

Appendix A

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

Product Name: Portable speaker

Trade Mark: QFX

Test Model: BT-ZX1

FCC ID: 2AOMX-BTZX1

Environmental Conditions

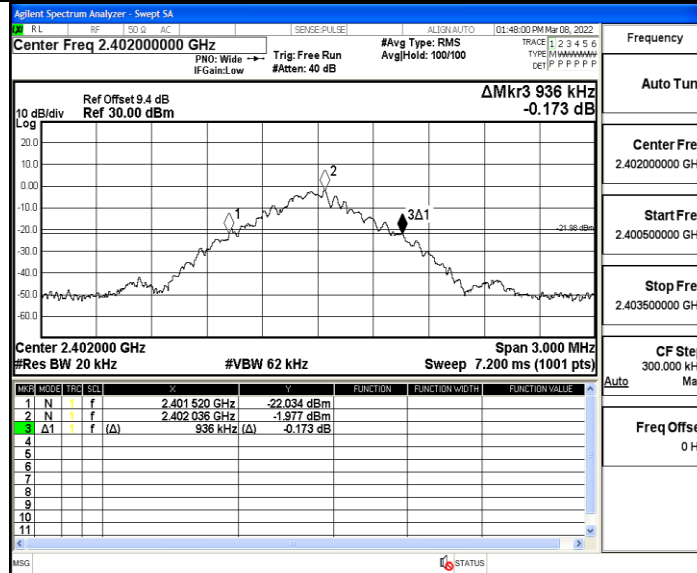
Temperature:	22.8° C
Relative Humidity:	56%
ATM Pressure:	100.0 kPa
Test Engineer:	Nancy Li
Supervised by:	Hugo Chen

A.1 20 dB Bandwidth

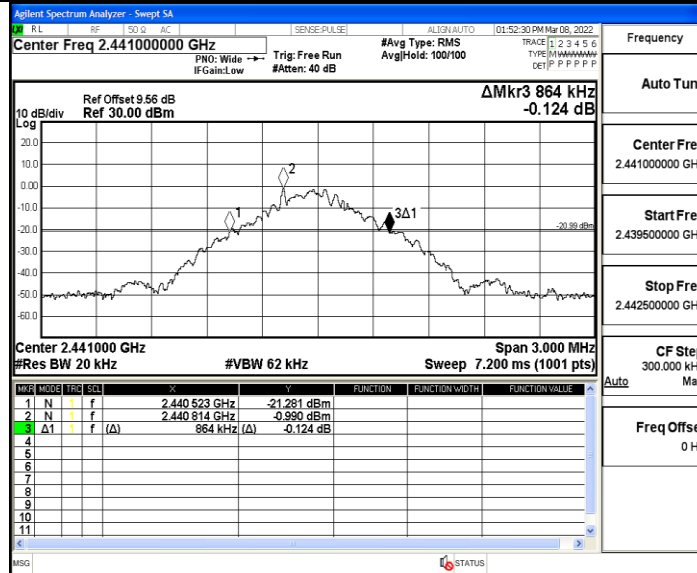
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.936	2401.520	2402.456	---	---
		2441	0.864	2440.523	2441.387	---	---
		2480	0.942	2479.523	2480.465	---	---
2DH5	Ant1	2402	1.332	2401.313	2402.645	---	---
		2441	1.314	2440.322	2441.636	---	---
		2480	1.347	2479.316	2480.663	---	---
3DH5	Ant1	2402	1.299	2401.331	2402.630	---	---
		2441	1.299	2440.331	2441.630	---	---
		2480	1.266	2479.343	2480.609	---	---

Test Graph

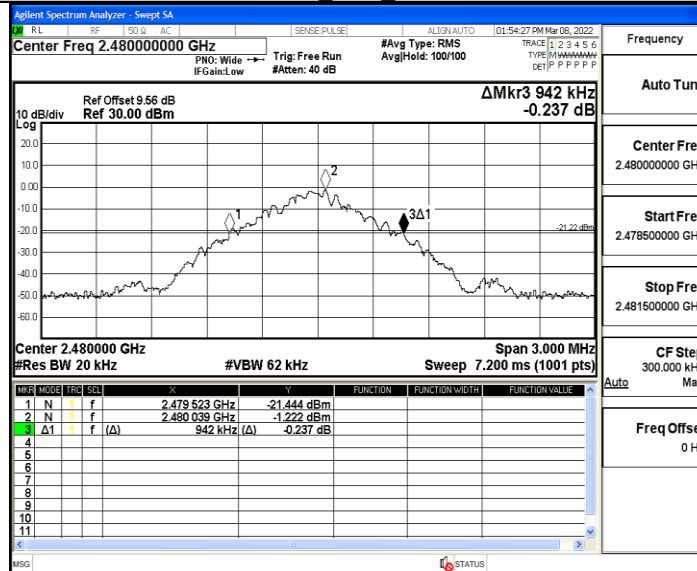
DH5_Ant1_2402



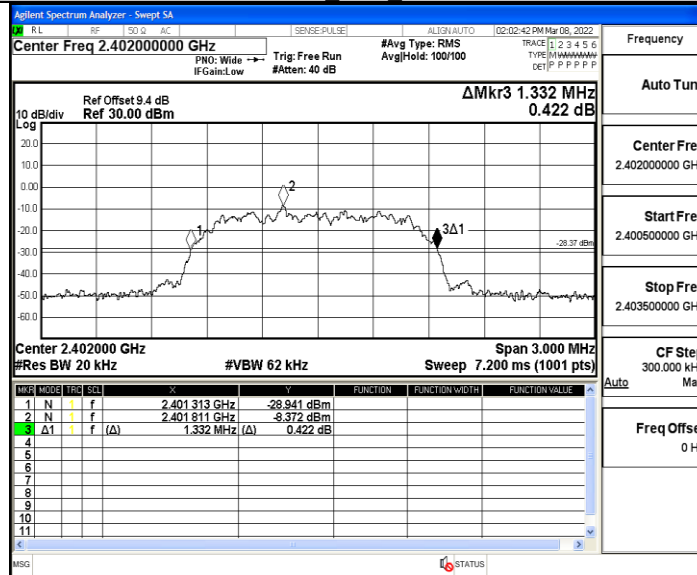
DH5_Ant1_2441



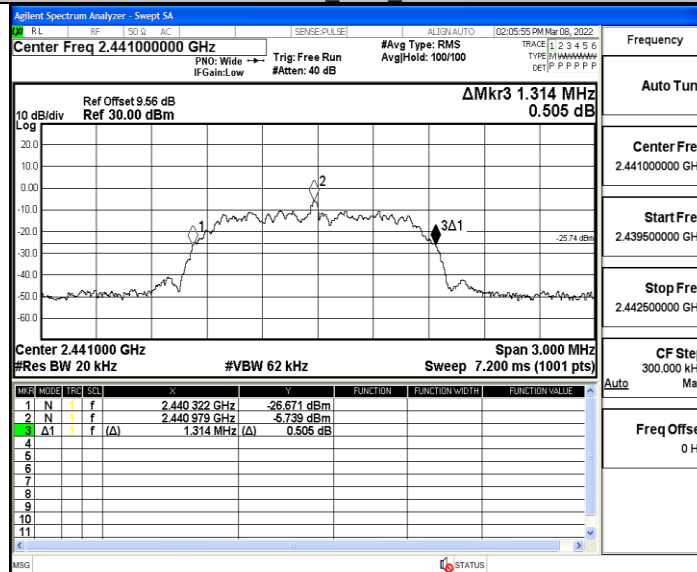
DH5_Ant1_2480



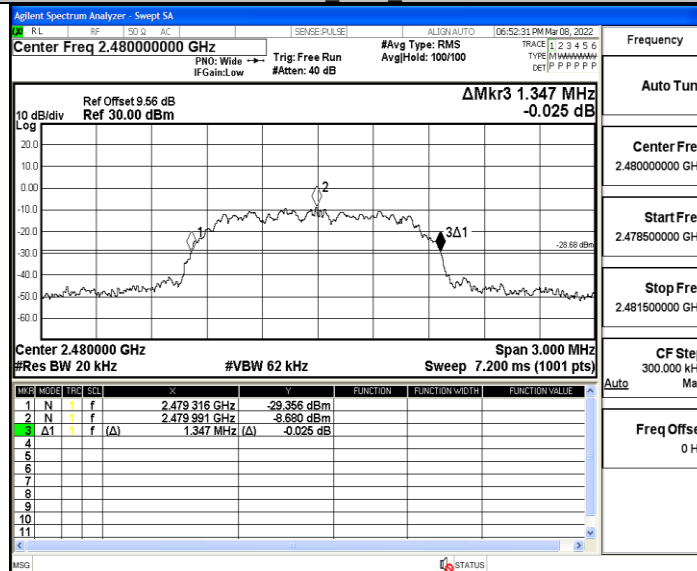
2DH5_Ant1_2402



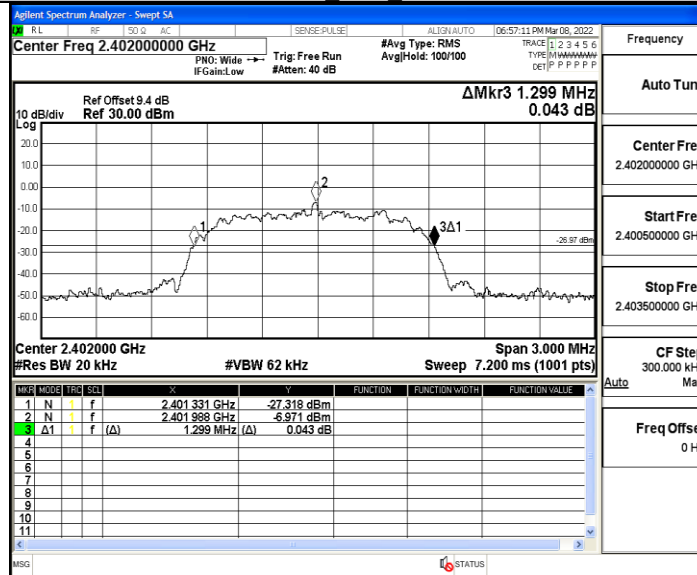
2DH5_Ant1_2441



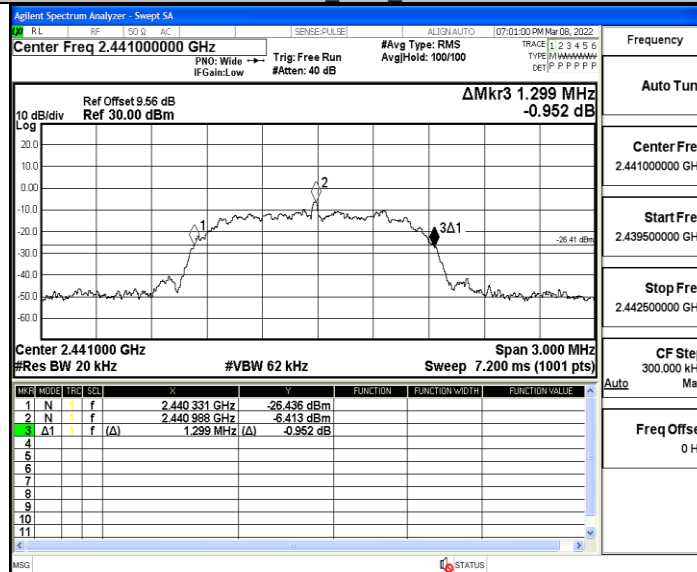
2DH5_Ant1_2480



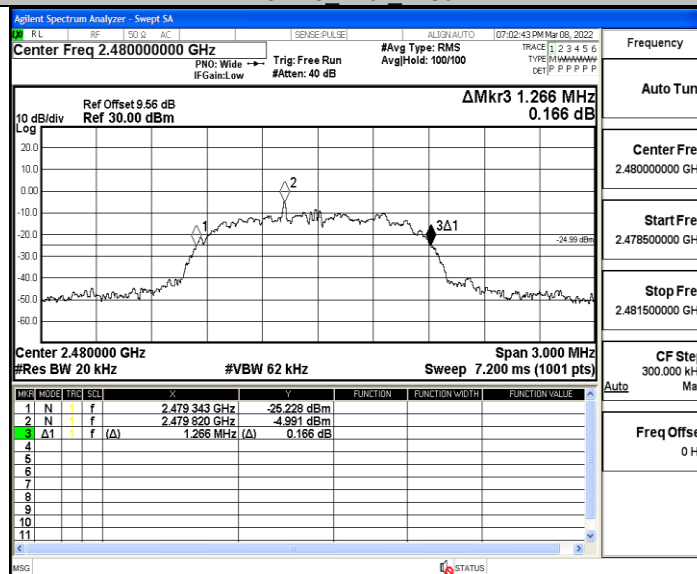
3DH5_Ant1_2402



3DH5_Ant1_2441



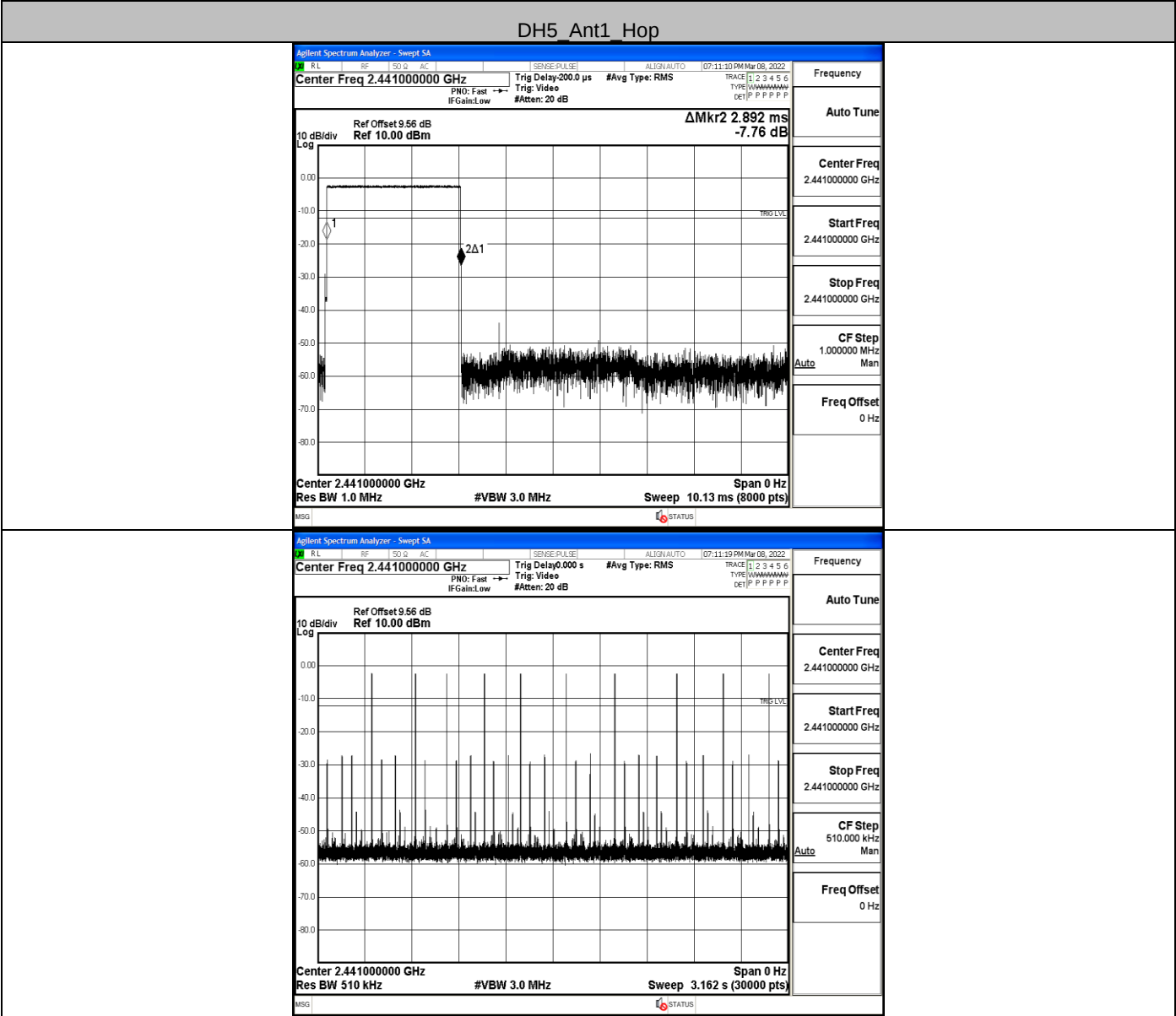
3DH5_Ant1_2480



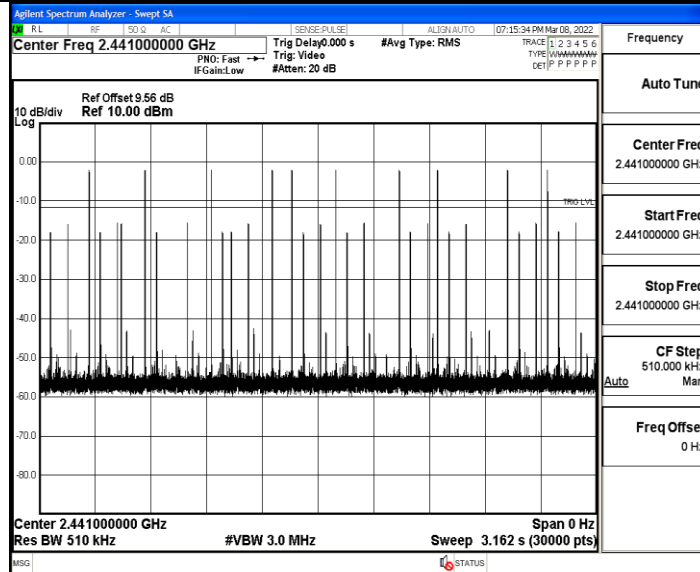
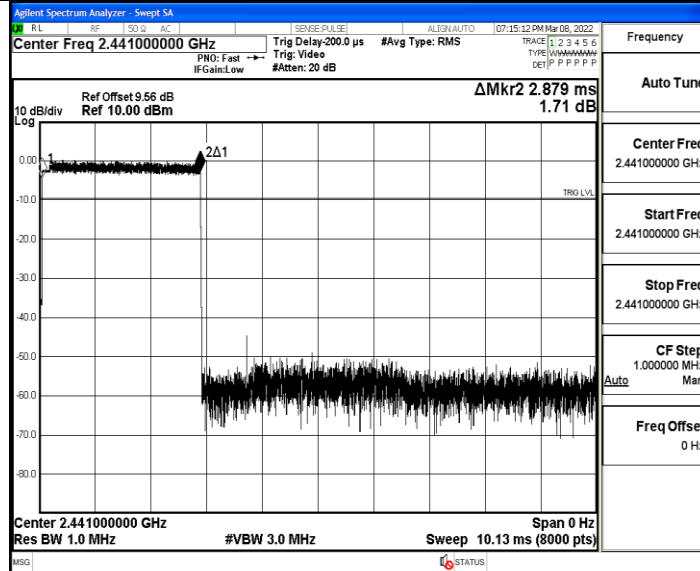
A.2 Dwell Time

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.89	110	0.318	≤0.4	PASS
2DH5	Ant1	Hop	2.88	110	0.317	≤0.4	PASS
3DH5	Ant1	Hop	2.88	110	0.317	≤0.4	PASS

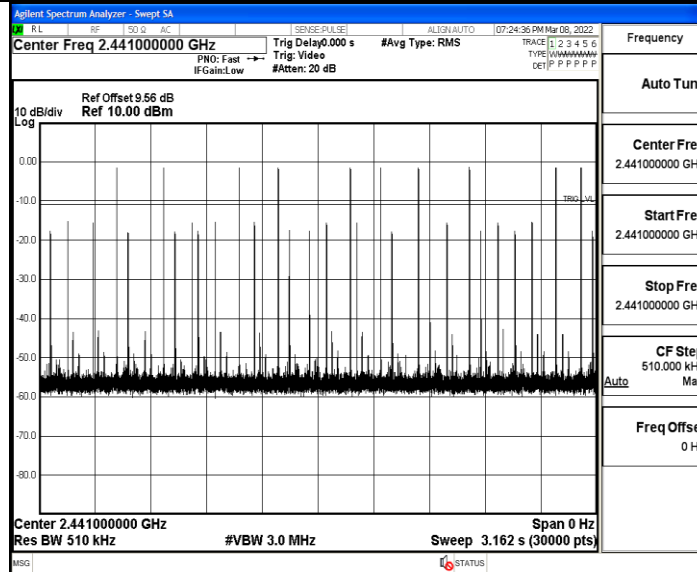
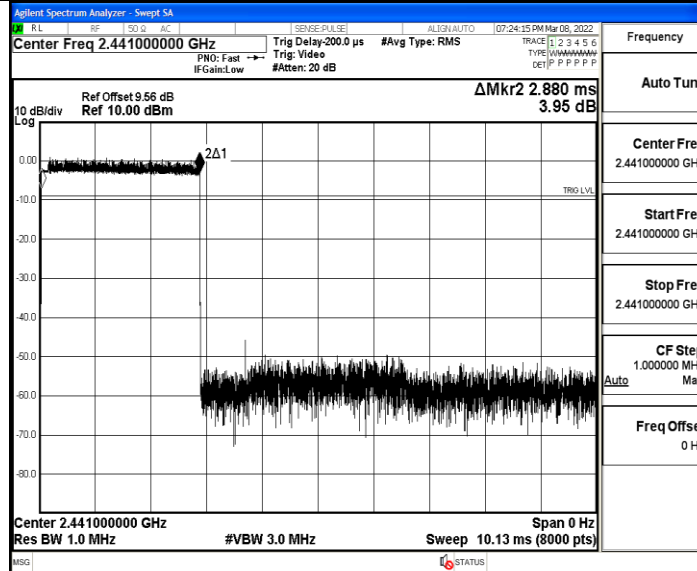
Test Graph



2DH5_Ant1_Hop



3DH5_Ant1_Hop

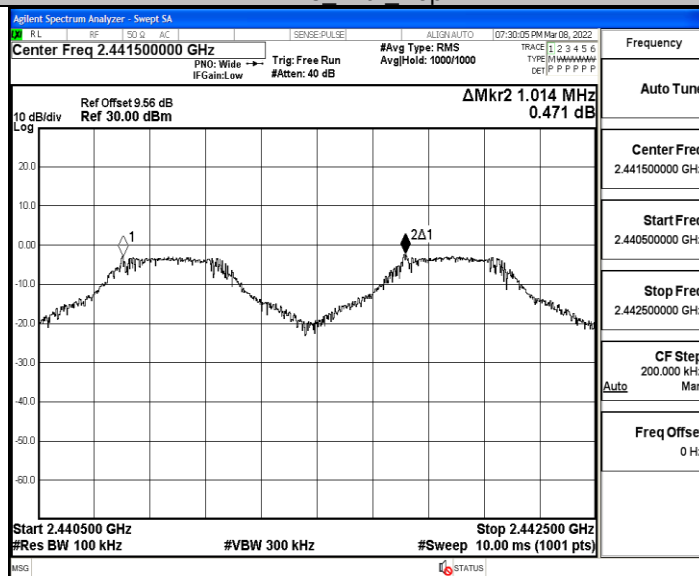


A.3 Carrier Frequency Separation

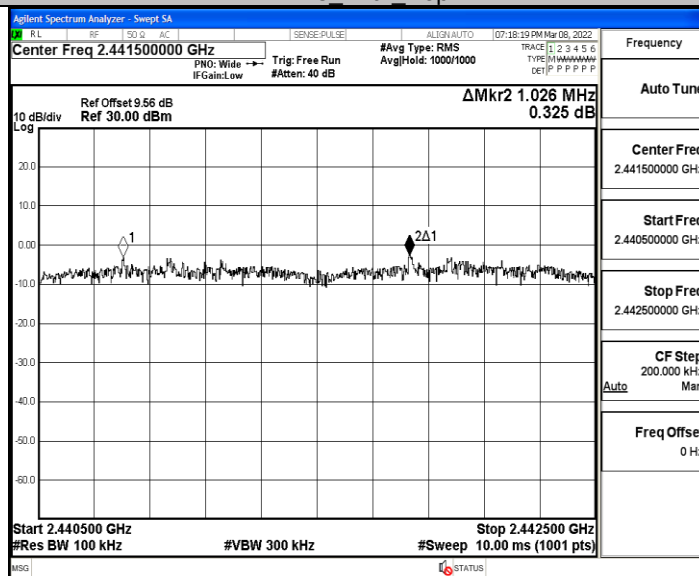
TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.014	≥ 0.942	PASS
2DH5	Ant1	Hop	1.026	≥ 0.898	PASS
3DH5	Ant1	Hop	0.988	≥ 0.866	PASS

Test Graph

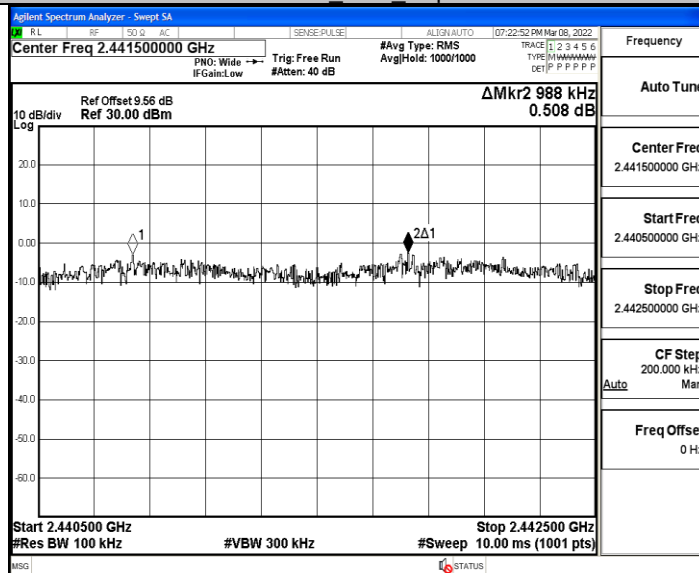
DH5_Ant1_Hop



2DH5_Ant1_Hop



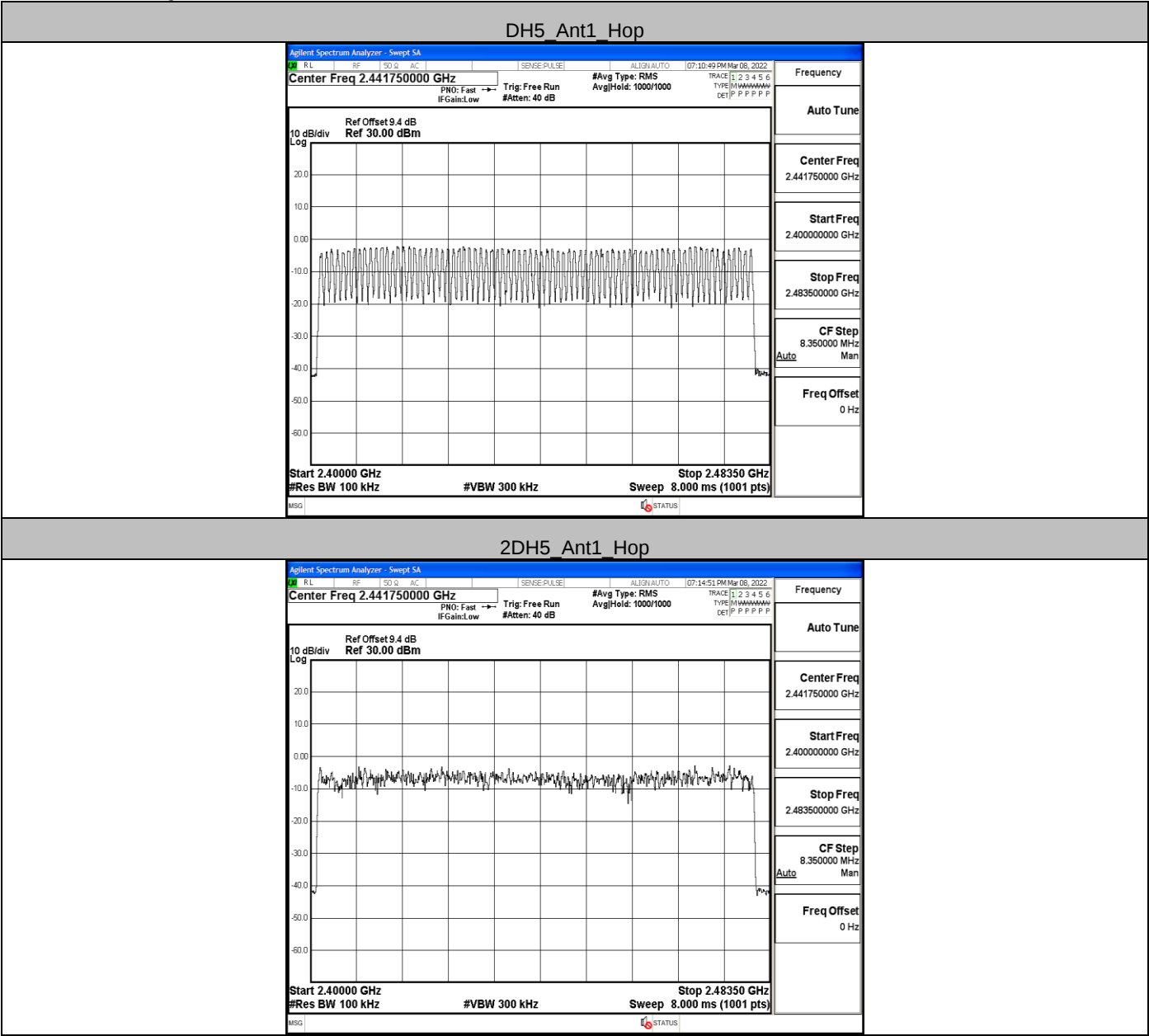
3DH5_Ant1_Hop

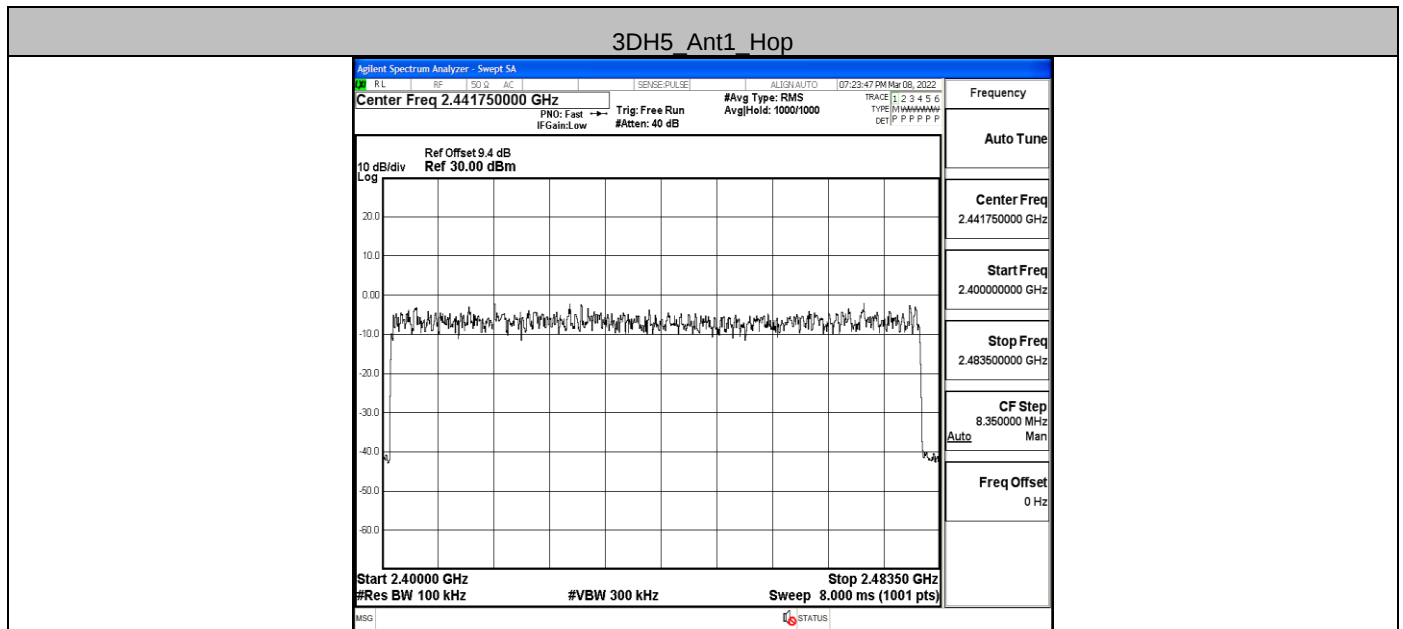


A.4 Hopping Channel Number

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



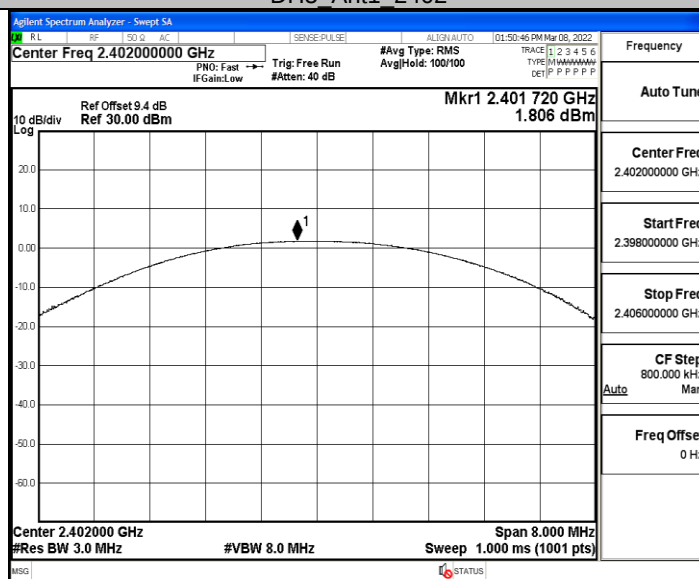


A.5 Conducted Peak Output Power

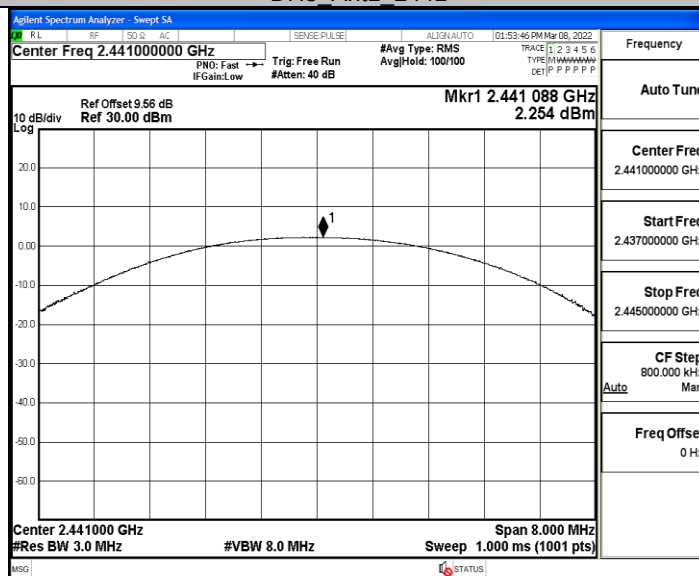
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	1.81	≤30	PASS
		2441	2.25	≤30	PASS
		2480	2.62	≤30	PASS
2DH5	Ant1	2402	0.49	≤20.97	PASS
		2441	1.21	≤20.97	PASS
		2480	1.13	≤20.97	PASS
3DH5	Ant1	2402	1.03	≤20.97	PASS
		2441	1.62	≤20.97	PASS
		2480	1.87	≤20.97	PASS

Test Graph

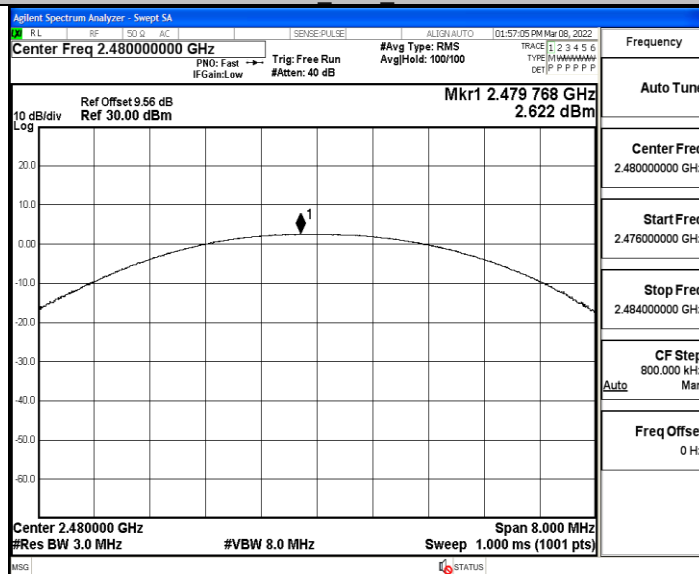
DH5 Ant1 2402



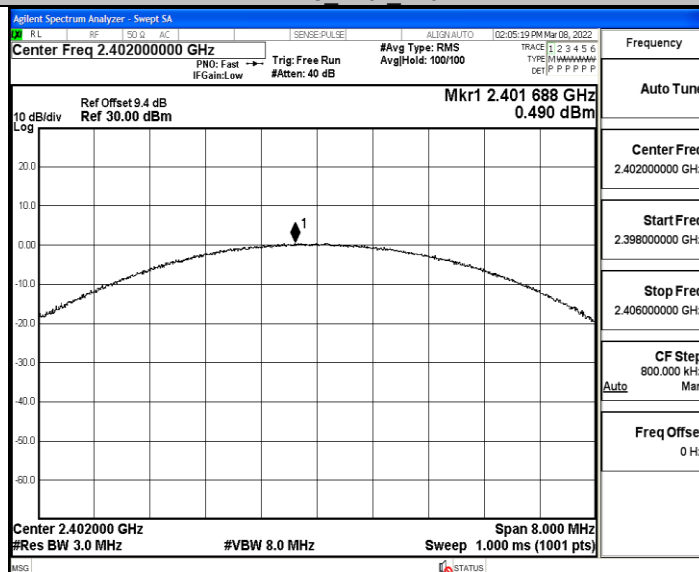
DH5 Ant1 2441



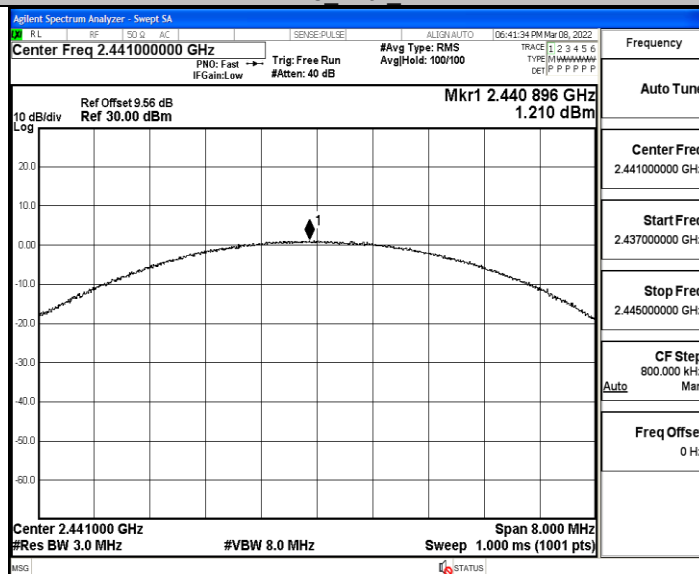
DH5 Ant1_2480



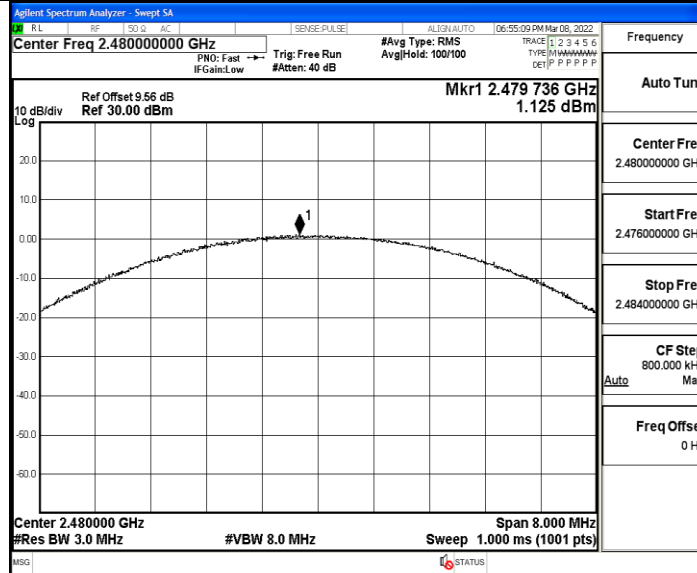
2DH5 Ant1_2402



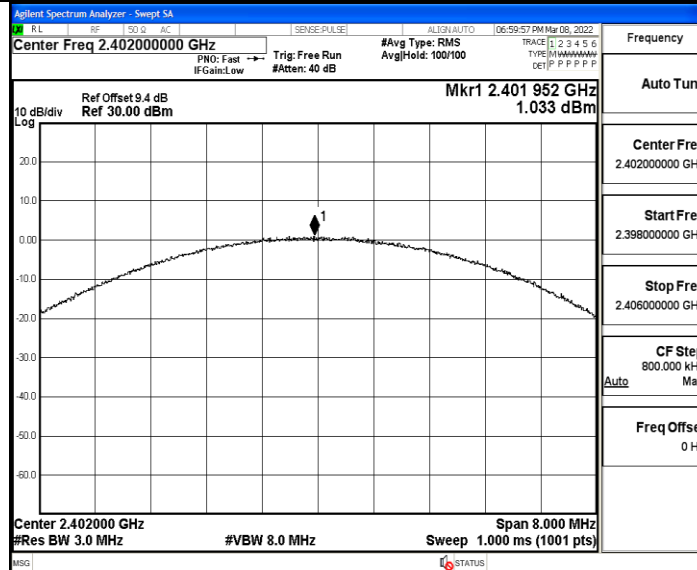
2DH5 Ant1_2441



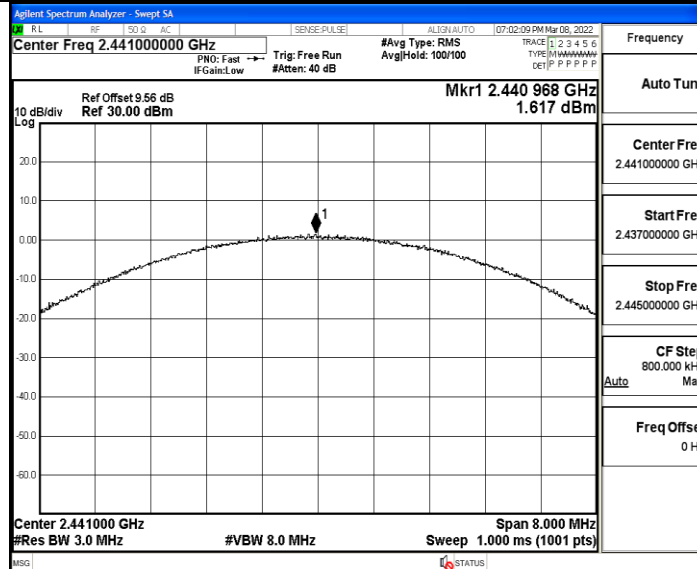
2DH5 Ant1 2480

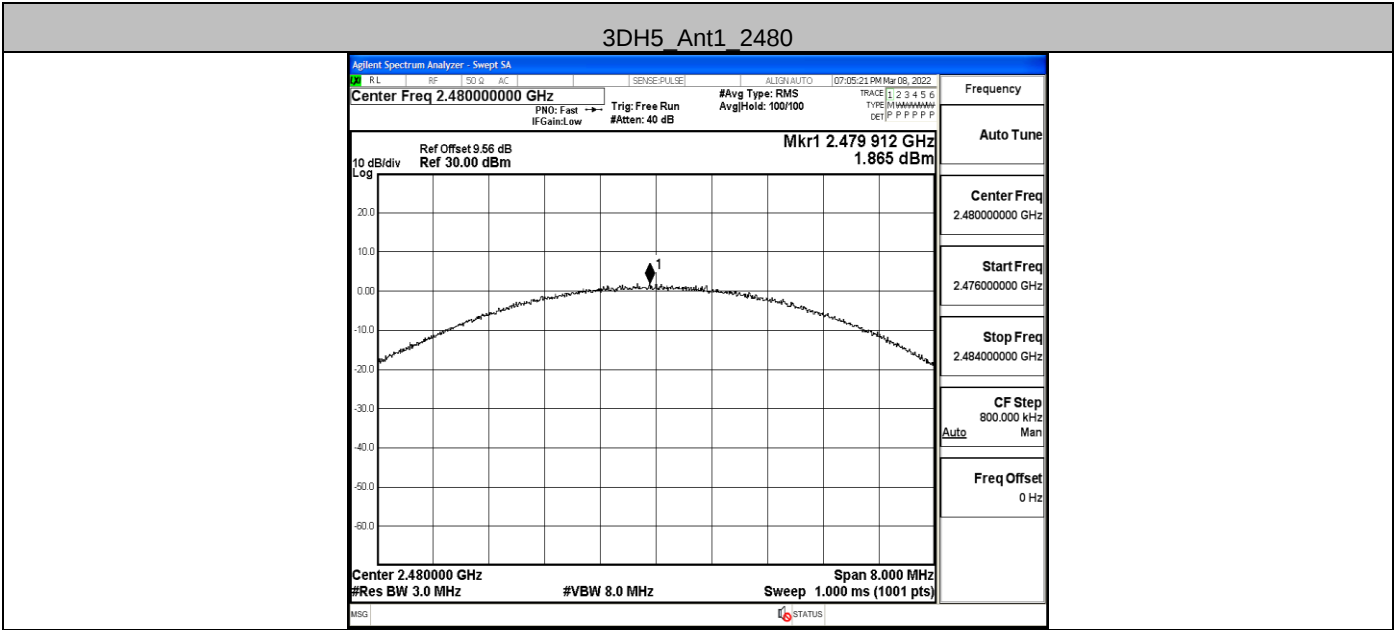


3DH5 Ant1 2402



3DH5 Ant1 2441



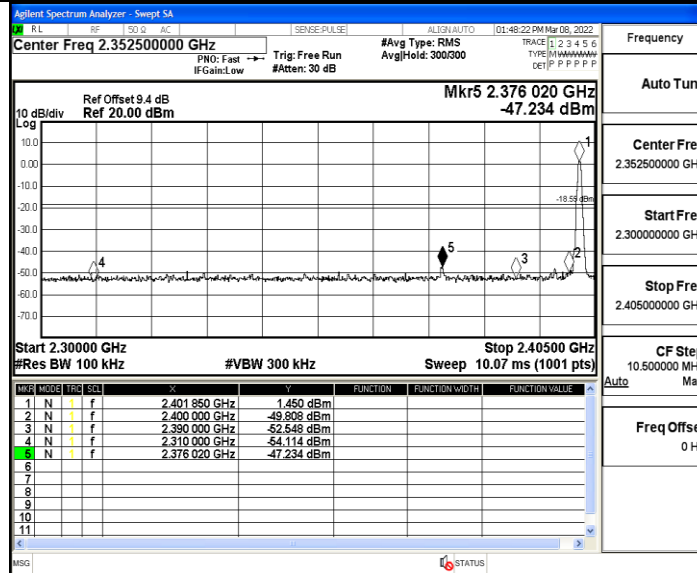


A.6 Band-edge for RF Conducted Emissions

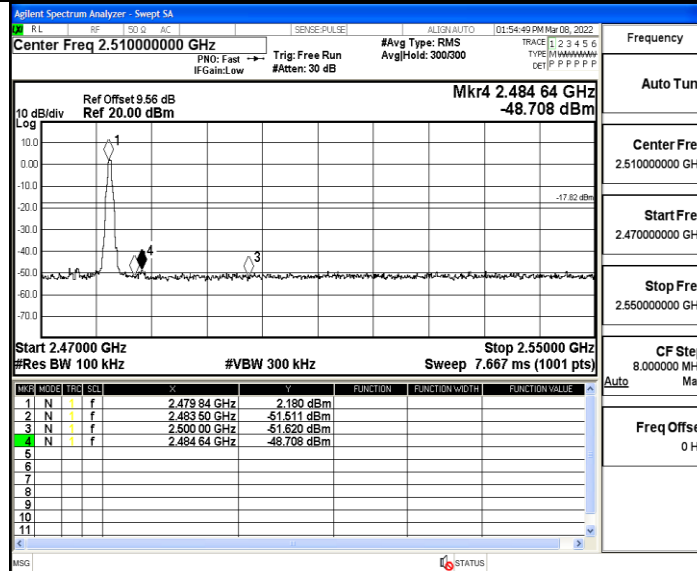
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	1.45	-47.23	≤ -18.55	PASS
		High	2480	2.18	-48.71	≤ -17.82	PASS
		Low	Hop_2402	-3.65	-47.72	≤ -23.65	PASS
		High	Hop_2480	-2.24	-48.8	≤ -22.24	PASS
2DH5	Ant1	Low	2402	-3.13	-47.69	≤ -23.13	PASS
		High	2480	-3.21	-49.48	≤ -23.21	PASS
		Low	Hop_2402	-5.41	-48.82	≤ -25.41	PASS
		High	Hop_2480	-3.03	-48.88	≤ -23.03	PASS
3DH5	Ant1	Low	2402	-2.97	-49.44	≤ -22.97	PASS
		High	2480	-4.19	-48.77	≤ -24.19	PASS
		Low	Hop_2402	-5.59	-49.64	≤ -25.59	PASS
		High	Hop_2480	-2.39	-49.27	≤ -22.39	PASS

Test Graph

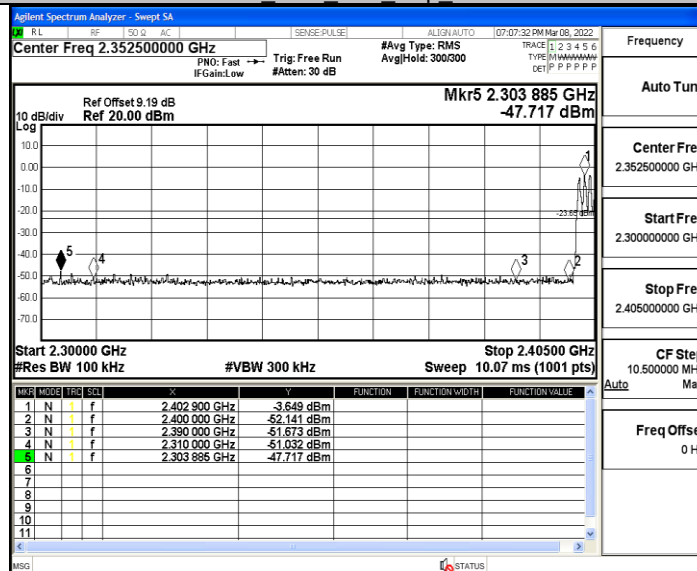
DH5_Ant1_Low_2402



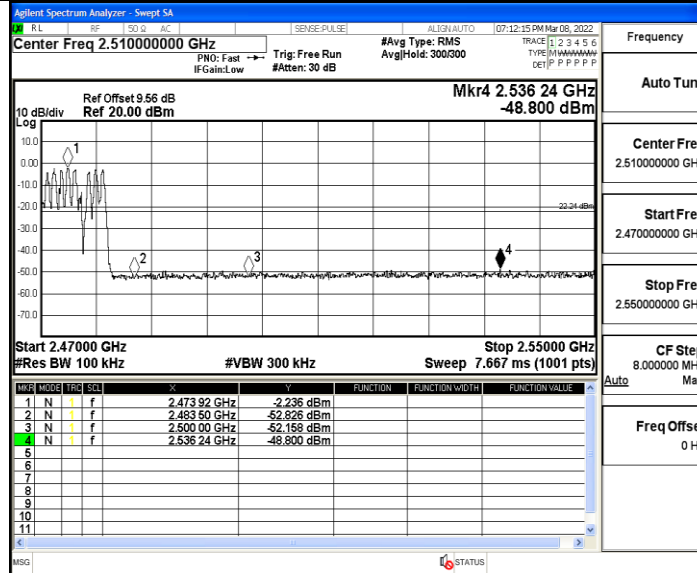
DH5_Ant1_High_2480



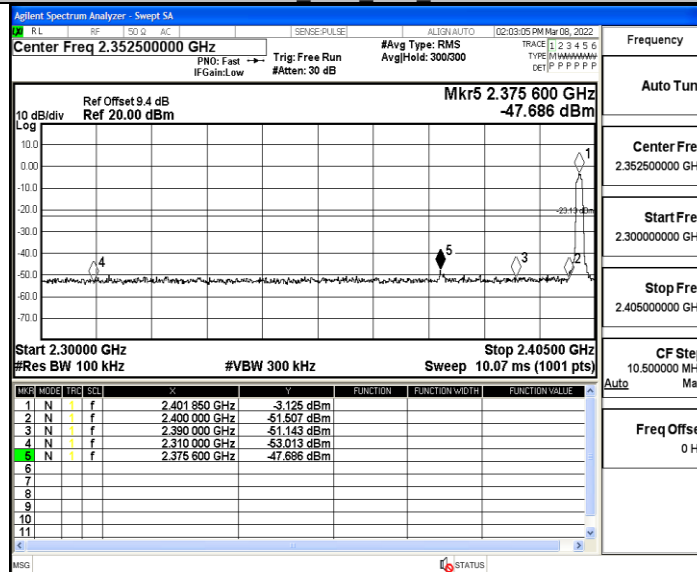
DH5_Ant1_Low_Hop_2402



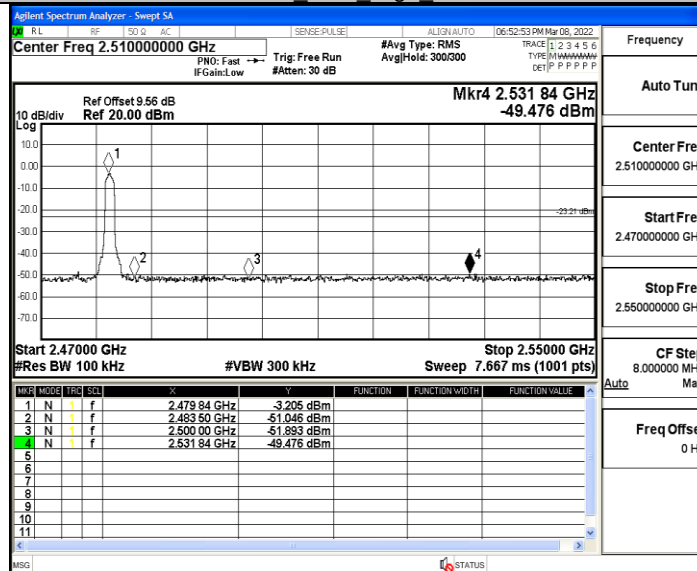
DH5_Ant1_High_Hop_2480



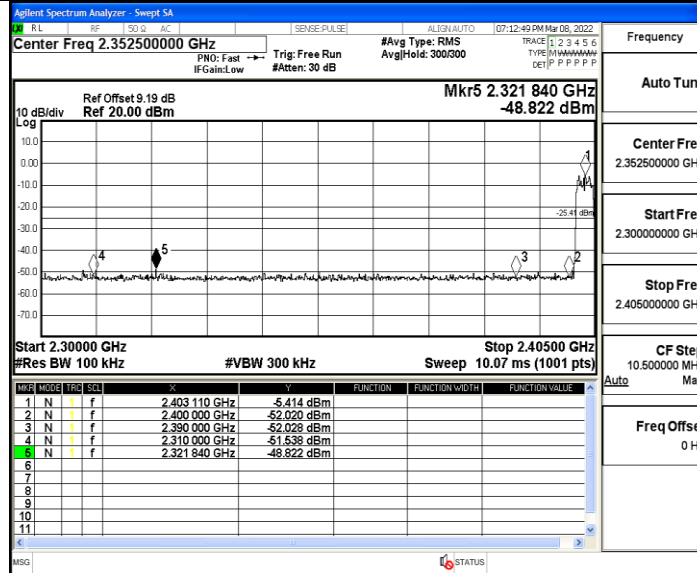
2DH5_Ant1_Low_2402



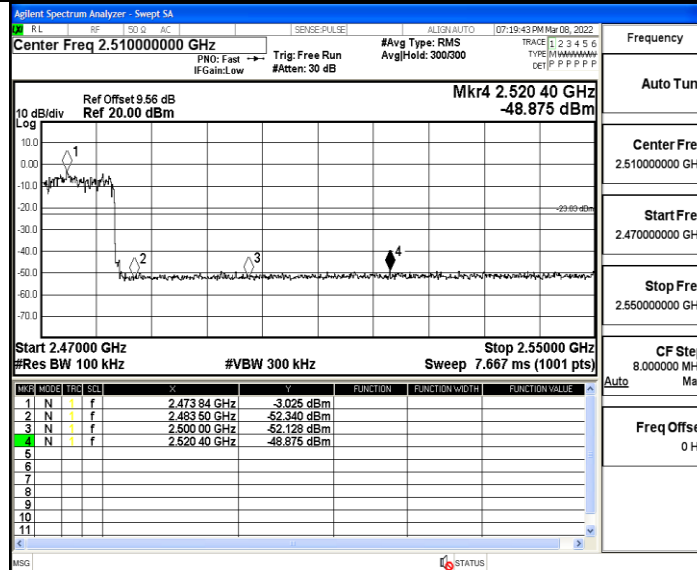
2DH5_Ant1_High_2480



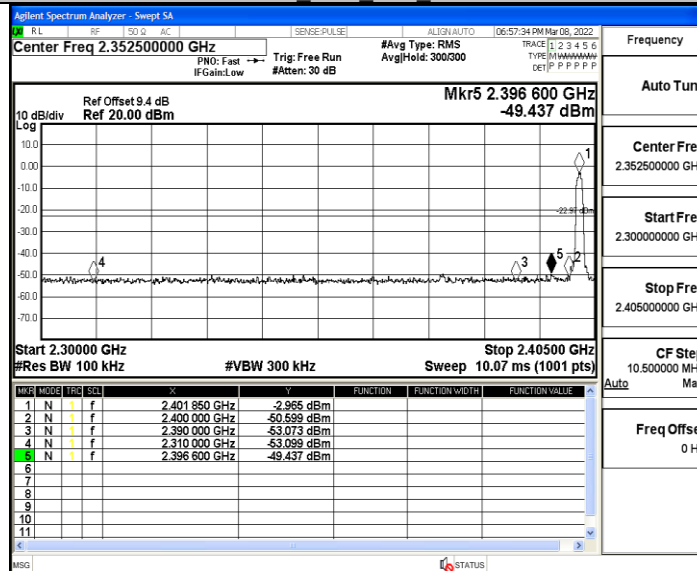
2DH5 Ant1 Low Hop 2402



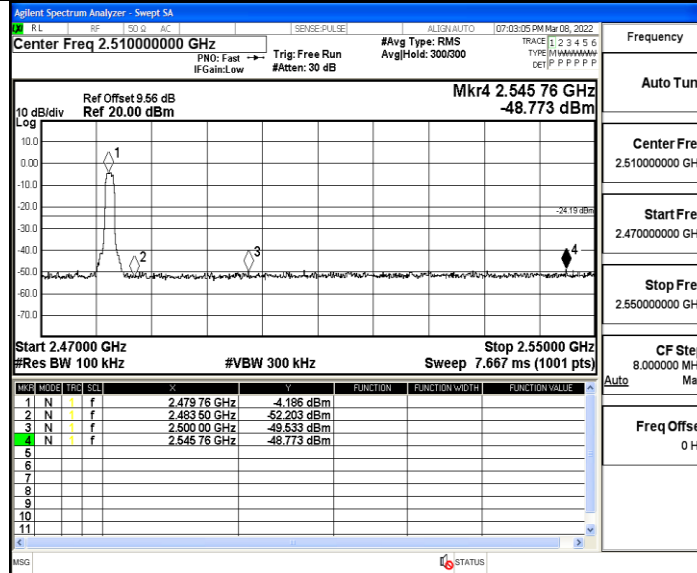
2DH5 Ant1 High Hop 2480



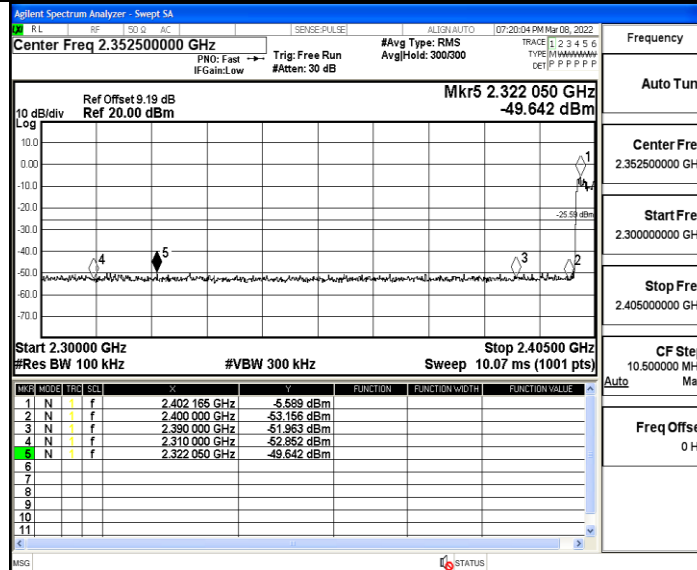
3DH5 Ant1 Low 2402



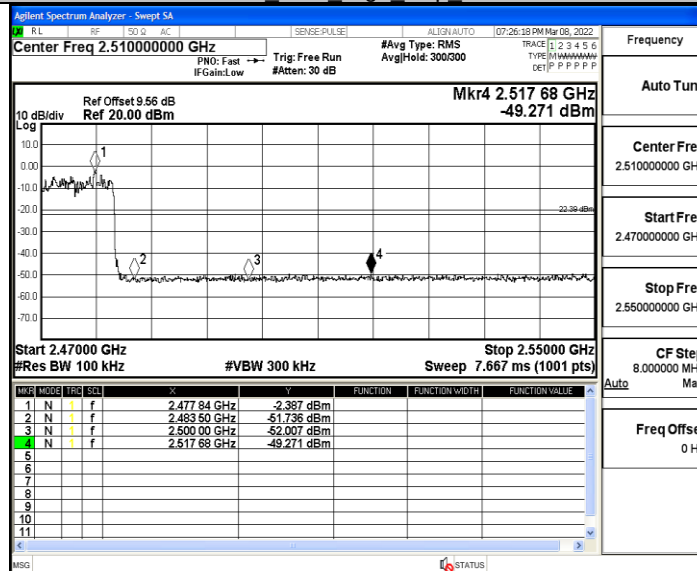
3DH5 Ant1 High 2480



3DH5 Ant1 Low Hop 2402



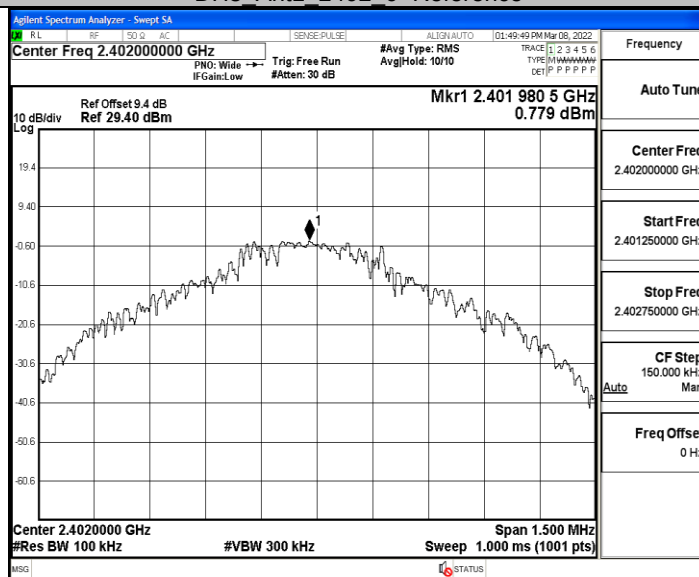
3DH5 Ant1 High Hop 2480



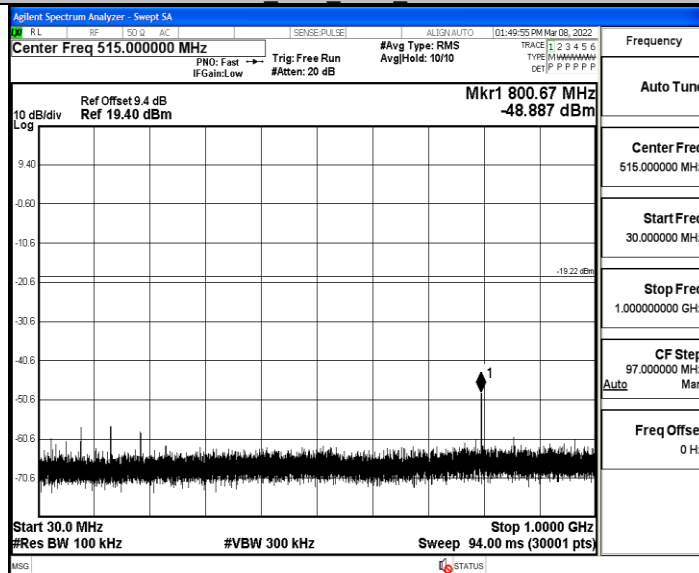
A.7 RF Conducted Spurious Emissions

Test Graph

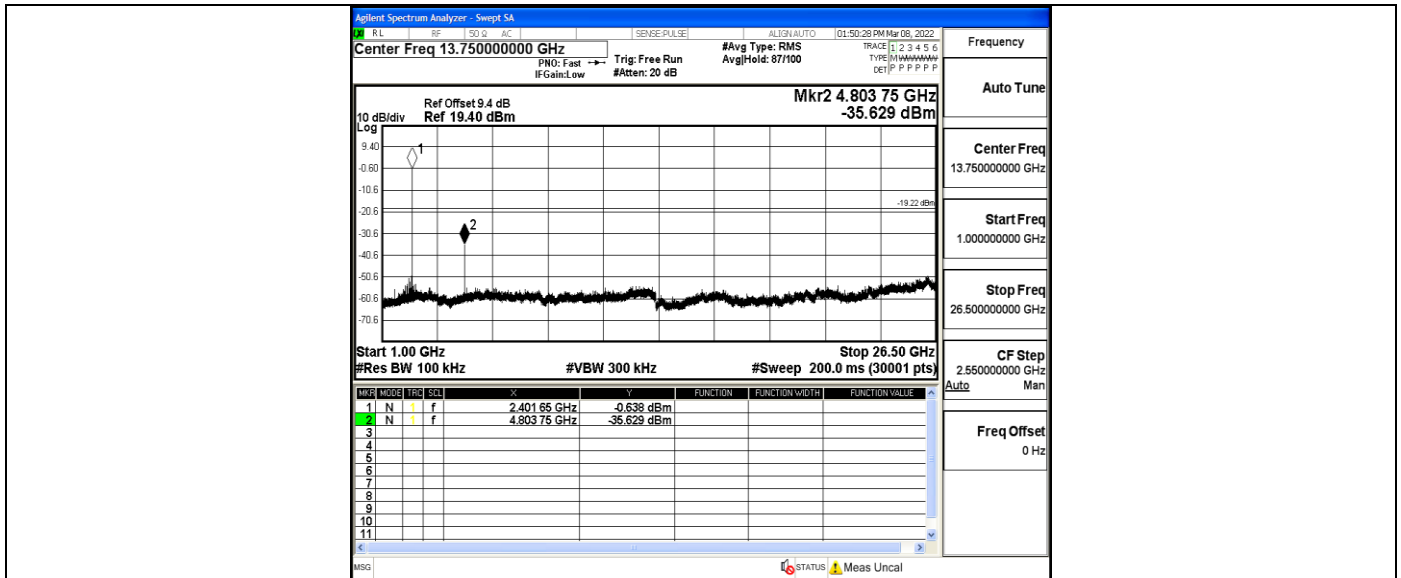
DH5_Ant1_2402_0-Reference



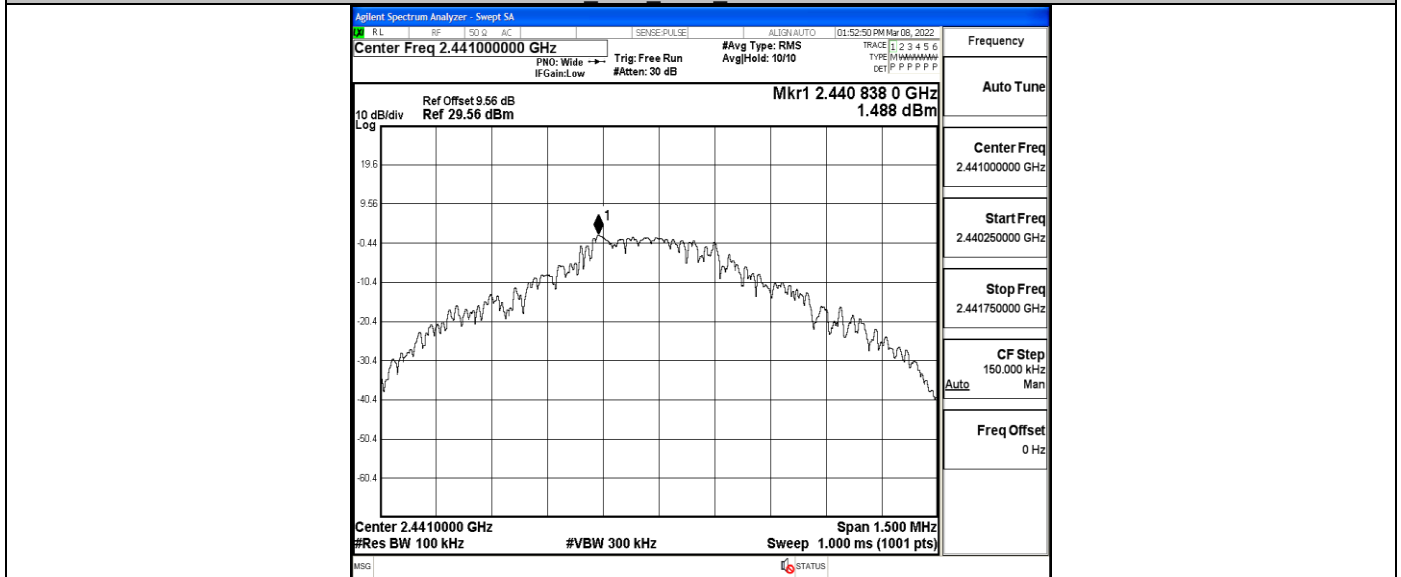
DH5_Ant1_2402_30~1000



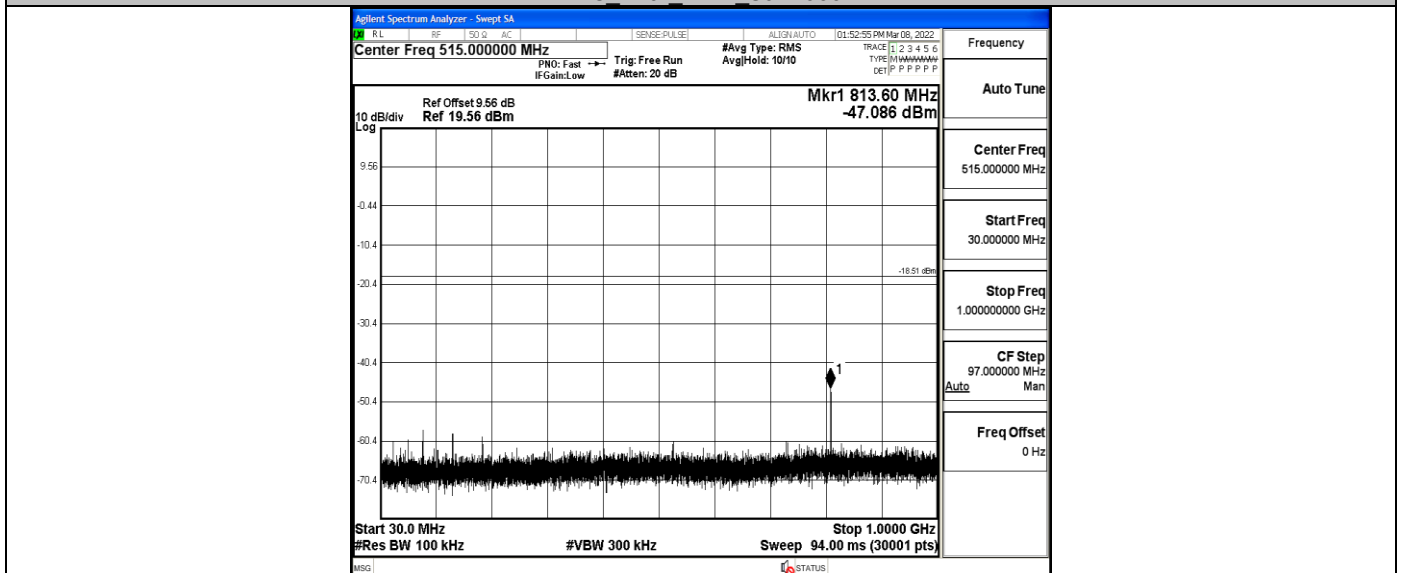
DH5_Ant1_2402_1000~26500



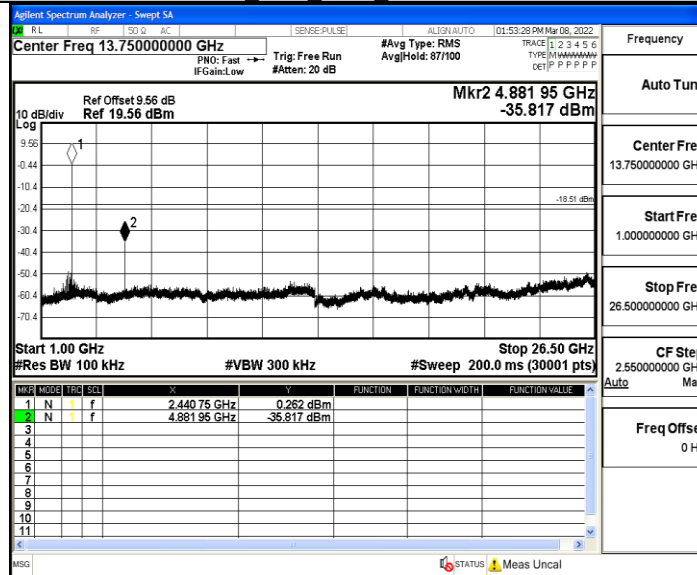
DH5_Ant1_2441_0-Reference



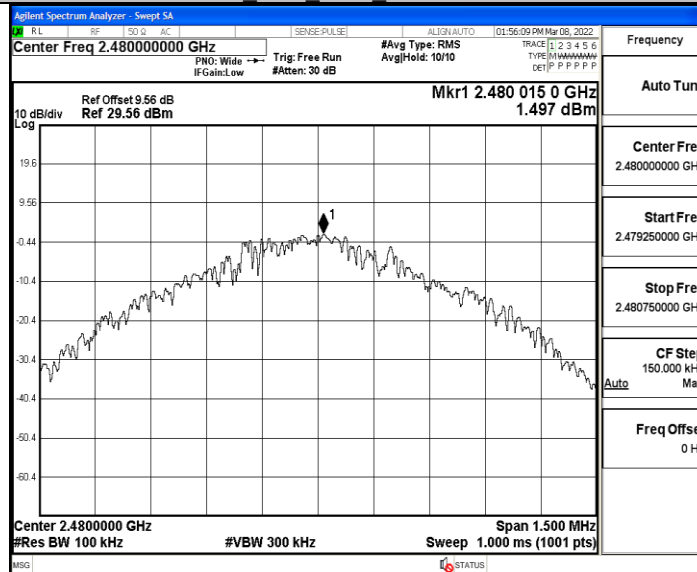
DH5_Ant1_2441_30-1000



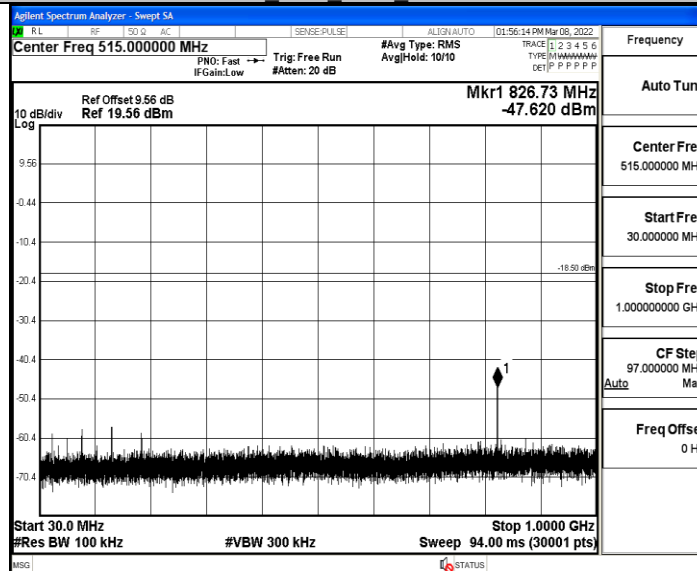
DH5_Ant1_2441_1000~26500



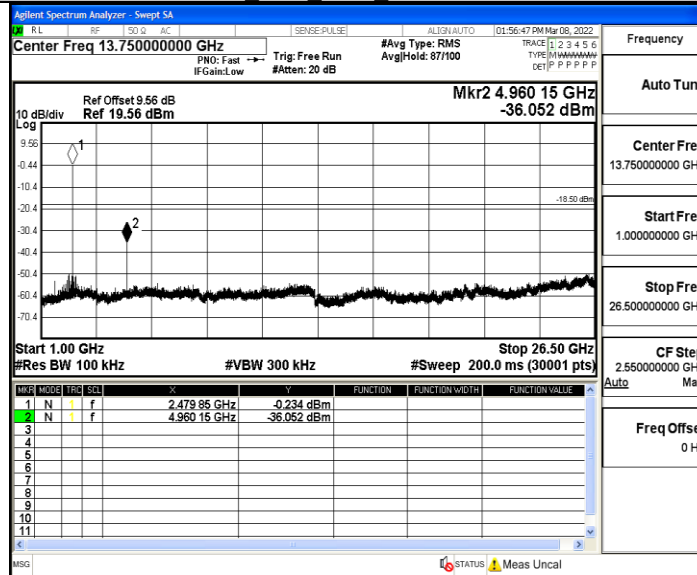
DH5_Ant1_2480_0-Reference



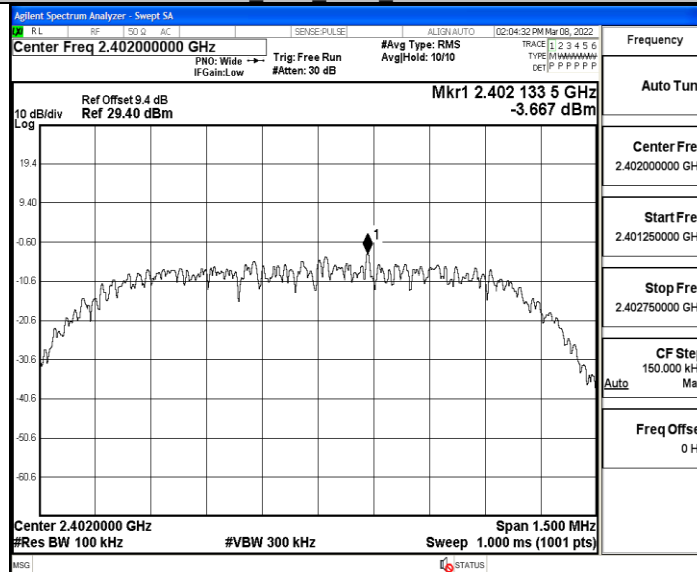
DH5_Ant1_2480_30~1000



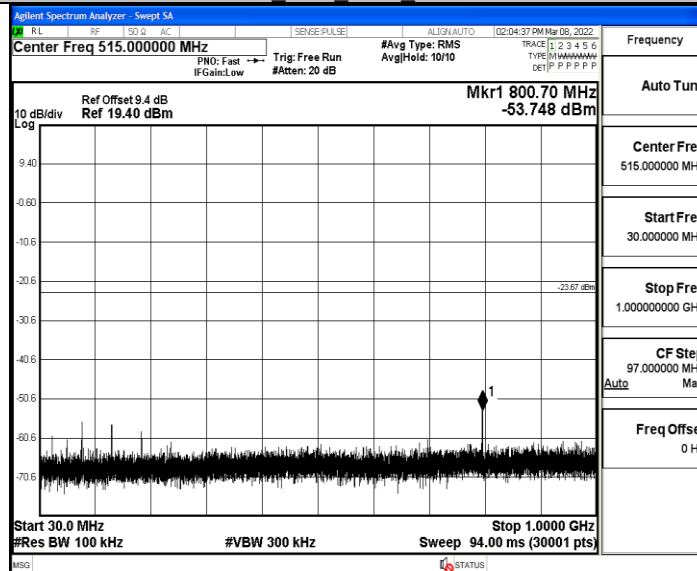
DH5 Ant1 2480 1000~26500



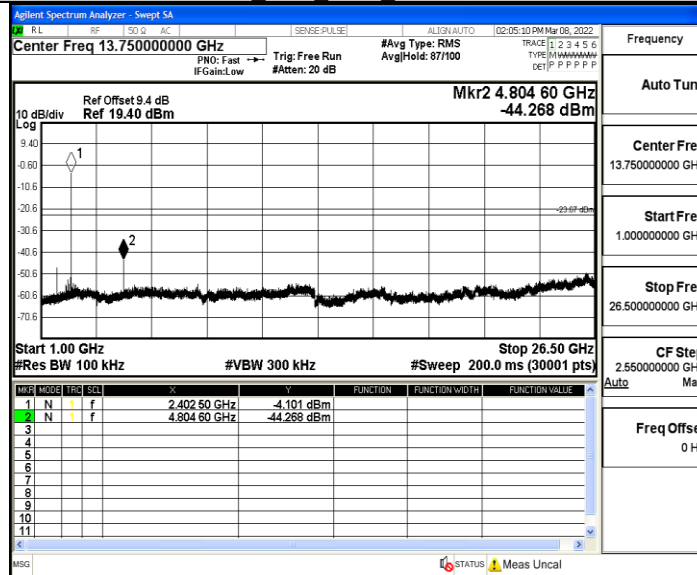
2DH5 Ant1 2402 0~Reference



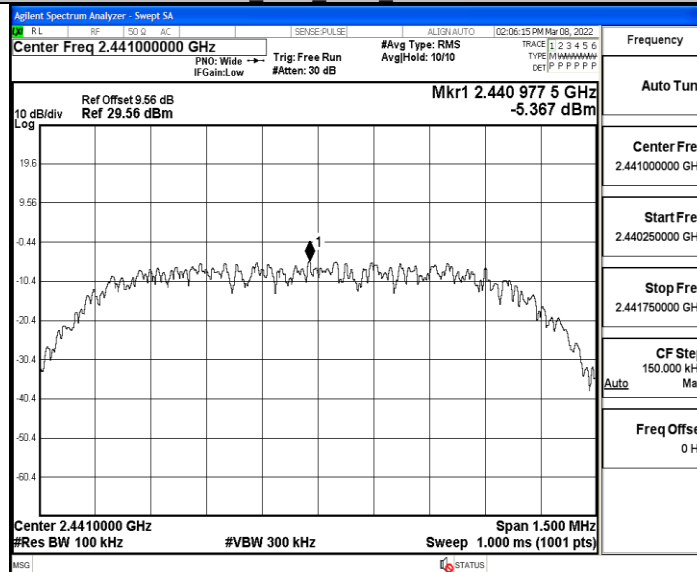
2DH5 Ant1 2402 30~1000



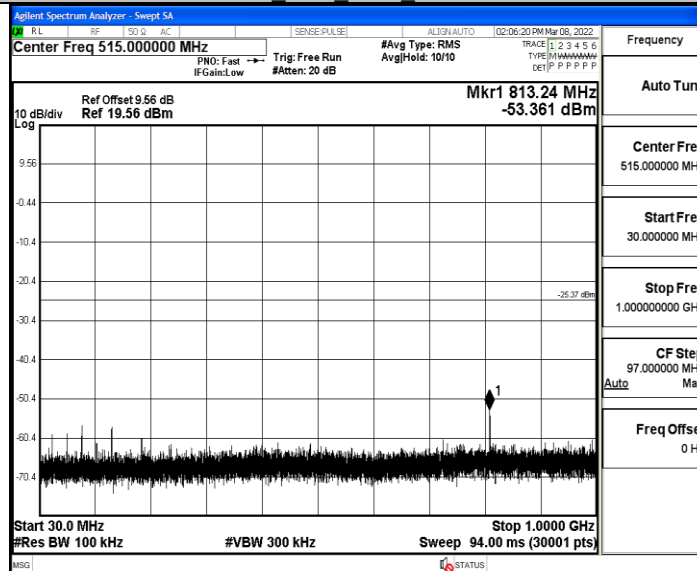
2DH5 Ant1 2402 1000~26500



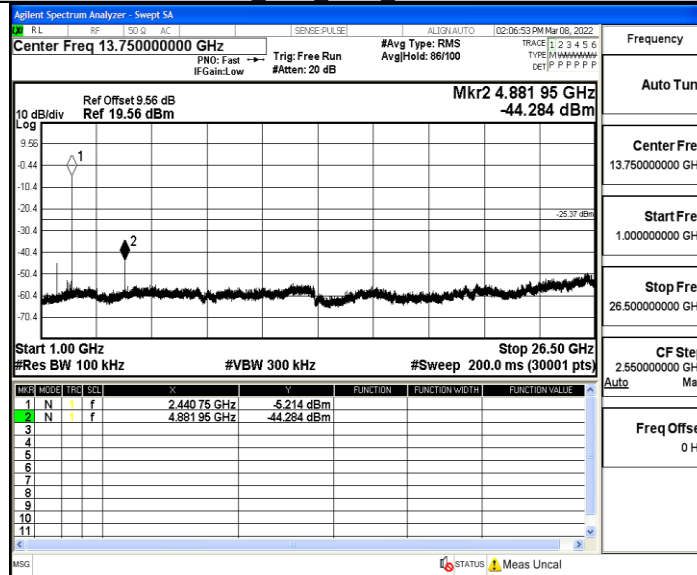
2DH5 Ant1 2441 0~Reference



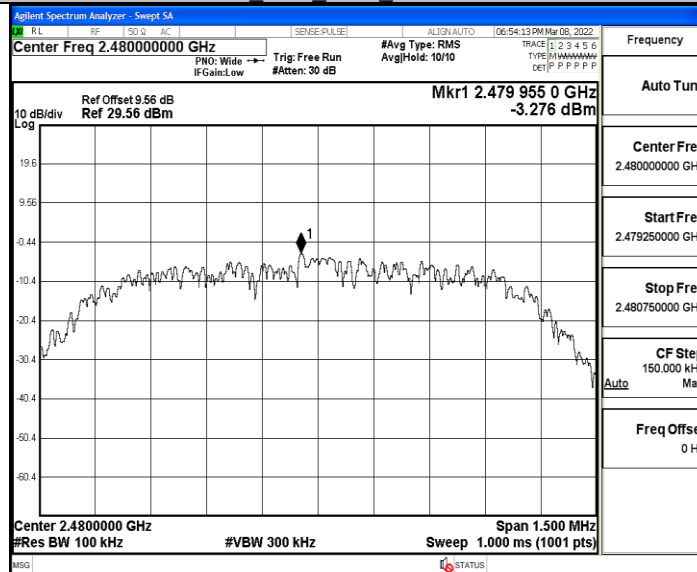
2DH5 Ant1 2441 30~1000



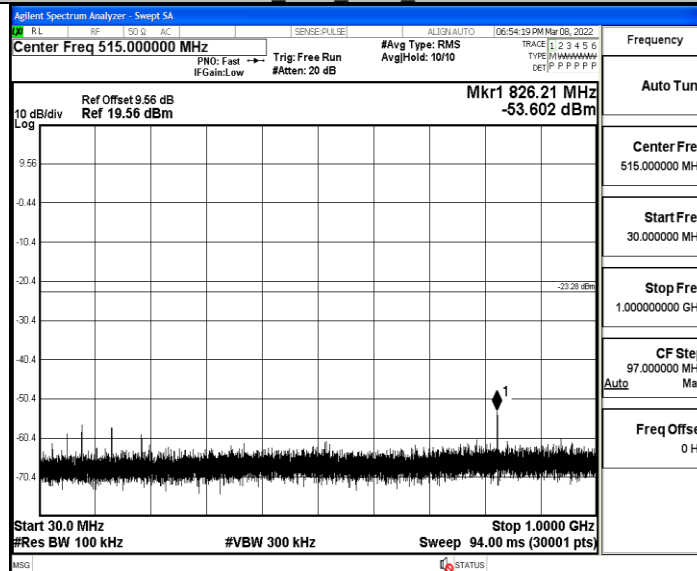
2DH5 Ant1 2441 1000-26500



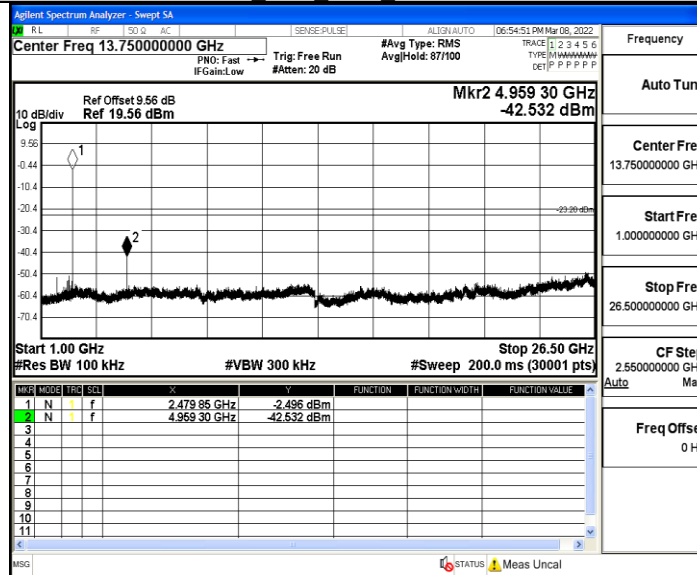
2DH5 Ant1 2480 0-Reference



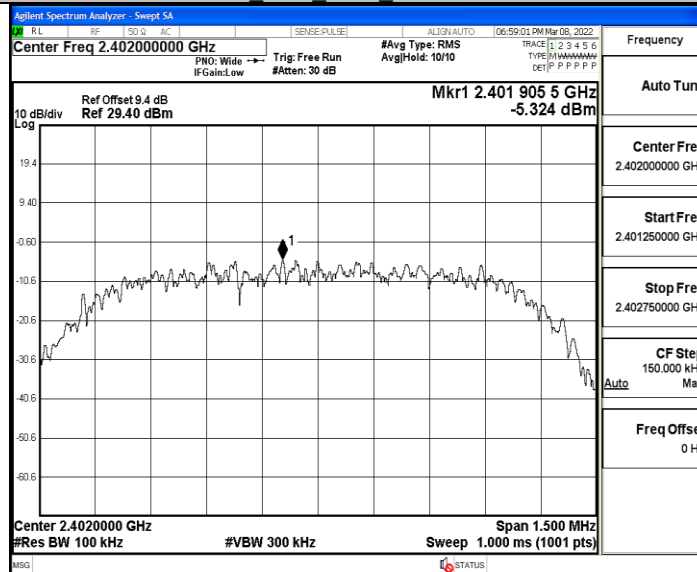
2DH5 Ant1 2480 30-1000



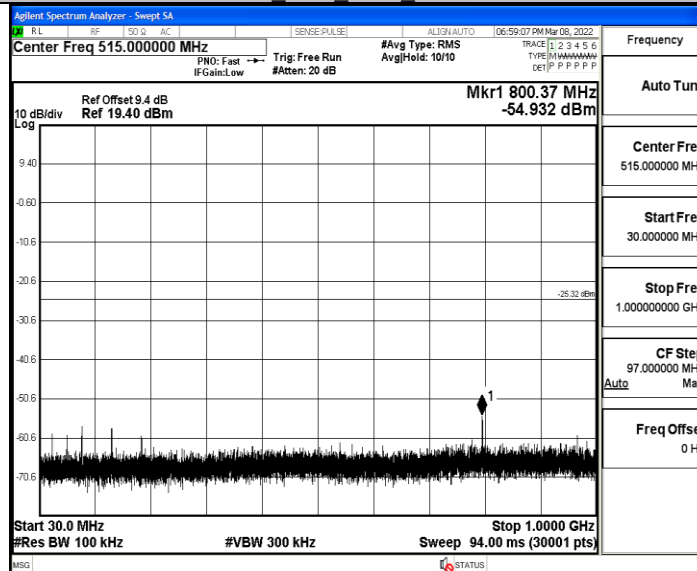
2DH5 Ant1 2480 1000~26500



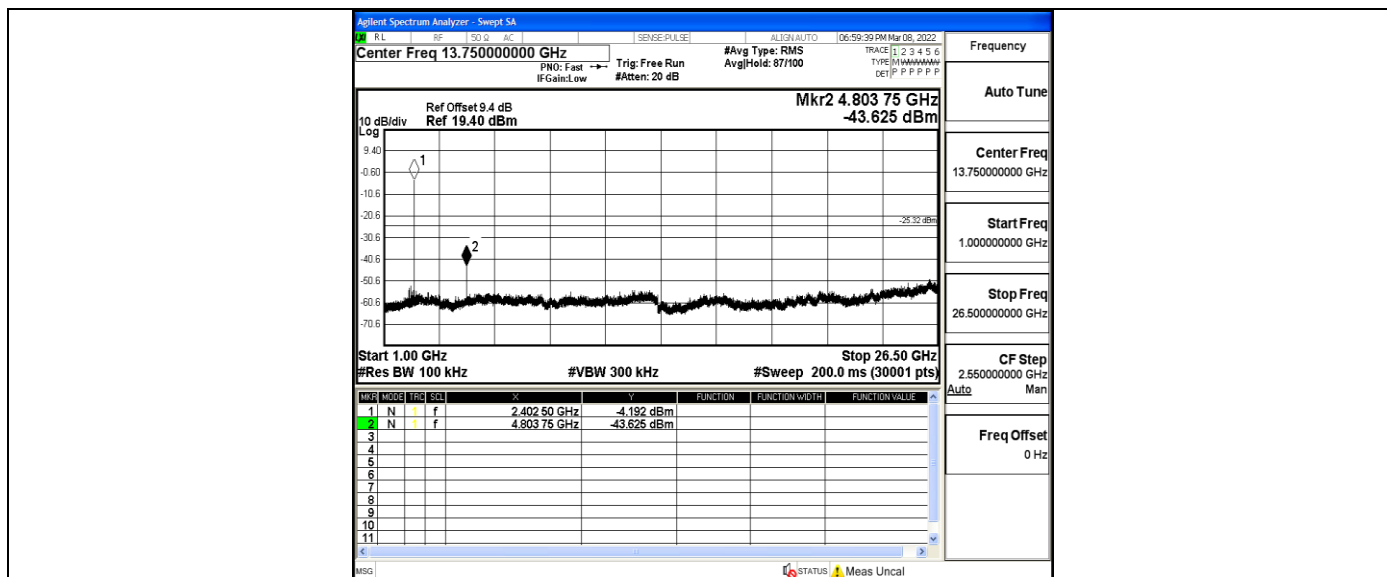
3DH5 Ant1 2402 0~Reference



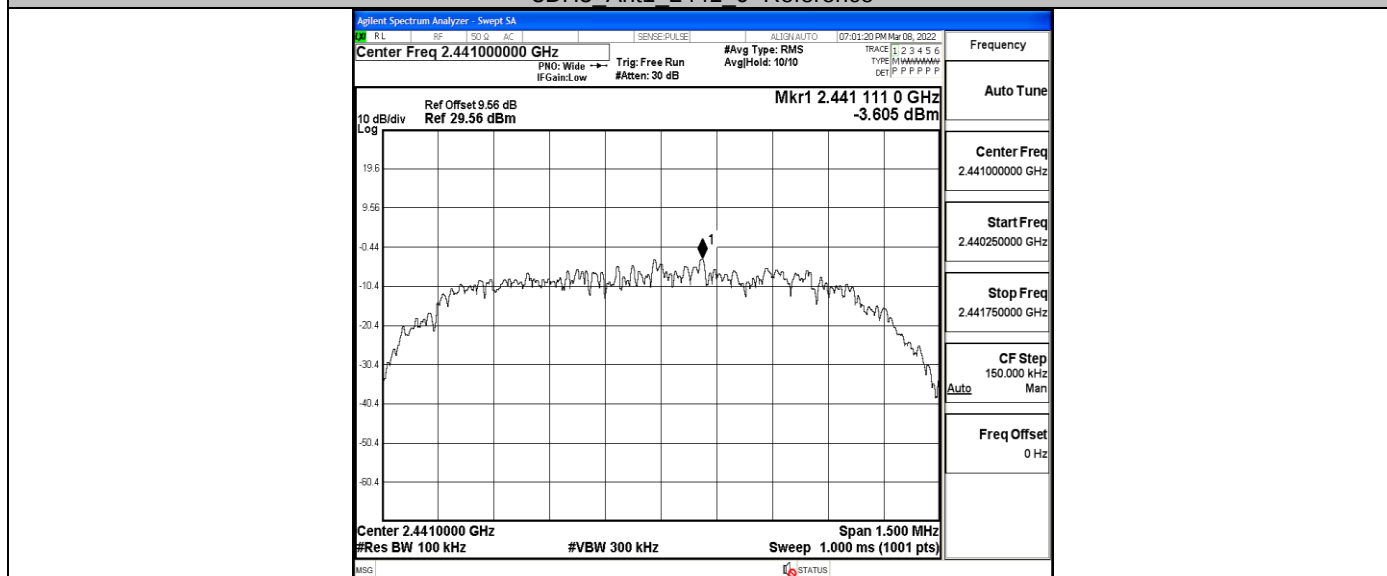
3DH5 Ant1 2402 30~1000



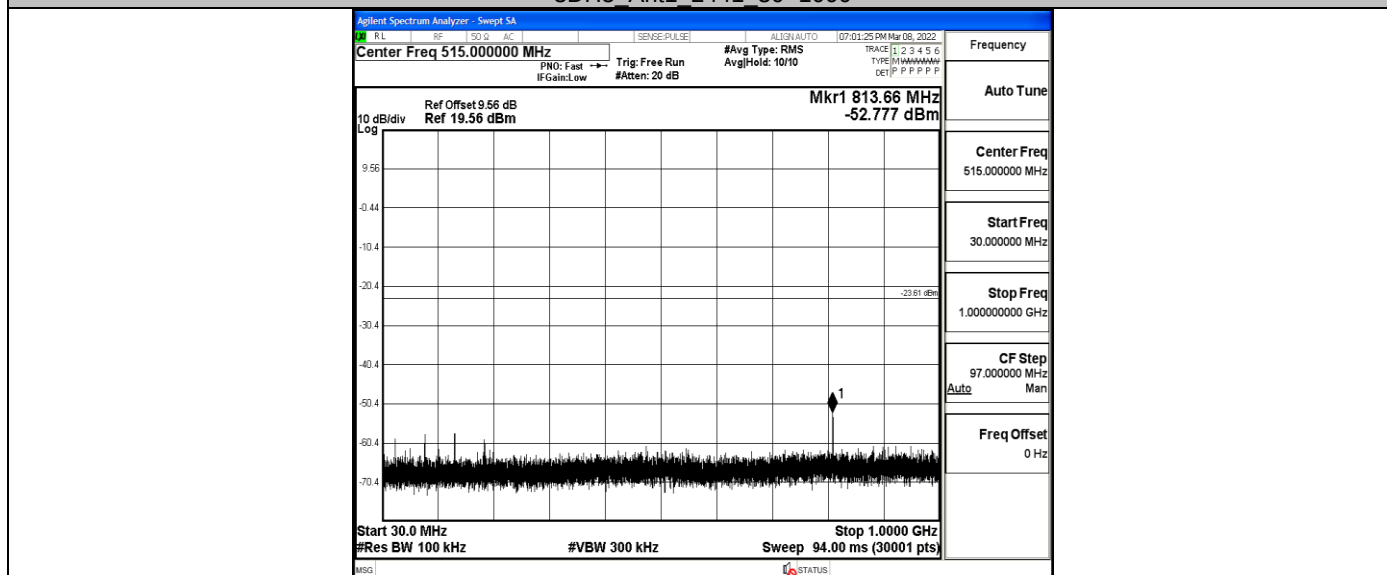
3DH5 Ant1 2402 1000~26500



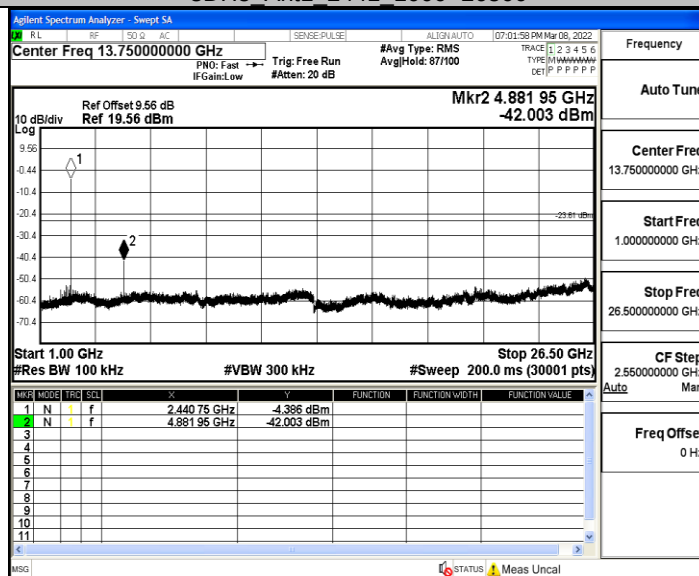
3DH5 Ant1 2441 0~Reference



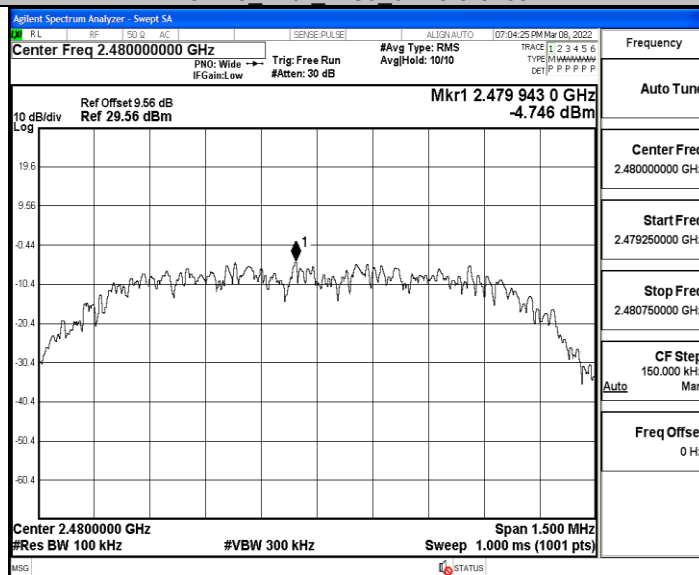
3DH5 Ant1 2441 30~1000



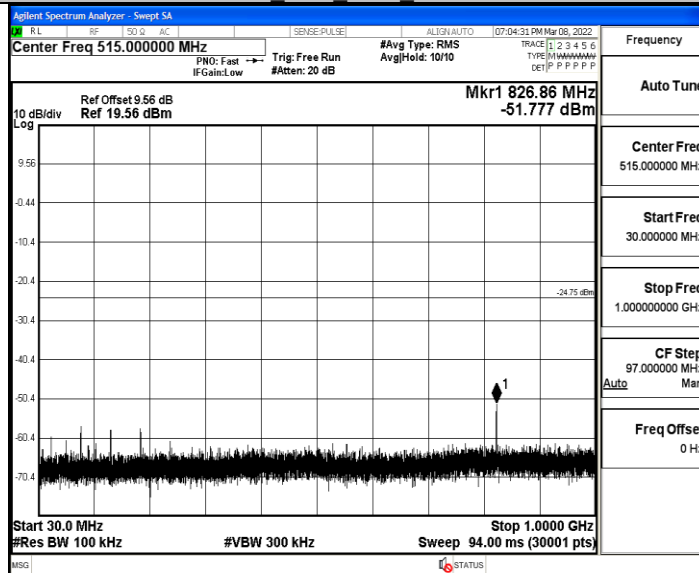
3DH5 Ant1 2441 1000~26500

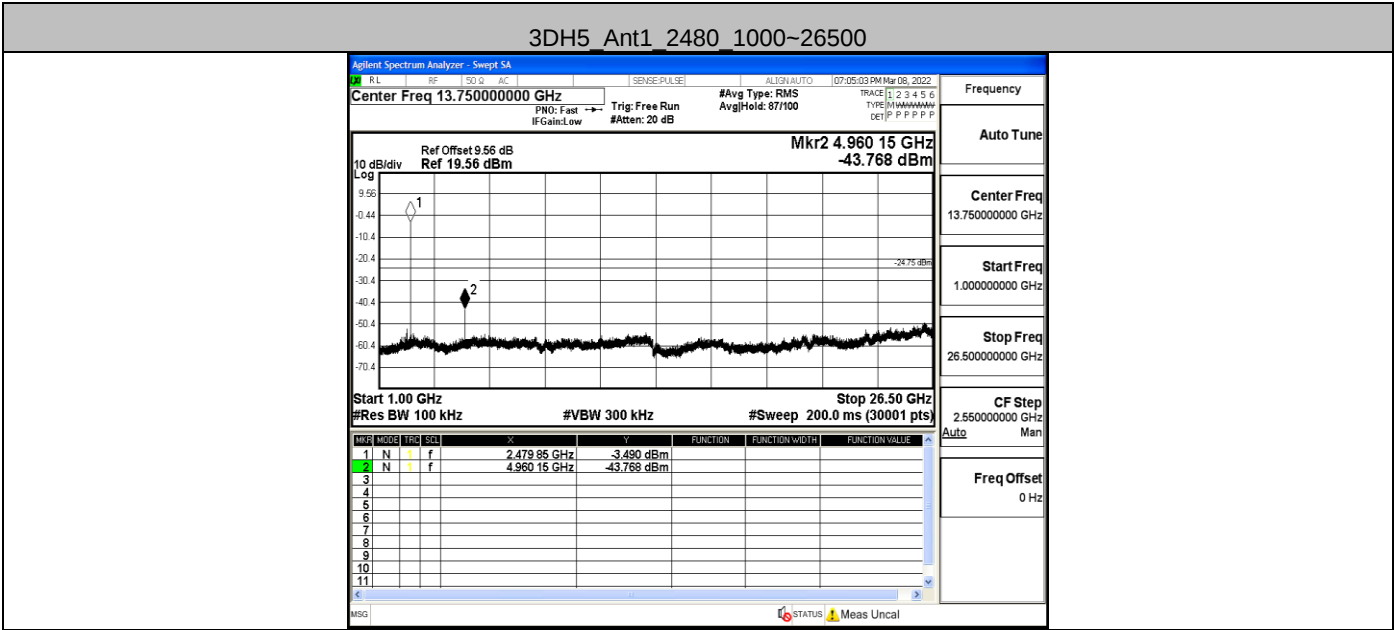


3DH5 Ant1 2480 0~Reference



3DH5 Ant1 2480 30~1000





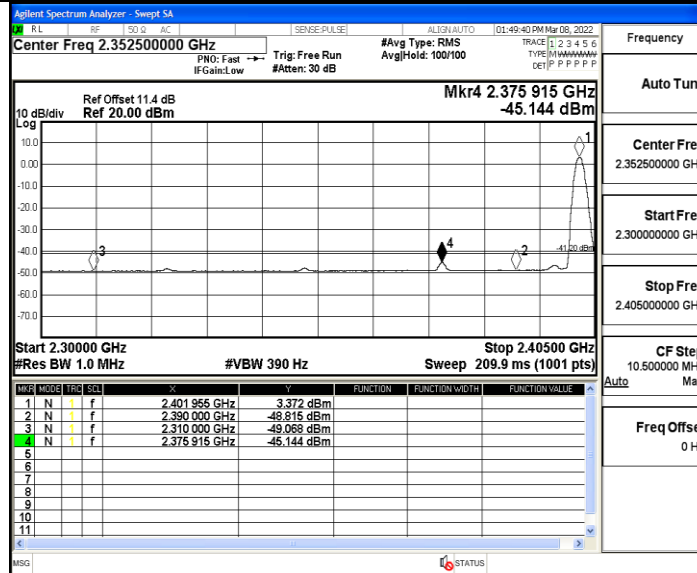
A.8 Restrict-band band-edge measurements

TestMode	Antenna	ChName	Channel	Detector	Freq(MHz)	Result(dBm)	Limit(dBm)	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-49.07	≤-41.20	PASS
				AV	2375.915	-45.14	≤-41.20	PASS
				AV	2390.000	-48.82	≤-41.20	PASS
				Peak	2310.000	-41.84	≤-21.20	PASS
				Peak	2344.520	-38.04	≤-21.20	PASS
				Peak	2390.000	-43.3	≤-21.20	PASS
		High	2480	AV	2483.500	-47.36	≤-41.20	PASS
				AV	2484.640	-46.17	≤-41.20	PASS
				AV	2500.000	-48.15	≤-41.20	PASS
				Peak	2483.500	-40.81	≤-21.20	PASS
				Peak	2485.040	-38.08	≤-21.20	PASS
				Peak	2500.000	-40.79	≤-21.20	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-49.14	≤-41.20	PASS
				AV	2376.125	-47.29	≤-41.20	PASS
				AV	2390.000	-48.73	≤-41.20	PASS
				Peak	2310.000	-41.19	≤-21.20	PASS
				Peak	2323.205	-37.33	≤-21.20	PASS
				Peak	2390.000	-42.3	≤-21.20	PASS
		High	2480	AV	2483.500	-47.8	≤-41.20	PASS
				AV	2484.560	-47.38	≤-41.20	PASS
				AV	2500.000	-48.11	≤-41.20	PASS
				Peak	2483.500	-39.82	≤-21.20	PASS
				Peak	2490.480	-37.72	≤-21.20	PASS
				Peak	2500.000	-41.2	≤-21.20	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-49.17	≤-41.20	PASS
				AV	2376.020	-47.32	≤-41.20	PASS
				AV	2390.000	-48.84	≤-41.20	PASS
				Peak	2310.000	-40.78	≤-21.20	PASS
				Peak	2365.625	-38.14	≤-21.20	PASS
				Peak	2390.000	-40.93	≤-21.20	PASS
		High	2480	AV	2483.500	-47.9	≤-41.20	PASS
				AV	2484.640	-47.43	≤-41.20	PASS
				AV	2500.000	-48.16	≤-41.20	PASS
				Peak	2483.500	-40.49	≤-21.20	PASS
				Peak	2489.680	-37.98	≤-21.20	PASS
				Peak	2500.000	-40.49	≤-21.20	PASS

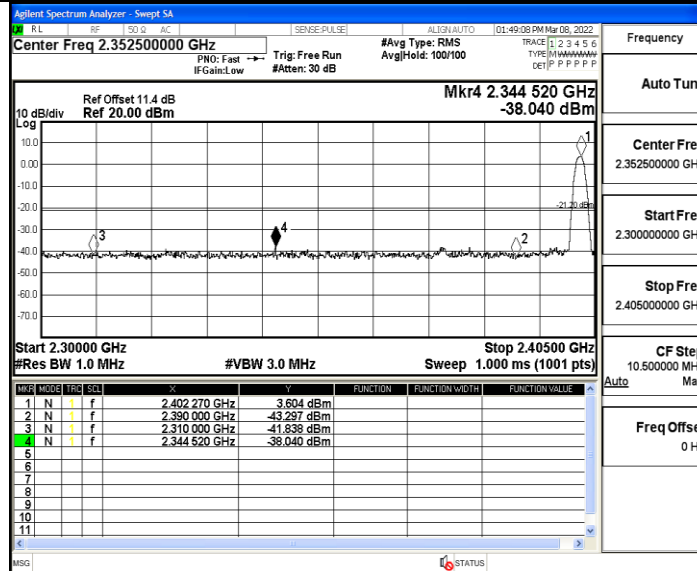
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

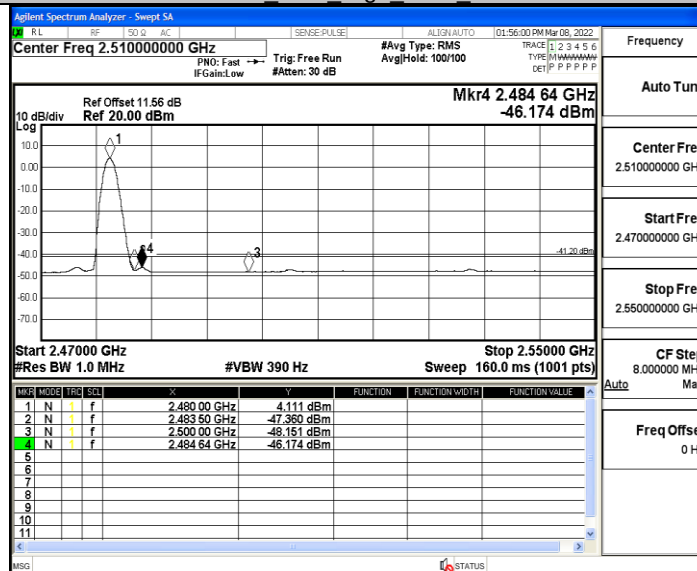
DH5 Ant1 Low 2402 AV



DH5 Ant1 Low 2402 Peak



DH5 Ant1 High 2480 AV



The screenshot shows an Agilent Spectrum Analyzer interface. The main display is a spectrum plot with a peak at 2.470000 GHz. The plot has a logarithmic scale for the y-axis (dBm) and a linear scale for the x-axis (Frequency). The peak is labeled with a value of -38.085 dBm. The plot also shows a reference level at 20.00 dBm and a noise floor at -120.00 dBm. The plot is titled 'Center Freq 2.510000000 GHz'.

Below the plot is a table with the following data:

MFR#	MODE	FREQ	SZ	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.470000 GHz	-38.085 dBm			
2	N	f		2.485000 GHz	-40.809 dBm			
3	N	f		2.500000 GHz	-40.792 dBm			
4	N	f		2.485000 GHz	-38.085 dBm			

Agilent Spectrum Analyzer - Swept SA

RL RE SO D AC SERVE P/L A/E ALIGN AUTO 02-04-23 PM 08, 2022

Center Freq 2.352500000 GHz PNO: Fast Trig: Free Run #Avg Type: RMS TRACE [1] 2 3 4 5 6
IF Gain: Low #Atten: 30 dB AvgHld: 100/100 TYPE [M] W W W W W W W W
DEF [P] P P P P P P

Ref Offset 11.4 dB
Ref 20.00 dBm

Mkr4 2.376 125 GHz
-47.293 dBm

10 dB/div

Start 2.30000 GHz Stop 2.40500 GHz
#Res BW 1.0 MHz #VBW 390 Hz Sweep 209.9 ms (1001 pts)

MkR	MODE	TRG	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f	f	2.401955 GHz	-1.539 dBm			
2	N	f	f	2.390000 GHz	-48.730 dBm			
3	N	f	f	2.310000 GHz	-49.142 dBm			
4	N	f	f	2.376 125 GHz	-47.293 dBm			

MSG STATUS

Agilent Spectrum Analyzer - Sweep SA

RL RF 50.0 AC SENSE:PALE AL30N AUTO 02:03:50 PM Mar 06, 2022

Center Freq 2.352500000 GHz

PHO: Fast Trg: Free Run #Avg Type: RMS #Att: 30 dB

IF Gain: Low

Auto Tune

Center Freq 2.352500000 GHz

Start Freq 2.300000000 GHz

Stop Freq 2.405000000 GHz

CF Stop 10.500000 MHz

Auto

Freq Offset 0 Hz

10 dB/div

Ref Offset 11.4 dB

Ref 20.00 dBm

Mkr4 2.323 205 GHz

-37.335 dBm

Log

Start 2.30000 GHz

Stop 2.40500 GHz

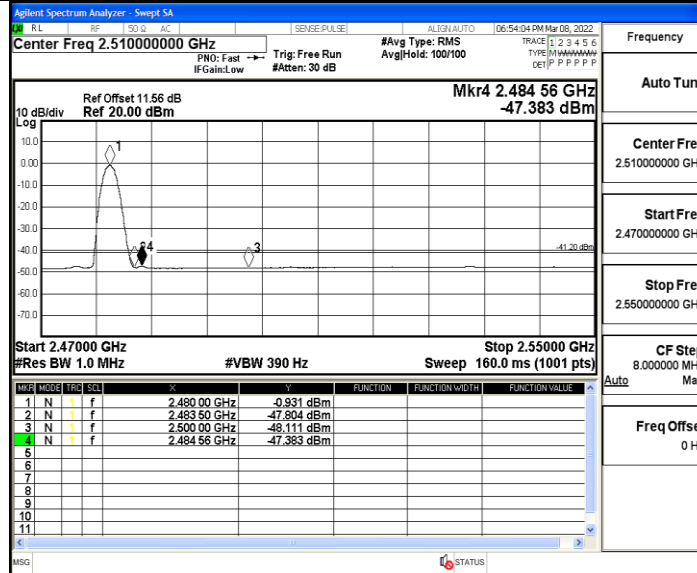
#Res BW 1.0 MHz

#VBW 3.0 MHz

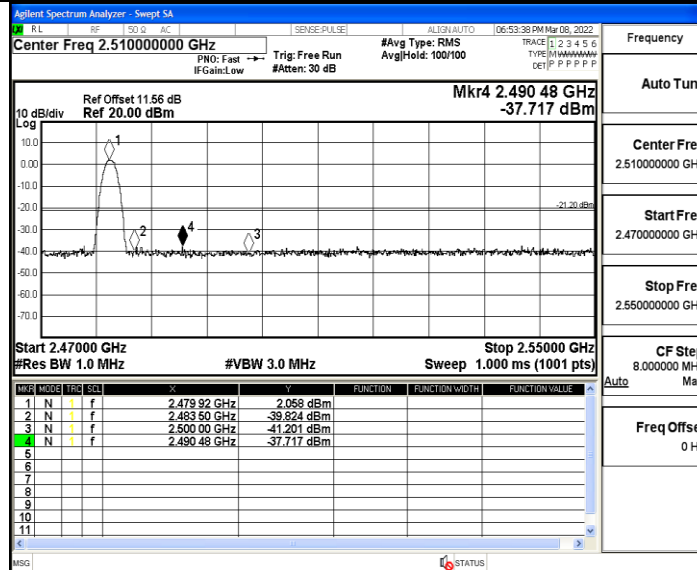
Sweep 1.000 ms (1001 pts)

MHz	MODE	TRG	SQL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f	f	2.401955 GHz	1.757 dBm			
2	N	f	f	2.390000 GHz	-42.299 dBm			
3	N	f	f	2.310000 GHz	-41.188 dBm			
4	N	f	f	2.323205 GHz	-37.335 dBm			

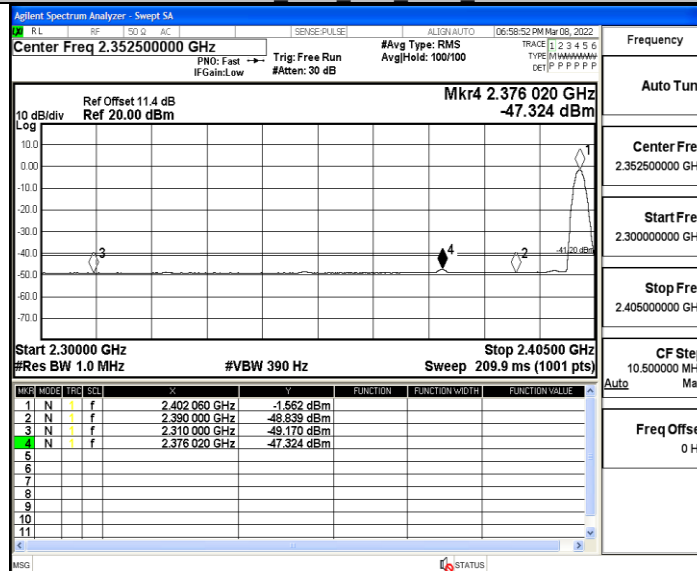
2DH5 Ant1_High_2480_AV



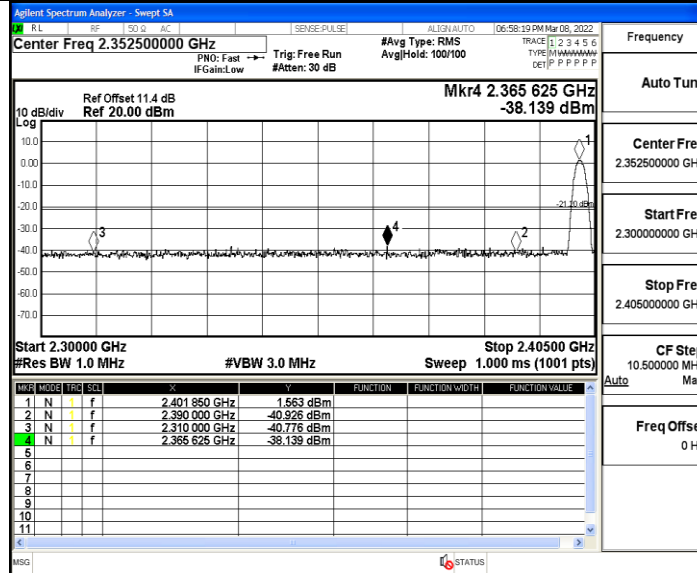
2DH5 Ant1_High_2480_Peak



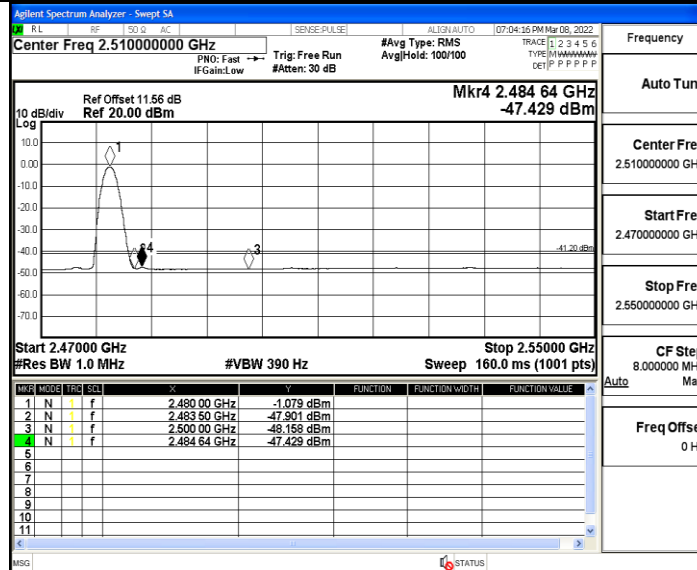
3DH5 Ant1_Low_2402_AV



3DH5_Ant1_Low_2402_Peak



3DH5_Ant1_High_2480_AV



3DH5_Ant1_High_2480_Peak

