

FCC Appendix RF Test Data for BT

FCC ID : 2BX8L-Z5

Company : Gaba Enterprise LLC

EUT : Bluetooth speaker

Model Number : Z5

Report No. : CTA26090102701

Reviewed By : Eric Wang

Appendix A: 20dB Emission Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.939	2401.550	2402.489	---	---
		2441	0.936	2440.553	2441.489	---	---
		2480	0.954	2479.541	2480.495	---	---
2DH5	Ant1	2402	1.290	2401.376	2402.666	---	---
		2441	1.320	2440.349	2441.669	---	---
		2480	1.281	2479.379	2480.660	---	---

DH5_Ant1_2402

Agilent Spectrum Analyzer - Sweep SA

Center Freq 2.402000000 GHz

Ref Offset 0.5 dB
Ref 30.00 dBm

Trig: Free Run
#Atten: 40 dB

#Avg Type: RMS
AvgHold: 100/100

Span 3.000 MHz
Sweep 3.200 ms (1001 pts)

#Res BW 30 kHz
#VBW 100 kHz

ΔMkr3 939 kHz
0.033 dB

MNR	MODE	TRIG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.401550 GHz	-25.988 dBm			
2	N	1	f	2.402024 GHz	-5.165 dBm			
3	Δ	1	f (Δ)	939 kHz (Δ)	0.033 dB			

DH5_Ant1_2441

Agilent Spectrum Analyzer - Sweep SA

Center Freq 2.441000000 GHz

Ref Offset 0.5 dB
Ref 30.00 dBm

Trig: Free Run
#Atten: 40 dB

#Avg Type: RMS
AvgHold: 100/100

Span 3.000 MHz
Sweep 3.200 ms (1001 pts)

#Res BW 30 kHz
#VBW 100 kHz

ΔMkr3 936 kHz
-0.128 dB

MNR	MODE	TRIG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.440553 GHz	-24.927 dBm			
2	N	1	f	2.441018 GHz	-4.920 dBm			
3	Δ	1	f (Δ)	936 kHz (Δ)	-0.128 dB			



2DH5_Ant1_2402



2DH5_Ant1_2441



2DH5_Ant1_2480

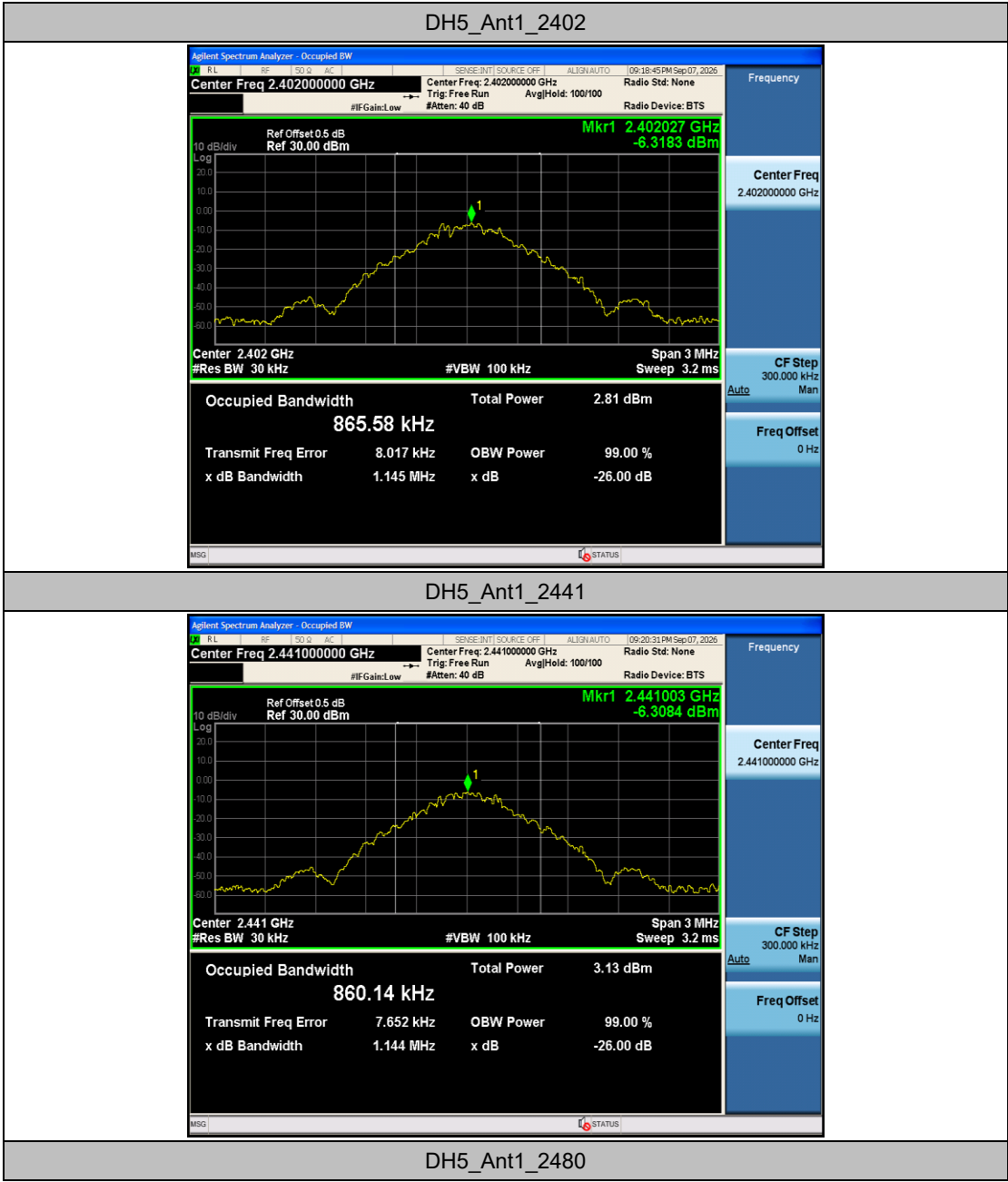


Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.86558	2401.5752	2402.4408	---	---
		2441	0.86014	2440.5776	2441.4377	---	---
		2480	0.87136	2479.5773	2480.4486	---	---
2DH5	Ant1	2402	1.1801	2401.4217	2402.6018	---	---
		2441	1.1821	2440.4205	2441.6026	---	---
		2480	1.1856	2479.4175	2480.6031	---	---

Test Graphs





2DH5_Ant1_2402



2DH5_Ant1_2441



2DH5_Ant1_2480



Appendix C: Maximum conducted output power

Test Result Peak

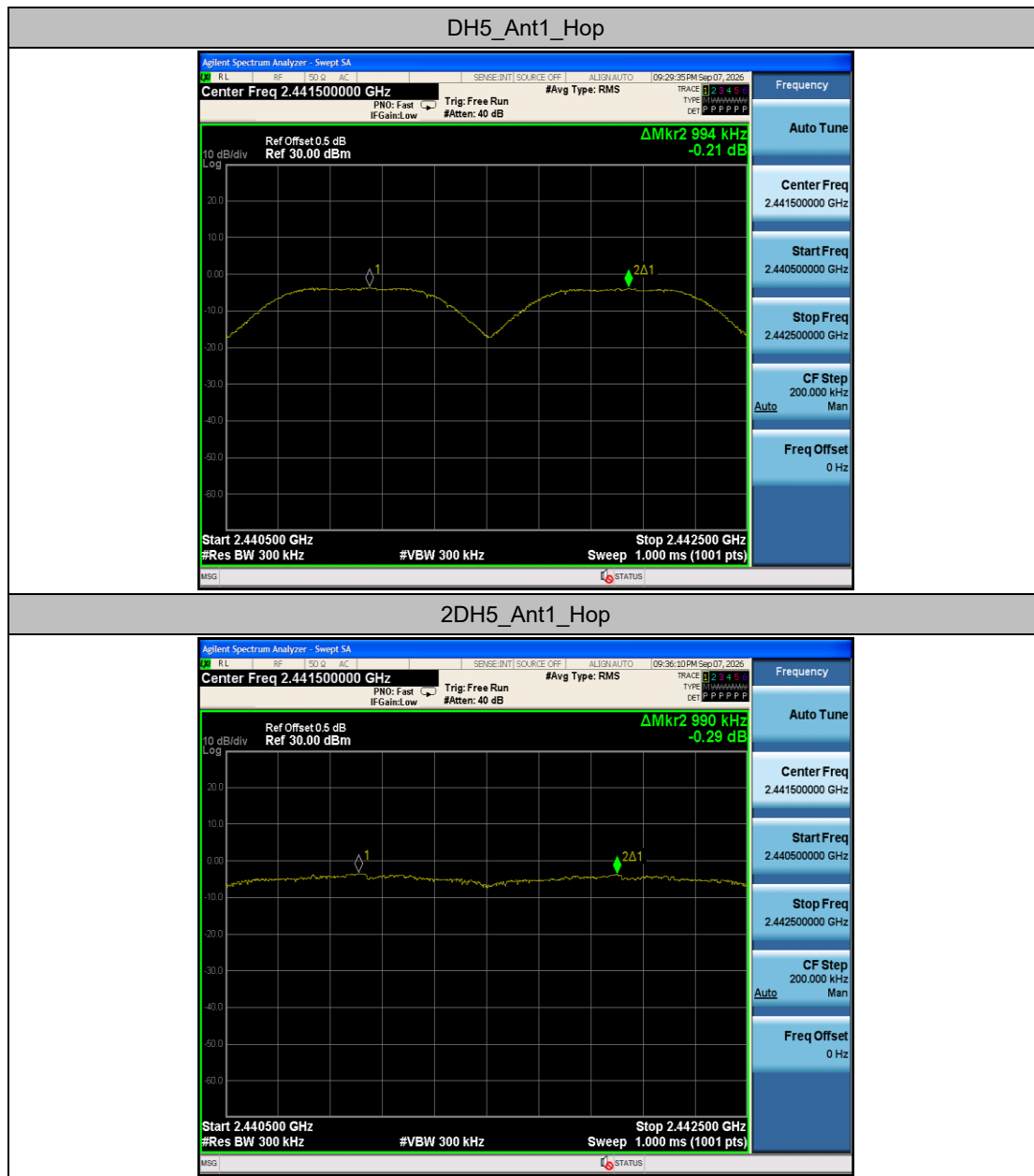
Test Mode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	-3.34	≤20.97	PASS
		2441	-3.37	≤20.97	PASS
		2480	-3.61	≤20.97	PASS
2DH5	Ant1	2402	-0.68	≤20.97	PASS
		2441	-0.79	≤20.97	PASS
		2480	-1.00	≤20.97	PASS

Appendix D: Carrier frequency separation

Test Result

TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.994	≥ 0.954	PASS
2DH5	Ant1	Hop	0.99	≥ 0.880	PASS

Test Graphs

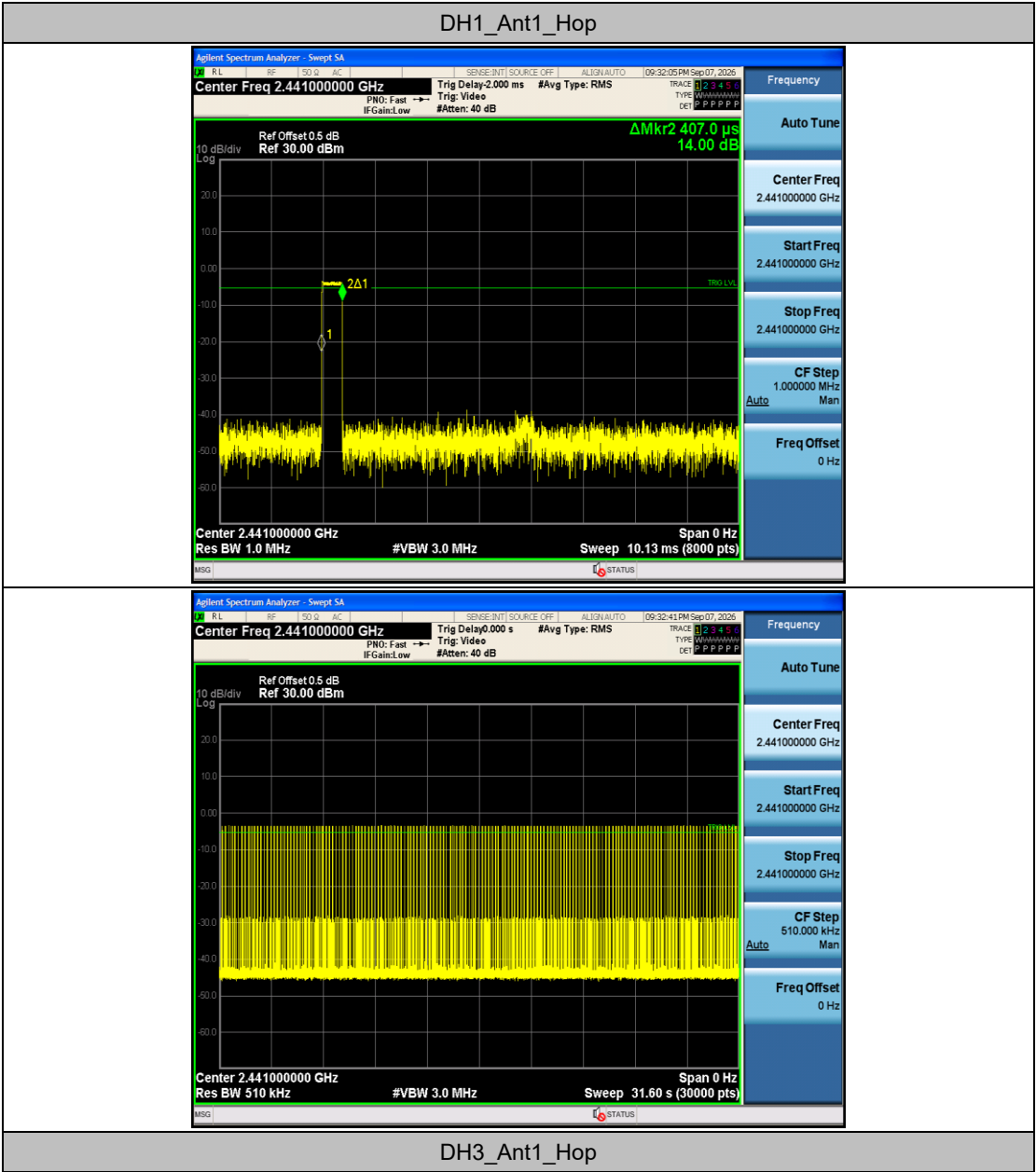


Appendix E: Time of occupancy

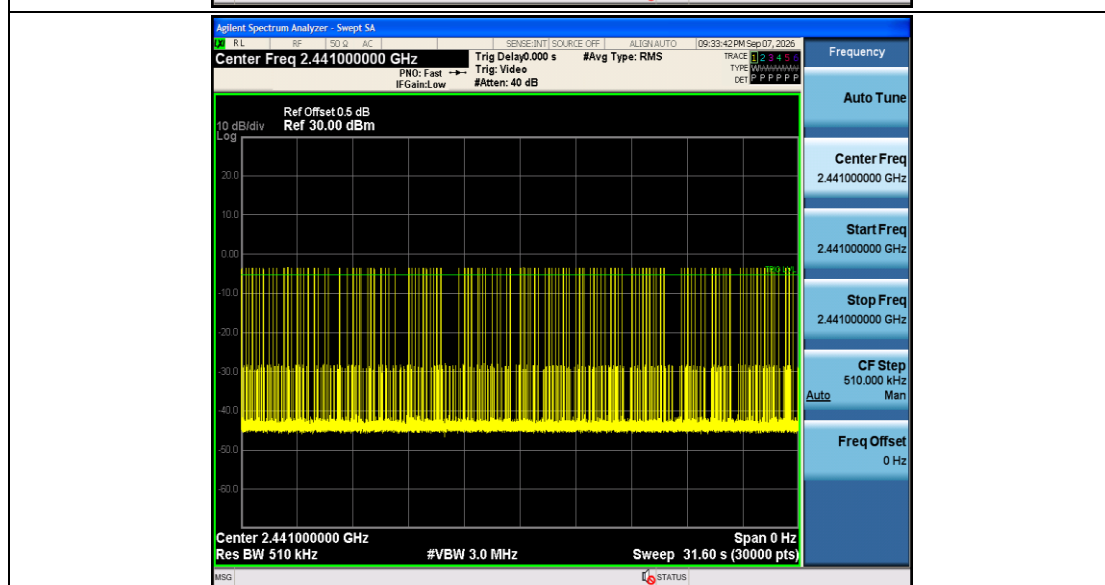
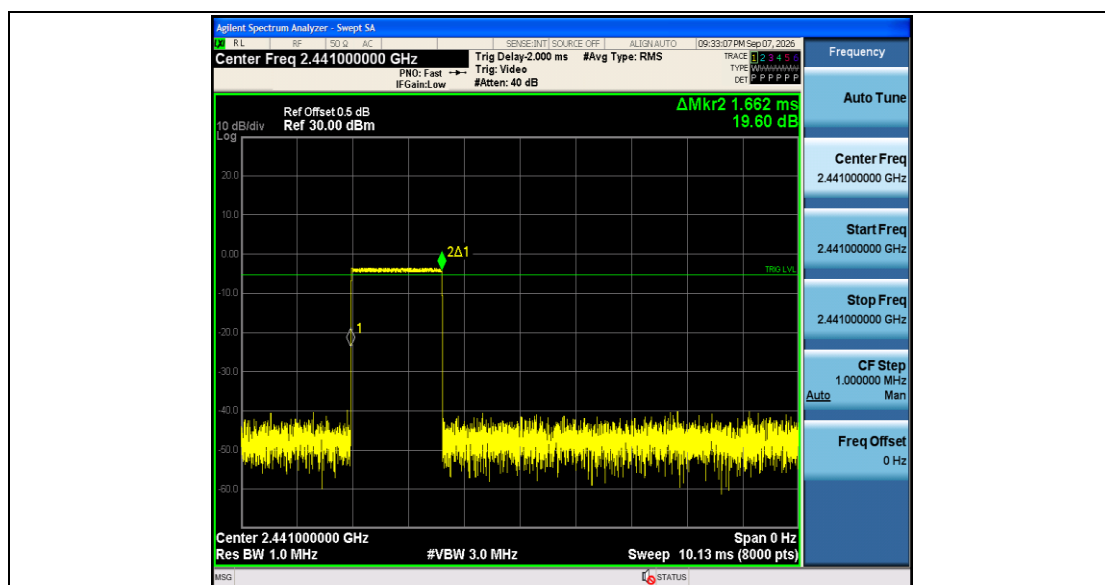
Test Result

TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.407	313	0.127	≤0.4	PASS
DH3	Ant1	Hop	1.662	157	0.261	≤0.4	PASS
DH5	Ant1	Hop	2.910	112	0.326	≤0.4	PASS
2DH1	Ant1	Hop	0.415	319	0.132	≤0.4	PASS
2DH3	Ant1	Hop	1.668	154	0.257	≤0.4	PASS
2DH5	Ant1	Hop	2.915	108	0.315	≤0.4	PASS

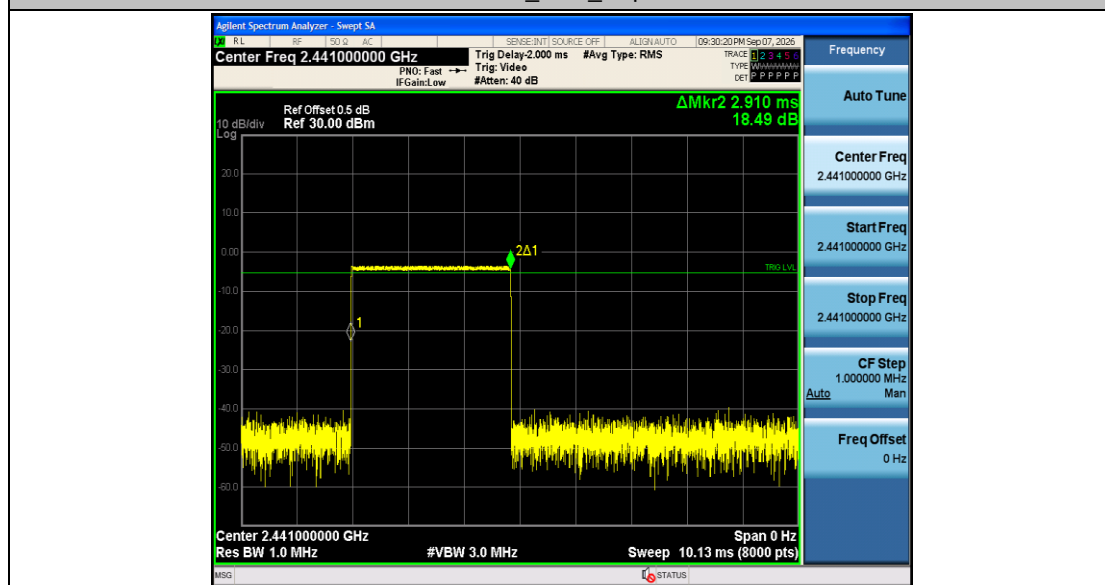
Test Graphs

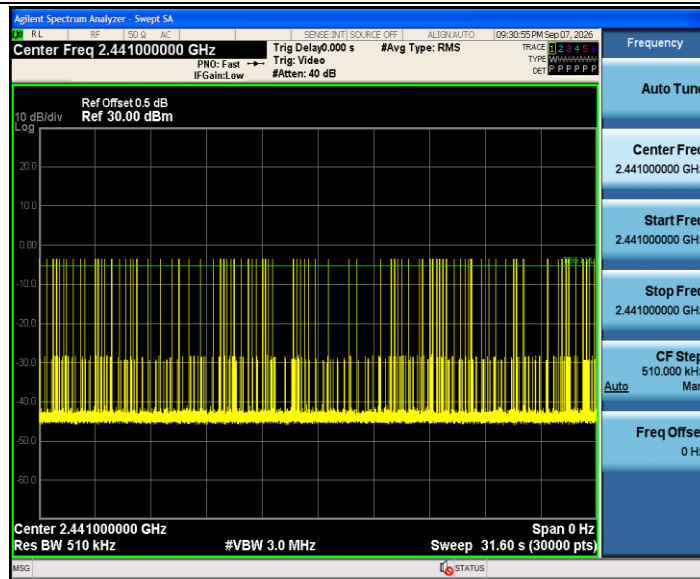


DH3_Ant1_Hop

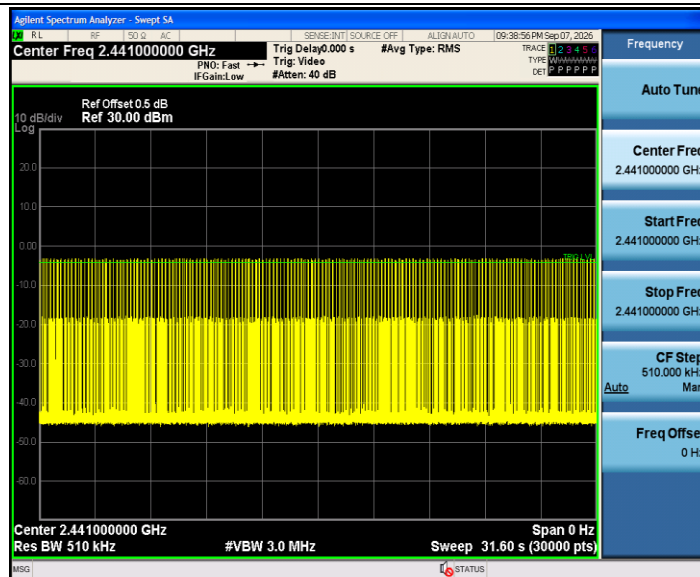
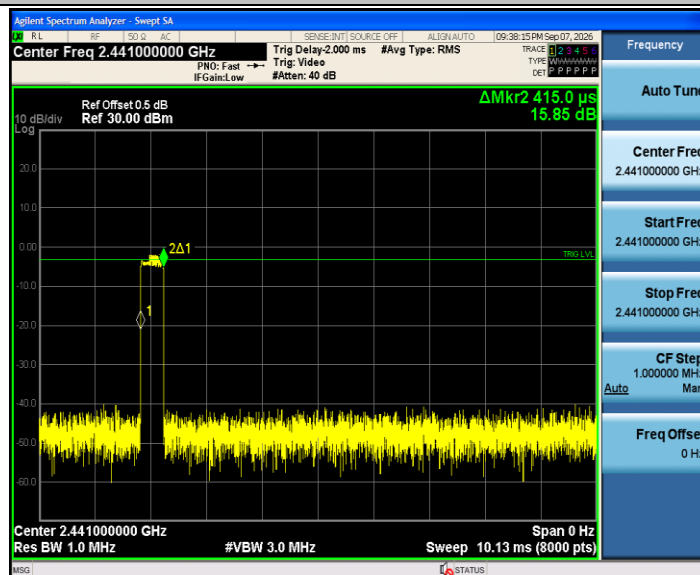


DH5_Ant1_Hop

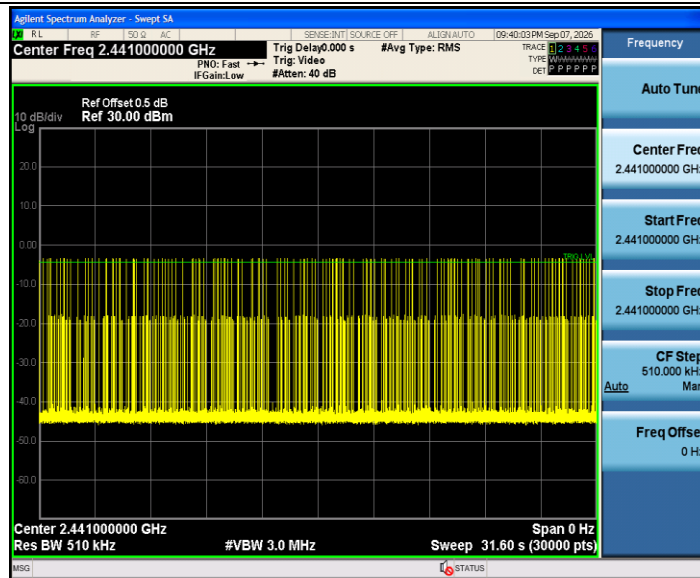
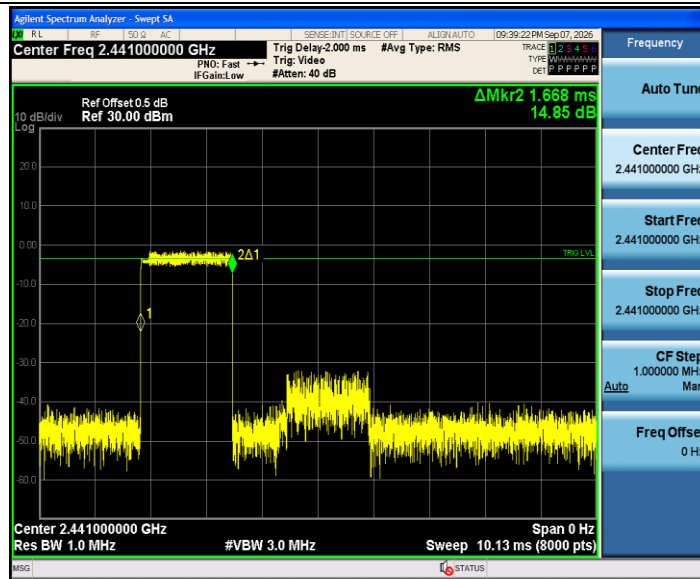




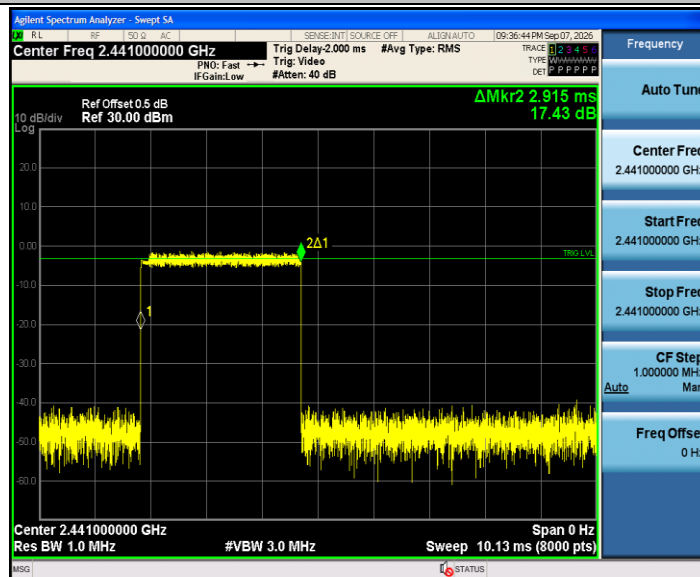
2DH1_Ant1_Hop

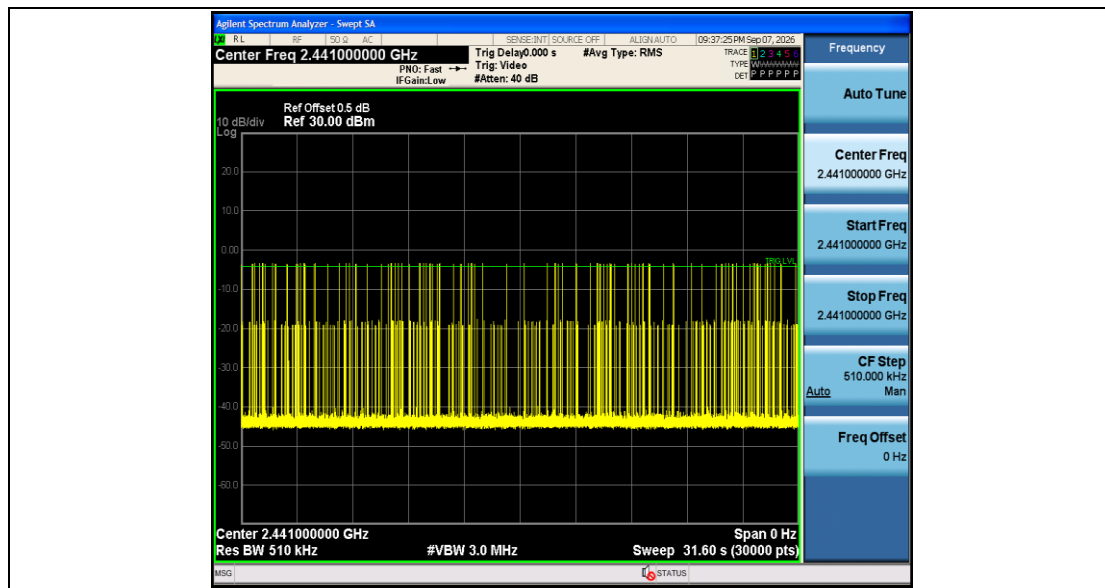


2DH3_Ant1_Hop



2DH5_Ant1_Hop





Appendix F: Number of hopping channels

Test Result

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

Test Graphs

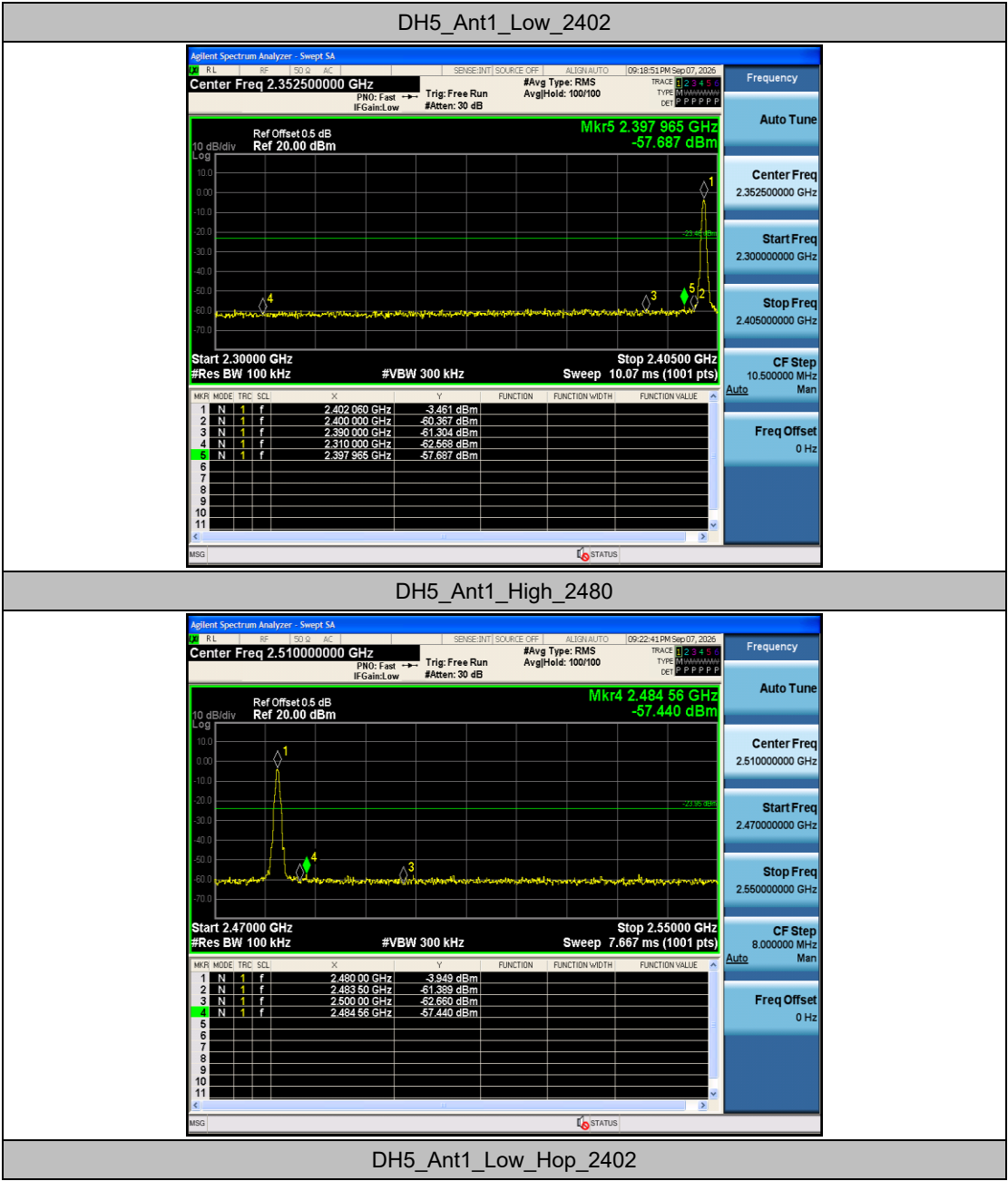


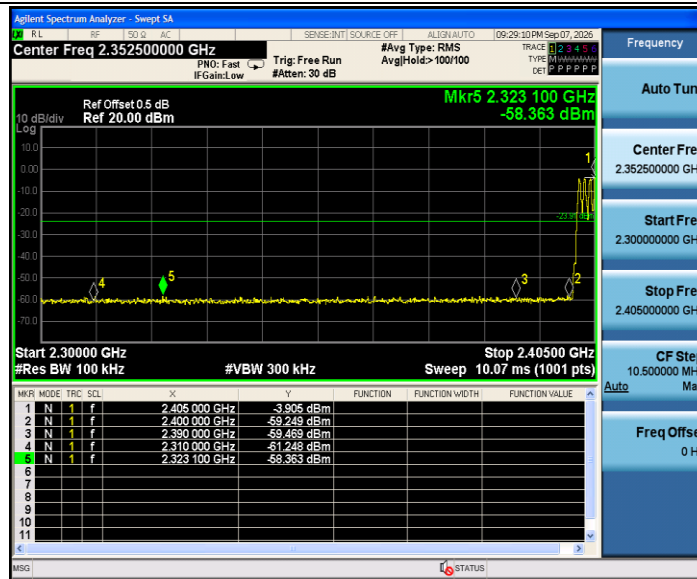
Appendix G: Band edge measurements

Test Result

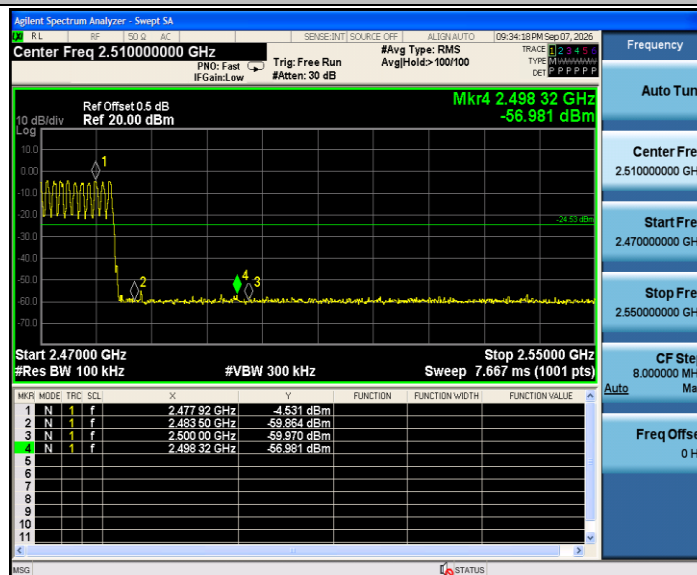
TestMode	Antenna	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-3.46	-57.69	≤-23.46	PASS
		High	2480	-3.95	-57.44	≤-23.95	PASS
		Low	Hop_2402	-3.91	-58.36	≤-23.91	PASS
		High	Hop_2480	-4.53	-56.98	≤-24.53	PASS
2DH5	Ant1	Low	2402	-4.43	-58.41	≤-24.43	PASS
		High	2480	-4.94	-57.29	≤-24.94	PASS
		Low	Hop_2402	-4.70	-55.7	≤-24.7	PASS
		High	Hop_2480	-5.05	-57.1	≤-25.05	PASS

Test Graphs

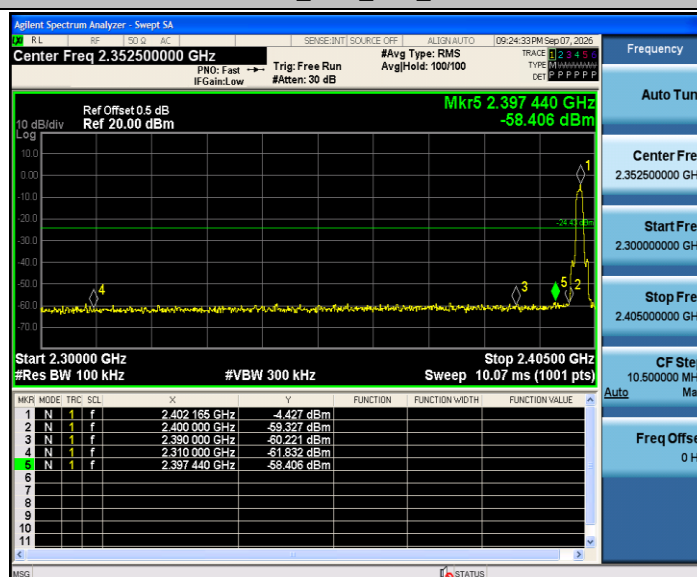




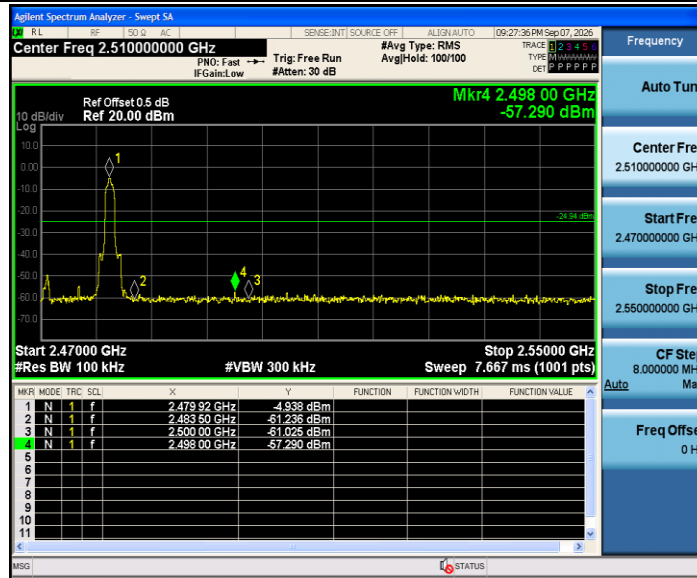
DH5_Ant1_High_Hop_2480



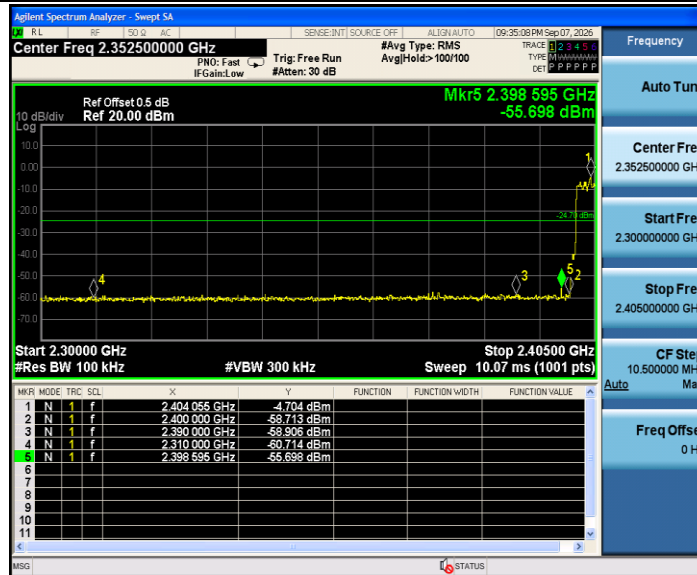
2DH5_Ant1_Low_2402



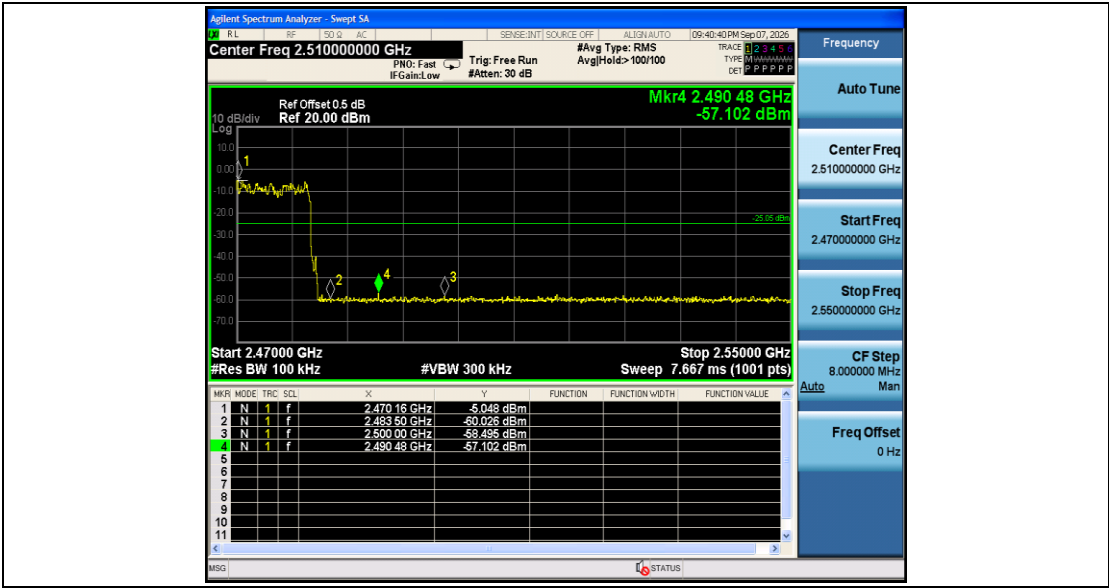
2DH5_Ant1_High_2480



2DH5_Ant1_Low_Hop_2402



2DH5_Ant1_High_Hop_2480

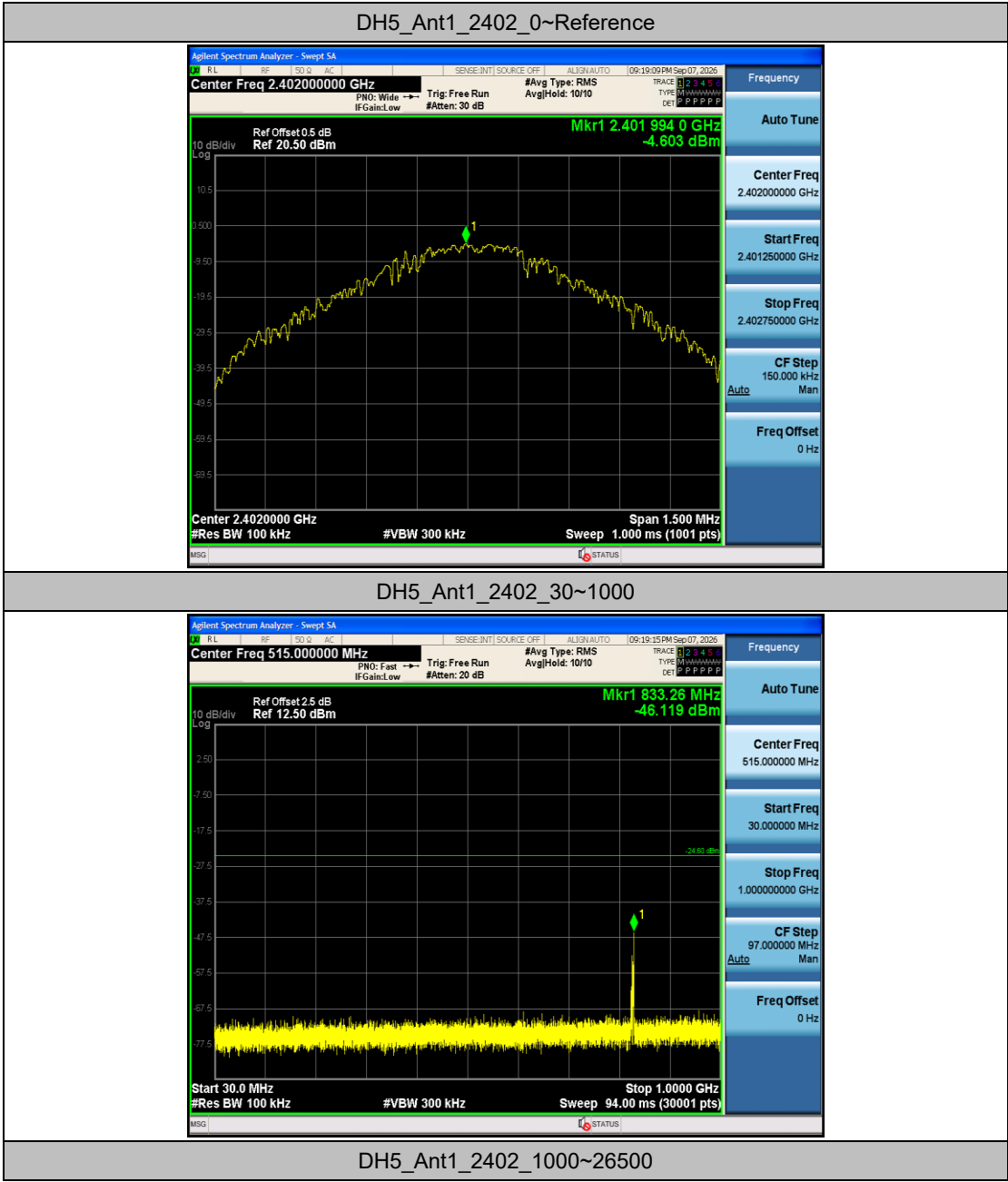


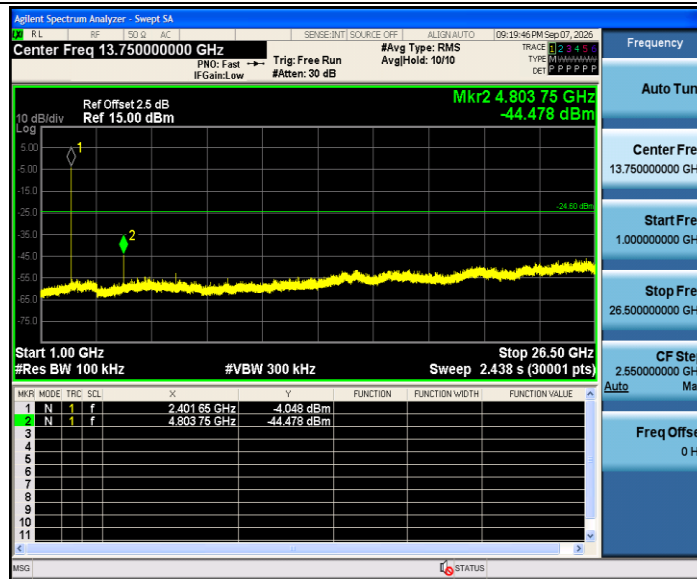
Appendix H: Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	-4.60	-4.60	---	PASS
			30~1000	-4.60	-46.12	≤-24.6	PASS
			1000~26500	-4.60	-44.48	≤-24.6	PASS
		2441	Reference	-4.41	-4.41	---	PASS
			30~1000	-4.41	-67.14	≤-24.41	PASS
			1000~26500	-4.41	-46.53	≤-24.41	PASS
		2480	Reference	-4.69	-4.69	---	PASS
			30~1000	-4.69	-51.66	≤-24.69	PASS
			1000~26500	-4.69	-45.06	≤-24.69	PASS
2DH5	Ant1	2402	Reference	-4.62	-4.62	---	PASS
			30~1000	-4.62	-68.86	≤-24.62	PASS
			1000~26500	-4.62	-46.52	≤-24.62	PASS
		2441	Reference	-7.19	-7.19	---	PASS
			30~1000	-7.19	-68.56	≤-27.19	PASS
			1000~26500	-7.19	-46.24	≤-27.19	PASS
		2480	Reference	-6.53	-6.53	---	PASS
			30~1000	-6.53	-68.45	≤-26.53	PASS
			1000~26500	-6.53	-46.2	≤-26.53	PASS

Test Graphs

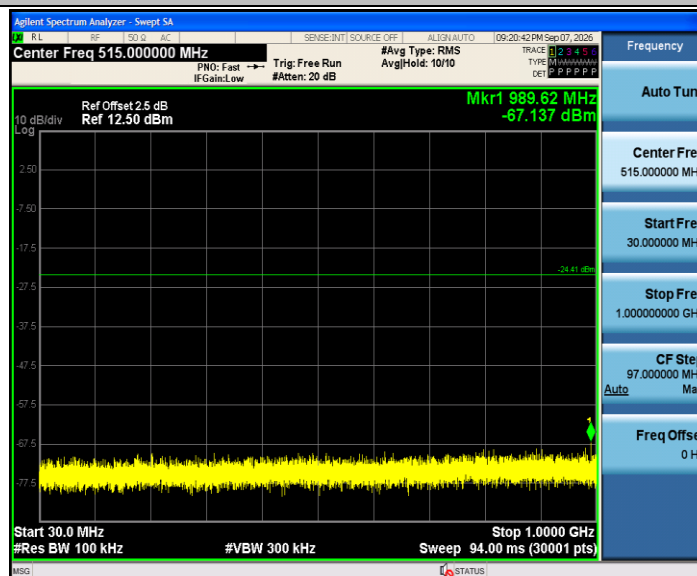




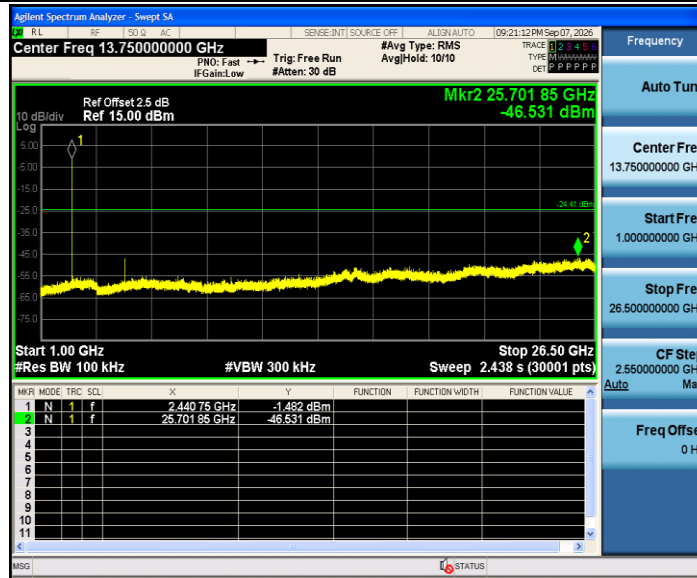
DH5_Ant1_2441_0~Reference



DH5_Ant1_2441_30~1000



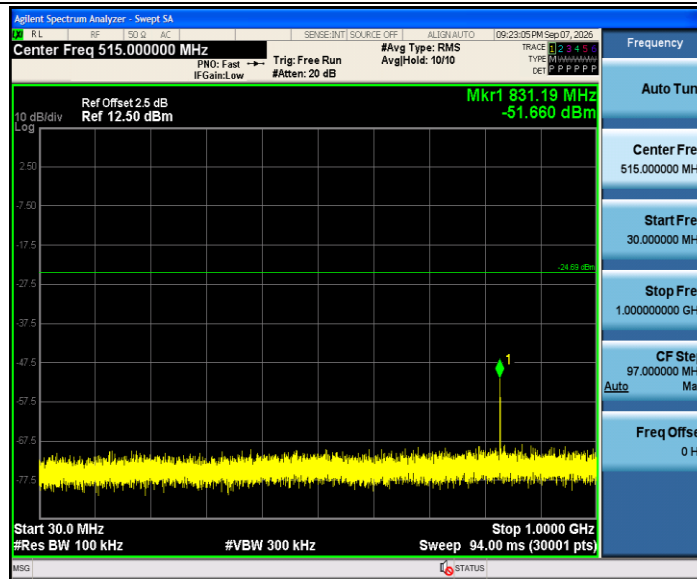
DH5_Ant1_2441_1000~26500



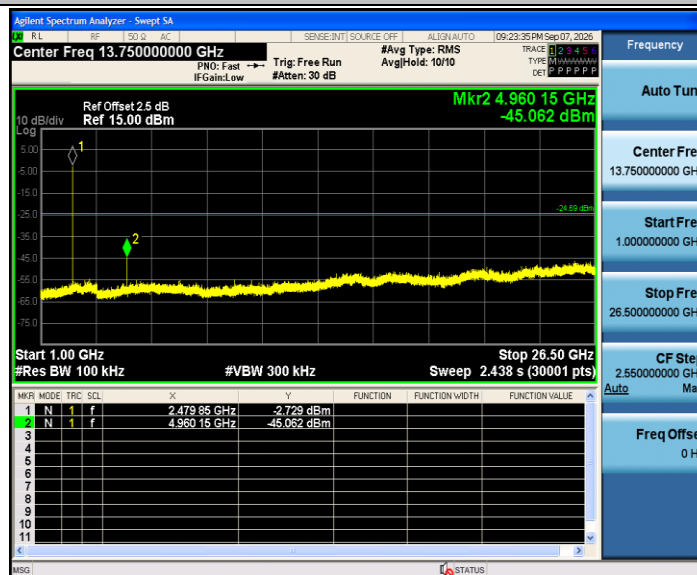
DH5_Ant1_2480_0~Reference



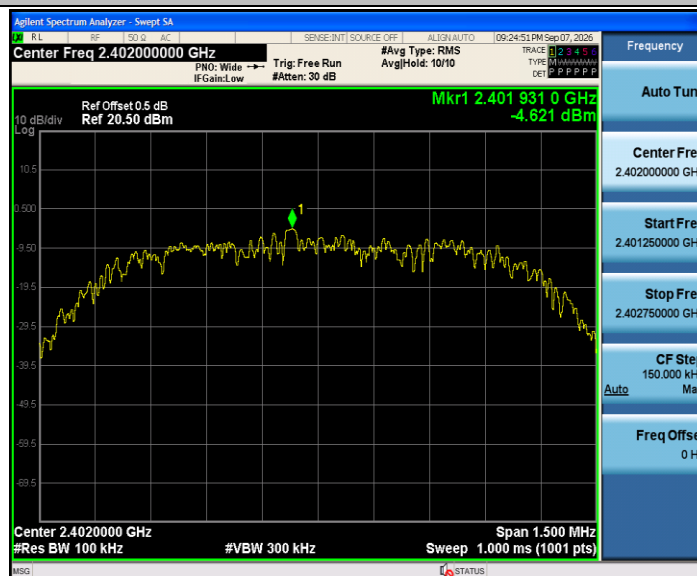
DH5_Ant1_2480_30~1000



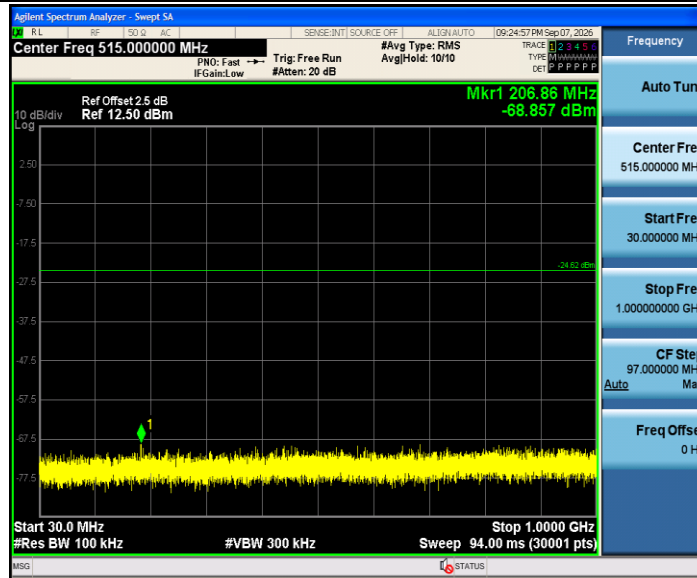
DH5_Ant1_2480_1000~26500



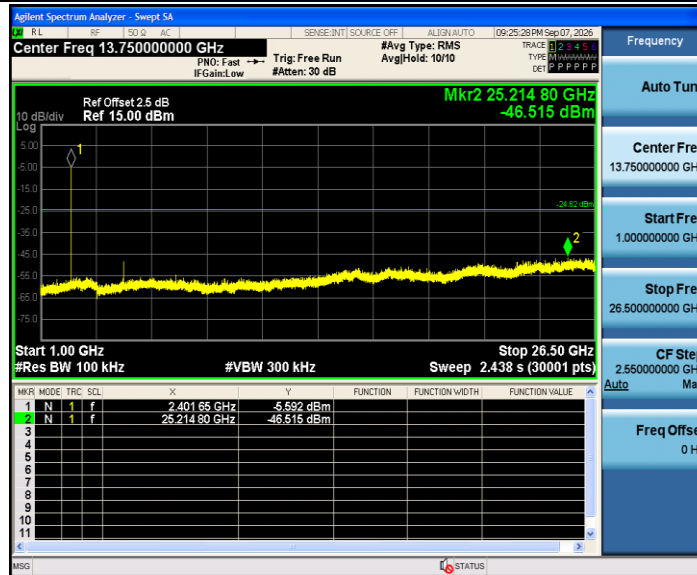
2DH5_Ant1_2402_0~Reference



2DH5_Ant1_2402_30~1000



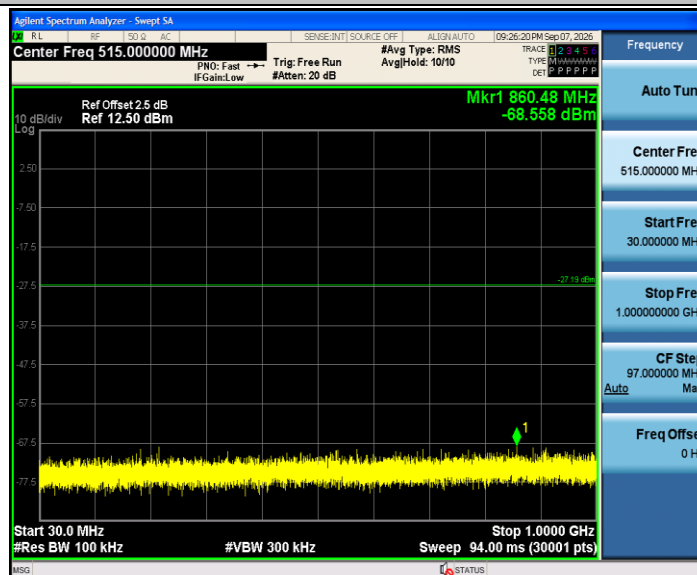
2DH5_Ant1_2402_1000~26500



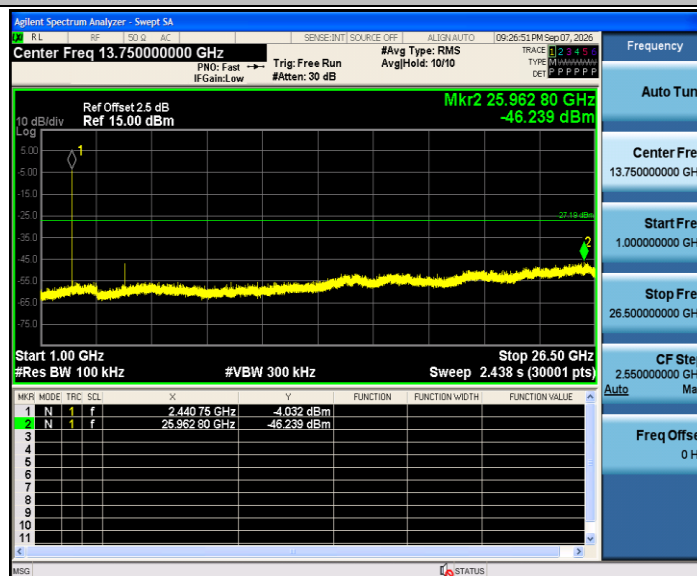
2DH5_Ant1_2441_0~Reference



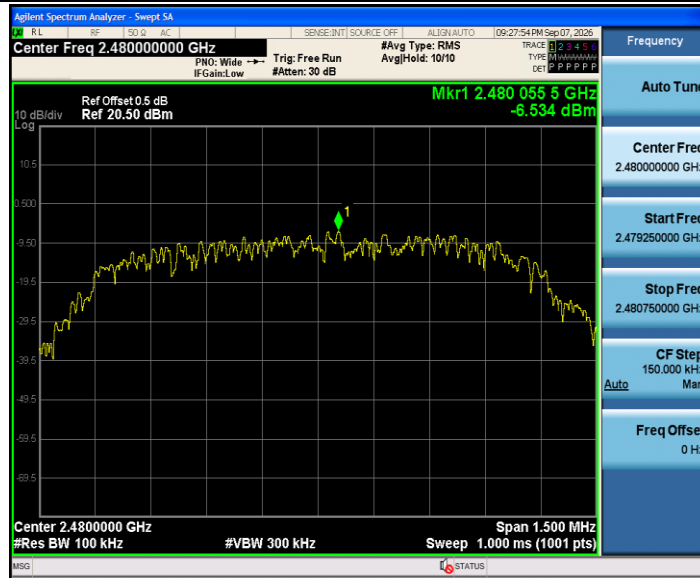
2DH5_Ant1_2441_30~1000



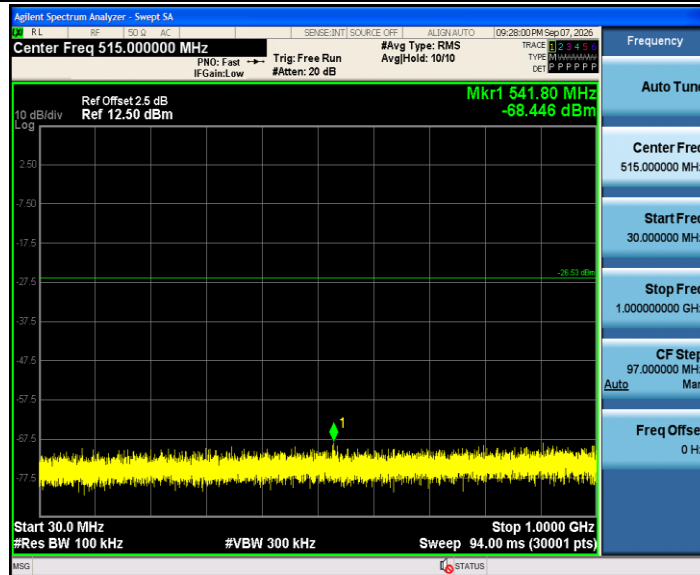
2DH5_Ant1_2441_1000~26500



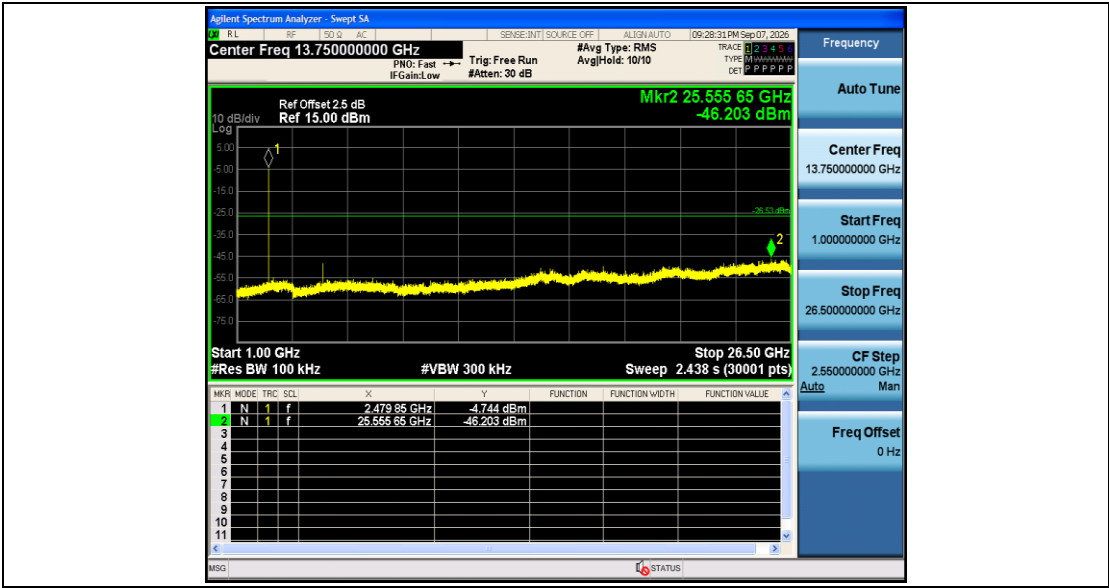
2DH5_Ant1_2480_0~Reference



2DH5_Ant1_2480_30~1000



2DH5_Ant1_2480_1000~26500



Appendix I: Duty Cycle

Test Result

TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	DC [%]	xFactor	Limit	Verdict
DH5	Ant1	2402	2.91	3.75	77.60	1.10	---	---
		2441	2.91	3.75	77.60	1.10	---	---
		2480	2.91	3.75	77.60	1.10	---	---
2DH5	Ant1	2402	2.92	3.75	77.87	1.09	---	---
		2441	2.92	3.76	77.66	1.10	---	---
		2480	2.91	3.75	77.60	1.10	---	---