



Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: SPEAKER

Test Model: RA 1215

Environmental Conditions

Temperature:	23.8° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Joker Hu
Supervised by:	Ling Zhu





A.1 20dB Emission Bandwidth

Test Result

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Verdict
DH5	Ant1	2402	1.032	2401.460	2402.492	---
		2441	0.975	2440.502	2441.477	---
		2480	1.011	2479.472	2480.483	---
2DH5	Ant1	2402	1.359	2401.307	2402.666	---
		2441	1.329	2440.325	2441.654	---
		2480	1.311	2479.331	2480.642	---
3DH5	Ant1	2402	1.335	2401.325	2402.660	---
		2441	1.287	2440.343	2441.630	---
		2480	1.302	2479.337	2480.639	---

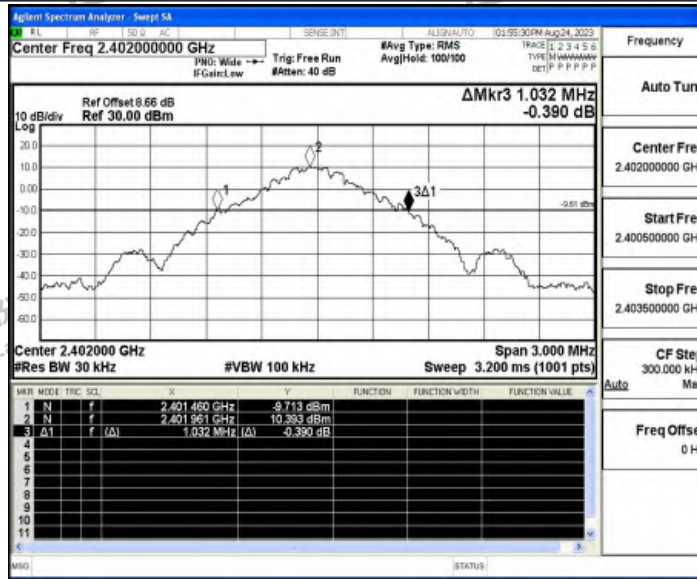


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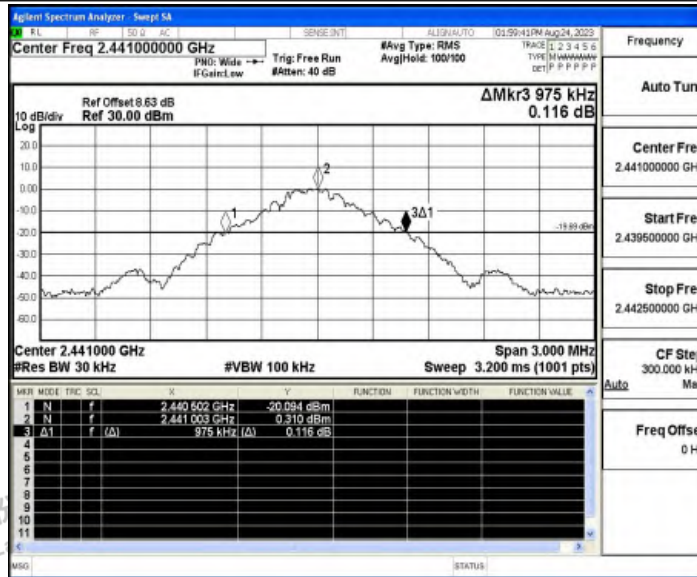


Test Graphs

DH5_Ant1_2402

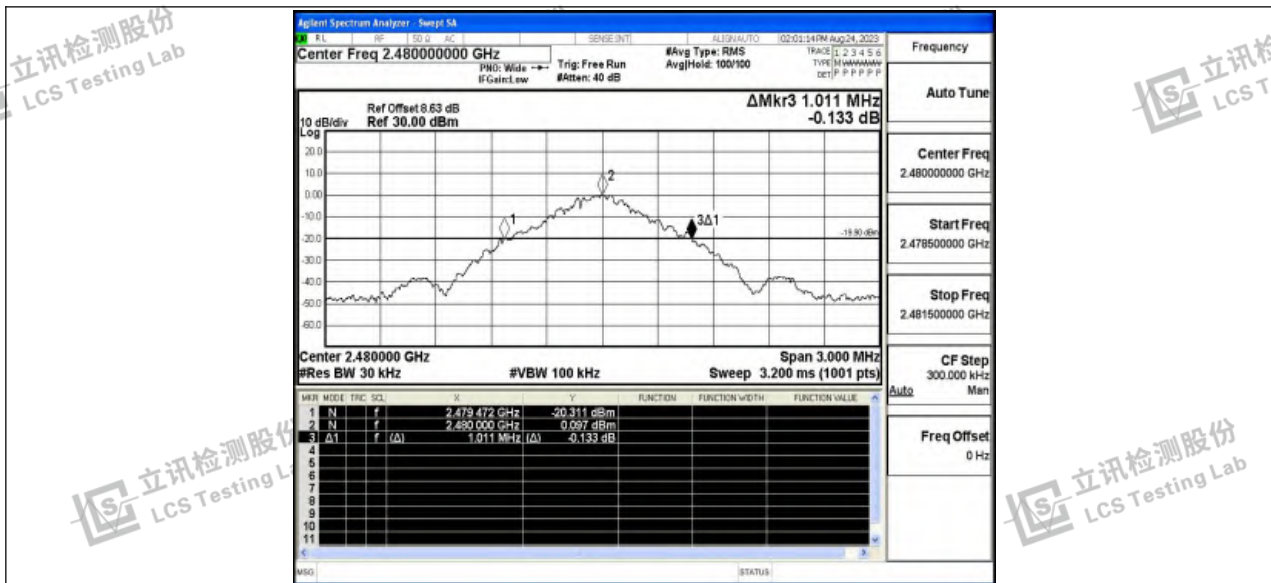


DH5_Ant1_2441

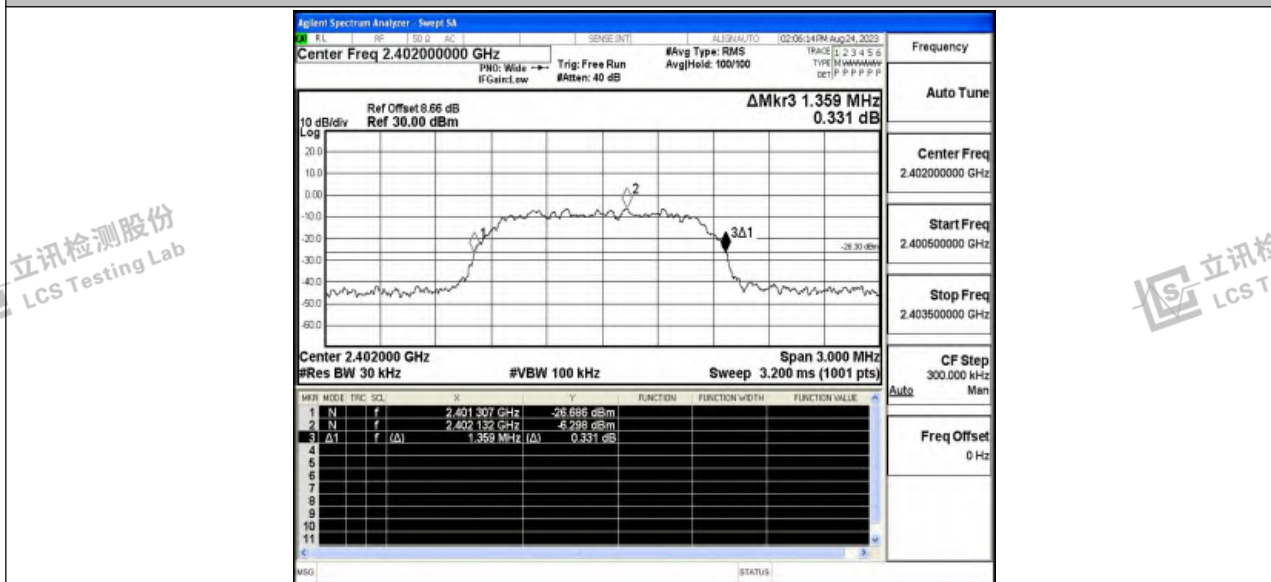


DH5_Ant1_2480





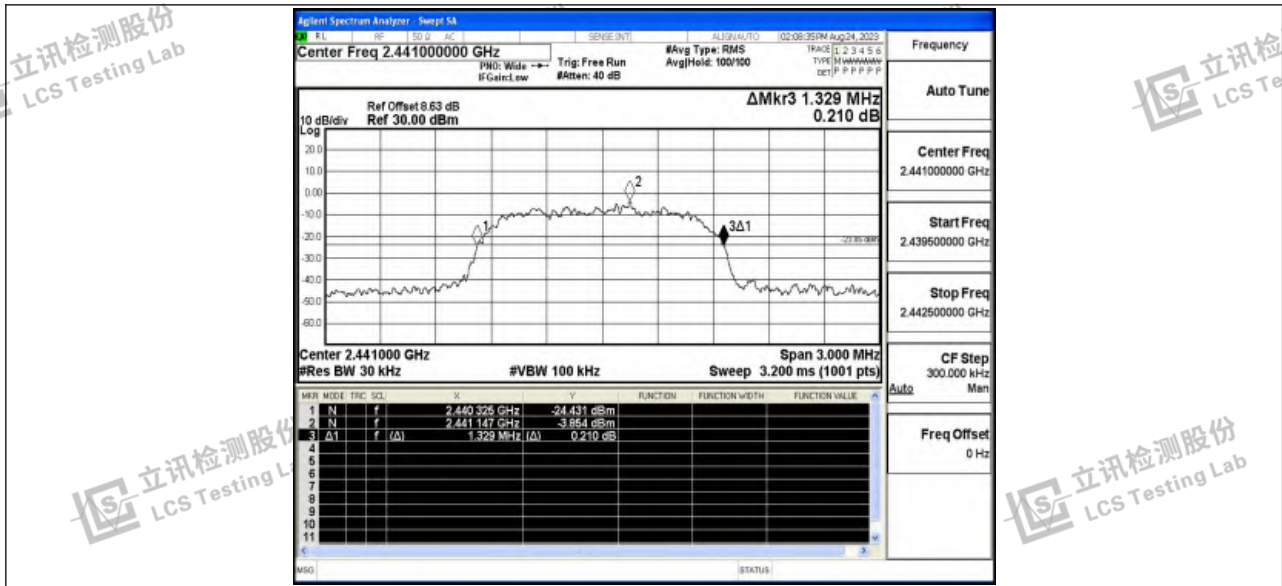
2DH5_Ant1_2402



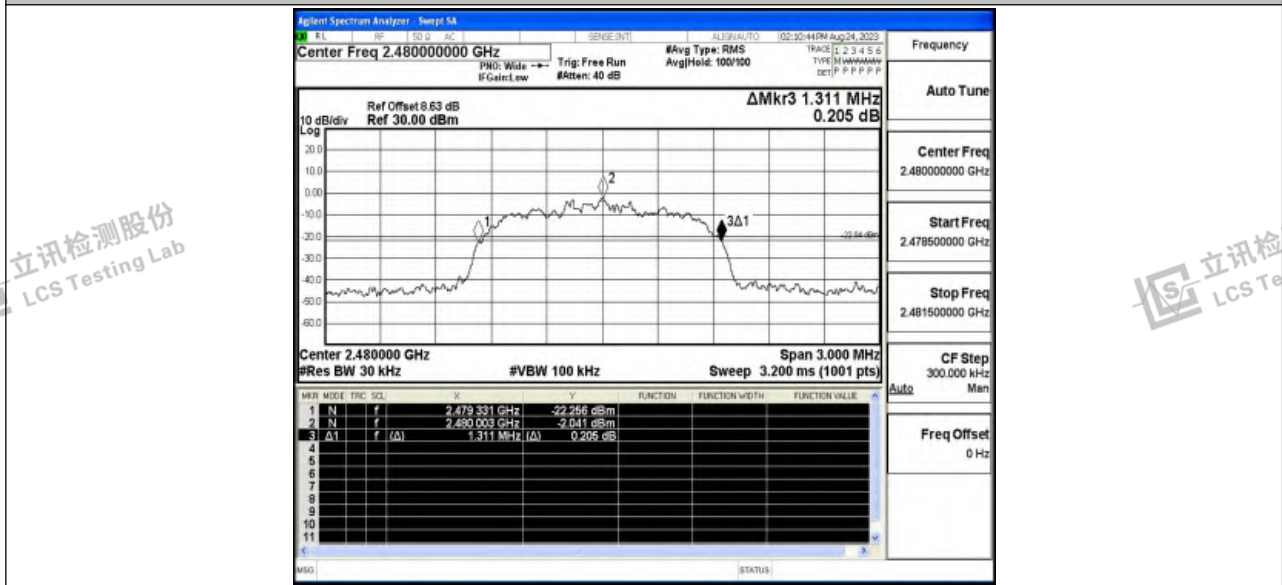
2DH5_Ant1_2441



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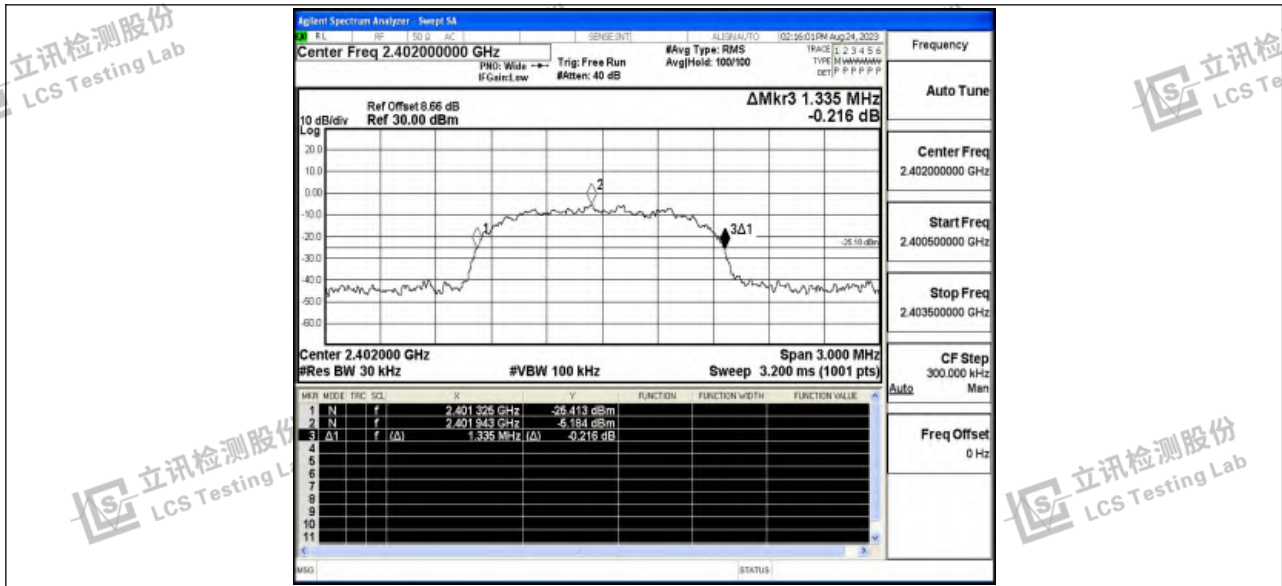


2DH5_Ant1_2480

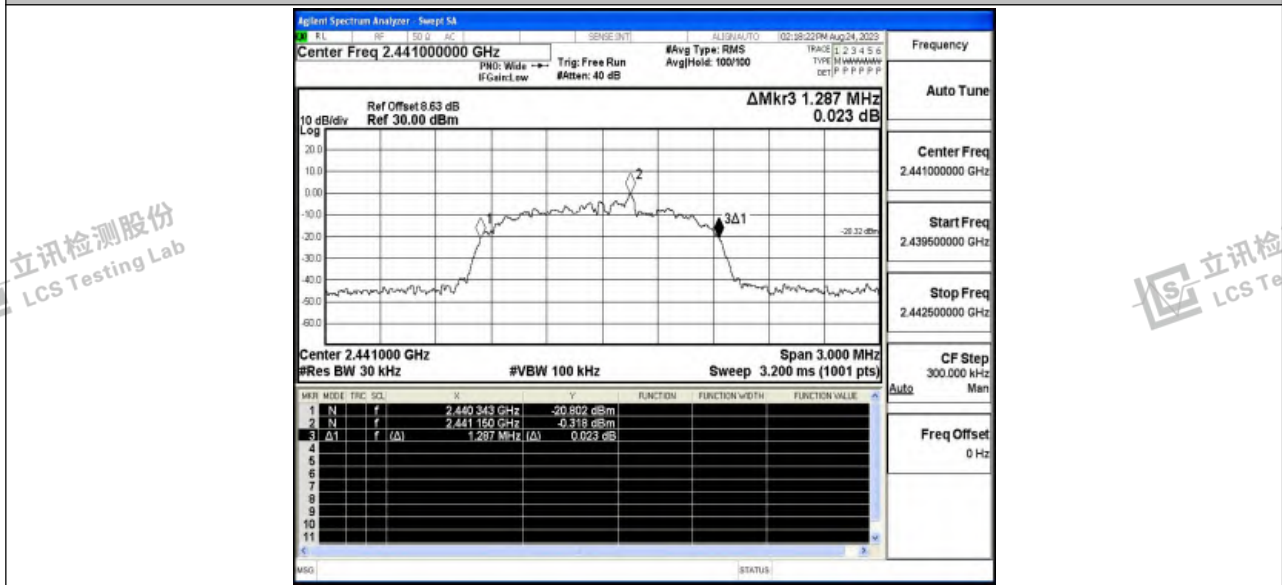


3DH5_Ant1_2402



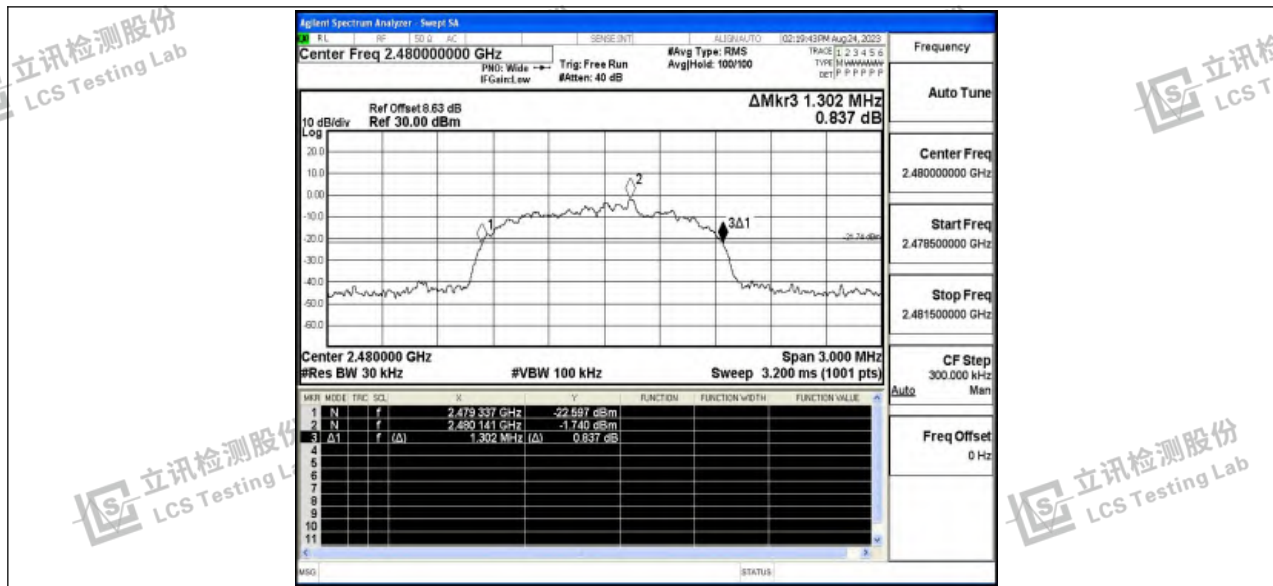


3DH5_Ant1_2441



3DH5_Ant1_2480





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A.2 Maximum conducted output power

Test Result

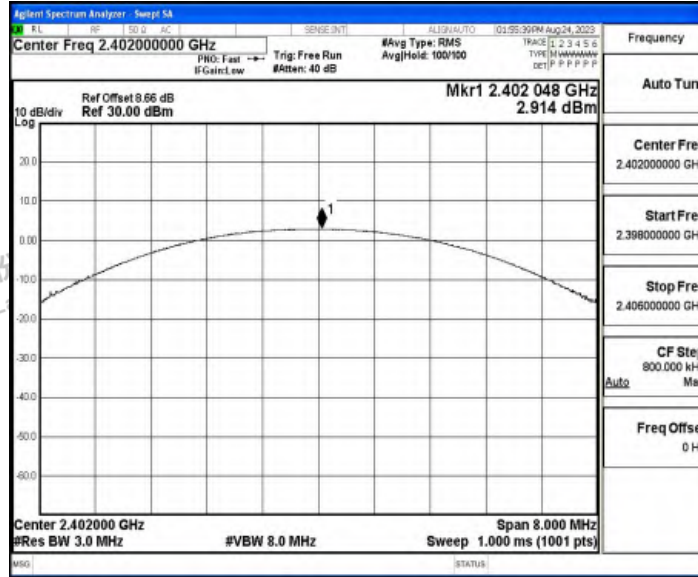
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	2.91	≤20.97	PASS
		2441	3.22	≤20.97	PASS
		2480	3.02	≤20.97	PASS
2DH5	Ant1	2402	2.85	≤20.97	PASS
		2441	2.82	≤20.97	PASS
		2480	2.82	≤20.97	PASS
3DH5	Ant1	2402	2.94	≤20.97	PASS
		2441	3.06	≤20.97	PASS
		2480	2.85	≤20.97	PASS



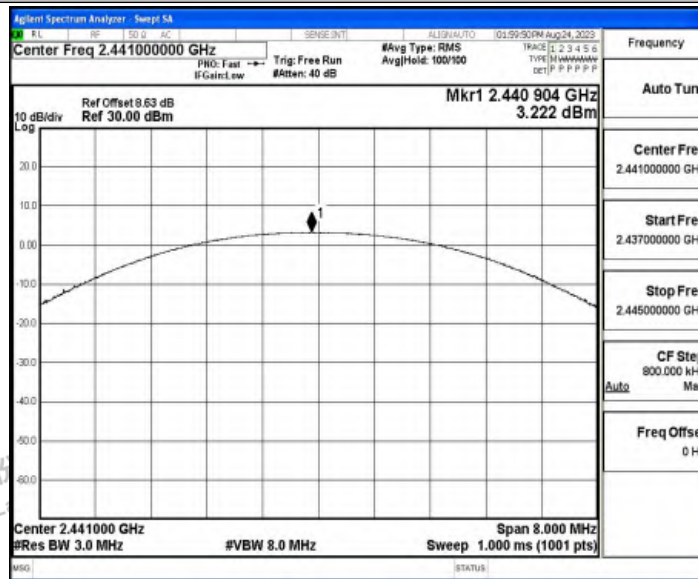


Test Graphs

DH5_Ant1_2402

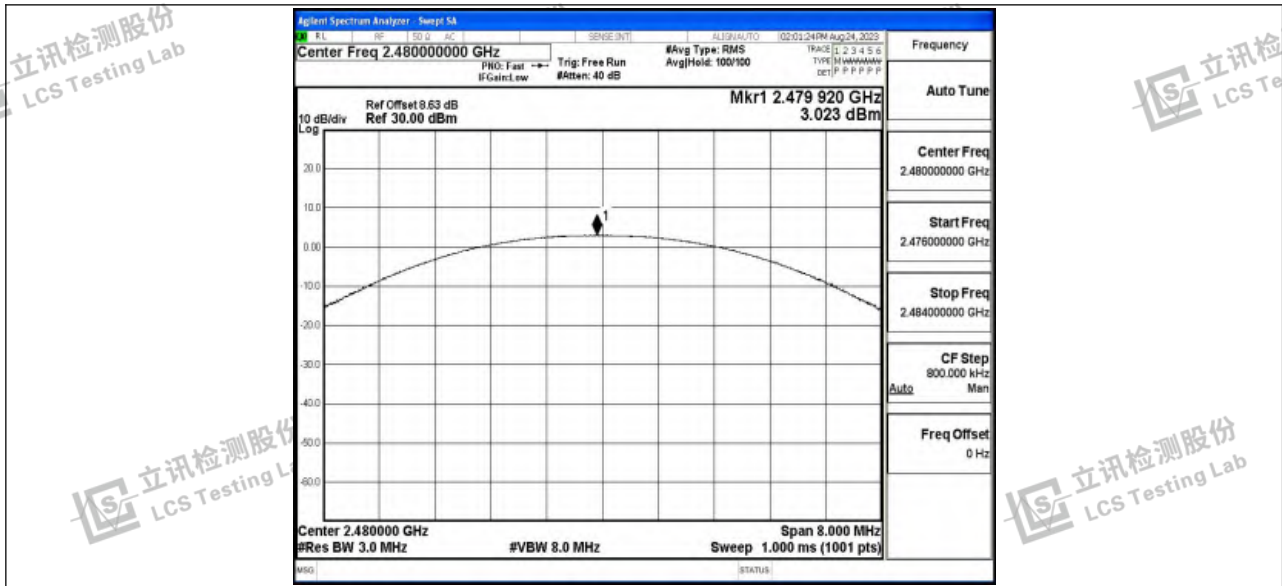


DH5_Ant1_2441

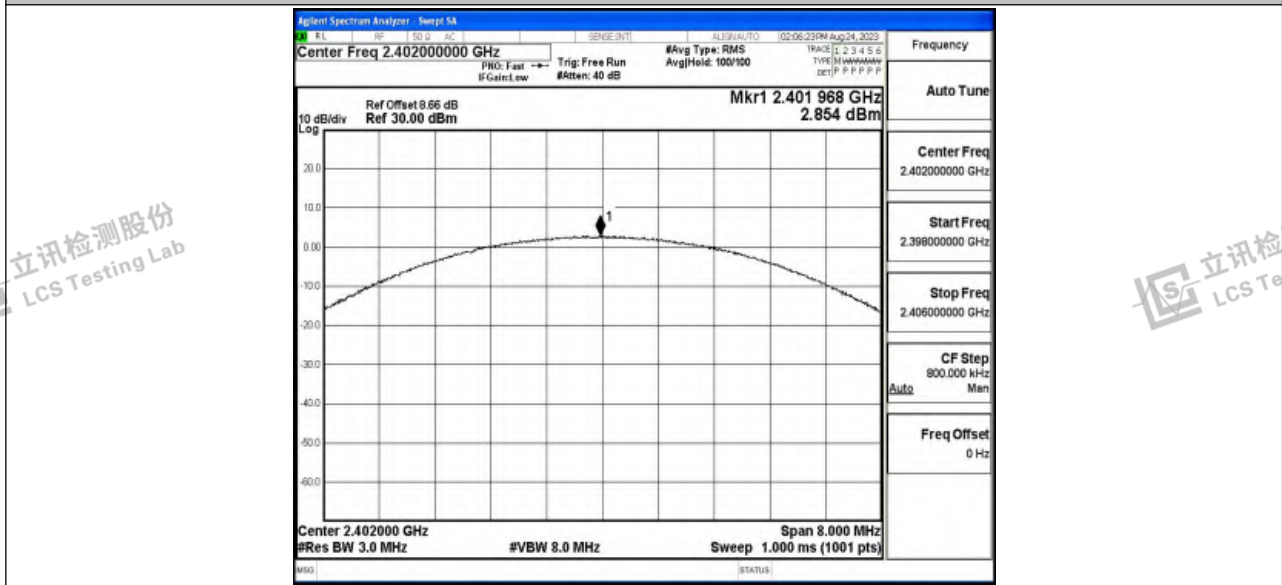


DH5_Ant1_2480



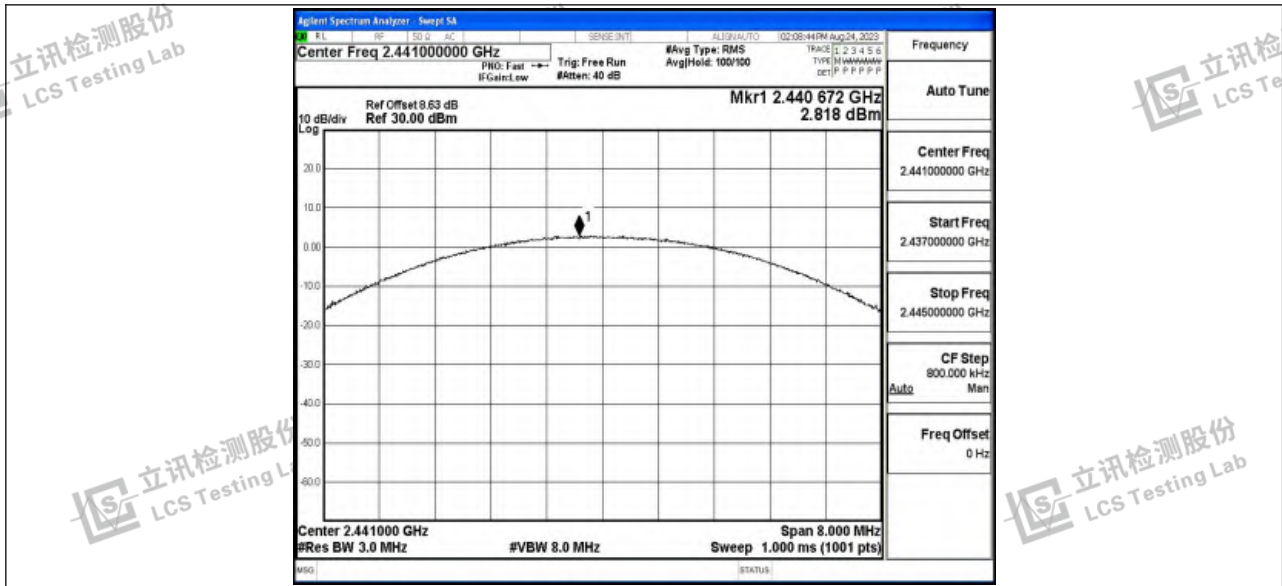


2DH5_Ant1_2402

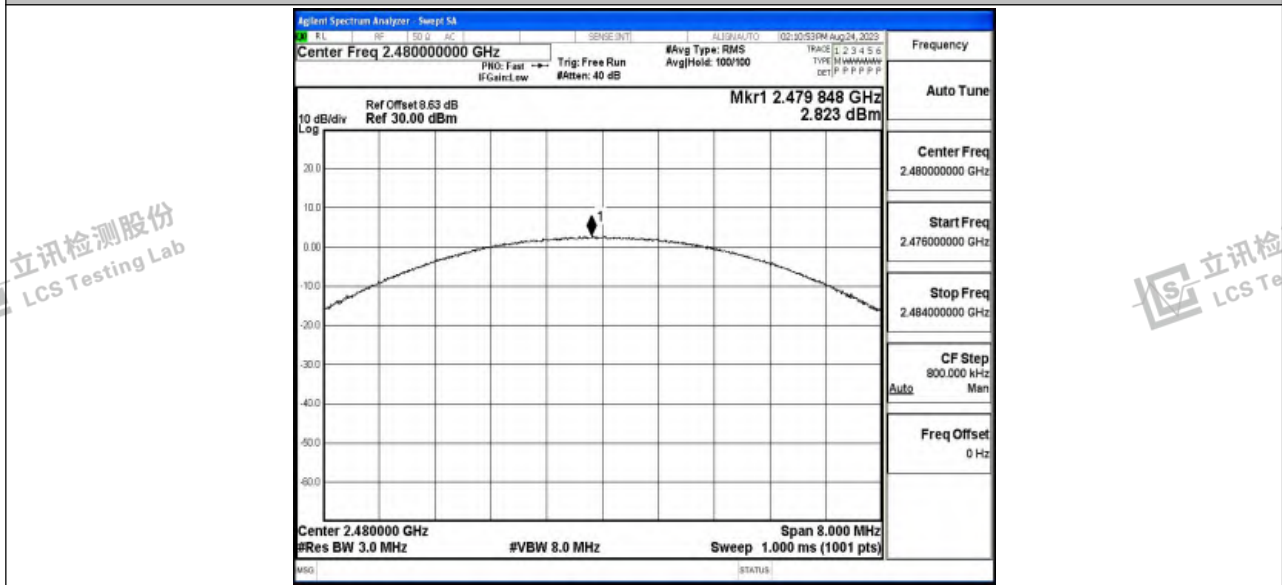


2DH5_Ant1_2441



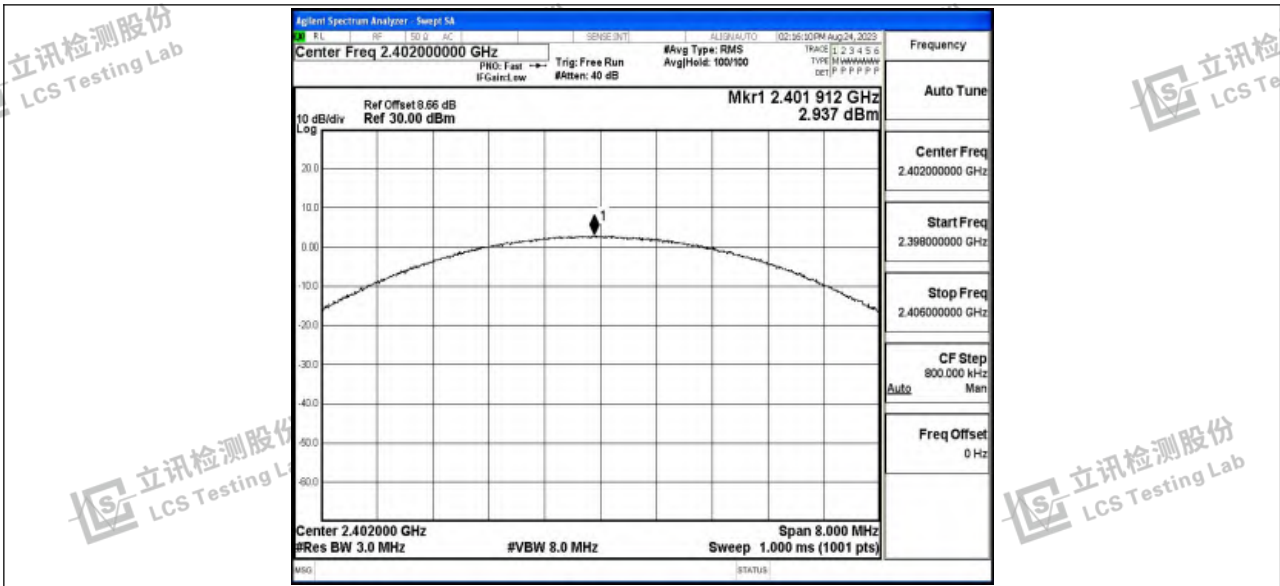


2DH5_Ant1_2480

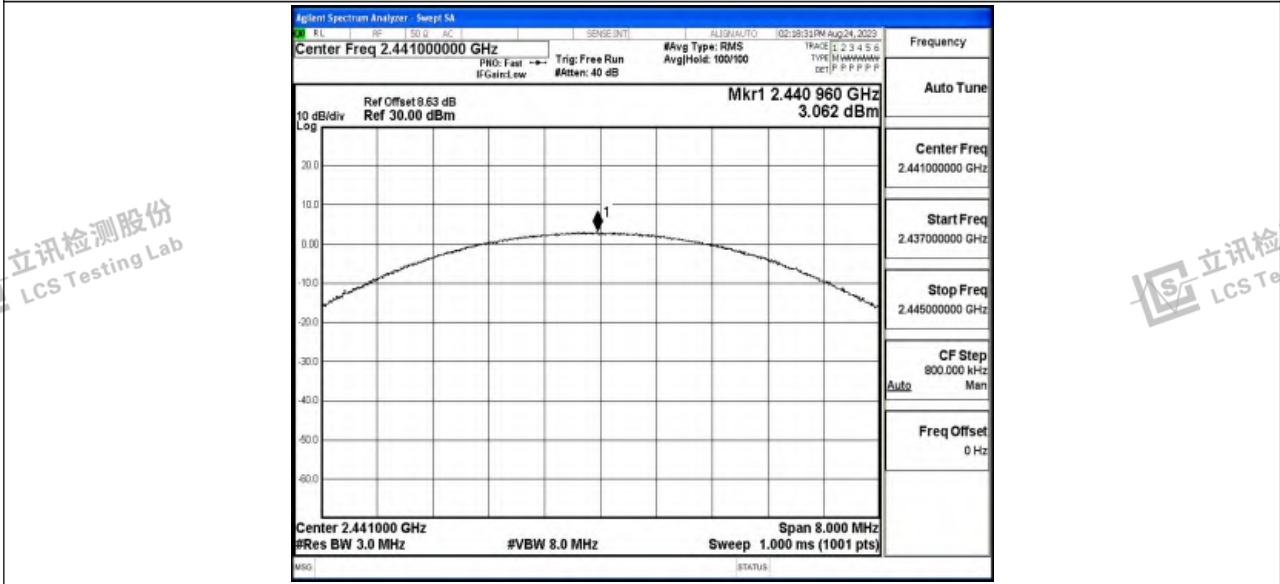


3DH5_Ant1_2402



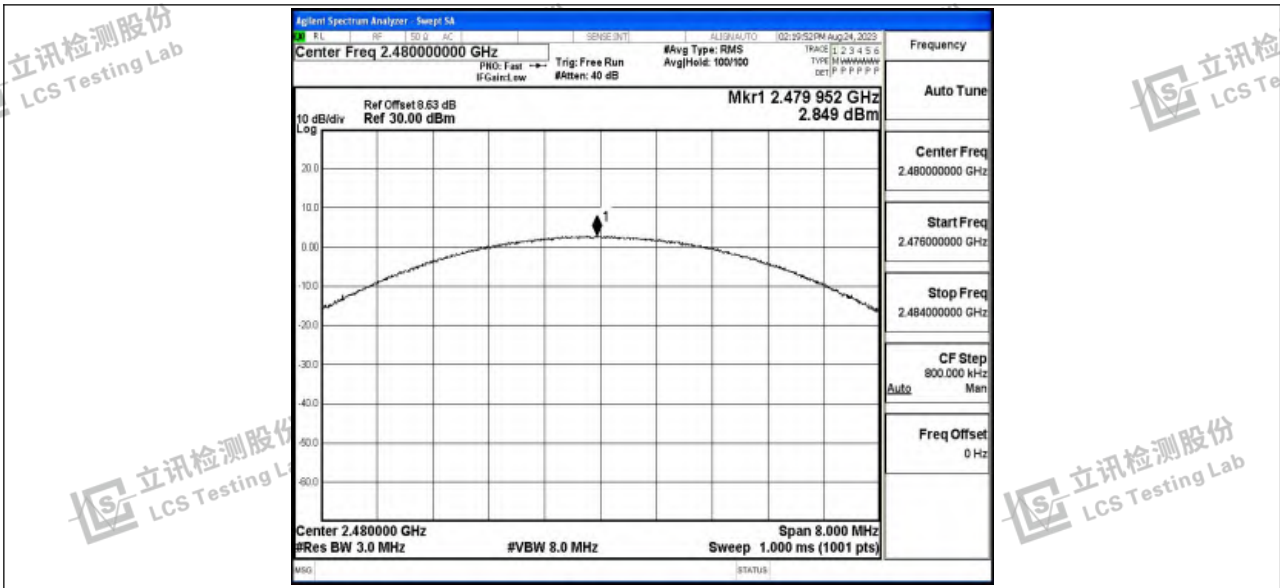


3DH5_Ant1_2441



3DH5_Ant1_2480





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A.3 Carrier frequency separation

Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.028	≥0.688	PASS
2DH5	Ant1	Hop	1.216	≥0.906	PASS
3DH5	Ant1	Hop	1.114	≥0.890	PASS

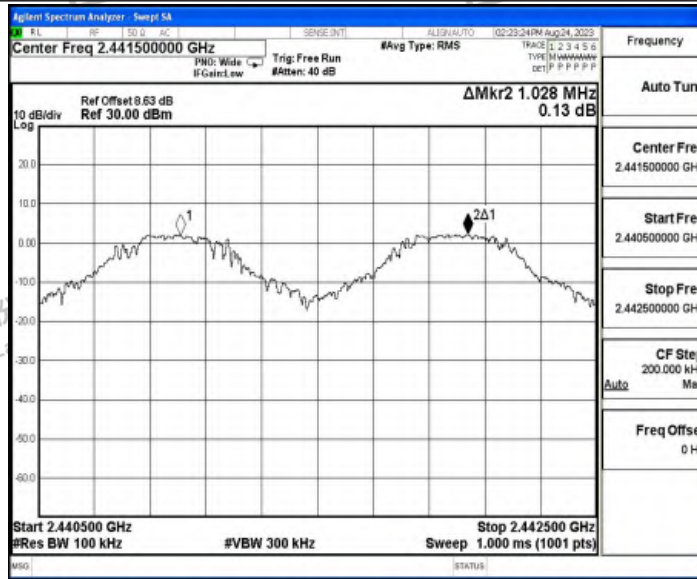


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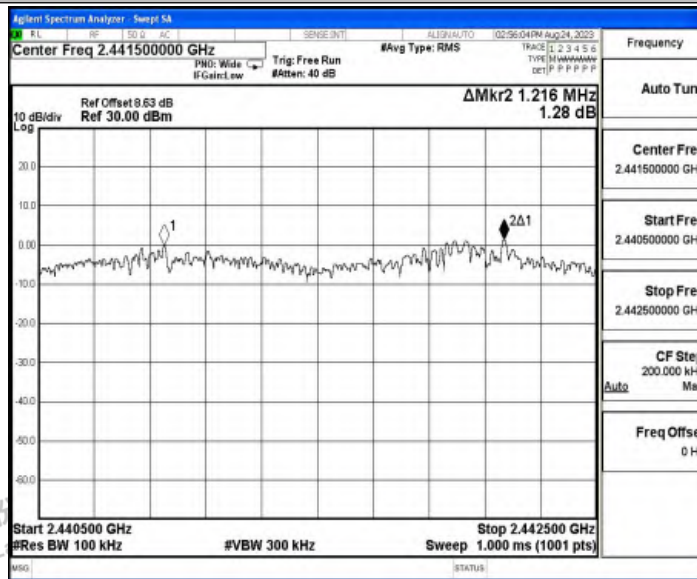


Test Graphs

DH5_Ant1_Hop

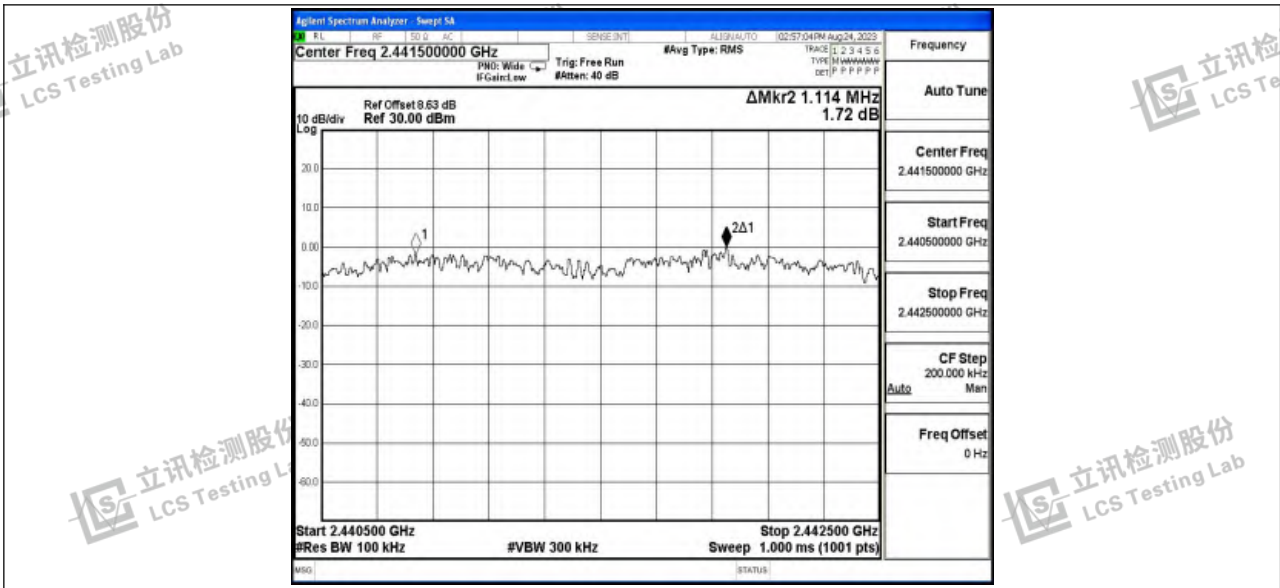


2DH5_Ant1_Hop



3DH5_Ant1_Hop





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A.4 Time of occupancy

Test Result

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.880	106.67	0.307	≤0.4	PASS
2DH5	Ant1	Hop	2.884	106.67	0.308	≤0.4	PASS
3DH5	Ant1	Hop	2.885	106.67	0.308	≤0.4	PASS

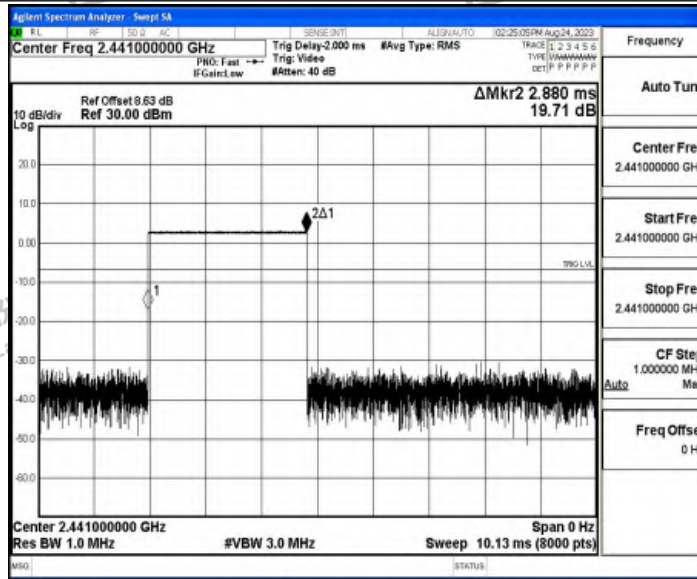


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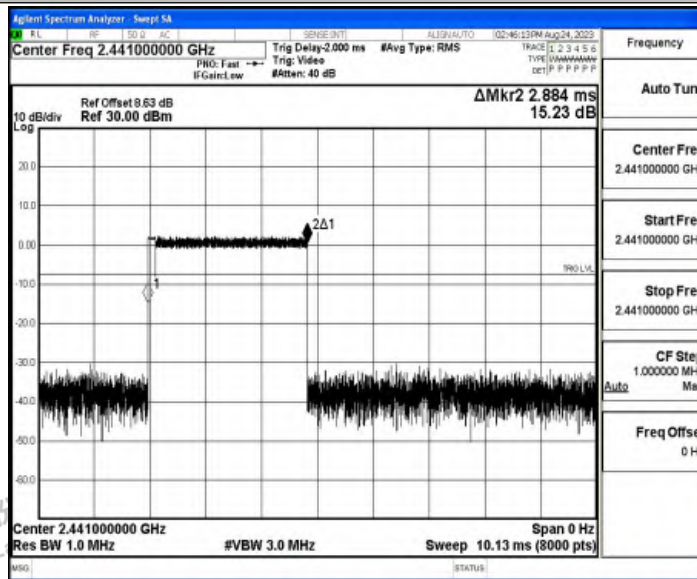


Test Graphs

DH5_Ant1_Hop

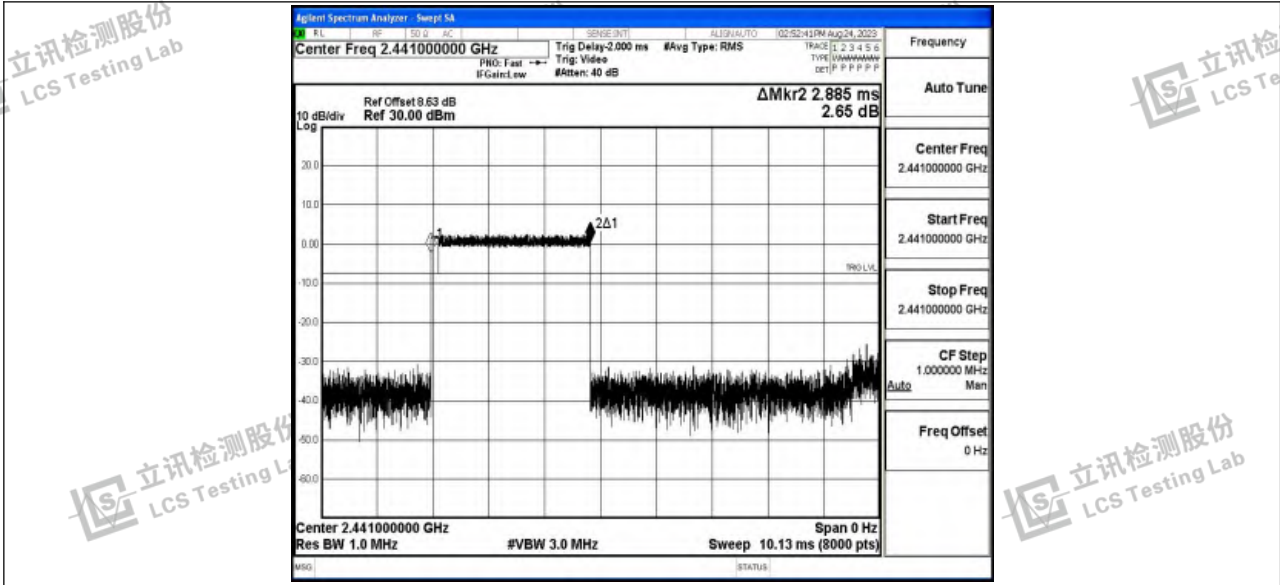


2DH5_Ant1_Hop



3DH5_Ant1_Hop





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A.5 Number of hopping channels

Test Result

TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

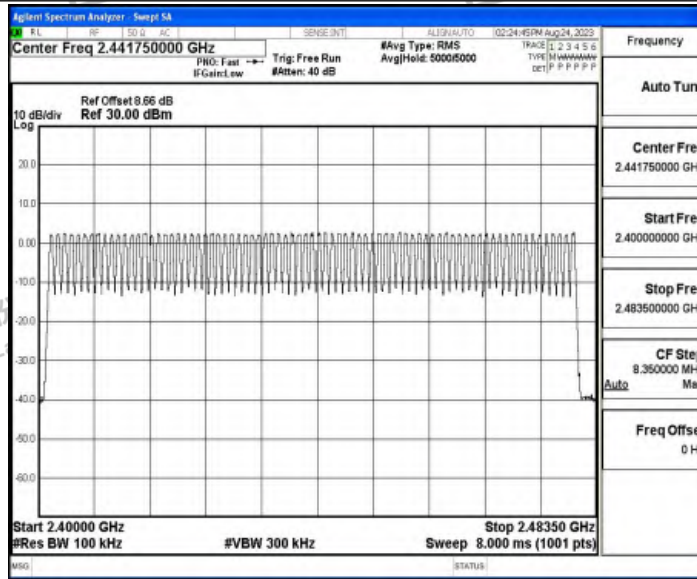


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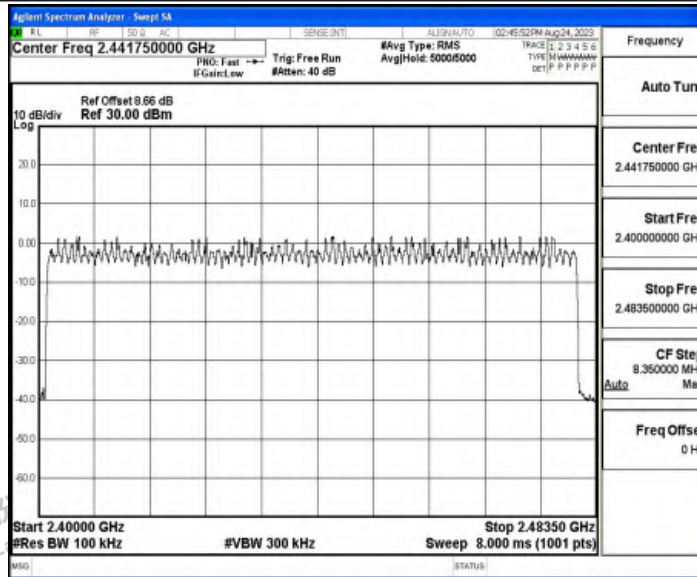


Test Graphs

DH5_Ant1_Hop

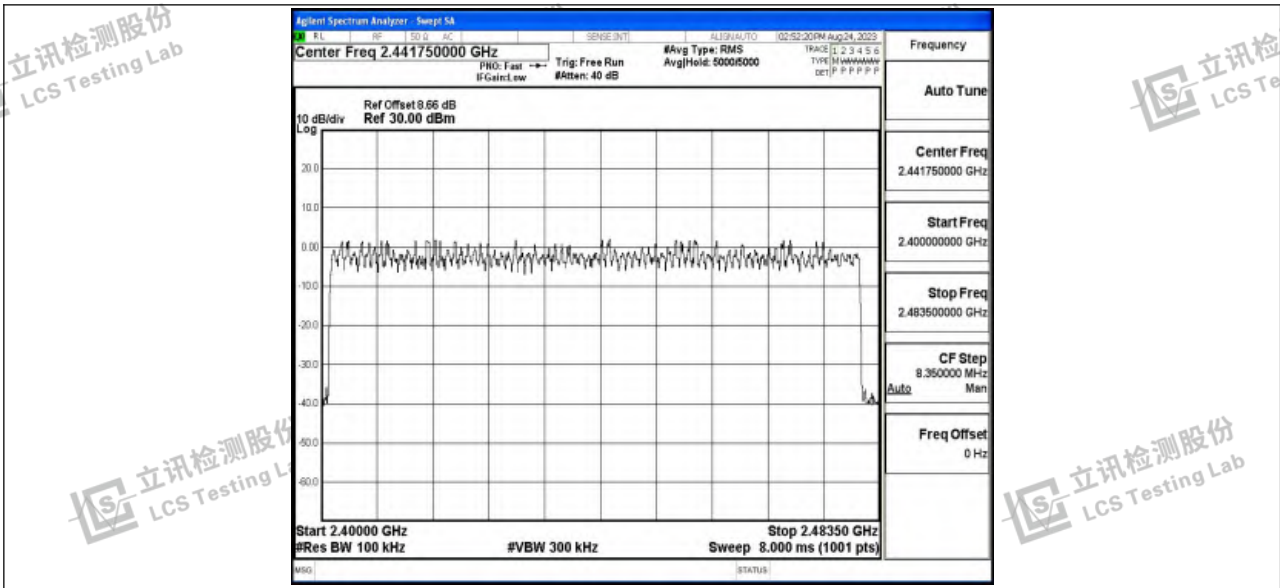


2DH5_Ant1_Hop



3DH5_Ant1_Hop





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A.6 Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	1.83	-49.52	≤-18.17	PASS
		High	2480	2.11	-49.07	≤-17.89	PASS
		Low	Hop_2402	1.48	-49.1	≤-18.52	PASS
		High	Hop_2480	2.34	-47.72	≤-17.66	PASS
2DH5	Ant1	Low	2402	-2.20	-50.19	≤-22.2	PASS
		High	2480	-2.93	-48.99	≤-22.93	PASS
		Low	Hop_2402	-2.72	-49.14	≤-22.72	PASS
		High	Hop_2480	0.39	-46.86	≤-19.61	PASS
3DH5	Ant1	Low	2402	-2.00	-49.94	≤-22	PASS
		High	2480	-1.30	-49.17	≤-21.3	PASS
		Low	Hop_2402	1.21	-49.21	≤-18.79	PASS
		High	Hop_2480	0.86	-47.61	≤-19.14	PASS

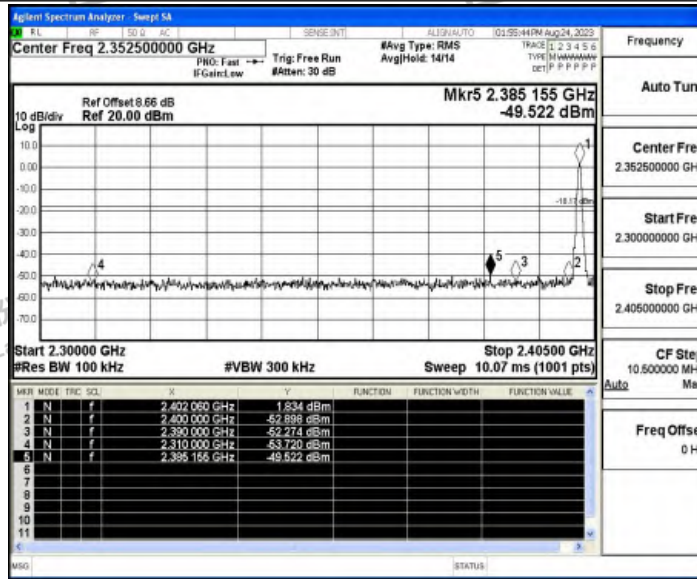


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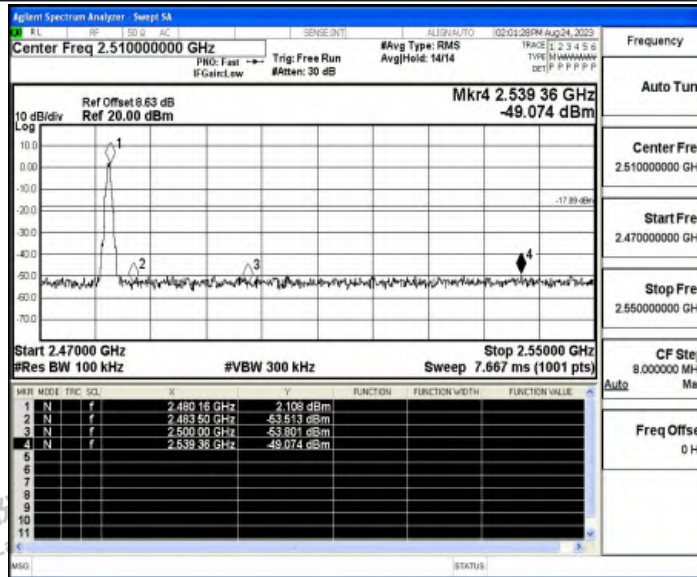


Test Graphs

DH5_Ant1_Low_2402

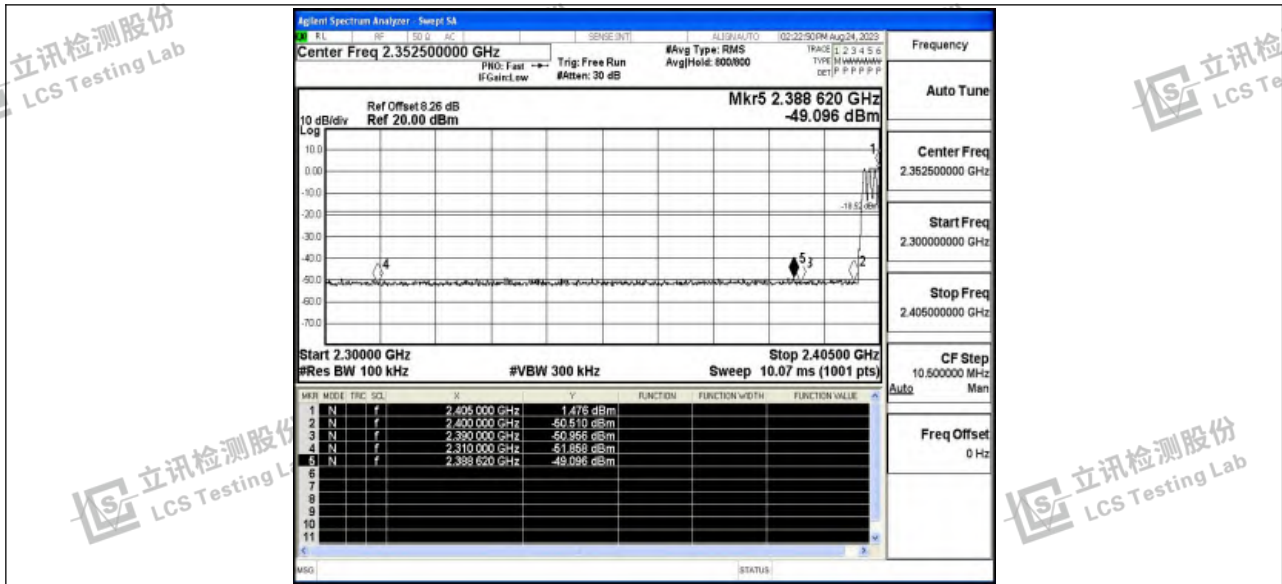


DH5_Ant1_High_2480

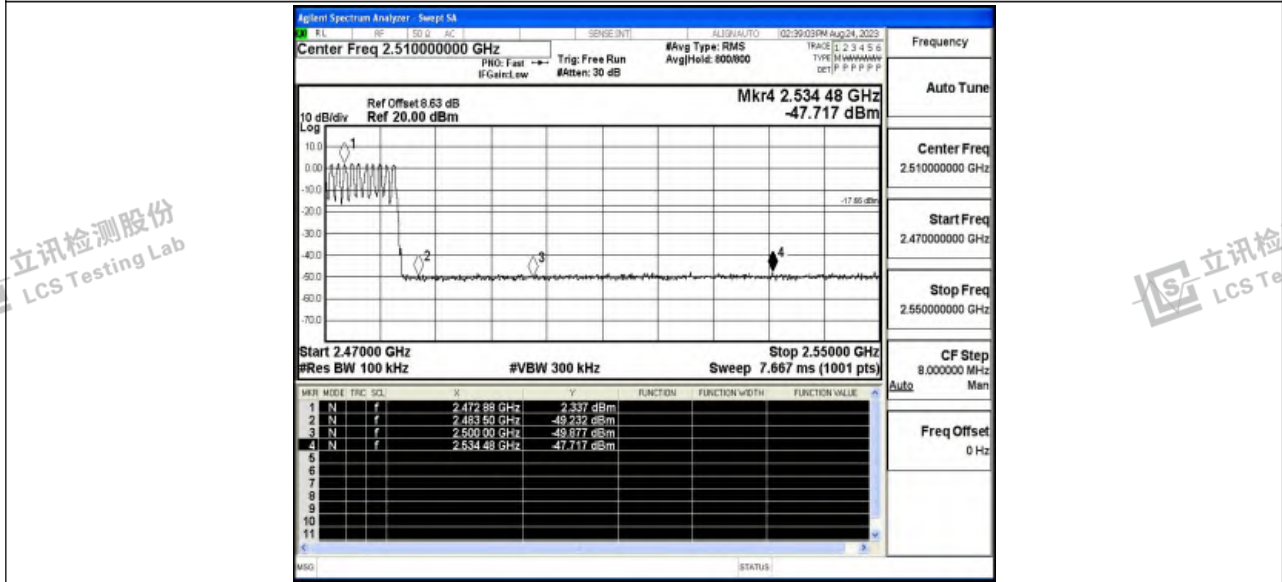


DH5_Ant1_Low_Hop_2402



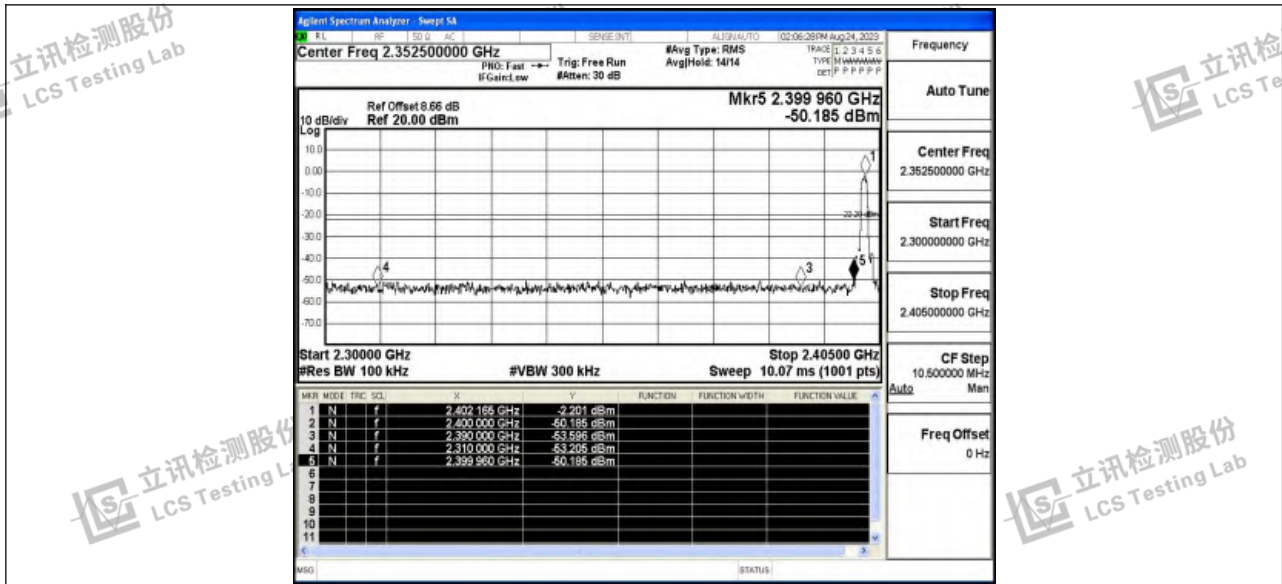


DH5_Ant1_High_Hop_2480

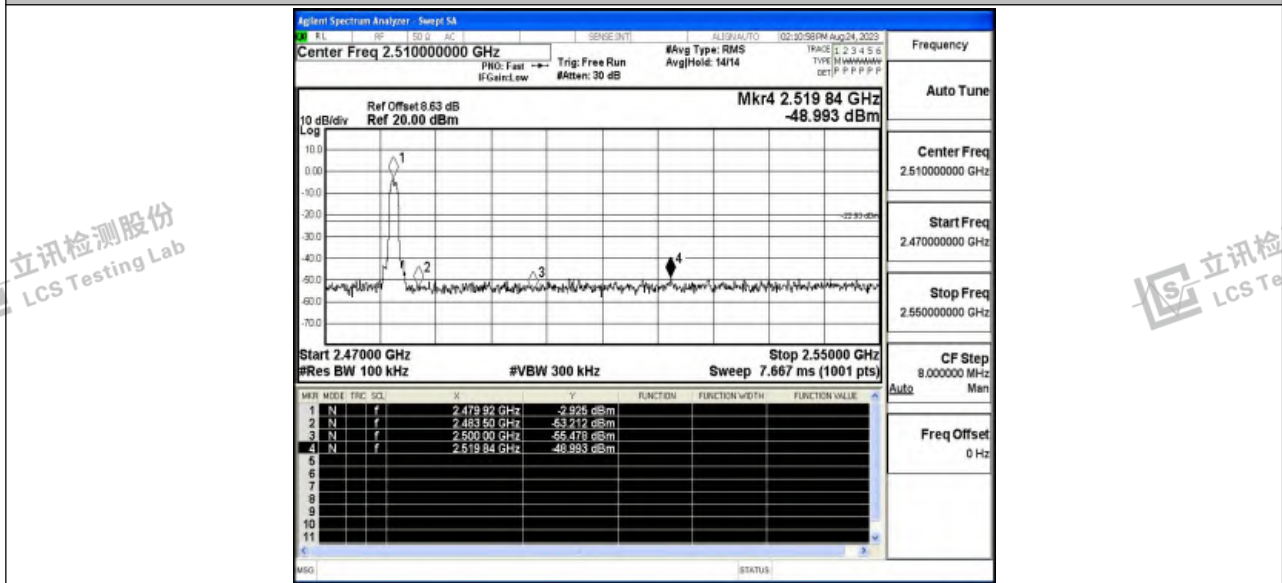


2DH5_Ant1_Low_2402



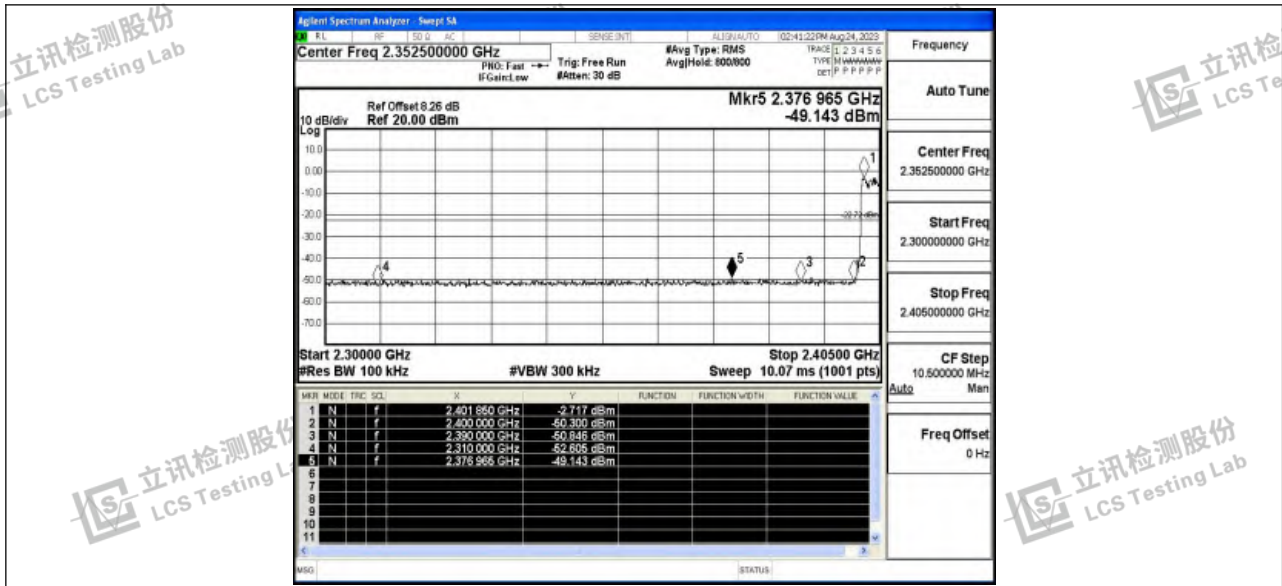


2DH5_Ant1_High_2480

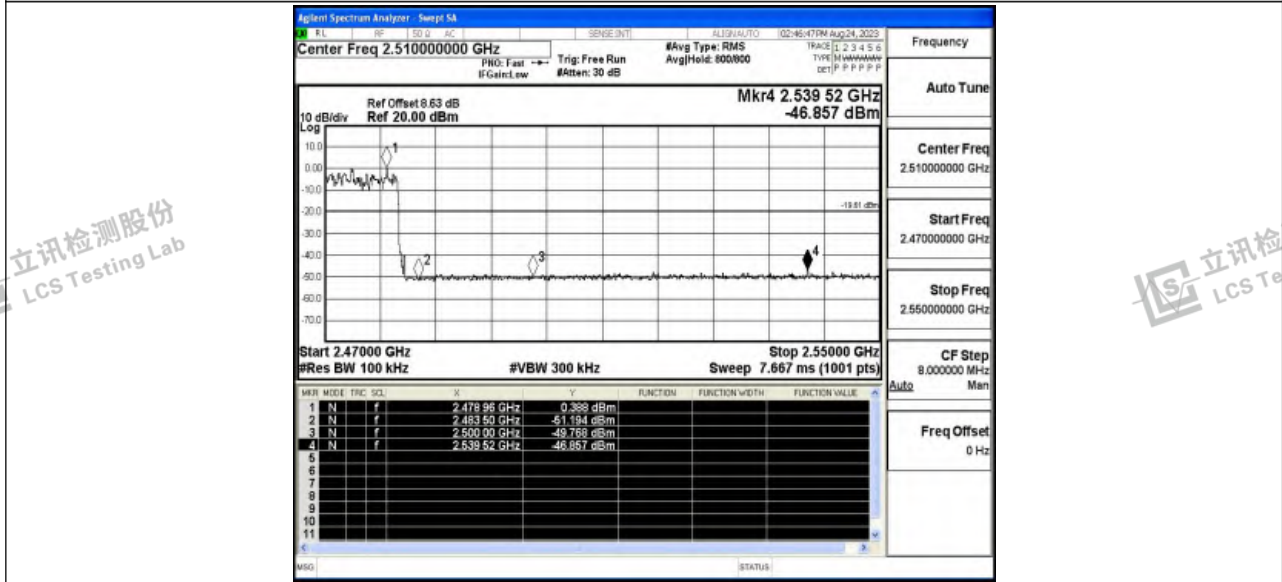


2DH5_Ant1_Low_Hop_2402



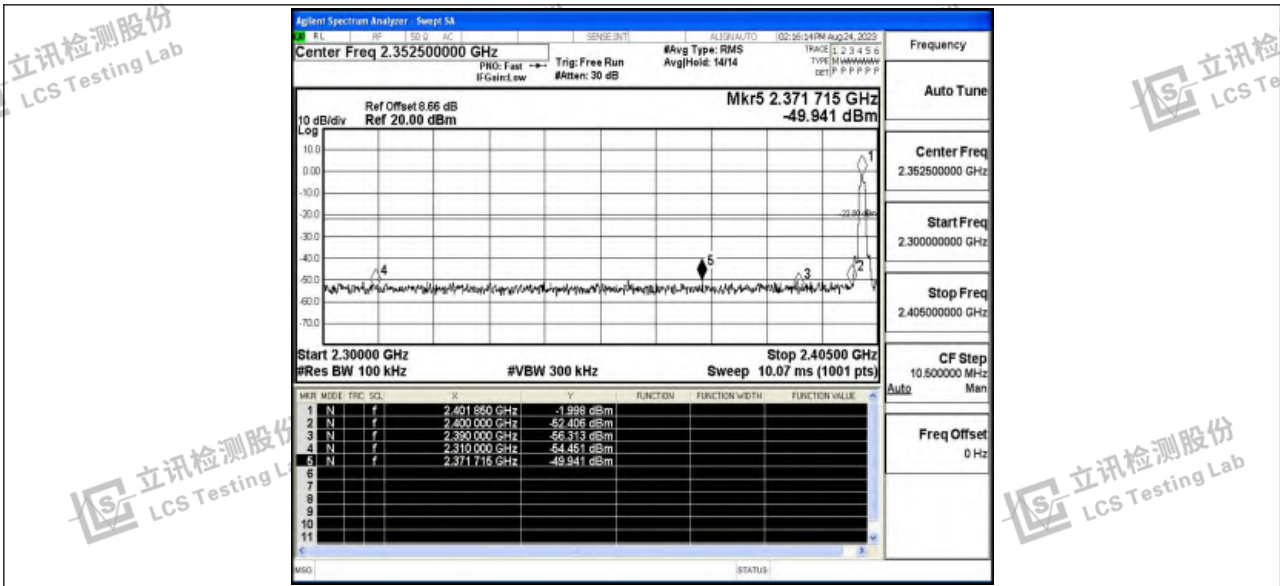


2DH5_Ant1_High_Hop_2480

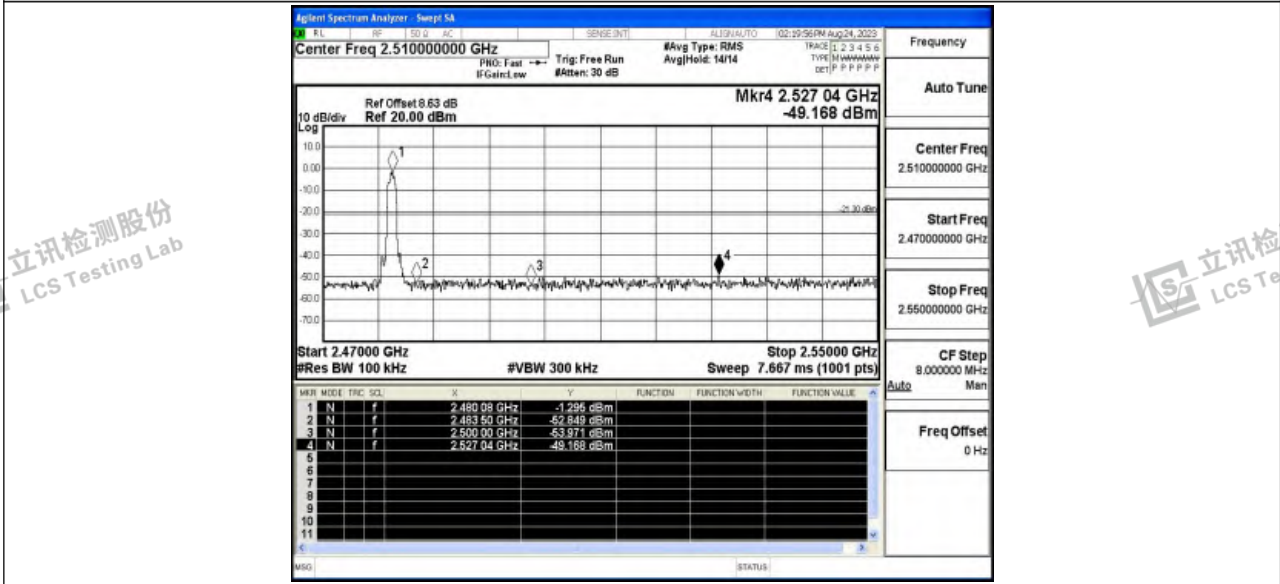


3DH5_Ant1_Low_2402



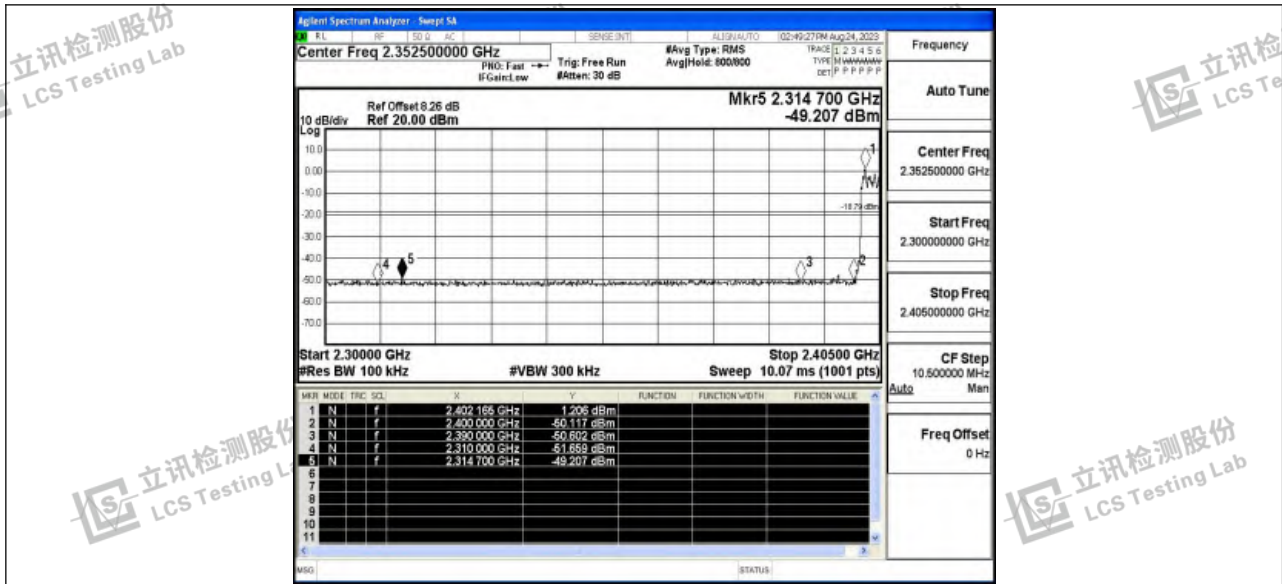


3DH5_Ant1_High_2480

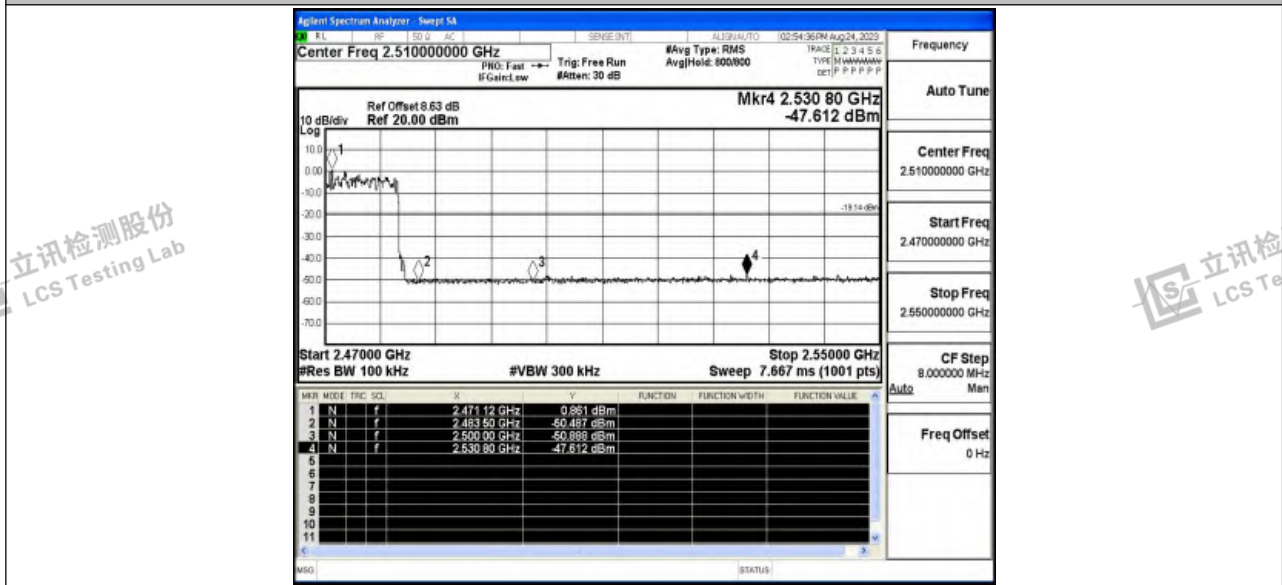


3DH5_Ant1_Low_Hop_2402





3DH5_Ant1_High_Hop_2480





A.7 Conducted Spurious Emission

Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	2.50	2.50	---	PASS
			30~1000	2.50	-61.25	≤-17.5	PASS
			1000~26500	2.50	-46.32	≤-17.5	PASS
		2441	Reference	2.63	2.63	---	PASS
			30~1000	2.63	-61.24	≤-17.37	PASS
			1000~26500	2.63	-46.04	≤-17.37	PASS
		2480	Reference	2.35	2.35	---	PASS
			30~1000	2.35	-61.5	≤-17.65	PASS
			1000~26500	2.35	-46.76	≤-17.65	PASS
2DH5	Ant1	2402	Reference	1.48	1.48	---	PASS
			30~1000	1.48	-61.06	≤-18.52	PASS
			1000~26500	1.48	-46.55	≤-18.52	PASS
		2441	Reference	1.11	1.11	---	PASS
			30~1000	1.11	-61	≤-18.89	PASS
			1000~26500	1.11	-46.83	≤-18.89	PASS
		2480	Reference	1.39	1.39	---	PASS
			30~1000	1.39	-60.43	≤-18.61	PASS
			1000~26500	1.39	-46.08	≤-18.61	PASS
3DH5	Ant1	2402	Reference	0.55	0.55	---	PASS
			30~1000	0.55	-61.8	≤-19.45	PASS
			1000~26500	0.55	-46.38	≤-19.45	PASS
		2441	Reference	1.46	1.46	---	PASS
			30~1000	1.46	-60.9	≤-18.54	PASS
			1000~26500	1.46	-45.96	≤-18.54	PASS
		2480	Reference	1.39	1.39	---	PASS
			30~1000	1.39	-61.27	≤-18.61	PASS
			1000~26500	1.39	-46.55	≤-18.61	PASS



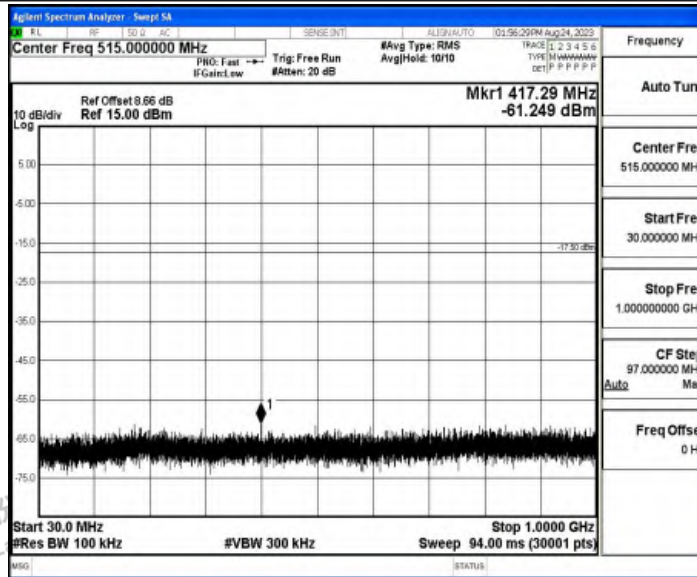


Test Graphs

DH5_Ant1_2402_0~Reference

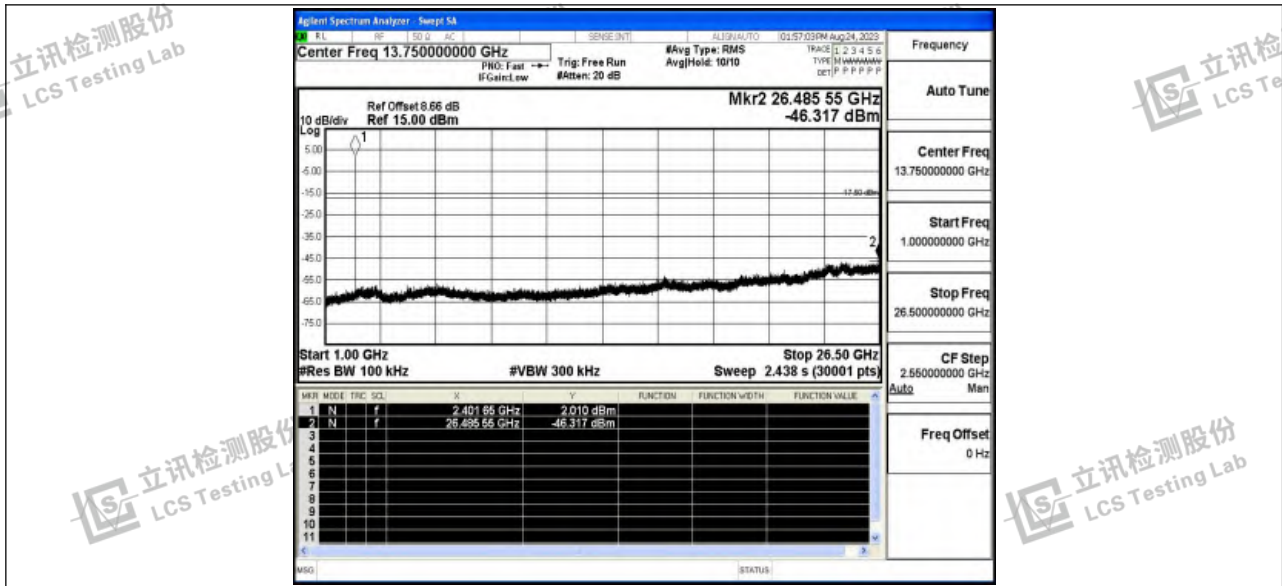


DH5_Ant1_2402_30~1000

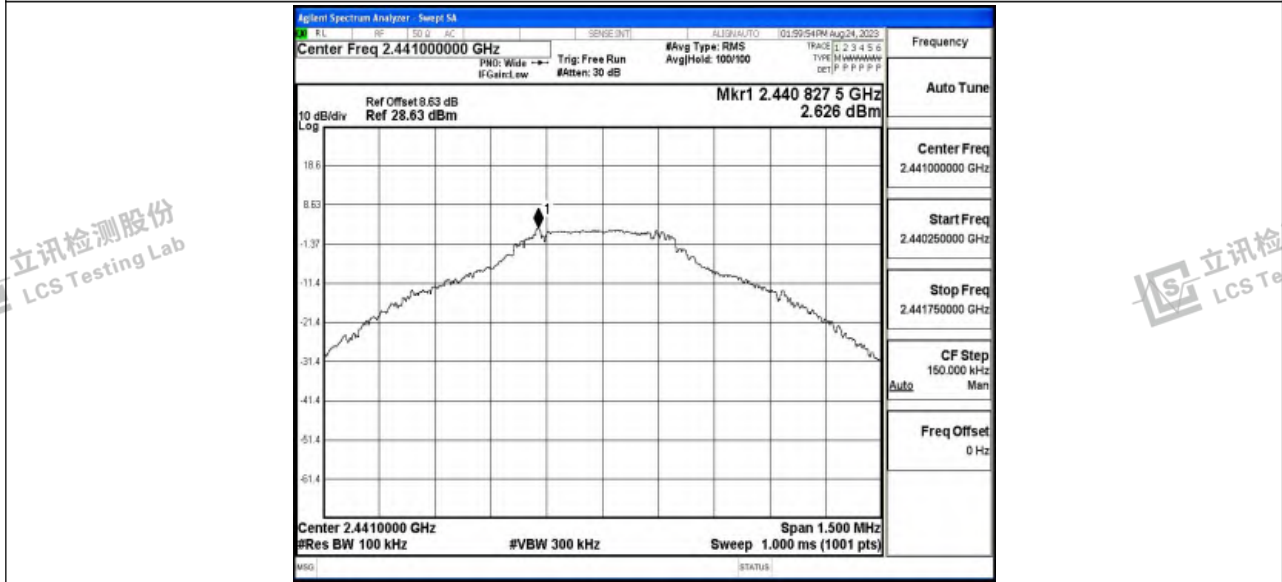


DH5_Ant1_2402_1000~26500



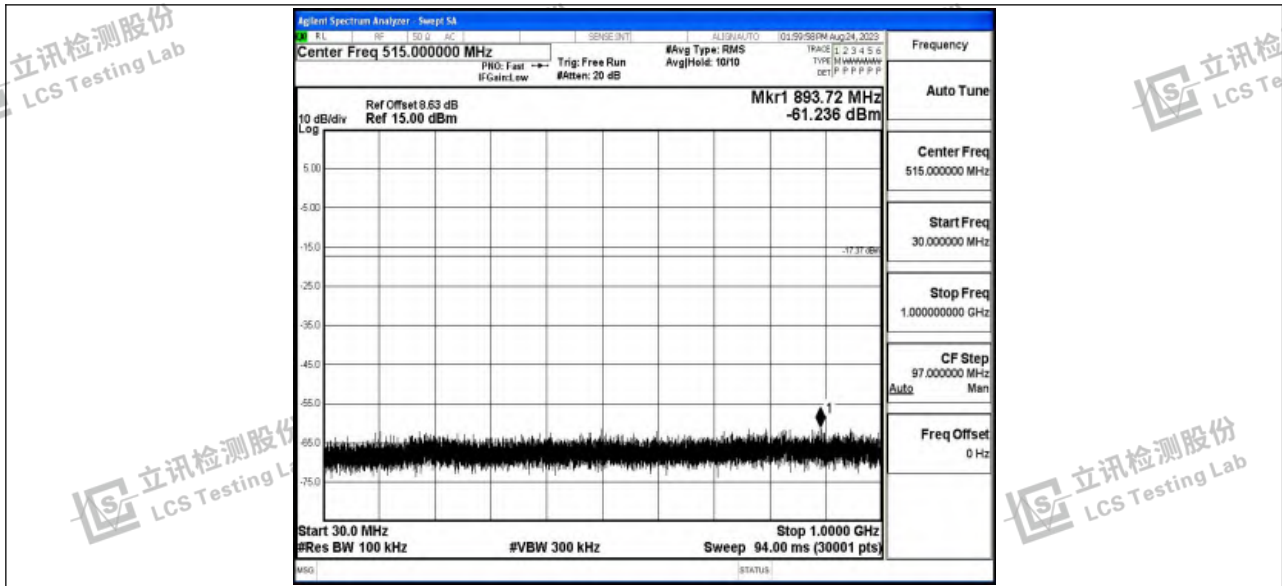


DH5_Ant1_2441_0~Reference

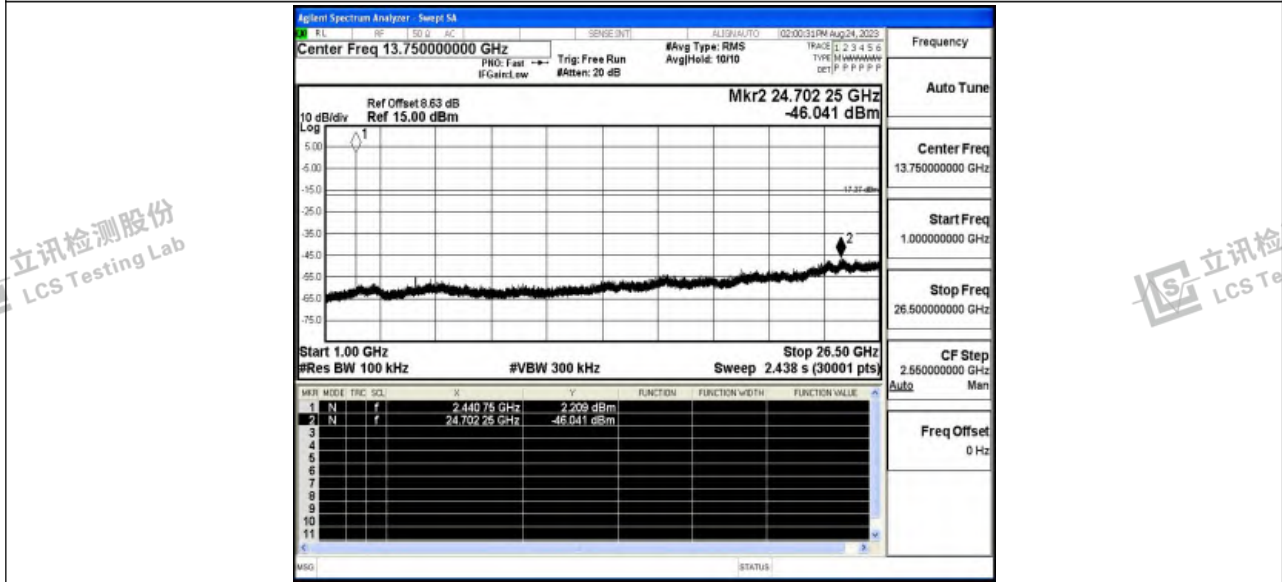


DH5_Ant1_2441_30~1000



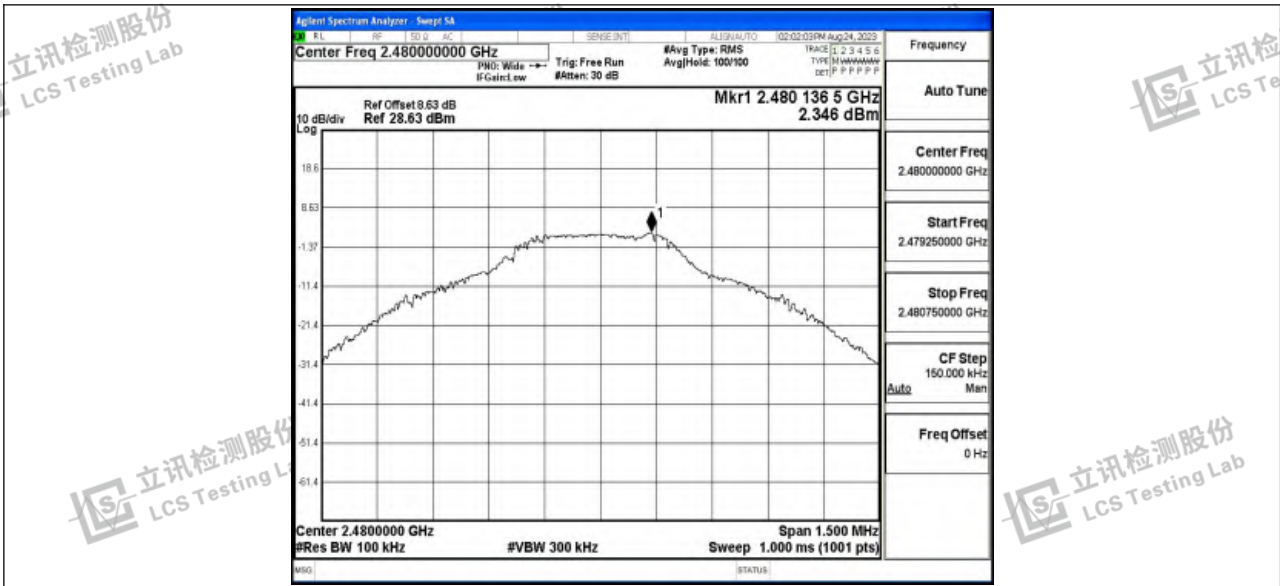


DH5_Ant1_2441_1000~26500

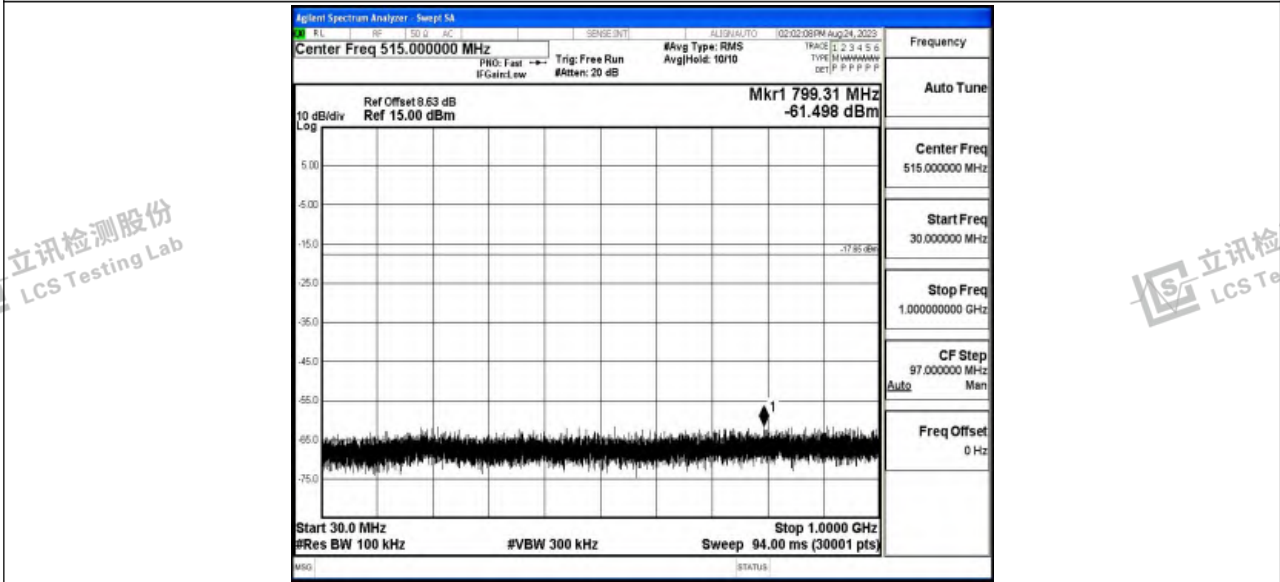


DH5_Ant1_2480_0~Reference



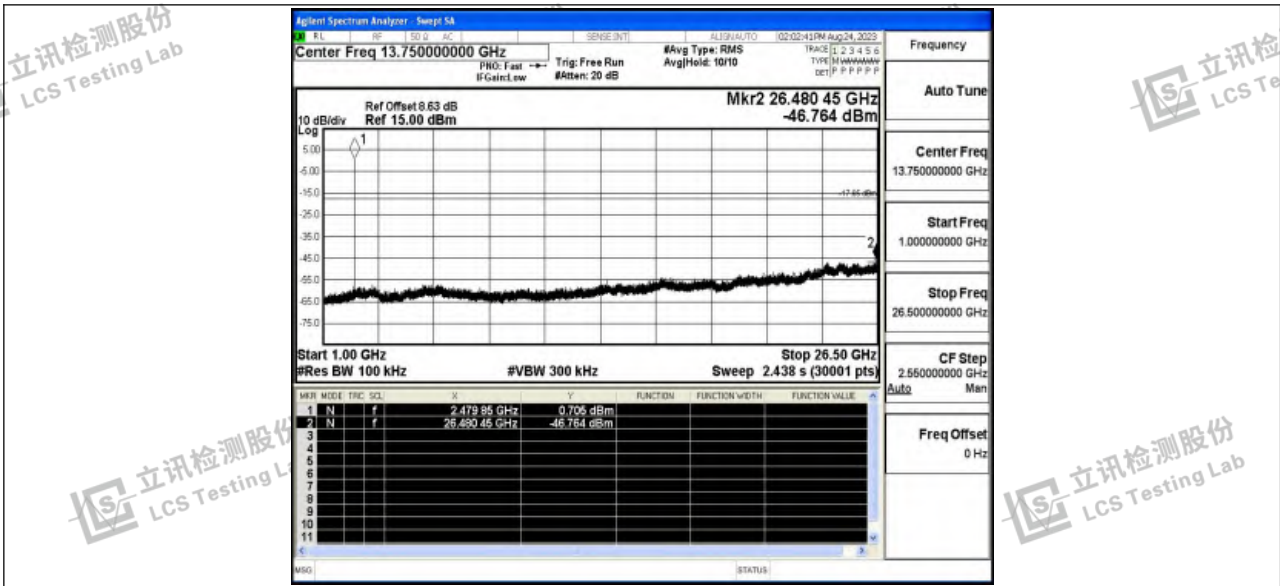


DH5_Ant1_2480_30~1000

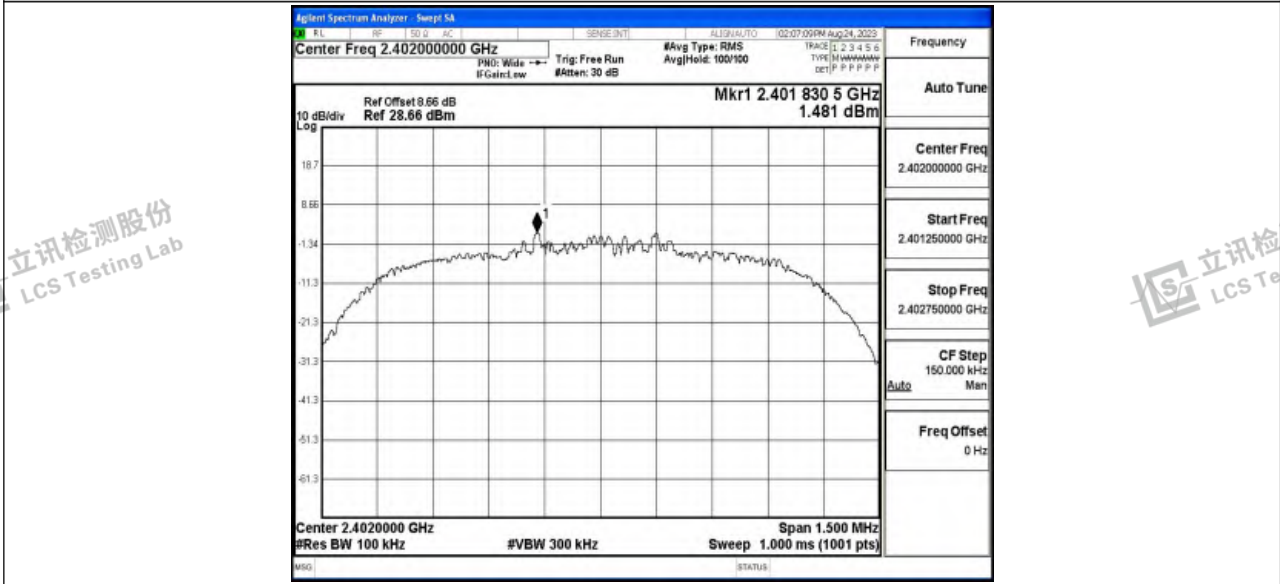


DH5_Ant1_2480_1000~26500



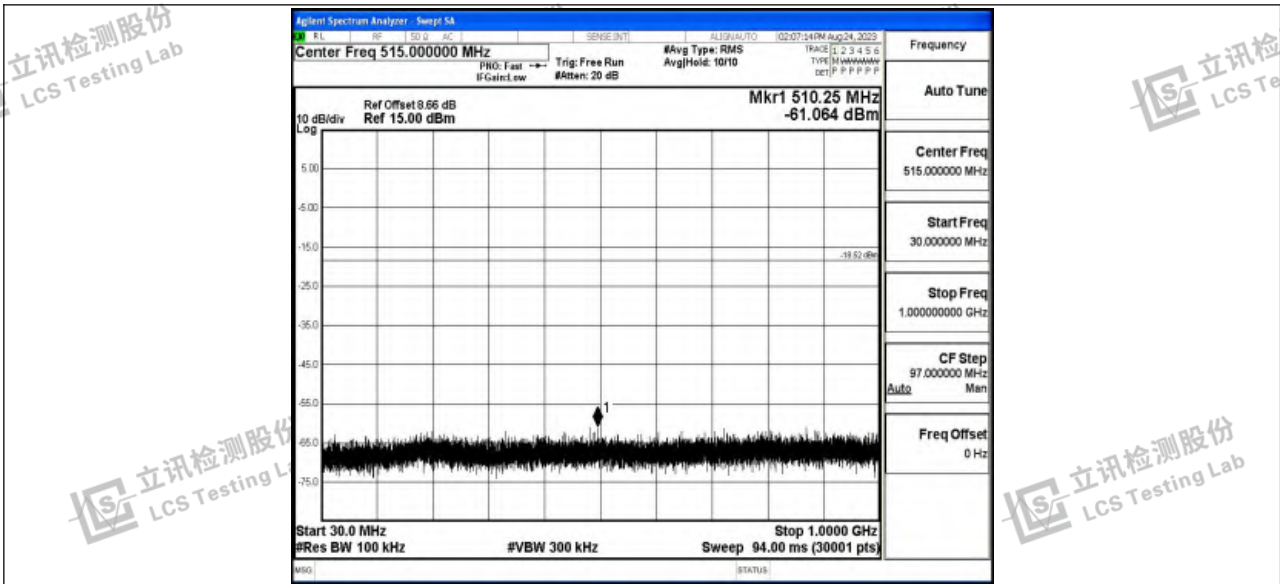


2DH5_Ant1_2402_0~Reference

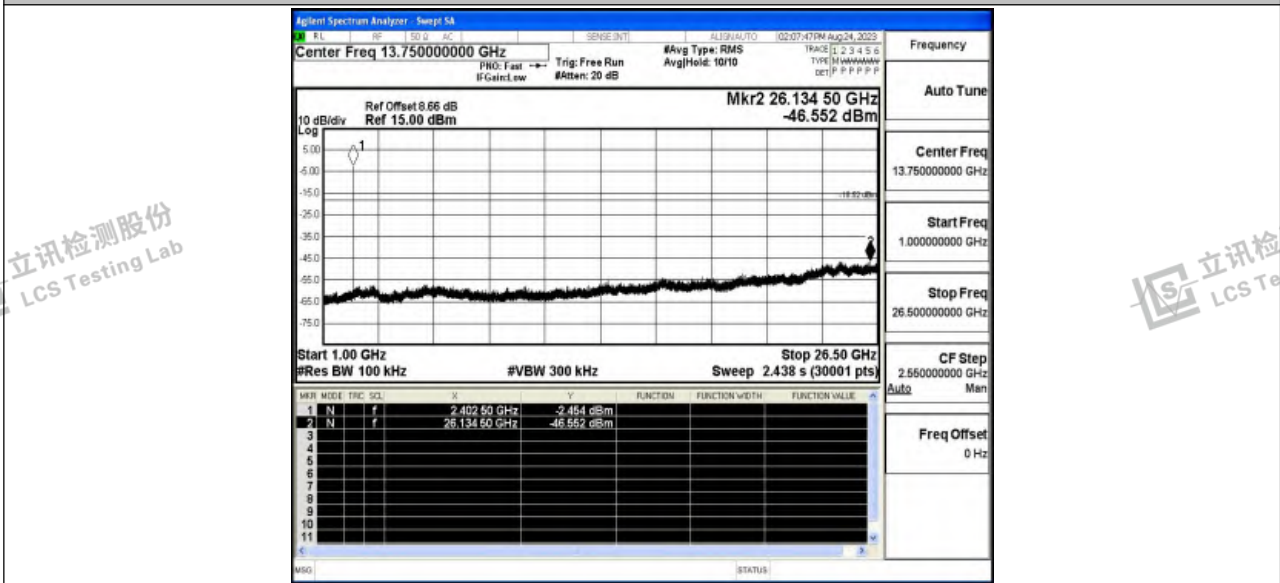


2DH5_Ant1_2402_30~1000



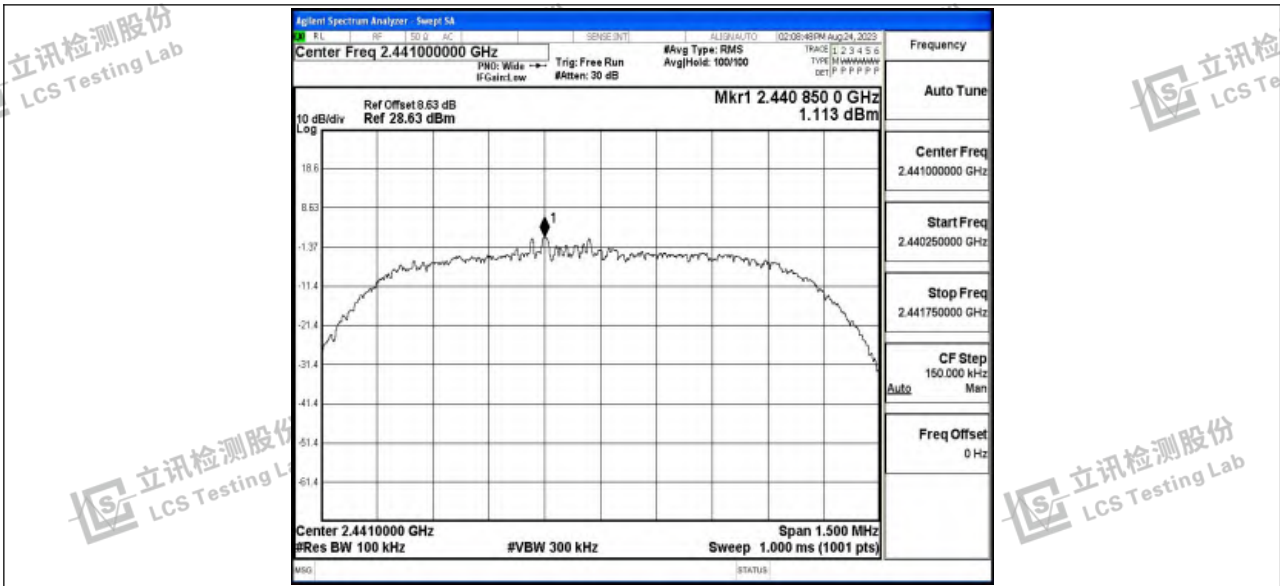


2DH5_Ant1_2402_1000~26500

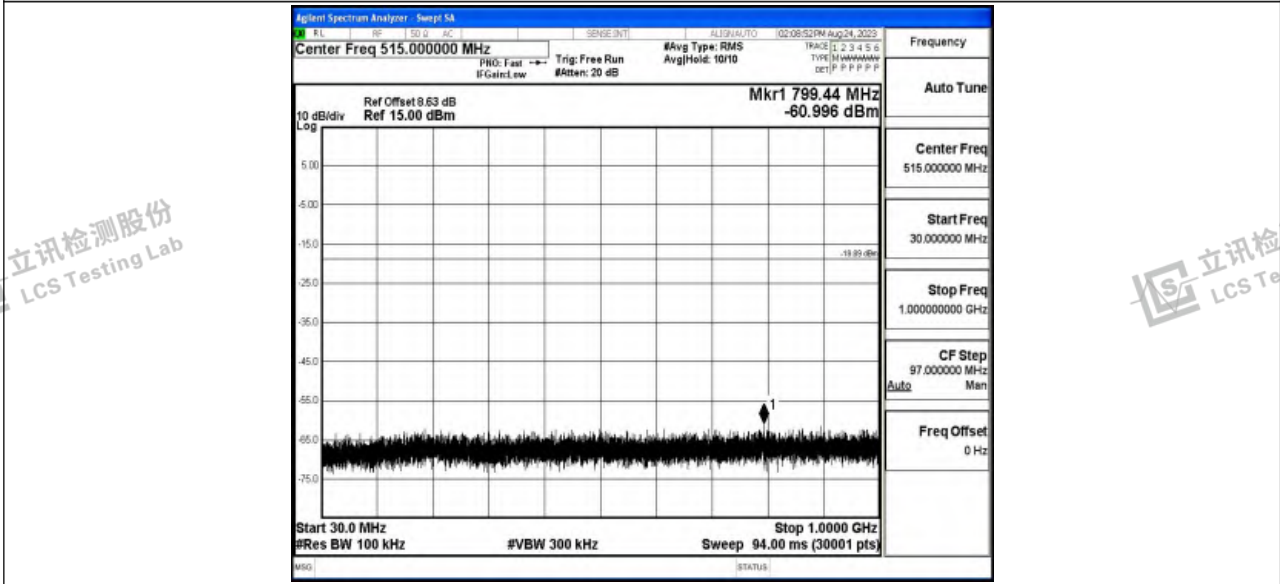


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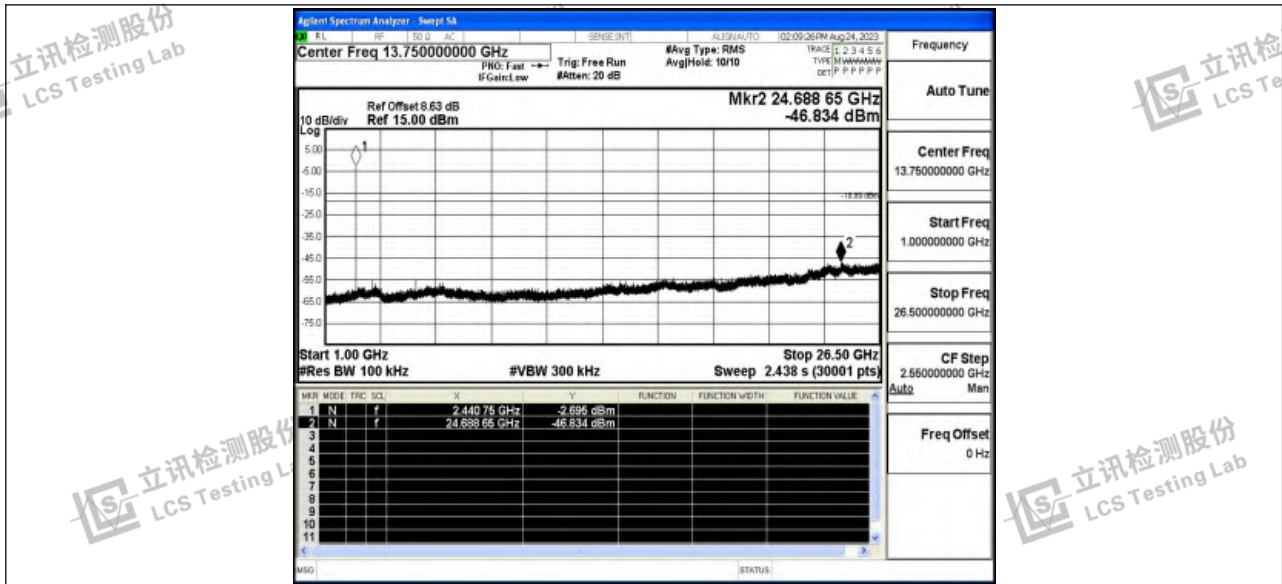


2DH5_Ant1_2441_30~1000

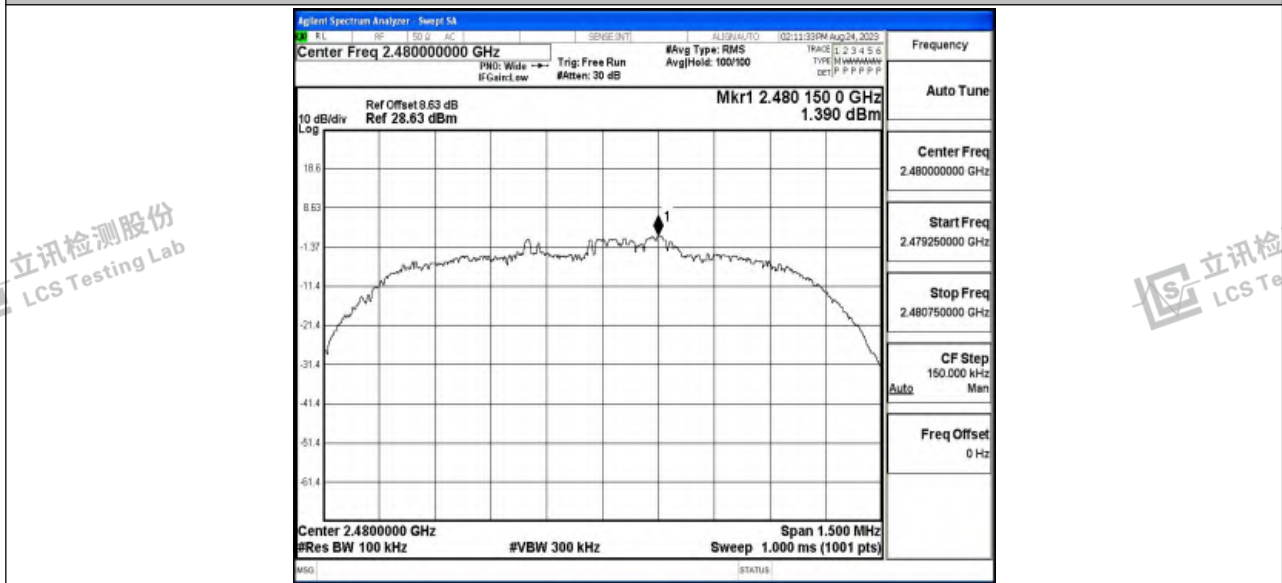


2DH5_Ant1_2441_1000~26500



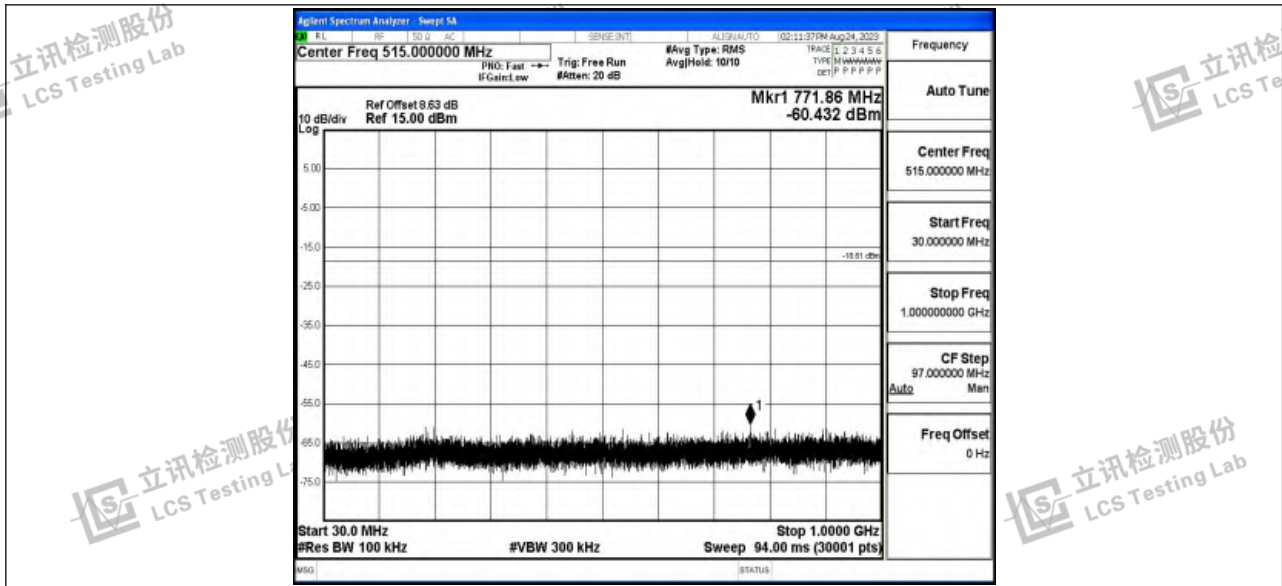


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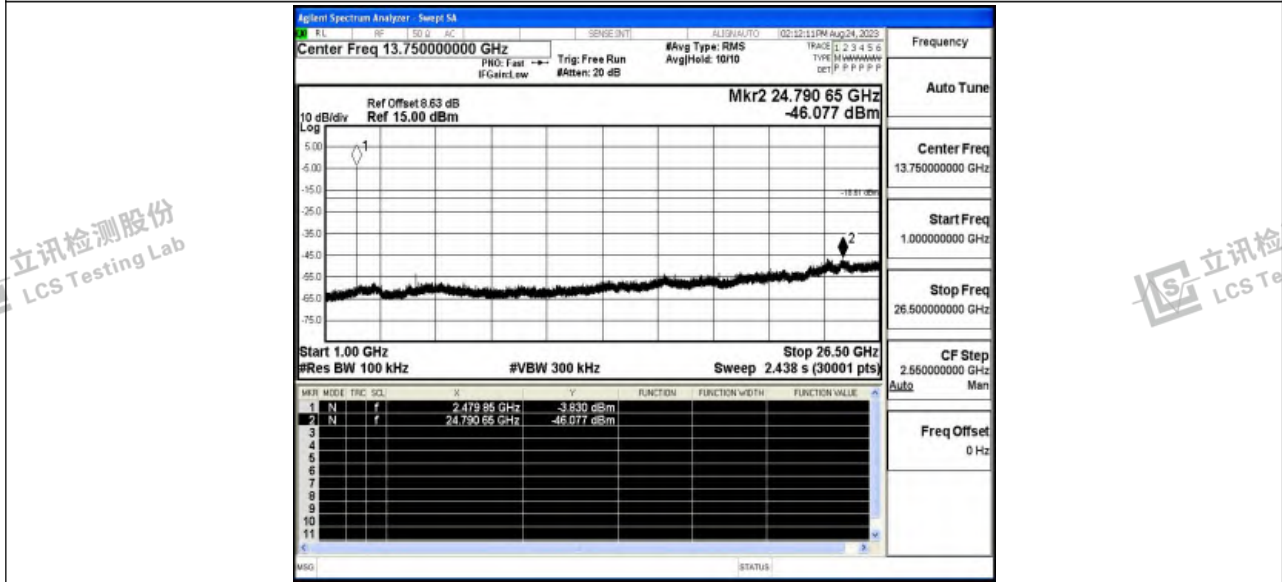


2DH5_Ant1_2480_30~1000



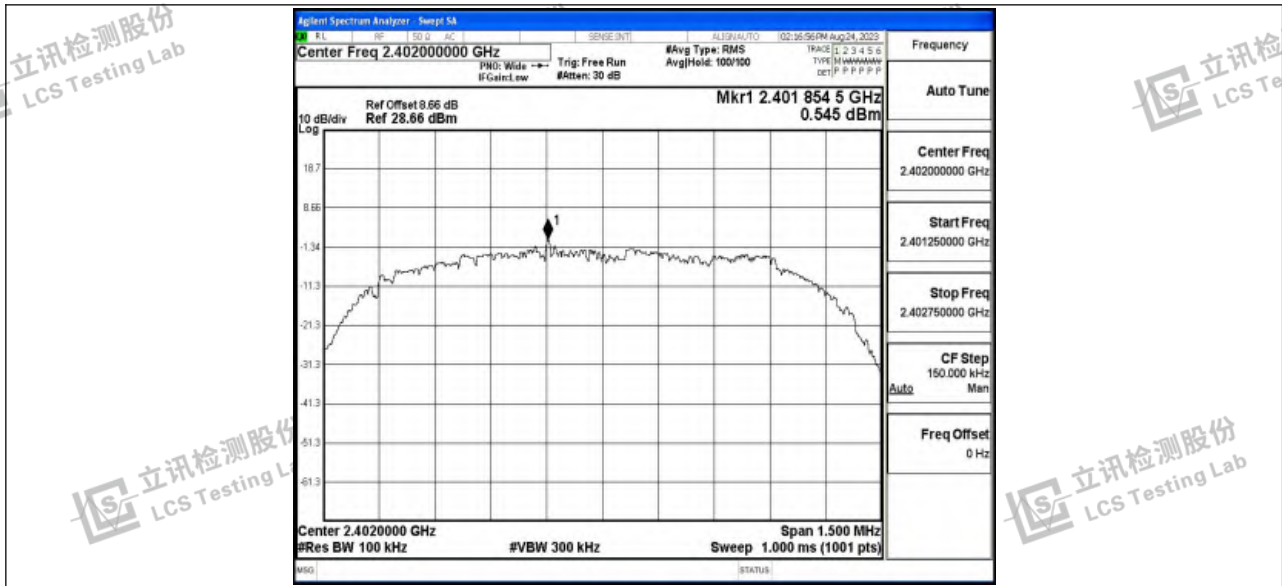


2DH5_Ant1_2480_1000~26500

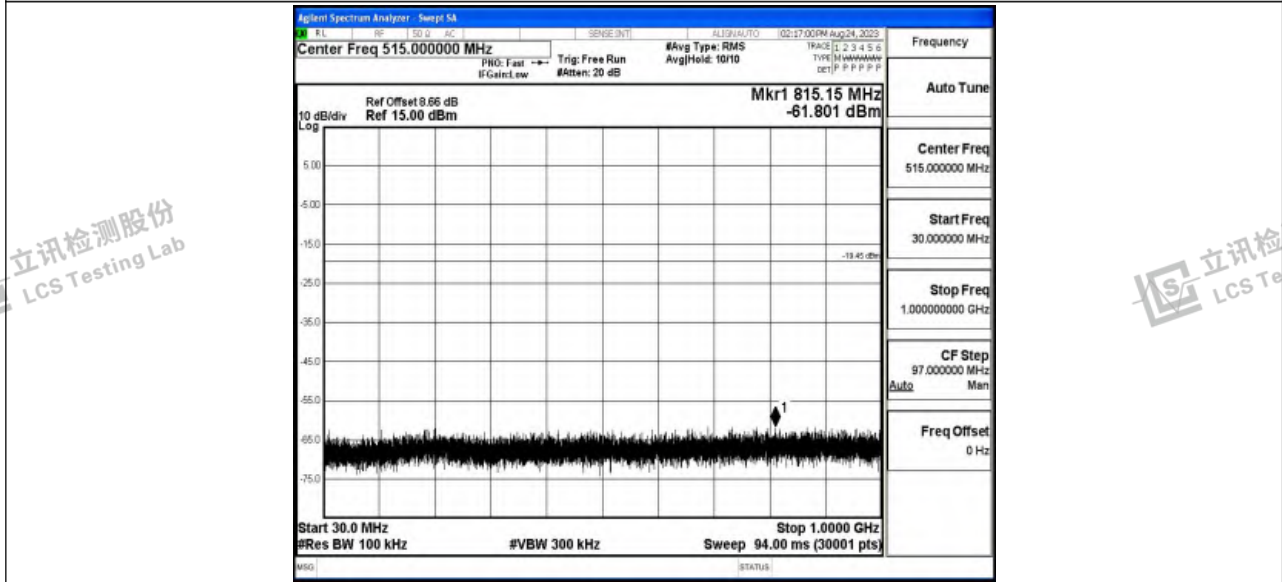


3DH5_Ant1_2402_0~Reference



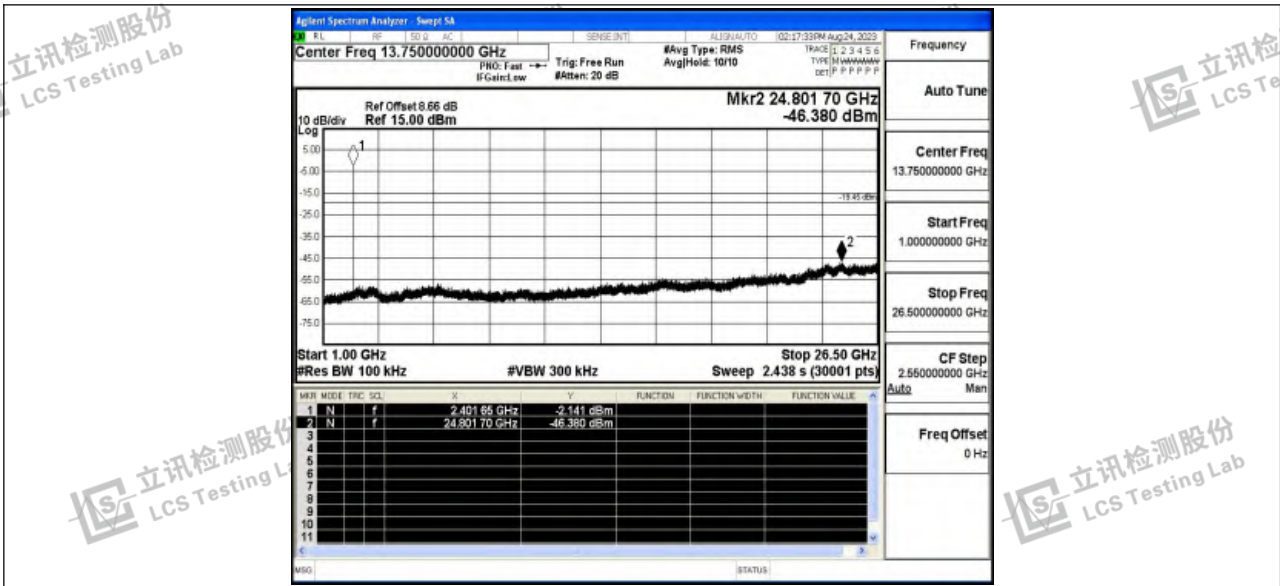


3DH5_Ant1_2402_30~1000

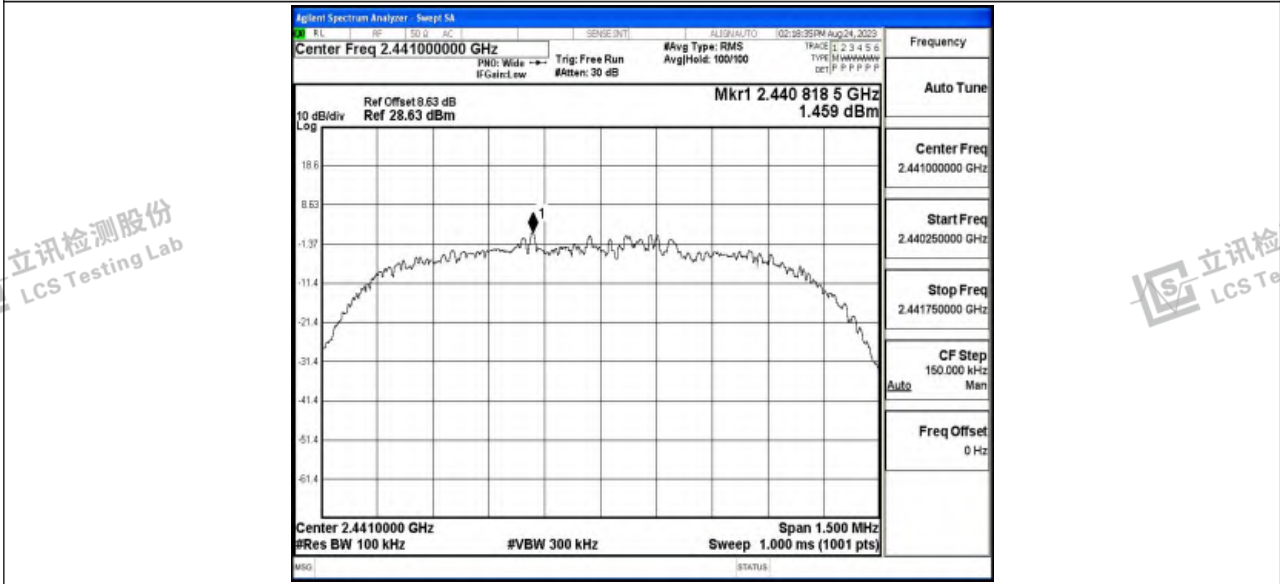


3DH5_Ant1_2402_1000~26500



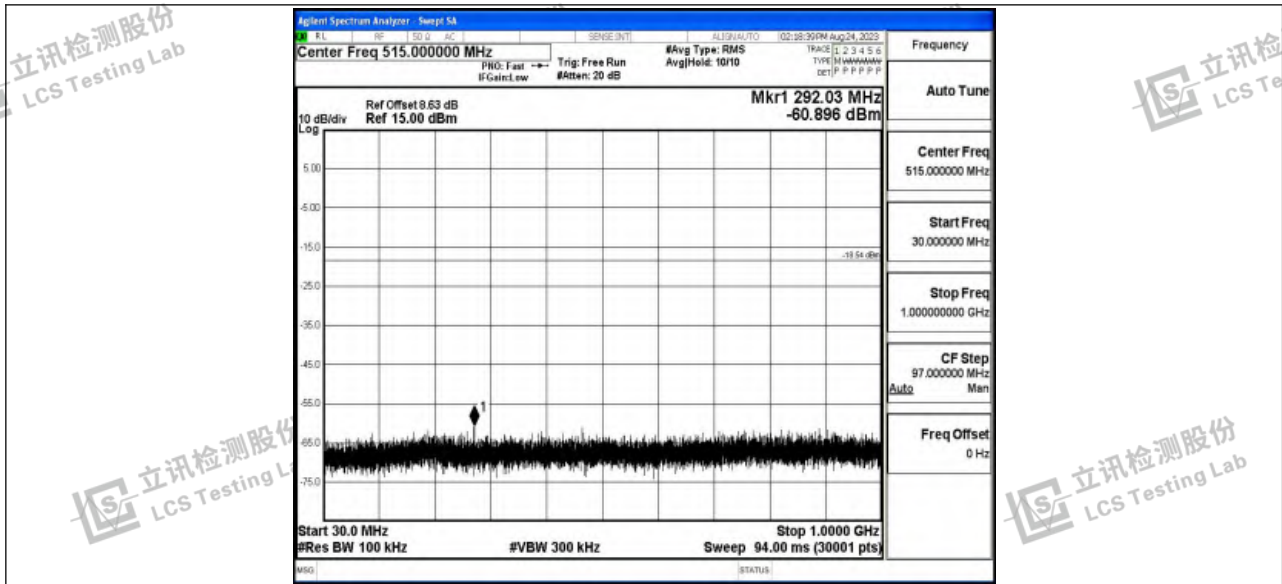


3DH5_Ant1_2441_0~Reference

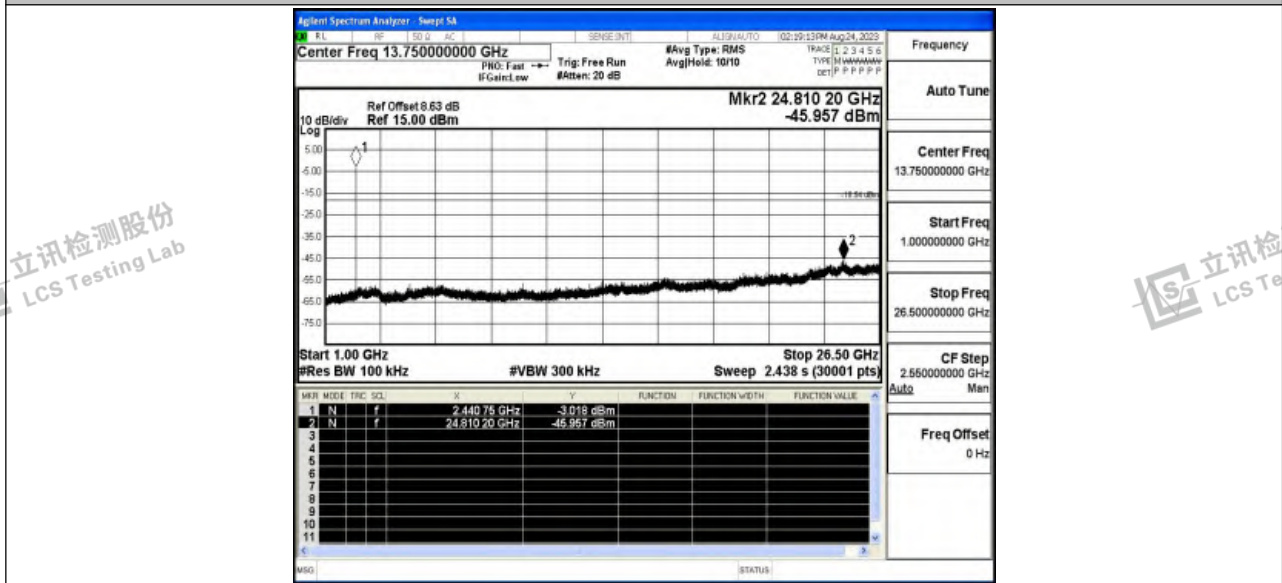


3DH5_Ant1_2441_30~1000



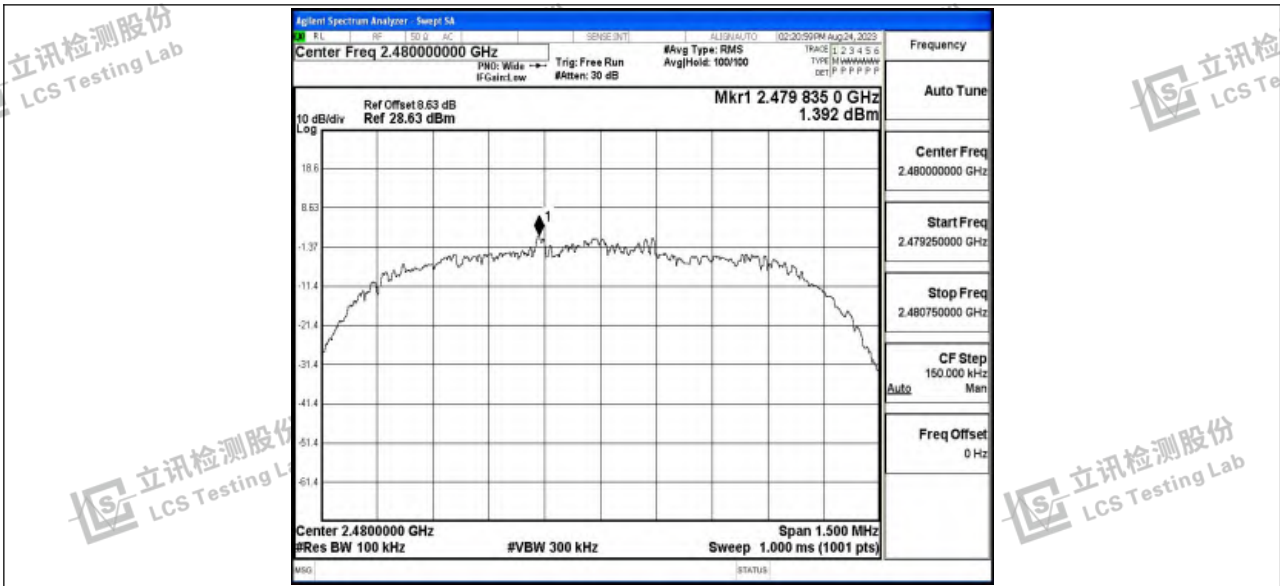


3DH5_Ant1_2441_1000~26500

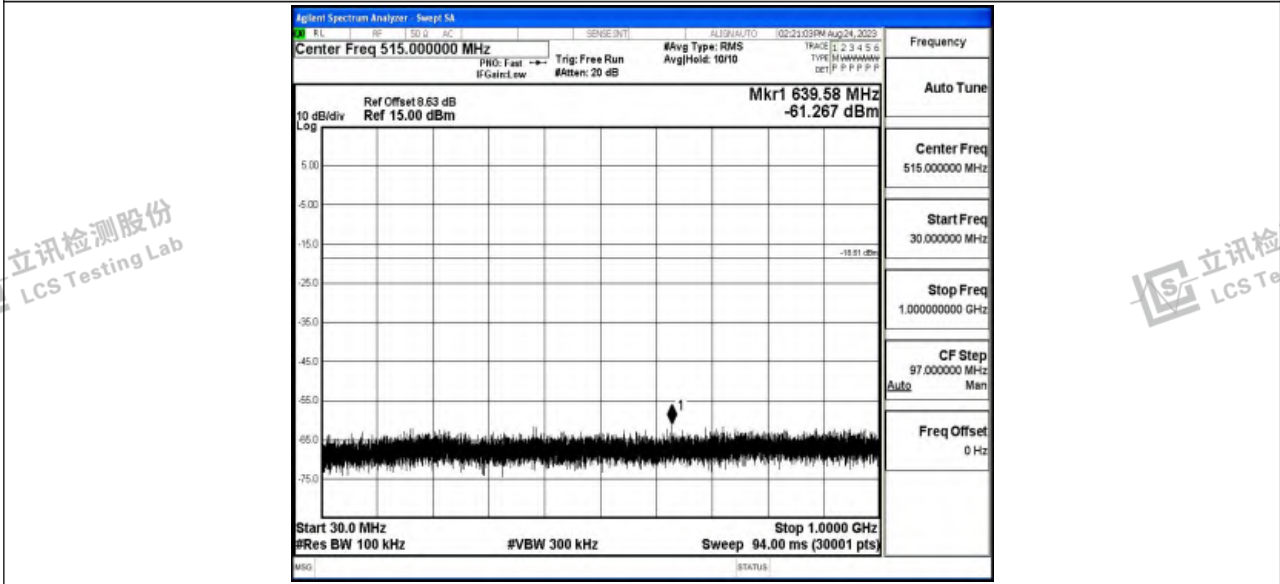


3DH5_Ant1_2480_0~Reference



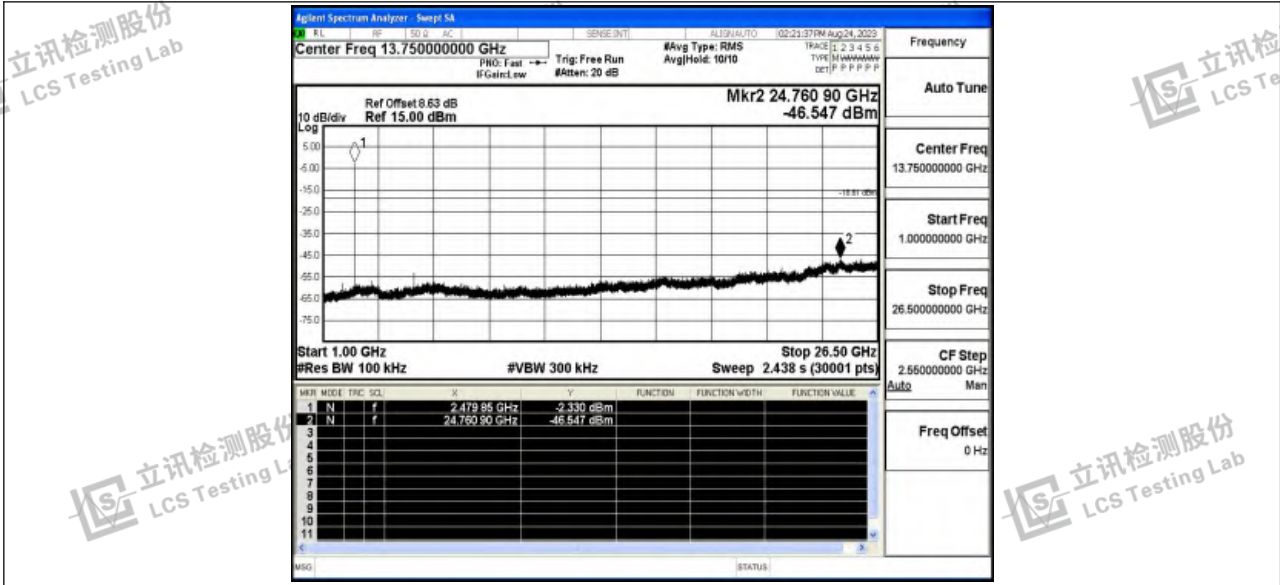


3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500





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A.8 Emissions in Restricted Bands

Test Result

Test Mode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-47.96	≤-41.20	47.24	≤54	PASS
				AV	2379.590	-47.51	≤-41.20	47.69	≤54	PASS
				AV	2390.000	-47.66	≤-41.20	47.54	≤54	PASS
				Peak	2310.000	-42.28	≤-21.20	52.92	≤74	PASS
				Peak	2375.495	-38.92	≤-21.20	56.28	≤74	PASS
				Peak	2390.000	-42.54	≤-21.20	52.66	≤74	PASS
		High	2480	AV	2483.500	-46.99	≤-41.20	48.21	≤54	PASS
				AV	2499.600	-46.95	≤-41.20	48.25	≤54	PASS
				AV	2500.000	-46.92	≤-41.20	48.28	≤54	PASS
				Peak	2483.500	-41.1	≤-21.20	54.10	≤74	PASS
				Peak	2498.160	-38.86	≤-21.20	56.34	≤74	PASS
				Peak	2500.000	-41.64	≤-21.20	53.56	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-38	≤-21.20	57.20	≤74	PASS
				Peak	2358.590	-37.91	≤-21.20	57.29	≤74	PASS
				Peak	2390.000	-39.88	≤-21.20	55.32	≤74	PASS
		High	Hop_2480	Peak	2483.500	-38.72	≤-21.20	56.48	≤74	PASS
				Peak	2497.680	-37.24	≤-21.20	57.96	≤74	PASS
				Peak	2500.000	-39.16	≤-21.20	56.04	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-48.05	≤-41.20	47.15	≤54	PASS
				AV	2384.105	-47.49	≤-41.20	47.71	≤54	PASS
				AV	2390.000	-47.51	≤-41.20	47.69	≤54	PASS
				Peak	2310.000	-43.84	≤-21.20	51.36	≤74	PASS
				Peak	2385.575	-37.6	≤-21.20	57.60	≤74	PASS
				Peak	2390.000	-39.73	≤-21.20	55.47	≤74	PASS
		High	2480	AV	2483.500	-46.86	≤-41.20	48.34	≤54	PASS
				AV	2483.520	-46.86	≤-41.20	48.34	≤54	PASS
				AV	2500.000	-47.18	≤-41.20	48.02	≤54	PASS
				Peak	2483.500	-41.13	≤-21.20	54.07	≤74	PASS
				Peak	2487.520	-38.62	≤-21.20	56.58	≤74	PASS
				Peak	2500.000	-39.62	≤-21.20	55.58	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-40.08	≤-21.20	55.12	≤74	PASS
				Peak	2332.445	-37.67	≤-21.20	57.53	≤74	PASS
				Peak	2390.000	-39.52	≤-21.20	55.68	≤74	PASS
		High	Hop_2480	Peak	2483.500	-39.7	≤-21.20	55.50	≤74	PASS





3DH5	Ant1	0	Peak	2498.400	-36.76	≤-21.20	58.44	≤74	PASS	
			Peak	2500.000	-38.66	≤-21.20	56.54	≤74	PASS	
		Low	2402	AV	2310.000	-48.13	≤-41.20	47.07	≤54	PASS
				AV	2389.565	-47.64	≤-41.20	47.56	≤54	PASS
				AV	2390.000	-47.76	≤-41.20	47.44	≤54	PASS
				Peak	2310.000	-40.13	≤-21.20	55.07	≤74	PASS
				Peak	2316.275	-38.68	≤-21.20	56.52	≤74	PASS
				Peak	2390.000	-44.69	≤-21.20	50.51	≤74	PASS
		High	2480	AV	2483.500	-46.97	≤-41.20	48.23	≤54	PASS
				AV	2483.520	-46.97	≤-41.20	48.23	≤54	PASS
				AV	2500.000	-47.22	≤-41.20	47.98	≤54	PASS
				Peak	2483.500	-40.85	≤-21.20	54.35	≤74	PASS
				Peak	2488.400	-38.63	≤-21.20	56.57	≤74	PASS
		Low	Hop_240 2	Peak	2310.000	-39.79	≤-21.20	55.41	≤74	PASS
				Peak	2362.685	-37.66	≤-21.20	57.54	≤74	PASS
				Peak	2390.000	-40.15	≤-21.20	55.05	≤74	PASS
		High	Hop_248 0	Peak	2483.500	-39.54	≤-21.20	55.66	≤74	PASS
				Peak	2499.840	-37.09	≤-21.20	58.11	≤74	PASS
				Peak	2500.000	-38.47	≤-21.20	56.73	≤74	PASS

Note:

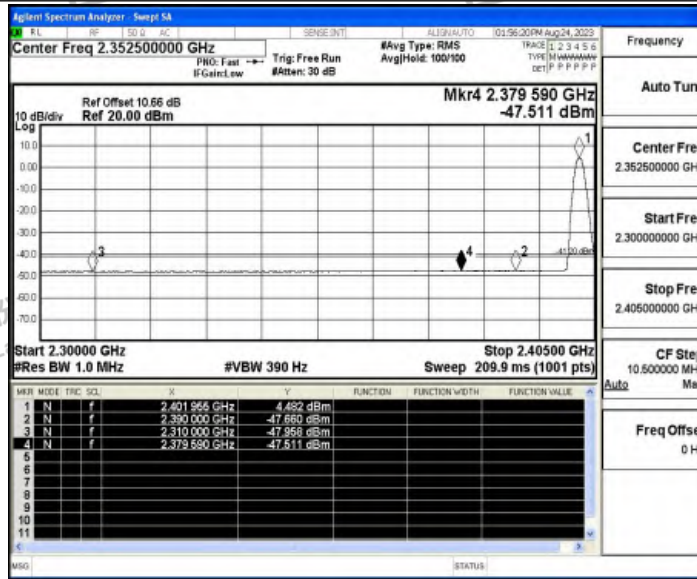
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.



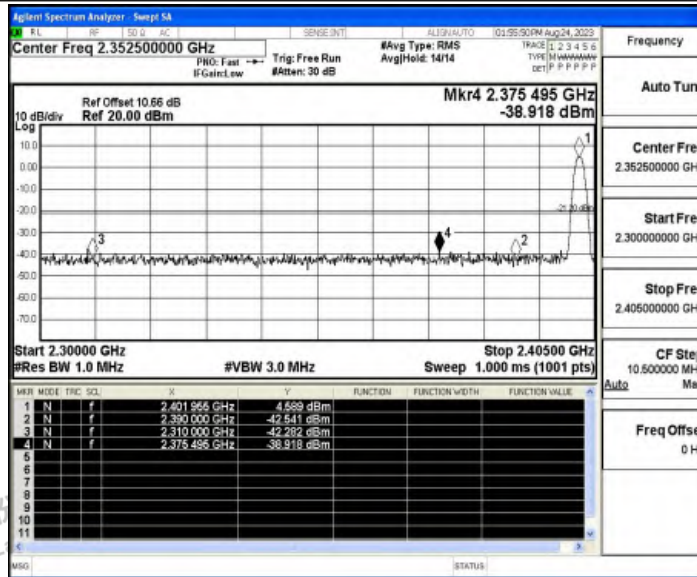


Test Graphs

DH5_Ant1_Low_2402_AV

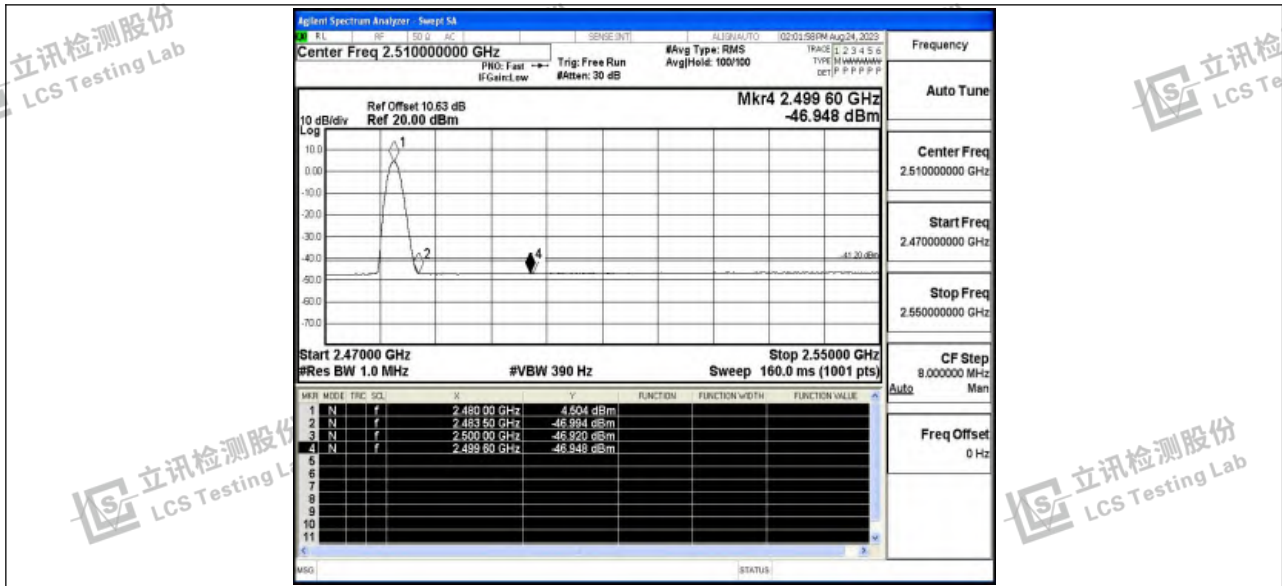


DH5_Ant1_Low_2402_Peak

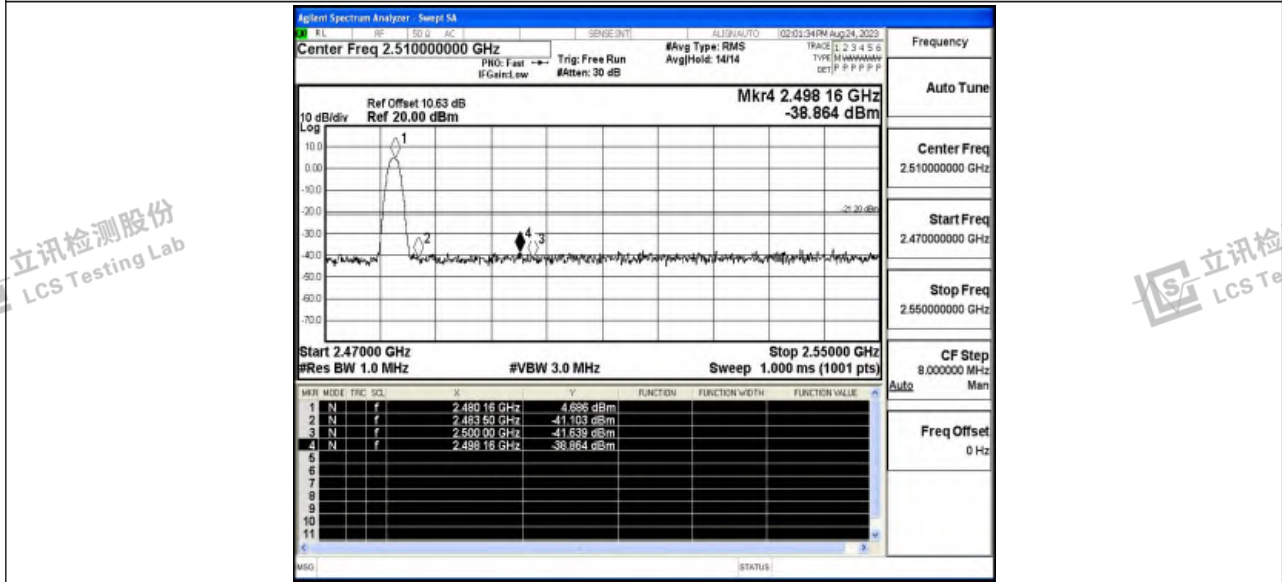


DH5_Ant1_High_2480_AV



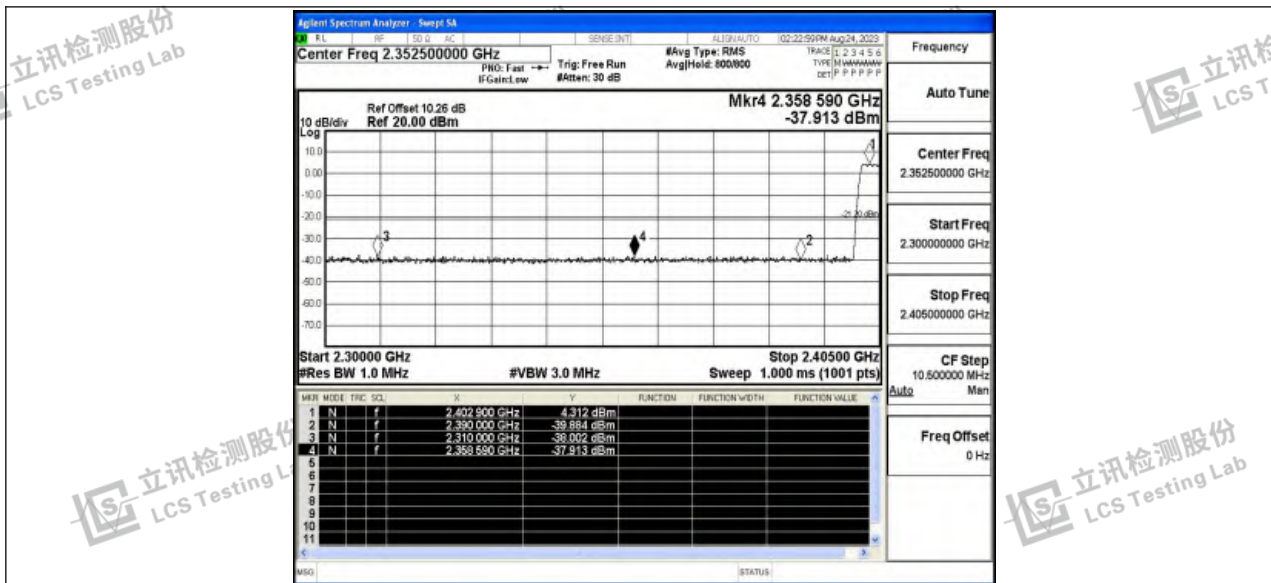


DH5_Ant1_High_2480_Peak

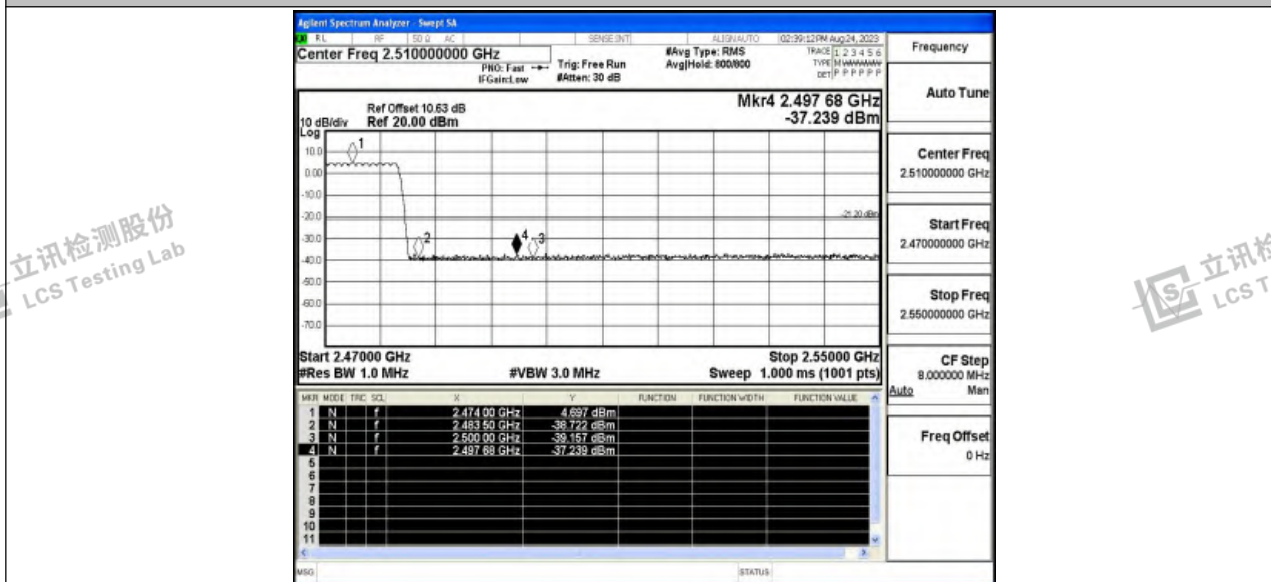


DH5_Ant1_Low_Hop_2402_Peak





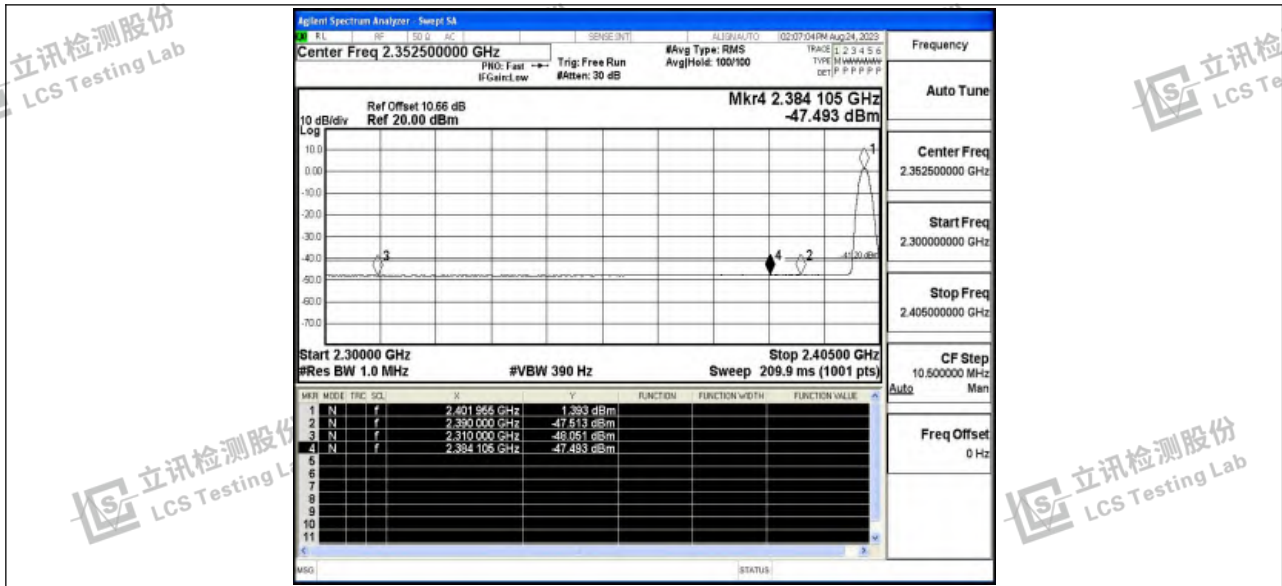
DH5_Ant1_High_Hop_2480_Peak



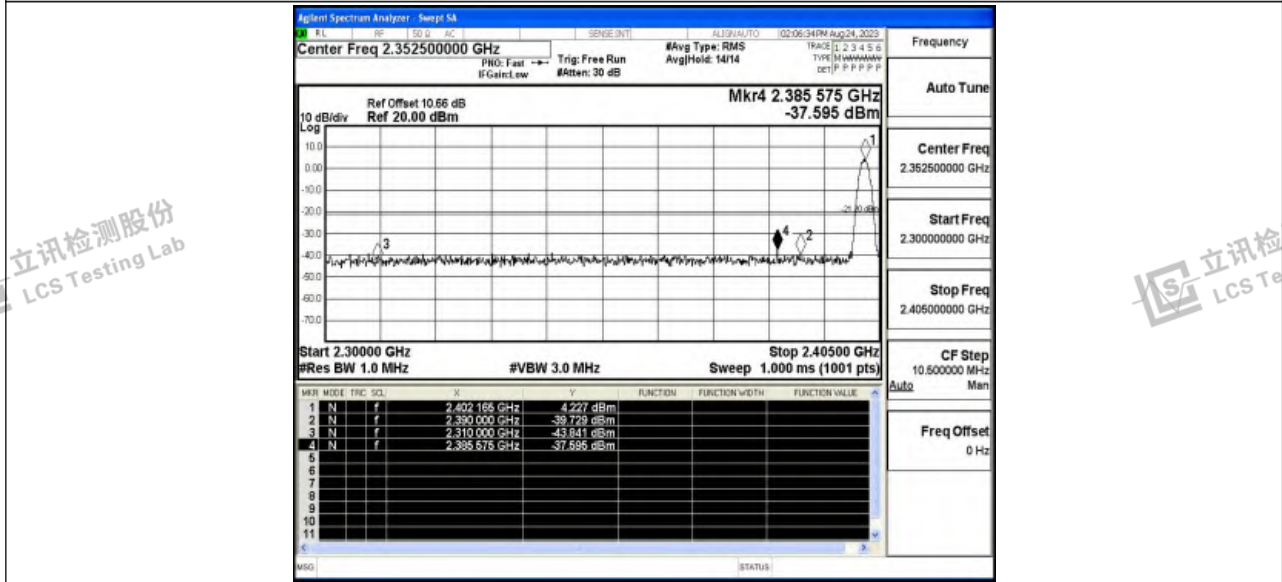
2DH5_Ant1_Low_2402_AV



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 Scan code to check authenticity

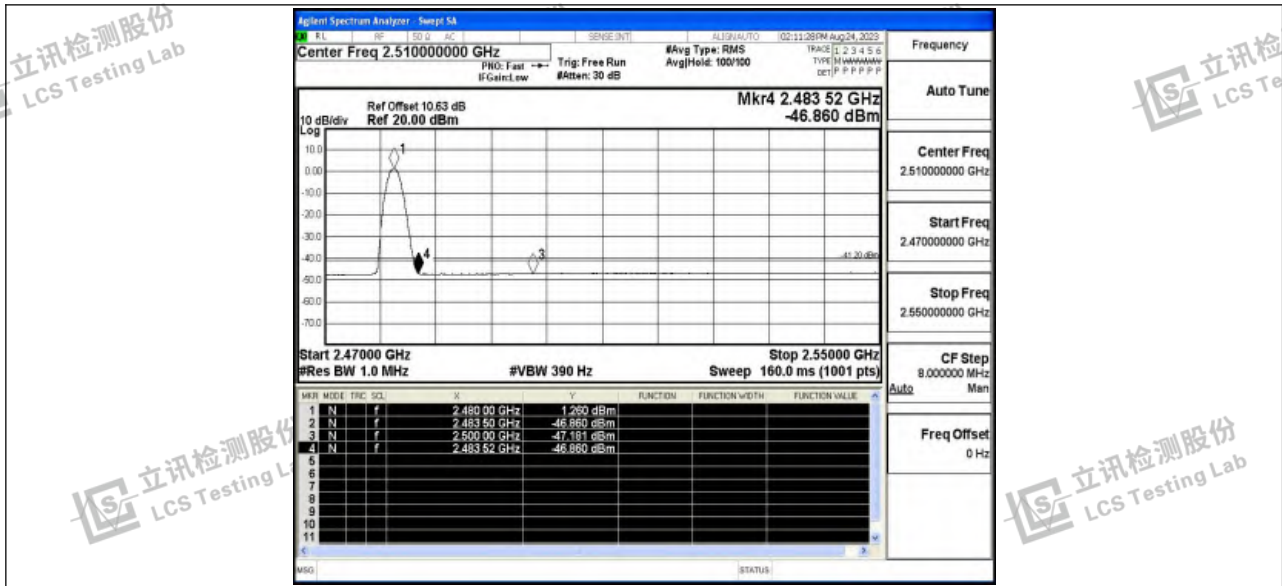


2DH5_Ant1_Low_2402_Peak

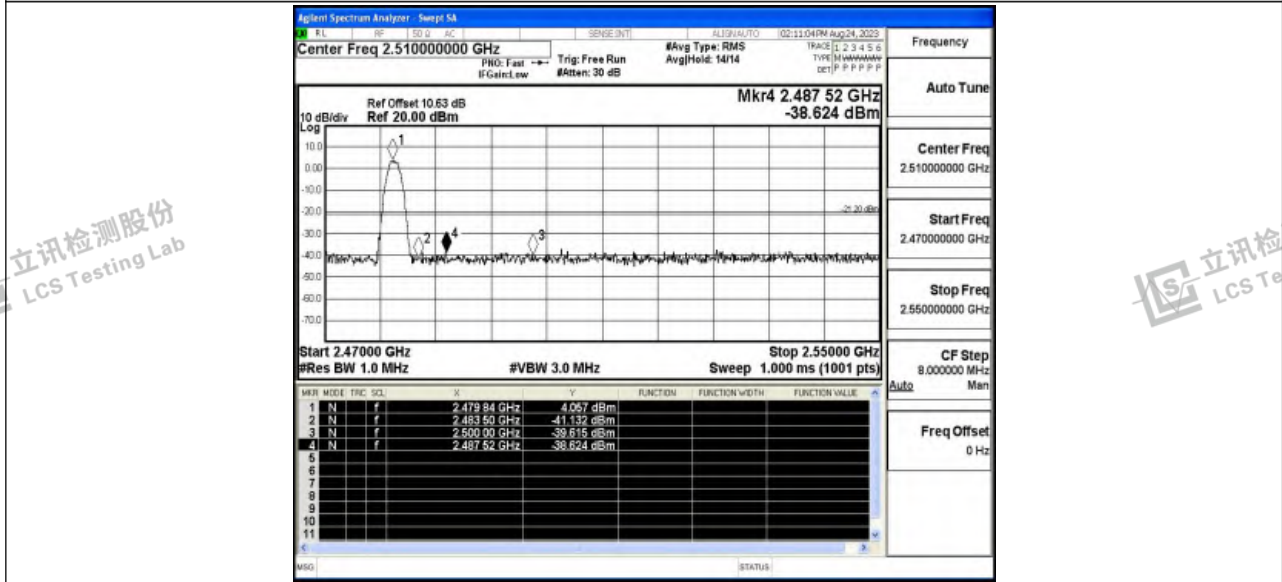


2DH5_Ant1_High_2480_AV



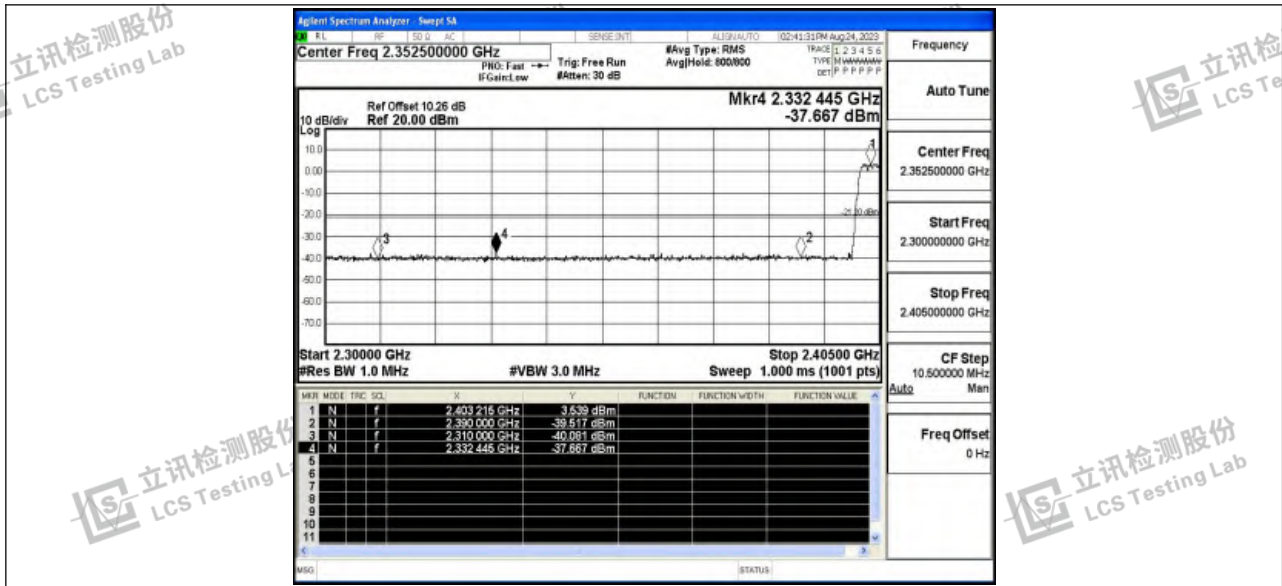


2DH5_Ant1_High_2480_Peak

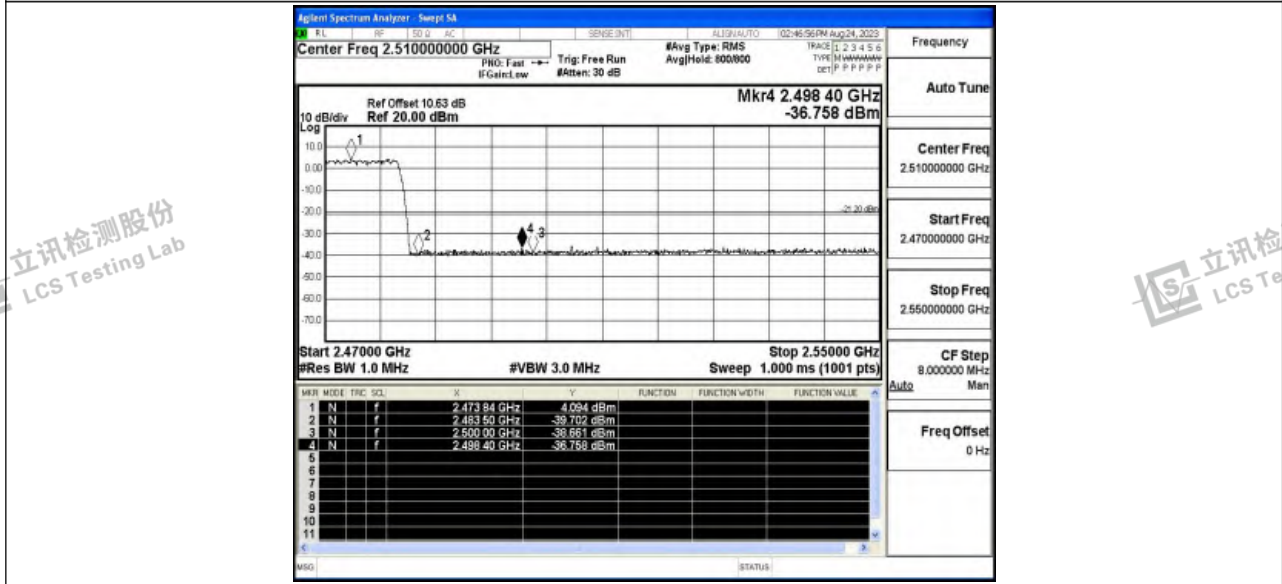


2DH5_Ant1_Low_Hop_2402_Peak



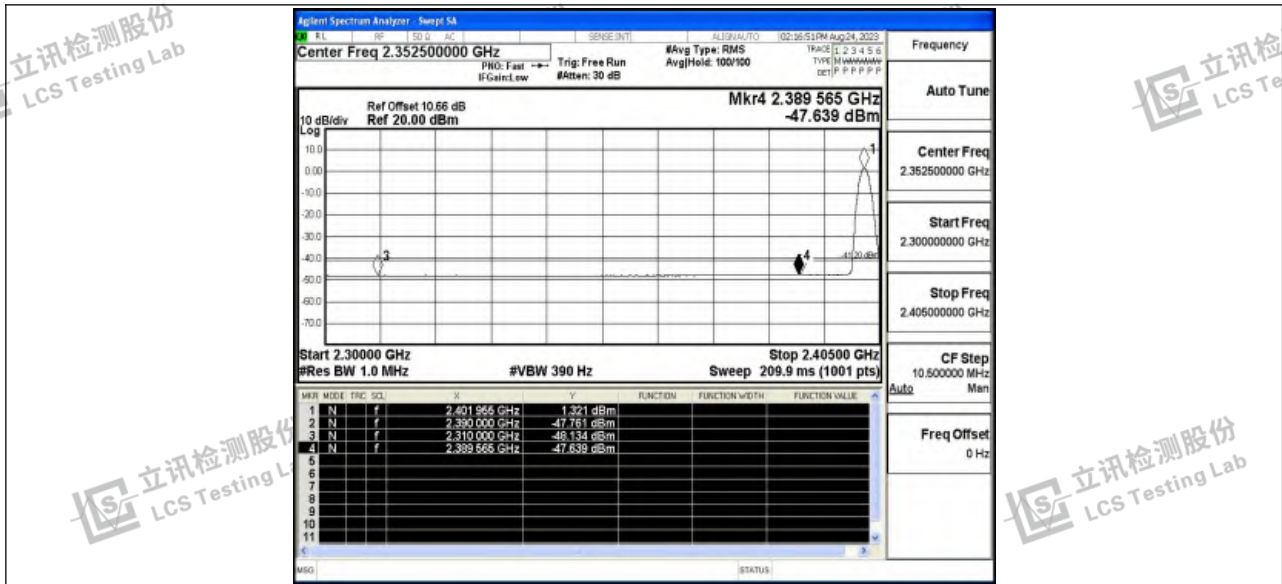


2DH5_Ant1_High_Hop_2480_Peak

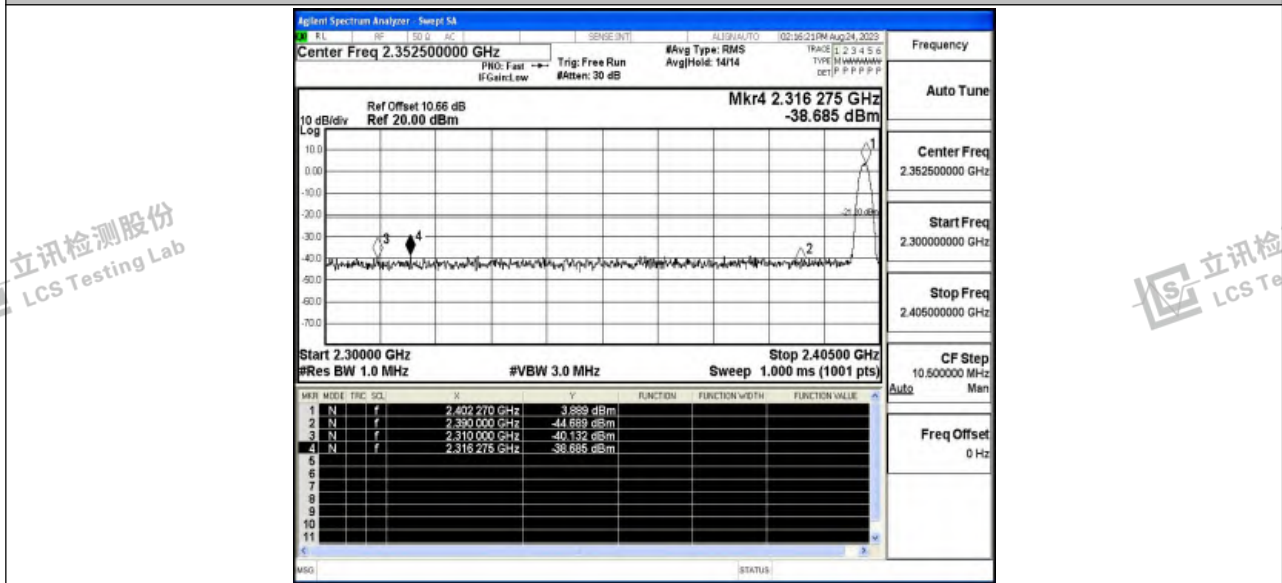


3DH5_Ant1_Low_2402_AV



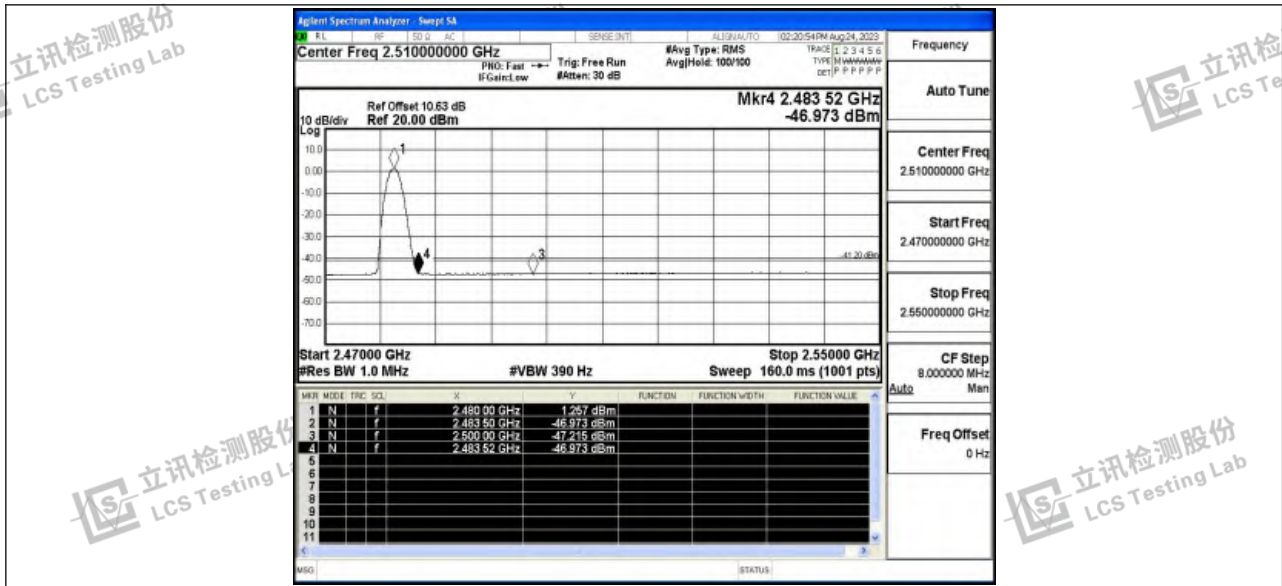


3DH5_Ant1_Low_2402_Peak

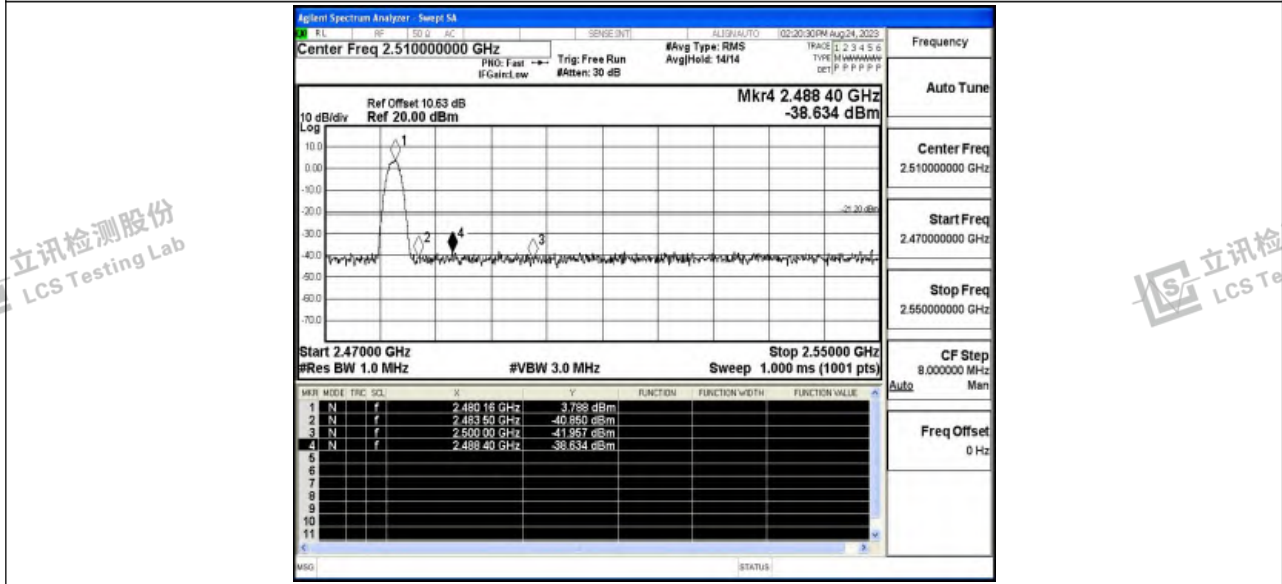


3DH5_Ant1_High_2480_AV



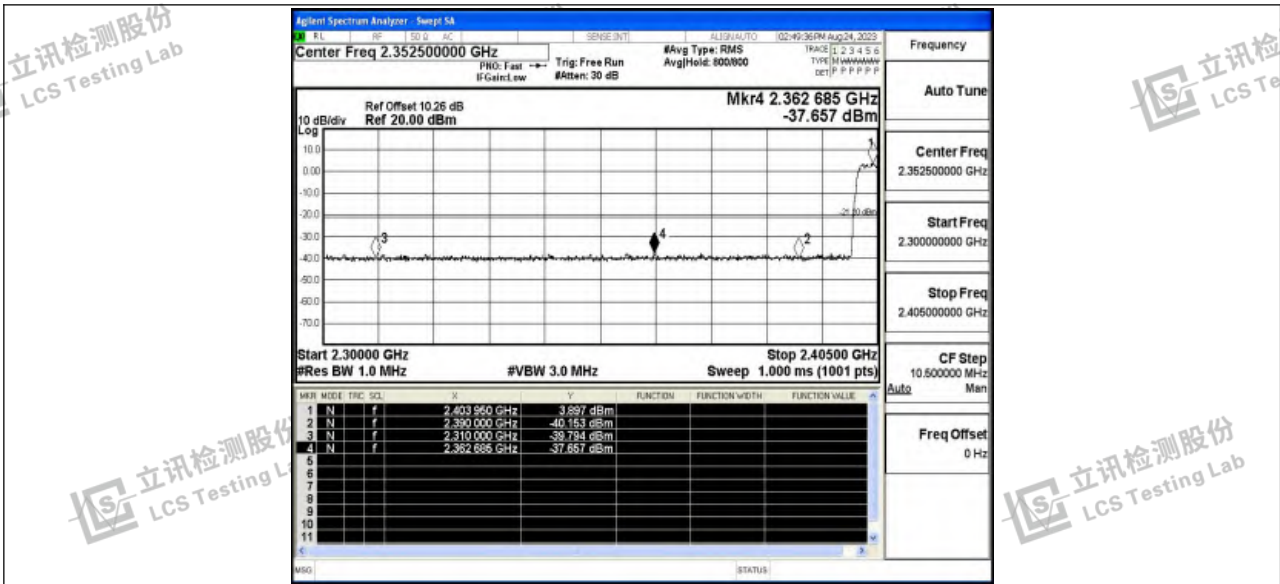


3DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_Hop_2402_Peak





3DH5_Ant1_High_Hop_2480_Peak

