



Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Multl-functiona Lamp

Test Model: LZ-S2017

Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan



Test Result

TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	1.050	2401.460	2402.510	---	---
		2441	1.044	2440.463	2441.507	---	---
		2480	1.035	2479.466	2480.501	---	---
2DH5	Ant1	2402	1.314	2401.343	2402.657	---	---
		2441	1.317	2440.337	2441.654	---	---
		2480	1.320	2479.340	2480.660	---	---
3DH5	Ant1	2402	1.299	2401.349	2402.648	---	---
		2441	1.302	2440.349	2441.651	---	---
		2480	1.305	2479.346	2480.651	---	---

DH5_Ant1_2402

Agilent Spectrum Analyzer - Swept SA

RL RF SO Q AC SENSE:INT ALIGN:AU TO 05:58:25 PM Jan 04, 2022

Center Freq 2.402000000 GHz PNO: Wide Trg: Free Run #Avg Type: RMS TRACE 1 2 3 4 5 6 TYPE: AVERAGE det: P P P P P

Ref Offset 8.86 dB ΔMkr3 1.050 MHz
Ref 30.00 dBm -0.057 dB

10 dB/div Log

20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0

2.400 2.401 2.402 2.403 2.404 2.405 2.406 2.407 2.408 2.409 2.410 GHz

Center 2.402000 GHz Span 3.000 MHz
#Res BW 30 kHz #VBW 100 kHz Sweep 3.200 ms (1001 pts)

MkR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.401460 GHz	-31.288 dBm			
2	N	f		2.402015 GHz	-10.988 dBm			
3	Δ1	f	(Δ)	1.050 MHz (Δ)	-0.057 dB			
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

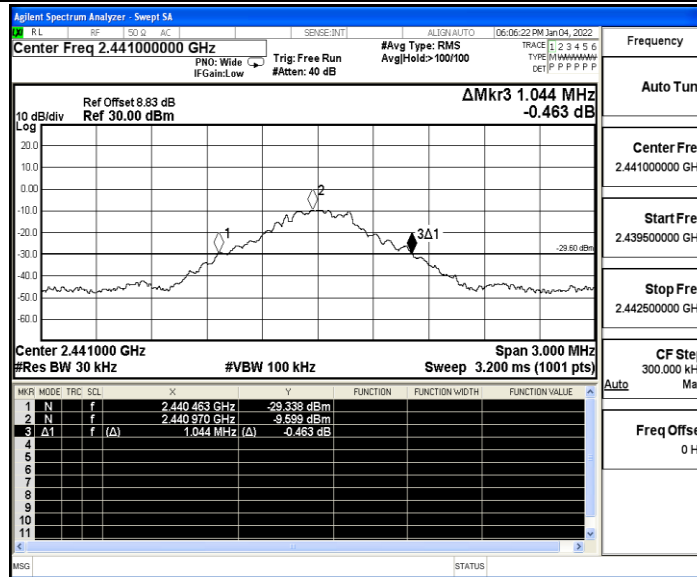
Center Freq
2.402000000 GHz

Start Freq
2.400500000 GHz

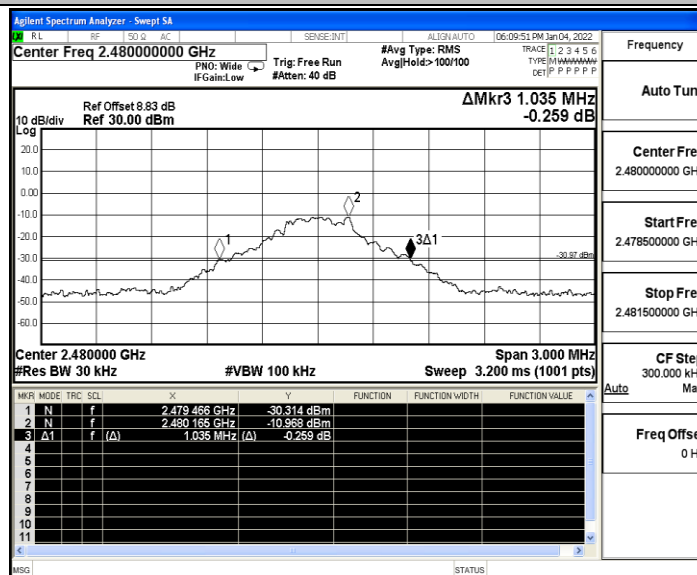
Stop Freq
2.403500000 GHz

CF Step
300.000 kHz
Man

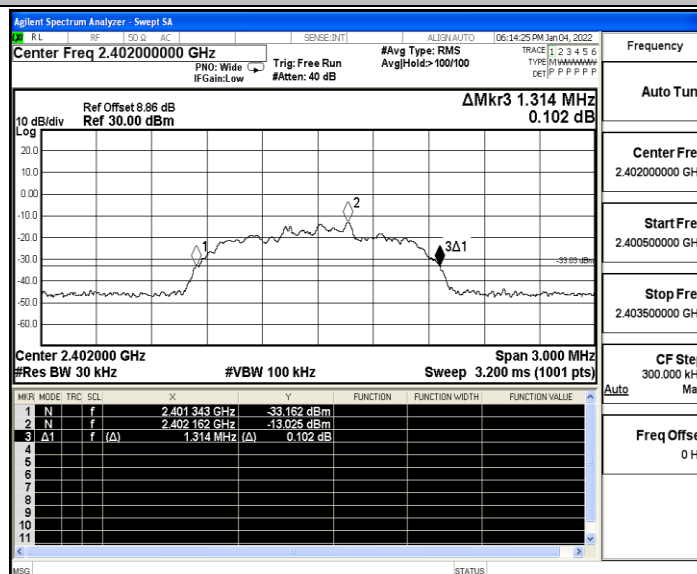
Freq Offset
0 Hz



DH5_Ant1_2480

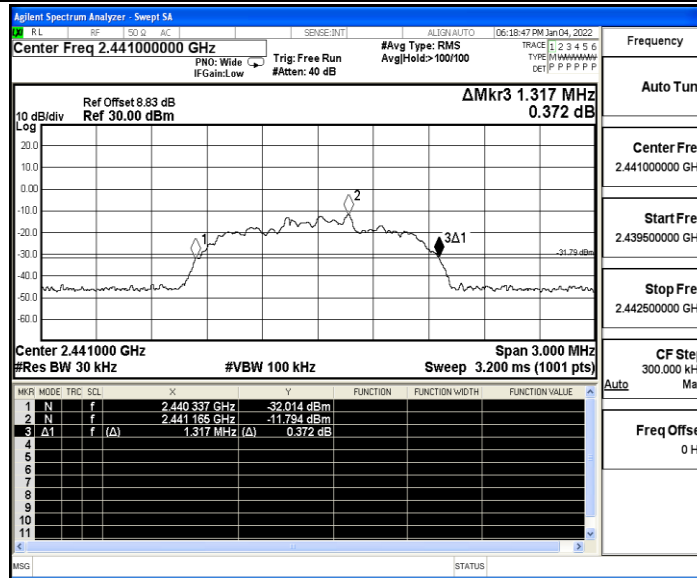


2DH5_Ant1_2402

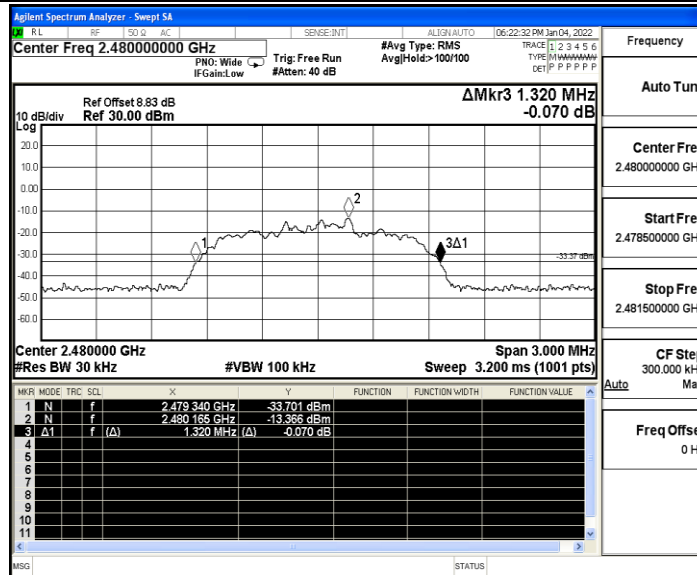




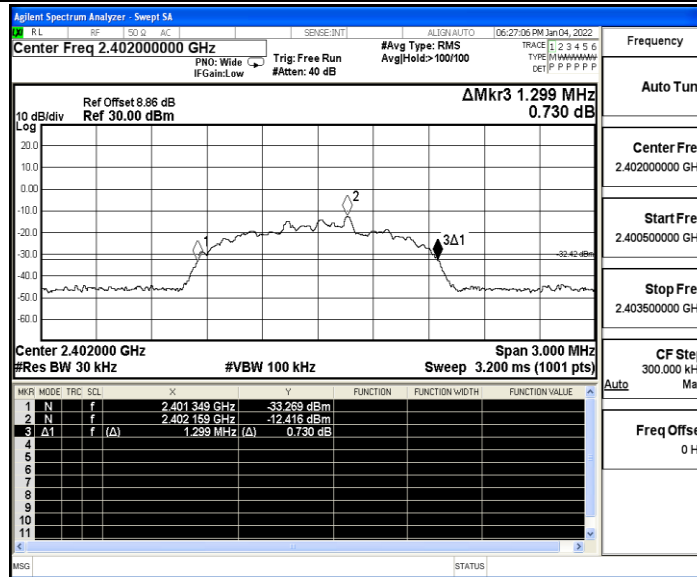
2DH5_Ant1_2441



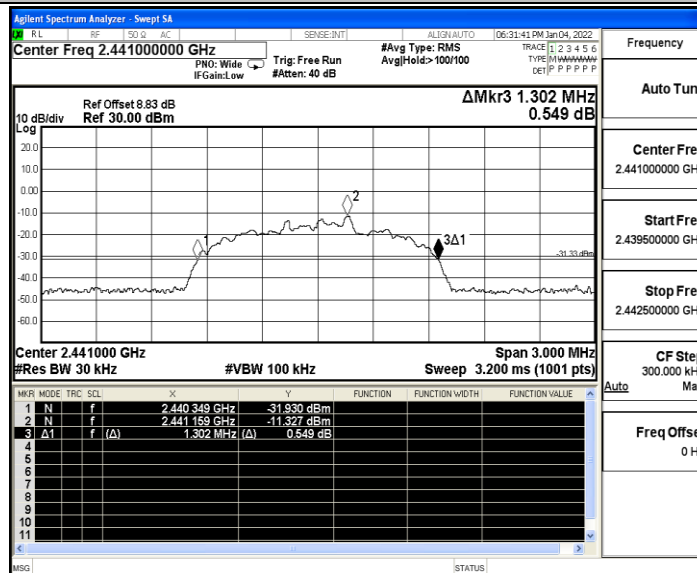
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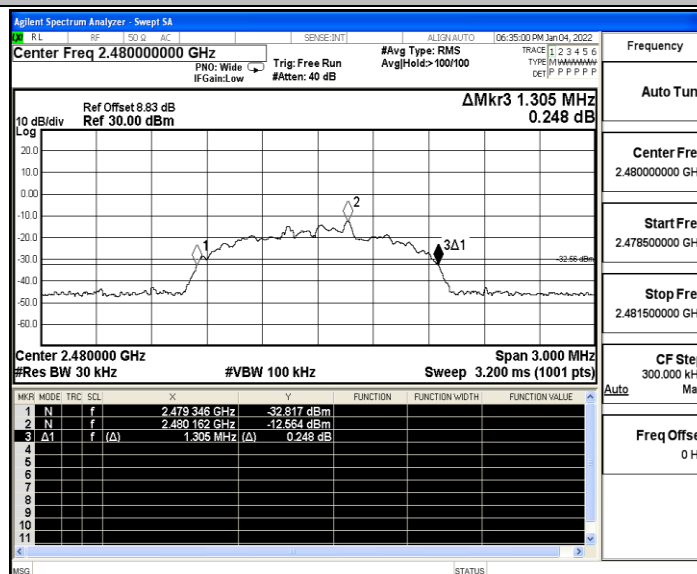
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



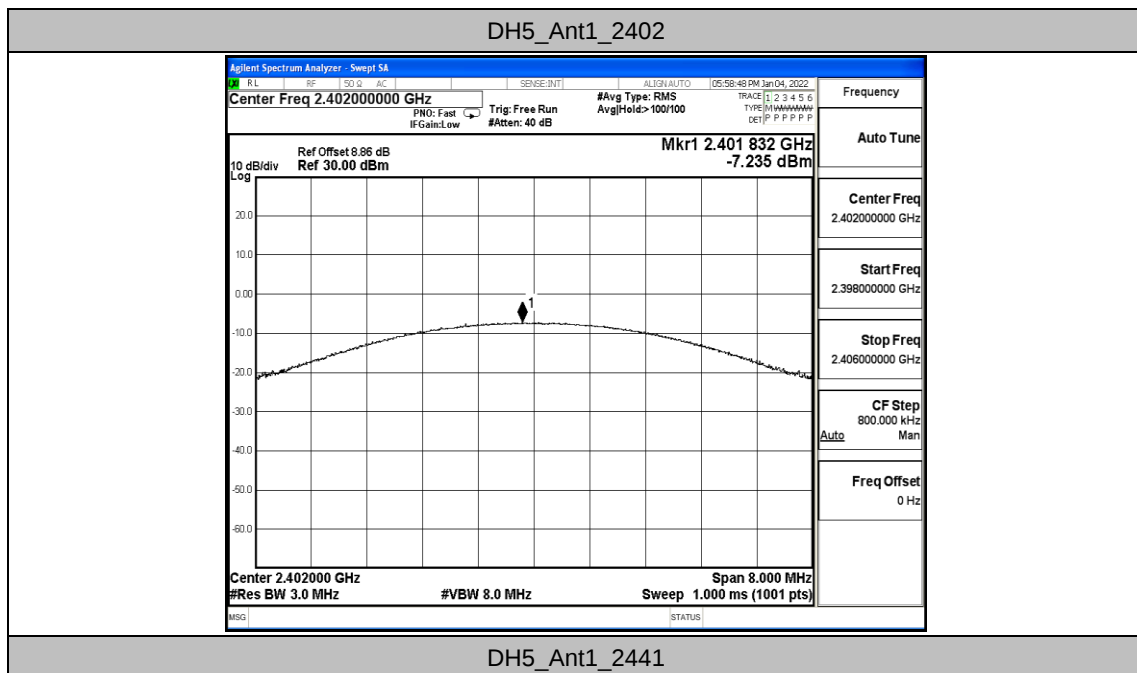


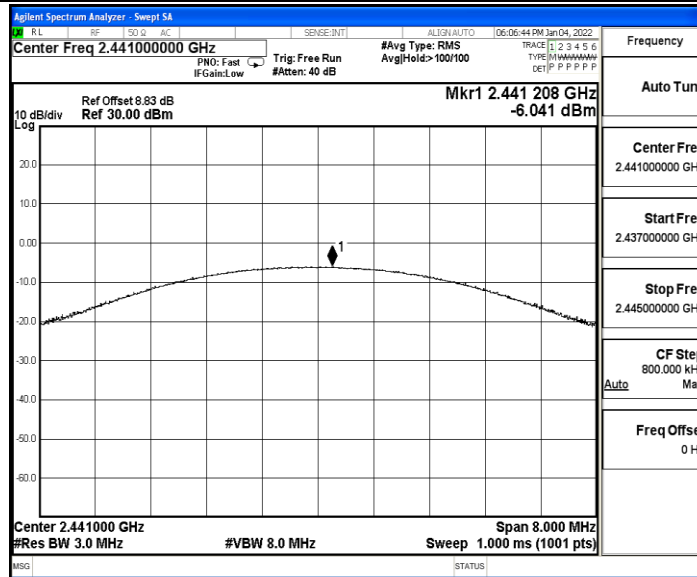
A.2 Maximum conducted output power

Test Result Peak

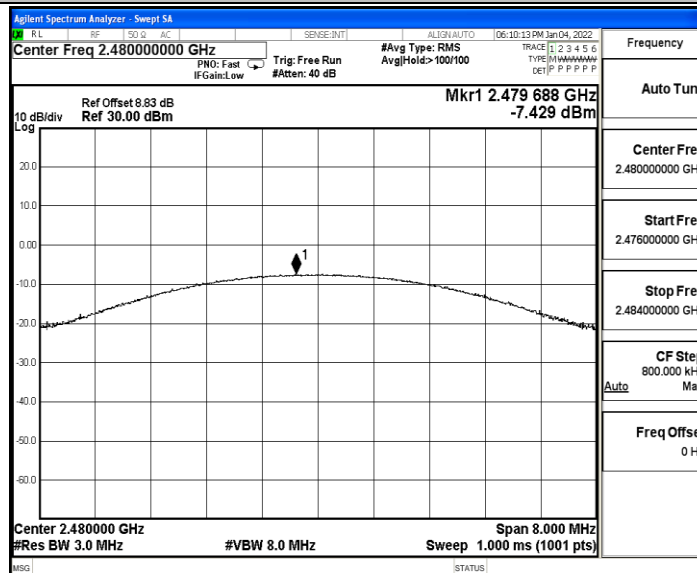
Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	-7.24	≤20.97	PASS
		2441	-6.04	≤20.97	PASS
		2480	-7.43	≤20.97	PASS
2DH5	Ant1	2402	-8.52	≤20.97	PASS
		2441	-7.14	≤20.97	PASS
		2480	-8.82	≤20.97	PASS
3DH5	Ant1	2402	-8.54	≤20.97	PASS
		2441	-7.34	≤20.97	PASS
		2480	-8.57	≤20.97	PASS

Test Graphs

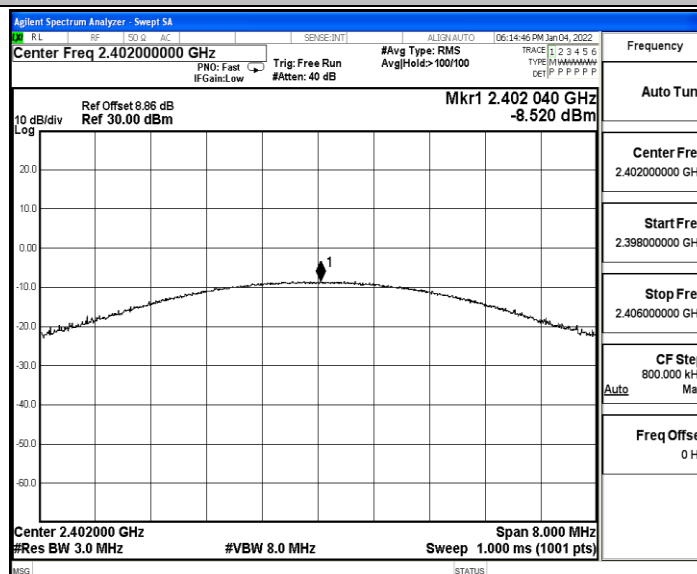




DH5_Ant1_2480

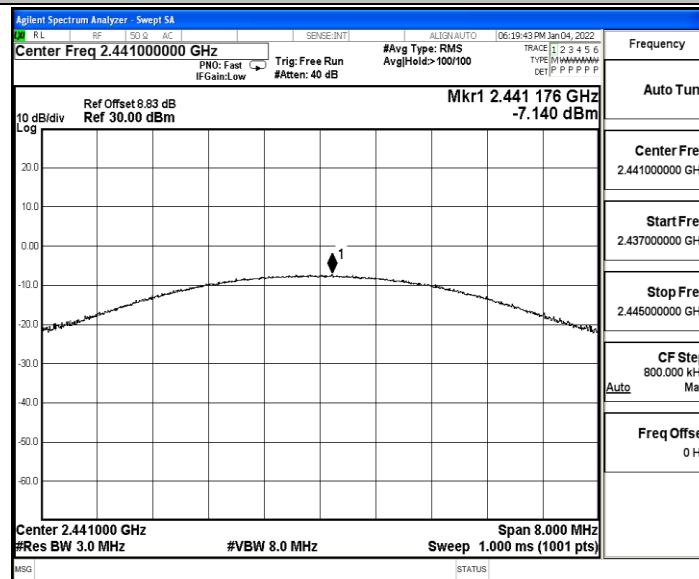


2DH5_Ant1_2402

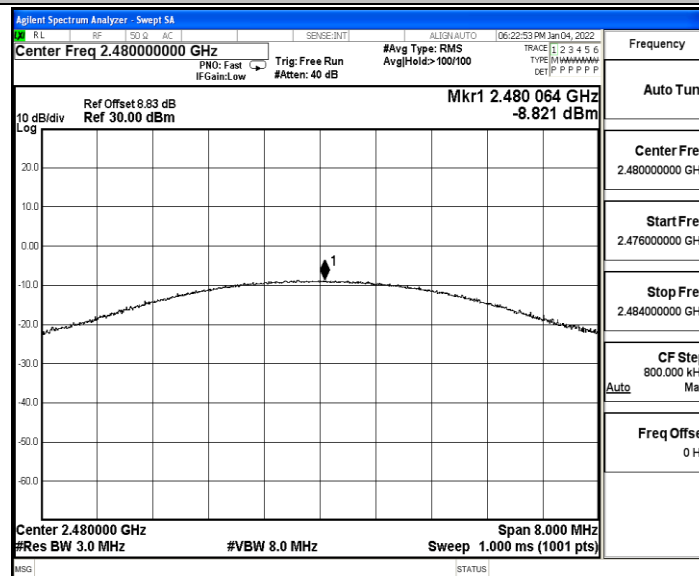




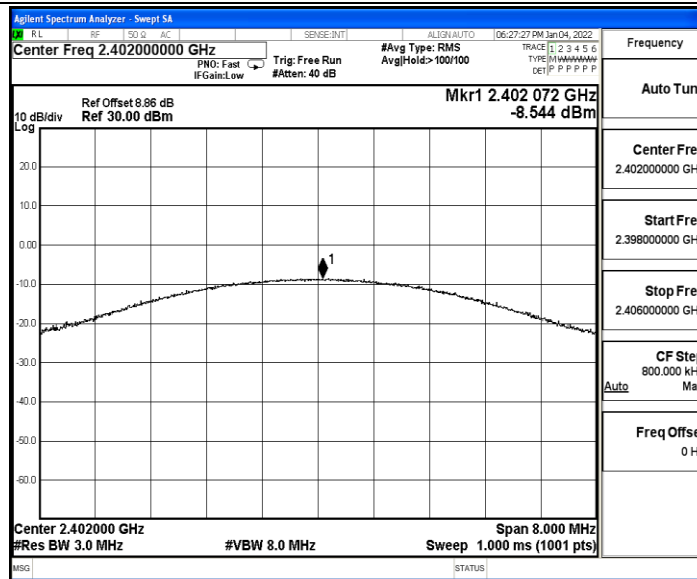
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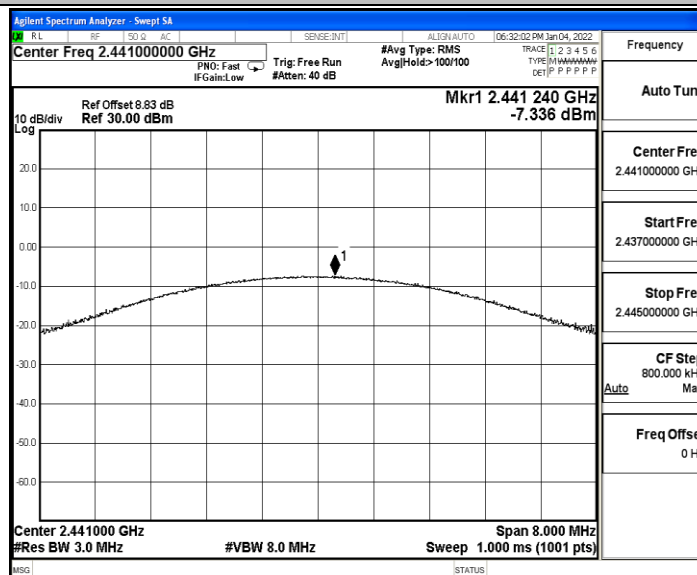
2DH5_Ant1_2480



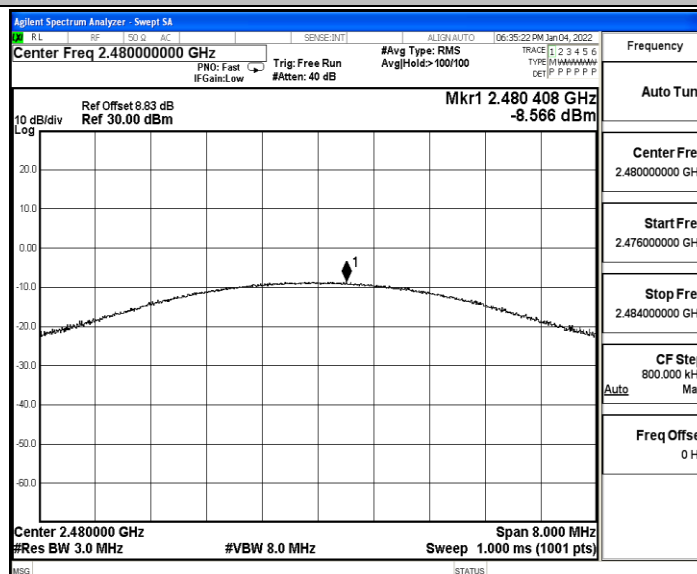
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



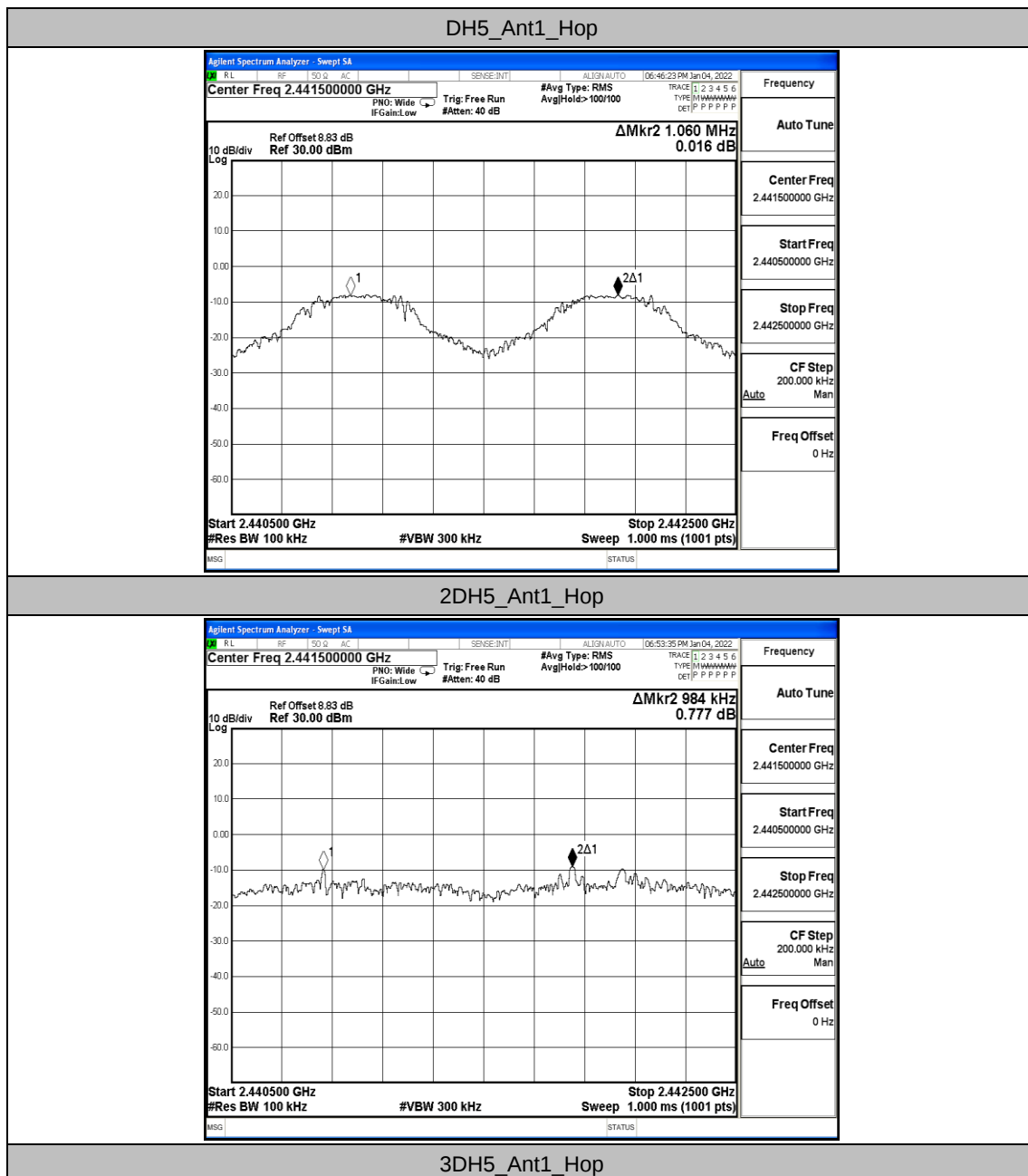


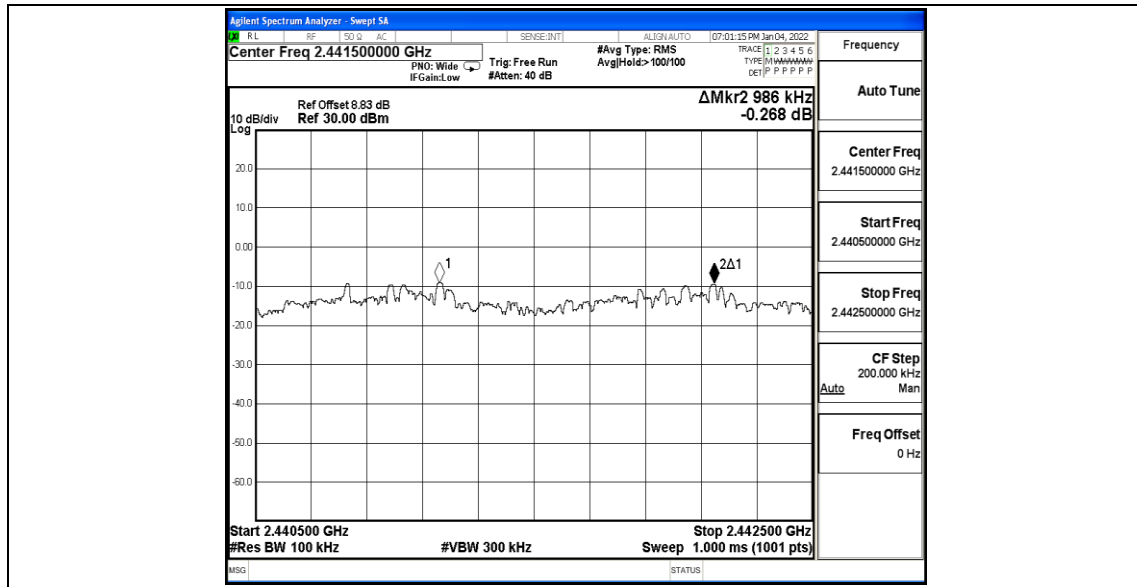
A.3 Carrier frequency separation

Test Result

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.06	≥ 0.7	PASS
2DH5	Ant1	Hop	0.984	≥ 0.88	PASS
3DH5	Ant1	Hop	0.986	≥ 0.87	PASS

Test Graphs





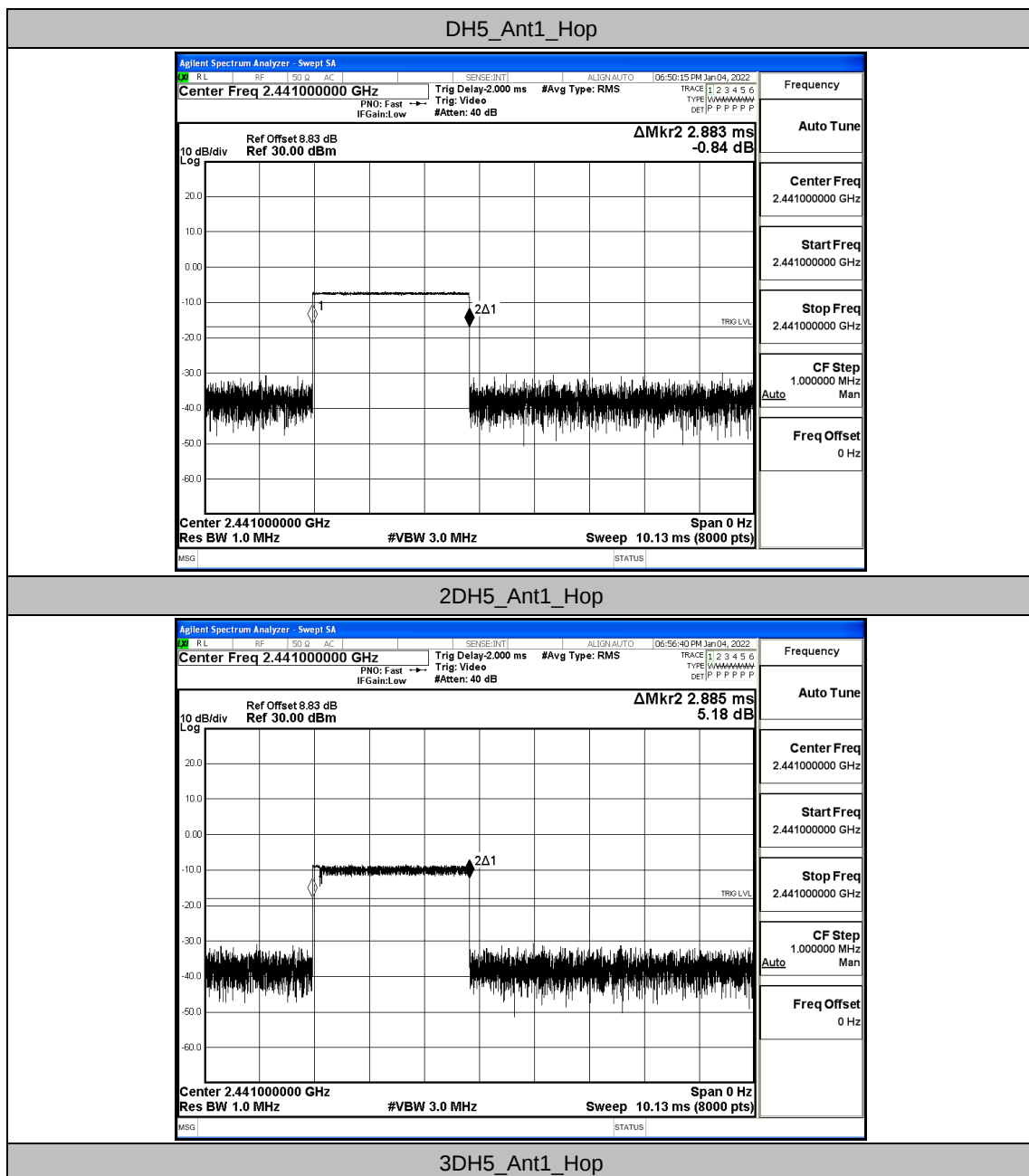


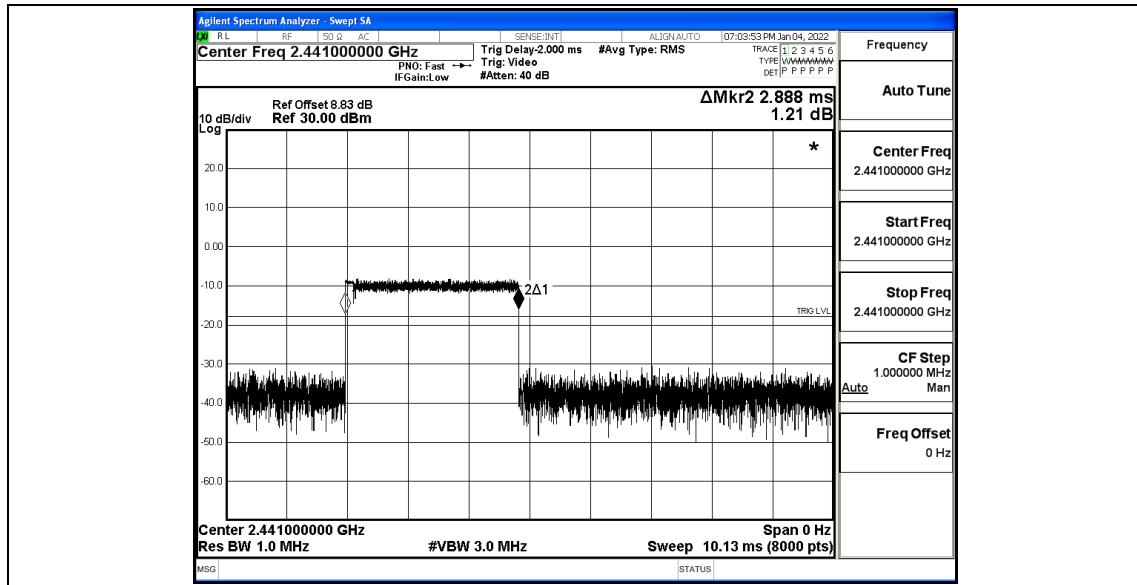
A.4 Time of occupancy

Test Result

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.883	106.67	0.308	≤0.4	PASS
2DH5	Ant1	Hop	2.885	106.67	0.308	≤0.4	PASS
3DH5	Ant1	Hop	2.888	106.67	0.308	≤0.4	PASS

Test Graphs





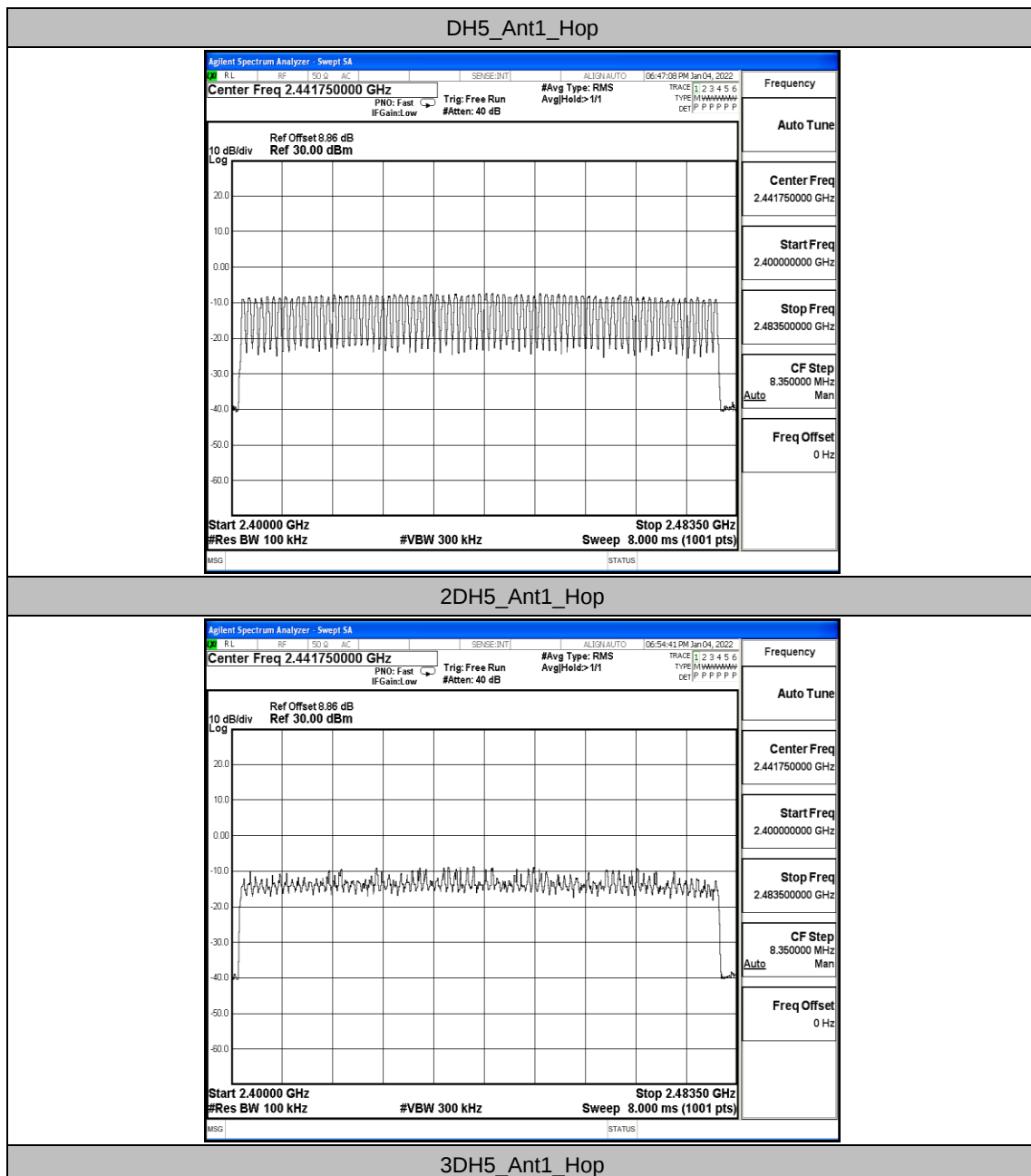


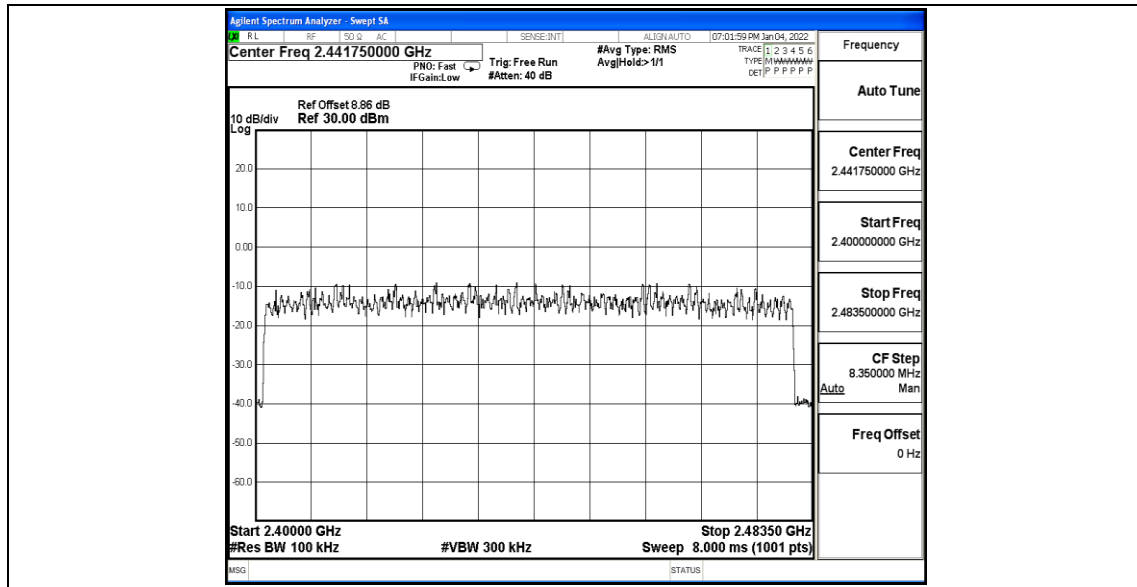
A.5 Number of hopping channels

Test Result

TestMode	Antenna	Frequency[MHz]	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





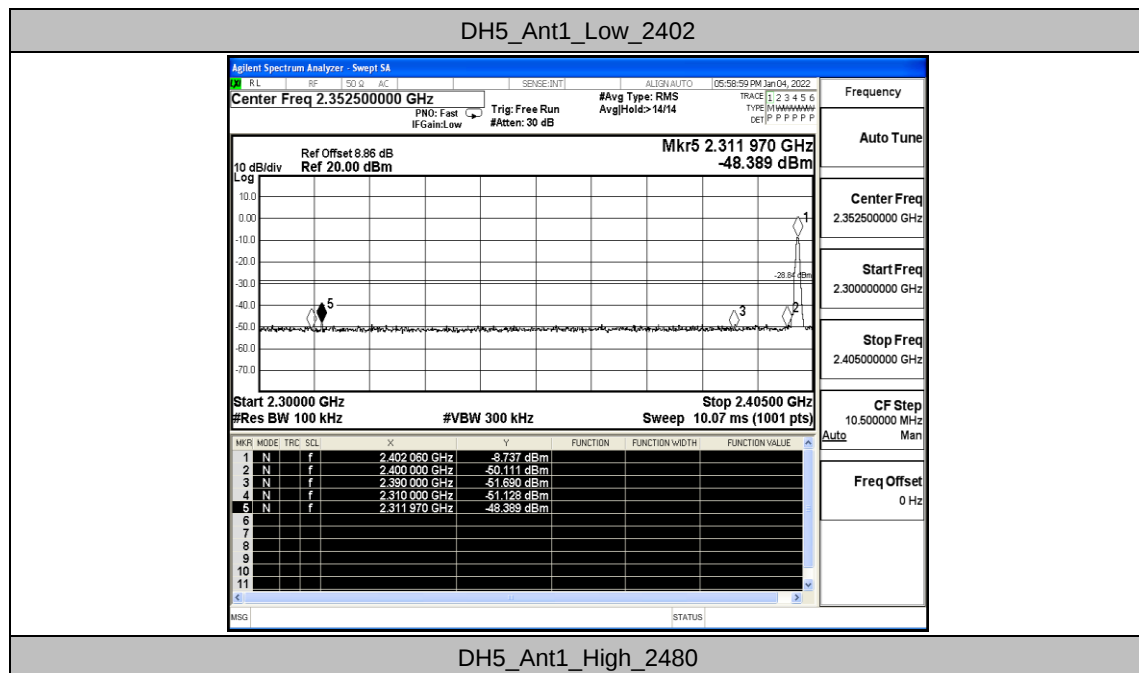


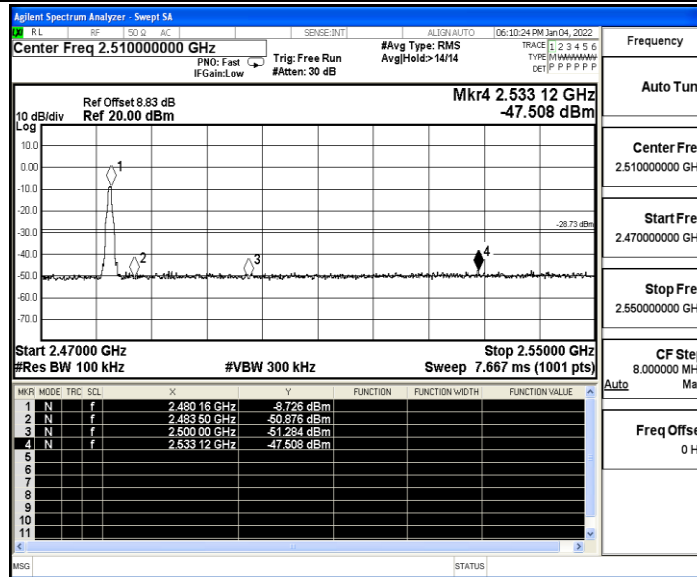
A.6 Band edge measurements

Test Result

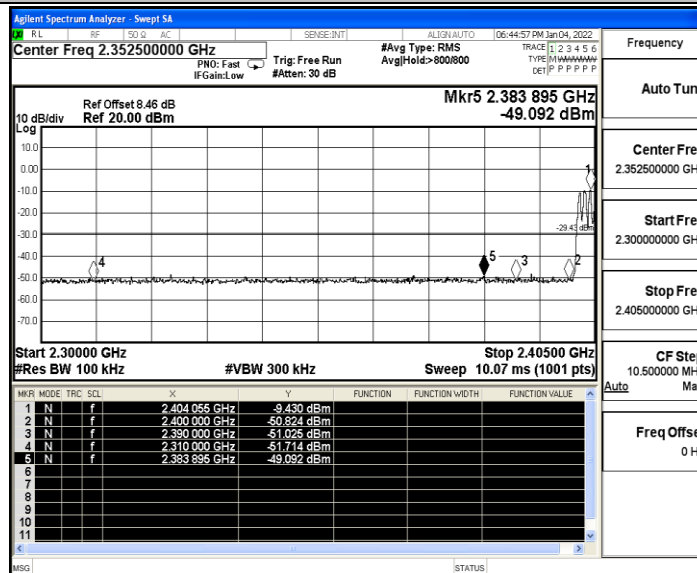
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-8.84	-48.39	≤ -28.84	PASS
		High	2480	-8.73	-47.51	≤ -28.73	PASS
		Low	Hop_2402	-9.43	-49.09	≤ -29.43	PASS
		High	Hop_2480	-8.71	-46.33	≤ -28.71	PASS
2DH5	Ant1	Low	2402	-11.44	-48.63	≤ -31.44	PASS
		High	2480	-10.92	-47.23	≤ -30.92	PASS
		Low	Hop_2402	-10.87	-48.9	≤ -30.87	PASS
		High	Hop_2480	-10.94	-48.19	≤ -30.94	PASS
3DH5	Ant1	Low	2402	-10.36	-49.13	≤ -30.36	PASS
		High	2480	-10.26	-48.14	≤ -30.26	PASS
		Low	Hop_2402	-14.34	-49.32	≤ -34.34	PASS
		High	Hop_2480	-12.78	-47.77	≤ -32.78	PASS

Test Graphs

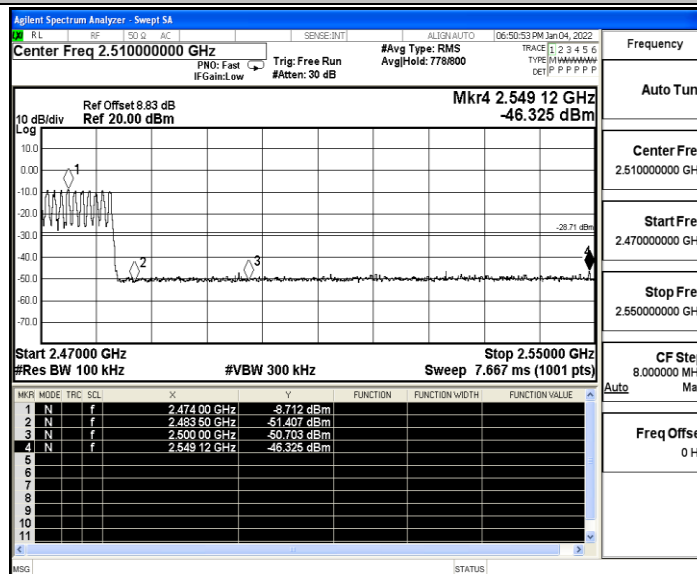




DH5_Ant1_Low_Hop_2402

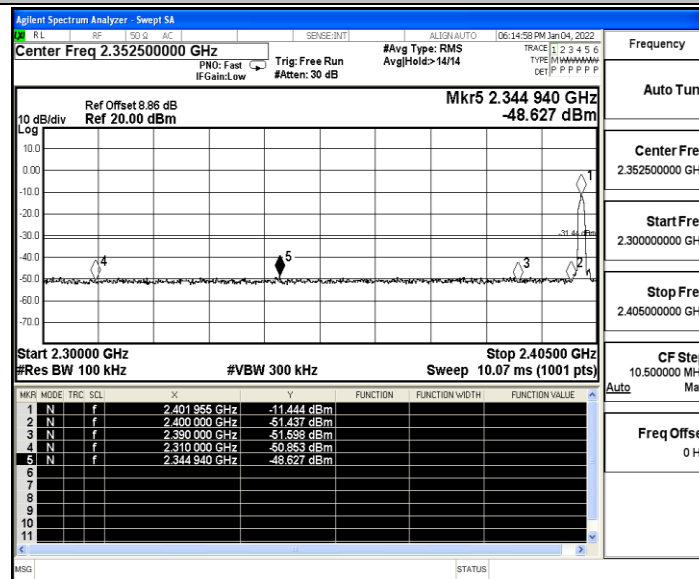


DH5_Ant1_High_Hop_2480

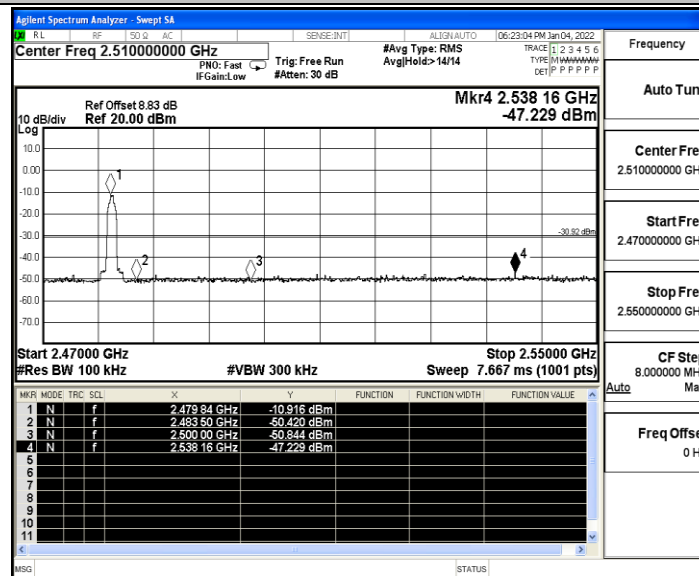




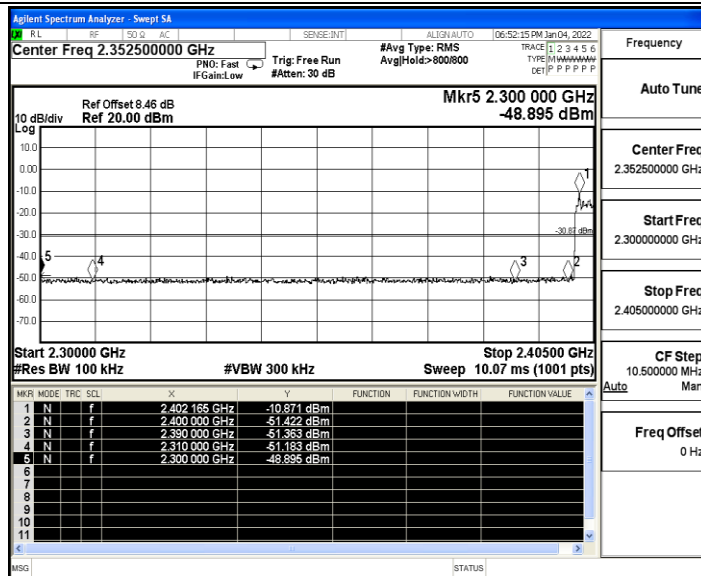
2DH5_Ant1_Low_2402



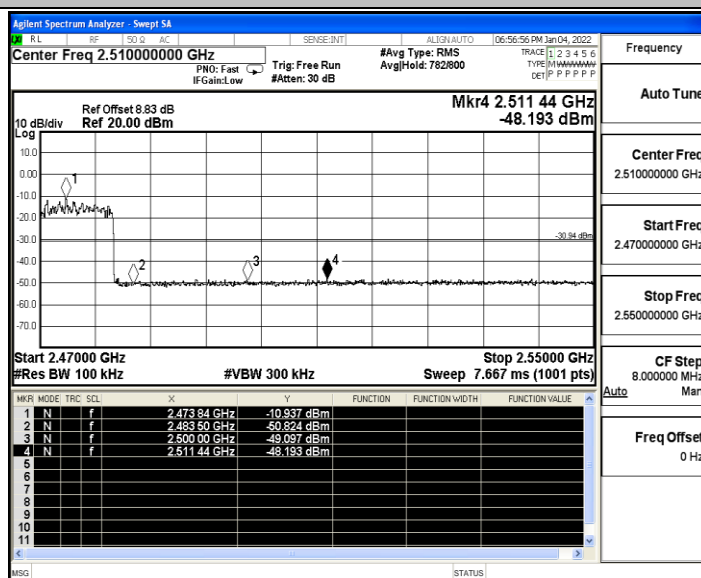
2DH5_Ant1_High_2480



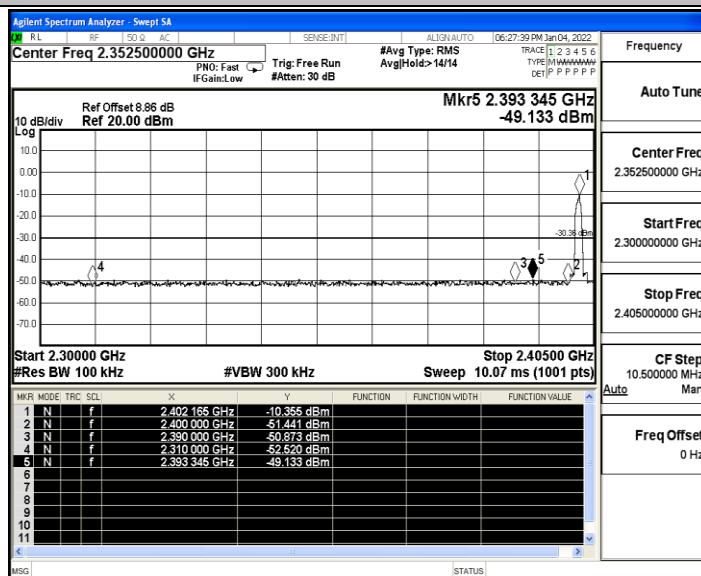
2DH5_Ant1_Low_Hop_2402



2DH5_Ant1_High_Hop_2480

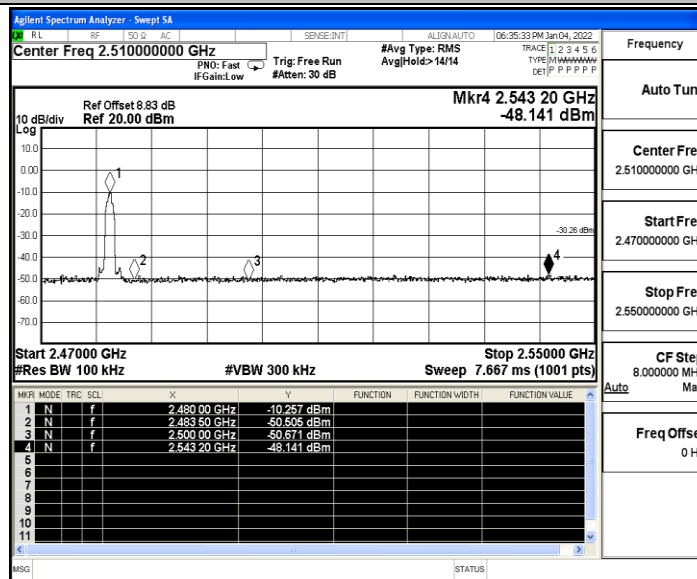


3DH5_Ant1_Low_2402

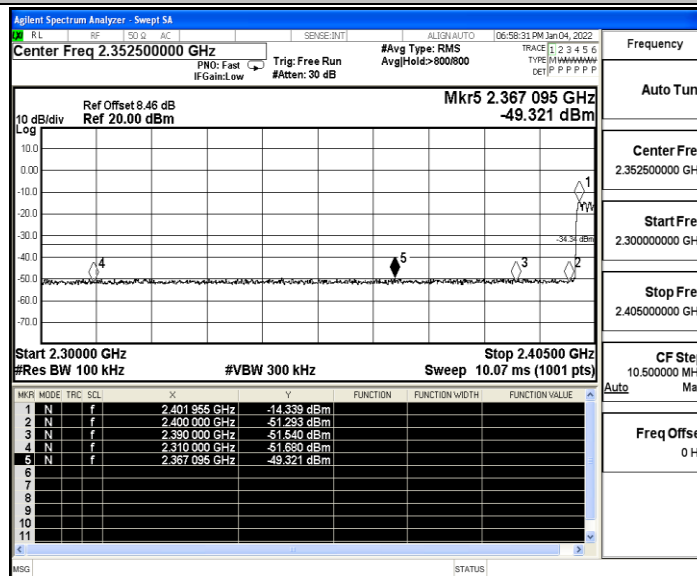




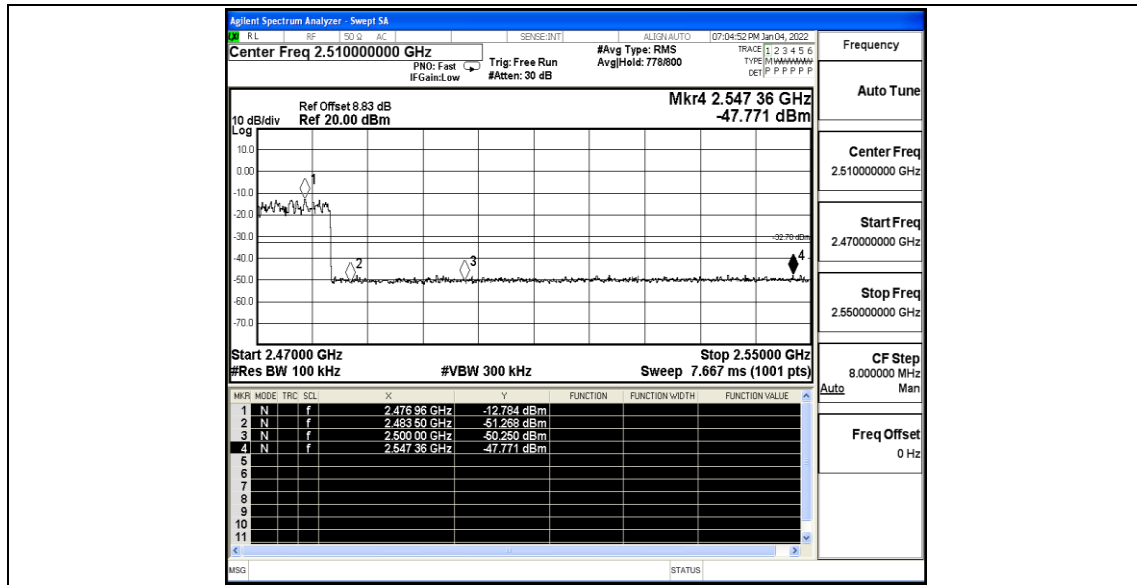
3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480





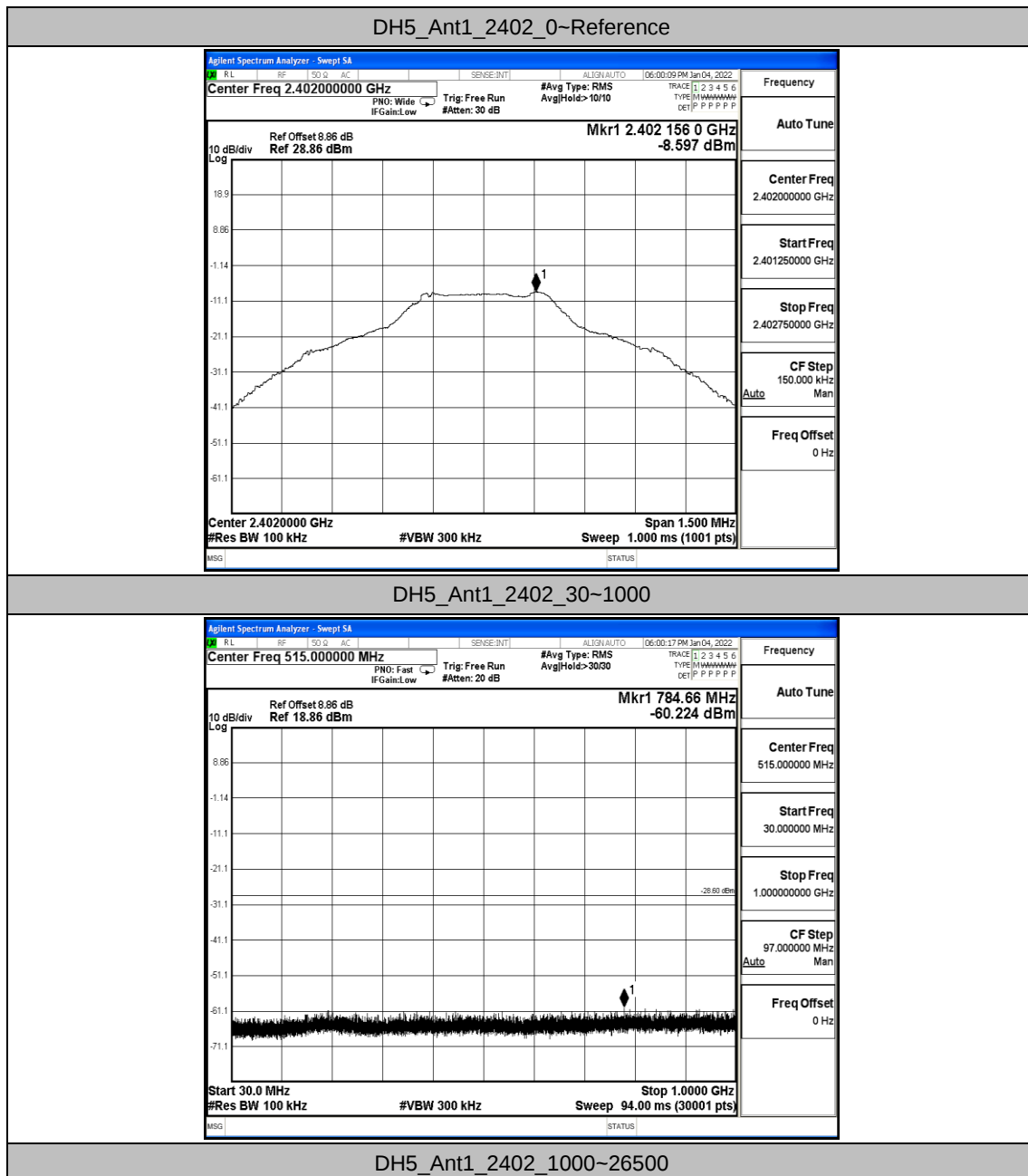
A.7 Conducted Spurious Emission

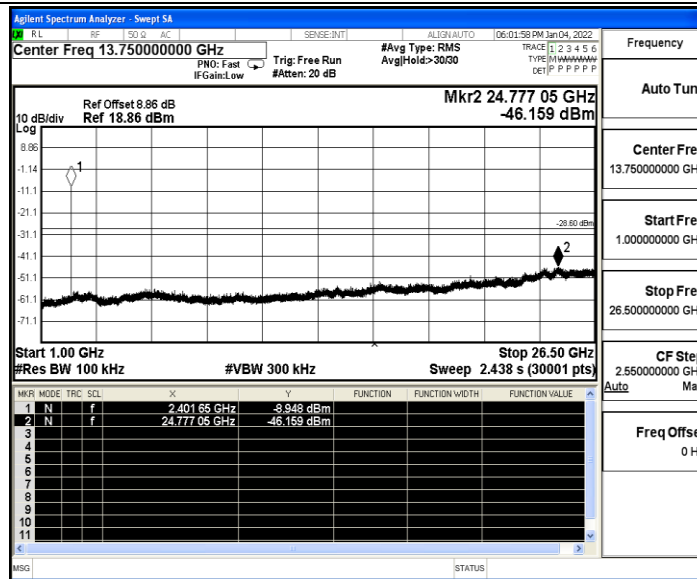
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	-8.60	-8.60	---	PASS
			30~1000	-8.60	-60.22	≤ -28.6	PASS
			1000~26500	-8.60	-46.16	≤ -28.6	PASS
		2441	Reference	-7.59	-7.59	---	PASS
			30~1000	-7.59	-60.24	≤ -27.59	PASS
			1000~26500	-7.59	-44.55	≤ -27.59	PASS
		2480	Reference	-8.87	-8.87	---	PASS
			30~1000	-8.87	-60.41	≤ -28.87	PASS
			1000~26500	-8.87	-45.87	≤ -28.87	PASS
2DH5	Ant1	2402	Reference	-10.33	-10.33	---	PASS
			30~1000	-10.33	-60.72	≤ -30.33	PASS
			1000~26500	-10.33	-45.96	≤ -30.33	PASS
		2441	Reference	-9.26	-9.26	---	PASS
			30~1000	-9.26	-60.51	≤ -29.26	PASS
			1000~26500	-9.26	-46.27	≤ -29.26	PASS
		2480	Reference	-10.51	-10.51	---	PASS
			30~1000	-10.51	-59.97	≤ -30.51	PASS
			1000~26500	-10.51	-45.19	≤ -30.51	PASS
3DH5	Ant1	2402	Reference	-10.39	-10.39	---	PASS
			30~1000	-10.39	-60.35	≤ -30.39	PASS
			1000~26500	-10.39	-45.7	≤ -30.39	PASS
		2441	Reference	-9.44	-9.44	---	PASS
			30~1000	-9.44	-60.43	≤ -29.44	PASS
			1000~26500	-9.44	-45.88	≤ -29.44	PASS
		2480	Reference	-10.52	-10.52	---	PASS
			30~1000	-10.52	-60.69	≤ -30.52	PASS
			1000~26500	-10.52	-45.97	≤ -30.52	PASS

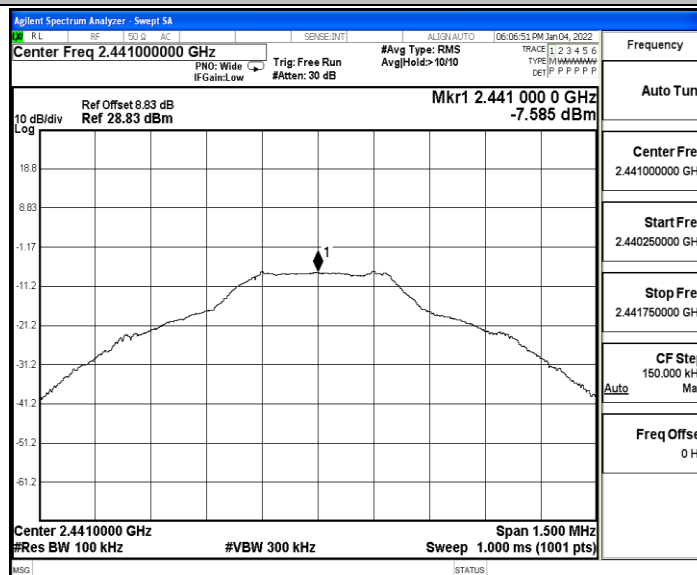


Test Graphs

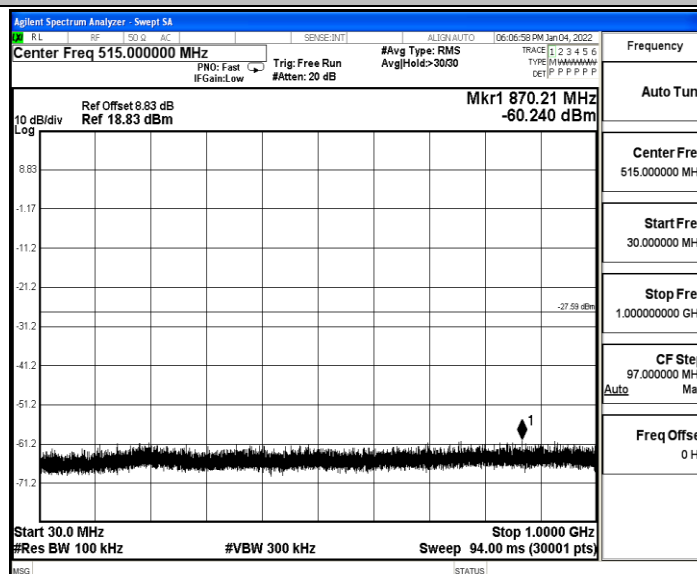




DH5_Ant1_2441_0~Reference

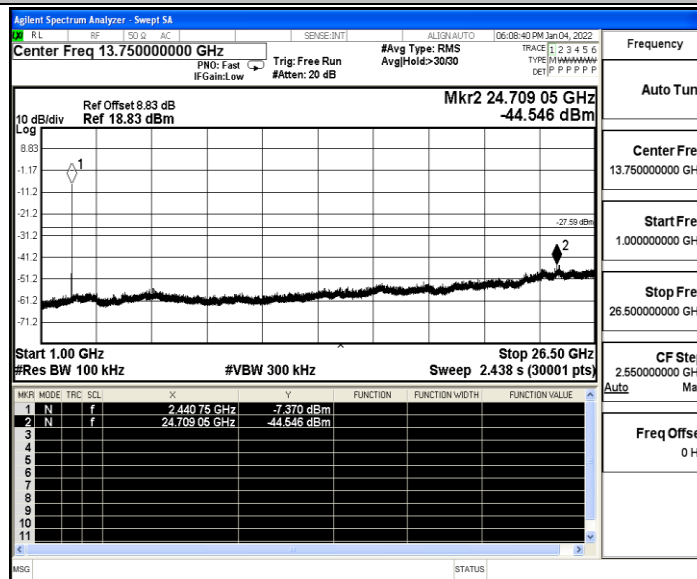


DH5_Ant1_2441_30~1000

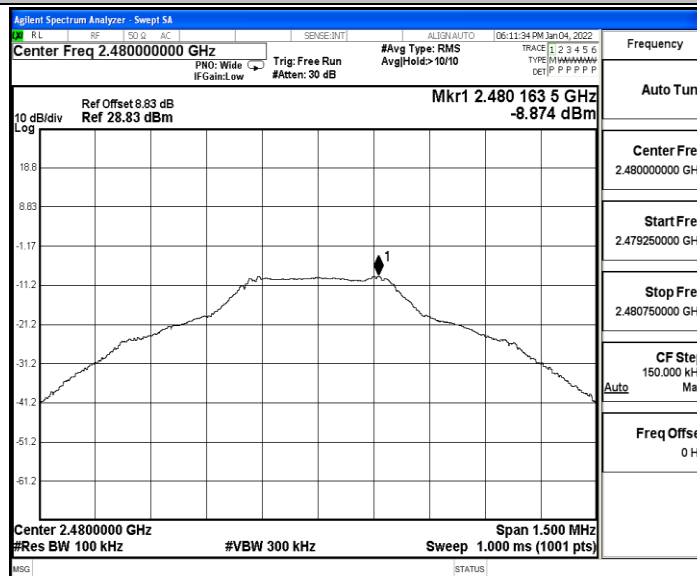




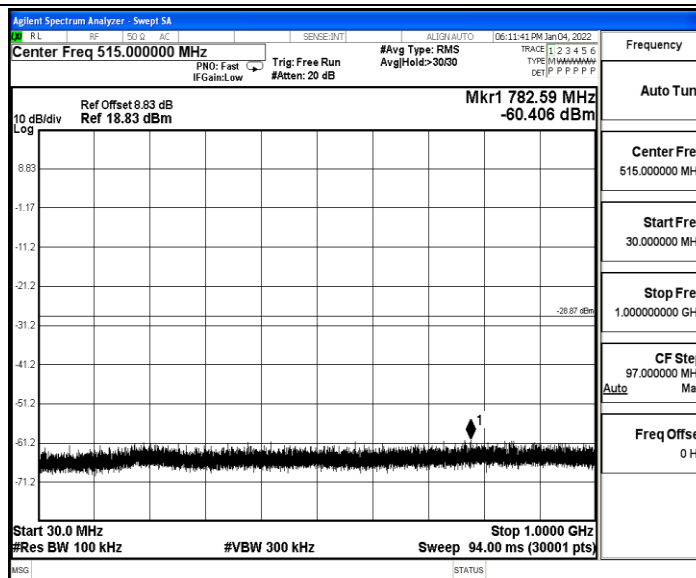
DH5_Ant1_2441_1000~26500



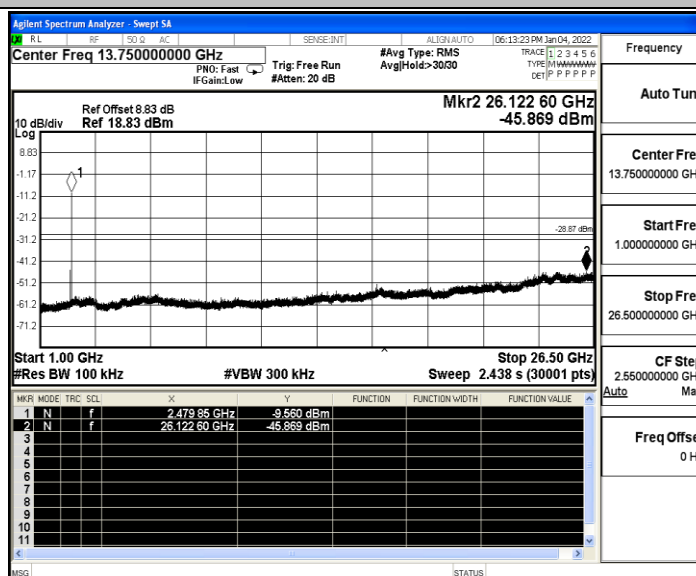
DH5_Ant1_2480_0~Reference



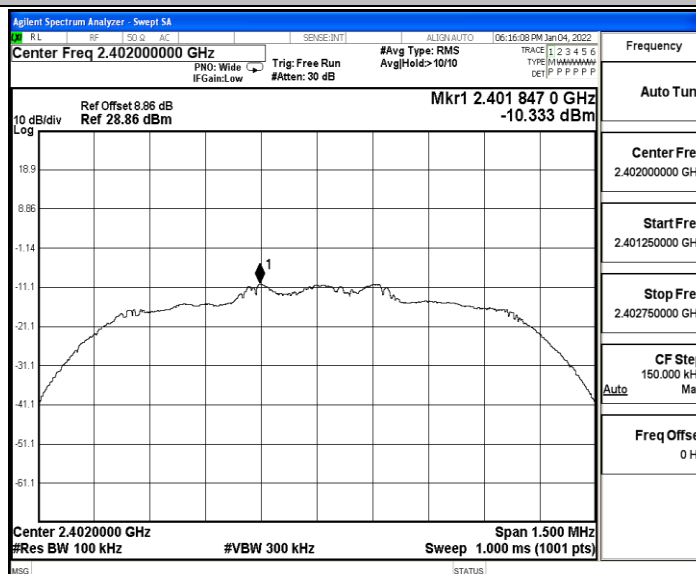
DH5_Ant1_2480_30~1000



DH5_Ant1_2480_1000~26500

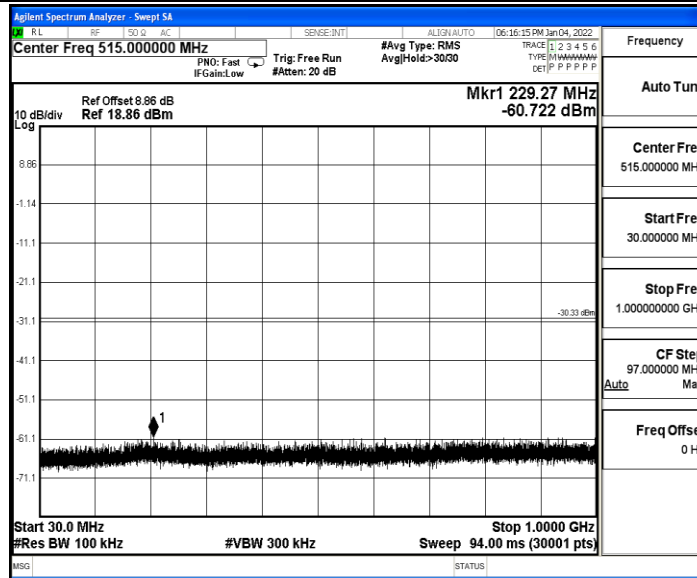


2DH5_Ant1_2402_0~Reference

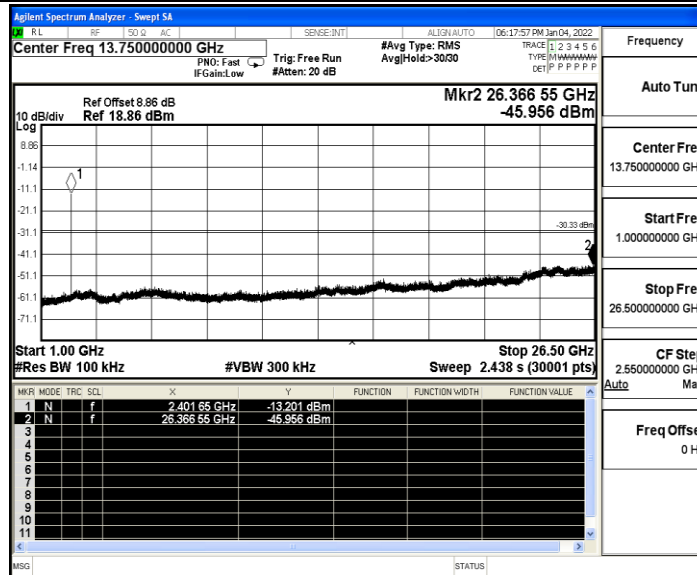




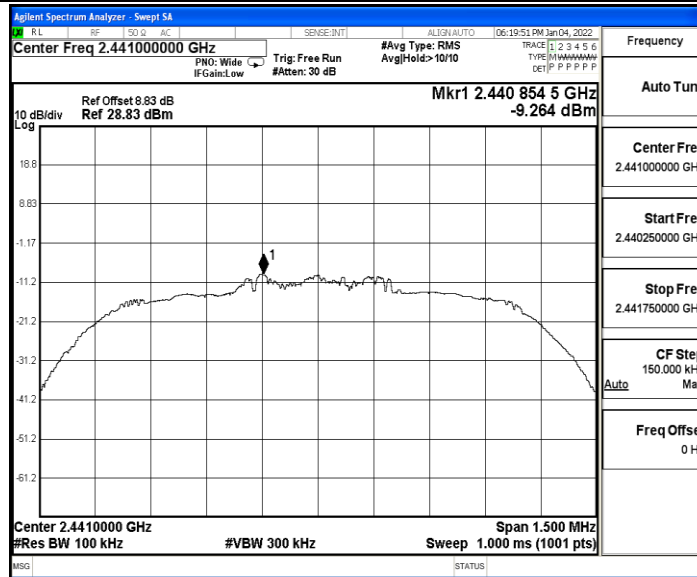
2DH5_Ant1_2402_30~1000



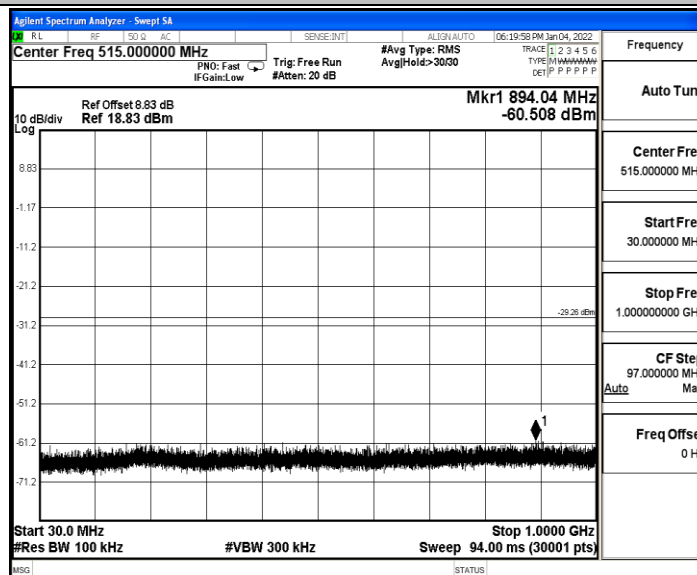
2DH5_Ant1_2402_1000~26500



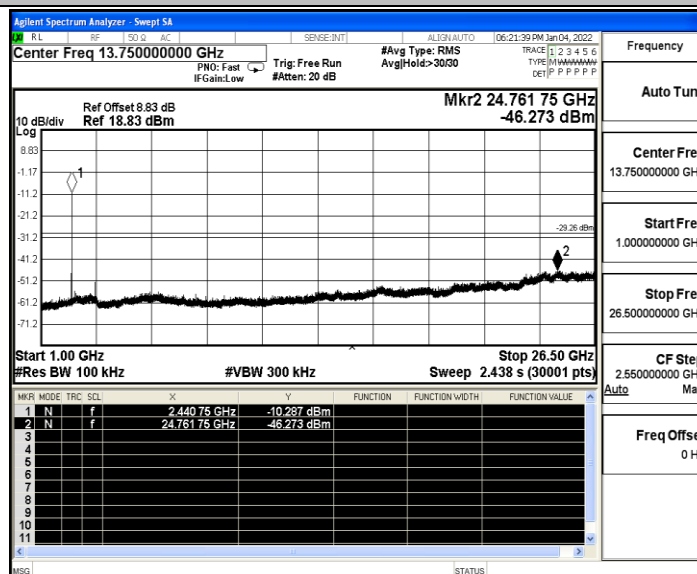
2DH5_Ant1_2441_0~Reference



2DH5_Ant1_2441_30~1000

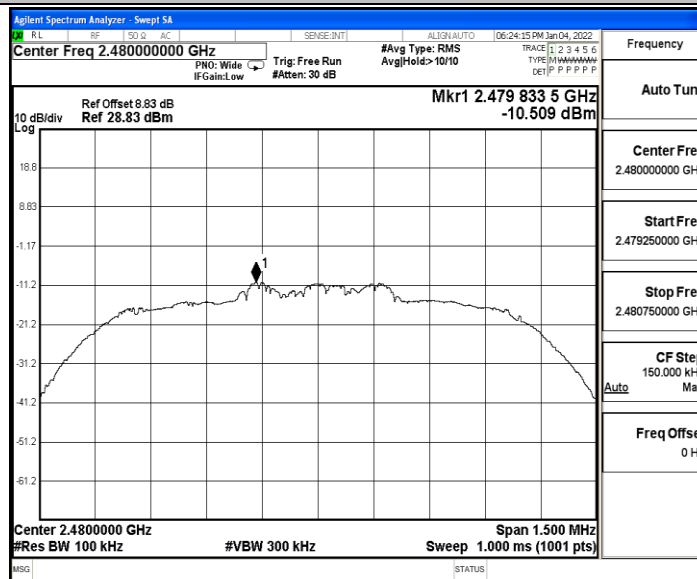


2DH5_Ant1_2441_1000~26500

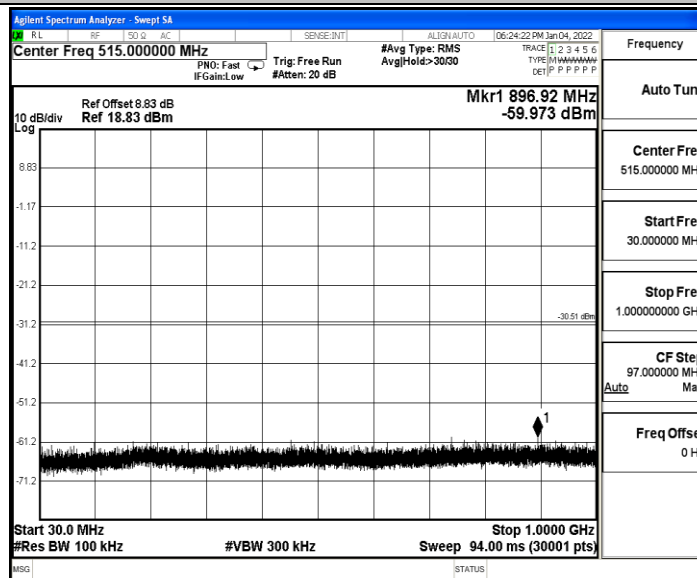




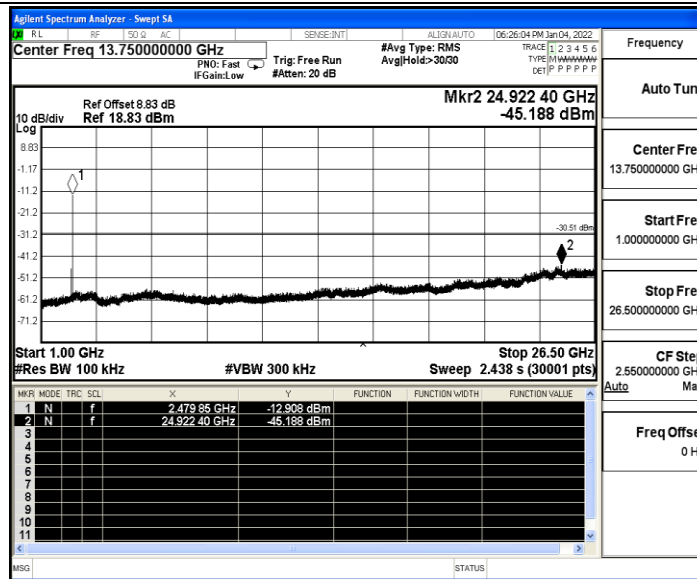
2DH5_Ant1_2480_0~Reference



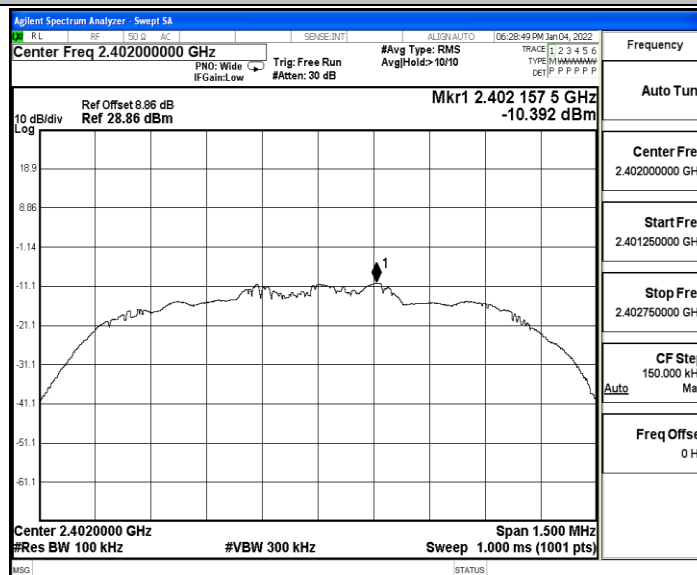
2DH5_Ant1_2480_30~1000



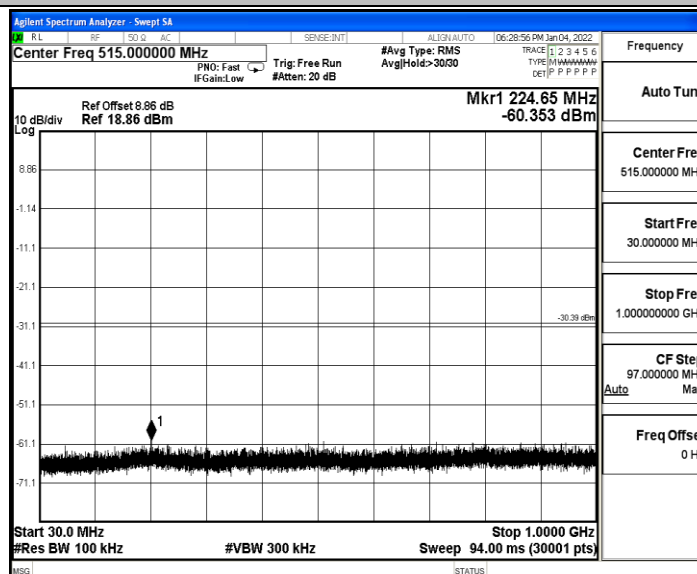
2DH5_Ant1_2480_1000~26500



3DH5_Ant1_2402_0-Reference

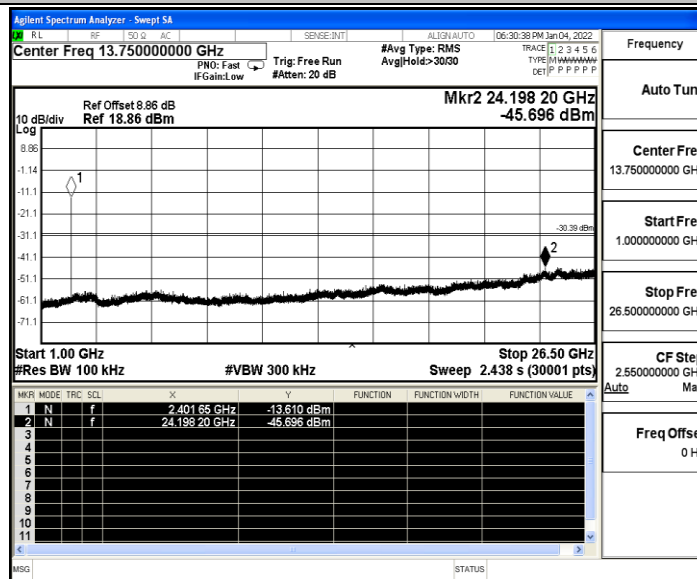


3DH5_Ant1_2402_30-1000

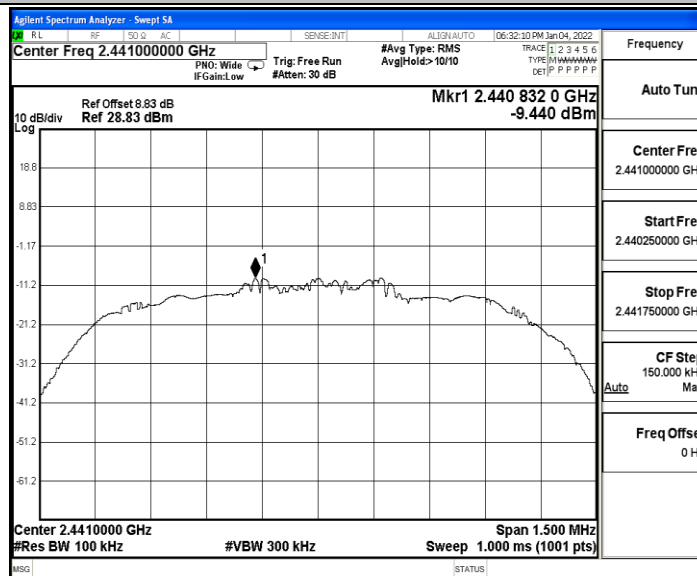




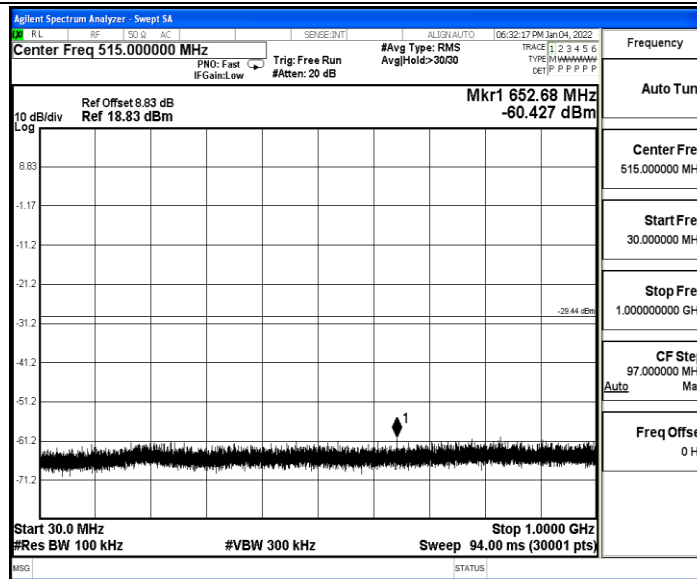
3DH5_Ant1_2402_1000~26500



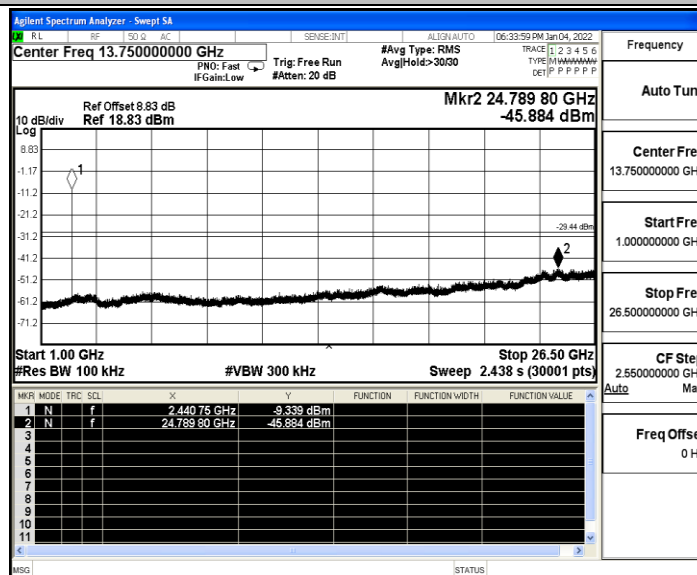
3DH5_Ant1_2441_0~Reference



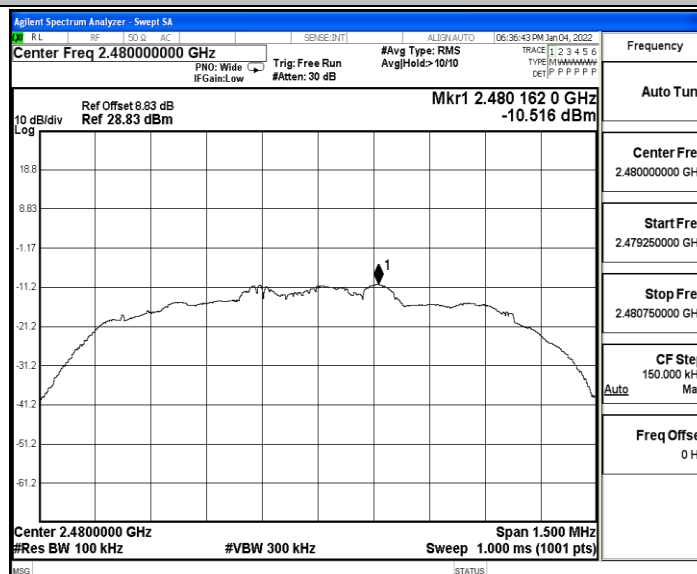
3DH5_Ant1_2441_30~1000

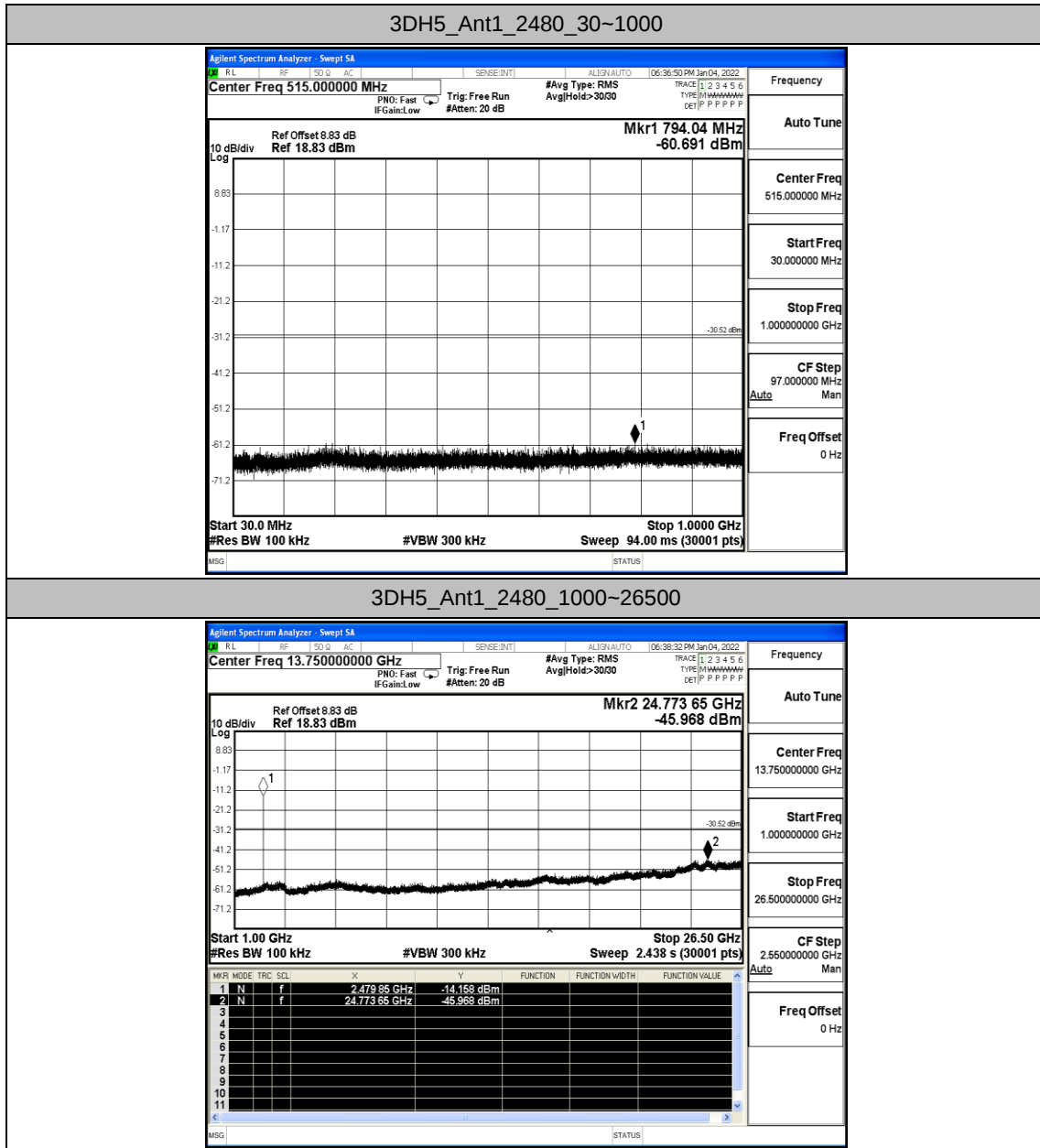


3DH5_Ant1_2441_1000~26500



3DH5_Ant1_2480_0~Reference







A.8 Emissions in Restricted Bands

Test Result

Test Mode	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	2402	AV	2310.000	-47.92	≤-41.20	47.28	≤54	PASS
		AV	2383.475	-47.43	≤-41.20	47.77	≤54	PASS
		AV	2390.000	-47.65	≤-41.20	47.55	≤54	PASS
		Peak	2310.000	-38.41	≤-21.20	56.79	≤74	PASS
		Peak	2378.120	-35.49	≤-21.20	59.71	≤74	PASS
		Peak	2390.000	-37.42	≤-21.20	57.78	≤74	PASS
	2480	AV	2483.500	-47.16	≤-41.20	48.04	≤54	PASS
		AV	2496.320	-46.87	≤-41.20	48.33	≤54	PASS
		AV	2500.000	-46.96	≤-41.20	48.24	≤54	PASS
		Peak	2483.500	-37.49	≤-21.20	57.71	≤74	PASS
		Peak	2493.360	-35.94	≤-21.20	59.26	≤74	PASS
		Peak	2500.000	-38.17	≤-21.20	57.03	≤74	PASS
	Hop_2402	Peak	2310.000	-39.33	≤-21.20	55.87	≤74	PASS
		Peak	2319.950	-36.2	≤-21.20	59.00	≤74	PASS
		Peak	2390.000	-38.96	≤-21.20	56.24	≤74	PASS
	Hop_2480	Peak	2483.500	-37.6	≤-21.20	57.60	≤74	PASS
		Peak	2494.240	-35.91	≤-21.20	59.29	≤74	PASS
		Peak	2500.000	-37.65	≤-21.20	57.55	≤74	PASS
2DH5	2402	AV	2310.000	-47.85	≤-41.20	47.35	≤54	PASS
		AV	2384.105	-47.45	≤-41.20	47.75	≤54	PASS
		AV	2390.000	-47.62	≤-41.20	47.58	≤54	PASS
		Peak	2310.000	-38.29	≤-21.20	56.91	≤74	PASS
		Peak	2342.315	-36.24	≤-21.20	58.96	≤74	PASS
		Peak	2390.000	-38.21	≤-21.20	56.99	≤74	PASS
	2480	AV	2483.500	-47.16	≤-41.20	48.04	≤54	PASS
		AV	2499.760	-46.95	≤-41.20	48.25	≤54	PASS
		AV	2500.000	-47.06	≤-41.20	48.14	≤54	PASS
		Peak	2483.500	-37.95	≤-21.20	57.25	≤74	PASS
		Peak	2488.000	-36.08	≤-21.20	59.12	≤74	PASS
		Peak	2500.000	-37.59	≤-21.20	57.61	≤74	PASS
	Hop_2402	Peak	2310.000	-39.36	≤-21.20	55.84	≤74	PASS
		Peak	2381.585	-36.69	≤-21.20	58.51	≤74	PASS
		Peak	2390.000	-38.94	≤-21.20	56.26	≤74	PASS
	Hop_2480	Peak	2483.500	-37.96	≤-21.20	57.24	≤74	PASS
		Peak	2498.320	-36.25	≤-21.20	58.95	≤74	PASS
		Peak	2500.000	-37.37	≤-21.20	57.83	≤74	PASS
3DH5	2402	AV	2310.000	-47.84	≤-41.20	47.36	≤54	PASS



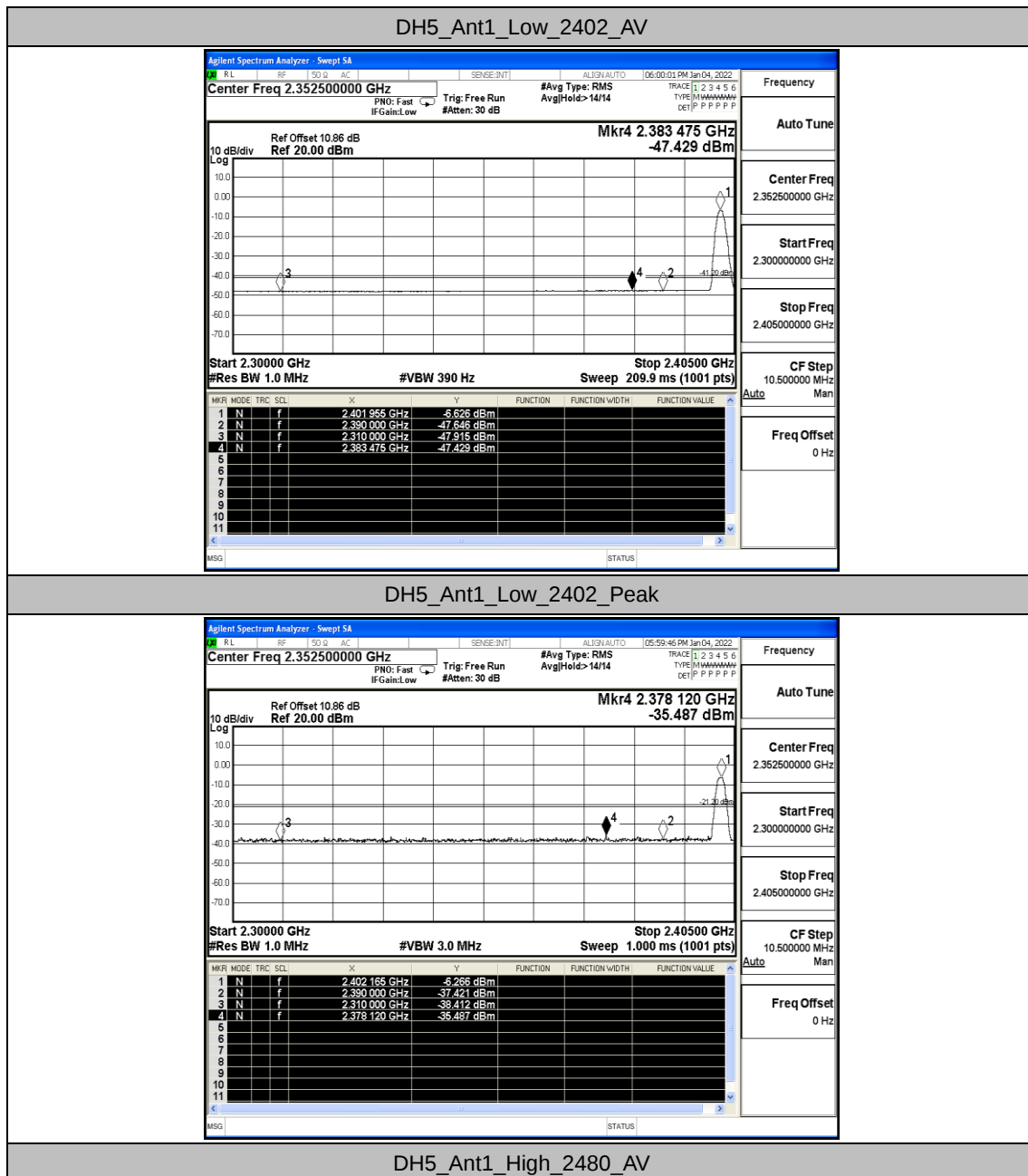
		AV	2389.880	-47.5	≤ -41.20	47.70	≤ 54	PASS
		AV	2390.000	-47.64	≤ -41.20	47.56	≤ 54	PASS
		Peak	2310.000	-38.74	≤ -21.20	56.46	≤ 74	PASS
		Peak	2385.680	-36.2	≤ -21.20	59.00	≤ 74	PASS
		Peak	2390.000	-38.52	≤ -21.20	56.68	≤ 74	PASS
	2480	AV	2483.500	-47.2	≤ -41.20	48.00	≤ 54	PASS
		AV	2499.840	-46.9	≤ -41.20	48.30	≤ 54	PASS
		AV	2500.000	-47.02	≤ -41.20	48.18	≤ 54	PASS
		Peak	2483.500	-37.21	≤ -21.20	57.99	≤ 74	PASS
		Peak	2496.000	-35.29	≤ -21.20	59.91	≤ 74	PASS
		Peak	2500.000	-36.89	≤ -21.20	58.31	≤ 74	PASS
	Hop_2402	Peak	2310.000	-38.93	≤ -21.20	56.27	≤ 74	PASS
		Peak	2347.250	-36.93	≤ -21.20	58.27	≤ 74	PASS
		Peak	2390.000	-38.22	≤ -21.20	56.98	≤ 74	PASS
	Hop_2480	Peak	2483.500	-38.15	≤ -21.20	57.05	≤ 74	PASS
		Peak	2499.600	-35.72	≤ -21.20	59.48	≤ 74	PASS
		Peak	2500.000	-38.07	≤ -21.20	57.13	≤ 74	PASS

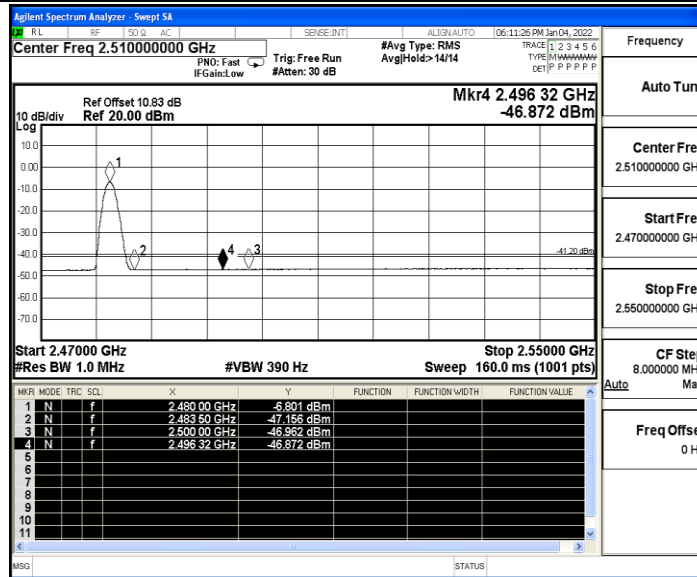
Note:

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.

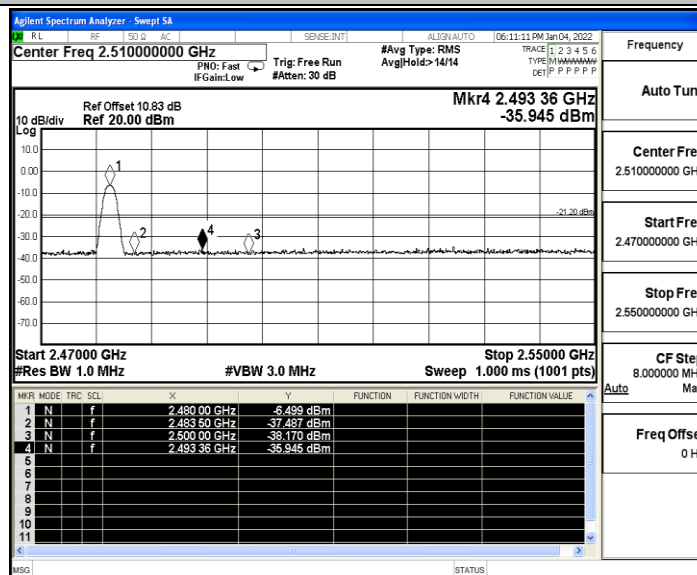


Test Graphs

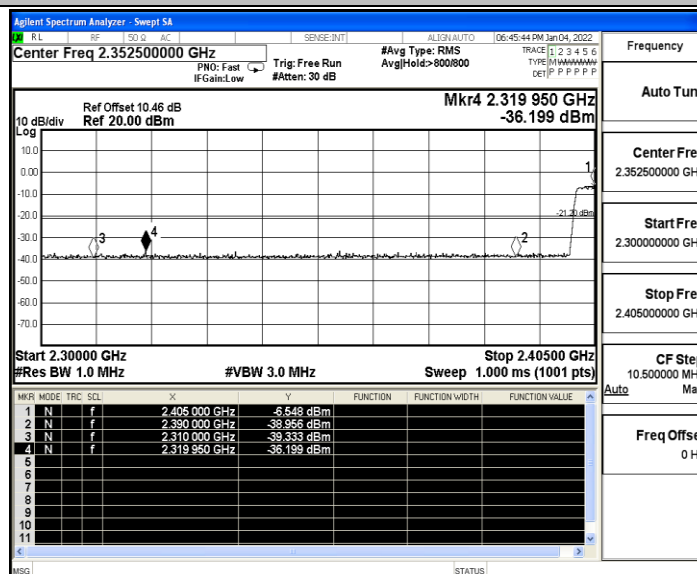




DH5_Ant1_High_2480_Peak

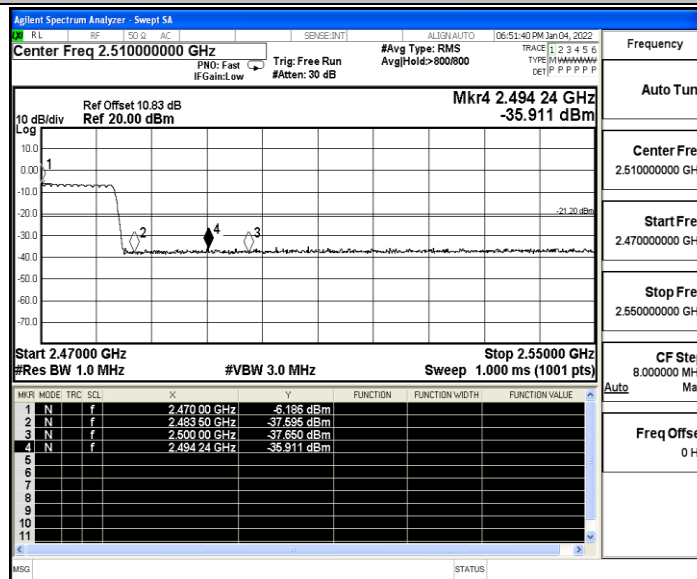


DH5_Ant1_Low_Hop_2402_Peak

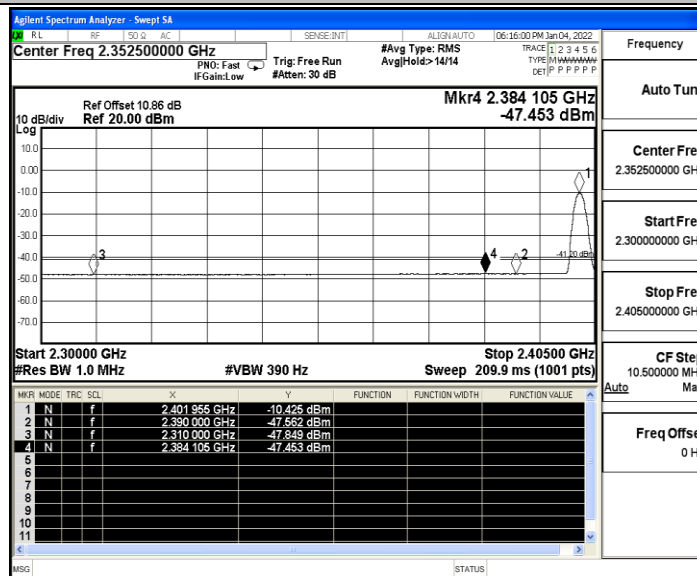




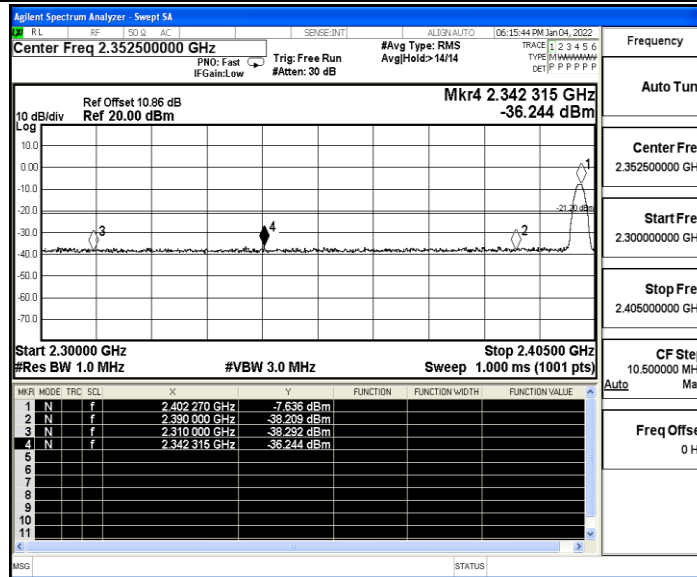
DH5_Ant1_High_Hop_2480_Peak



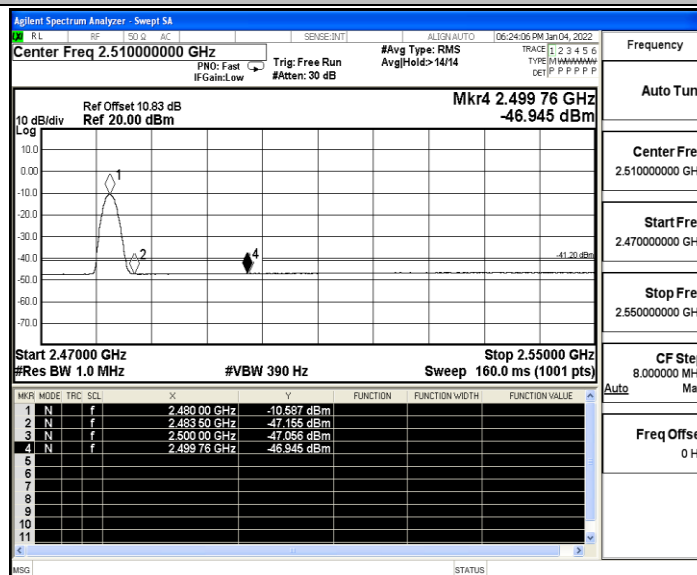
2DH5_Ant1_Low_2402_AV



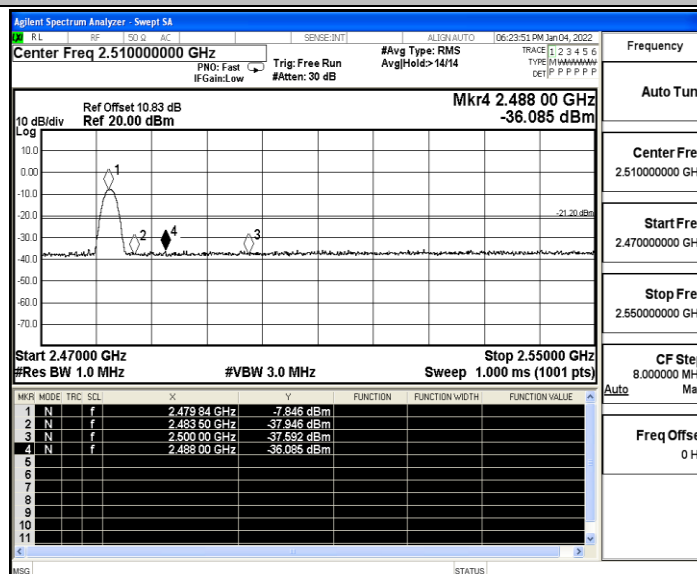
2DH5_Ant1_Low_2402_Peak



2DH5_Ant1_High_2480_AV

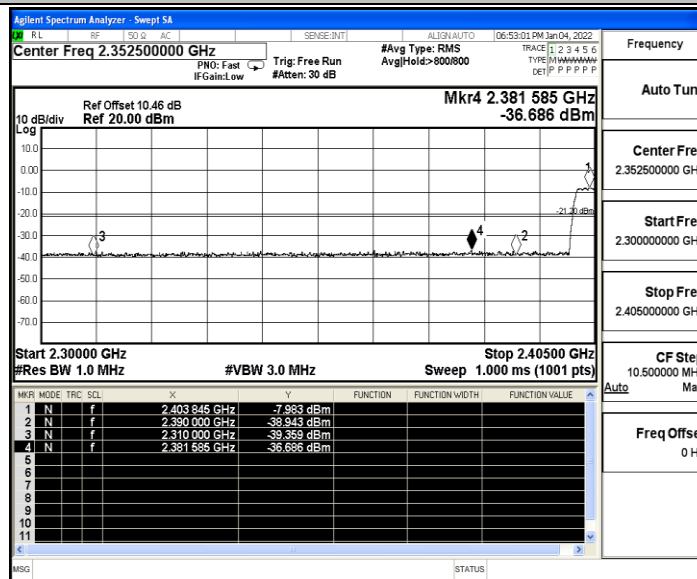


2DH5_Ant1_High_2480_Peak

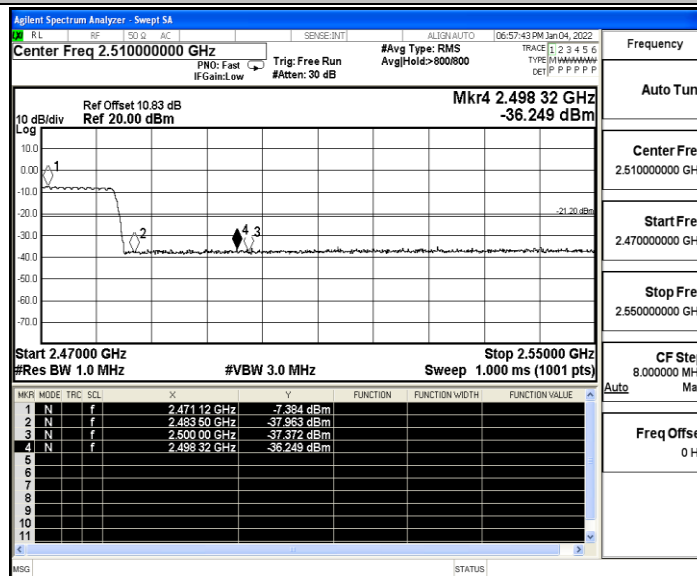




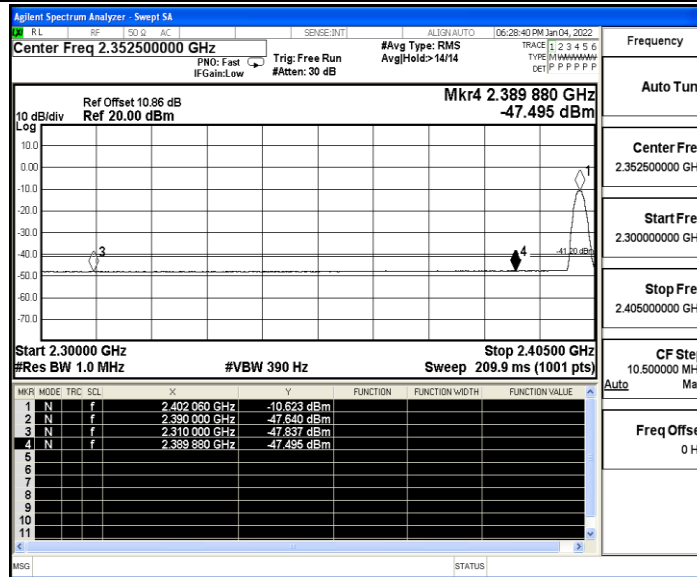
2DH5_Ant1_Low_Hop_2402_Peak



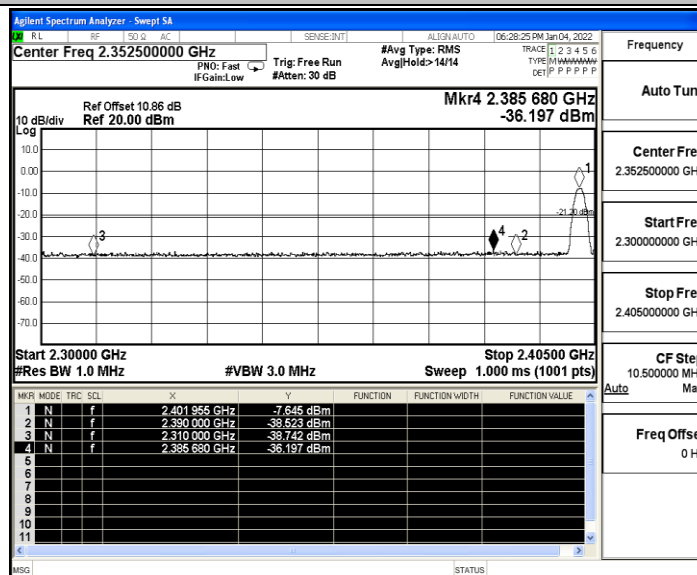
2DH5_Ant1_High_Hop_2480_Peak



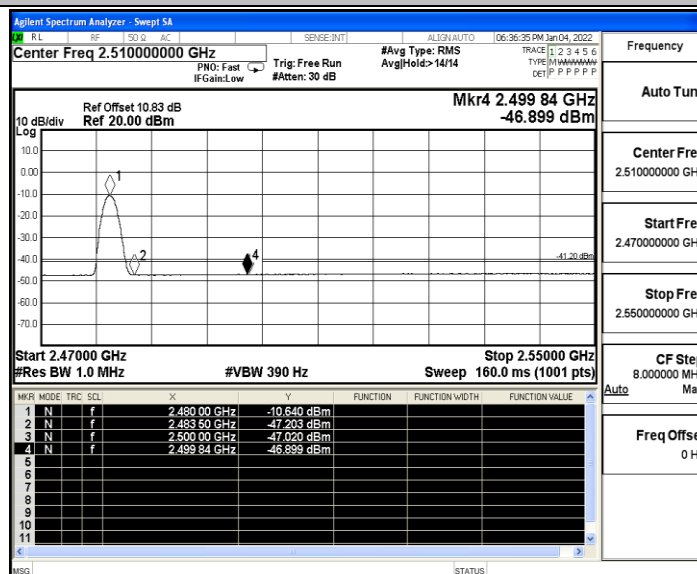
3DH5_Ant1_Low_2402_AV



3DH5_Ant1_Low_2402_Peak

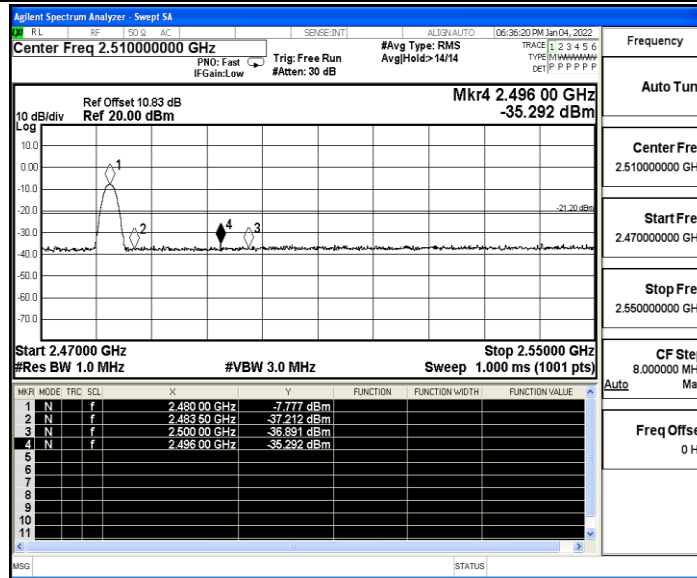


3DH5_Ant1_High_2480_AV

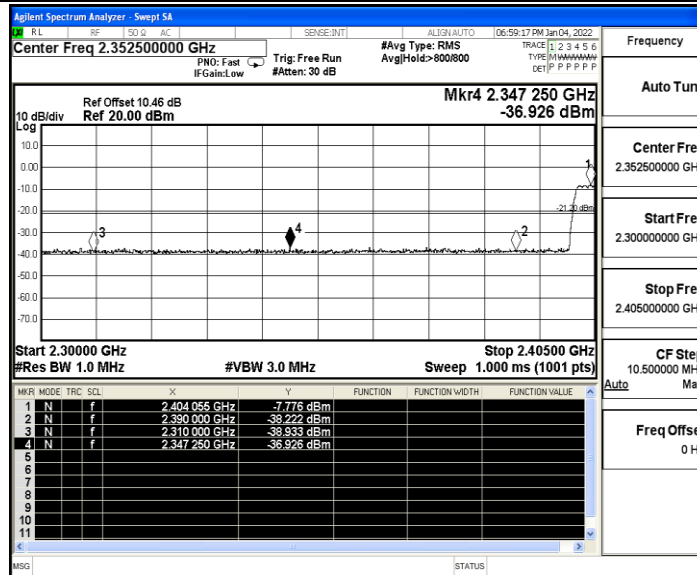




3DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_Hop_2402_Peak



3DH5_Ant1_High_Hop_2480_Peak

