

Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Sunrise Alarm Clock N17

Test Model: N17

Environmental Conditions

Temperature:	24.1°C
Relative Humidity:	54.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang hai
Supervised by:	Fengliu Tang

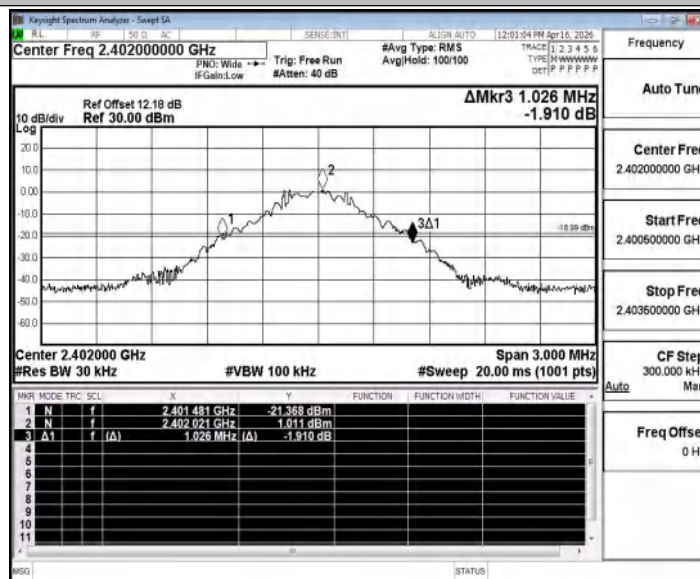
A.1 20dB Emission Bandwidth

Test Result

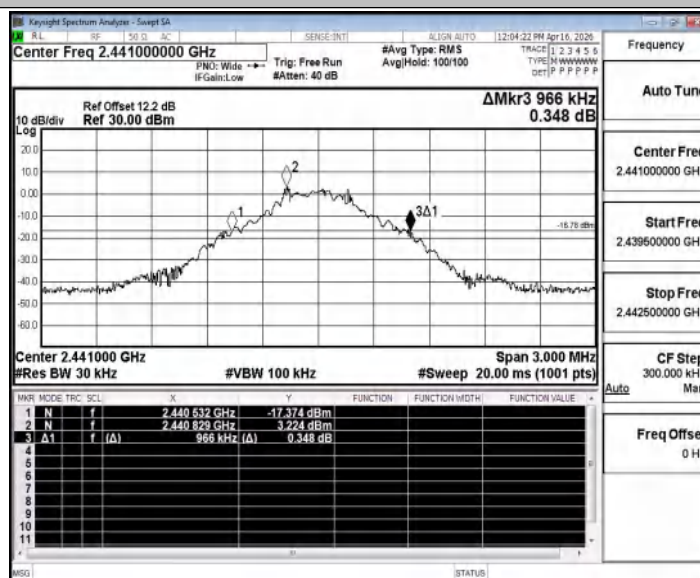
TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	1.026	2401.481	2402.507	---	---
		2441	0.966	2440.532	2441.498	---	---
		2480	0.963	2479.532	2480.495	---	---
2DH5	Ant1	2402	1.287	2401.361	2402.648	---	---
		2441	1.290	2440.358	2441.648	---	---
		2480	1.287	2479.361	2480.648	---	---
3DH5	Ant1	2402	1.296	2401.346	2402.642	---	---
		2441	1.302	2440.343	2441.645	---	---
		2480	1.299	2479.346	2480.645	---	---

Test Graphs

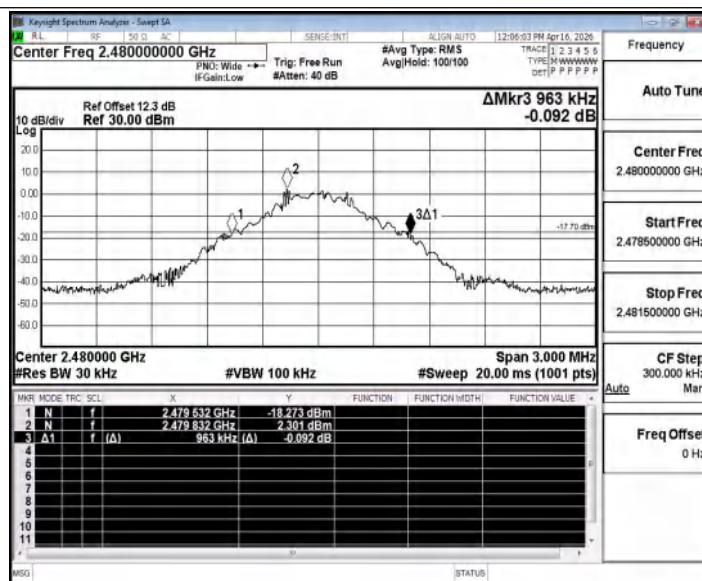
DH5_Ant1_2402



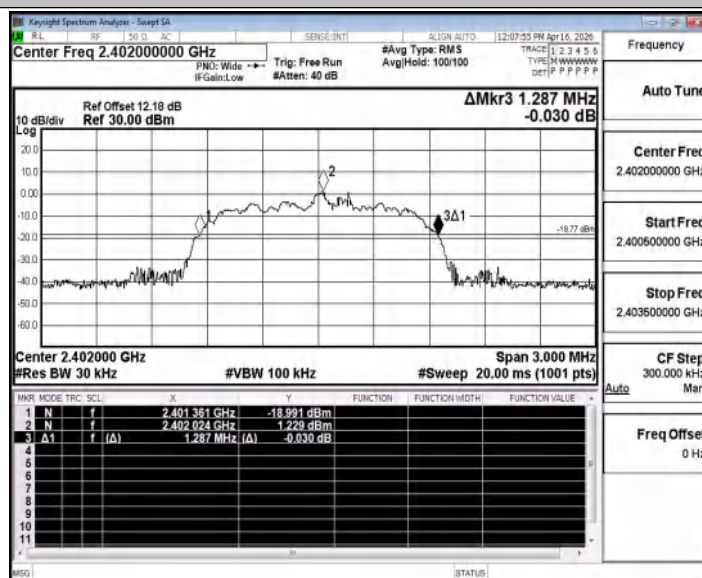
DH5_Ant1_2441



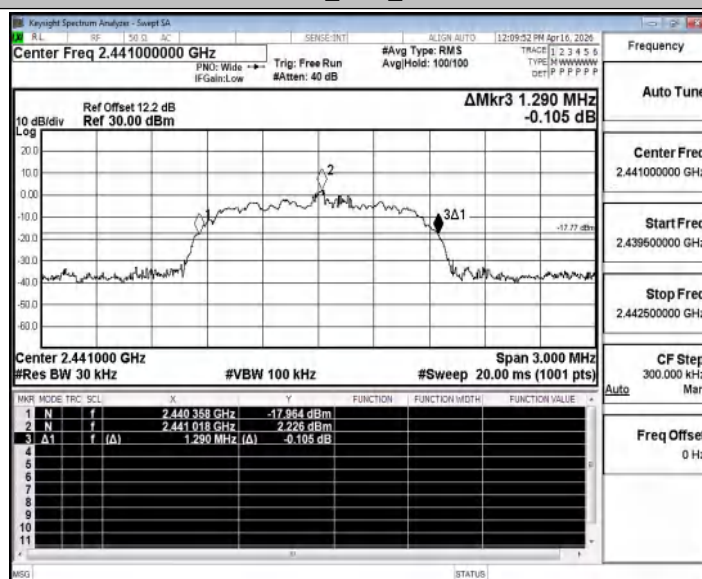
DH5_Ant1_2480



2DH5_Ant1_2402



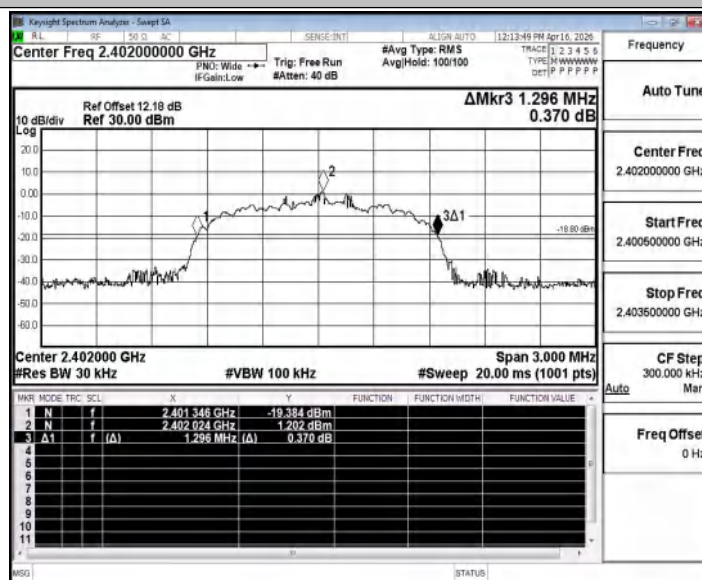
2DH5_Ant1_2441



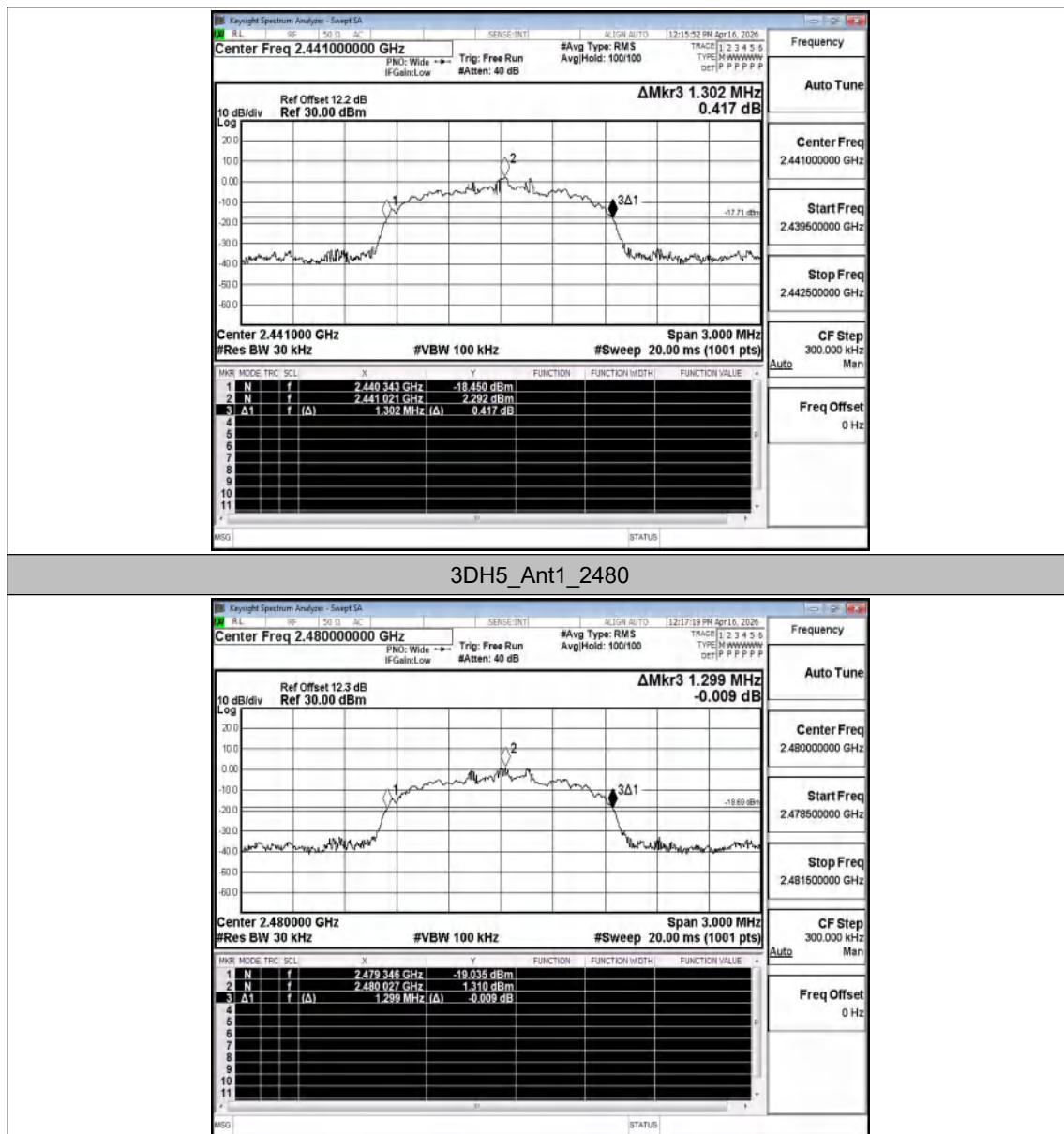
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



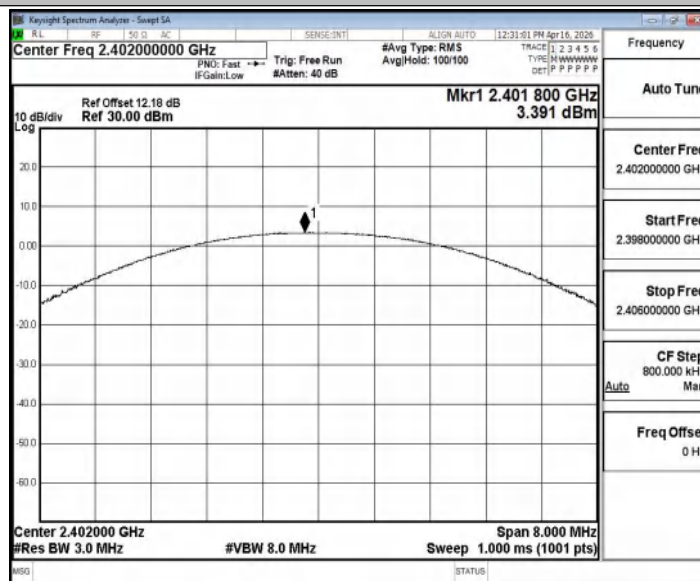
A.2 Maximum Peak conducted output power

Test Result Peak

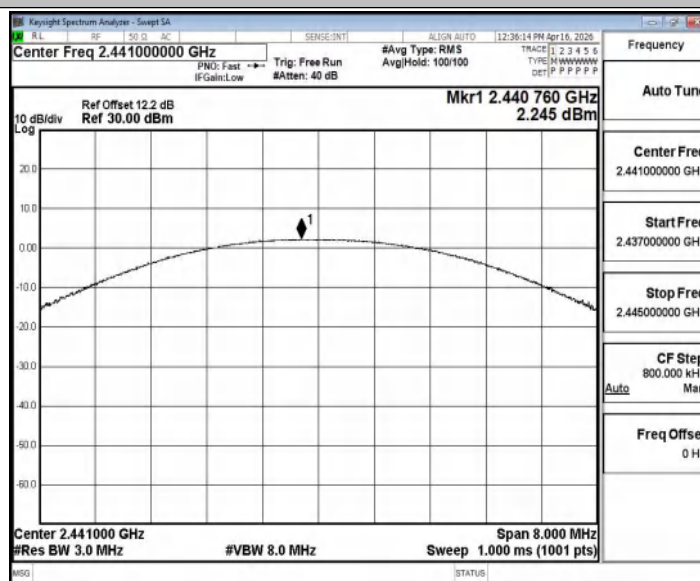
Test Mode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	3.39	≤30	PASS
		2441	2.25	≤30	PASS
		2480	3.61	≤30	PASS
2DH5	Ant1	2402	2.80	≤30	PASS
		2441	3.71	≤30	PASS
		2480	2.68	≤30	PASS
3DH5	Ant1	2402	2.85	≤30	PASS
		2441	3.82	≤30	PASS
		2480	2.84	≤30	PASS

Test Graphs

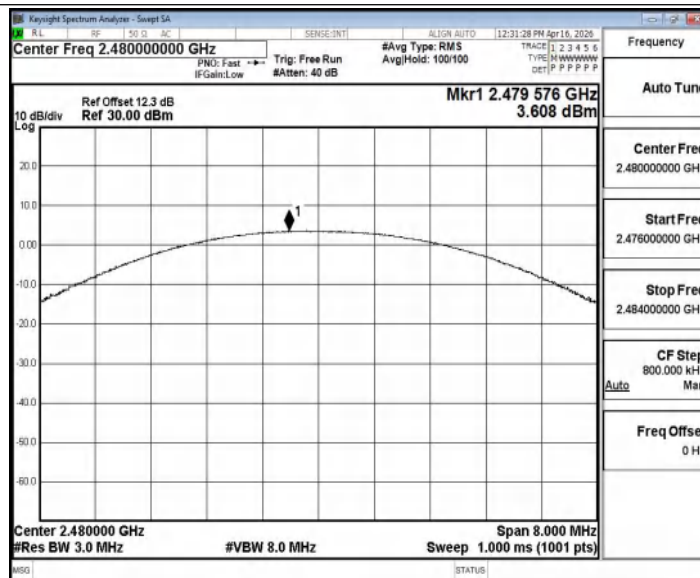
DH5_Ant1_2402



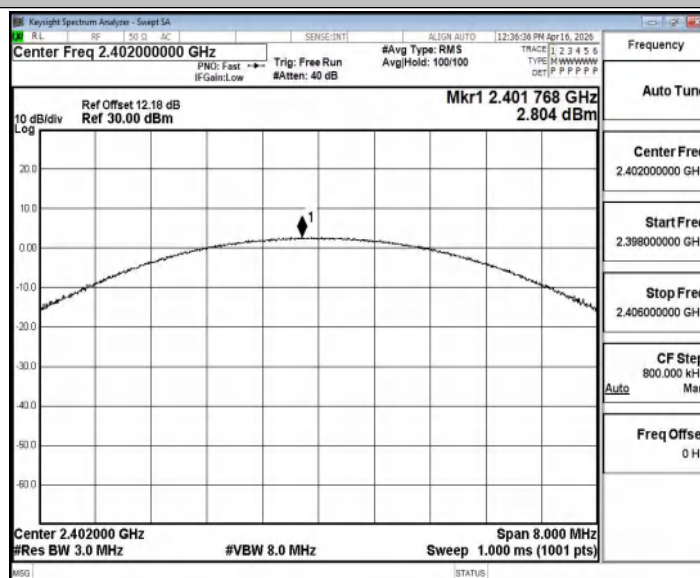
DH5_Ant1_2441



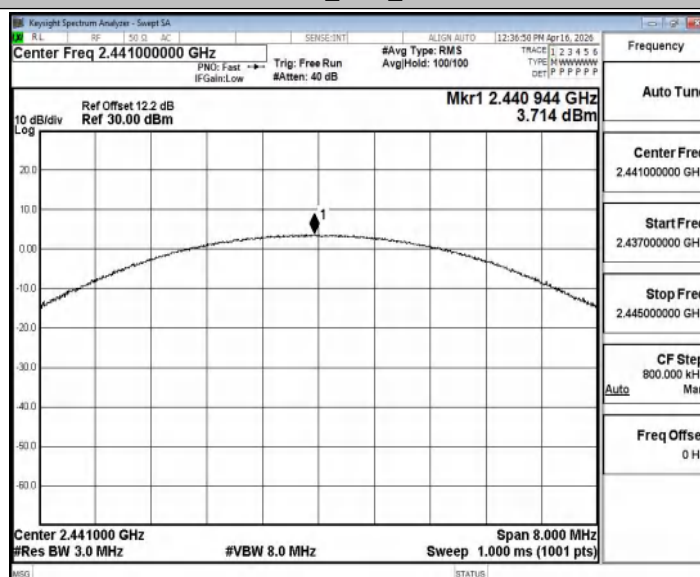
DH5_Ant1_2480



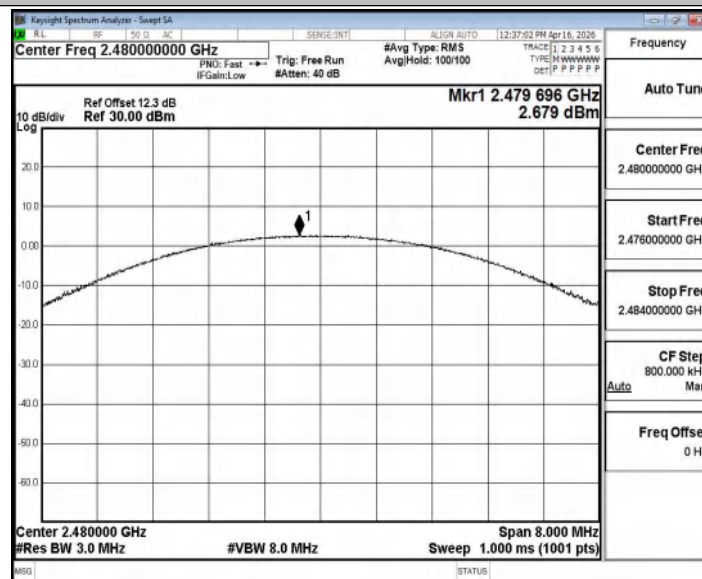
2DH5_Ant1_2402



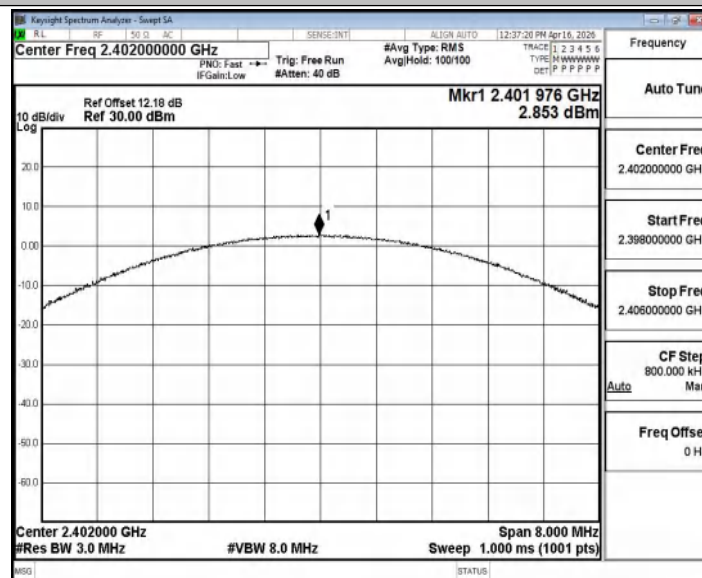
2DH5_Ant1_2441



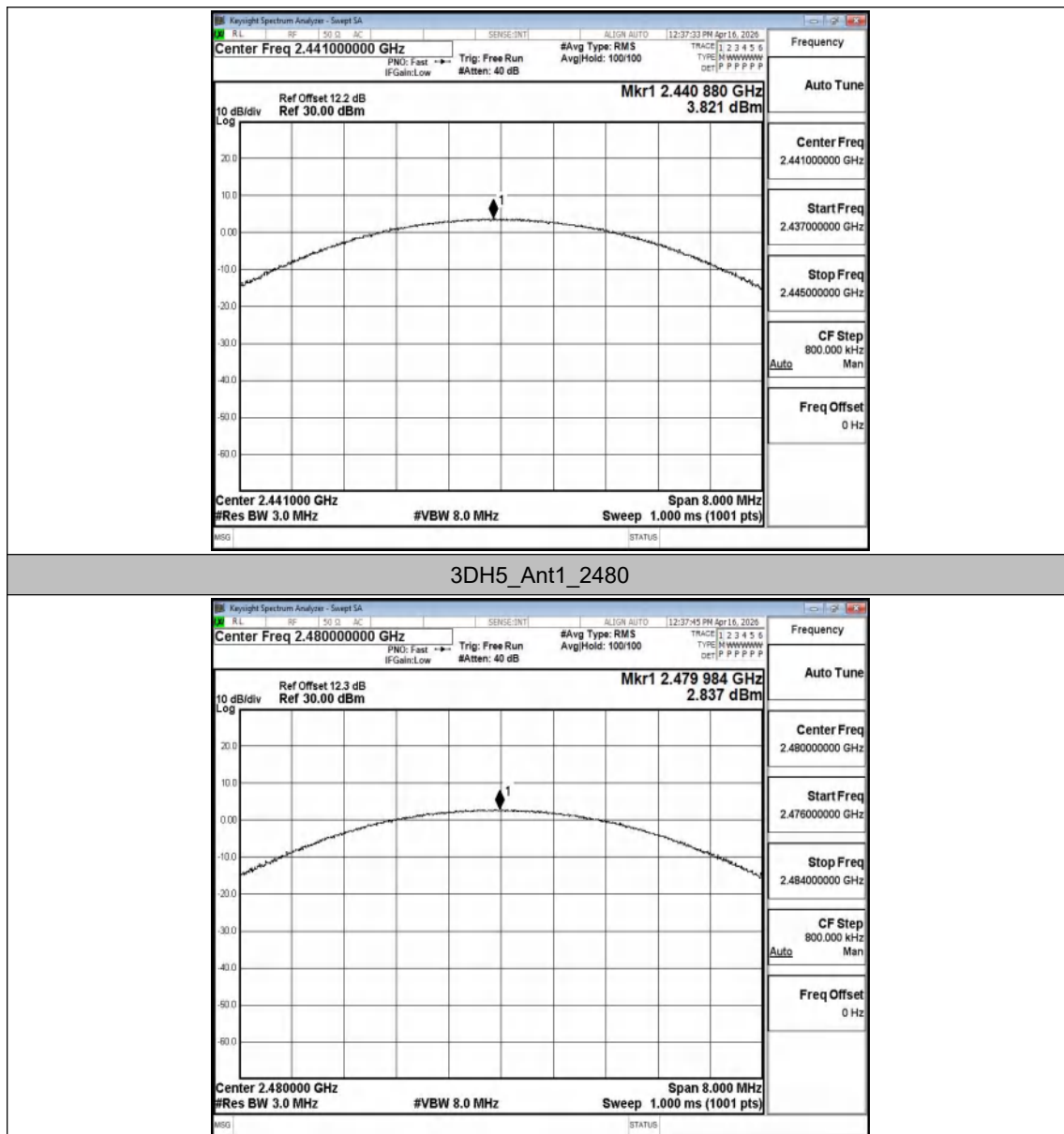
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



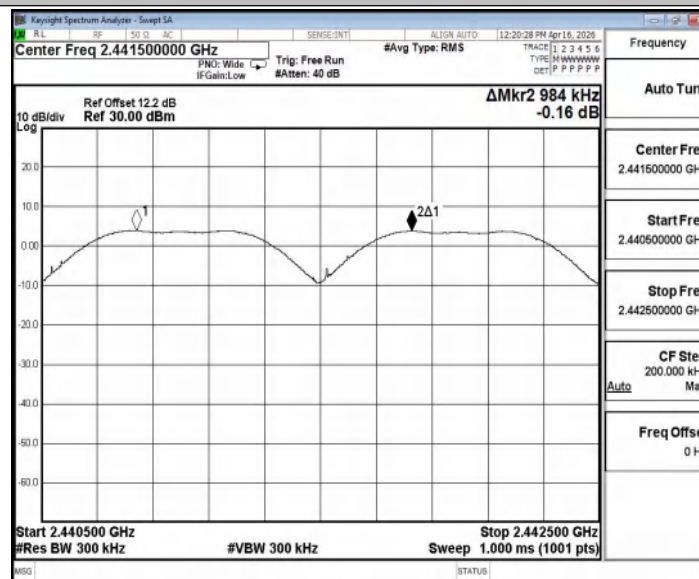
A.3 Carrier frequency separation

Test Result

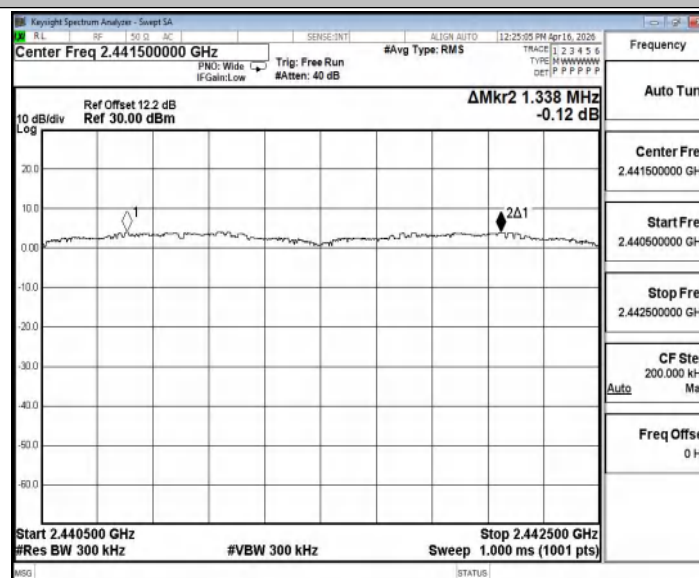
TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.984	≥ 0.684	PASS
2DH5	Ant1	Hop	1.338	≥ 1.290	PASS
3DH5	Ant1	Hop	1.004	≥ 0.868	PASS

Test Graphs

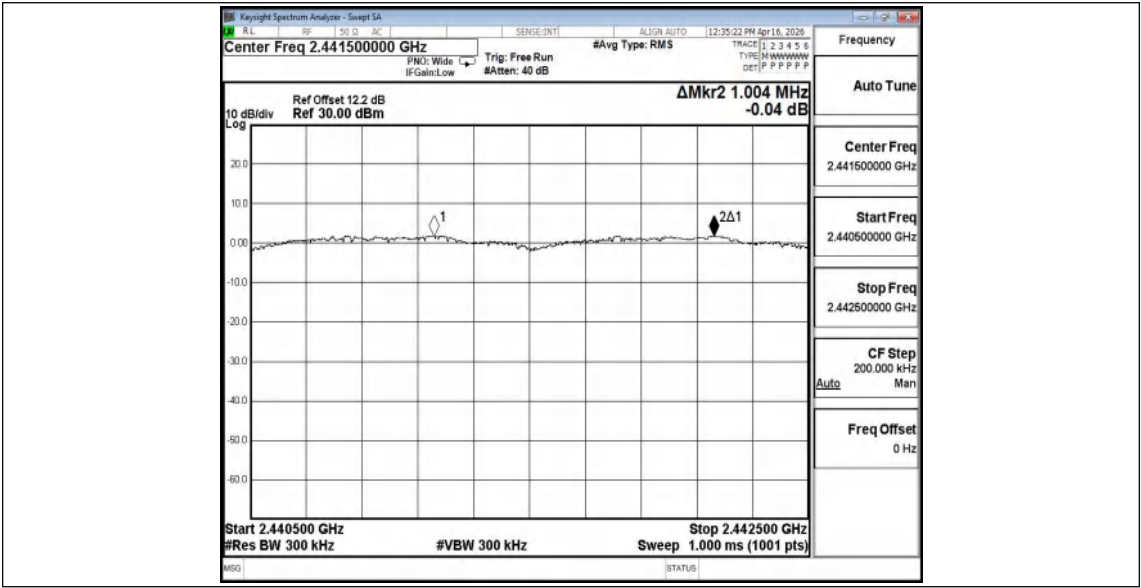
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop

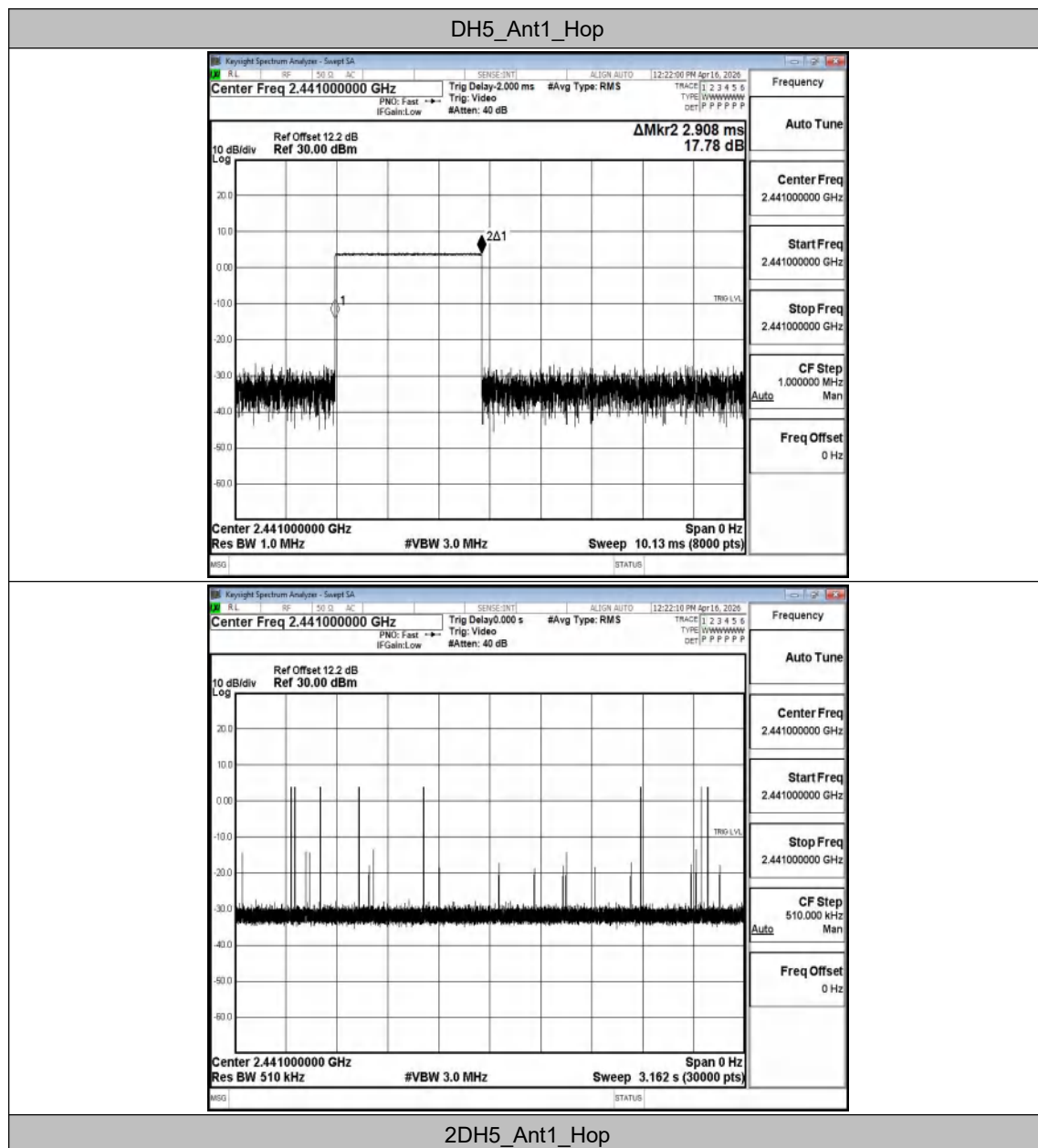


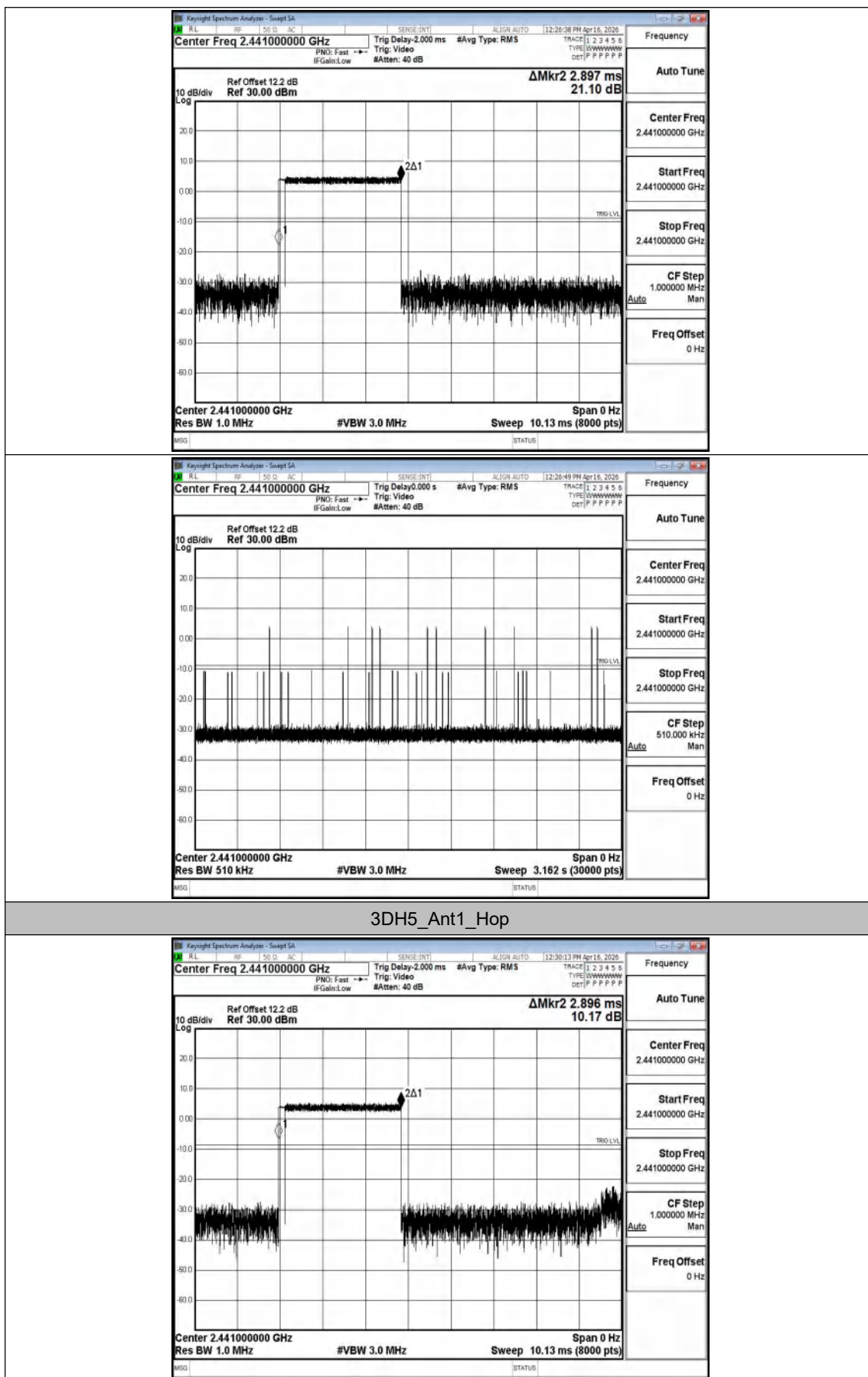
A.4 Time of occupancy

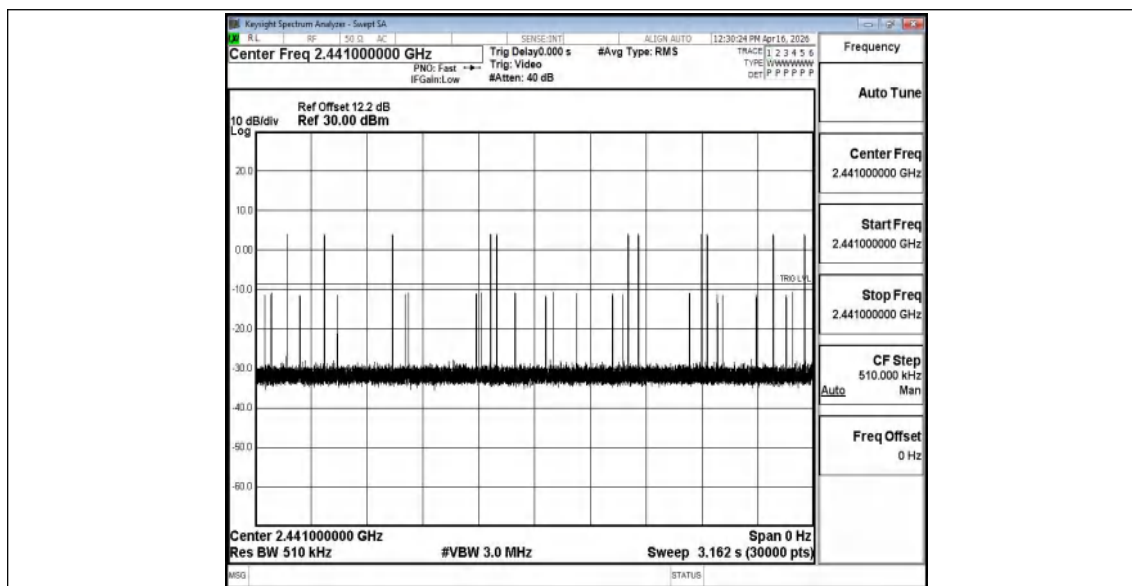
Test Result

TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.908	90	0.262	≤0.4	PASS
2DH5	Ant1	Hop	2.897	110	0.319	≤0.4	PASS
3DH5	Ant1	Hop	2.896	120	0.348	≤0.4	PASS

Test Graphs







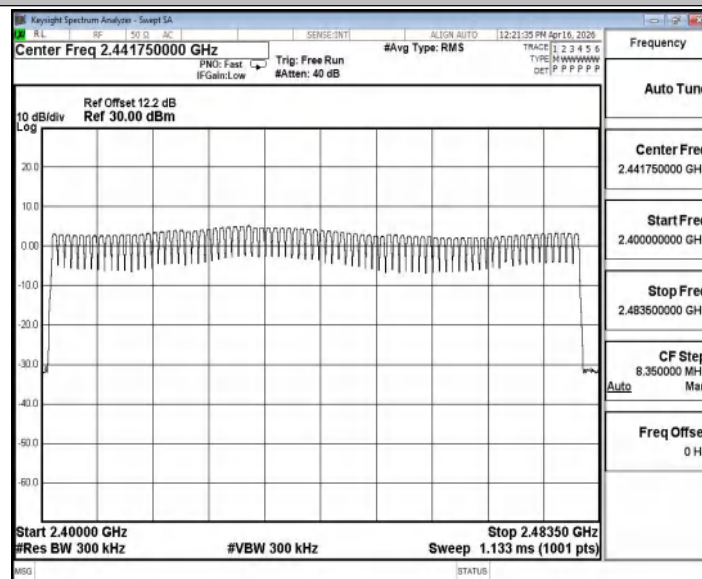
A.5 Number of hopping channels

Test Result

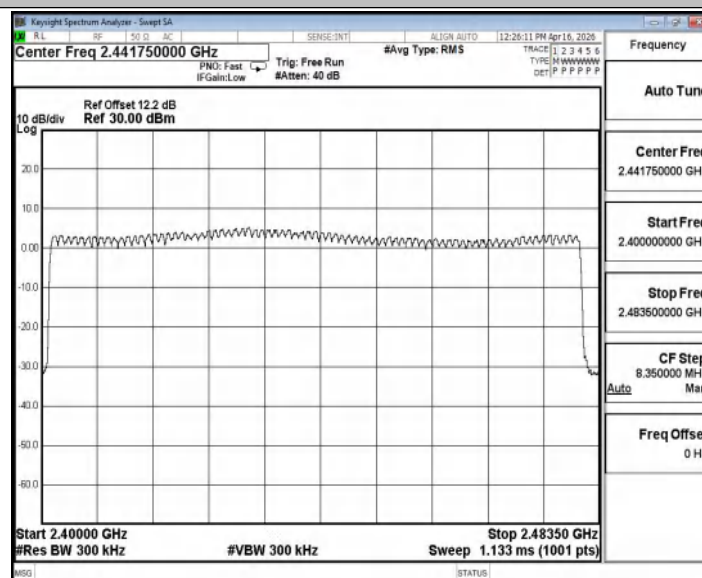
TestMode	Antenna	Freq(MHz)	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

Test Graphs

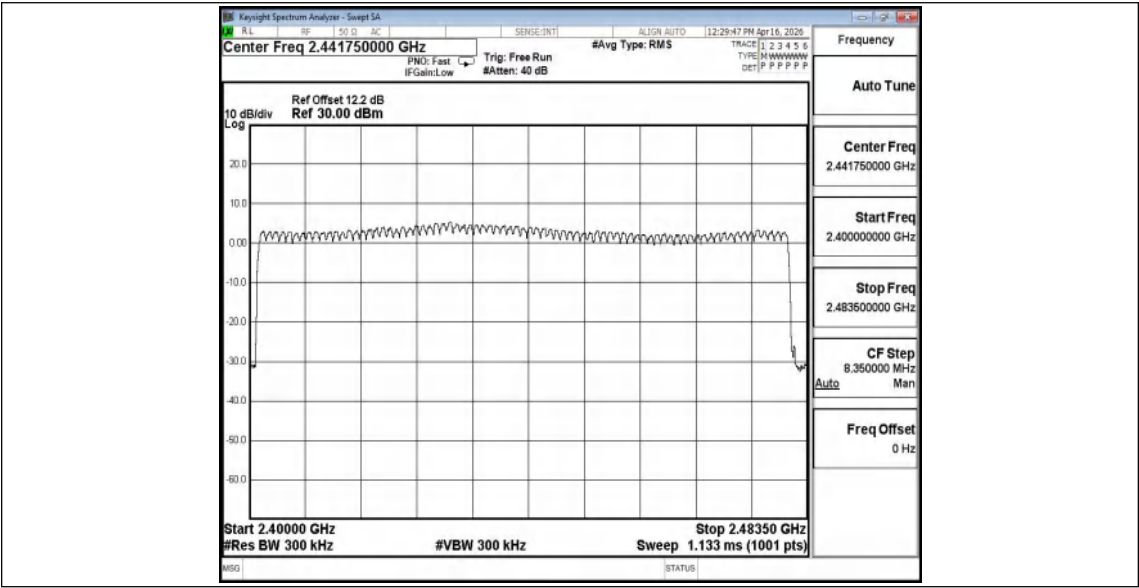
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop



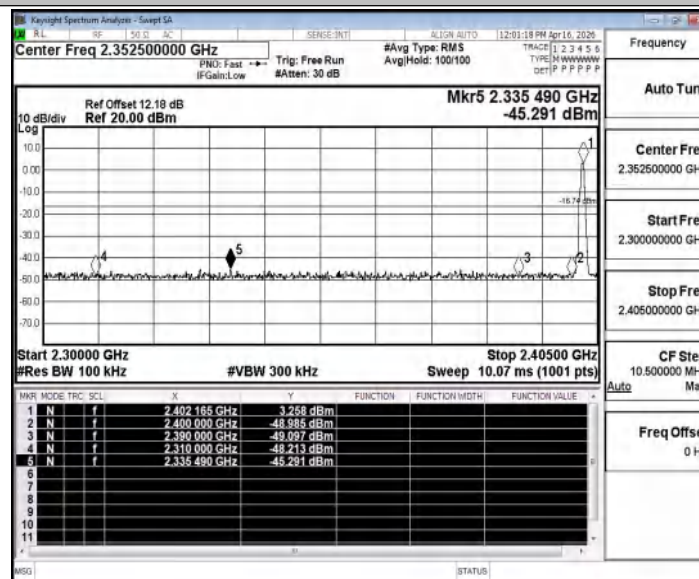
A.6 Band edge measurements

Test Result

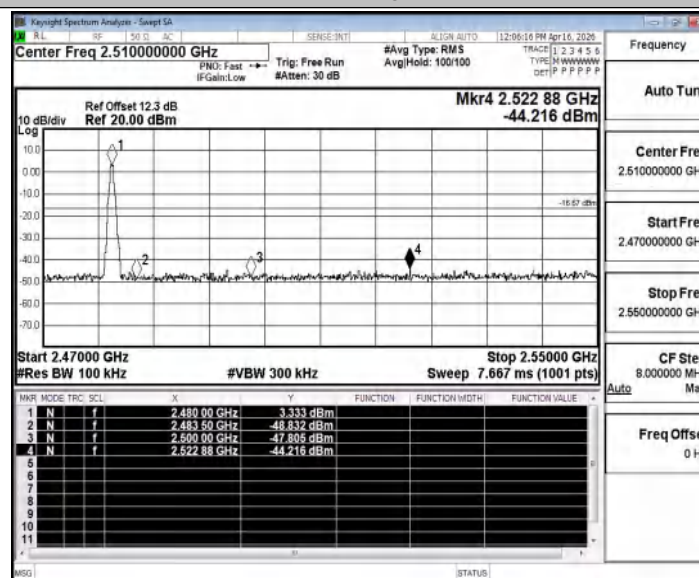
TestMode	Antenna	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	3.26	-45.29	≤-16.74	PASS
		High	2480	3.33	-44.22	≤-16.67	PASS
		Low	Hop_2402	1.70	-45.41	≤-18.31	PASS
		High	Hop_2480	2.34	-44.94	≤-17.66	PASS
2DH5	Ant1	Low	2402	2.68	-45.16	≤-17.32	PASS
		High	2480	3.16	-44.28	≤-16.84	PASS
		Low	Hop_2402	1.64	-45.15	≤-18.36	PASS
		High	Hop_2480	-0.02	-45.09	≤-20.02	PASS
3DH5	Ant1	Low	2402	3.29	-44.25	≤-16.71	PASS
		High	2480	3.23	-44.29	≤-16.77	PASS
		Low	Hop_2402	-1.08	-45.54	≤-21.08	PASS
		High	Hop_2480	0.66	-44.28	≤-19.34	PASS

Test Graphs

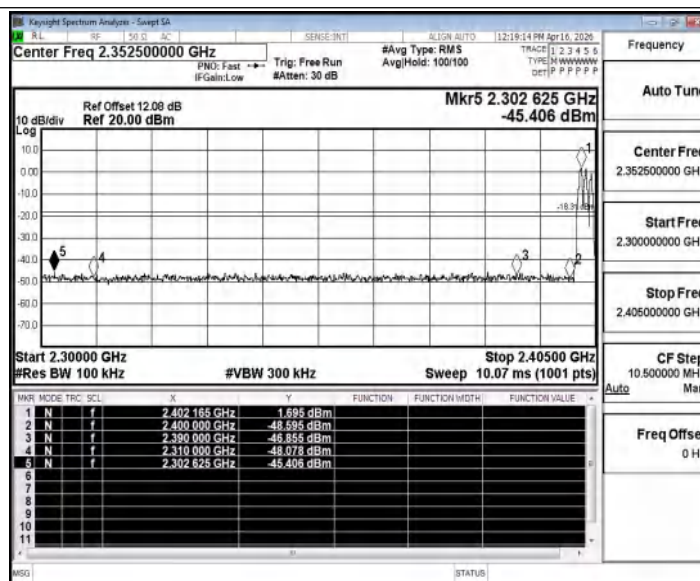
DH5_Ant1_Low_2402



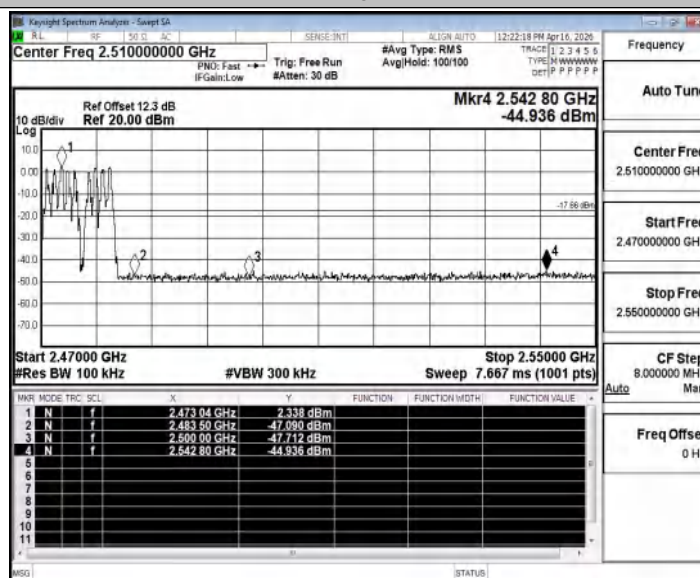
DH5_Ant1_High_2480



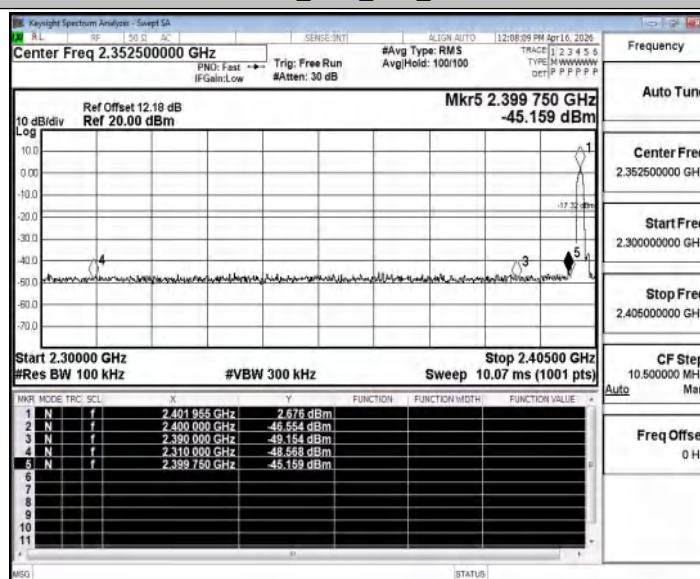
DH5_Ant1_Low_Hop_2402



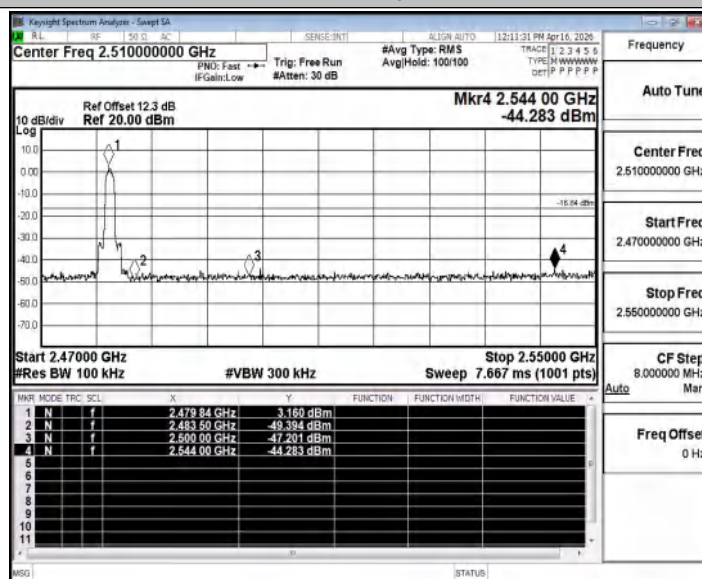
DH5_Ant1_High_Hop_2480



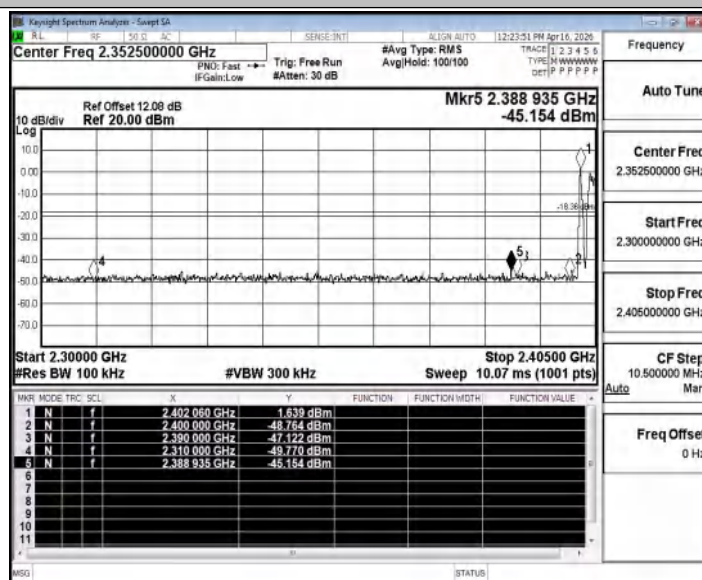
2DH5_Ant1_Low_2402



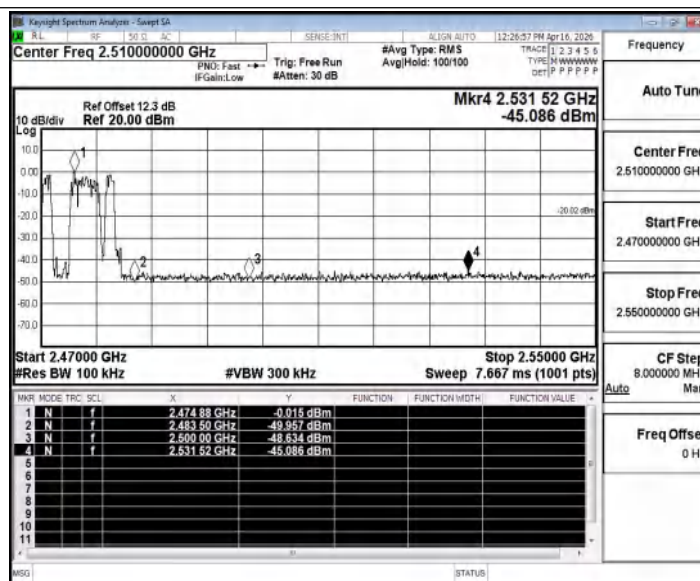
2DH5_Ant1_High_2480



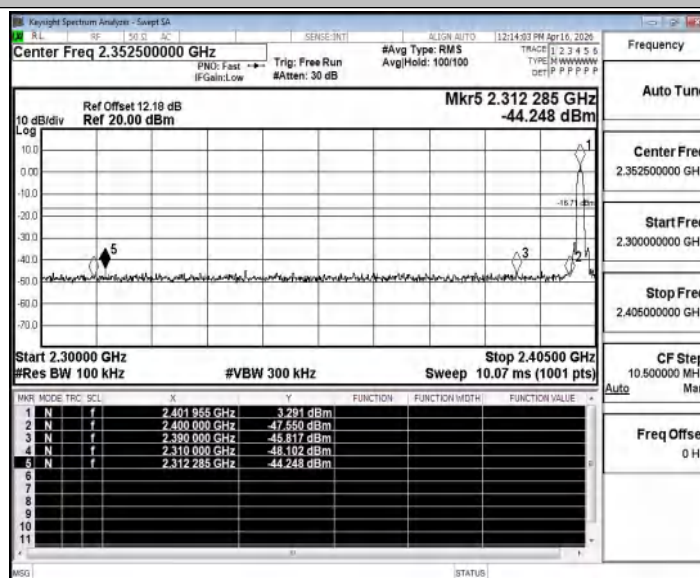
2DH5_Ant1_Low_Hop_2402



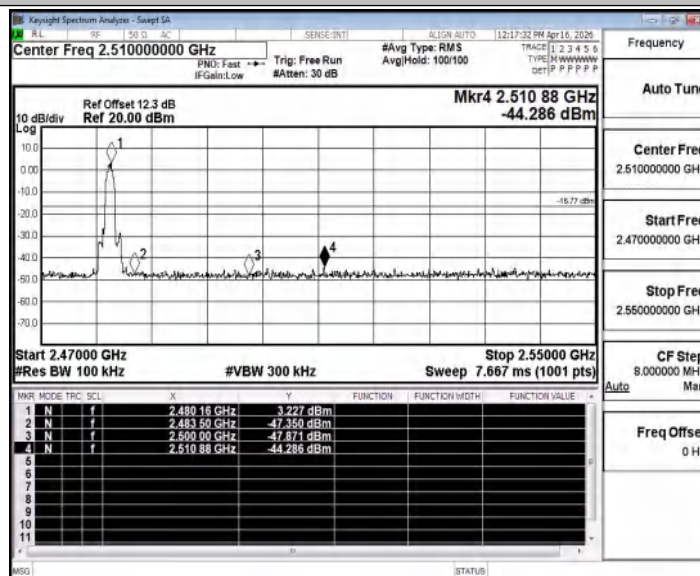
2DH5_Ant1_High_Hop_2480



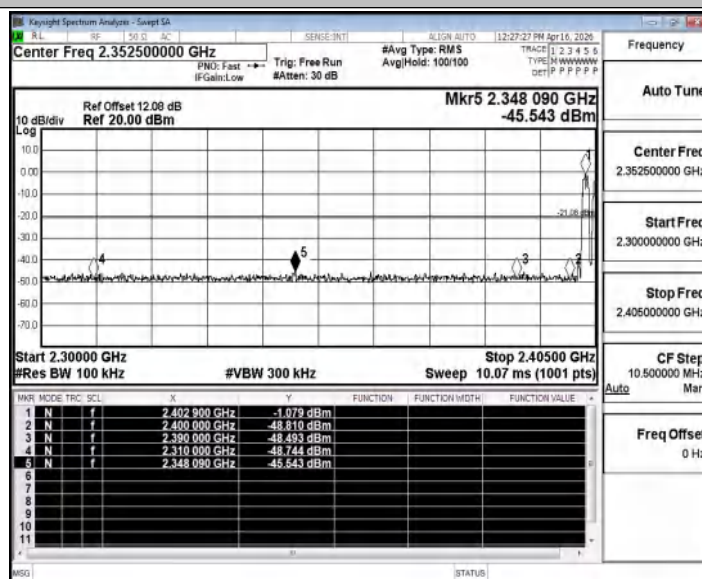
3DH5_Ant1_Low_2402



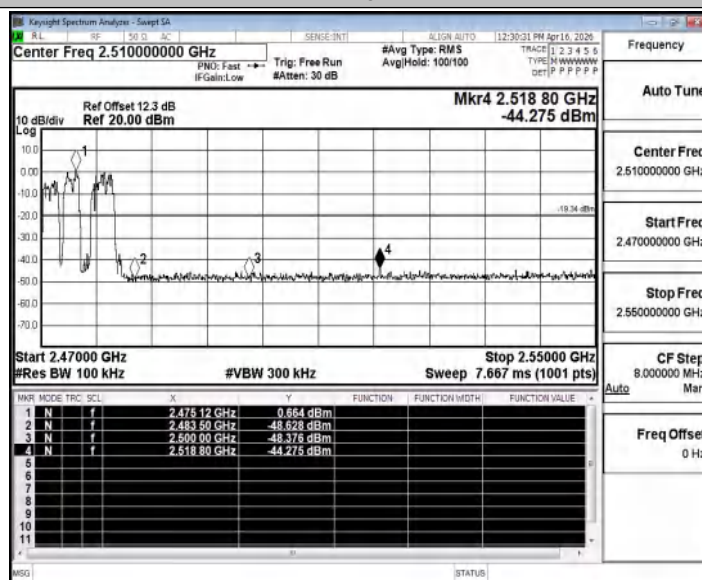
3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480

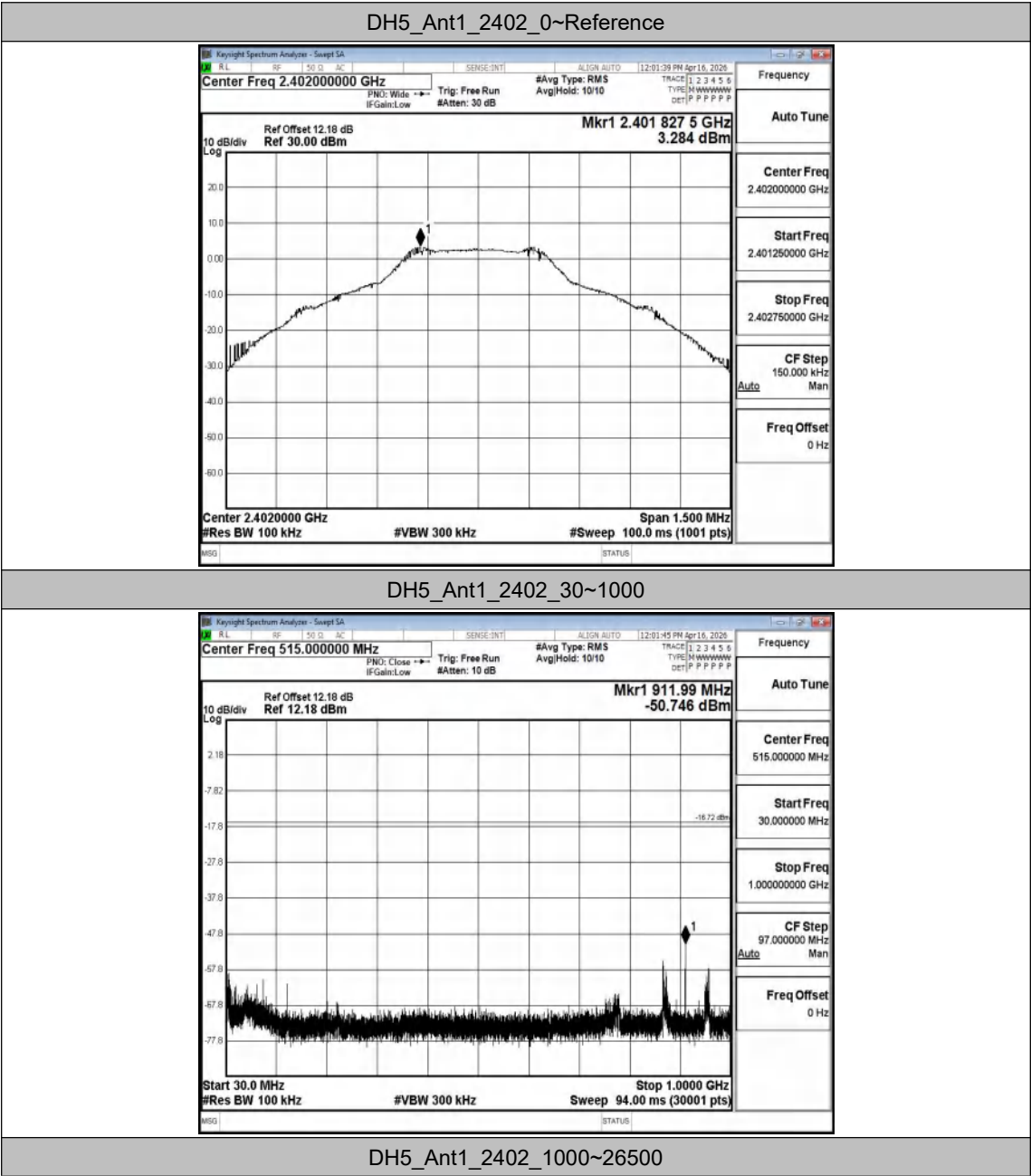


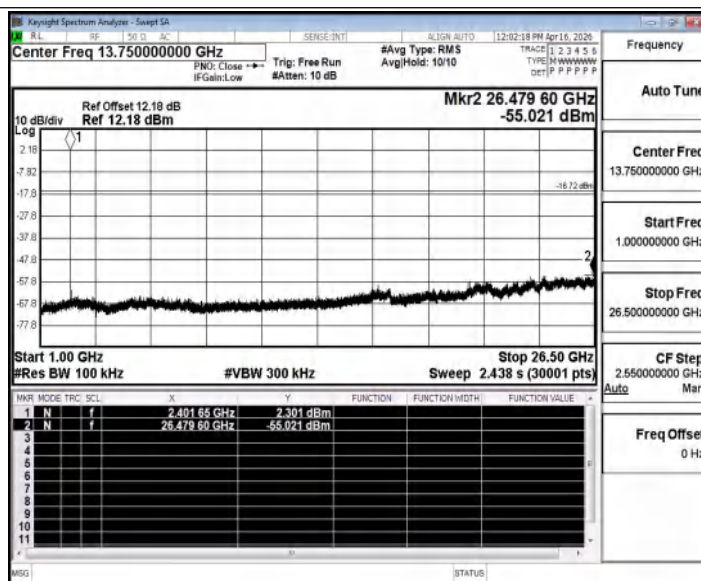
A.7 Conducted Spurious Emission

Test Result

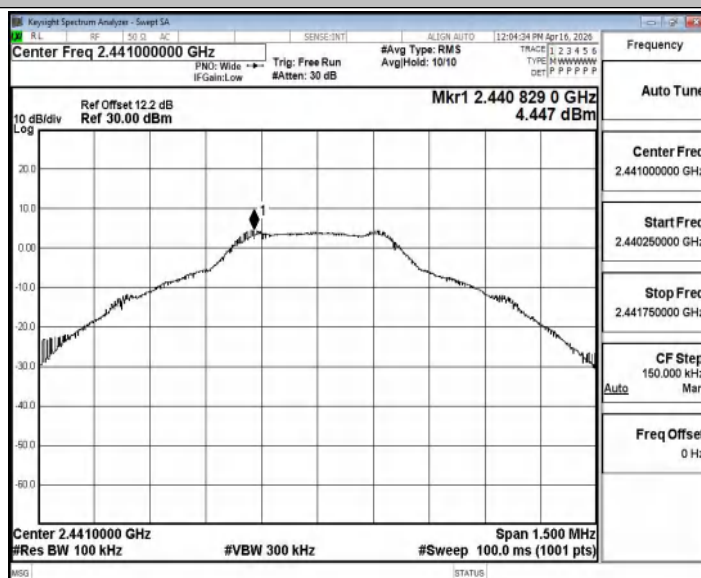
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	3.28	3.28	---	PASS
			30~1000	3.28	-50.75	≤-16.72	PASS
			1000~26500	3.28	-55.02	≤-16.72	PASS
		2441	Reference	4.45	4.45	---	PASS
			30~1000	4.45	-48.69	≤-15.55	PASS
			1000~26500	4.45	-54.85	≤-15.55	PASS
		2480	Reference	3.53	3.53	---	PASS
			30~1000	3.53	-47.28	≤-16.47	PASS
			1000~26500	3.53	-54.74	≤-16.47	PASS
2DH5	Ant1	2402	Reference	3.23	3.23	---	PASS
			30~1000	3.23	-50.81	≤-16.77	PASS
			1000~26500	3.23	-54.92	≤-16.77	PASS
		2441	Reference	4.32	4.32	---	PASS
			30~1000	4.32	-50.22	≤-15.68	PASS
			1000~26500	4.32	-53.89	≤-15.68	PASS
		2480	Reference	3.40	3.40	---	PASS
			30~1000	3.40	-52.58	≤-16.6	PASS
			1000~26500	3.40	-54.26	≤-16.6	PASS
3DH5	Ant1	2402	Reference	3.38	3.38	---	PASS
			30~1000	3.38	-49.88	≤-16.62	PASS
			1000~26500	3.38	-54.58	≤-16.62	PASS
		2441	Reference	4.43	4.43	---	PASS
			30~1000	4.43	-51.01	≤-15.57	PASS
			1000~26500	4.43	-54.47	≤-15.57	PASS
		2480	Reference	3.51	3.51	---	PASS
			30~1000	3.51	-51.24	≤-16.49	PASS
			1000~26500	3.51	-53.62	≤-16.49	PASS

Test Graphs

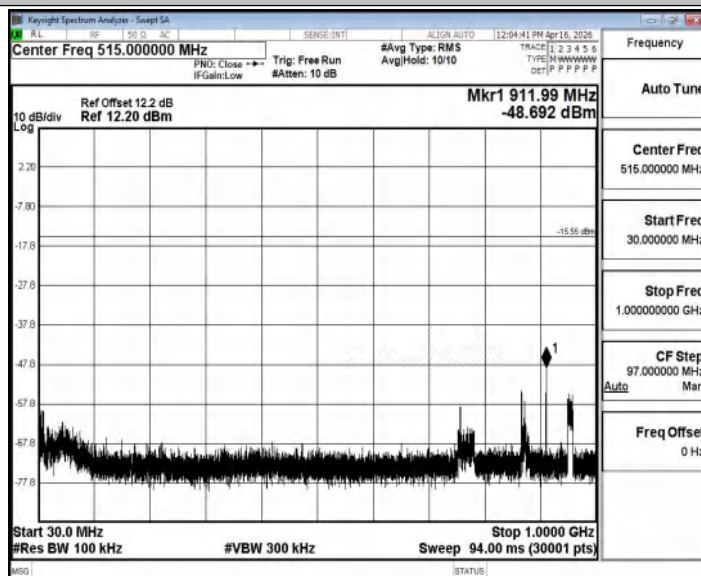




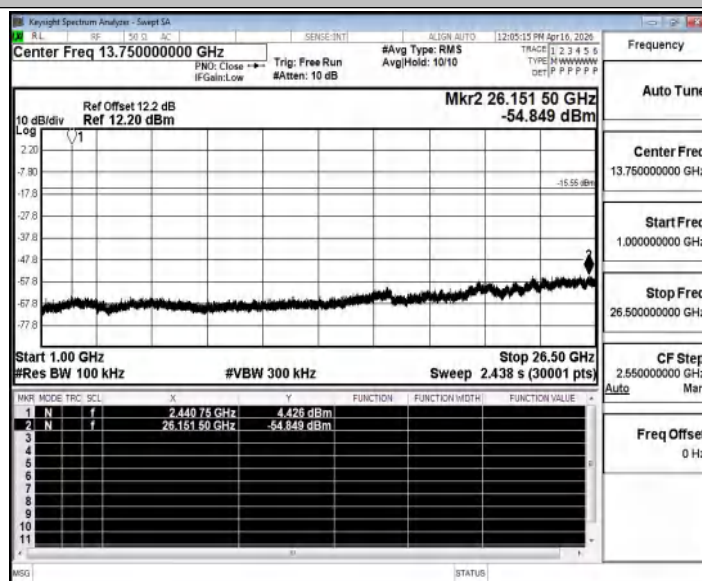
DH5_Ant1_2441_0~Reference



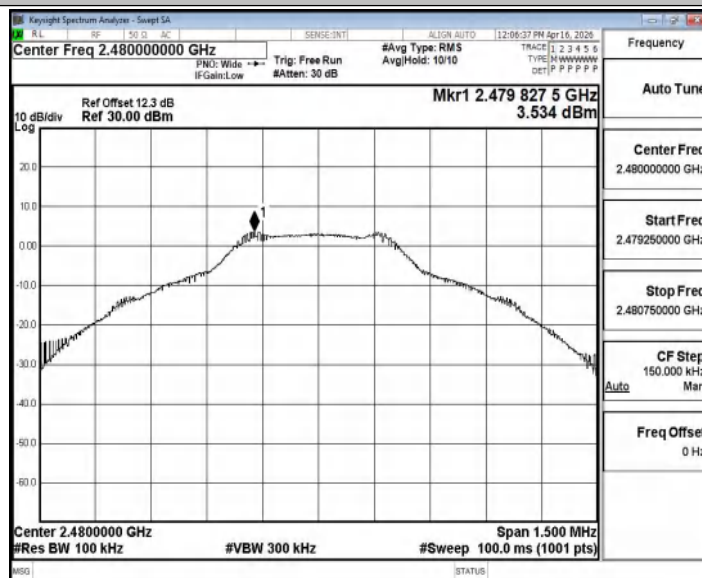
DH5_Ant1_2441_30~1000



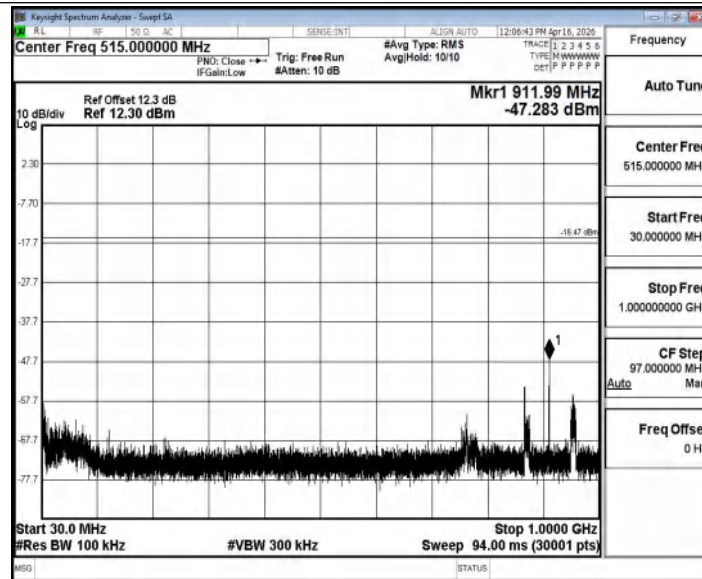
DH5_Ant1_2441_1000~26500



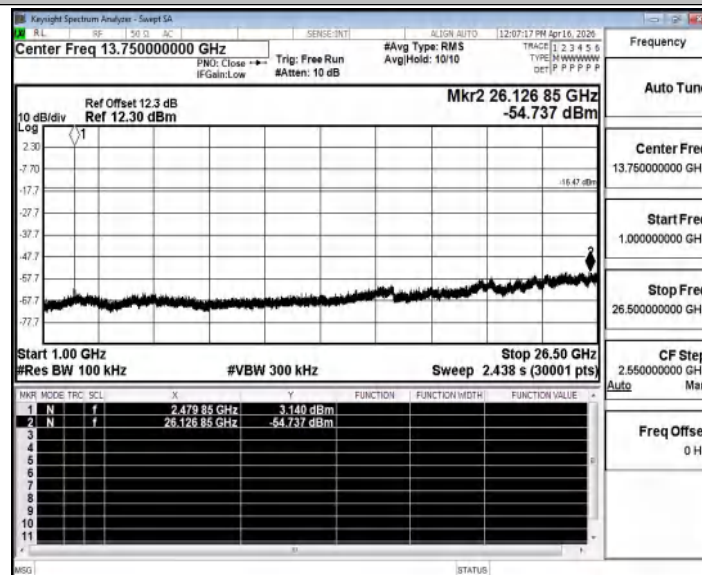
DH5_Ant1_2480_0~Reference



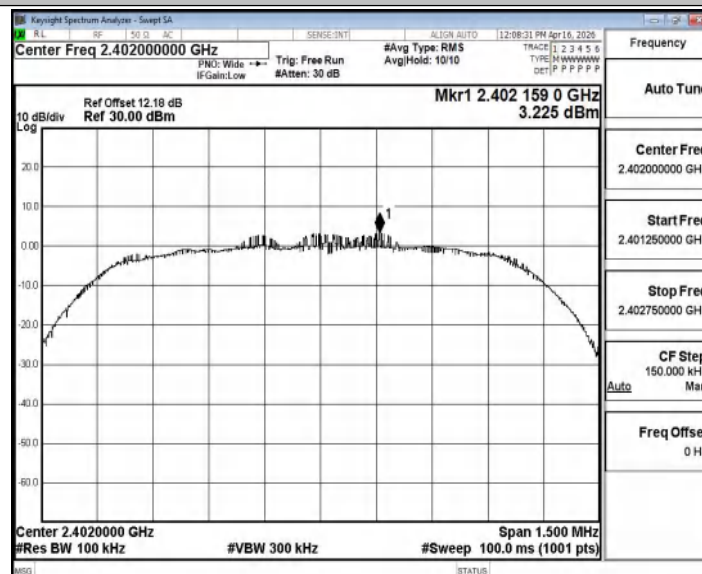
DH5_Ant1_2480_30~1000

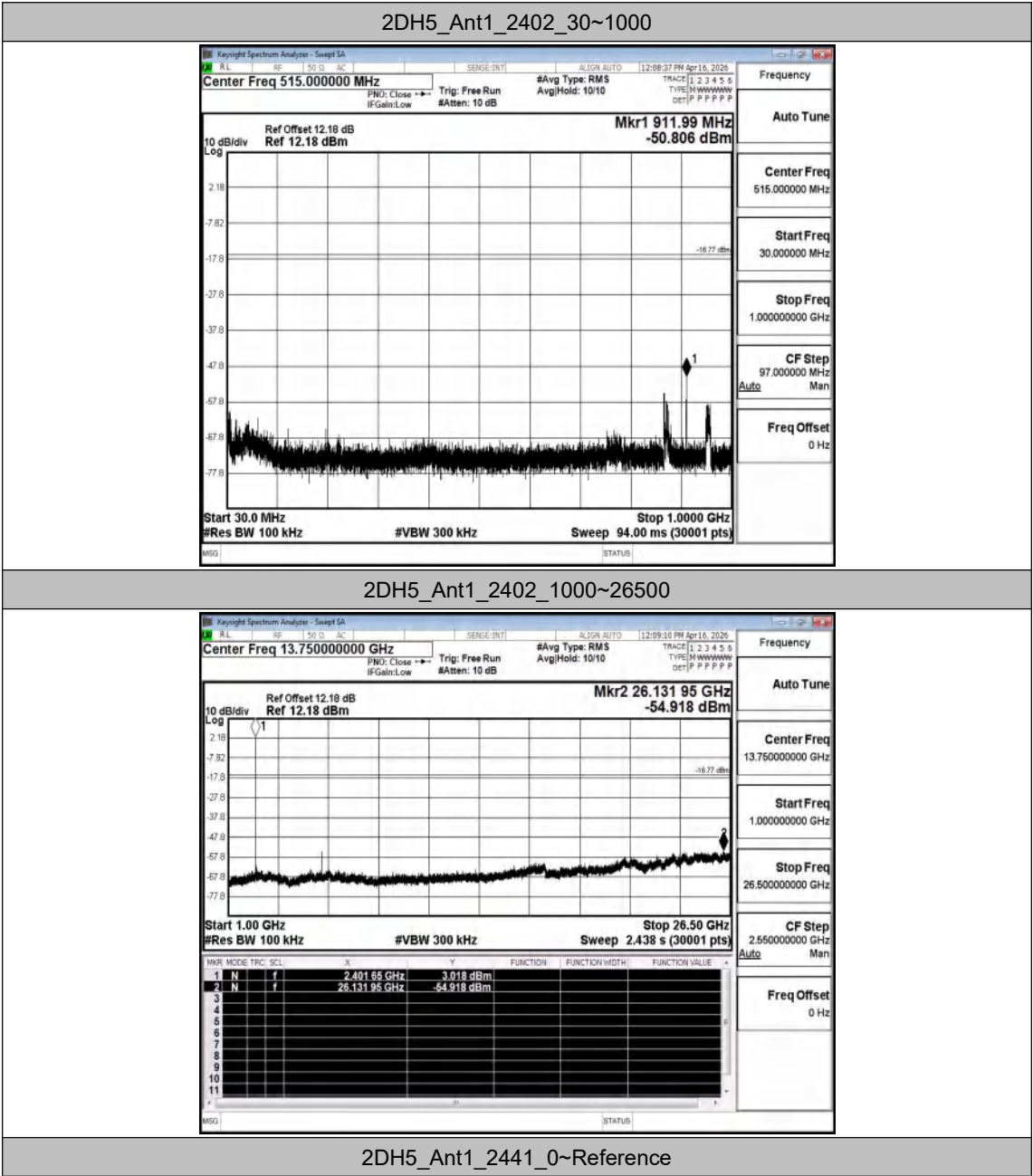


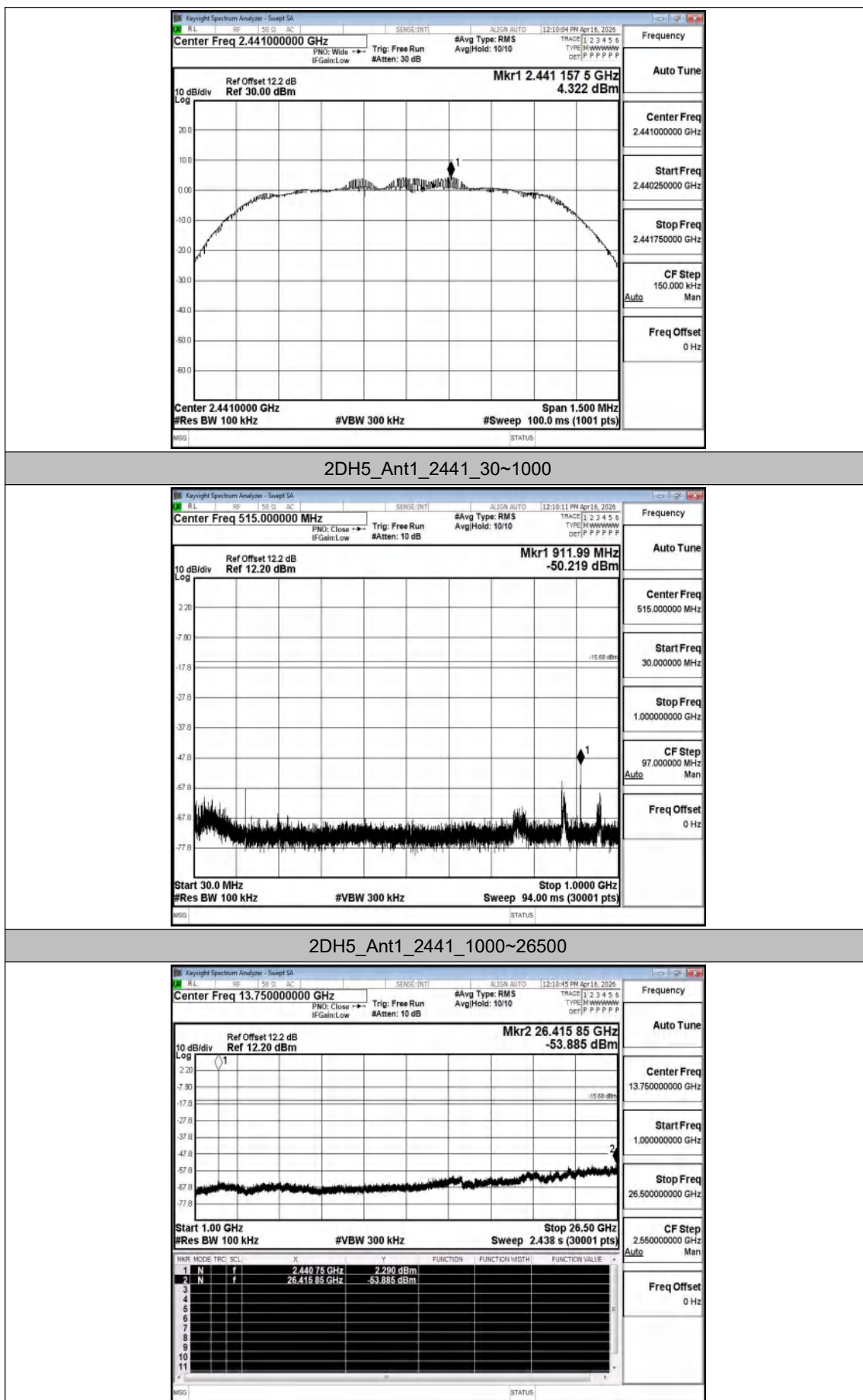
DH5_Ant1_2480_1000~26500



2DH5_Ant1_2402_0~Reference





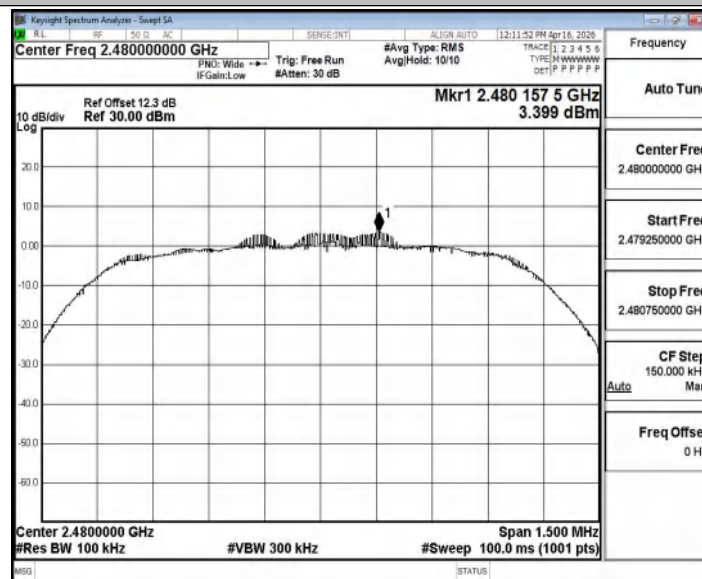


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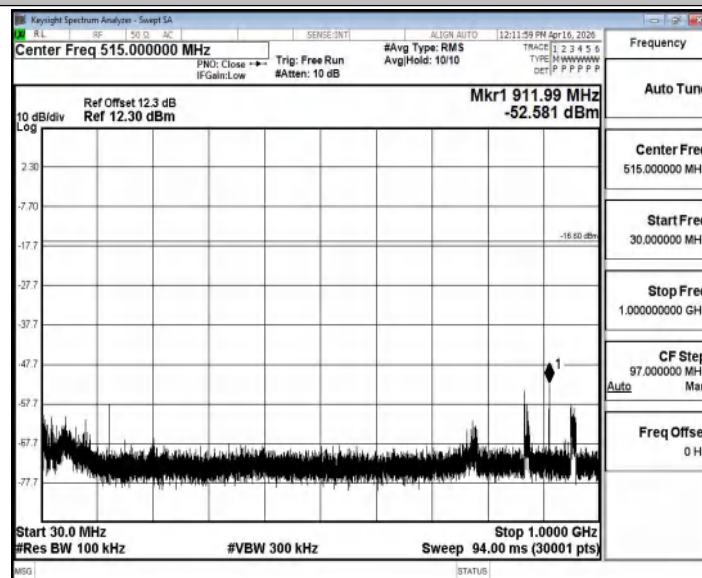
Add: No.44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China

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

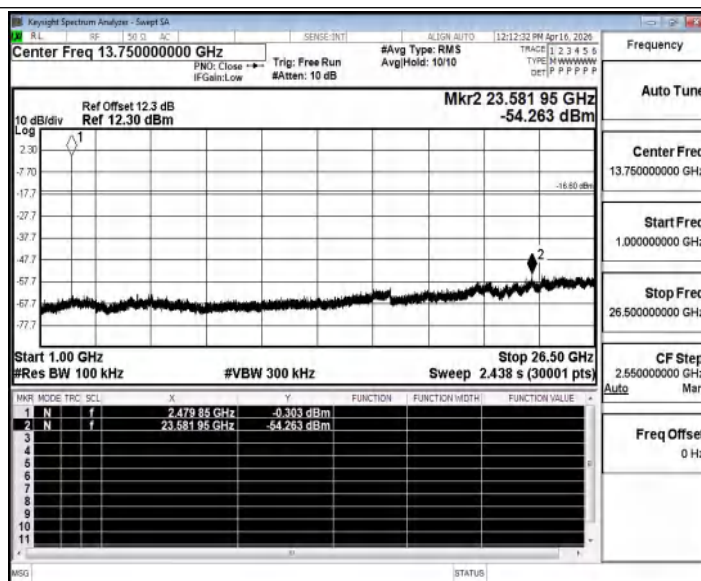
2DH5_Ant1_2480_0~Reference



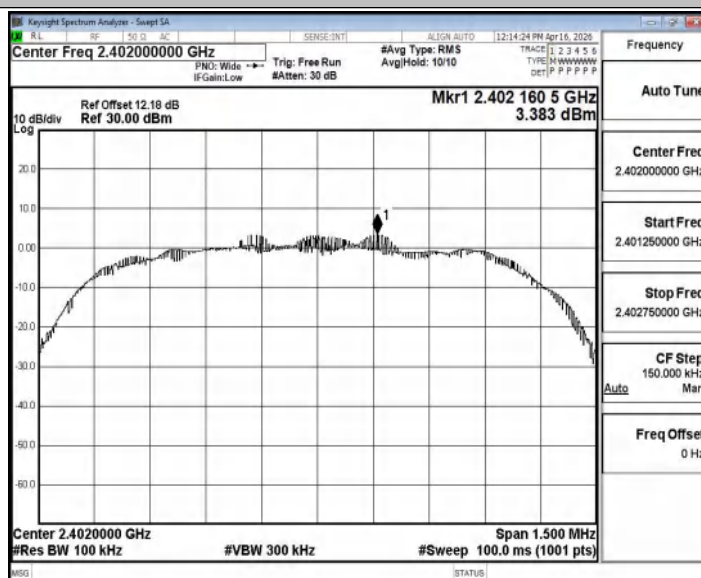
2DH5_Ant1_2480_30~1000



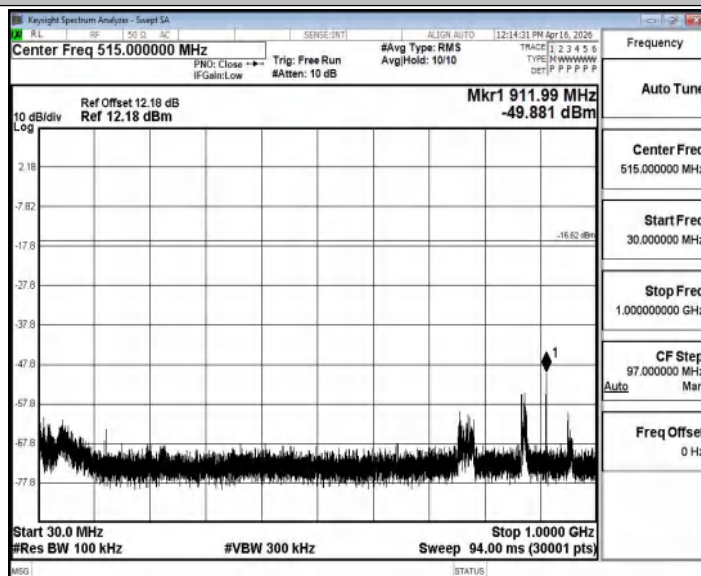
2DH5_Ant1_2480_1000~26500



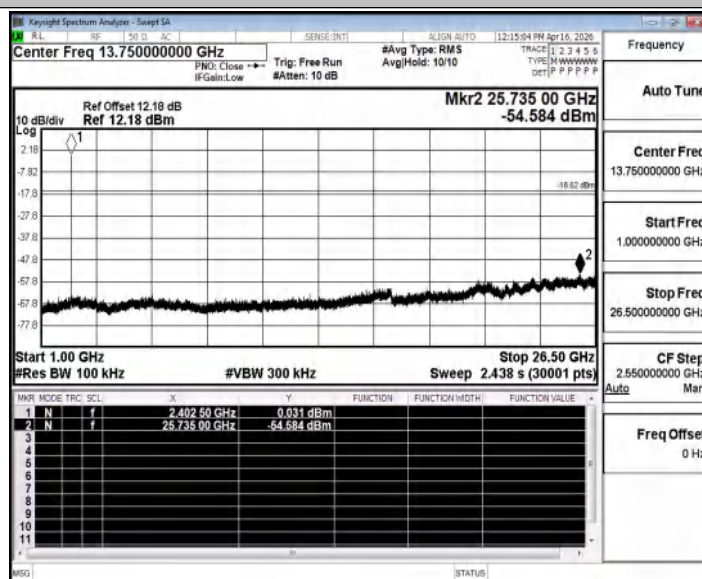
3DH5_Ant1_2402_0~Reference



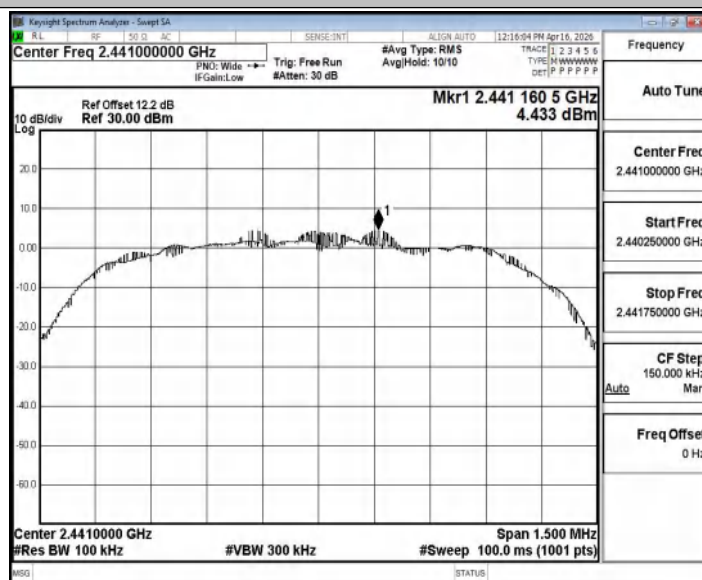
3DH5_Ant1_2402_30~1000



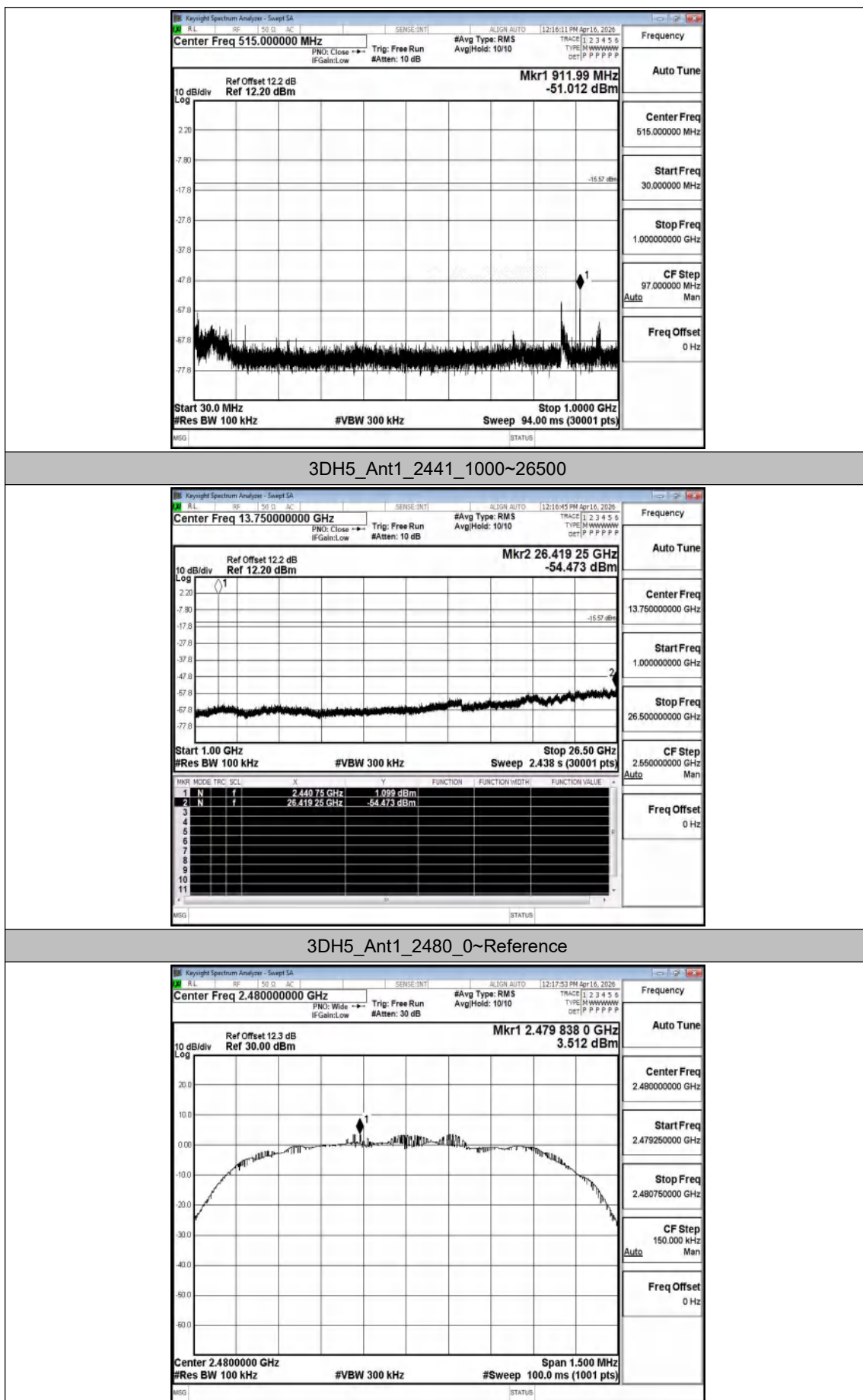
3DH5_Ant1_2402_1000~26500



3DH5_Ant1_2441_0~Reference



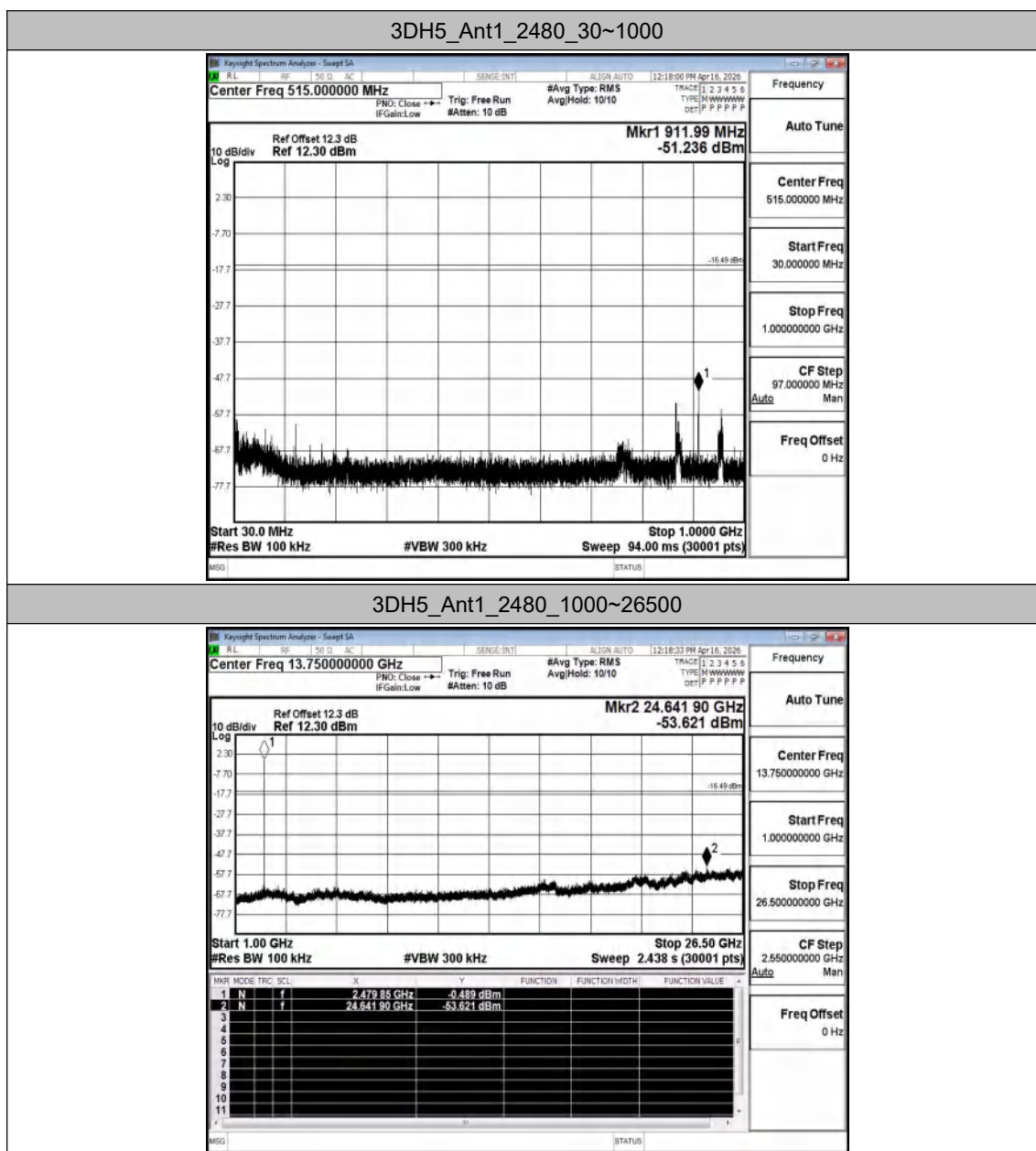
3DH5_Ant1_2441_30~1000



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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



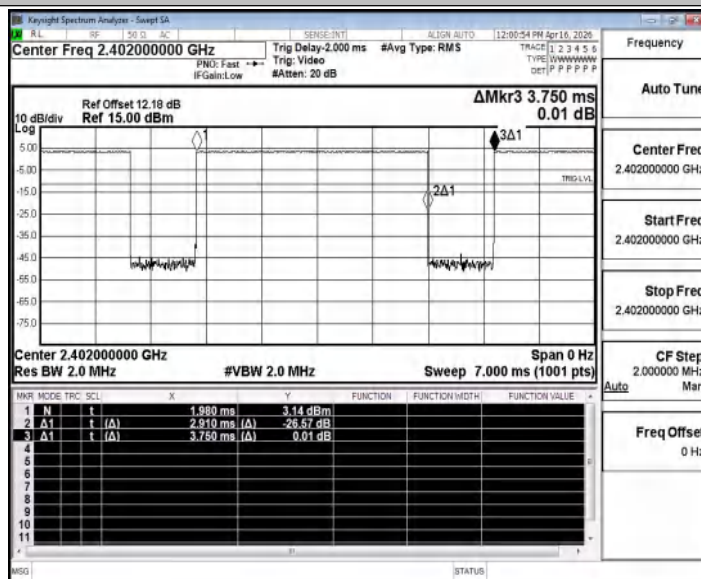
A.8 Duty Cycle

Test Result

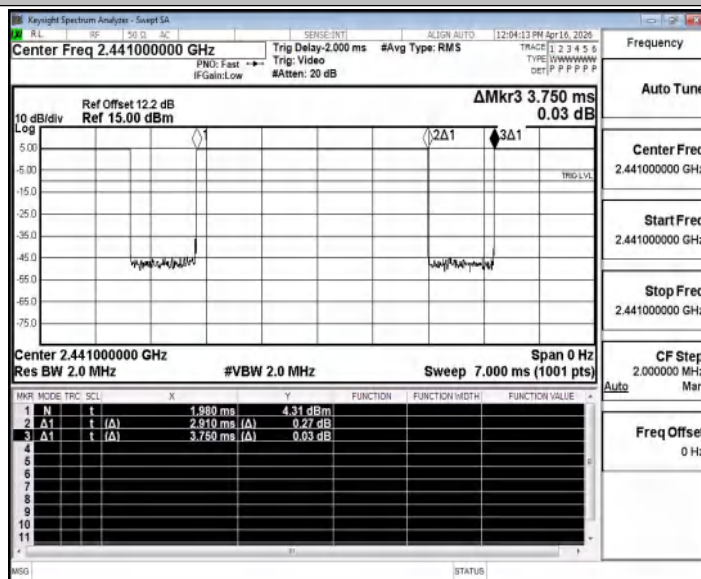
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	DC [%]	xFactor	Limit	Verdict
DH5	Ant1	2402	2.91	3.75	77.60	1.10	---	---
		2441	2.91	3.75	77.60	1.10	---	---
		2480	2.91	3.75	77.60	1.10	---	---
2DH5	Ant1	2402	2.90	3.75	77.33	1.12	---	---
		2441	2.90	3.75	77.33	1.12	---	---
		2480	2.90	3.75	77.33	1.12	---	---
3DH5	Ant1	2402	2.90	3.76	77.13	1.13	---	---
		2441	2.90	3.76	77.13	1.13	---	---
		2480	2.89	3.74	77.27	1.12	---	---

Test Graphs

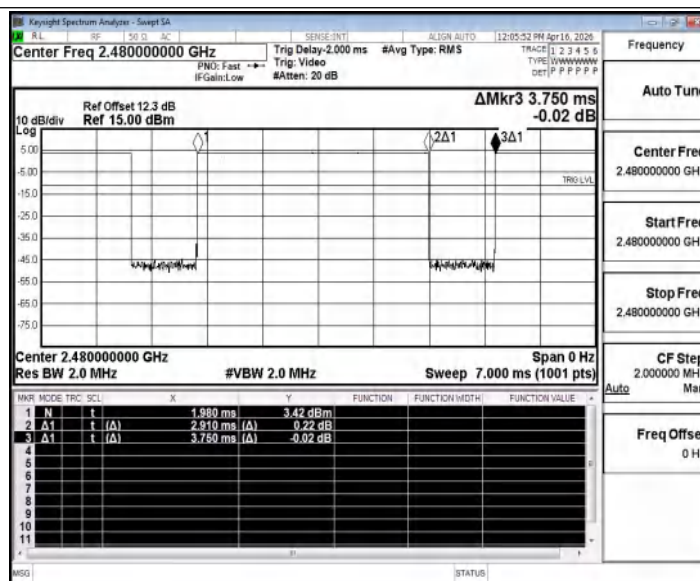
DH5_Ant1_2402



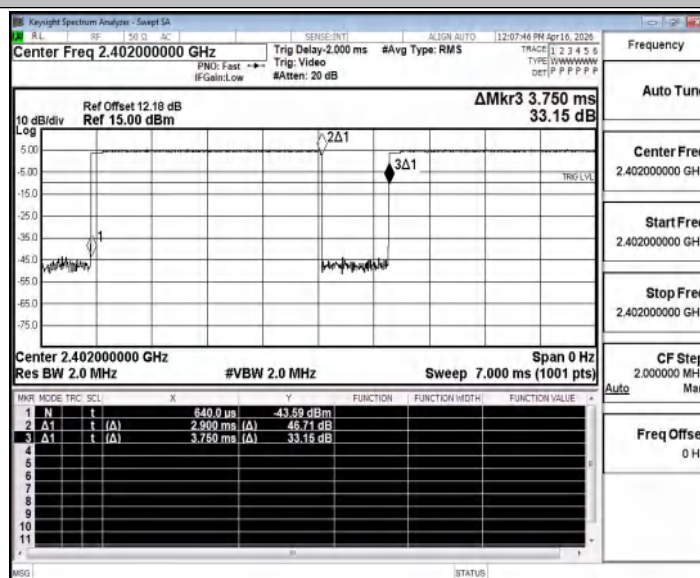
DH5_Ant1_2441



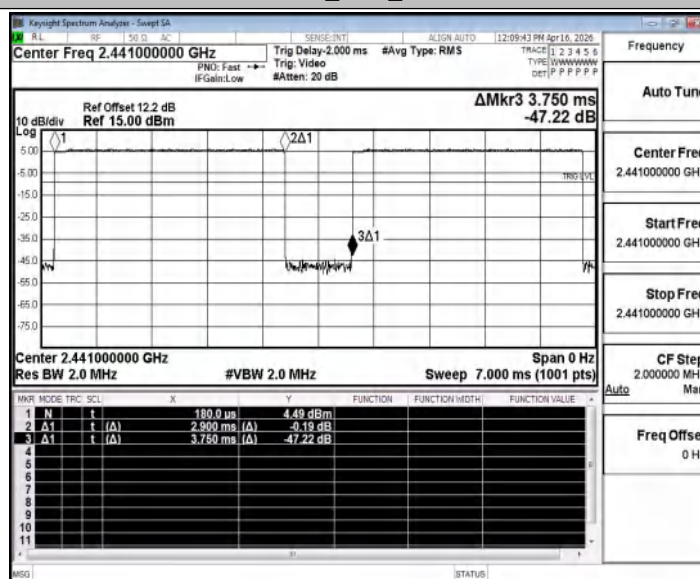
DH5_Ant1_2480



2DH5_Ant1_2402



2DH5_Ant1_2441

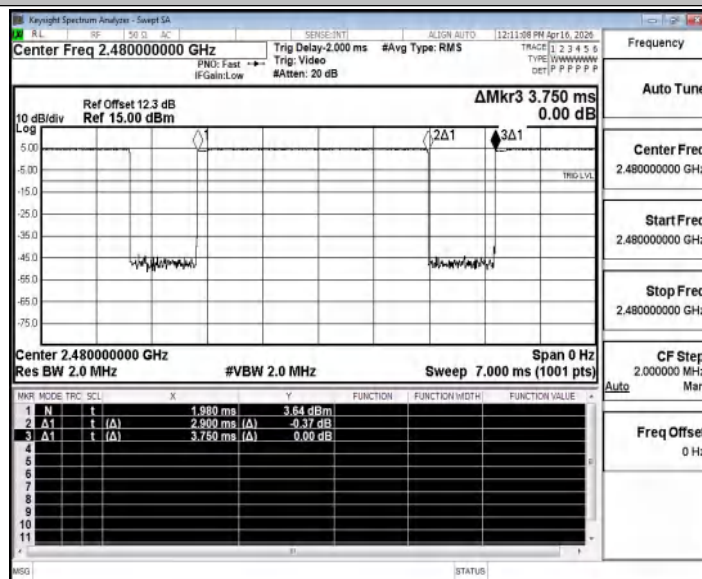


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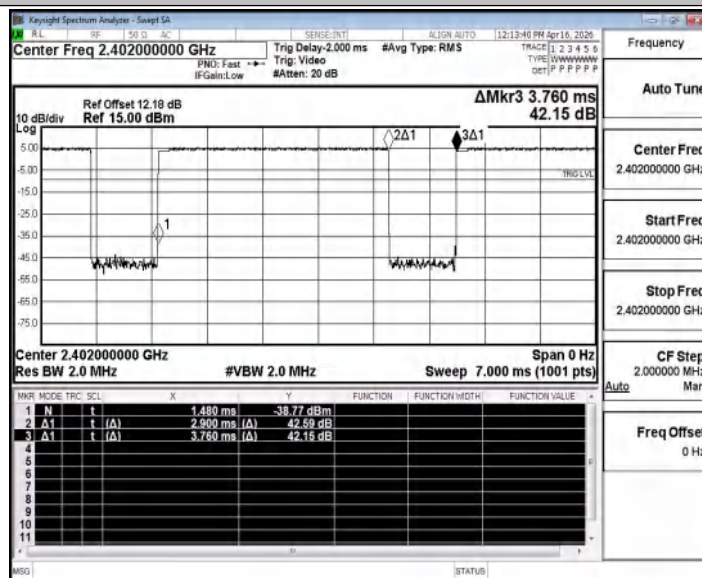
Add: No.44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China

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

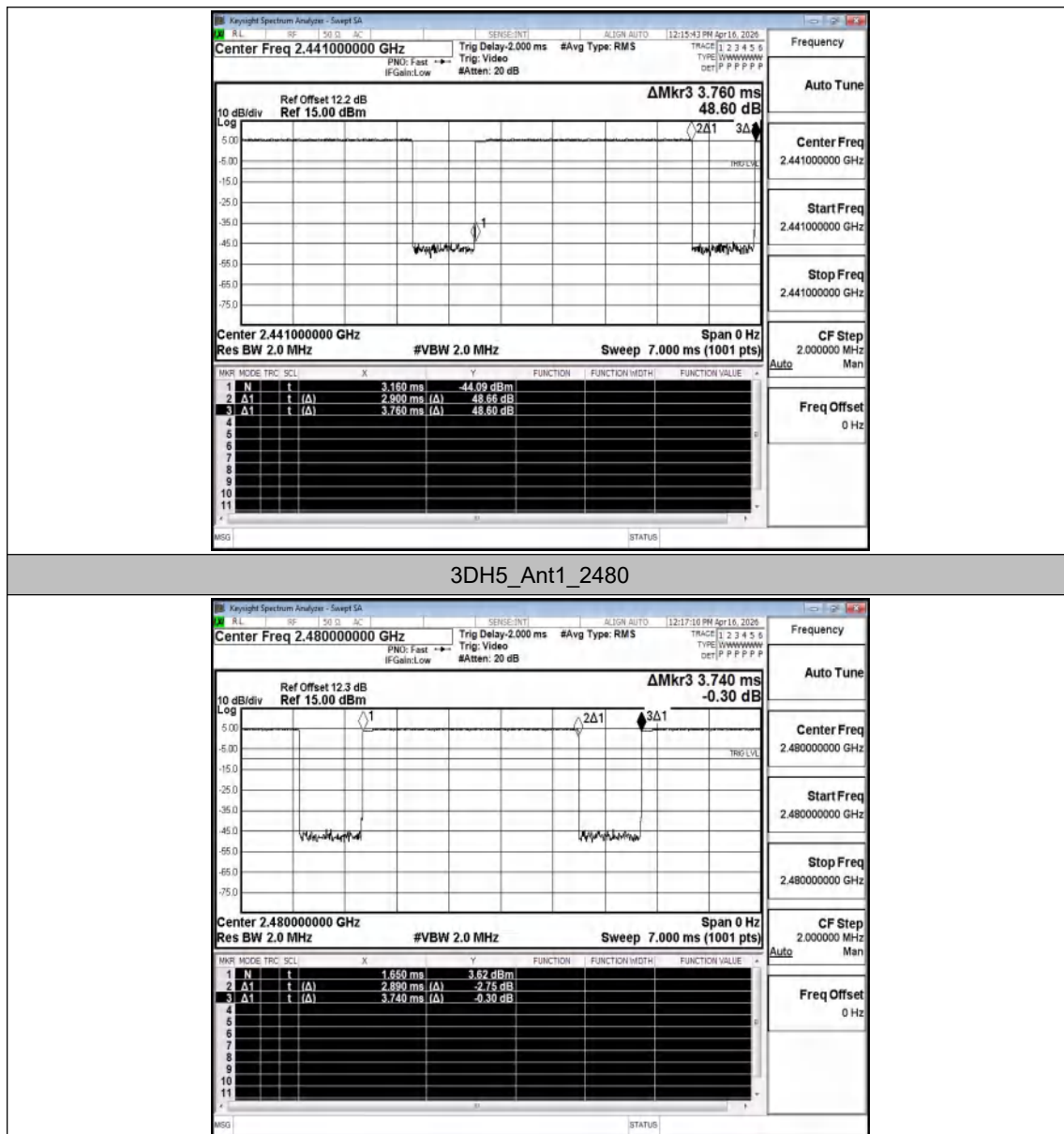
2DH5_Ant1_2480



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]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-61	≤-44.30	2.00	1.10	37.30	≤54	PASS
				AV	2376.125	-59.87	≤-44.30	2.00	1.10	38.43	≤54	PASS
				AV	2390.000	-60.3	≤-44.30	2.00	1.10	38.00	≤54	PASS
				Peak	2310.000	-52.52	≤-23.20	2.00	0.00	44.68	≤74	PASS
				Peak	2364.155	-49.65	≤-23.20	2.00	0.00	47.55	≤74	PASS
				Peak	2390.000	-52.69	≤-23.20	2.00	0.00	44.51	≤74	PASS
		High	2480	AV	2483.500	-58.6	≤-44.30	2.00	1.10	39.70	≤54	PASS
				AV	2483.520	-58.6	≤-44.30	2.00	1.10	39.70	≤54	PASS
				AV	2500.000	-60.54	≤-44.30	2.00	1.10	37.76	≤54	PASS
				Peak	2483.500	-51.17	≤-23.20	2.00	0.00	46.03	≤74	PASS
				Peak	2485.920	-43.22	≤-23.20	2.00	0.00	53.98	≤74	PASS
				Peak	2500.000	-52.25	≤-23.20	2.00	0.00	44.95	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-51.49	≤-23.20	2.00	0.00	45.71	≤74	PASS
				Peak	2313.860	-50.15	≤-23.20	2.00	0.00	47.05	≤74	PASS
				Peak	2390.000	-52	≤-23.20	2.00	0.00	45.20	≤74	PASS
		High	Hop_2480	Peak	2483.500	-53.31	≤-23.20	2.00	0.00	43.89	≤74	PASS
				Peak	2495.520	-50.02	≤-23.20	2.00	0.00	47.18	≤74	PASS
				Peak	2500.000	-50.69	≤-23.20	2.00	0.00	46.51	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-61.14	≤-44.32	2.00	1.12	37.18	≤54	PASS
				AV	2325.935	-59.97	≤-44.32	2.00	1.12	38.35	≤54	PASS
				AV	2390.000	-60.45	≤-44.32	2.00	1.12	37.87	≤54	PASS
				Peak	2310.000	-51.57	≤-23.20	2.00	0.00	45.63	≤74	PASS
				Peak	2384.420	-50.31	≤-23.20	2.00	0.00	46.89	≤74	PASS
				Peak	2390.000	-51.56	≤-23.20	2.00	0.00	45.64	≤74	PASS
		High	2480	AV	2483.500	-55.36	≤-44.32	2.00	1.12	42.96	≤54	PASS
				AV	2483.520	-55.36	≤-44.32	2.00	1.12	42.96	≤54	PASS
				AV	2500.000	-60.67	≤-44.32	2.00	1.12	37.65	≤54	PASS
				Peak	2483.500	-45.19	≤-23.20	2.00	0.00	52.01	≤74	PASS
				Peak	2483.920	-43.62	≤-23.20	2.00	0.00	53.58	≤74	PASS
				Peak	2500.000	-52.79	≤-23.20	2.00	0.00	44.41	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-52.73	≤-23.20	2.00	0.00	44.47	≤74	PASS
				Peak	2334.965	-49.52	≤-23.20	2.00	0.00	47.68	≤74	PASS
				Peak	2390.000	-52.37	≤-23.20	2.00	0.00	44.83	≤74	PASS
		High	Hop_2480	Peak	2483.500	-52.77	≤-23.20	2.00	0.00	44.43	≤74	PASS
				Peak	2492.240	-49.31	≤-23.20	2.00	0.00	47.89	≤74	PASS
				Peak	2500.000	-53.06	≤-23.20	2.00	0.00	44.14	≤74	PASS

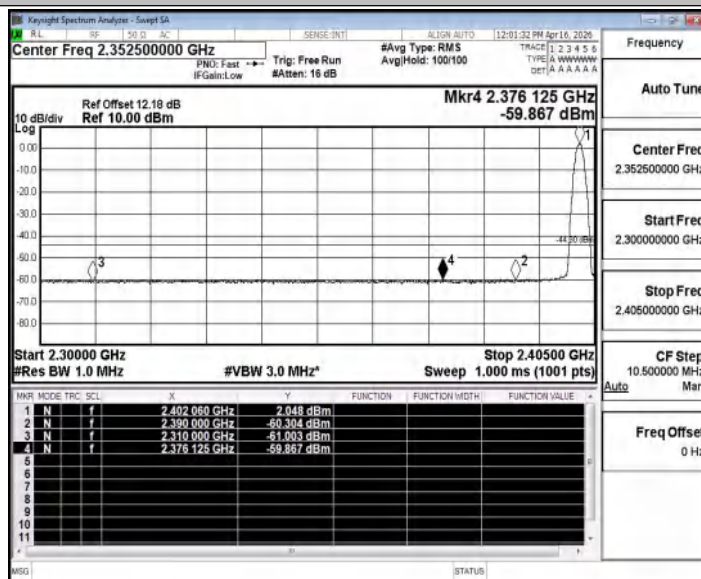
3DH5	Ant1	Low	2402	AV	2310.000	-60.92	≤-44.33	2.00	1.13	37.41	≤54	PASS
				AV	2336.120	-59.88	≤-44.33	2.00	1.13	38.45	≤54	PASS
				AV	2390.000	-60.53	≤-44.33	2.00	1.13	37.80	≤54	PASS
				Peak	2310.000	-53.09	≤-23.20	2.00	0.00	44.11	≤74	PASS
				Peak	2359.430	-49.9	≤-23.20	2.00	0.00	47.30	≤74	PASS
				Peak	2390.000	-52.66	≤-23.20	2.00	0.00	44.54	≤74	PASS
		High	2480	AV	2483.500	-53.9	≤-44.32	2.00	1.12	44.42	≤54	PASS
				AV	2483.520	-53.9	≤-44.32	2.00	1.12	44.42	≤54	PASS
				AV	2500.000	-61.05	≤-44.32	2.00	1.12	37.27	≤54	PASS
				Peak	2483.500	-43.47	≤-23.20	2.00	0.00	53.73	≤74	PASS
				Peak	2483.680	-42.66	≤-23.20	2.00	0.00	54.54	≤74	PASS
				Peak	2500.000	-53.31	≤-23.20	2.00	0.00	43.89	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-52.35	≤-23.20	2.00	0.00	44.85	≤74	PASS
				Peak	2363.525	-49.9	≤-23.20	2.00	0.00	47.30	≤74	PASS
				Peak	2390.000	-52.51	≤-23.20	2.00	0.00	44.69	≤74	PASS
		High	Hop_2480	Peak	2483.500	-51.88	≤-23.20	2.00	0.00	45.32	≤74	PASS
				Peak	2483.840	-47.23	≤-23.20	2.00	0.00	49.97	≤74	PASS
				Peak	2500.000	-52.66	≤-23.20	2.00	0.00	44.54	≤74	PASS

Note:

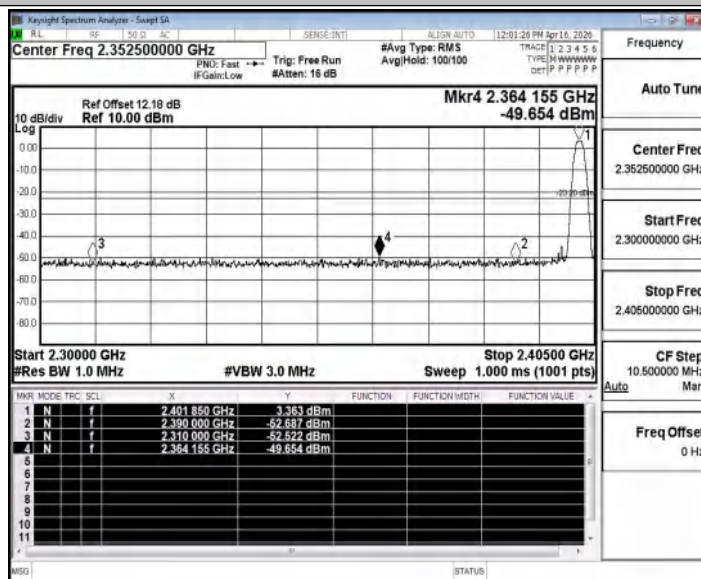
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

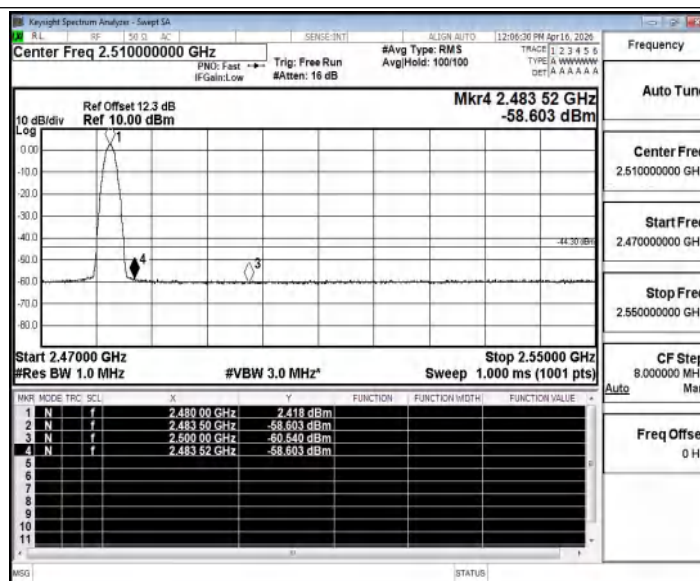
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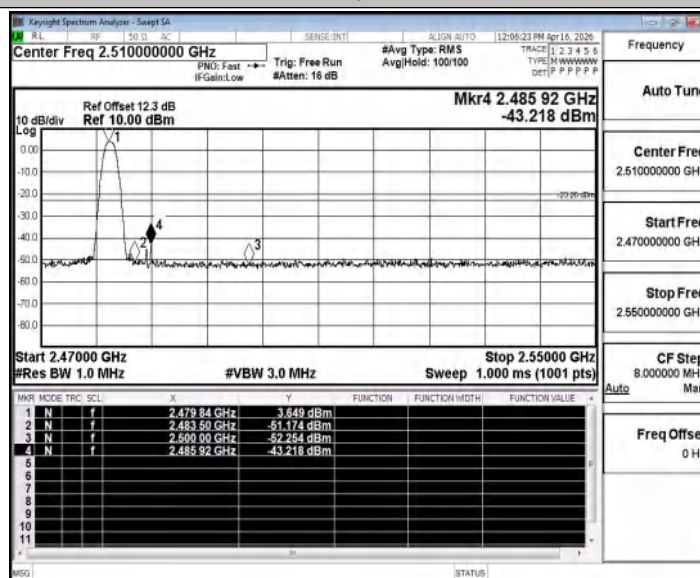
DH5_Ant1_Low_2402_Peak



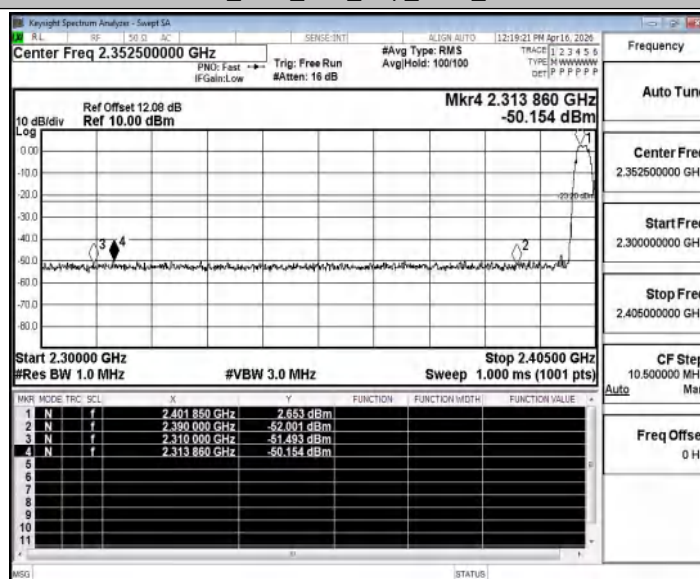
DH5_Ant1_High_2480_AV



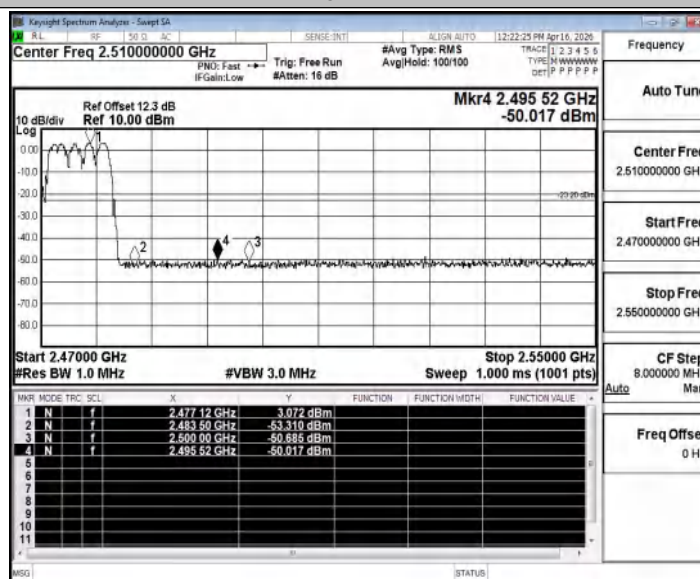
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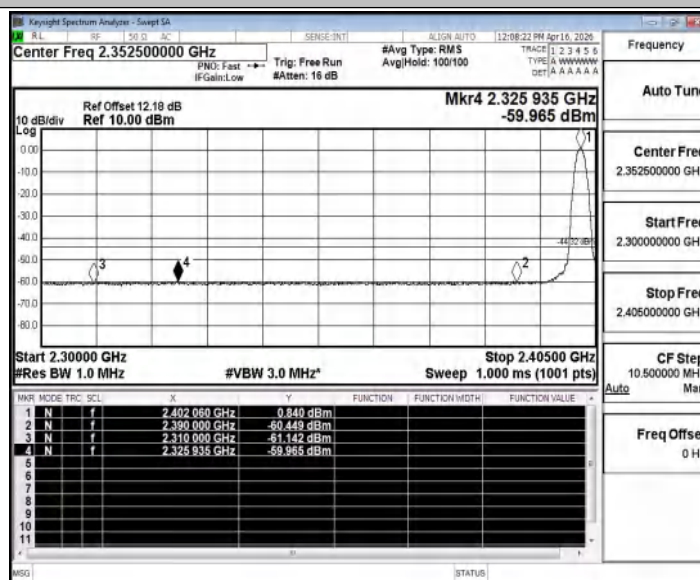
DH5_Ant1_Low_Hop_2402_Peak



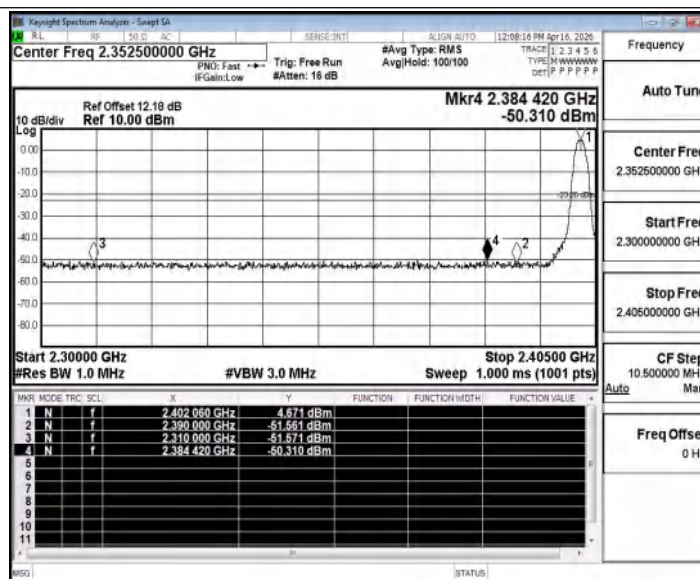
DH5_Ant1_High_Hop_2480_Peak



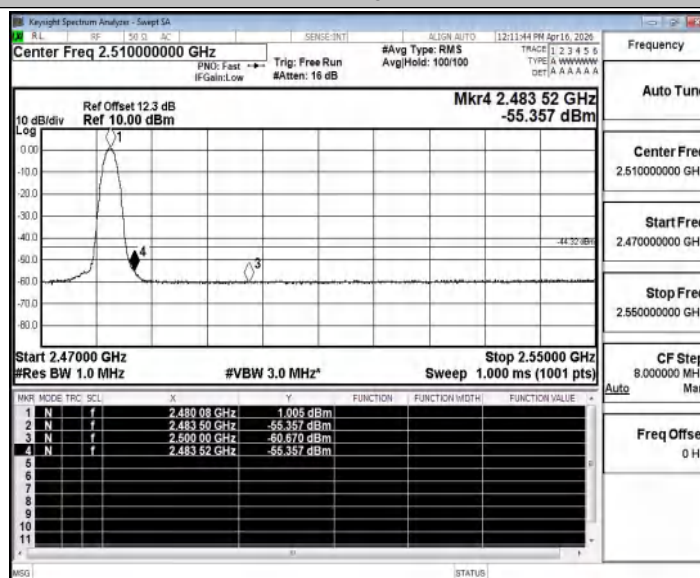
2DH5_Ant1_Low_2402_AV



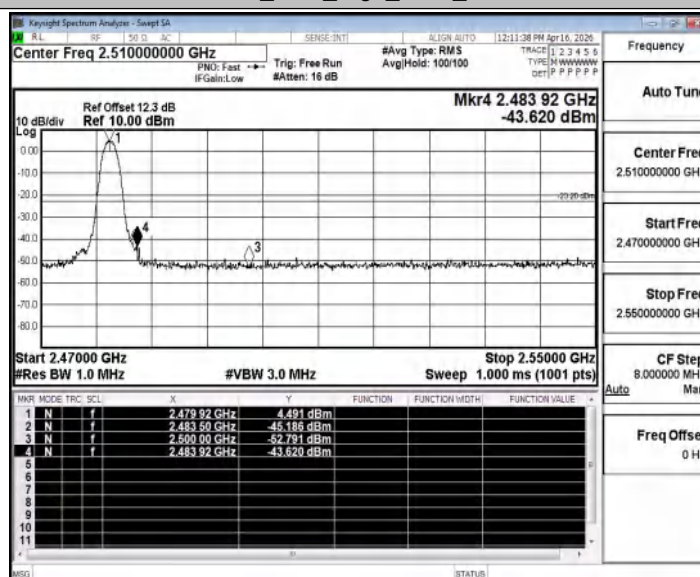
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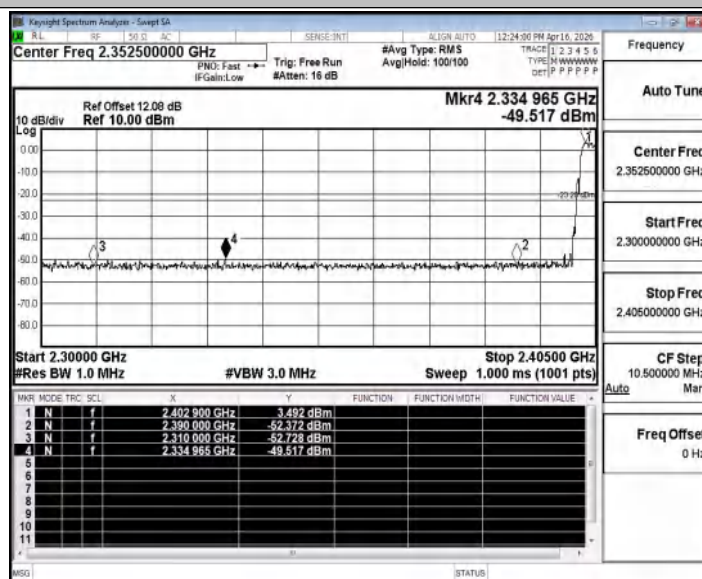
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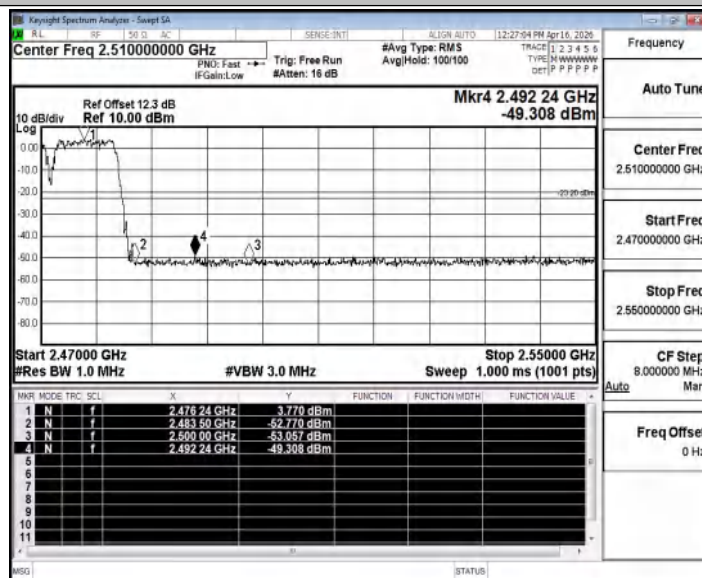
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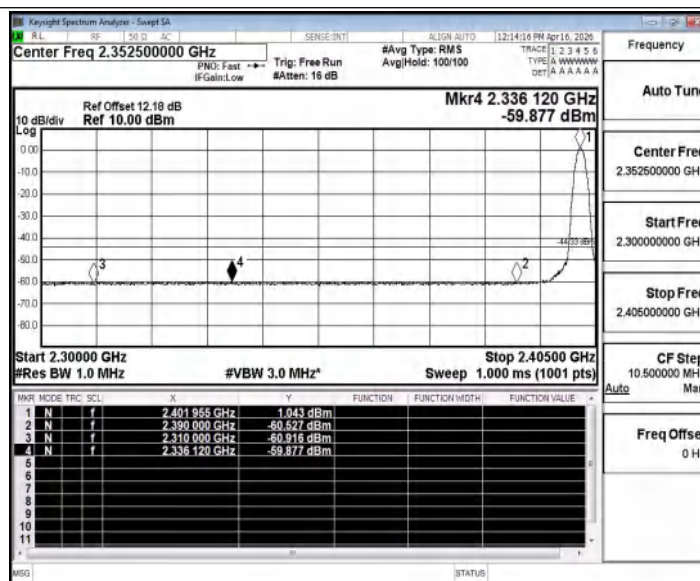
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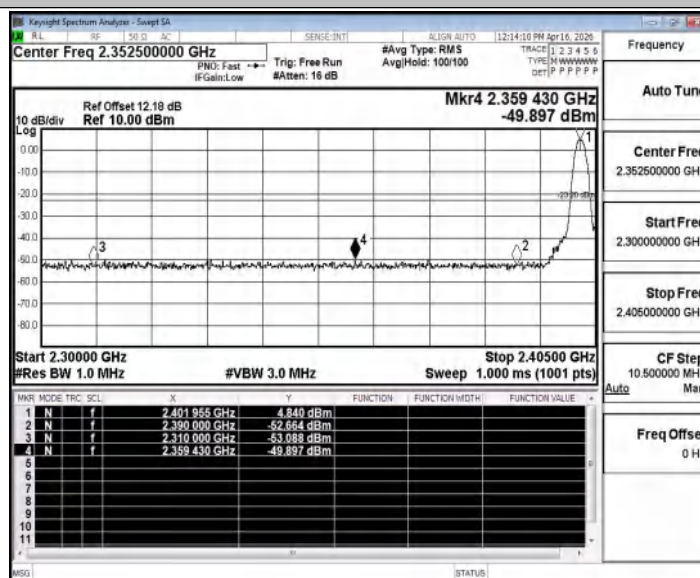
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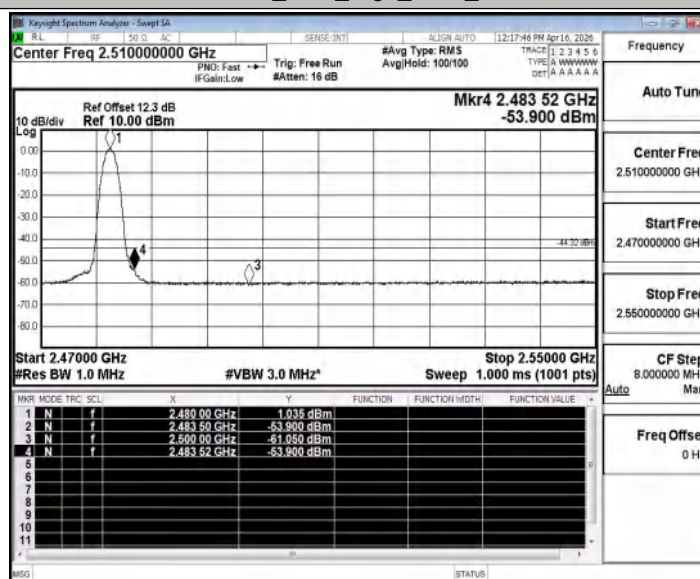
3DH5_Ant1_Low_2402_AV



3DH5_Ant1_Low_2402_Peak



3DH5_Ant1_High_2480_AV

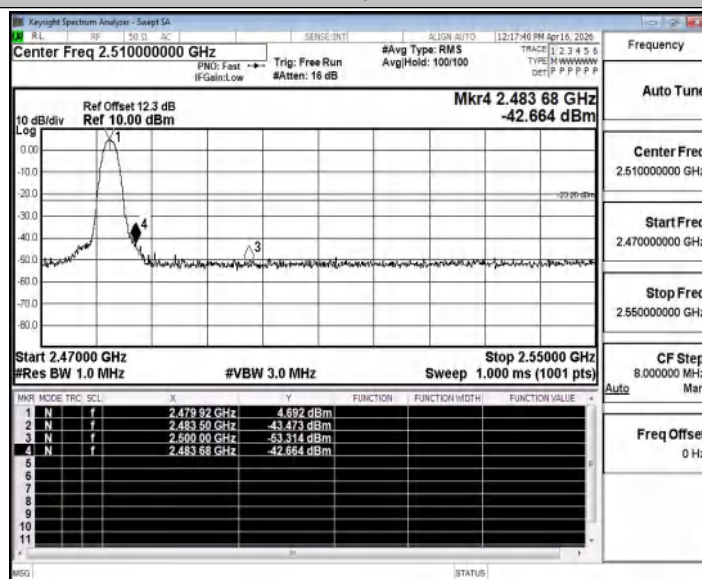


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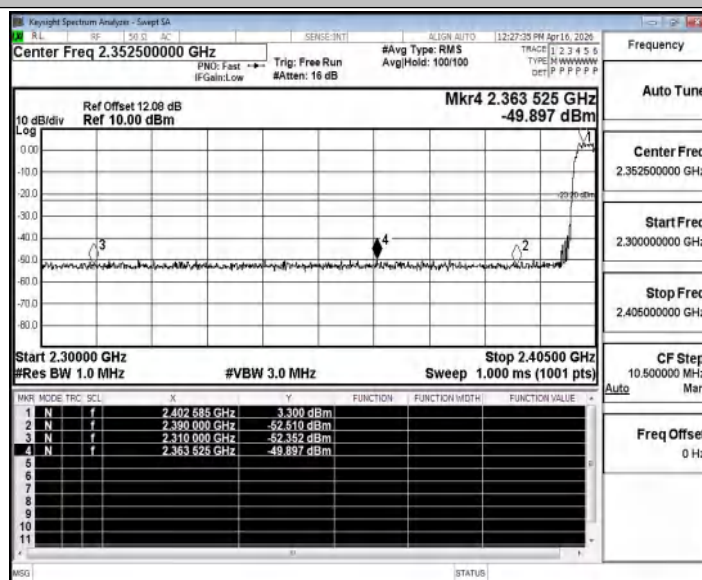
Add: No.44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China

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

3DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_Hop_2402_Peak



3DH5_Ant1_High_Hop_2480_Peak

