

Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: all-in-one

Test Model: ZF320

Environmental Conditions

Temperature:	24.9°C
Relative Humidity:	53.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Suichao Lai
Supervised by:	Yan Chen

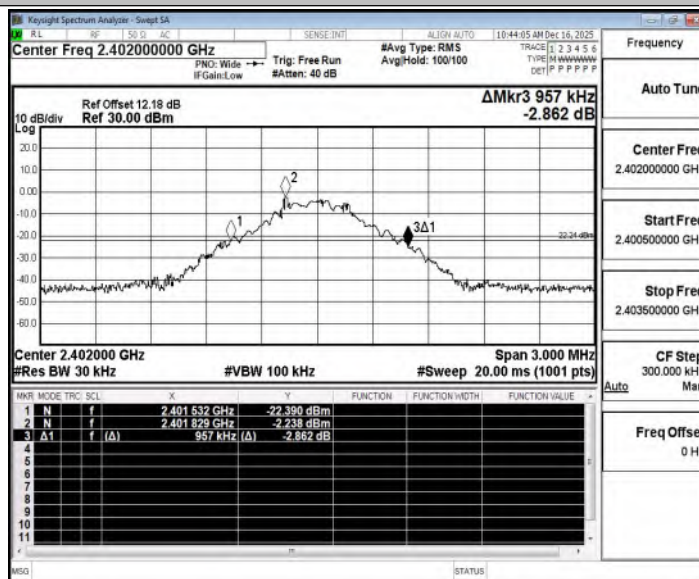
A.1 20dB Bandwidth

Test Result

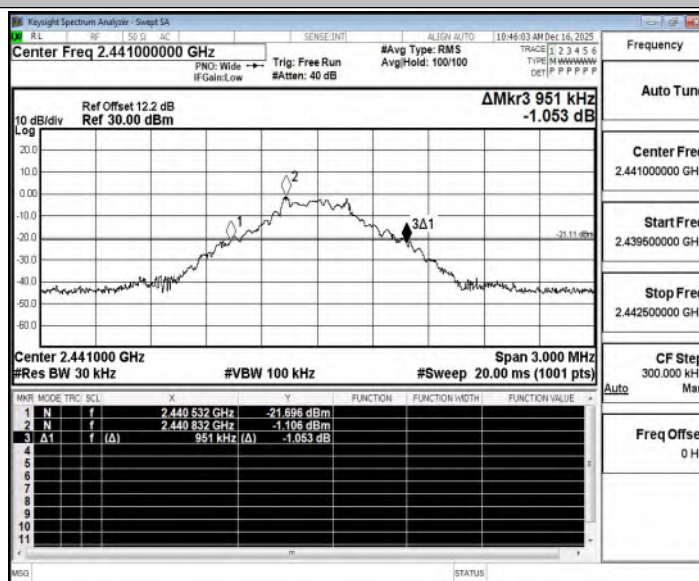
TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.957	2401.532	2402.489	---	---
		2441	0.951	2440.532	2441.483	---	---
		2480	1.029	2479.472	2480.501	---	---
2DH5	Ant1	2402	1.290	2401.358	2402.648	---	---
		2441	1.287	2440.358	2441.645	---	---
		2480	1.284	2479.361	2480.645	---	---
3DH5	Ant1	2402	1.293	2401.346	2402.639	---	---
		2441	1.299	2440.343	2441.642	---	---
		2480	1.302	2479.346	2480.648	---	---

Test Graphs

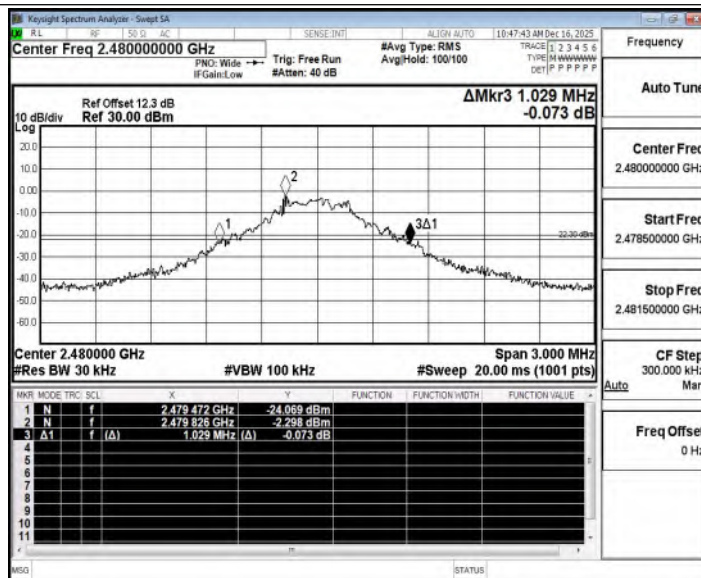
DH5_Ant1_2402



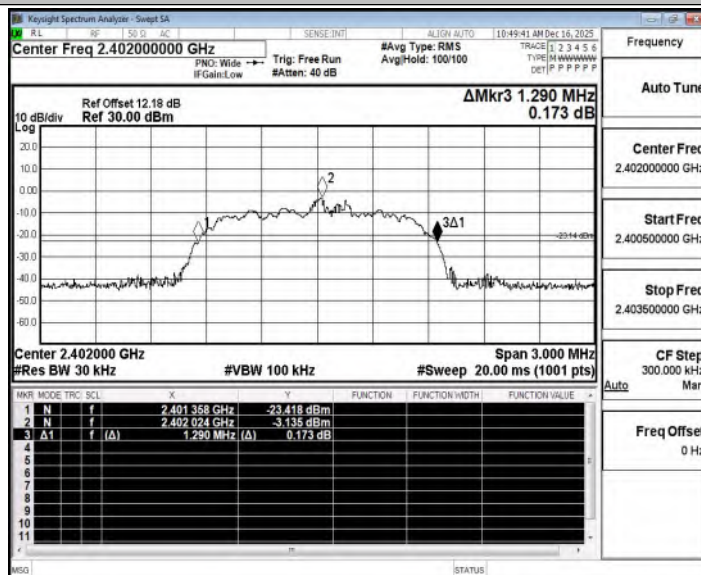
DH5_Ant1_2441



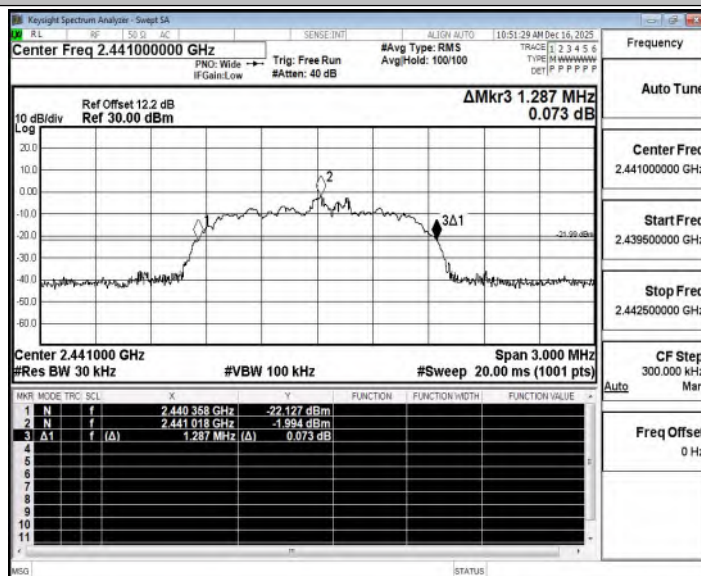
DH5_Ant1_2480



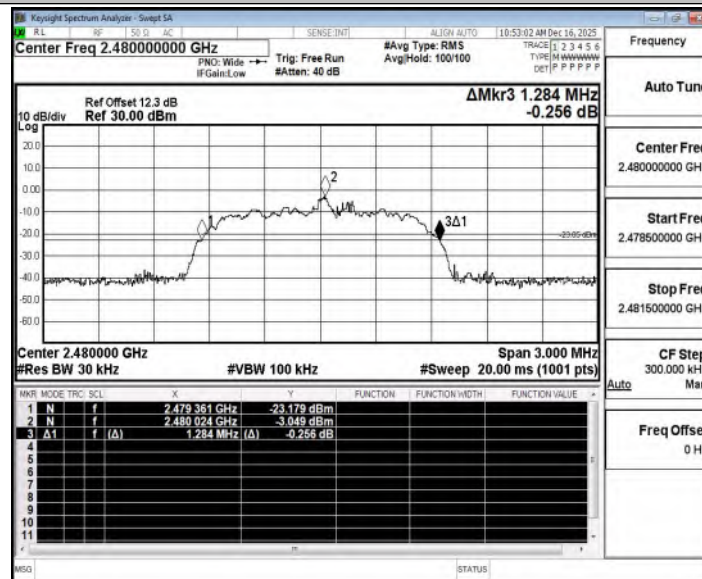
2DH5_Ant1_2402



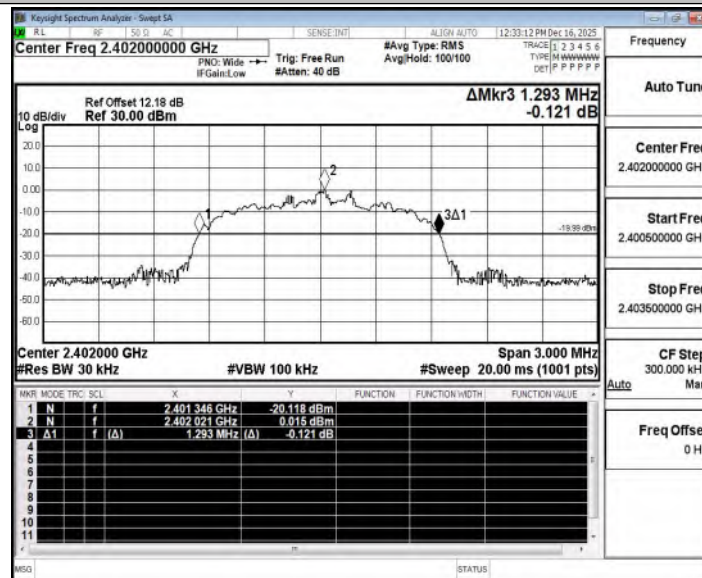
2DH5_Ant1_2441



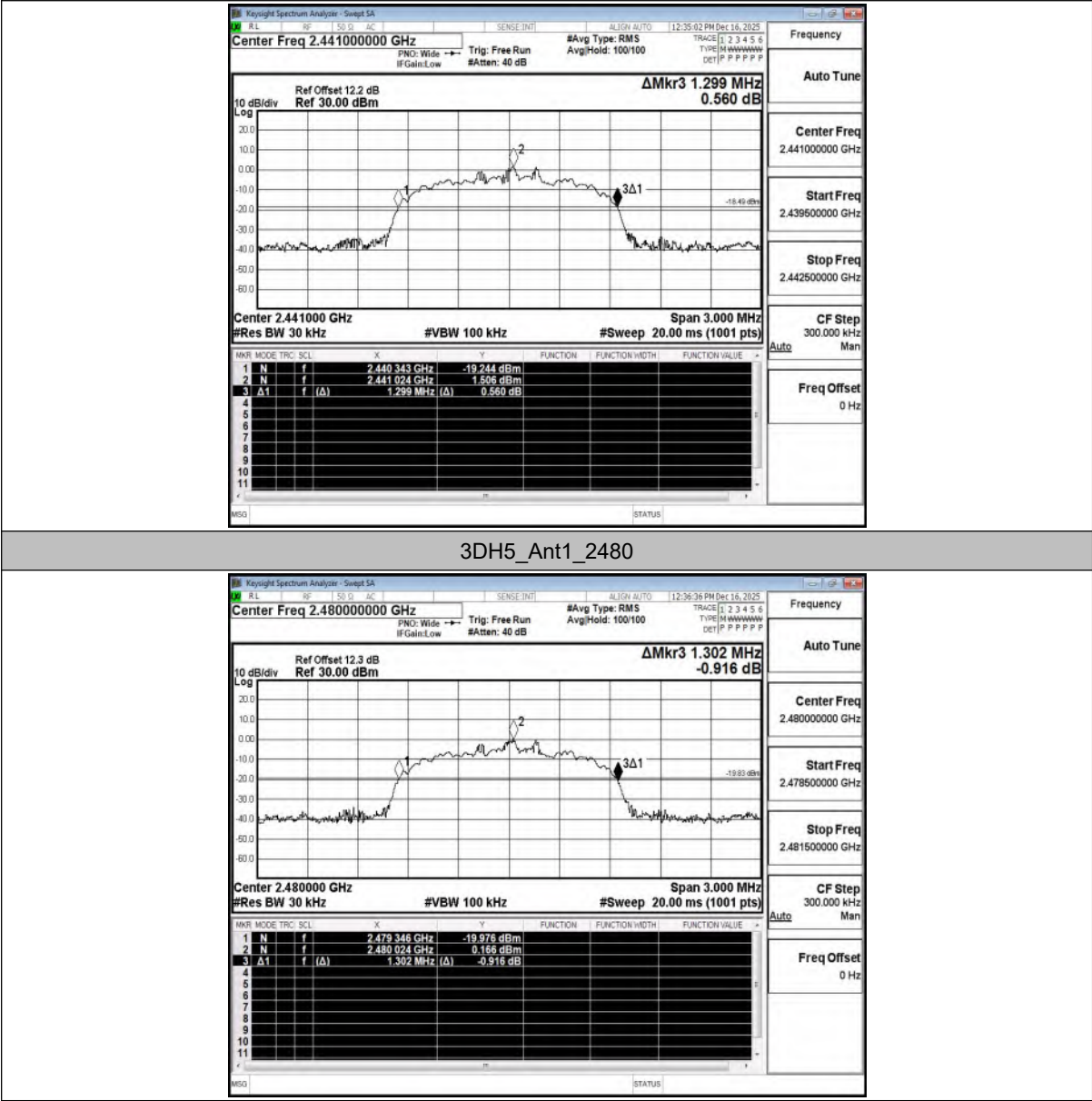
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441

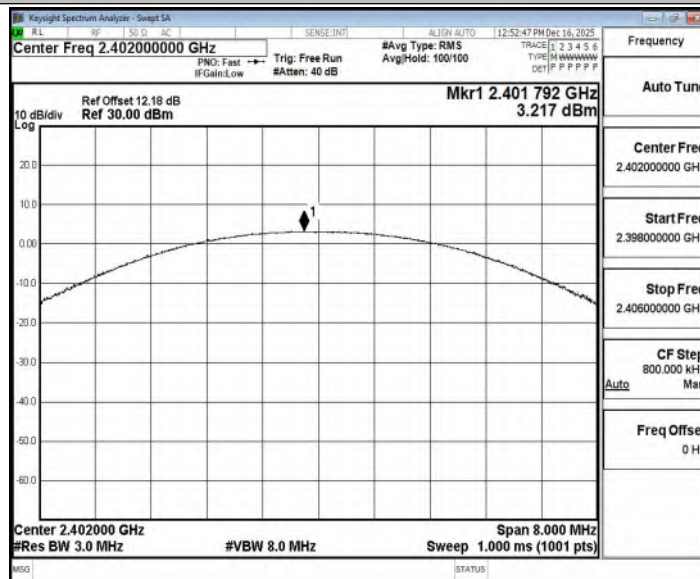


A.2 Maximum Peak Conducted Output Power

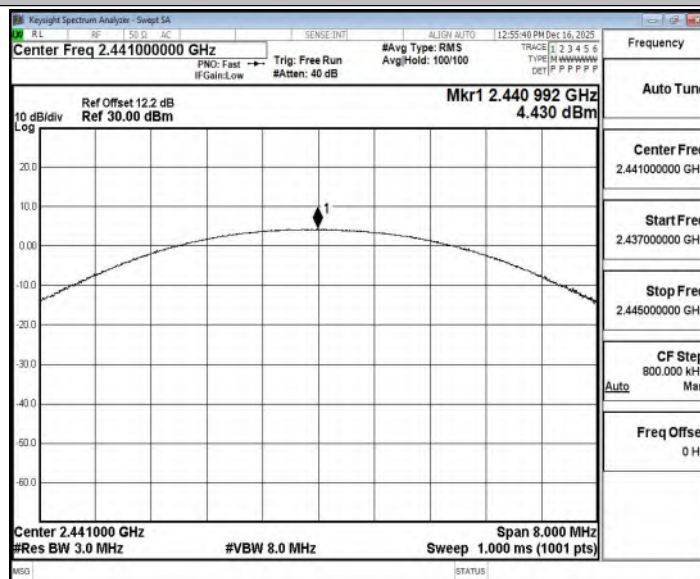
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	3.22	21	Pass
NVNT	1-DH5	2441	Ant1	4.43	21	Pass
NVNT	1-DH5	2480	Ant1	2.85	21	Pass
NVNT	2-DH5	2402	Ant1	4.42	21	Pass
NVNT	2-DH5	2441	Ant1	5.44	21	Pass
NVNT	2-DH5	2480	Ant1	3.91	21	Pass
NVNT	3-DH5	2402	Ant1	4.72	21	Pass
NVNT	3-DH5	2441	Ant1	5.51	21	Pass
NVNT	3-DH5	2480	Ant1	4.02	21	Pass

Test Graphs

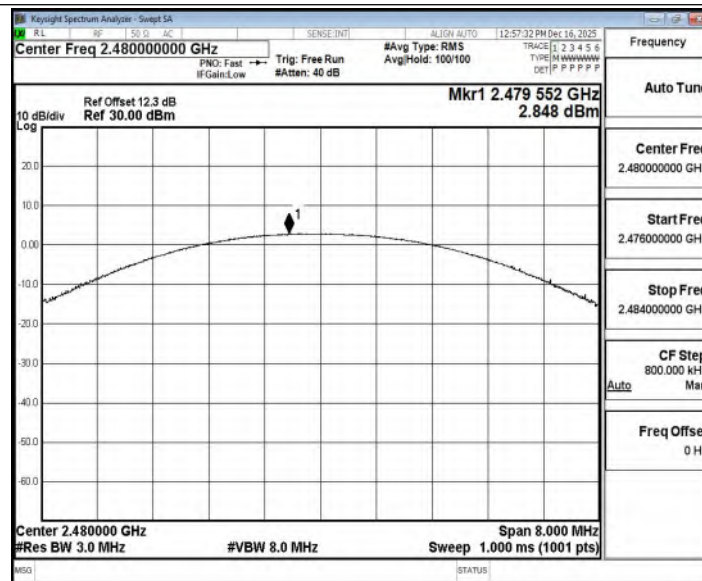
DH5_Ant1_2402



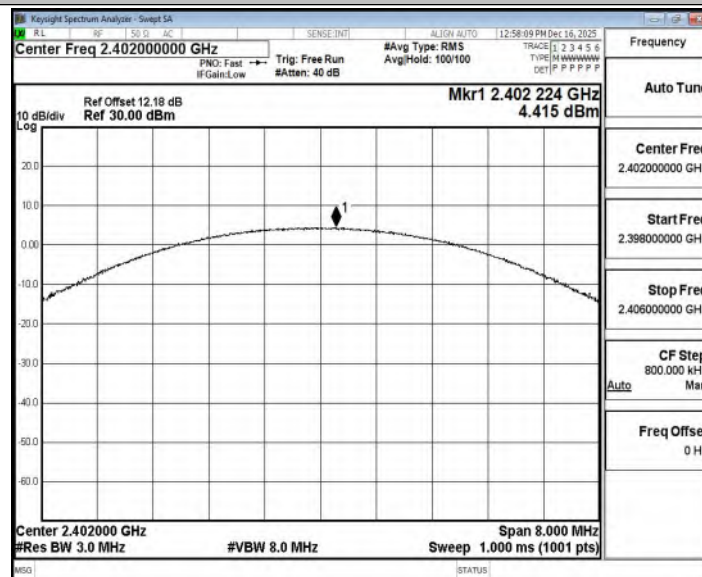
DH5_Ant1_2441



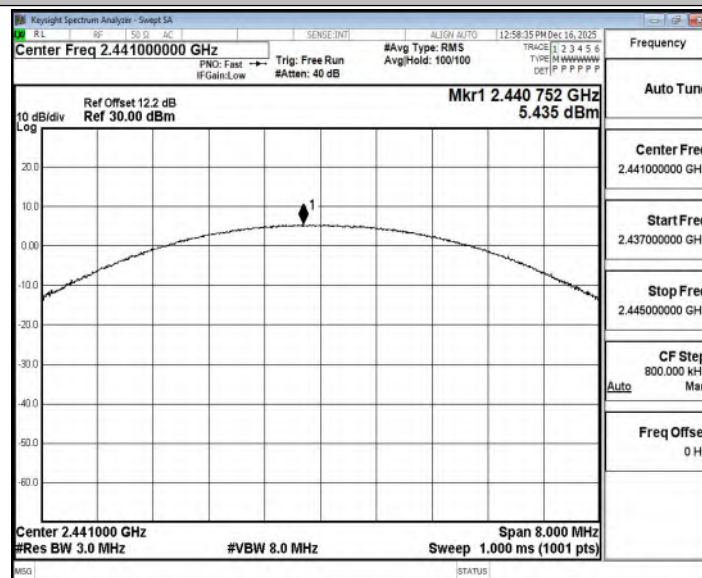
DH5_Ant1_2480



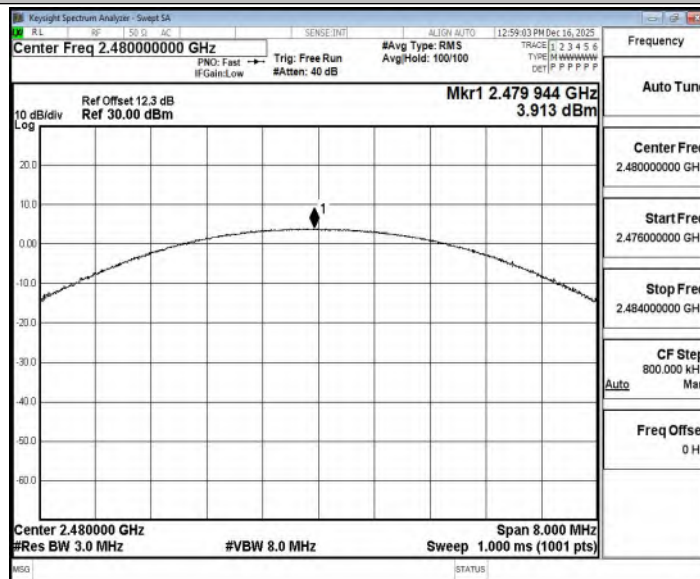
2DH5_Ant1_2402



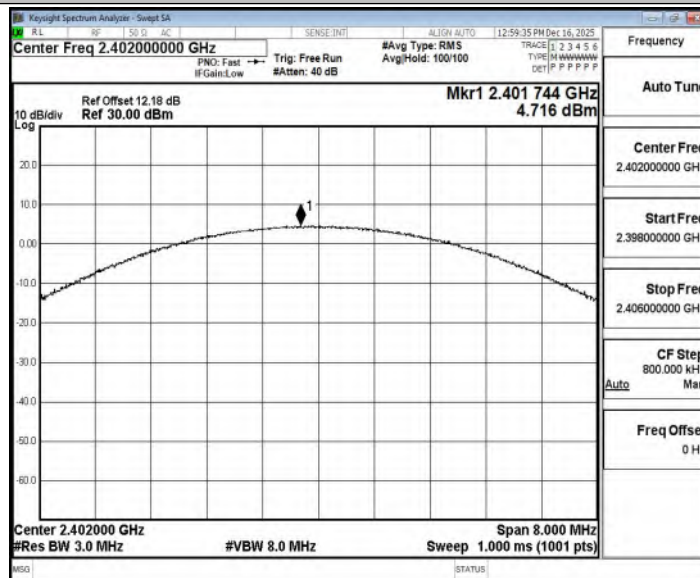
2DH5_Ant1_2441



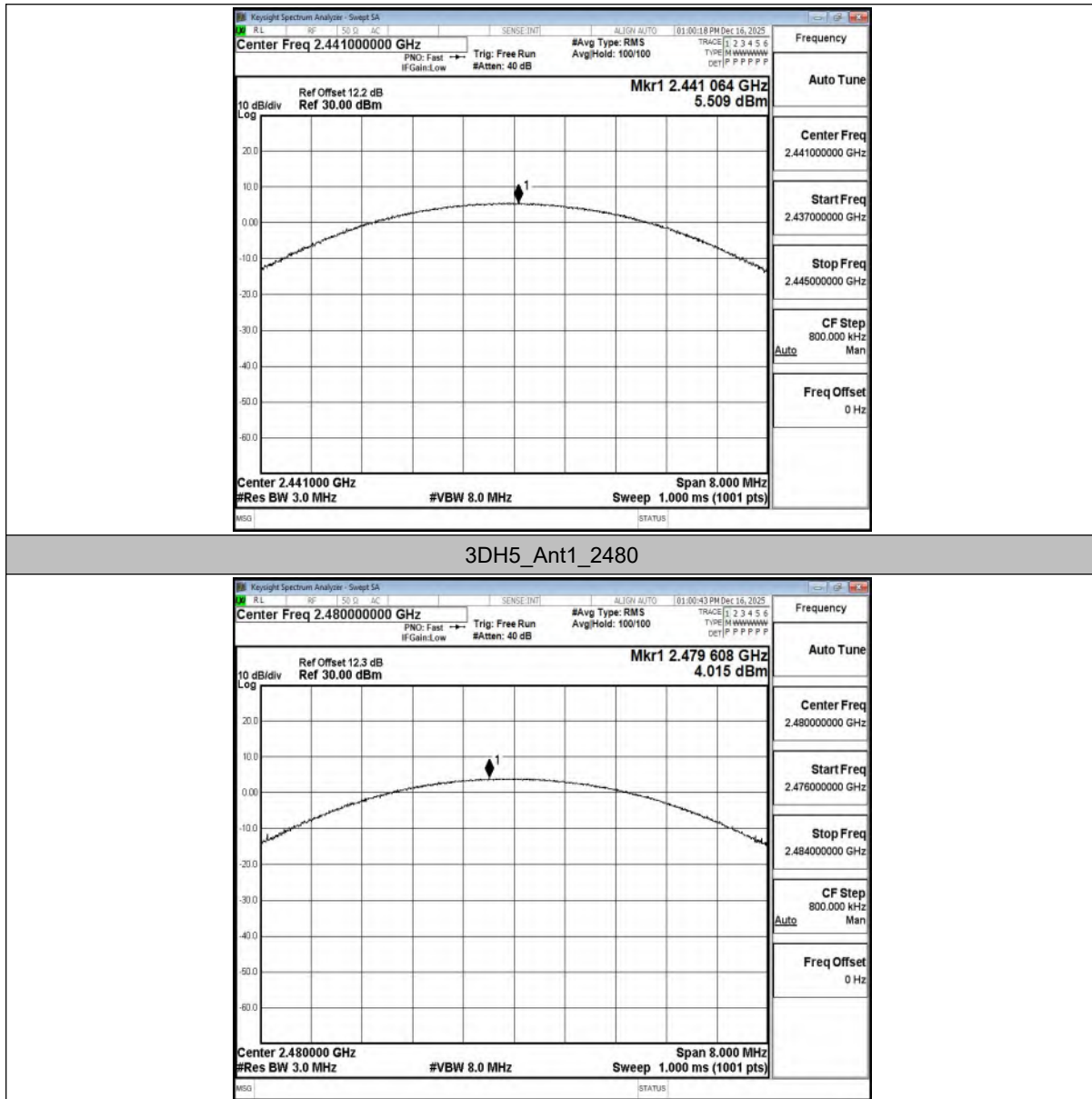
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



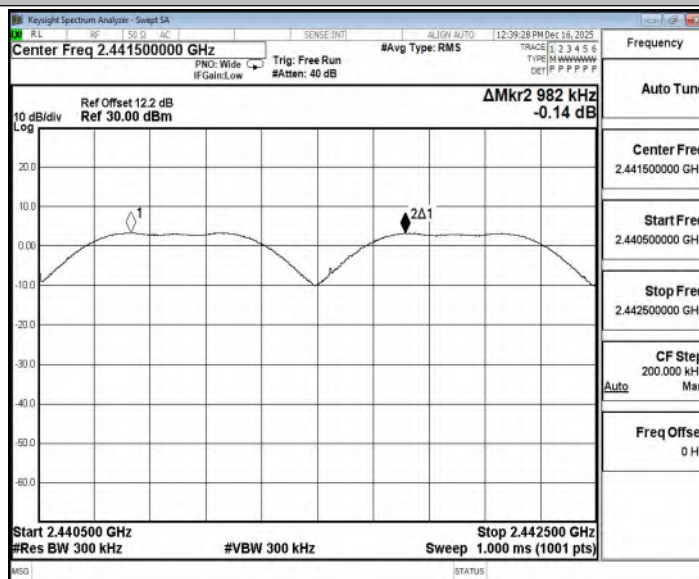
A.3 Carrier Frequencies Separation

Test Result

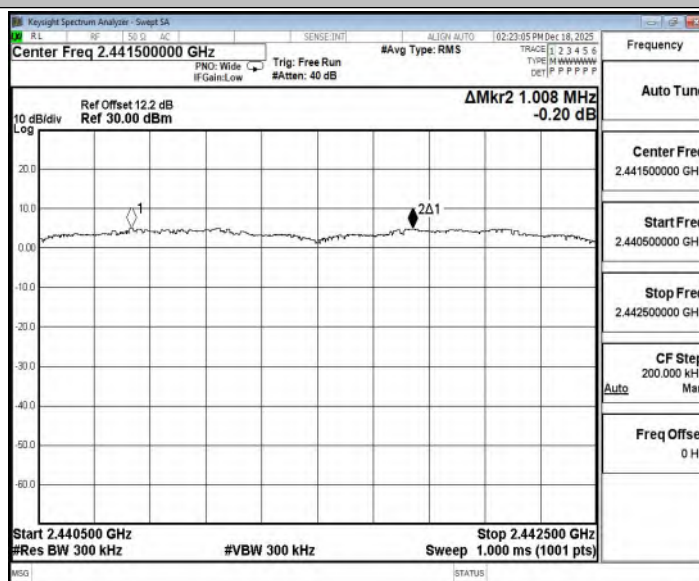
TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.982	≥0.686	PASS
2DH5	Ant1	Hop	1.008	≥0.860	PASS
3DH5	Ant1	Hop	0.994	≥0.868	PASS

Test Graphs

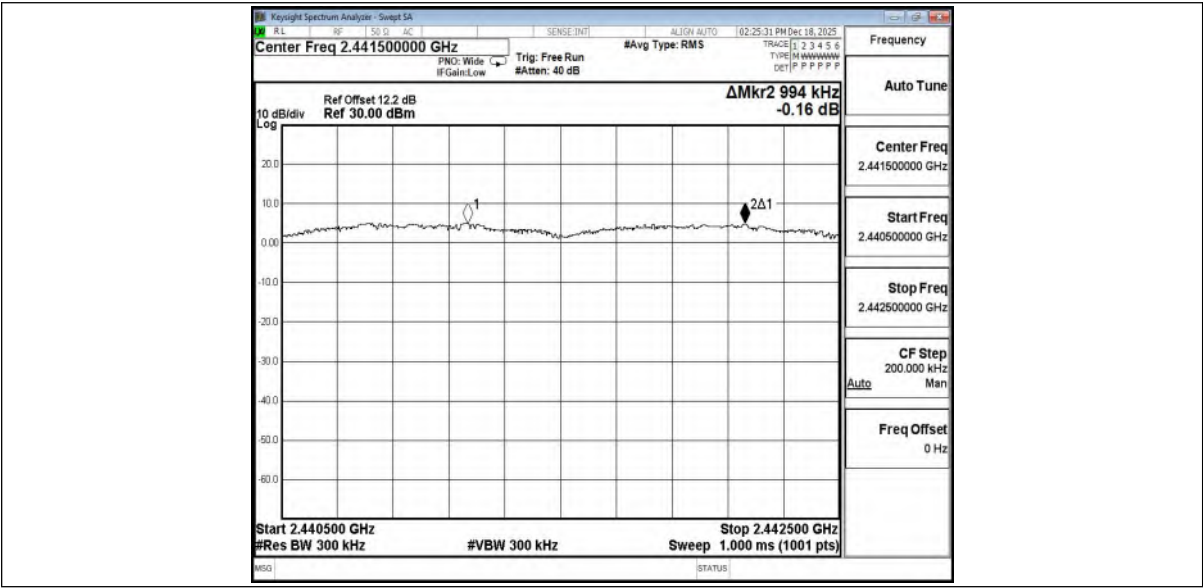
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop

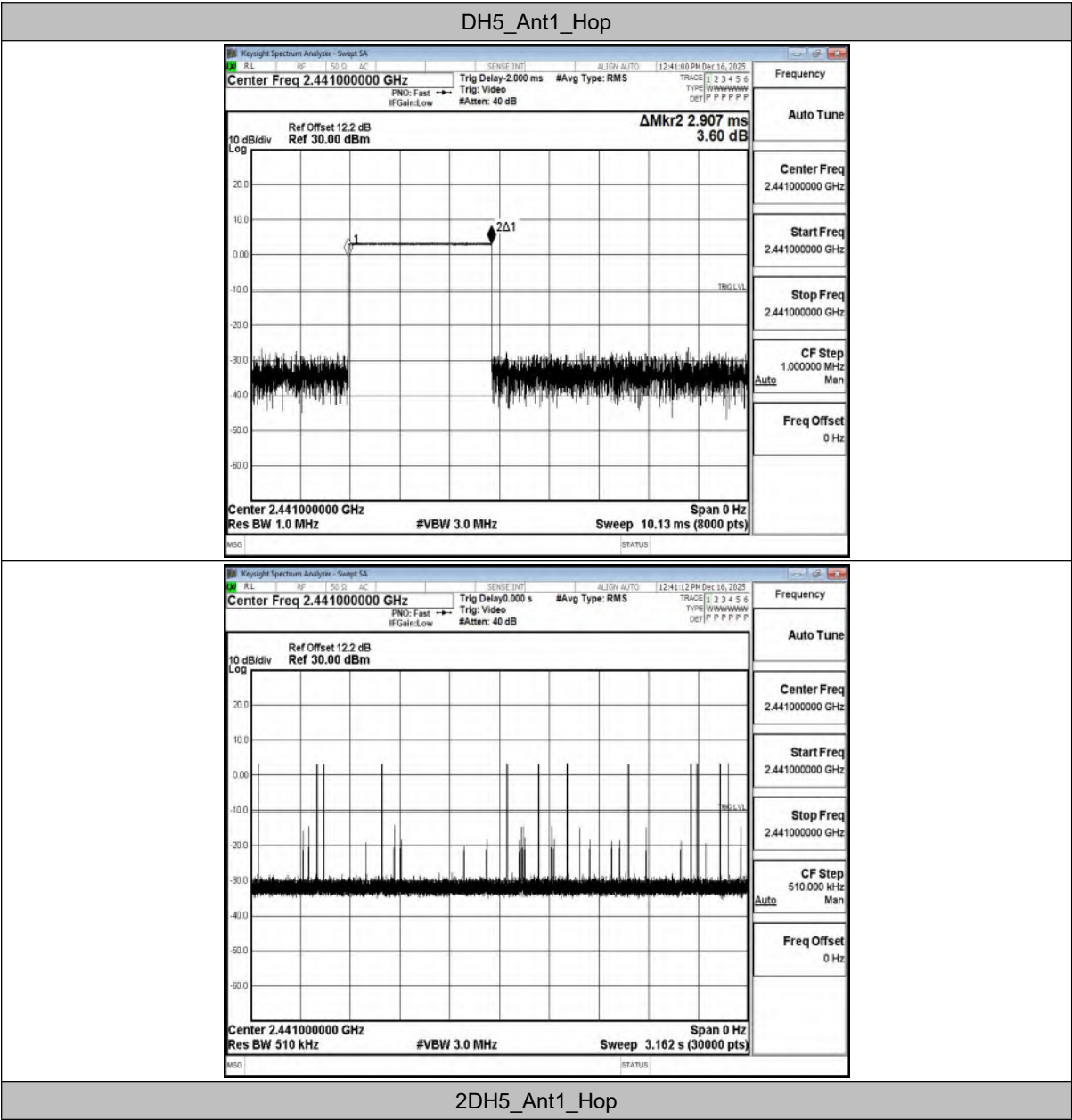


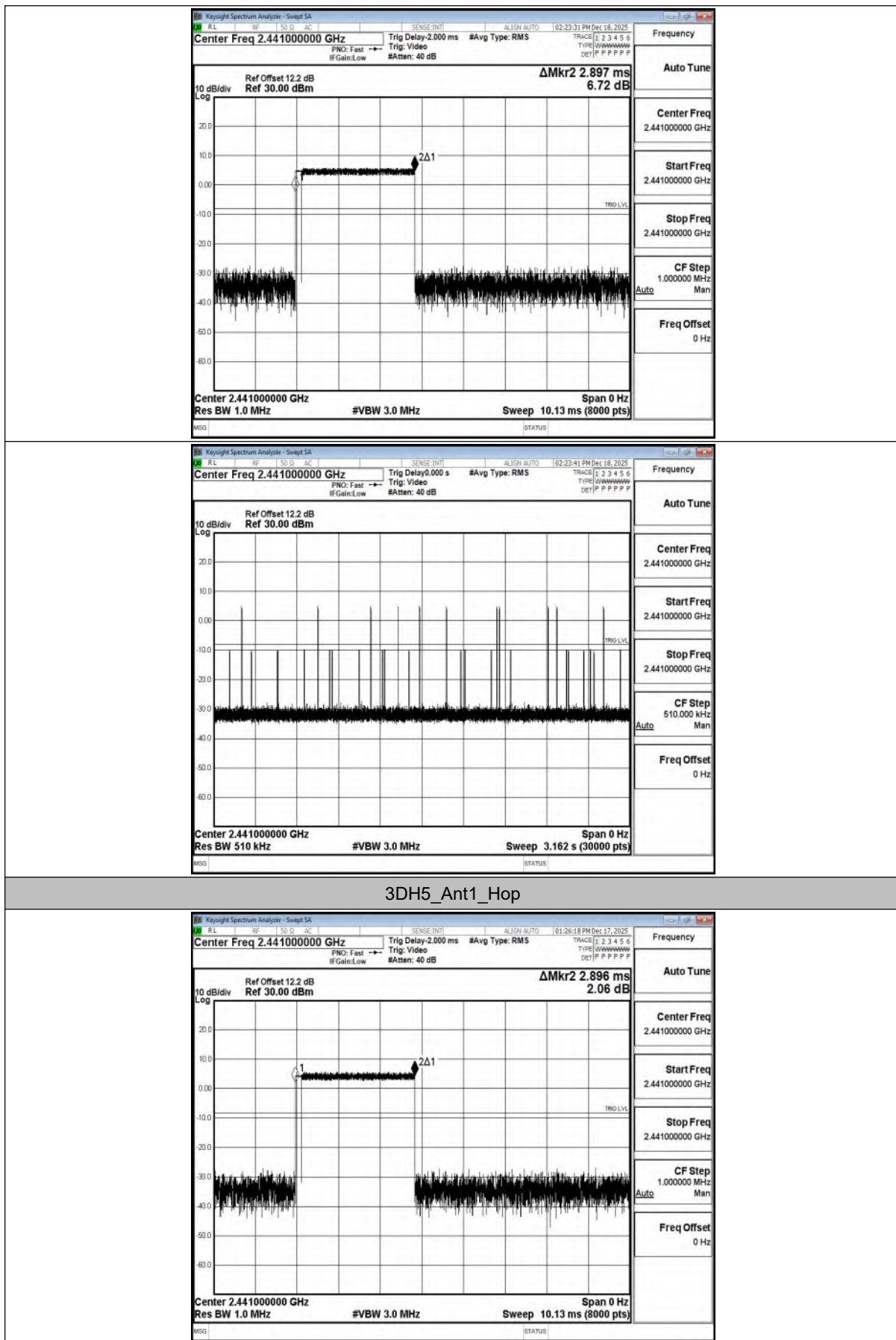
A.4 Dwell Time

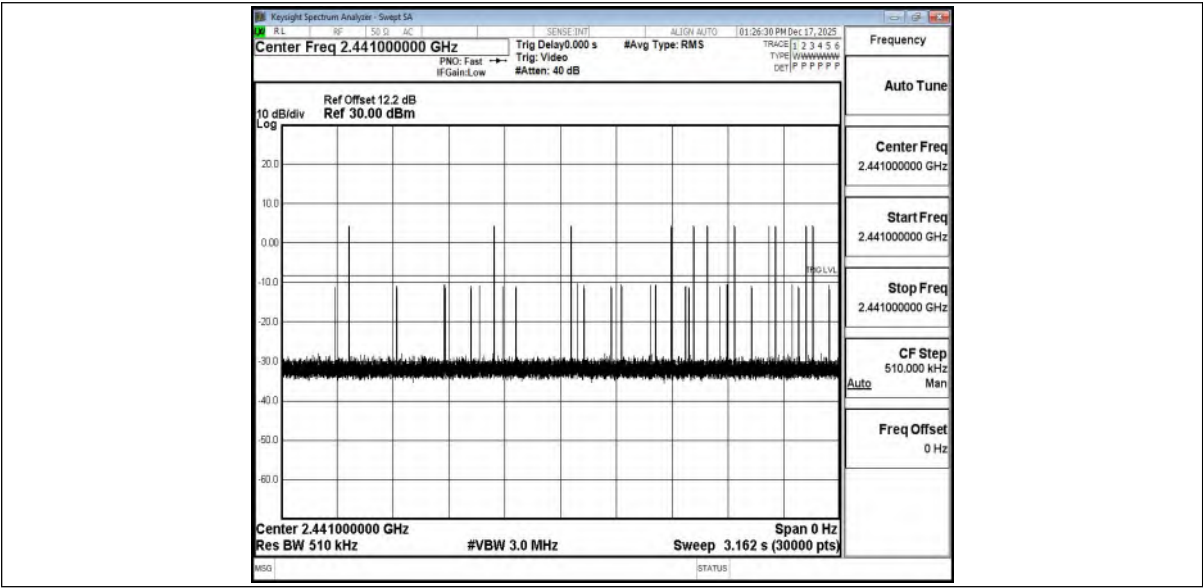
Test Result

TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.907	130	0.378	≤0.4	PASS
2DH5	Ant1	Hop	2.897	120	0.348	≤0.4	PASS
3DH5	Ant1	Hop	2.896	120	0.348	≤0.4	PASS

Test Graphs







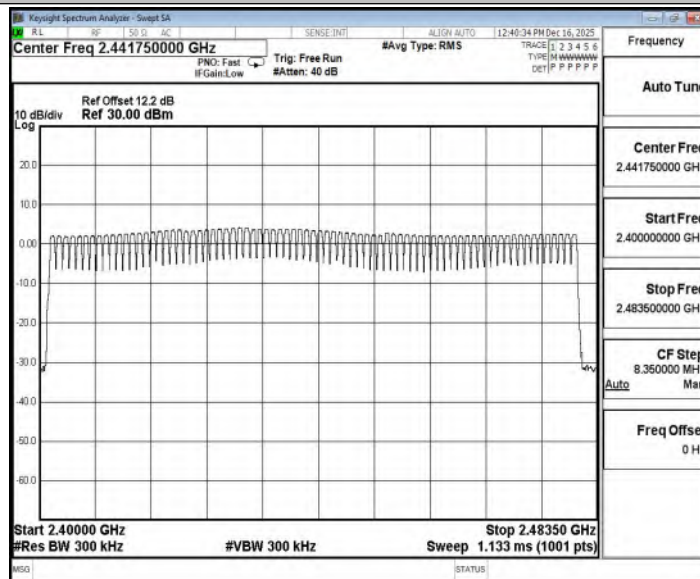
A.5 Number of Hopping Channel

Test Result

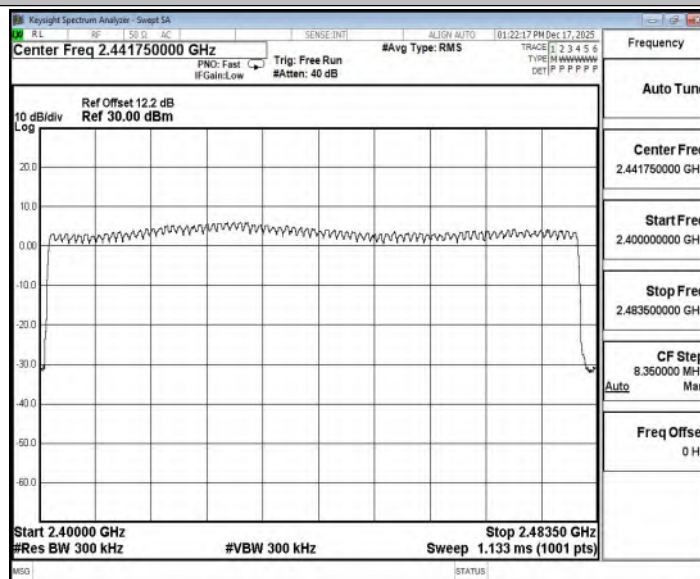
TestMode	Antenna	Freq(MHz)	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

Test Graphs

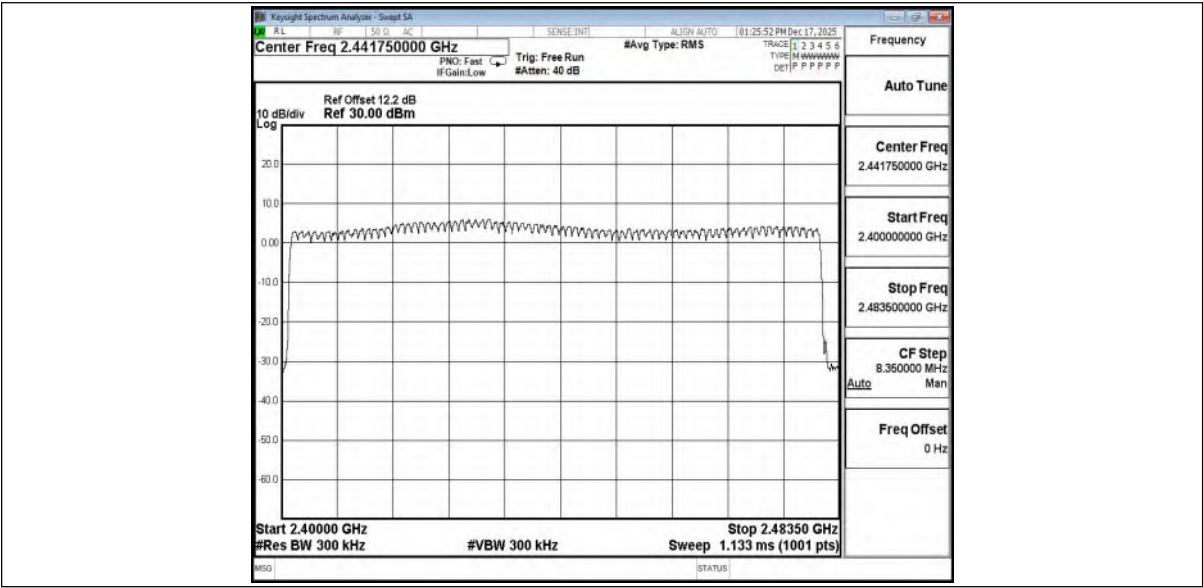
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop



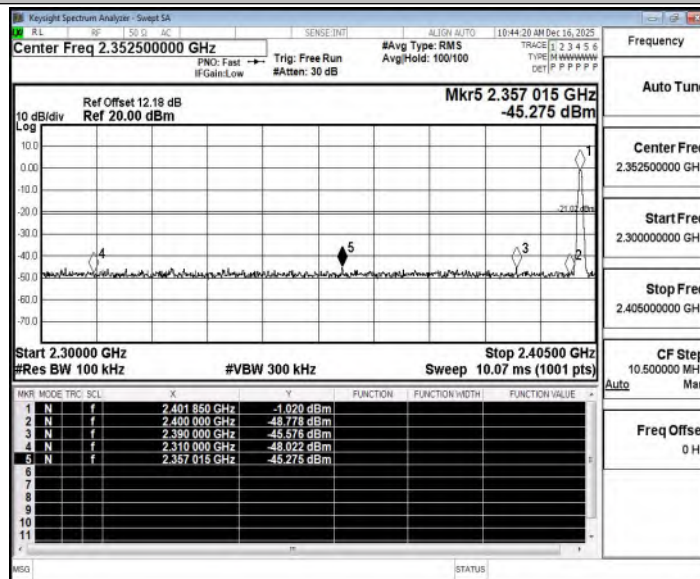
A.6 Band Edge

Test Result

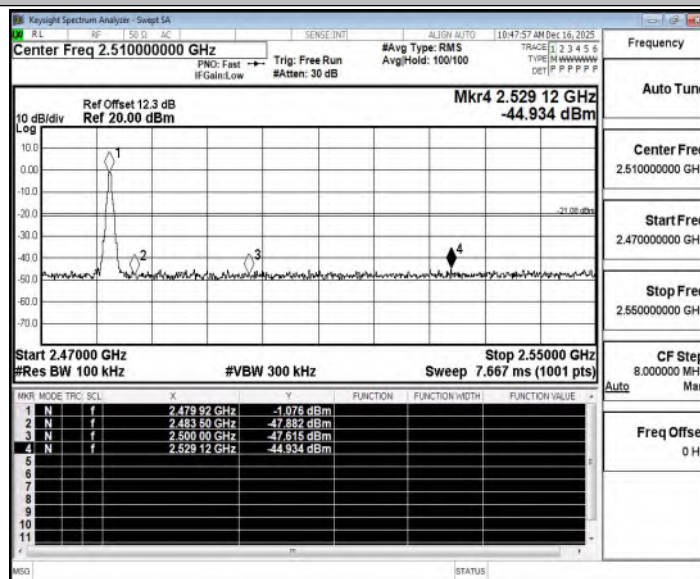
TestMode	Antenna	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-1.02	-45.28	≤ -21.02	PASS
		High	2480	-1.08	-44.93	≤ -21.08	PASS
		Low	Hop_2402	-4.23	-45.82	≤ -24.23	PASS
		High	Hop_2480	1.81	-45.01	≤ -18.19	PASS
2DH5	Ant1	Low	2402	-1.31	-45.39	≤ -21.31	PASS
		High	2480	-3.77	-44.13	≤ -23.77	PASS
		Low	Hop_2402	-0.64	-45.49	≤ -20.64	PASS
		High	Hop_2480	1.19	-44.92	≤ -18.81	PASS
3DH5	Ant1	Low	2402	1.40	-45.24	≤ -18.61	PASS
		High	2480	2.24	-45.2	≤ -17.76	PASS
		Low	Hop_2402	-0.68	-45.02	≤ -20.68	PASS
		High	Hop_2480	3.35	-44.39	≤ -16.65	PASS

Test Graphs

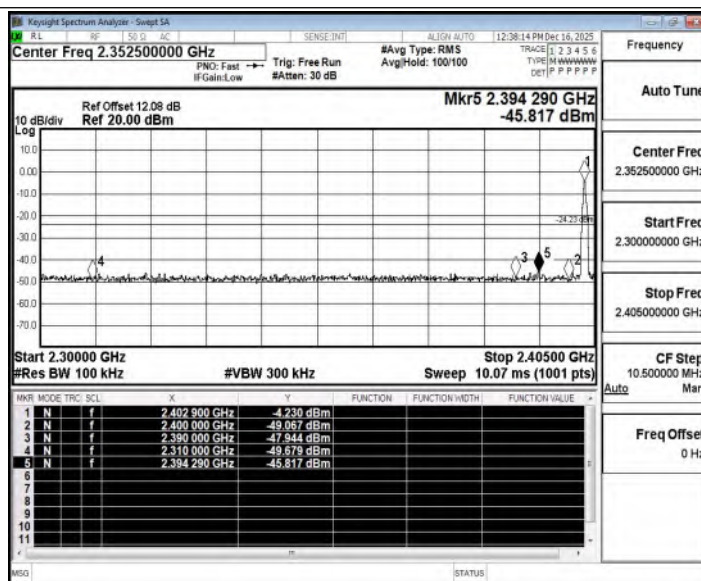
DH5_Ant1_Low_2402



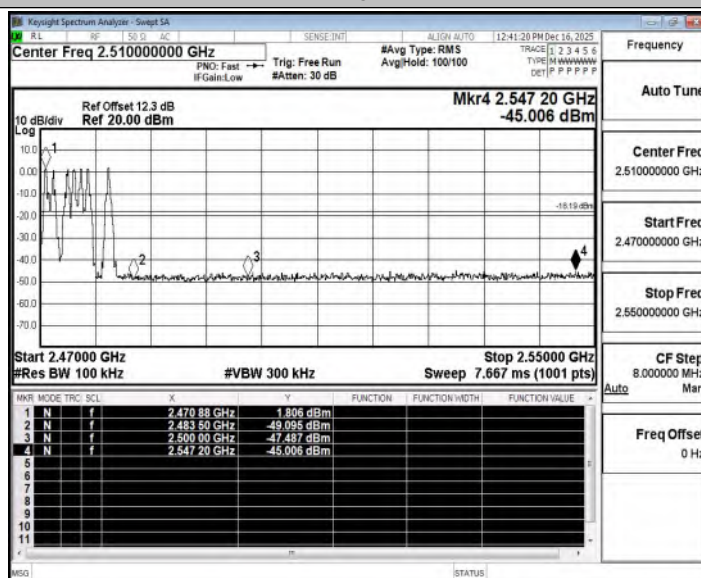
DH5_Ant1_High_2480



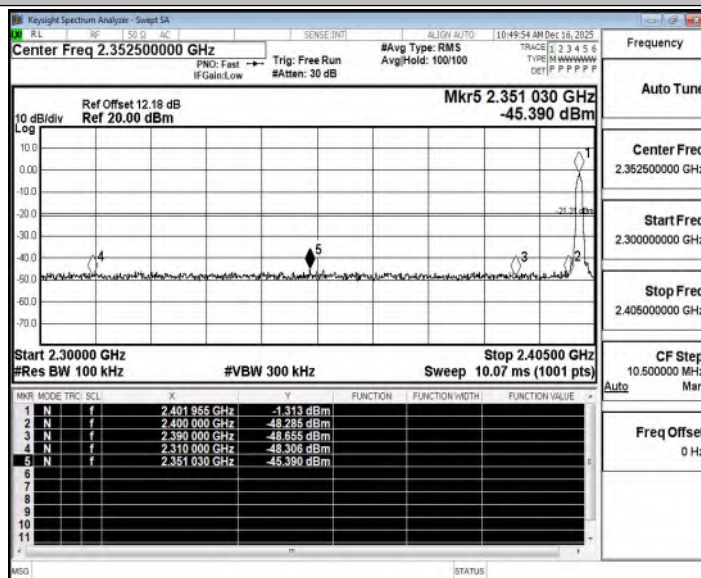
DH5_Ant1_Low_Hop_2402



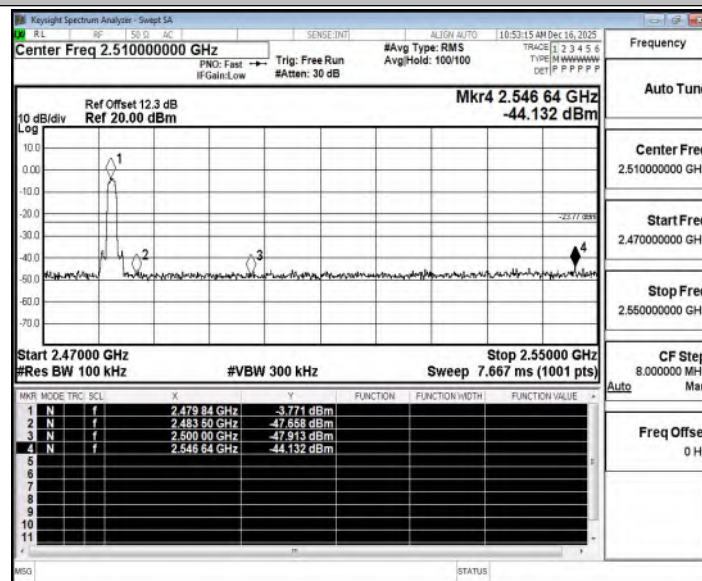
DH5_Ant1_High_Hop_2480



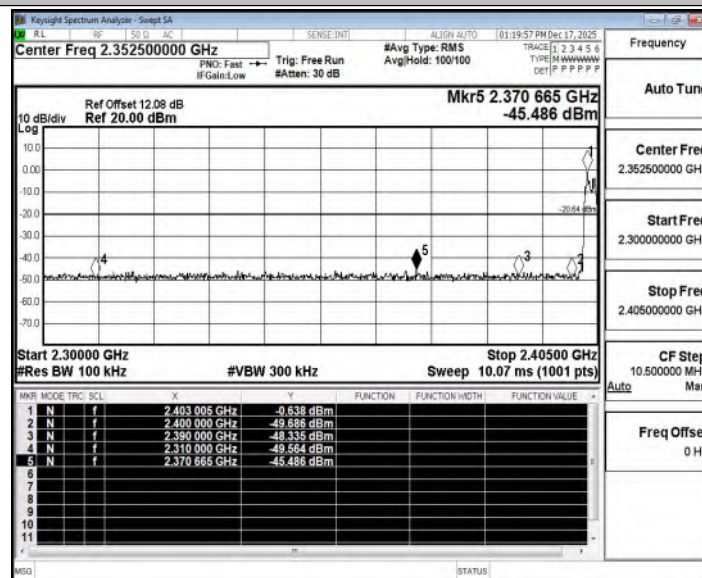
2DH5_Ant1_Low_2402



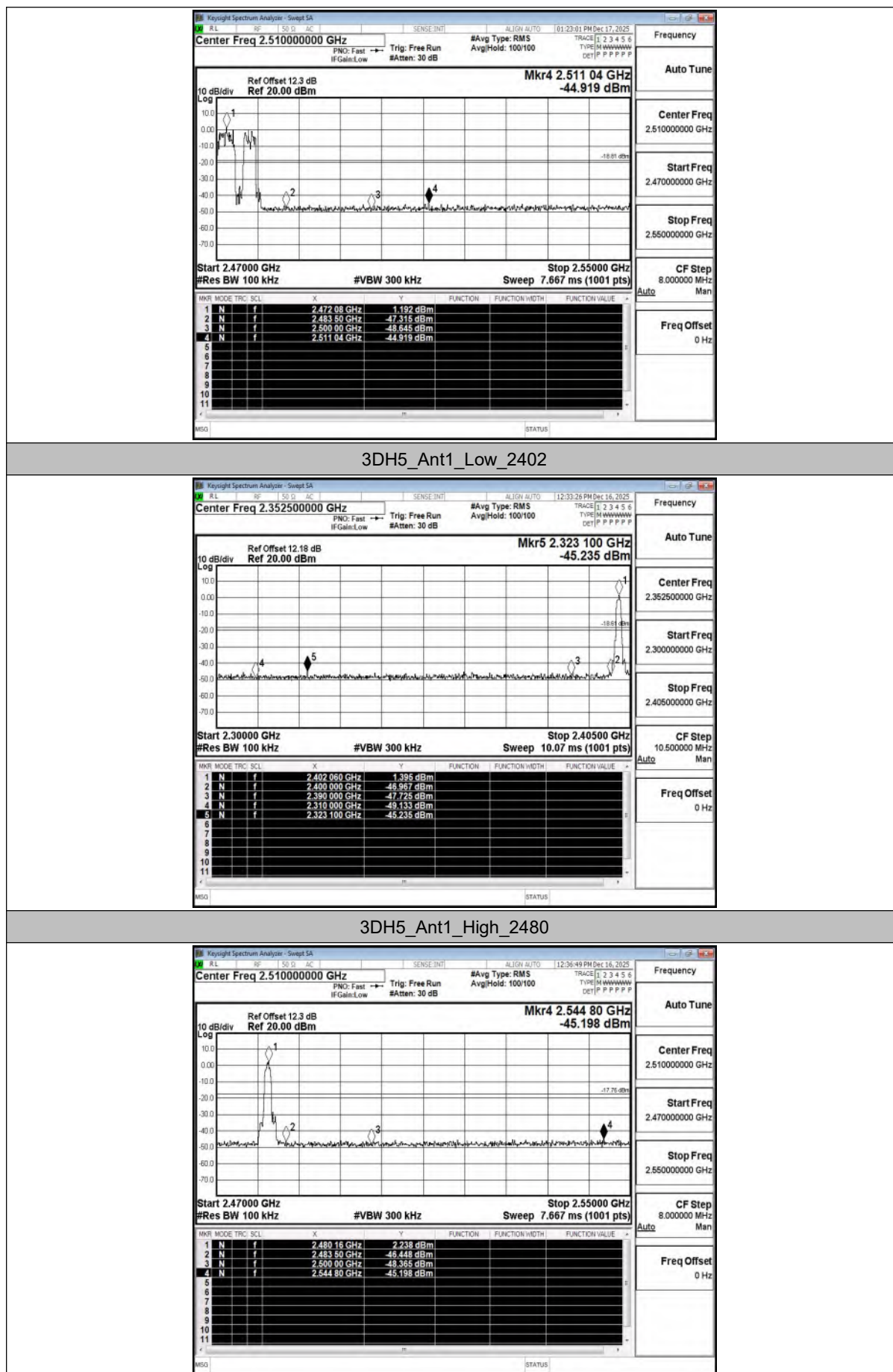
2DH5_Ant1_High_2480



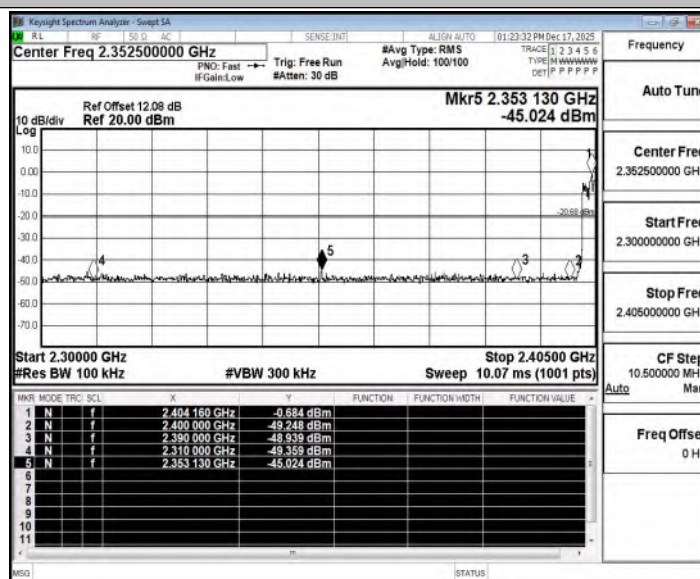
2DH5_Ant1_Low_Hop_2402



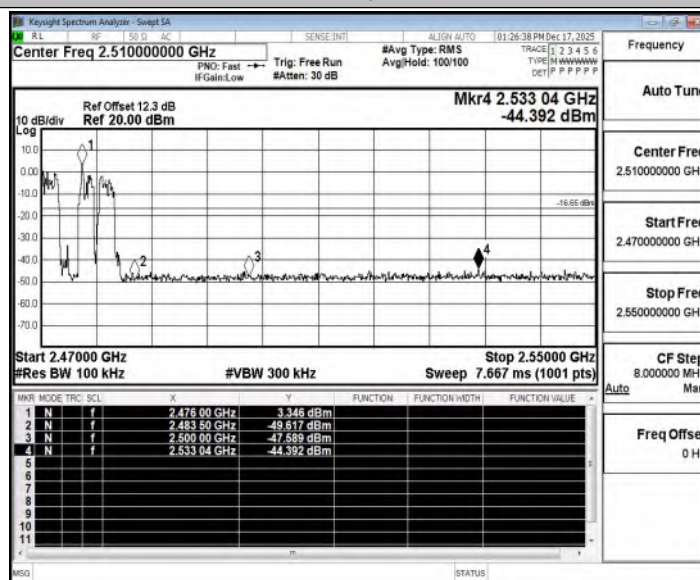
2DH5_Ant1_High_Hop_2480



3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480



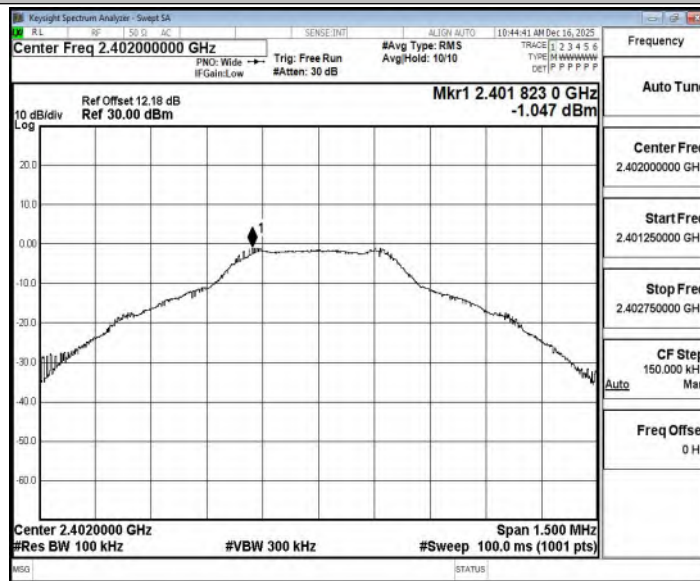
A.7 Conducted RF Spurious Emission

Test Result

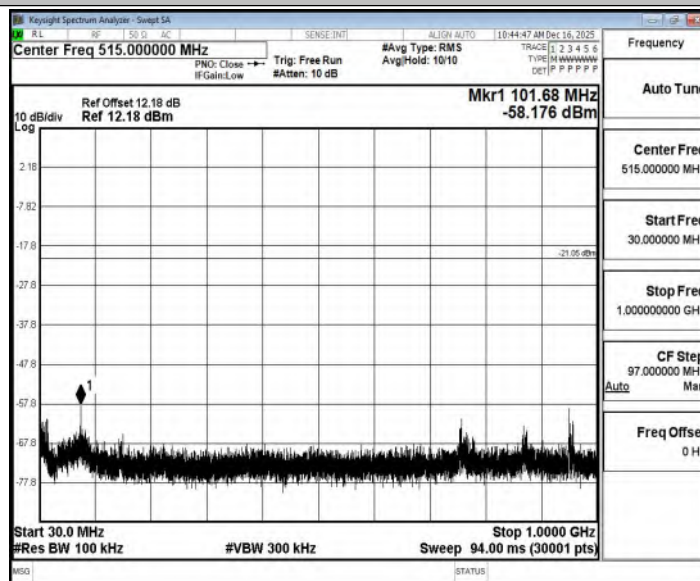
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	-1.05	-1.05	---	PASS
			30~1000	-1.05	-58.18	≤-21.05	PASS
			1000~26500	-1.05	-48.07	≤-21.05	PASS
		2441	Reference	0.13	0.13	---	PASS
			30~1000	0.13	-59.72	≤-19.87	PASS
			1000~26500	0.13	-54.84	≤-19.87	PASS
		2480	Reference	-0.67	-0.67	---	PASS
			30~1000	-0.67	-55.26	≤-20.67	PASS
			1000~26500	-0.67	-55.02	≤-20.67	PASS
2DH5	Ant1	2402	Reference	-1.15	-1.15	---	PASS
			30~1000	-1.15	-57.36	≤-21.15	PASS
			1000~26500	-1.15	-54.05	≤-21.15	PASS
		2441	Reference	0.03	0.03	---	PASS
			30~1000	0.03	-60.35	≤-19.97	PASS
			1000~26500	0.03	-54.63	≤-19.97	PASS
		2480	Reference	-1.08	-1.08	---	PASS
			30~1000	-1.08	-58.82	≤-21.08	PASS
			1000~26500	-1.08	-53.68	≤-21.08	PASS
3DH5	Ant1	2402	Reference	2.22	2.22	---	PASS
			30~1000	2.22	-59.42	≤-17.78	PASS
			1000~26500	2.22	-53.8	≤-17.78	PASS
		2441	Reference	3.60	3.60	---	PASS
			30~1000	3.60	-59.77	≤-16.4	PASS
			1000~26500	3.60	-55.05	≤-16.4	PASS
		2480	Reference	2.25	2.25	---	PASS
			30~1000	2.25	-59.7	≤-17.75	PASS
			1000~26500	2.25	-51.19	≤-17.75	PASS

Test Graphs

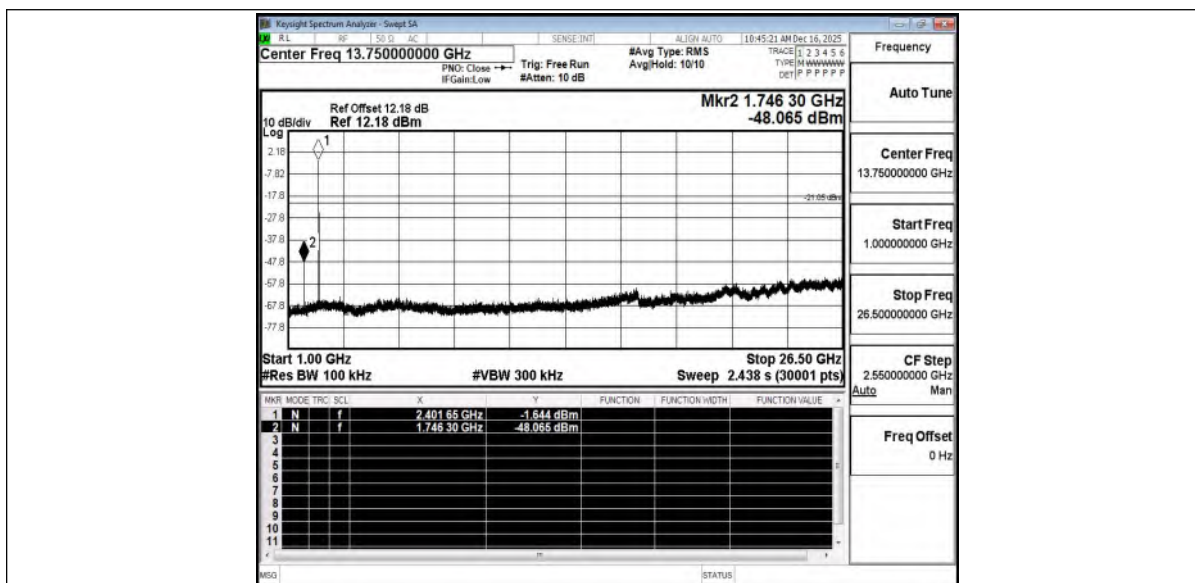
DH5_Ant1_2402_0~Reference



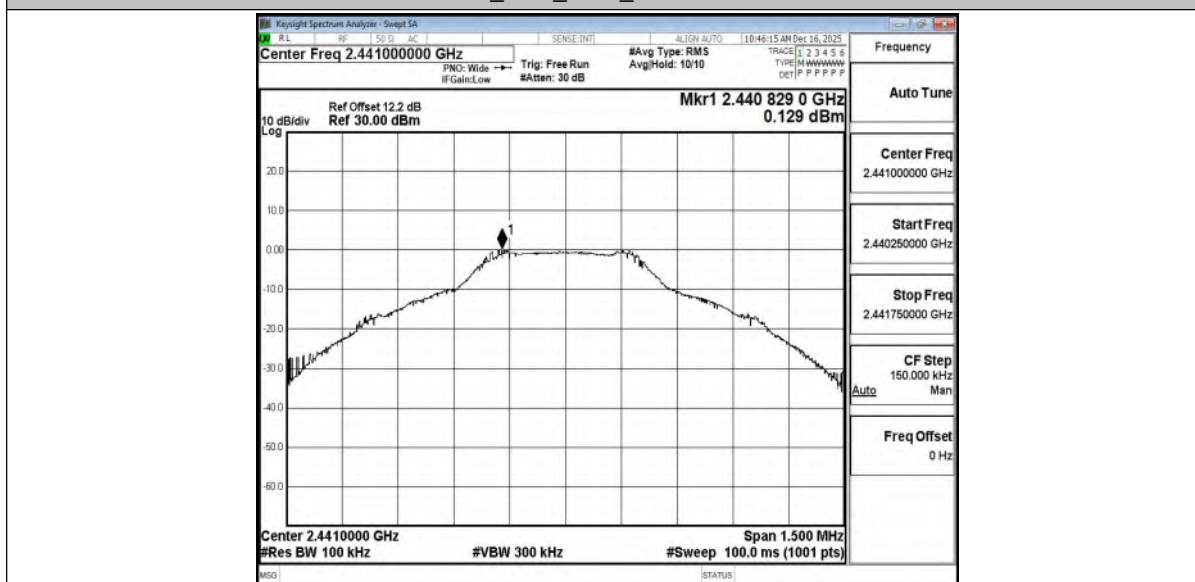
DH5_Ant1_2402_30~1000



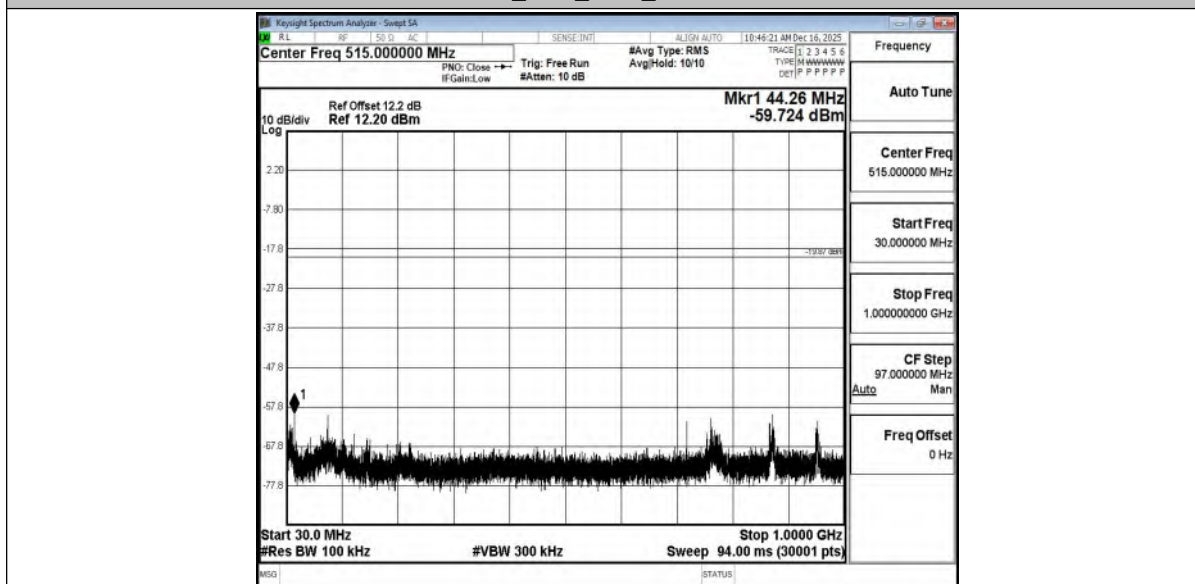
DH5_Ant1_2402_1000~26500



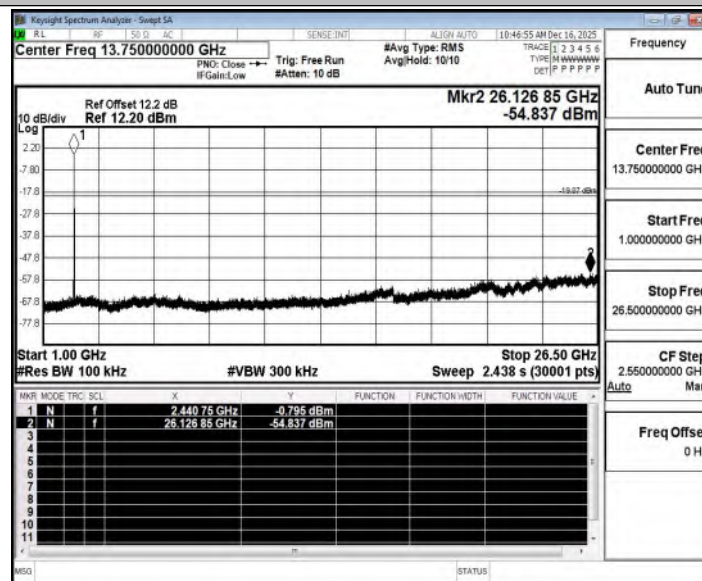
DH5_Ant1_2441_0~Reference



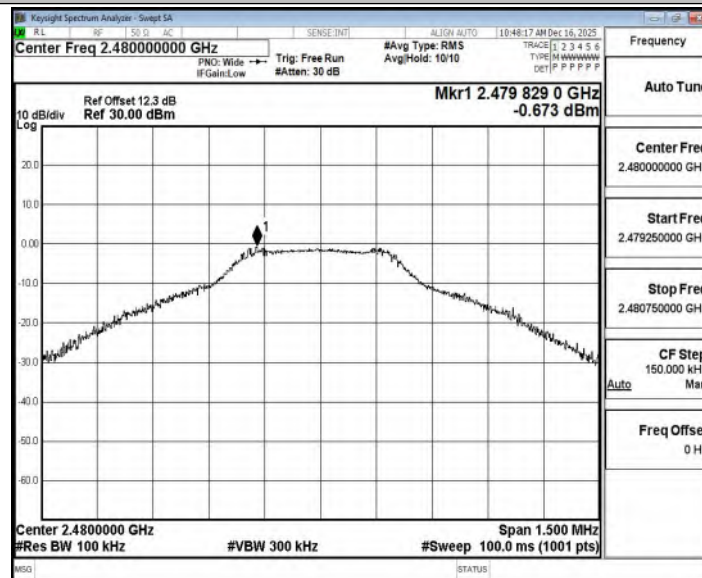
DH5_Ant1_2441_30~1000



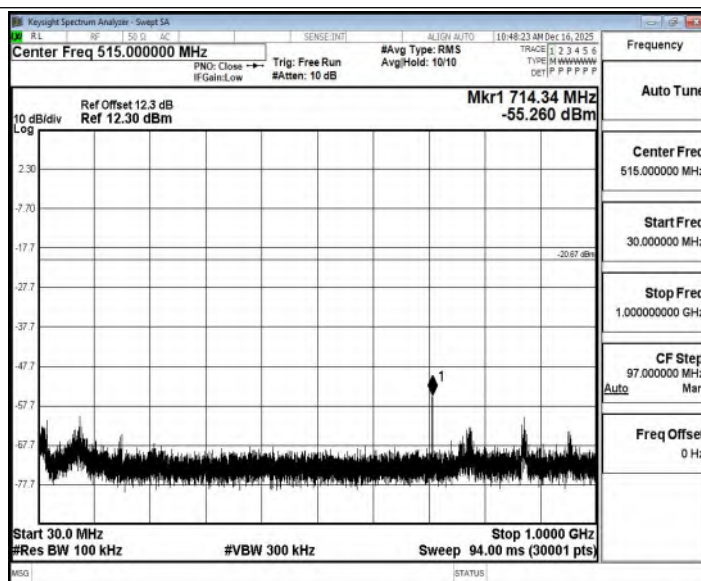
DH5_Ant1_2441_1000~26500



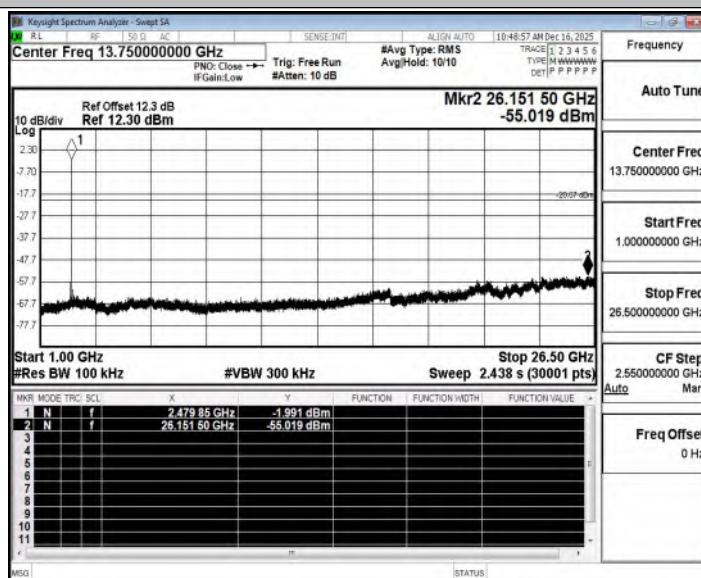
DH5_Ant1_2480_0~Reference



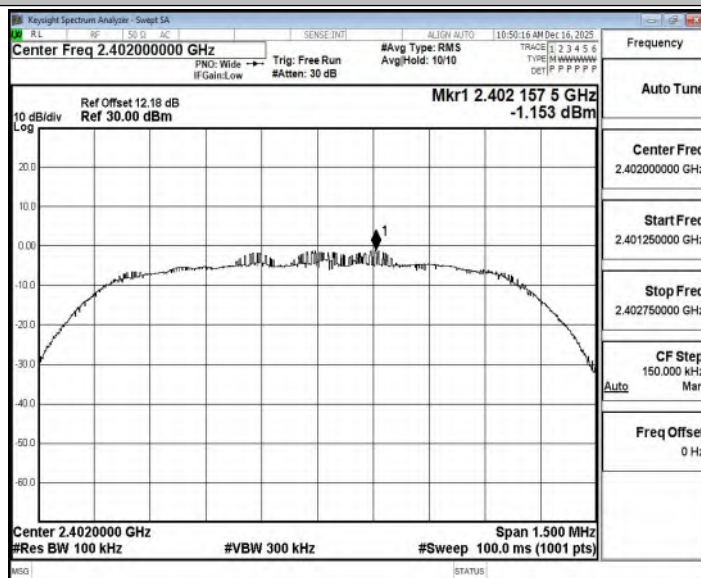
DH5_Ant1_2480_30~1000

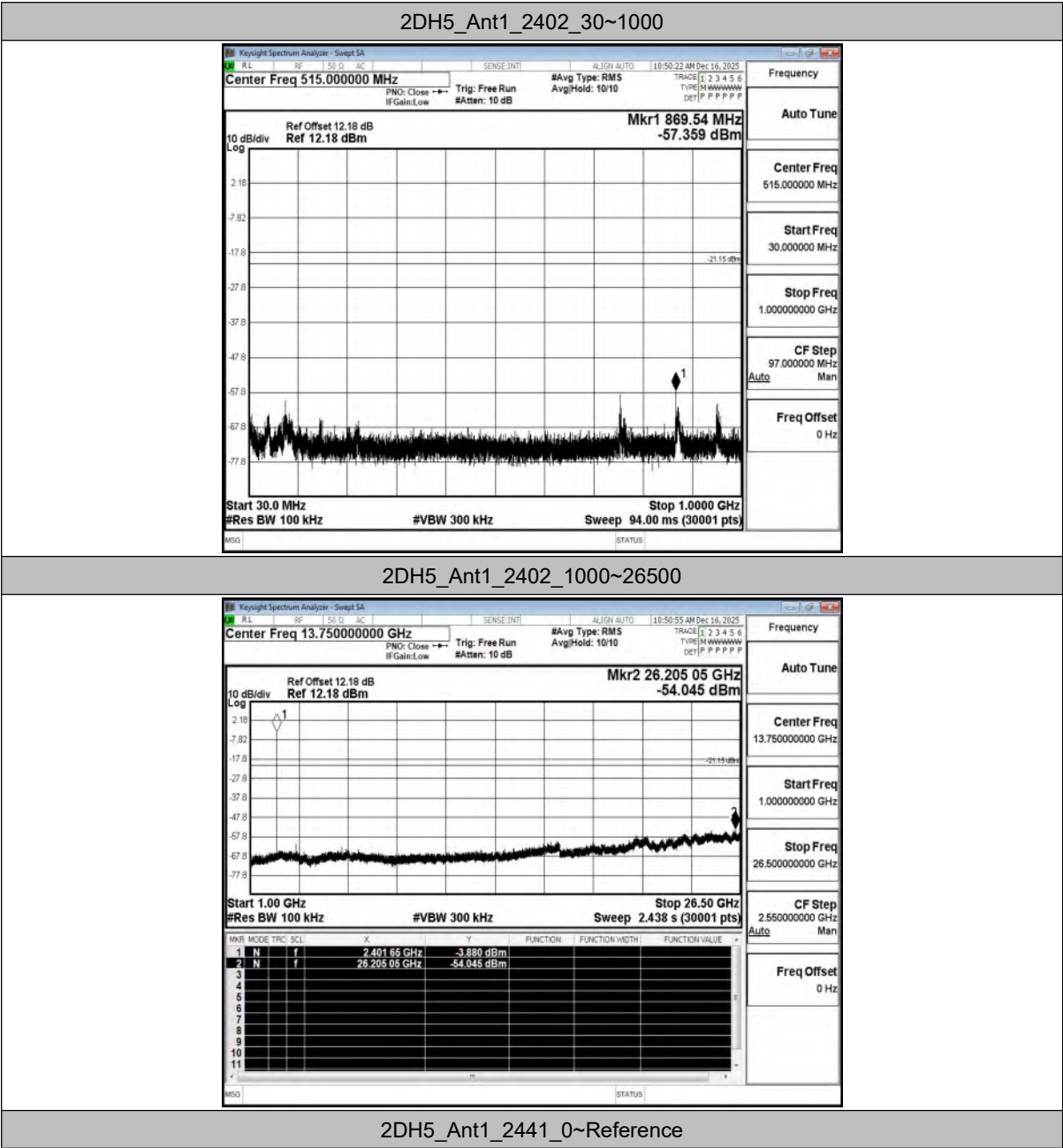


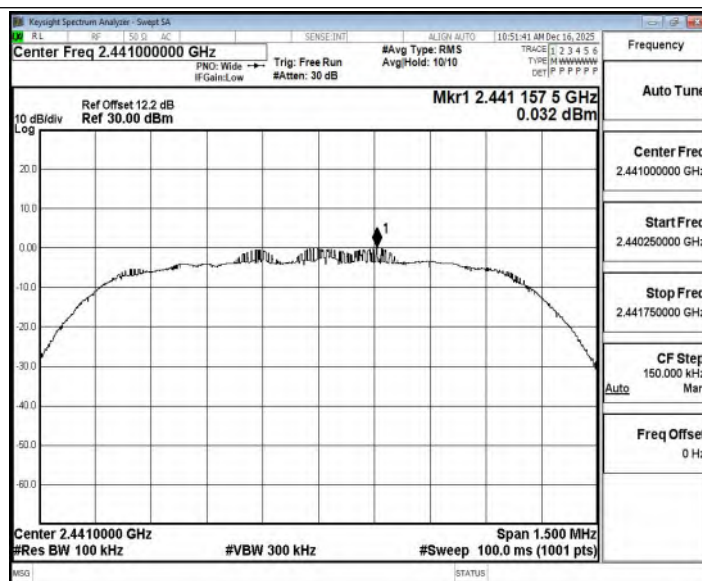
DH5_Ant1_2480_1000~26500



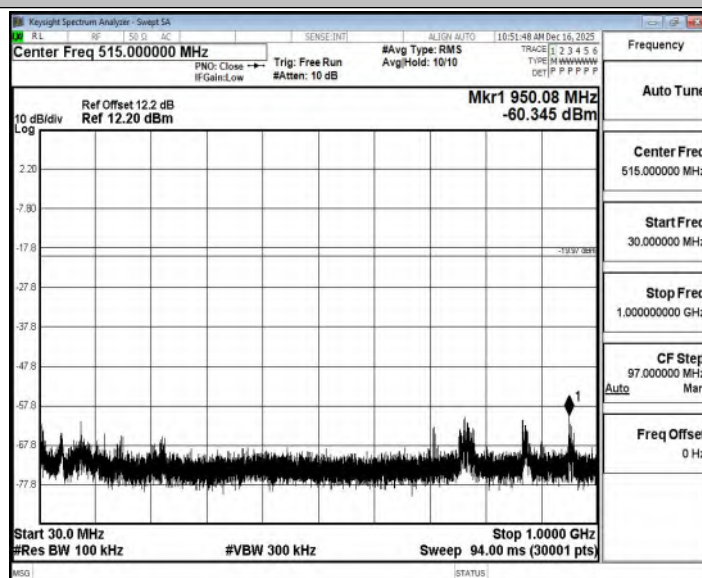
2DH5_Ant1_2402_0~Reference



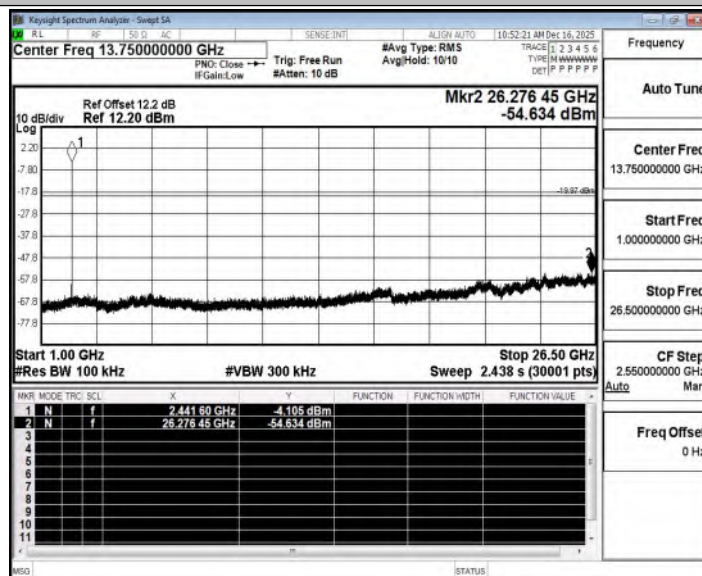




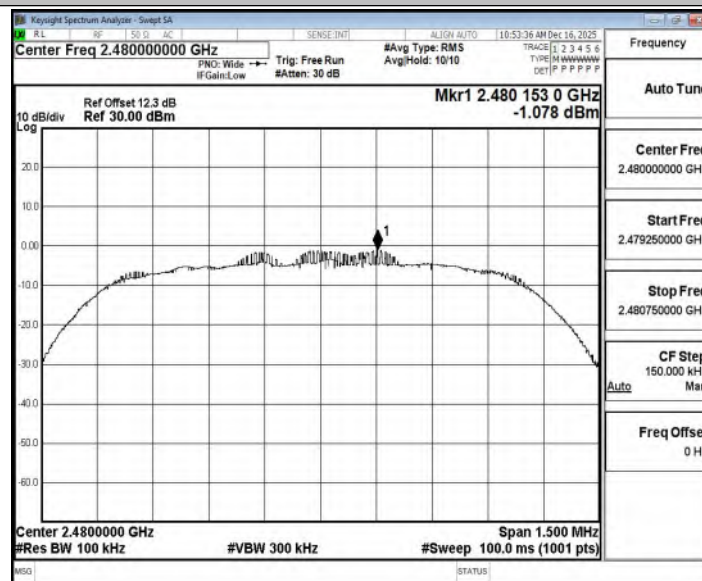
2DH5_Ant1_2441_30~1000



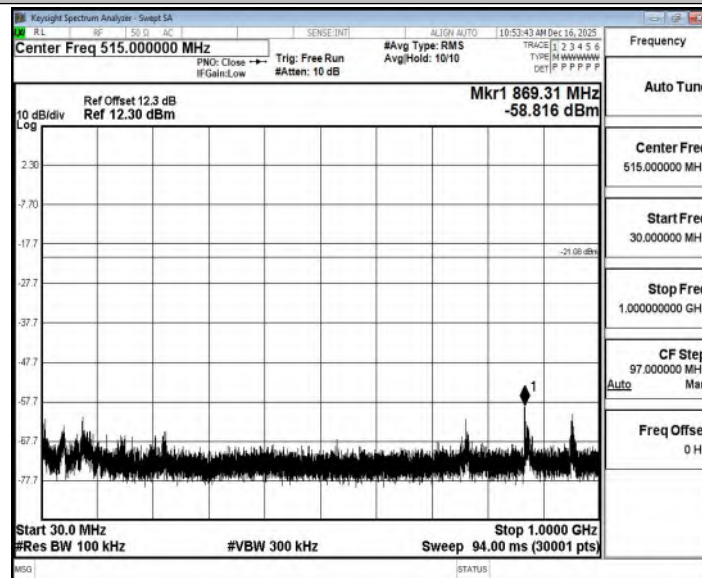
2DH5_Ant1_2441_1000~26500



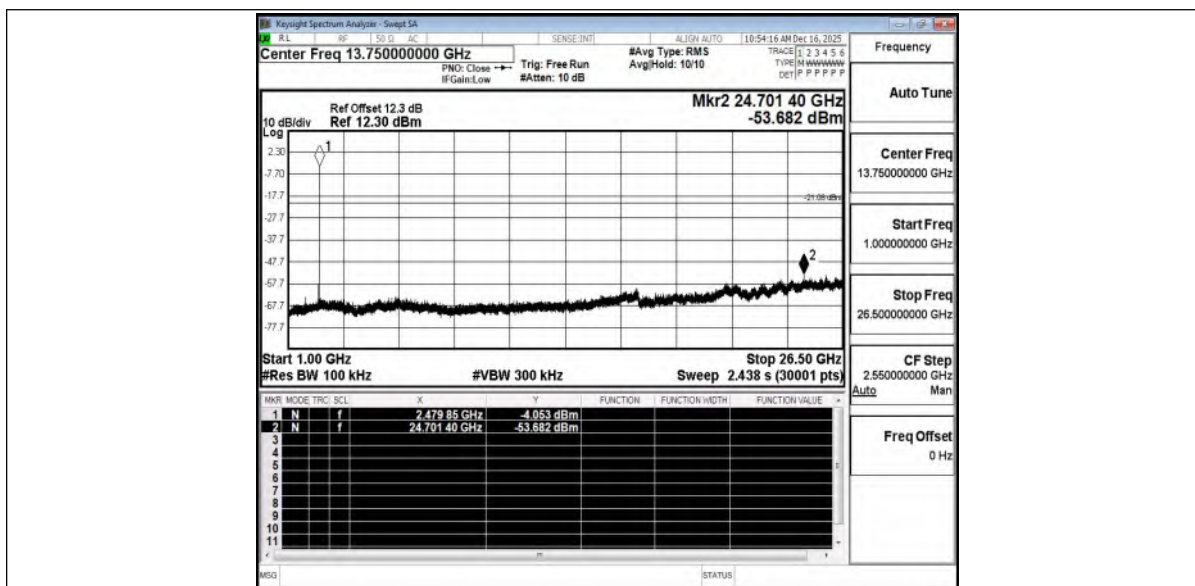
2DH5_Ant1_2480_0~Reference



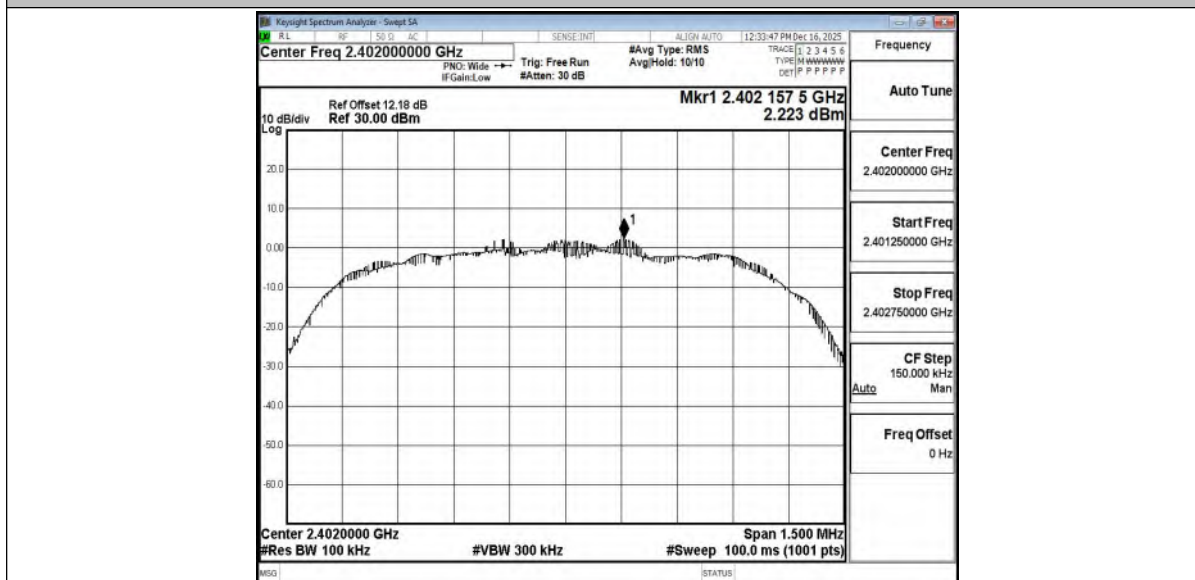
2DH5_Ant1_2480_30~1000



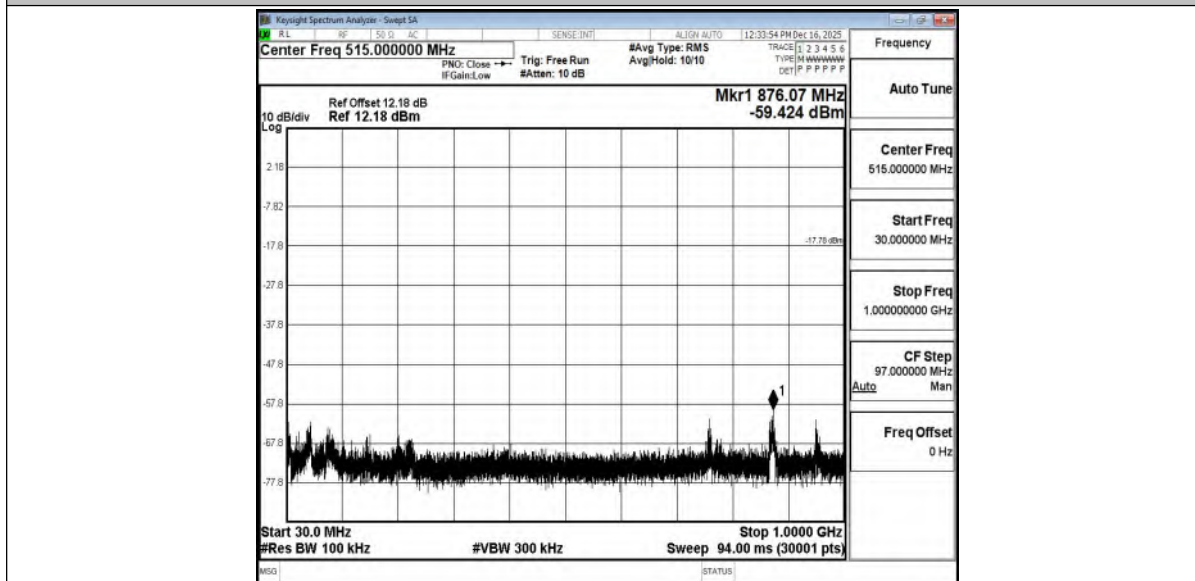
2DH5_Ant1_2480_1000~26500



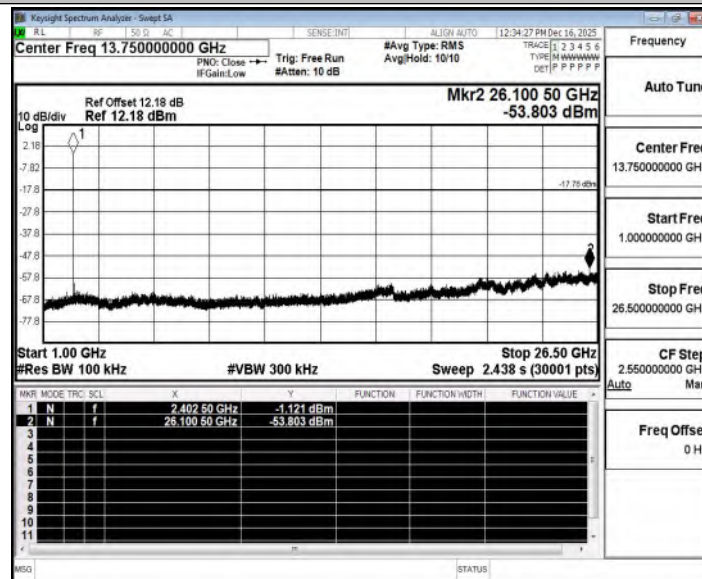
3DH5_Ant1_2402_0~Reference



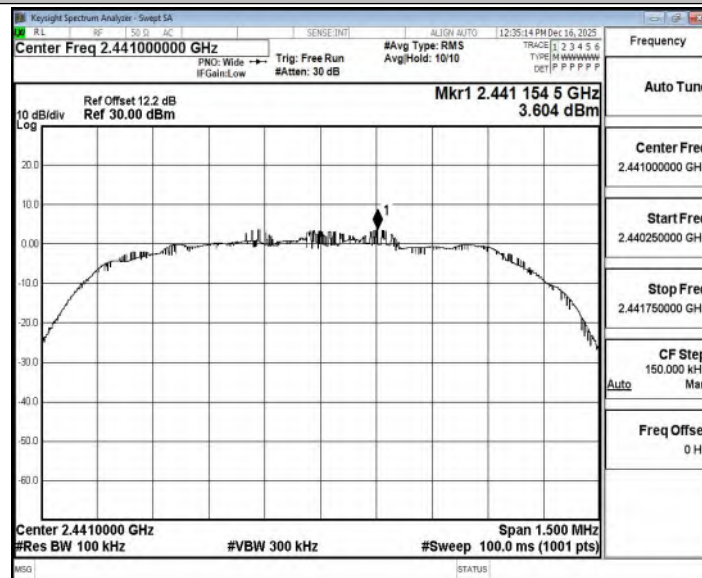
3DH5_Ant1_2402_30~1000



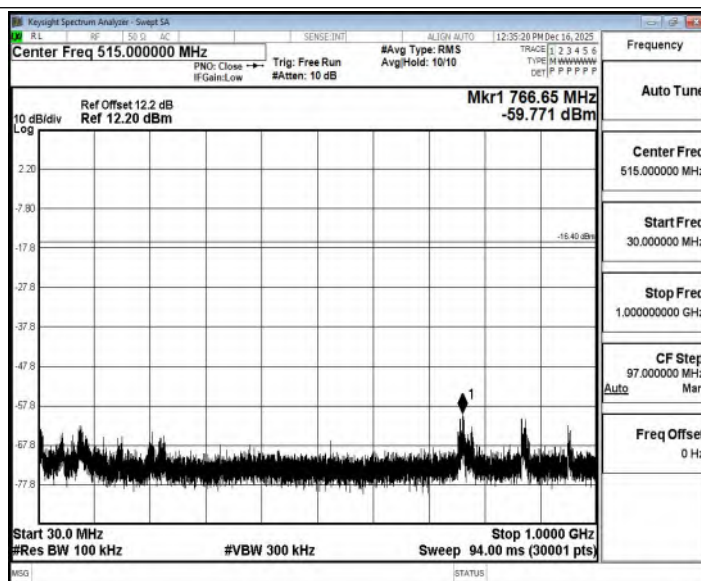
3DH5_Ant1_2402_1000~26500



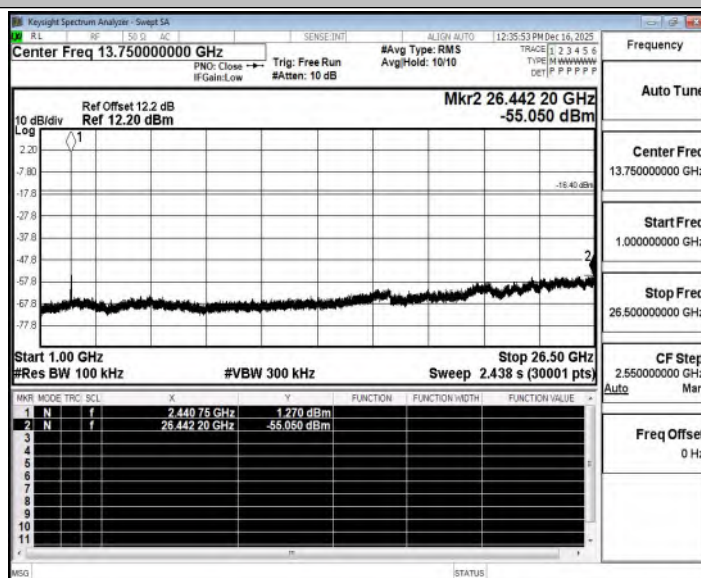
3DH5_Ant1_2441_0~Reference



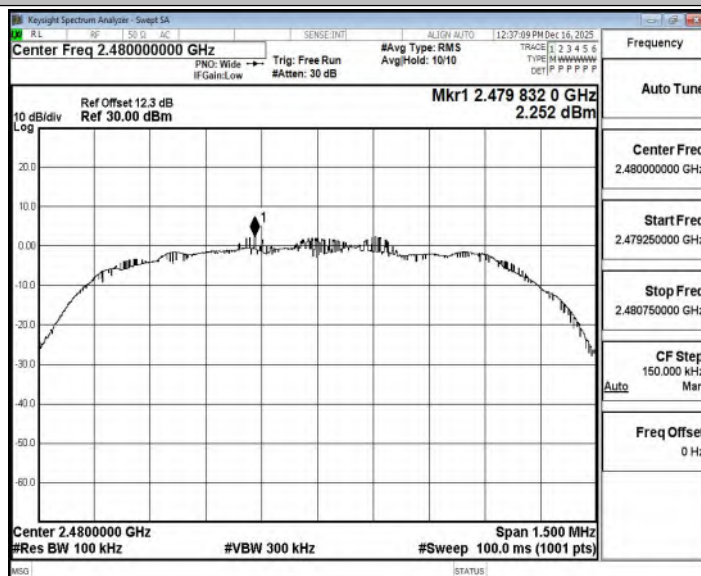
3DH5_Ant1_2441_30~1000

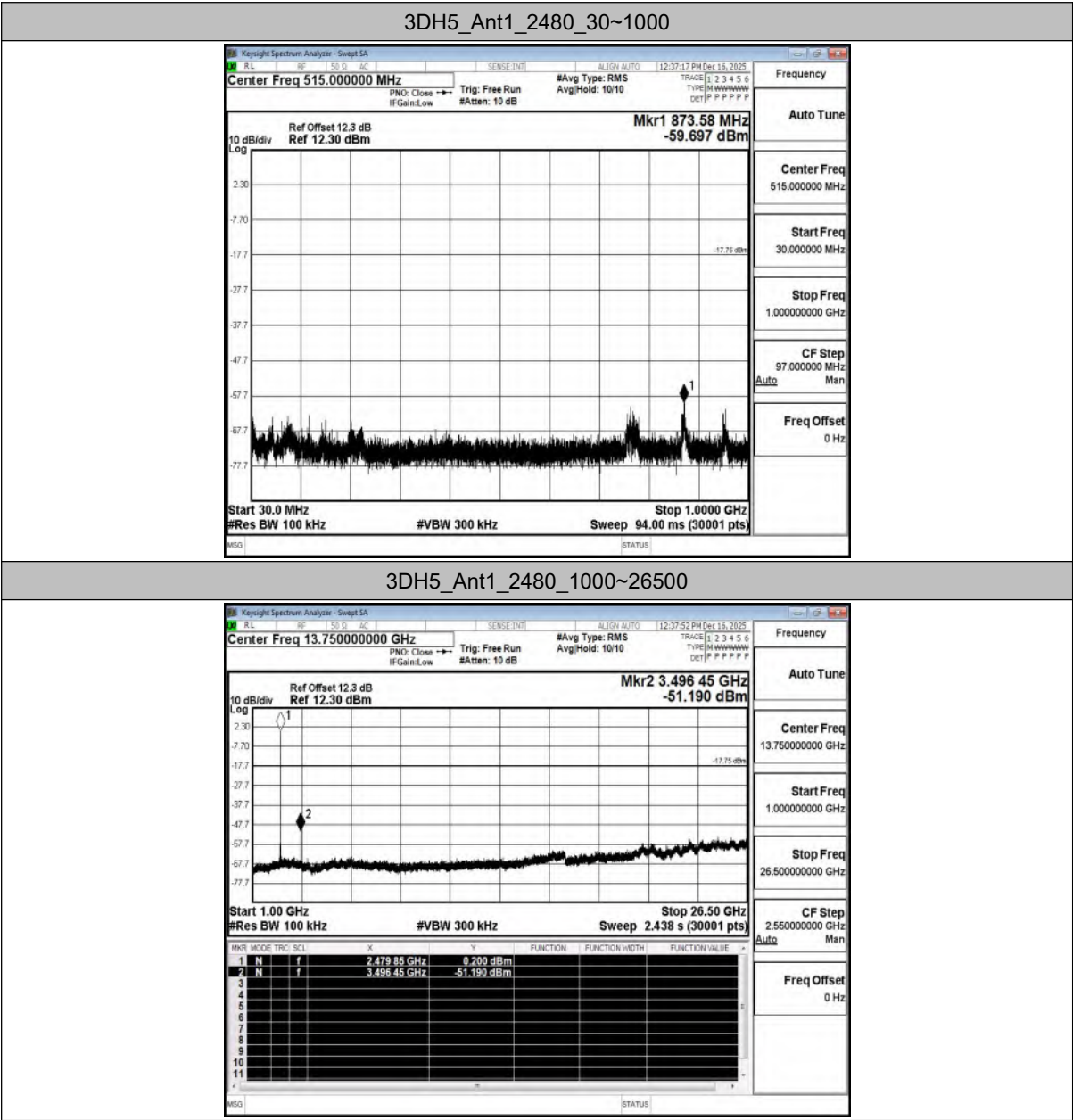


3DH5_Ant1_2441_1000~26500



3DH5_Ant1_2480_0~Reference





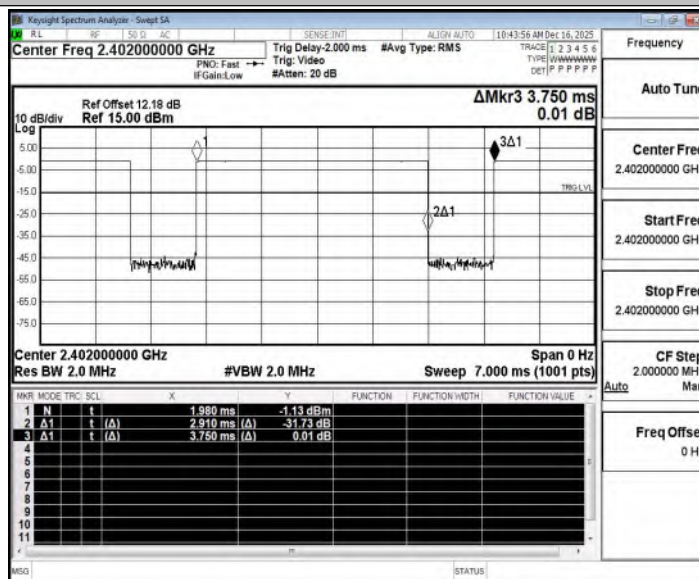
A.8 Duty Cycle

Test Result

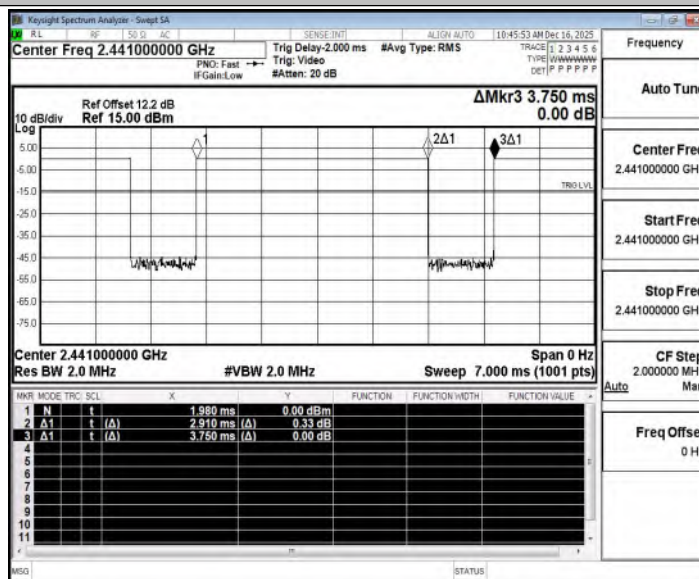
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	DC [%]	DC Factor Factor	Limit	Verdict
DH5	Ant1	2402	2.91	3.75	77.60	1.10	---	---
		2441	2.91	3.75	77.60	1.10	---	---
		2480	2.91	3.75	77.60	1.10	---	---
2DH5	Ant1	2402	2.90	3.75	77.33	1.12	---	---
		2441	2.90	3.76	77.13	1.13	---	---
		2480	2.89	3.75	77.07	1.13	---	---
3DH5	Ant1	2402	2.90	3.75	77.33	1.12	---	---
		2441	2.90	3.76	77.13	1.13	---	---
		2480	2.89	3.75	77.07	1.13	---	---

Test Graphs

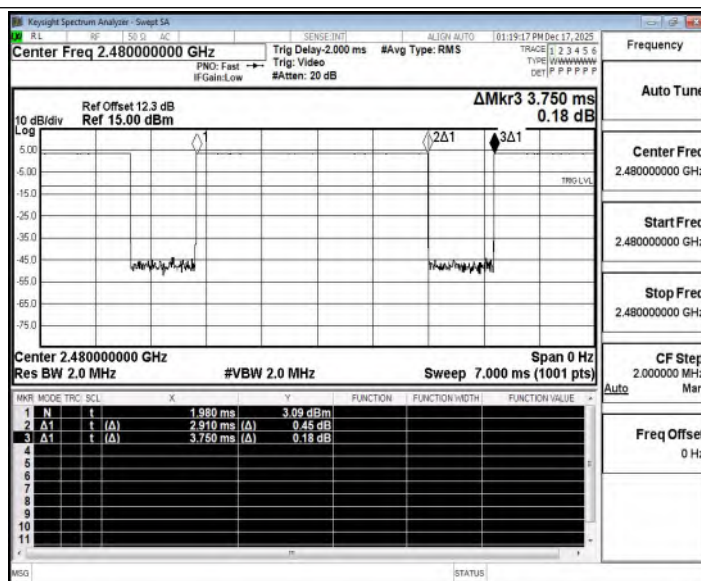
DH5_Ant1_2402



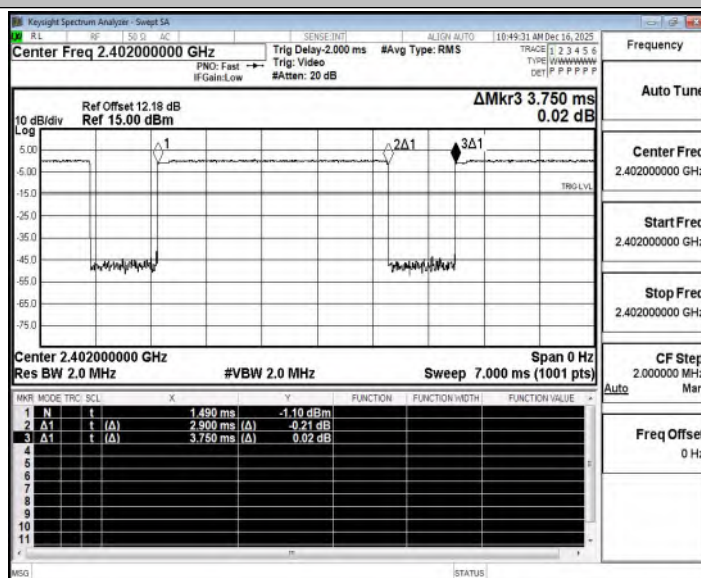
DH5_Ant1_2441



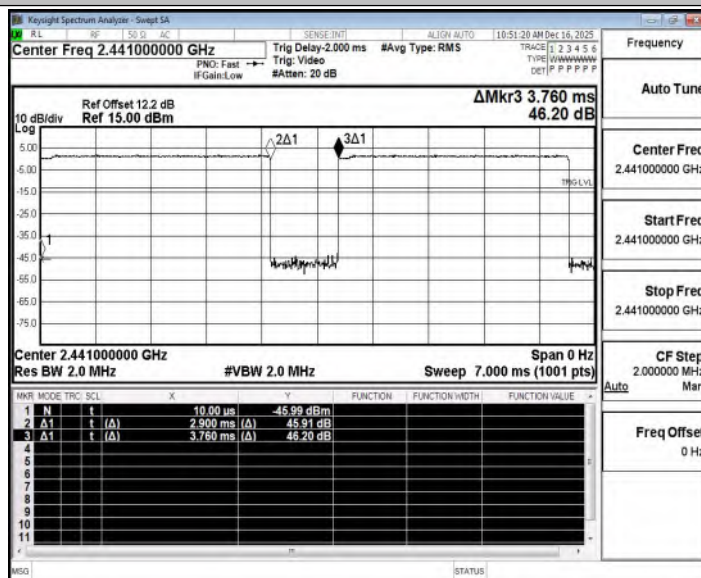
DH5_Ant1_2480



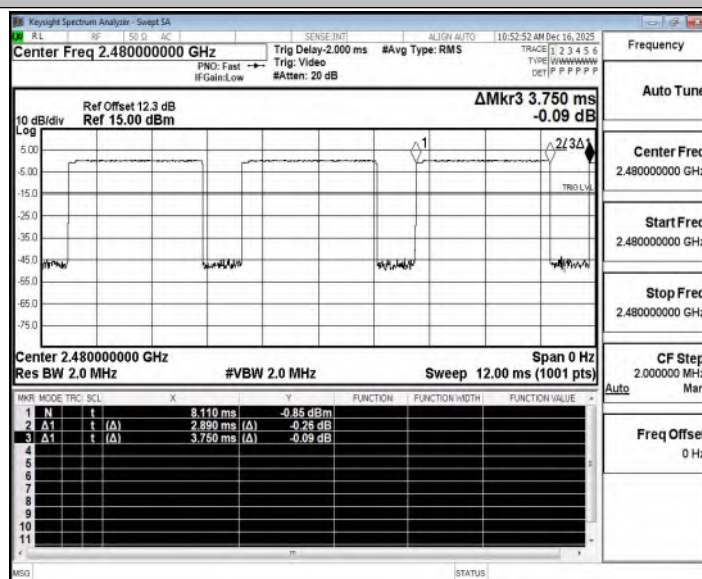
2D5_Ant1_2402



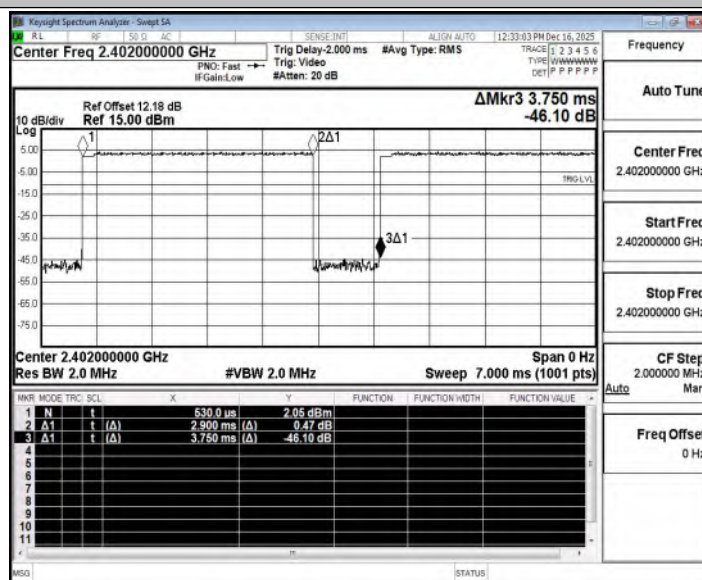
2D5_Ant1_2441



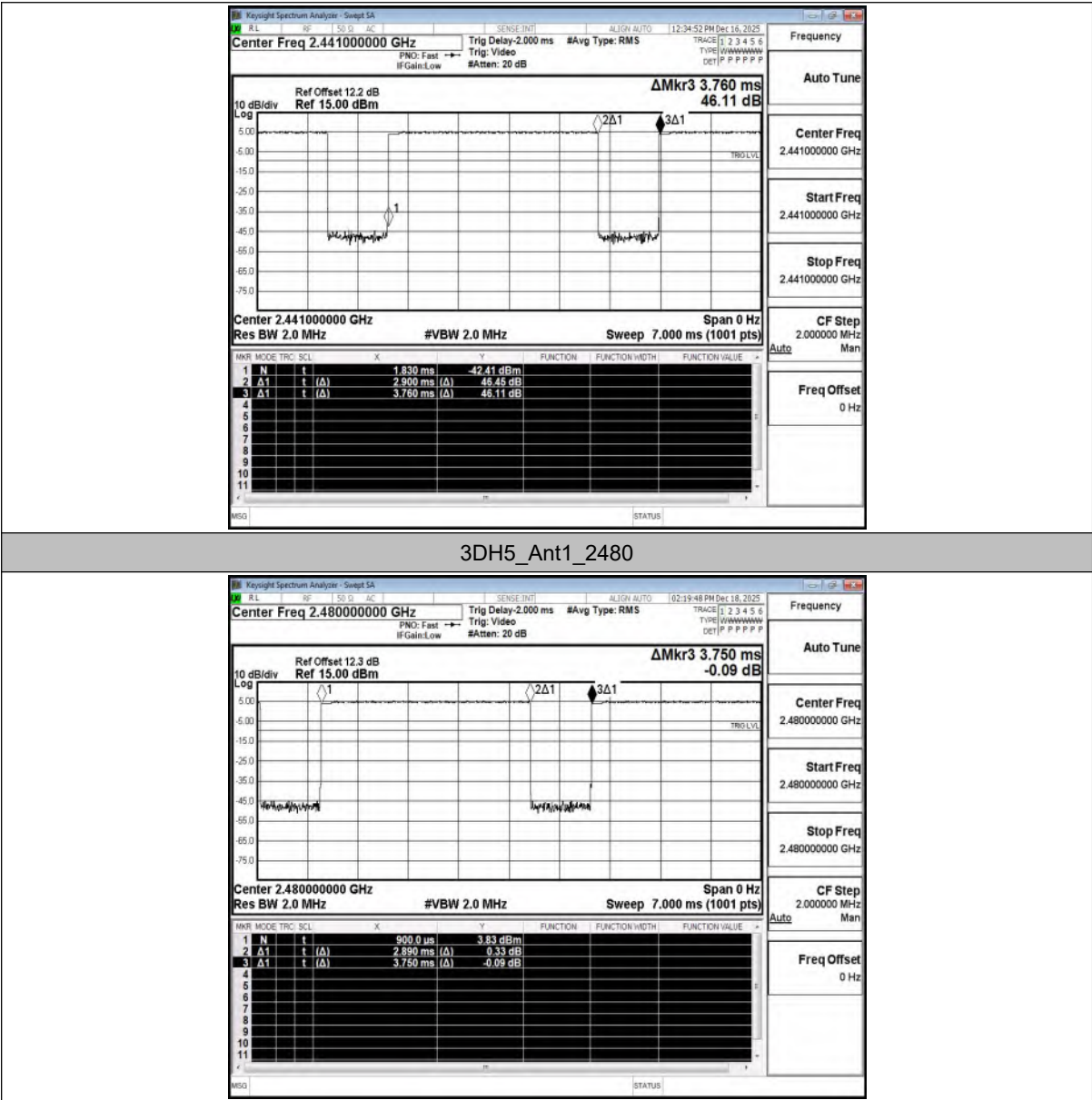
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



A.9 Restrict Band

Test Result

TestM ode	Antenn a	ChNa me	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	-61.22	≤-48.30	0.95	1.10	36.09	≤54	PASS
				AV	2332.865	-60.14	≤-48.30	0.95	1.10	37.17	≤54	PASS
				AV	2390.000	-61.06	≤-48.30	0.95	1.10	36.25	≤54	PASS
				Peak	2310.000	-53.94	≤-27.20	0.95	0.00	42.27	≤74	PASS
				Peak	2335.175	-50.02	≤-27.20	0.95	0.00	46.19	≤74	PASS
				Peak	2390.000	-52.85	≤-27.20	0.95	0.00	43.36	≤74	PASS
		High	2480	AV	2483.500	-59.09	≤-48.30	0.95	1.10	38.22	≤54	PASS
				AV	2484.000	-59.01	≤-48.30	0.95	1.10	38.30	≤54	PASS
				AV	2500.000	-60.55	≤-48.30	0.95	1.10	36.76	≤54	PASS
				Peak	2483.500	-51.78	≤-27.20	0.95	0.00	44.43	≤74	PASS
				Peak	2486.320	-43.4	≤-27.20	0.95	0.00	52.81	≤74	PASS
				Peak	2500.000	-52.51	≤-27.20	0.95	0.00	43.70	≤74	PASS
		Low	Hop_2 402	Peak	2310.000	-52.48	≤-27.20	0.95	0.00	43.73	≤74	PASS
				Peak	2375.180	-50.25	≤-27.20	0.95	0.00	45.96	≤74	PASS
				Peak	2390.000	-52.78	≤-27.20	0.95	0.00	43.43	≤74	PASS
		High	Hop_2 480	Peak	2483.500	-53.12	≤-27.20	0.95	0.00	43.09	≤74	PASS
				Peak	2485.280	-50.33	≤-27.20	0.95	0.00	45.88	≤74	PASS
				Peak	2500.000	-51.4	≤-27.20	0.95	0.00	44.81	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-60.76	≤-48.32	0.95	1.12	36.57	≤54	PASS
				AV	2353.235	-60.07	≤-48.32	0.95	1.12	37.26	≤54	PASS
				AV	2390.000	-60.8	≤-48.32	0.95	1.12	36.53	≤54	PASS
				Peak	2310.000	-53.76	≤-27.20	0.95	0.00	42.45	≤74	PASS
				Peak	2359.850	-50.6	≤-27.20	0.95	0.00	45.61	≤74	PASS
				Peak	2390.000	-53.04	≤-27.20	0.95	0.00	43.17	≤74	PASS
		High	2480	AV	2483.500	-58.26	≤-48.33	0.95	1.13	39.08	≤54	PASS
				AV	2483.520	-58.26	≤-48.33	0.95	1.13	39.08	≤54	PASS
				AV	2500.000	-60.94	≤-48.33	0.95	1.13	36.40	≤54	PASS
				Peak	2483.500	-49.21	≤-27.20	0.95	0.00	47.00	≤74	PASS
				Peak	2483.840	-46.93	≤-27.20	0.95	0.00	49.28	≤74	PASS
				Peak	2500.000	-52.9	≤-27.20	0.95	0.00	43.31	≤74	PASS
		Low	Hop_2 402	Peak	2310.000	-53.45	≤-27.20	0.95	0.00	42.76	≤74	PASS
				Peak	2318.375	-50.3	≤-27.20	0.95	0.00	45.91	≤74	PASS
				Peak	2390.000	-53.6	≤-27.20	0.95	0.00	42.61	≤74	PASS
		High	Hop_2 480	Peak	2483.500	-52.48	≤-27.20	0.95	0.00	43.73	≤74	PASS
				Peak	2490.400	-49.84	≤-27.20	0.95	0.00	46.37	≤74	PASS
				Peak	2500.000	-52.78	≤-27.20	0.95	0.00	43.43	≤74	PASS

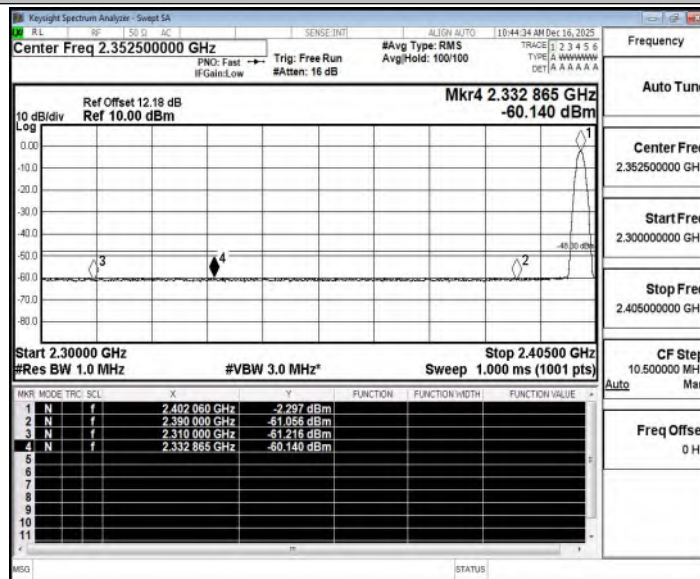
3DH5	Ant1	Low	2402	AV	2310.000	-60.98	≤-48.32	0.95	1.12	36.35	≤54	PASS
				AV	2378.120	-60.16	≤-48.32	0.95	1.12	37.17	≤54	PASS
				AV	2390.000	-60.89	≤-48.32	0.95	1.12	36.44	≤54	PASS
				Peak	2310.000	-51.72	≤-27.20	0.95	0.00	44.49	≤74	PASS
				Peak	2373.500	-50.43	≤-27.20	0.95	0.00	45.78	≤74	PASS
				Peak	2390.000	-52.45	≤-27.20	0.95	0.00	43.76	≤74	PASS
		High	2480	AV	2483.500	-54.28	≤-48.33	0.95	1.13	43.06	≤54	PASS
				AV	2483.520	-54.28	≤-48.33	0.95	1.13	43.06	≤54	PASS
				AV	2500.000	-61.05	≤-48.33	0.95	1.13	36.29	≤54	PASS
				Peak	2483.500	-41.79	≤-27.20	0.95	0.00	54.42	≤74	PASS
				Peak	2483.520	-41.79	≤-27.20	0.95	0.00	54.42	≤74	PASS
				Peak	2500.000	-52.32	≤-27.20	0.95	0.00	43.89	≤74	PASS
		Low	Hop_2 402	Peak	2310.000	-53.48	≤-27.20	0.95	0.00	42.73	≤74	PASS
				Peak	2326.250	-49.88	≤-27.20	0.95	0.00	46.33	≤74	PASS
				Peak	2390.000	-52.62	≤-27.20	0.95	0.00	43.59	≤74	PASS
		High	Hop_2 480	Peak	2483.500	-51.81	≤-27.20	0.95	0.00	44.40	≤74	PASS
				Peak	2492.560	-48.54	≤-27.20	0.95	0.00	47.67	≤74	PASS
				Peak	2500.000	-52.92	≤-27.20	0.95	0.00	43.29	≤74	PASS

Note:

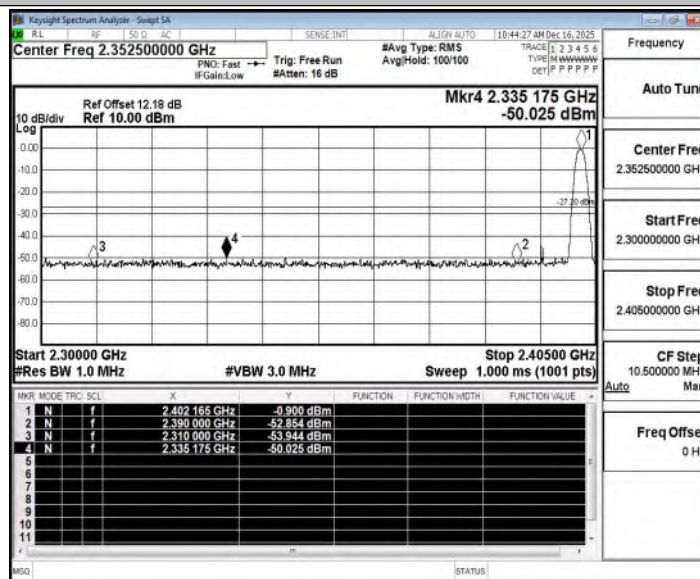
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

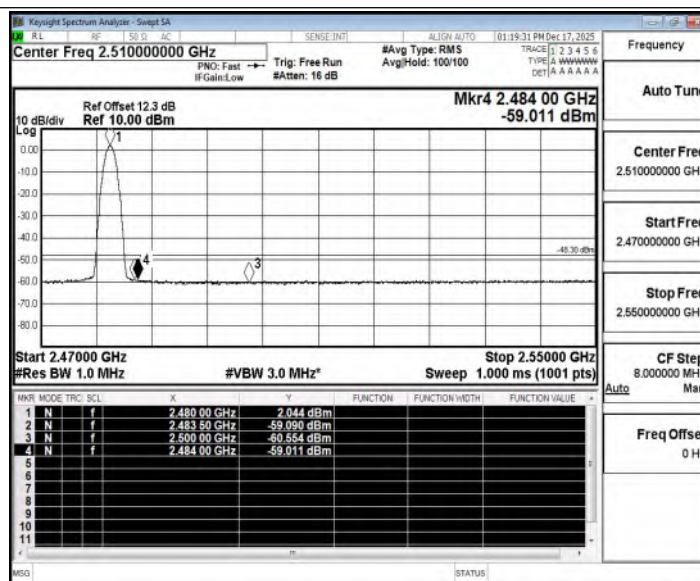
DH5_Ant1_Low_2402_AV



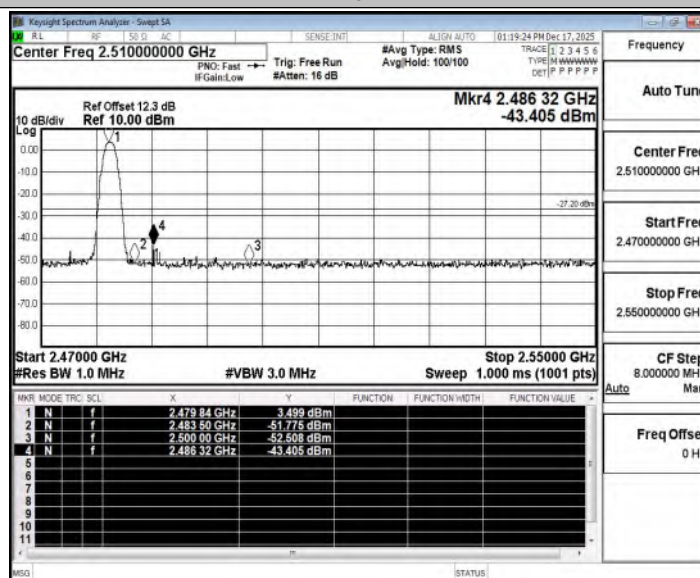
DH5_Ant1_Low_2402_Peak



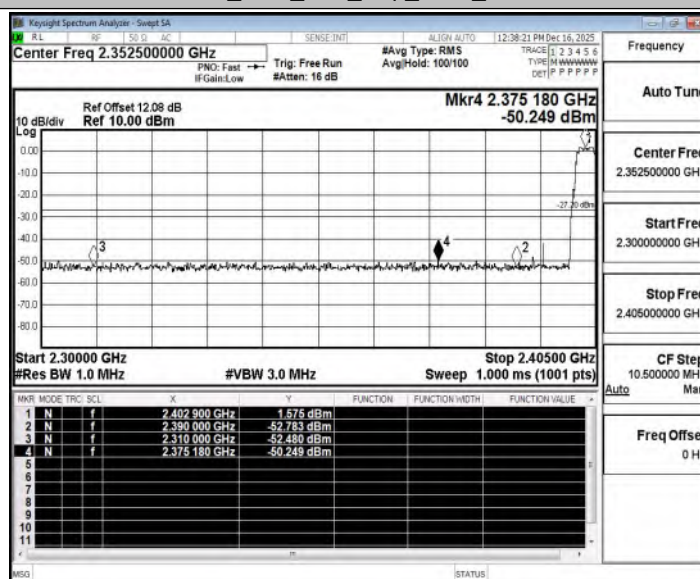
DH5_Ant1_High_2480_AV

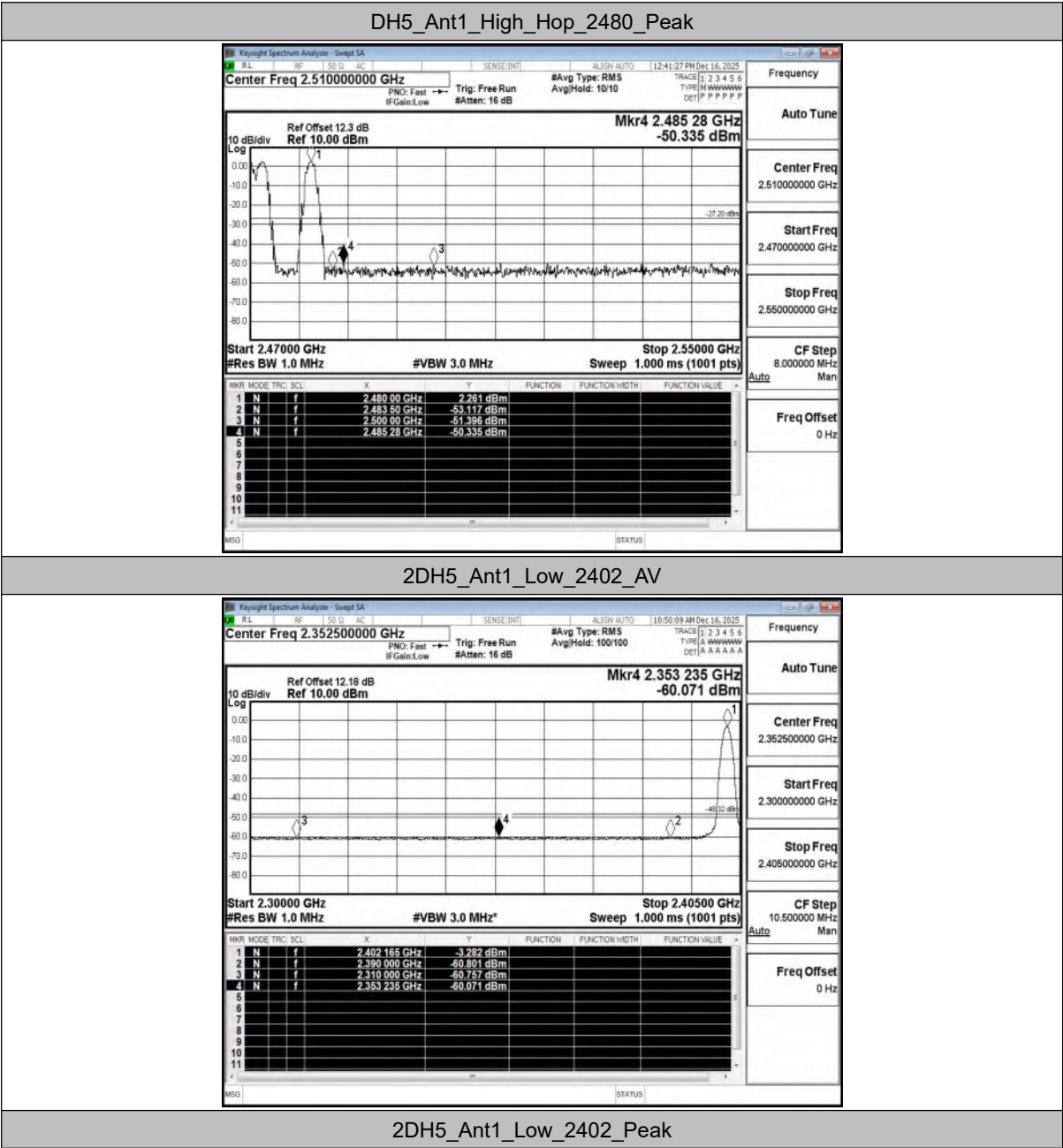


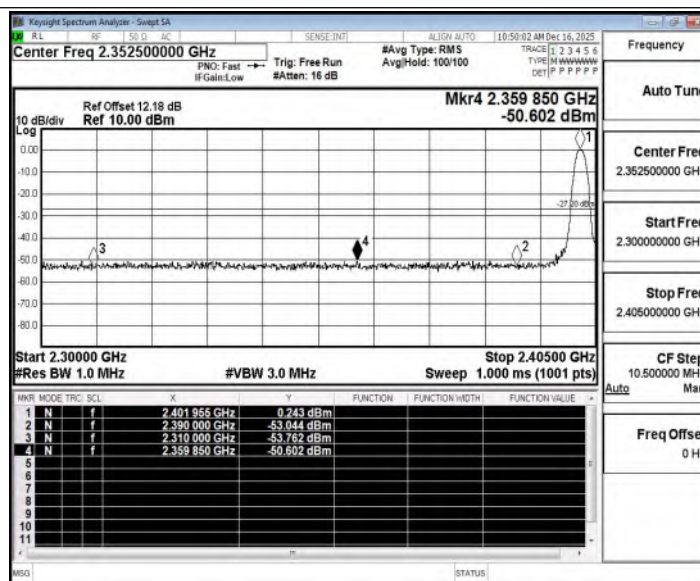
DH5_Ant1_High_2480_Peak



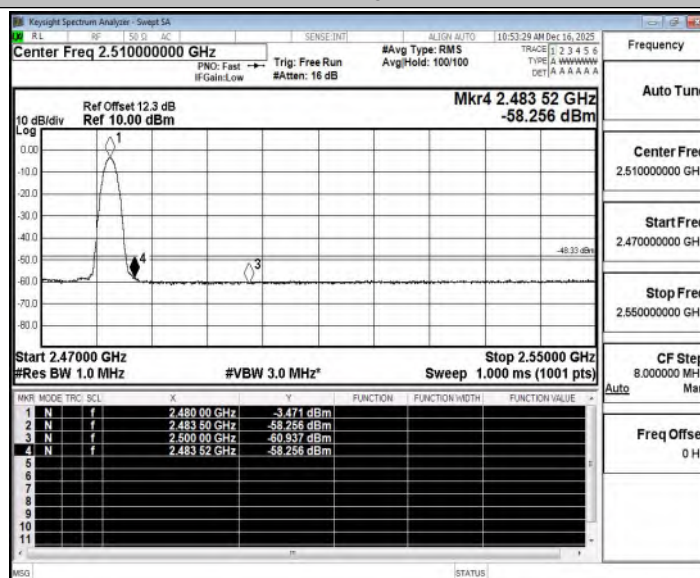
DH5_Ant1_Low_Hop_2402_Peak



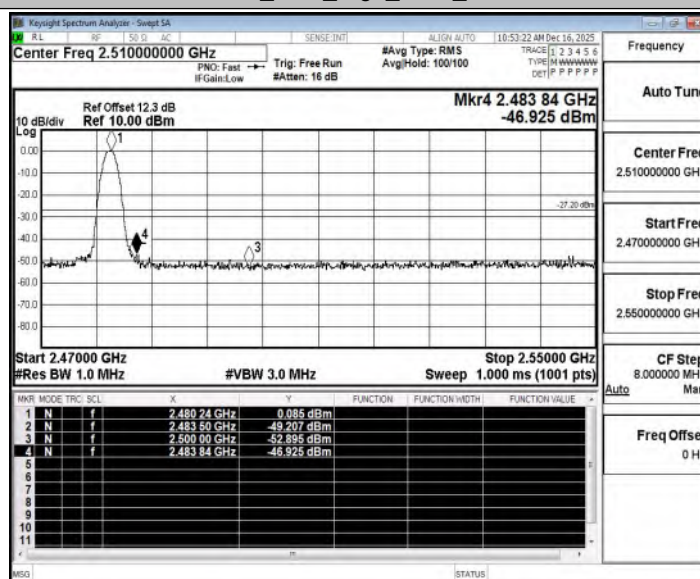




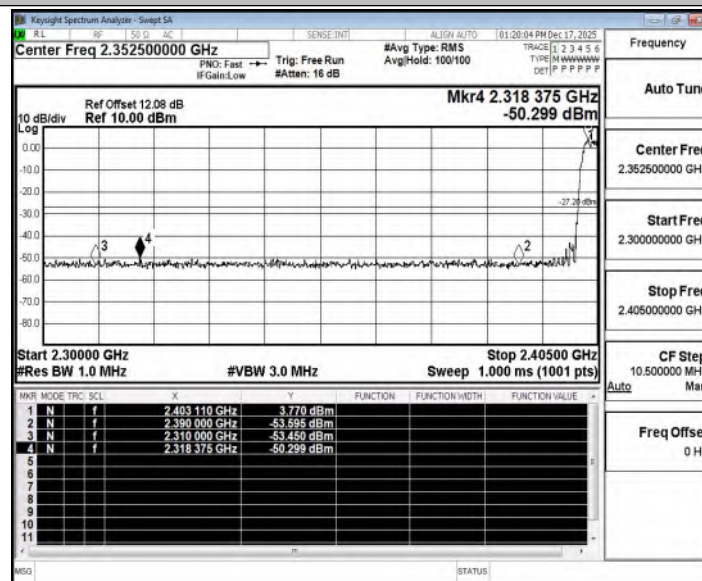
2DH5_Ant1_High_2480_AV



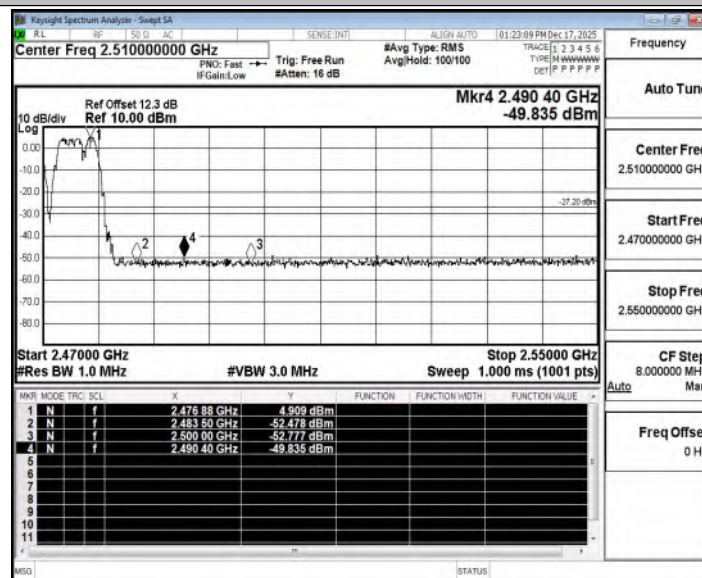
2DH5_Ant1_High_2480_Peak



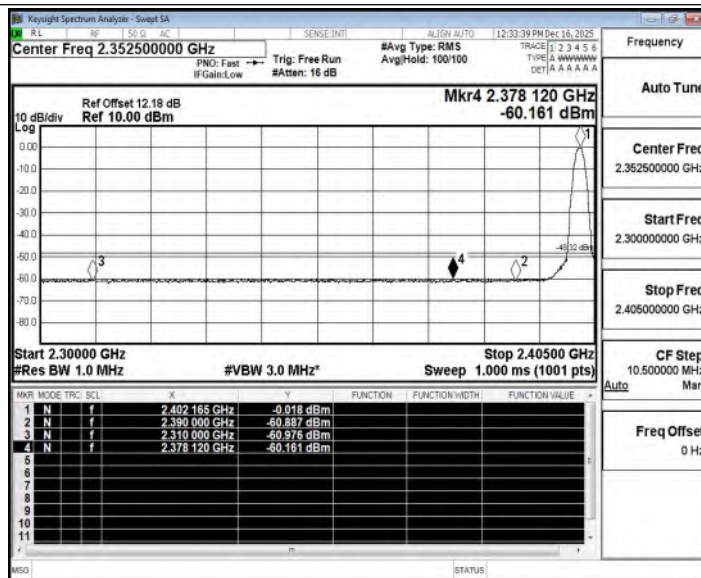
2DH5_Ant1_Low_Hop_2402_Peak



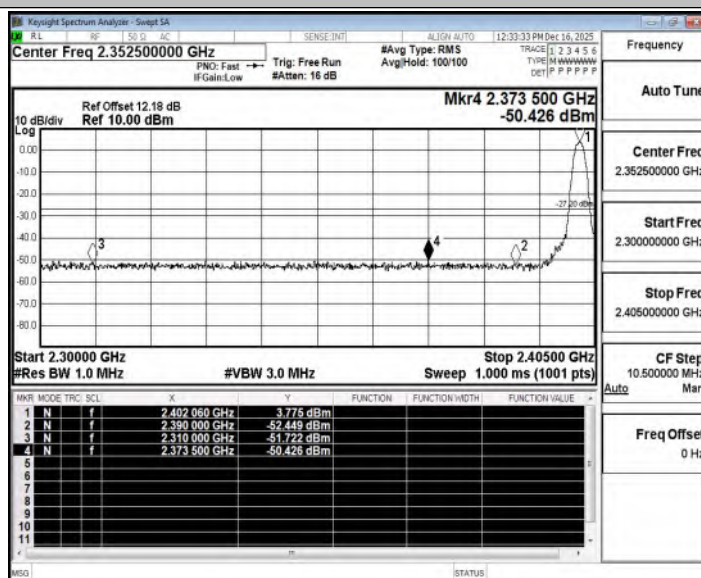
2DH5_Ant1_High_Hop_2480_Peak



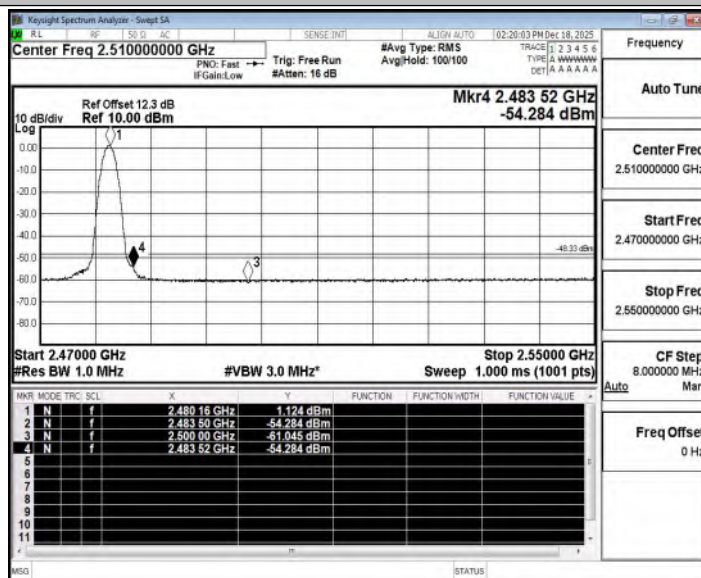
3DH5_Ant1_Low_2402_AV



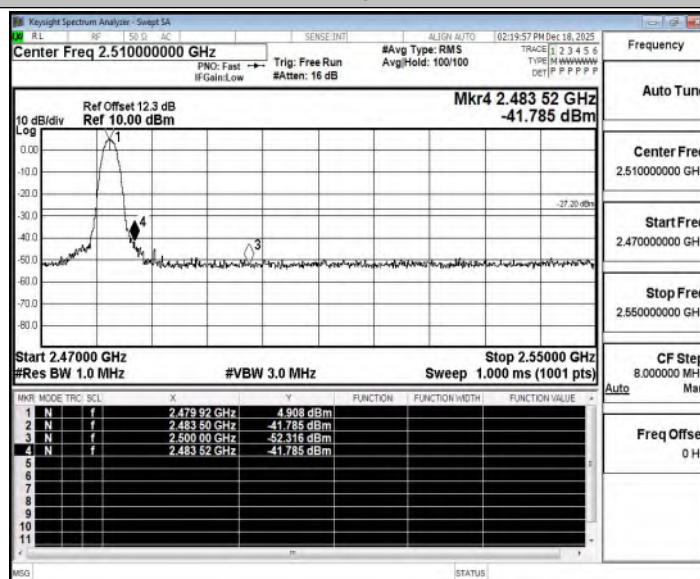
3DH5_Ant1_Low_2402_Peak



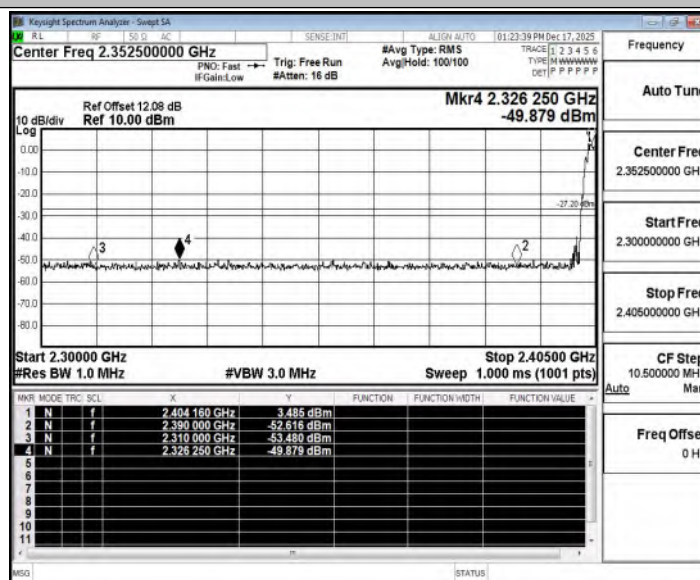
3DH5_Ant1_High_2480_AV



3DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_Hop_2402_Peak



3DH5_Ant1_High_Hop_2480_Peak

