



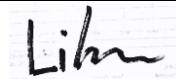
Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: USB Bluetooth Dongle

Test Model: MRD-AD003

Environmental Conditions

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



A.1 20dB Emission Bandwidth

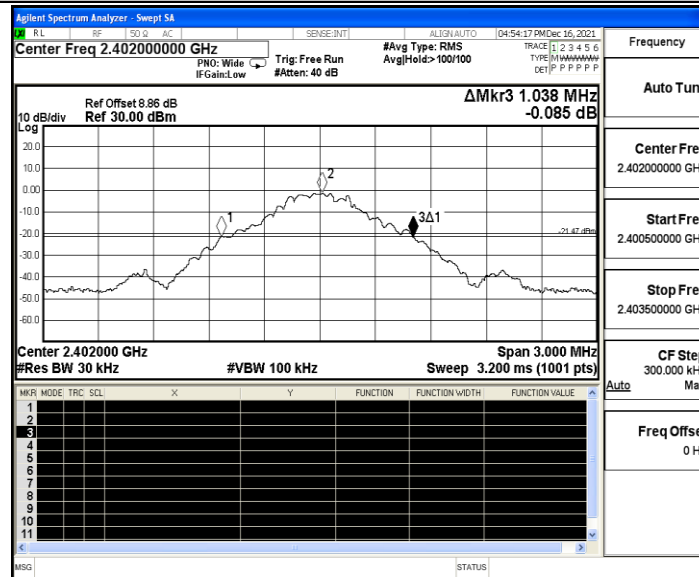
Test Result

TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	1.038	2401.466	2402.504	---	PASS
		2441	1.032	2440.469	2441.501	---	PASS
		2480	1.038	2479.463	2480.501	---	PASS
2DH5	Ant1	2402	1.290	2401.361	2402.651	---	PASS
		2441	1.296	2440.358	2441.654	---	PASS
		2480	1.320	2479.334	2480.654	---	PASS
3DH5	Ant1	2402	1.317	2401.340	2402.657	---	PASS
		2441	1.317	2440.340	2441.657	---	PASS
		2480	1.296	2479.346	2480.642	---	PASS

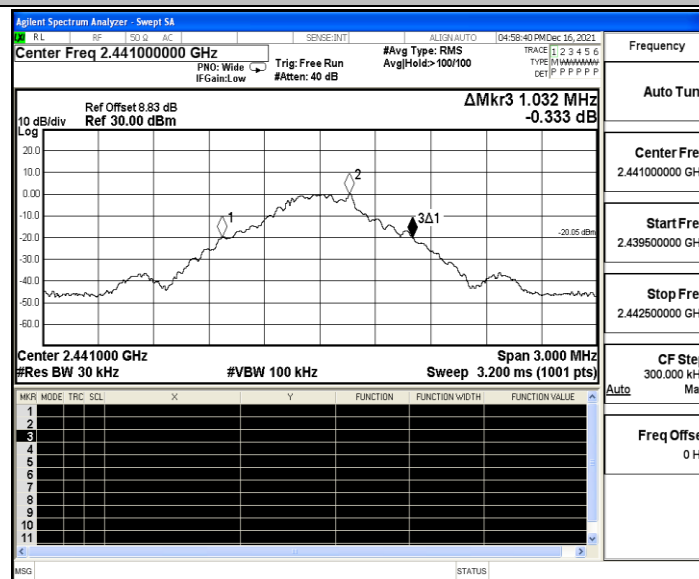


Test Graphs

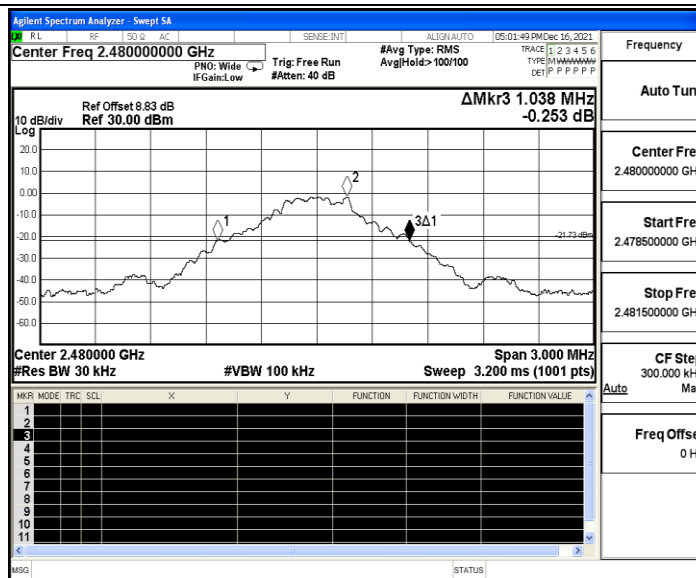
DH5_Ant1_2402



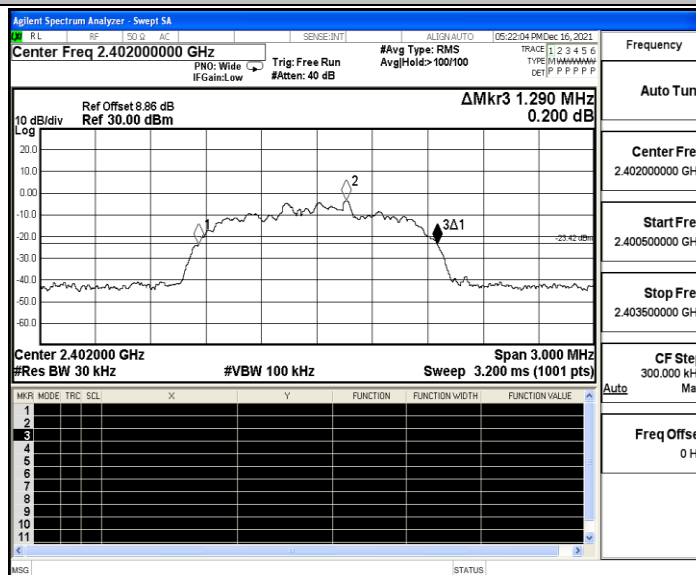
DH5_Ant1_2441



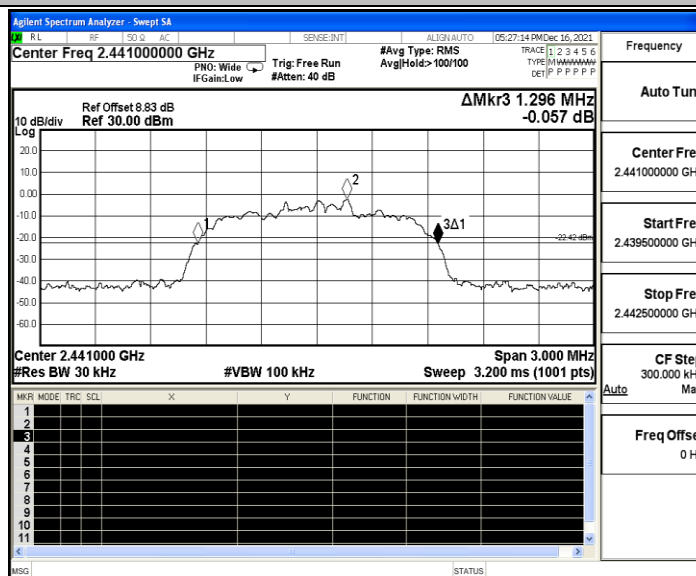
DH5_Ant1_2480



2DH5_Ant1_2402

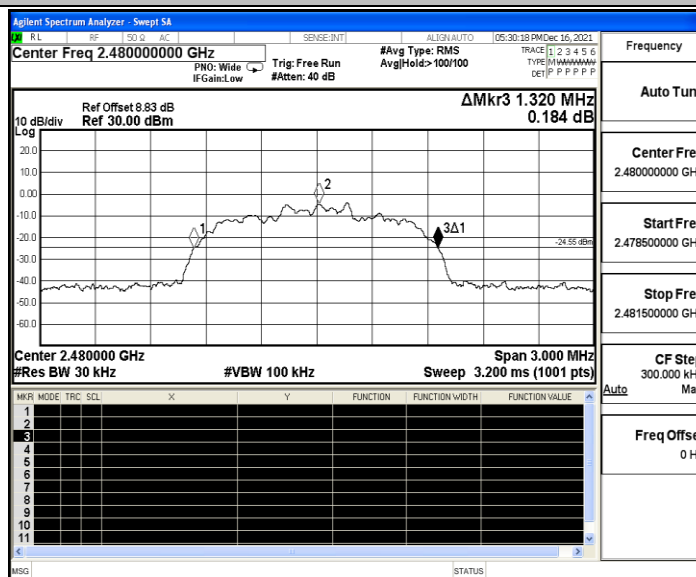


2DH5_Ant1_2441

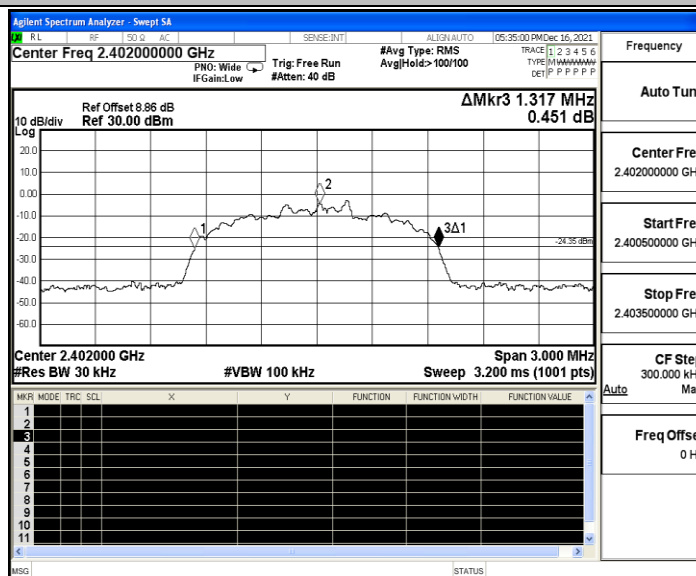




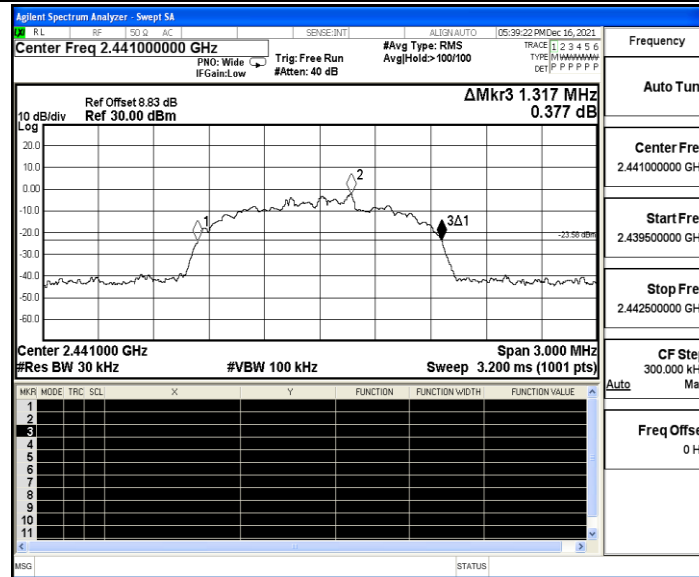
2DH5_Ant1_2480



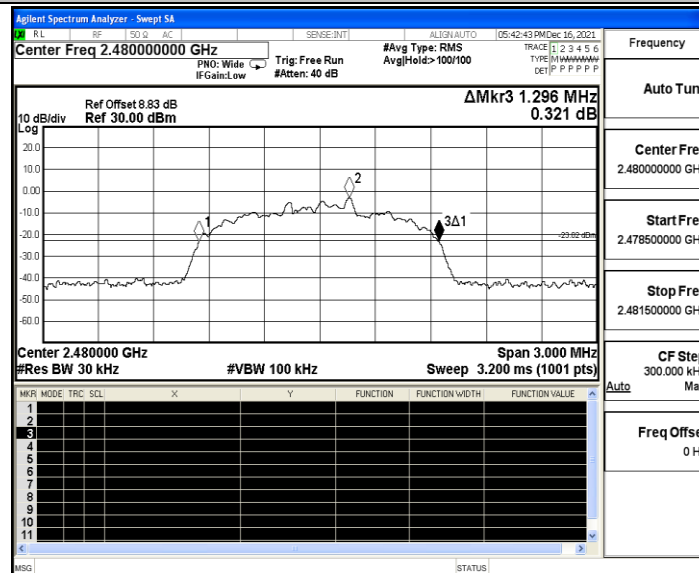
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



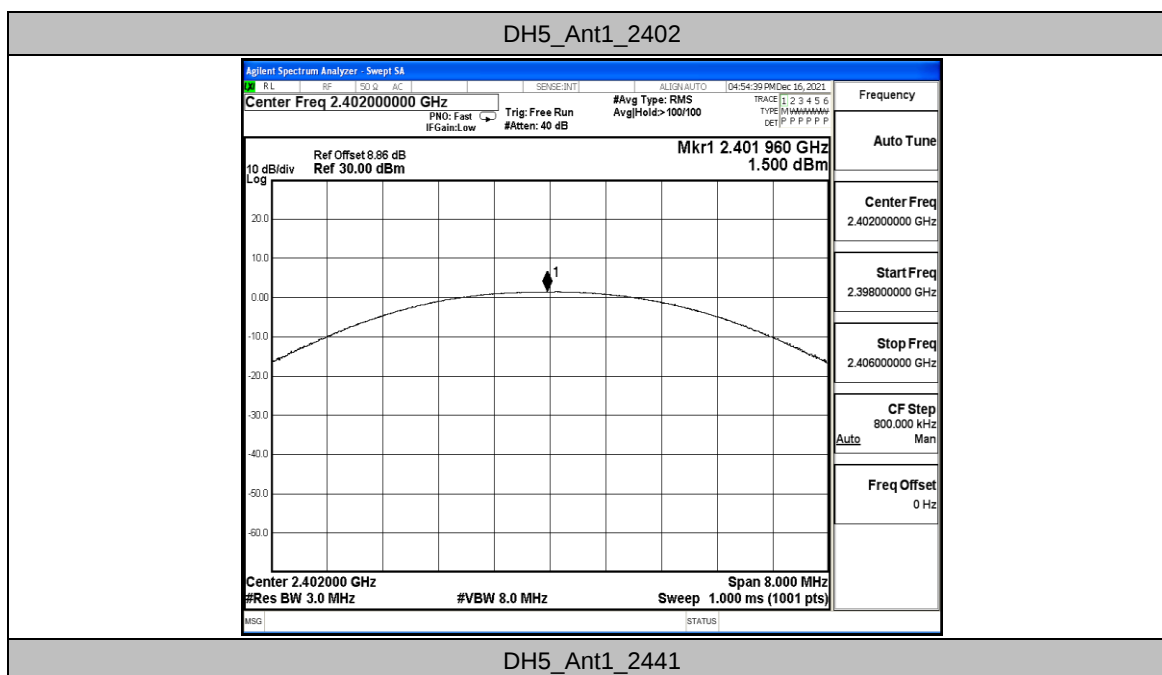


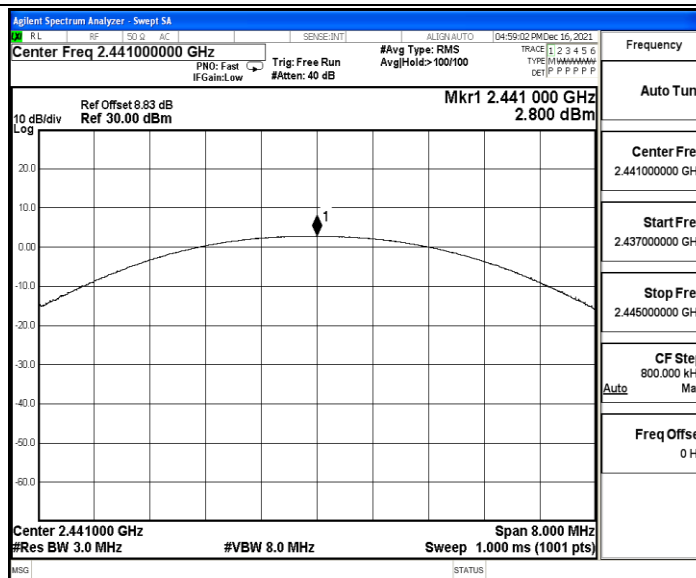
A.2 Maximum conducted output power

Test Result Peak

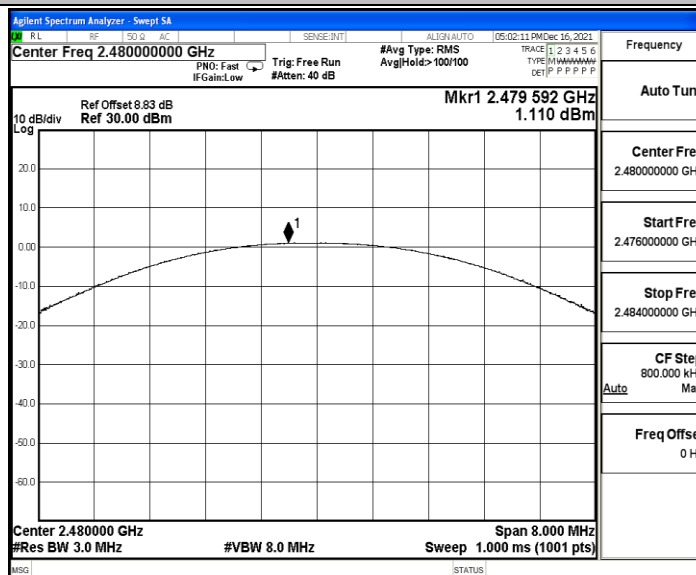
Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	1.5	≤20.97	PASS
		2441	2.8	≤20.97	PASS
		2480	1.11	≤20.97	PASS
2DH5	Ant1	2402	0.54	≤20.97	PASS
		2441	1.83	≤20.97	PASS
		2480	0.22	≤20.97	PASS
3DH5	Ant1	2402	0.73	≤20.97	PASS
		2441	2.03	≤20.97	PASS
		2480	0.31	≤20.97	PASS

Test Graphs

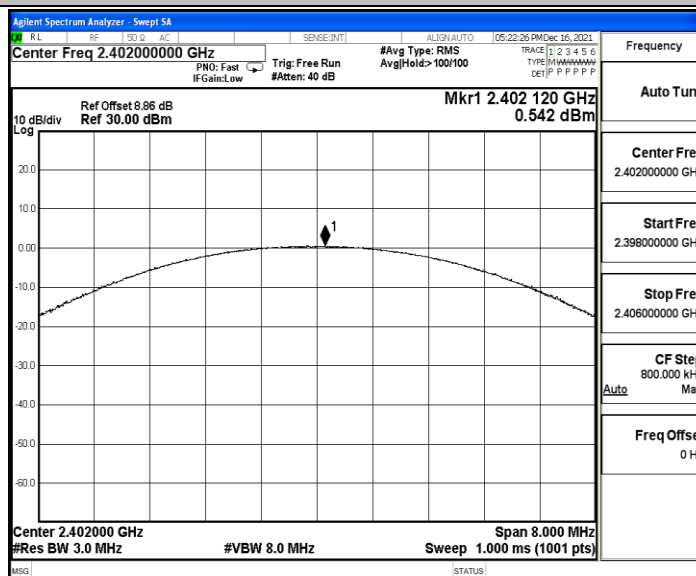




DH5_Ant1_2480

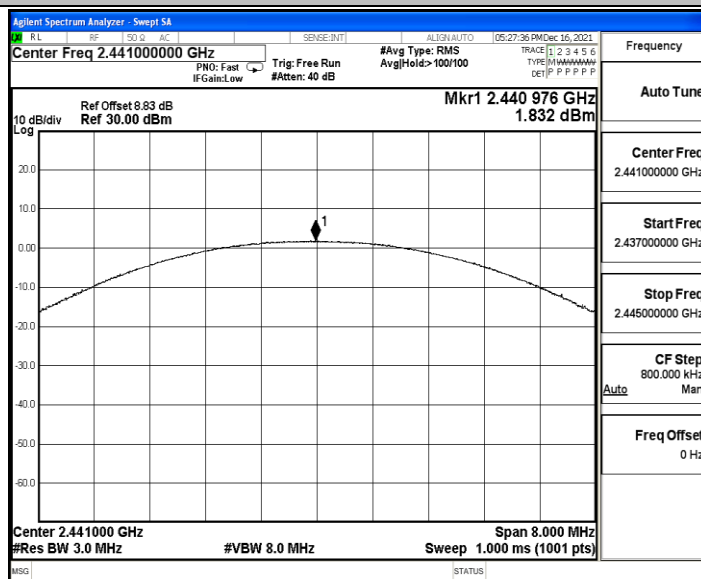


2DH5_Ant1_2402

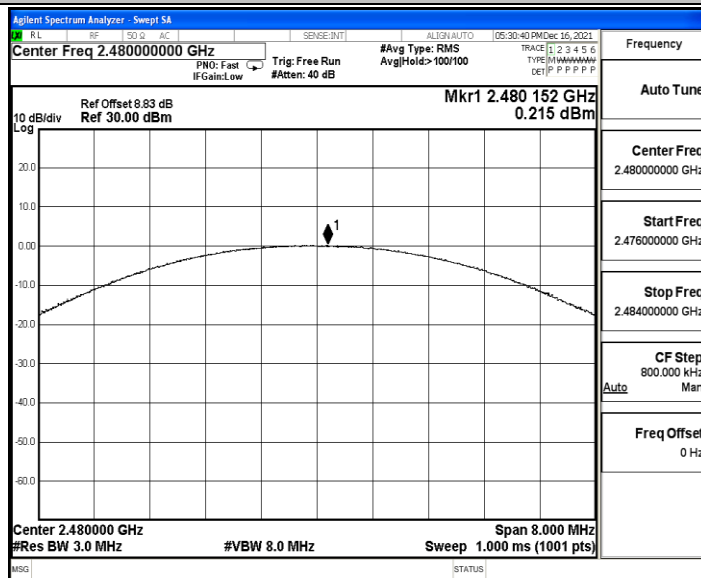




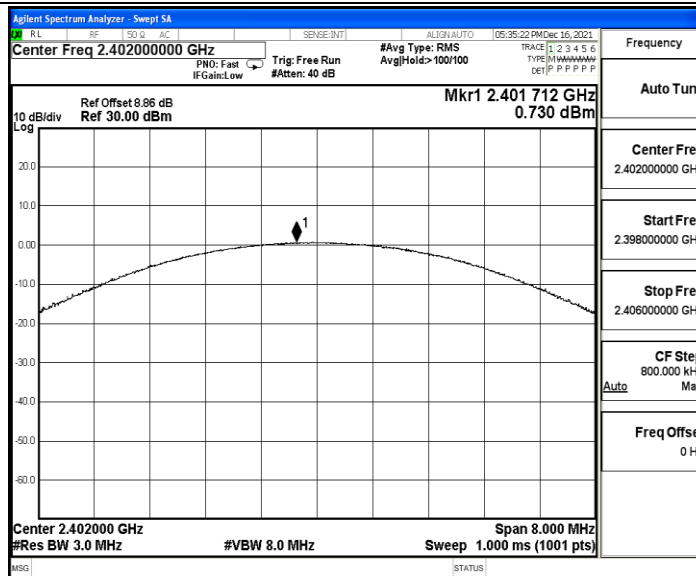
2DH5_Ant1_2441



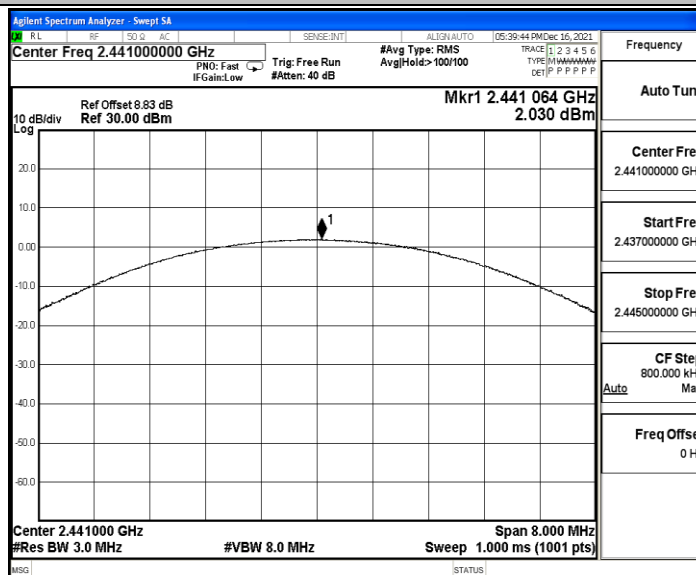
2DH5_Ant1_2480



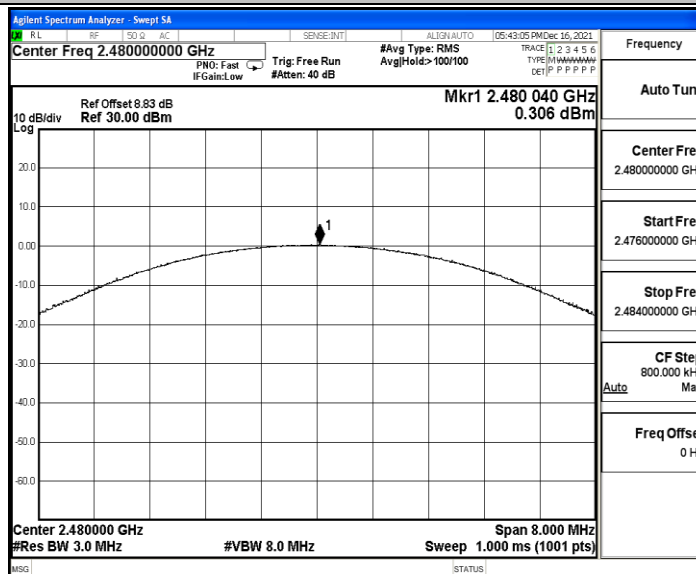
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



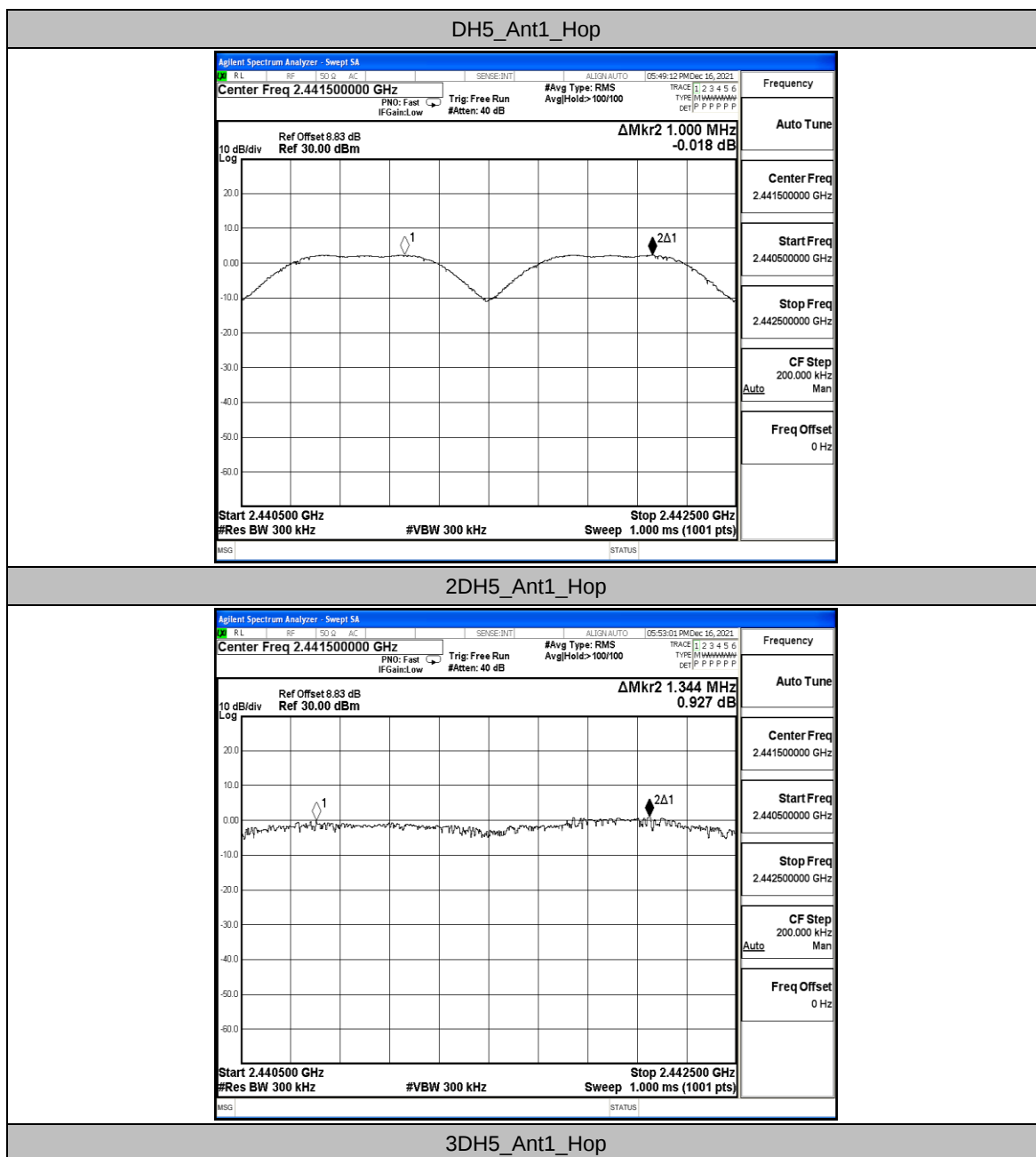


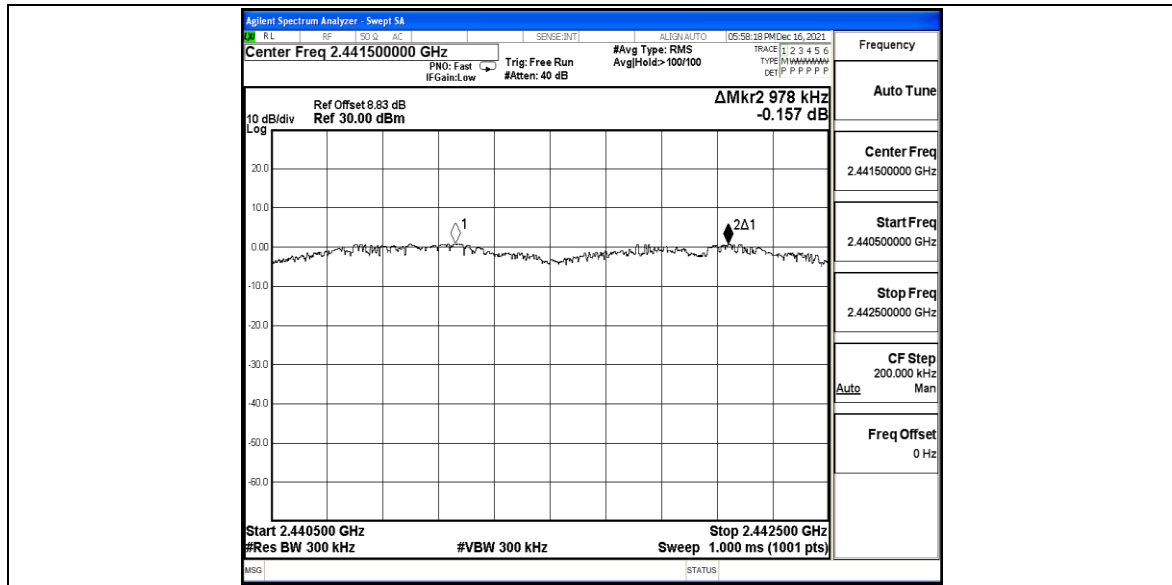
A.3 Carrier frequency separation

Test Result

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1	≥ 0.692	PASS
2DH5	Ant1	Hop	1.344	≥ 1.320	PASS
3DH5	Ant1	Hop	0.978	≥ 0.878	PASS

Test Graphs





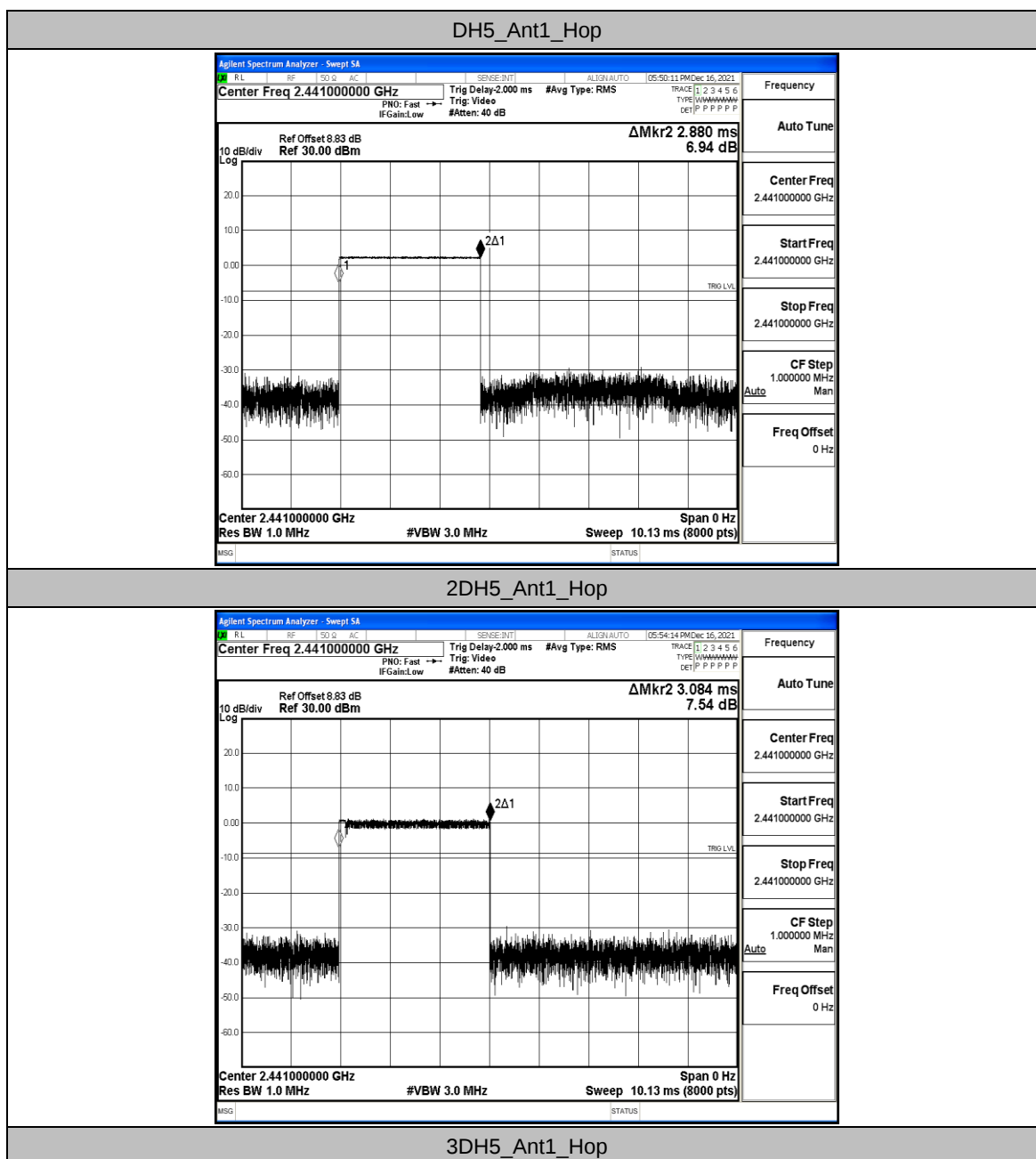


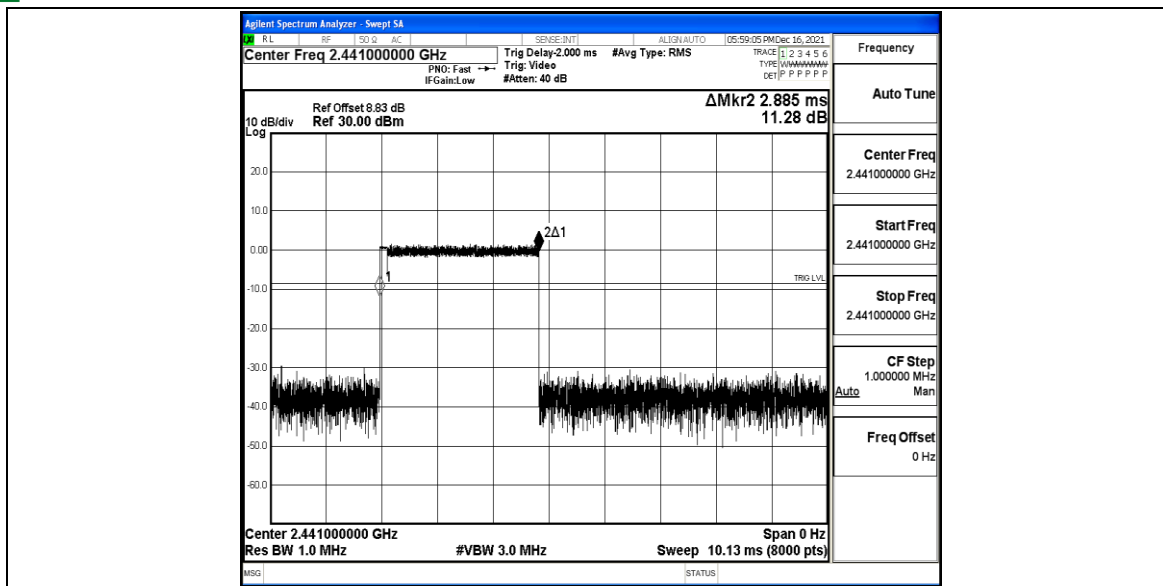
A.4 Time of occupancy

Test Result

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.88	106.67	0.307	≤0.4	PASS
2DH5	Ant1	Hop	3.08	106.67	0.329	≤0.4	PASS
3DH5	Ant1	Hop	2.89	106.67	0.308	≤0.4	PASS

Test Graphs







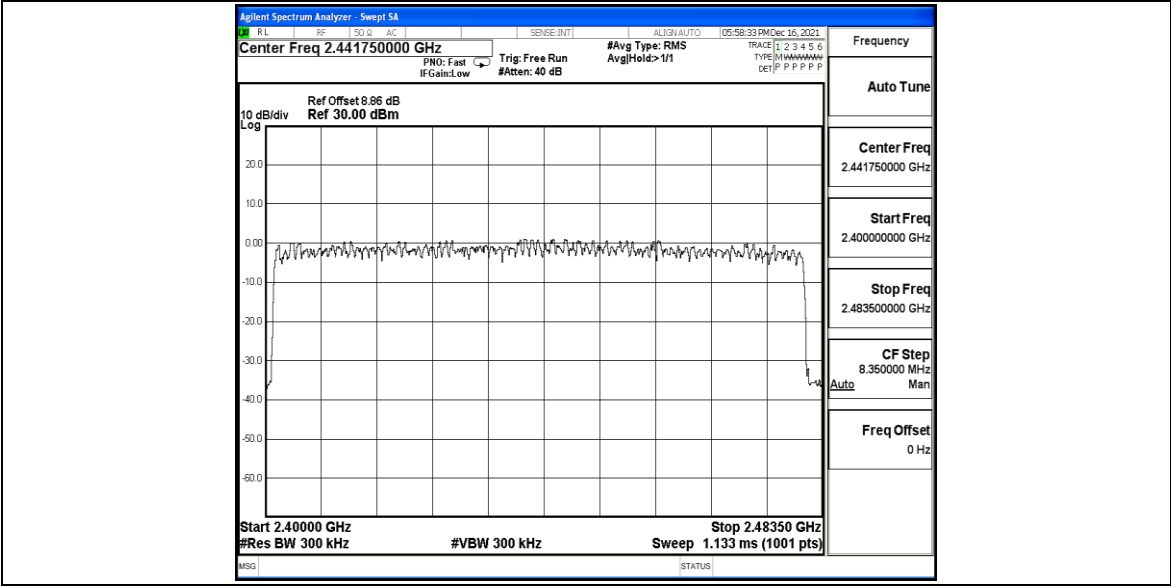
A.5 Number of hopping channels

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







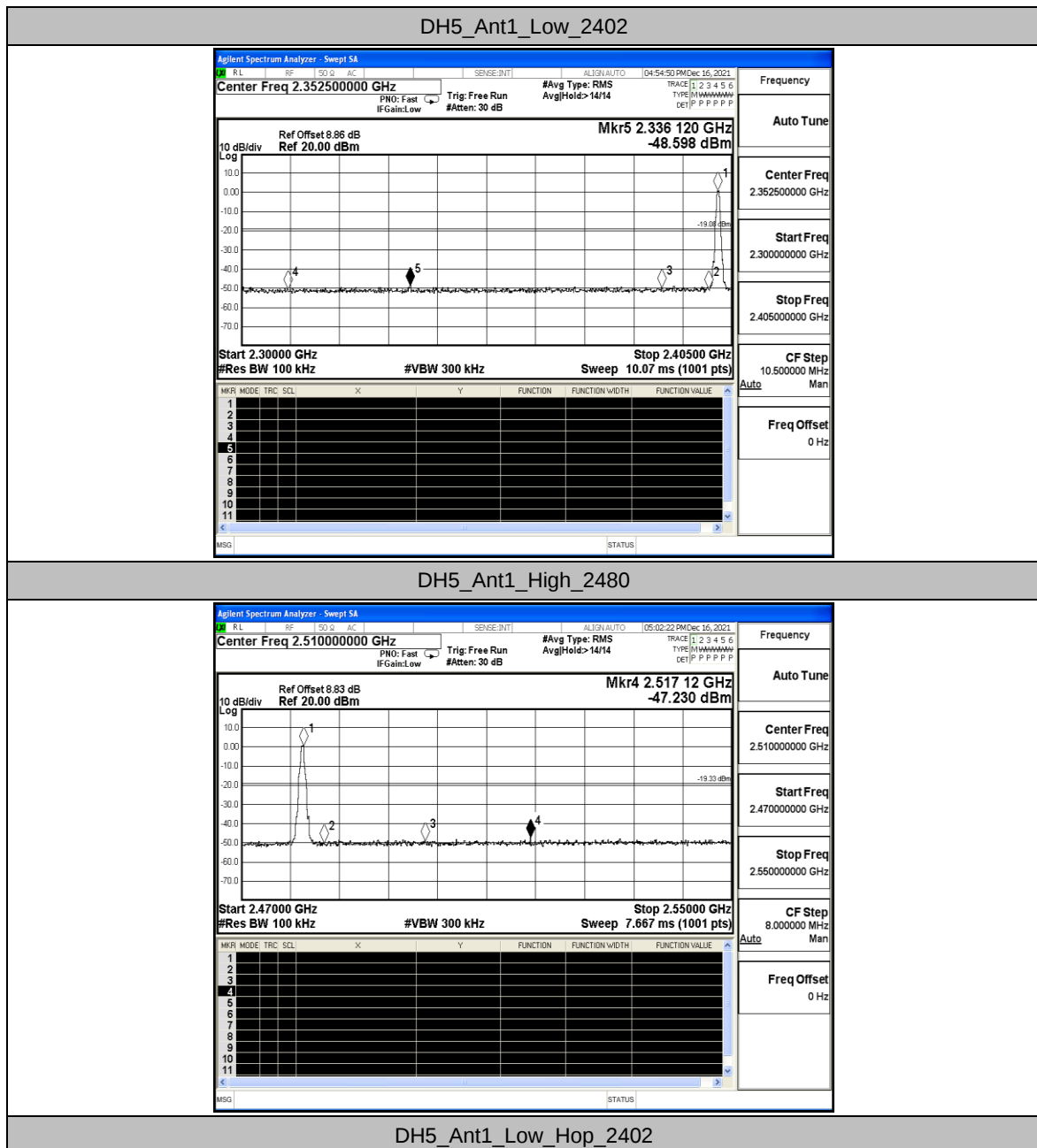
A.6 Band edge measurements

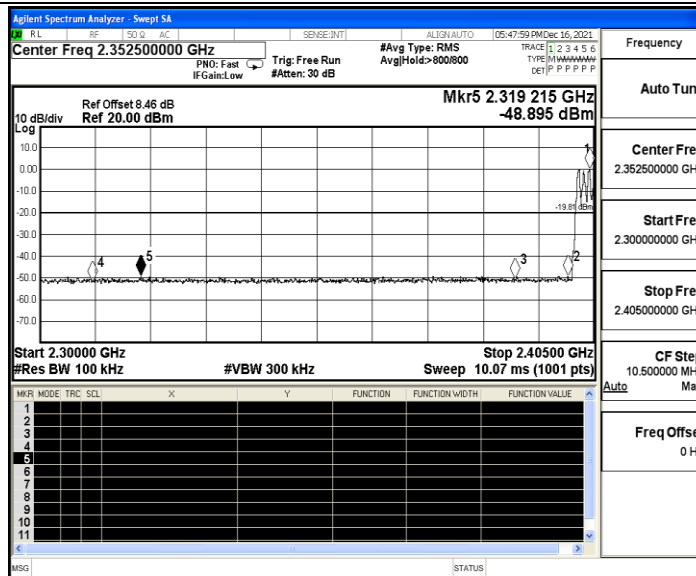
Test Result

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	0.93	-48.6	≤ -19.08	PASS
		High	2480	0.68	-47.23	≤ -19.33	PASS
		Low	Hop_2402	0.20	-48.9	≤ -19.81	PASS
		High	Hop_2480	0.79	-47.67	≤ -19.22	PASS
2DH5	Ant1	Low	2402	-0.63	-48.45	≤ -20.63	PASS
		High	2480	-0.75	-46.9	≤ -20.75	PASS
		Low	Hop_2402	-1.07	-49.34	≤ -21.07	PASS
		High	Hop_2480	-4.15	-48.24	≤ -24.15	PASS
3DH5	Ant1	Low	2402	-0.50	-48.23	≤ -20.5	PASS
		High	2480	-1.27	-46.9	≤ -21.27	PASS
		Low	Hop_2402	-3.78	-49.46	≤ -23.78	PASS
		High	Hop_2480	-0.96	-47.04	≤ -20.96	PASS

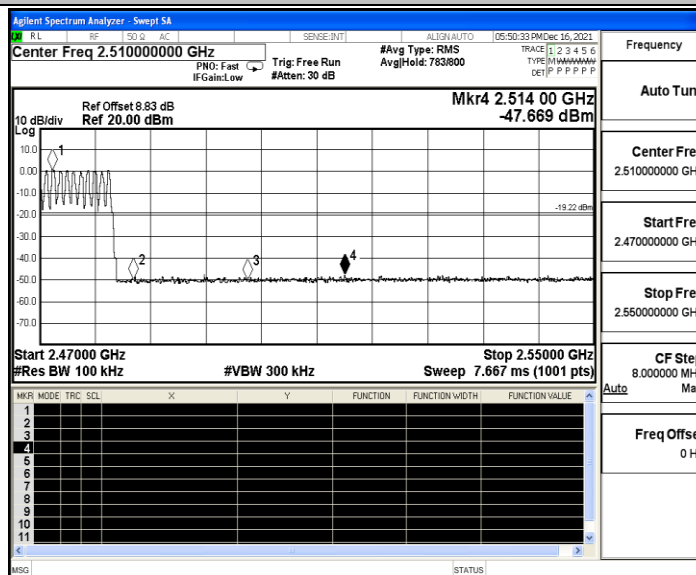


Test Graphs

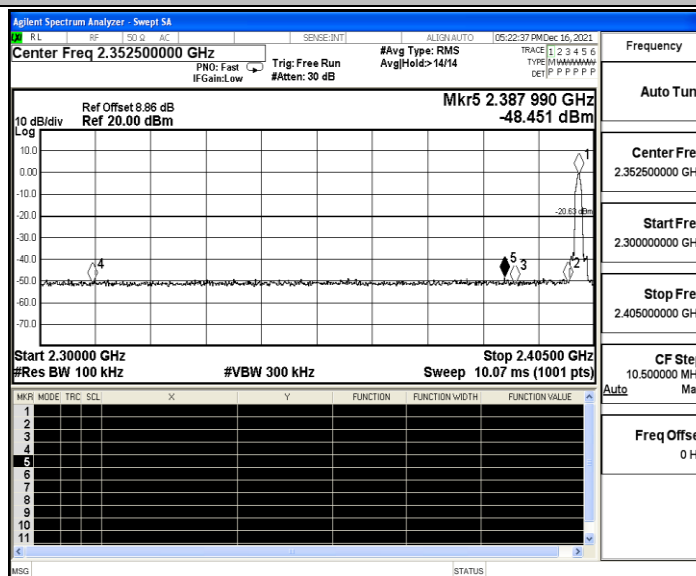




DH5_Ant1_High_Hop_2480

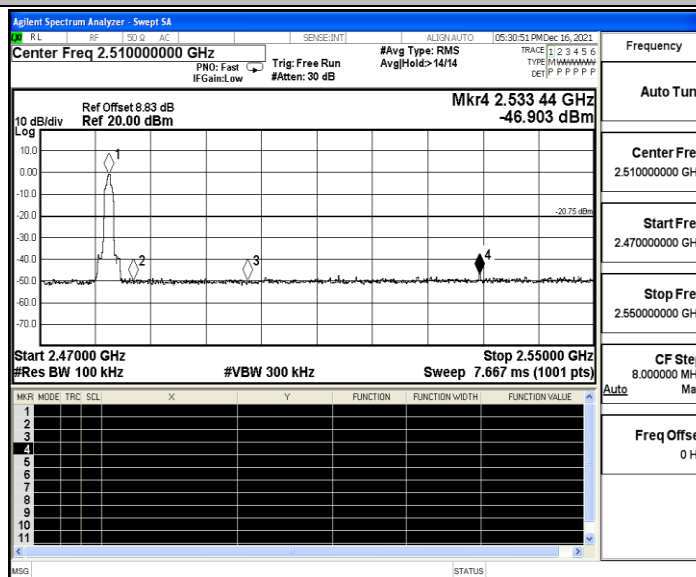


2DH5_Ant1_Low_2402

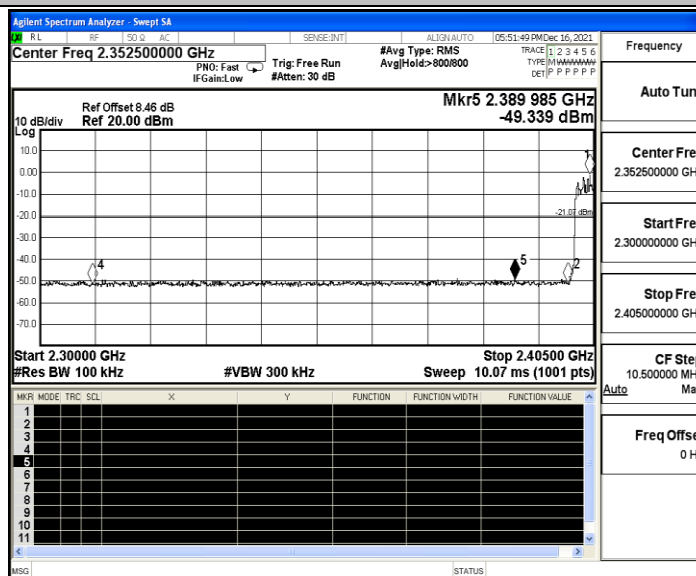




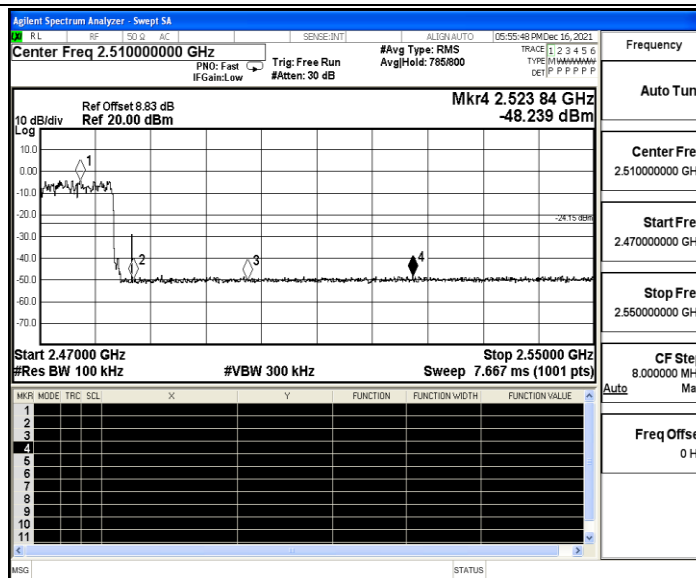
2DH5_Ant1_High_2480



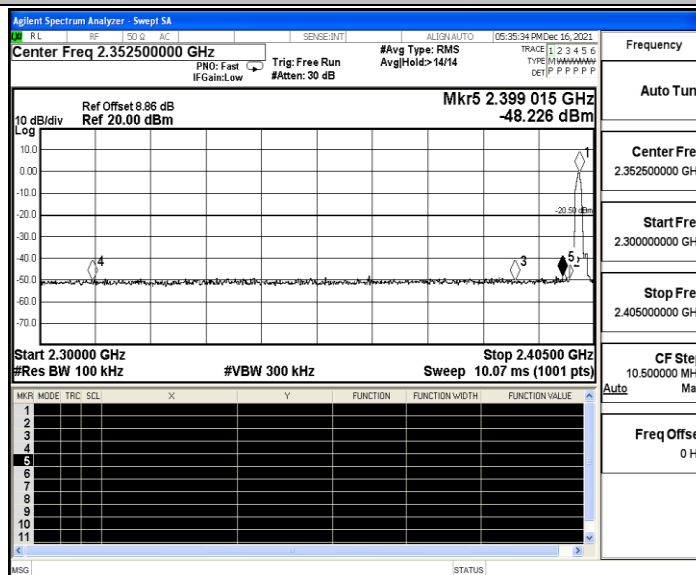
2DH5_Ant1_Low_Hop_2402



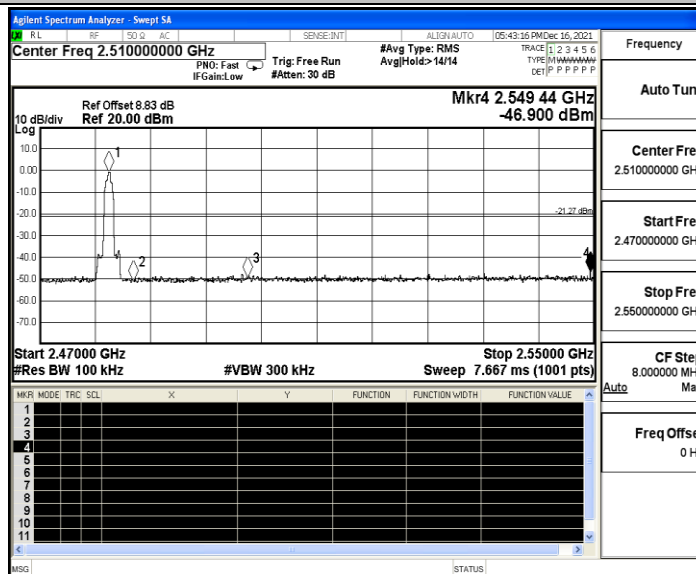
2DH5_Ant1_High_Hop_2480



3DH5_Ant1_Low_2402

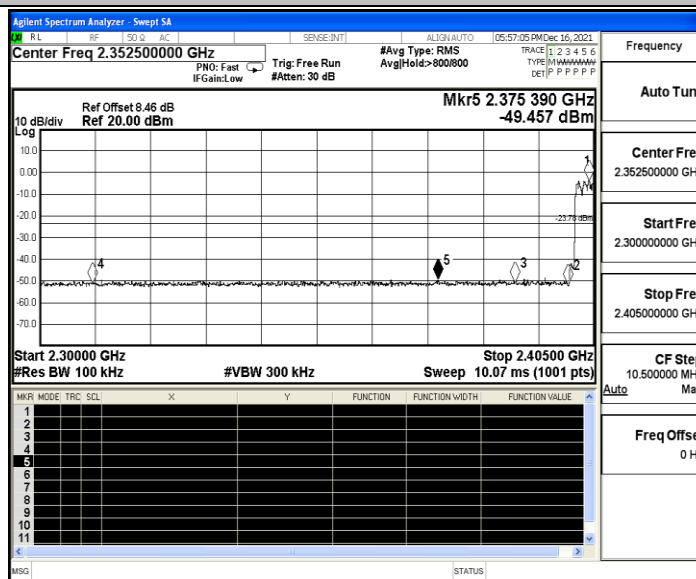


3DH5_Ant1_High_2480

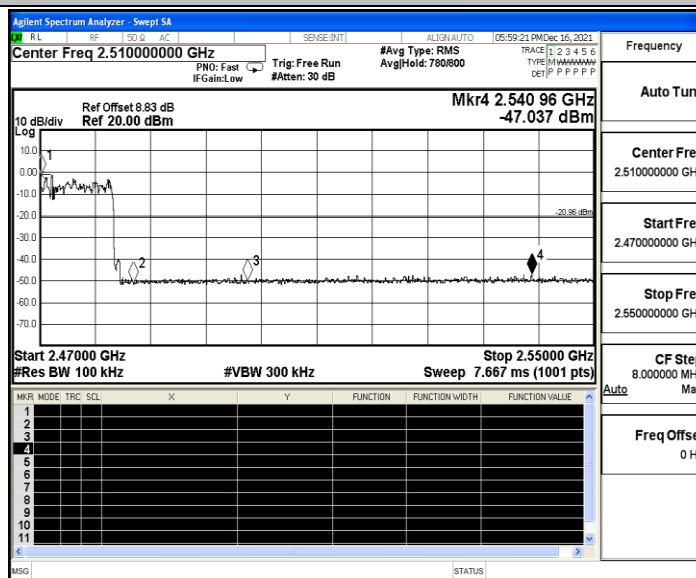




3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480





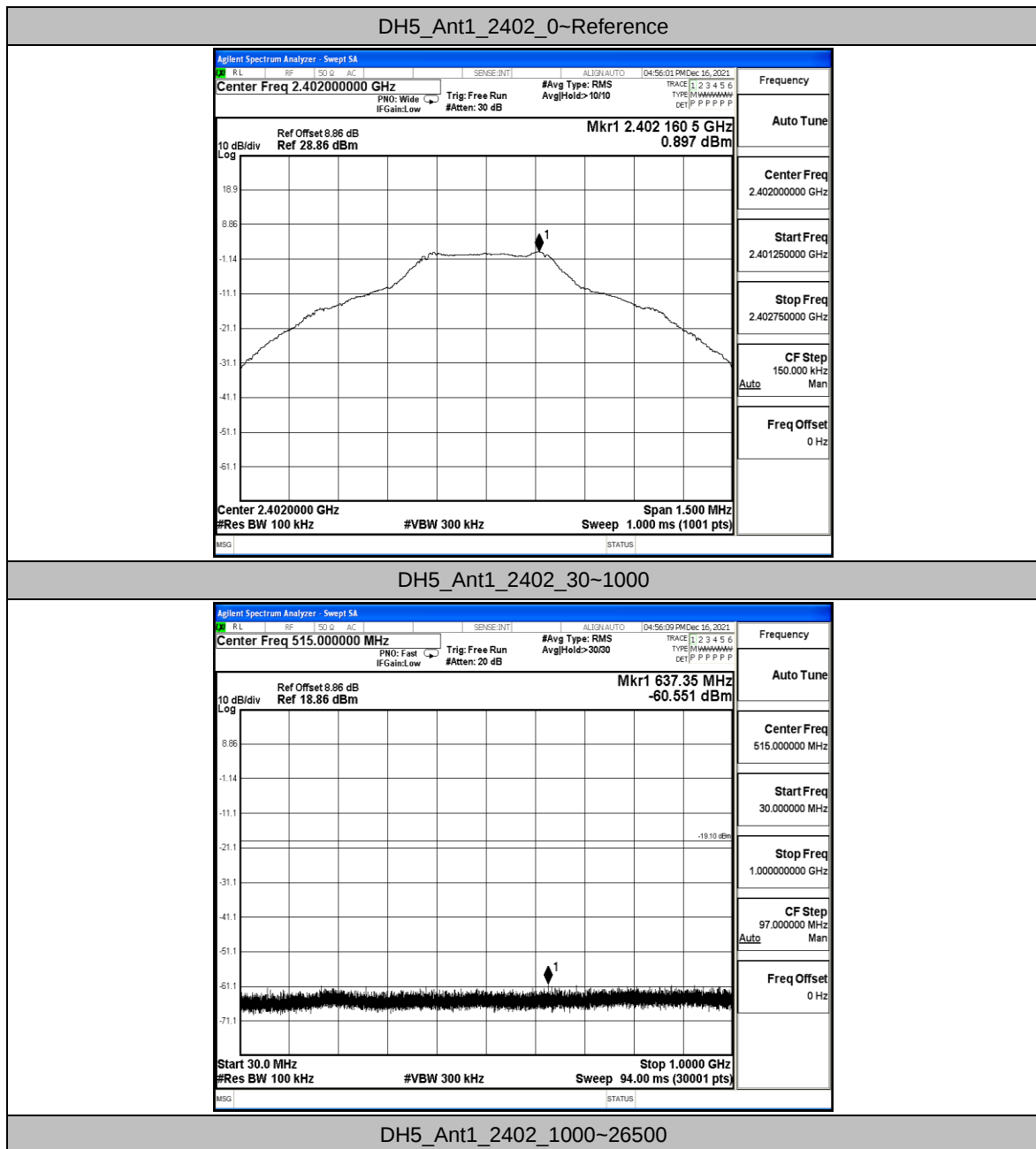
A.7 Conducted Spurious Emission

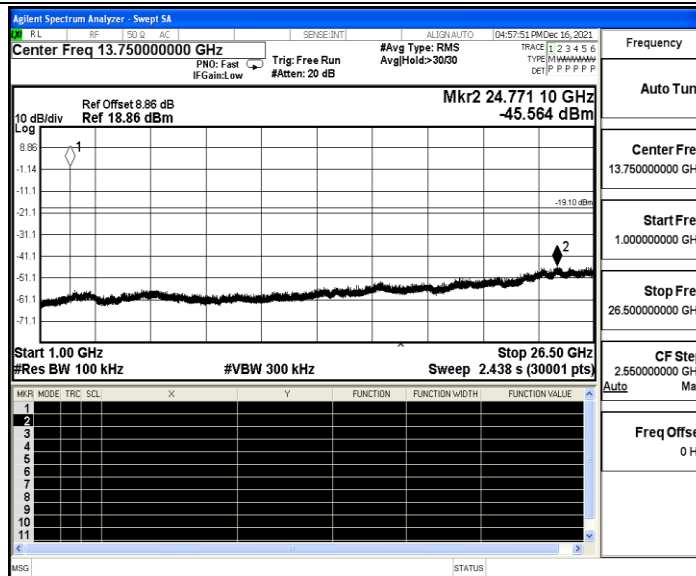
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	0.90	0.90	---	PASS
			30~1000	0.90	-60.55	≤ -19.1	PASS
			1000~26500	0.90	-45.56	≤ -19.1	PASS
		2441	Reference	2.23	2.23	---	PASS
			30~1000	2.23	-59.81	≤ -17.77	PASS
			1000~26500	2.23	-45.44	≤ -17.77	PASS
		2480	Reference	0.54	0.54	---	PASS
			30~1000	0.54	-60.04	≤ -19.46	PASS
			1000~26500	0.54	-45.1	≤ -19.46	PASS
2DH5	Ant1	2402	Reference	-0.68	-0.68	---	PASS
			30~1000	-0.68	-60.68	≤ -20.68	PASS
			1000~26500	-0.68	-46.04	≤ -20.68	PASS
		2441	Reference	0.54	0.54	---	PASS
			30~1000	0.54	-60.16	≤ -19.46	PASS
			1000~26500	0.54	-45.98	≤ -19.46	PASS
		2480	Reference	-1.24	-1.24	---	PASS
			30~1000	-1.24	-59.97	≤ -21.24	PASS
			1000~26500	-1.24	-45.51	≤ -21.24	PASS
3DH5	Ant1	2402	Reference	-0.60	-0.60	---	PASS
			30~1000	-0.60	-60.32	≤ -20.6	PASS
			1000~26500	-0.60	-45.5	≤ -20.6	PASS
		2441	Reference	0.60	0.60	---	PASS
			30~1000	0.60	-60.55	≤ -19.4	PASS
			1000~26500	0.60	-45.5	≤ -19.4	PASS
		2480	Reference	-0.93	-0.93	---	PASS
			30~1000	-0.93	-60.43	≤ -20.93	PASS
			1000~26500	-0.93	-45.69	≤ -20.93	PASS

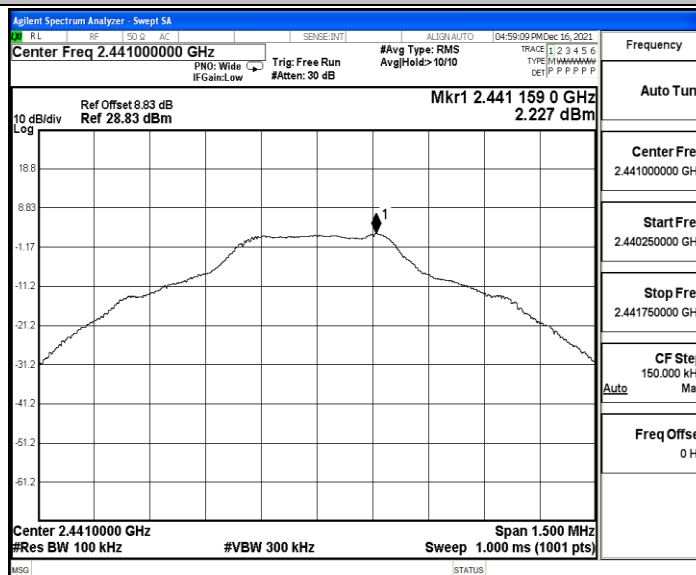


Test Graphs

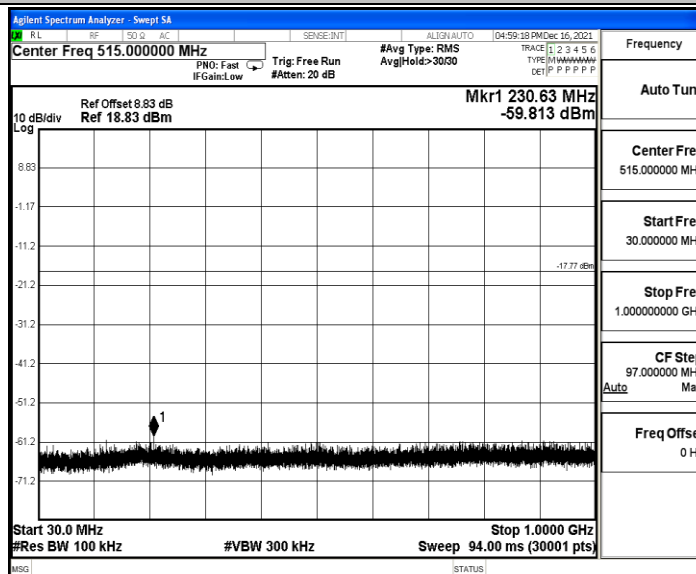




DH5_Ant1_2441_0~Reference

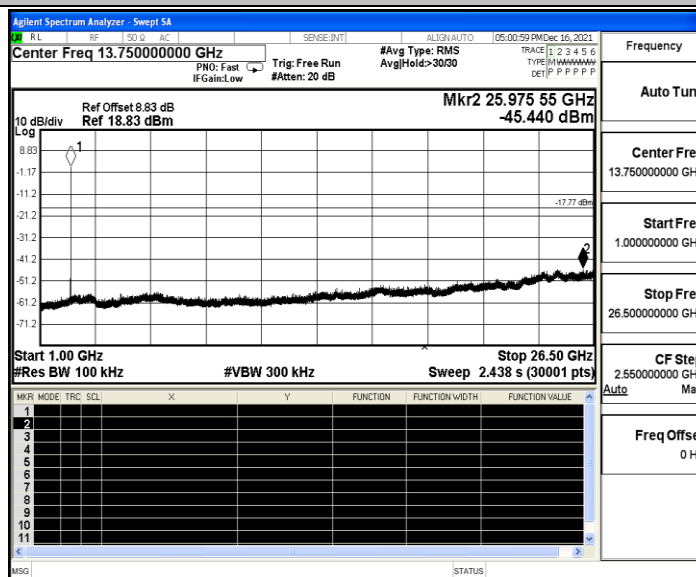


DH5_Ant1_2441_30~1000

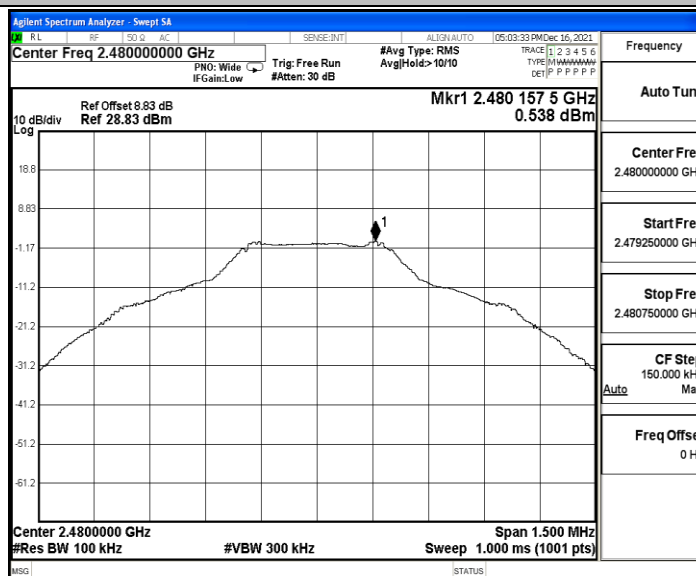




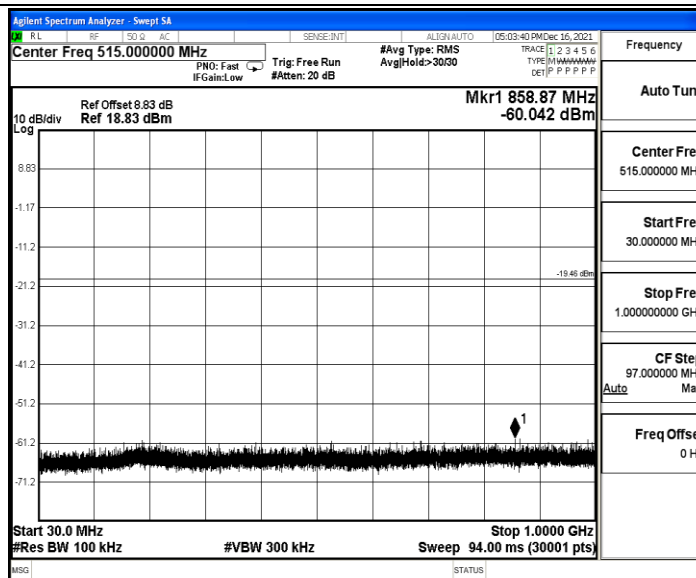
DH5_Ant1_2441_1000~26500



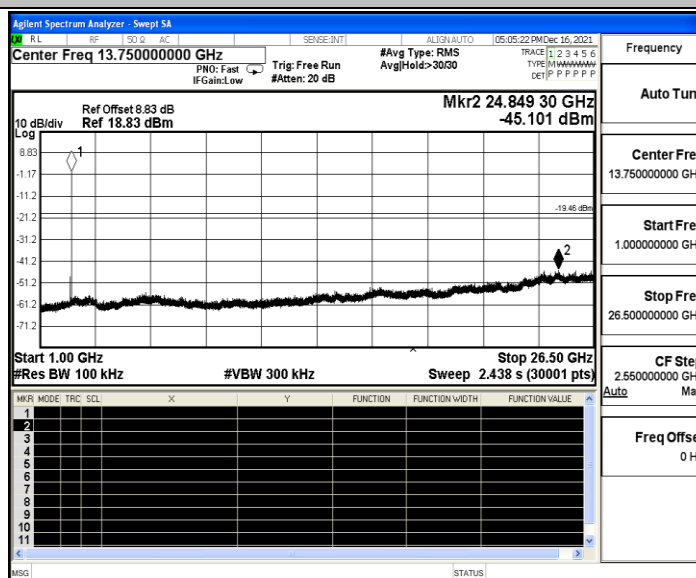
DH5_Ant1_2480_0~Reference



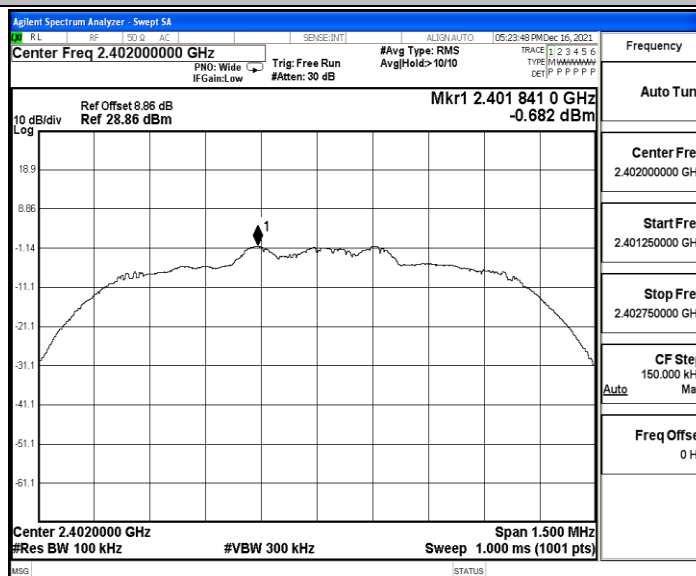
DH5_Ant1_2480_30~1000



DH5_Ant1_2480_1000~26500

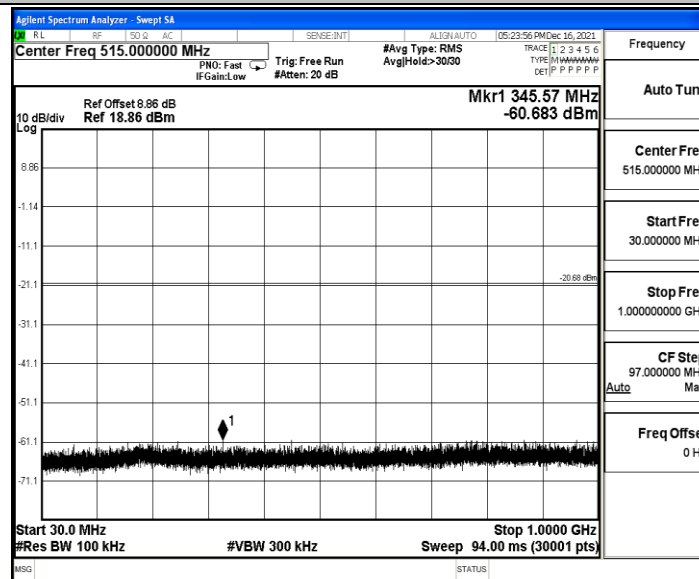


2DH5_Ant1_2402_0~Reference

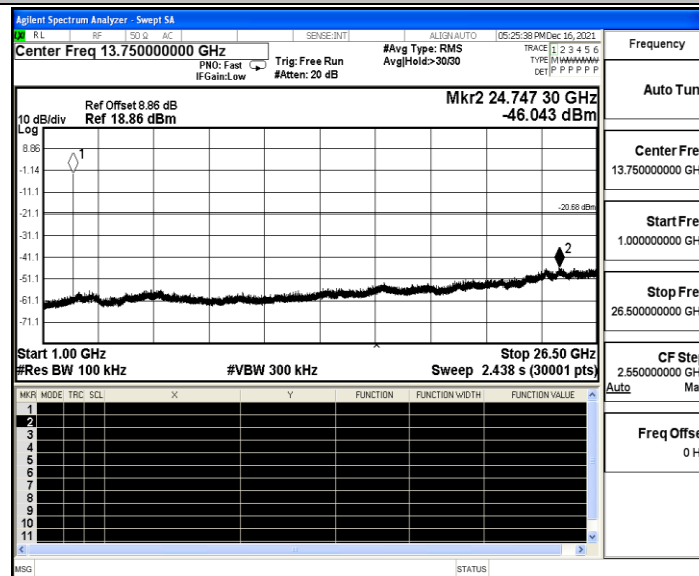




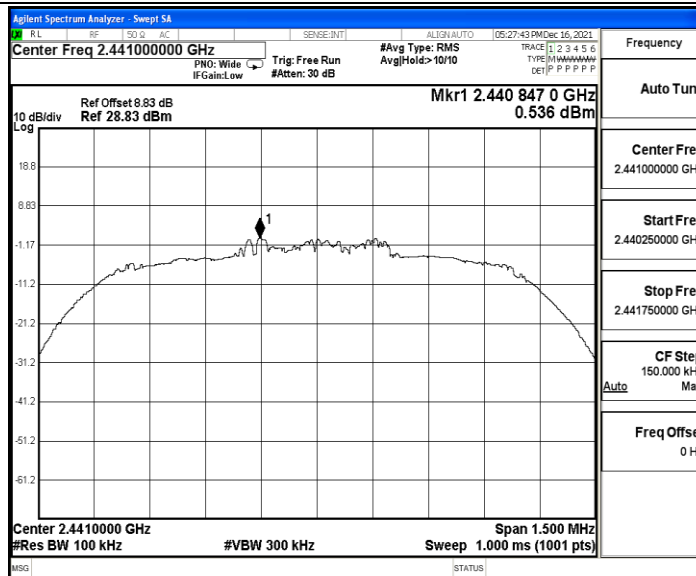
2DH5_Ant1_2402_30~1000



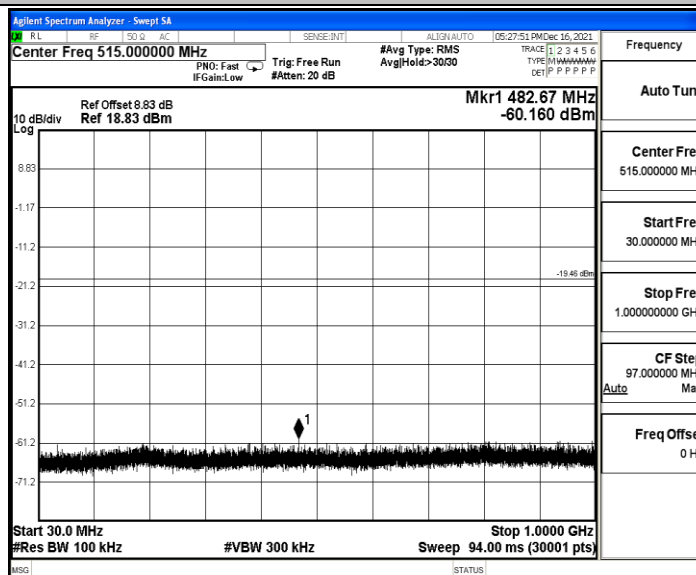
2DH5_Ant1_2402_1000~26500



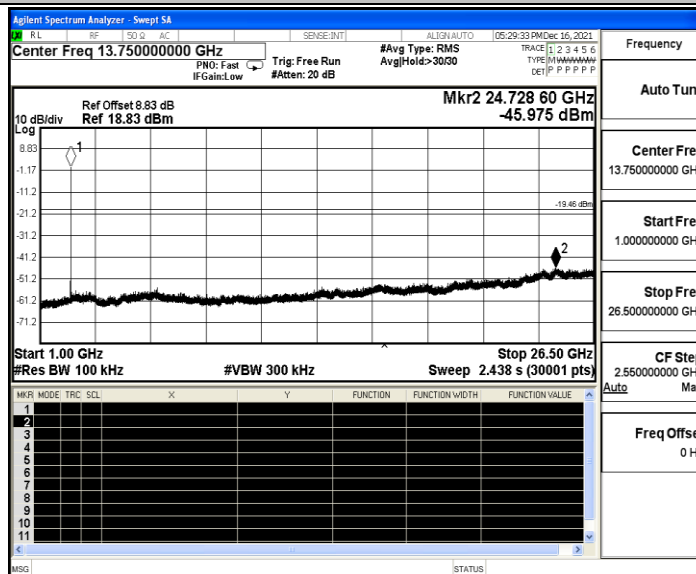
2DH5_Ant1_2441_0~Reference



2DH5_Ant1_2441_30~1000

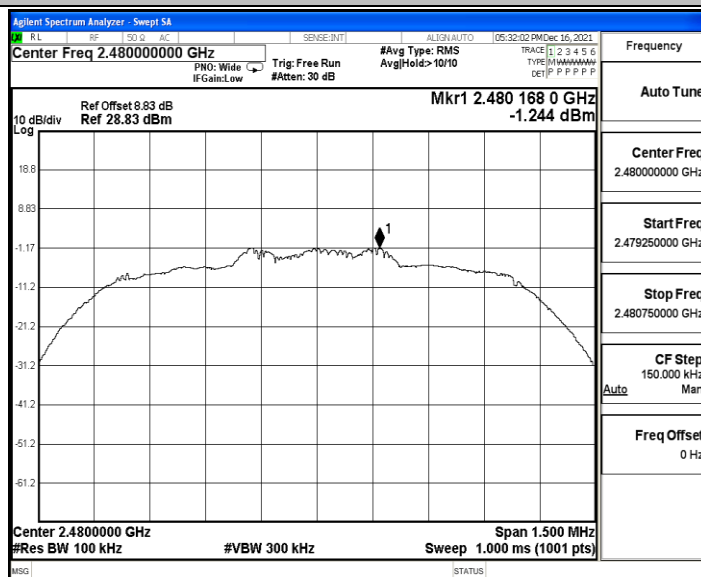


2DH5_Ant1_2441_1000~26500

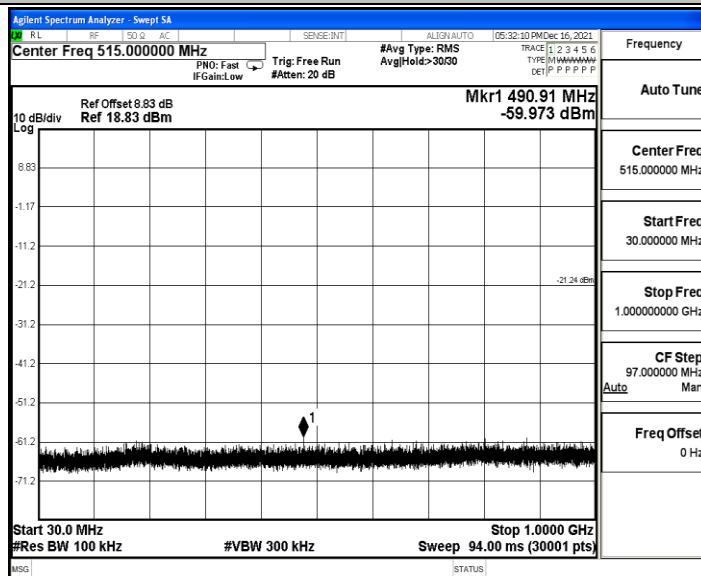




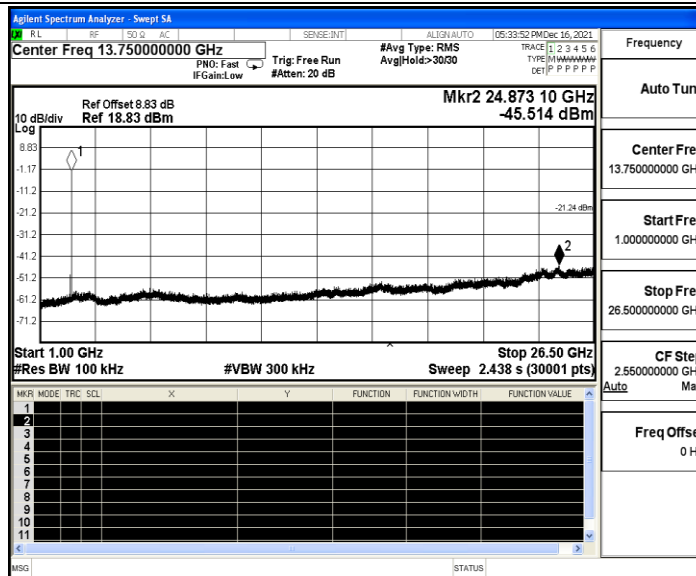
2DH5_Ant1_2480_0~Reference



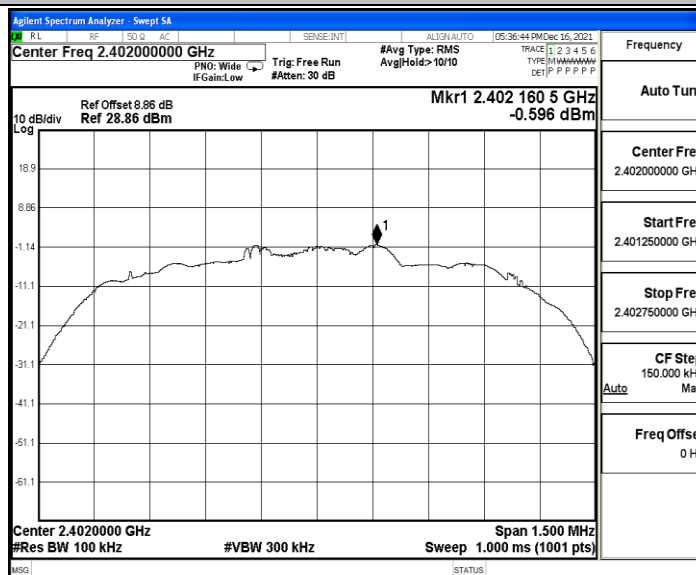
2DH5_Ant1_2480_30~1000



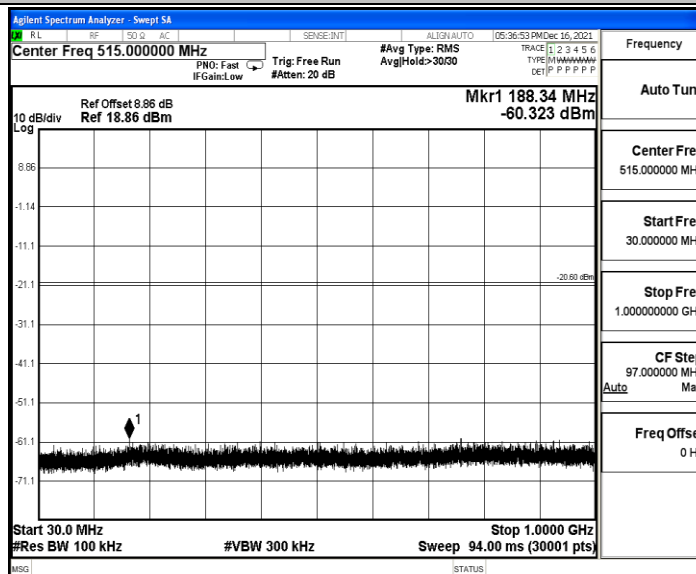
2DH5_Ant1_2480_1000~26500



3DH5_Ant1_2402_0~Reference

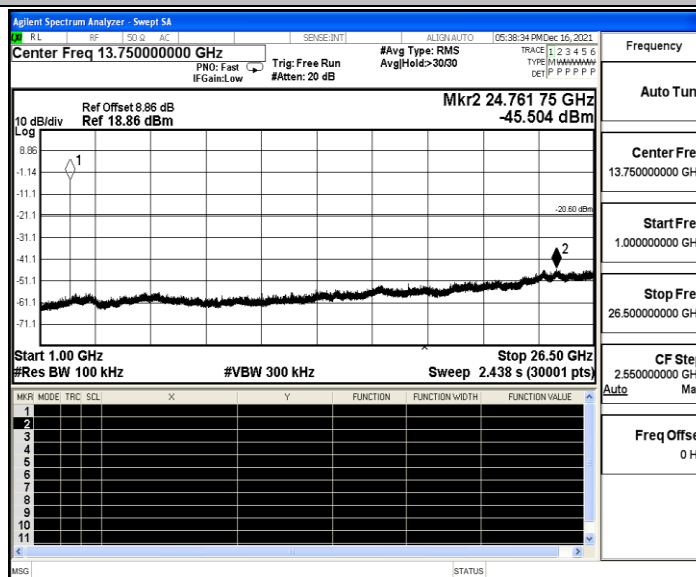


3DH5_Ant1_2402_30~1000

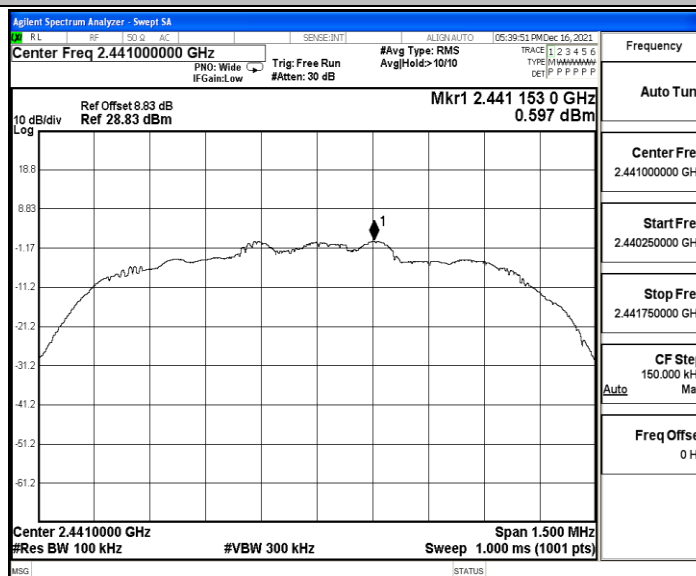




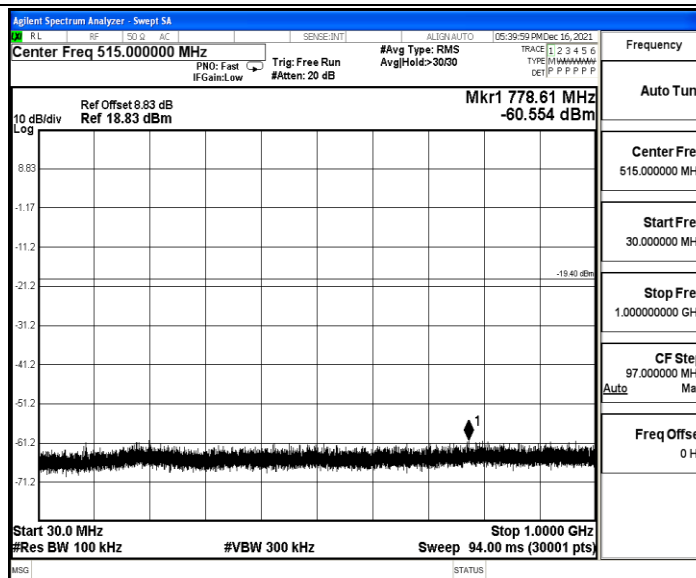
3DH5_Ant1_2402_1000~26500



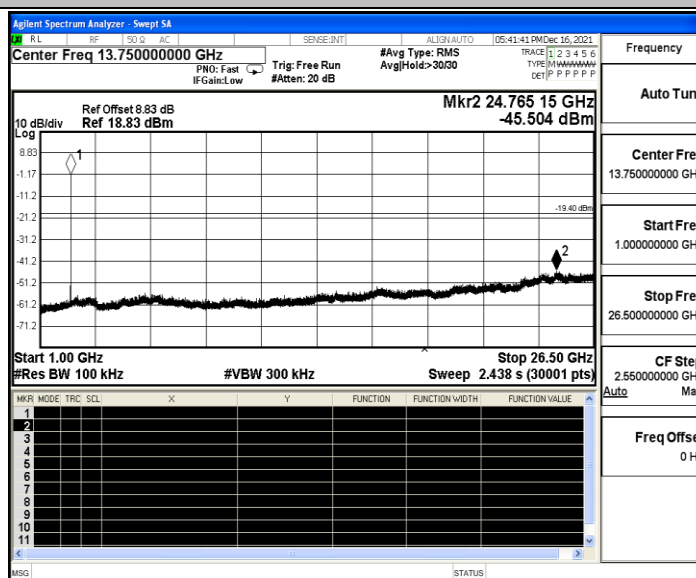
3DH5_Ant1_2441_0~Reference



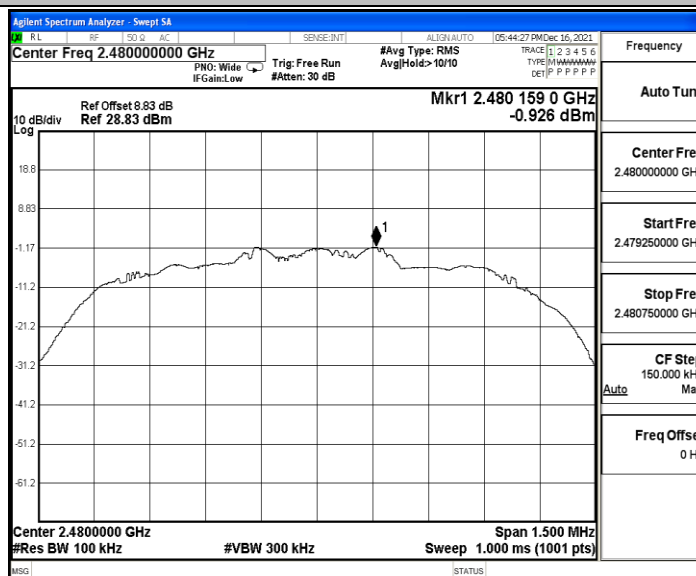
3DH5_Ant1_2441_30~1000



3DH5_Ant1_2441_1000~26500

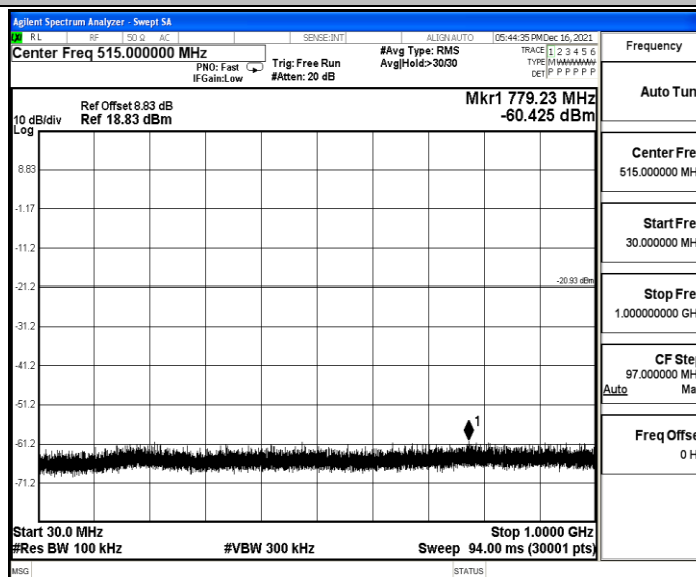


3DH5_Ant1_2480_0~Reference

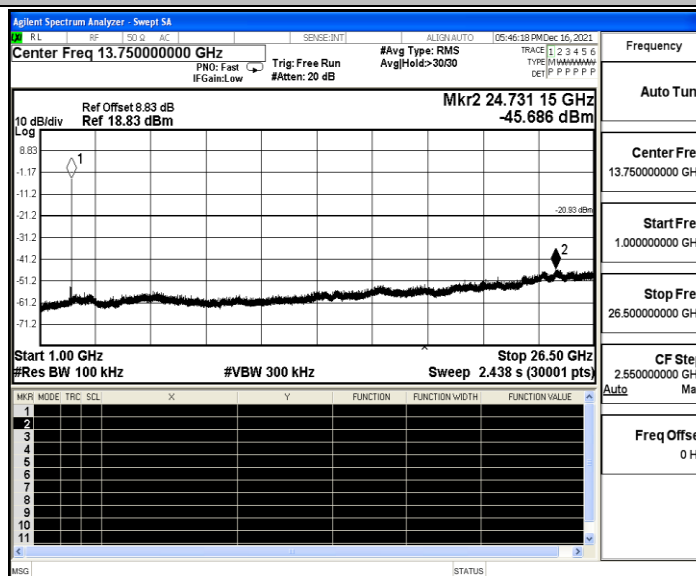




3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500





A.8 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-47.85	≤-41.20	47.35	≤54	PASS
				AV	2384.735	-47.41	≤-41.20	47.79	≤54	PASS
				AV	2390.000	-47.68	≤-41.20	47.52	≤54	PASS
				Peak	2310.000	-37.24	≤-21.20	57.96	≤74	PASS
				Peak	2388.410	-36.2	≤-21.20	59.00	≤74	PASS
				Peak	2390.000	-37	≤-21.20	58.20	≤74	PASS
		High	2480	AV	2483.500	-46.96	≤-41.20	48.24	≤54	PASS
				AV	2494.080	-46.89	≤-41.20	48.31	≤54	PASS
				AV	2500.000	-47.01	≤-41.20	48.19	≤54	PASS
				Peak	2483.500	-36.93	≤-21.20	58.27	≤74	PASS
				Peak	2492.960	-35.89	≤-21.20	59.31	≤74	PASS
				Peak	2500.000	-37.51	≤-21.20	57.69	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-38.55	≤-21.20	56.65	≤74	PASS
				Peak	2382.635	-37.03	≤-21.20	58.17	≤74	PASS
				Peak	2390.000	-38.85	≤-21.20	56.35	≤74	PASS
		High	Hop_2480	Peak	2483.500	-37.86	≤-21.20	57.34	≤74	PASS
				Peak	2489.680	-35.75	≤-21.20	59.45	≤74	PASS
				Peak	2500.000	-36.94	≤-21.20	58.26	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-47.87	≤-41.20	47.33	≤54	PASS
				AV	2384.840	-47.36	≤-41.20	47.84	≤54	PASS
				AV	2390.000	-47.68	≤-41.20	47.52	≤54	PASS
				Peak	2310.000	-39.03	≤-21.20	56.17	≤74	PASS
				Peak	2359.640	-36.23	≤-21.20	58.97	≤74	PASS
				Peak	2390.000	-37.56	≤-21.20	57.64	≤74	PASS
		High	2480	AV	2483.500	-46.97	≤-41.20	48.23	≤54	PASS
				AV	2493.680	-46.89	≤-41.20	48.31	≤54	PASS
				AV	2500.000	-47.03	≤-41.20	48.17	≤54	PASS
				Peak	2483.500	-38.15	≤-21.20	57.05	≤74	PASS
				Peak	2499.680	-35.92	≤-21.20	59.28	≤74	PASS
				Peak	2500.000	-37.62	≤-21.20	57.58	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-38.68	≤-21.20	56.52	≤74	PASS
				Peak	2384.525	-36.67	≤-21.20	58.53	≤74	PASS
				Peak	2390.000	-38.23	≤-21.20	56.97	≤74	PASS
		High	Hop_2480	Peak	2483.500	-37.11	≤-21.20	58.09	≤74	PASS
				Peak	2498.880	-35.92	≤-21.20	59.28	≤74	PASS
				Peak	2500.000	-38.38	≤-21.20	56.82	≤74	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-47.91	≤-41.20	47.29	≤54	PASS



				AV	2386.940	-47.47	≤-41.20	47.73	≤54	PASS
				AV	2390.000	-47.52	≤-41.20	47.68	≤54	PASS
				Peak	2310.000	-39.05	≤-21.20	56.15	≤74	PASS
				Peak	2324.255	-35.88	≤-21.20	59.32	≤74	PASS
				Peak	2390.000	-37.92	≤-21.20	57.28	≤74	PASS
		High	2480	AV	2483.500	-46.96	≤-41.20	48.24	≤54	PASS
				AV	2497.760	-46.87	≤-41.20	48.33	≤54	PASS
				AV	2500.000	-46.99	≤-41.20	48.21	≤54	PASS
				Peak	2483.500	-38.05	≤-21.20	57.15	≤74	PASS
				Peak	2496.560	-35.22	≤-21.20	59.98	≤74	PASS
				Peak	2500.000	-37.58	≤-21.20	57.62	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-38.91	≤-21.20	56.29	≤74	PASS
				Peak	2387.675	-36.3	≤-21.20	58.90	≤74	PASS
				Peak	2390.000	-37.81	≤-21.20	57.39	≤74	PASS
		High	Hop_2480	Peak	2483.500	-37.85	≤-21.20	57.35	≤74	PASS
				Peak	2499.440	-35.9	≤-21.20	59.30	≤74	PASS
				Peak	2500.000	-37.86	≤-21.20	57.34	≤74	PASS

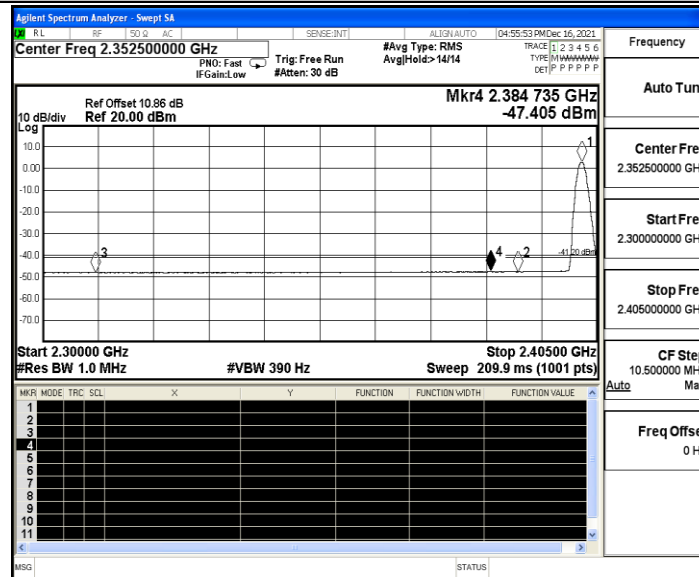
Note:

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.

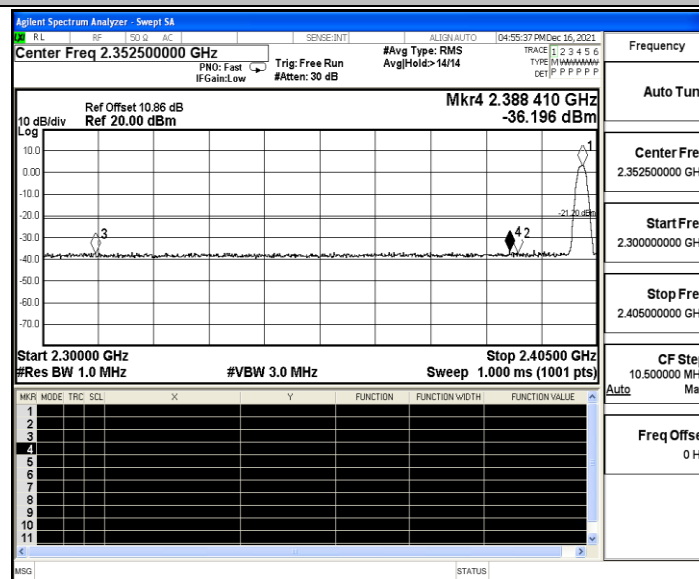


Test Graphs

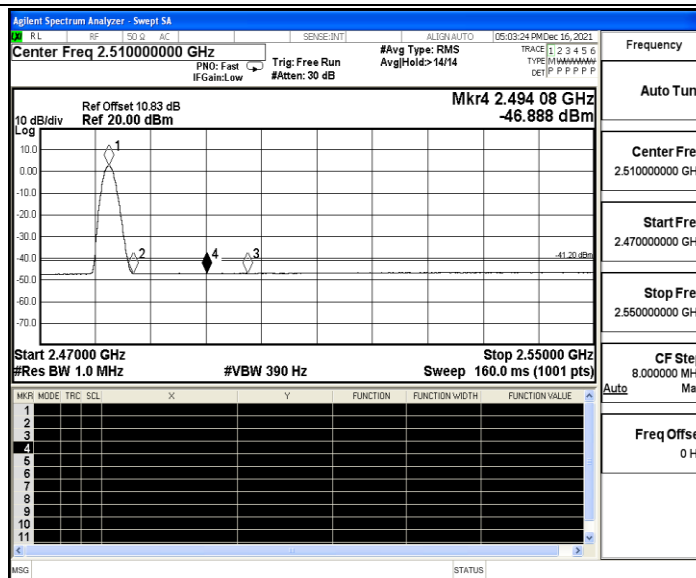
DH5_Ant1_Low_2402_AV



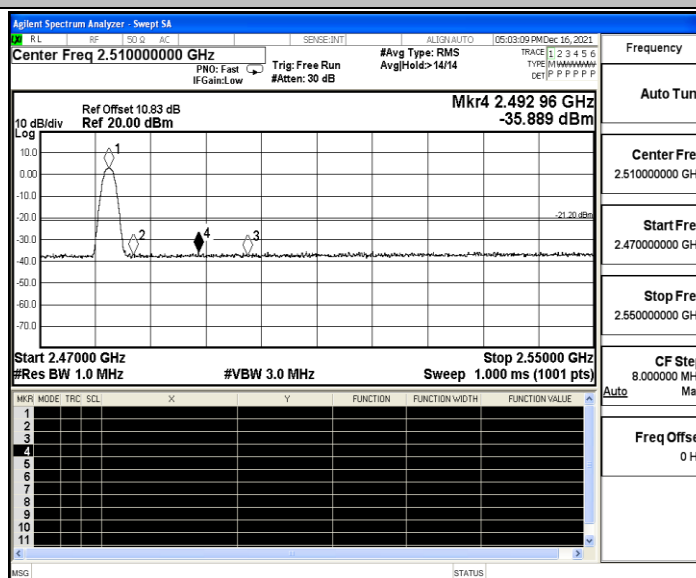
DH5_Ant1_Low_2402_Peak



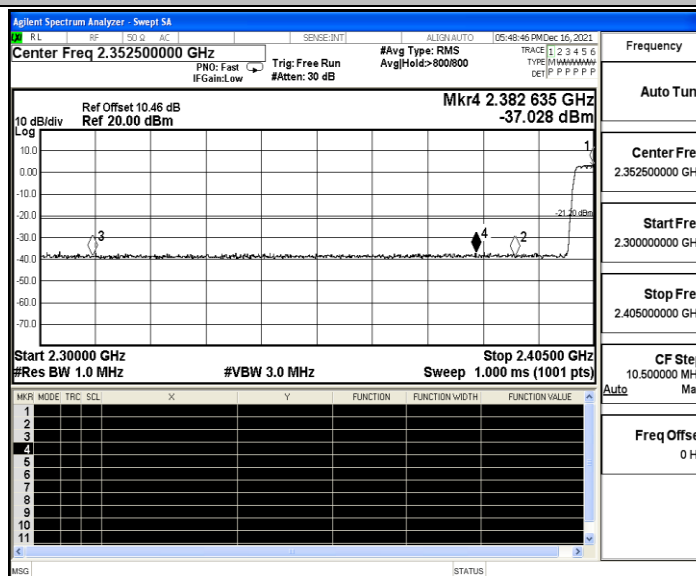
DH5_Ant1_High_2480_AV



DH5_Ant1_High_2480_Peak

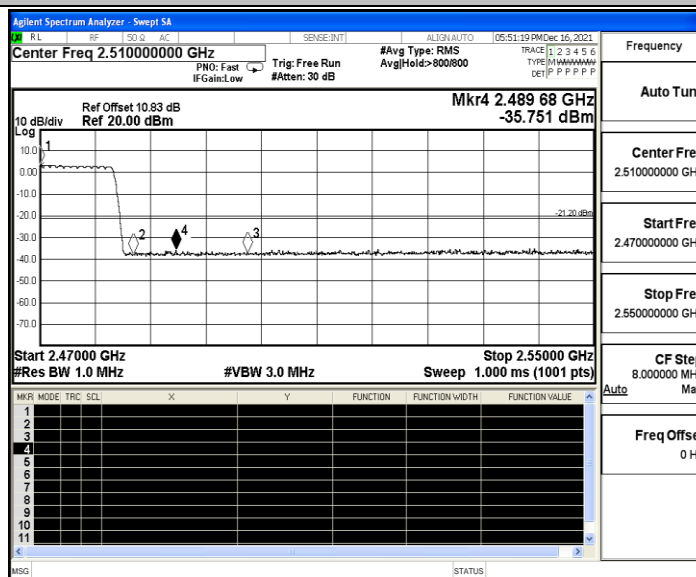


DH5_Ant1_Low_Hop_2402_Peak

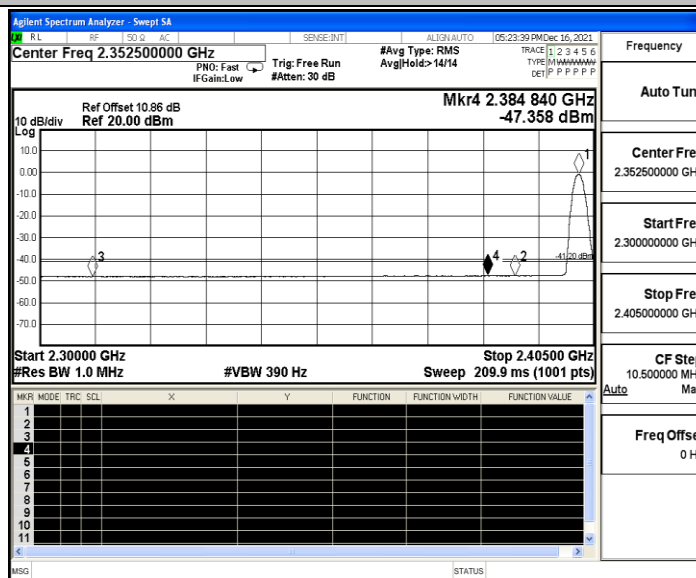




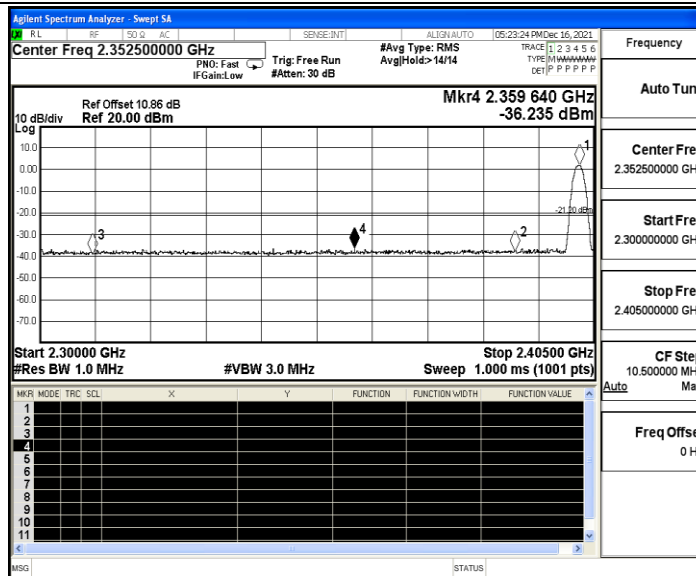
DH5_Ant1_High_Hop_2480_Peak



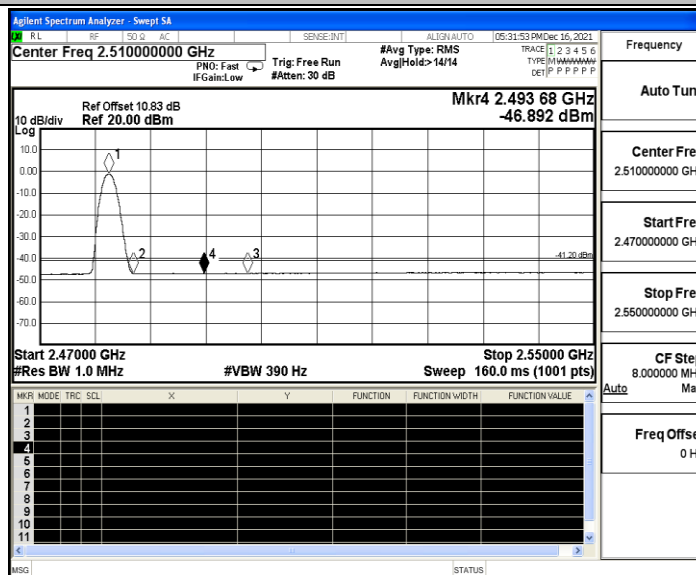
2DH5_Ant1_Low_2402_AV



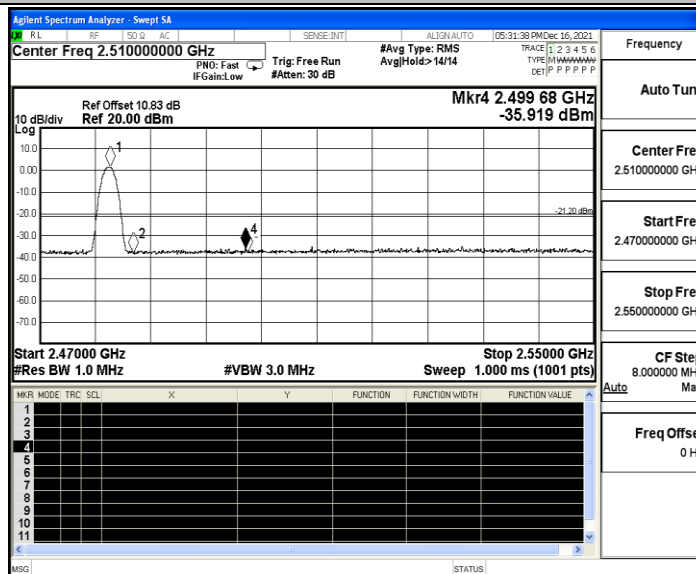
2DH5_Ant1_Low_2402_Peak



2DH5_Ant1_High_2480_AV



2DH5_Ant1_High_2480_Peak



[illegible]

Agilent Spectrum Analyzer - Sweep SA

RL RF SO G AC SENSE: INT ALIGN: AUTO 05:56:35 PM Dec 16, 2021

Center Freq 2.510000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB #Avg Type: RMS Avg/Hold: >800/800 TRACE [1] 2 3 4 5 6 TYPE [1] W W W W W W W W DET [1] P P P P P P

Ref Offset 10.83 dB Mkr 2.498 88 GHz
Ref 20.00 dBm -35.916 dBm

10 dB/div
Log

Start 2.47000 GHz
#Res BW 1.0 MHz

Stop 2.55000 GHz
Sweep 1.000 ms (1001 pts)

#VBW 3.0 MHz

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

MISC STATUS

Frequency Auto Tune

Center Freq 2.510000000 GHz

Start Freq 2.470000000 GHz

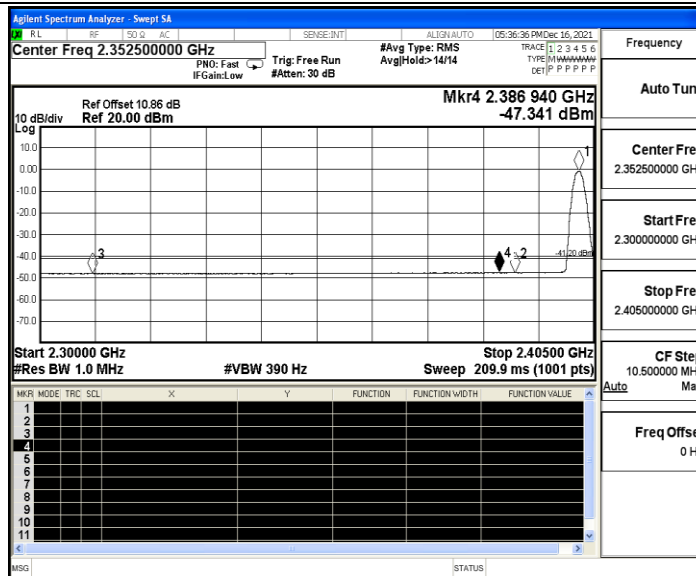
Stop Freq 2.550000000 GHz

CF Stop 8.0000000 MHz

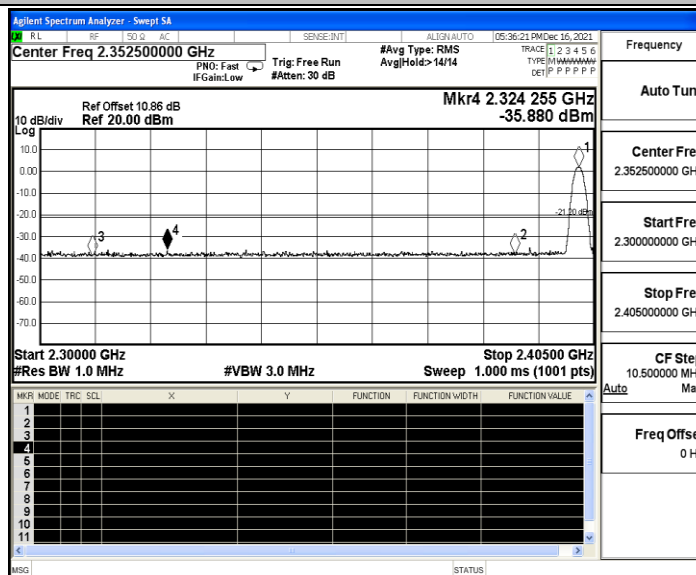
Auto

Freq Offset 0 Hz

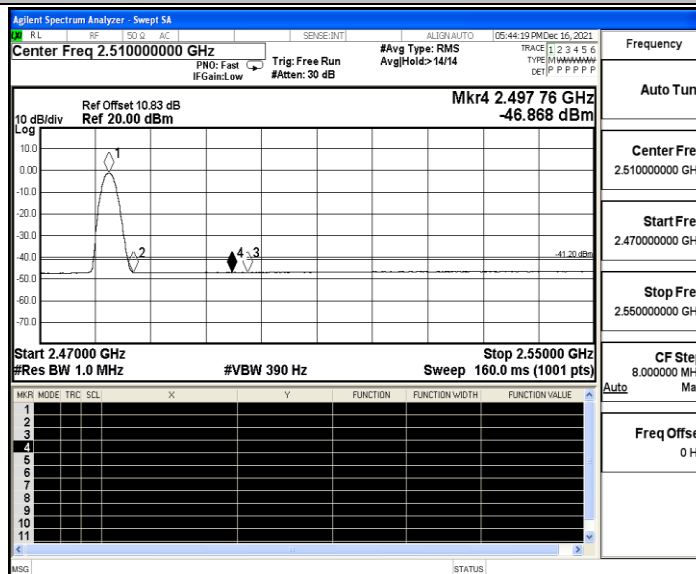
41 / 44



3DH5_Ant1_Low_2402_Peak

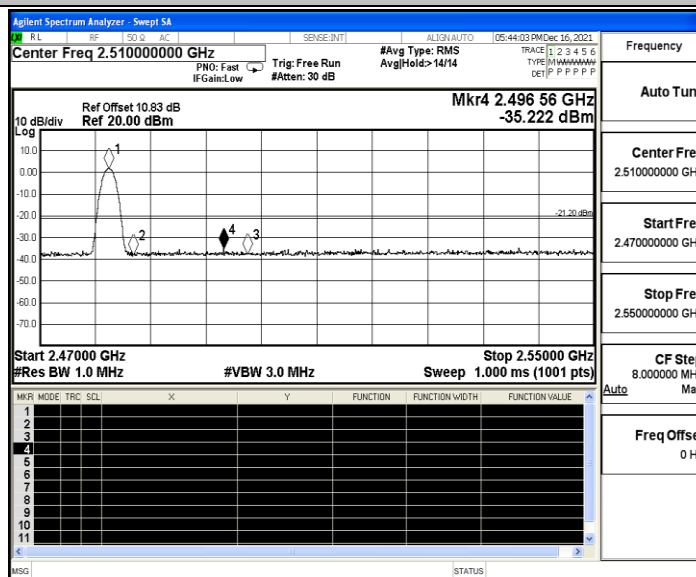


3DH5_Ant1_High_2480_AV

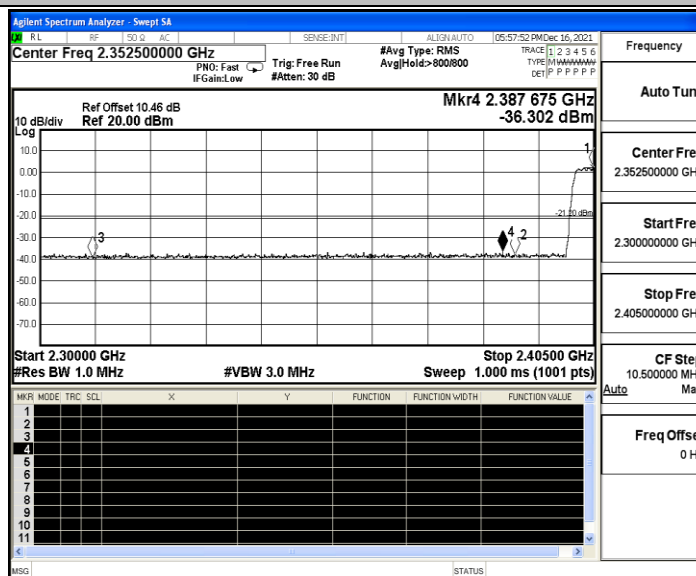




3DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_Hop_2402_Peak



3DH5_Ant1_High_Hop_2480_Peak

