



Appendix A

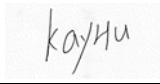
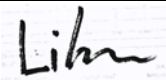
RF Test Data for BT V5.1(DSS) (Conducted Measurement)

Product Name: HyperGear CobraStrike True Wireless Gaming Earbuds

Trade Mark: HYPERGEAR

Test Model: 15524

Environmental Conditions

Temperature:	21.1° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	
Supervised by:	



Appendix A.1: 20dB Emission Bandwidth

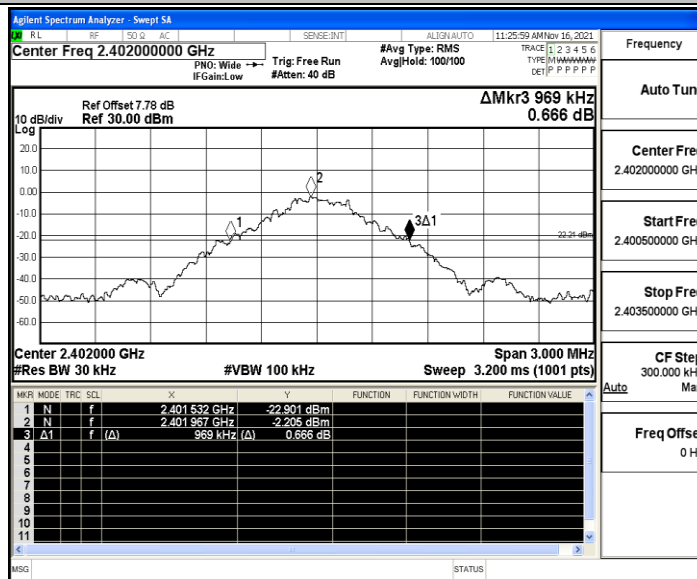
Test Result

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.969	2401.532	2402.501	---	PASS
		2441	0.960	2440.535	2441.495	---	PASS
		2480	1.032	2479.463	2480.495	---	PASS
2DH5	Ant1	2402	1.317	2401.346	2402.663	---	PASS
		2441	1.350	2440.322	2441.672	---	PASS
		2480	1.320	2479.337	2480.657	---	PASS
3DH5	Ant1	2402	1.338	2401.331	2402.669	---	PASS
		2441	1.311	2440.346	2441.657	---	PASS
		2480	1.293	2479.349	2480.642	---	PASS

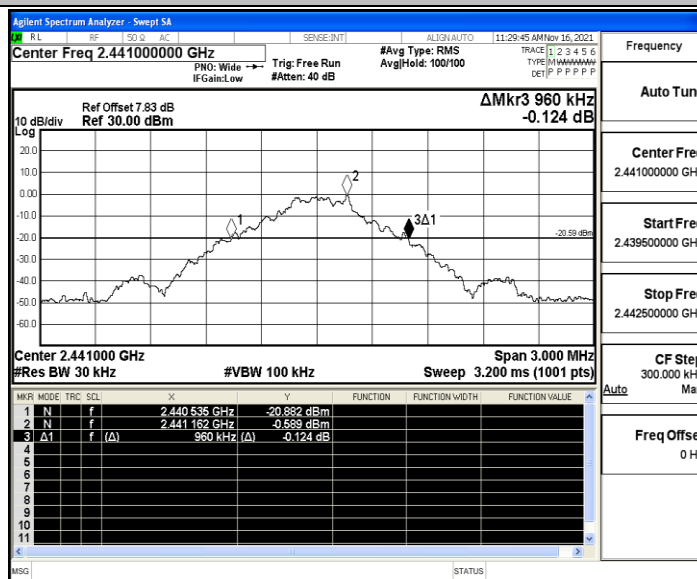


Test Graphs

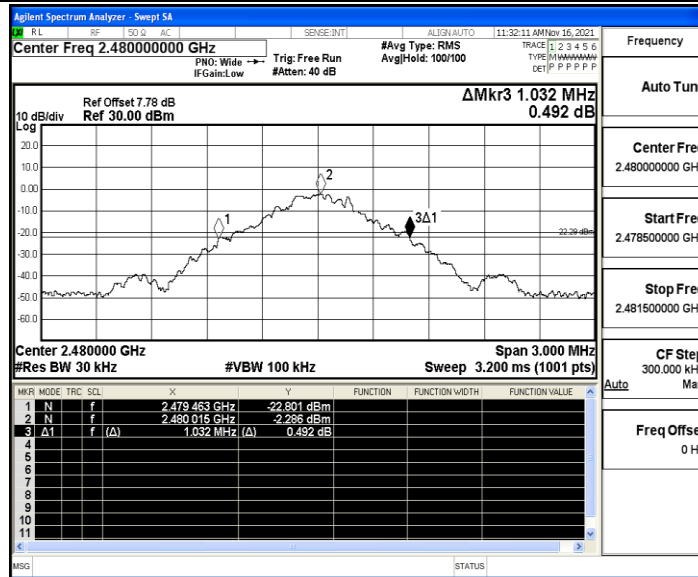
DH5_Ant1_2402



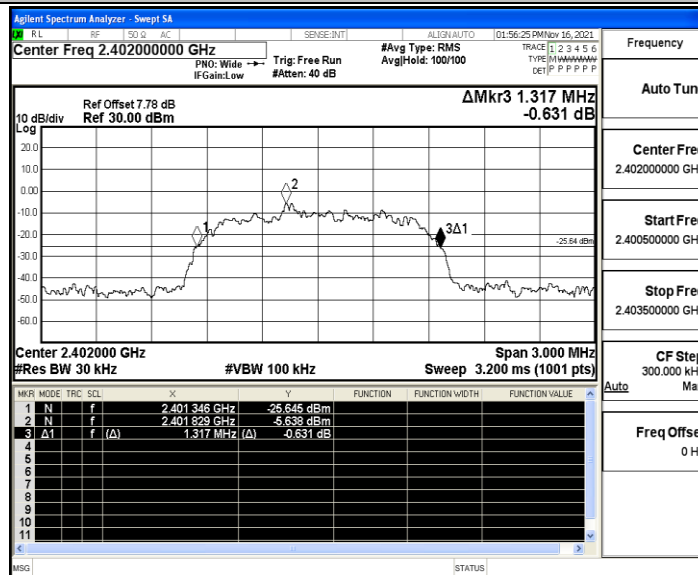
DH5_Ant1_2441



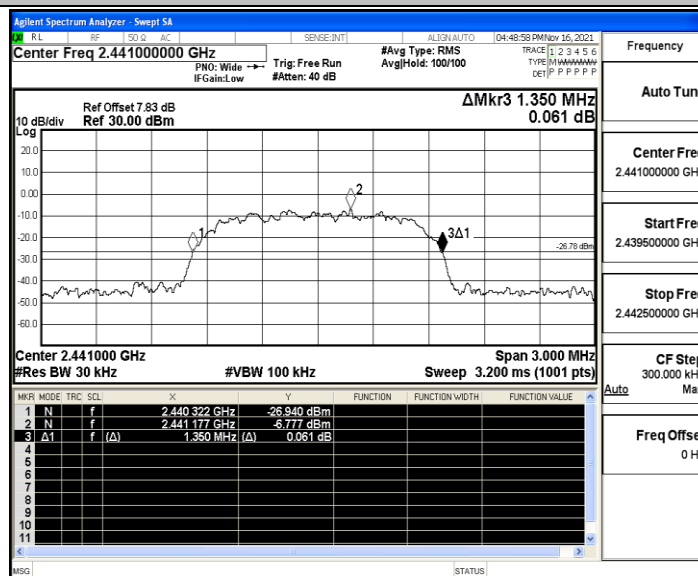
DH5_Ant1_2480



2DH5_Ant1_2402

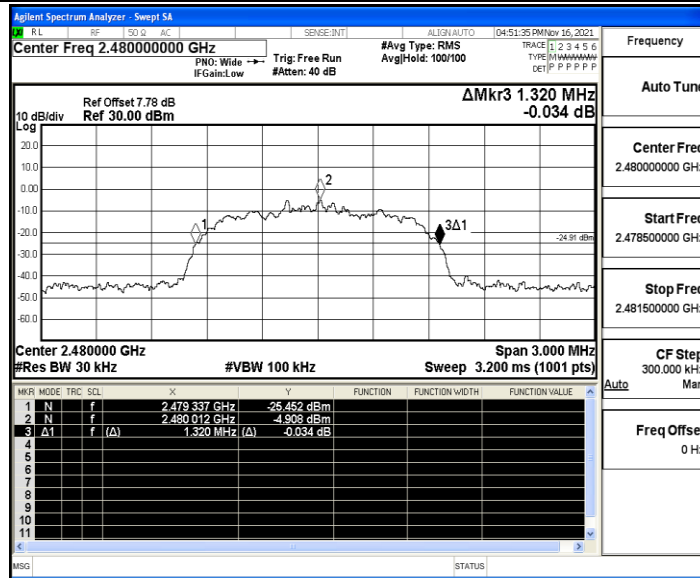


2DH5_Ant1_2441

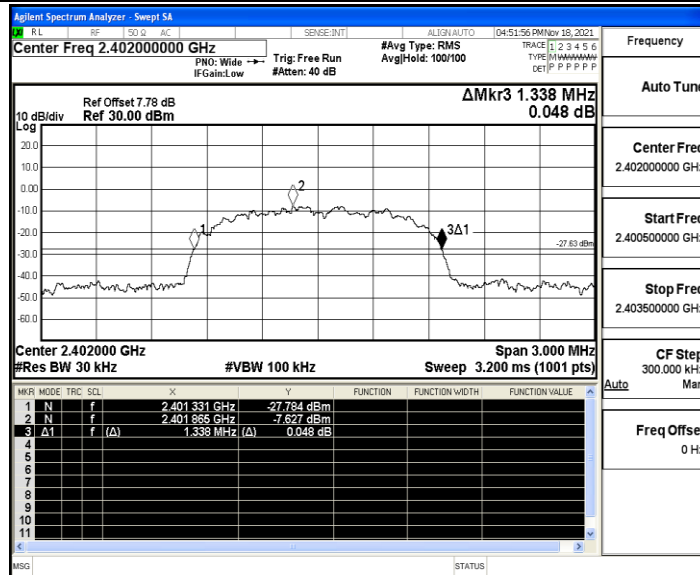




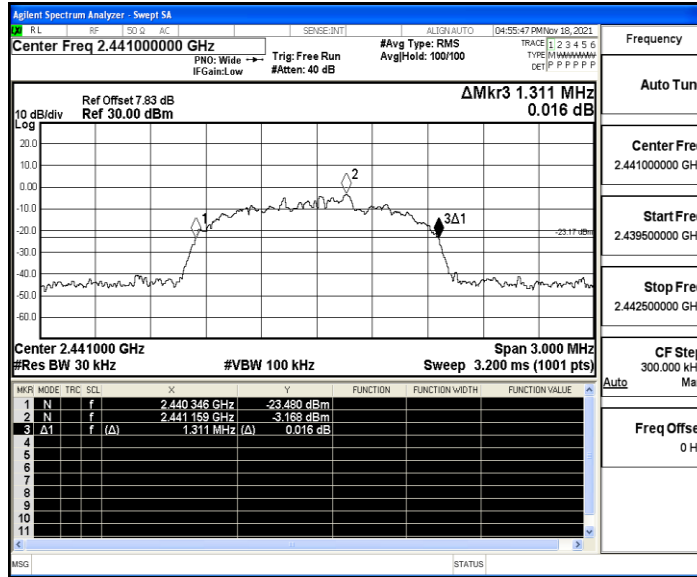
2DH5_Ant1_2480



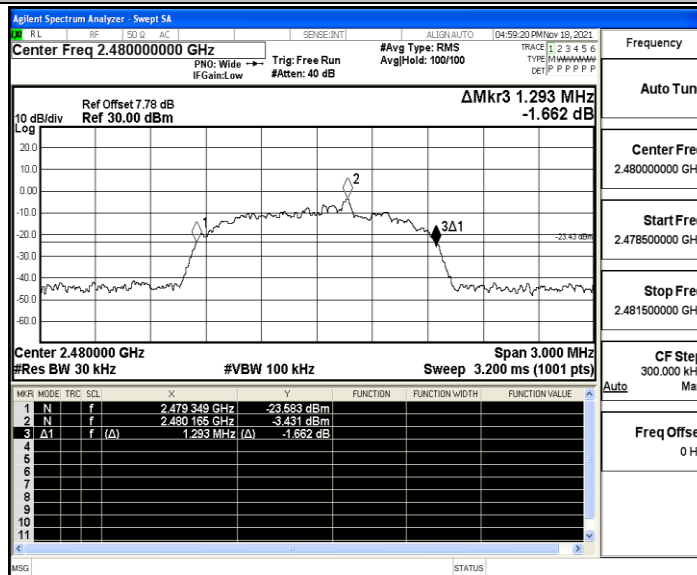
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480





Appendix A.2: Maximum conducted output power

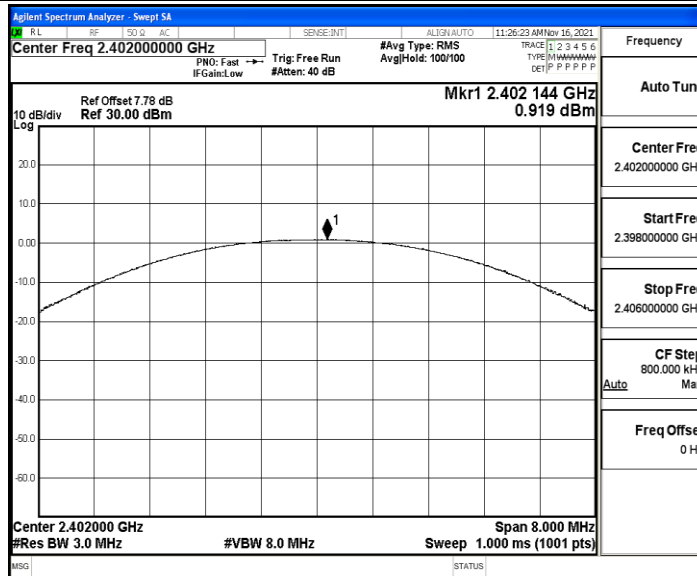
Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	0.92	≤ 20.97	PASS
		2441	2.12	≤ 20.97	PASS
		2480	0.63	≤ 20.97	PASS
2DH5	Ant1	2402	0.15	≤ 20.97	PASS
		2441	1.21	≤ 20.97	PASS
		2480	-0.29	≤ 20.97	PASS
3DH5	Ant1	2402	0.43	≤ 20.97	PASS
		2441	1.63	≤ 20.97	PASS
		2480	0.3	≤ 20.97	PASS

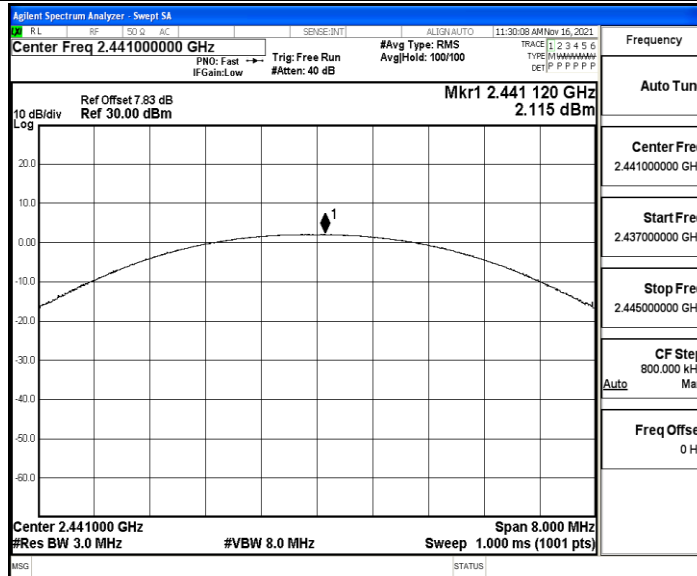


Test Graphs

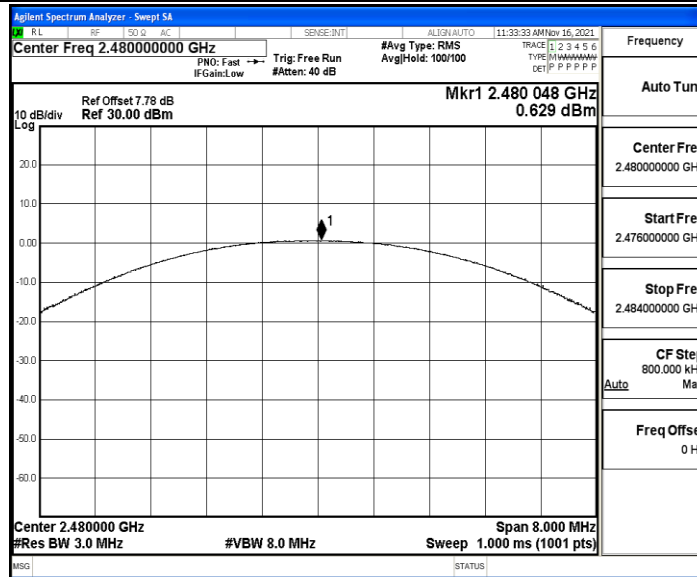
DH5_Ant1_2402



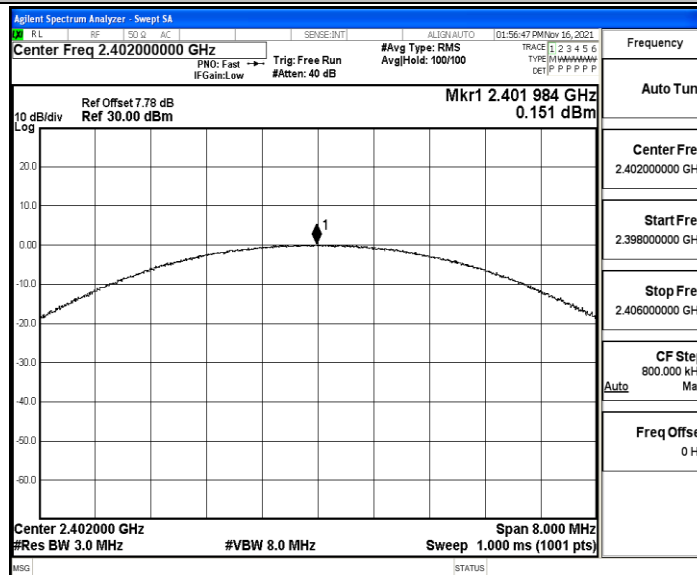
DH5_Ant1_2441



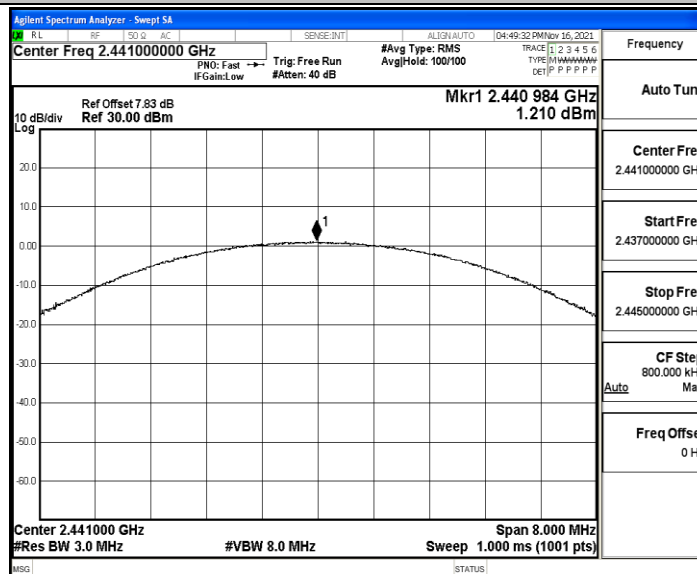
DH5_Ant1_2480



2DH5_Ant1_2402

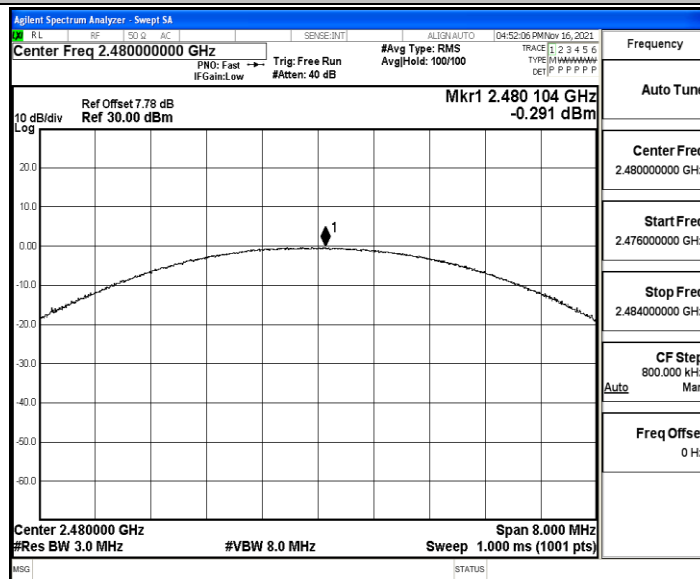


2DH5_Ant1_2441

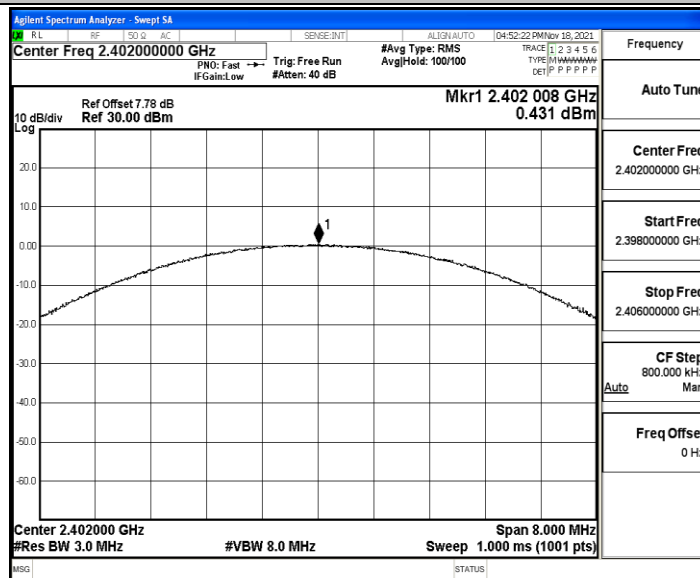




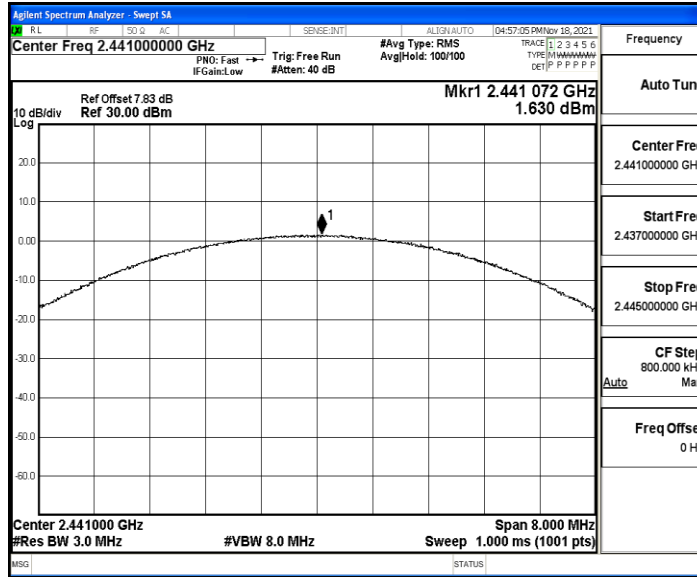
2DH5_Ant1_2480



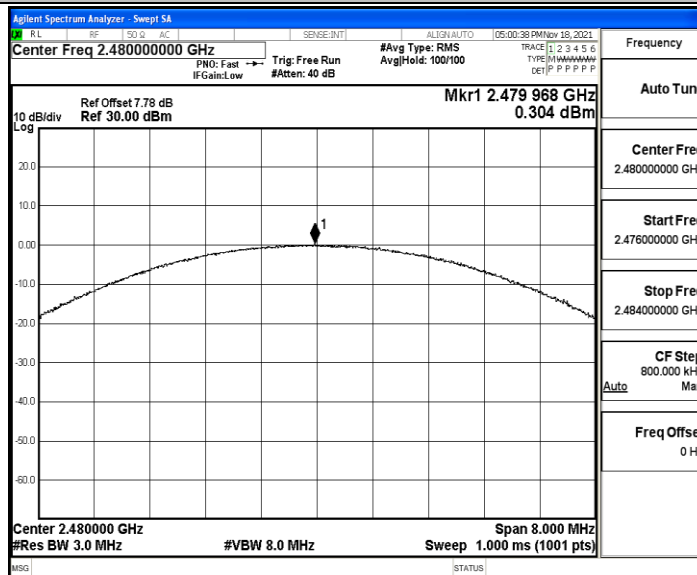
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480





Appendix A.3: Carrier frequency separation

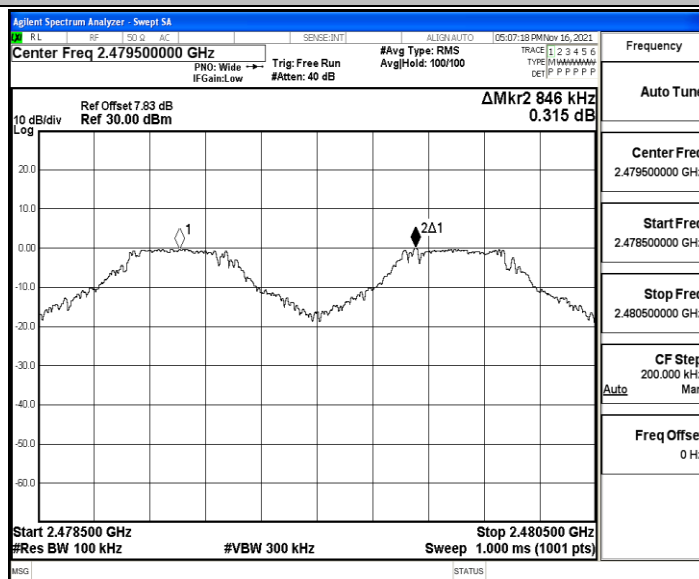
Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.846	≥ 0.688	PASS
2DH5	Ant1	Hop	1.012	≥ 0.900	PASS
3DH5	Ant1	Hop	0.994	≥ 0.892	PASS

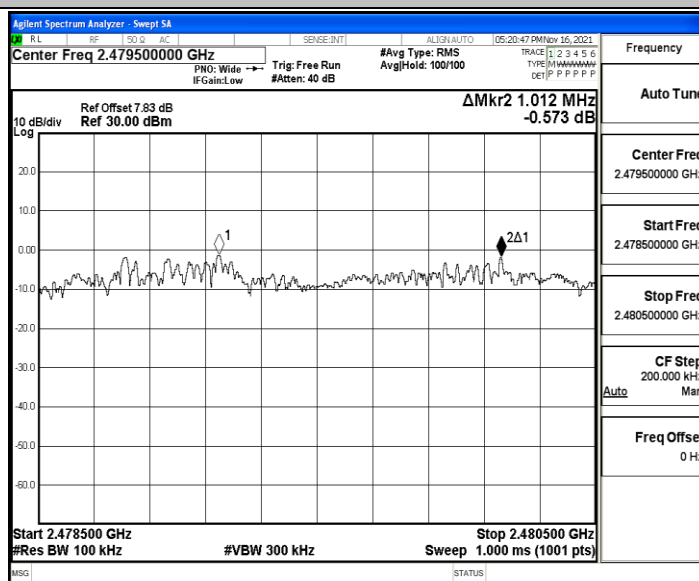


Test Graphs

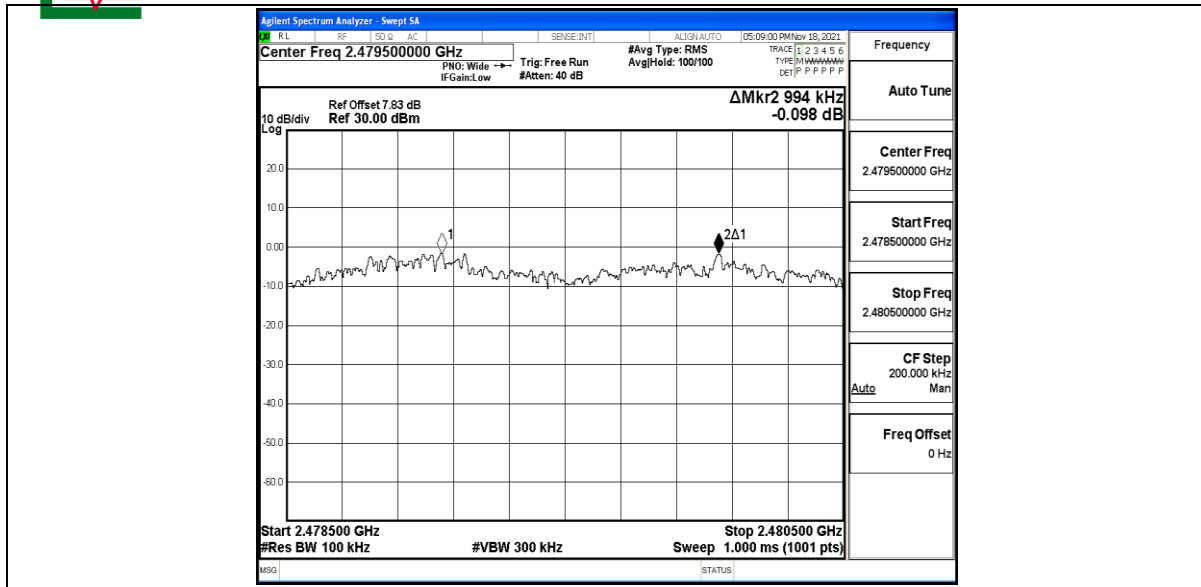
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop





Appendix A.4: Time of occupancy

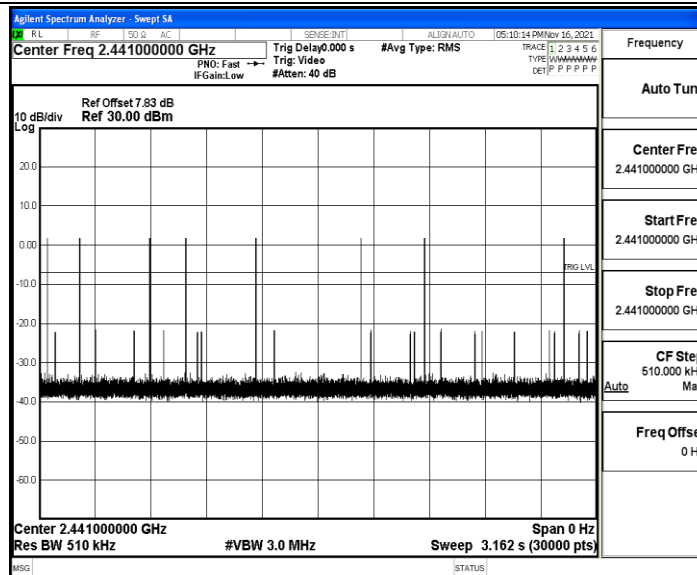
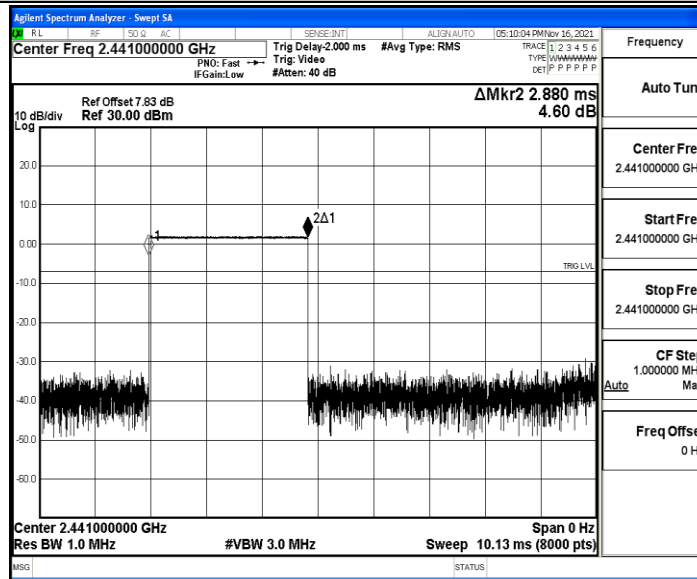
Test Result

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.88	100	0.288	≤0.4	PASS
2DH5	Ant1	Hop	2.88	110	0.317	≤0.4	PASS
3DH5	Ant1	Hop	2.89	107	0.309	≤0.4	PASS

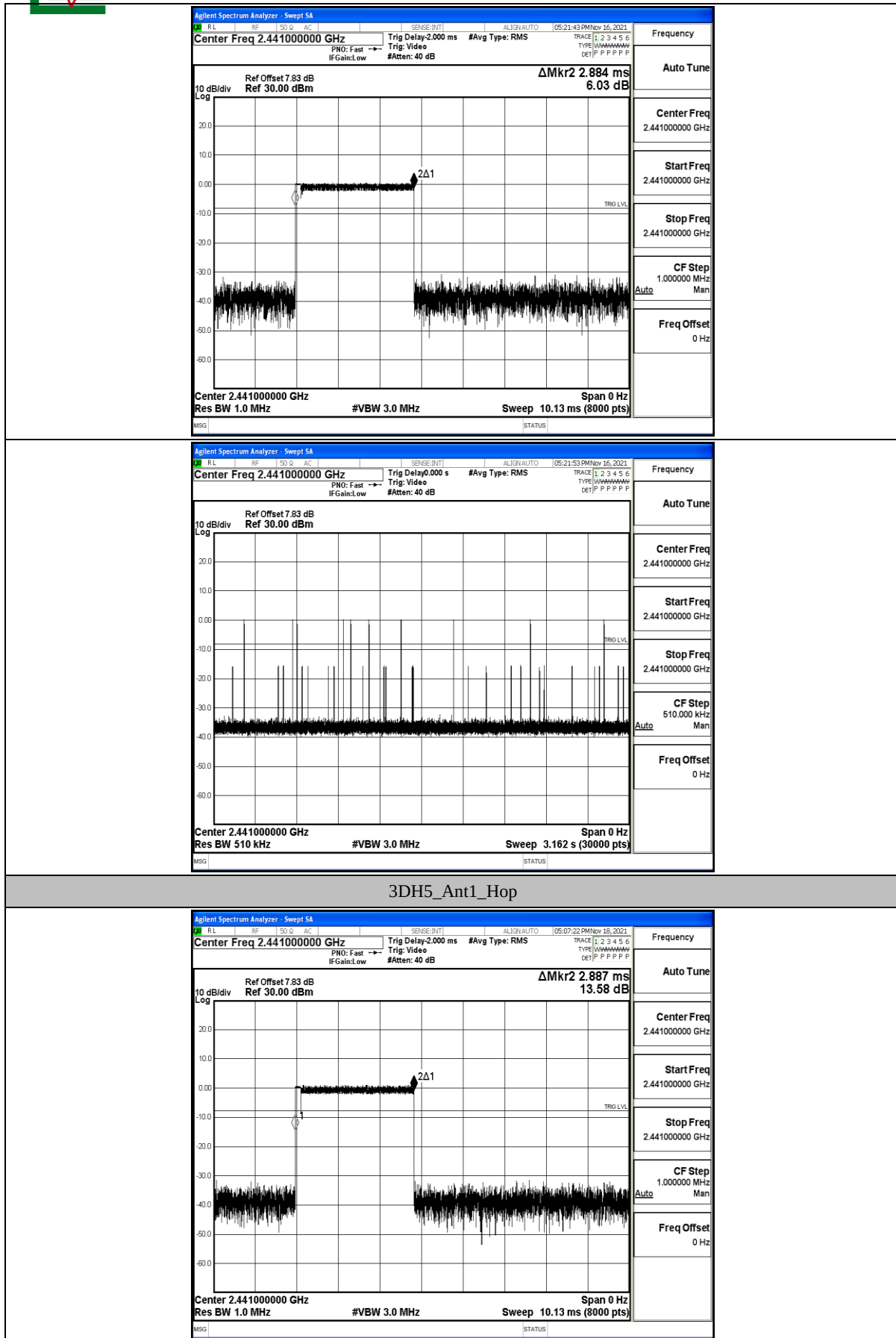


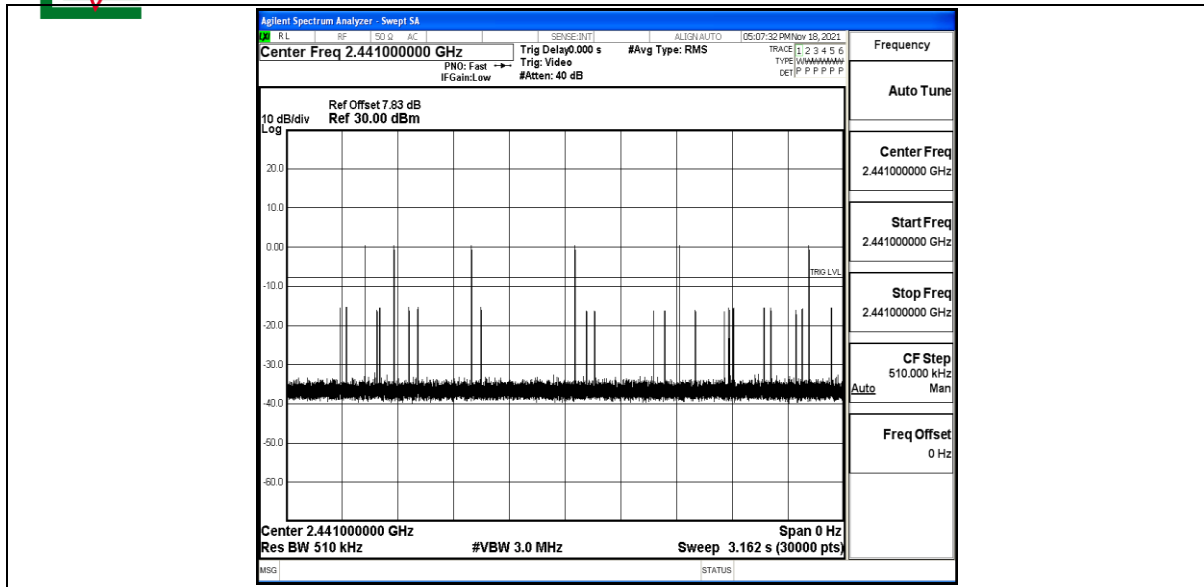
Test Graphs

DH5_Ant1_Hop



2DH5_Ant1_Hop







Appendix A.5: Number of hopping channels

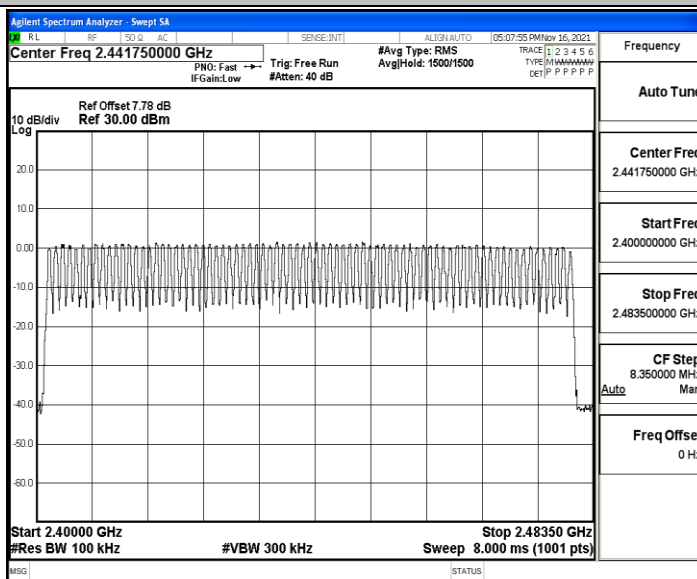
Test Result

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

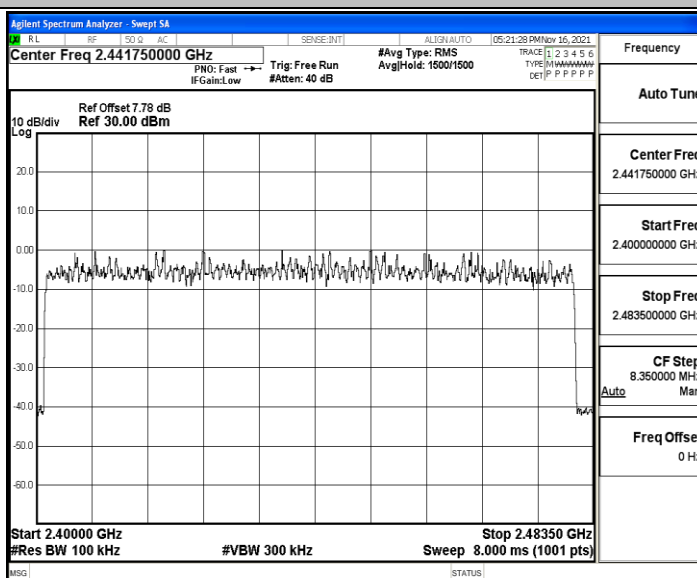


Test Graphs

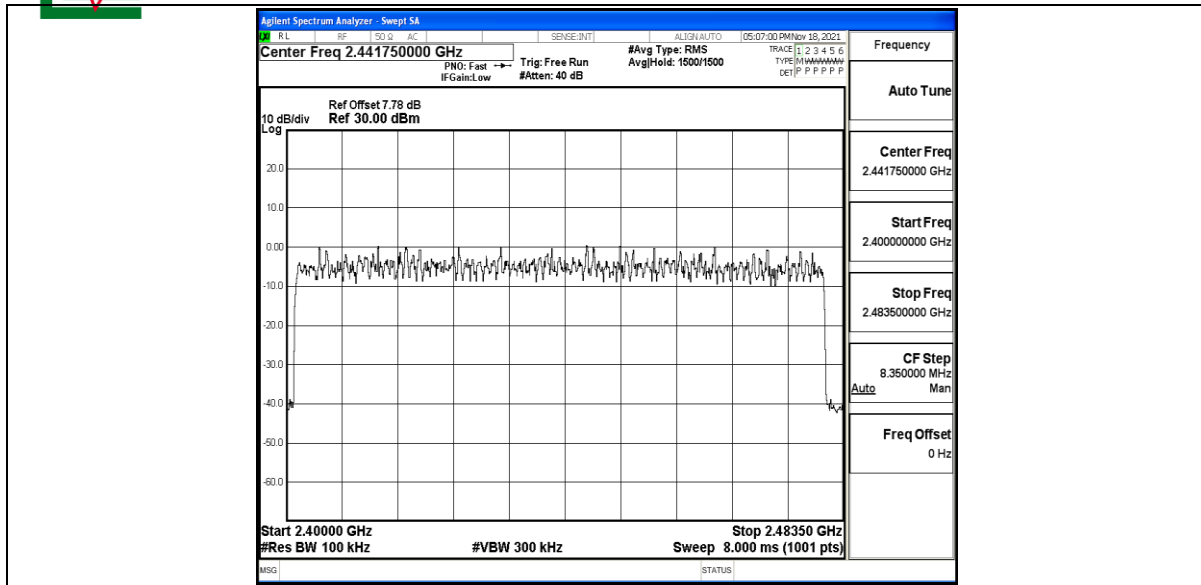
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop





Appendix A.6: Band edge measurements

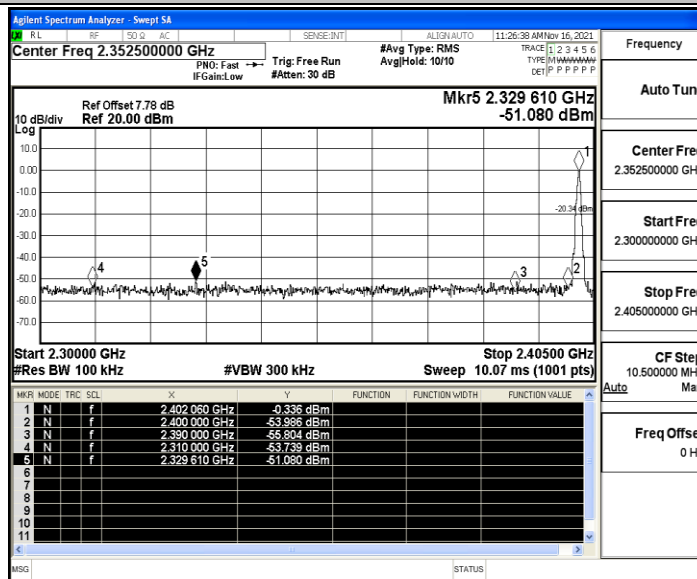
Test Result

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-0.34	-51.08	≤ -20.34	PASS
		High	2480	0.14	-50	≤ -19.86	PASS
		Low	Hop_2402	0.53	-49.26	≤ -19.47	PASS
		High	Hop_2480	0.34	-48.3	≤ -19.66	PASS
2DH5	Ant1	Low	2402	-5.76	-50.58	≤ -25.76	PASS
		High	2480	-5.19	-49.33	≤ -25.19	PASS
		Low	Hop_2402	-3.12	-48.52	≤ -23.12	PASS
		High	Hop_2480	-3.27	-48.59	≤ -23.27	PASS
3DH5	Ant1	Low	2402	-2.65	-50.43	≤ -22.65	PASS
		High	2480	-4.81	-49.45	≤ -24.81	PASS
		Low	Hop_2402	-4.34	-49.47	≤ -24.34	PASS
		High	Hop_2480	-1.04	-48.8	≤ -21.04	PASS

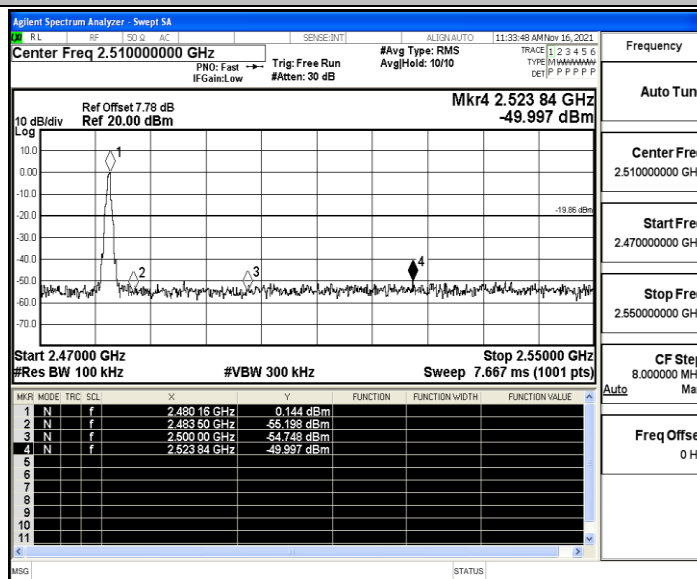


Test Graphs

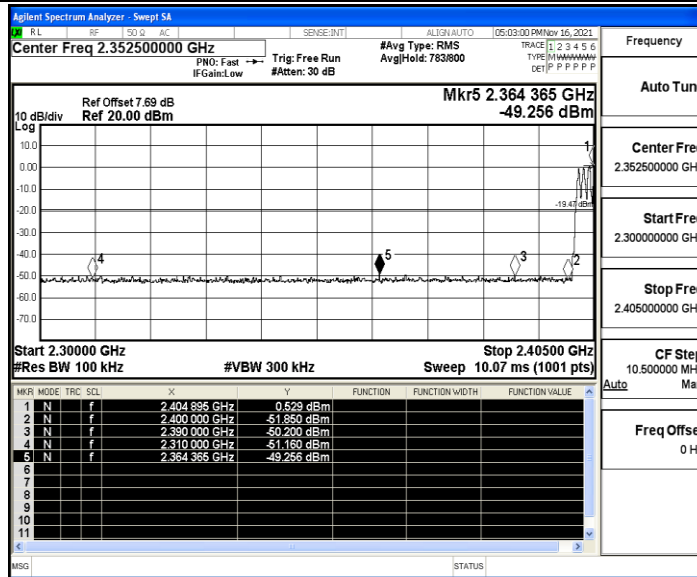
DH5_Ant1_Low_2402



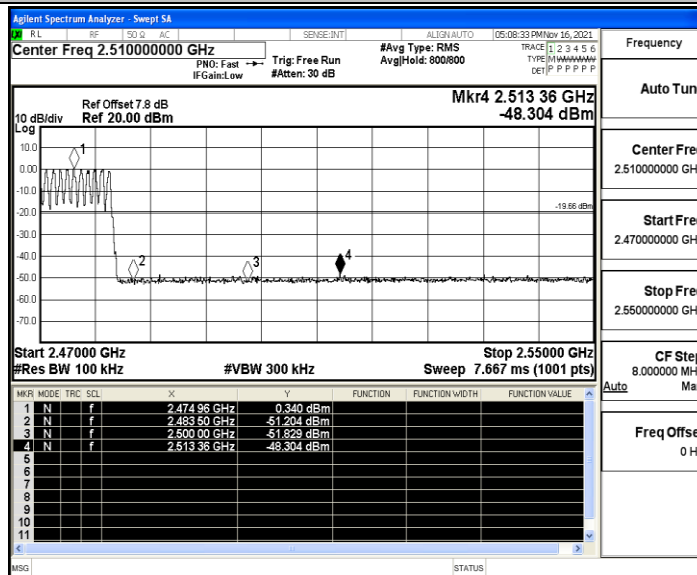
DH5_Ant1_High_2480



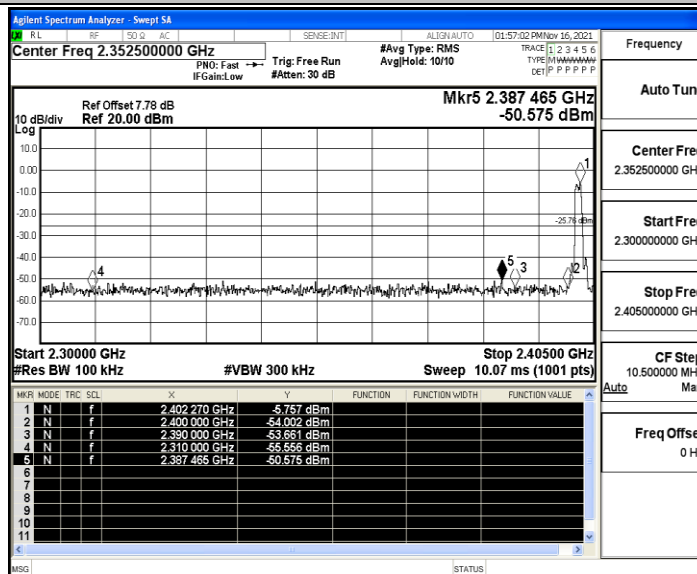
DH5_Ant1_Low_Hop_2402



DH5_Ant1_High_Hop_2480

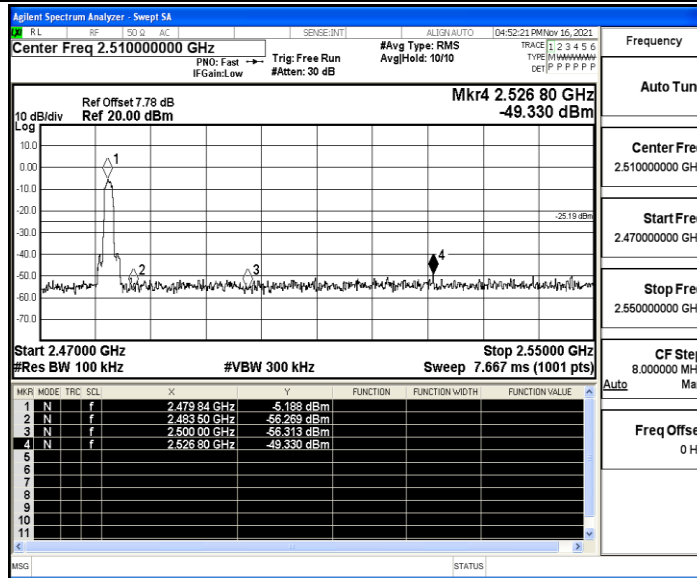


2DH5_Ant1_Low_2402

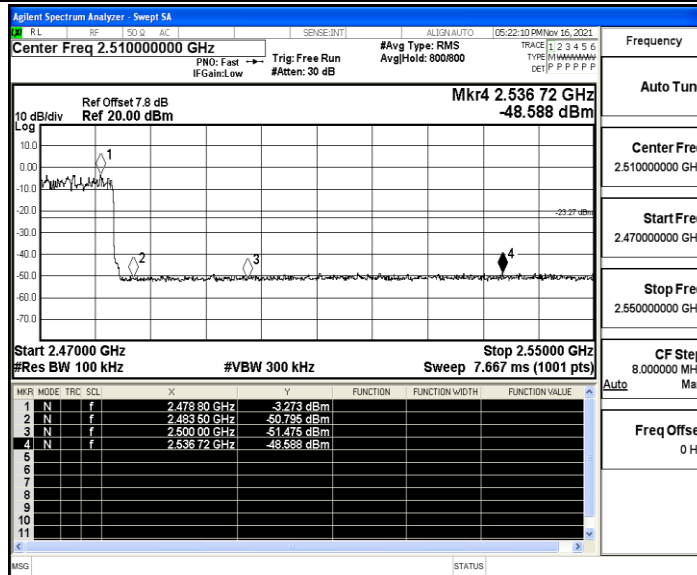




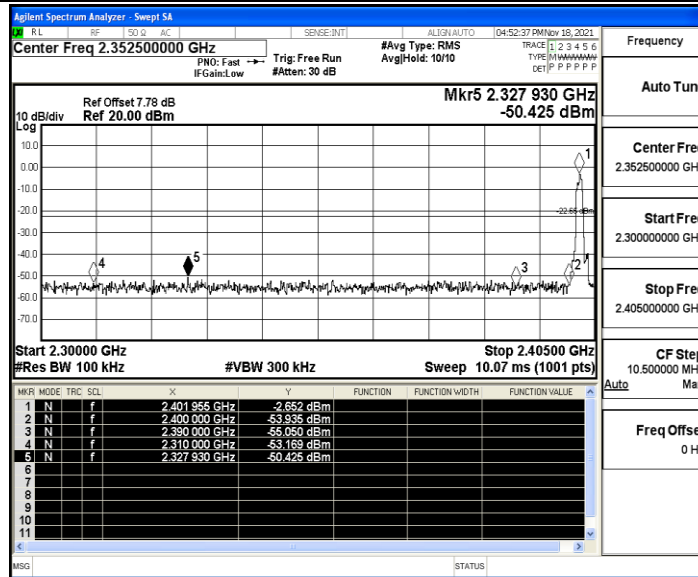
2DH5_Ant1_High_2480



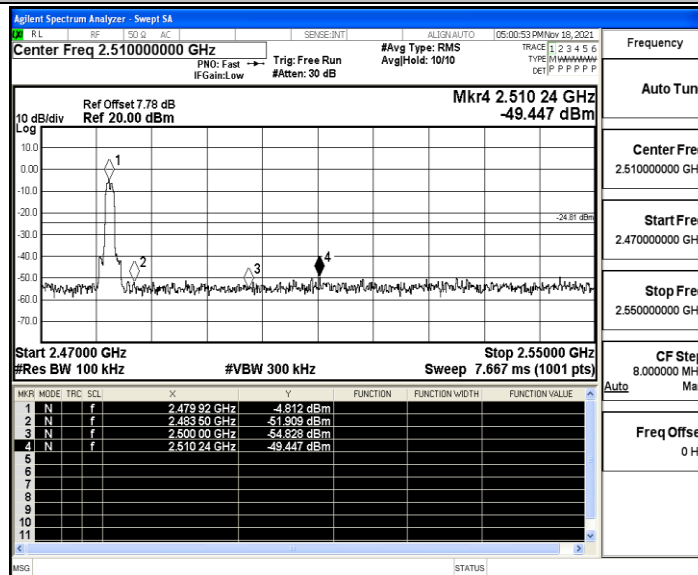
2DH5_Ant1_High_Hop_2480



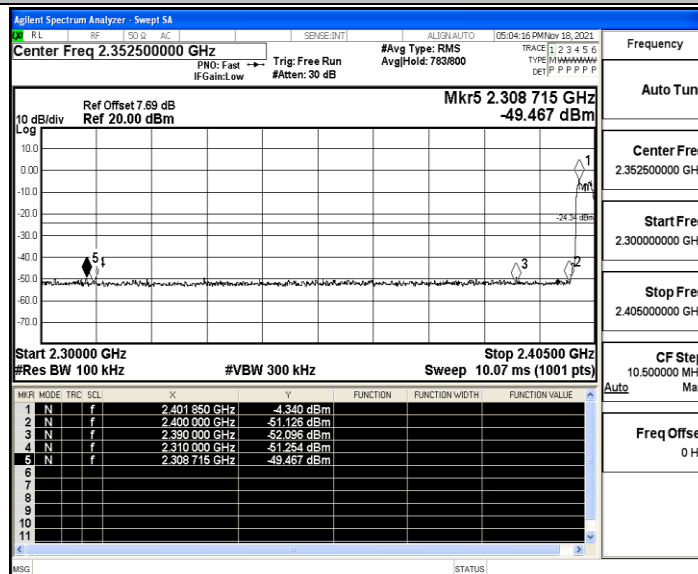
3DH5_Ant1_Low_2402



3DH5_Ant1_High_2480

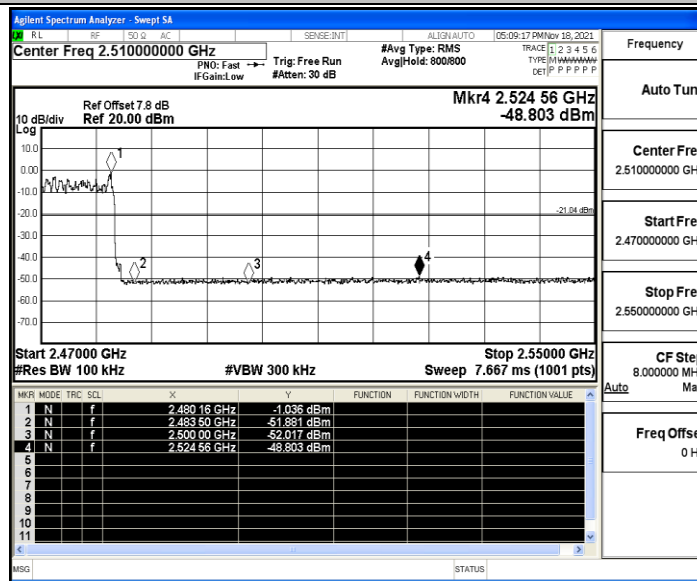


3DH5_Ant1_Low_Hop_2402





3DH5_Ant1_High_Hop_2480





Appendix A.7: Conducted Spurious Emission

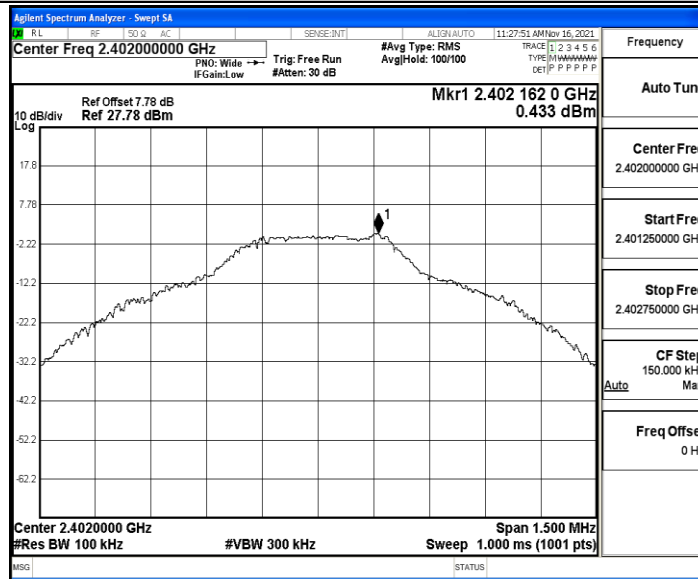
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	0.43	0.43	---	PASS
			30~1000	0.43	-61.32	≤ -19.57	PASS
			1000~26500	0.43	-47.42	≤ -19.57	PASS
		2441	Reference	1.50	1.50	---	PASS
			30~1000	1.50	-60.82	≤ -18.5	PASS
			1000~26500	1.50	-47.09	≤ -18.5	PASS
		2480	Reference	-0.18	-0.18	---	PASS
			30~1000	-0.18	-61.69	≤ -20.18	PASS
			1000~26500	-0.18	-46.97	≤ -20.18	PASS
2DH5	Ant1	2402	Reference	-0.87	-0.87	---	PASS
			30~1000	-0.87	-61.84	≤ -20.87	PASS
			1000~26500	-0.87	-47.22	≤ -20.87	PASS
		2441	Reference	-0.48	-0.48	---	PASS
			30~1000	-0.48	-59.19	≤ -20.48	PASS
			1000~26500	-0.48	-47.08	≤ -20.48	PASS
		2480	Reference	-4.50	-4.50	---	PASS
			30~1000	-4.50	-59.19	≤ -24.5	PASS
			1000~26500	-4.50	-46.22	≤ -24.5	PASS
3DH5	Ant1	2402	Reference	-0.97	-0.97	---	PASS
			30~1000	-0.97	-60.54	≤ -20.97	PASS
			1000~26500	-0.97	-47.28	≤ -20.97	PASS
		2441	Reference	-0.36	-0.36	---	PASS
			30~1000	-0.36	-61.57	≤ -20.36	PASS
			1000~26500	-0.36	-46.49	≤ -20.36	PASS
		2480	Reference	-1.96	-1.96	---	PASS
			30~1000	-1.96	-61.38	≤ -21.96	PASS
			1000~26500	-1.96	-46.86	≤ -21.96	PASS

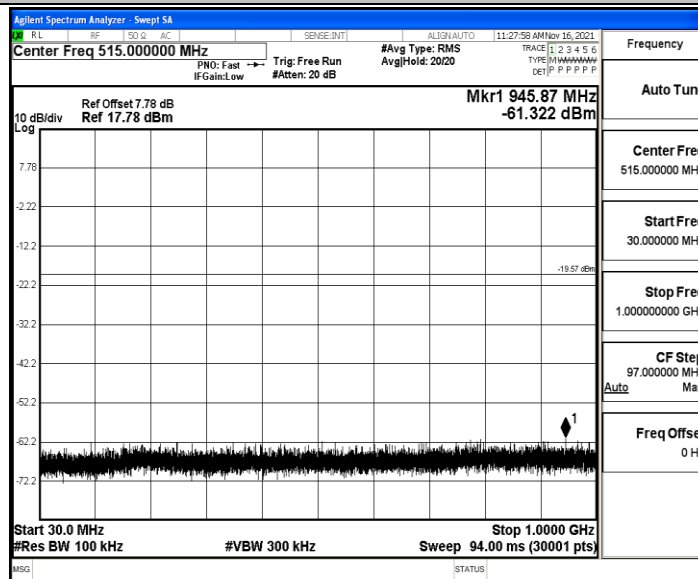


Test Graphs

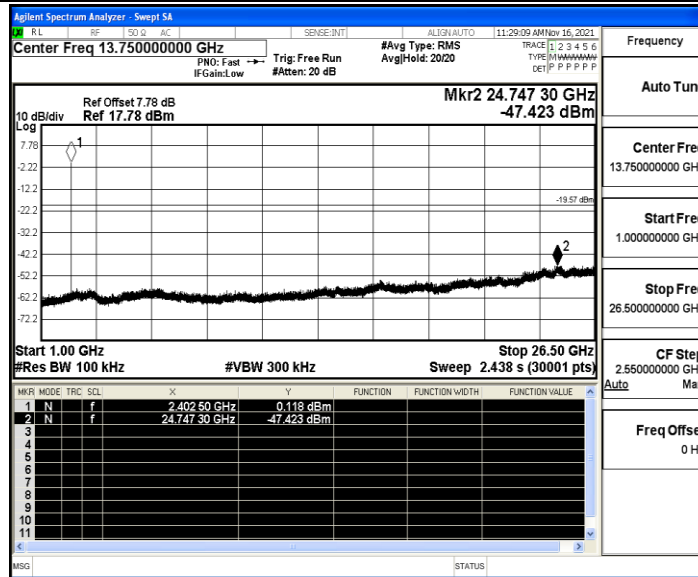
DH5_Ant1_2402_0~Reference



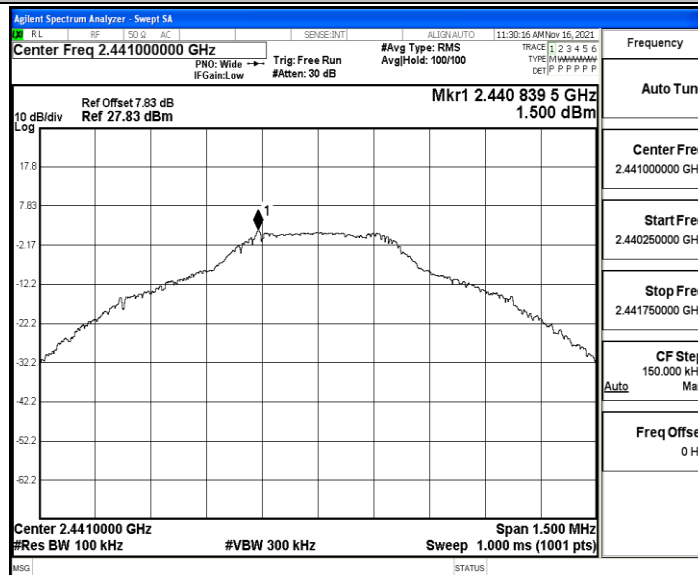
DH5_Ant1_2402_30~1000



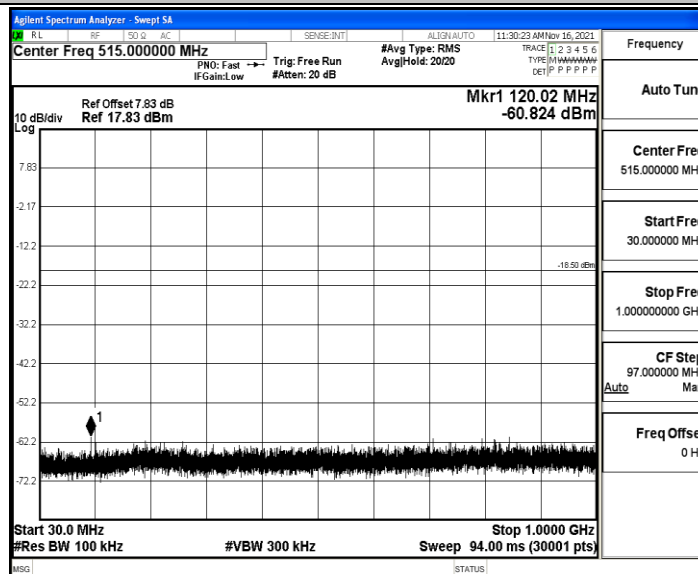
DH5_Ant1_2402_1000~26500



DH5_Ant1_2441_0~Reference

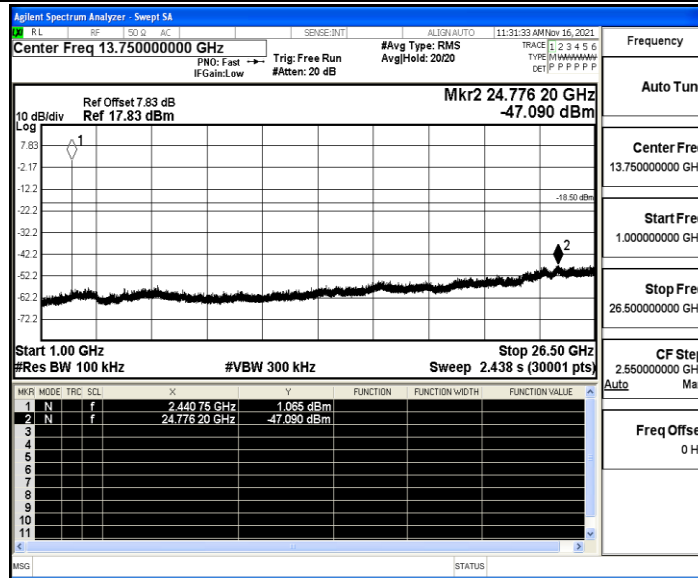


DH5_Ant1_2441_30~1000

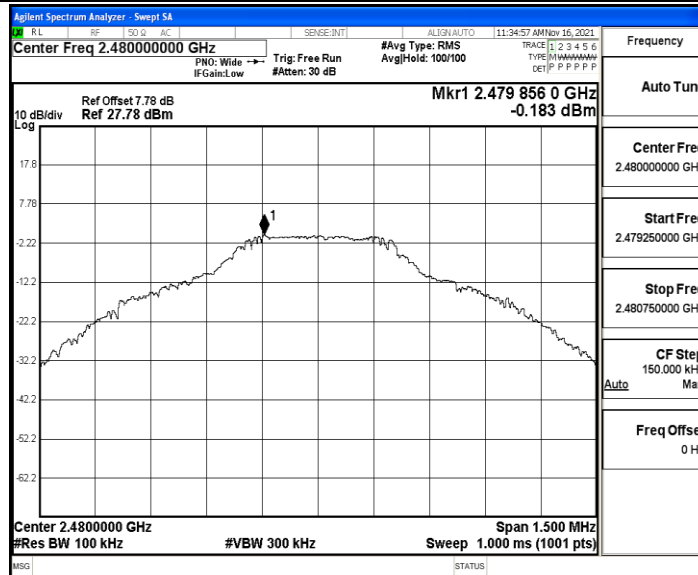




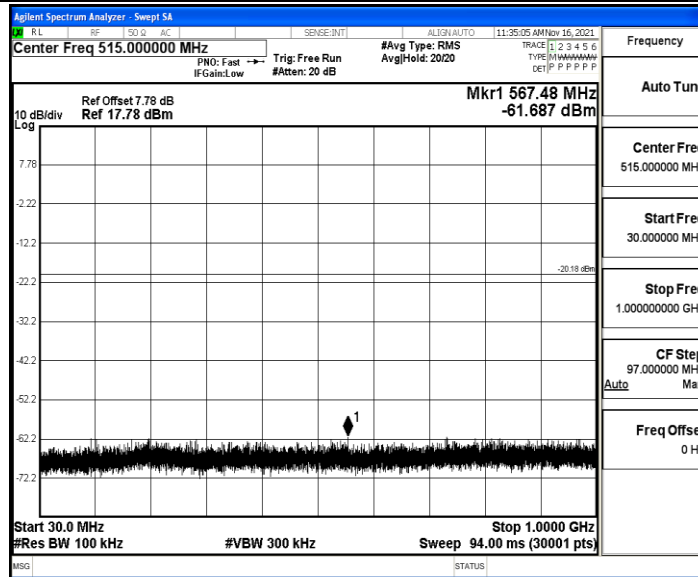
DH5_Ant1_2441_1000~26500



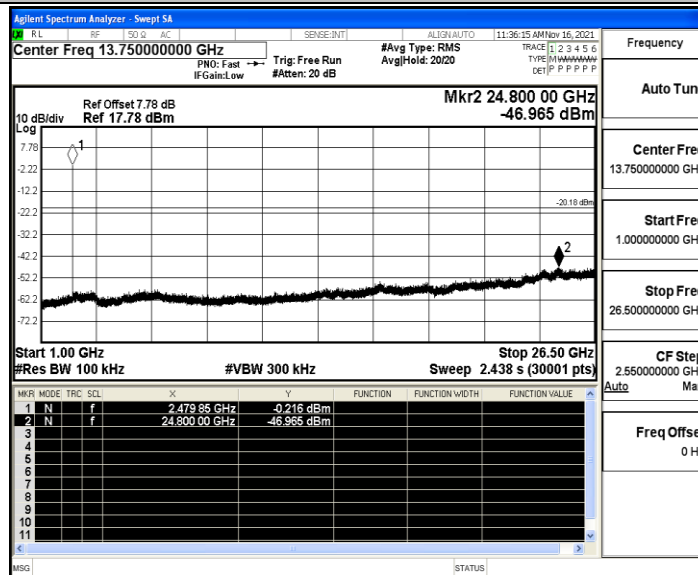
DH5_Ant1_2480_0~Reference



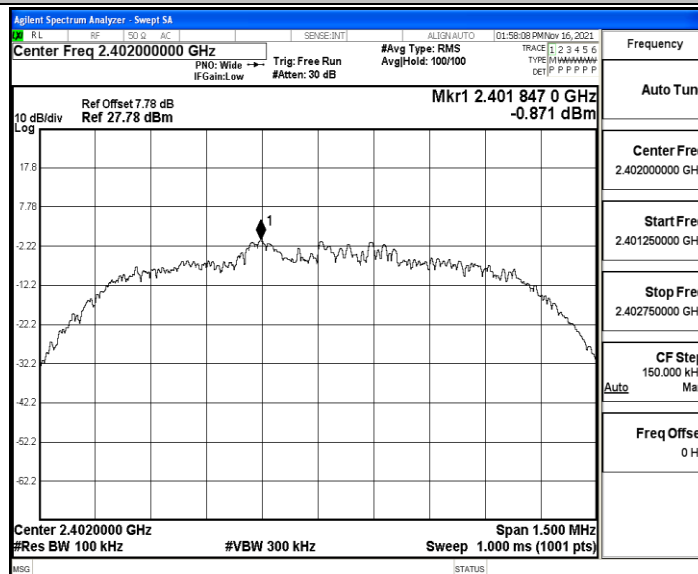
DH5_Ant1_2480_30~1000



DH5_Ant1_2480_1000~26500

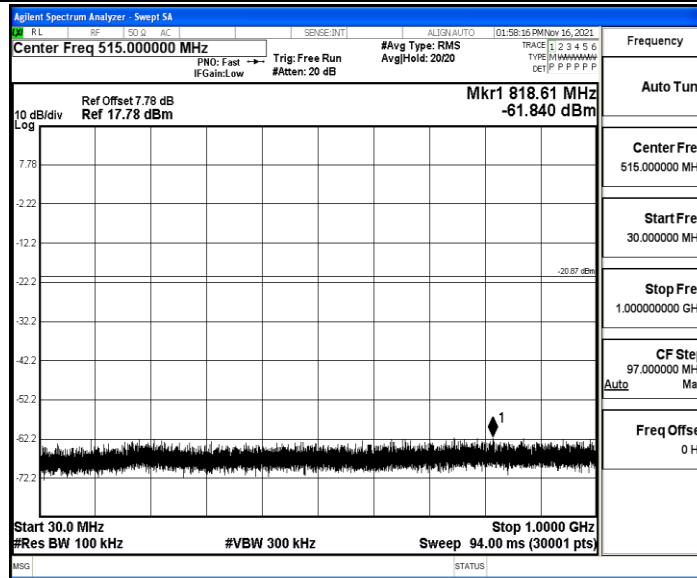


2DH5_Ant1_2402_0~Reference

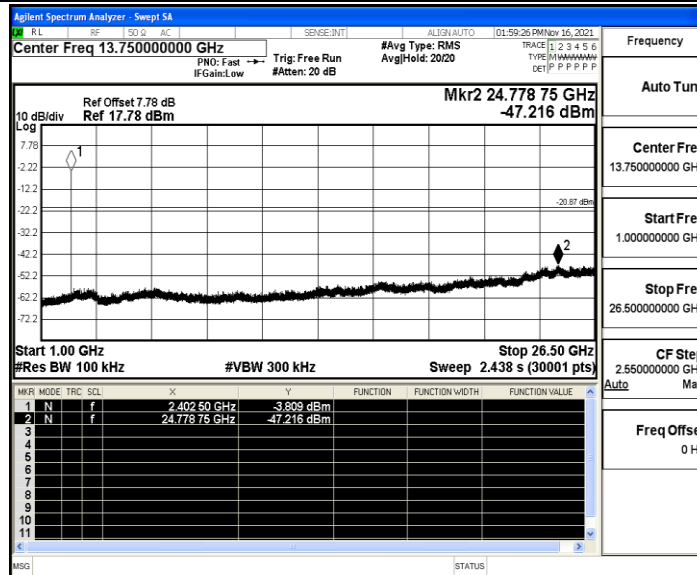




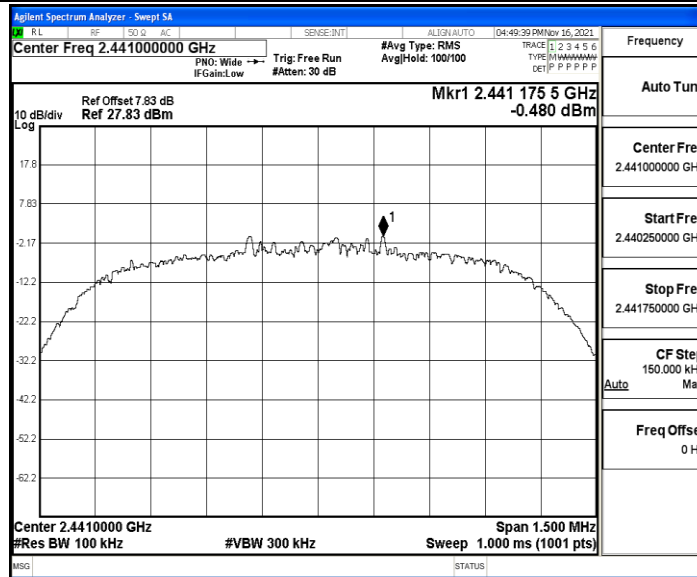
2DH5_Ant1_2402_30~1000



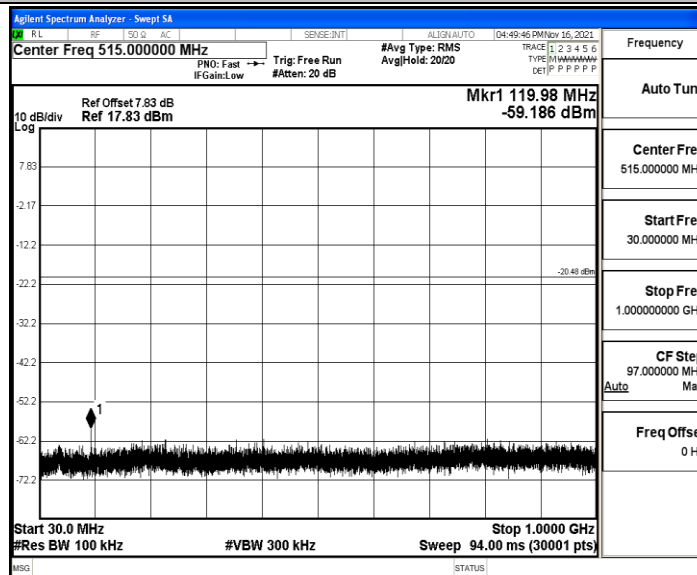
2DH5_Ant1_2402_1000~26500



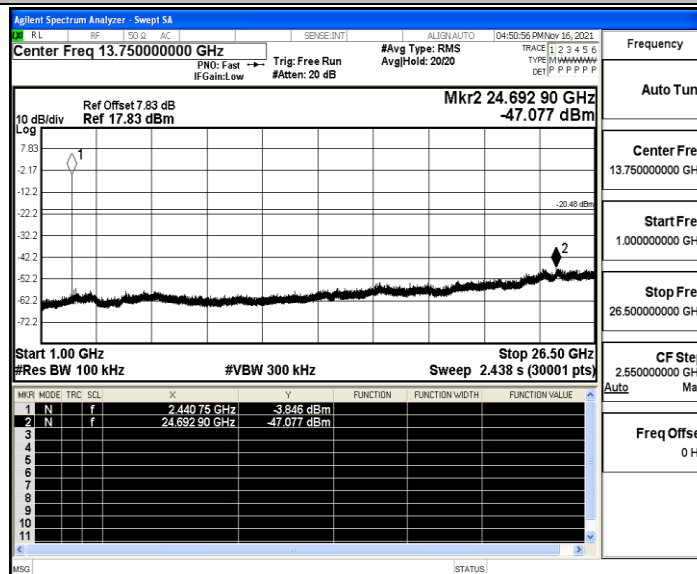
2DH5_Ant1_2441_0~Reference



2DH5_Ant1_2441_30~1000

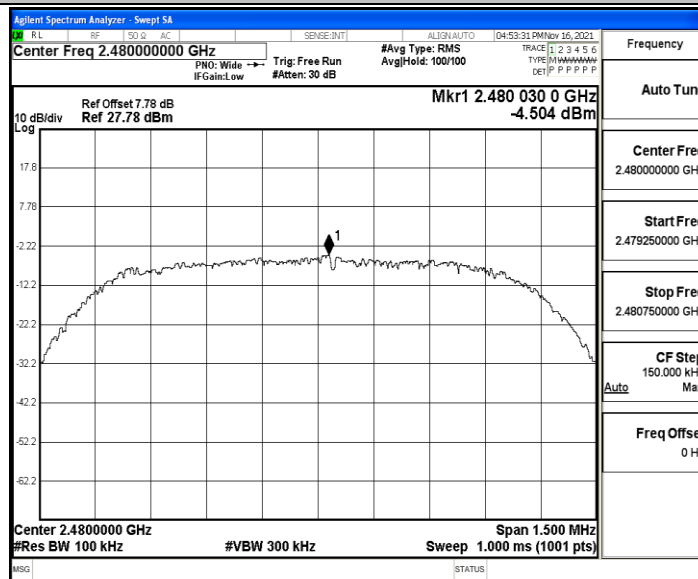


2DH5_Ant1_2441_1000~26500

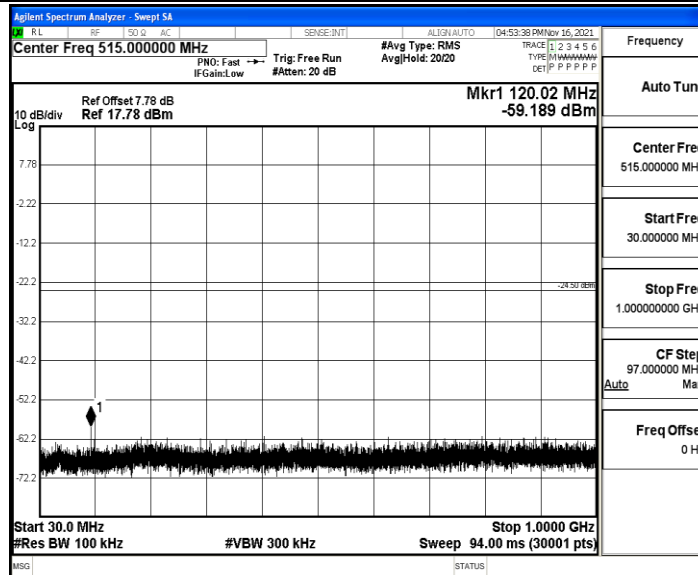




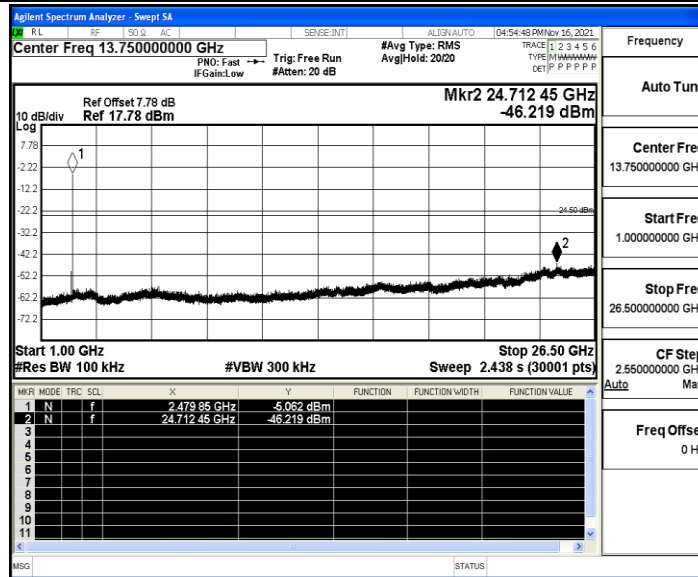
2DH5_Ant1_2480_0~Reference



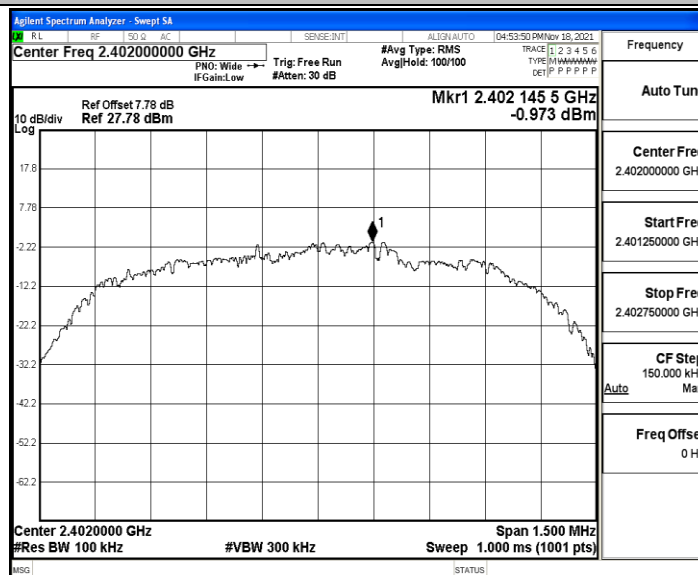
2DH5_Ant1_2480_30~1000



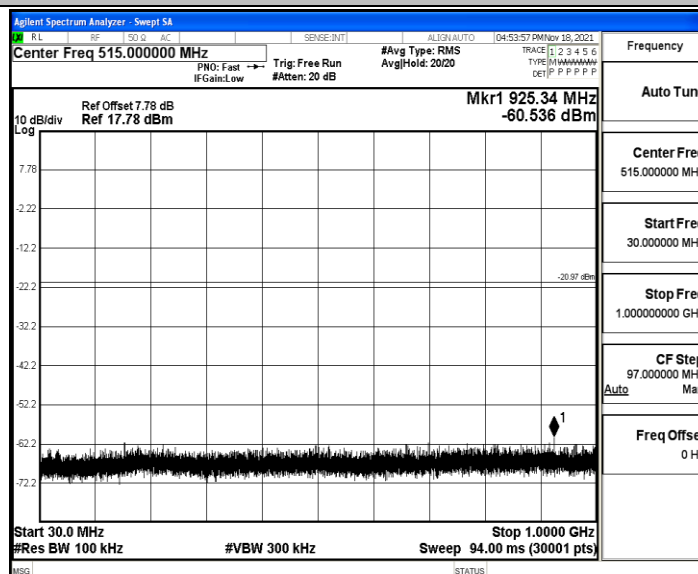
2DH5_Ant1_2480_1000~26500



3DH5_Ant1_2402_0~Reference

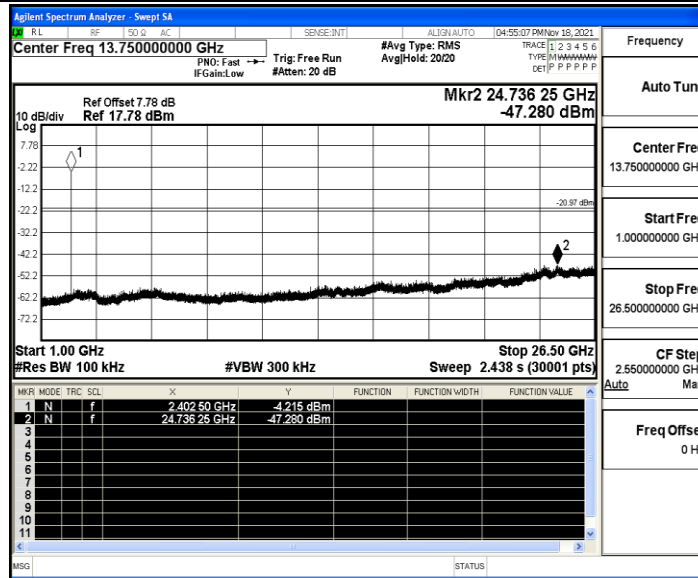


3DH5_Ant1_2402_30~1000

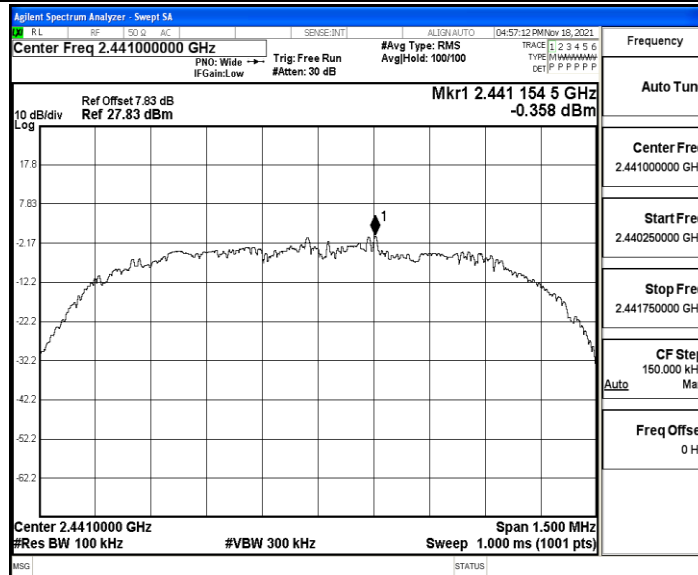




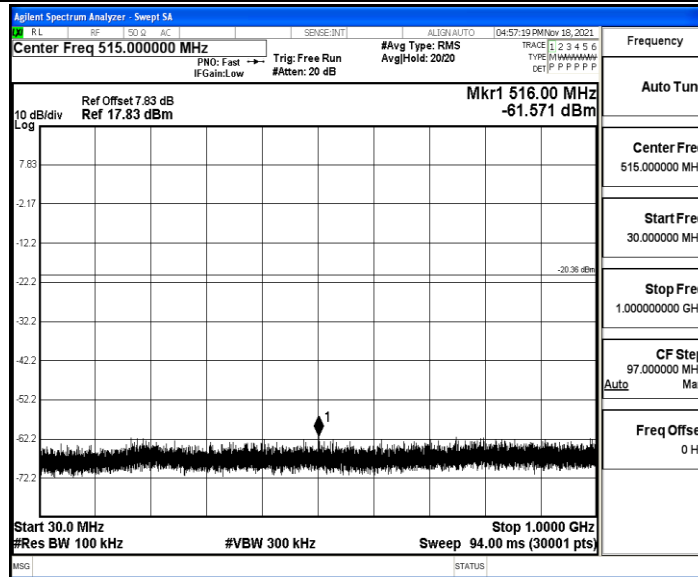
3DH5_Ant1_2402_1000~26500



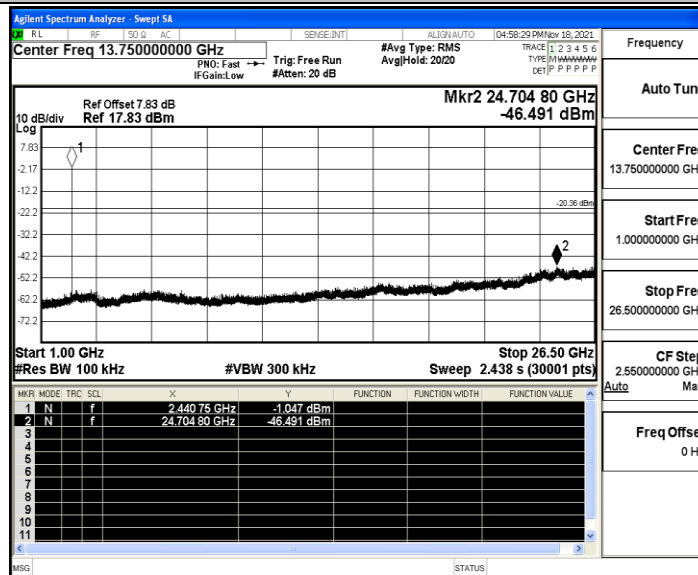
3DH5_Ant1_2441_0~Reference



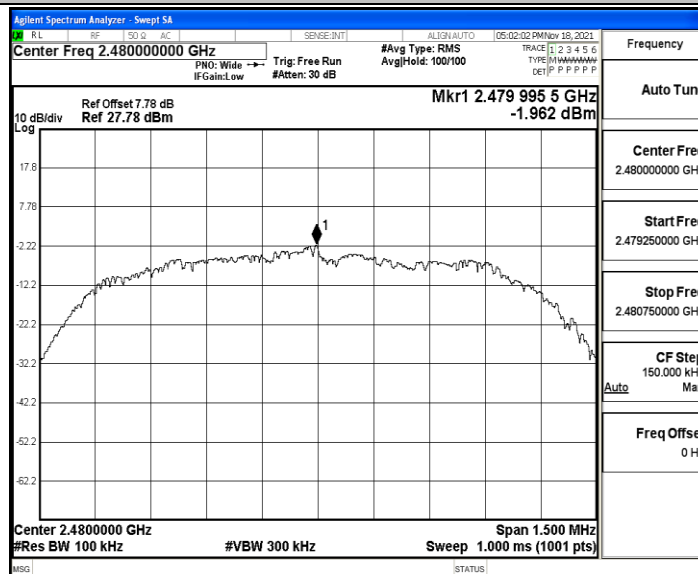
3DH5_Ant1_2441_30~1000



3DH5_Ant1_2441_1000~26500

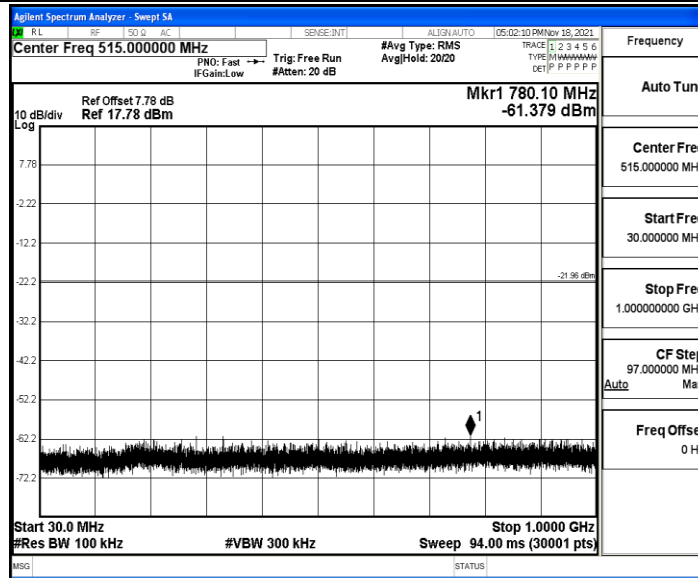


3DH5_Ant1_2480_0~Reference

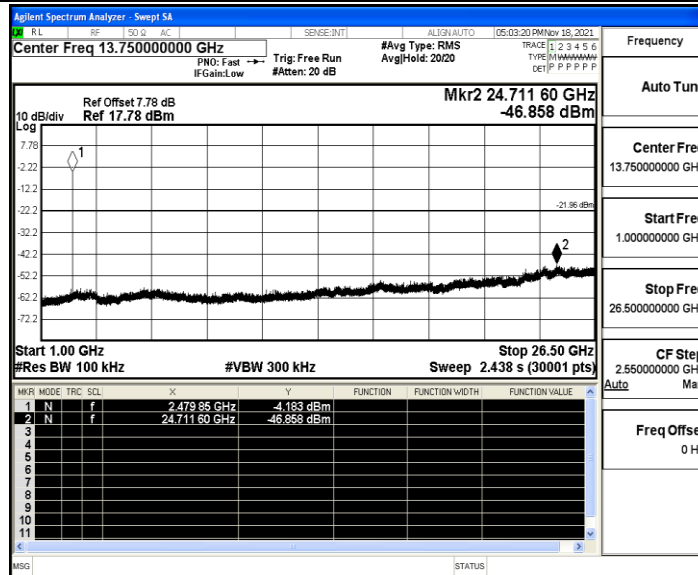




3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500





Appendix A.8: Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-48.87	≤-41.20	46.33	≤54	PASS
				AV	2381.690	-48.37	≤-41.20	46.83	≤54	PASS
				AV	2390.000	-48.64	≤-41.20	46.56	≤54	PASS
				Peak	2310.000	-41.24	≤-21.20	53.96	≤74	PASS
				Peak	2349.455	-38.26	≤-21.20	56.94	≤74	PASS
				Peak	2390.000	-41.75	≤-21.20	53.45	≤74	PASS
		High	2480	AV	2483.500	-47.97	≤-41.20	47.23	≤54	PASS
				AV	2498.480	-47.85	≤-41.20	47.35	≤54	PASS
				AV	2500.000	-47.93	≤-41.20	47.27	≤54	PASS
				Peak	2483.500	-42.26	≤-21.20	52.94	≤74	PASS
				Peak	2488.400	-38.49	≤-21.20	56.71	≤74	PASS
				Peak	2500.000	-41.39	≤-21.20	53.81	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-48.82	≤-41.20	46.38	≤54	PASS
				AV	2377.385	-48.32	≤-41.20	46.88	≤54	PASS
				AV	2390.000	-48.44	≤-41.20	46.76	≤54	PASS
				Peak	2310.000	-43.09	≤-21.20	52.11	≤74	PASS
				Peak	2321.000	-38.89	≤-21.20	56.31	≤74	PASS
				Peak	2390.000	-42.25	≤-21.20	52.95	≤74	PASS
		High	2480	AV	2483.500	-48.07	≤-41.20	47.13	≤54	PASS
				AV	2494.480	-47.91	≤-41.20	47.29	≤54	PASS
				AV	2500.000	-48.04	≤-41.20	47.16	≤54	PASS
				Peak	2483.500	-43.07	≤-21.20	52.13	≤74	PASS
				Peak	2494.160	-38.77	≤-21.20	56.43	≤74	PASS
				Peak	2500.000	-41.27	≤-21.20	53.93	≤74	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-48.93	≤-41.20	46.27	≤54	PASS
				AV	2376.125	-48.5	≤-41.20	46.70	≤54	PASS
				AV	2390.000	-48.64	≤-41.20	46.56	≤54	PASS
				Peak	2310.000	-41.9	≤-21.20	53.30	≤74	PASS
				Peak	2361.425	-38.99	≤-21.20	56.21	≤74	PASS
				Peak	2390.000	-40.86	≤-21.20	54.34	≤74	PASS
		High	2480	AV	2483.500	-47.97	≤-41.20	47.23	≤54	PASS
				AV	2498.320	-47.95	≤-41.20	47.25	≤54	PASS
				AV	2500.000	-48.16	≤-41.20	47.04	≤54	PASS
				Peak	2483.500	-41.44	≤-21.20	53.76	≤74	PASS
				Peak	2491.760	-37.93	≤-21.20	57.27	≤74	PASS
				Peak	2500.000	-41.41	≤-21.20	53.79	≤74	PASS



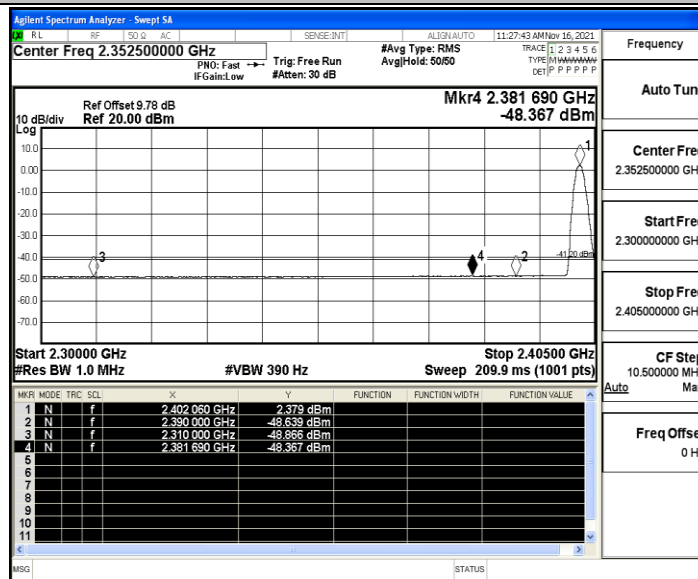
Note:

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.

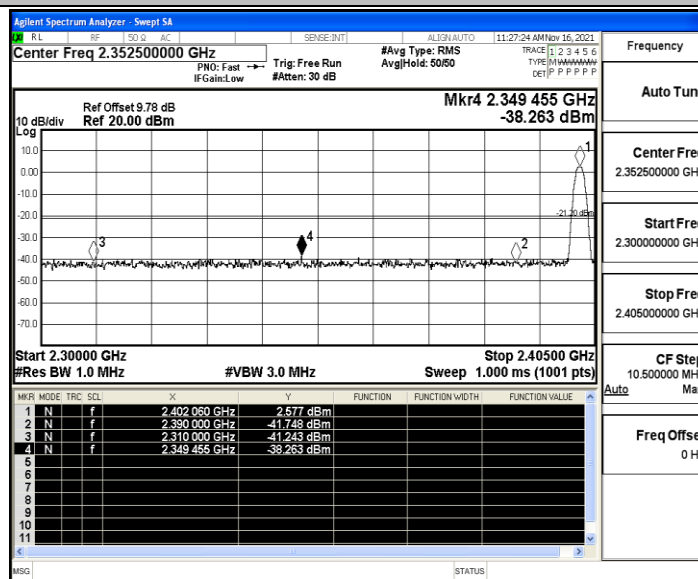


Test Graphs

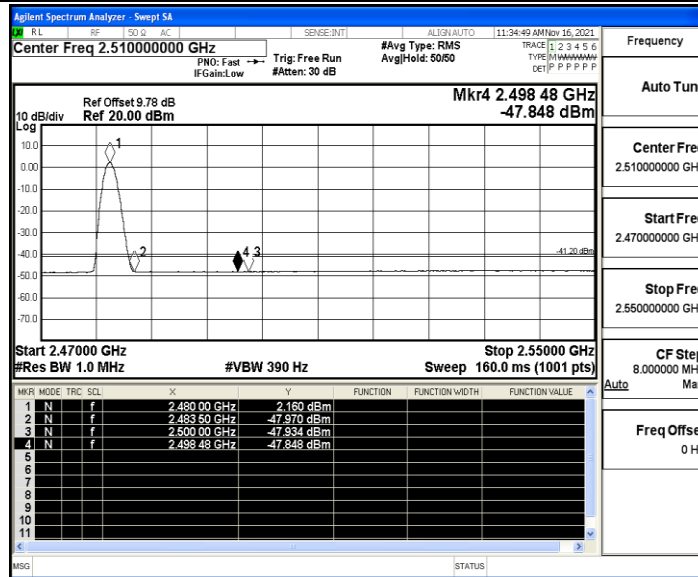
DH5_Ant1_Low_2402_AV



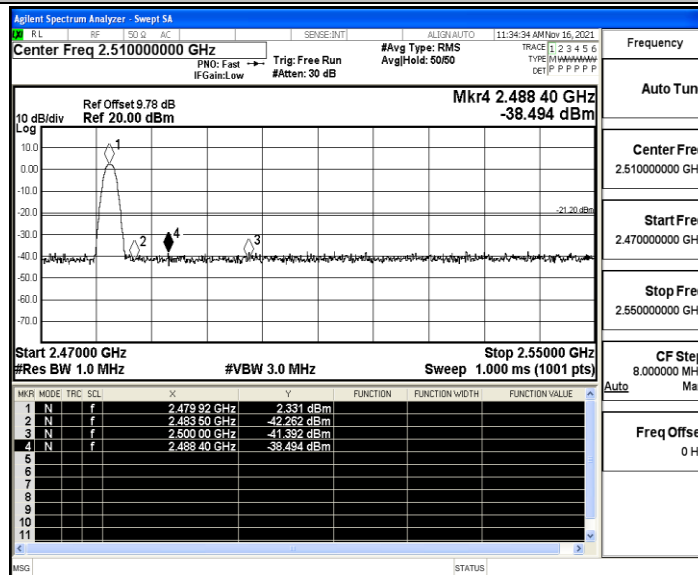
DH5_Ant1_Low_2402_Peak



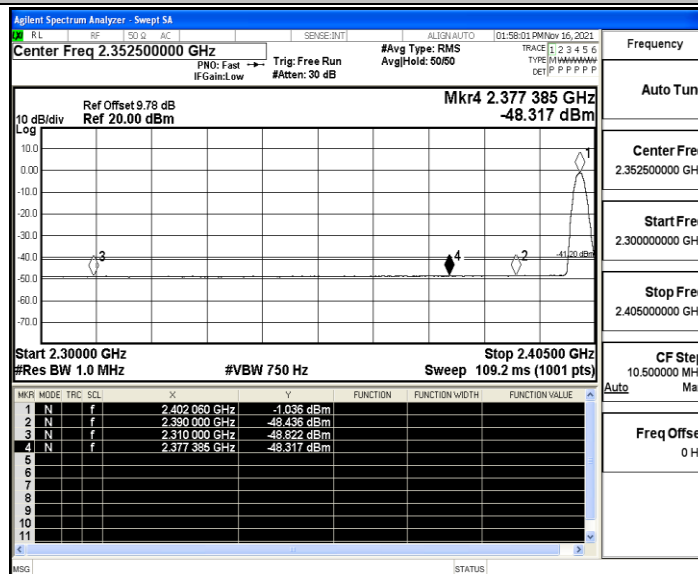
DH5_Ant1_High_2480_AV



DH5_Ant1_High_2480_Peak

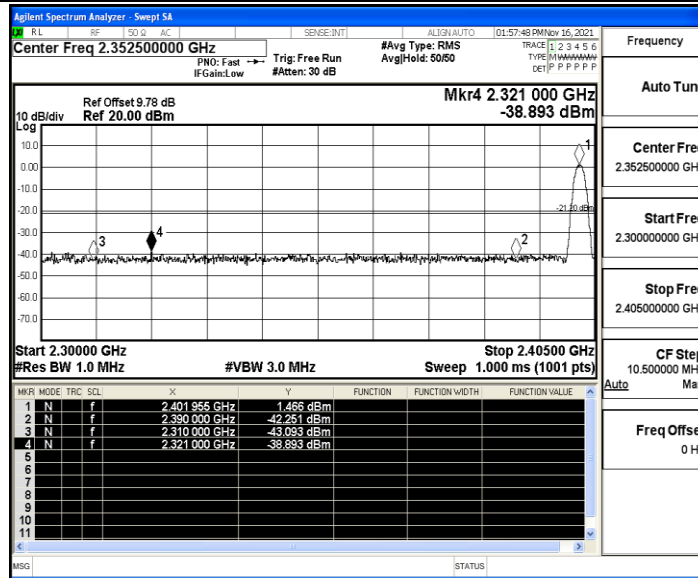


2DH5_Ant1_Low_2402_AV

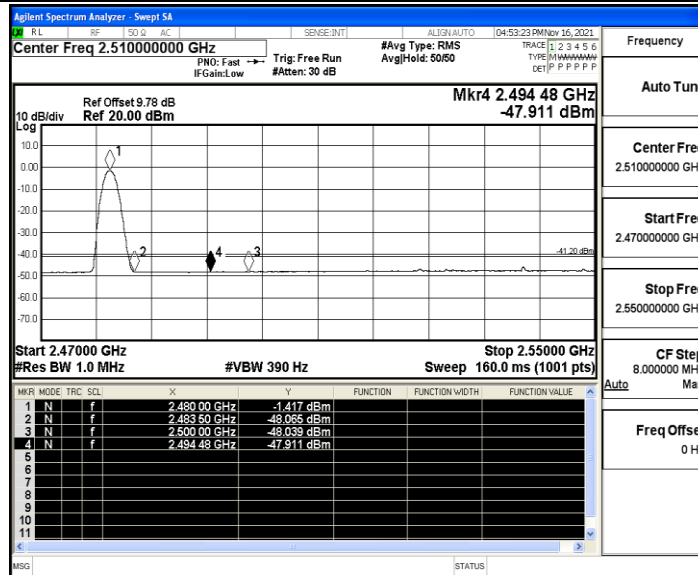




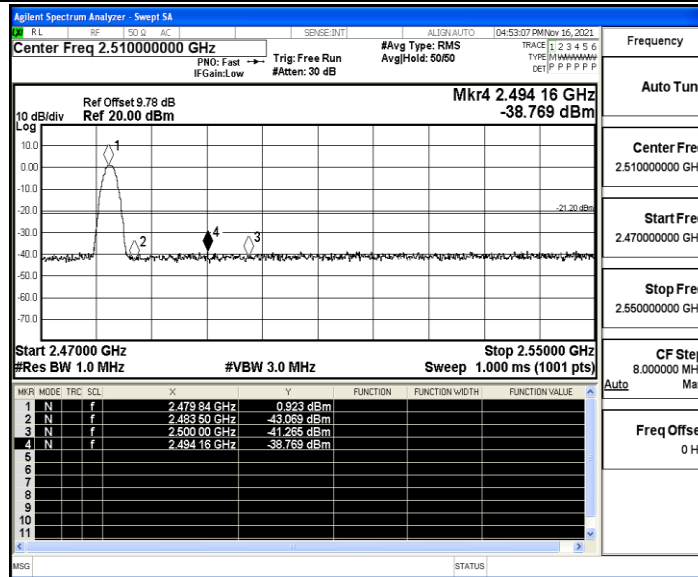
2DH5_Ant1_Low_2402_Peak



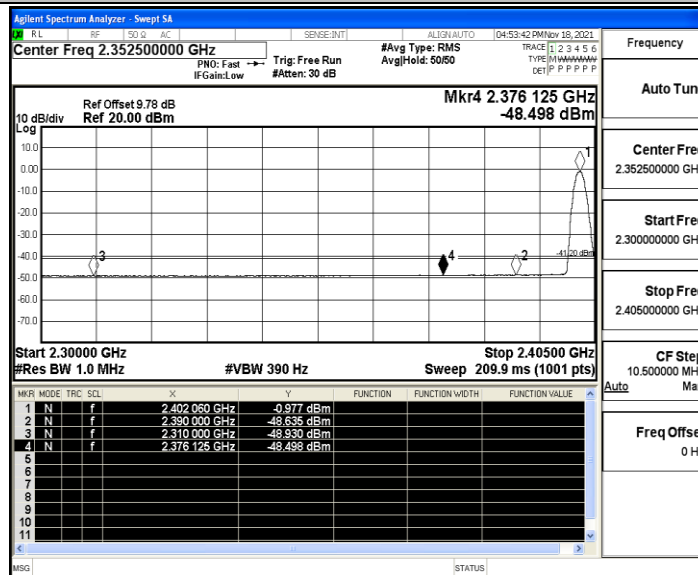
2DH5_Ant1_High_2480_AV



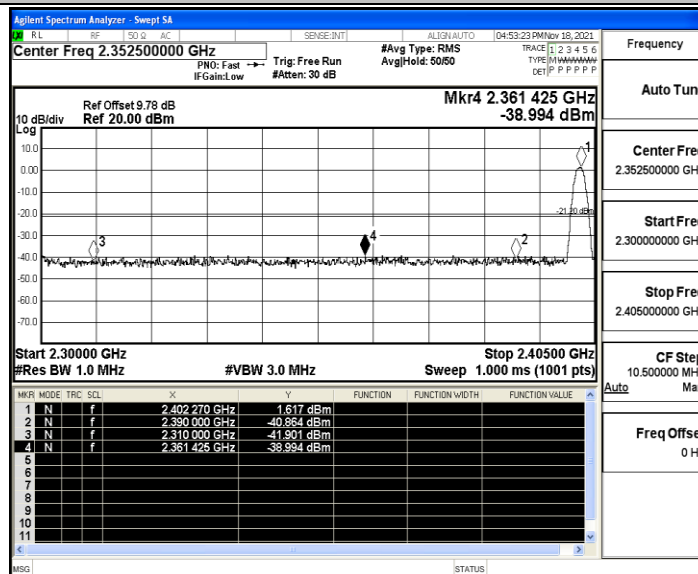
2DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_2402_AV

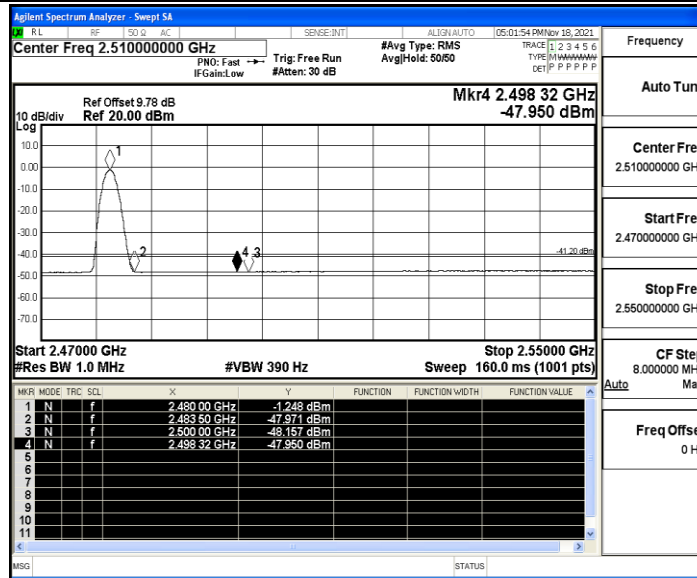


3DH5_Ant1_Low_2402_Peak





3DH5_Ant1_High_2480_AV



3DH5_Ant1_High_2480_Peak

