

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

Product Name: Portable Electronic Piano



Trade Mark:

Test Model: V30

FCC ID: 2BF77-V30

Environmental Conditions

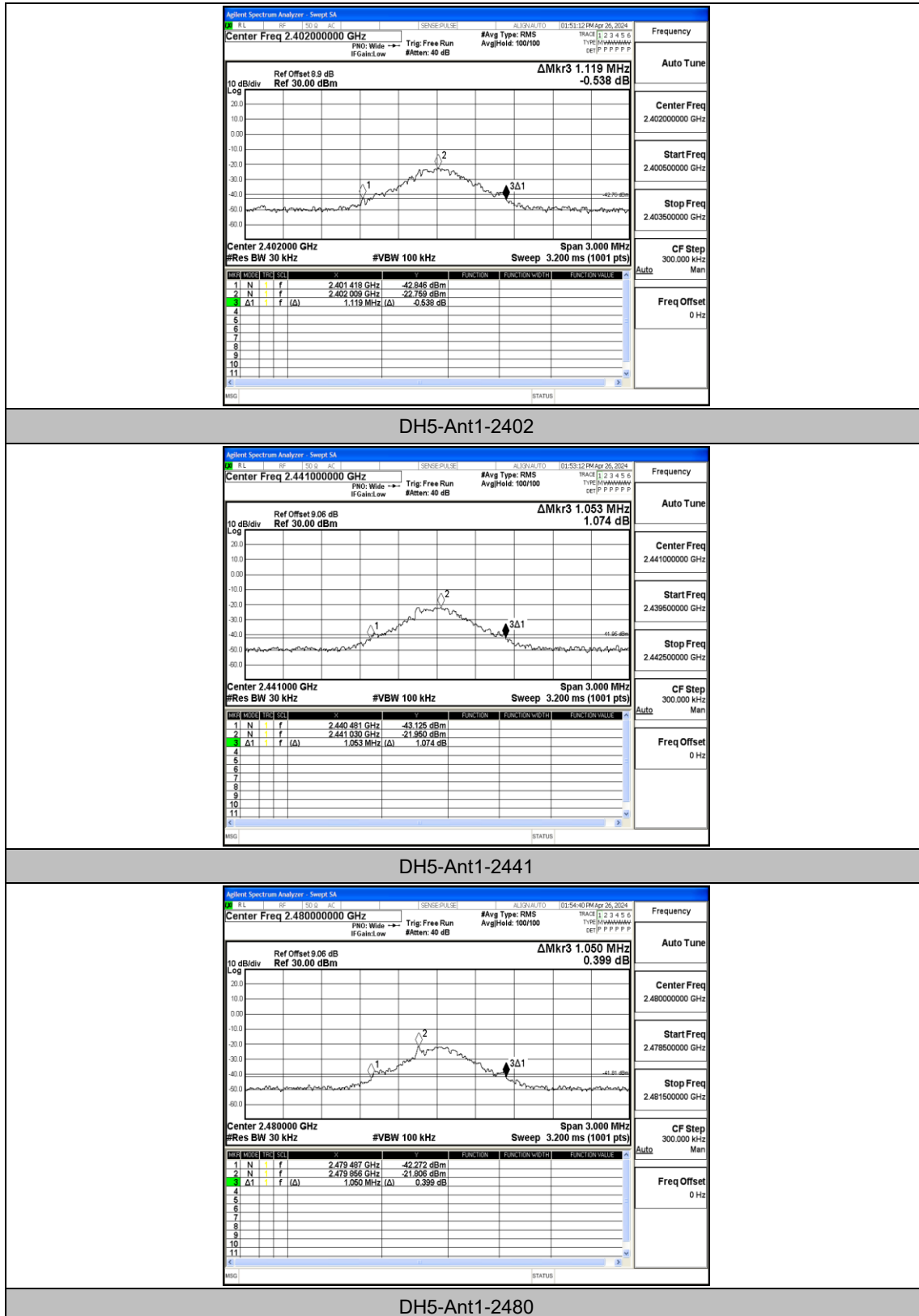
Temperature:	23.8℃
Relative Humidity:	58%
ATM Pressure:	100.0 kPa
Test Engineer:	Allen Lai
Supervised by:	Hugo Chen
NOTE	N/A

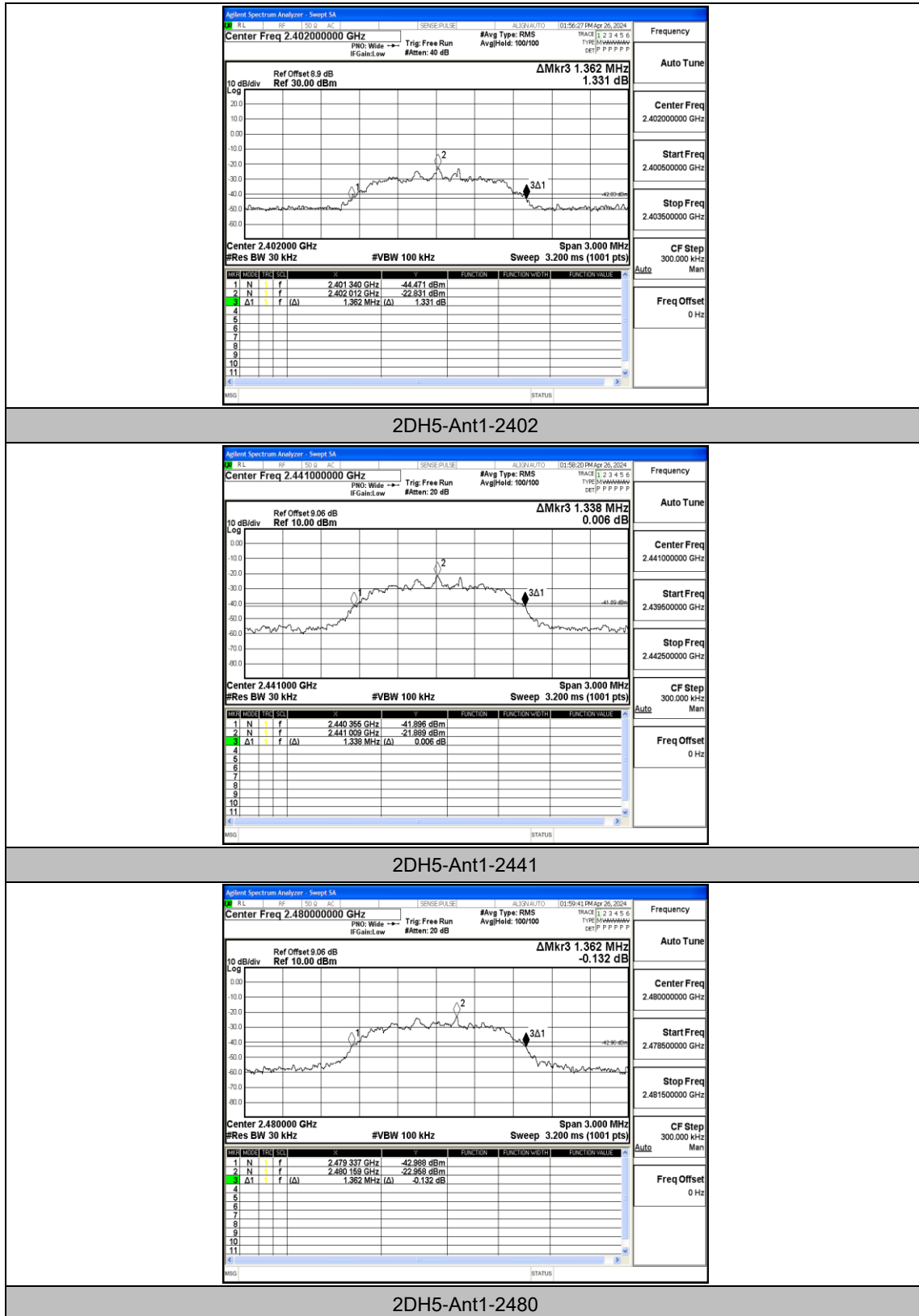
Appendix A: 20dB Emission Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	1.119	2401.418	2402.537	---	---
DH5	Ant1	2441	1.053	2440.481	2441.534	---	---
DH5	Ant1	2480	1.050	2479.487	2480.537	---	---
2DH5	Ant1	2402	1.362	2401.340	2402.702	---	---
2DH5	Ant1	2441	1.338	2440.355	2441.693	---	---
2DH5	Ant1	2480	1.362	2479.337	2480.699	---	---

Test Graphs



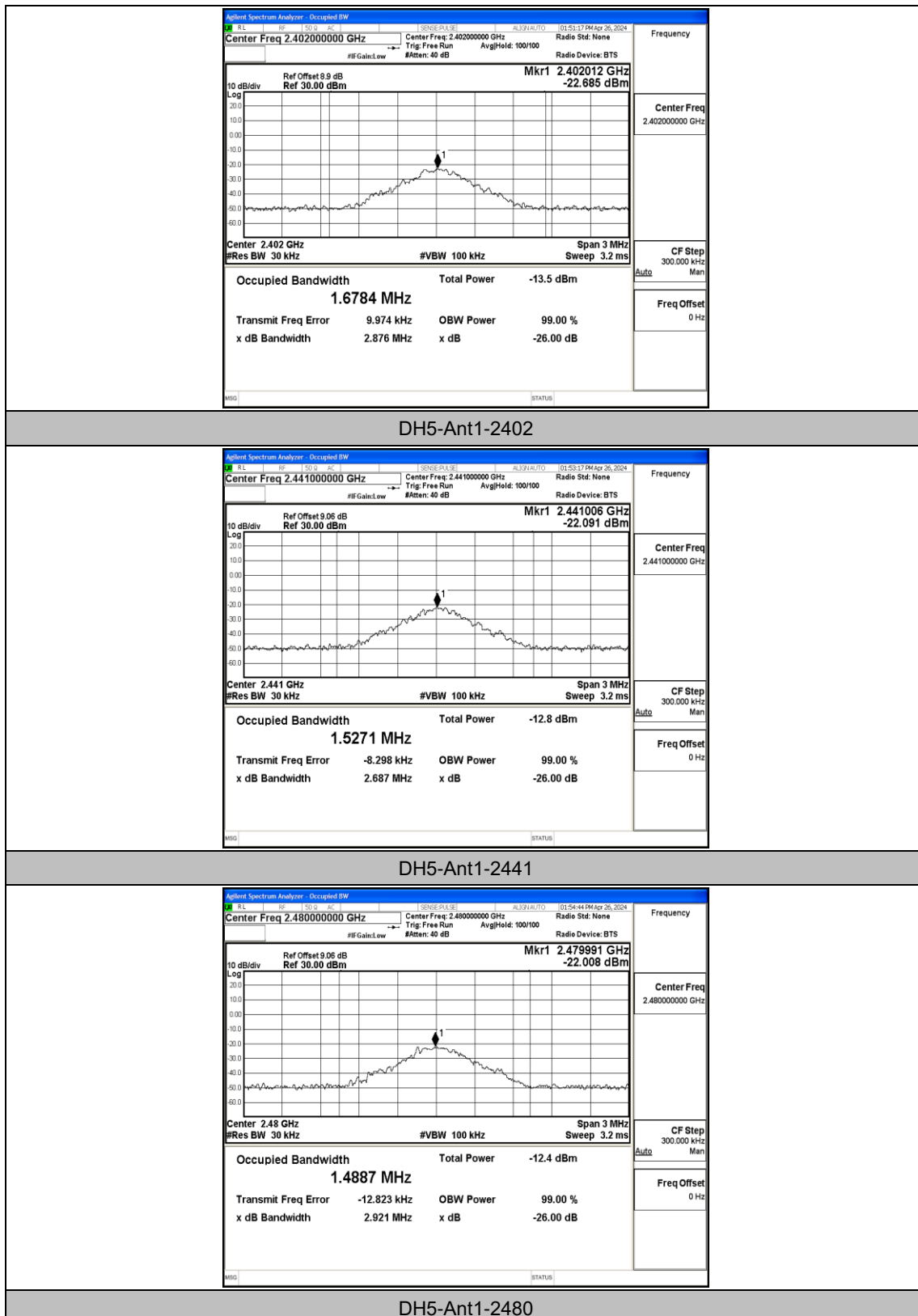


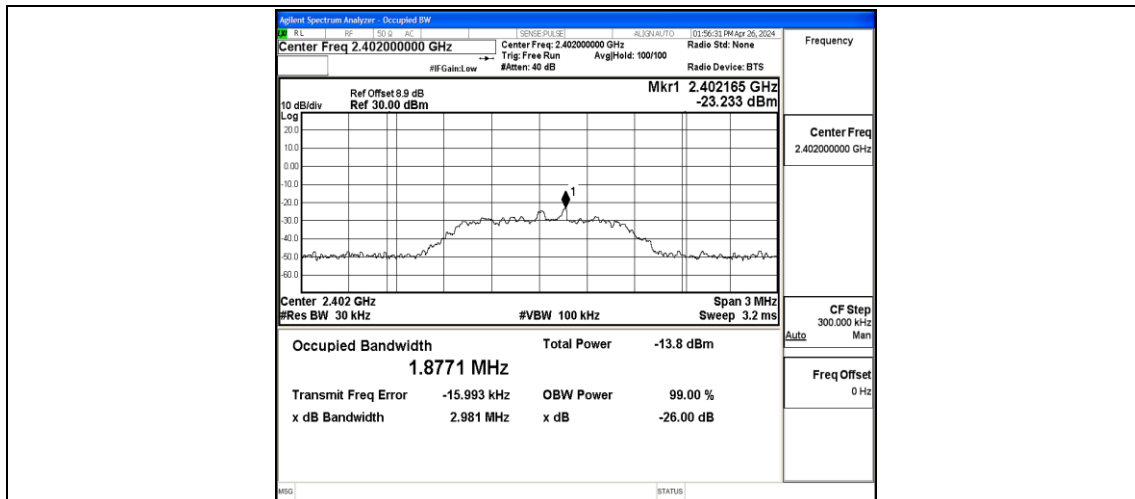
Appendix B: Occupied Channel Bandwidth

Test Result

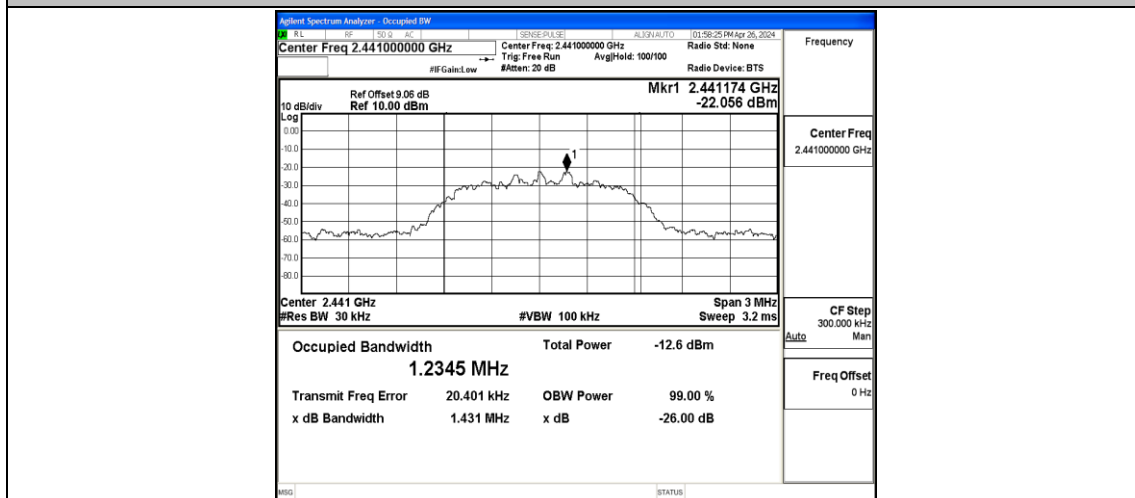
TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	1.6784	2401.1708	2402.8492	---	---
DH5	Ant1	2441	1.5271	2440.2282	2441.7553	---	---
DH5	Ant1	2480	1.4887	2479.2428	2480.7315	---	---
2DH5	Ant1	2402	1.8771	2401.0455	2402.9226	---	---
2DH5	Ant1	2441	1.2345	2440.4032	2441.6377	---	---
2DH5	Ant1	2480	1.2514	2479.3964	2480.6478	---	---

Test Graphs

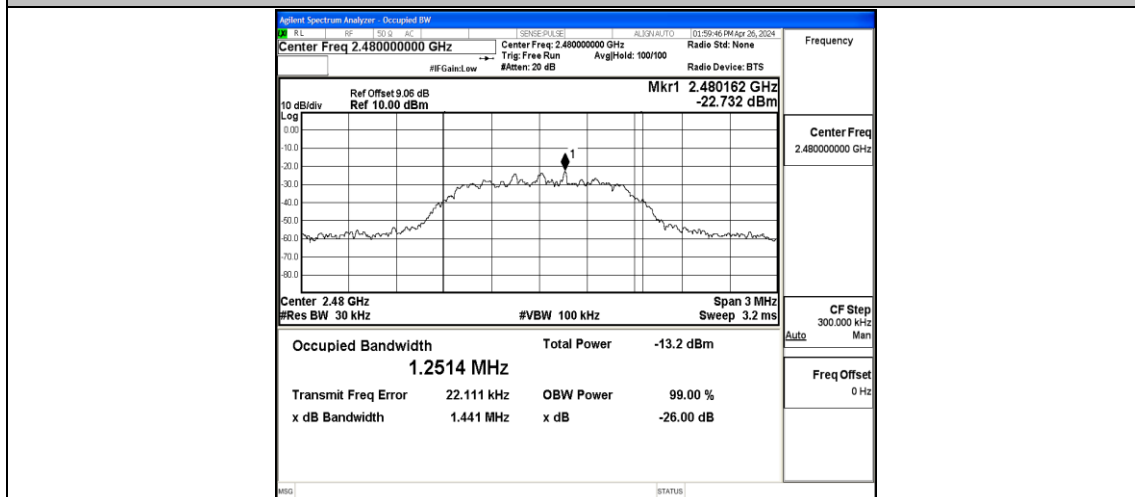




2DH5-Ant1-2402



2DH5-Ant1-2441



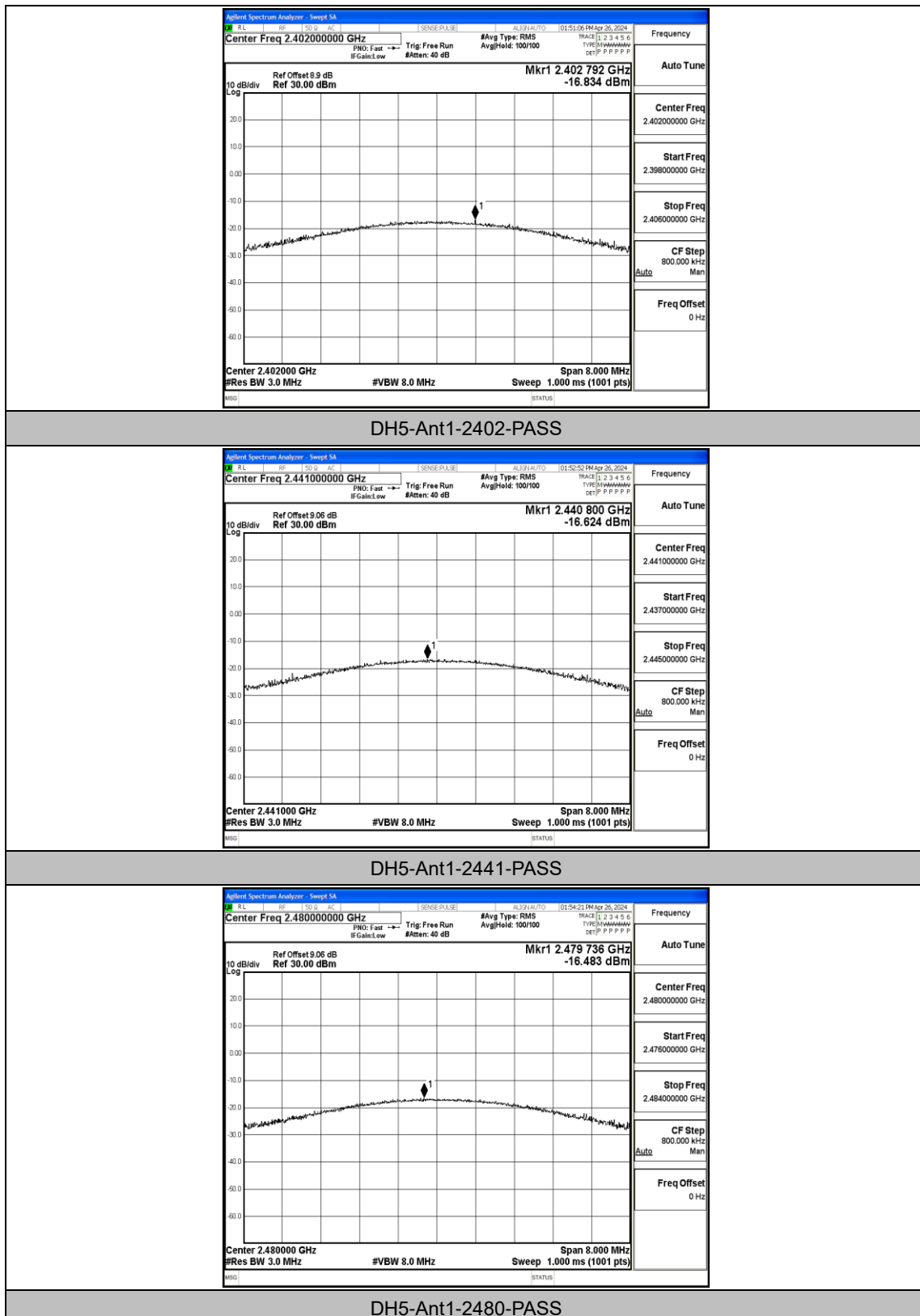
2DH5-Ant1-2480

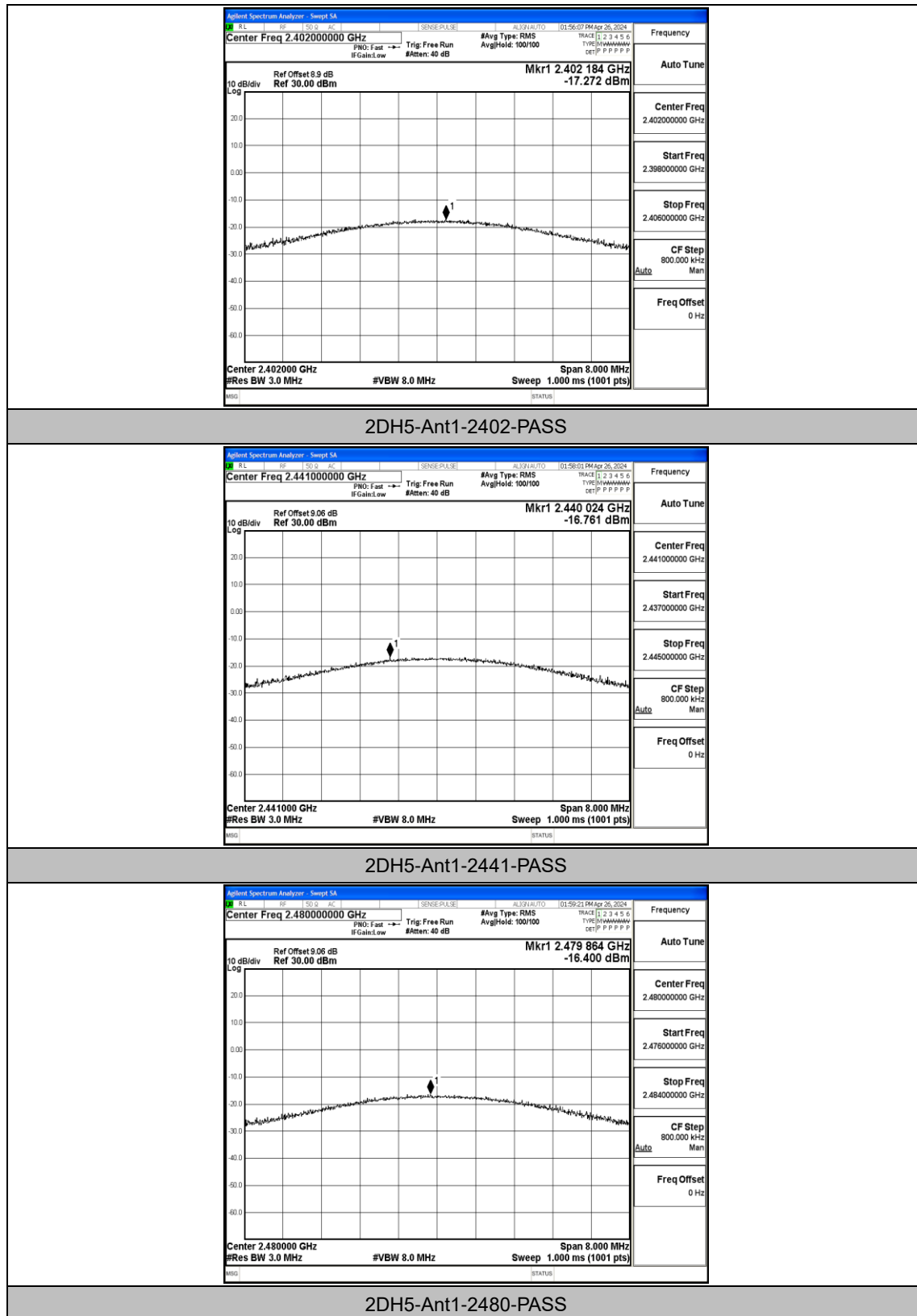
Appendix C: Maximum peak conducted output power

Test Result

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	-16.83	≤30	PASS
DH5	Ant1	2441	-16.62	≤30	PASS
DH5	Ant1	2480	-16.48	≤30	PASS
2DH5	Ant1	2402	-17.27	≤20.97	PASS
2DH5	Ant1	2441	-16.76	≤20.97	PASS
2DH5	Ant1	2480	-16.40	≤20.97	PASS

Test Graphs



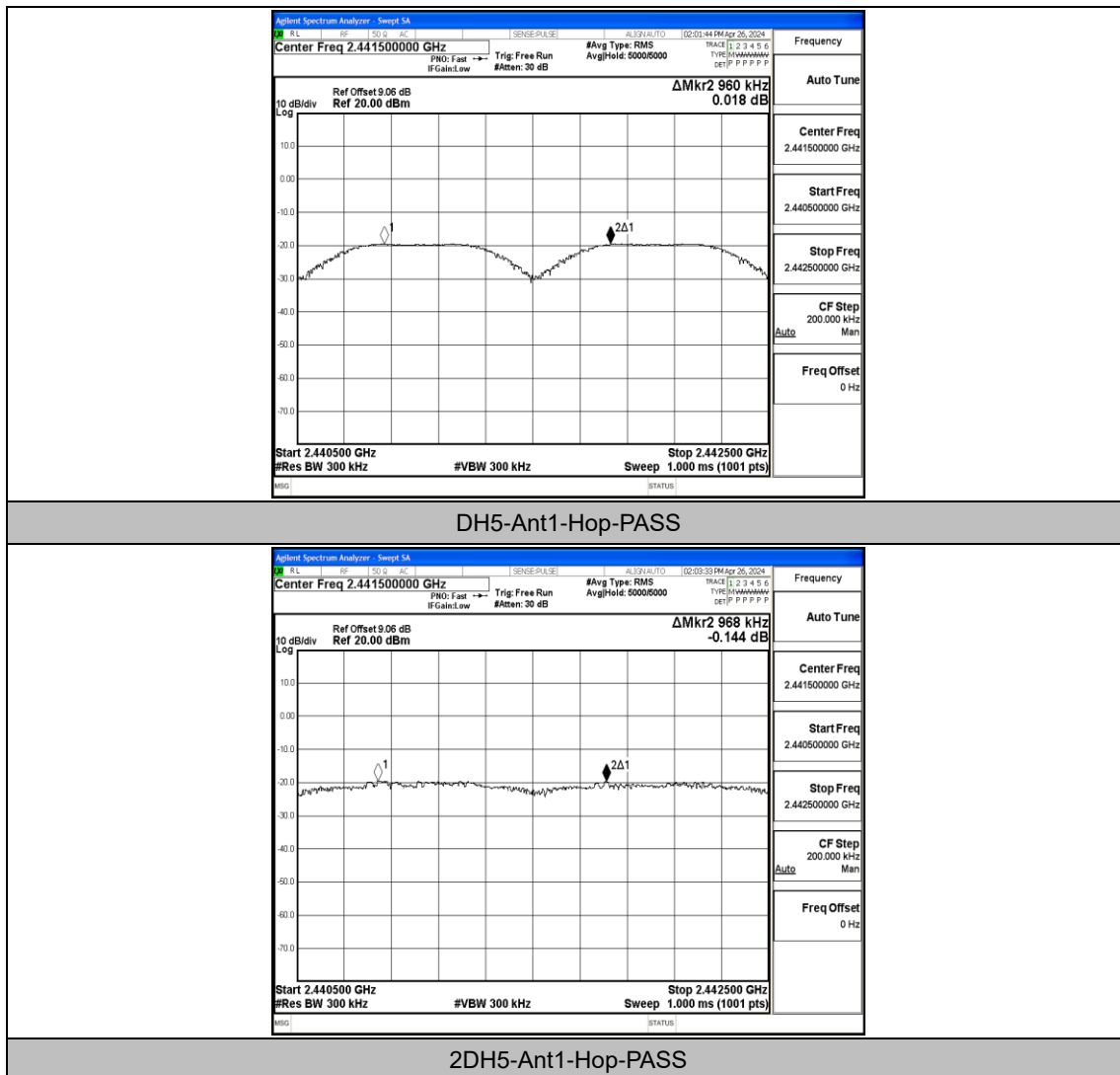


Appendix D: Carrier frequency separation

Test Result

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.96	≥ 0.746	PASS
2DH5	Ant1	Hop	0.968	≥ 0.908	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	-1.980	100	-0.198	≤0.4	PASS
2DH5	Ant1	Hop	-1.851	90	-0.167	≤0.4	PASS

Agilent Spectrum Analyzer - Sweep 5A

Center Freq 2.441000000 GHz

Trig Delay: 2.000 ms

Trig Video

#Avg Type: RMS

Ref Offset: 9.06 dB

Ref 20.00 dBm

ΔMkr2 -1.980 ms

-25.47 dB

10 dB/Div

Log

20.0

10.0

0.00

-10.0

-20.0

-30.0

-40.0

-50.0

-60.0

-70.0

2.441

2.441000000 GHz

Span 0 Hz

Res BW 1.0 MHz

#VBW 3.0 MHz

Sweep 10.13 ms (8000 pts)

Frequency

Auto Tune

Center Freq 2.441000000 GHz

Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz

Auto Man

Freq Offset 0 Hz

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Trig Delay: 0.000 s
#Atten: 30 dB

Ref Offset: 9.06 dB
Ref 20.00 dBm

10 dB/div
Log

Center 2.441000000 GHz
Res BW 510 kHz
#VBW 3.0 MHz
Sweep 3.162 s (30000 pts)
Span 0 Hz

Frequency

Auto Tune

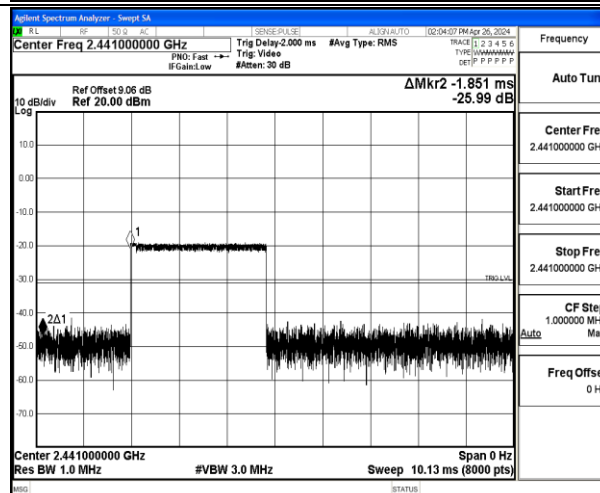
Center Freq
2.441000000 GHz

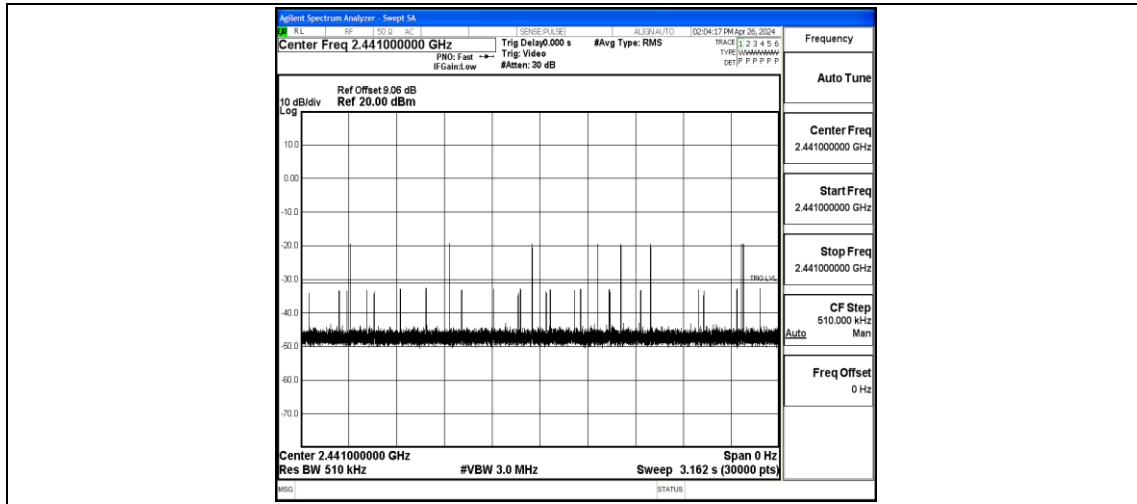
Start Freq
2.441000000 GHz

Stop Freq
2.441000000 GHz

CF Step
510.000 kHz
Auto Man

Freq Offset
0 Hz



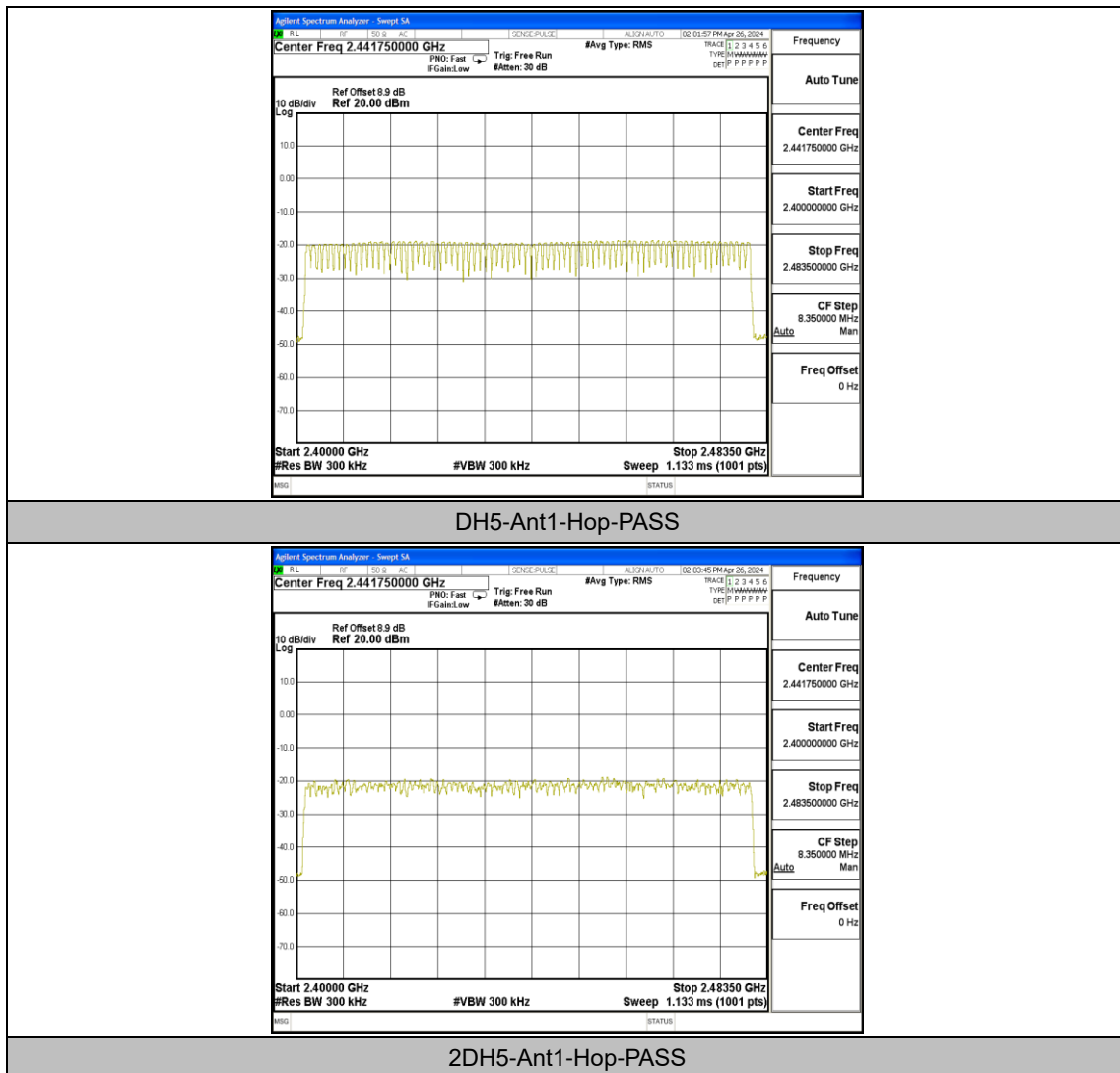


Appendix F: Number of hopping channels

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

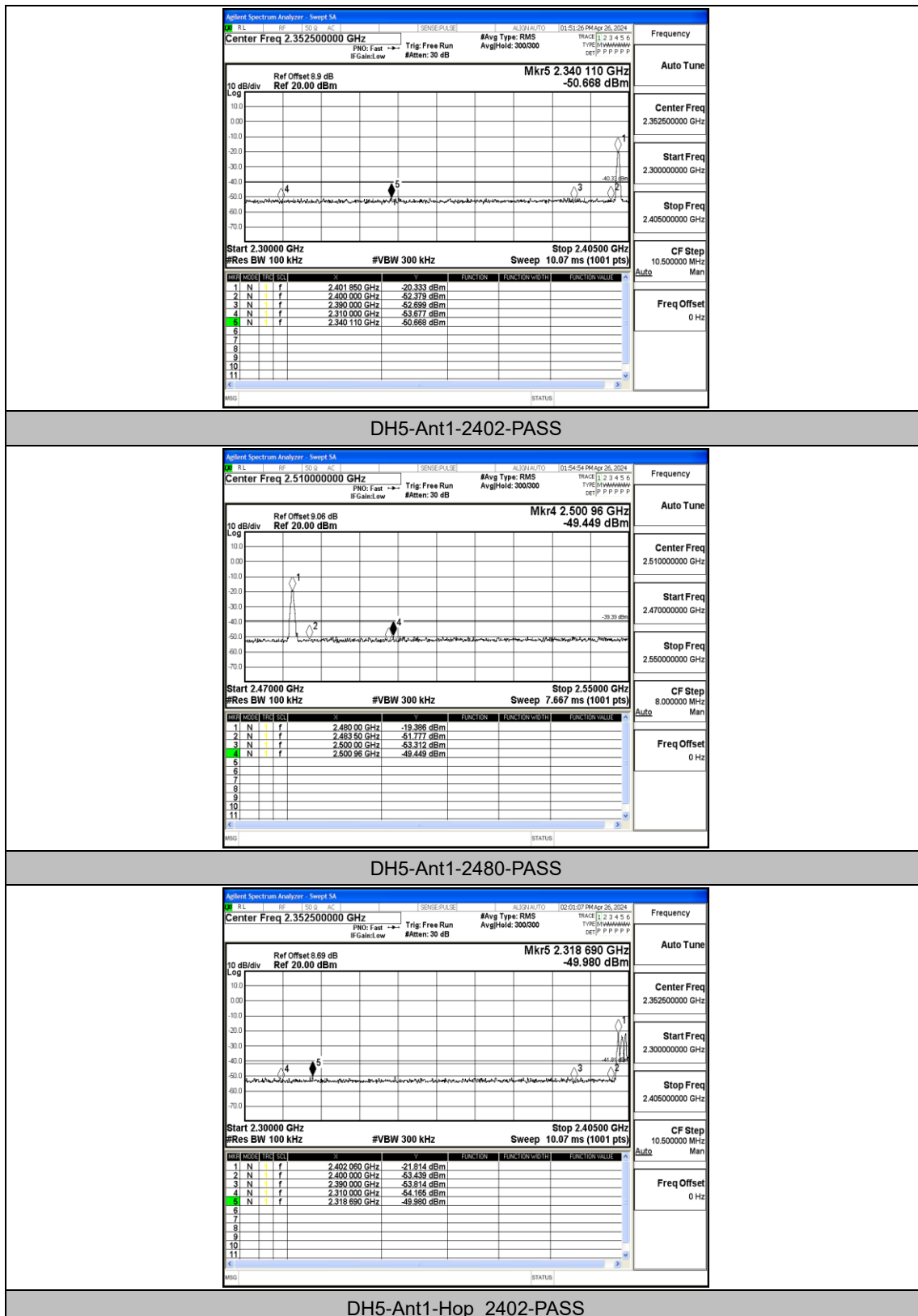


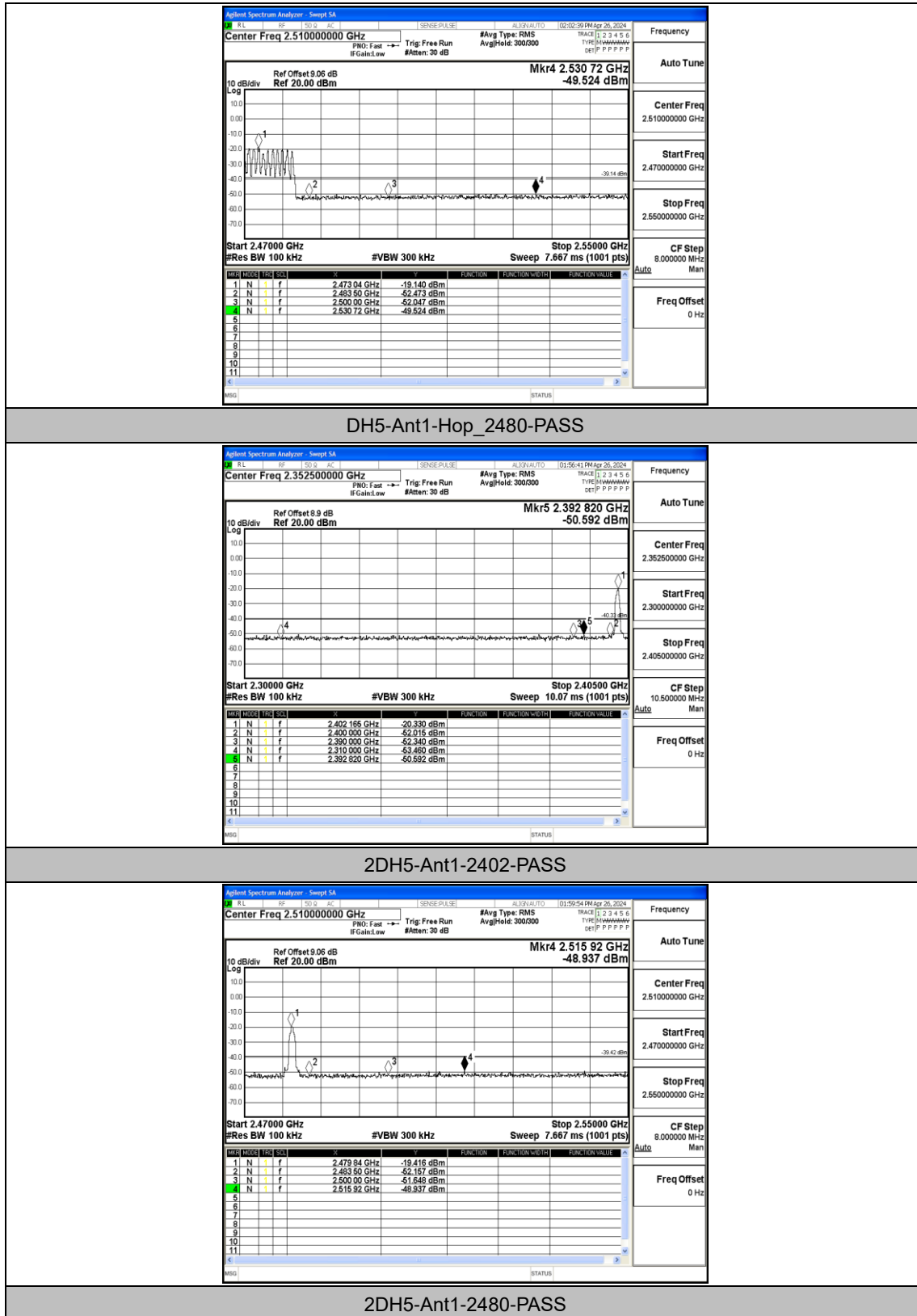
Appendix G: Band edge measurements

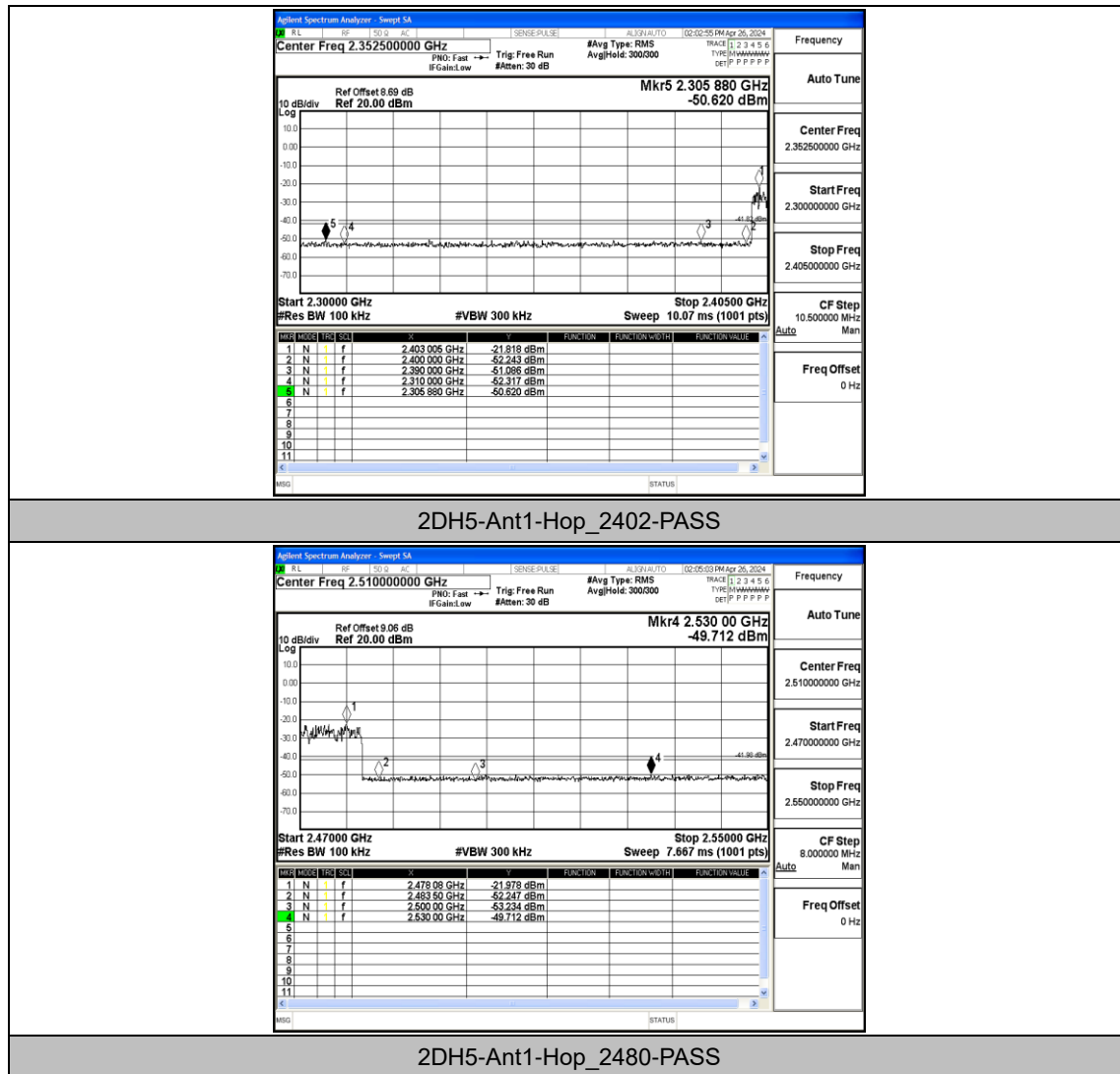
Test Result

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-20.33	-50.67	≤-40.33	PASS
DH5	Ant1	High	2480	-19.39	-49.45	≤-39.39	PASS
DH5	Ant1	Low	Hop_2402	-21.81	-49.98	≤-41.81	PASS
DH5	Ant1	High	Hop_2480	-19.14	-49.52	≤-39.14	PASS
2DH5	Ant1	Low	2402	-20.33	-50.59	≤-40.33	PASS
2DH5	Ant1	High	2480	-19.42	-48.94	≤-39.42	PASS
2DH5	Ant1	Low	Hop_2402	-21.82	-50.62	≤-41.82	PASS
2DH5	Ant1	High	Hop_2480	-21.98	-49.71	≤-41.98	PASS

Test Graphs





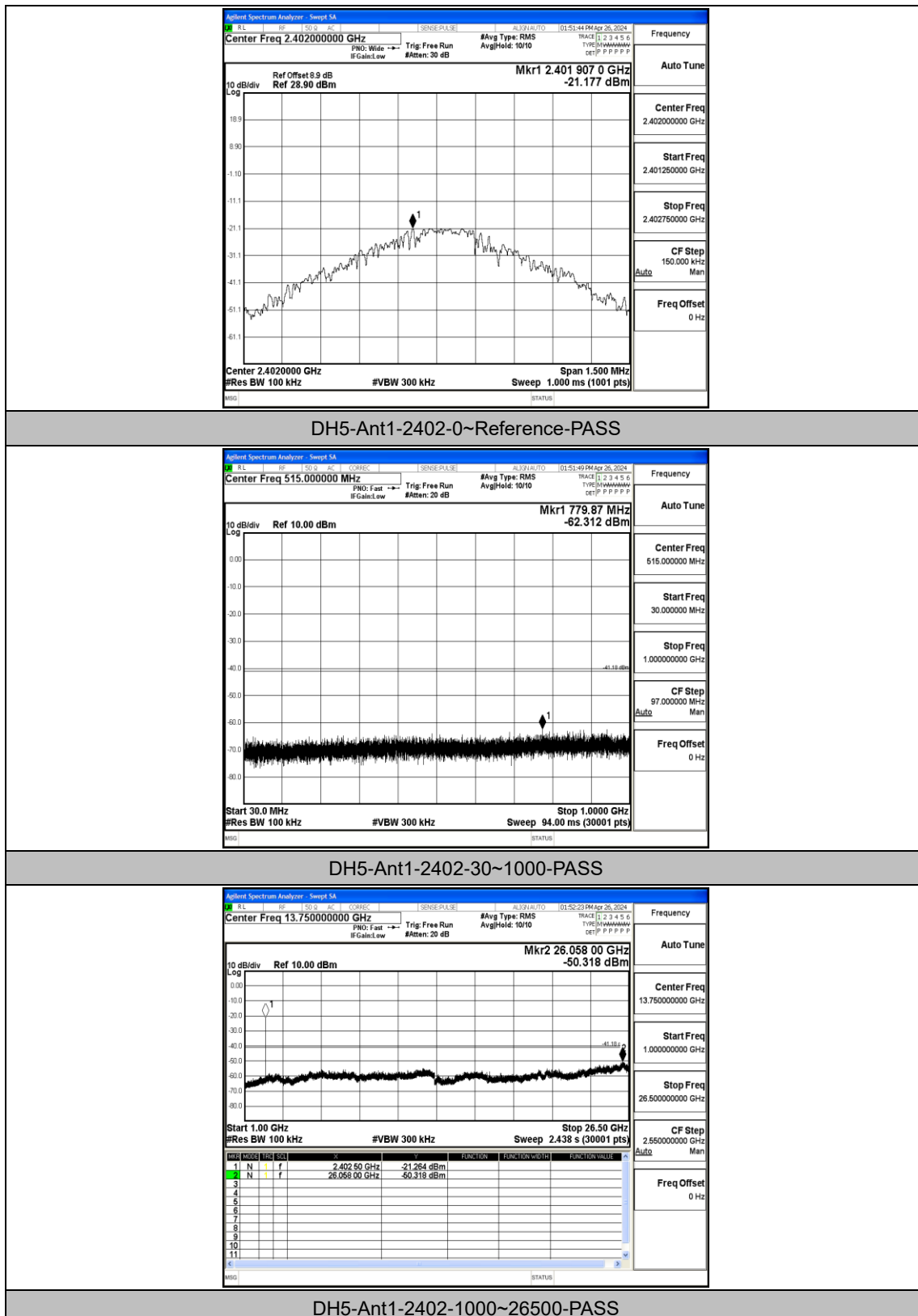


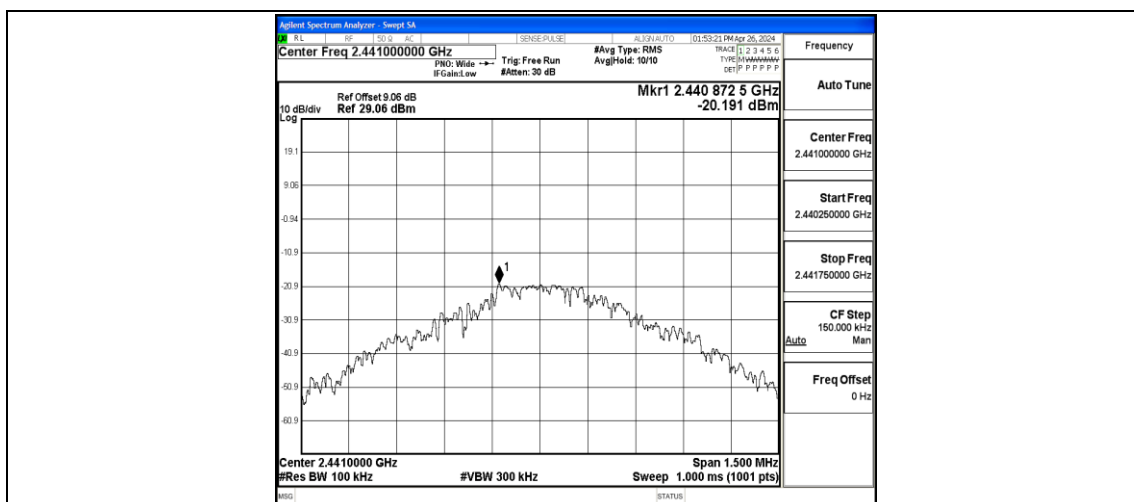
Appendix H: Conducted Spurious Emission

Test Result

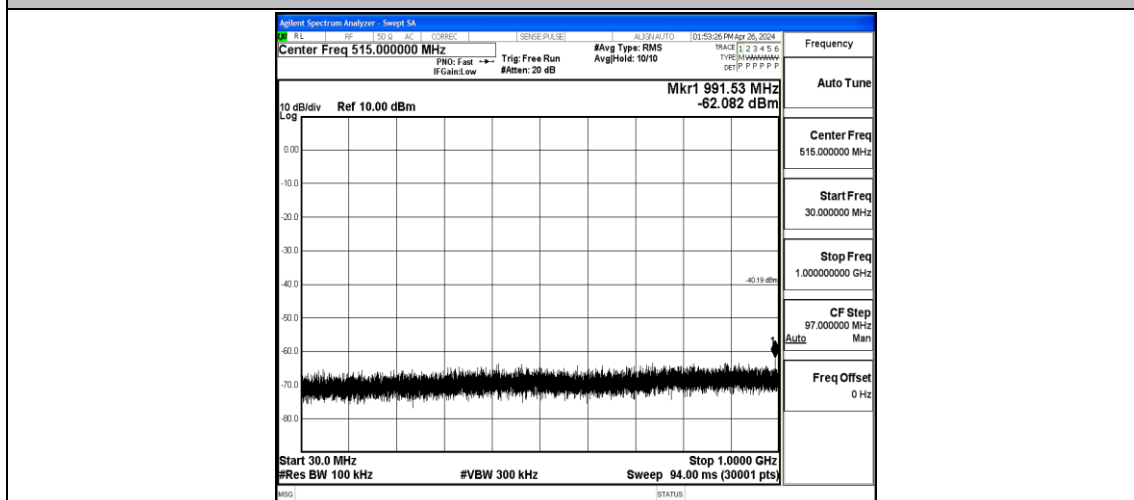
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	0~Reference	-21.18	-21.18	---	PASS
DH5	Ant1	2402	30~1000	-21.18	-62.31	≤-41.18	PASS
DH5	Ant1	2402	1000~26500	-21.18	-50.32	≤-41.18	PASS
DH5	Ant1	2441	0~Reference	-20.19	-20.19	---	PASS
DH5	Ant1	2441	30~1000	-20.19	-62.08	≤-40.19	PASS
DH5	Ant1	2441	1000~26500	-20.19	-50.85	≤-40.19	PASS
DH5	Ant1	2480	0~Reference	-19.73	-19.73	---	PASS
DH5	Ant1	2480	30~1000	-19.73	-62.79	≤-39.73	PASS
DH5	Ant1	2480	1000~26500	-19.73	-49.74	≤-39.73	PASS
2DH5	Ant1	2402	0~Reference	-22.91	-22.91	---	PASS
2DH5	Ant1	2402	30~1000	-22.91	-63.38	≤-42.91	PASS
2DH5	Ant1	2402	1000~26500	-22.91	-50.21	≤-42.91	PASS
2DH5	Ant1	2441	0~Reference	-19.68	-19.68	---	PASS
2DH5	Ant1	2441	30~1000	-19.68	-62.92	≤-39.68	PASS
2DH5	Ant1	2441	1000~26500	-19.68	-49.89	≤-39.68	PASS
2DH5	Ant1	2480	0~Reference	-22.85	-22.85	---	PASS
2DH5	Ant1	2480	30~1000	-22.85	-62.44	≤-42.85	PASS
2DH5	Ant1	2480	1000~26500	-22.85	-50.41	≤-42.85	PASS

Test Graphs

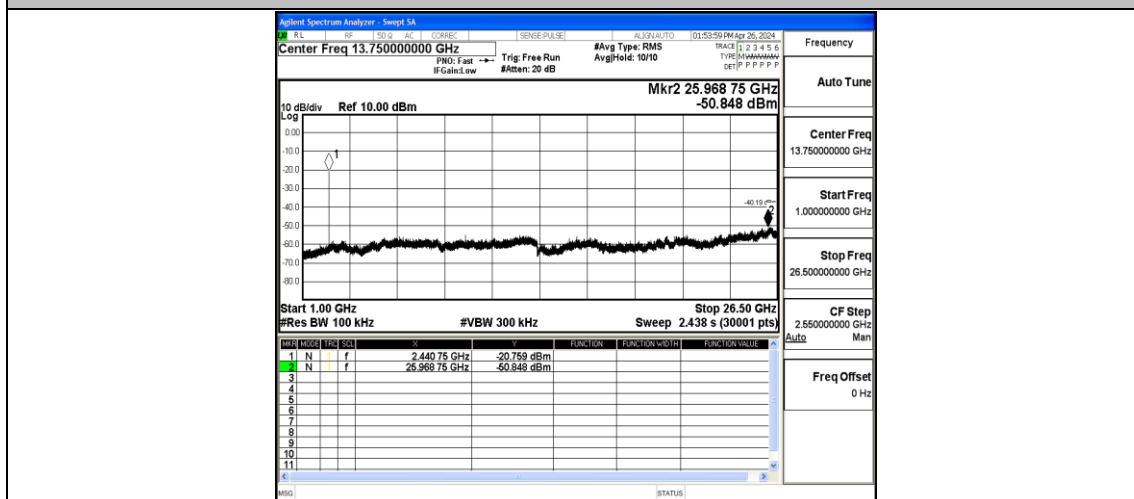




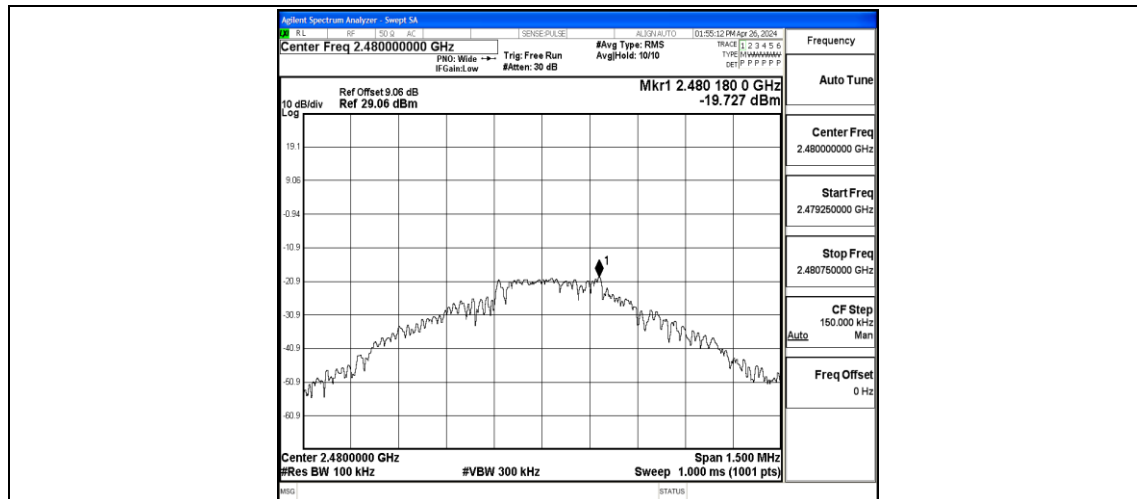
DH5-Ant1-2441-0~Reference-PASS



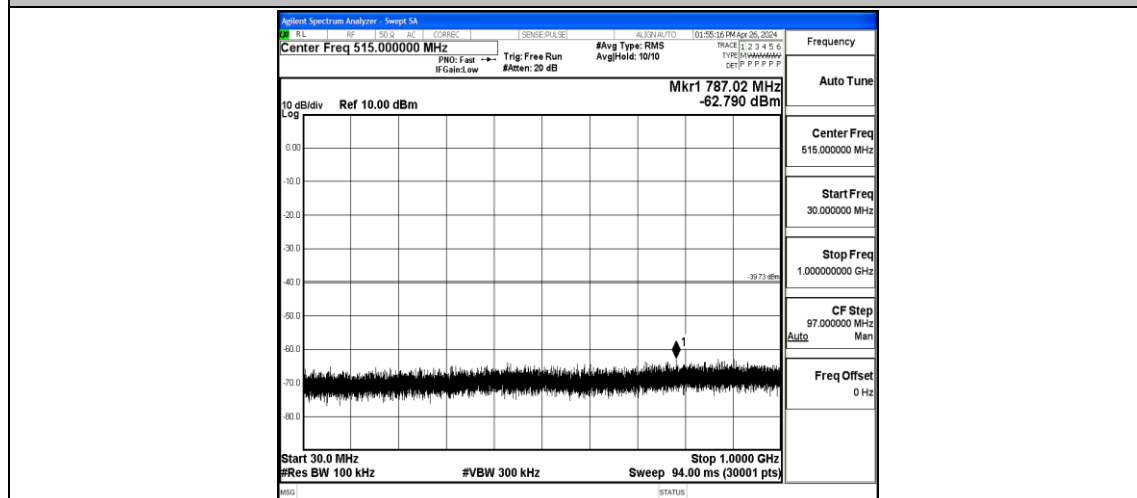
DH5-Ant1-2441-30~1000-PASS



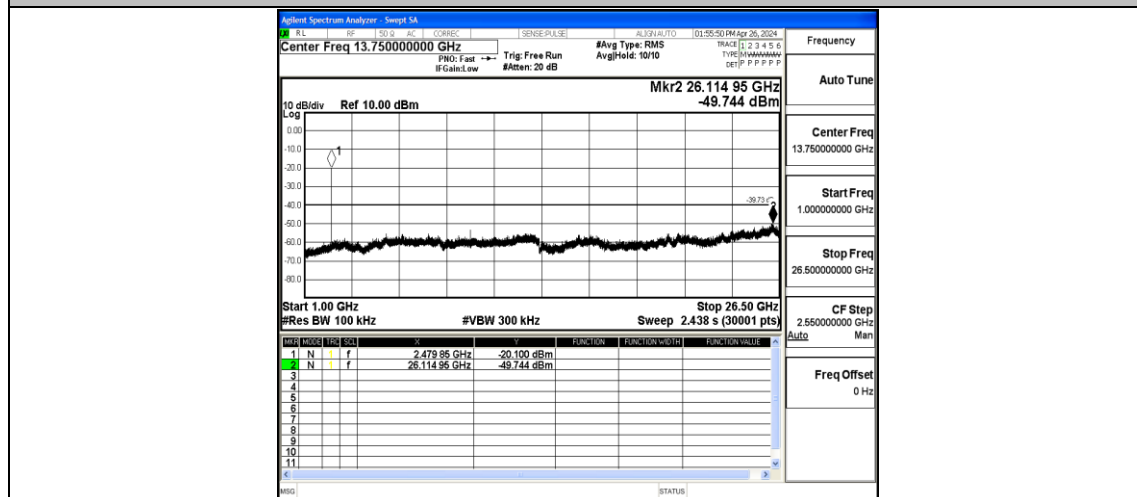
DH5-Ant1-2441-1000~26500-PASS



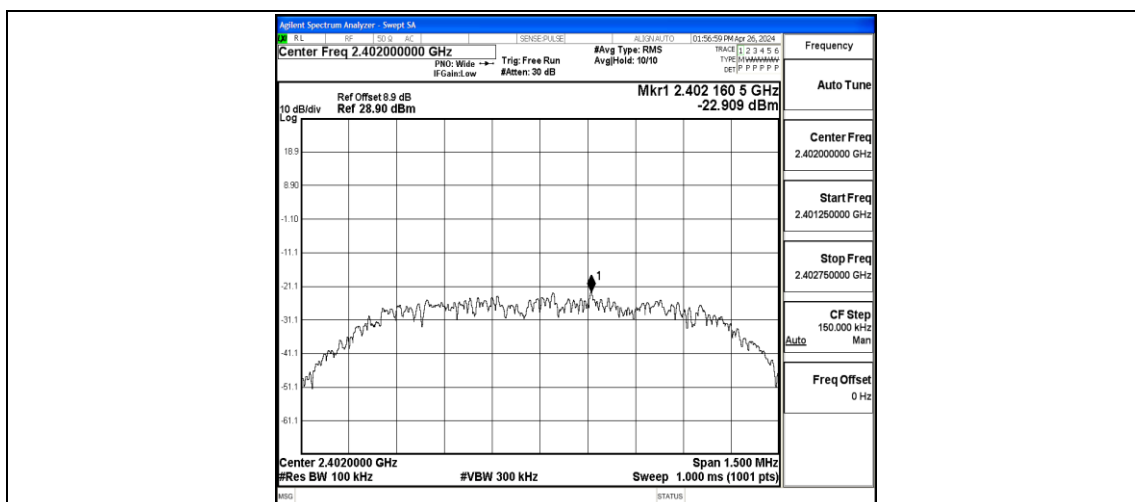
DH5-Ant1-2480-0~Reference-PASS



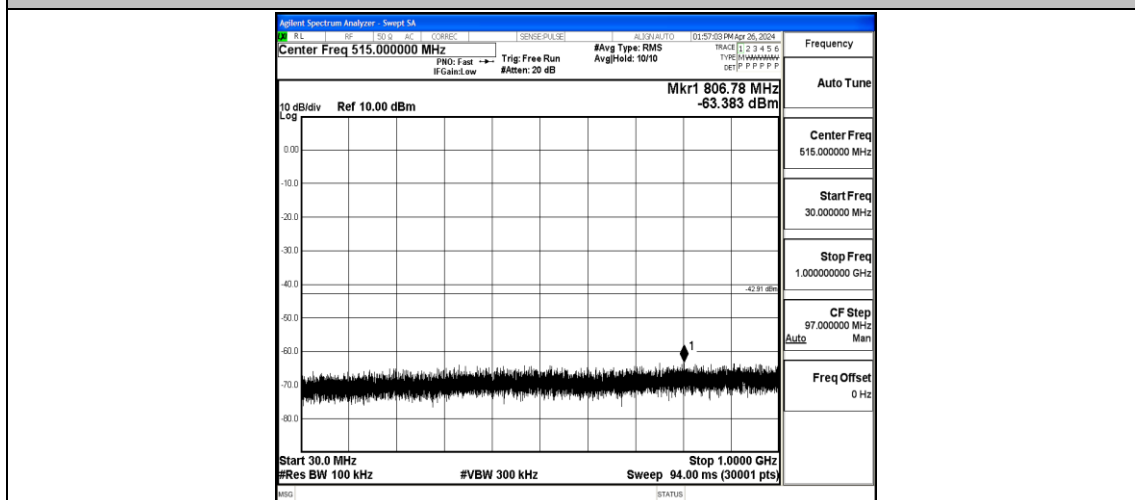
DH5-Ant1-2480-30~1000-PASS



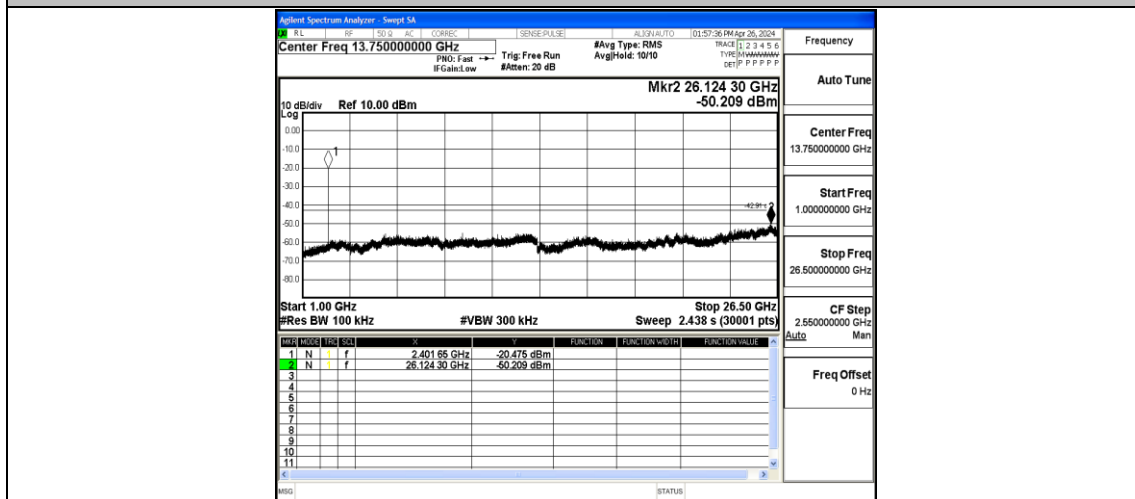
DH5-Ant1-2480-1000~26500-PASS



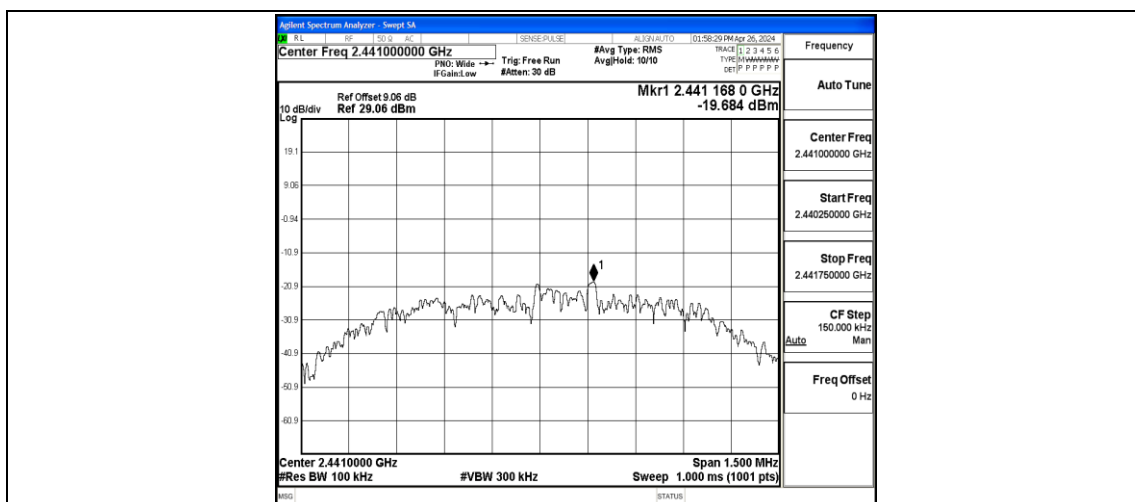
2DH5-Ant1-2402-0~Reference-PASS



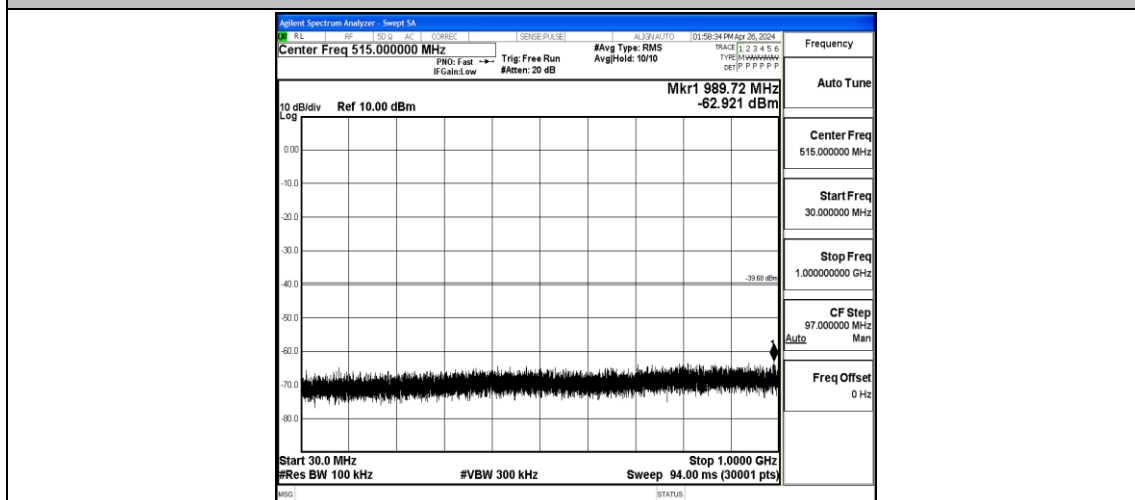
2DH5-Ant1-2402-30~1000-PASS



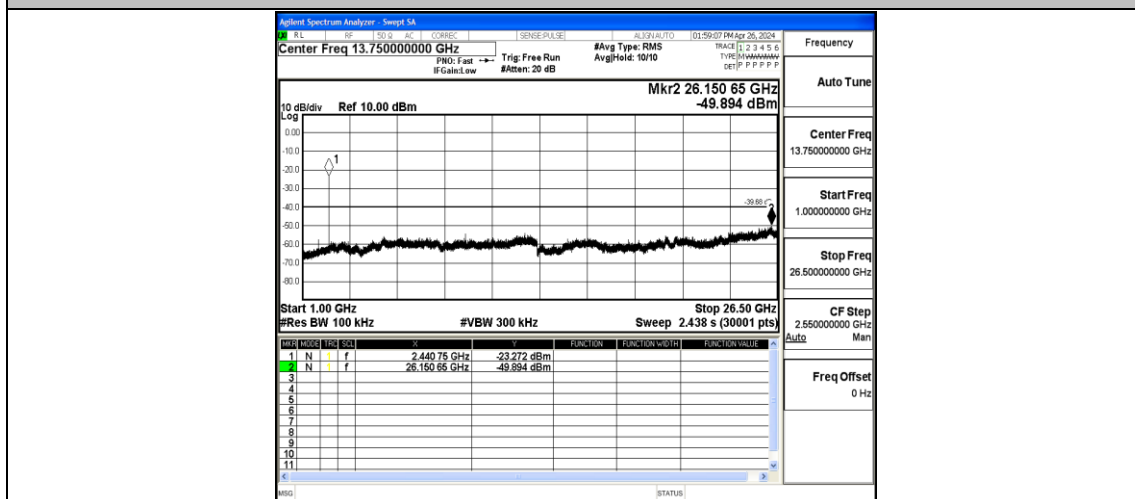
2DH5-Ant1-2402-1000~26500-PASS



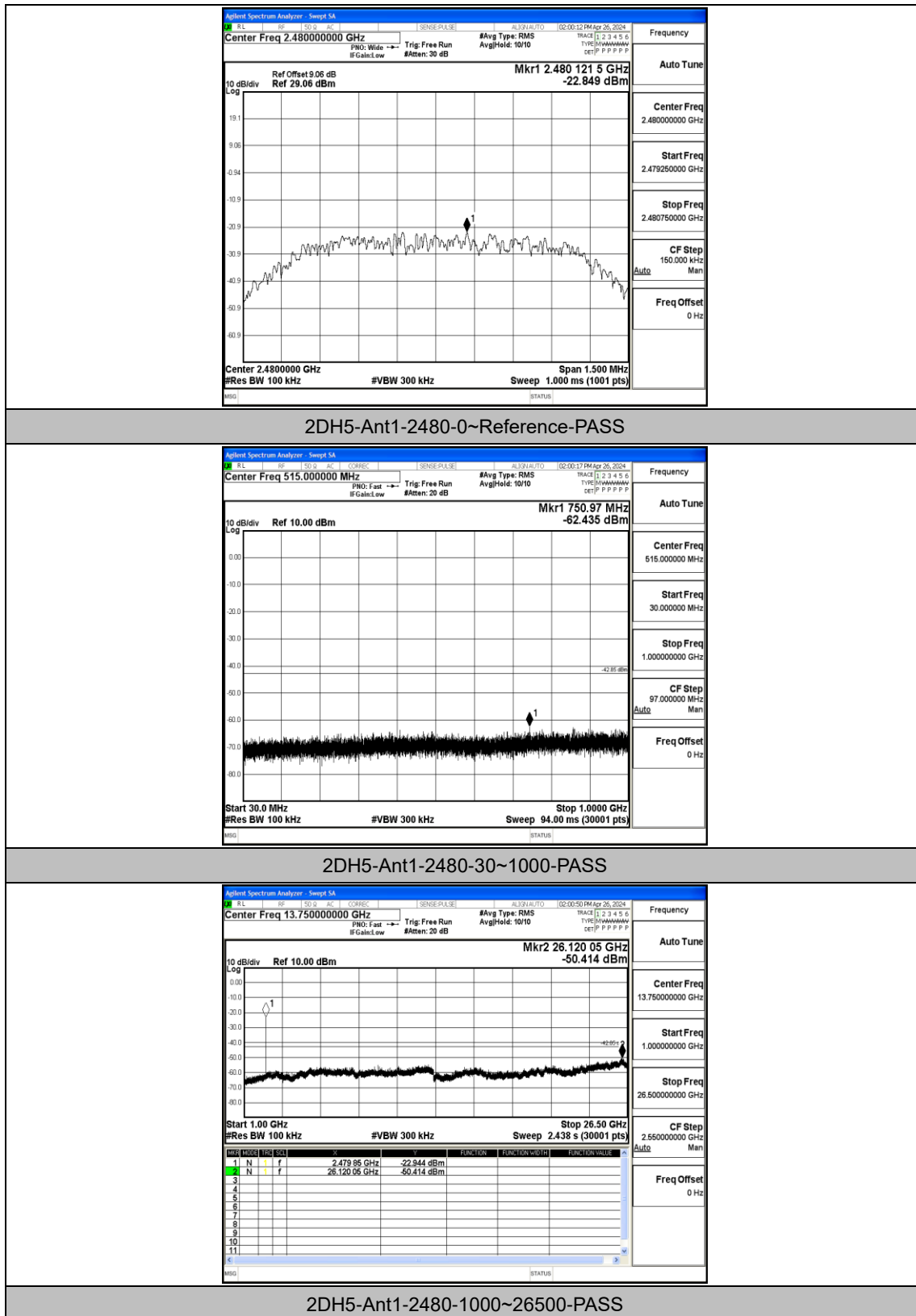
2DH5-Ant1-2441-0~Reference-PASS



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



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

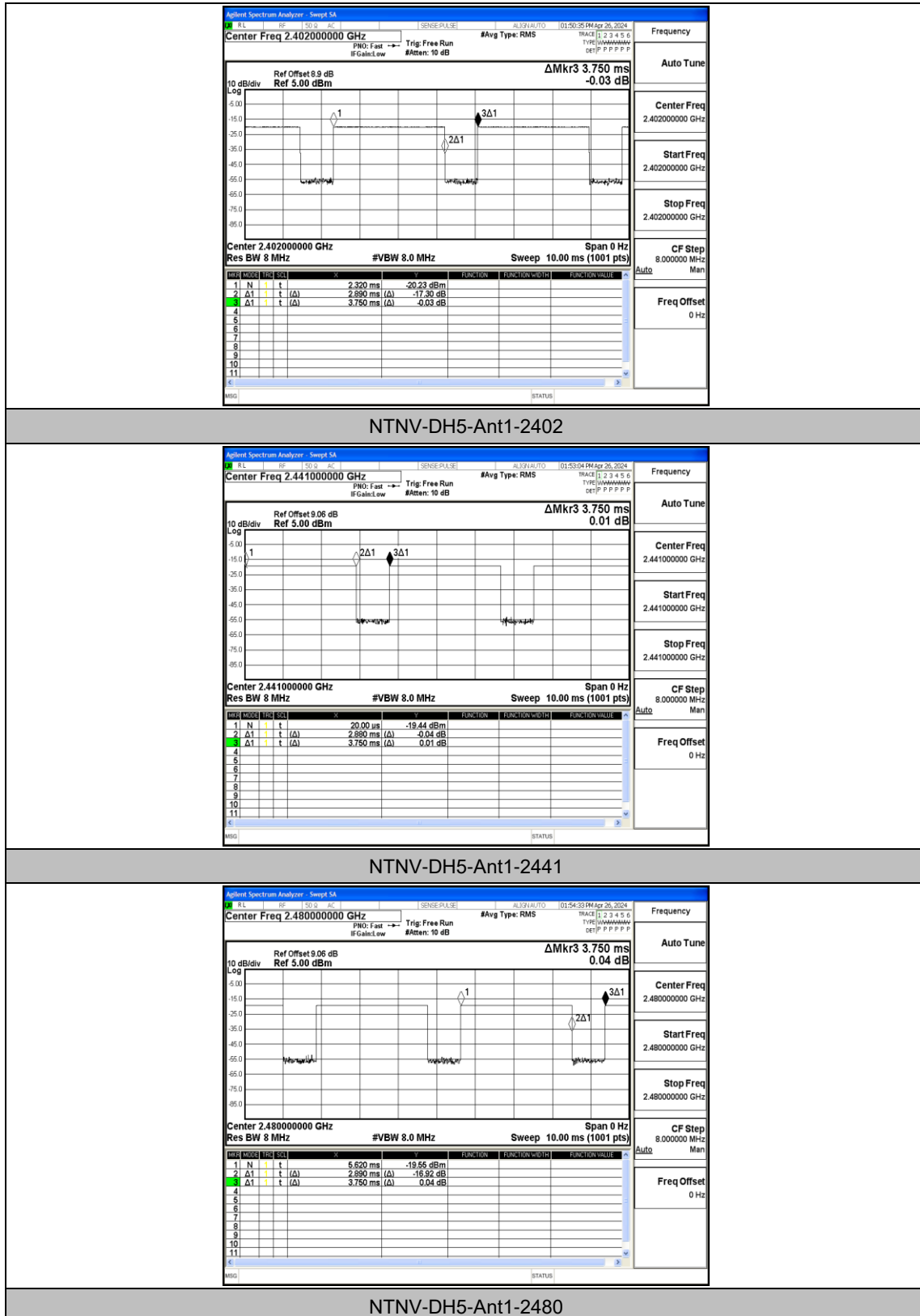


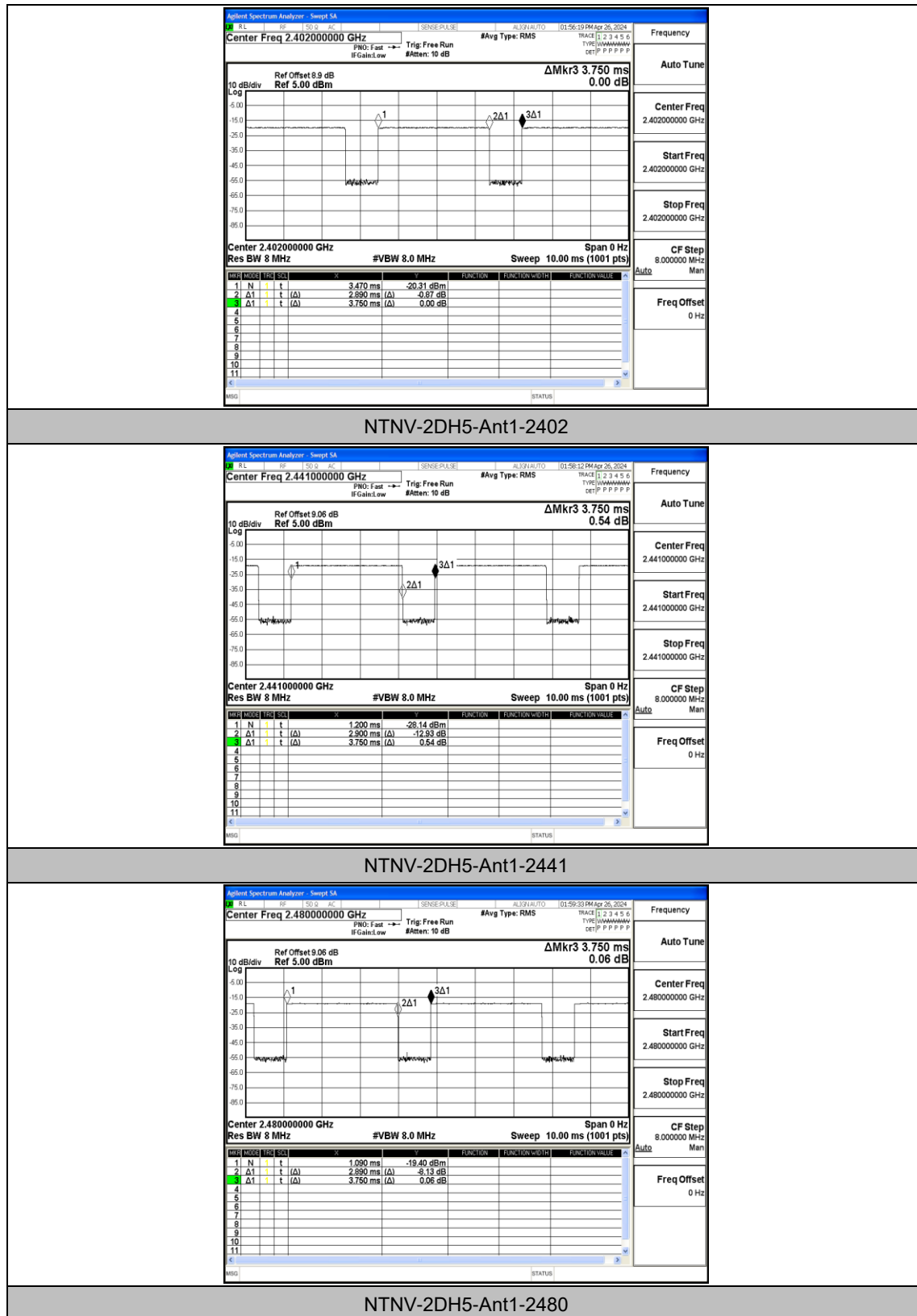
Appendix I: Duty Cycle

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	2.89	3.75	77.07	1.13
2DH5	Ant1	2402	2.89	3.75	77.07	1.13
2DH5	Ant1	2441	2.90	3.75	77.33	1.12
2DH5	Ant1	2480	2.89	3.75	77.07	1.13

Test Graphs





Appendix J: Emissions in Restricted Bands

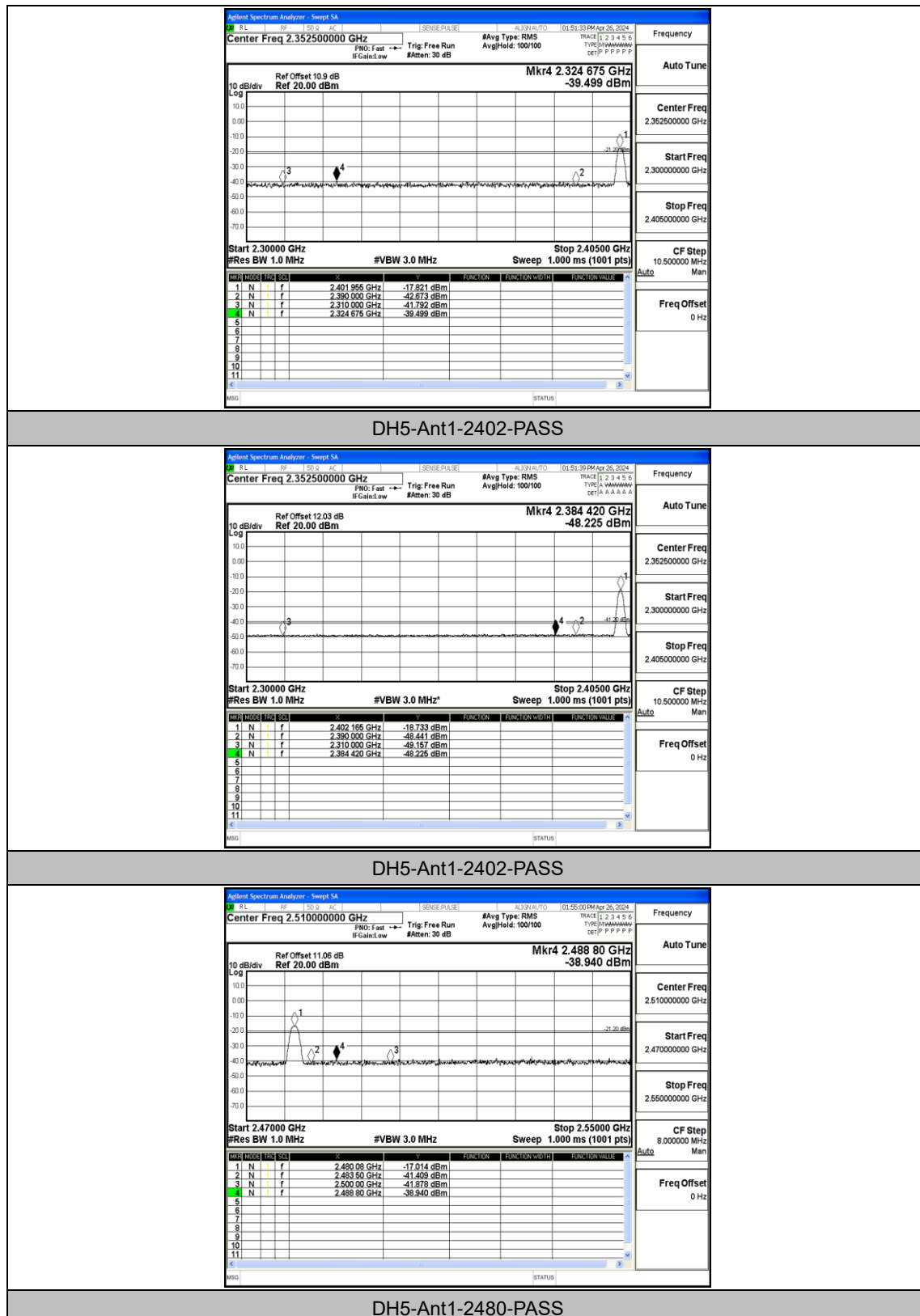
Test Result

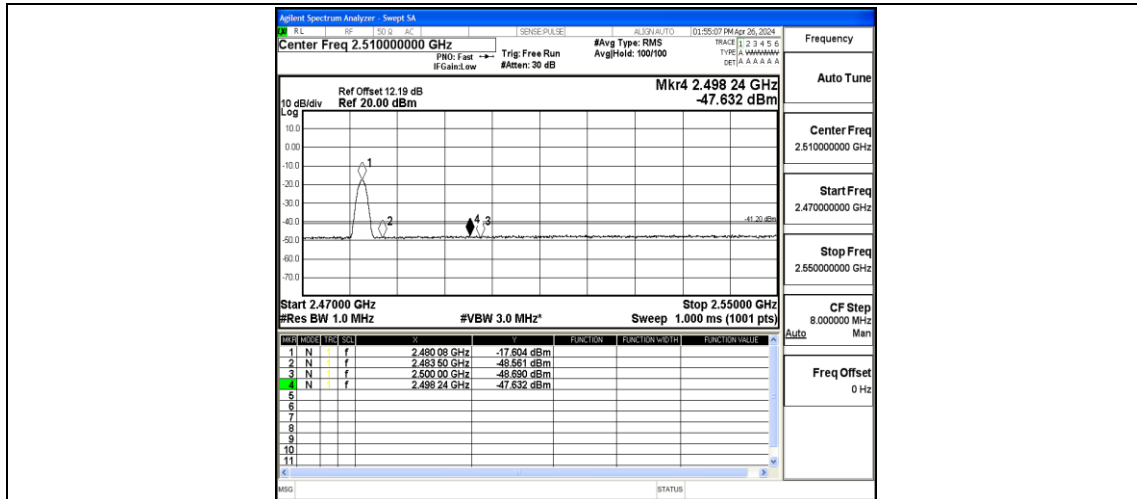
TestMode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant1	Low	2402	Peak	2390.000	-42.67	≤-21.20	52.53	≤74	PASS
DH5	Ant1	Low	2402	Peak	2310.000	-41.79	≤-21.20	53.41	≤74	PASS
DH5	Ant1	Low	2402	Peak	2324.675	-39.5	≤-21.20	55.70	≤74	PASS
DH5	Ant1	Low	2402	AV	2390.000	-48.44	≤-41.20	46.76	≤54	PASS
DH5	Ant1	Low	2402	AV	2310.000	-49.16	≤-41.20	46.04	≤54	PASS
DH5	Ant1	Low	2402	AV	2384.420	-48.23	≤-41.20	46.97	≤54	PASS
DH5	Ant1	High	2480	Peak	2483.500	-41.41	≤-21.20	53.79	≤74	PASS
DH5	Ant1	High	2480	Peak	2500.000	-41.88	≤-21.20	53.32	≤74	PASS
DH5	Ant1	High	2480	Peak	2488.800	-38.94	≤-21.20	56.26	≤74	PASS
DH5	Ant1	High	2480	AV	2483.500	-48.56	≤-41.20	46.64	≤54	PASS
DH5	Ant1	High	2480	AV	2500.000	-48.69	≤-41.20	46.51	≤54	PASS
DH5	Ant1	High	2480	AV	2498.240	-47.63	≤-41.20	47.57	≤54	PASS
2DH5	Ant1	Low	2402	Peak	2390.000	-42.4	≤-21.20	52.80	≤74	PASS
2DH5	Ant1	Low	2402	Peak	2310.000	-42.68	≤-21.20	52.52	≤74	PASS
2DH5	Ant1	Low	2402	Peak	2375.810	-39.45	≤-21.20	55.75	≤74	PASS
2DH5	Ant1	Low	2402	AV	2390.000	-48.91	≤-41.20	46.29	≤54	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-49.14	≤-41.20	46.06	≤54	PASS
2DH5	Ant1	Low	2402	AV	2385.785	-48.21	≤-41.20	46.99	≤54	PASS
2DH5	Ant1	High	2480	Peak	2483.500	-42.66	≤-21.20	52.54	≤74	PASS
2DH5	Ant1	High	2480	Peak	2500.000	-42.03	≤-21.20	53.17	≤74	PASS
2DH5	Ant1	High	2480	Peak	2491.040	-38.65	≤-21.20	56.55	≤74	PASS
2DH5	Ant1	High	2480	AV	2483.500	-48.5	≤-41.20	46.70	≤54	PASS
2DH5	Ant1	High	2480	AV	2500.000	-48.82	≤-41.20	46.38	≤54	PASS
2DH5	Ant1	High	2480	AV	2495.280	-47.3	≤-41.20	47.90	≤54	PASS

Note:

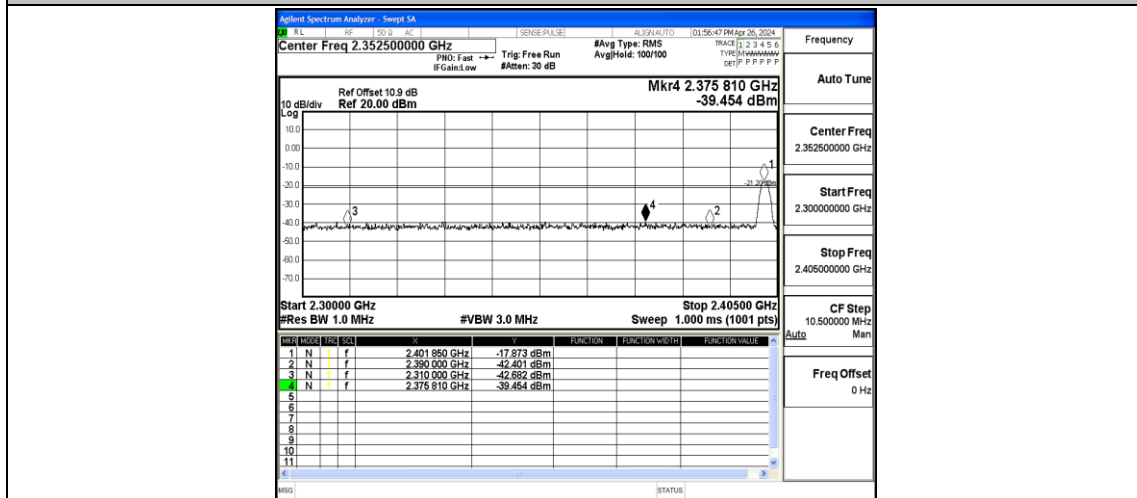
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

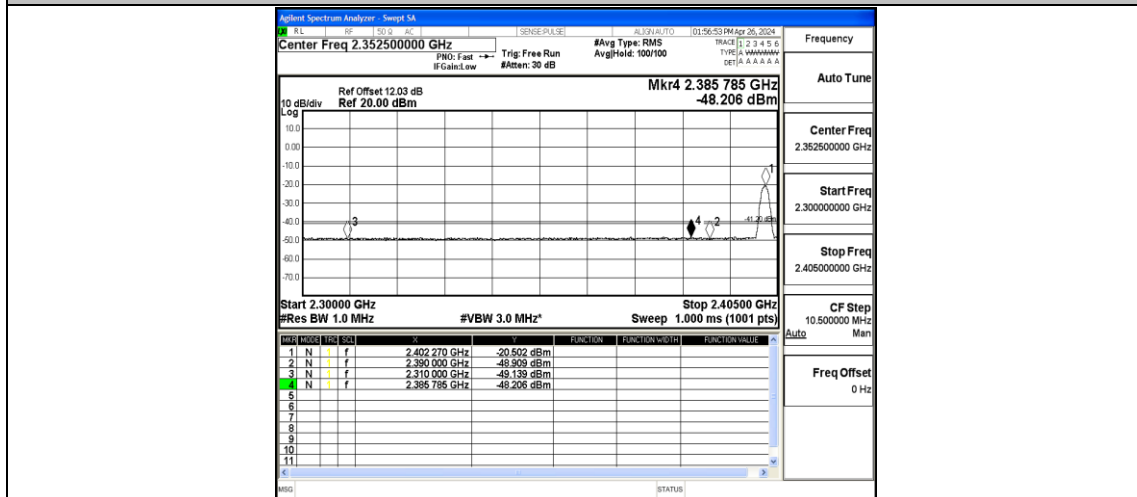




DH5-Ant1-2480-PASS



2DH5-Ant1-2402-PASS



2DH5-Ant1-2402-PASS

