



Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Smart Projector

Test Model: D061AQ

Environmental Conditions

Temperature:	23.1° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	<i>Nick Peng</i>
	Nick Peng
Supervised by:	<i>Taylor Hu</i>
	Taylor Hu





A.1 20dB Emission Bandwidth

Test Result

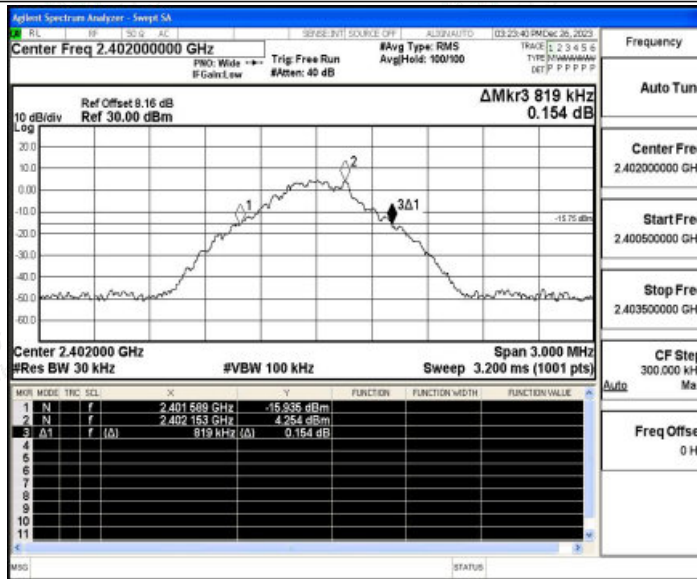
TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.819	2401.589	2402.408	---	---
		2441	0.819	2440.589	2441.408	---	---
		2480	0.840	2479.565	2480.405	---	---
2DH5	Ant1	2402	1.272	2401.364	2402.636	---	---
		2441	1.278	2440.361	2441.639	---	---
		2480	1.272	2479.364	2480.636	---	---
3DH5	Ant1	2402	1.257	2401.358	2402.615	---	---
		2441	1.269	2440.367	2441.636	---	---
		2480	1.302	2479.343	2480.645	---	---



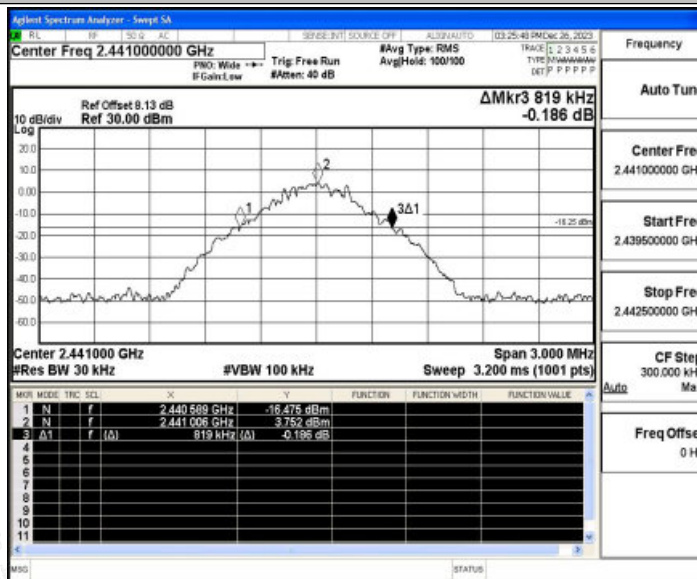


Test Graphs

DH5_Ant1_2402

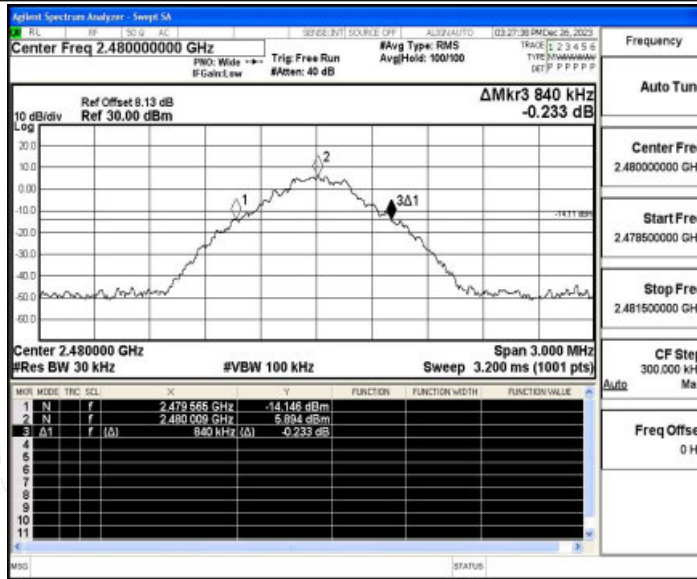


DH5_Ant1_2441

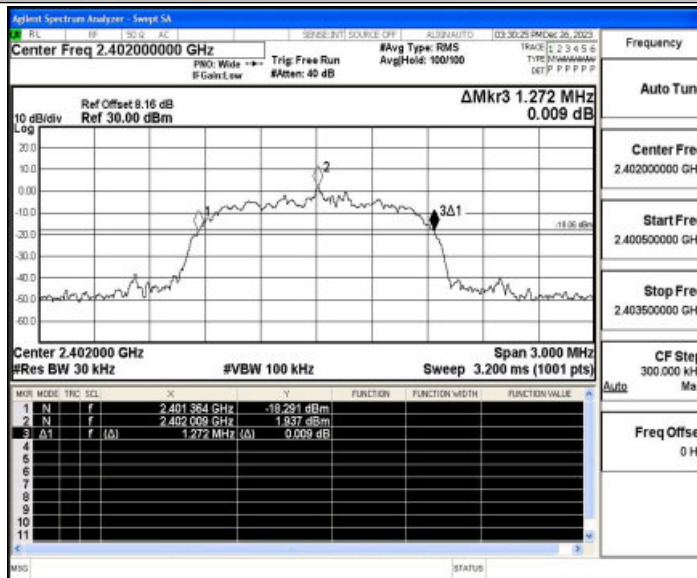


DH5_Ant1_2480



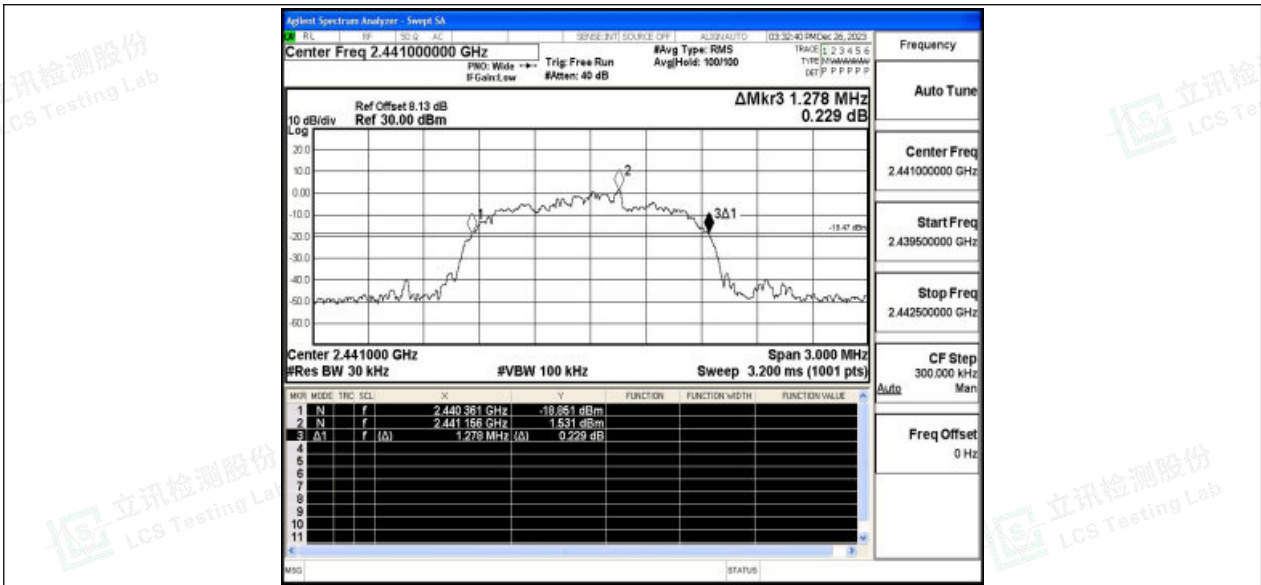


2DH5_Ant1_2402

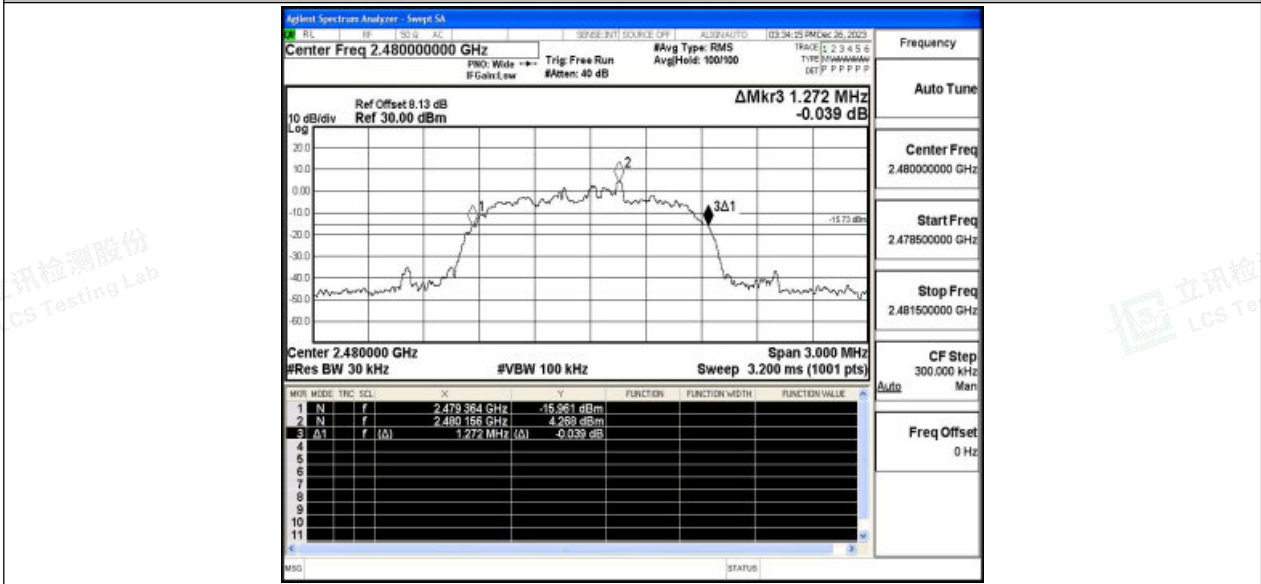


2DH5_Ant1_2441



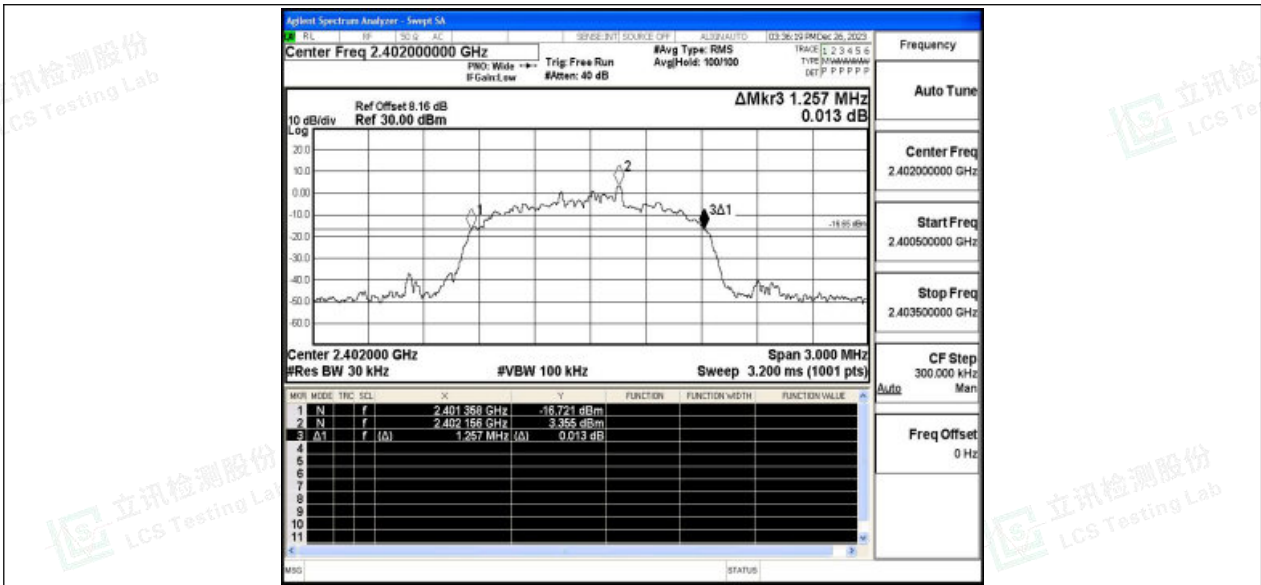


2DH5_Ant1_2480

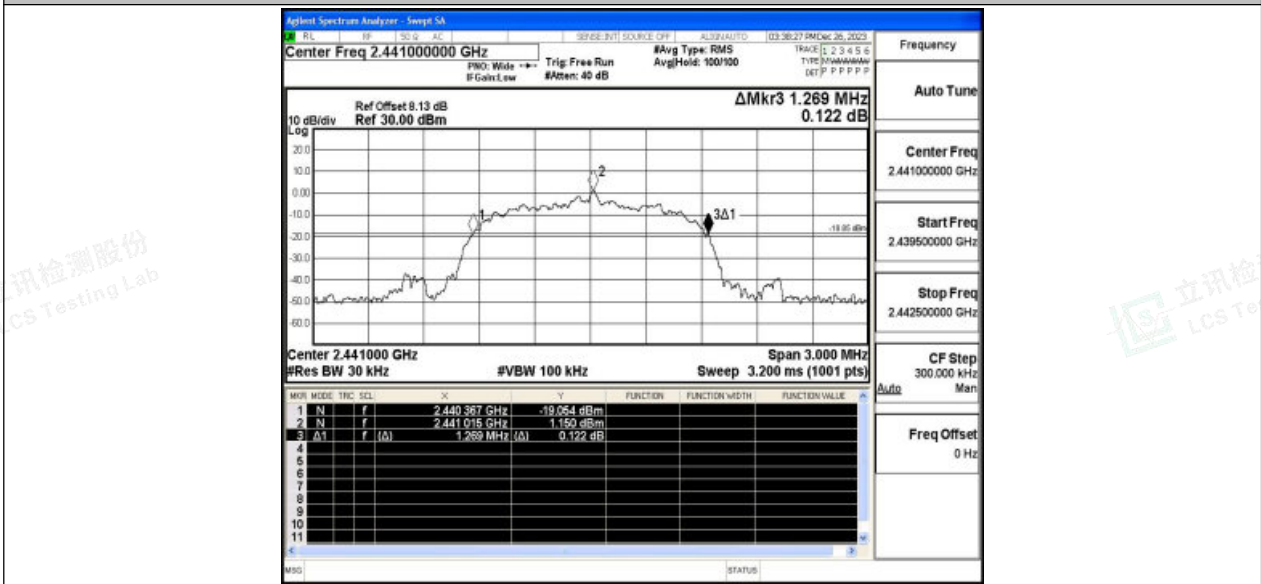


3DH5_Ant1_2402



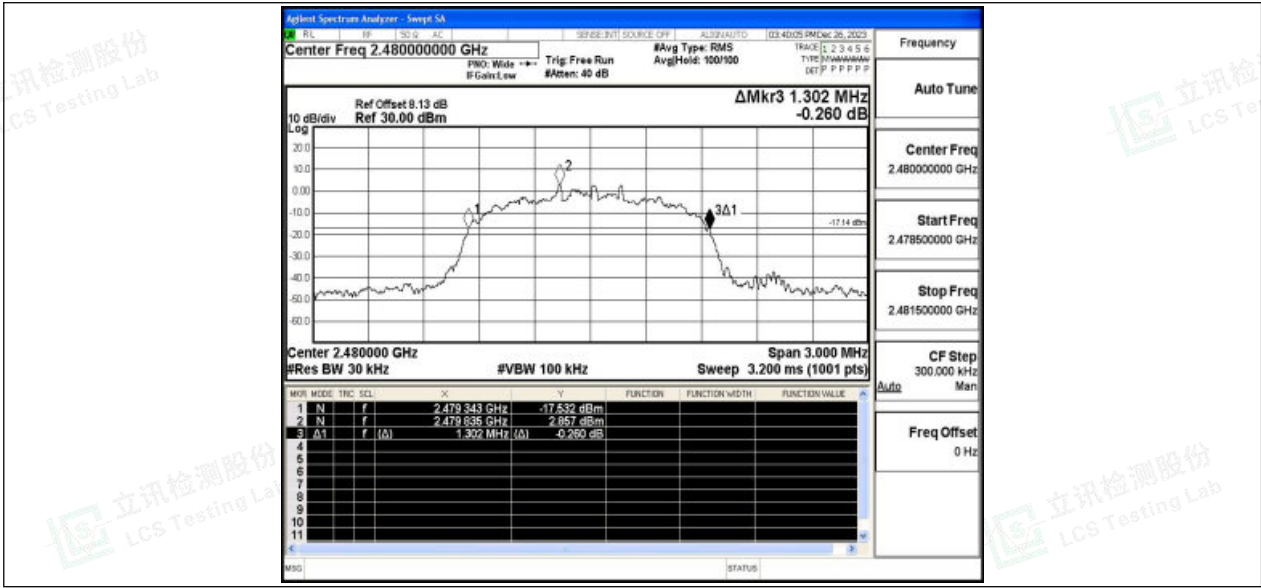


3DH5_Ant1_2441



3DH5_Ant1_2480







A.2 Maximum conducted output power

Test Result Peak

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	6.93	≤20.97	PASS
		2441	6.42	≤20.97	PASS
		2480	8.58	≤20.97	PASS
2DH5	Ant1	2402	5.73	≤20.97	PASS
		2441	5.44	≤20.97	PASS
		2480	7.55	≤20.97	PASS
3DH5	Ant1	2402	5.76	≤20.97	PASS
		2441	5.34	≤20.97	PASS
		2480	7.54	≤20.97	PASS



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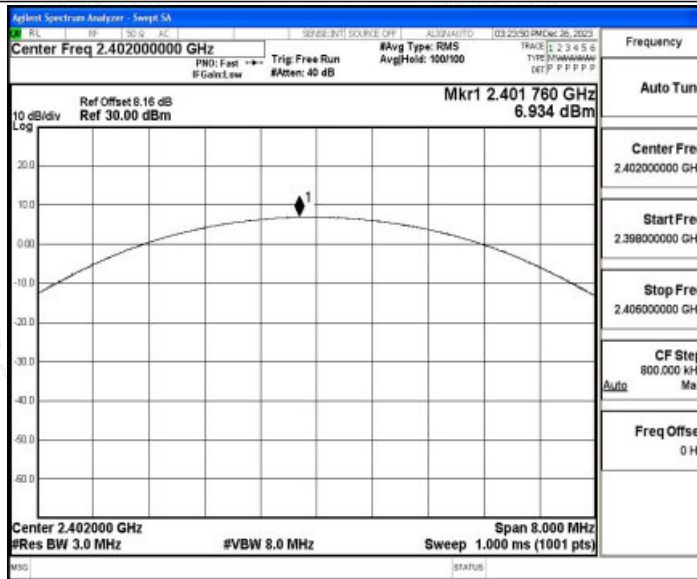
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity

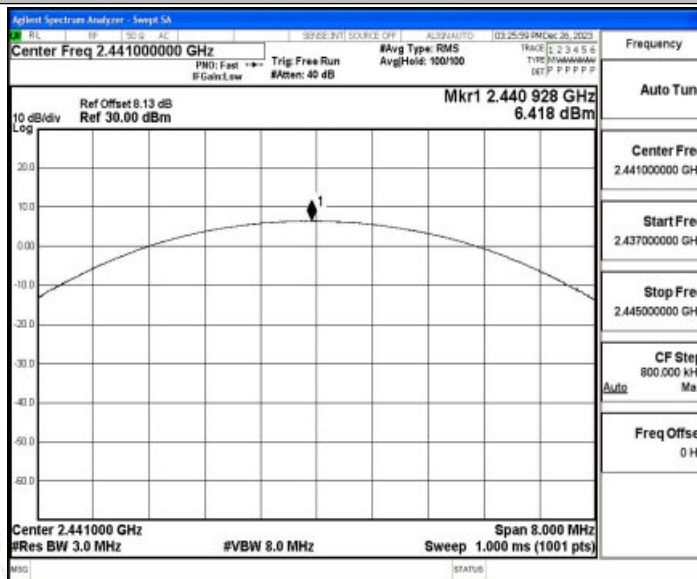


Test Graphs

DH5_Ant1_2402

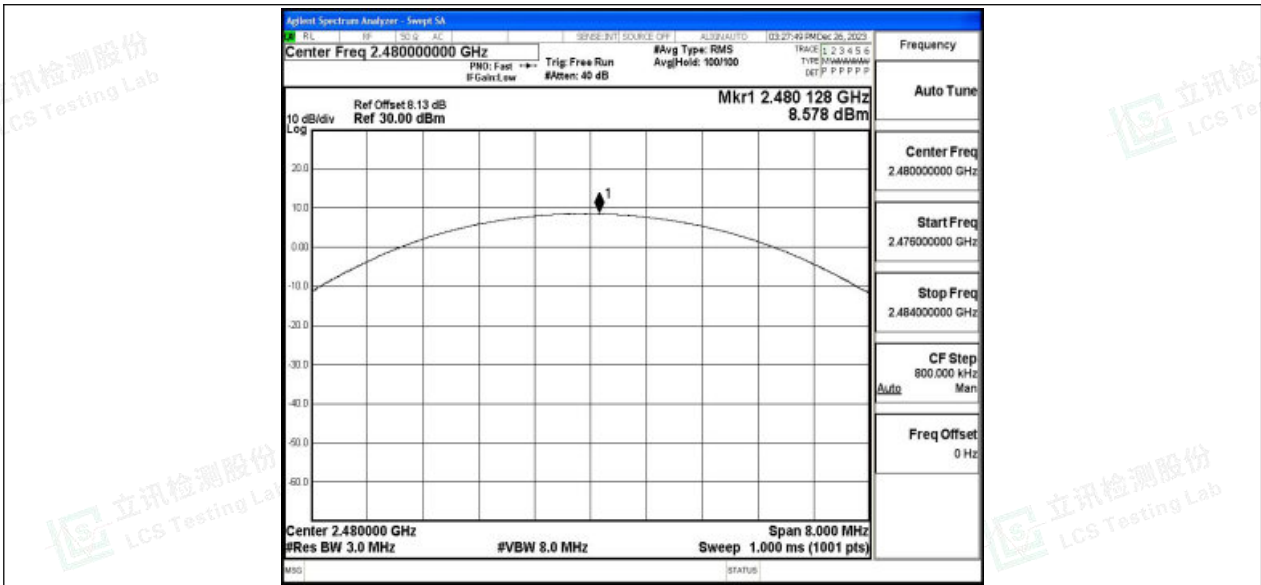


DH5_Ant1_2441

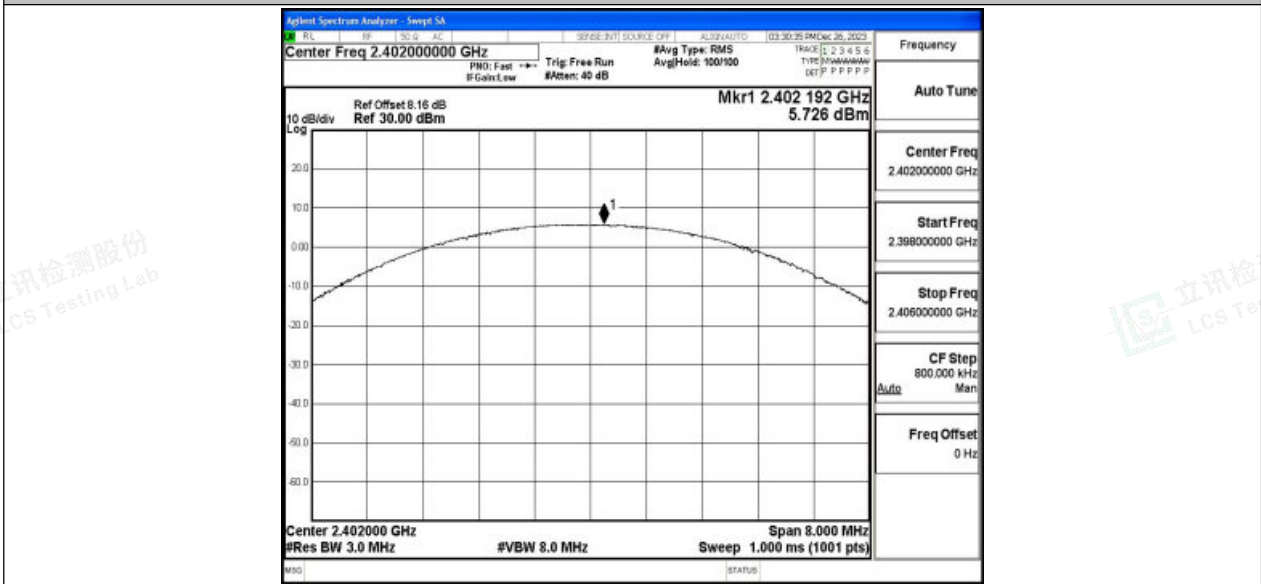


DH5_Ant1_2480



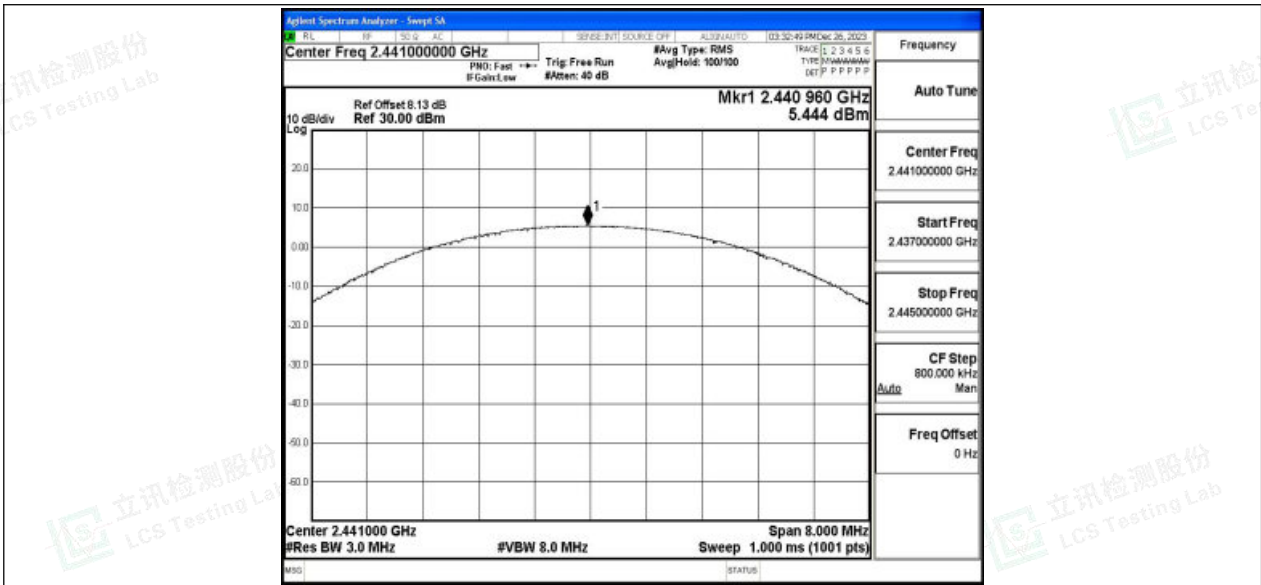


2DH5_Ant1_2402

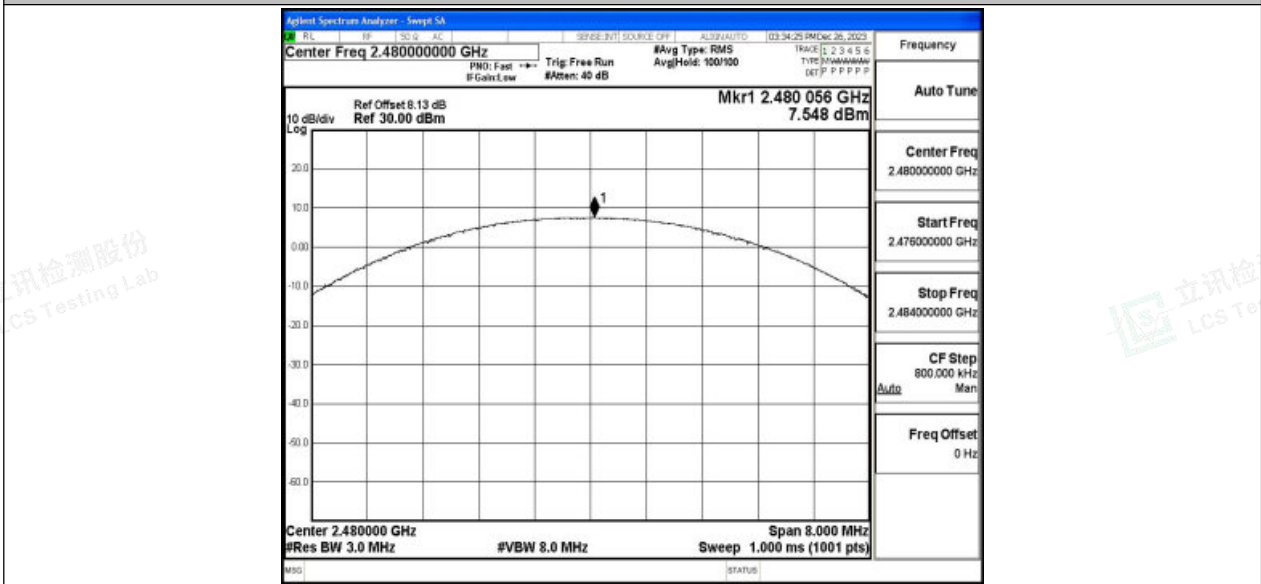


2DH5_Ant1_2441



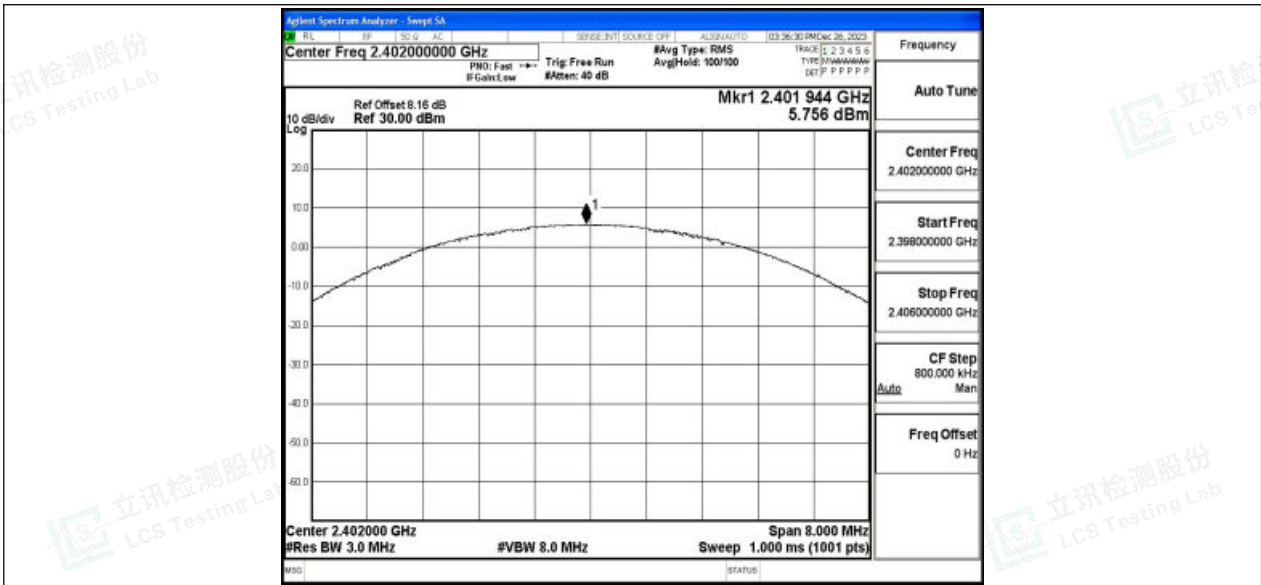


2DH5_Ant1_2480

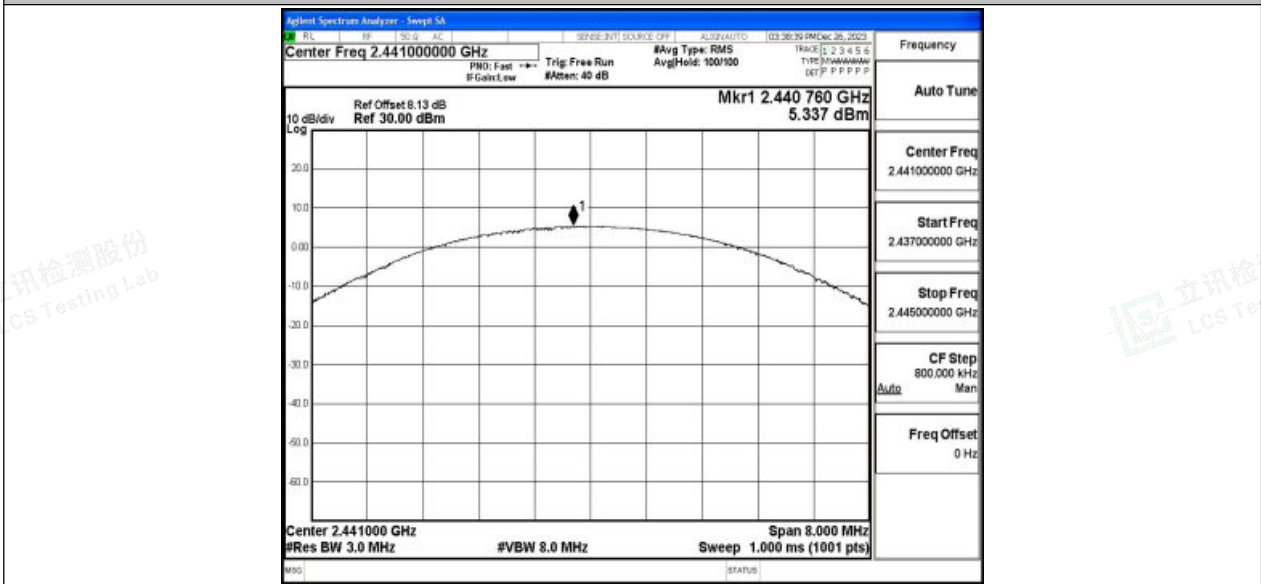


3DH5_Ant1_2402



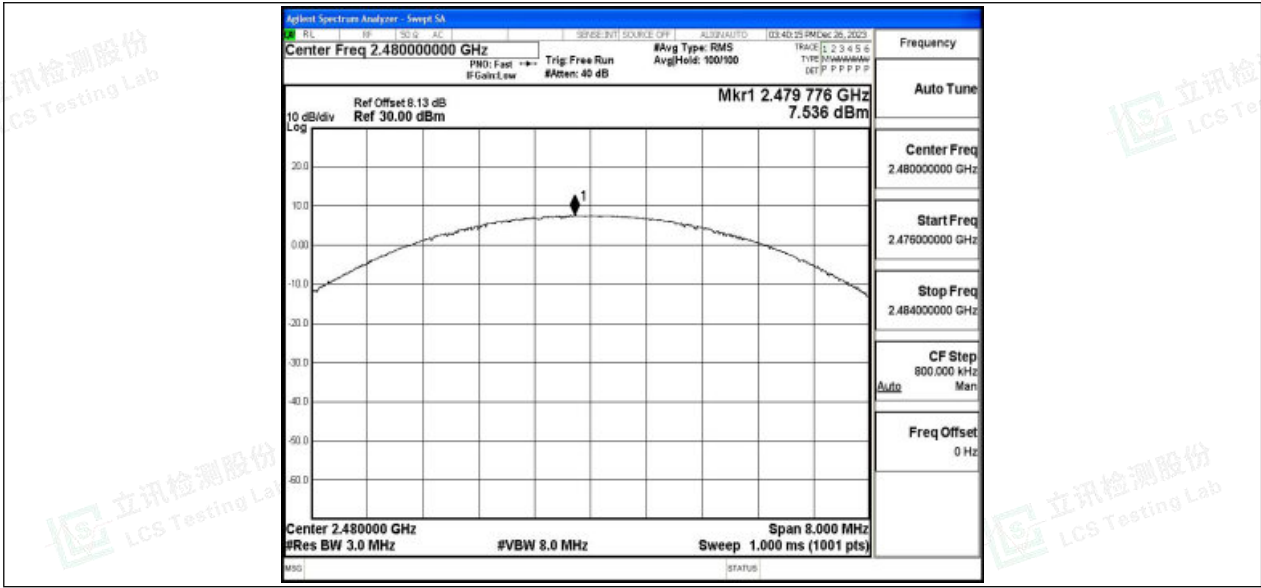


3DH5_Ant1_2441



3DH5_Ant1_2480







A.3 Carrier frequency separation

Test Result

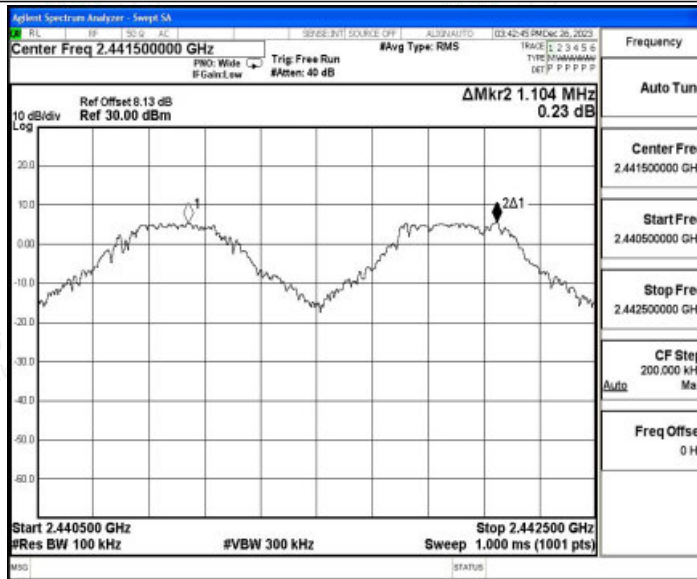
TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.104	≥0.560	PASS
2DH5	Ant1	Hop	1.286	≥0.852	PASS
3DH5	Ant1	Hop	1.036	≥0.868	PASS



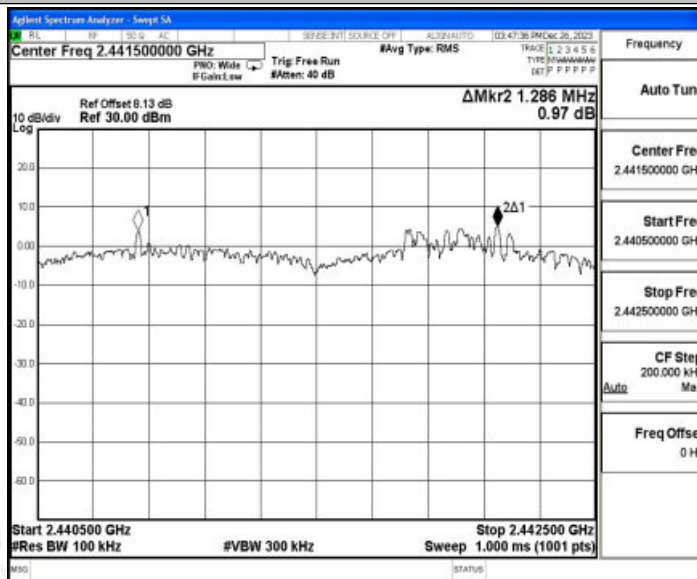


Test Graphs

DH5_Ant1_Hop

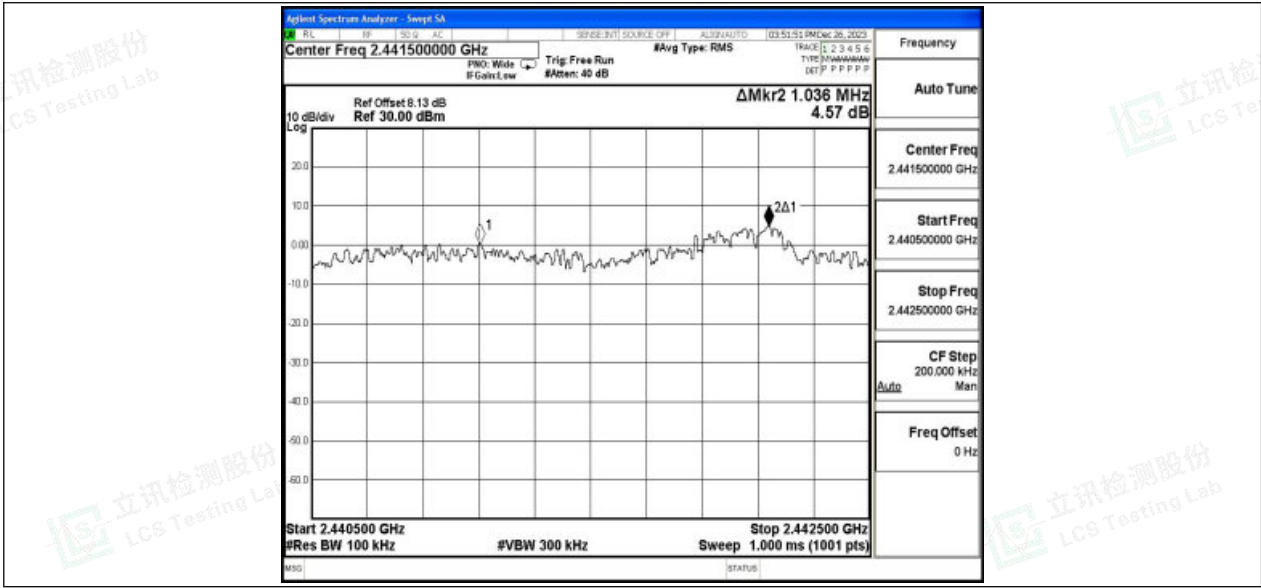


2DH5_Ant1_Hop



3DH5_Ant1_Hop







A.4 Time of occupancy

Test Result

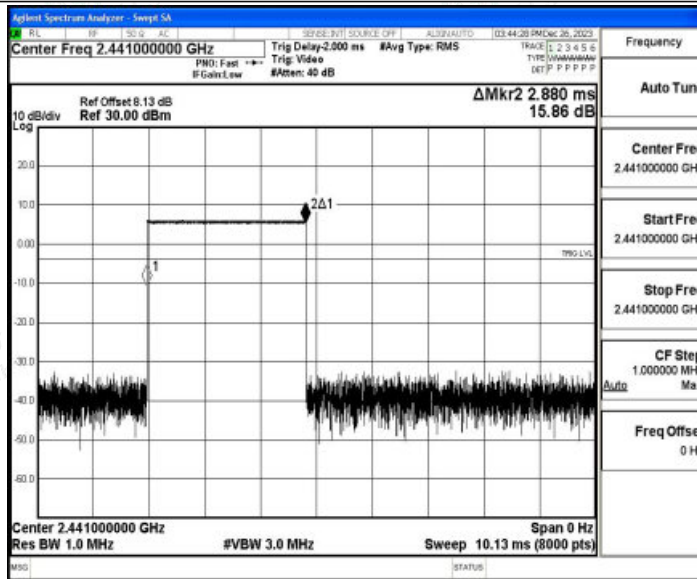
TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.880	106.67	0.307	≤0.4	PASS
2DH5	Ant1	Hop	2.884	106.67	0.308	≤0.4	PASS
3DH5	Ant1	Hop	2.885	106.67	0.308	≤0.4	PASS



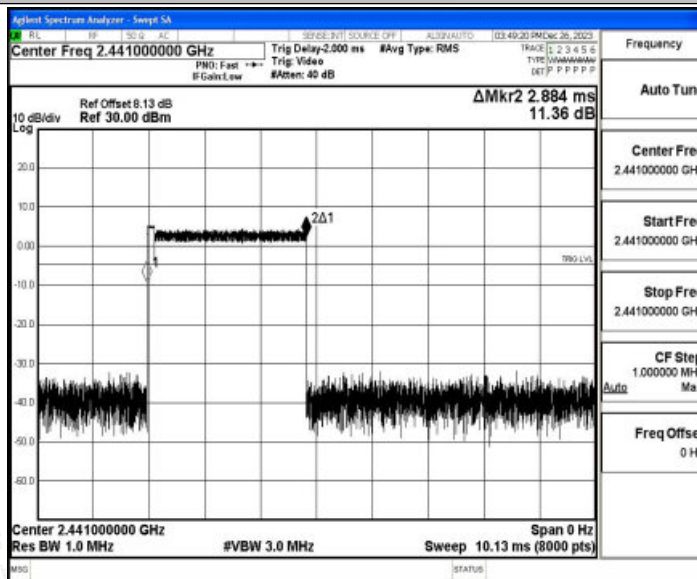


Test Graphs

DH5_Ant1_Hop

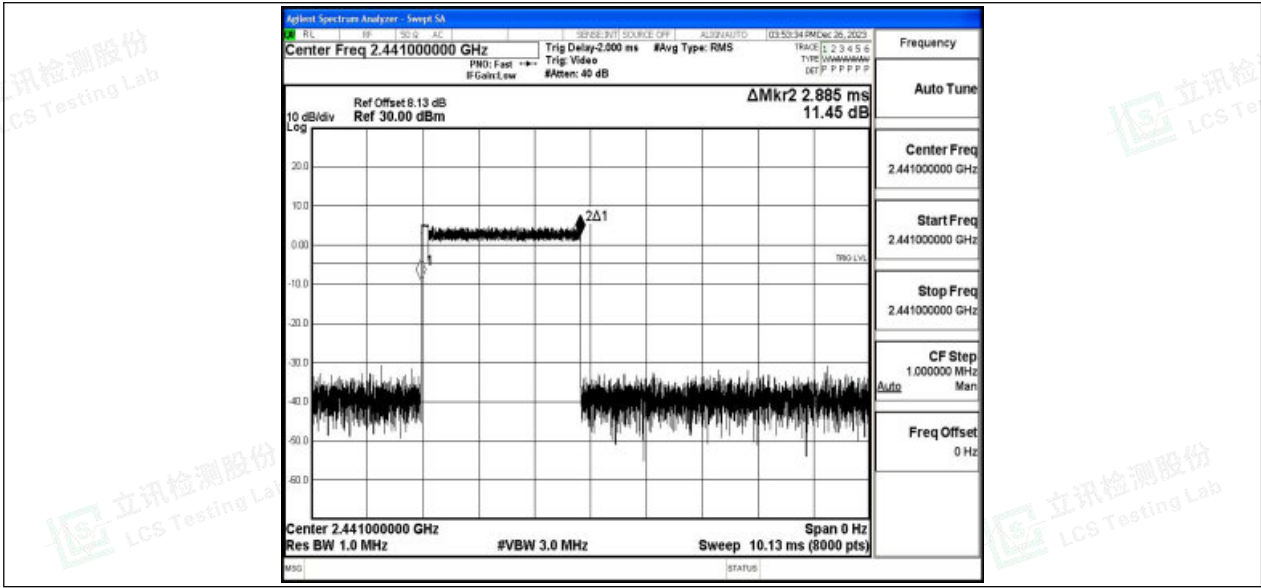


2DH5_Ant1_Hop



3DH5_Ant1_Hop







A.5 Number of hopping channels

Test Result

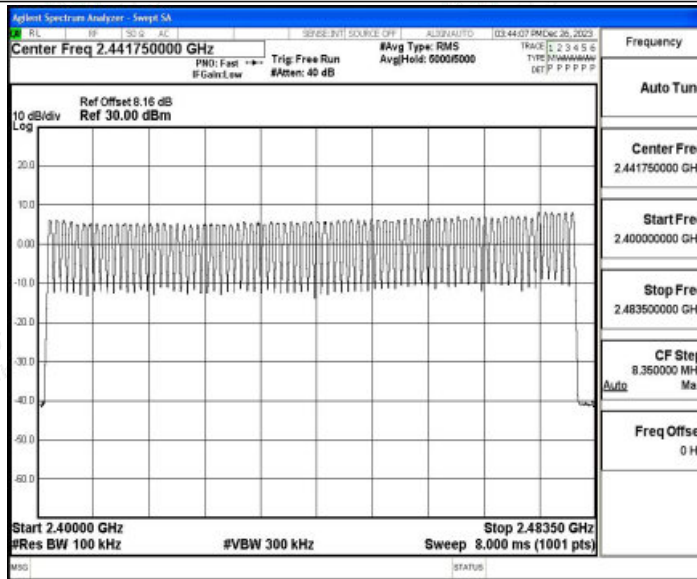
TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS



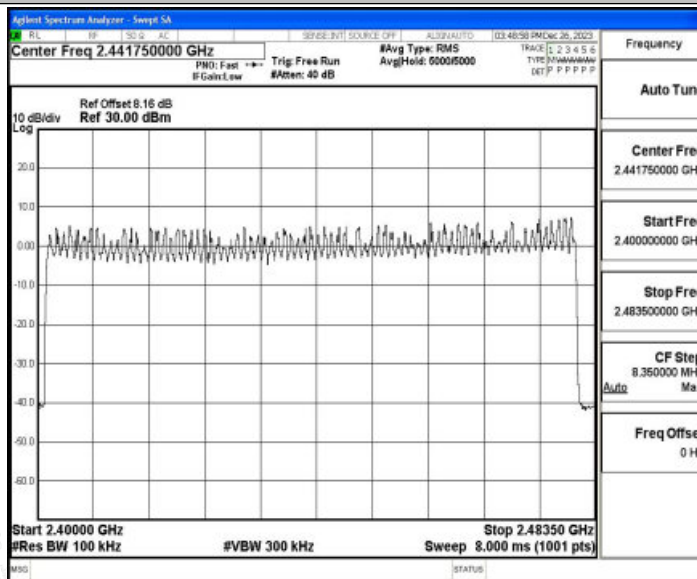


Test Graphs

DH5_Ant1_Hop

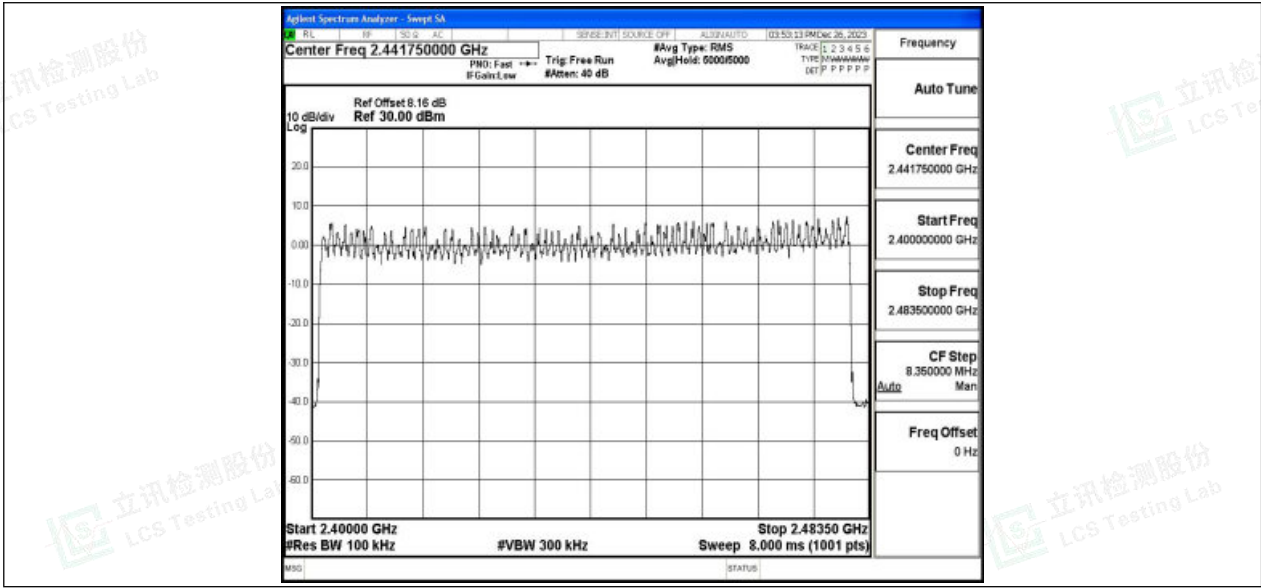


2DH5_Ant1_Hop



3DH5_Ant1_Hop







A.6 Band edge measurements

Test Result

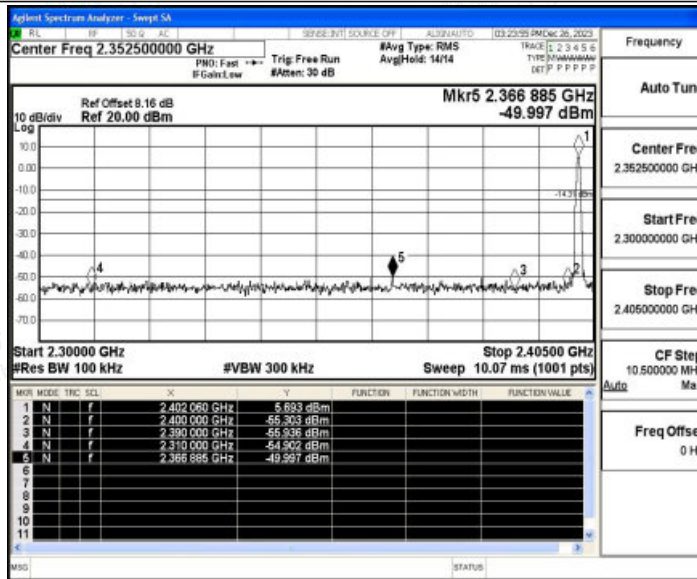
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	5.69	-50	≤-14.31	PASS
		High	2480	7.56	-50.47	≤-12.44	PASS
		Low	Hop_2402	5.45	-49.72	≤-14.55	PASS
		High	Hop_2480	7.95	-47.88	≤-12.05	PASS
2DH5	Ant1	Low	2402	4.53	-50.99	≤-15.47	PASS
		High	2480	5.57	-50.6	≤-14.43	PASS
		Low	Hop_2402	3.39	-50.28	≤-16.61	PASS
		High	Hop_2480	6.23	-48.99	≤-13.77	PASS
3DH5	Ant1	Low	2402	-0.17	-50.49	≤-20.17	PASS
		High	2480	7.01	-50.68	≤-12.99	PASS
		Low	Hop_2402	4.86	-49.09	≤-15.14	PASS
		High	Hop_2480	6.09	-49.55	≤-13.91	PASS



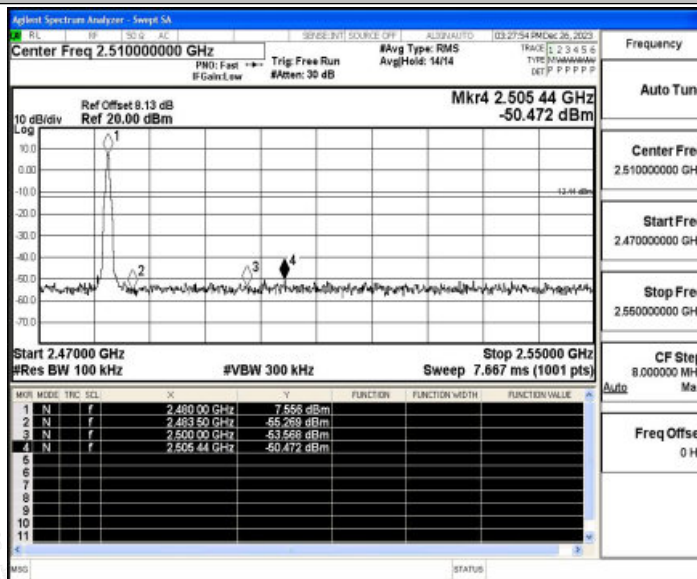


Test Graphs

DH5_Ant1_Low_2402

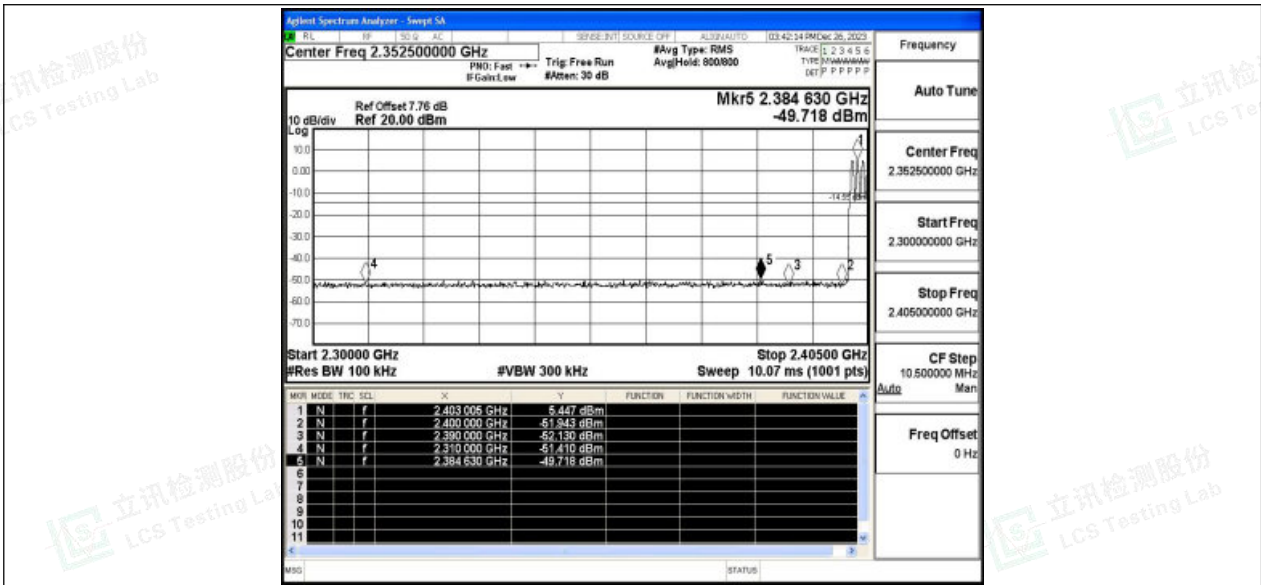


DH5_Ant1_High_2480

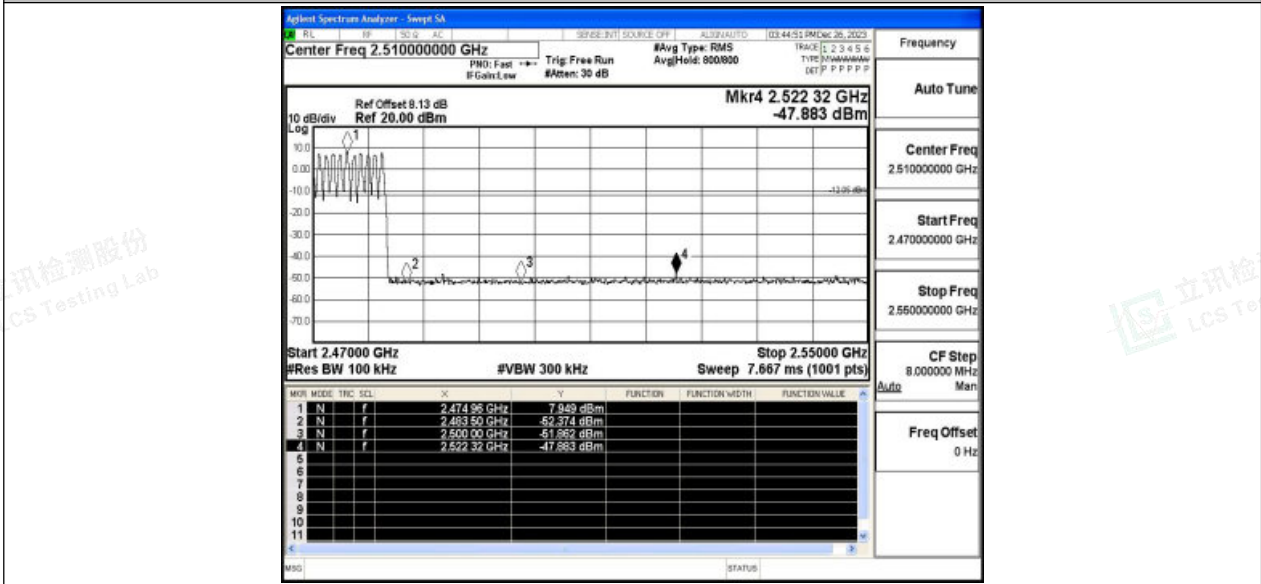


DH5_Ant1_Low_Hop_2402



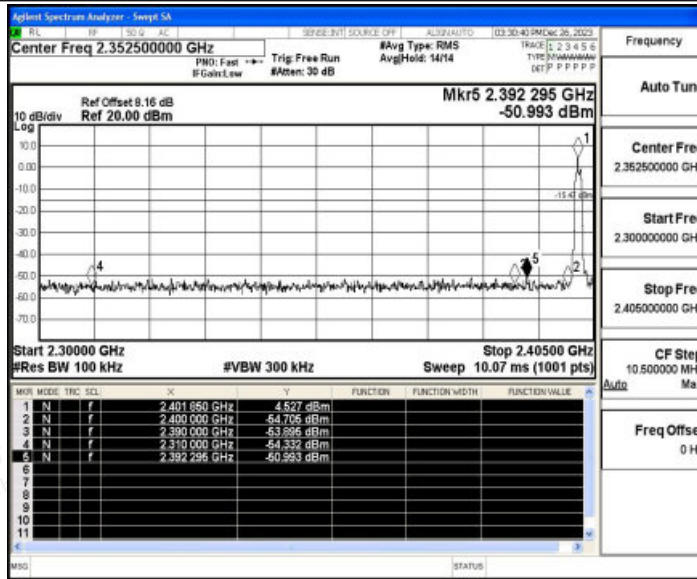


DH5_Ant1_High_Hop_2480

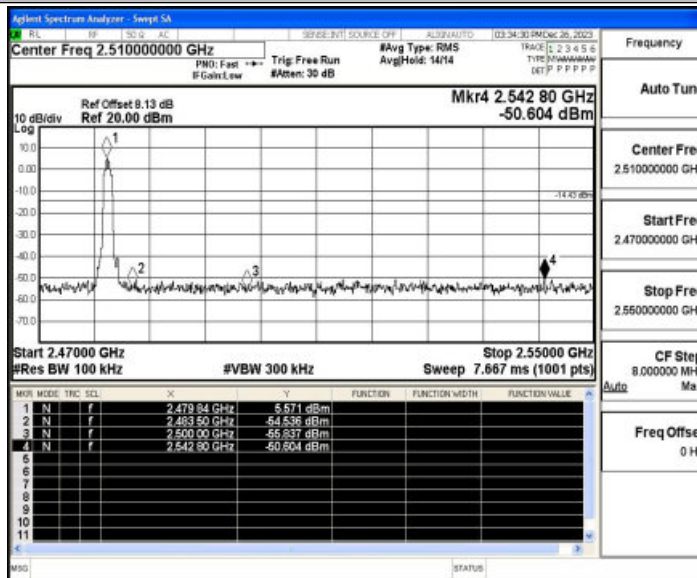


2DH5_Ant1_Low_2402



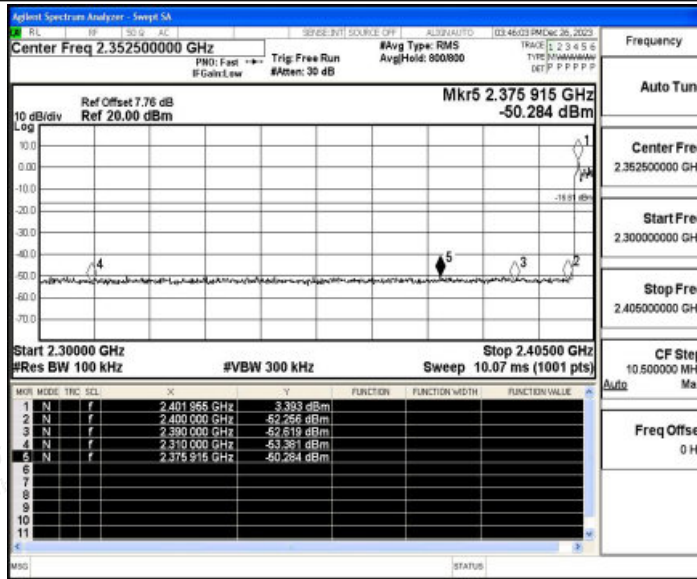


2DH5_Ant1_High_2480

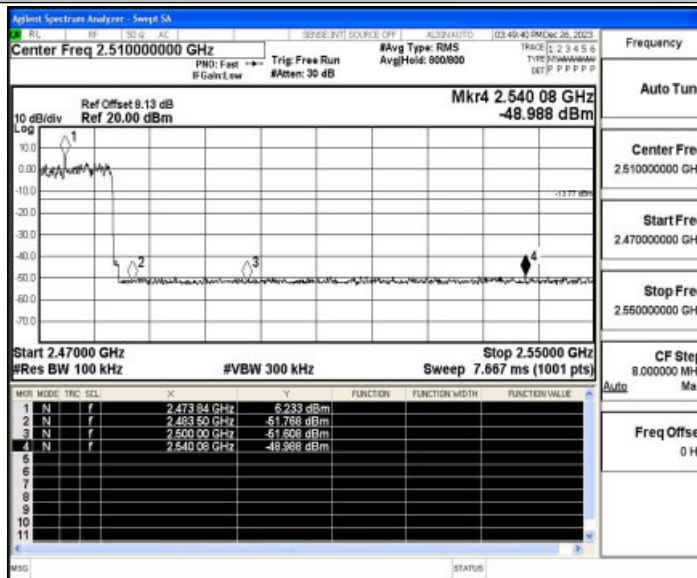


2DH5_Ant1_Low_Hop_2402



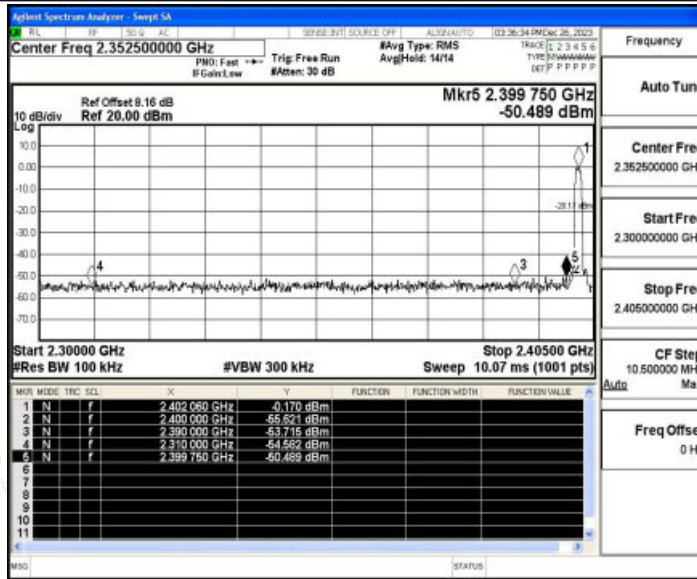


2DH5_Ant1_High_Hop_2480

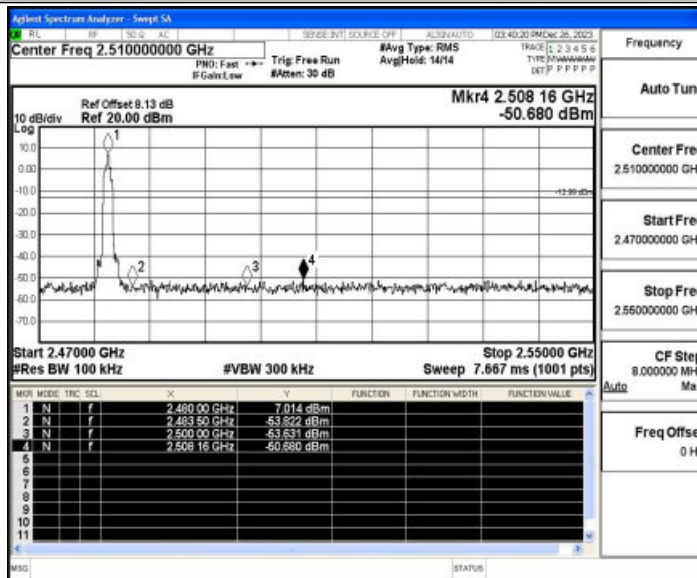


3DH5_Ant1_Low_2402



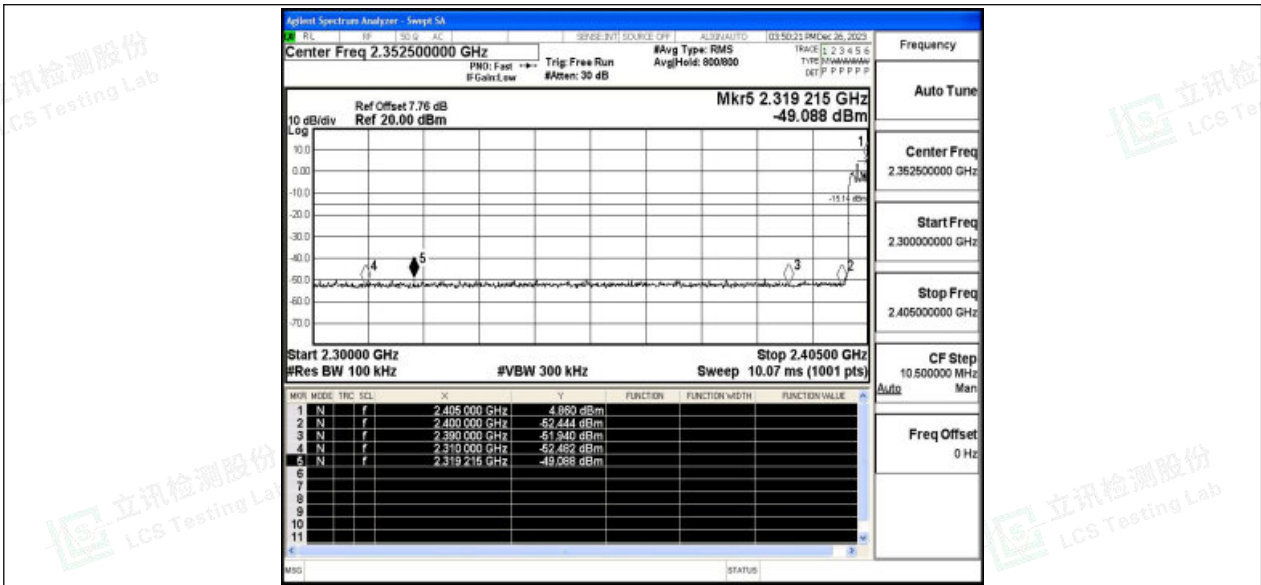


3DH5_Ant1_High_2480

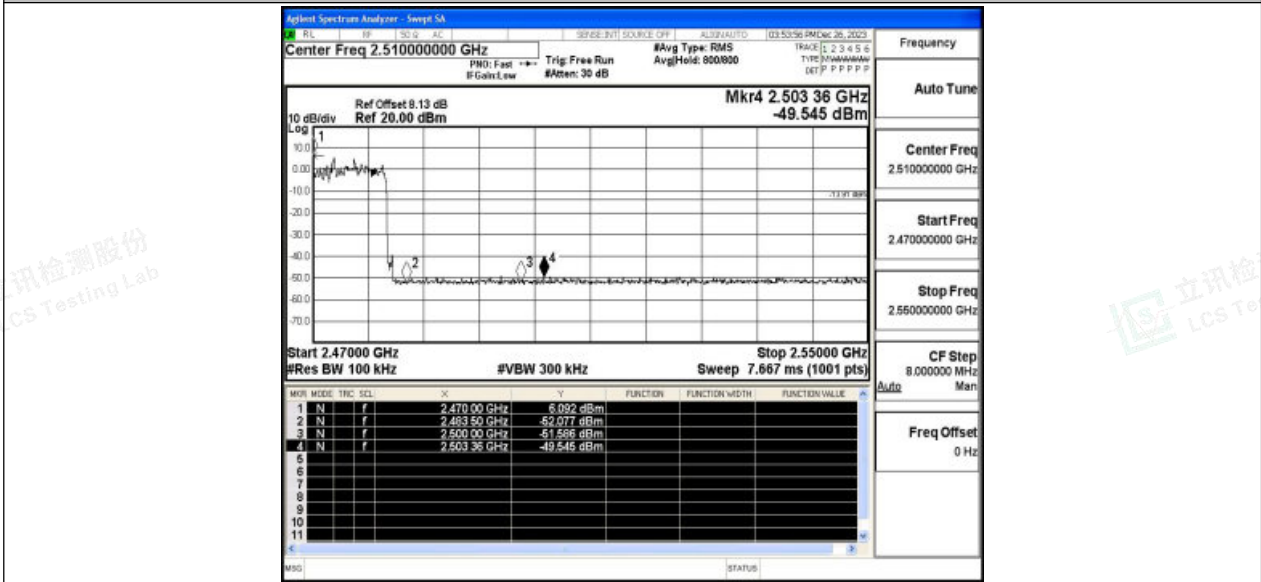


3DH5_Ant1_Low_Hop_2402





3DH5_Ant1_High_Hop_2480





A.7 Conducted Spurious Emission

Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	6.08	6.08	---	PASS
			30~1000	6.08	-60.54	≤-13.92	PASS
			1000~26500	6.08	-46.9	≤-13.92	PASS
		2441	Reference	5.82	5.82	---	PASS
			30~1000	5.82	-61.9	≤-14.18	PASS
			1000~26500	5.82	-48.53	≤-14.18	PASS
		2480	Reference	8.00	8.00	---	PASS
			30~1000	8.00	-61.69	≤-12	PASS
			1000~26500	8.00	-46.87	≤-12	PASS
2DH5	Ant1	2402	Reference	4.43	4.43	---	PASS
			30~1000	4.43	-61.93	≤-15.57	PASS
			1000~26500	4.43	-48.75	≤-15.57	PASS
		2441	Reference	4.27	4.27	---	PASS
			30~1000	4.27	-61.02	≤-15.73	PASS
			1000~26500	4.27	-49.13	≤-15.73	PASS
		2480	Reference	7.20	7.20	---	PASS
			30~1000	7.20	-61.5	≤-12.8	PASS
			1000~26500	7.20	-48.75	≤-12.8	PASS
3DH5	Ant1	2402	Reference	5.26	5.26	---	PASS
			30~1000	5.26	-61.95	≤-14.74	PASS
			1000~26500	5.26	-49.04	≤-14.74	PASS
		2441	Reference	4.95	4.95	---	PASS
			30~1000	4.95	-60.52	≤-15.05	PASS
			1000~26500	4.95	-48.49	≤-15.05	PASS
		2480	Reference	7.18	7.18	---	PASS
			30~1000	7.18	-61.38	≤-12.82	PASS
			1000~26500	7.18	-48.86	≤-12.82	PASS



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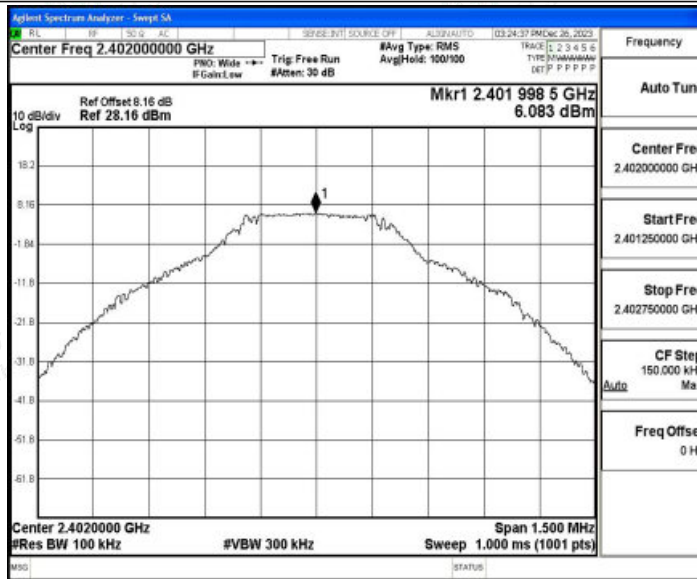
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity

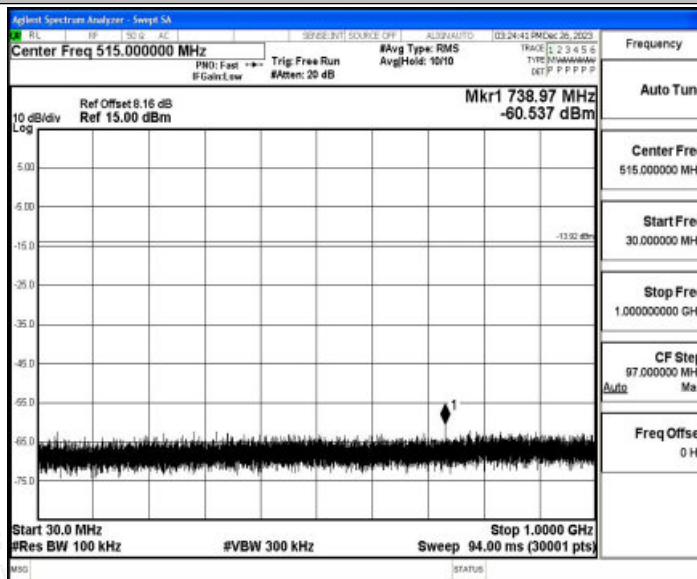


Test Graphs

DH5_Ant1_2402_0~Reference

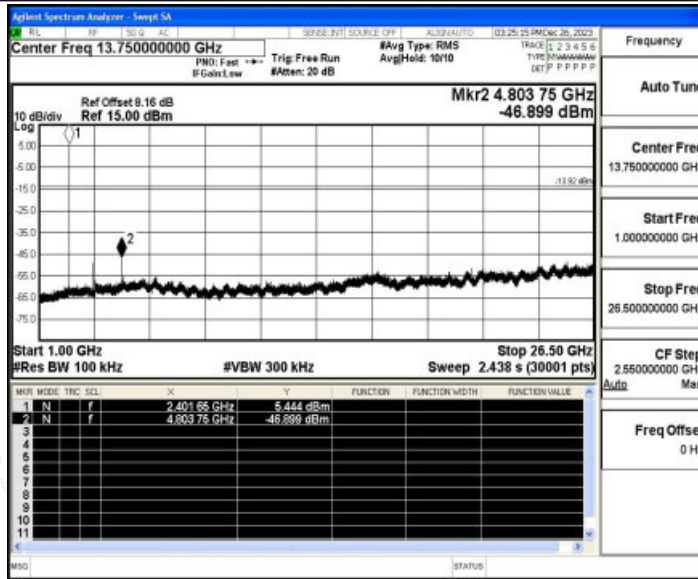


DH5_Ant1_2402_30~1000

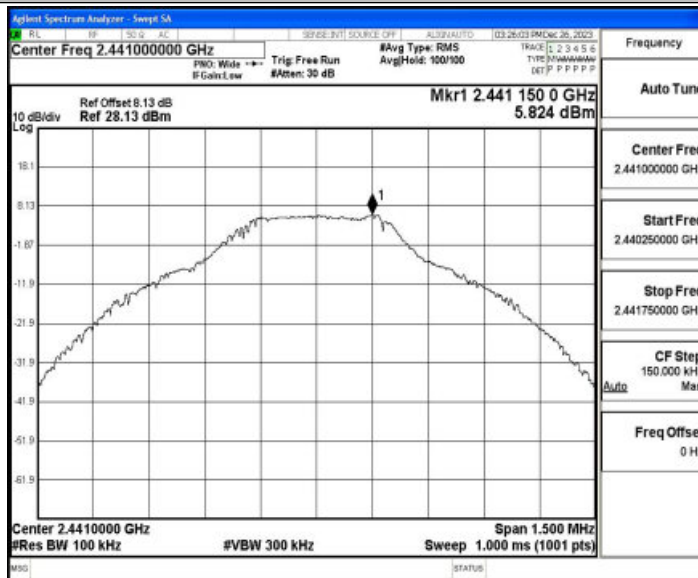


DH5_Ant1_2402_1000~26500



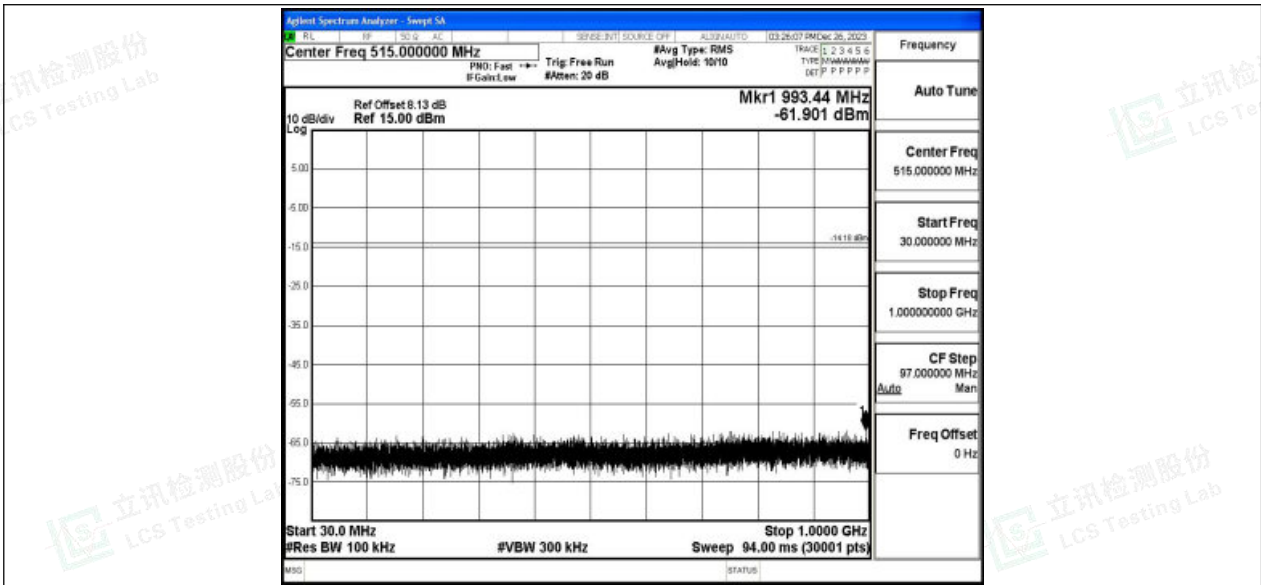


DH5_Ant1_2441_0~Reference

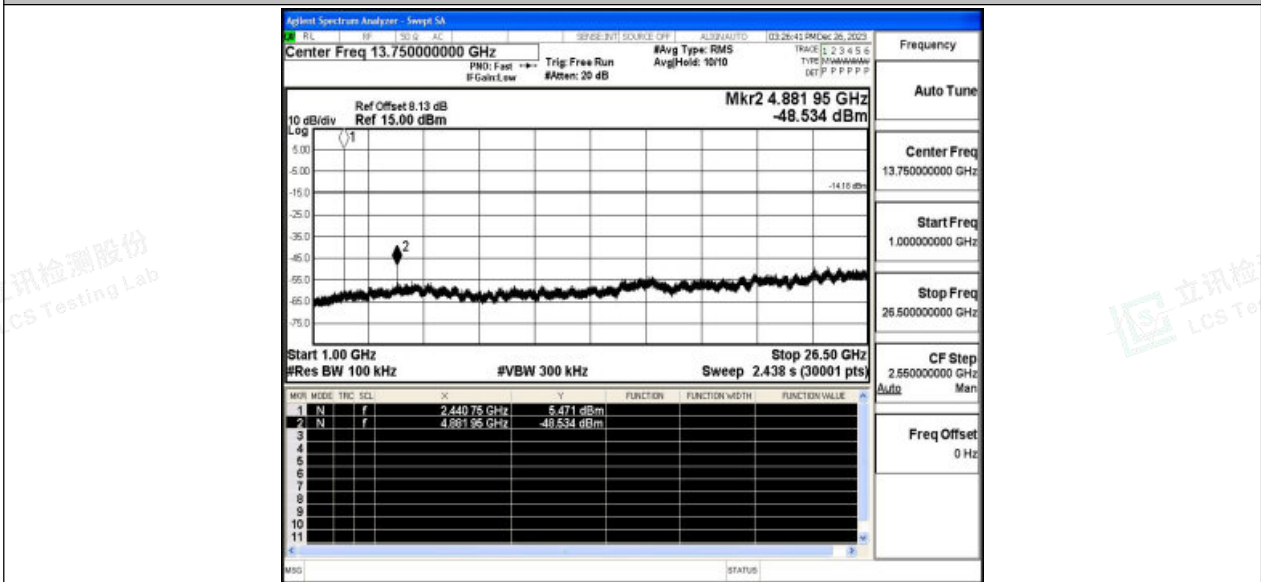


DH5_Ant1_2441_30~1000



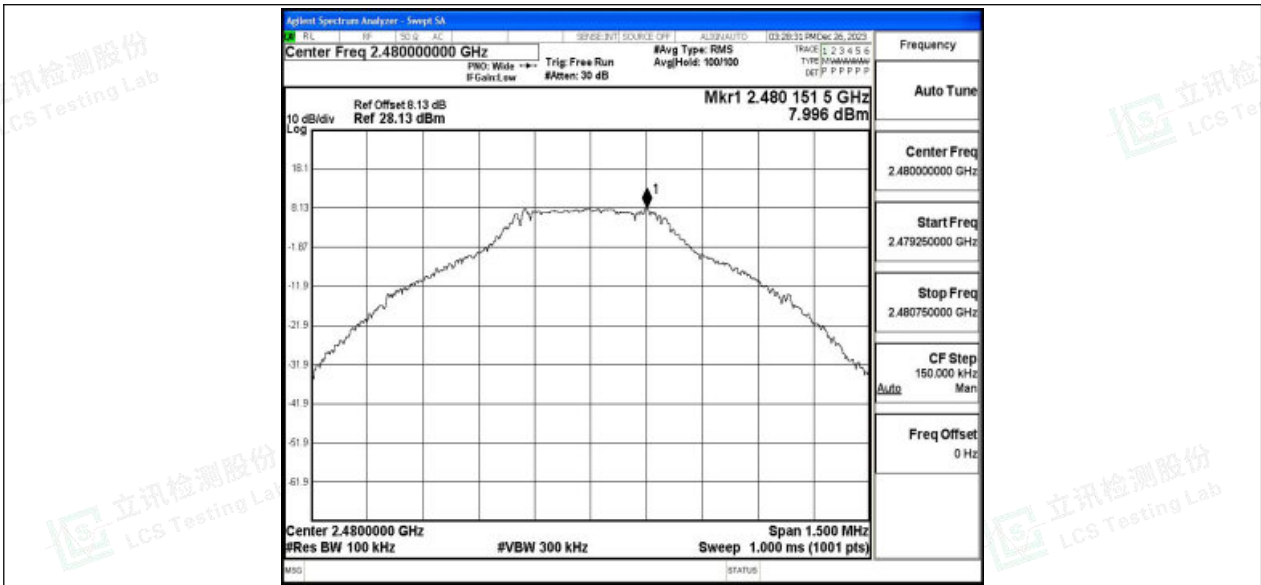


DH5_Ant1_2441_1000~26500

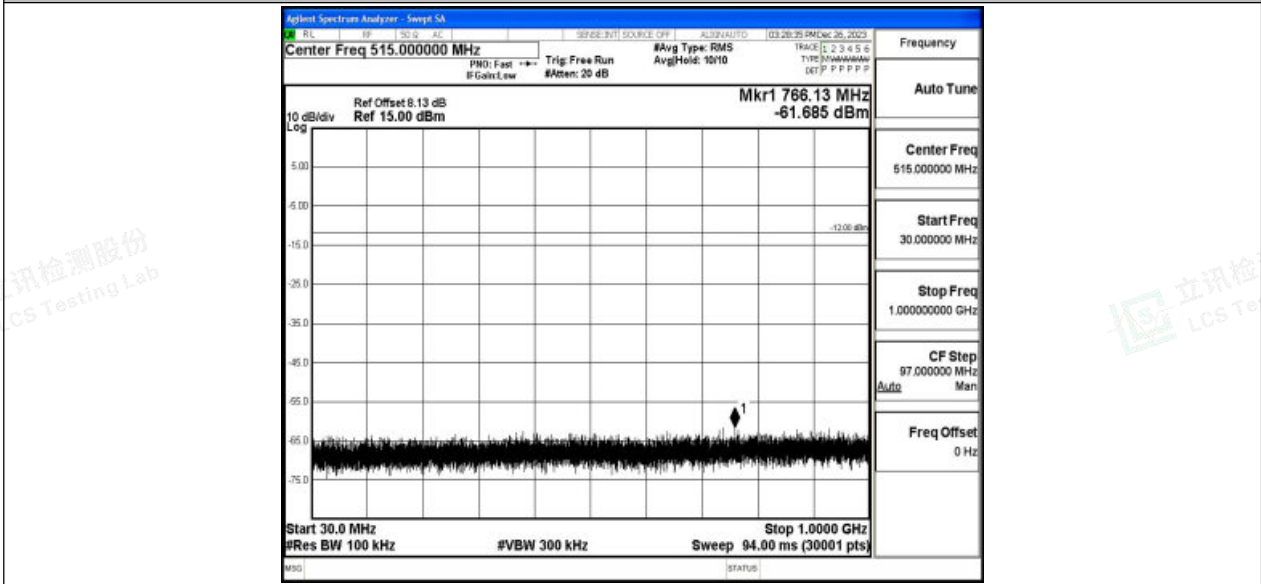


DH5_Ant1_2480_0~Reference



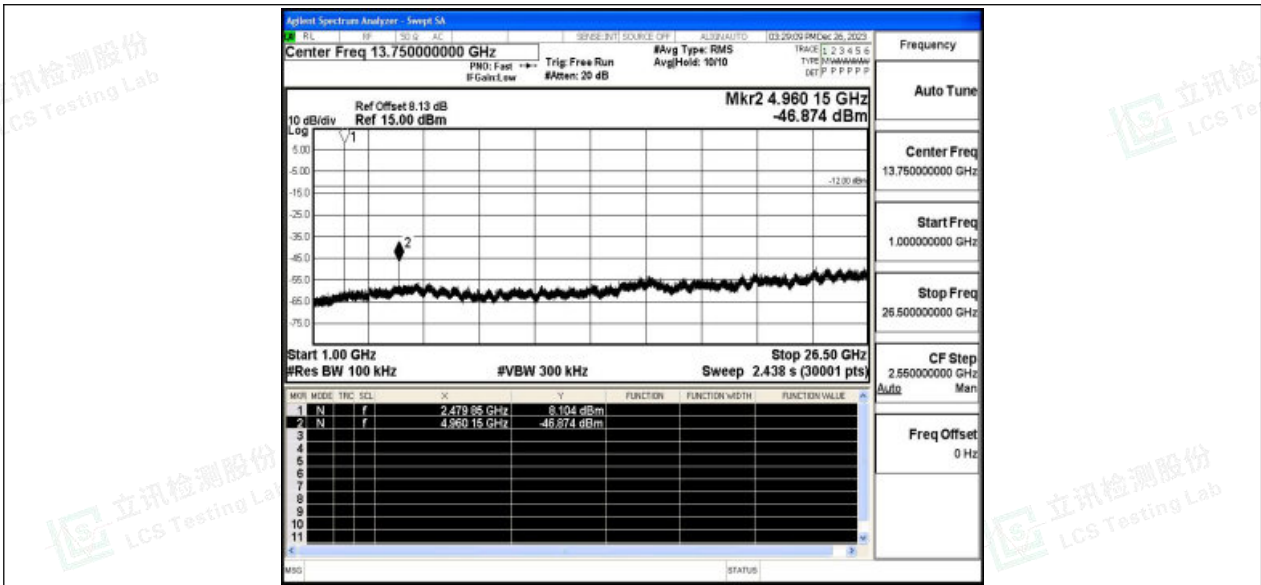


DH5_Ant1_2480_30~1000

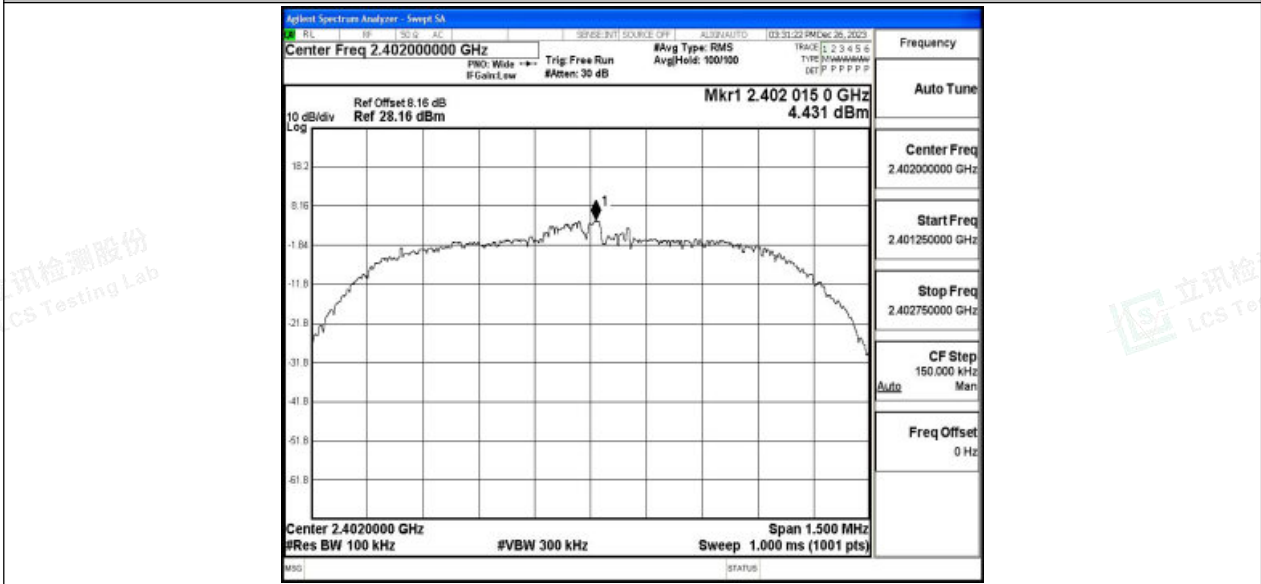


DH5_Ant1_2480_1000~26500



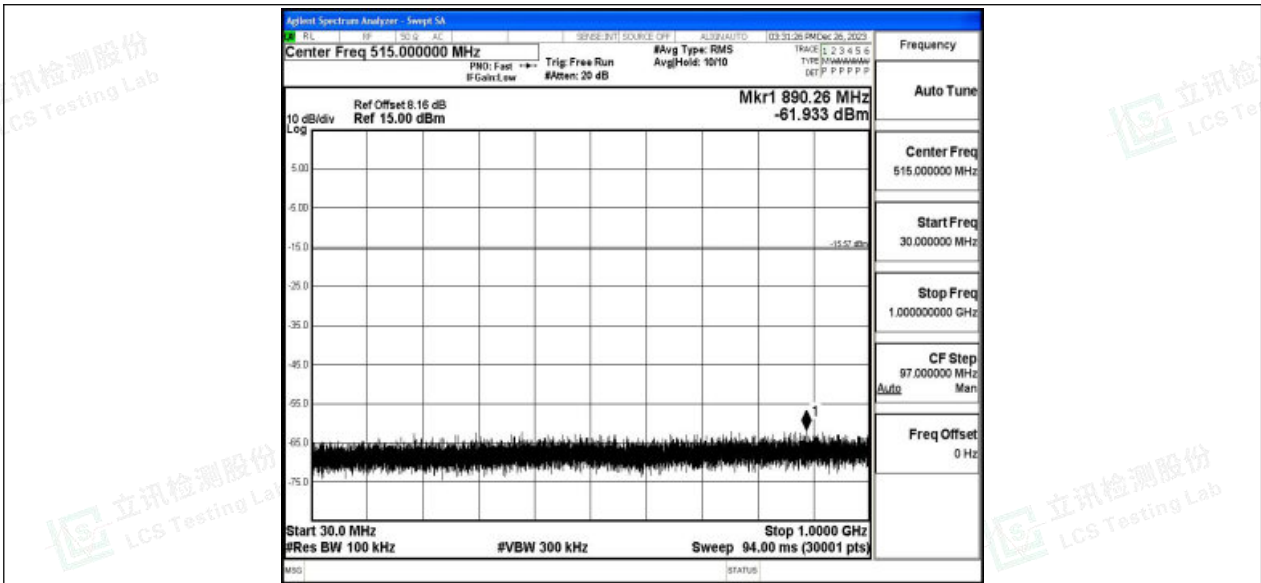


2DH5_Ant1_2402_0~Reference

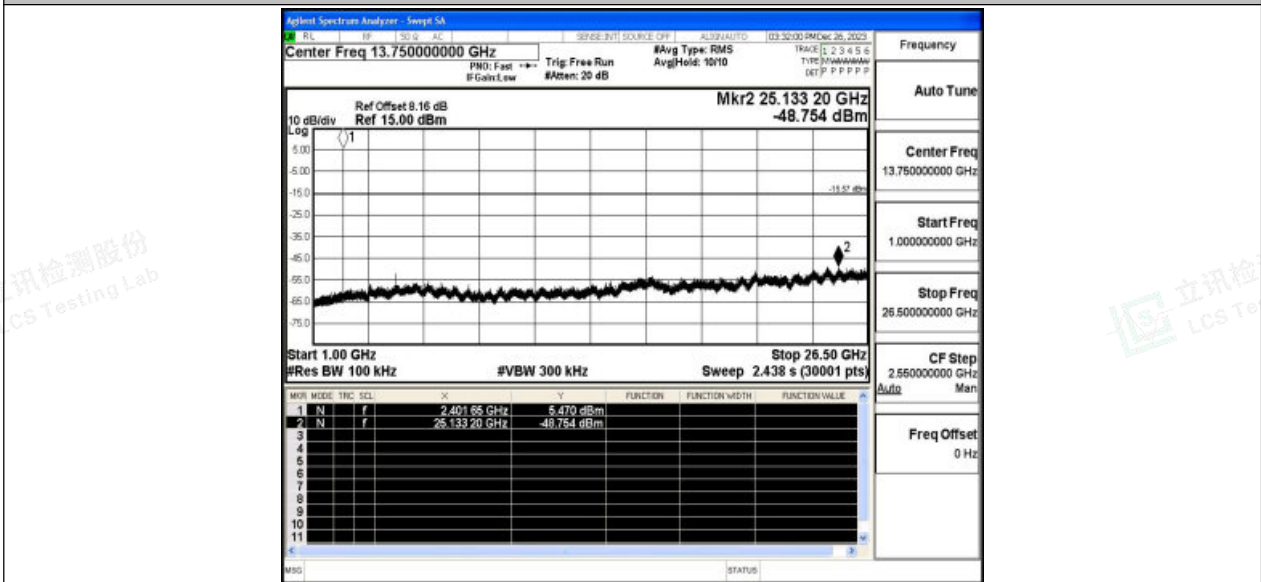


2DH5_Ant1_2402_30~1000



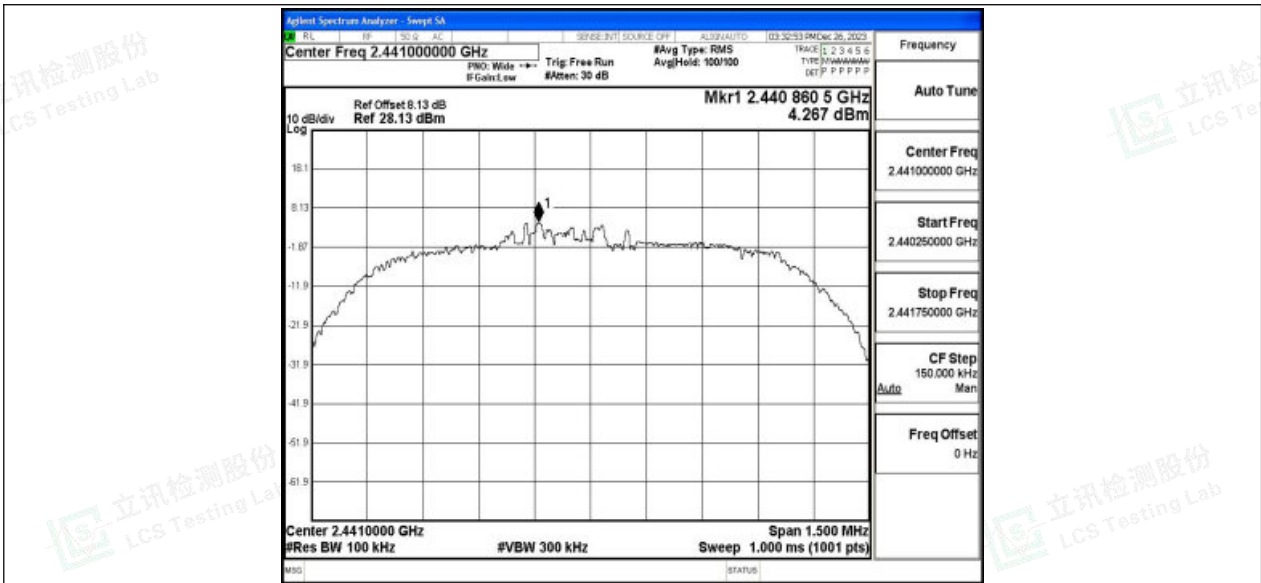


2DH5_Ant1_2402_1000~26500

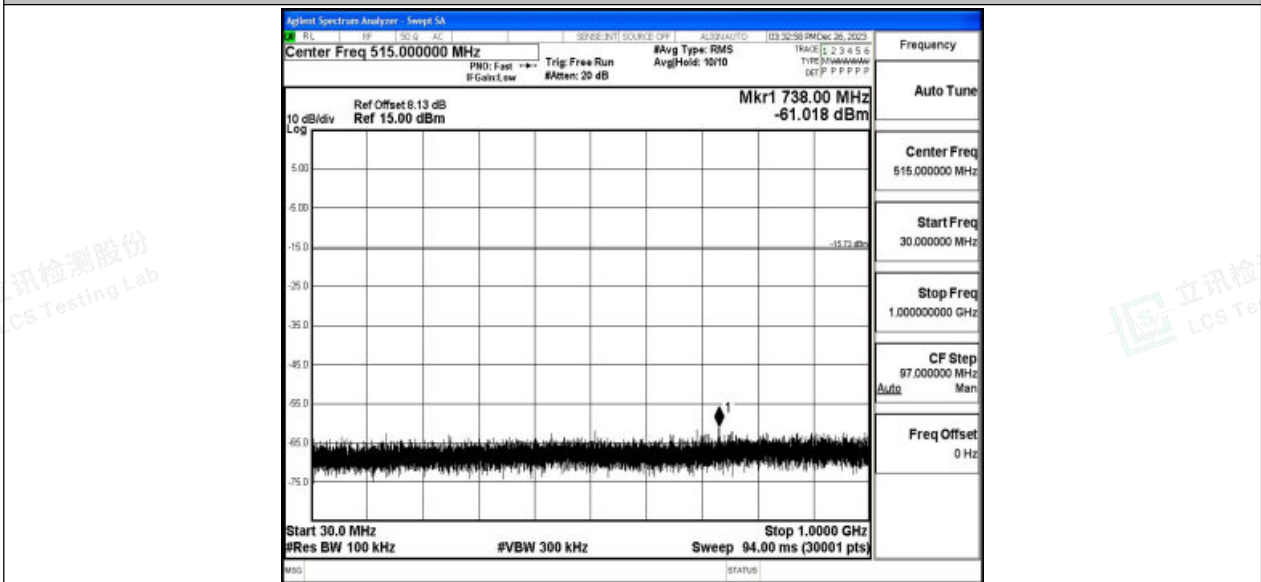


2DH5_Ant1_2441_0~Reference



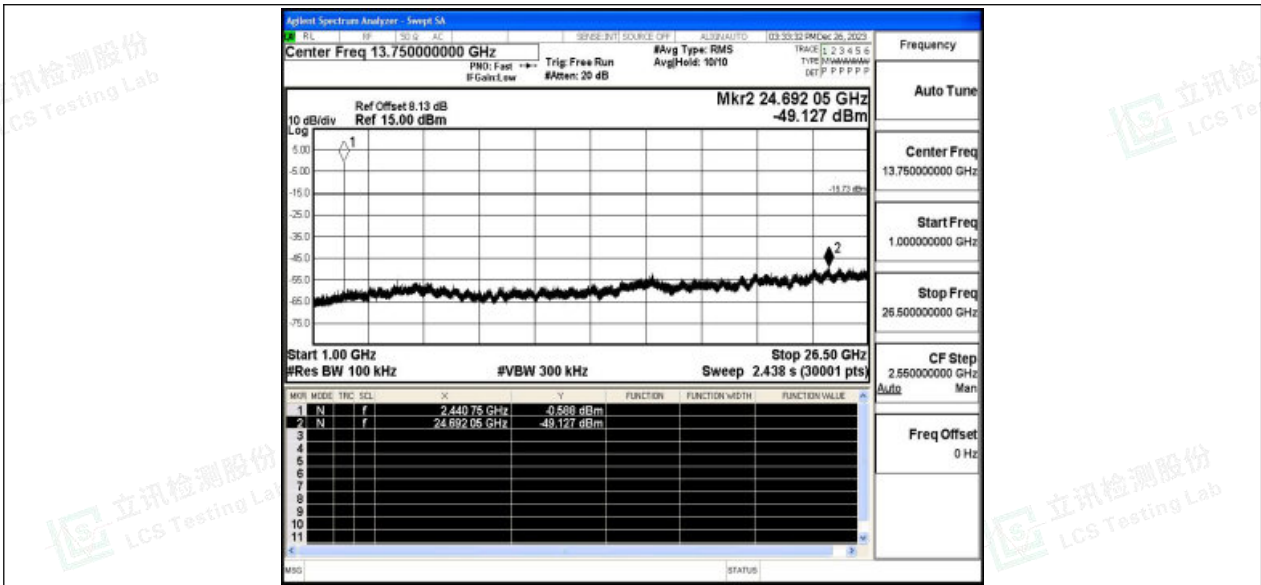


2DH5_Ant1_2441_30~1000

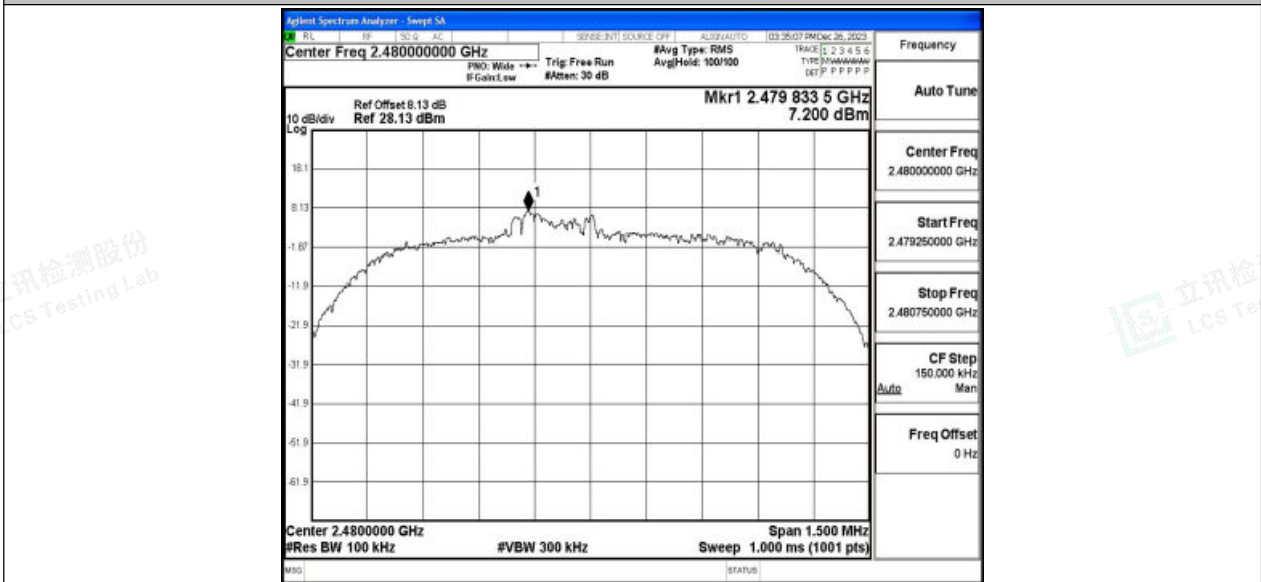


2DH5_Ant1_2441_1000~26500



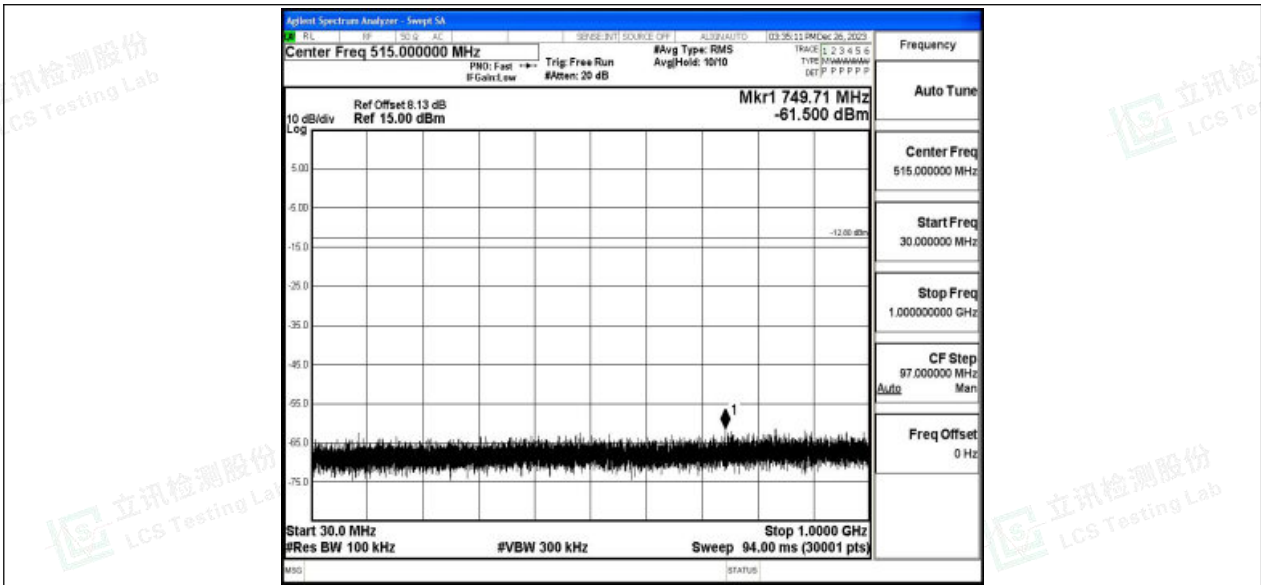


2DH5_Ant1_2480_0~Reference

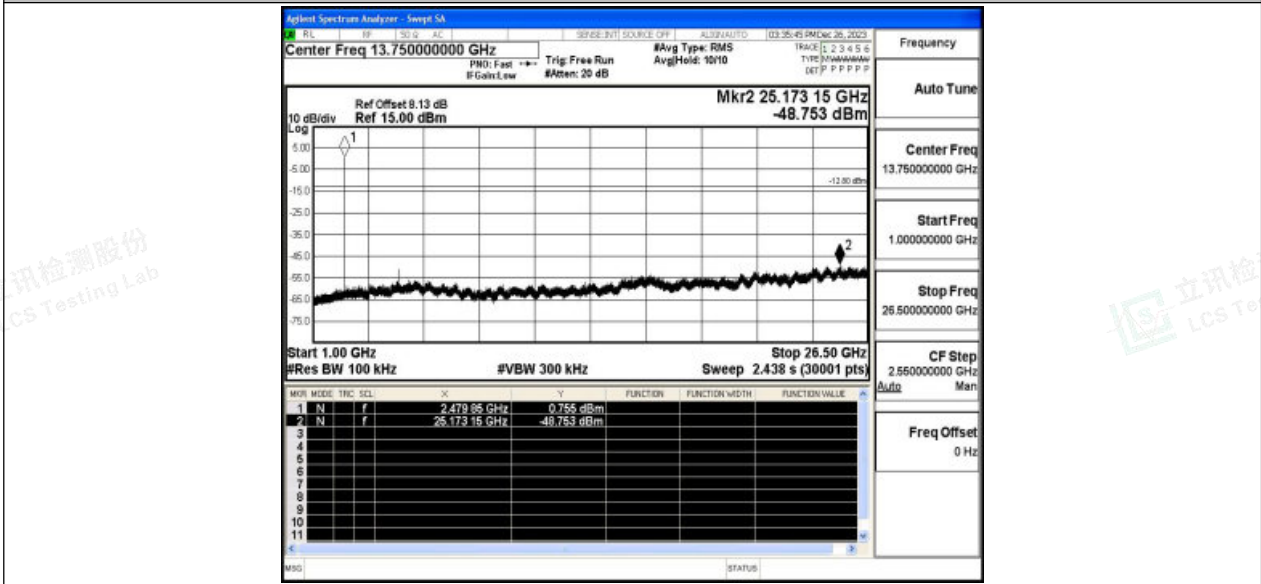


2DH5_Ant1_2480_30~1000



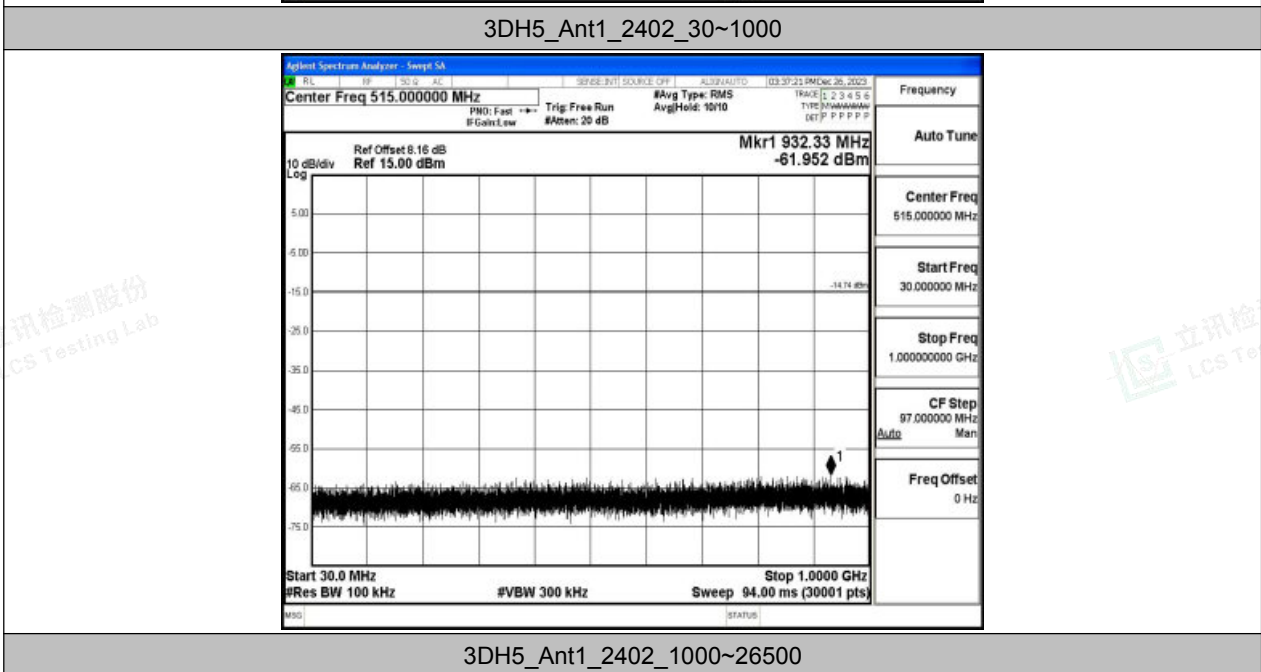
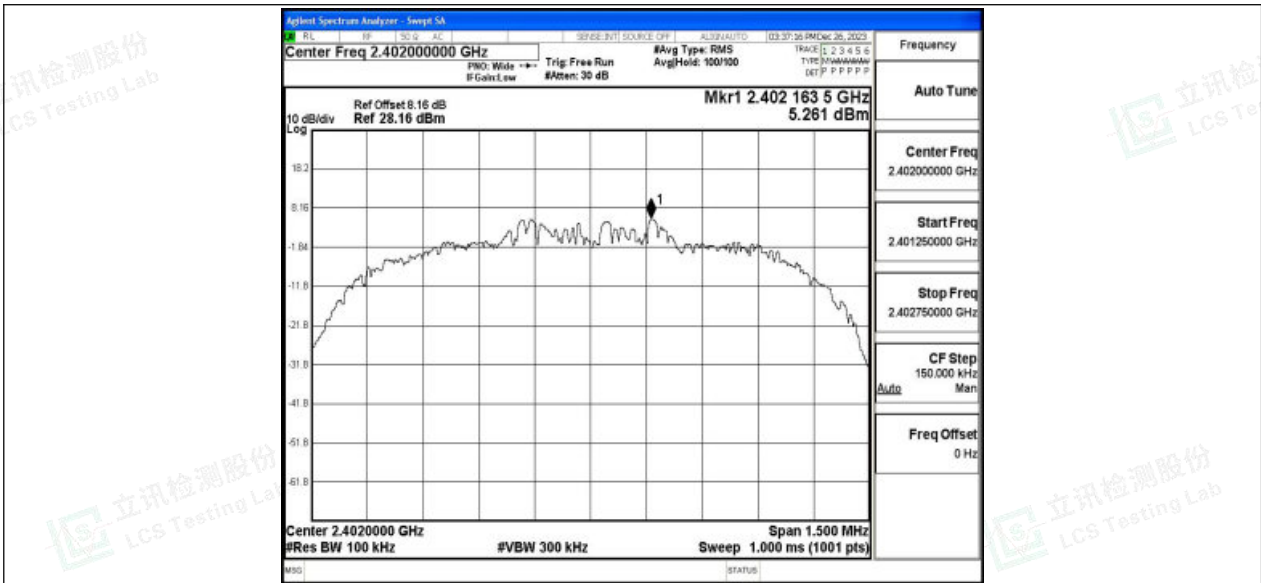


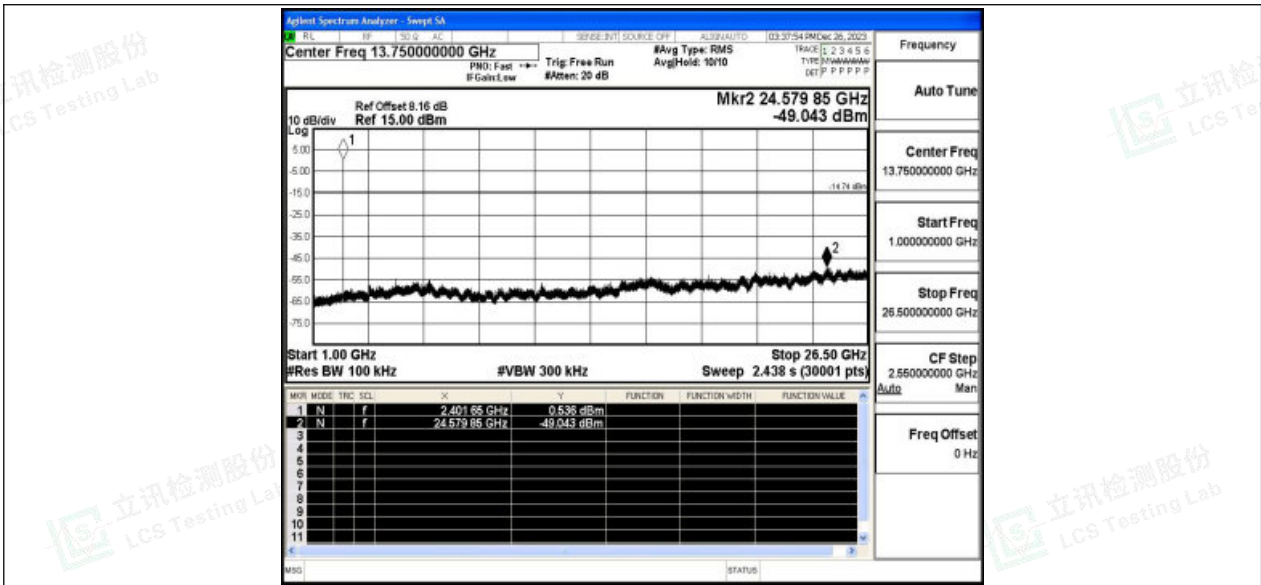
2DH5_Ant1_2480_1000~26500



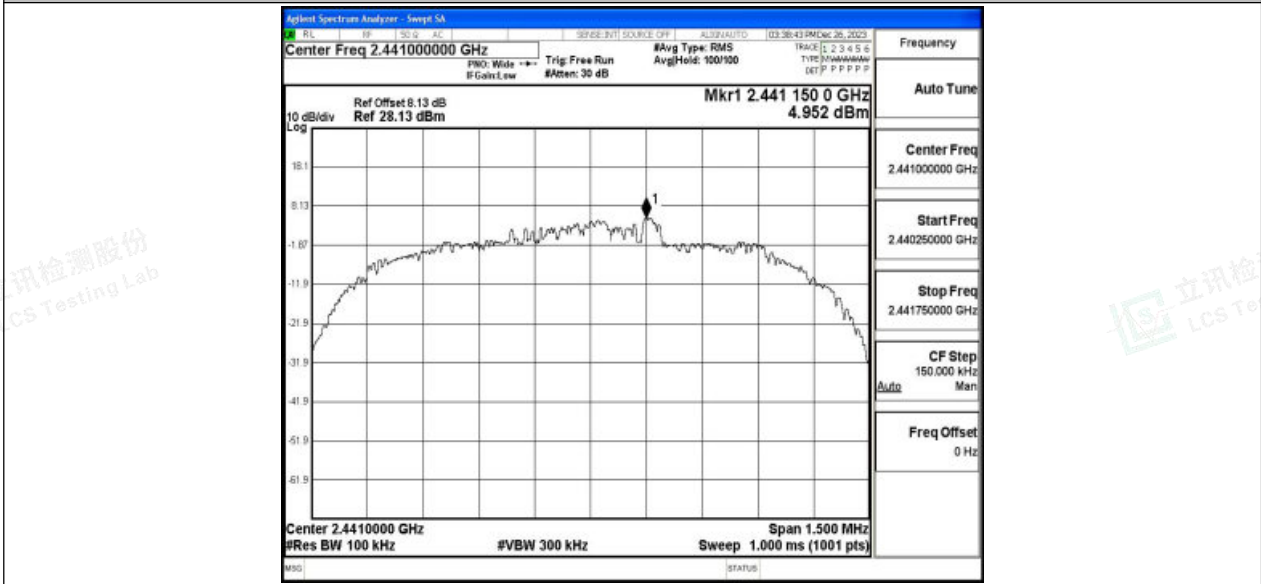
3DH5_Ant1_2402_0~Reference





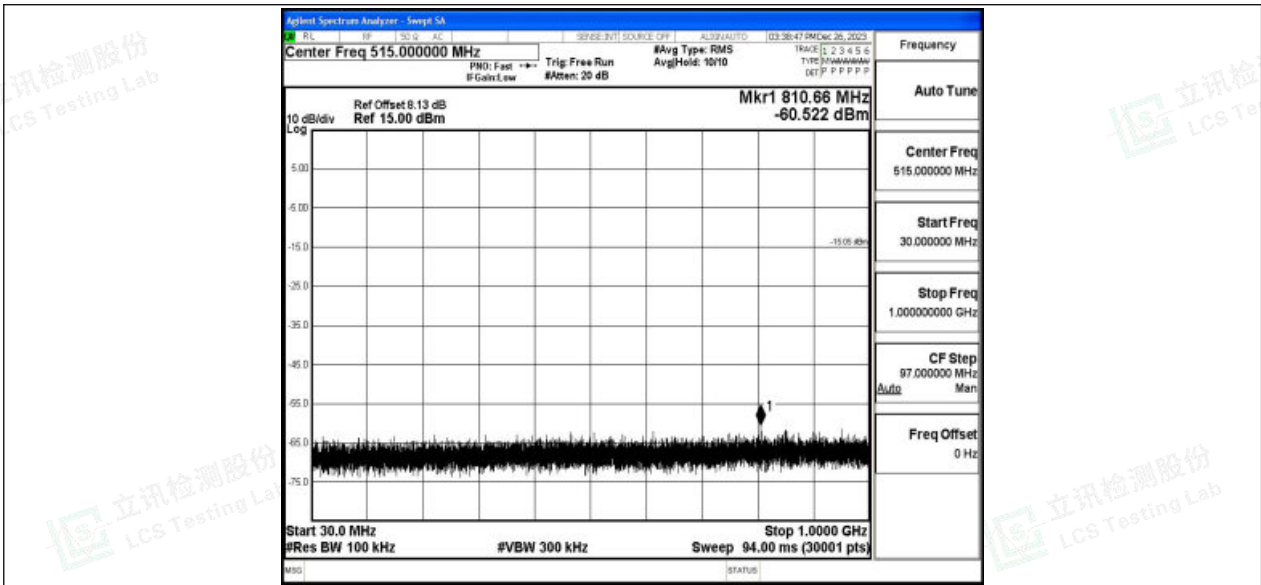


3DH5_Ant1_2441_0~Reference

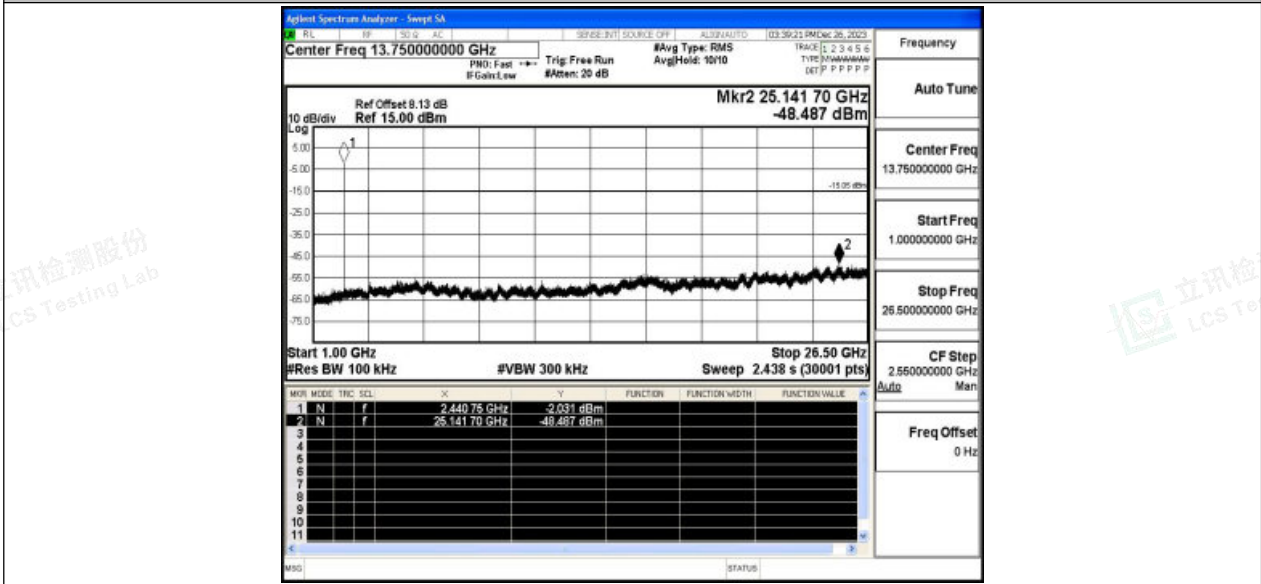


3DH5_Ant1_2441_30~1000



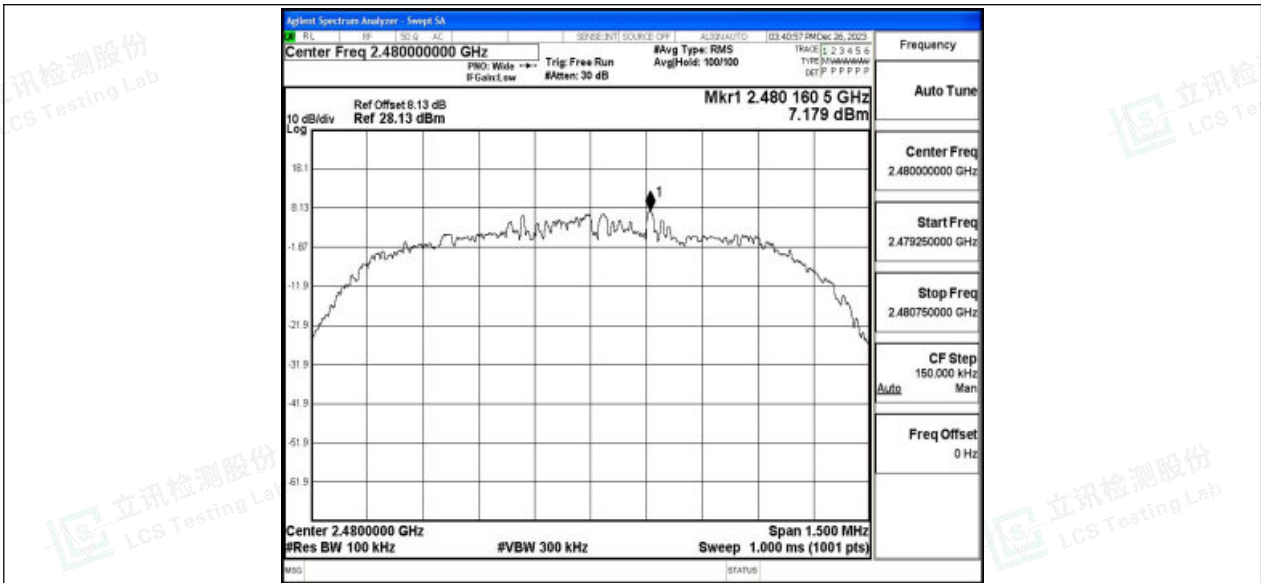


3DH5_Ant1_2441_1000~26500

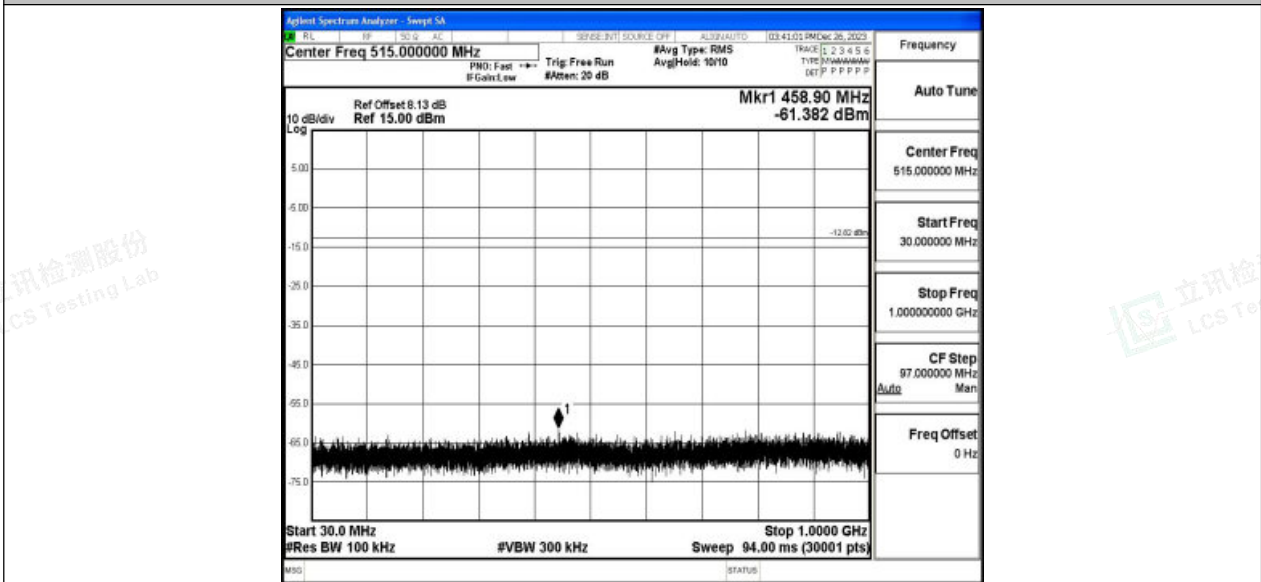


3DH5_Ant1_2480_0~Reference



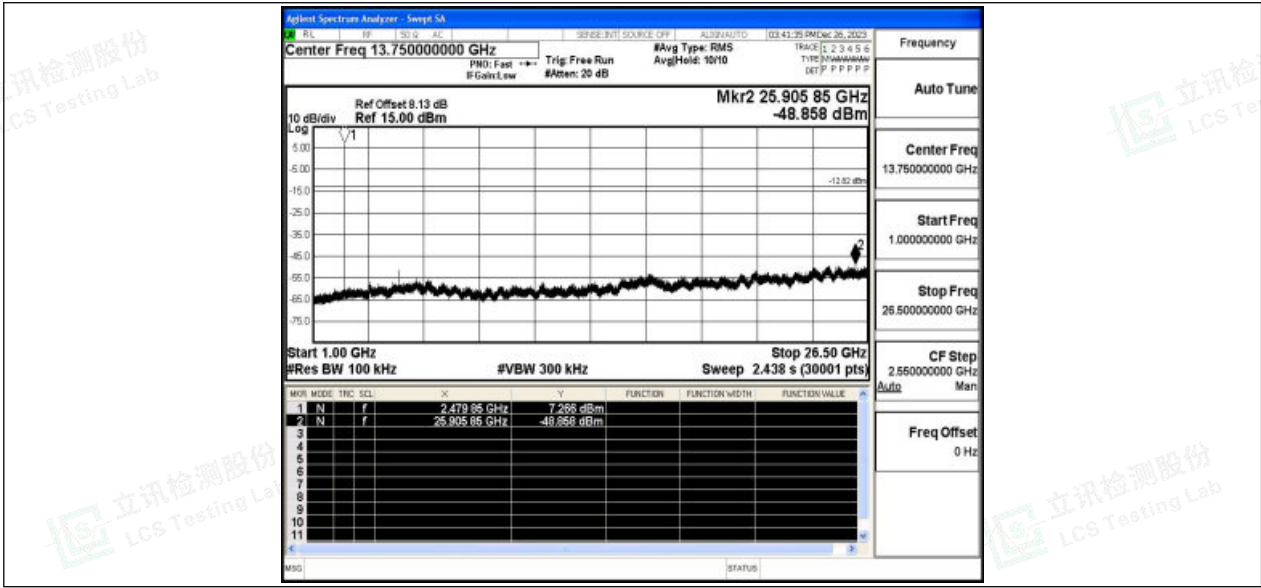


3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500







A.8 Duty Cycle

Test Result

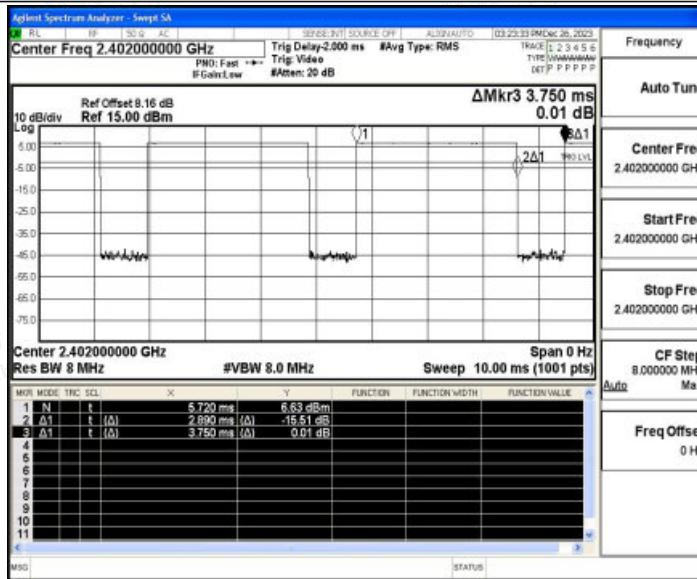
TestMode	Antenna	Frequency[M Hz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]	1/T Factor[kHz]
DH5	Ant1	2402	2.89	3.75	77.07	1.13	0.35
		2441	2.88	3.75	76.80	1.15	0.35
		2480	2.88	3.75	76.80	1.15	0.35
2DH5	Ant1	2402	2.88	3.75	76.80	1.15	0.35
		2441	2.89	3.75	77.07	1.13	0.35
		2480	2.89	3.75	77.07	1.13	0.35
3DH5	Ant1	2402	2.89	3.75	77.07	1.13	0.35
		2441	2.89	3.75	77.07	1.13	0.35
		2480	2.89	3.75	77.07	1.13	0.35



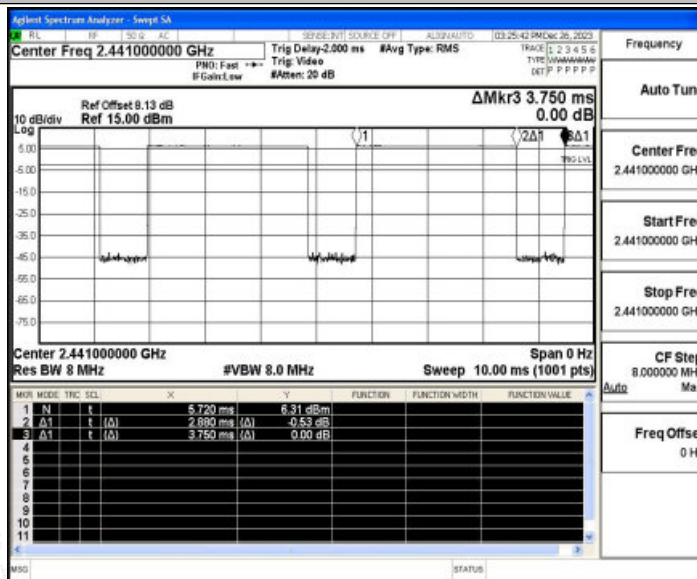


Test Graphs

DH5_Ant1_2402

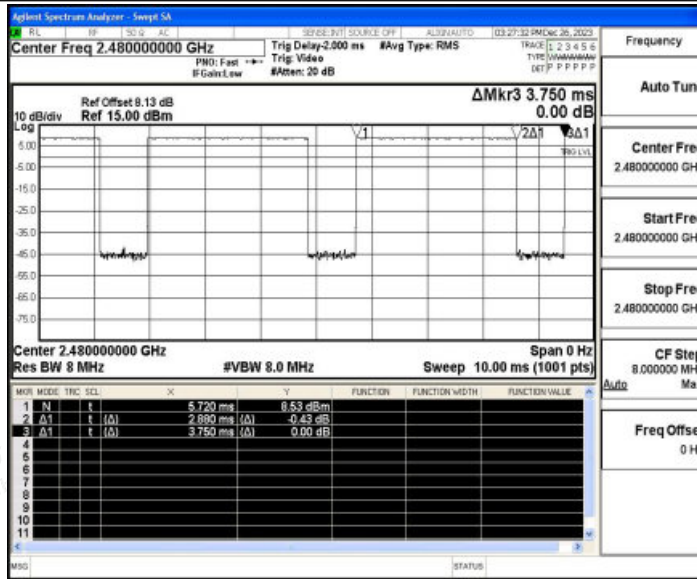


DH5_Ant1_2441

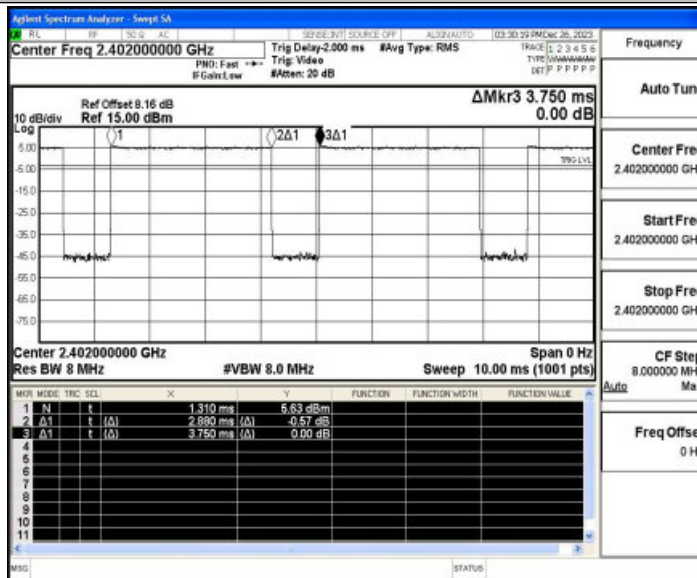


DH5_Ant1_2480



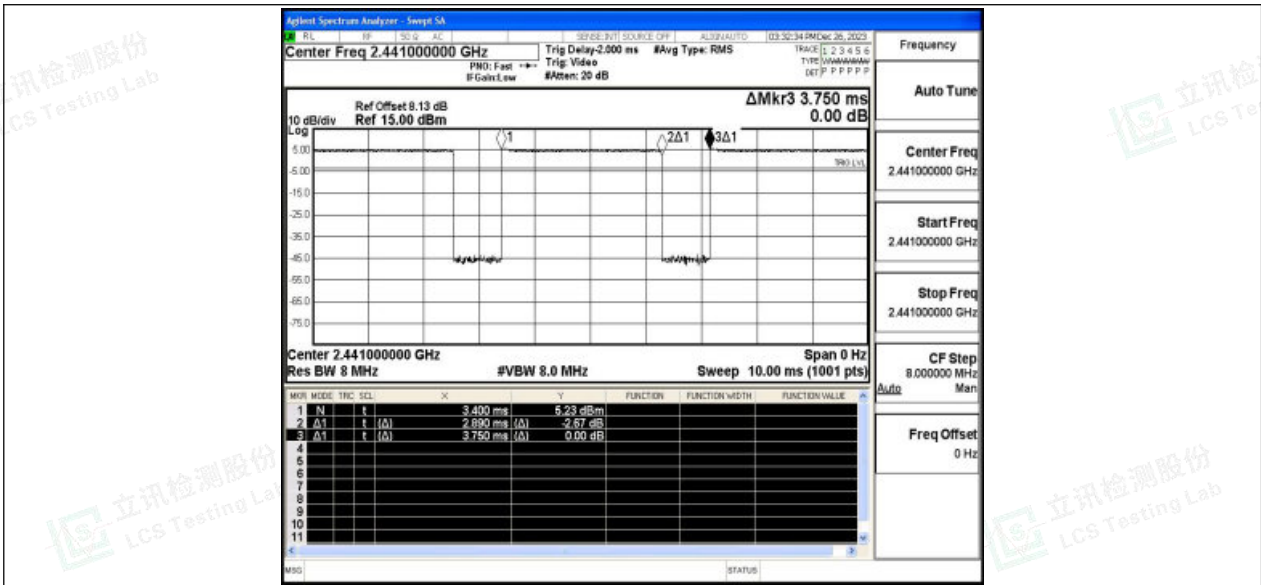


2DH5_Ant1_2402

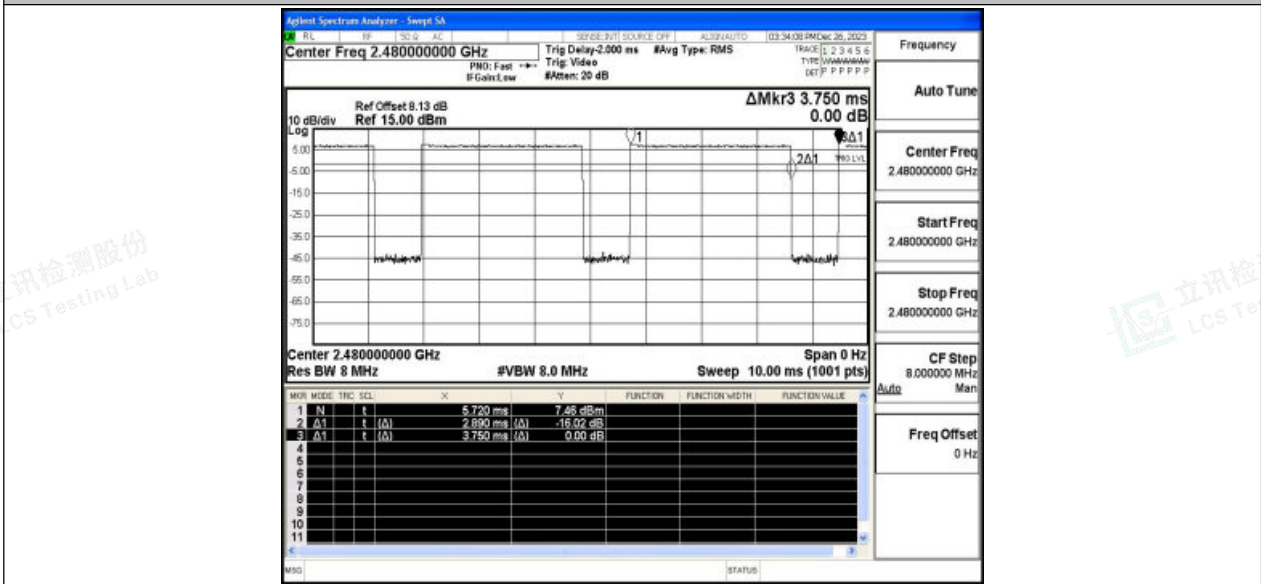


2DH5_Ant1_2441



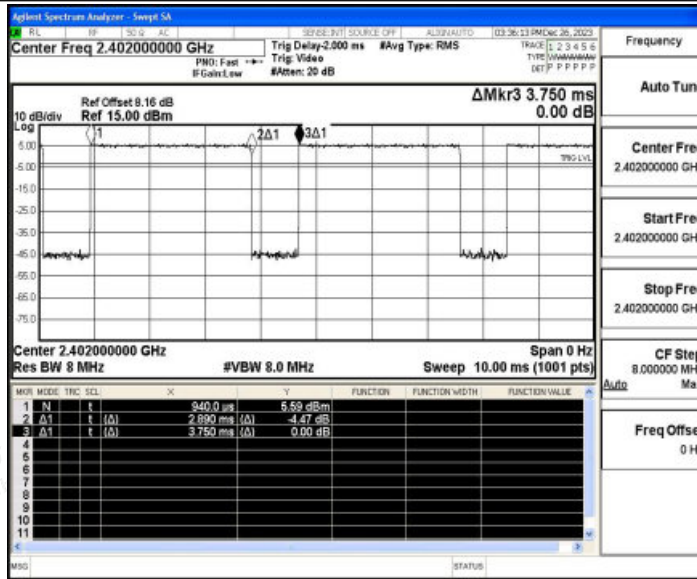


2DH5_Ant1_2480

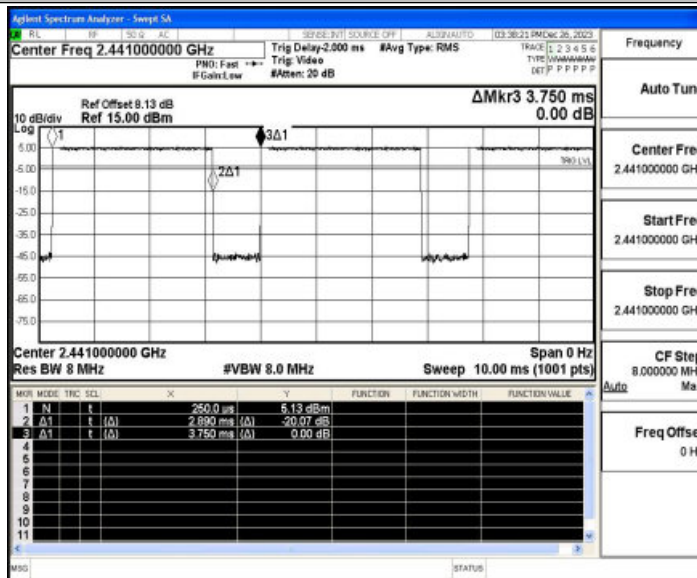


3DH5_Ant1_2402



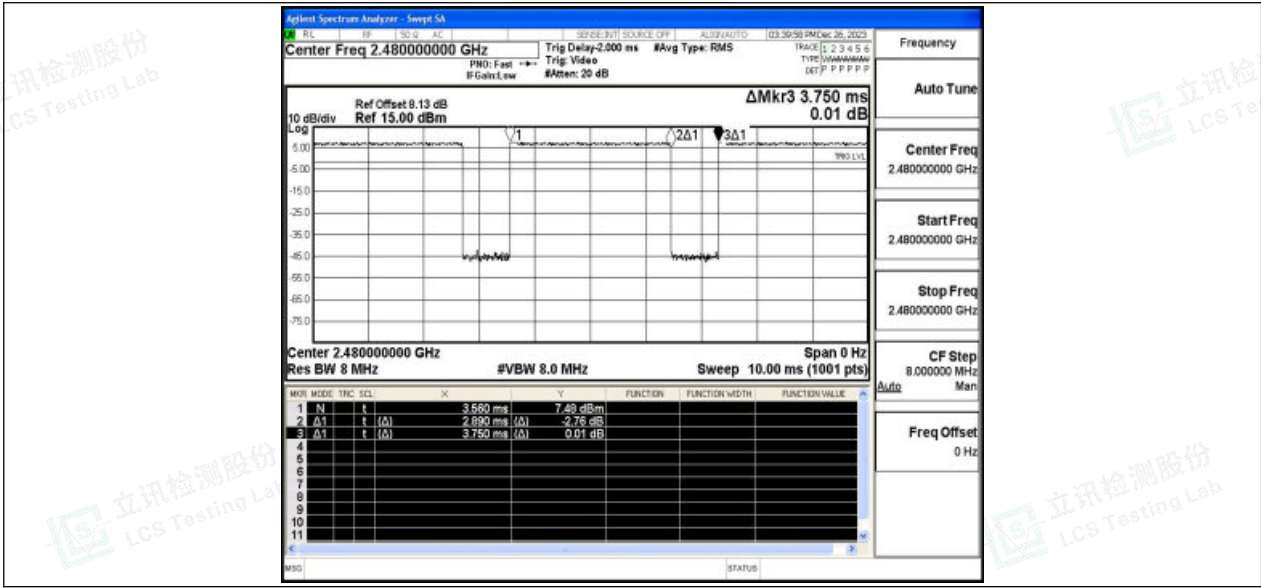


3DH5_Ant1_2441



3DH5_Ant1_2480







A.9 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Frequenc y[MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/ m]	Verdict		
DH5	Ant1	Low	2402	AV	2310.000	-48.48	≤-41.20	46.72	≤54	PASS		
				AV	2367.410	-47.36	≤-41.20	47.84	≤54	PASS		
				AV	2390.000	-47.84	≤-41.20	47.36	≤54	PASS		
				Peak	2310.000	-41.25	≤-21.20	53.95	≤74	PASS		
				Peak	2389.460	-38.71	≤-21.20	56.49	≤74	PASS		
				Peak	2390.000	-42.07	≤-21.20	53.13	≤74	PASS		
		High	2480	AV	2483.500	-47.18	≤-41.20	48.02	≤54	PASS		
				AV	2483.600	-46.97	≤-41.20	48.23	≤54	PASS		
				AV	2500.000	-48.38	≤-41.20	46.82	≤54	PASS		
				Peak	2483.500	-40.36	≤-21.20	54.84	≤74	PASS		
				Peak	2494.000	-38.58	≤-21.20	56.62	≤74	PASS		
				Peak	2500.000	-39.78	≤-21.20	55.42	≤74	PASS		
		Low	Hop_240 2	Peak	2310.000	-42.32	≤-21.20	52.88	≤74	PASS		
				Peak	2333.915	-39.23	≤-21.20	55.97	≤74	PASS		
				Peak	2390.000	-41.51	≤-21.20	53.69	≤74	PASS		
		High	Hop_248 0	Peak	2483.500	-40.89	≤-21.20	54.31	≤74	PASS		
				Peak	2485.040	-38.34	≤-21.20	56.86	≤74	PASS		
				Peak	2500.000	-40.31	≤-21.20	54.89	≤74	PASS		
		2DH5	Ant1	Low	2402	AV	2310.000	-48.56	≤-41.20	46.64	≤54	PASS
						AV	2360.165	-47.45	≤-41.20	47.75	≤54	PASS
						AV	2390.000	-48.02	≤-41.20	47.18	≤54	PASS
Peak	2310.000					-40.72	≤-21.20	54.48	≤74	PASS		
Peak	2363.735					-38.38	≤-21.20	56.82	≤74	PASS		
Peak	2390.000					-40.79	≤-21.20	54.41	≤74	PASS		
High	2480			AV	2483.500	-48.1	≤-41.20	47.10	≤54	PASS		
				AV	2486.400	-47.34	≤-41.20	47.86	≤54	PASS		
				AV	2500.000	-48.43	≤-41.20	46.77	≤54	PASS		
				Peak	2483.500	-40.32	≤-21.20	54.88	≤74	PASS		
				Peak	2493.520	-37.45	≤-21.20	57.75	≤74	PASS		
				Peak	2500.000	-41.83	≤-21.20	53.37	≤74	PASS		
Low	Hop_240 2			Peak	2310.000	-41.27	≤-21.20	53.93	≤74	PASS		
				Peak	2373.605	-39.02	≤-21.20	56.18	≤74	PASS		
				Peak	2390.000	-41.27	≤-21.20	53.93	≤74	PASS		
High	Hop_248 0			Peak	2483.500	-42.14	≤-21.20	53.06	≤74	PASS		
				Peak	2492.800	-38.37	≤-21.20	56.83	≤74	PASS		
				Peak	2500.000	-41.71	≤-21.20	53.49	≤74	PASS		



Shenzhen LCS Compliance Testing Laboratory Ltd.

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

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity



3DH5	Ant1	Low	2402	AV	2310.000	-48.61	≤-41.20	46.59	≤54	PASS
				AV	2384.210	-47.48	≤-41.20	47.72	≤54	PASS
				AV	2390.000	-48.24	≤-41.20	46.96	≤54	PASS
				Peak	2310.000	-42.39	≤-21.20	52.81	≤74	PASS
				Peak	2365.835	-37.73	≤-21.20	57.47	≤74	PASS
				Peak	2390.000	-39.77	≤-21.20	55.43	≤74	PASS
		High	2480	AV	2483.500	-47.42	≤-41.20	47.78	≤54	PASS
				AV	2485.680	-47.16	≤-41.20	48.04	≤54	PASS
				AV	2500.000	-48.01	≤-41.20	47.19	≤54	PASS
				Peak	2483.500	-39.9	≤-21.20	55.30	≤74	PASS
				Peak	2490.560	-38.3	≤-21.20	56.90	≤74	PASS
				Peak	2500.000	-40.89	≤-21.20	54.31	≤74	PASS
		Low	Hop_240 2	Peak	2310.000	-41.78	≤-21.20	53.42	≤74	PASS
				Peak	2363.420	-38.82	≤-21.20	56.38	≤74	PASS
				Peak	2390.000	-43.12	≤-21.20	52.08	≤74	PASS
		High	Hop_248 0	Peak	2483.500	-41.6	≤-21.20	53.60	≤74	PASS
				Peak	2488.400	-39.08	≤-21.20	56.12	≤74	PASS
				Peak	2500.000	-41.05	≤-21.20	54.15	≤74	PASS

Note:

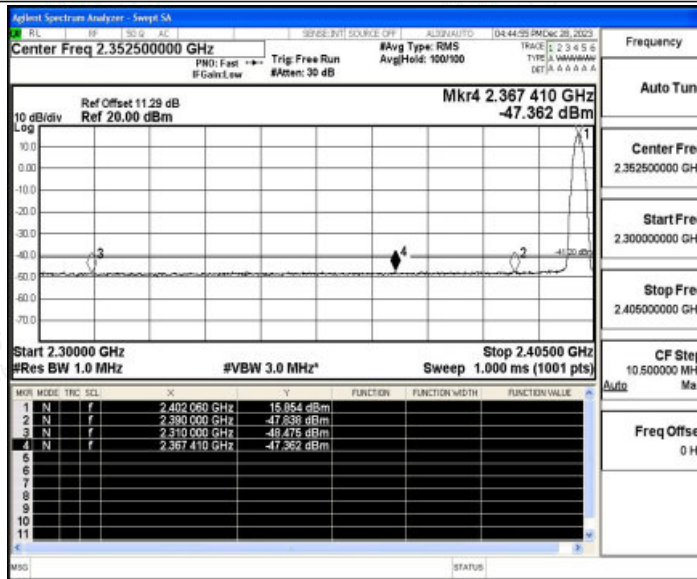
1. The Antenna Gain is compensated in the graph. The Correction Factor is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.



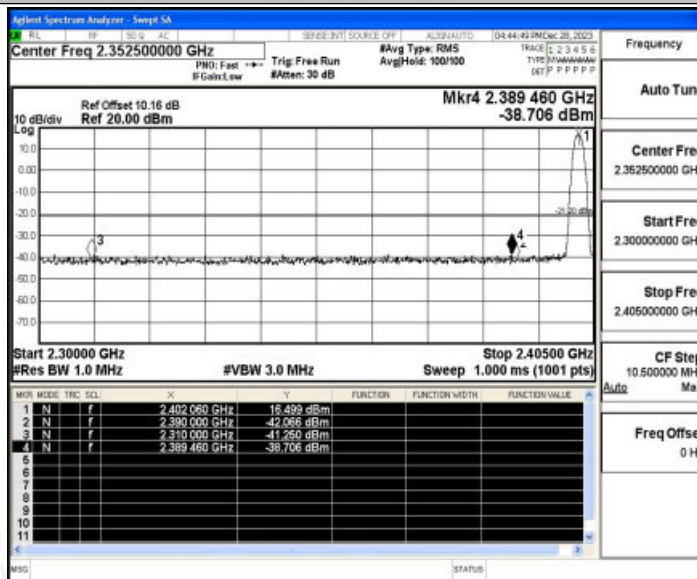


Test Graphs

DH5_Ant1_Low_2402_AV

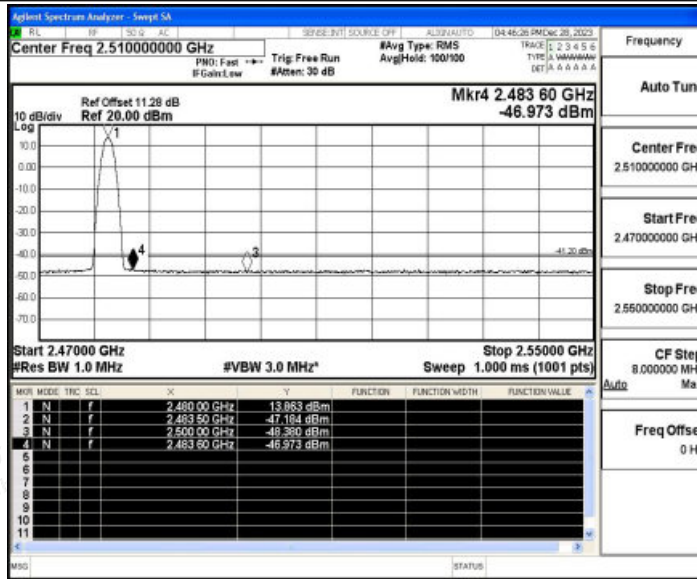


DH5_Ant1_Low_2402_Peak

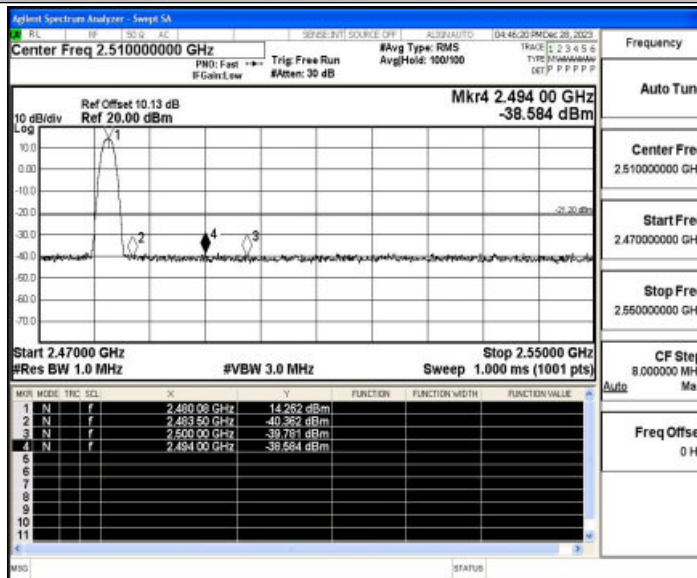


DH5_Ant1_High_2480_AV



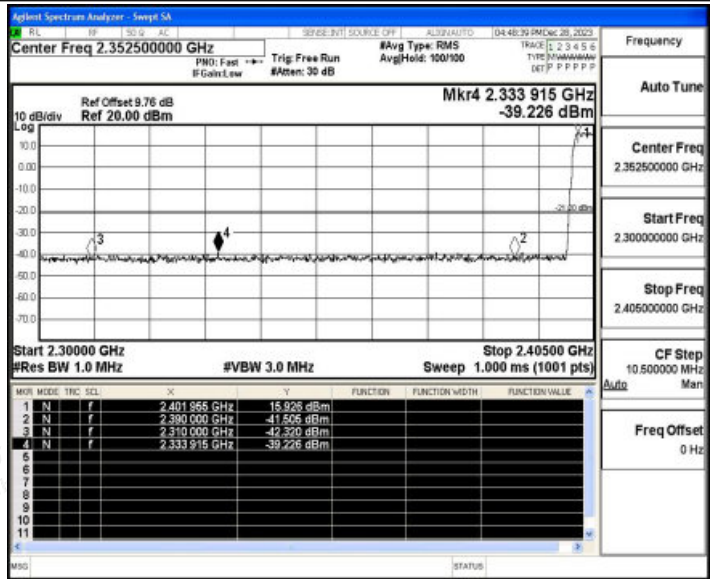


DH5_Ant1_High_2480_Peak

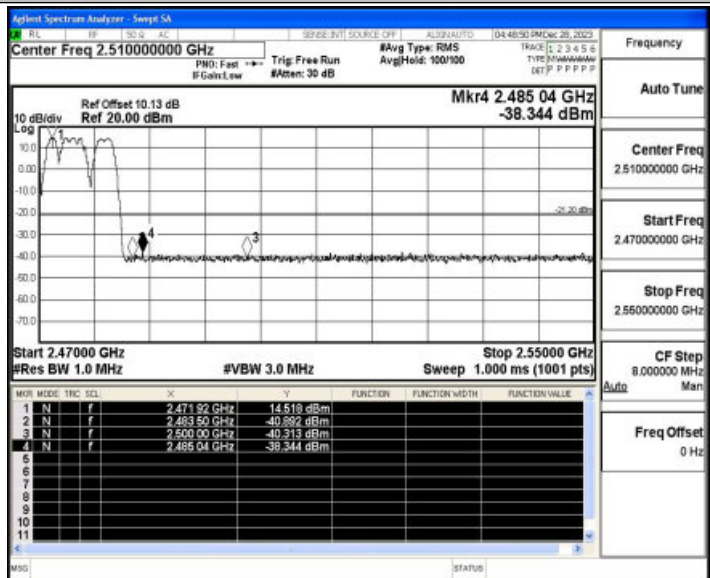


DH5_Ant1_Low_Hop_2402_Peak



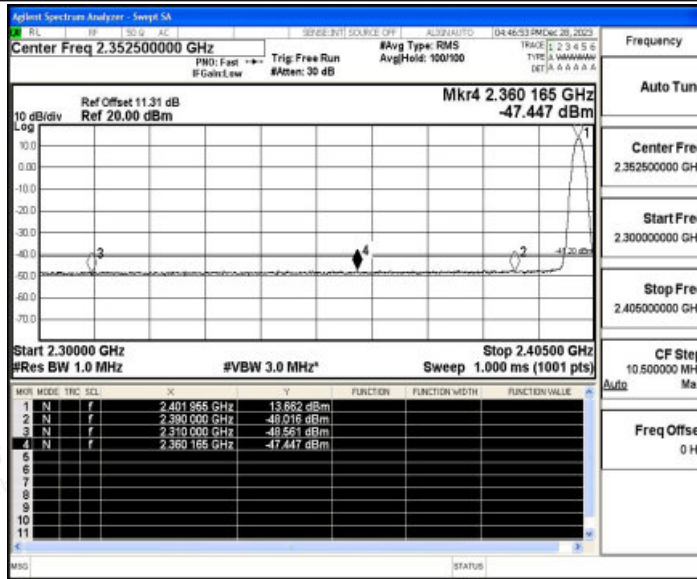


DH5_Ant1_High_Hop_2480_Peak

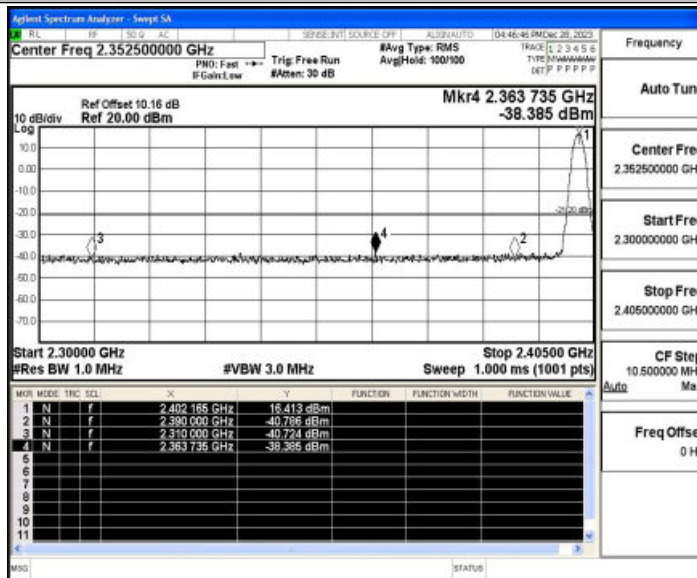


2DH5_Ant1_Low_2402_AV



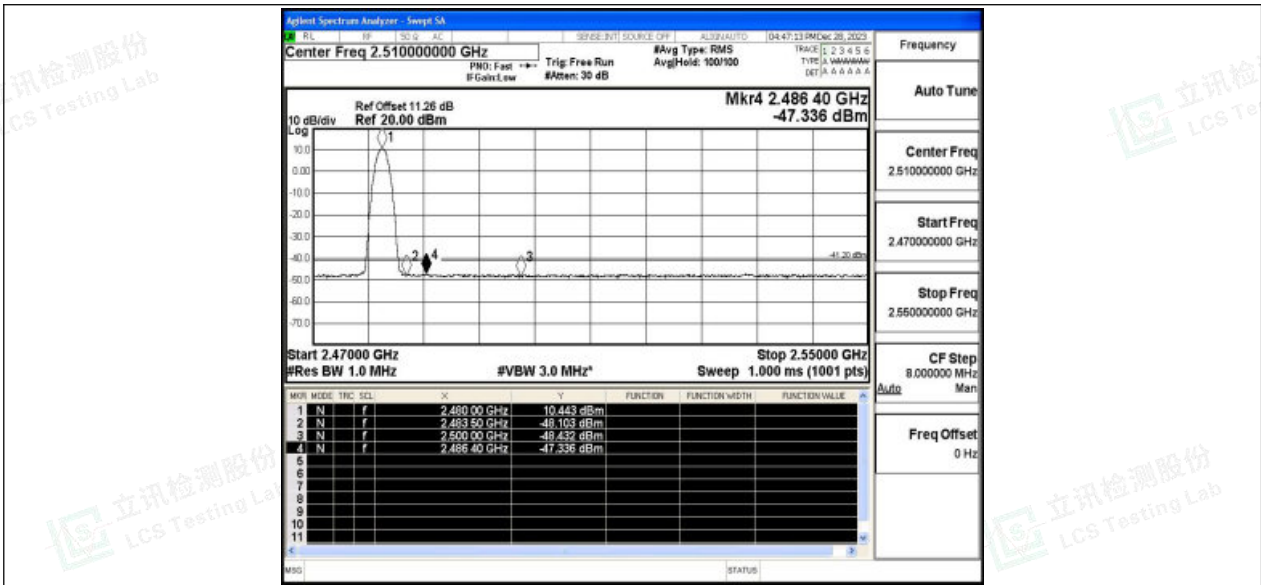


2DH5_Ant1_Low_2402_Peak

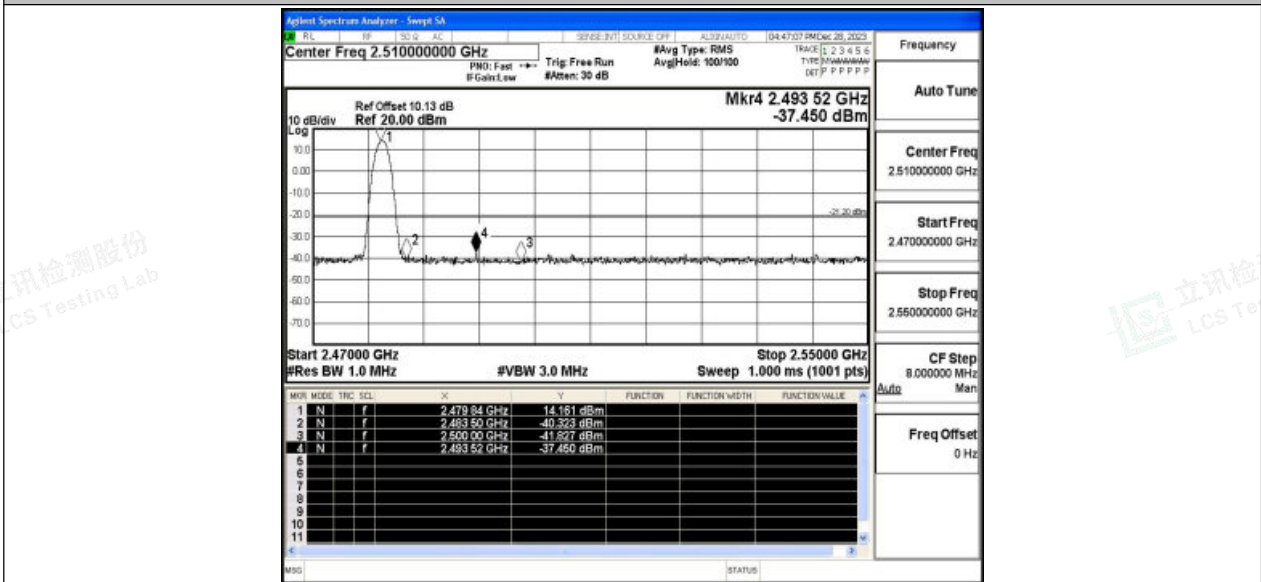


2DH5_Ant1_High_2480_AV



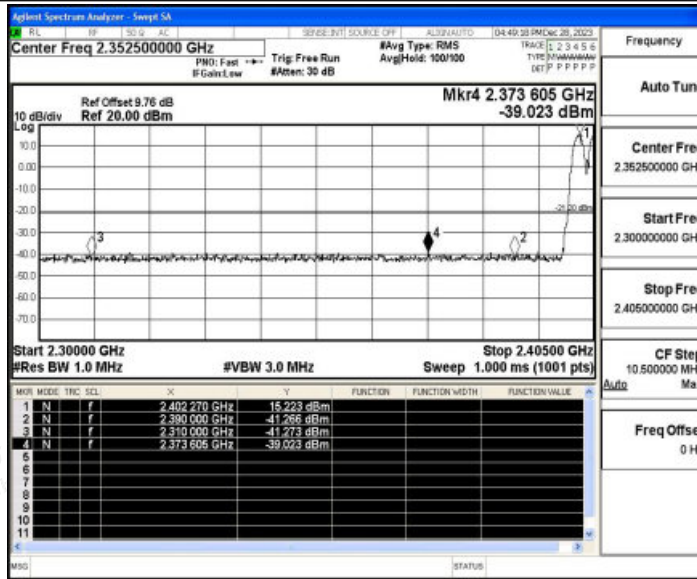


2DH5_Ant1_High_2480_Peak

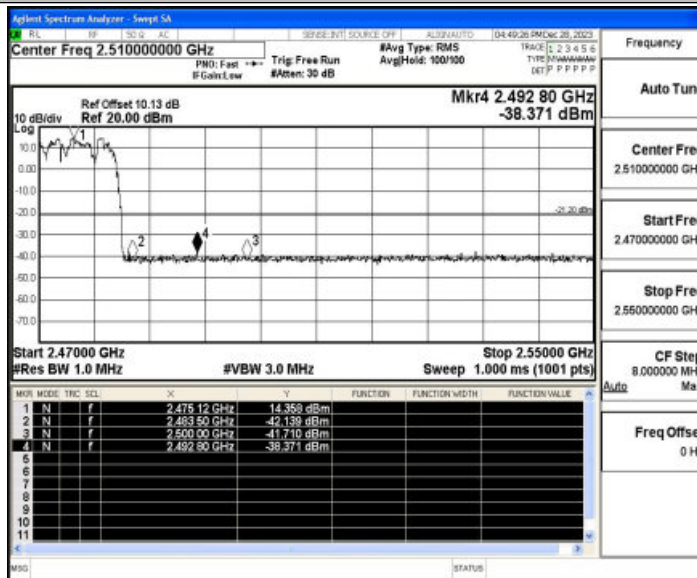


2DH5_Ant1_Low_Hop_2402_Peak



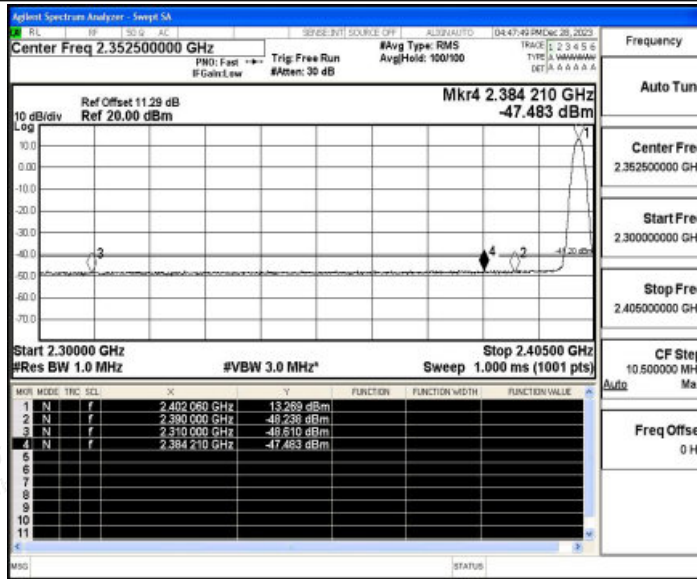


2DH5_Ant1_High_Hop_2480_Peak

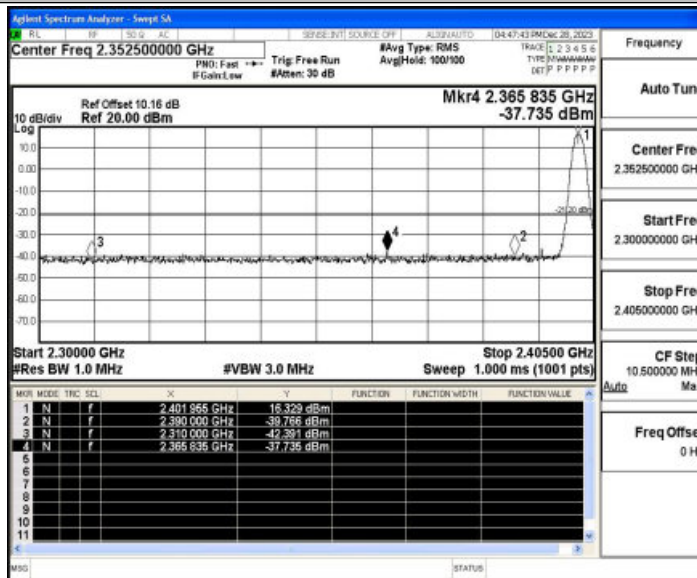


3DH5_Ant1_Low_2402_AV



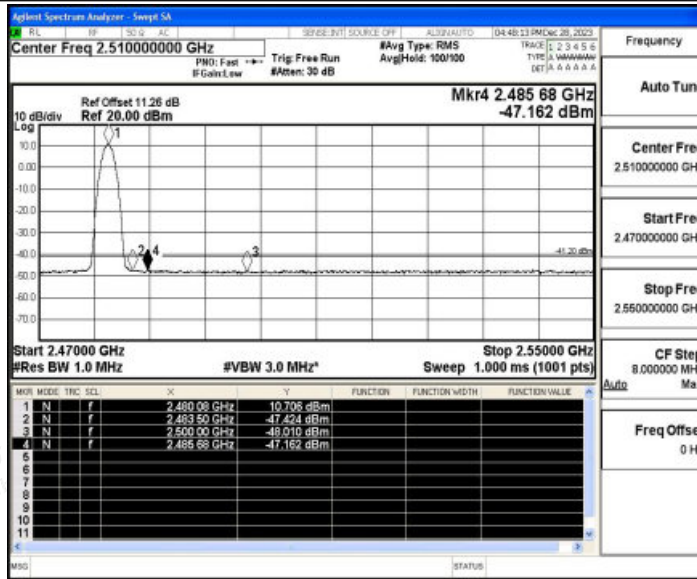


3DH5_Ant1_Low_2402_Peak

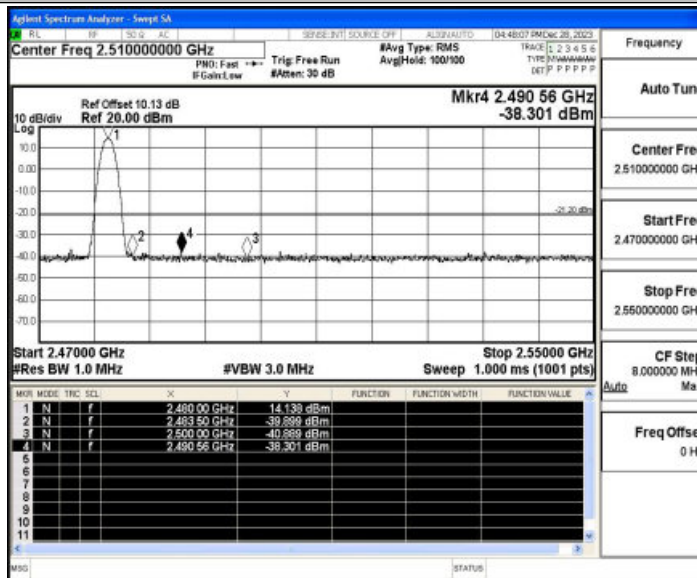


3DH5_Ant1_High_2480_AV



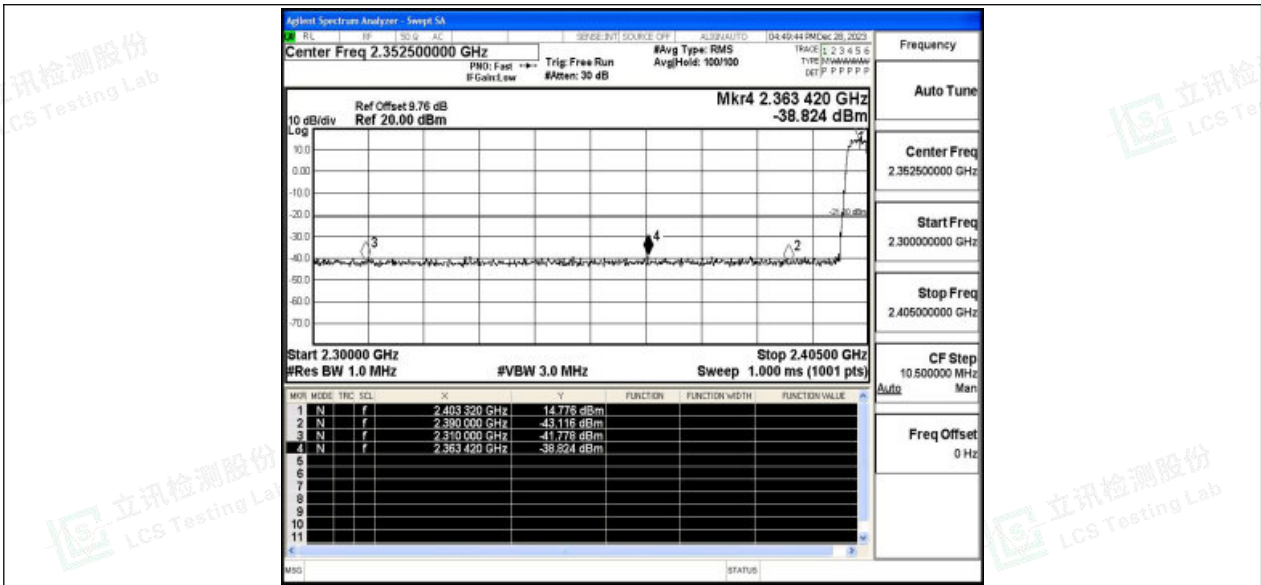


3DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_Hop_2402_Peak





3DH5_Ant1_High_Hop_2480_Peak

