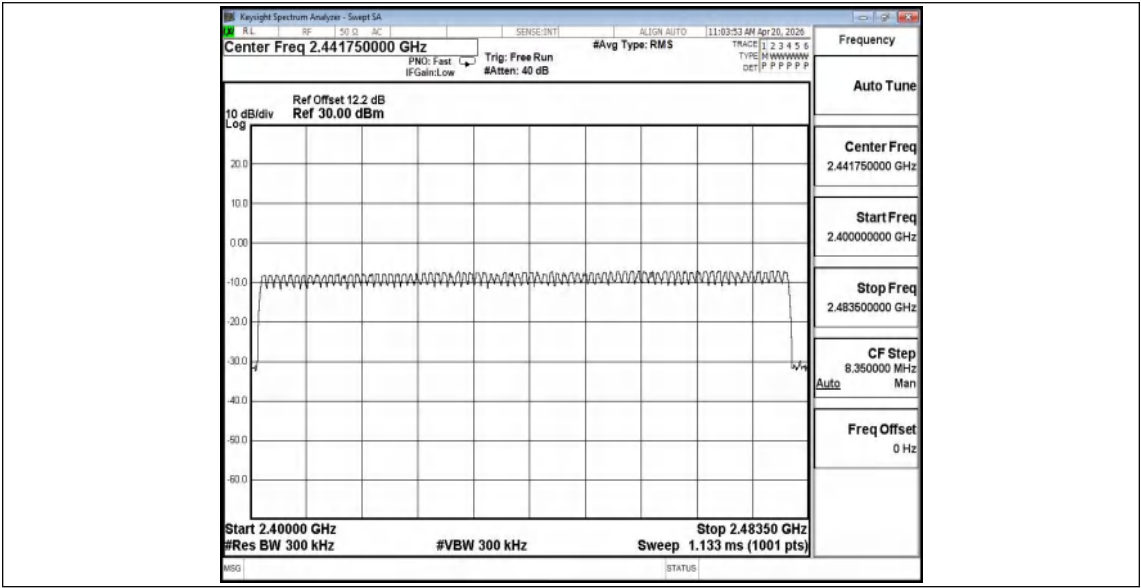
A.5 Number of hopping channels

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



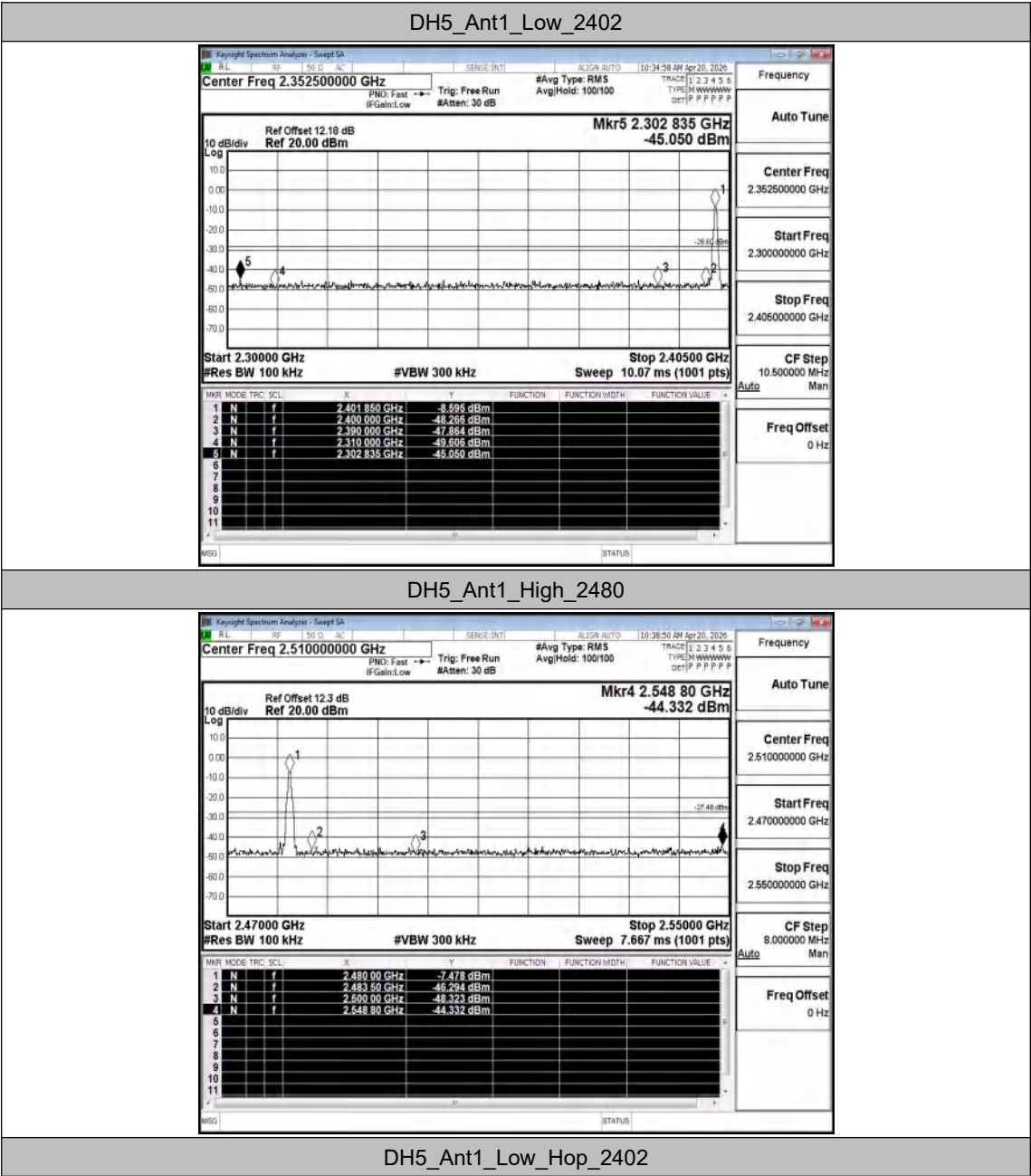


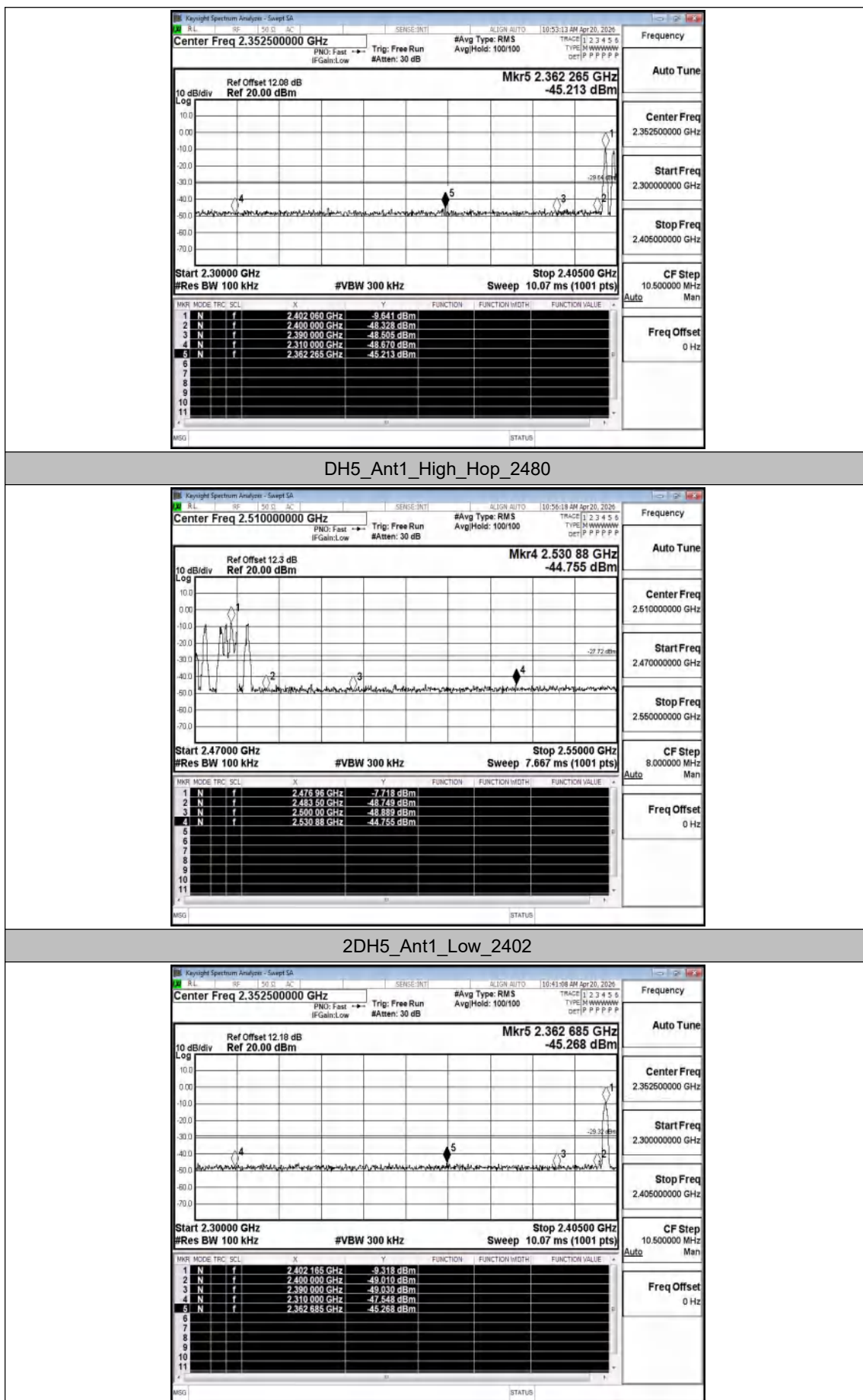
A.6 Band edge measurements

Test Result

TestMode	Antenna	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-8.60	-45.05	≤ -28.6	PASS
		High	2480	-7.48	-44.33	≤ -27.48	PASS
		Low	Hop_2402	-9.64	-45.21	≤ -29.64	PASS
		High	Hop_2480	-7.72	-44.76	≤ -27.72	PASS
2DH5	Ant1	Low	2402	-9.32	-45.27	≤ -29.32	PASS
		High	2480	-7.48	-44.45	≤ -27.48	PASS
		Low	Hop_2402	-12.75	-45.34	≤ -32.75	PASS
		High	Hop_2480	-10.90	-44.83	≤ -30.9	PASS
3DH5	Ant1	Low	2402	-9.68	-44.74	≤ -29.68	PASS
		High	2480	-7.37	-43.64	≤ -27.37	PASS
		Low	Hop_2402	-14.16	-45.54	≤ -34.16	PASS
		High	Hop_2480	-10.77	-44.73	≤ -30.77	PASS

Test Graphs

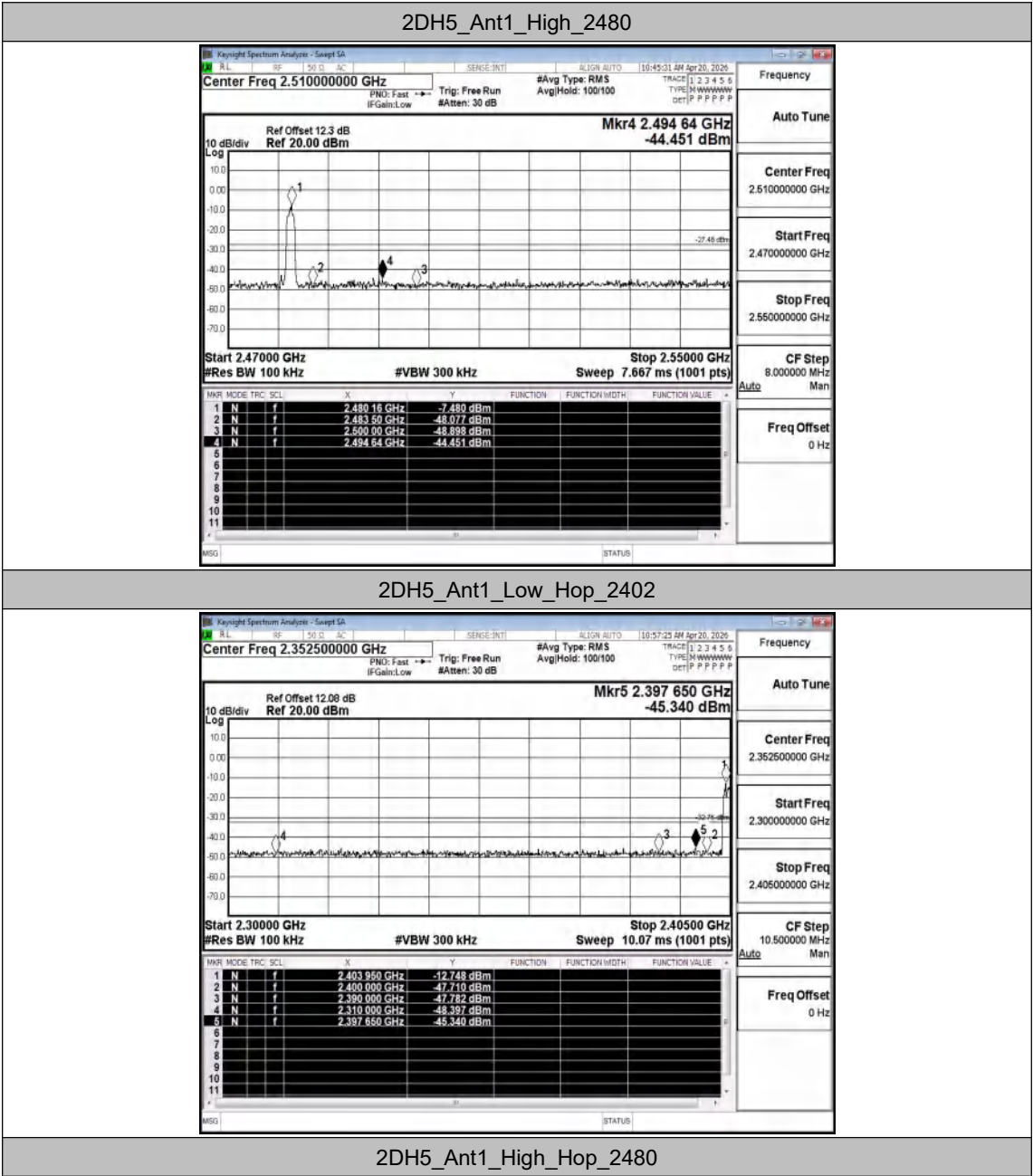


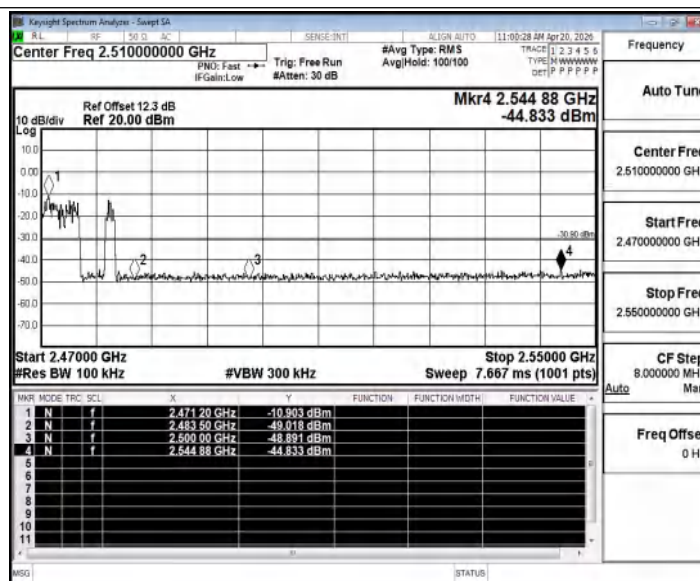


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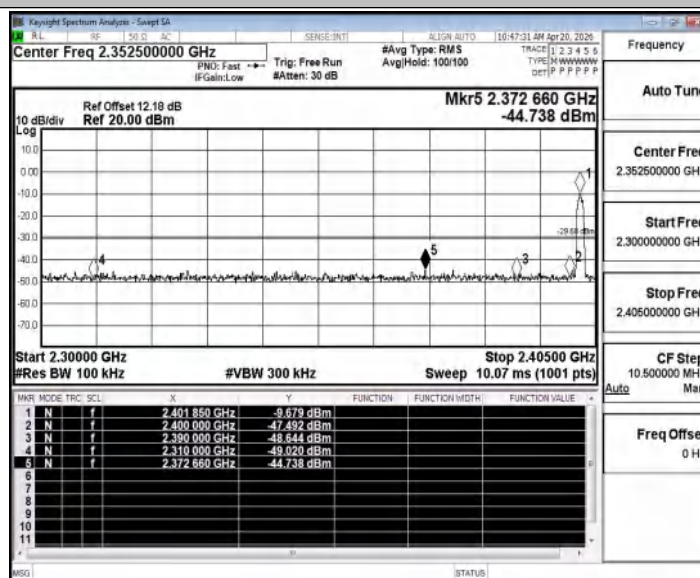
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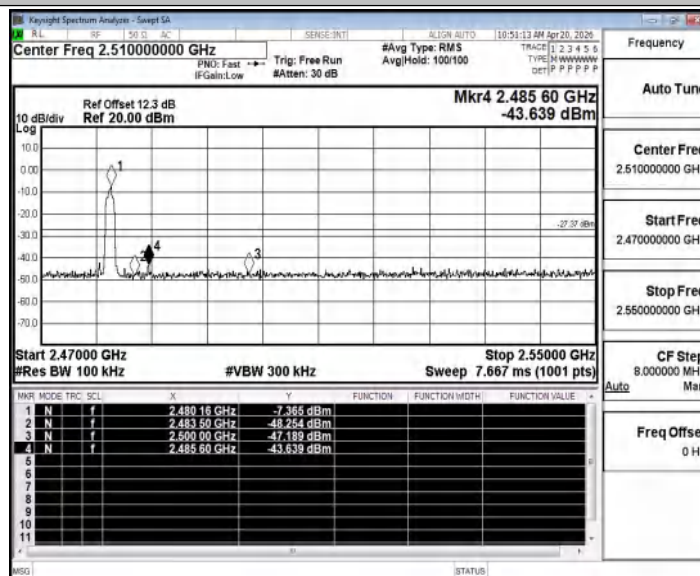


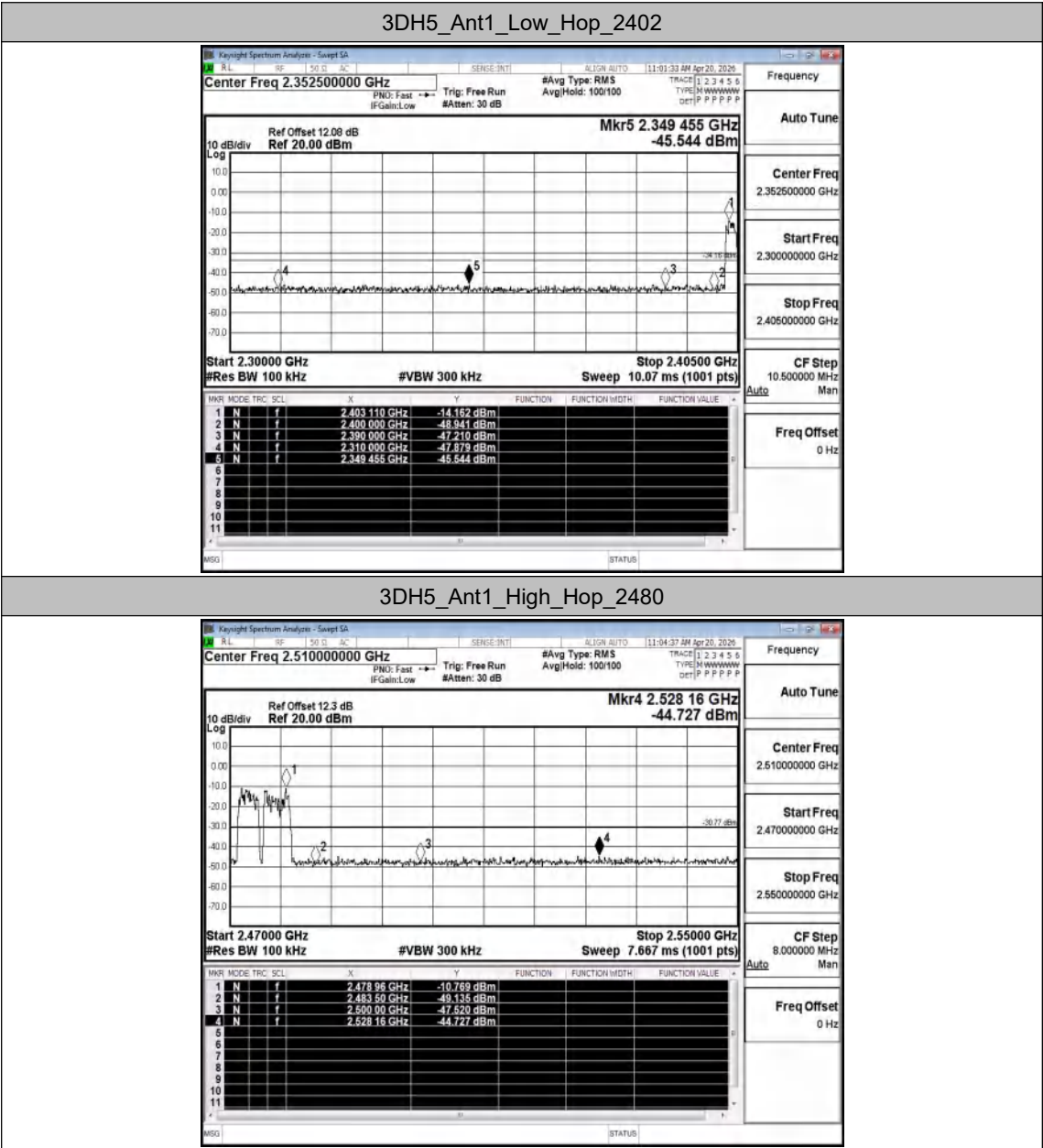


3DH5_Ant1_Low_2402



3DH5_Ant1_High_2480



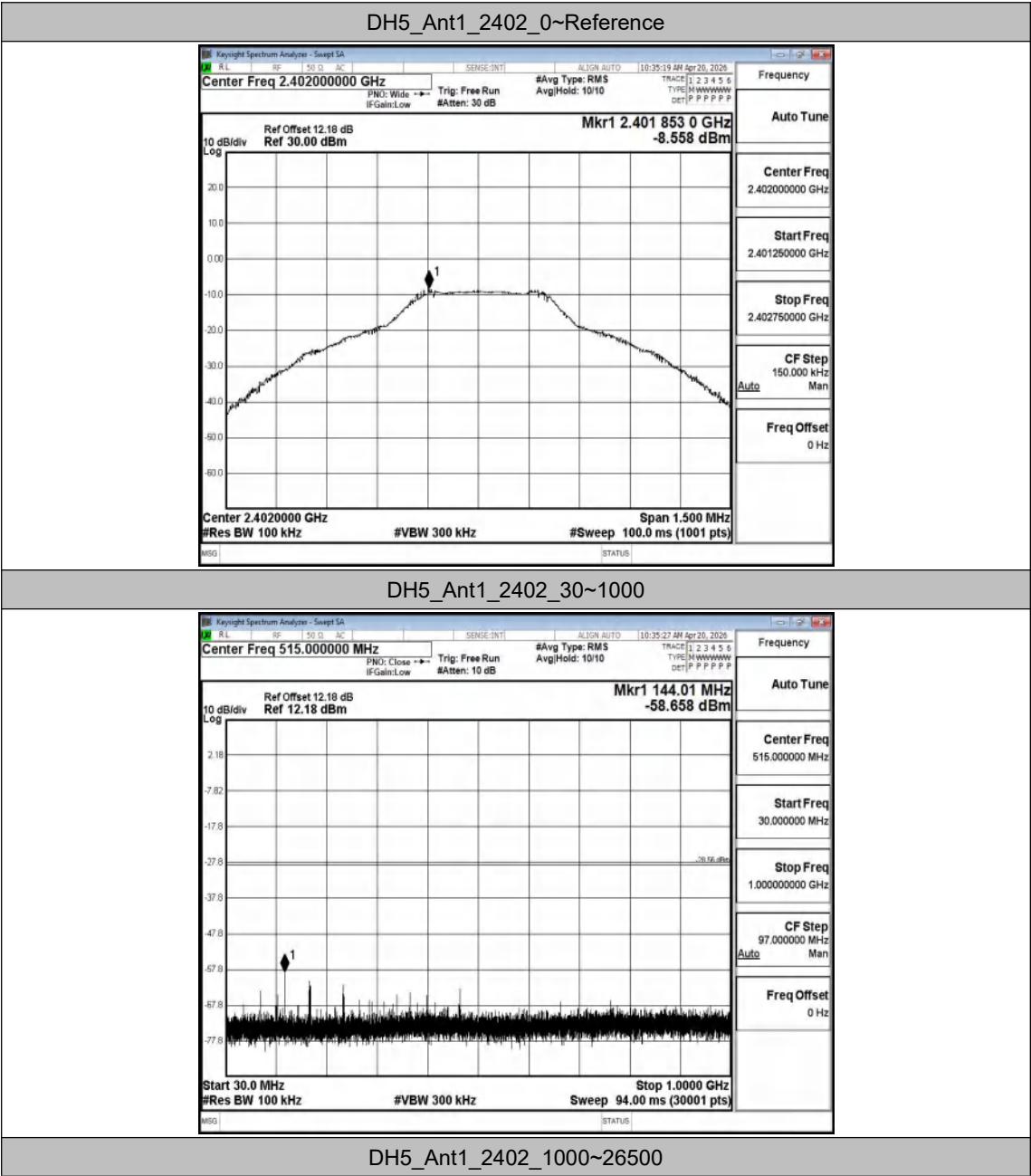


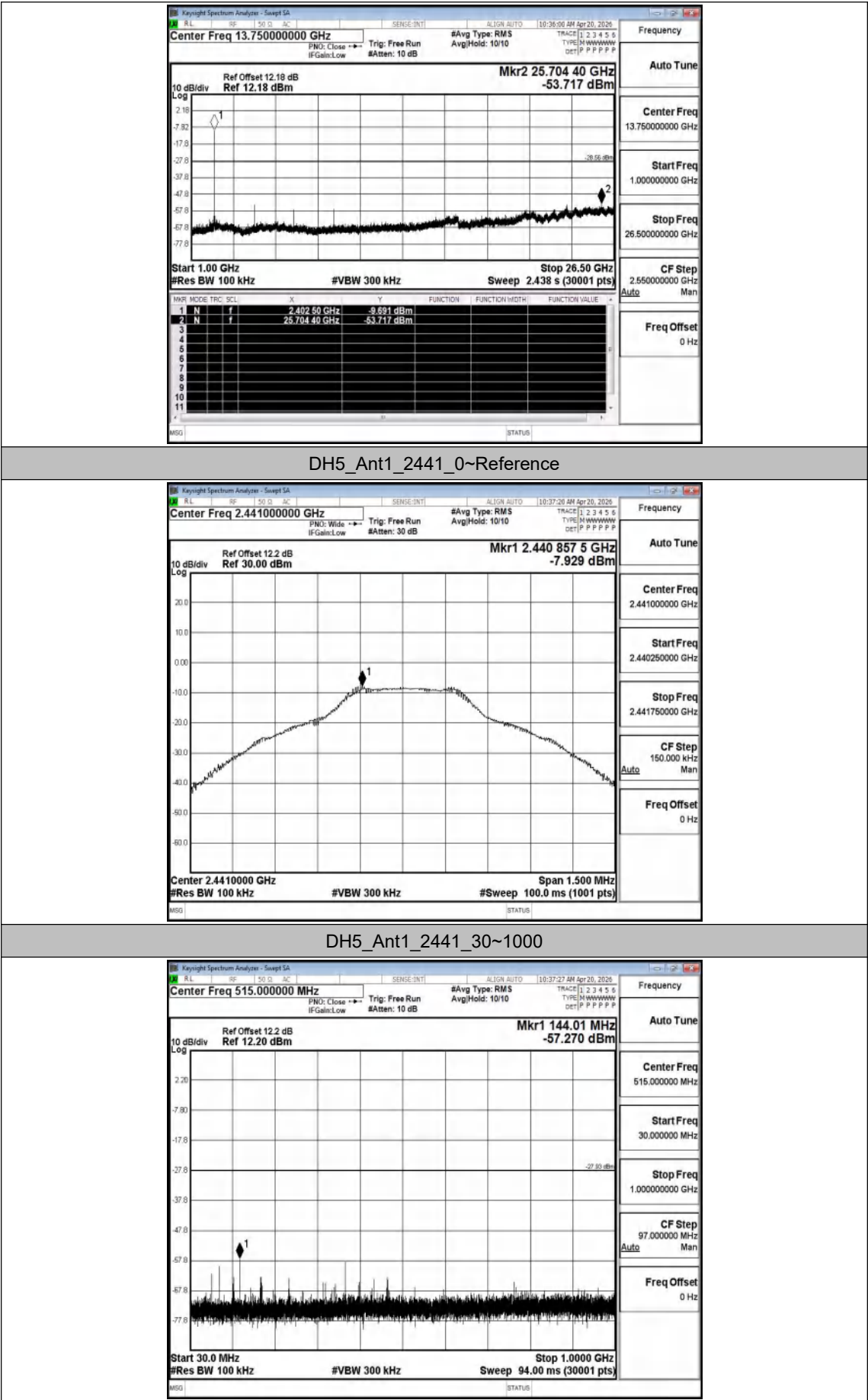
A.7 Conducted Spurious Emission

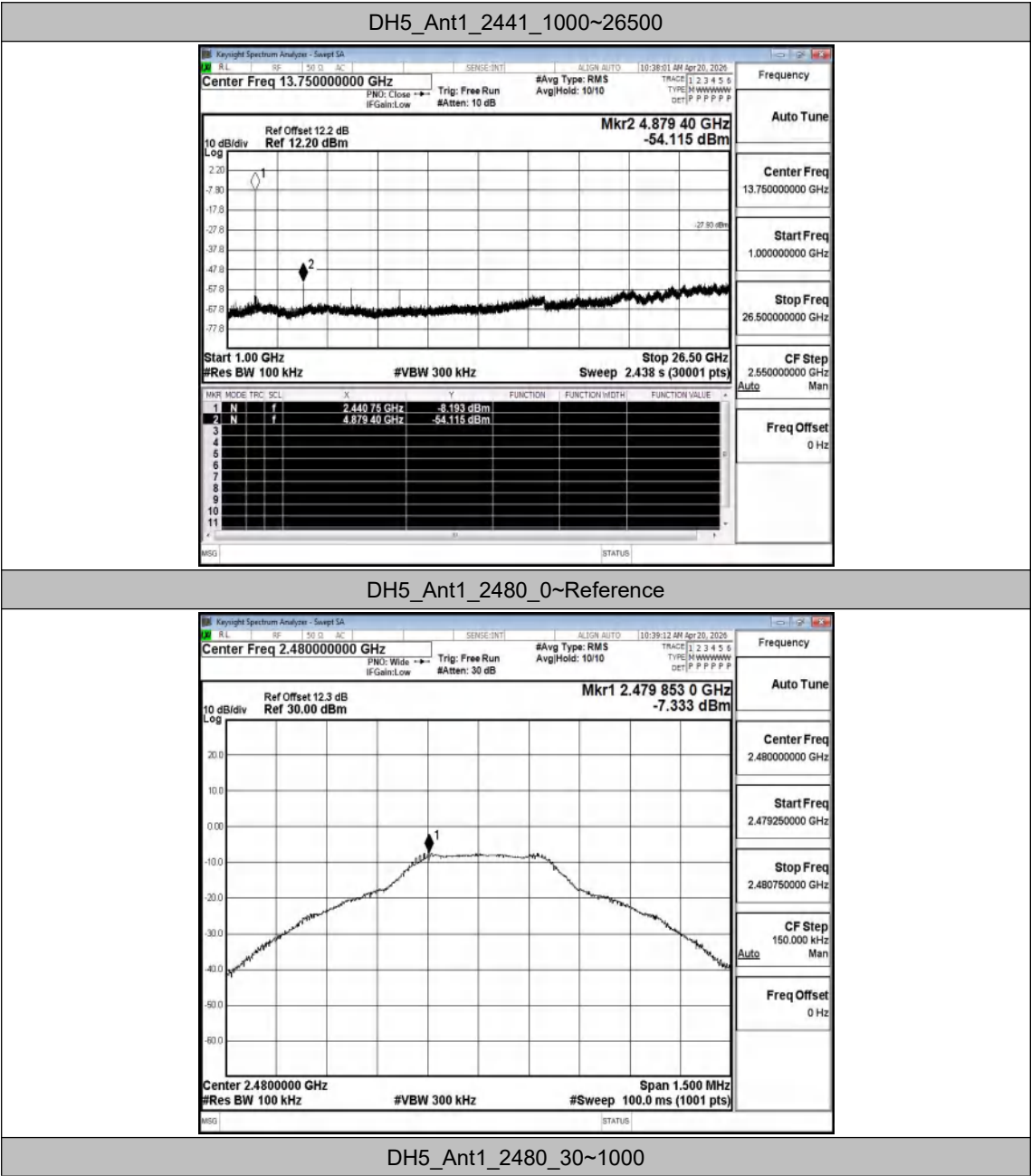
Test Result

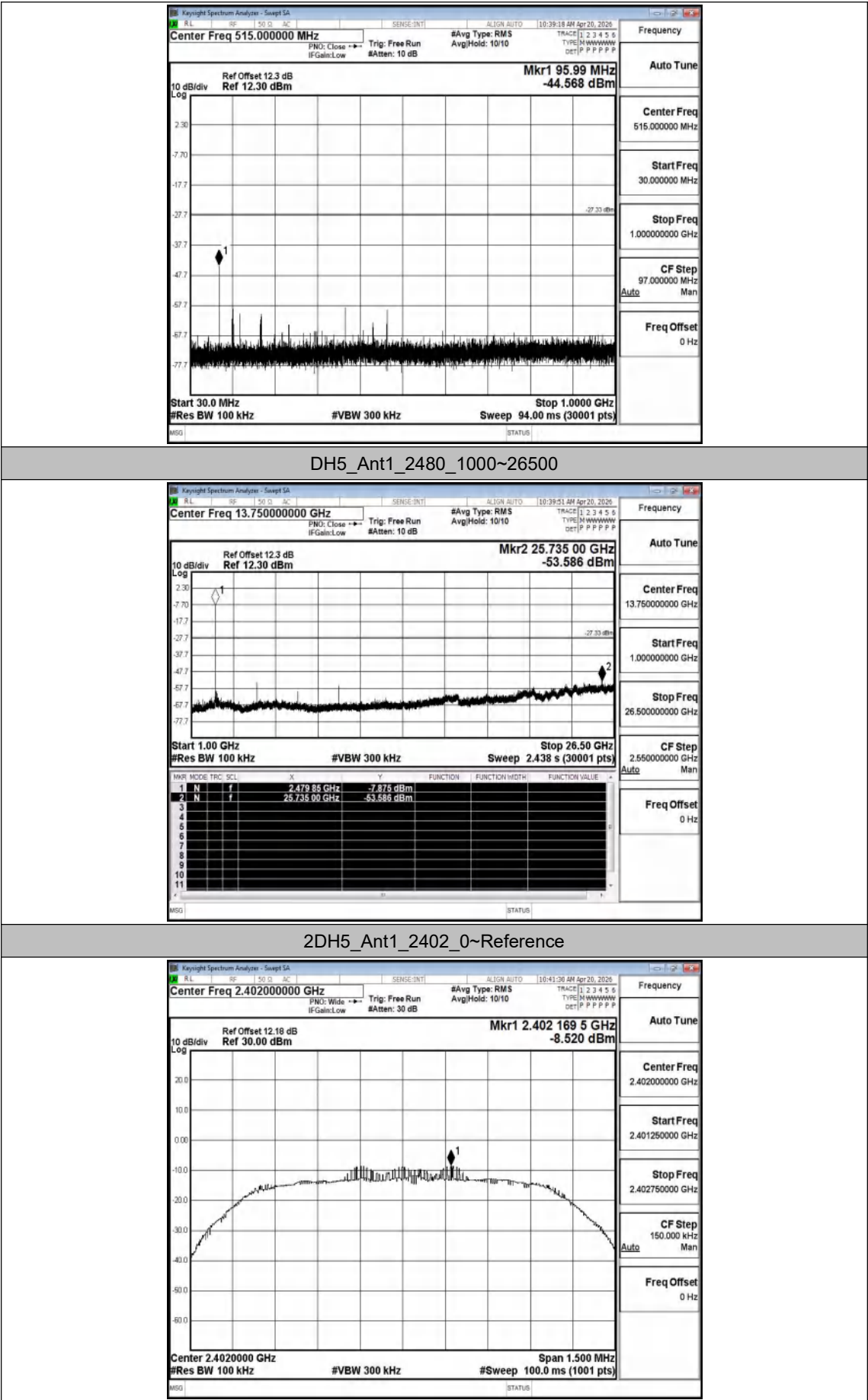
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	-8.56	-8.56	---	PASS
			30~1000	-8.56	-58.66	≤-28.56	PASS
			1000~26500	-8.56	-53.72	≤-28.56	PASS
		2441	Reference	-7.93	-7.93	---	PASS
			30~1000	-7.93	-57.27	≤-27.93	PASS
			1000~26500	-7.93	-54.12	≤-27.93	PASS
		2480	Reference	-7.33	-7.33	---	PASS
			30~1000	-7.33	-44.57	≤-27.33	PASS
			1000~26500	-7.33	-53.59	≤-27.33	PASS
2DH5	Ant1	2402	Reference	-8.52	-8.52	---	PASS
			30~1000	-8.52	-58.97	≤-28.52	PASS
			1000~26500	-8.52	-54.4	≤-28.52	PASS
		2441	Reference	-7.92	-7.92	---	PASS
			30~1000	-7.92	-58.73	≤-27.92	PASS
			1000~26500	-7.92	-54.34	≤-27.92	PASS
		2480	Reference	-7.36	-7.36	---	PASS
			30~1000	-7.36	-55.86	≤-27.36	PASS
			1000~26500	-7.36	-53.84	≤-27.36	PASS
3DH5	Ant1	2402	Reference	-8.52	-8.52	---	PASS
			30~1000	-8.52	-56.44	≤-28.52	PASS
			1000~26500	-8.52	-54.14	≤-28.52	PASS
		2441	Reference	-7.92	-7.92	---	PASS
			30~1000	-7.92	-53.83	≤-27.92	PASS
			1000~26500	-7.92	-54.49	≤-27.92	PASS
		2480	Reference	-7.36	-7.36	---	PASS
			30~1000	-7.36	-59.76	≤-27.36	PASS
			1000~26500	-7.36	-54.07	≤-27.36	PASS

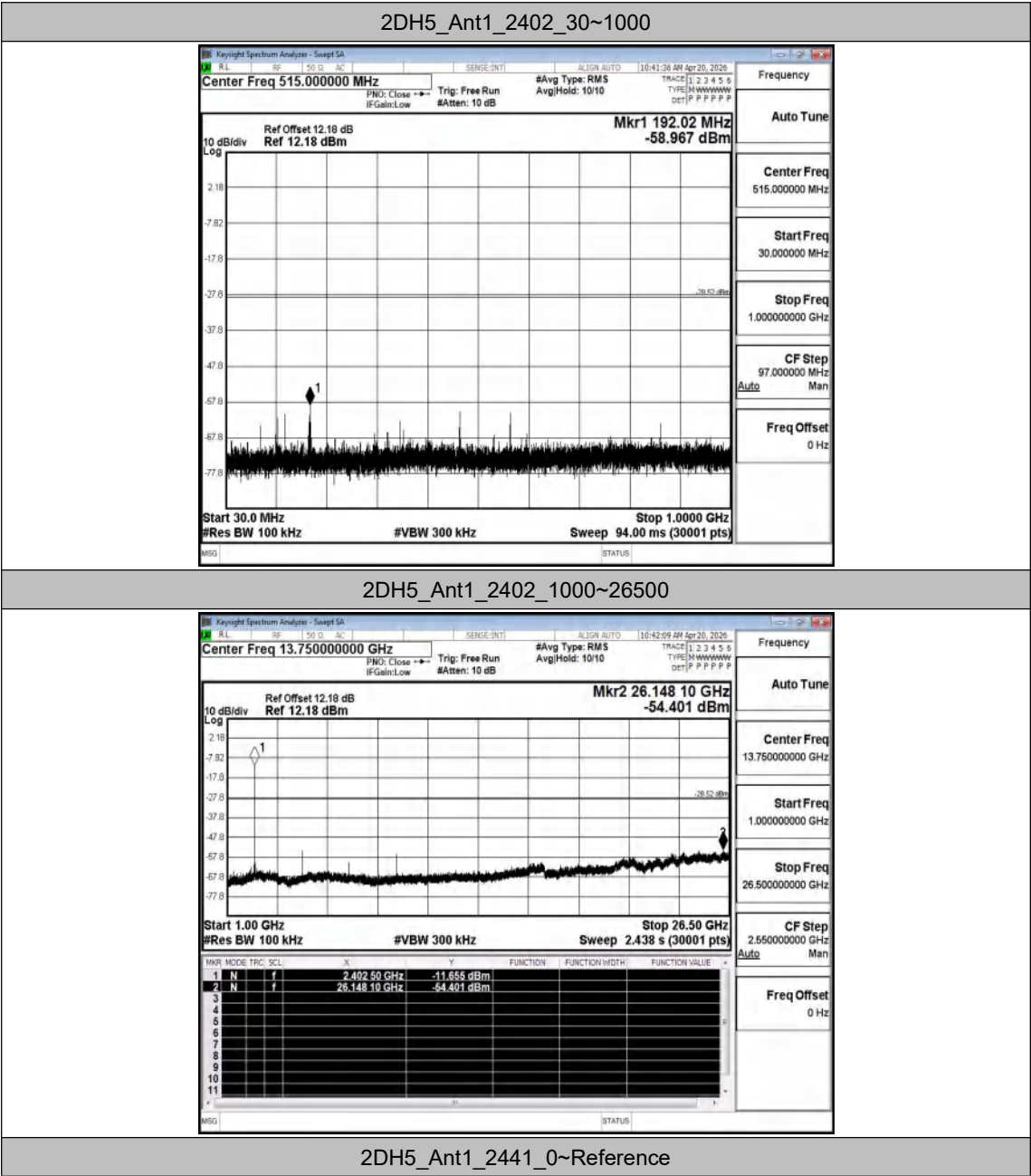
Test Graphs

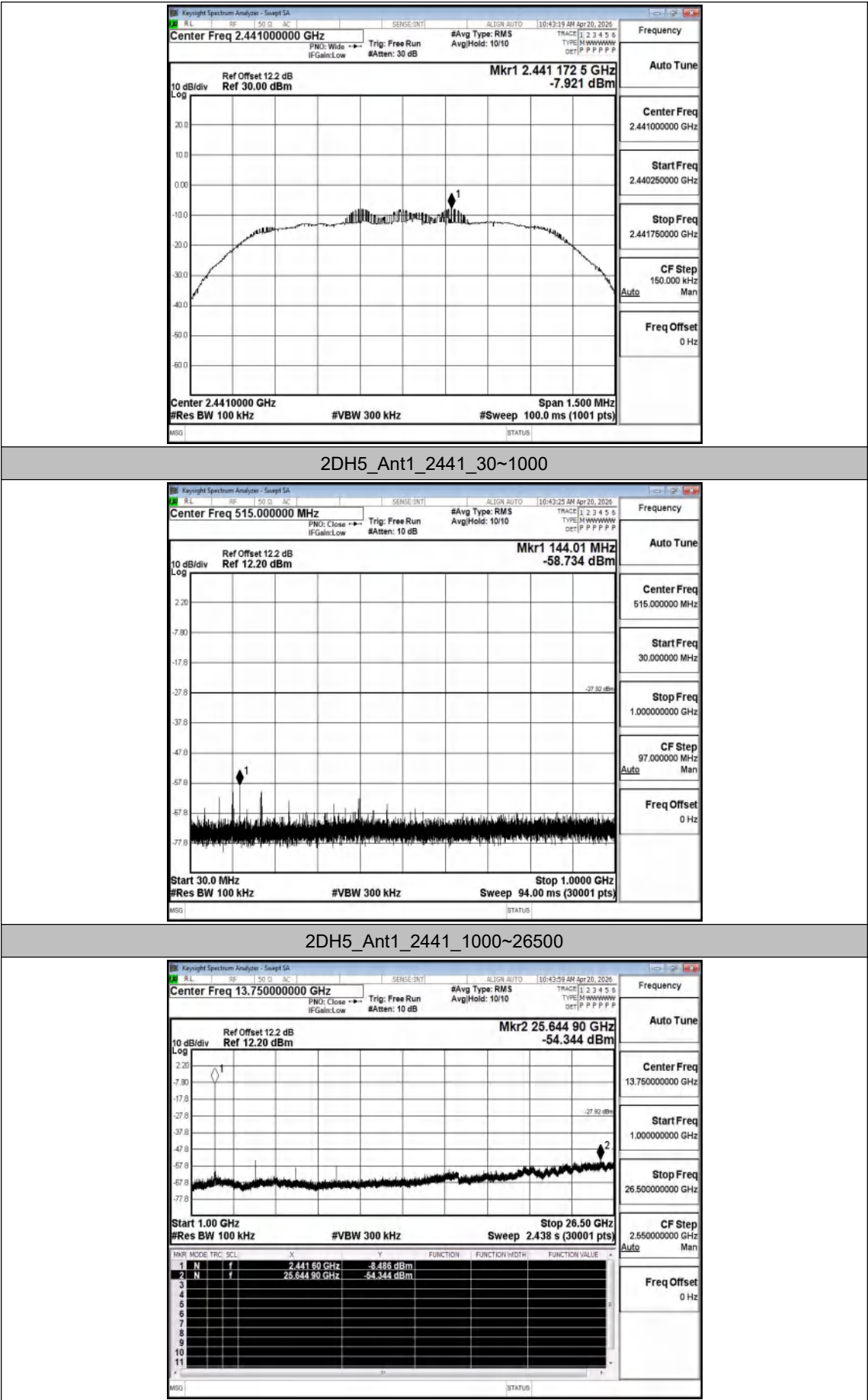


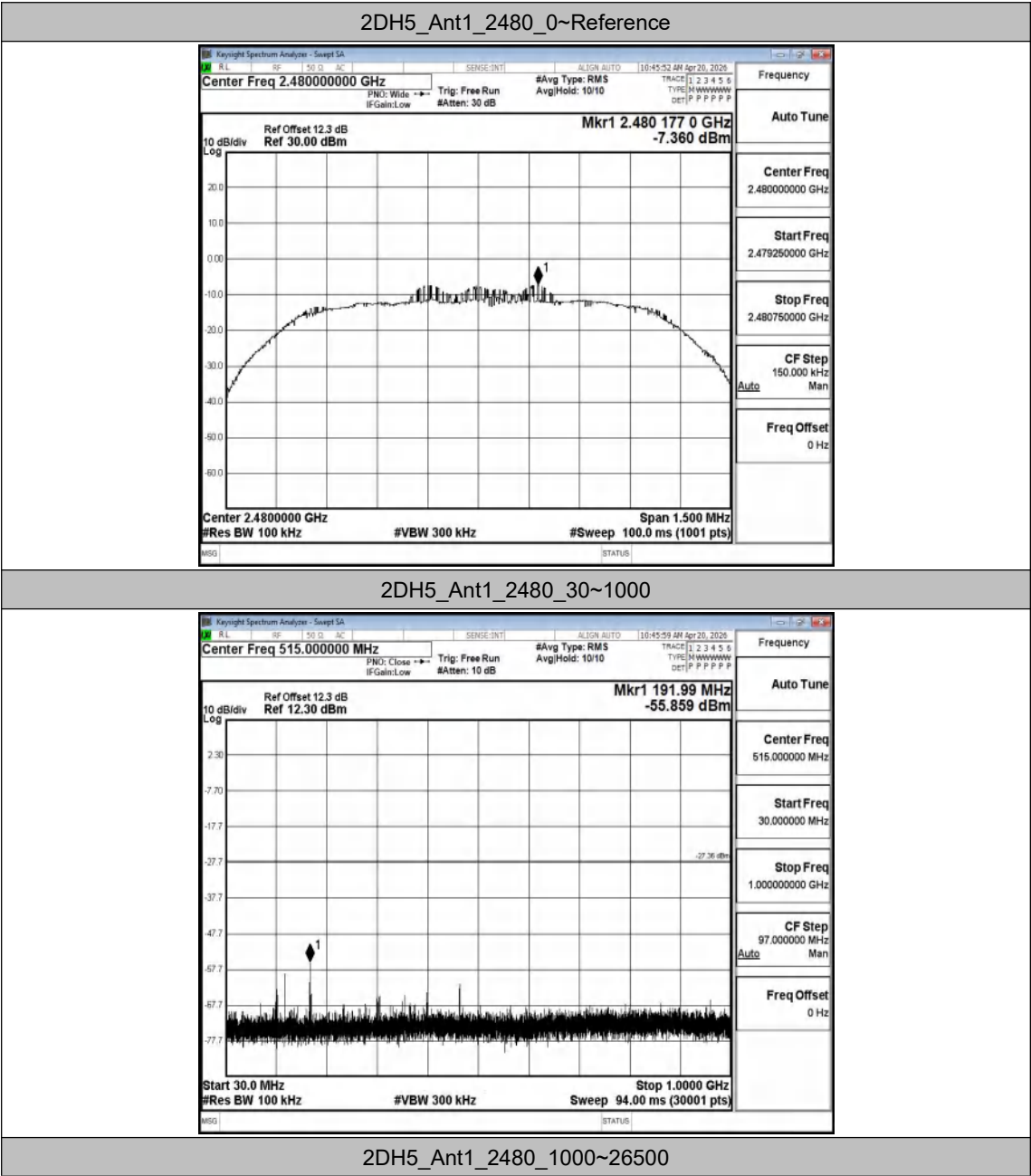


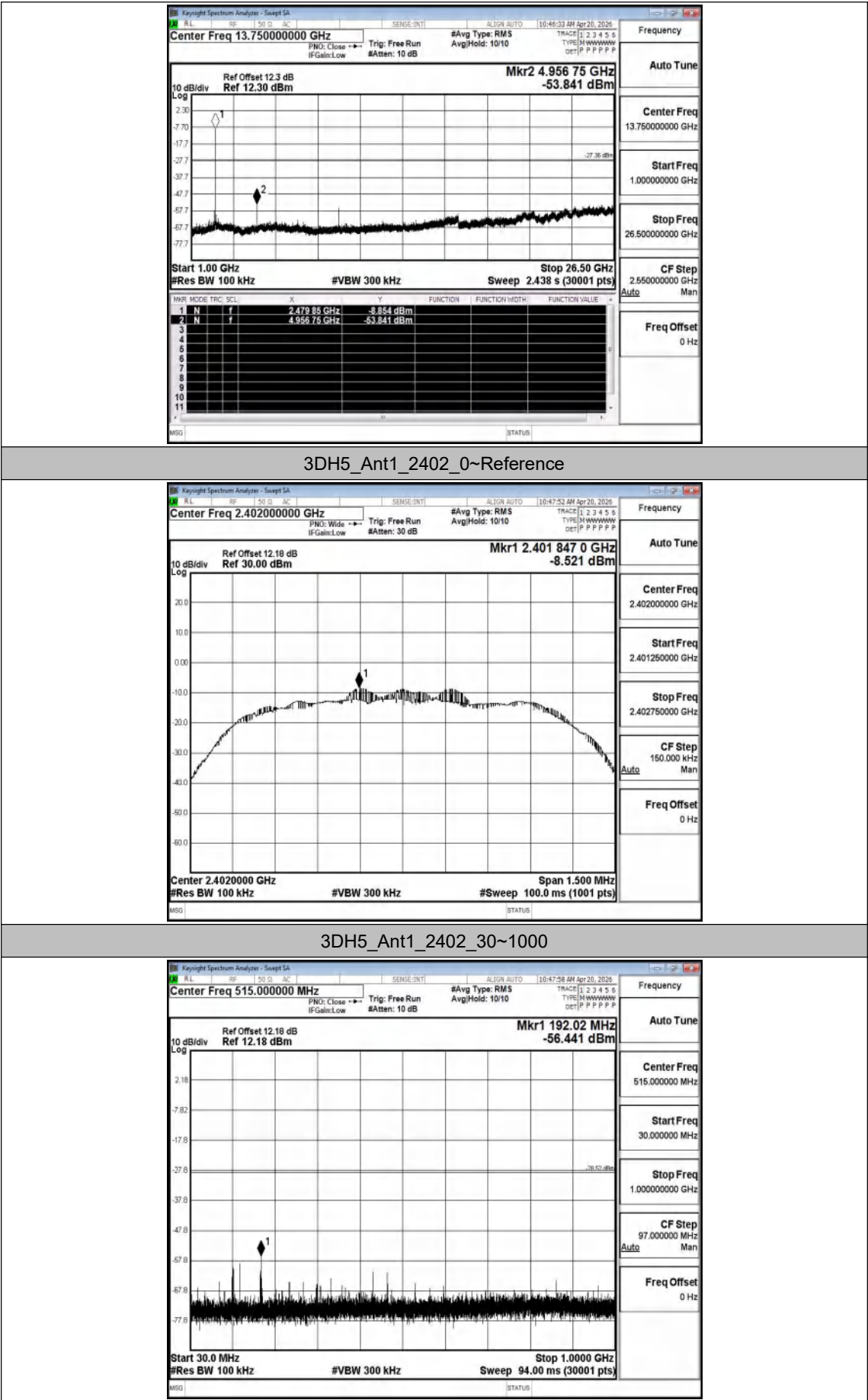


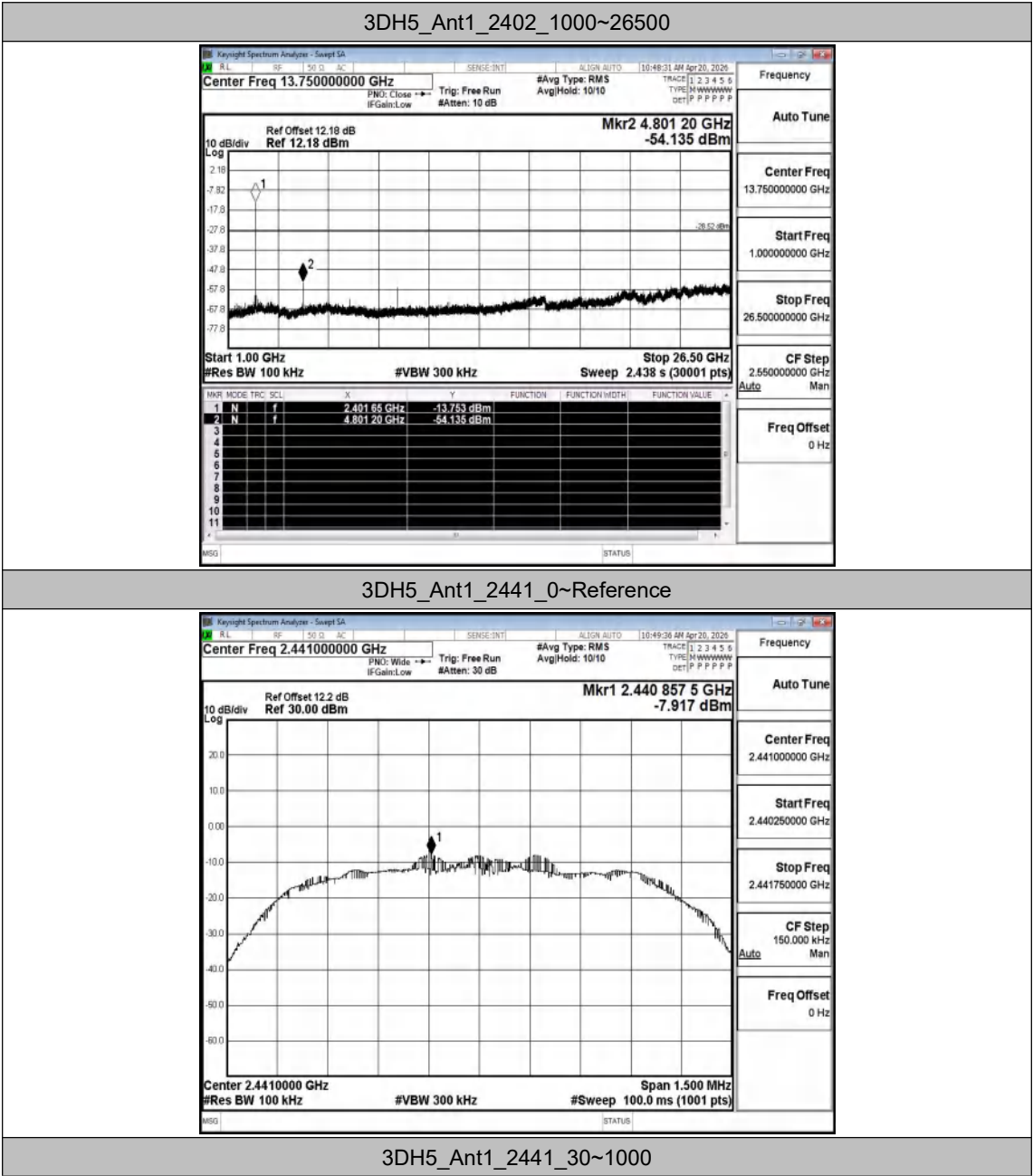


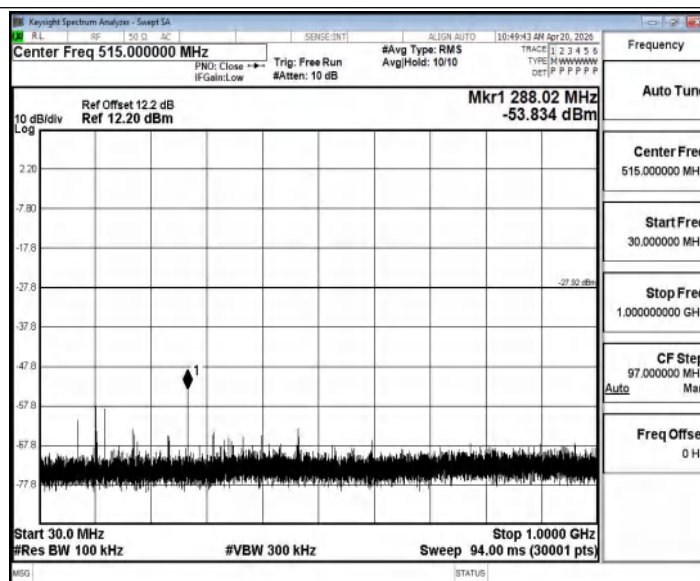




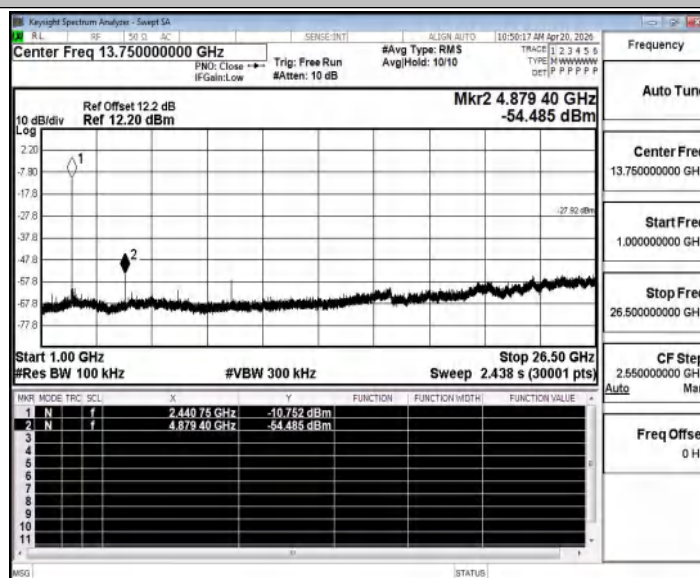




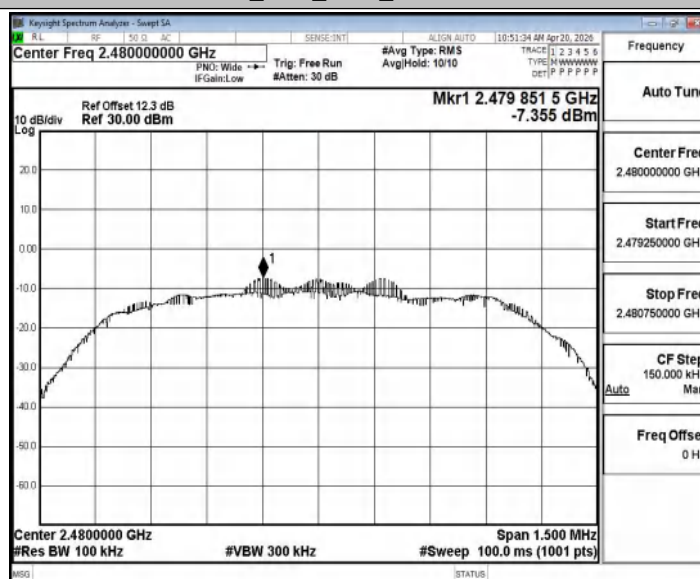


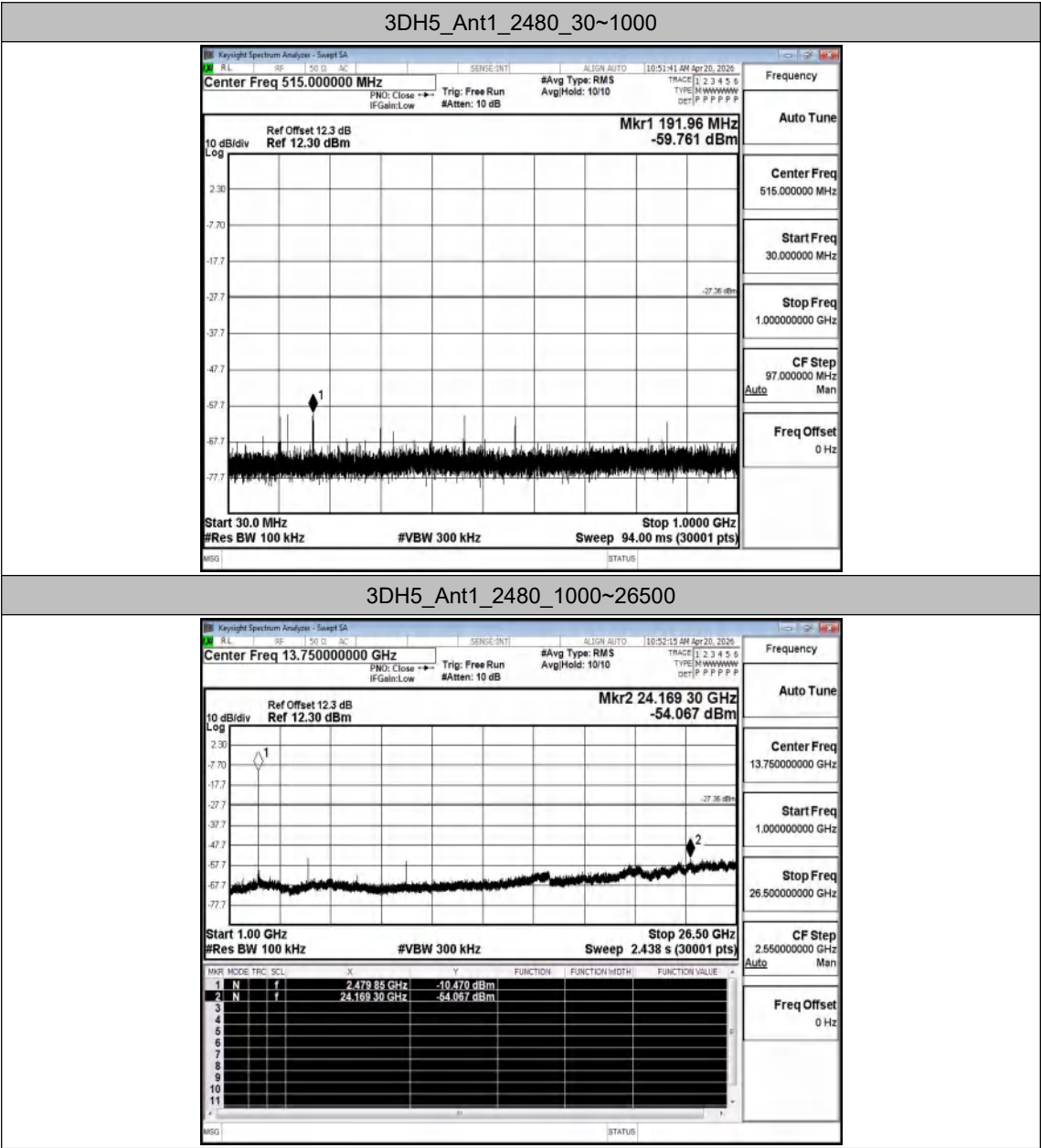


3DH5_Ant1_2441_1000~26500



3DH5_Ant1_2480_0~Reference



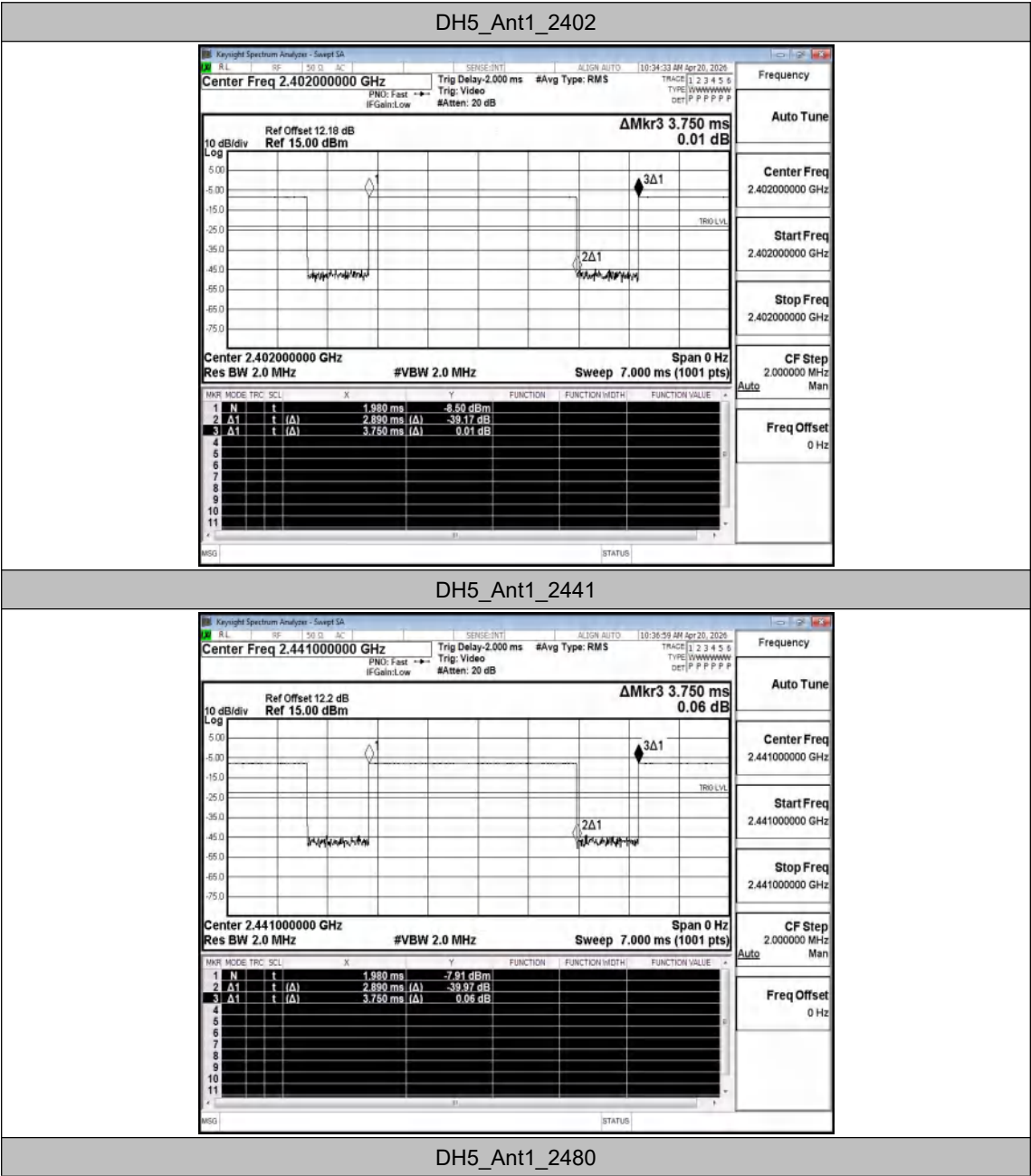


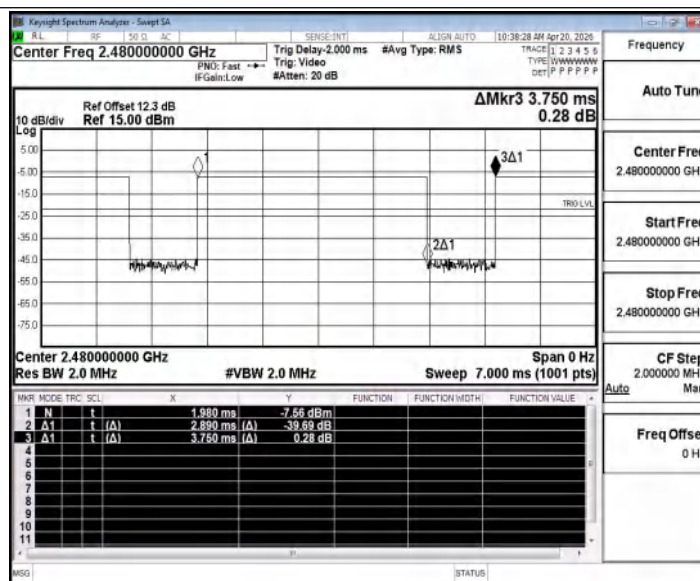
A.8 Duty Cycle

Test Result

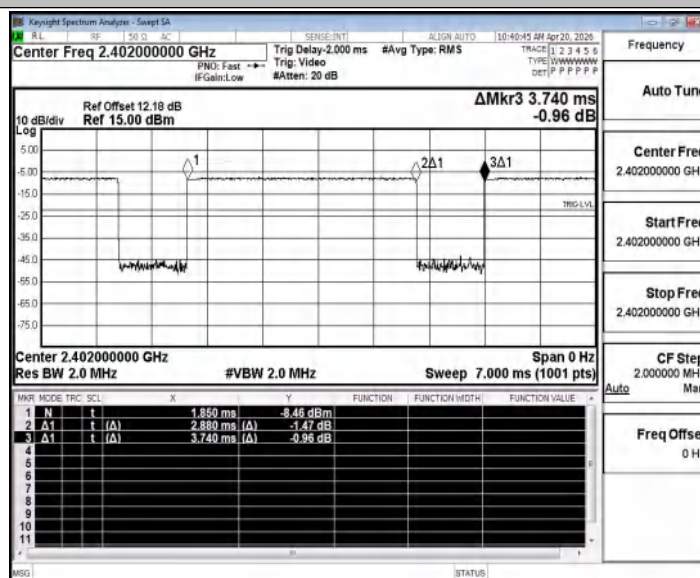
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	DC [%]	xFactor	Limit	Verdict
DH5	Ant1	2402	2.89	3.75	77.07	1.13	---	---
		2441	2.89	3.75	77.07	1.13	---	---
		2480	2.89	3.75	77.07	1.13	---	---
2DH5	Ant1	2402	2.88	3.74	77.01	1.13	---	---
		2441	2.88	3.75	76.80	1.15	---	---
		2480	2.88	3.74	77.01	1.13	---	---
3DH5	Ant1	2402	2.88	3.74	77.01	1.13	---	---
		2441	2.89	3.76	76.86	1.14	---	---
		2480	2.90	3.76	77.13	1.13	---	---

Test Graphs

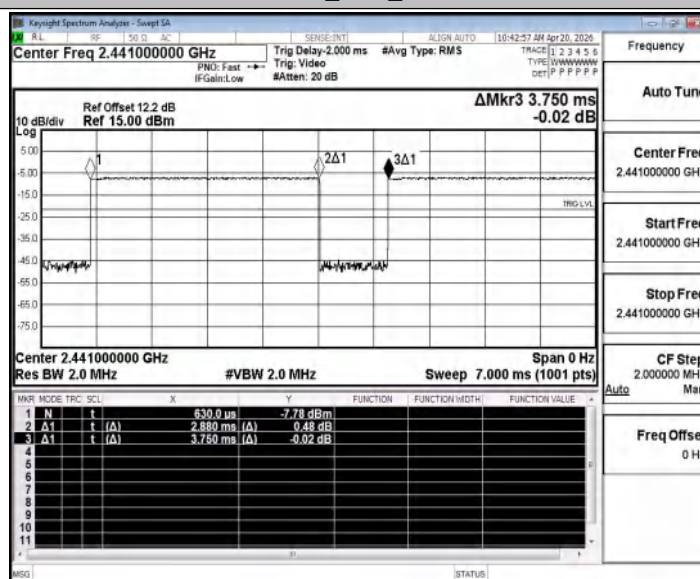


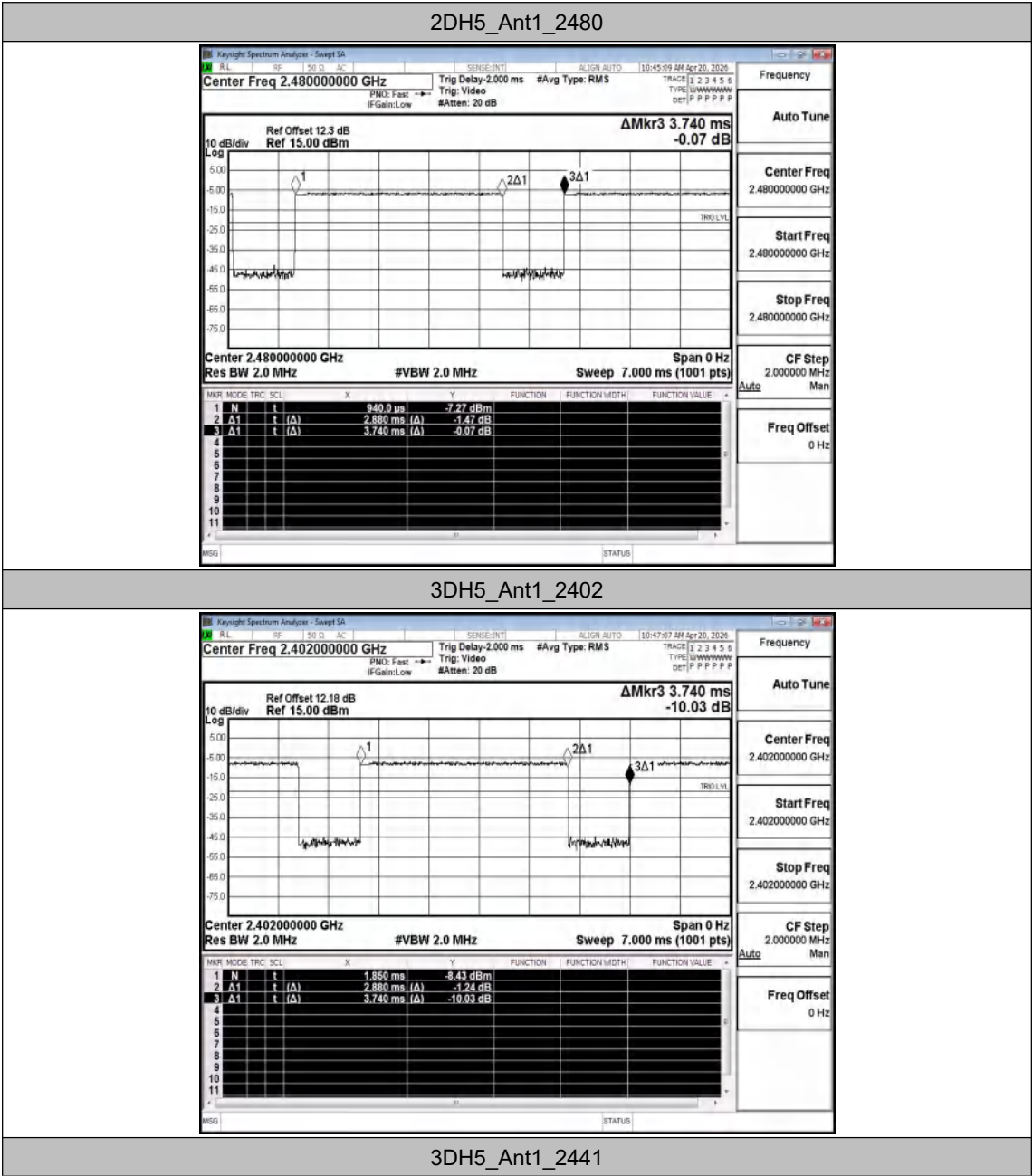


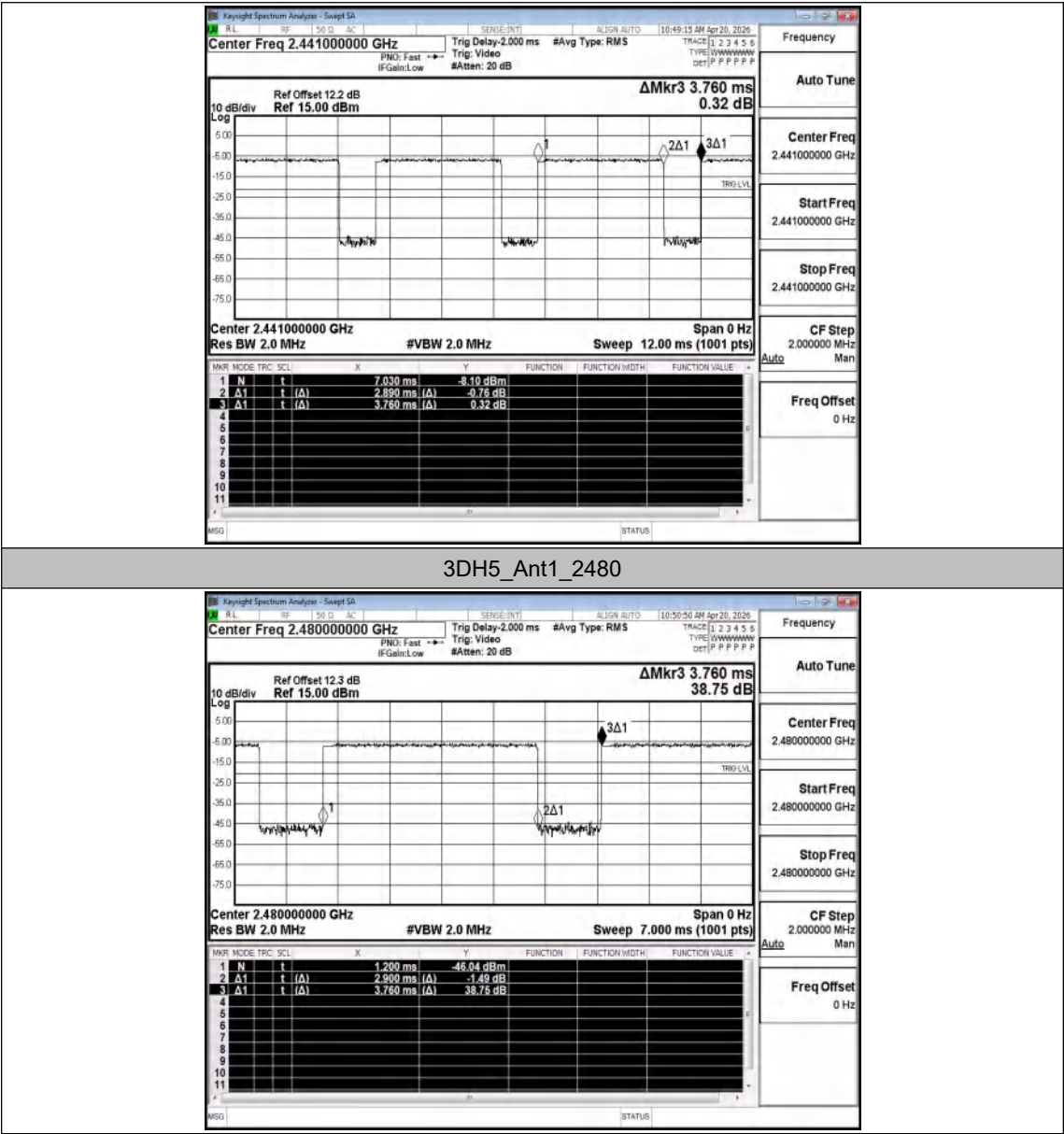
2DH5_Ant1_2402



2DH5_Ant1_2441







A.9 Emissions in Restricted Bands

Test Result

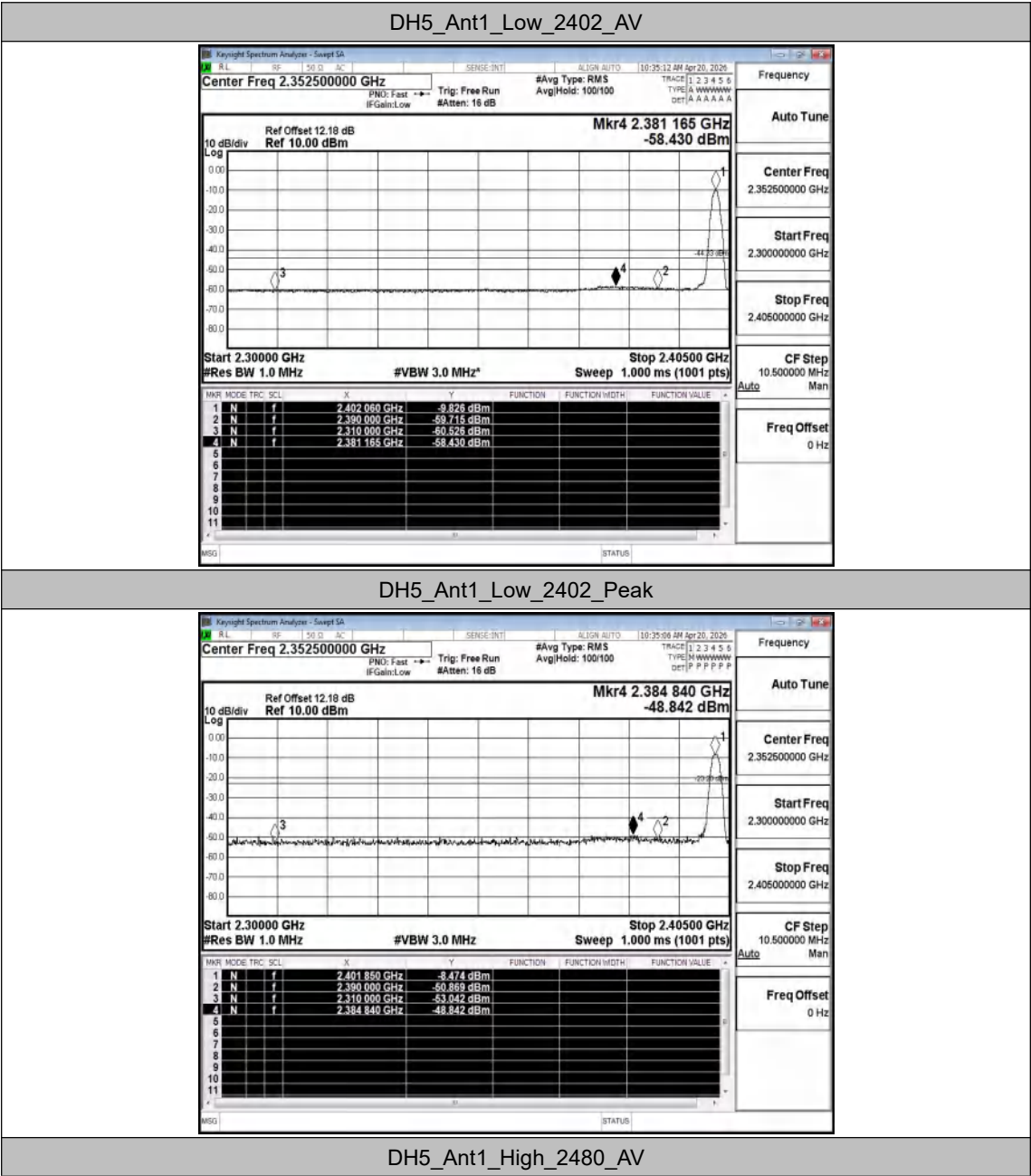
TestMode	Antenna	ChName	Freq (MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-60.53	≤-44.33	2.00	1.13	37.80	≤54	PASS
				AV	2381.165	-58.43	≤-44.33	2.00	1.13	39.90	≤54	PASS
				AV	2390.000	-59.72	≤-44.33	2.00	1.13	38.61	≤54	PASS
				Peak	2310.000	-53.04	≤-23.20	2.00	0.00	44.16	≤74	PASS
				Peak	2384.840	-48.84	≤-23.20	2.00	0.00	48.36	≤74	PASS
				Peak	2390.000	-50.87	≤-23.20	2.00	0.00	46.33	≤74	PASS
		High	2480	AV	2483.500	-59.27	≤-44.33	2.00	1.13	39.06	≤54	PASS
				AV	2496.640	-57.1	≤-44.33	2.00	1.13	41.23	≤54	PASS
				AV	2500.000	-58.08	≤-44.33	2.00	1.13	40.25	≤54	PASS
				Peak	2483.500	-51.73	≤-23.20	2.00	0.00	45.47	≤74	PASS
				Peak	2499.520	-47.93	≤-23.20	2.00	0.00	49.27	≤74	PASS
				Peak	2500.000	-49.13	≤-23.20	2.00	0.00	48.07	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-52.22	≤-23.20	2.00	0.00	44.98	≤74	PASS
				Peak	2325.620	-49.14	≤-23.20	2.00	0.00	48.06	≤74	PASS
				Peak	2390.000	-52.21	≤-23.20	2.00	0.00	44.99	≤74	PASS
		High	Hop_2480	Peak	2483.500	-50.98	≤-23.20	2.00	0.00	46.22	≤74	PASS
				Peak	2496.960	-48.1	≤-23.20	2.00	0.00	49.10	≤74	PASS
				Peak	2500.000	-52.31	≤-23.20	2.00	0.00	44.89	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-60.94	≤-44.33	2.00	1.13	37.39	≤54	PASS
				AV	2378.435	-58.33	≤-44.33	2.00	1.13	40.00	≤54	PASS
				AV	2390.000	-59.92	≤-44.33	2.00	1.13	38.41	≤54	PASS
				Peak	2310.000	-52.36	≤-23.20	2.00	0.00	44.84	≤74	PASS
				Peak	2379.800	-48.46	≤-23.20	2.00	0.00	48.74	≤74	PASS
				Peak	2390.000	-50.77	≤-23.20	2.00	0.00	46.43	≤74	PASS
		High	2480	AV	2483.500	-59.25	≤-44.33	2.00	1.13	39.08	≤54	PASS
				AV	2499.840	-57.43	≤-44.33	2.00	1.13	40.90	≤54	PASS
				AV	2500.000	-57.58	≤-44.33	2.00	1.13	40.75	≤54	PASS
				Peak	2483.500	-52.07	≤-23.20	2.00	0.00	45.13	≤74	PASS
				Peak	2496.320	-47.71	≤-23.20	2.00	0.00	49.49	≤74	PASS
				Peak	2500.000	-49.93	≤-23.20	2.00	0.00	47.27	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-52.6	≤-23.20	2.00	0.00	44.60	≤74	PASS
				Peak	2381.375	-48.43	≤-23.20	2.00	0.00	48.77	≤74	PASS
				Peak	2390.000	-51.68	≤-23.20	2.00	0.00	45.52	≤74	PASS
		High	Hop_2480	Peak	2483.500	-51.09	≤-23.20	2.00	0.00	46.11	≤74	PASS
				Peak	2487.760	-48.42	≤-23.20	2.00	0.00	48.78	≤74	PASS
				Peak	2500.000	-52.23	≤-23.20	2.00	0.00	44.97	≤74	PASS

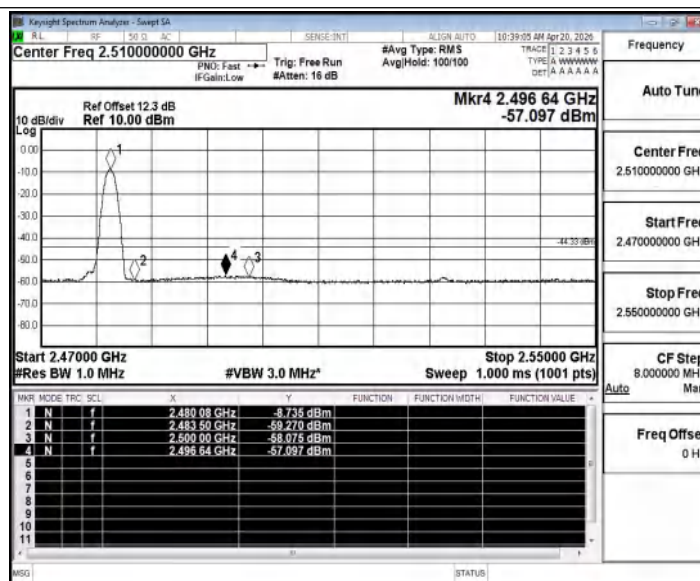
3DH5	Ant1	Low	2402	AV	2310.000	-60.38	≤ -44.33	2.00	1.13	37.95	≤ 54	PASS
				AV	2379.170	-58.49	≤ -44.33	2.00	1.13	39.84	≤ 54	PASS
				AV	2390.000	-60.04	≤ -44.33	2.00	1.13	38.29	≤ 54	PASS
				Peak	2310.000	-52.56	≤ -23.20	2.00	0.00	44.64	≤ 74	PASS
				Peak	2386.835	-47.27	≤ -23.20	2.00	0.00	49.93	≤ 74	PASS
				Peak	2390.000	-51.44	≤ -23.20	2.00	0.00	45.76	≤ 74	PASS
		High	2480	AV	2483.500	-59.65	≤ -44.33	2.00	1.13	38.68	≤ 54	PASS
				AV	2496.000	-57.36	≤ -44.33	2.00	1.13	40.97	≤ 54	PASS
				AV	2500.000	-57.81	≤ -44.33	2.00	1.13	40.52	≤ 54	PASS
				Peak	2483.500	-51.9	≤ -23.20	2.00	0.00	45.30	≤ 74	PASS
				Peak	2498.880	-46.92	≤ -23.20	2.00	0.00	50.28	≤ 74	PASS
				Peak	2500.000	-50.43	≤ -23.20	2.00	0.00	46.77	≤ 74	PASS
		Low	Hop_2402	Peak	2310.000	-53.09	≤ -23.20	2.00	0.00	44.11	≤ 74	PASS
				Peak	2386.205	-47.92	≤ -23.20	2.00	0.00	49.28	≤ 74	PASS
				Peak	2390.000	-52.71	≤ -23.20	2.00	0.00	44.49	≤ 74	PASS
		High	Hop_2480	Peak	2483.500	-51.52	≤ -23.20	2.00	0.00	45.68	≤ 74	PASS
				Peak	2496.000	-48.2	≤ -23.20	2.00	0.00	49.00	≤ 74	PASS
				Peak	2500.000	-52.39	≤ -23.20	2.00	0.00	44.81	≤ 74	PASS

Note:

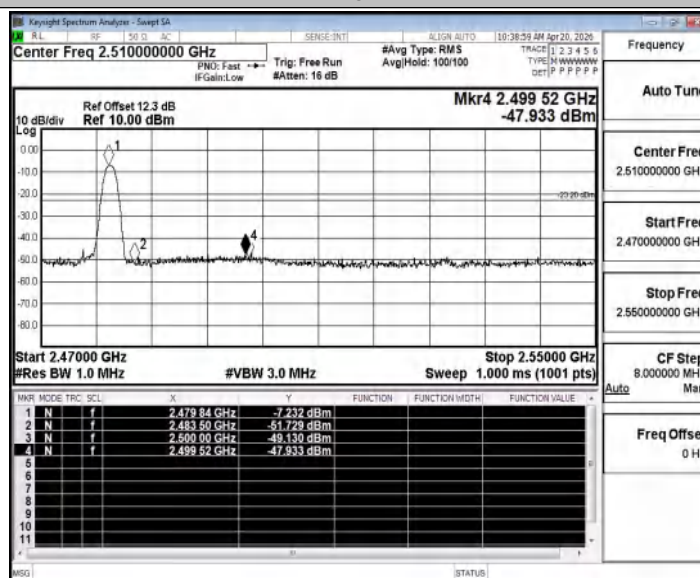
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

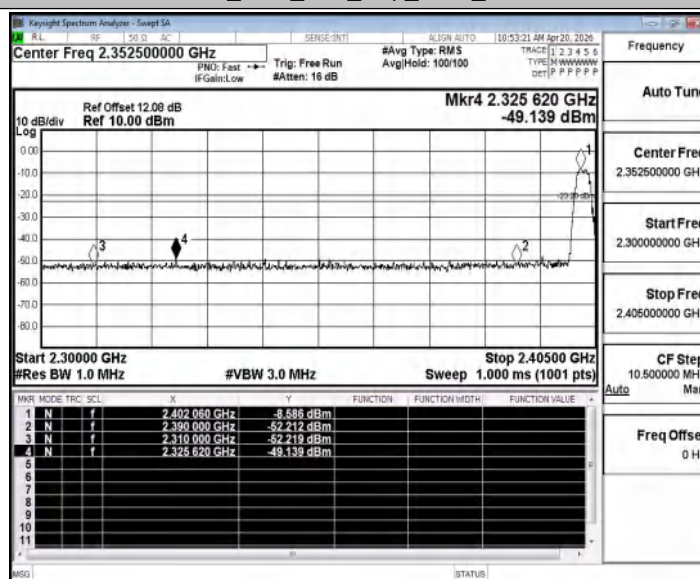


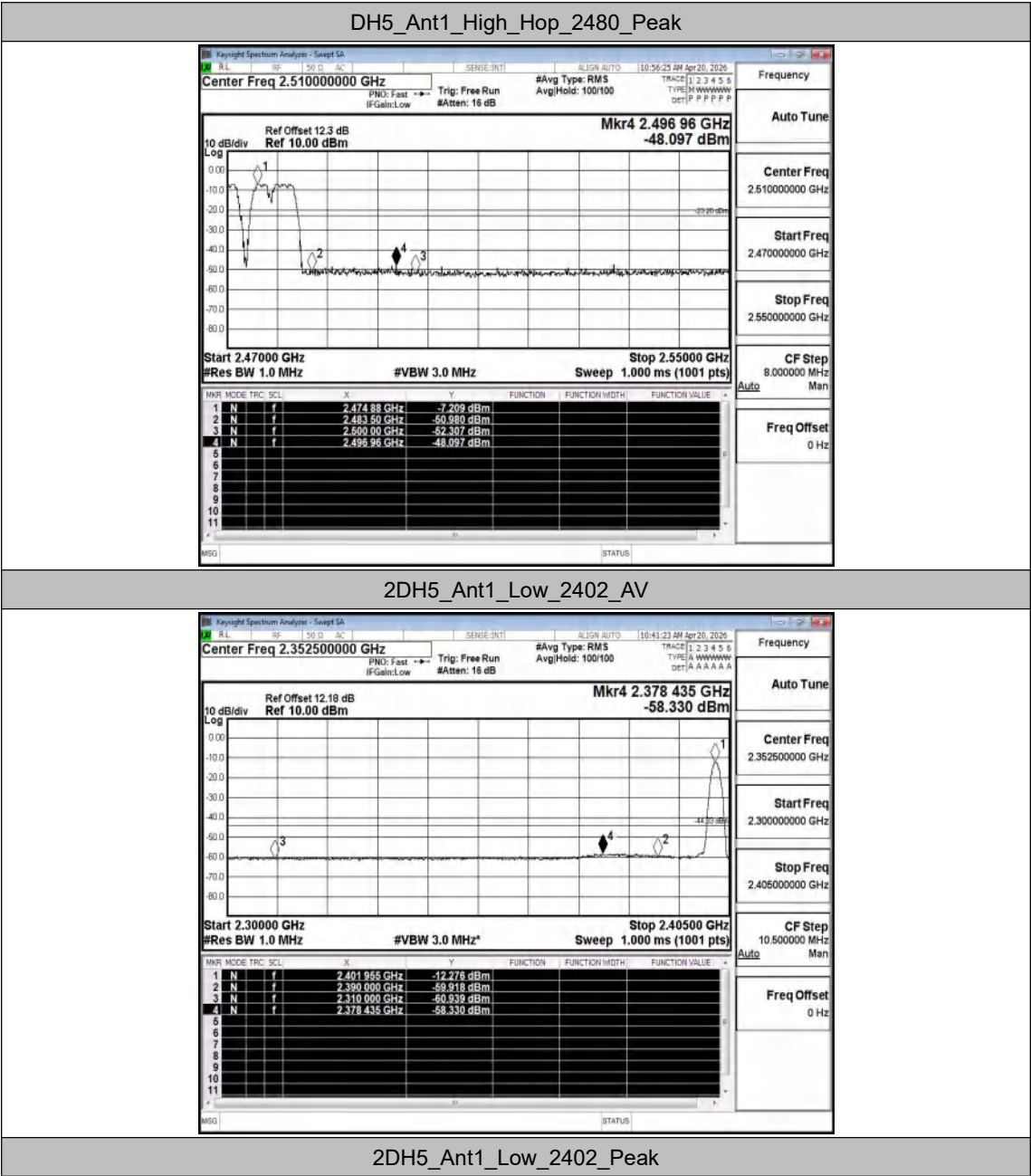


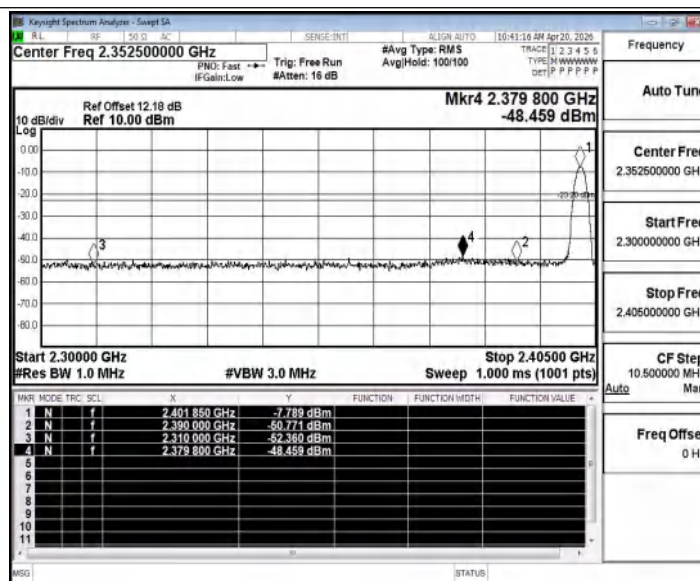
DH5_Ant1_High_2480_Peak



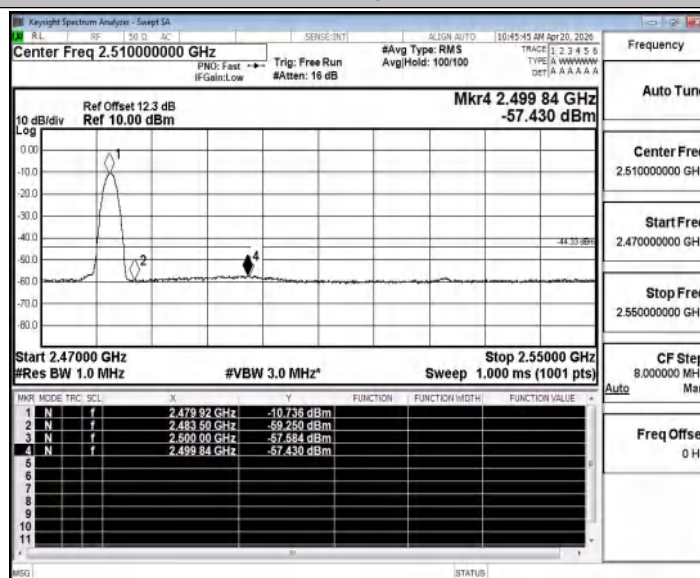
DH5_Ant1_Low_Hop_2402_Peak



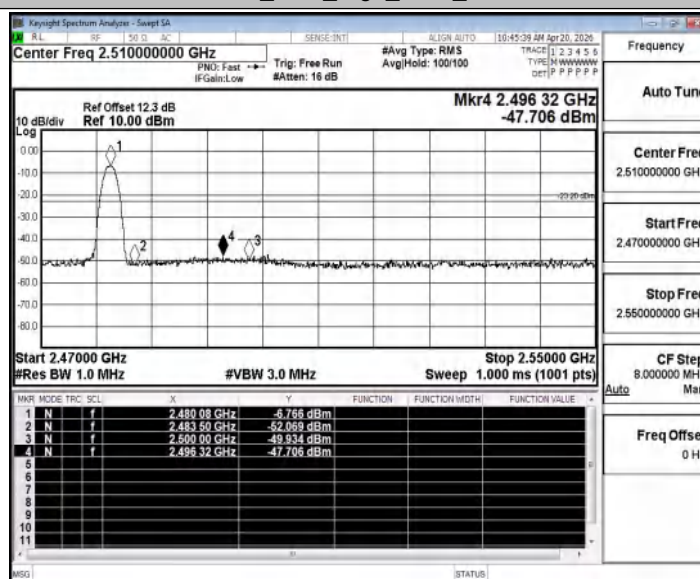


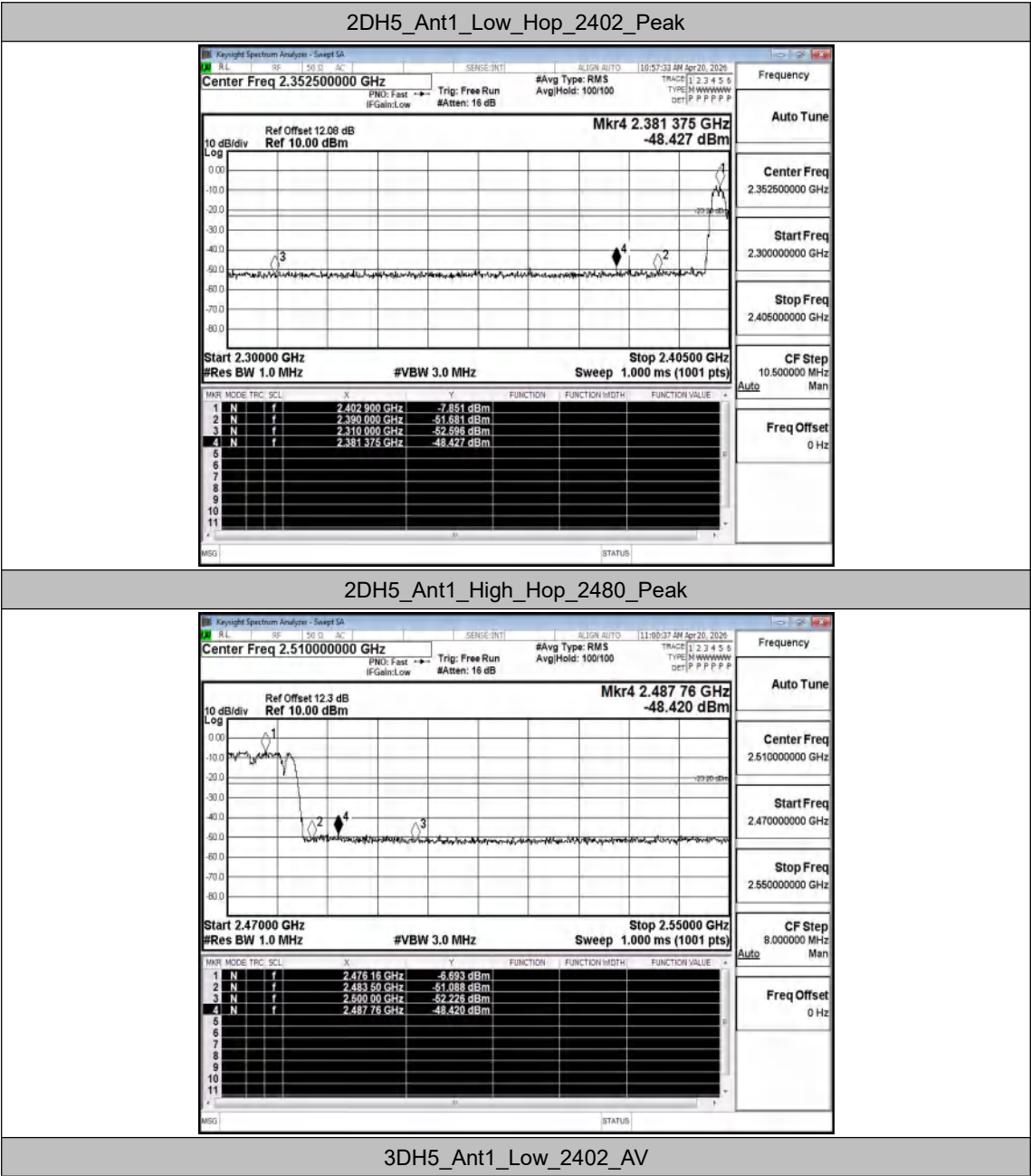


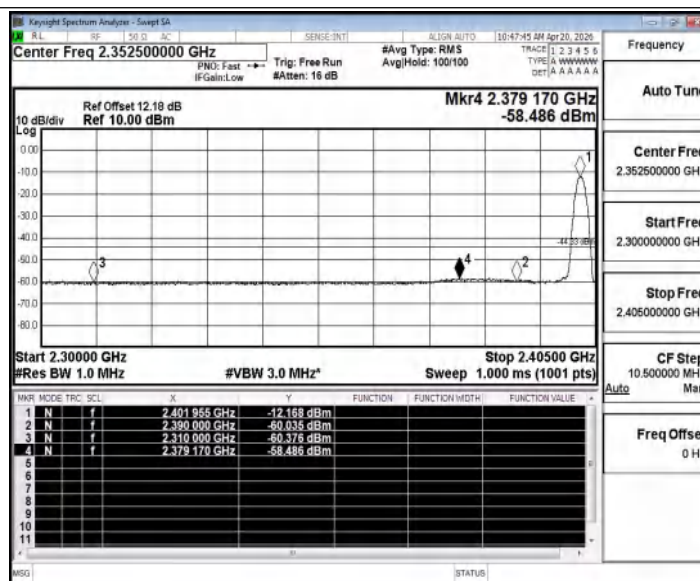
2DH5_Ant1_High_2480_AV



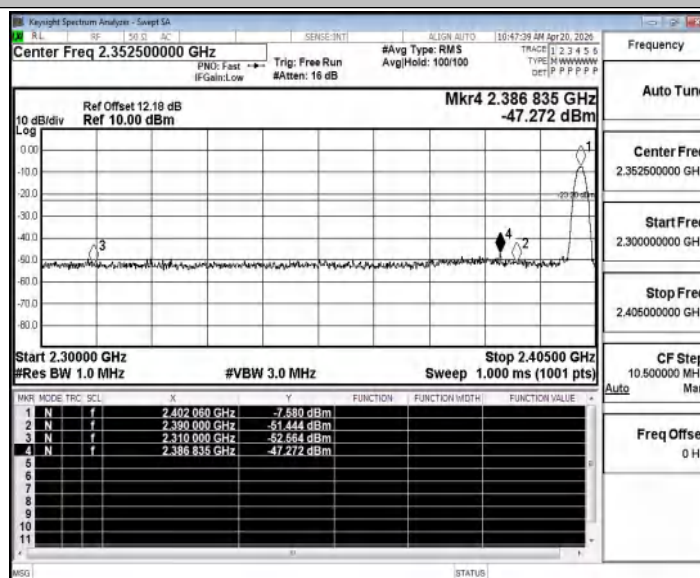
2DH5_Ant1_High_2480_Peak



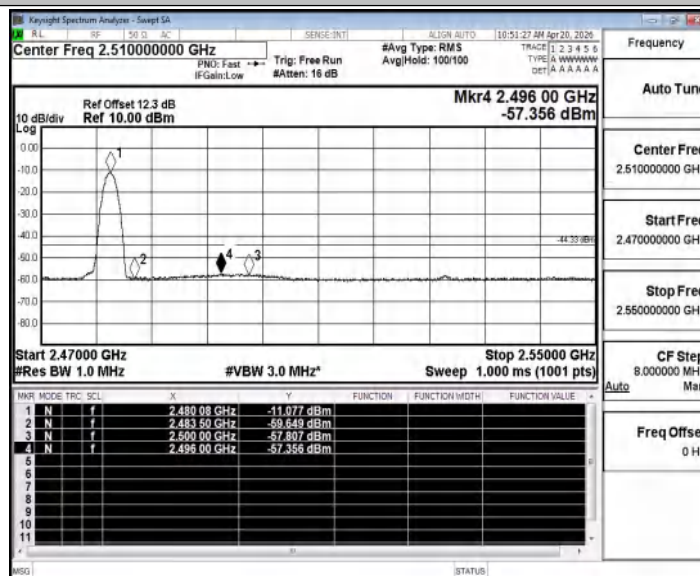




3DH5_Ant1_Low_2402_Peak



3DH5_Ant1_High_2480_AV



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