

Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Portable Speaker

Test Model: Sonic Boom POP

Environmental Conditions

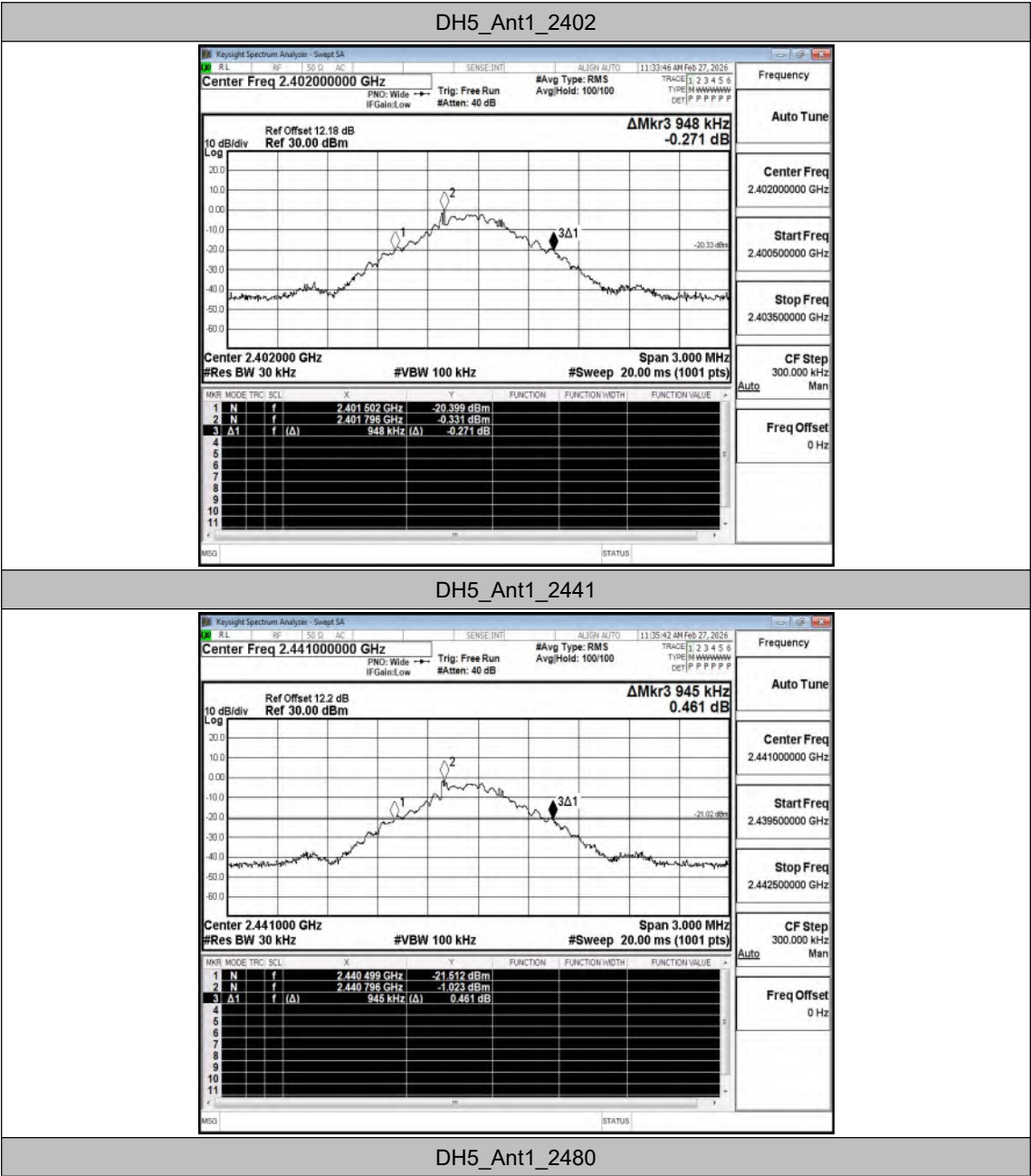
Temperature:	24.5°C
Relative Humidity:	54.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Yan Chen
Supervised by:	Fengliu Tang

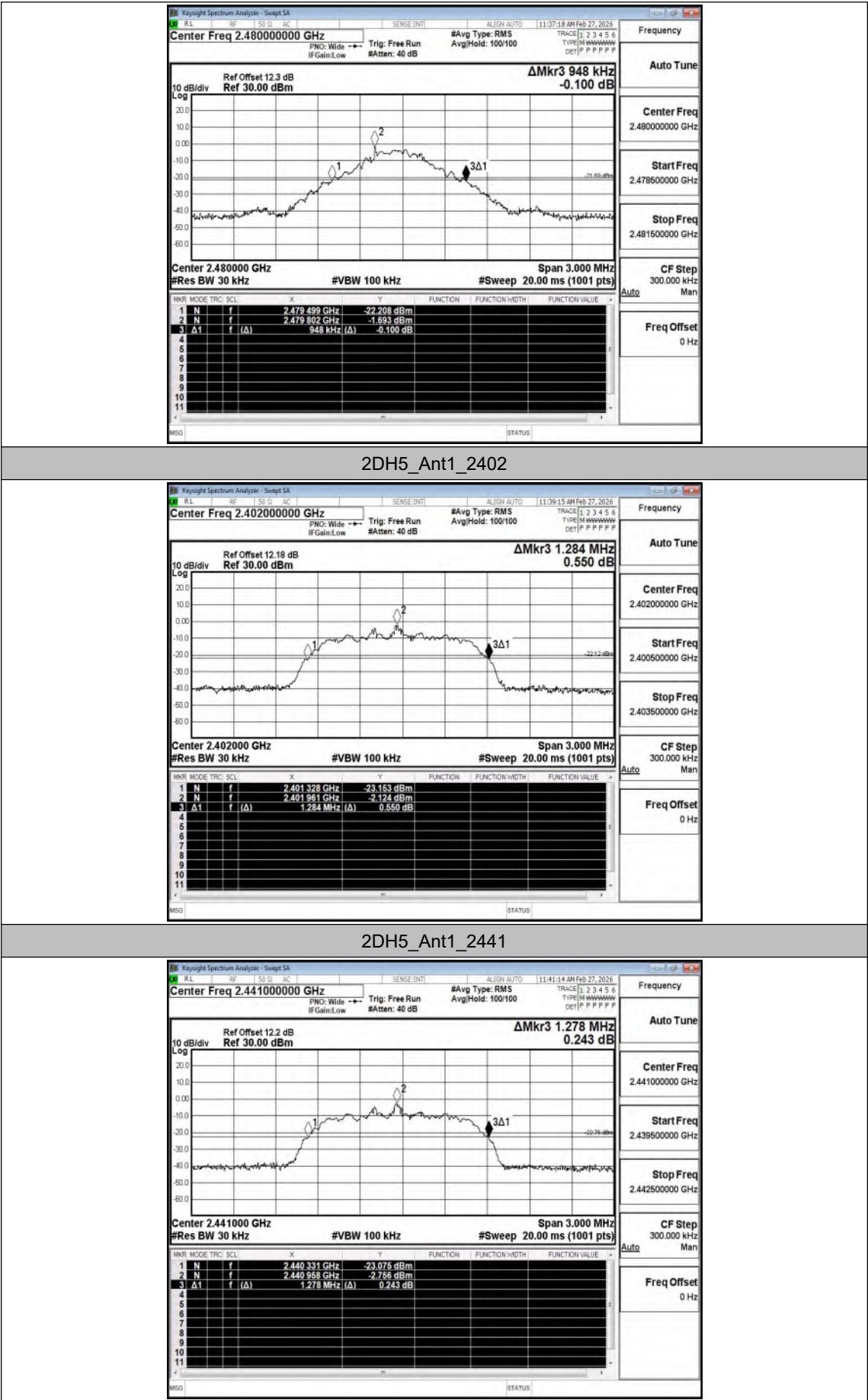
A.1 20dB Emission Bandwidth

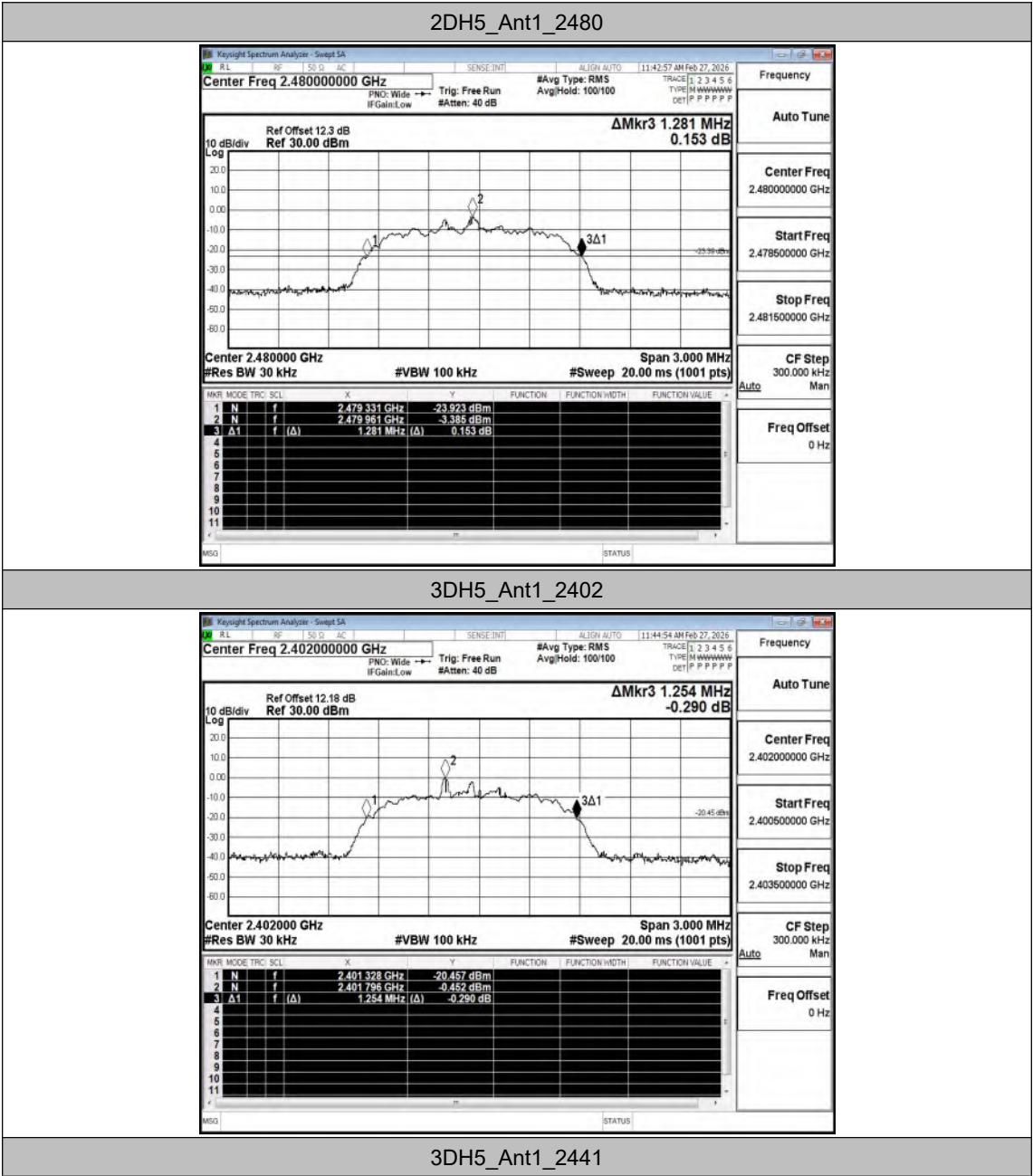
Test Result

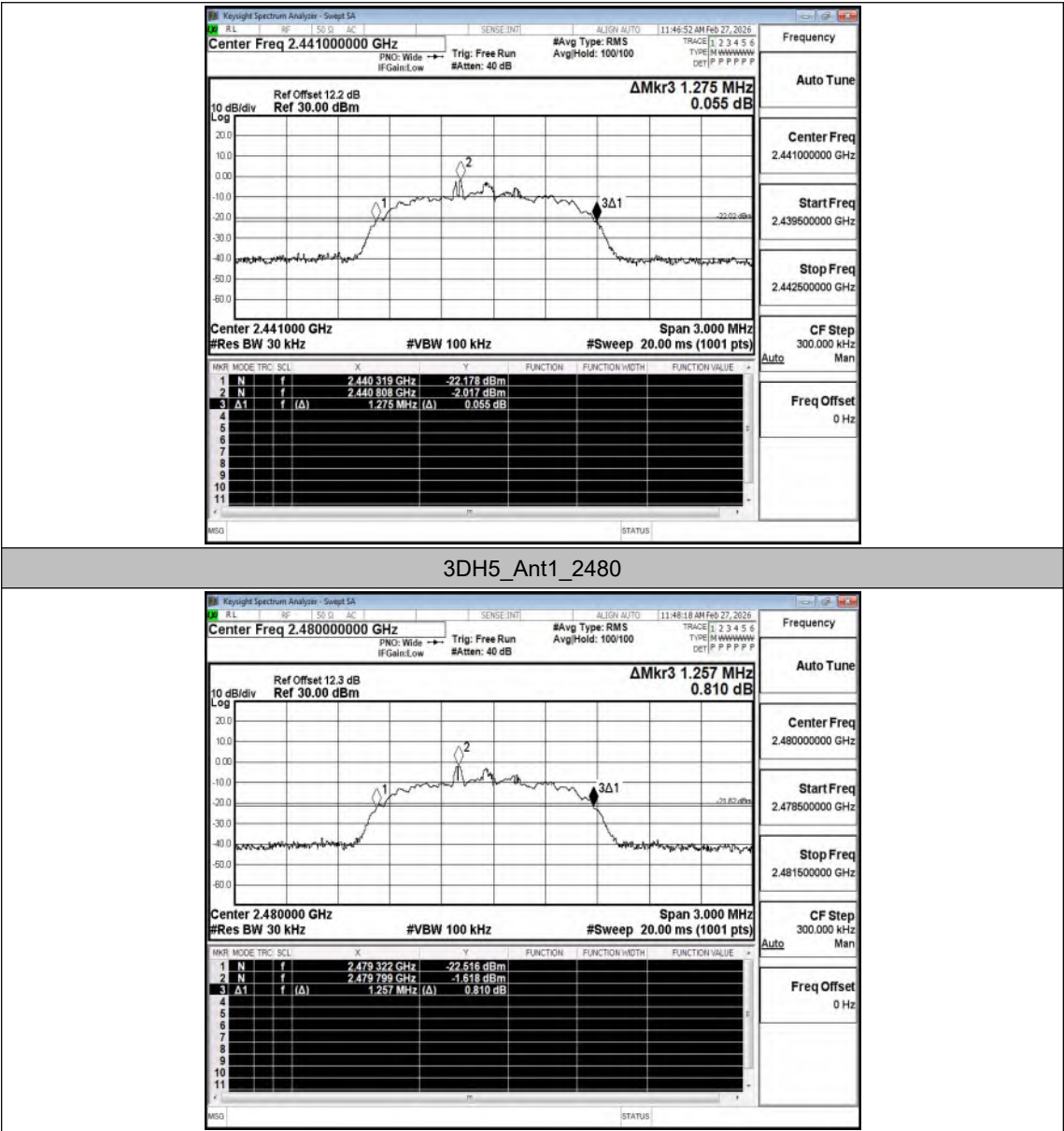
TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.948	2401.502	2402.450	---	---
		2441	0.945	2440.499	2441.444	---	---
		2480	0.948	2479.499	2480.447	---	---
2DH5	Ant1	2402	1.284	2401.328	2402.612	---	---
		2441	1.278	2440.331	2441.609	---	---
		2480	1.281	2479.331	2480.612	---	---
3DH5	Ant1	2402	1.254	2401.328	2402.582	---	---
		2441	1.275	2440.319	2441.594	---	---
		2480	1.257	2479.322	2480.579	---	---

Test Graphs







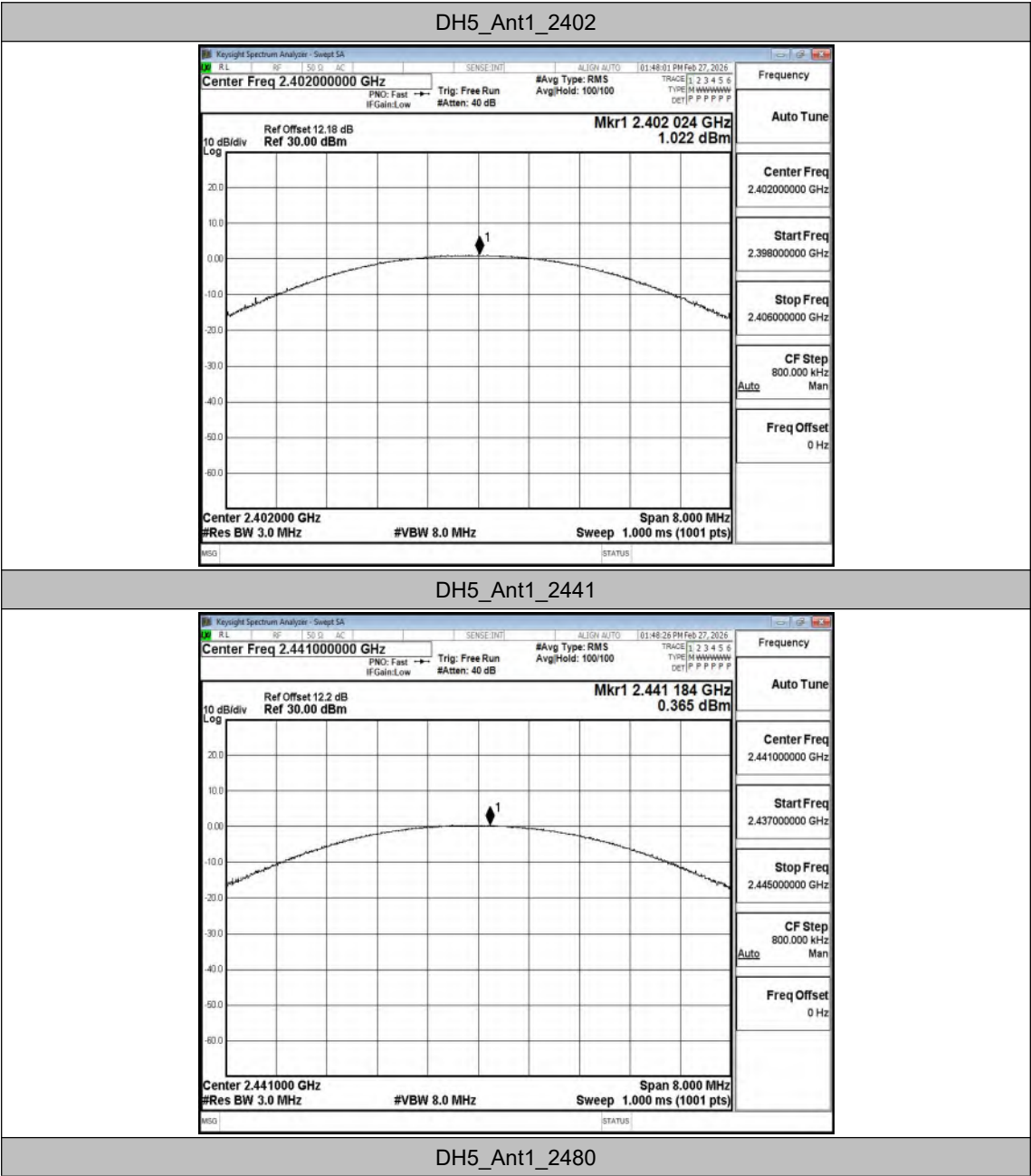


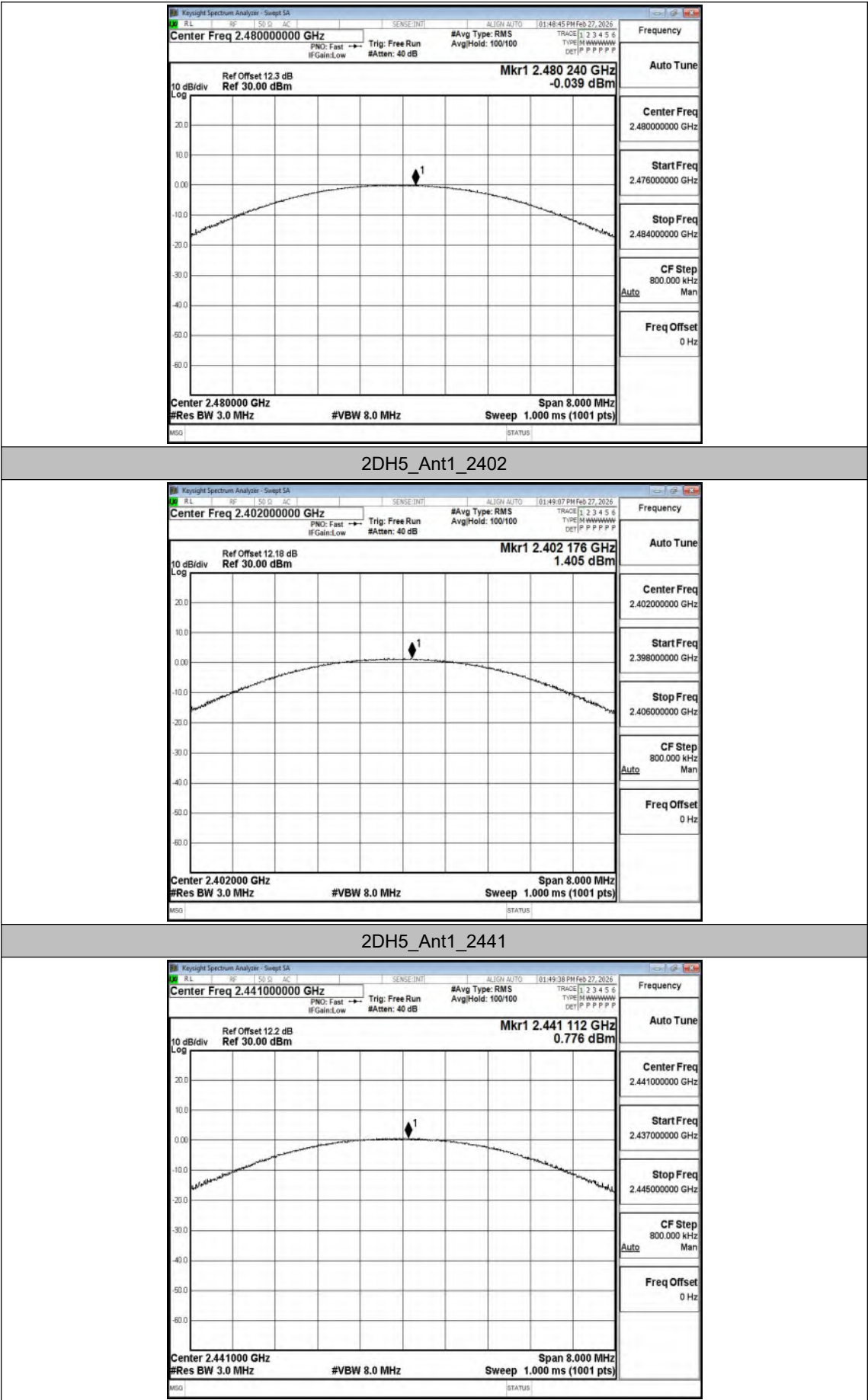
A.2 Maximum Peak conducted output power

Test Result Peak

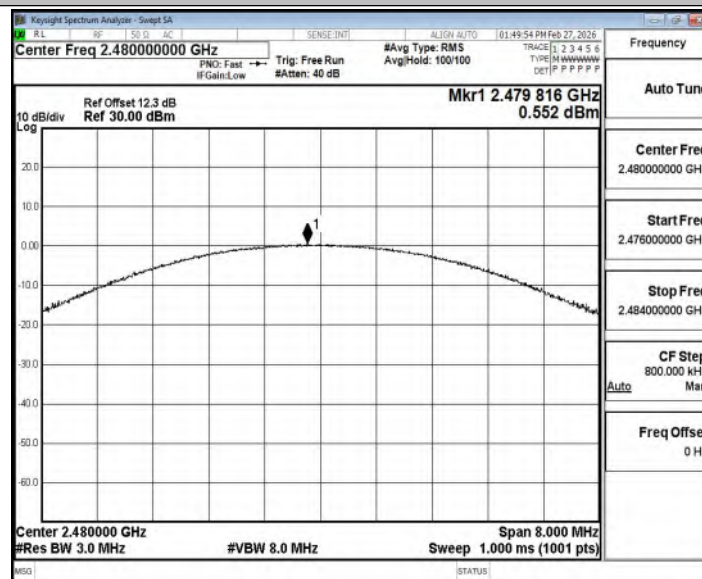
Test Mode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	1.02	≤30	PASS
		2441	0.37	≤30	PASS
		2480	-0.04	≤30	PASS
2DH5	Ant1	2402	1.41	≤30	PASS
		2441	0.78	≤30	PASS
		2480	0.55	≤30	PASS
3DH5	Ant1	2402	1.80	≤30	PASS
		2441	1.09	≤30	PASS
		2480	0.69	≤30	PASS

Test Graphs

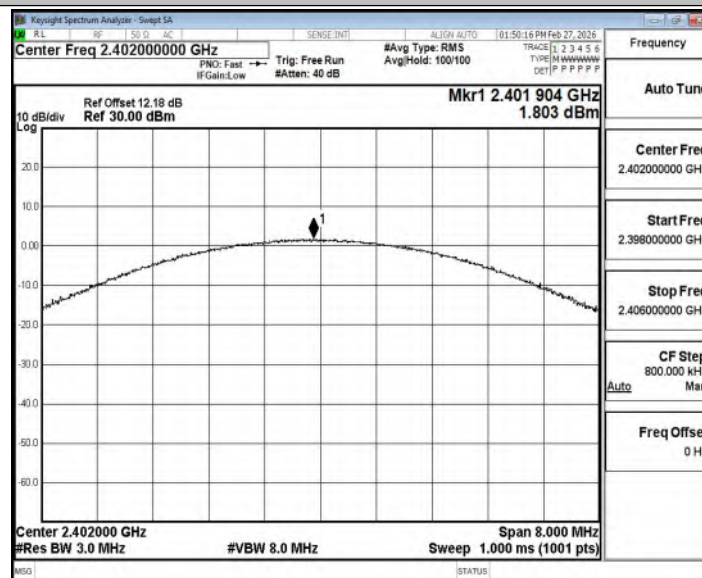




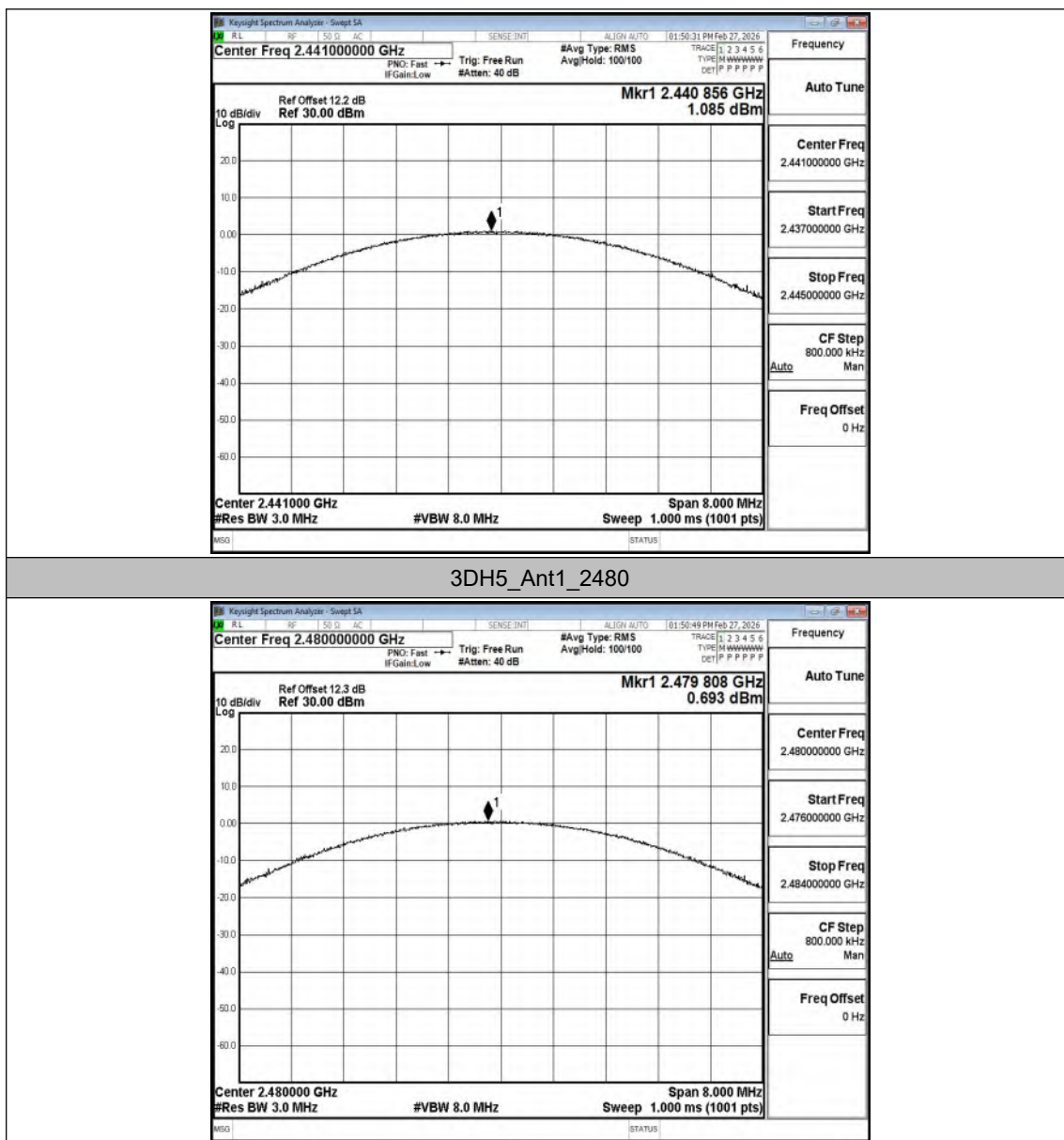
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



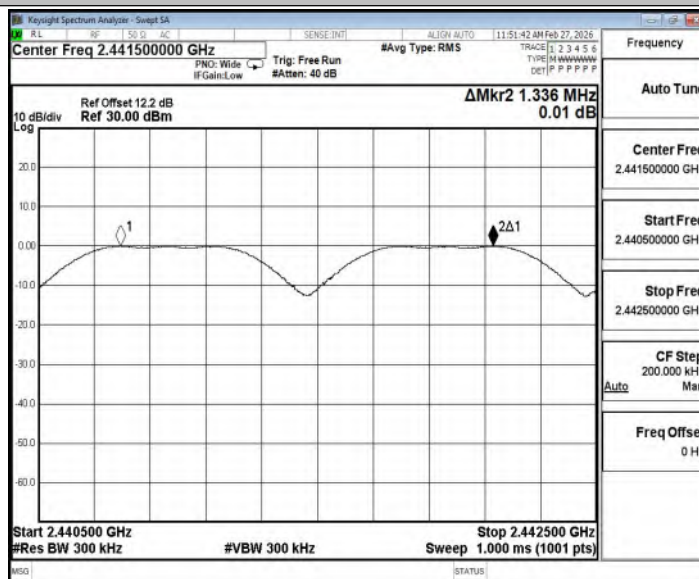
A.3 Carrier frequency separation

Test Result

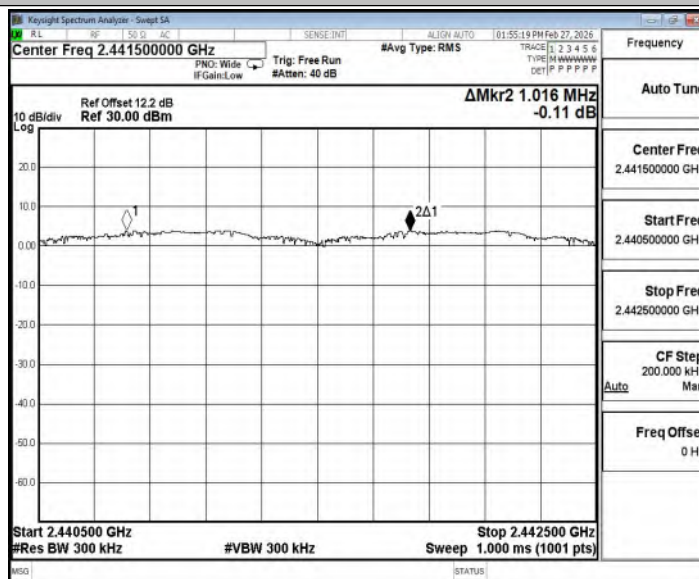
TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.336	≥ 0.948	PASS
2DH5	Ant1	Hop	1.016	≥ 0.856	PASS
3DH5	Ant1	Hop	0.976	≥ 0.850	PASS

Test Graphs

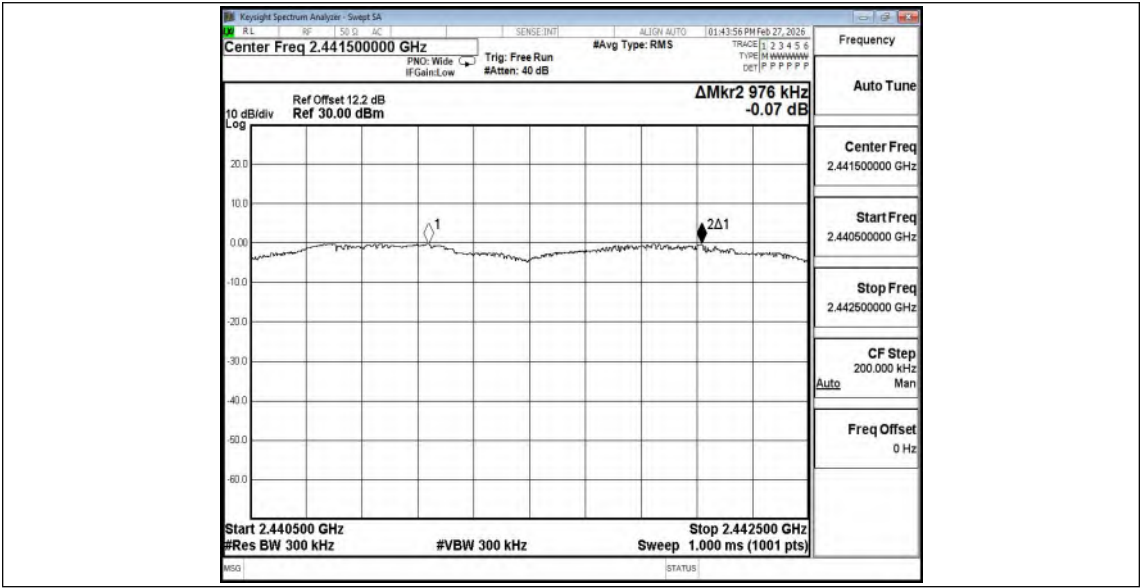
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop

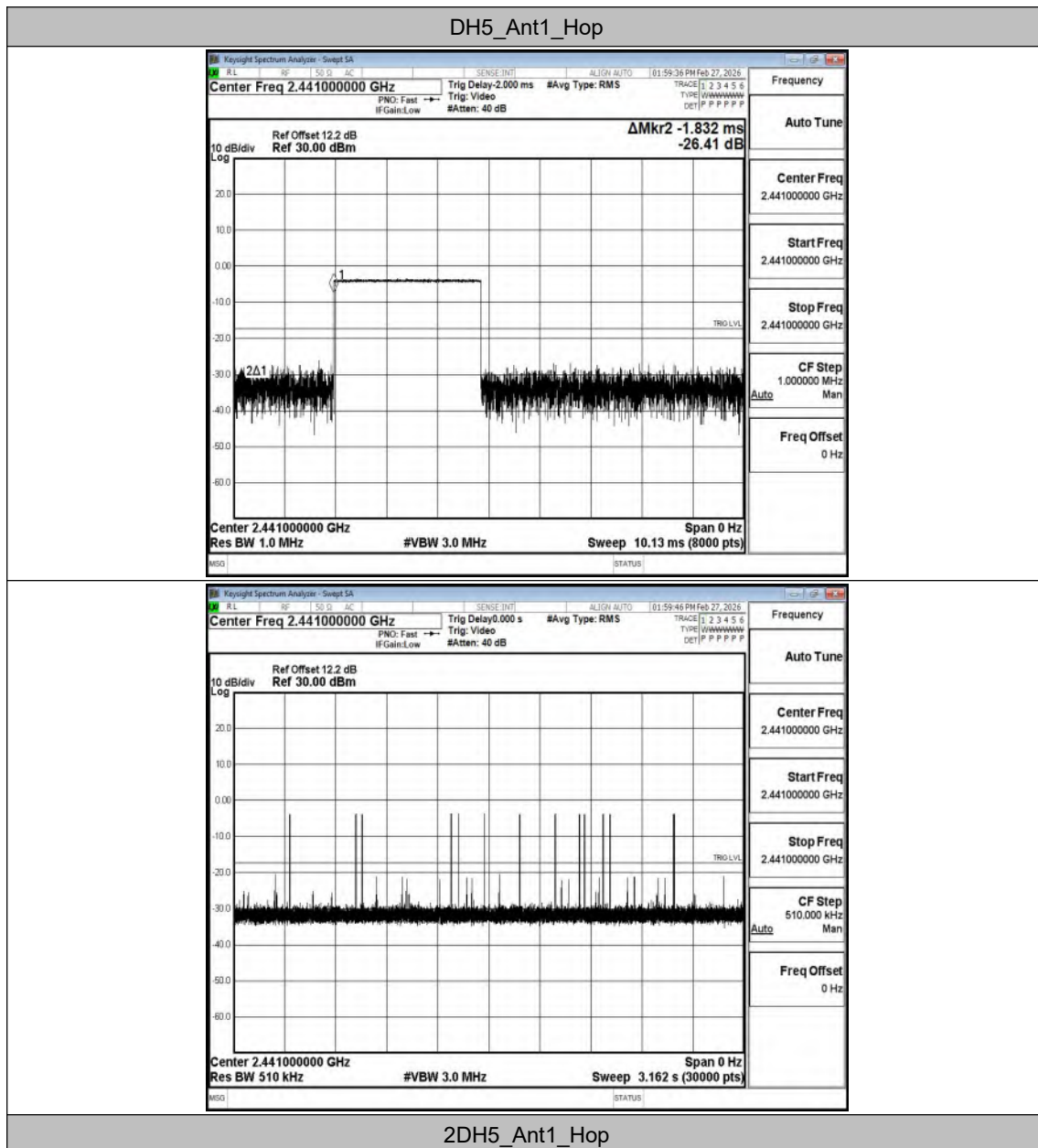


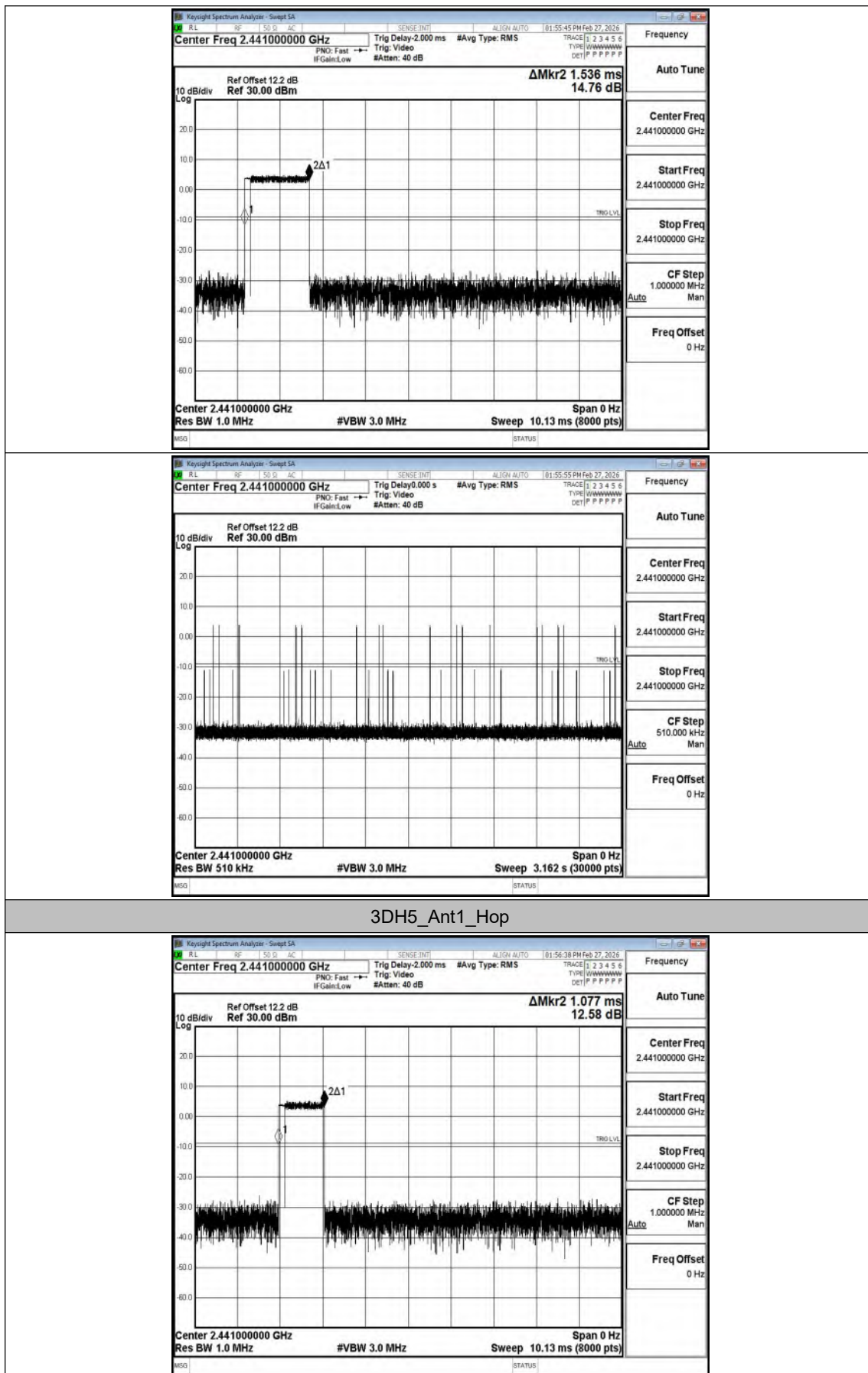
A.4 Time of occupancy

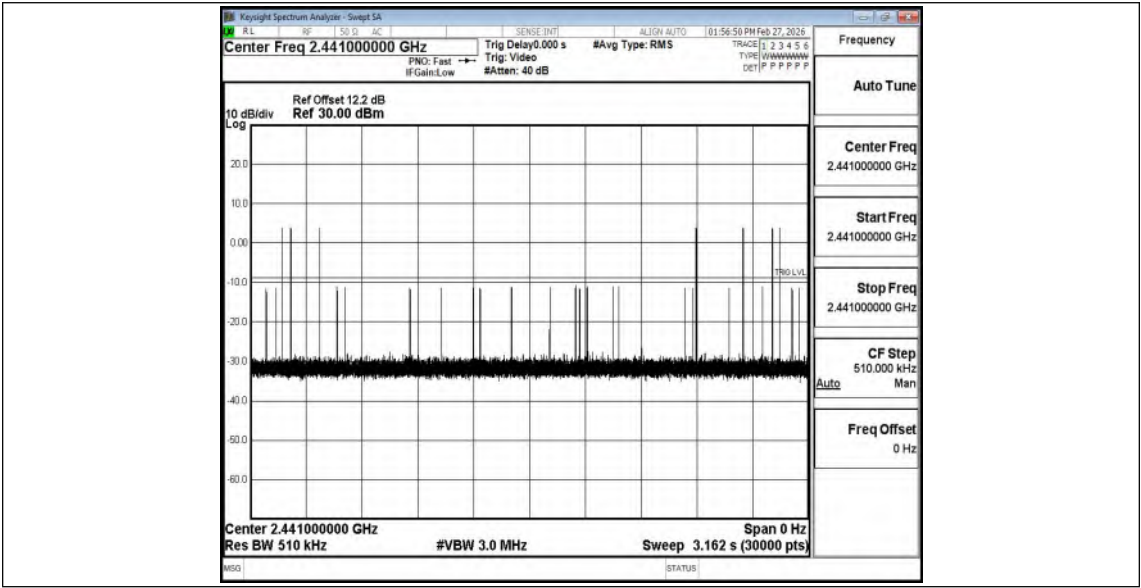
Test Result

TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	-1.832	150	-0.275	≤0.4	PASS
2DH5	Ant1	Hop	1.536	190	0.292	≤0.4	PASS
3DH5	Ant1	Hop	1.077	90	0.097	≤0.4	PASS

Test Graphs







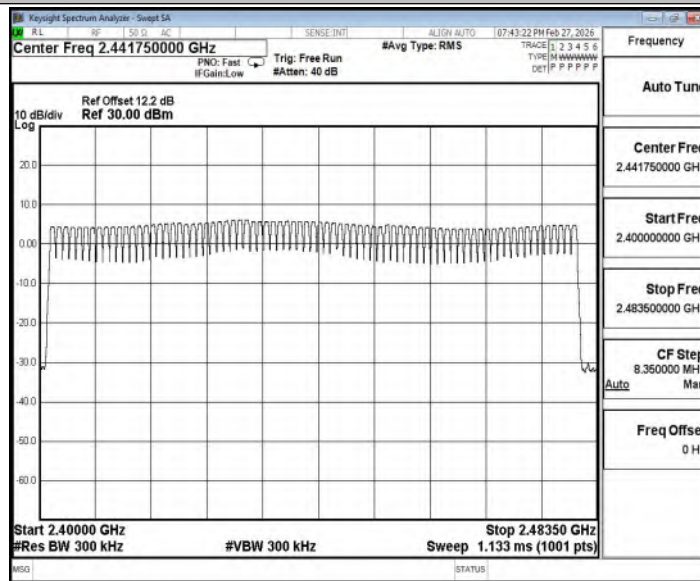
A.5 Number of hopping channels

Test Result

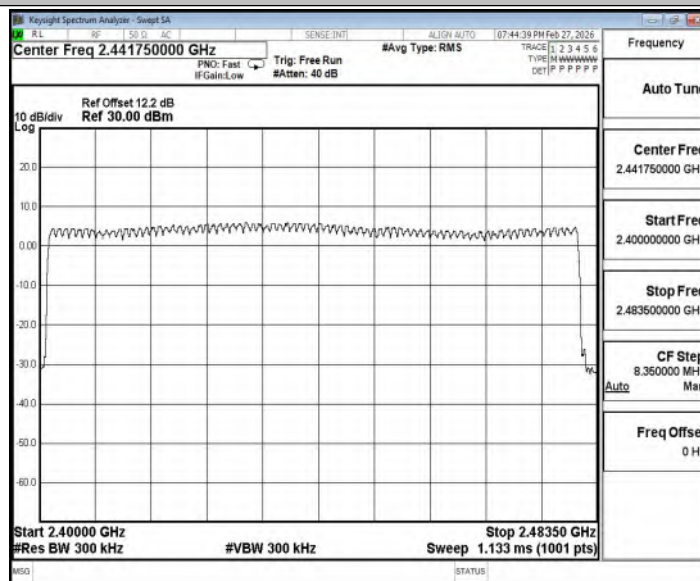
TestMode	Antenna	Freq(MHz)	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

Test Graphs

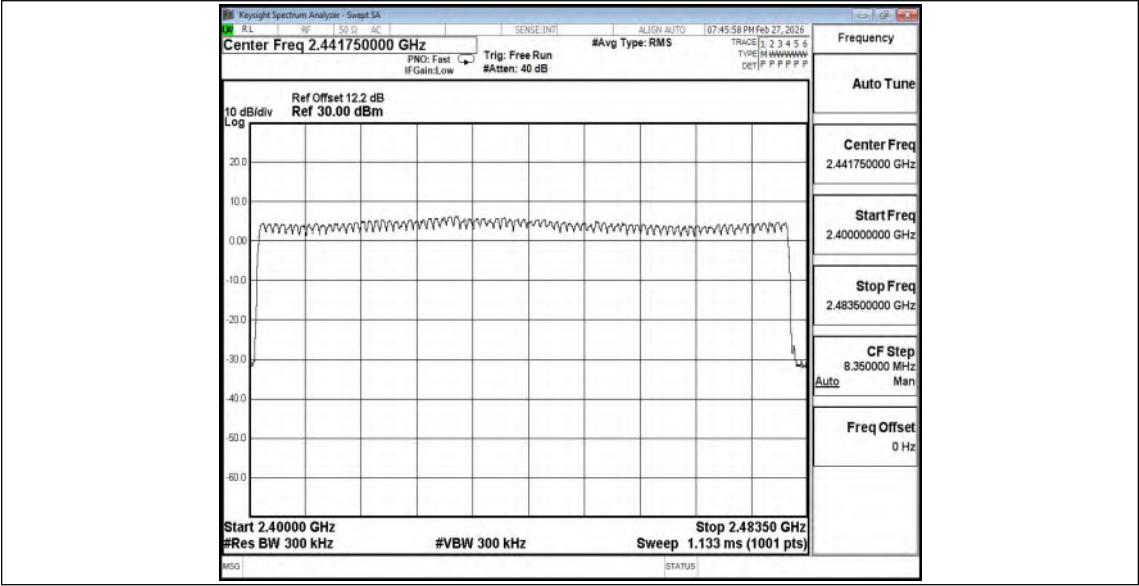
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop



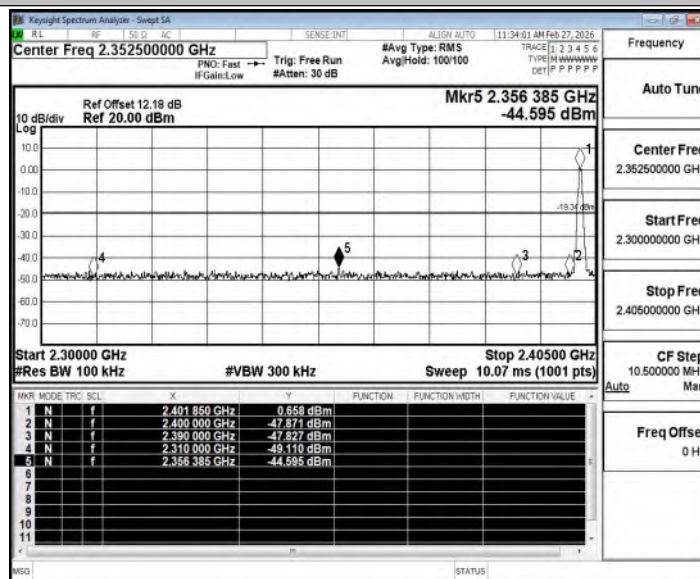
A.6 Band edge measurements

Test Result

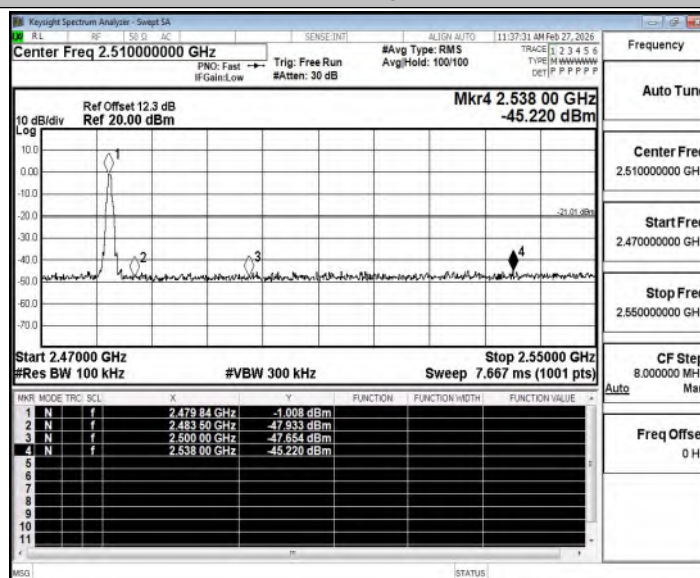
TestMode	Antenna	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	0.66	-44.6	≤ -19.34	PASS
		High	2480	-1.01	-45.22	≤ -21.01	PASS
		Low	Hop_2402	0.90	-45.5	≤ -19.1	PASS
		High	Hop_2480	2.47	-45.12	≤ -17.53	PASS
2DH5	Ant1	Low	2402	-0.02	-45.68	≤ -20.02	PASS
		High	2480	-0.61	-44.4	≤ -20.61	PASS
		Low	Hop_2402	-3.56	-45.6	≤ -23.56	PASS
		High	Hop_2480	-0.41	-44.93	≤ -20.41	PASS
3DH5	Ant1	Low	2402	-1.23	-45.64	≤ -21.23	PASS
		High	2480	-3.42	-45.02	≤ -23.42	PASS
		Low	Hop_2402	-1.25	-46.19	≤ -21.25	PASS
		High	Hop_2480	2.63	-44.82	≤ -17.37	PASS

Test Graphs

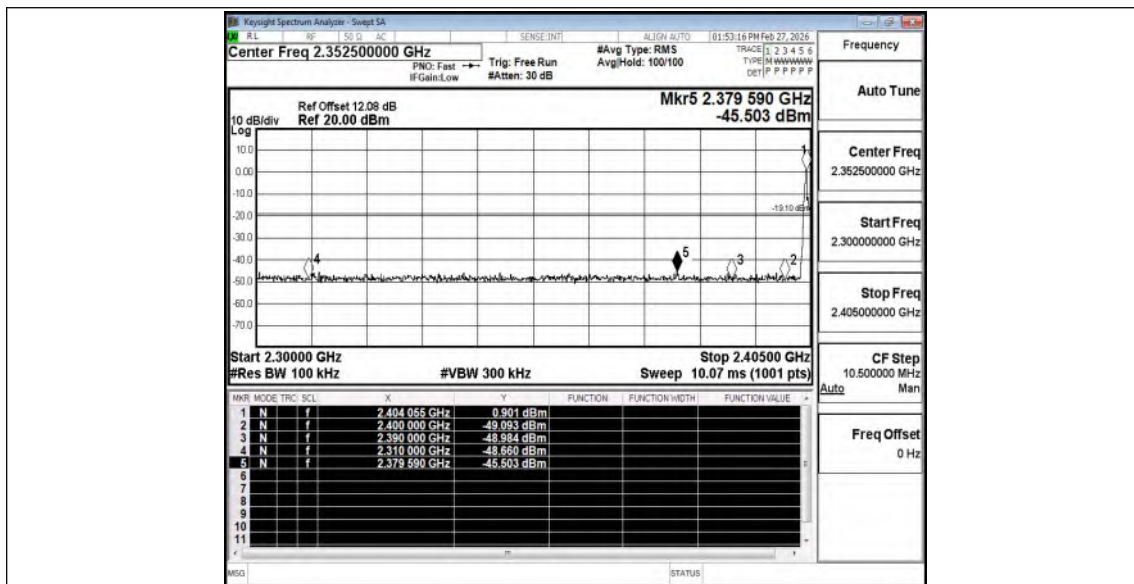
DH5_Ant1_Low_2402



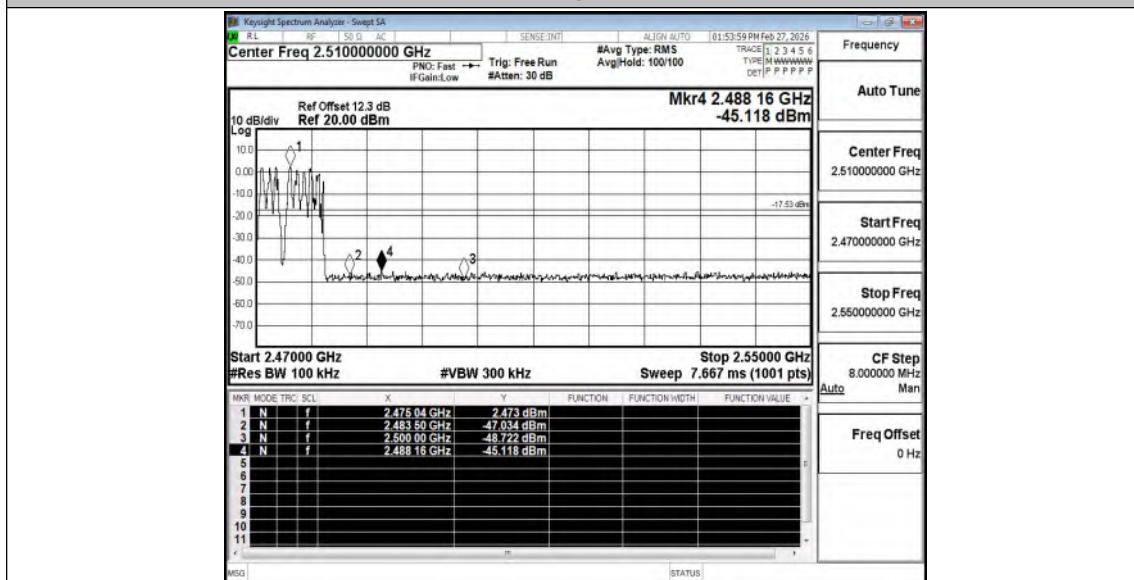
DH5_Ant1_High_2480



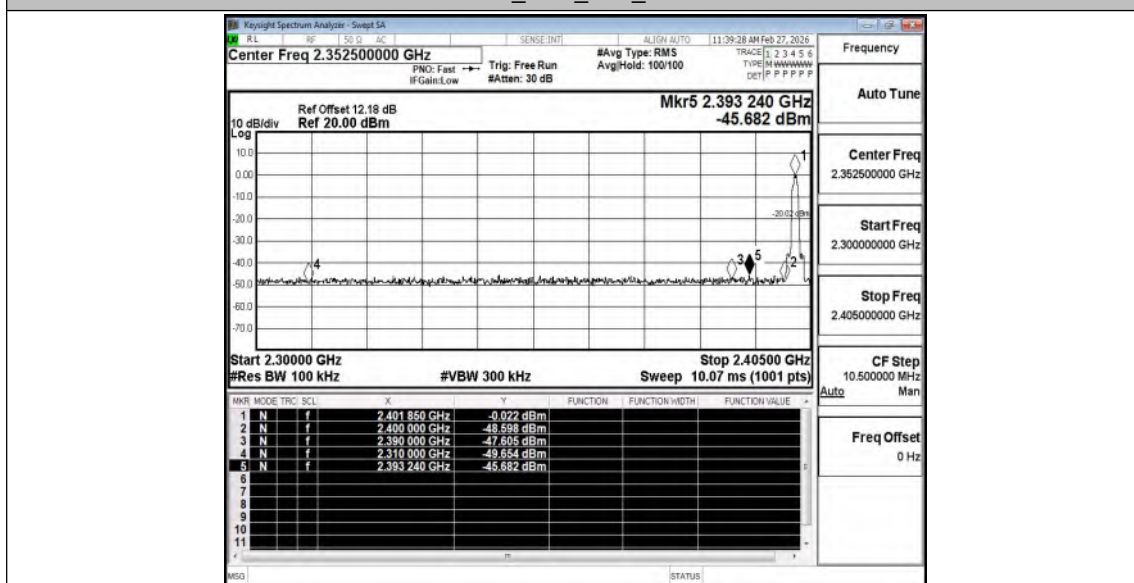
DH5_Ant1_Low_Hop_2402



DH5_Ant1_High_Hop_2480



2DH5_Ant1_Low_2402

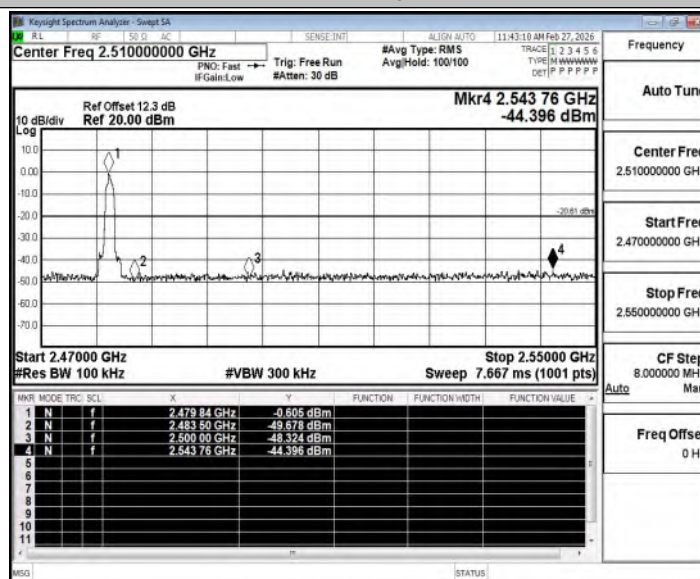


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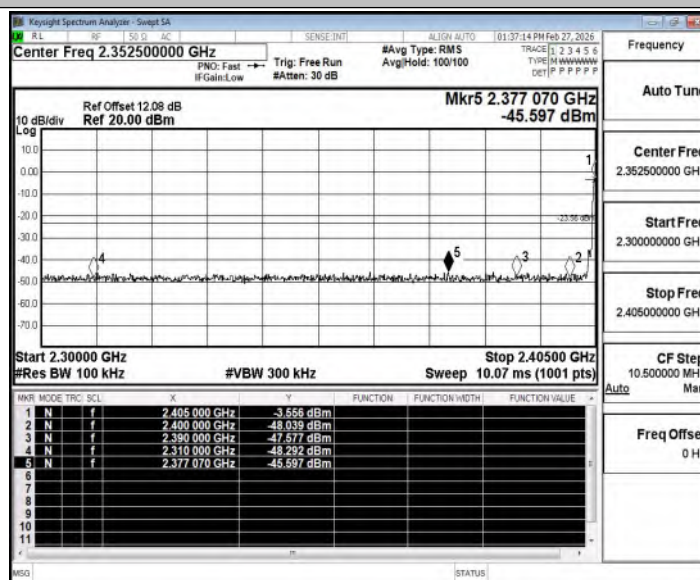
Add: No.44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China

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

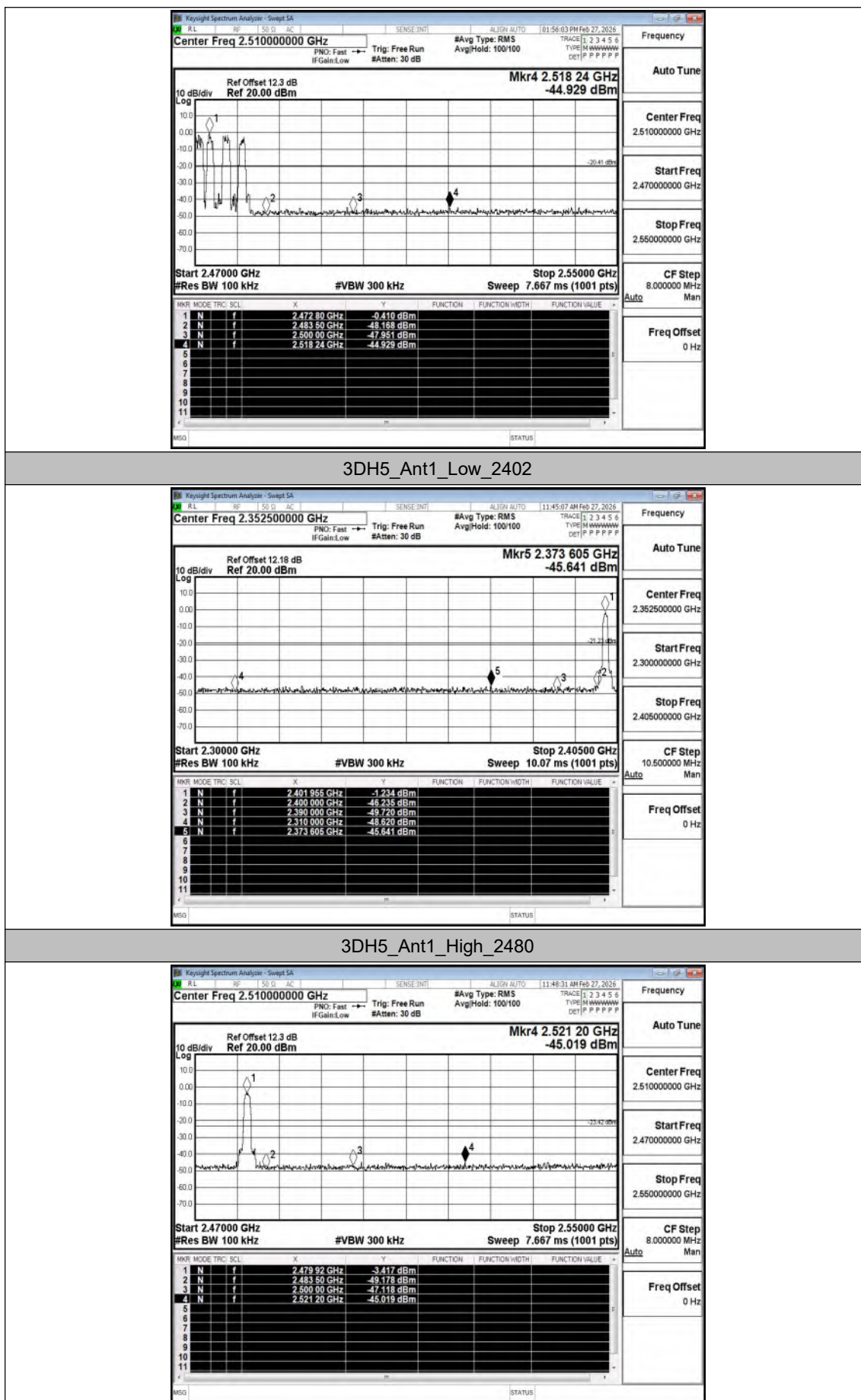
2DH5_Ant1_High_2480



2DH5_Ant1_Low_Hop_2402



2DH5_Ant1_High_Hop_2480

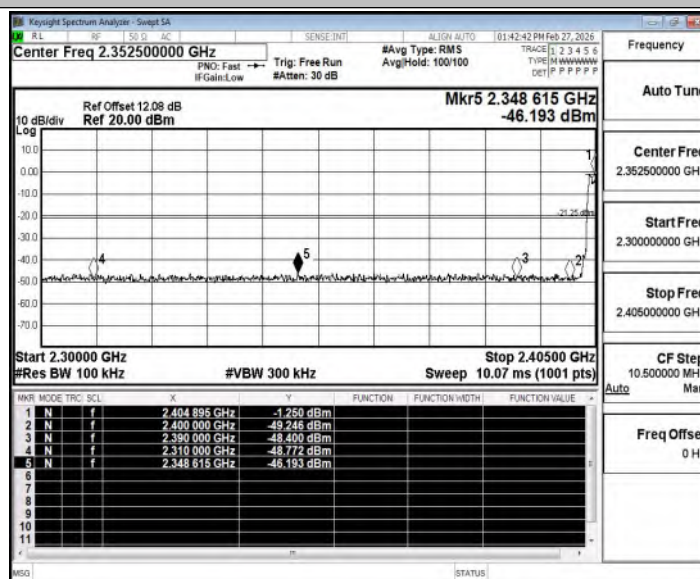


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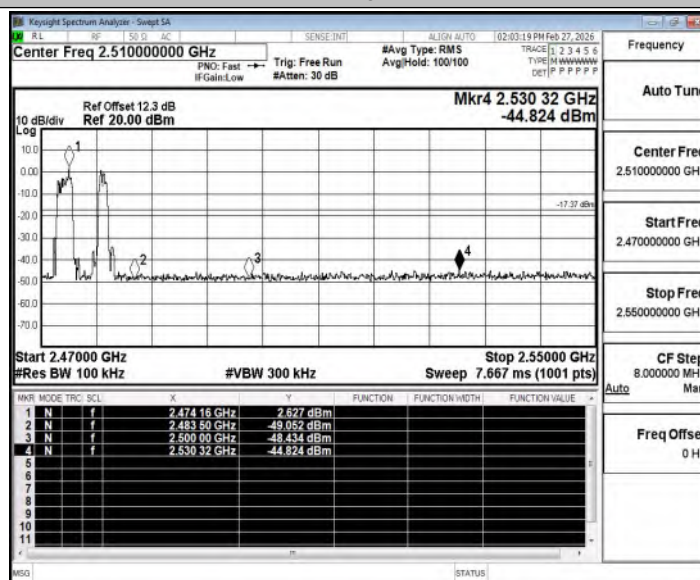
Add: No.44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China

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3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480



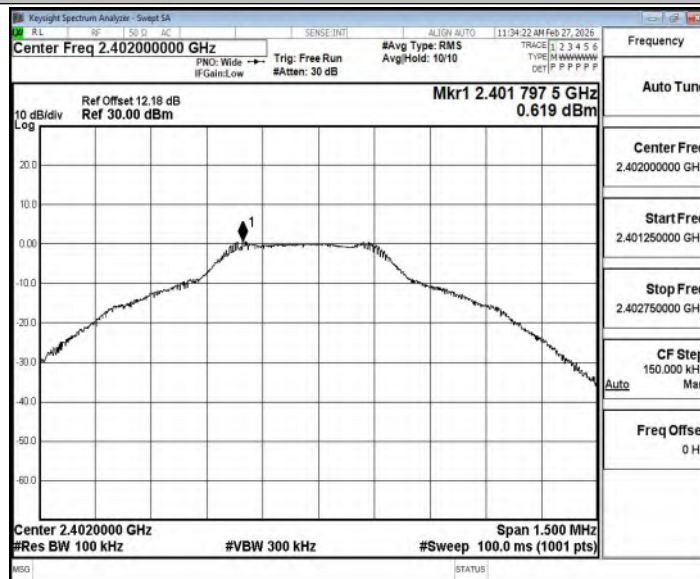
A.7 Conducted Spurious Emission

Test Result

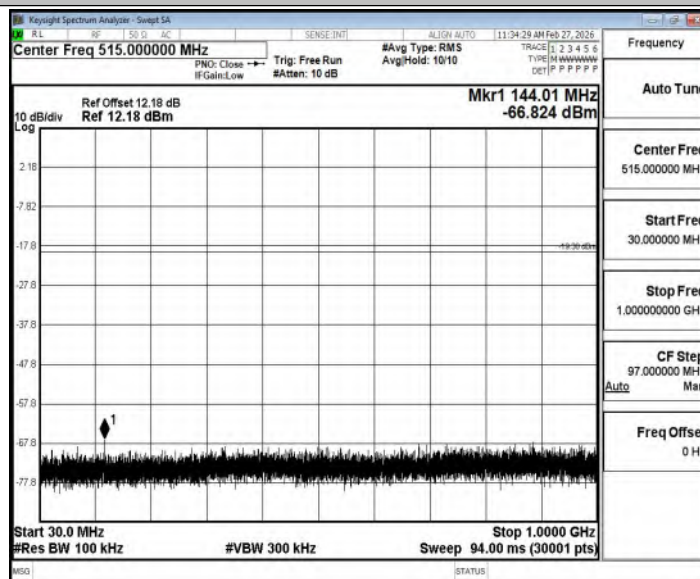
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	0.62	0.62	---	PASS
			30~1000	0.62	-66.82	≤-19.38	PASS
			1000~26500	0.62	-43.87	≤-19.38	PASS
		2441	Reference	-0.19	-0.19	---	PASS
			30~1000	-0.19	-67.2	≤-20.19	PASS
			1000~26500	-0.19	-45.75	≤-20.19	PASS
		2480	Reference	-0.60	-0.60	---	PASS
			30~1000	-0.60	-67.25	≤-20.6	PASS
			1000~26500	-0.60	-43.19	≤-20.6	PASS
2DH5	Ant1	2402	Reference	0.38	0.38	---	PASS
			30~1000	0.38	-67.08	≤-19.62	PASS
			1000~26500	0.38	-46.88	≤-19.62	PASS
		2441	Reference	-0.38	-0.38	---	PASS
			30~1000	-0.38	-68	≤-20.38	PASS
			1000~26500	-0.38	-46.79	≤-20.38	PASS
		2480	Reference	-0.80	-0.80	---	PASS
			30~1000	-0.80	-66.71	≤-20.8	PASS
			1000~26500	-0.80	-49.36	≤-20.8	PASS
3DH5	Ant1	2402	Reference	0.55	0.55	---	PASS
			30~1000	0.55	-67.07	≤-19.45	PASS
			1000~26500	0.55	-47.71	≤-19.45	PASS
		2441	Reference	-0.22	-0.22	---	PASS
			30~1000	-0.22	-48.68	≤-20.22	PASS
			1000~26500	-0.22	-45.23	≤-20.22	PASS
		2480	Reference	-0.60	-0.60	---	PASS
			30~1000	-0.60	-67.65	≤-20.6	PASS
			1000~26500	-0.60	-47.81	≤-20.6	PASS

Test Graphs

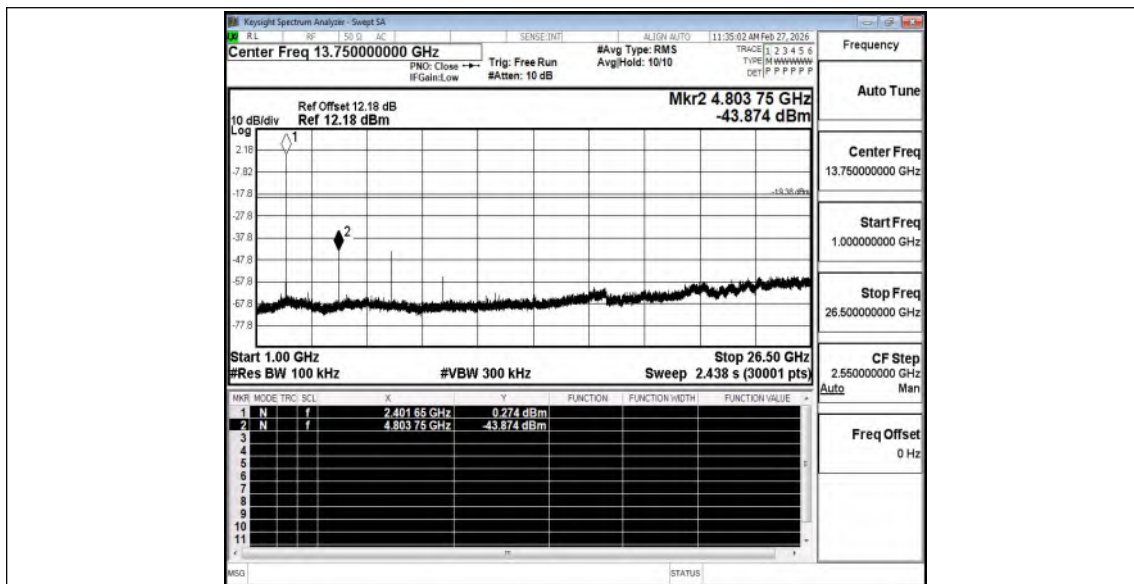
DH5_Ant1_2402_0~Reference



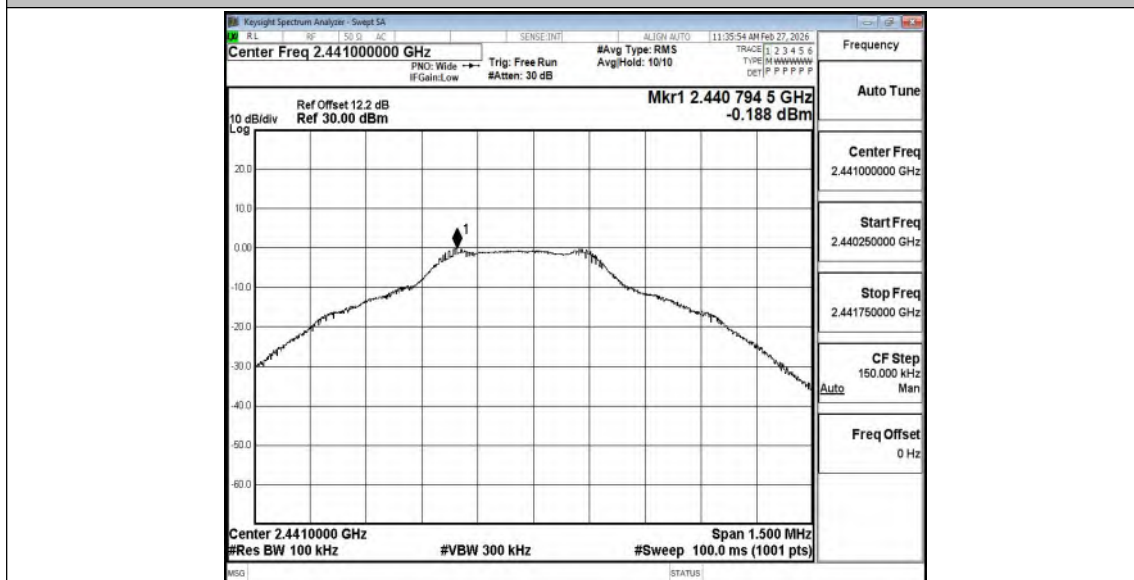
DH5_Ant1_2402_30~1000



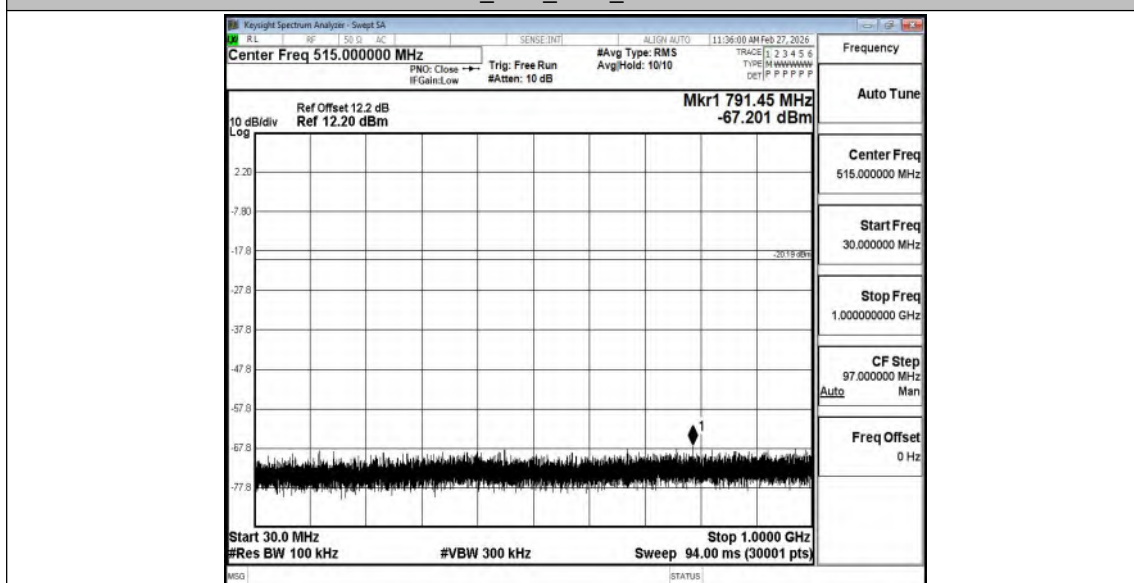
DH5_Ant1_2402_1000~26500



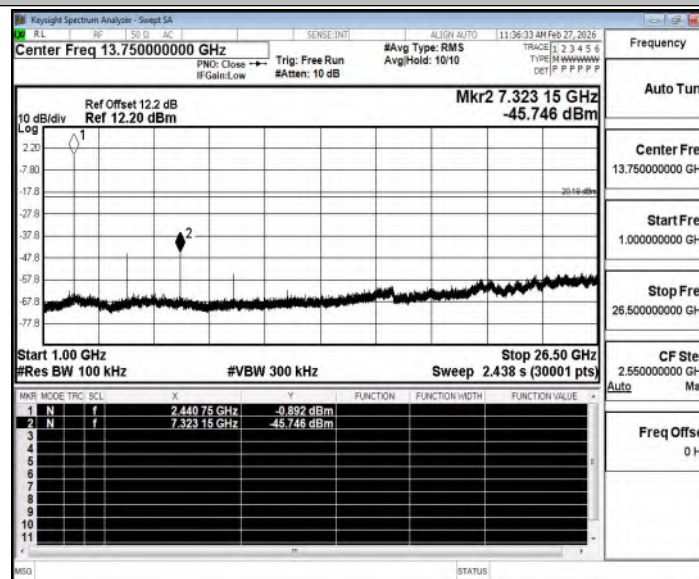
DH5_Ant1_2441_0~Reference



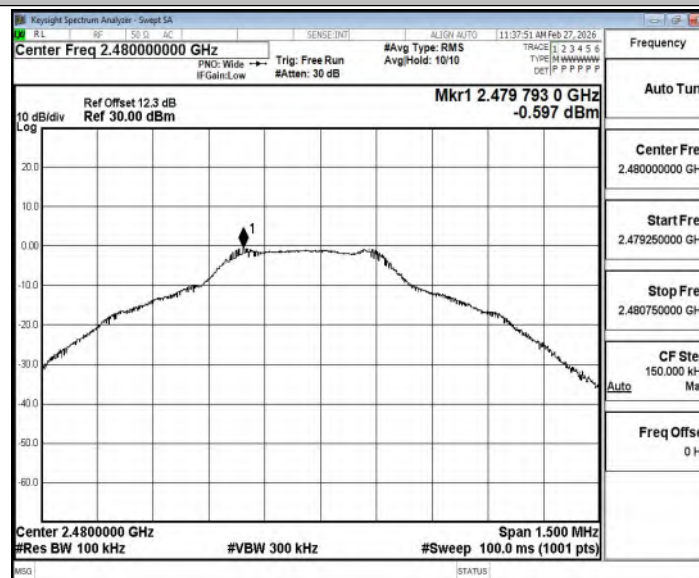
DH5_Ant1_2441_30~1000



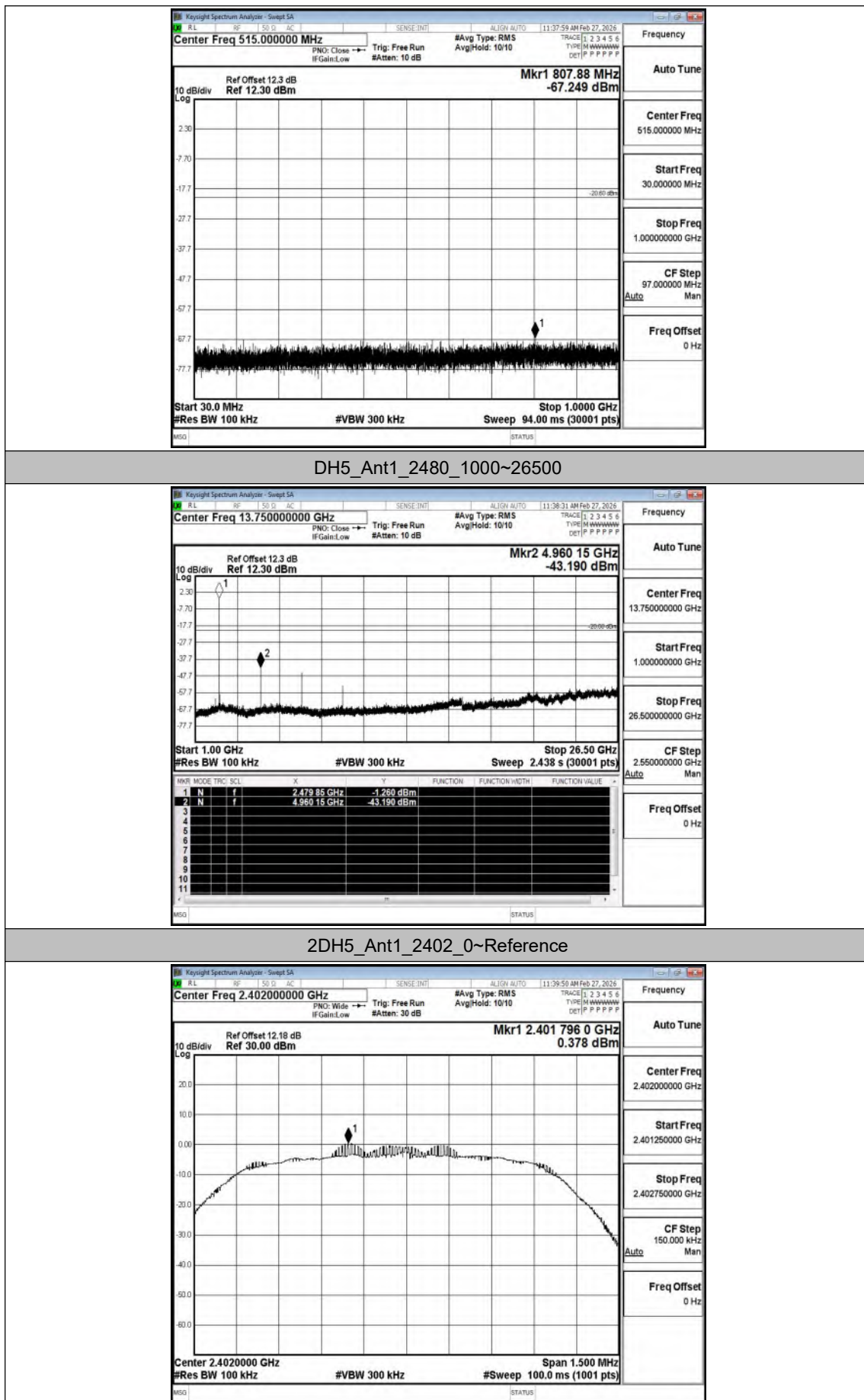
DH5_Ant1_2441_1000~26500



DH5_Ant1_2480_0~Reference



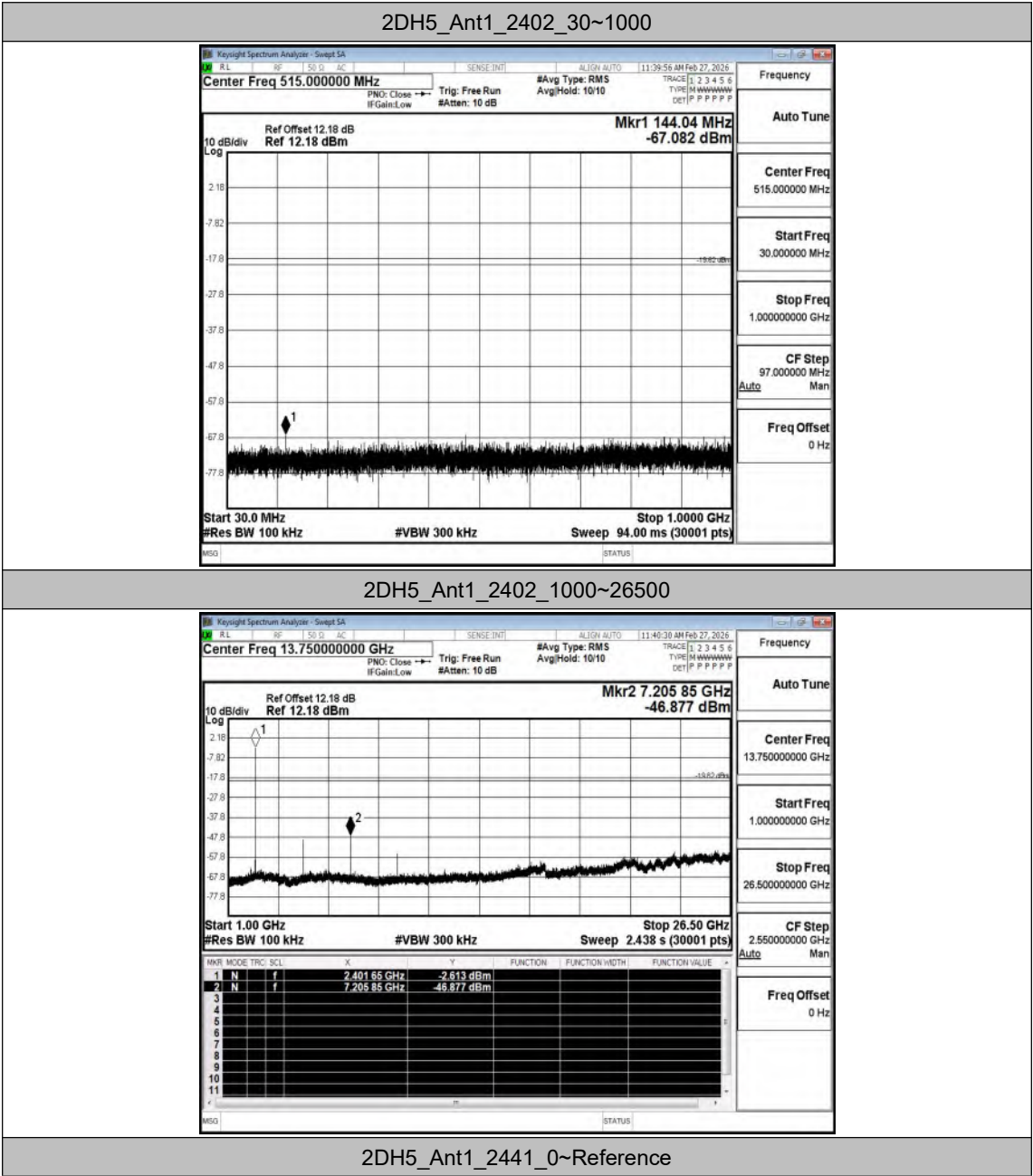
DH5_Ant1_2480_30~1000

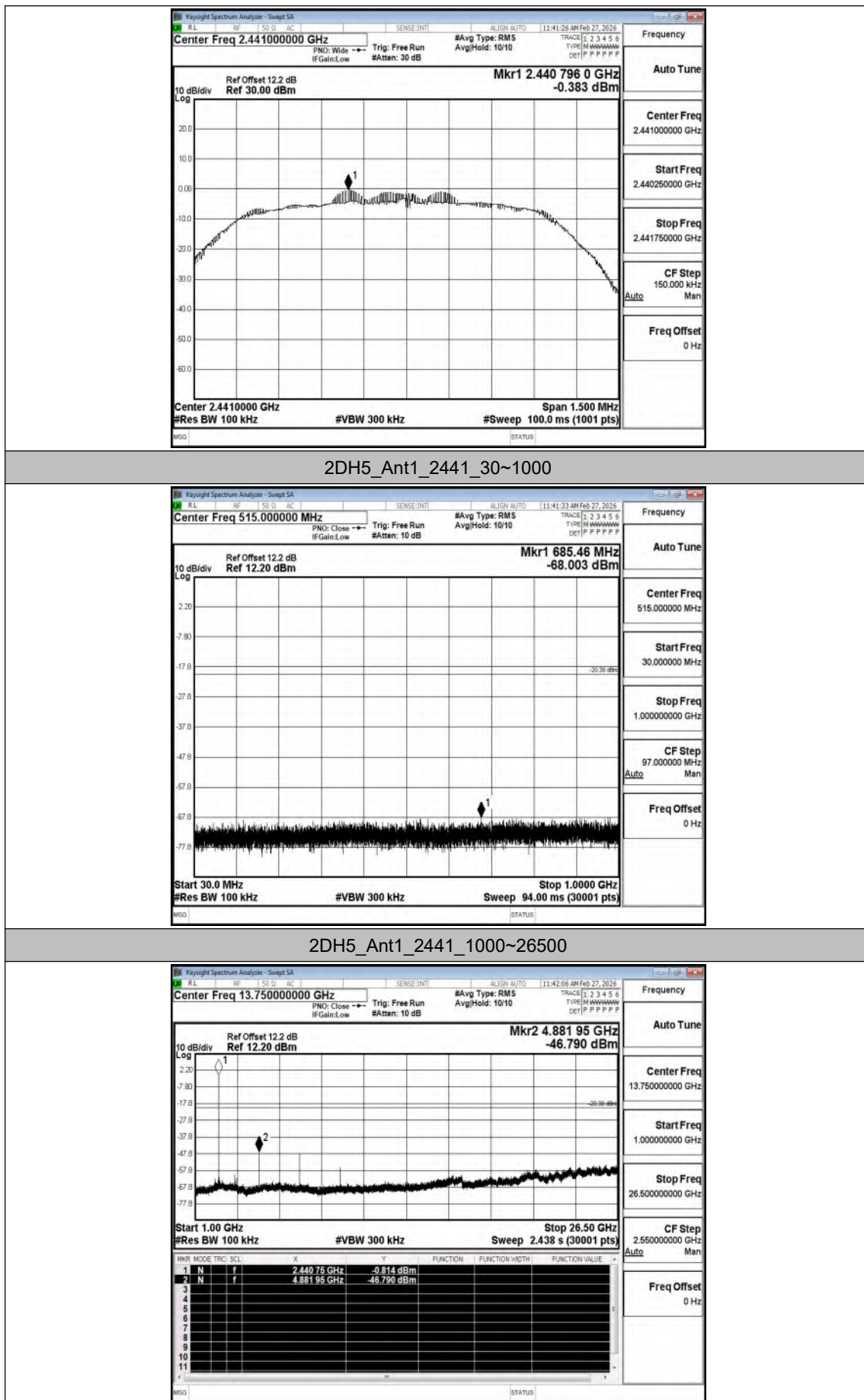


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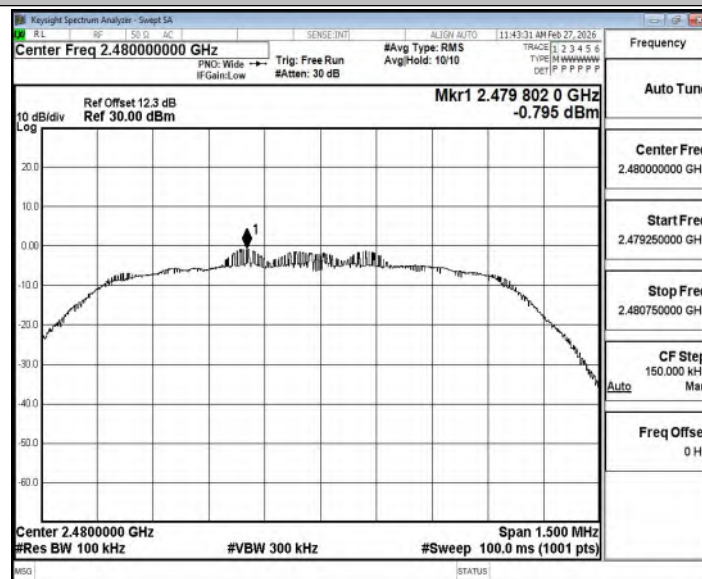


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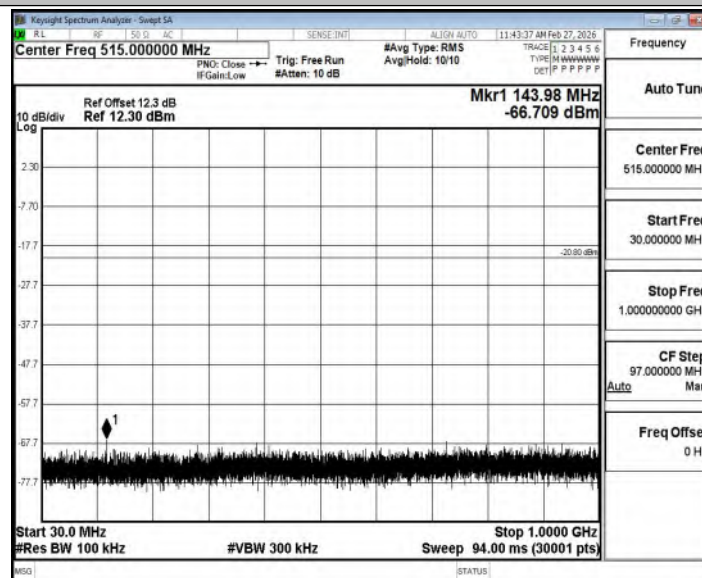
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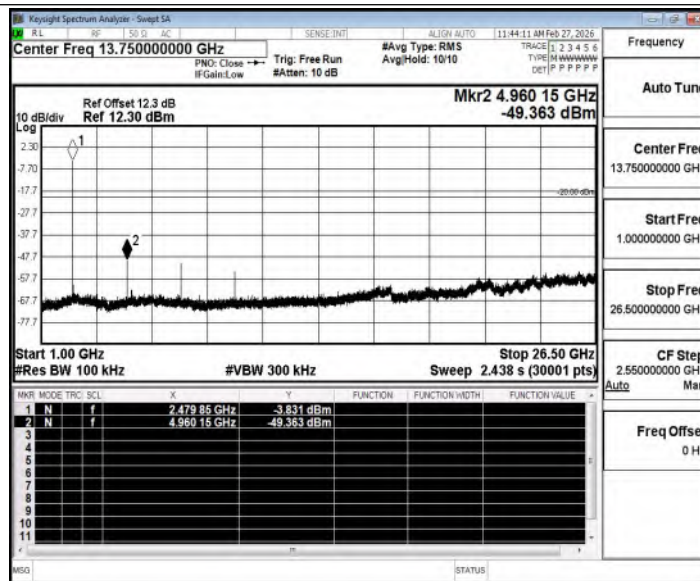
2DH5_Ant1_2480_0~Reference



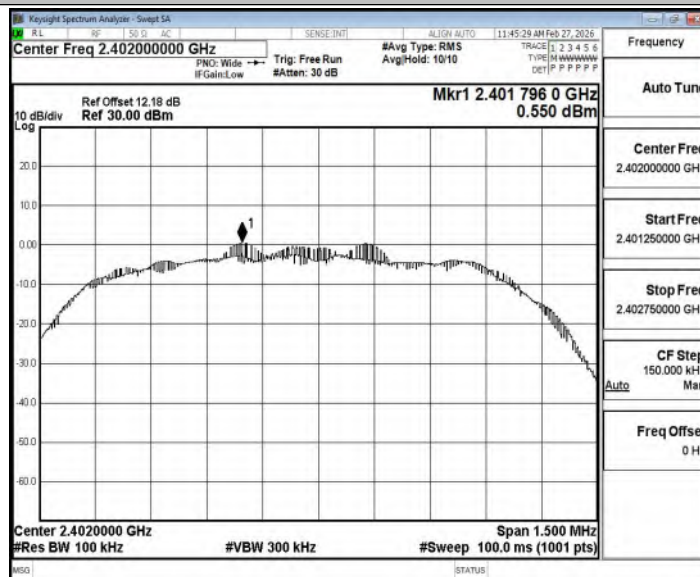
2DH5_Ant1_2480_30~1000



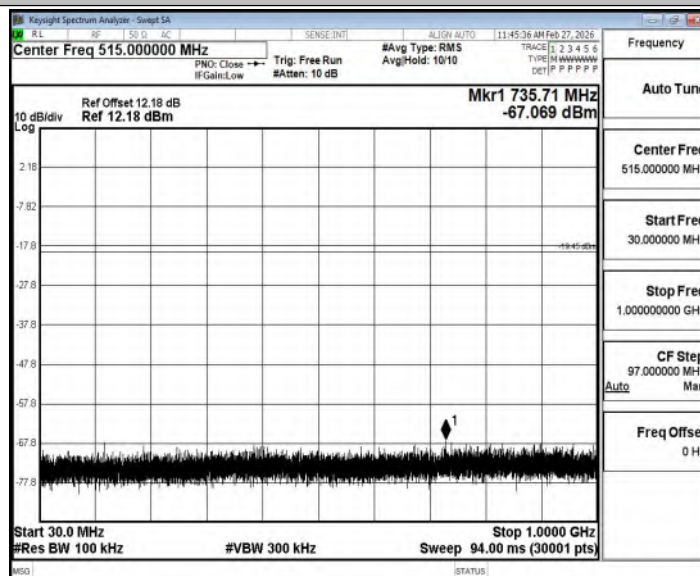
2DH5_Ant1_2480_1000~26500



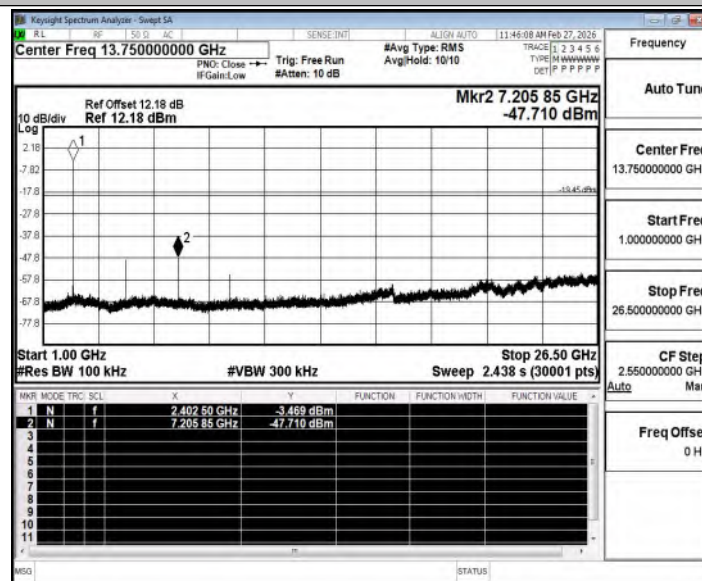
3DH5_Ant1_2402_0~Reference



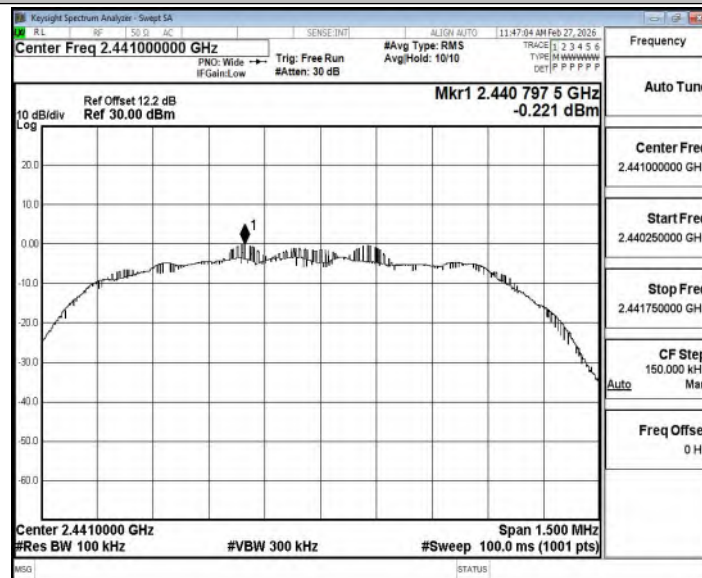
3DH5_Ant1_2402_30~1000



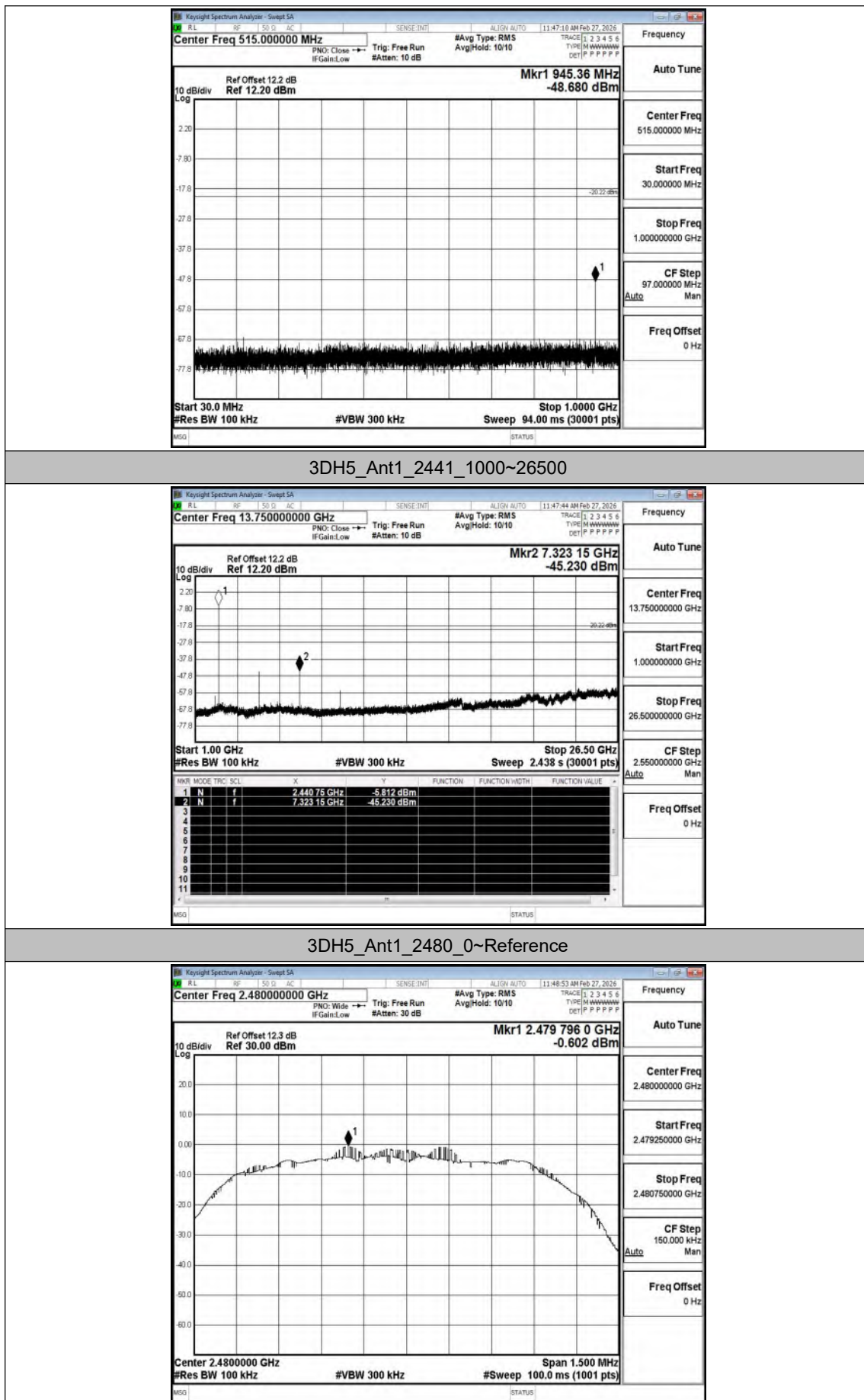
3DH5_Ant1_2402_1000~26500



3DH5_Ant1_2441_0~Reference



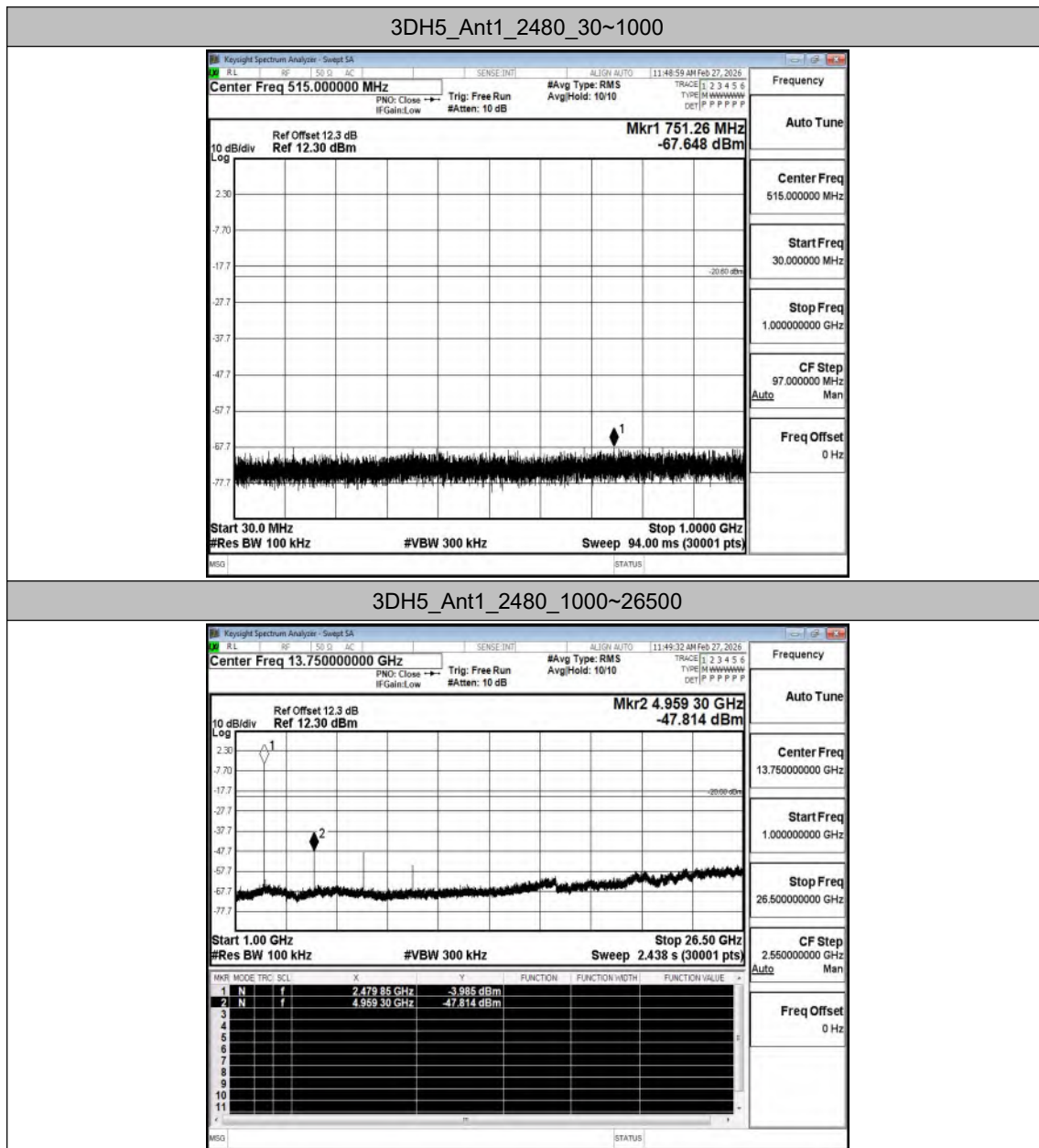
3DH5_Ant1_2441_30~1000



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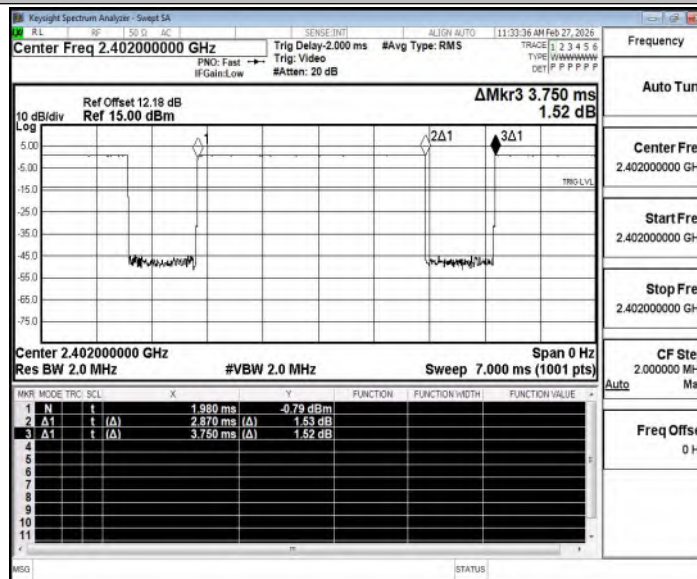
A.8 Duty Cycle

Test Result

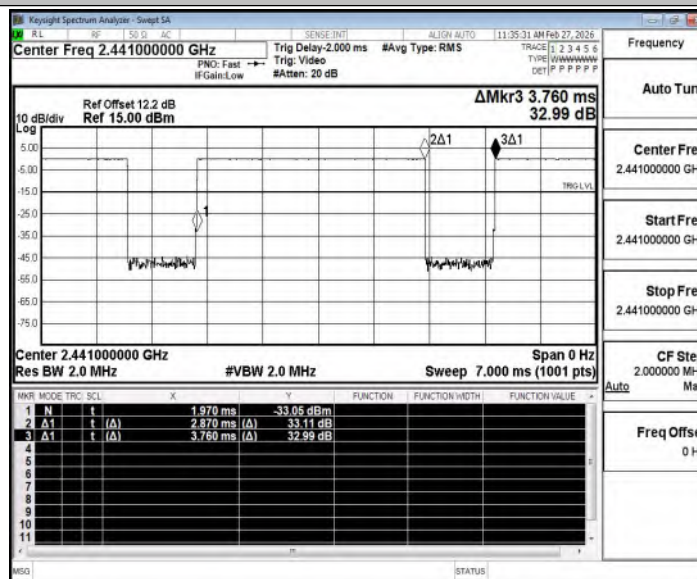
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	DC [%]	xFactor	Limit	Verdict
DH5	Ant1	2402	2.87	3.75	76.53	1.16	---	---
		2441	2.87	3.76	76.33	1.17	---	---
		2480	2.87	3.75	76.53	1.16	---	---
2DH5	Ant1	2402	2.89	3.76	76.86	1.14	---	---
		2441	2.88	3.75	76.80	1.15	---	---
		2480	2.88	3.76	76.60	1.16	---	---
3DH5	Ant1	2402	2.88	3.75	76.80	1.15	---	---
		2441	2.88	3.75	76.80	1.15	---	---
		2480	2.88	3.75	76.80	1.15	---	---

Test Graphs

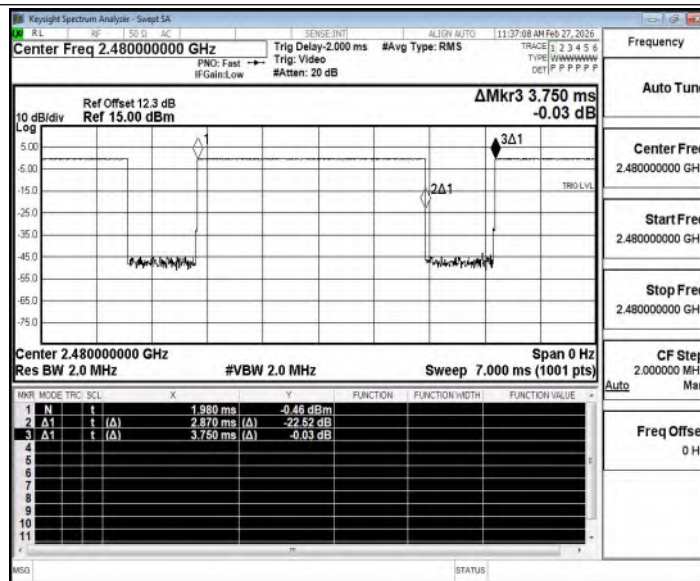
DH5_Ant1_2402



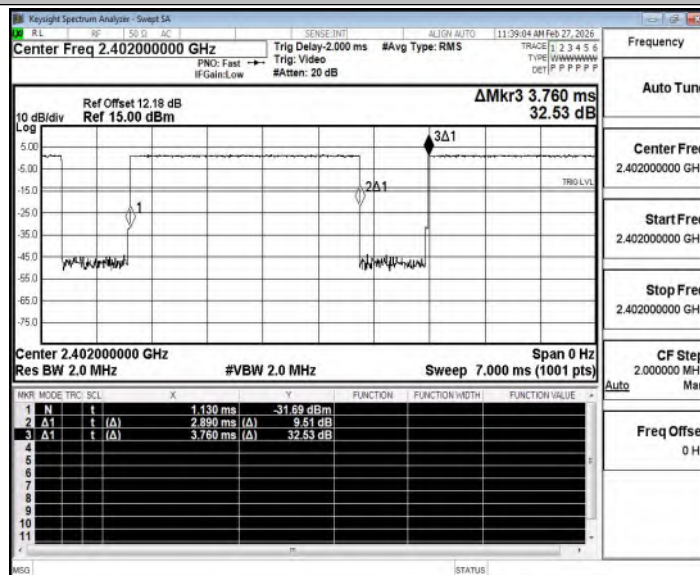
DH5_Ant1_2441



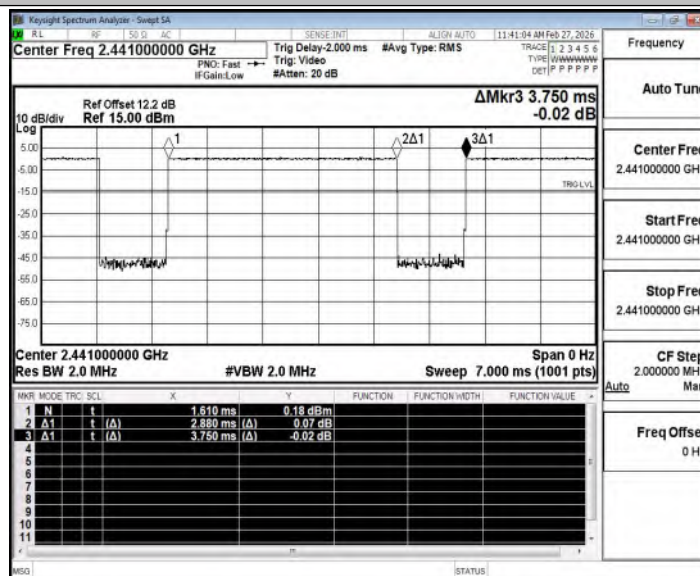
DH5_Ant1_2480



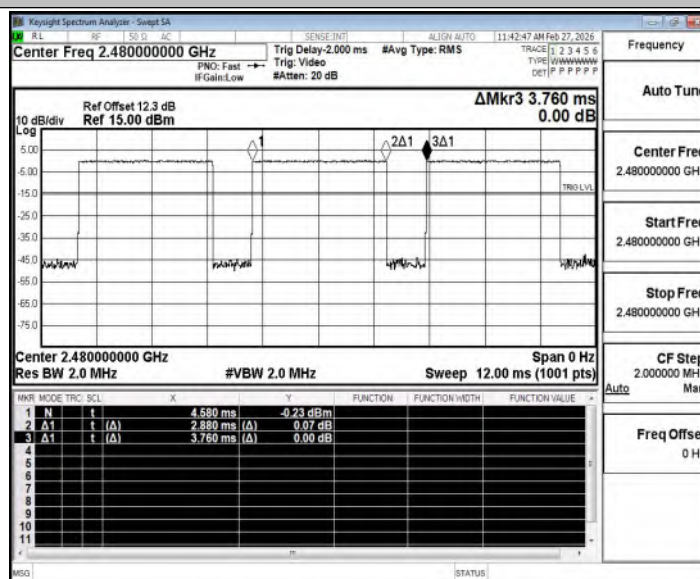
2DH5_Ant1_2402



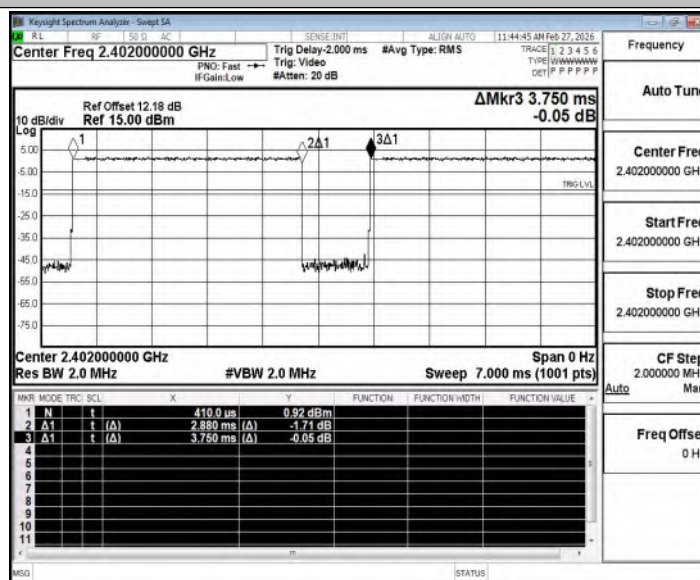
2DH5_Ant1_2441



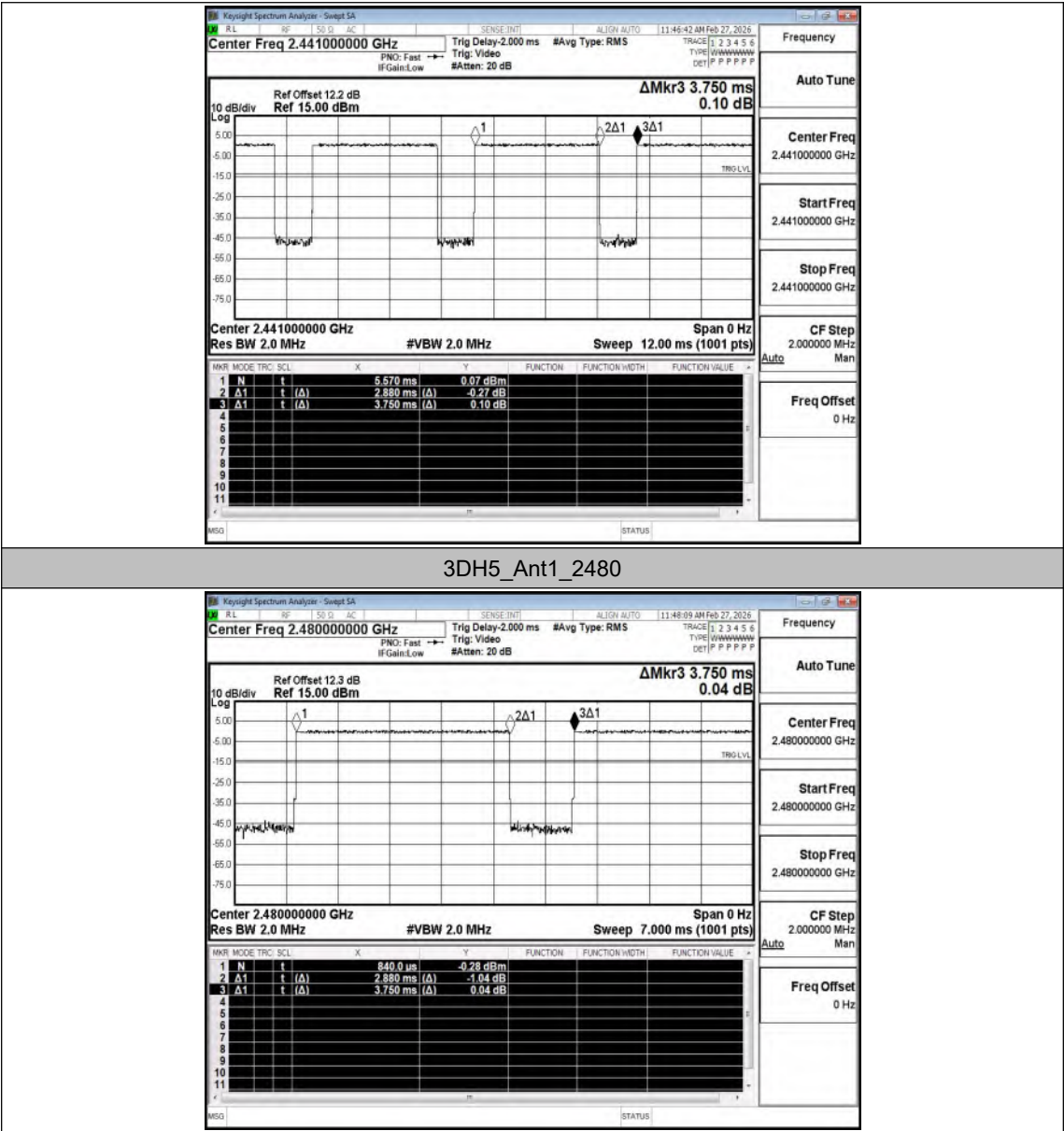
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



A.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	-60.67	≤-44.36	2.00	1.16	37.69	≤54	PASS
				AV	2389.880	-57.9	≤-44.36	2.00	1.16	40.46	≤54	PASS
				AV	2390.000	-58.06	≤-44.36	2.00	1.16	40.30	≤54	PASS
				Peak	2310.000	-51.6	≤-23.20	2.00	0.00	45.60	≤74	PASS
				Peak	2367.620	-48.97	≤-23.20	2.00	0.00	48.23	≤74	PASS
				Peak	2390.000	-50.78	≤-23.20	2.00	0.00	46.42	≤74	PASS
		High	2480	AV	2483.500	-58.01	≤-44.36	2.00	1.16	40.35	≤54	PASS
				AV	2491.600	-56.91	≤-44.36	2.00	1.16	41.45	≤54	PASS
				AV	2500.000	-60.32	≤-44.36	2.00	1.16	38.04	≤54	PASS
				Peak	2483.500	-48.21	≤-23.20	2.00	0.00	48.99	≤74	PASS
				Peak	2483.840	-47.73	≤-23.20	2.00	0.00	49.47	≤74	PASS
				Peak	2500.000	-50.72	≤-23.20	2.00	0.00	46.48	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-51.98	≤-23.20	2.00	0.00	45.22	≤74	PASS
				Peak	2319.845	-49.39	≤-23.20	2.00	0.00	47.81	≤74	PASS
				Peak	2390.000	-52.56	≤-23.20	2.00	0.00	44.64	≤74	PASS
		High	Hop_2480	Peak	2483.500	-52.65	≤-23.20	2.00	0.00	44.55	≤74	PASS
				Peak	2494.480	-49.67	≤-23.20	2.00	0.00	47.53	≤74	PASS
				Peak	2500.000	-51.7	≤-23.20	2.00	0.00	45.50	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-61.08	≤-44.34	2.00	1.14	37.26	≤54	PASS
				AV	2389.880	-58.55	≤-44.34	2.00	1.14	39.79	≤54	PASS
				AV	2390.000	-58.56	≤-44.34	2.00	1.14	39.78	≤54	PASS
				Peak	2310.000	-52.72	≤-23.20	2.00	0.00	44.48	≤74	PASS
				Peak	2336.750	-48.99	≤-23.20	2.00	0.00	48.21	≤74	PASS
				Peak	2390.000	-51.77	≤-23.20	2.00	0.00	45.43	≤74	PASS
		High	2480	AV	2483.500	-58.01	≤-44.36	2.00	1.16	40.35	≤54	PASS
				AV	2491.440	-57.89	≤-44.36	2.00	1.16	40.47	≤54	PASS
				AV	2500.000	-60.28	≤-44.36	2.00	1.16	38.08	≤54	PASS
				Peak	2483.500	-49.15	≤-23.20	2.00	0.00	48.05	≤74	PASS
				Peak	2484.320	-48.86	≤-23.20	2.00	0.00	48.34	≤74	PASS
				Peak	2500.000	-52.97	≤-23.20	2.00	0.00	44.23	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-52.82	≤-23.20	2.00	0.00	44.38	≤74	PASS
				Peak	2388.095	-49.79	≤-23.20	2.00	0.00	47.41	≤74	PASS
				Peak	2390.000	-51.5	≤-23.20	2.00	0.00	45.70	≤74	PASS
		High	Hop_2480	Peak	2483.500	-51.92	≤-23.20	2.00	0.00	45.28	≤74	PASS
				Peak	2491.840	-49.22	≤-23.20	2.00	0.00	47.98	≤74	PASS
				Peak	2500.000	-51.84	≤-23.20	2.00	0.00	45.36	≤74	PASS

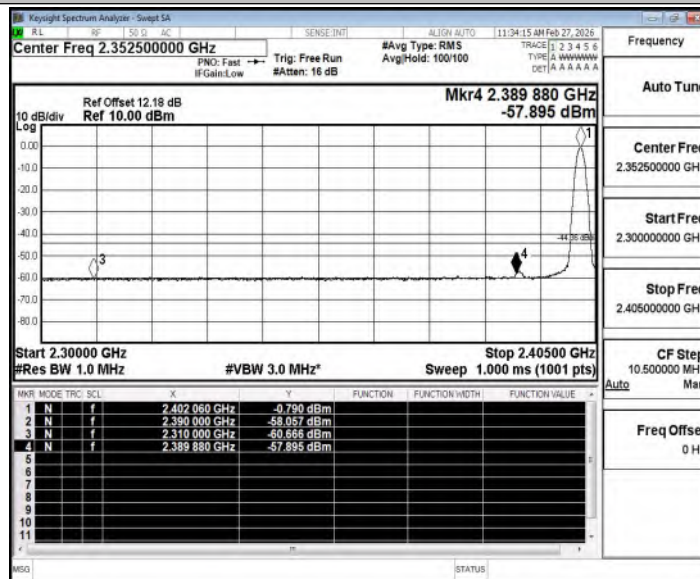
3DH5	Ant1	Low	2402	AV	2310.000	-60.8	≤-44.35	2.00	1.15	37.55	≤54	PASS
				AV	2389.985	-58.62	≤-44.35	2.00	1.15	39.73	≤54	PASS
				AV	2390.000	-58.62	≤-44.35	2.00	1.15	39.73	≤54	PASS
				Peak	2310.000	-53.08	≤-23.20	2.00	0.00	44.12	≤74	PASS
				Peak	2389.880	-49.52	≤-23.20	2.00	0.00	47.68	≤74	PASS
				Peak	2390.000	-49.55	≤-23.20	2.00	0.00	47.65	≤74	PASS
		High	2480	AV	2483.500	-57.89	≤-44.35	2.00	1.15	40.46	≤54	PASS
				AV	2491.520	-57.7	≤-44.35	2.00	1.15	40.65	≤54	PASS
				AV	2500.000	-60.12	≤-44.35	2.00	1.15	38.23	≤54	PASS
				Peak	2483.500	-50.49	≤-23.20	2.00	0.00	46.71	≤74	PASS
				Peak	2484.080	-48.12	≤-23.20	2.00	0.00	49.08	≤74	PASS
				Peak	2500.000	-53.9	≤-23.20	2.00	0.00	43.30	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-54.44	≤-23.20	2.00	0.00	42.76	≤74	PASS
				Peak	2332.025	-49.86	≤-23.20	2.00	0.00	47.34	≤74	PASS
				Peak	2390.000	-52.77	≤-23.20	2.00	0.00	44.43	≤74	PASS
		High	Hop_2480	Peak	2483.500	-51.98	≤-23.20	2.00	0.00	45.22	≤74	PASS
				Peak	2499.120	-49.63	≤-23.20	2.00	0.00	47.57	≤74	PASS
				Peak	2500.000	-52.12	≤-23.20	2.00	0.00	45.08	≤74	PASS

Note:

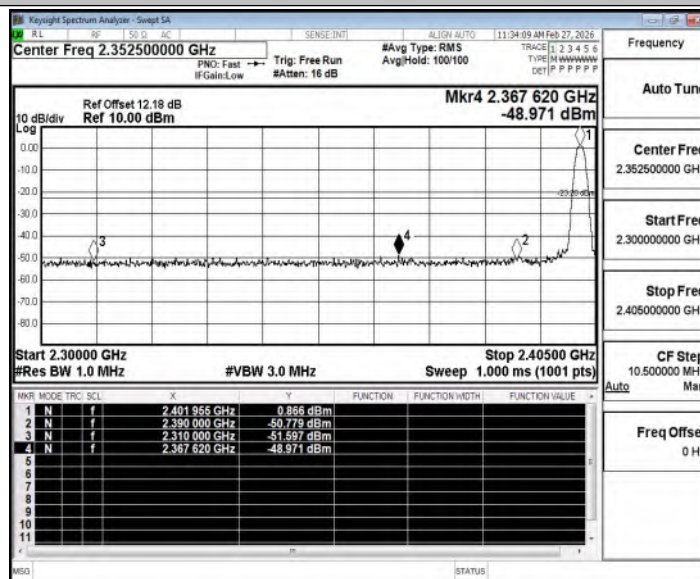
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

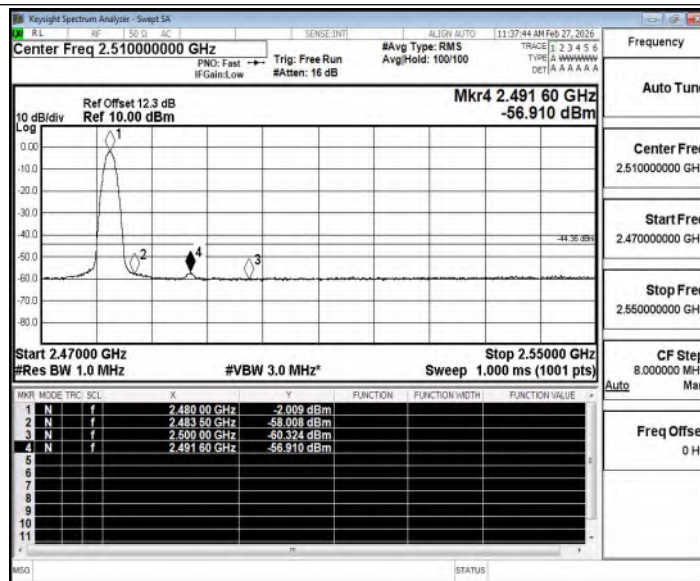
DH5_Ant1_Low_2402_AV



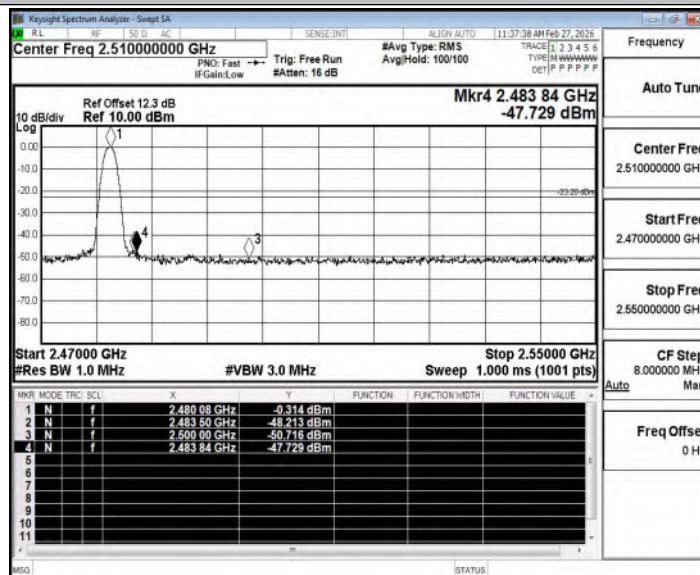
DH5_Ant1_Low_2402_Peak



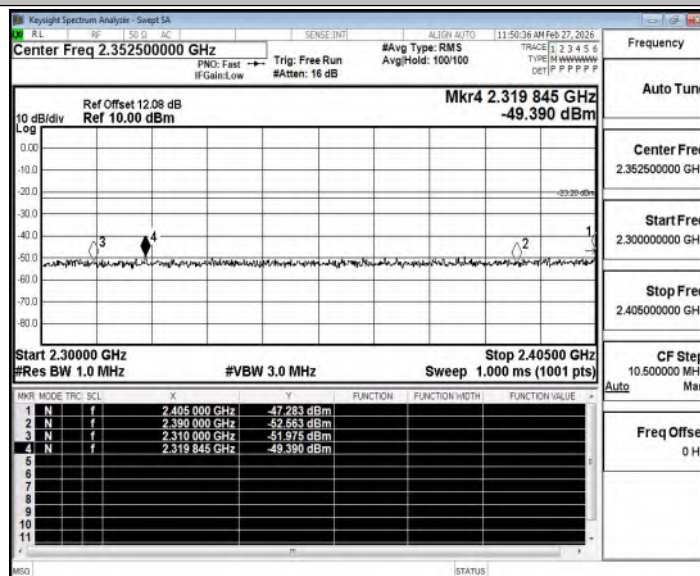
DH5_Ant1_High_2480_AV



DH5_Ant1_High_2480_Peak



DH5_Ant1_Low_Hop_2402_Peak

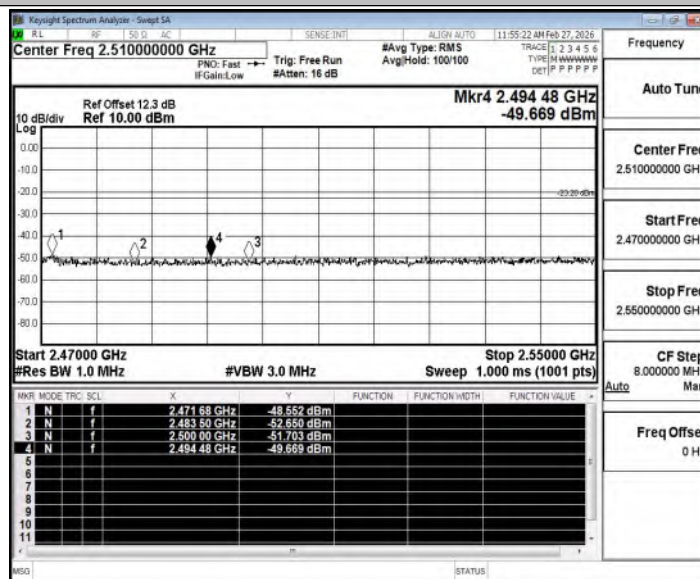


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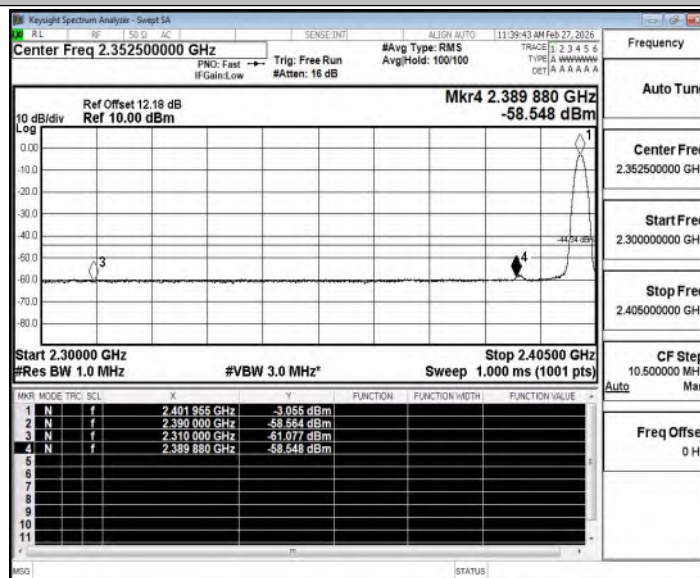
Add: No.44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China

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

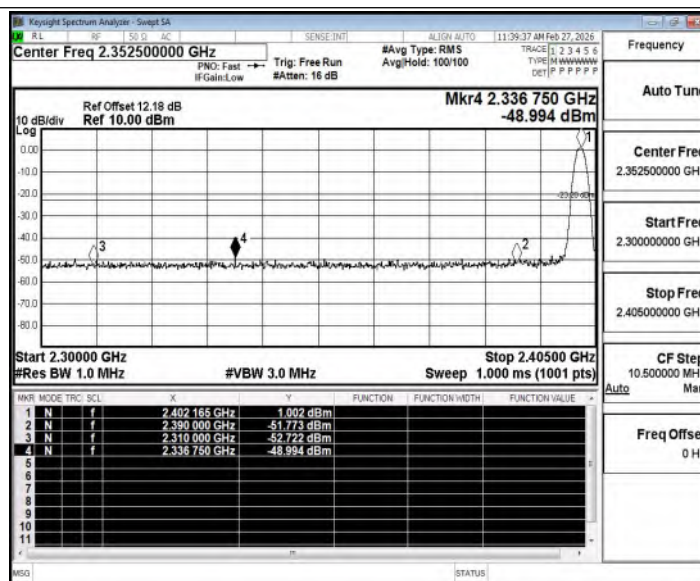
DH5_Ant1_High_Hop_2480_Peak



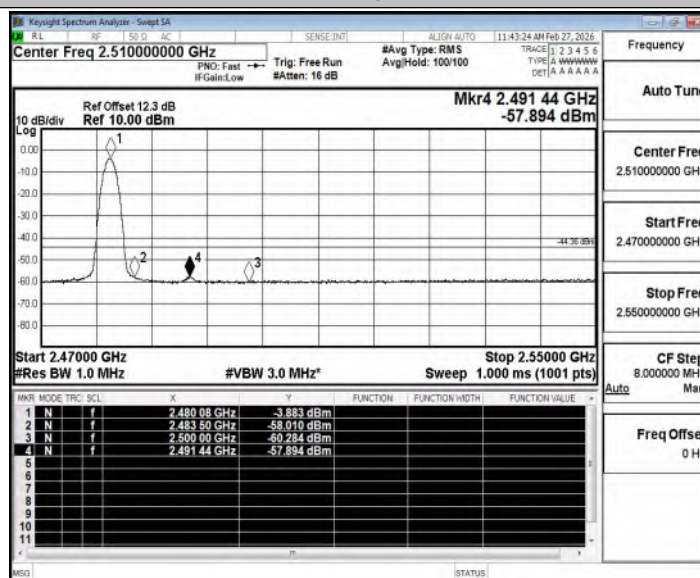
2DH5_Ant1_Low_2402_AV



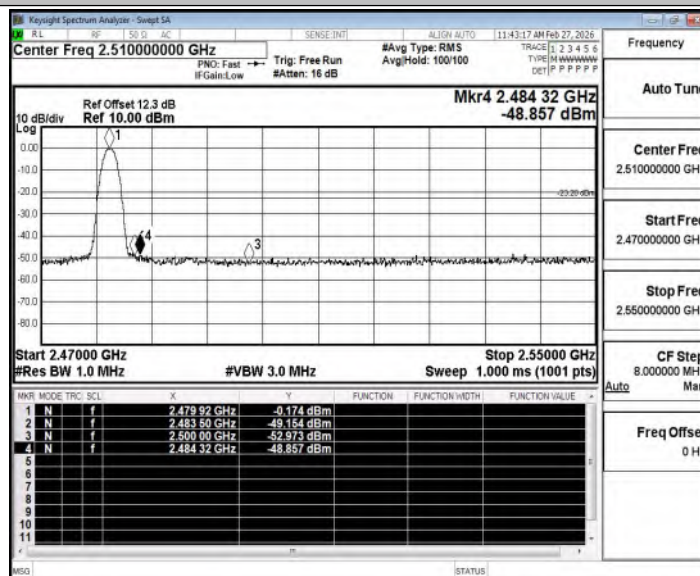
2DH5_Ant1_Low_2402_Peak



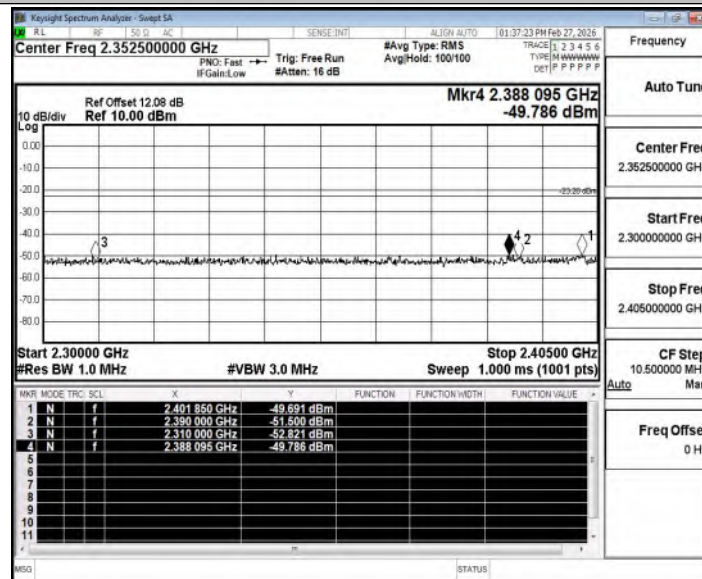
2DH5_Ant1_High_2480_AV



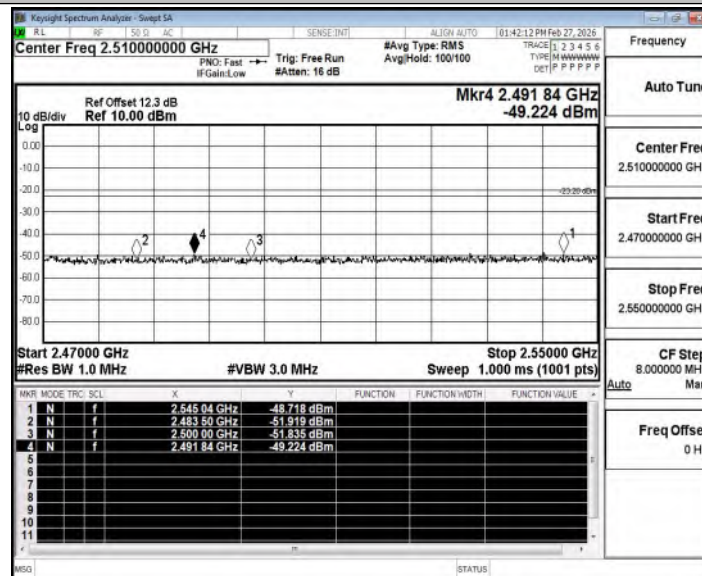
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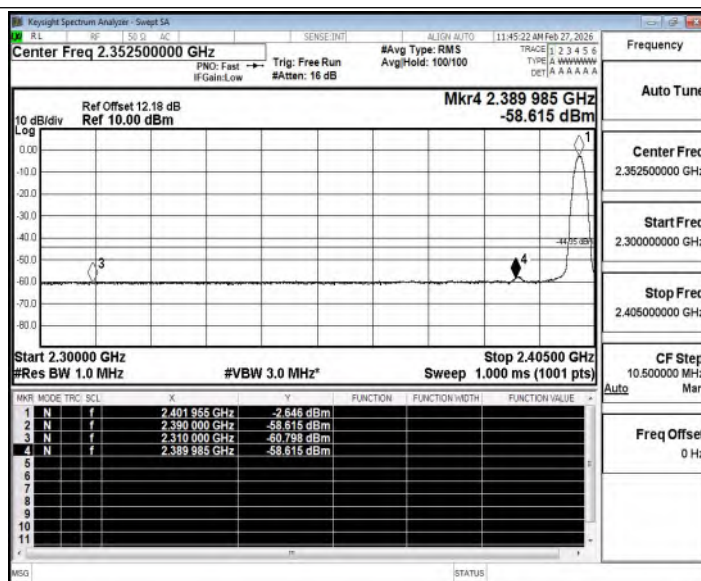
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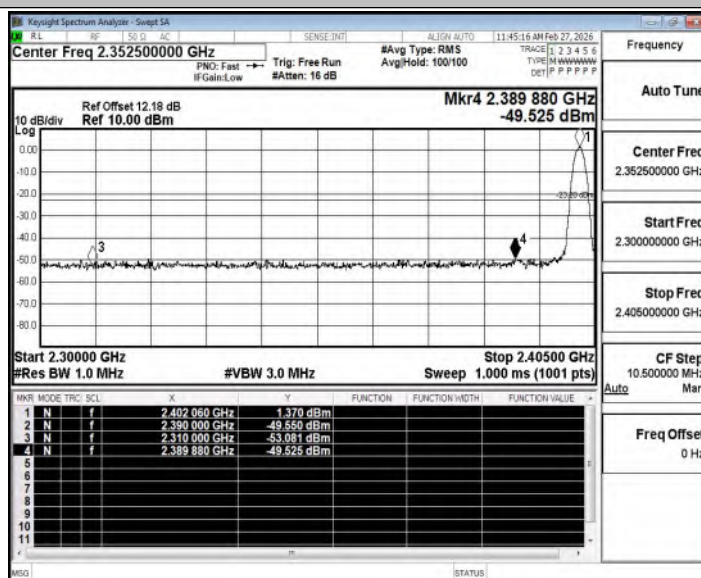
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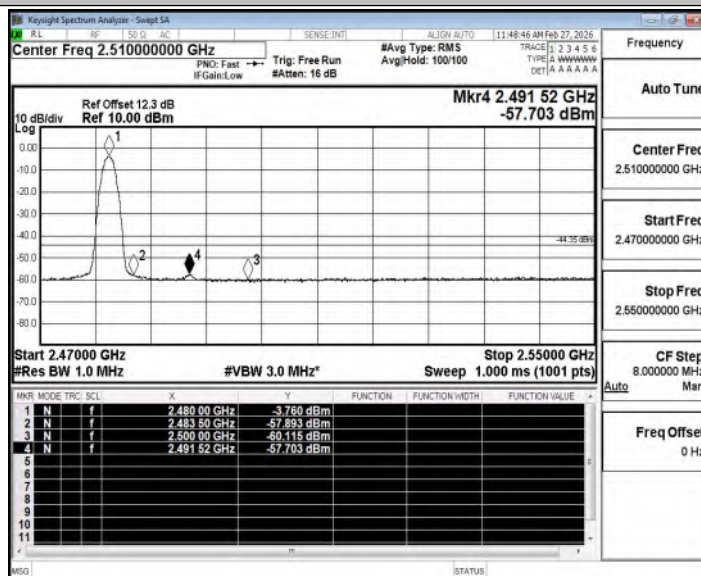
3DH5_Ant1_Low_2402_AV



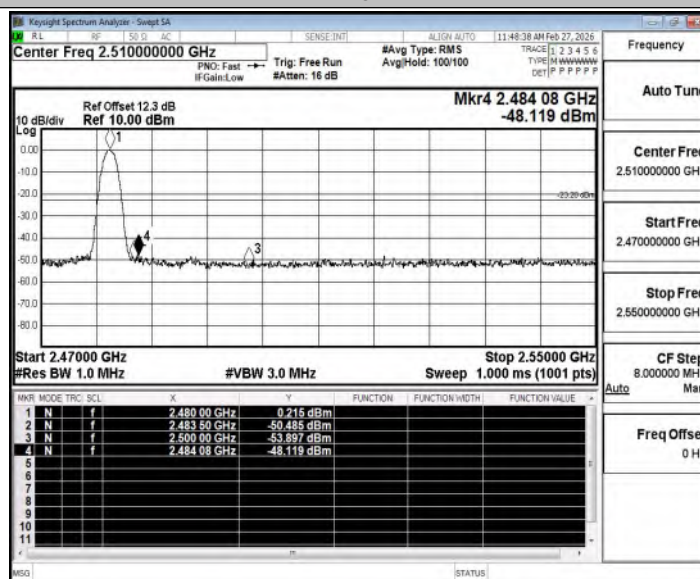
3DH5_Ant1_Low_2402_Peak



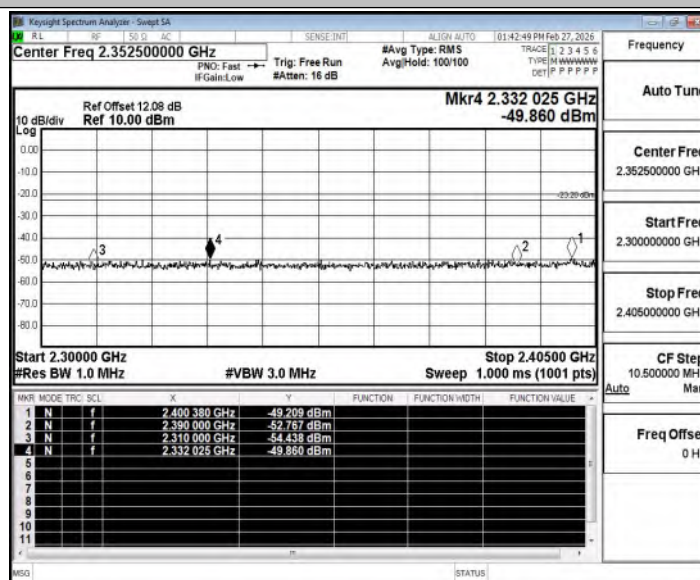
3DH5_Ant1_High_2480_AV



3DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_Hop_2402_Peak



3DH5_Ant1_High_Hop_2480_Peak

