

## Appendix A

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

Product Name: Bluetooth Headphones

Trade Mark: Altec Lansing

Test Model: MZX301N

FCC ID: 2AL9B-MZX301N

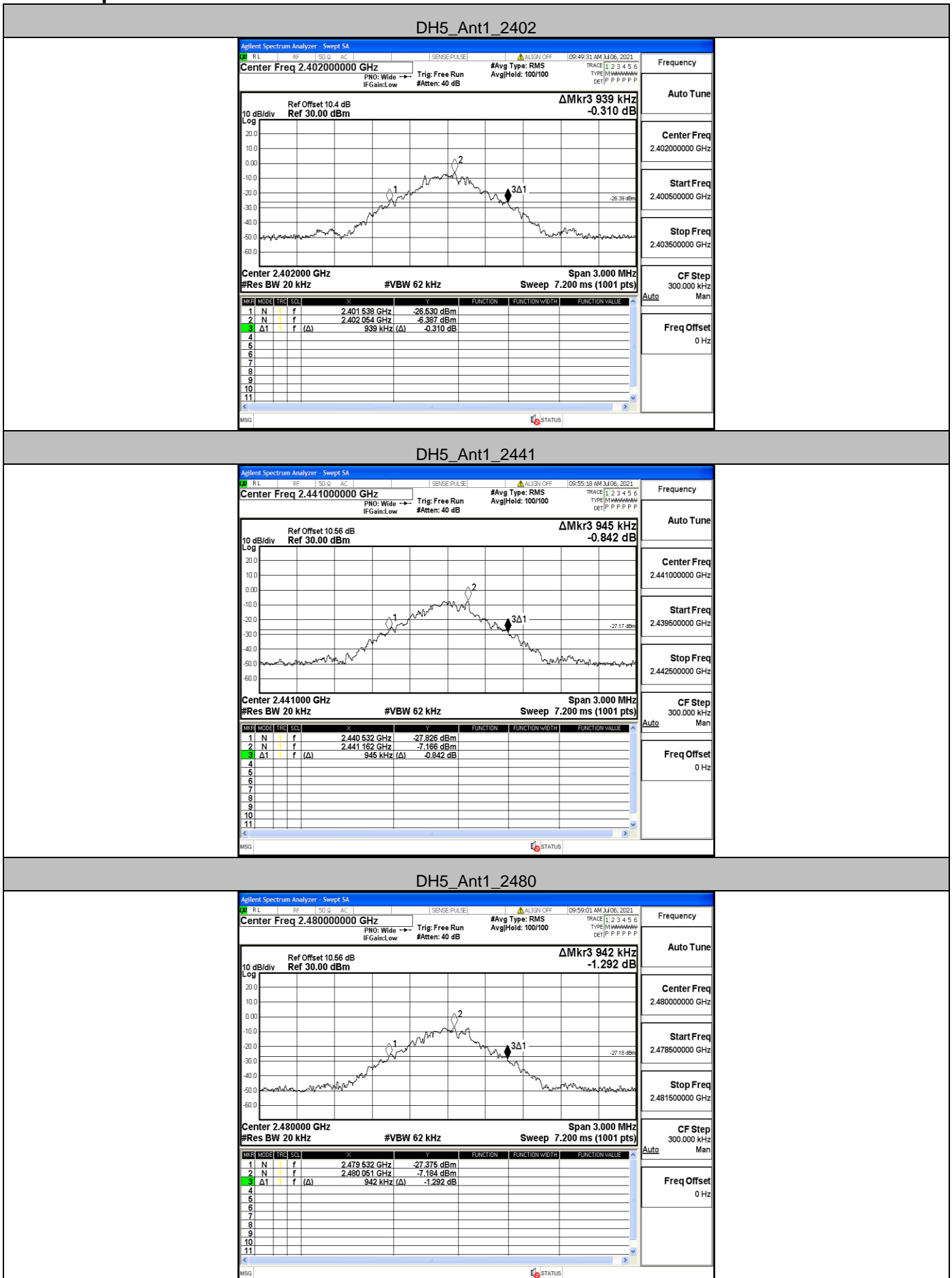
### Environmental Conditions

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

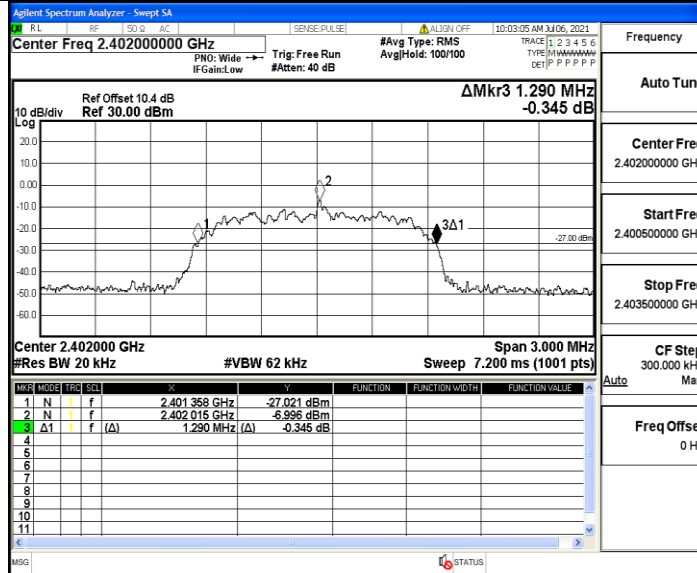
#### A.1 20 dB Bandwidth

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.939	2401.538	2402.477	---	PASS
		2441	0.945	2440.532	2441.477	---	PASS
		2480	0.942	2479.532	2480.474	---	PASS
2DH5	Ant1	2402	1.290	2401.358	2402.648	---	PASS
		2441	1.311	2440.337	2441.648	---	PASS
		2480	1.323	2479.328	2480.651	---	PASS
3DH5	Ant1	2402	1.275	2401.346	2402.621	---	PASS
		2441	1.332	2440.322	2441.654	---	PASS
		2480	1.296	2479.340	2480.636	---	PASS

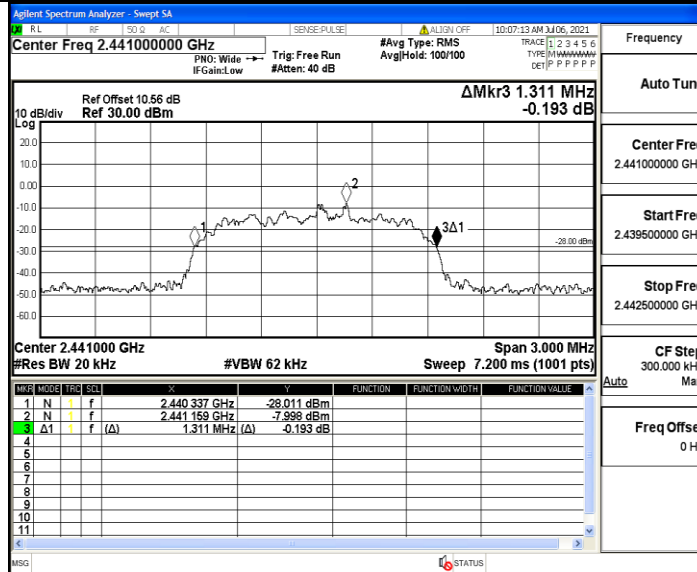
Test Graph



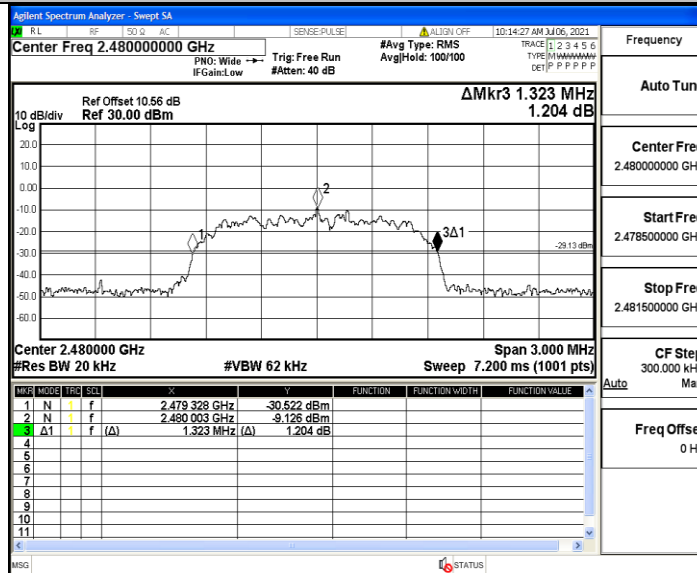
2DH5\_Ant1\_2402



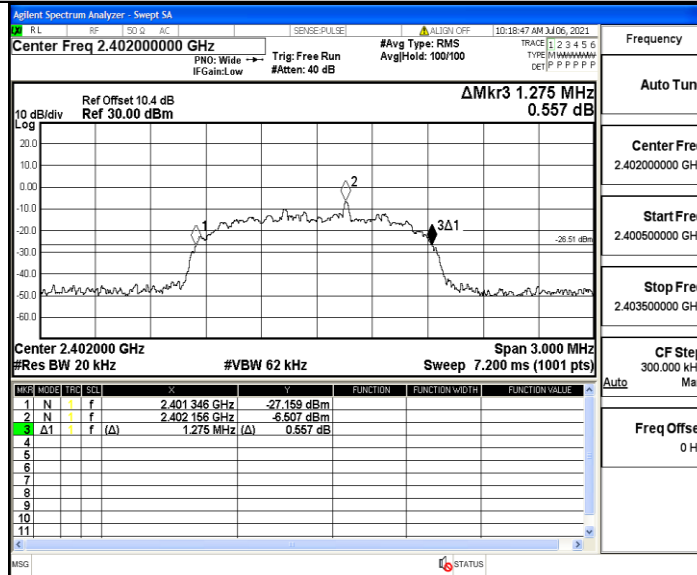
2DH5\_Ant1\_2441



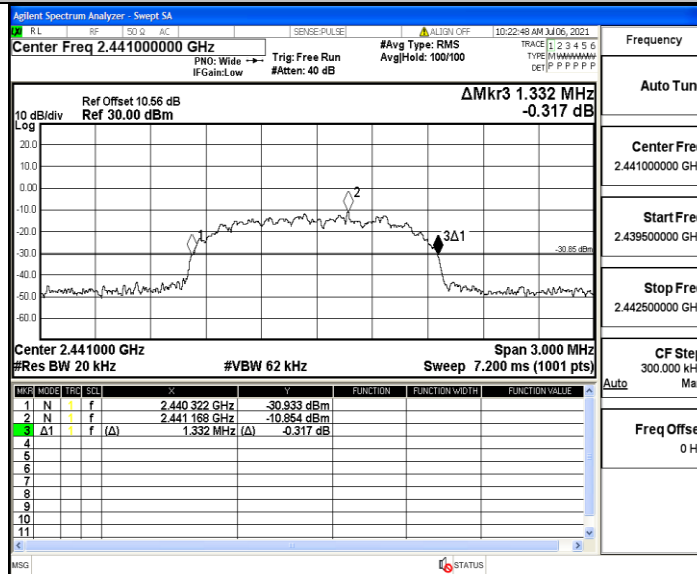
2DH5\_Ant1\_2480



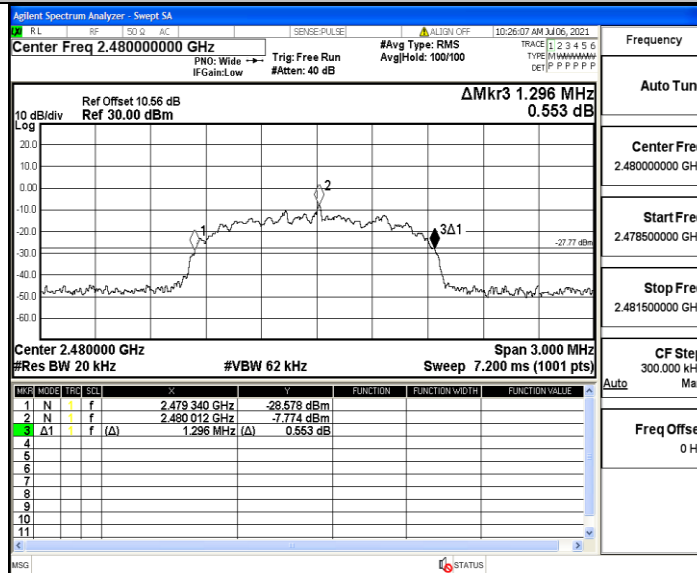
3DH5\_Ant1\_2402



3DH5\_Ant1\_2441



3DH5\_Ant1\_2480

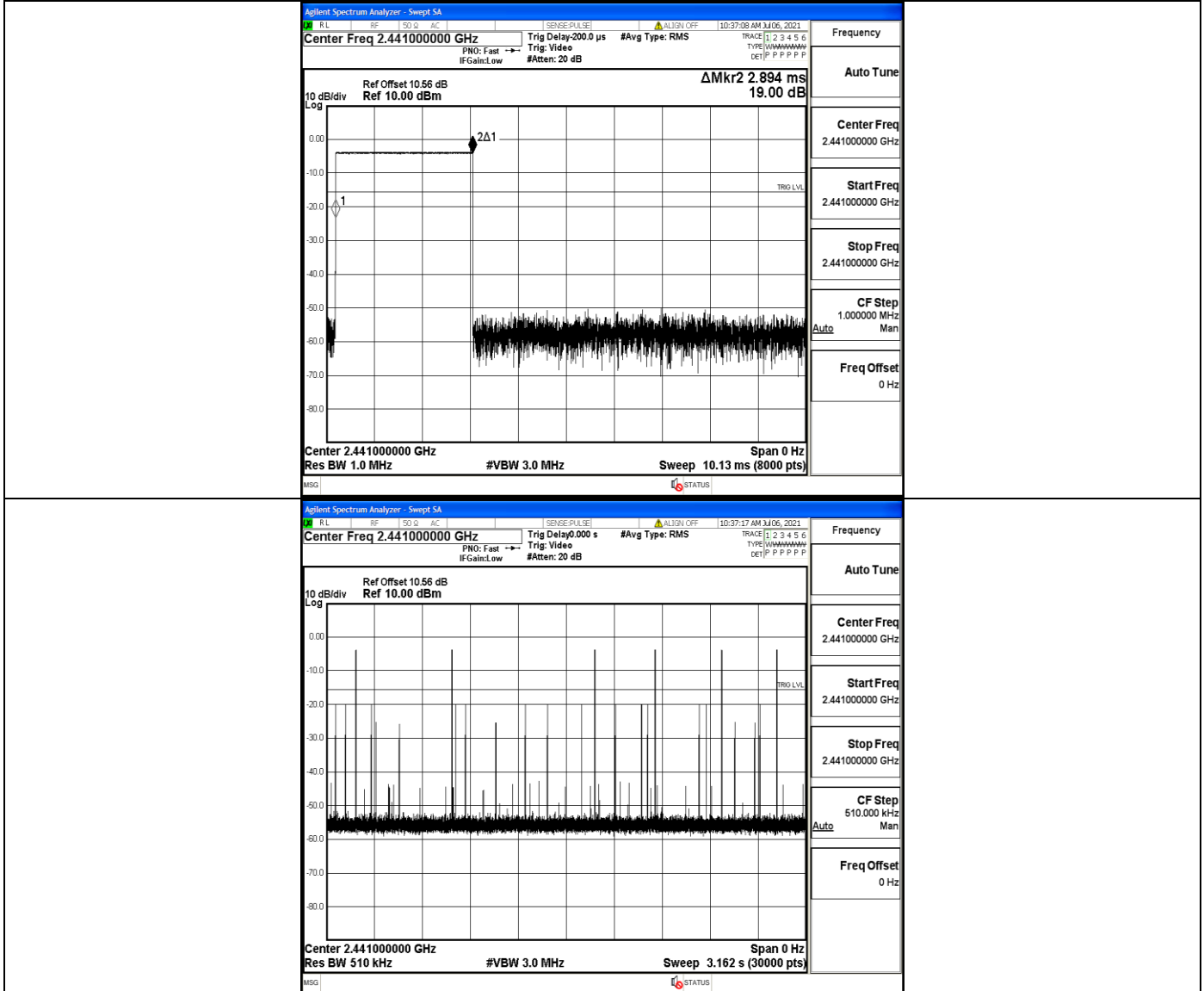


**A.2 Dwell Time**

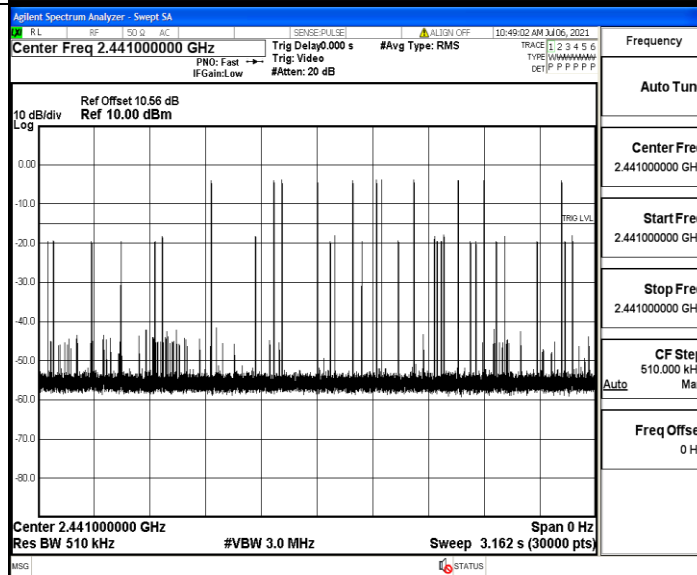
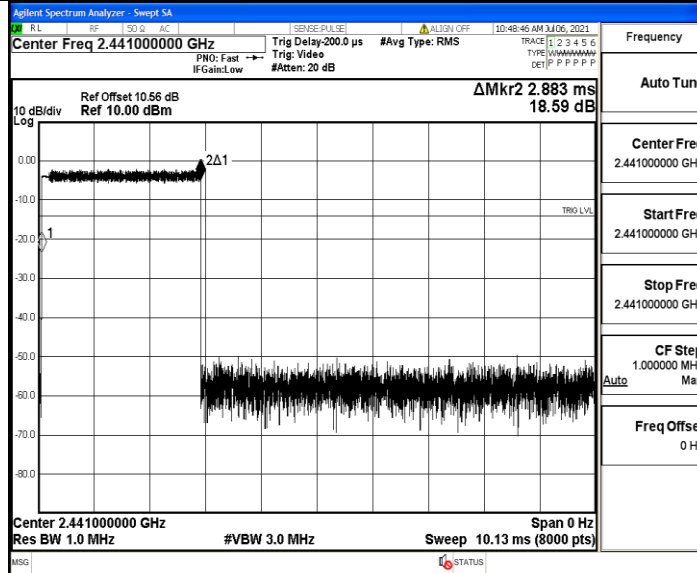
TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.89	70	0.203	<=0.4	PASS
2DH5	Ant1	Hop	2.88	120	0.346	<=0.4	PASS
3DH5	Ant1	Hop	2.88	100	0.288	<=0.4	PASS

### Test Graph

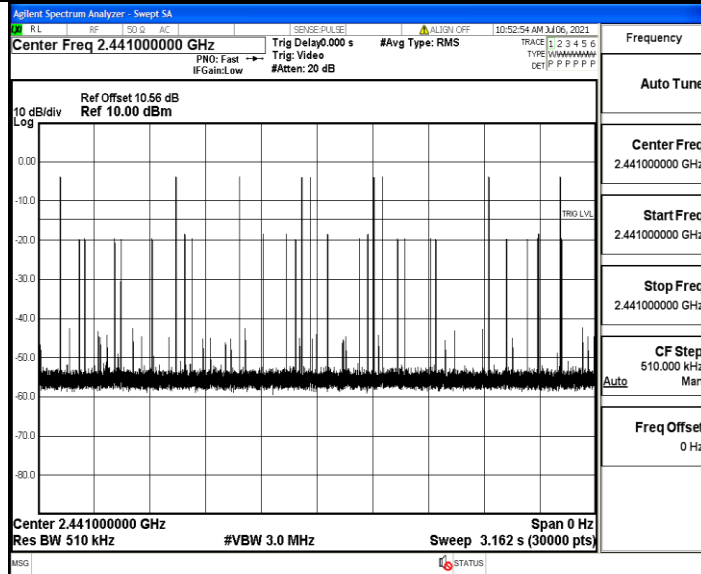
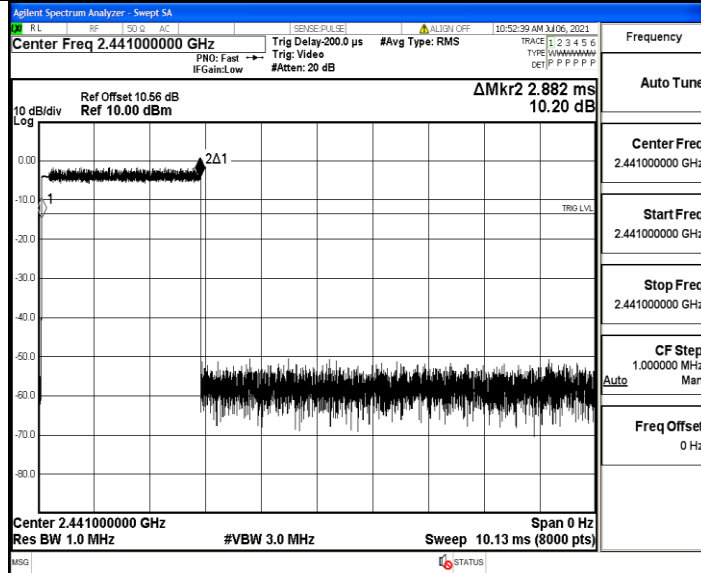
#### DH5\_Ant1\_Hop



2DH5\_Ant1\_Hop



3DH5\_Ant1\_Hop

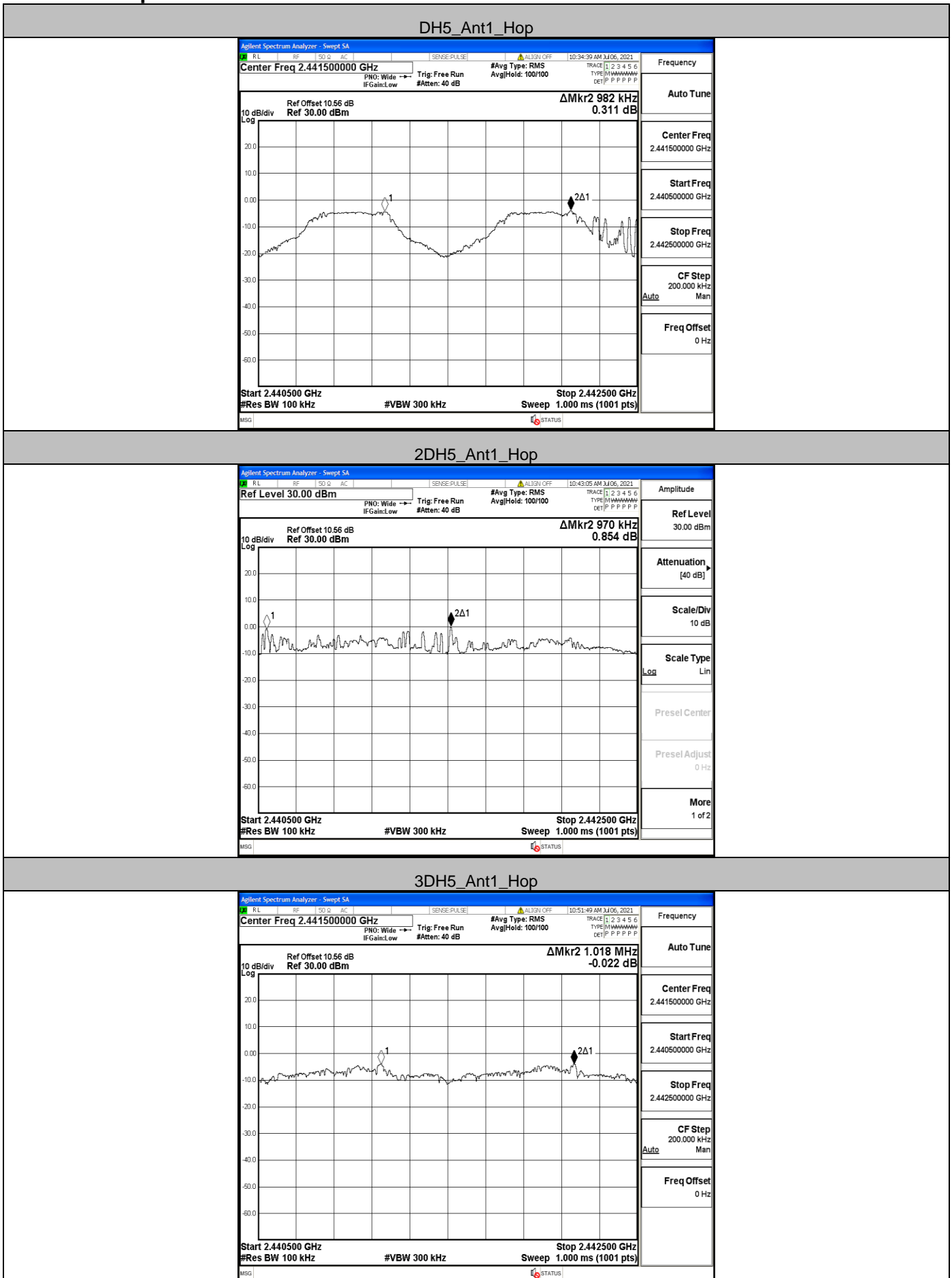




### A.3 Carrier Frequency Separation

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.982	$\geq 0.945$	PASS
2DH5	Ant1	Hop	0.97	$\geq 0.882$	PASS
3DH5	Ant1	Hop	1.018	$\geq 0.888$	PASS

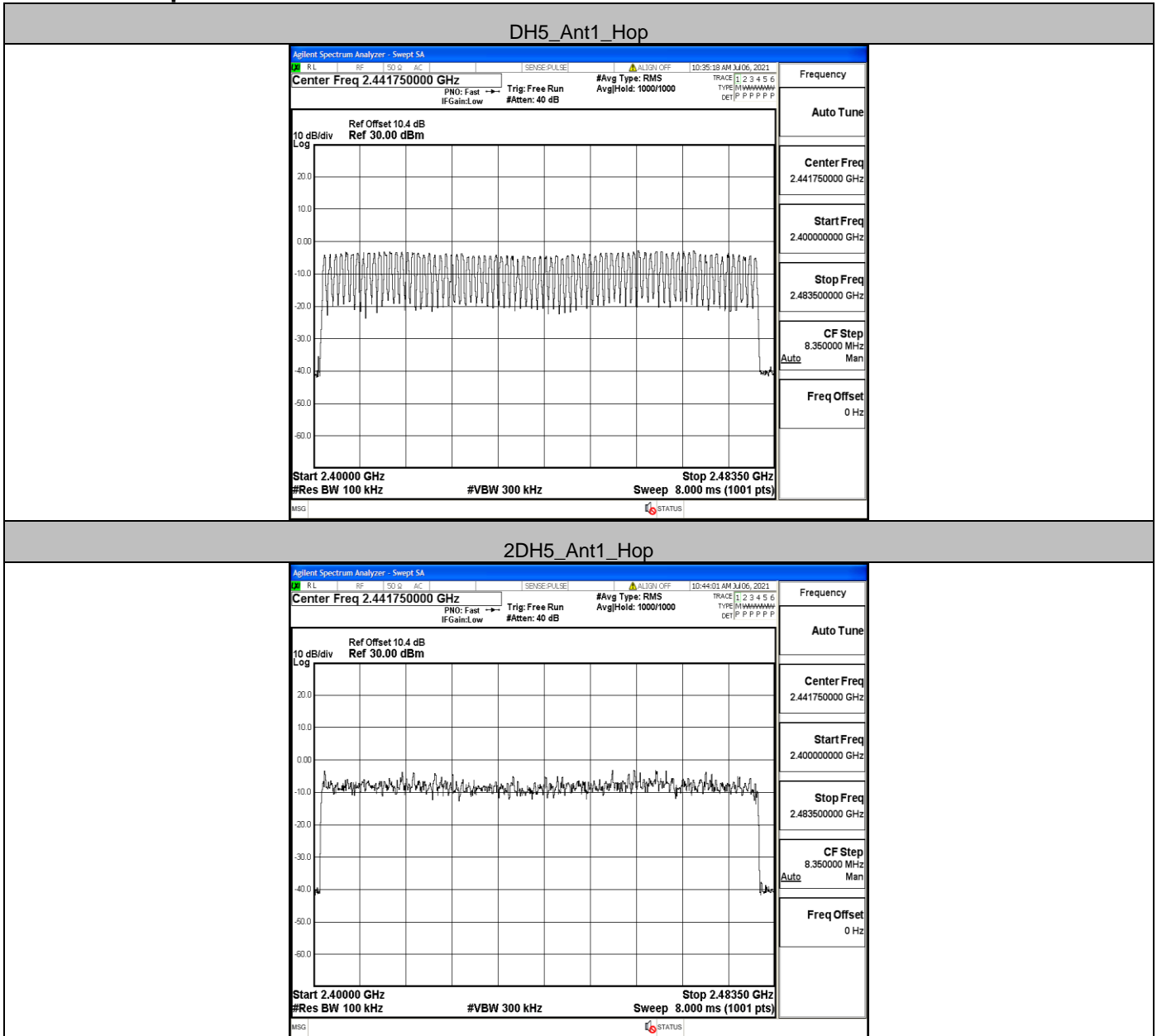
### Test Graph



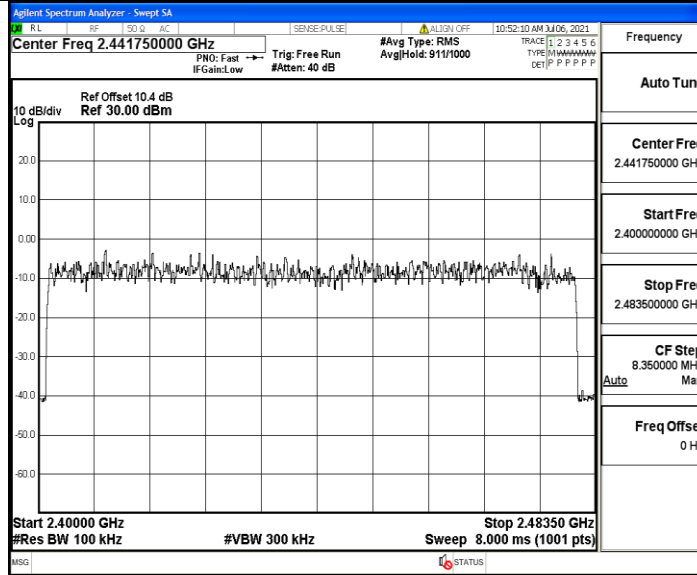
### A.4 Hopping Channel Number

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



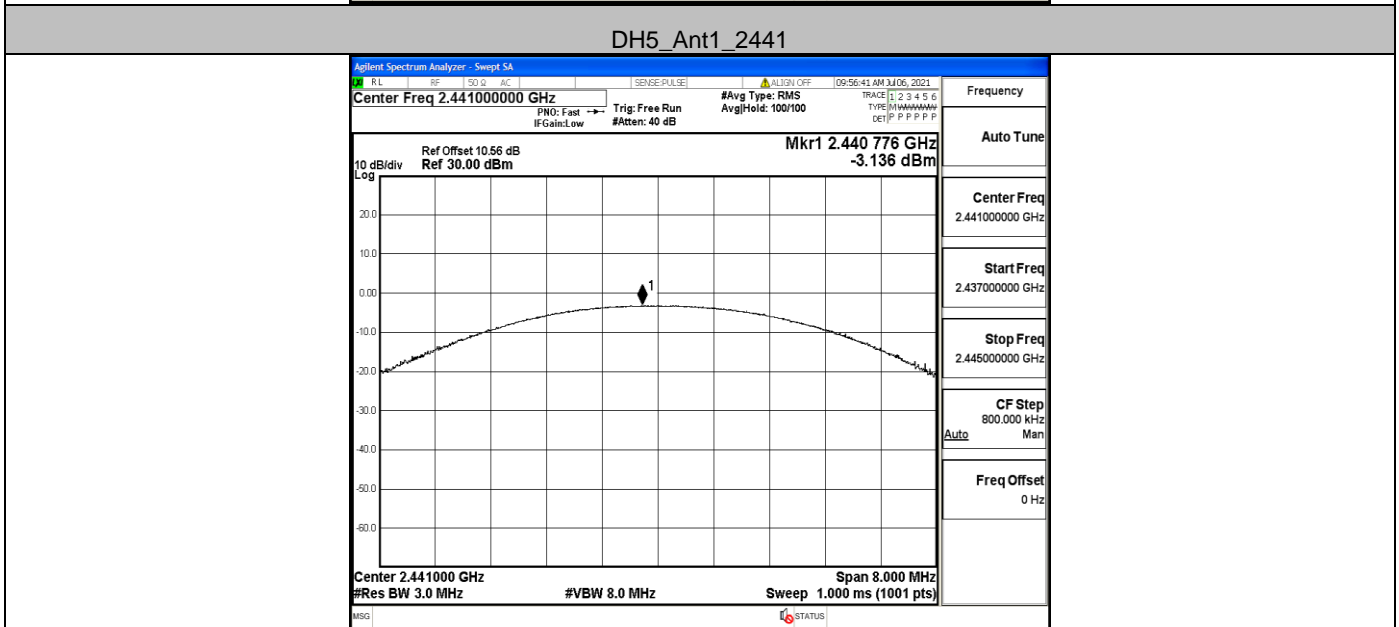
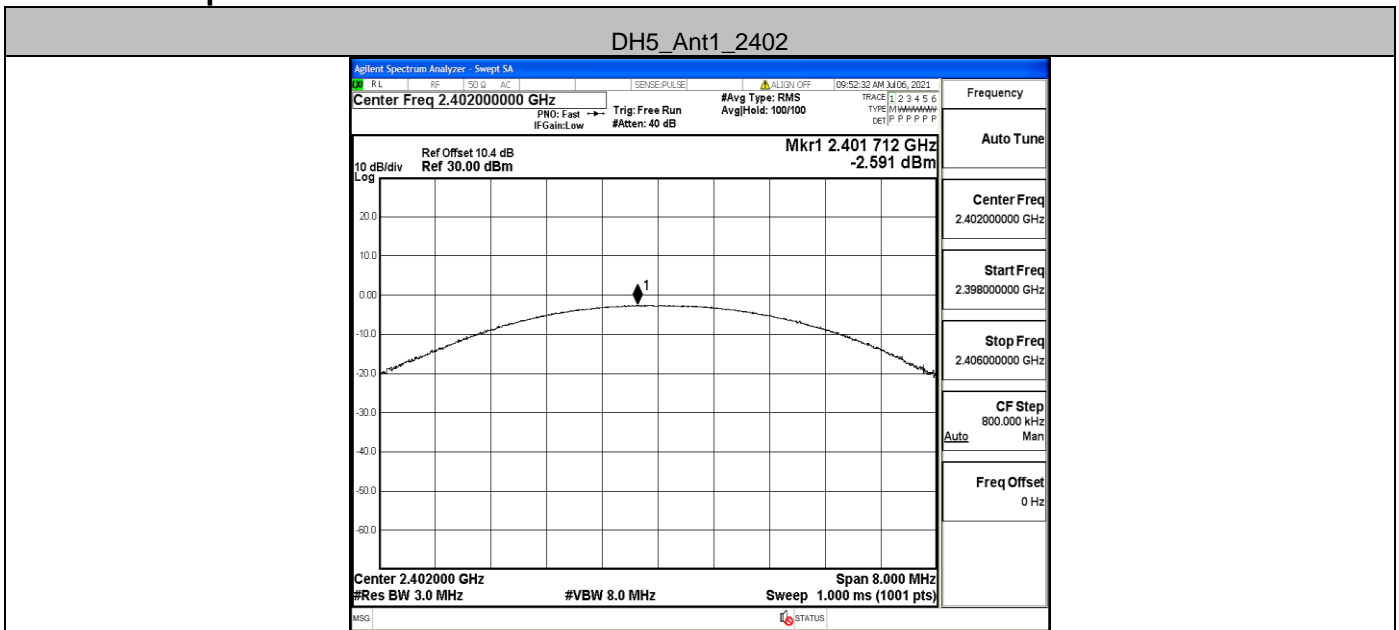
3DH5\_Ant1\_Hop



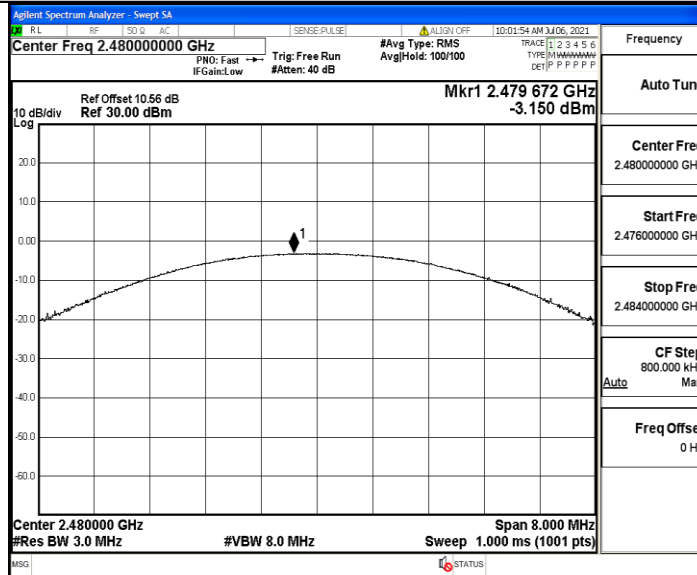
### A.5 Conducted Peak Output Power

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	-2.59	<=20.97	PASS
		2441	-3.14	<=20.97	PASS
		2480	-3.15	<=20.97	PASS
2DH5	Ant1	2402	-0.88	<=20.97	PASS
		2441	-1.32	<=20.97	PASS
		2480	-1.26	<=20.97	PASS
3DH5	Ant1	2402	-0.62	<=20.97	PASS
		2441	-0.98	<=20.97	PASS
		2480	-0.99	<=20.97	PASS

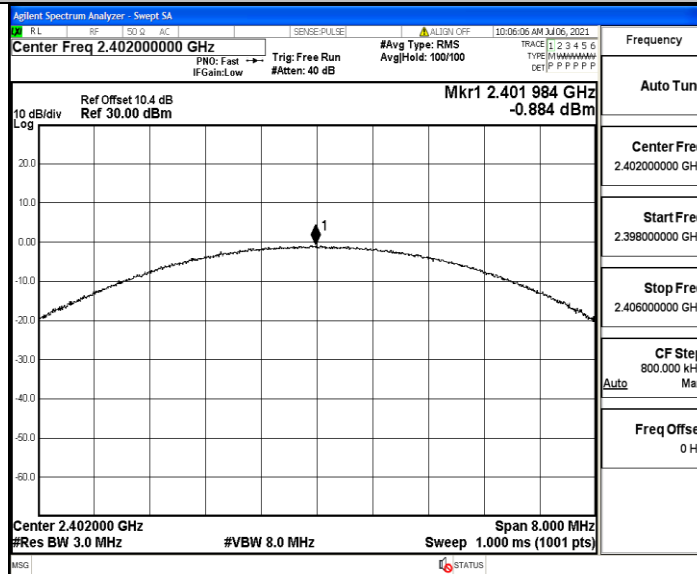
### Test Graph



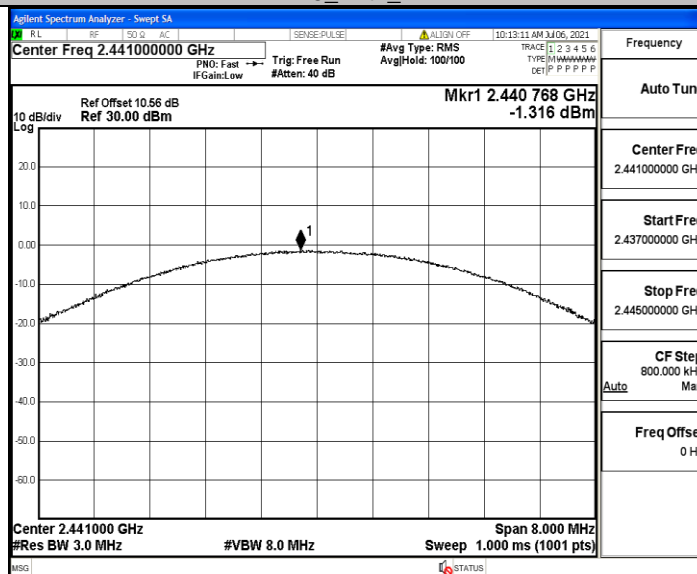
DH5\_Ant1\_2480



2DH5\_Ant1\_2402

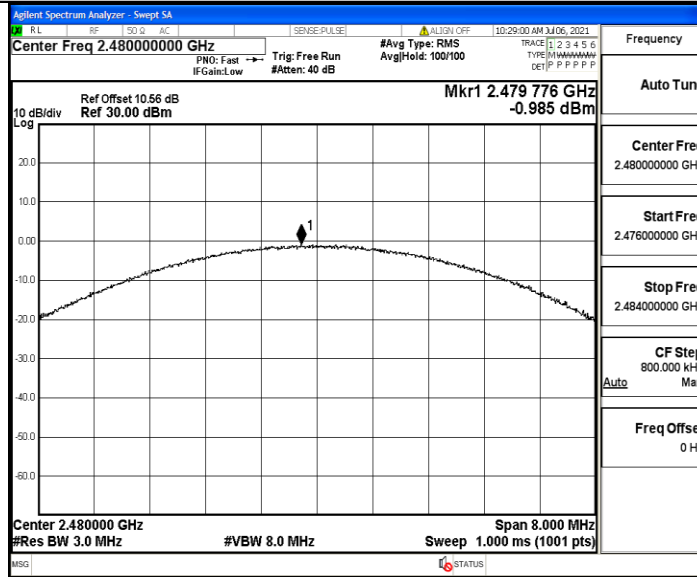


2DH5\_Ant1\_2441





3DH5\_Ant1\_2480



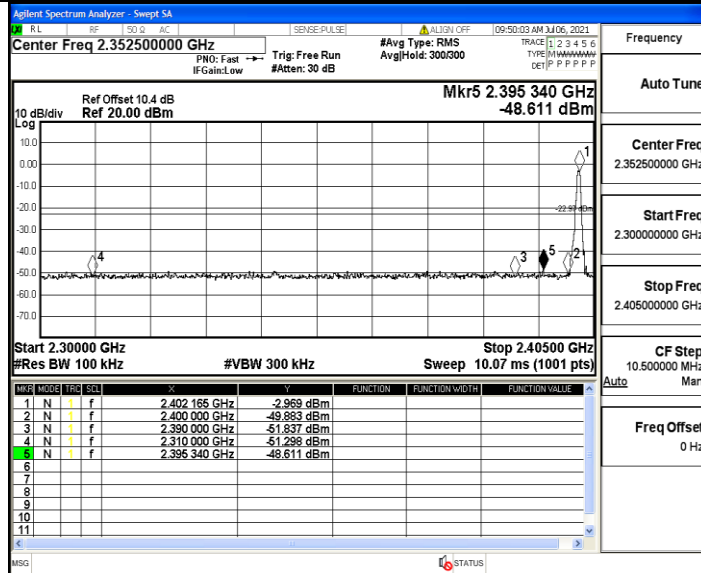


**A.6 Band-edge for RF Conducted Emissions**

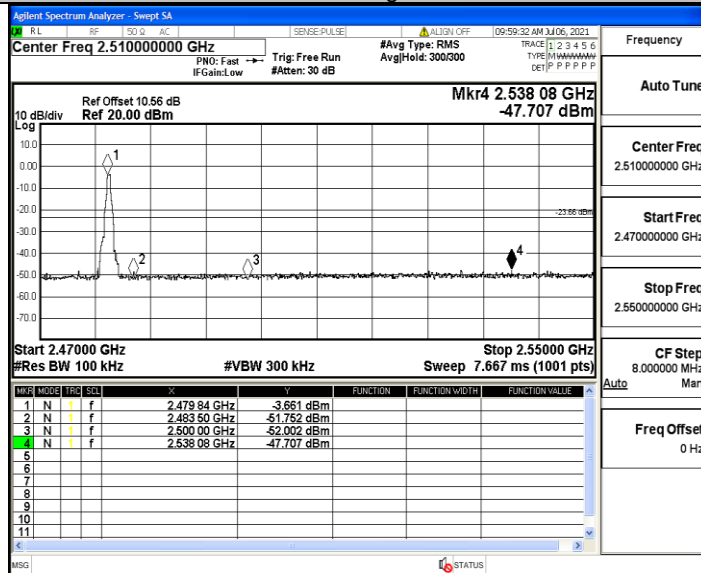
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-2.97	-48.61	<=-22.97	PASS
		High	2480	-3.66	-47.71	<=-23.66	PASS
		Low	Hop_2402	-3.87	-48.86	<=-23.87	PASS
		High	Hop_2480	-3.52	-48.12	<=-23.52	PASS
2DH5	Ant1	Low	2402	-3.26	-48.46	<=-23.26	PASS
		High	2480	-4.77	-47.84	<=-24.77	PASS
		Low	Hop_2402	-4.23	-49.21	<=-24.23	PASS
		High	Hop_2480	-5.81	-48.09	<=-25.81	PASS
3DH5	Ant1	Low	2402	-3.40	-48.77	<=-23.4	PASS
		High	2480	-3.89	-48.01	<=-23.89	PASS
		Low	Hop_2402	-3.67	-48.78	<=-23.67	PASS
		High	Hop_2480	-5.72	-47.96	<=-25.72	PASS

Test Graph

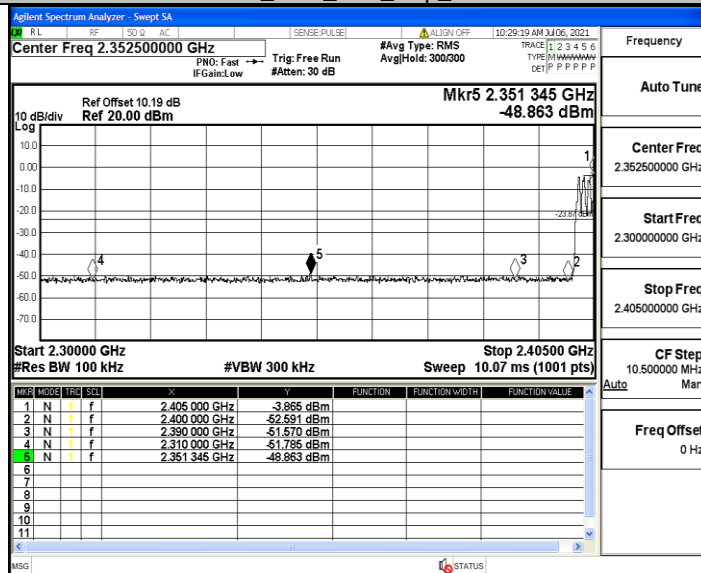
DH5\_Ant1\_Low\_2402



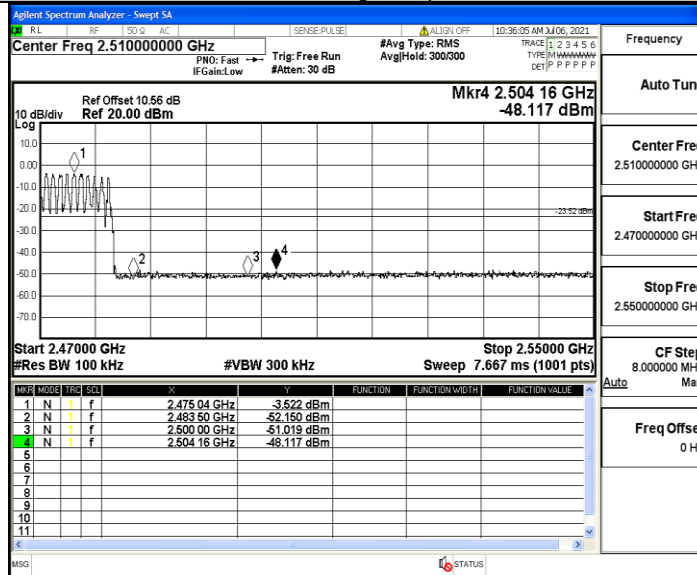
DH5\_Ant1\_High\_2480



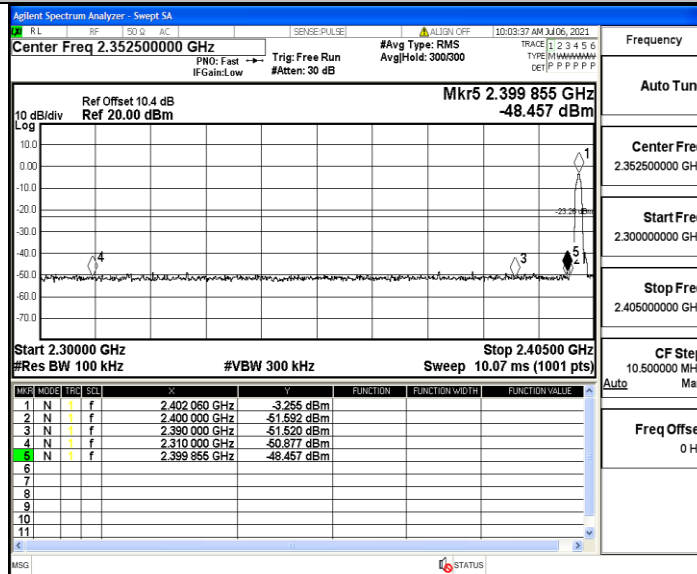
DH5\_Ant1\_Low\_Hop\_2402



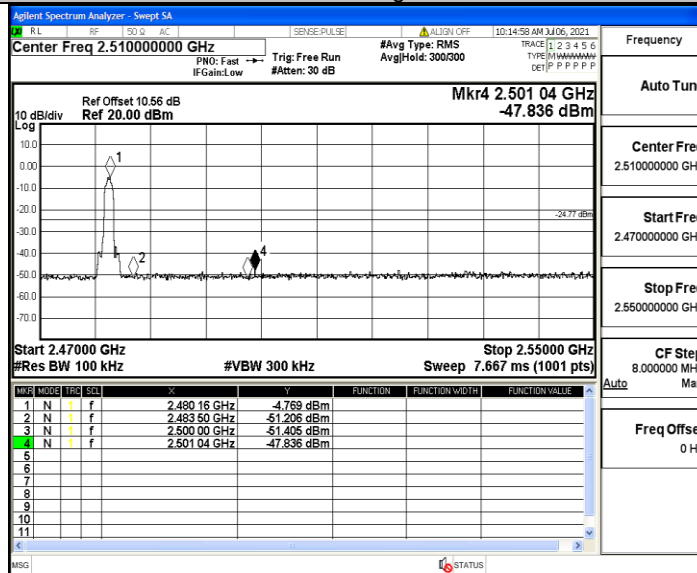
DH5\_Ant1\_High\_Hop\_2480



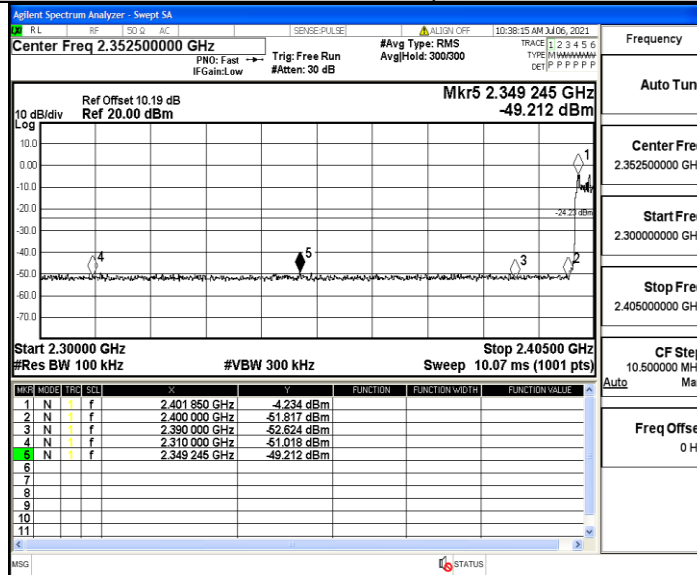
2DH5\_Ant1\_Low\_2402



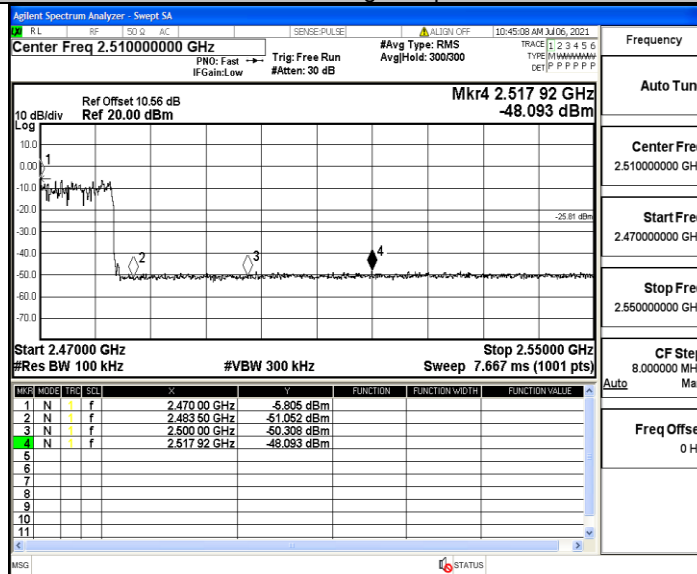
2DH5\_Ant1\_High\_2480



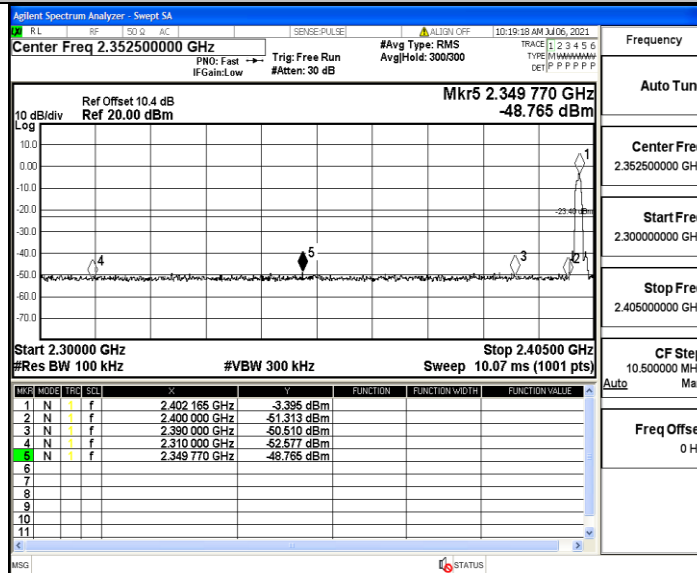
2DH5\_Ant1\_Low\_Hop\_2402



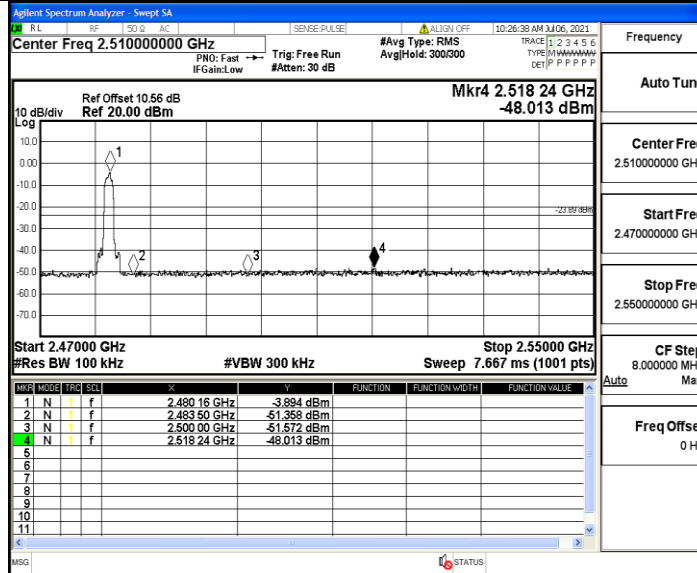
2DH5\_Ant1\_High\_Hop\_2480



3DH5\_Ant1\_Low\_2402

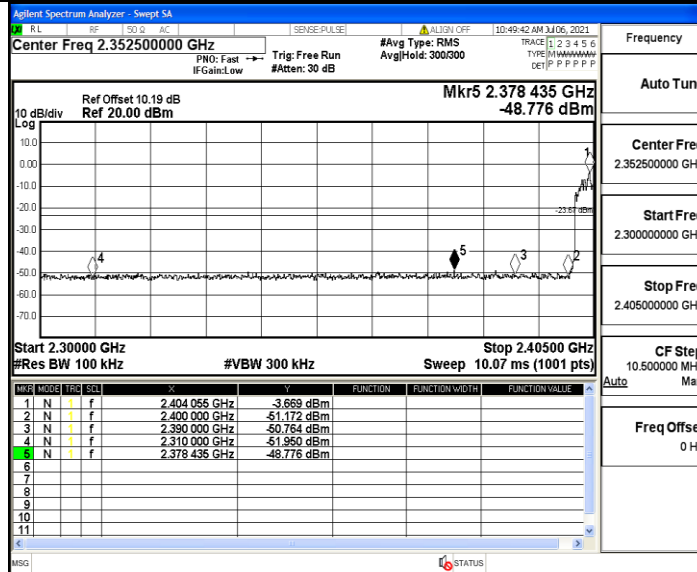


3DH5\_Ant1\_High\_2480



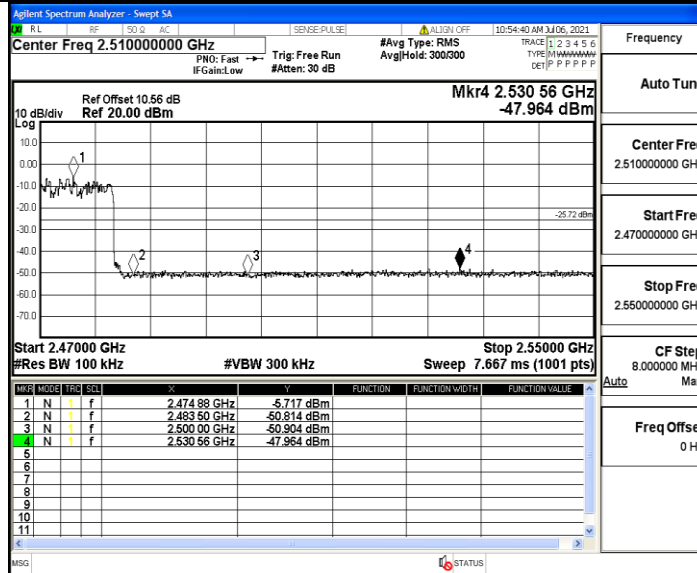
Frequency  
Auto Tune  
Center Freq  
2.51000000 GHz  
Start Freq  
2.47000000 GHz  
Stop Freq  
2.55000000 GHz  
CF Step  
8.000000 MHz  
Auto Man  
Freq Offset  
0 Hz

3DH5\_Ant1\_Low\_Hop\_2402



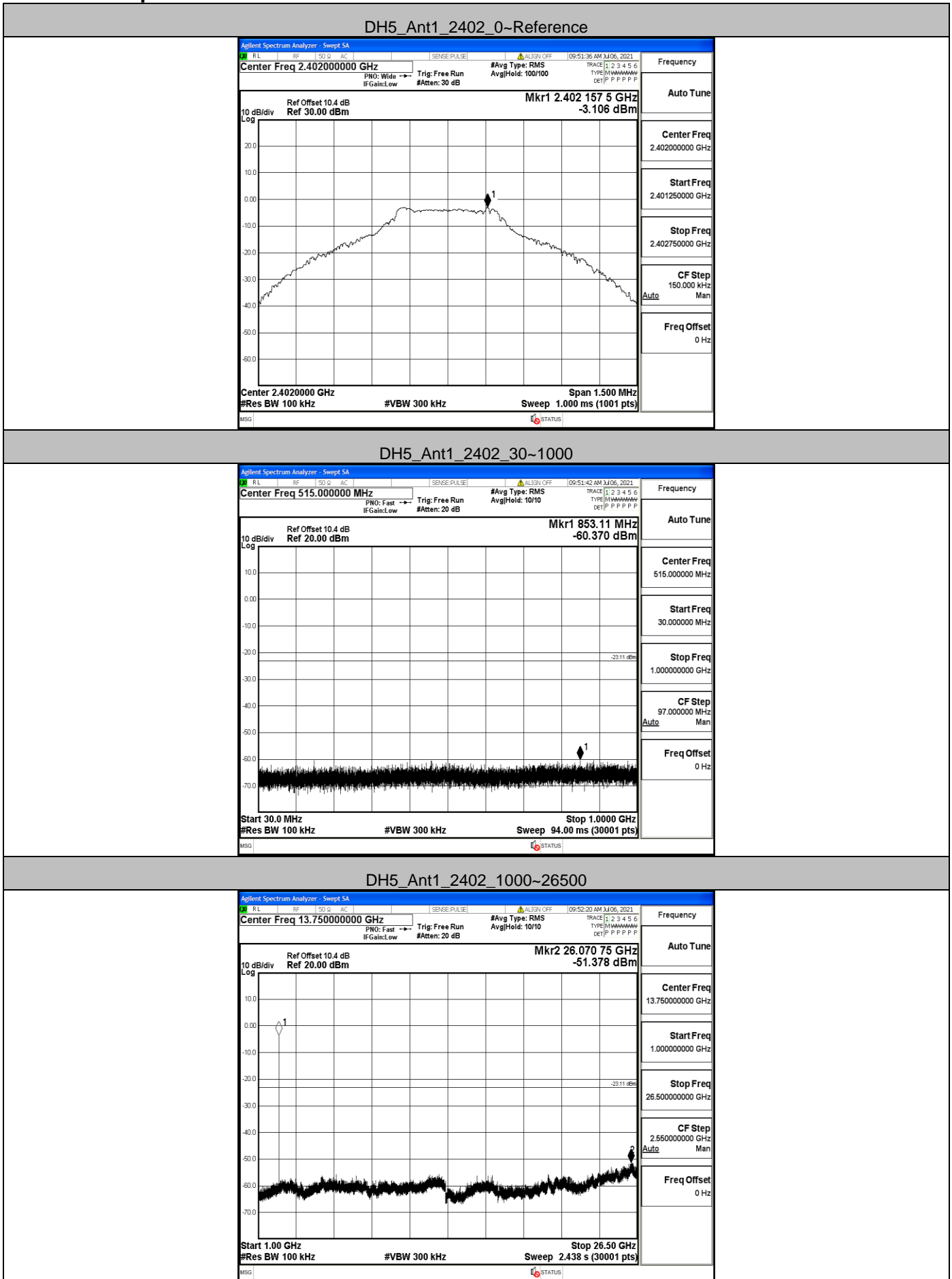
Frequency  
Auto Tune  
Center Freq  
2.35250000 GHz  
Start Freq  
2.30000000 GHz  
Stop Freq  
2.40500000 GHz  
CF Step  
10.500000 MHz  
Auto Man  
Freq Offset  
0 Hz

3DH5\_Ant1\_High\_Hop\_2480

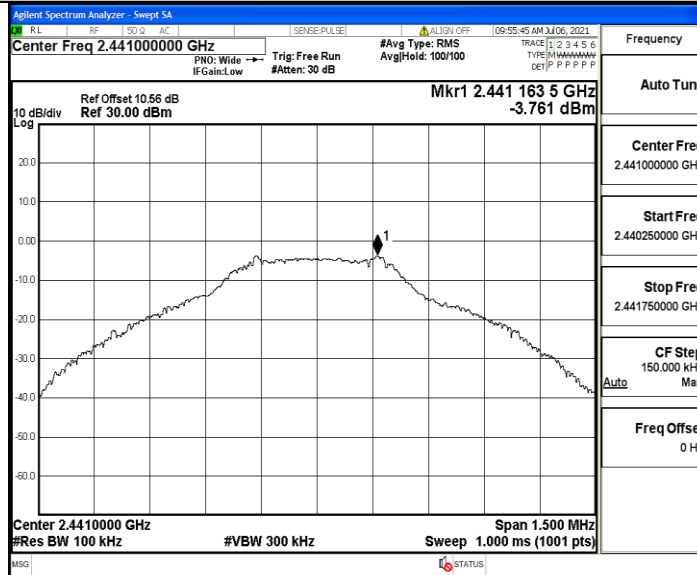


Frequency  
Auto Tune  
Center Freq  
2.51000000 GHz  
Start Freq  
2.47000000 GHz  
Stop Freq  
2.55000000 GHz  
CF Step  
8.000000 MHz  
Auto Man  
Freq Offset  
0 Hz

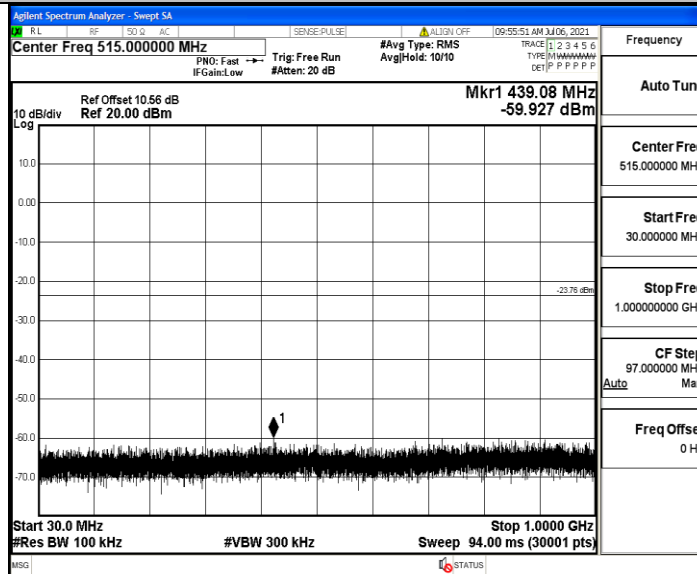
### A.7 RF Conducted Spurious Emissions Test Graph



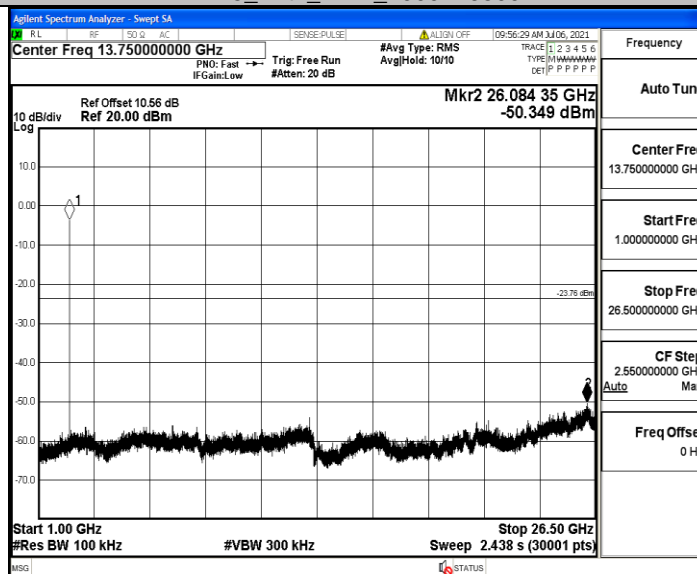
DH5\_Ant1\_2441\_0~Reference



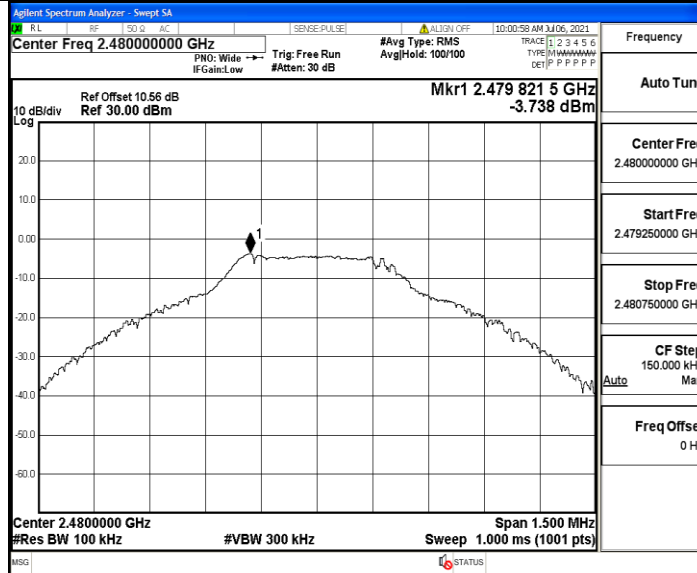
DH5\_Ant1\_2441\_30~1000



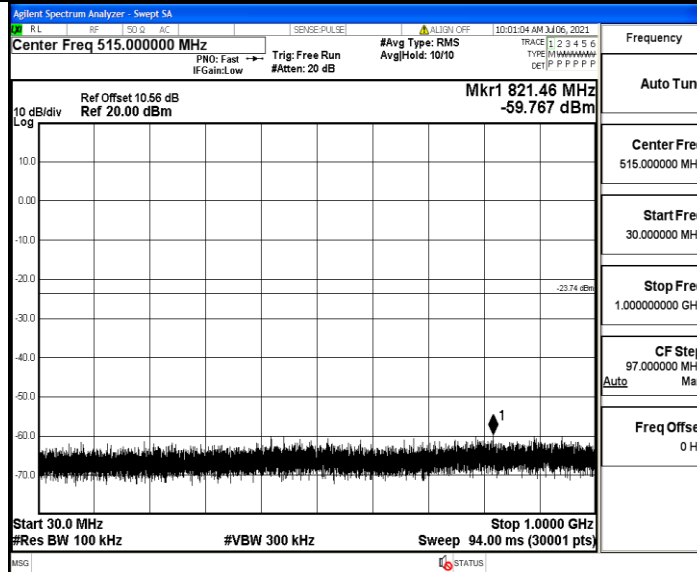
DH5\_Ant1\_2441\_1000~26500



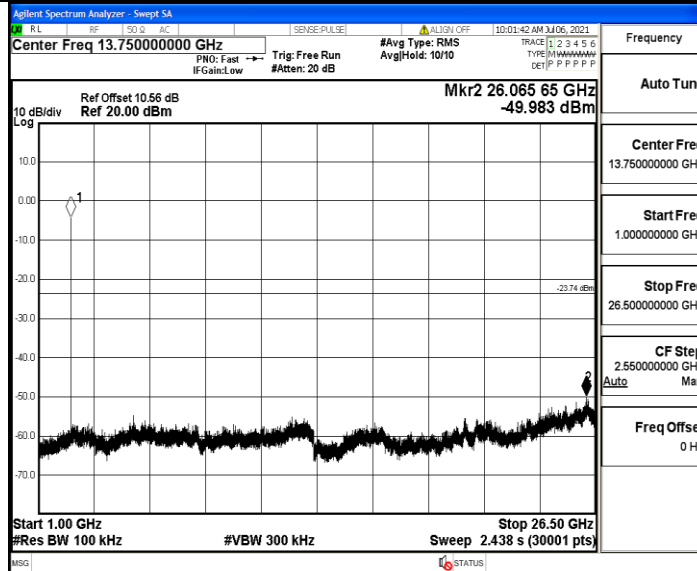
DH5\_Ant1\_2480\_0~Reference



DH5\_Ant1\_2480\_30~1000

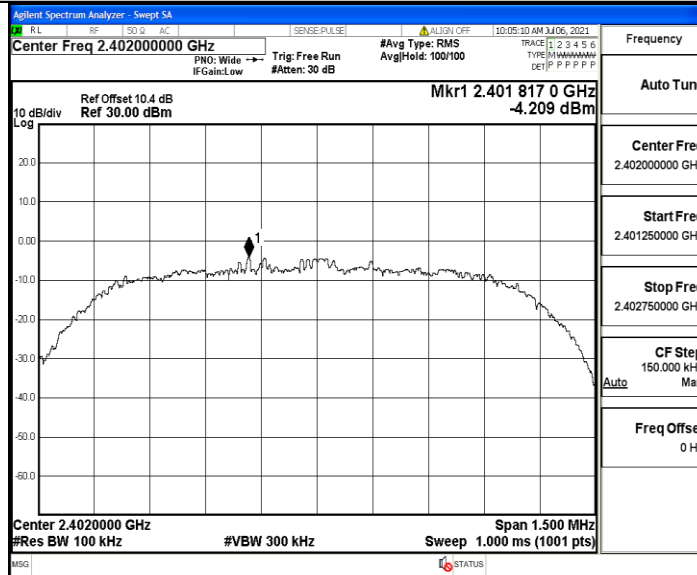


DH5\_Ant1\_2480\_1000~26500

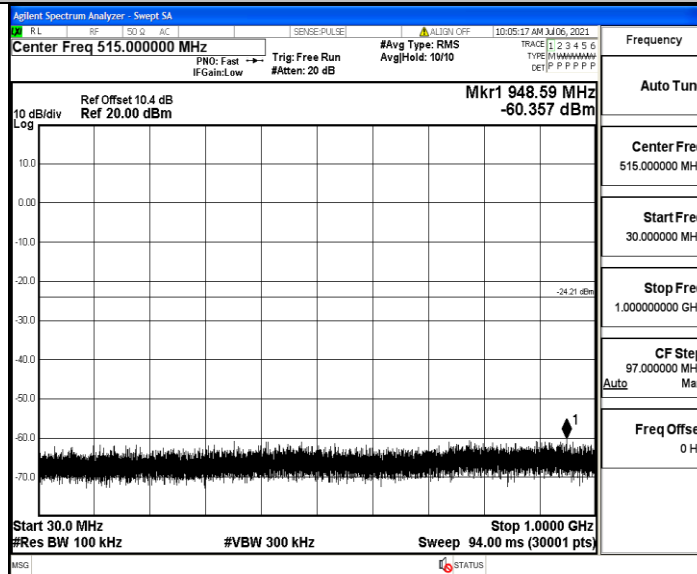




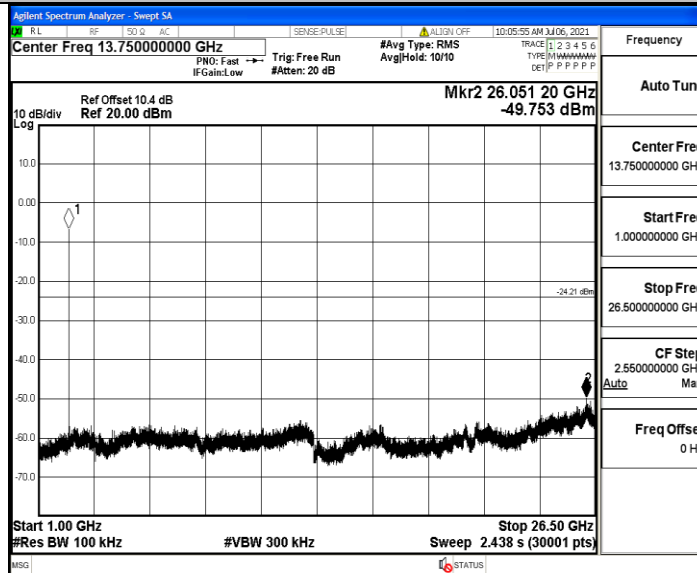
2DH5\_Ant1\_2402\_0~Reference



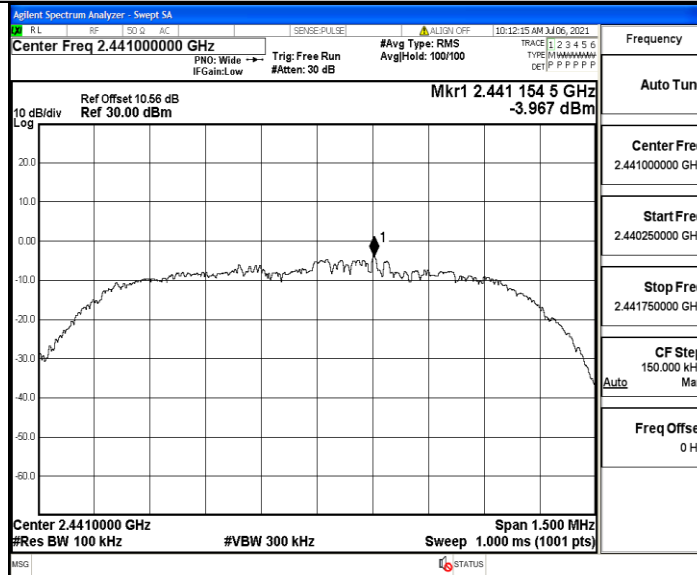
2DH5\_Ant1\_2402\_30~1000



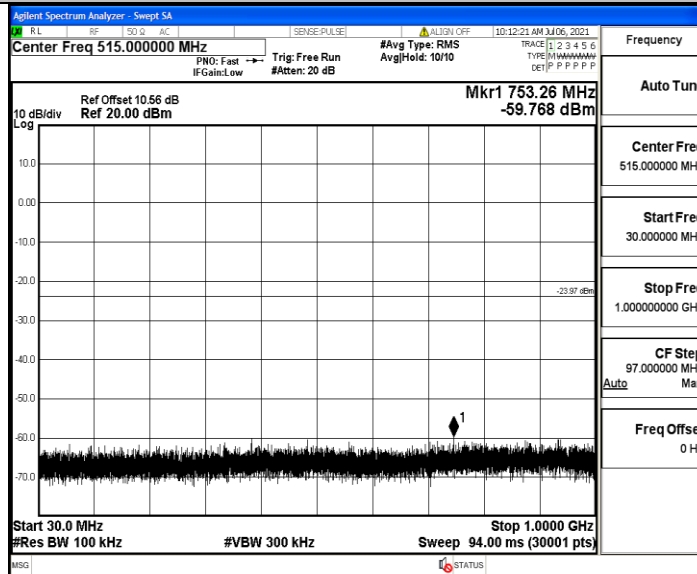
2DH5\_Ant1\_2402\_1000~26500



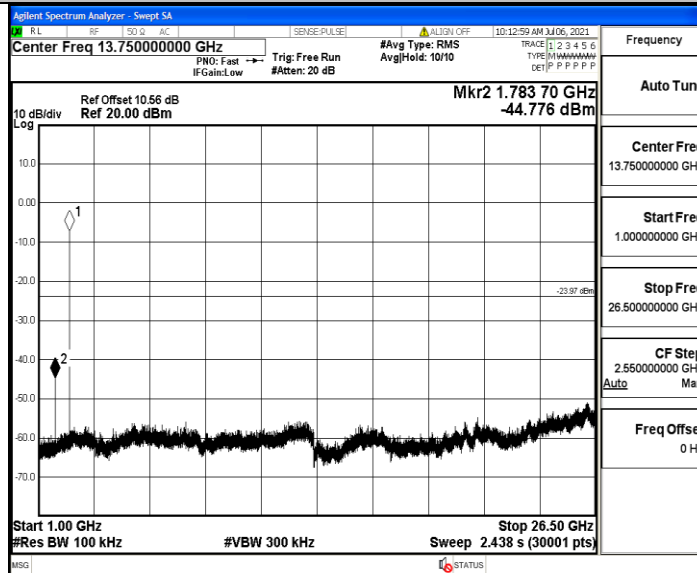
2DH5\_Ant1\_2441\_0~Reference



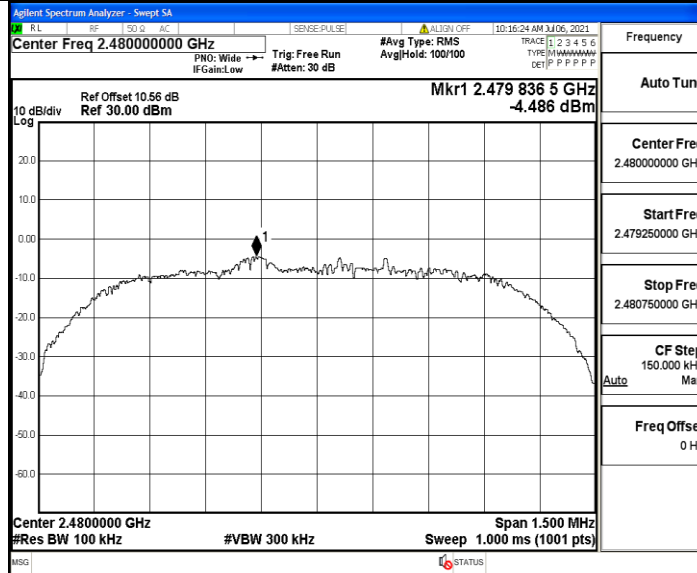
2DH5\_Ant1\_2441\_30~1000



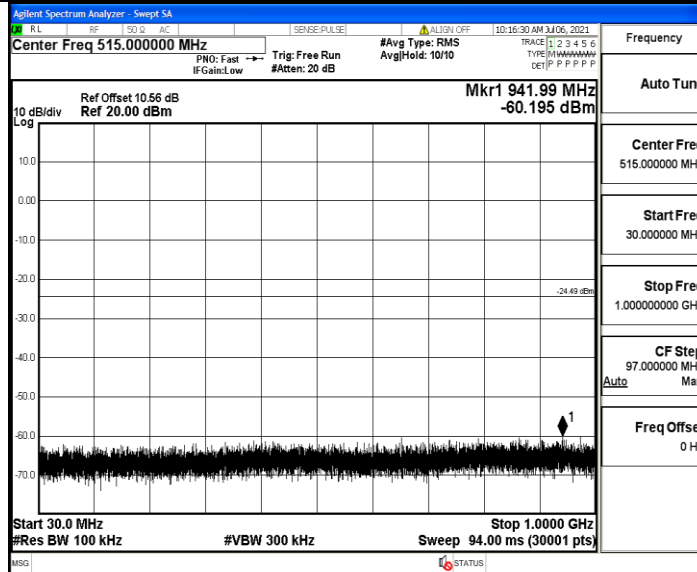
2DH5\_Ant1\_2441\_1000~26500



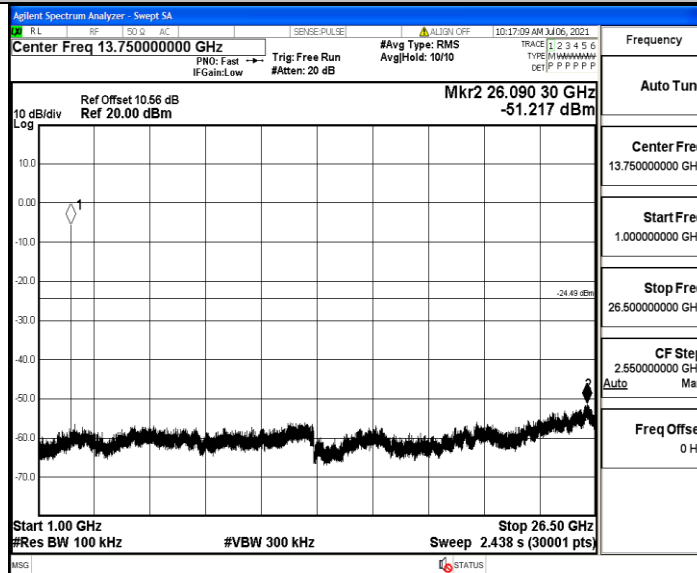
2DH5\_Ant1\_2480\_0~Reference



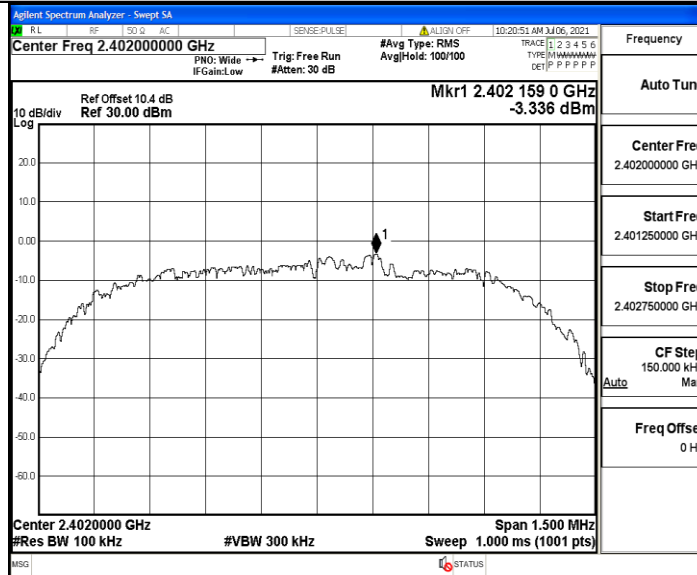
2DH5\_Ant1\_2480\_30~1000



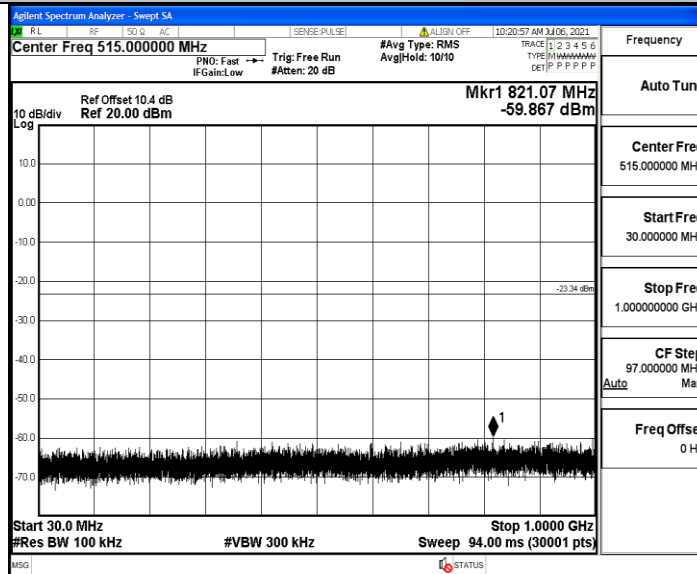
2DH5\_Ant1\_2480\_1000~26500



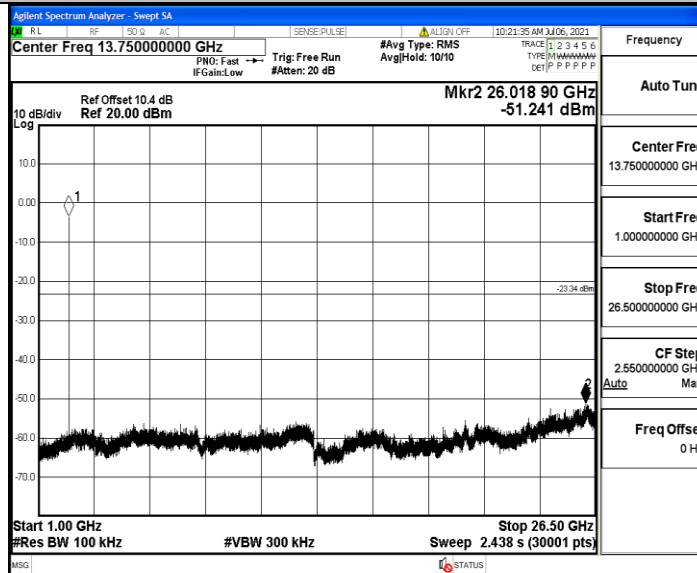
3DH5\_Ant1\_2402\_0~Reference



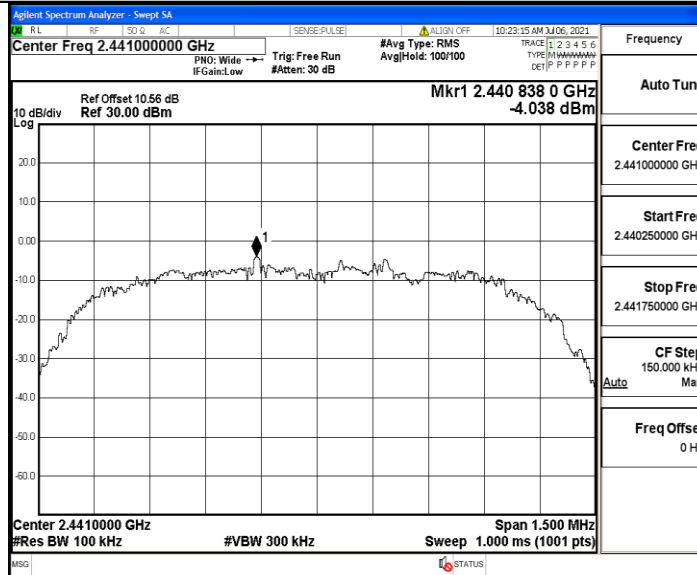
3DH5\_Ant1\_2402\_30~1000



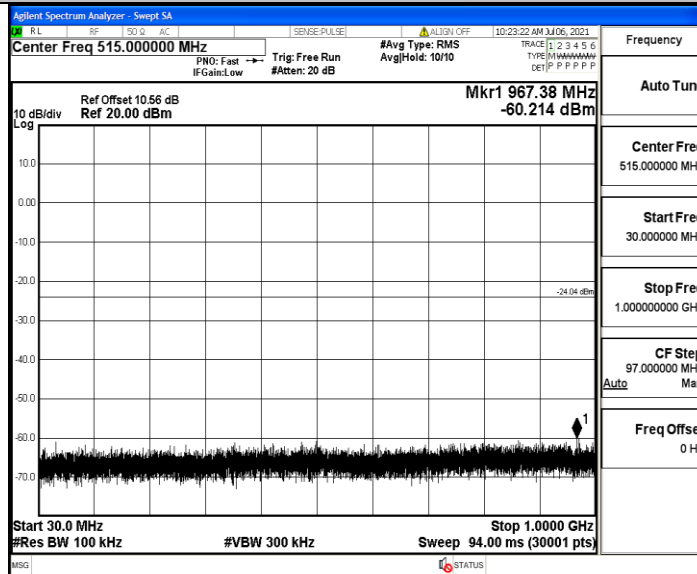
3DH5\_Ant1\_2402\_1000~26500



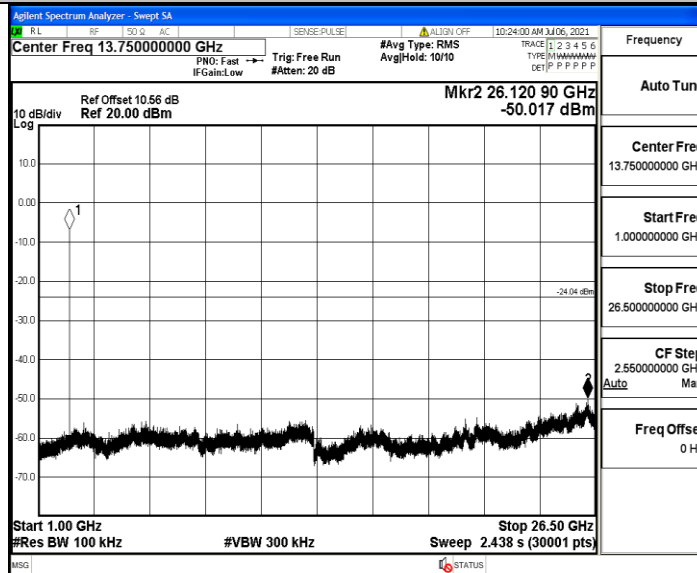
3DH5\_Ant1\_2441\_0~Reference



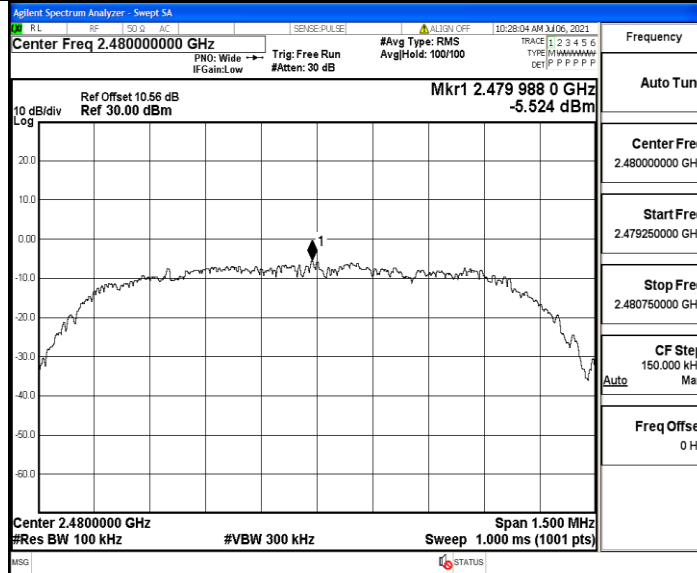
3DH5\_Ant1\_2441\_30~1000



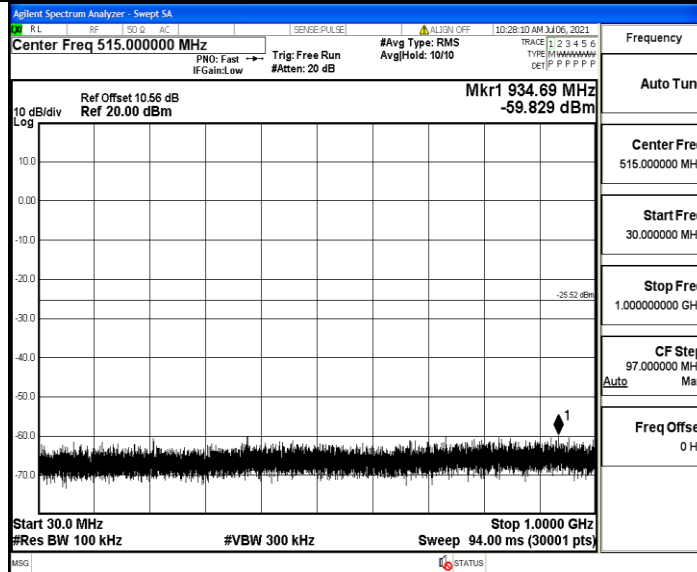
3DH5\_Ant1\_2441\_1000~26500



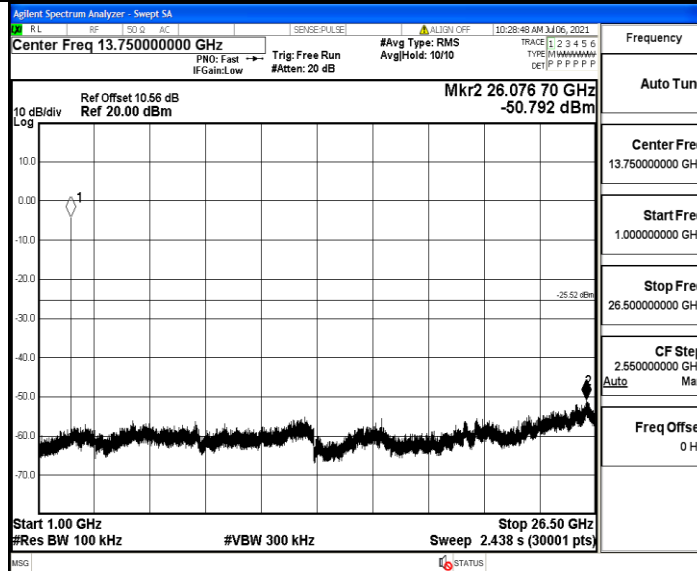
3DH5\_Ant1\_2480\_0~Reference



3DH5\_Ant1\_2480\_30~1000



3DH5\_Ant1\_2480\_1000~26500



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

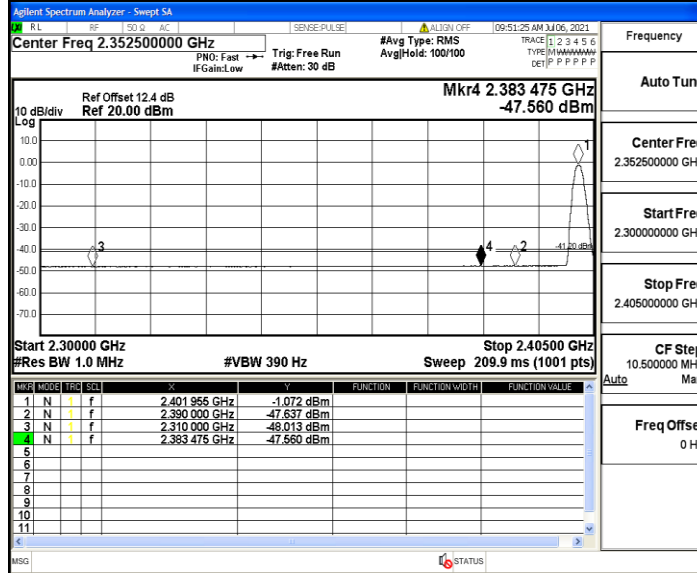
TestMode	Antenna	ChName	Channel	Detector	Freq ( MHz )	Result(dBm)	Limit(dBm)	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-48.01	<=-41.20	PASS
				AV	2383.475	-47.56	<=-41.20	PASS
				AV	2390.000	-47.64	<=-41.20	PASS
				Peak	2310.000	-40.96	<=-21.20	PASS
				Peak	2363.525	-37.57	<=-21.20	PASS
				Peak	2390.000	-39.11	<=-21.20	PASS
		High	2480	AV	2483.500	-47.13	<=-41.20	PASS
				AV	2490.720	-46.53	<=-41.20	PASS
				AV	2500.000	-46.91	<=-41.20	PASS
				Peak	2483.500	-39.48	<=-21.20	PASS
				Peak	2493.040	-38.13	<=-21.20	PASS
				Peak	2500.000	-39.09	<=-21.20	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-47.94	<=-41.20	PASS
				AV	2388.410	-47.56	<=-41.20	PASS
				AV	2390.000	-47.73	<=-41.20	PASS
				Peak	2310.000	-41.26	<=-21.20	PASS
				Peak	2378.225	-36.86	<=-21.20	PASS
				Peak	2390.000	-39.76	<=-21.20	PASS
		High	2480	AV	2483.500	-47.1	<=-41.20	PASS
				AV	2495.680	-46.9	<=-41.20	PASS
				AV	2500.000	-47.06	<=-41.20	PASS
				Peak	2483.500	-39.54	<=-21.20	PASS
				Peak	2485.200	-37.6	<=-21.20	PASS
				Peak	2500.000	-38.68	<=-21.20	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-48	<=-41.20	PASS
				AV	2386.520	-47.57	<=-41.20	PASS
				AV	2390.000	-47.68	<=-41.20	PASS
				Peak	2310.000	-40.41	<=-21.20	PASS
				Peak	2348.090	-37.5	<=-21.20	PASS
				Peak	2390.000	-39.65	<=-21.20	PASS
		High	2480	AV	2483.500	-47.21	<=-41.20	PASS
				AV	2497.760	-46.93	<=-41.20	PASS
				AV	2500.000	-47.03	<=-41.20	PASS
				Peak	2483.500	-40.24	<=-21.20	PASS
				Peak	2494.880	-37.47	<=-21.20	PASS
				Peak	2500.000	-39.88	<=-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.

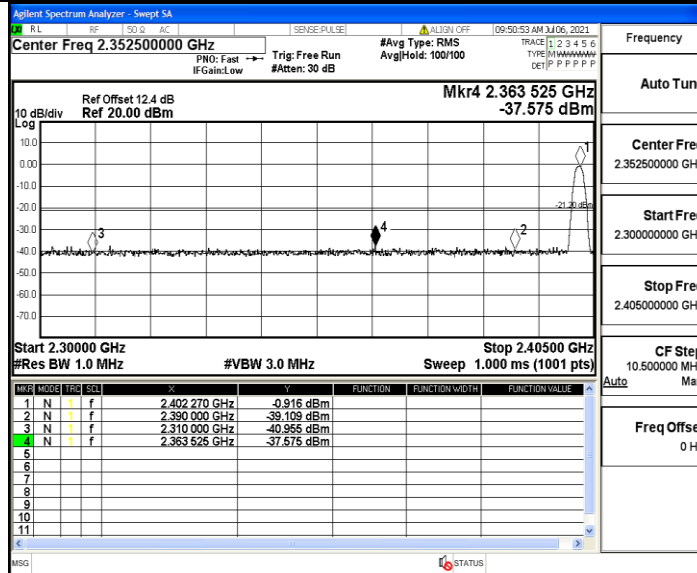


Test Graphs

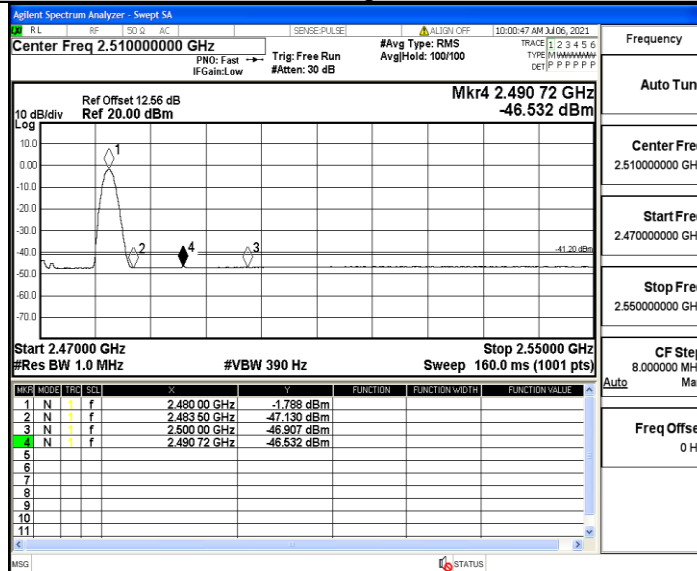
DH5\_Ant1\_Low\_2402\_AV



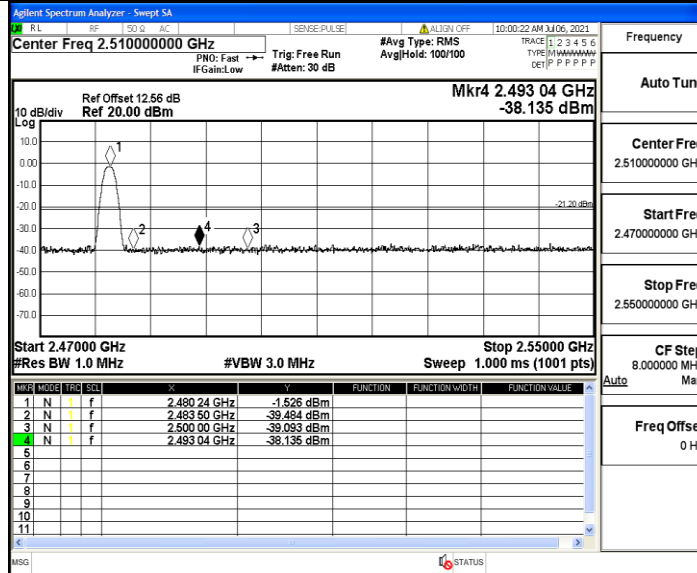
DH5\_Ant1\_Low\_2402\_Peak



DH5\_Ant1\_High\_2480\_AV

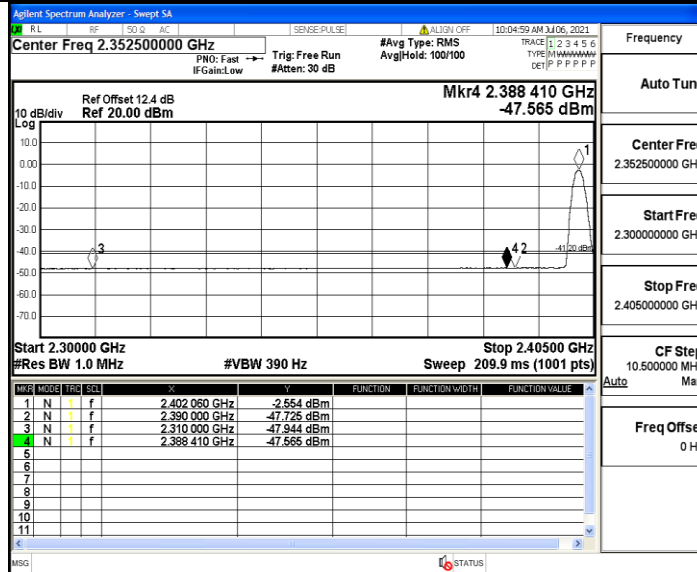


DH5\_Ant1\_High\_2480\_Peak



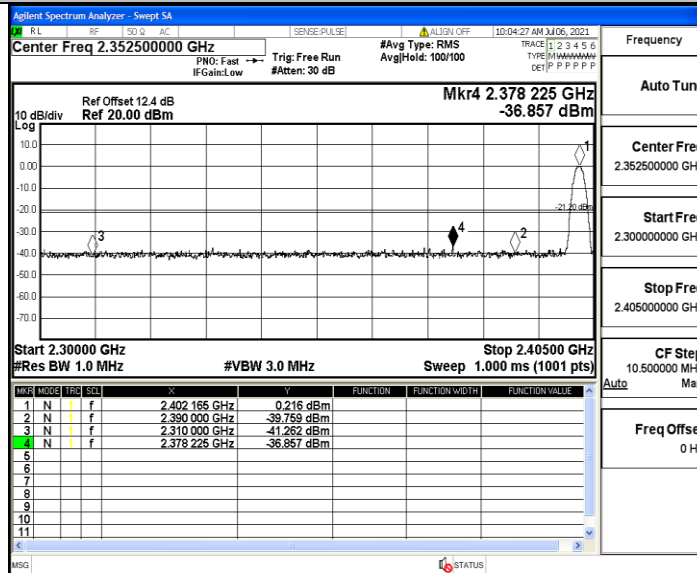
Frequency	Auto Tune
Center Freq	2.51000000 GHz
Start Freq	2.47000000 GHz
Stop Freq	2.55000000 GHz
CF Step	8.000000 MHz
Freq Offset	0 Hz

2DH5\_Ant1\_Low\_2402\_AV



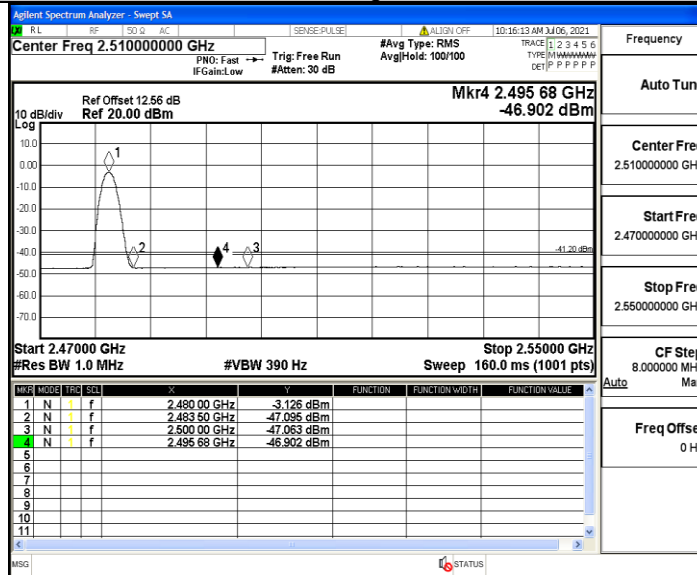
Frequency	Auto Tune
Center Freq	2.35250000 GHz
Start Freq	2.30000000 GHz
Stop Freq	2.40500000 GHz
CF Step	10.500000 MHz
Freq Offset	0 Hz

2DH5\_Ant1\_Low\_2402\_Peak

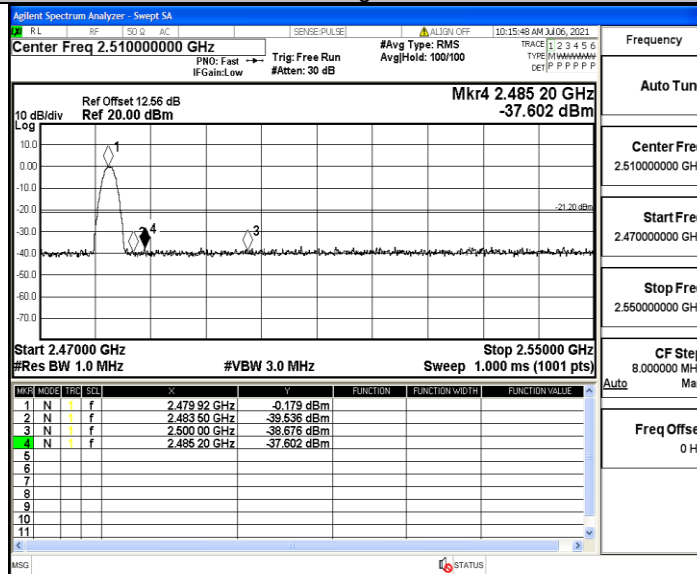


Frequency	Auto Tune
Center Freq	2.35250000 GHz
Start Freq	2.30000000 GHz
Stop Freq	2.40500000 GHz
CF Step	10.500000 MHz
Freq Offset	0 Hz

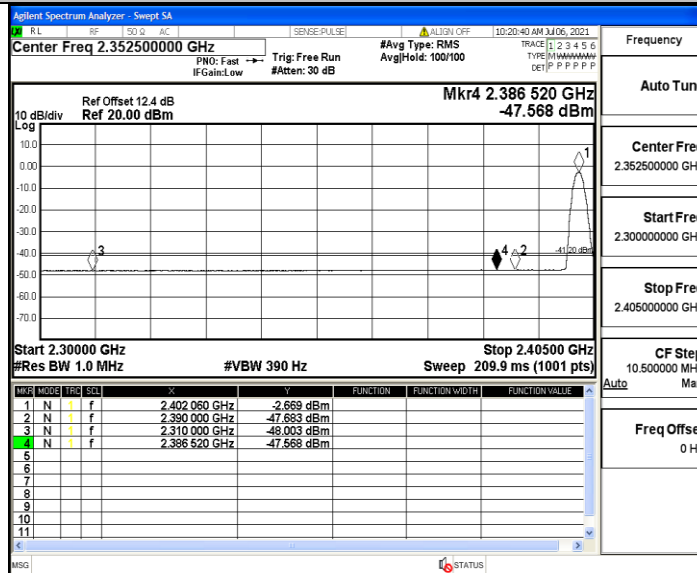
2DH5\_Ant1\_High\_2480\_AV



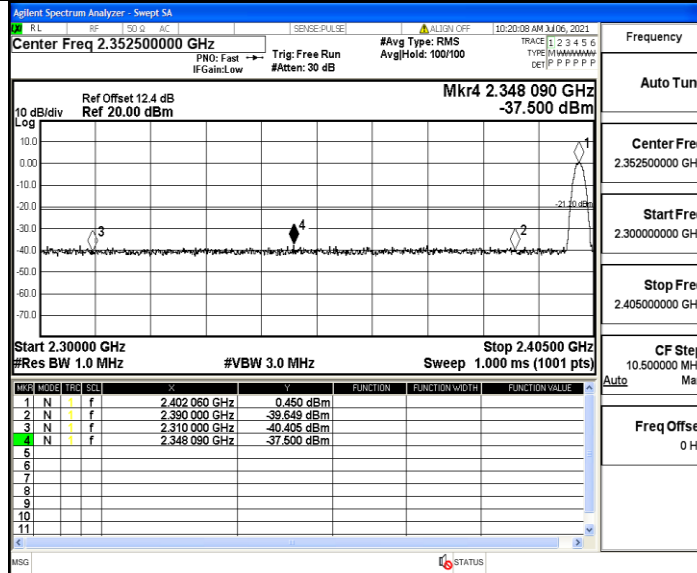
2DH5\_Ant1\_High\_2480\_Peak



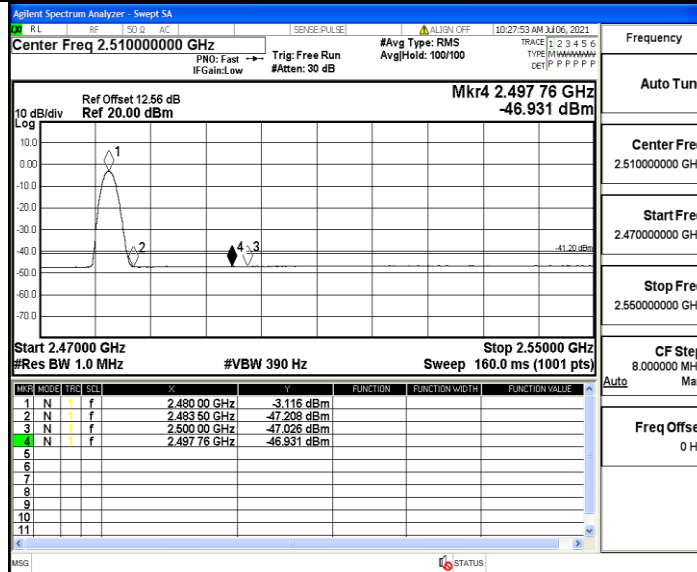
3DH5\_Ant1\_Low\_2402\_AV



3DH5\_Ant1\_Low\_2402\_Peak



3DH5\_Ant1\_High\_2480\_AV



3DH5\_Ant1\_High\_2480\_Peak

