



## Appendix A

### RF Test Data for BT (Conducted Measurement)

**Product Name: BLUETOOTH SPEAKER**

**Trade Mark: Fiodio**

**Test Model: F-130**

#### Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Bill Zhu
Supervised by:	Li huan



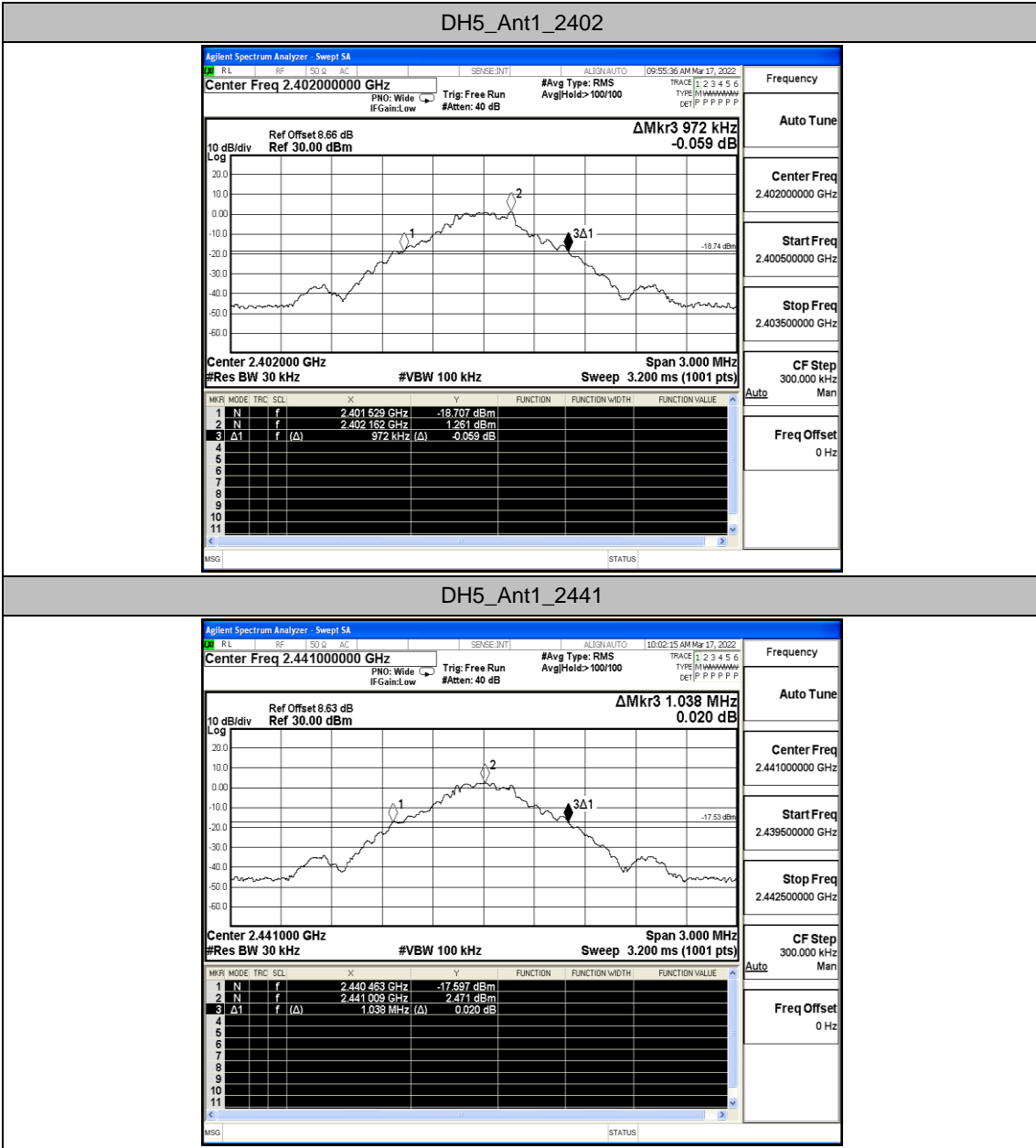
## Appendix A.1.1: 20dB Emission Bandwidth

### Test Result

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.972	2401.529	2402.501	---	---
		2441	1.038	2440.463	2441.501	---	---
		2480	1.044	2479.460	2480.504	---	---
2DH5	Ant1	2402	1.290	2401.361	2402.651	---	---
		2441	1.299	2440.355	2441.654	---	---
		2480	1.323	2479.334	2480.657	---	---
3DH5	Ant1	2402	1.299	2401.346	2402.645	---	---
		2441	1.314	2440.340	2441.654	---	---
		2480	1.317	2479.340	2480.657	---	---

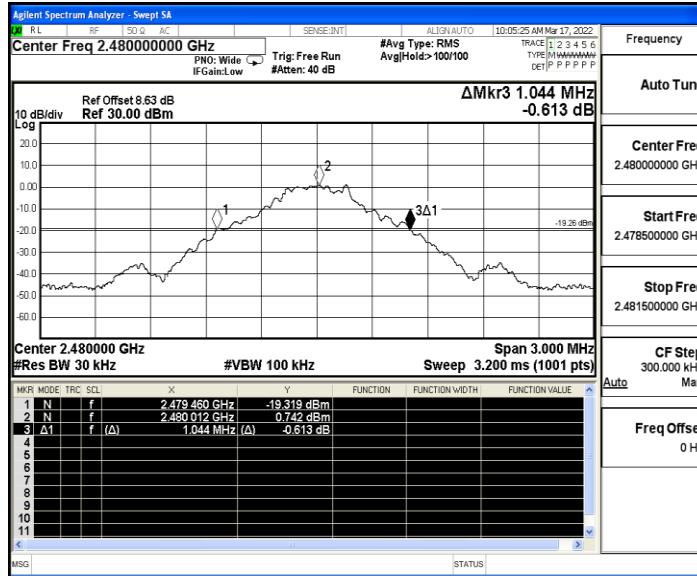


### Test Graphs

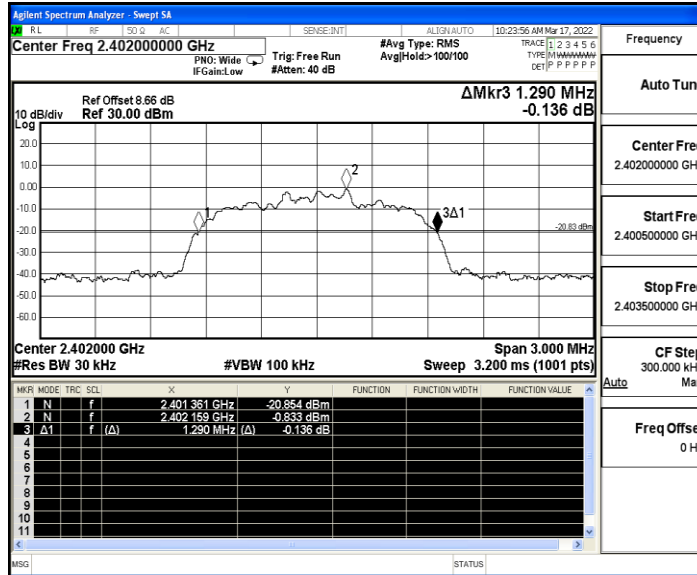

**DH5\_Ant1\_2441**



DH5\_Ant1\_2480

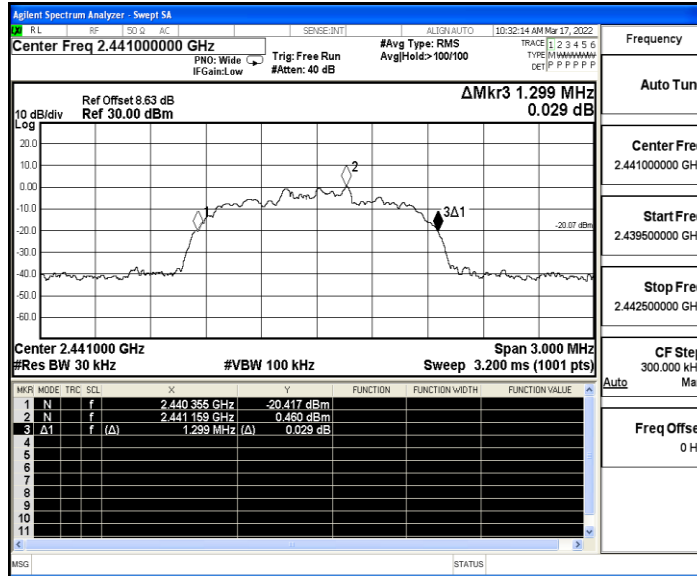


2DH5\_Ant1\_2402

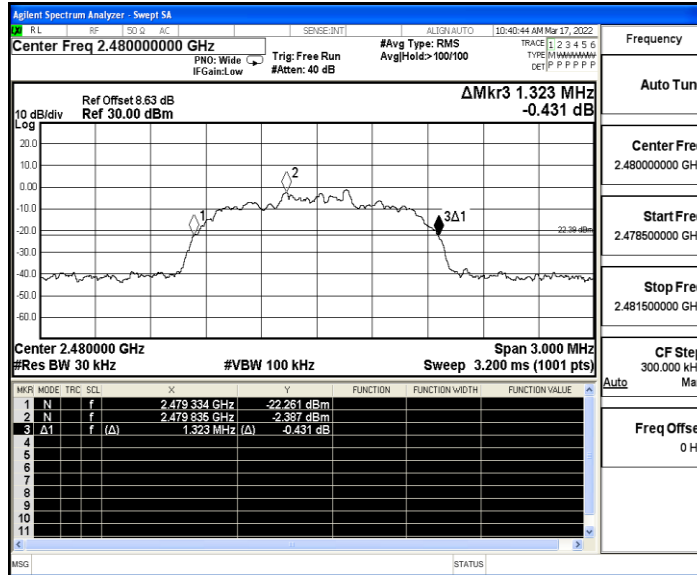




2DH5\_Ant1\_2441

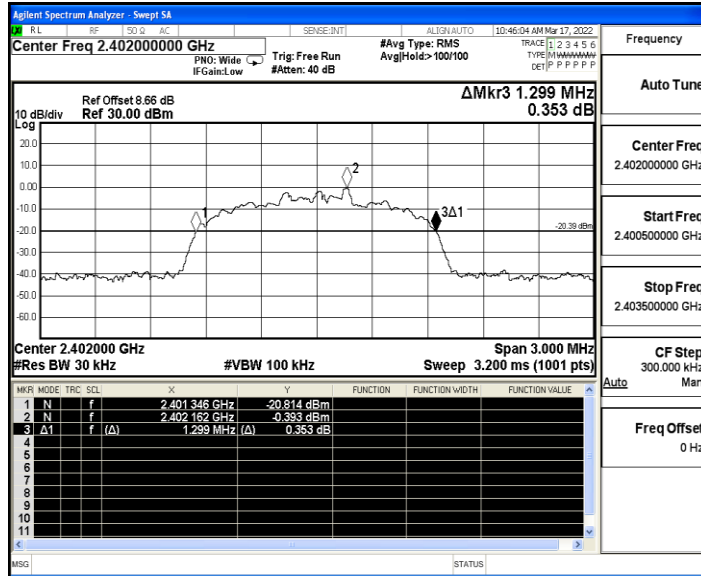


2DH5\_Ant1\_2480

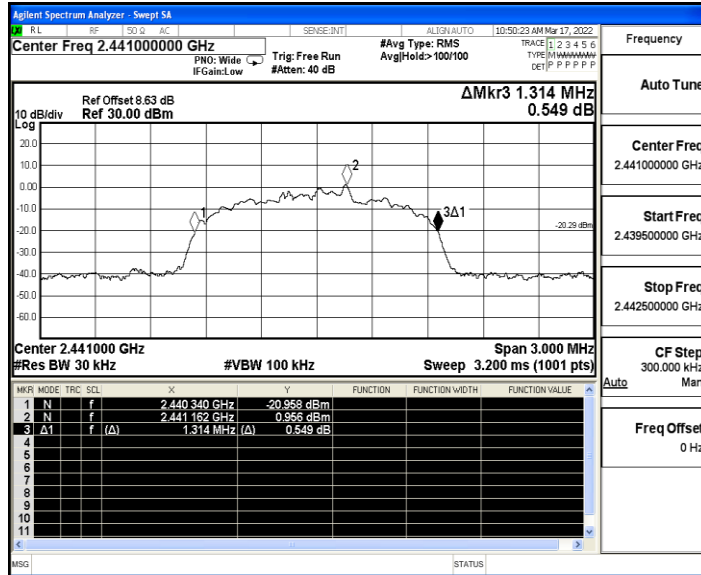




3DH5\_Ant1\_2402

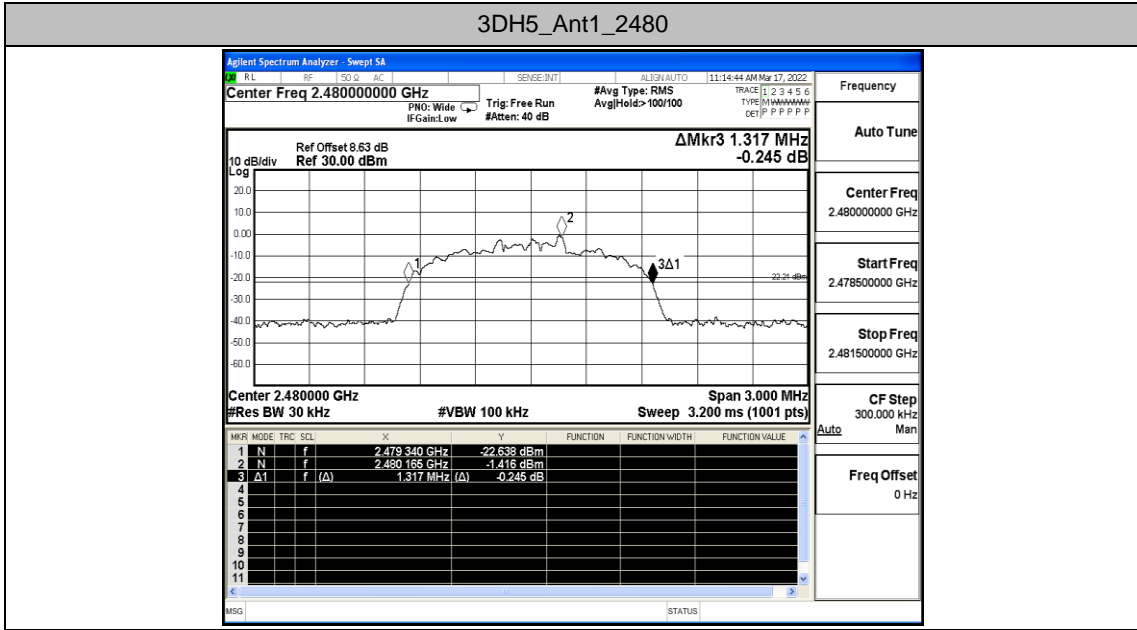


3DH5\_Ant1\_2441





3DH5\_Ant1\_2480





## Appendix A.1.2: Occupied Channel Bandwidth

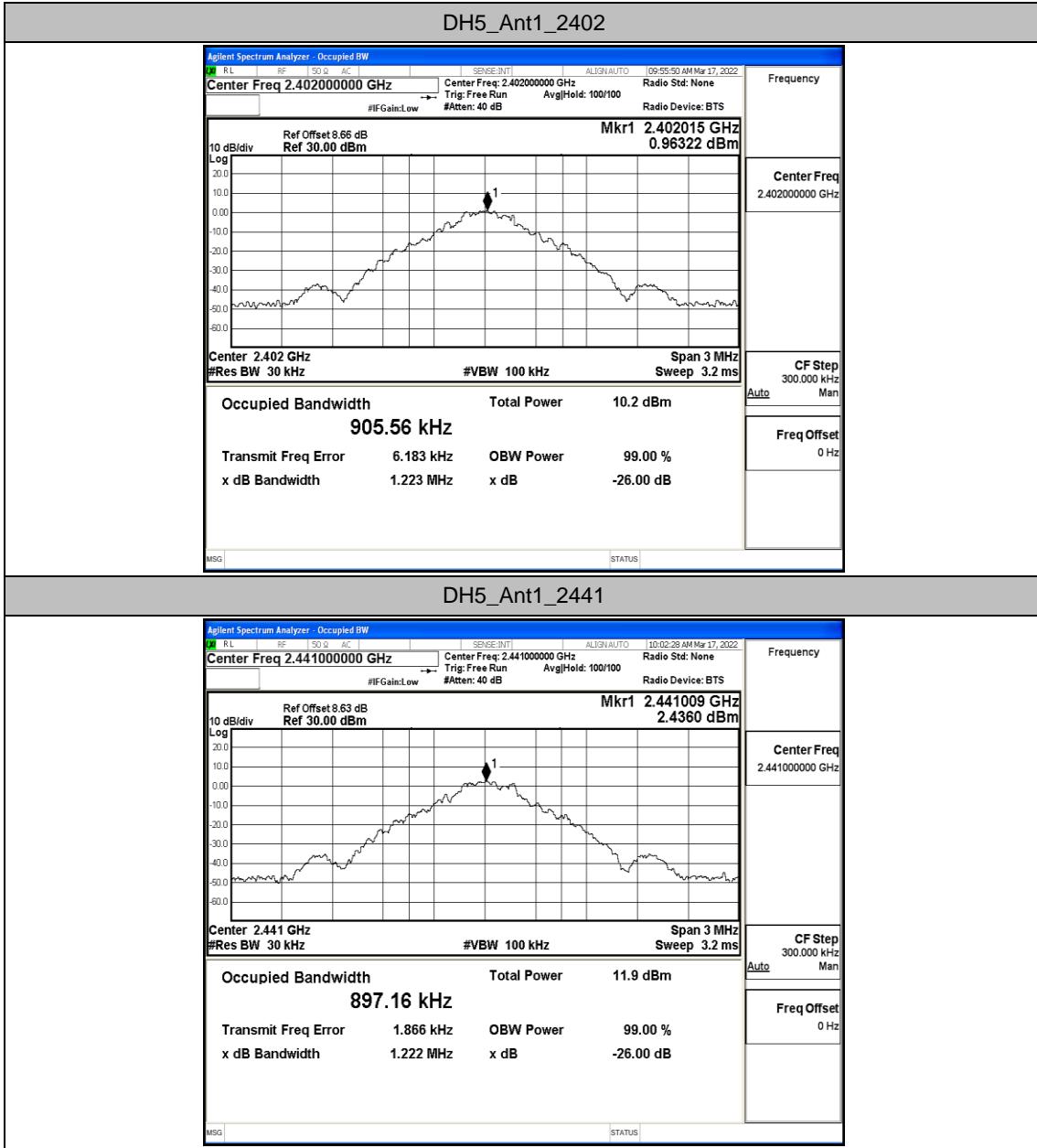
### Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.90556	2401.553	2402.459	---	---
		2441	0.89716	2440.553	2441.450	---	---
		2480	0.88735	2479.555	2480.443	---	---
2DH5	Ant1	2402	1.1823	2401.407	2402.589	---	---
		2441	1.2003	2440.396	2441.597	---	---
		2480	1.1852	2479.401	2480.586	---	---
3DH5	Ant1	2402	1.1927	2401.399	2402.591	---	---
		2441	1.1957	2440.400	2441.595	---	---
		2480	1.2109	2479.387	2480.598	---	---



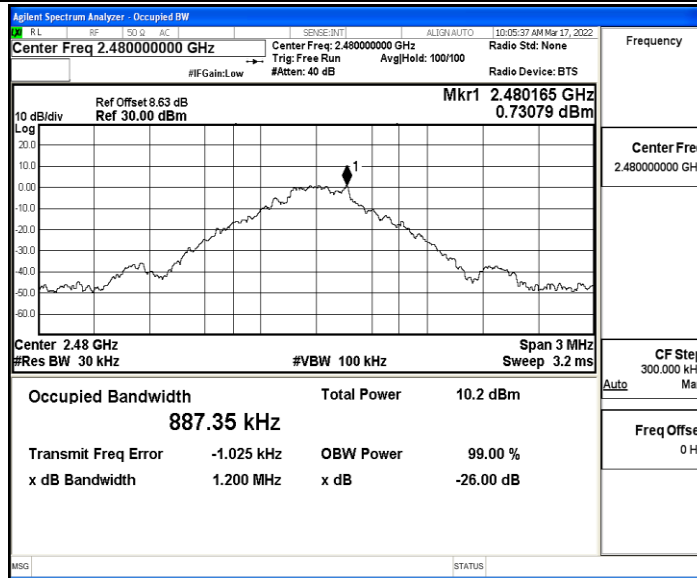


### Test Graphs

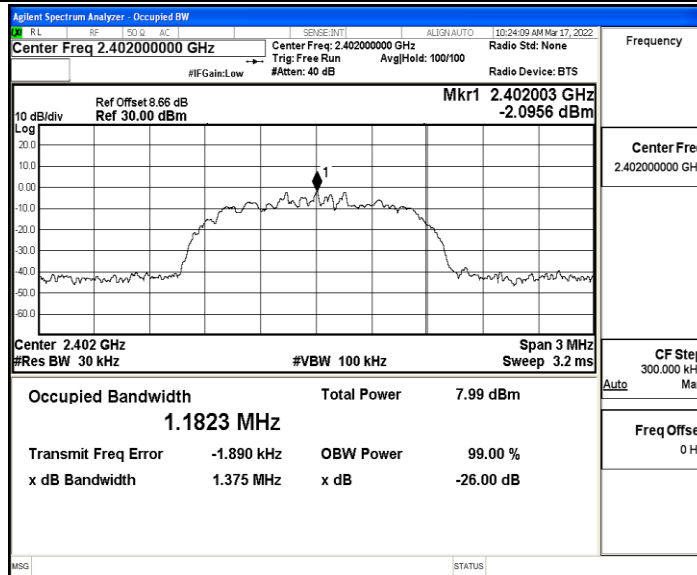




DH5\_Ant1\_2480

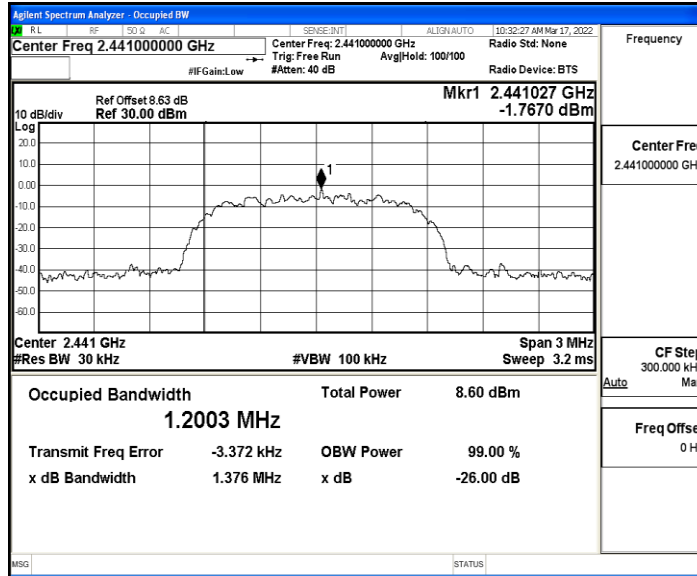


2DH5\_Ant1\_2402

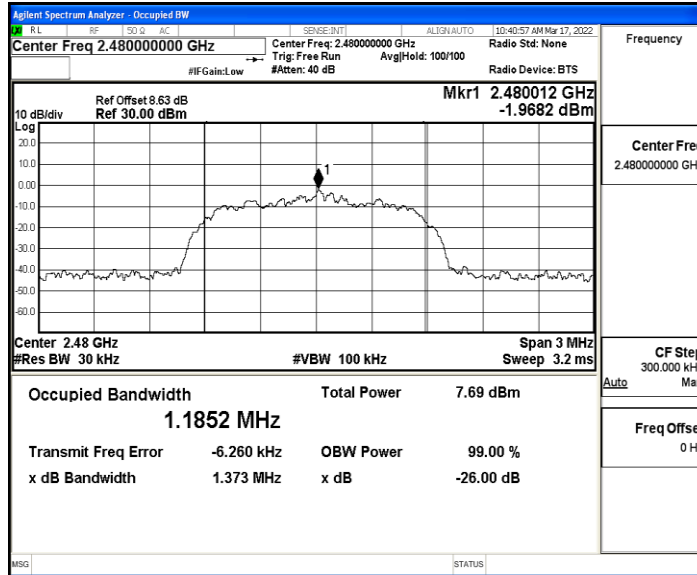




2DH5\_Ant1\_2441

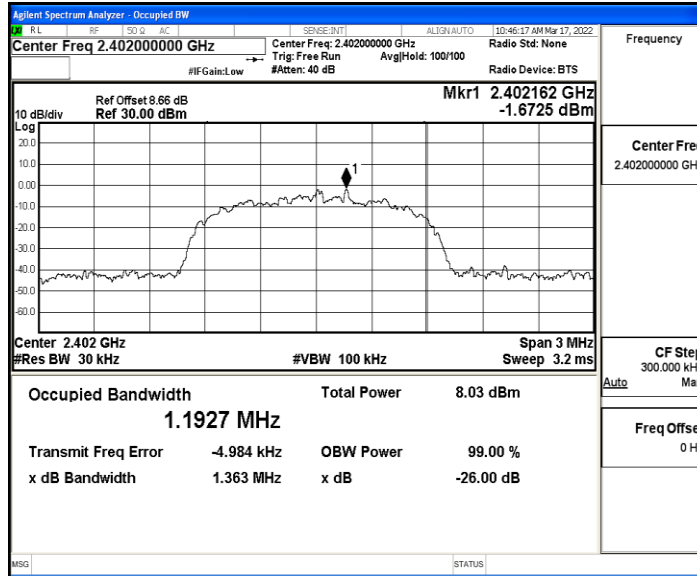


2DH5\_Ant1\_2480

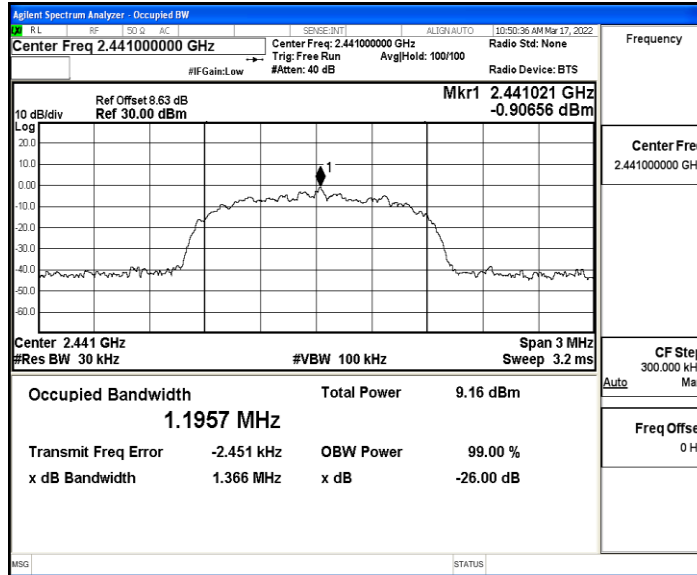




3DH5\_Ant1\_2402

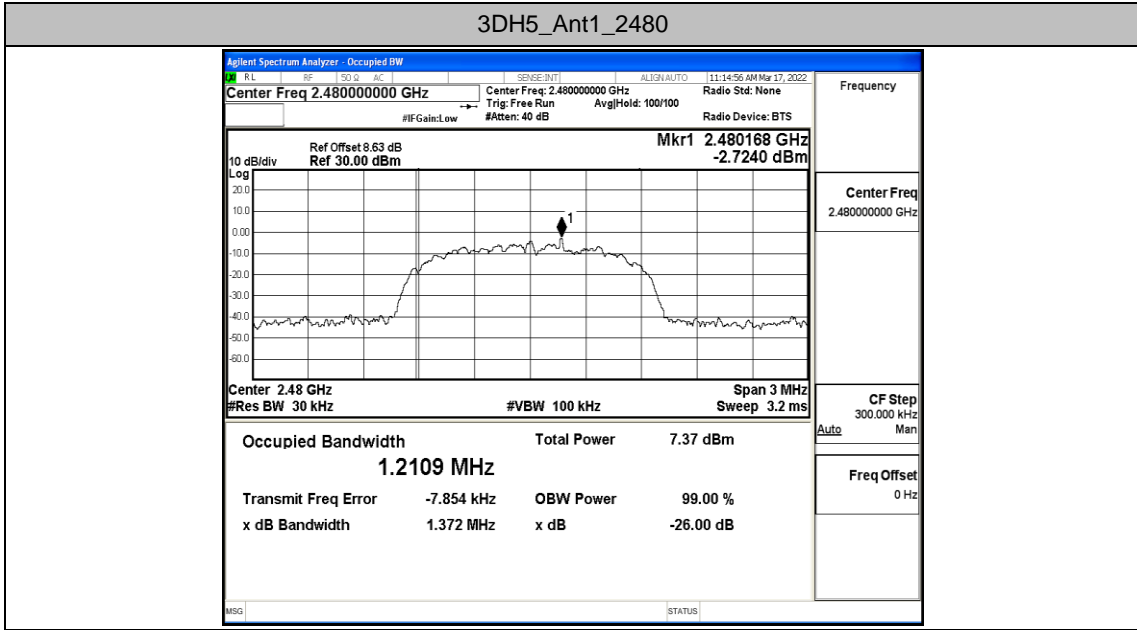


3DH5\_Ant1\_2441





3DH5\_Ant1\_2480





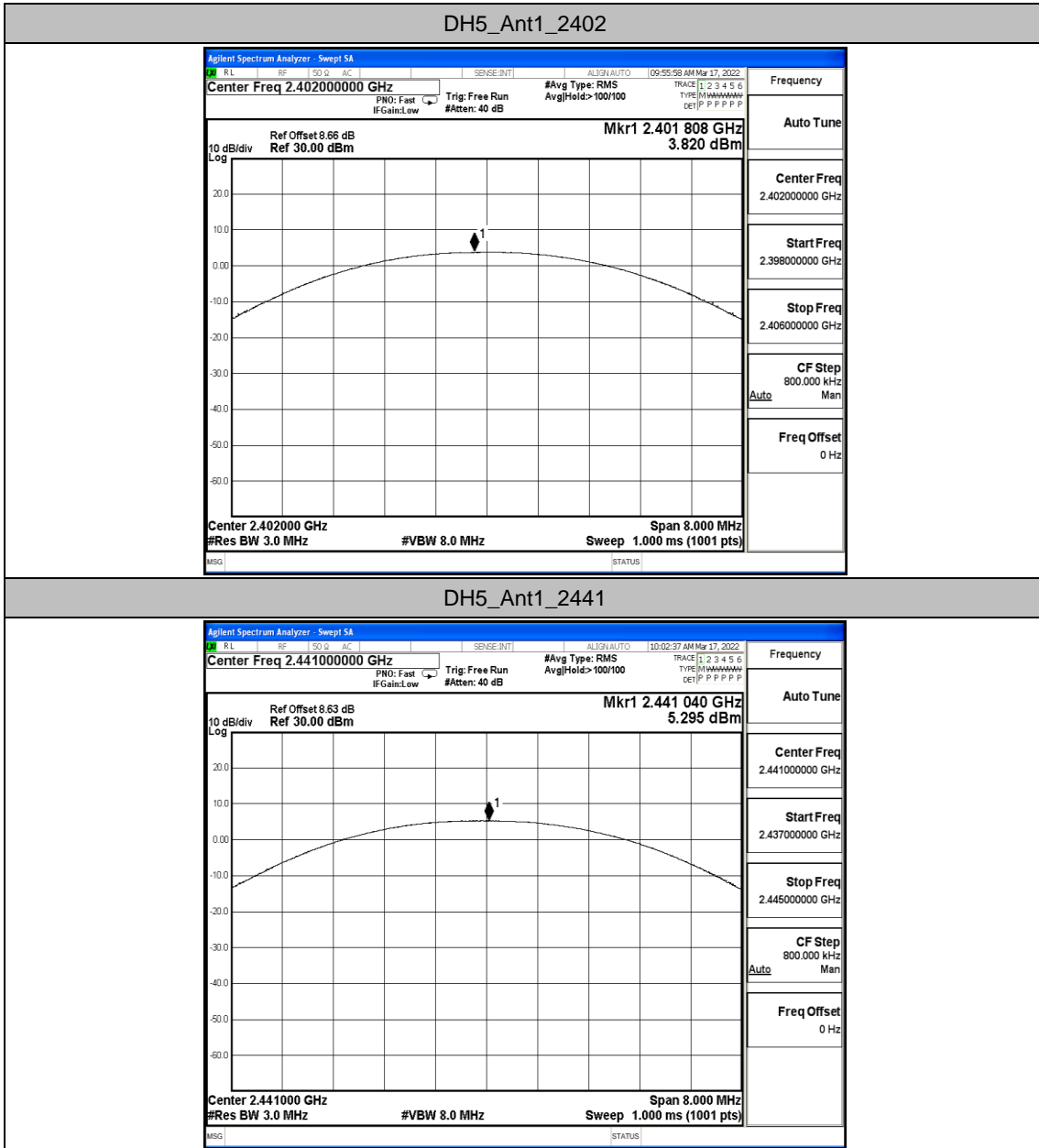
## Appendix A.2: Maximum conducted output power

### Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	3.82	≤20.97	PASS
		2441	5.3	≤20.97	PASS
		2480	3.59	≤20.97	PASS
2DH5	Ant1	2402	3.01	≤20.97	PASS
		2441	4.36	≤20.97	PASS
		2480	2.75	≤20.97	PASS
3DH5	Ant1	2402	3.19	≤20.97	PASS
		2441	4.63	≤20.97	PASS
		2480	2.95	≤20.97	PASS

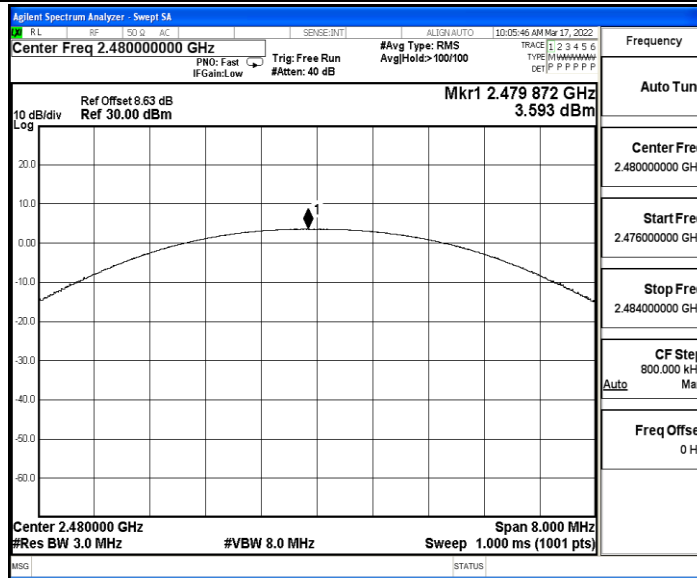


### Test Graphs

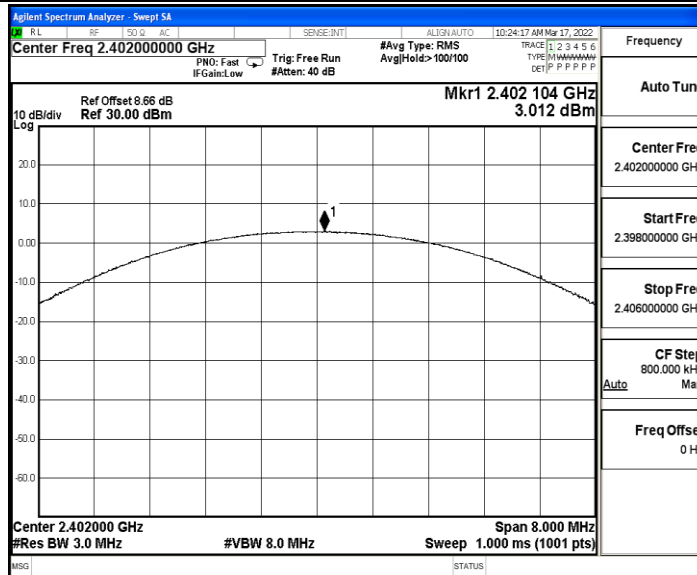




### DH5\_Ant1\_2480



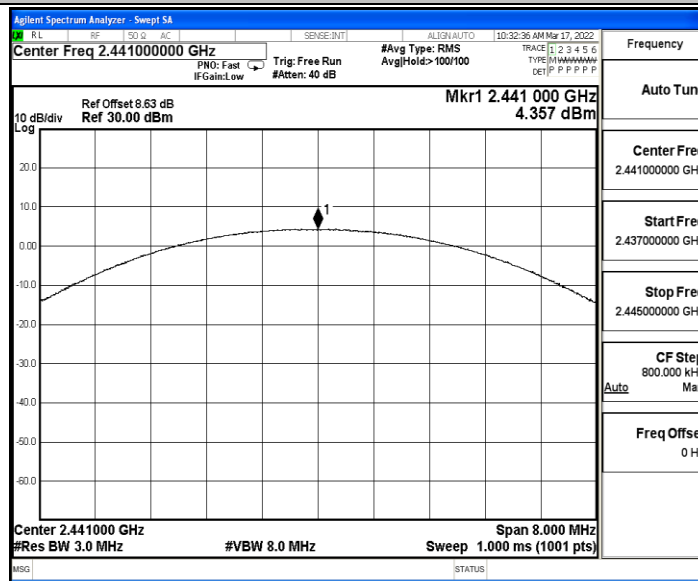
### 2DH5\_Ant1\_2402



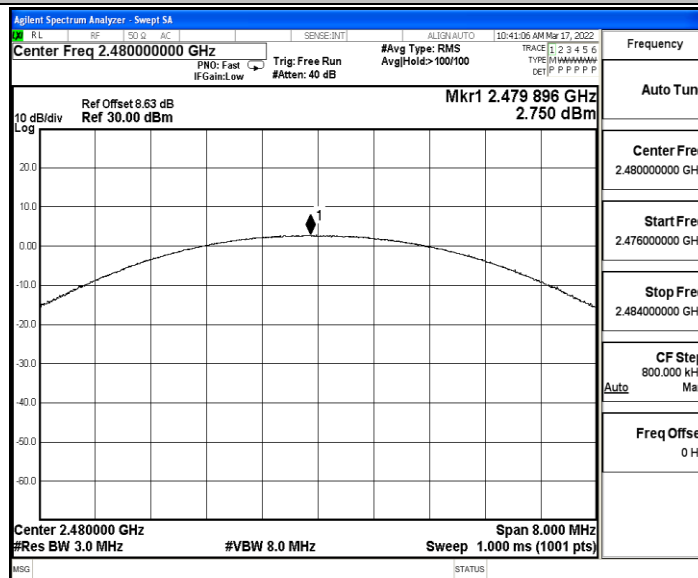




### 2DH5\_Ant1\_2441

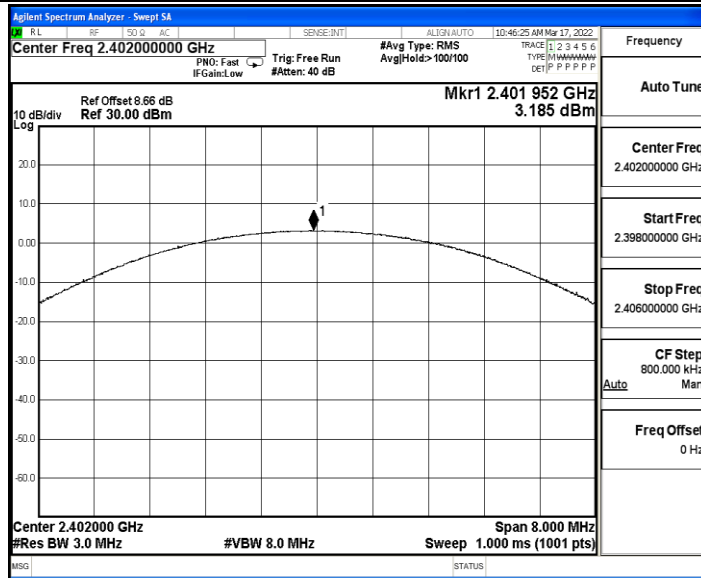


### 2DH5\_Ant1\_2480

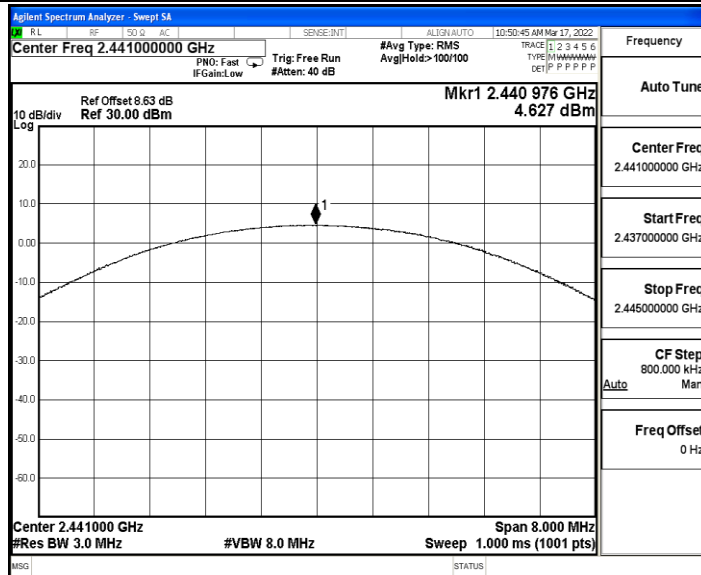




### 3DH5\_Ant1\_2402

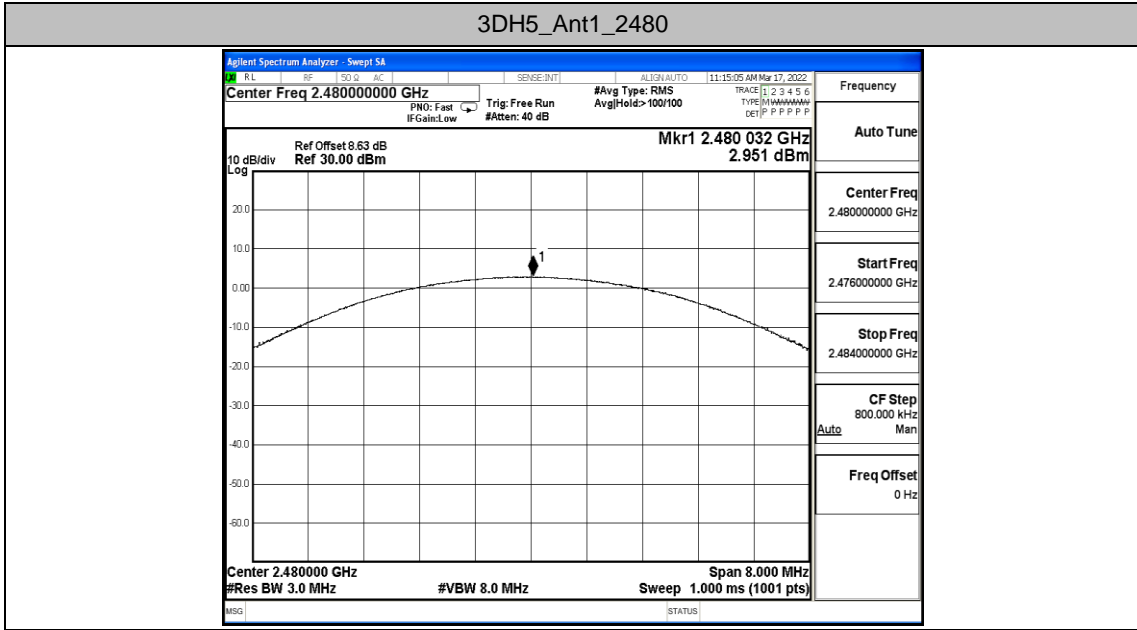


### 3DH5\_Ant1\_2441





3DH5\_Ant1\_2480





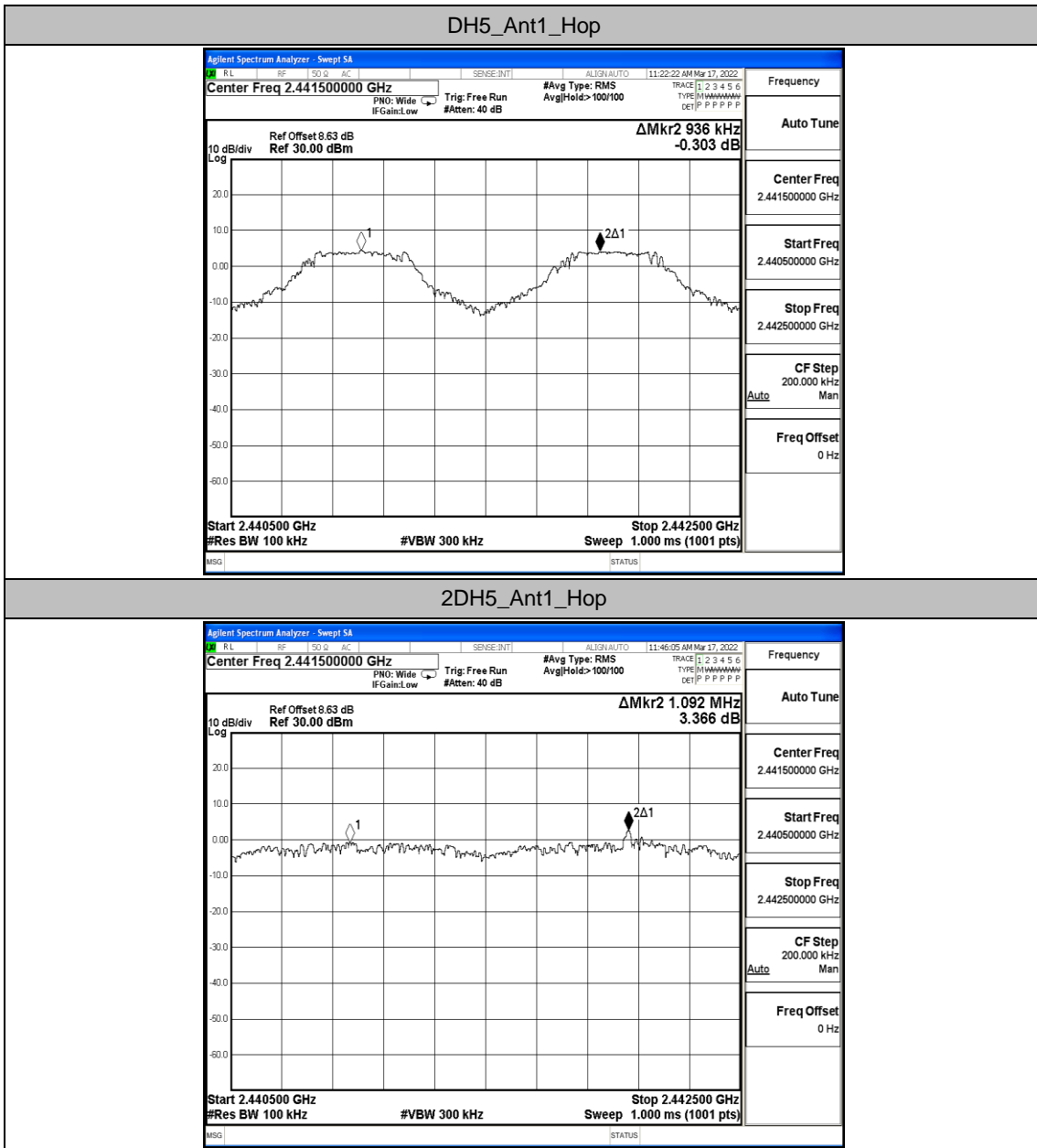
## Appendix A.3: Carrier frequency separation

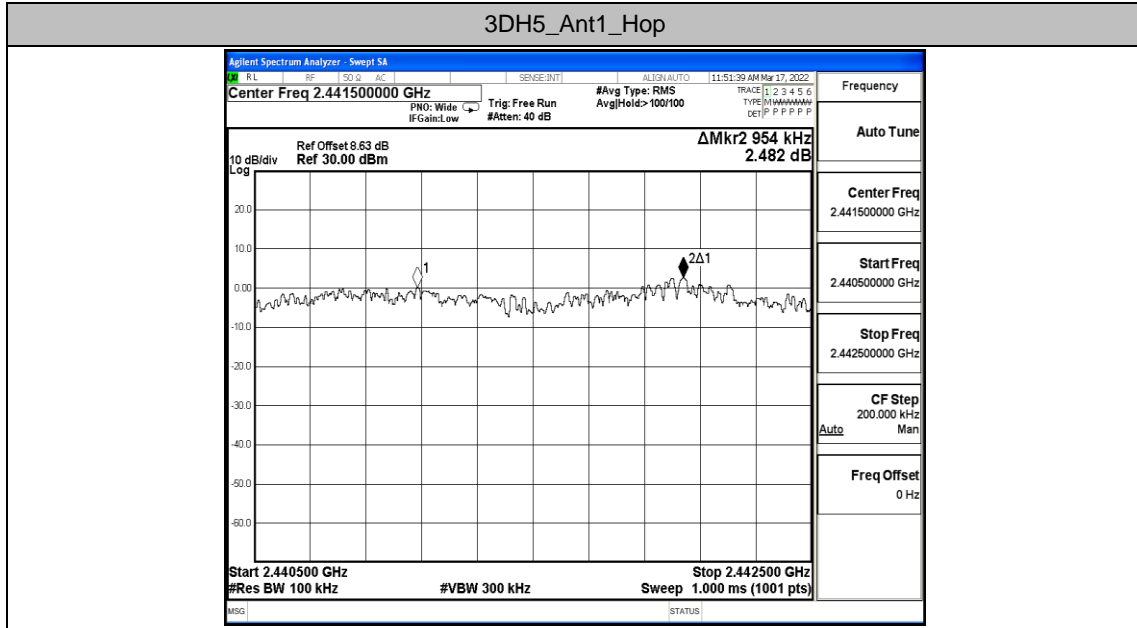
### Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.936	≥0.696	PASS
2DH5	Ant1	Hop	1.092	≥0.882	PASS
3DH5	Ant1	Hop	0.954	≥0.878	PASS



### Test Graphs







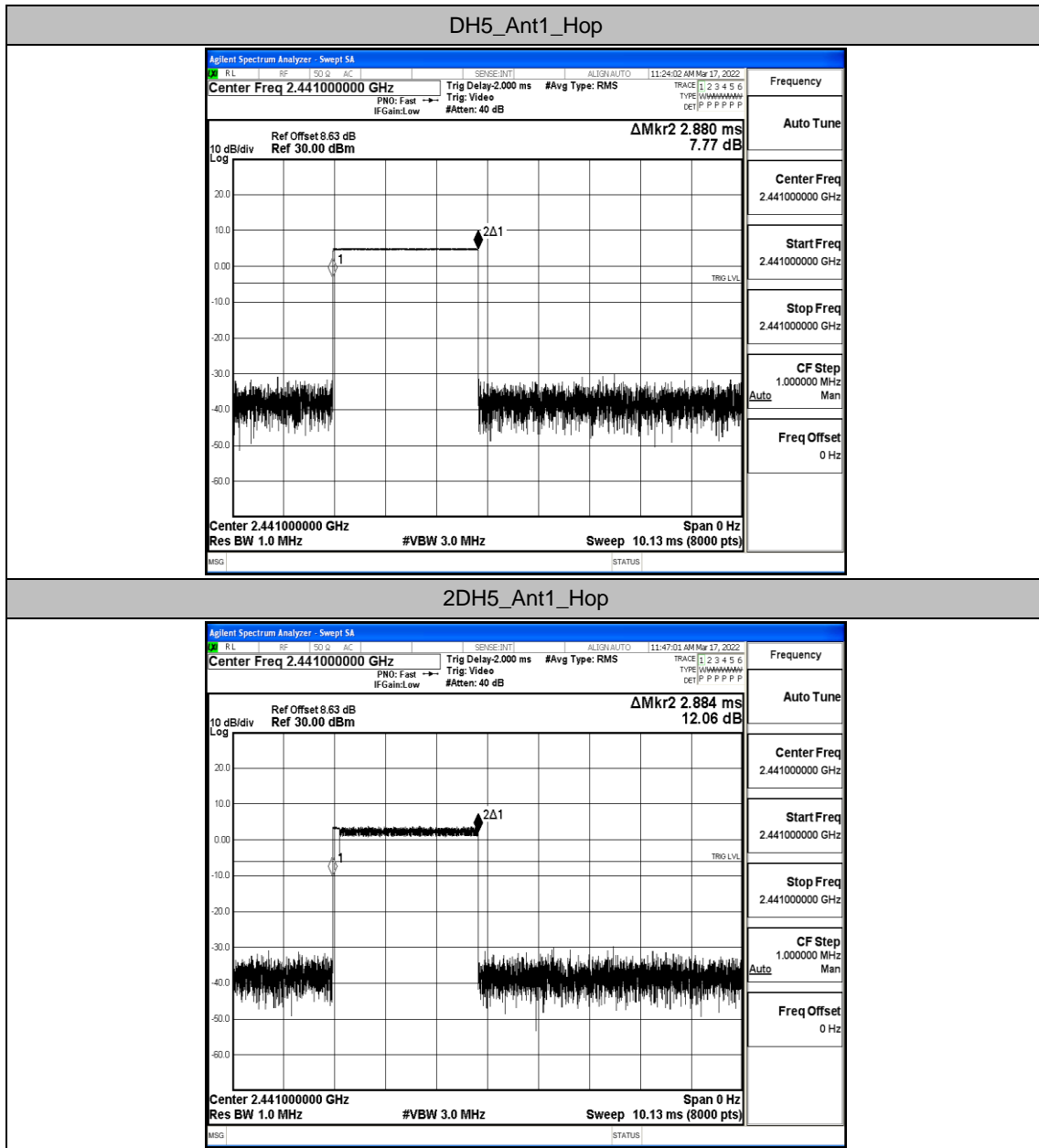
## Appendix A.4: Time of occupancy

### Test Result

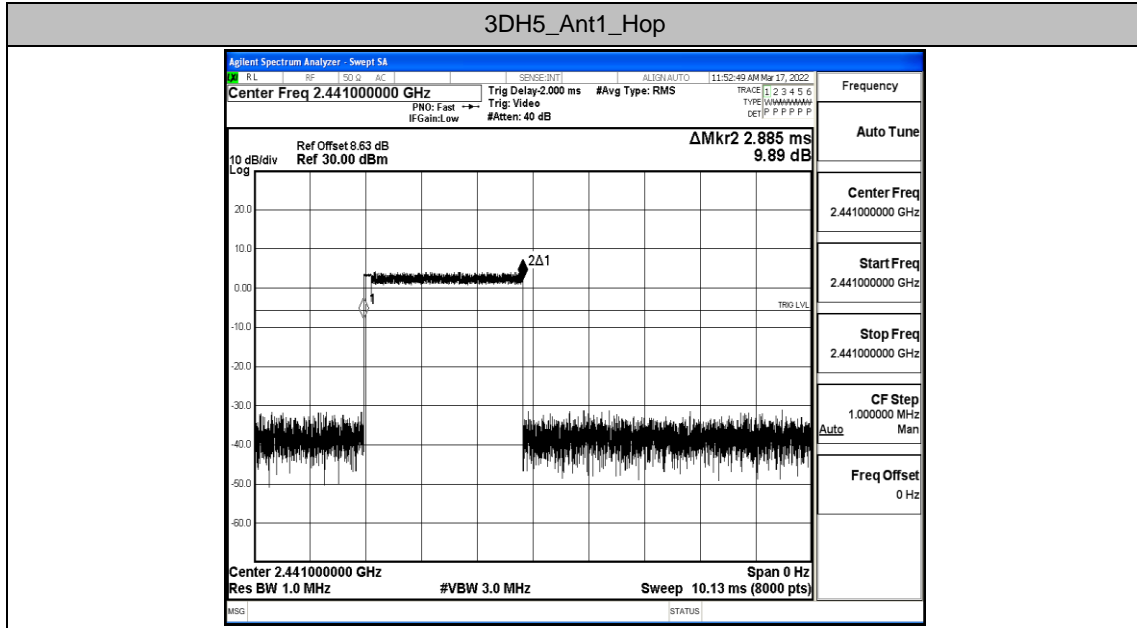
TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.88	106.67	0.307	≤0.4	PASS
2DH5	Ant1	Hop	2.88	106.67	0.308	≤0.4	PASS
3DH5	Ant1	Hop	2.89	106.67	0.308	≤0.4	PASS



### Test Graphs









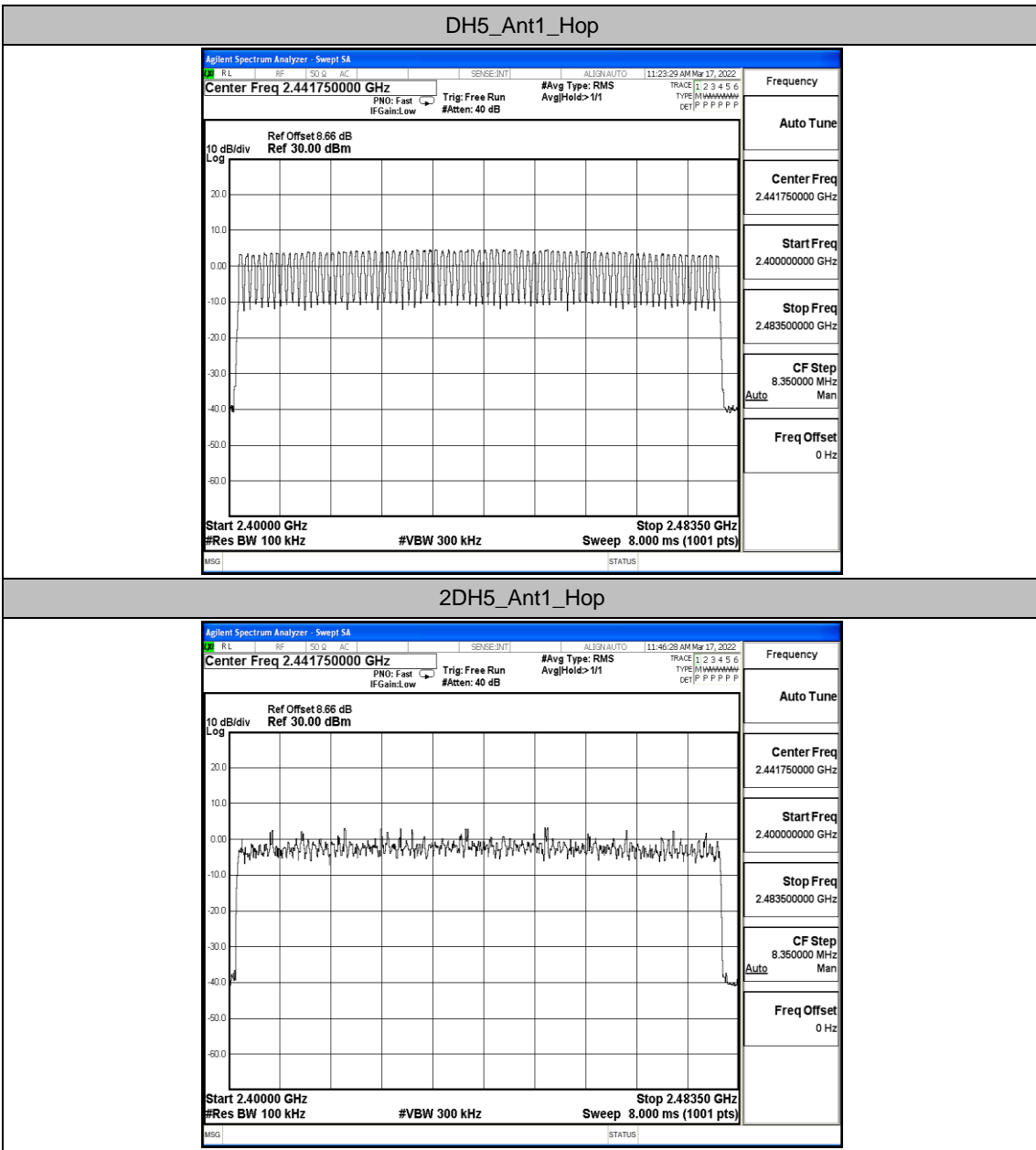
## Appendix A.5: Number of hopping channels

### 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

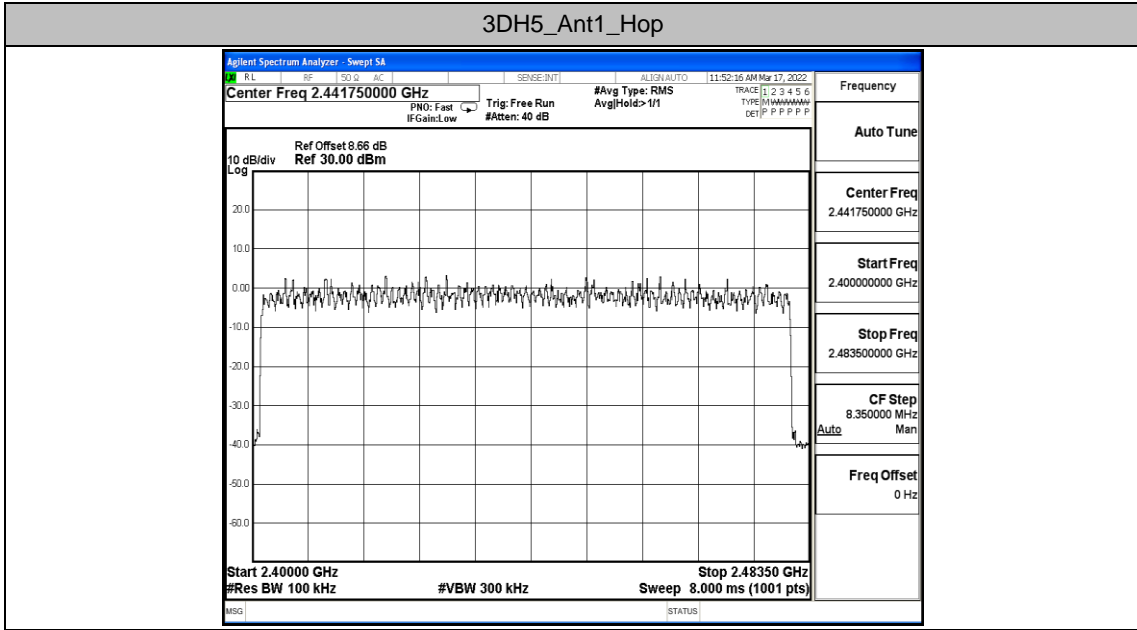


### Test Graphs





### 3DH5\_Ant1\_Hop





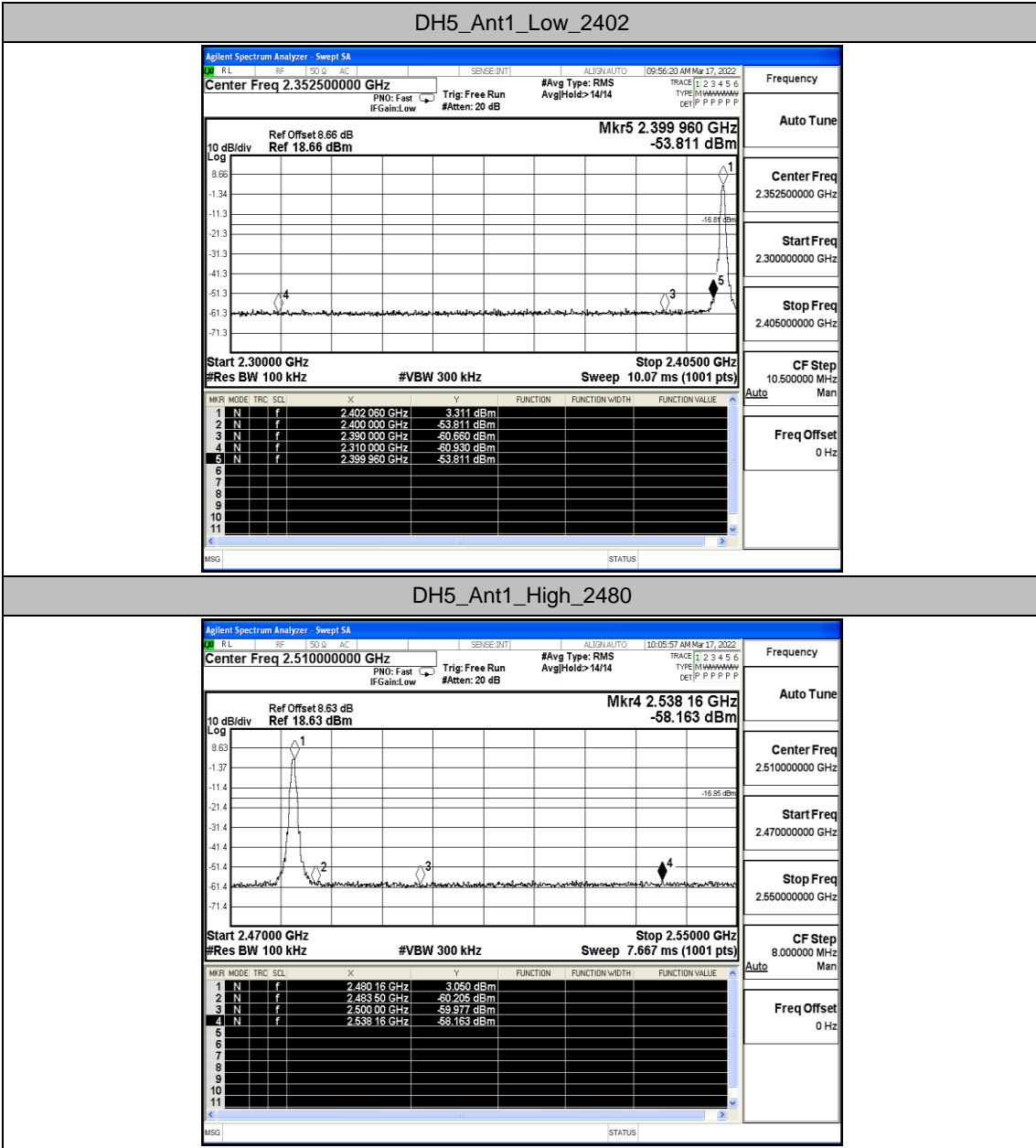
## Appendix A.6: Band edge measurements

### Test Result

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	3.19	-53.81	≤-16.81	PASS
		High	2480	3.05	-58.16	≤-16.95	PASS
		Low	Hop_2402	3.10	-58.19	≤-16.91	PASS
		High	Hop_2480	3.46	-57.39	≤-16.55	PASS
2DH5	Ant1	Low	2402	-0.39	-54.47	≤-20.39	PASS
		High	2480	1.84	-57.65	≤-18.16	PASS
		Low	Hop_2402	1.35	-58.88	≤-18.65	PASS
		High	Hop_2480	1.34	-57.83	≤-18.66	PASS
3DH5	Ant1	Low	2402	2.10	-55.26	≤-17.9	PASS
		High	2480	1.10	-57.72	≤-18.91	PASS
		Low	Hop_2402	-1.62	-58.91	≤-21.62	PASS
		High	Hop_2480	2.26	-57.49	≤-17.75	PASS

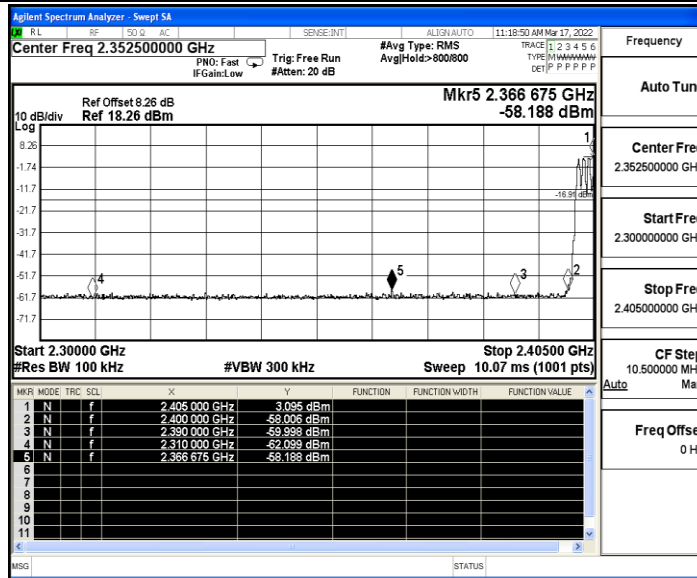


### Test Graphs

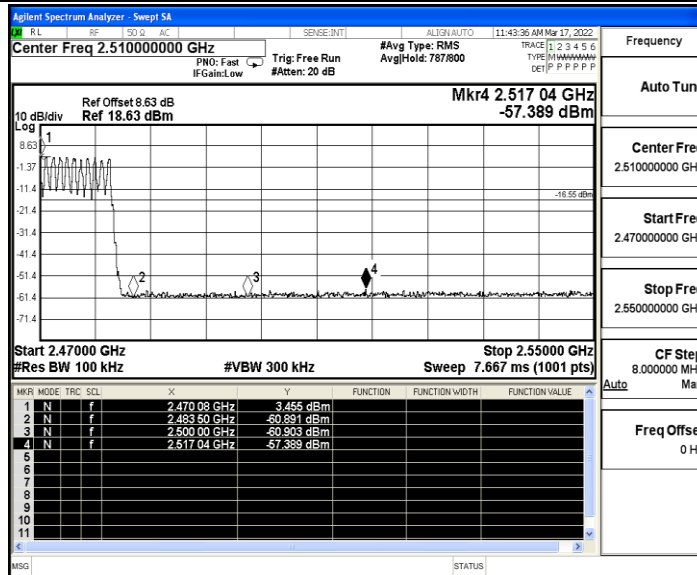




DH5\_Ant1\_Low\_Hop\_2402

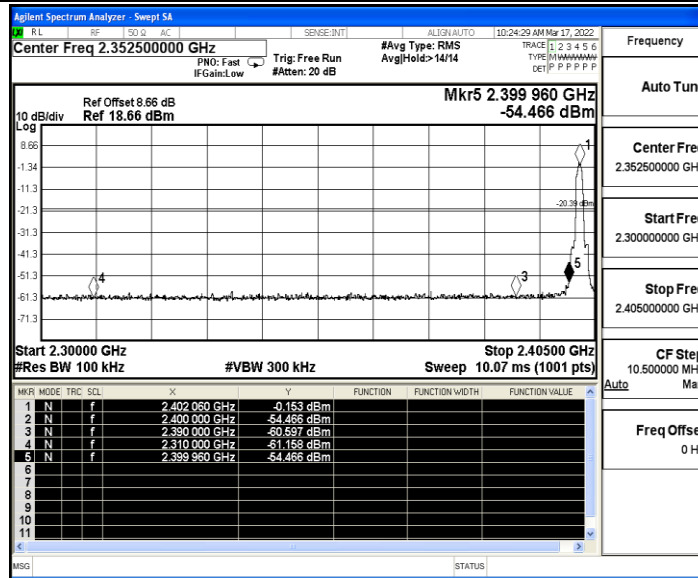


DH5\_Ant1\_High\_Hop\_2480

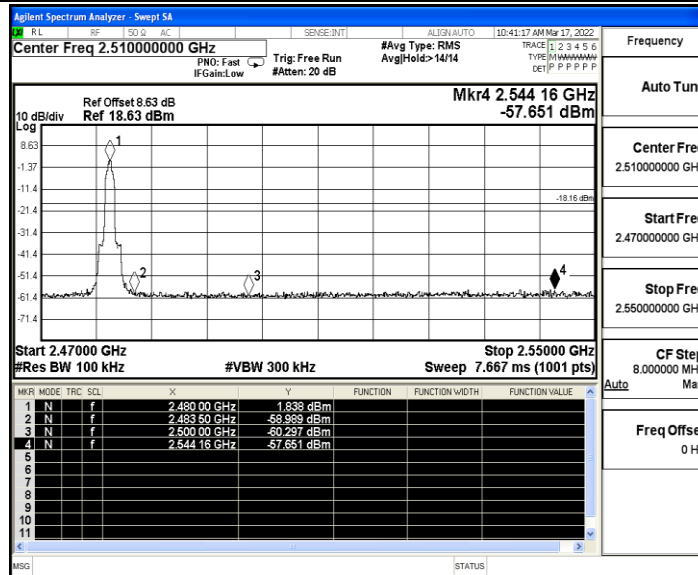




2DH5\_Ant1\_Low\_2402



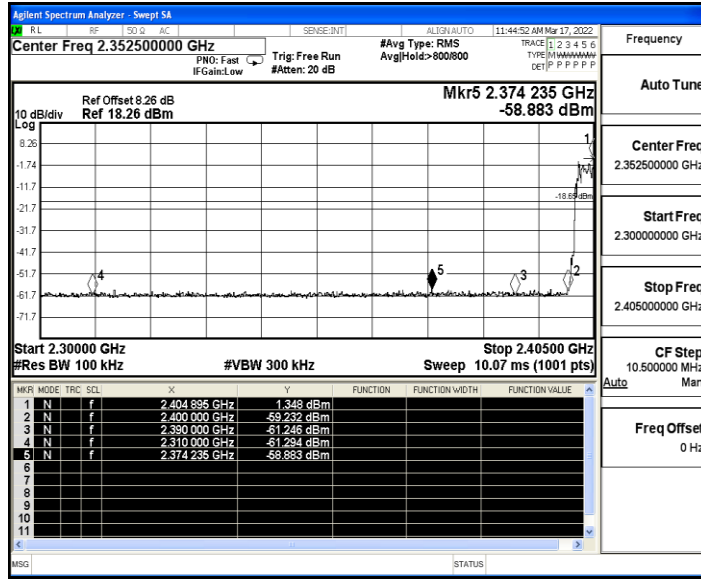
2DH5\_Ant1\_High\_2480



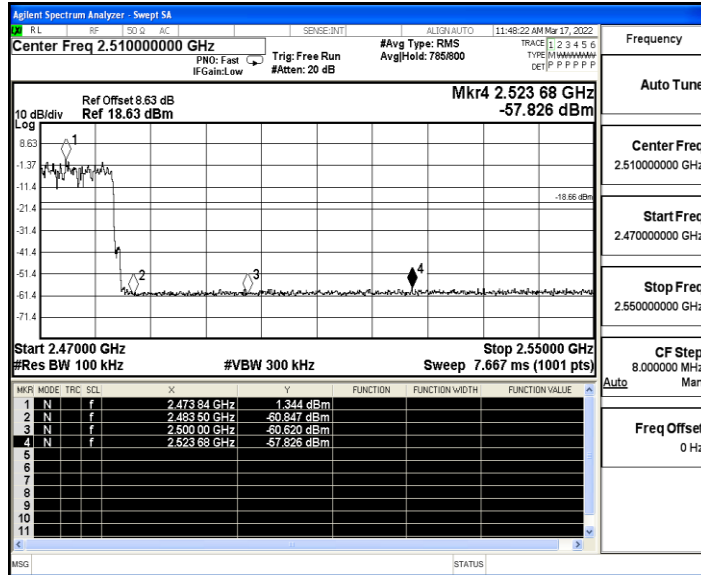




2DH5\_Ant1\_Low\_Hop\_2402

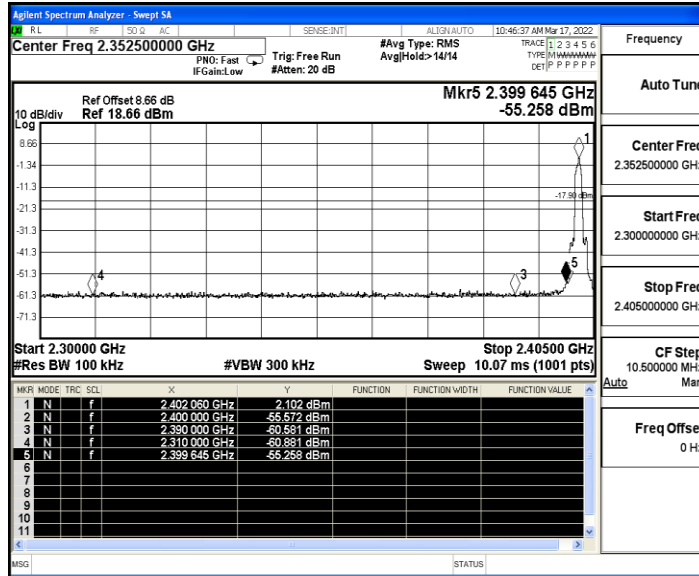


2DH5\_Ant1\_High\_Hop\_2480

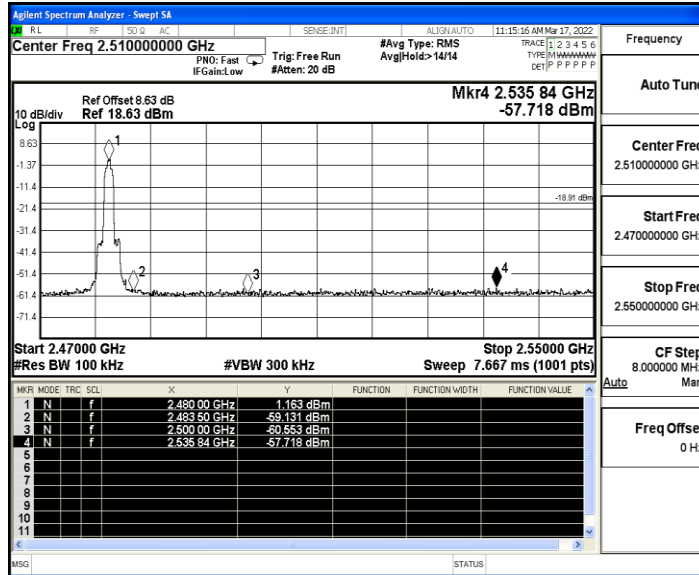




3DH5\_Ant1\_Low\_2402

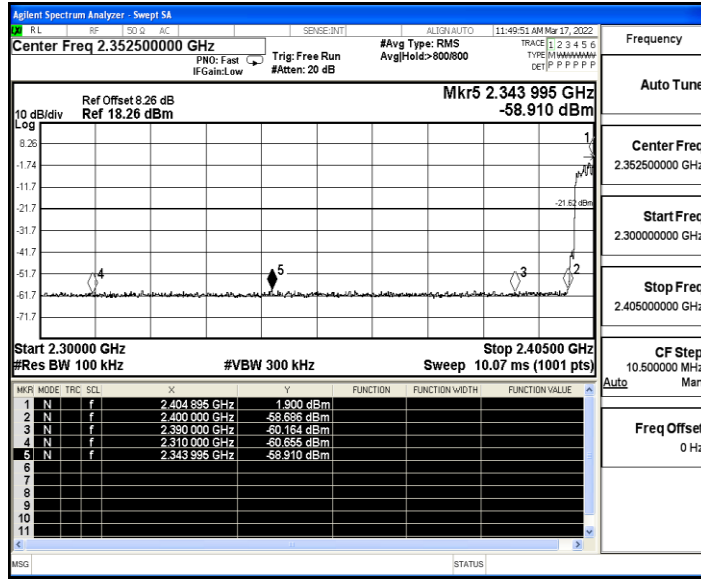


3DH5\_Ant1\_High\_2480

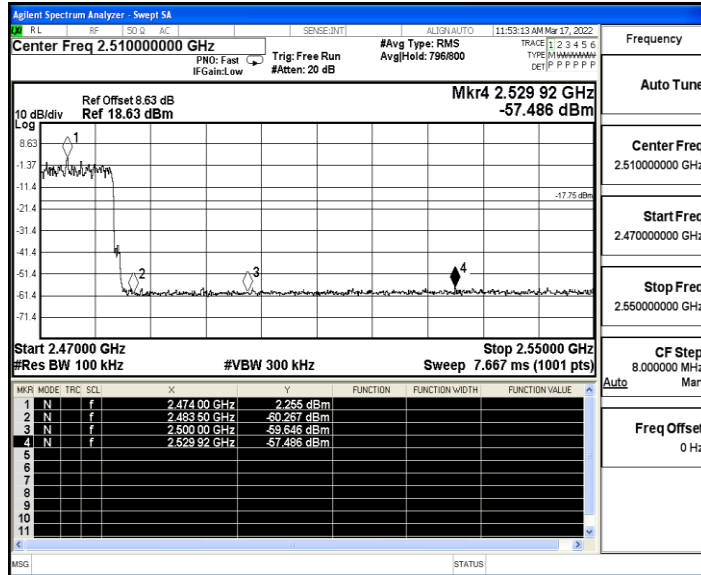




3DH5\_Ant1\_Low\_Hop\_2402



3DH5\_Ant1\_High\_Hop\_2480





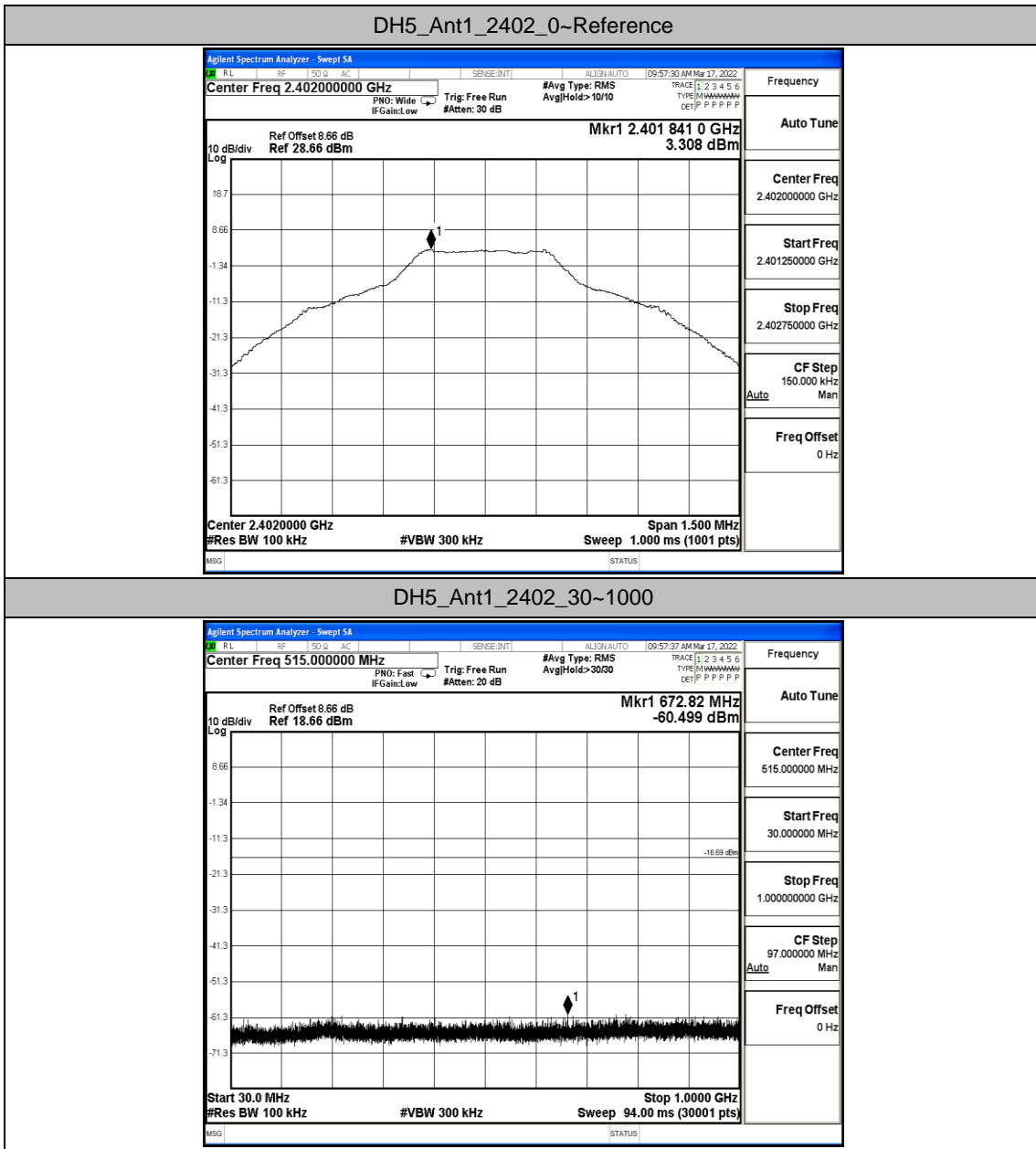
## Appendix A.7: Conducted Spurious Emission

### Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	3.31	3.31	---	PASS
			30~1000	3.31	-60.5	≤-16.69	PASS
			1000~26500	3.31	-46.19	≤-16.69	PASS
		2441	Reference	4.82	4.82	---	PASS
			30~1000	4.82	-61.06	≤-15.18	PASS
			1000~26500	4.82	-46.41	≤-15.18	PASS
		2480	Reference	3.09	3.09	---	PASS
			30~1000	3.09	-61.08	≤-16.91	PASS
			1000~26500	3.09	-45.87	≤-16.91	PASS
2DH5	Ant1	2402	Reference	1.83	1.83	---	PASS
			30~1000	1.83	-60.26	≤-18.17	PASS
			1000~26500	1.83	-45.93	≤-18.17	PASS
		2441	Reference	3.20	3.20	---	PASS
			30~1000	3.20	-60.54	≤-16.8	PASS
			1000~26500	3.20	-45.94	≤-16.8	PASS
		2480	Reference	1.72	1.72	---	PASS
			30~1000	1.72	-60.81	≤-18.28	PASS
			1000~26500	1.72	-45.63	≤-18.28	PASS
3DH5	Ant1	2402	Reference	1.92	1.92	---	PASS
			30~1000	1.92	-60.31	≤-18.08	PASS
			1000~26500	1.92	-46.22	≤-18.08	PASS
		2441	Reference	3.26	3.26	---	PASS
			30~1000	3.26	-60.62	≤-16.74	PASS
			1000~26500	3.26	-46.53	≤-16.74	PASS
		2480	Reference	1.65	1.65	---	PASS
			30~1000	1.65	-60.25	≤-18.35	PASS
			1000~26500	1.65	-46.22	≤-18.35	PASS

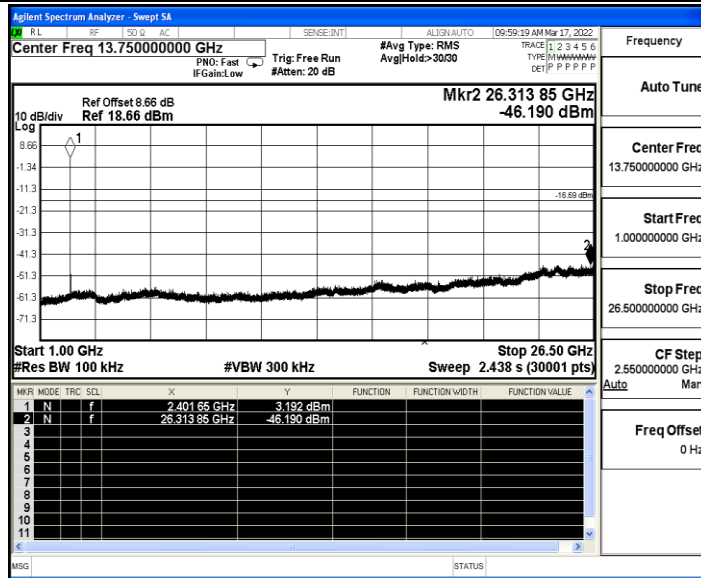


### Test Graphs

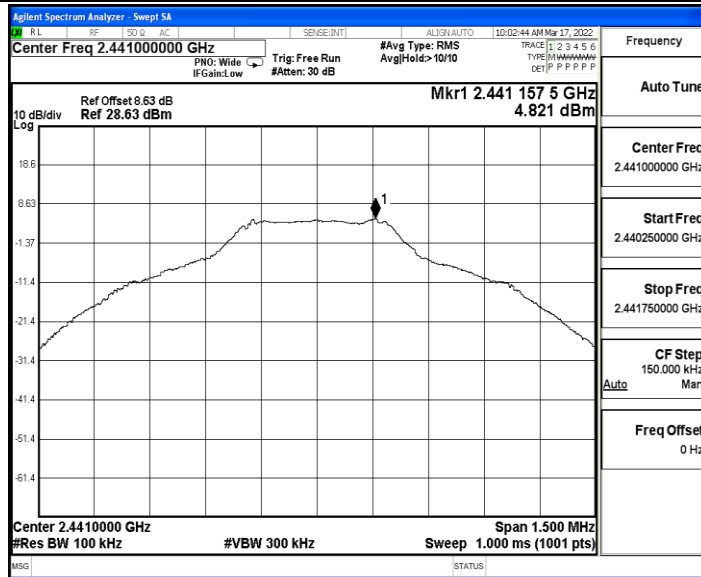




### DH5\_Ant1\_2402\_1000~26500

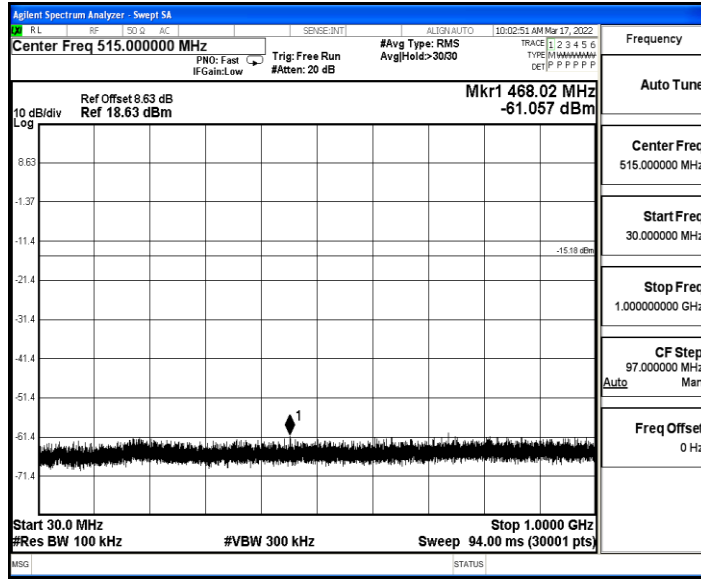


### DH5\_Ant1\_2441\_0~Reference

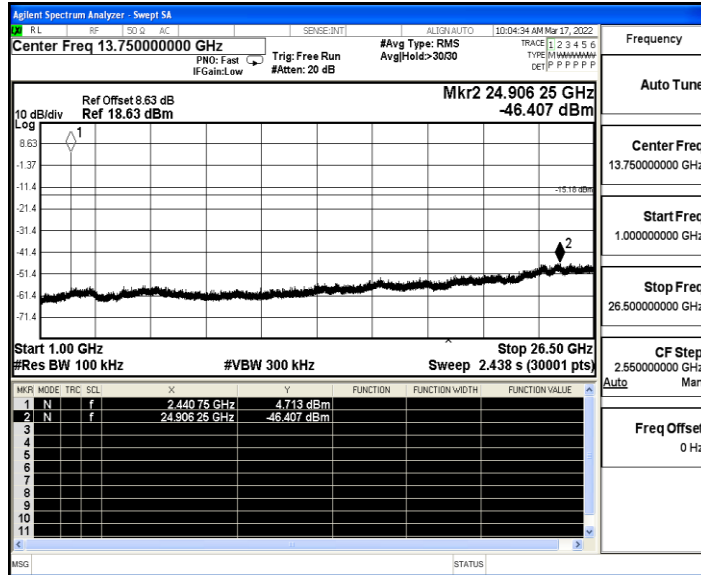




DH5\_Ant1\_2441\_30~1000

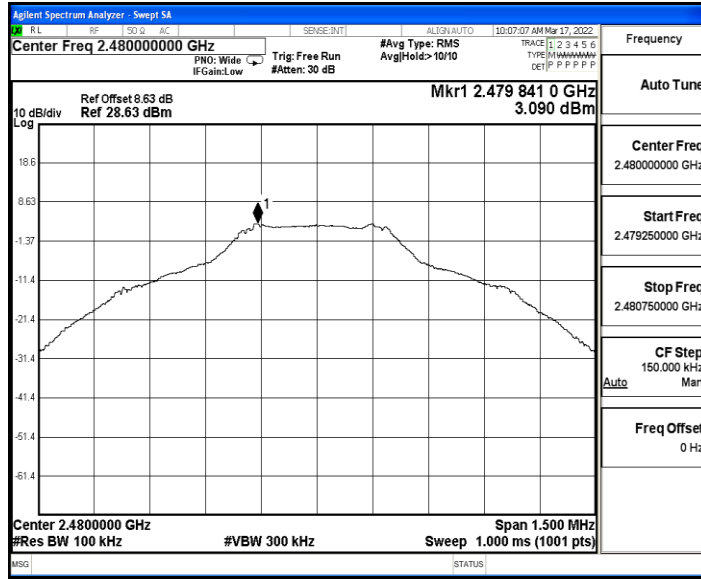


DH5\_Ant1\_2441\_1000~26500

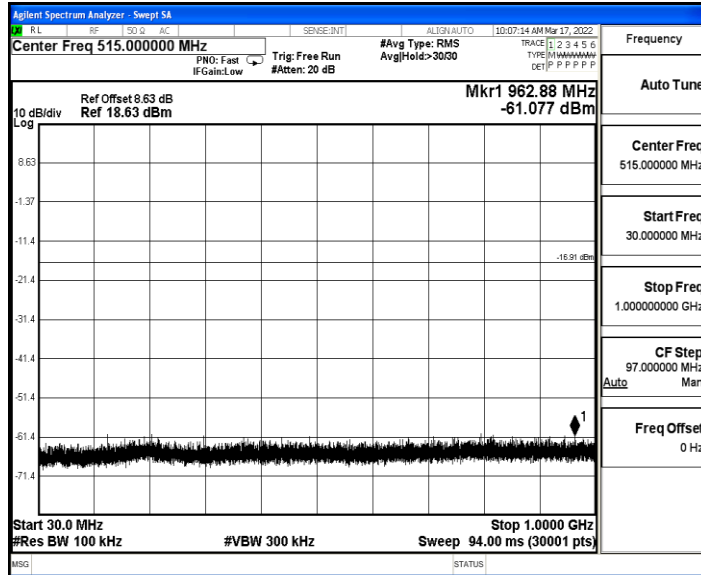




### DH5\_Ant1\_2480\_0~Reference



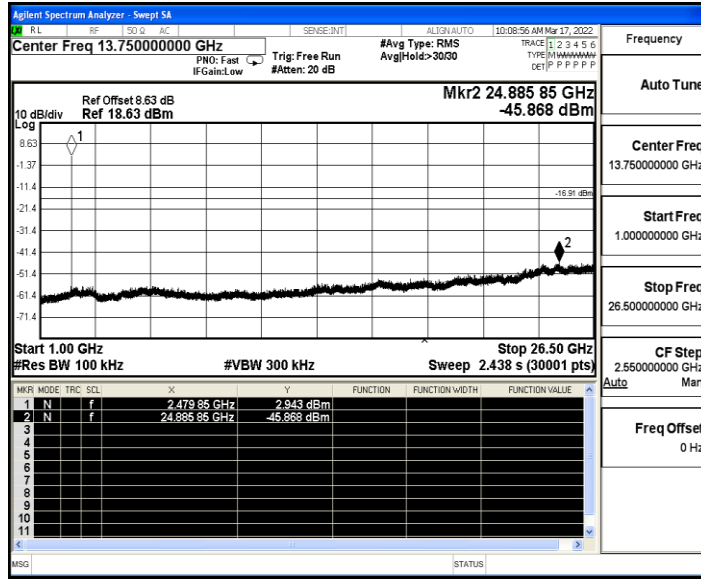
### DH5\_Ant1\_2480\_30~1000



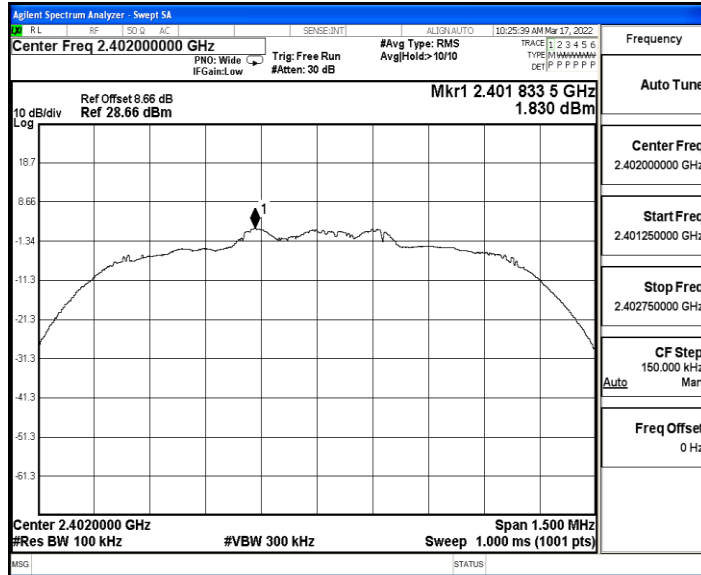




DH5\_Ant1\_2480\_1000~26500

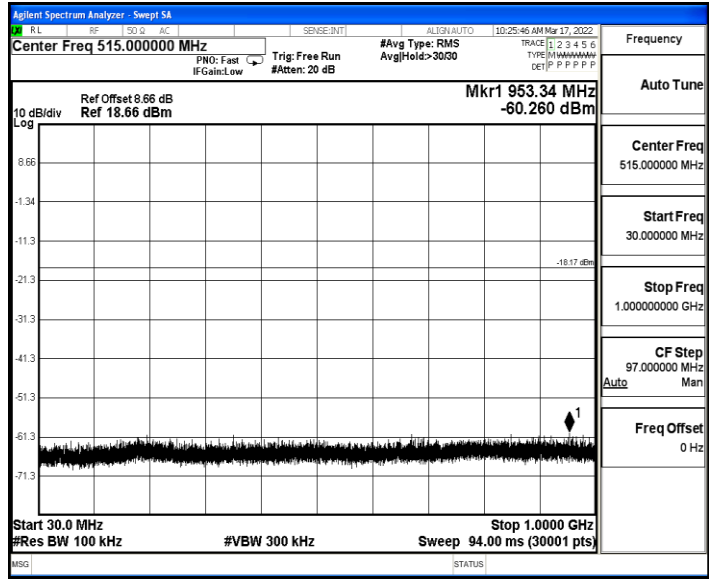


2DH5\_Ant1\_2402\_0~Reference

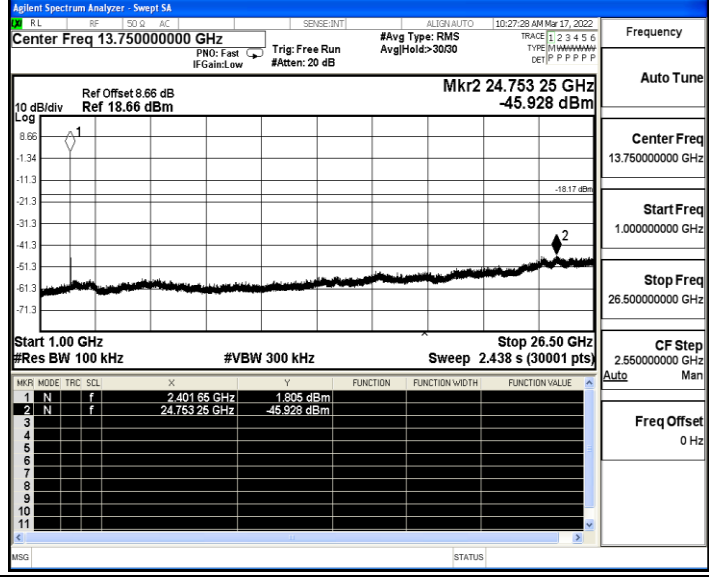




2DH5\_Ant1\_2402\_30~1000

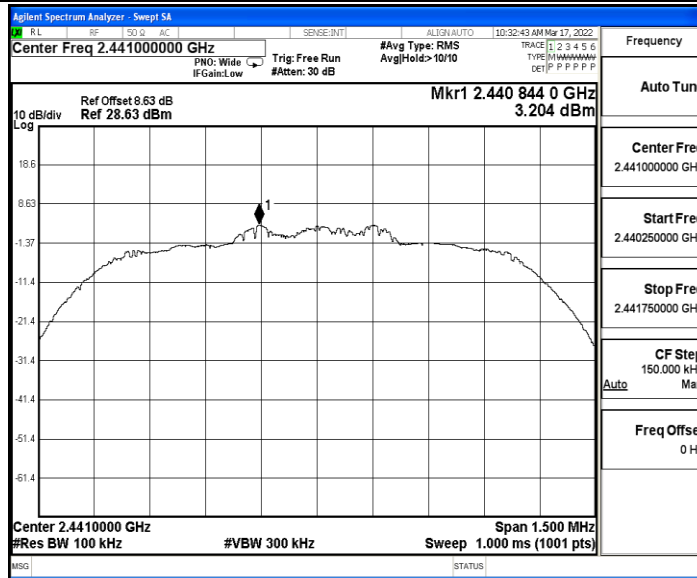


2DH5\_Ant1\_2402\_1000~26500

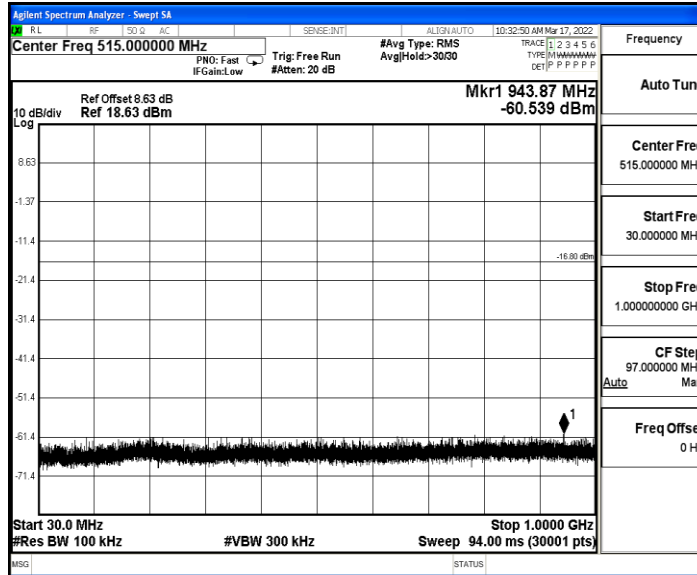




### 2DH5\_Ant1\_2441\_0~Reference

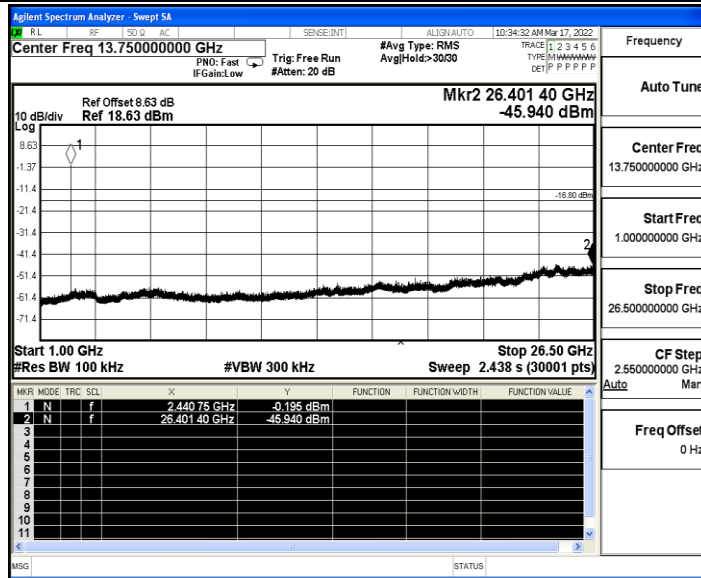


### 2DH5\_Ant1\_2441\_30~1000

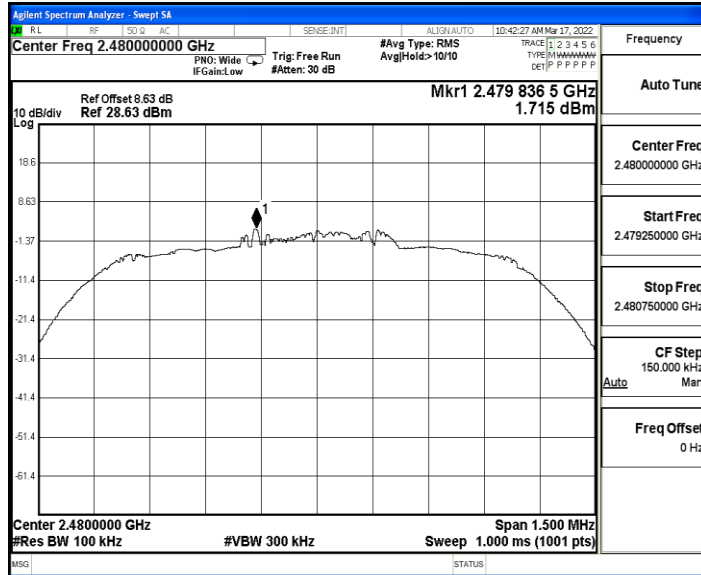




2DH5\_Ant1\_2441\_1000~26500

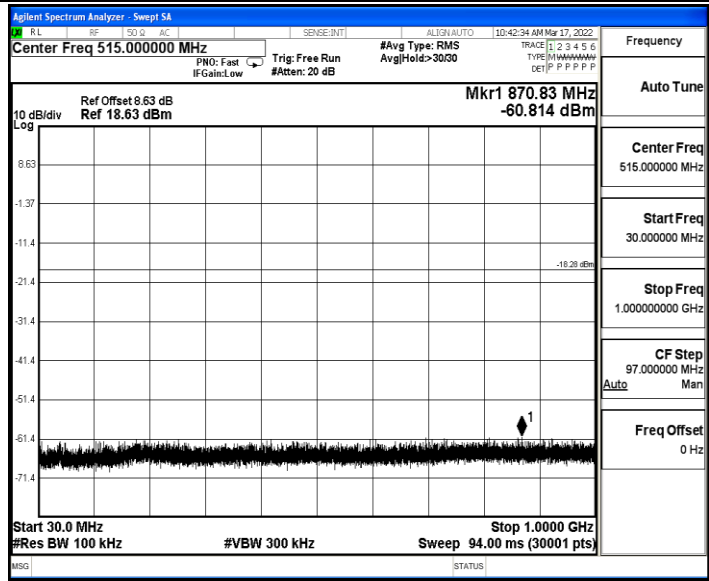


2DH5\_Ant1\_2480\_0~Reference

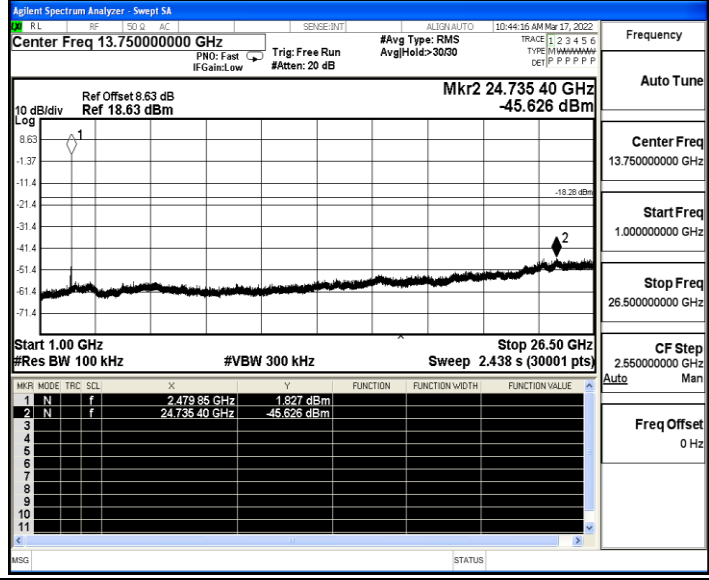




2DH5\_Ant1\_2480\_30~1000

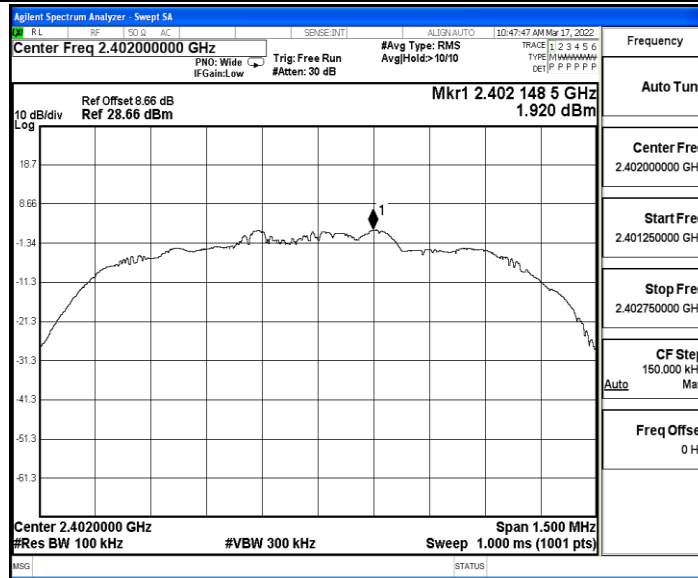


2DH5\_Ant1\_2480\_1000~26500

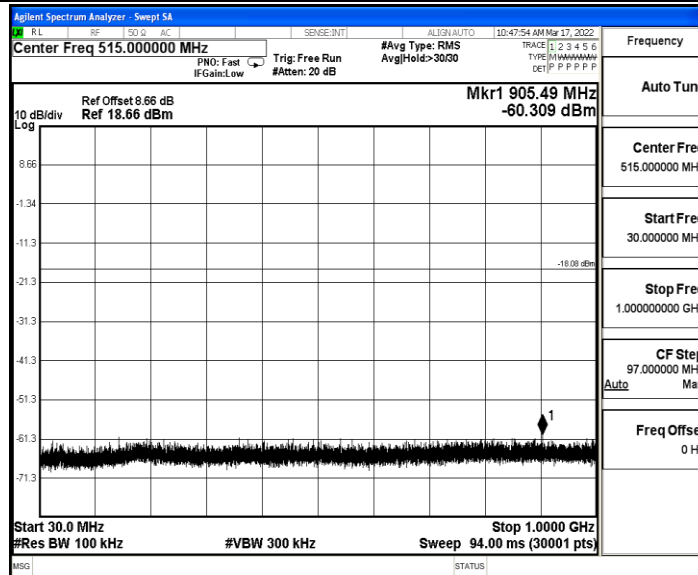




### 3DH5\_Ant1\_2402\_0~Reference

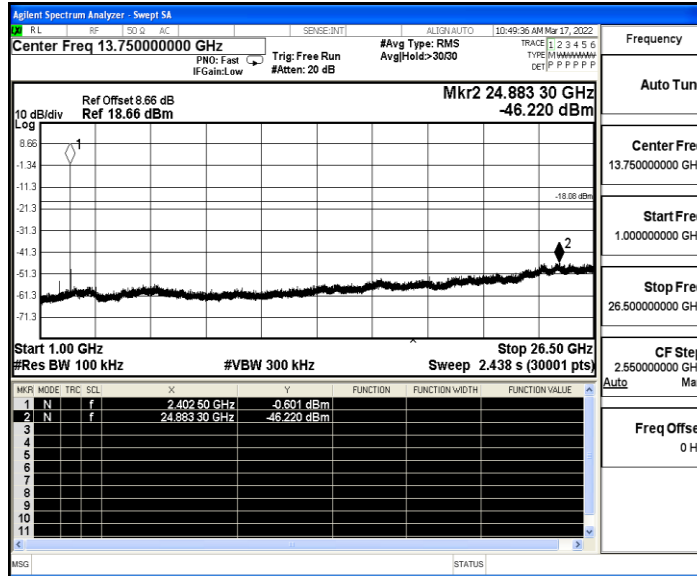


### 3DH5\_Ant1\_2402\_30~1000

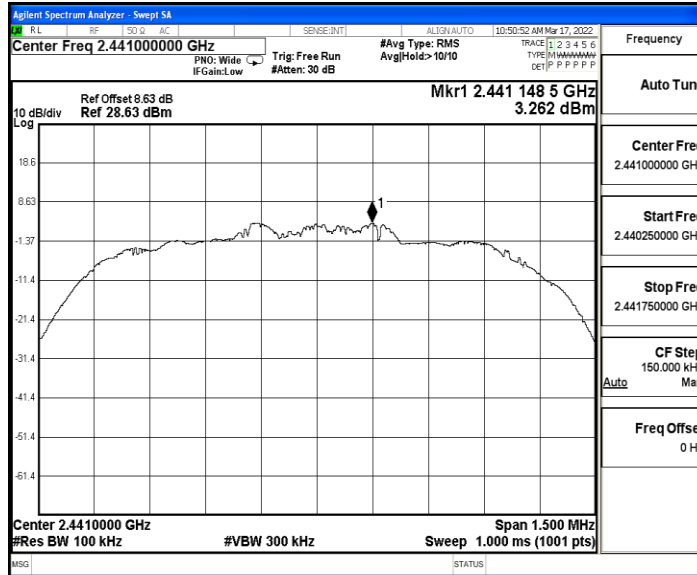




3DH5\_Ant1\_2402\_1000~26500

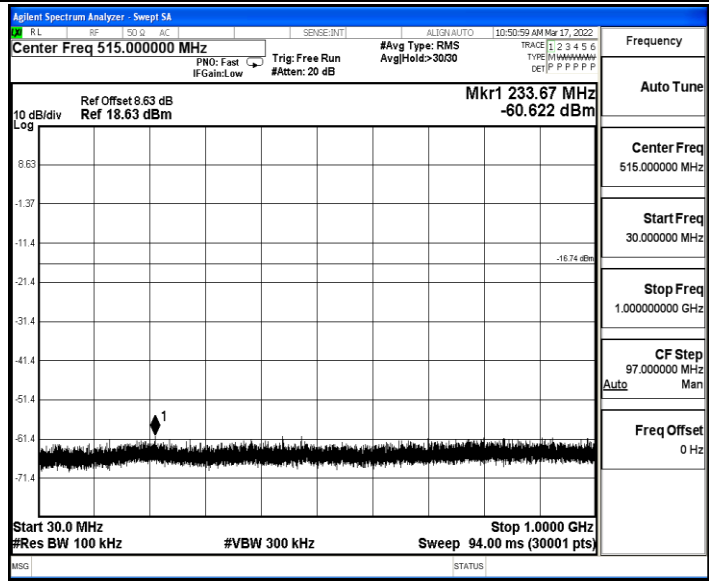


3DH5\_Ant1\_2441\_0~Reference

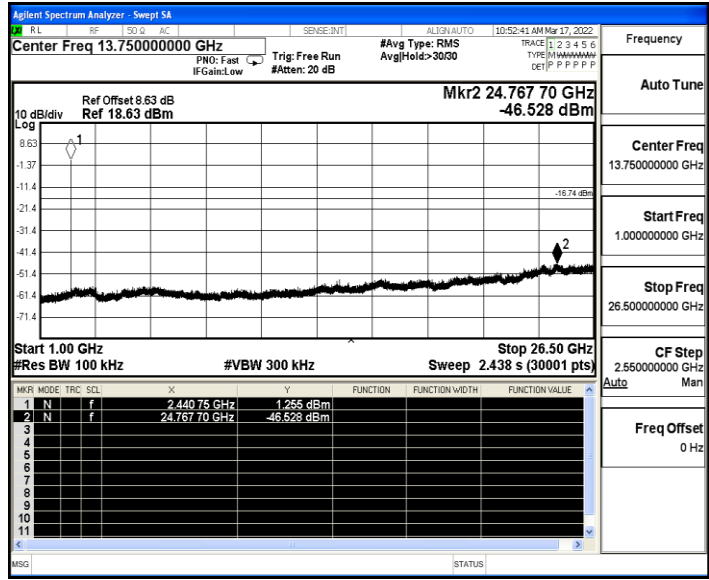




3DH5\_Ant1\_2441\_30~1000



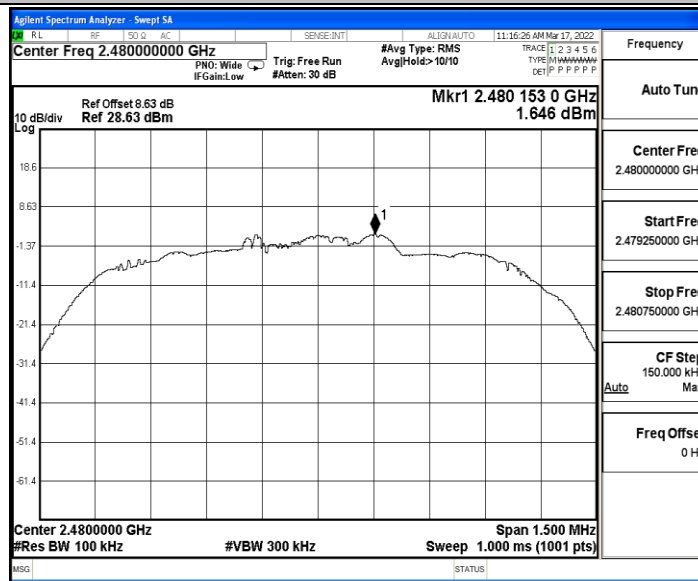
3DH5\_Ant1\_2441\_1000~26500



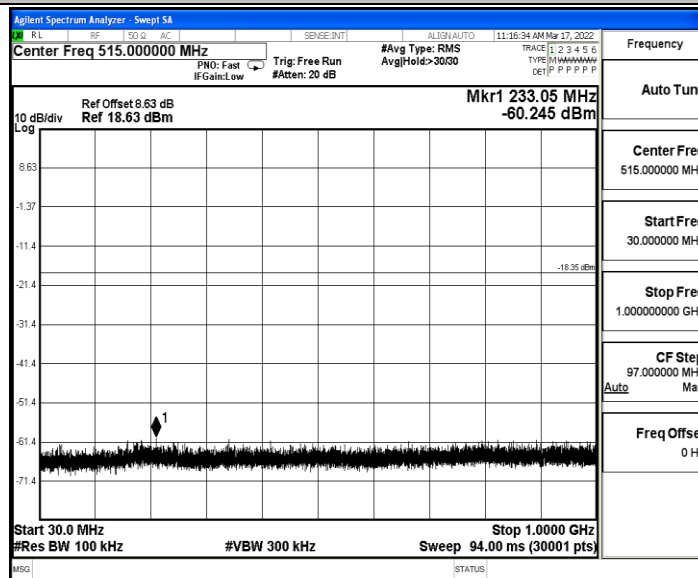




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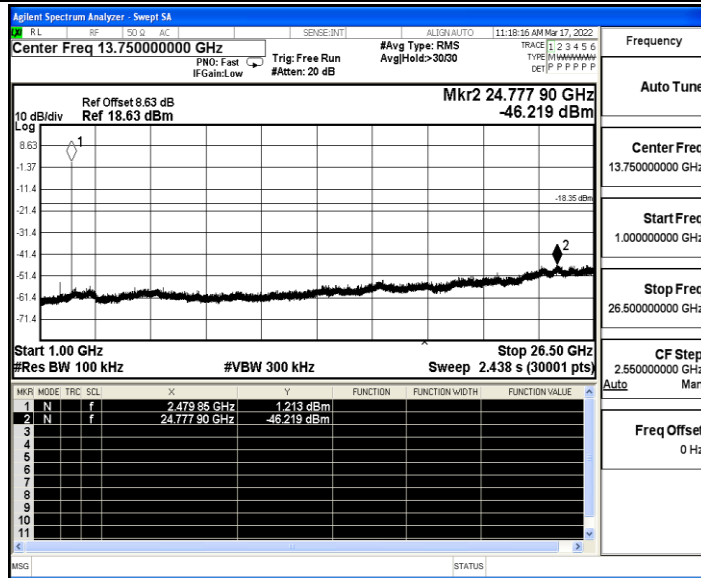


### 3DH5\_Ant1\_2480\_30~1000





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	-58.1	≤-41.20	37.10	≤54	PASS
				AV	2388.095	-57.65	≤-41.20	37.55	≤54	PASS
				AV	2390.000	-57.68	≤-41.20	37.52	≤54	PASS
				Peak	2310.000	-48.51	≤-21.20	46.69	≤74	PASS
				Peak	2338.010	-46.03	≤-21.20	49.17	≤74	PASS
				Peak	2390.000	-48.58	≤-21.20	46.62	≤74	PASS
		High	2480	AV	2483.500	-53.46	≤-41.20	41.74	≤54	PASS
				AV	2483.520	-53.46	≤-41.20	41.74	≤54	PASS
				AV	2500.000	-57.11	≤-41.20	38.09	≤54	PASS
				Peak	2483.500	-46.82	≤-21.20	48.38	≤74	PASS
				Peak	2498.000	-46.03	≤-21.20	49.17	≤74	PASS
				Peak	2500.000	-47.98	≤-21.20	47.22	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-49.09	≤-21.20	46.11	≤74	PASS
				Peak	2358.695	-47.21	≤-21.20	47.99	≤74	PASS
				Peak	2390.000	-49.17	≤-21.20	46.03	≤74	PASS
		High	Hop_2480	Peak	2483.500	-47.31	≤-21.20	47.89	≤74	PASS
				Peak	2495.280	-45.81	≤-21.20	49.39	≤74	PASS
				Peak	2500.000	-46.7	≤-21.20	48.50	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-58.05	≤-41.20	37.15	≤54	PASS
				AV	2387.675	-57.42	≤-41.20	37.78	≤54	PASS
				AV	2390.000	-57.56	≤-41.20	37.64	≤54	PASS
				Peak	2310.000	-49	≤-21.20	46.20	≤74	PASS
				Peak	2389.040	-46.53	≤-21.20	48.67	≤74	PASS
				Peak	2390.000	-47.74	≤-21.20	47.46	≤74	PASS
		High	2480	AV	2483.500	-53.28	≤-41.20	41.92	≤54	PASS
				AV	2483.520	-53.28	≤-41.20	41.92	≤54	PASS
				AV	2500.000	-57.14	≤-41.20	38.06	≤54	PASS
				Peak	2483.500	-46.34	≤-21.20	48.86	≤74	PASS
				Peak	2488.000	-45.81	≤-21.20	49.39	≤74	PASS
				Peak	2500.000	-48.27	≤-21.20	46.93	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-48.55	≤-21.20	46.65	≤74	PASS
				Peak	2378.645	-46.33	≤-21.20	48.87	≤74	PASS
				Peak	2390.000	-47.65	≤-21.20	47.55	≤74	PASS
		High	Hop_2480	Peak	2483.500	-47.83	≤-21.20	47.37	≤74	PASS
				Peak	2486.720	-46.03	≤-21.20	49.17	≤74	PASS
				Peak	2500.000	-47.15	≤-21.20	48.05	≤74	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-58.02	≤-41.20	37.18	≤54	PASS



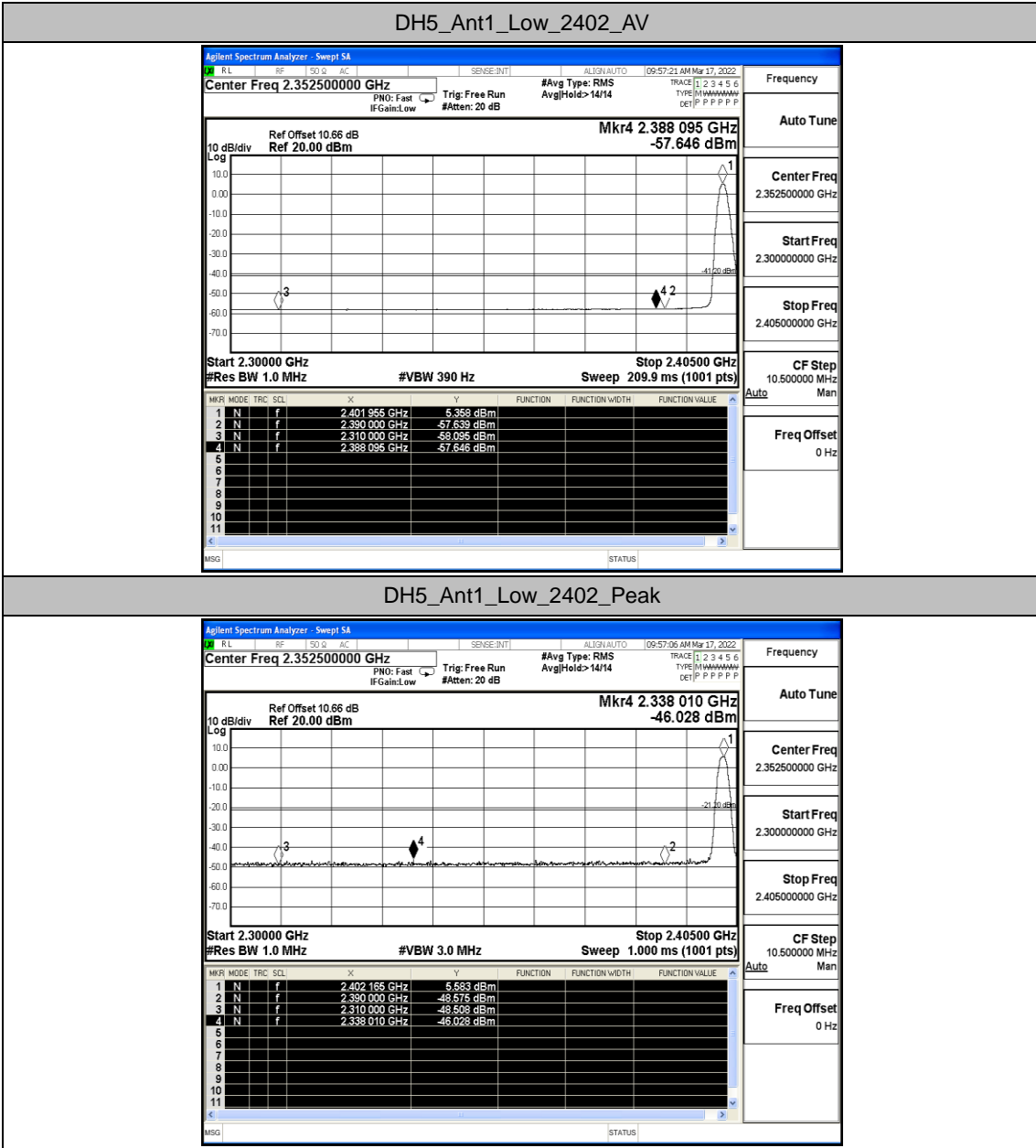
				AV	2388.830	-57.46	≤-41.20	37.74	≤54	PASS
				AV	2390.000	-57.67	≤-41.20	37.53	≤54	PASS
				Peak	2310.000	-47.65	≤-21.20	47.55	≤74	PASS
				Peak	2337.695	-46.61	≤-21.20	48.59	≤74	PASS
				Peak	2390.000	-48.34	≤-21.20	46.86	≤74	PASS
		High	2480	AV	2483.500	-53.34	≤-41.20	41.86	≤54	PASS
				AV	2483.520	-53.34	≤-41.20	41.86	≤54	PASS
				AV	2500.000	-57.12	≤-41.20	38.08	≤54	PASS
				Peak	2483.500	-44.83	≤-21.20	50.37	≤74	PASS
				Peak	2484.080	-44.07	≤-21.20	51.13	≤74	PASS
				Peak	2500.000	-48.01	≤-21.20	47.19	≤74	PASS
		Low	Hop_24 02	Peak	2310.000	-48.69	≤-21.20	46.51	≤74	PASS
				Peak	2368.460	-46.51	≤-21.20	48.69	≤74	PASS
				Peak	2390.000	-48.97	≤-21.20	46.23	≤74	PASS
		High	Hop_24 80	Peak	2483.500	-47.55	≤-21.20	47.65	≤74	PASS
				Peak	2488.640	-46.18	≤-21.20	49.02	≤74	PASS
				Peak	2500.000	-47.56	≤-21.20	47.64	≤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.

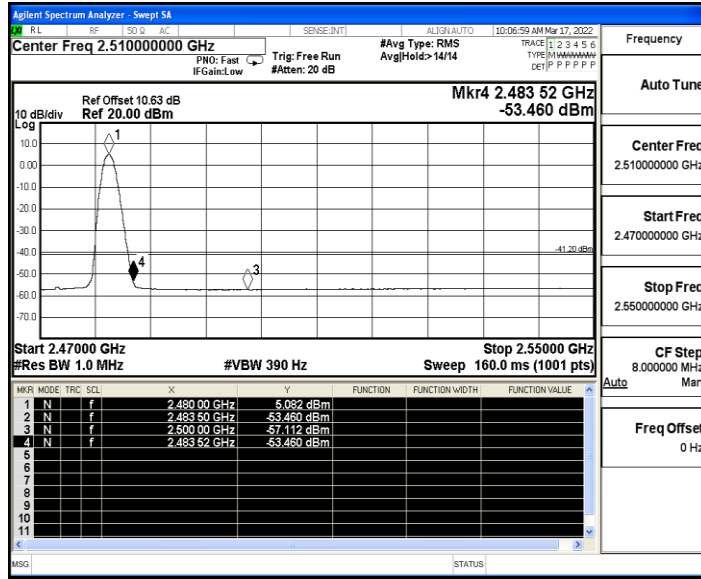


### Test Graphs

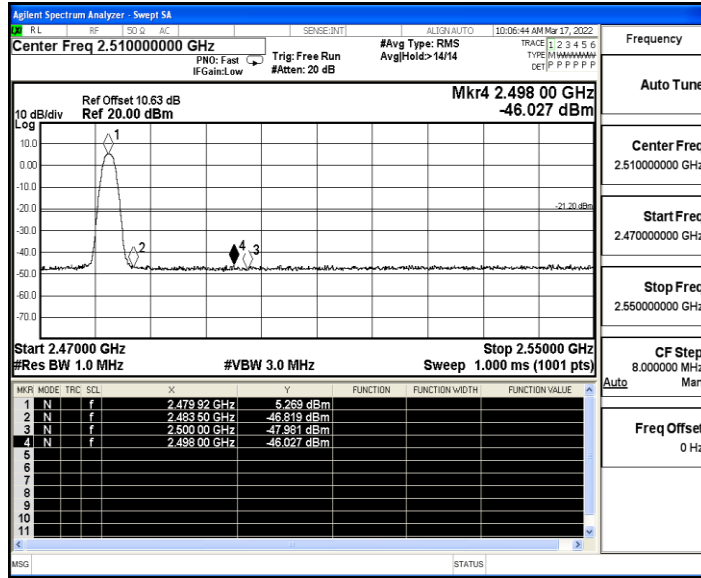




DH5\_Ant1\_High\_2480\_AV

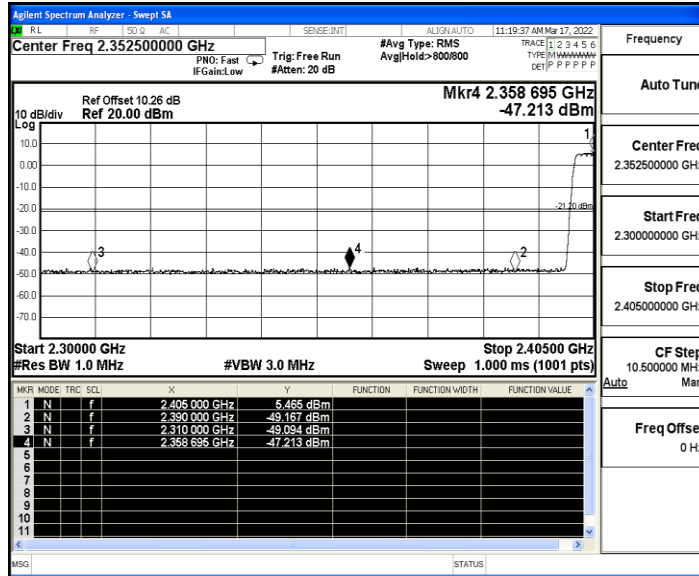


DH5\_Ant1\_High\_2480\_Peak

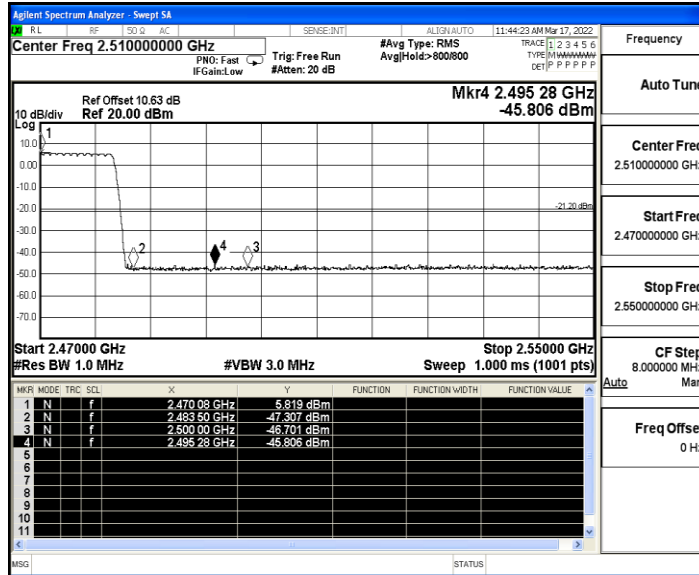




DH5\_Ant1\_Low\_Hop\_2402\_Peak

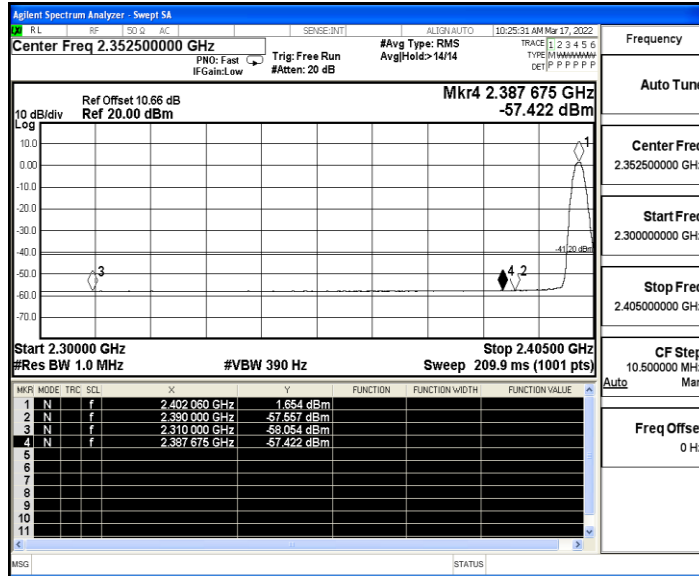


DH5\_Ant1\_High\_Hop\_2480\_Peak

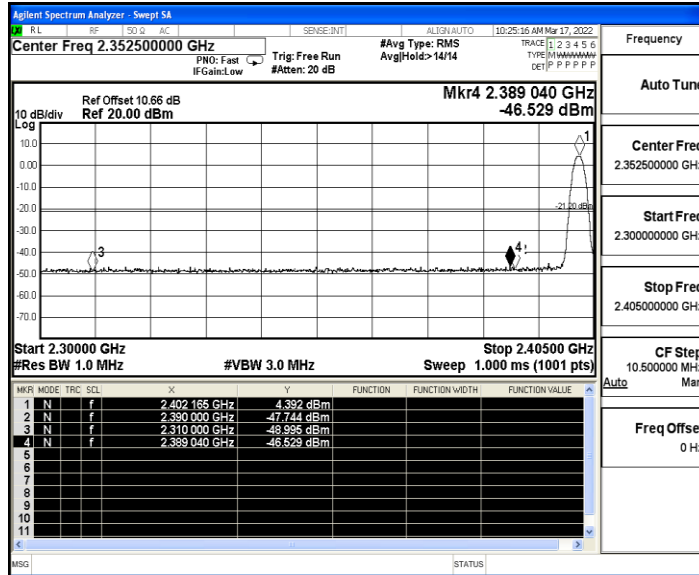




2DH5\_Ant1\_Low\_2402\_AV



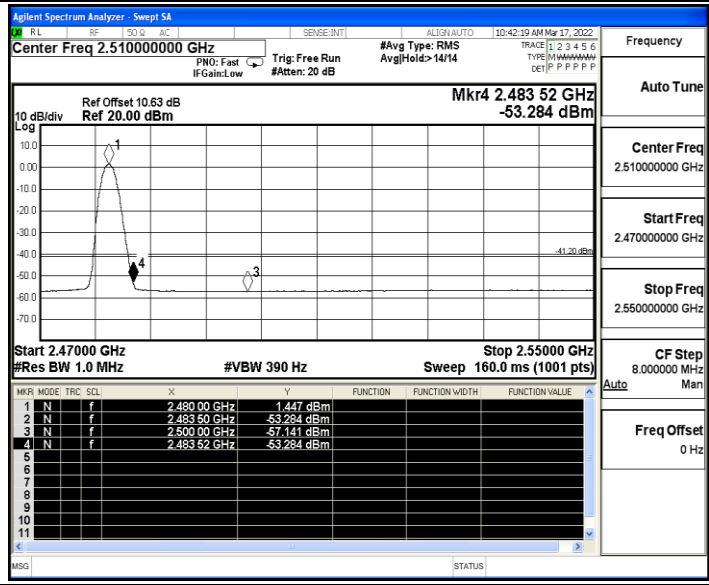
2DH5\_Ant1\_Low\_2402\_Peak



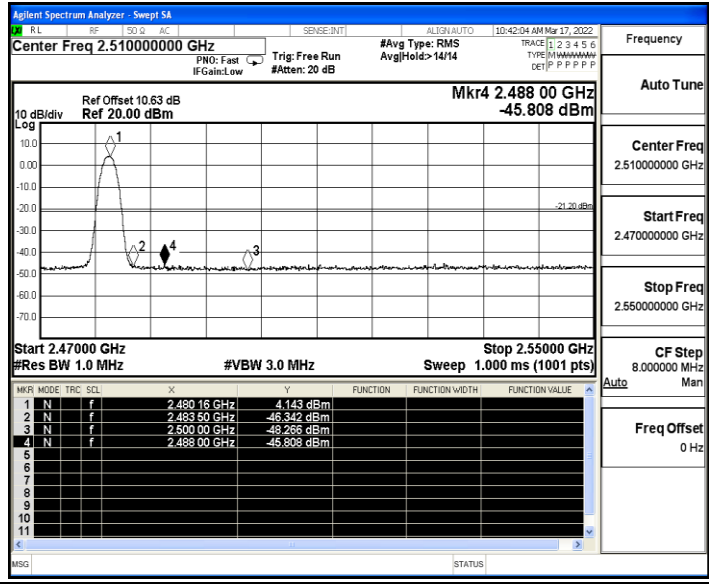




2DH5\_Ant1\_High\_2480\_AV

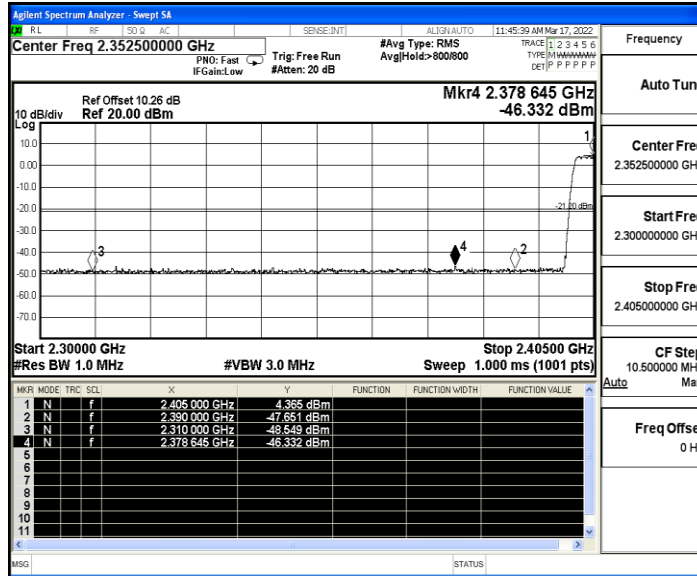


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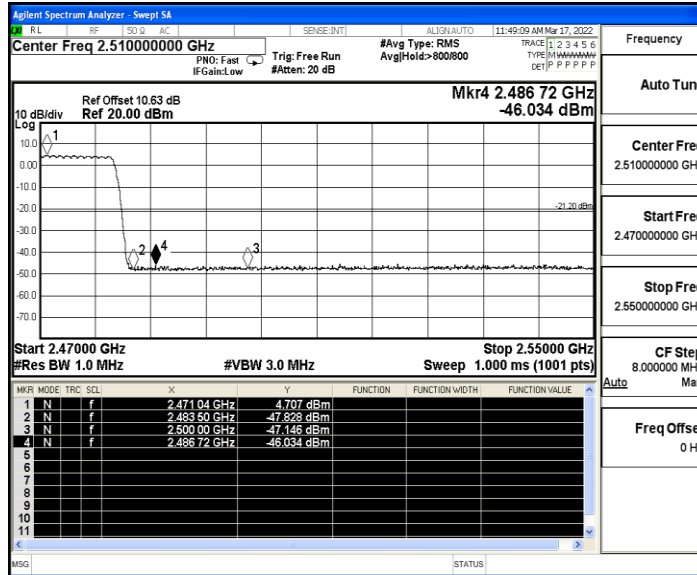




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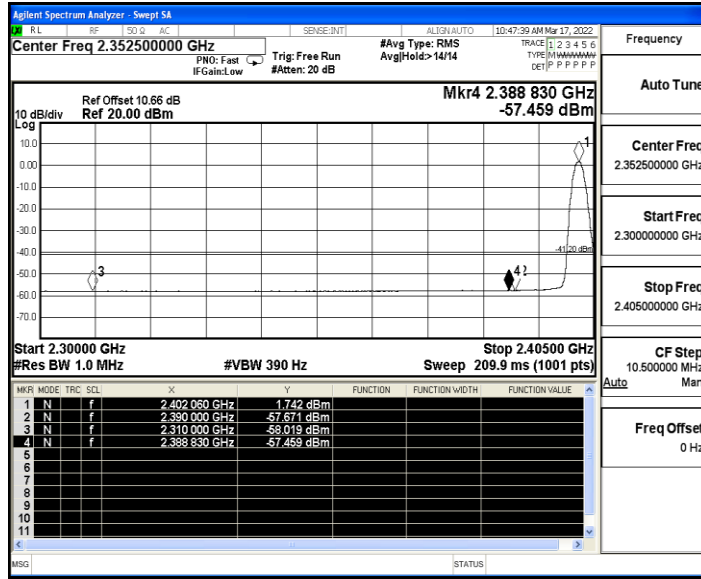


2DH5\_Ant1\_High\_Hop\_2480\_Peak

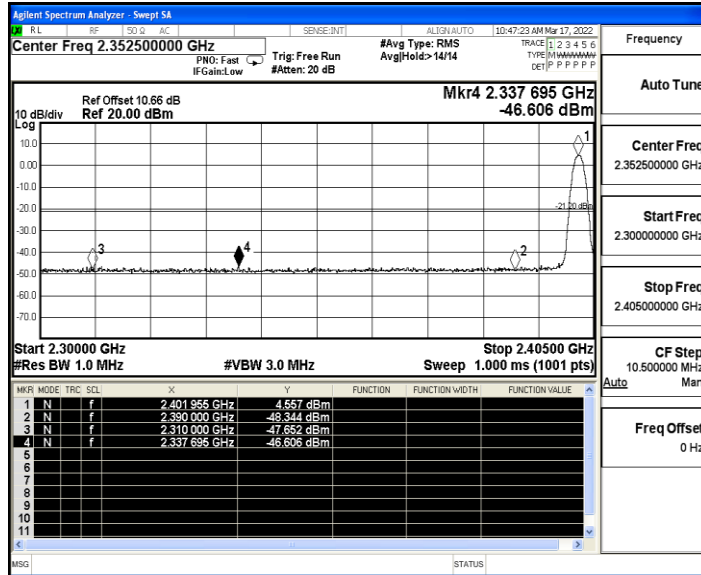




3DH5\_Ant1\_Low\_2402\_AV

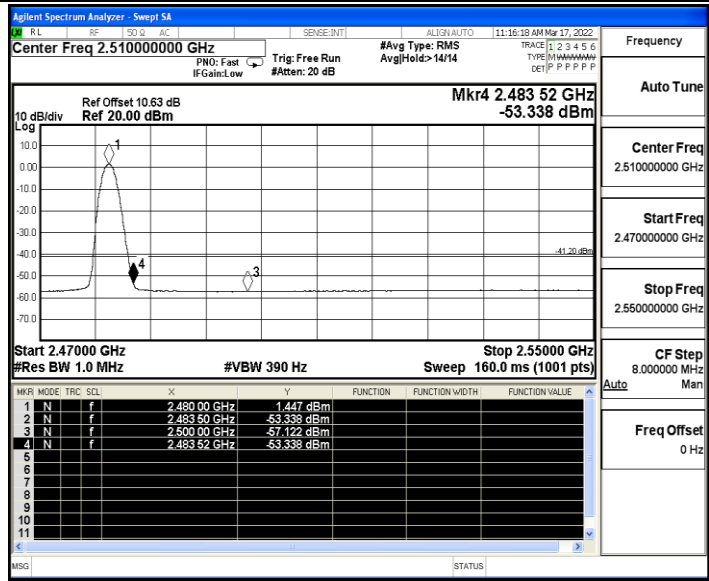


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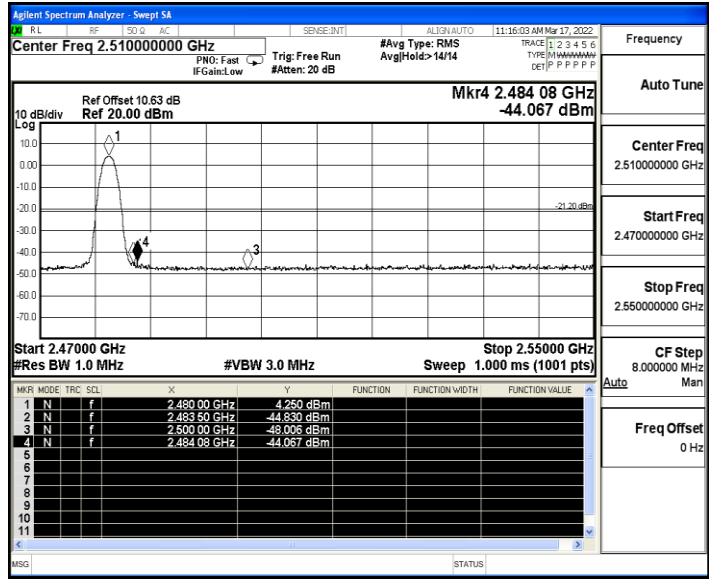




3DH5\_Ant1\_High\_2480\_AV

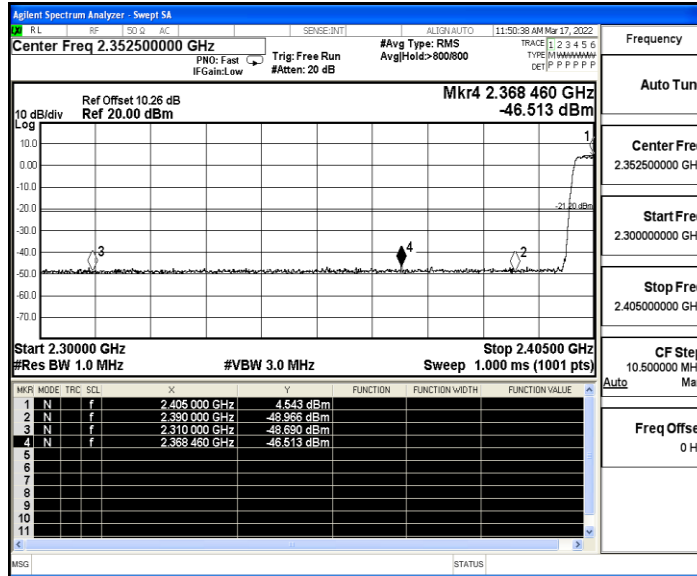


3DH5\_Ant1\_High\_2480\_Peak





3DH5\_Ant1\_Low\_Hop\_2402\_Peak



3DH5\_Ant1\_High\_Hop\_2480\_Peak

