



Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: LEGENDS PINBALL MICRO

Test Model: HA8818

Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	<i>Taylor Hu</i> Taylor Hu
Supervised by:	<i>Li hu</i> Li huan





A.1 20dB Emission Bandwidth

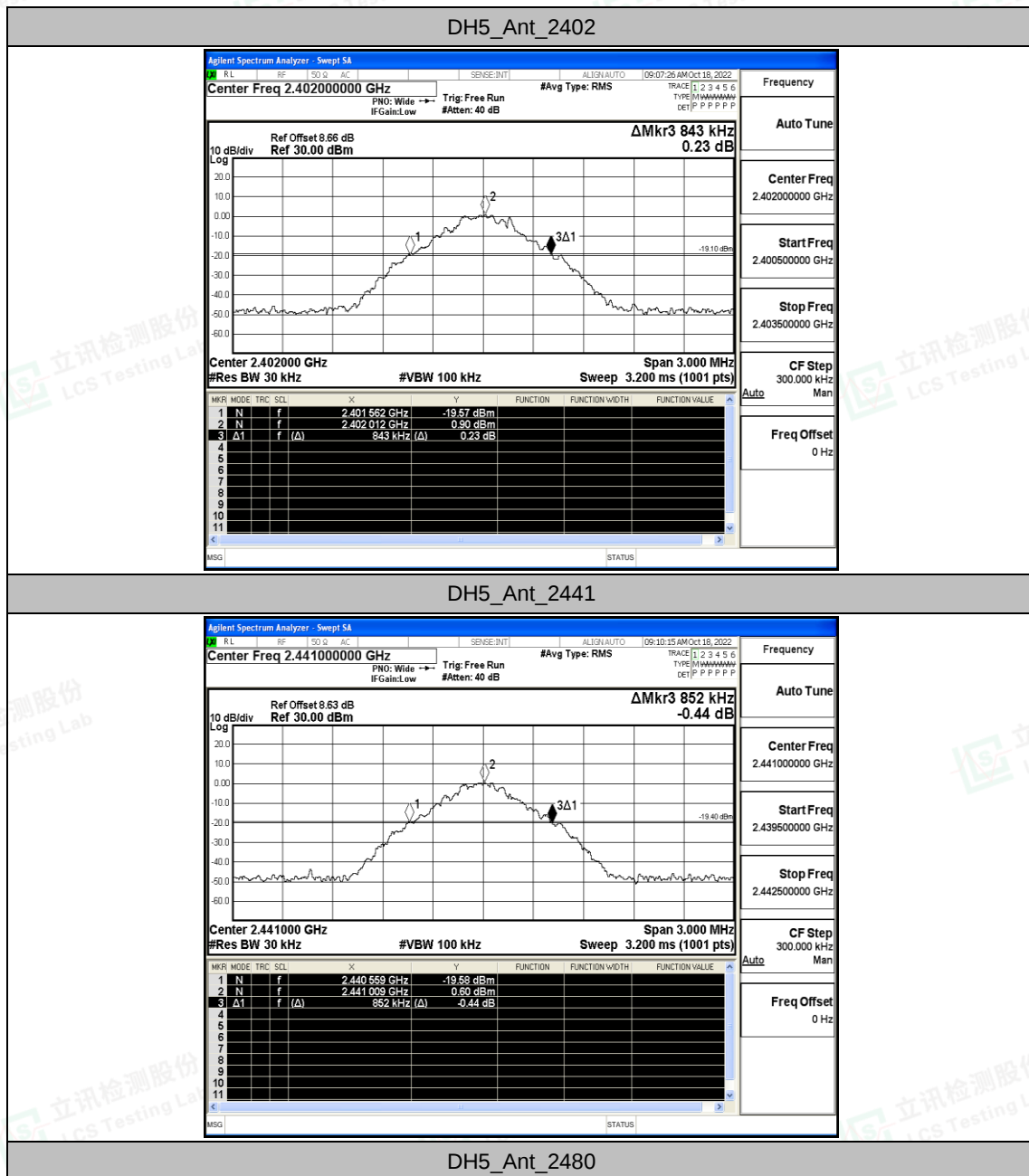
Test Result

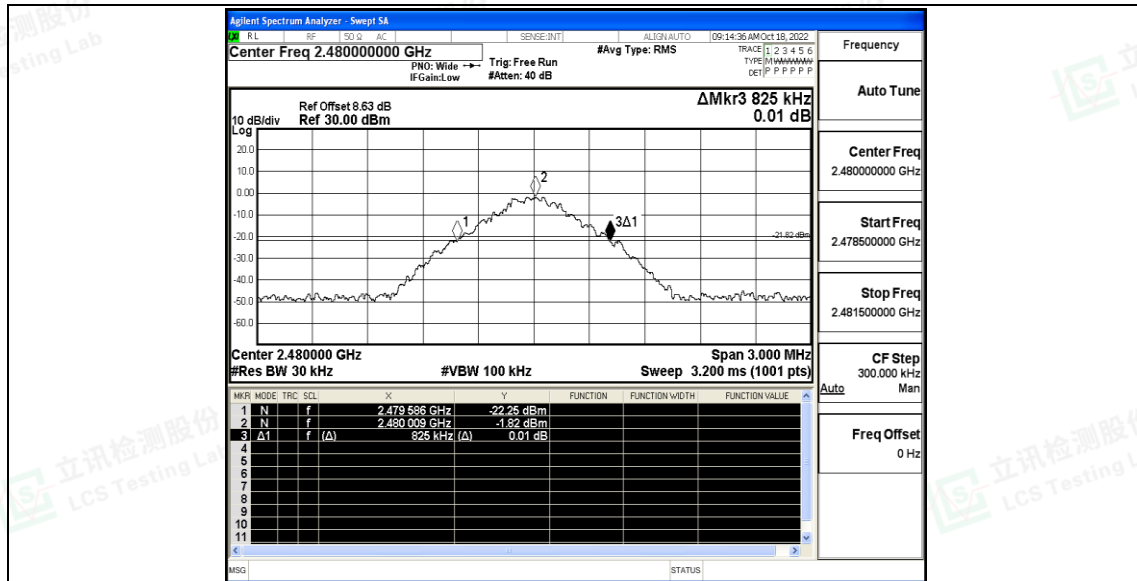
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Verdict
DH5	Ant	2402	0.843	2401.562	2402.405	PASS
		2441	0.852	2440.559	2441.411	PASS
		2480	0.825	2479.586	2480.411	PASS
2DH5	Ant	2402	1.272	2401.364	2402.636	PASS
		2441	1.353	2440.316	2441.669	PASS
		2480	1.281	2479.358	2480.639	PASS
3DH5	Ant	2402	1.272	2401.355	2402.627	PASS
		2441	1.281	2440.343	2441.624	PASS
		2480	1.290	2479.346	2480.636	PASS



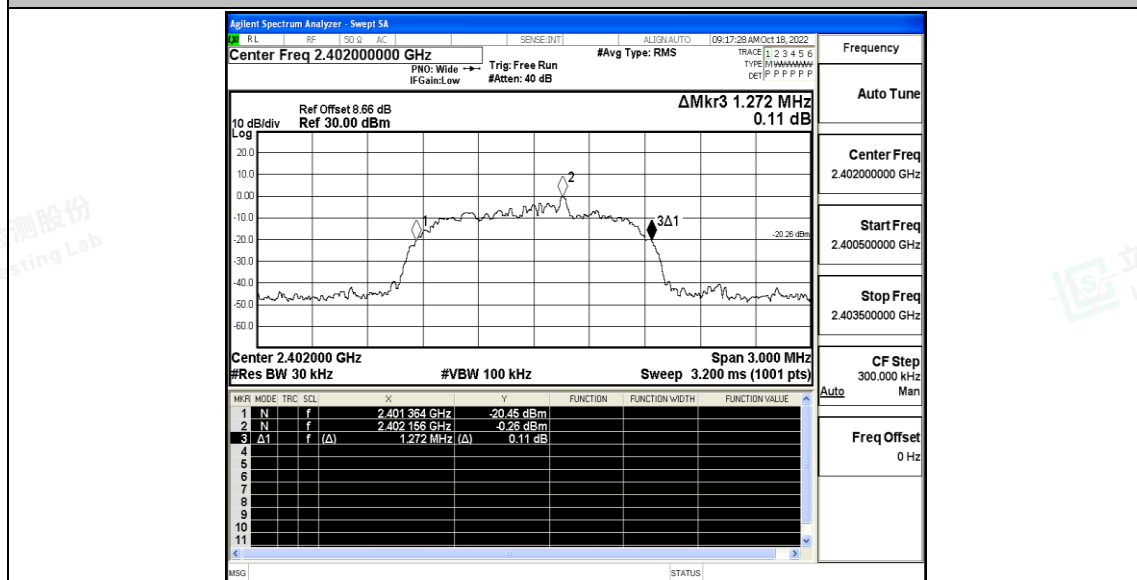


Test Graphs





2DH5_Ant_2402



2DH5_Ant_2441

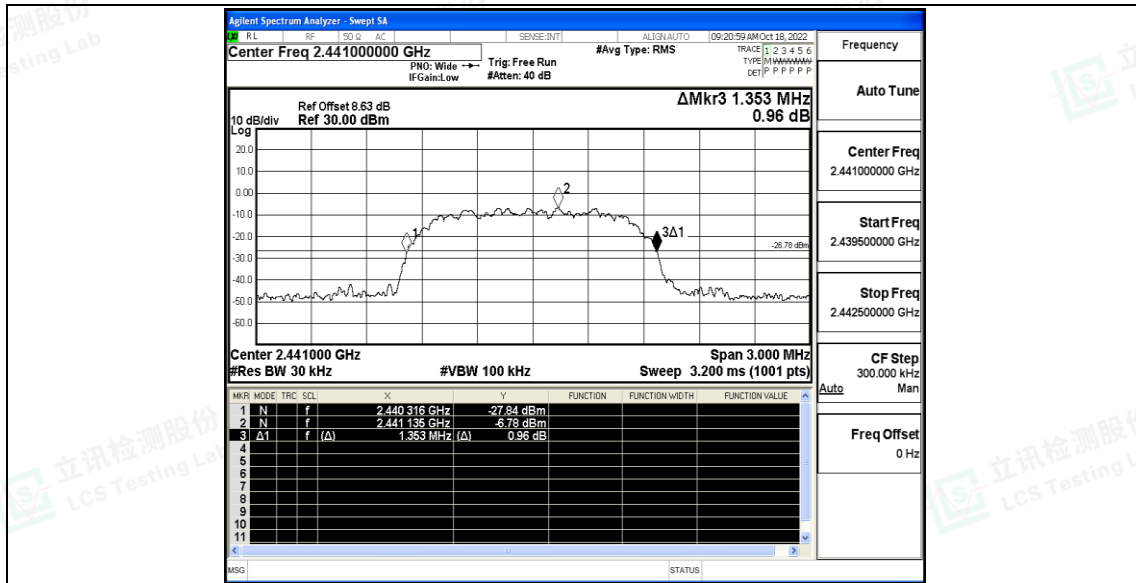


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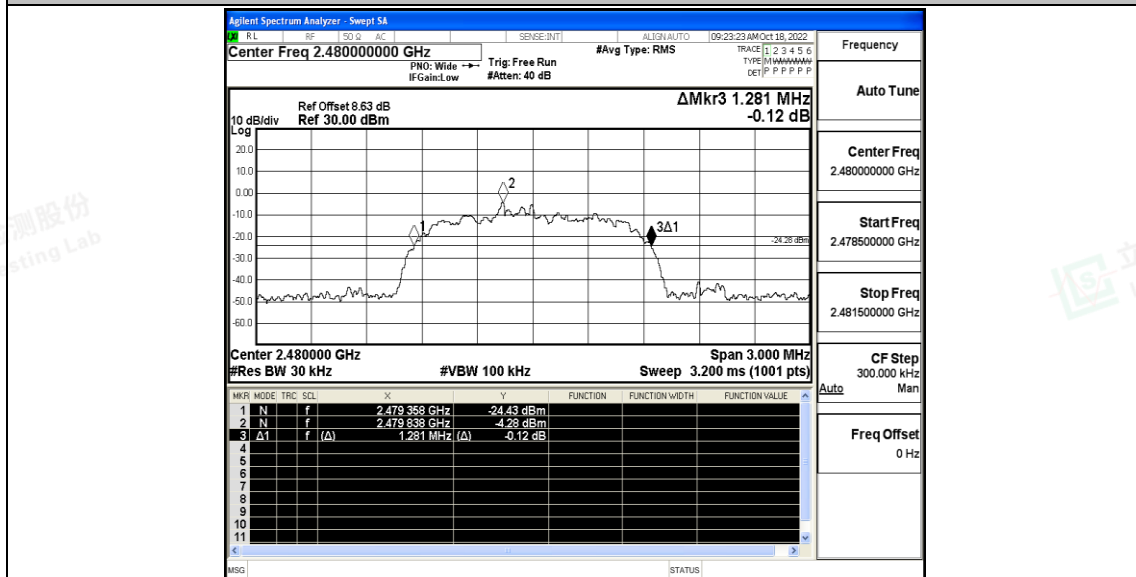
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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2DH5_Ant_2480



3DH5_Ant_2402

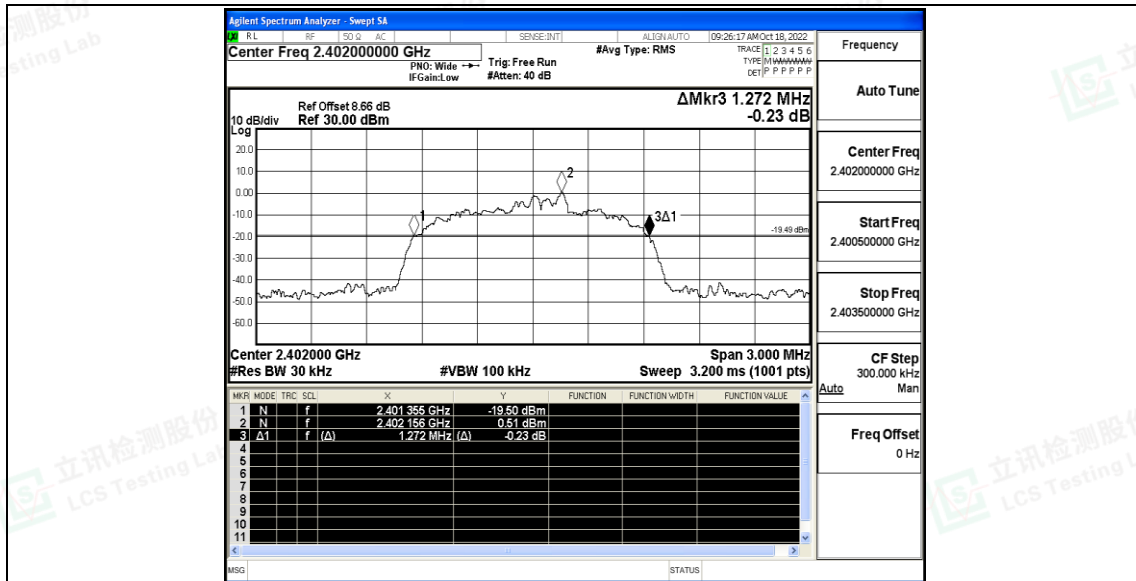


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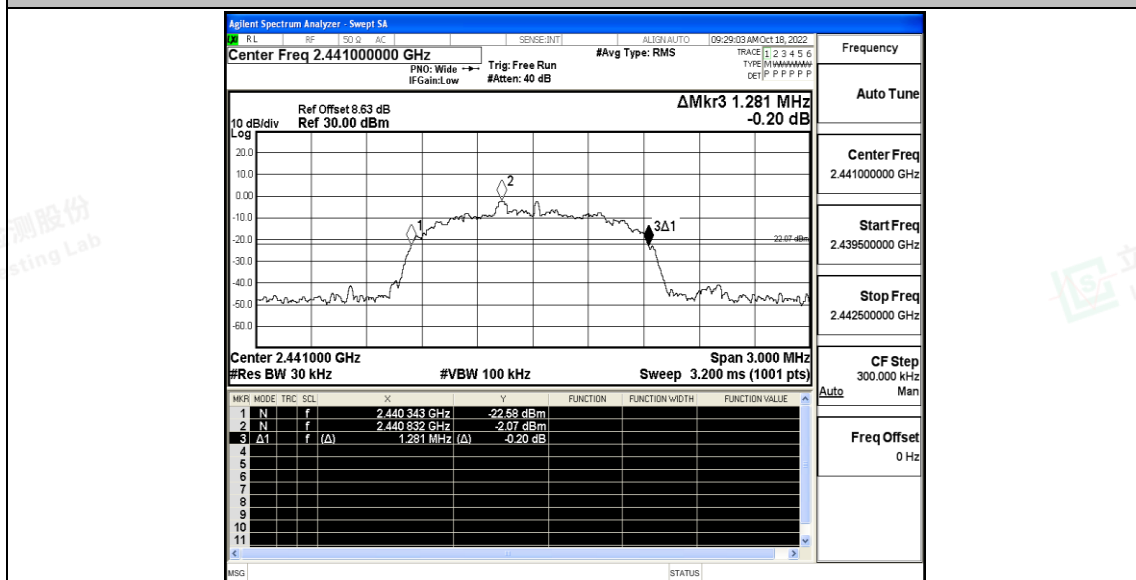
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3DH5_Ant_2441



3DH5_Ant_2480

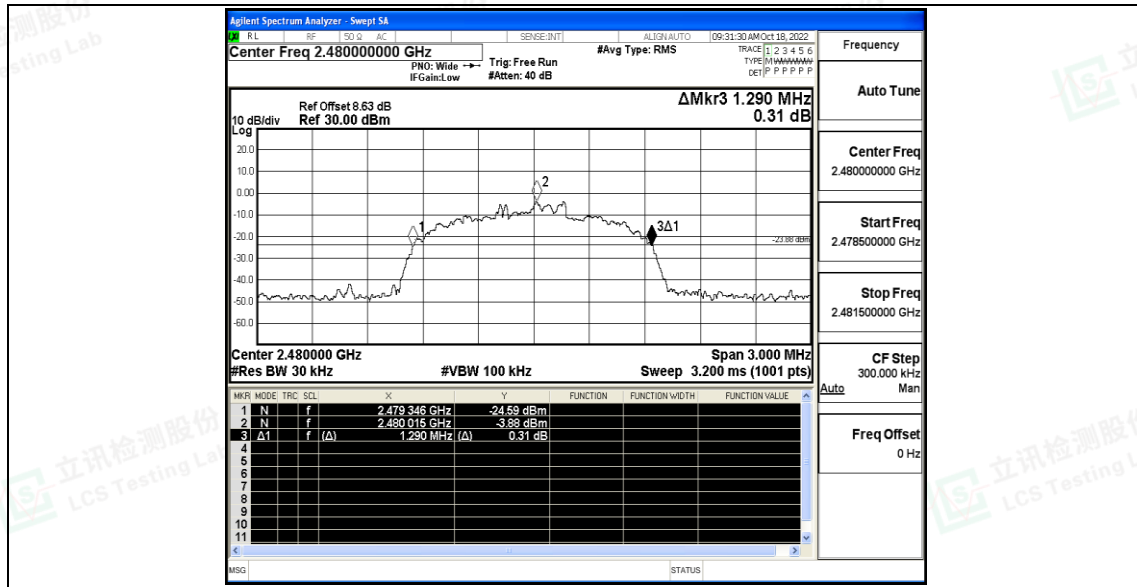


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A.2 Maximum conducted output power

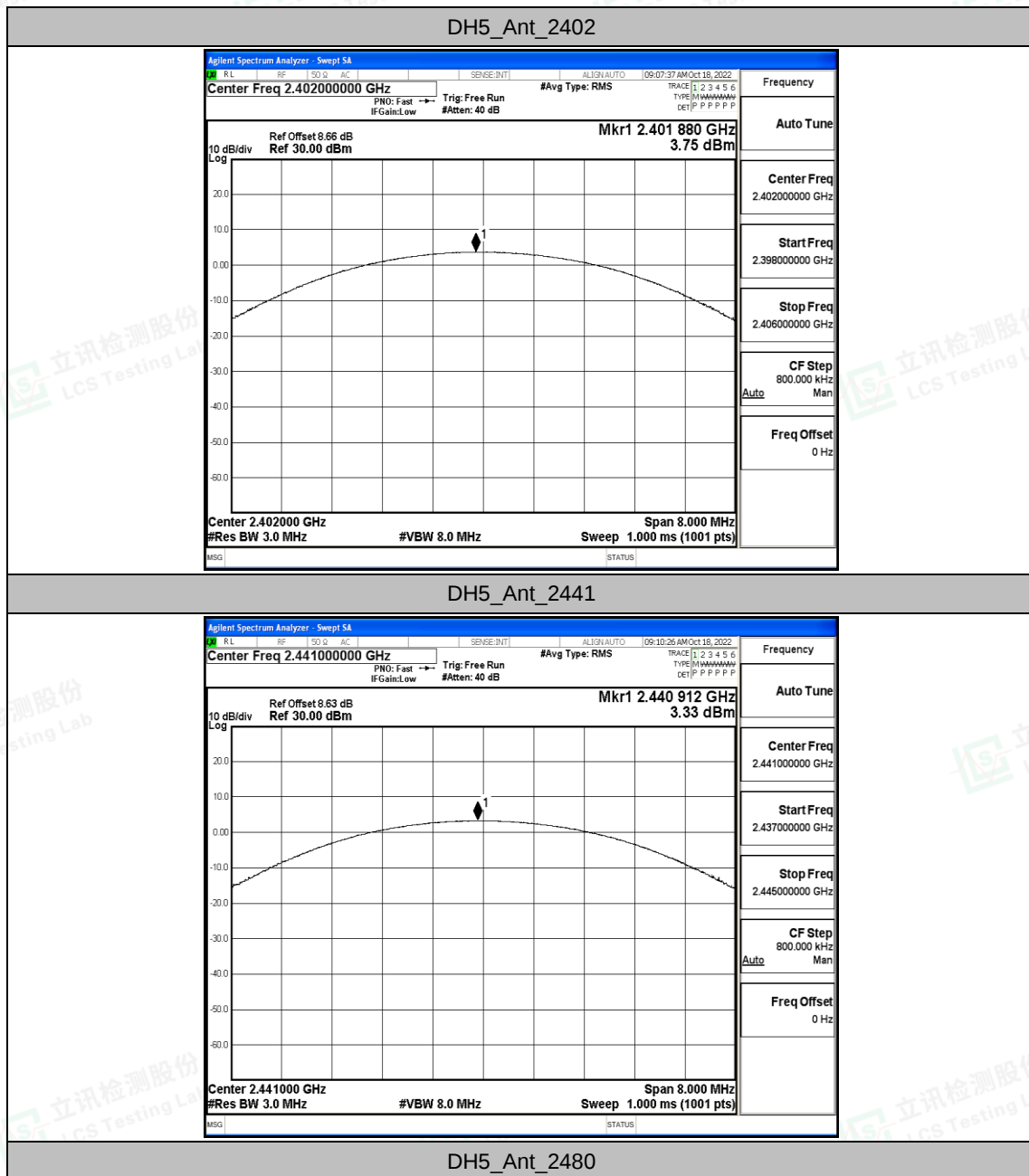
Test Result

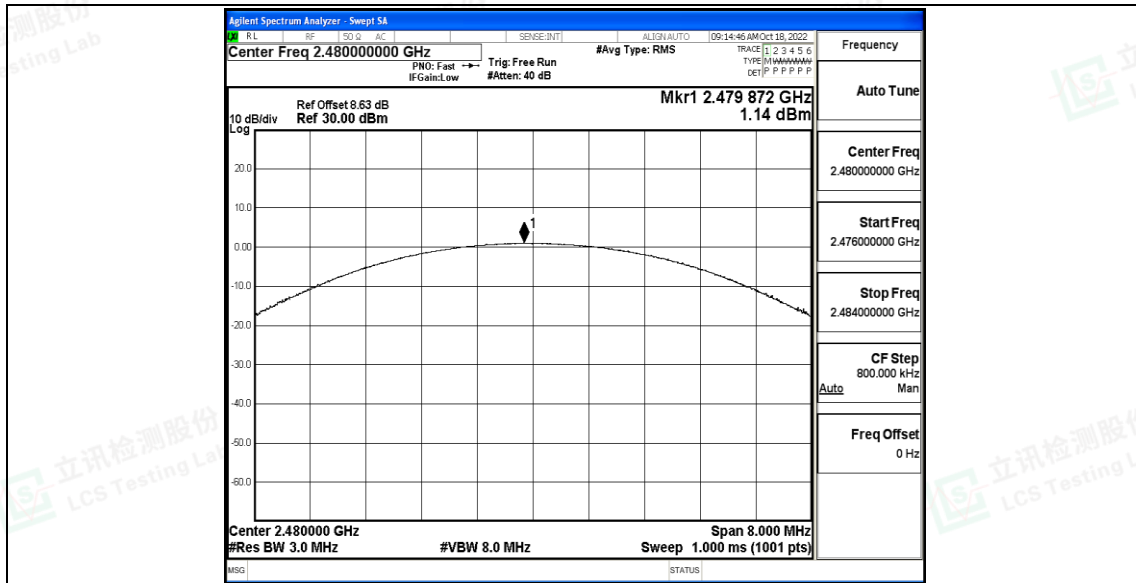
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant	2402	3.75	≤20.97	PASS
		2441	3.33	≤20.97	PASS
		2480	1.14	≤20.97	PASS
2DH5	Ant	2402	2.93	≤20.97	PASS
		2441	2.61	≤20.97	PASS
		2480	0.39	≤20.97	PASS
3DH5	Ant	2402	2.96	≤20.97	PASS
		2441	2.67	≤20.97	PASS
		2480	0.31	≤20.97	PASS



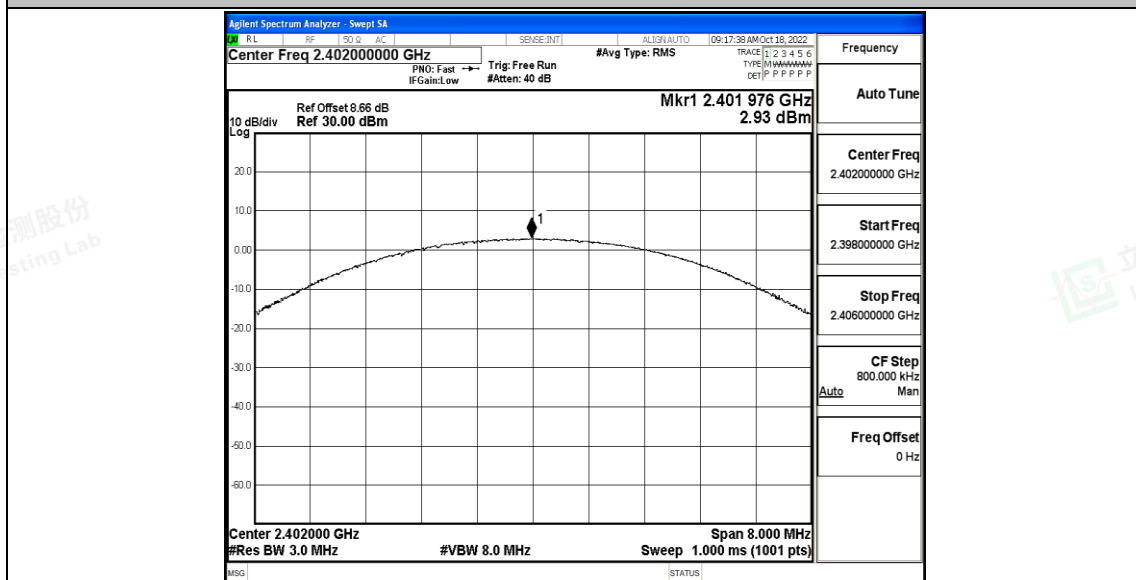


Test Graphs



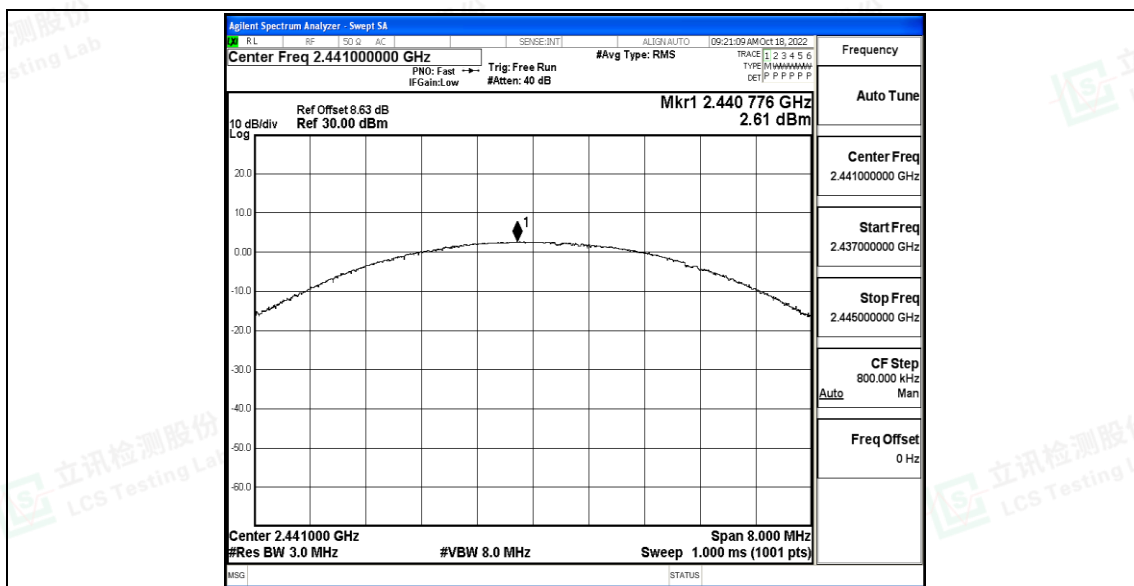


2DH5_Ant_2402

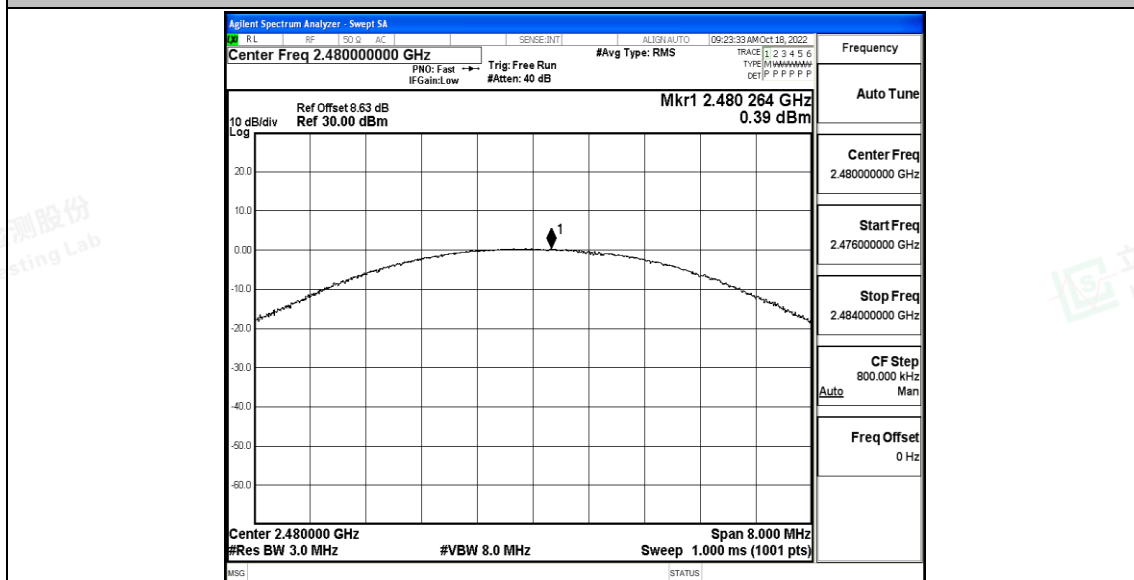


2DH5_Ant_2441



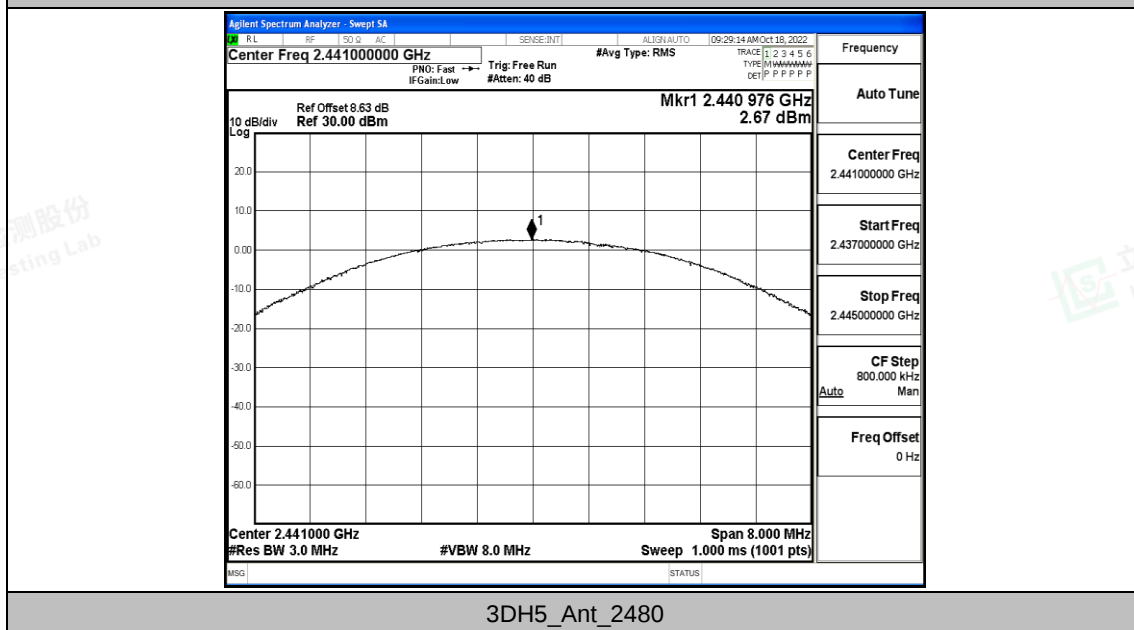
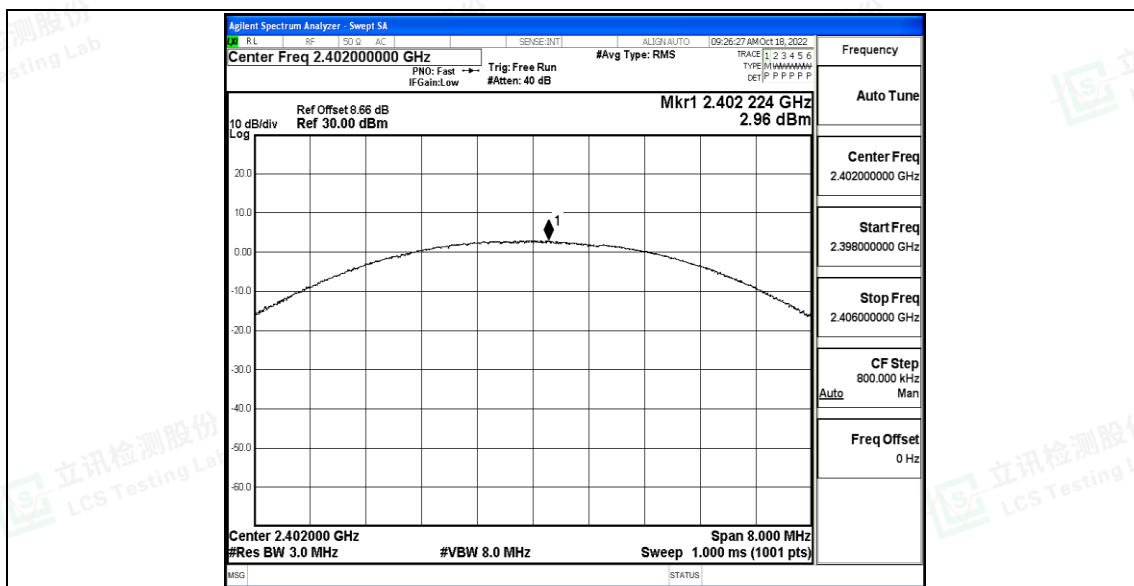


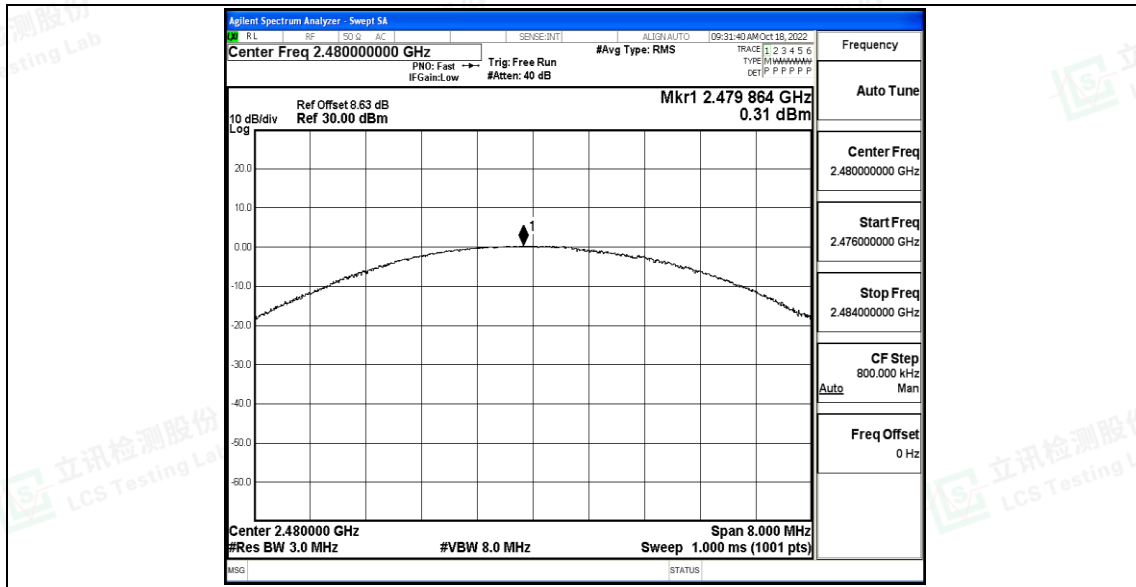
2DH5_Ant_2480



3DH5_Ant_2402









A.3 Carrier frequency separation

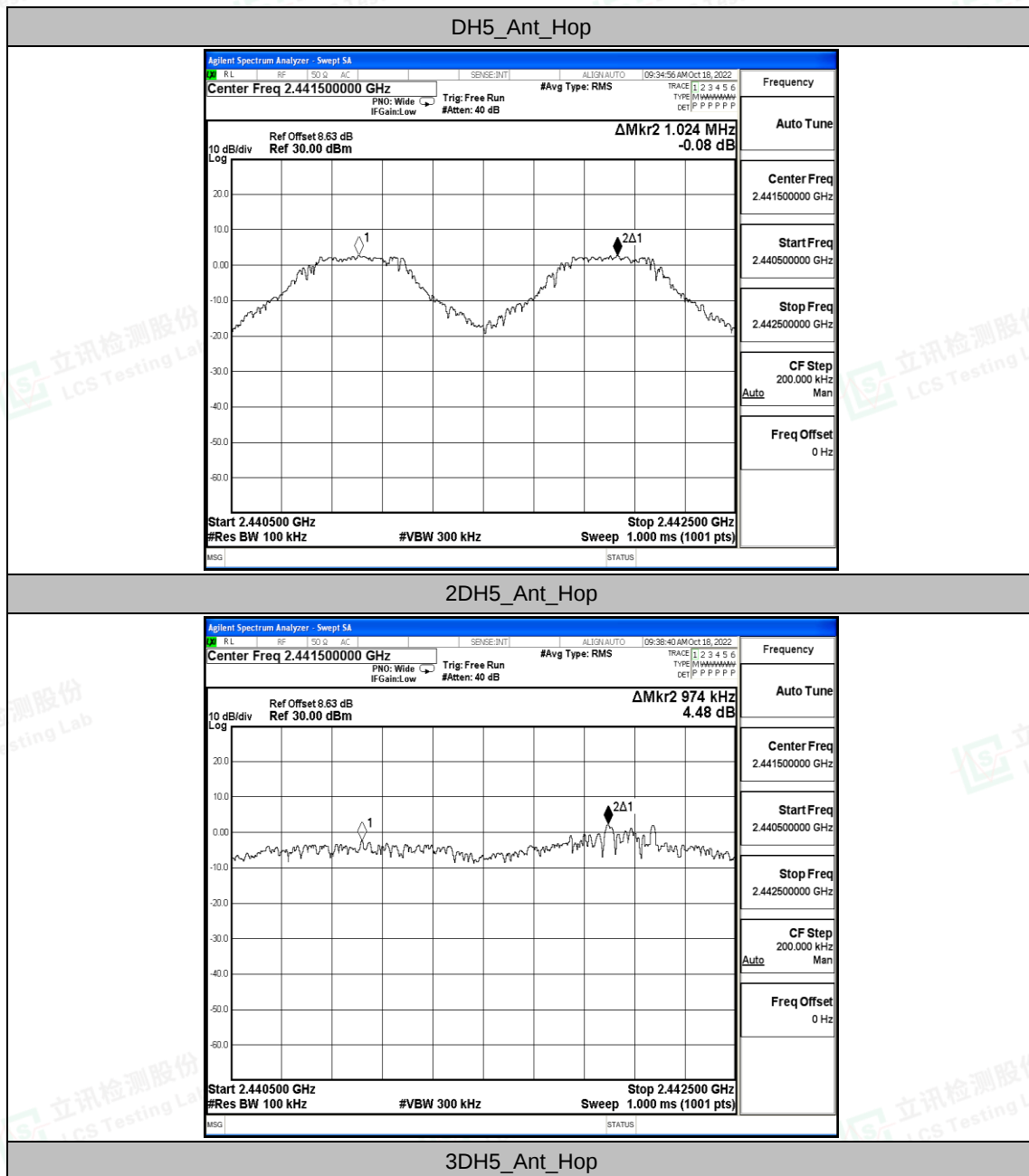
Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant	Hop	1.024	≥ 0.568	PASS
2DH5	Ant	Hop	0.974	≥ 0.902	PASS
3DH5	Ant	Hop	1.058	≥ 0.860	PASS





Test Graphs

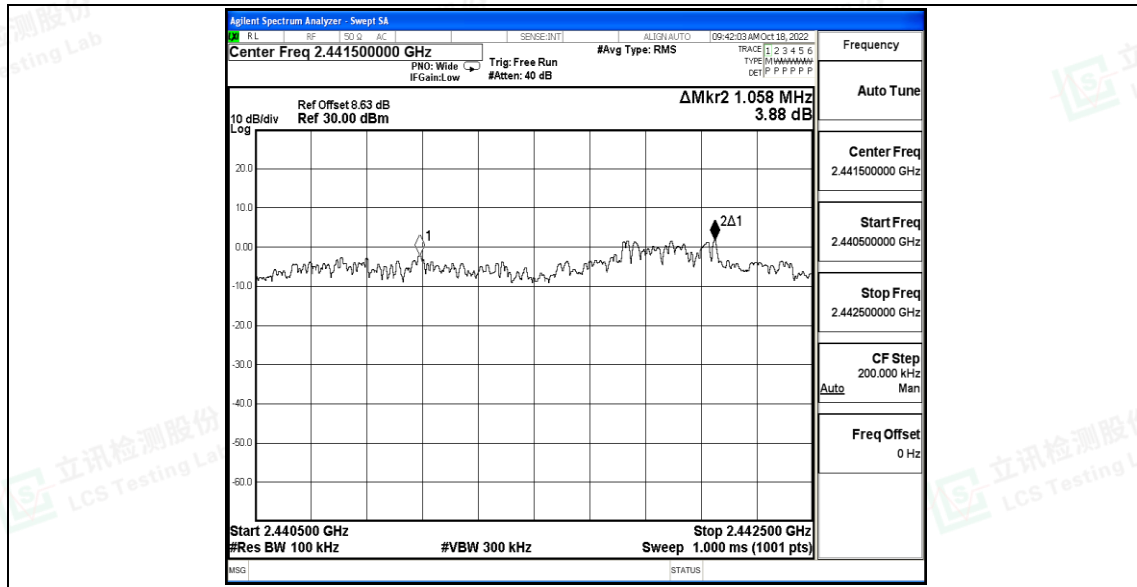


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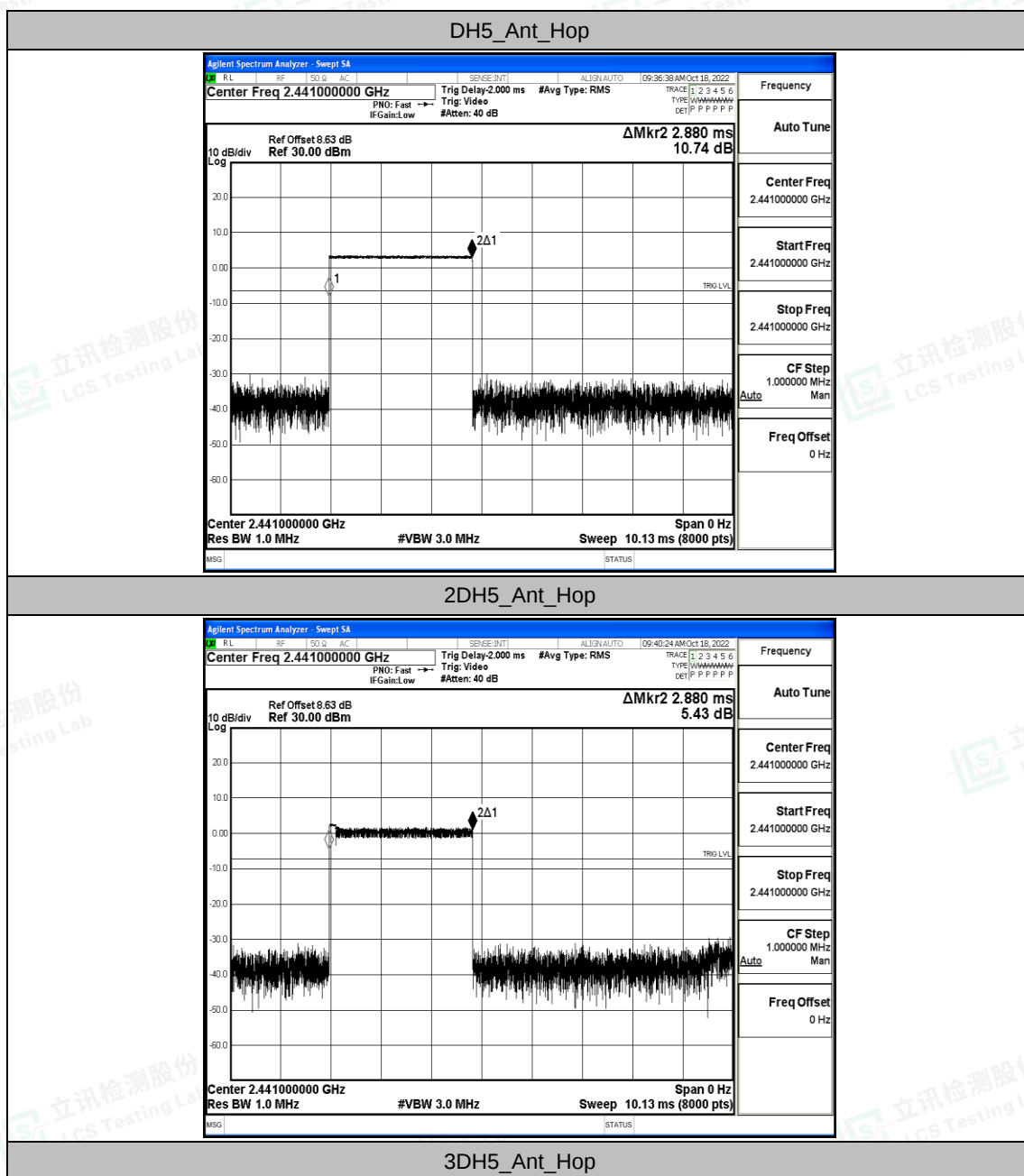
A.4 Time of occupancy

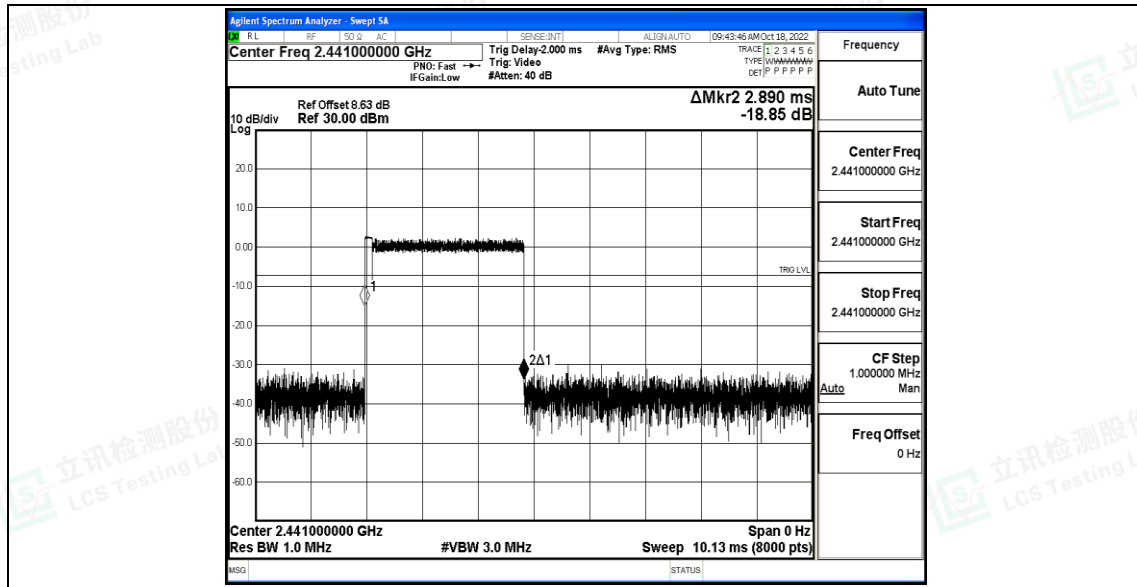
Test Result

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant	Hop	2.88	106.67	0.307	≤0.4	PASS
2DH5	Ant	Hop	2.88	106.67	0.307	≤0.4	PASS
3DH5	Ant	Hop	2.89	106.67	0.308	≤0.4	PASS



Test Graphs







A.5 Number of hopping channels

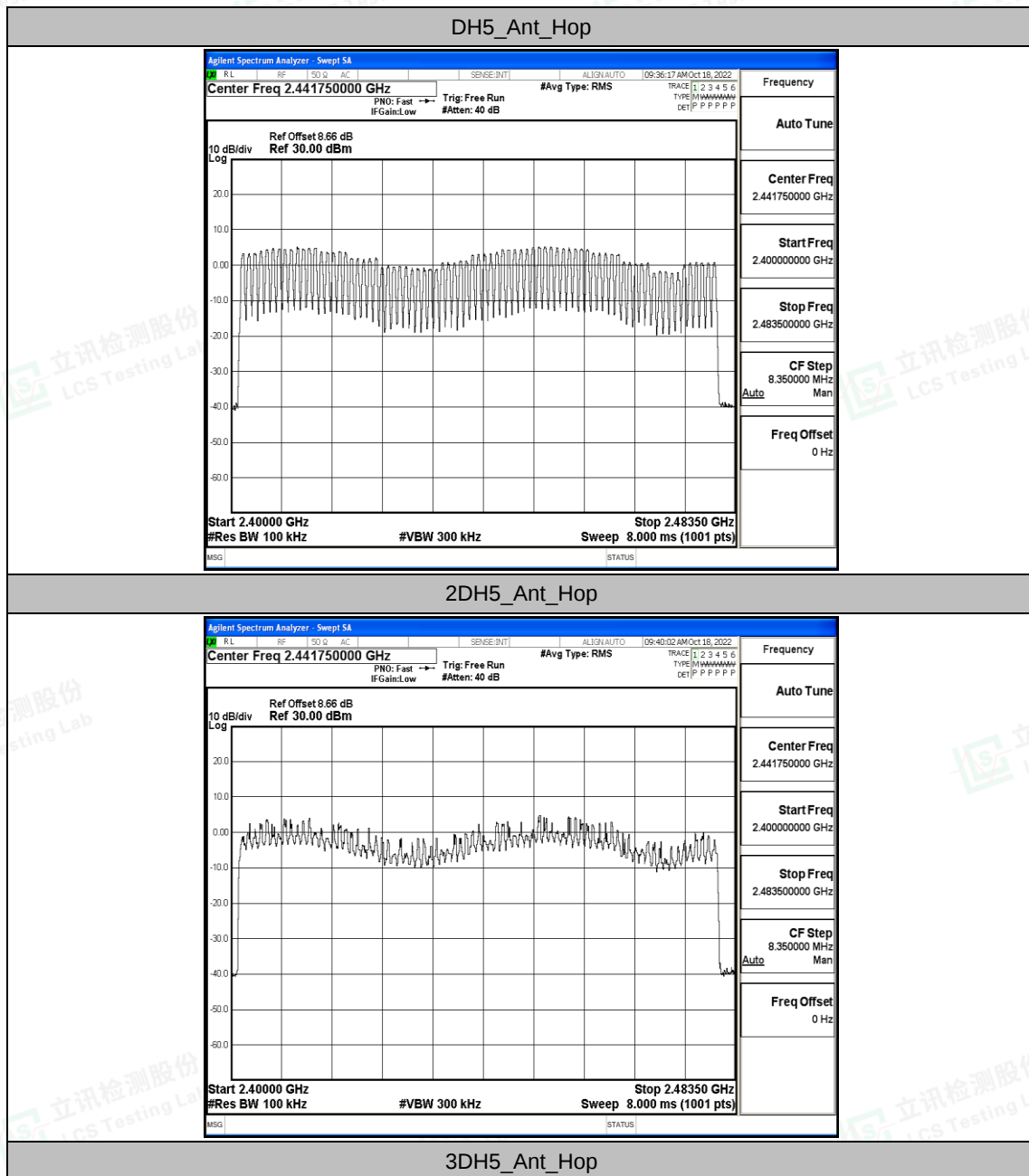
Test Result

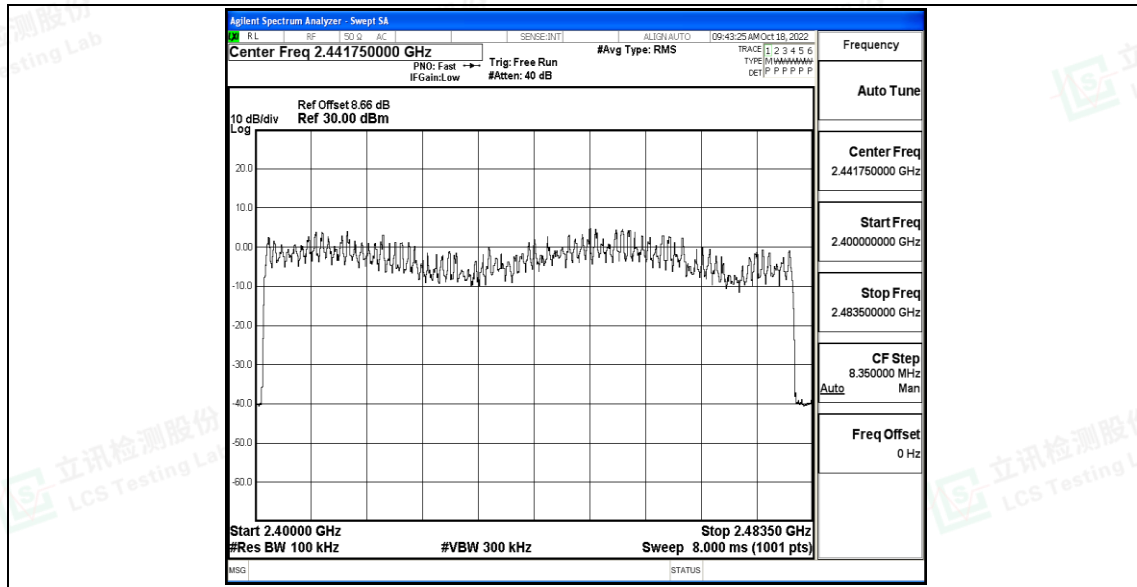
TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant	Hop	79	≥15	PASS
2DH5	Ant	Hop	79	≥15	PASS
3DH5	Ant	Hop	79	≥15	PASS





Test Graphs







A.6 Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant	Low	2402	2.32	-59.98	≤ -17.68	PASS
		High	2480	-0.11	-57.81	≤ -20.11	PASS
		Low	Hop_2402	2.75	-58.93	≤ -17.25	PASS
		High	Hop_2480	0.37	-57.36	≤ -19.63	PASS
2DH5	Ant	Low	2402	2.41	-59.75	≤ -17.6	PASS
		High	2480	-5.24	-59.38	≤ -25.24	PASS
		Low	Hop_2402	-2.29	-59.26	≤ -22.29	PASS
		High	Hop_2480	-2.39	-57.33	≤ -22.39	PASS
3DH5	Ant	Low	2402	1.34	-59.68	≤ -18.66	PASS
		High	2480	-5.45	-59.03	≤ -25.45	PASS
		Low	Hop_2402	0.91	-59.34	≤ -19.09	PASS
		High	Hop_2480	-2.71	-57.28	≤ -22.71	PASS



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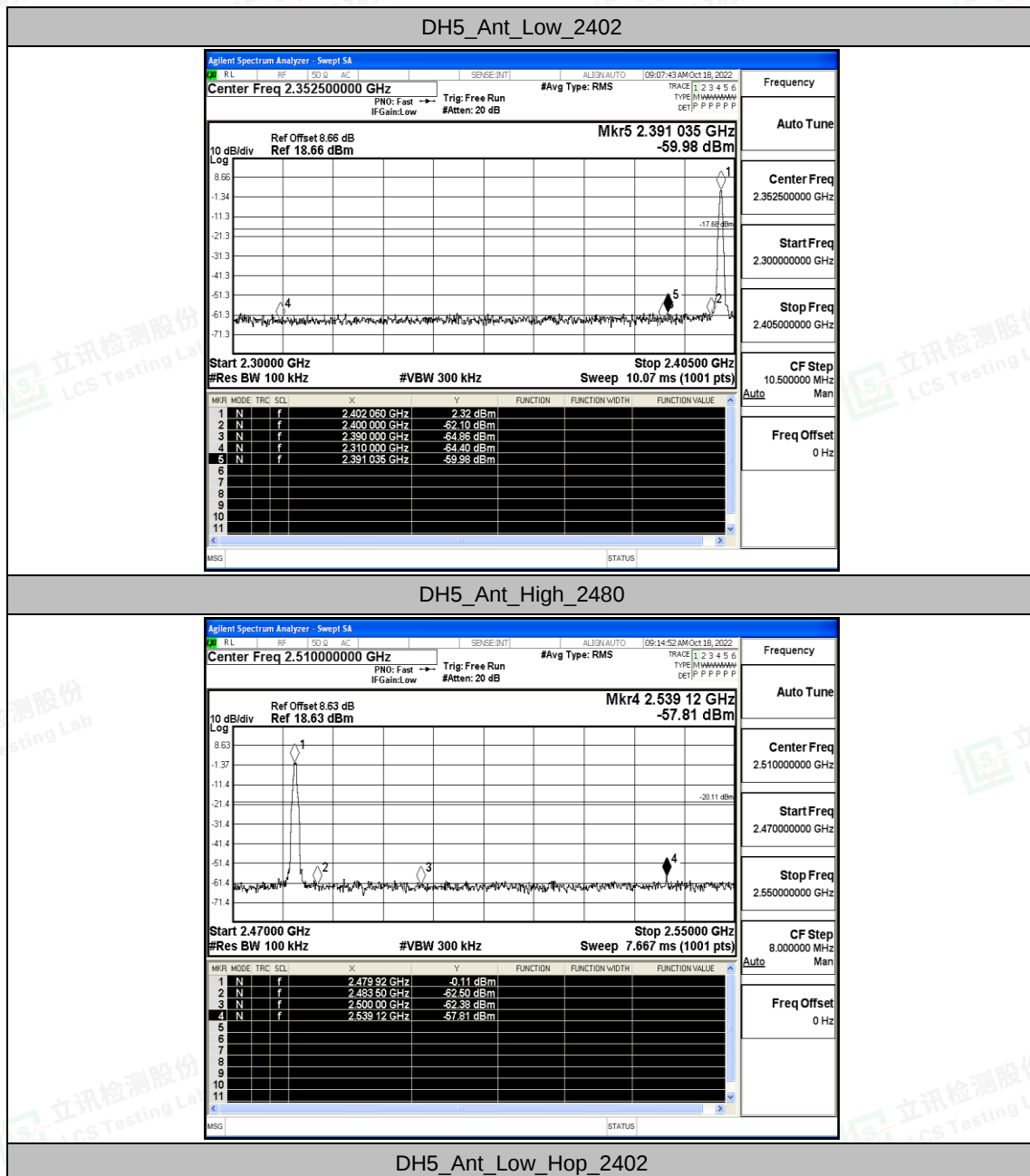
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Test Graphs

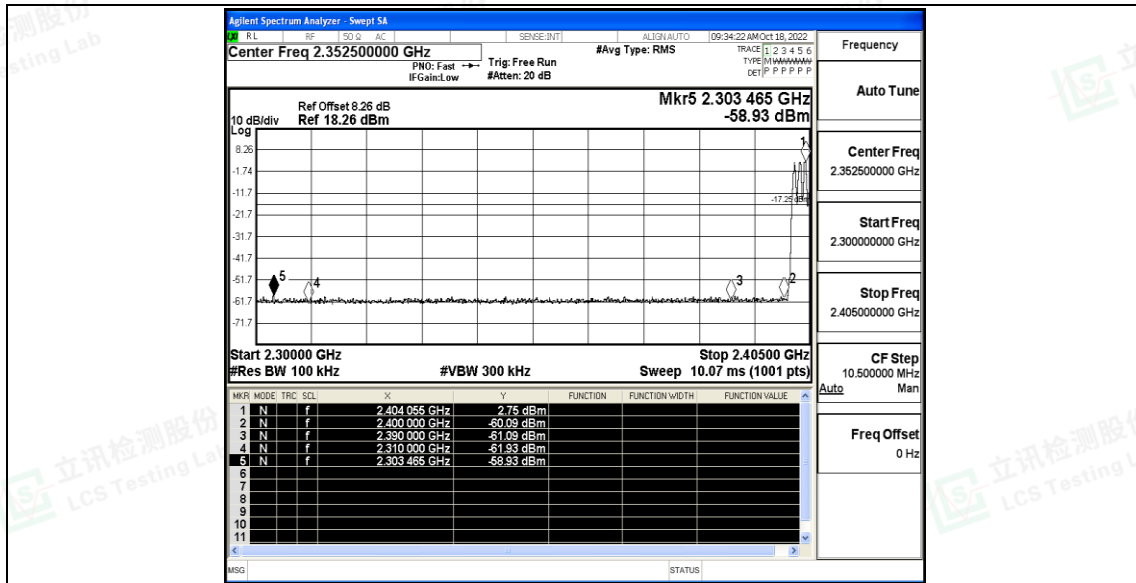


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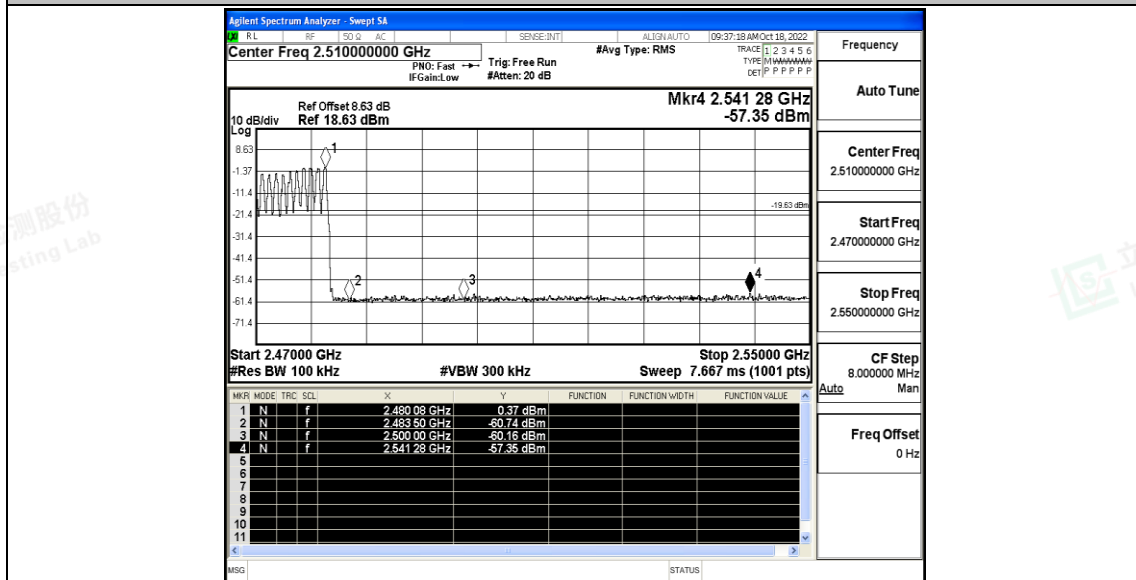
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DH5_Ant_High_Hop_2480



2DH5_Ant_Low_2402

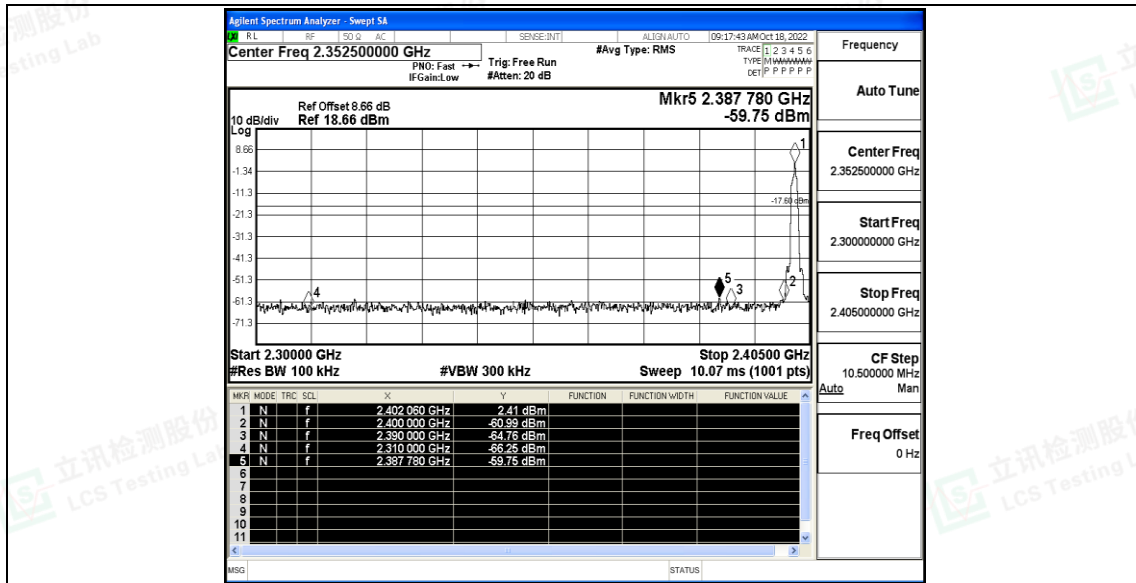


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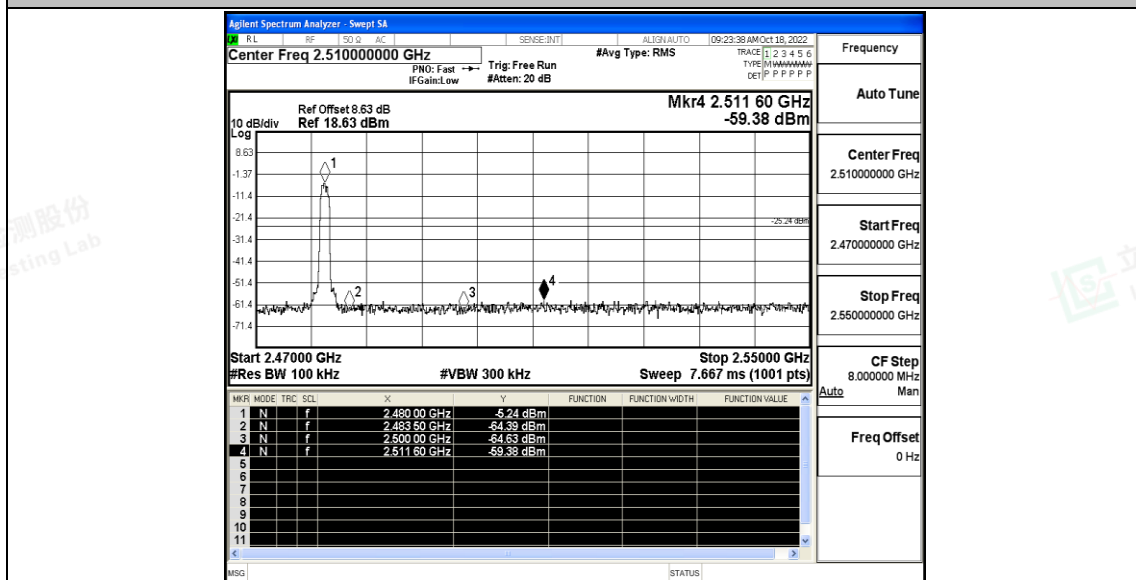
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2DH5_Ant_High_2480



2DH5_Ant_Low_Hop_2402

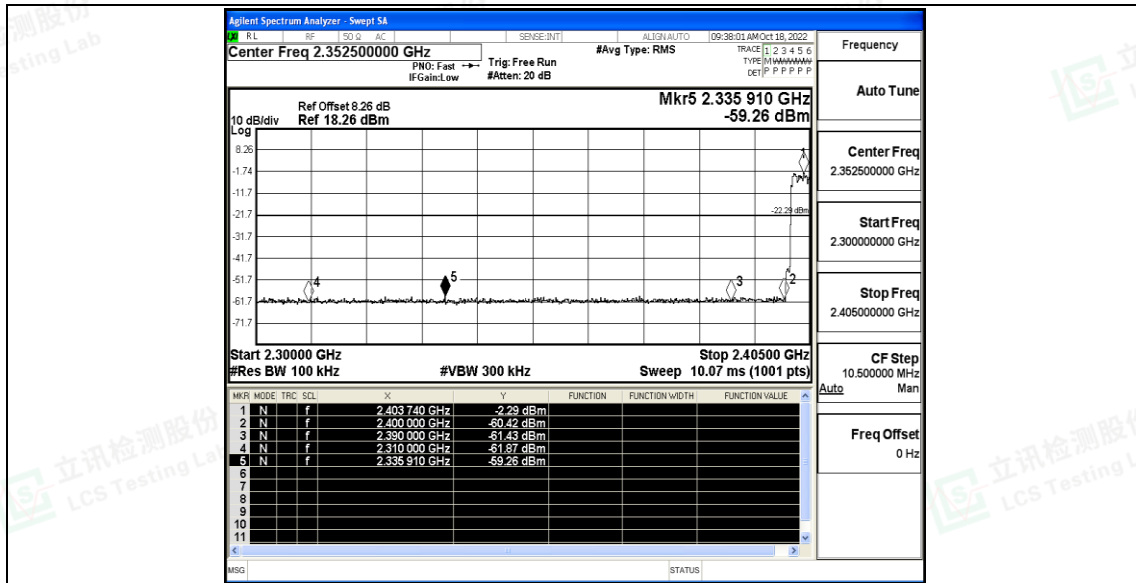


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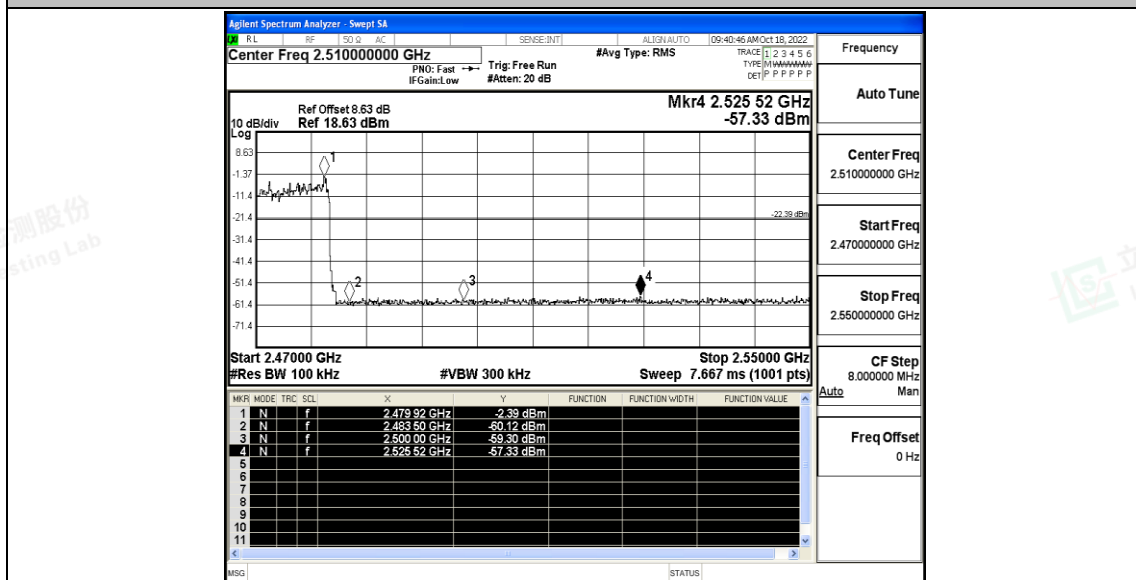
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2DH5_Ant_High_Hop_2480



3DH5_Ant_Low_2402

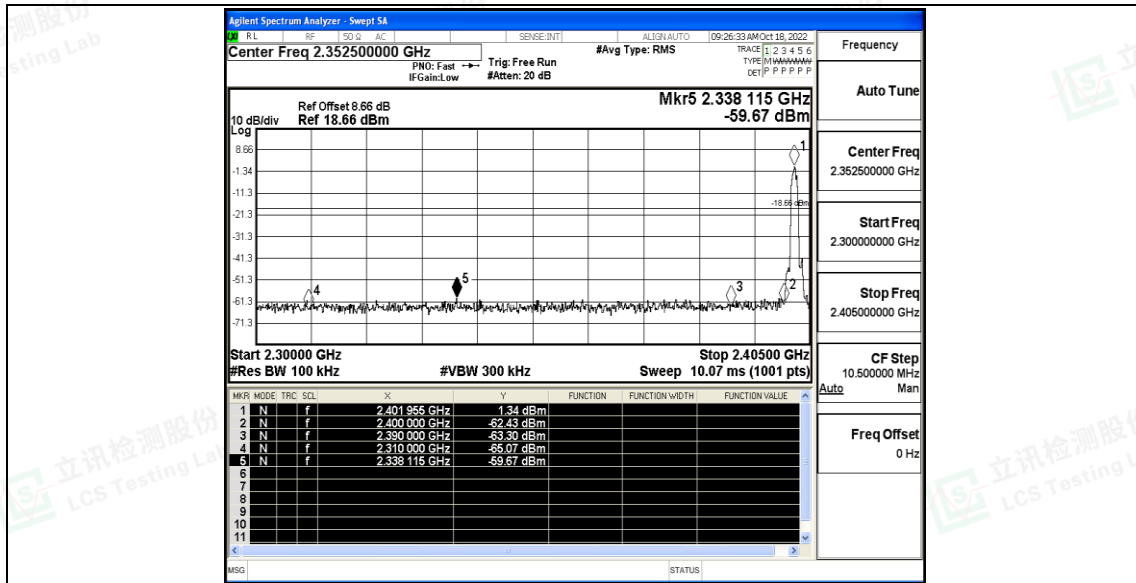


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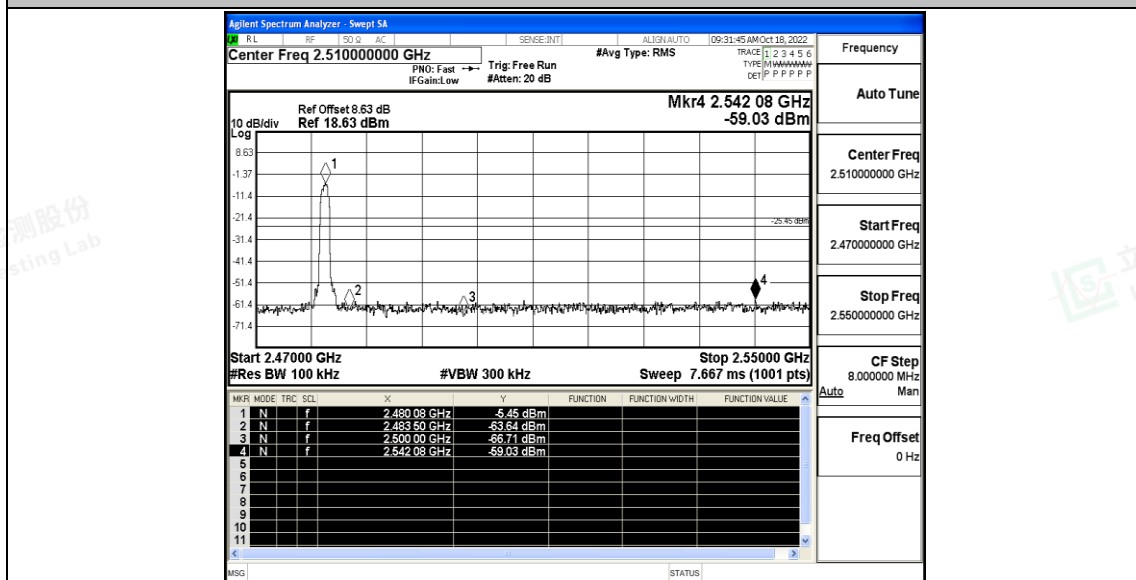
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3DH5_Ant_High_2480



3DH5_Ant_Low_Hop_2402

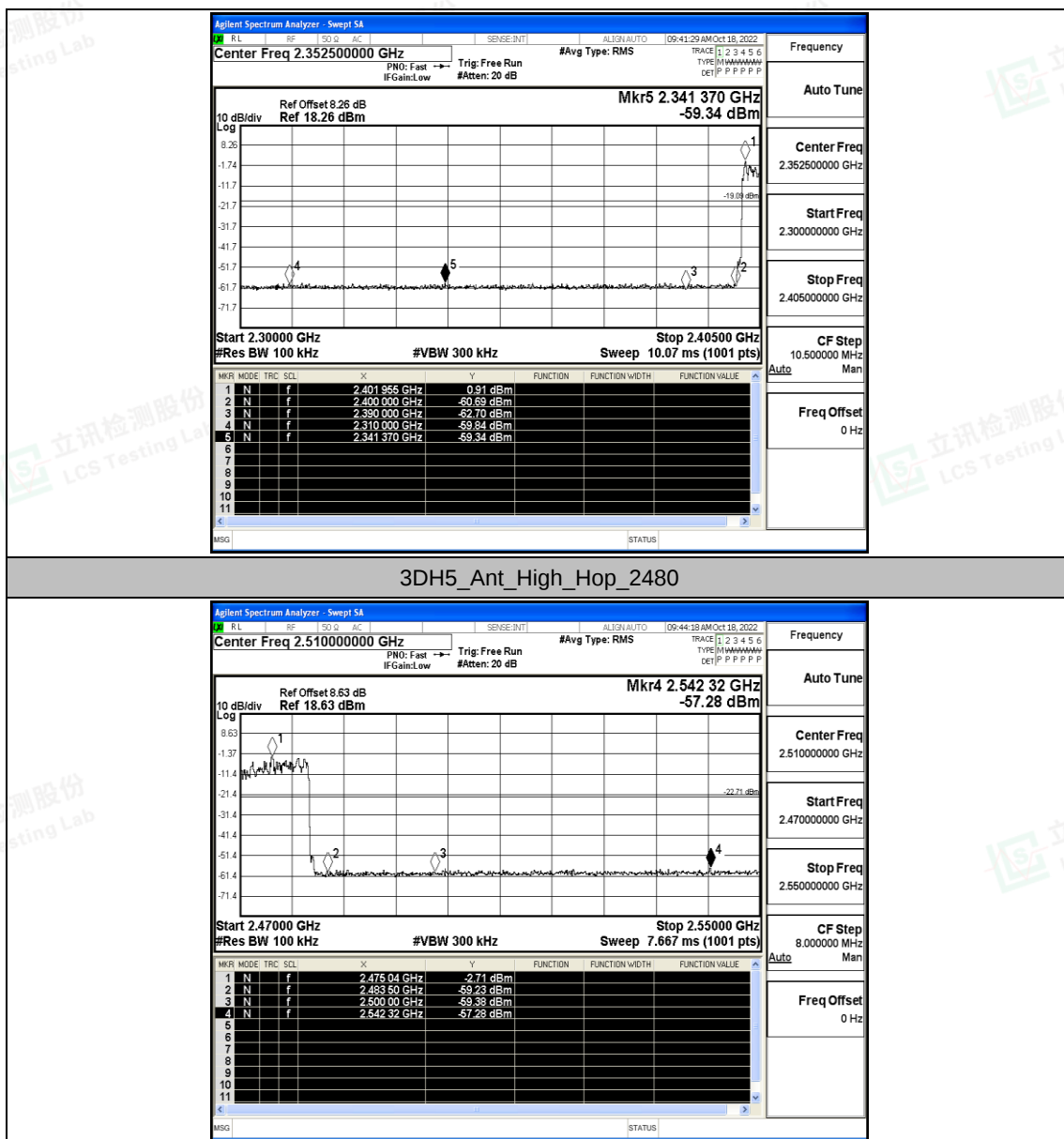


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A.7 Conducted Spurious Emission

Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant	2402	Reference	2.75	2.75	---	PASS
			30~1000	2.75	-60.14	≤-17.25	PASS
			1000~26500	2.75	-45.88	≤-17.25	PASS
		2441	Reference	2.30	2.30	---	PASS
			30~1000	2.30	-60.54	≤-17.7	PASS
			1000~26500	2.30	-45.83	≤-17.7	PASS
		2480	Reference	0.13	0.13	---	PASS
			30~1000	0.13	-59.97	≤-19.87	PASS
			1000~26500	0.13	-46.22	≤-19.87	PASS
2DH5	Ant	2402	Reference	-2.47	-2.47	---	PASS
			30~1000	-2.47	-60.49	≤-22.47	PASS
			1000~26500	-2.47	-46.01	≤-22.47	PASS
		2441	Reference	-3.09	-3.09	---	PASS
			30~1000	-3.09	-60.75	≤-23.09	PASS
			1000~26500	-3.09	-45.91	≤-23.09	PASS
		2480	Reference	-4.88	-4.88	---	PASS
			30~1000	-4.88	-60.51	≤-24.88	PASS
			1000~26500	-4.88	-45.89	≤-24.88	PASS
3DH5	Ant	2402	Reference	1.64	1.64	---	PASS
			30~1000	1.64	-61.09	≤-18.36	PASS
			1000~26500	1.64	-46.3	≤-18.36	PASS
		2441	Reference	-2.24	-2.24	---	PASS
			30~1000	-2.24	-60.19	≤-22.24	PASS
			1000~26500	-2.24	-46.19	≤-22.24	PASS
		2480	Reference	-4.58	-4.58	---	PASS
			30~1000	-4.58	-60.58	≤-24.58	PASS
			1000~26500	-4.58	-45.89	≤-24.58	PASS



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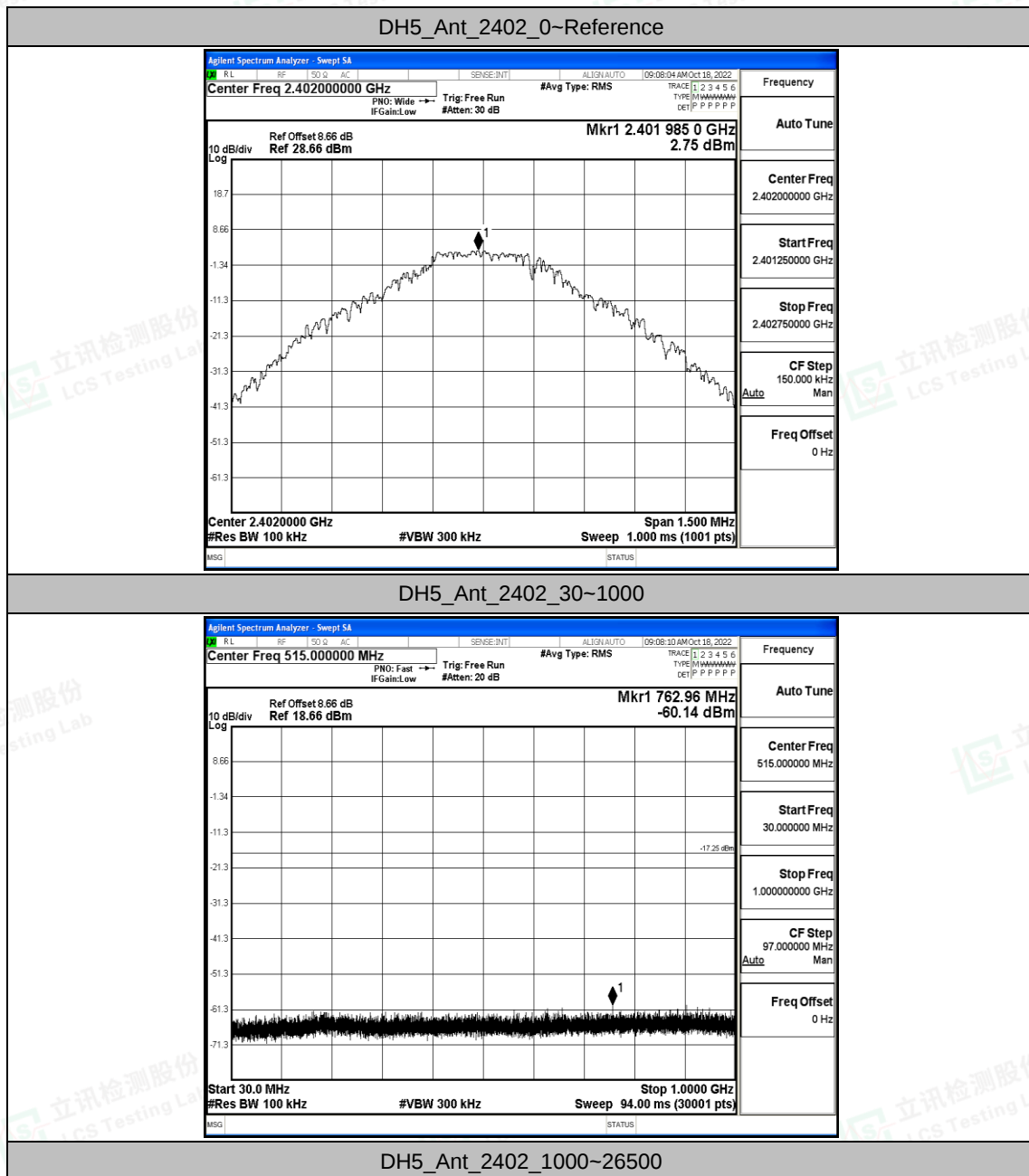
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Test Graphs

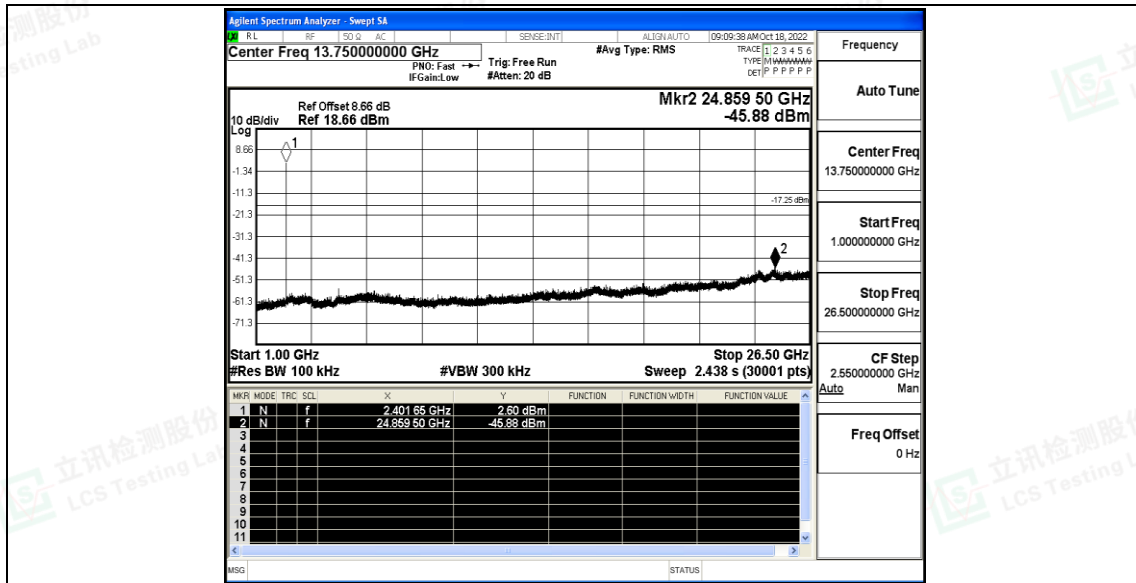


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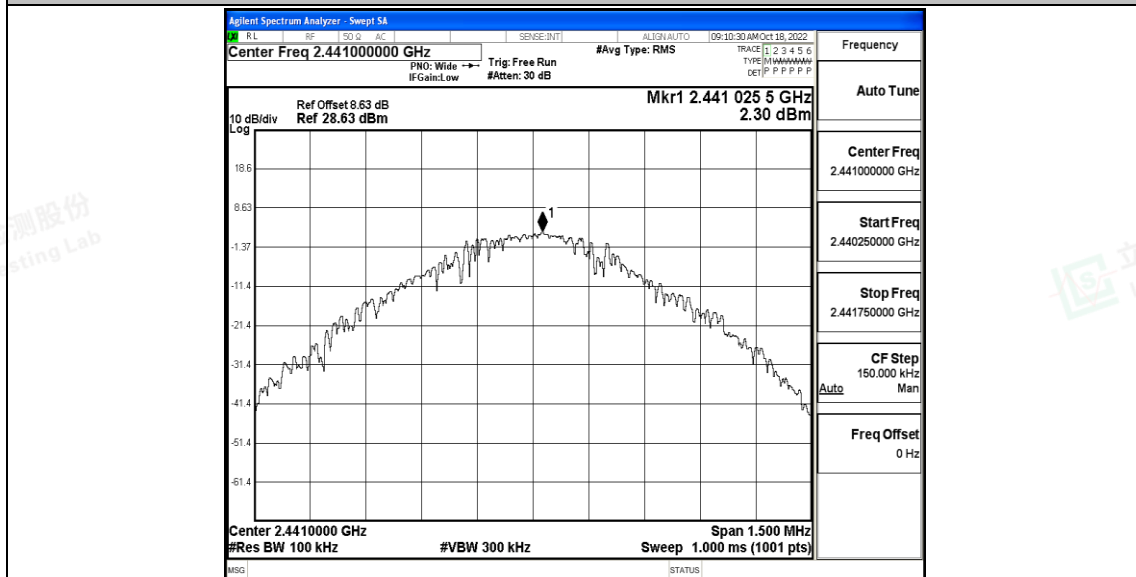
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DH5_Ant_2441_0~Reference



DH5_Ant_2441_30~1000

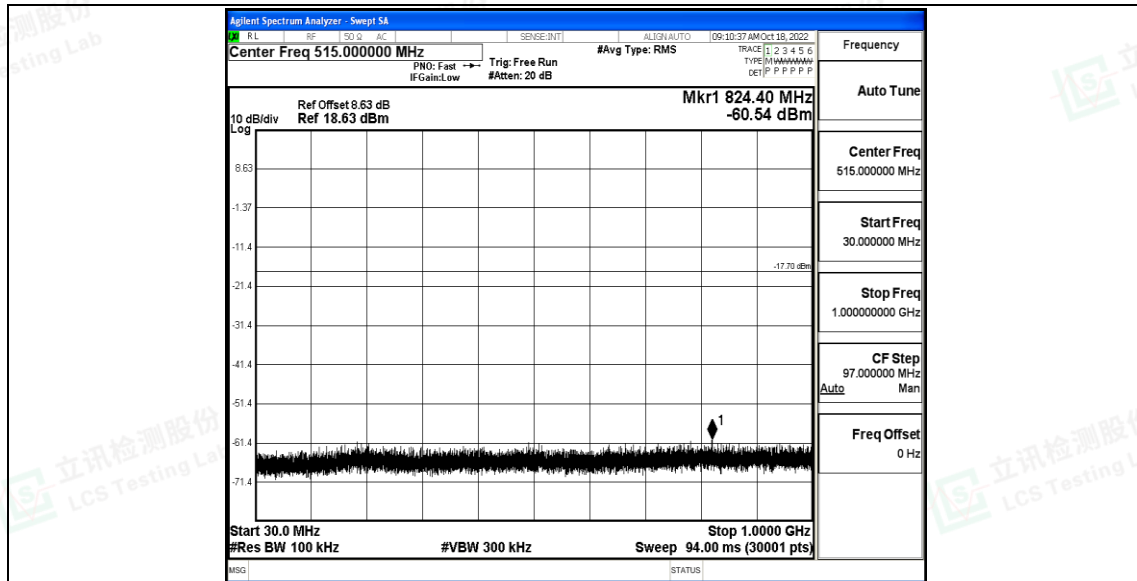


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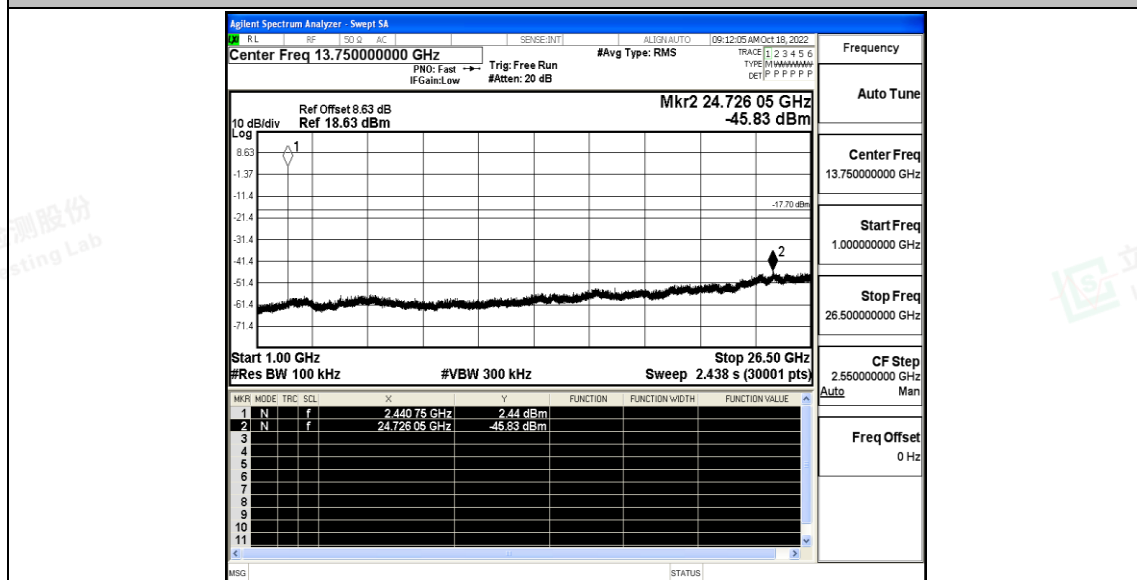
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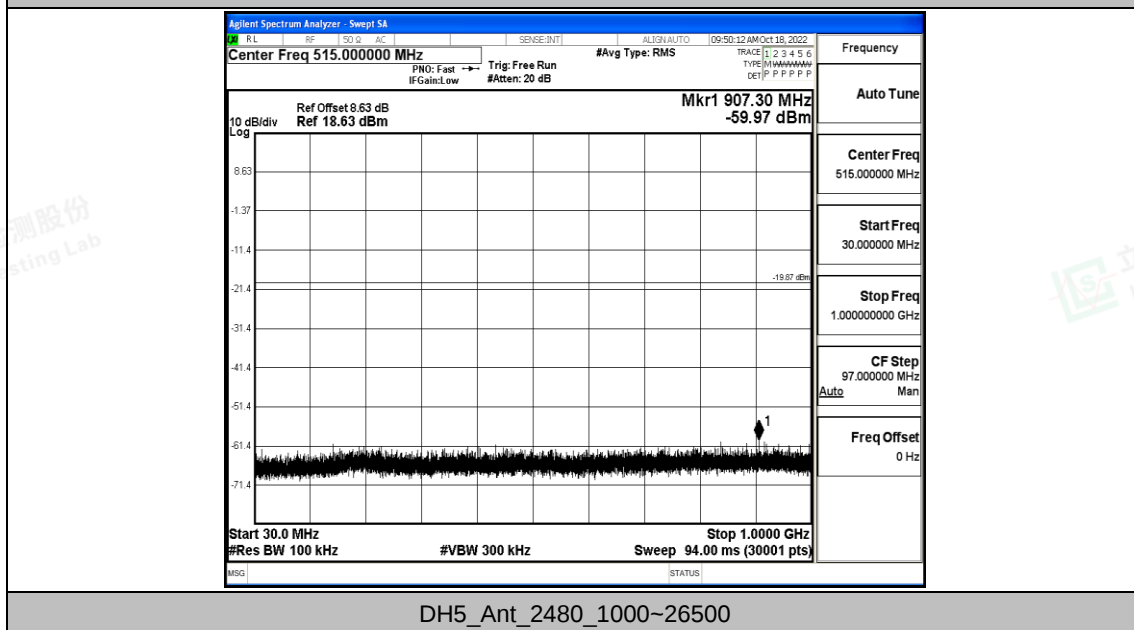
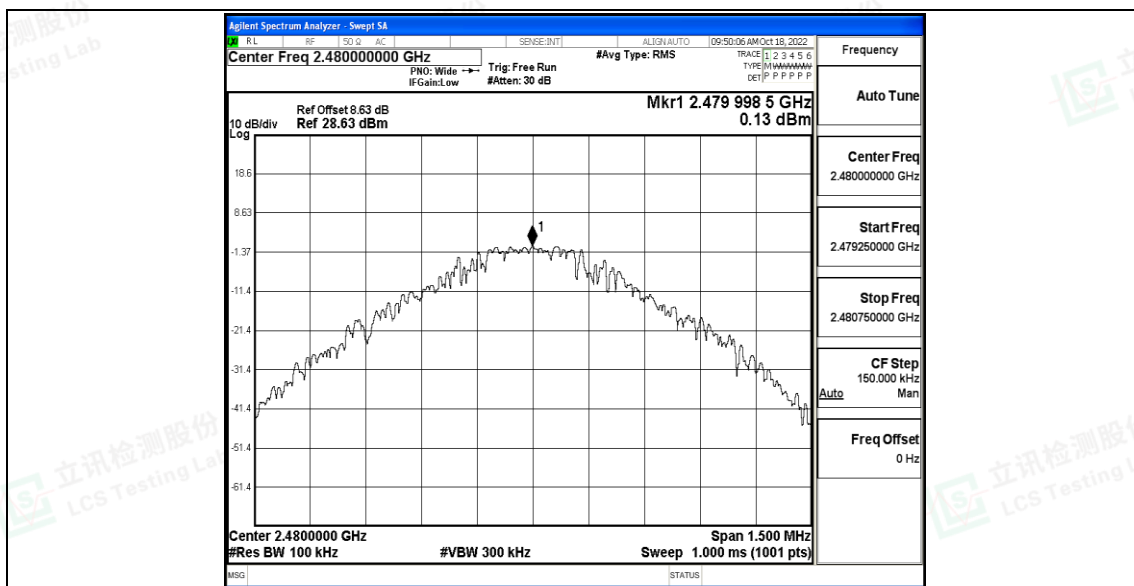


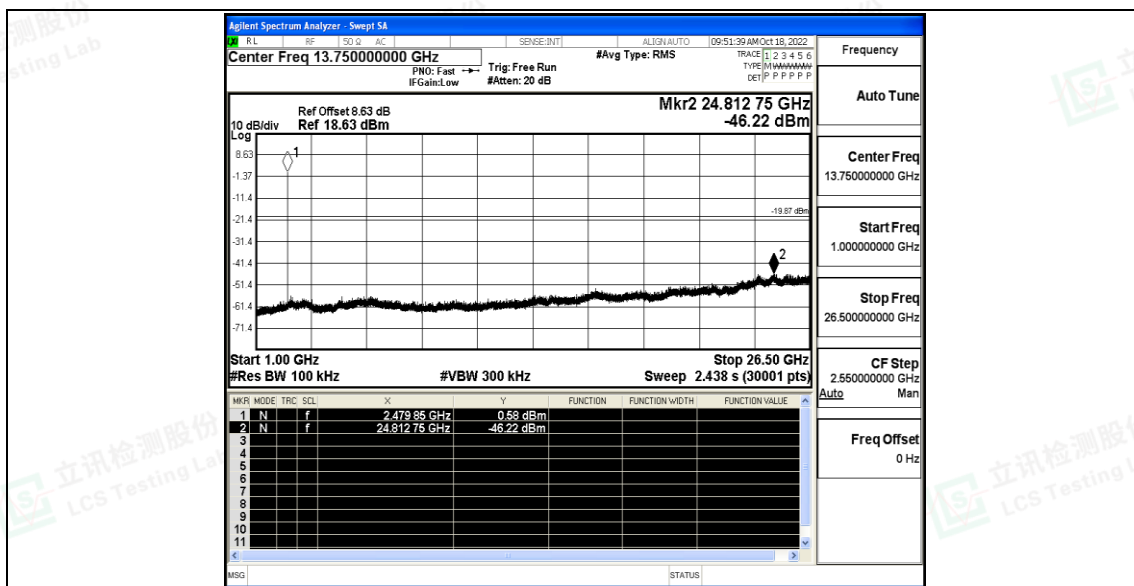
DH5_Ant_2441_1000~26500



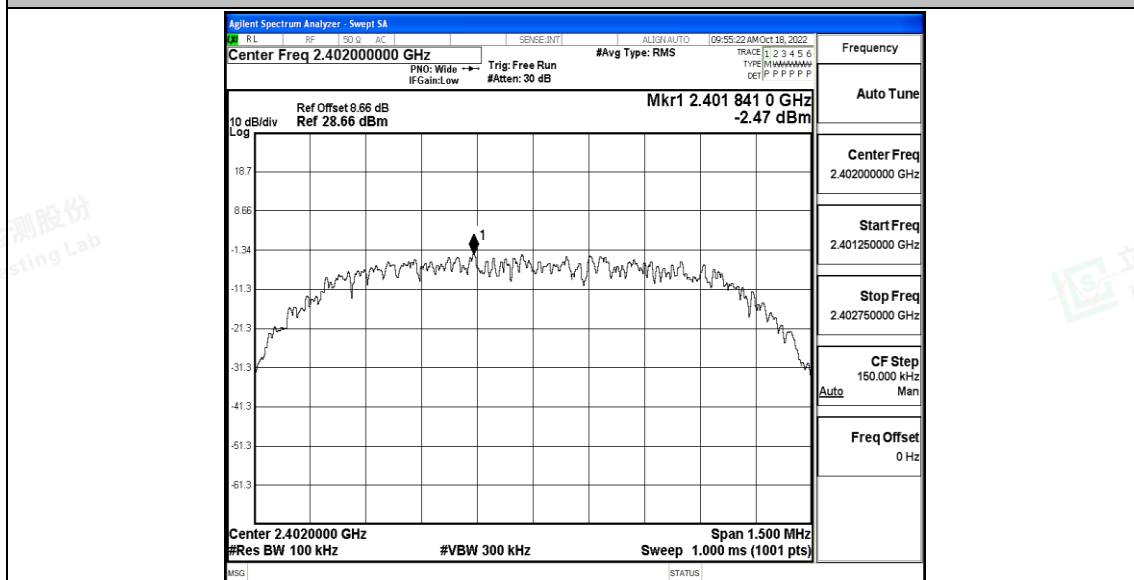
DH5_Ant_2480_0~Reference







2DH5_Ant_2402_0-Reference



2DH5_Ant_2402_30~1000

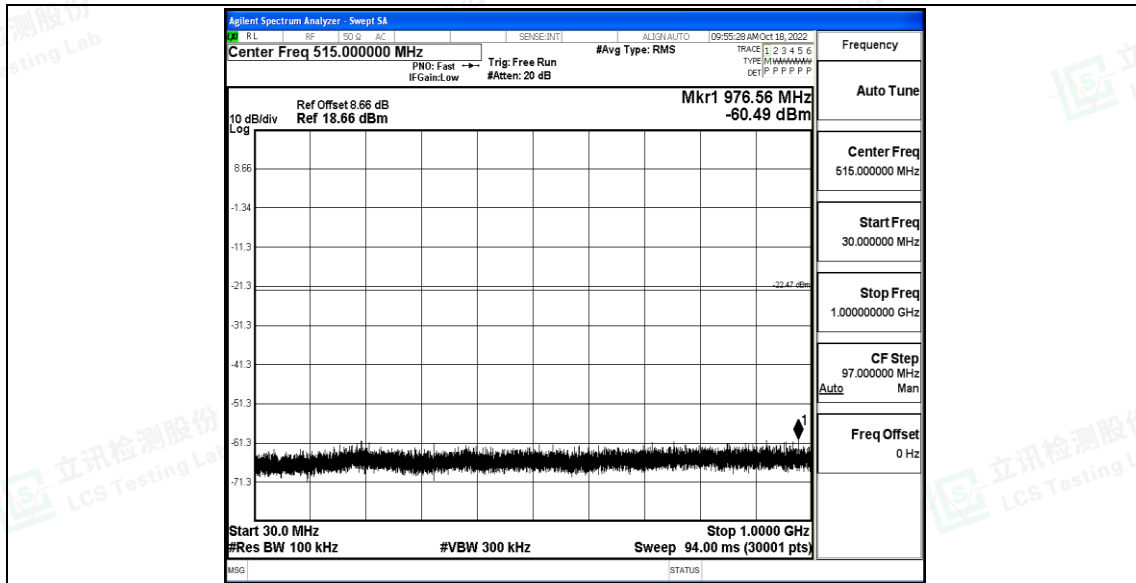


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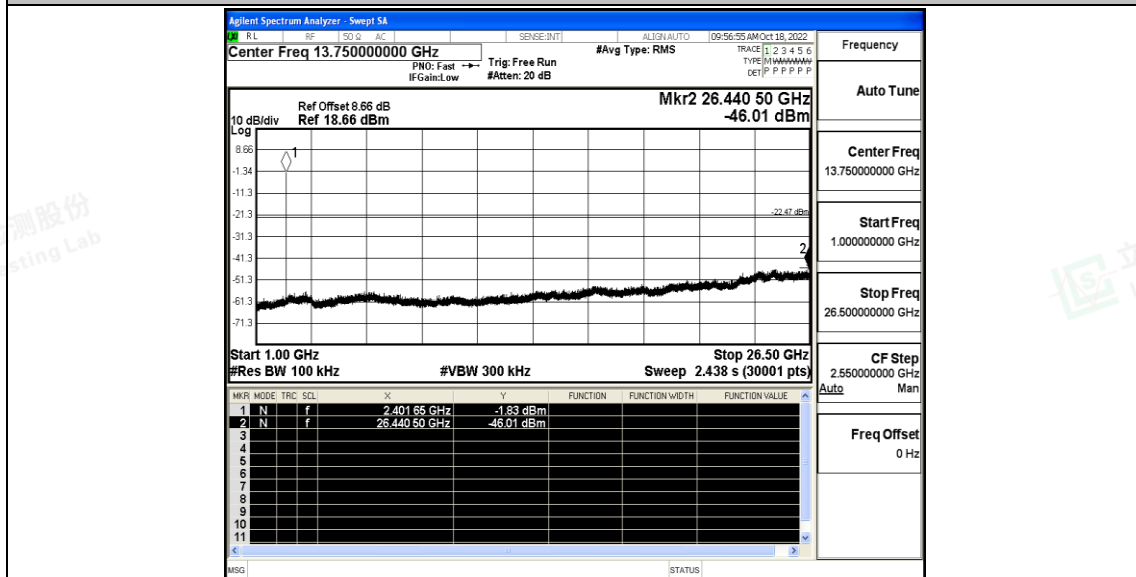
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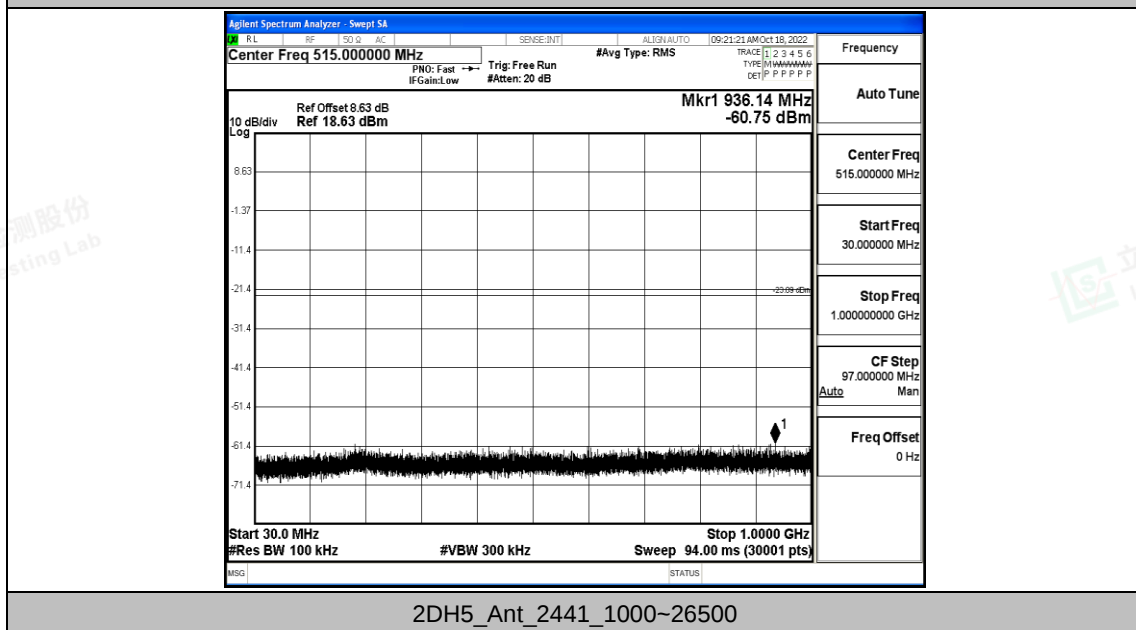
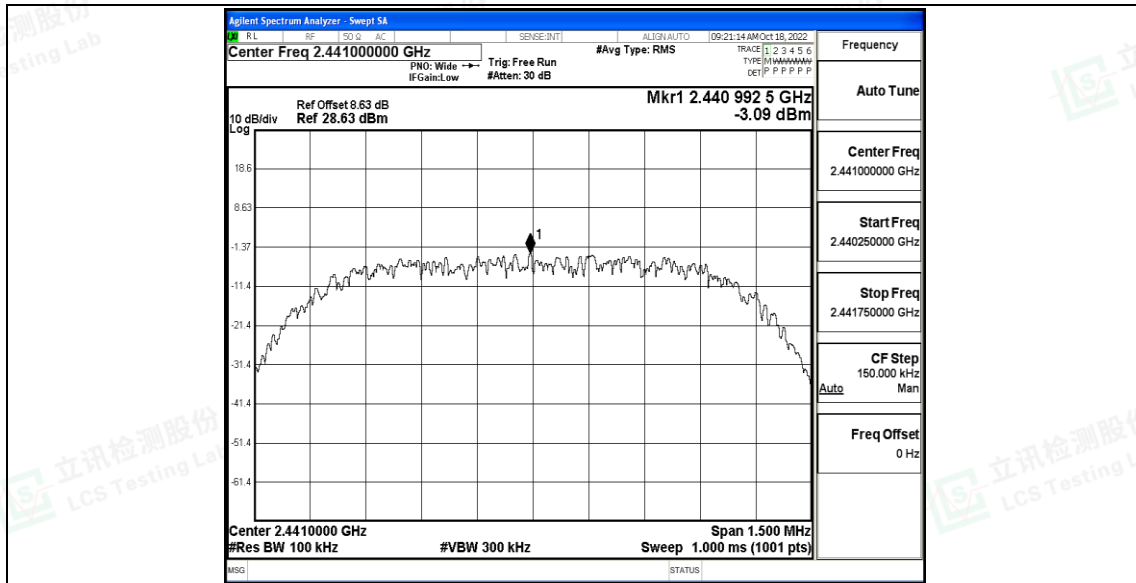


2DH5_Ant_2402_1000~26500



2DH5_Ant_2441_0-Reference



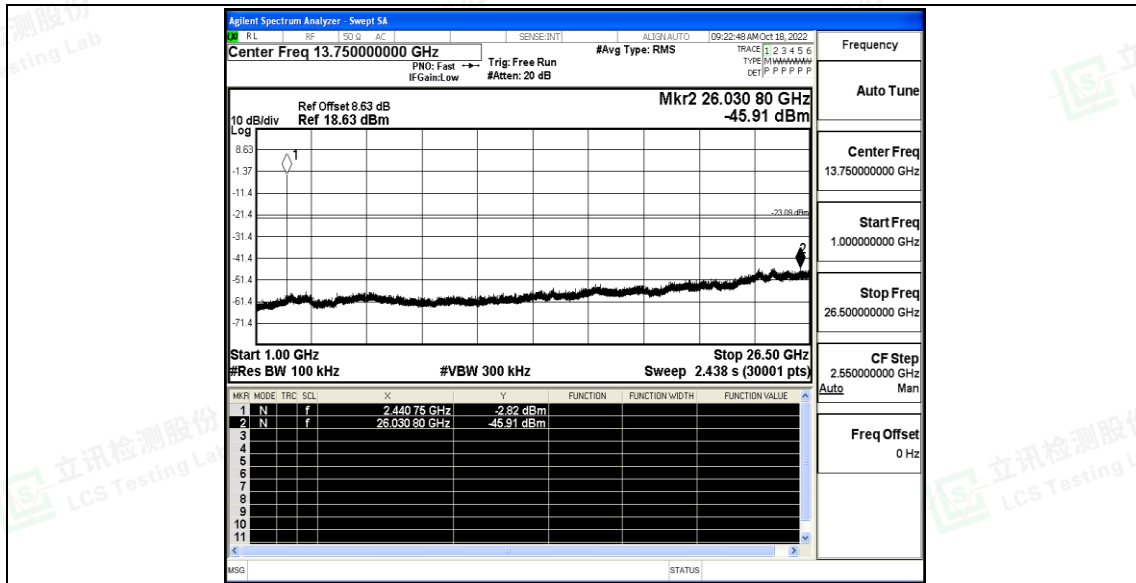


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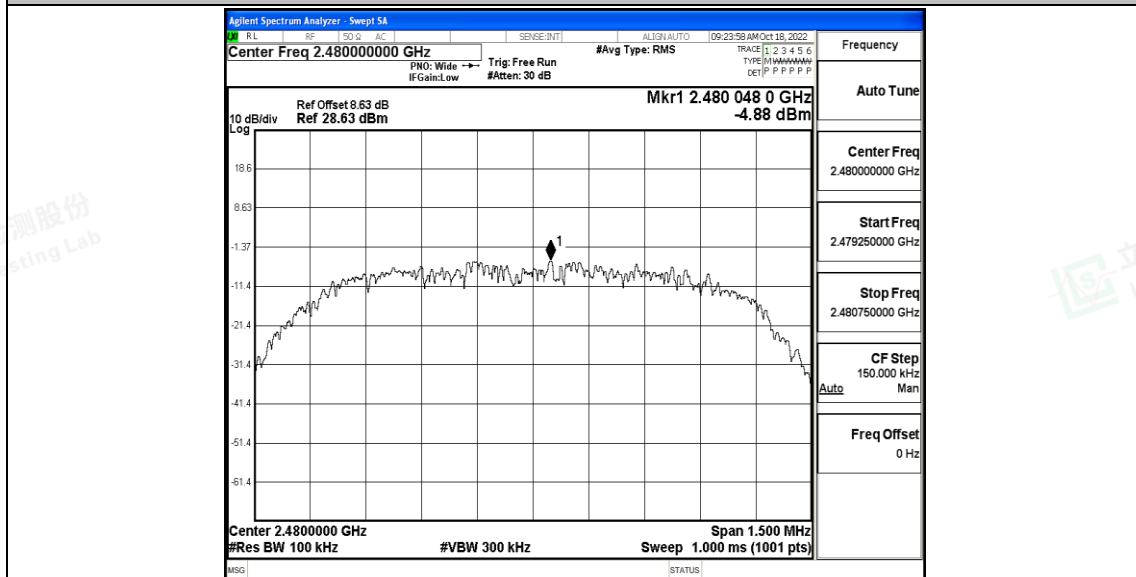
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2DH5_Ant_2480_0-Reference



2DH5_Ant_2480_30~1000

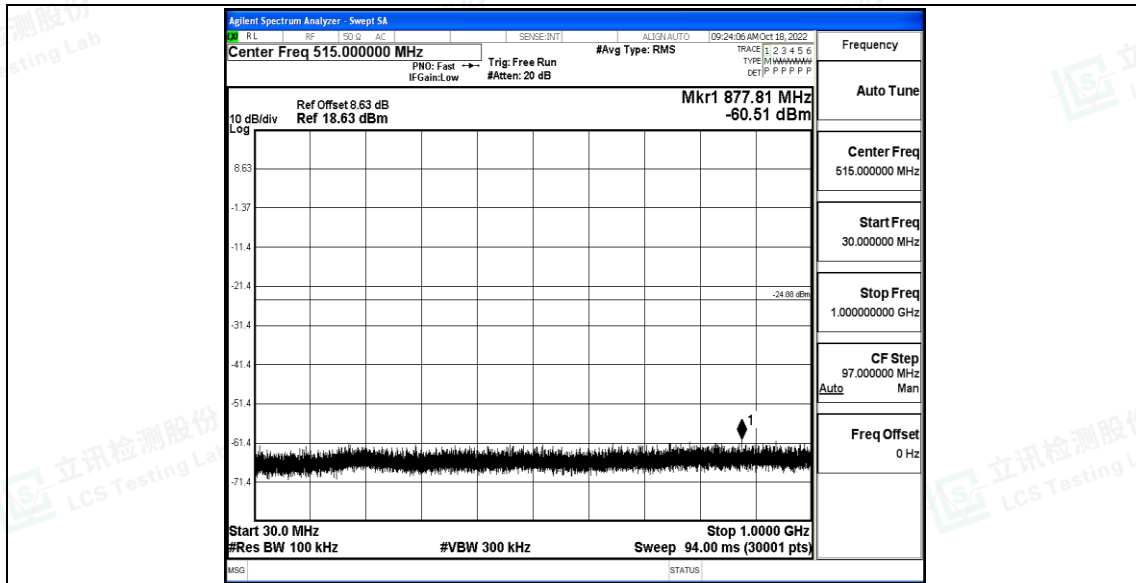


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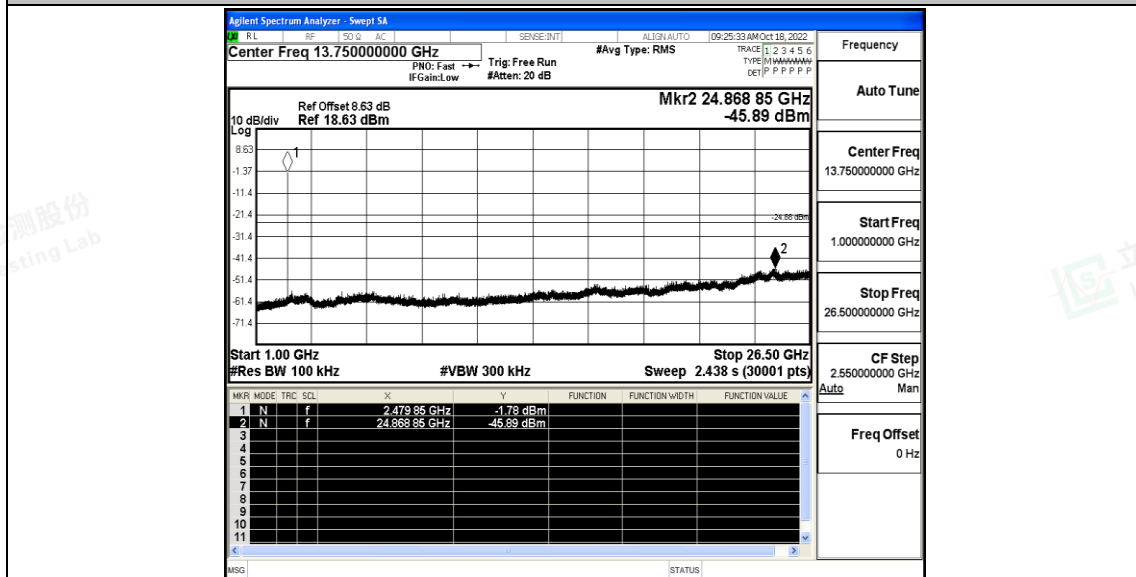
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2DH5_Ant_2480_1000~26500



3DH5_Ant_2402_0-Reference

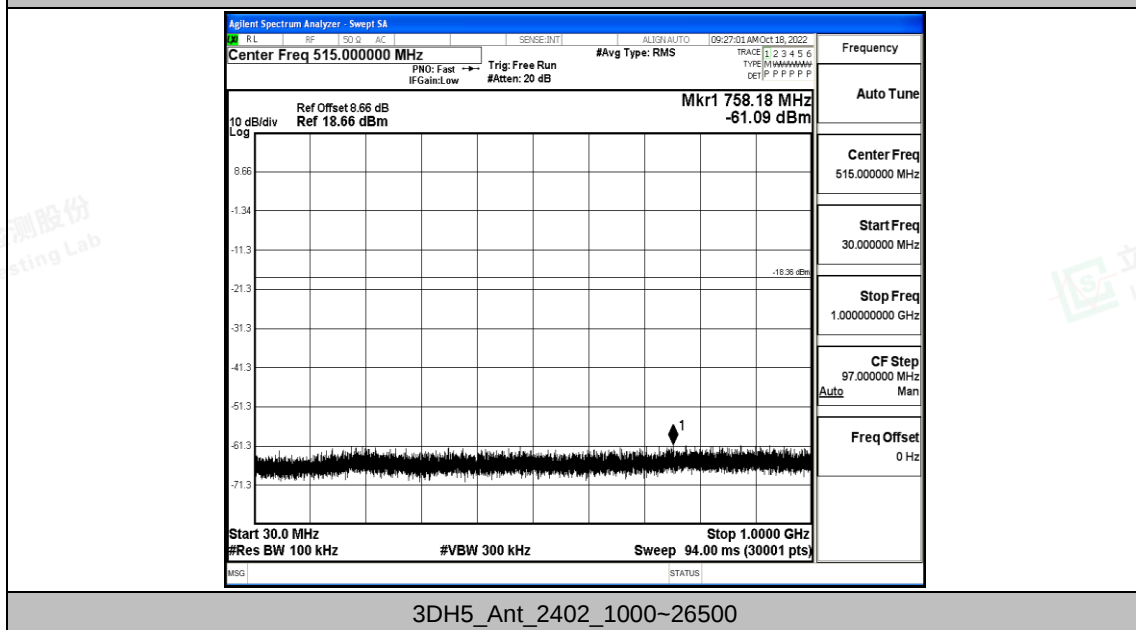
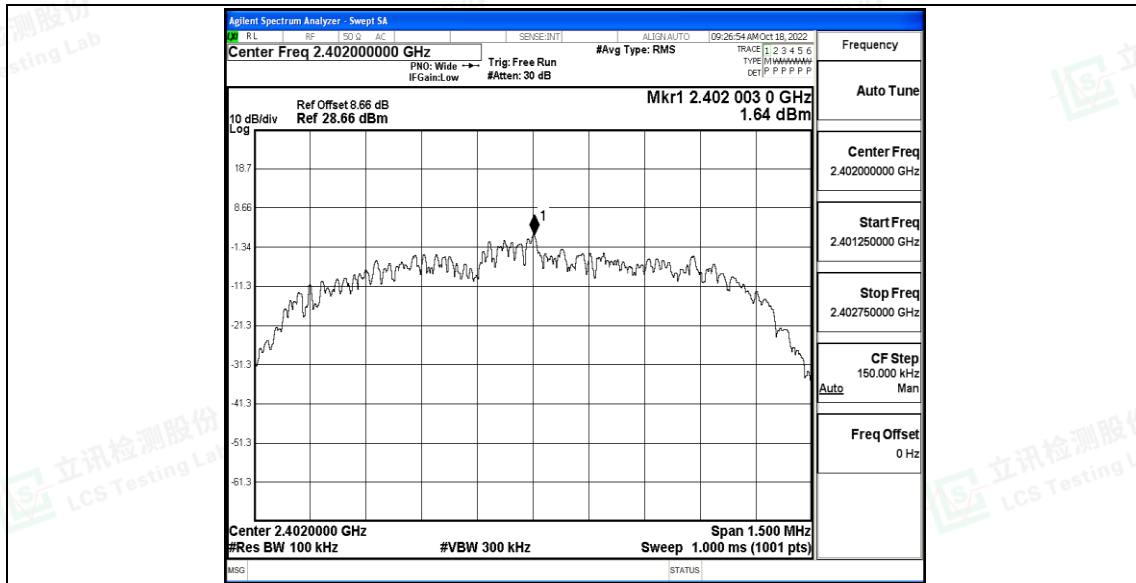


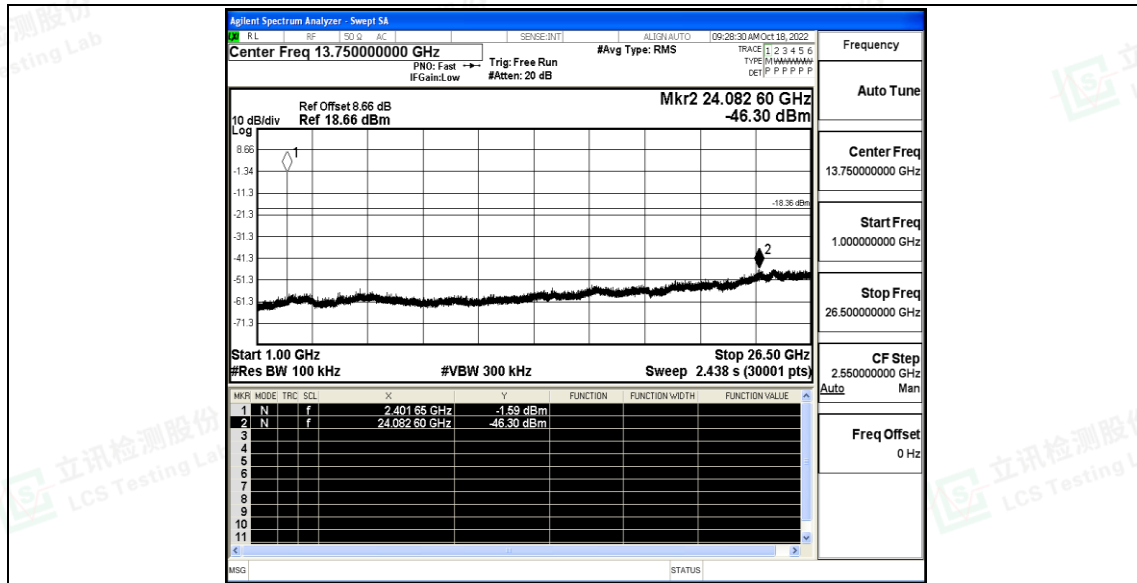
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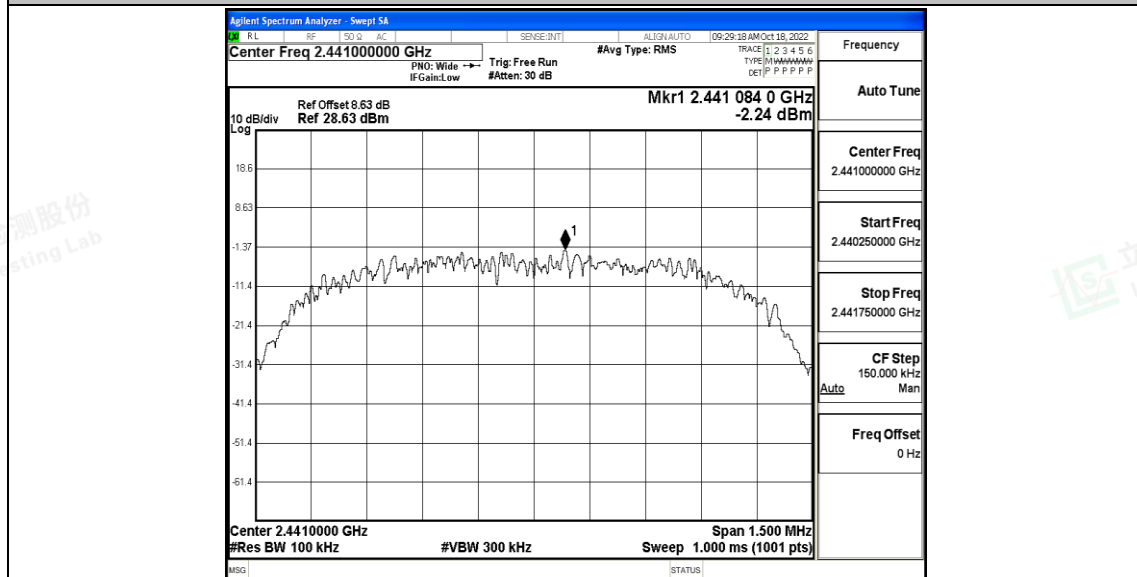
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3DH5_Ant_2441_0-Reference



3DH5_Ant_2441_30~1000

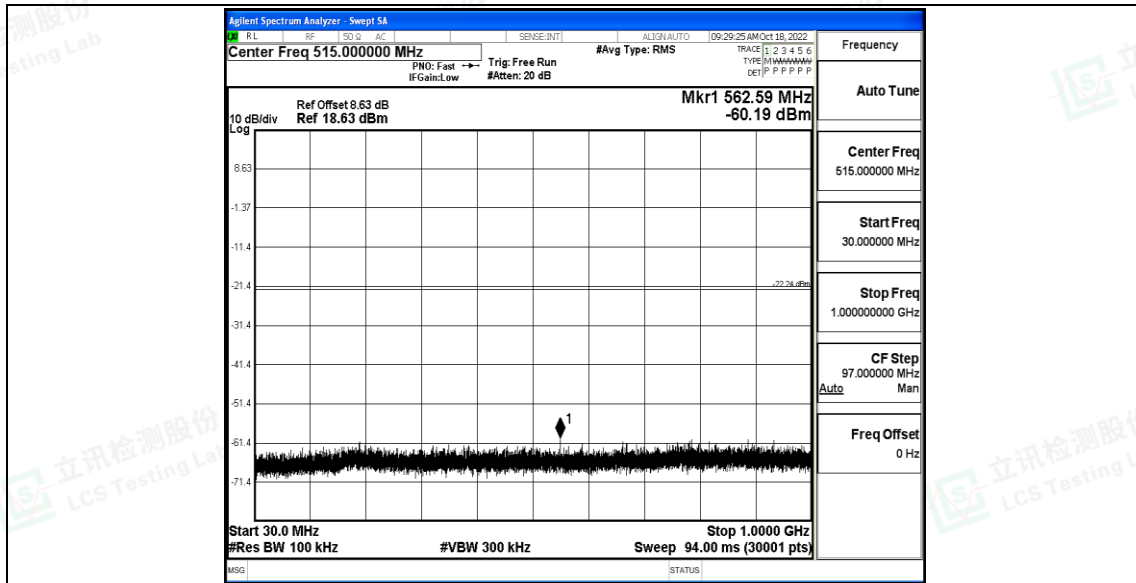


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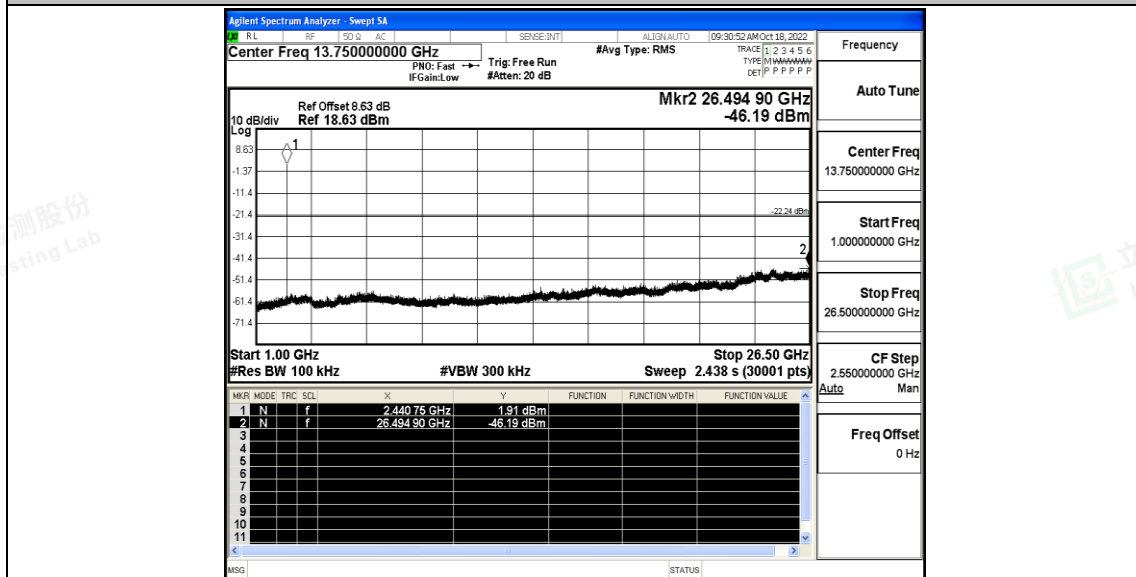
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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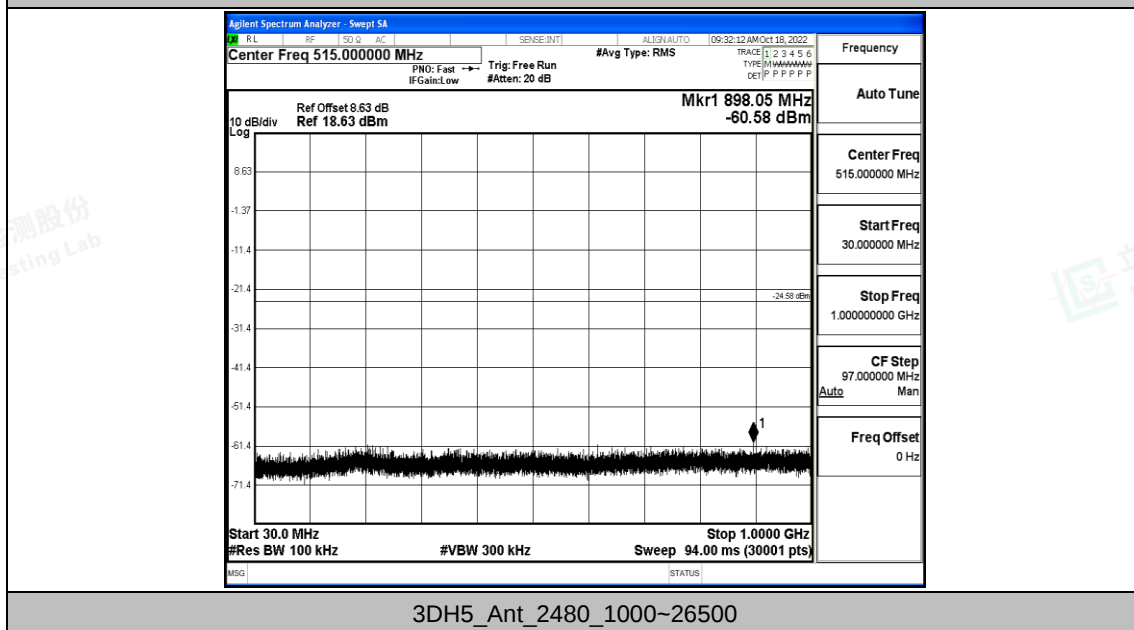
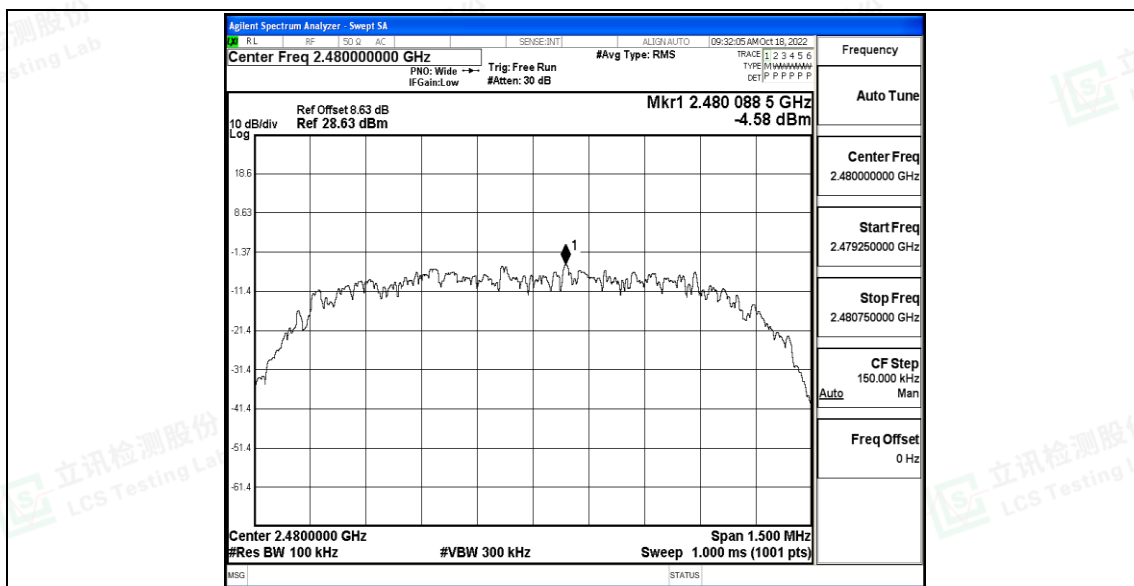


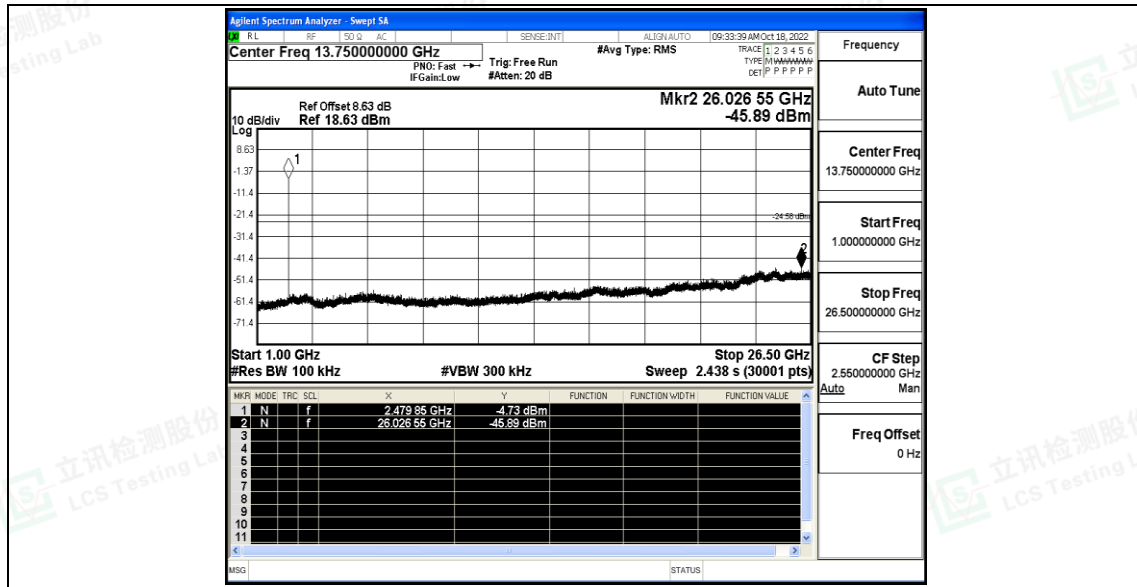
3DH5_Ant_2441_1000~26500



3DH5_Ant_2480_0~Reference







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A.8 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant	Low	2402	AV	2310.000	-58.05	≤-41.20	37.15	≤54	PASS
				AV	2388.620	-57.5	≤-41.20	37.70	≤54	PASS
				AV	2390.000	-57.66	≤-41.20	37.54	≤54	PASS
				Peak	2310.000	-54.25	≤-21.20	40.95	≤74	PASS
				Peak	2322.785	-47.36	≤-21.20	47.84	≤74	PASS
				Peak	2390.000	-51.32	≤-21.20	43.88	≤74	PASS
		High	2480	AV	2483.500	-55.17	≤-41.20	40.03	≤54	PASS
				AV	2483.520	-55.17	≤-41.20	40.03	≤54	PASS
				AV	2500.000	-57.2	≤-41.20	38.00	≤54	PASS
				Peak	2483.500	-51.87	≤-21.20	43.33	≤74	PASS
				Peak	2484.080	-47.42	≤-21.20	47.78	≤74	PASS
				Peak	2500.000	-50.68	≤-21.20	44.52	≤74	PASS
2DH5	Ant	Low	2402	AV	2310.000	-58.21	≤-41.20	36.99	≤54	PASS
				AV	2387.360	-57.5	≤-41.20	37.70	≤54	PASS
				AV	2390.000	-57.7	≤-41.20	37.50	≤54	PASS
				Peak	2310.000	-53.36	≤-21.20	41.84	≤74	PASS
				Peak	2361.530	-48.26	≤-21.20	46.94	≤74	PASS
				Peak	2390.000	-51.55	≤-21.20	43.65	≤74	PASS
		High	2480	AV	2483.500	-55.2	≤-41.20	40.00	≤54	PASS
				AV	2483.520	-55.2	≤-41.20	40.00	≤54	PASS
				AV	2500.000	-57.12	≤-41.20	38.08	≤54	PASS
				Peak	2483.500	-50.22	≤-21.20	44.98	≤74	PASS
				Peak	2489.920	-48.3	≤-21.20	46.90	≤74	PASS
				Peak	2500.000	-51.86	≤-21.20	43.34	≤74	PASS
3DH5	Ant	Low	2402	AV	2310.000	-57.98	≤-41.20	37.22	≤54	PASS
				AV	2389.040	-57.56	≤-41.20	37.64	≤54	PASS
				AV	2390.000	-57.61	≤-41.20	37.59	≤54	PASS
				Peak	2310.000	-50.54	≤-21.20	44.66	≤74	PASS
				Peak	2368.880	-48.67	≤-21.20	46.53	≤74	PASS
				Peak	2390.000	-52.37	≤-21.20	42.83	≤74	PASS
		High	2480	AV	2483.500	-55.44	≤-41.20	39.76	≤54	PASS
				AV	2483.520	-55.44	≤-41.20	39.76	≤54	PASS
				AV	2500.000	-57.01	≤-41.20	38.19	≤54	PASS
				Peak	2483.500	-50.47	≤-21.20	44.73	≤74	PASS
				Peak	2484.000	-47.62	≤-21.20	47.58	≤74	PASS



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				Peak	2500.000	-52.11	≤-21.20	43.09	≤74	PASS
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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

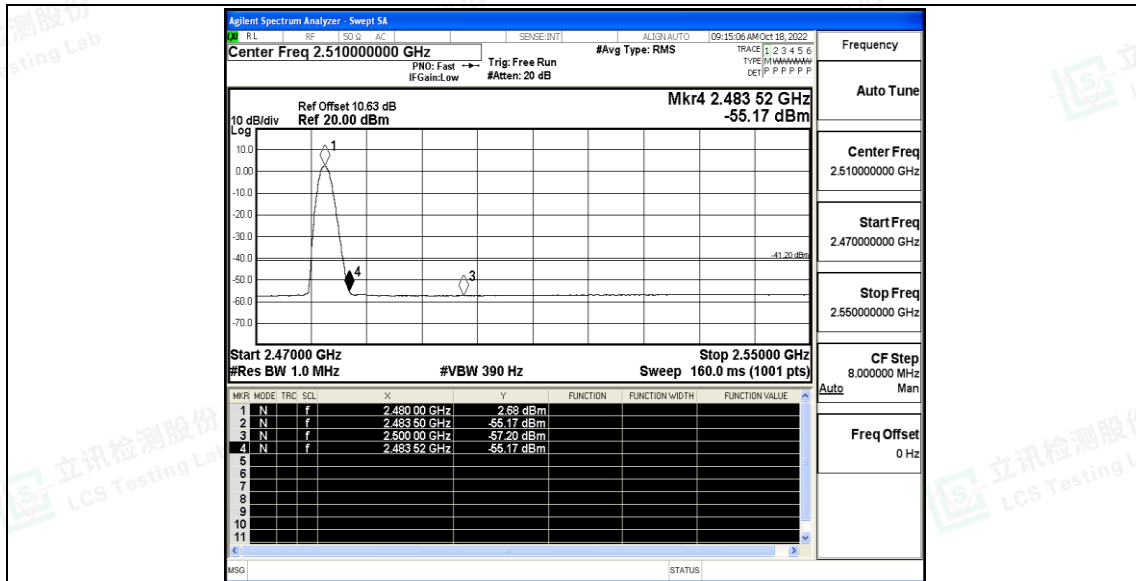


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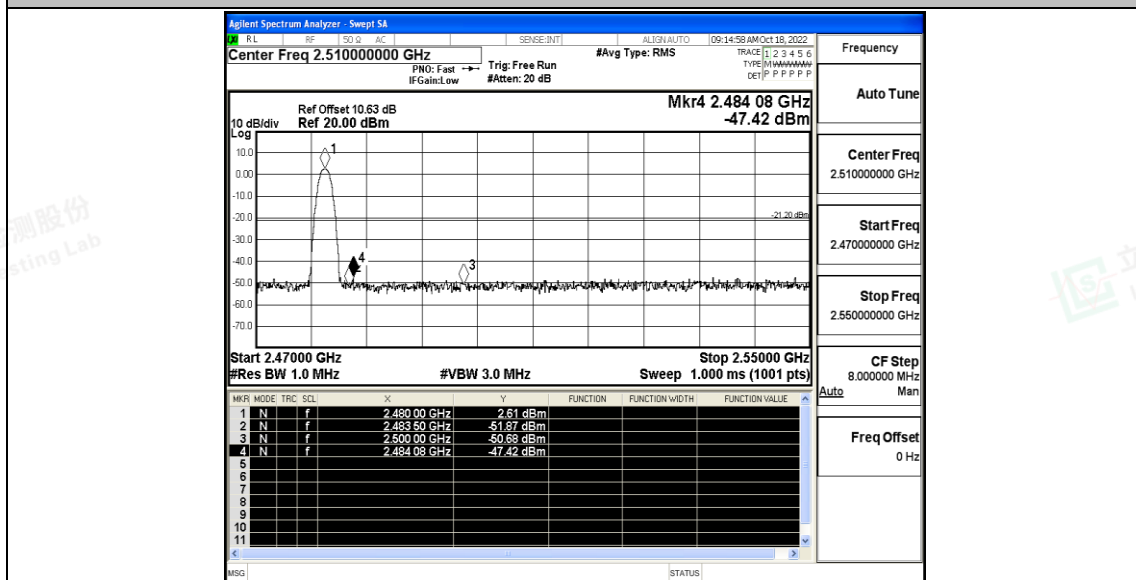
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DH5_Ant_High_2480_Peak



2DH5_Ant_Low_2402_AV

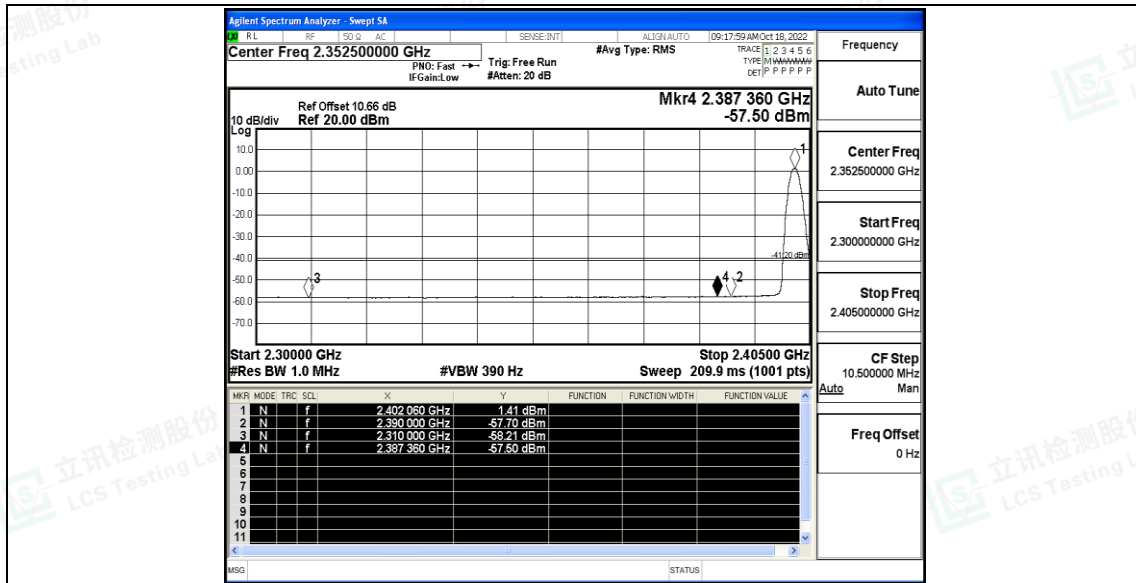


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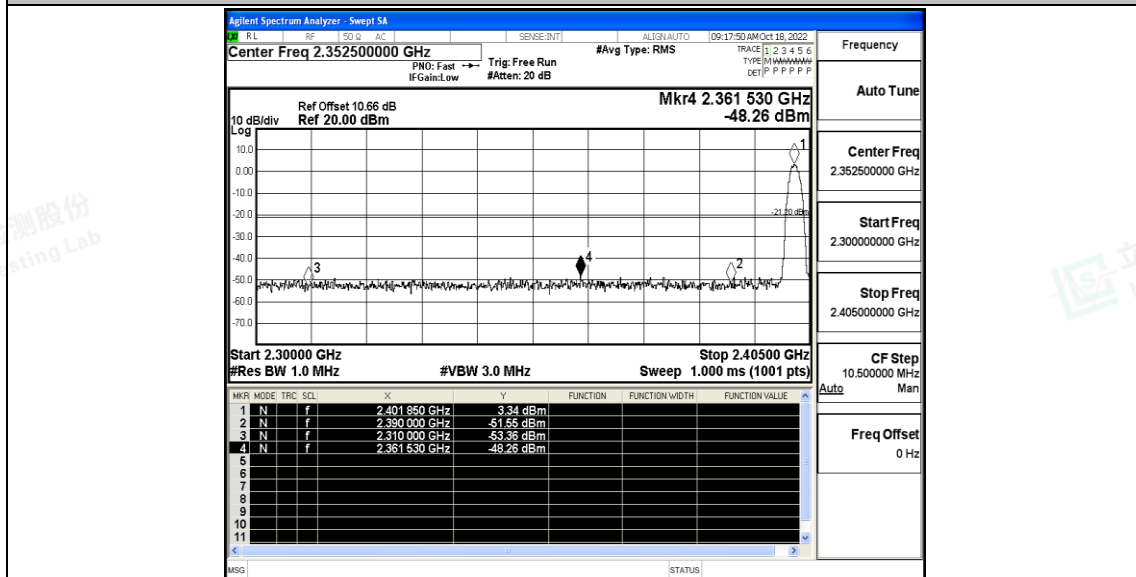
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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2DH5_Ant_Low_2402_Peak



2DH5_Ant_High_2480_AV

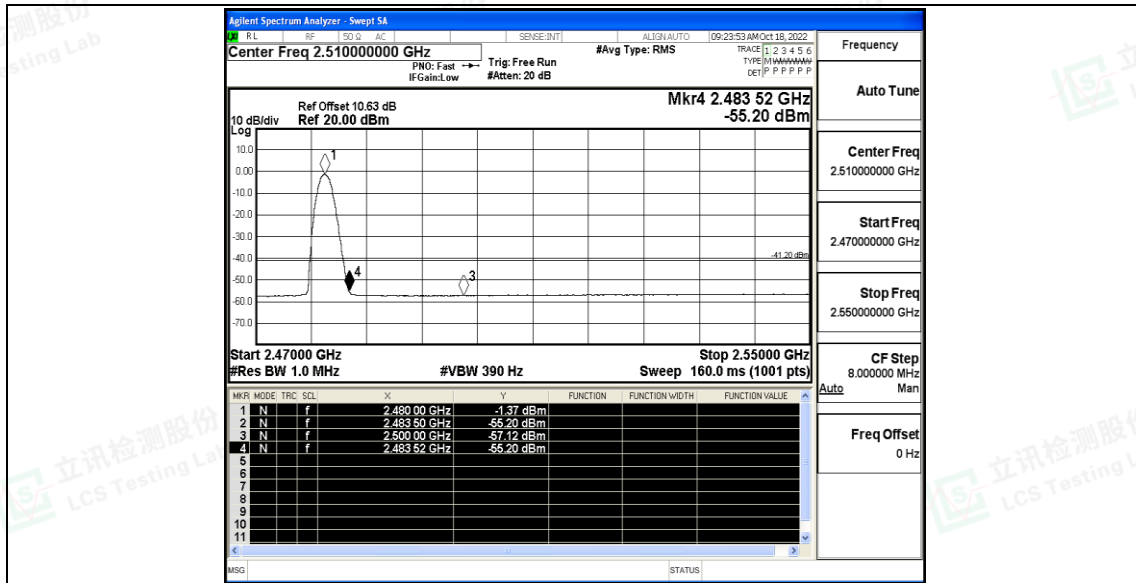


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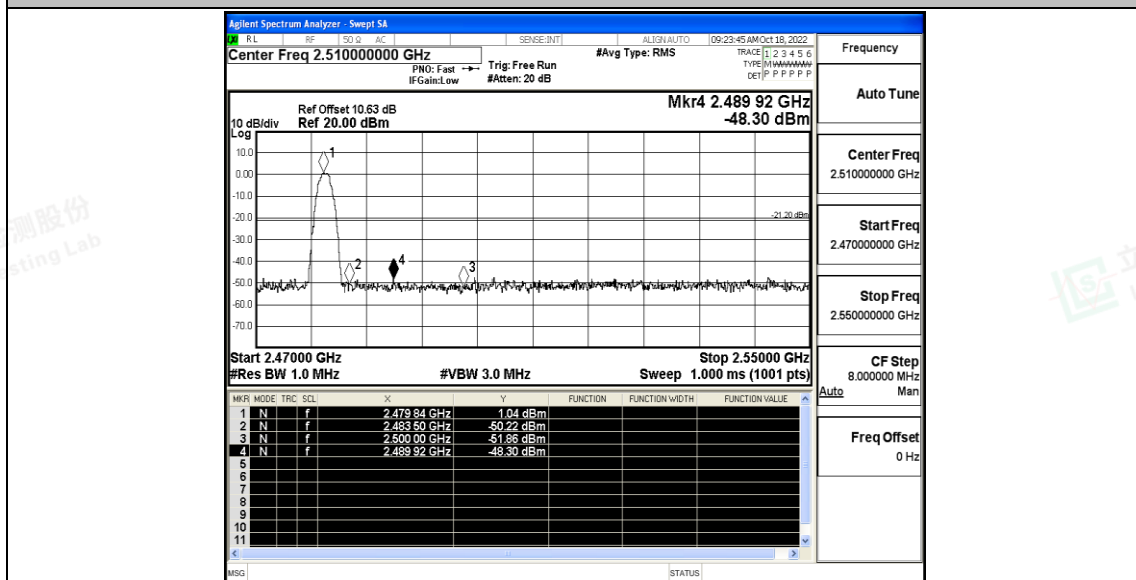
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2DH5_Ant_High_2480_Peak



3DH5_Ant_Low_2402_AV

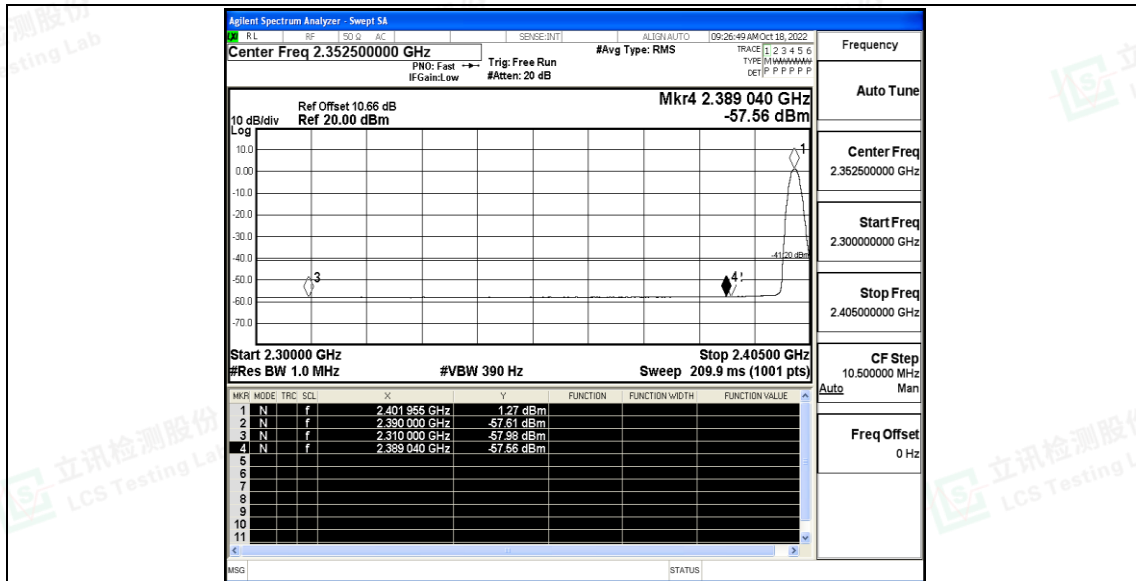


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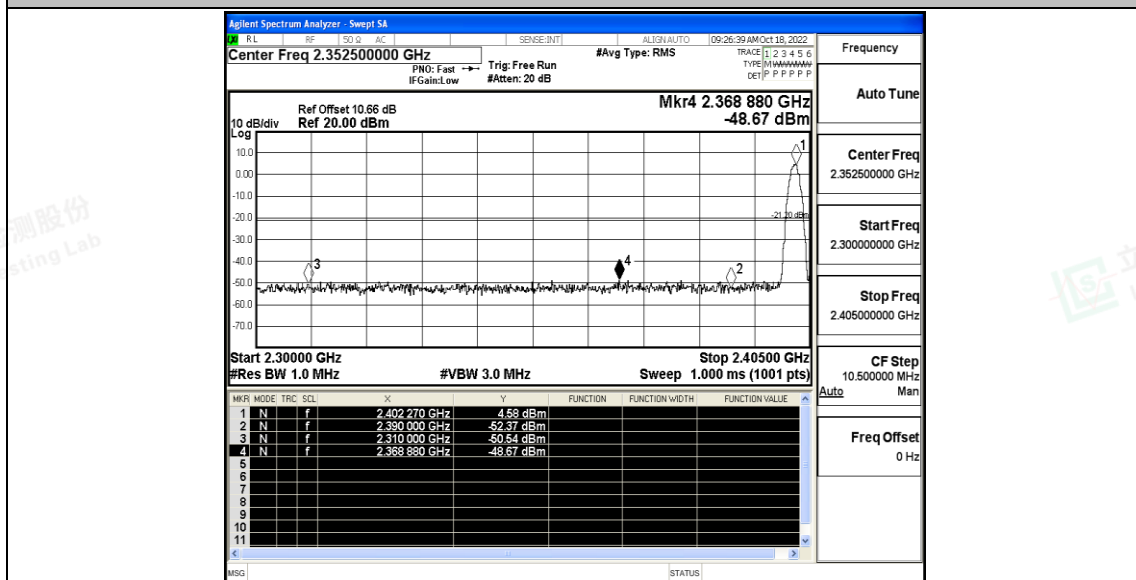
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3DH5_Ant_Low_2402_Peak



3DH5_Ant_High_2480_AV

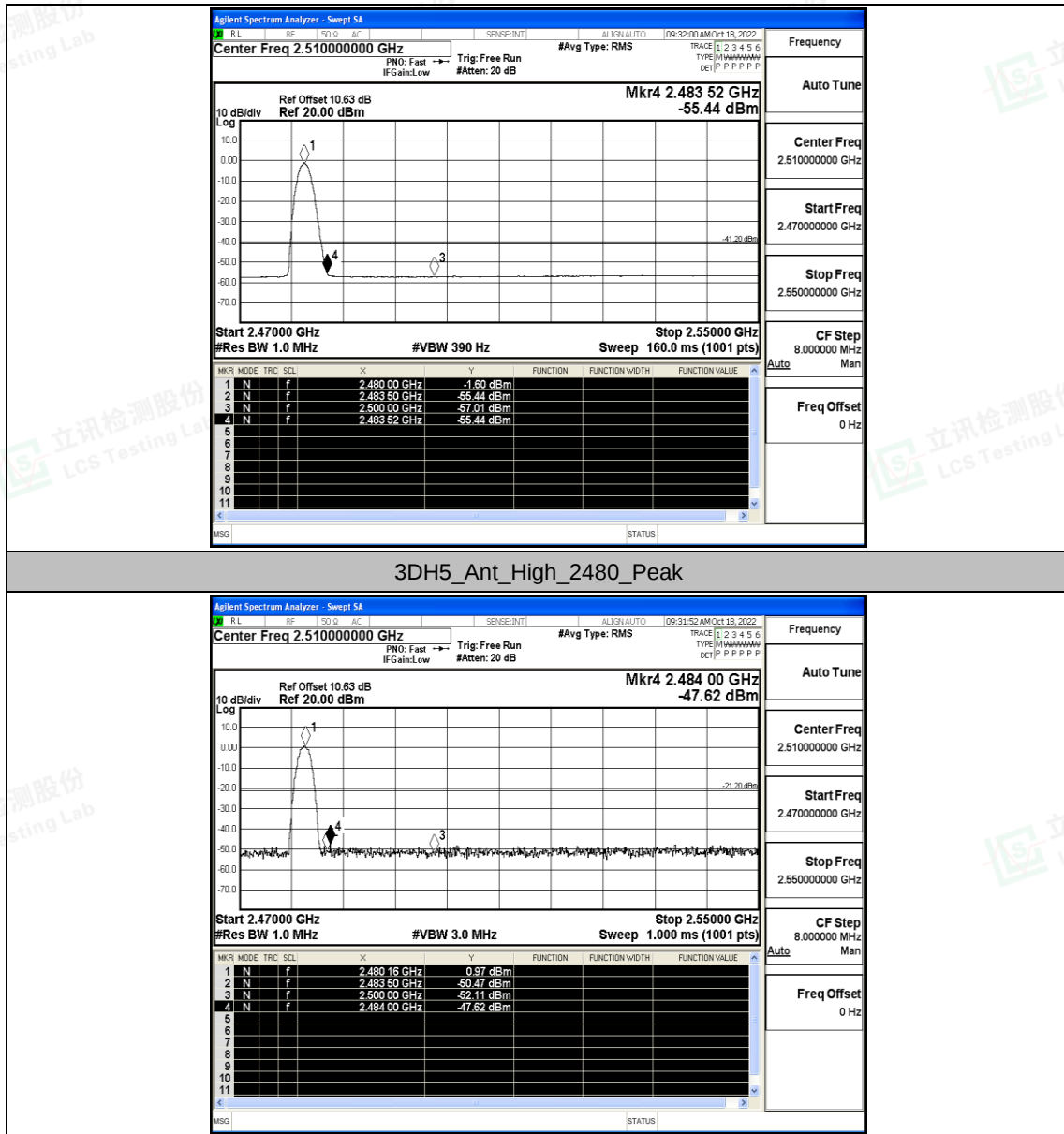


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