

Appendix Test Data for BT(BDR/EDR) (Conducted Measurement)

Product Name: TWS Earbuds Ball

Trade Mark: N/A

Test Model: YS-TWS049

FCC ID: 2AWHS-TWS049

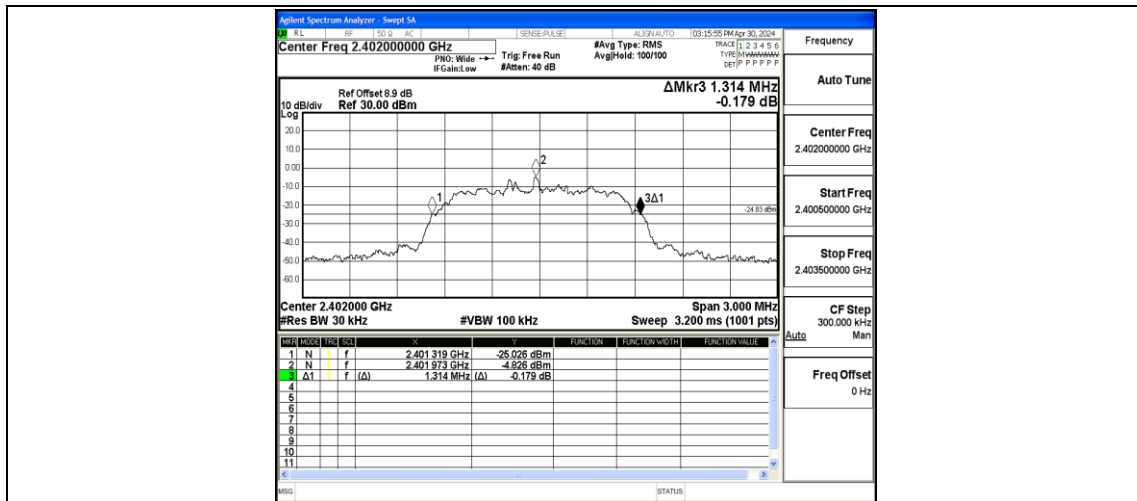
Environmental Conditions

Temperature:	23.8℃
Relative Humidity:	58%
ATM Pressure:	100.0 kPa
Test Engineer:	Allen Lai
Supervised by:	Hugo Chen
NOTE	N/A

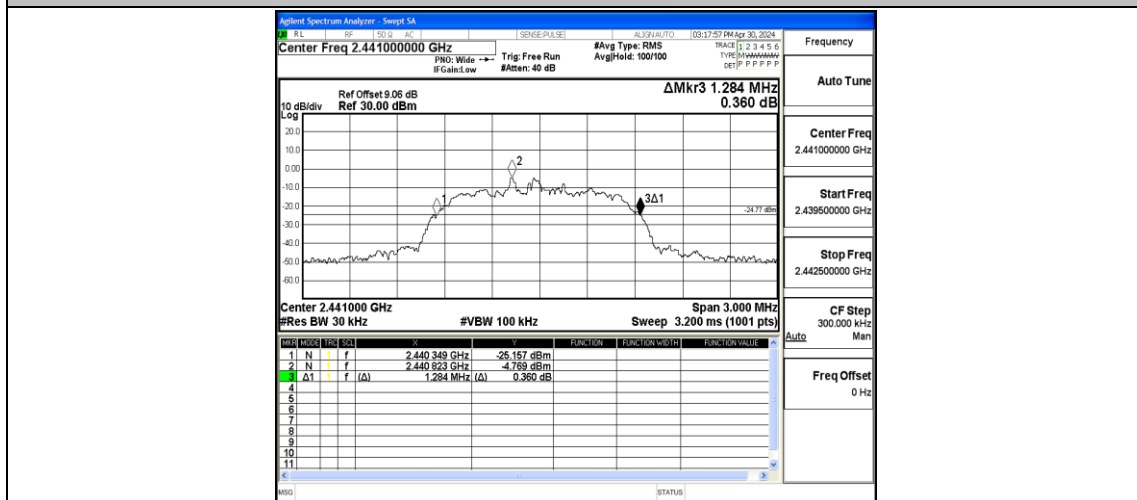
Appendix A: 20dB Emission Bandwidth

Test Result

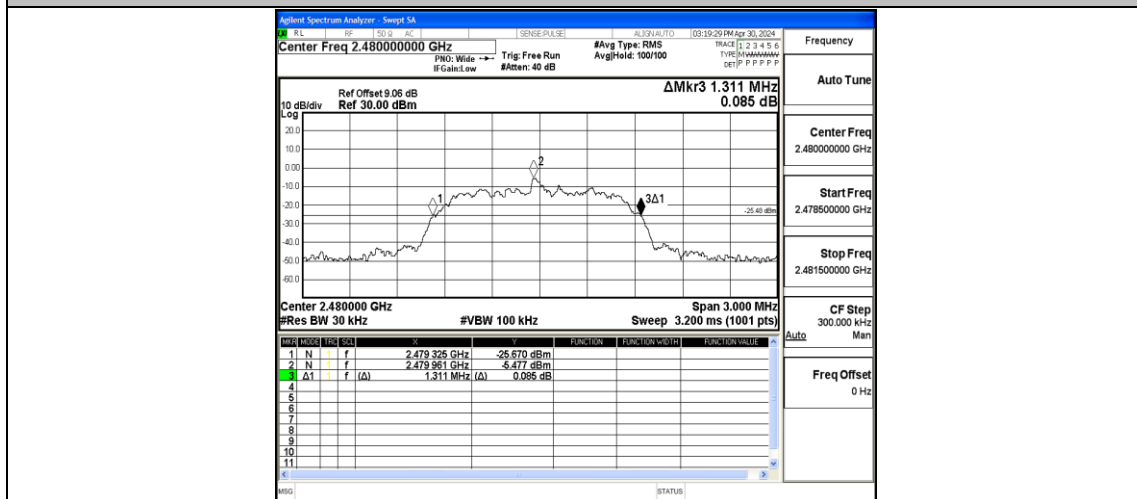
TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.954	2401.520	2402.474	---	---
DH5	Ant1	2441	0.972	2440.511	2441.483	---	---
DH5	Ant1	2480	0.996	2479.484	2480.480	---	---
2DH5	Ant1	2402	1.314	2401.319	2402.633	---	---
2DH5	Ant1	2441	1.284	2440.349	2441.633	---	---
2DH5	Ant1	2480	1.311	2479.325	2480.636	---	---



2DH5-Ant1-2402



2DH5-Ant1-2441



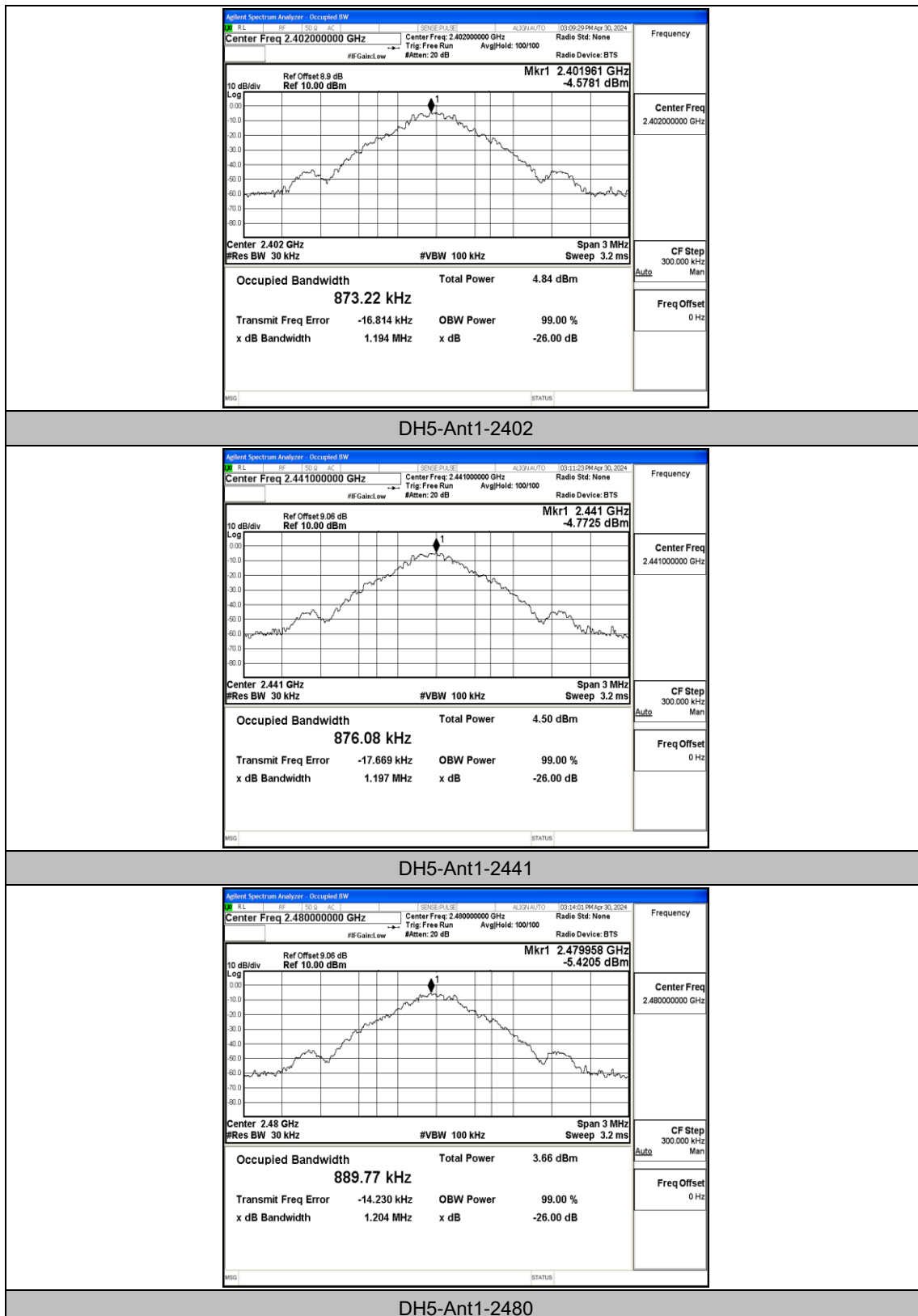
2DH5-Ant1-2480

Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.87322	2401.5466	2402.4198	---	---
DH5	Ant1	2441	0.87608	2440.5443	2441.4204	---	---
DH5	Ant1	2480	0.88977	2479.5409	2480.4307	---	---
2DH5	Ant1	2402	1.2035	2401.3829	2402.5864	---	---
2DH5	Ant1	2441	1.2066	2440.3804	2441.5870	---	---
2DH5	Ant1	2480	1.1801	2479.3941	2480.5742	---	---

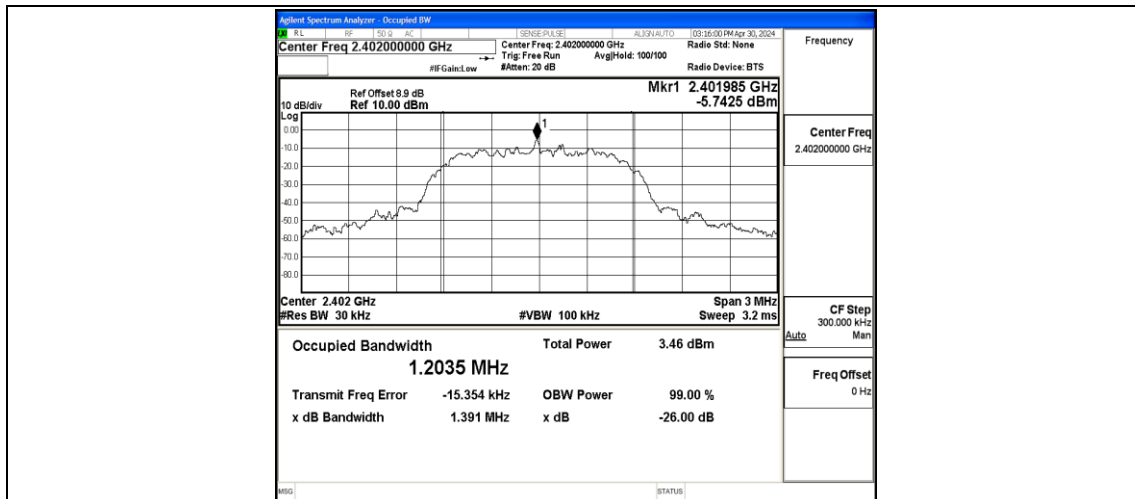
Test Graphs



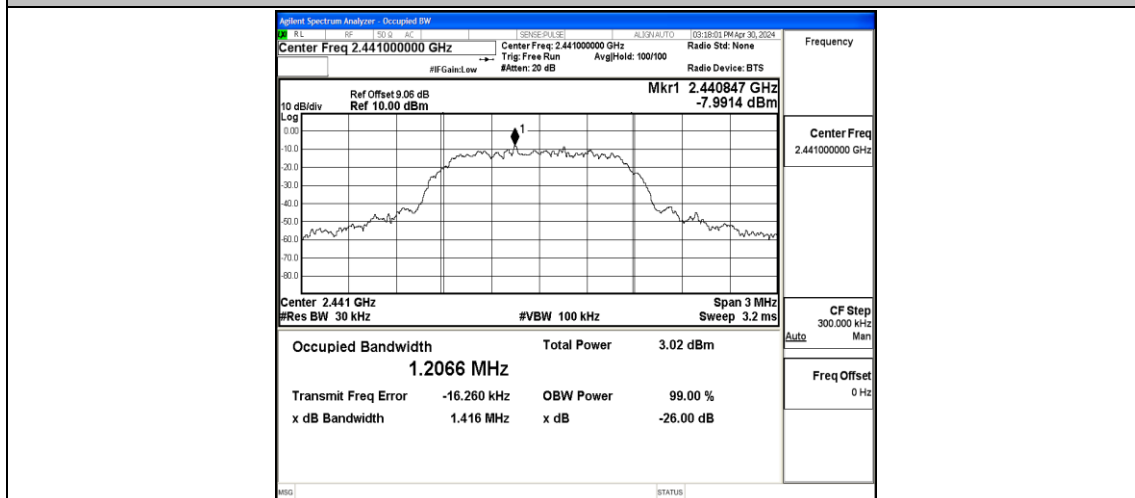
DH5-Ant1-2402

DH5-Ant1-2441

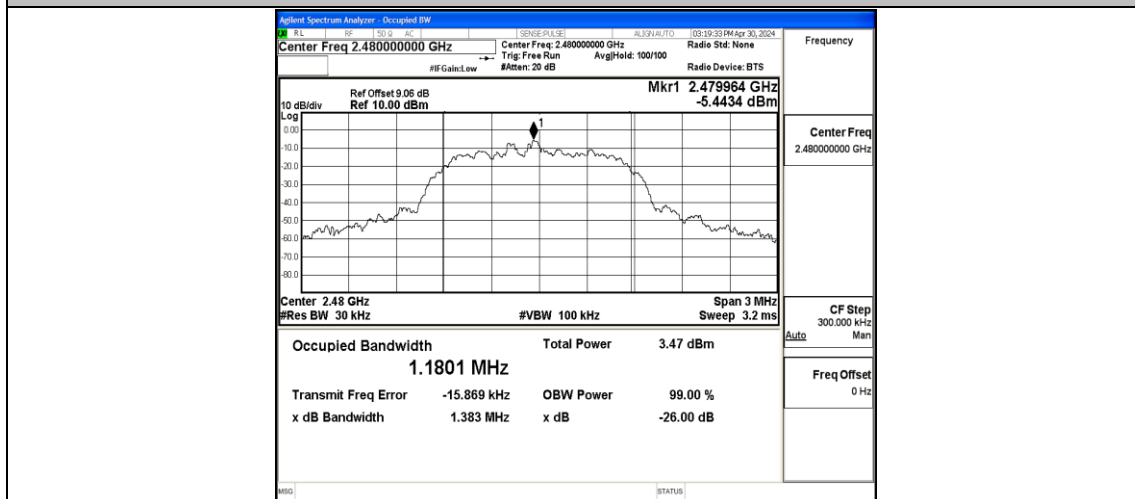
DH5-Ant1-2480



2DH5-Ant1-2402



2DH5-Ant1-2441



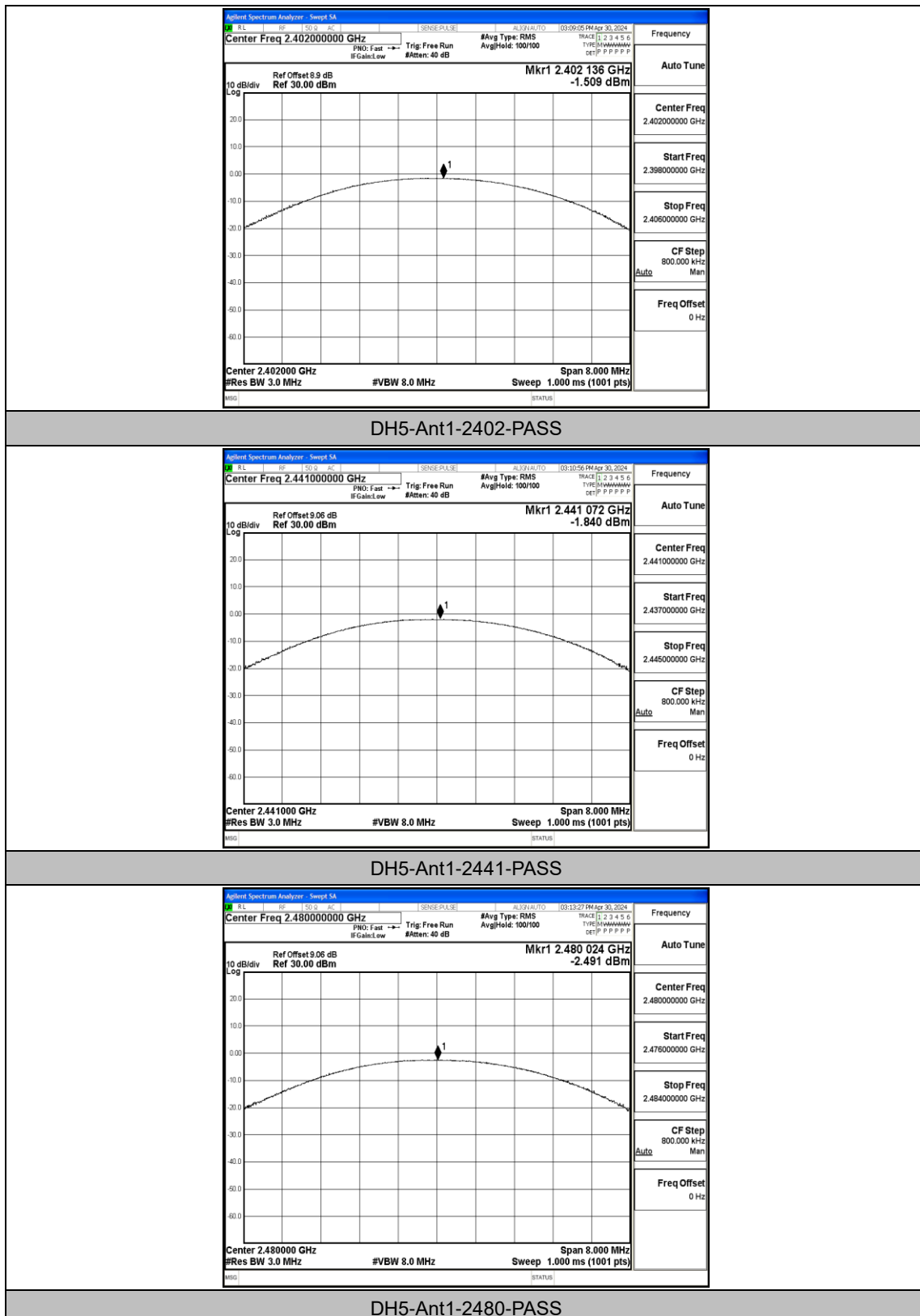
2DH5-Ant1-2480

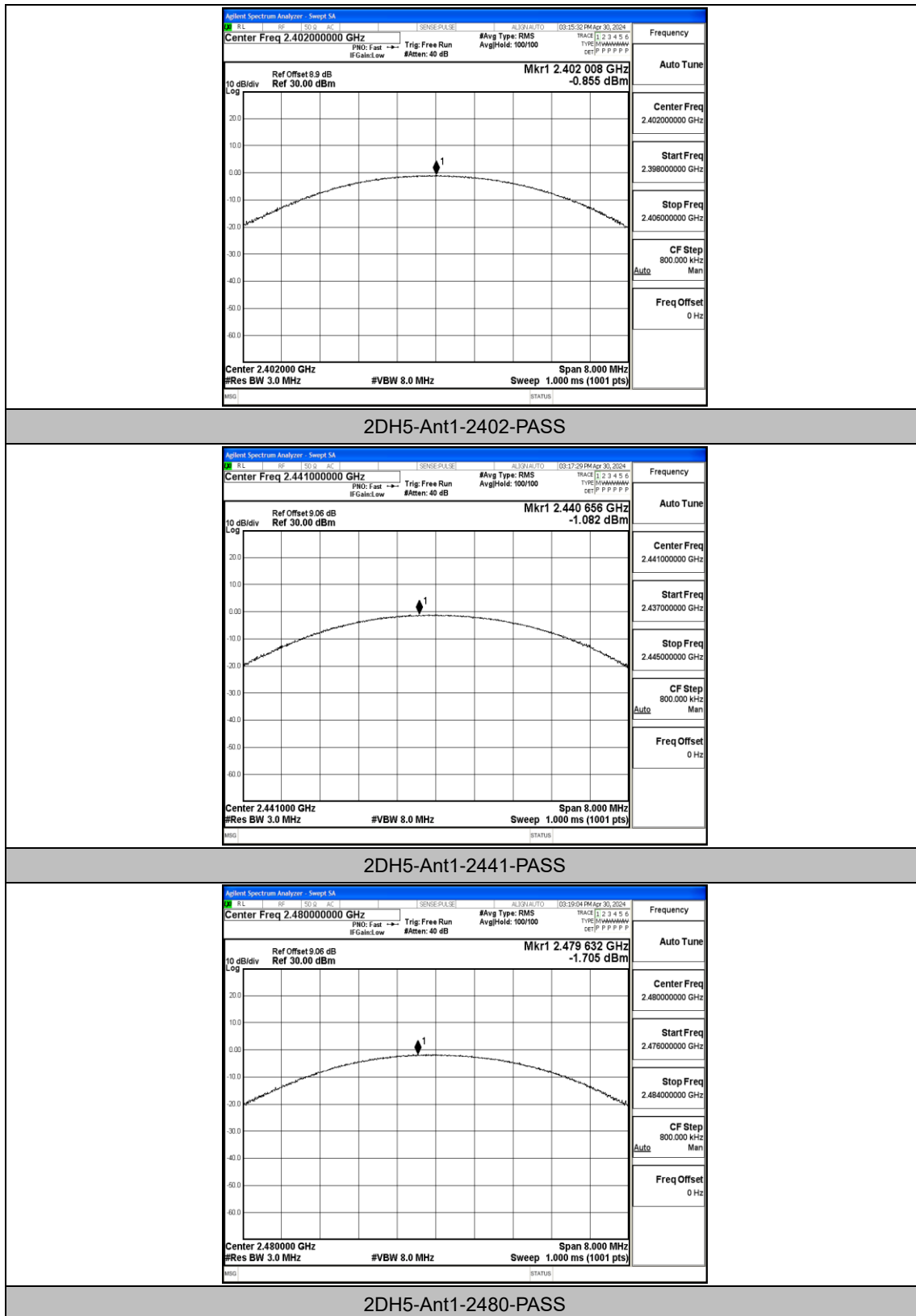
Appendix C: Maximum peak conducted output power

Test Result

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	-1.51	≤30	PASS
DH5	Ant1	2441	-1.84	≤30	PASS
DH5	Ant1	2480	-2.49	≤30	PASS
2DH5	Ant1	2402	-0.86	≤30	PASS
2DH5	Ant1	2441	-1.08	≤30	PASS
2DH5	Ant1	2480	-1.71	≤30	PASS

Test Graphs



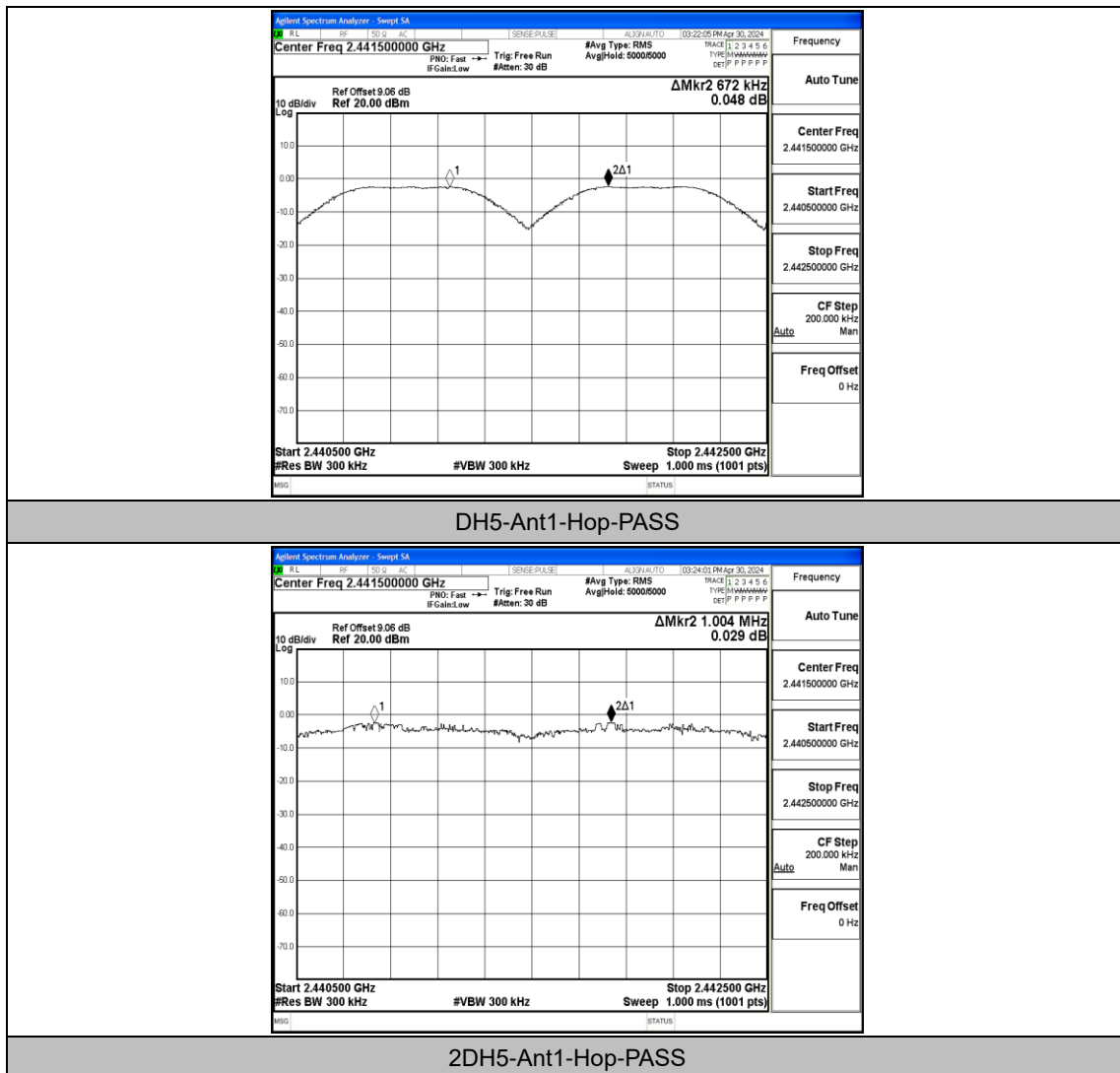


Appendix D: Carrier frequency separation

Test Result

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.672	≥ 0.664	PASS
2DH5	Ant1	Hop	1.004	≥ 0.876	PASS

Test Graphs

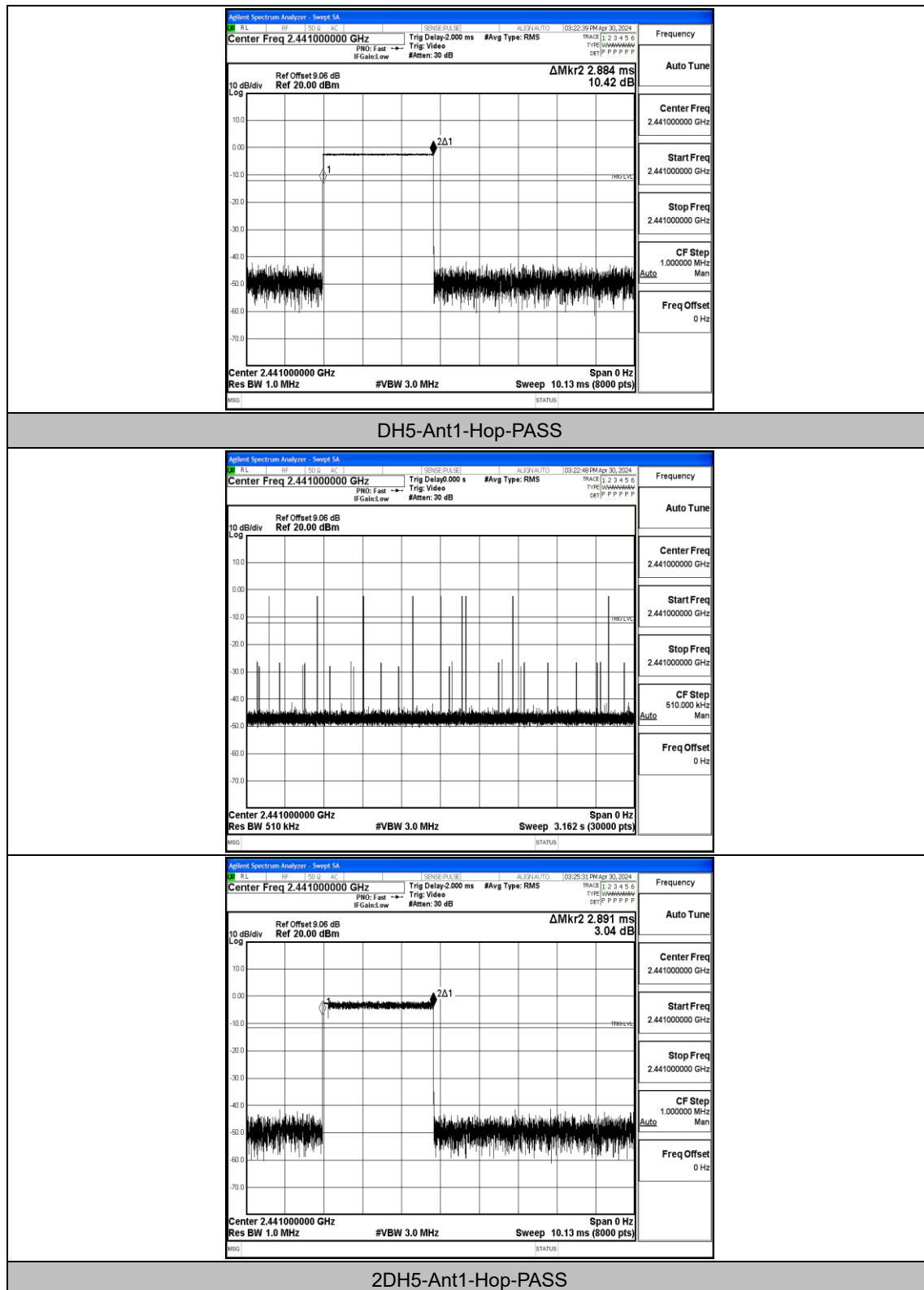


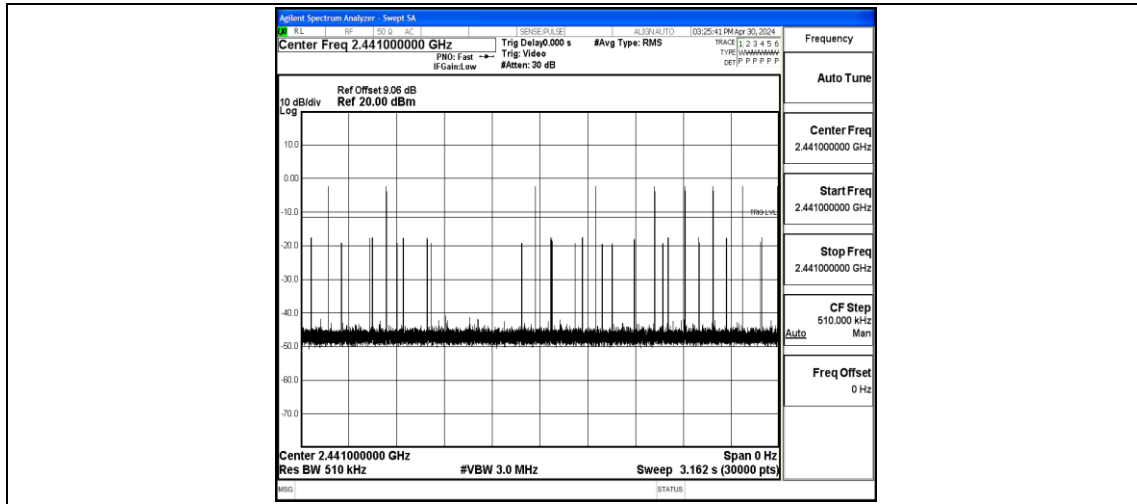
Appendix E: Time of occupancy

Test Result

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.884	110	0.317	≤0.4	PASS
2DH5	Ant1	Hop	2.891	100	0.289	≤0.4	PASS

Test Graphs



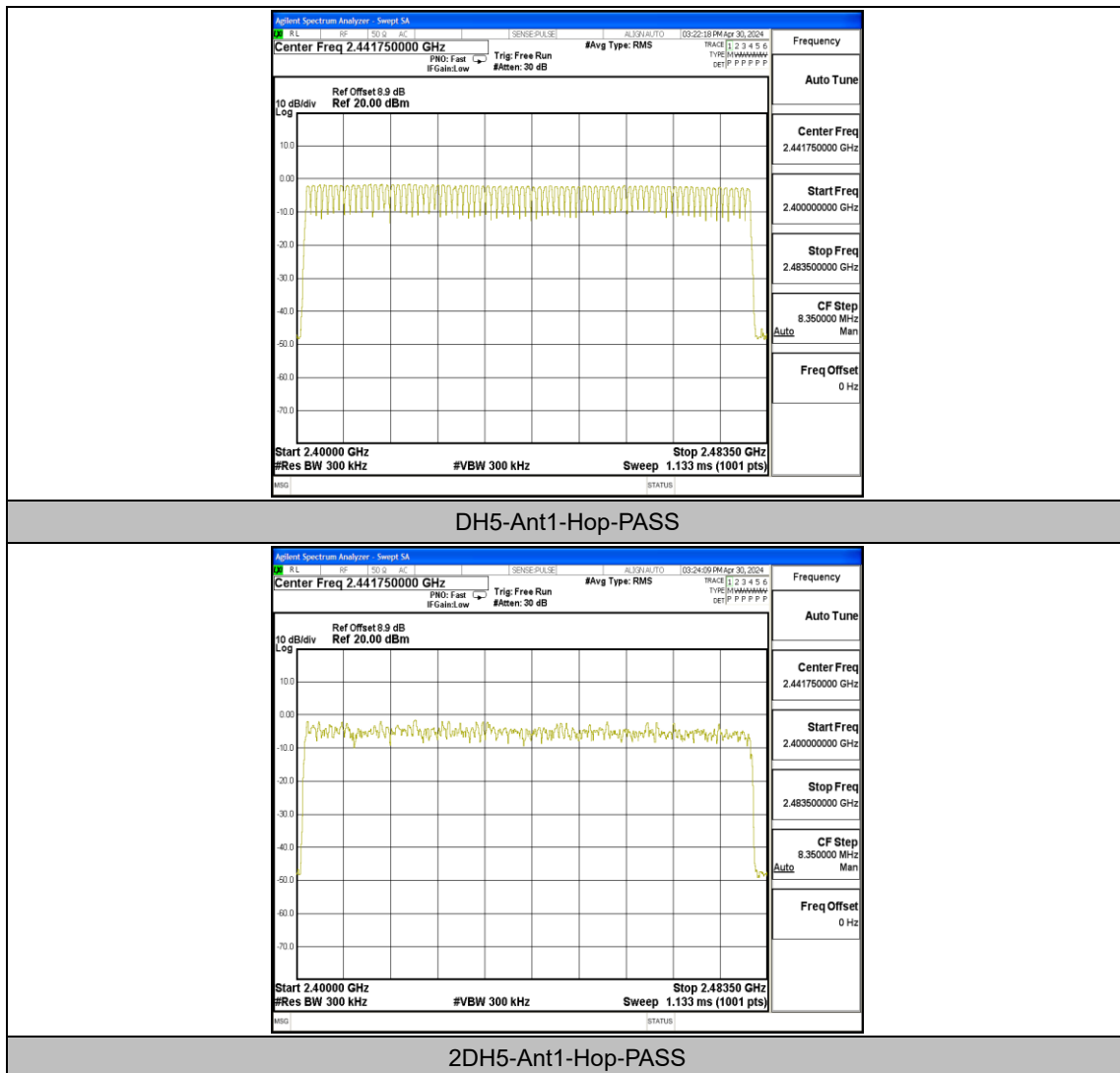


Appendix F: Number of hopping channels

Test Result

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

Test Graphs

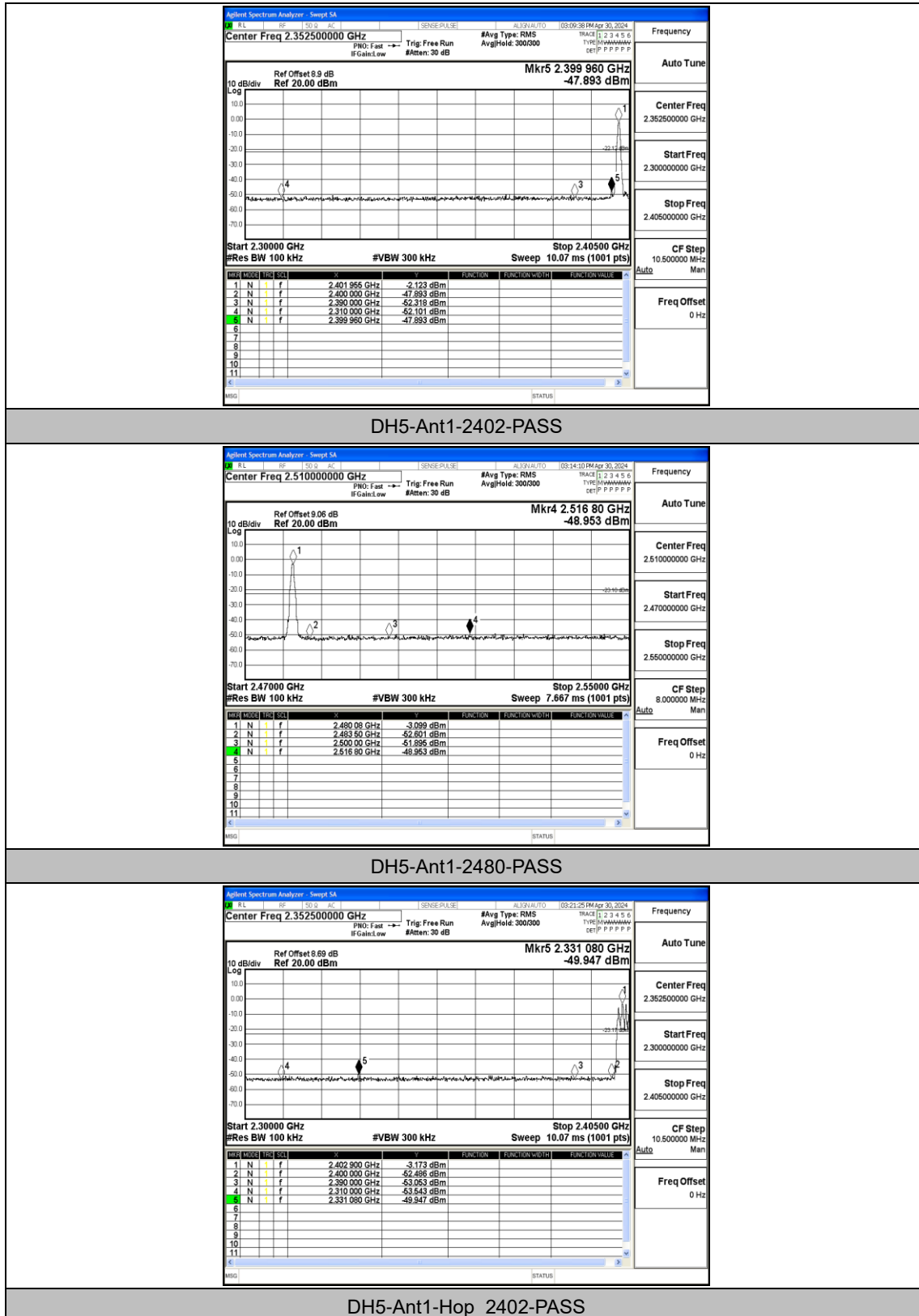


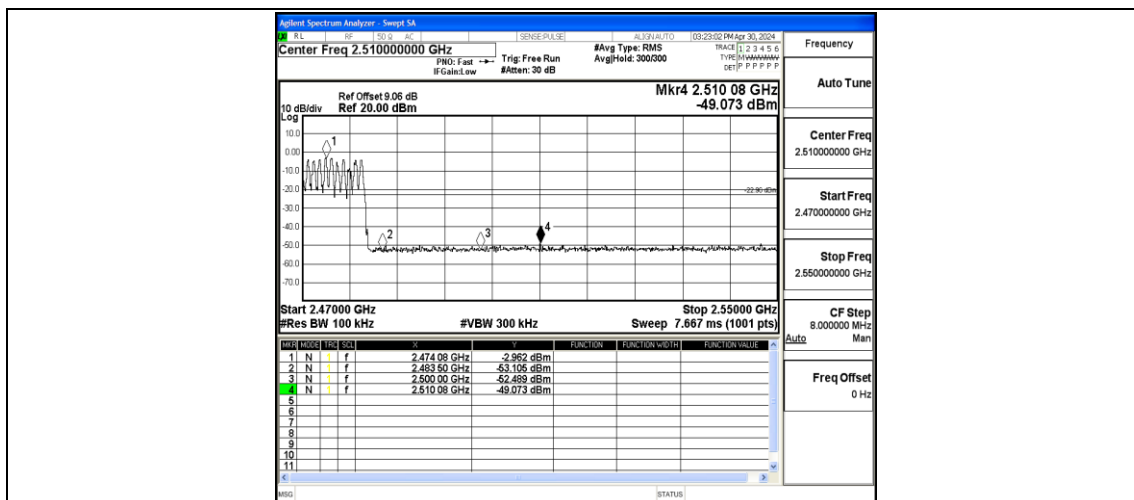
Appendix G: Band edge measurements

Test Result

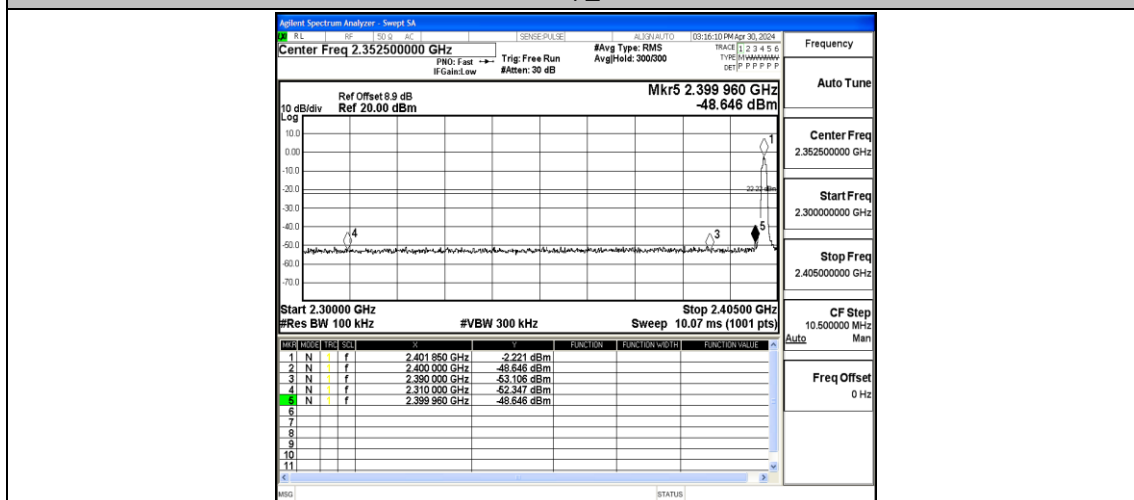
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-2.12	-47.89	≤ -22.12	PASS
DH5	Ant1	High	2480	-3.10	-48.95	≤ -23.1	PASS
DH5	Ant1	Low	Hop_2402	-3.17	-49.95	≤ -23.17	PASS
DH5	Ant1	High	Hop_2480	-2.96	-49.07	≤ -22.96	PASS
2DH5	Ant1	Low	2402	-2.22	-48.65	≤ -22.22	PASS
2DH5	Ant1	High	2480	-3.97	-49.24	≤ -23.97	PASS
2DH5	Ant1	Low	Hop_2402	-6.55	-50.62	≤ -26.55	PASS
2DH5	Ant1	High	Hop_2480	-3.41	-48.77	≤ -23.41	PASS

Test Graphs

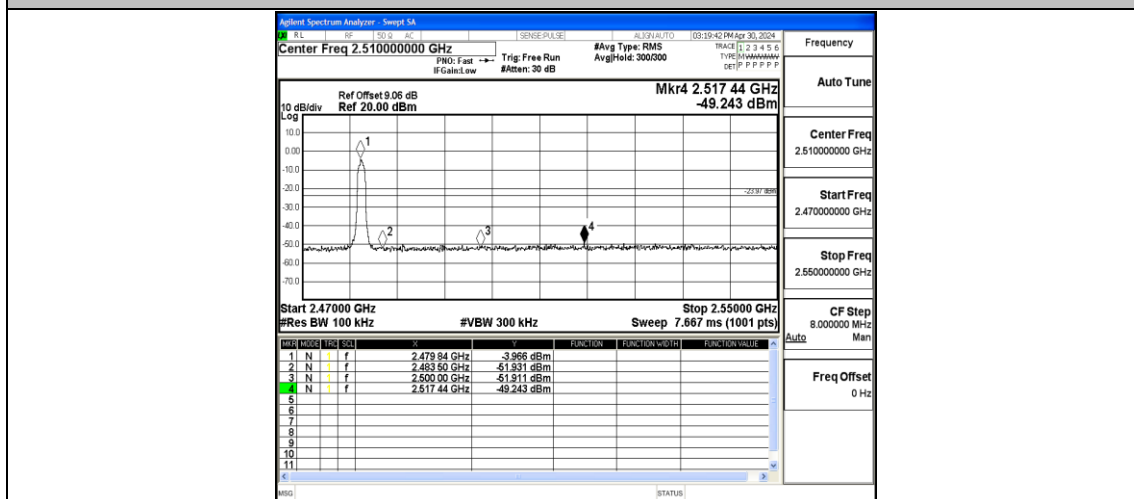




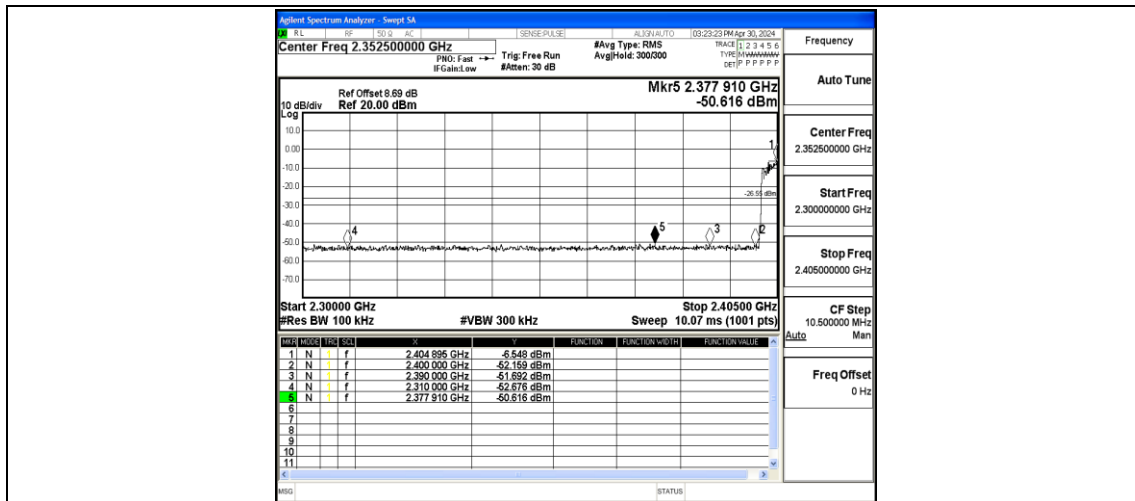
DH5-Ant1-Hop_2480-PASS



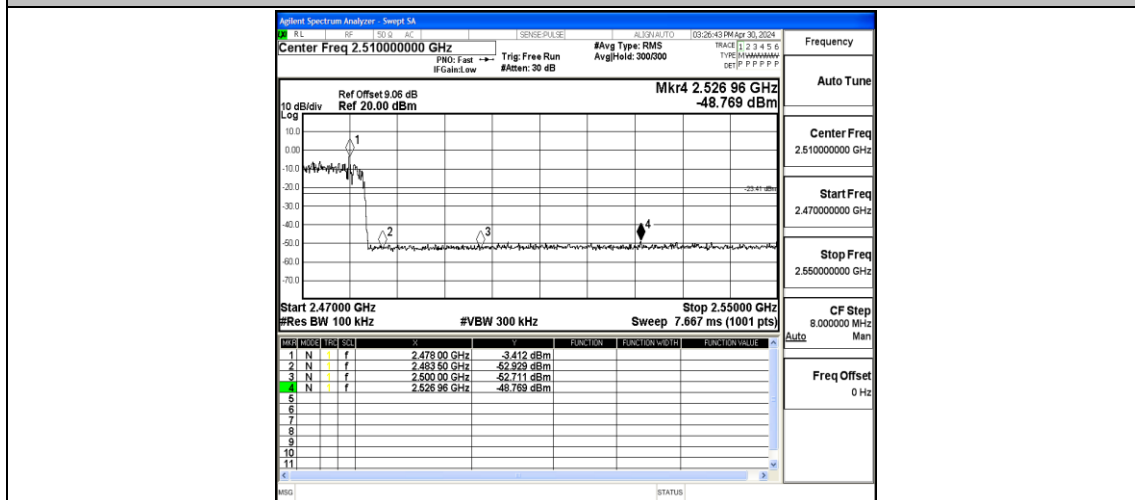
2DH5-Ant1-2402-PASS



2DH5-Ant1-2480-PASS



2DH5-Ant1-Hop_2402-PASS



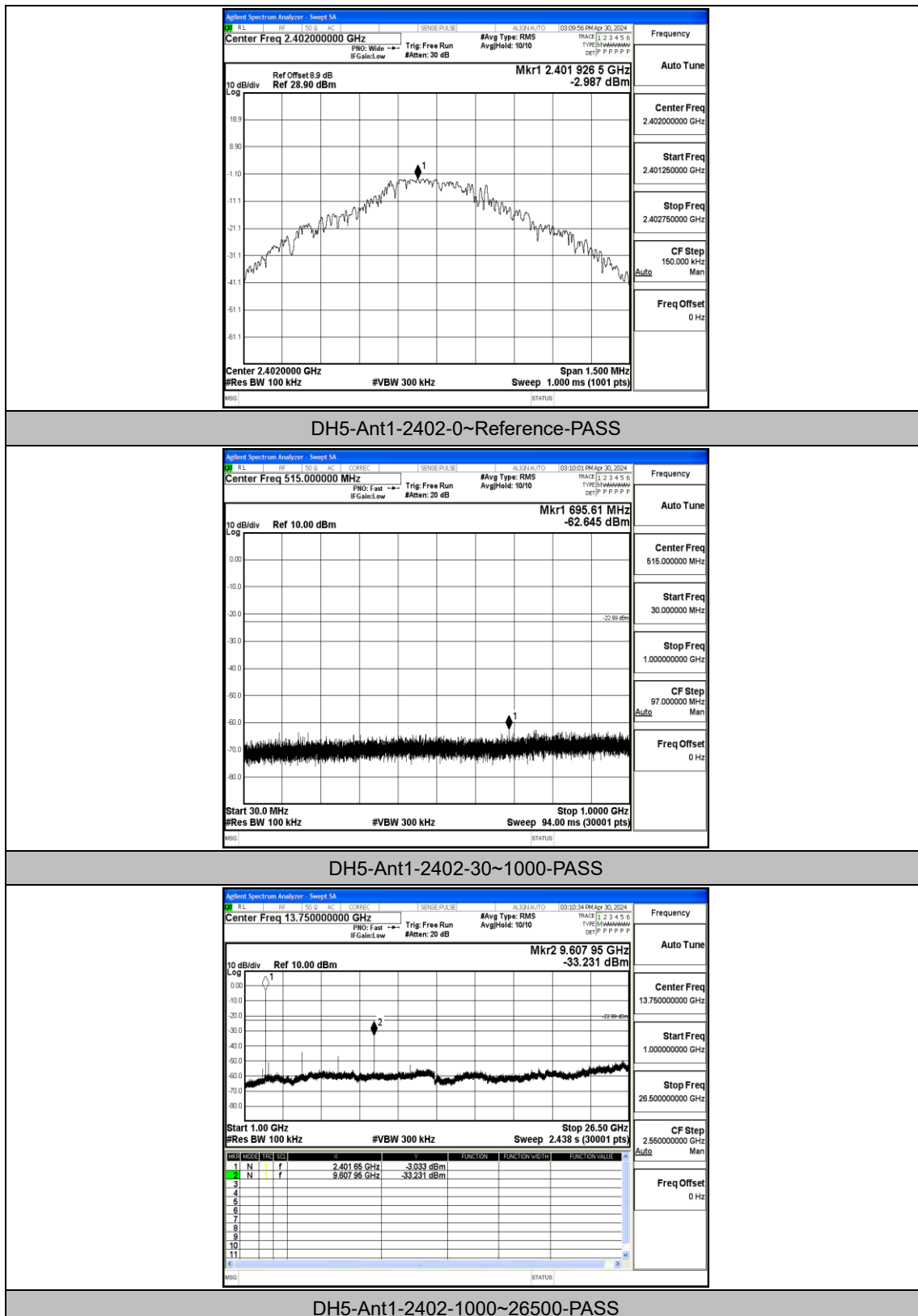
2DH5-Ant1-Hop_2480-PASS

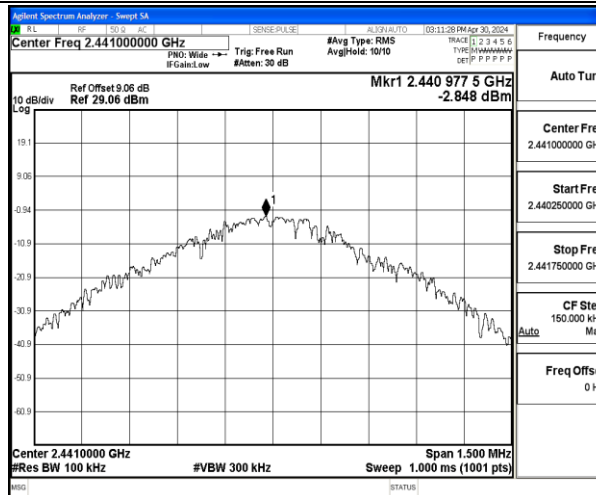
Appendix H: Conducted Spurious Emission

Test Result

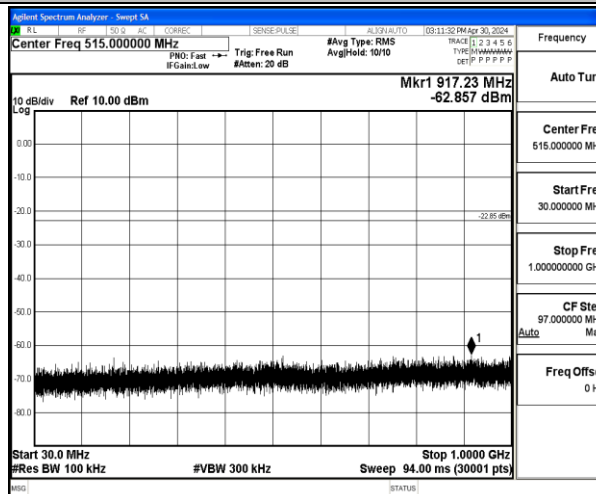
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	0~Reference	-2.99	-2.99	---	PASS
DH5	Ant1	2402	30~1000	-2.99	-62.65	≤-22.99	PASS
DH5	Ant1	2402	1000~26500	-2.99	-33.23	≤-22.99	PASS
DH5	Ant1	2441	0~Reference	-2.85	-2.85	---	PASS
DH5	Ant1	2441	30~1000	-2.85	-62.86	≤-22.85	PASS
DH5	Ant1	2441	1000~26500	-2.85	-31.14	≤-22.85	PASS
DH5	Ant1	2480	0~Reference	-3.80	-3.80	---	PASS
DH5	Ant1	2480	30~1000	-3.80	-61.26	≤-23.8	PASS
DH5	Ant1	2480	1000~26500	-3.80	-30.45	≤-23.8	PASS
2DH5	Ant1	2402	0~Reference	-6.25	-6.25	---	PASS
2DH5	Ant1	2402	30~1000	-6.25	-55.57	≤-26.25	PASS
2DH5	Ant1	2402	1000~26500	-6.25	-32.86	≤-26.25	PASS
2DH5	Ant1	2441	0~Reference	-5.95	-5.95	---	PASS
2DH5	Ant1	2441	30~1000	-5.95	-62.82	≤-25.95	PASS
2DH5	Ant1	2441	1000~26500	-5.95	-31.08	≤-25.95	PASS
2DH5	Ant1	2480	0~Reference	-5.50	-5.50	---	PASS
2DH5	Ant1	2480	30~1000	-5.50	-62.3	≤-25.5	PASS
2DH5	Ant1	2480	1000~26500	-5.50	-30.45	≤-25.5	PASS

Test Graphs

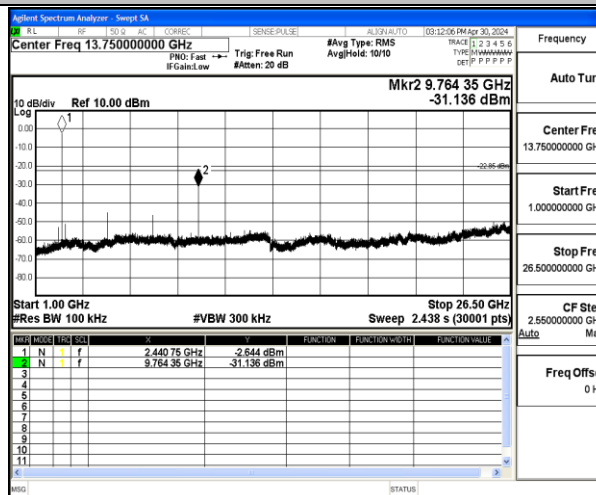




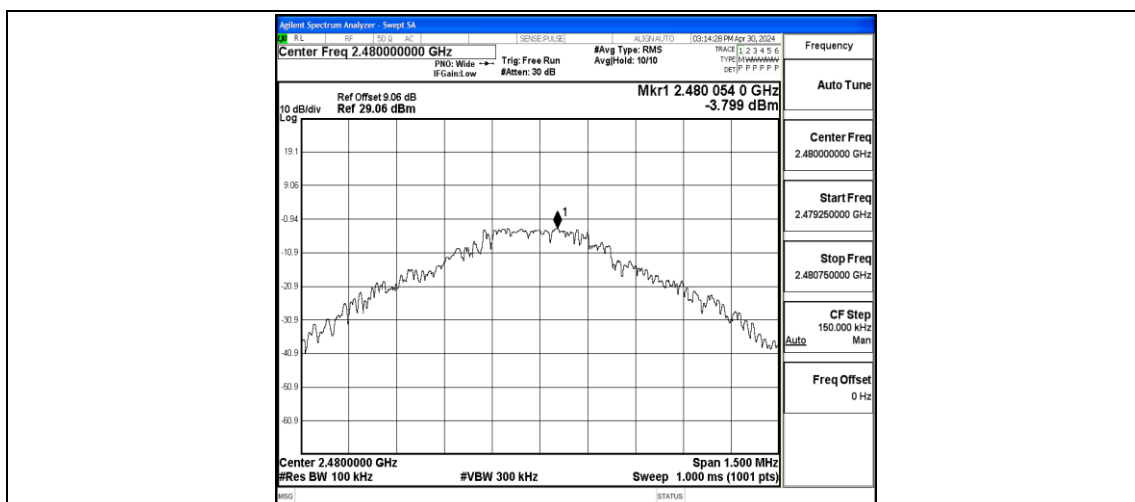
DH5-Ant1-2441-0~Reference-PASS



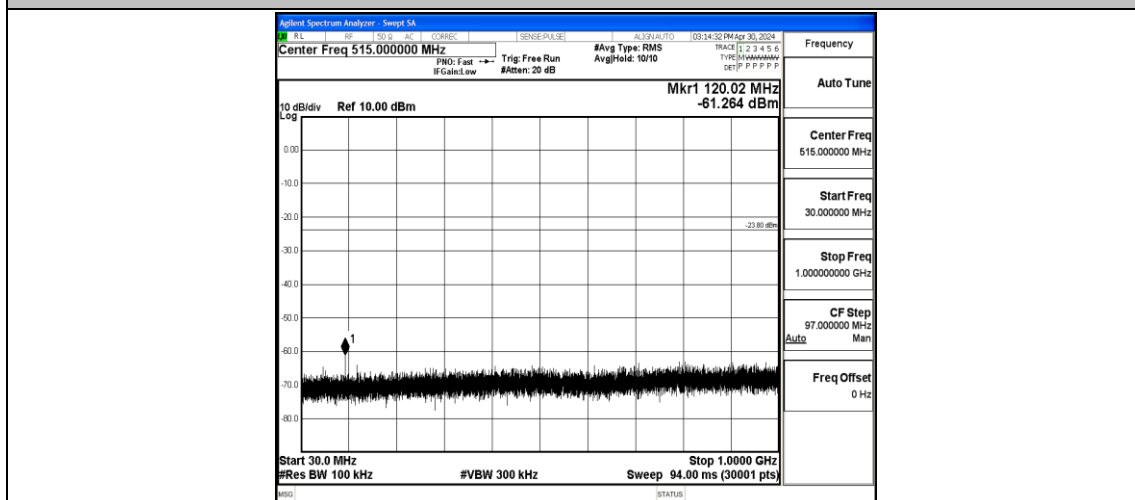
DH5-Ant1-2441-30~1000-PASS



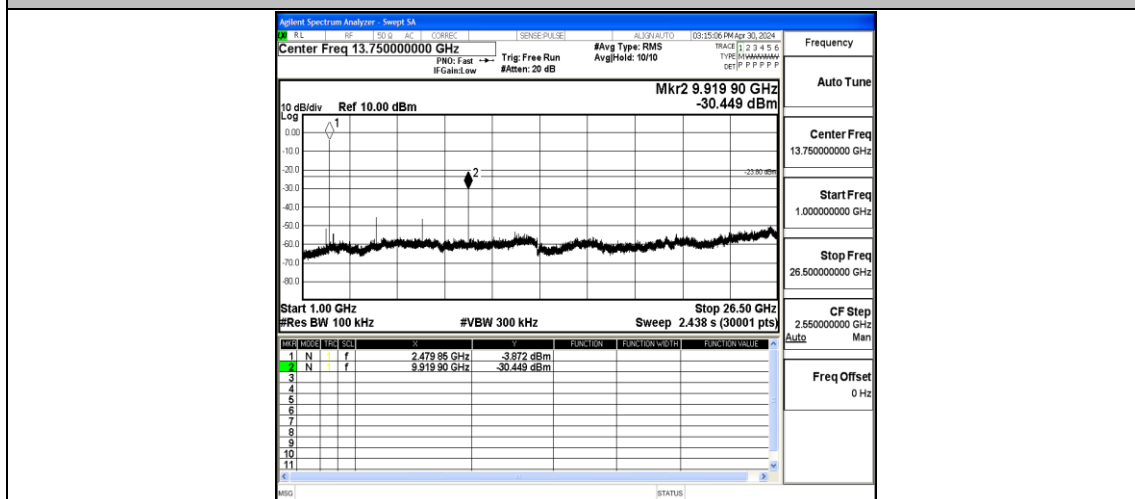
DH5-Ant1-2441-1000~26500-PASS



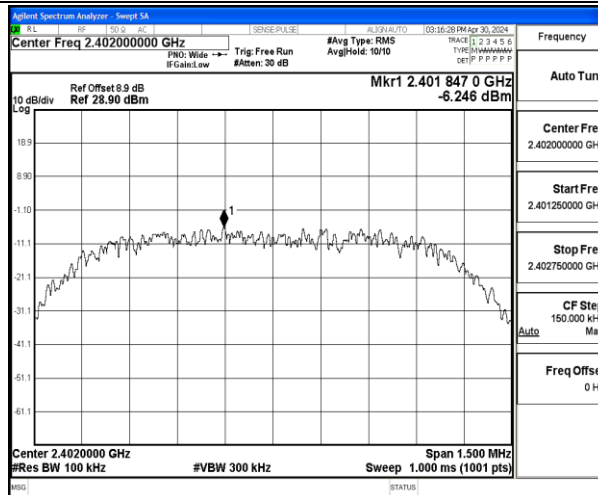
DH5-Ant1-2480-0~Reference-PASS



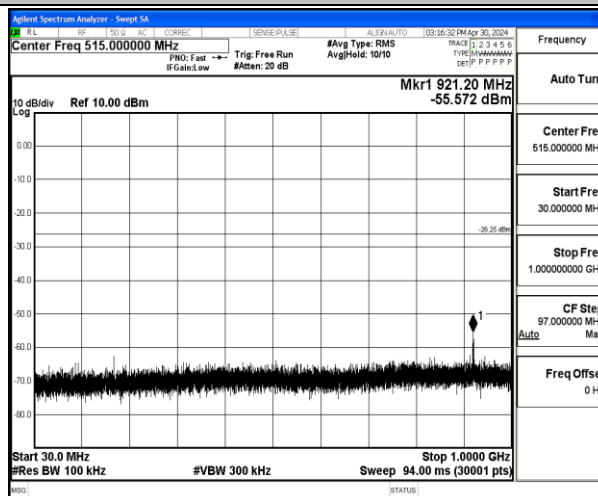
DH5-Ant1-2480-30~1000-PASS



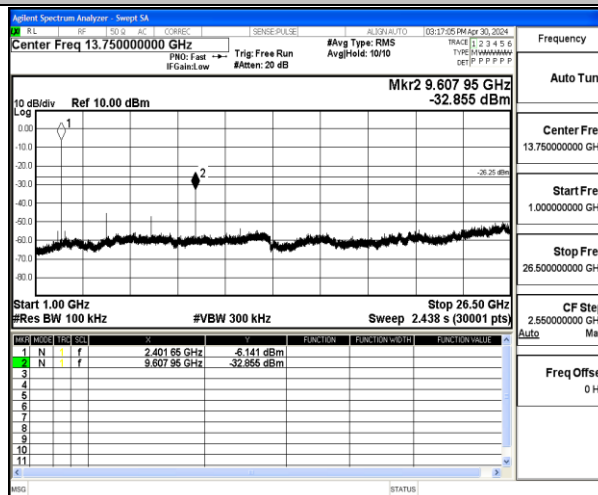
DH5-Ant1-2480-1000~26500-PASS



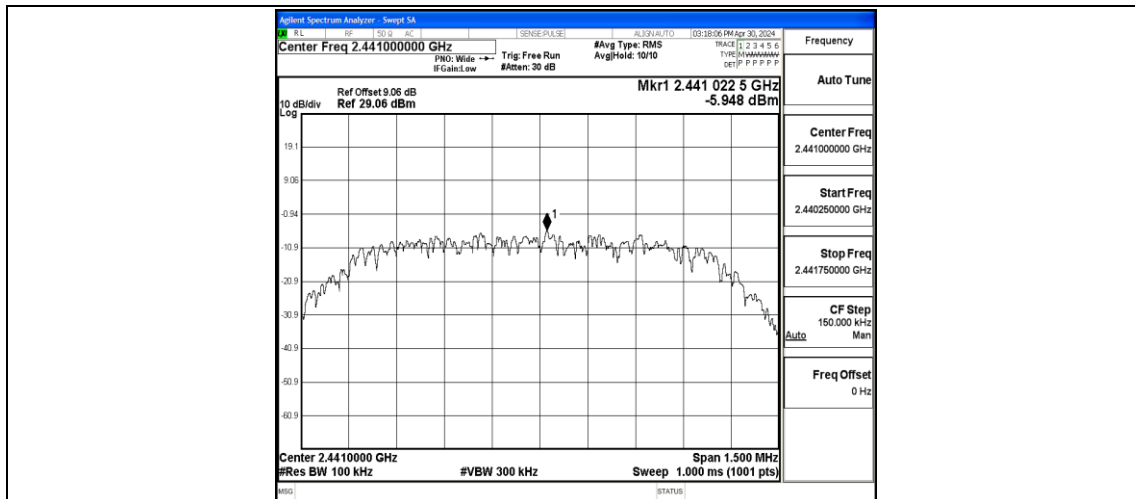
2DH5-Ant1-2402-0~Reference-PASS



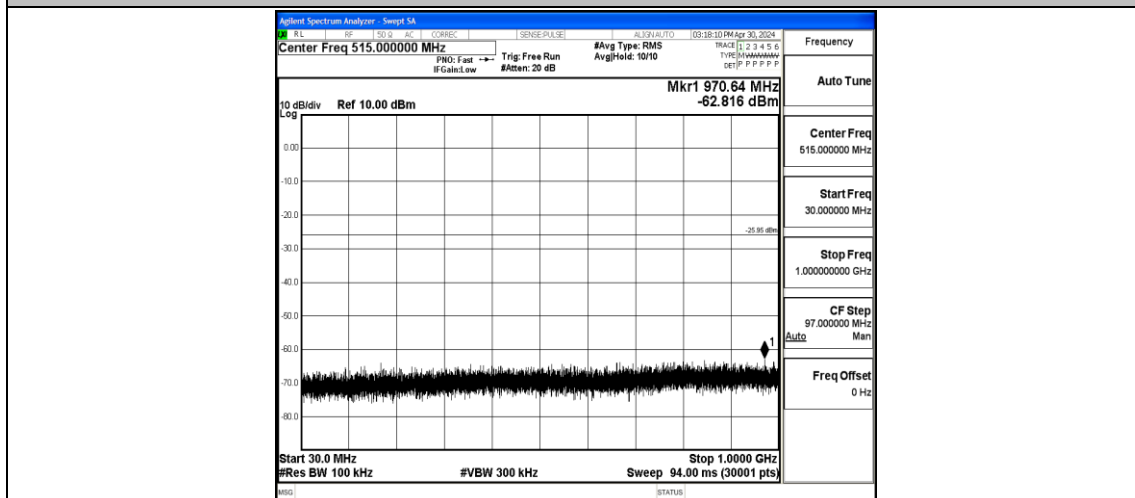
2DH5-Ant1-2402-30~1000-PASS



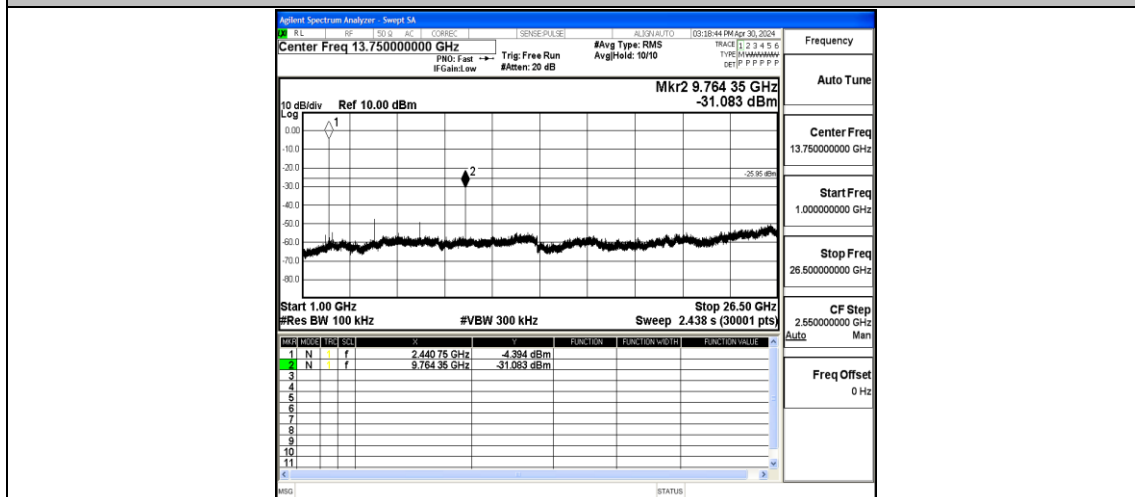
2DH5-Ant1-2402-1000~26500-PASS



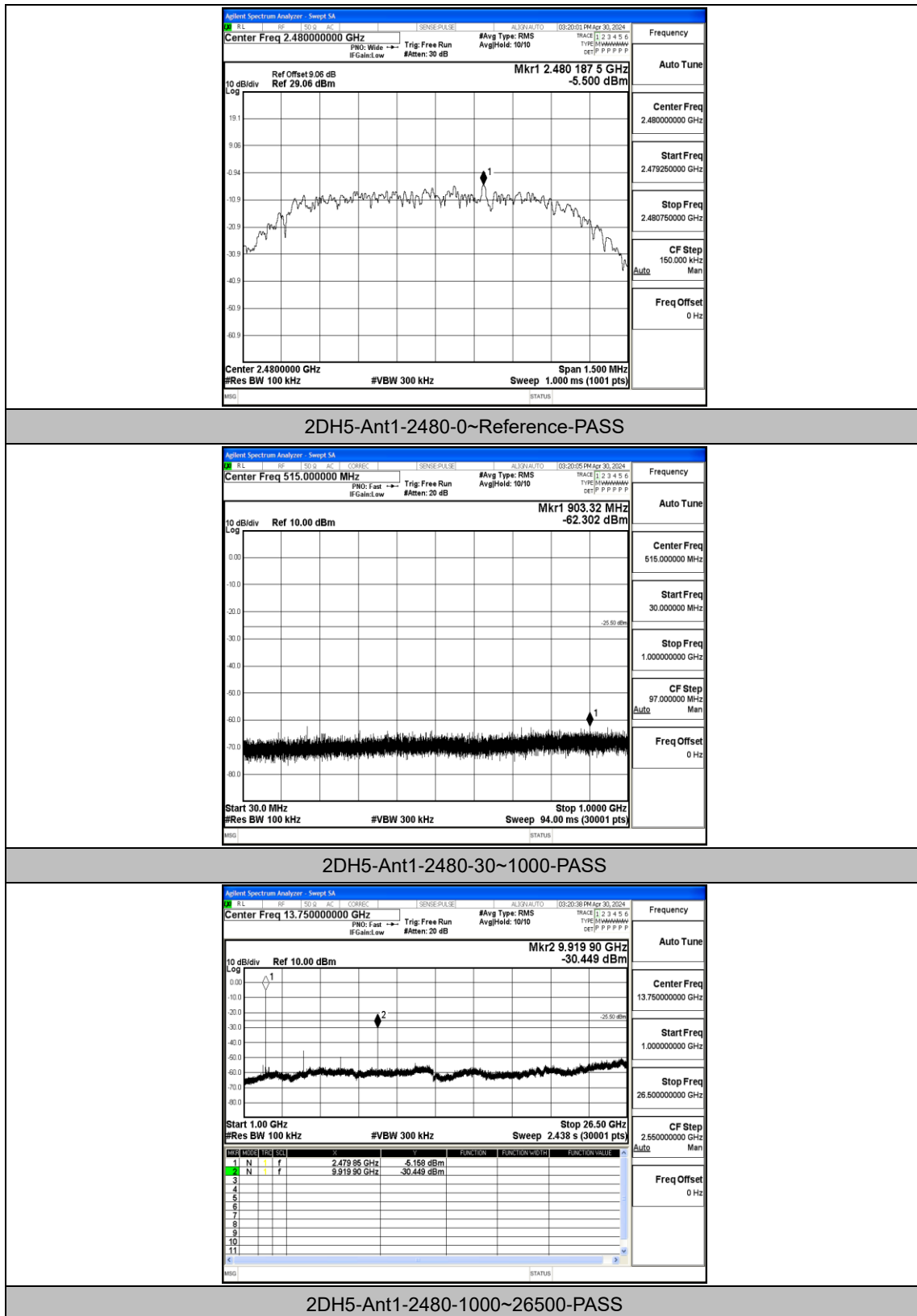
2DH5-Ant1-2441-0~Reference-PASS



2DH5-Ant1-2441-30~1000-PASS



2DH5-Ant1-2441-1000~26500-PASS

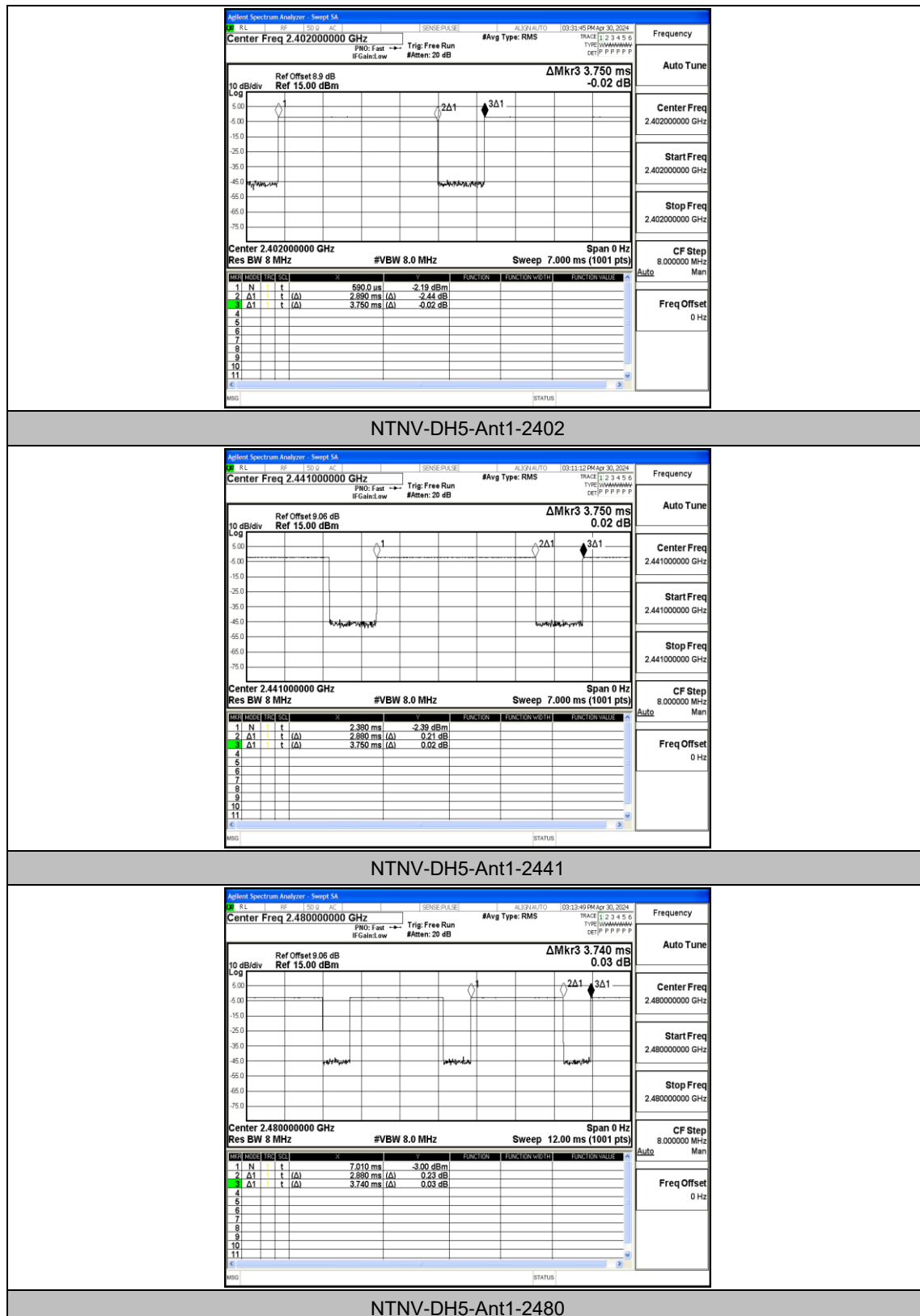


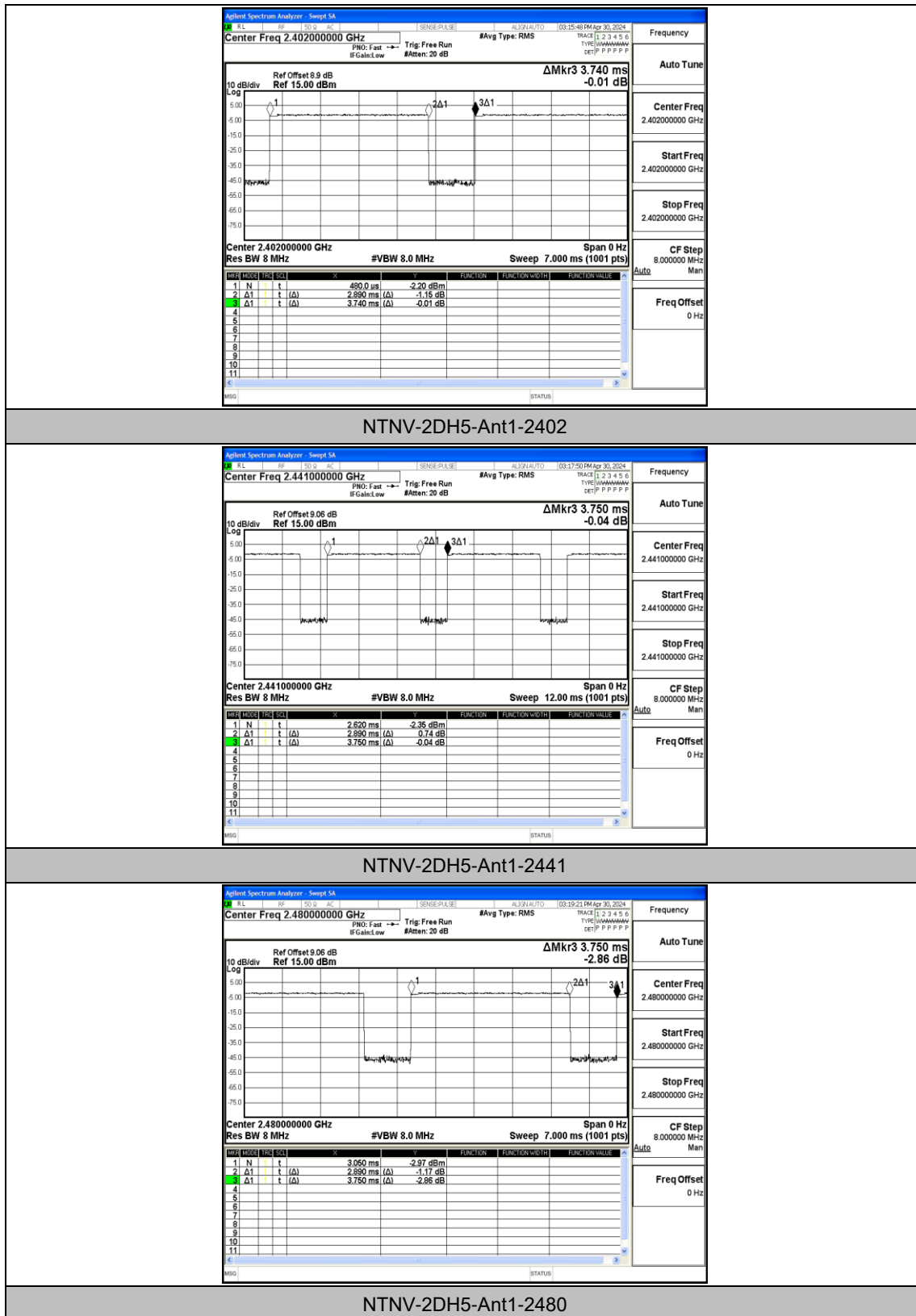
Appendix I: Duty Cycle

Test Result

TestMode	Antenna	Frequency[MHz]	ON Time[ms]	Period[ms]	Duty Cycle[%]	Duty Cycle Factor[dB]
DH5	Ant1	2402	2.89	3.75	77.07	1.13
DH5	Ant1	2441	2.88	3.75	76.80	1.15
DH5	Ant1	2480	2.88	3.74	77.01	1.13
2DH5	Ant1	2402	2.89	3.74	77.27	1.12
2DH5	Ant1	2441	2.89	3.75	77.07	1.13
2DH5	Ant1	2480	2.89	3.75	77.07	1.13

Test Graphs





Appendix J: Emissions in Restricted Bands

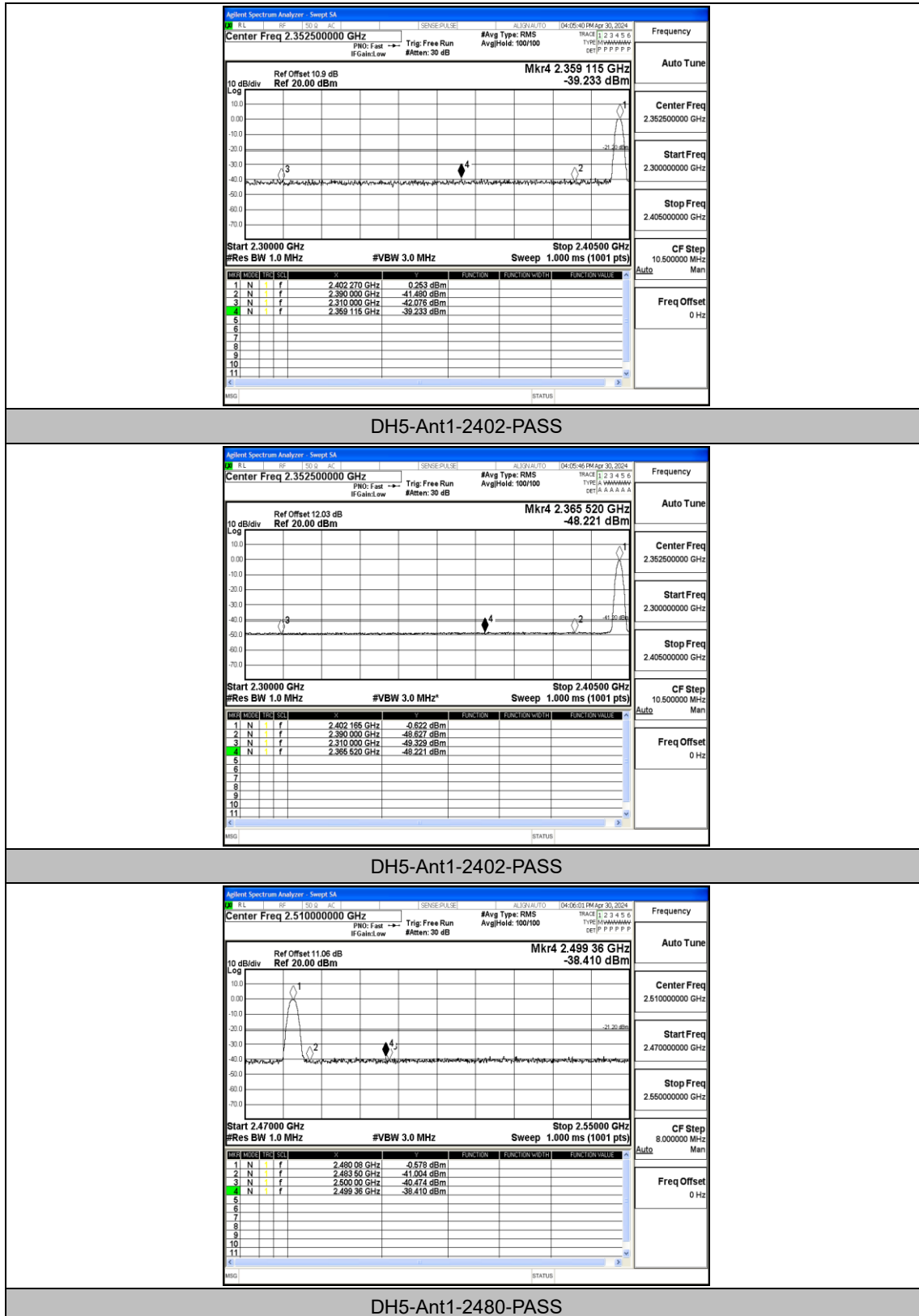
Test Result

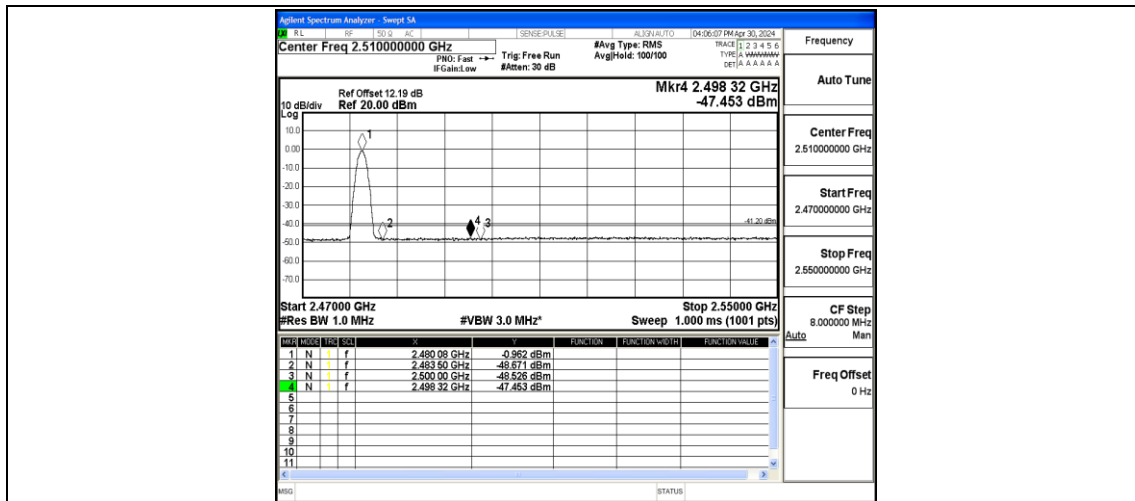
TestMode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant1	Low	2402	Peak	2390.000	-41.48	≤-21.20	53.72	≤74	PASS
DH5	Ant1	Low	2402	Peak	2310.000	-42.08	≤-21.20	53.12	≤74	PASS
DH5	Ant1	Low	2402	Peak	2359.115	-39.23	≤-21.20	55.97	≤74	PASS
DH5	Ant1	Low	2402	AV	2390.000	-48.63	≤-41.20	46.57	≤54	PASS
DH5	Ant1	Low	2402	AV	2310.000	-49.33	≤-41.20	45.87	≤54	PASS
DH5	Ant1	Low	2402	AV	2365.520	-48.22	≤-41.20	46.98	≤54	PASS
DH5	Ant1	High	2480	Peak	2483.500	-41	≤-21.20	54.20	≤74	PASS
DH5	Ant1	High	2480	Peak	2500.000	-40.47	≤-21.20	54.73	≤74	PASS
DH5	Ant1	High	2480	Peak	2499.360	-38.41	≤-21.20	56.79	≤74	PASS
DH5	Ant1	High	2480	AV	2483.500	-48.67	≤-41.20	46.53	≤54	PASS
DH5	Ant1	High	2480	AV	2500.000	-48.53	≤-41.20	46.67	≤54	PASS
DH5	Ant1	High	2480	AV	2498.320	-47.45	≤-41.20	47.75	≤54	PASS
2DH5	Ant1	Low	2402	Peak	2390.000	-41.45	≤-21.20	53.75	≤74	PASS
2DH5	Ant1	Low	2402	Peak	2310.000	-41.47	≤-21.20	53.73	≤74	PASS
2DH5	Ant1	Low	2402	Peak	2367.515	-38.78	≤-21.20	56.42	≤74	PASS
2DH5	Ant1	Low	2402	AV	2390.000	-48.94	≤-41.20	46.26	≤54	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-49.36	≤-41.20	45.84	≤54	PASS
2DH5	Ant1	Low	2402	AV	2374.340	-48.18	≤-41.20	47.02	≤54	PASS
2DH5	Ant1	High	2480	Peak	2483.500	-41.92	≤-21.20	53.28	≤74	PASS
2DH5	Ant1	High	2480	Peak	2500.000	-40.98	≤-21.20	54.22	≤74	PASS
2DH5	Ant1	High	2480	Peak	2489.520	-38.32	≤-21.20	56.88	≤74	PASS
2DH5	Ant1	High	2480	AV	2483.500	-48.9	≤-41.20	46.30	≤54	PASS
2DH5	Ant1	High	2480	AV	2500.000	-47.86	≤-41.20	47.34	≤54	PASS
2DH5	Ant1	High	2480	AV	2499.120	-47.2	≤-41.20	48.00	≤54	PASS

Note:

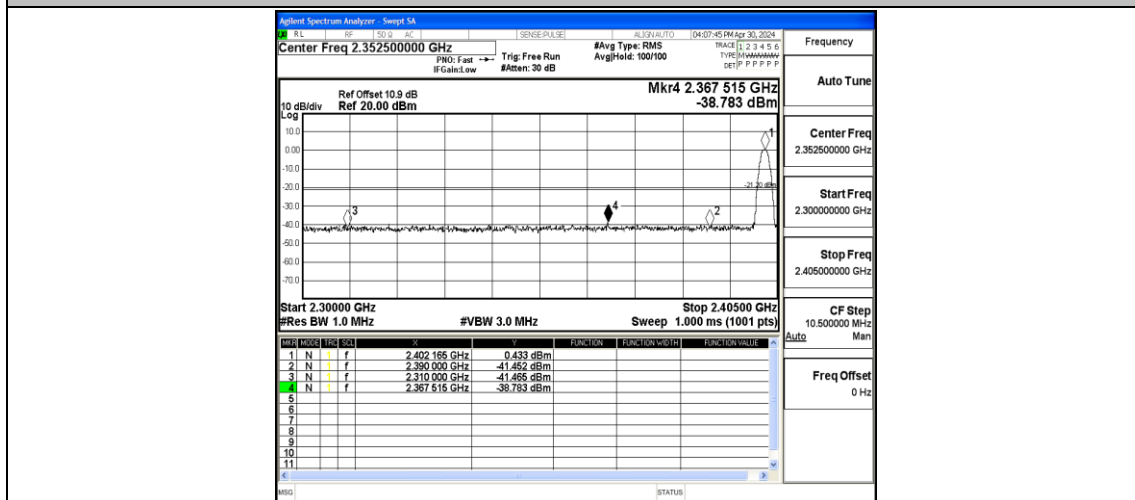
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

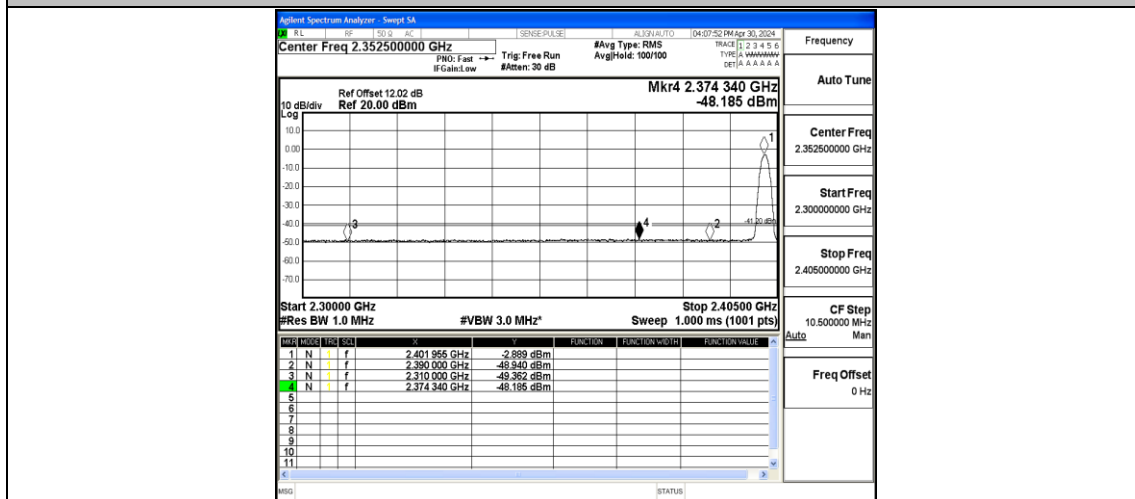




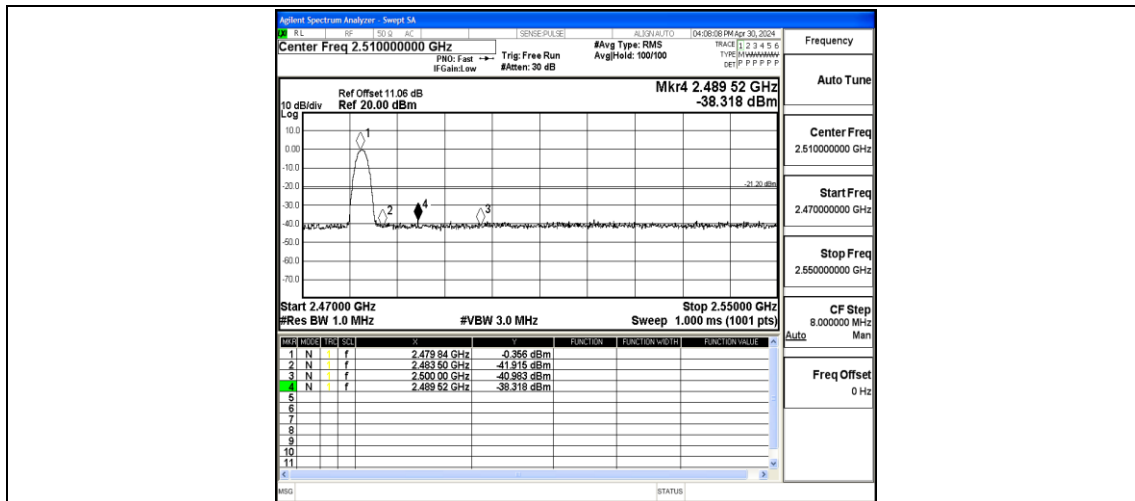
DH5-Ant1-2480-PASS



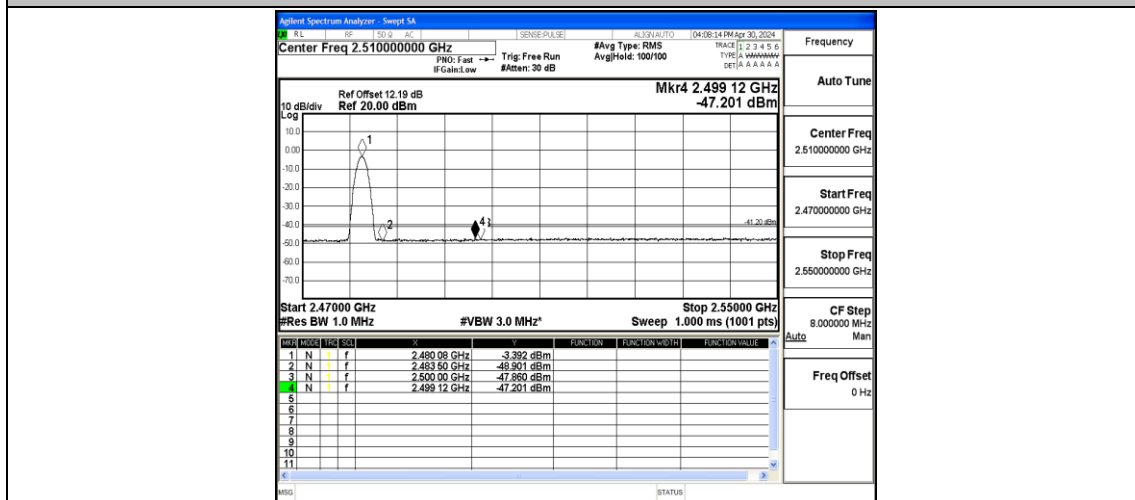
2DH5-Ant1-2402-PASS



2DH5-Ant1-2402-PASS



2DH5-Ant1-2480-PASS



2DH5-Ant1-2480-PASS