



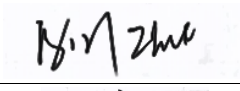
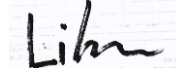
Appendix A

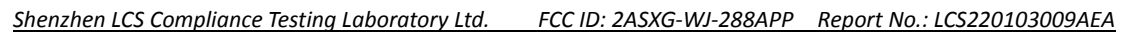
RF Test Data for BT (Conducted Measurement)

Product Name: Radio Alarm Clock with Wireless Charging

Test Model: WJ-288APP

Environmental Conditions

Temperature:	21.1° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	
Supervised by:	



Test Result

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.963	2401.535	2402.498	---	---
		2441	0.966	2440.532	2441.498	---	---
		2480	0.960	2479.535	2480.495	---	---
2DH5	Ant1	2402	1.311	2401.349	2402.660	---	---
		2441	1.317	2440.343	2441.660	---	---
		2480	1.287	2479.370	2480.657	---	---

DH5_Ant1_2402

Agilent Spectrum Analyzer - Swept SA

RL RF SO G AC SENSE:INT ALIGN:AUTO 04:35:04 PM Jan 11, 2022

Center Freq 2.402000000 GHz PNO: Wide Trg: Free Run #Avg Type: RMS TRACE 1 2 3 4 5 6
IF Gain: Low #Atten: 40 dB AvgHold: 100/100 TYPE: BW:AWWAVE DET: P P P P P P

Ref Offset 8.66 dB Δ Mkr3 963 kHz
Ref 30.00 dBm 0.145 dB

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 Span 3.000 MHz
#Res BW 30 kHz #VBW 100 kHz Sweep 3.200 ms (1001 pts)

MKR	MODE	TRC	SQL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.401536 GHz	-28.277 dBm			
2	N	f		2.401841 GHz	-7.800 dBm			
3	Δ 1	f	(Δ)	963 kHz (Δ)	0.145 dB			
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

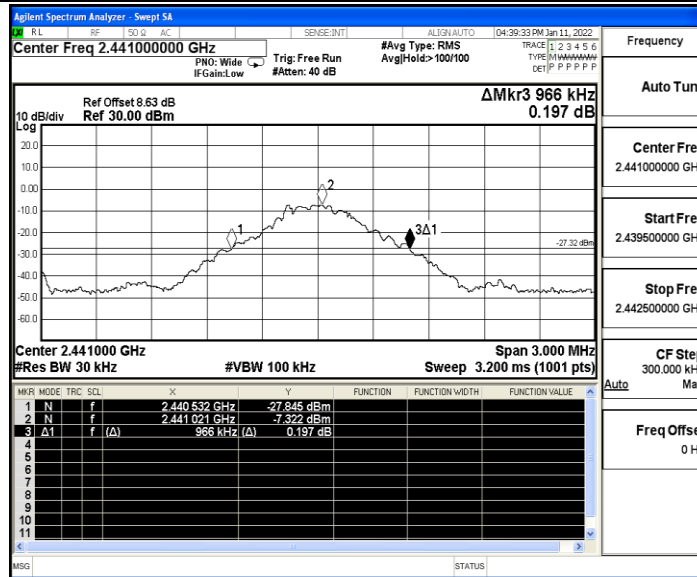
Center Freq
2.402000000 GHz

Start Freq
2.400500000 GHz

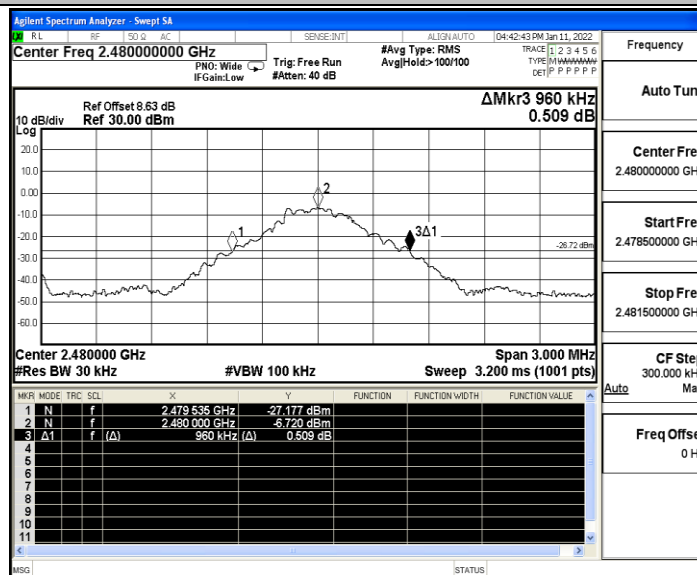
Stop Freq
2.403500000 GHz

CF Step
300.000 kHz
Man

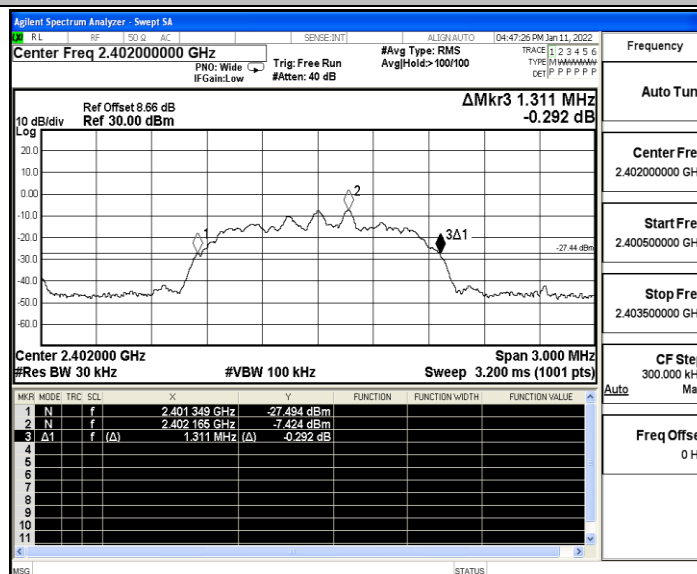
Freq Offset
0 Hz



DH5_Ant1_2480

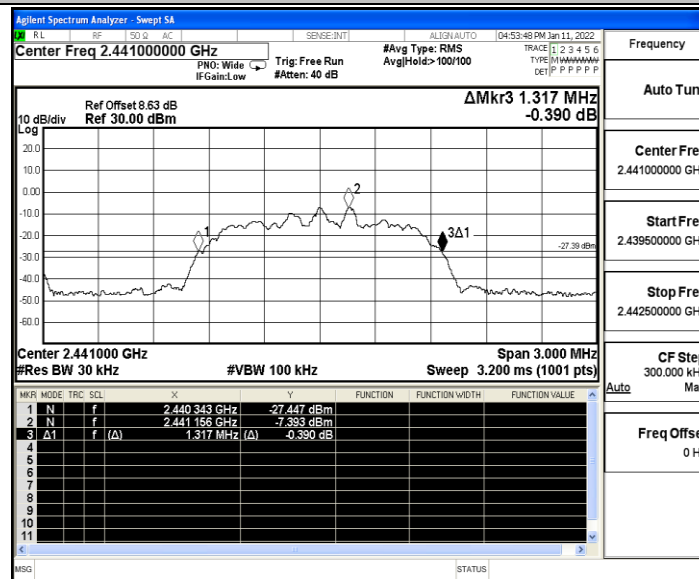


2DH5_Ant1_2402

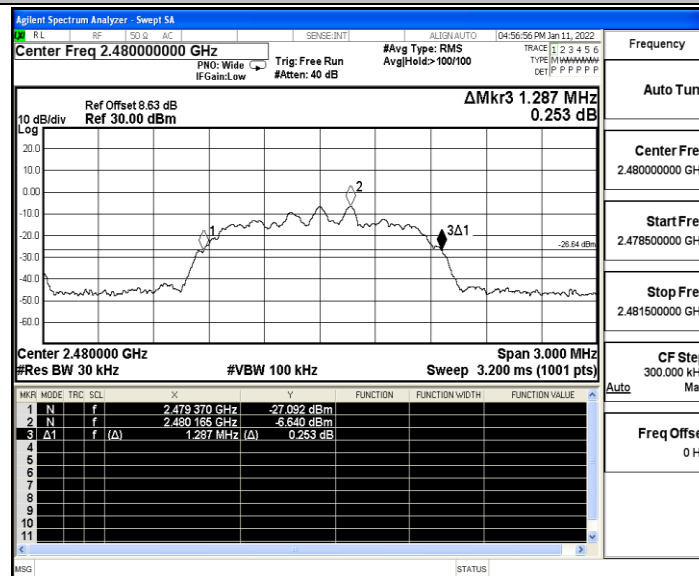




2DH5_Ant1_2441



2DH5_Ant1_2480



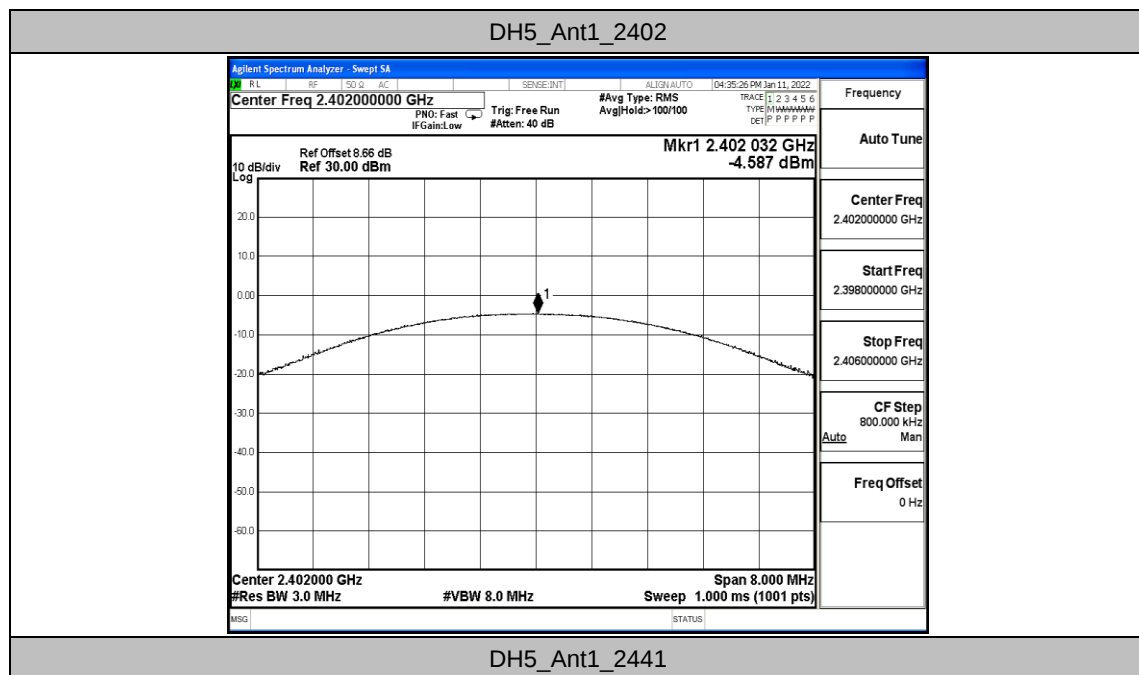


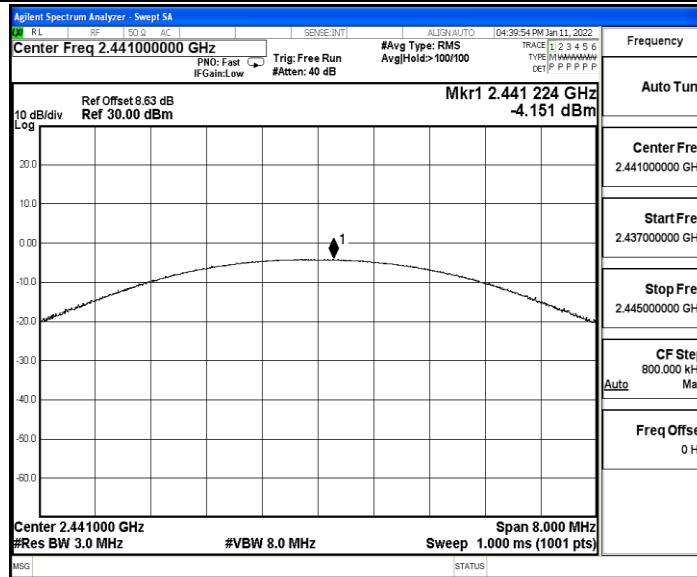
A.2 Maximum conducted output power

Test Result

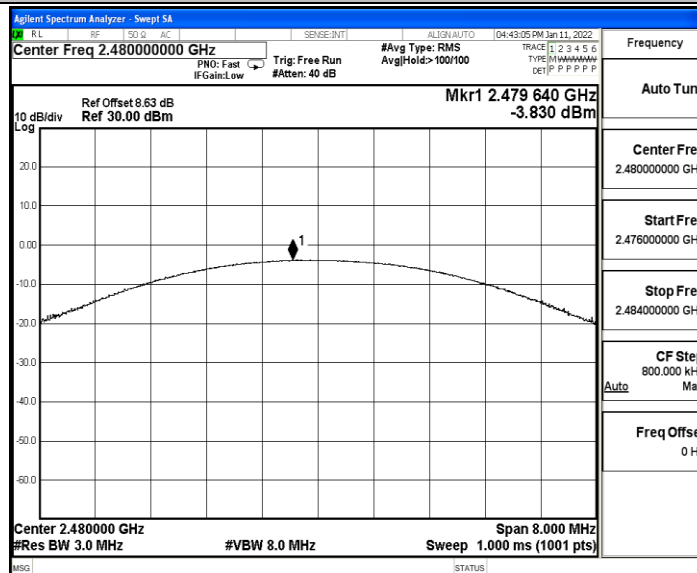
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	-4.59	≤20.97	PASS
		2441	-4.15	≤20.97	PASS
		2480	-3.83	≤20.97	PASS
2DH5	Ant1	2402	-3.83	≤20.97	PASS
		2441	-3.48	≤20.97	PASS
		2480	-3.19	≤20.97	PASS

Test Graphs

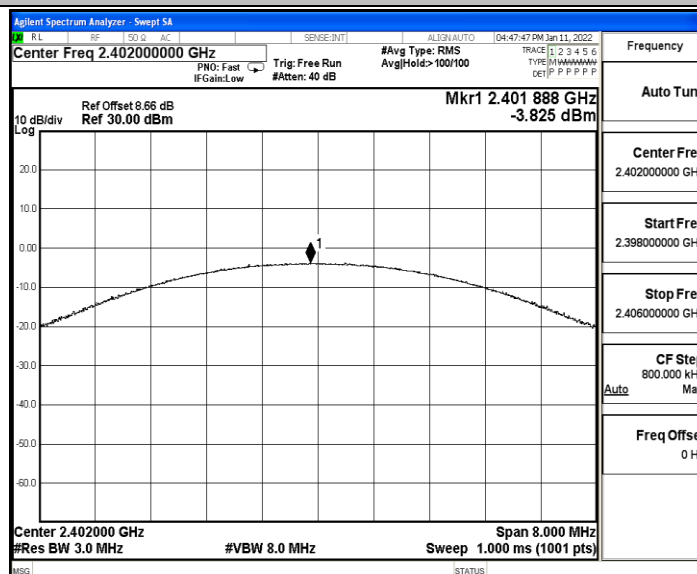




DH5_Ant1_2480

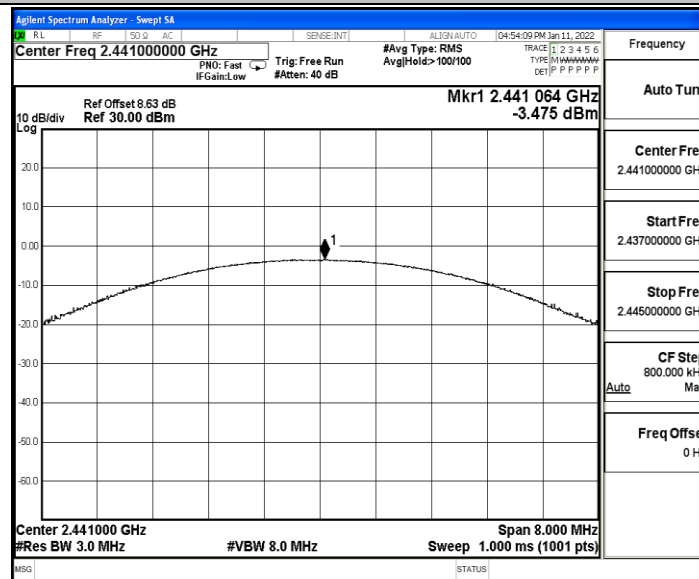


2DH5_Ant1_2402

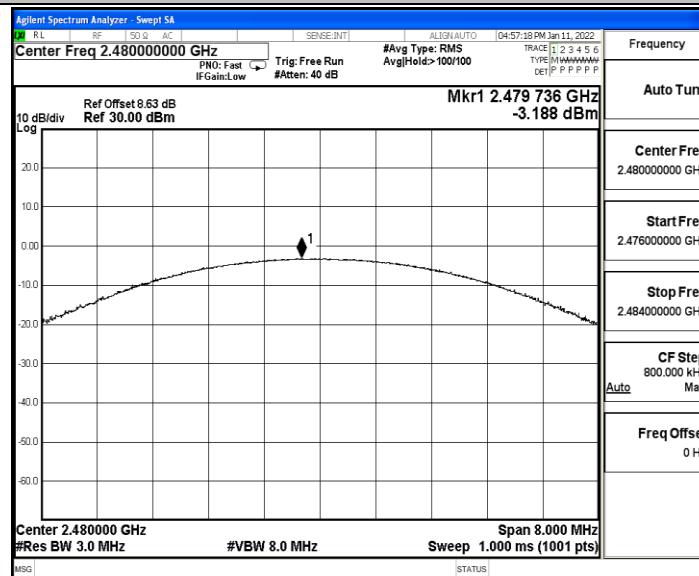


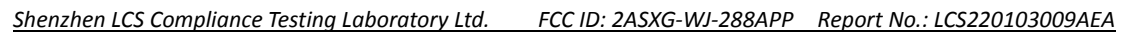


2DH5_Ant1_2441



2DH5_Ant1_2480





Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.224	≥0.966	PASS
2DH5	Ant1	Hop	0.902	≥0.878	PASS

DH5_Ant1_Hop

Agilent Spectrum Analyzer - Swept SA

RL RF SO G AC SENSE INT ALIGN/AUTO 05:02:01 PM Jan 11, 2022

Center Freq 2.441500000 GHz PNO: Wide IF Gain: Low Trig: Free Run #Atten: 40 dB #Avg Type: RMS Avg Hold: >100/100 TRACE 1 2 3 4 5 6 TYPE: BW: W W W W W W W W DET: P P P P P P P P

Ref Offset 8.63 dB Ref 30.00 dBm Δ Mkr2 1.224 MHz -0.127 dB

10 dB/div Log

Start 2.440500 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.000 ms (1001 pts)

Stop 2.442500 GHz

MSG STATUS

Frequency

Auto Tune

Center Freq 2.441500000 GHz

Start Freq 2.440500000 GHz

Stop Freq 2.442500000 GHz

CF Step 200.000 kHz Man

Freq Offset 0 Hz

2DH5_Ant1_Hop

Agilent Spectrum Analyzer - Swept SA

RL RF SO G AC SENSE INT ALIGN/AUTO 05:07:33 PM Jan 11, 2022

Center Freq 2.441500000 GHz PNO: Wide IF Gain: Low Trig: Free Run #Atten: 40 dB #Avg Type: RMS Avg Hold: >100/100 TRACE 1 2 3 4 5 6 TYPE: BW: W W W W W W W W DET: P P P P P P P P

Ref Offset 8.63 dB Ref 30.00 dBm Δ Mkr2 902 kHz 2.761 dB

10 dB/div Log

Start 2.440500 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.000 ms (1001 pts)

Stop 2.442500 GHz

MSG STATUS

Frequency

Auto Tune

Center Freq 2.441500000 GHz

Start Freq 2.440500000 GHz

Stop Freq 2.442500000 GHz

CF Step 200.000 kHz Man

Freq Offset 0 Hz

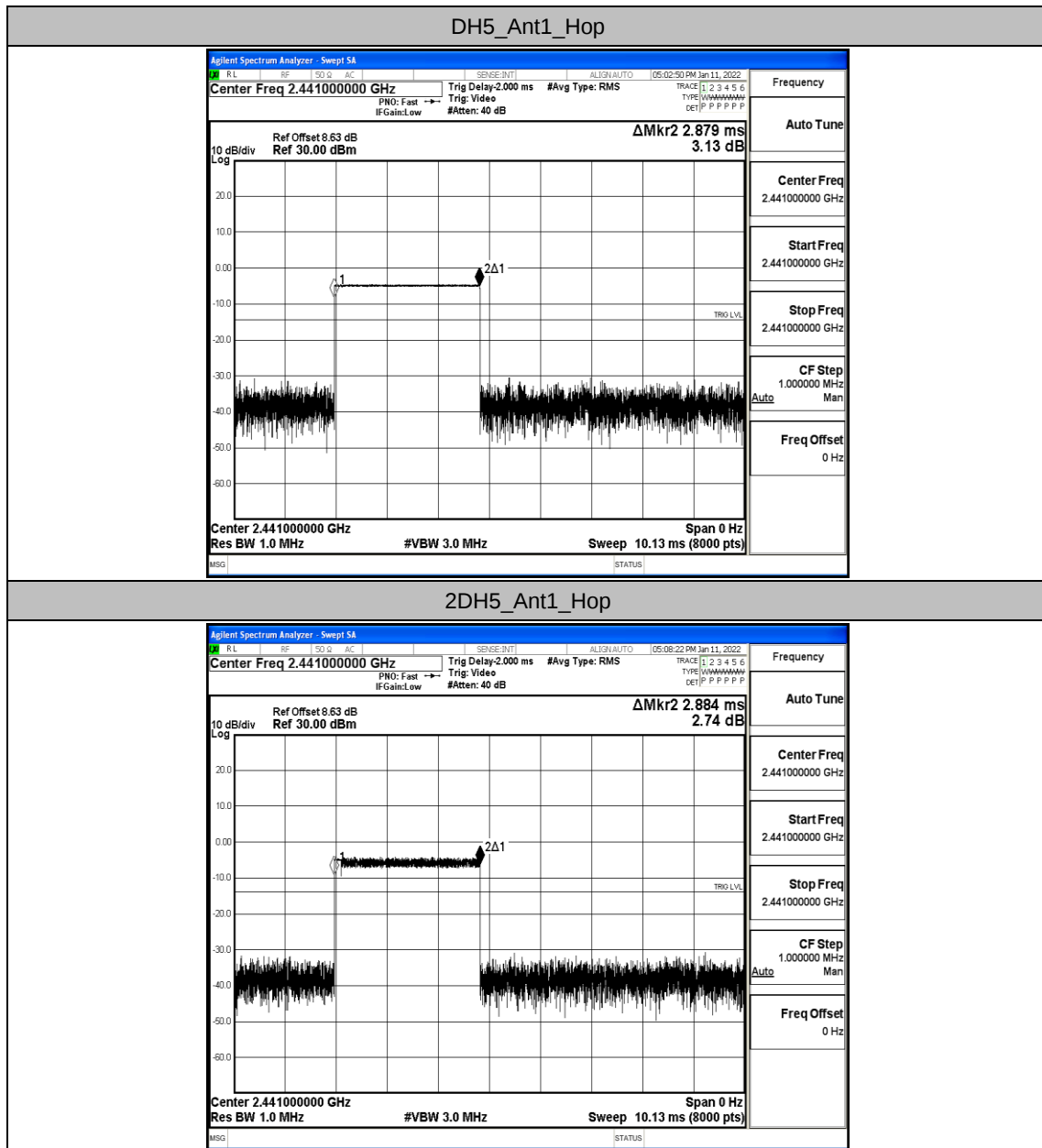


A.4 Time of occupancy

Test Result

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

Test Graphs



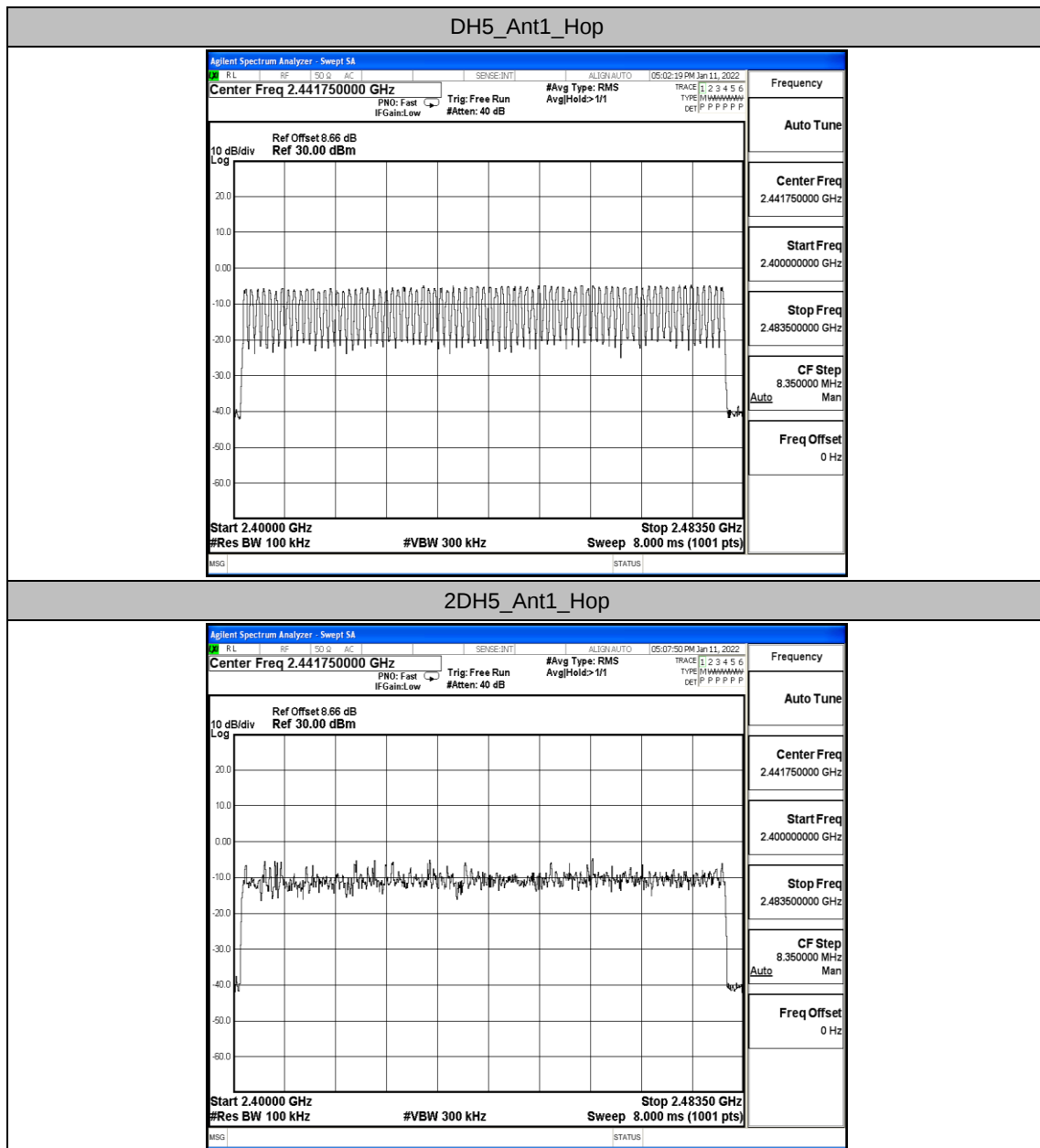


A.5 Number of hopping channels

Test Result

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

Test Graphs



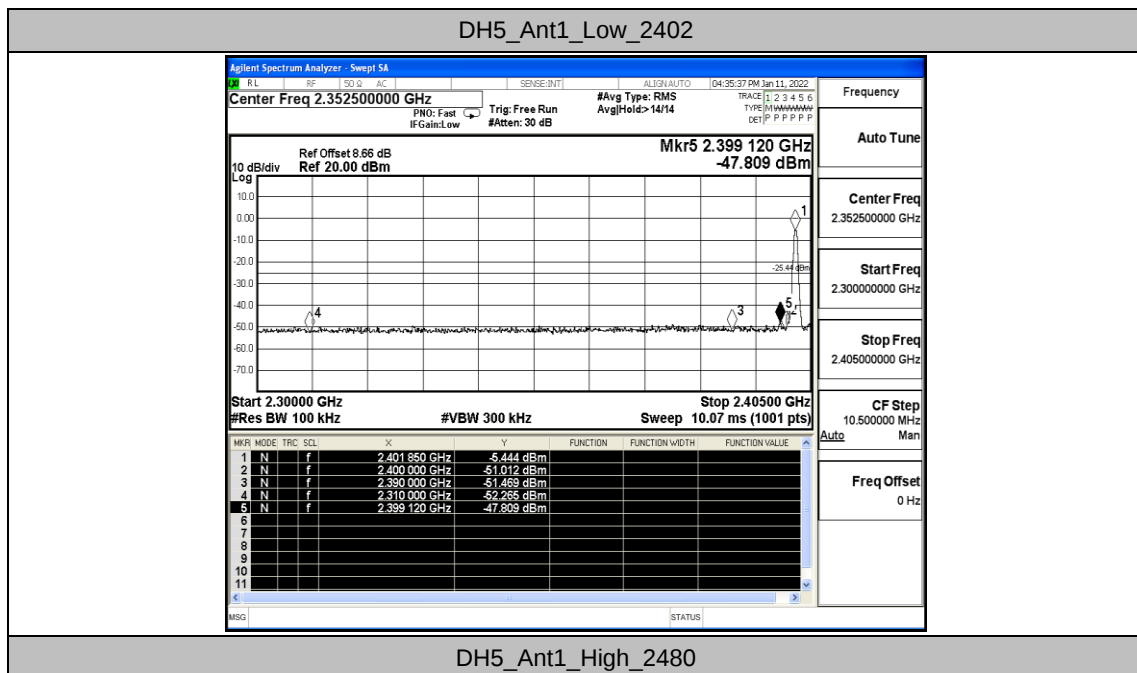


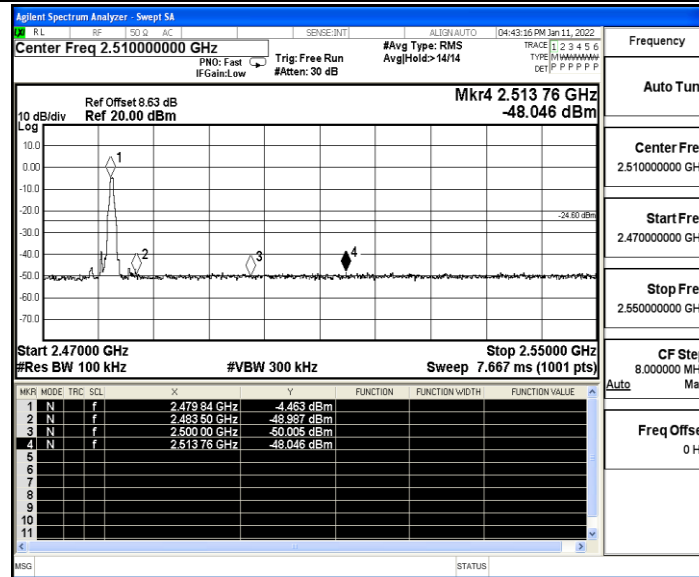
A.6 Band edge measurements

Test Result

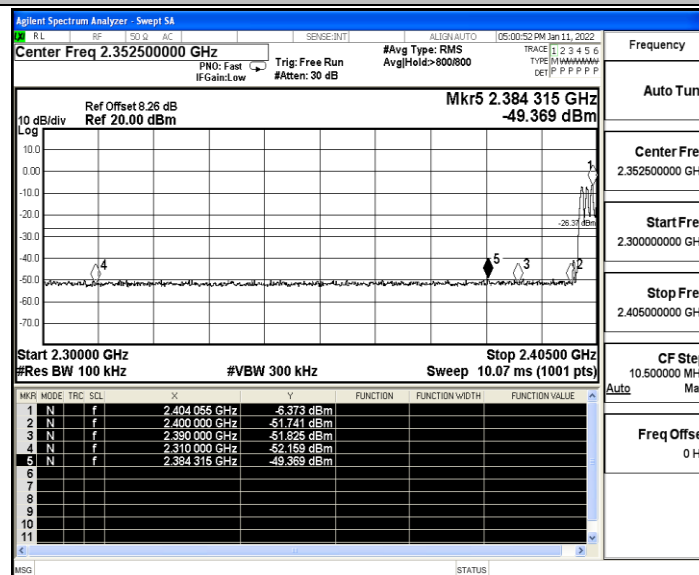
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-5.44	-47.81	≤-25.44	PASS
		High	2480	-4.60	-48.05	≤-24.6	PASS
		Low	Hop_2402	-6.37	-49.37	≤-26.37	PASS
		High	Hop_2480	-4.78	-48.04	≤-24.78	PASS
2DH5	Ant1	Low	2402	-5.62	-48.81	≤-25.62	PASS
		High	2480	-4.68	-47.98	≤-24.68	PASS
		Low	Hop_2402	-9.69	-49.58	≤-29.69	PASS
		High	Hop_2480	-5.68	-48.1	≤-25.68	PASS

Test Graphs

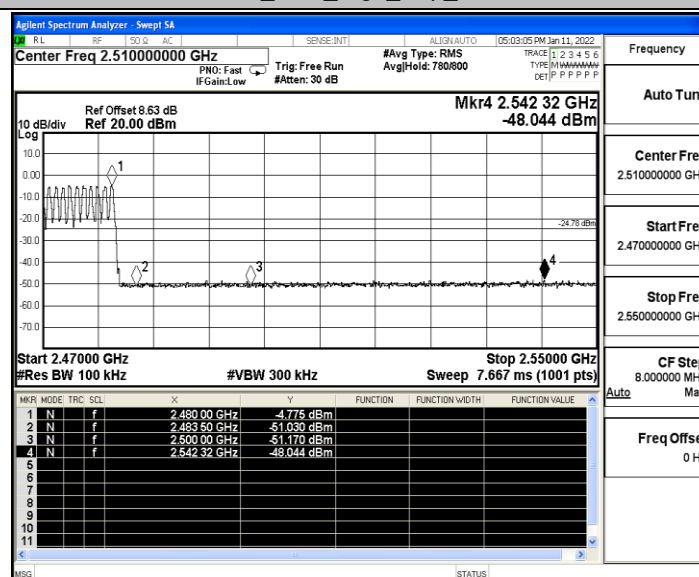




DH5_Ant1_Low_Hop_2402

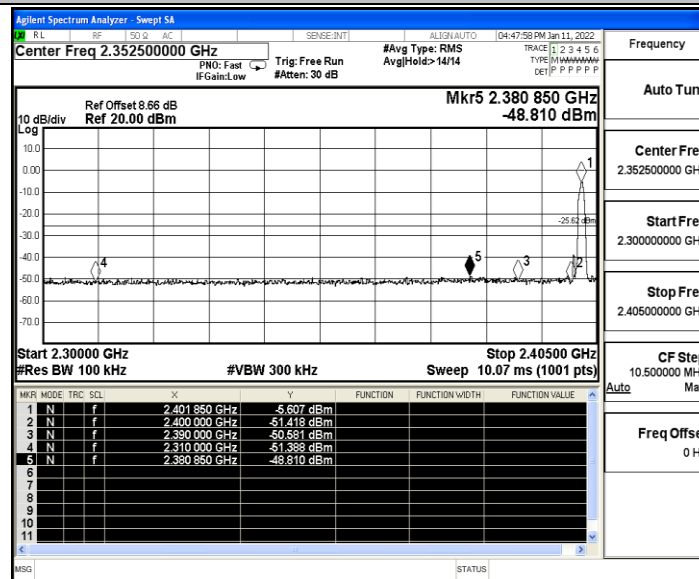


DH5_Ant1_High_Hop_2480

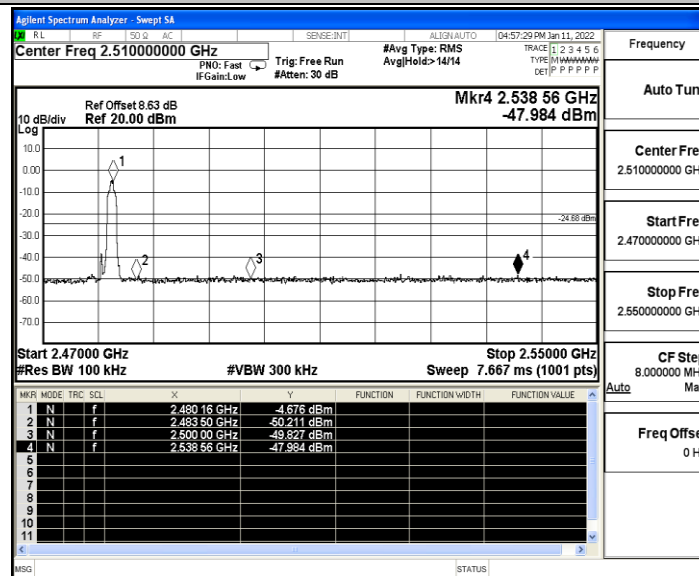




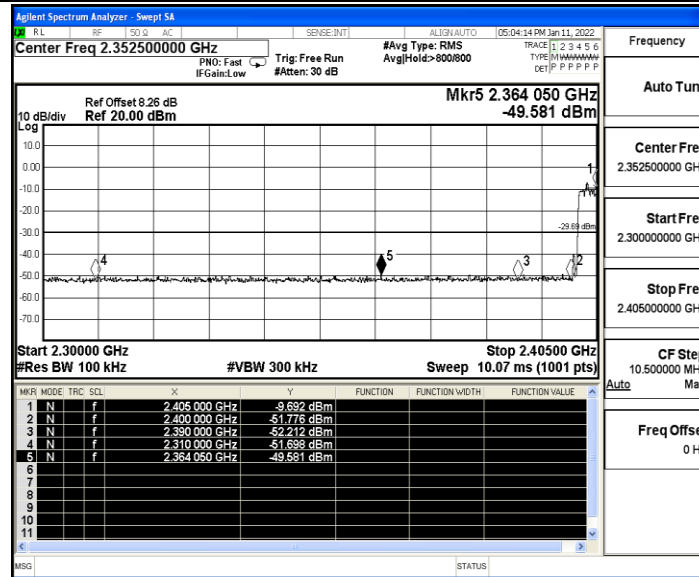
2DH5_Ant1_Low_2402



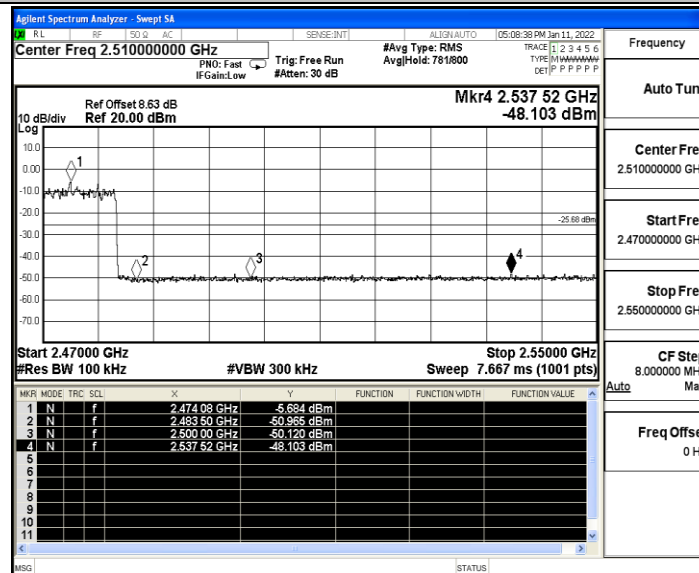
2DH5_Ant1_High_2480



2DH5_Ant1_Low_Hop_2402



2DH5_Ant1_High_Hop_2480





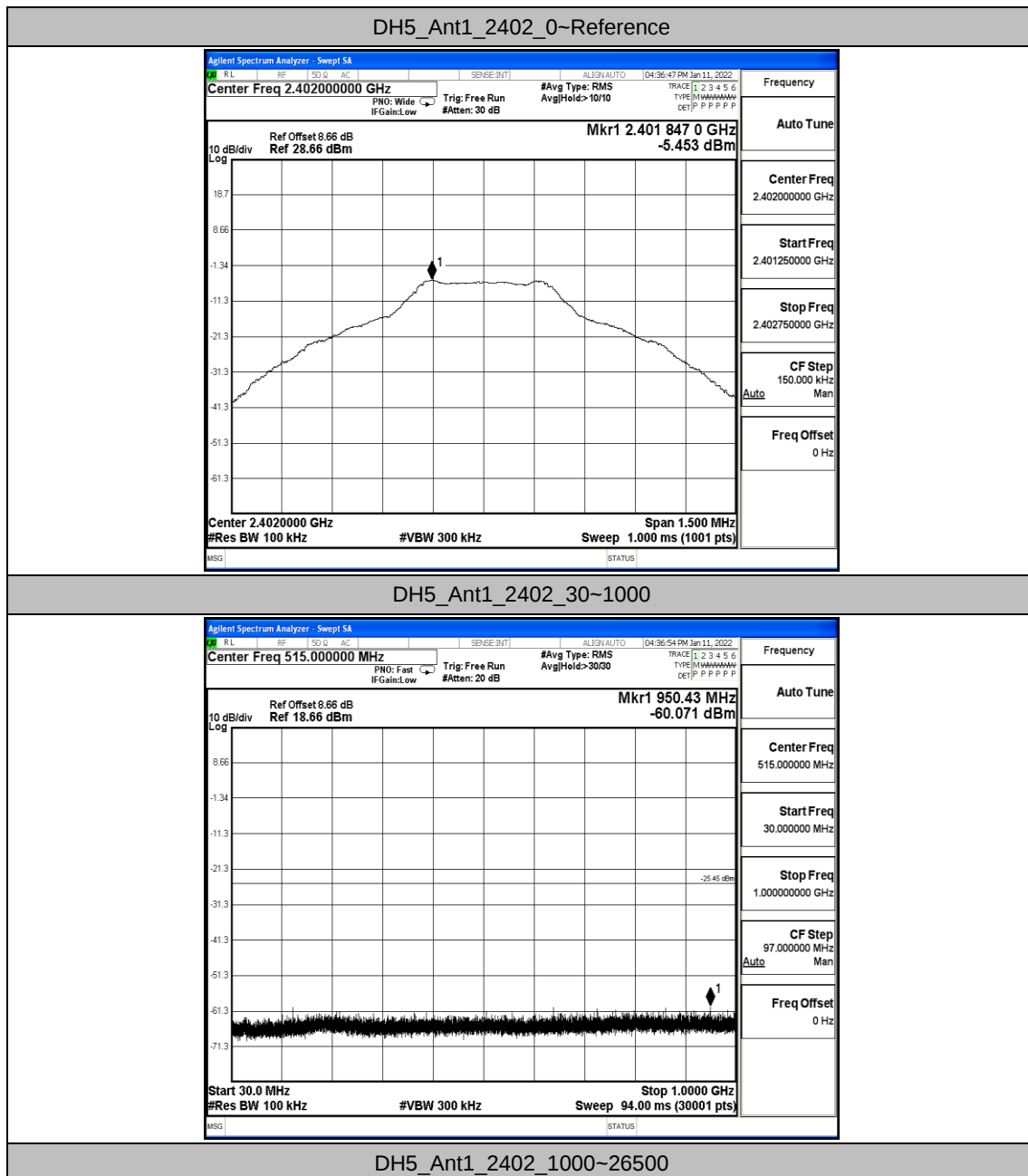
A.7 Conducted Spurious Emission

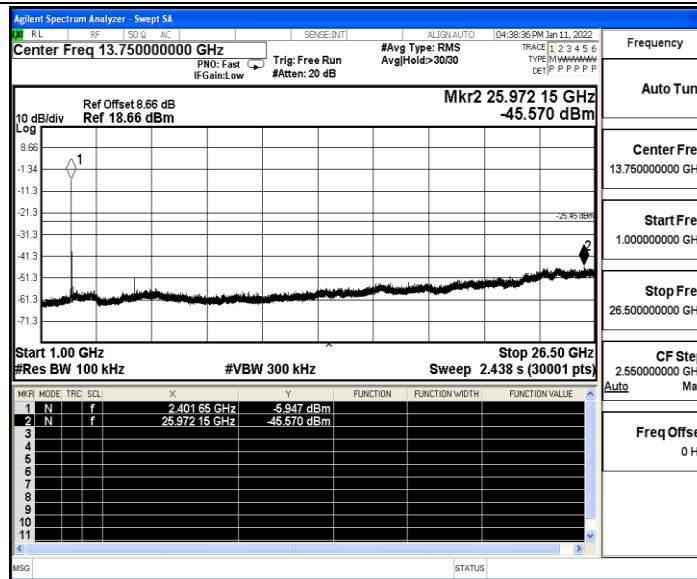
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	-5.45	-5.45	---	PASS
			30~1000	-5.45	-60.07	≤ -25.45	PASS
			1000~26500	-5.45	-45.57	≤ -25.45	PASS
		2441	Reference	-4.98	-4.98	---	PASS
			30~1000	-4.98	-60.07	≤ -24.98	PASS
			1000~26500	-4.98	-46.25	≤ -24.98	PASS
		2480	Reference	-4.63	-4.63	---	PASS
			30~1000	-4.63	-59.85	≤ -24.63	PASS
			1000~26500	-4.63	-45.76	≤ -24.63	PASS
2DH5	Ant1	2402	Reference	-5.43	-5.43	---	PASS
			30~1000	-5.43	-59.95	≤ -25.43	PASS
			1000~26500	-5.43	-46.25	≤ -25.43	PASS
		2441	Reference	-4.98	-4.98	---	PASS
			30~1000	-4.98	-60.82	≤ -24.98	PASS
			1000~26500	-4.98	-46.33	≤ -24.98	PASS
		2480	Reference	-4.66	-4.66	---	PASS
			30~1000	-4.66	-60.18	≤ -24.66	PASS
			1000~26500	-4.66	-45.42	≤ -24.66	PASS

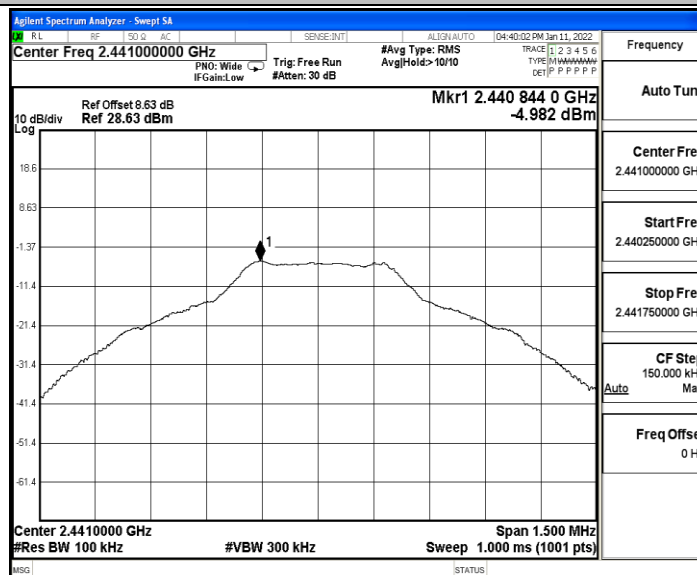


Test Graphs

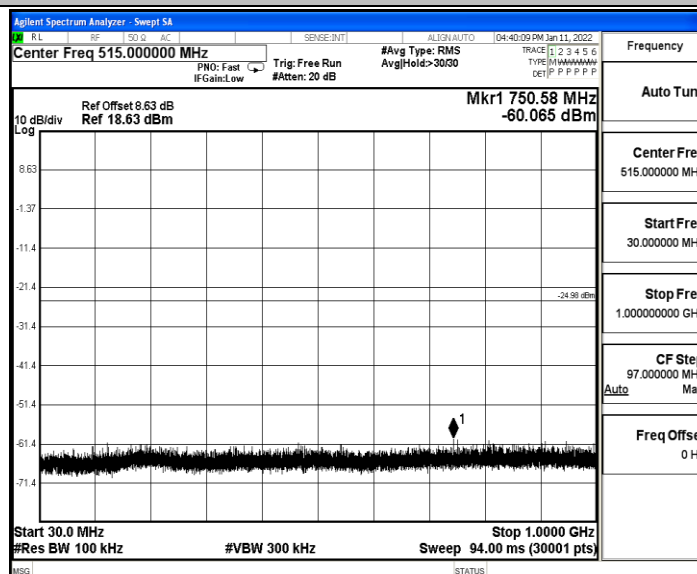




DH5_Ant1_2441_0-Reference

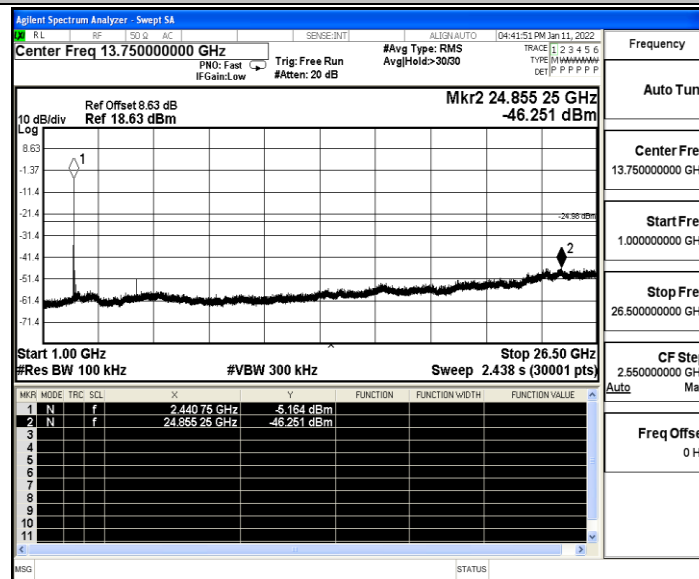


DH5_Ant1_2441_30~1000

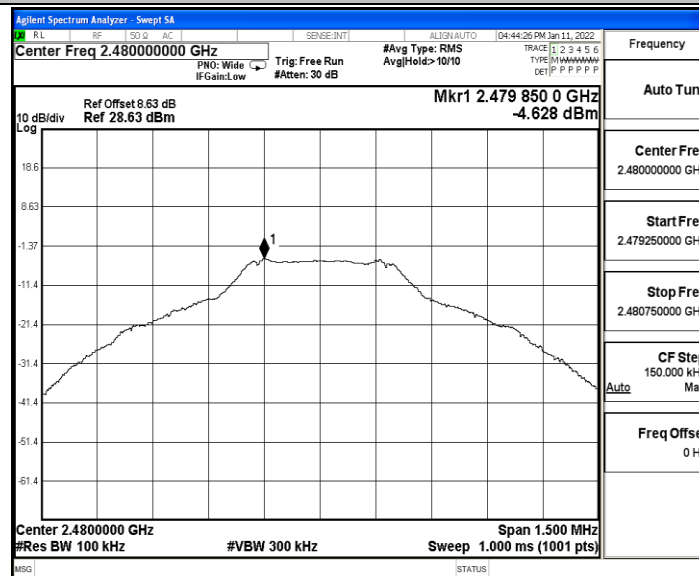




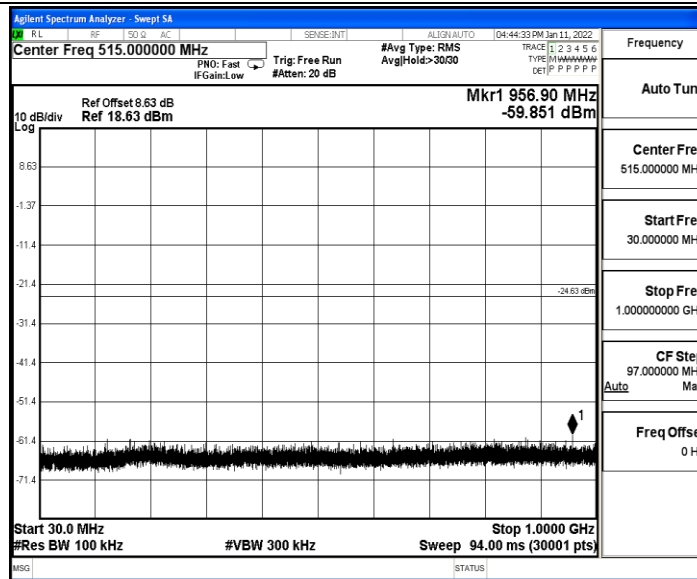
DH5_Ant1_2441_1000~26500



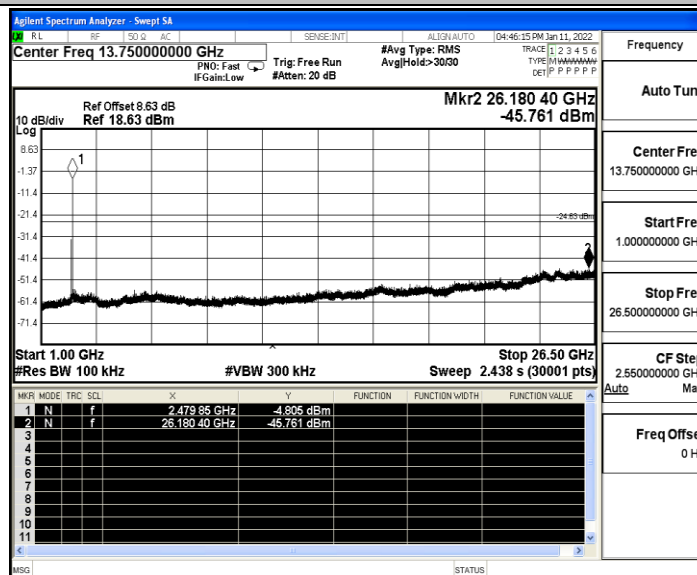
DH5_Ant1_2480_0~Reference



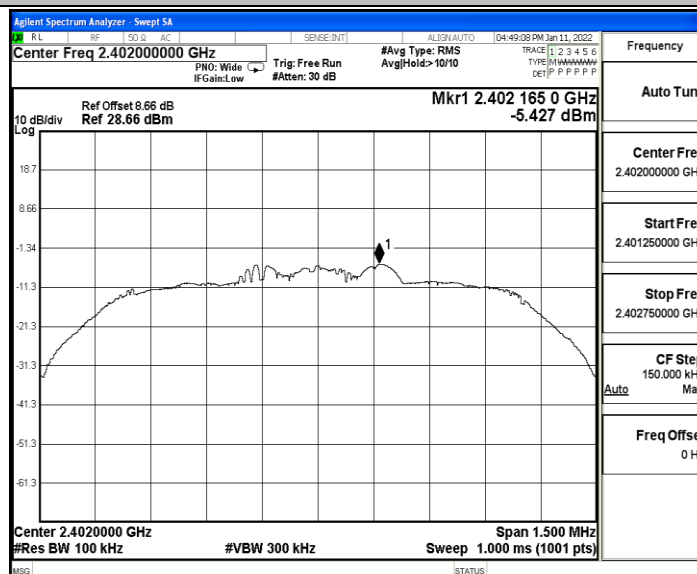
DH5_Ant1_2480_30~1000

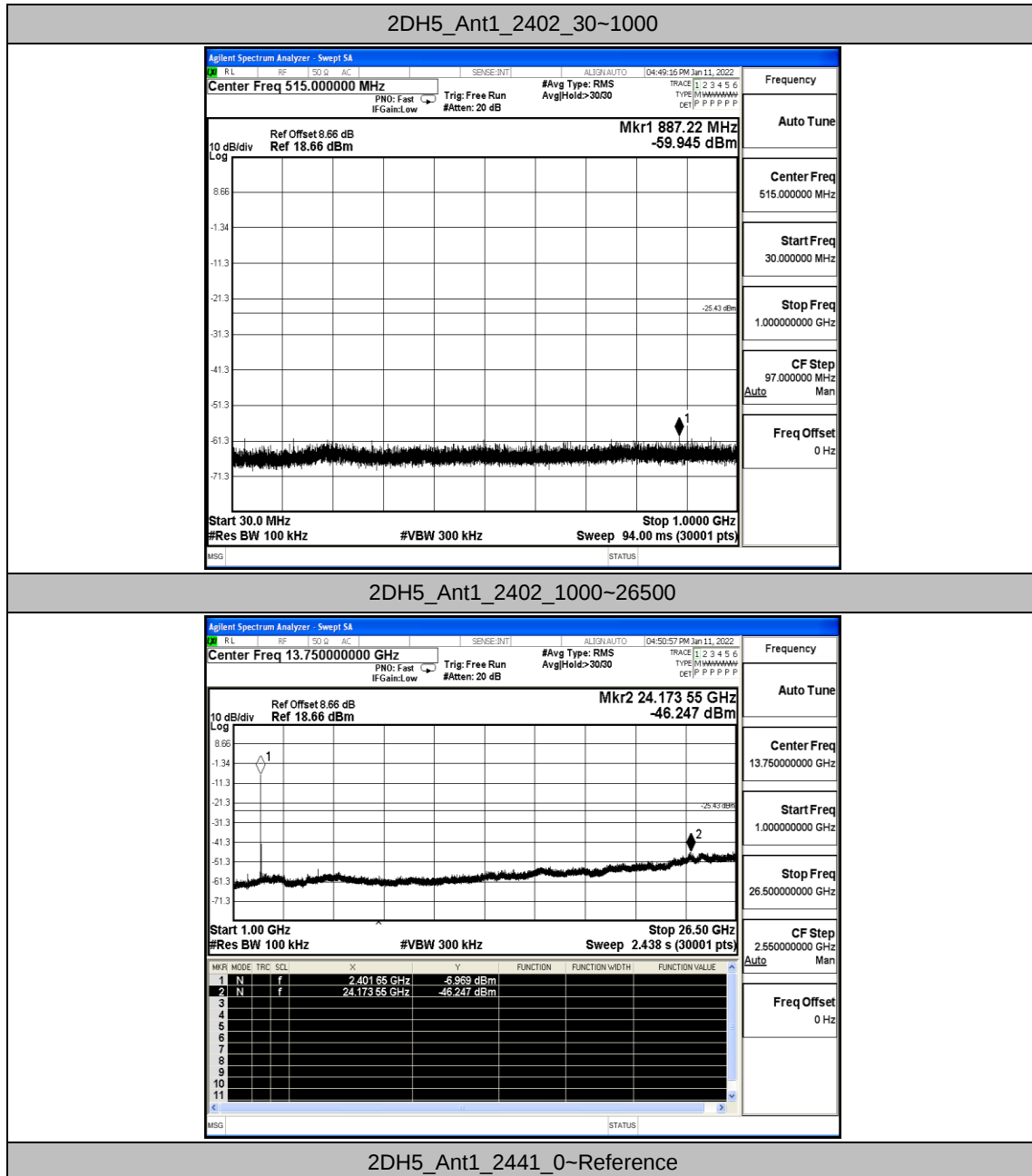


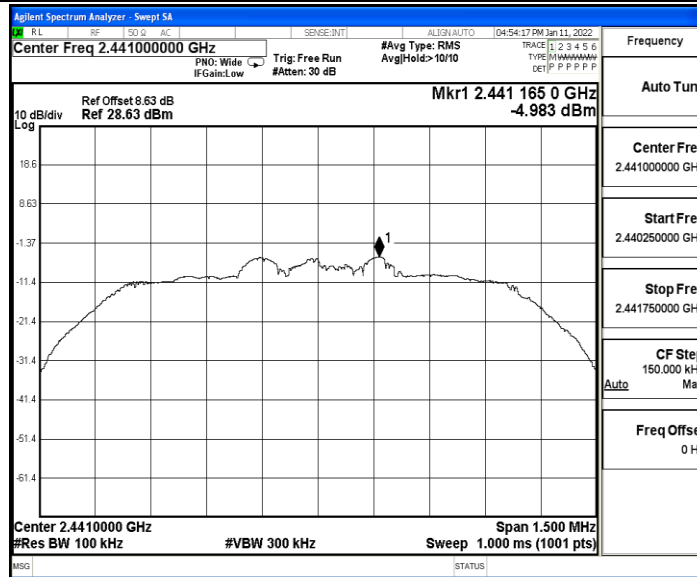
DH5_Ant1_2480_1000~26500



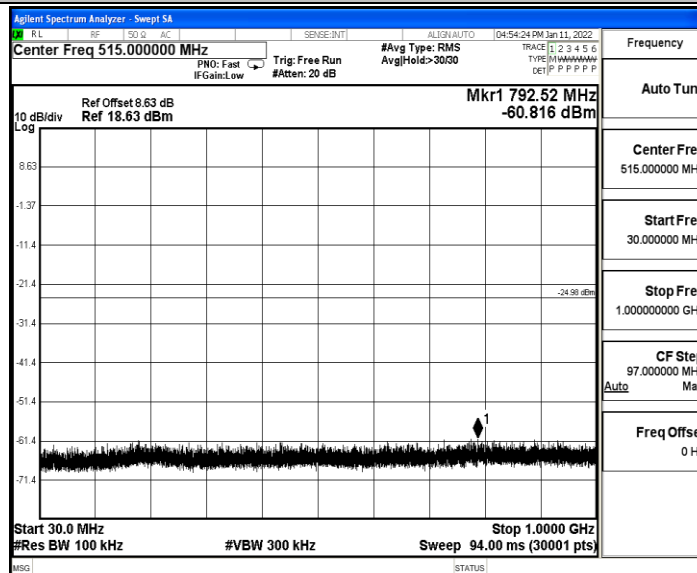
2DH5_Ant1_2402_0~Reference



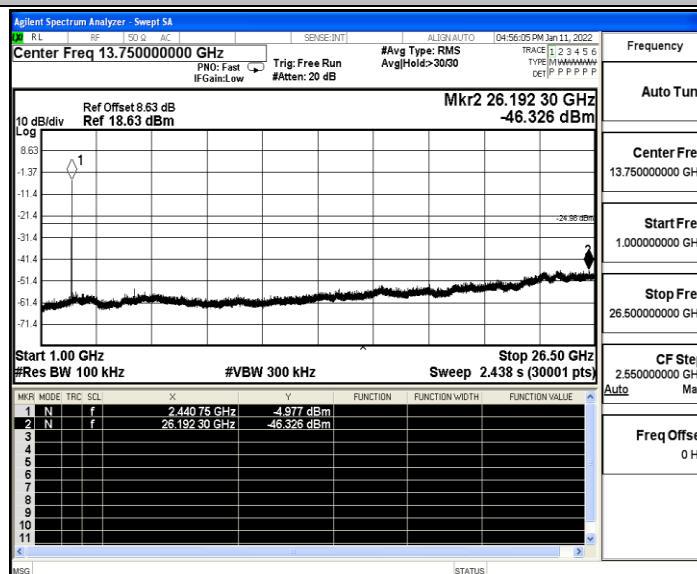




2DH5_Ant1_2441_30~1000

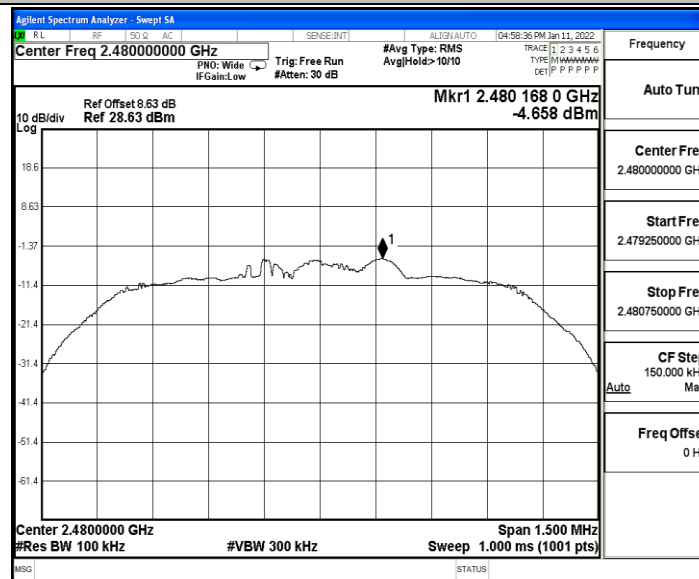


2DH5_Ant1_2441_1000~26500

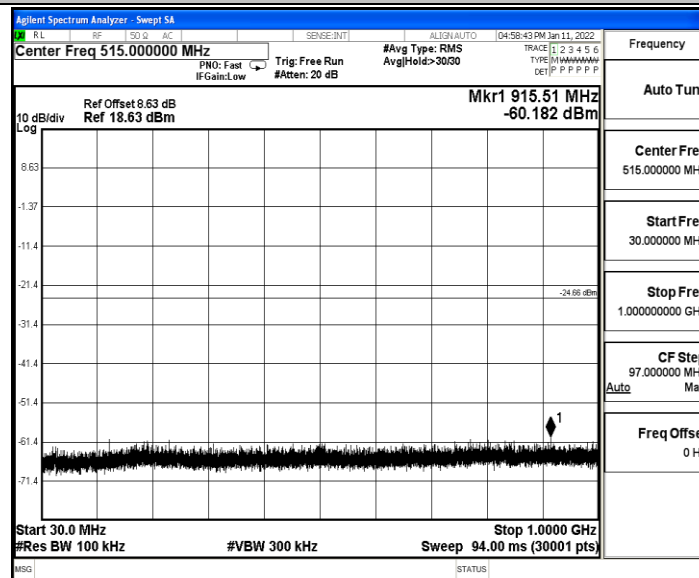




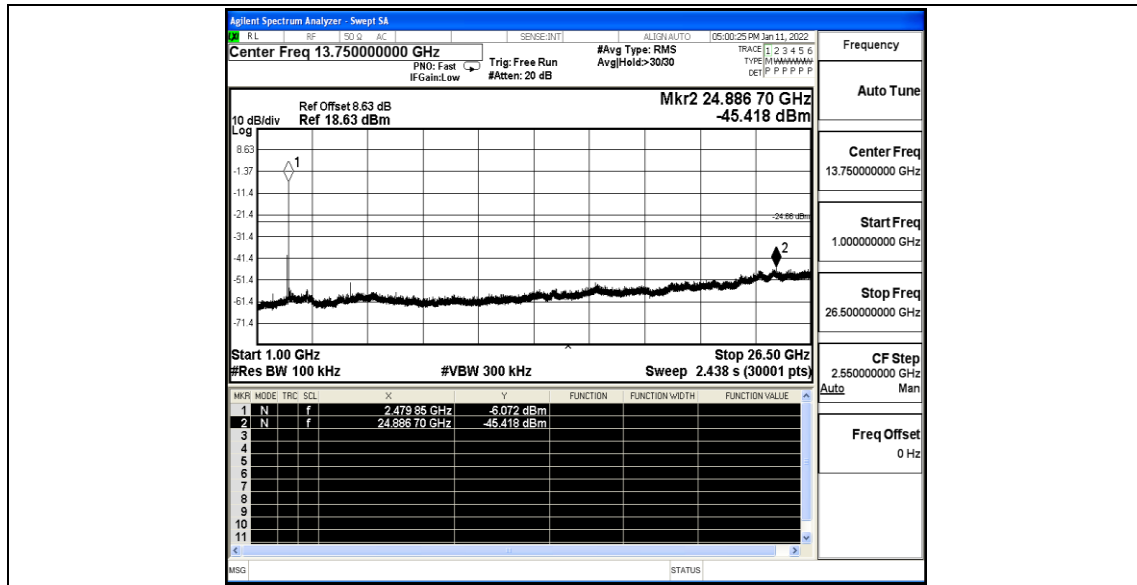
2DH5_Ant1_2480_0~Reference



2DH5_Ant1_2480_30~1000



2DH5_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	-48.46	≤-41.20	46.74	≤54	PASS
				AV	2384.630	-47.43	≤-41.20	47.77	≤54	PASS
				AV	2390.000	-47.67	≤-41.20	47.53	≤54	PASS
				Peak	2310.000	-38.11	≤-21.20	57.09	≤74	PASS
				Peak	2375.390	-36.65	≤-21.20	58.55	≤74	PASS
				Peak	2390.000	-38.79	≤-21.20	56.41	≤74	PASS
		High	2480	AV	2483.500	-46.16	≤-41.20	49.04	≤54	PASS
				AV	2483.520	-46.16	≤-41.20	49.04	≤54	PASS
				AV	2500.000	-46.78	≤-41.20	48.42	≤54	PASS
				Peak	2483.500	-36.81	≤-21.20	58.39	≤74	PASS
				Peak	2499.440	-35.87	≤-21.20	59.33	≤74	PASS
				Peak	2500.000	-37.62	≤-21.20	57.58	≤74	PASS
		Low	Hop_24 02	Peak	2310.000	-39.53	≤-21.20	55.67	≤74	PASS
				Peak	2385.155	-37.18	≤-21.20	58.02	≤74	PASS
				Peak	2390.000	-38.93	≤-21.20	56.27	≤74	PASS
		High	Hop_24 80	Peak	2483.500	-37.19	≤-21.20	58.01	≤74	PASS
				Peak	2495.120	-36.57	≤-21.20	58.63	≤74	PASS
				Peak	2500.000	-37.55	≤-21.20	57.65	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-48.33	≤-41.20	46.87	≤54	PASS
				AV	2377.910	-47.27	≤-41.20	47.93	≤54	PASS
				AV	2390.000	-47.59	≤-41.20	47.61	≤54	PASS
				Peak	2310.000	-38.66	≤-21.20	56.54	≤74	PASS
				Peak	2378.015	-36.38	≤-21.20	58.82	≤74	PASS
				Peak	2390.000	-37.85	≤-21.20	57.35	≤74	PASS
		High	2480	AV	2483.500	-46.79	≤-41.20	48.41	≤54	PASS
				AV	2483.520	-46.79	≤-41.20	48.41	≤54	PASS
				AV	2500.000	-47	≤-41.20	48.20	≤54	PASS
				Peak	2483.500	-37.46	≤-21.20	57.74	≤74	PASS
				Peak	2489.920	-36.01	≤-21.20	59.19	≤74	PASS
				Peak	2500.000	-36.52	≤-21.20	58.68	≤74	PASS
		Low	Hop_24 02	Peak	2310.000	-39.87	≤-21.20	55.33	≤74	PASS
				Peak	2380.745	-36.88	≤-21.20	58.32	≤74	PASS
				Peak	2390.000	-37.83	≤-21.20	57.37	≤74	PASS
		High	Hop_24 80	Peak	2483.500	-38.72	≤-21.20	56.48	≤74	PASS
				Peak	2489.840	-36.1	≤-21.20	59.10	≤74	PASS
				Peak	2500.000	-37.8	≤-21.20	57.40	≤74	PASS

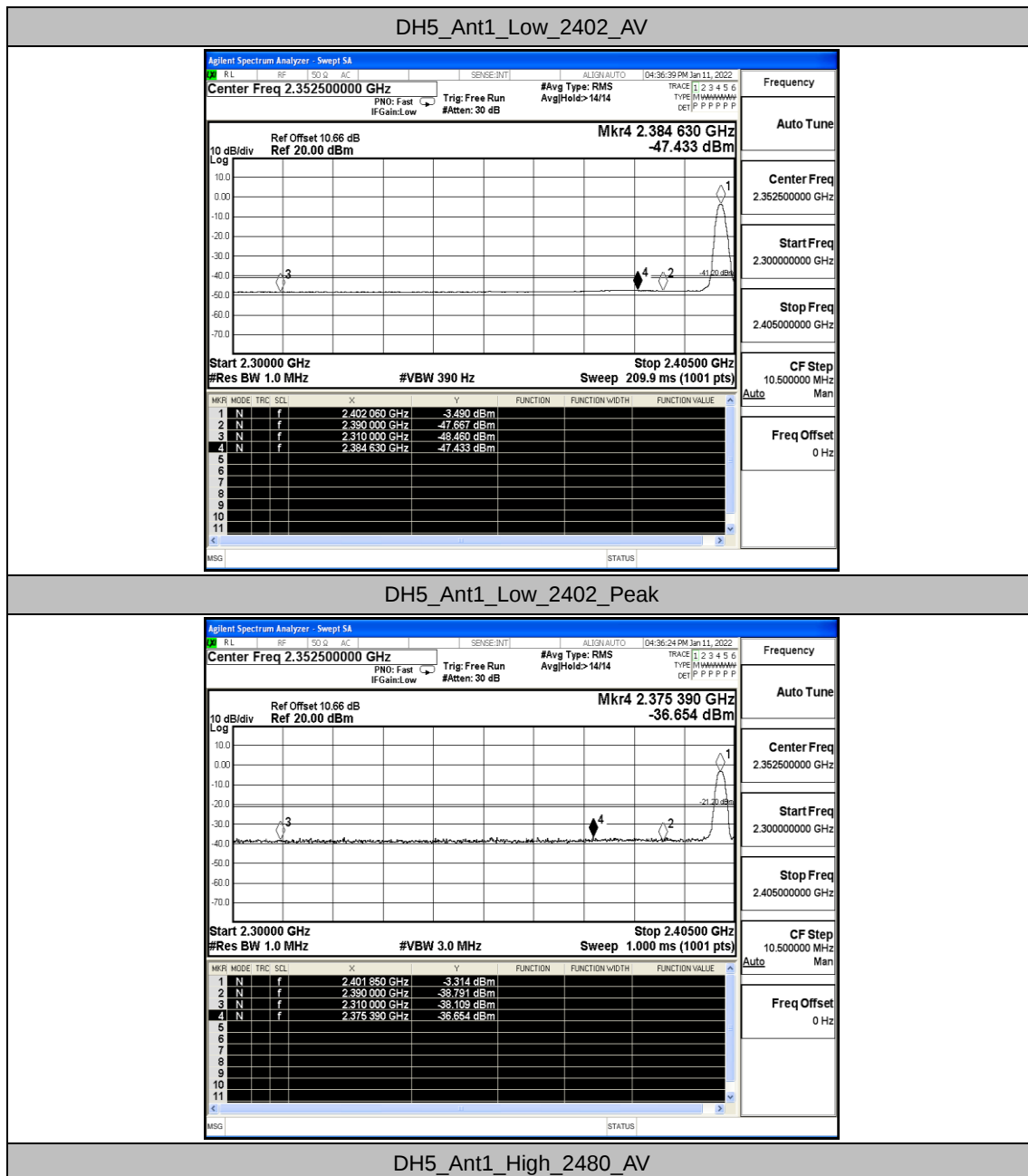


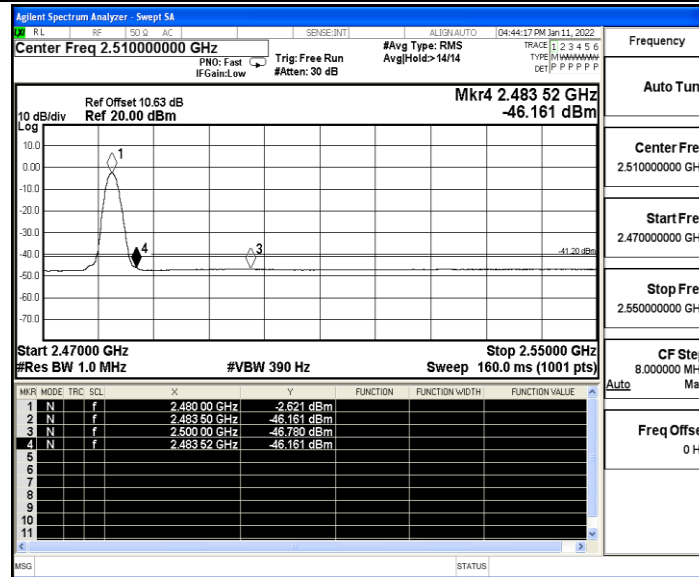
Note:

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

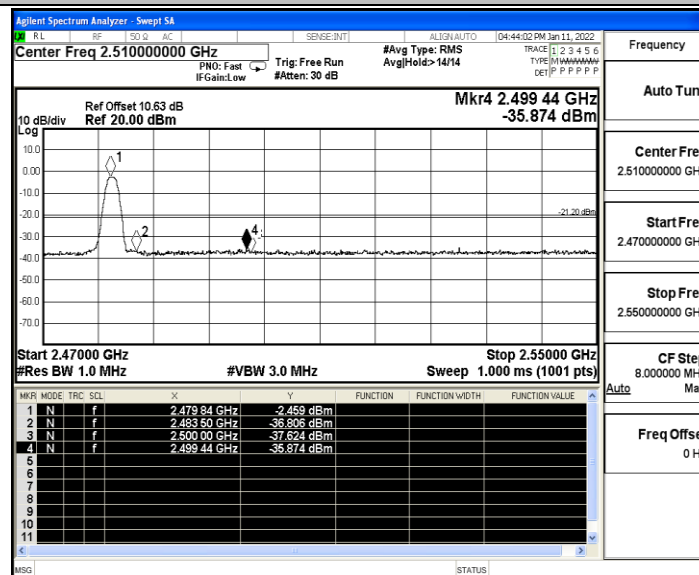


Test Graphs

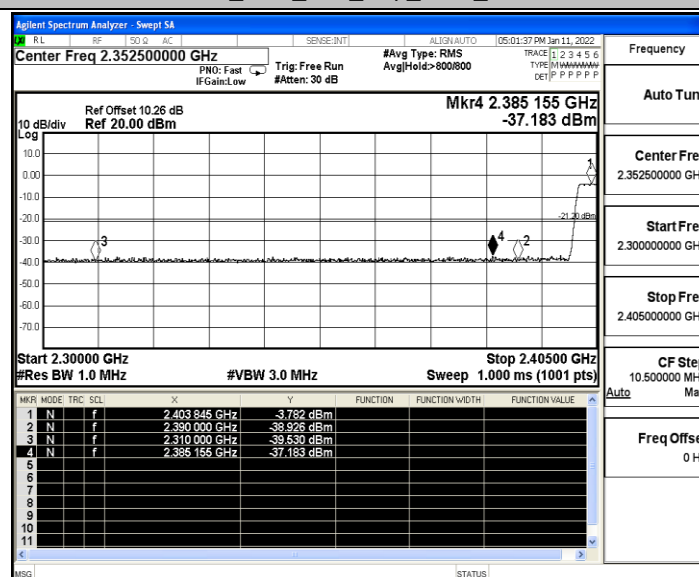




DH5_Ant1_High_2480_Peak

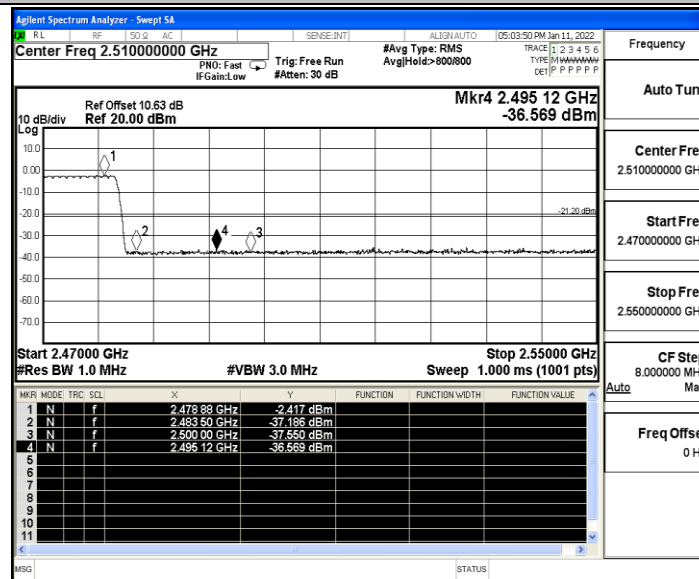


DH5_Ant1_Low_Hop_2402_Peak

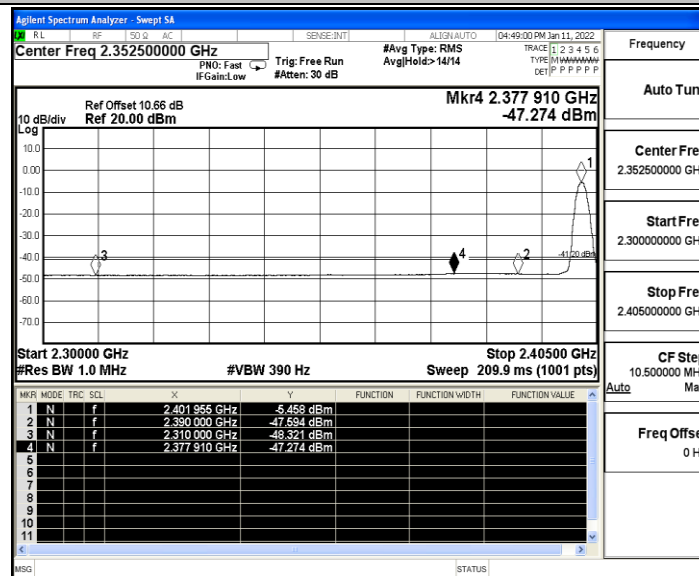




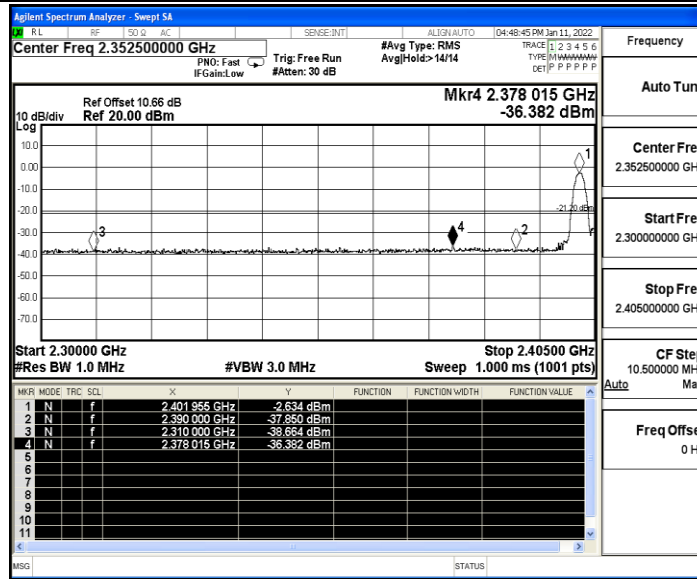
DH5_Ant1_High_Hop_2480_Peak



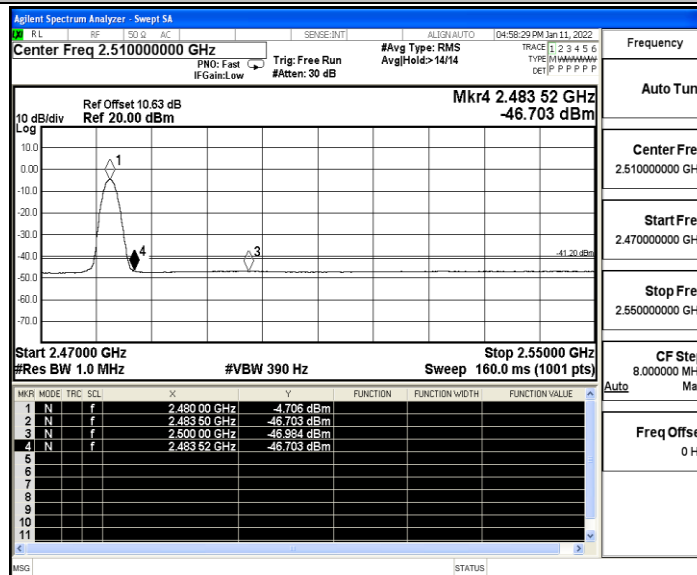
2DH5_Ant1_Low_2402_AV



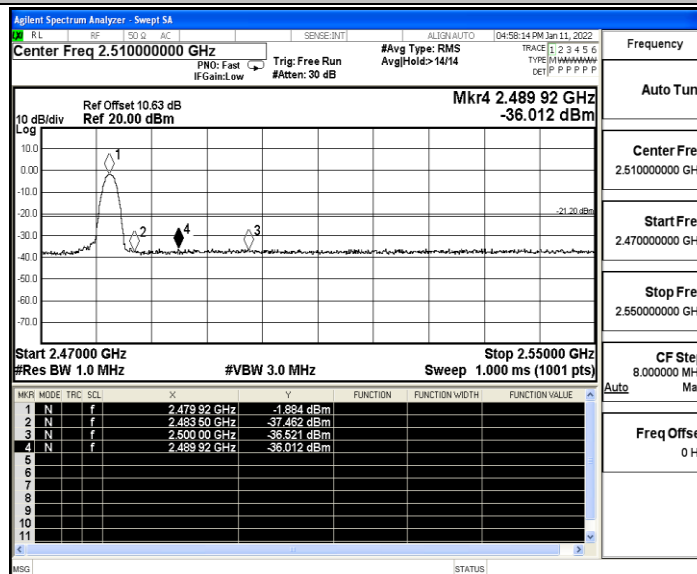
2DH5_Ant1_Low_2402_Peak



2DH5_Ant1_High_2480_AV

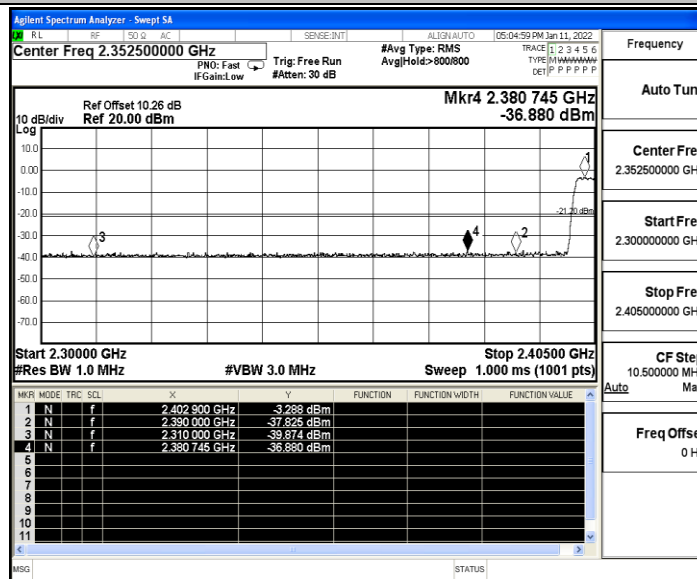


2DH5_Ant1_High_2480_Peak





2DH5_Ant1_Low_Hop_2402_Peak



2DH5_Ant1_High_Hop_2480_Peak

