

## Appendix Test Data for BT(BDR/EDR) (Conducted Measurement)

Product Name: Bone Conduction Headphone

Trade Mark: N/A

Test Model: TWS 18X

FCC ID: 2AJ5N-TWS18X

### Environmental Conditions

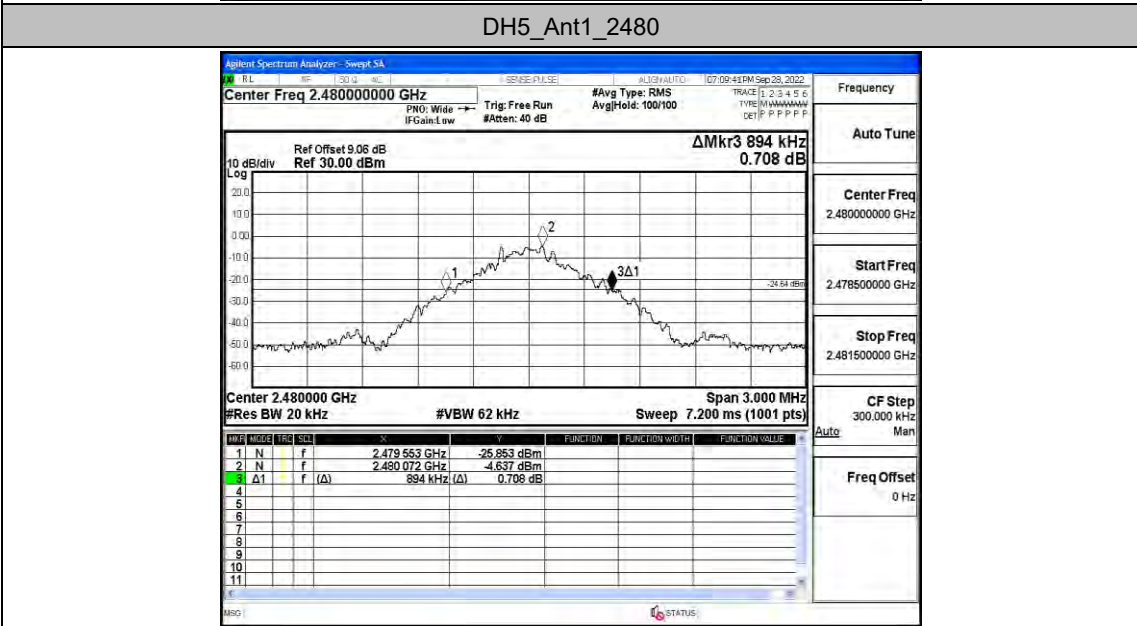
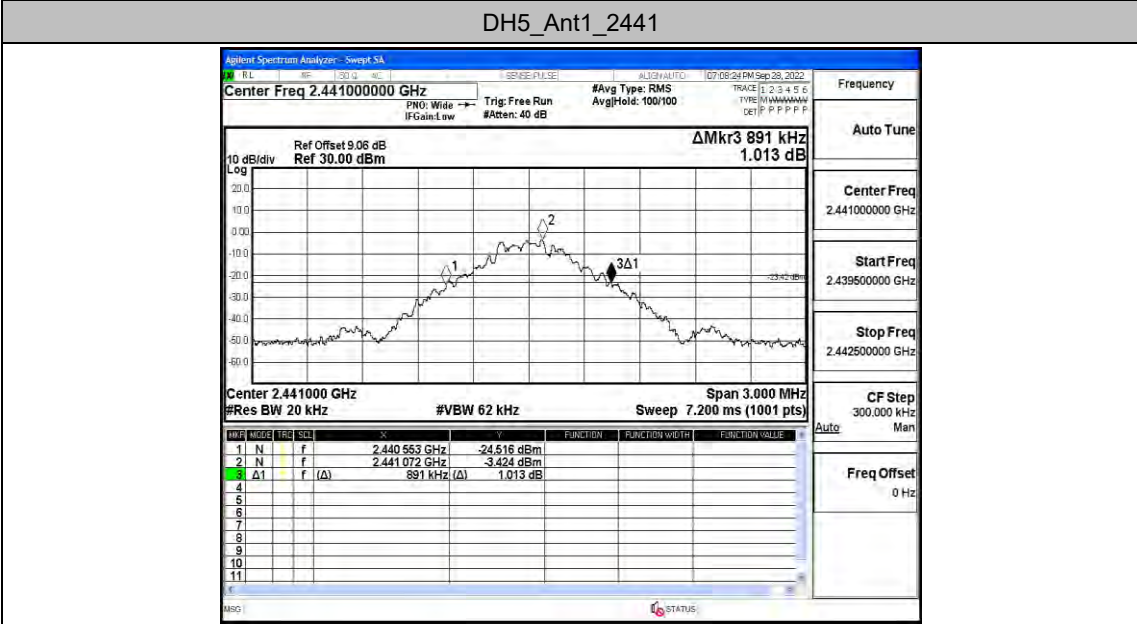
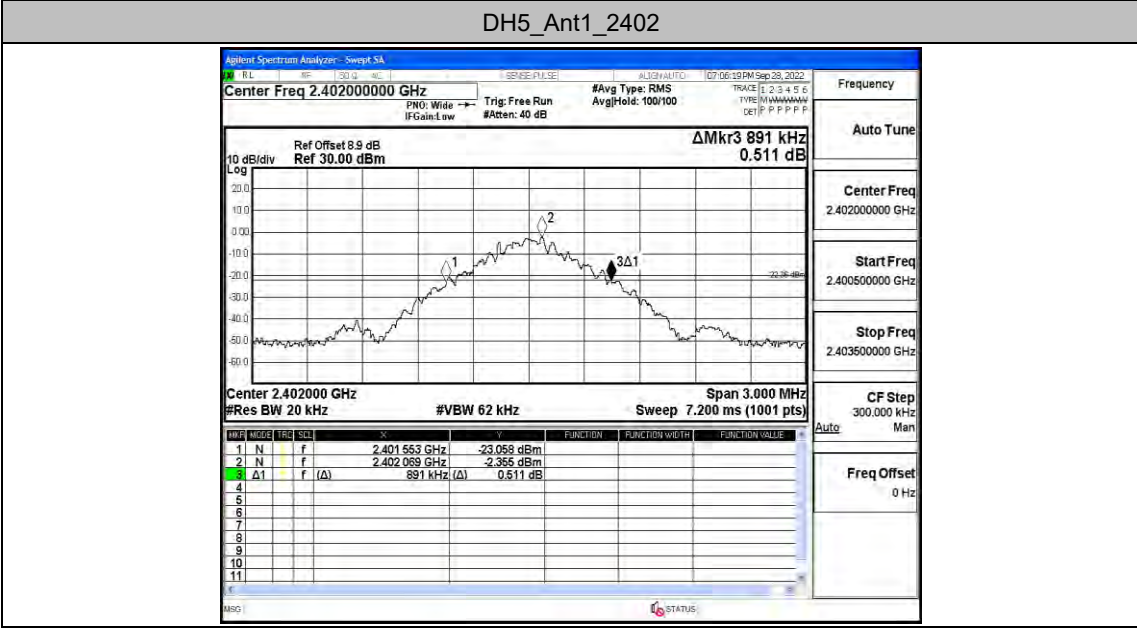
Temperature:	25.5°C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Anna Hu
Supervised by:	Hugo Chen
NOTE	N/A

## Appendix A: 20dB Emission Bandwidth

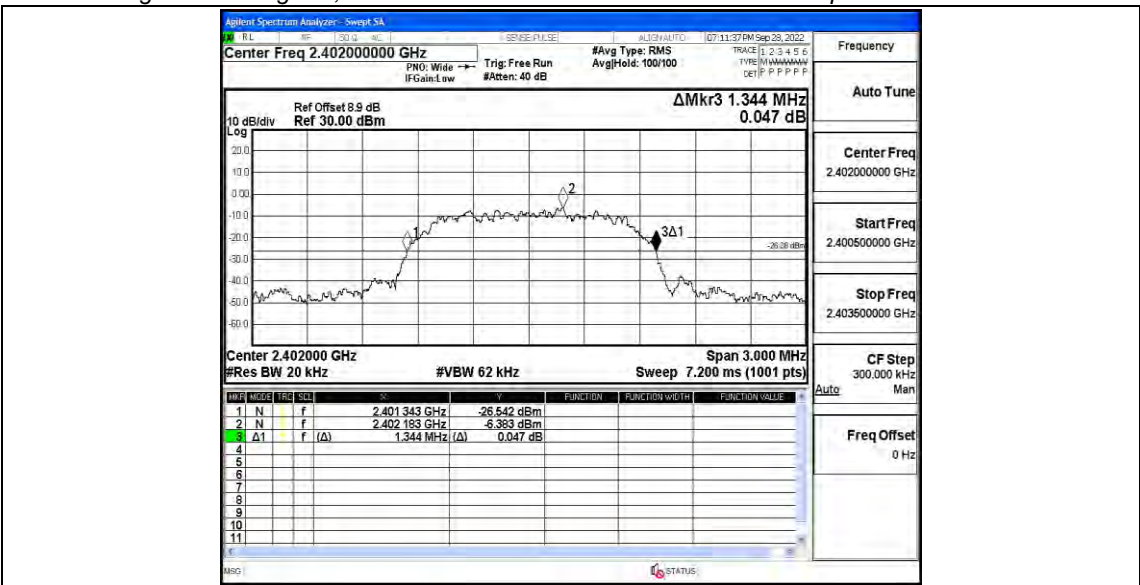
### Test Result

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.891	2401.553	2402.444	---	---
		2441	0.891	2440.553	2441.444	---	---
		2480	0.894	2479.553	2480.447	---	---
2DH5	Ant1	2402	1.344	2401.343	2402.687	---	---
		2441	1.332	2440.346	2441.678	---	---
		2480	1.326	2479.349	2480.675	---	---
3DH5	Ant1	2402	1.233	2401.382	2402.615	---	---
		2441	1.185	2440.424	2441.609	---	---
		2480	1.230	2479.382	2480.612	---	---

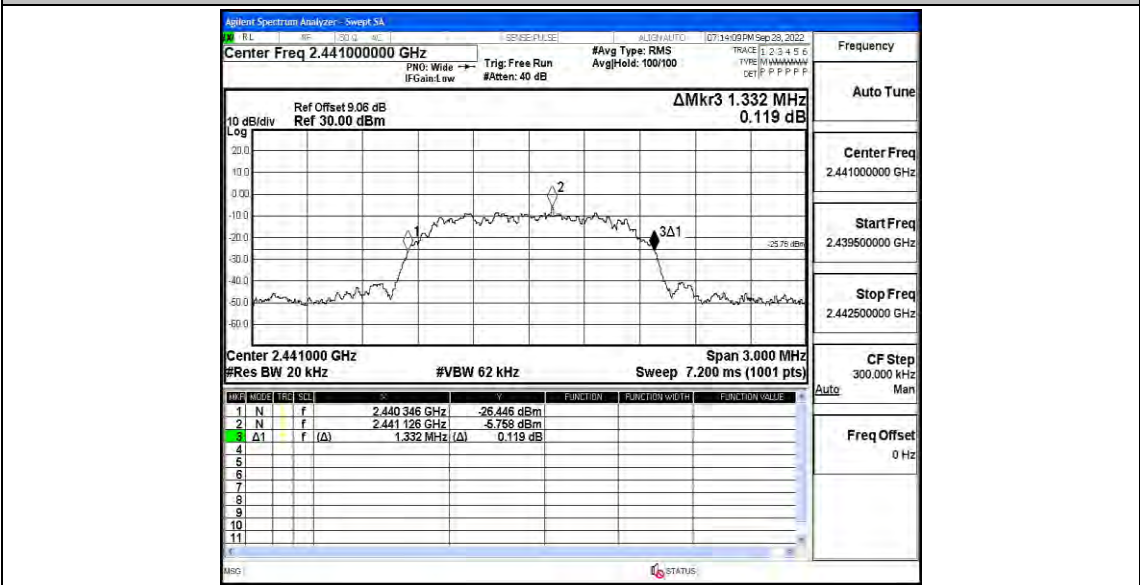
### Test Graphs



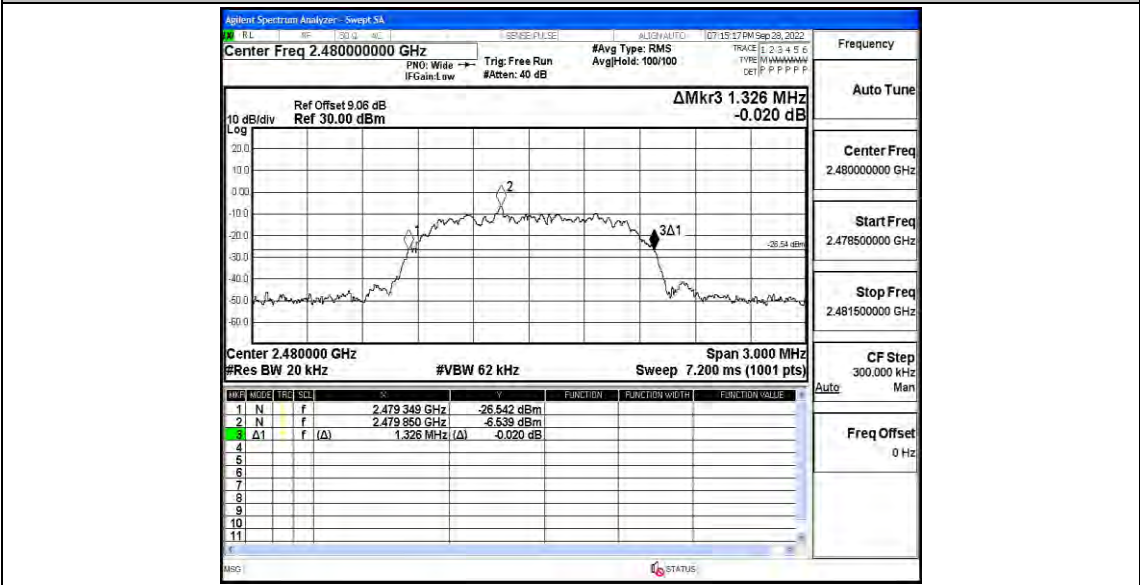
2DH5\_Ant1\_2402



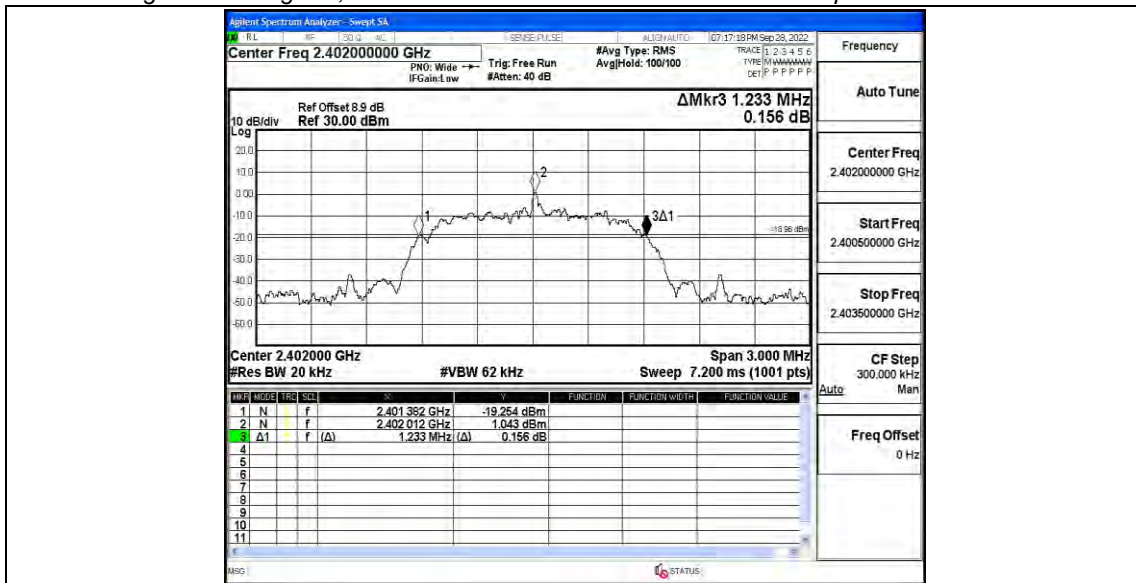
2DH5\_Ant1\_2441



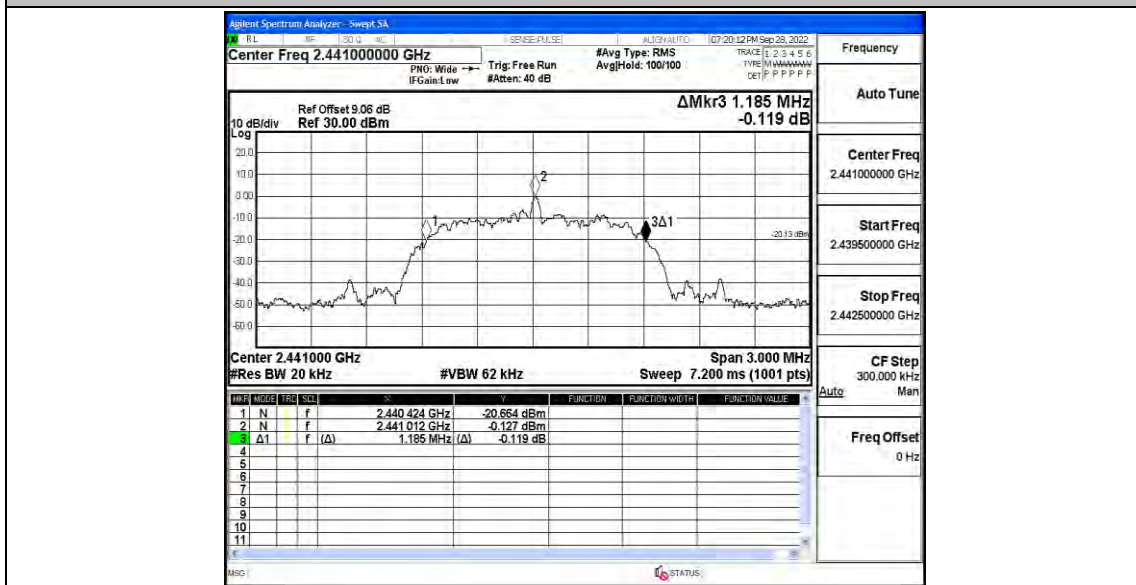
2DH5\_Ant1\_2480



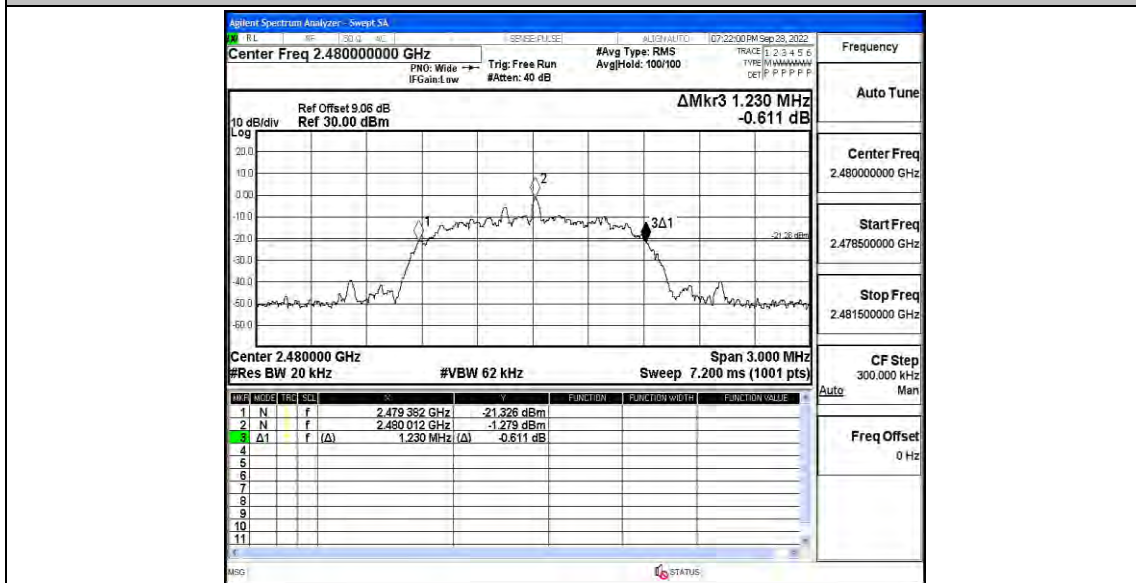
3DH5\_Ant1\_2402



3DH5\_Ant1\_2441



3DH5\_Ant1\_2480

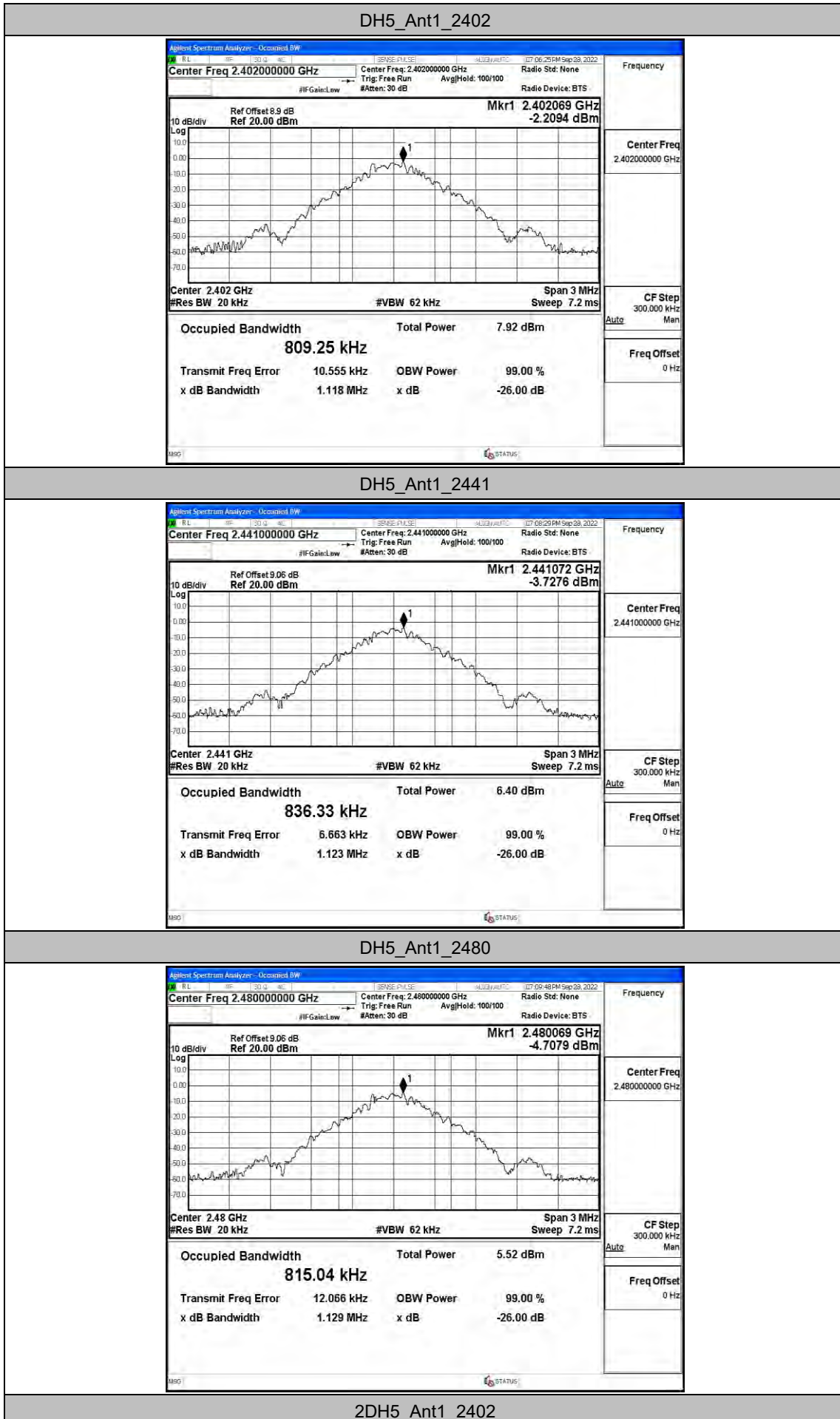


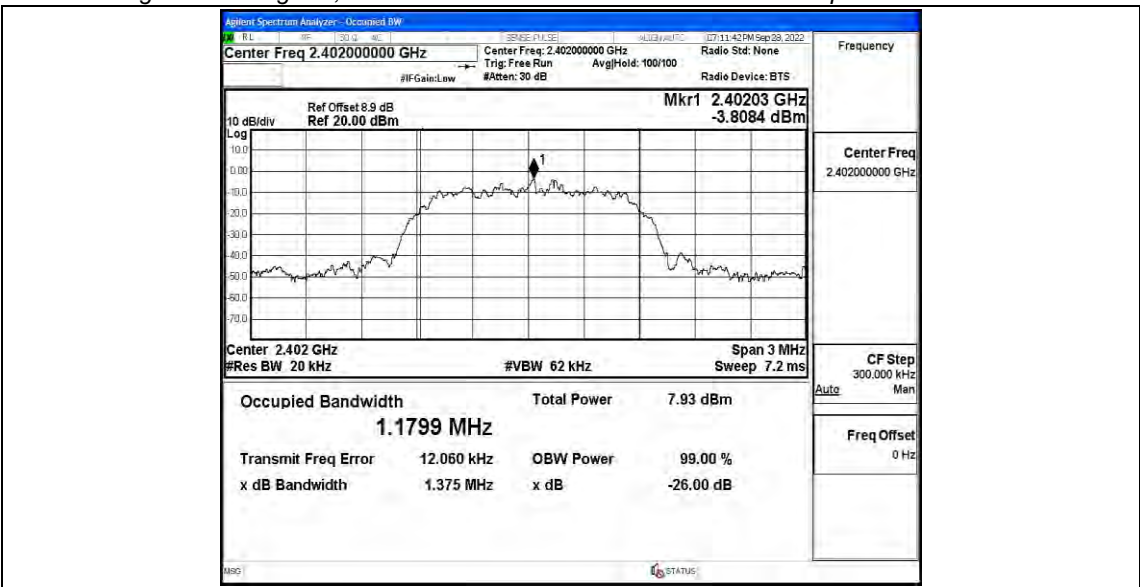
## Appendix B: Occupied Channel Bandwidth

### Test Result

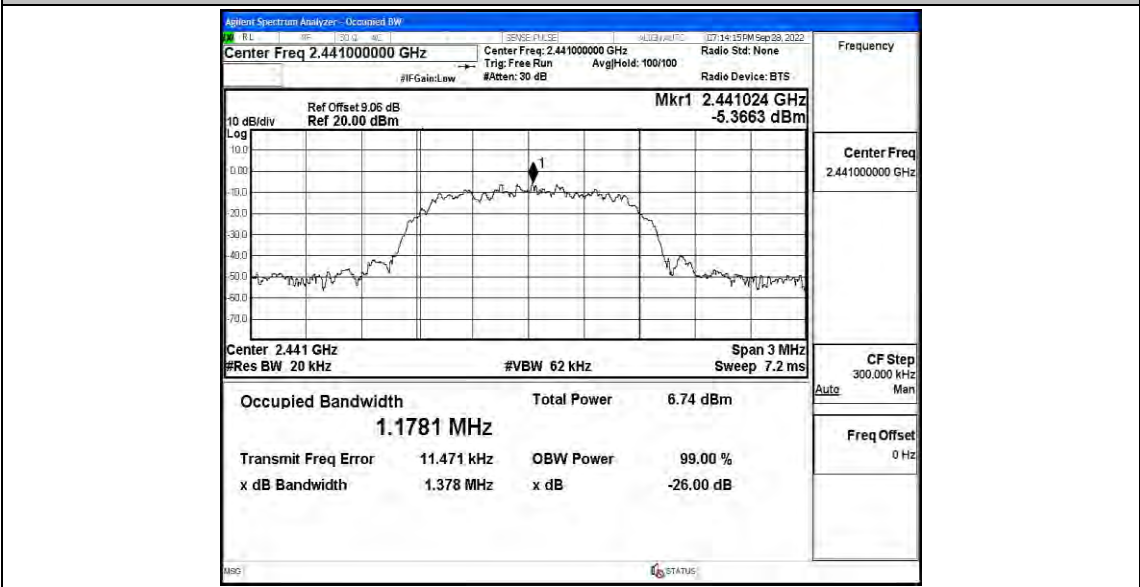
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.80925	2401.6059	2402.4152	---	---
		2441	0.83633	2440.5885	2441.4248	---	---
		2480	0.81504	2479.6046	2480.4196	---	---
2DH5	Ant1	2402	1.1799	2401.4221	2402.6020	---	---
		2441	1.1781	2440.4224	2441.6005	---	---
		2480	1.1790	2479.4213	2480.6003	---	---
3DH5	Ant1	2402	1.1633	2401.4277	2402.5910	---	---
		2441	1.1637	2440.4255	2441.5892	---	---
		2480	1.1579	2479.4323	2480.5902	---	---

Test Graphs

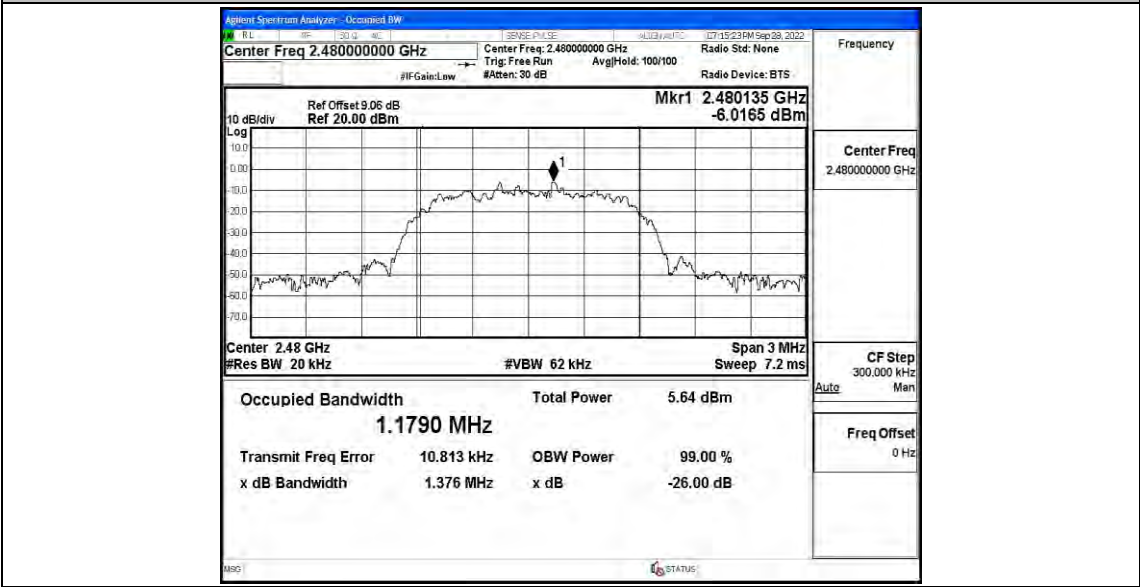




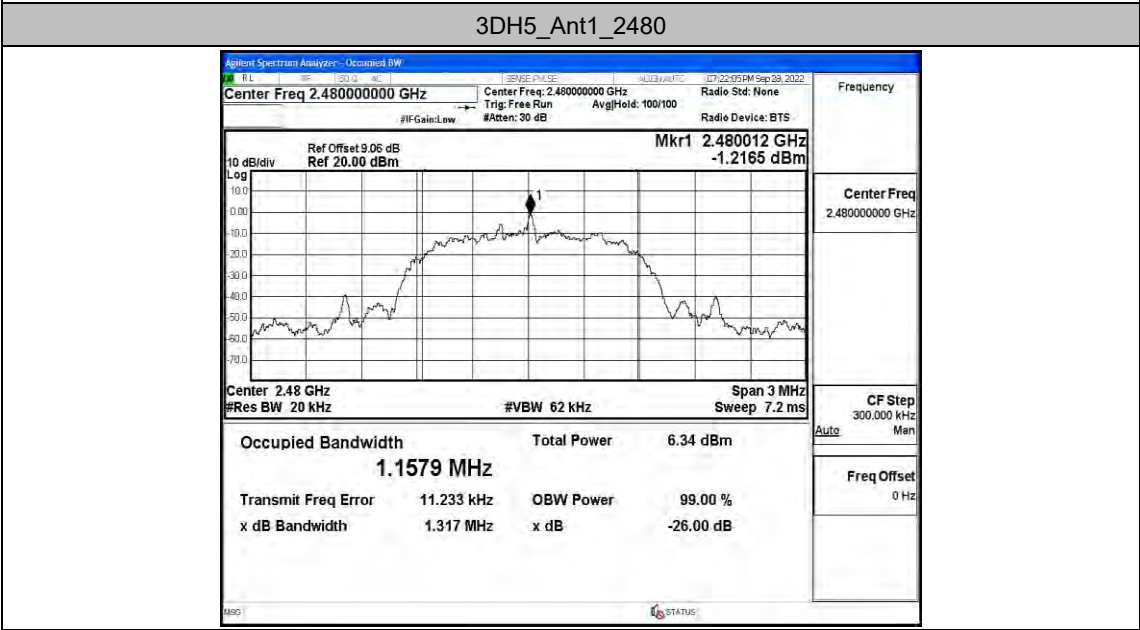
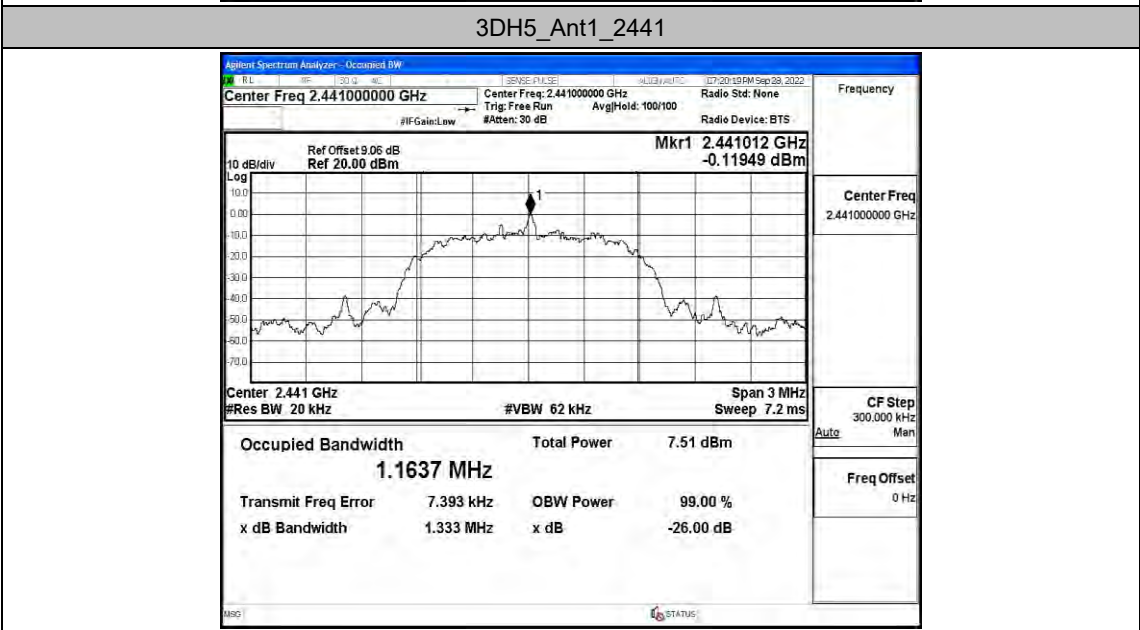
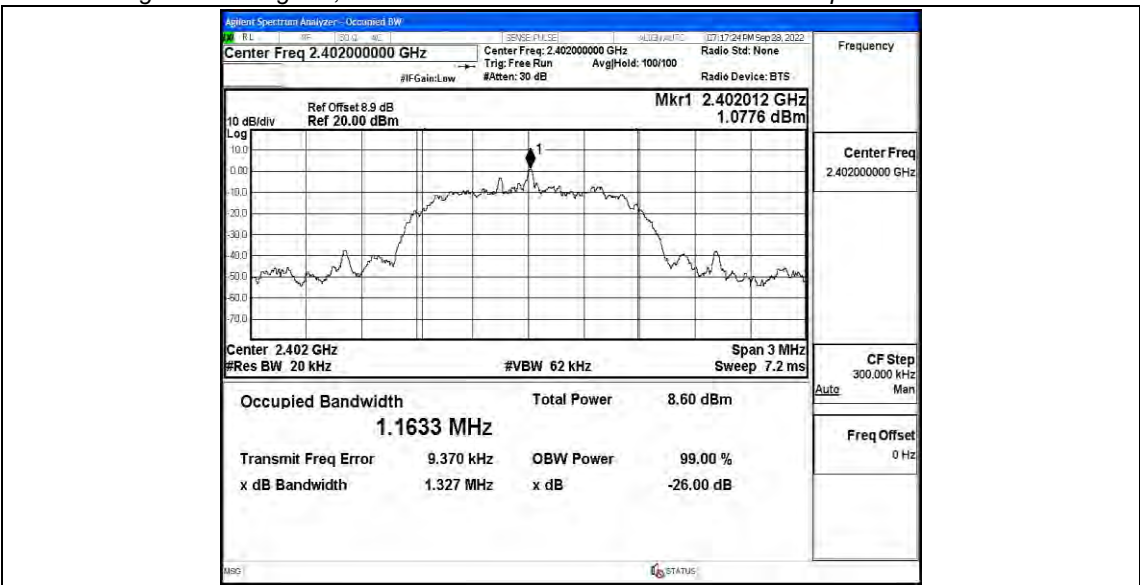
2DH5\_Ant1\_2441



2DH5\_Ant1\_2480



3DH5\_Ant1\_2402



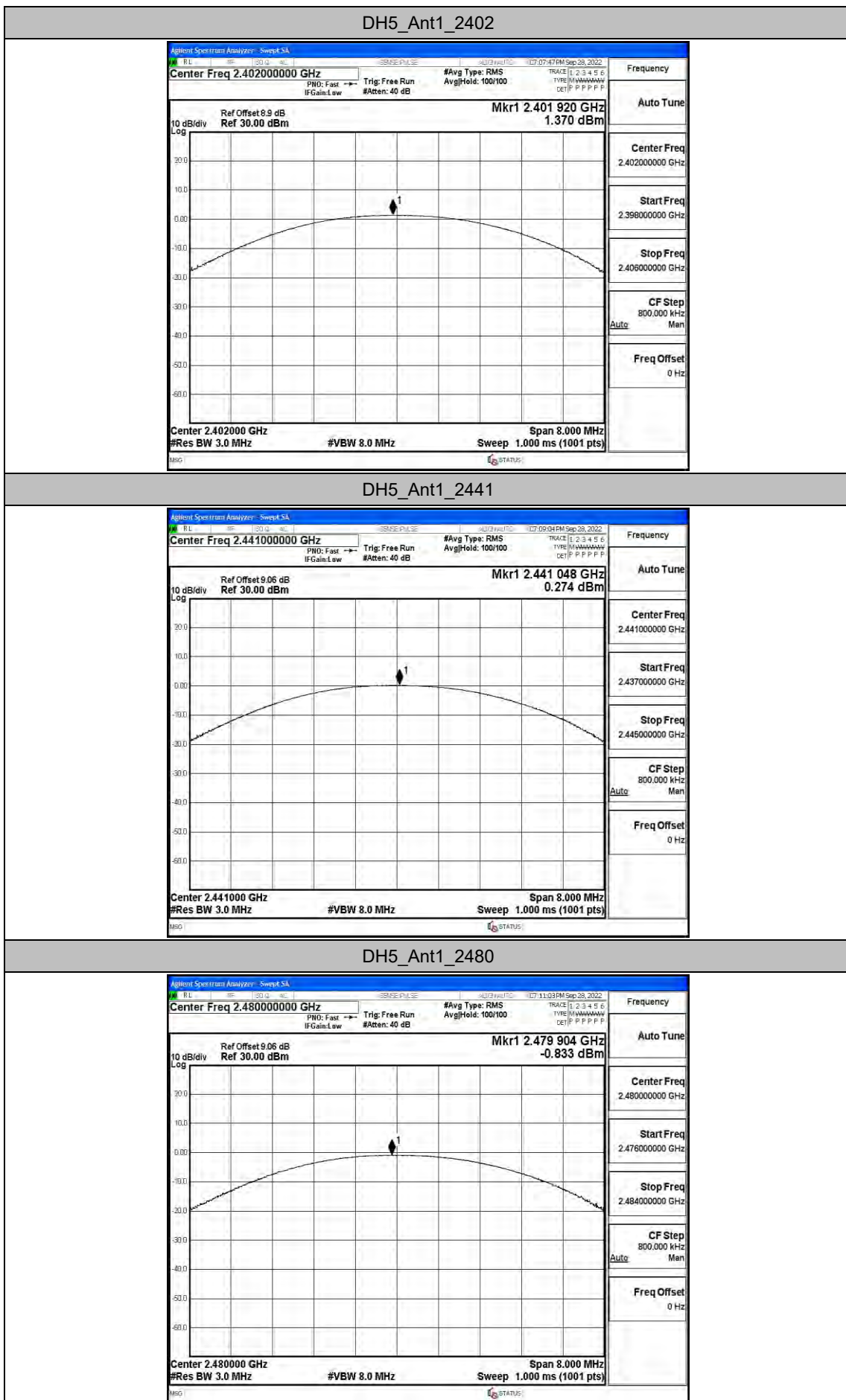


## Appendix C: Maximum Peak conducted output power

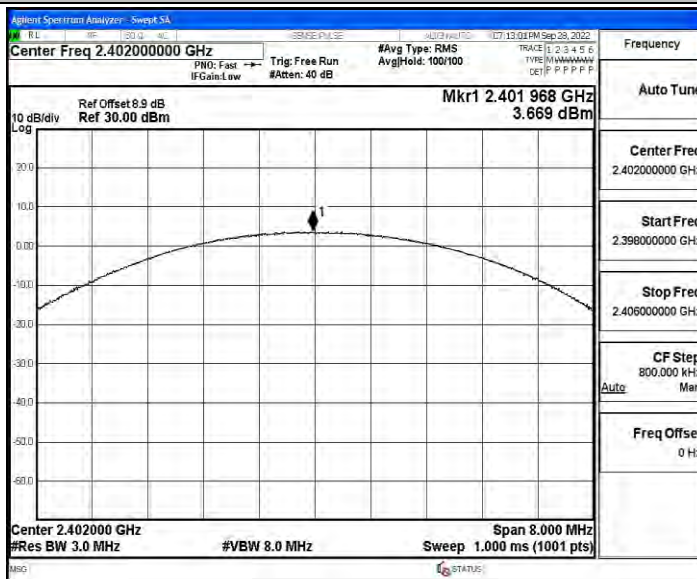
### Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	1.37	≤30	PASS
		2441	0.27	≤30	PASS
		2480	-0.83	≤30	PASS
2DH5	Ant1	2402	3.67	≤20.97	PASS
		2441	2.58	≤20.97	PASS
		2480	1.32	≤20.97	PASS
3DH5	Ant1	2402	4.27	≤20.97	PASS
		2441	3.02	≤20.97	PASS
		2480	1.89	≤20.97	PASS

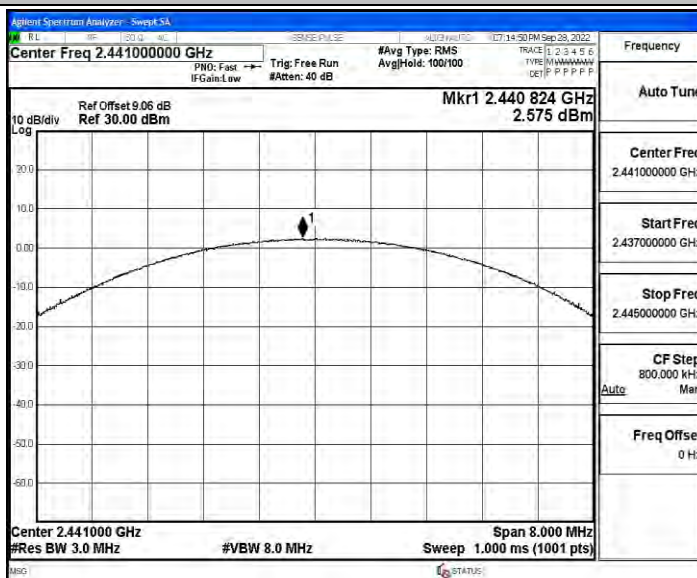
### Test Graphs



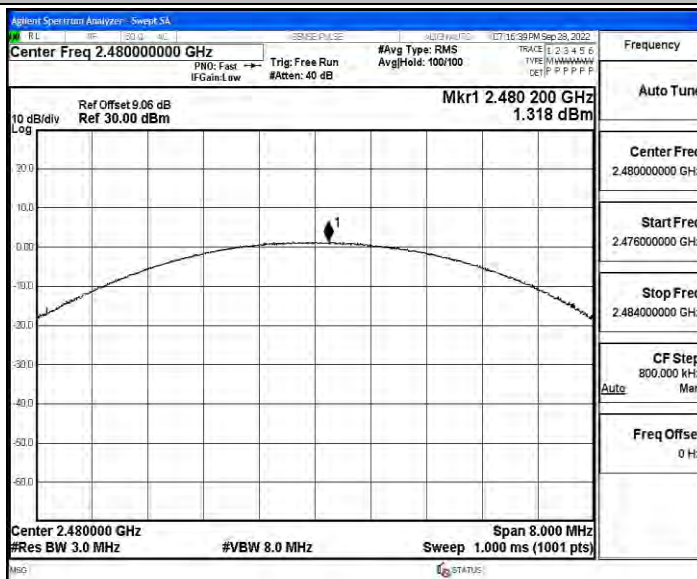
2DH5\_Ant1\_2402



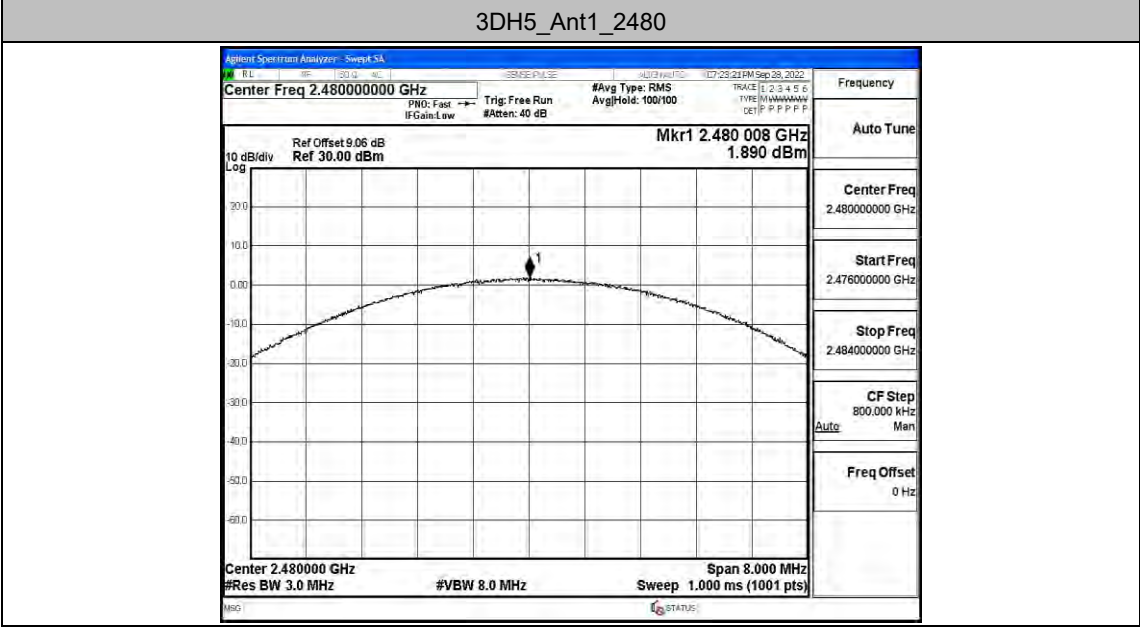
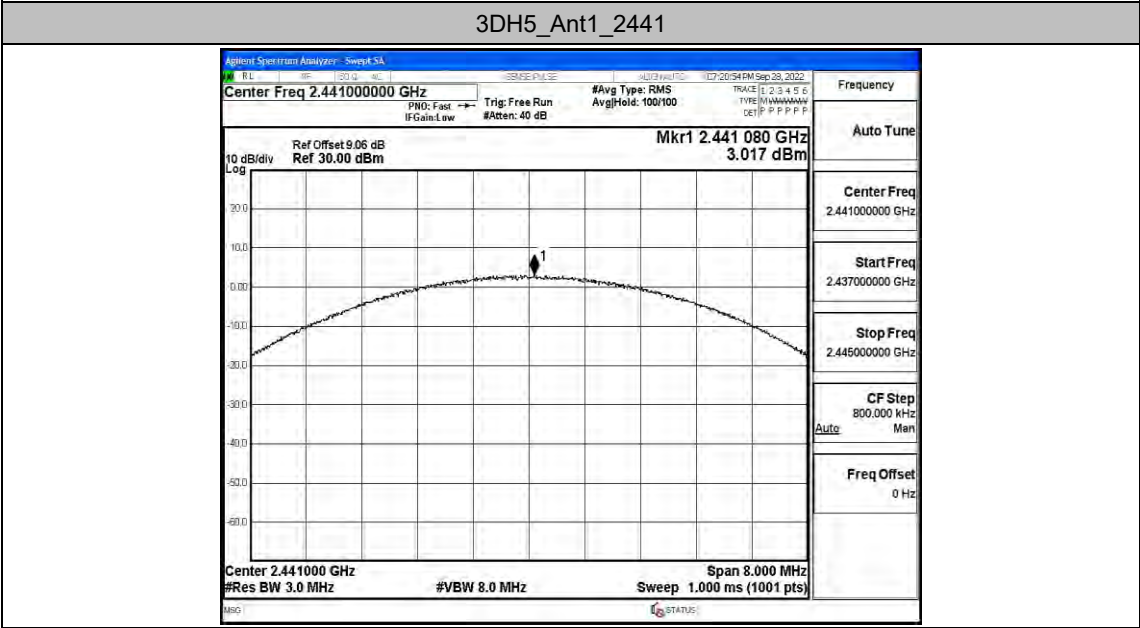
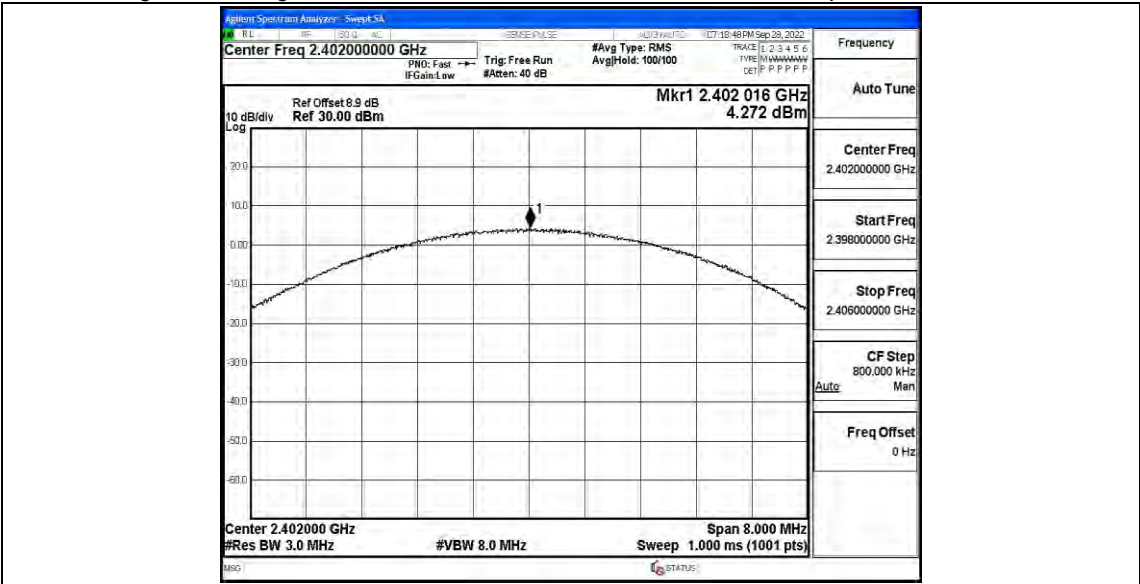
2DH5\_Ant1\_2441



2DH5\_Ant1\_2480



3DH5\_Ant1\_2402

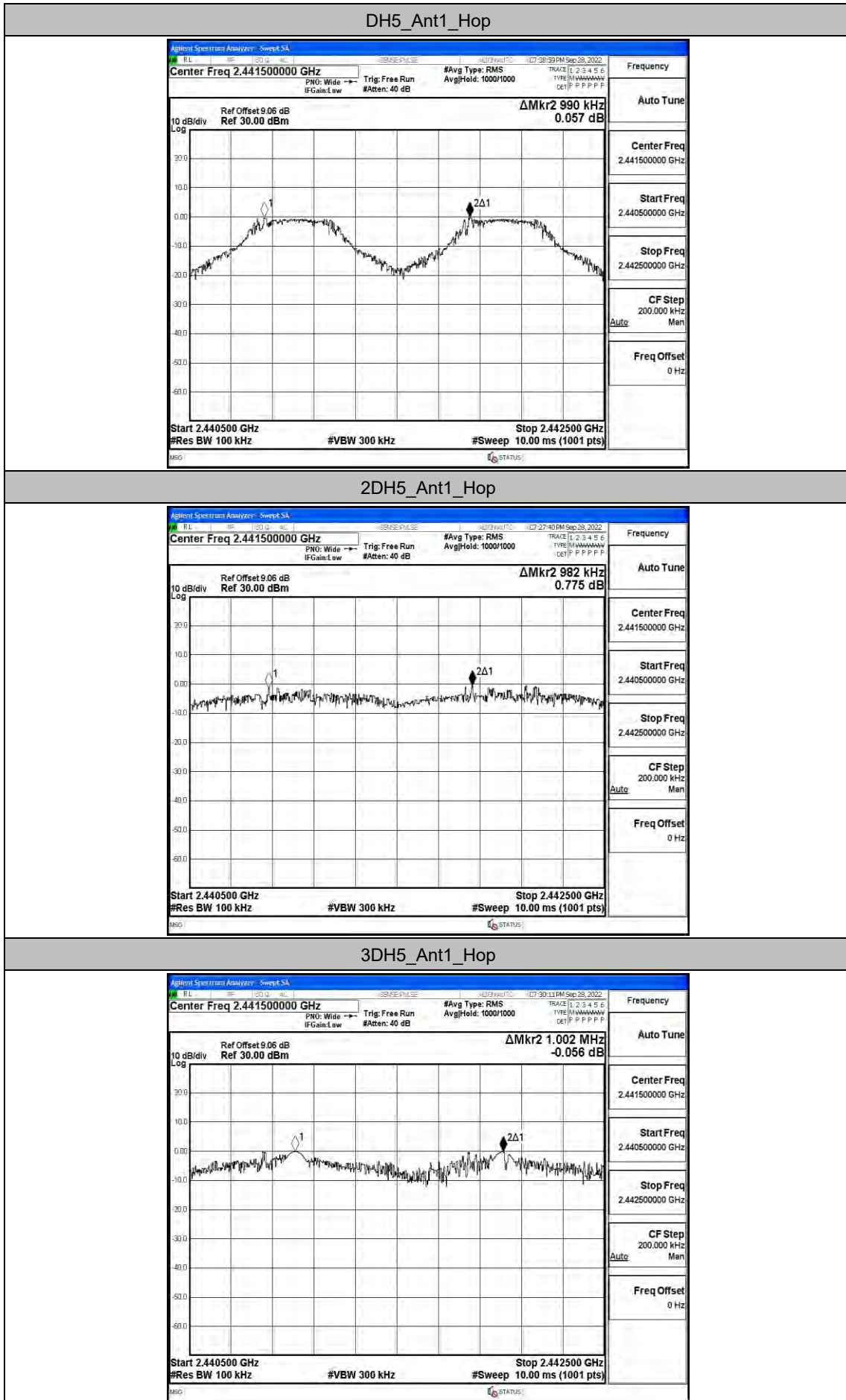


## Appendix D: Carrier frequency separation

### Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.99	$\geq 0.894$	PASS
2DH5	Ant1	Hop	0.982	$\geq 0.896$	PASS
3DH5	Ant1	Hop	1.002	$\geq 0.822$	PASS

Test Graphs

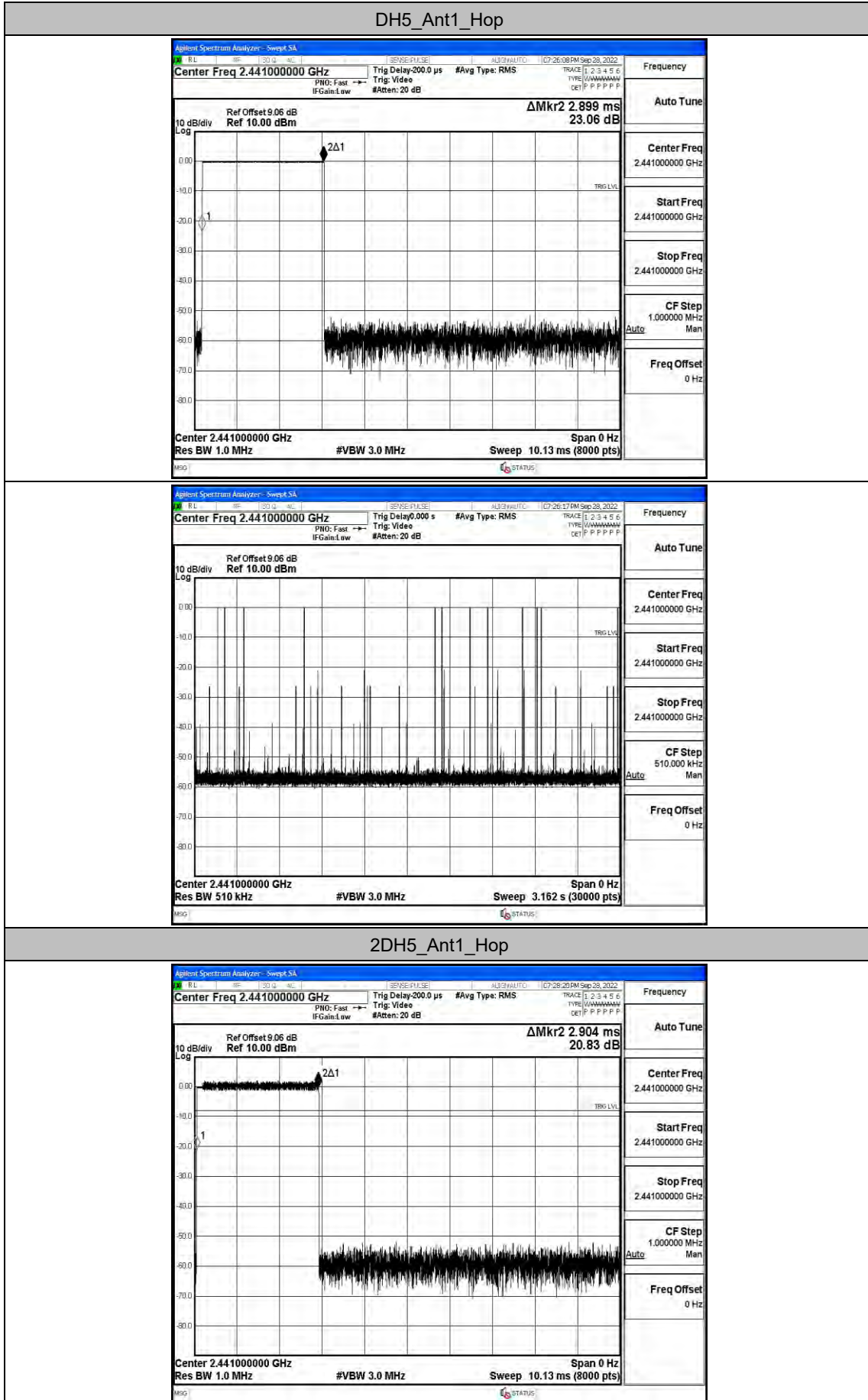


## Appendix E: Time of occupancy

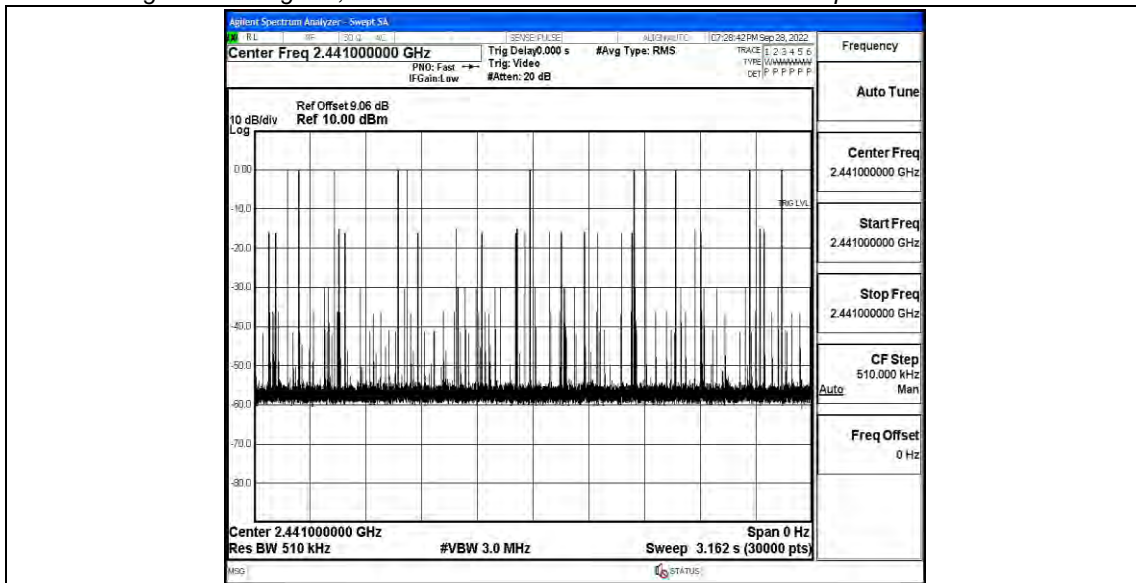
### Test Result

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.899	130	0.377	≤0.4	PASS
2DH5	Ant1	Hop	2.904	120	0.348	≤0.4	PASS
3DH5	Ant1	Hop	2.908	90	0.262	≤0.4	PASS

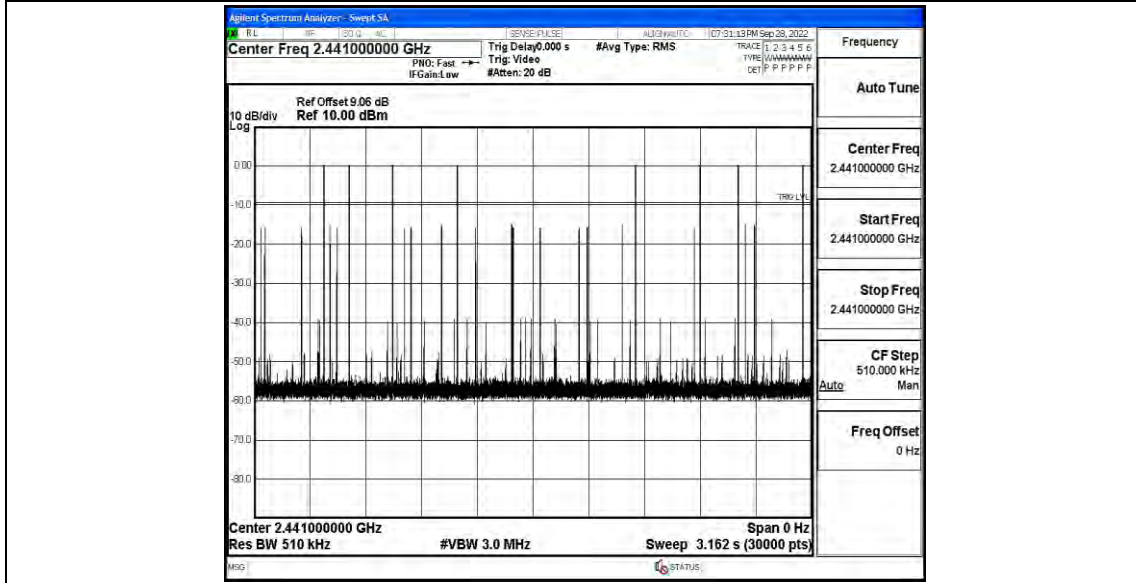
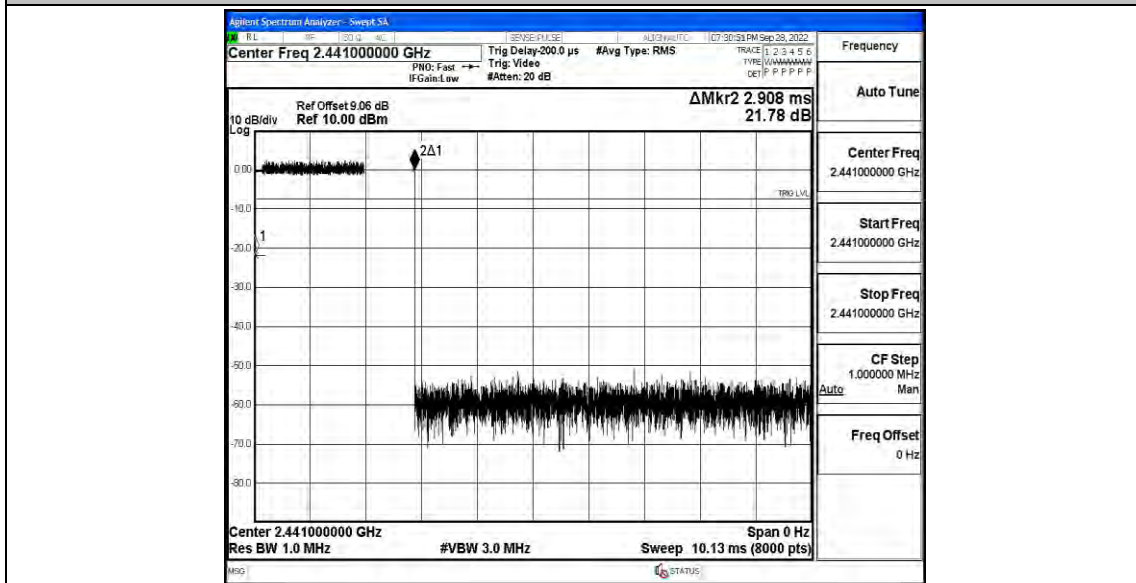
### Test Graphs







3DH5\_Ant1\_Hop

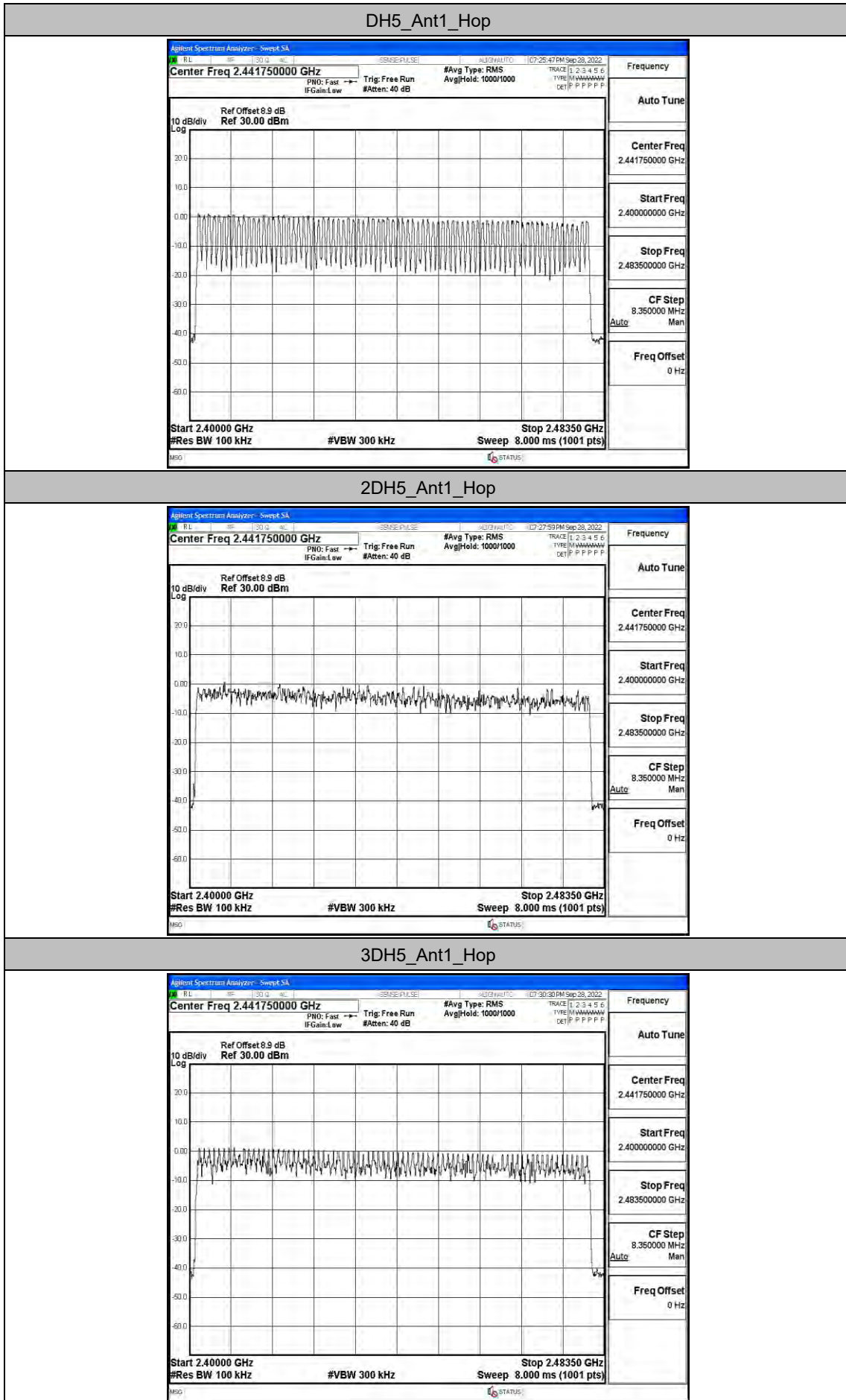


## Appendix F: Number of hopping channels

### 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



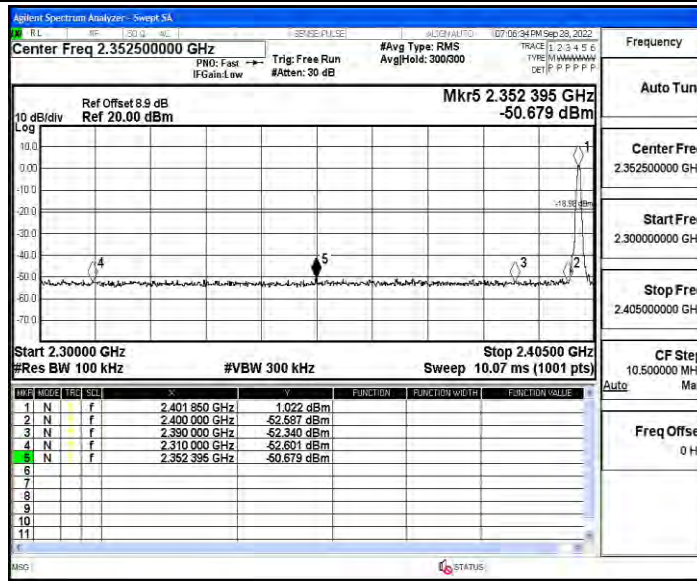
## Appendix G: Band edge measurements

### Test Result

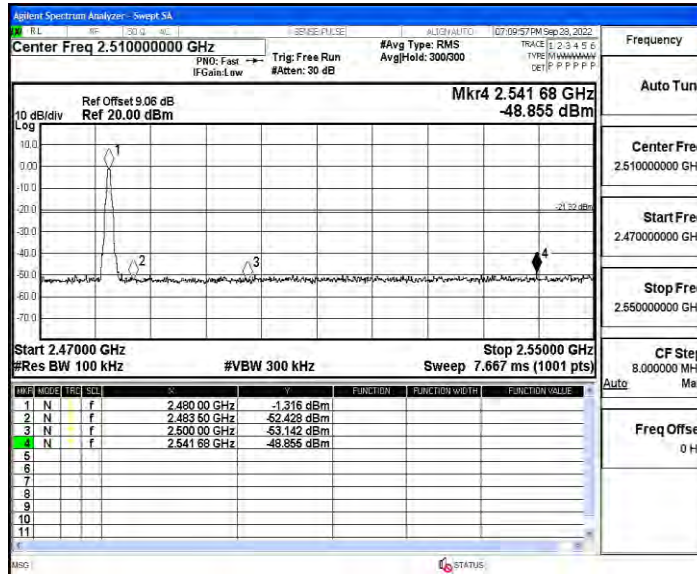
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	1.02	-50.68	≤-18.98	PASS
		High	2480	-1.32	-48.86	≤-21.32	PASS
		Low	Hop_2402	0.27	-50.84	≤-19.73	PASS
		High	Hop_2480	-1.45	-48.78	≤-21.45	PASS
2DH5	Ant1	Low	2402	0.63	-43.94	≤-19.37	PASS
		High	2480	-1.47	-49.19	≤-21.47	PASS
		Low	Hop_2402	-1.72	-50.68	≤-21.72	PASS
		High	Hop_2480	-3.00	-48.94	≤-23	PASS
3DH5	Ant1	Low	2402	1.12	-47.96	≤-18.88	PASS
		High	2480	-1.18	-49.44	≤-21.18	PASS
		Low	Hop_2402	0.81	-50.45	≤-19.19	PASS
		High	Hop_2480	-1.05	-49.45	≤-21.05	PASS

### Test Graphs

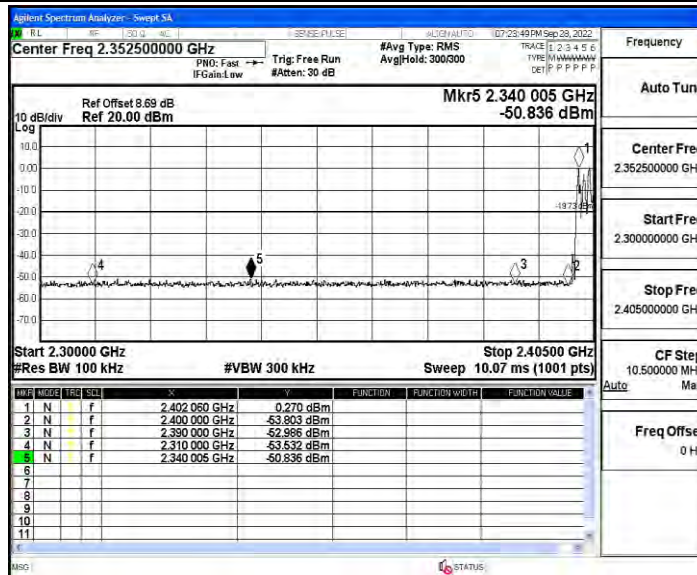
#### DH5\_Ant1\_Low\_2402



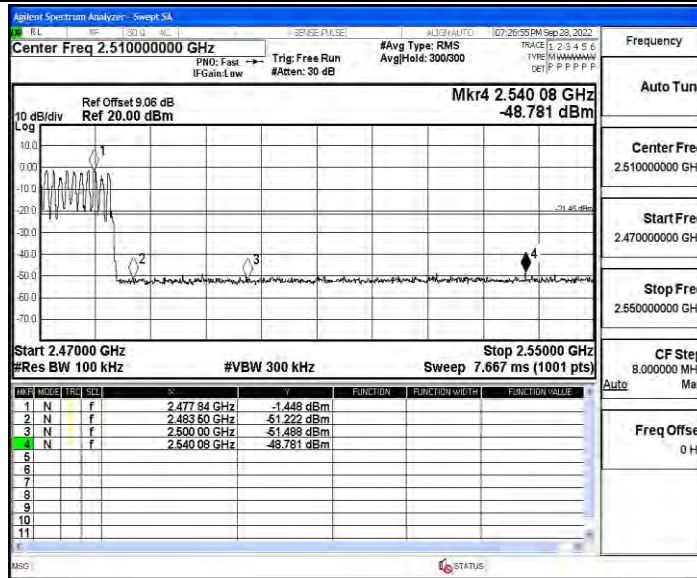
#### DH5\_Ant1\_High\_2480



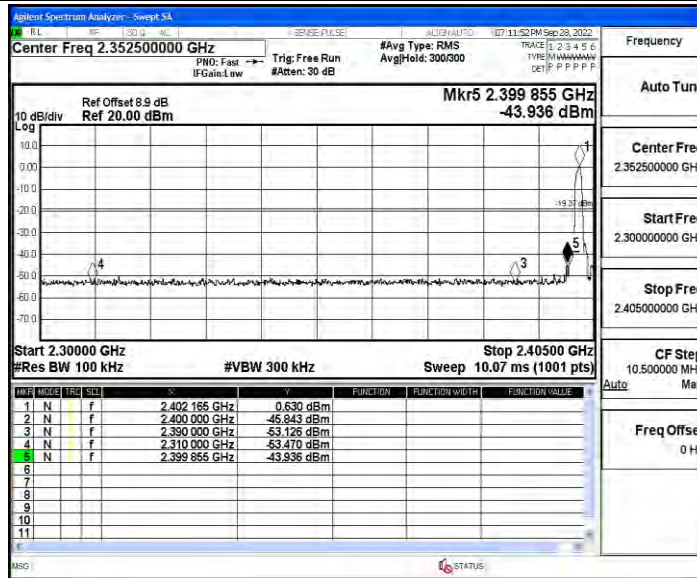
#### DH5\_Ant1\_Low\_Hop\_2402



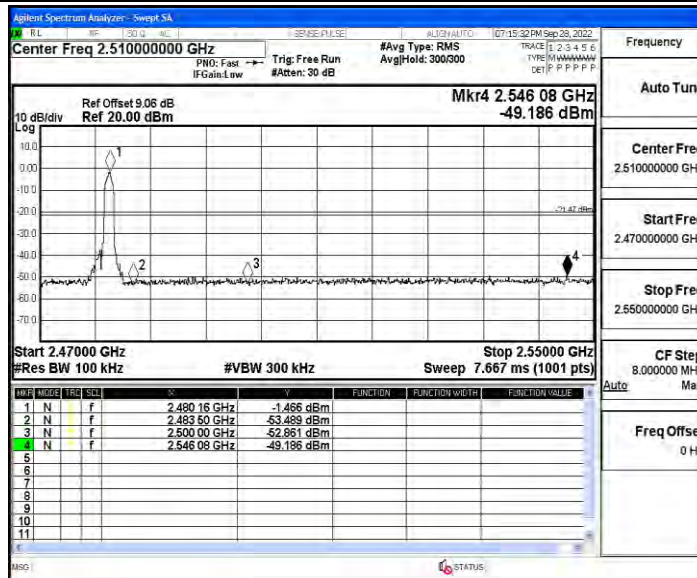
#### DH5\_Ant1\_High\_Hop\_2480



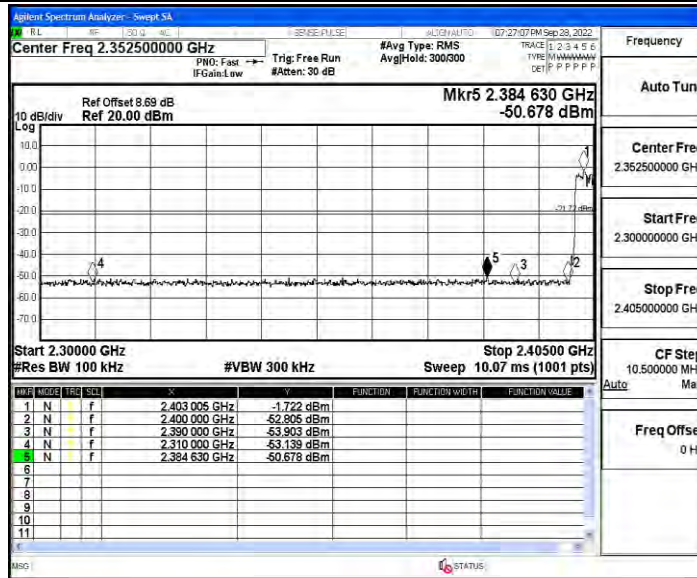
2DH5\_Ant1\_Low\_2402



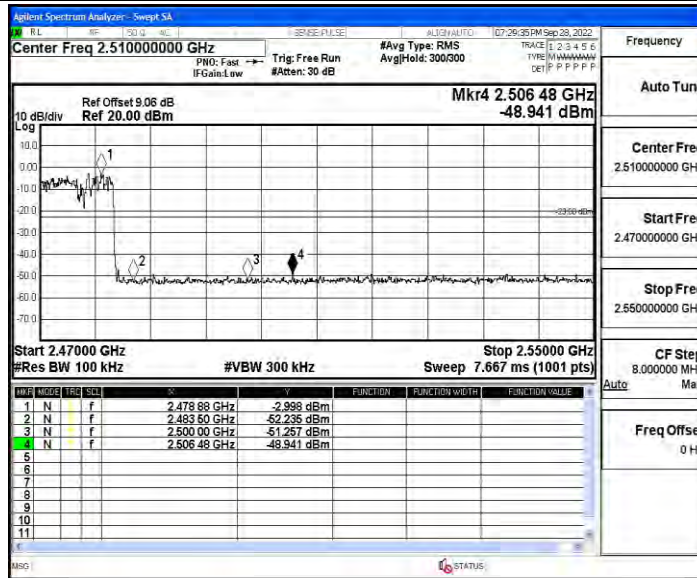
2DH5\_Ant1\_High\_2480



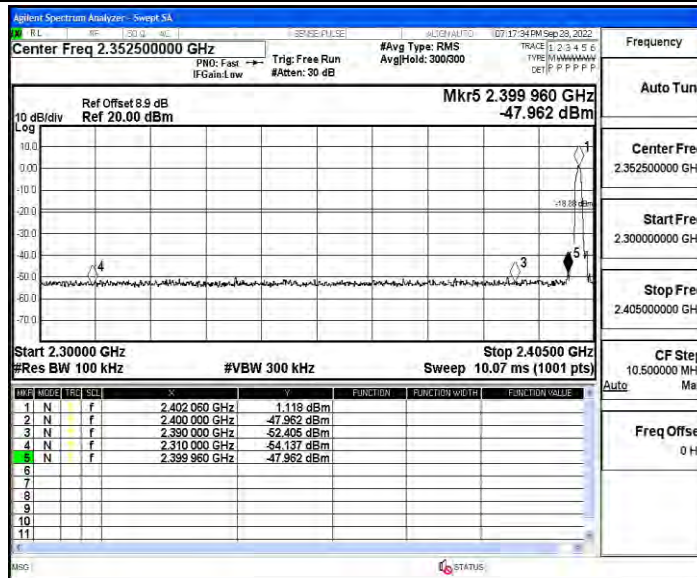
2DH5\_Ant1\_Low\_Hop\_2402



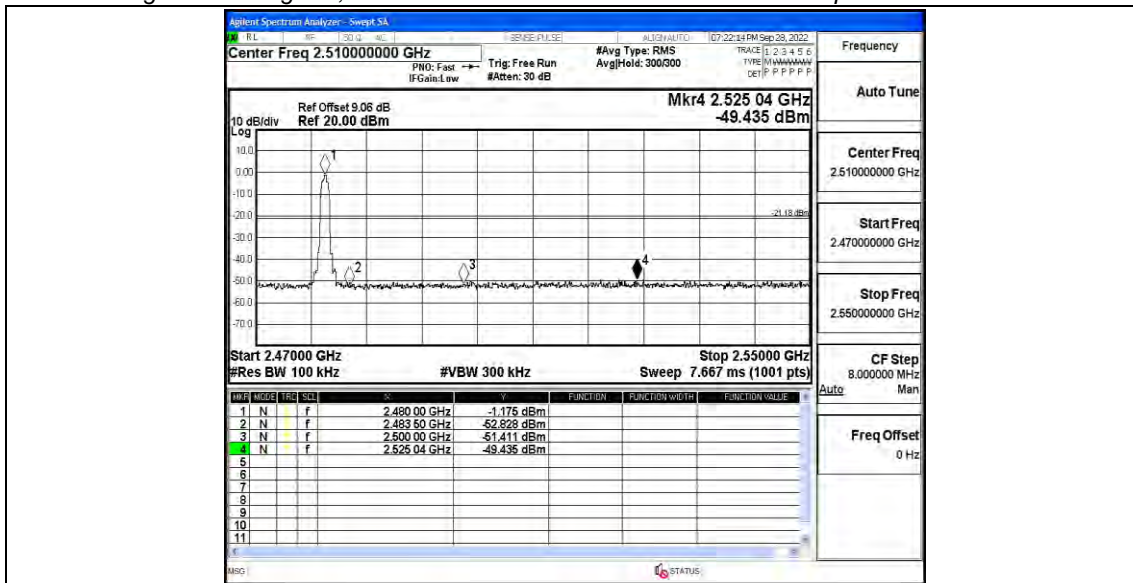
2DH5\_Ant1\_High\_Hop\_2480



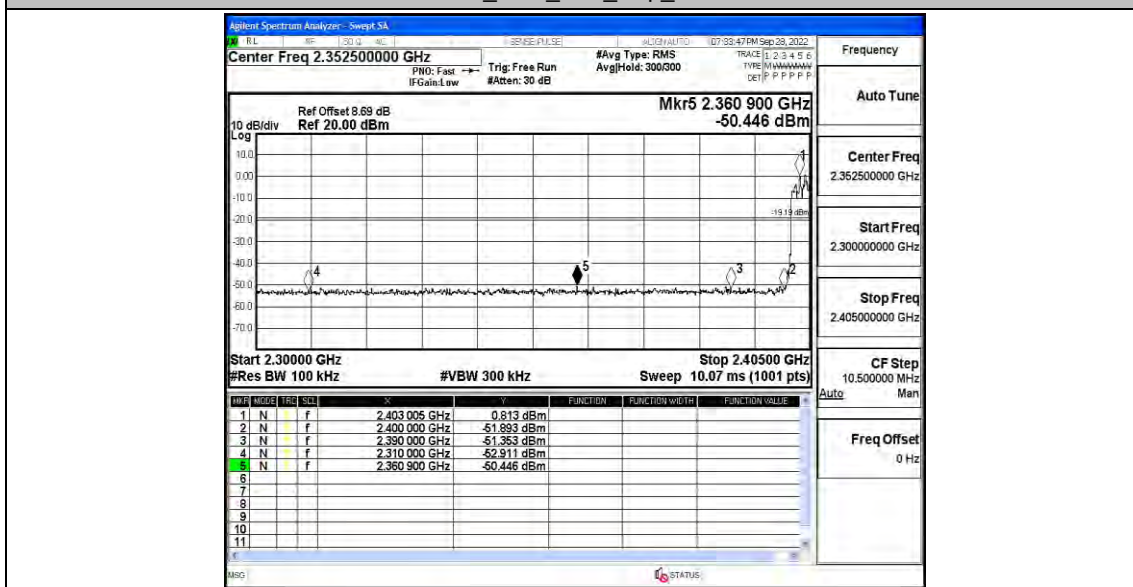
3DH5\_Ant1\_Low\_2402



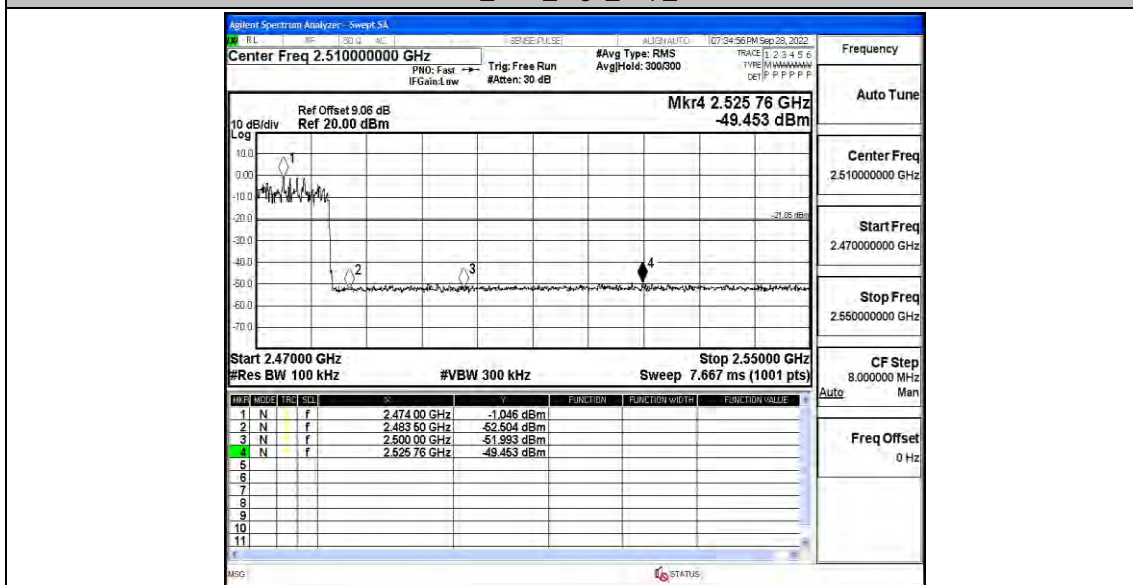
3DH5\_Ant1\_High\_2480



3DH5\_Ant1\_Low\_Hop\_2402



3DH5\_Ant1\_High\_Hop\_2480





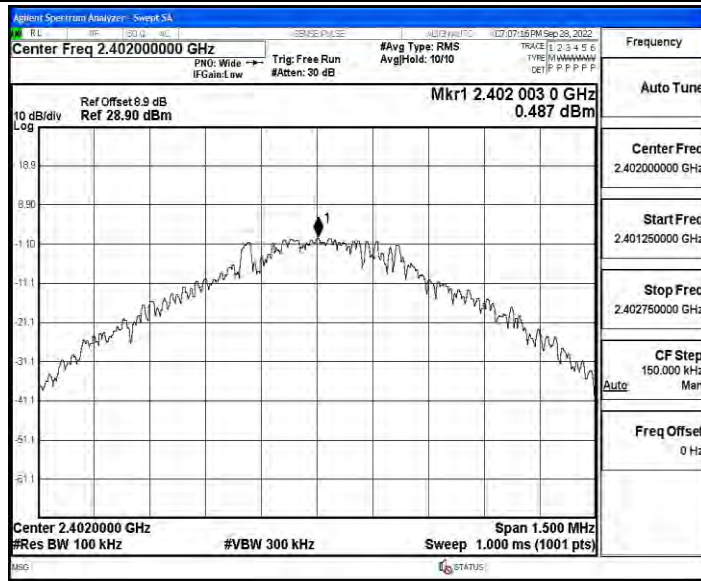
## Appendix H: Conducted Spurious Emission

### Test Result

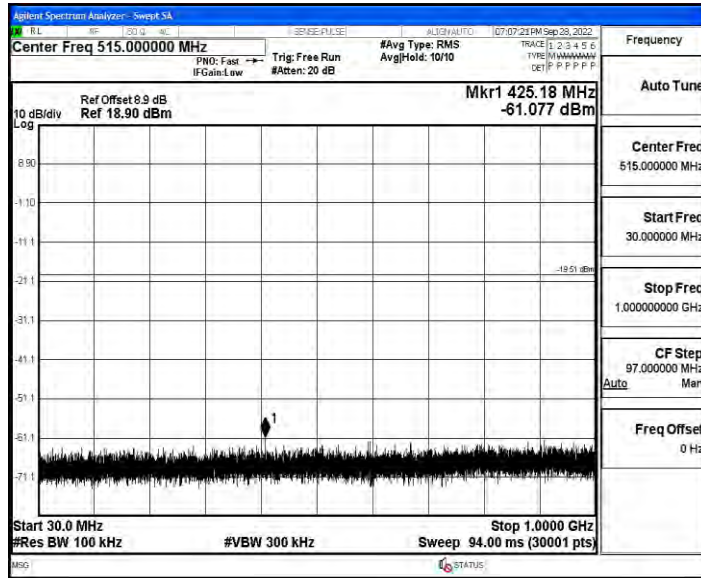
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	0.49	0.49	---	PASS
			30~1000	0.49	-61.08	≤-19.51	PASS
			1000~26500	0.49	-41.78	≤-19.51	PASS
		2441	Reference	-0.37	-0.37	---	PASS
			30~1000	-0.37	-61.69	≤-20.37	PASS
			1000~26500	-0.37	-43.75	≤-20.37	PASS
		2480	Reference	-1.51	-1.51	---	PASS
			30~1000	-1.51	-61.42	≤-21.51	PASS
			1000~26500	-1.51	-50.3	≤-21.51	PASS
2DH5	Ant1	2402	Reference	-1.02	-1.02	---	PASS
			30~1000	-1.02	-61.33	≤-21.02	PASS
			1000~26500	-1.02	-45.15	≤-21.02	PASS
		2441	Reference	-2.38	-2.38	---	PASS
			30~1000	-2.38	-61.39	≤-22.38	PASS
			1000~26500	-2.38	-46.95	≤-22.38	PASS
		2480	Reference	-2.34	-2.34	---	PASS
			30~1000	-2.34	-61.29	≤-22.34	PASS
			1000~26500	-2.34	-47.05	≤-22.34	PASS
3DH5	Ant1	2402	Reference	1.08	1.08	---	PASS
			30~1000	1.08	-62.02	≤-18.92	PASS
			1000~26500	1.08	-40.78	≤-18.92	PASS
		2441	Reference	-0.12	-0.12	---	PASS
			30~1000	-0.12	-61.09	≤-20.12	PASS
			1000~26500	-0.12	-47.59	≤-20.12	PASS
		2480	Reference	-1.22	-1.22	---	PASS
			30~1000	-1.22	-60.87	≤-21.22	PASS
			1000~26500	-1.22	-46.91	≤-21.22	PASS

### Test Graphs

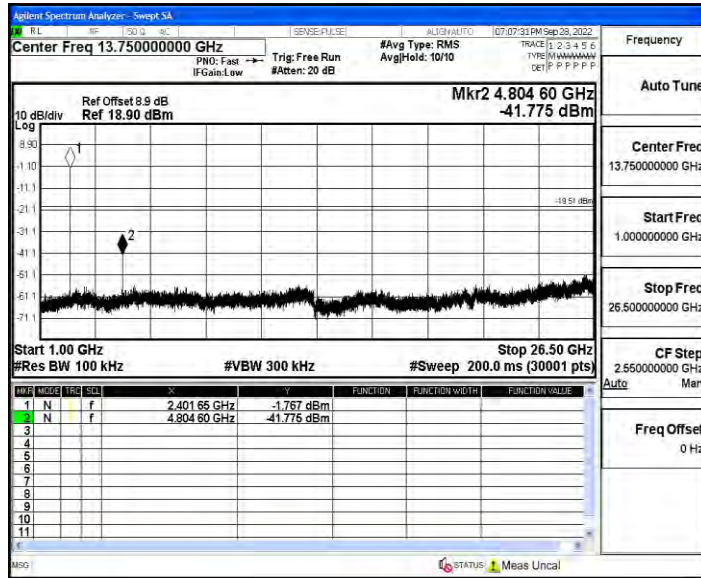
DH5\_Ant1\_2402\_0~Reference



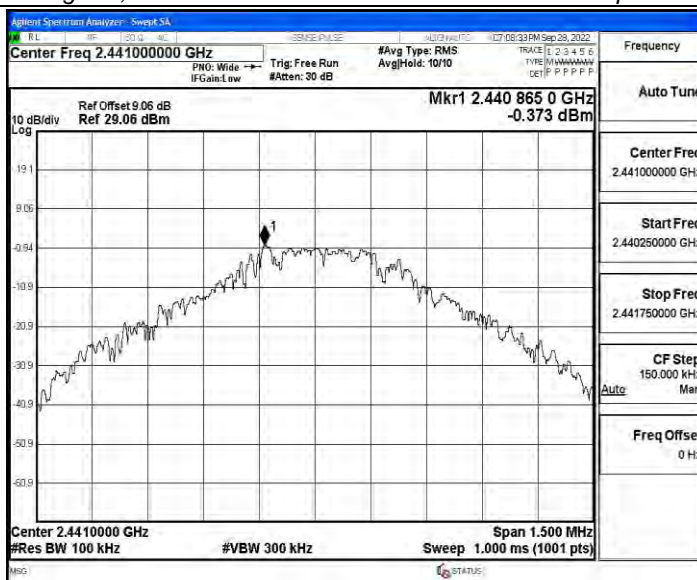
DH5\_Ant1\_2402\_30~1000



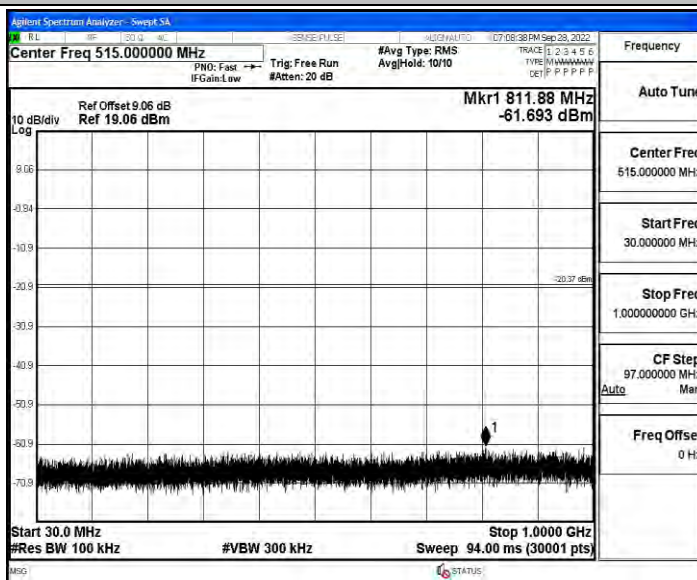
DH5\_Ant1\_2402\_1000~26500



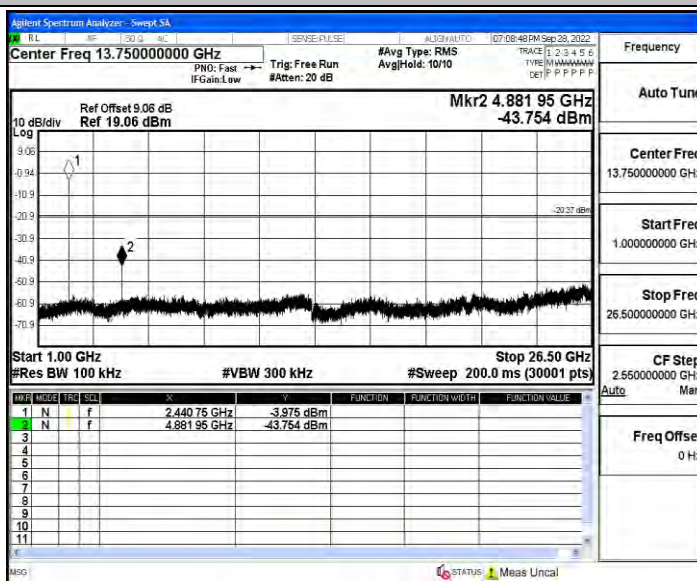
DH5\_Ant1\_2441\_0~Reference



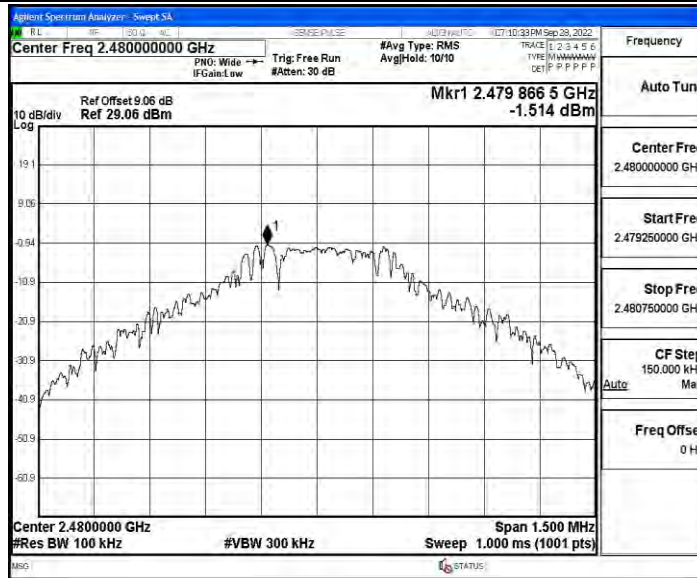
DH5\_Ant1\_2441\_30~1000



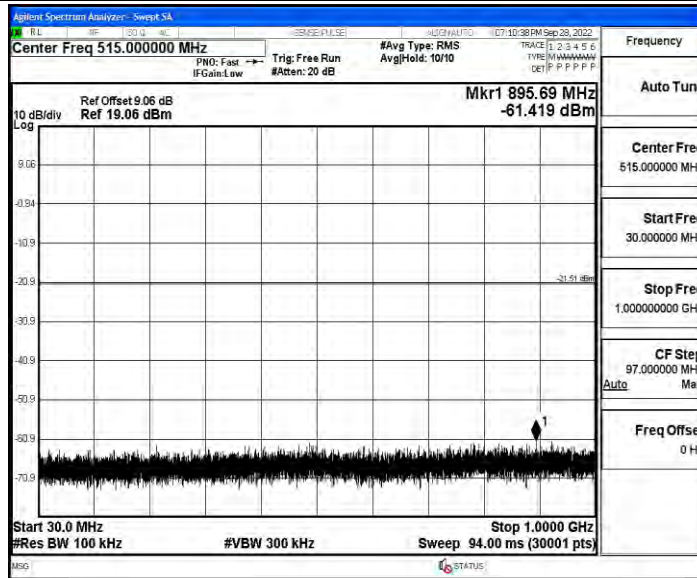
DH5\_Ant1\_2441\_1000~26500



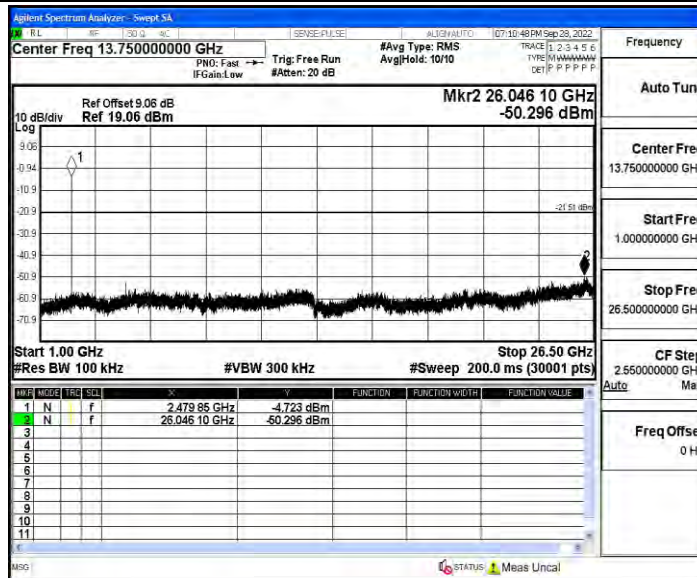
DH5\_Ant1\_2480\_0~Reference



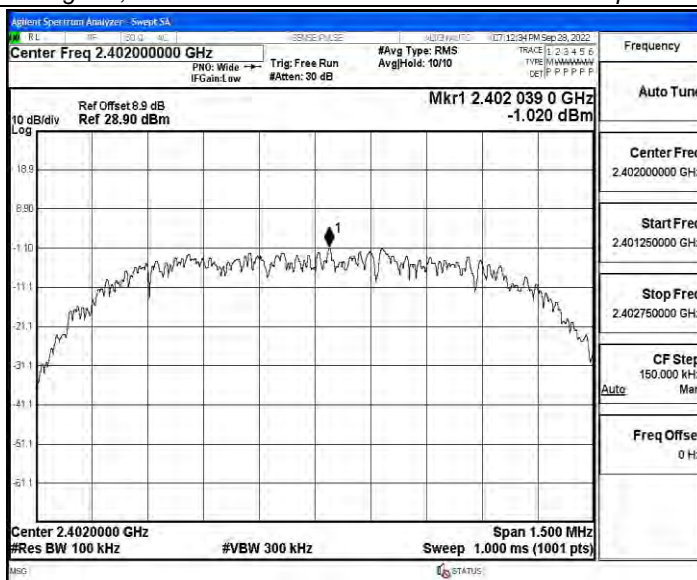
DH5\_Ant1\_2480\_30~1000



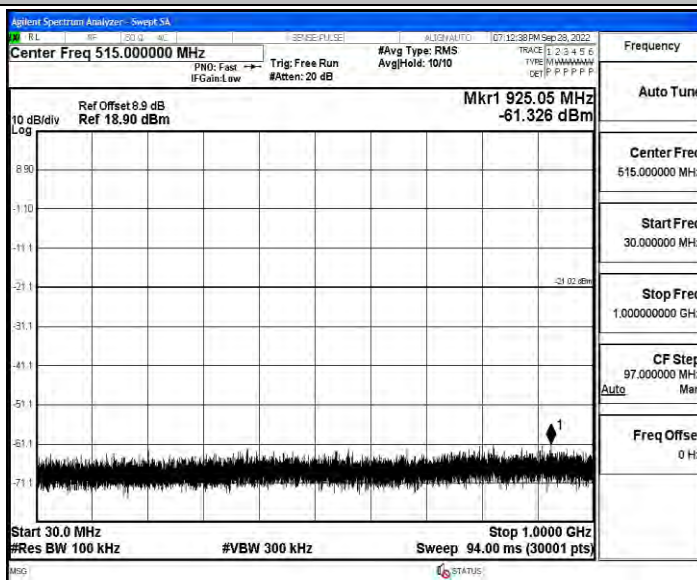
DH5\_Ant1\_2480\_1000~26500



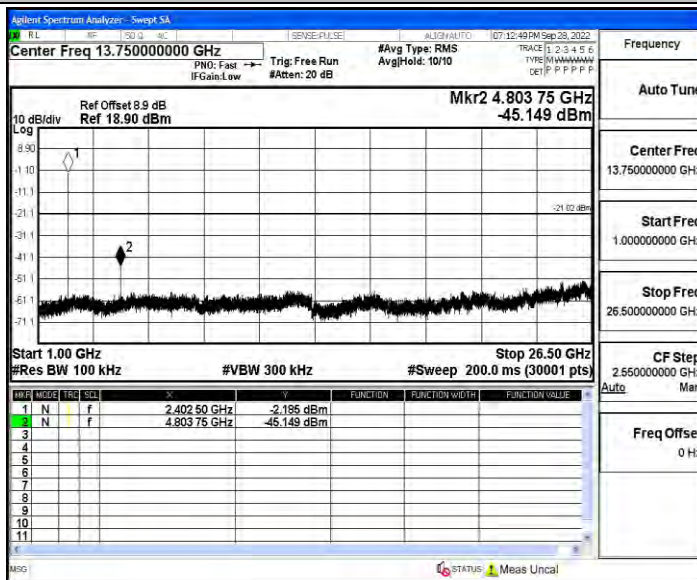
2DH5\_Ant1\_2402\_0~Reference



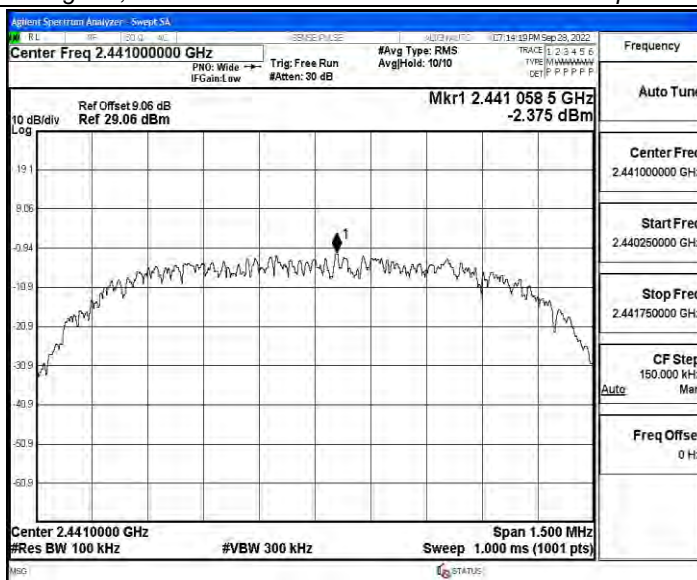
2DH5\_Ant1\_2402\_30~1000



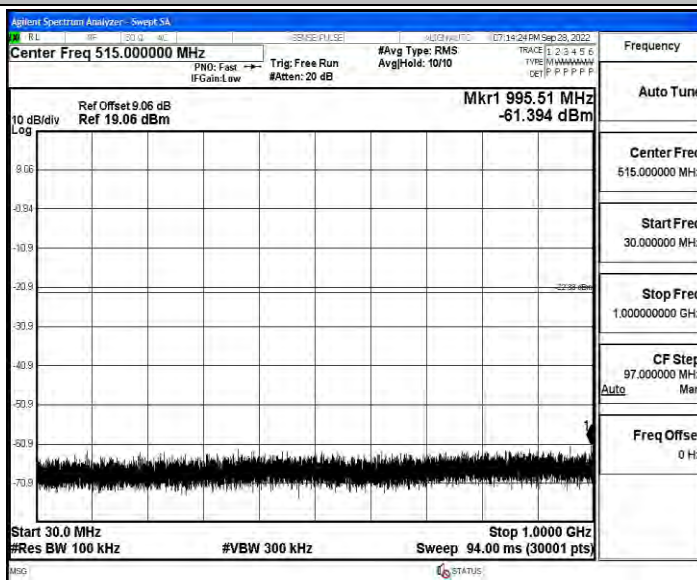
2DH5\_Ant1\_2402\_1000~26500



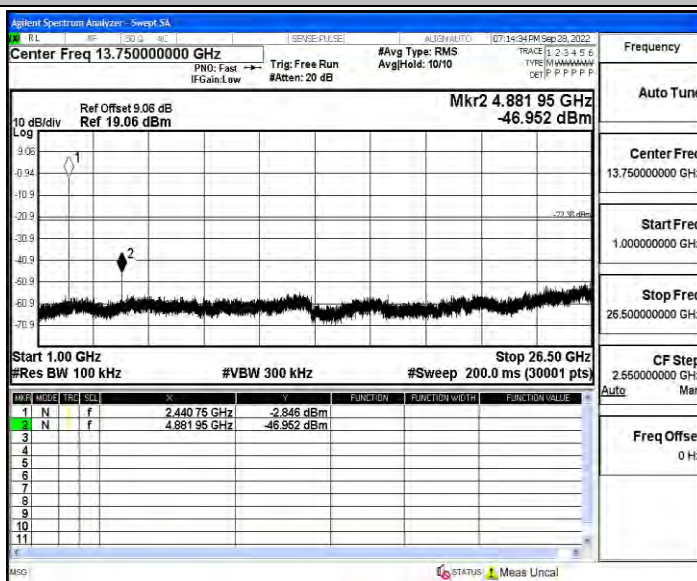
2DH5\_Ant1\_2441\_0~Reference



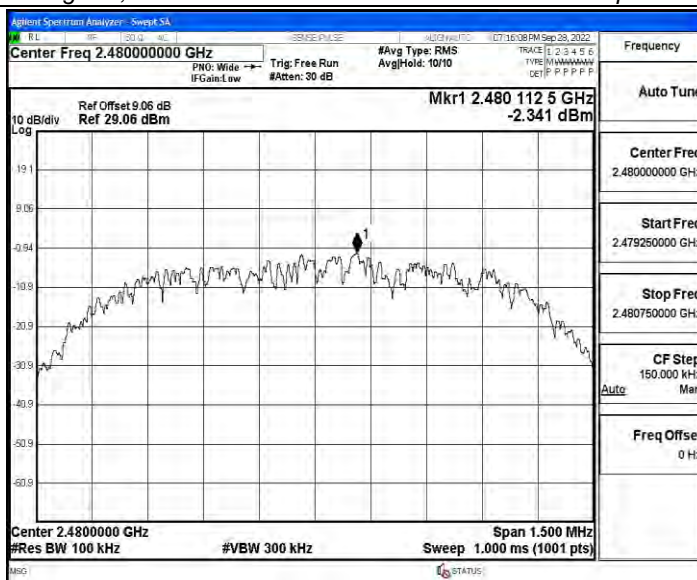
2DH5\_Ant1\_2441\_30~1000



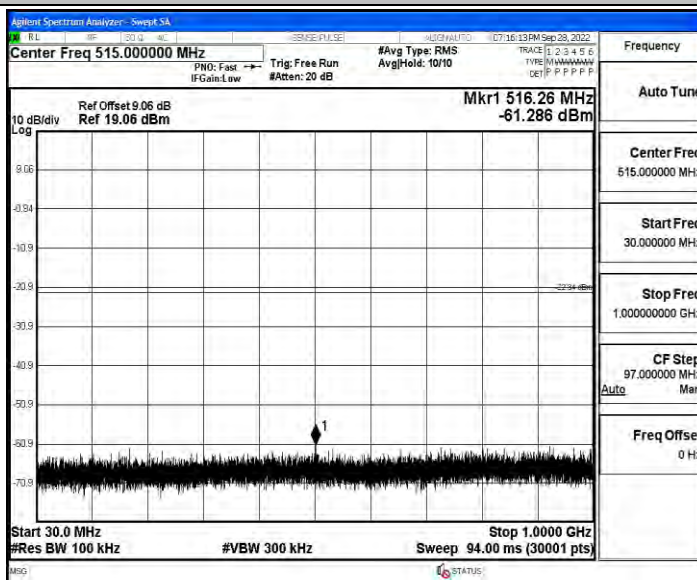
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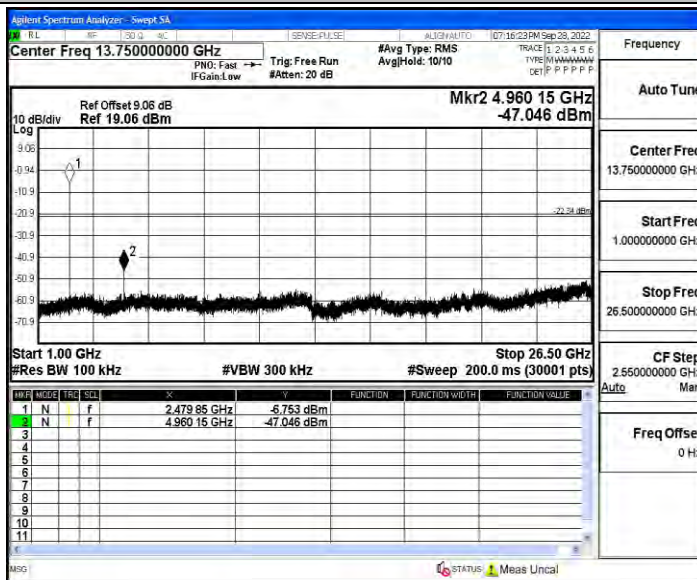
2DH5\_Ant1\_2480\_0~Reference



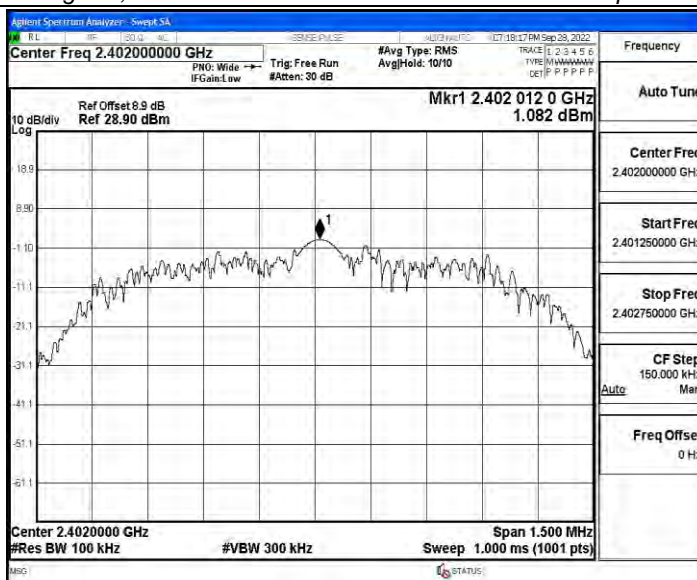
2DH5\_Ant1\_2480\_30~1000



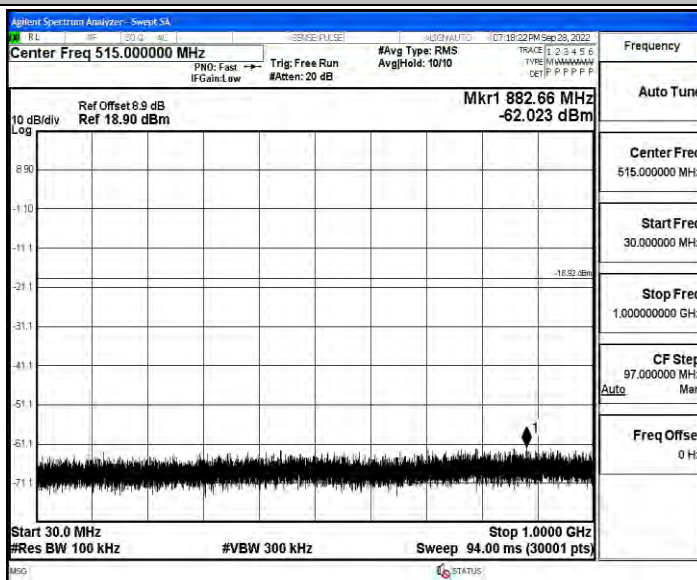
2DH5\_Ant1\_2480\_1000~26500



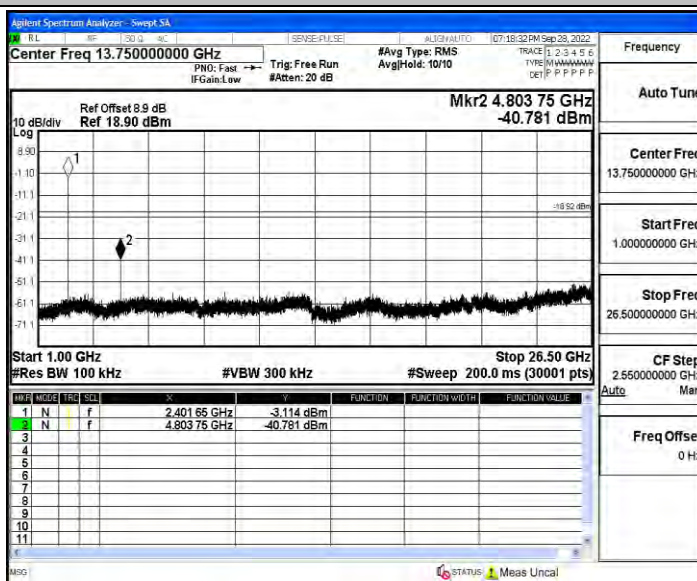
3DH5\_Ant1\_2402\_0~Reference



3DH5\_Ant1\_2402\_30~1000

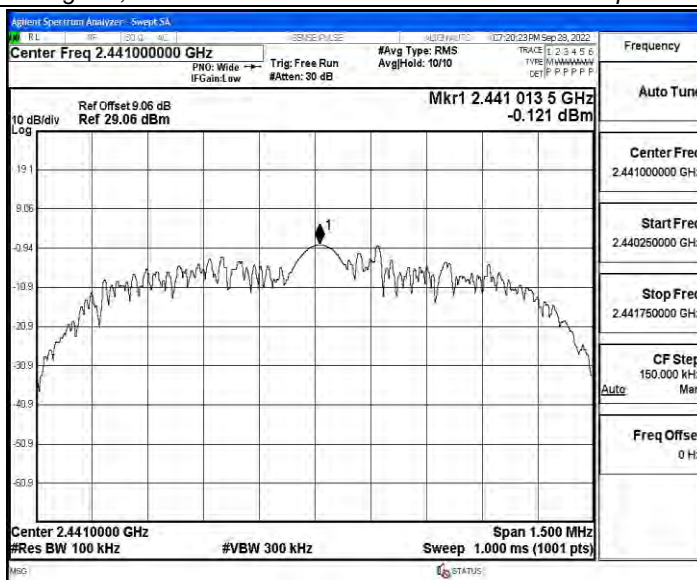


3DH5\_Ant1\_2402\_1000~26500

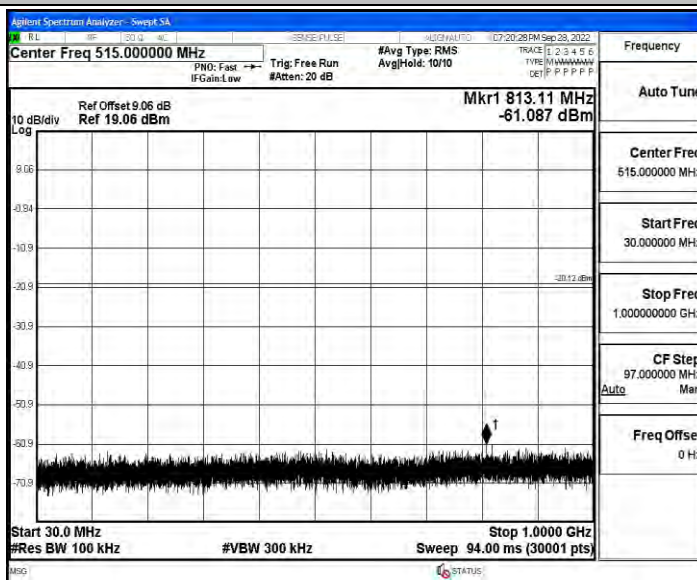


3DH5\_Ant1\_2441\_0~Reference

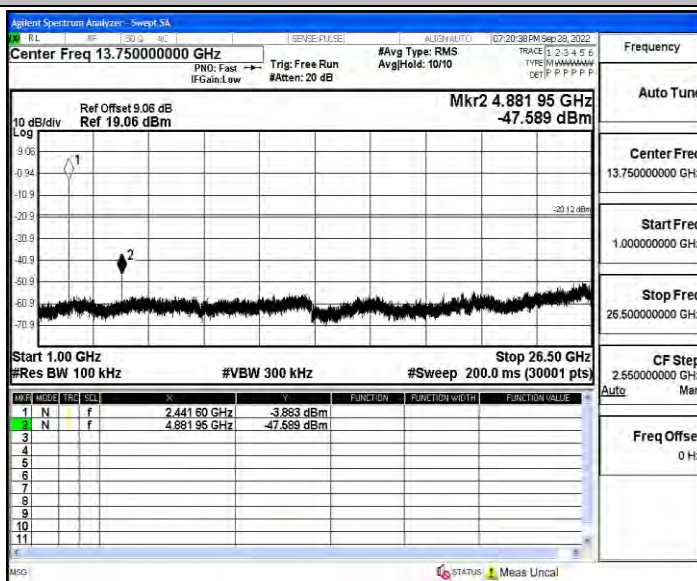




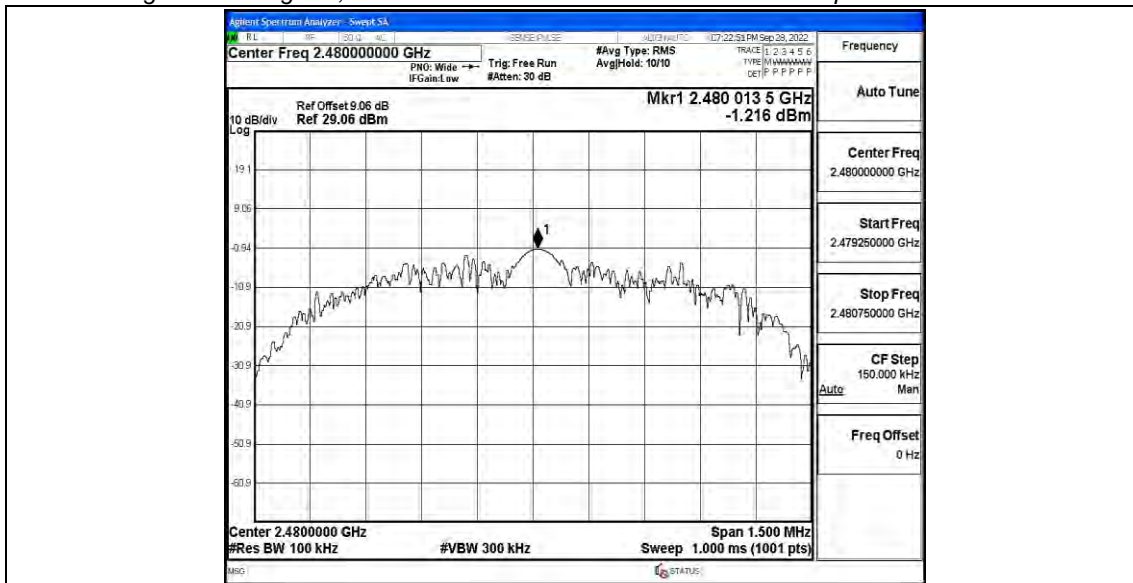
3DH5\_Ant1\_2441\_30~1000



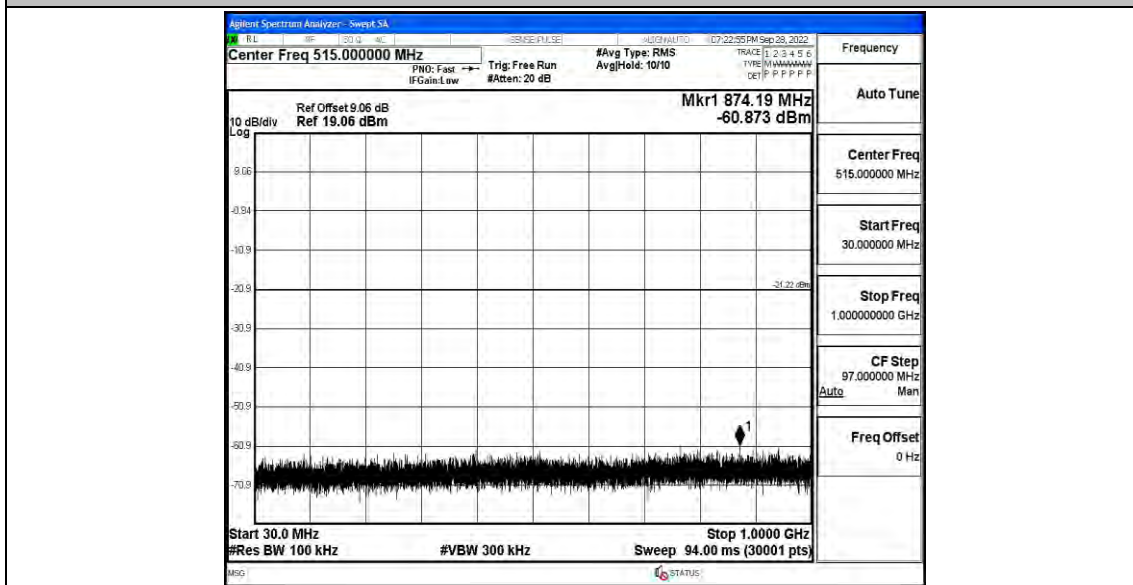
3DH5\_Ant1\_2441\_1000~26500



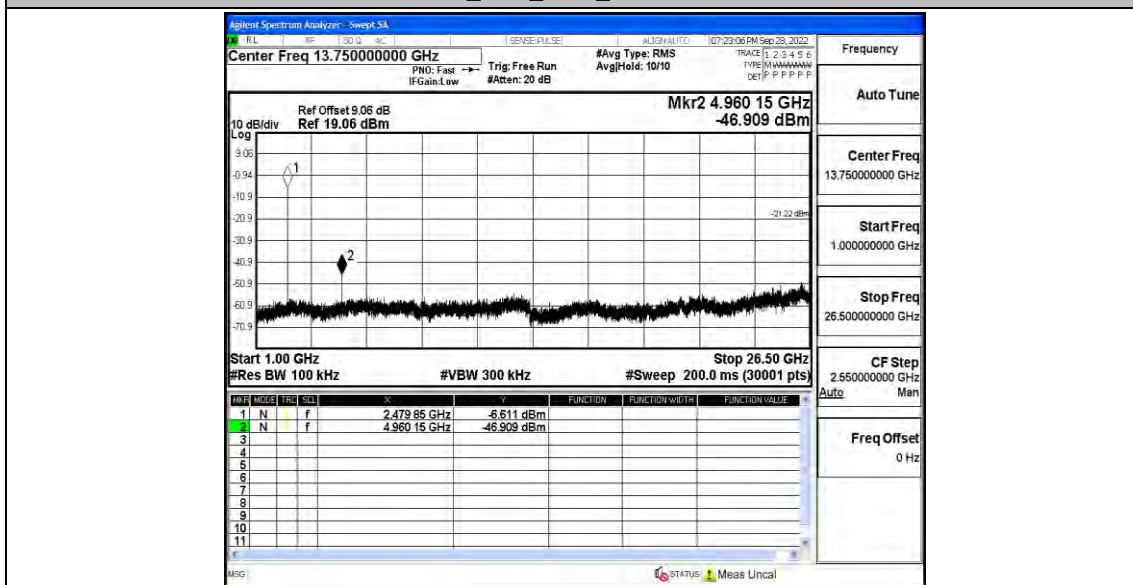
3DH5\_Ant1\_2480\_0~Reference



3DH5\_Ant1\_2480\_30~1000



3DH5\_Ant1\_2480\_1000~26500

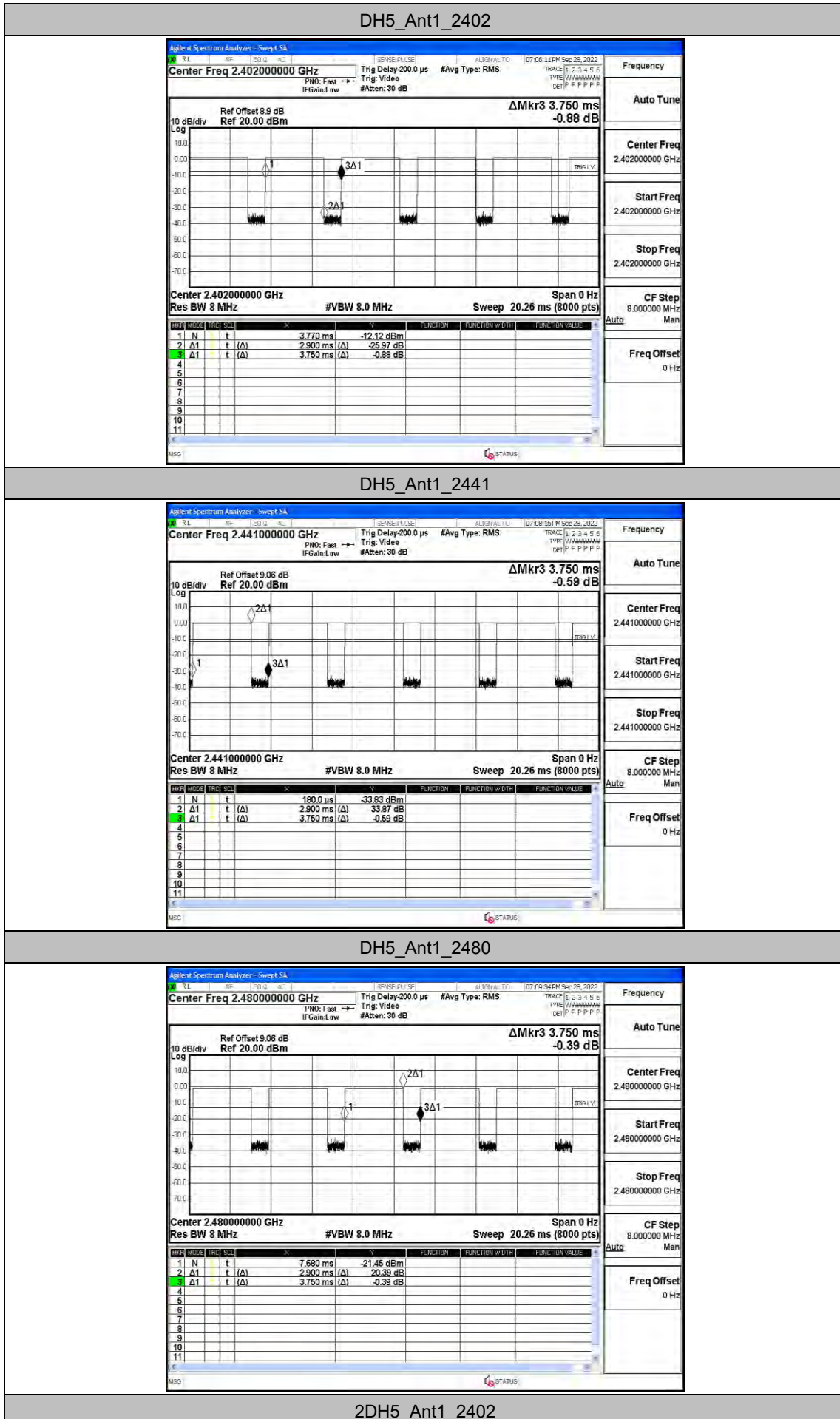


## Appendix I: Duty Cycle

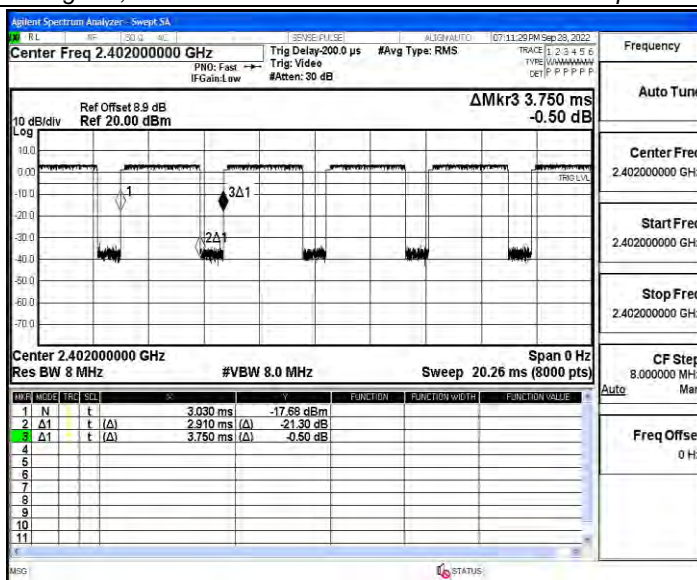
### Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T[kHz]
DH5	Ant1	2402	2.90	3.75	77.33	0.34
		2441	2.90	3.75	77.33	0.34
		2480	2.90	3.75	77.33	0.34
2DH5	Ant1	2402	2.91	3.75	77.60	0.34
		2441	2.90	3.75	77.33	0.34
		2480	2.91	3.75	77.60	0.34
3DH5	Ant1	2402	2.91	3.75	77.60	0.34
		2441	2.91	3.75	77.60	0.34
		2480	2.90	3.75	77.33	0.34

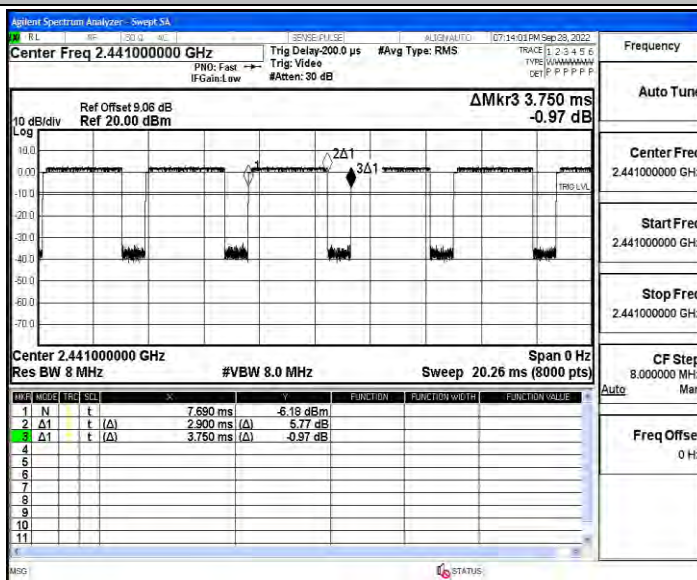
Test Graphs



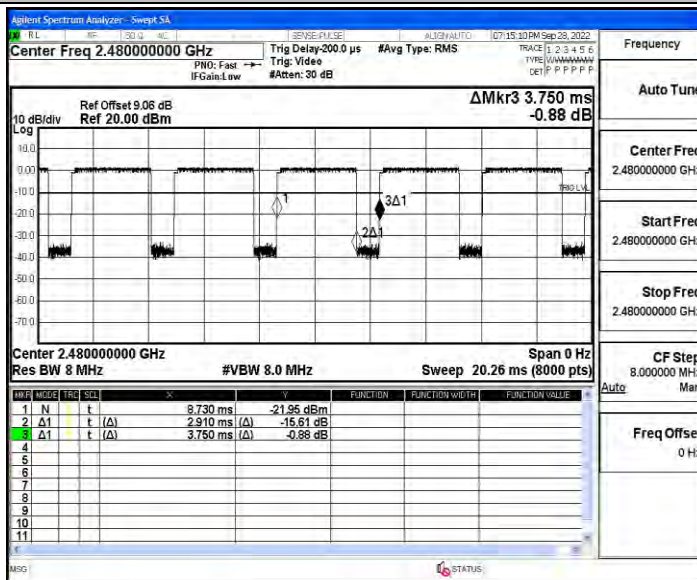
2DH5\_Ant1\_2402



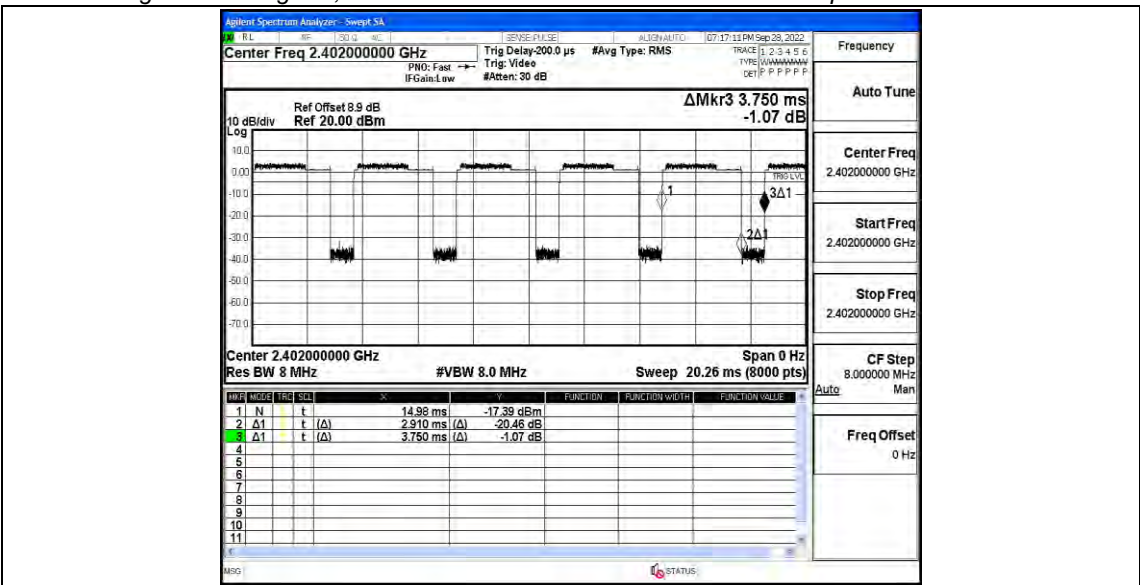
2Dh5\_Ant1\_2441



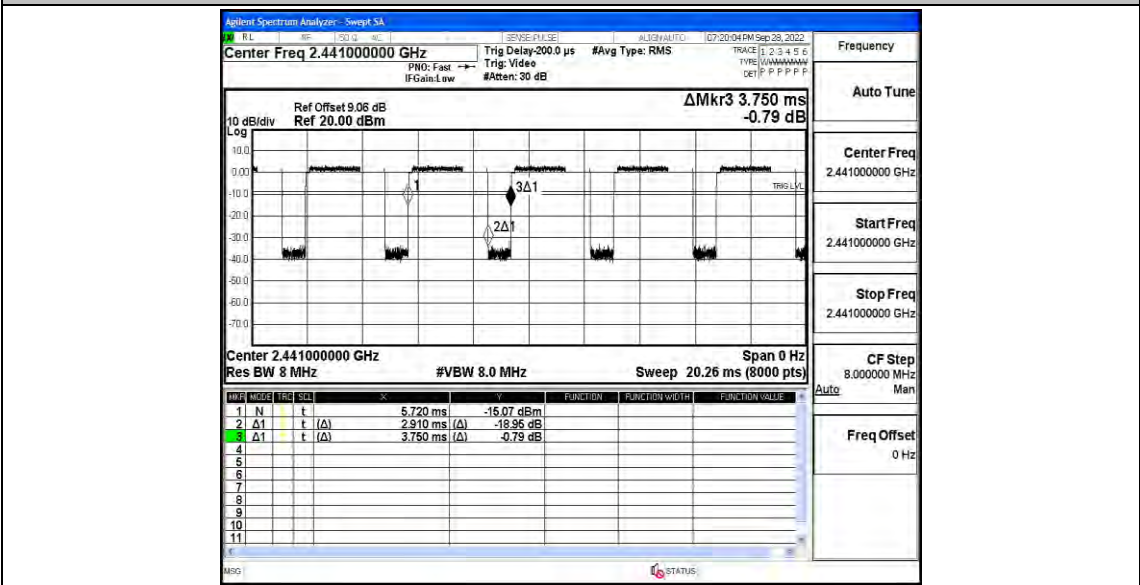
2Dh5\_Ant1\_2480



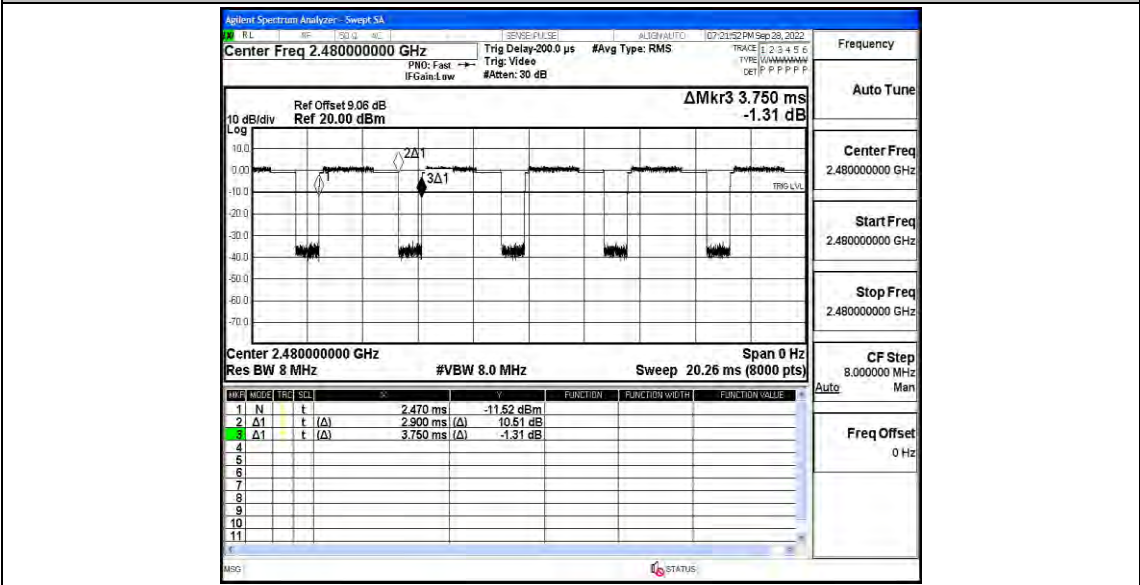
3Dh5\_Ant1\_2402



3DH5\_Ant1\_2441



3DH5\_Ant1\_2480



## Appendix J: Emissions in Restricted Bands

### Test Result

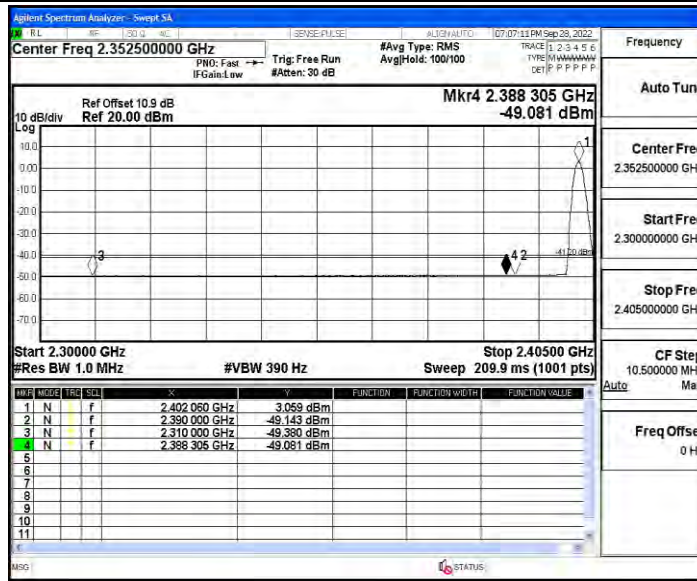
TestMode	Antenna	ChName	Channel	Detector	Freq(MHz)	Result(dBm)	Limit(dBm)	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-49.38	≤-41.20	PASS
				AV	2388.305	-49.08	≤-41.20	PASS
				AV	2390.000	-49.14	≤-41.20	PASS
				Peak	2310.000	-42.74	≤-21.20	PASS
				Peak	2375.390	-38.98	≤-21.20	PASS
				Peak	2390.000	-42.14	≤-21.20	PASS
		High	2480	AV	2483.500	-48.5	≤-41.20	PASS
				AV	2498.640	-48.48	≤-41.20	PASS
				AV	2500.000	-48.49	≤-41.20	PASS
				Peak	2483.500	-40.88	≤-21.20	PASS
				Peak	2489.040	-38.41	≤-21.20	PASS
				Peak	2500.000	-41.1	≤-21.20	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-49.45	≤-41.20	PASS
				AV	2386.100	-49.11	≤-41.20	PASS
				AV	2390.000	-49.25	≤-41.20	PASS
				Peak	2310.000	-43.22	≤-21.20	PASS
				Peak	2338.745	-39.61	≤-21.20	PASS
				Peak	2390.000	-40.76	≤-21.20	PASS
		High	2480	AV	2483.500	-48.27	≤-41.20	PASS
				AV	2483.520	-48.27	≤-41.20	PASS
				AV	2500.000	-48.56	≤-41.20	PASS
				Peak	2483.500	-40.71	≤-21.20	PASS
				Peak	2491.120	-38.22	≤-21.20	PASS
				Peak	2500.000	-41.7	≤-21.20	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-49.53	≤-41.20	PASS
				AV	2385.785	-49.06	≤-41.20	PASS
				AV	2390.000	-49.13	≤-41.20	PASS
				Peak	2310.000	-43.78	≤-21.20	PASS
				Peak	2364.785	-39.74	≤-21.20	PASS
				Peak	2390.000	-42.07	≤-21.20	PASS
		High	2480	AV	2483.500	-48.26	≤-41.20	PASS
				AV	2483.520	-48.26	≤-41.20	PASS
				AV	2500.000	-48.55	≤-41.20	PASS
				Peak	2483.500	-40.27	≤-21.20	PASS
				Peak	2496.160	-38.61	≤-21.20	PASS
				Peak	2500.000	-41.24	≤-21.20	PASS

#### Note:

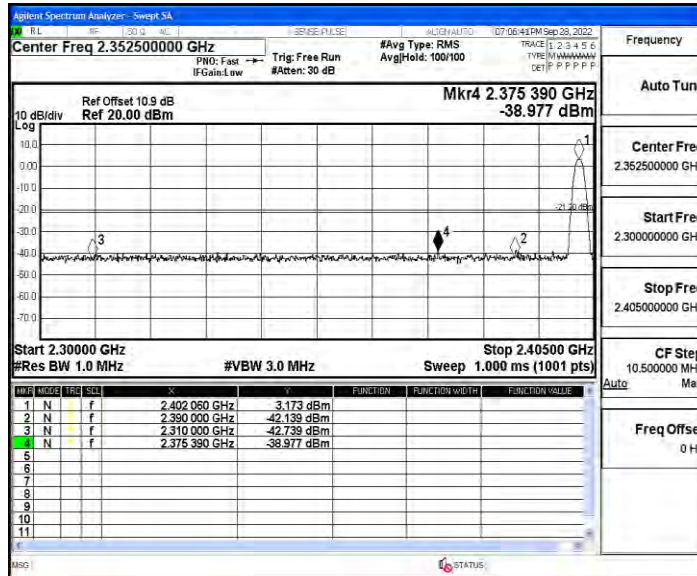
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

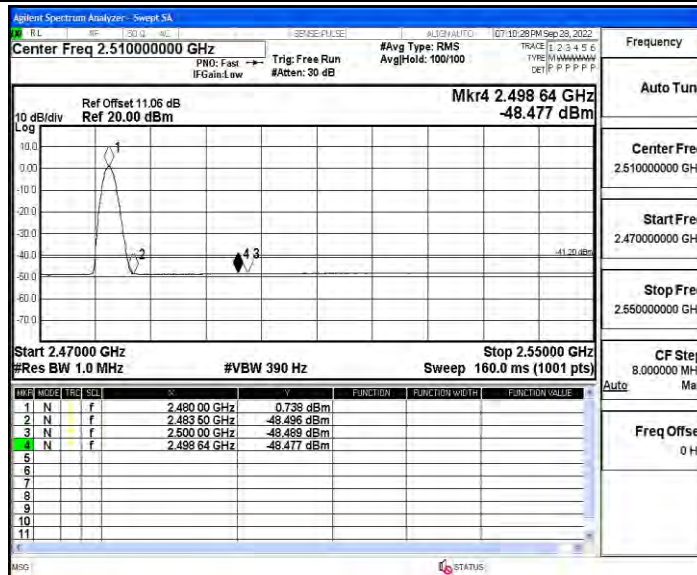
DH5\_Ant1\_Low\_2402\_AV



DH5\_Ant1\_Low\_2402\_Peak

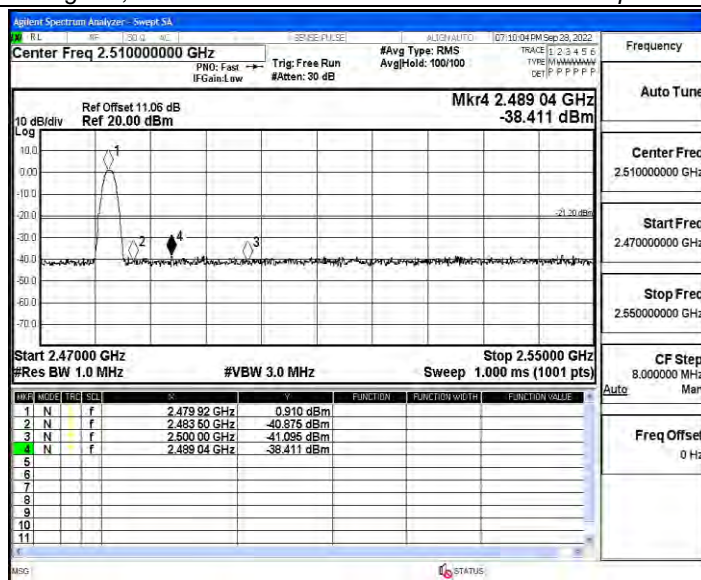


DH5\_Ant1\_High\_2480\_AV

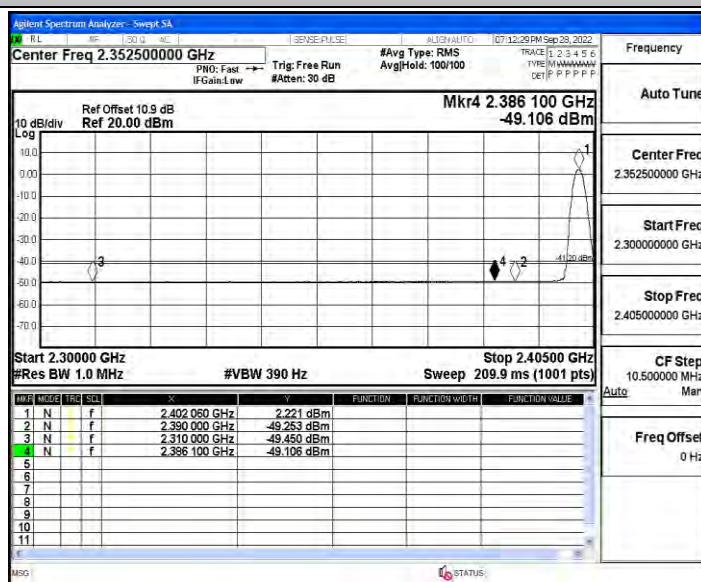


DH5\_Ant1\_High\_2480\_Peak

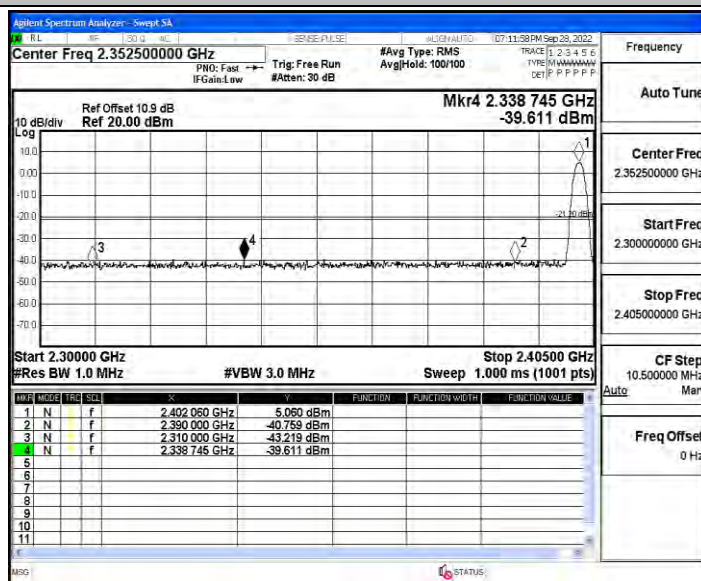




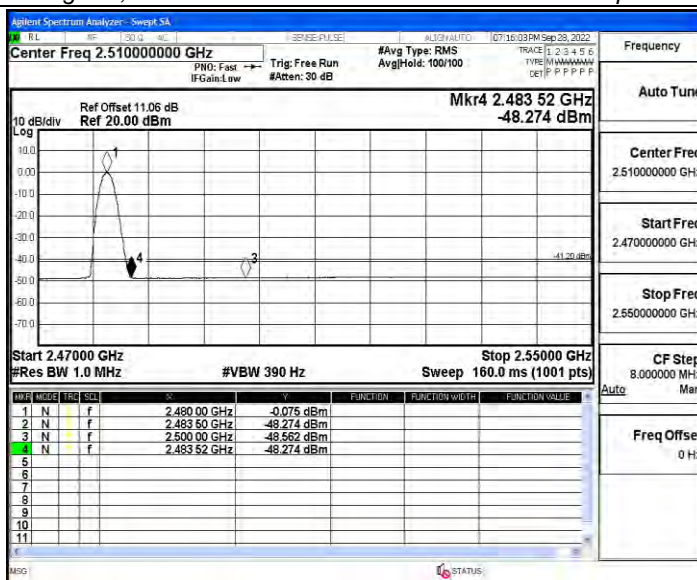
2DH5\_Ant1\_Low\_2402\_AV



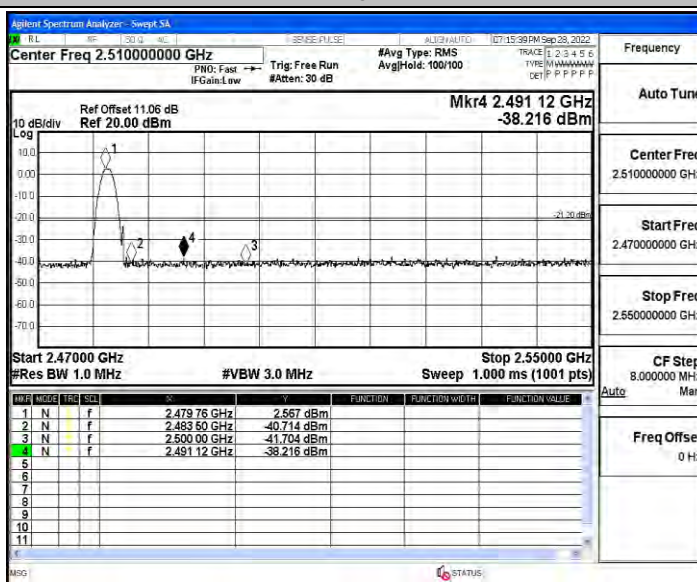
2DH5\_Ant1\_Low\_2402\_Peak



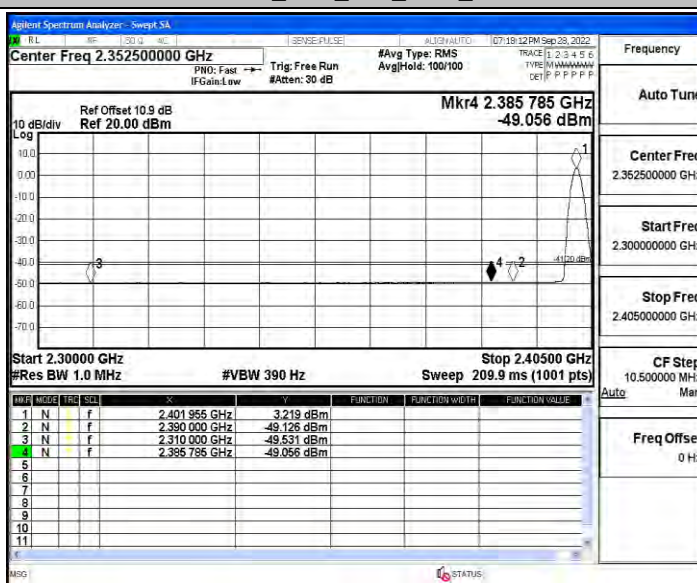
2DH5\_Ant1\_High\_2480\_AV



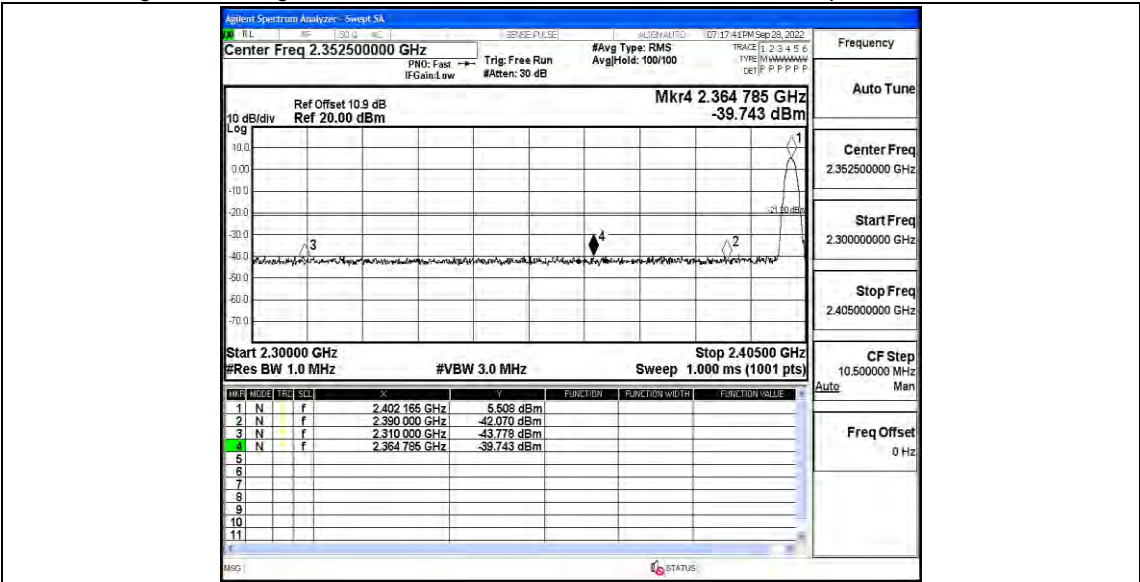
2DH5\_Ant1\_High\_2480\_Peak



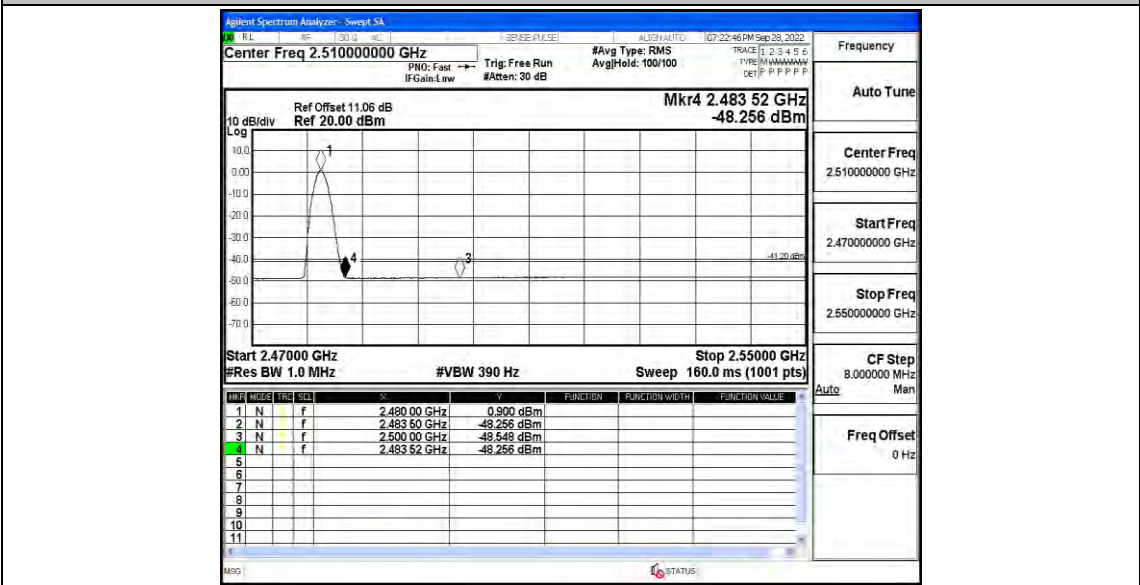
3DH5\_Ant1\_Low\_2402\_AV



3DH5\_Ant1\_Low\_2402\_Peak



3DH5\_Ant1\_High\_2480\_AV



3DH5\_Ant1\_High\_2480\_Peak

