

## Appendix A

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

**Product Name: Bluetooth Headphones**

**Trade Mark: Altec Lansing**

**Test Model: MZX4100**

**FCC ID: 2AL9B-MZX4100**

### Environmental Conditions

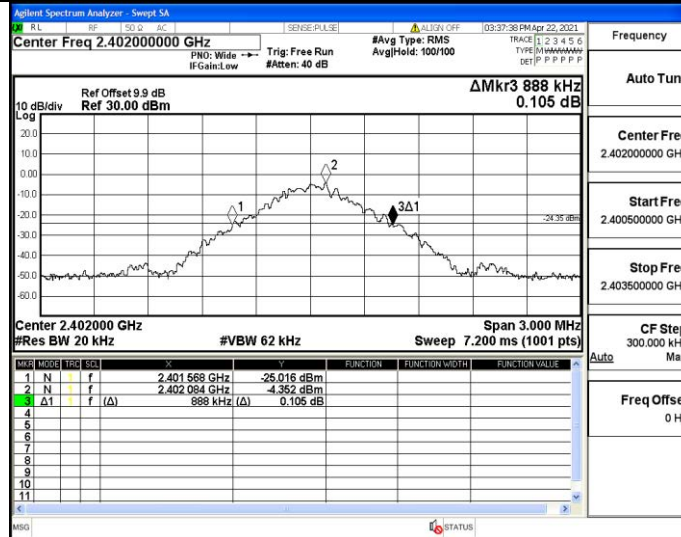
Temperature:	22.8° C
Relative Humidity:	56%
ATM Pressure:	100.0 kPa
Test Engineer:	Nancy Li
Supervised by:	Hugo Chen

#### A.1 20 dB Bandwidth

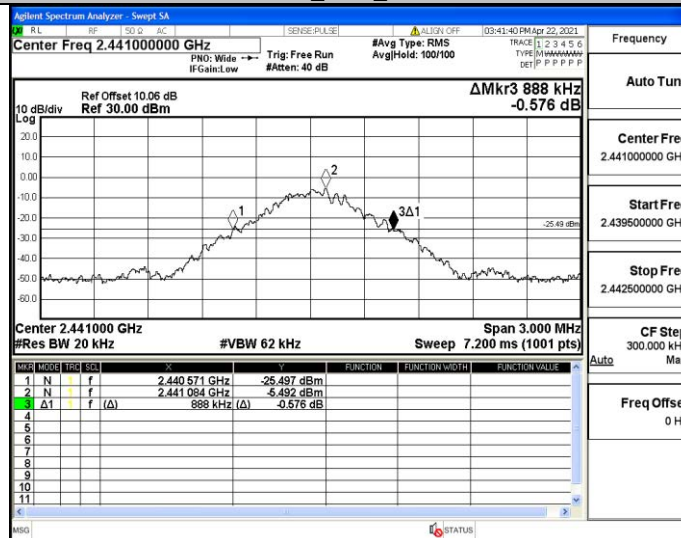
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.888	2401.568	2402.456	---	PASS
		2441	0.888	2440.571	2441.459	---	PASS
		2480	0.891	2479.568	2480.459	---	PASS
2DH5	Ant1	2402	1.212	2401.421	2402.633	---	PASS
		2441	1.332	2440.361	2441.693	---	PASS
		2480	1.233	2479.403	2480.636	---	PASS
3DH5	Ant1	2402	1.311	2401.373	2402.684	---	PASS
		2441	1.302	2440.376	2441.678	---	PASS
		2480	1.311	2479.376	2480.687	---	PASS

Test Graph

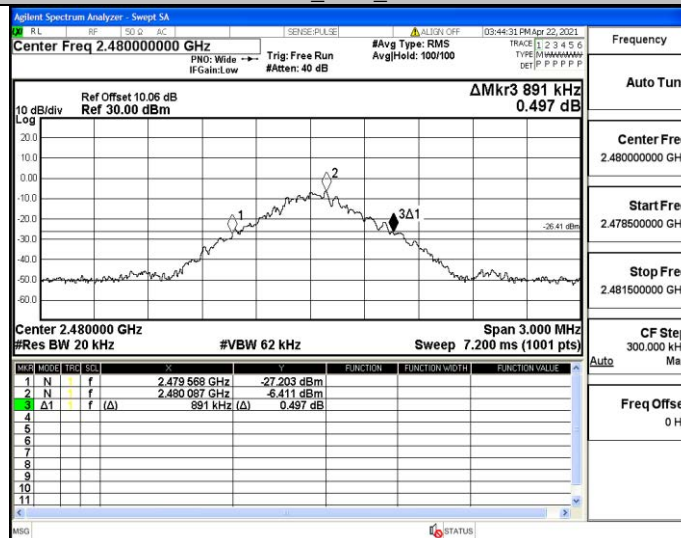
DH5\_Ant1\_2402



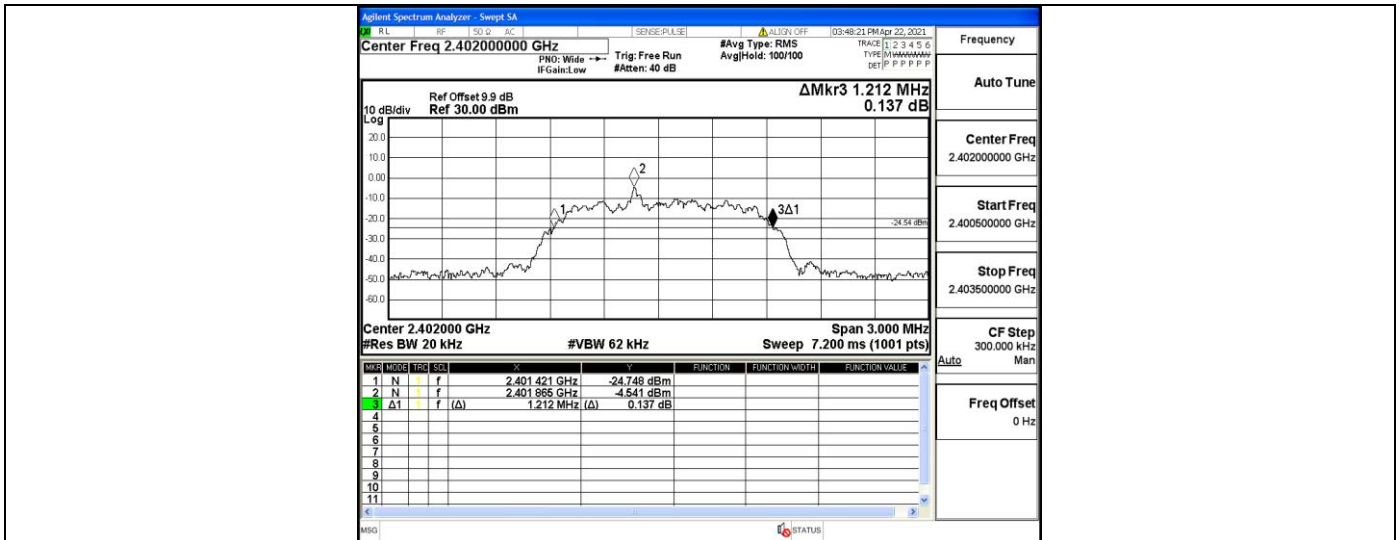
DH5\_Ant1\_2441



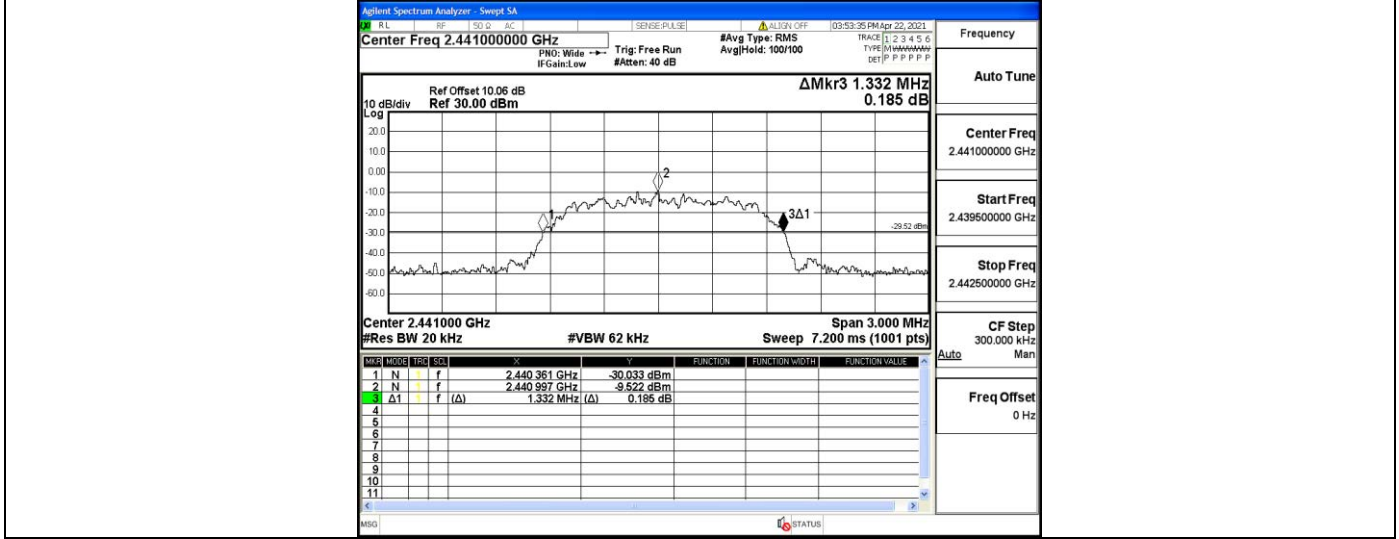
DH5\_Ant1\_2480



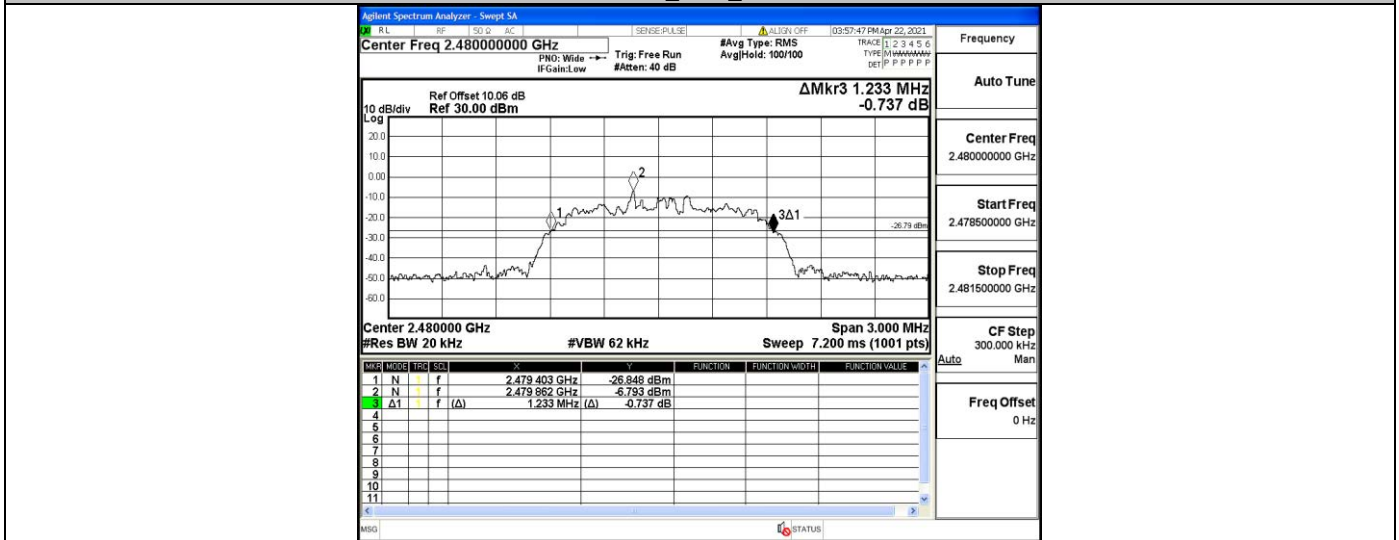
2DH5\_Ant1\_2402



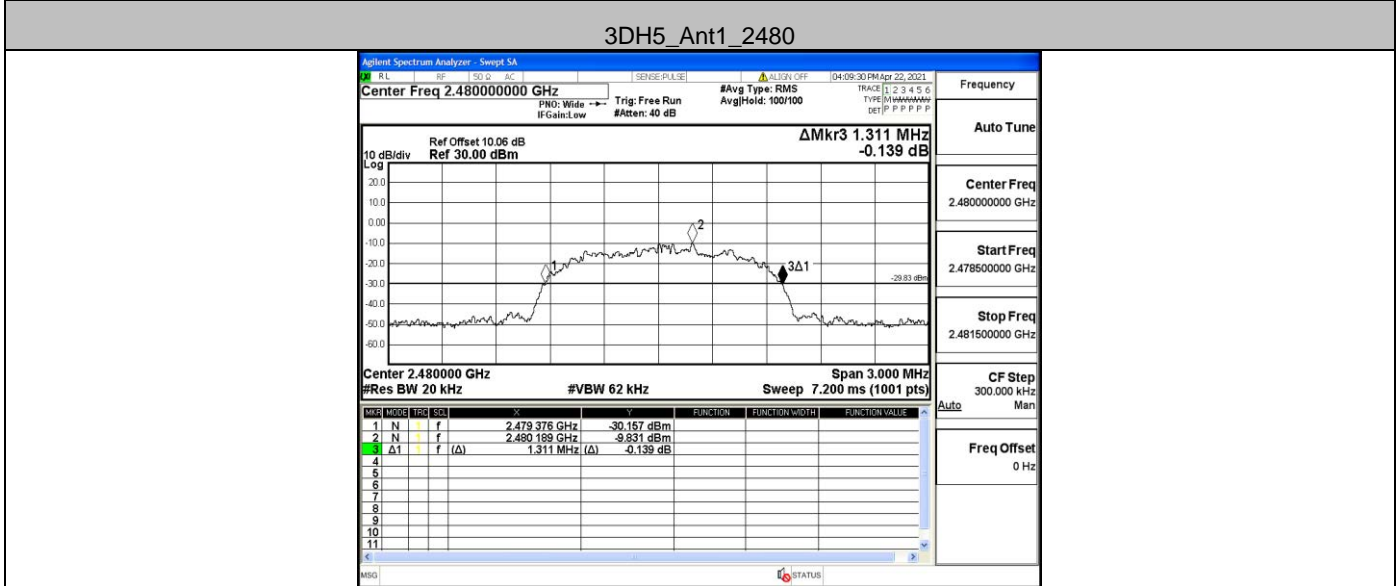
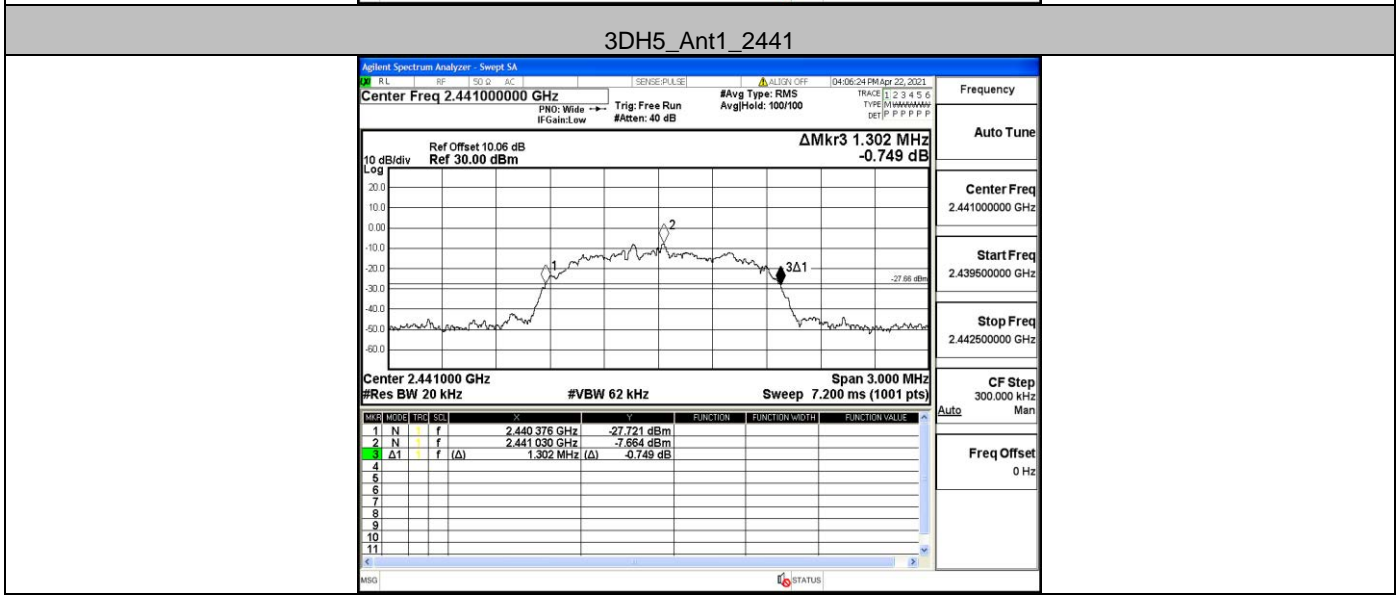
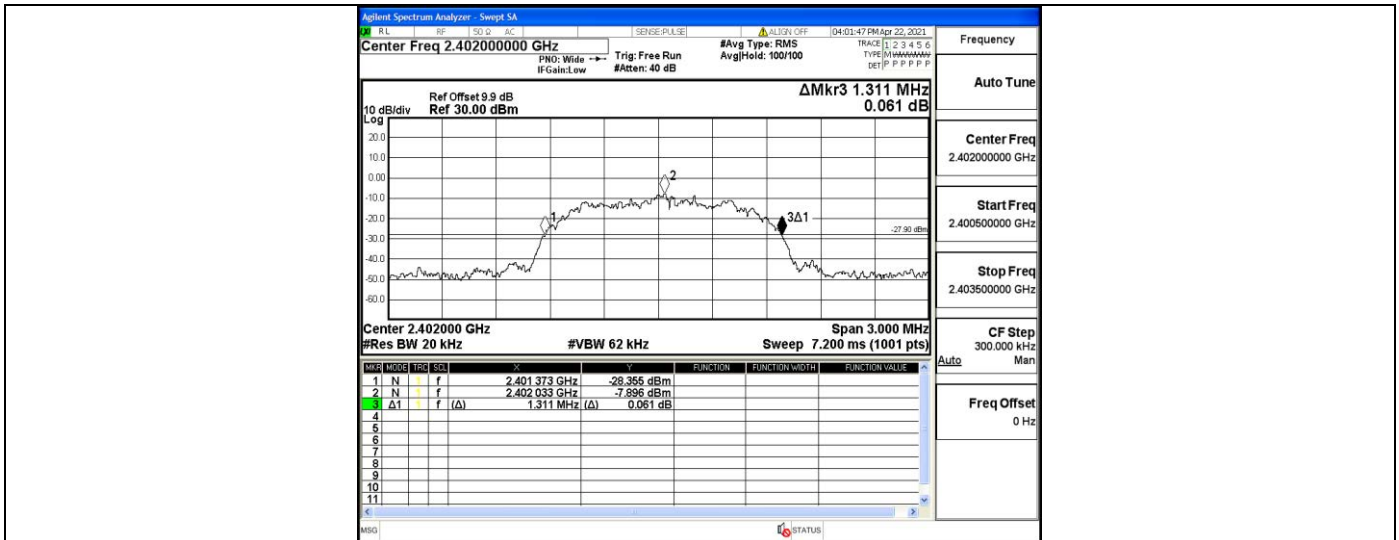
2DH5\_Ant1\_2441



2DH5\_Ant1\_2480



3DH5\_Ant1\_2402

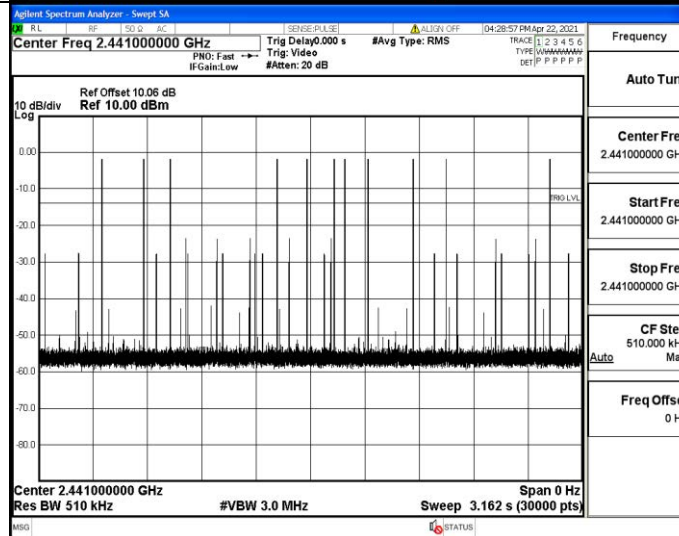
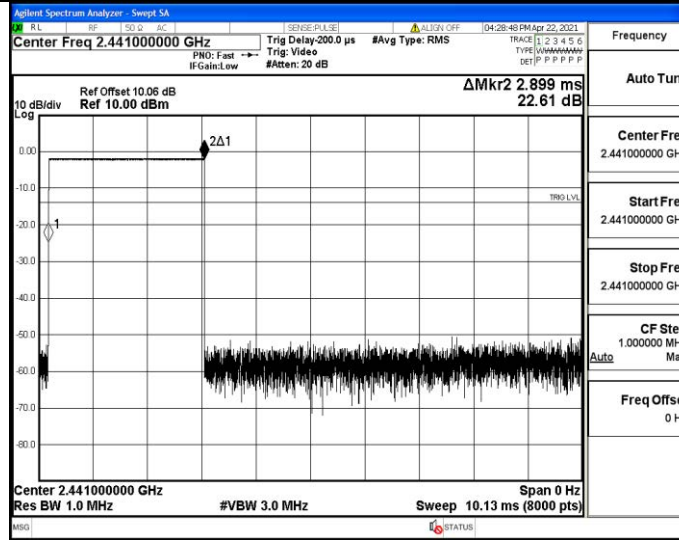


**A.2 Dwell Time**

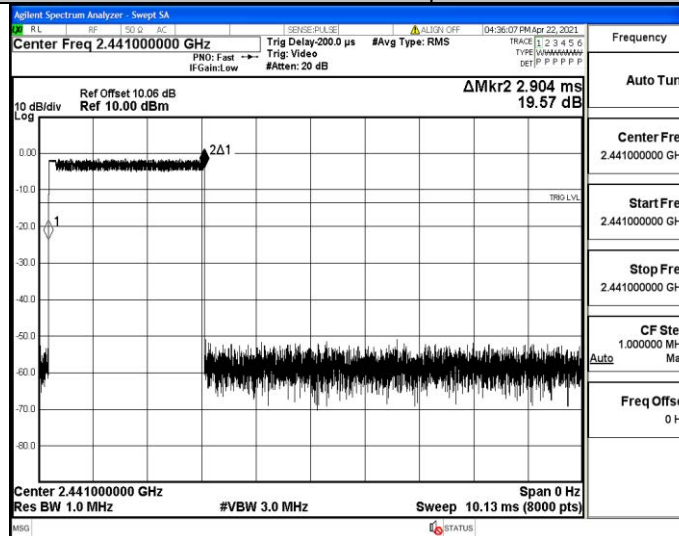
TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.90	120	0.348	<=0.4	PASS
2DH5	Ant1	Hop	2.90	120	0.349	<=0.4	PASS
3DH5	Ant1	Hop	2.91	110	0.32	<=0.4	PASS

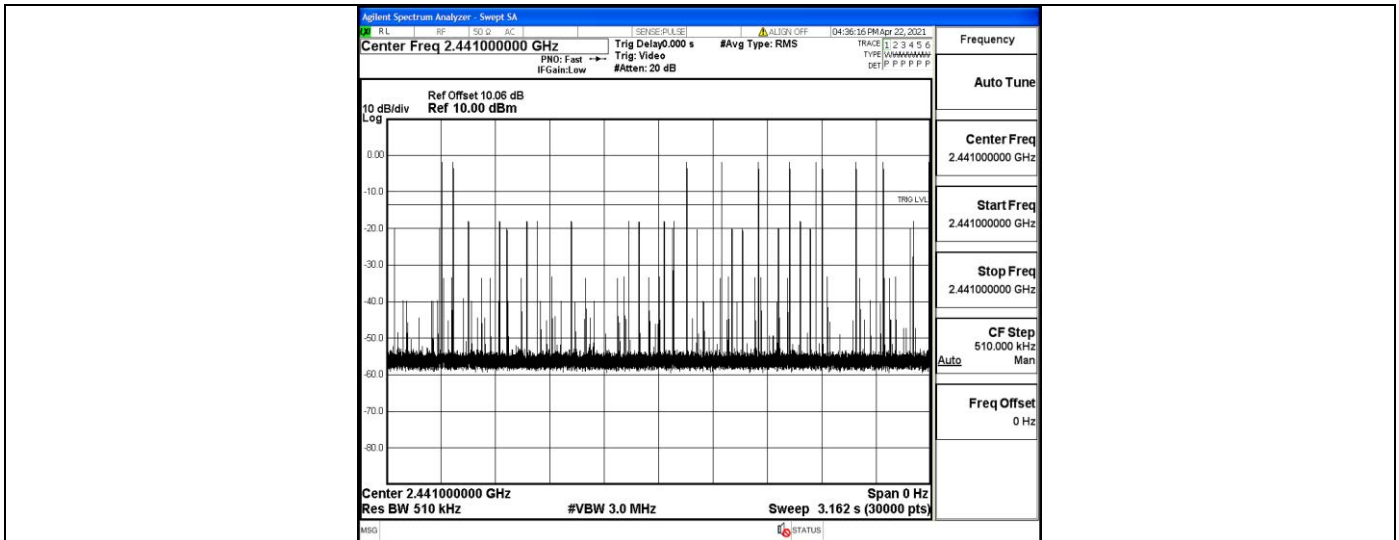
### Test Graph

#### DH5\_Ant1\_Hop

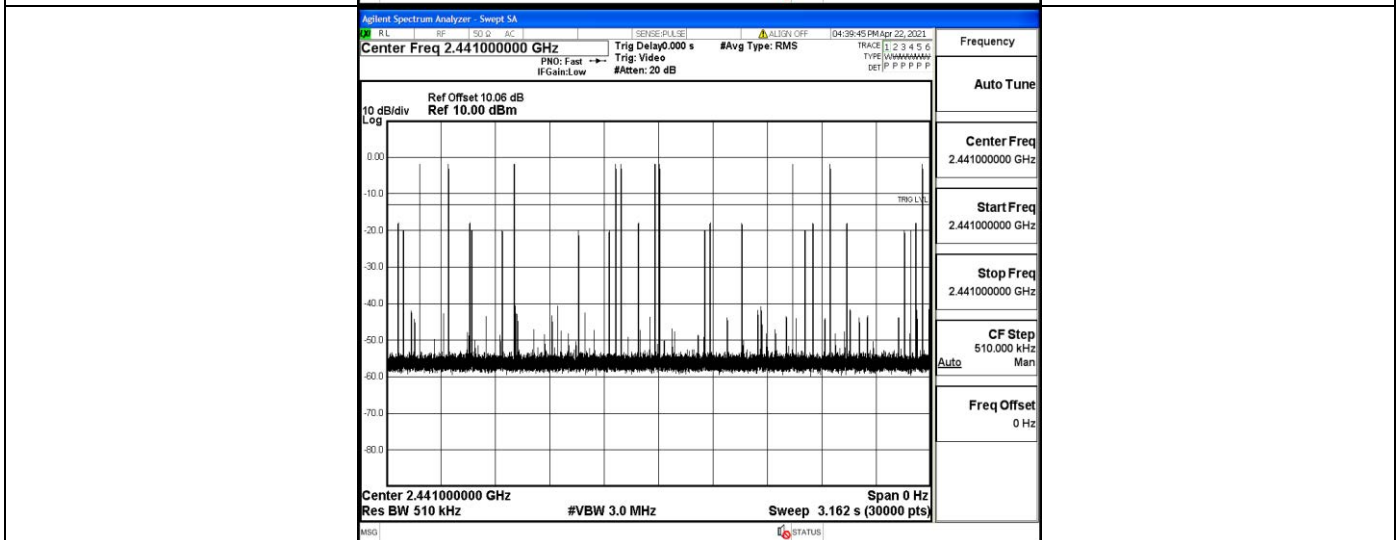
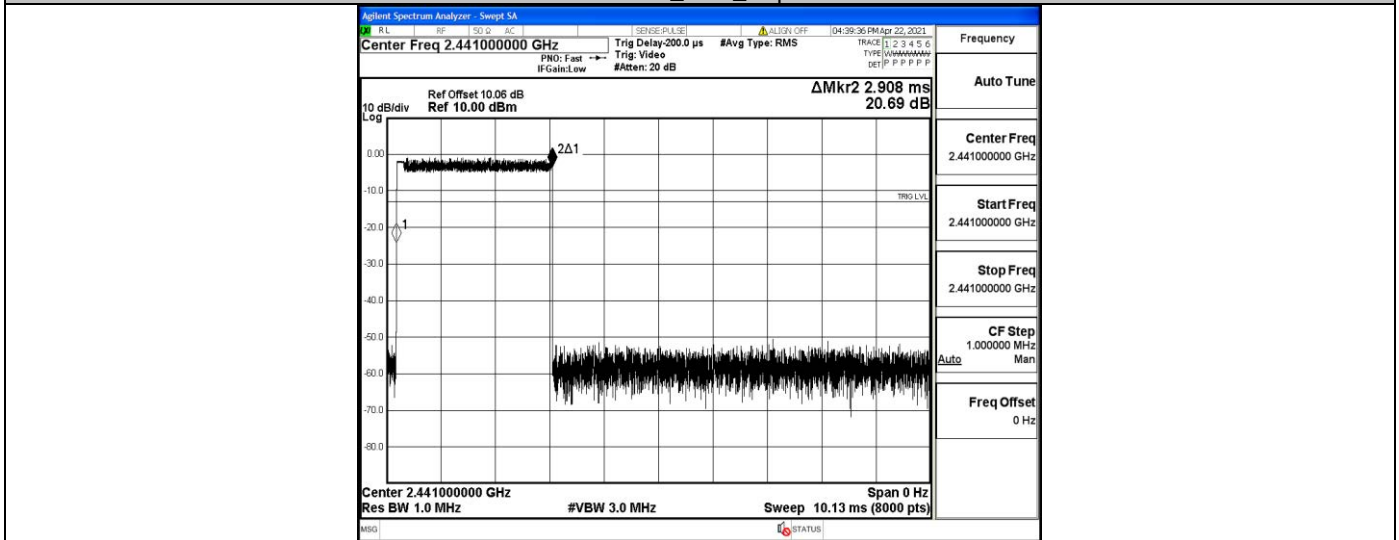


#### 2DH5\_Ant1\_Hop





3DH5\_Ant1\_Hop



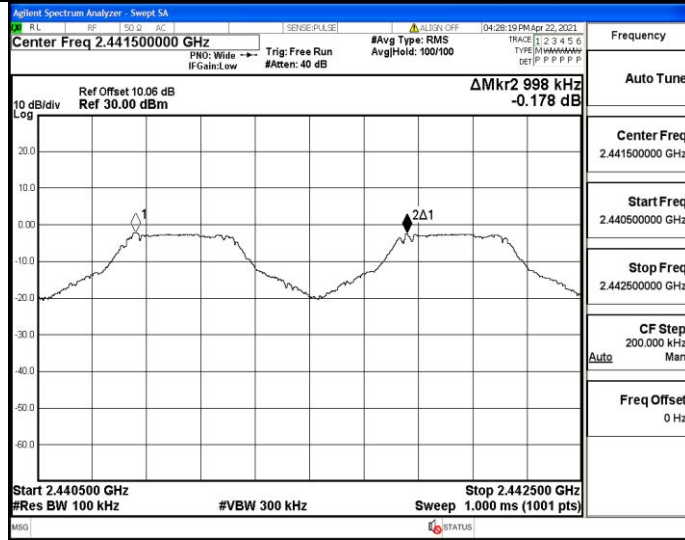
### A.3 Carrier Frequency Separation

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.998	$\geq 0.746$	PASS
2DH5	Ant1	Hop	1.002	$\geq 0.942$	PASS
3DH5	Ant1	Hop	0.984	$\geq 0.916$	PASS

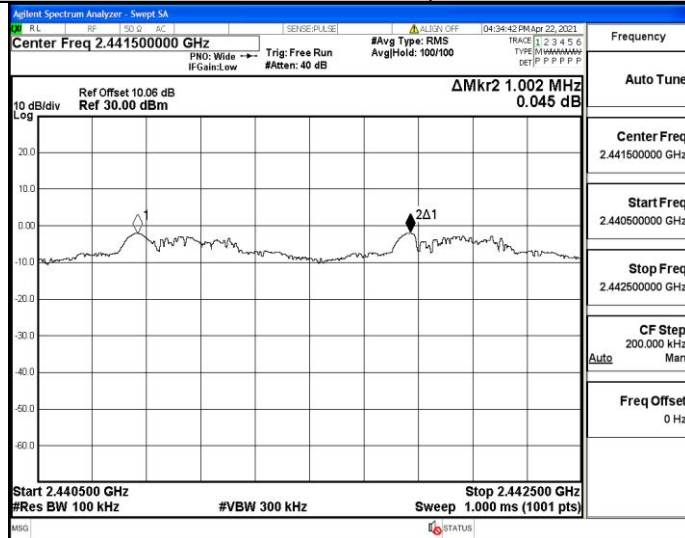


### Test Graph

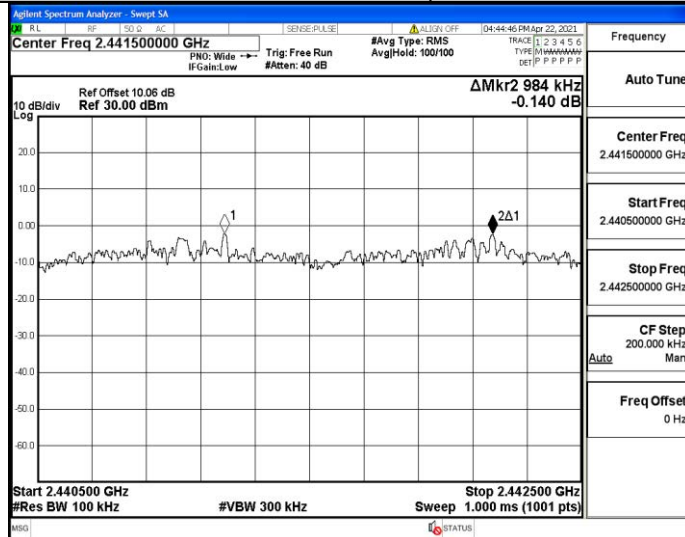
#### DH5\_Ant1\_Hop



#### 2DH5\_Ant1\_Hop



#### 3DH5\_Ant1\_Hop

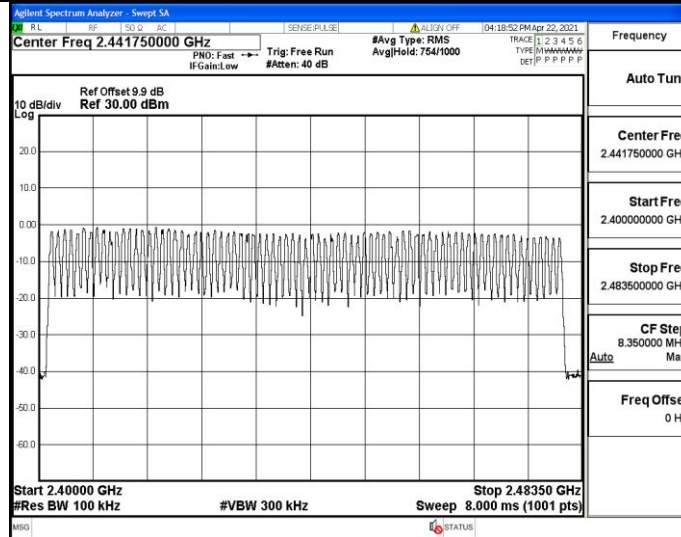


**A.4 Hopping Channel Number**

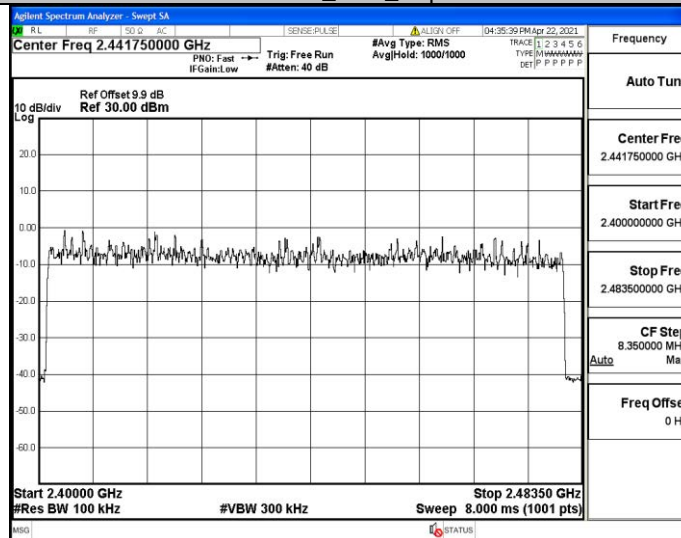
TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	>=15	PASS
2DH5	Ant1	Hop	79	>=15	PASS
3DH5	Ant1	Hop	79	>=15	PASS

### Test Graph

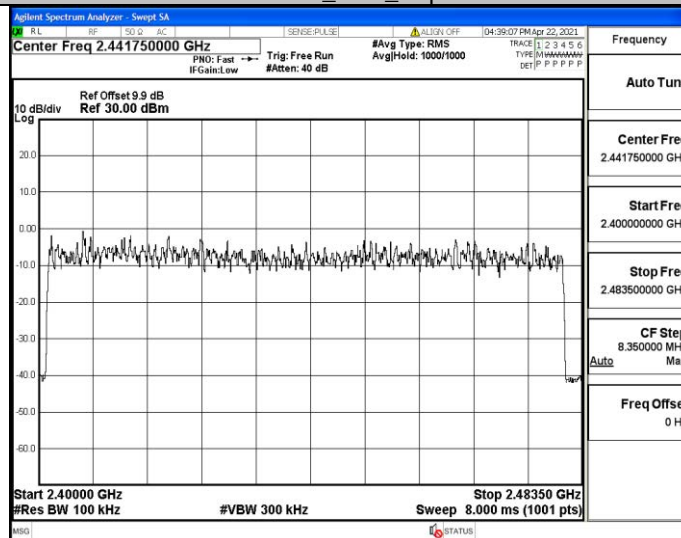
DH5\_Ant1\_Hop



2DH5\_Ant1\_Hop



3DH5\_Ant1\_Hop

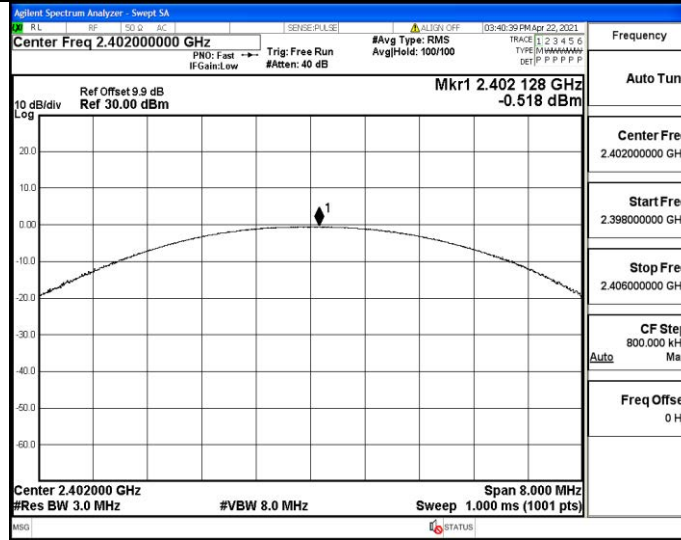


**A.5 Conducted Peak Output Power**

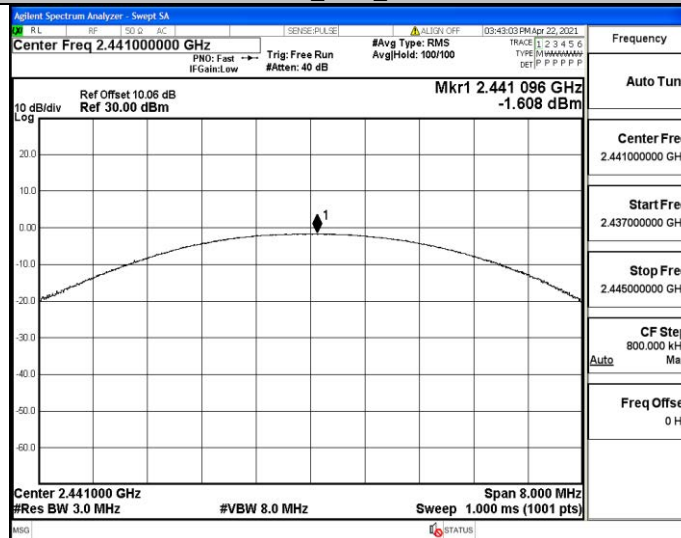
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	-0.52	<=20.97	PASS
		2441	-1.61	<=20.97	PASS
		2480	-2.51	<=20.97	PASS
2DH5	Ant1	2402	0.27	<=20.97	PASS
		2441	-1.03	<=20.97	PASS
		2480	-1.9	<=20.97	PASS
3DH5	Ant1	2402	0.61	<=20.97	PASS
		2441	-0.45	<=20.97	PASS
		2480	-1.55	<=20.97	PASS

Test Graph

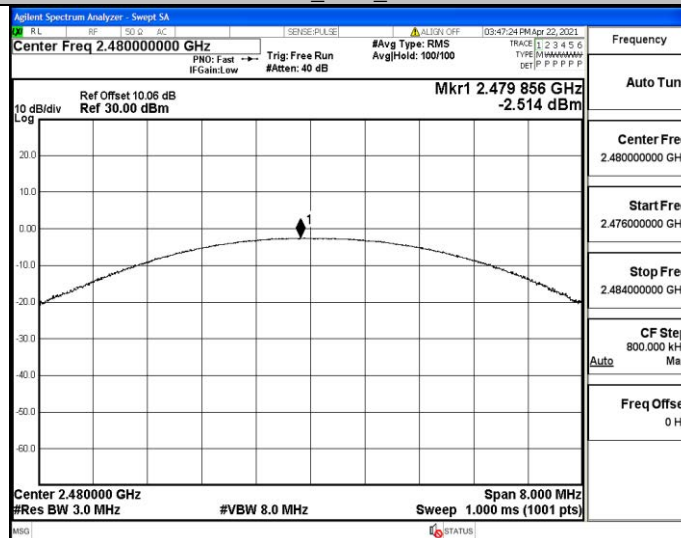
DH5\_Ant1\_2402



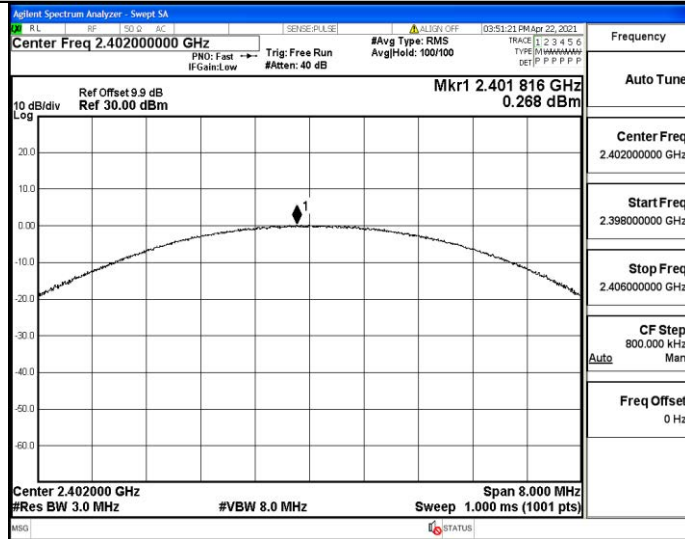
DH5\_Ant1\_2441



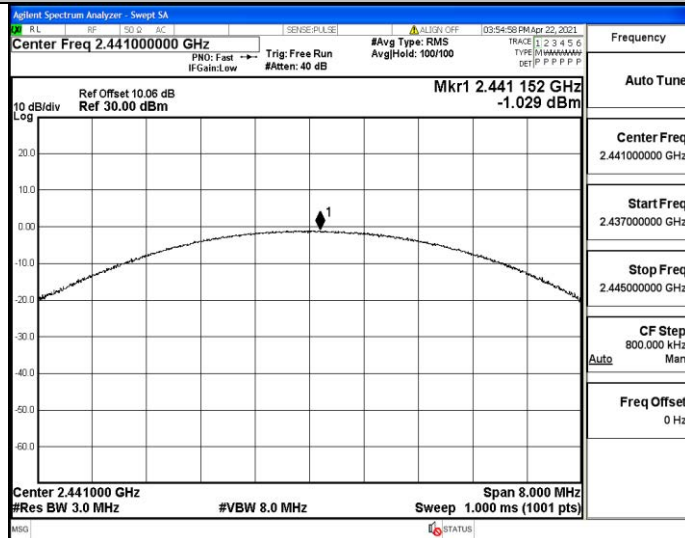
DH5\_Ant1\_2480



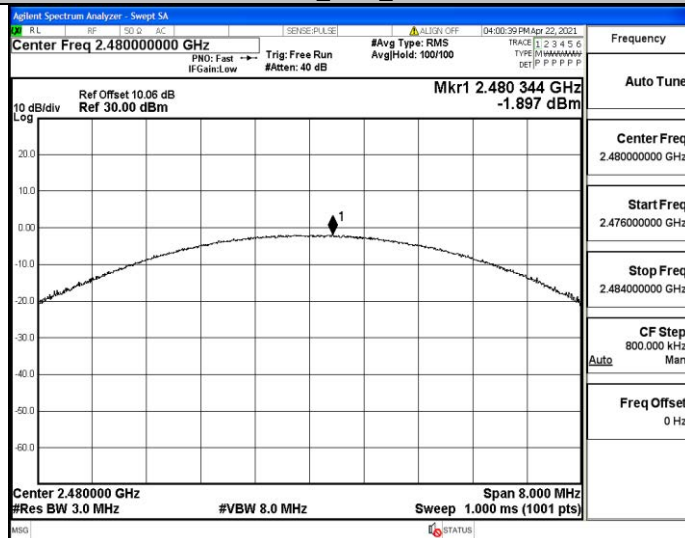
2DH5\_Ant1\_2402



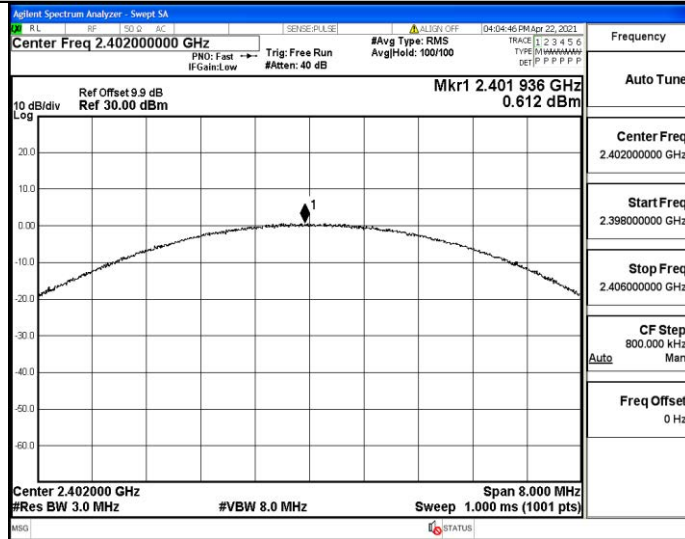
2DH5\_Ant1\_2441



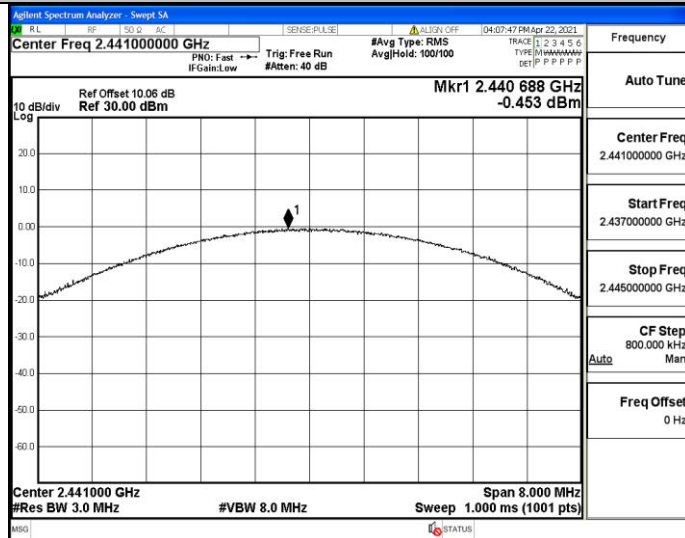
2DH5\_Ant1\_2480



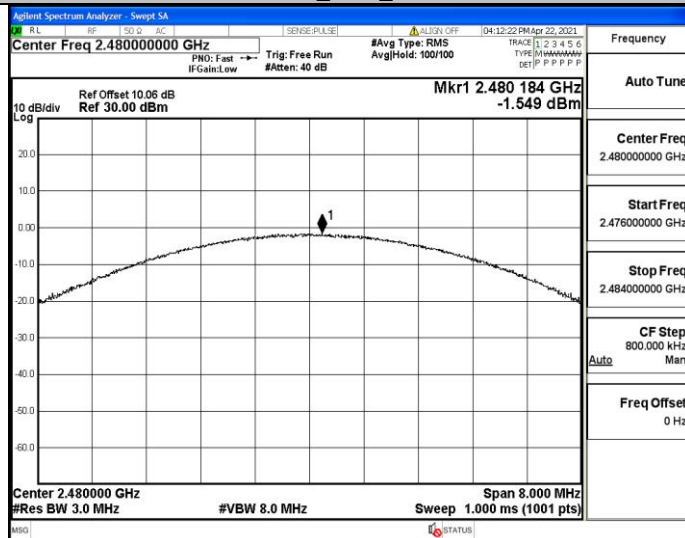
3DH5\_Ant1\_2402



3DH5\_Ant1\_2441



3DH5\_Ant1\_2480



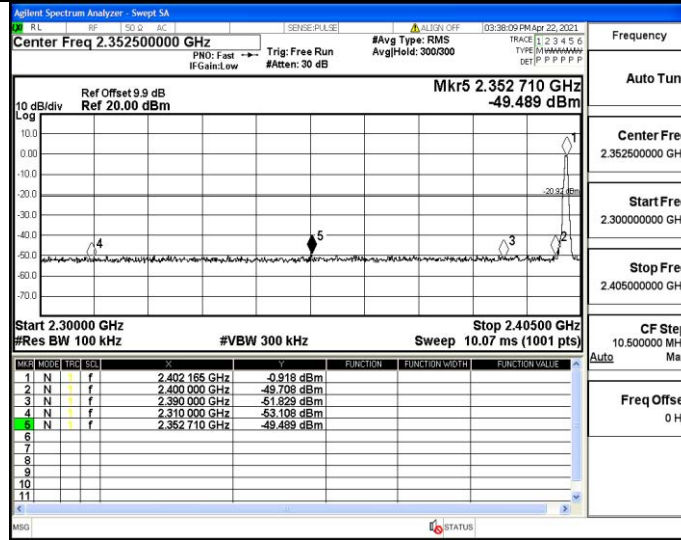
**A.6 Band-edge for RF Conducted Emissions**

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-0.92	-49.49	<=-20.92	PASS
		High	2480	-2.94	-48.28	<=-22.94	PASS
		Low	Hop_2402	-1.20	-49.57	<=-21.2	PASS
		High	Hop_2480	-2.37	-48.31	<=-22.37	PASS
2DH5	Ant1	Low	2402	-0.88	-46.09	<=-20.88	PASS
		High	2480	-2.87	-48.17	<=-22.87	PASS
		Low	Hop_2402	-6.02	-49.56	<=-26.02	PASS
		High	Hop_2480	-3.39	-48.37	<=-23.39	PASS
3DH5	Ant1	Low	2402	-0.91	-48.92	<=-20.91	PASS
		High	2480	-4.13	-47.96	<=-24.13	PASS
		Low	Hop_2402	-4.14	-48.98	<=-24.14	PASS
		High	Hop_2480	-2.40	-48.74	<=-22.4	PASS

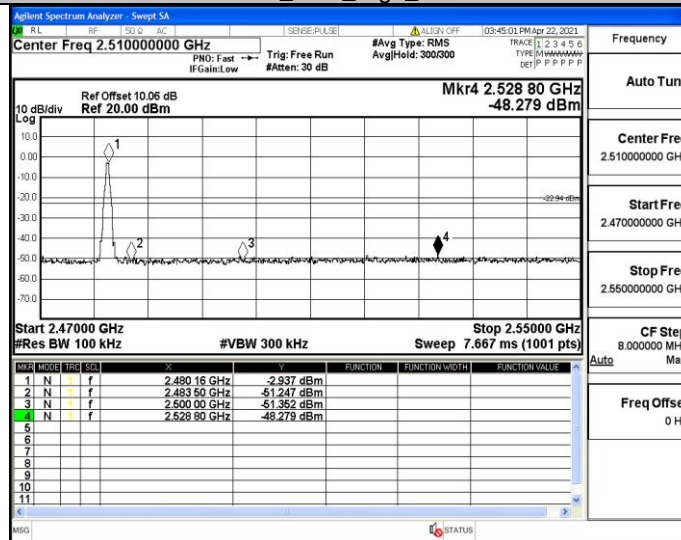


Test Graph

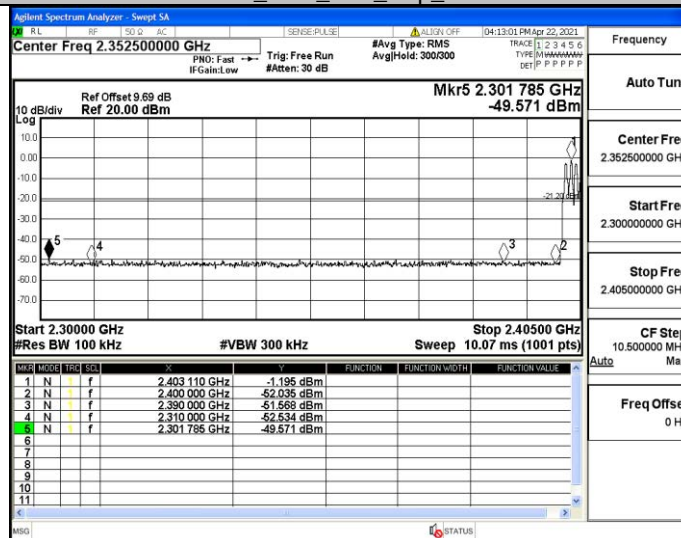
DH5\_Ant1\_Low\_2402



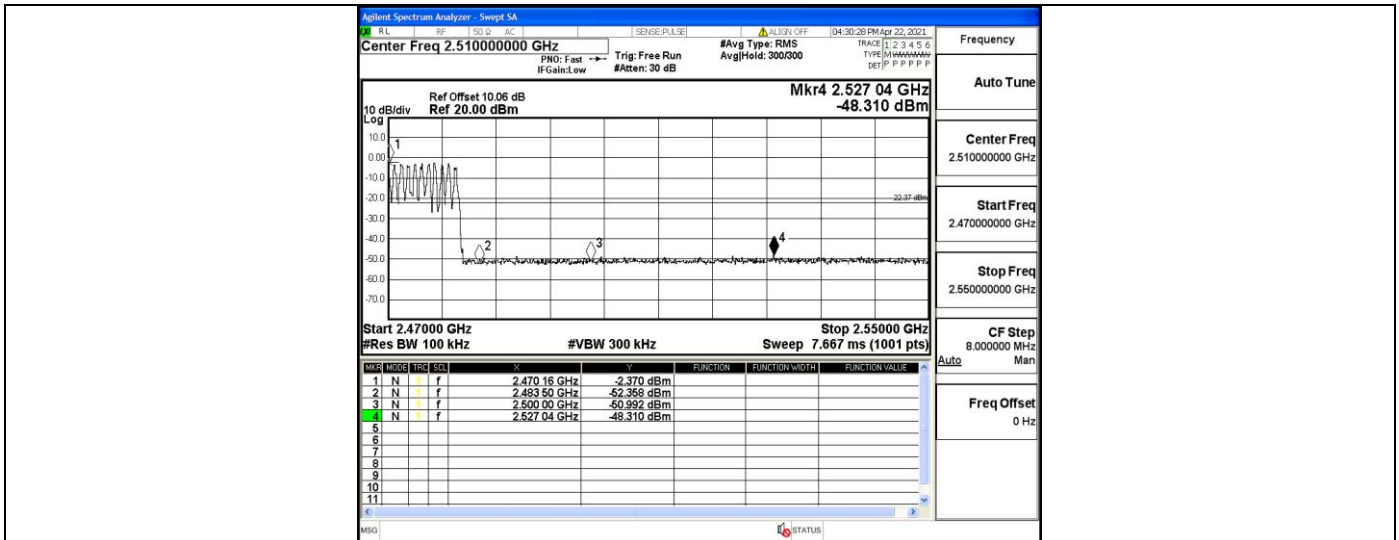
DH5\_Ant1\_High\_2480



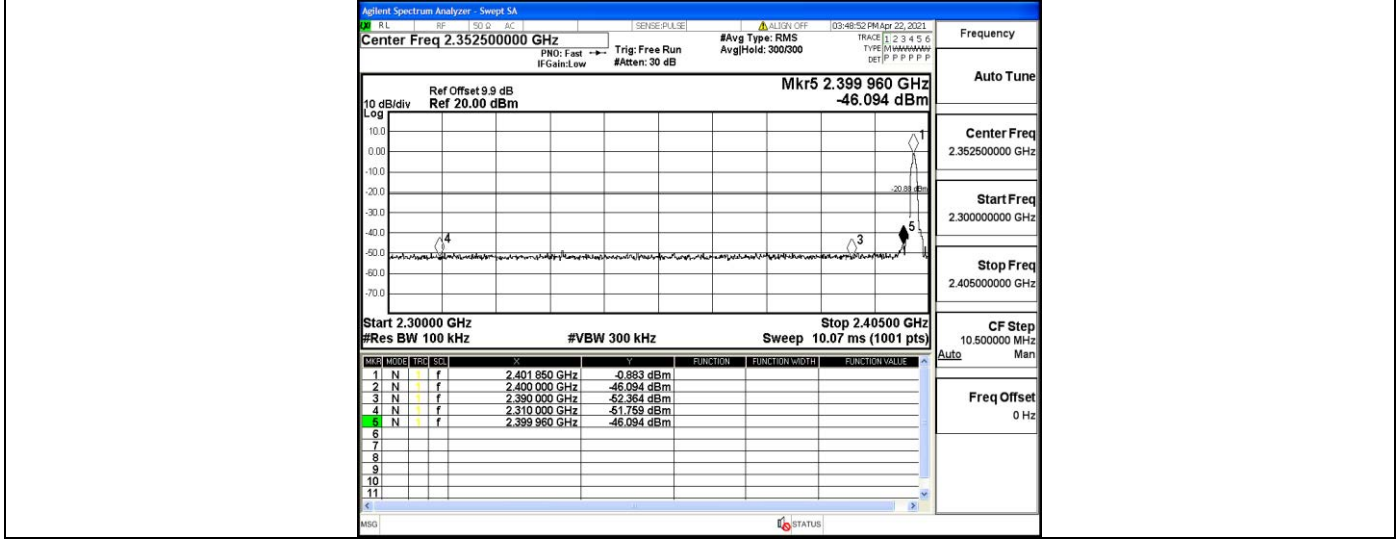
DH5\_Ant1\_Low\_Hop\_2402



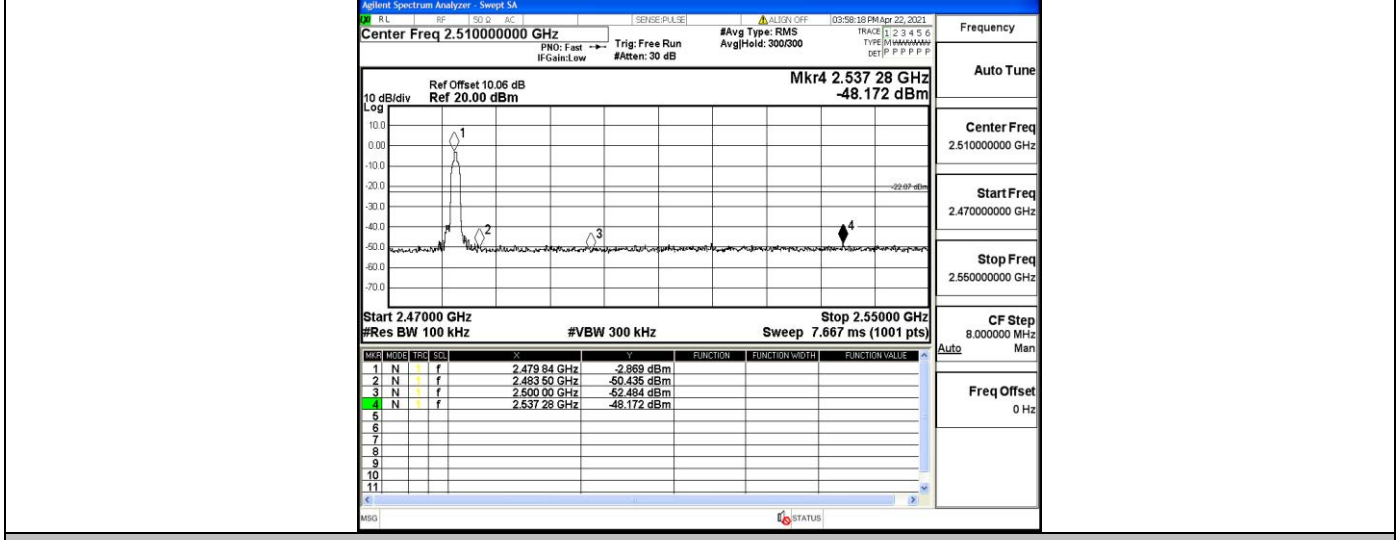
DH5\_Ant1\_High\_Hop\_2480



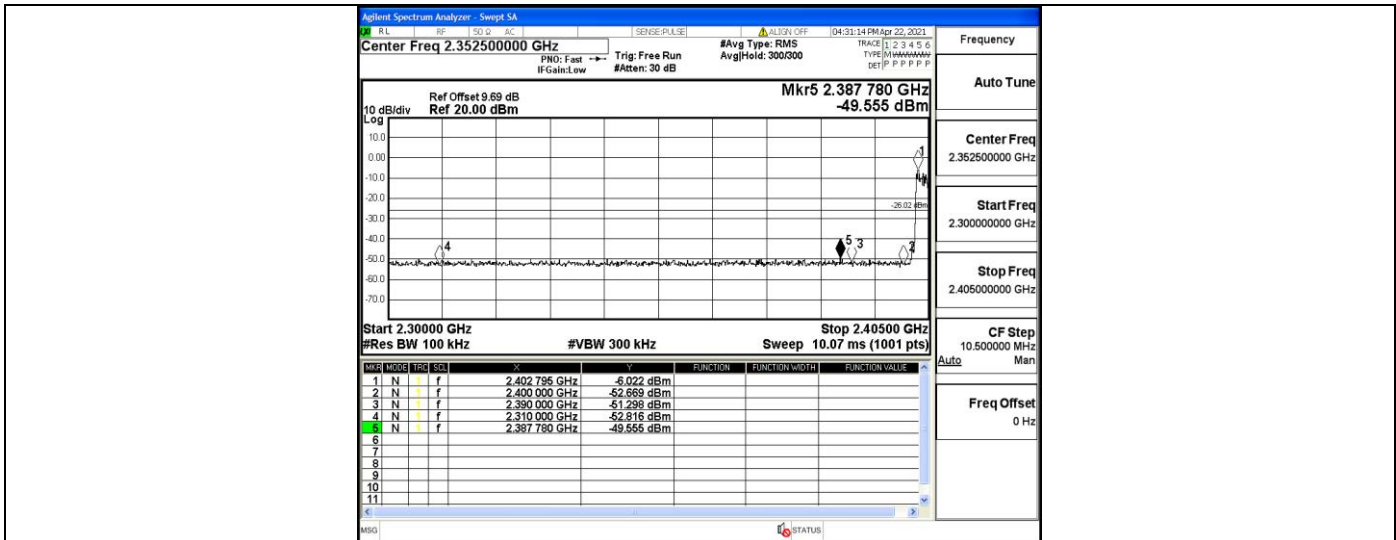
2DH5\_Ant1\_Low\_2402



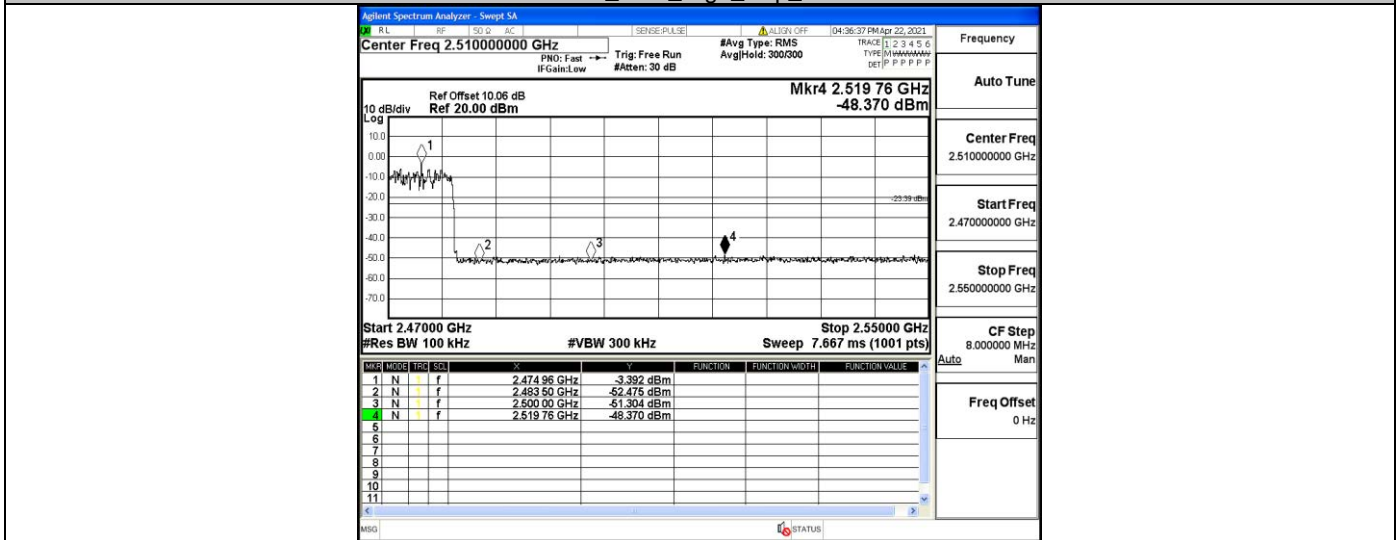
2DH5\_Ant1\_High\_2480



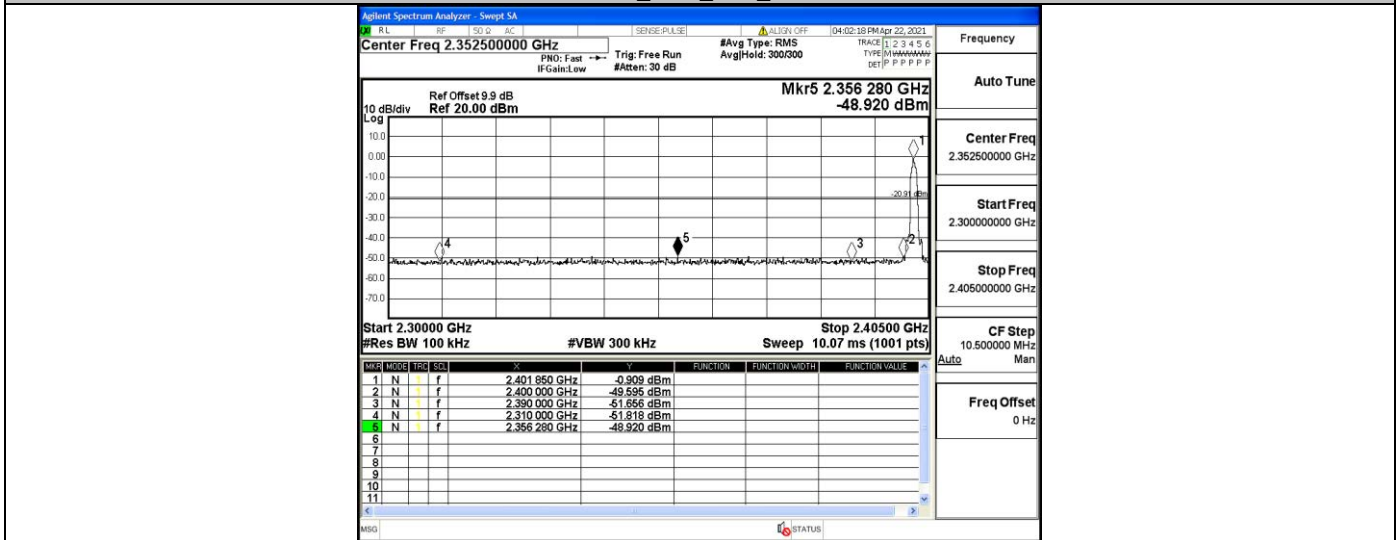
2DH5\_Ant1\_Low\_Hop\_2402



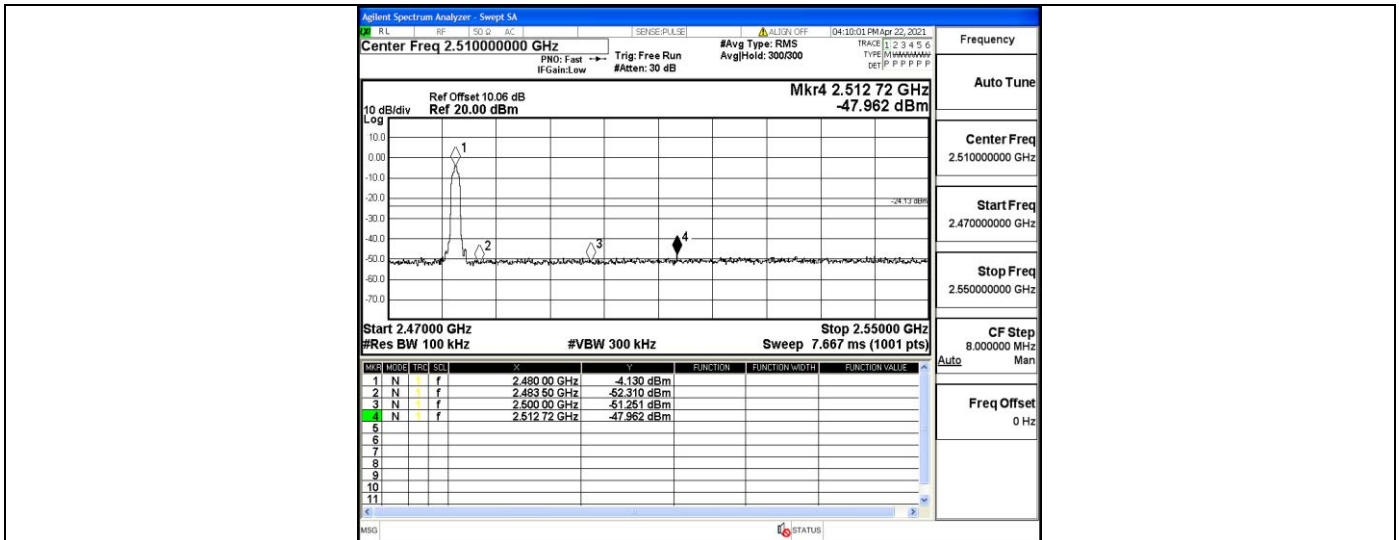
2DH5\_Ant1\_High\_Hop\_2480



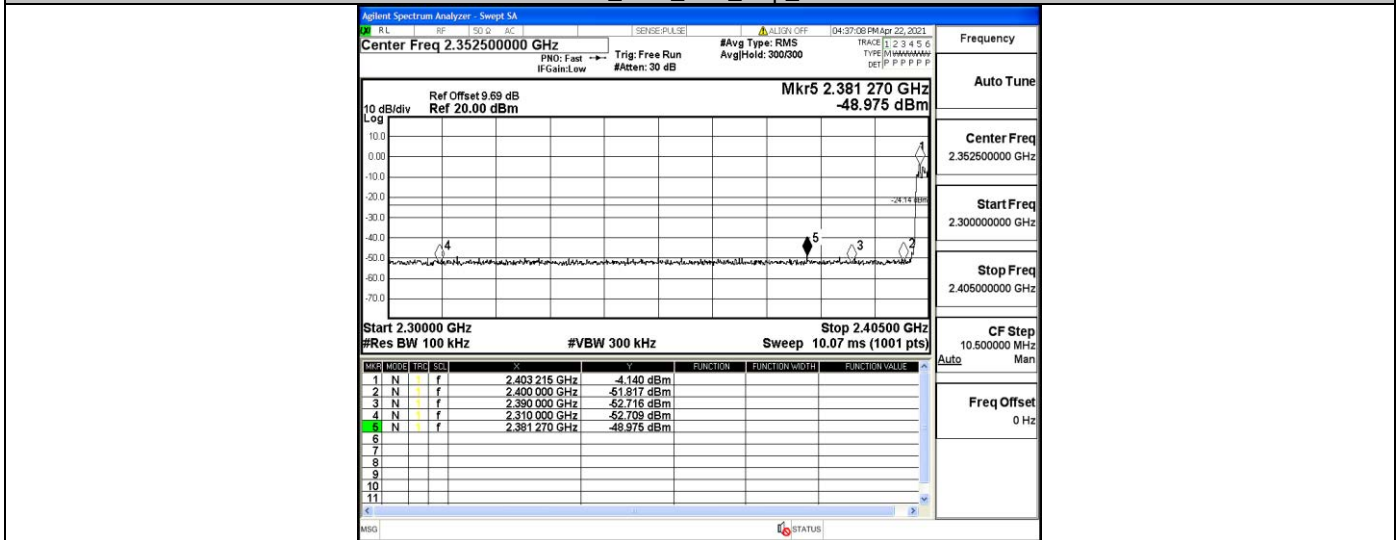
3DH5\_Ant1\_Low\_2402



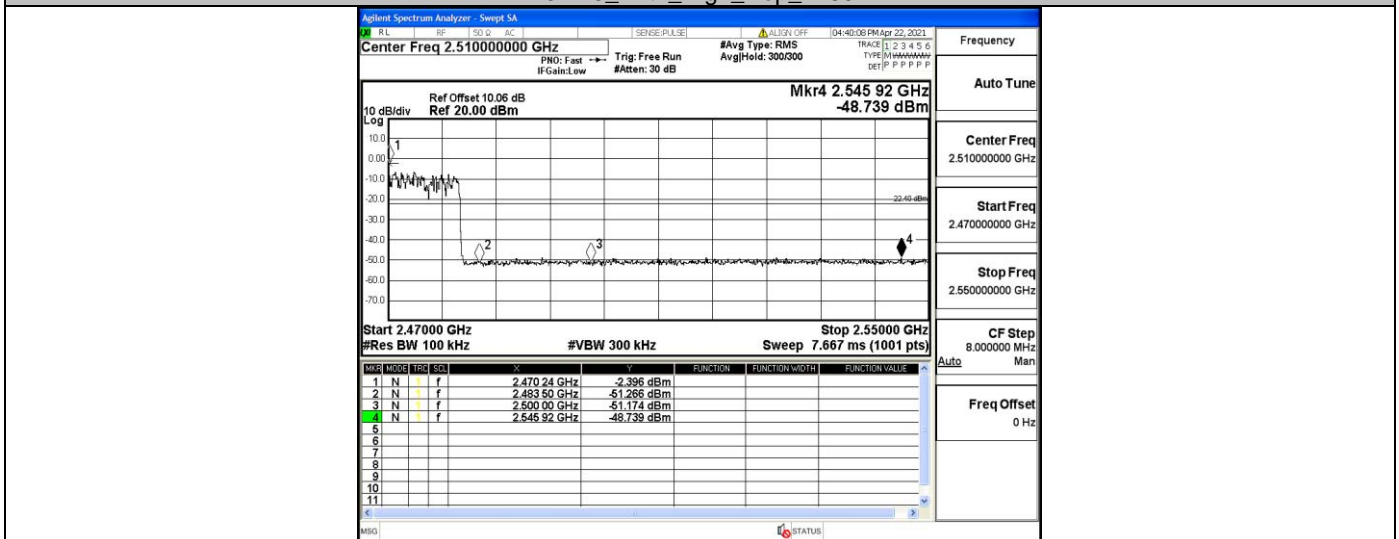
3DH5\_Ant1\_High\_2480



3DH5\_Ant1\_Low\_Hop\_2402

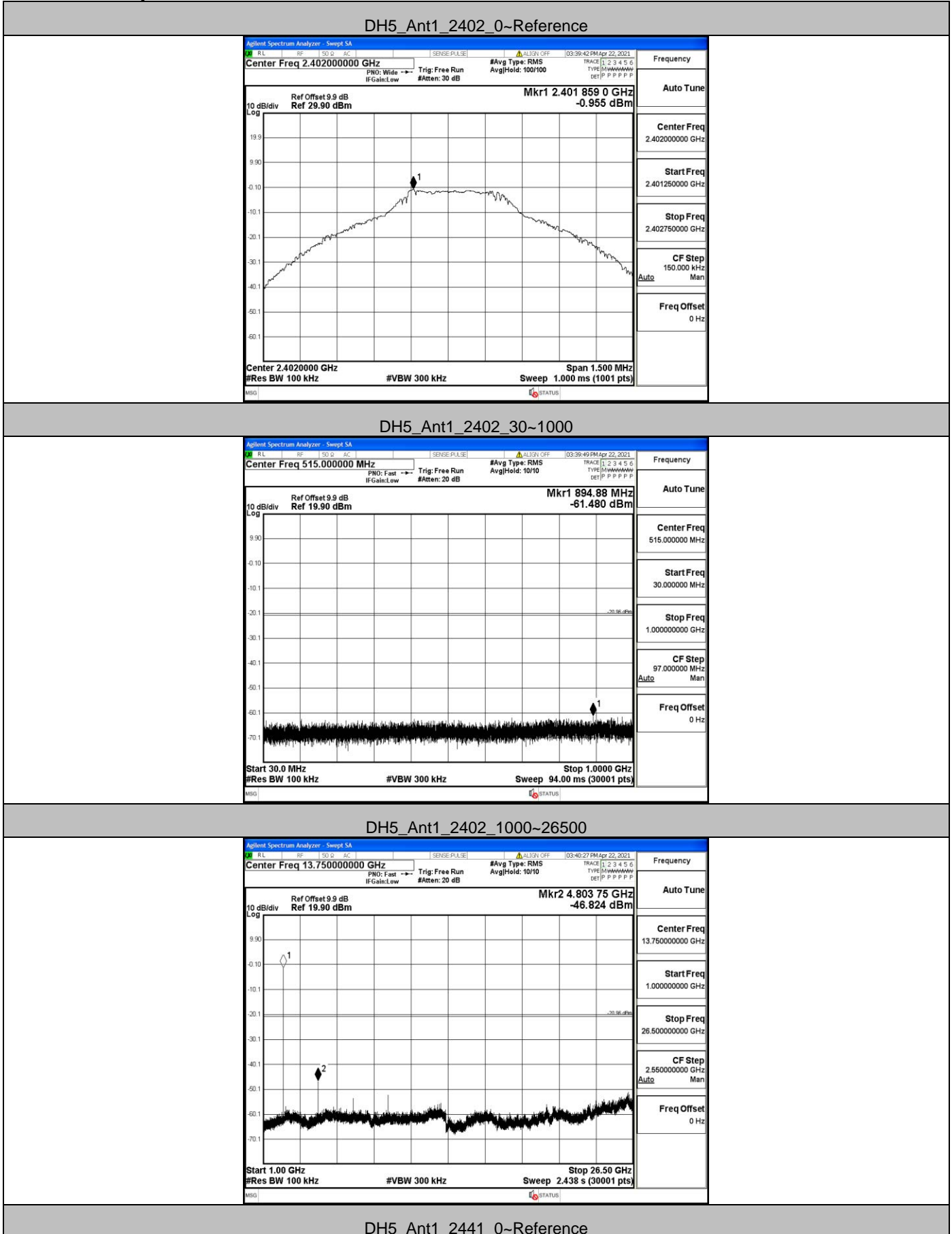


3DH5\_Ant1\_High\_Hop\_2480

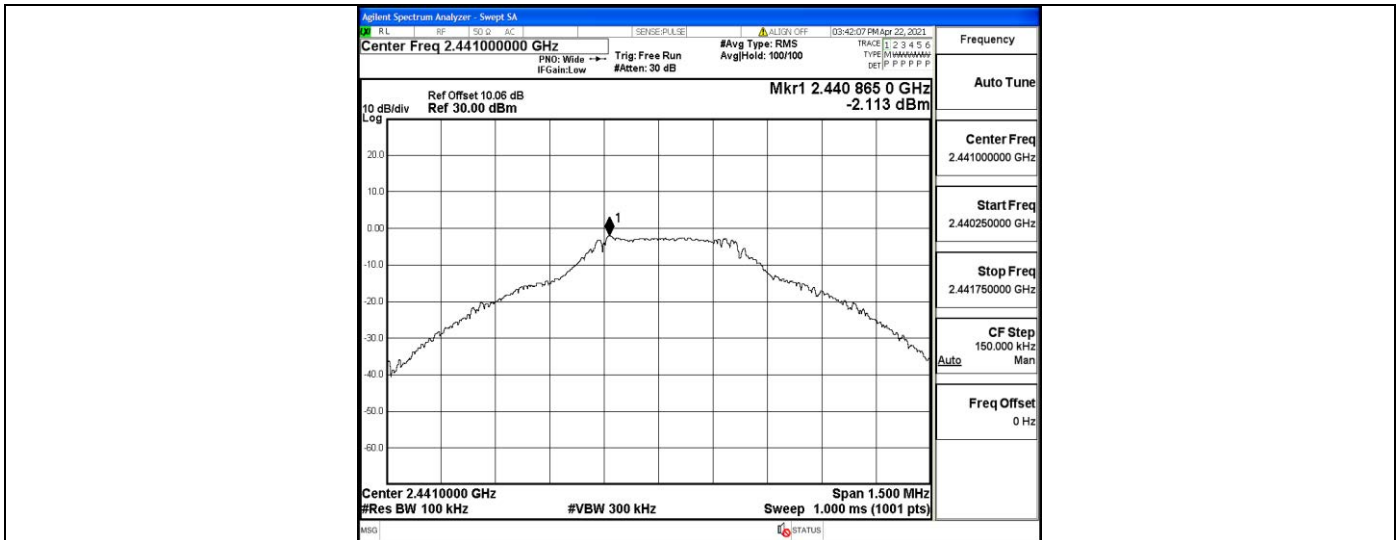


### A.7 RF Conducted Spurious Emissions

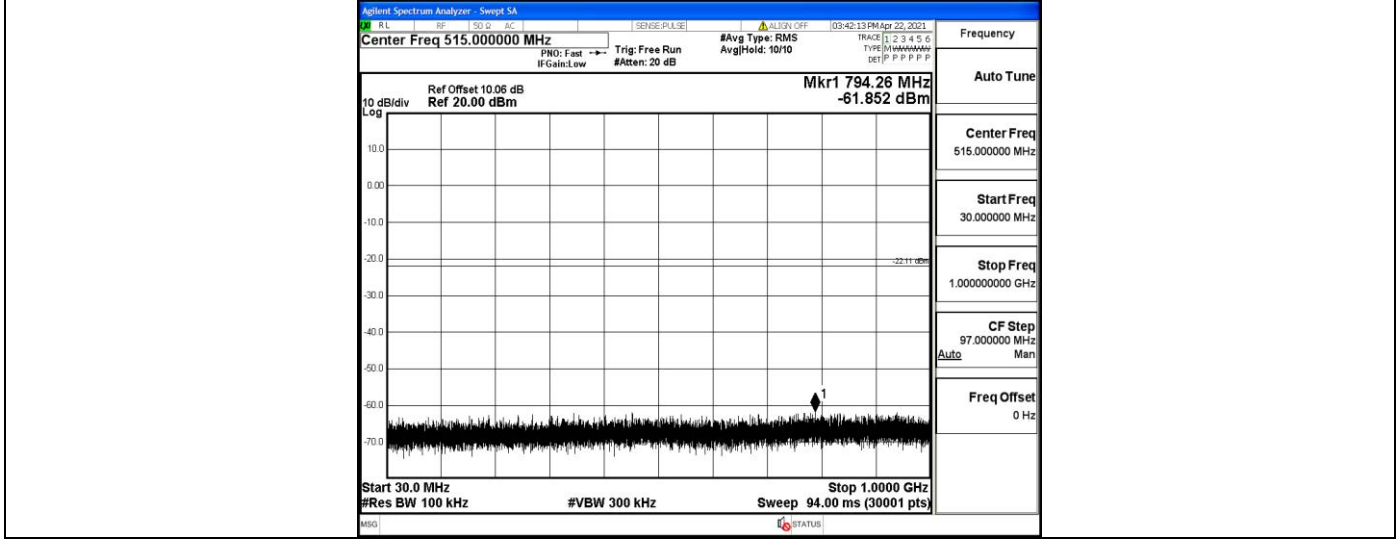
#### Test Graph



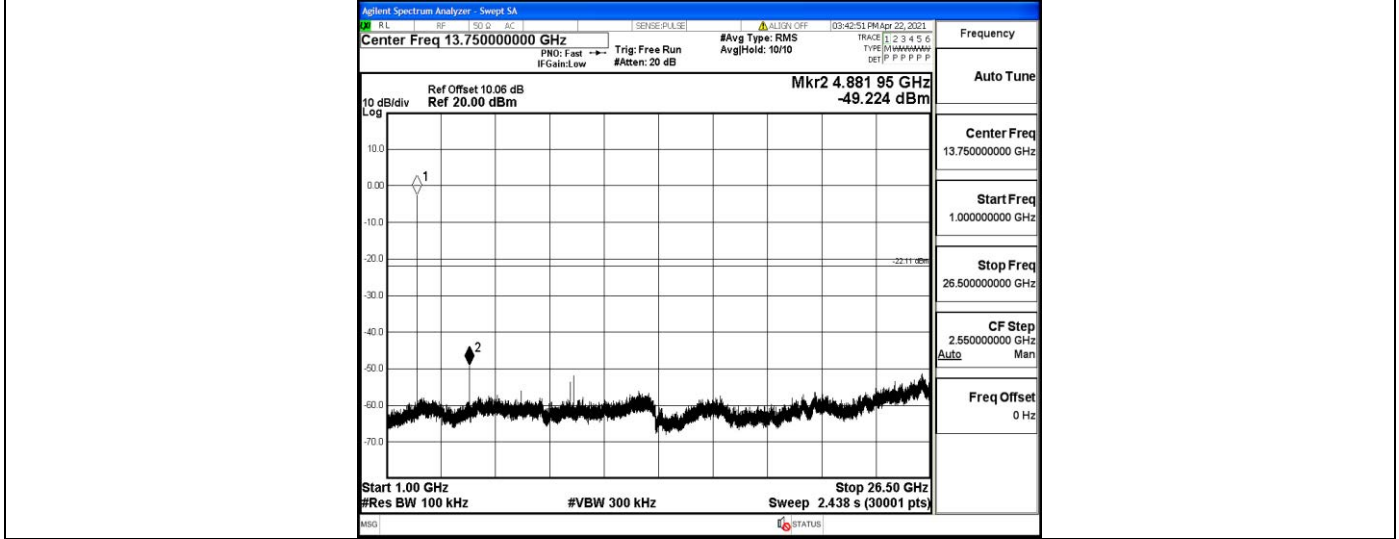
DH5\_Ant1\_2441\_0~Reference



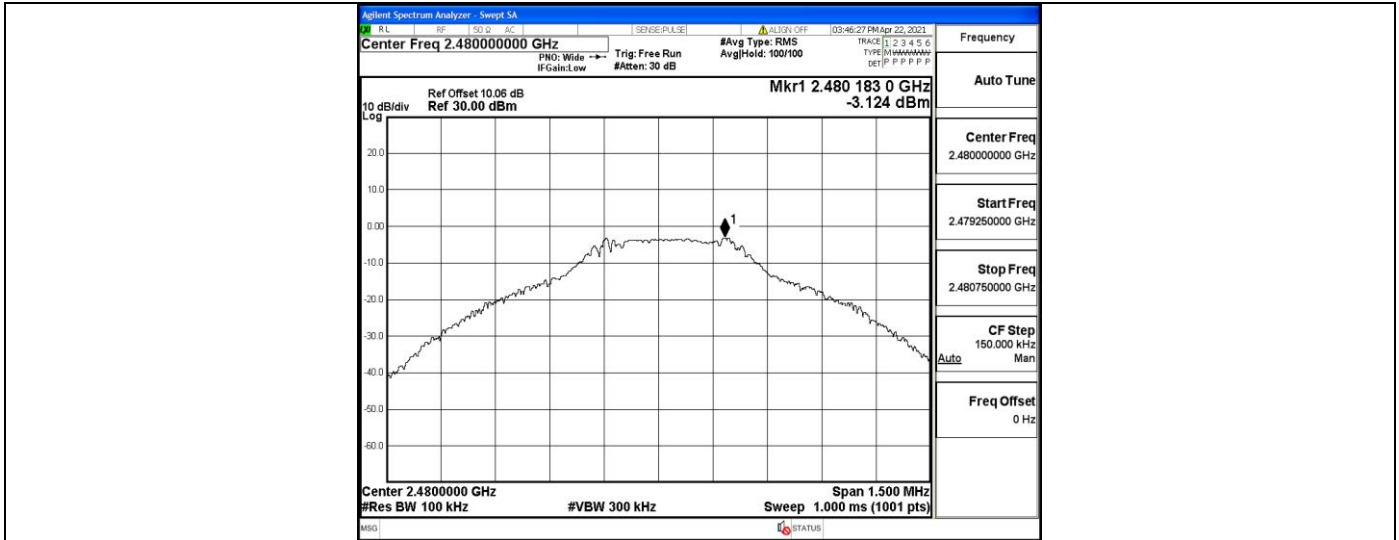
DH5\_Ant1\_2441\_30~1000



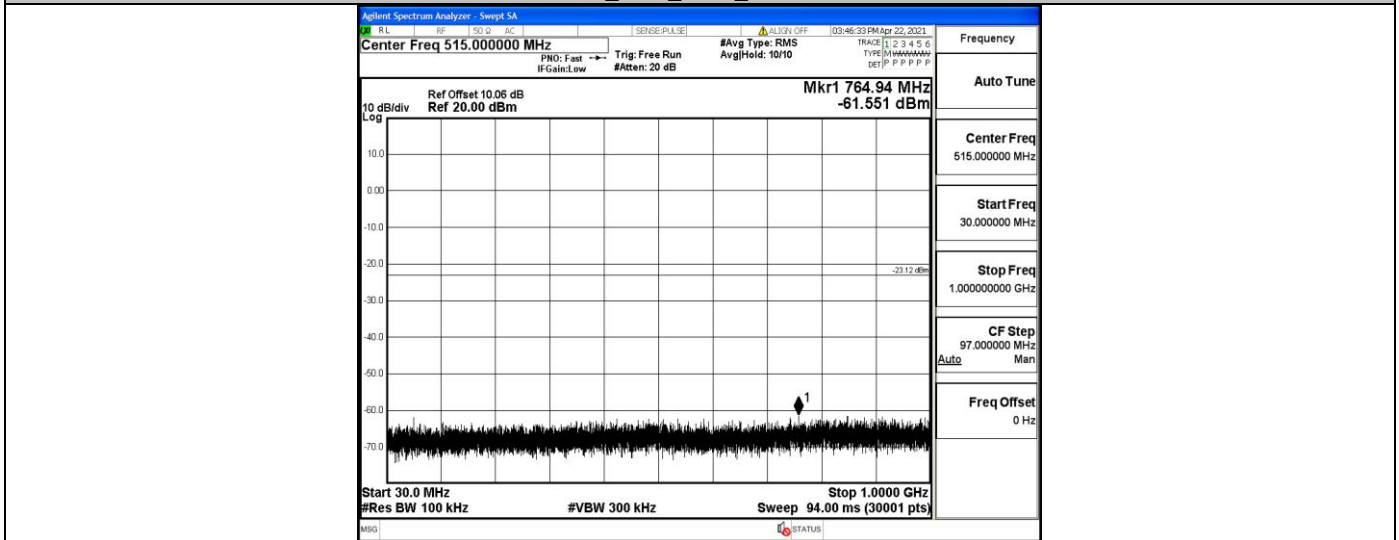
DH5\_Ant1\_2441\_1000~26500



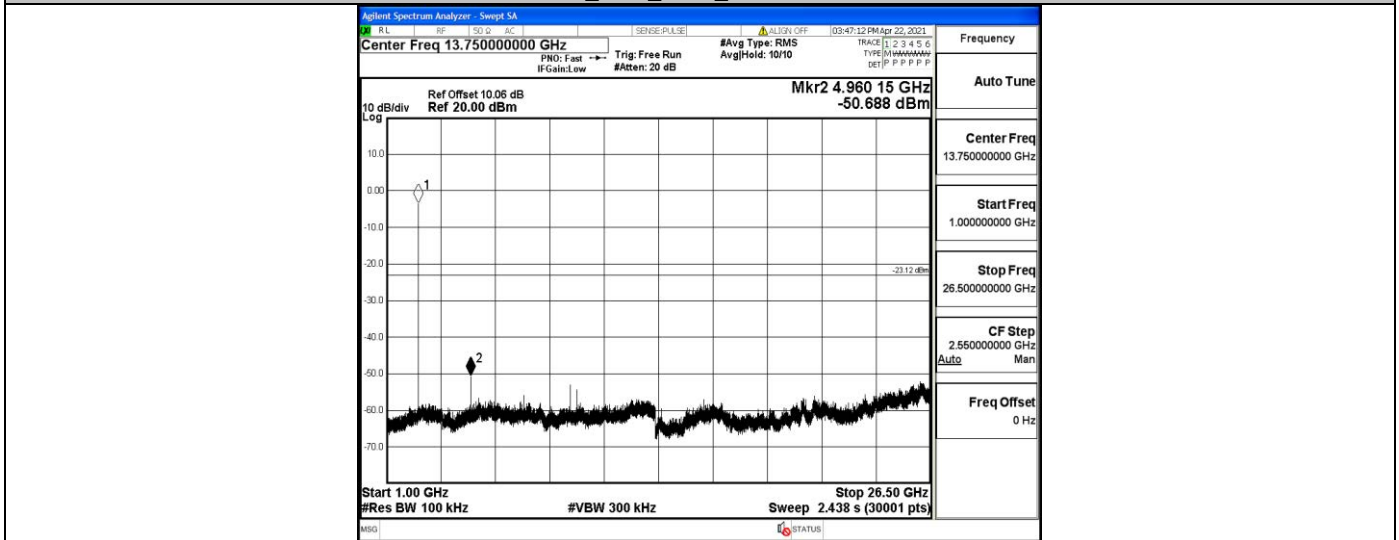
DH5\_Ant1\_2480\_0~Reference



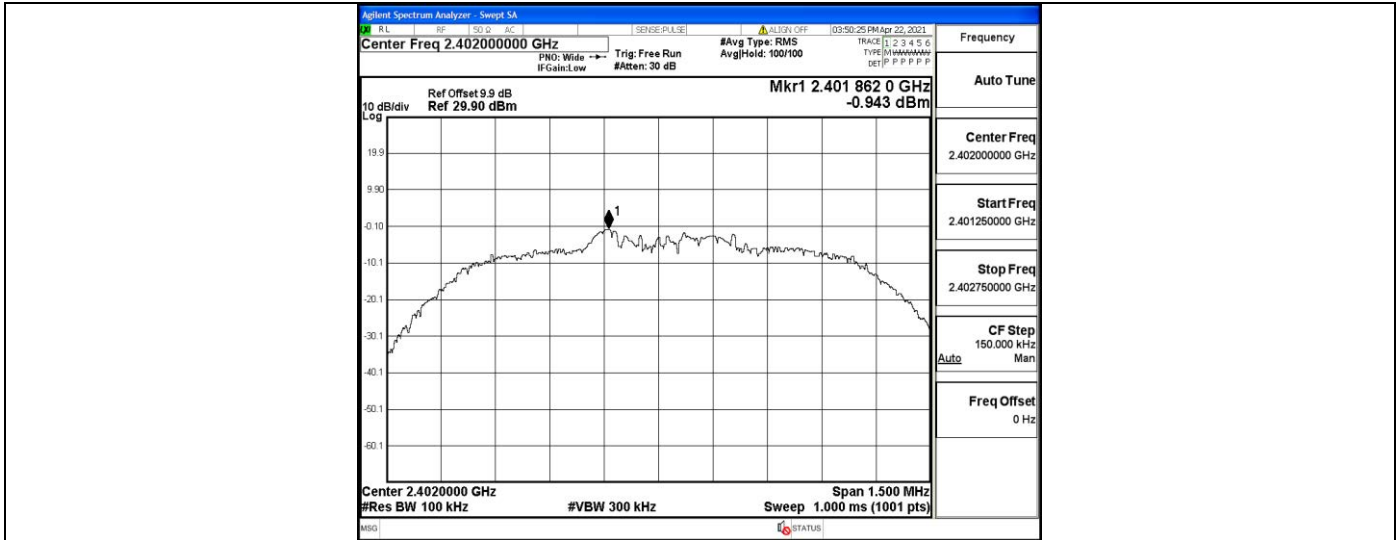
DH5\_Ant1\_2480\_30~1000



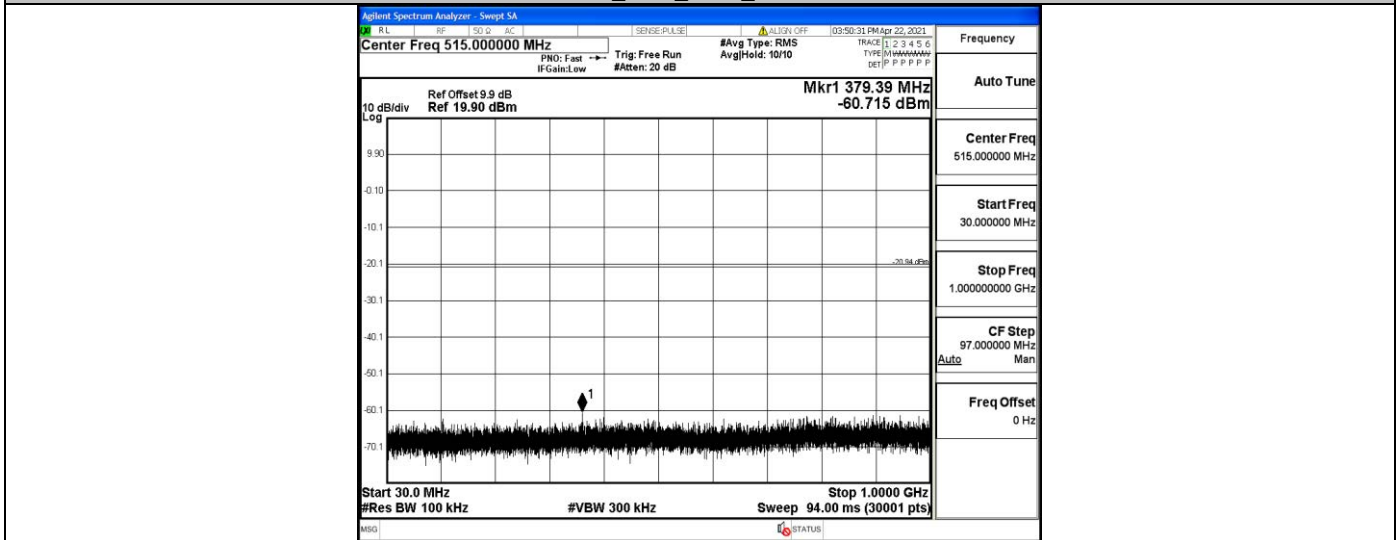
DH5\_Ant1\_2480\_1000~26500



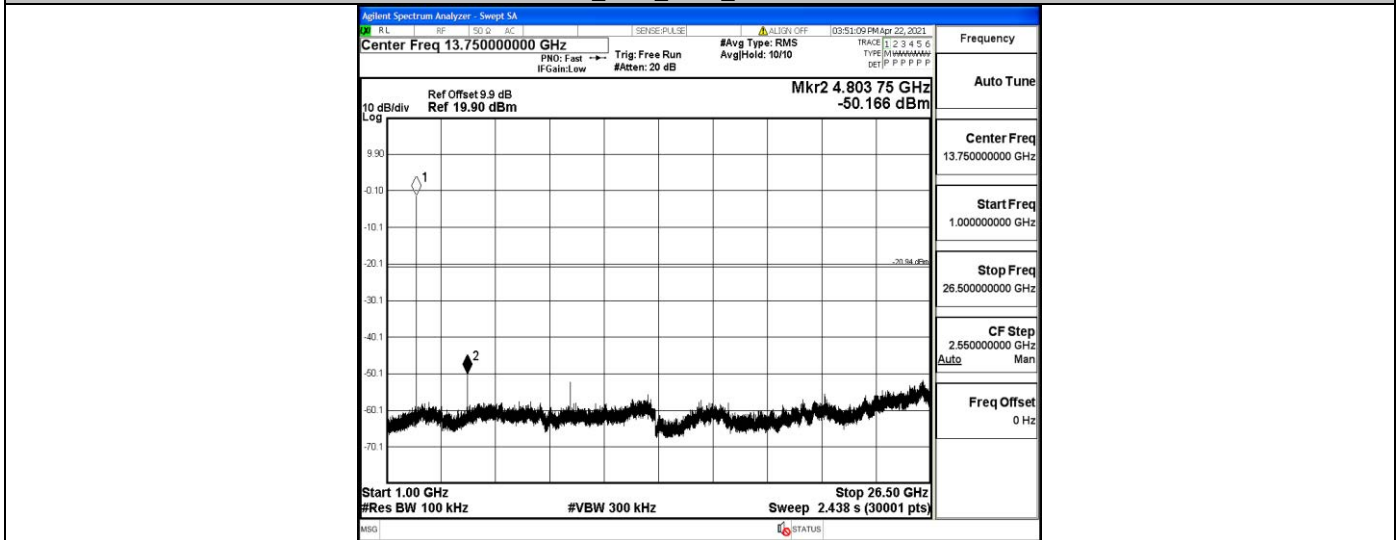
2DH5\_Ant1\_2402\_0~Reference



2DH5\_Ant1\_2402\_30~1000

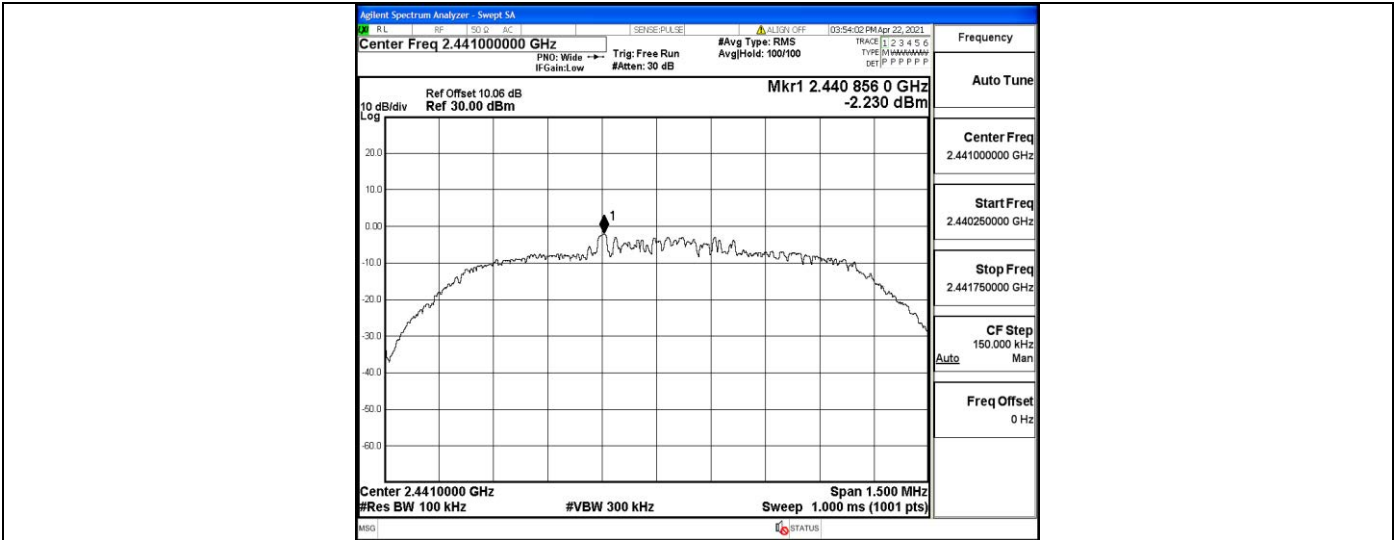


2DH5\_Ant1\_2402\_1000~26500

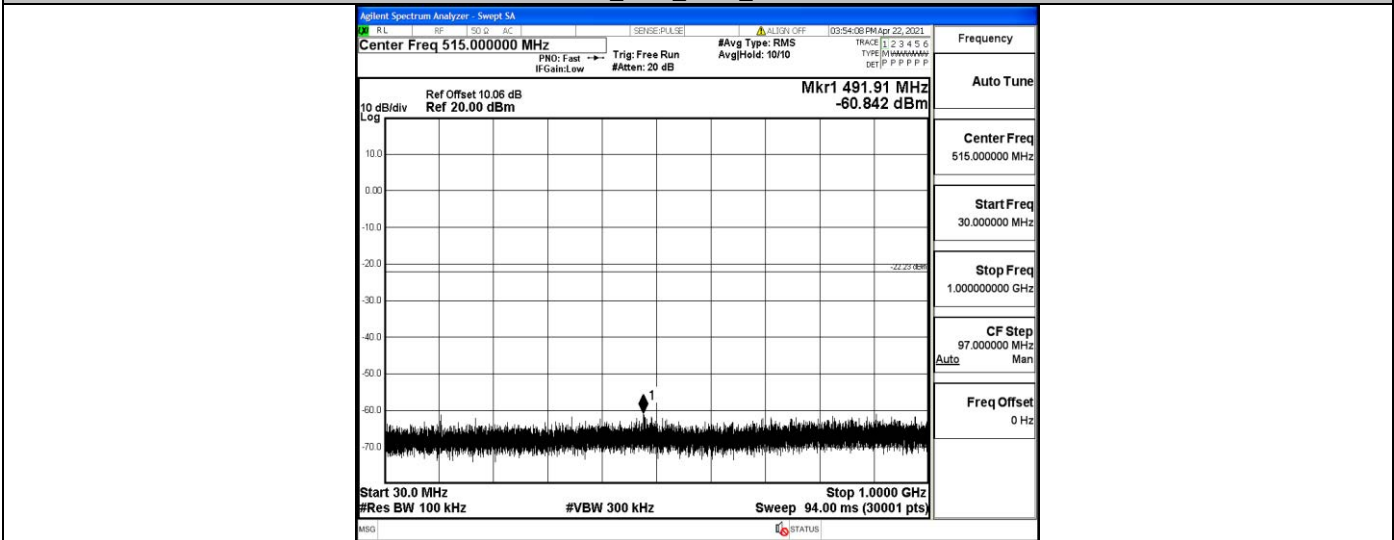


2DH5\_Ant1\_2441\_0~Reference

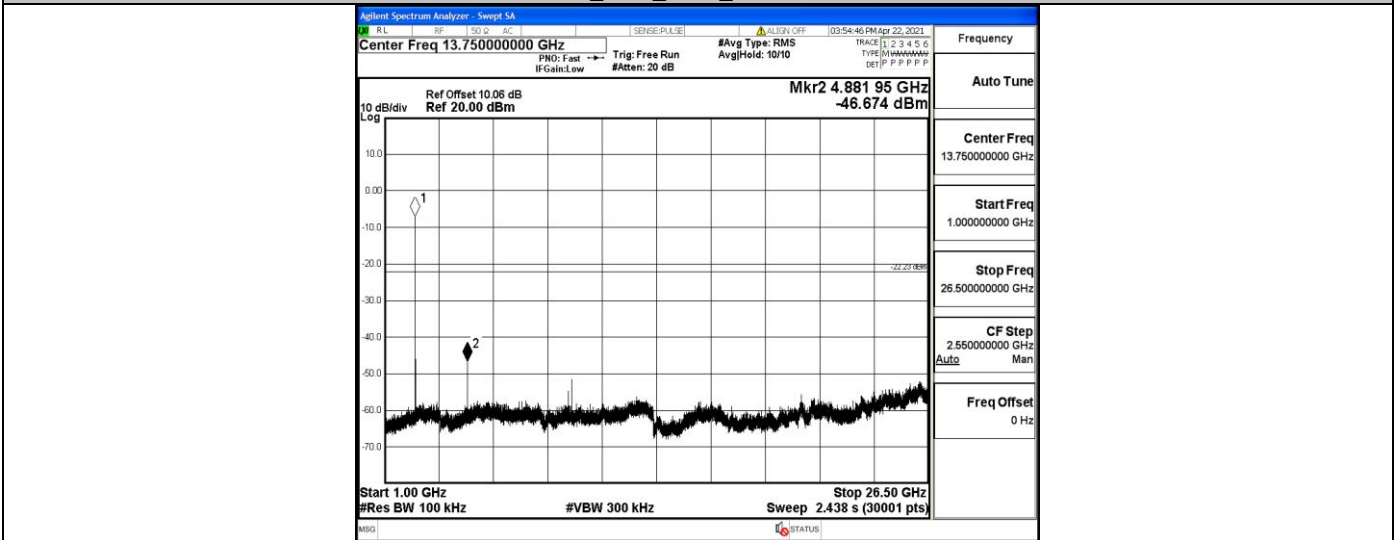




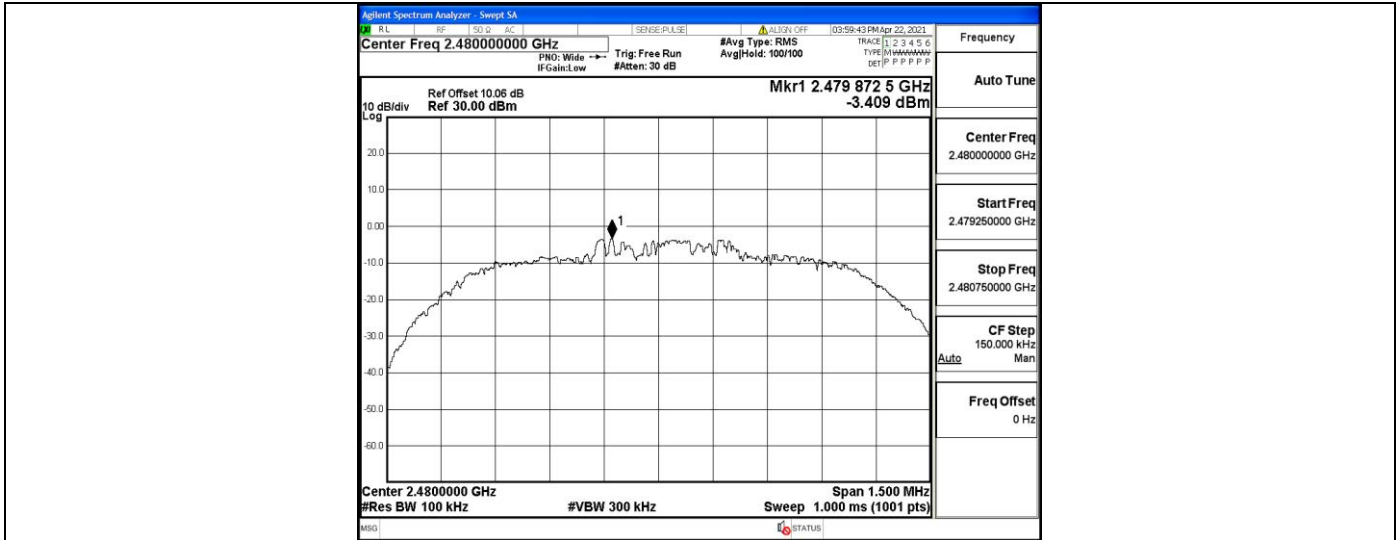
2DH5\_Ant1\_2441\_30~1000



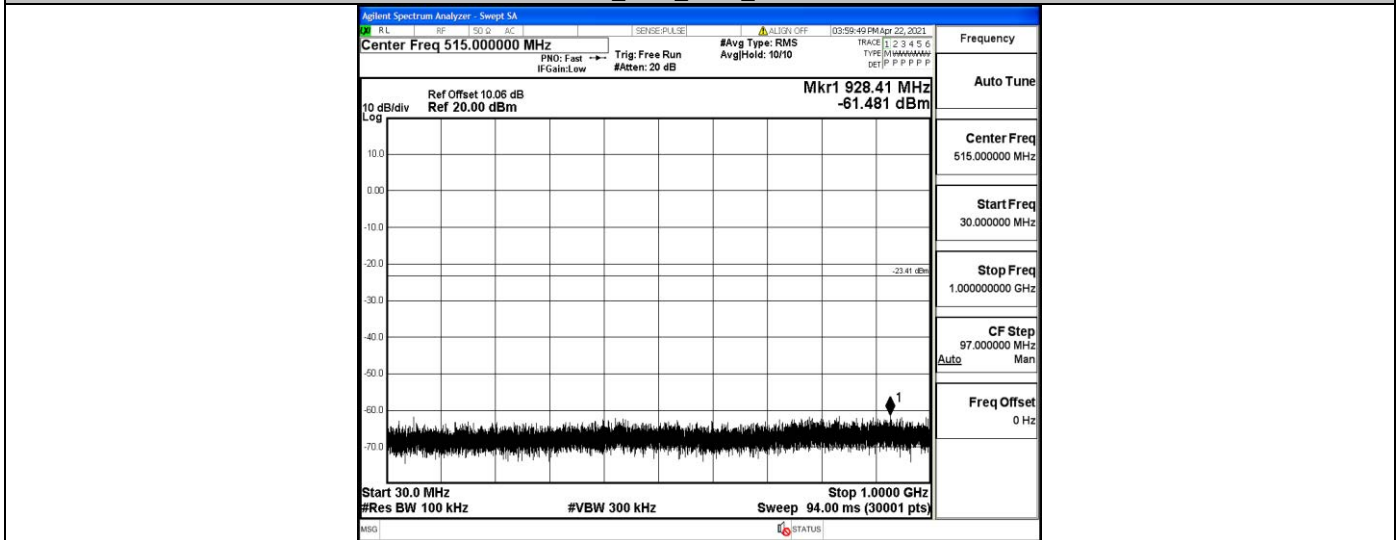
2DH5\_Ant1\_2441\_1000~26500



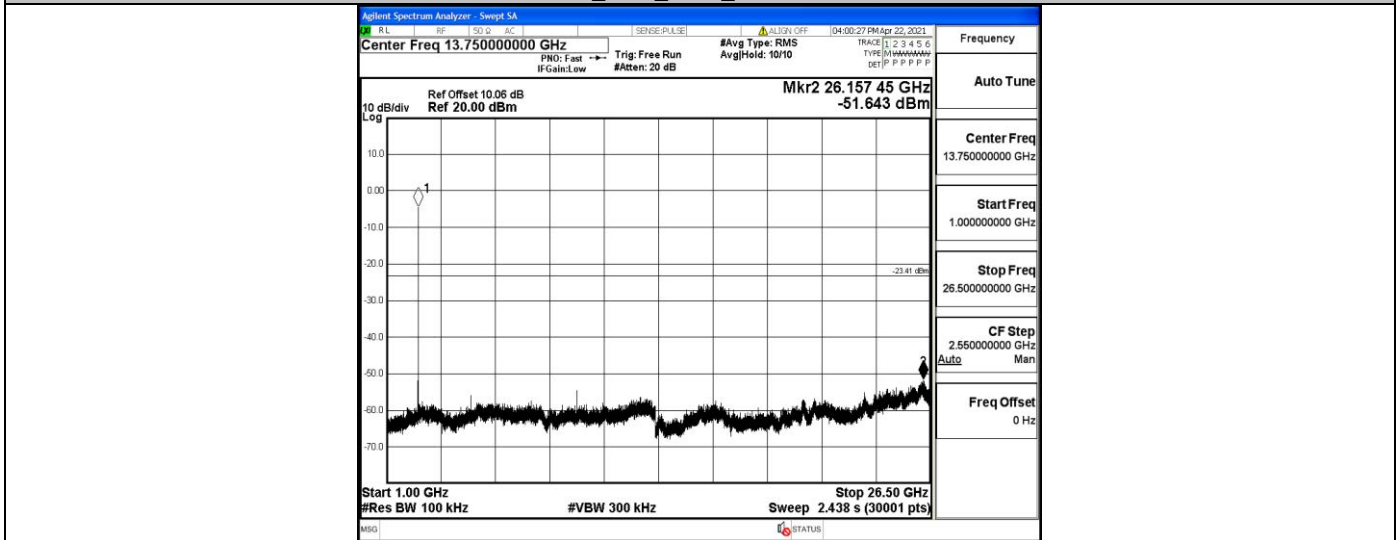
2DH5\_Ant1\_2480\_0~Reference



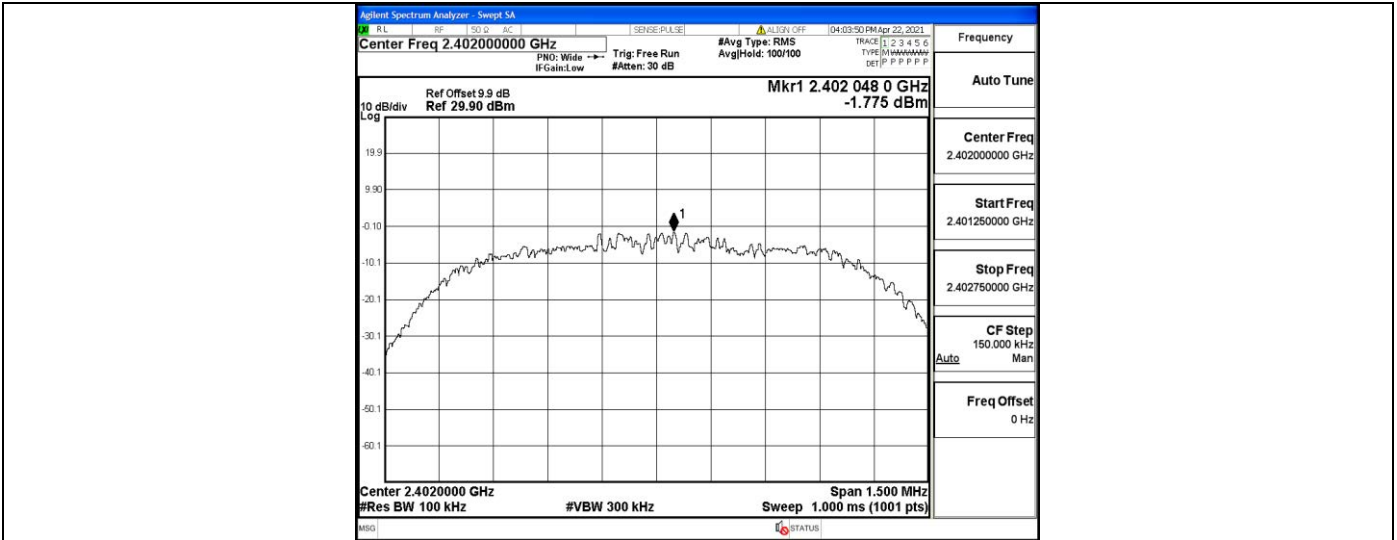
2DH5\_Ant1\_2480\_30~1000



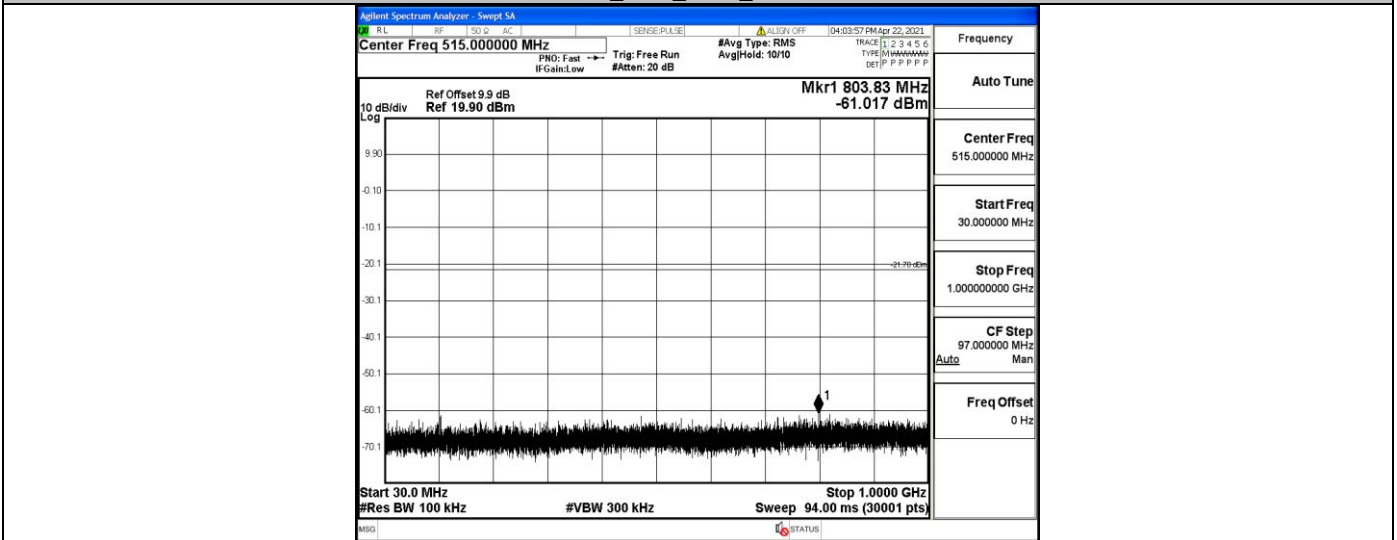
2DH5\_Ant1\_2480\_1000~26500



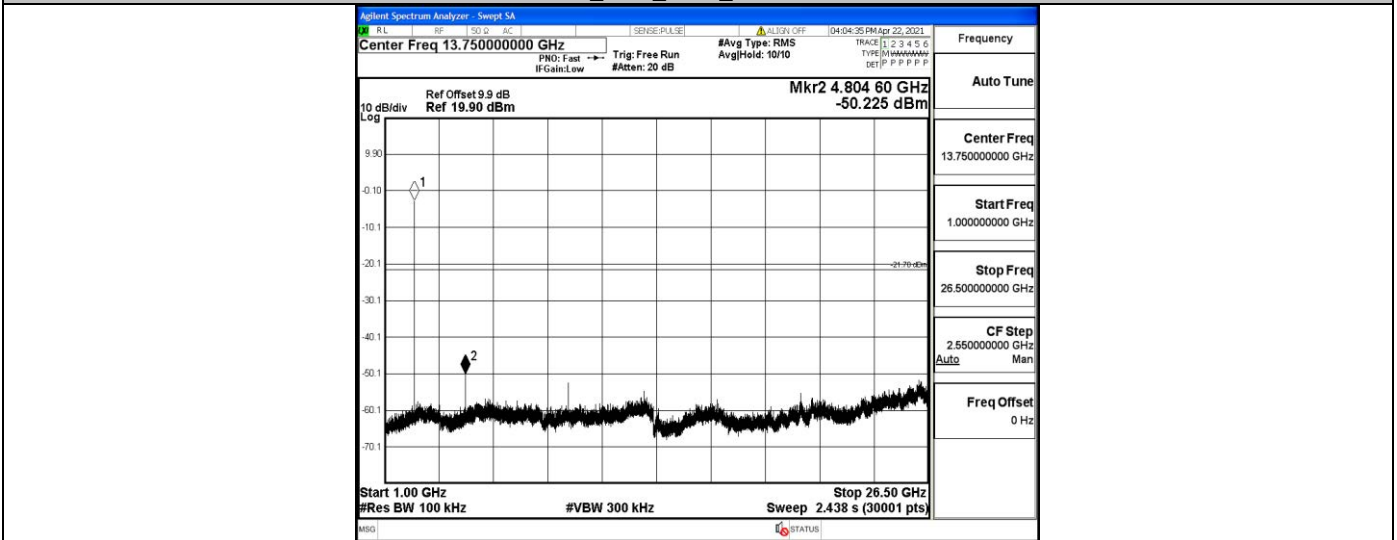
3DH5\_Ant1\_2402\_0~Reference



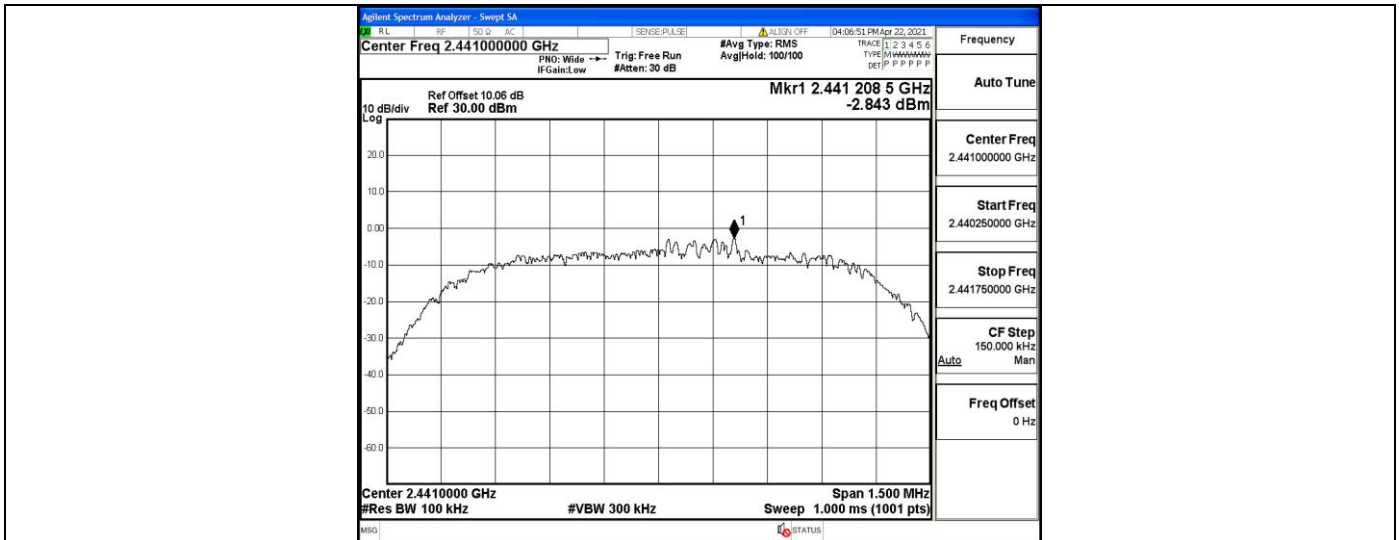
3DH5\_Ant1\_2402\_30~1000



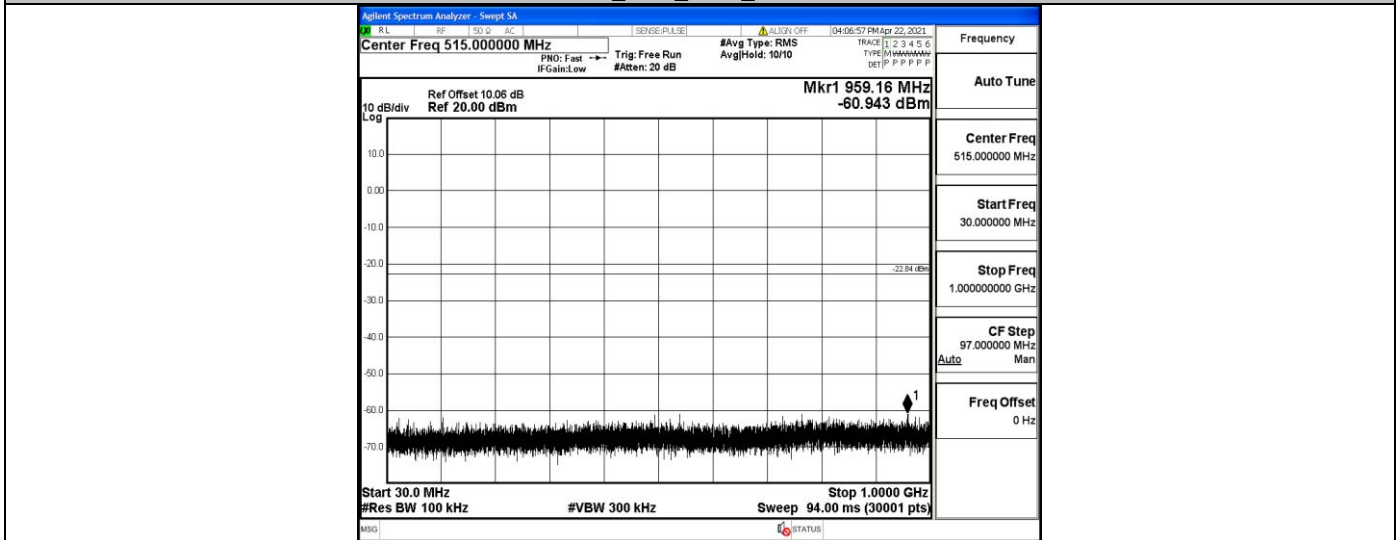
3DH5\_Ant1\_2402\_1000~26500



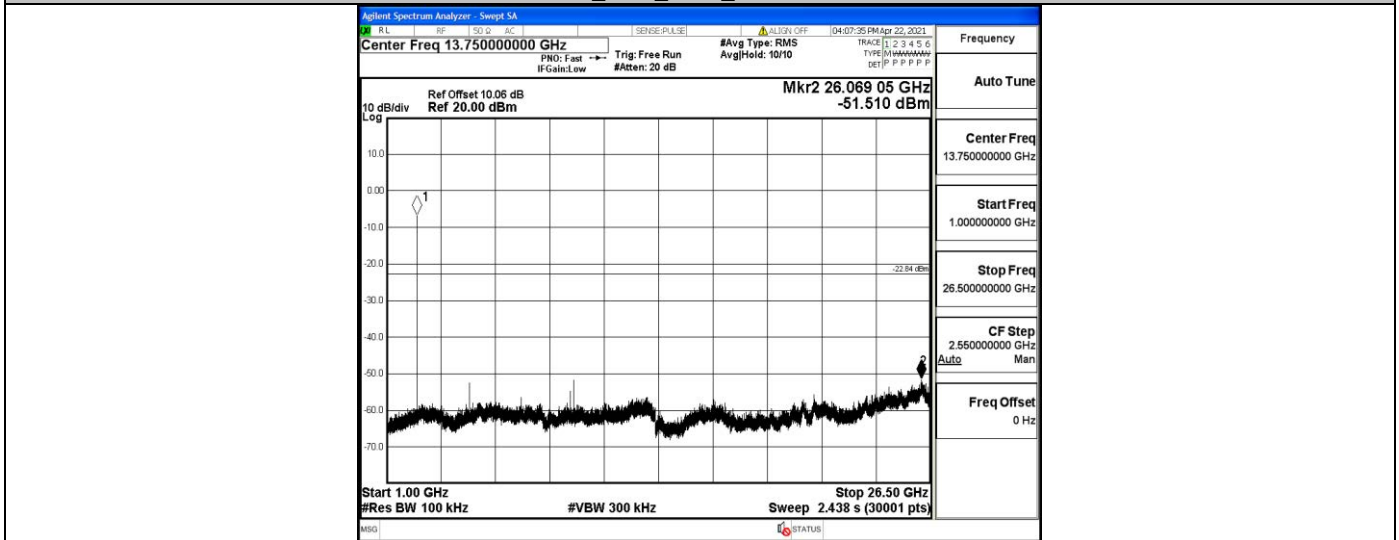
3DH5\_Ant1\_2441\_0~Reference



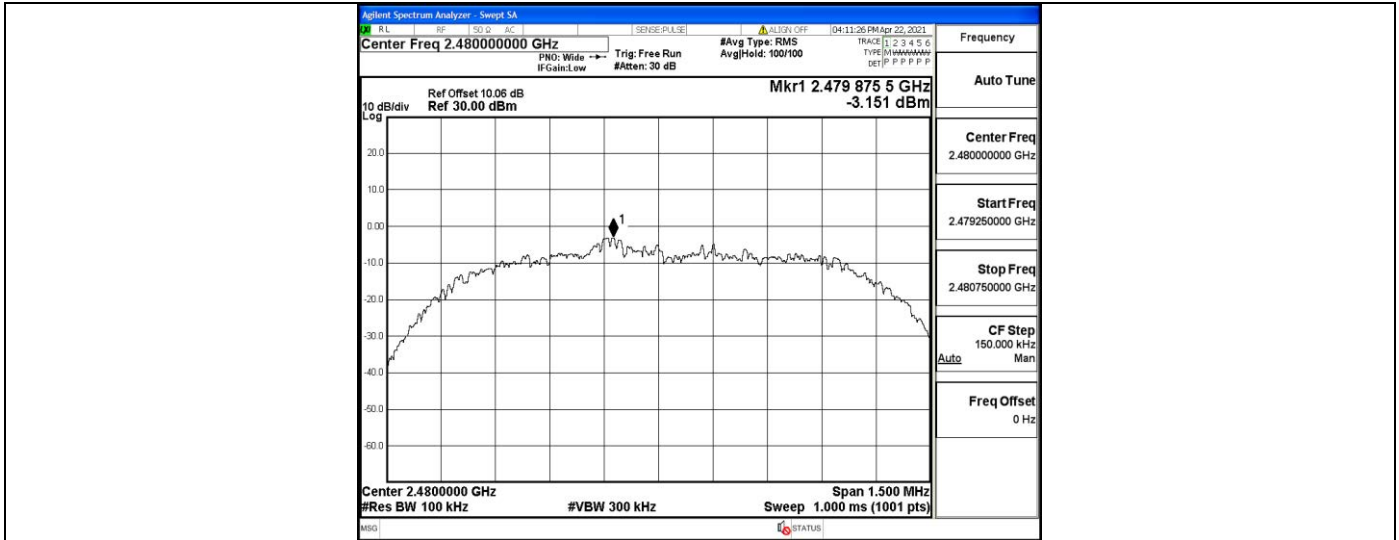
3DH5\_Ant1\_2441\_30~1000



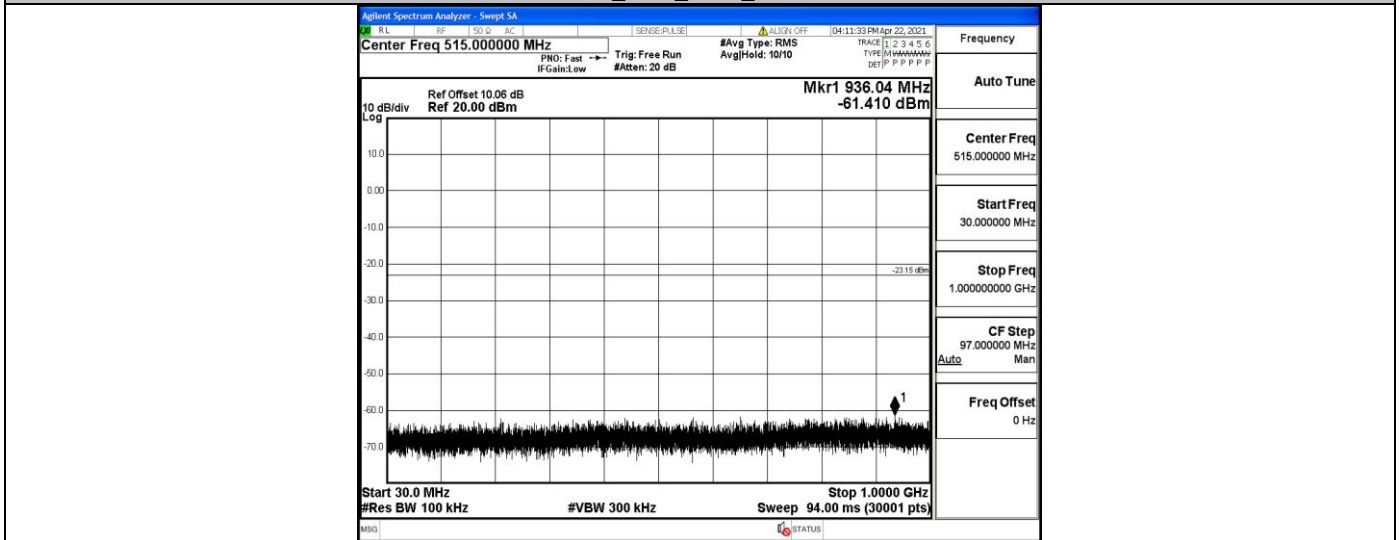
3DH5\_Ant1\_2441\_1000~26500



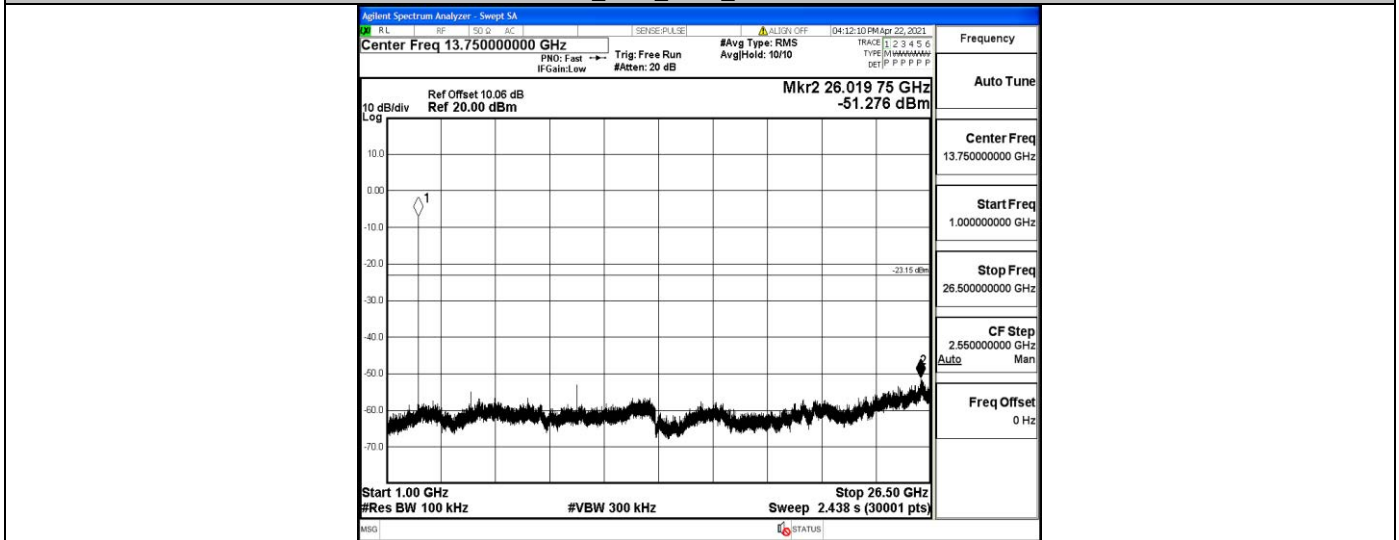
3DH5\_Ant1\_2480\_0~Reference



3DH5\_Ant1\_2480\_30~1000



3DH5\_Ant1\_2480\_1000~26500



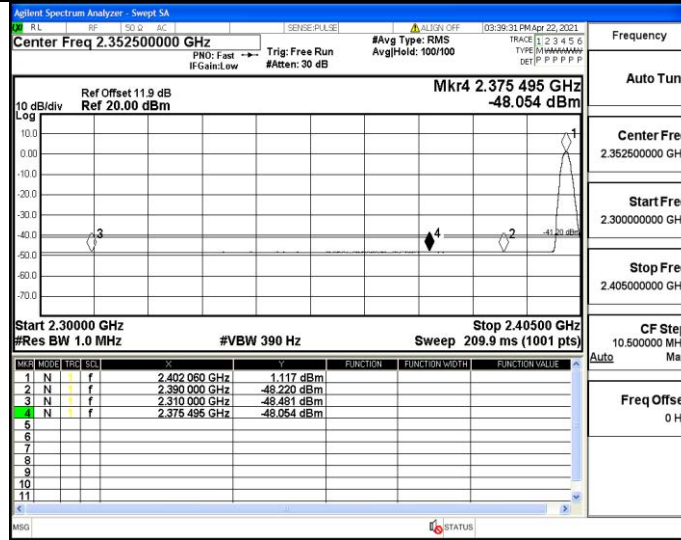
**A.8 Restrict-band band-edge measurements**

TestMode	Antenna	ChName	Channel	Detector	Freq	Result	Limit	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-48.48	<=-41.20	PASS
				AV	2375.495	-48.05	<=-41.20	PASS
				AV	2390.000	-48.22	<=-41.20	PASS
				Peak	2310.000	-41.73	<=-21.20	PASS
				Peak	2385.785	-38.3	<=-21.20	PASS
				Peak	2390.000	-40.43	<=-21.20	PASS
		High	2480	AV	2483.500	-47.45	<=-41.20	PASS
				AV	2497.120	-47.34	<=-41.20	PASS
				AV	2500.000	-47.42	<=-41.20	PASS
				Peak	2483.500	-40.07	<=-21.20	PASS
				Peak	2495.120	-38.19	<=-21.20	PASS
				Peak	2500.000	-40.49	<=-21.20	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-48.4	<=-41.20	PASS
				AV	2389.040	-48.06	<=-41.20	PASS
				AV	2390.000	-48.2	<=-41.20	PASS
				Peak	2310.000	-40.82	<=-21.20	PASS
				Peak	2335.490	-37.72	<=-21.20	PASS
				Peak	2390.000	-41.46	<=-21.20	PASS
		High	2480	AV	2483.500	-47.53	<=-41.20	PASS
				AV	2496.320	-47.3	<=-41.20	PASS
				AV	2500.000	-47.46	<=-41.20	PASS
				Peak	2483.500	-40.52	<=-21.20	PASS
				Peak	2491.760	-37.18	<=-21.20	PASS
				Peak	2500.000	-40.2	<=-21.20	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-48.45	<=-41.20	PASS
				AV	2380.115	-48.05	<=-41.20	PASS
				AV	2390.000	-48.21	<=-41.20	PASS
				Peak	2310.000	-42.68	<=-21.20	PASS
				Peak	2378.645	-38.11	<=-21.20	PASS
				Peak	2390.000	-41.09	<=-21.20	PASS
		High	2480	AV	2483.500	-47.62	<=-41.20	PASS
				AV	2496.560	-47.33	<=-41.20	PASS
				AV	2500.000	-47.48	<=-41.20	PASS
				Peak	2483.500	-38.23	<=-21.20	PASS
				Peak	2494.640	-37.72	<=-21.20	PASS
				Peak	2500.000	-41.44	<=-21.20	PASS

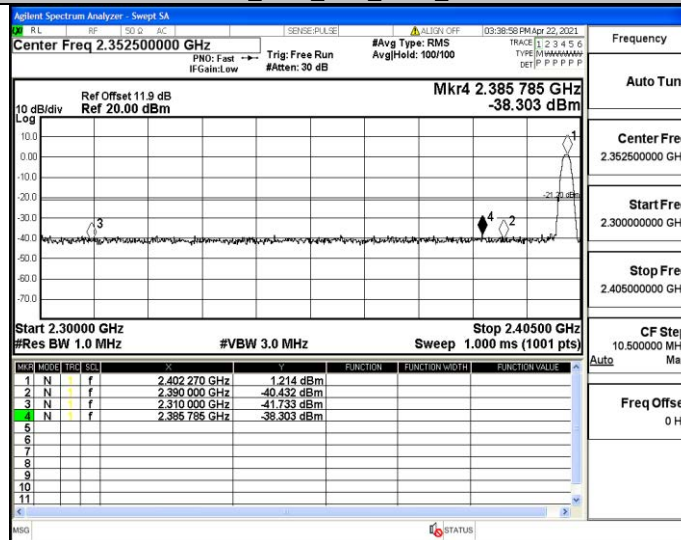
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

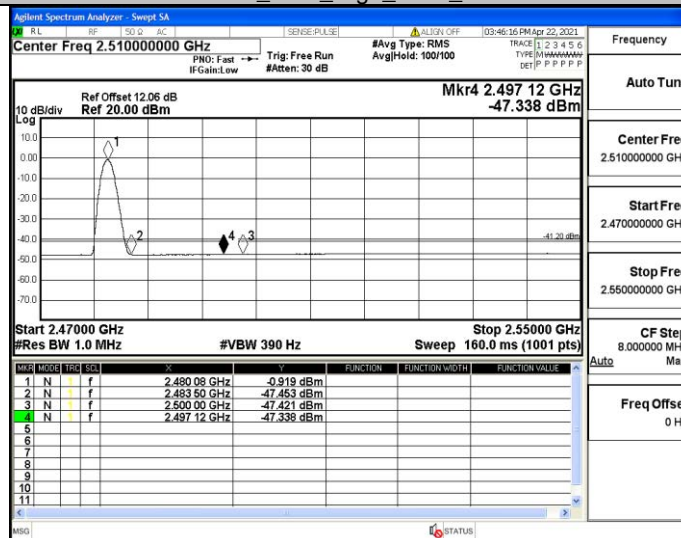
DH5\_Ant1\_Low\_2402\_AV



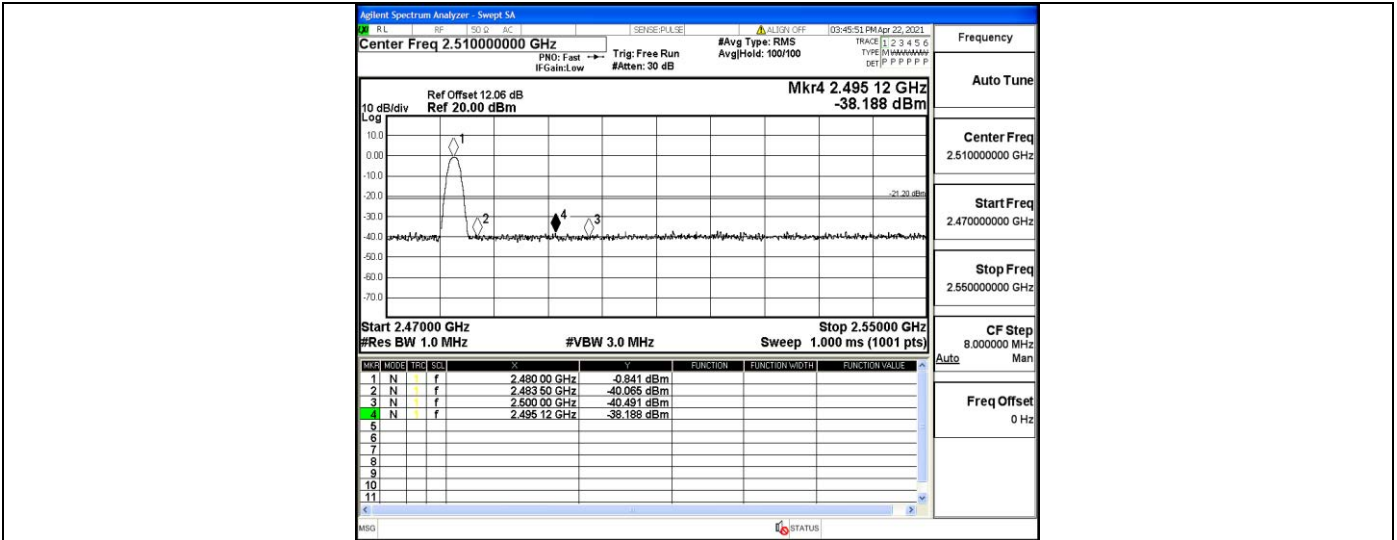
DH5\_Ant1\_Low\_2402\_Peak



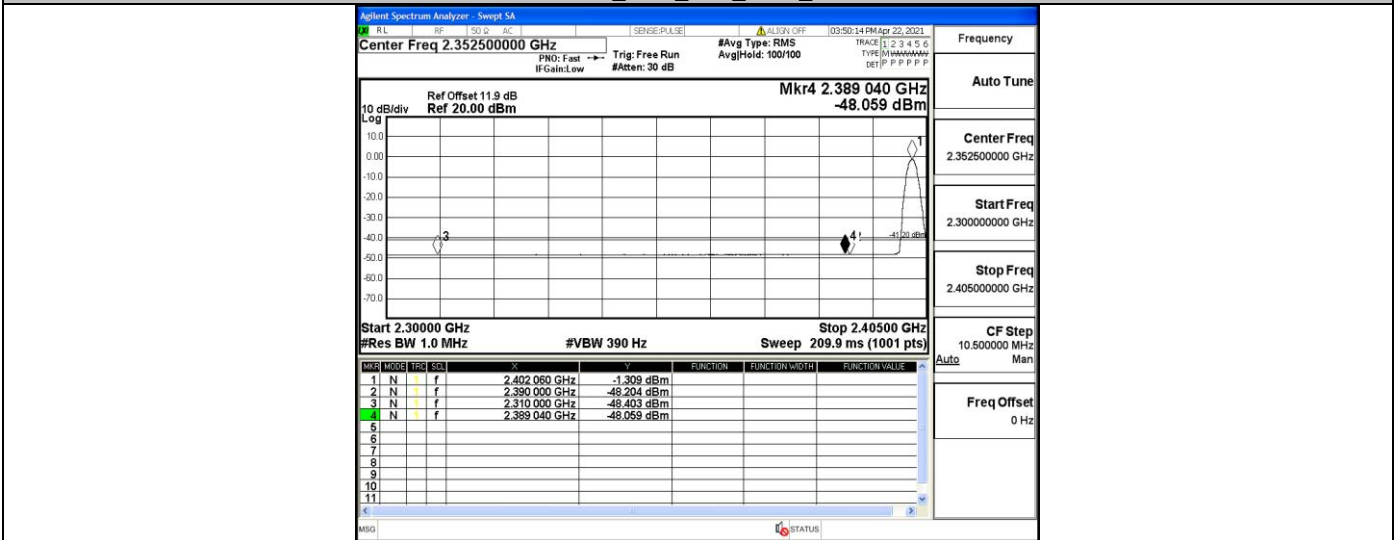
DH5\_Ant1\_High\_2480\_AV



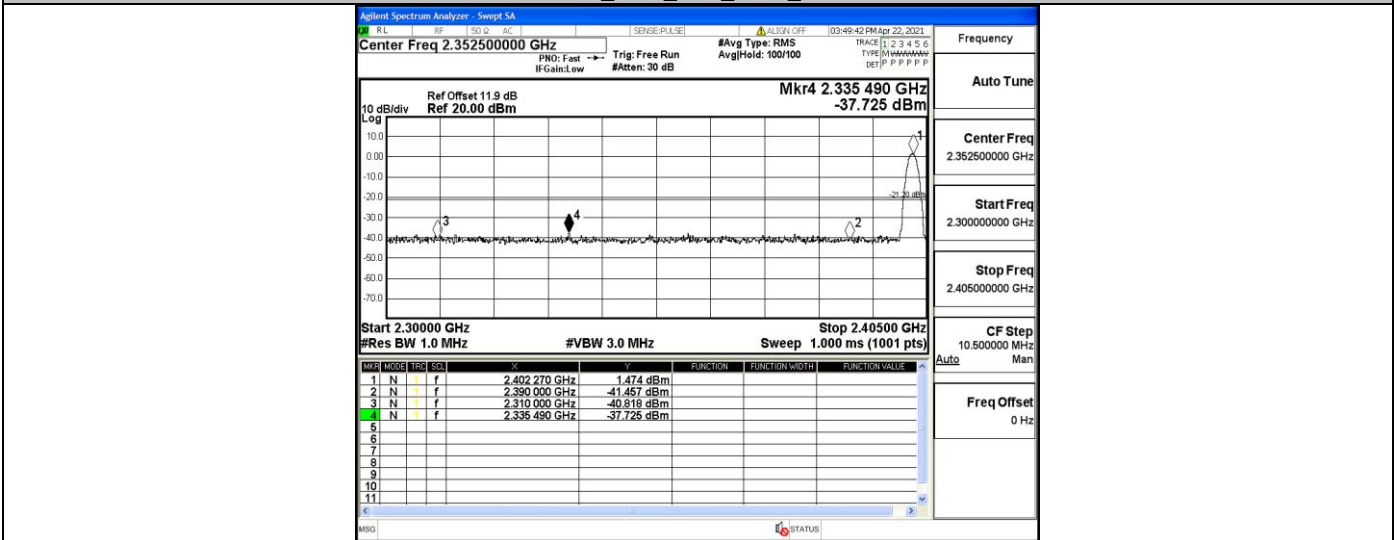
DH5\_Ant1\_High\_2480\_Peak



2DH5\_Ant1\_Low\_2402\_AV

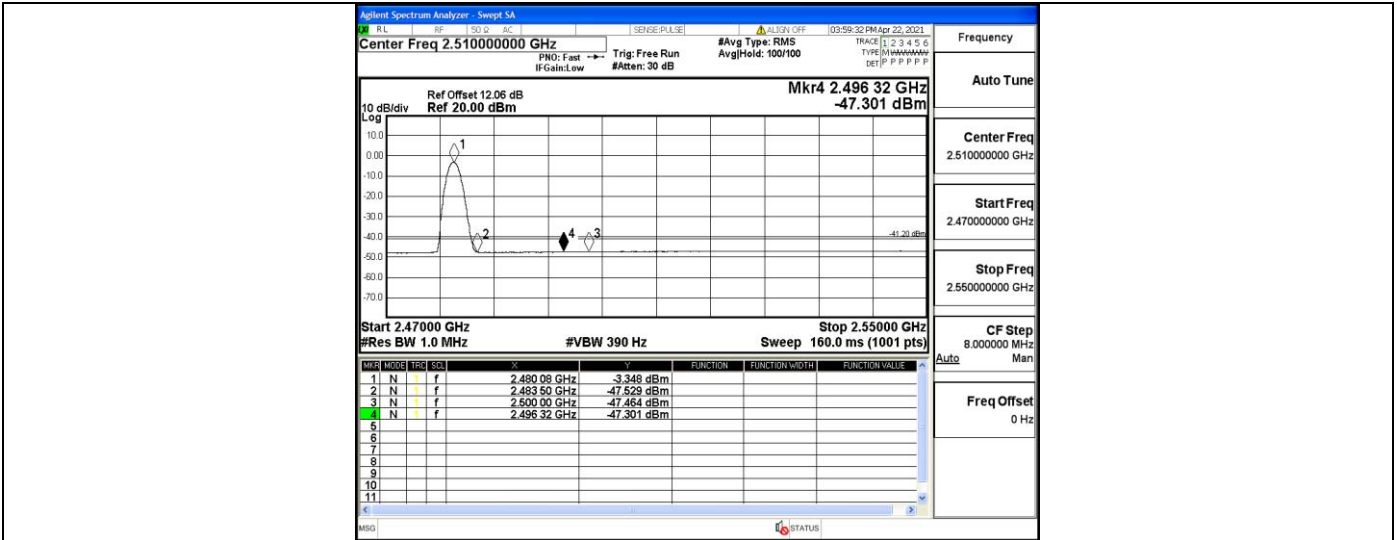


2DH5\_Ant1\_Low\_2402\_Peak

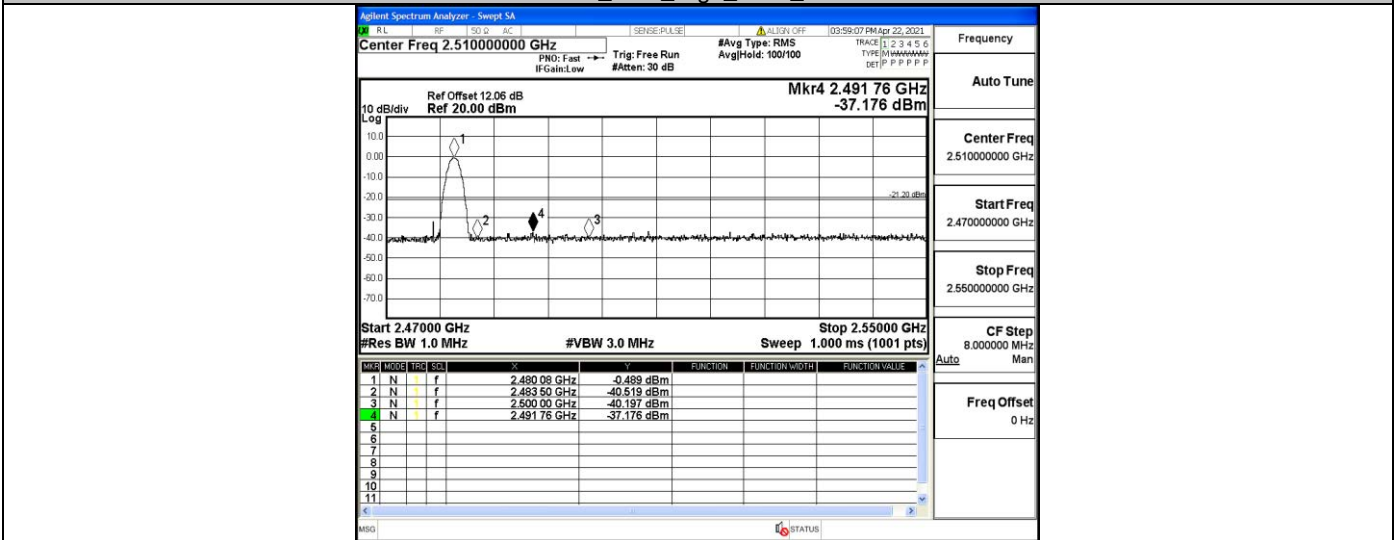


2DH5\_Ant1\_High\_2480\_AV

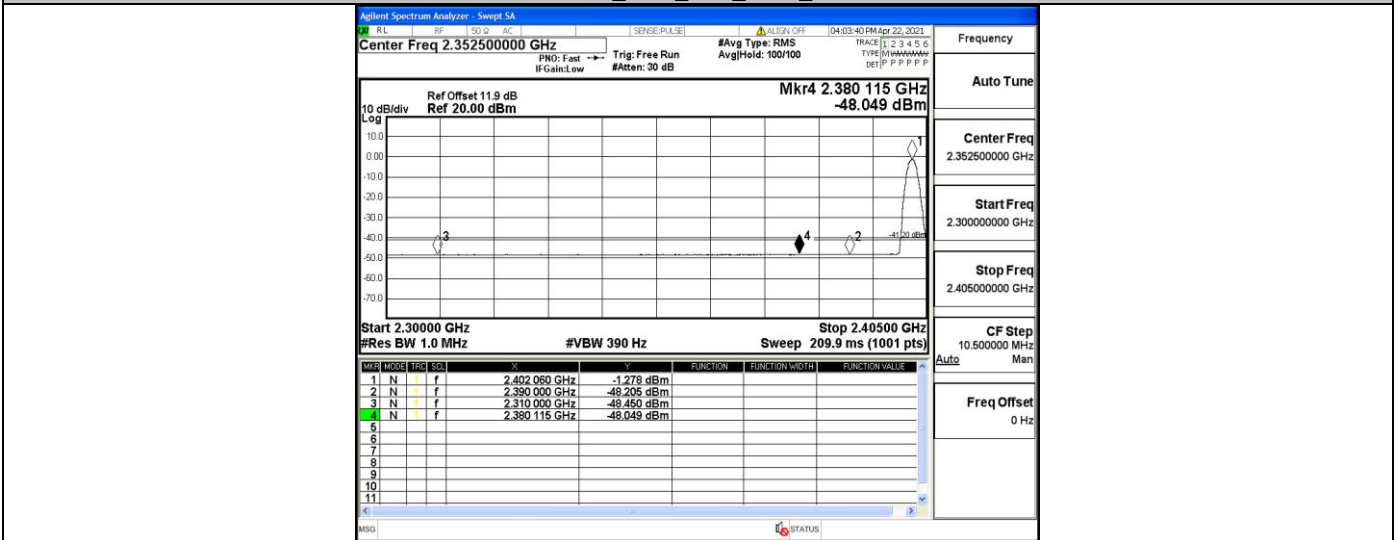




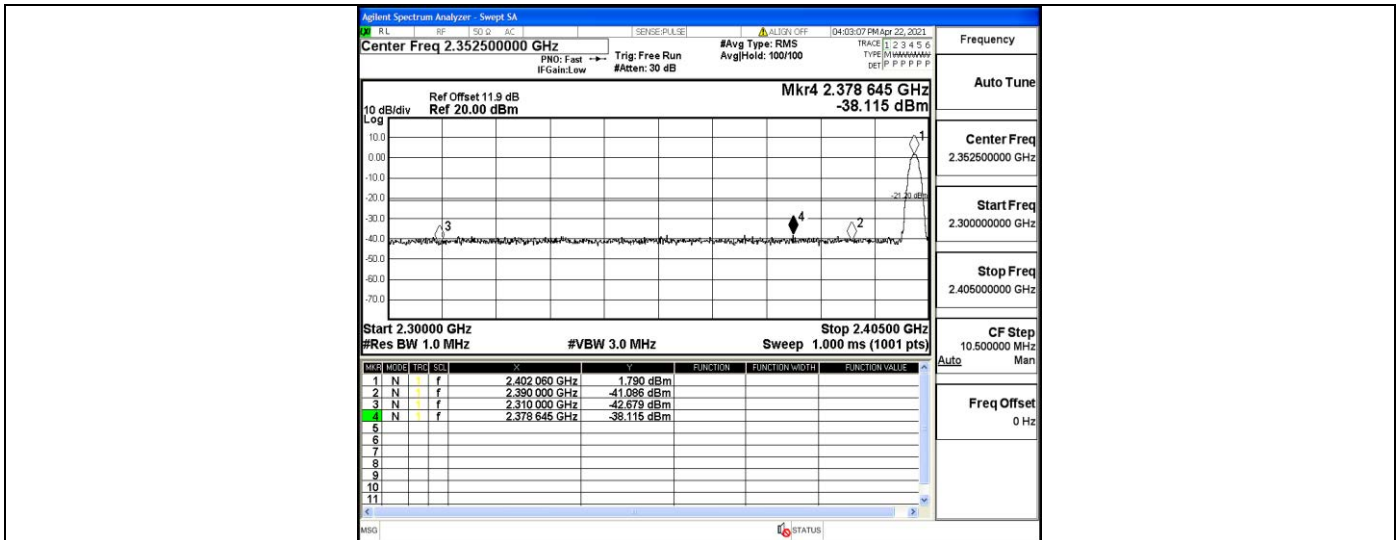
2DH5\_Ant1\_High\_2480\_Peak



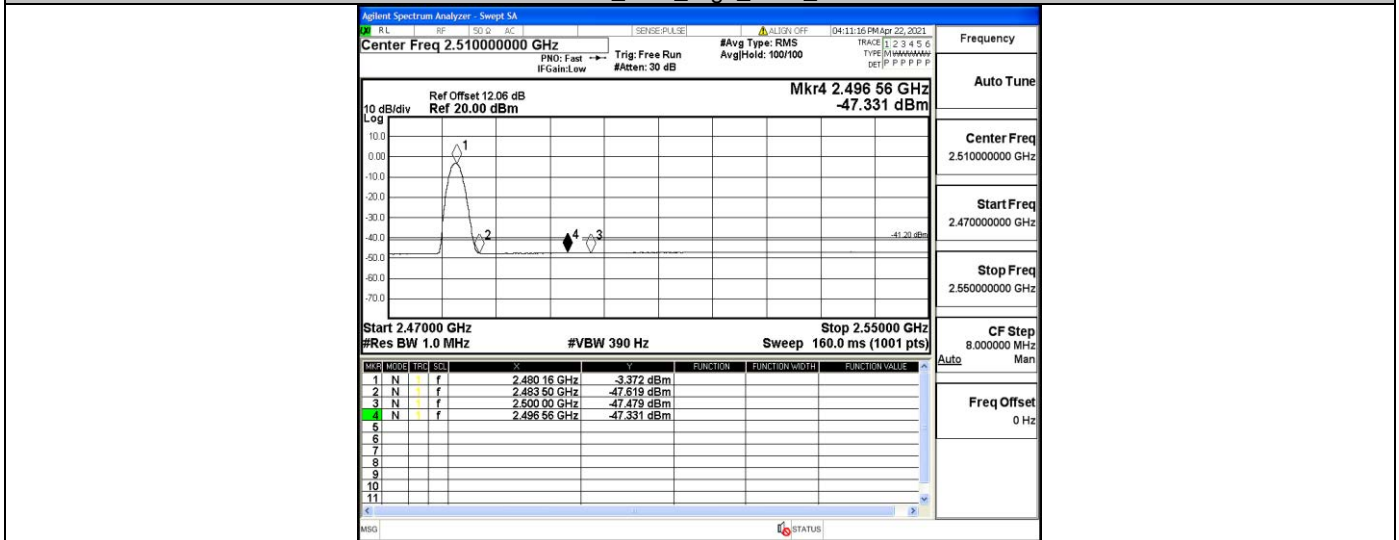
3DH5\_Ant1\_Low\_2402\_AV



3DH5\_Ant1\_Low\_2402\_Peak



3DH5\_Ant1\_High\_2480\_AV



3DH5\_Ant1\_High\_2480\_Peak

