



Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Bluetooth FM Transmitter

Test Model: BT23R

Environmental Conditions

Temperature:	23.8°C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Taylor Hu
Supervised by:	Nick Peng





A.1 20dB Emission Bandwidth

Test Result

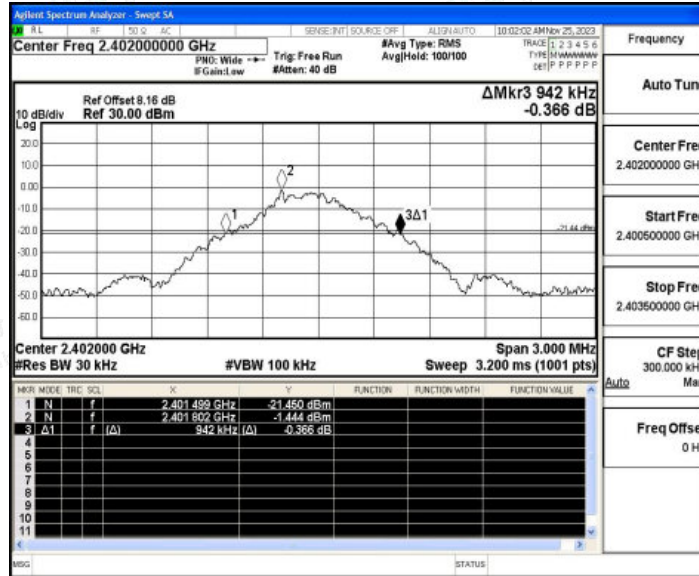
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Verdict
DH5	Ant1	2402	0.942	2401.499	2402.441	---
		2441	1.017	2440.436	2441.453	---
		2480	0.957	2479.496	2480.453	---
2DH5	Ant1	2402	1.275	2401.331	2402.606	---
		2441	1.281	2440.328	2441.609	---
		2480	1.332	2479.295	2480.627	---
3DH5	Ant1	2402	1.260	2401.322	2402.582	---
		2441	1.305	2440.310	2441.615	---
		2480	1.263	2479.325	2480.588	---



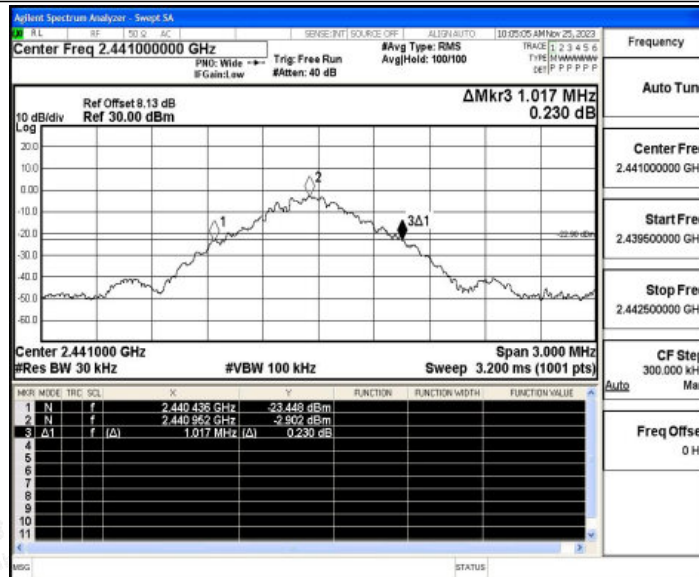


Test Graphs

DH5_Ant1_2402



DH5_Ant1_2441



DH5_Ant1_2480

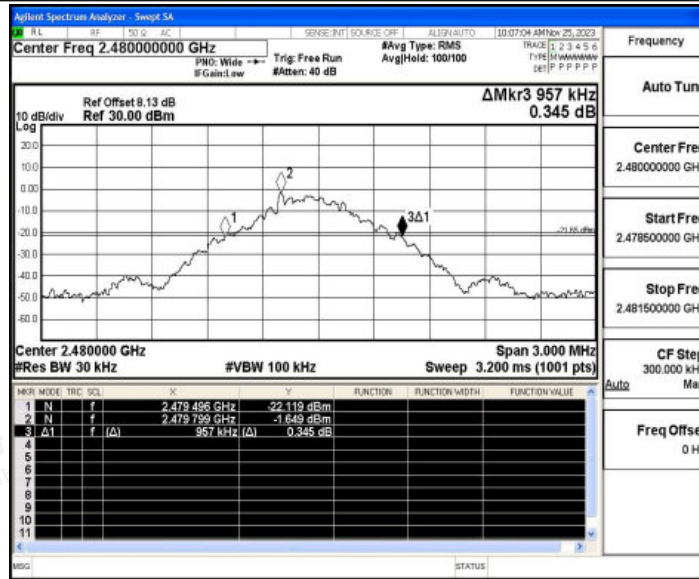


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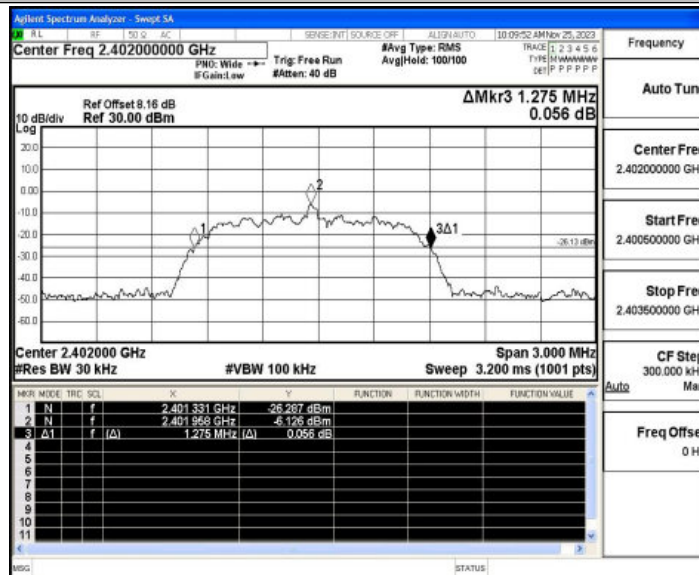
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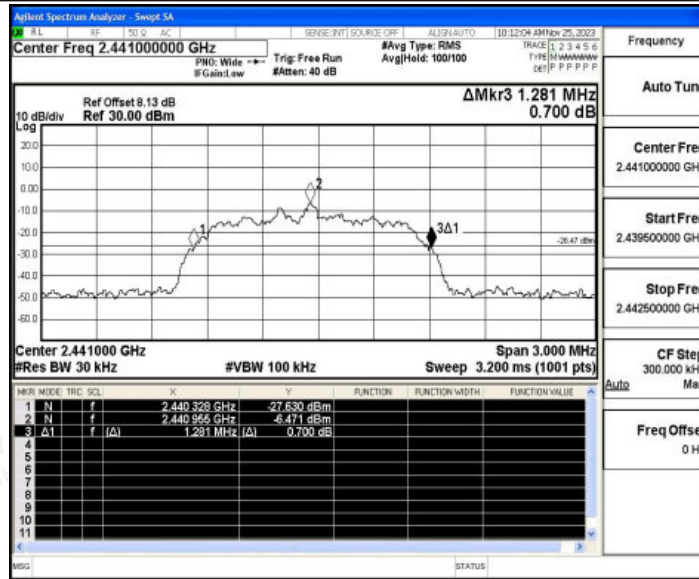


2DH5_Ant1_2402

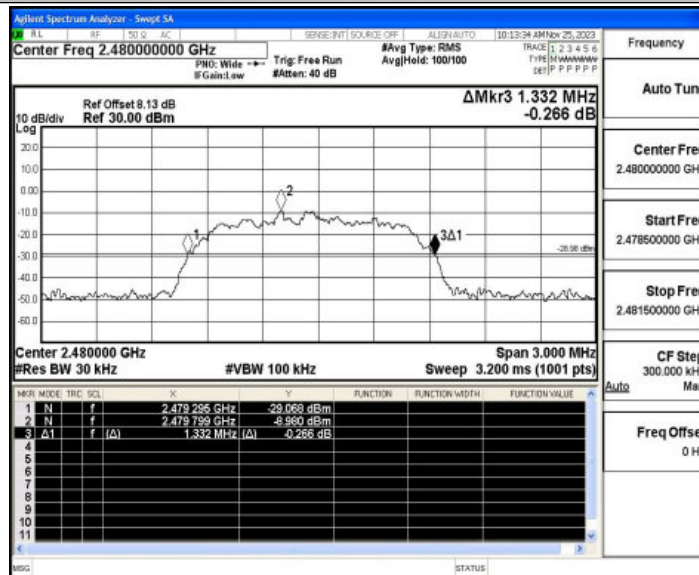


2DH5_Ant1_2441





2DH5_Ant1_2480



3DH5_Ant1_2402

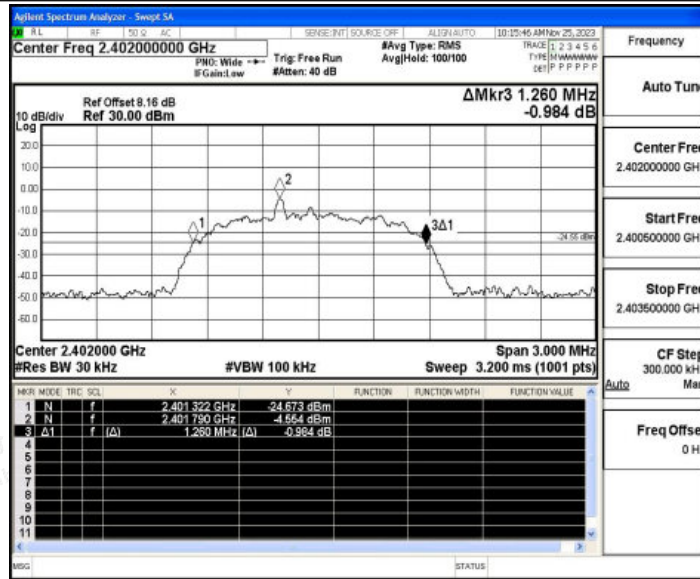


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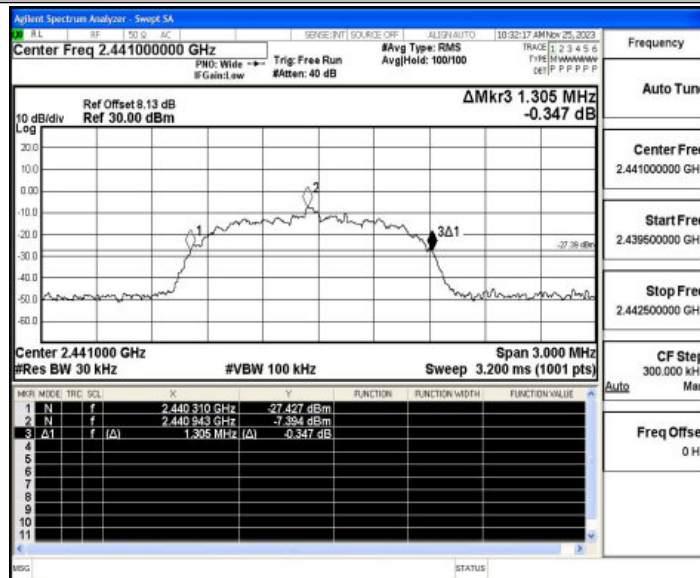
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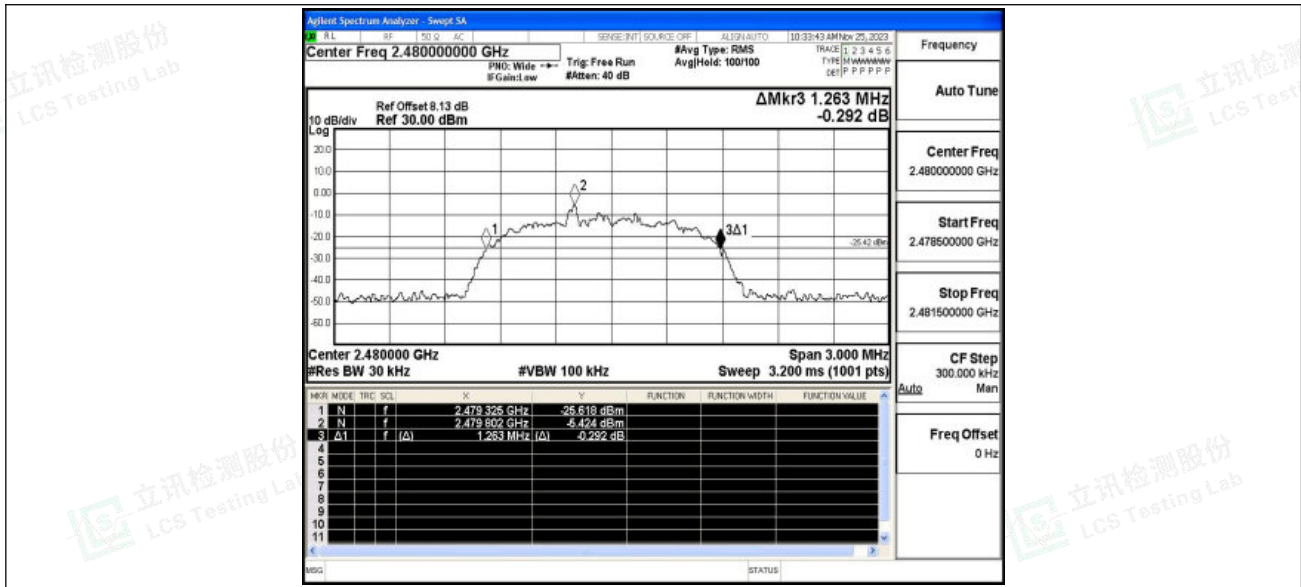


3DH5_Ant1_2441



3DH5_Ant1_2480







A.2 Maximum conducted output power

Test Result

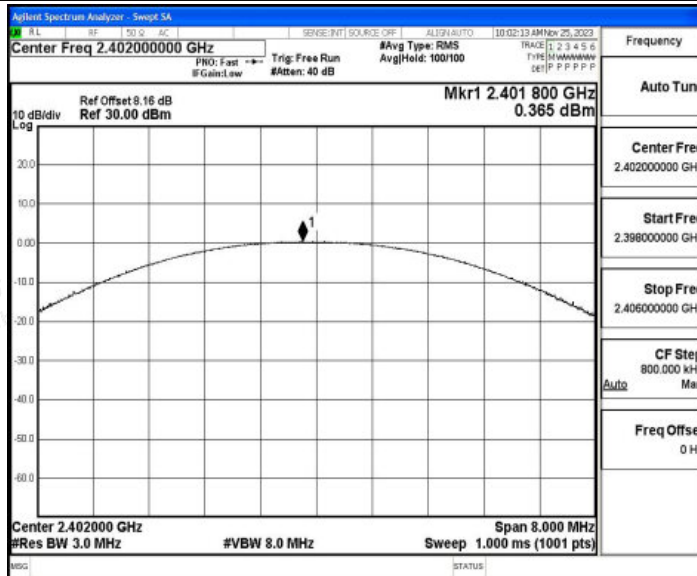
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	0.37	≤20.97	PASS
		2441	-0.06	≤20.97	PASS
		2480	-0.06	≤20.97	PASS
2DH5	Ant1	2402	-2.34	≤20.97	PASS
		2441	-2.73	≤20.97	PASS
		2480	-2.92	≤20.97	PASS
3DH5	Ant1	2402	-1.91	≤20.97	PASS
		2441	-2.35	≤20.97	PASS
		2480	-2.41	≤20.97	PASS



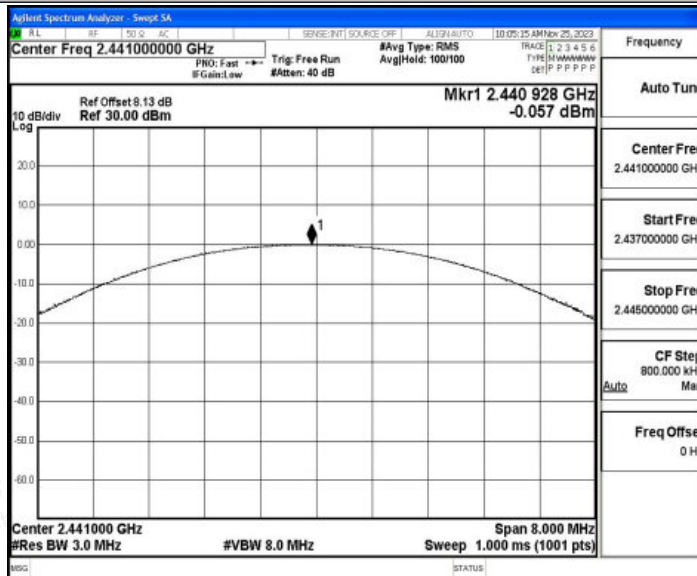


Test Graphs

DH5_Ant1_2402

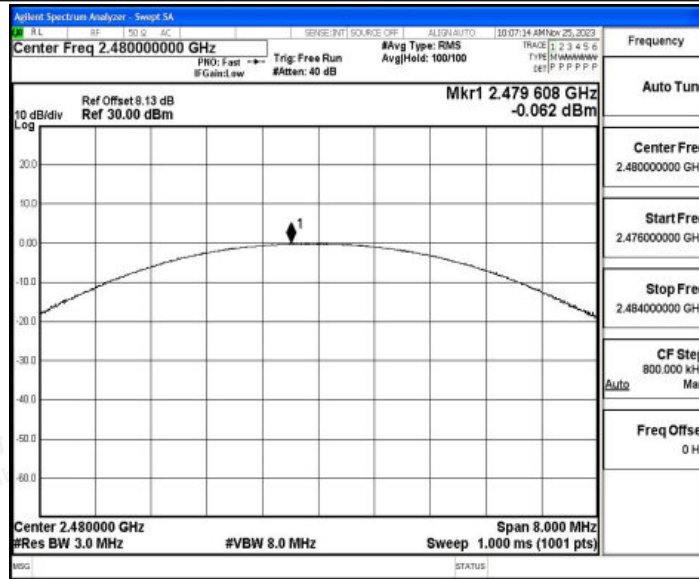


DH5_Ant1_2441

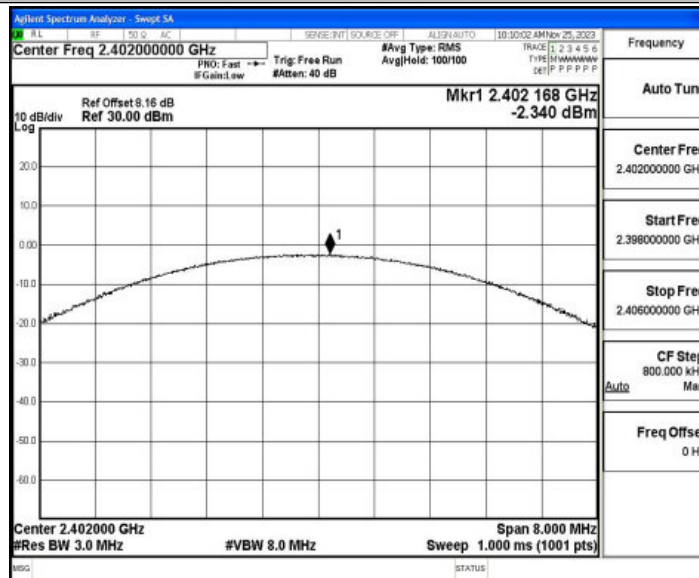


DH5_Ant1_2480



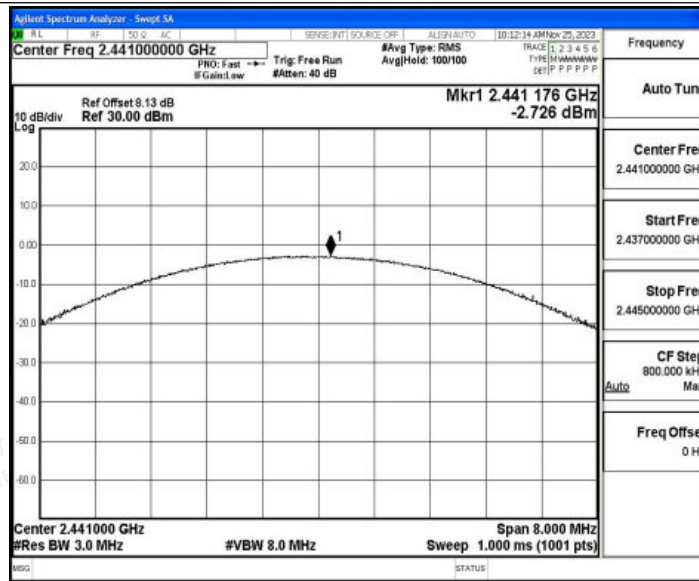


2DH5_Ant1_2402

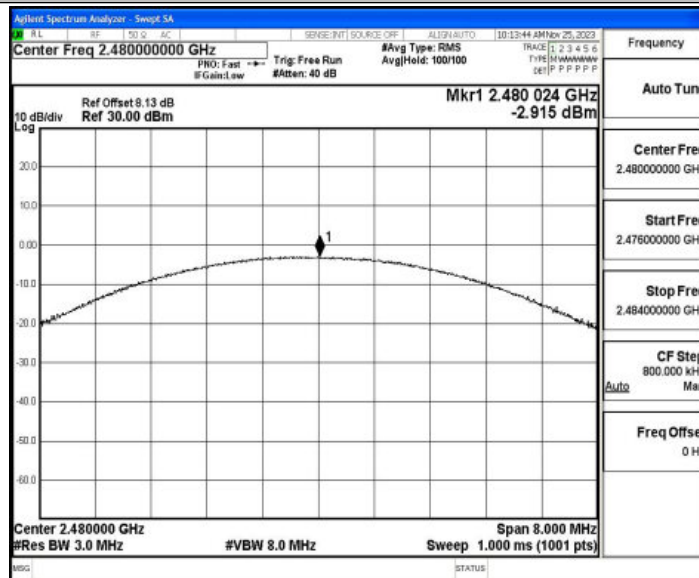


2DH5_Ant1_2441



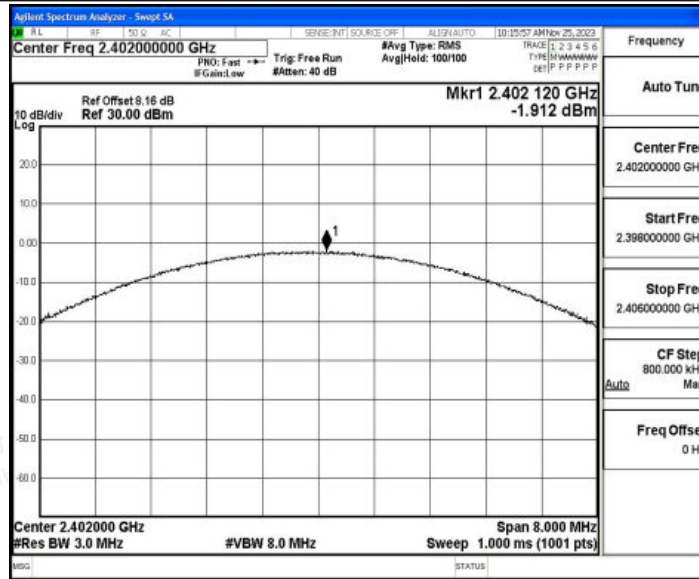


2DH5_Ant1_2480

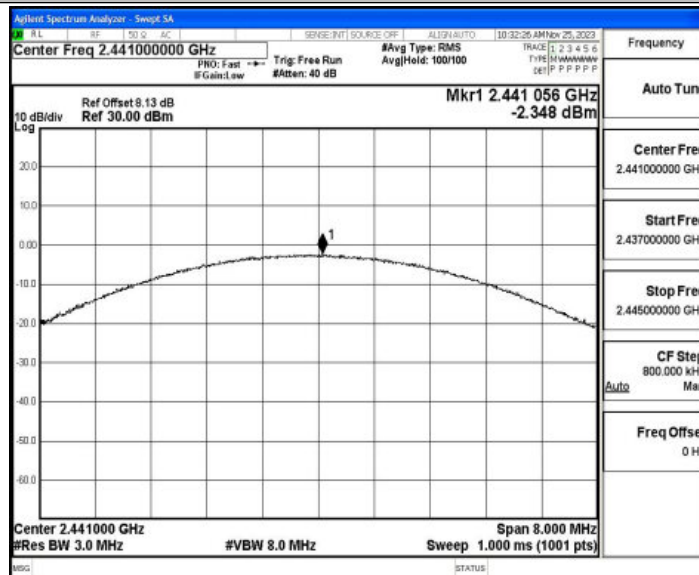


3DH5_Ant1_2402



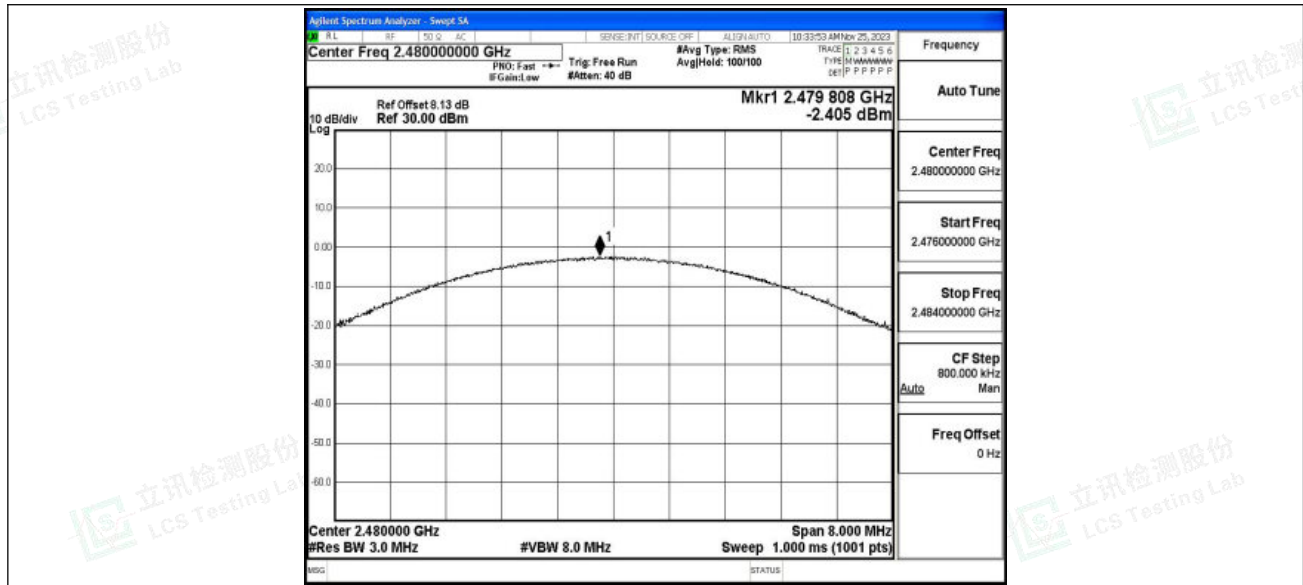


3DH5_Ant1_2441



3DH5_Ant1_2480







A.3 Carrier frequency separation

Test Result

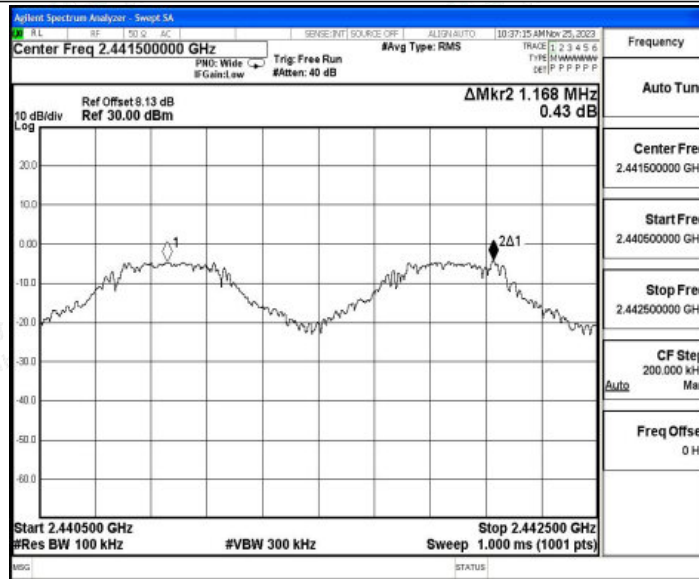
TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.168	≥0.678	PASS
2DH5	Ant1	Hop	1.13	≥0.888	PASS
3DH5	Ant1	Hop	1.144	≥0.870	PASS



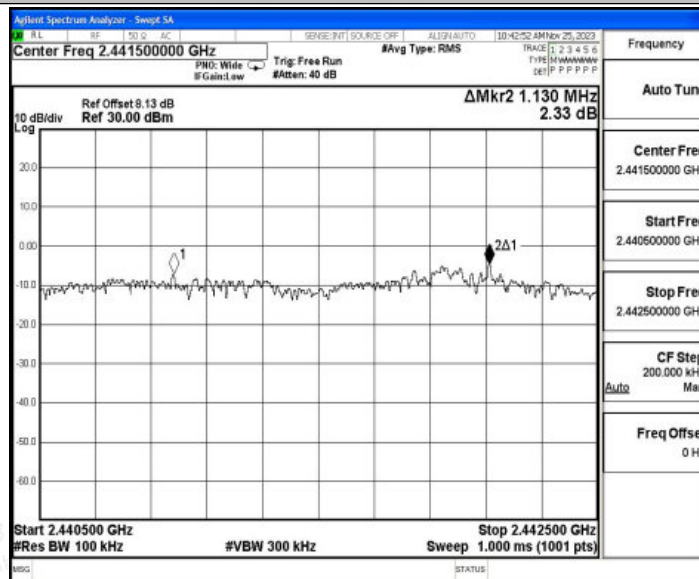


Test Graphs

DH5_Ant1_Hop

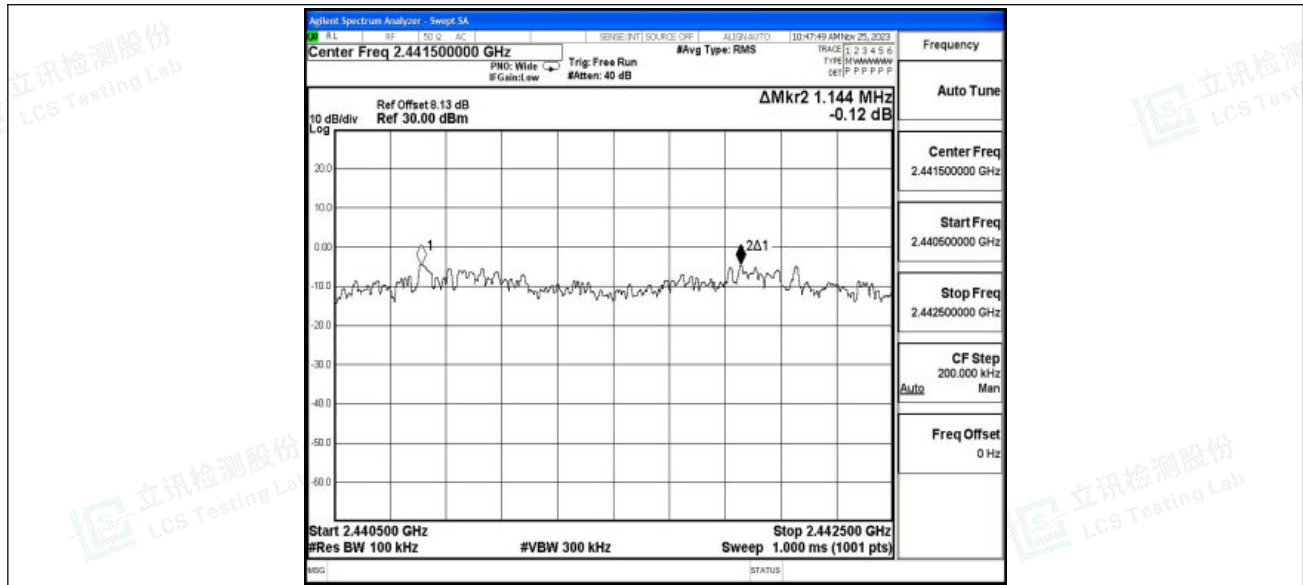


2DH5_Ant1_Hop



3DH5_Ant1_Hop







A.4 Time of occupancy

Test Result

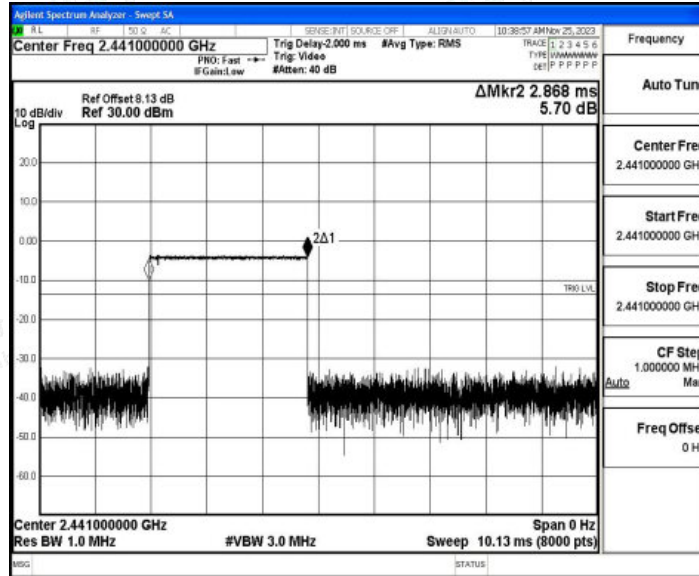
TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.868	106.67	0.306	≤0.4	PASS
2DH5	Ant1	Hop	2.879	106.67	0.307	≤0.4	PASS
3DH5	Ant1	Hop	2.880	106.67	0.307	≤0.4	PASS



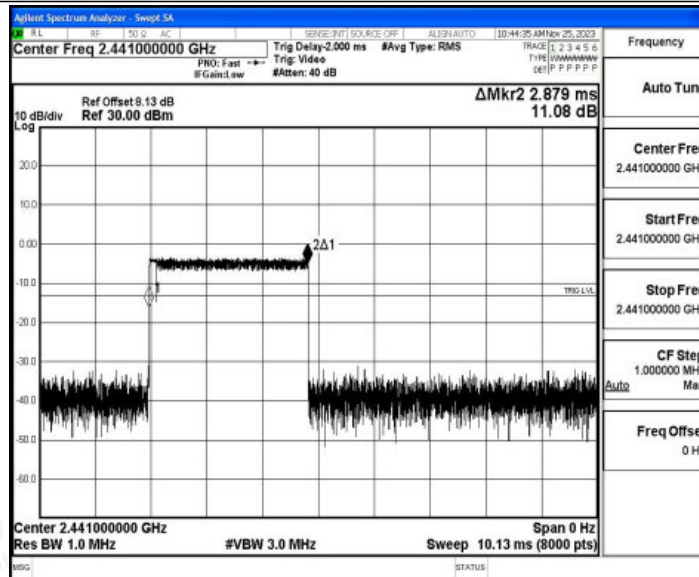


Test Graphs

DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop

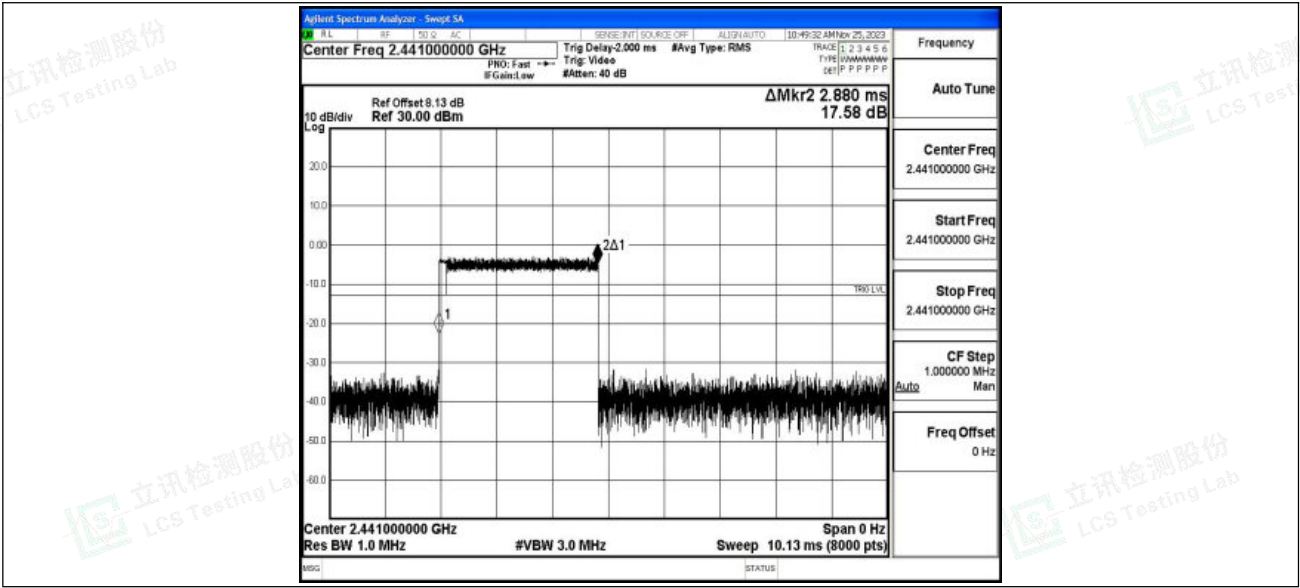


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A.5 Number of hopping channels

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



Test Graphs





A.6 Band edge measurements

Test Result

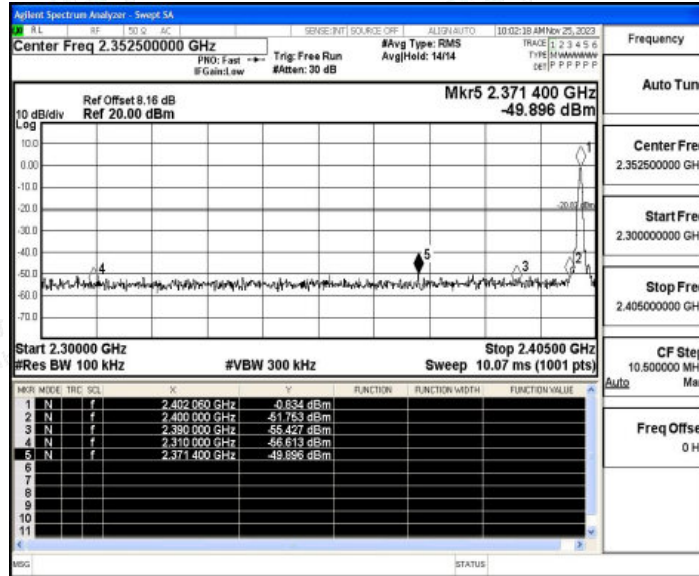
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-0.83	-49.9	≤ -20.83	PASS
		High	2480	-1.53	-50.57	≤ -21.53	PASS
		Low	Hop_2402	-4.21	-50.19	≤ -24.21	PASS
		High	Hop_2480	-4.18	-49.22	≤ -24.18	PASS
2DH5	Ant1	Low	2402	-7.57	-51.06	≤ -27.57	PASS
		High	2480	-5.40	-50.51	≤ -25.4	PASS
		Low	Hop_2402	-6.84	-49.36	≤ -26.84	PASS
		High	Hop_2480	-5.67	-49.48	≤ -25.67	PASS
3DH5	Ant1	Low	2402	-3.68	-49.76	≤ -23.68	PASS
		High	2480	-8.35	-50.37	≤ -28.35	PASS
		Low	Hop_2402	-8.13	-50.09	≤ -28.13	PASS
		High	Hop_2480	-5.42	-48.27	≤ -25.42	PASS



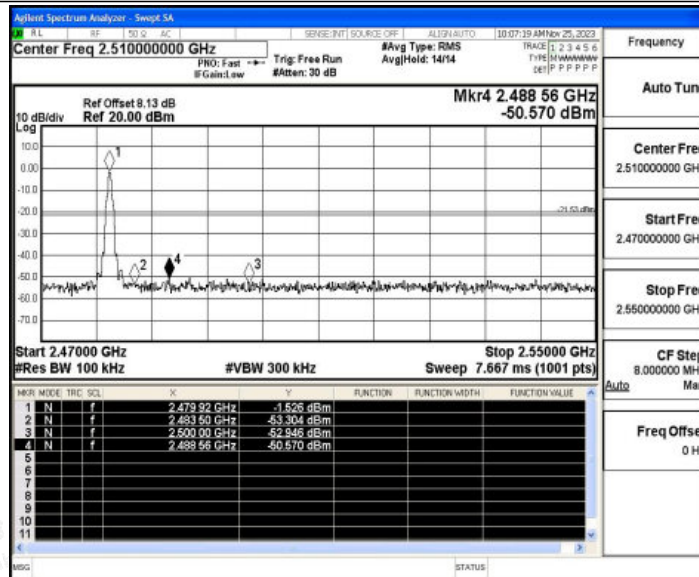


Test Graphs

DH5_Ant1_Low_2402



DH5_Ant1_High_2480



DH5_Ant1_Low_Hop_2402

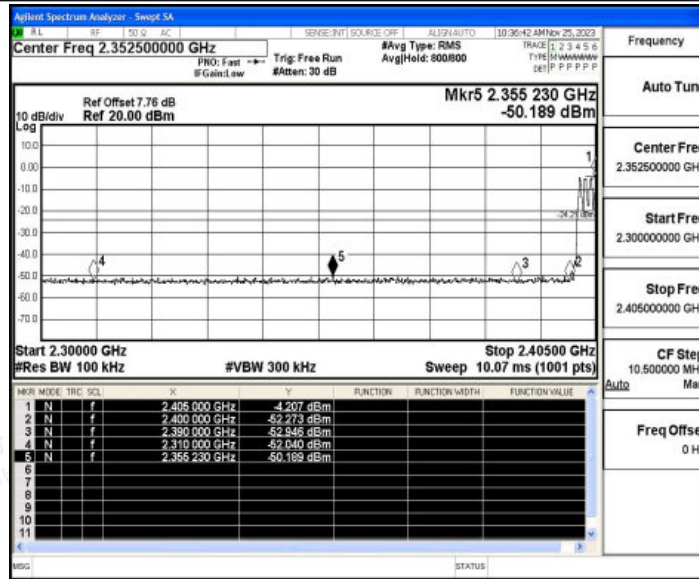


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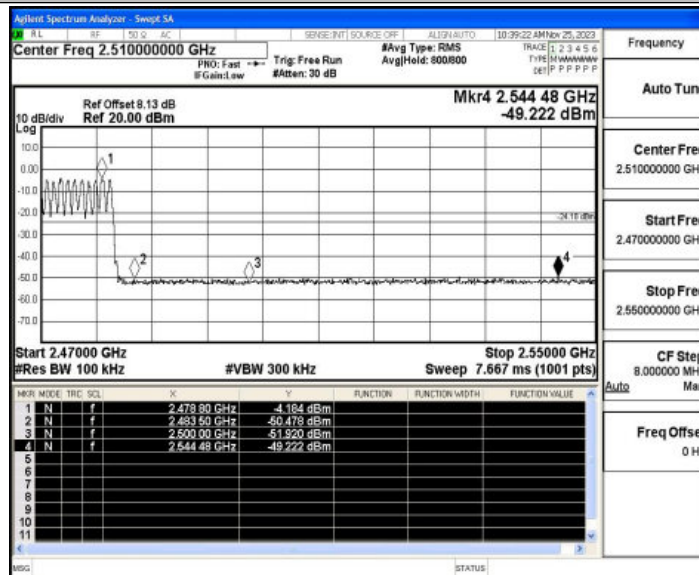
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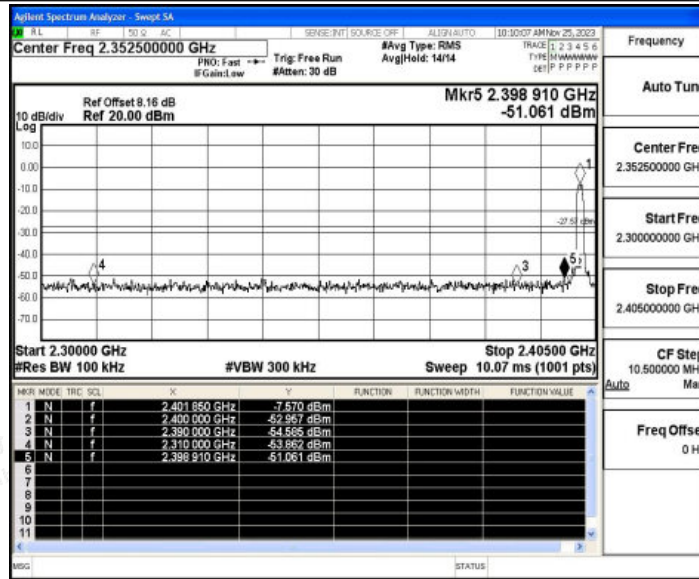


DH5_Ant1_High_Hop_2480

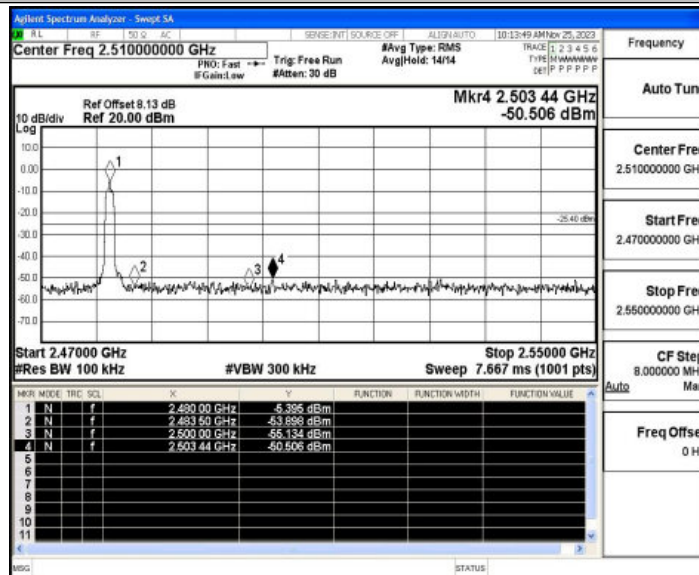


2DH5_Ant1_Low_2402





2DH5_Ant1_High_2480



2DH5_Ant1_Low_Hop_2402

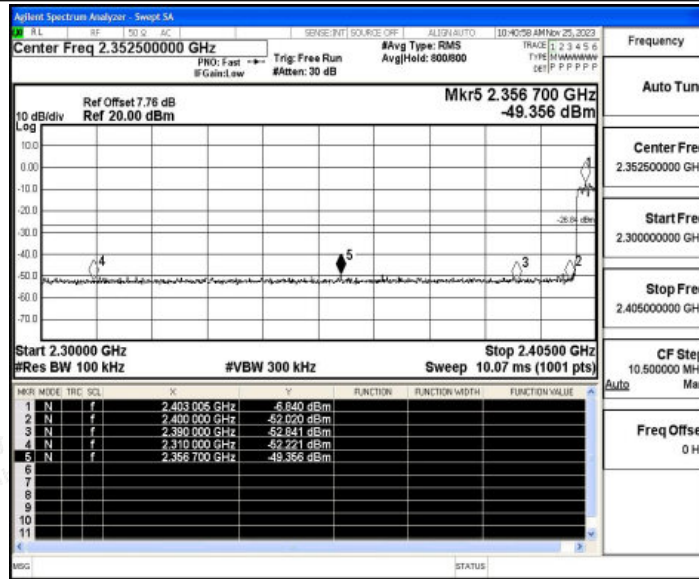


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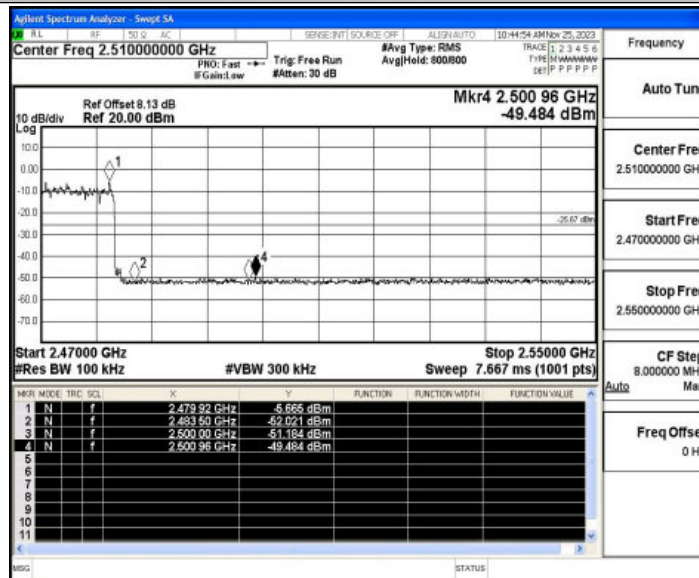
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Scan code to check authenticity

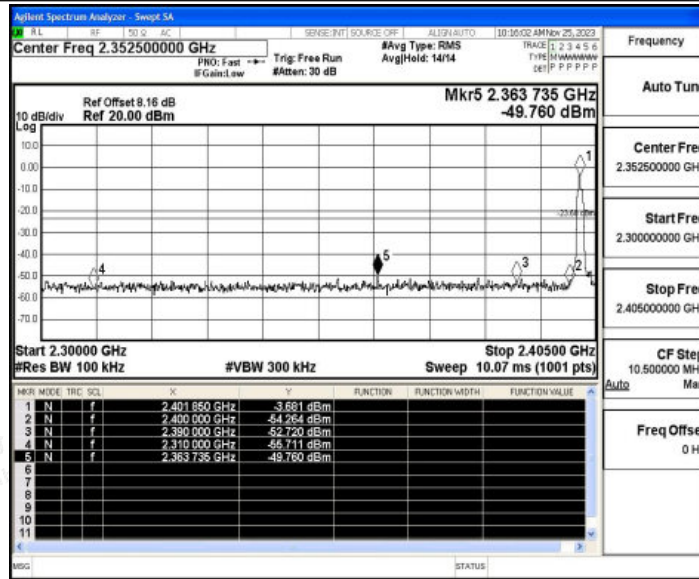


2DH5_Ant1_High_Hop_2480

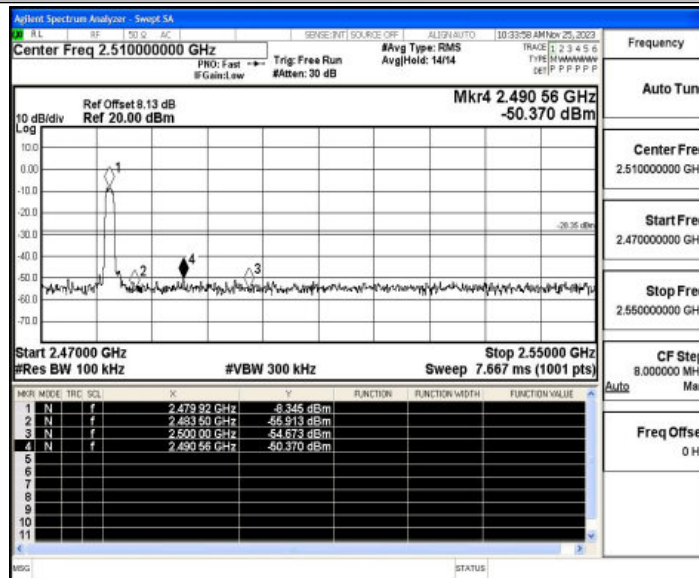


3DH5_Ant1_Low_2402



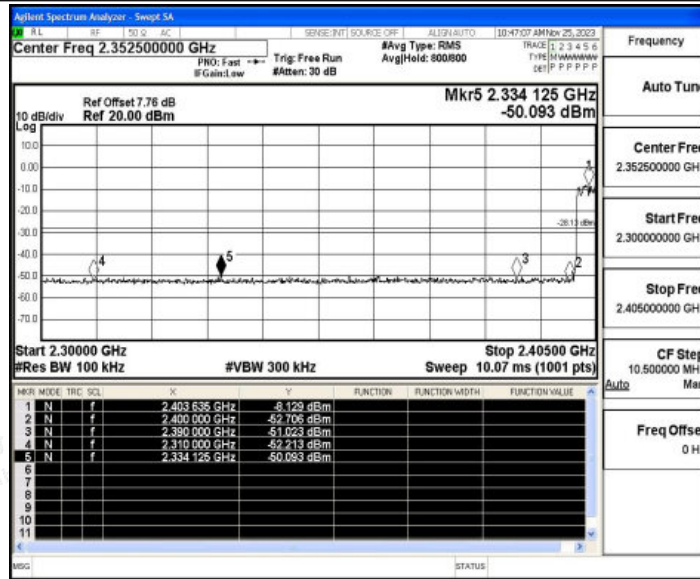


3DH5_Ant1_High_2480

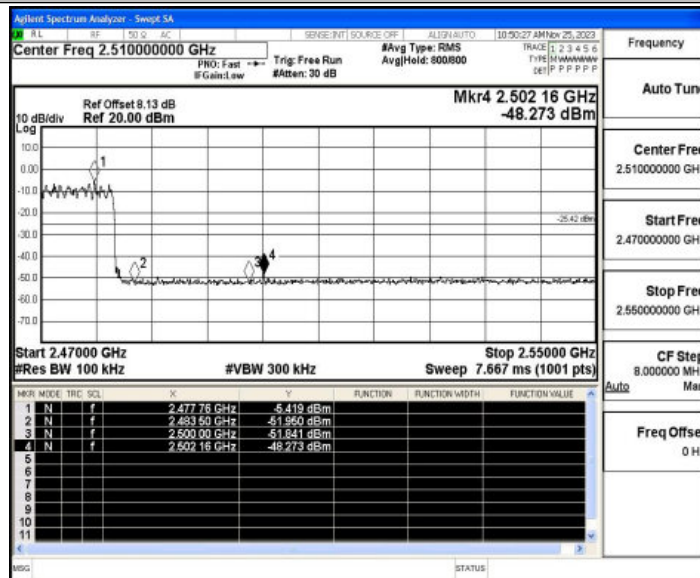


3DH5_Ant1_Low_Hop_2402





3DH5_Ant1_High_Hop_2480





A.7 Conducted Spurious Emission

Test Result

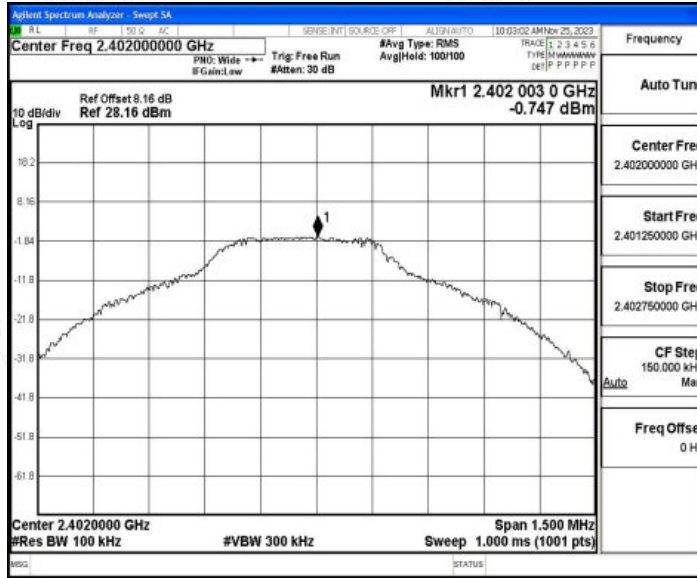
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	-0.75	-0.75	---	PASS
			30~1000	-0.75	-61.33	≤-20.75	PASS
			1000~26500	-0.75	-41.23	≤-20.75	PASS
		2441	Reference	-0.98	-0.98	---	PASS
			30~1000	-0.98	-61.82	≤-20.98	PASS
			1000~26500	-0.98	-43.65	≤-20.98	PASS
		2480	Reference	-0.99	-0.99	---	PASS
			30~1000	-0.99	-61.93	≤-20.99	PASS
			1000~26500	-0.99	-45.32	≤-20.99	PASS
2DH5	Ant1	2402	Reference	-3.84	-3.84	---	PASS
			30~1000	-3.84	-61.81	≤-23.84	PASS
			1000~26500	-3.84	-49.41	≤-23.84	PASS
		2441	Reference	-4.68	-4.68	---	PASS
			30~1000	-4.68	-61.18	≤-24.68	PASS
			1000~26500	-4.68	-48.48	≤-24.68	PASS
		2480	Reference	-4.31	-4.31	---	PASS
			30~1000	-4.31	-61.49	≤-24.31	PASS
			1000~26500	-4.31	-48.75	≤-24.31	PASS
3DH5	Ant1	2402	Reference	-3.94	-3.94	---	PASS
			30~1000	-3.94	-60.94	≤-23.94	PASS
			1000~26500	-3.94	-48.7	≤-23.94	PASS
		2441	Reference	-5.44	-5.44	---	PASS
			30~1000	-5.44	-61.96	≤-25.44	PASS
			1000~26500	-5.44	-49	≤-25.44	PASS
		2480	Reference	-4.64	-4.64	---	PASS
			30~1000	-4.64	-61.13	≤-24.64	PASS
			1000~26500	-4.64	-49.05	≤-24.64	PASS



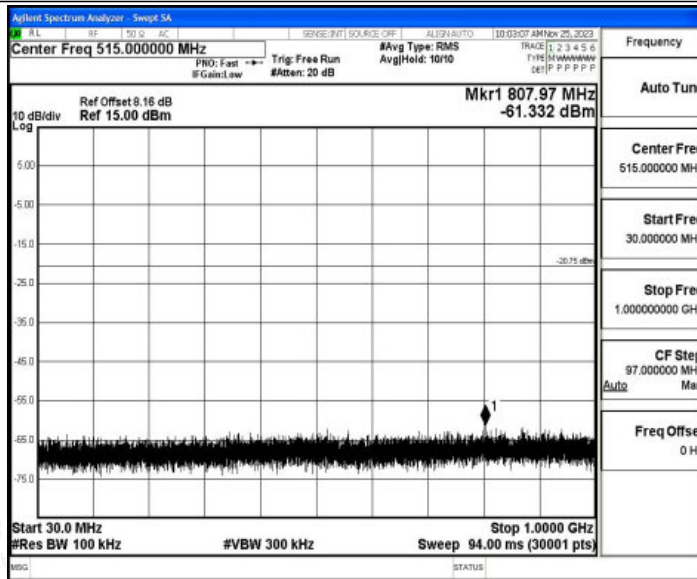


Test Graphs

DH5_Ant1_2402_0~Reference

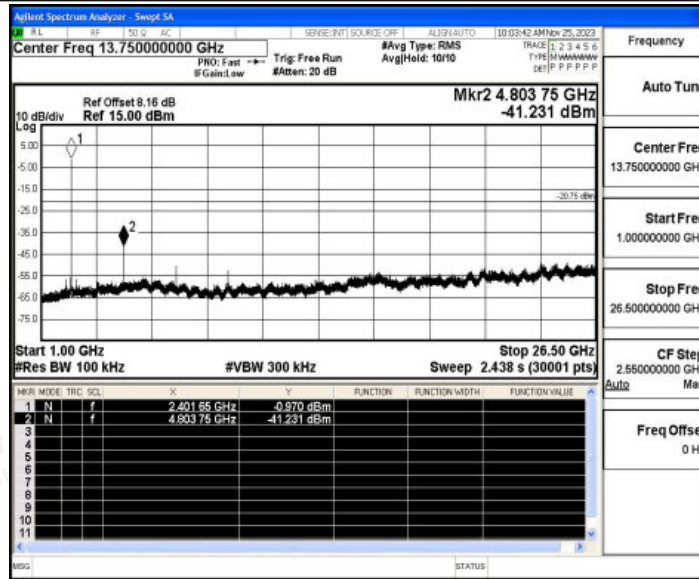


DH5_Ant1_2402_30~1000

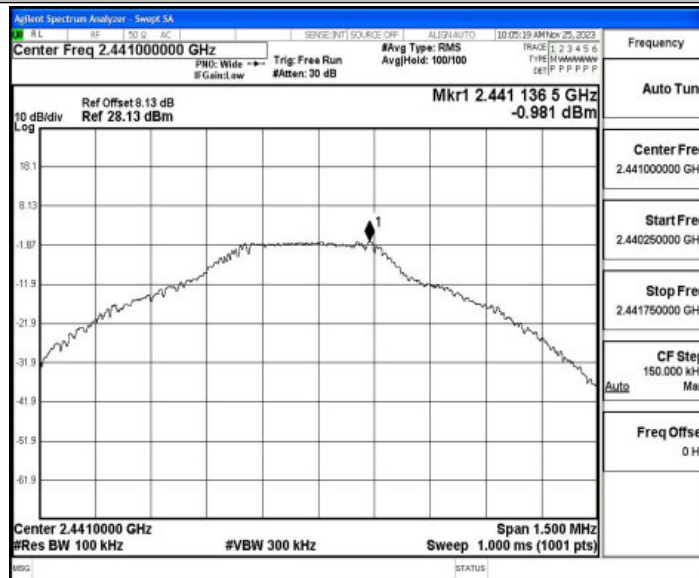


DH5_Ant1_2402_1000~26500



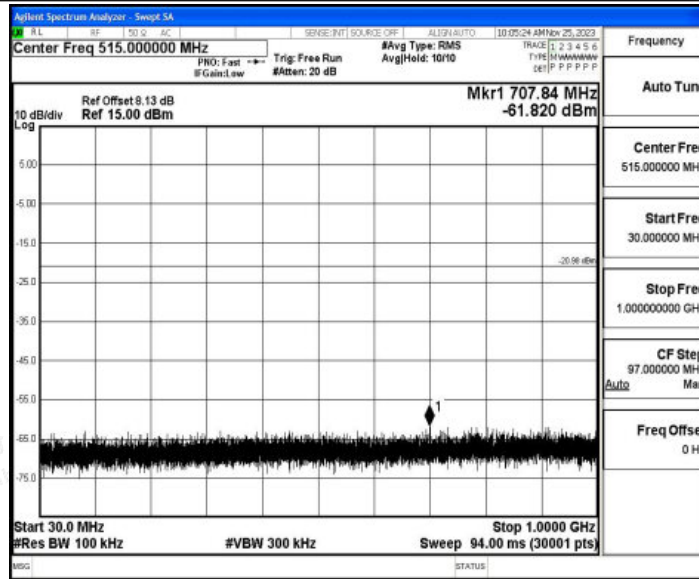


DH5_Ant1_2441_0~Reference

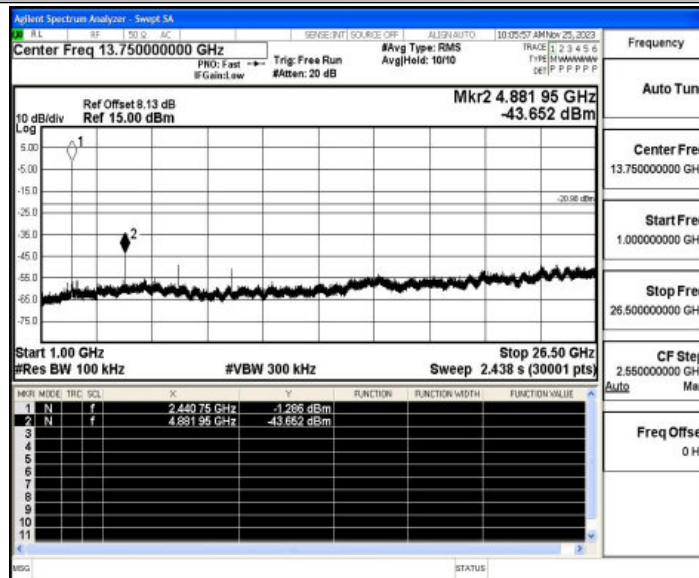


DH5_Ant1_2441_30~1000



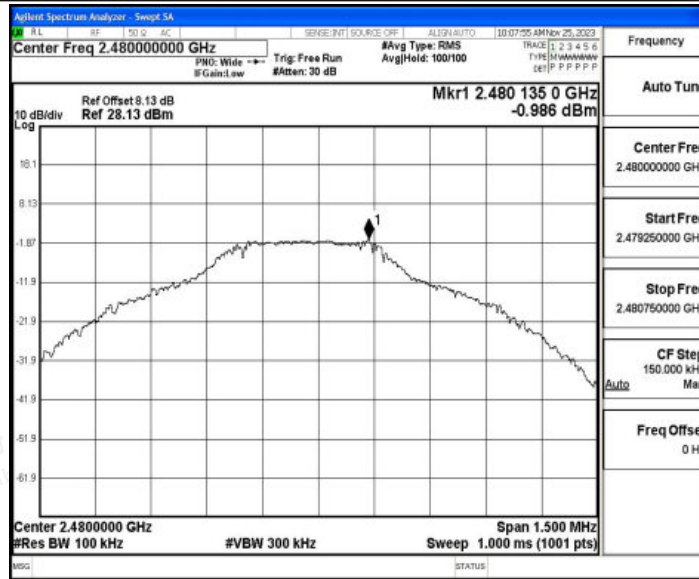


DH5_Ant1_2441_1000~26500

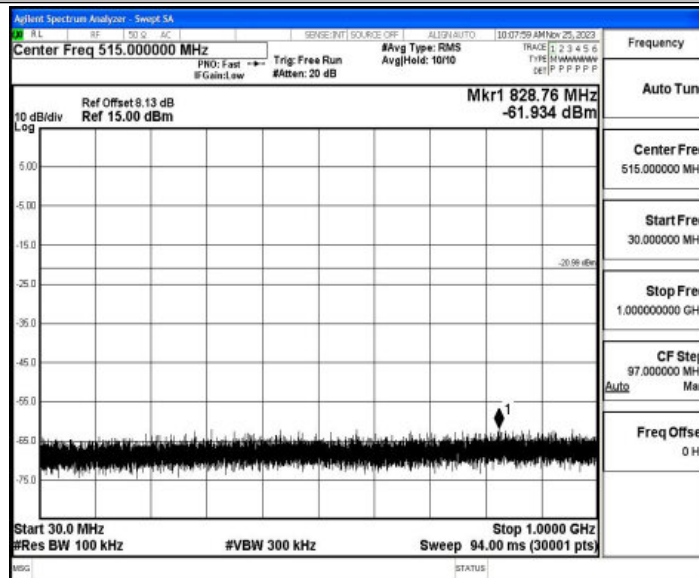


DH5_Ant1_2480_0~Reference



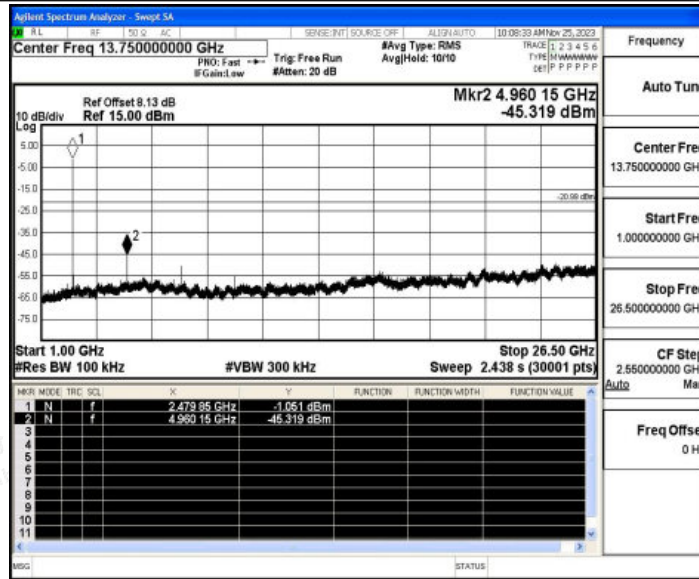


DH5_Ant1_2480_30~1000

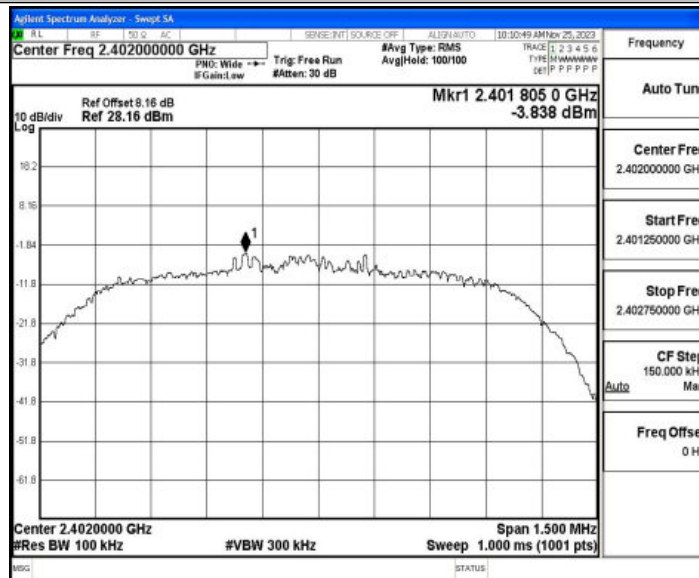


DH5_Ant1_2480_1000~26500



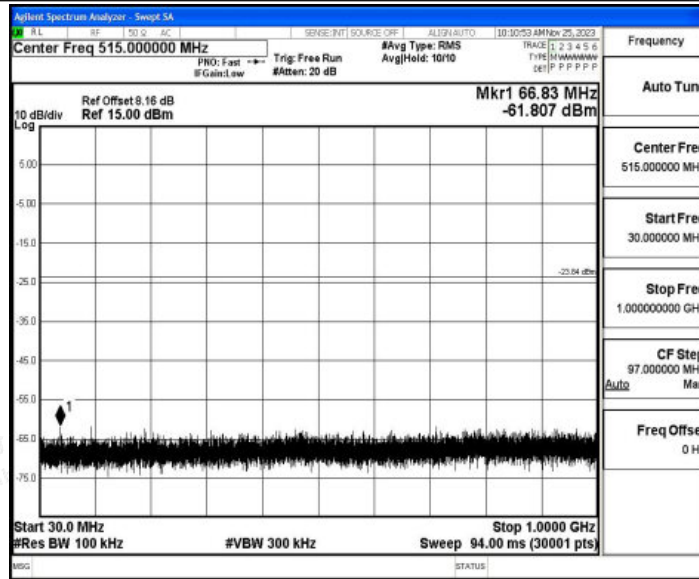


2DH5_Ant1_2402_0~Reference

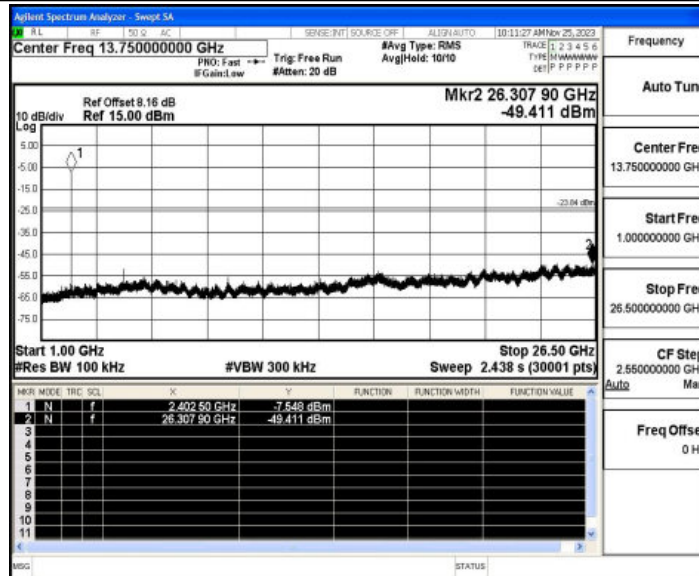


2DH5_Ant1_2402_30~1000





2DH5_Ant1_2402_1000~26500



2DH5_Ant1_2441_0~Reference

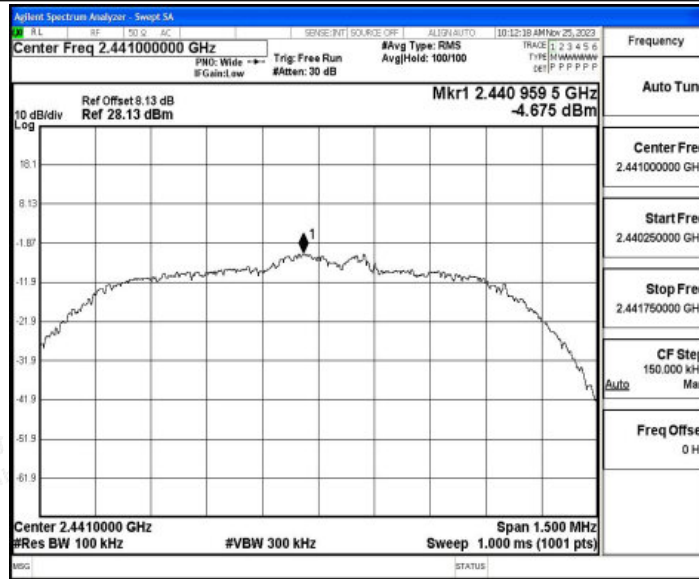


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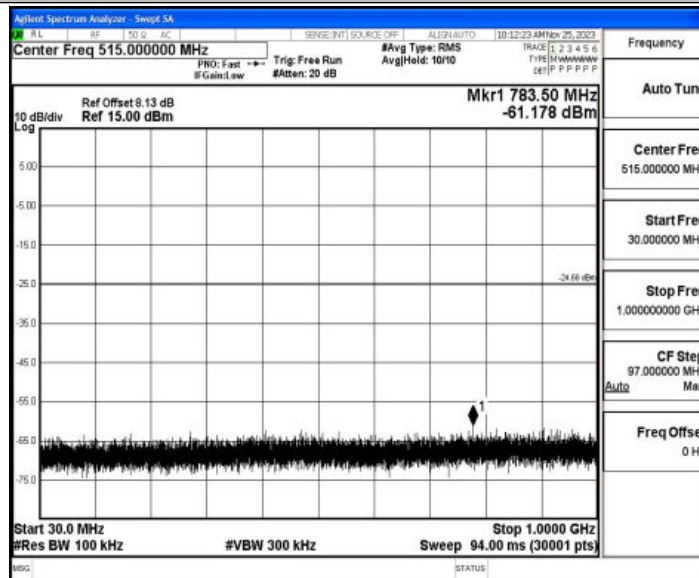
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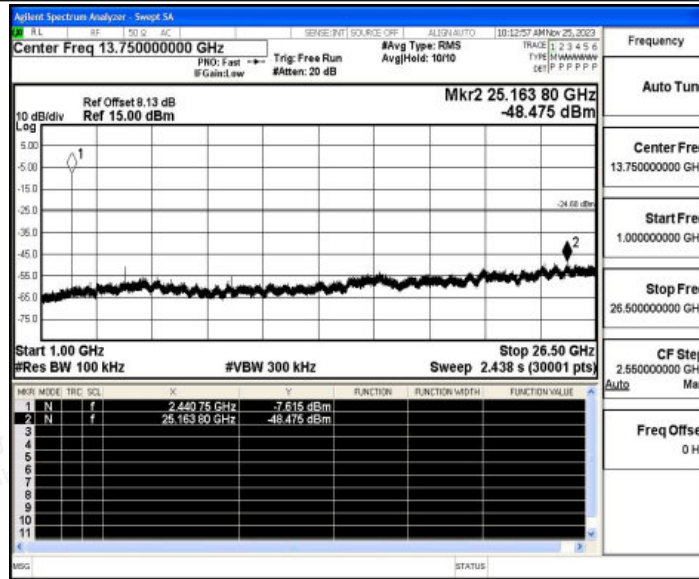


2DH5_Ant1_2441_30~1000

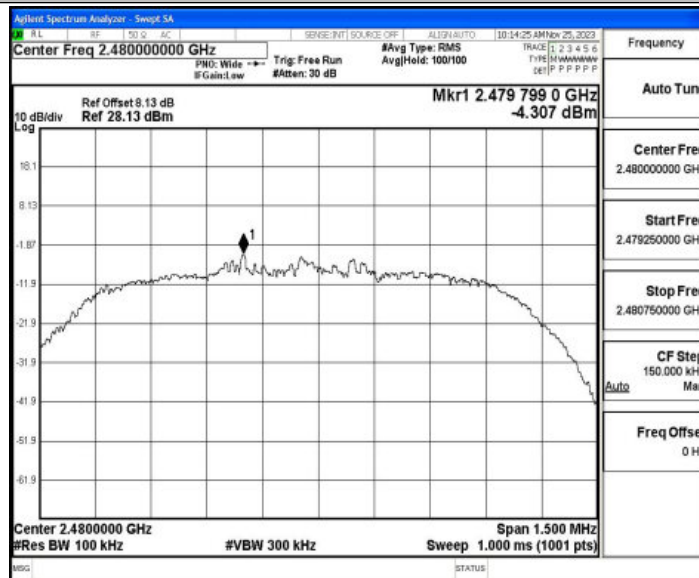


2DH5_Ant1_2441_1000~26500



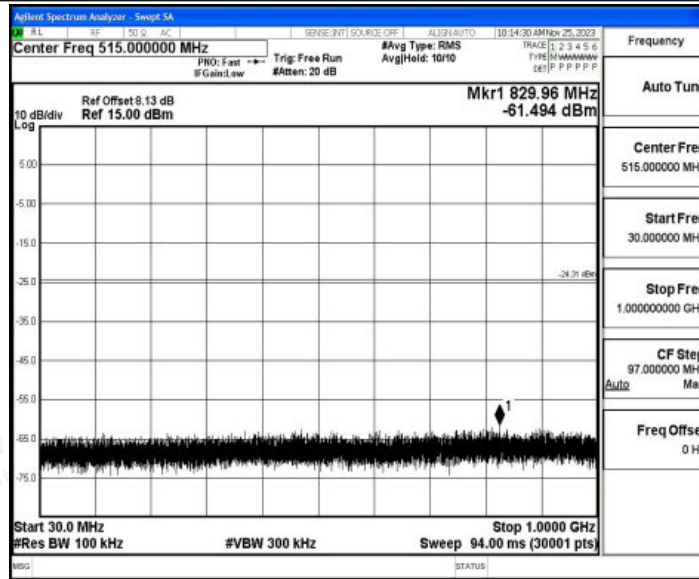


2DH5_Ant1_2480_0~Reference

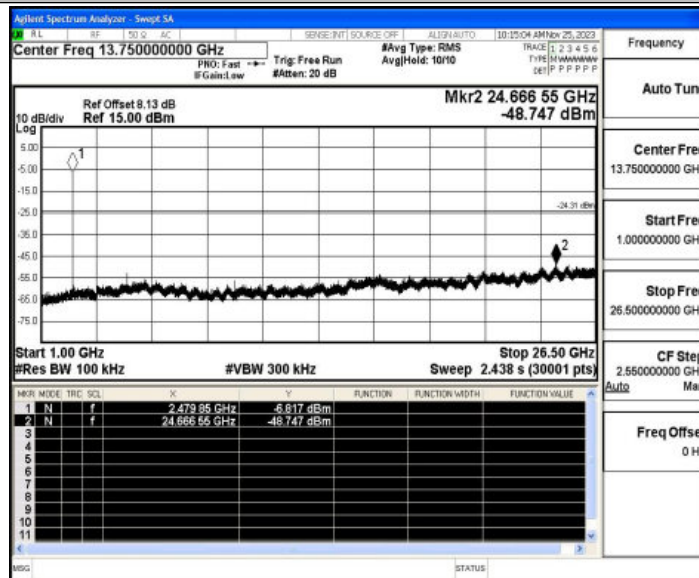


2DH5_Ant1_2480_30~1000



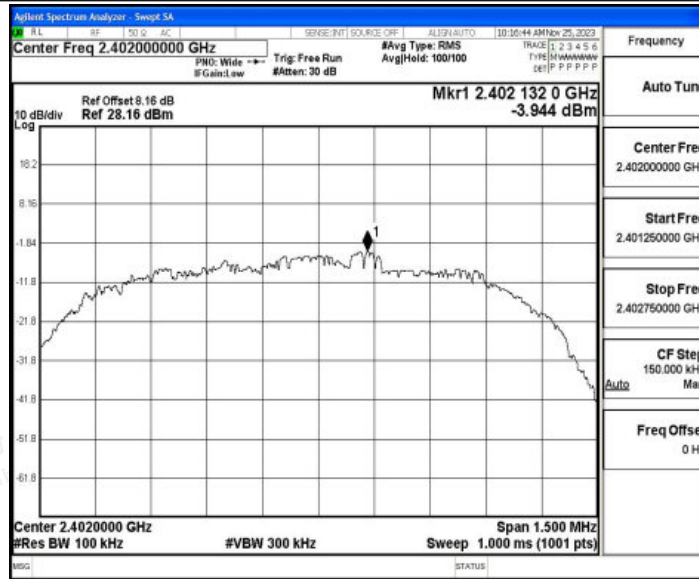


2DH5_Ant1_2480_1000~26500

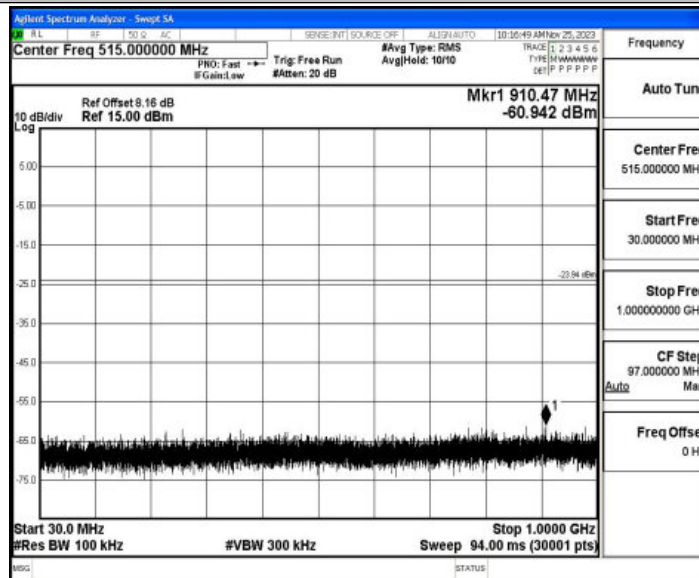


3DH5_Ant1_2402_0~Reference



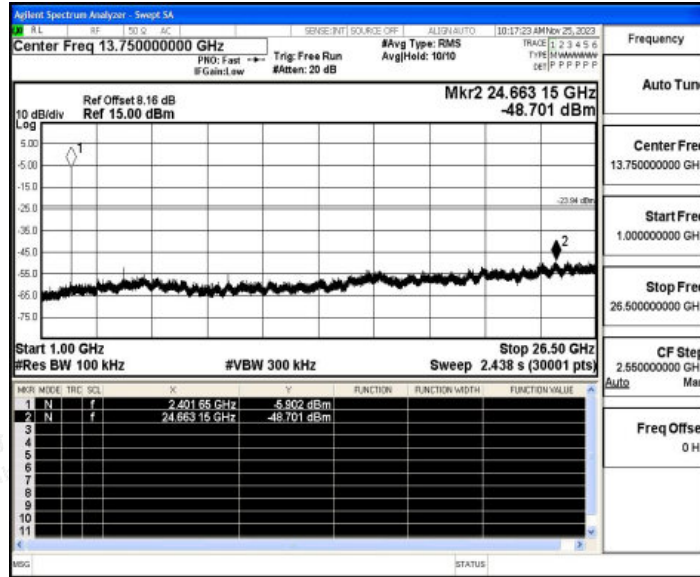


3DH5_Ant1_2402_30~1000

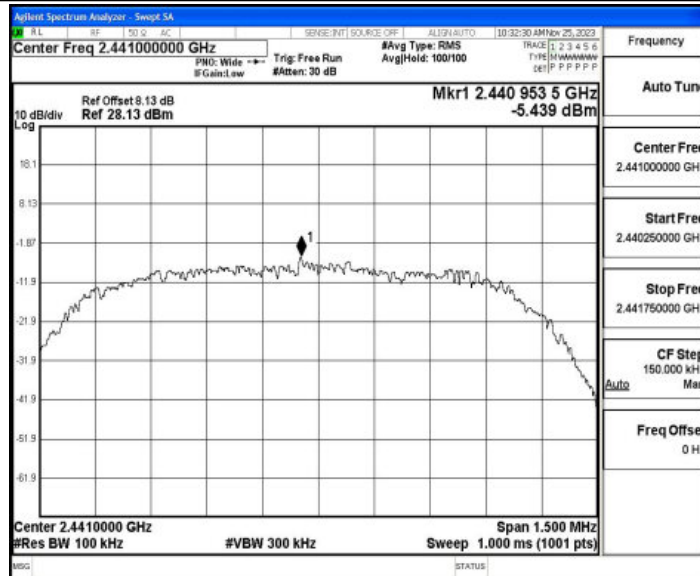


3DH5_Ant1_2402_1000~26500



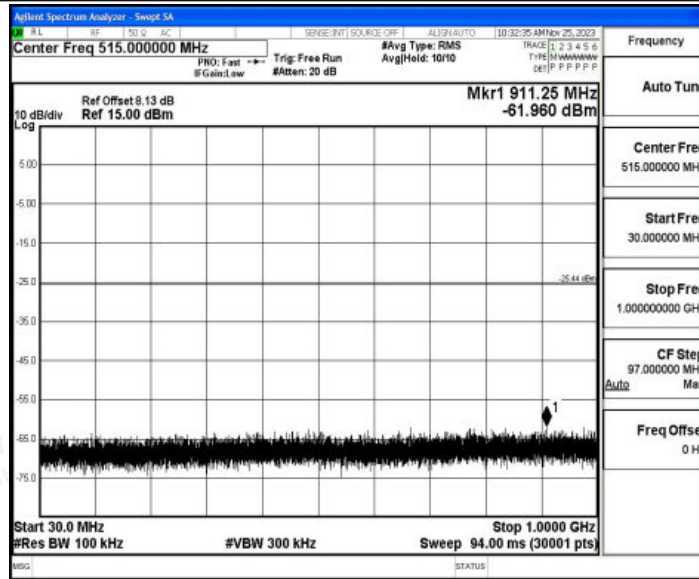


3DH5_Ant1_2441_0~Reference

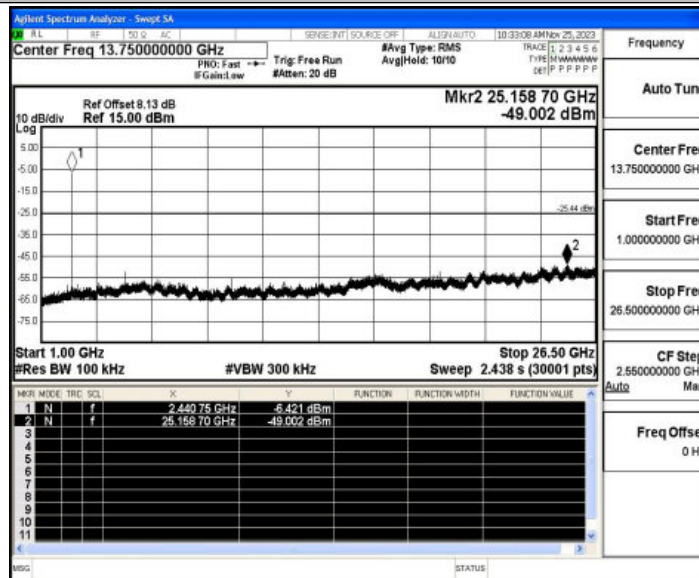


3DH5_Ant1_2441_30~1000





3DH5_Ant1_2441_1000~26500



3DH5_Ant1_2480_0~Reference

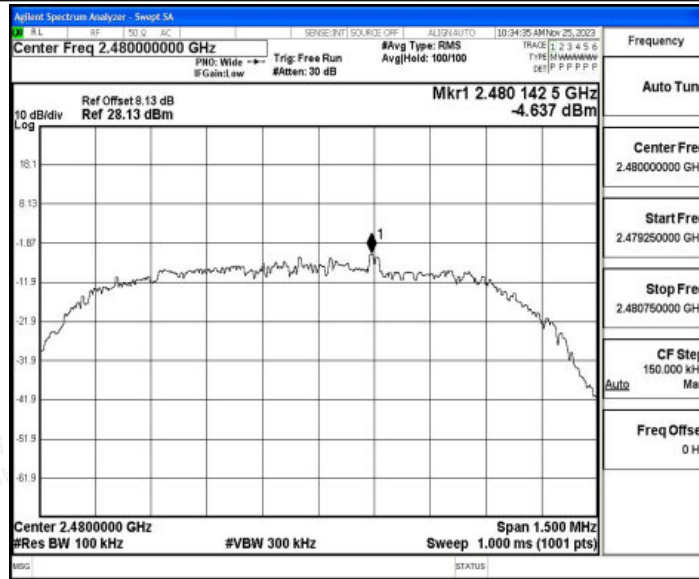


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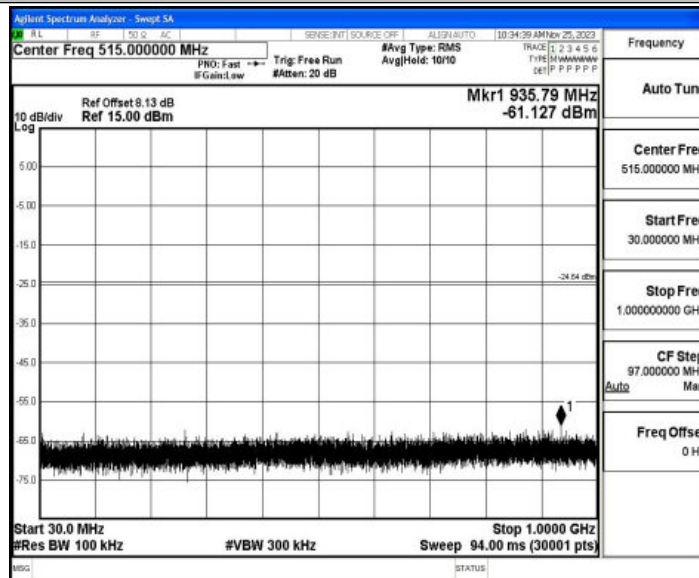
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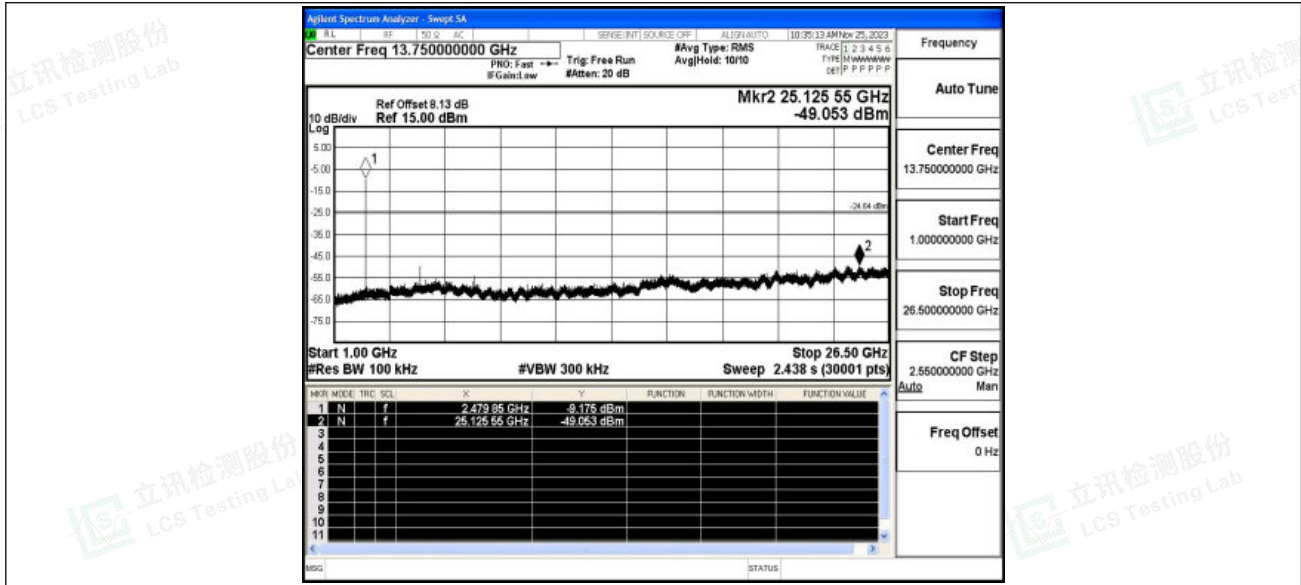


3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500







A.8 Emissions in Restricted Bands

Test Result

TestModel	Antenna	ChannelName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-48.97	≤-41.20	46.23	≤54	PASS
				AV	2389.985	-47.61	≤-41.20	47.59	≤54	PASS
				AV	2390.000	-47.62	≤-41.20	47.58	≤54	PASS
				Peak	2310.000	-44.13	≤-21.20	51.07	≤74	PASS
				Peak	2347.145	-38.8	≤-21.20	56.40	≤74	PASS
				Peak	2390.000	-41.25	≤-21.20	53.95	≤74	PASS
		High	2480	AV	2483.500	-47.59	≤-41.20	47.61	≤54	PASS
				AV	2491.520	-47.1	≤-41.20	48.10	≤54	PASS
				AV	2500.000	-48.42	≤-41.20	46.78	≤54	PASS
				Peak	2483.500	-41.88	≤-21.20	53.32	≤74	PASS
				Peak	2497.360	-39.99	≤-21.20	55.21	≤74	PASS
				Peak	2500.000	-44.23	≤-21.20	50.97	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-41.23	≤-21.20	53.97	≤74	PASS
				Peak	2336.225	-38.48	≤-21.20	56.72	≤74	PASS
				Peak	2390.000	-41.45	≤-21.20	53.75	≤74	PASS
		High	Hop_2480	Peak	2483.500	-40.65	≤-21.20	54.55	≤74	PASS
				Peak	2496.960	-38.59	≤-21.20	56.61	≤74	PASS
				Peak	2500.000	-41.47	≤-21.20	53.73	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-49.06	≤-41.20	46.14	≤54	PASS
				AV	2389.985	-48.25	≤-41.20	46.95	≤54	PASS
				AV	2390.000	-48.25	≤-41.20	46.95	≤54	PASS
				Peak	2310.000	-41.58	≤-21.20	53.62	≤74	PASS
				Peak	2384.840	-39.29	≤-21.20	55.91	≤74	PASS
				Peak	2390.000	-41.6	≤-21.20	53.60	≤74	PASS
		High	2480	AV	2483.500	-48.21	≤-41.20	46.99	≤54	PASS
				AV	2491.520	-48.11	≤-41.20	47.09	≤54	PASS
				AV	2500.000	-48.51	≤-41.20	46.69	≤54	PASS
				Peak	2483.500	-43.03	≤-21.20	52.17	≤74	PASS
				Peak	2496.880	-38.22	≤-21.20	56.98	≤74	PASS
				Peak	2500.000	-43.77	≤-21.20	51.43	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-41.65	≤-21.20	53.55	≤74	PASS
				Peak	2368.565	-38.89	≤-21.20	56.31	≤74	PASS
				Peak	2390.000	-40.23	≤-21.20	54.97	≤74	PASS
		High	Hop_2480	Peak	2483.500	-39.84	≤-21.20	55.36	≤74	PASS
				Peak	2498.880	-38.07	≤-21.20	57.13	≤74	PASS
				Peak	2500.000	-39.7	≤-21.20	55.50	≤74	PASS



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3DH5	Ant1	Low	2402	AV	2310.000	-49.15	≤-41.20	46.05	≤54	PASS
				AV	2389.985	-48.25	≤-41.20	46.95	≤54	PASS
				AV	2390.000	-48.25	≤-41.20	46.95	≤54	PASS
				Peak	2310.000	-43.59	≤-21.20	51.61	≤74	PASS
				Peak	2386.100	-39.64	≤-21.20	55.56	≤74	PASS
				Peak	2390.000	-43.23	≤-21.20	51.97	≤74	PASS
		High	2480	AV	2483.500	-48.23	≤-41.20	46.97	≤54	PASS
				AV	2491.680	-48.04	≤-41.20	47.16	≤54	PASS
				AV	2500.000	-48.38	≤-41.20	46.82	≤54	PASS
				Peak	2483.500	-44.81	≤-21.20	50.39	≤74	PASS
				Peak	2492.000	-39.53	≤-21.20	55.67	≤74	PASS
				Peak	2500.000	-41.57	≤-21.20	53.63	≤74	PASS
		Low	Hop_2 402	Peak	2310.000	-41.15	≤-21.20	54.05	≤74	PASS
				Peak	2316.800	-38.8	≤-21.20	56.40	≤74	PASS
				Peak	2390.000	-41.44	≤-21.20	53.76	≤74	PASS
		High	Hop_2 480	Peak	2483.500	-40.28	≤-21.20	54.92	≤74	PASS
				Peak	2487.680	-37.78	≤-21.20	57.42	≤74	PASS
				Peak	2500.000	-40.38	≤-21.20	54.82	≤74	PASS

Note:

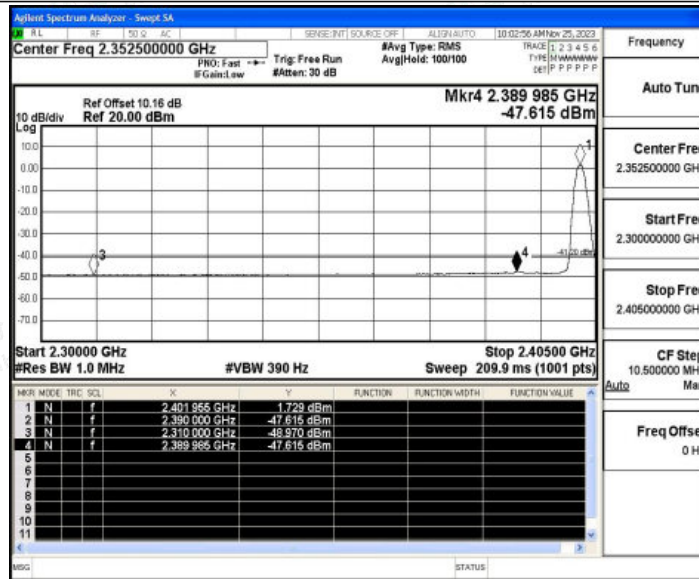
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.



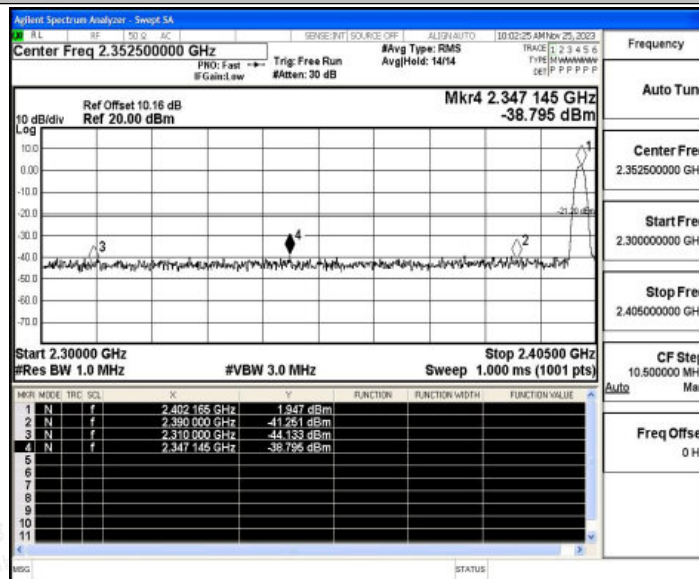


Test Graphs

DH5_Ant1_Low_2402_AV



DH5_Ant1_Low_2402_Peak



DH5_Ant1_High_2480_AV

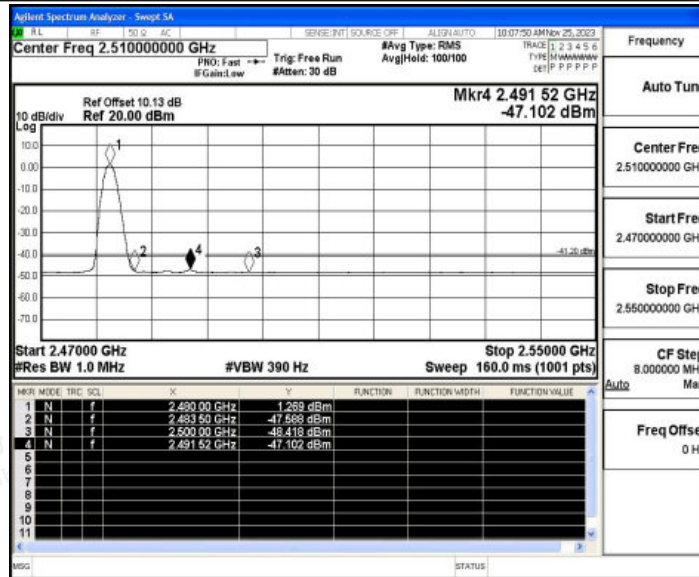


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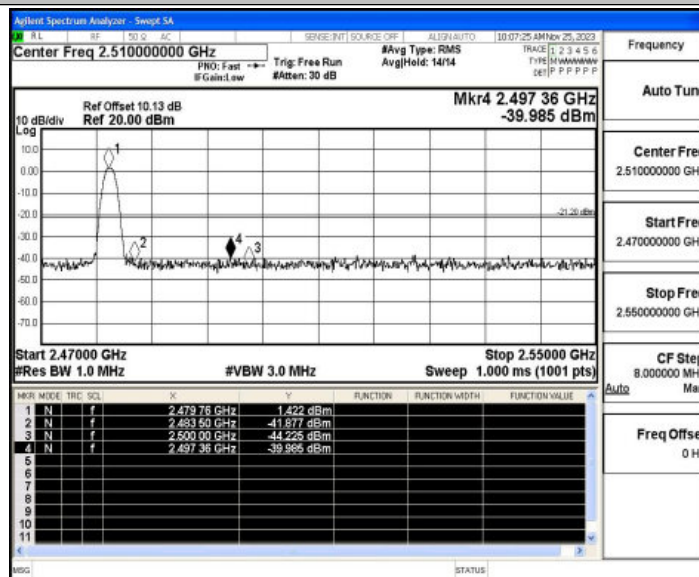
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DH5_Ant1_High_2480_Peak



DH5_Ant1_Low_Hop_2402_Peak

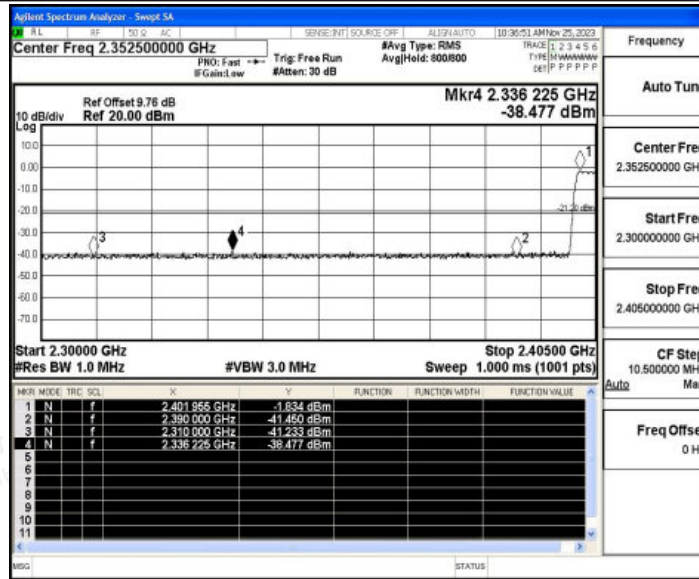


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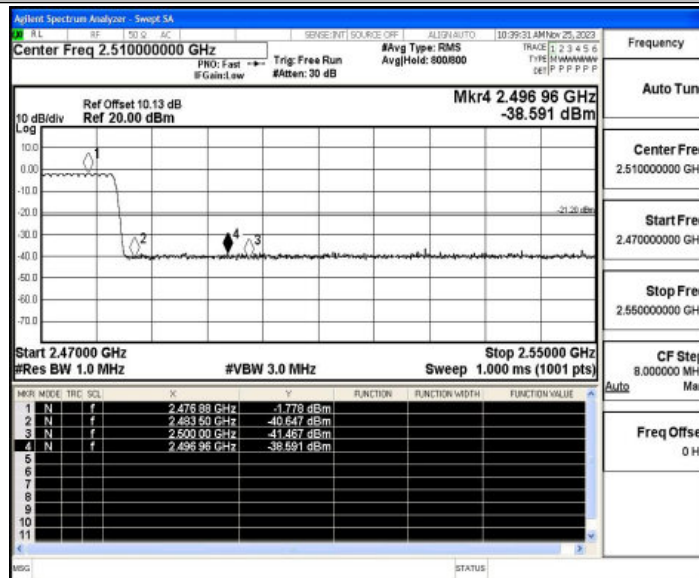
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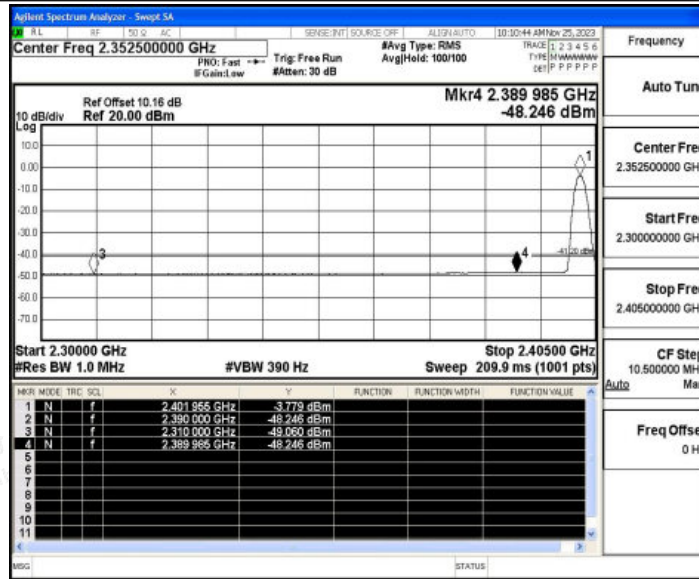


DH5_Ant1_High_Hop_2480_Peak

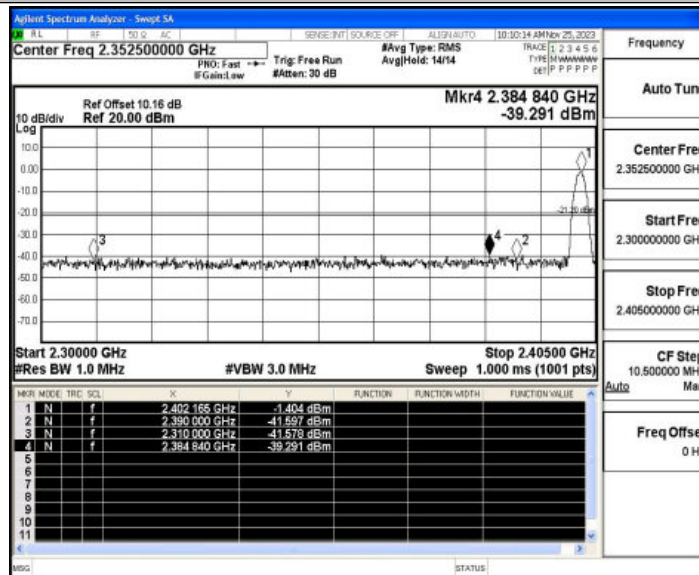


2DH5_Ant1_Low_2402_AV





2DH5_Ant1_Low_2402_Peak



2DH5_Ant1_High_2480_AV

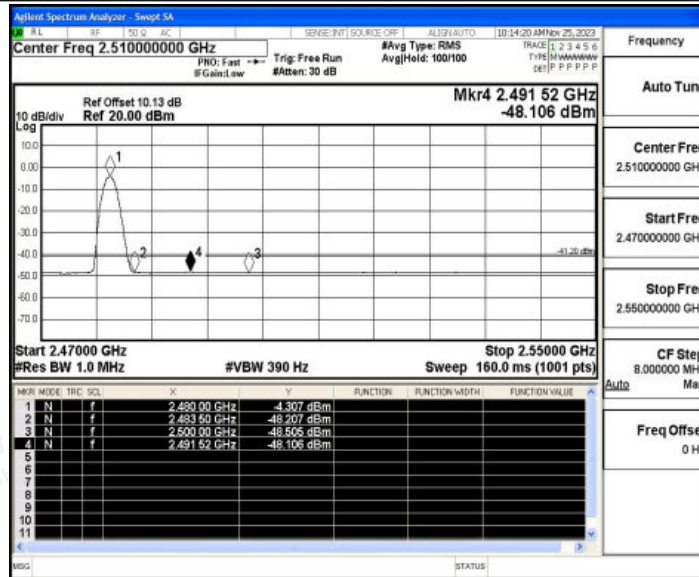


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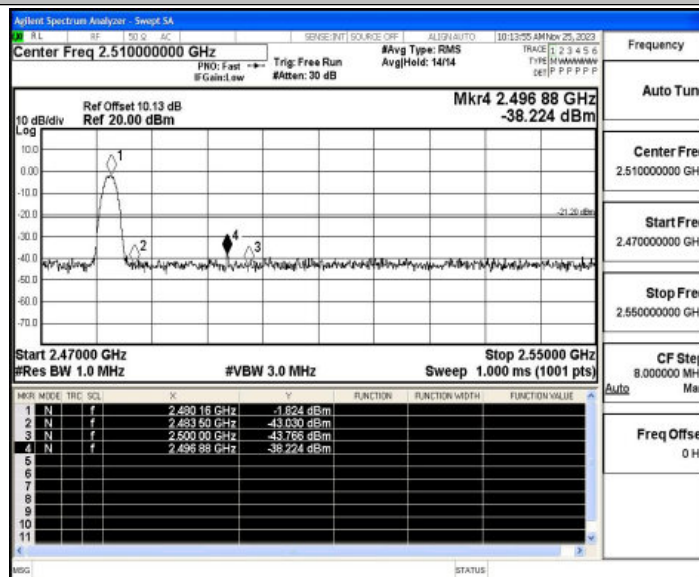
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2DH5_Ant1_High_2480_Peak



2DH5_Ant1_Low_Hop_2402_Peak

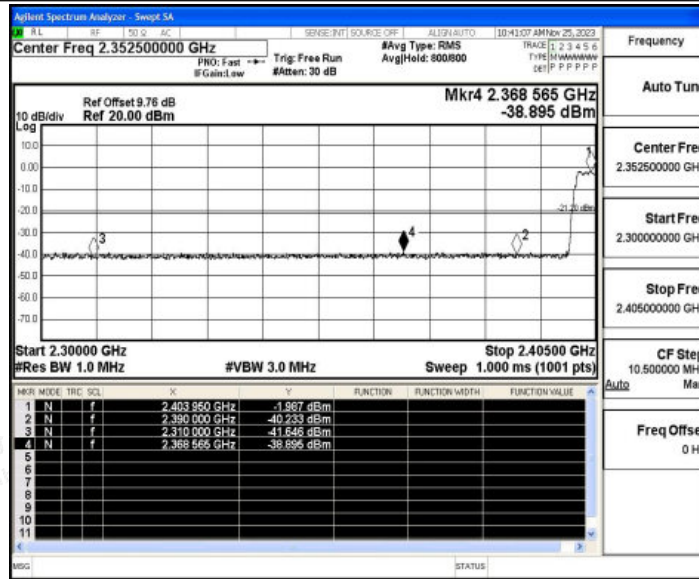


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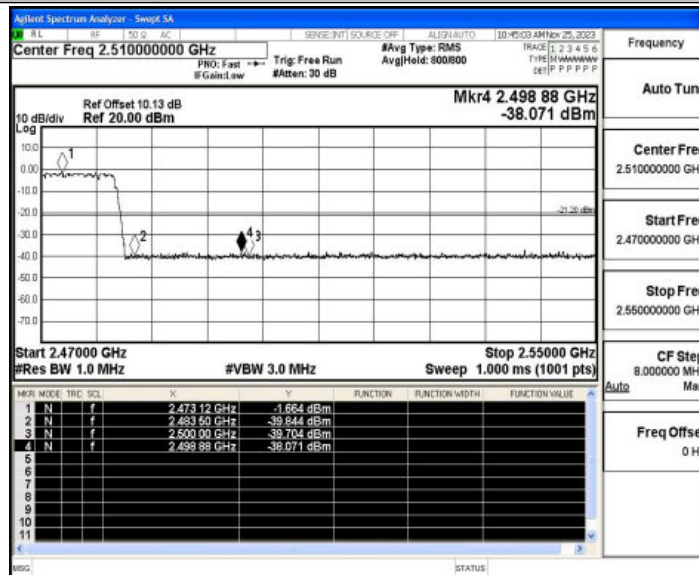
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2DH5_Ant1_High_Hop_2480_Peak



3DH5_Ant1_Low_2402_AV

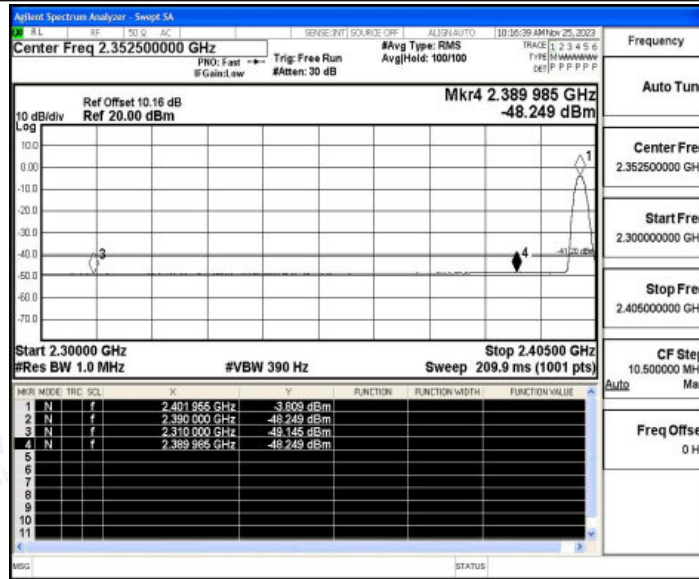


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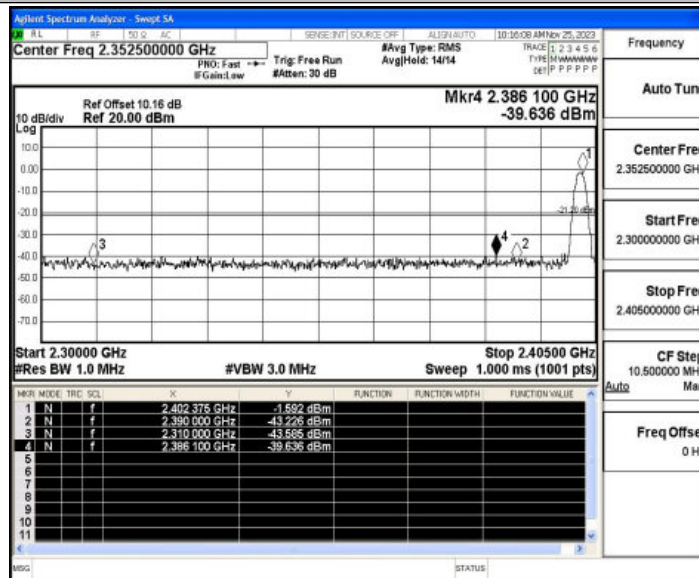
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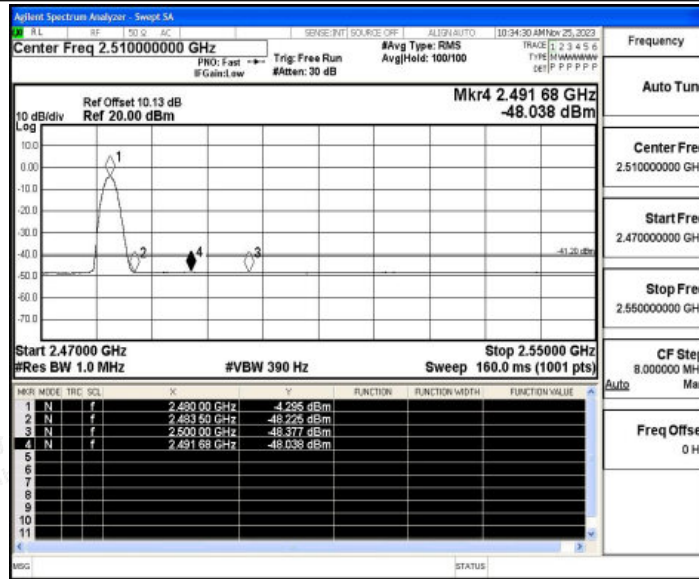


3DH5_Ant1_Low_2402_Peak

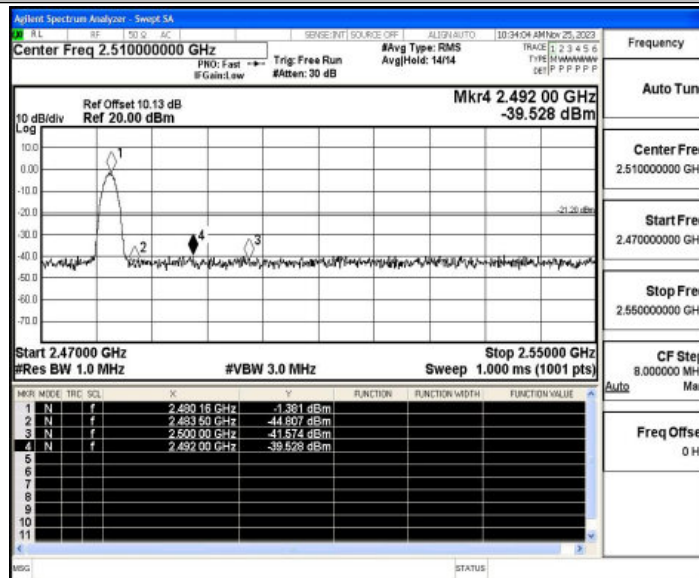


3DH5_Ant1_High_2480_AV





3DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_Hop_2402_Peak

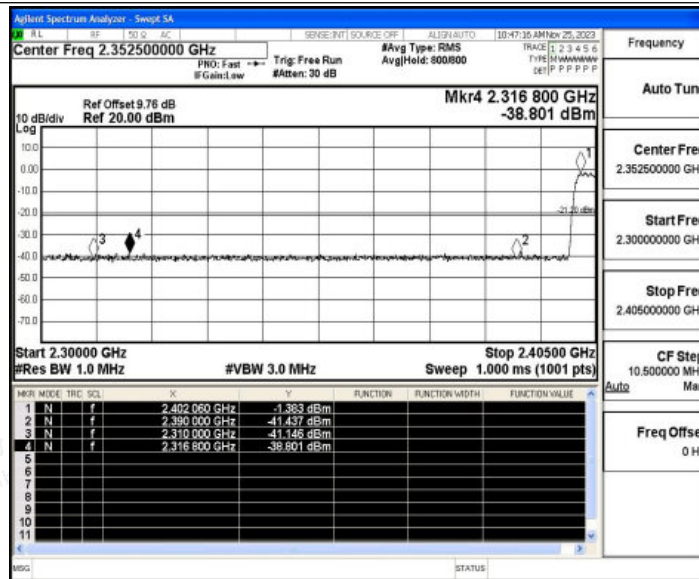


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3DH5_Ant1_High_Hop_2480_Peak

