



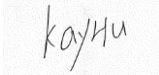
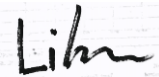
Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: True Wireless Speaker

Test Model: 53877

Environmental Conditions

Temperature:	23.4° C
Relative Humidity:	51.3%
ATM Pressure:	100.0 kPa
Test Engineer:	
Supervised by:	



A.1 20dB Emission Bandwidth

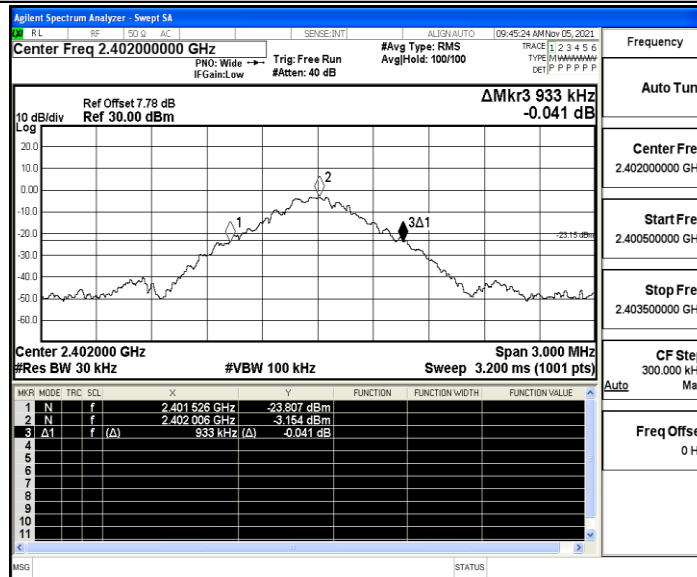
Test Result

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.933	2401.526	2402.459	---	PASS
		2441	0.954	2440.526	2441.480	---	PASS
		2480	0.945	2479.523	2480.468	---	PASS
2DH5	Ant1	2402	1.311	2401.328	2402.639	---	PASS
		2441	1.329	2440.319	2441.648	---	PASS
		2480	1.362	2479.310	2480.672	---	PASS
3DH5	Ant1	2402	1.341	2401.313	2402.654	---	PASS
		2441	1.365	2440.307	2441.672	---	PASS
		2480	1.362	2479.310	2480.672	---	PASS

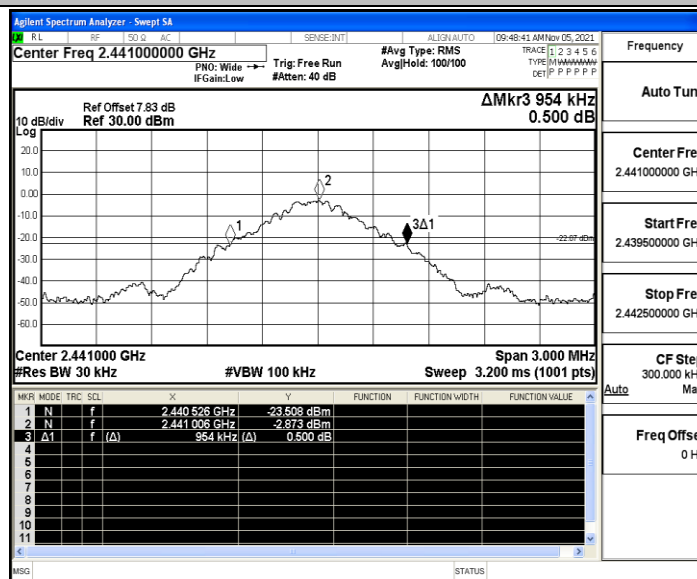


Test Graphs

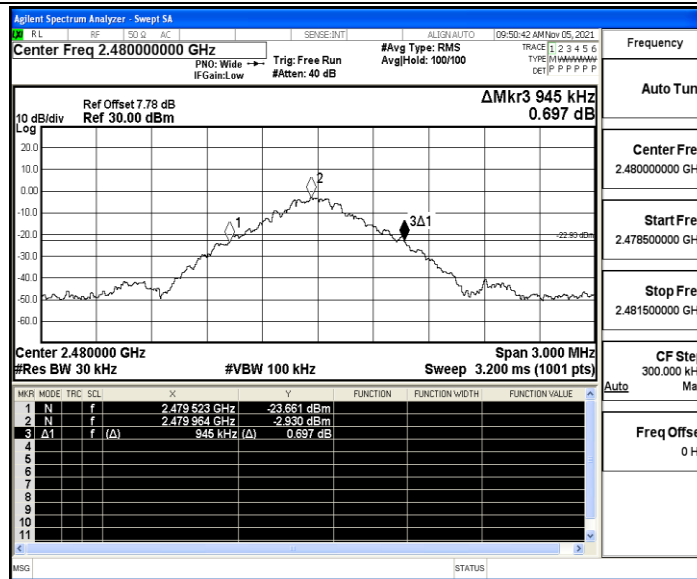
DH5_Ant1_2402



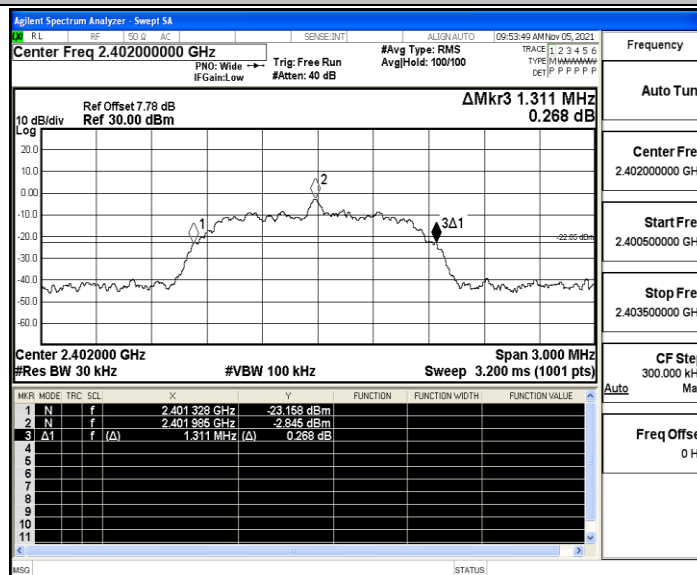
DH5_Ant1_2441



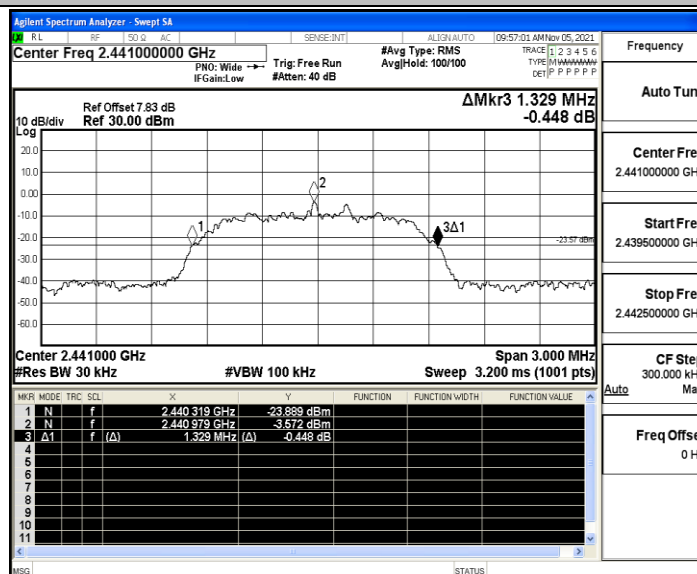
DH5_Ant1_2480



2DH5_Ant1_2402

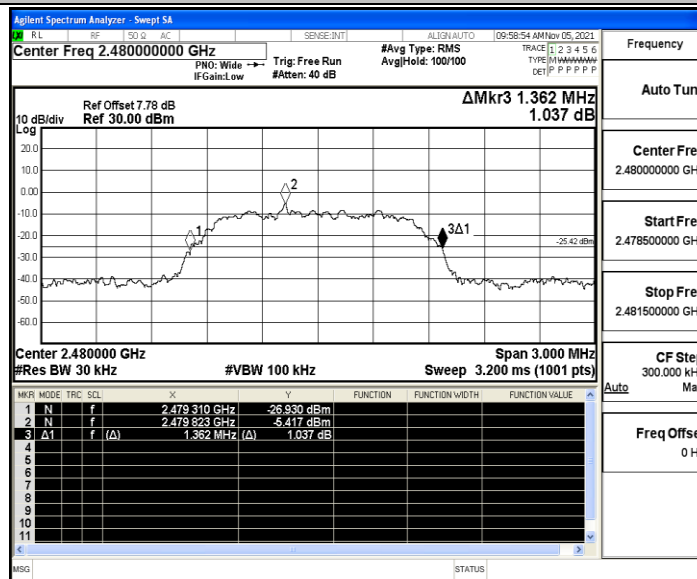


2DH5_Ant1_2441

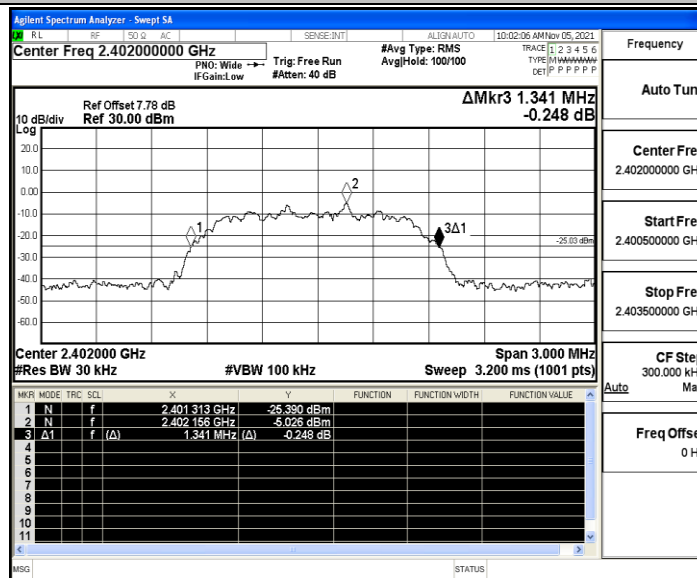




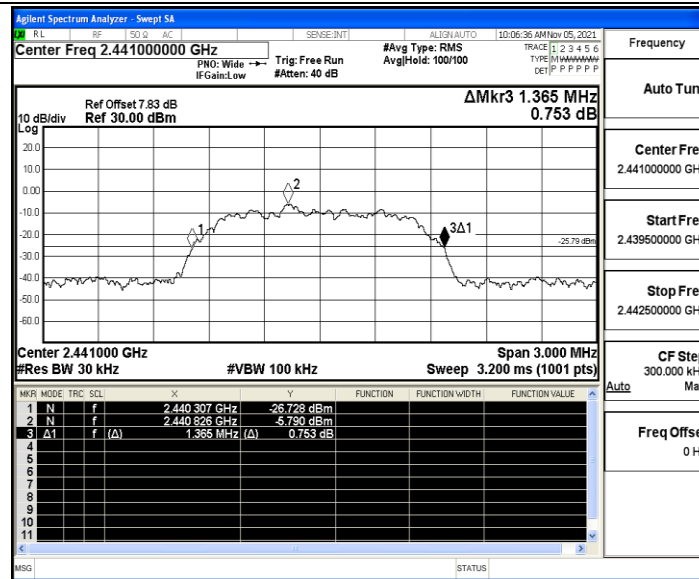
2DH5_Ant1_2480



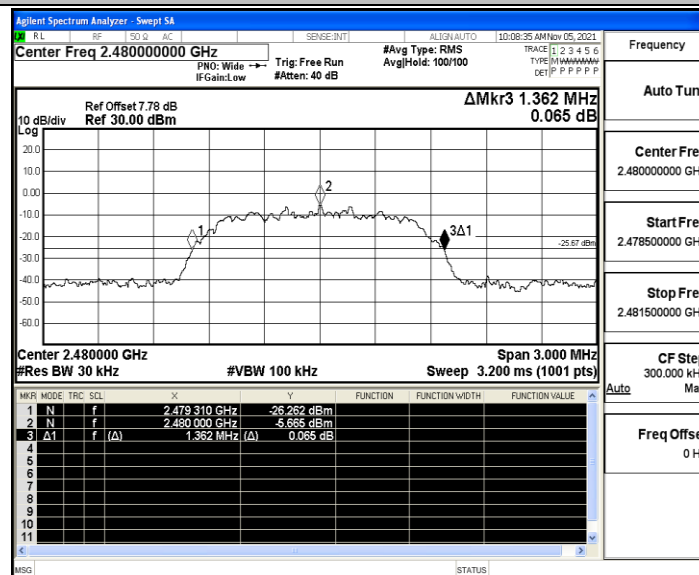
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480





Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	-0.04	≤21	PASS
		2441	0.22	≤21	PASS
		2480	0.2	≤21	PASS
2DH5	Ant1	2402	0.43	≤21	PASS
		2441	0.73	≤21	PASS
		2480	0.63	≤21	PASS
3DH5	Ant1	2402	0.44	≤21	PASS
		2441	0.7	≤21	PASS
		2480	0.73	≤21	PASS

DH5_Ant1_2402

Agilent Spectrum Analyzer - Swept SA

RL RF SQ Q AC SENSE:INT ALIGN: AUTO 09:45:46 AM Nov 05, 2021

Center Freq 2.402000000 GHz

PRF: Fast → Trig: Free Run #Avg Type: RMS #Avg Hold: 100/100

IF Gain: Low #Atten: 40 dB

TRACE 1 2 3 4 5 6

TYPE: BWANAWAN

DETP: P P P P P

Ref Offset 7.78 dB

Ref 30.00 dBm

Mkr1 2.401 552 GHz

-0.043 dBm

10 dB/div

Log

20.0

10.0

0.00

-10.0

-20.0

-30.0

-40.0

-50.0

-60.0

Center 2.402000 GHz

#Res BW 3.0 MHz

#VBW 8.0 MHz

Span 8.000 MHz

Sweep 1.000 ms (1001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq

2.402000000 GHz

Start Freq

2.398000000 GHz

Stop Freq

2.406000000 GHz

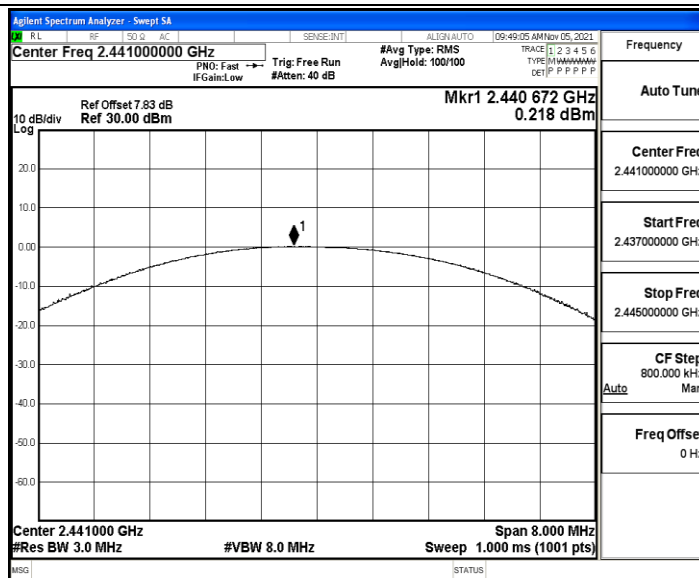
CF Step

800.000 kHz

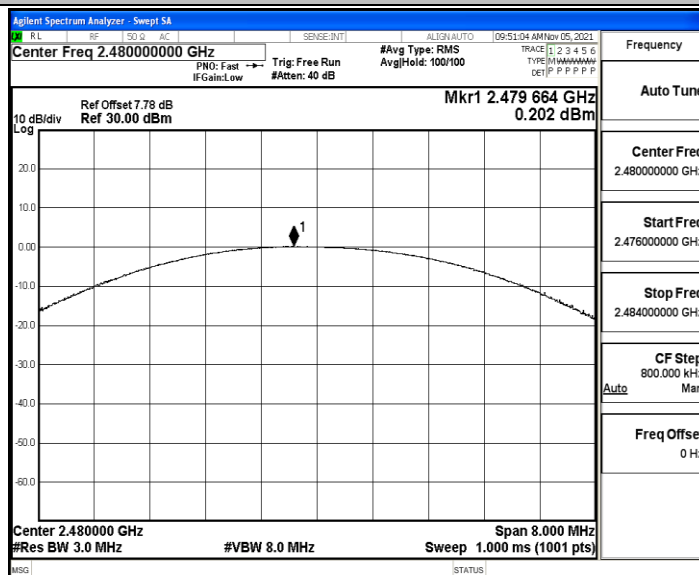
Auto Man

Freq Offset

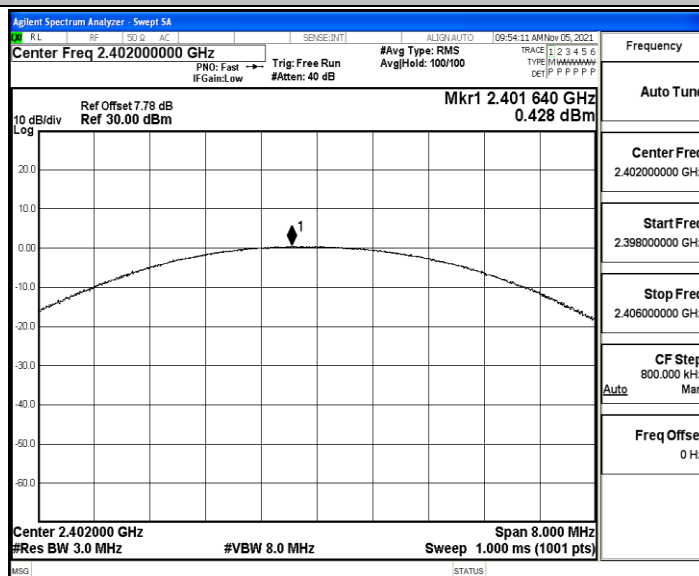
0 Hz



DH5_Ant1_2480

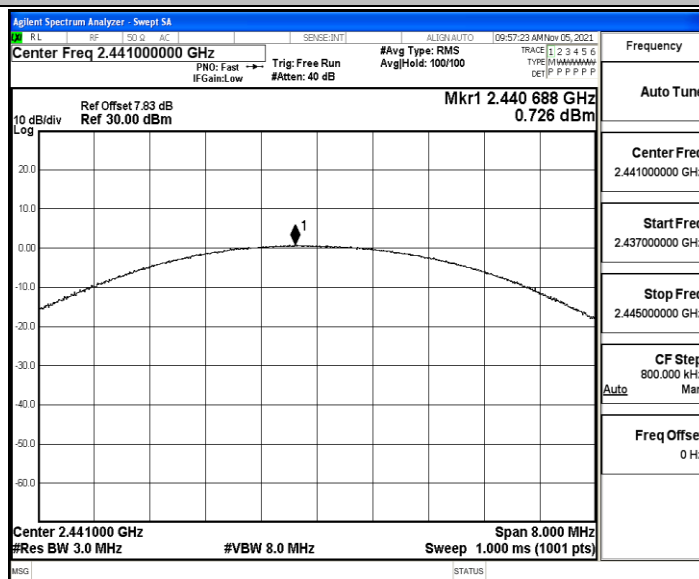


2DH5_Ant1_2402

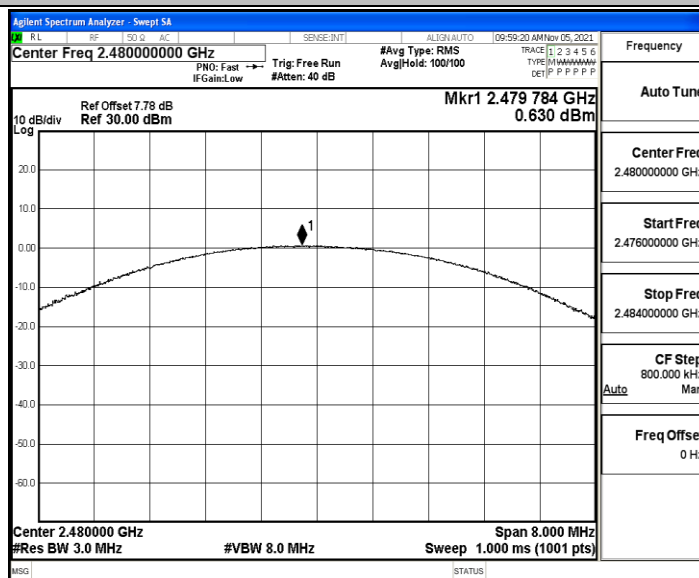




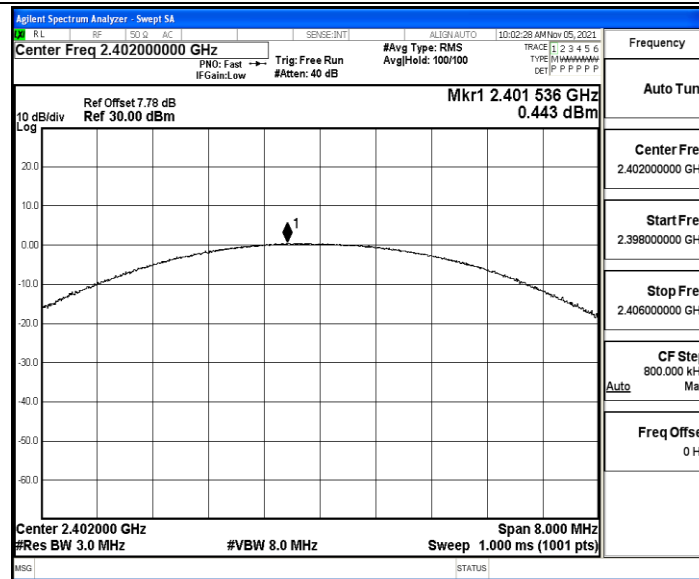
2DH5_Ant1_2441



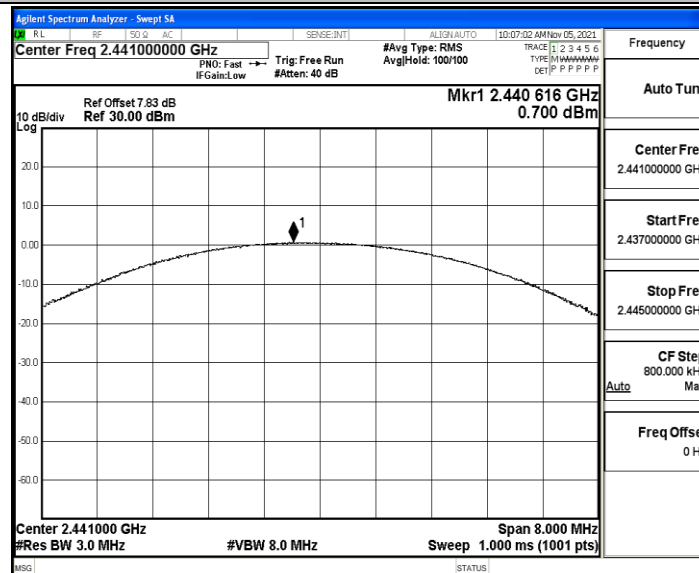
2DH5_Ant1_2480



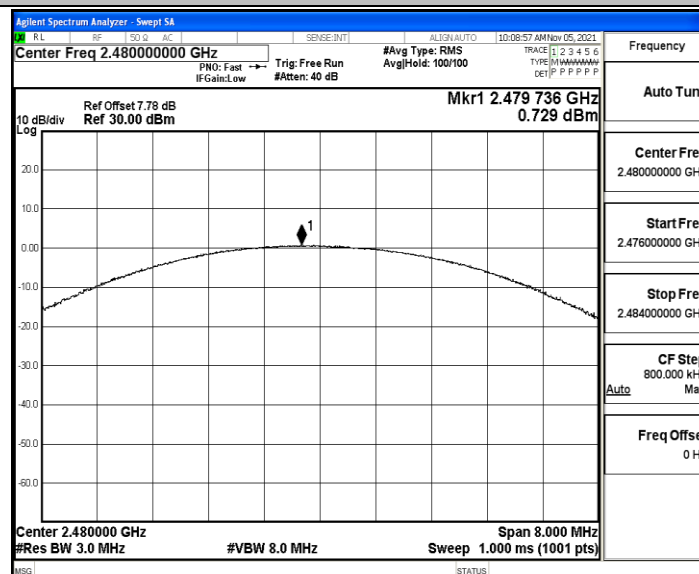
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



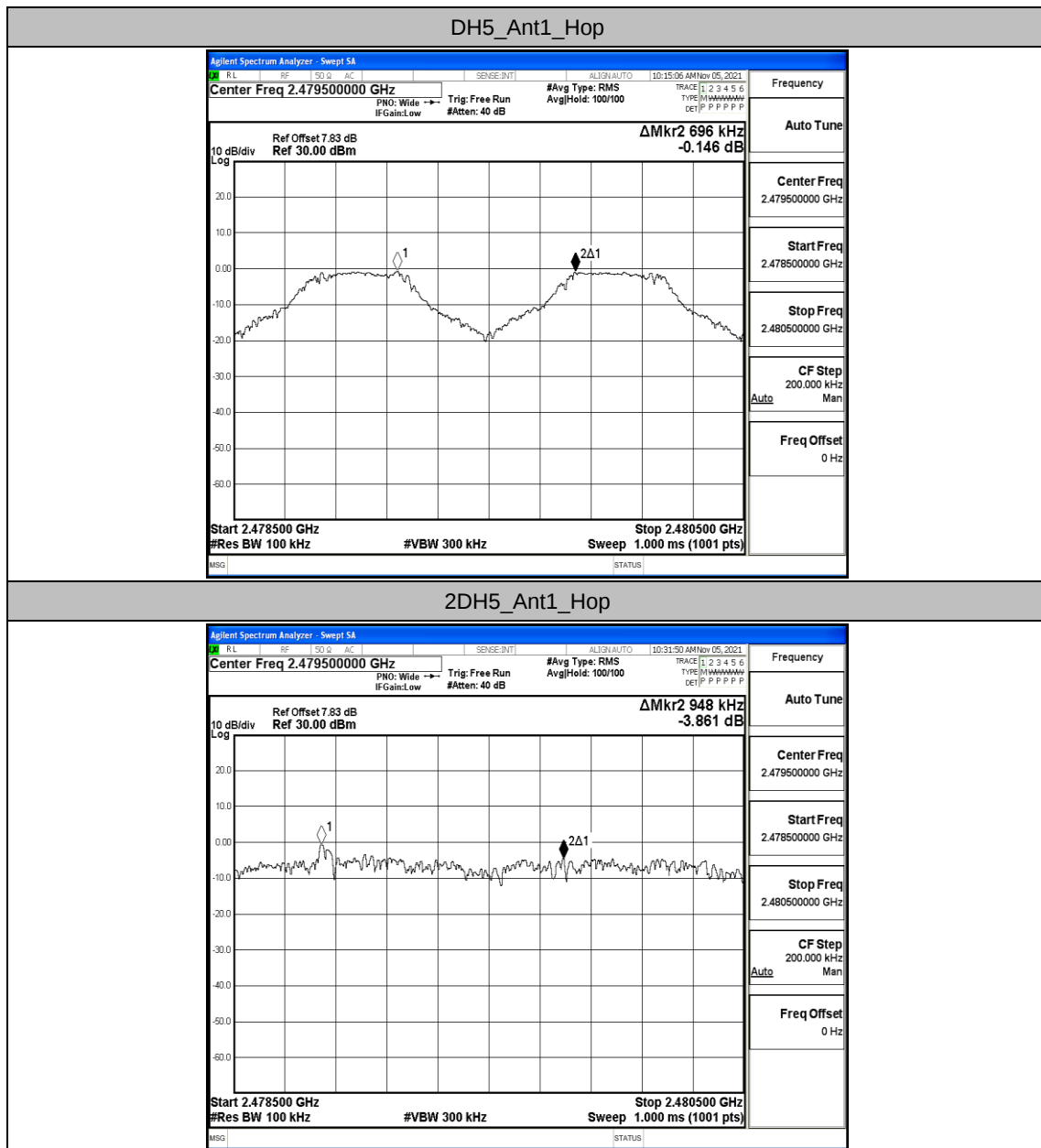


A.3 Carrier frequency separation

Test Result

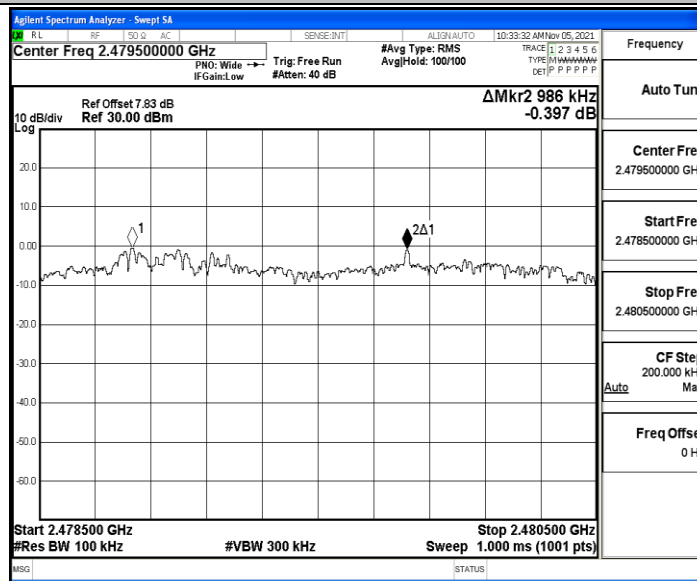
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	Hop	0.696	≥0.63	PASS
2DH5	Ant1	Hop	0.948	≥0.66	PASS
3DH5	Ant1	Hop	0.986	≥0.66	PASS

Test Graphs





3DH5_Ant1_Hop



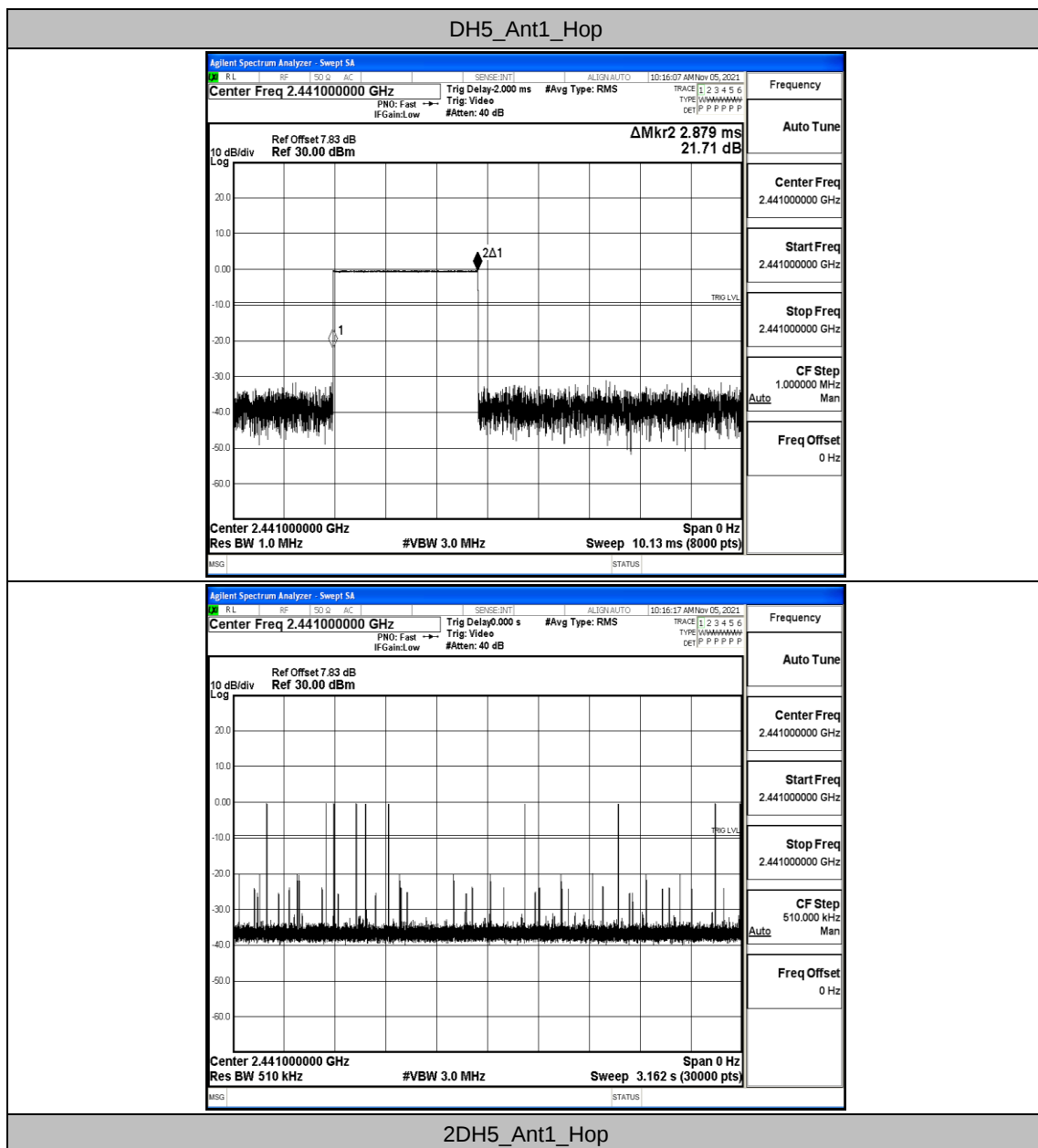


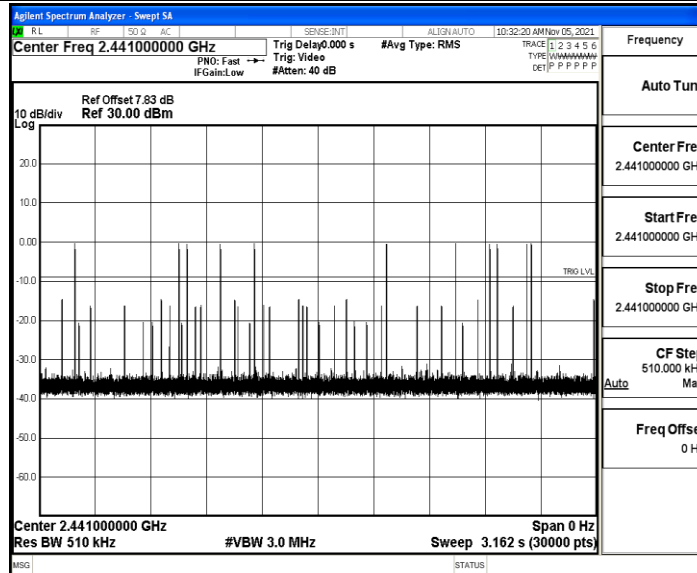
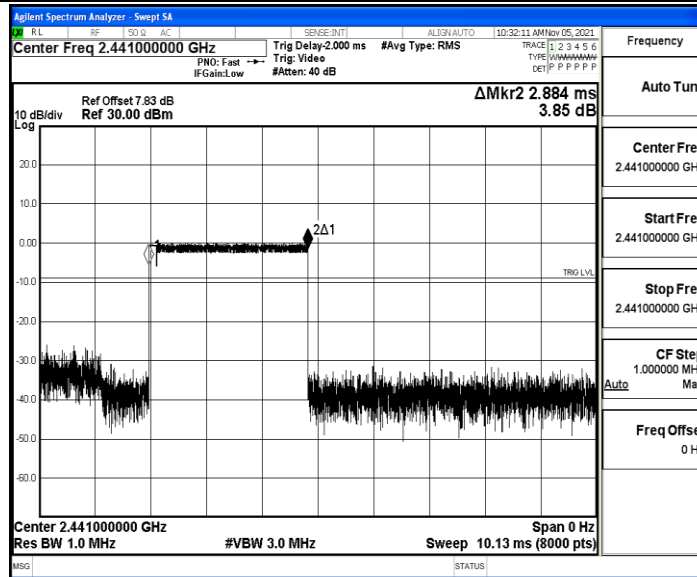
A.4 Time of occupancy

Test Result

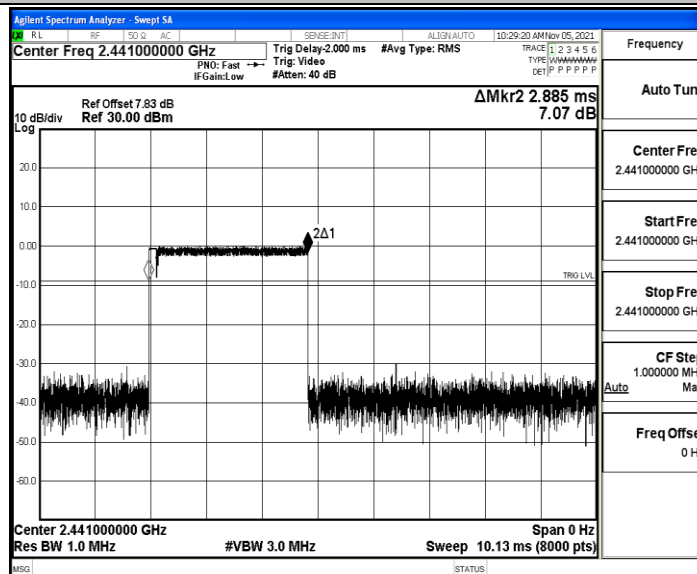
TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.88	110	0.317	≤0.4	PASS
2DH5	Ant1	Hop	2.88	120	0.346	≤0.4	PASS
3DH5	Ant1	Hop	2.89	100	0.289	≤0.4	PASS

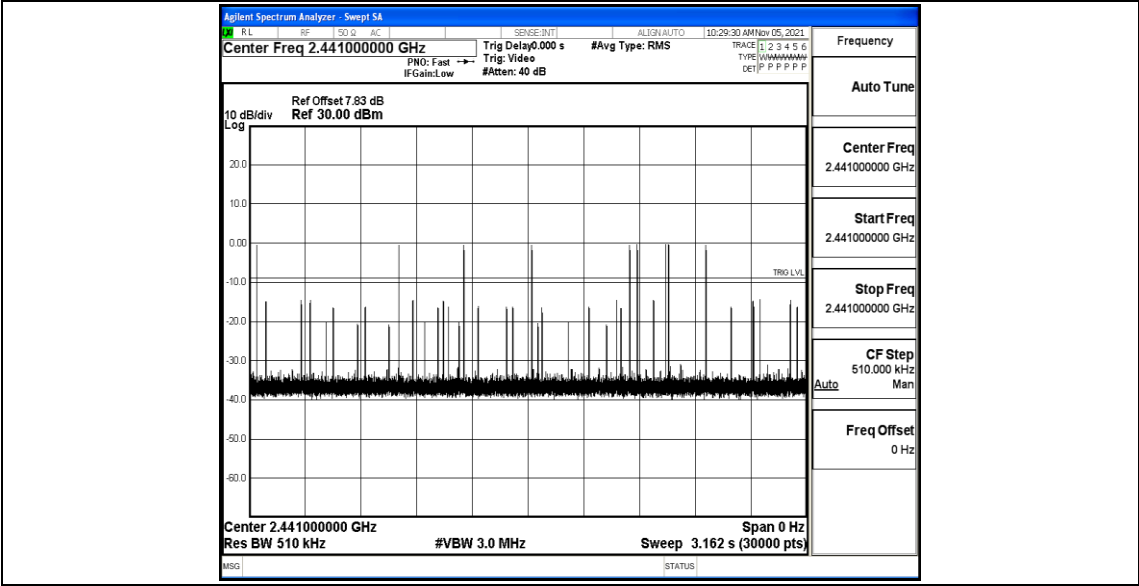
Test Graphs





3DH5_Ant1_Hop





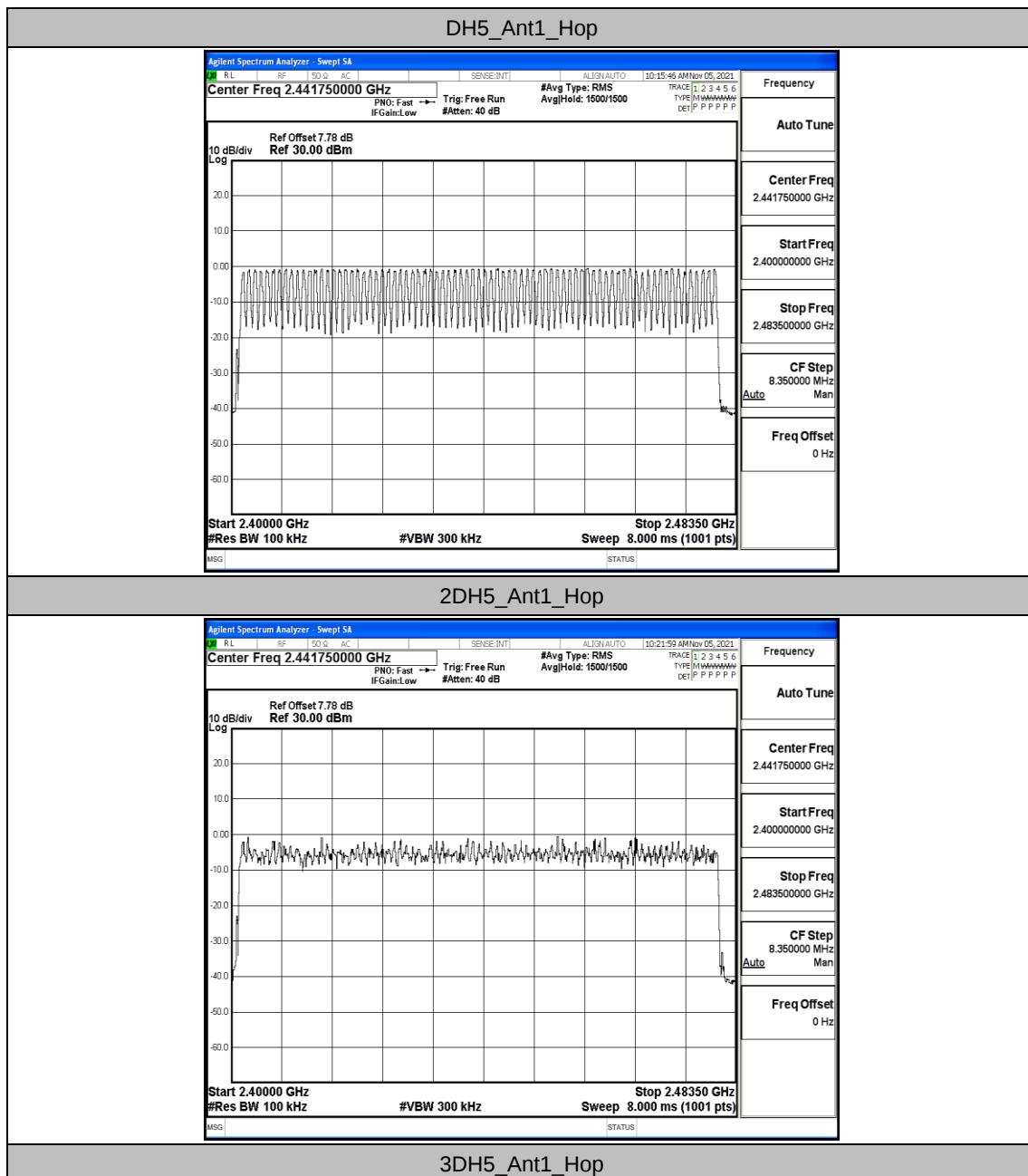


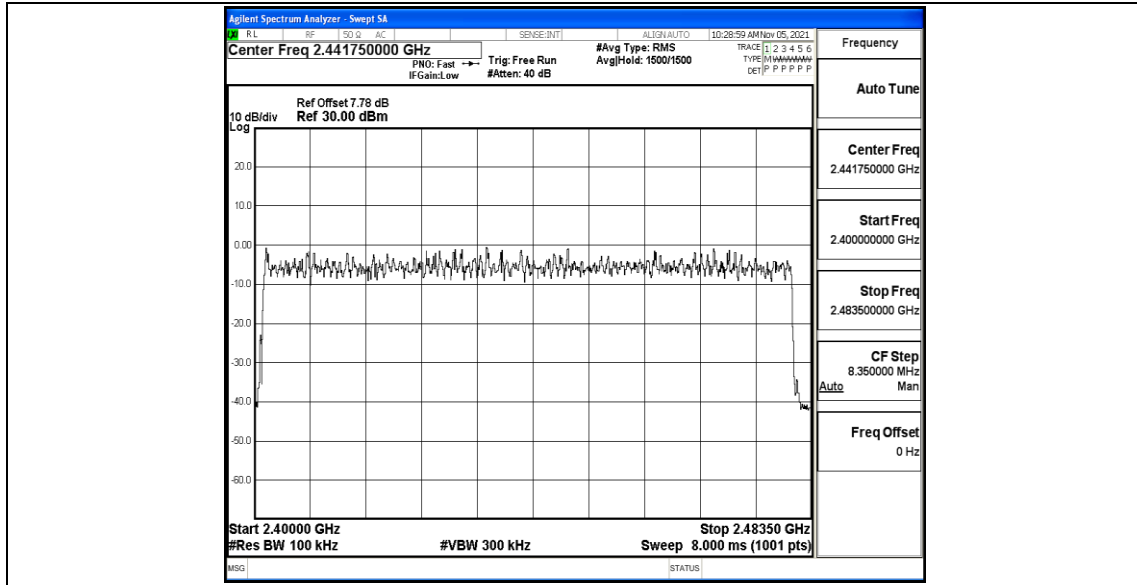
A.5 Number of hopping channels

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







A.6 Band edge measurements

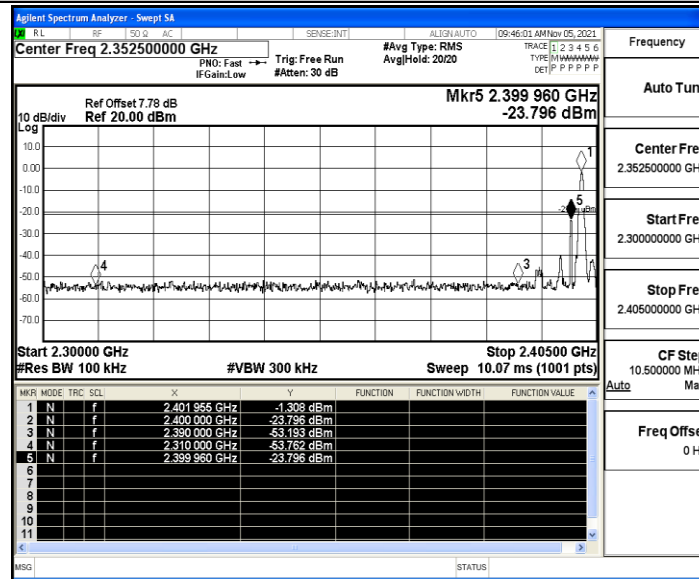
Test Result

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-1.31	-23.8	≤ -21.31	PASS
		High	2480	-1.13	-48.3	≤ -21.13	PASS
		Low	Hop_2402	-1.27	-49.95	≤ -21.27	PASS
		High	Hop_2480	-0.83	-43.63	≤ -20.83	PASS
2DH5	Ant1	Low	2402	-1.06	-21.98	≤ -21.06	PASS
		High	2480	-3.55	-49.97	≤ -23.55	PASS
		Low	Hop_2402	-4.32	-50.07	≤ -24.32	PASS
		High	Hop_2480	-0.81	-38.47	≤ -20.81	PASS
3DH5	Ant1	Low	2402	-12.43	-33.19	≤ -32.43	PASS
		High	2480	-2.71	-50.33	≤ -22.71	PASS
		Low	Hop_2402	-3.98	-49.5	≤ -23.98	PASS
		High	Hop_2480	-1.36	-42.55	≤ -21.36	PASS

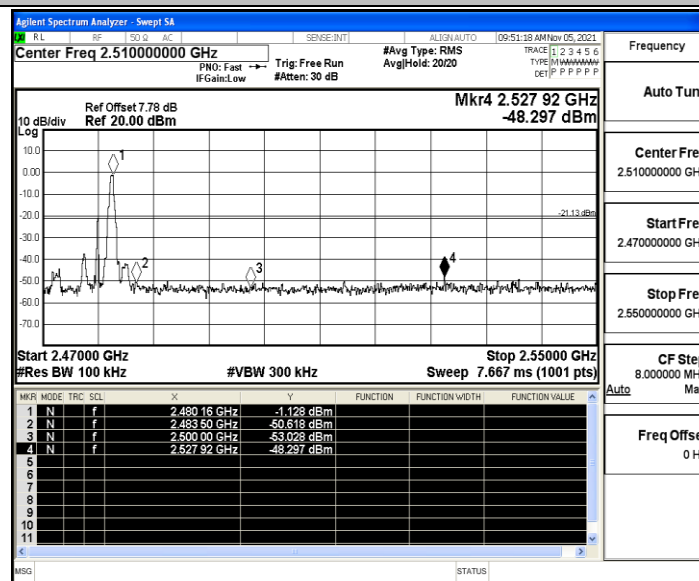


Test Graphs

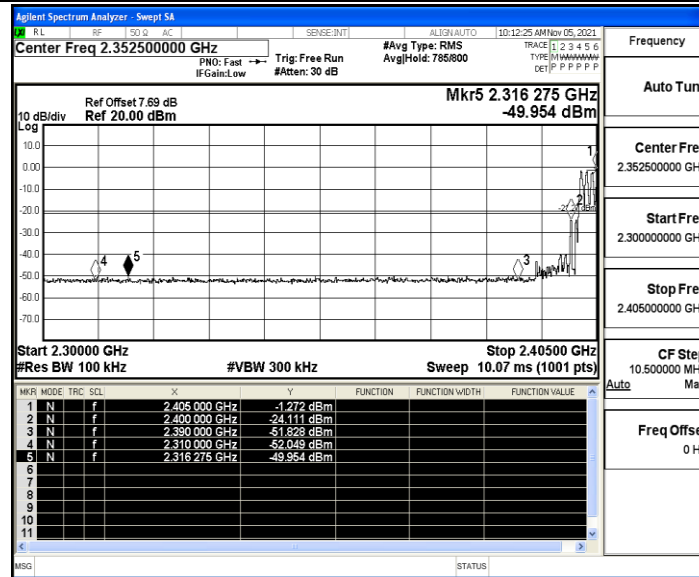
DH5_Ant1_Low_2402



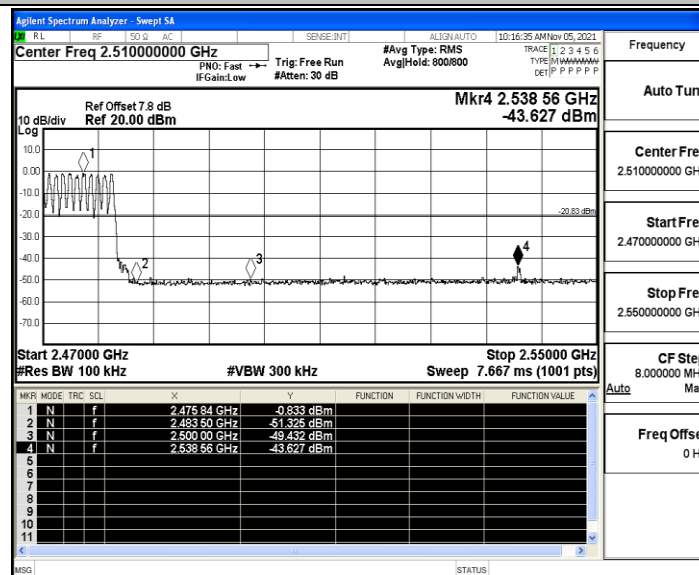
DH5_Ant1_High_2480



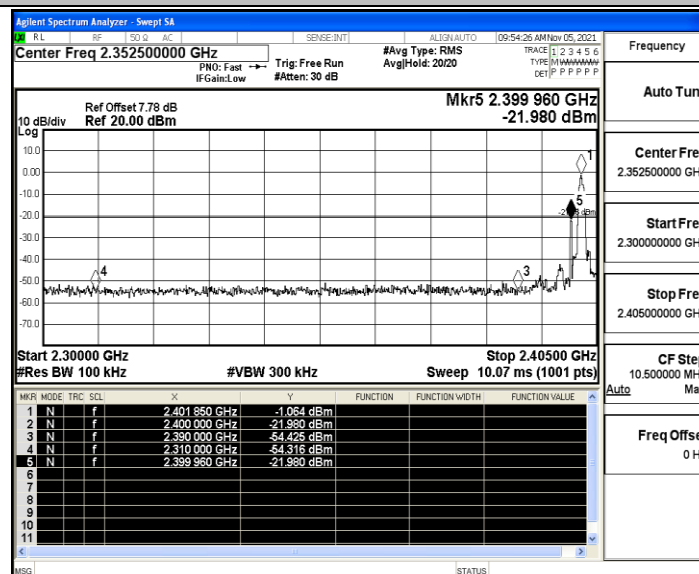
DH5_Ant1_Low_Hop_2402



DH5_Ant1_High_Hop_2480

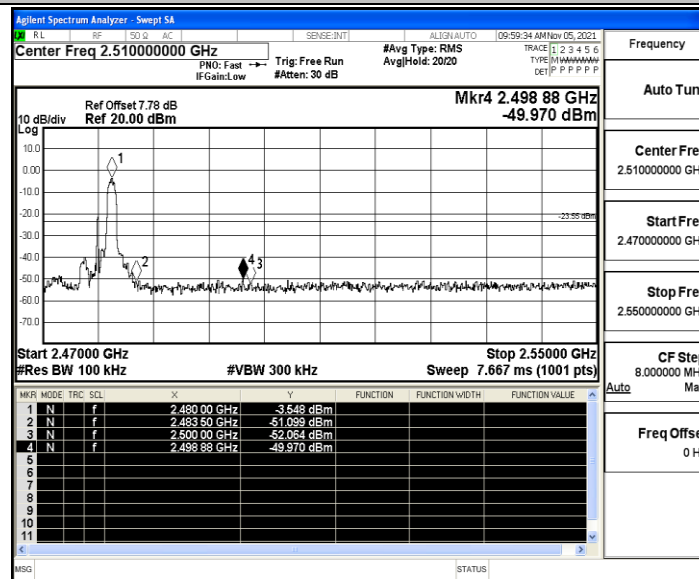


2DH5_Ant1_Low_2402

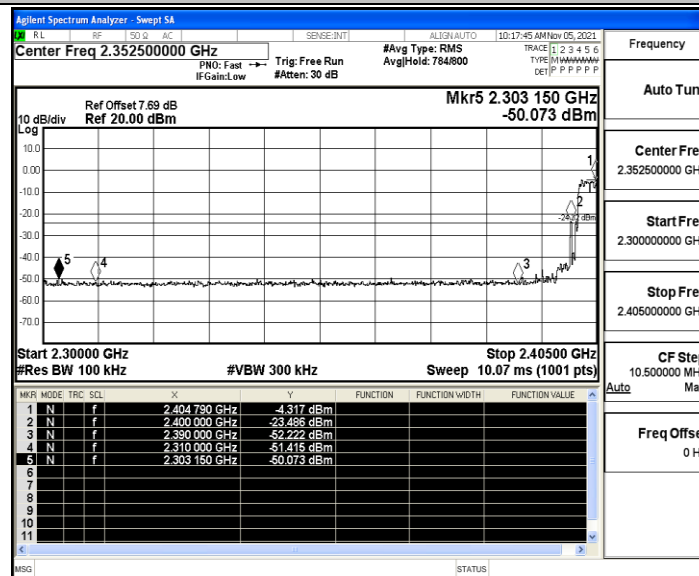




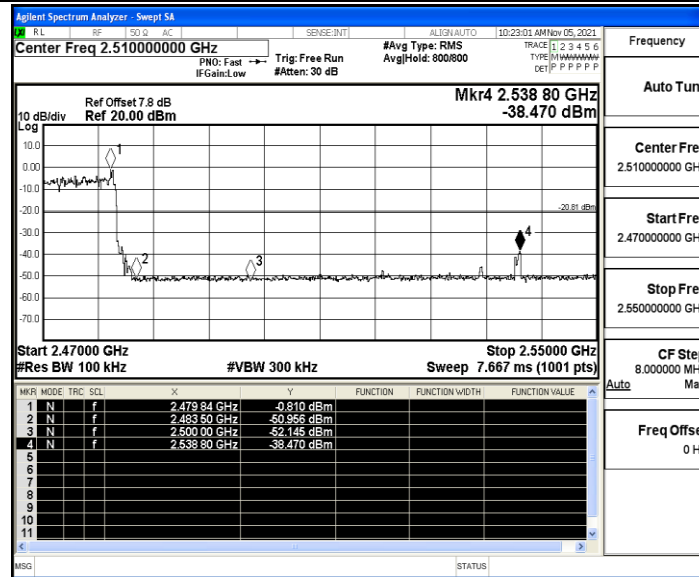
2DH5_Ant1_High_2480



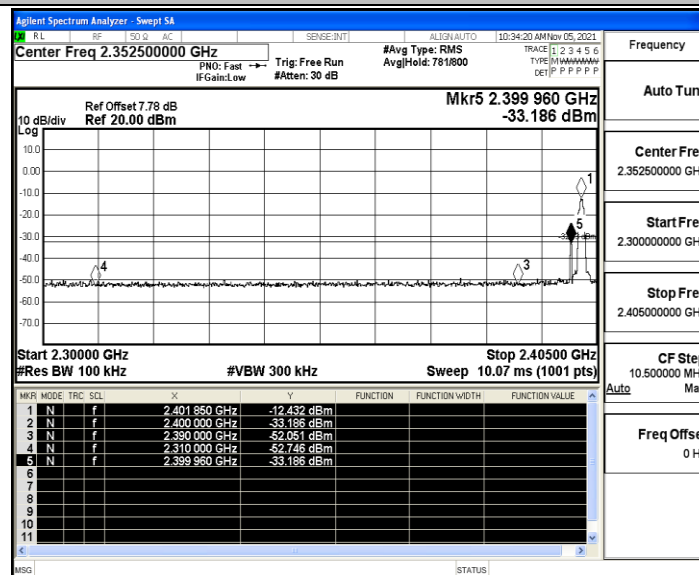
2DH5_Ant1_Low_Hop_2402



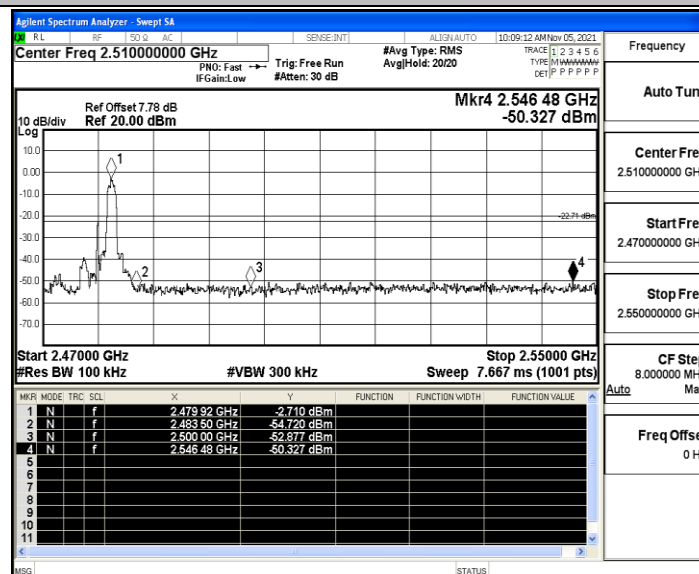
2DH5_Ant1_High_Hop_2480



3DH5_Ant1_Low_2402

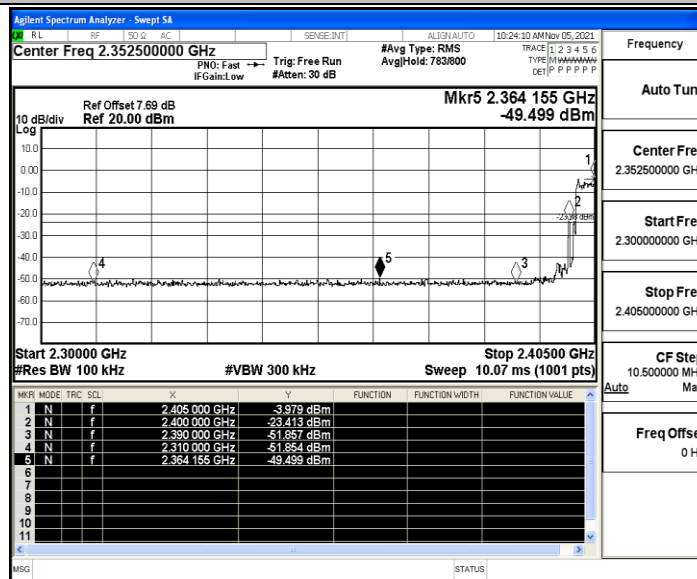


3DH5_Ant1_High_2480

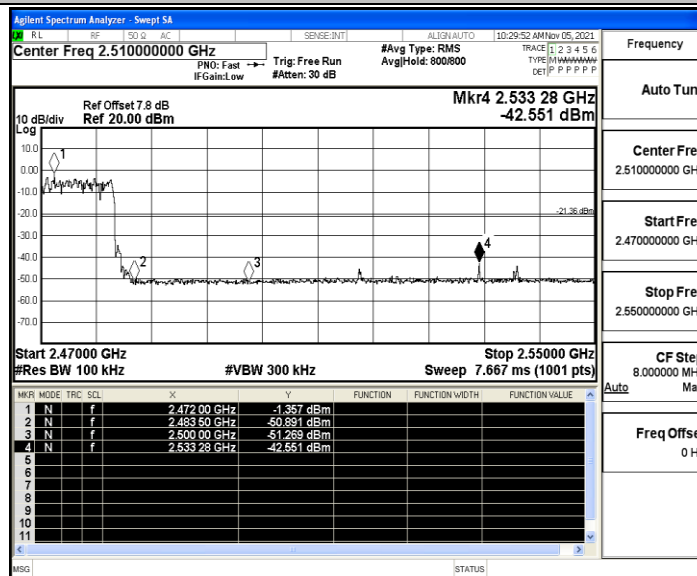




3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480





A.7 Conducted Spurious Emission

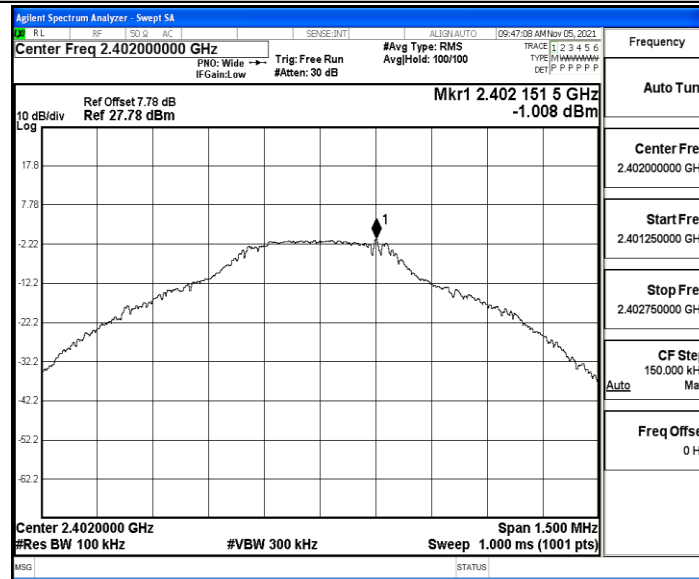
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	-1.01	-1.01	---	PASS
			30~1000	-1.01	-56.03	≤ -21.01	PASS
			1000~26500	-1.01	-43.51	≤ -21.01	PASS
		2441	Reference	-1.10	-1.10	---	PASS
			30~1000	-1.10	-58.68	≤ -21.1	PASS
			1000~26500	-1.10	-43.98	≤ -21.1	PASS
		2480	Reference	-1.10	-1.10	---	PASS
			30~1000	-1.10	-57.52	≤ -21.1	PASS
			1000~26500	-1.10	-45.73	≤ -21.1	PASS
2DH5	Ant1	2402	Reference	-0.82	-0.82	---	PASS
			30~1000	-0.82	-60	≤ -20.82	PASS
			1000~26500	-0.82	-44.14	≤ -20.82	PASS
		2441	Reference	-1.39	-1.39	---	PASS
			30~1000	-1.39	-58.49	≤ -21.39	PASS
			1000~26500	-1.39	-47.84	≤ -21.39	PASS
		2480	Reference	-3.64	-3.64	---	PASS
			30~1000	-3.64	-58.33	≤ -23.64	PASS
			1000~26500	-3.64	-47.5	≤ -23.64	PASS
3DH5	Ant1	2402	Reference	-0.82	-0.82	---	PASS
			30~1000	-0.82	-59.47	≤ -20.82	PASS
			1000~26500	-0.82	-44.64	≤ -20.82	PASS
		2441	Reference	-0.84	-0.84	---	PASS
			30~1000	-0.84	-58.31	≤ -20.84	PASS
			1000~26500	-0.84	-47.03	≤ -20.84	PASS
		2480	Reference	-1.55	-1.55	---	PASS
			30~1000	-1.55	-58.92	≤ -21.55	PASS
			1000~26500	-1.55	-45.71	≤ -21.55	PASS

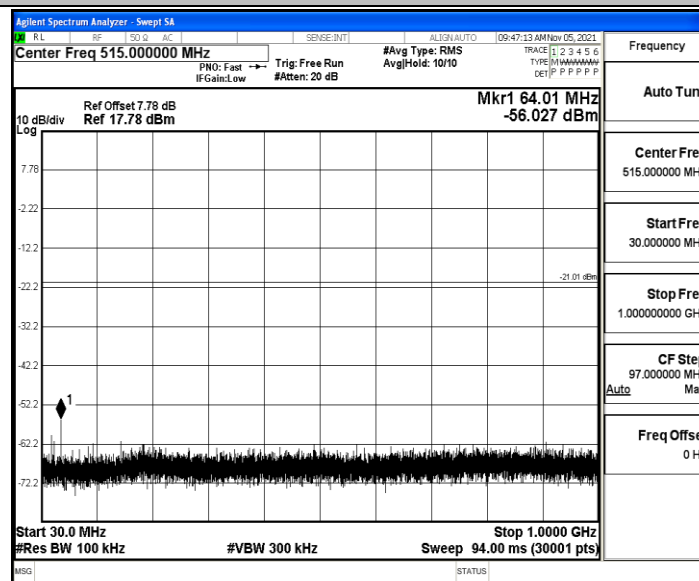


Test Graphs

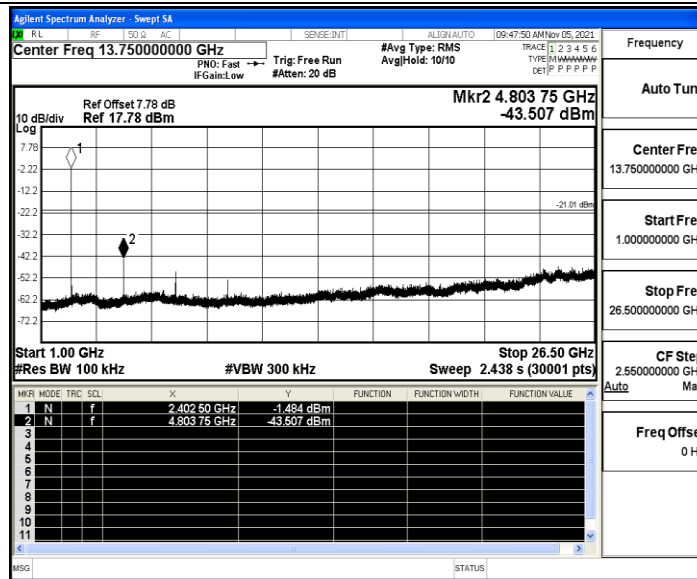
DH5_Ant1_2402_0~Reference



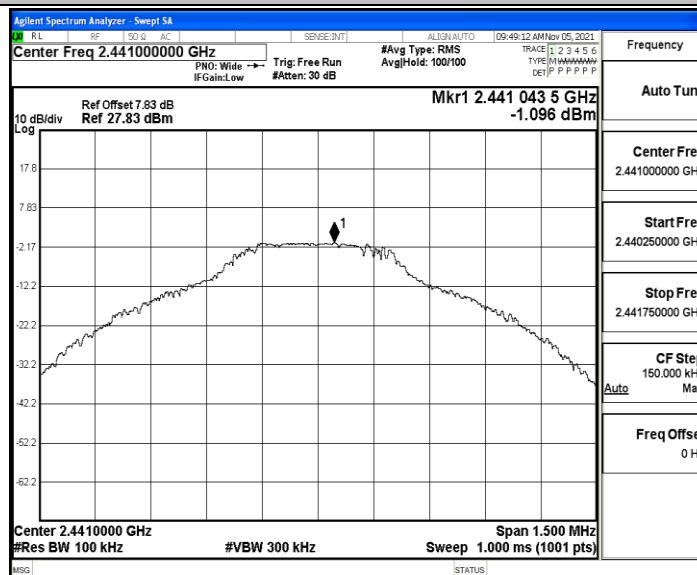
DH5_Ant1_2402_30~1000



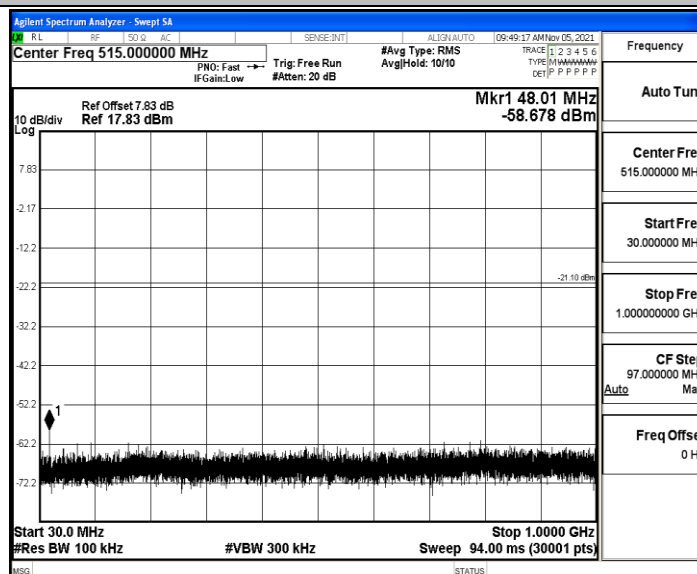
DH5_Ant1_2402_1000~26500



DH5_Ant1_2441_0~Reference

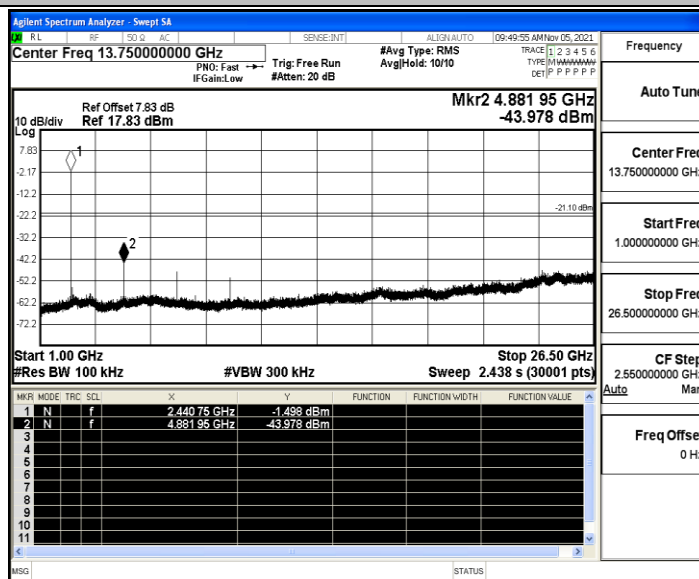


DH5_Ant1_2441_30~1000

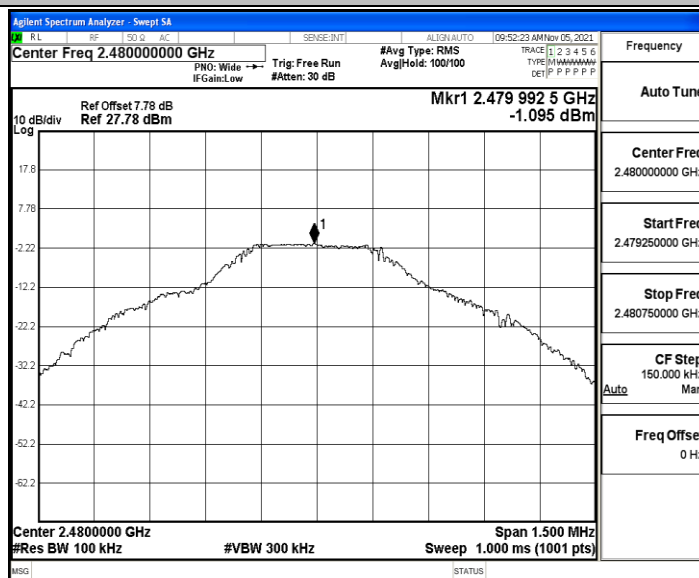




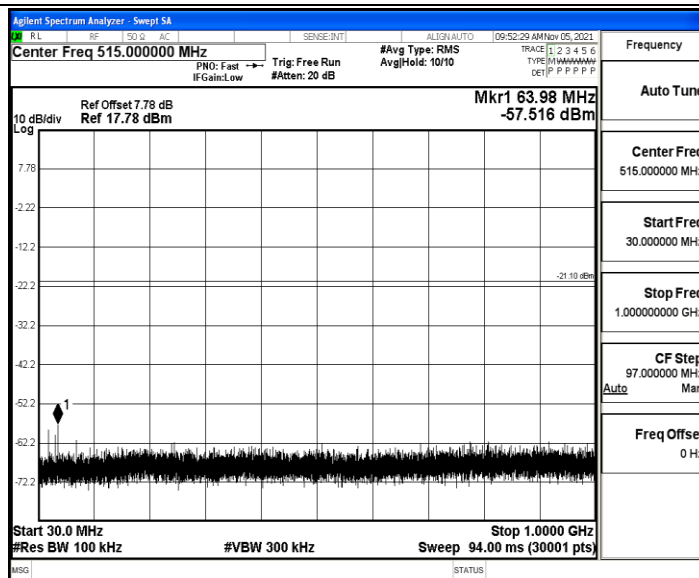
DH5_Ant1_2441_1000~26500



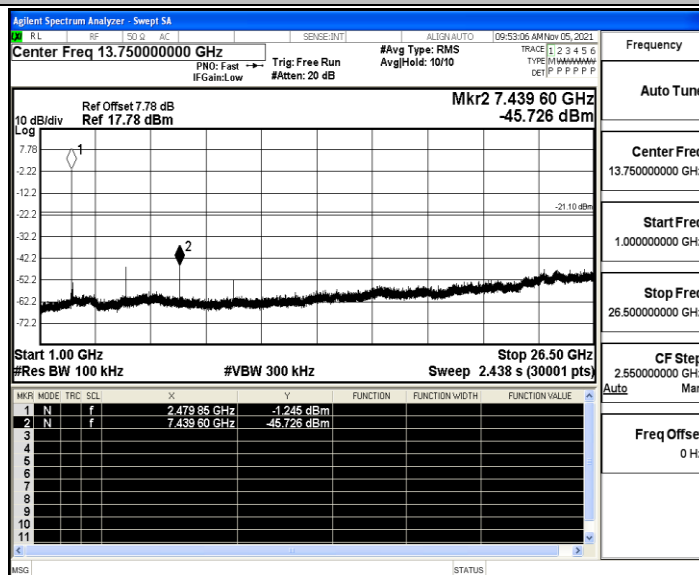
DH5_Ant1_2480_0~Reference



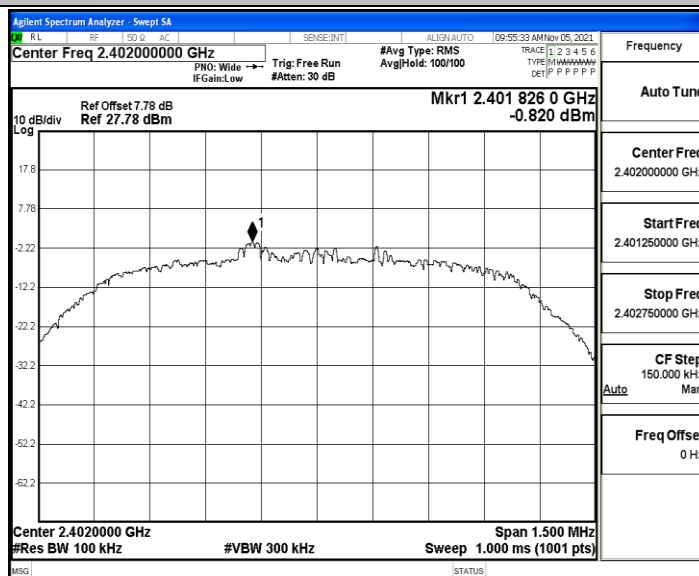
DH5_Ant1_2480_30~1000



DH5_Ant1_2480_1000~26500

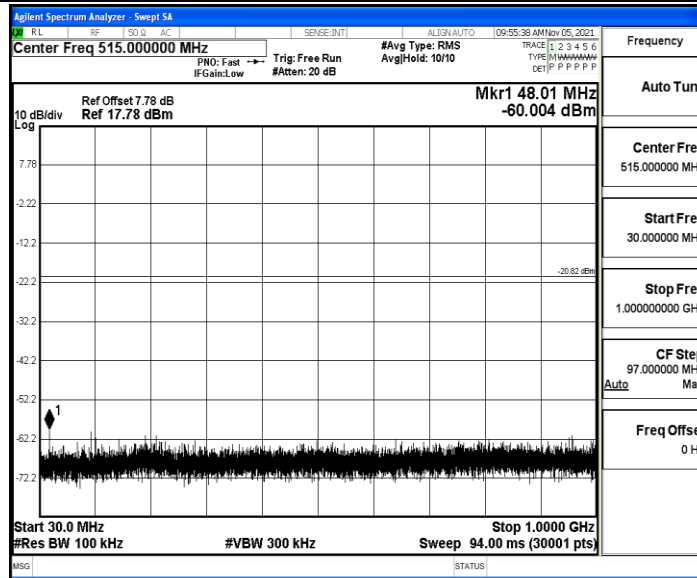


2DH5_Ant1_2402_0~Reference

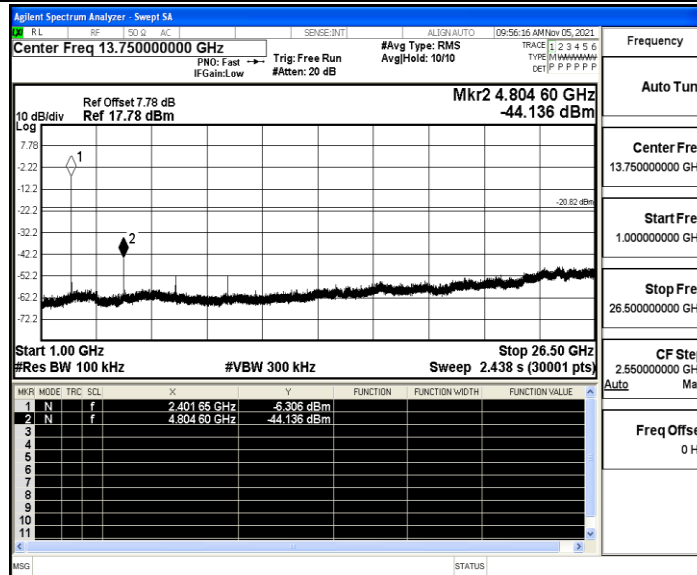




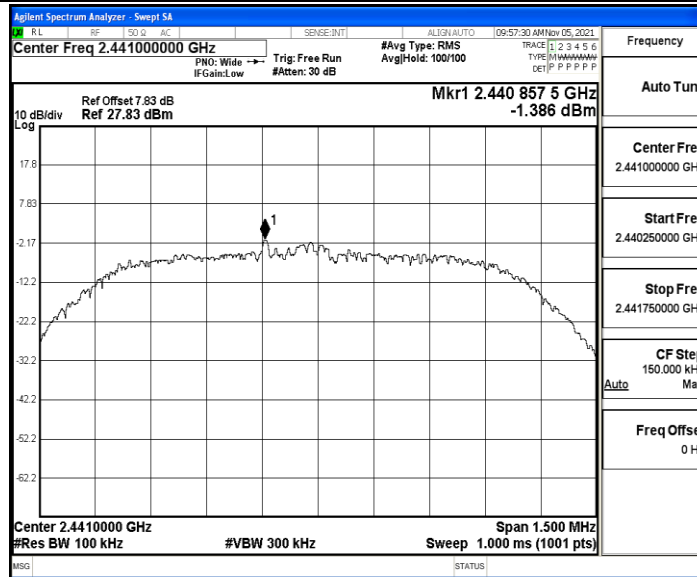
2DH5_Ant1_2402_30~1000



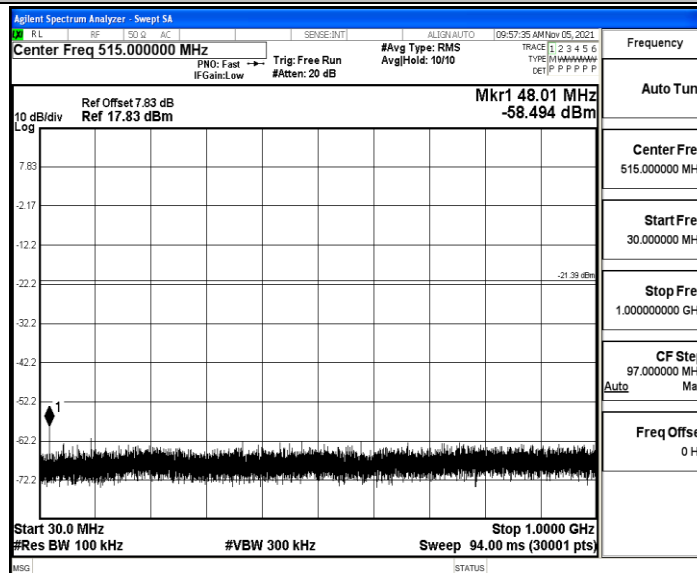
2DH5_Ant1_2402_1000~26500



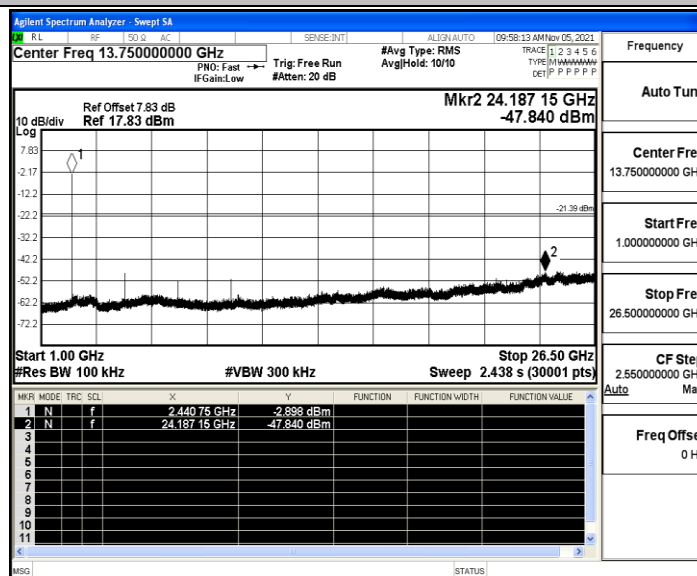
2DH5_Ant1_2441_0~Reference



2DH5_Ant1_2441_30~1000

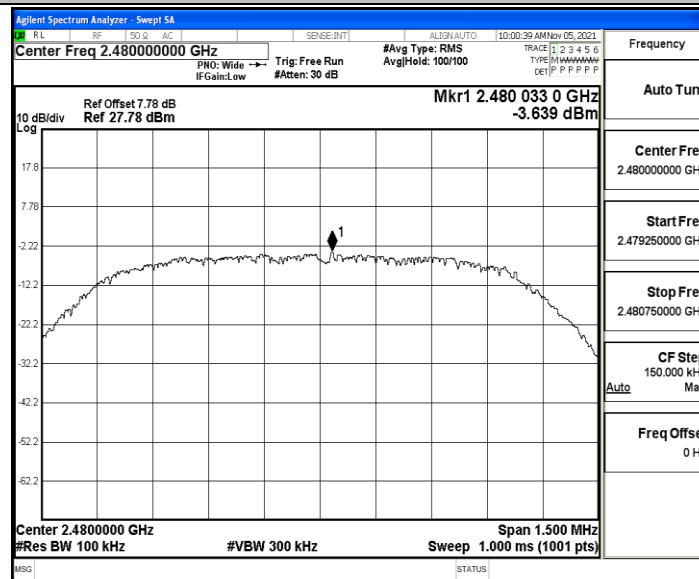


2DH5_Ant1_2441_1000~26500

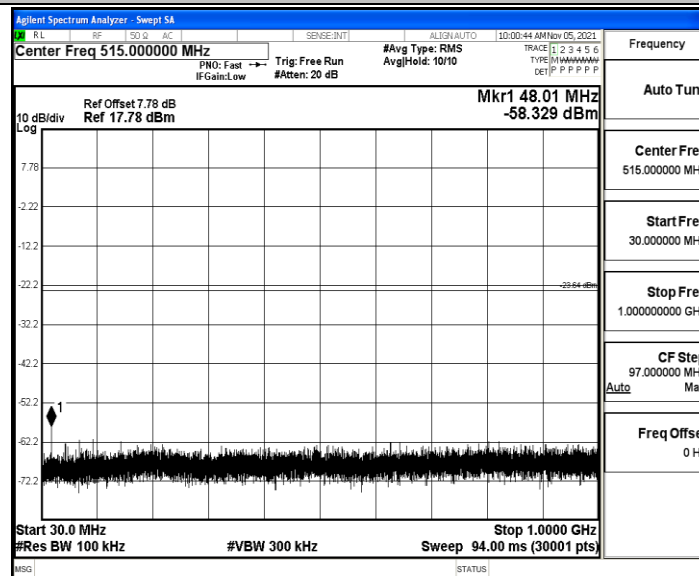




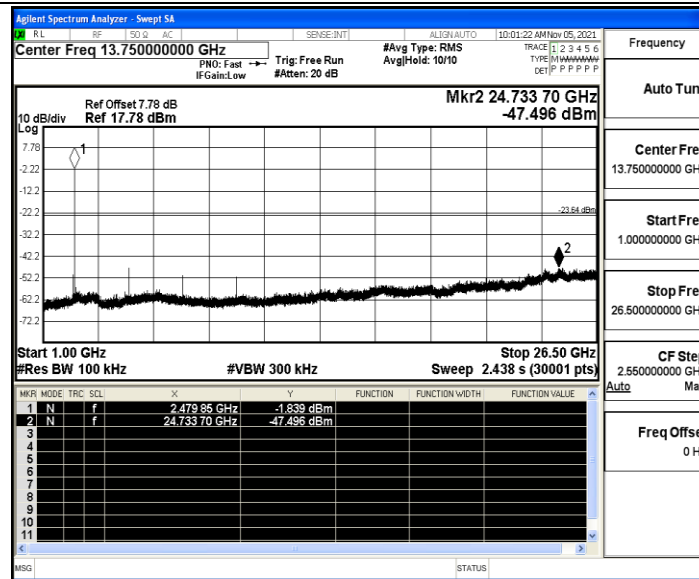
2DH5_Ant1_2480_0~Reference



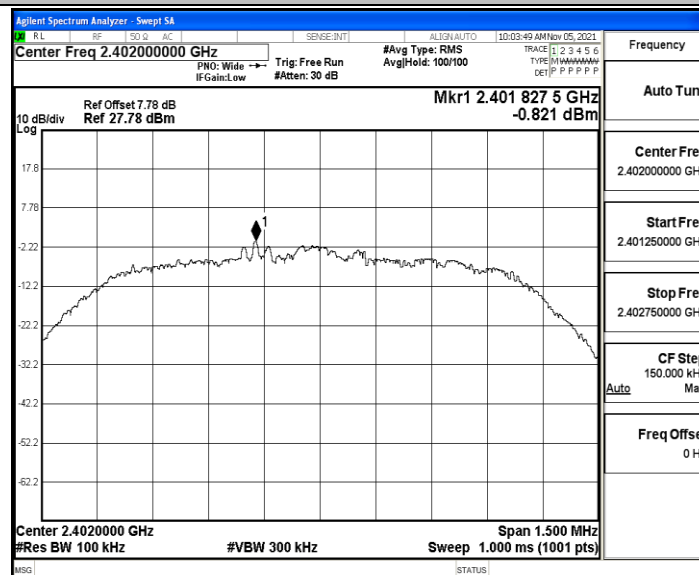
2DH5_Ant1_2480_30~1000



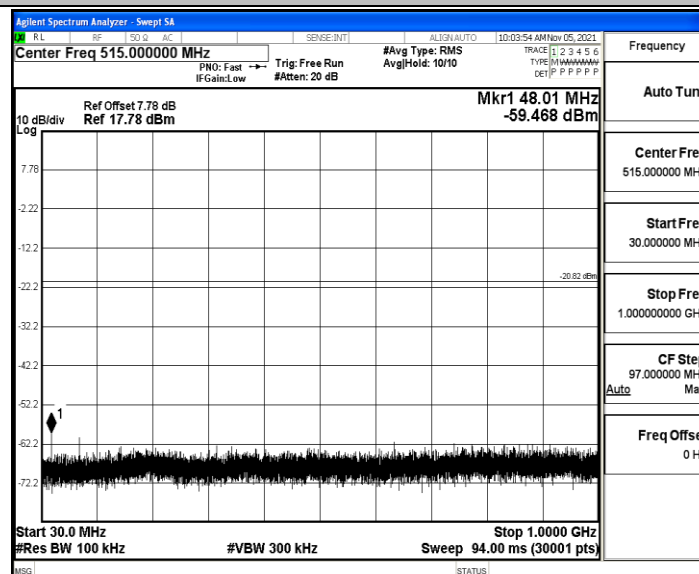
2DH5_Ant1_2480_1000~26500



3DH5_Ant1_2402_0-Reference

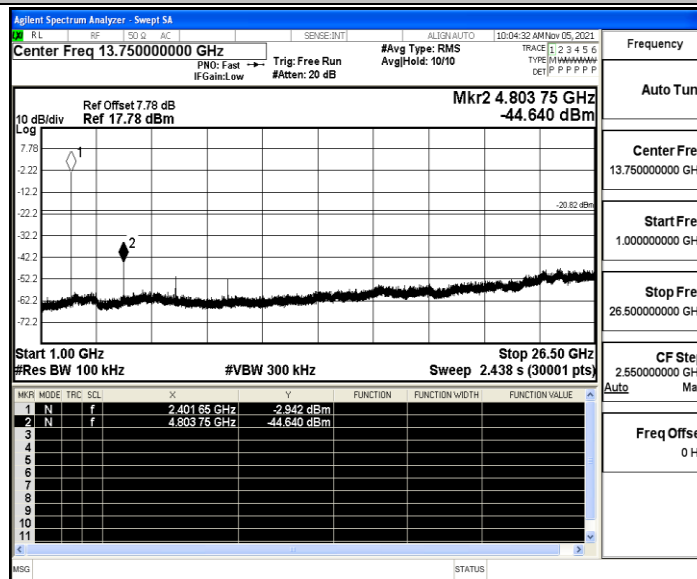


3DH5_Ant1_2402_30~1000

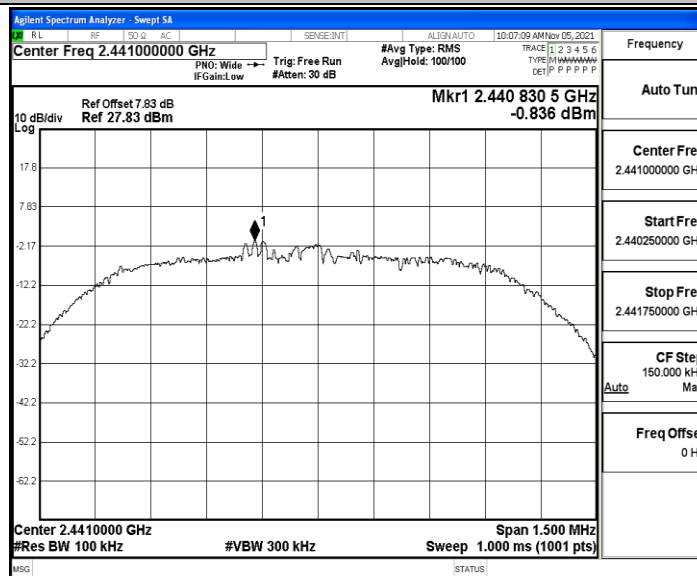




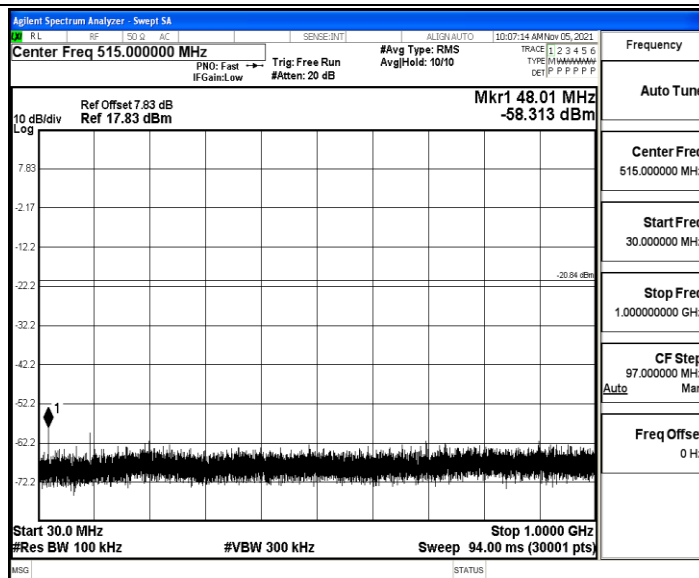
3DH5_Ant1_2402_1000~26500



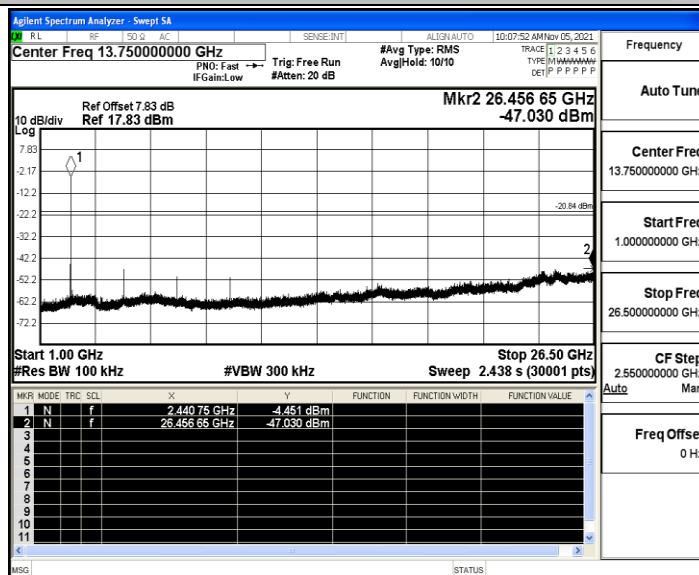
3DH5_Ant1_2441_0~Reference



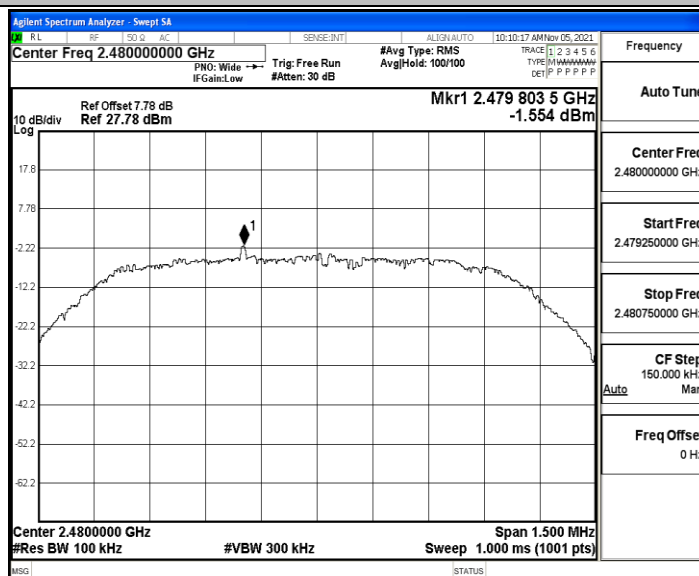
3DH5_Ant1_2441_30~1000



3DH5_Ant1_2441_1000~26500

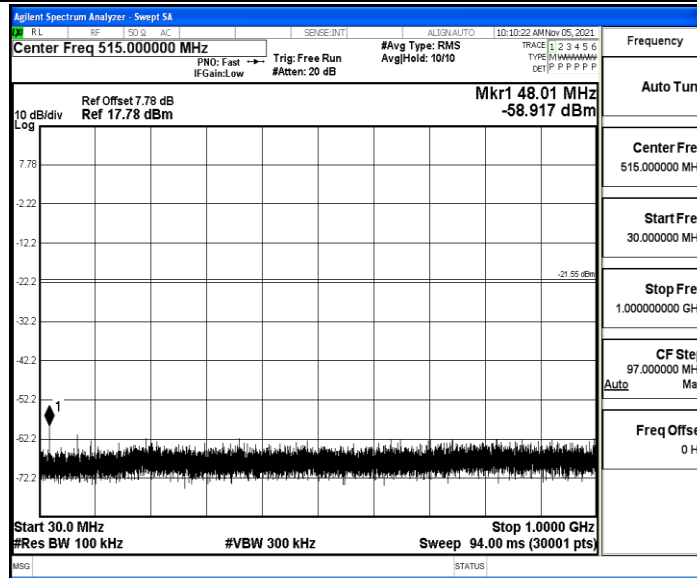


3DH5_Ant1_2480_0~Reference

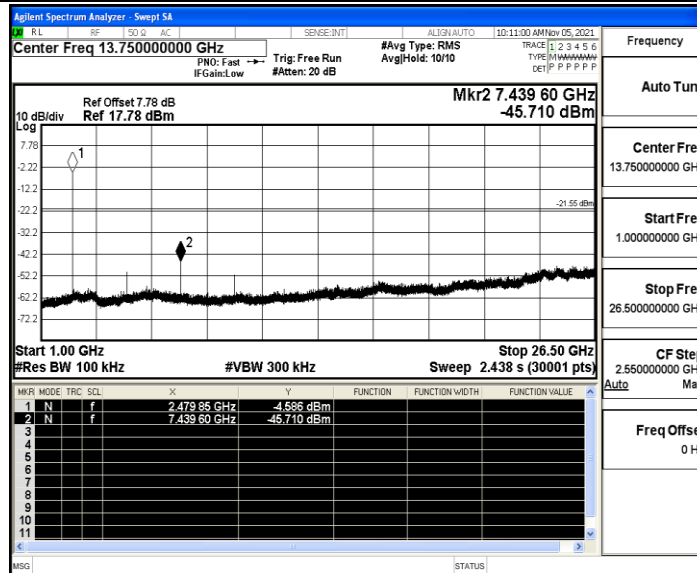




3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500





A.8 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	-49.12	≤-41.20	46.08	≤54	PASS
				AV	2387.045	-48.5	≤-41.20	46.70	≤54	PASS
				AV	2390.000	-48.63	≤-41.20	46.57	≤54	PASS
				Peak	2310.000	-41.78	≤-21.20	53.42	≤74	PASS
				Peak	2371.505	-37.49	≤-21.20	57.71	≤74	PASS
				Peak	2390.000	-43.52	≤-21.20	51.68	≤74	PASS
		High	2480	AV	2483.500	-46.18	≤-41.20	49.02	≤54	PASS
				AV	2483.520	-46.18	≤-41.20	49.02	≤54	PASS
				AV	2500.000	-48.1	≤-41.20	47.10	≤54	PASS
				Peak	2483.500	-41.37	≤-21.20	53.83	≤74	PASS
				Peak	2499.200	-39.44	≤-21.20	55.76	≤74	PASS
				Peak	2500.000	-42.89	≤-21.20	52.31	≤74	PASS
		Low	Hop_24 02	Peak	2310.000	-39.13	≤-21.20	56.07	≤74	PASS
				Peak	2379.905	-37.73	≤-21.20	57.47	≤74	PASS
				Peak	2390.000	-40.5	≤-21.20	54.70	≤74	PASS
		High	Hop_24 80	Peak	2483.500	-40.06	≤-21.20	55.14	≤74	PASS
				Peak	2495.920	-37.95	≤-21.20	57.25	≤74	PASS
				Peak	2500.000	-39.68	≤-21.20	55.52	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-49.11	≤-41.20	46.09	≤54	PASS
				AV	2386.310	-48.49	≤-41.20	46.71	≤54	PASS
				AV	2390.000	-48.59	≤-41.20	46.61	≤54	PASS
				Peak	2310.000	-43.46	≤-21.20	51.74	≤74	PASS
				Peak	2330.030	-39.29	≤-21.20	55.91	≤74	PASS
				Peak	2390.000	-42.61	≤-21.20	52.59	≤74	PASS
		High	2480	AV	2483.500	-45.94	≤-41.20	49.26	≤54	PASS
				AV	2483.520	-45.94	≤-41.20	49.26	≤54	PASS
				AV	2500.000	-48.15	≤-41.20	47.05	≤54	PASS
				Peak	2483.500	-39.57	≤-21.20	55.63	≤74	PASS
				Peak	2483.600	-38.84	≤-21.20	56.36	≤74	PASS
				Peak	2500.000	-42.98	≤-21.20	52.22	≤74	PASS
		Low	Hop_24 02	Peak	2310.000	-41.27	≤-21.20	53.93	≤74	PASS
				Peak	2368.145	-38.06	≤-21.20	57.14	≤74	PASS
				Peak	2390.000	-39.74	≤-21.20	55.46	≤74	PASS
		High	Hop_24 80	Peak	2483.500	-40.33	≤-21.20	54.87	≤74	PASS
				Peak	2494.880	-37.55	≤-21.20	57.65	≤74	PASS
				Peak	2500.000	-39.43	≤-21.20	55.77	≤74	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-49.04	≤-41.20	46.16	≤54	PASS



				AV	2389.985	-48.59	≤ -41.20	46.61	≤ 54	PASS
				AV	2390.000	-48.59	≤ -41.20	46.61	≤ 54	PASS
				Peak	2310.000	-43.92	≤ -21.20	51.28	≤ 74	PASS
				Peak	2374.970	-39.02	≤ -21.20	56.18	≤ 74	PASS
				Peak	2390.000	-40.54	≤ -21.20	54.66	≤ 74	PASS
		High	2480	AV	2483.500	-45.81	≤ -41.20	49.39	≤ 54	PASS
				AV	2483.520	-45.81	≤ -41.20	49.39	≤ 54	PASS
				AV	2500.000	-48	≤ -41.20	47.20	≤ 54	PASS
				Peak	2483.500	-41.78	≤ -21.20	53.42	≤ 74	PASS
				Peak	2498.800	-38.16	≤ -21.20	57.04	≤ 74	PASS
				Peak	2500.000	-43.32	≤ -21.20	51.88	≤ 74	PASS
		Low	Hop_24 02	Peak	2310.000	-40.34	≤ -21.20	54.86	≤ 74	PASS
				Peak	2354.180	-38.2	≤ -21.20	57.00	≤ 74	PASS
				Peak	2390.000	-40.08	≤ -21.20	55.12	≤ 74	PASS
		High	Hop_24 80	Peak	2483.500	-40.74	≤ -21.20	54.46	≤ 74	PASS
				Peak	2490.800	-37.72	≤ -21.20	57.48	≤ 74	PASS
				Peak	2500.000	-39.93	≤ -21.20	55.27	≤ 74	PASS

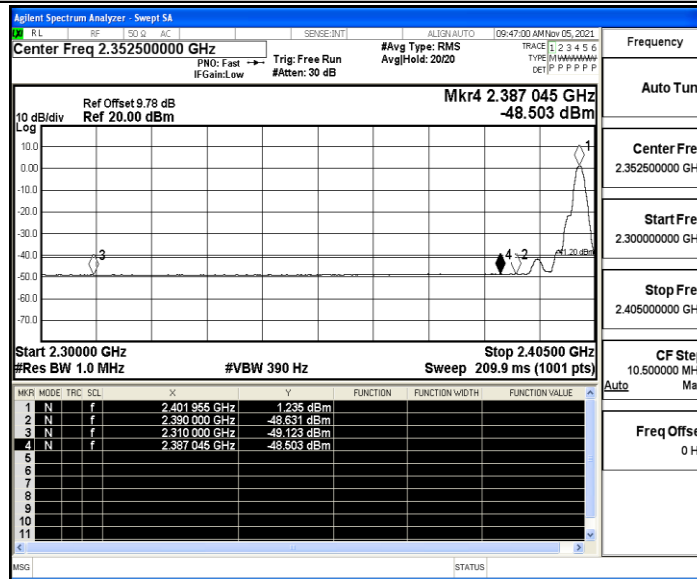
Note:

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.

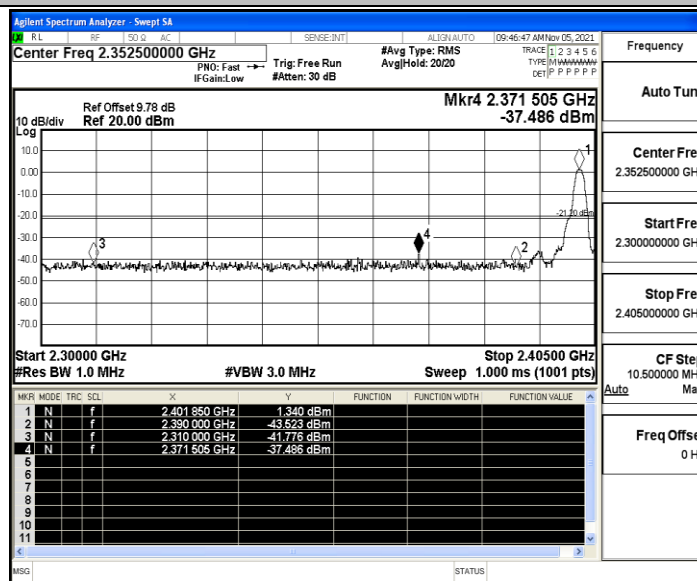


Test Graphs

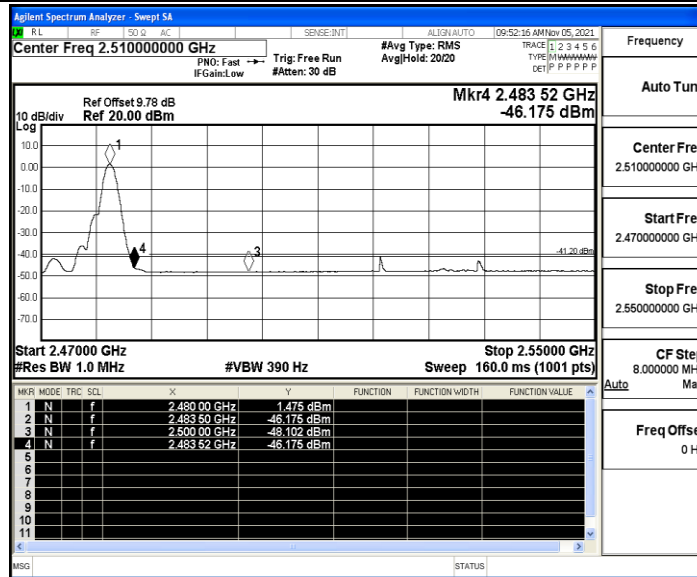
DH5_Ant1_Low_2402_AV



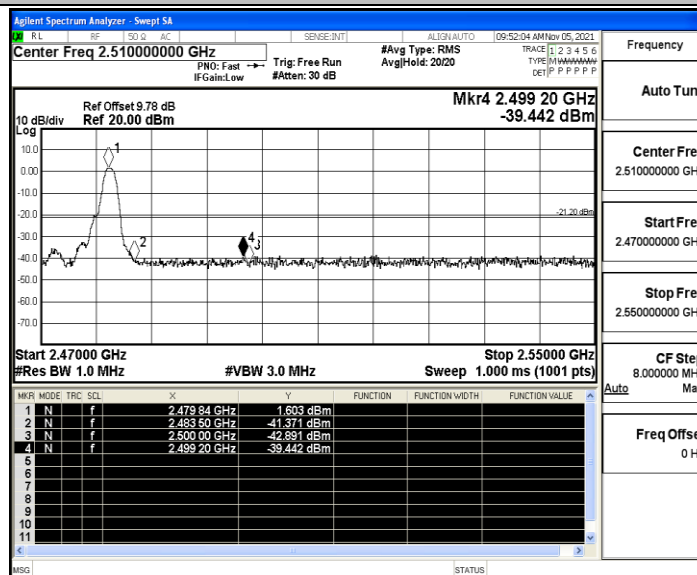
DH5_Ant1_Low_2402_Peak



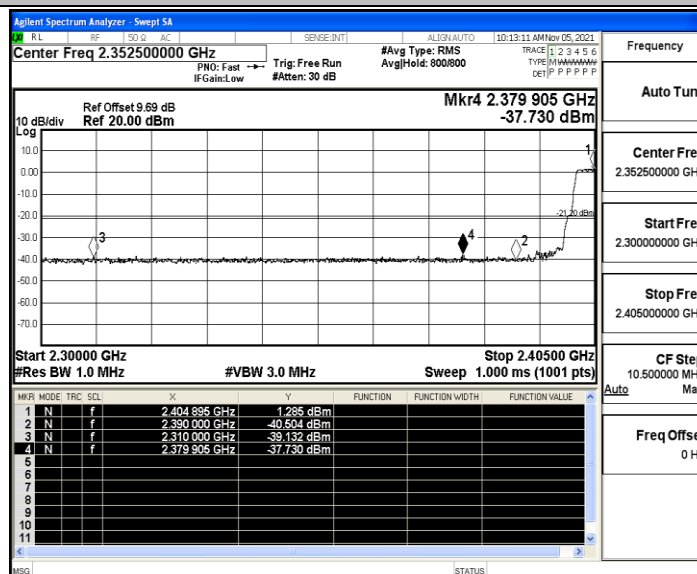
DH5_Ant1_High_2480_AV



DH5_Ant1_High_2480_Peak

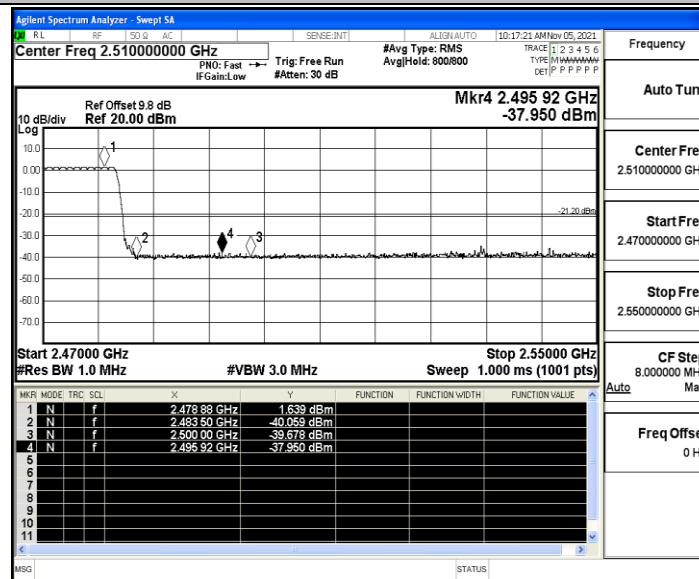


DH5_Ant1_Low_Hop_2402_Peak

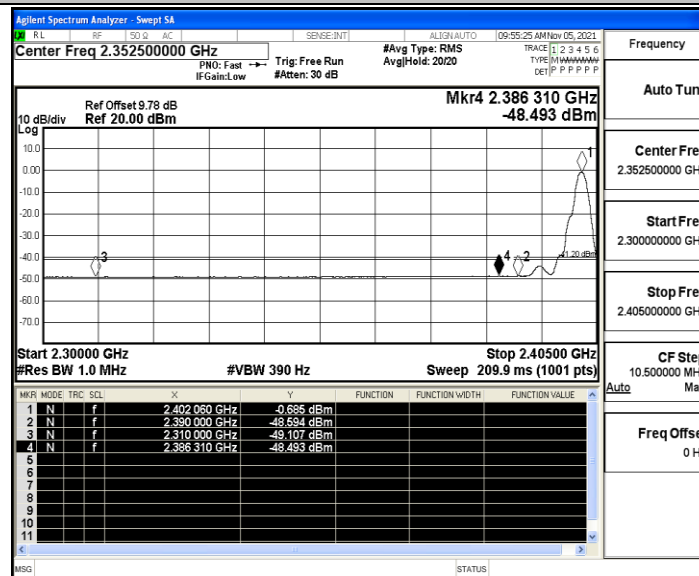




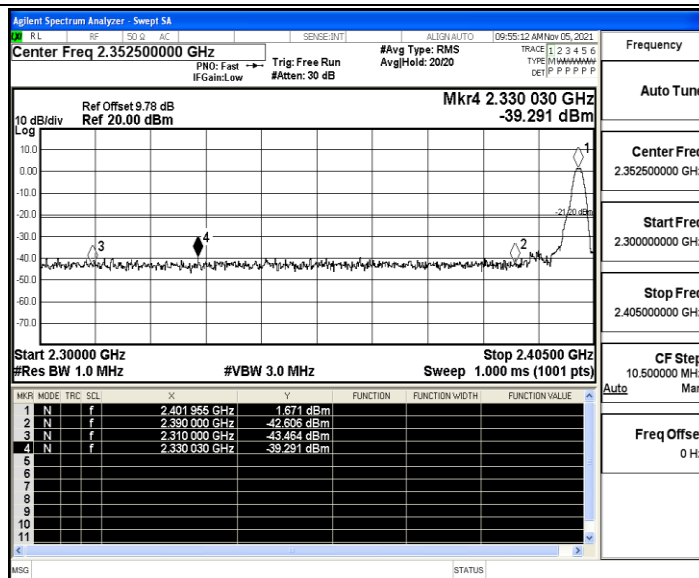
DH5_Ant1_High_Hop_2480_Peak



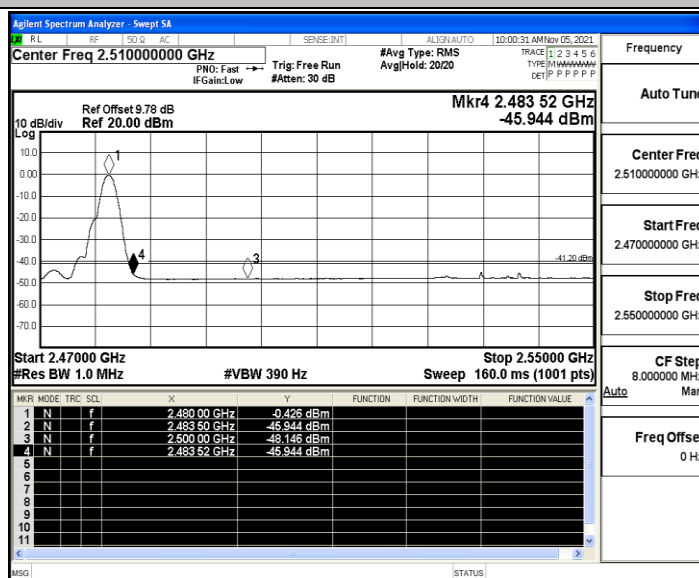
2DH5_Ant1_Low_2402_AV



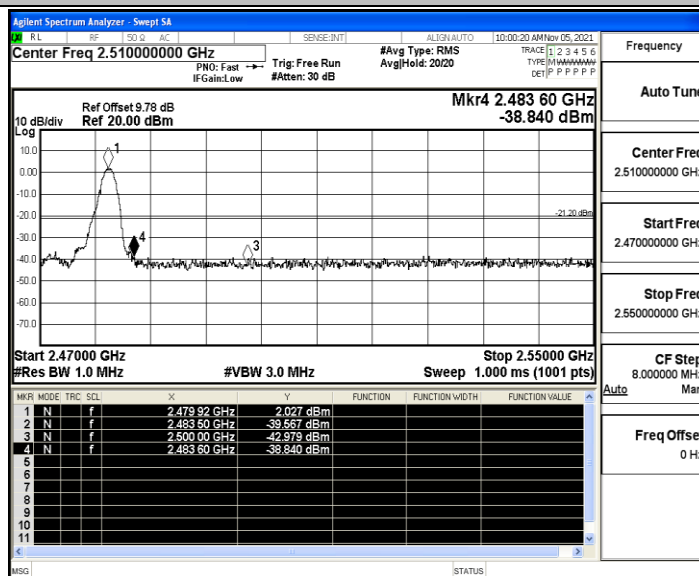
2DH5_Ant1_Low_2402_Peak



2DH5_Ant1_High_2480_AV



2DH5_Ant1_High_2480_Peak





Agilent Spectrum Analyzer - Sweep SA

RF L SO G AC SENSE: INT ALIGN: AUTO 10:18:31 AM Nov 05, 2021

Center Freq 2.352500000 GHz #Avg Type: RMS
 PNO: Fast Trig: Free Run AvgHold: 800/800
 IF Gain: Low #Atten: 30 dB TYPE: HANNAWAY
 DET: P P P P P

Ref Offset 9.69 dB
 Ref 20.00 dBm

Mkr4 2.368 145 GHz
 -38.064 dBm

Start 2.30000 GHz Stop 2.40500 GHz
 #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 1.000 ms (1001 pts)

MKR	MODE	TRG	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.405 000 GHz	1.698 dBm			
2	N	f		2.390 000 GHz	-39.735 dBm			
3	N	f		2.310 000 GHz	-41.271 dBm			
4	N	f		2.368 145 GHz	-38.064 dBm			
5								
6								
7								
8								
9								
10								
11								

Auto Mar

Freq Offset 0 Hz

MSG STATUS

Agilent Spectrum Analyzer - Sweep SA

RL RF SO G AC SENSE INT ALIGN AUTO 10-23-46 AM Nov 05, 2021
Center Freq 2.510000000 GHz #Avg Type: RMS Avg/Hold: 600/600 TRACE [1] 2 3 4 5 6 TYPE: AWWAVE DET: P P P P P P
 PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB

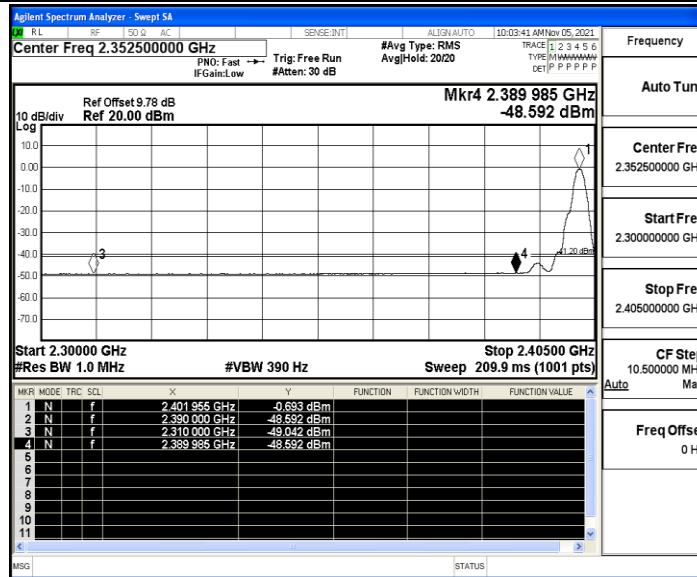
Mkr4 2.494 88 GHz -37.553 dBm

The plot shows a spectrum from approximately 2.47 MHz to 2.55 MHz. The y-axis represents power density in dB/dBm, ranging from -70 to 10. A sharp peak is visible at 2.49488 GHz, which is marked with a cursor and labeled 'Mkr4'. Other smaller peaks are present across the frequency range.

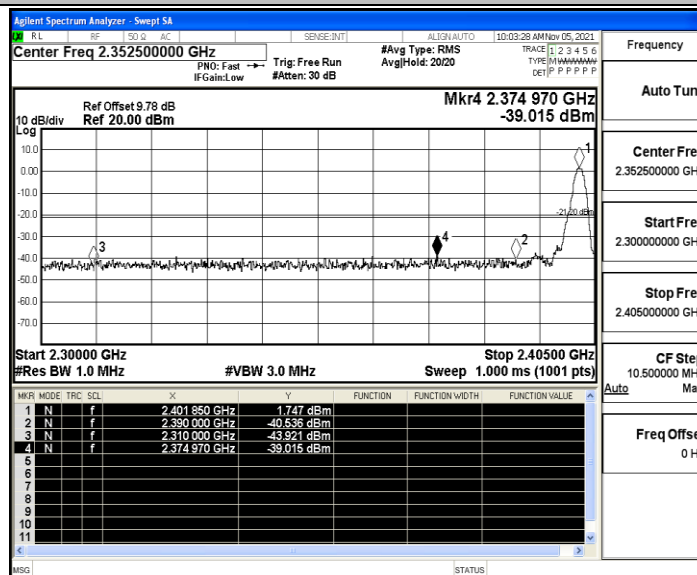
MKR MODE	FREQ	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f	2.475 84 GHz	-1.876 dBm			
2	N	f	2.483 50 GHz	-40.327 dBm			
3	N	f	2.500 00 GHz	-39.428 dBm			
4	N	f	2.494 88 GHz	-37.553 dBm			

Start 2.47000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 2.55000 GHz Sweep 1.000 ms (1001 pts)

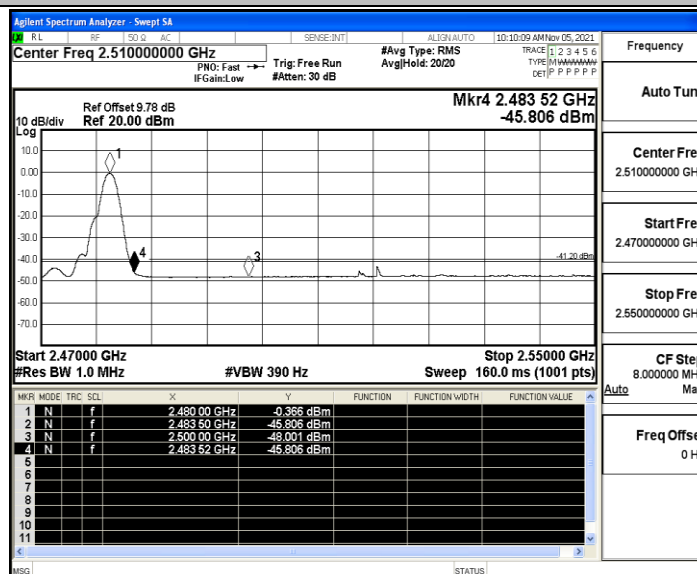
42 / 45



3DH5_Ant1_Low_2402_Peak

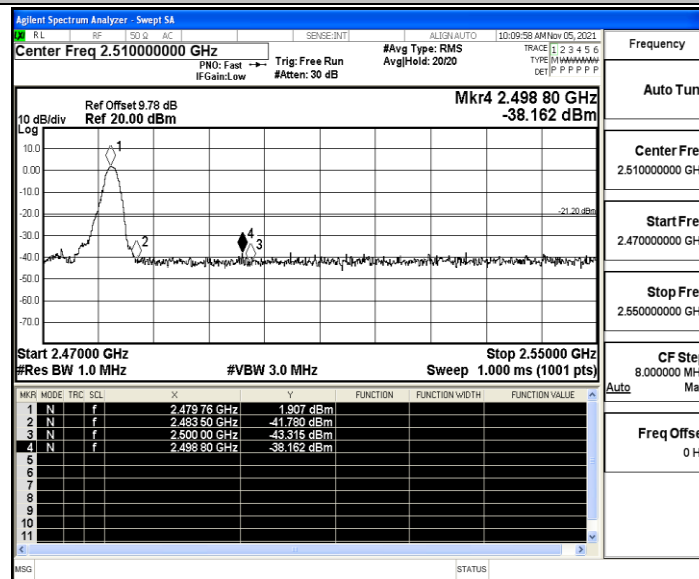


3DH5_Ant1_High_2480_AV

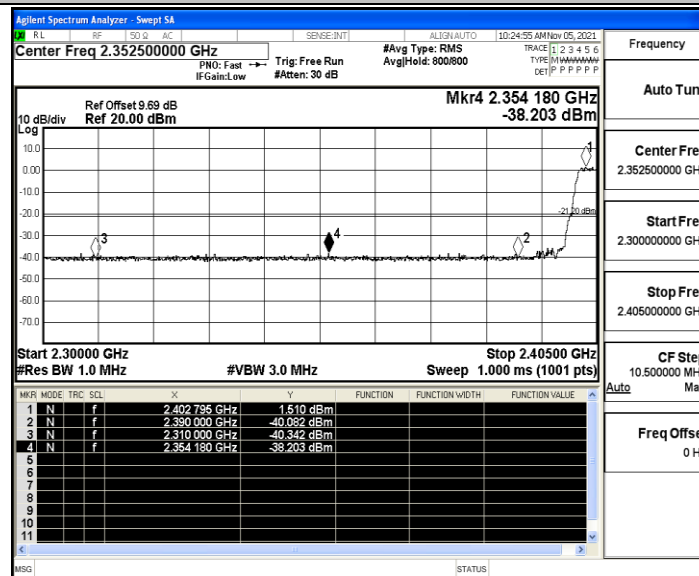




3DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_Hop_2402_Peak



3DH5_Ant1_High_Hop_2480_Peak

