



Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Aroma diffuser (dual mode with bluetooth speaker)

Test Model: SAD-10010

Environmental Conditions

Temperature:	23.7° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Monkey Li
Supervised by:	Li huan

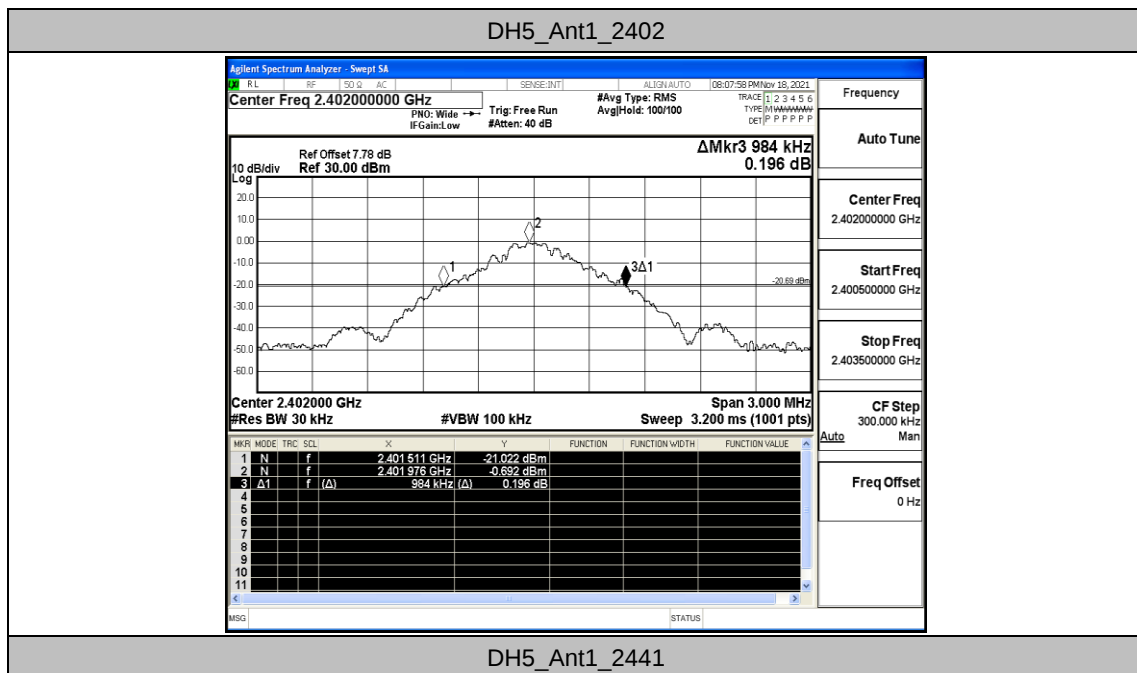


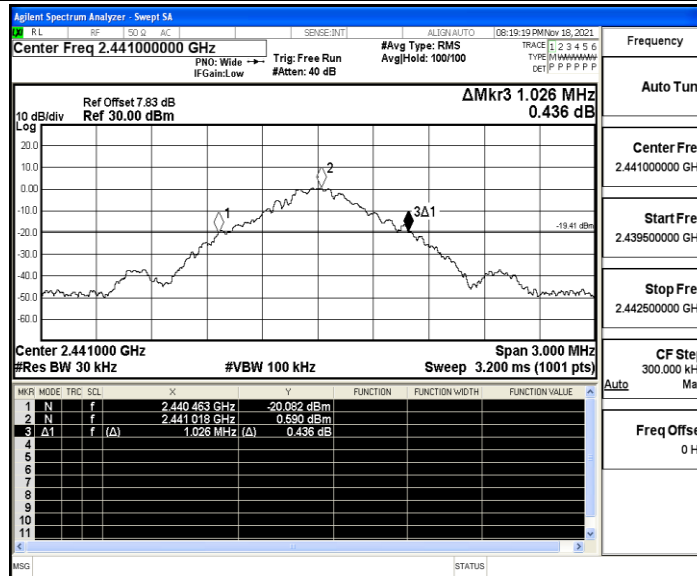
A.1 20dB Emission Bandwidth

Test Result

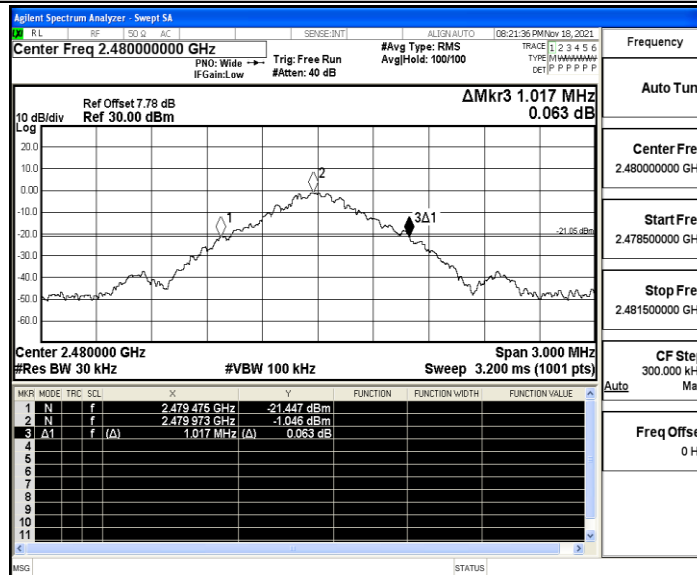
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.984	2401.511	2402.495	---	PASS
		2441	1.026	2440.463	2441.489	---	PASS
		2480	1.017	2479.475	2480.492	---	PASS
2DH5	Ant1	2402	1.332	2401.331	2402.663	---	PASS
		2441	1.320	2440.337	2441.657	---	PASS
		2480	1.338	2479.328	2480.666	---	PASS
3DH5	Ant1	2402	1.296	2401.349	2402.645	---	PASS
		2441	1.290	2440.352	2441.642	---	PASS
		2480	1.320	2479.340	2480.660	---	PASS

Test Graphs

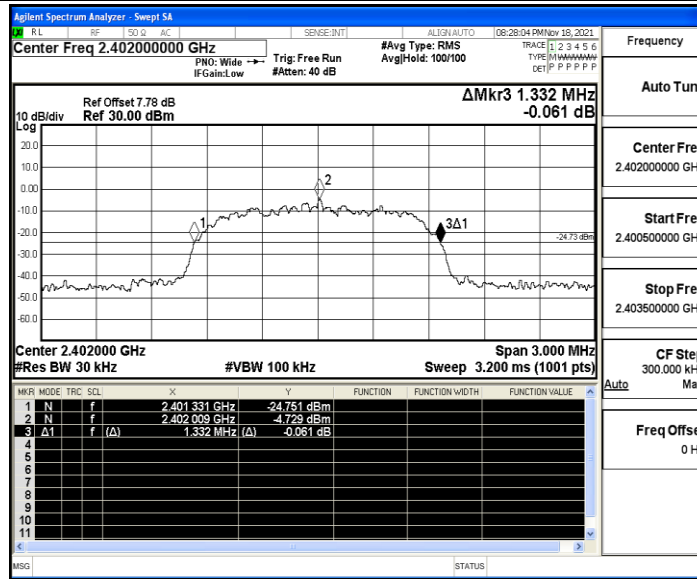




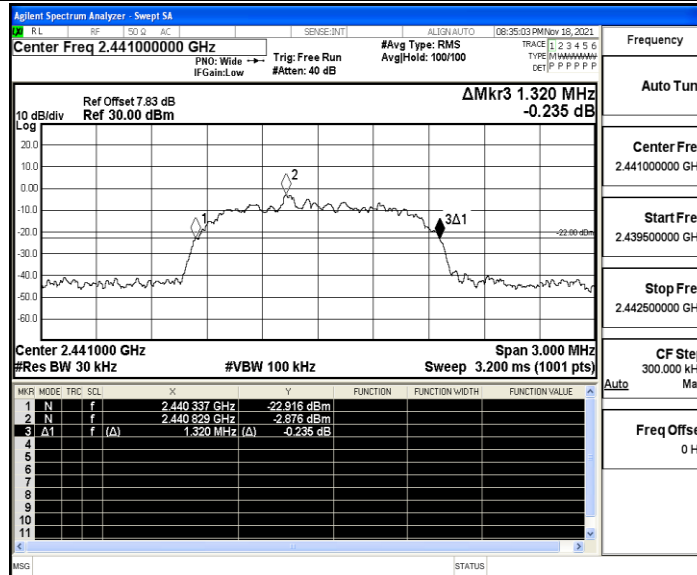
DH5_Ant1_2480



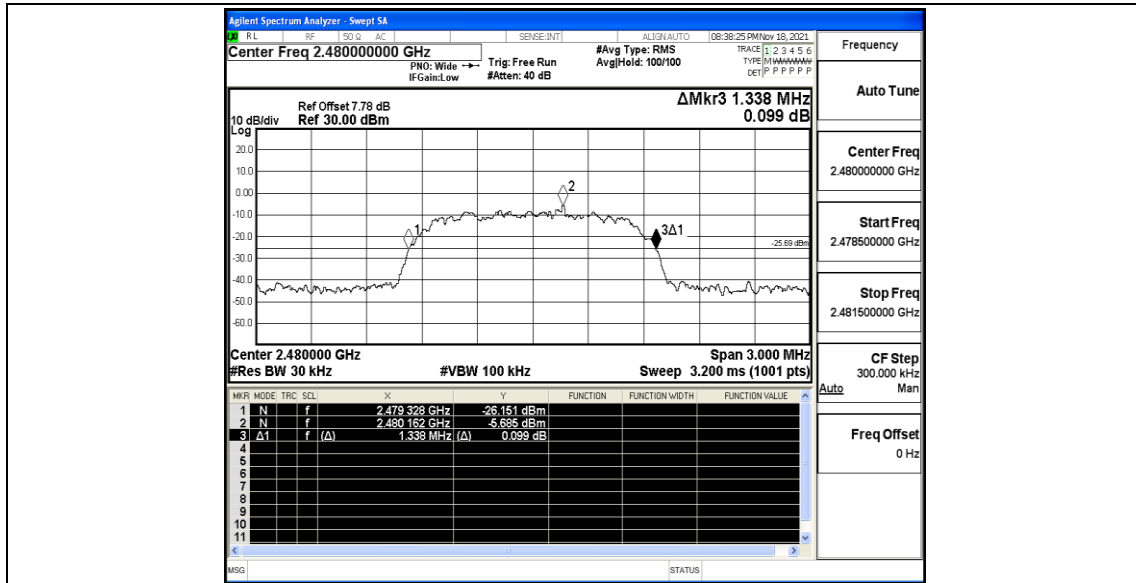
2DH5_Ant1_2402



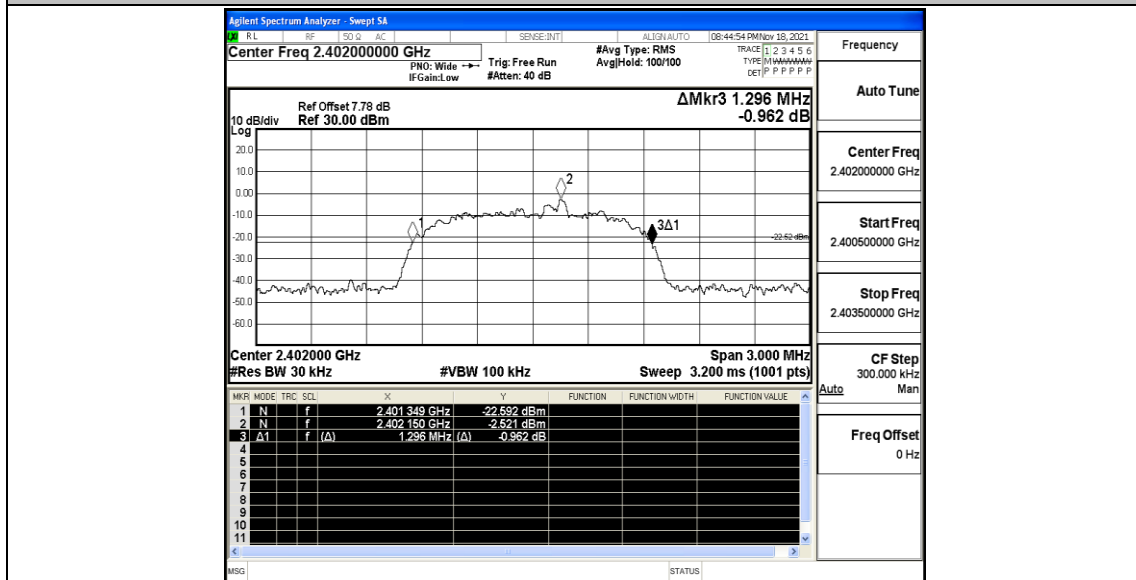
2DH5_Ant1_2441



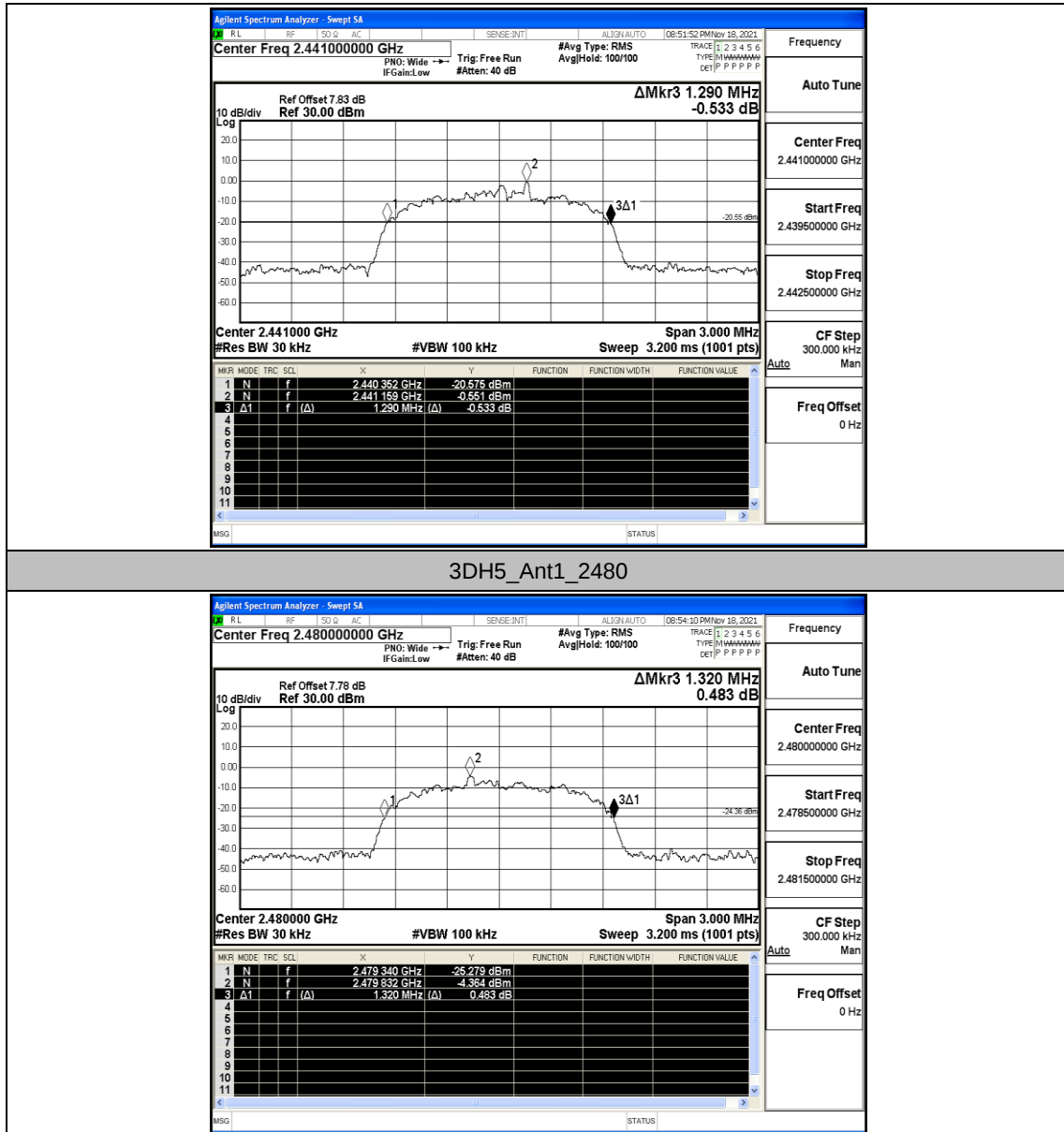
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



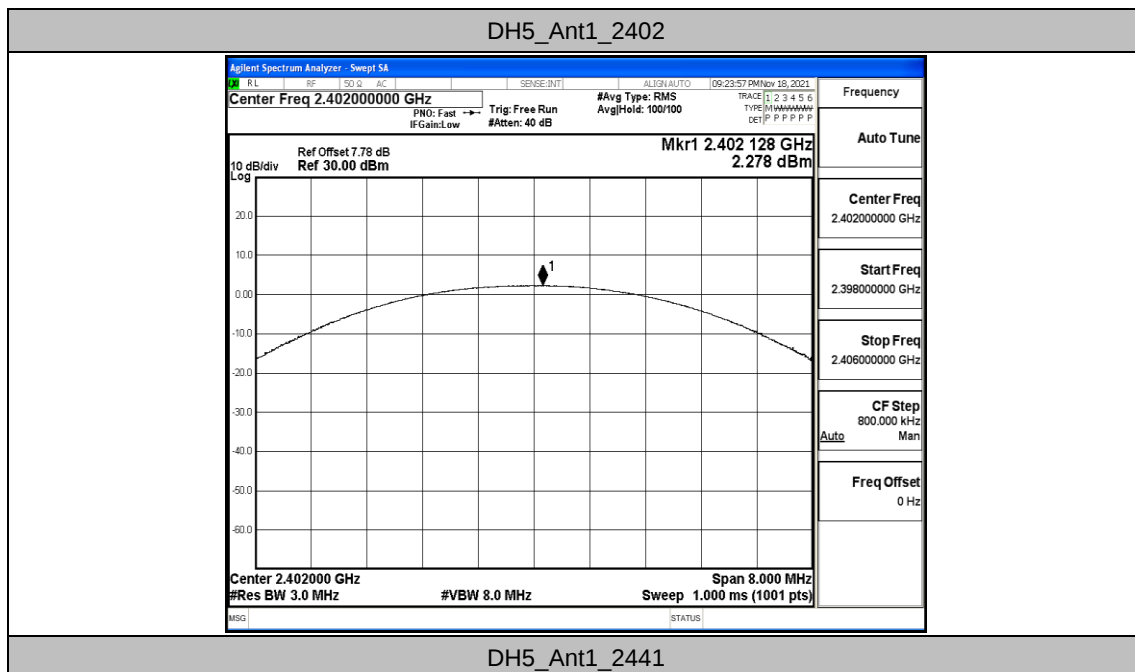


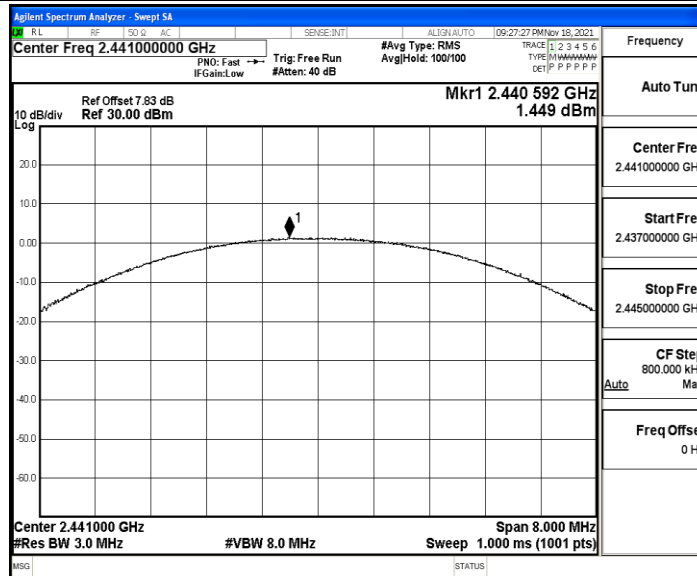
A.2 Maximum conducted output power

Test Result

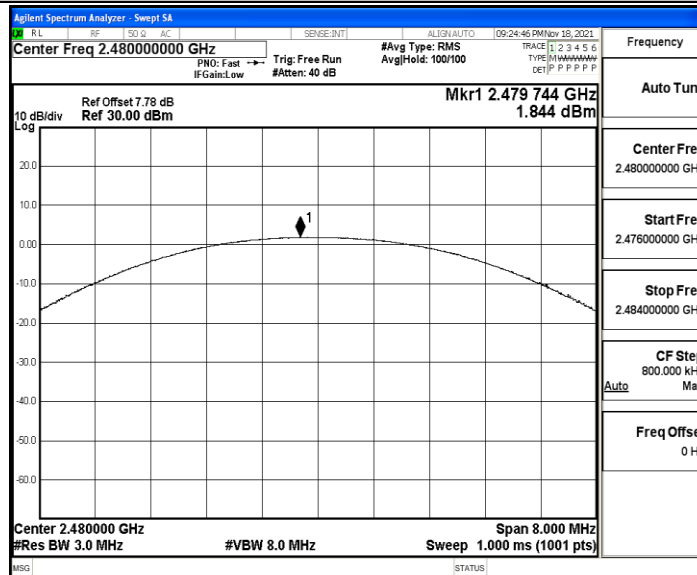
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	2.28	≤20.97	PASS
		2441	1.45	≤20.97	PASS
		2480	1.84	≤20.97	PASS
2DH5	Ant1	2402	1.46	≤20.97	PASS
		2441	2.36	≤20.97	PASS
		2480	0.91	≤20.97	PASS
3DH5	Ant1	2402	1.62	≤20.97	PASS
		2441	2.65	≤20.97	PASS
		2480	1.15	≤20.97	PASS

Test Graphs

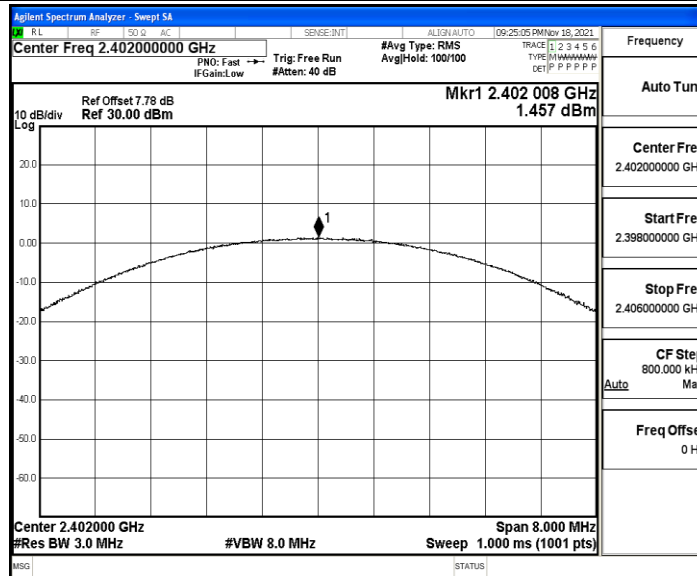




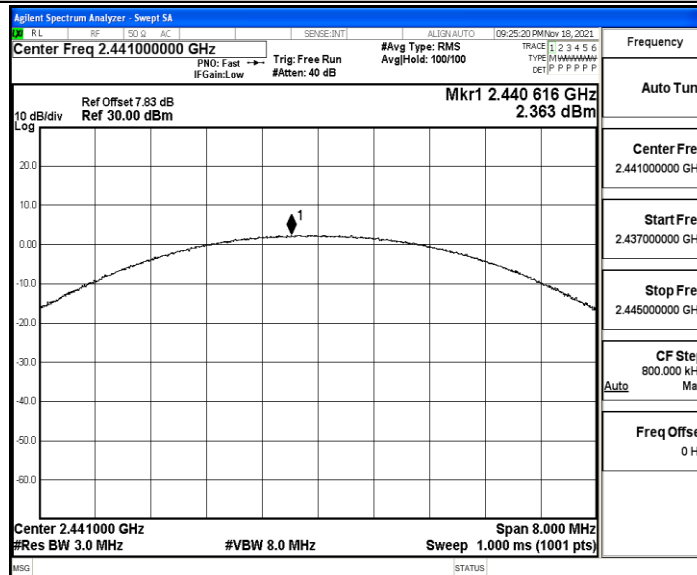
DH5_Ant1_2480



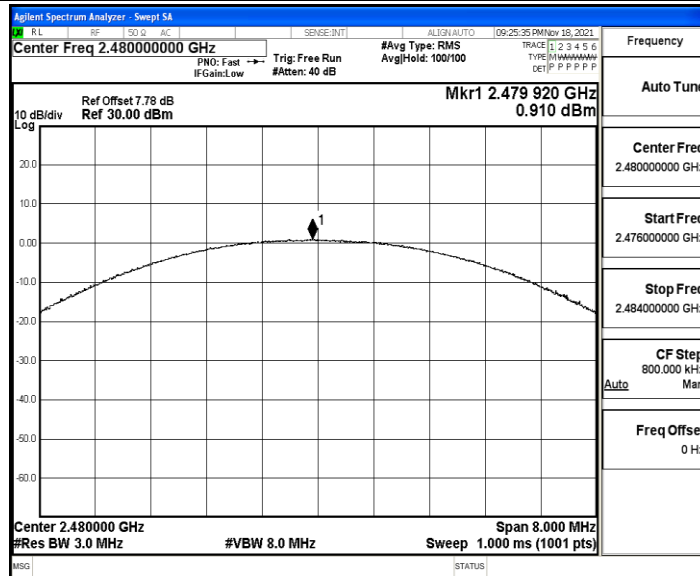
2DH5_Ant1_2402



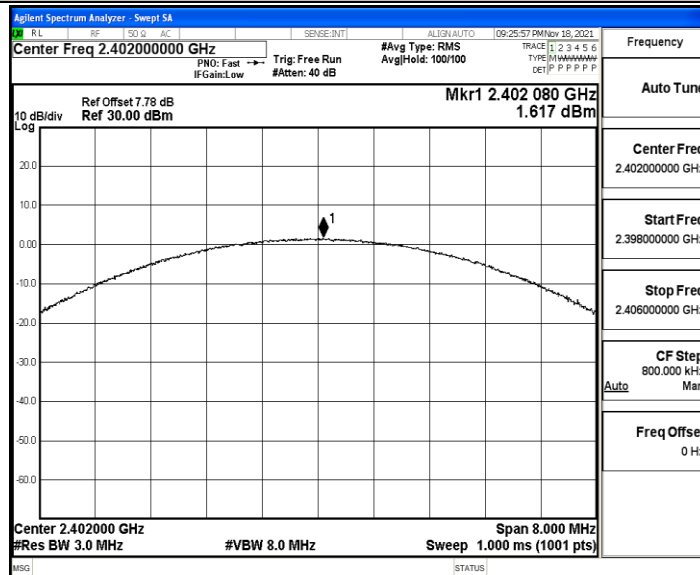
2DH5_Ant1_2441



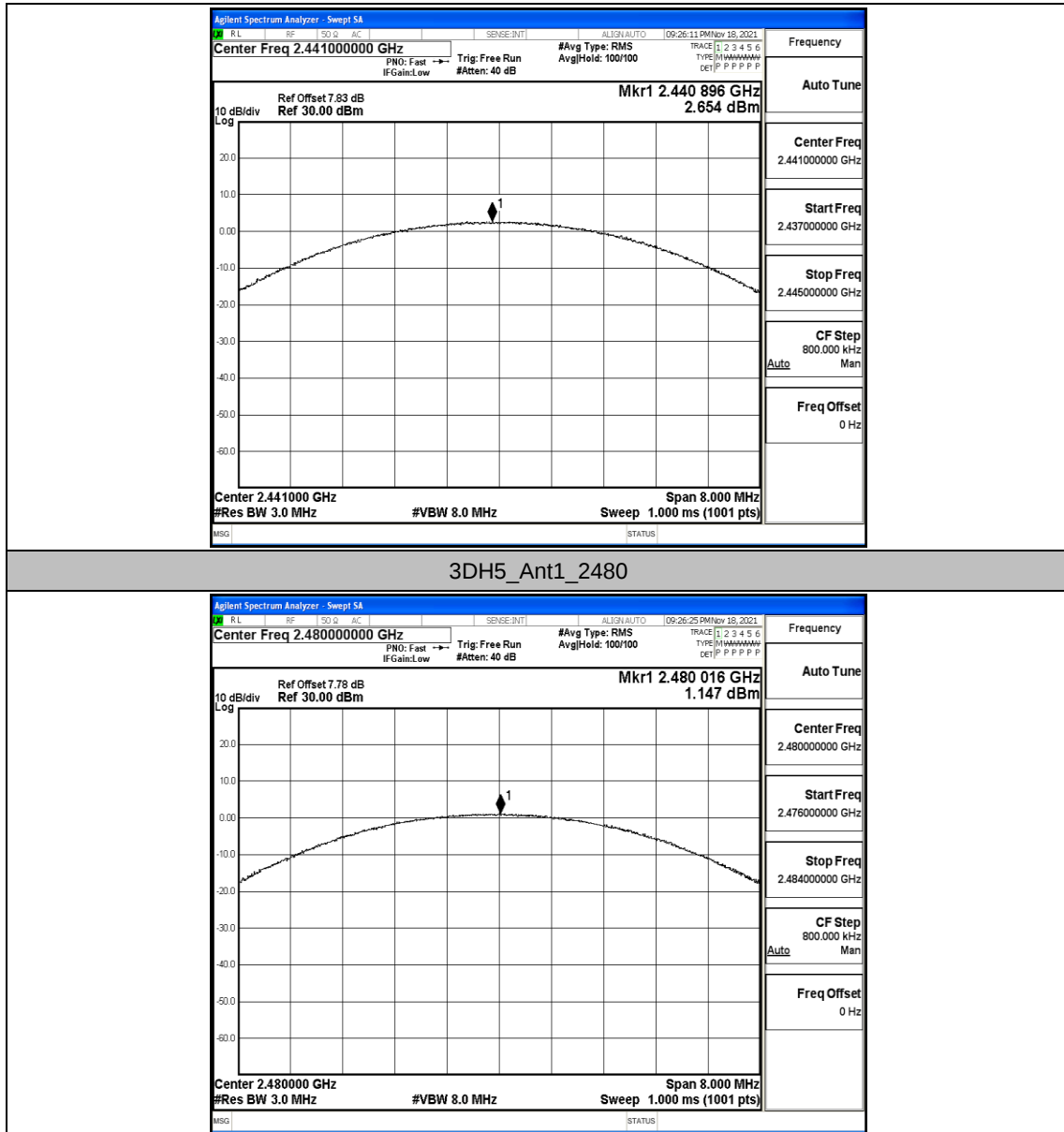
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



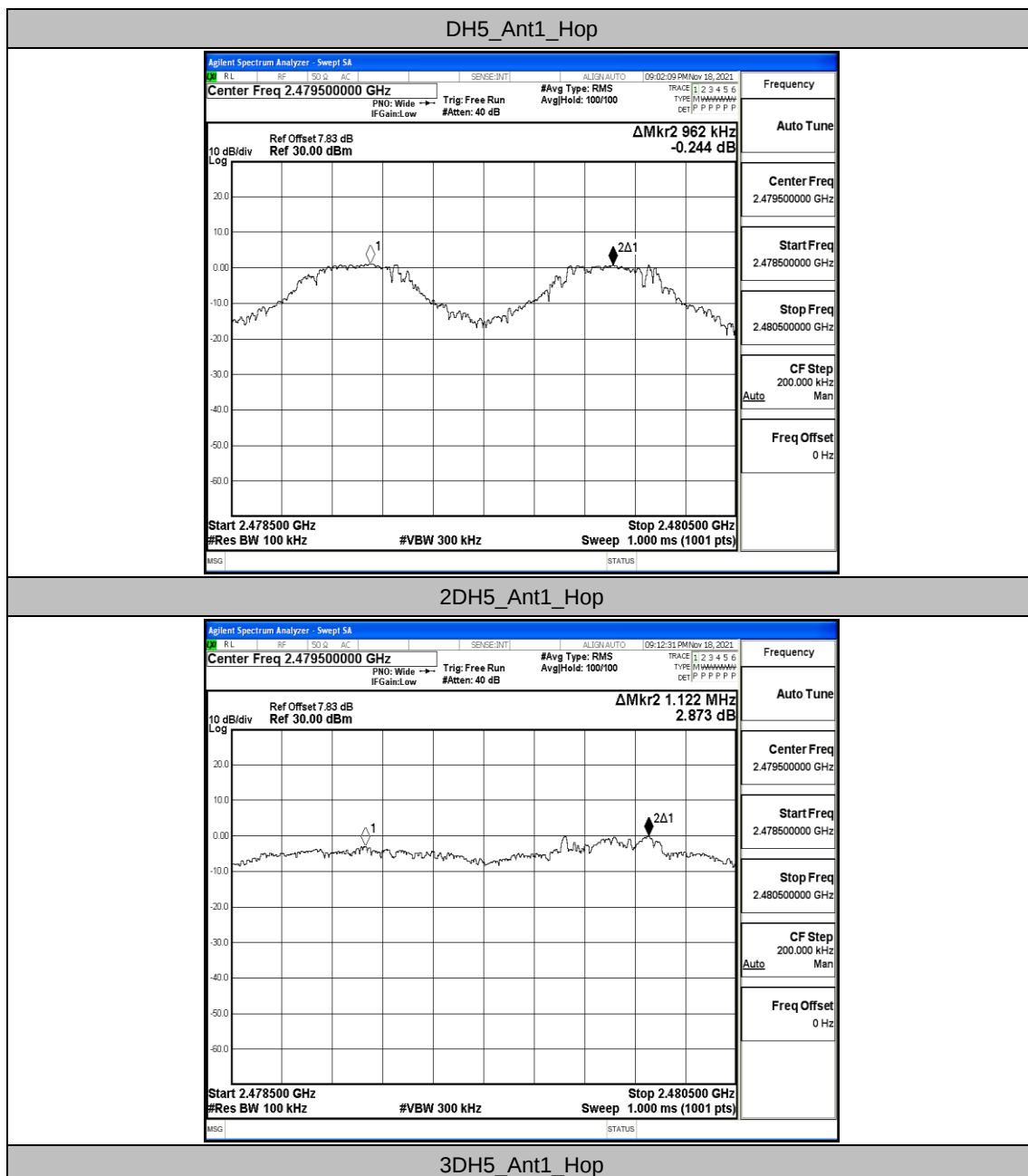


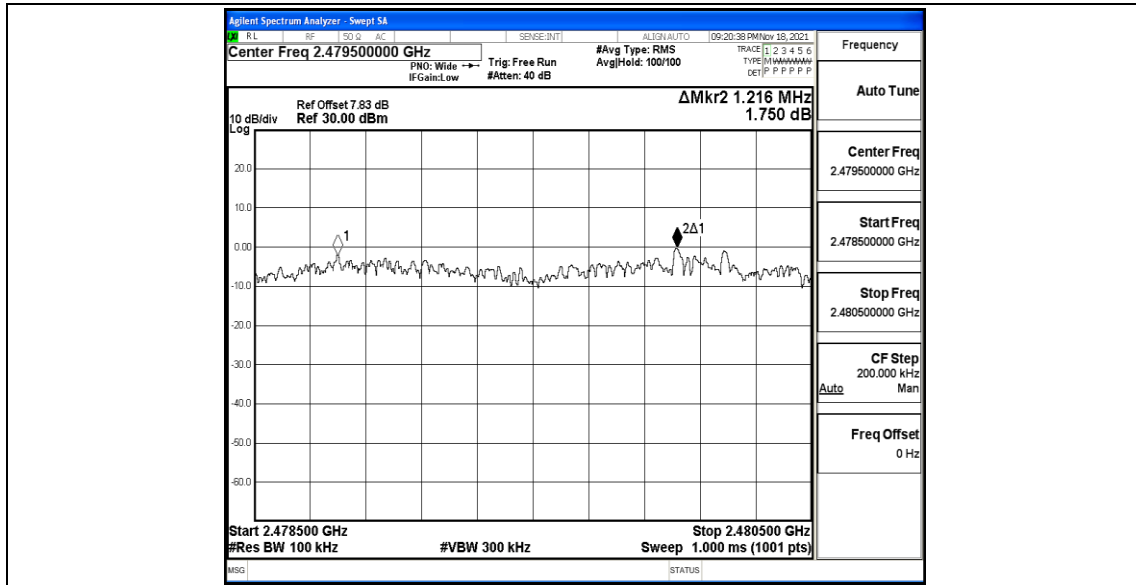
A.3 Carrier frequency separation

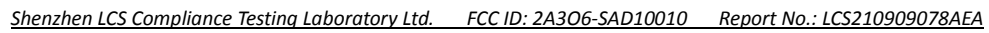
Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.962	≥ 0.684	PASS
2DH5	Ant1	Hop	1.122	≥ 0.892	PASS
3DH5	Ant1	Hop	1.216	≥ 0.880	PASS

Test Graphs







Test Result

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.88	90	0.259	≤0.4	PASS
2DH5	Ant1	Hop	2.88	130	0.375	≤0.4	PASS
3DH5	Ant1	Hop	2.89	100	0.289	≤0.4	PASS

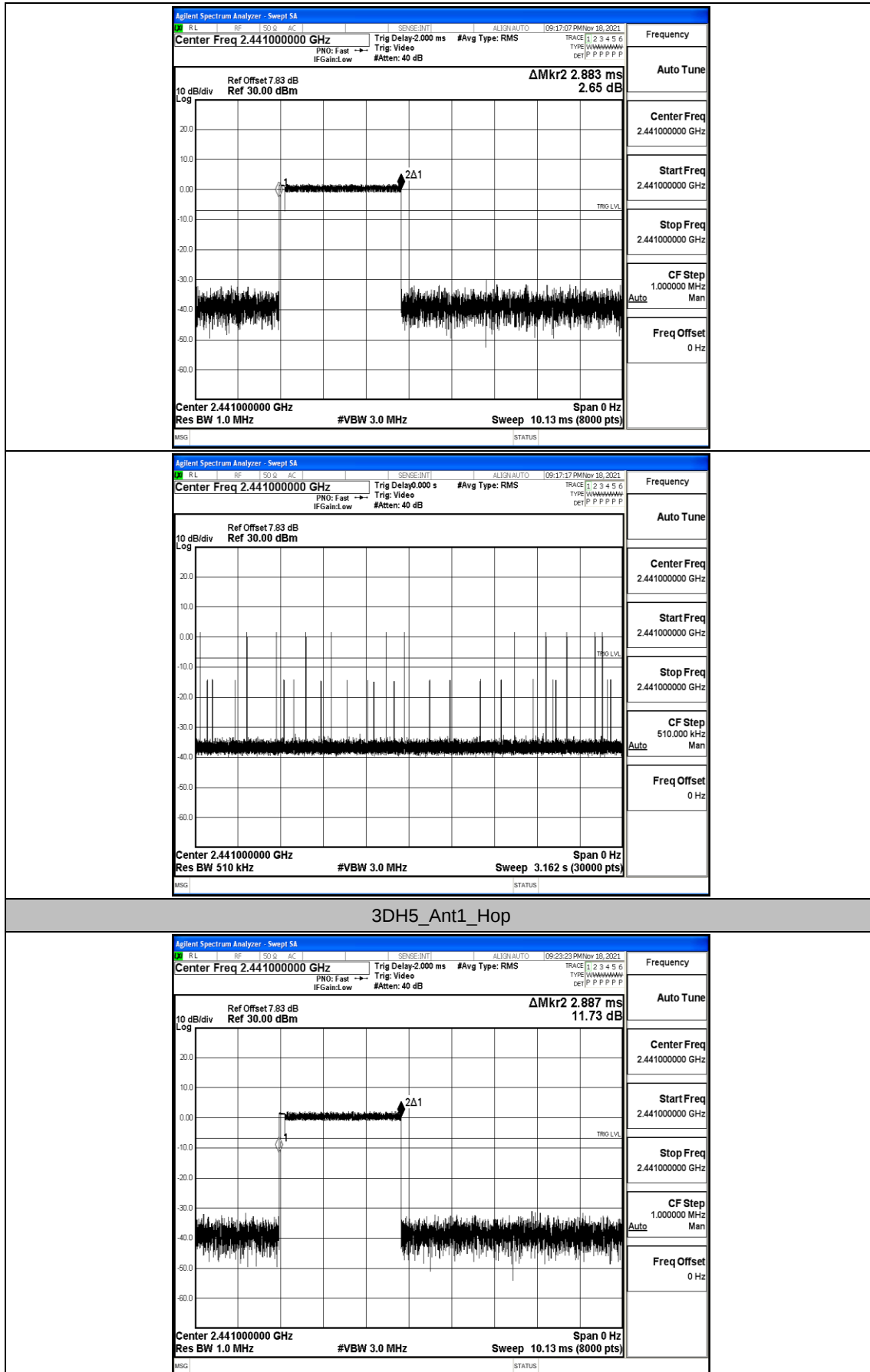
The figure displays two screenshots of an Agilent Spectrum Analyzer, showing frequency spectra for two different antenna configurations: DH5_Ant1_Hop and 2DH5_Ant1_Hop.

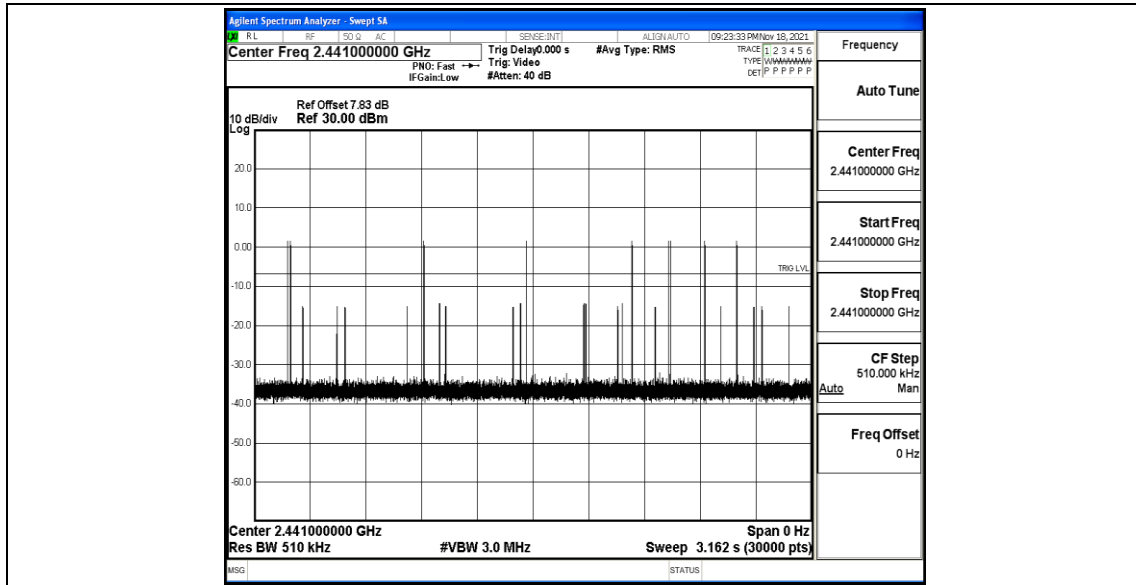
Top Screenshot (DH5_Ant1_Hop):

- Center Freq:** 2.441000000 GHz
- Ref Offset:** 7.83 dB
- Ref:** 30.00 dBm
- Span:** 0 Hz
- Res BW:** 1.0 MHz
- #VBW:** 3.0 MHz
- Sweep:** 10.13 ms (8000 pts)
- Frequency Range:** 2.441000000 GHz to 2.441000000 GHz
- CF Step:** 1.000000 MHz
- Freq Offset:** 0 Hz
- Auto Tune:** Yes
- Trig Delay:** 2.000 ms
- #Avg Type:** RMS
- Trig:** Video
- #Atten:** 40 dB
- PN0:** Fast
- IF Gain:** Low
- SENSE:** INT
- ALIGN:** AUTO
- DATE:** 09-05-40 PM Nov 18, 2021
- TRACE:** 1 2 3 4 5 6
- TYPE:** WWWWWWWW
- SET:** P P P P P P

Bottom Screenshot (2DH5_Ant1_Hop):

- Center Freq:** 2.441000000 GHz
- Ref Offset:** 7.83 dB
- Ref:** 30.00 dBm
- Span:** 0 Hz
- Res BW:** 510 kHz
- #VBW:** 3.0 MHz
- Sweep:** 3.162 s (30000 pts)
- Frequency Range:** 2.441000000 GHz to 2.441000000 GHz
- CF Step:** 510.000 kHz
- Freq Offset:** 0 Hz
- Auto Tune:** Yes
- Trig Delay:** 0.000 s
- #Avg Type:** RMS
- Trig:** Video
- #Atten:** 40 dB
- PN0:** Fast
- IF Gain:** Low
- SENSE:** INT
- ALIGN:** AUTO
- DATE:** 09-05-50 PM Nov 18, 2021
- TRACE:** 1 2 3 4 5 6
- TYPE:** WWWWWWWW
- SET:** P P P P P P





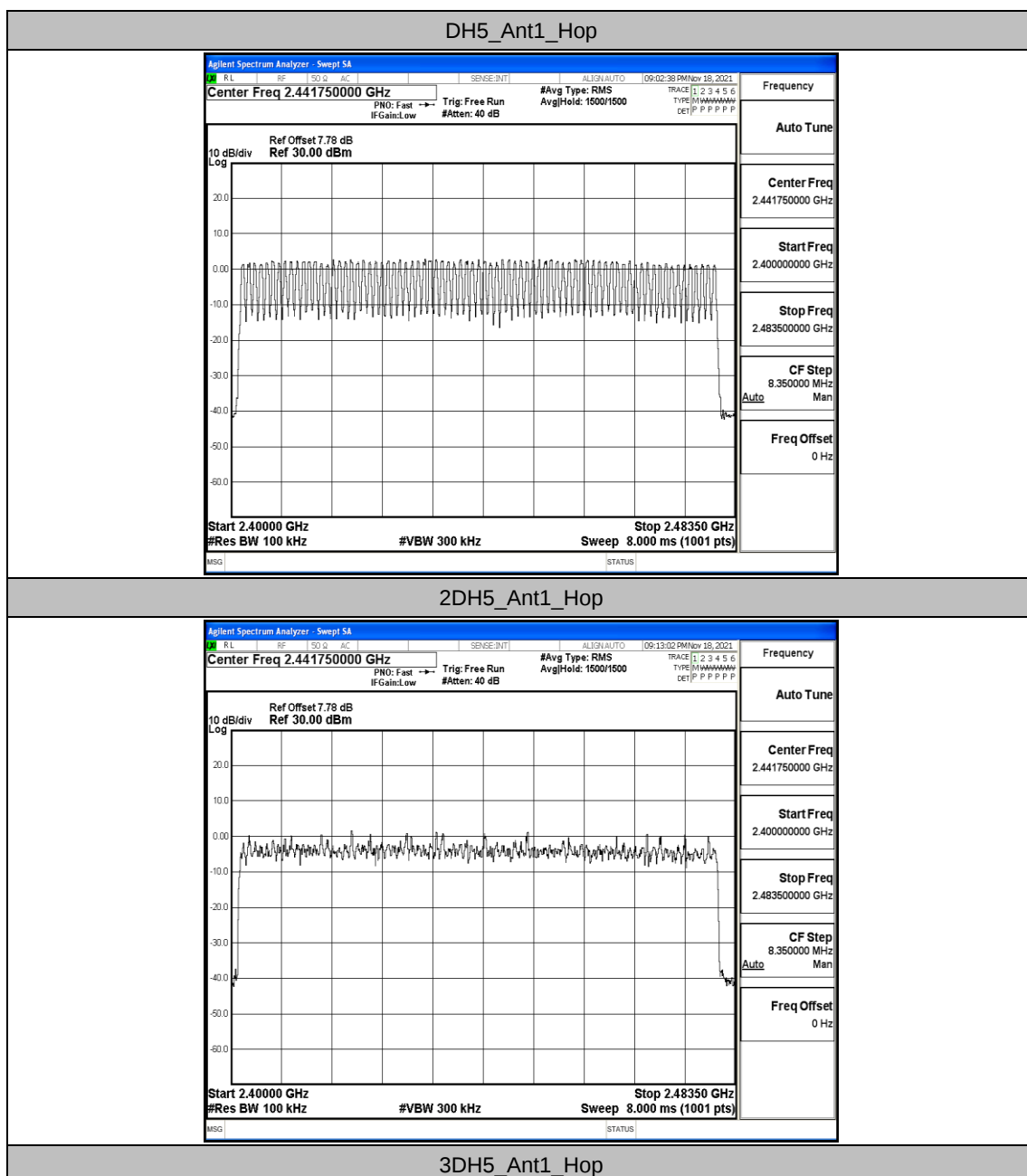


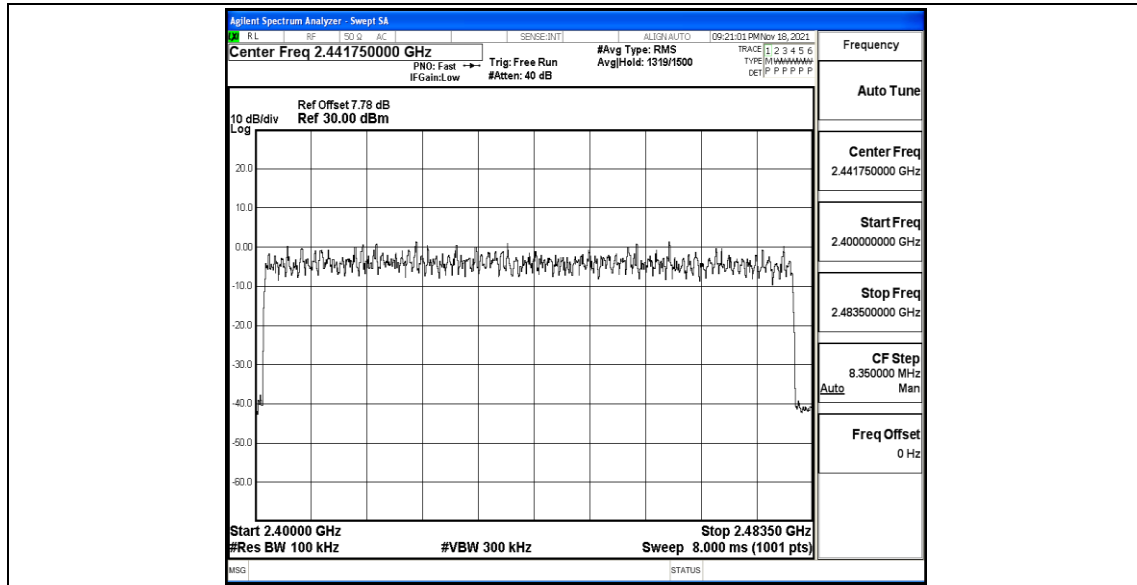
A.5 Number of hopping channels

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







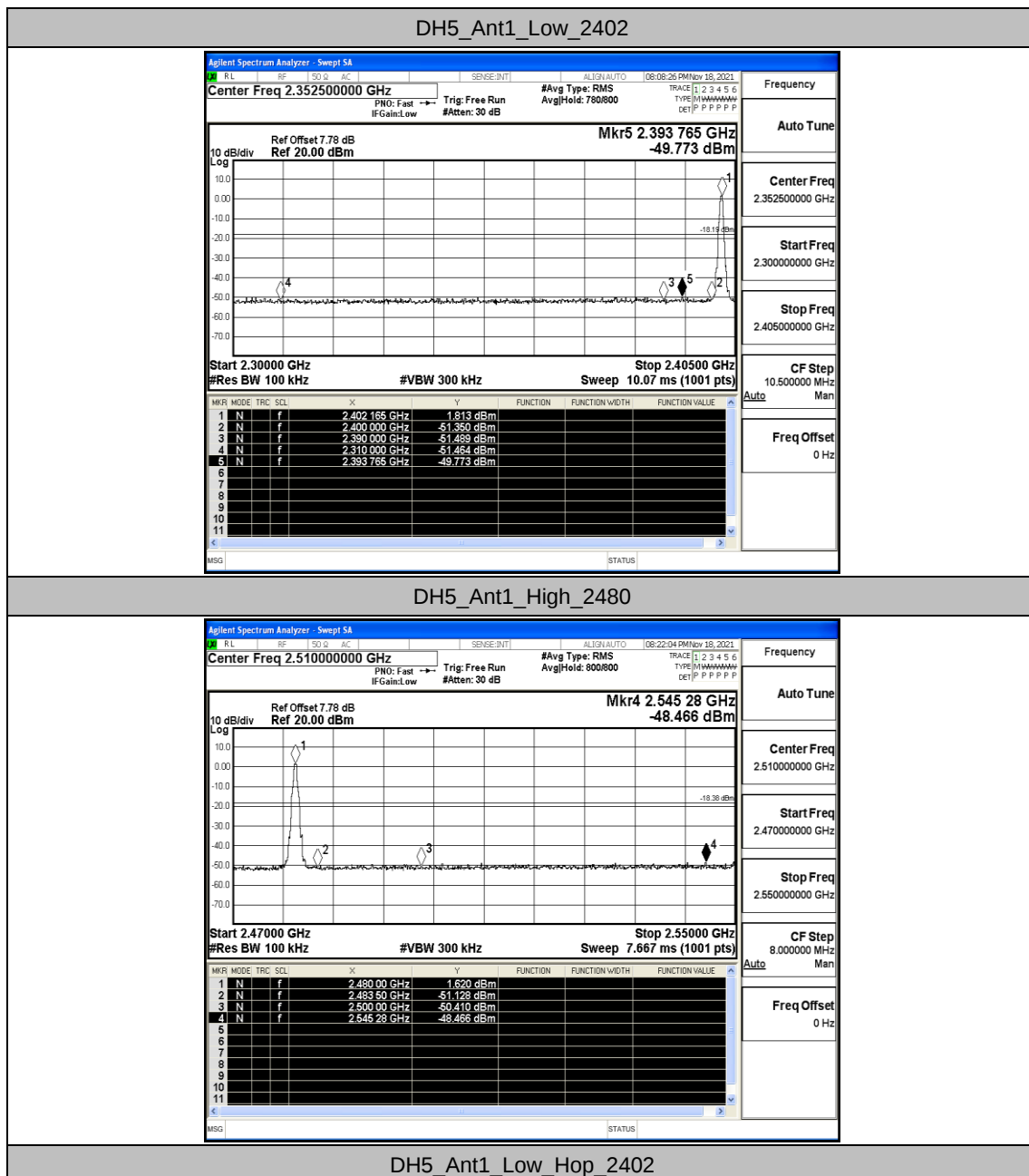
A.6 Band edge measurements

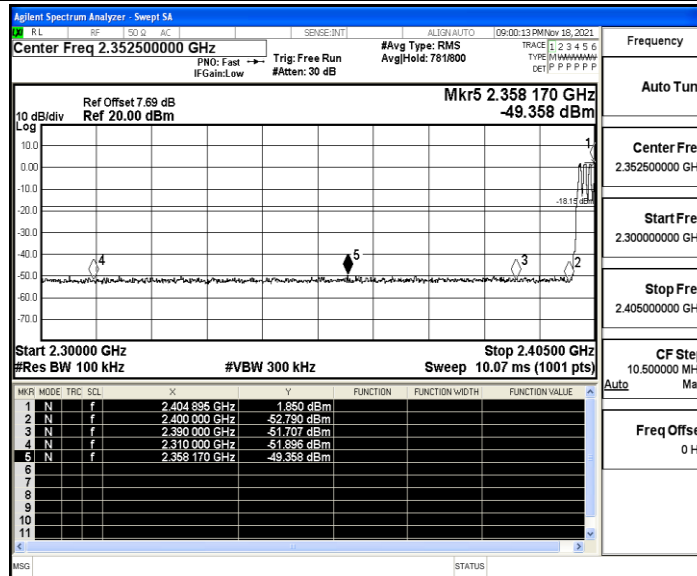
Test Result

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	1.81	-49.77	≤ -18.19	PASS
		High	2480	1.62	-48.47	≤ -18.38	PASS
		Low	Hop_2402	1.85	-49.36	≤ -18.15	PASS
		High	Hop_2480	2.13	-48.39	≤ -17.87	PASS
2DH5	Ant1	Low	2402	-2.83	-49.69	≤ -22.83	PASS
		High	2480	0.18	-48.61	≤ -19.82	PASS
		Low	Hop_2402	-0.19	-49.83	≤ -20.19	PASS
		High	Hop_2480	-0.42	-47.89	≤ -20.42	PASS
3DH5	Ant1	Low	2402	0.39	-49.47	≤ -19.61	PASS
		High	2480	0.19	-48.12	≤ -19.81	PASS
		Low	Hop_2402	0.48	-49.26	≤ -19.52	PASS
		High	Hop_2480	-1.64	-48.75	≤ -21.64	PASS

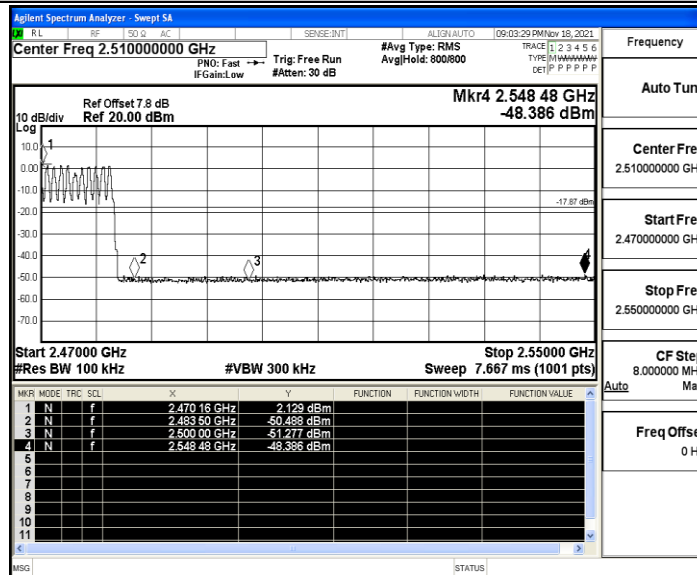


Test Graphs

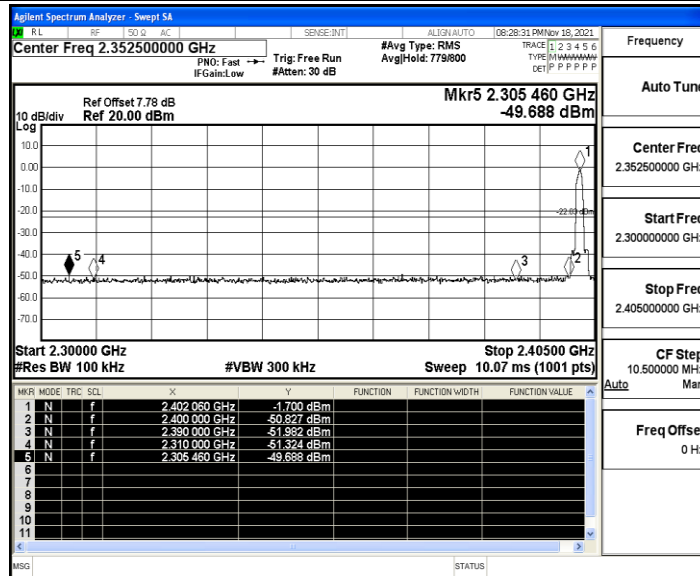




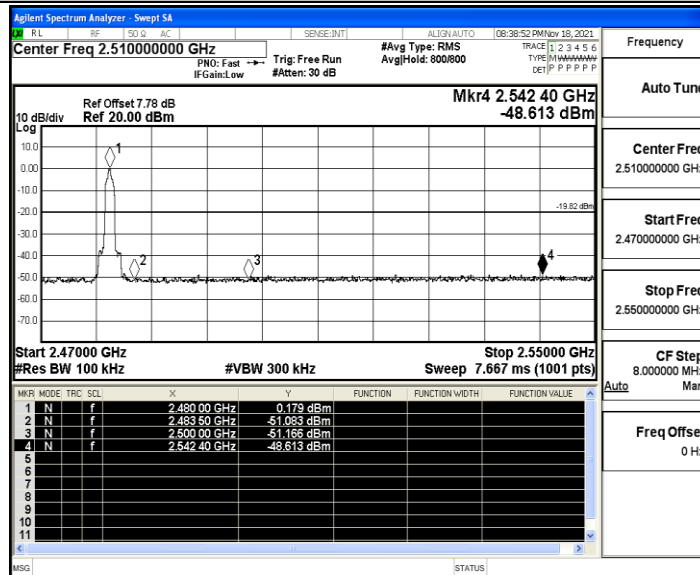
DH5_Ant1_High_Hop_2480



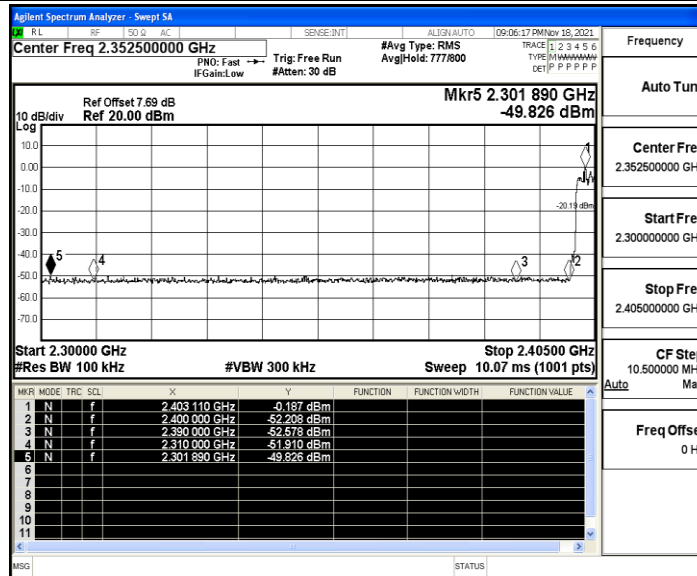
2DH5_Ant1_Low_2402



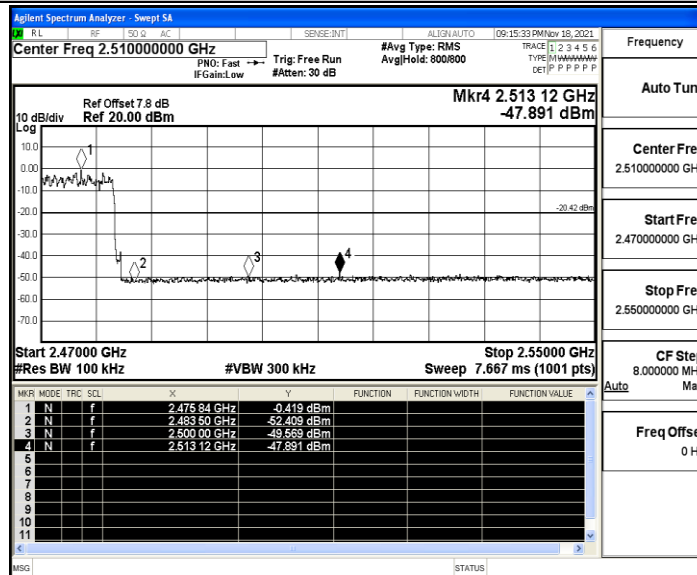
2DH5_Ant1_High_2480



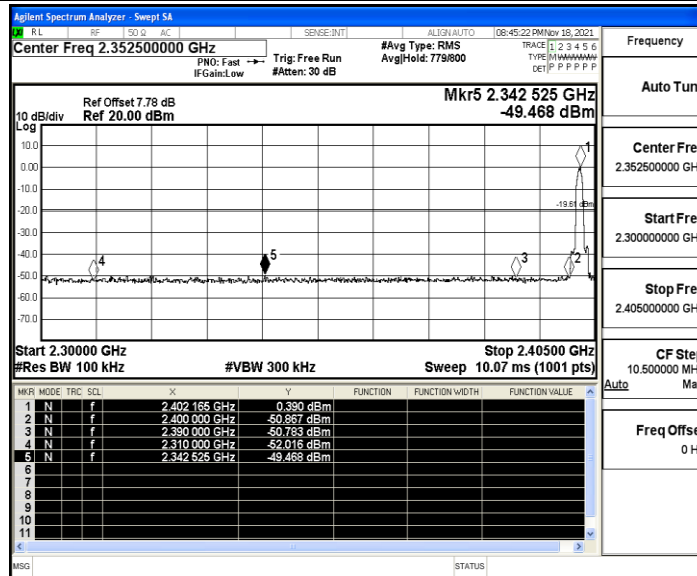
2DH5_Ant1_Low_Hop_2402



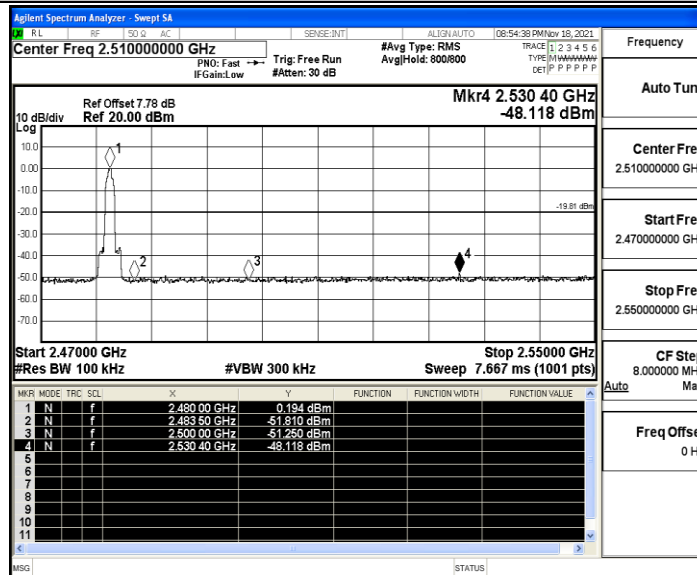
2DH5_Ant1_High_Hop_2480



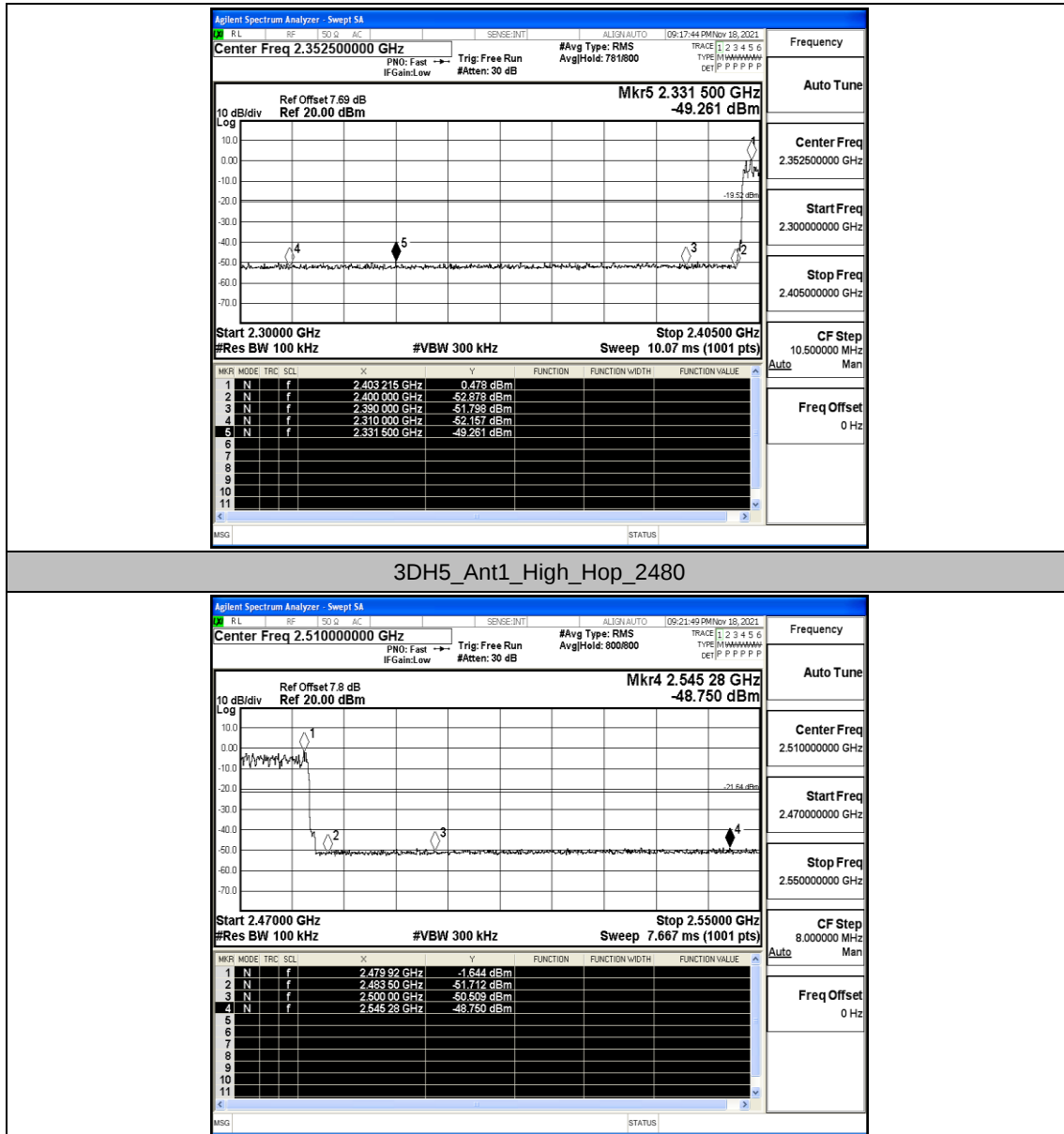
3DH5_Ant1_Low_2402



3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402





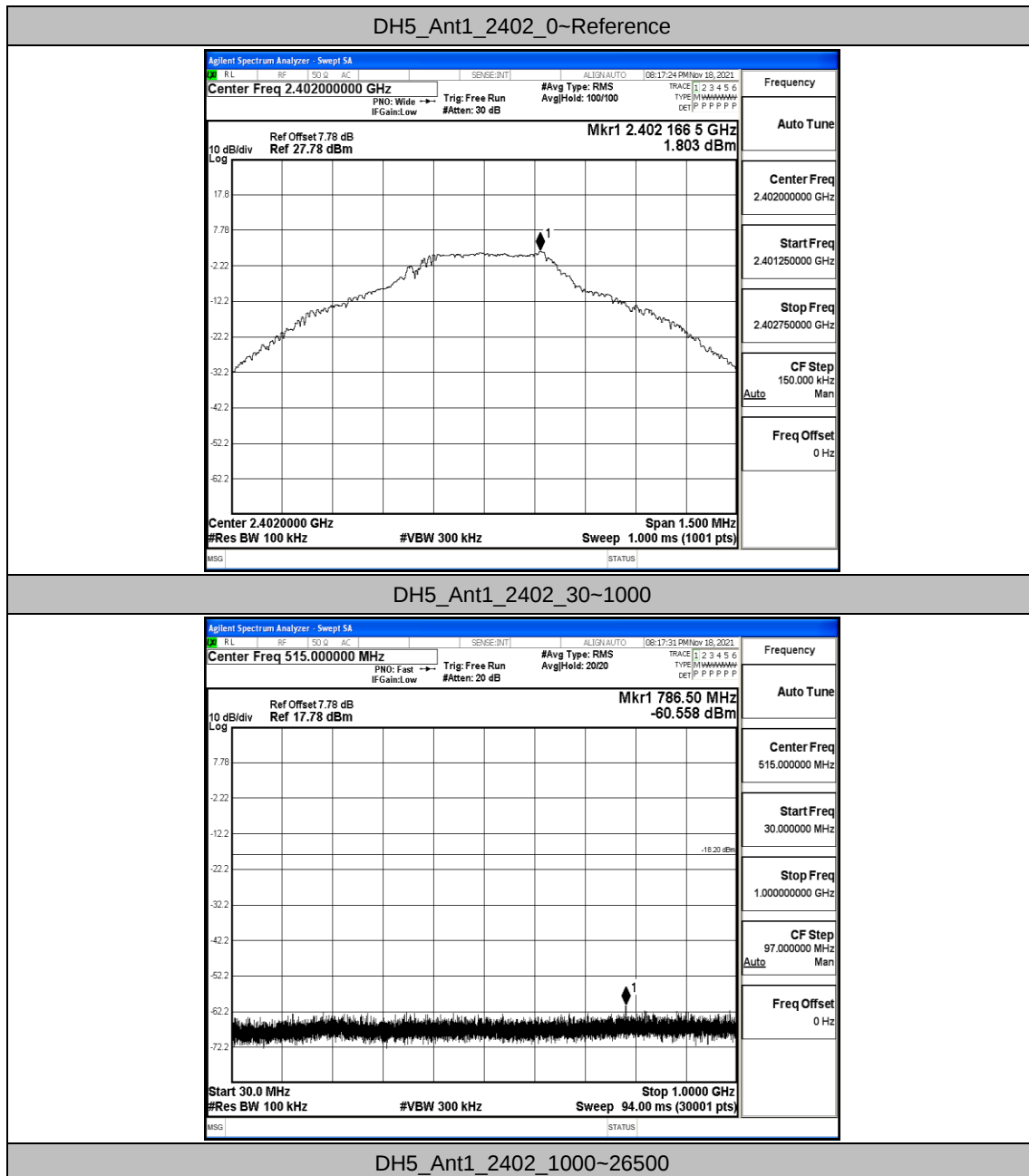
A.7 Conducted Spurious Emission

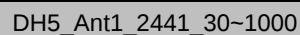
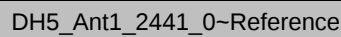
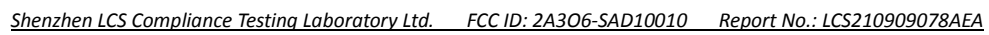
Test Result

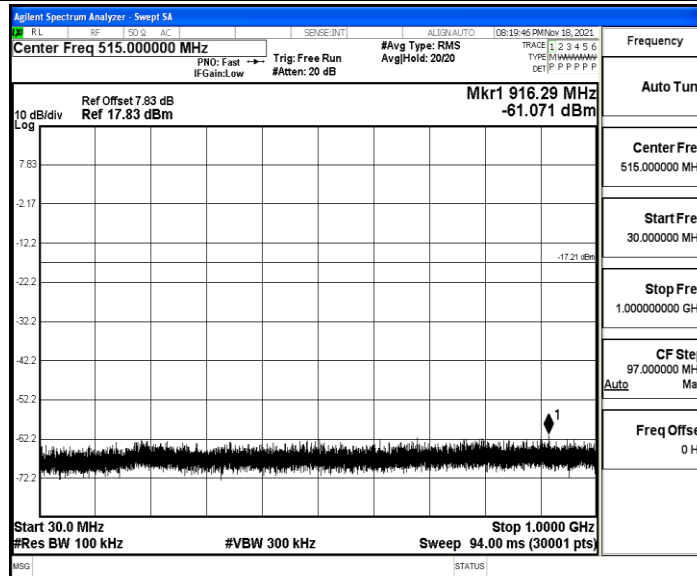
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	1.80	1.80	---	PASS
			30~1000	1.80	-60.56	≤-18.2	PASS
			1000~26500	1.80	-46.31	≤-18.2	PASS
		2441	Reference	2.79	2.79	---	PASS
			30~1000	2.79	-61.07	≤-17.21	PASS
			1000~26500	2.79	-46.67	≤-17.21	PASS
		2480	Reference	1.35	1.35	---	PASS
			30~1000	1.35	-61.35	≤-18.65	PASS
			1000~26500	1.35	-47.11	≤-18.65	PASS
2DH5	Ant1	2402	Reference	-0.07	-0.07	---	PASS
			30~1000	-0.07	-60.98	≤-20.07	PASS
			1000~26500	-0.07	-46.31	≤-20.07	PASS
		2441	Reference	1.29	1.29	---	PASS
			30~1000	1.29	-61.78	≤-18.71	PASS
			1000~26500	1.29	-46.72	≤-18.71	PASS
		2480	Reference	-0.43	-0.43	---	PASS
			30~1000	-0.43	-61.46	≤-20.43	PASS
			1000~26500	-0.43	-47.12	≤-20.43	PASS
3DH5	Ant1	2402	Reference	-1.11	-1.11	---	PASS
			30~1000	-1.11	-61.19	≤-21.11	PASS
			1000~26500	-1.11	-46.18	≤-21.11	PASS
		2441	Reference	-1.87	-1.87	---	PASS
			30~1000	-1.87	-61.42	≤-21.87	PASS
			1000~26500	-1.87	-46.47	≤-21.87	PASS
		2480	Reference	-0.13	-0.13	---	PASS
			30~1000	-0.13	-62.07	≤-20.13	PASS
			1000~26500	-0.13	-47.46	≤-20.13	PASS



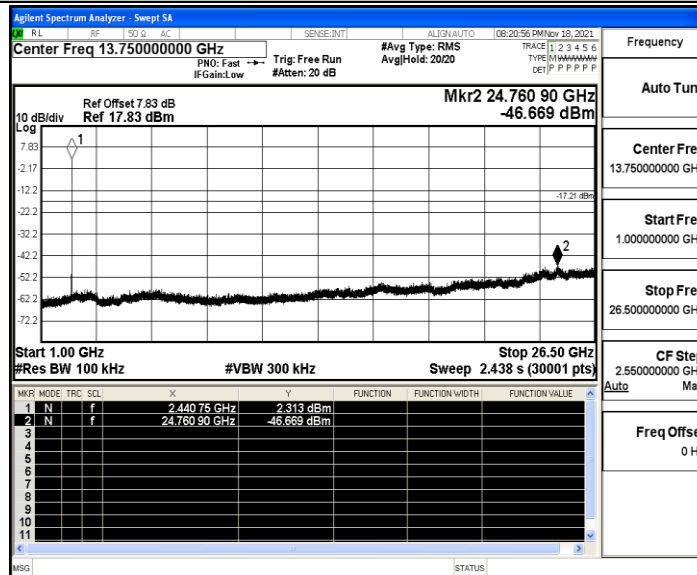
Test Graphs



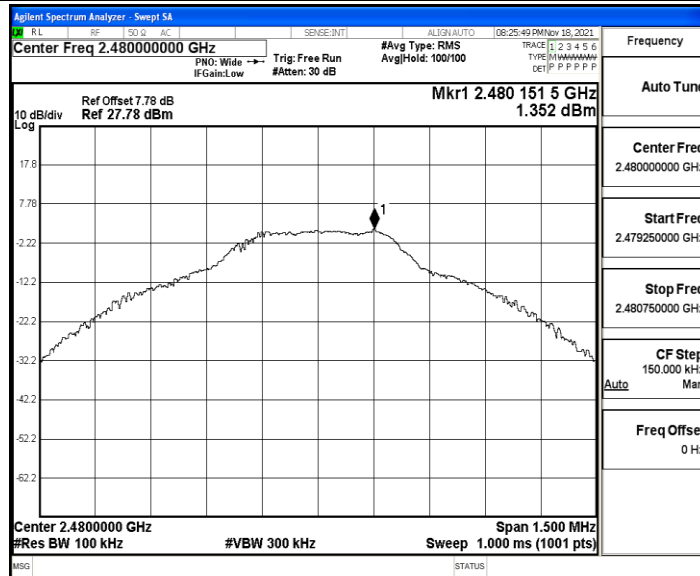




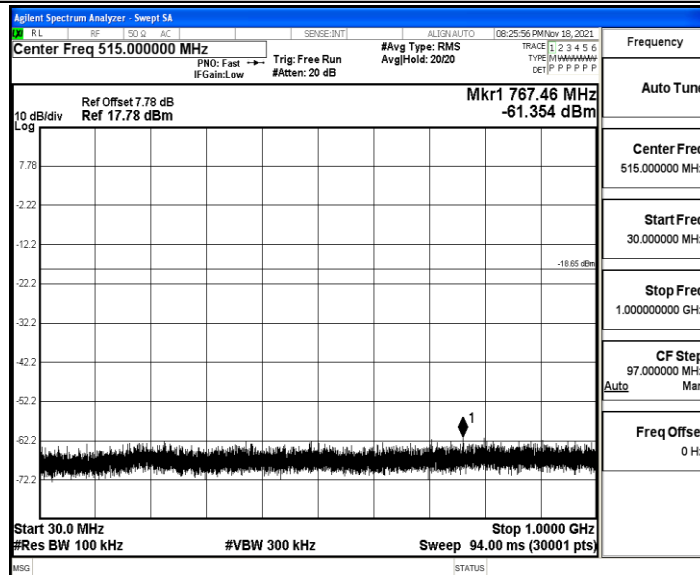
DH5_Ant1_2441_1000~26500



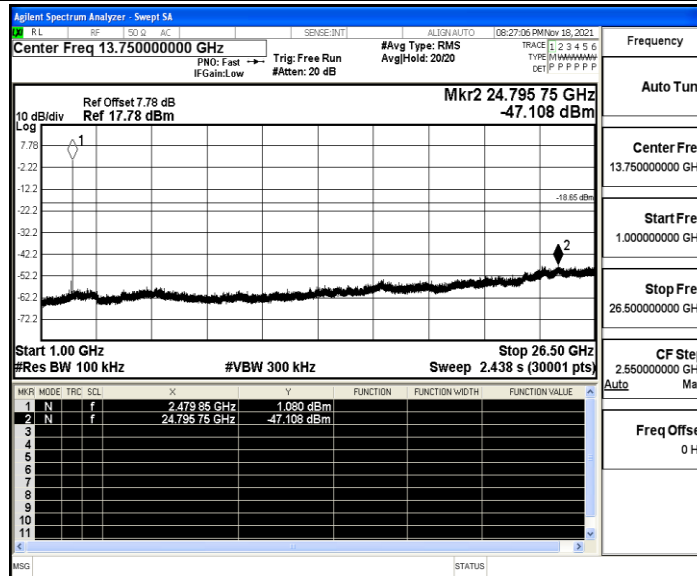
DH5_Ant1_2480_0~Reference



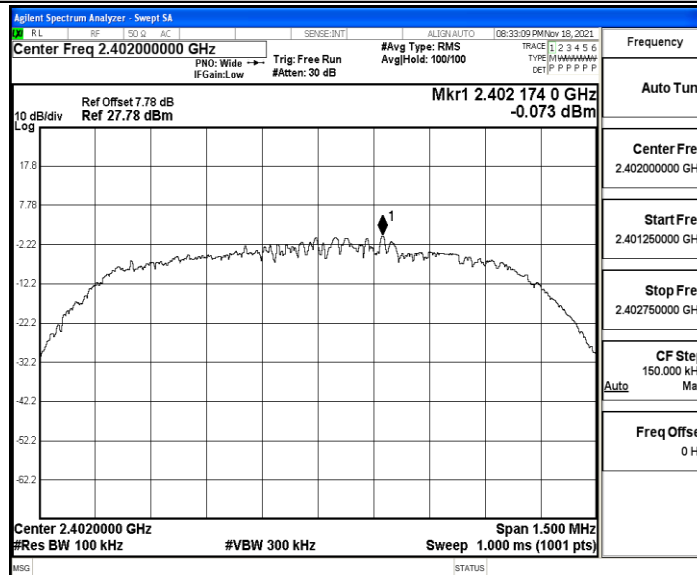
DH5_Ant1_2480_30~1000



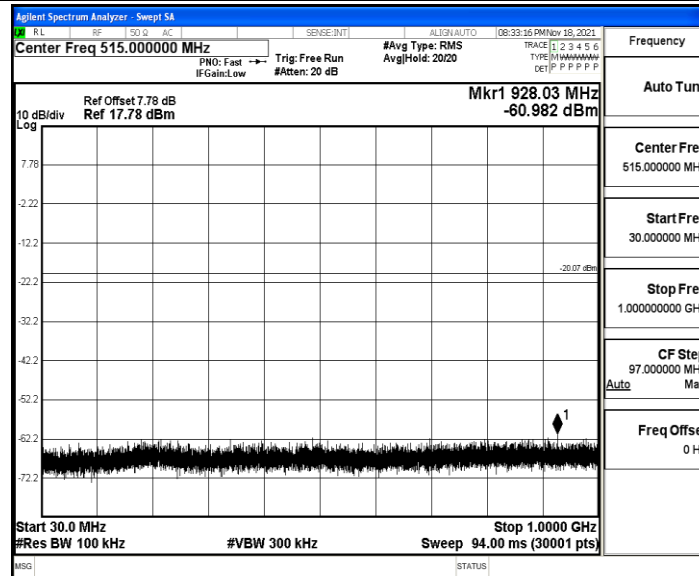
DH5_Ant1_2480_1000~26500



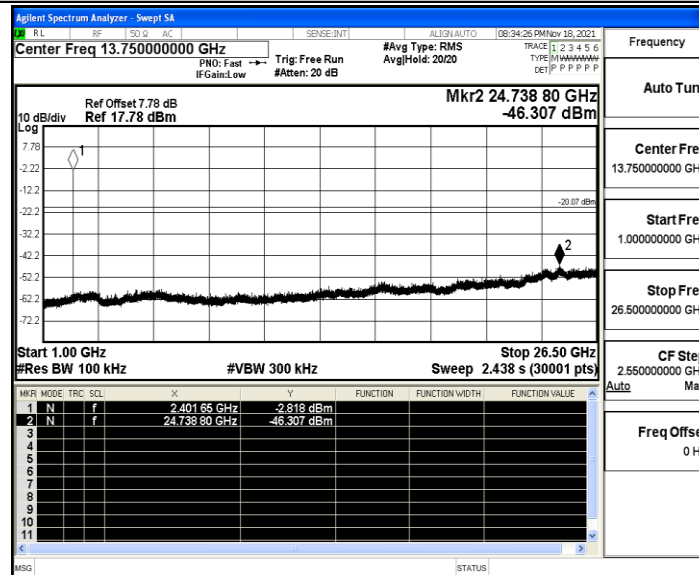
2DH5_Ant1_2402_0~Reference



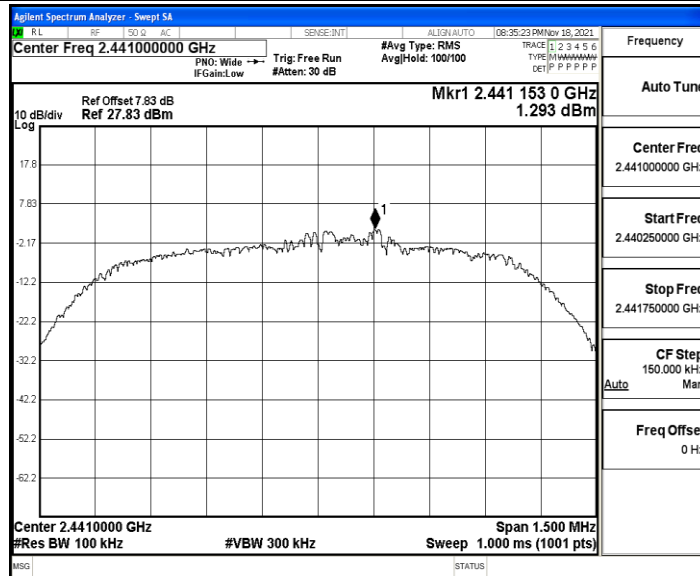
2DH5_Ant1_2402_30~1000



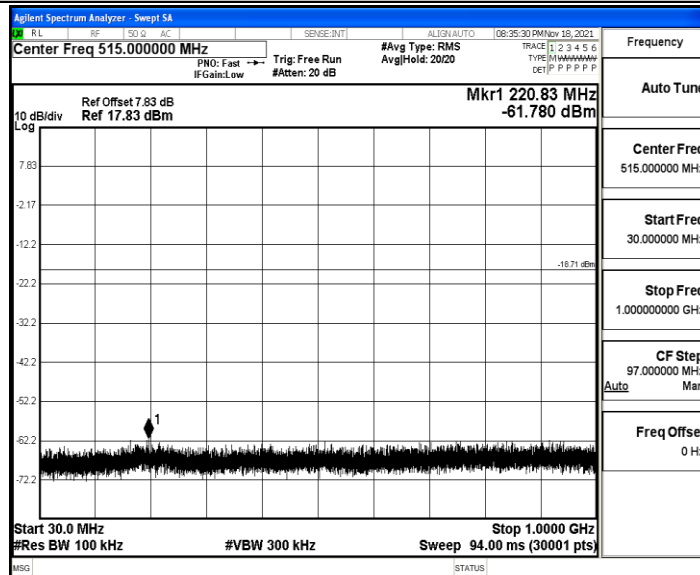
2DH5_Ant1_2402_1000~26500



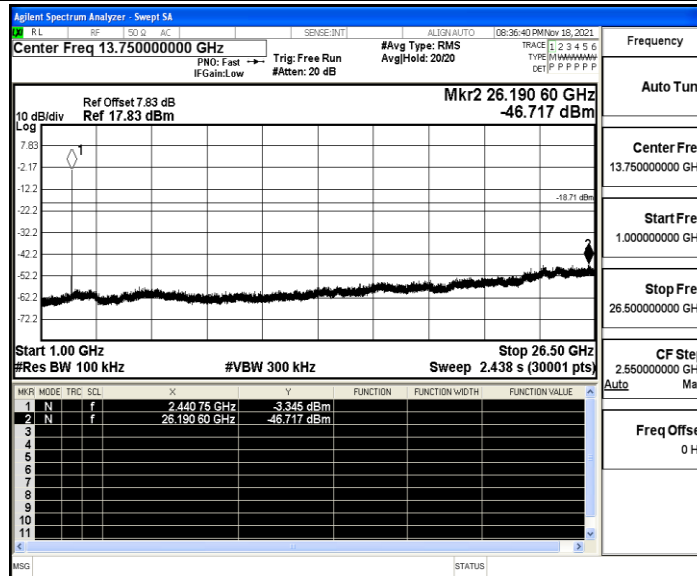
2DH5_Ant1_2441_0~Reference



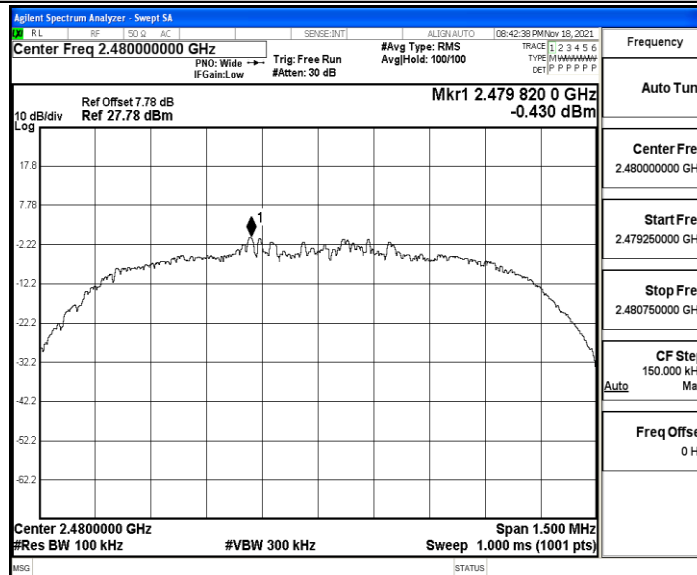
2DH5_Ant1_2441_30~1000



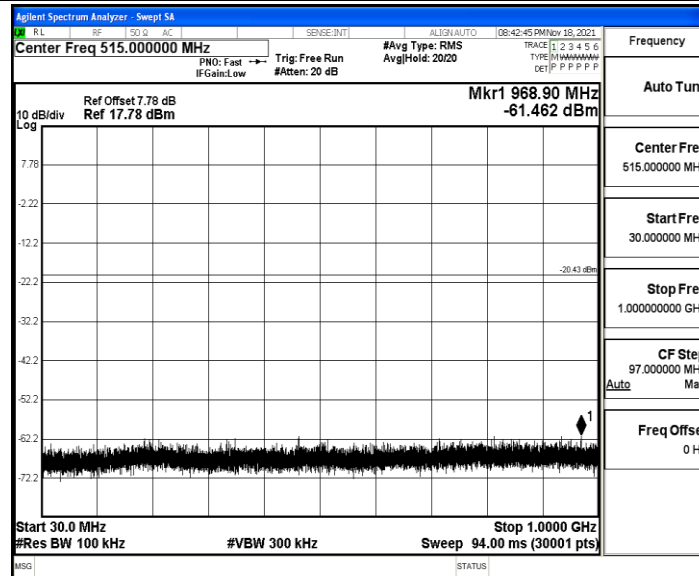
2DH5_Ant1_2441_1000~26500



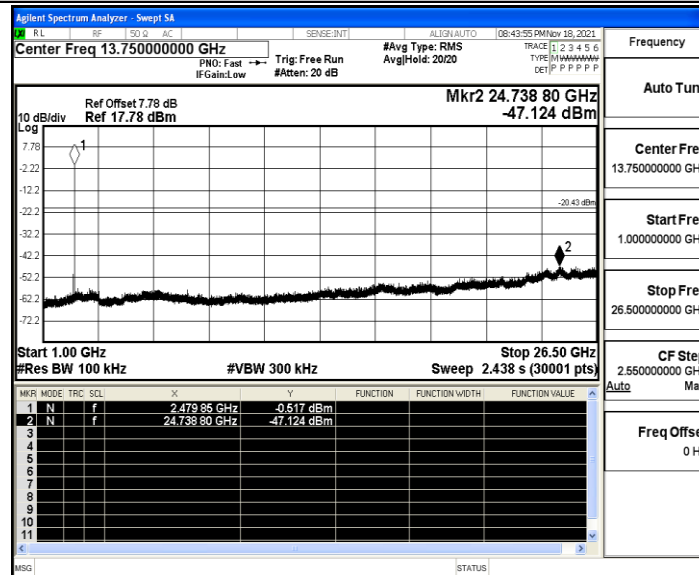
2DH5_Ant1_2480_0~Reference



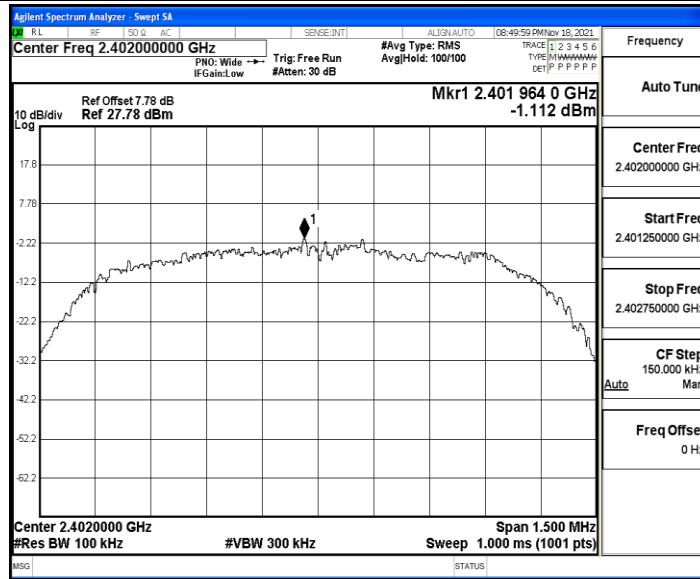
2DH5_Ant1_2480_30~1000



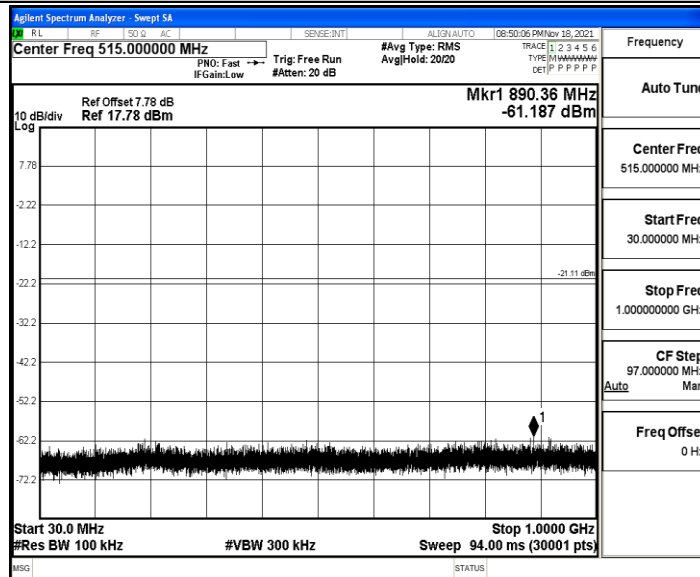
2DH5_Ant1_2480_1000~26500



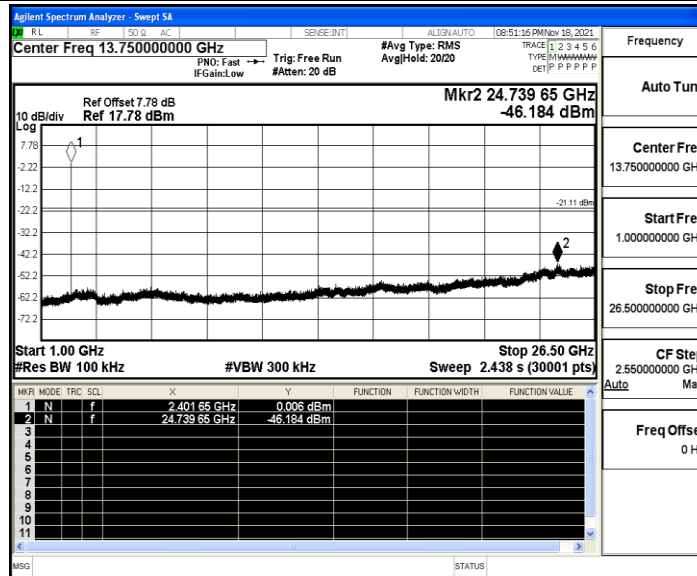
3DH5_Ant1_2402_0~Reference



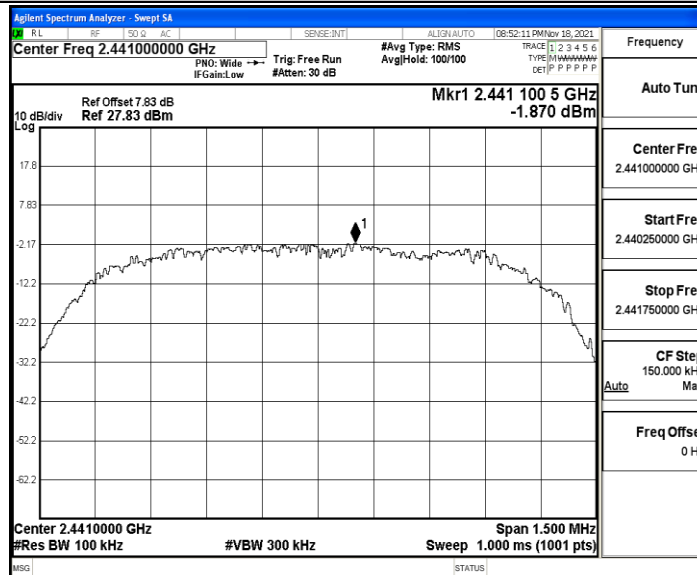
3DH5_Ant1_2402_30~1000



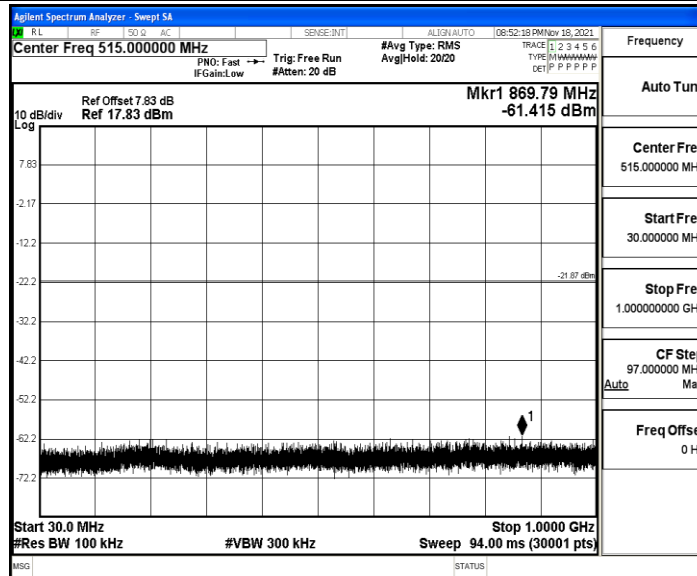
3DH5_Ant1_2402_1000~26500



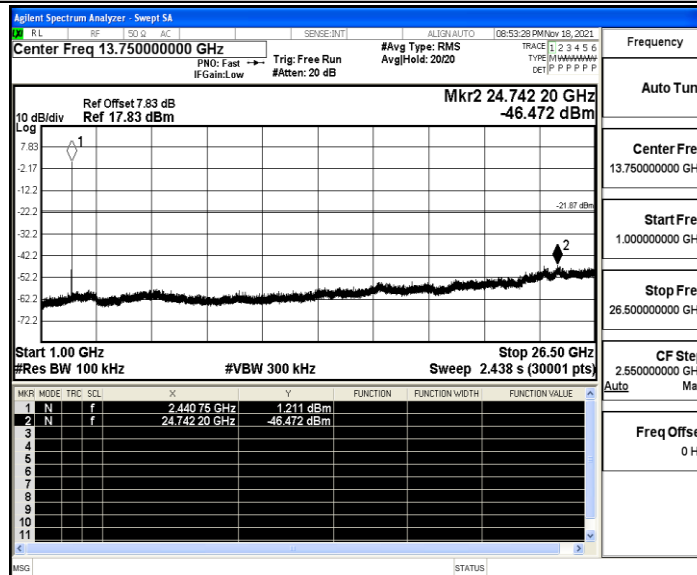
3DH5_Ant1_2441_0~Reference



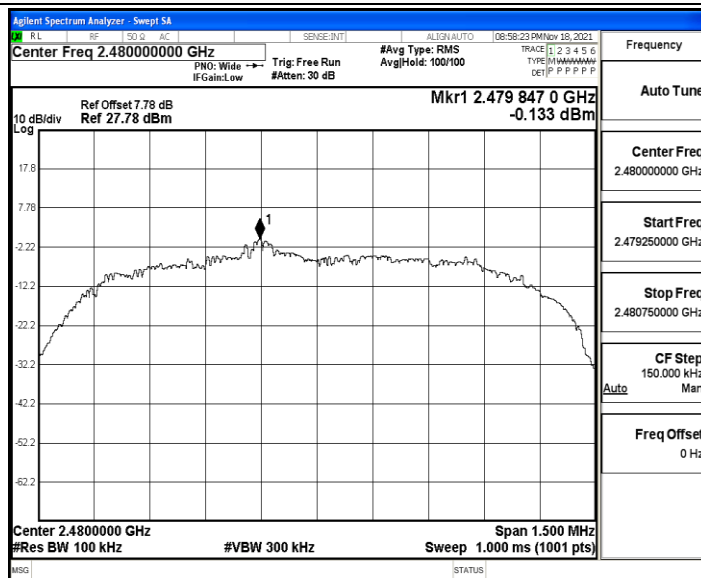
3DH5_Ant1_2441_30~1000



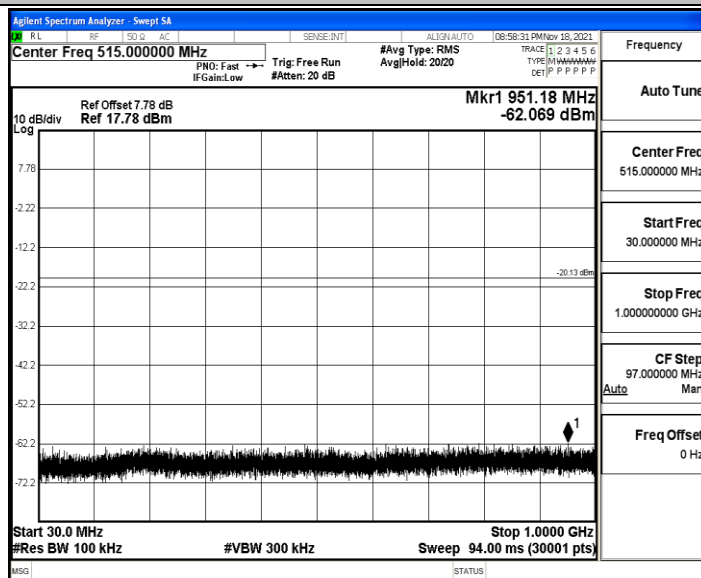
3DH5_Ant1_2441_1000~26500



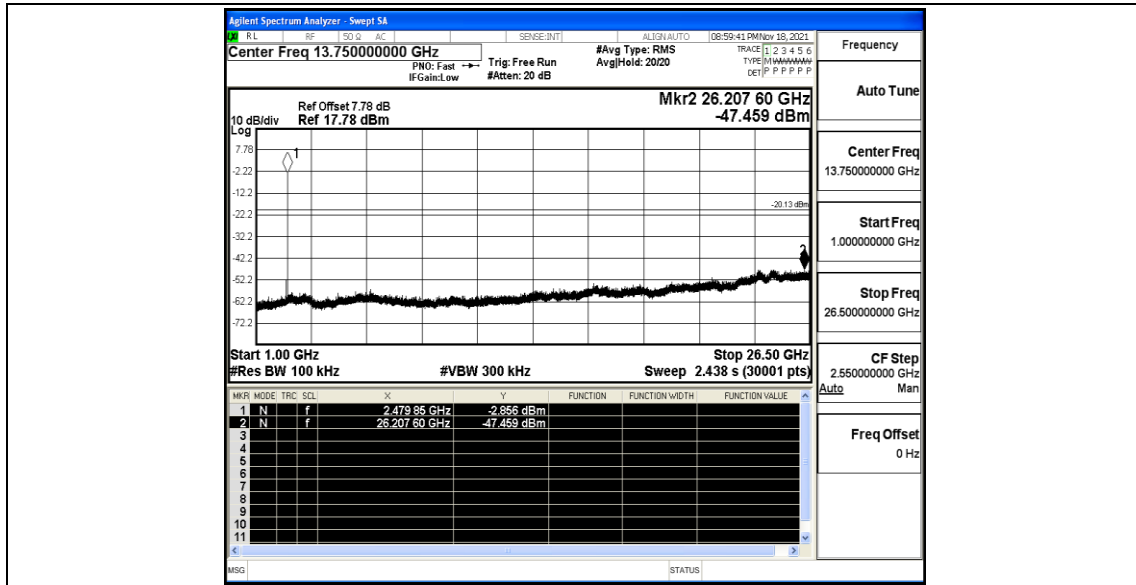
3DH5_Ant1_2480_0~Reference



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	-48.87	≤-41.20	46.33	≤54	PASS
				AV	2374.760	-48.4	≤-41.20	46.80	≤54	PASS
				AV	2390.000	-48.59	≤-41.20	46.61	≤54	PASS
				Peak	2310.000	-40.69	≤-21.20	54.51	≤74	PASS
				Peak	2371.505	-37.6	≤-21.20	57.60	≤74	PASS
				Peak	2390.000	-39.07	≤-21.20	56.13	≤74	PASS
		High	2480	AV	2483.500	-47.73	≤-41.20	47.47	≤54	PASS
				AV	2483.520	-47.73	≤-41.20	47.47	≤54	PASS
				AV	2500.000	-47.95	≤-41.20	47.25	≤54	PASS
				Peak	2483.500	-40.02	≤-21.20	55.18	≤74	PASS
				Peak	2492.560	-37.79	≤-21.20	57.41	≤74	PASS
				Peak	2500.000	-39.66	≤-21.20	55.54	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-40.18	≤-21.20	55.02	≤74	PASS
				Peak	2384.630	-37.91	≤-21.20	57.29	≤74	PASS
				Peak	2390.000	-39.84	≤-21.20	55.36	≤74	PASS
		High	Hop_2480	Peak	2483.500	-40.02	≤-21.20	55.18	≤74	PASS
				Peak	2499.360	-37.43	≤-21.20	57.77	≤74	PASS
				Peak	2500.000	-38.42	≤-21.20	56.78	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-48.75	≤-41.20	46.45	≤54	PASS
				AV	2385.050	-48.39	≤-41.20	46.81	≤54	PASS
				AV	2390.000	-48.58	≤-41.20	46.62	≤54	PASS
				Peak	2310.000	-40.93	≤-21.20	54.27	≤74	PASS
				Peak	2310.710	-38.39	≤-21.20	56.81	≤74	PASS
				Peak	2390.000	-40.32	≤-21.20	54.88	≤74	PASS
		High	2480	AV	2483.500	-47.83	≤-41.20	47.37	≤54	PASS
				AV	2483.520	-47.83	≤-41.20	47.37	≤54	PASS
				AV	2500.000	-47.87	≤-41.20	47.33	≤54	PASS
				Peak	2483.500	-39.46	≤-21.20	55.74	≤74	PASS
				Peak	2496.960	-37.48	≤-21.20	57.72	≤74	PASS
				Peak	2500.000	-40.52	≤-21.20	54.68	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-40.04	≤-21.20	55.16	≤74	PASS
				Peak	2382.425	-37.77	≤-21.20	57.43	≤74	PASS
				Peak	2390.000	-40.83	≤-21.20	54.37	≤74	PASS
		High	Hop_2480	Peak	2483.500	-40.45	≤-21.20	54.75	≤74	PASS
				Peak	2493.360	-37.36	≤-21.20	57.84	≤74	PASS
				Peak	2500.000	-40.08	≤-21.20	55.12	≤74	PASS



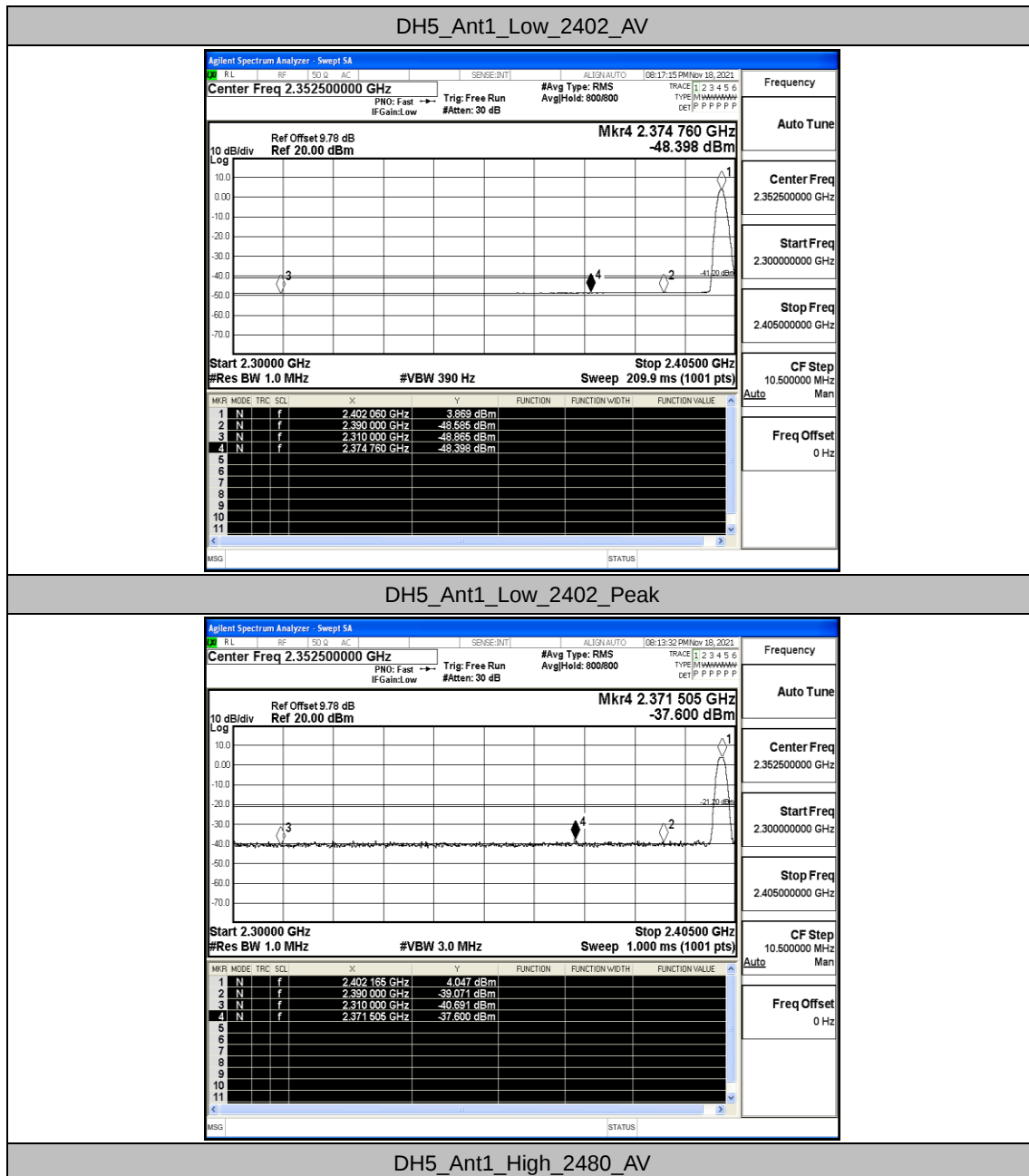
3DH5	Ant1	Low	2402	AV	2310.000	-48.85	≤-41.20	46.35	≤54	PASS
				AV	2382.110	-48.38	≤-41.20	46.82	≤54	PASS
				AV	2390.000	-48.61	≤-41.20	46.59	≤54	PASS
				Peak	2310.000	-40.42	≤-21.20	54.78	≤74	PASS
				Peak	2342.945	-37.69	≤-21.20	57.51	≤74	PASS
				Peak	2390.000	-38.84	≤-21.20	56.36	≤74	PASS
		High	2480	AV	2483.500	-47.77	≤-41.20	47.43	≤54	PASS
				AV	2483.520	-47.77	≤-41.20	47.43	≤54	PASS
				AV	2500.000	-47.86	≤-41.20	47.34	≤54	PASS
				Peak	2483.500	-40.24	≤-21.20	54.96	≤74	PASS
				Peak	2490.560	-36.98	≤-21.20	58.22	≤74	PASS
				Peak	2500.000	-40.65	≤-21.20	54.55	≤74	PASS
		Low	Hop_24 02	Peak	2310.000	-40.13	≤-21.20	55.07	≤74	PASS
				Peak	2368.985	-38.25	≤-21.20	56.95	≤74	PASS
				Peak	2390.000	-40.52	≤-21.20	54.68	≤74	PASS
		High	Hop_24 80	Peak	2483.500	-39.64	≤-21.20	55.56	≤74	PASS
				Peak	2497.600	-37.81	≤-21.20	57.39	≤74	PASS
				Peak	2500.000	-38.54	≤-21.20	56.66	≤74	PASS

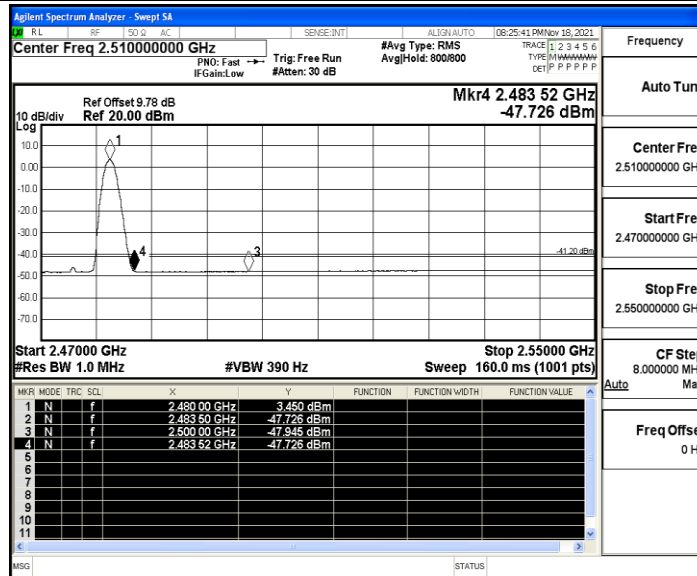
Note:

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.

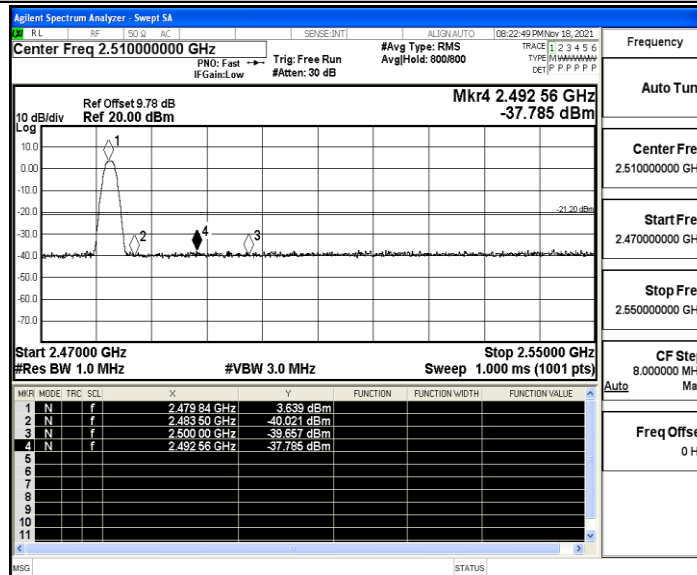


Test Graphs

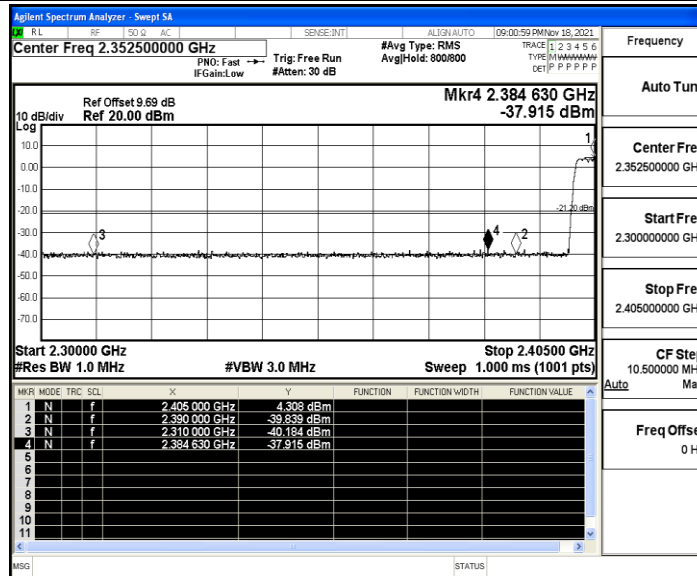




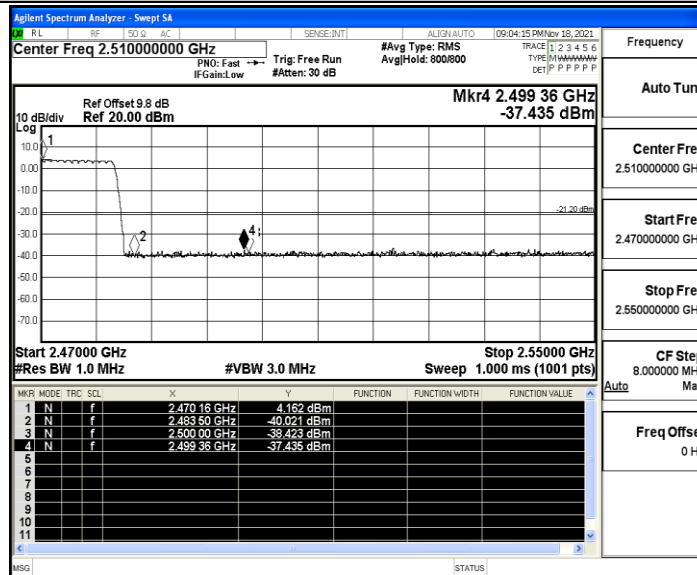
DH5_Ant1_High_2480_Peak



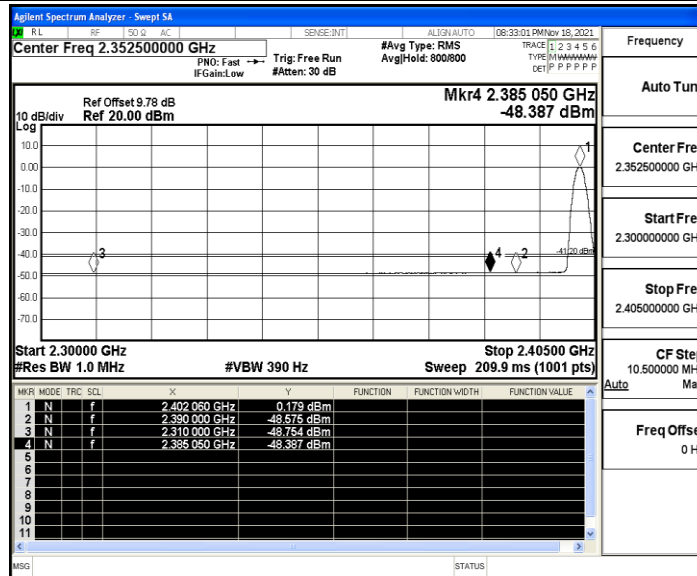
DH5_Ant1_Low_Hop_2402_Peak



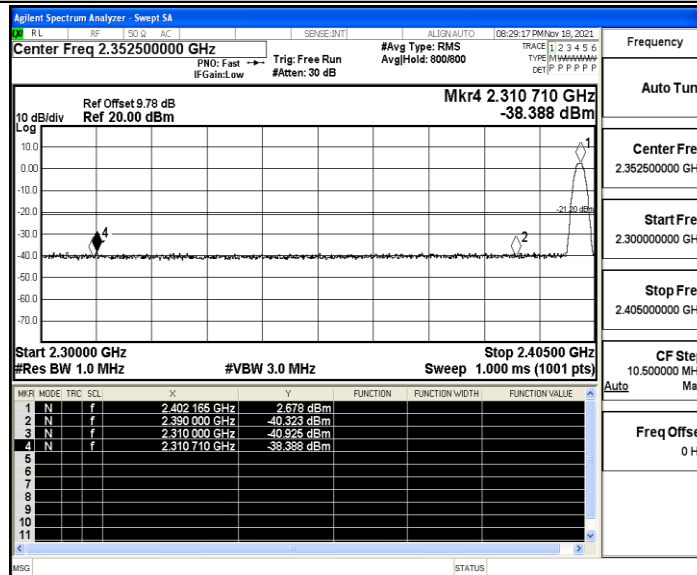
DH5_Ant1_High_Hop_2480_Peak



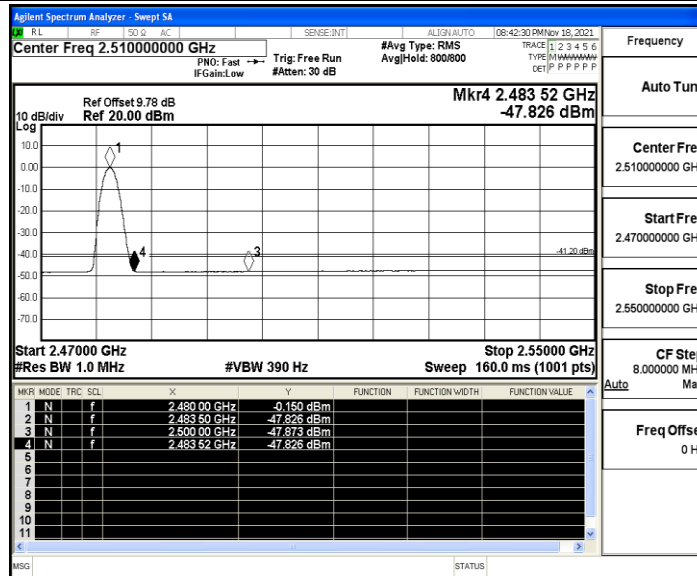
2DH5_Ant1_Low_2402_AV



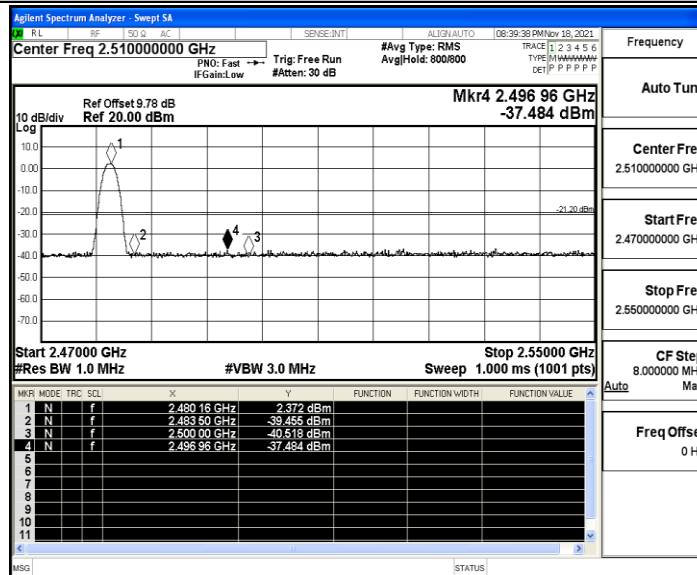
2DH5_Ant1_Low_2402_Peak



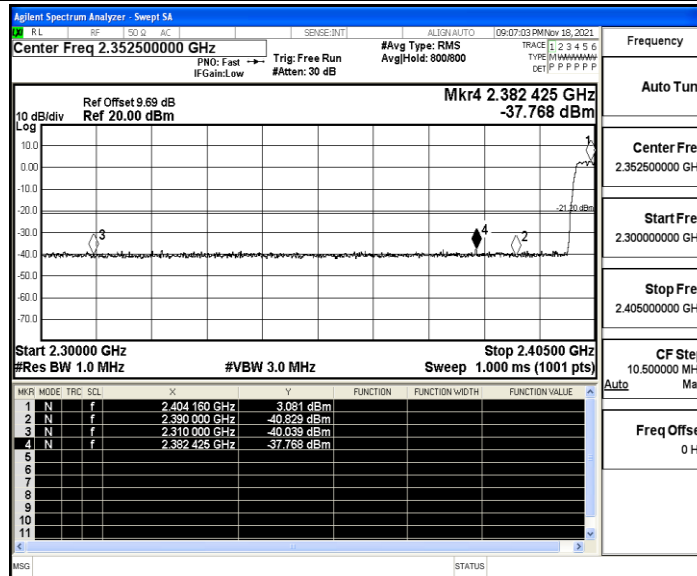
2DH5_Ant1_High_2480_AV



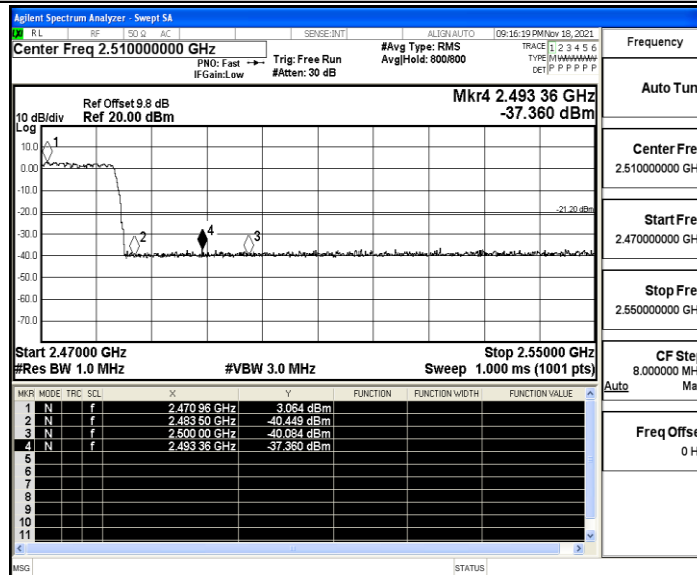
2DH5_Ant1_High_2480_Peak



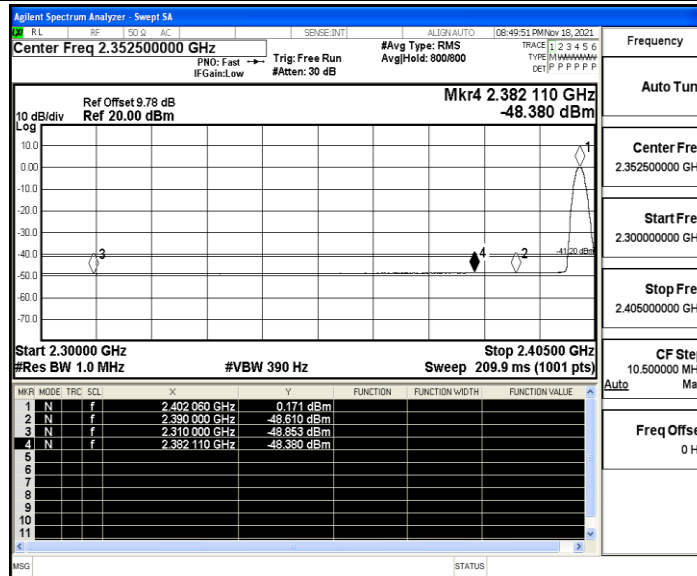
2DH5_Ant1_Low_Hop_2402_Peak



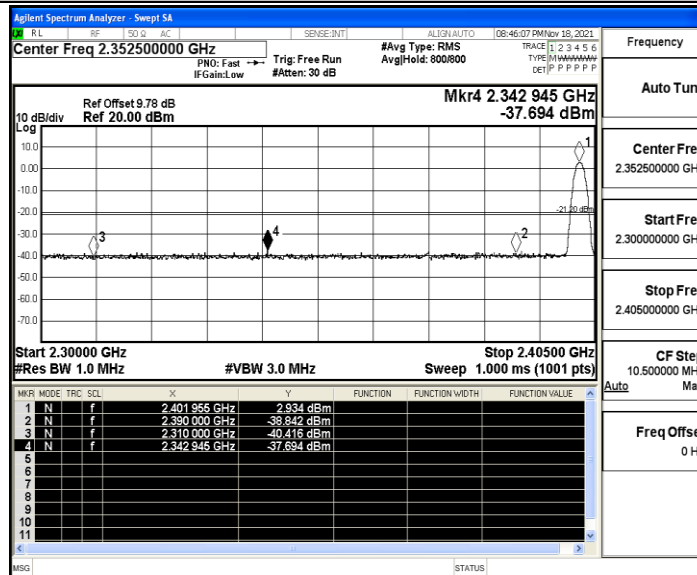
2DH5_Ant1_High_Hop_2480_Peak



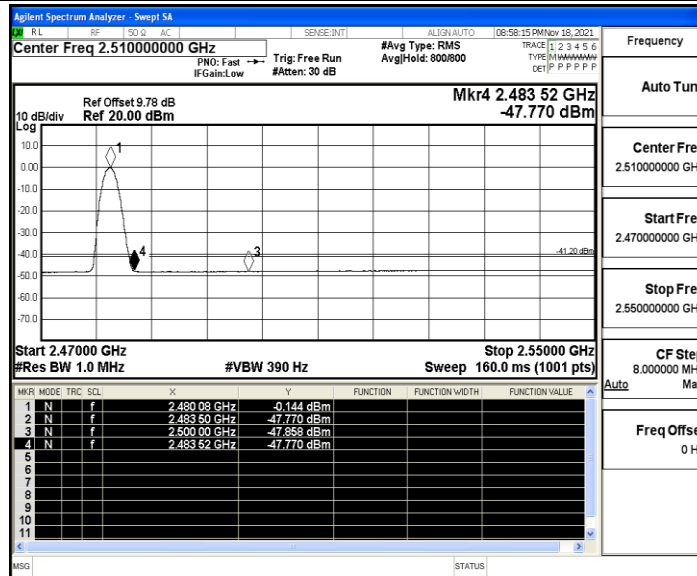
3DH5_Ant1_Low_2402_AV



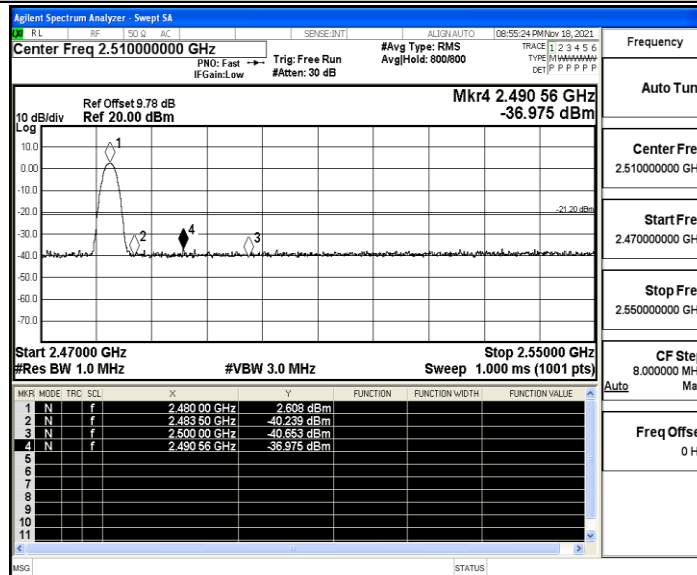
3DH5_Ant1_Low_2402_Peak



3DH5_Ant1_High_2480_AV



3DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_Hop_2402_Peak

