Appendix A
RF Test Data for BT(BDR/EDR) (Conducted Measurement)
Product Name: True Wireless Earbuds
Trade Mark: Tranya
Test Model: T20
FCC ID: 2A4AX-T20

Environmental Conditions

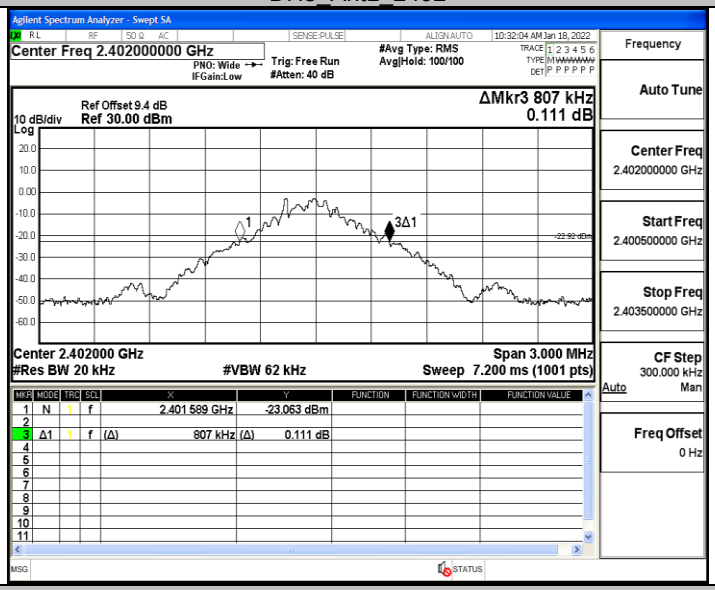
Temperature:	22.8° C
Relative Humidity:	56%
ATM Pressure:	100.0 kPa
Test Engineer:	Nancy Li
Supervised by:	Hugo Chen

A.1 20 dB Bandwidth

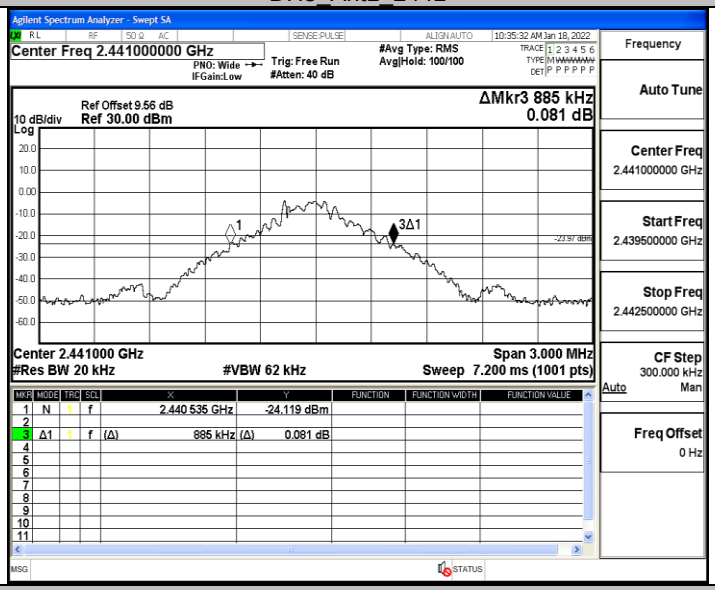
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.807	2401.589	2402.396	---	PASS
		2441	0.885	2440.535	2441.420	---	PASS
		2480	0.888	2479.535	2480.423	---	PASS
2DH5	Ant1	2402	1.323	2401.328	2402.651	---	PASS
		2441	1.203	2440.391	2441.594	---	PASS
		2480	1.341	2479.322	2480.663	---	PASS
3DH5	Ant1	2402	1.233	2401.361	2402.594	---	PASS
		2441	1.242	2440.358	2441.600	---	PASS
		2480	1.338	2479.319	2480.657	---	PASS

Test Graph

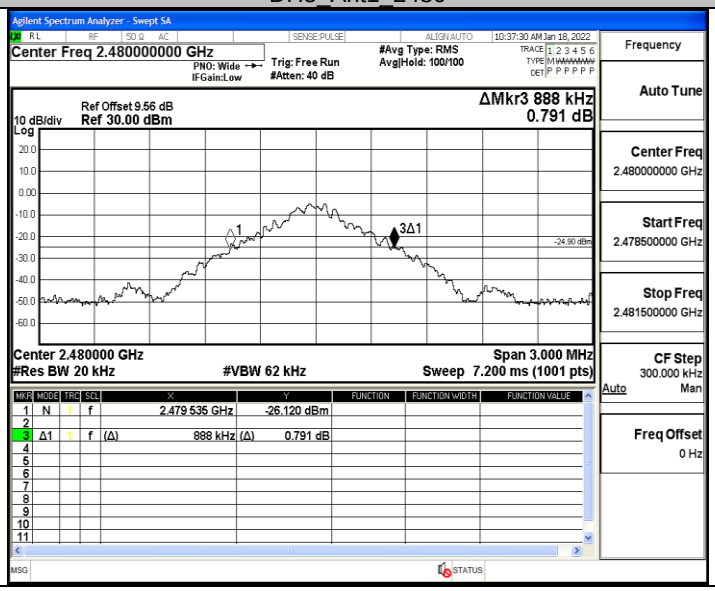
DH5_Ant1_2402



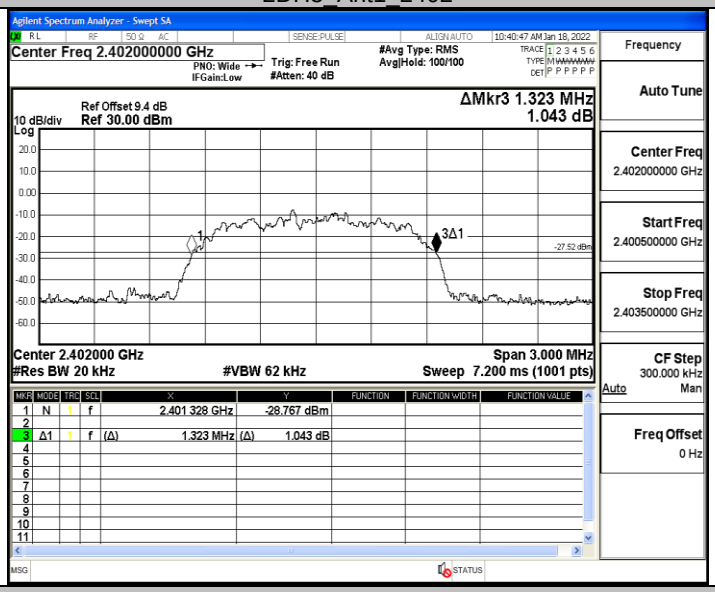
DH5_Ant1_2441



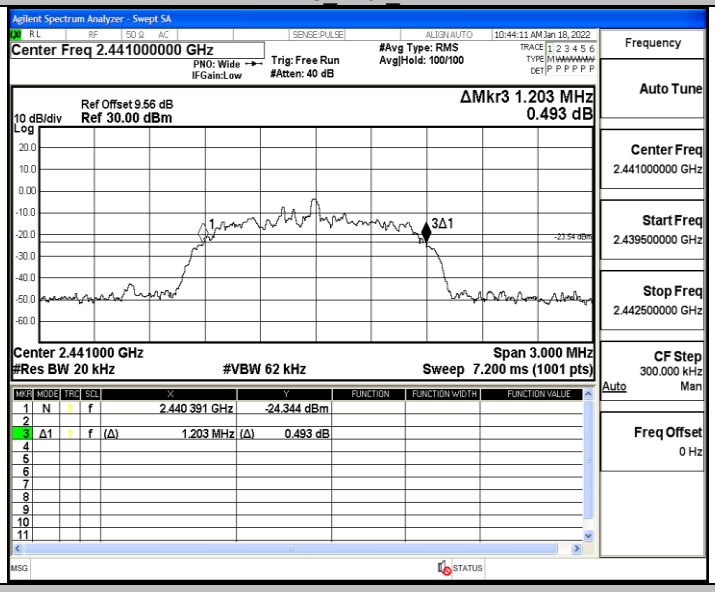
DH5_Ant1_2480



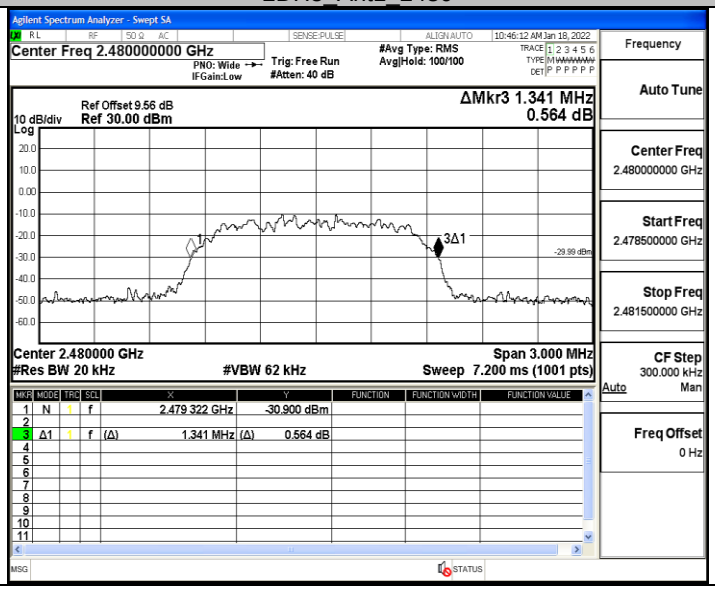
2DH5_Ant1_2402



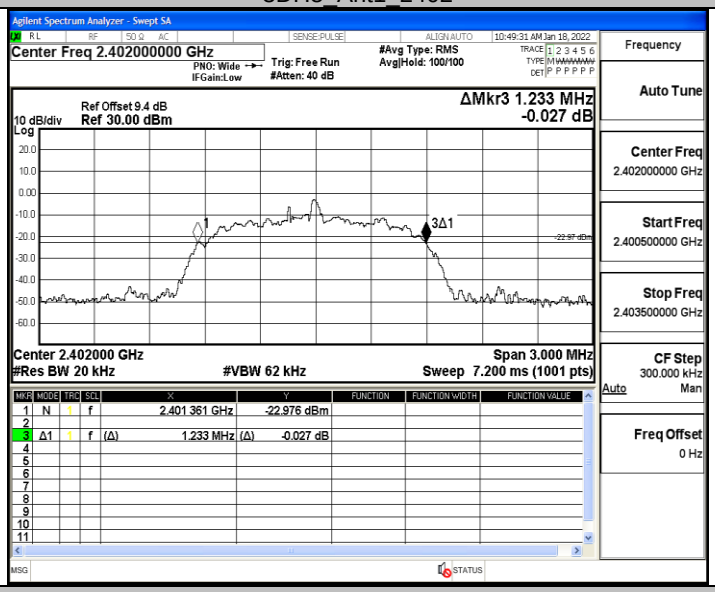
2DH5_Ant1_2441



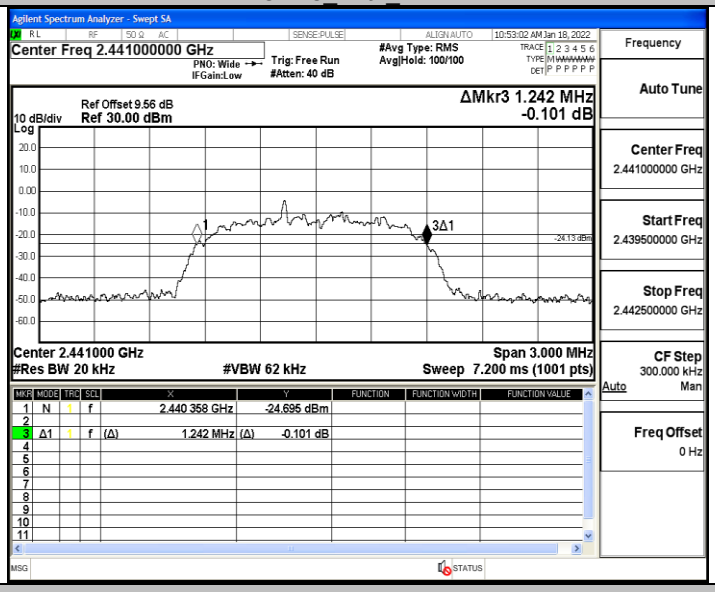
2DH5_Ant1_2480



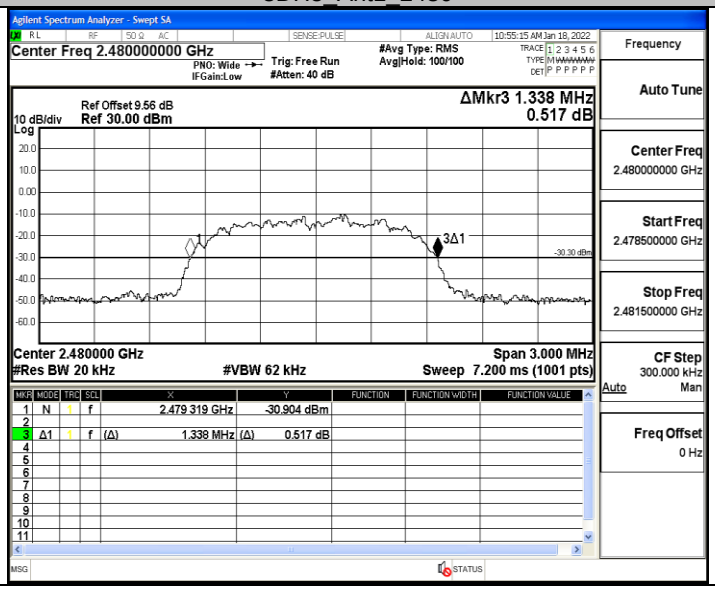
3DH5_Ant1_2402



3DH5_Ant1_2441



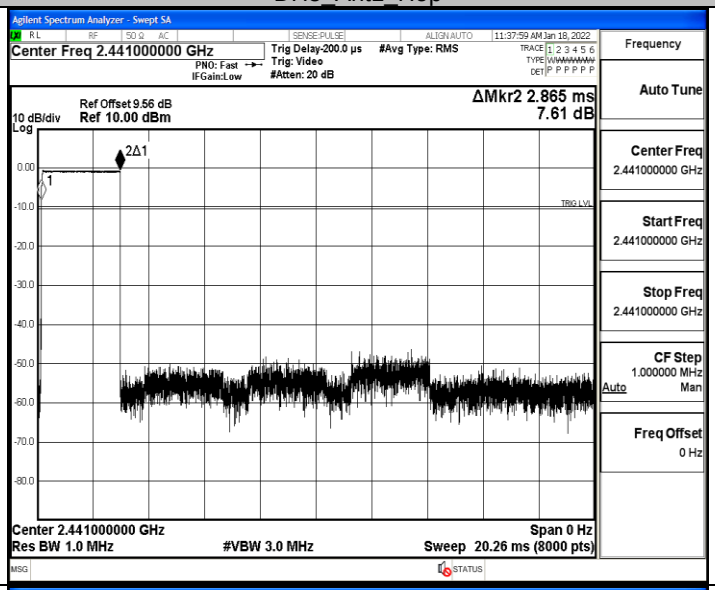
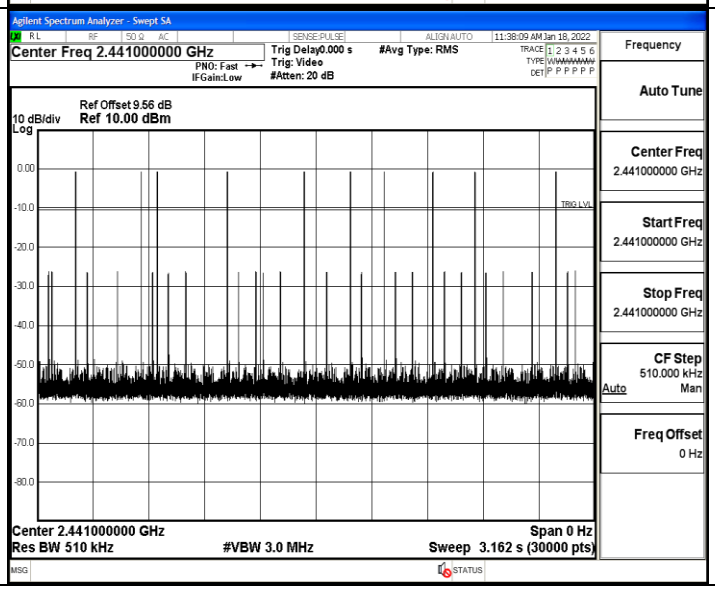
3DH5_Ant1_2480

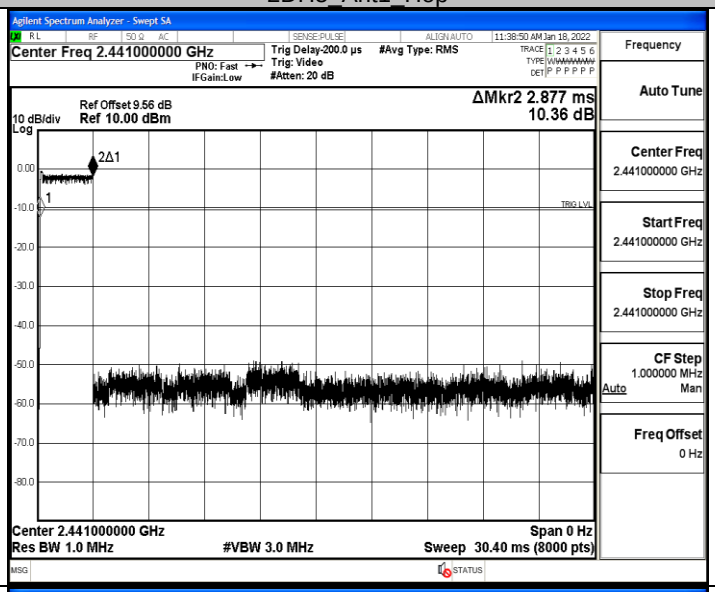
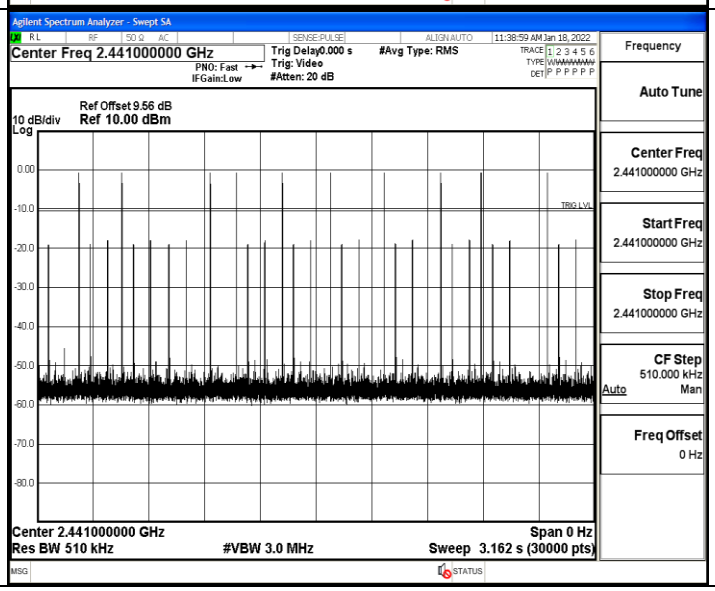


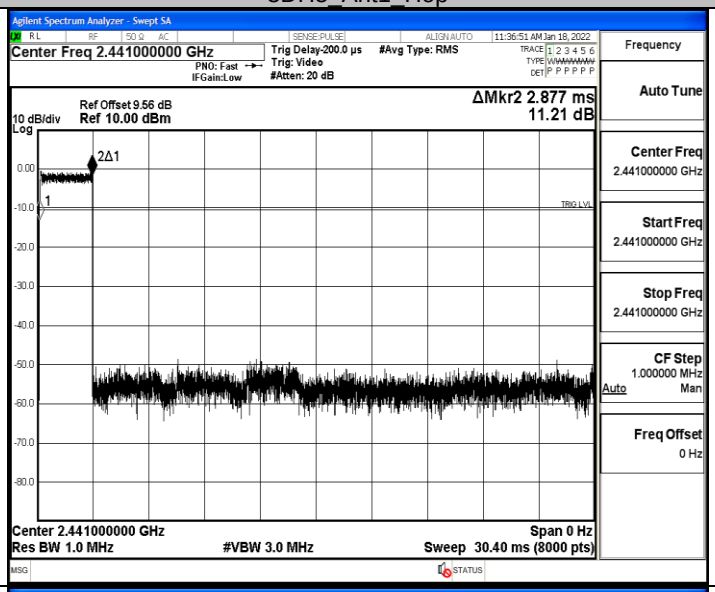
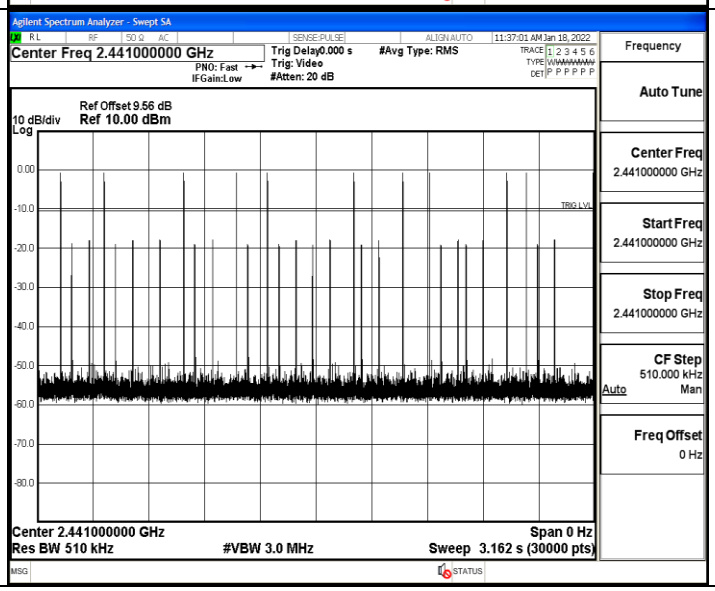
A.2 Dwell Time

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	110	0.316	≤0.4	PASS
3DH5	Ant1	Hop	2.88	120	0.345	≤0.4	PASS

Test Graph

DH5_Ant1_Hop



2DH5_Ant1_Hop		
		
		

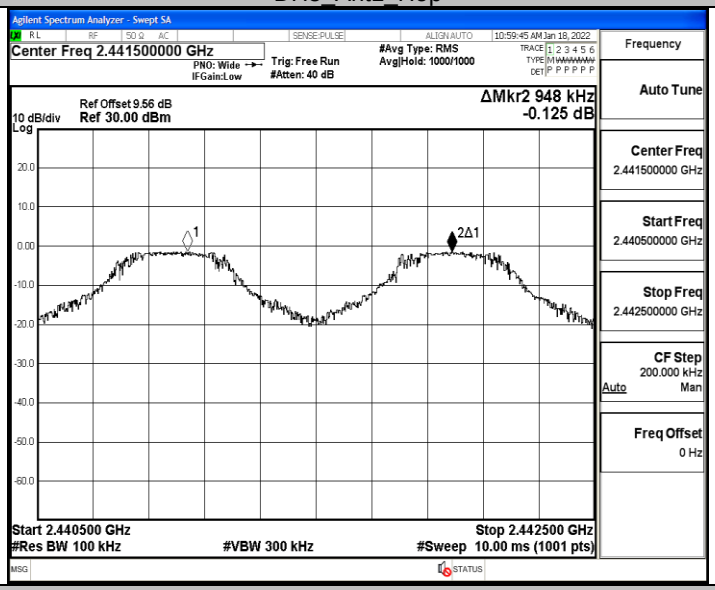
3DH5_Ant1_Hop		
		
		

A.3 Carrier Frequency Separation

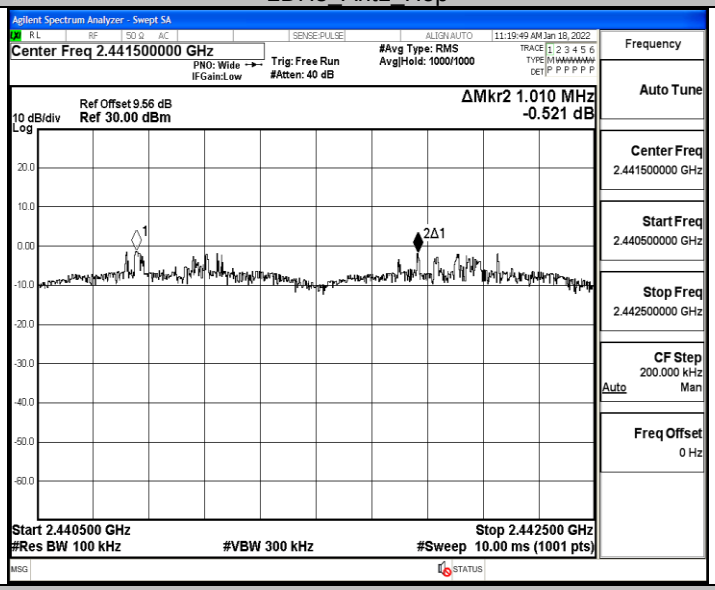
TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.948	≥0.888	PASS
2DH5	Ant1	Hop	1.01	≥0.894	PASS
3DH5	Ant1	Hop	0.992	≥0.892	PASS

Test Graph

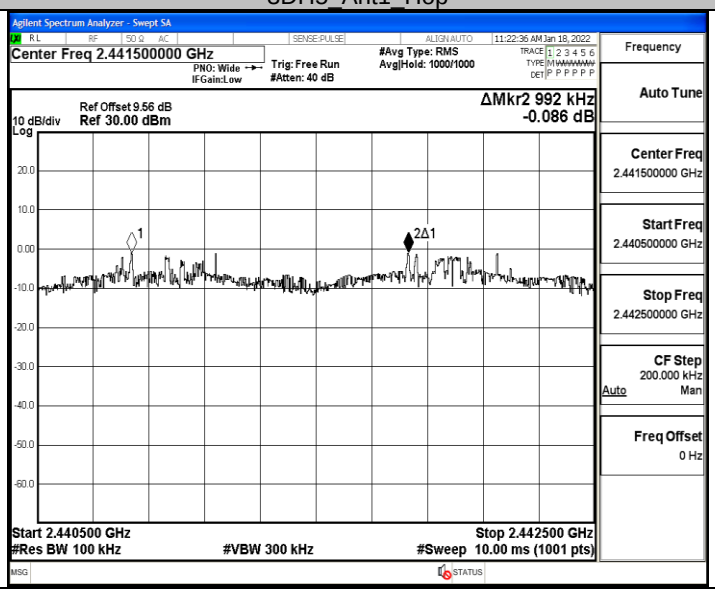
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop

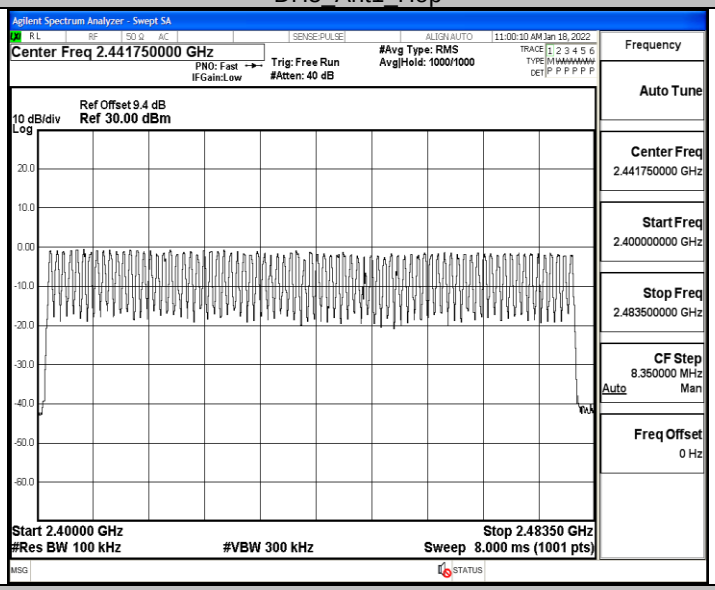


A.4 Hopping Channel Number

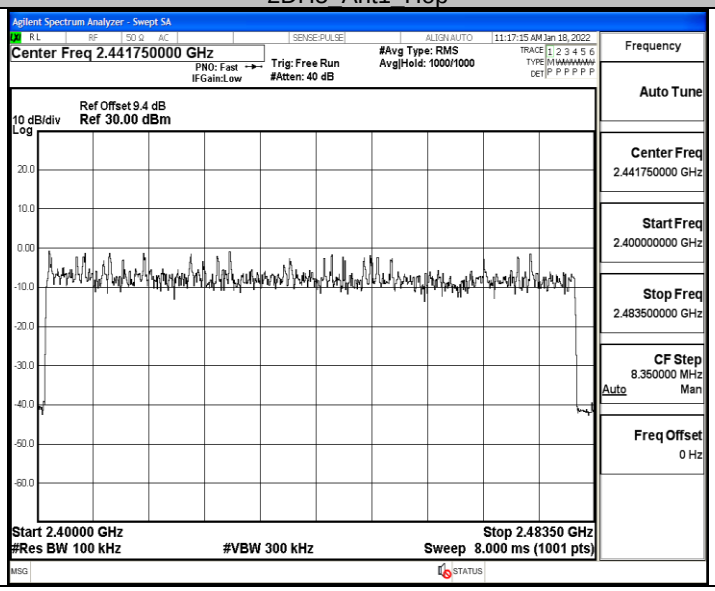
TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	>=15	PASS
2DH5	Ant1	Hop	79	>=15	PASS
3DH5	Ant1	Hop	79	>=15	PASS

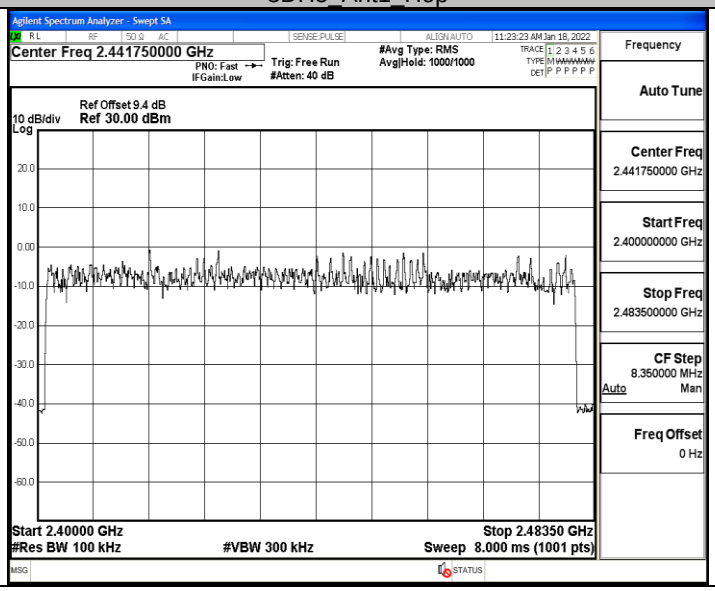
Test Graph

DH5_Ant1_Hop



2DH5_Ant1_Hop



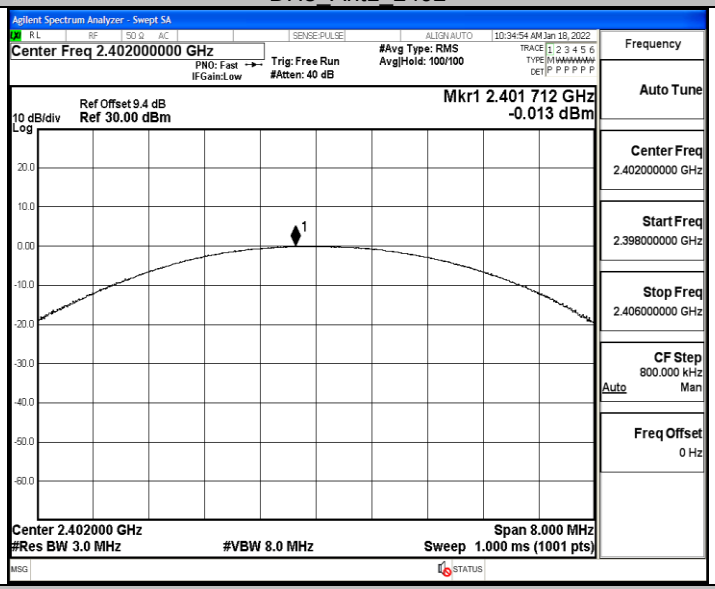
3DH5_Ant1_Hop


A.5 Conducted Peak Output Power

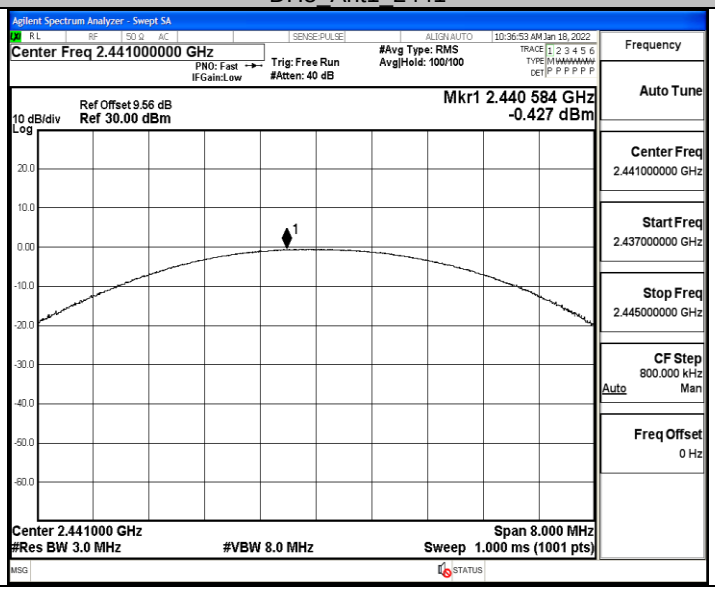
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	-0.01	≤30	PASS
		2441	-0.43	≤30	PASS
		2480	-0.95	≤30	PASS
2DH5	Ant1	2402	-0.02	≤20.97	PASS
		2441	-0.5	≤20.97	PASS
		2480	-0.93	≤20.97	PASS
3DH5	Ant1	2402	0.04	≤20.97	PASS
		2441	-0.34	≤20.97	PASS
		2480	-0.86	≤20.97	PASS

Test Graph

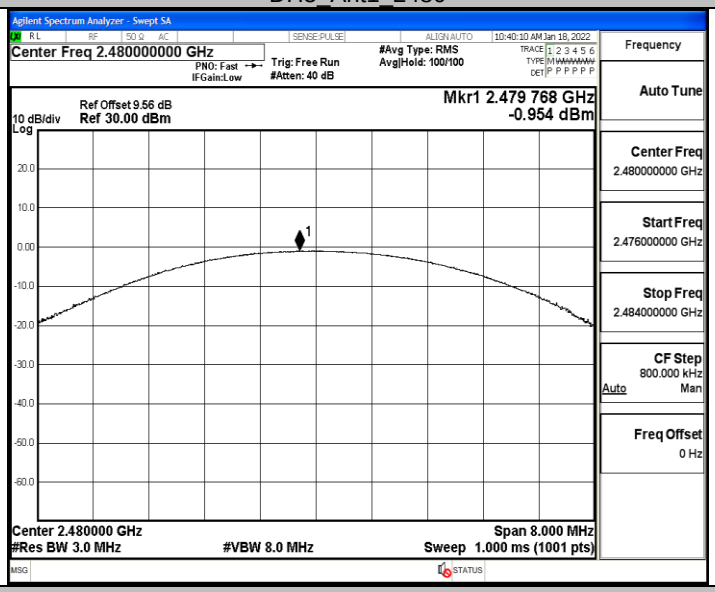
DH5_Ant1_2402



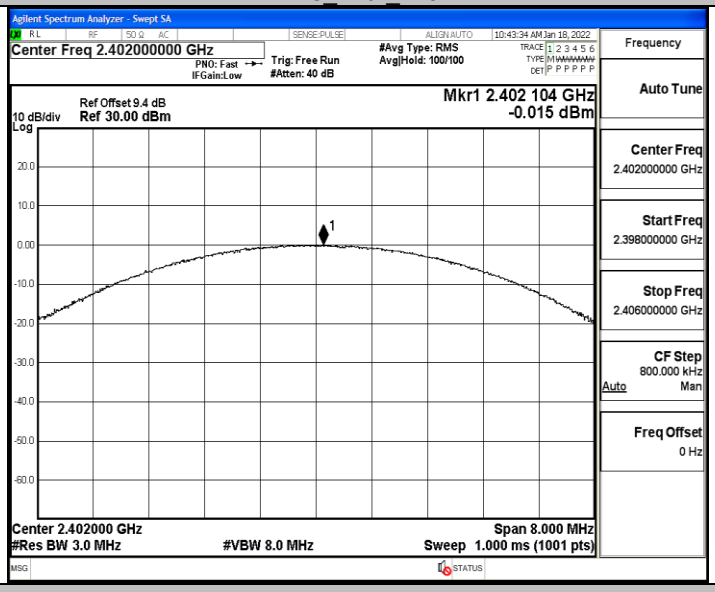
DH5_Ant1_2441



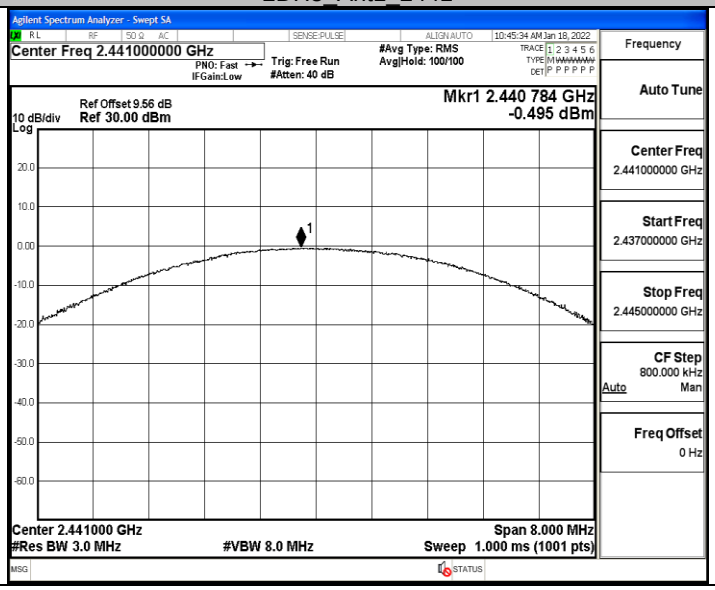
DH5_Ant1_2480



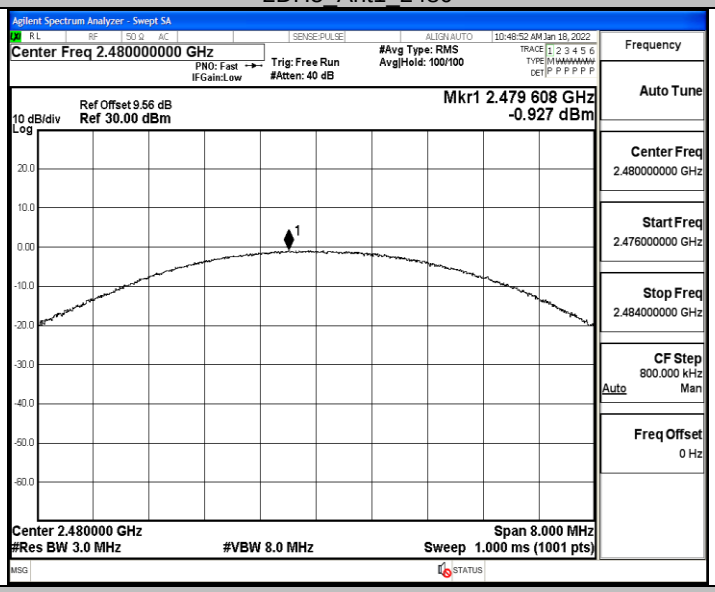
2DH5_Ant1_2402



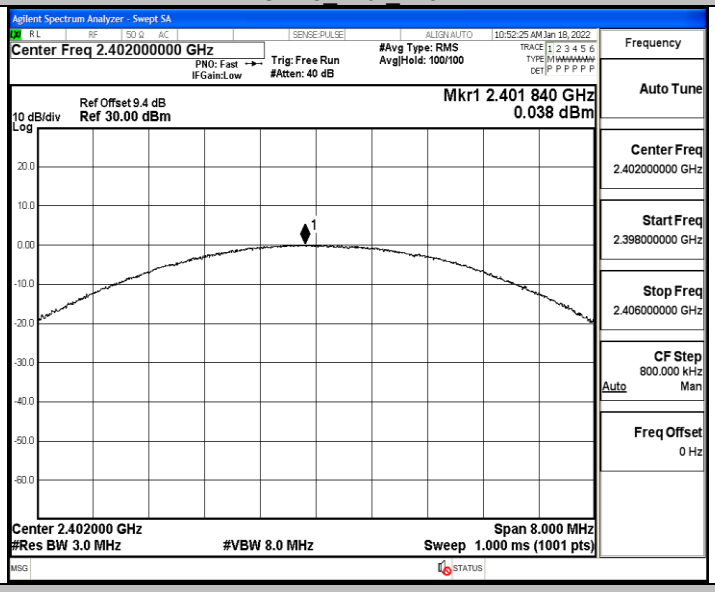
2DH5_Ant1_2441



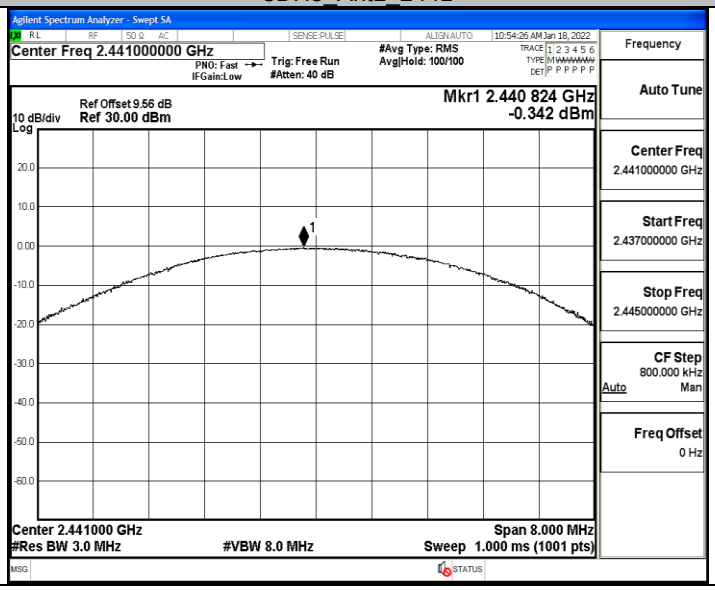
2DH5_Ant1_2480

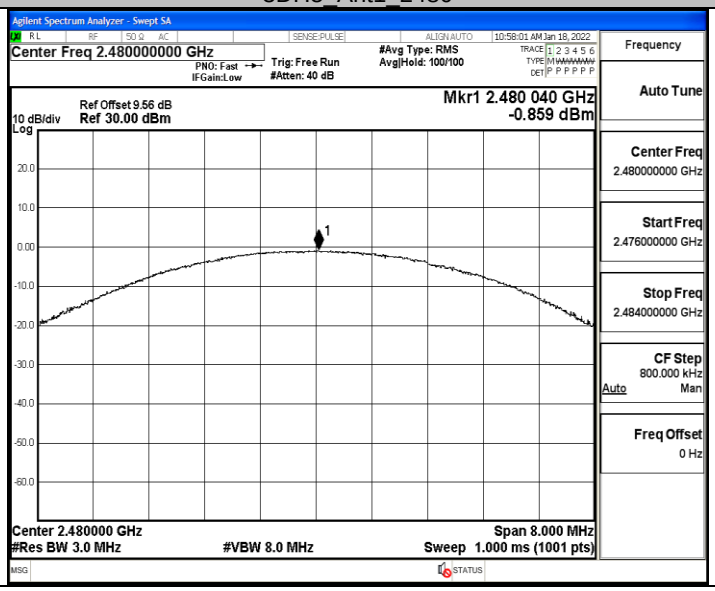


3DH5_Ant1_2402



3DH5_Ant1_2441



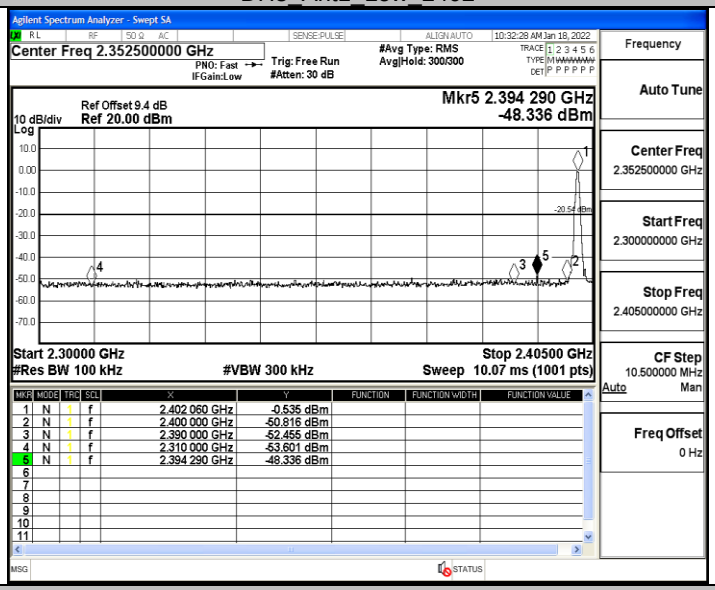
3DH5_Ant1_2480


A.6 Band-edge for RF Conducted Emissions

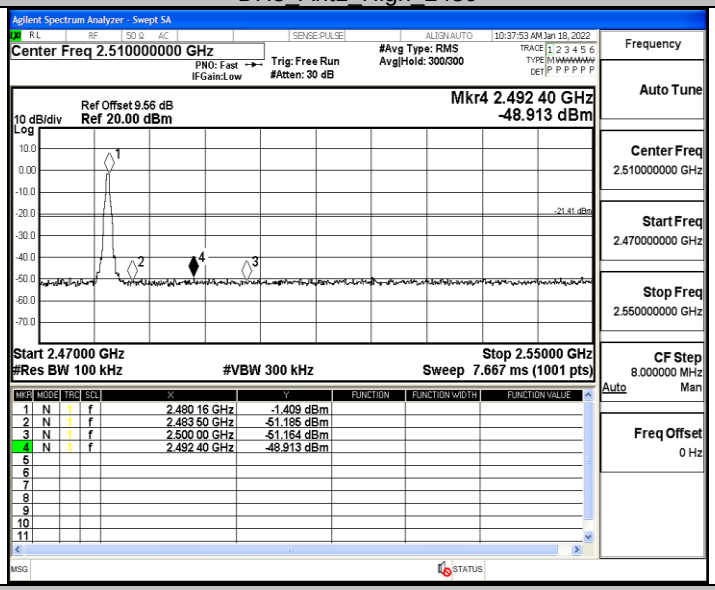
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-0.54	-48.34	≤-20.54	PASS
		High	2480	-1.41	-48.91	≤-21.41	PASS
		Low	Hop_2402	-0.93	-50.17	≤-20.93	PASS
		High	Hop_2480	-1.36	-49.11	≤-21.36	PASS
2DH5	Ant1	Low	2402	-0.68	-48.09	≤-20.68	PASS
		High	2480	-2.18	-48.89	≤-22.18	PASS
		Low	Hop_2402	-2.48	-49.67	≤-22.48	PASS
		High	Hop_2480	-2.60	-48.68	≤-22.6	PASS
3DH5	Ant1	Low	2402	-0.38	-49.83	≤-20.38	PASS
		High	2480	-1.44	-49.08	≤-21.44	PASS
		Low	Hop_2402	-2.00	-49.21	≤-22	PASS
		High	Hop_2480	-3.97	-48.52	≤-23.97	PASS

Test Graph

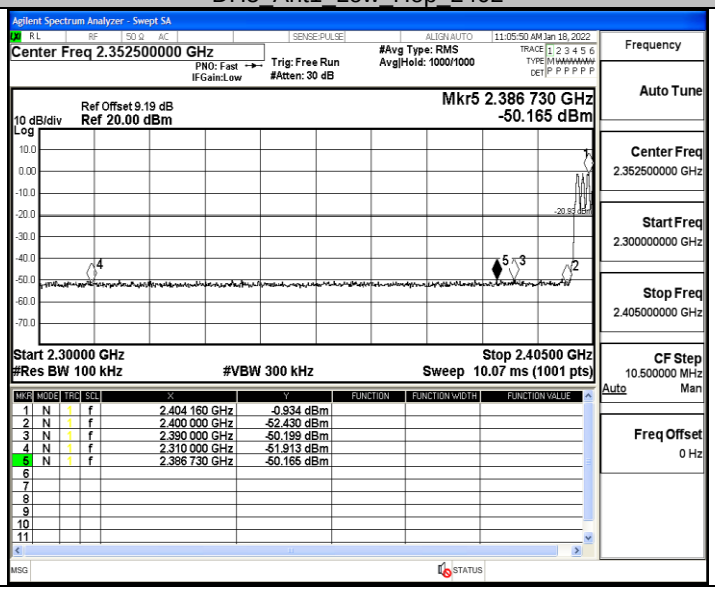
DH5_Ant1_Low_2402



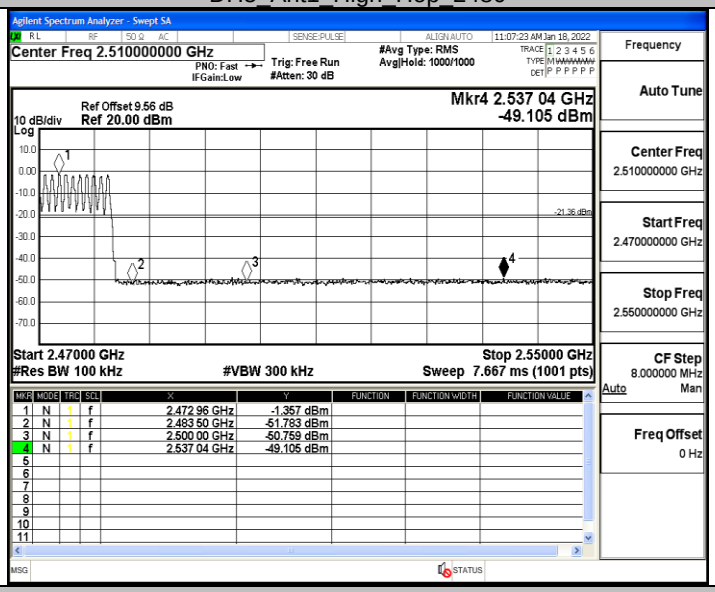
DH5_Ant1_High_2480



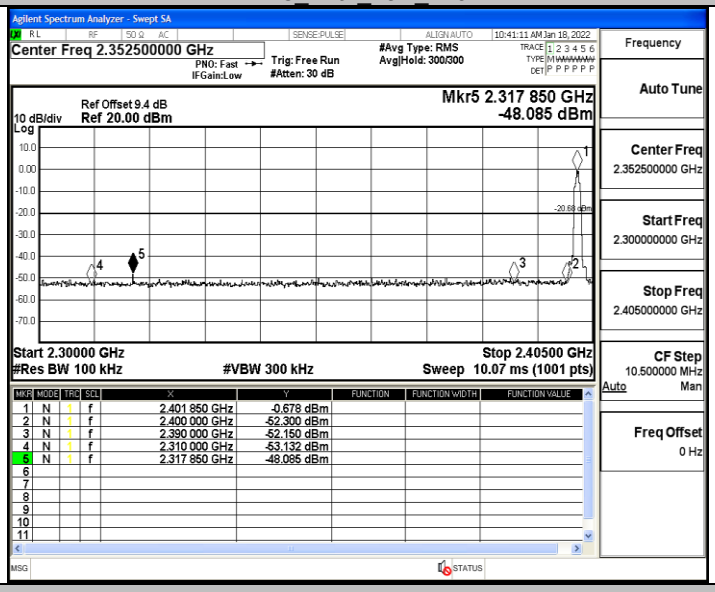
DH5_Ant1_Low_Hop_2402



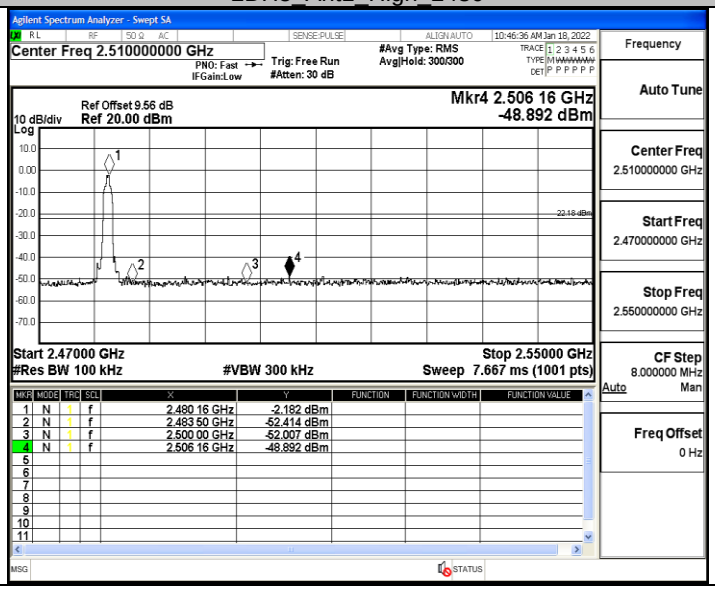
DH5_Ant1_High_Hop_2480



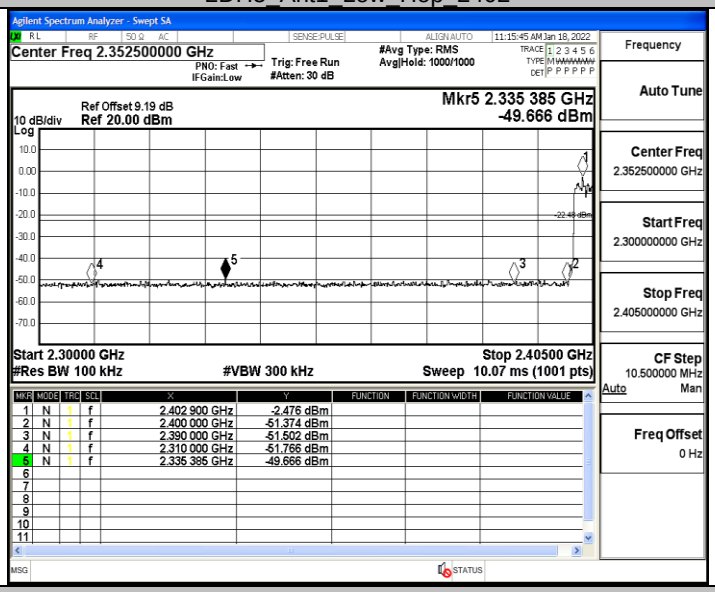
2DH5_Ant1_Low_2402



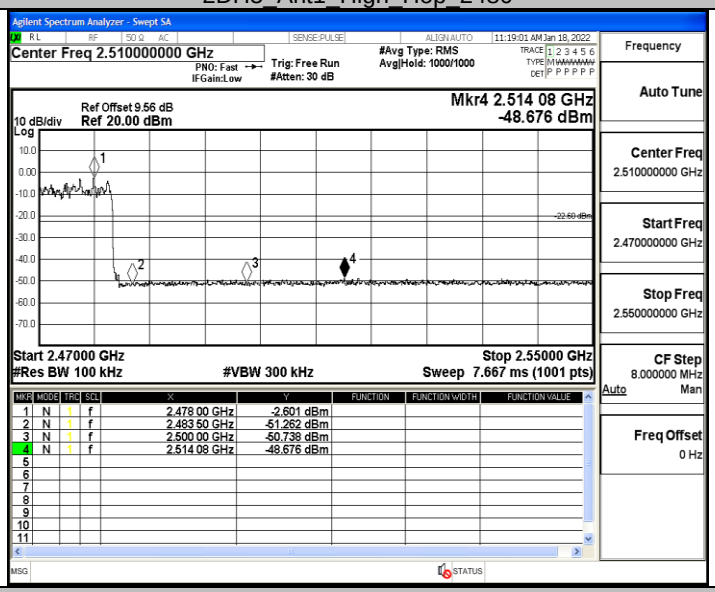
2DH5_Ant1_High_2480



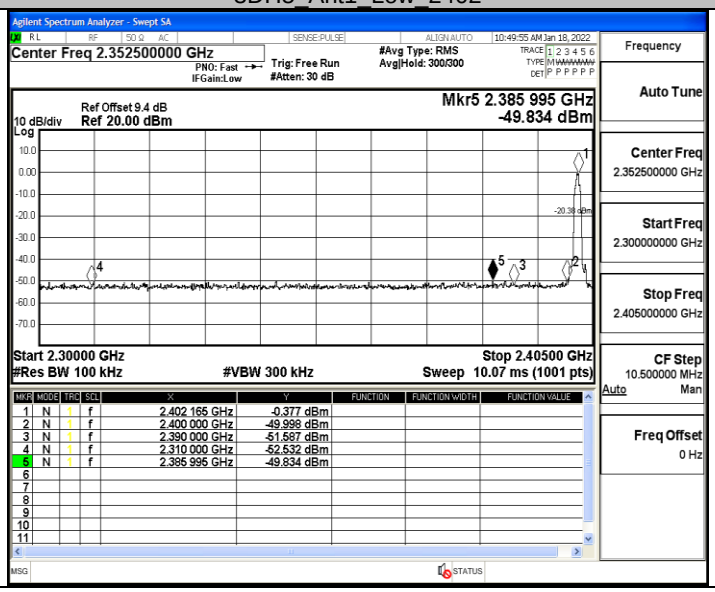
2DH5_Ant1_Low_Hop_2402



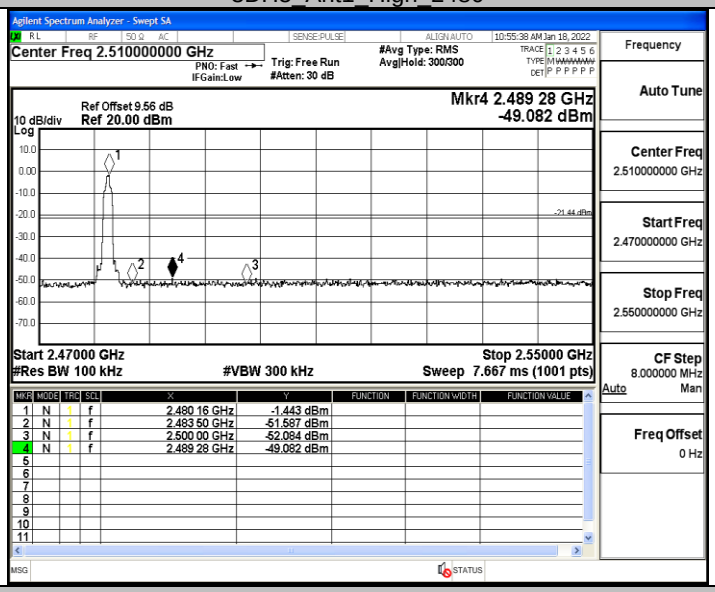
2DH5_Ant1_High_Hop_2480



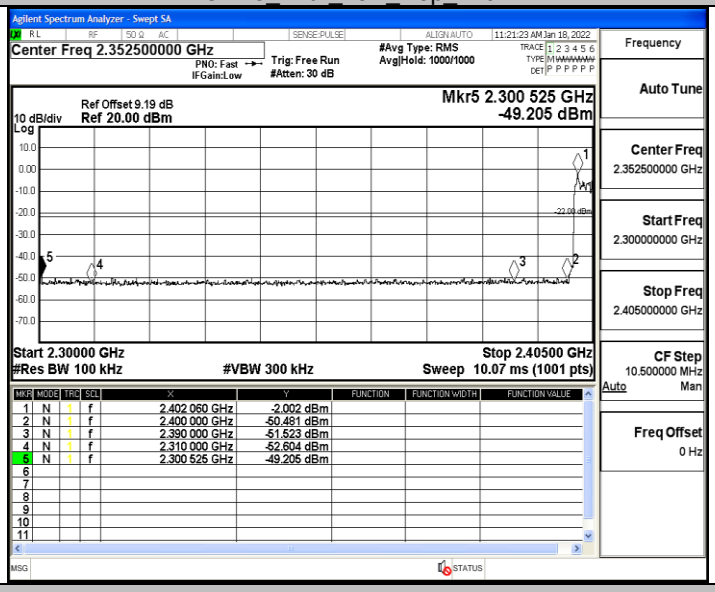
3DH5_Ant1_Low_2402



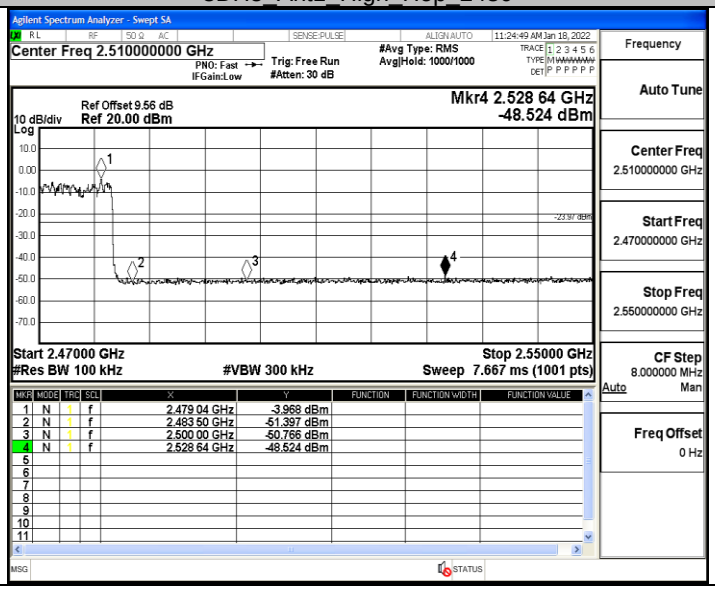
3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



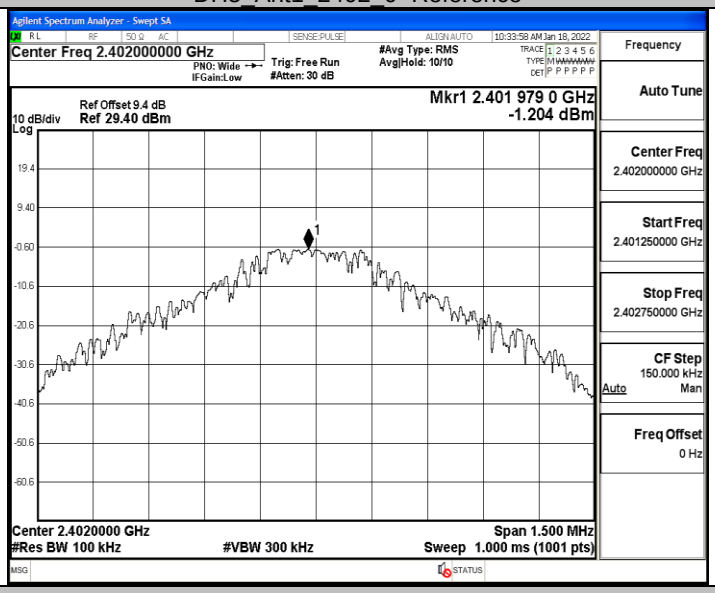
3DH5_Ant1_High_Hop_2480



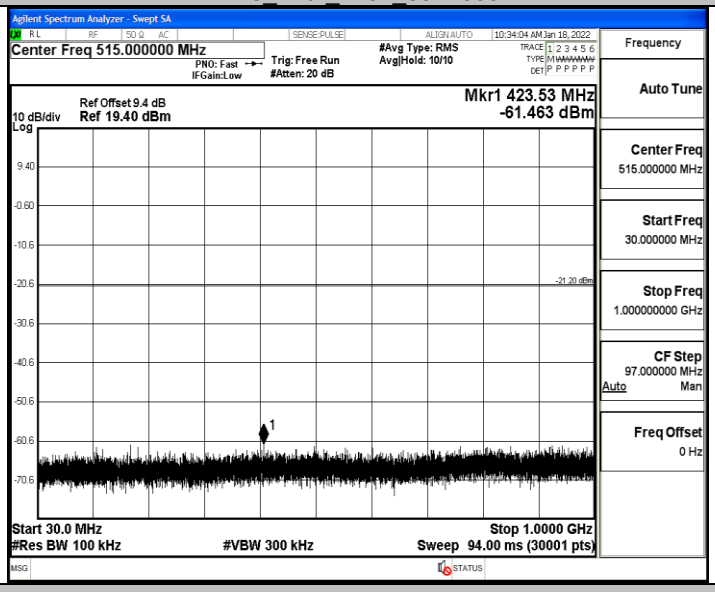
A.7 RF Conducted Spurious Emissions

Test Graph

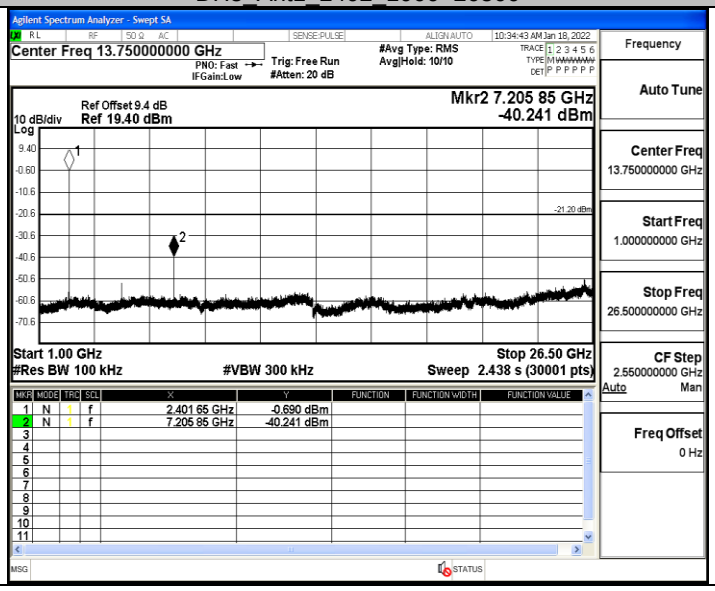
DH5_Ant1_2402_0~Reference



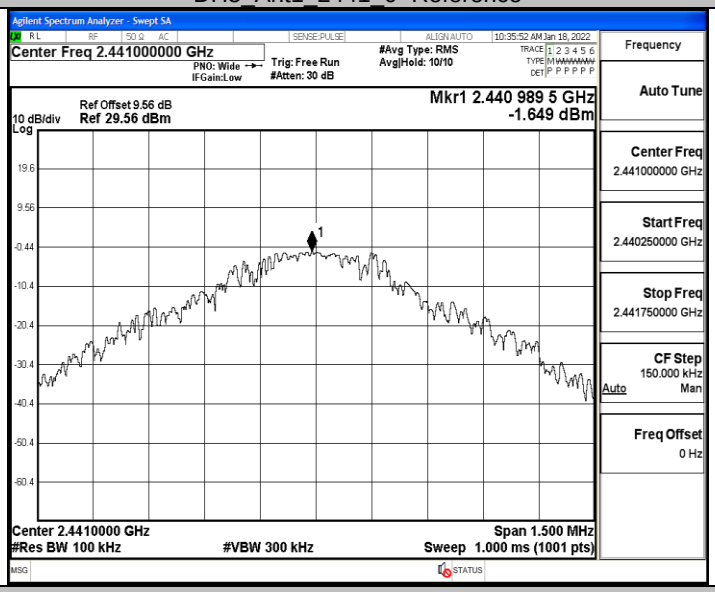
DH5_Ant1_2402_30~1000



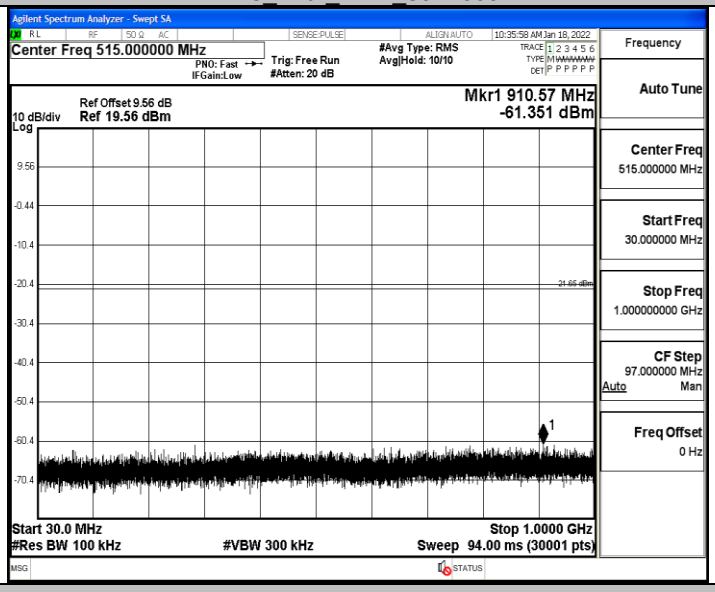
DH5_Ant1_2402_1000~26500



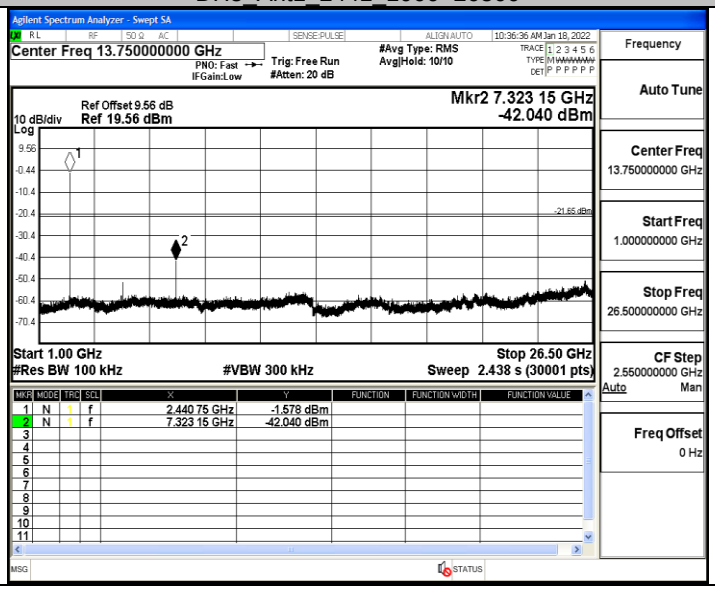
DH5_Ant1_2441_0~Reference



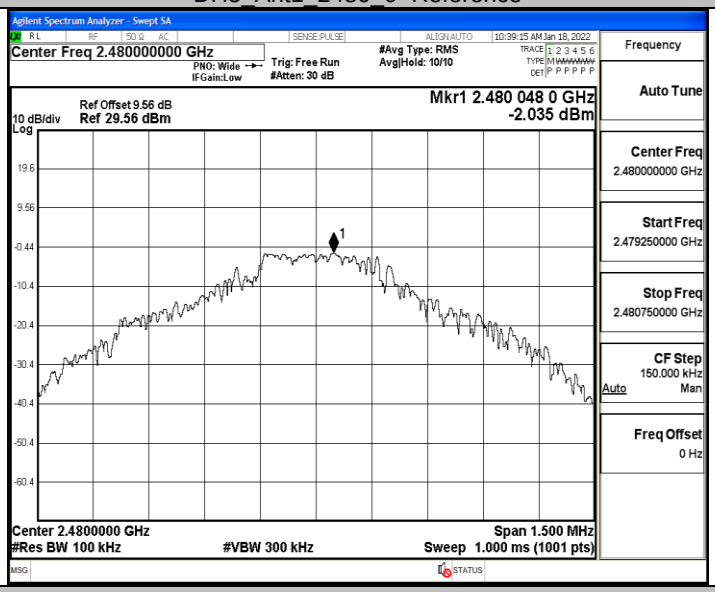
DH5_Ant1_2441_30~1000



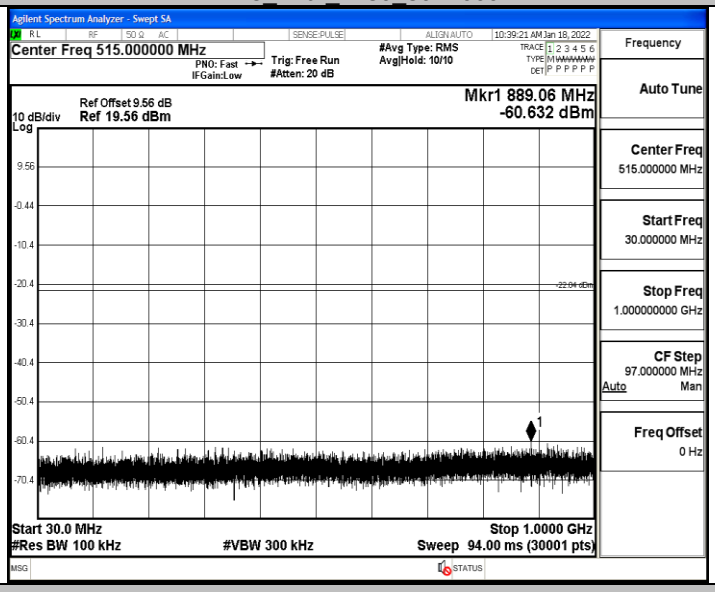
DH5_Ant1_2441_1000~26500



DH5_Ant1_2480_0~Reference



DH5_Ant1_2480_30~1000



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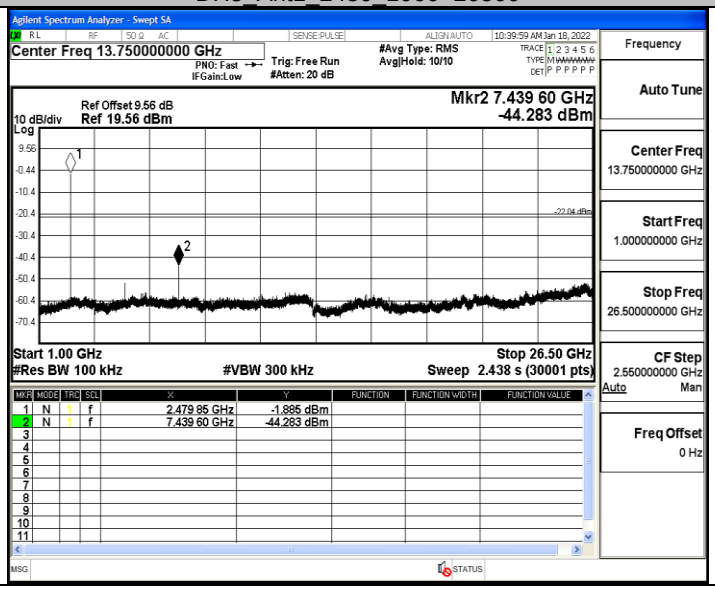

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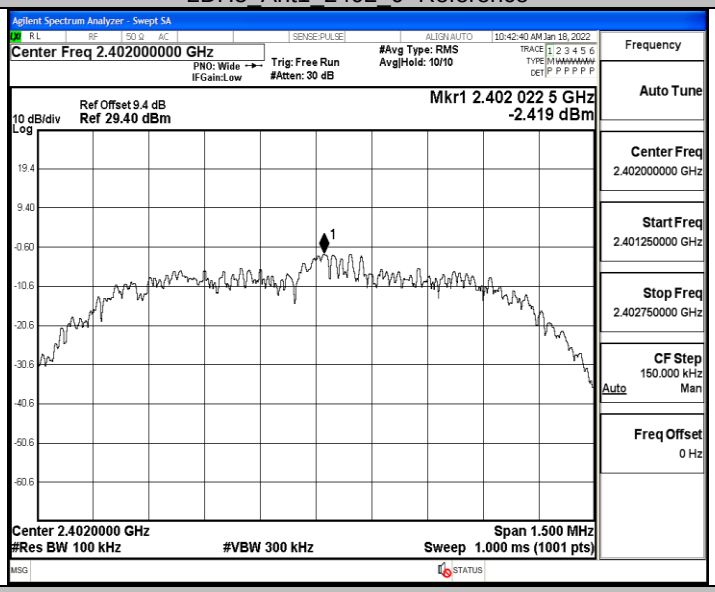

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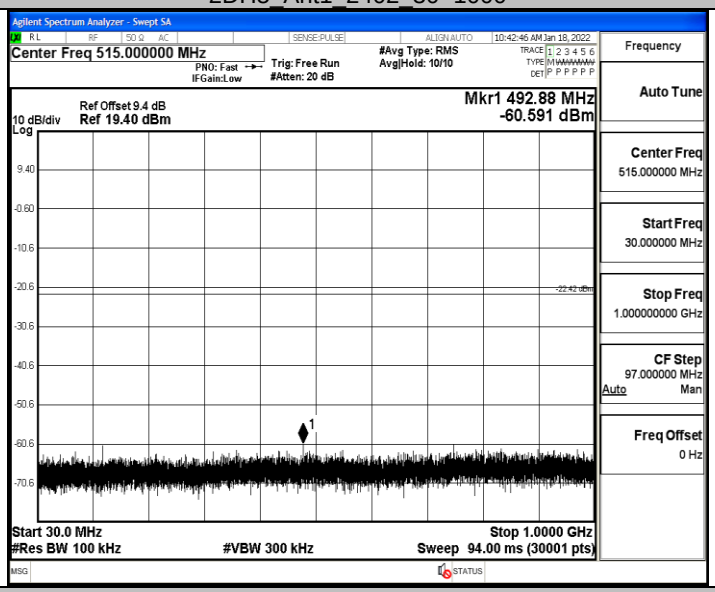

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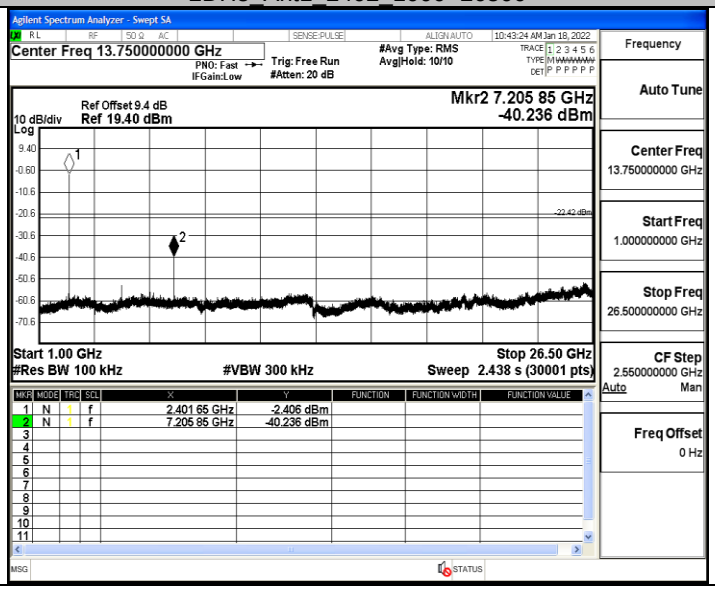

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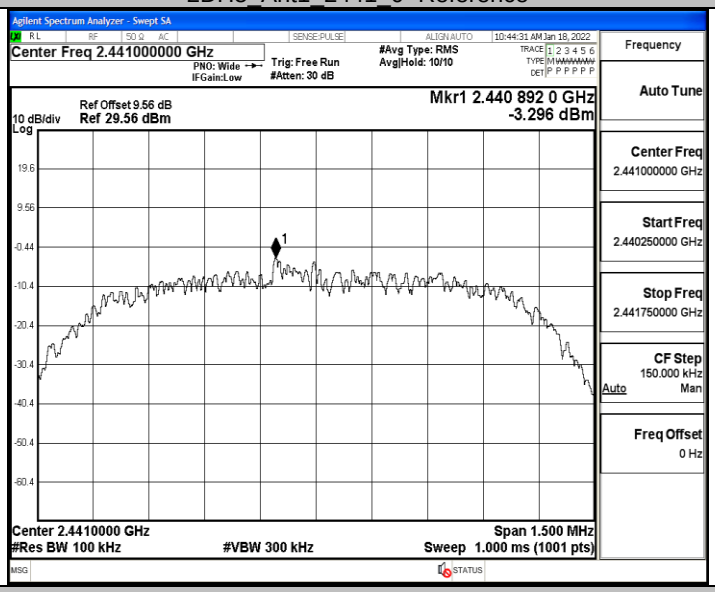

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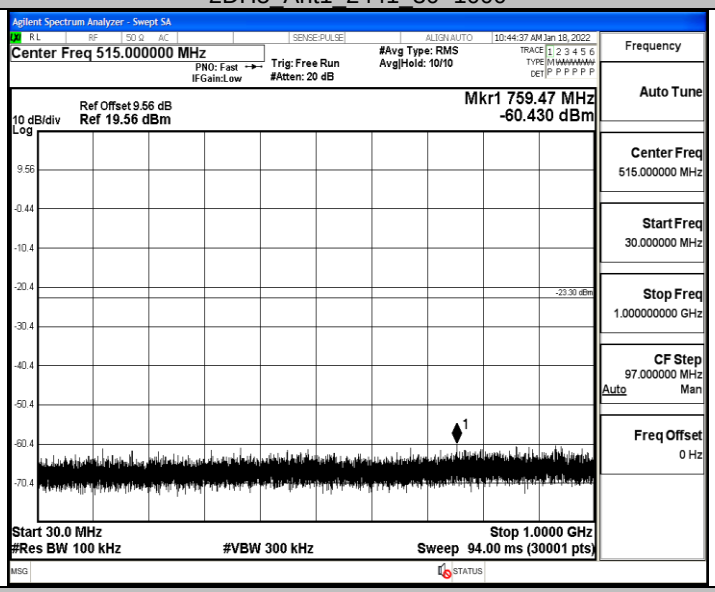

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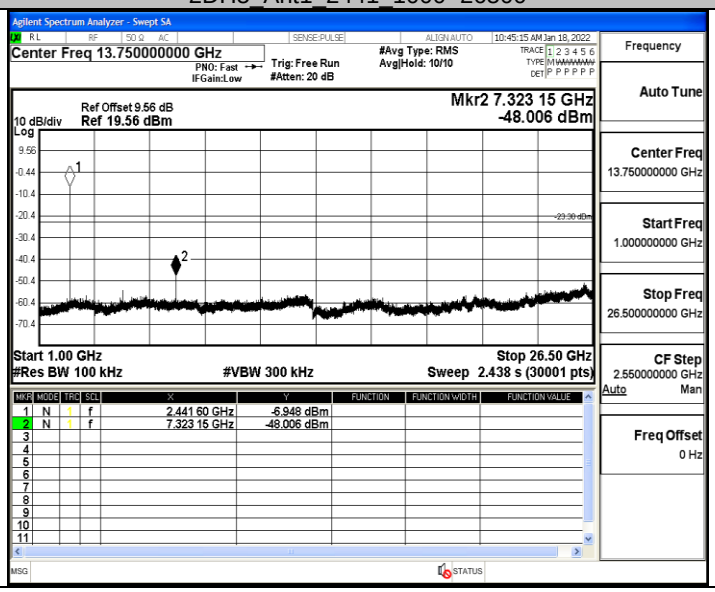

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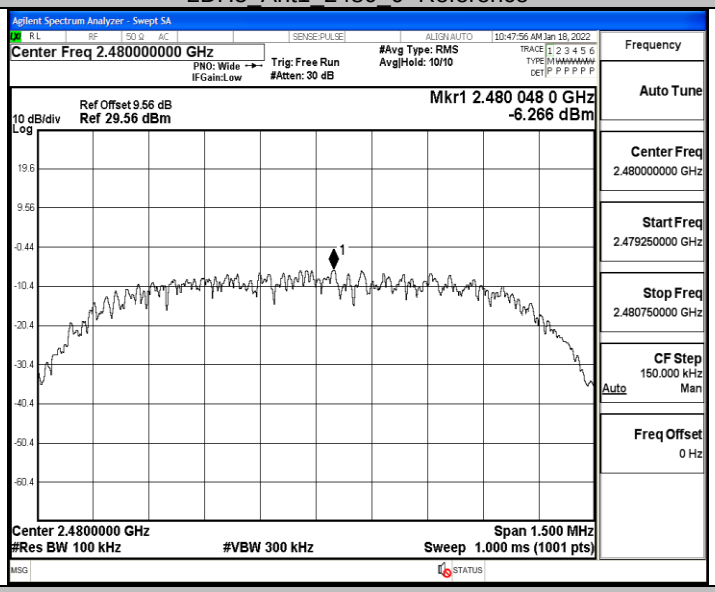

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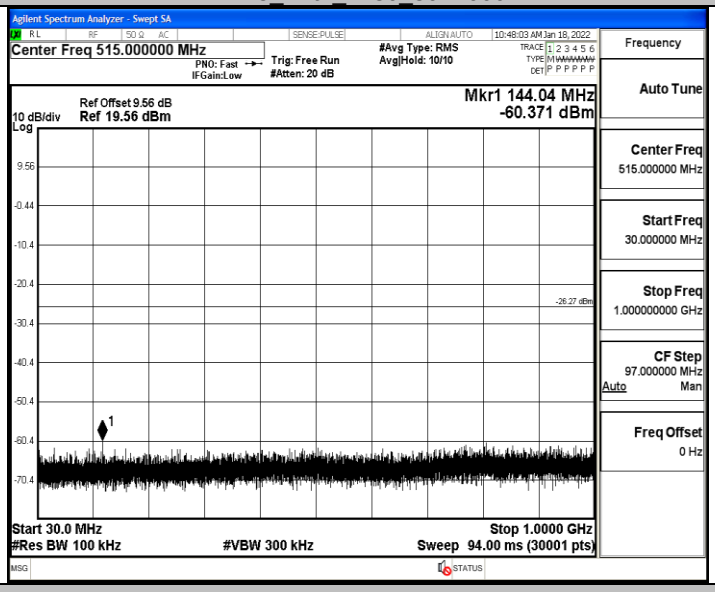

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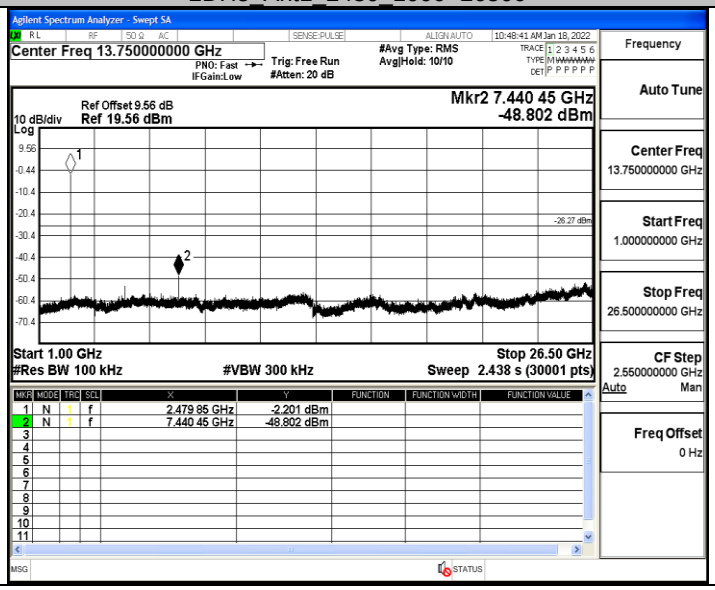
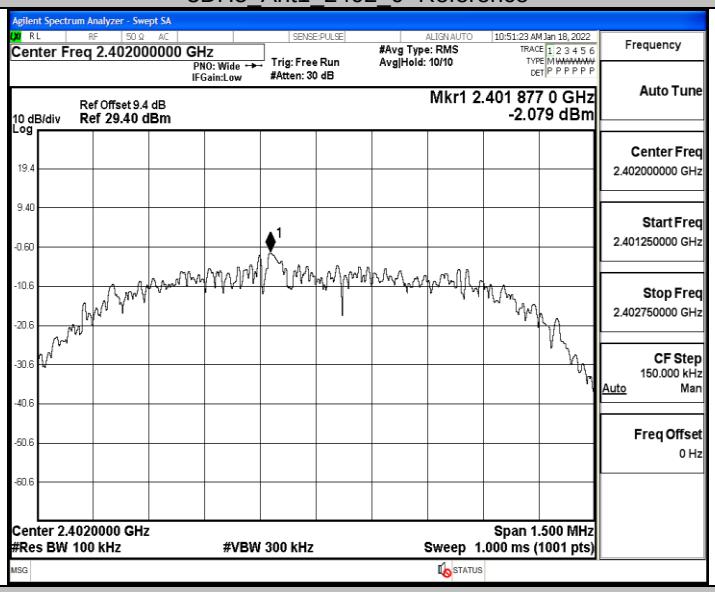


3DH5_Ant1_2402_0~Reference



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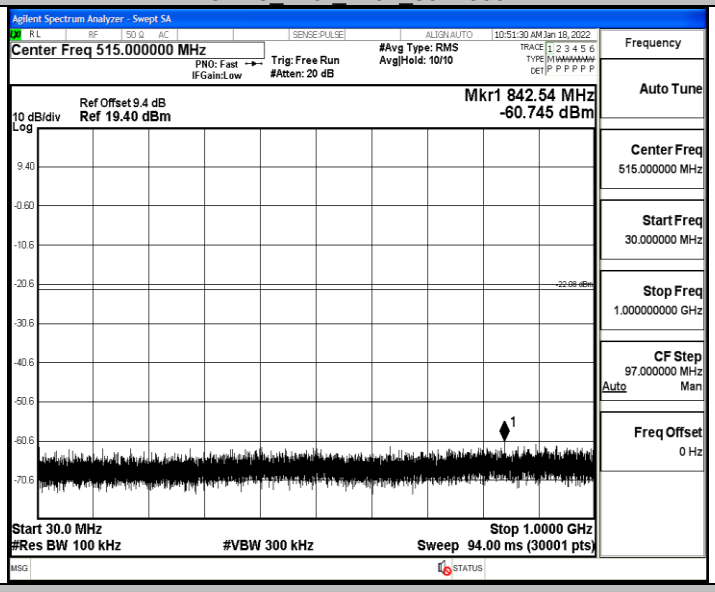

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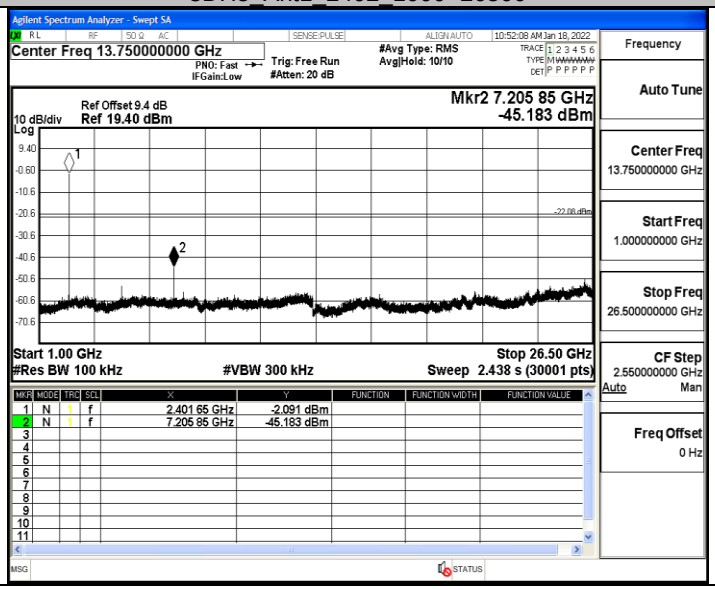

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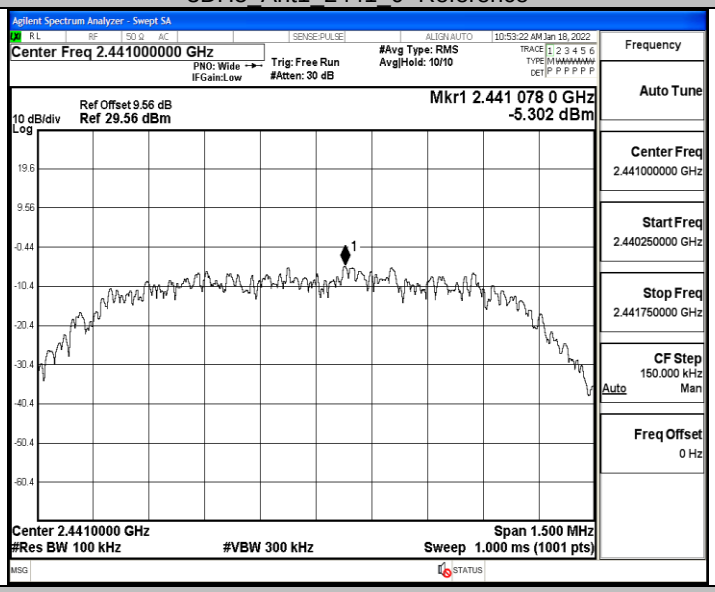

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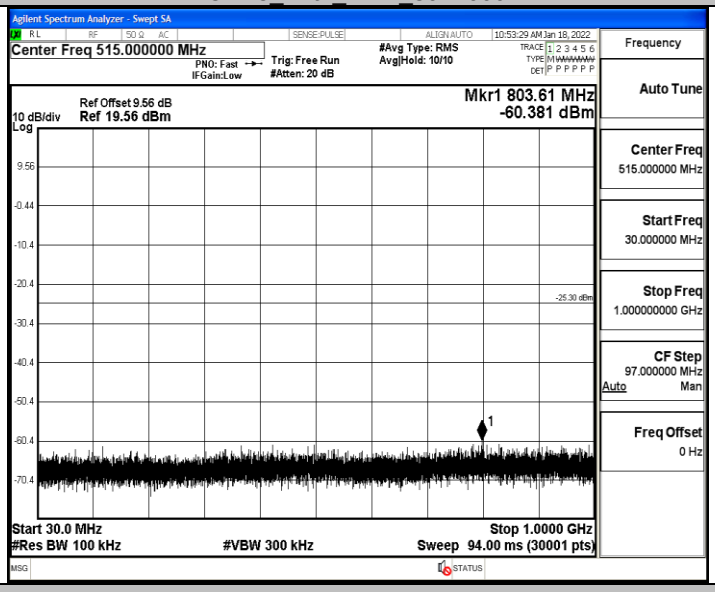

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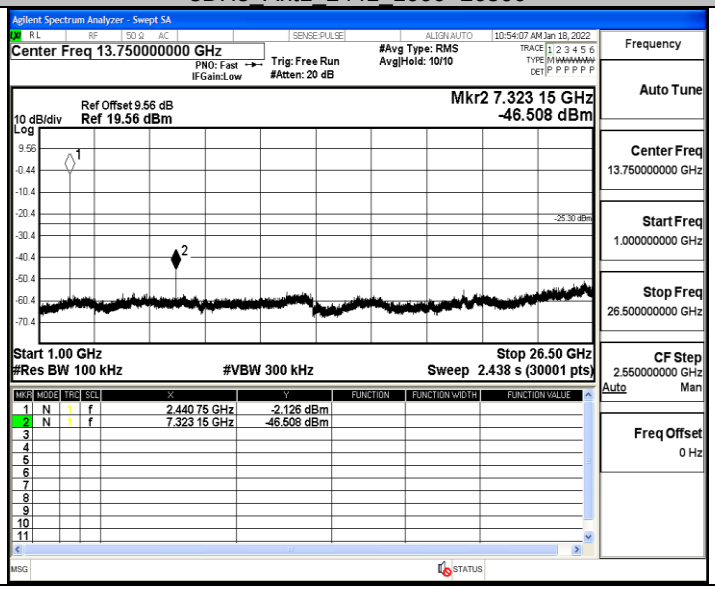

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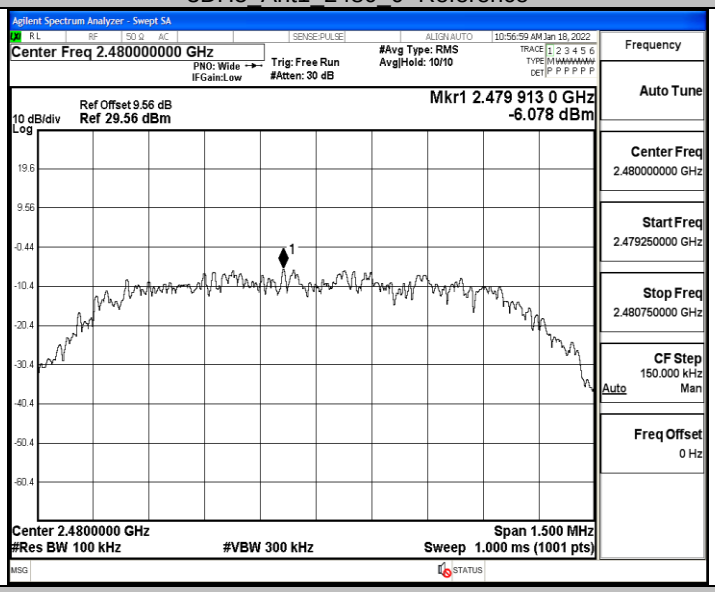

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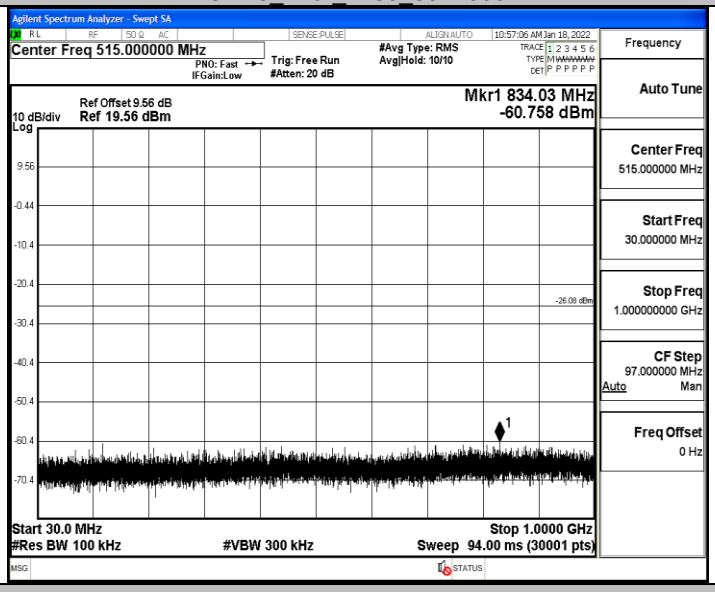

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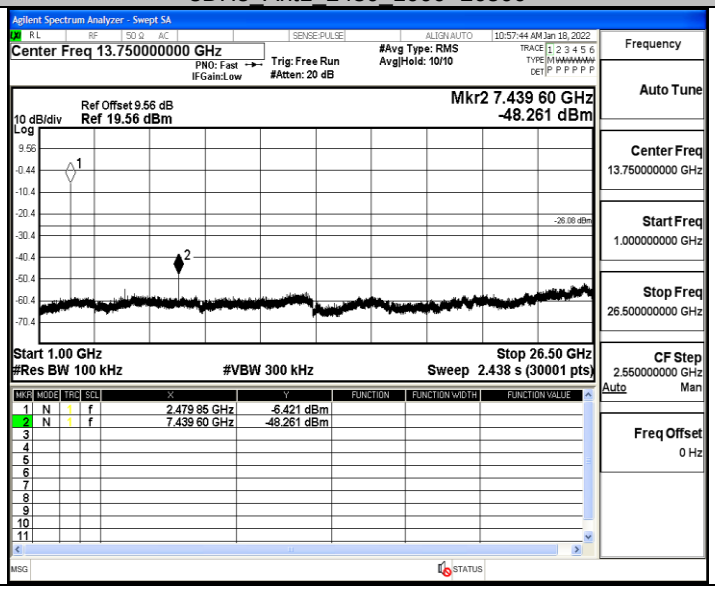


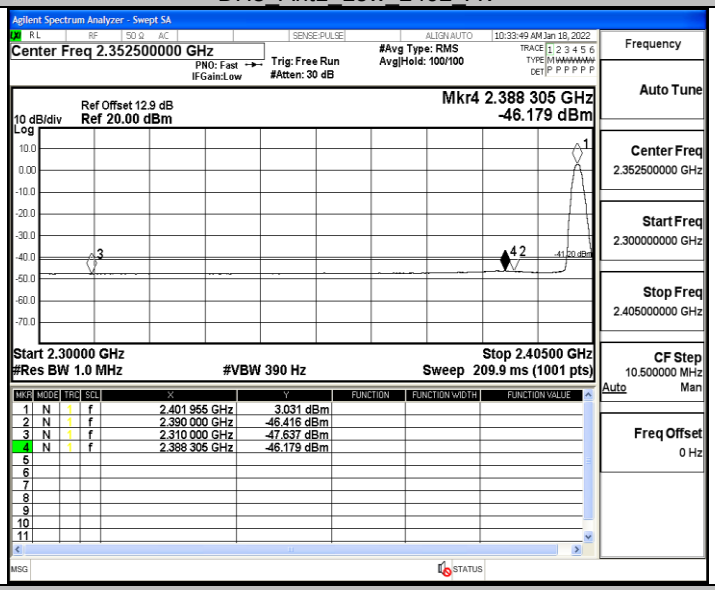
A.8 Restrict-band band-edge measurements

TestMode	Antenna	ChName	Channel	Detector	Freq(MHz)	Result(dBm)	Limit(dBm)	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-47.64	≤-41.20	PASS
				AV	2388.305	-46.18	≤-41.20	PASS
				AV	2390.000	-46.42	≤-41.20	PASS
				Peak	2310.000	-42.01	≤-21.20	PASS
				Peak	2353.970	-37.28	≤-21.20	PASS
				Peak	2390.000	-39.97	≤-21.20	PASS
		High	2480	AV	2483.500	-46.41	≤-41.20	PASS
				AV	2495.680	-46.04	≤-41.20	PASS
				AV	2500.000	-46.39	≤-41.20	PASS
				Peak	2483.500	-38.6	≤-21.20	PASS
				Peak	2492.640	-36.9	≤-21.20	PASS
				Peak	2500.000	-40.2	≤-21.20	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-47.61	≤-41.20	PASS
				AV	2386.835	-46.83	≤-41.20	PASS
				AV	2390.000	-46.93	≤-41.20	PASS
				Peak	2310.000	-41.02	≤-21.20	PASS
				Peak	2384.105	-36.85	≤-21.20	PASS
				Peak	2390.000	-39.1	≤-21.20	PASS
		High	2480	AV	2483.500	-46.46	≤-41.20	PASS
				AV	2496.880	-46.3	≤-41.20	PASS
				AV	2500.000	-46.5	≤-41.20	PASS
				Peak	2483.500	-40.6	≤-21.20	PASS
				Peak	2489.040	-36.63	≤-21.20	PASS
				Peak	2500.000	-36.45	≤-21.20	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-47.56	≤-41.20	PASS
				AV	2388.830	-46.8	≤-41.20	PASS
				AV	2390.000	-46.99	≤-41.20	PASS
				Peak	2310.000	-39.61	≤-21.20	PASS
				Peak	2327.510	-37.46	≤-21.20	PASS
				Peak	2390.000	-40.36	≤-21.20	PASS
		High	2480	AV	2483.500	-46.54	≤-41.20	PASS
				AV	2497.760	-46.27	≤-41.20	PASS
				AV	2500.000	-46.54	≤-41.20	PASS
				Peak	2483.500	-39.82	≤-21.20	PASS
				Peak	2484.560	-35.93	≤-21.20	PASS
				Peak	2500.000	-40.67	≤-21.20	PASS

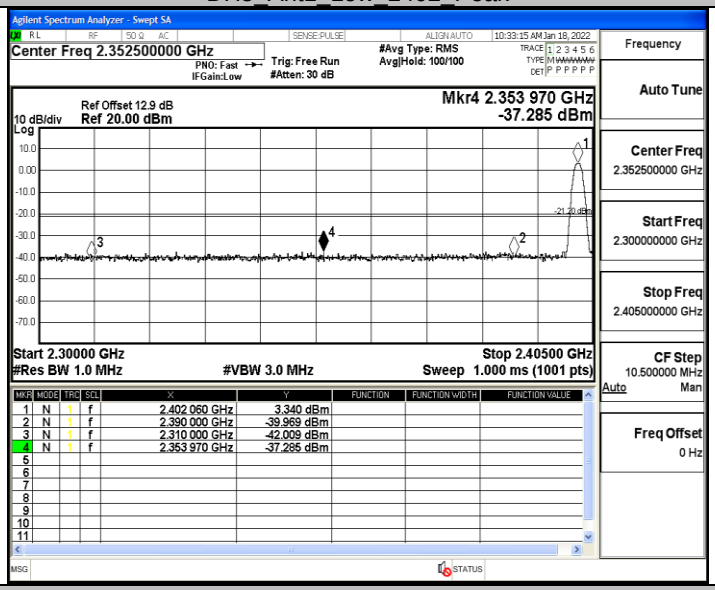
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

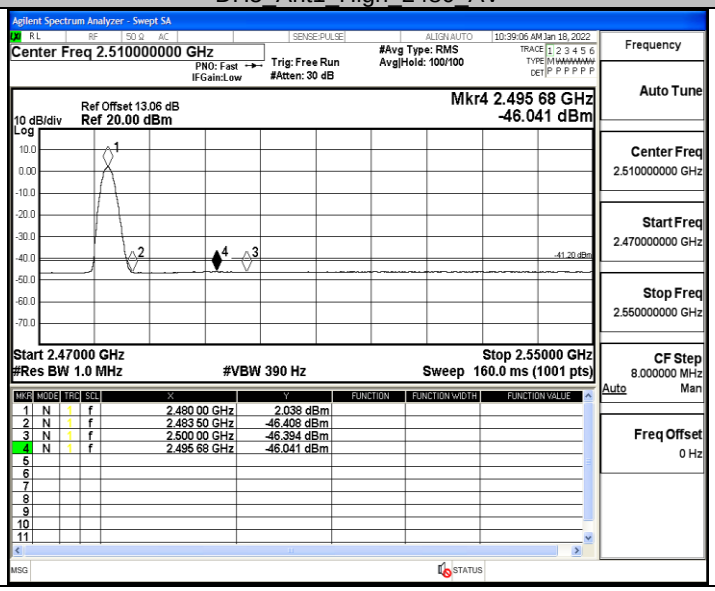
DH5_Ant1_Low_2402_AV



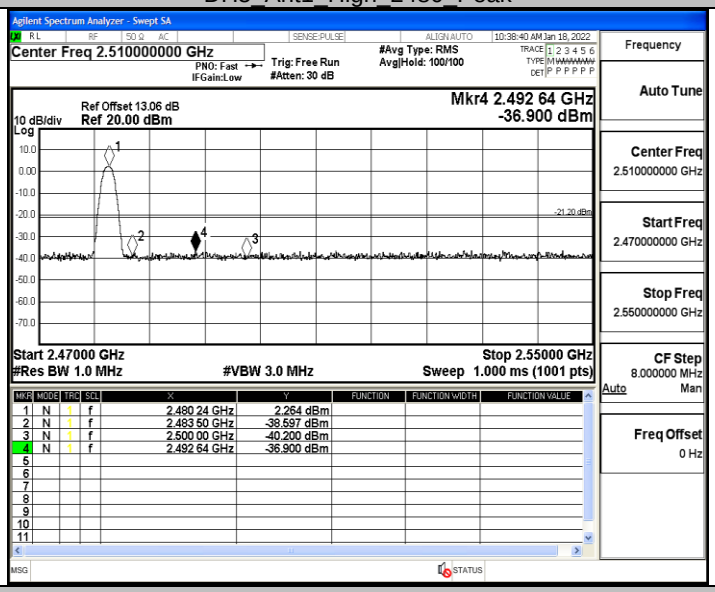
DH5_Ant1_Low_2402_Peak



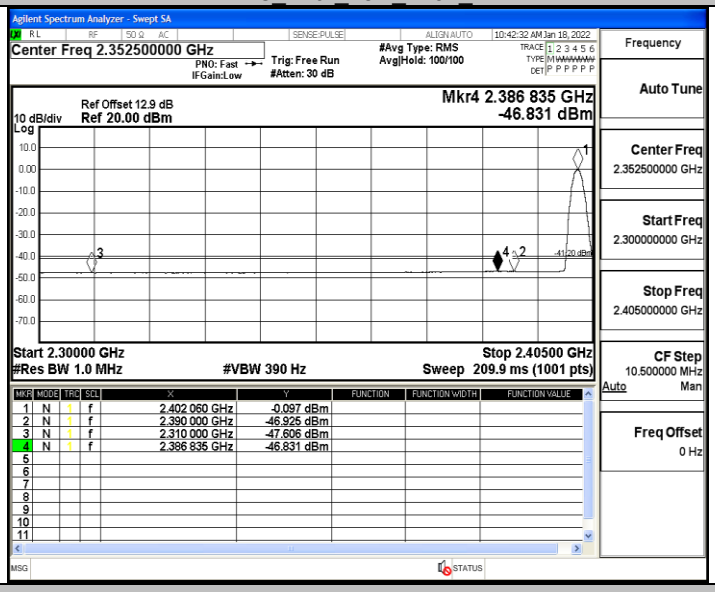
DH5_Ant1_High_2480_AV



DH5_Ant1_High_2480_Peak



2DH5_Ant1_Low_2402_AV



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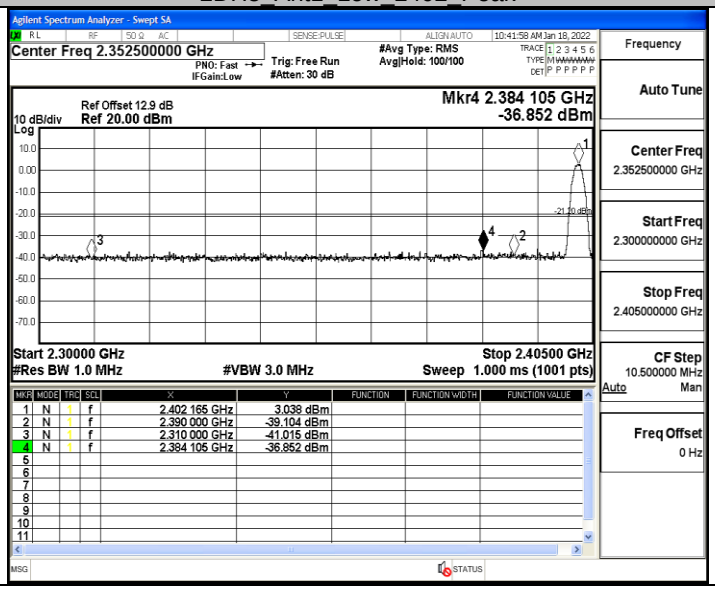
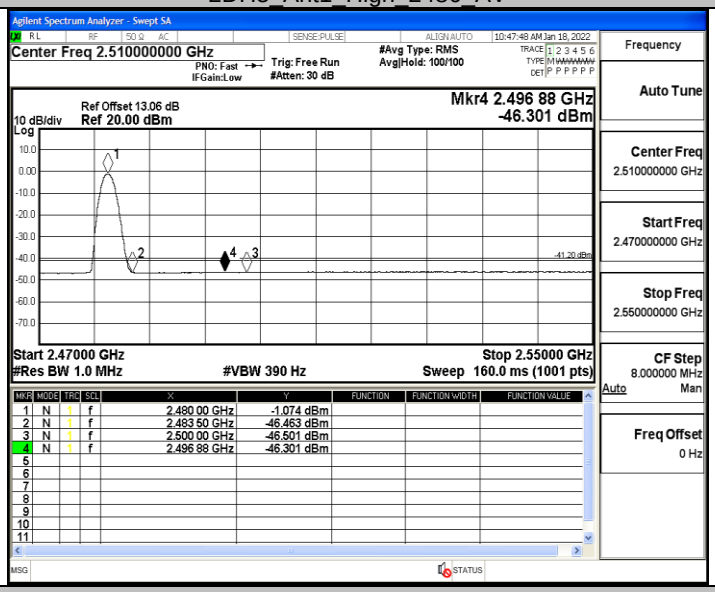
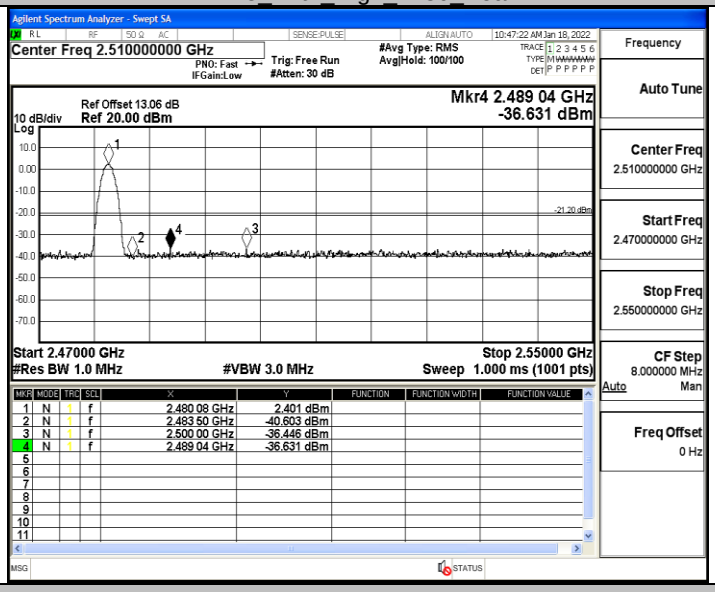


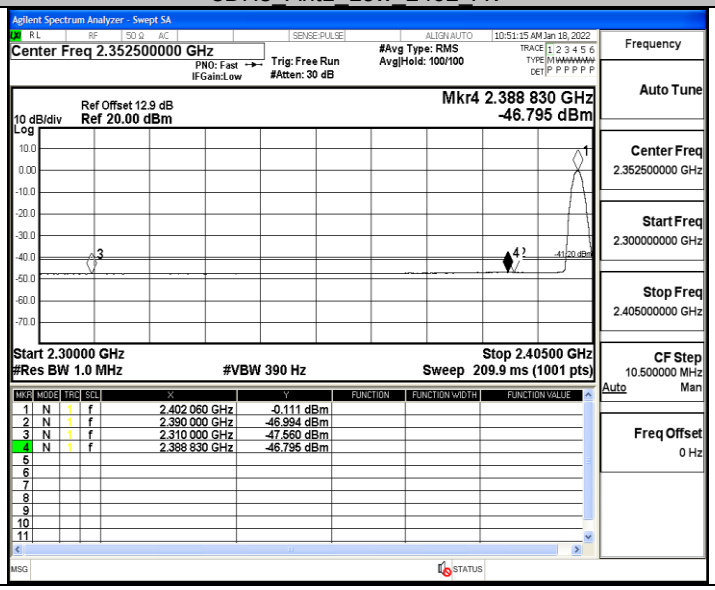
2DH5_Ant1_High_2480_AV



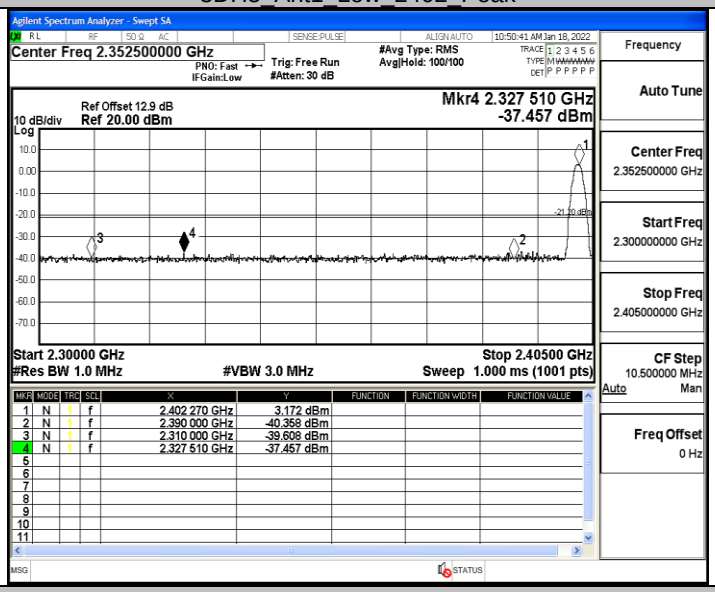
2DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_2402_AV



3DH5_Ant1_Low_2402_Peak



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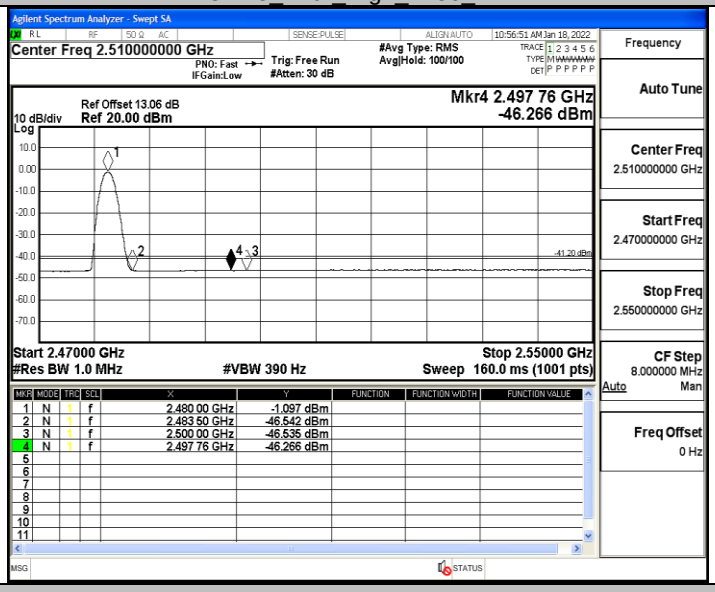

3DH5_Ant1_High_2480_Peak