



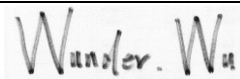
Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Portable keyboard piano

Test Model: BX-20

Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	 Wunder Wu
Supervised by:	 Li Huan





A.1 20dB Emission Bandwidth

Test Result

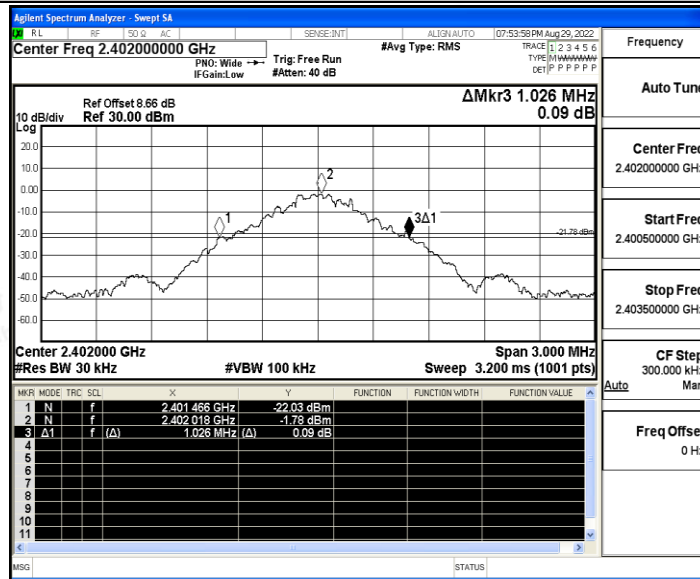
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Verdict
DH5	Ant	2402	1.026	2401.466	2402.492	---
		2441	1.026	2440.469	2441.495	---
		2480	1.023	2479.469	2480.492	---
2DH5	Ant	2402	1.323	2401.334	2402.657	---
		2441	1.290	2440.361	2441.651	---
		2480	1.314	2479.346	2480.660	---
3DH5	Ant	2402	1.311	2401.343	2402.654	---
		2441	1.320	2440.343	2441.663	---
		2480	1.347	2479.322	2480.669	---



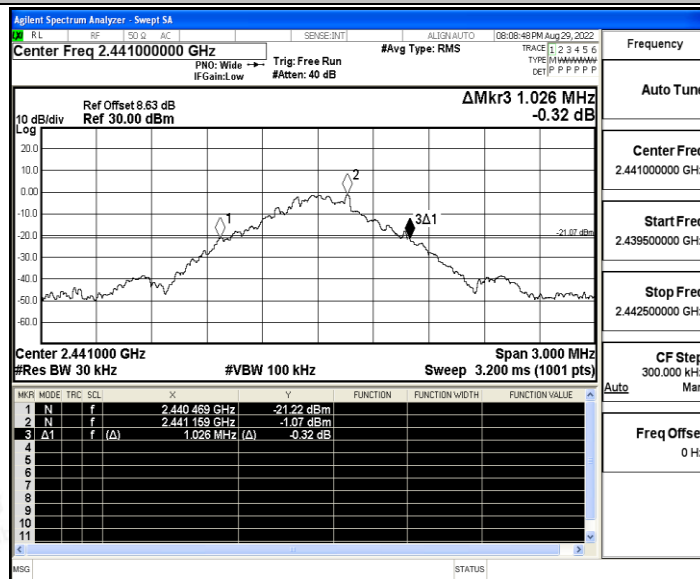


Test Graphs

DH5_Ant_2402

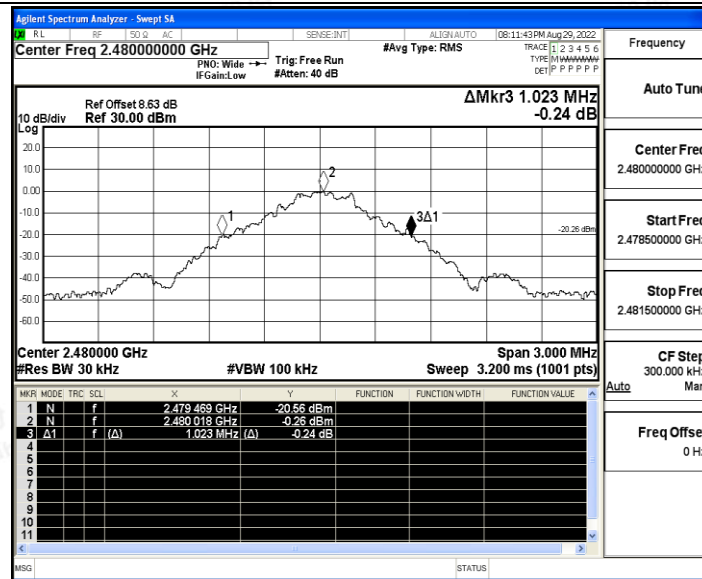


DH5_Ant_2441

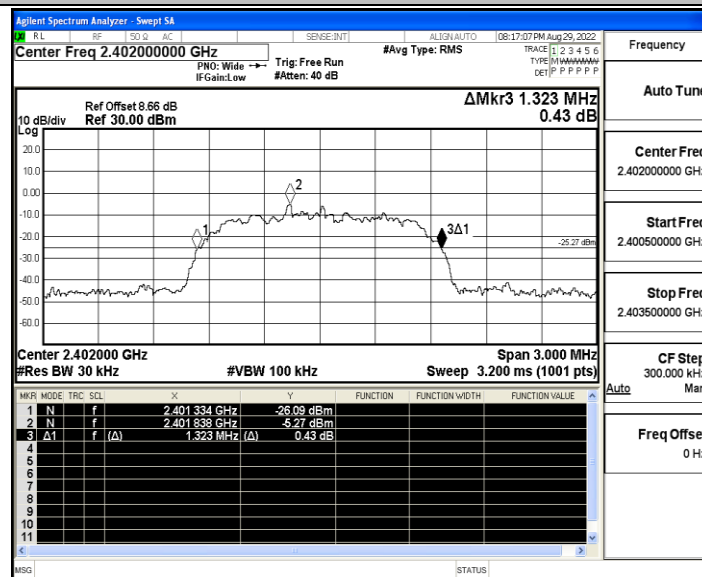


DH5_Ant_2480



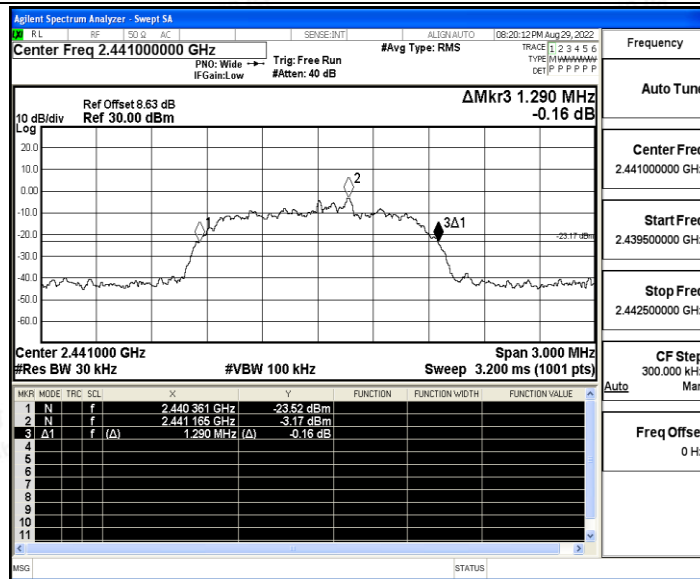


2DH5_Ant_2402

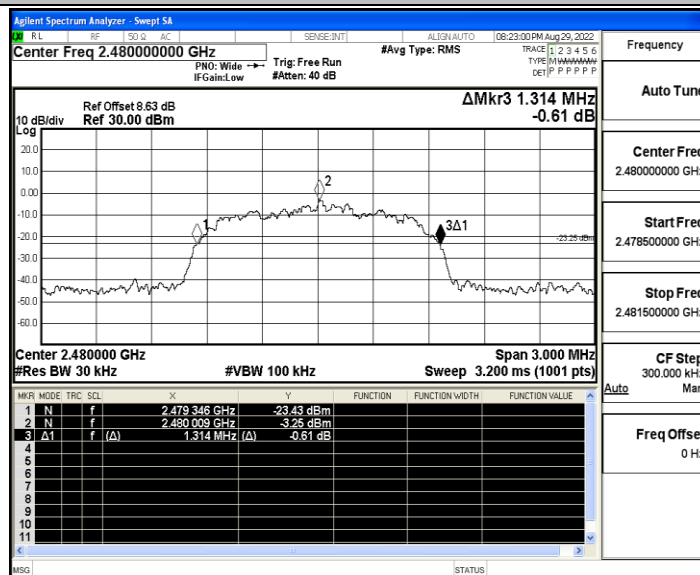


2DH5_Ant_2441



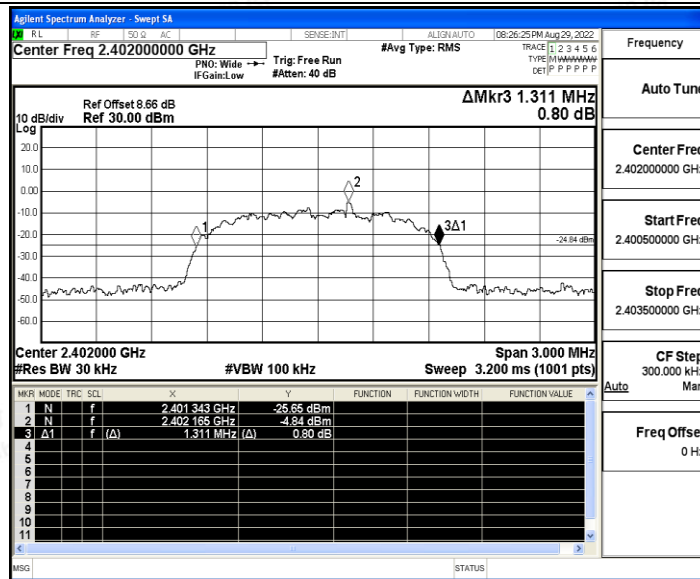


2DH5_Ant_2480

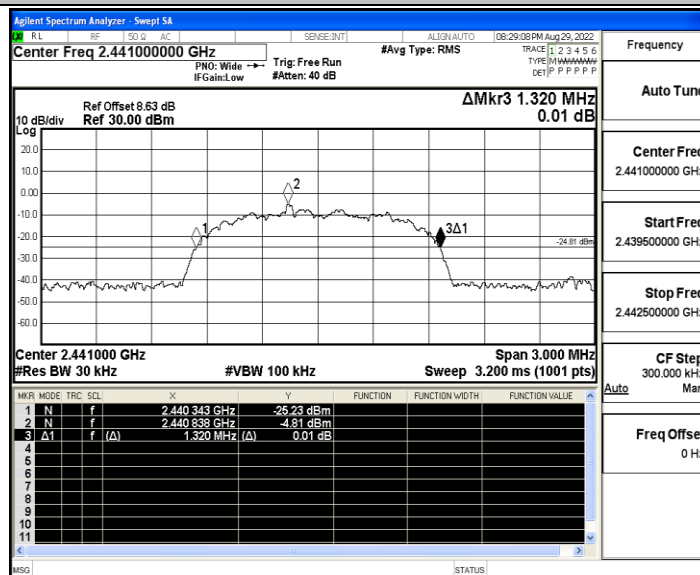


3DH5_Ant_2402



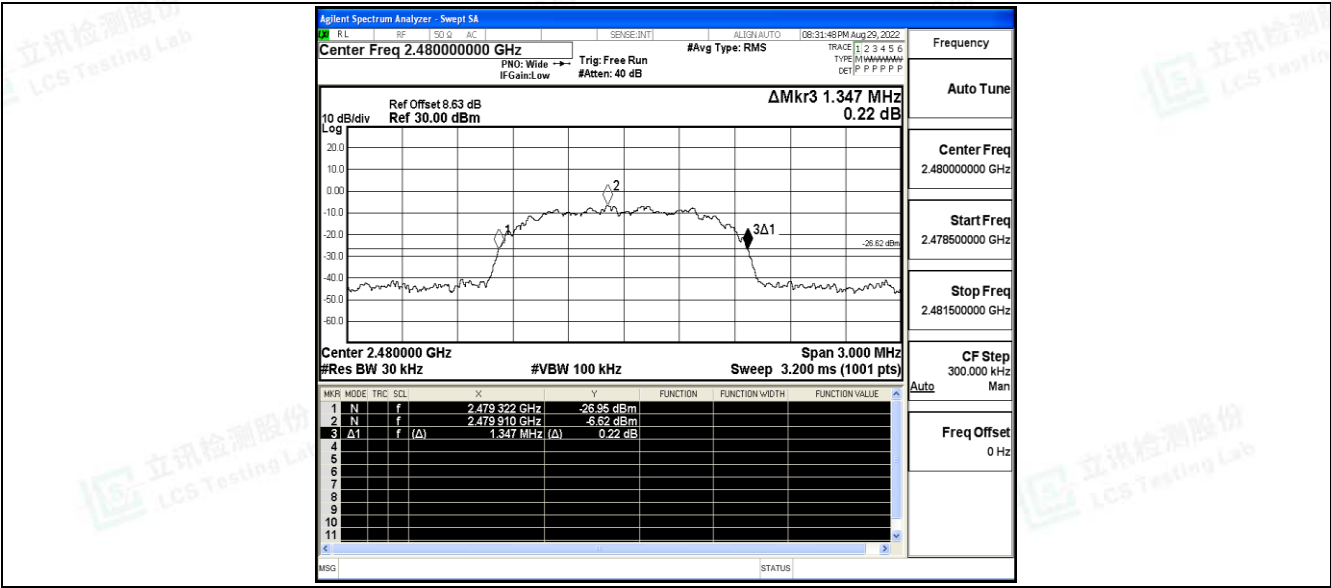


3DH5_Ant_2441



3DH5_Ant_2480







A.2 Occupied Channel Bandwidth

Test Result

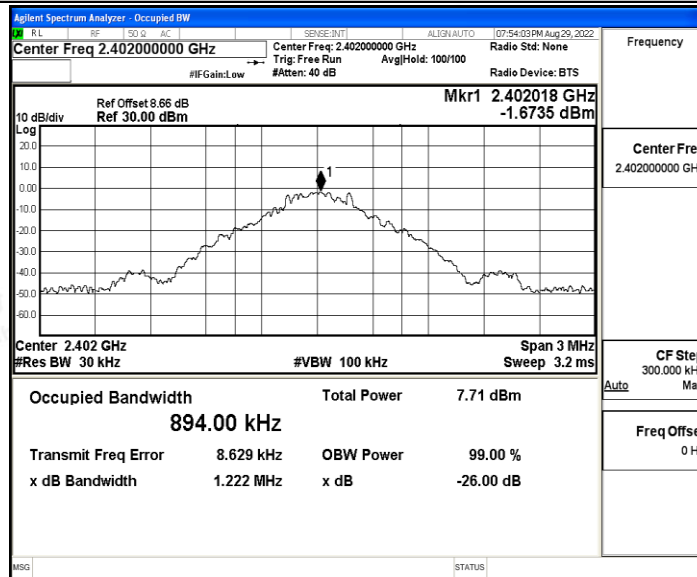
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant	2402	0.89400	2401.5616	2402.4556	---	---
		2441	0.90150	2440.5563	2441.4578	---	---
		2480	0.90652	2479.5515	2480.4581	---	---
2DH5	Ant	2402	1.1872	2401.4048	2402.5920	---	---
		2441	1.1937	2440.4031	2441.5968	---	---
		2480	1.1929	2479.4013	2480.5942	---	---
3DH5	Ant	2402	1.2020	2401.3970	2402.5990	---	---
		2441	1.2003	2440.3998	2441.6001	---	---
		2480	1.1984	2479.3974	2480.5958	---	---



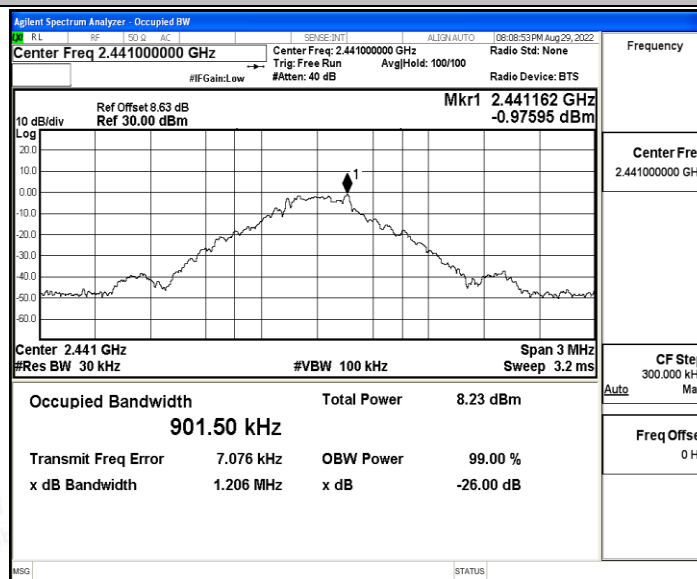


Test Graphs

DH5_Ant_2402

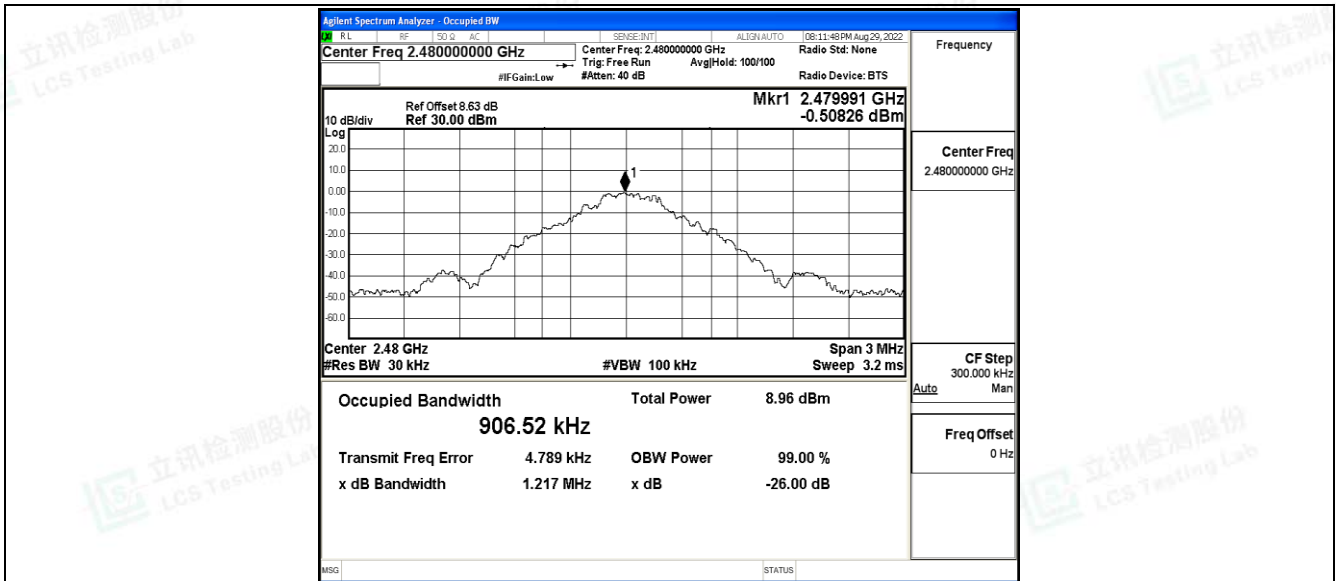


DH5_Ant_2441

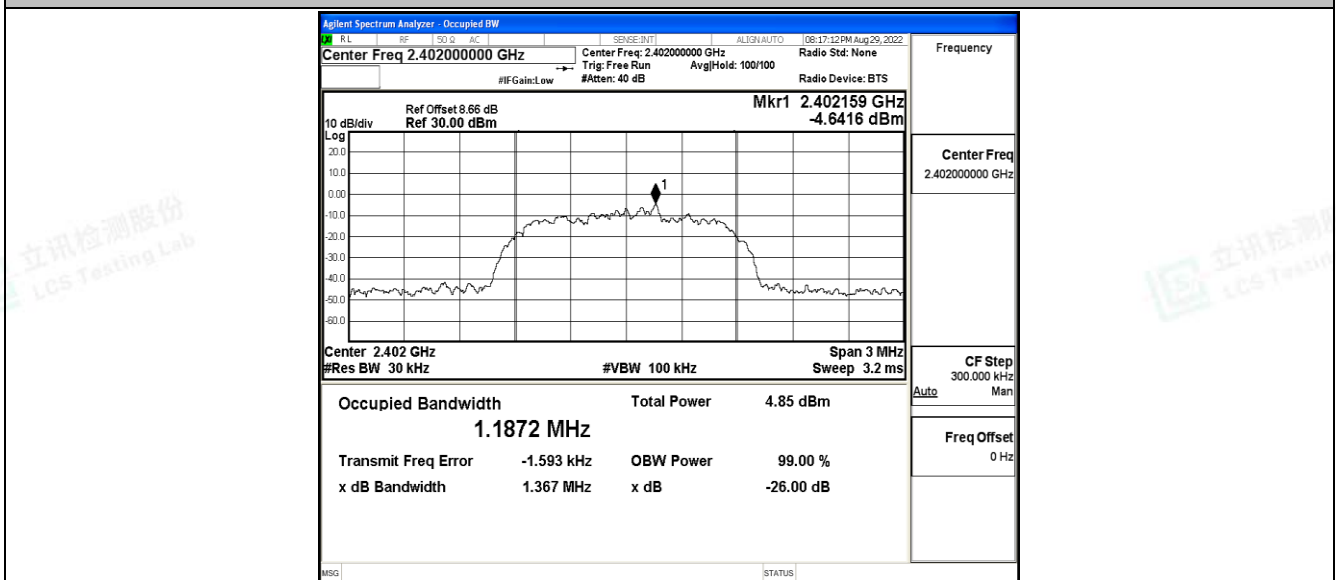


DH5_Ant_2480



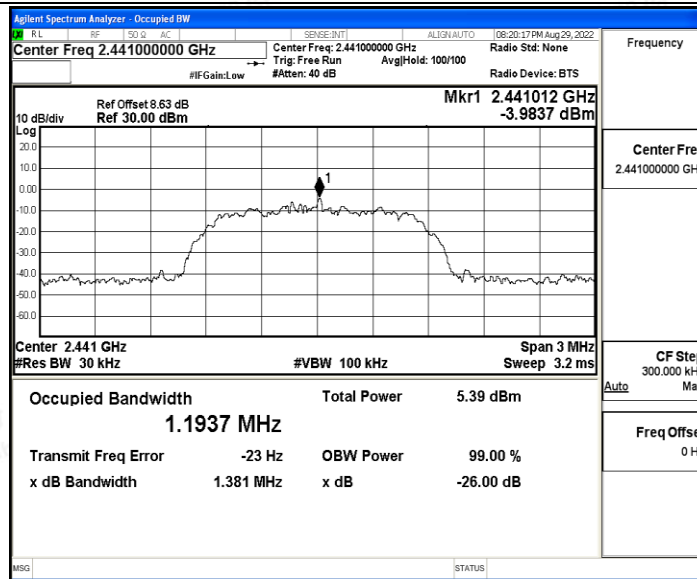


2DH5_Ant_2402

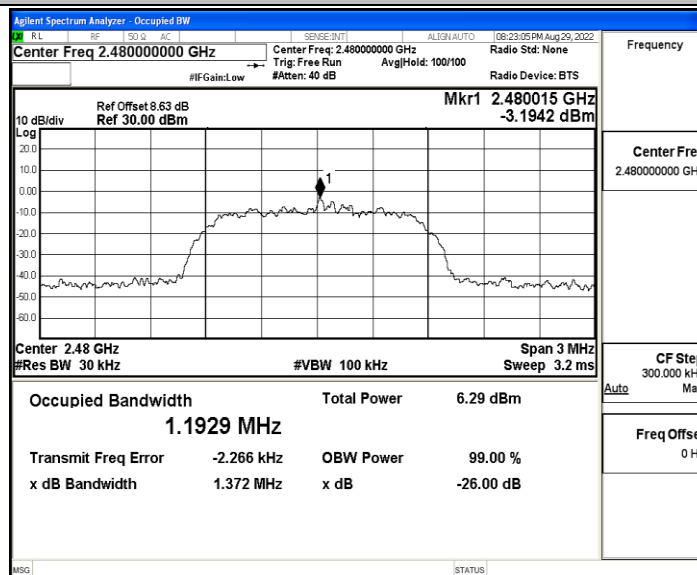


2DH5_Ant_2441



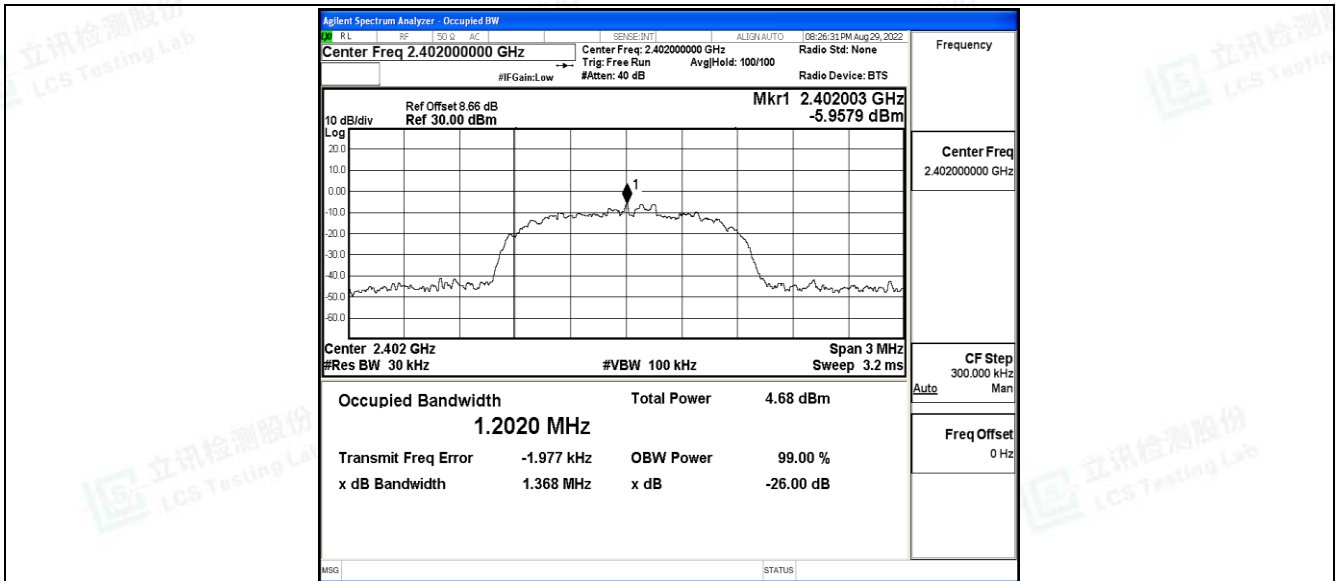


2DH5_Ant_2480

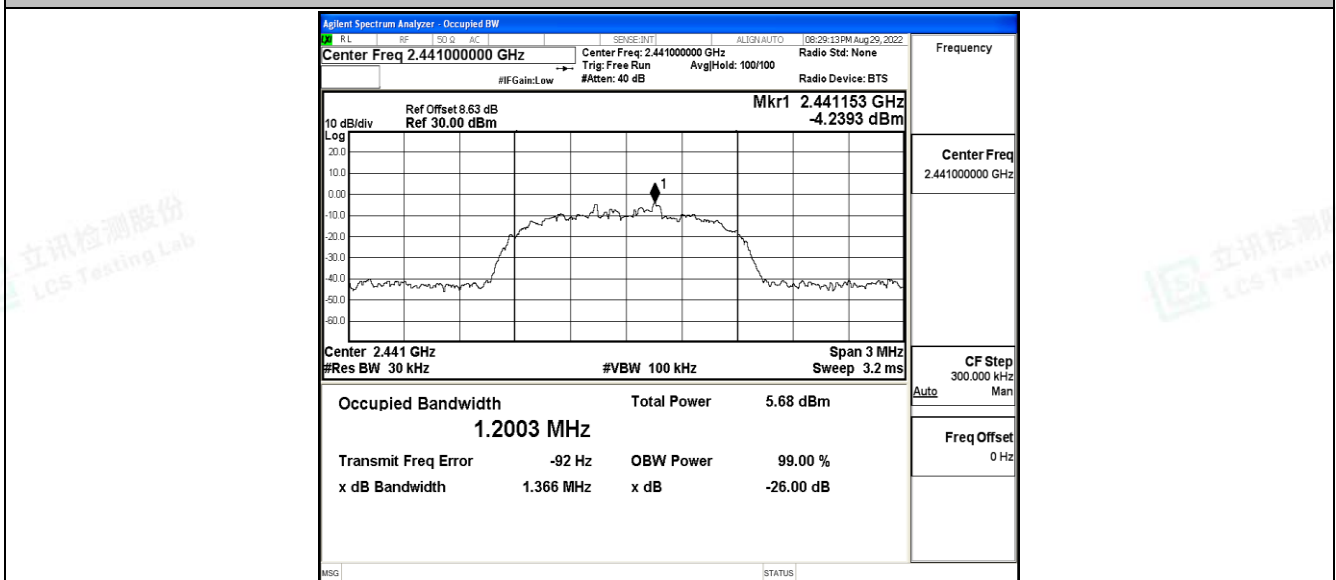


3DH5_Ant_2402



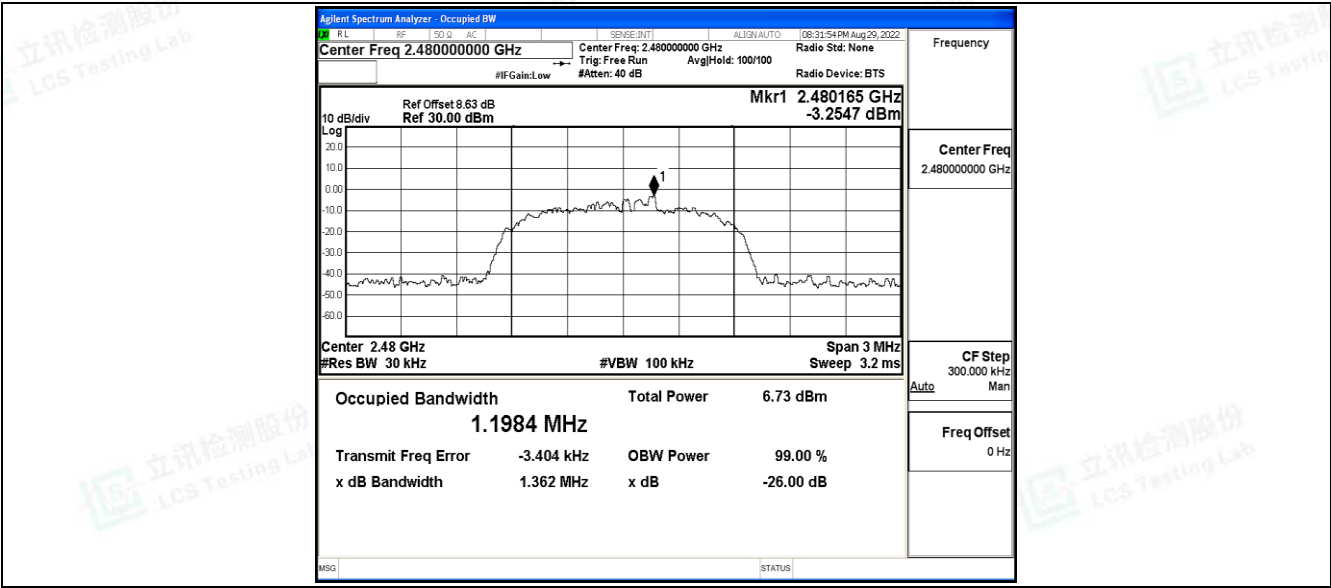


3DH5_Ant_2441



3DH5_Ant_2480







A.3 Maximum peak conducted output power

Test Result

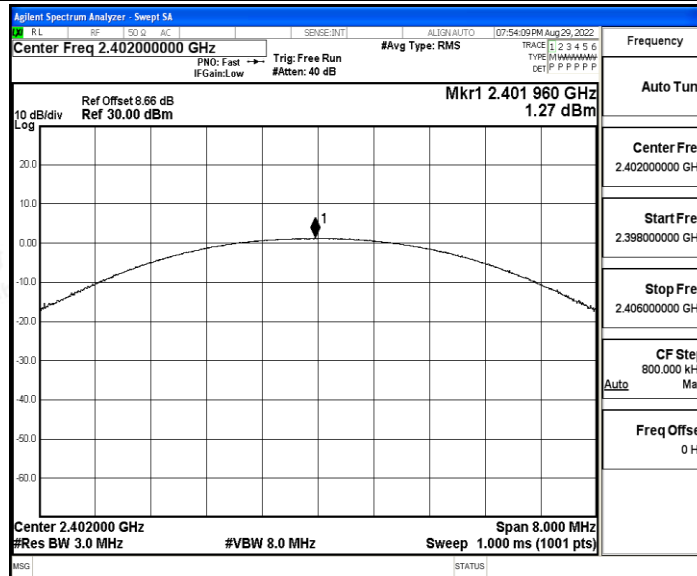
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant	2402	1.27	≤20.97	PASS
		2441	1.54	≤20.97	PASS
		2480	2.62	≤20.97	PASS
2DH5	Ant	2402	0.04	≤20.97	PASS
		2441	0.66	≤20.97	PASS
		2480	1.76	≤20.97	PASS
3DH5	Ant	2402	0.09	≤20.97	PASS
		2441	0.78	≤20.97	PASS
		2480	1.74	≤20.97	PASS



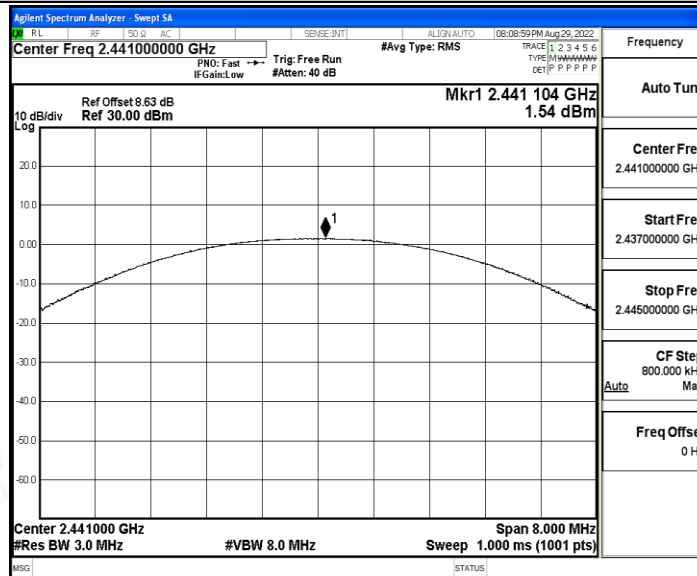


Test Graphs

DH5_Ant_2402

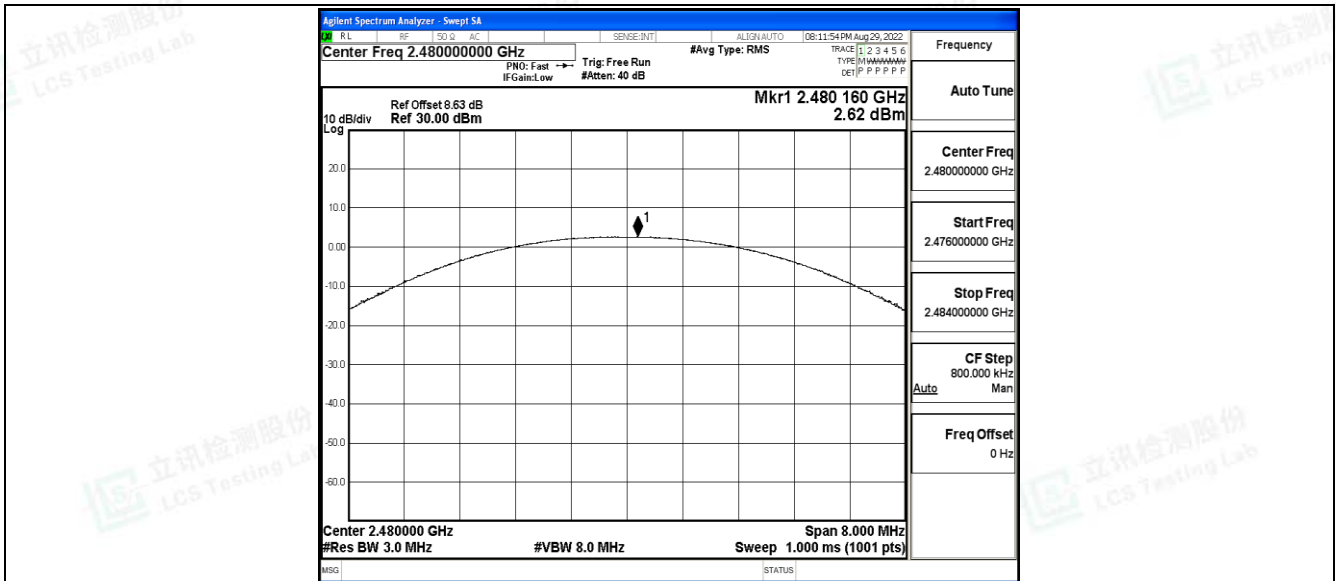


DH5_Ant_2441

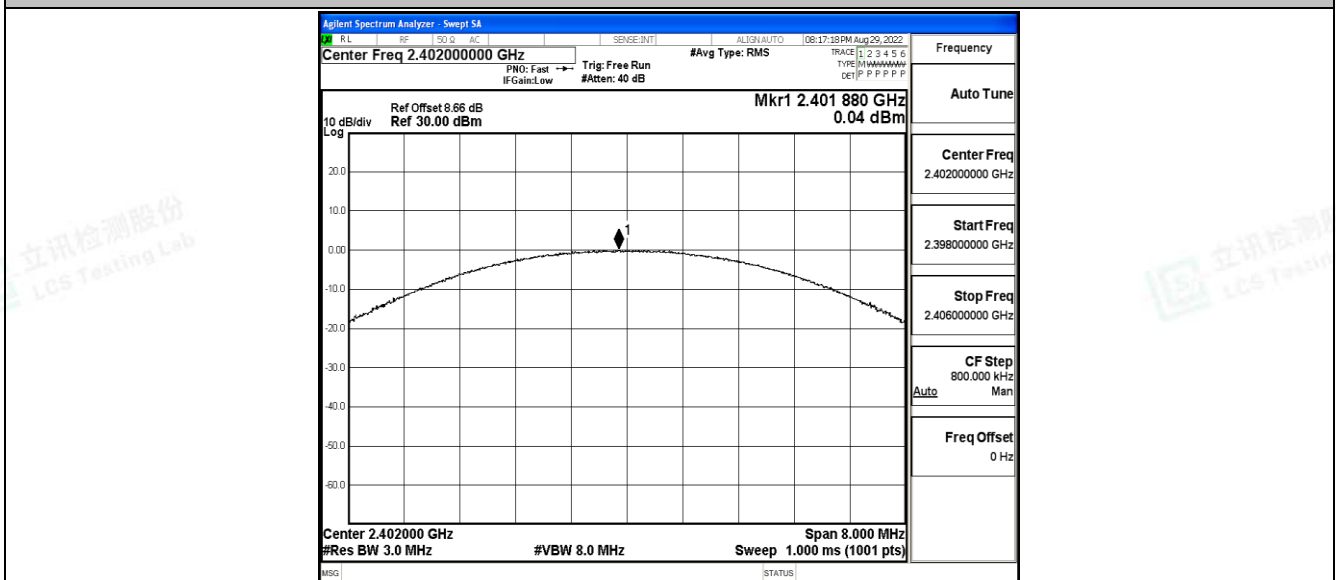


DH5_Ant_2480



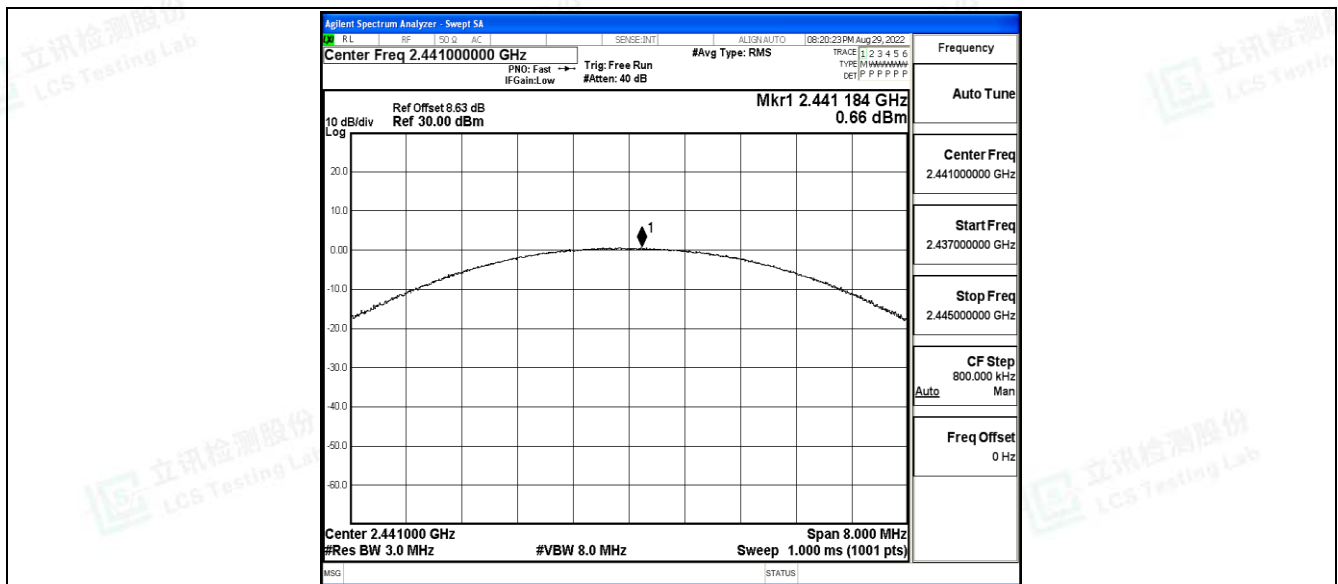


2DH5_Ant_2402

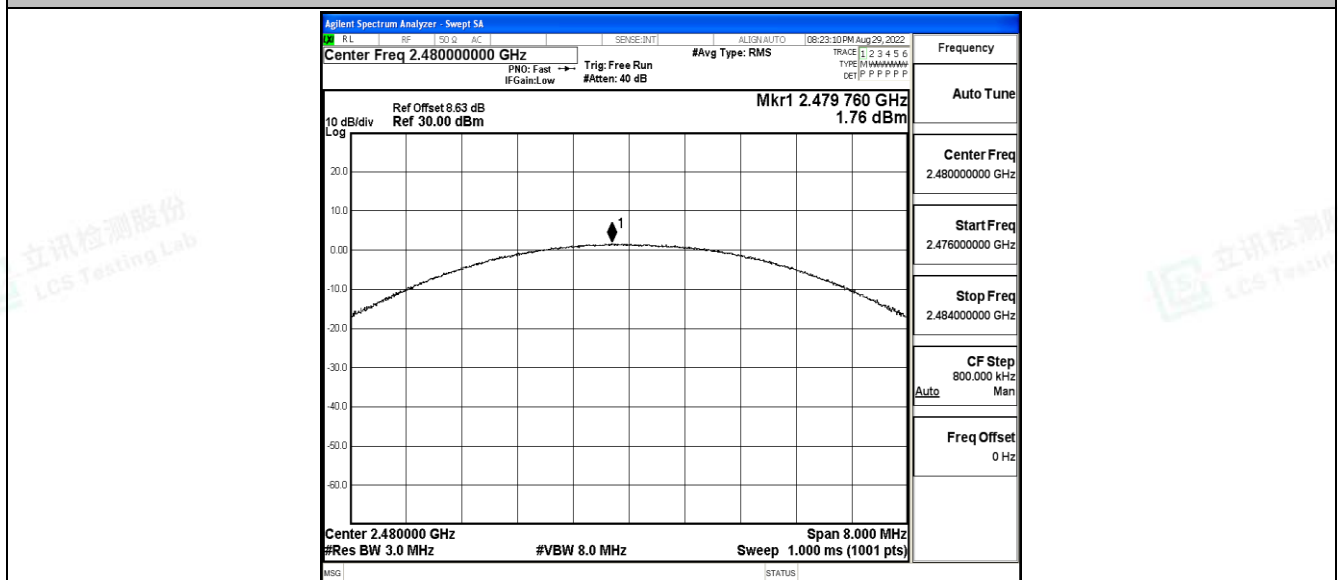


2DH5_Ant_2441



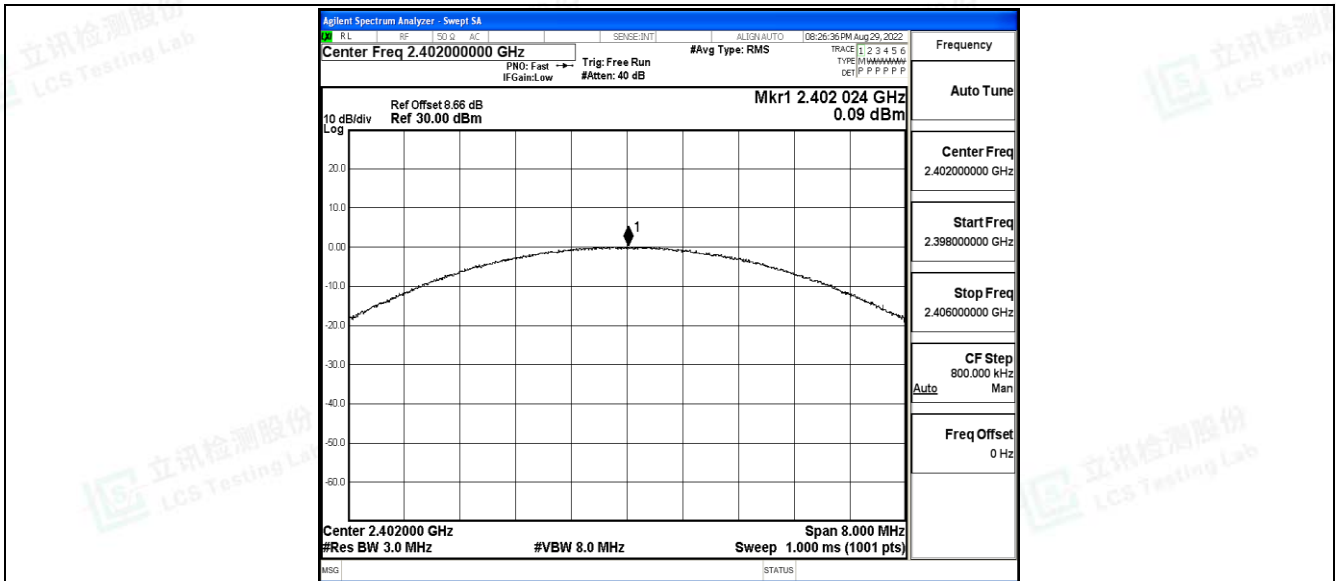


2DH5_Ant_2480

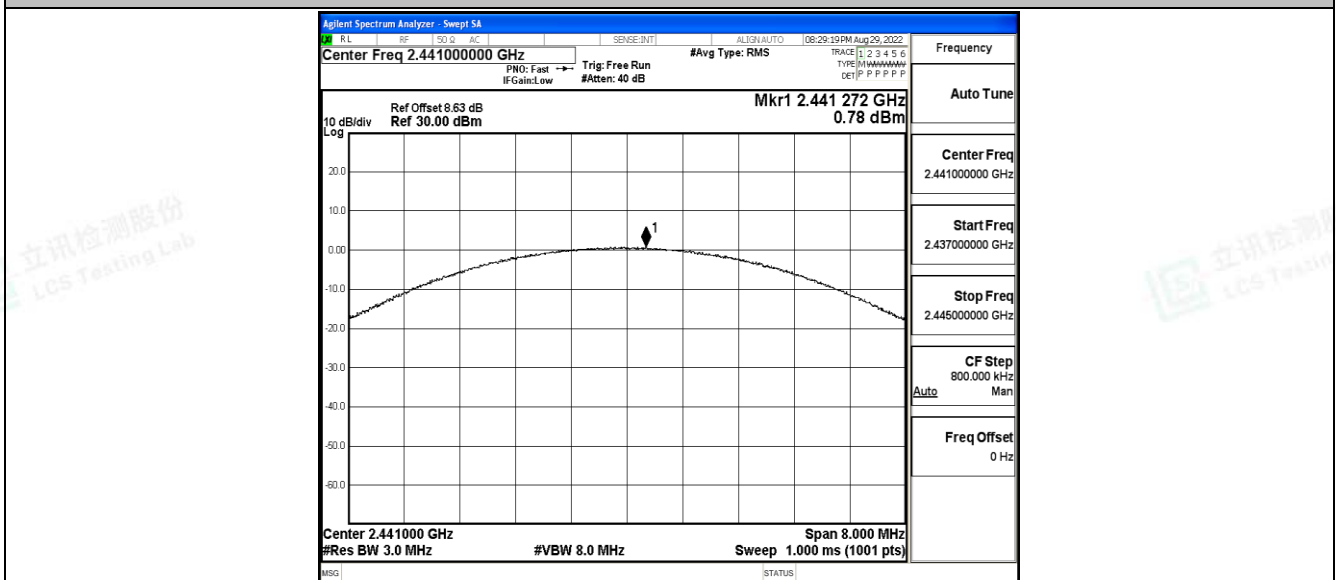


3DH5_Ant_2402



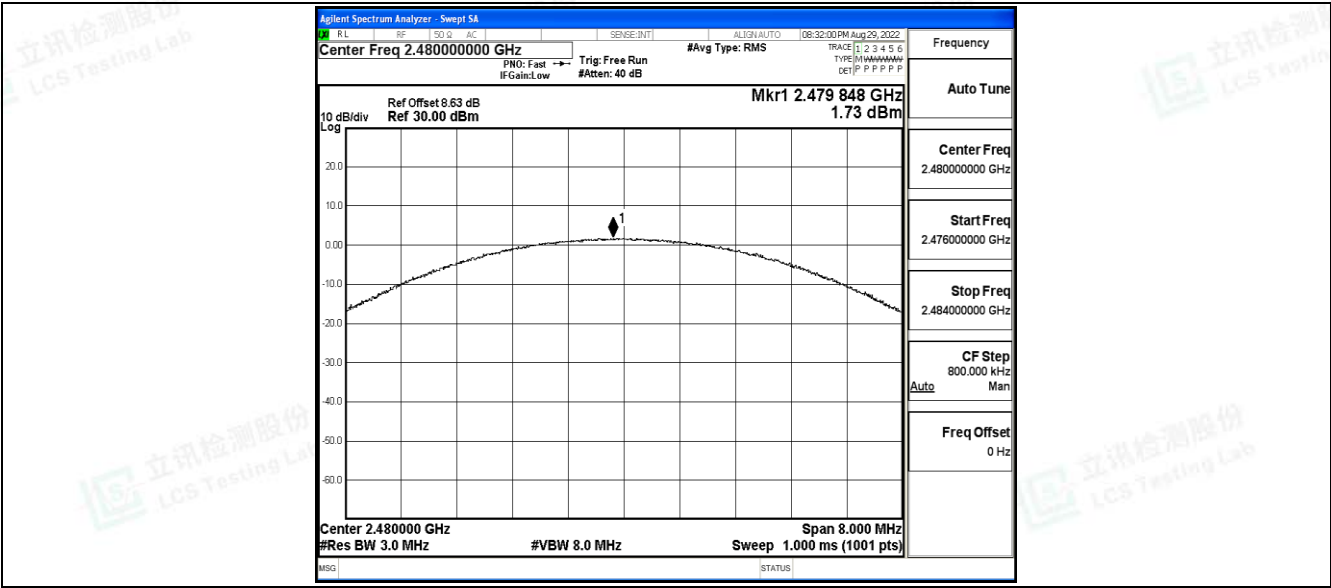


3DH5_Ant_2441



3DH5_Ant_2480







A.4 Carrier frequency separation

Test Result

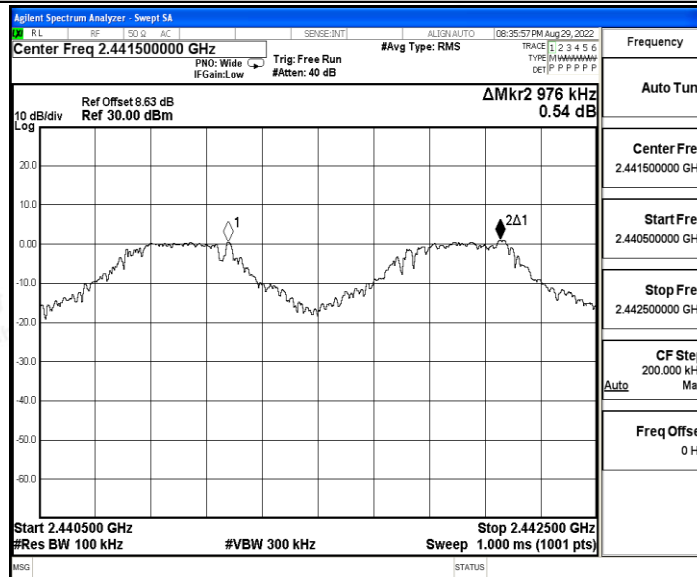
TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant	Hop	0.976	≥0.684	PASS
2DH5	Ant	Hop	0.976	≥0.882	PASS
3DH5	Ant	Hop	0.942	≥0.898	PASS



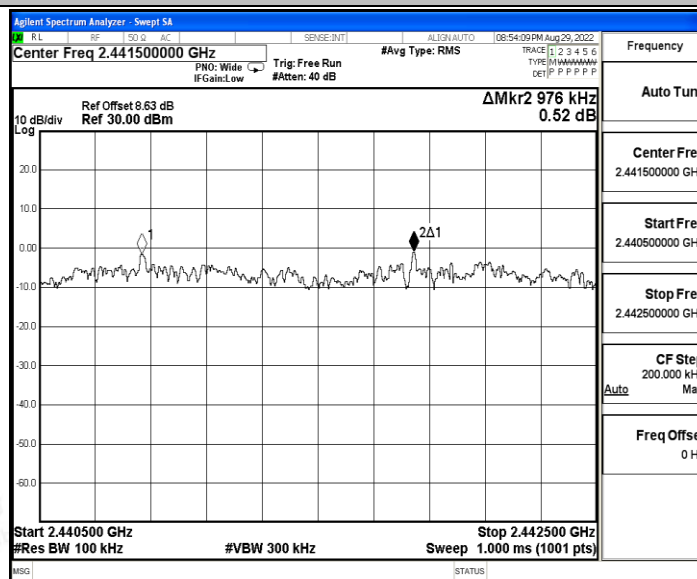


Test Graphs

DH5_Ant_Hop

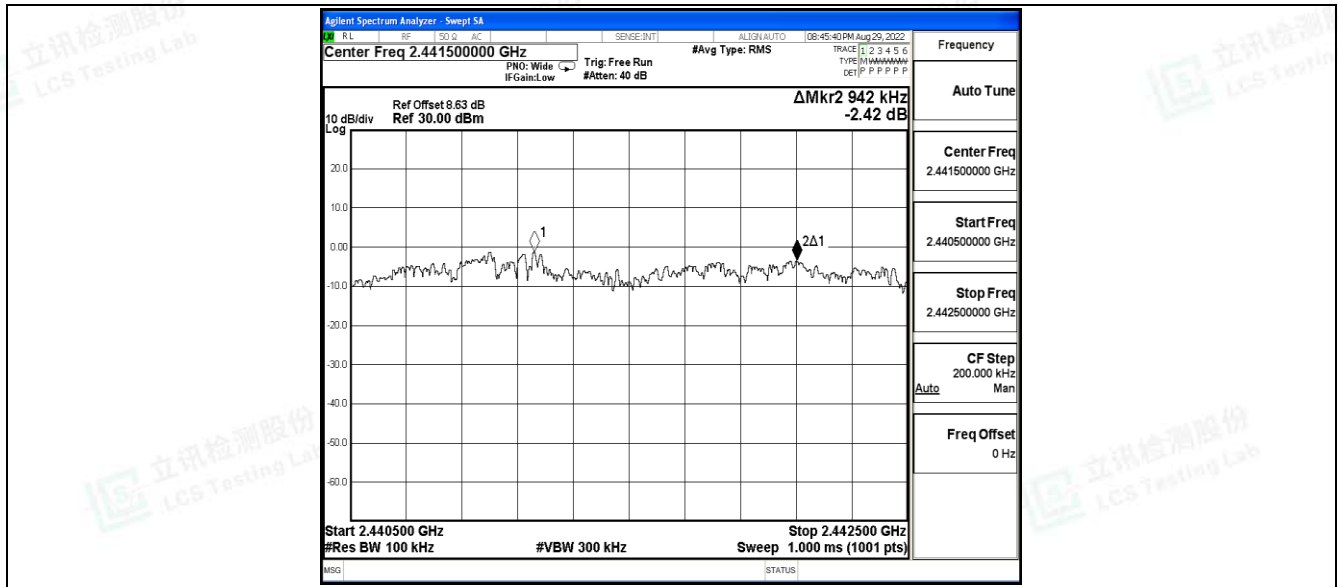


2DH5_Ant_Hop



3DH5_Ant_Hop







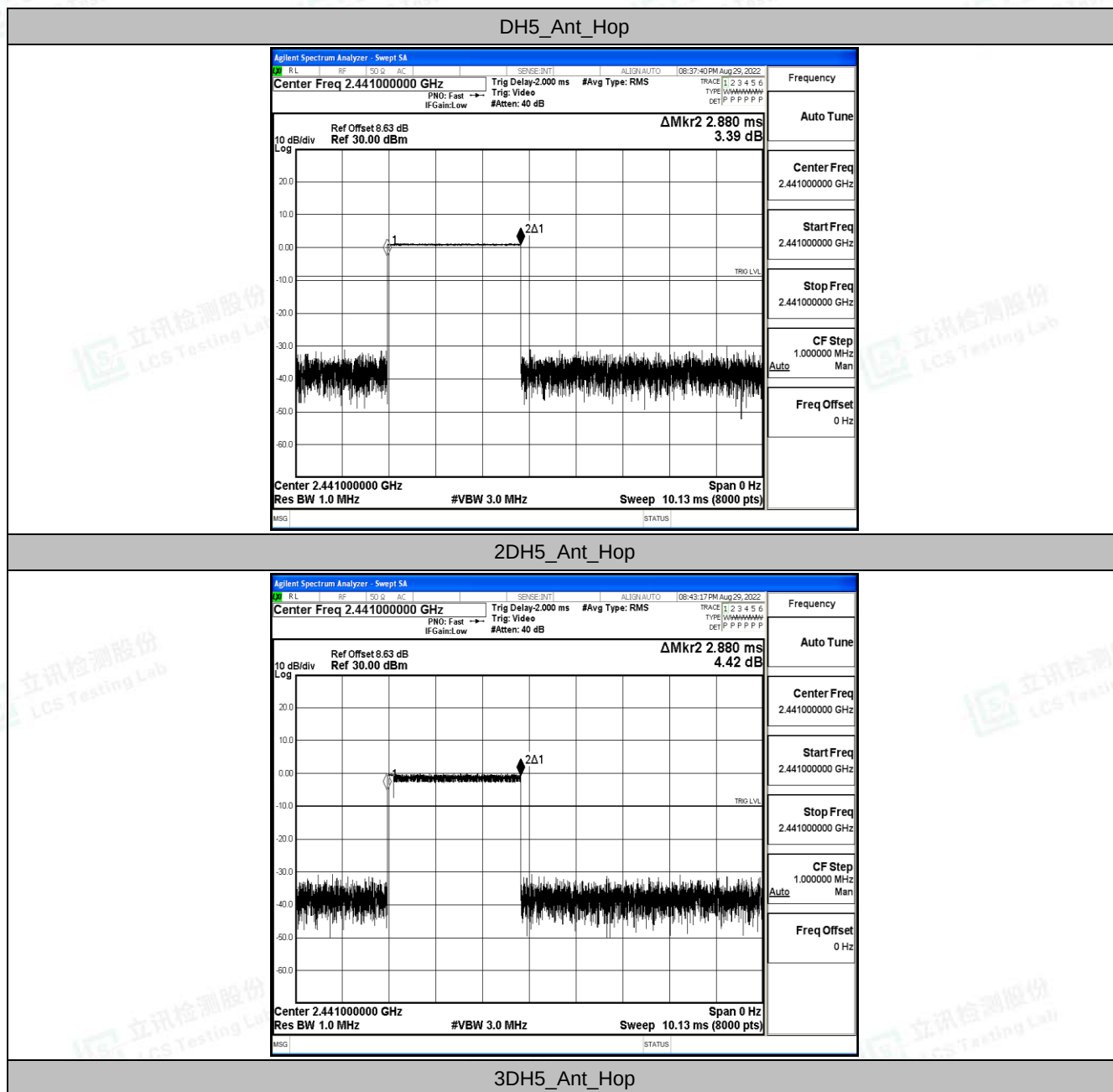
A.5 Time of occupancy

Test Result

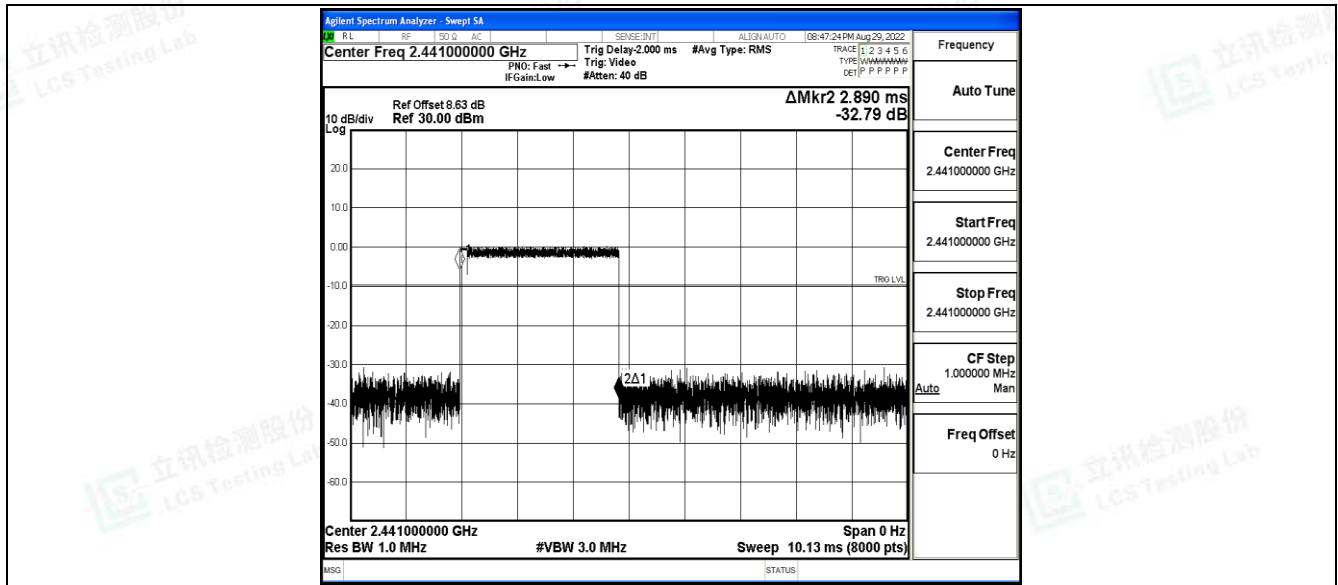
TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant	Hop	2.88	106.67	0.307	≤0.4	PASS
2DH5	Ant	Hop	2.88	106.67	0.307	≤0.4	PASS
3DH5	Ant	Hop	2.89	106.67	0.308	≤0.4	PASS



Test Graphs



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





A.6 Number of hopping channels

Test Result

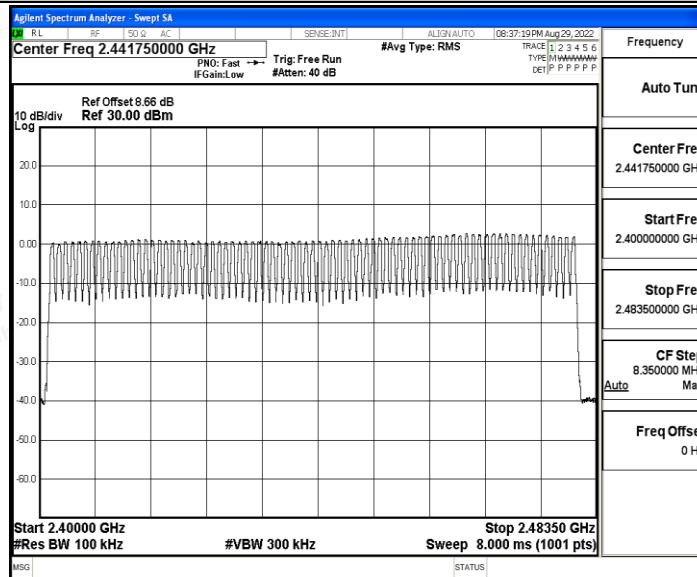
TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant	Hop	79	≥15	PASS
2DH5	Ant	Hop	79	≥15	PASS
3DH5	Ant	Hop	79	≥15	PASS



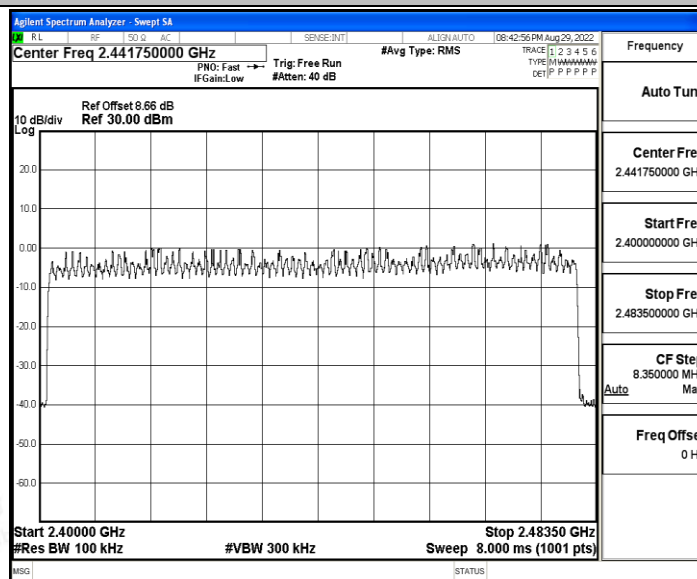


Test Graphs

DH5_Ant_Hop

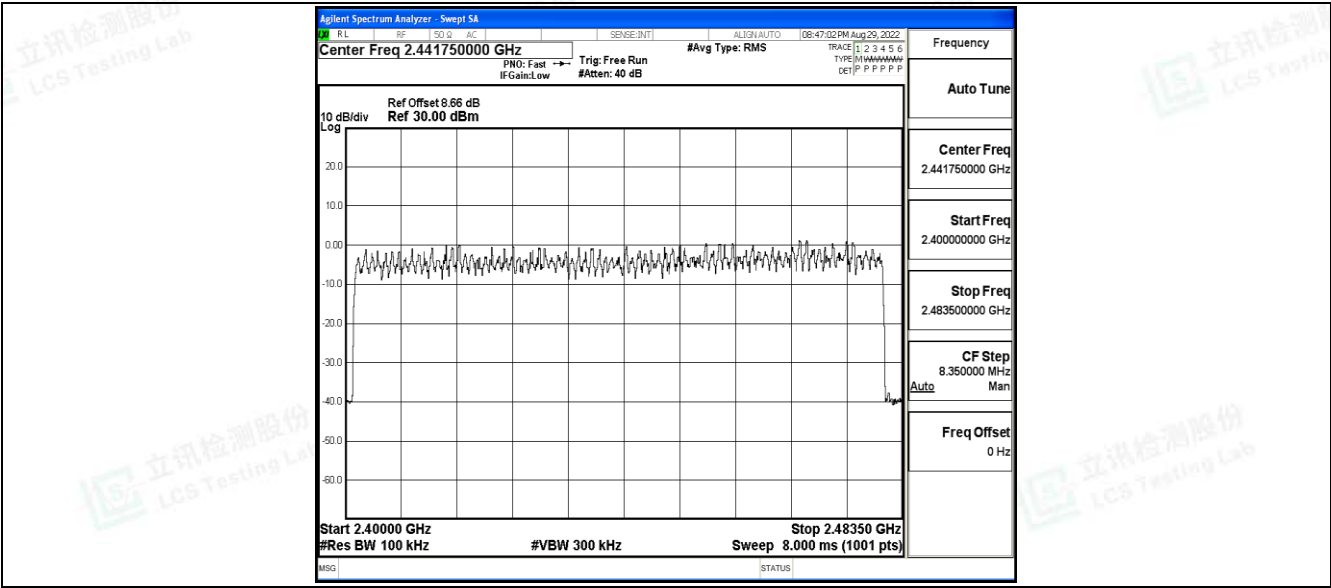


2DH5_Ant_Hop



3DH5_Ant_Hop







A.7 Band edge measurements

Test Result

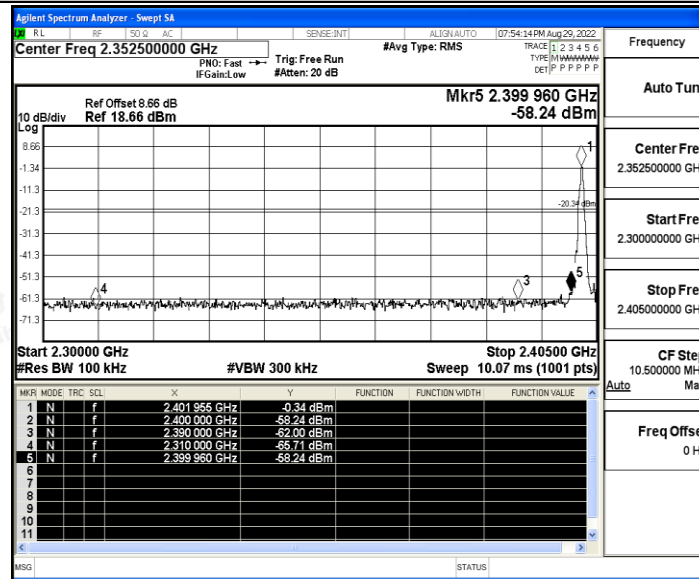
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant	Low	2402	-0.34	-58.24	≤ -20.34	PASS
		High	2480	1.28	-58.98	≤ -18.72	PASS
		Low	Hop_2402	0.07	-59.06	≤ -19.93	PASS
		High	Hop_2480	2.41	-57.44	≤ -17.59	PASS
2DH5	Ant	Low	2402	-2.64	-59.45	≤ -22.64	PASS
		High	2480	-2.97	-58.85	≤ -22.97	PASS
		Low	Hop_2402	-5.16	-53.73	≤ -25.16	PASS
		High	Hop_2480	0.80	-57.55	≤ -19.2	PASS
3DH5	Ant	Low	2402	-1.33	-58.05	≤ -21.33	PASS
		High	2480	-1.31	-59.01	≤ -21.31	PASS
		Low	Hop_2402	-5.44	-58.99	≤ -25.44	PASS
		High	Hop_2480	-1.13	-57.4	≤ -21.13	PASS



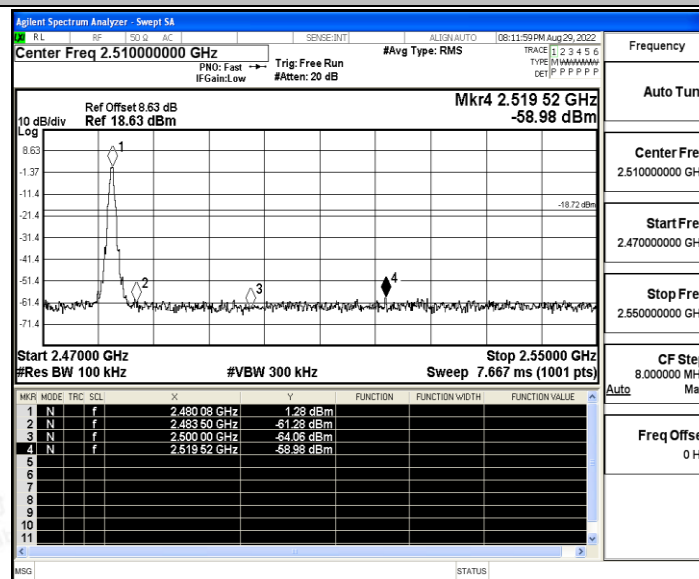


Test Graphs

DH5_Ant_Low_2402

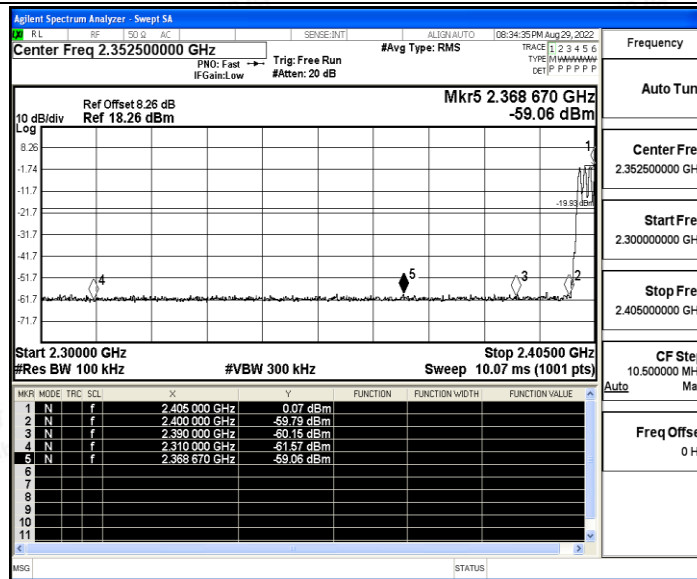


DH5_Ant_High_2480

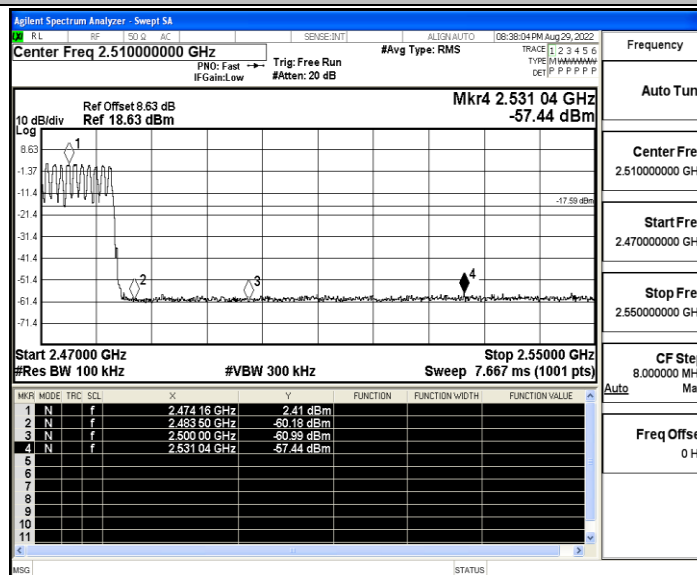


DH5_Ant_Low_Hop_2402



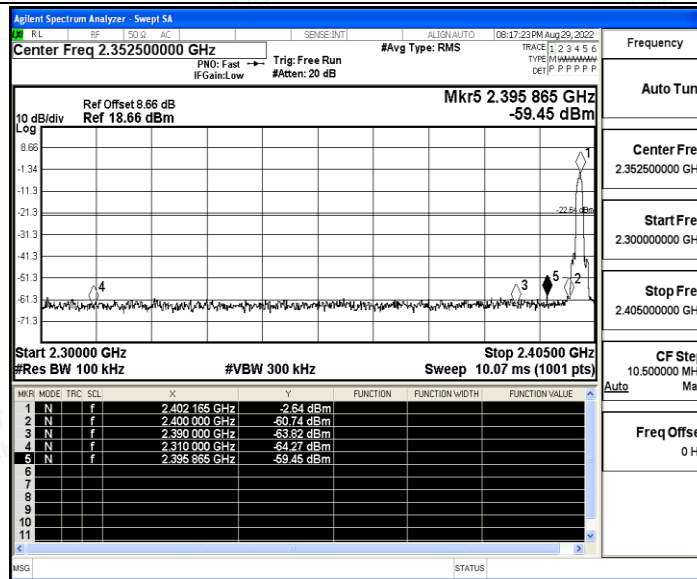


DH5_Ant_High_Hop_2480

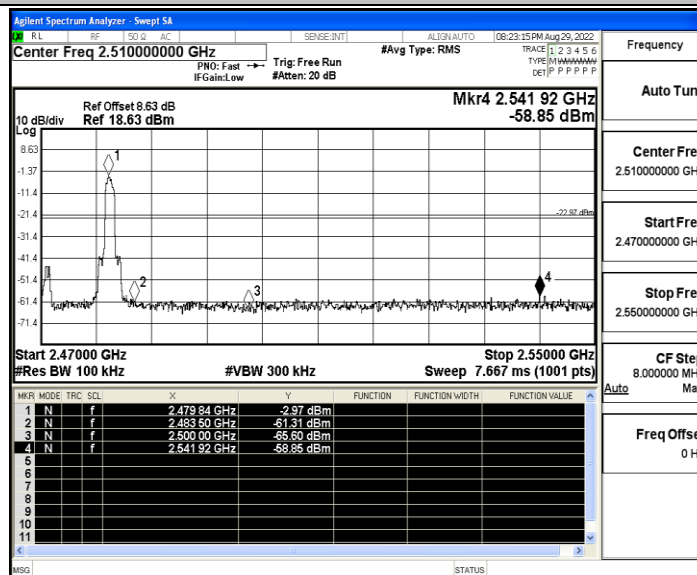


2DH5_Ant_Low_2402



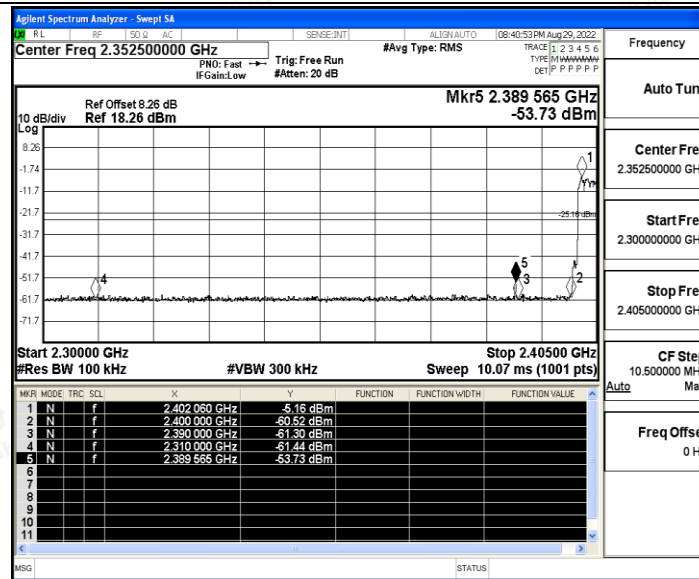


2DH5_Ant_High_2480

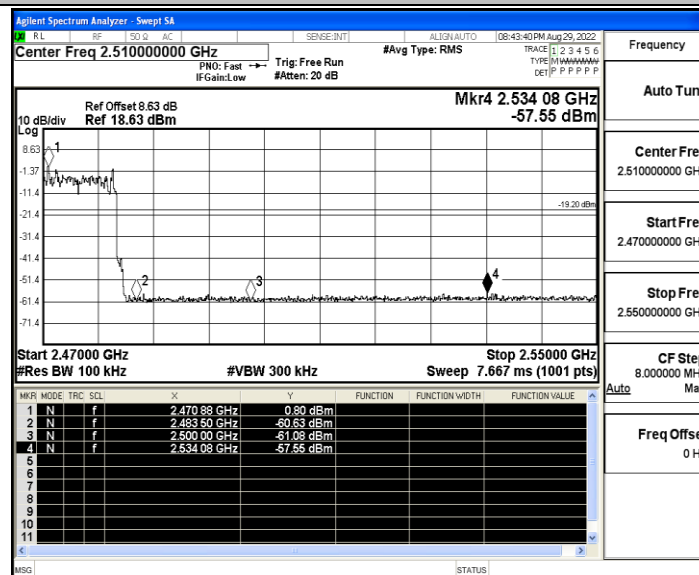


2DH5_Ant_Low_Hop_2402



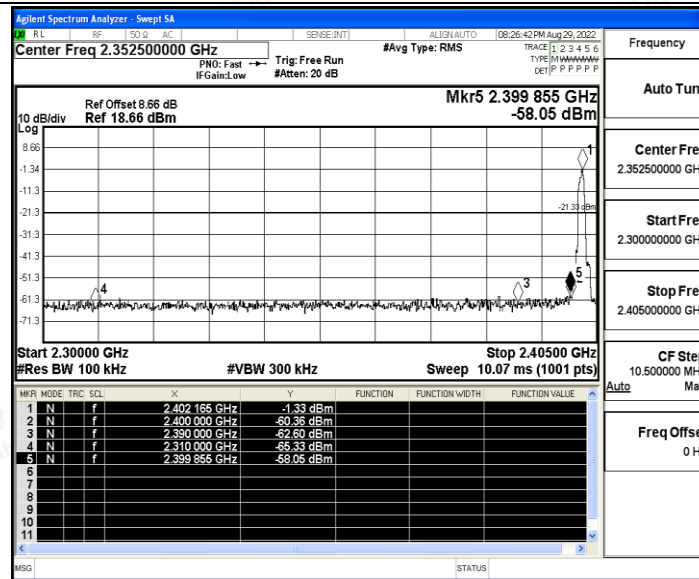


2DH5_Ant_High_Hop_2480

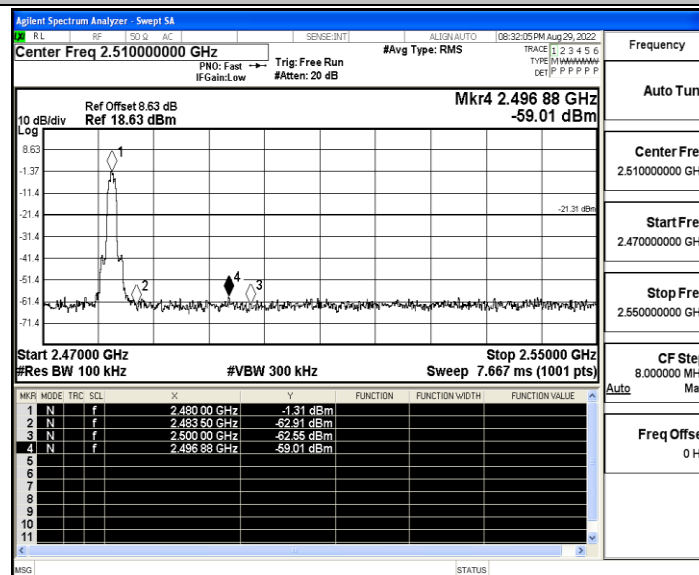


3DH5_Ant_Low_2402



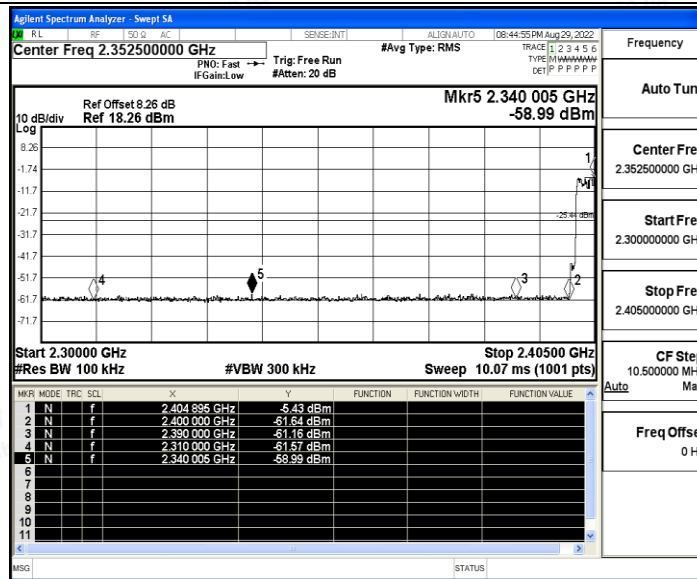


3DH5_Ant_High_2480

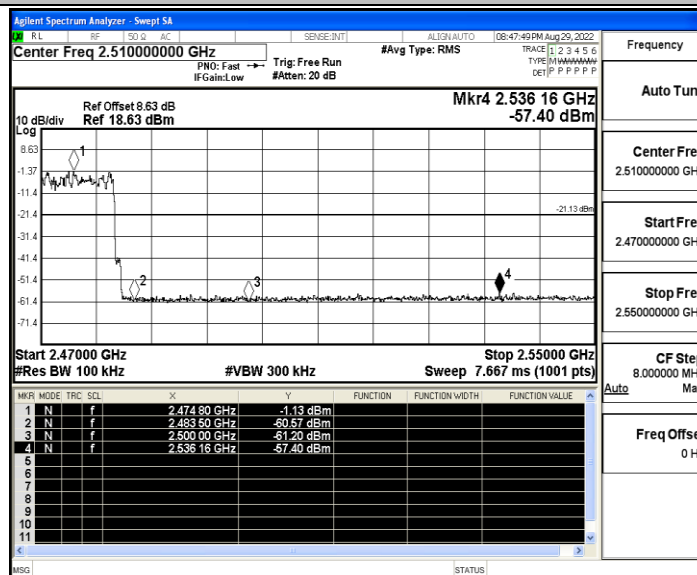


3DH5_Ant_Low_Hop_2402





3DH5_Ant_High_Hop_2480





A.8 Conducted Spurious Emission

Test Result

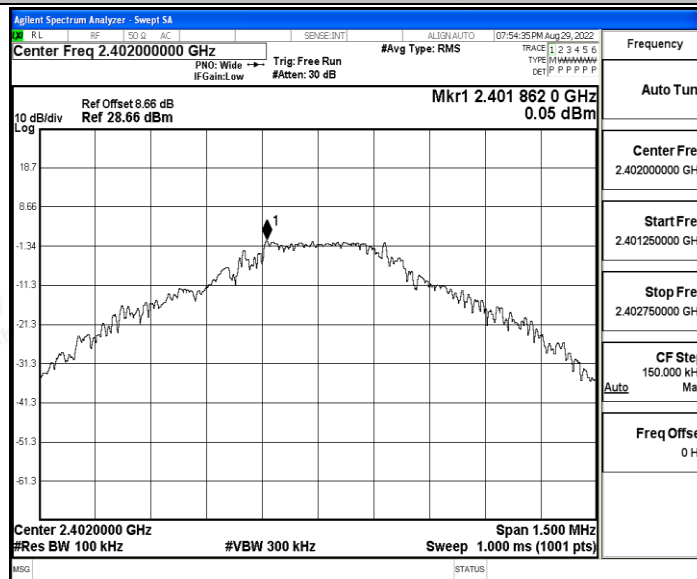
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant	2402	Reference	0.05	0.05	---	PASS
			30~1000	0.05	-58.59	≤-19.95	PASS
			1000~26500	0.05	-45.94	≤-19.95	PASS
		2441	Reference	0.58	0.58	---	PASS
			30~1000	0.58	-60.89	≤-19.42	PASS
			1000~26500	0.58	-46.1	≤-19.42	PASS
		2480	Reference	1.61	1.61	---	PASS
			30~1000	1.61	-60.25	≤-18.39	PASS
			1000~26500	1.61	-46.59	≤-18.39	PASS
2DH5	Ant	2402	Reference	-1.29	-1.29	---	PASS
			30~1000	-1.29	-51.27	≤-21.29	PASS
			1000~26500	-1.29	-35.19	≤-21.29	PASS
		2441	Reference	-1.00	-1.00	---	PASS
			30~1000	-1.00	-60.78	≤-21	PASS
			1000~26500	-1.00	-32.32	≤-21	PASS
		2480	Reference	-3.31	-3.31	---	PASS
			30~1000	-3.31	-60.5	≤-23.31	PASS
			1000~26500	-3.31	-36.73	≤-23.31	PASS
3DH5	Ant	2402	Reference	-4.54	-4.54	---	PASS
			30~1000	-4.54	-60.26	≤-24.54	PASS
			1000~26500	-4.54	-37.12	≤-24.54	PASS
		2441	Reference	-3.78	-3.78	---	PASS
			30~1000	-3.78	-60.11	≤-23.78	PASS
			1000~26500	-3.78	-28.04	≤-23.78	PASS
		2480	Reference	-2.05	-2.05	---	PASS
			30~1000	-2.05	-60.24	≤-22.05	PASS
			1000~26500	-2.05	-44.83	≤-22.05	PASS



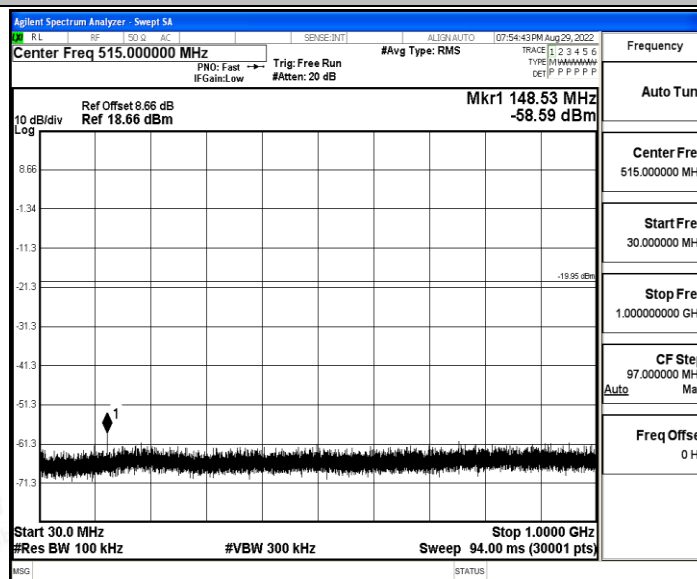


Test Graphs

DH5_Ant_2402_0~Reference

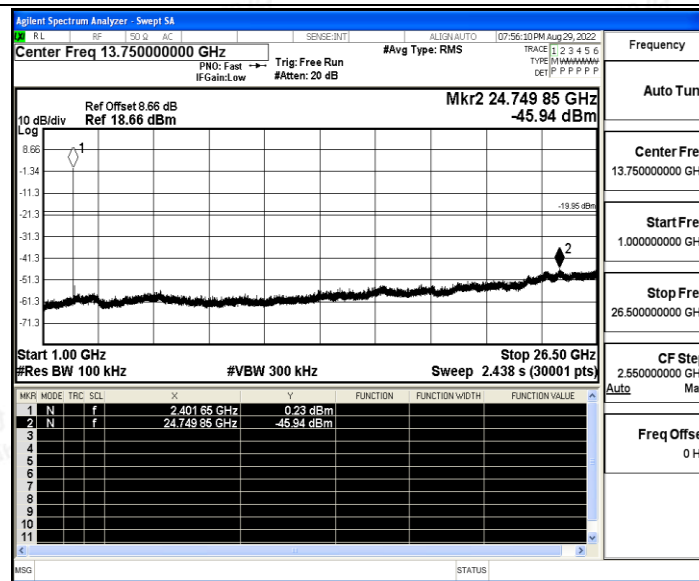


DH5_Ant_2402_30~1000

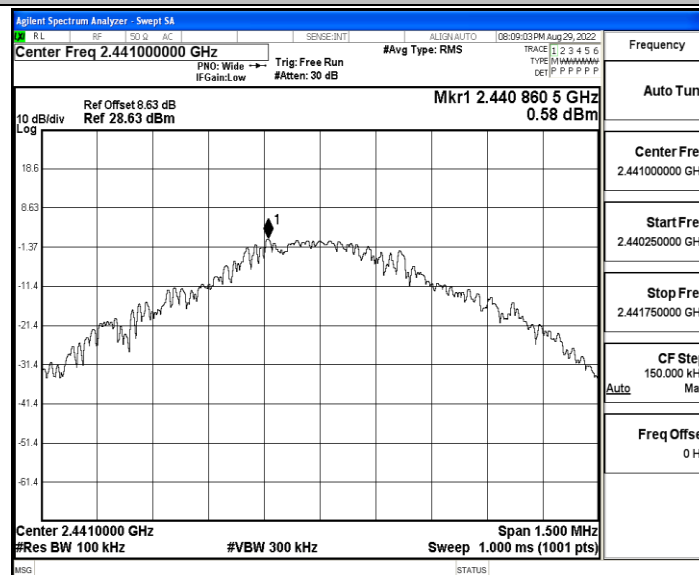


DH5_Ant_2402_1000~26500



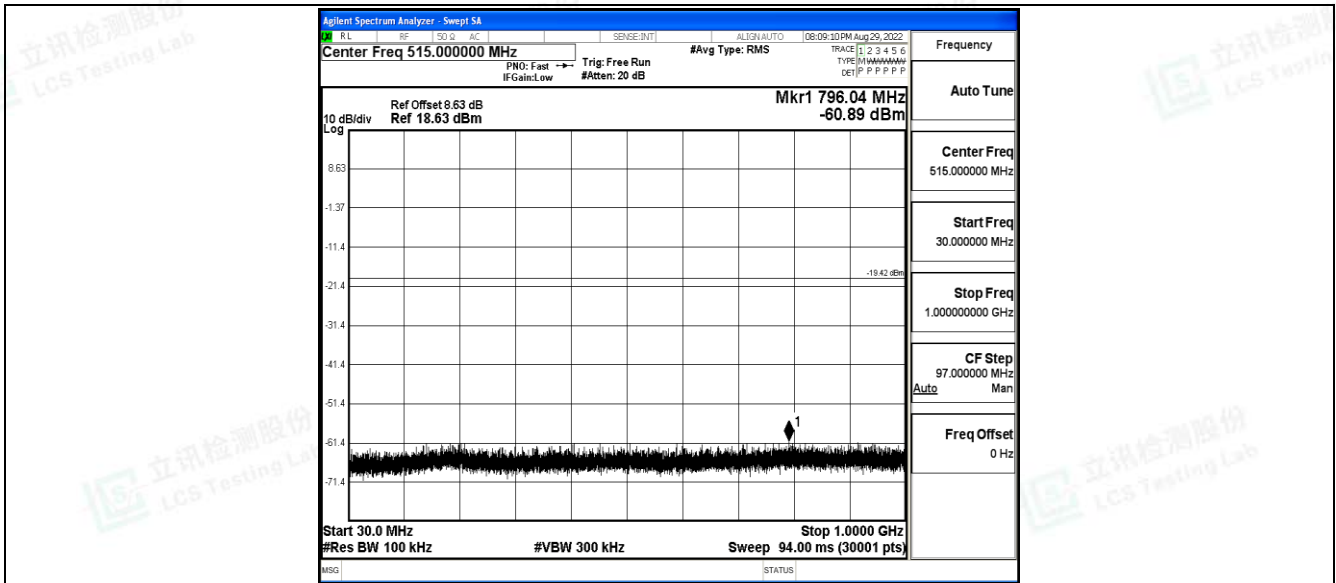


DH5_Ant_2441_0~Reference

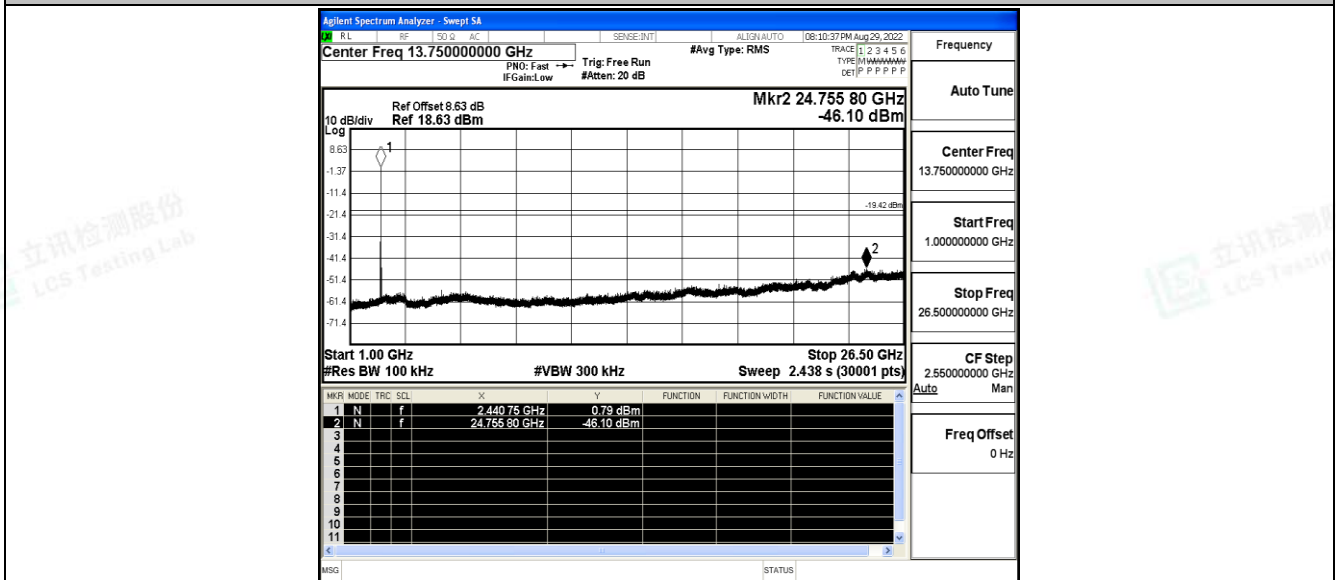


DH5_Ant_2441_30~1000



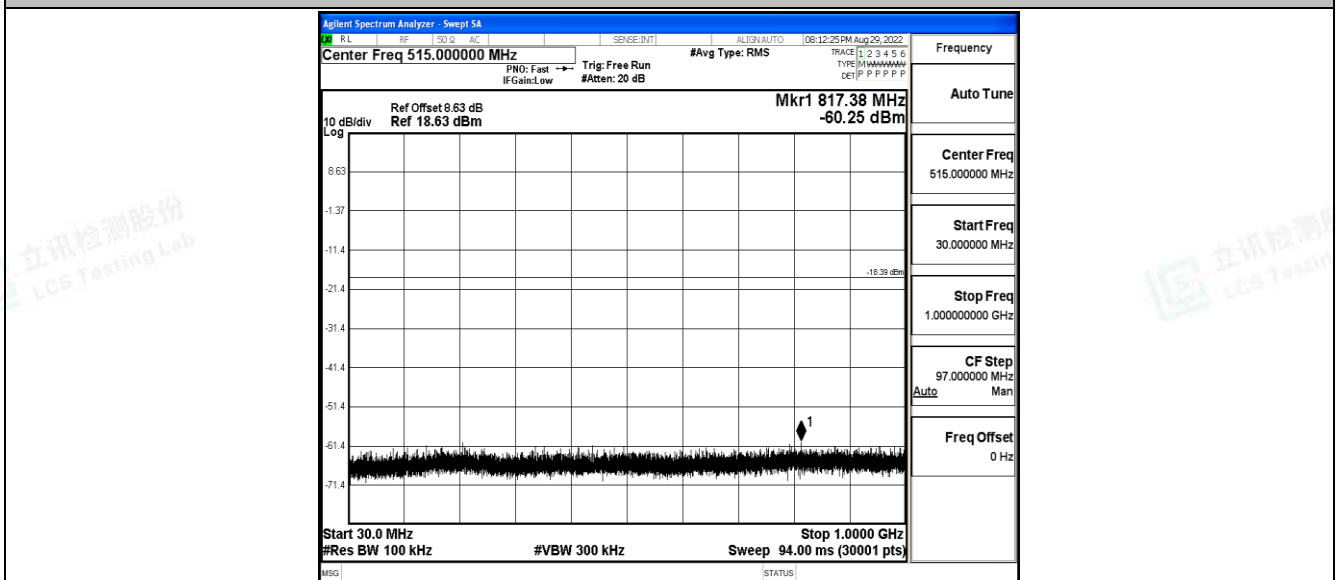
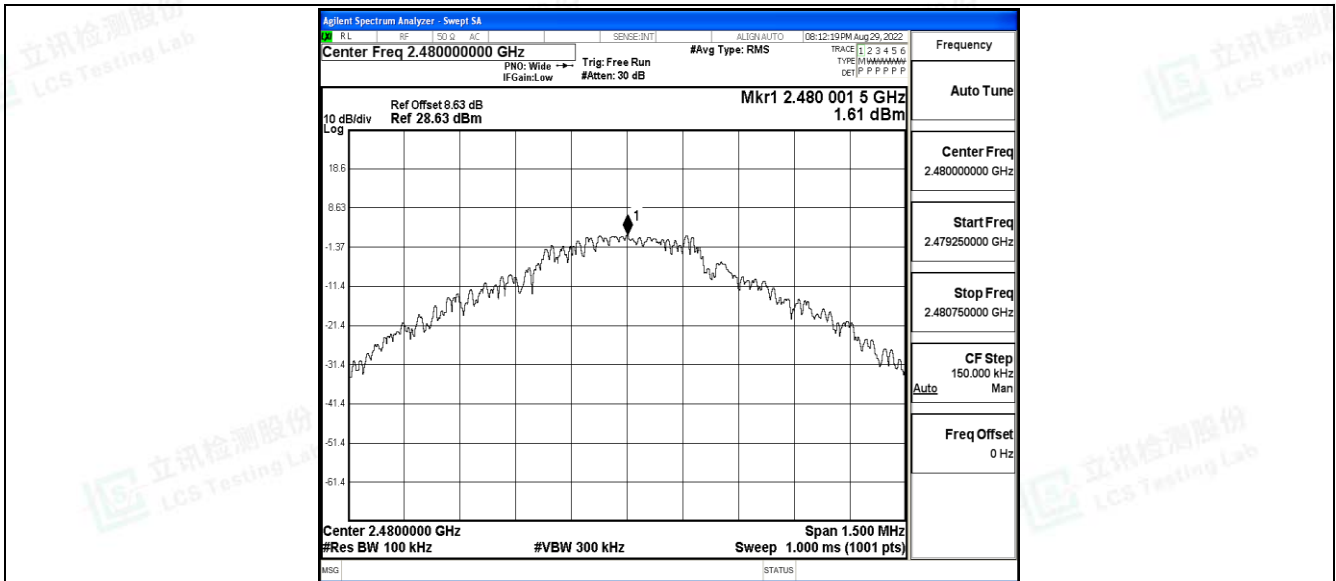


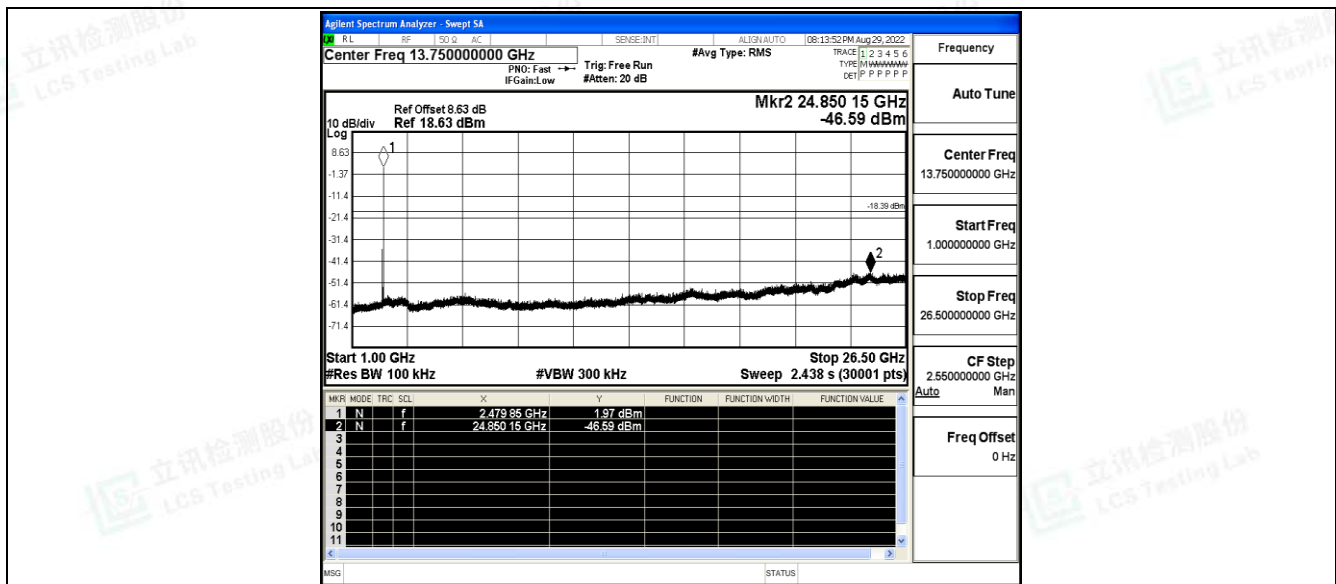
DH5_Ant_2441_1000~26500



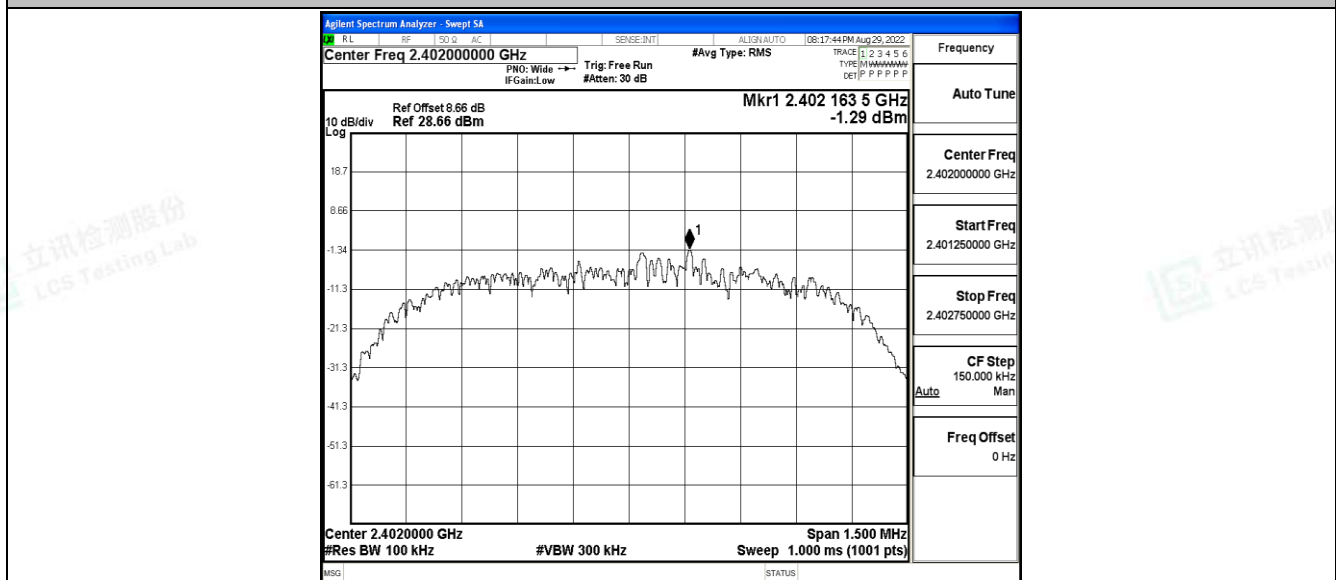
DH5_Ant_2480_0~Reference





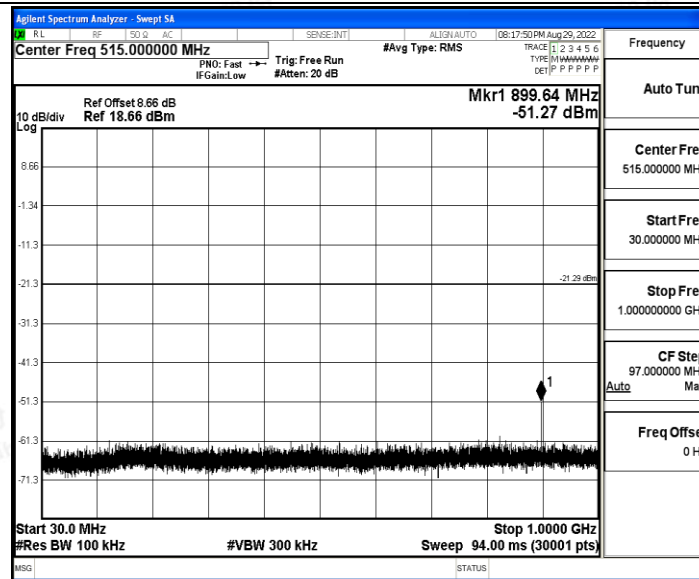


2DH5_Ant_2402_0~Reference

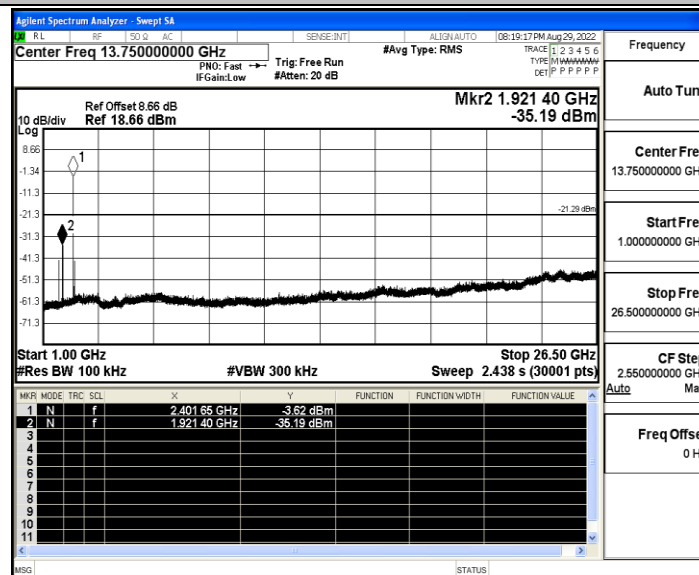


2DH5_Ant_2402_30~1000



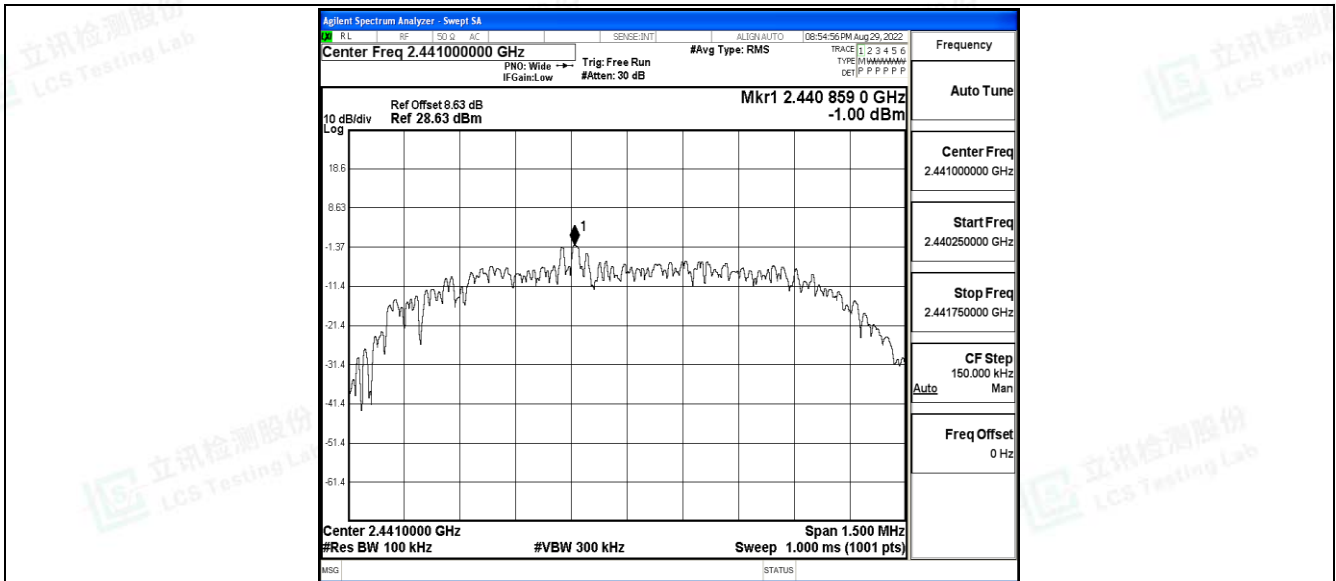


2DH5_Ant_2402_1000~26500

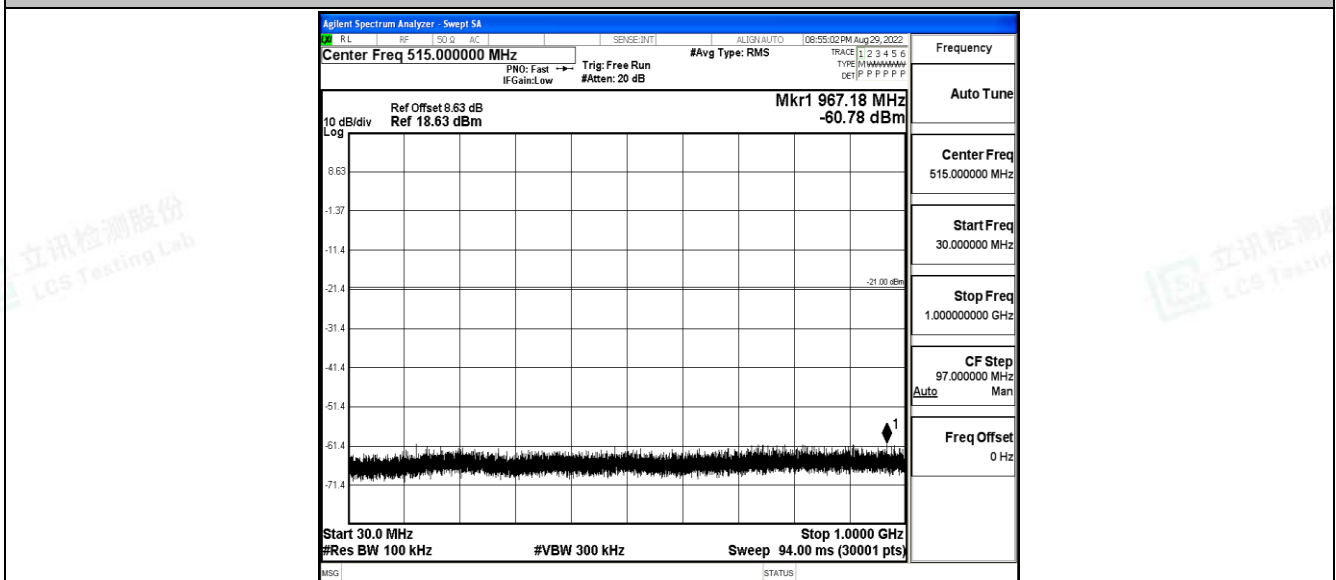


2DH5_Ant_2441_0~Reference



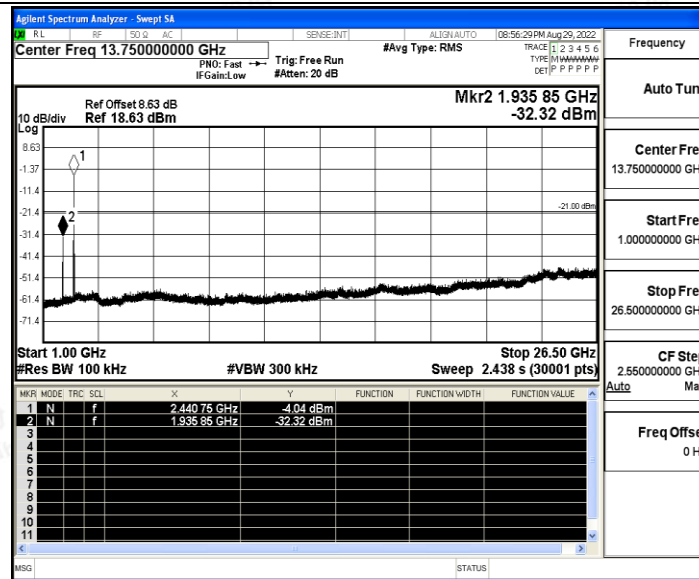


2DH5_Ant_2441_30~1000

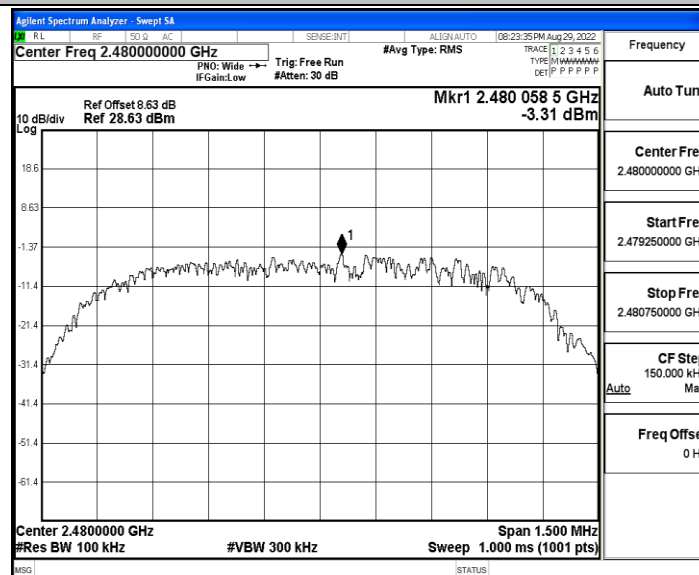


2DH5_Ant_2441_1000~26500



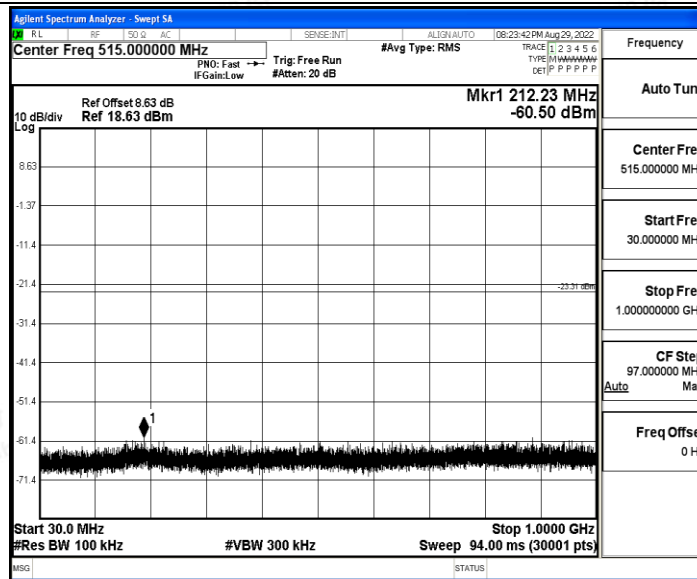


2DH5_Ant_2480_0~Reference

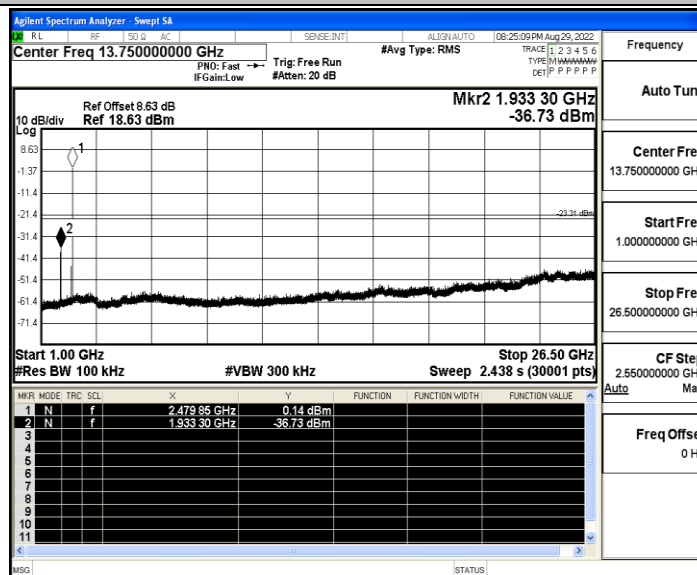


2DH5_Ant_2480_30~1000



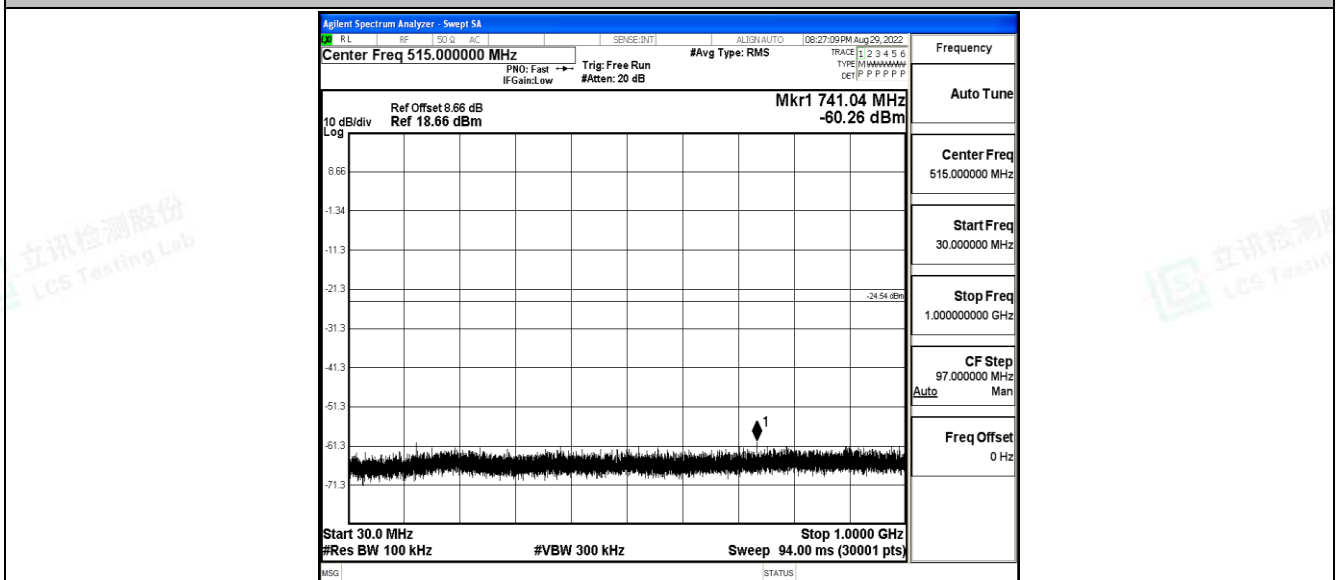
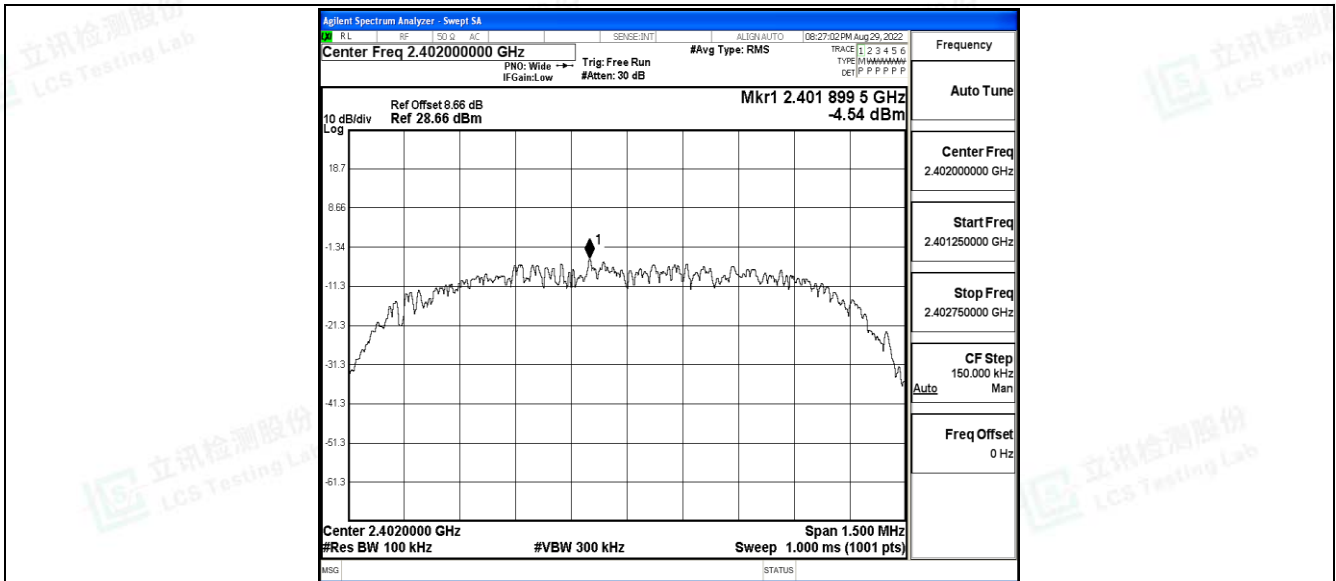


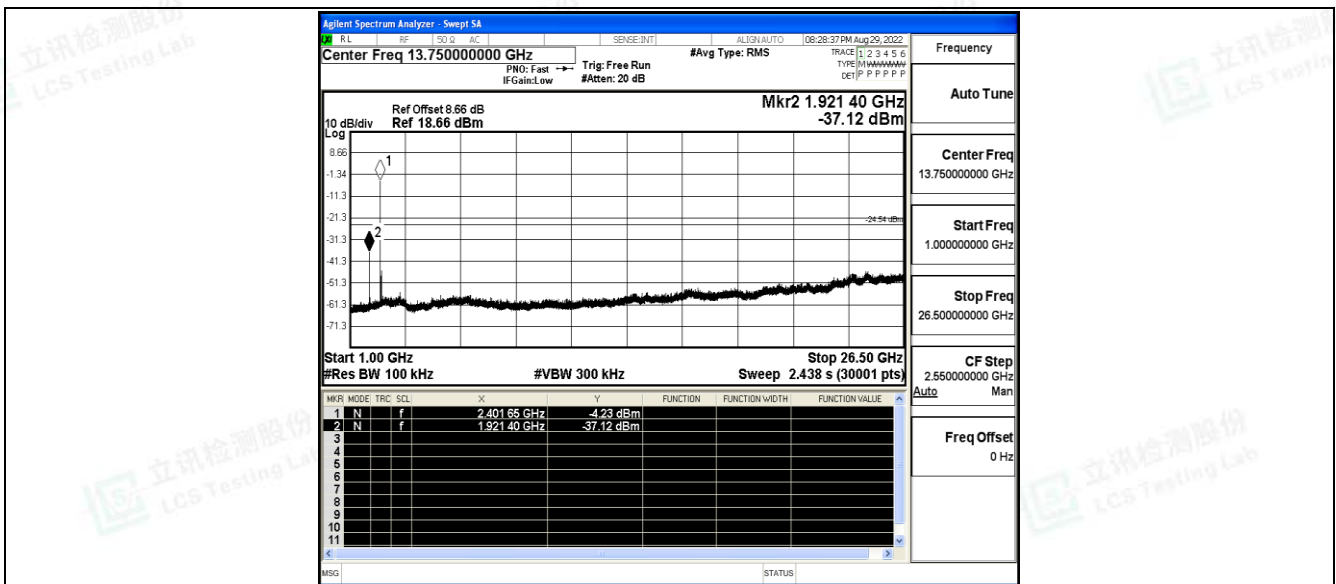
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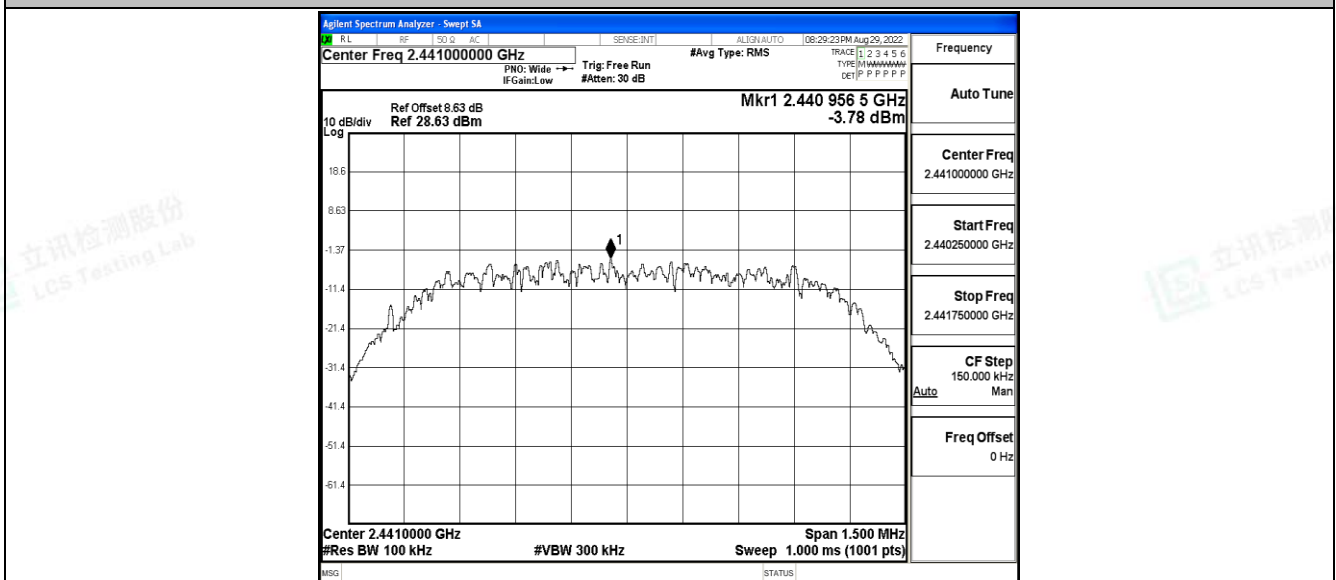
3DH5_Ant_2402_0~Reference





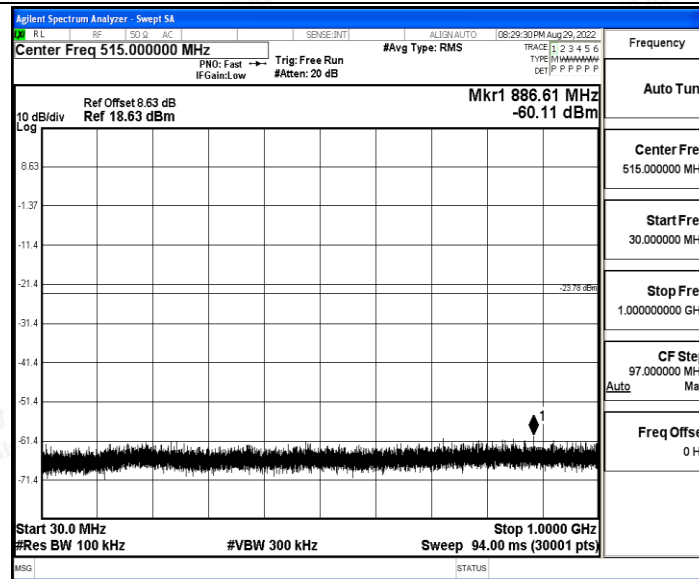


3DH5_Ant_2441_0~Reference

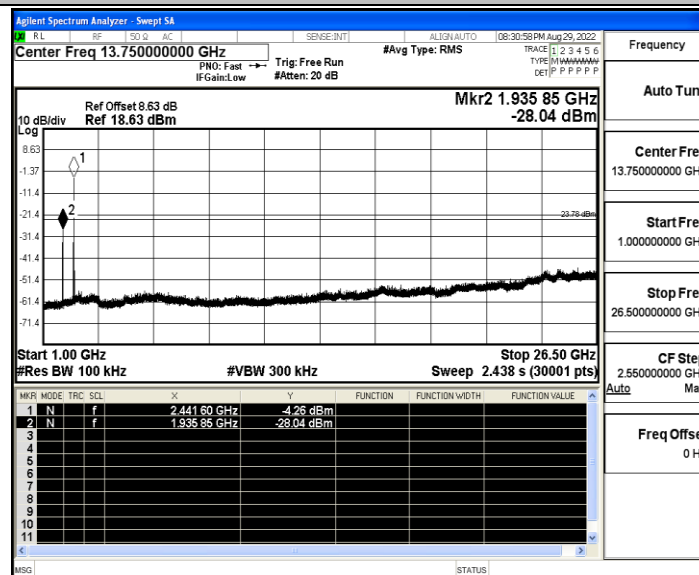


3DH5_Ant_2441_30~1000



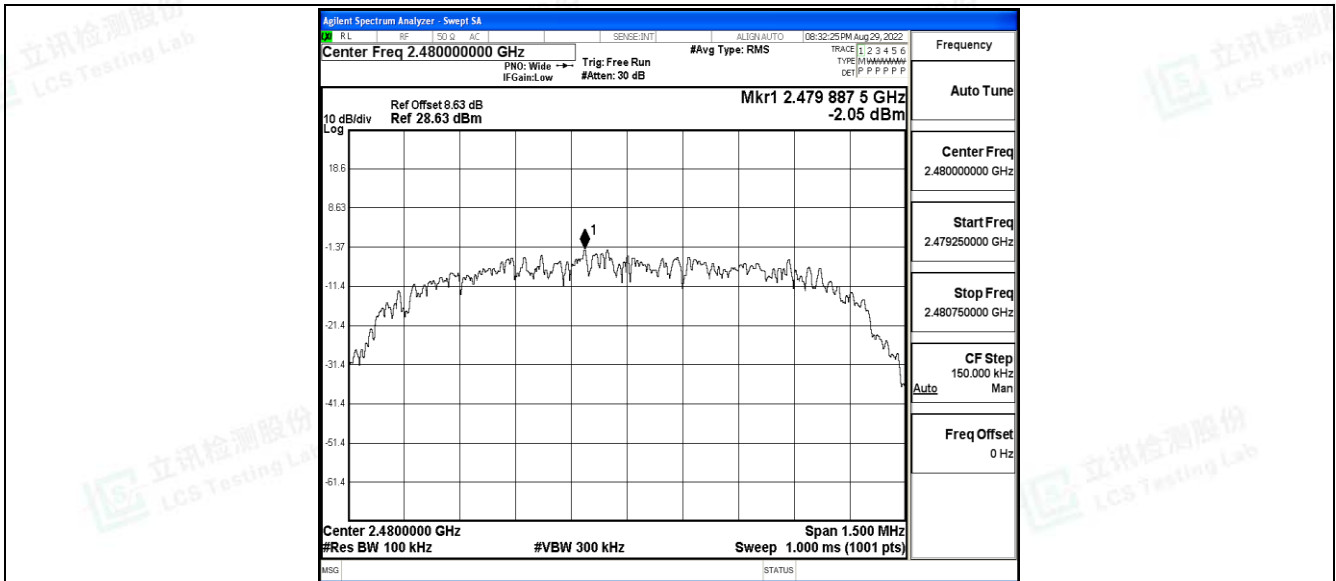


3DH5_Ant_2441_1000~26500

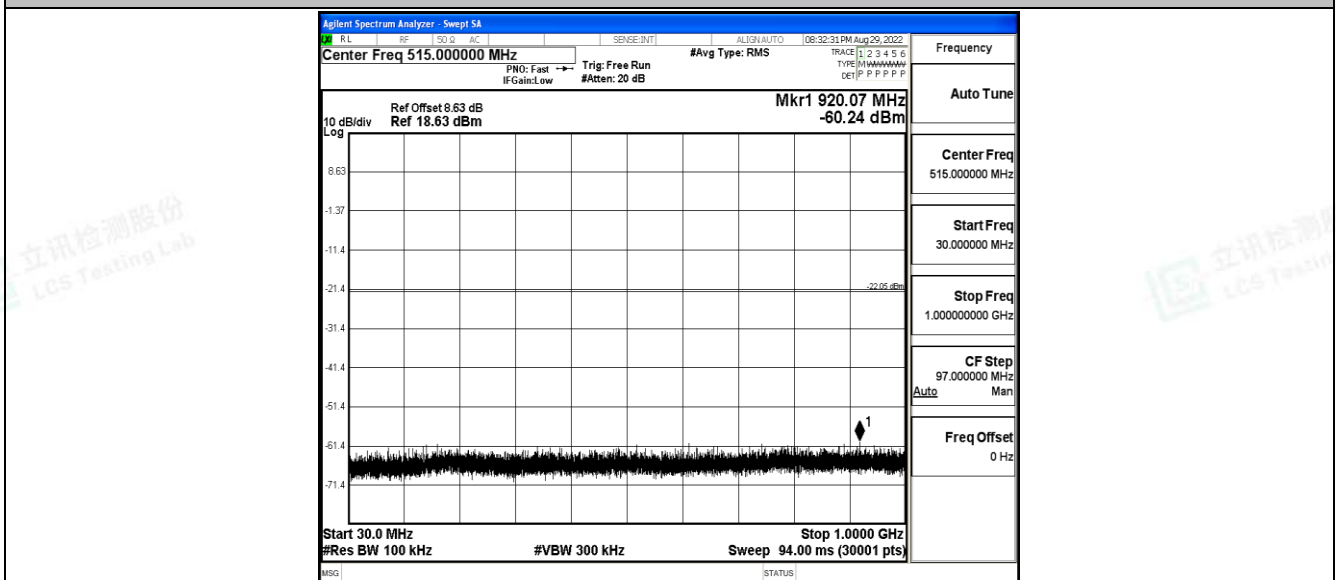


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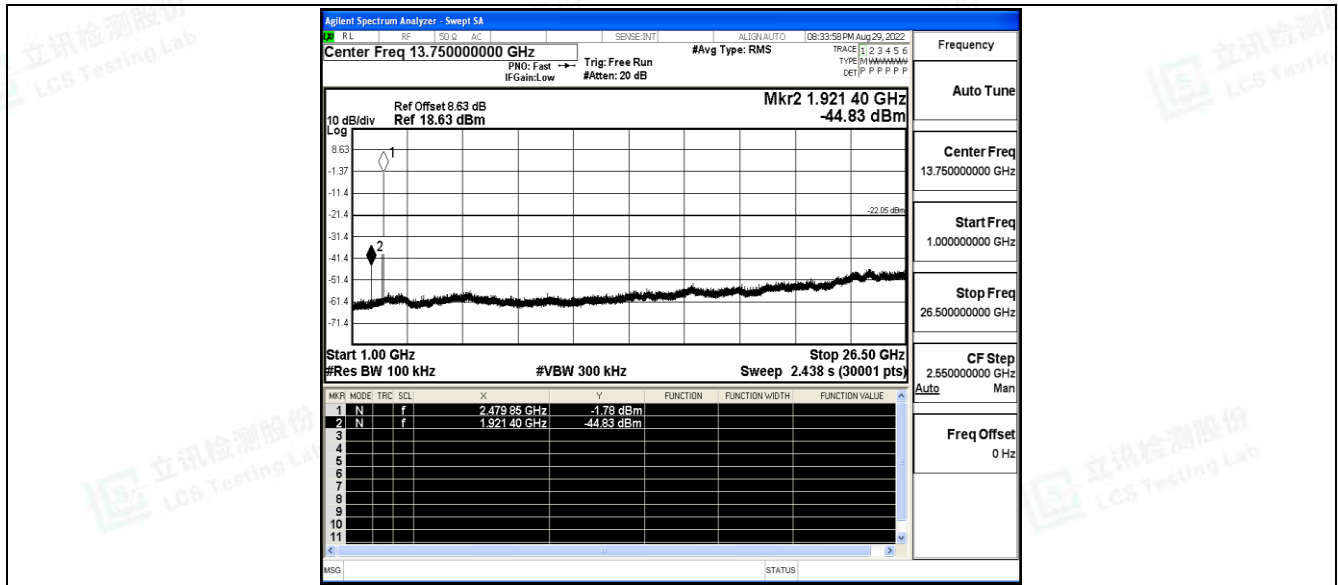


3DH5_Ant_2480_30~1000



3DH5_Ant_2480_1000~26500







A.9 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	-58.08	≤-41.20	37.12	≤54	PASS
				AV	2388.515	-57.52	≤-41.20	37.68	≤54	PASS
				AV	2390.000	-57.65	≤-41.20	37.55	≤54	PASS
				Peak	2310.000	-52.11	≤-21.20	43.09	≤74	PASS
				Peak	2385.260	-48.19	≤-21.20	47.01	≤74	PASS
				Peak	2390.000	-53	≤-21.20	42.20	≤74	PASS
		High	2480	AV	2483.500	-54.36	≤-41.20	40.84	≤54	PASS
				AV	2483.520	-54.36	≤-41.20	40.84	≤54	PASS
				AV	2500.000	-57.07	≤-41.20	38.13	≤54	PASS
				Peak	2483.500	-49.74	≤-21.20	45.46	≤74	PASS
				Peak	2485.760	-48.47	≤-21.20	46.73	≤74	PASS
				Peak	2500.000	-50.13	≤-21.20	45.07	≤74	PASS
2DH5	Ant	Low	2402	AV	2310.000	-58.3	≤-41.20	36.90	≤54	PASS
				AV	2389.460	-57.53	≤-41.20	37.67	≤54	PASS
				AV	2390.000	-57.77	≤-41.20	37.43	≤54	PASS
				Peak	2310.000	-55.35	≤-21.20	39.85	≤74	PASS
				Peak	2362.055	-49.17	≤-21.20	46.03	≤74	PASS
				Peak	2390.000	-52.81	≤-21.20	42.39	≤74	PASS
		High	2480	AV	2483.500	-54.27	≤-41.20	40.93	≤54	PASS
				AV	2483.520	-54.27	≤-41.20	40.93	≤54	PASS
				AV	2500.000	-57.34	≤-41.20	37.86	≤54	PASS
				Peak	2483.500	-51.97	≤-21.20	43.23	≤74	PASS
				Peak	2491.680	-48.06	≤-21.20	47.14	≤74	PASS
				Peak	2500.000	-52.6	≤-21.20	42.60	≤74	PASS
3DH5	Ant	Low	2402	AV	2310.000	-58.13	≤-41.20	37.07	≤54	PASS
				AV	2389.775	-57.63	≤-41.20	37.57	≤54	PASS
				AV	2390.000	-57.73	≤-41.20	37.47	≤54	PASS
				Peak	2310.000	-53.38	≤-21.20	41.82	≤74	PASS
				Peak	2376.545	-48.82	≤-21.20	46.38	≤74	PASS
				Peak	2390.000	-53.19	≤-21.20	42.01	≤74	PASS
		High	2480	AV	2483.500	-54.04	≤-41.20	41.16	≤54	PASS
				AV	2483.520	-54.04	≤-41.20	41.16	≤54	PASS
				AV	2500.000	-57.19	≤-41.20	38.01	≤54	PASS
				Peak	2483.500	-49.89	≤-21.20	45.31	≤74	PASS
				Peak	2488.880	-48.47	≤-21.20	46.73	≤74	PASS



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Scan code to check authenticity



				Peak	2500.000	-53.03	≤-21.20	42.17	≤74	PASS
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Note:

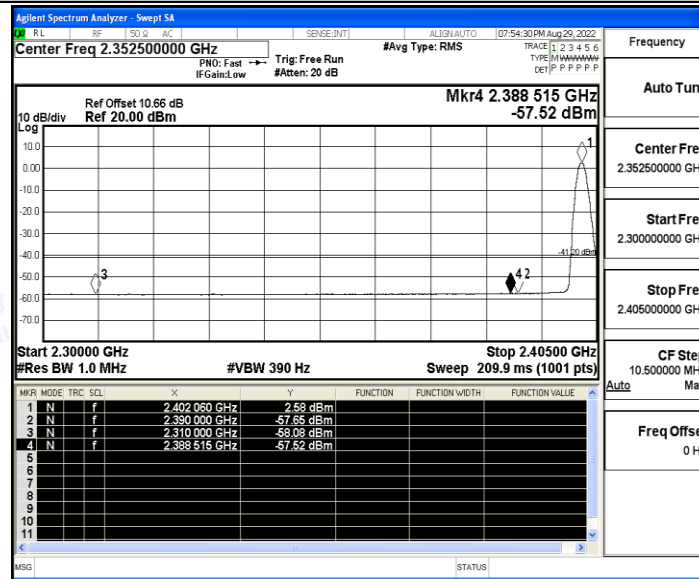
- 1. The Antenna Gain is compensated in the graph.
- 2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.



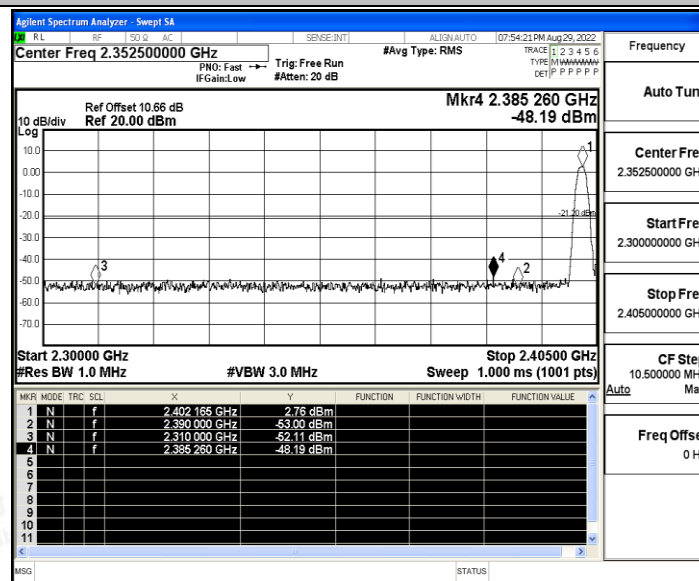


Test Graphs

DH5_Ant_Low_2402_AV

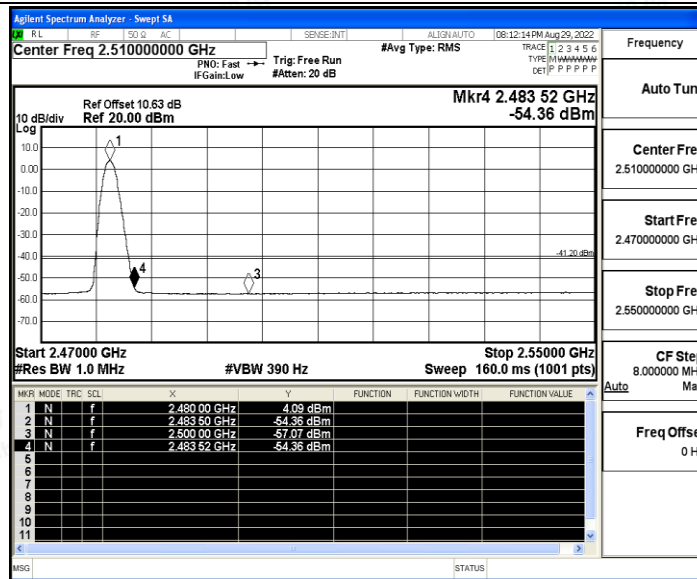


DH5_Ant_Low_2402_Peak

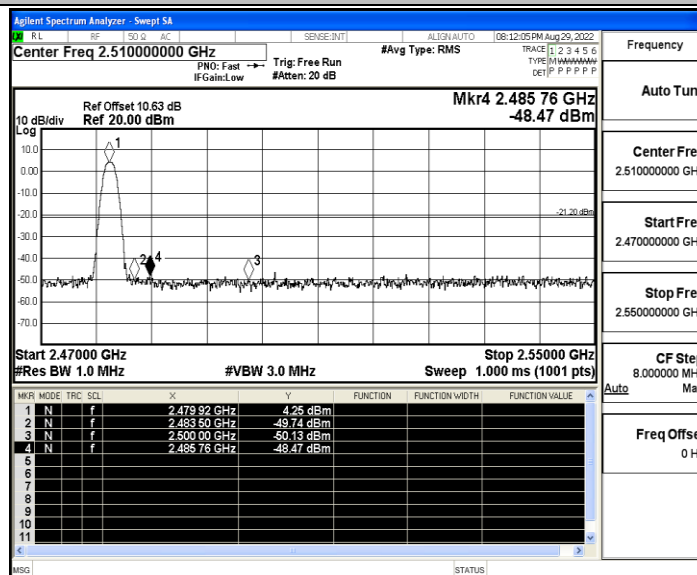


DH5_Ant_High_2480_AV



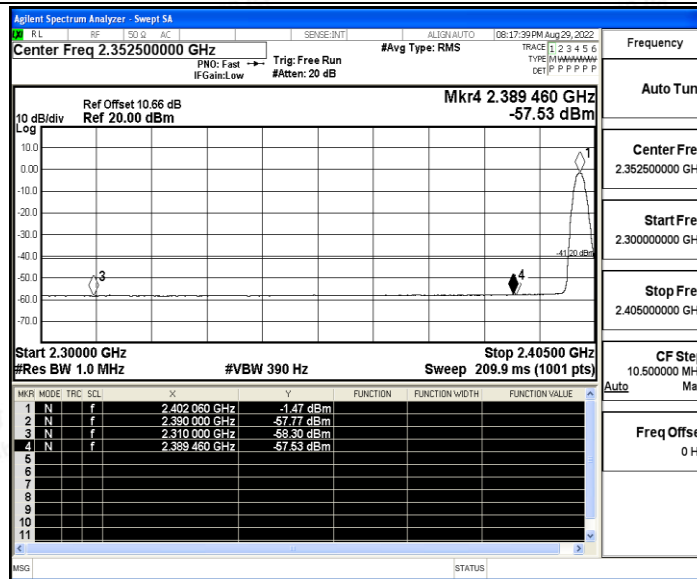


DH5_Ant_High_2480_Peak

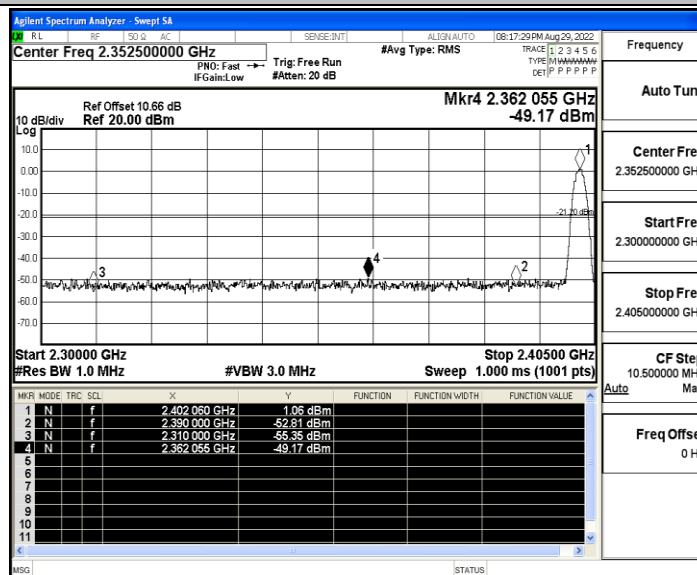


2DH5_Ant_Low_2402_AV



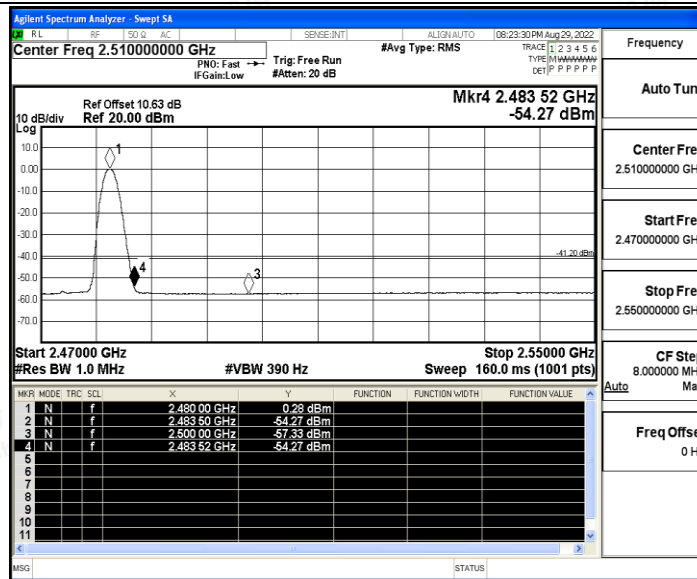


2DH5_Ant_Low_2402_Peak

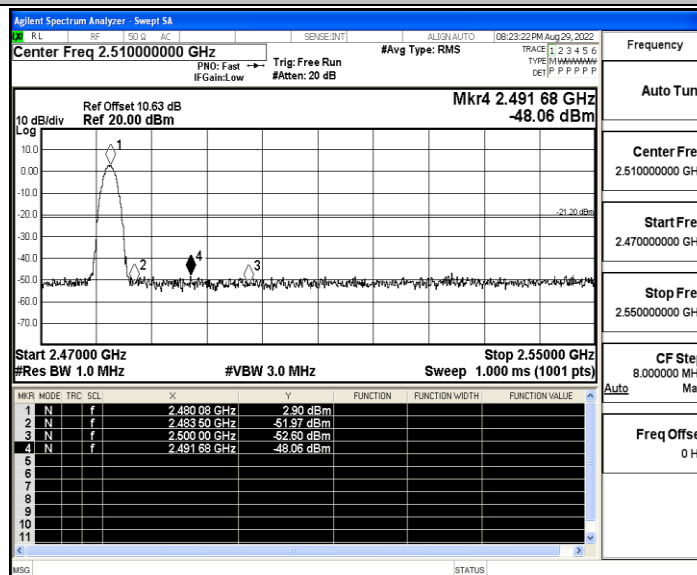


2DH5_Ant_High_2480_AV



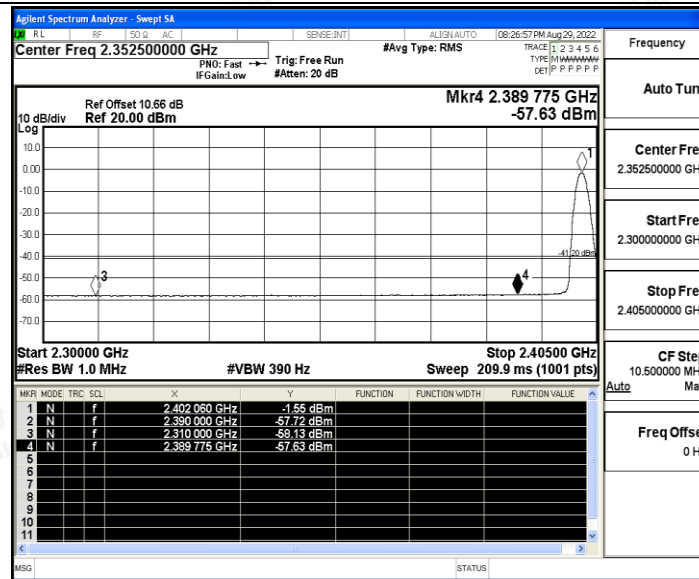


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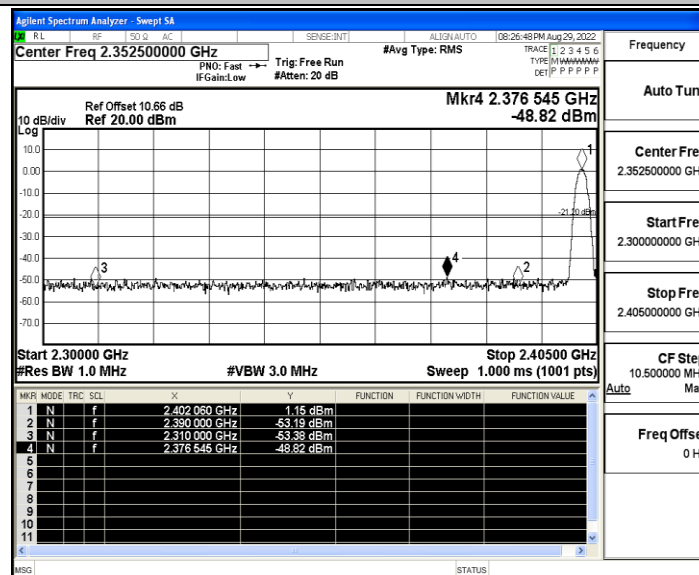


3DH5_Ant_Low_2402_AV



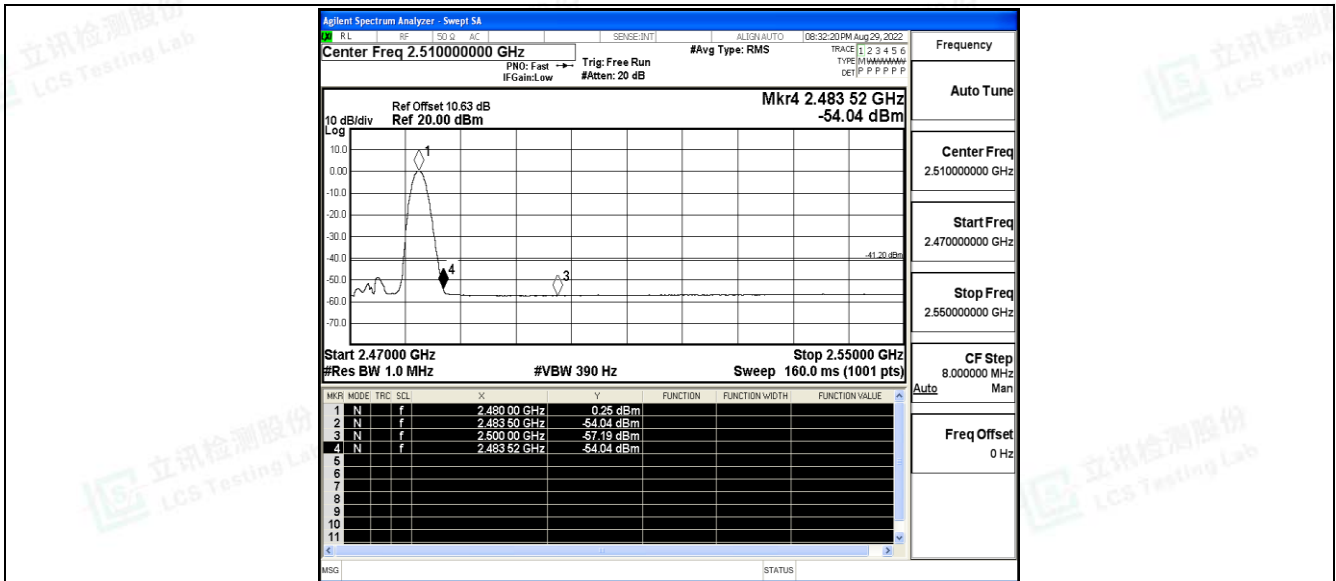


3DH5_Ant_Low_2402_Peak



3DH5_Ant_High_2480_AV





3DH5_Ant_High_2480_Peak

