Appendix A
RF Test Data for BT(BDR/EDR) (Conducted Measurement)
Product Name: True Wireless Earbuds
Trade Mark: Tranya
Test Model: T30
FCC ID: 2A4AX-T30

Environmental Conditions

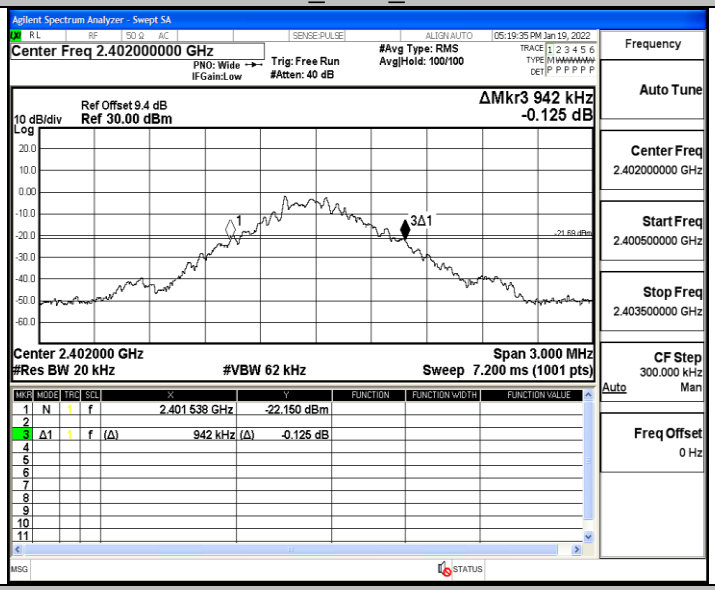
Temperature:	22.8° C
Relative Humidity:	56%
ATM Pressure:	100.0 kPa
Test Engineer:	Nancy Li
Supervised by:	Hugo Chen

A.1 20 dB Bandwidth

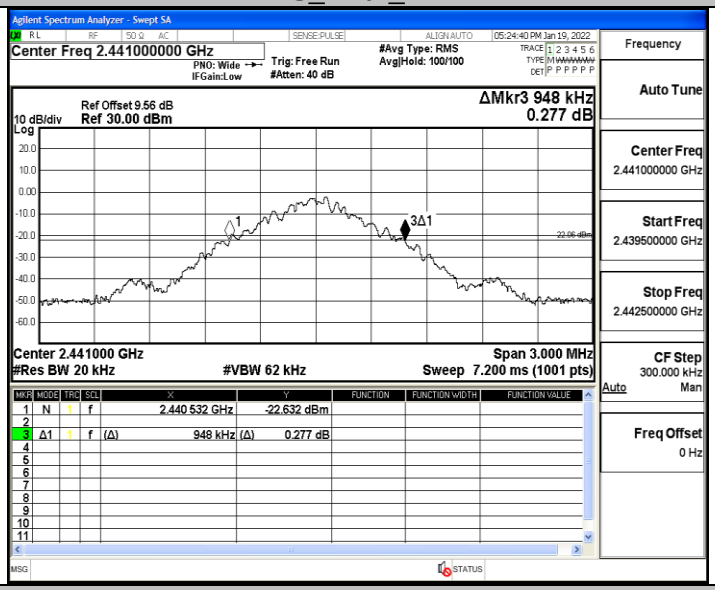
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.942	2401.538	2402.480	---	PASS
		2441	0.948	2440.532	2441.480	---	PASS
		2480	0.942	2479.532	2480.474	---	PASS
2DH5	Ant1	2402	1.215	2401.382	2402.597	---	PASS
		2441	1.233	2440.370	2441.603	---	PASS
		2480	1.209	2479.394	2480.603	---	PASS
3DH5	Ant1	2402	1.278	2401.346	2402.624	---	PASS
		2441	1.227	2440.370	2441.597	---	PASS
		2480	1.242	2479.364	2480.606	---	PASS

Test Graph

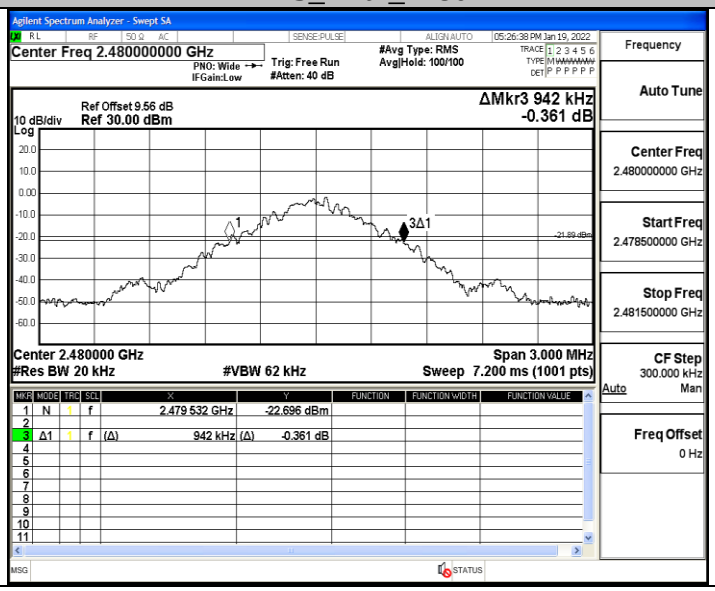
DH5_Ant1_2402



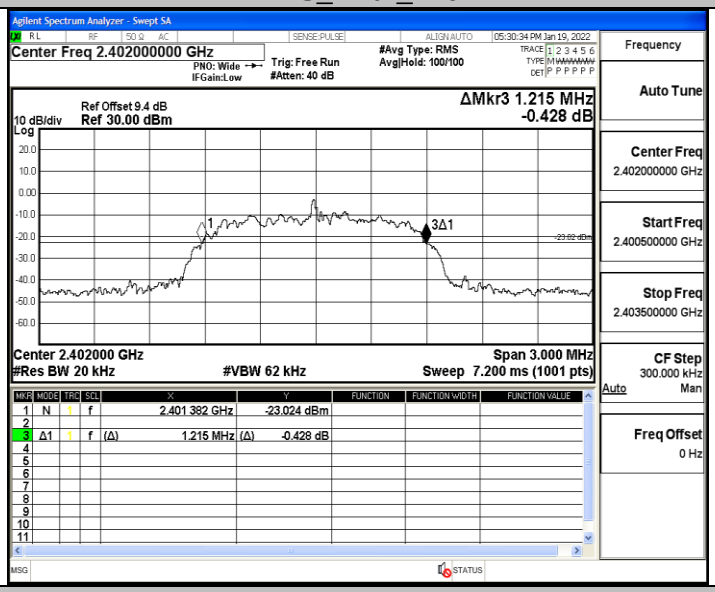
DH5_Ant1_2441



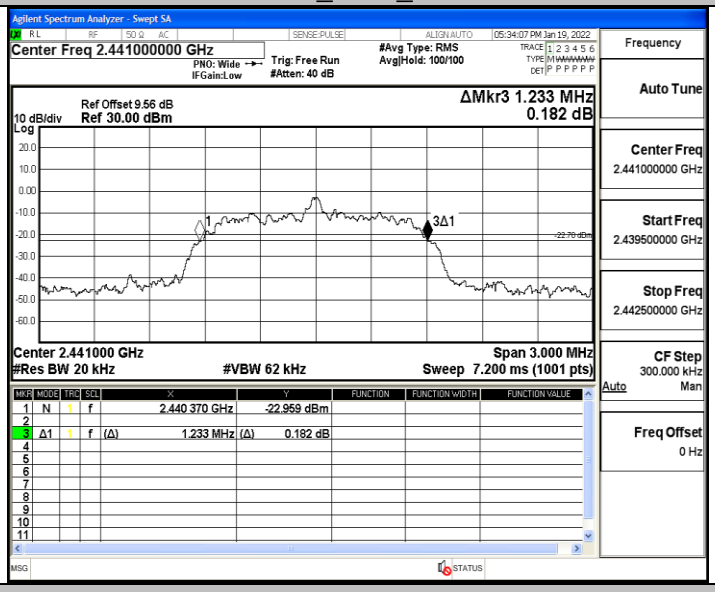
DH5_Ant1_2480



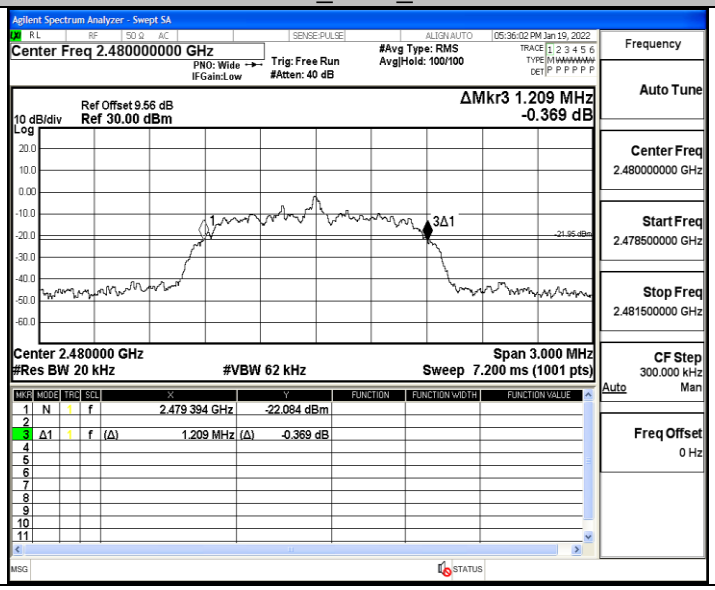
2DH5_Ant1_2402



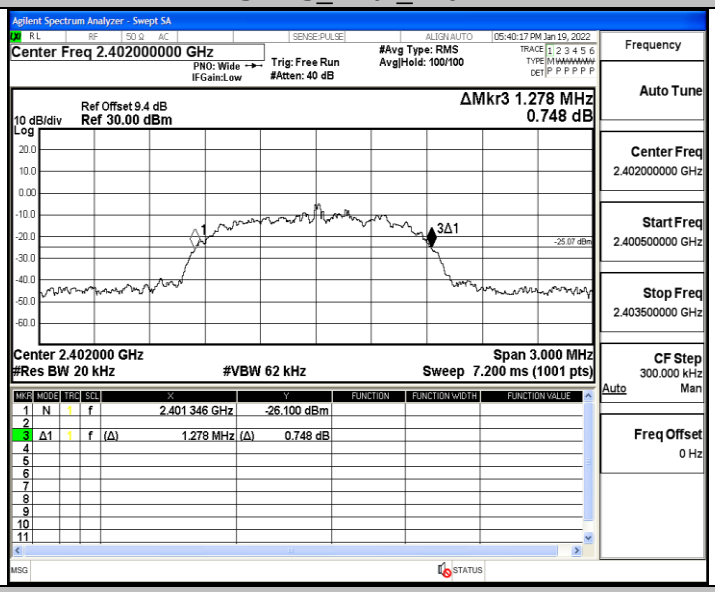
2DH5_Ant1_2441



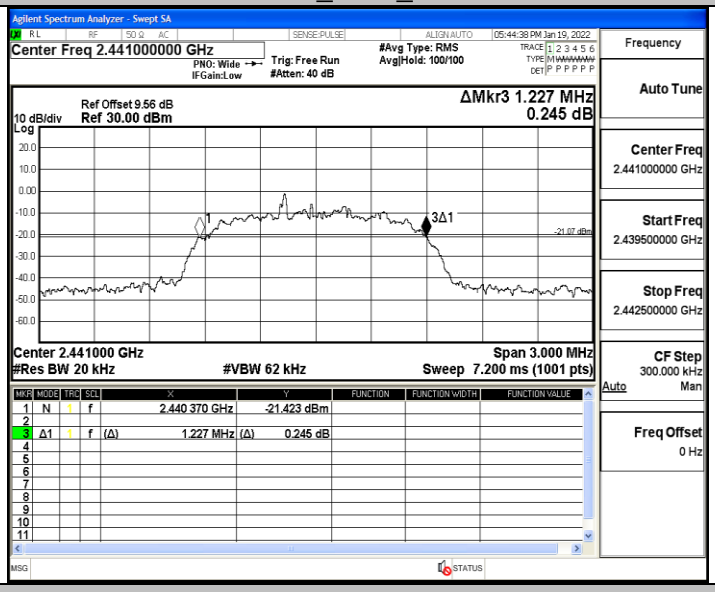
2DH5_Ant1_2480



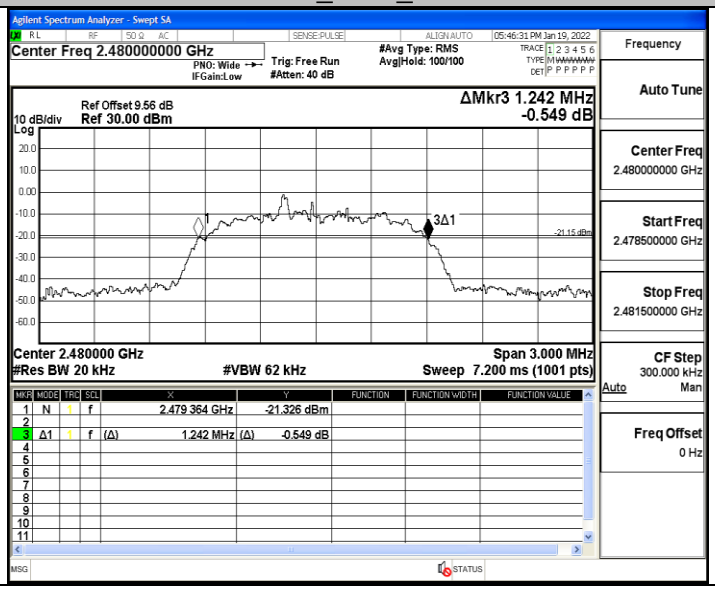
3DH5_Ant1_2402



3DH5_Ant1_2441



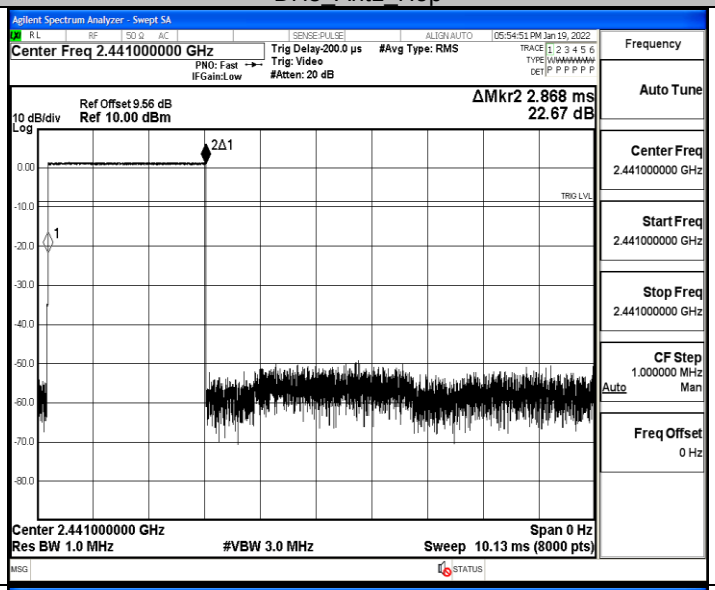
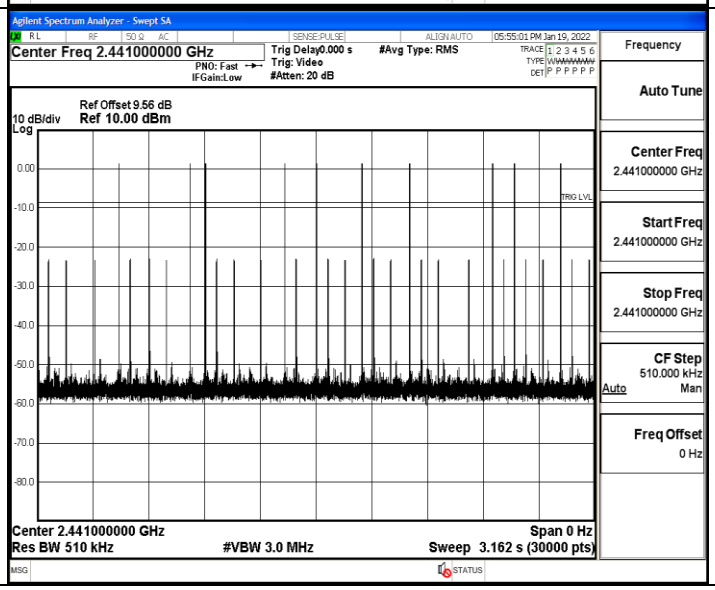
3DH5_Ant1_2480

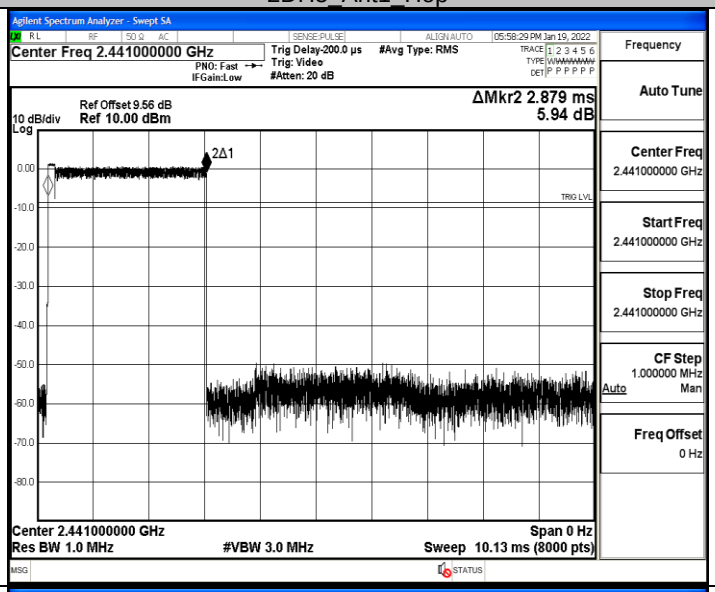
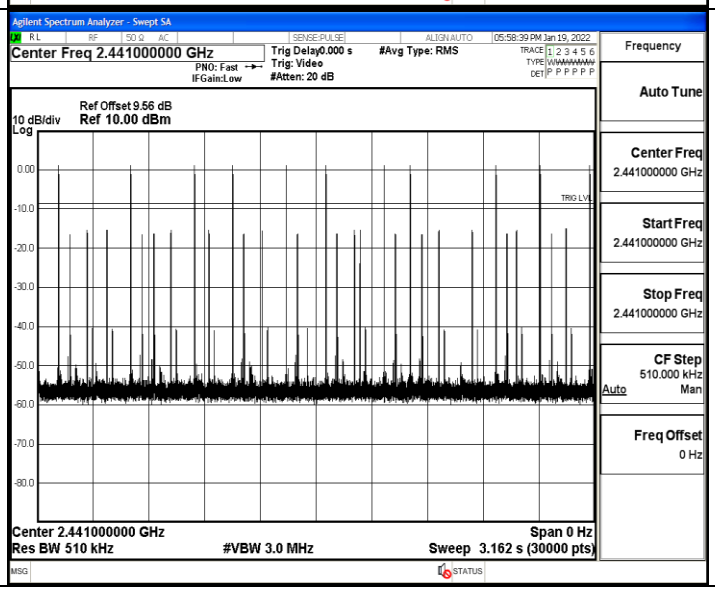


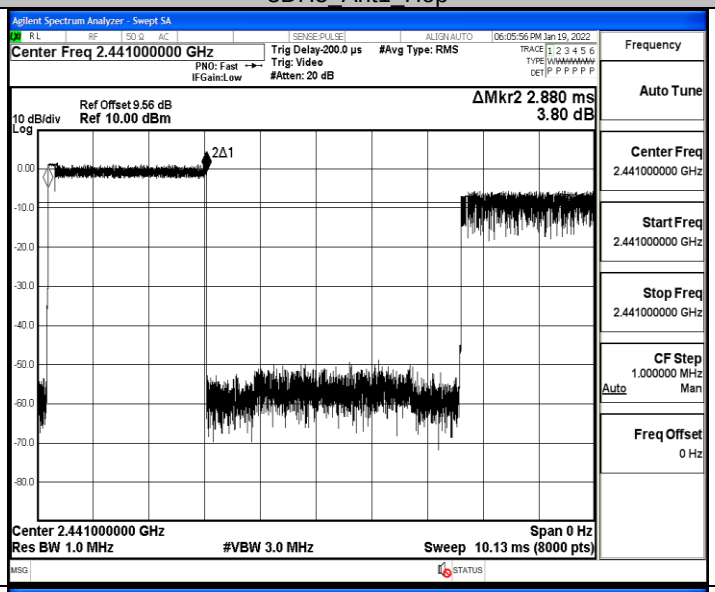
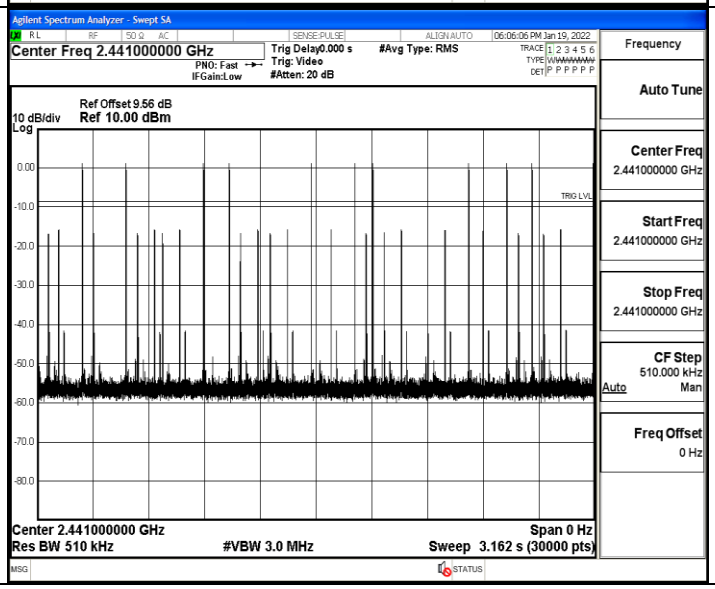
A.2 Dwell Time

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.87	110	0.315	≤0.4	PASS
2DH5	Ant1	Hop	2.88	120	0.345	≤0.4	PASS
3DH5	Ant1	Hop	2.88	120	0.346	≤0.4	PASS

Test Graph

DH5_Ant1_Hop



2DH5_Ant1_Hop		
		
		

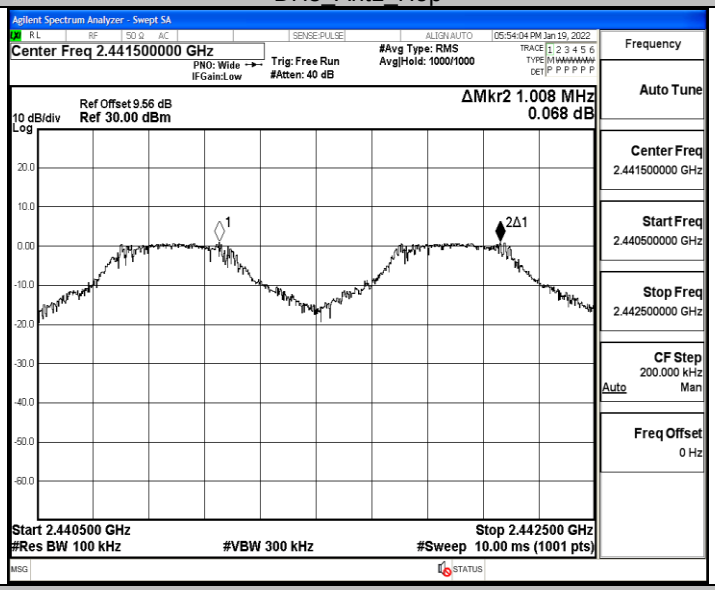
3DH5_Ant1_Hop		
		
		

A.3 Carrier Frequency Separation

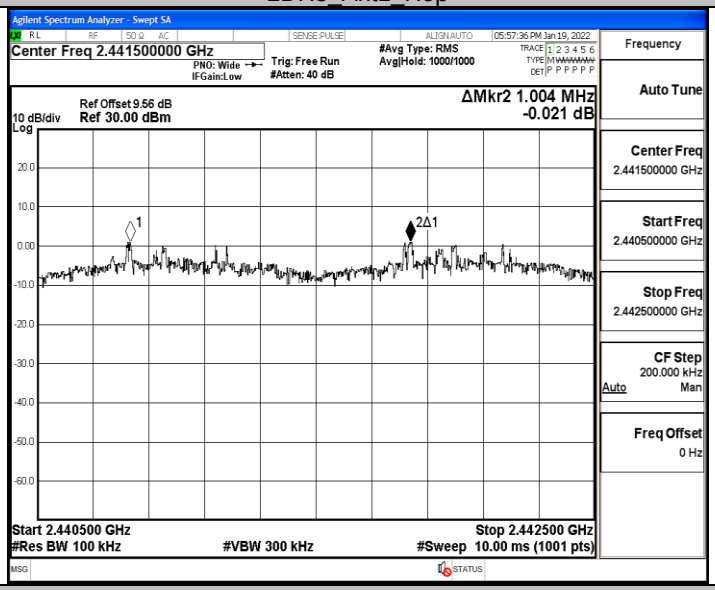
TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.008	≥0.948	PASS
2DH5	Ant1	Hop	1.004	≥0.822	PASS
3DH5	Ant1	Hop	0.996	≥0.852	PASS

Test Graph

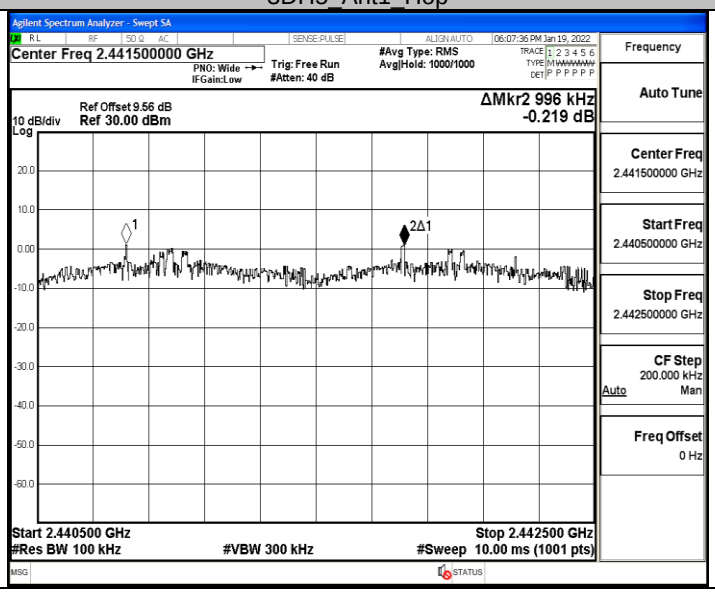
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop

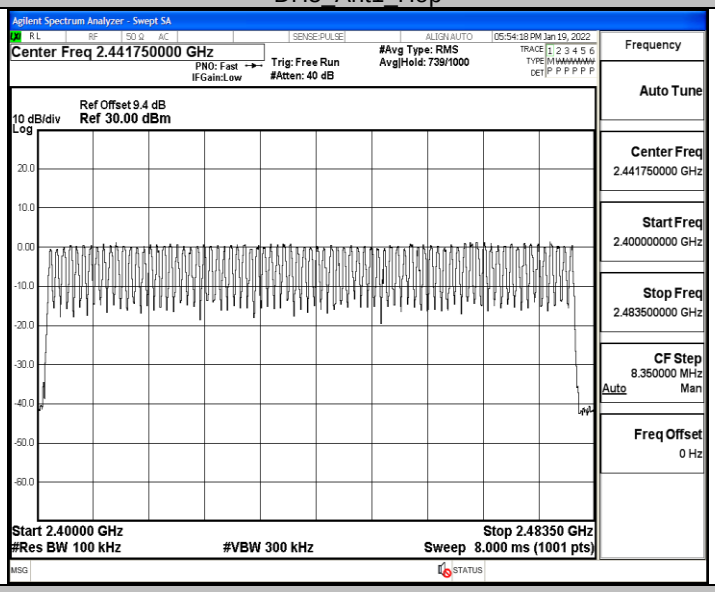


A.4 Hopping Channel Number

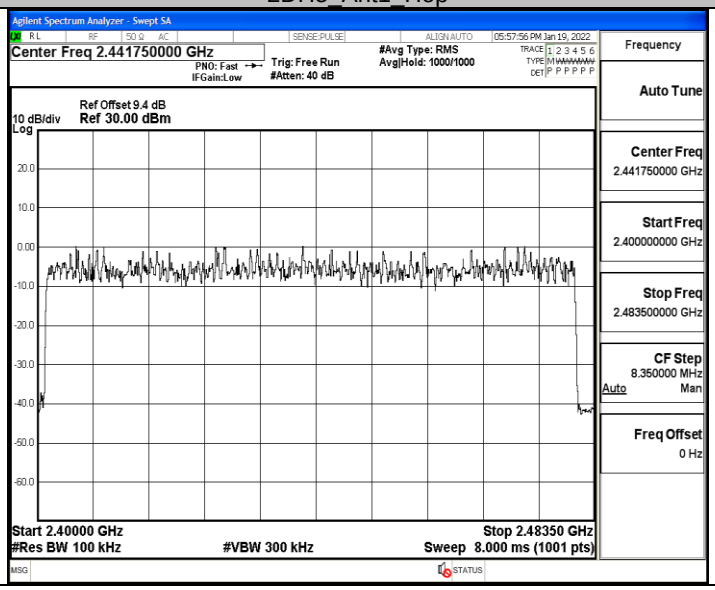
TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	>=15	PASS
2DH5	Ant1	Hop	79	>=15	PASS
3DH5	Ant1	Hop	79	>=15	PASS

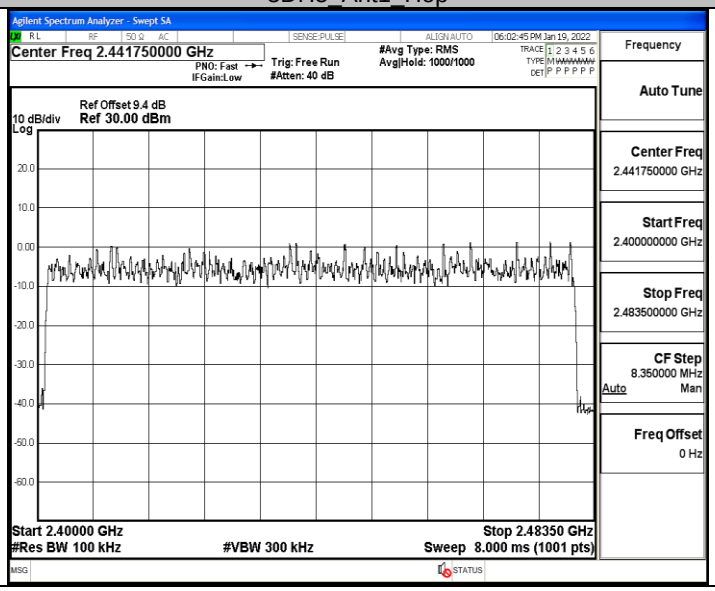
Test Graph

DH5_Ant1_Hop



2DH5_Ant1_Hop



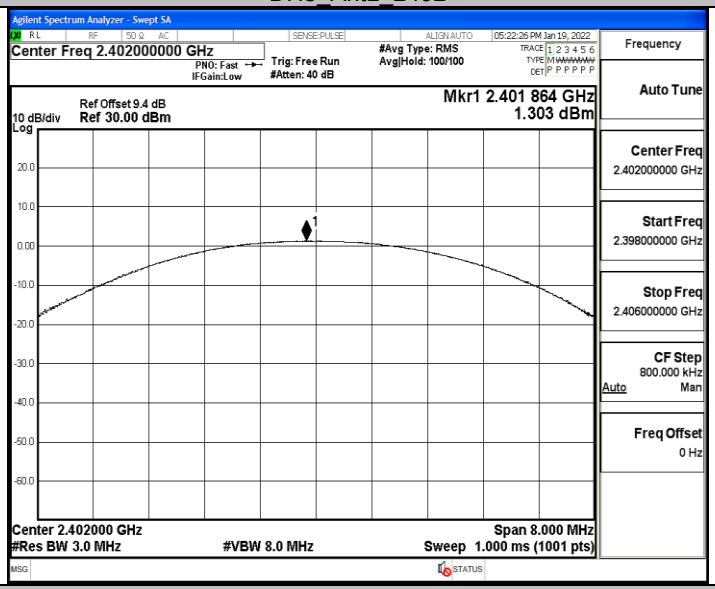
3DH5_Ant1_Hop


A.5 Conducted Peak Output Power

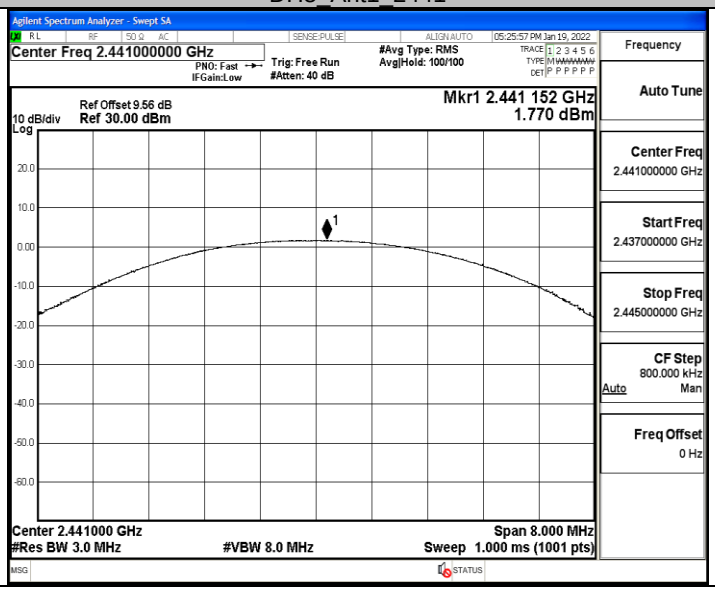
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	1.30	≤30	PASS
		2441	1.77	≤30	PASS
		2480	1.92	≤30	PASS
2DH5	Ant1	2402	1.21	≤20.97	PASS
		2441	1.78	≤20.97	PASS
		2480	1.77	≤20.97	PASS
3DH5	Ant1	2402	1.50	≤20.97	PASS
		2441	1.76	≤20.97	PASS
		2480	1.98	≤20.97	PASS

Test Graph

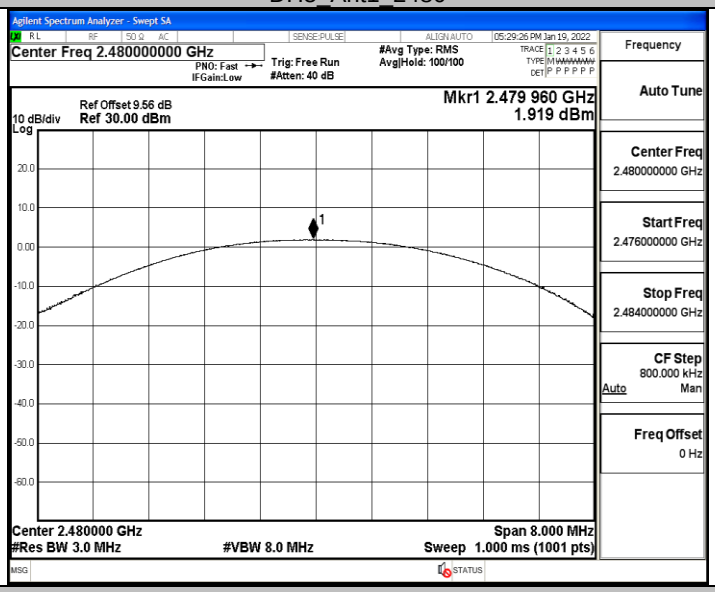
DH5_Ant1_2402



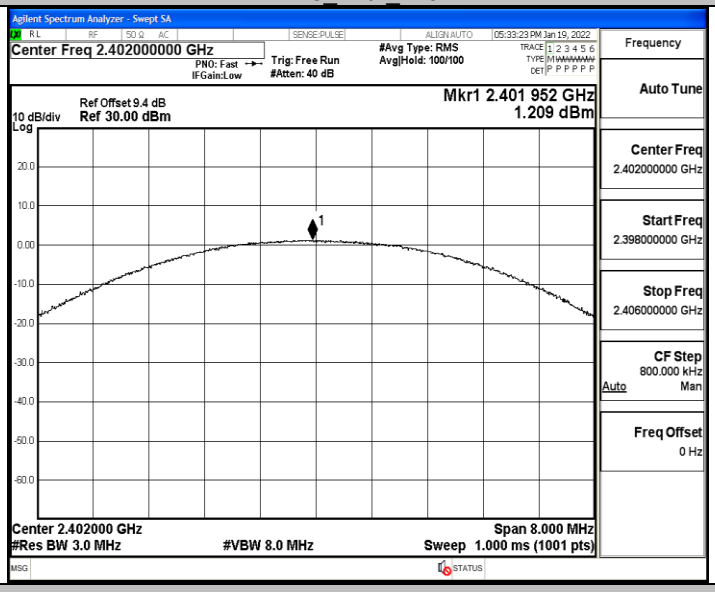
DH5_Ant1_2441



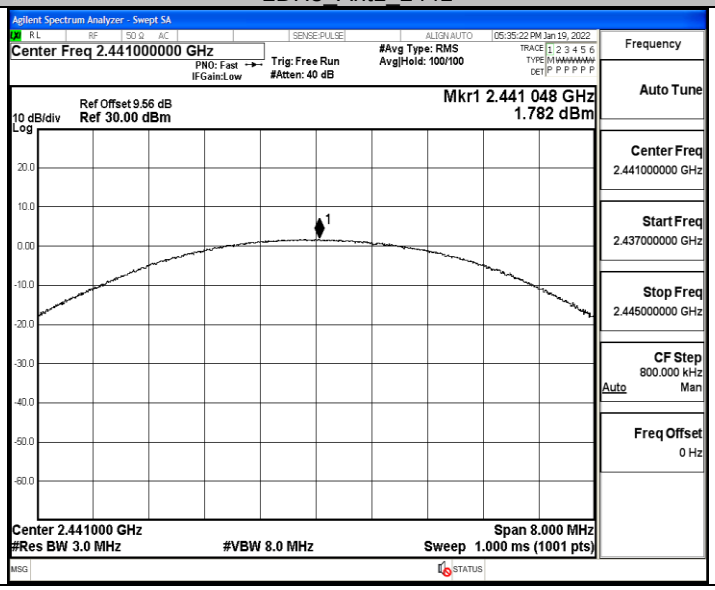
DH5_Ant1_2480



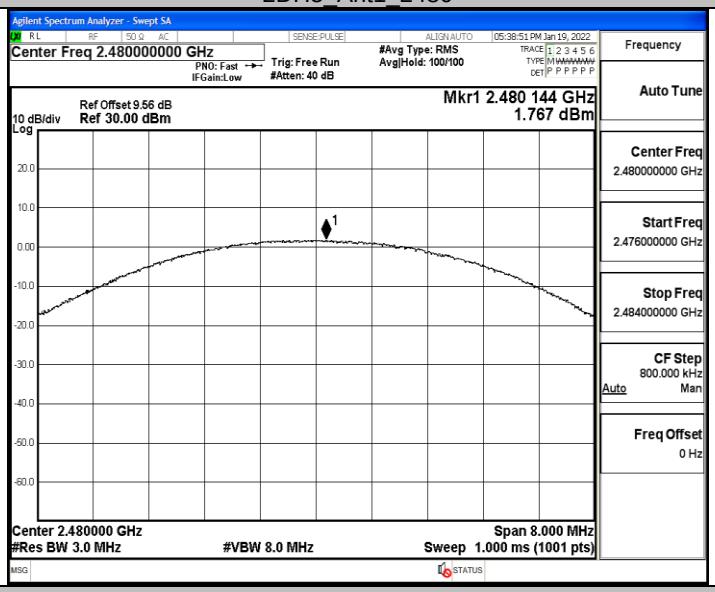
2DH5_Ant1_2402



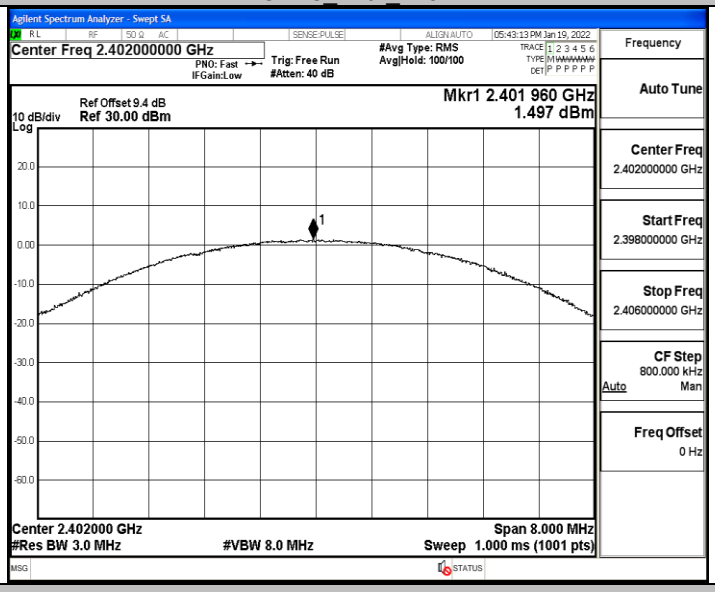
2DH5_Ant1_2441



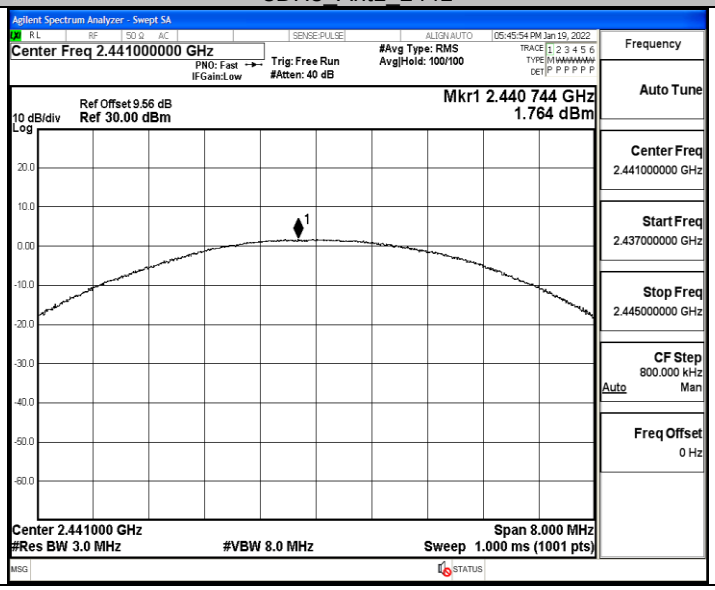
2DH5_Ant1_2480

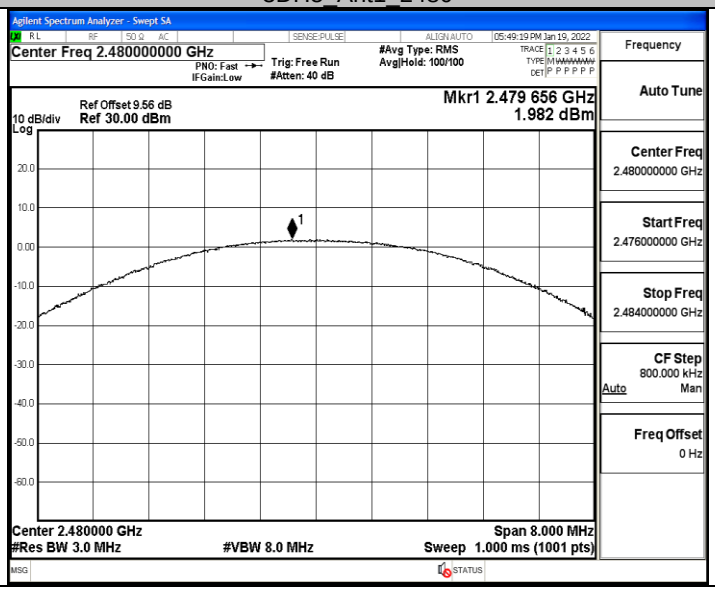


3DH5_Ant1_2402



3DH5_Ant1_2441



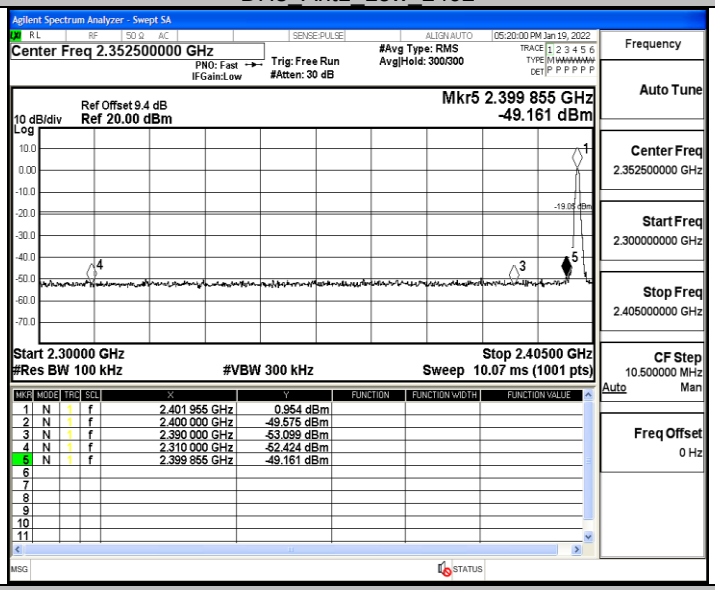
3DH5_Ant1_2480


A.6 Band-edge for RF Conducted Emissions

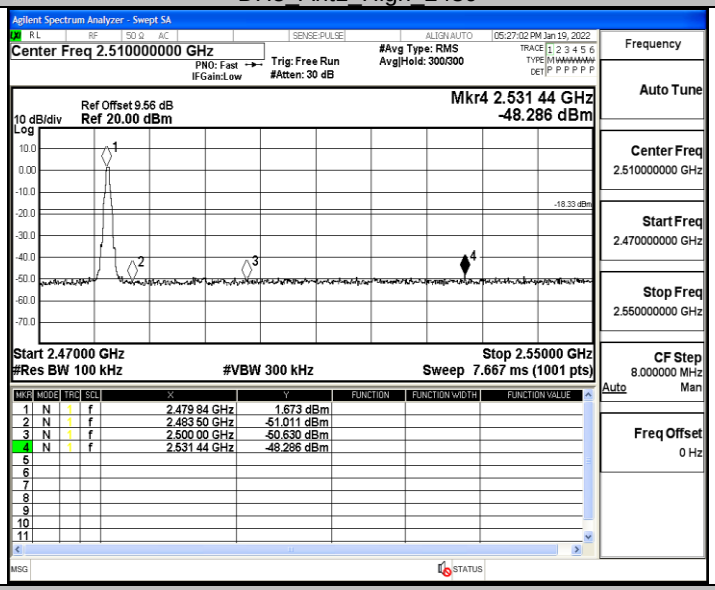
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	0.95	-49.16	≤-19.05	PASS
		High	2480	1.67	-48.29	≤-18.33	PASS
		Low	Hop_2402	0.90	-50.23	≤-19.1	PASS
		High	Hop_2480	1.73	-48.42	≤-18.28	PASS
2DH5	Ant1	Low	2402	0.55	-47.89	≤-19.45	PASS
		High	2480	0.02	-48.65	≤-19.98	PASS
		Low	Hop_2402	-3.67	-50.09	≤-23.67	PASS
		High	Hop_2480	-3.06	-48.88	≤-23.06	PASS
3DH5	Ant1	Low	2402	1.03	-46.52	≤-18.97	PASS
		High	2480	1.71	-48.6	≤-18.29	PASS
		Low	Hop_2402	-1.53	-49.65	≤-21.53	PASS
		High	Hop_2480	-3.65	-48.9	≤-23.65	PASS

Test Graph

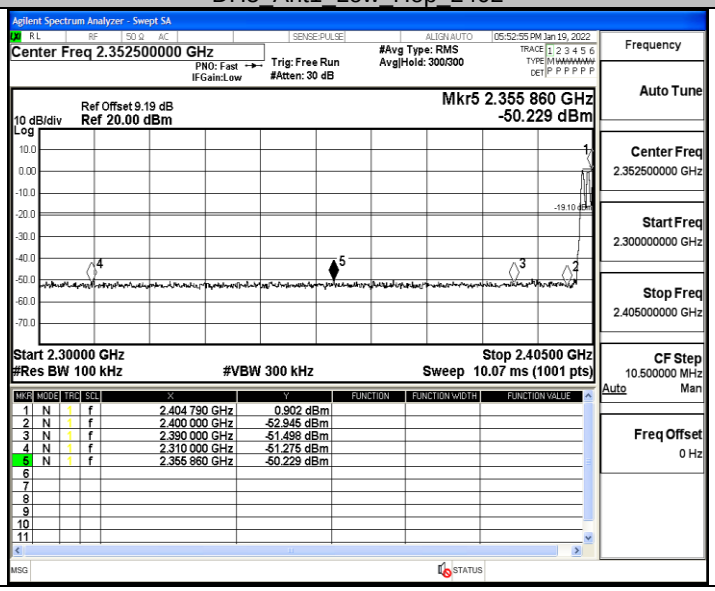
DH5_Ant1_Low_2402



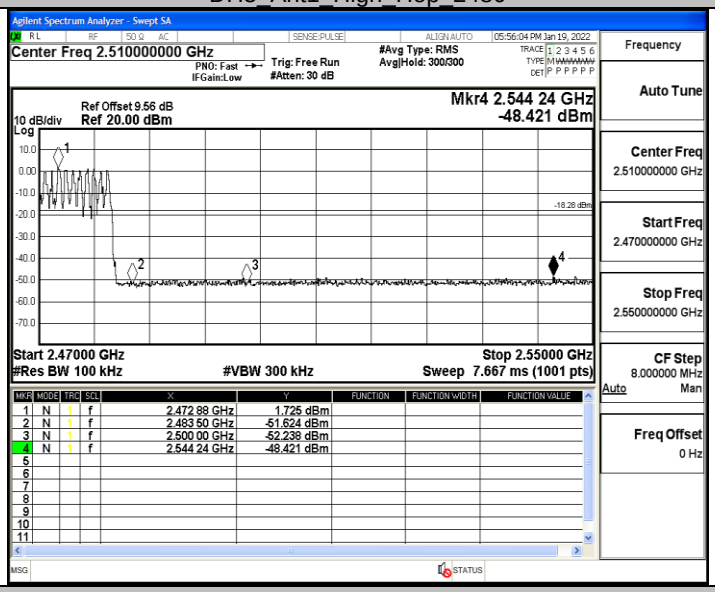
DH5_Ant1_High_2480



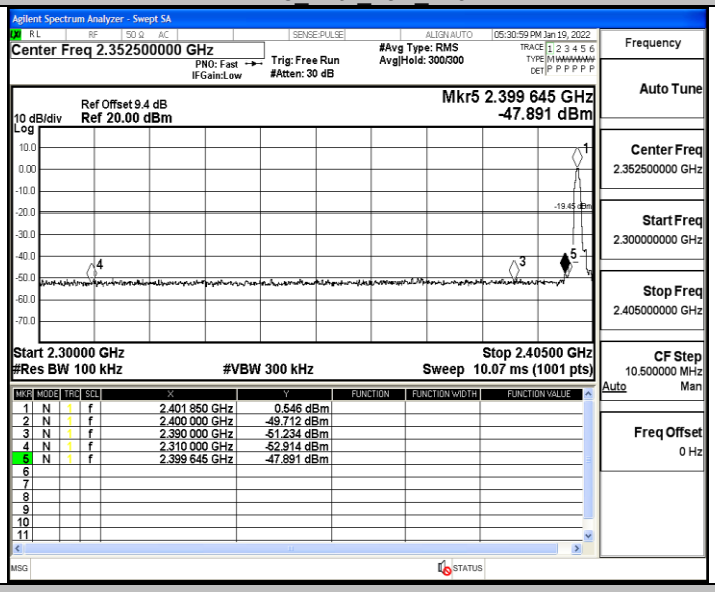
DH5_Ant1_Low_Hop_2402



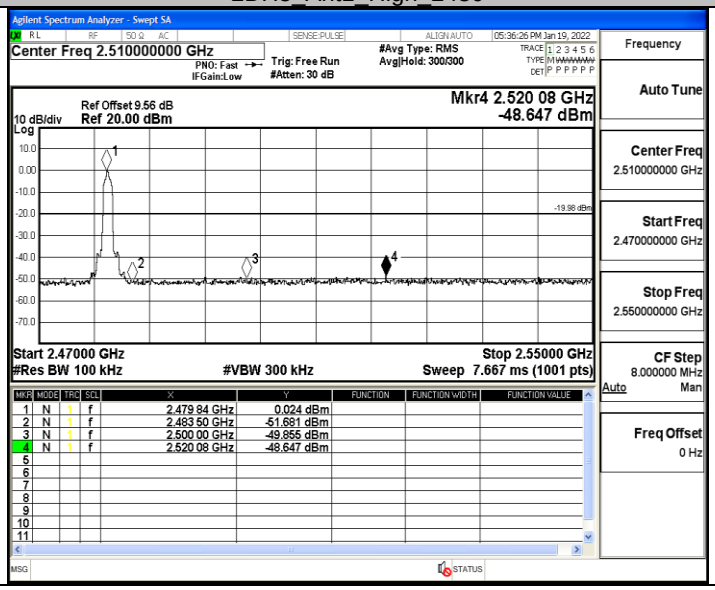
DH5_Ant1_High_Hop_2480



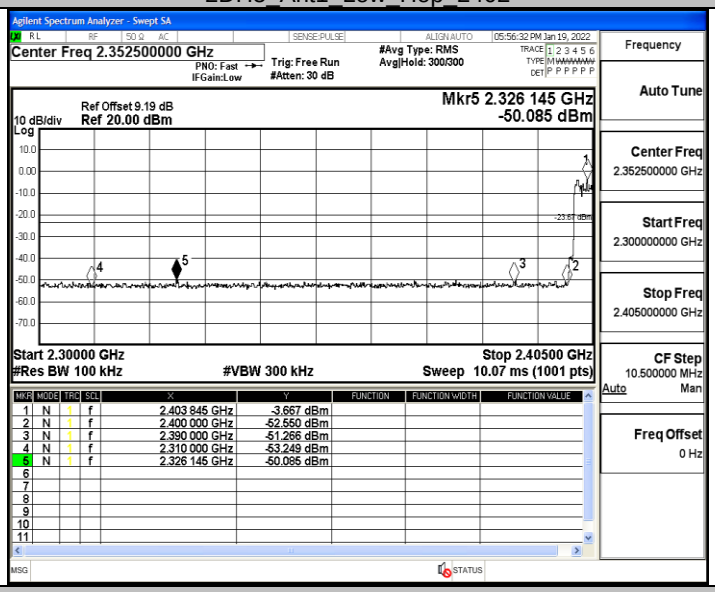
2DH5_Ant1_Low_2402



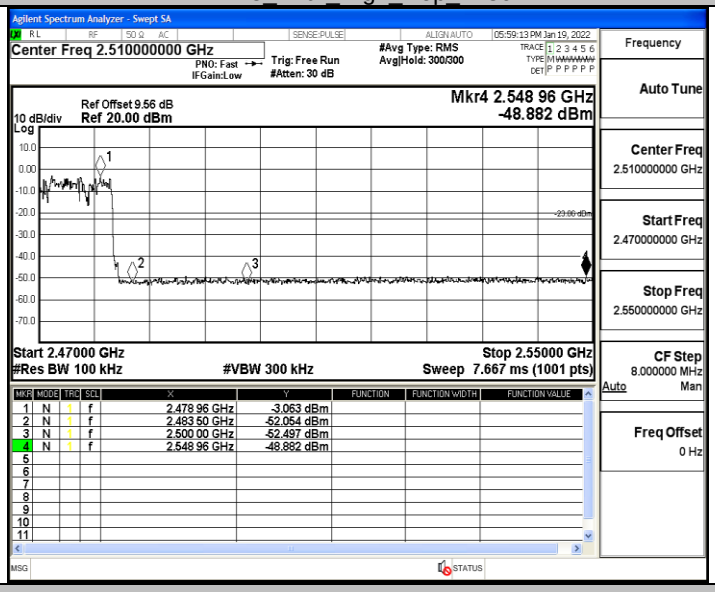
2DH5_Ant1_High_2480



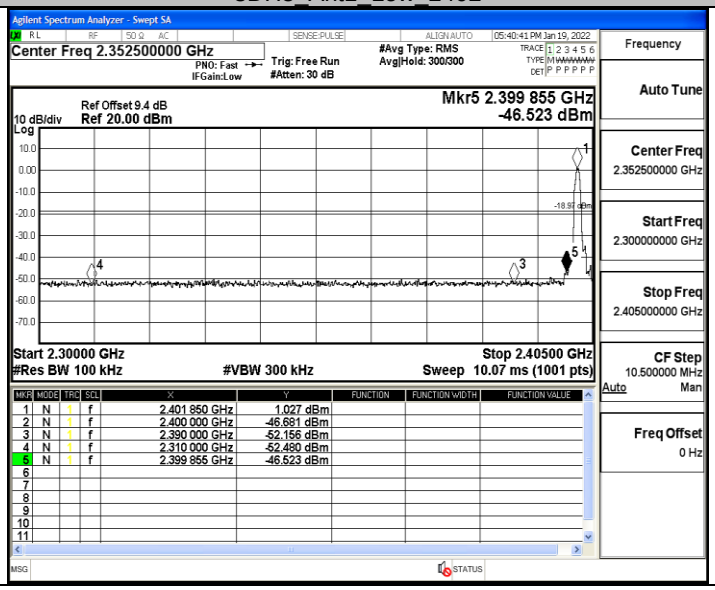
2DH5_Ant1_Low_Hop_2402



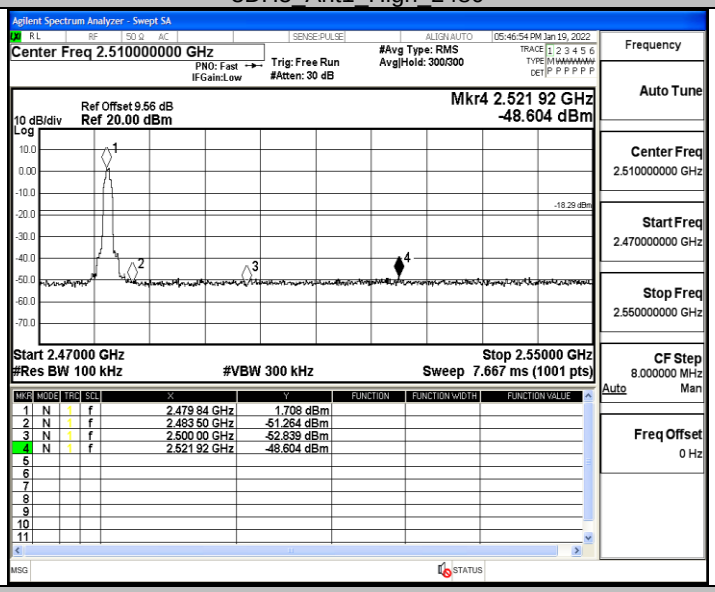
2DH5_Ant1_High_Hop_2480



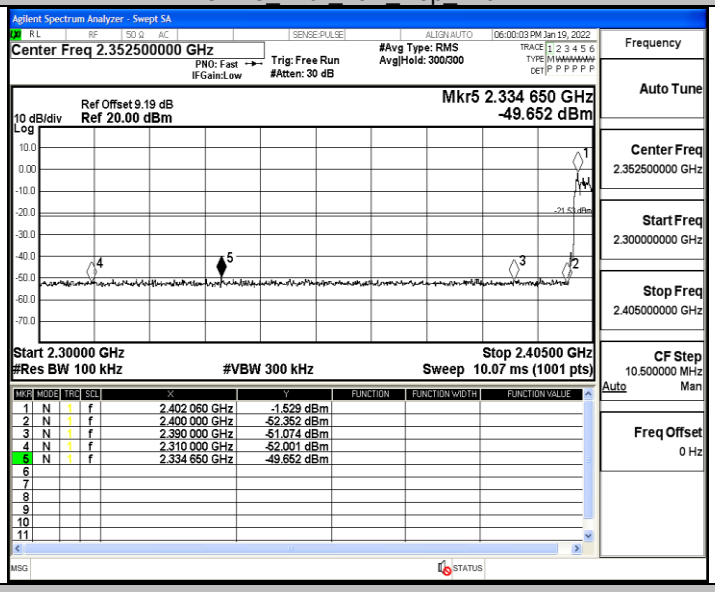
3DH5_Ant1_Low_2402



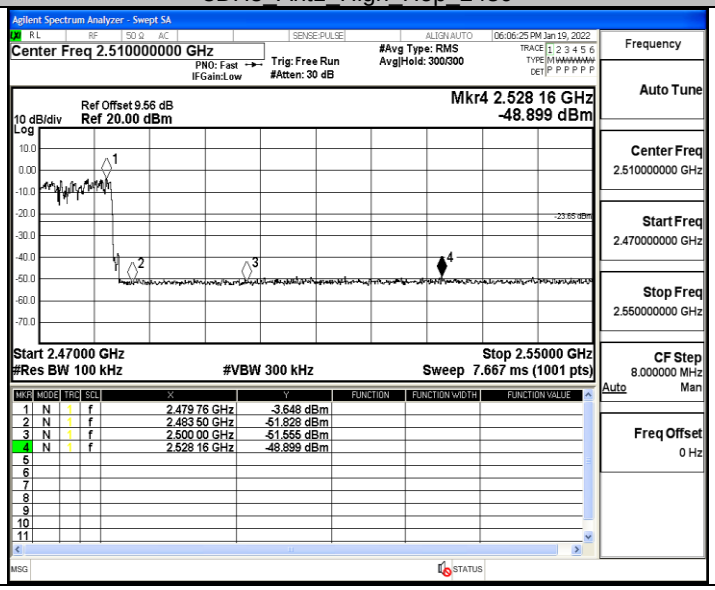
3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



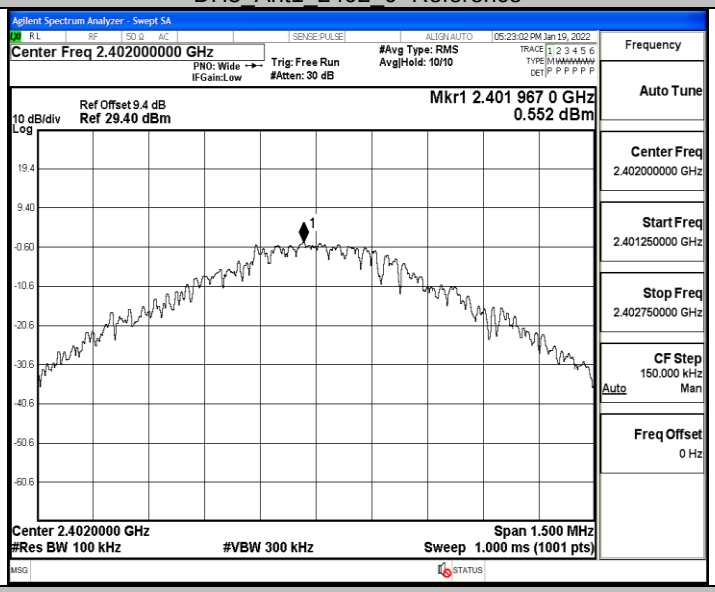
3DH5_Ant1_High_Hop_2480



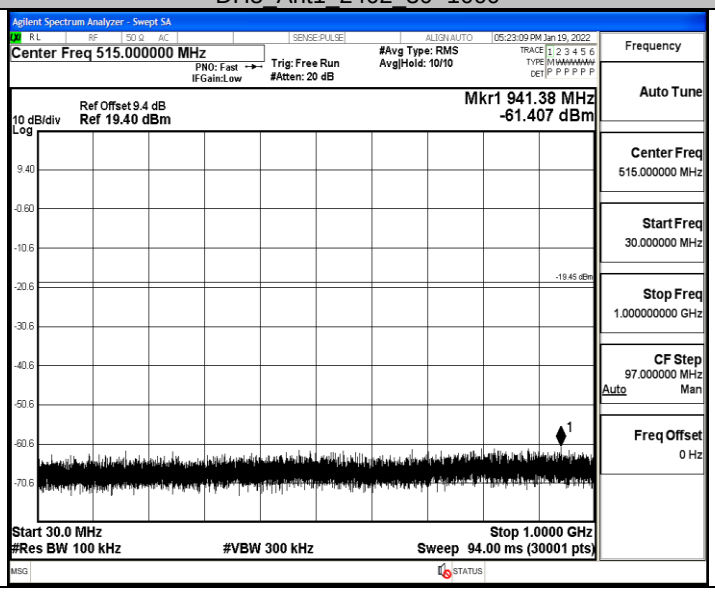
A.7 RF Conducted Spurious Emissions

Test Graph

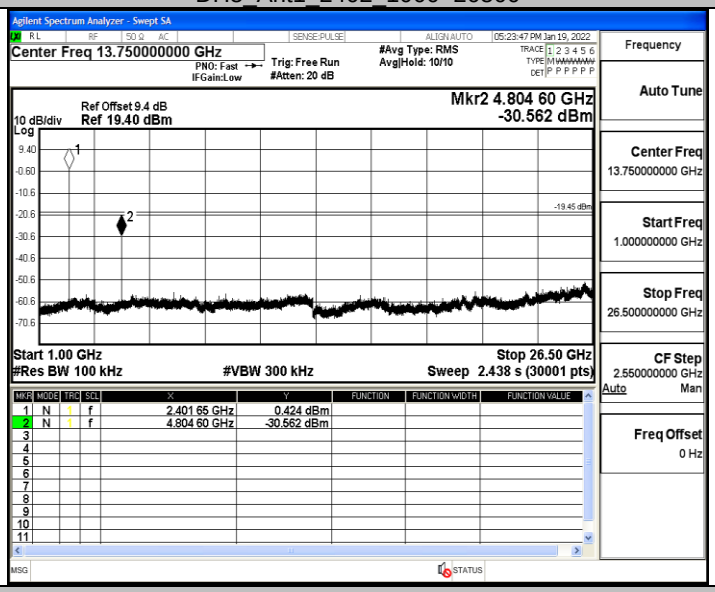
DH5_Ant1_2402_0~Reference



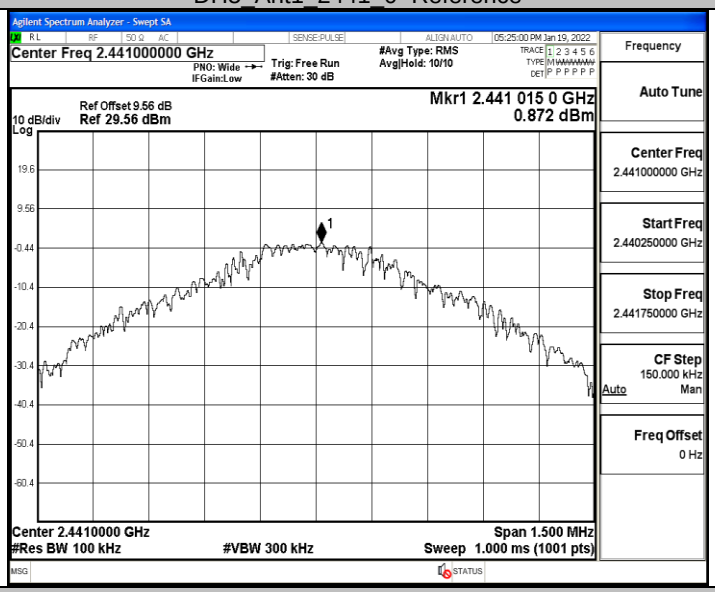
DH5_Ant1_2402_30~1000



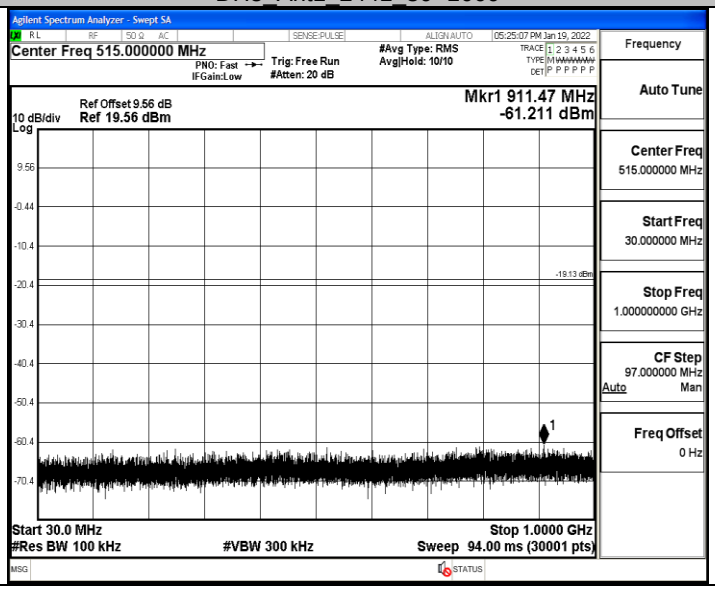
DH5_Ant1_2402_1000~26500



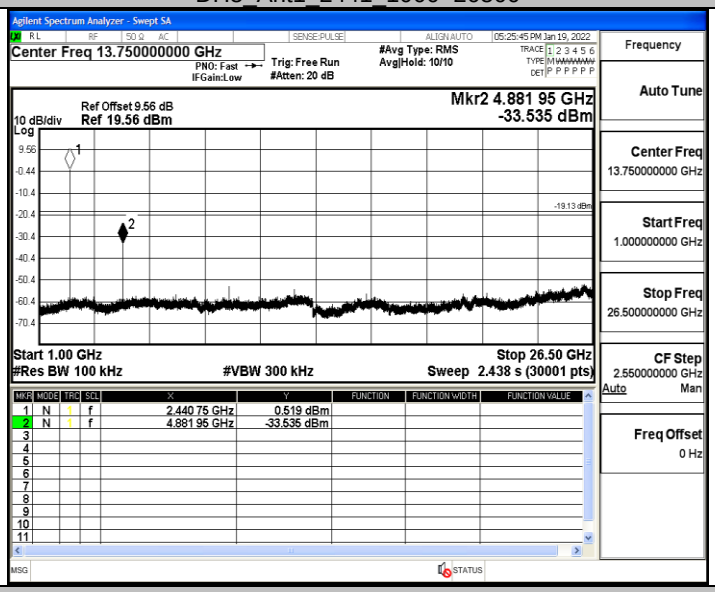
DH5_Ant1_2441_0~Reference



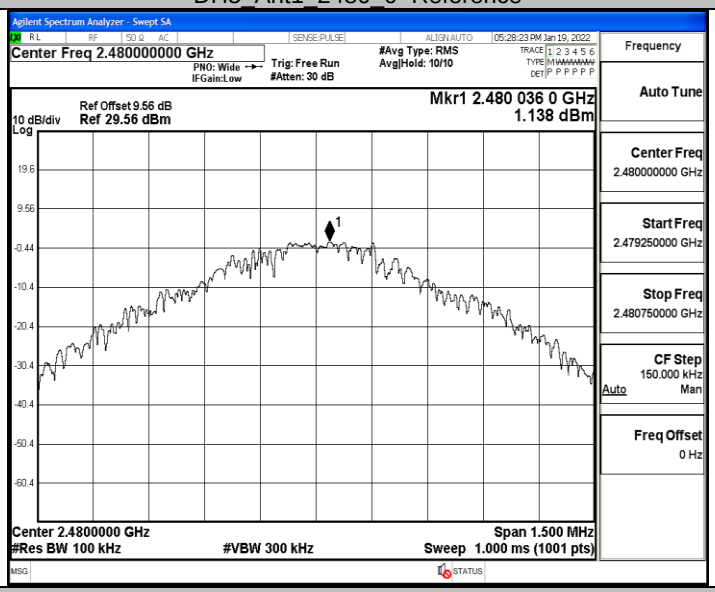
DH5_Ant1_2441_30~1000



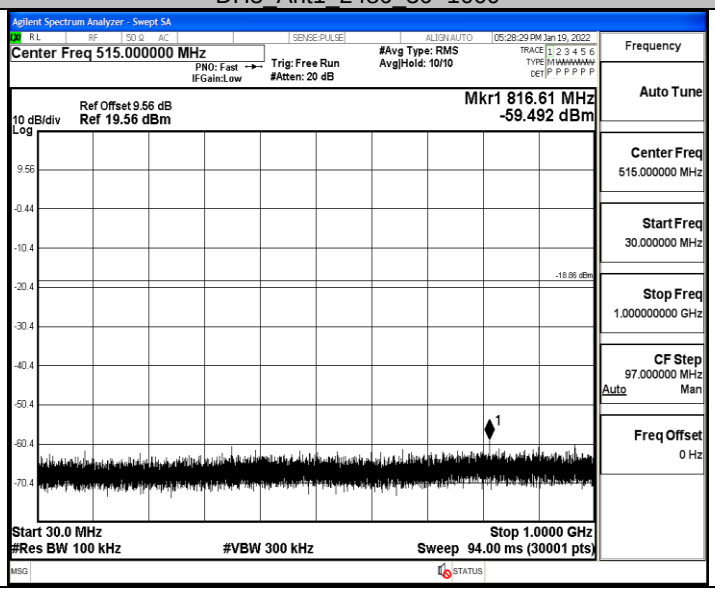
DH5_Ant1_2441_1000~26500



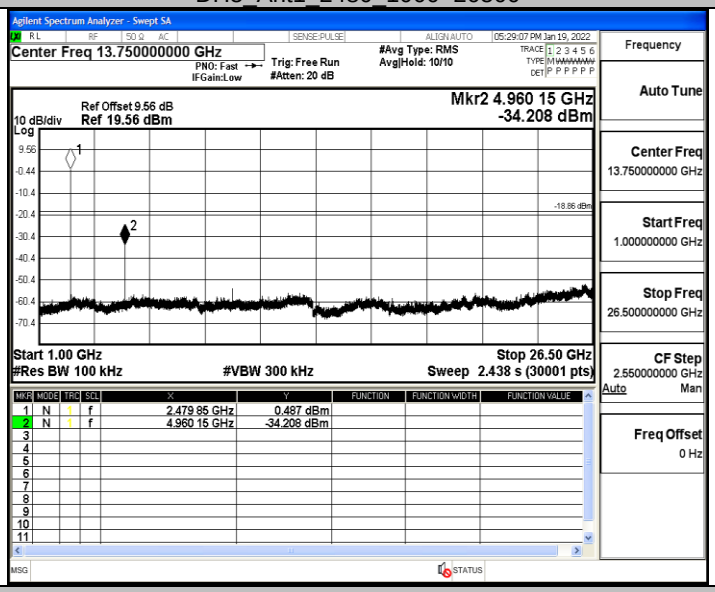
DH5_Ant1_2480_0~Reference



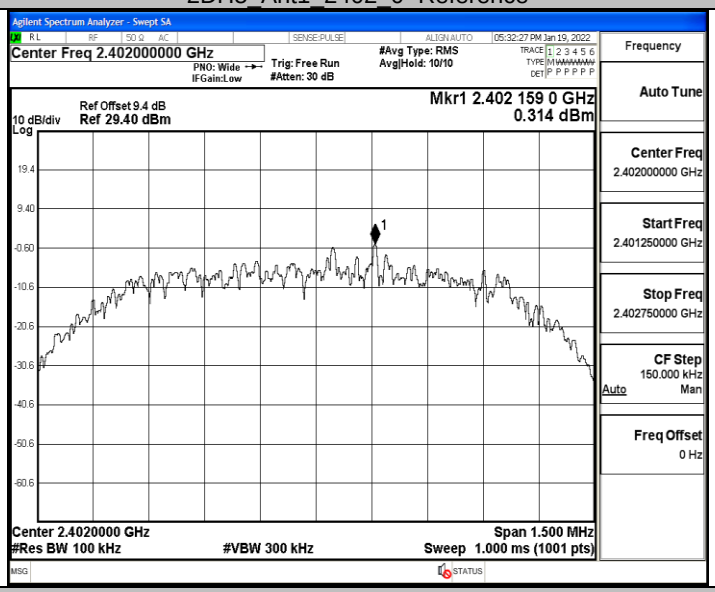
DH5_Ant1_2480_30~1000



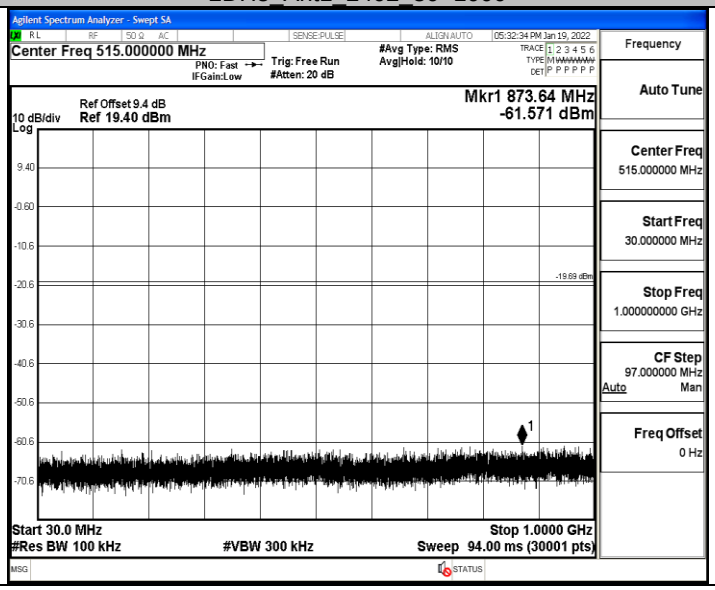
DH5_Ant1_2480_1000~26500



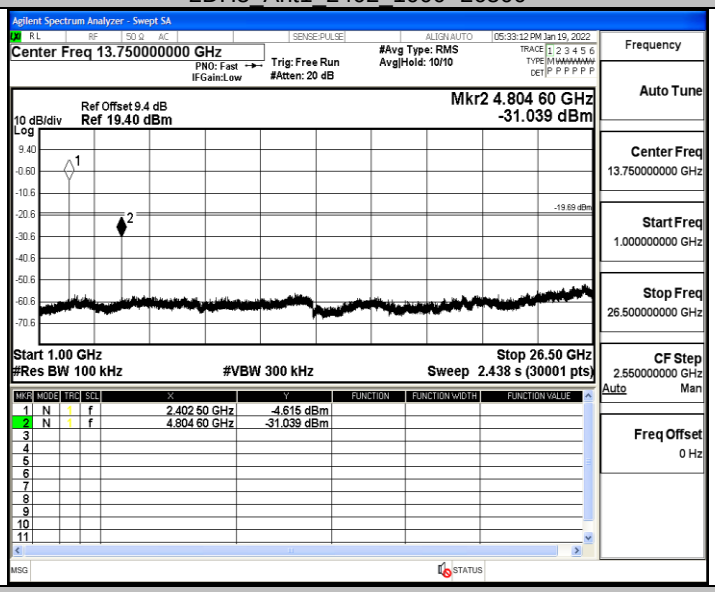
2DH5_Ant1_2402_0~Reference



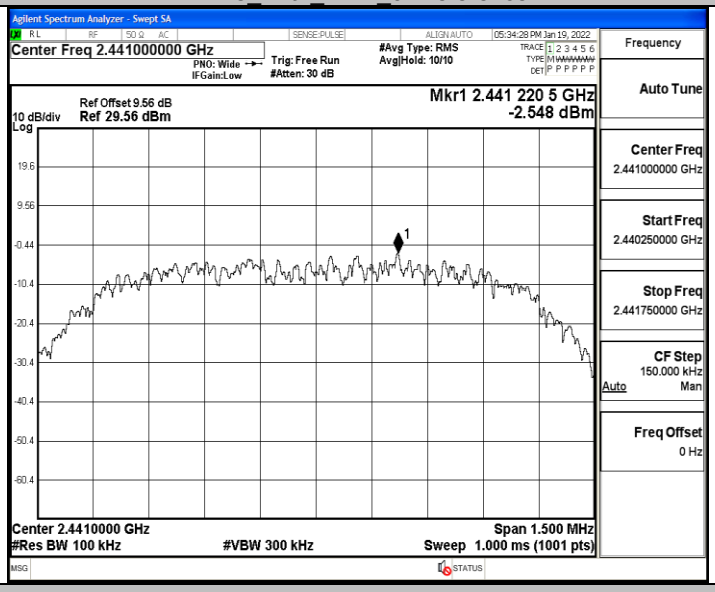
2DH5_Ant1_2402_30~1000



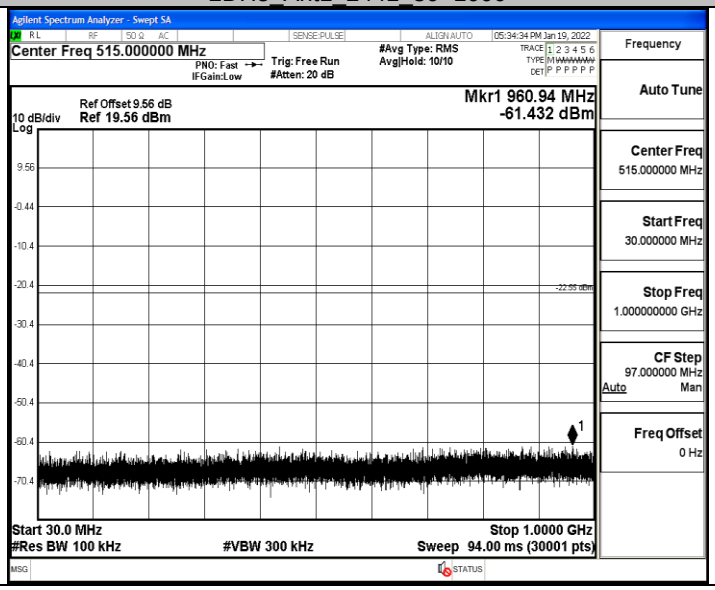
2DH5_Ant1_2402_1000~26500



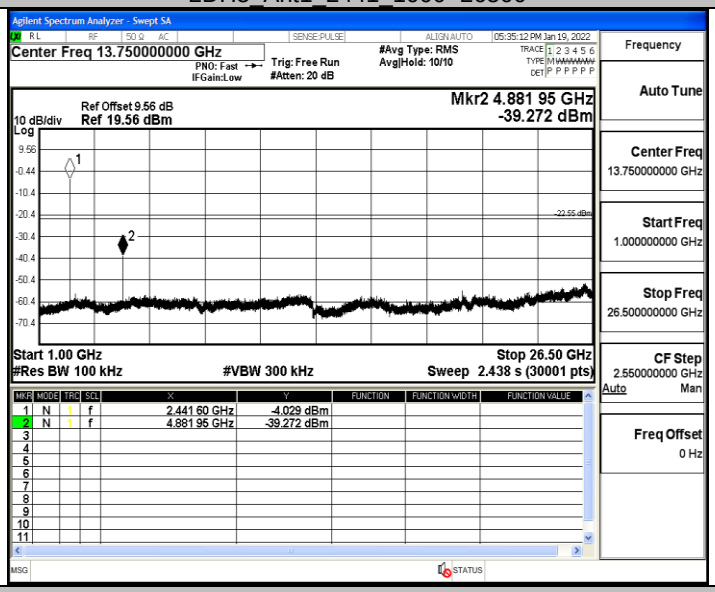
2DH5_Ant1_2441_0~Reference



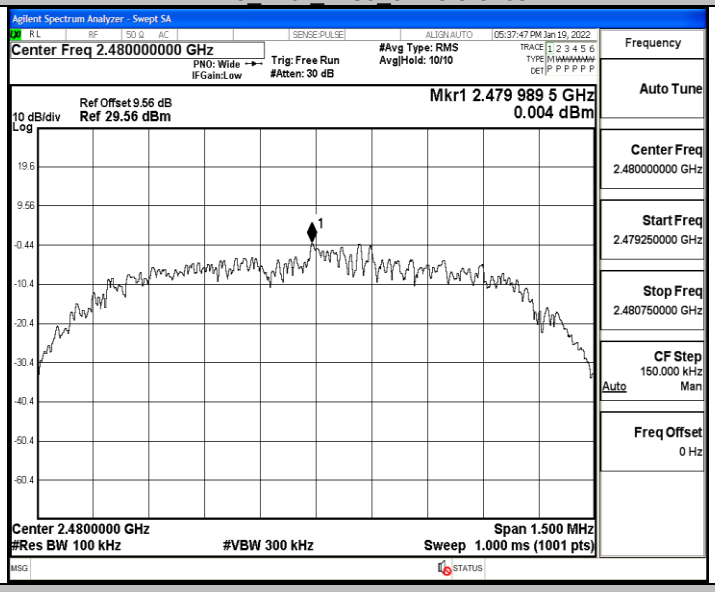
2DH5_Ant1_2441_30~1000



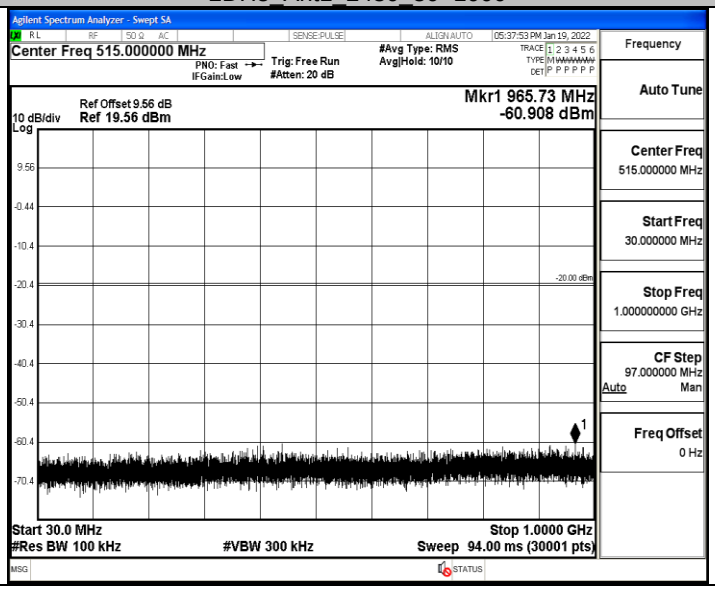
2DH5_Ant1_2441_1000~26500



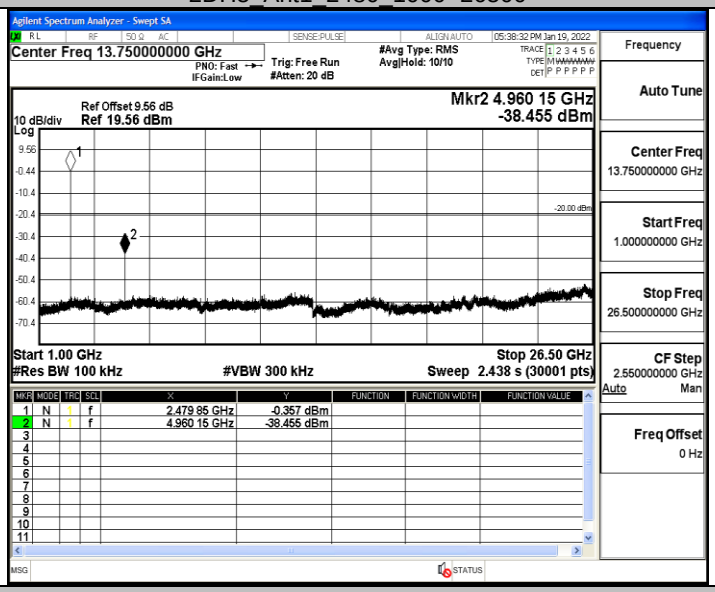
2DH5_Ant1_2480_0~Reference



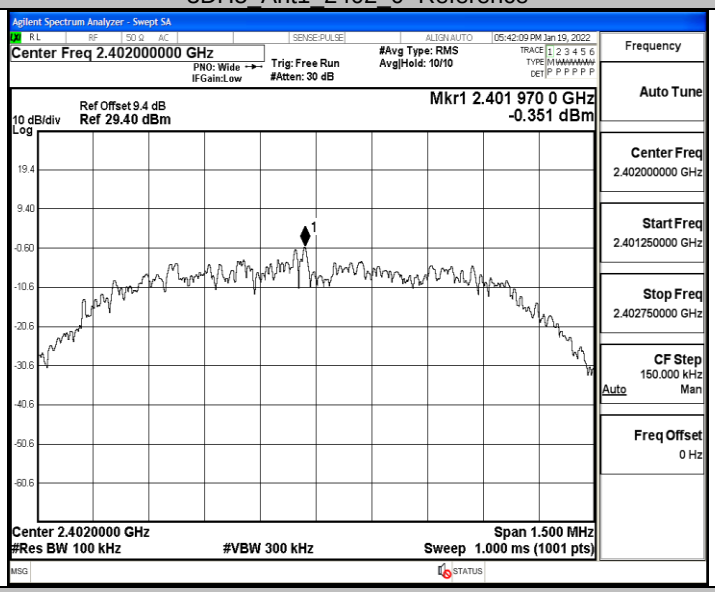
2DH5_Ant1_2480_30~1000



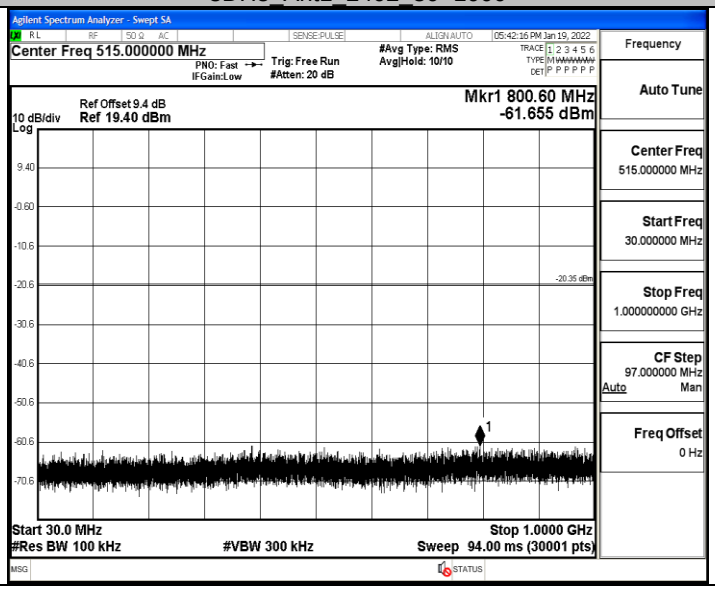
2DH5_Ant1_2480_1000~26500



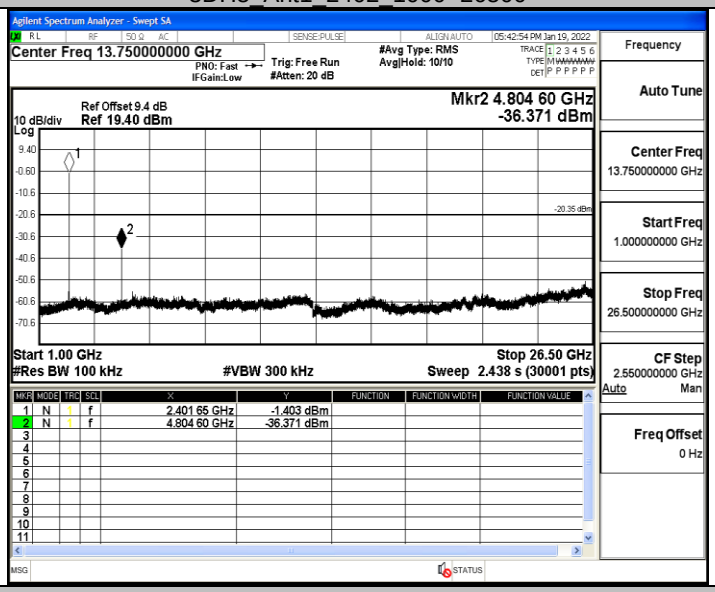
3DH5_Ant1_2402_0~Reference



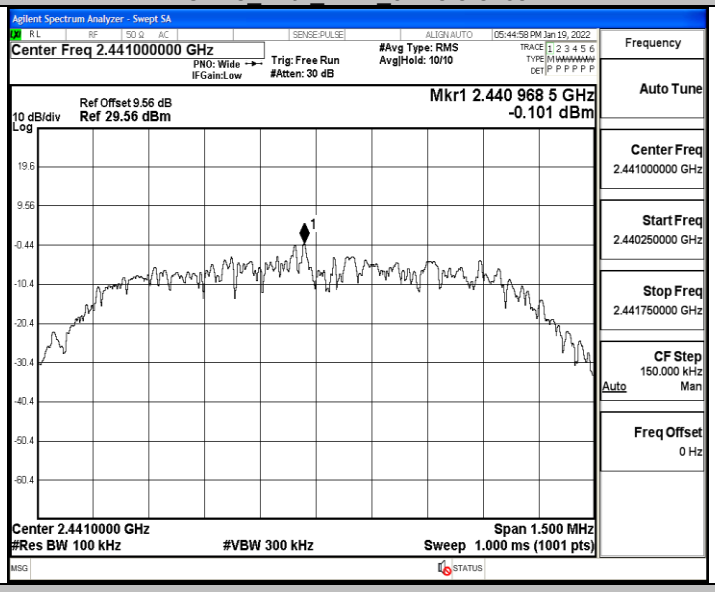
3DH5_Ant1_2402_30~1000



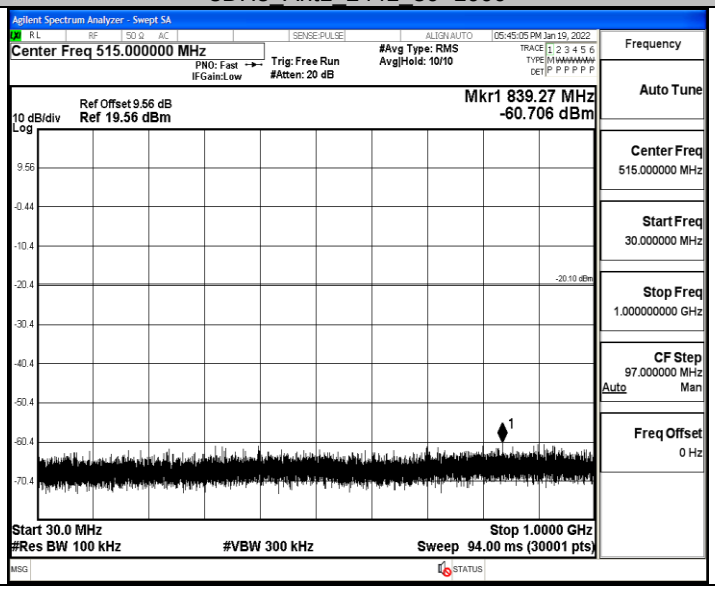
3DH5_Ant1_2402_1000~26500



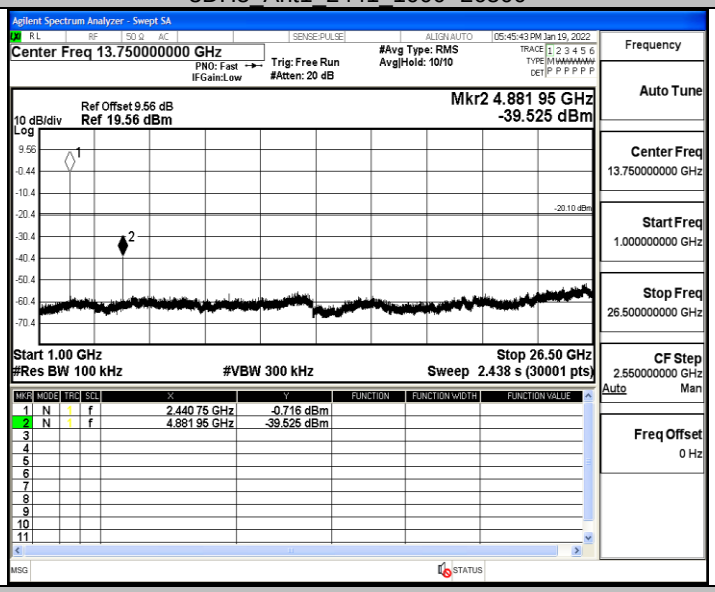
3DH5_Ant1_2441_0~Reference



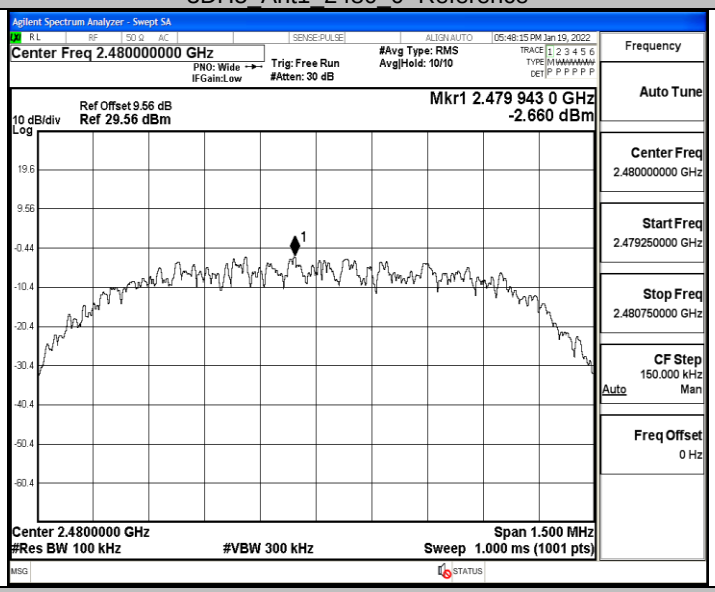
3DH5_Ant1_2441_30~1000



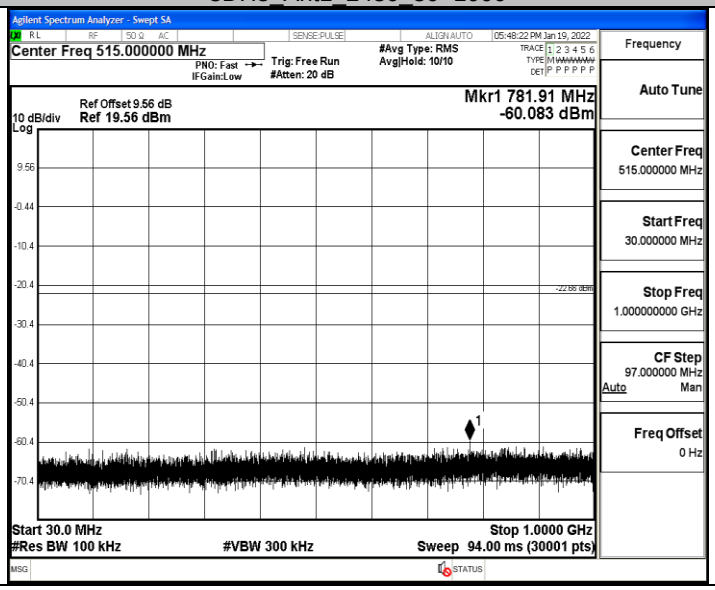
3DH5_Ant1_2441_1000~26500

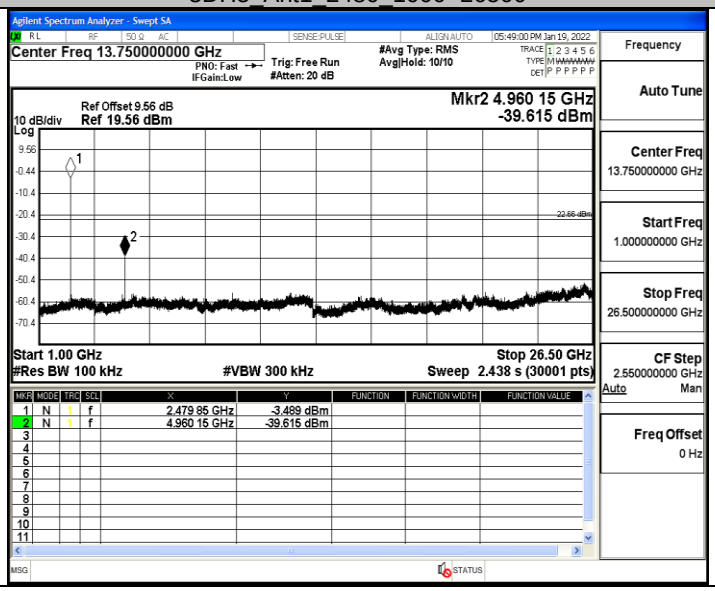


3DH5_Ant1_2480_0~Reference



3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500


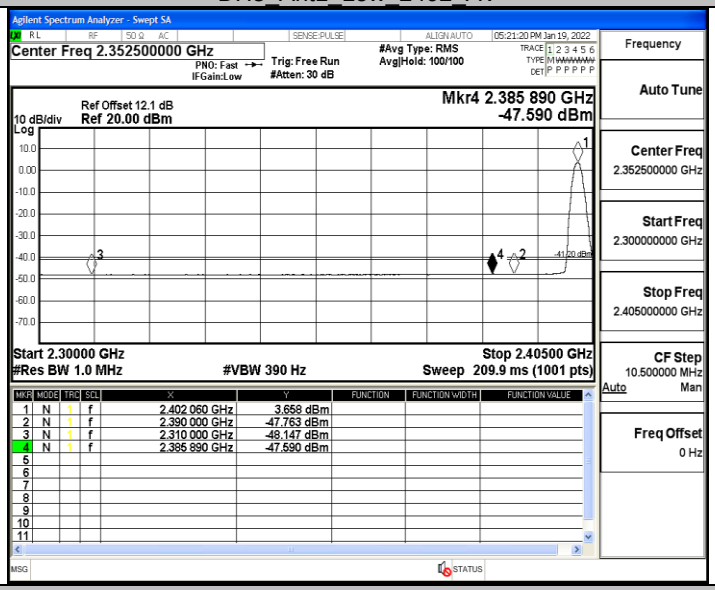
A.8 Restrict-band band-edge measurements

TestMode	Antenna	ChName	Channel	Detector	Freq(MHz)	Result(dBm)	Limit(dBm)	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-48.15	≤-41.20	PASS
				AV	2385.890	-47.59	≤-41.20	PASS
				AV	2390.000	-47.76	≤-41.20	PASS
				Peak	2310.000	-41.11	≤-21.20	PASS
				Peak	2343.890	-37.26	≤-21.20	PASS
				Peak	2390.000	-41.38	≤-21.20	PASS
		High	2480	AV	2483.500	-46.6	≤-41.20	PASS
				AV	2483.520	-46.6	≤-41.20	PASS
				AV	2500.000	-47.11	≤-41.20	PASS
				Peak	2483.500	-40.62	≤-21.20	PASS
				Peak	2490.240	-37.39	≤-21.20	PASS
				Peak	2500.000	-40.15	≤-21.20	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-48.04	≤-41.20	PASS
				AV	2388.095	-47.35	≤-41.20	PASS
				AV	2390.000	-47.61	≤-41.20	PASS
				Peak	2310.000	-41.08	≤-21.20	PASS
				Peak	2312.495	-37.55	≤-21.20	PASS
				Peak	2390.000	-40.03	≤-21.20	PASS
		High	2480	AV	2483.500	-46.32	≤-41.20	PASS
				AV	2483.520	-46.31	≤-41.20	PASS
				AV	2500.000	-47.07	≤-41.20	PASS
				Peak	2483.500	-40.85	≤-21.20	PASS
				Peak	2486.080	-37.09	≤-21.20	PASS
				Peak	2500.000	-40.14	≤-21.20	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-48.02	≤-41.20	PASS
				AV	2387.780	-47.41	≤-41.20	PASS
				AV	2390.000	-47.73	≤-41.20	PASS
				Peak	2310.000	-42.18	≤-21.20	PASS
				Peak	2381.375	-37.35	≤-21.20	PASS
				Peak	2390.000	-42.1	≤-21.20	PASS
		High	2480	AV	2483.500	-46.42	≤-41.20	PASS
				AV	2483.520	-46.42	≤-41.20	PASS
				AV	2500.000	-47.04	≤-41.20	PASS
				Peak	2483.500	-39.74	≤-21.20	PASS
				Peak	2486.560	-37.41	≤-21.20	PASS
				Peak	2500.000	-40.56	≤-21.20	PASS

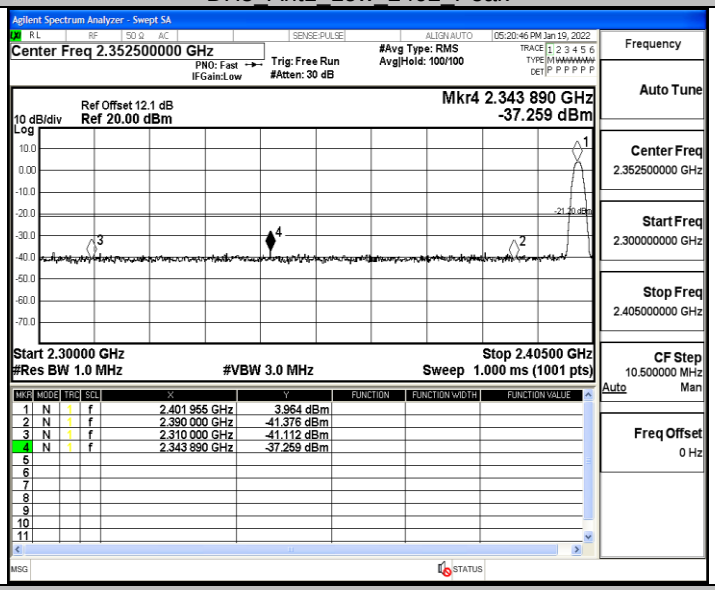
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

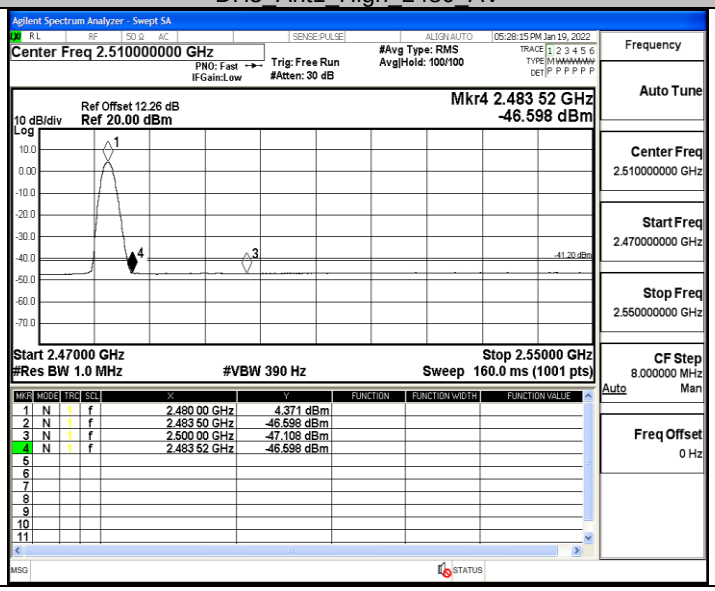
DH5_Ant1_Low_2402_AV



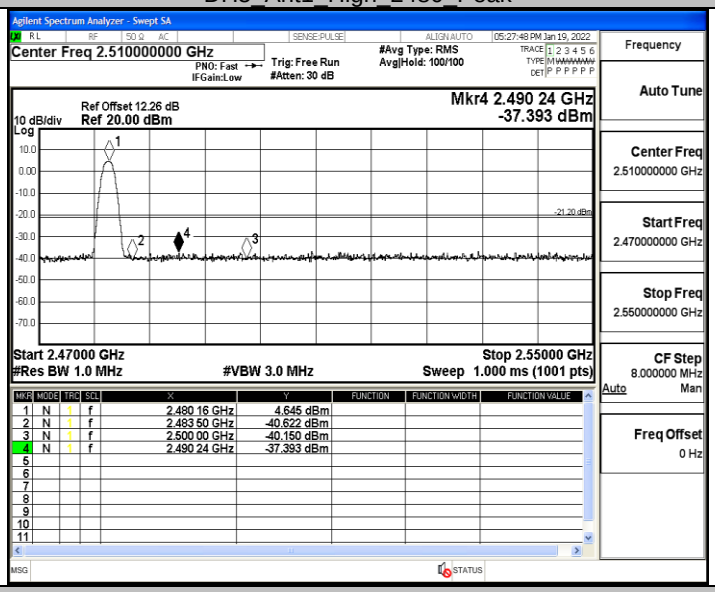
DH5_Ant1_Low_2402_Peak



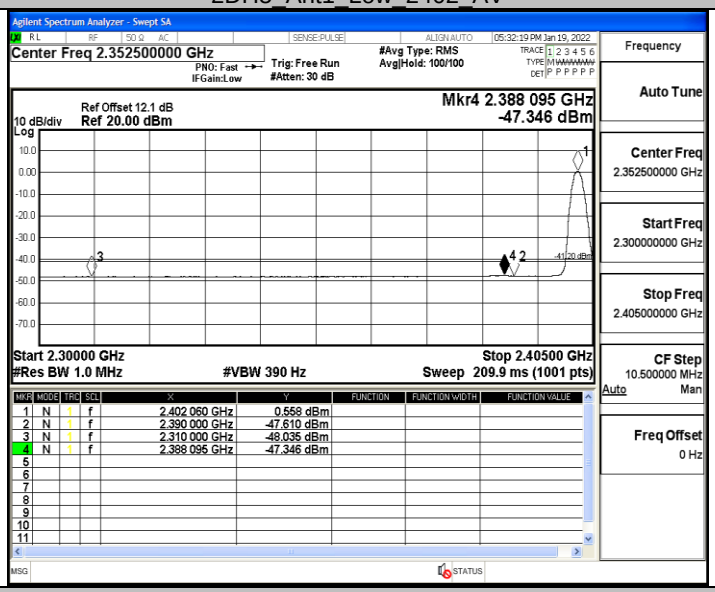
DH5_Ant1_High_2480_AV



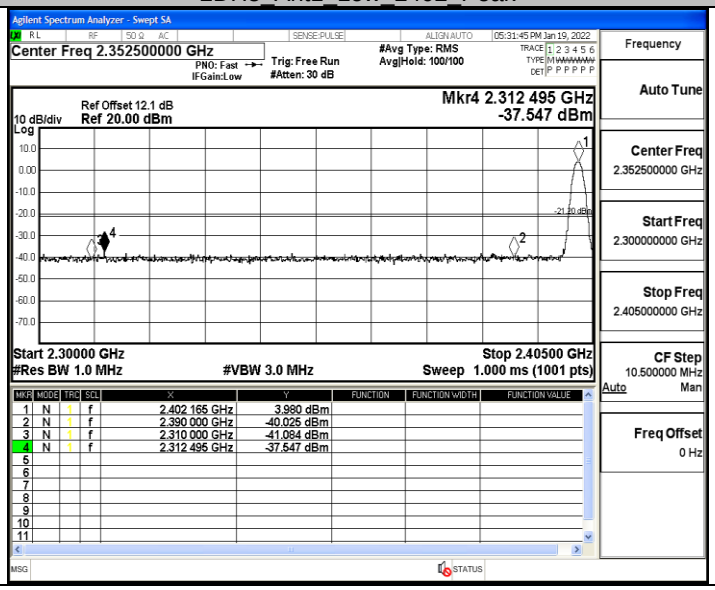
DH5_Ant1_High_2480_Peak



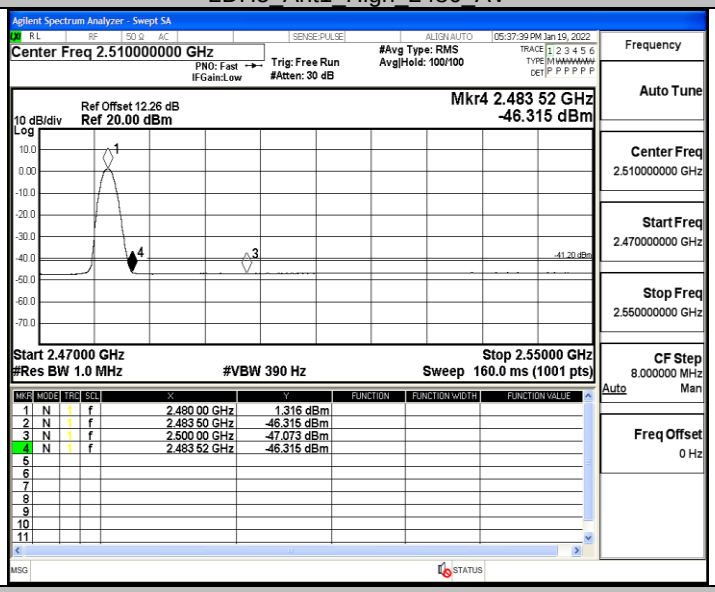
2DH5_Ant1_Low_2402_AV



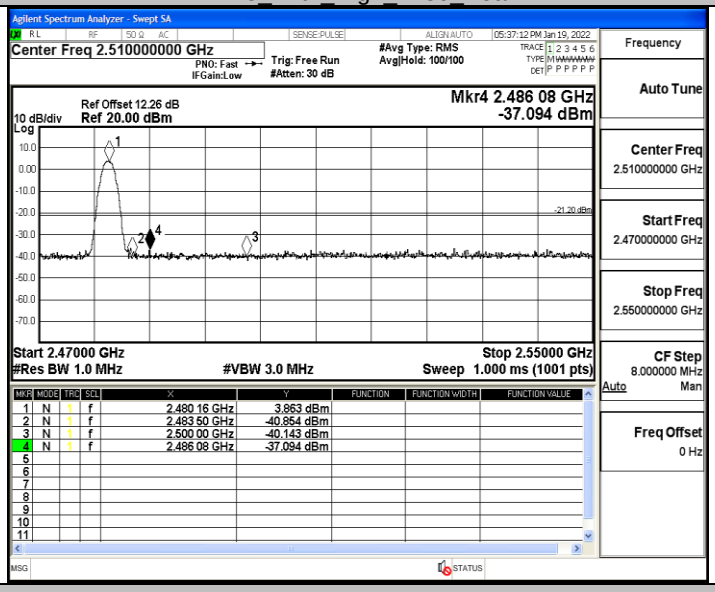
2DH5_Ant1_Low_2402_Peak



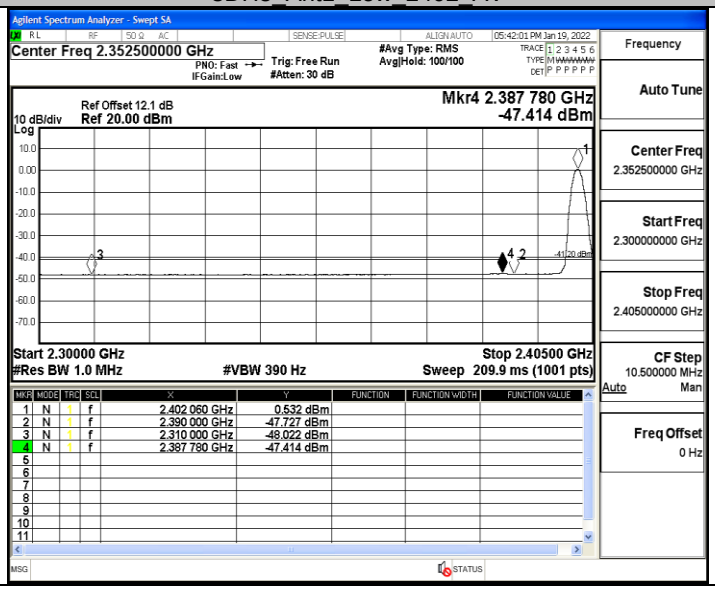
2DH5_Ant1_High_2480_AV



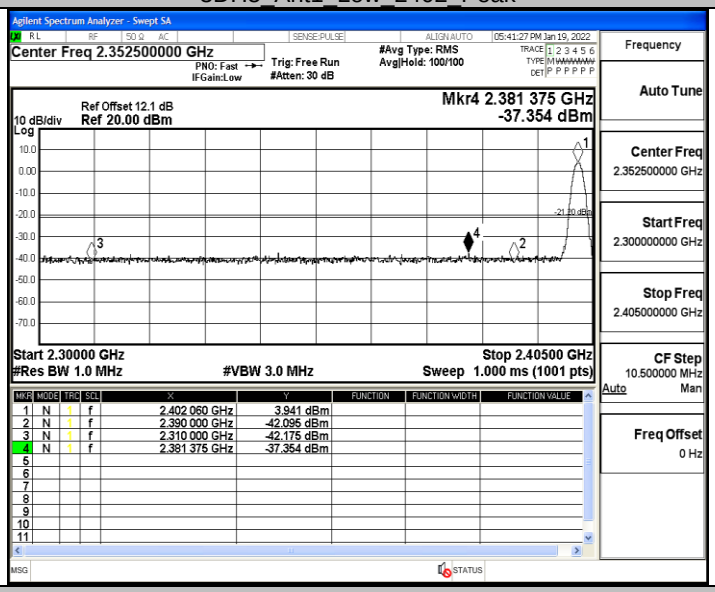
2DH5_Ant1_High_2480_Peak



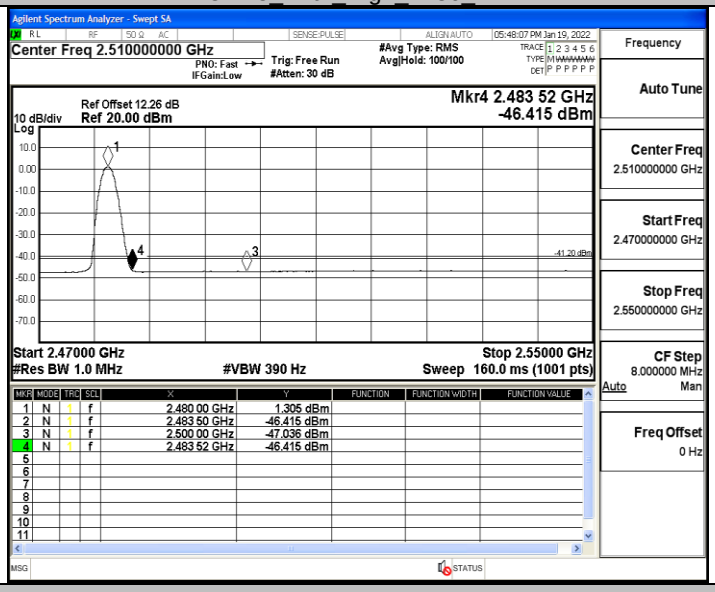
3DH5_Ant1_Low_2402_AV



3DH5_Ant1_Low_2402_Peak



3DH5_Ant1_High_2480_AV



3DH5_Ant1_High_2480_Peak