

Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Bluetooth Speaker
Test Model: A SPEAKER10

Environmental Conditions

Temperature:	24.2°C
Relative Humidity:	52.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Jone Lee
Supervised by:	Fengliu Tang

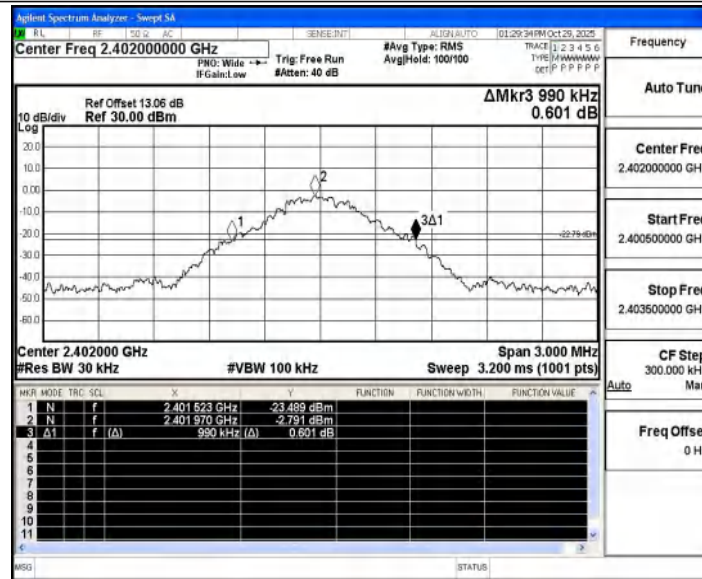
A.1 20dB Emission Bandwidth

Test Result

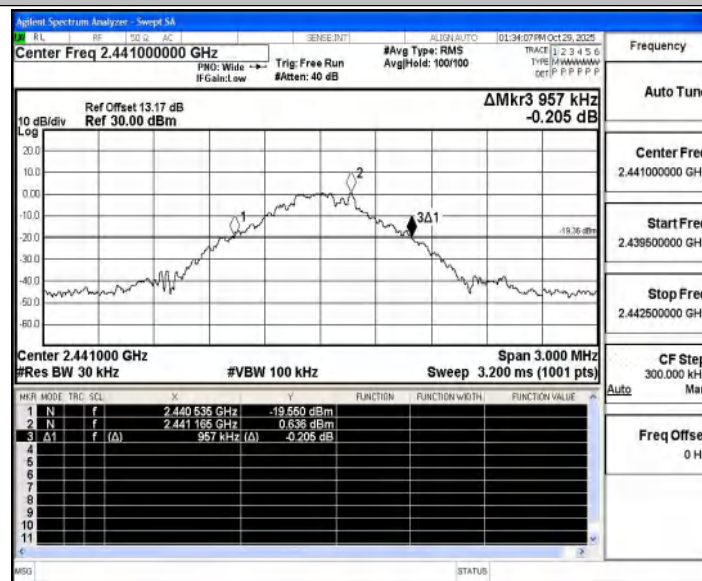
TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.990	2401.523	2402.513	---	---
		2441	0.957	2440.535	2441.492	---	---
		2480	0.942	2479.538	2480.480	---	---
2DH5	Ant1	2402	1.290	2401.361	2402.651	---	---
		2441	1.290	2440.361	2441.651	---	---
		2480	1.320	2479.337	2480.657	---	---
3DH5	Ant1	2402	1.302	2401.343	2402.645	---	---
		2441	1.311	2440.343	2441.654	---	---
		2480	1.305	2479.343	2480.648	---	---

Test Graphs

DH5_Ant1_2402



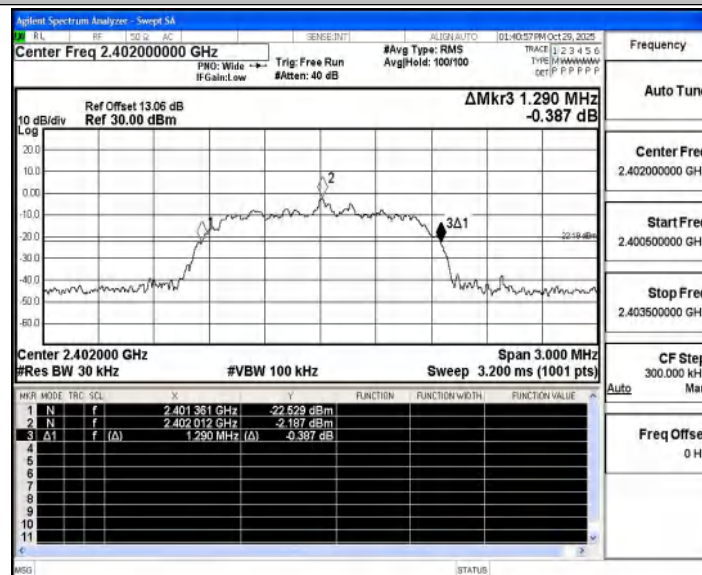
DH5_Ant1_2441



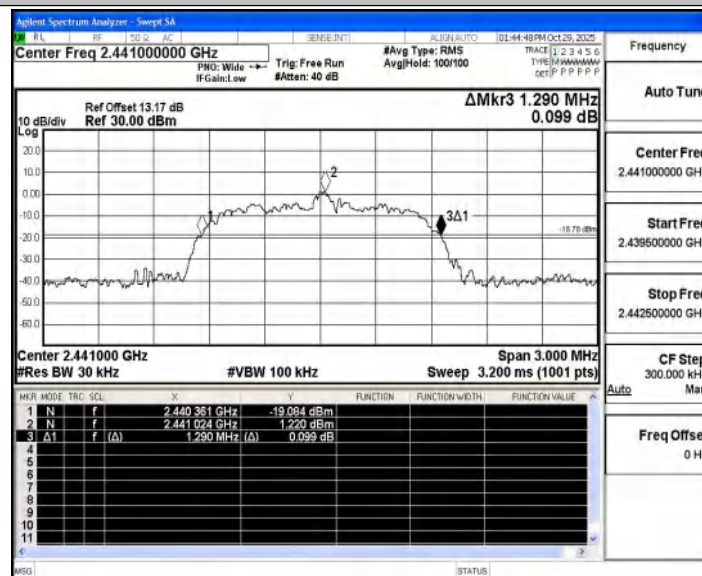
DH5_Ant1_2480



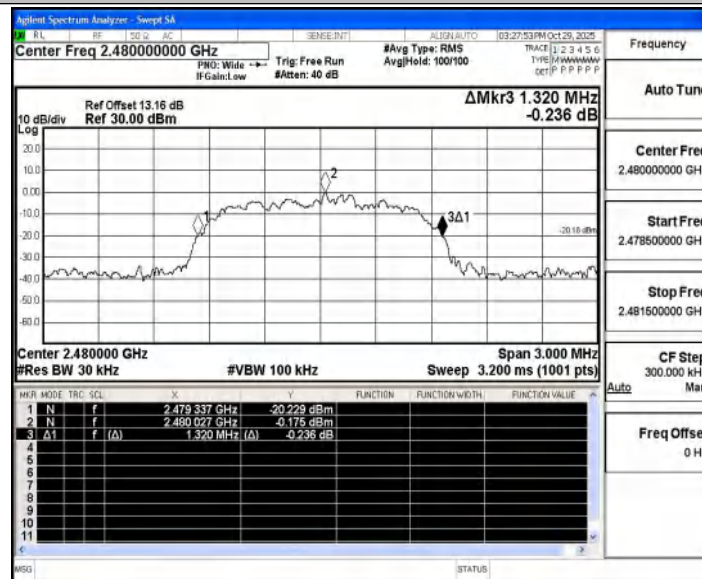
2DH5_Ant1_2402



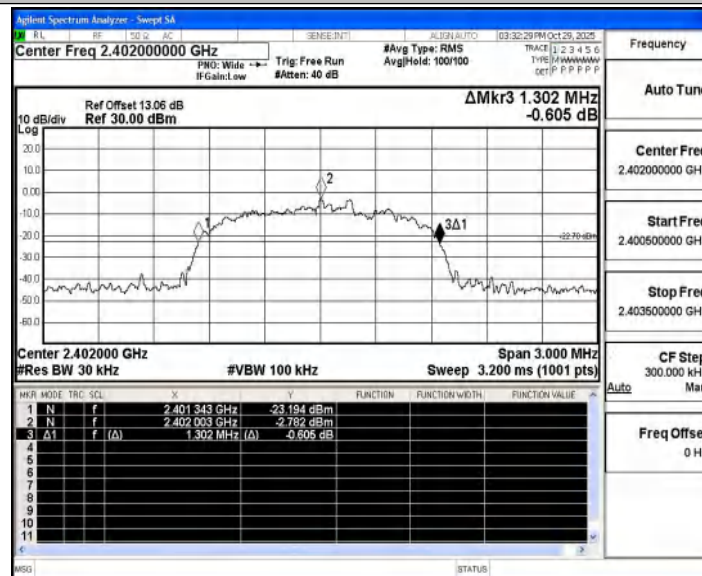
2DH5_Ant1_2441



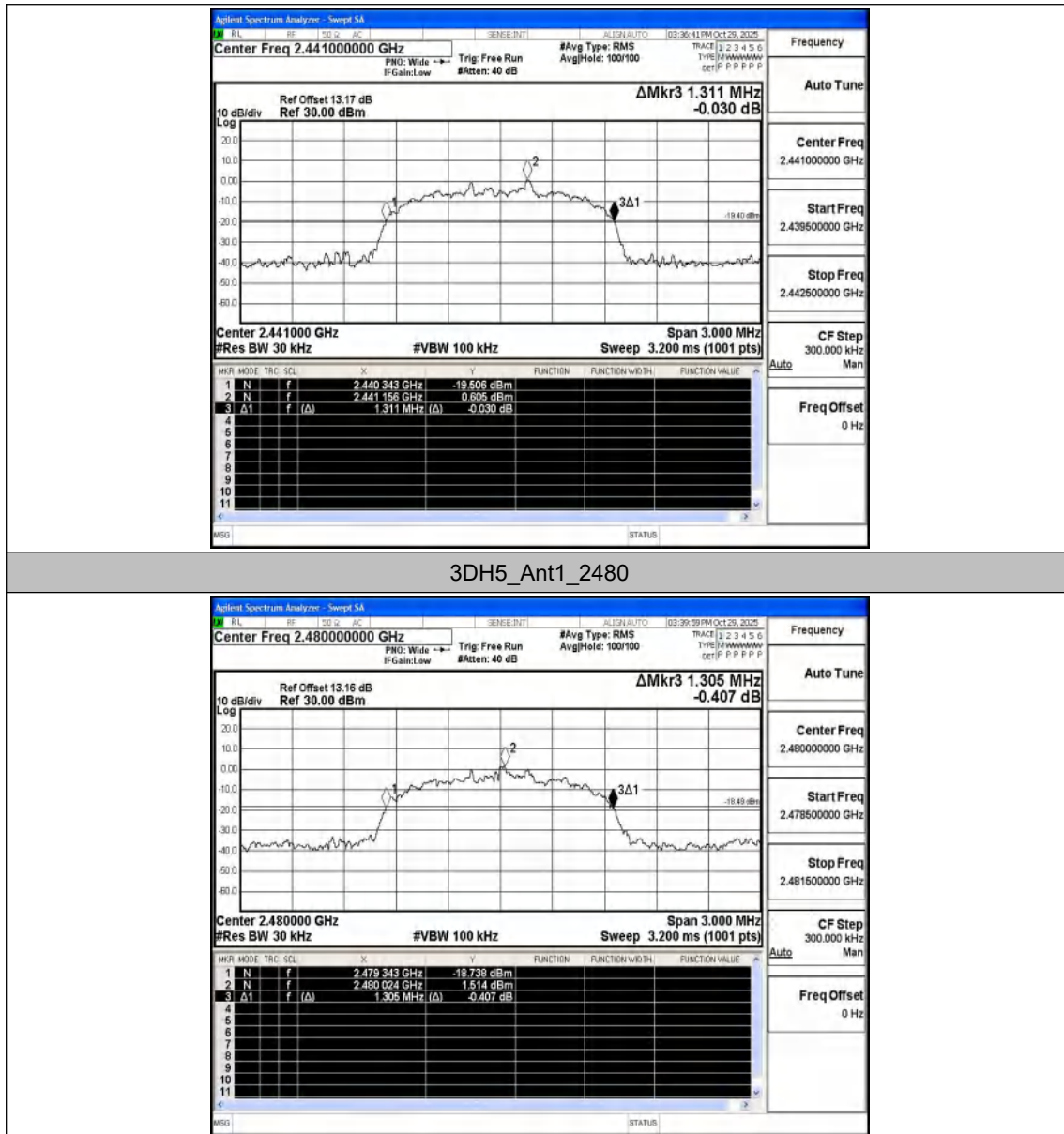
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



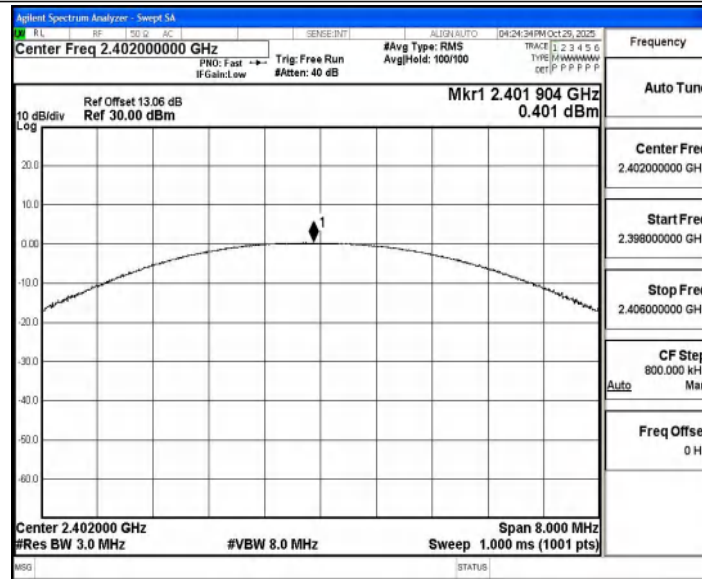
A.2 Maximum Peak Conducted Output Power

Test Result Peak

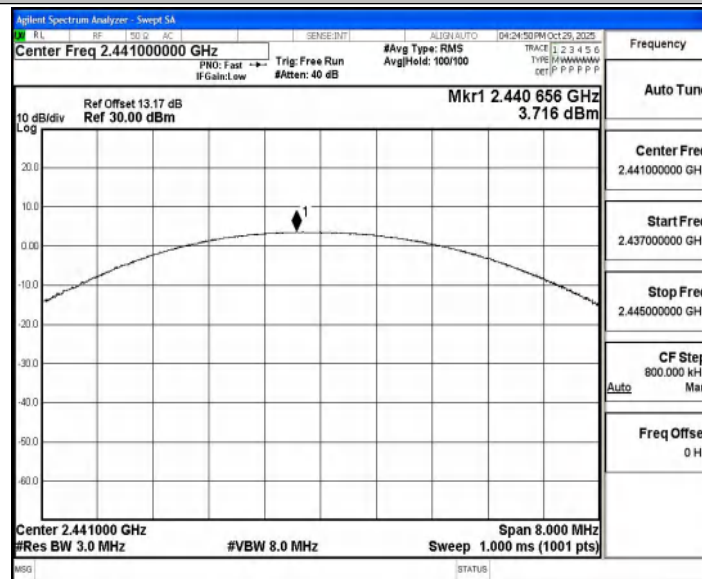
Test Mode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	0.40	≤30	PASS
		2441	3.72	≤30	PASS
		2480	4.21	≤30	PASS
2DH5	Ant1	2402	1.95	≤30	PASS
		2441	4.86	≤30	PASS
		2480	5.00	≤30	PASS
3DH5	Ant1	2402	2.27	≤30	PASS
		2441	5.04	≤30	PASS
		2480	5.12	≤30	PASS

Test Graphs

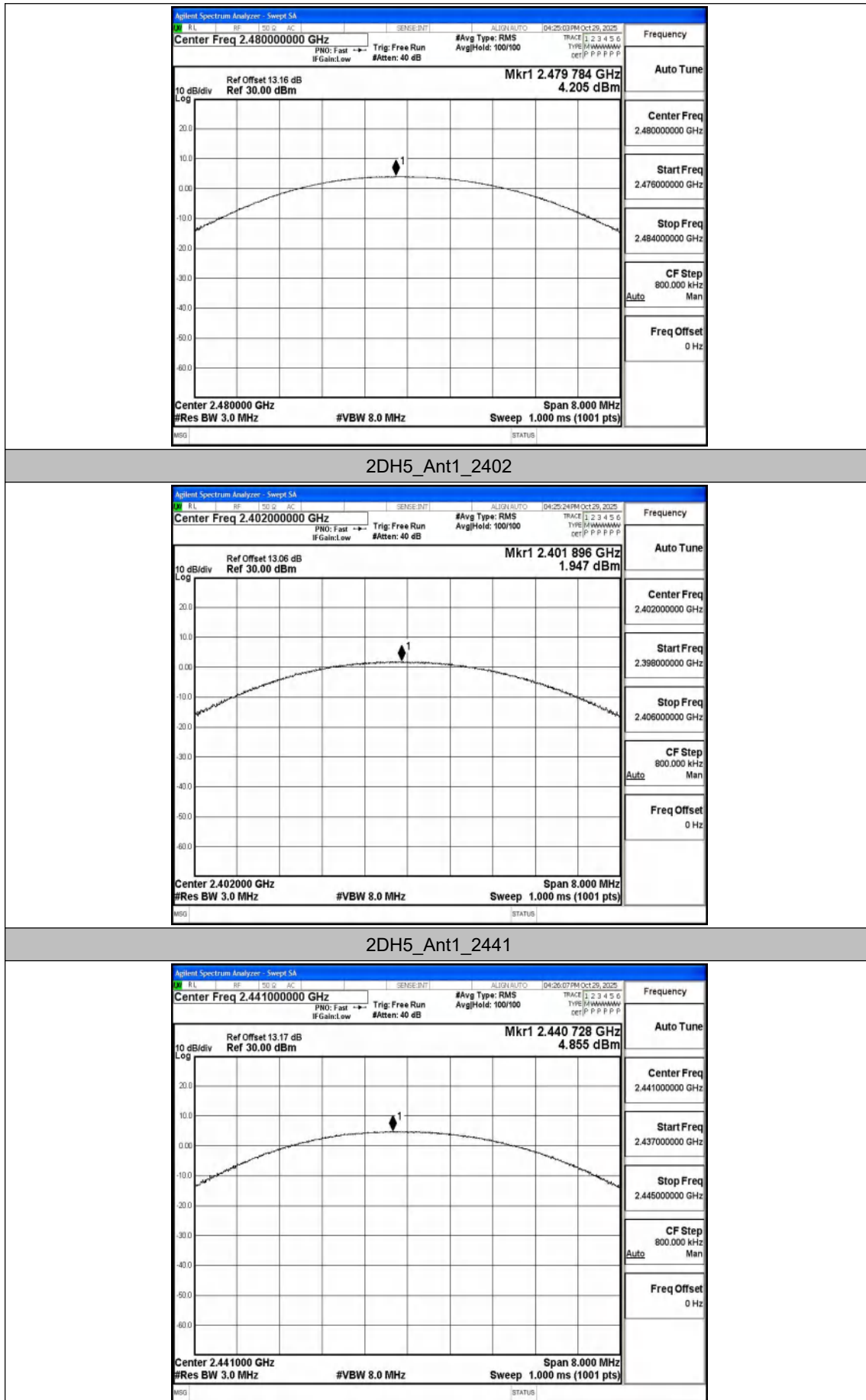
DH5_Ant1_2402



DH5_Ant1_2441



DH5_Ant1_2480

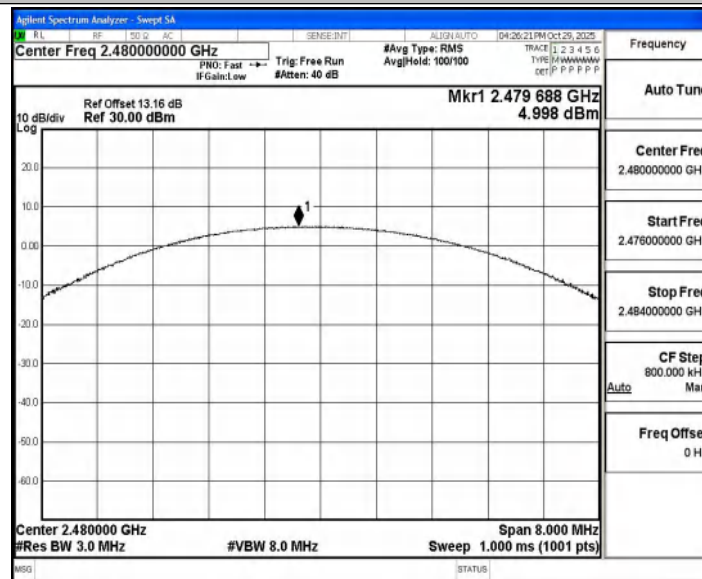


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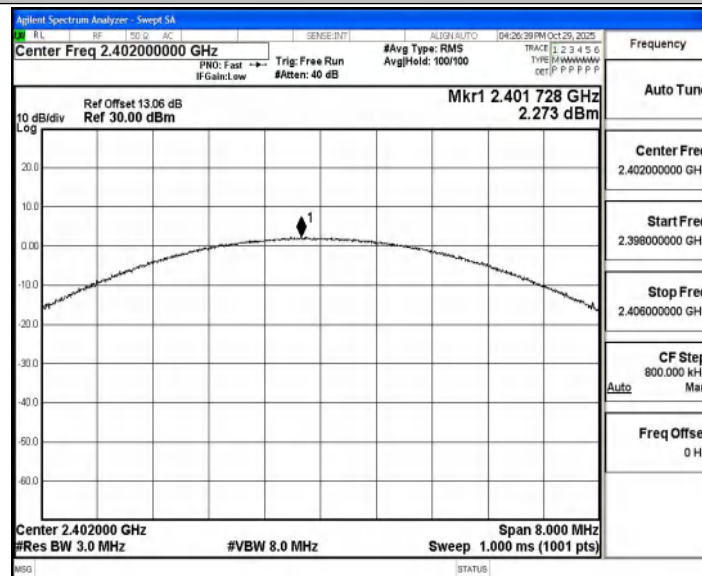
Add: No.44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China

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

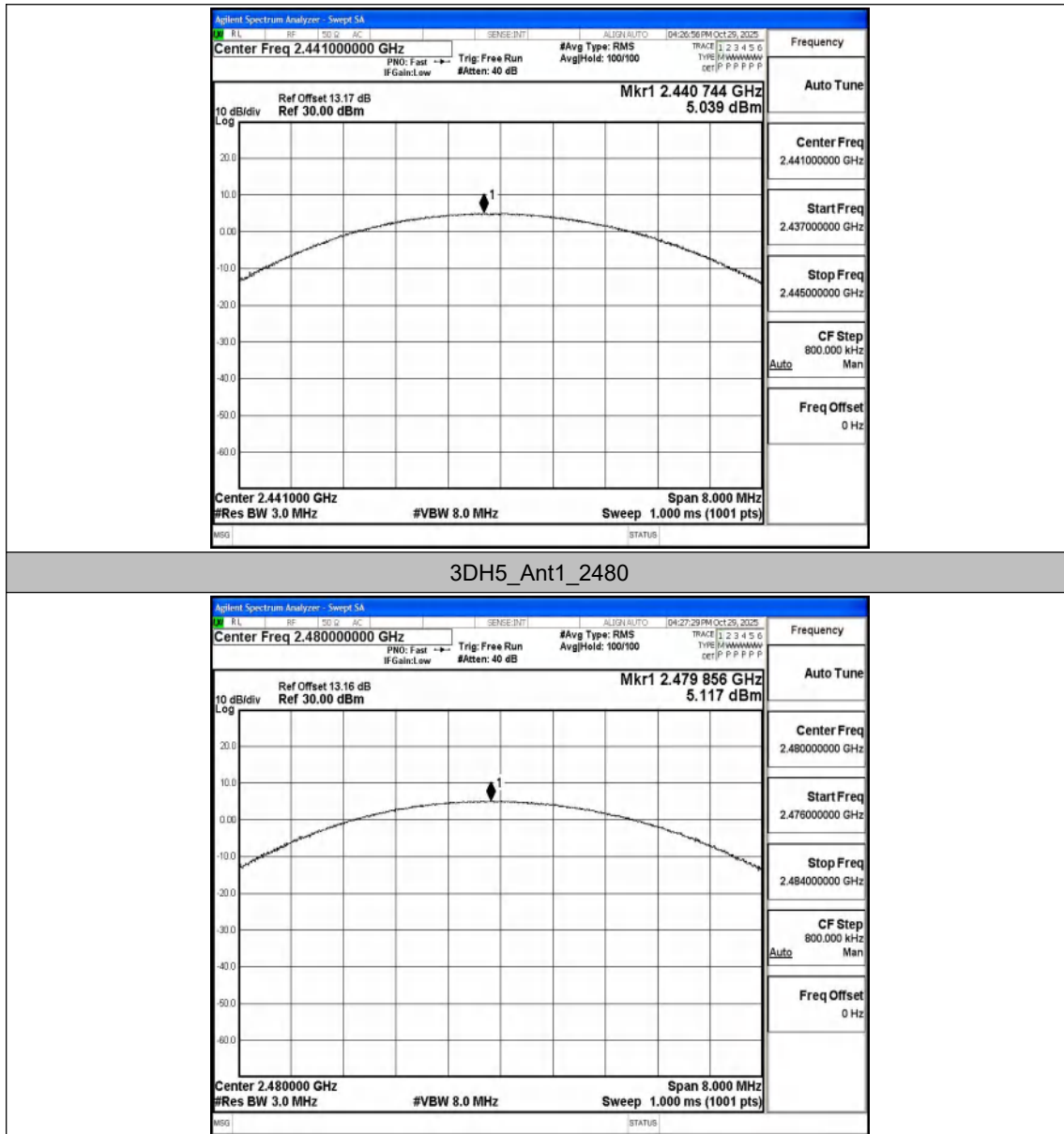
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



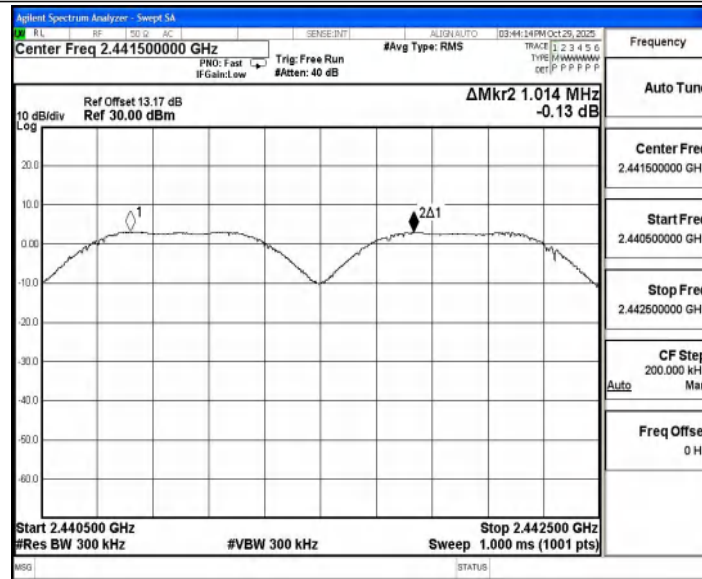
A.3 Carrier frequency separation

Test Result

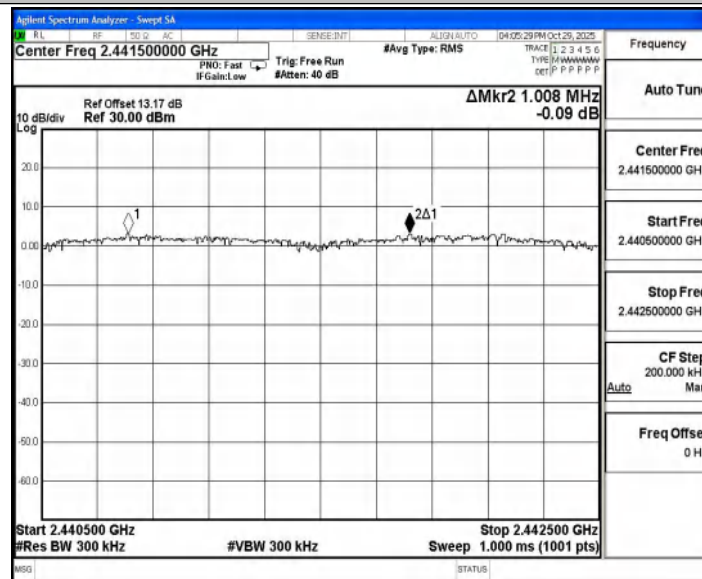
TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.014	≥0.990	PASS
2DH5	Ant1	Hop	1.008	≥0.880	PASS
3DH5	Ant1	Hop	1.328	≥1.311	PASS

Test Graphs

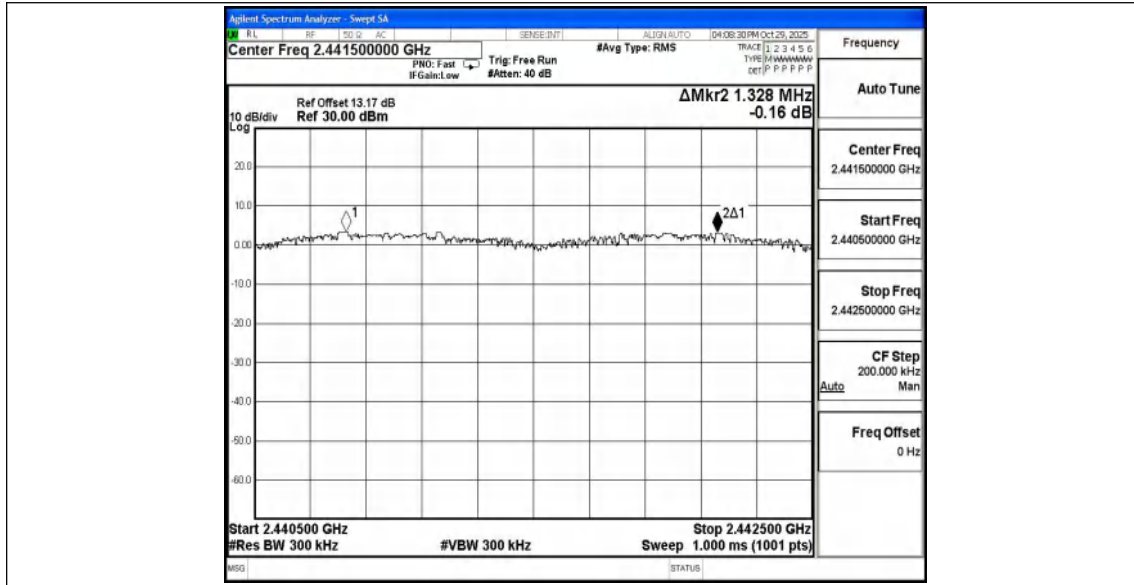
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop



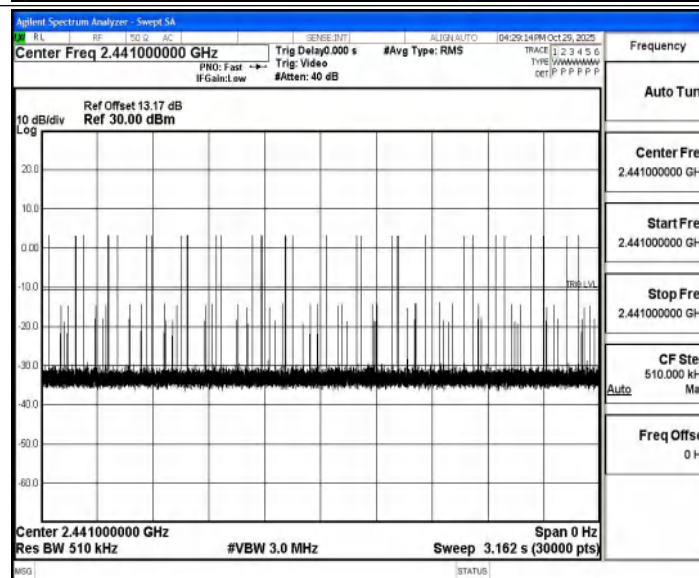
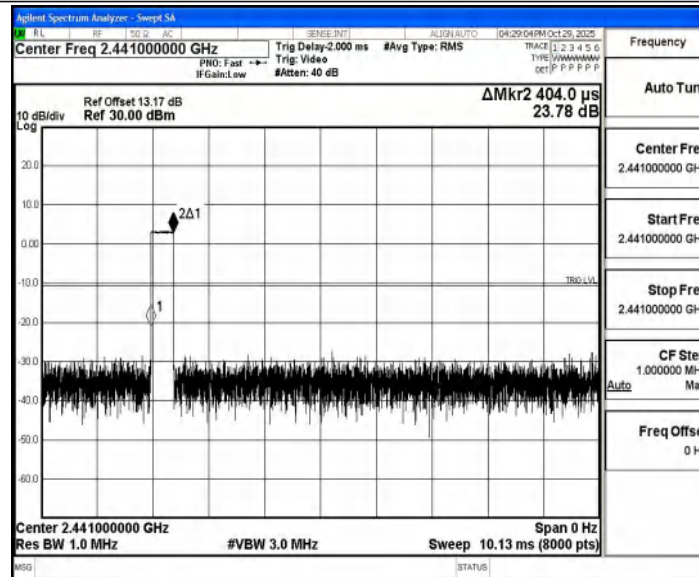
A.4 Dwell Time

Test Result

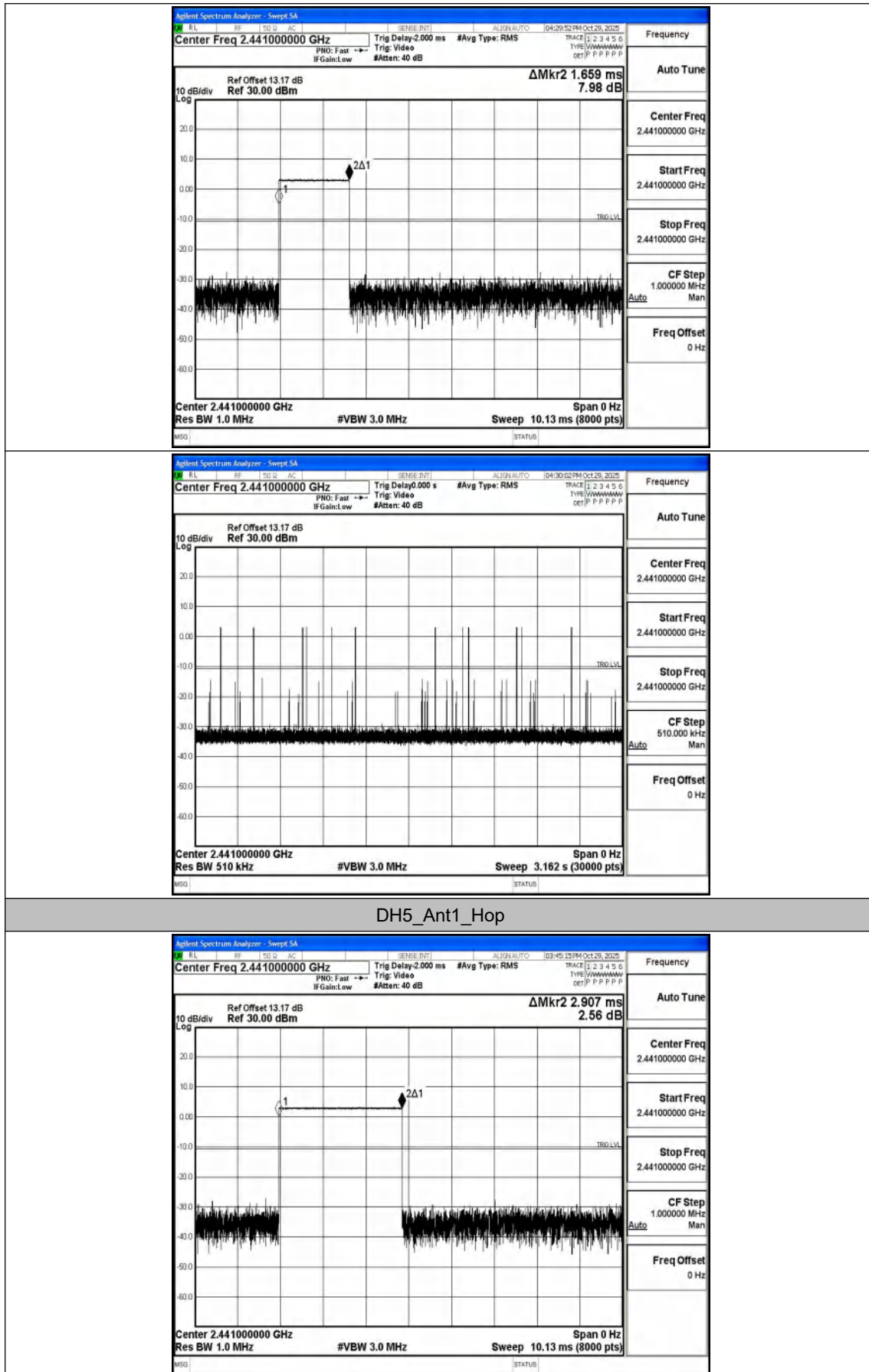
TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.404	330	0.133	≤0.4	PASS
DH3	Ant1	Hop	1.659	140	0.232	≤0.4	PASS
DH5	Ant1	Hop	2.907	110	0.32	≤0.4	PASS
2DH1	Ant1	Hop	0.396	330	0.131	≤0.4	PASS
2DH3	Ant1	Hop	1.649	180	0.297	≤0.4	PASS
2DH5	Ant1	Hop	2.897	70	0.203	≤0.4	PASS
3DH1	Ant1	Hop	0.395	320	0.126	≤0.4	PASS
3DH3	Ant1	Hop	1.644	180	0.296	≤0.4	PASS
3DH5	Ant1	Hop	2.896	130	0.376	≤0.4	PASS

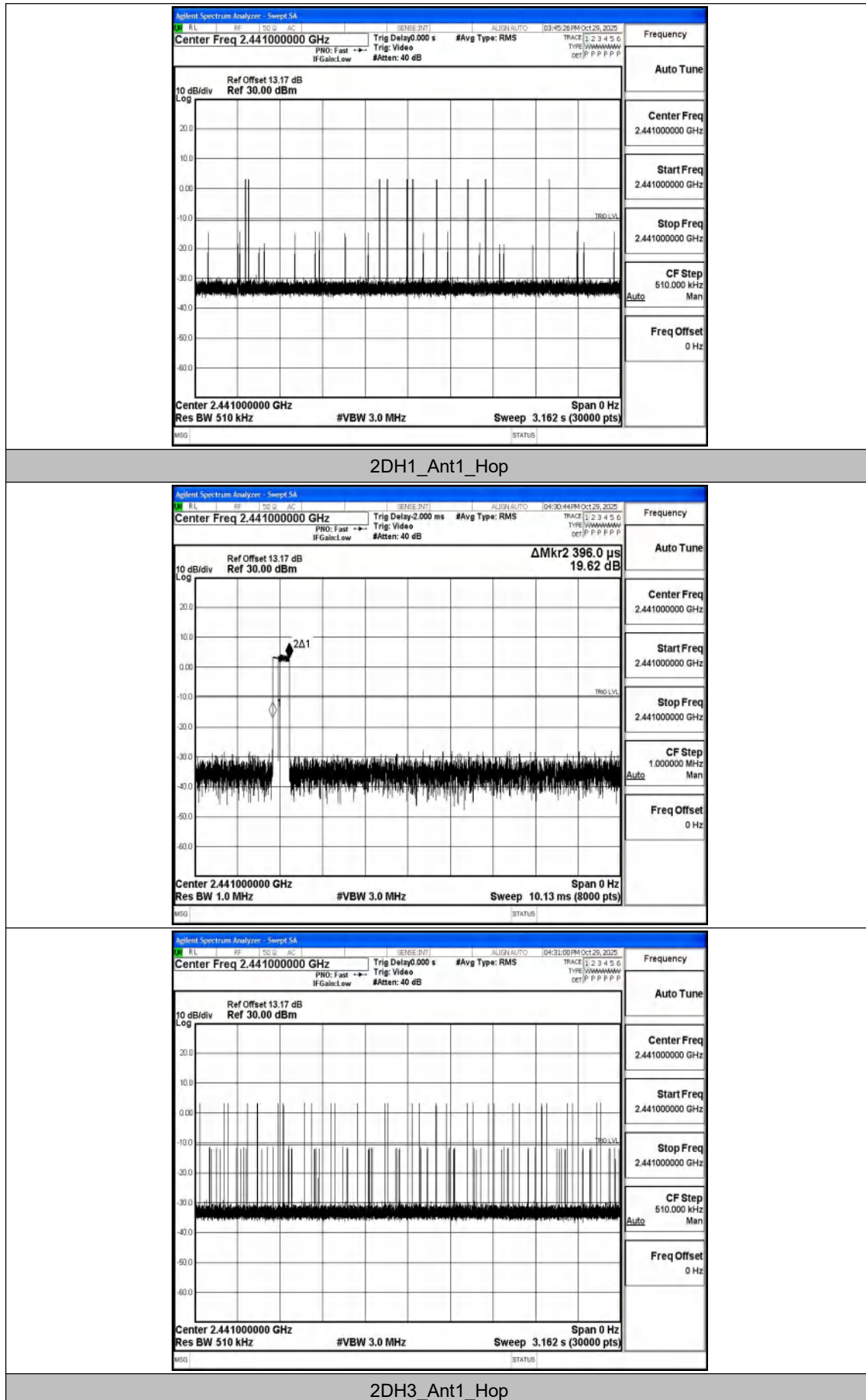
Test Graphs

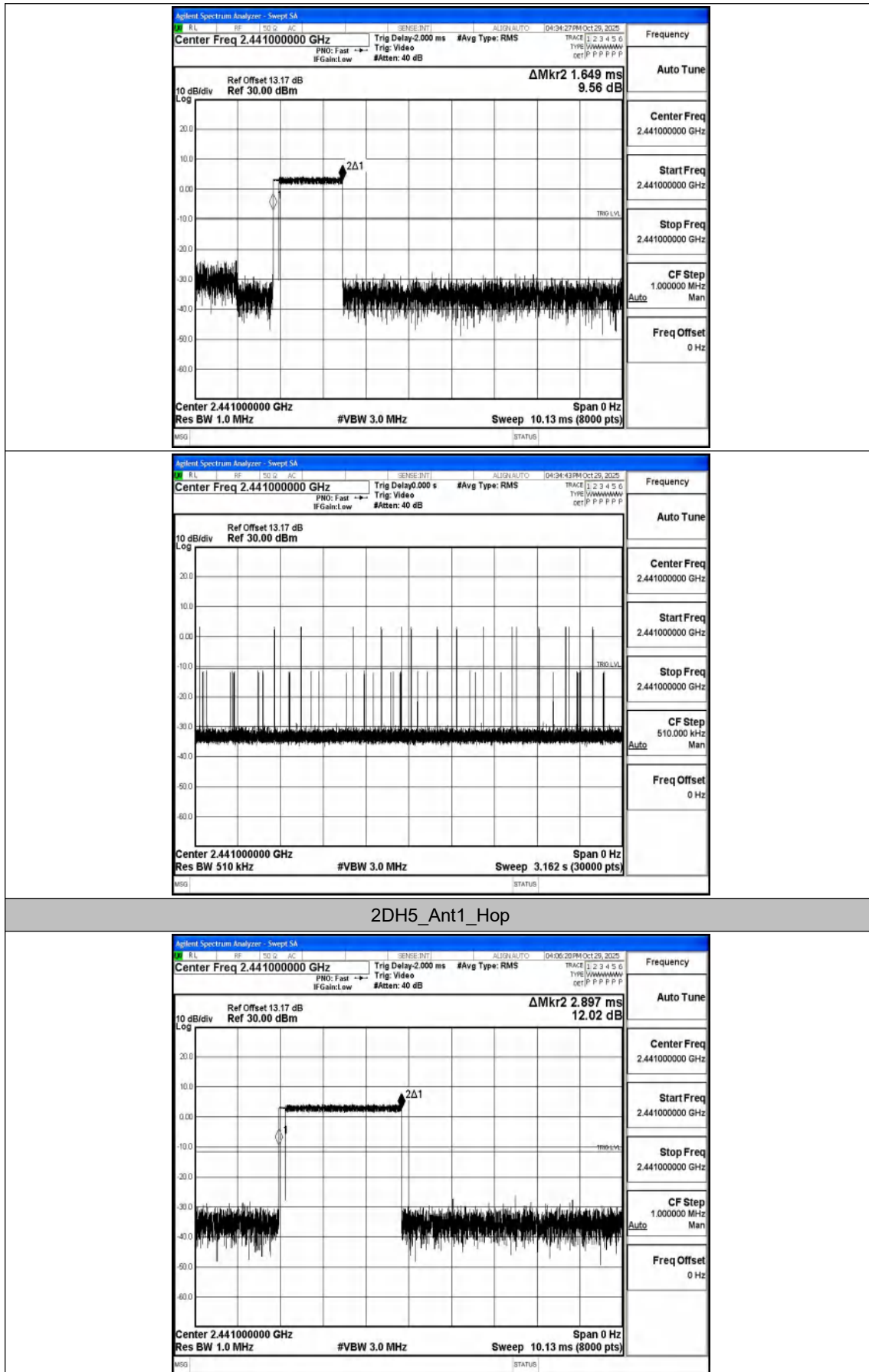
DH1_Ant1_Hop

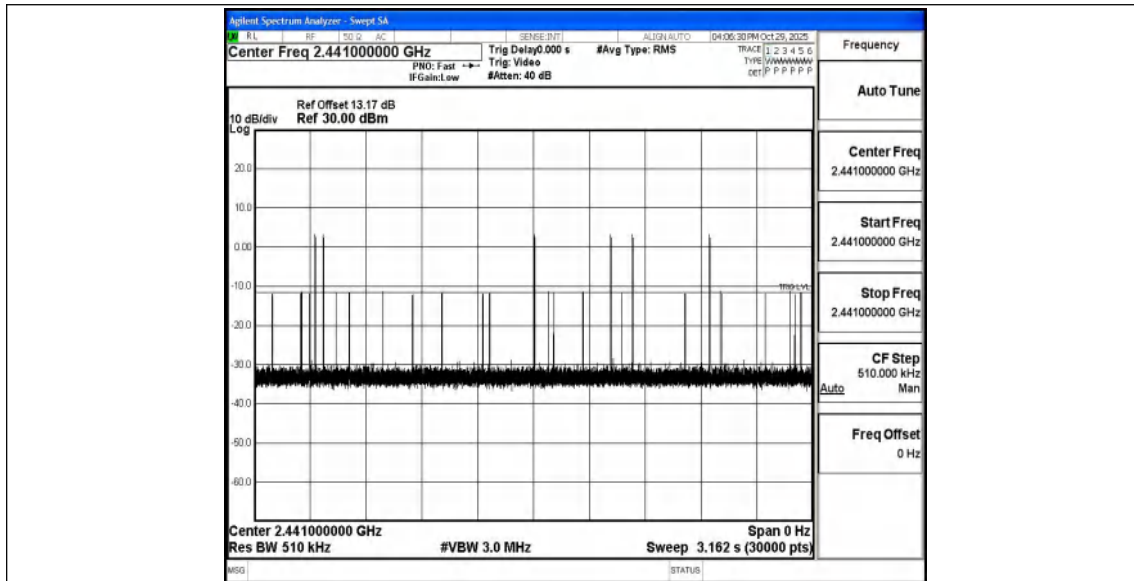


DH3_Ant1_Hop

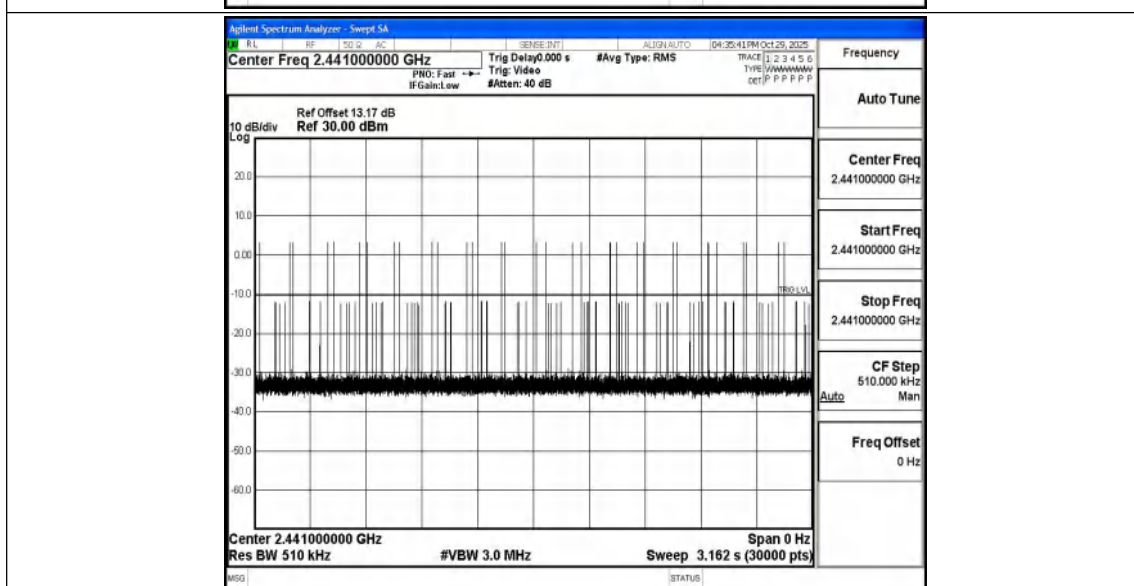
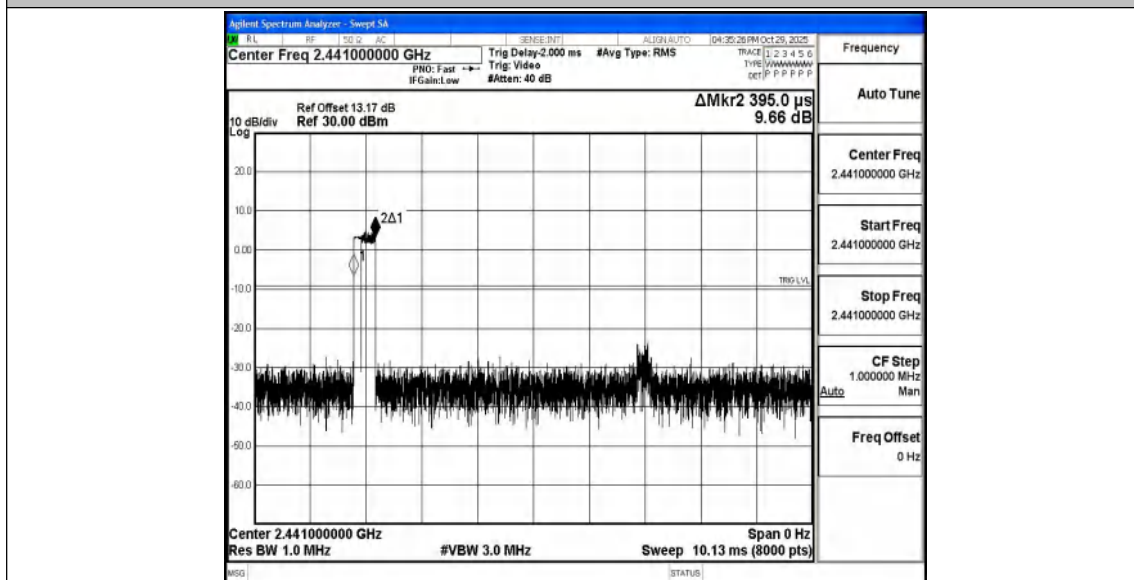




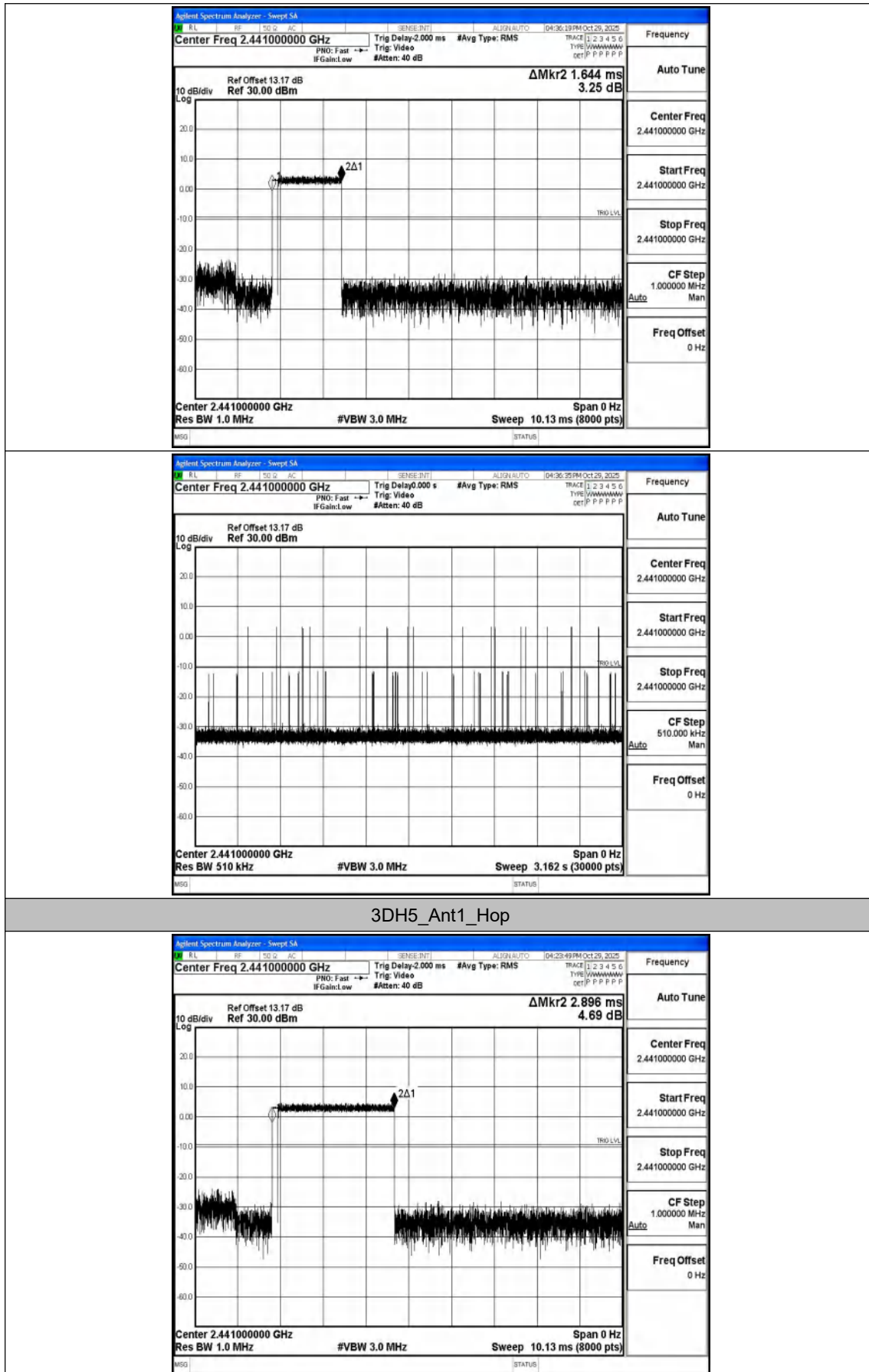


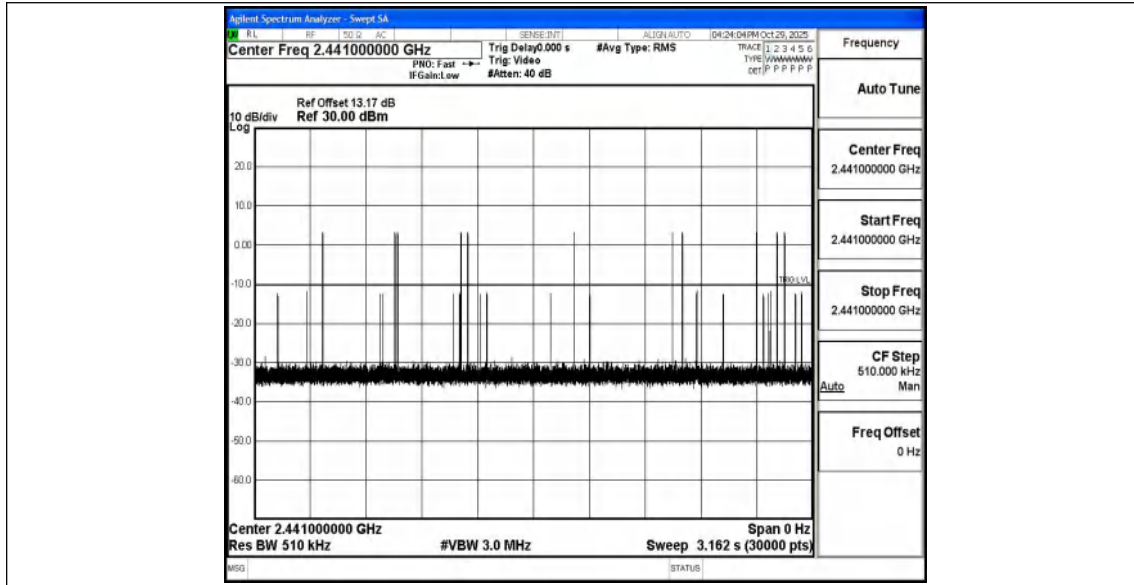


3DH1_Ant1_Hop



3DH3_Ant1_Hop





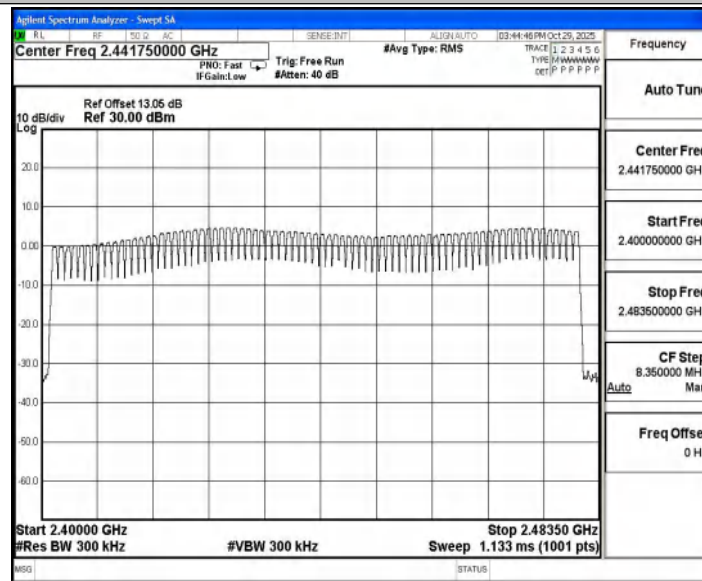
A.5 Number of hopping channels

Test Result

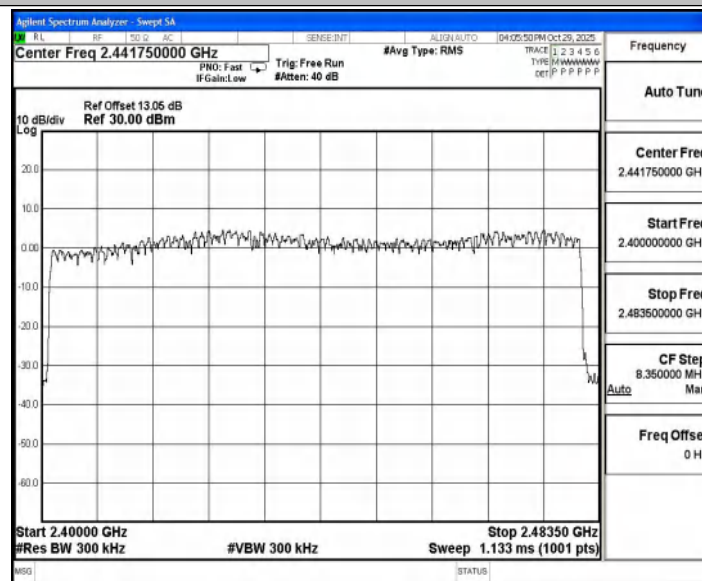
TestMode	Antenna	Freq(MHz)	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

Test Graphs

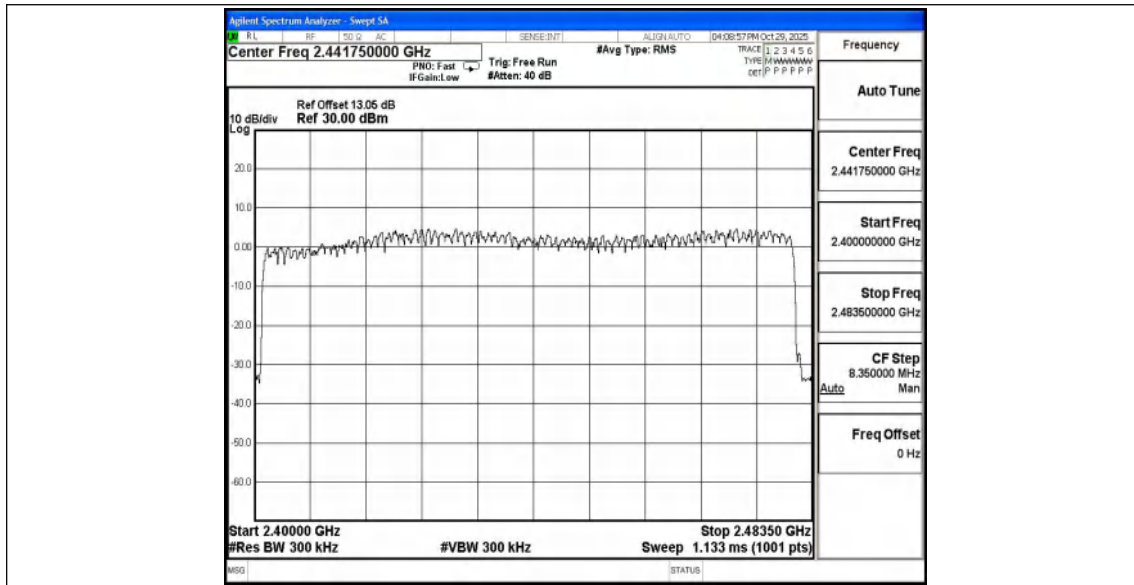
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop



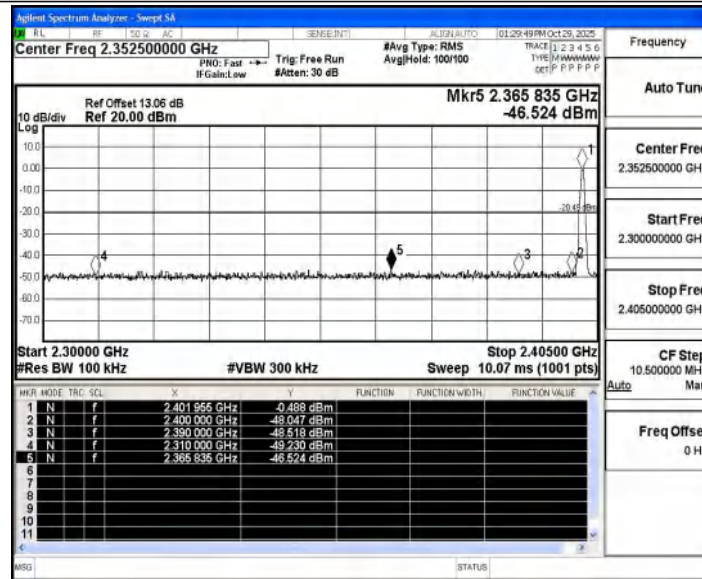
A.6 Band edge measurements

Test Result

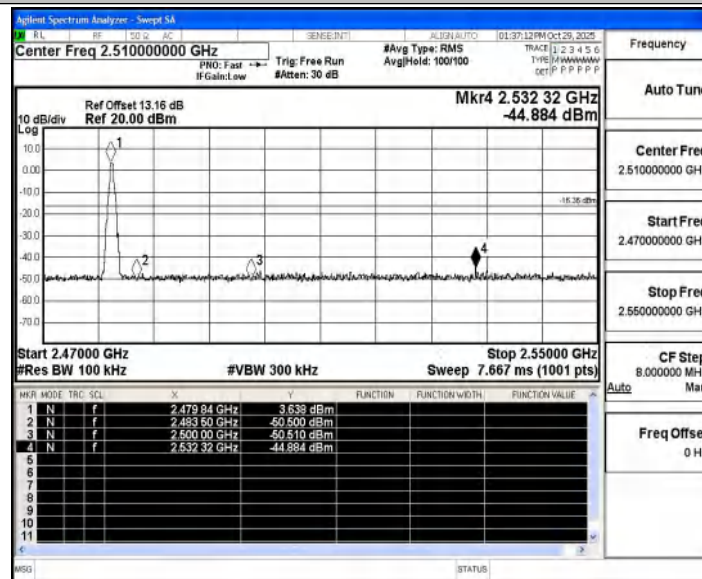
TestMode	Antenna	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-0.49	-46.52	≤-20.49	PASS
		High	2480	3.64	-44.88	≤-16.36	PASS
		Low	Hop_2402	-0.13	-45.14	≤-20.13	PASS
		High	Hop_2480	4.32	-45.06	≤-15.68	PASS
2DH5	Ant1	Low	2402	-1.35	-46.1	≤-21.35	PASS
		High	2480	3.23	-45.95	≤-16.77	PASS
		Low	Hop_2402	-0.90	-45.4	≤-20.9	PASS
		High	Hop_2480	4.40	-45.11	≤-15.6	PASS
3DH5	Ant1	Low	2402	-2.27	-45.85	≤-22.27	PASS
		High	2480	1.33	-46.76	≤-18.67	PASS
		Low	Hop_2402	-0.12	-45.46	≤-20.12	PASS
		High	Hop_2480	4.19	-37.47	≤-15.81	PASS

Test Graphs

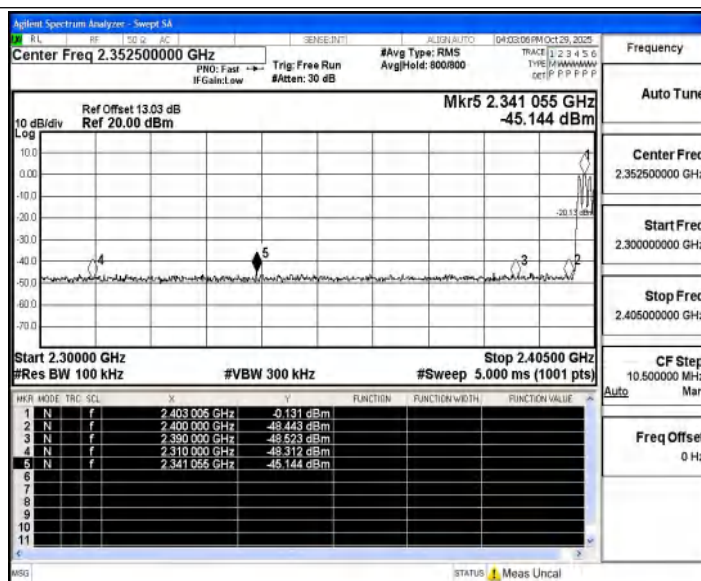
DH5_Ant1_Low_2402



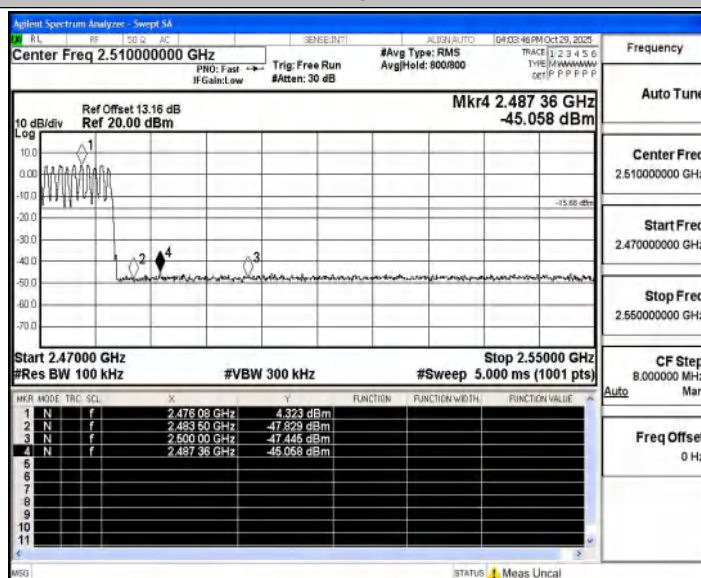
DH5_Ant1_High_2480



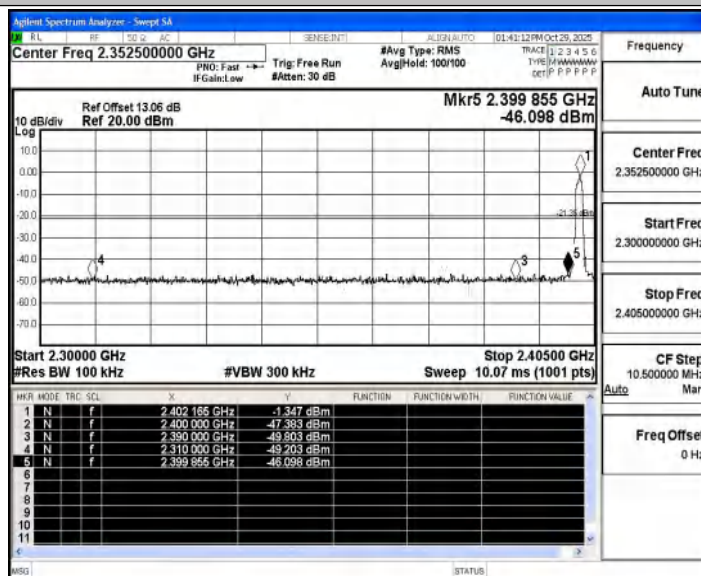
DH5_Ant1_Low_Hop_2402



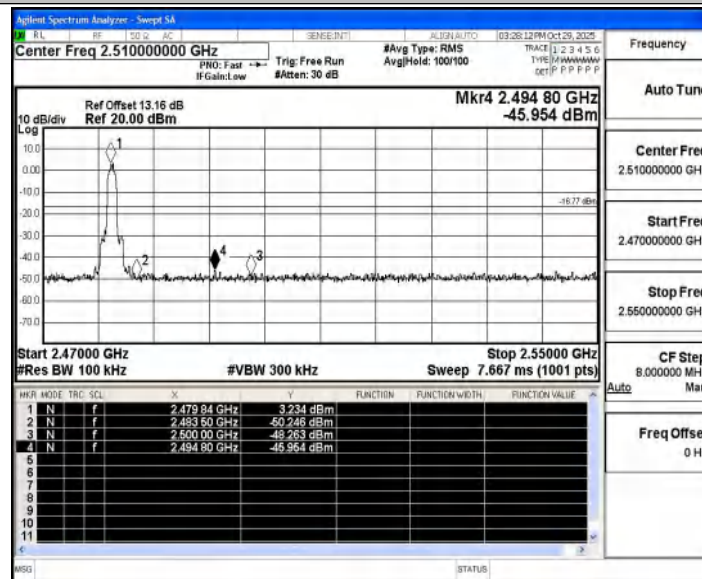
DH5 Ant1 High Hop 2480



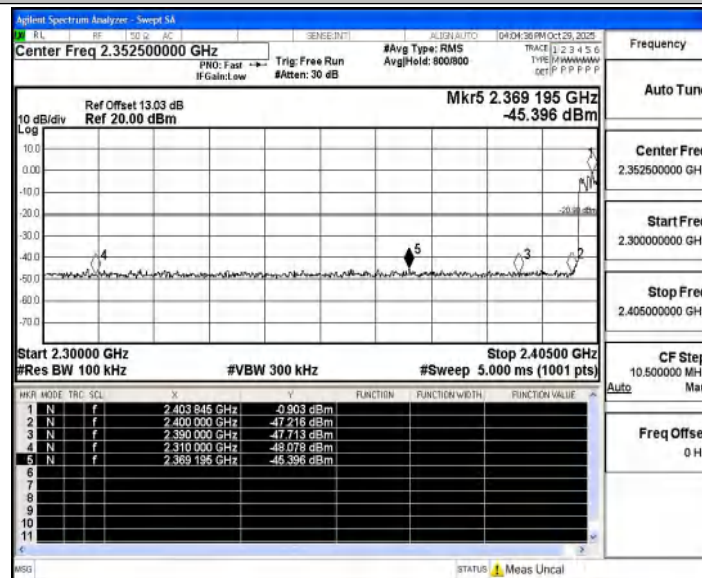
2DH5 Ant1 Low 2402



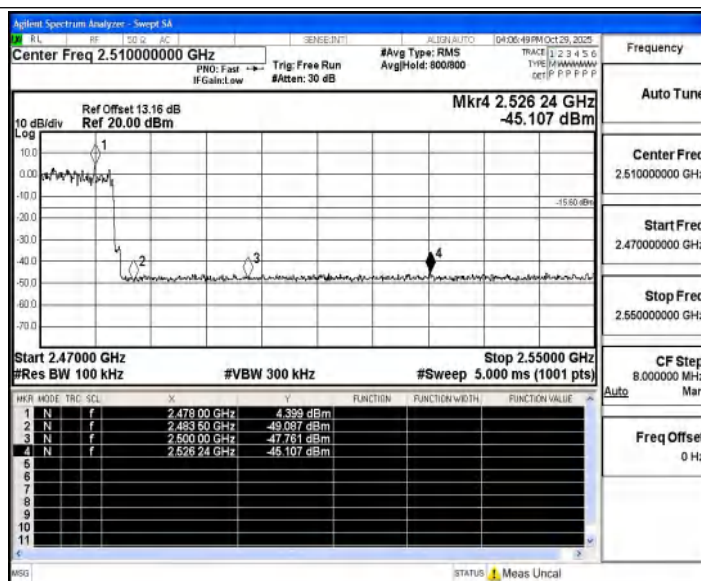
2DH5_Ant1_High_2480



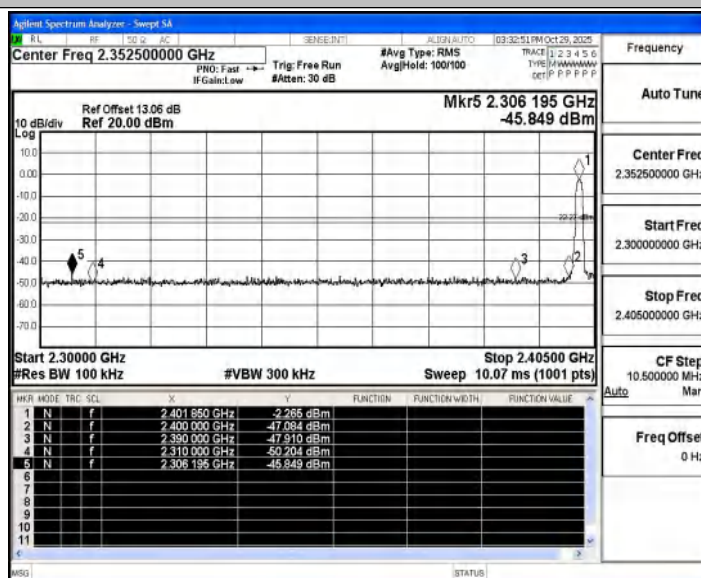
2DH5_Ant1_Low_Hop_2402



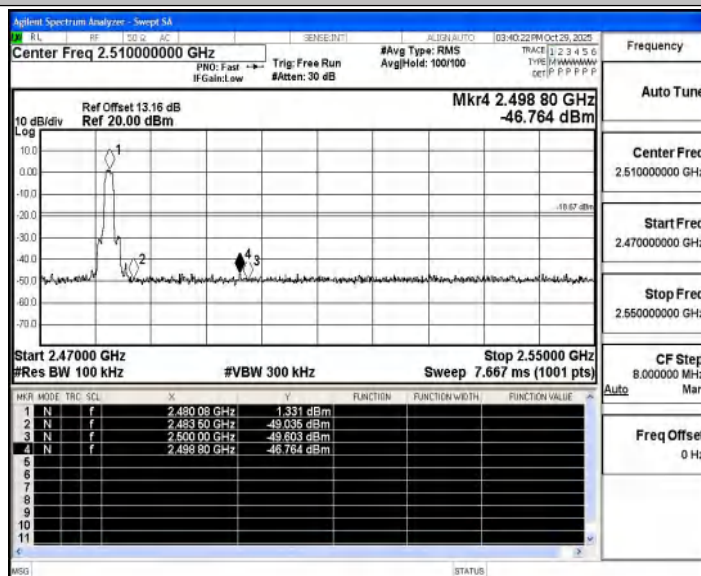
2DH5_Ant1_High_Hop_2480



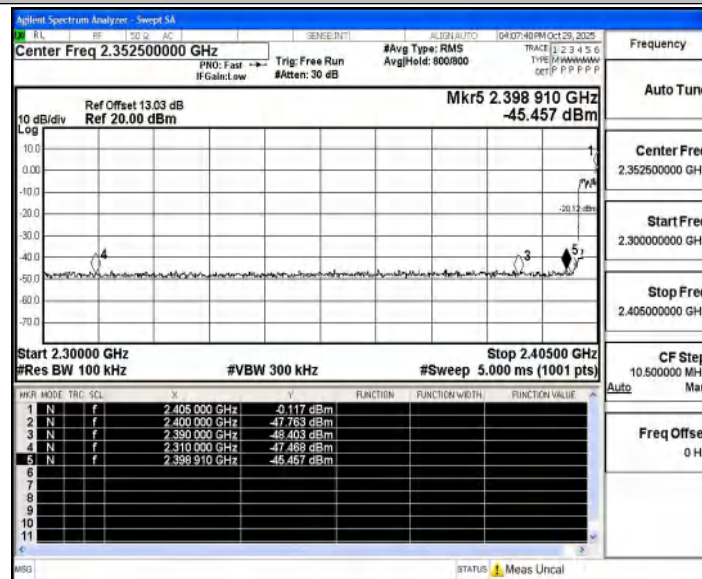
3DH5 Ant1 Low 2402



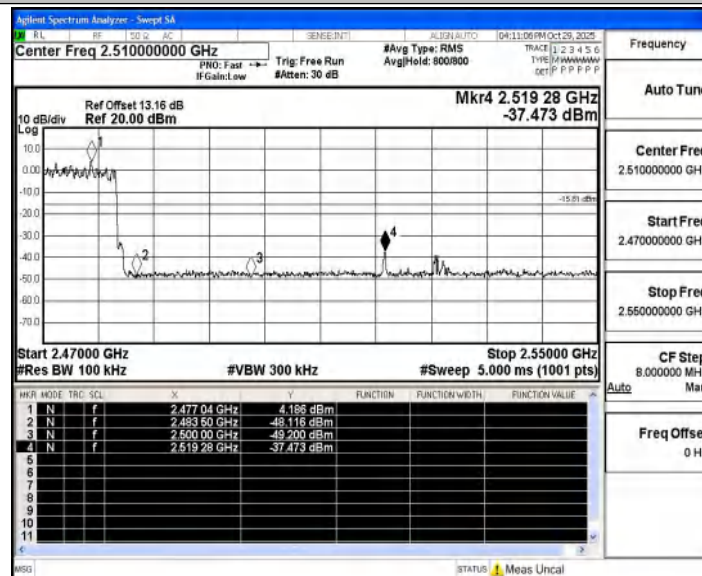
3DH5 Ant1 High 2480



3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480



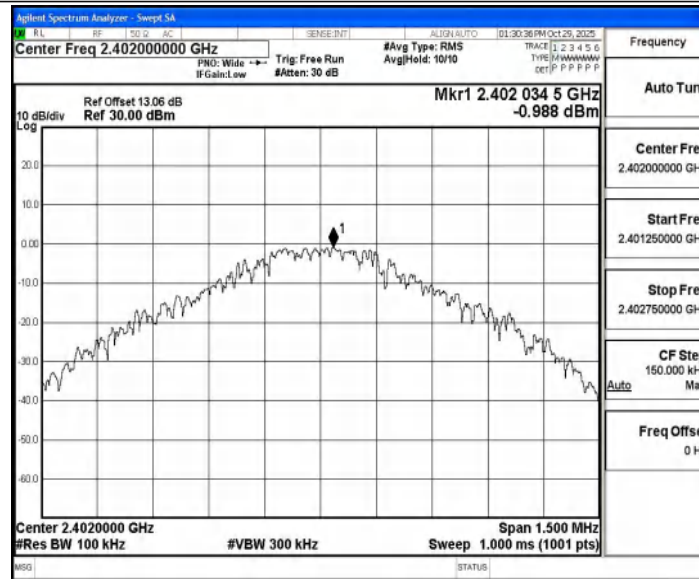
A.7 Conducted Spurious Emission

Test Result

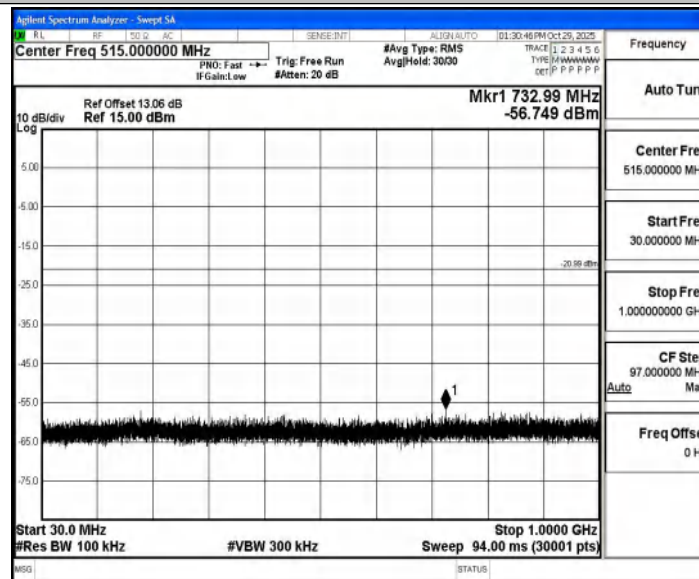
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	-0.99	-0.99	---	PASS
			30~1000	-0.99	-56.75	≤-20.99	PASS
			1000~26500	-0.99	-44.01	≤-20.99	PASS
		2441	Reference	2.84	2.84	---	PASS
			30~1000	2.84	-57.55	≤-17.16	PASS
			1000~26500	2.84	-44.27	≤-17.16	PASS
		2480	Reference	3.67	3.67	---	PASS
			30~1000	3.67	-56.69	≤-16.33	PASS
			1000~26500	3.67	-44.44	≤-16.33	PASS
2DH5	Ant1	2402	Reference	-3.42	-3.42	---	PASS
			30~1000	-3.42	-49.46	≤-23.42	PASS
			1000~26500	-3.42	-44.03	≤-23.42	PASS
		2441	Reference	2.43	2.43	---	PASS
			30~1000	2.43	-56.87	≤-17.57	PASS
			1000~26500	2.43	-43.7	≤-17.57	PASS
		2480	Reference	0.51	0.51	---	PASS
			30~1000	0.51	-56.54	≤-19.49	PASS
			1000~26500	0.51	-43.88	≤-19.49	PASS
3DH5	Ant1	2402	Reference	-2.95	-2.95	---	PASS
			30~1000	-2.95	-56.67	≤-22.95	PASS
			1000~26500	-2.95	-44.27	≤-22.95	PASS
		2441	Reference	1.50	1.50	---	PASS
			30~1000	1.50	-56.94	≤-18.5	PASS
			1000~26500	1.50	-44.82	≤-18.5	PASS
		2480	Reference	2.79	2.79	---	PASS
			30~1000	2.79	-55.96	≤-17.21	PASS
			1000~26500	2.79	-44.16	≤-17.21	PASS

Test Graphs

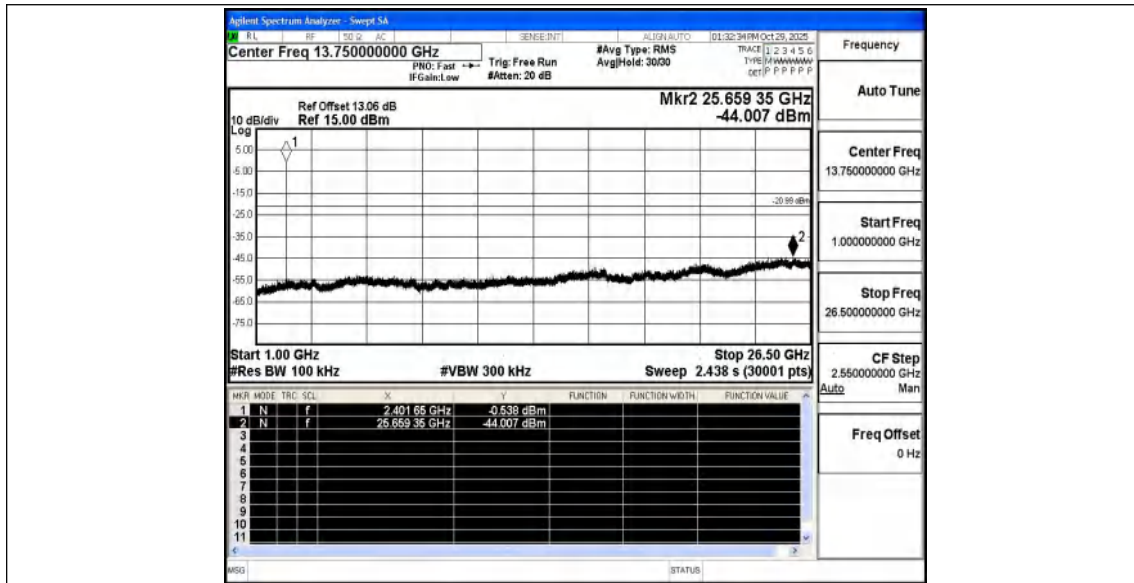
DH5_Ant1_2402_0~Reference



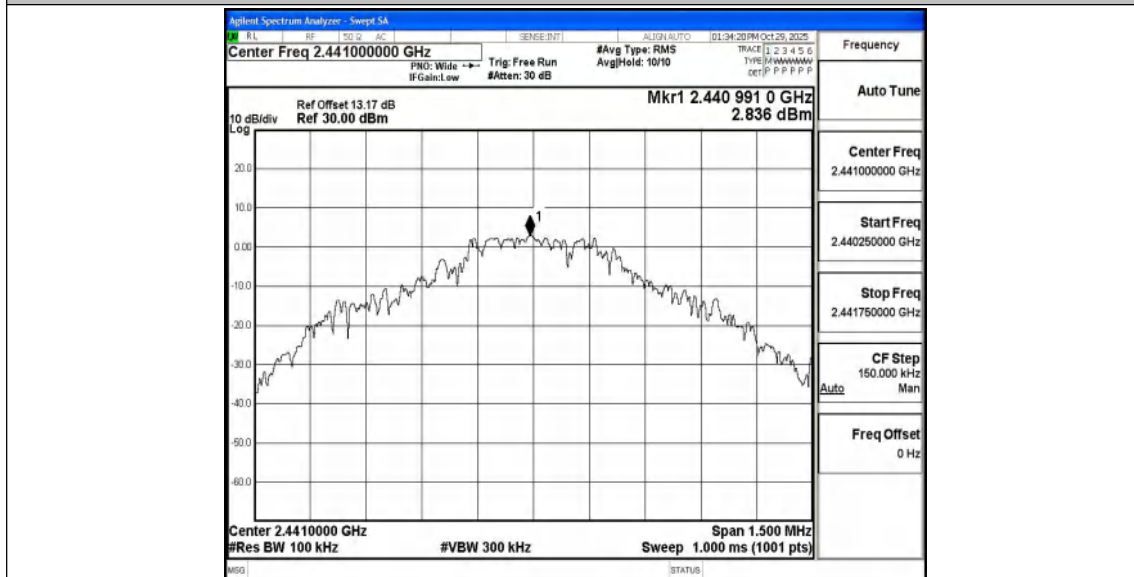
DH5_Ant1_2402_30~1000



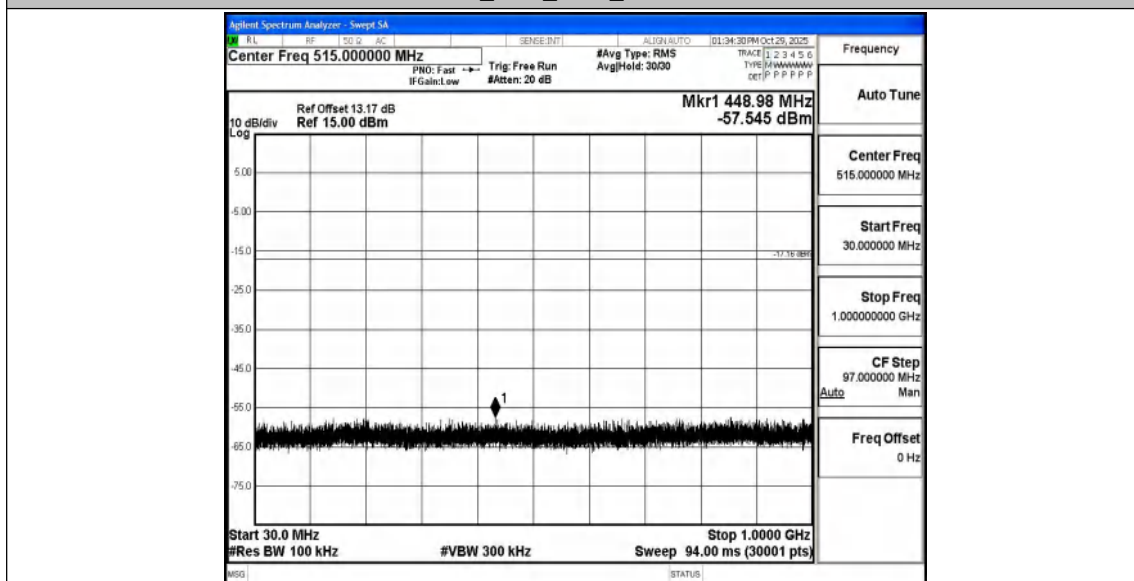
DH5_Ant1_2402_1000~26500



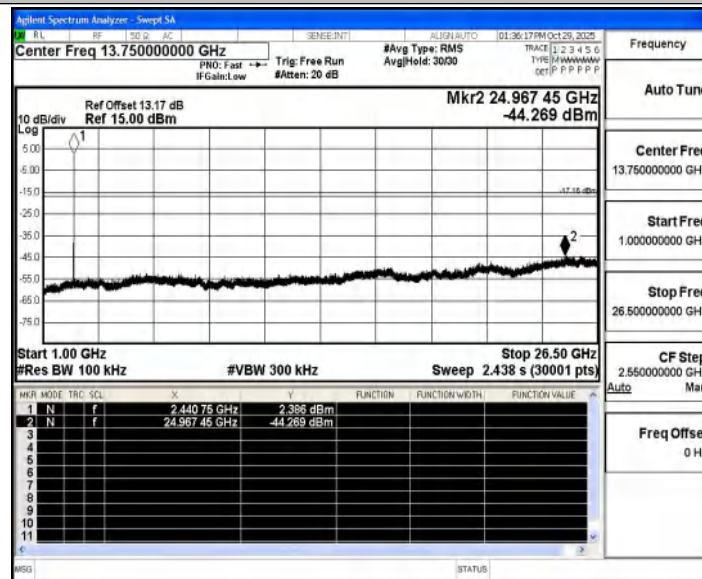
DH5_Ant1_2441_0~Reference



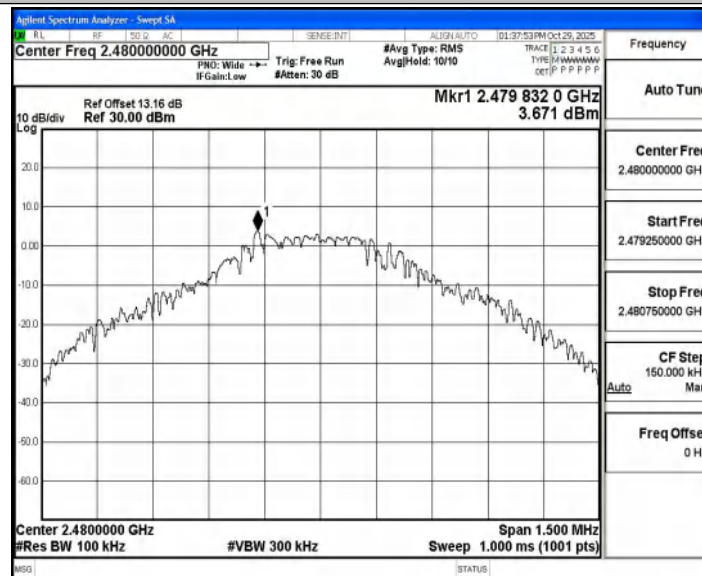
DH5_Ant1_2441_30~1000



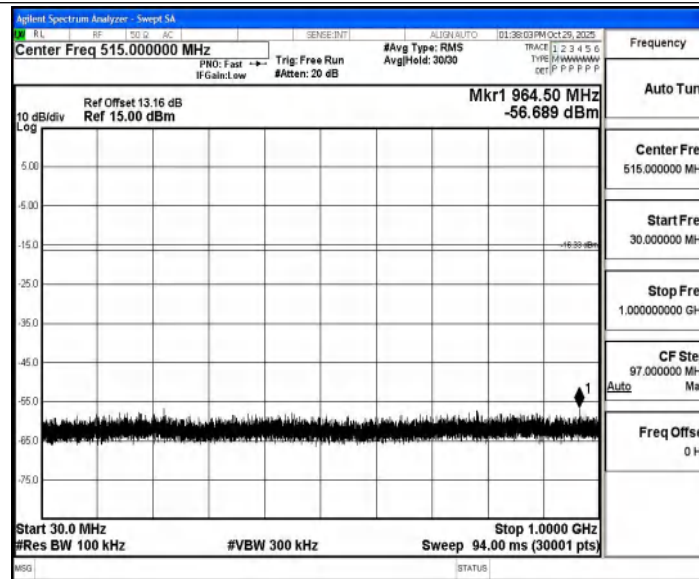
DH5_Ant1_2441_1000~26500



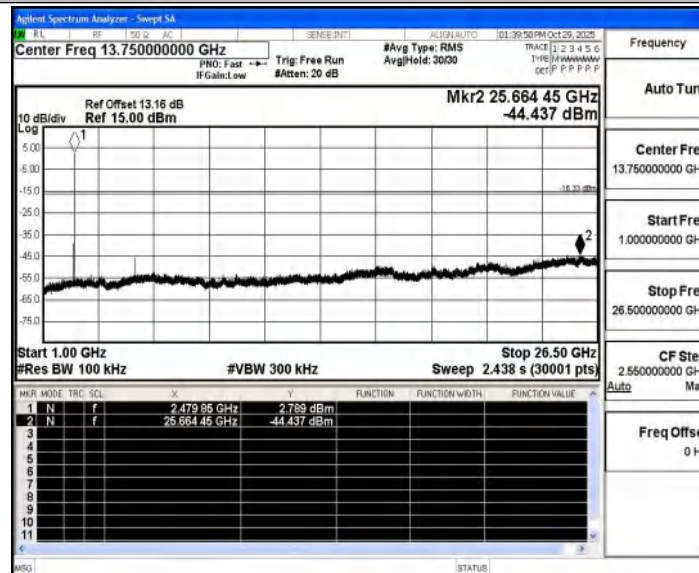
DH5_Ant1_2480_0~Reference



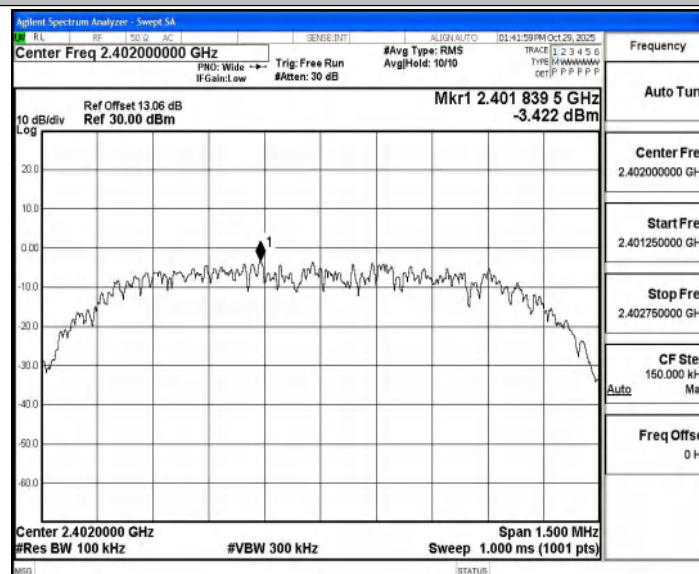
DH5_Ant1_2480_30~1000



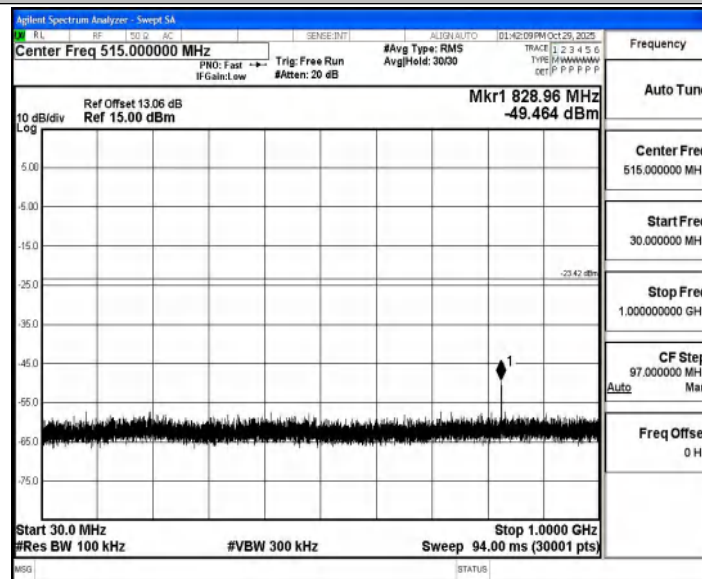
DH5_Ant1_2480_1000~26500



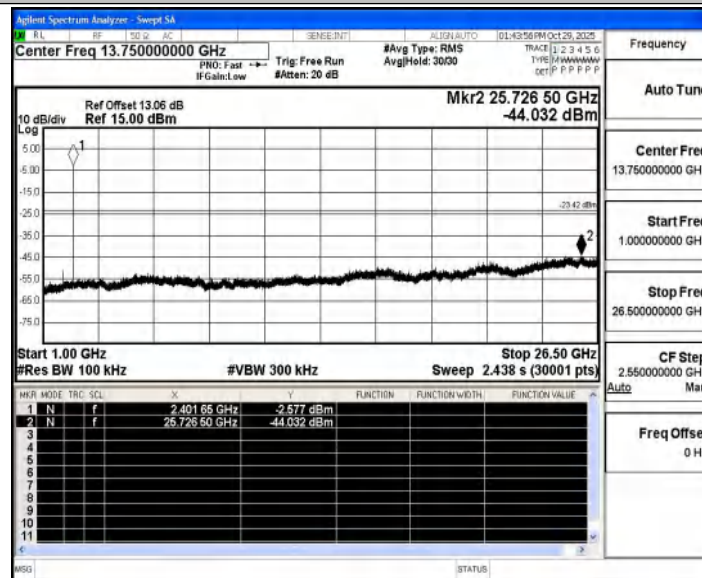
2DH5_Ant1_2402_0~Reference



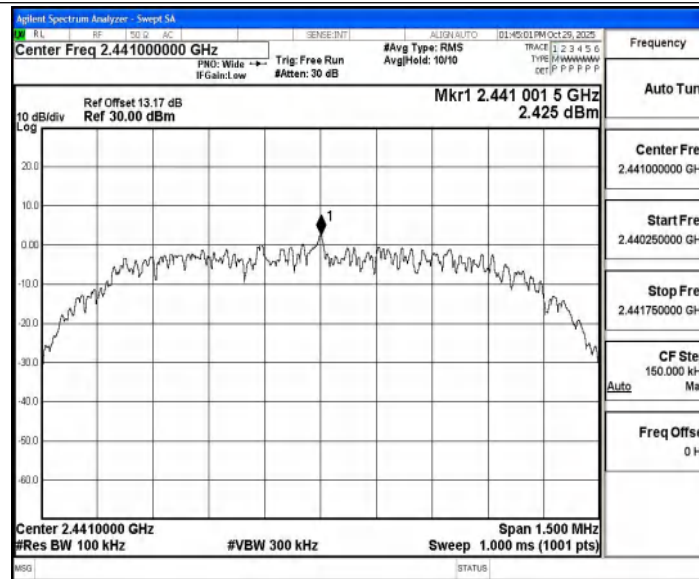
2DH5_Ant1_2402_30~1000



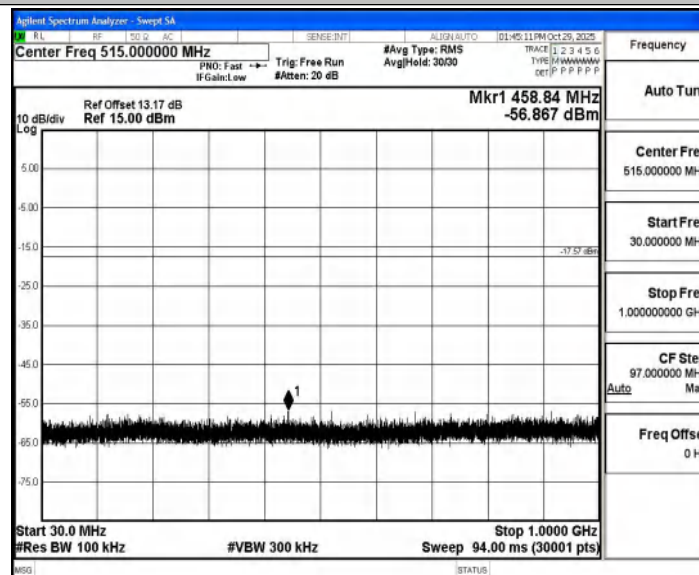
2DH5_Ant1_2402_1000~26500



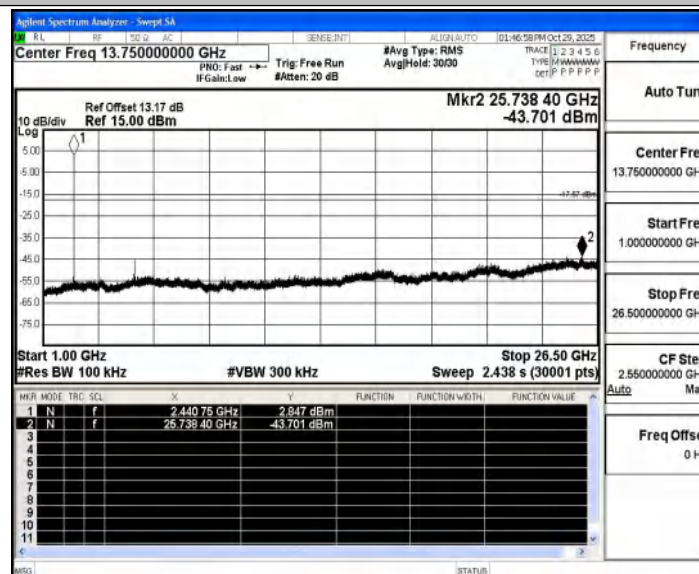
2DH5_Ant1_2441_0~Reference



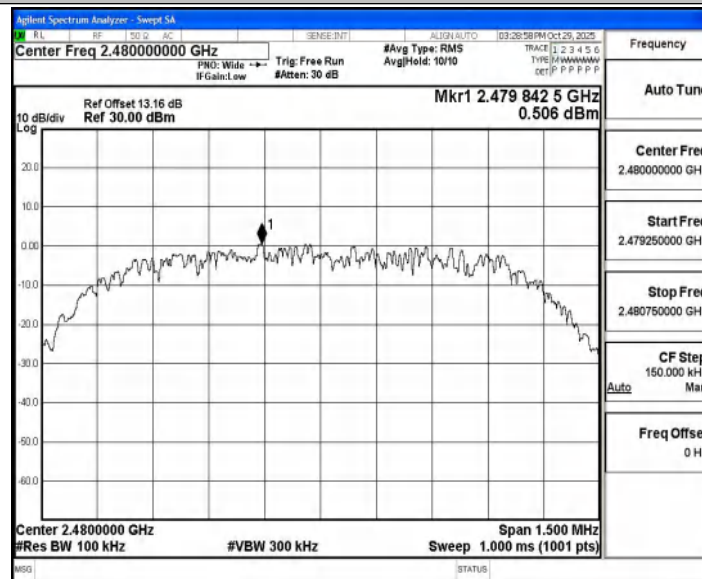
2DH5_Ant1_2441_30~1000



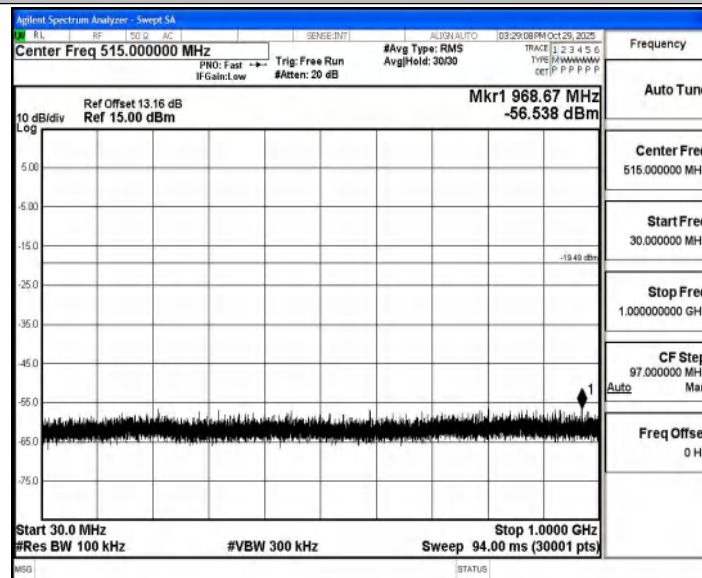
2DH5_Ant1_2441_1000~26500



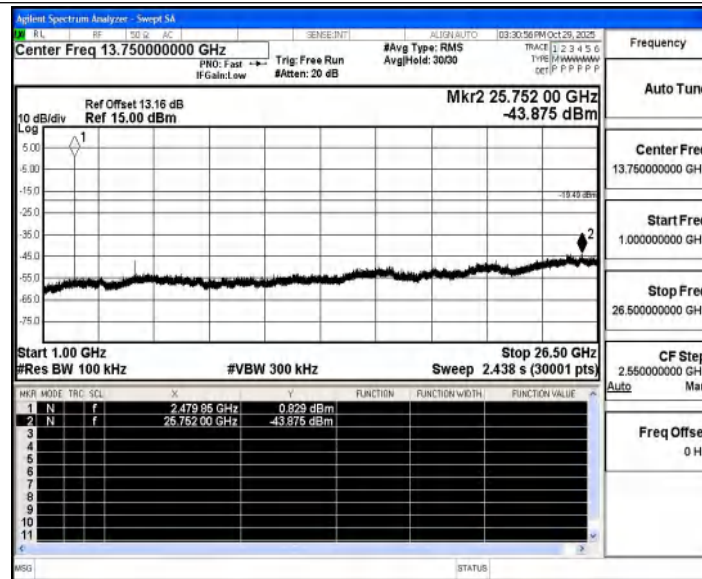
2DH5_Ant1_2480_0~Reference



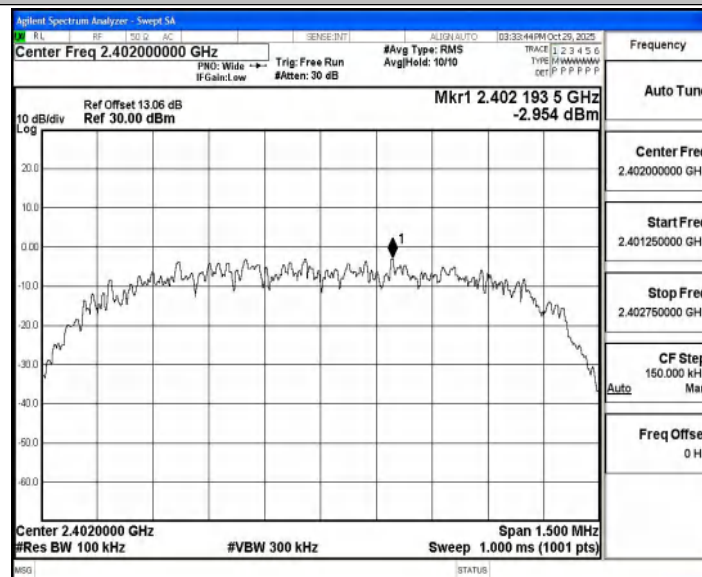
2DH5_Ant1_2480_30~1000



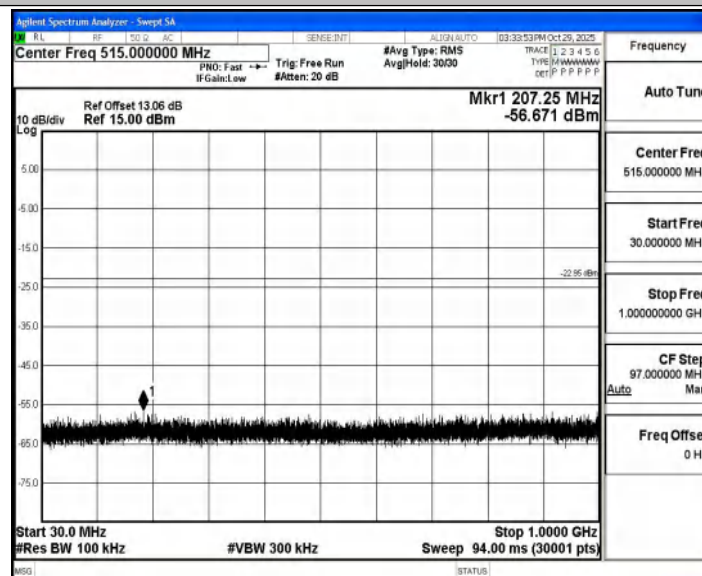
2DH5_Ant1_2480_1000~26500



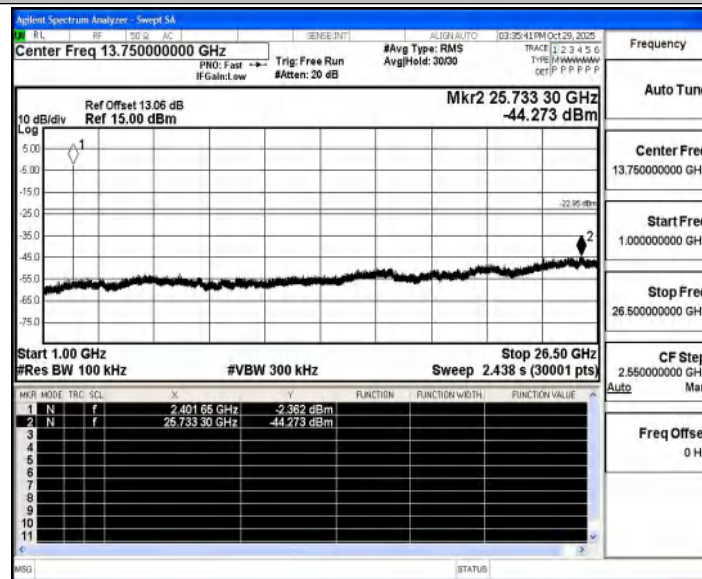
3DH5_Ant1_2402_0~Reference



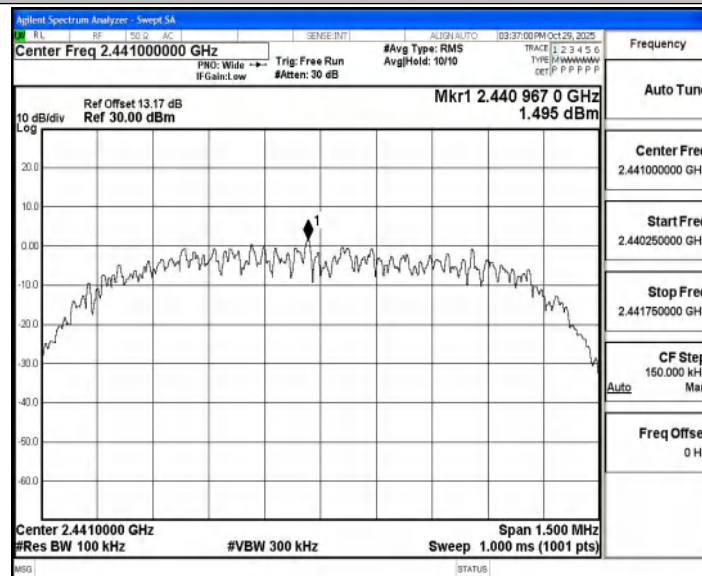
3DH5_Ant1_2402_30~1000



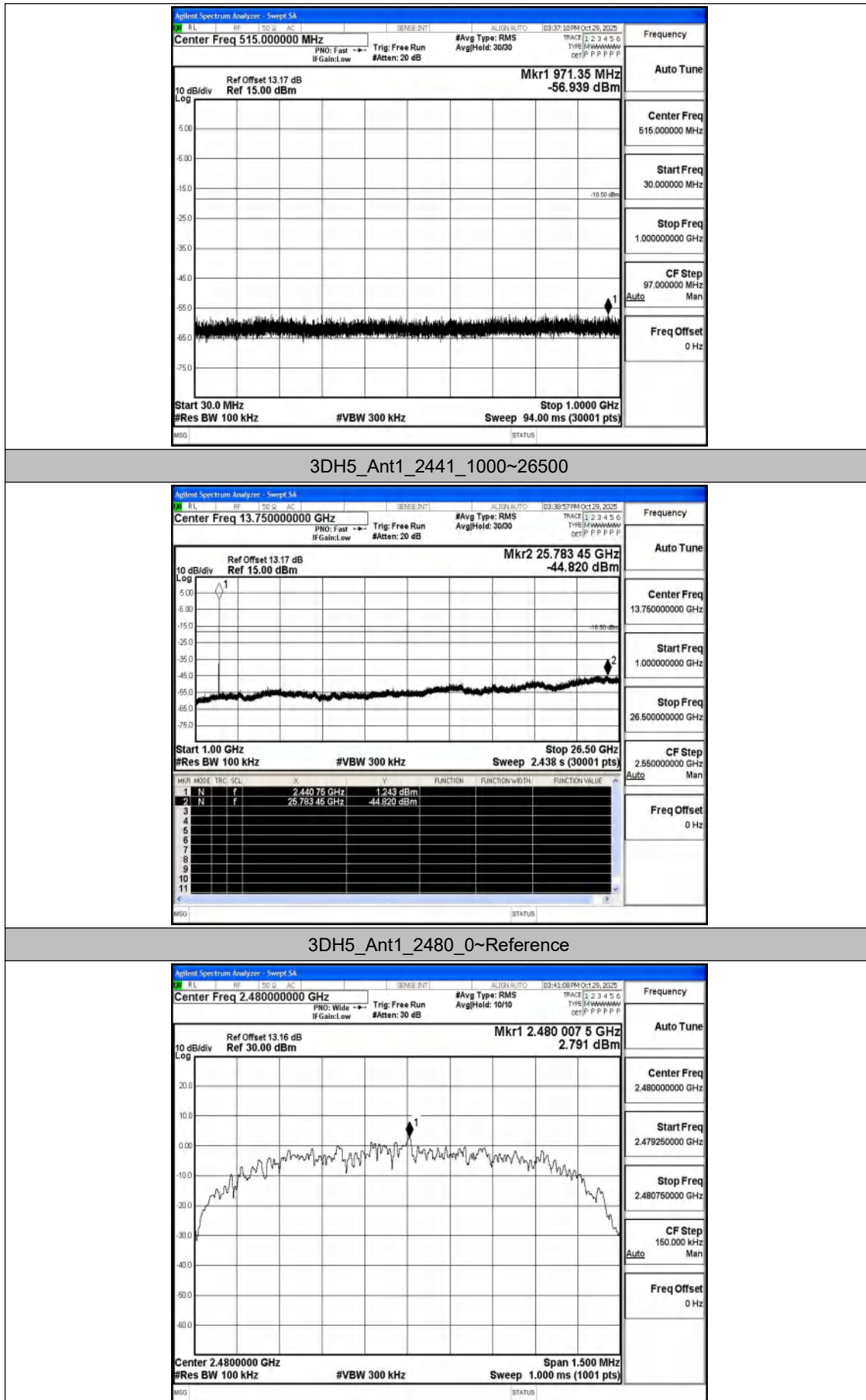
3DH5_Ant1_2402_1000~26500



3DH5_Ant1_2441_0~Reference



3DH5_Ant1_2441_30~1000

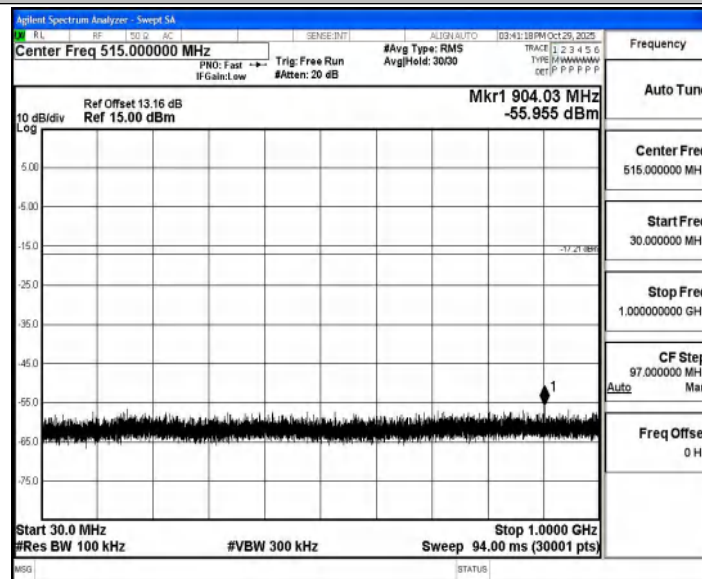


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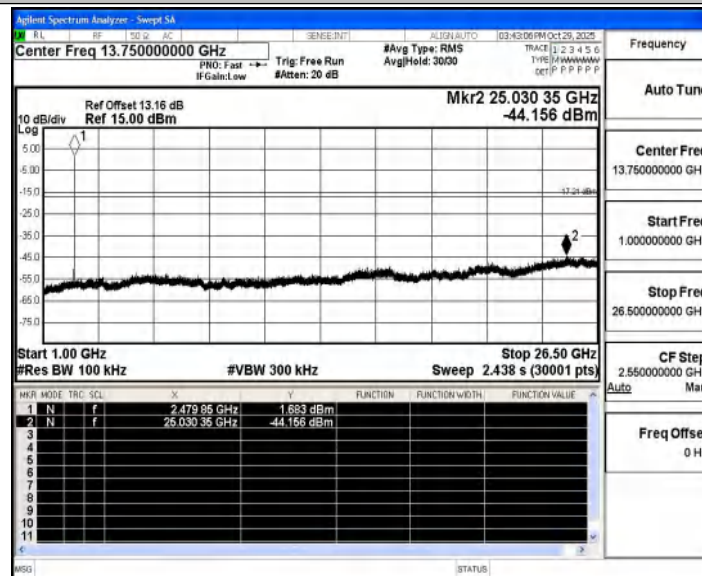
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3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500



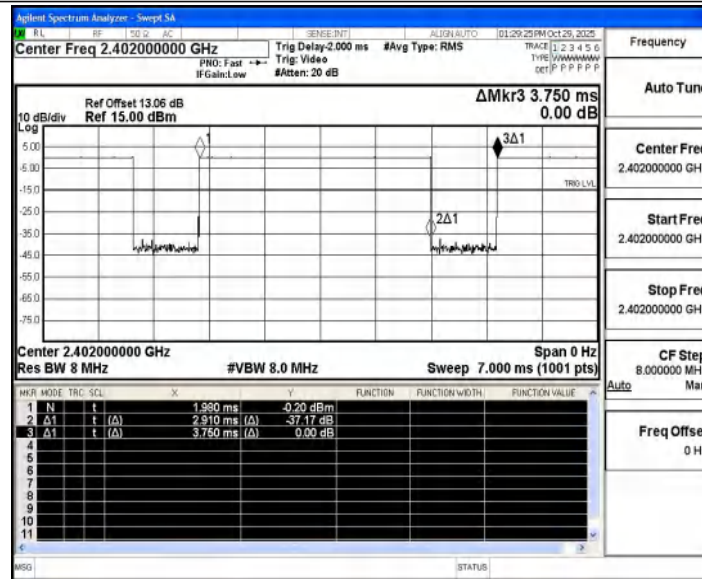
A.8 Duty Cycle

Test Result

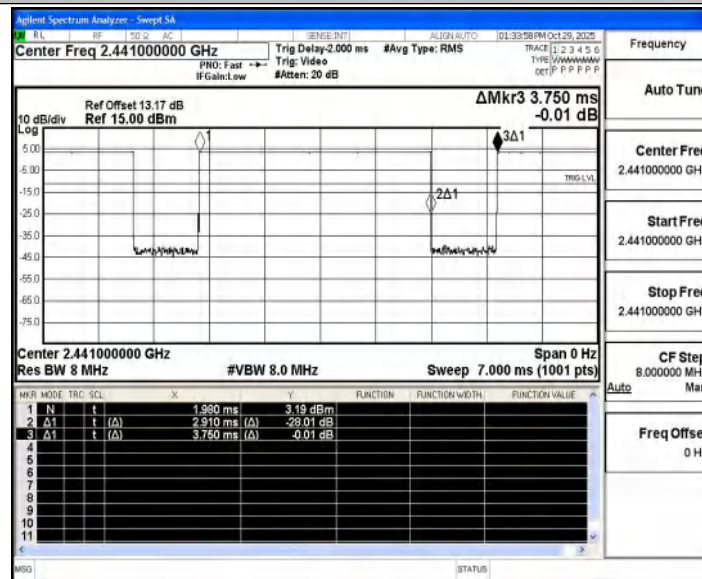
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	DC [%]	xFactor	Limit	Verdict
DH5	Ant1	2402	2.91	3.75	77.60	1.10	---	---
		2441	2.91	3.75	77.60	1.10	---	---
		2480	2.91	3.75	77.60	1.10	---	---
2DH5	Ant1	2402	2.90	3.76	77.13	1.13	---	---
		2441	2.90	3.75	77.33	1.12	---	---
		2480	2.90	3.75	77.33	1.12	---	---
3DH5	Ant1	2402	2.90	3.75	77.33	1.12	---	---
		2441	2.90	3.75	77.33	1.12	---	---
		2480	2.90	3.76	77.13	1.13	---	---

Test Graphs

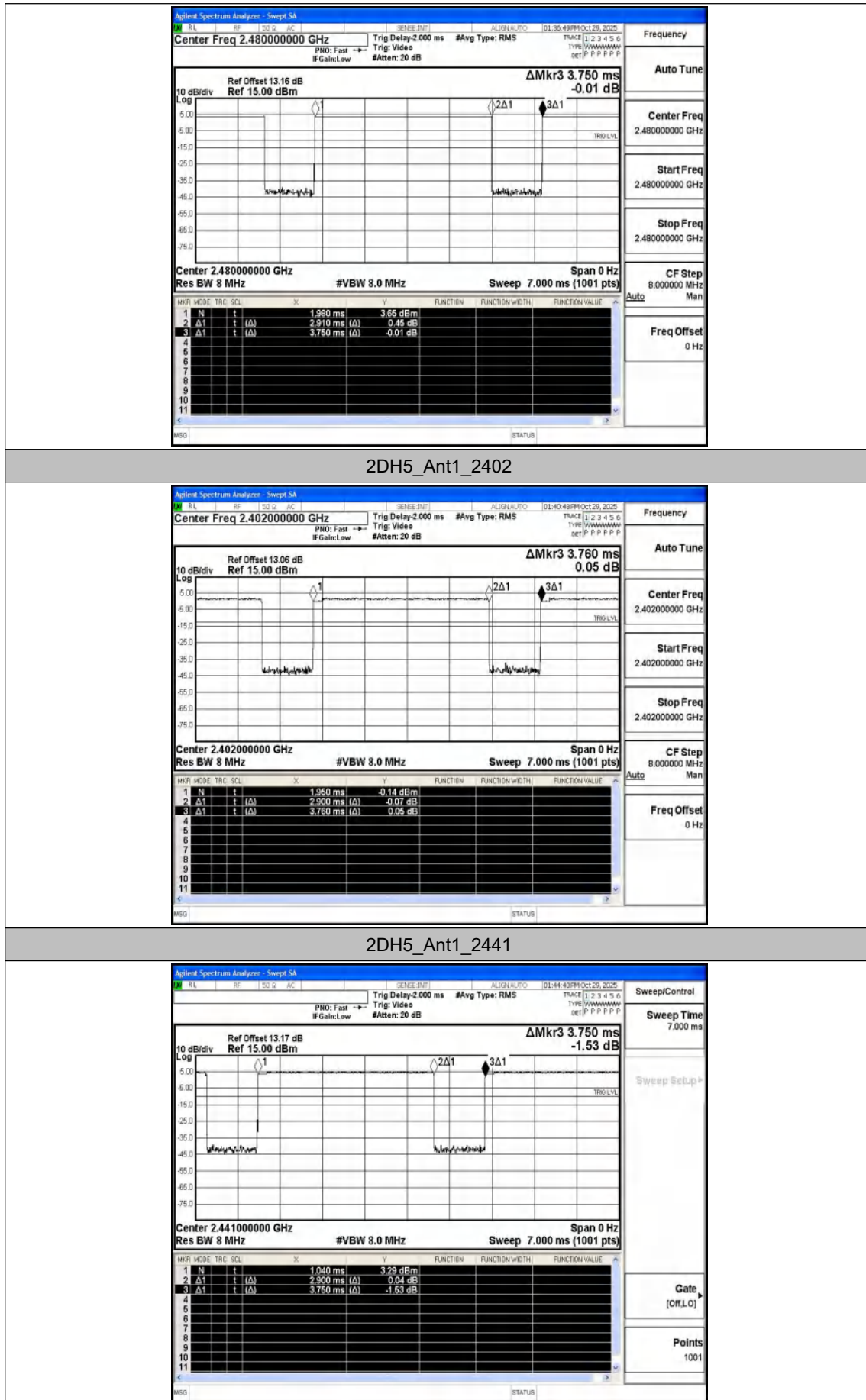
DH5_Ant1_2402



DH5_Ant1_2441



DH5_Ant1_2480

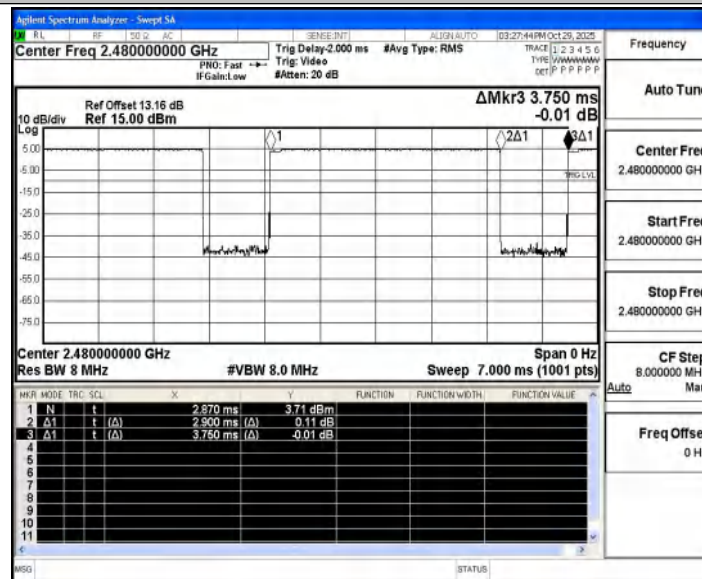


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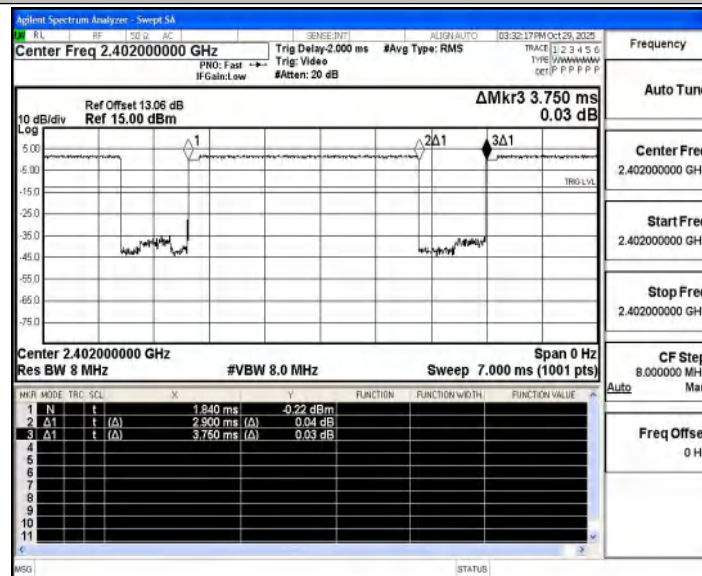
Add: No.44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China

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

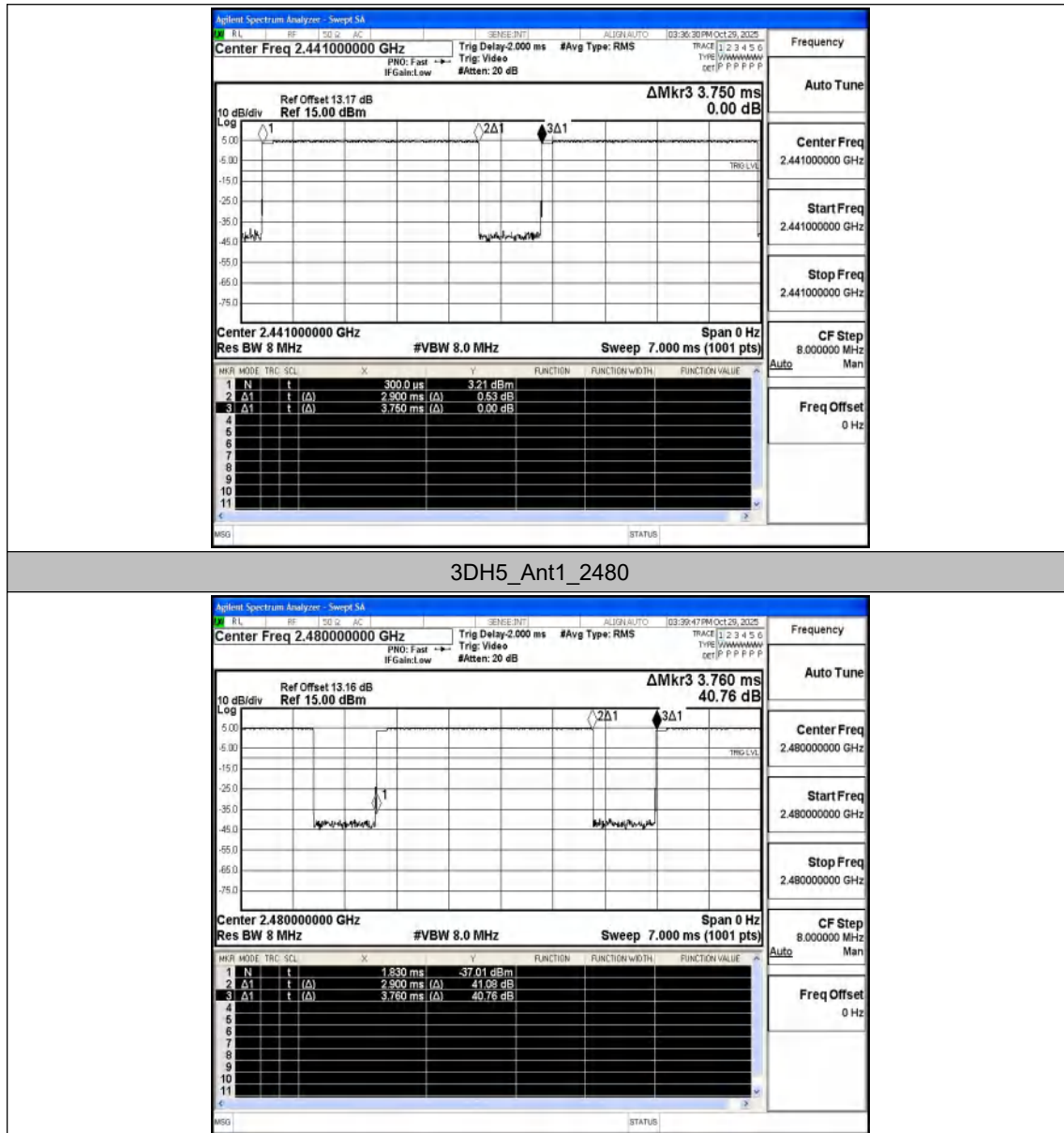
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



A.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
DH5	Ant1	Low	2402	AV	2310.000	-45.46	≤-41.20	49.74	≤54	PASS
				AV	2387.045	-44.9	≤-41.20	50.30	≤54	PASS
				AV	2390.000	-44.97	≤-41.20	50.23	≤54	PASS
				Peak	2310.000	-38.46	≤-21.20	56.74	≤74	PASS
				Peak	2371.295	-35.35	≤-21.20	59.85	≤74	PASS
				Peak	2390.000	-37.07	≤-21.20	58.13	≤74	PASS
		High	2480	AV	2483.500	-44.67	≤-41.20	50.53	≤54	PASS
				AV	2483.520	-44.67	≤-41.20	50.53	≤54	PASS
				AV	2500.000	-44.86	≤-41.20	50.34	≤54	PASS
				Peak	2483.500	-38.47	≤-21.20	56.73	≤74	PASS
				Peak	2498.800	-35.45	≤-21.20	59.75	≤74	PASS
				Peak	2500.000	-36.65	≤-21.20	58.55	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-35.92	≤-21.20	59.28	≤74	PASS
				Peak	2382.635	-34.28	≤-21.20	60.92	≤74	PASS
				Peak	2390.000	-35.81	≤-21.20	59.39	≤74	PASS
		High	Hop_2480	Peak	2483.500	-36.2	≤-21.20	59.00	≤74	PASS
				Peak	2491.200	-33.82	≤-21.20	61.38	≤74	PASS
				Peak	2500.000	-36.06	≤-21.20	59.14	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-45.48	≤-41.20	49.72	≤54	PASS
				AV	2387.885	-44.88	≤-41.20	50.32	≤54	PASS
				AV	2390.000	-44.97	≤-41.20	50.23	≤54	PASS
				Peak	2310.000	-37.23	≤-21.20	57.97	≤74	PASS
				Peak	2382.110	-35.16	≤-21.20	60.04	≤74	PASS
				Peak	2390.000	-38.25	≤-21.20	56.95	≤74	PASS
		High	2480	AV	2483.500	-44.36	≤-41.20	50.84	≤54	PASS
				AV	2483.520	-44.36	≤-41.20	50.84	≤54	PASS
				AV	2500.000	-45.08	≤-41.20	50.12	≤54	PASS
				Peak	2483.500	-37.28	≤-21.20	57.92	≤74	PASS
				Peak	2488.560	-35.77	≤-21.20	59.43	≤74	PASS
				Peak	2500.000	-38.69	≤-21.20	56.51	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-33.57	≤-21.20	61.63	≤74	PASS
				Peak	2390.000	-36.29	≤-21.20	58.91	≤74	PASS
		High	Hop_2480	Peak	2483.500	-36.13	≤-21.20	59.07	≤74	PASS
				Peak	2496.960	-34.05	≤-21.20	61.15	≤74	PASS
				Peak	2500.000	-34.62	≤-21.20	60.58	≤74	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-45.36	≤-41.20	49.84	≤54	PASS
				AV	2388.200	-44.74	≤-41.20	50.46	≤54	PASS

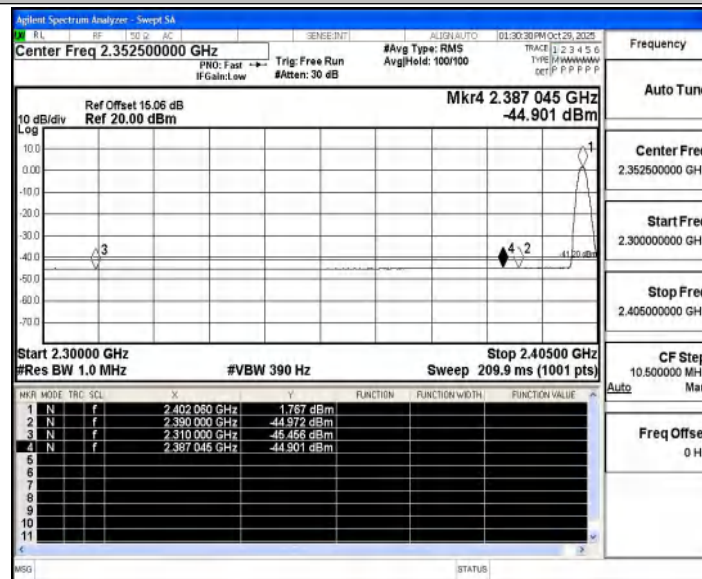
				AV	2390.000	-44.87	≤ -41.20	50.33	≤ 54	PASS
				Peak	2310.000	-36.91	≤ -21.20	58.29	≤ 74	PASS
				Peak	2374.865	-34.34	≤ -21.20	60.86	≤ 74	PASS
				Peak	2390.000	-37.38	≤ -21.20	57.82	≤ 74	PASS
		High	2480	AV	2483.500	-44.16	≤ -41.20	51.04	≤ 54	PASS
				AV	2483.520	-44.16	≤ -41.20	51.04	≤ 54	PASS
				AV	2500.000	-45.07	≤ -41.20	50.13	≤ 54	PASS
				Peak	2483.500	-36.85	≤ -21.20	58.35	≤ 74	PASS
				Peak	2495.840	-35.7	≤ -21.20	59.50	≤ 74	PASS
				Peak	2500.000	-37.28	≤ -21.20	57.92	≤ 74	PASS
		Low	Hop_240 2	Peak	2310.000	-36.12	≤ -21.20	59.08	≤ 74	PASS
				Peak	2314.385	-34.35	≤ -21.20	60.85	≤ 74	PASS
				Peak	2390.000	-35.69	≤ -21.20	59.51	≤ 74	PASS
		High	Hop_248 0	Peak	2483.500	-34.77	≤ -21.20	60.43	≤ 74	PASS
				Peak	2490.640	-34.04	≤ -21.20	61.16	≤ 74	PASS
				Peak	2500.000	-35.87	≤ -21.20	59.33	≤ 74	PASS

Note:

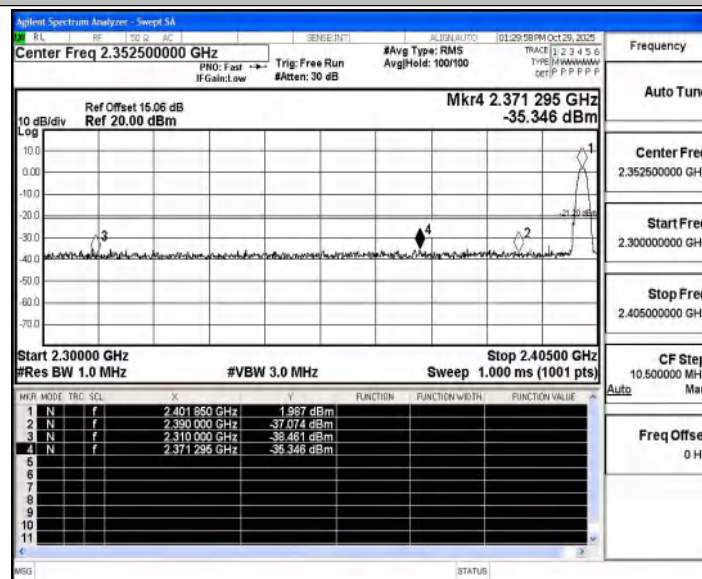
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

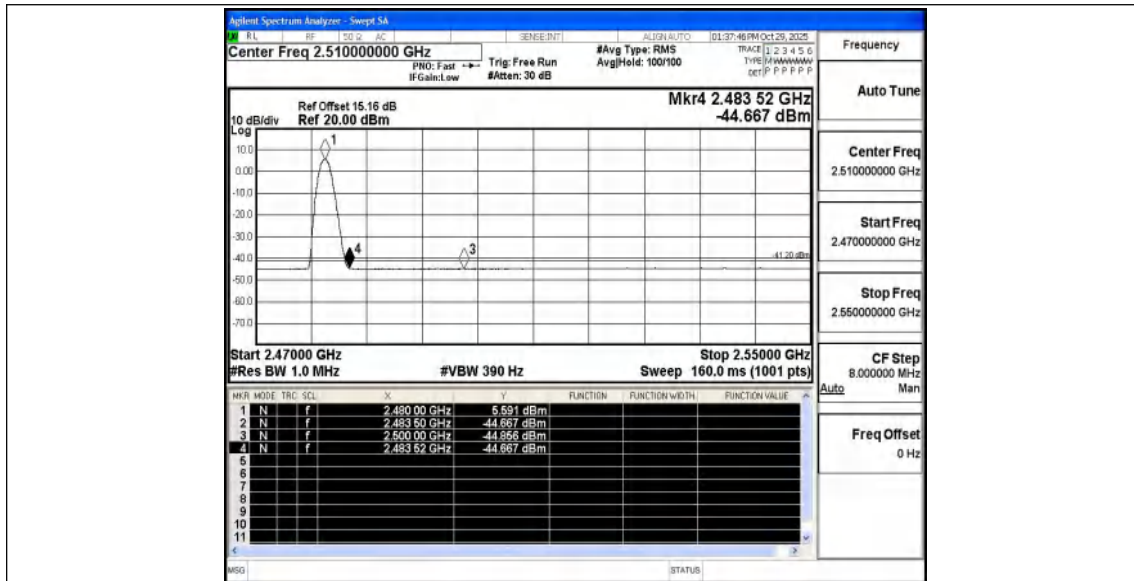
DH5_Ant1_Low_2402_AV



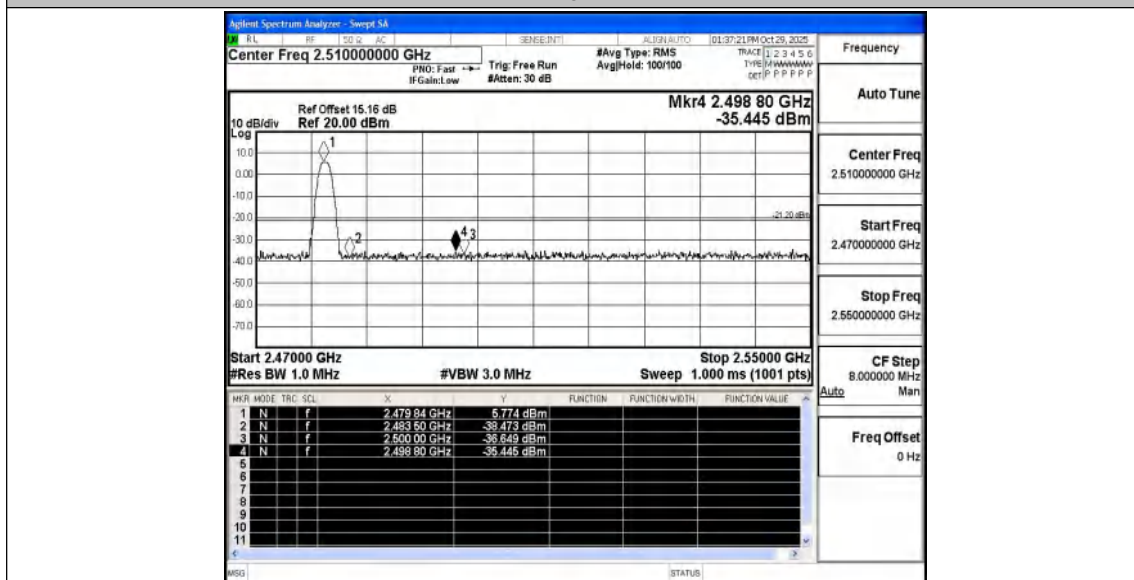
DH5_Ant1_Low_2402_Peak



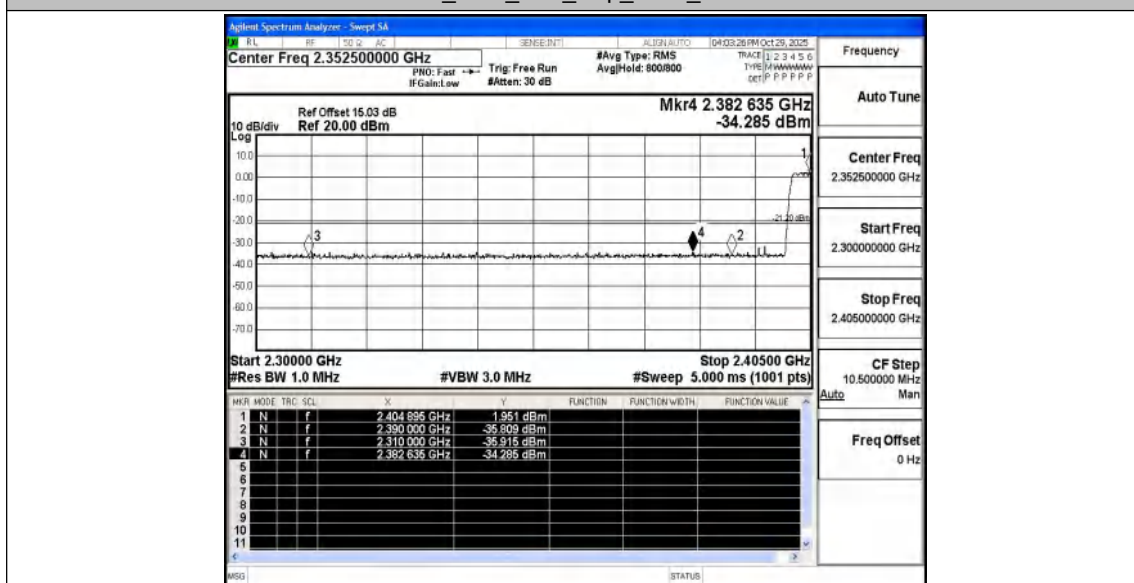
DH5_Ant1_High_2480_AV



DH5_Ant1_High_2480_Peak



DH5_Ant1_Low_Hop_2402_Peak

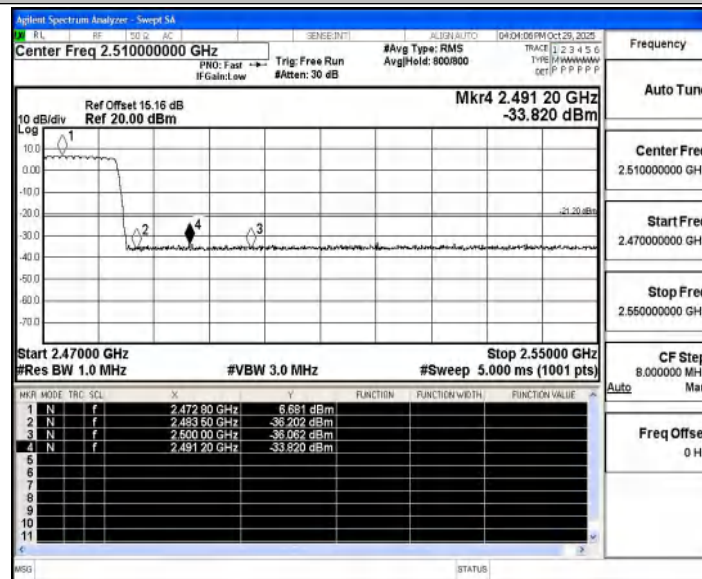


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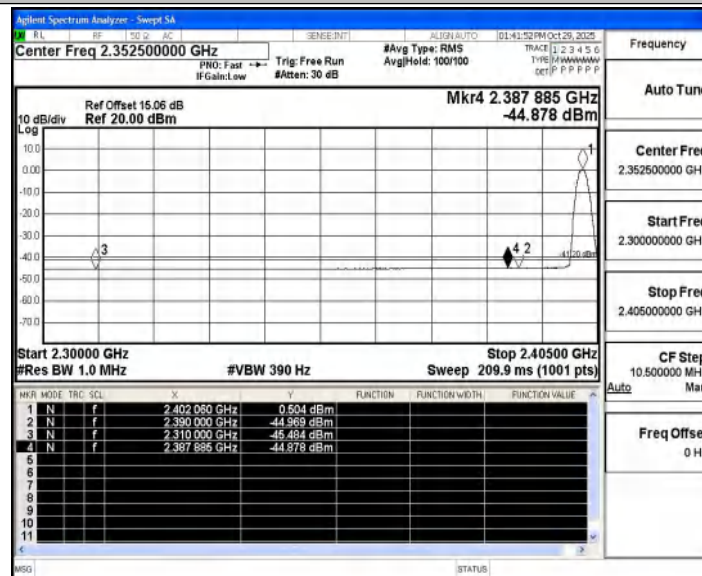
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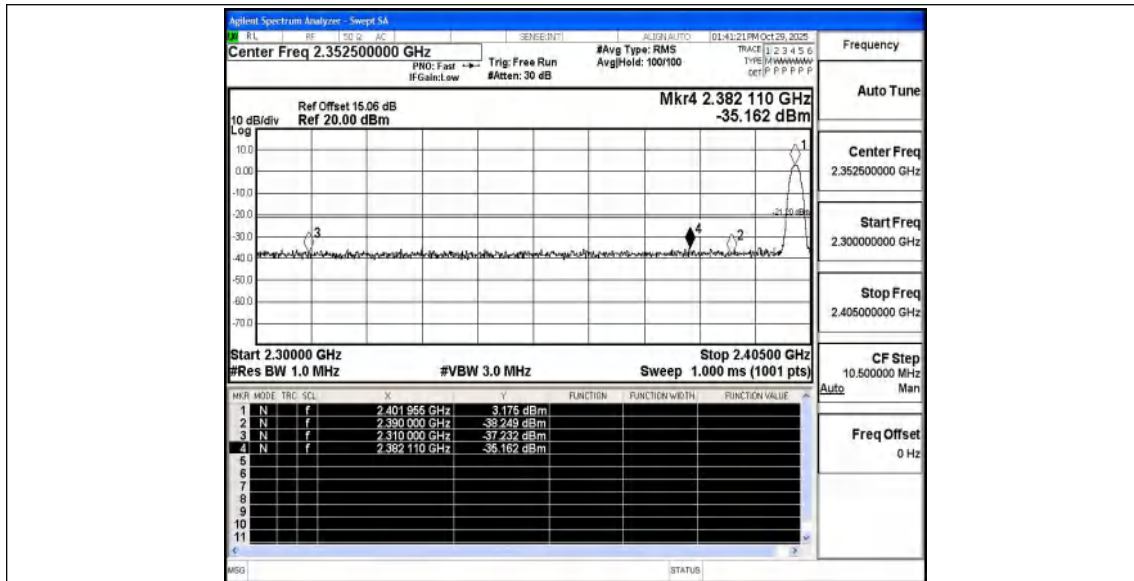
DH5_Ant1_High_Hop_2480_Peak



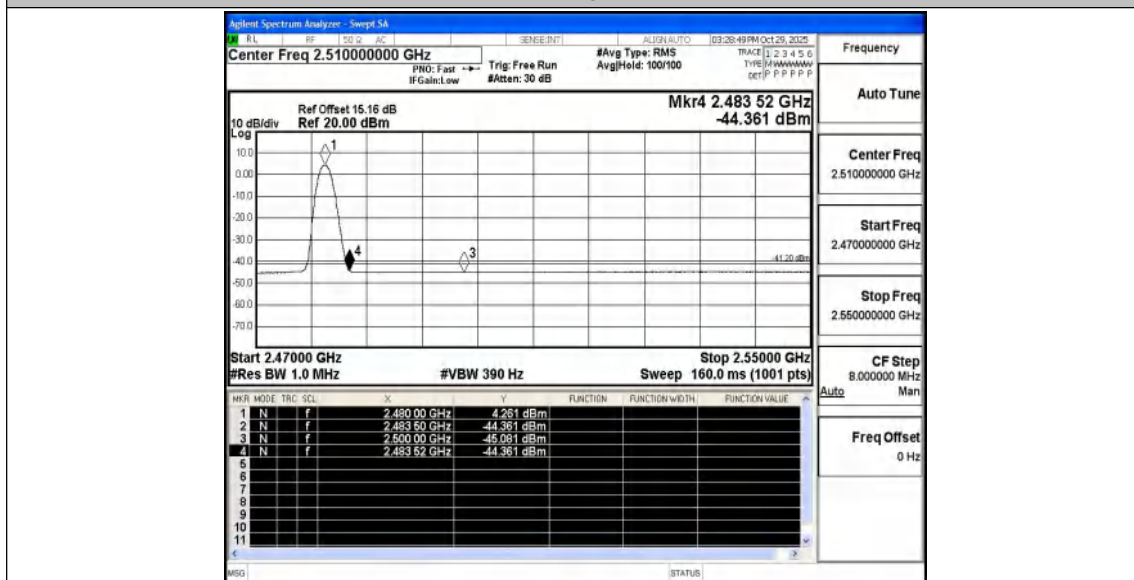
2DH5_Ant1_Low_2402_AV



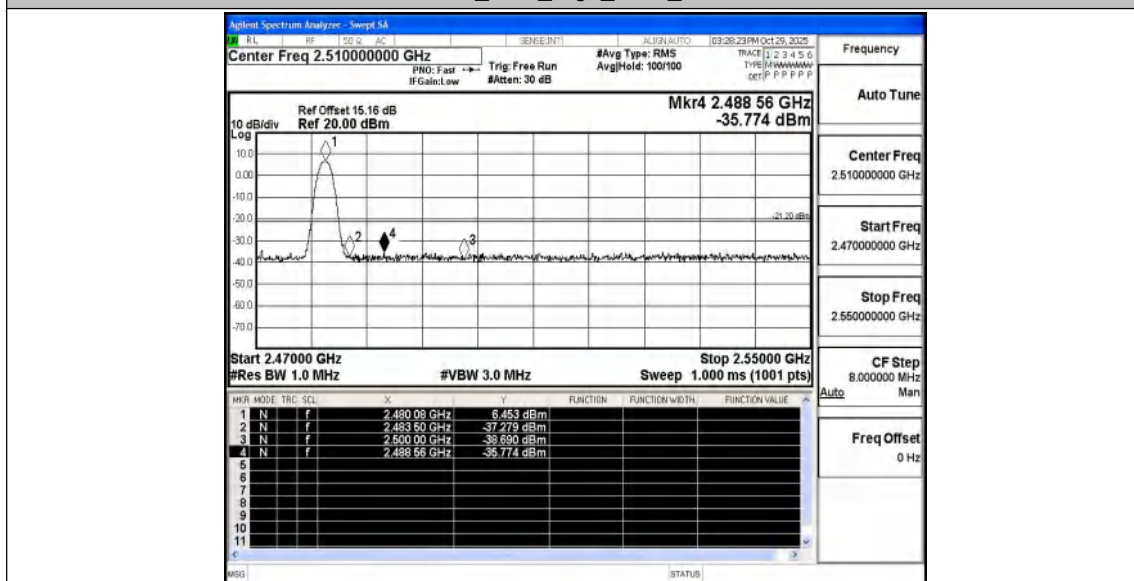
2DH5_Ant1_Low_2402_Peak



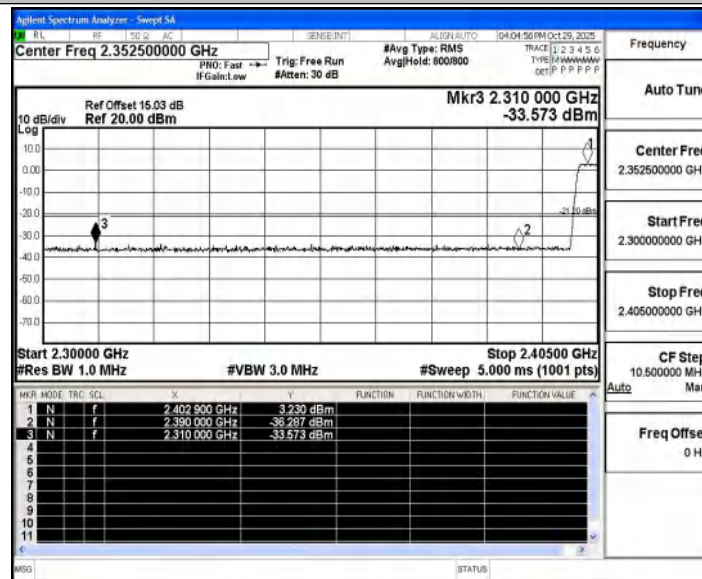
2DH5_Ant1_High_2480_AV



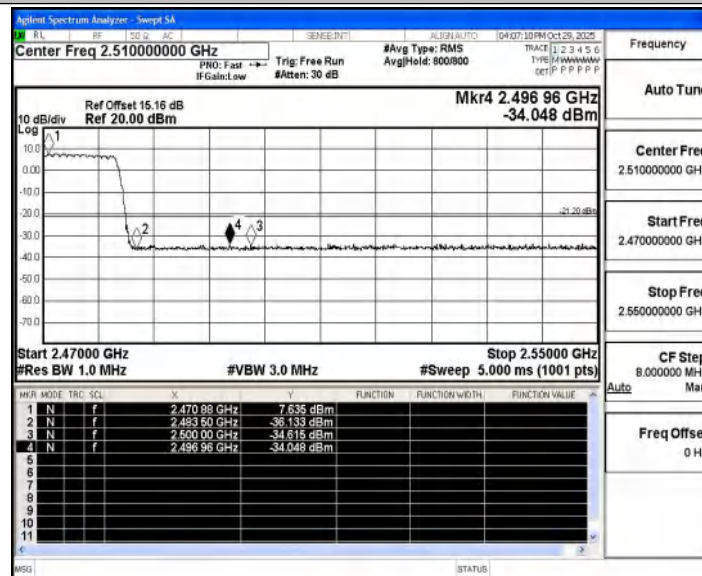
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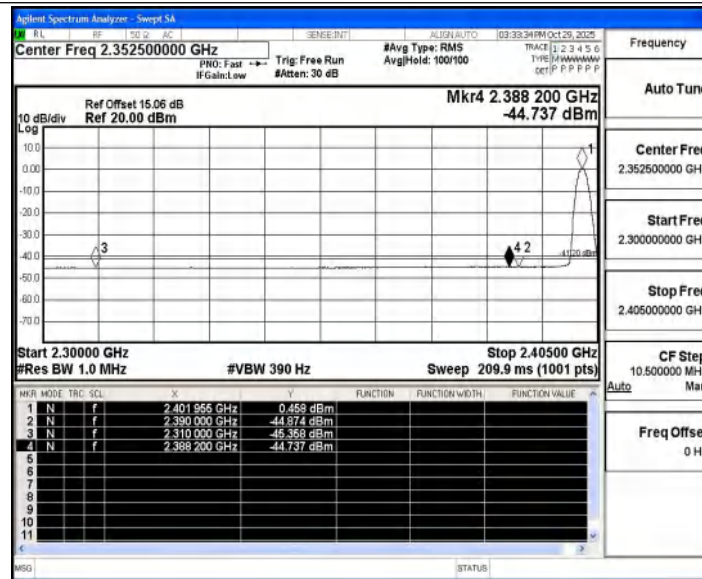
2DH5_Ant1_Low_Hop_2402_Peak



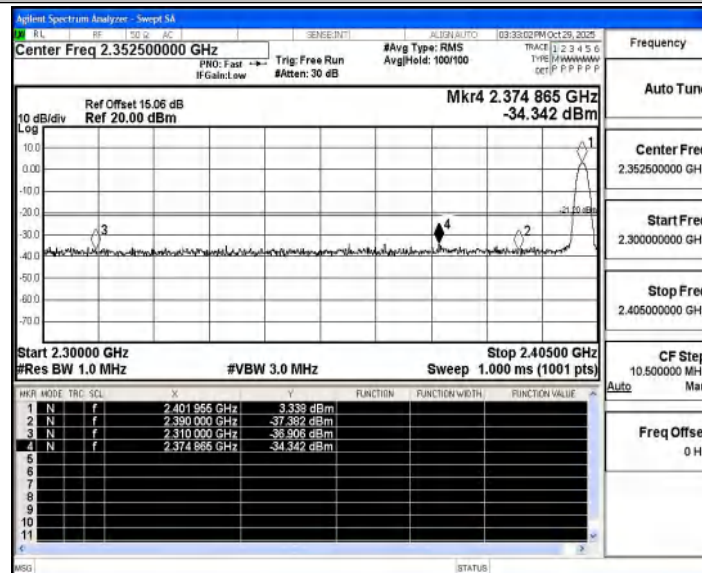
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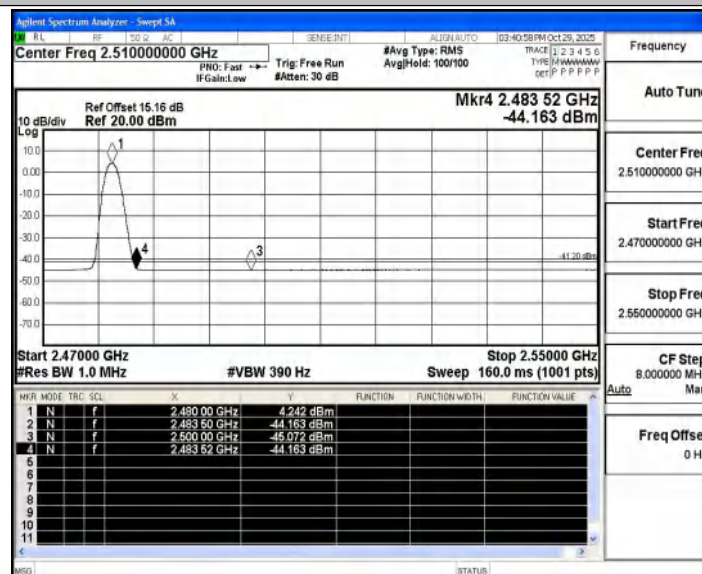
3DH5_Ant1_Low_2402_AV



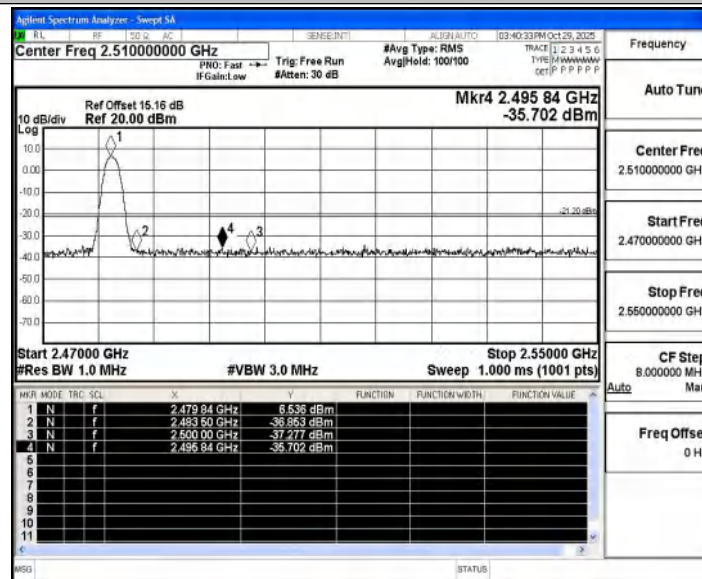
3DH5_Ant1_Low_2402_Peak



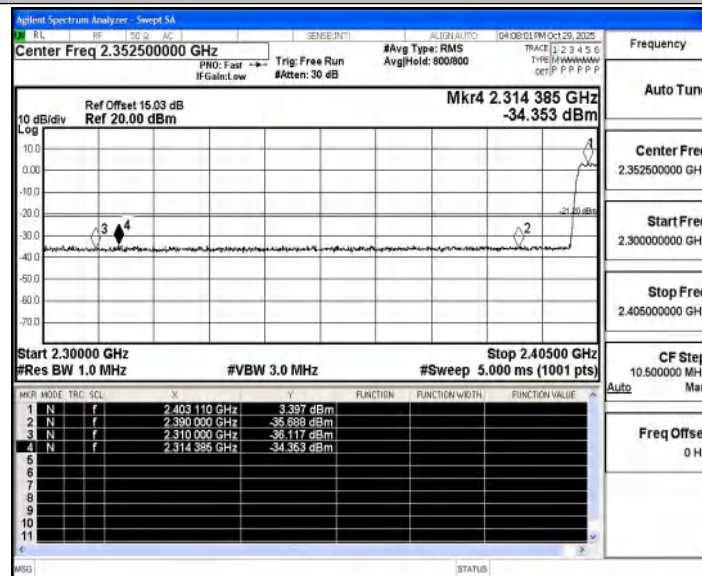
3DH5_Ant1_High_2480_AV



3DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_Hop_2402_Peak



3DH5_Ant1_High_Hop_2480_Peak

