



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

Product Name: Gravastar Mercury Edge PRO Wireless Gaming Headset

Trade Mark: GravaStar

Test Model: GS MH1 PRO

FCC ID: 2ASXF-GS-MH1-PRO

Environmental Conditions

Temperature:	23.5°C
Relative Humidity:	58%
ATM Pressure:	100.0 kPa
Test Engineer:	Allen Lai
Supervised by:	Max Zhang
NOTE	N/A

Appendix A: 20dB Emission Bandwidth

Test Result

Test Mode	Antenna	Frequency [MHz]	20db EBW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
DH5	Ant1	2402	0.963	2401.523	2402.486	---	---
DH5	Ant1	2441	0.975	2440.508	2441.483	---	---
DH5	Ant1	2480	0.960	2479.523	2480.483	---	---
2DH5	Ant1	2402	1.284	2401.358	2402.642	---	---
2DH5	Ant1	2441	1.326	2440.322	2441.648	---	---
2DH5	Ant1	2480	1.278	2479.358	2480.636	---	---
3DH5	Ant1	2402	1.302	2401.340	2402.642	---	---
3DH5	Ant1	2441	1.290	2440.346	2441.636	---	---
3DH5	Ant1	2480	1.299	2479.340	2480.639	---	---

Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs





DH5-Ant1-2480



2DH5-Ant1-2402





2DH5-Ant1-2441



2DH5-Ant1-2480



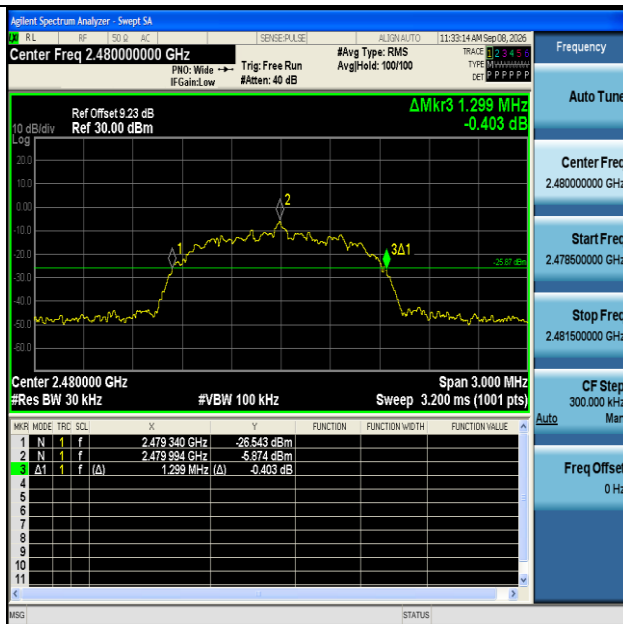


3DH5-Ant1-2402



3DH5-Ant1-2441







Appendix B: Occupied Channel Bandwidth

Test Result

Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
DH5	Ant1	2402	0.89342	2401.5484	2402.4418	---	---
DH5	Ant1	2441	0.88646	2440.5475	2441.4340	---	---
DH5	Ant1	2480	0.88246	2479.5504	2480.4329	---	---
2DH5	Ant1	2402	1.1785	2401.3985	2402.5770	---	---
2DH5	Ant1	2441	1.1884	2440.3948	2441.5832	---	---
2DH5	Ant1	2480	1.1899	2479.3948	2480.5847	---	---
3DH5	Ant1	2402	1.1786	2401.4043	2402.5829	---	---
3DH5	Ant1	2441	1.1828	2440.3969	2441.5797	---	---
3DH5	Ant1	2480	1.2024	2479.3859	2480.5883	---	---

Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



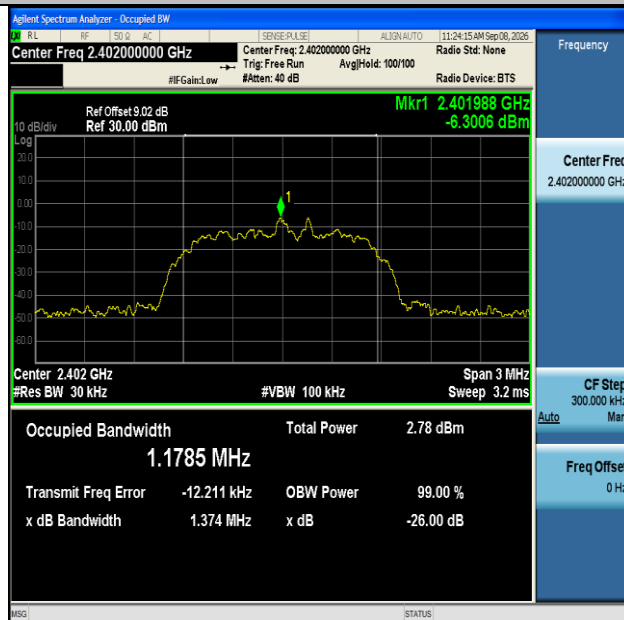


Test Graphs



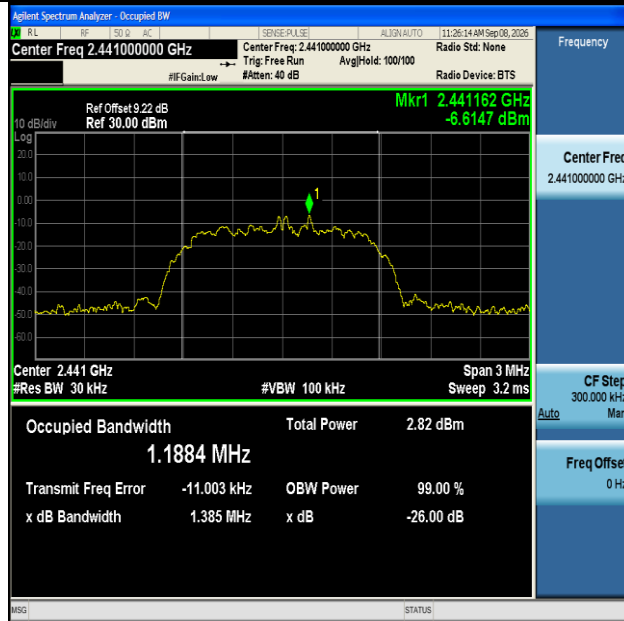


DH5-Ant1-2480



2DH5-Ant1-2402



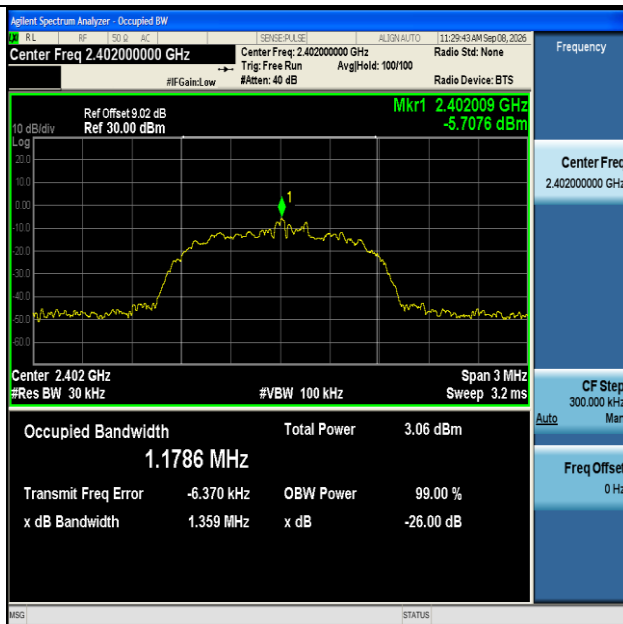


2DH5-Ant1-2441

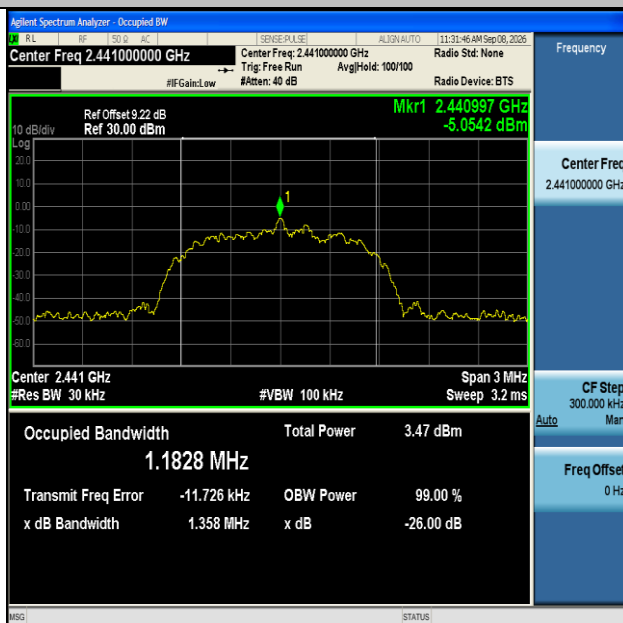


2DH5-Ant1-2480



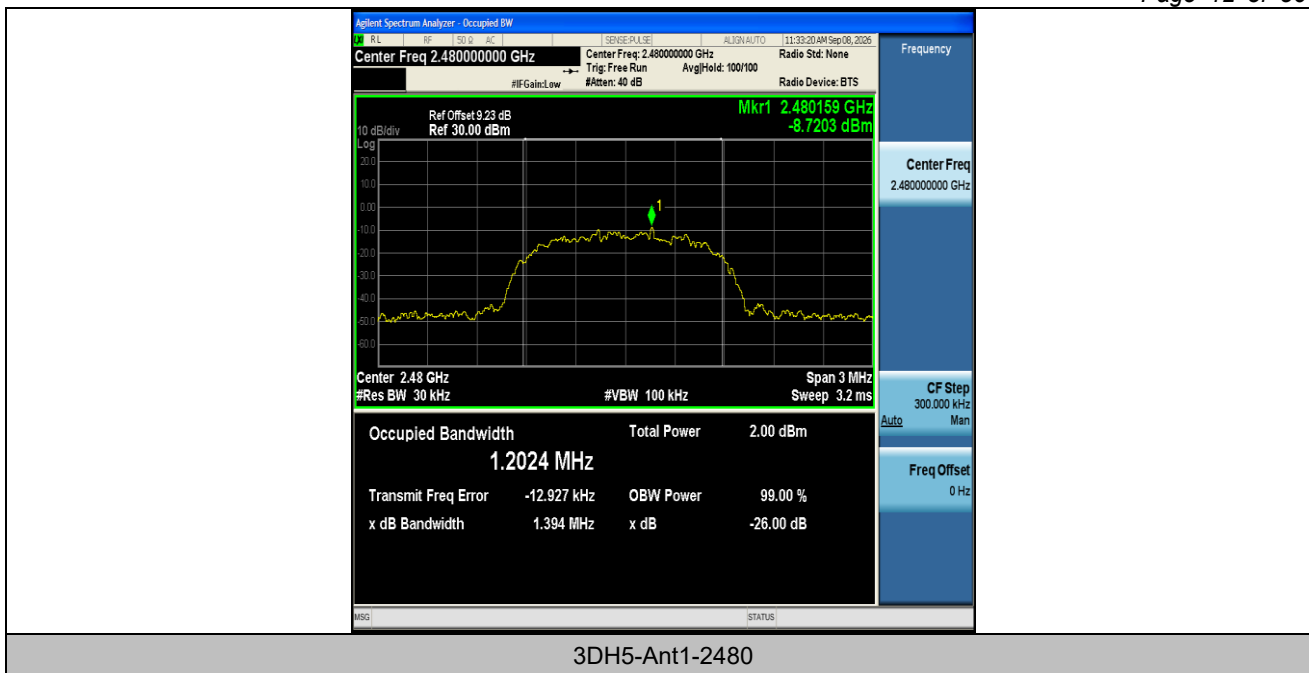


3DH5-Ant1-2402



3DH5-Ant1-2441







Appendix C: Maximum peak conducted output power

Test Result

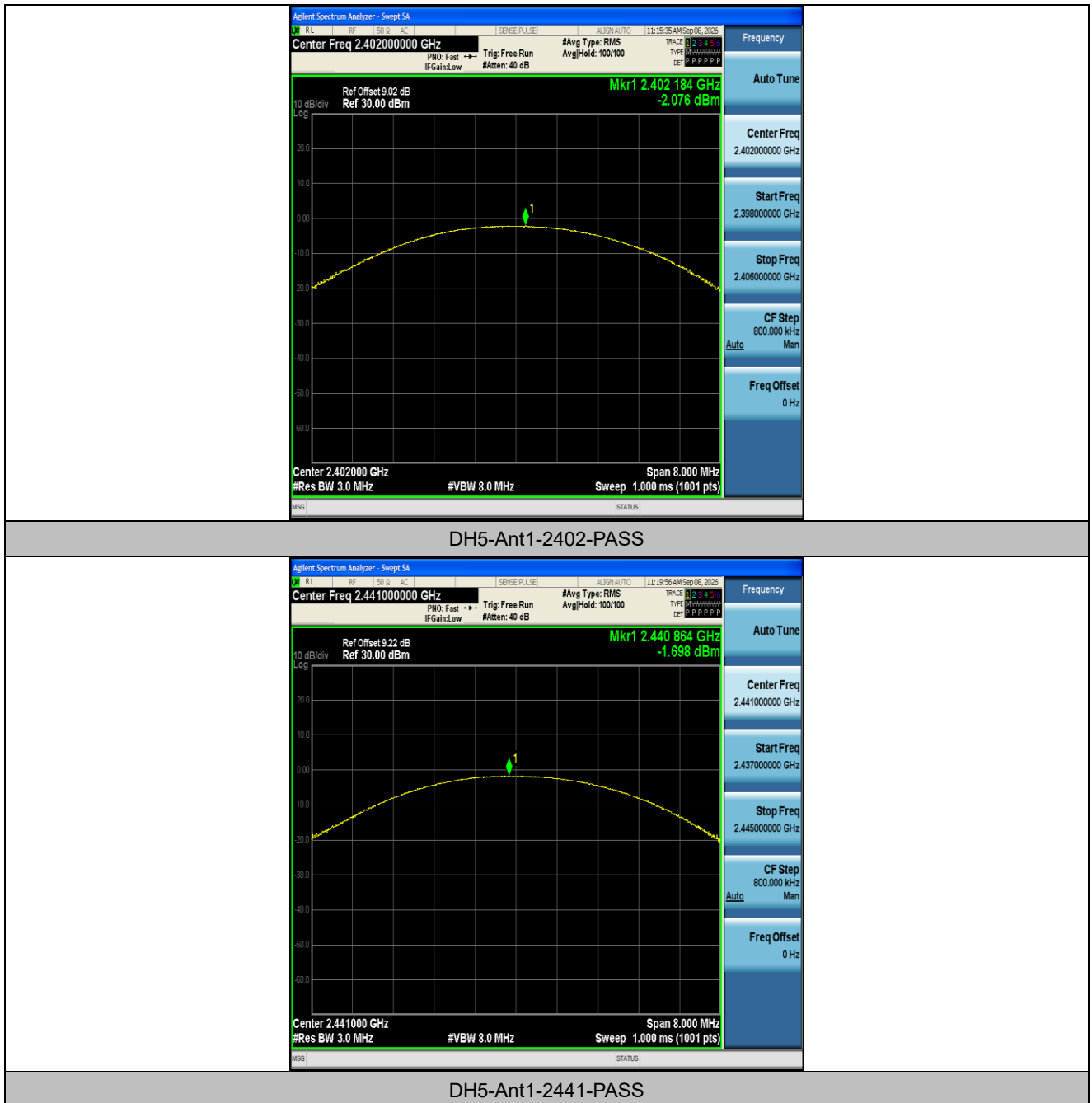
Test Mode	Antenna	Frequency [MHz]	Conducted Peak Power [dBm]	Conducted Limit [dBm]	Verdict
DH5	Ant1	2402	-2.08	≤30	PASS
DH5	Ant1	2441	-1.70	≤30	PASS
DH5	Ant1	2480	-2.33	≤30	PASS
2DH5	Ant1	2402	-1.92	≤20.97	PASS
2DH5	Ant1	2441	-1.41	≤20.97	PASS
2DH5	Ant1	2480	-2.21	≤20.97	PASS
3DH5	Ant1	2402	-1.27	≤20.97	PASS
3DH5	Ant1	2441	-0.85	≤20.97	PASS
3DH5	Ant1	2480	-1.60	≤20.97	PASS

Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



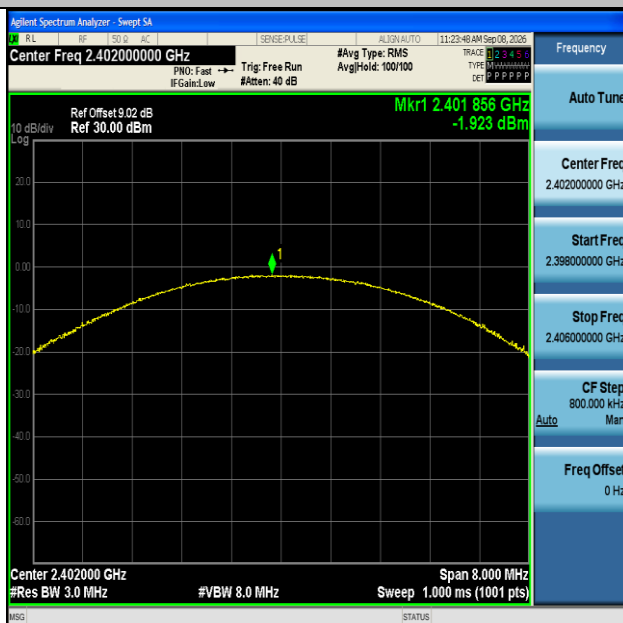


Test Graphs





DH5-Ant1-2480-PASS

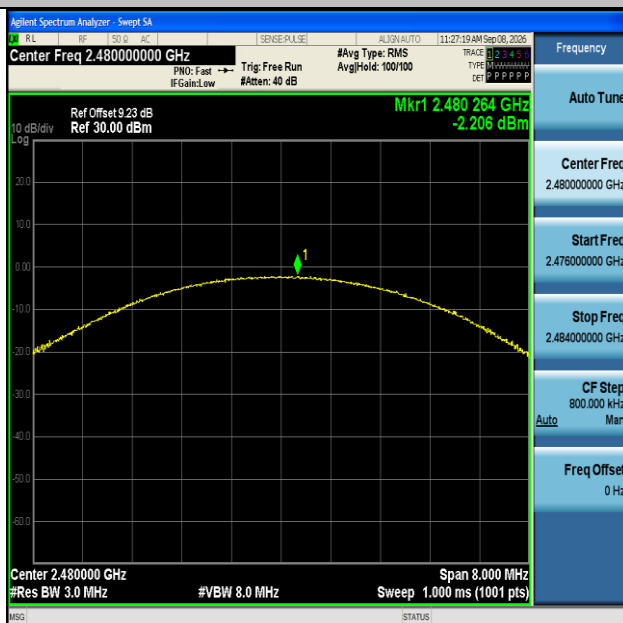


2DH5-Ant1-2402-PASS



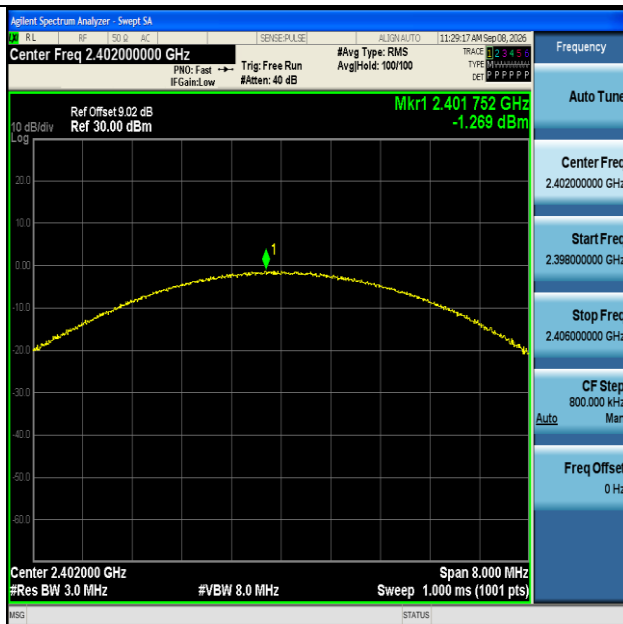


2DH5-Ant1-2441-PASS

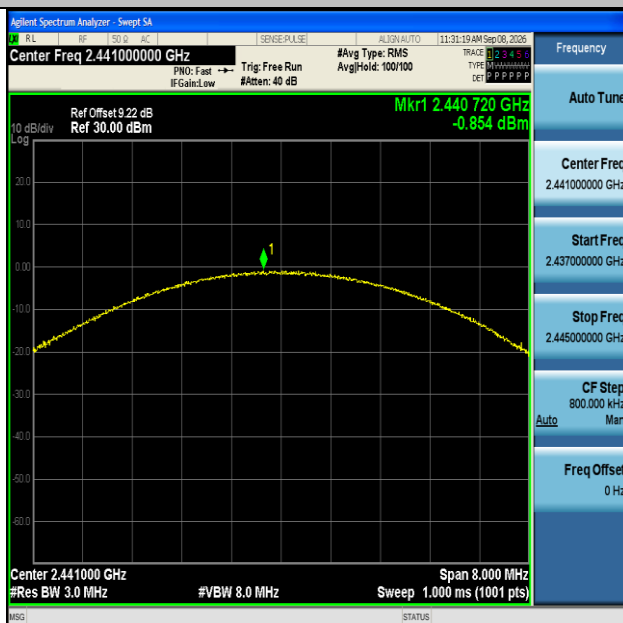


2DH5-Ant1-2480-PASS



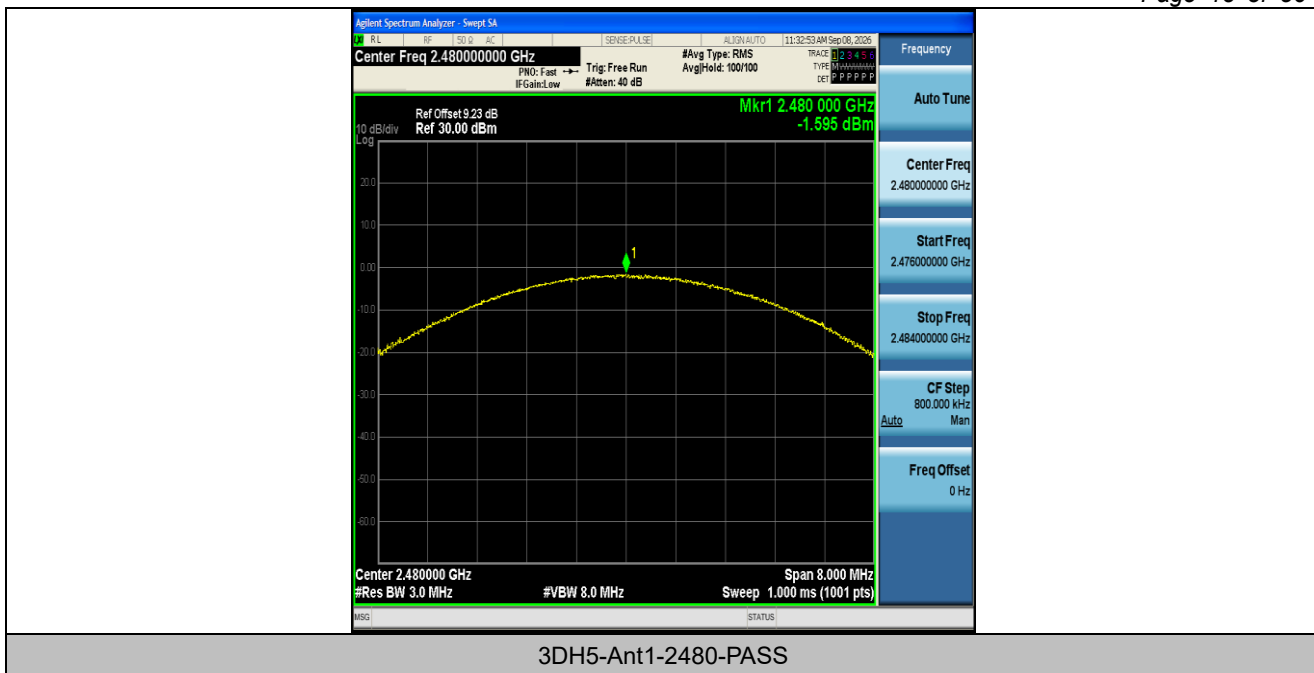


3DH5-Ant1-2402-PASS



3DH5-Ant1-2441-PASS







Appendix D: Carrier frequency separation

Test Result

Test Mode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
DH5	Ant1	Hop	0.982	≥ 0.975	PASS
2DH5	Ant1	Hop	1.146	≥ 0.884	PASS
3DH5	Ant1	Hop	0.976	≥ 0.868	PASS

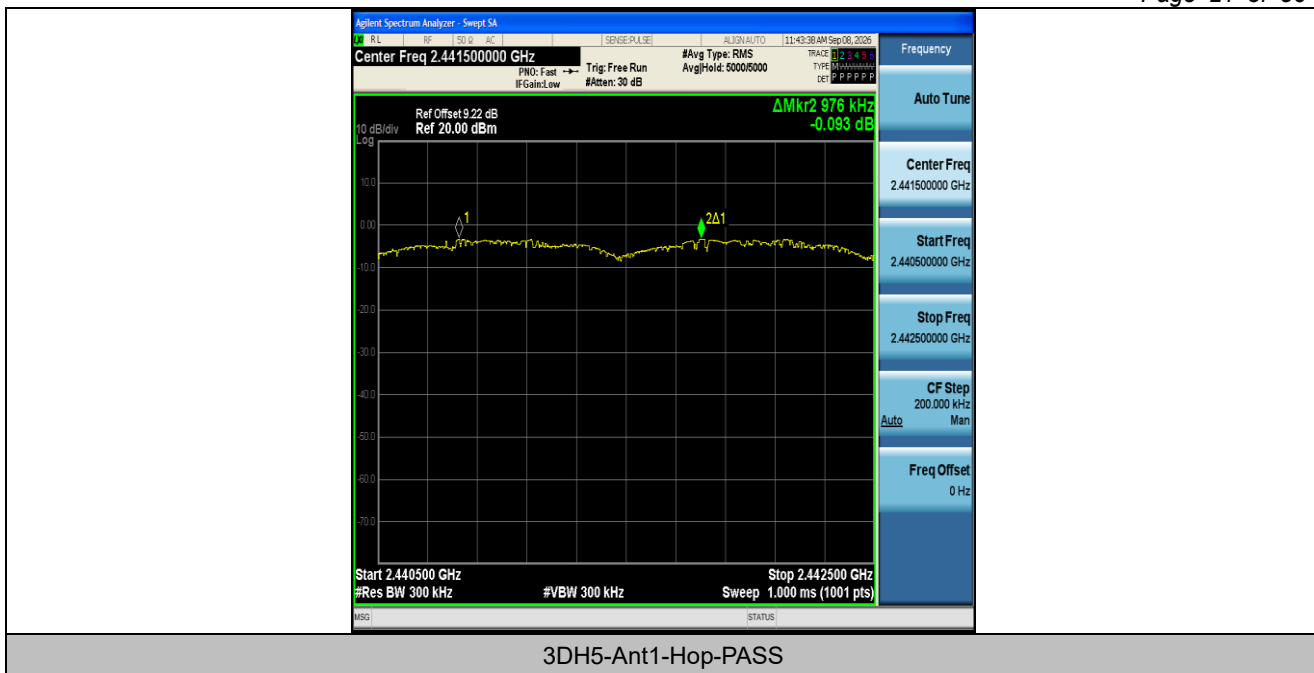
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs







Appendix E: Time of occupancy

Test Result

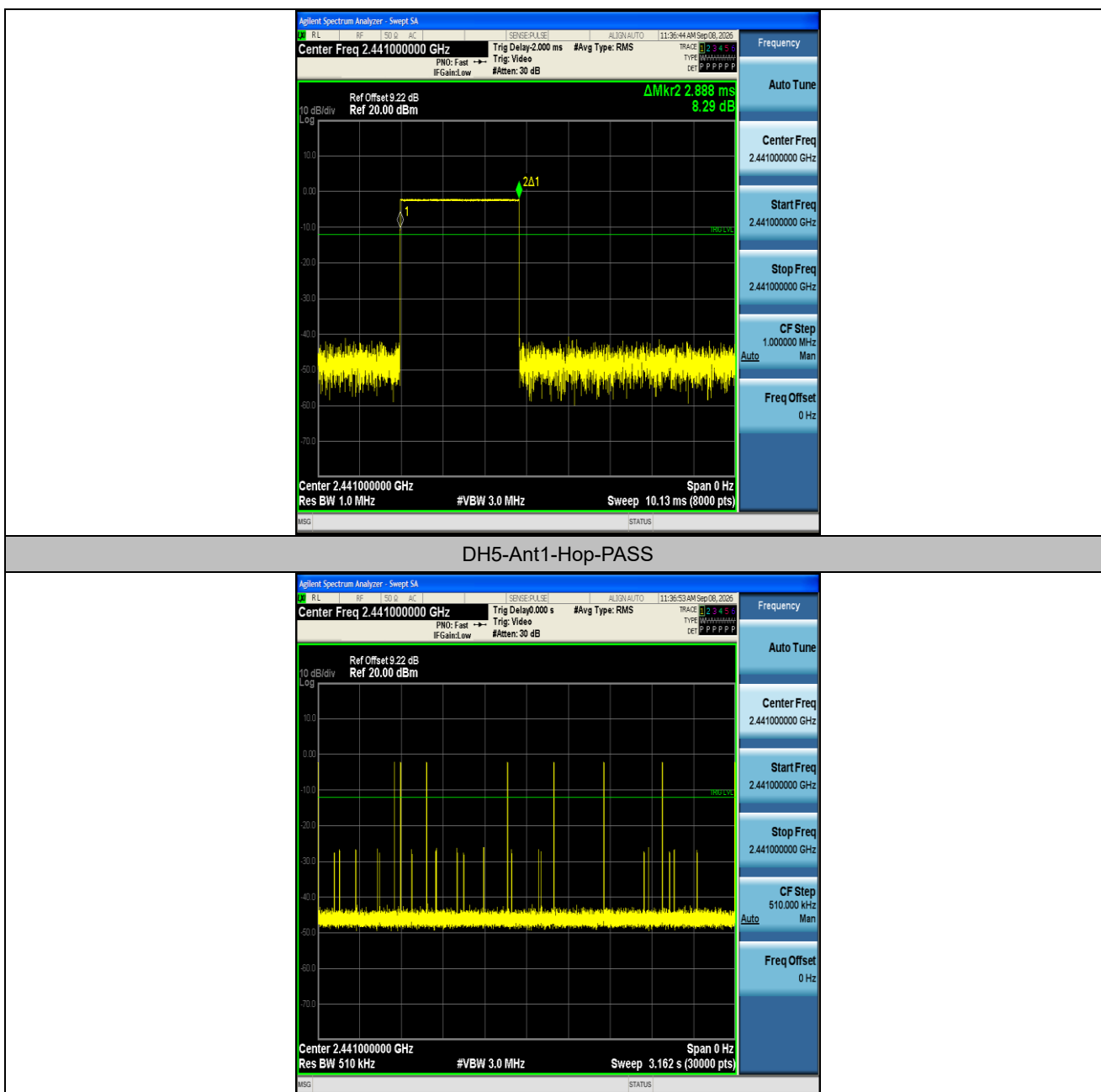
Test Mode	Antenna	Frequency [MHz]	Burst Width [ms]	TotalHops [Num]	Result [s]	Limit [s]	Verdict
DH5	Ant1	Hop	2.888	90	0.26	≤0.4	PASS
2DH5	Ant1	Hop	2.893	100	0.289	≤0.4	PASS
3DH5	Ant1	Hop	2.894	120	0.347	≤0.4	PASS

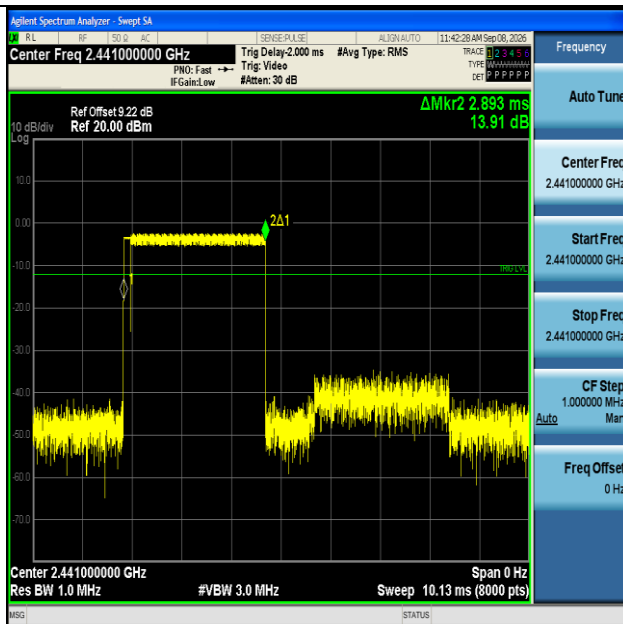
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



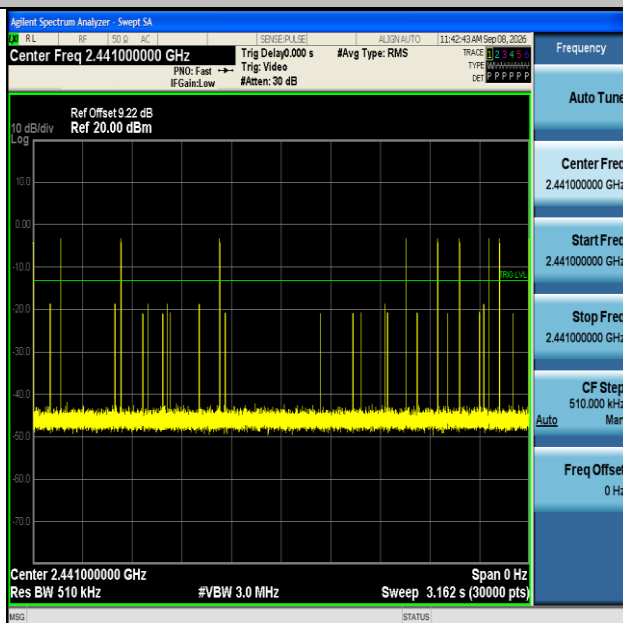


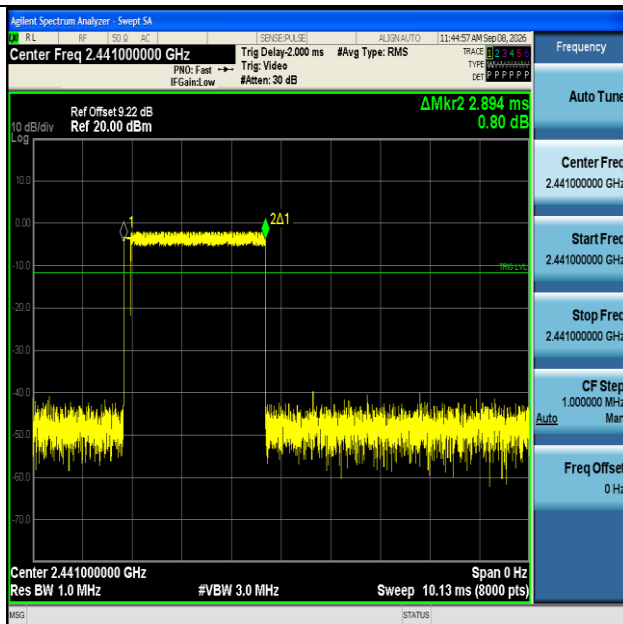
Test Graphs



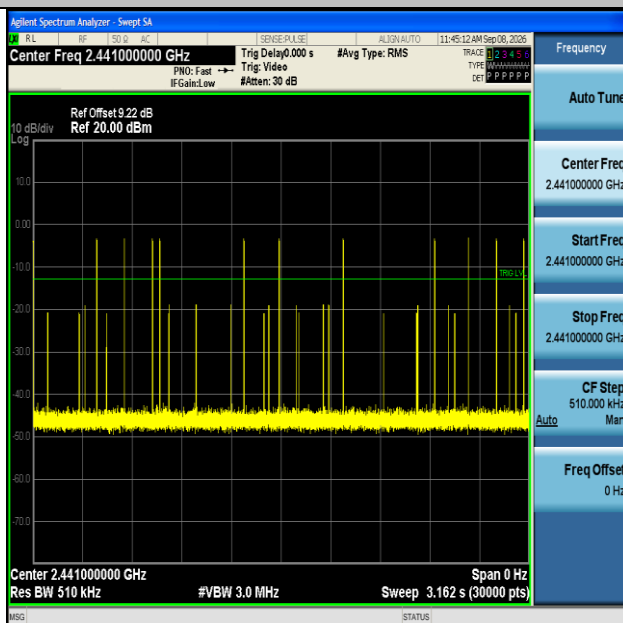


2DH5-Ant1-Hop-PASS





3DH5-Ant1-Hop-PASS





Appendix F: Number of hopping channels

Test Result

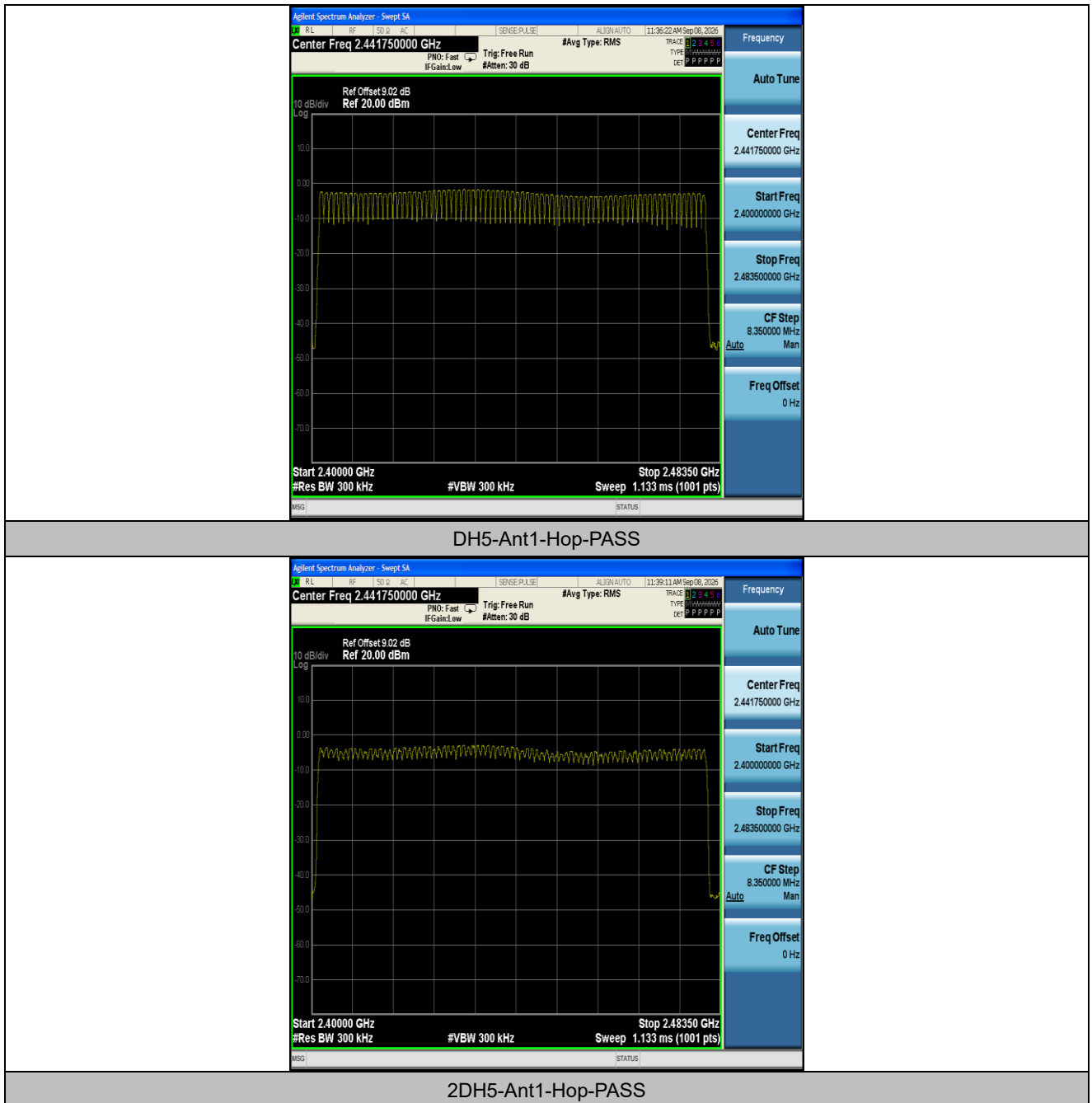
Test Mode	Antenna	Frequency [MHz]	Result [Num]	Limit [Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

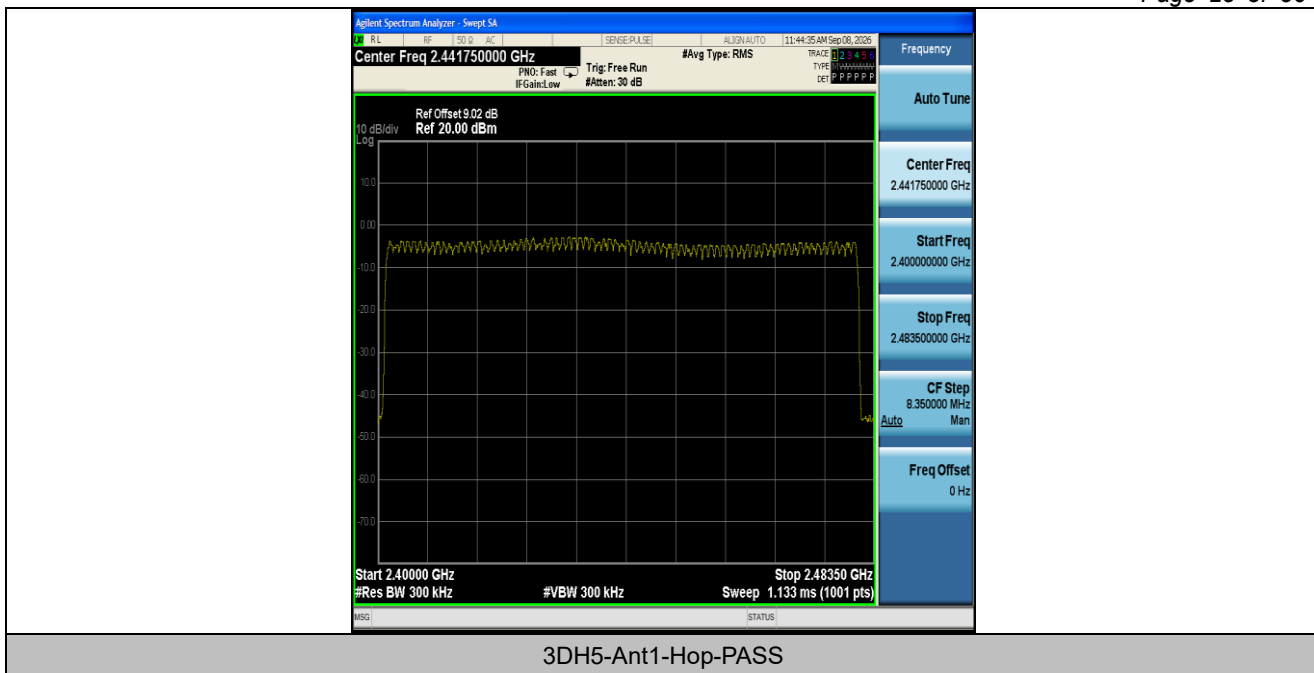
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs







Appendix G: Band edge measurements

Test Result

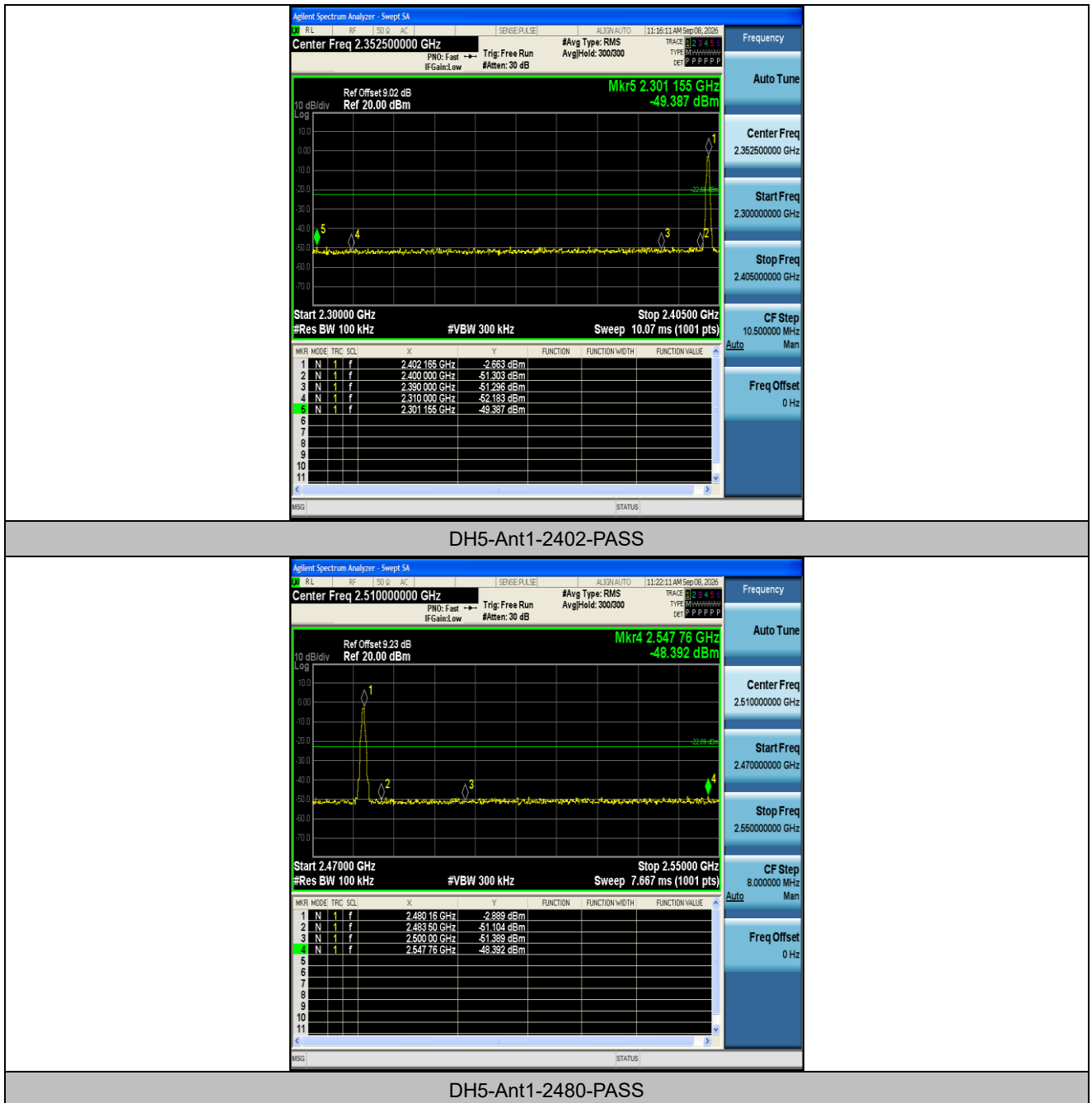
Test Mode	Antenna	Ch.Name	Frequency [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-2.66	-49.39	≤-22.66	PASS
DH5	Ant1	High	2480	-2.89	-48.39	≤-22.89	PASS
DH5	Ant1	Low	Hop_2402	-2.97	-48.72	≤-22.97	PASS
DH5	Ant1	High	Hop_2480	-3.08	-48.34	≤-23.08	PASS
2DH5	Ant1	Low	2402	-3.64	-47.76	≤-23.64	PASS
2DH5	Ant1	High	2480	-3.97	-48.34	≤-23.97	PASS
2DH5	Ant1	Low	Hop_2402	-5.14	-49.14	≤-25.14	PASS
2DH5	Ant1	High	Hop_2480	-5.56	-47.65	≤-25.56	PASS
3DH5	Ant1	Low	2402	-4.05	-48.64	≤-24.05	PASS
3DH5	Ant1	High	2480	-4.22	-48.5	≤-24.22	PASS
3DH5	Ant1	Low	Hop_2402	-6.20	-48.07	≤-26.2	PASS
3DH5	Ant1	High	Hop_2480	-7.25	-48.32	≤-27.25	PASS

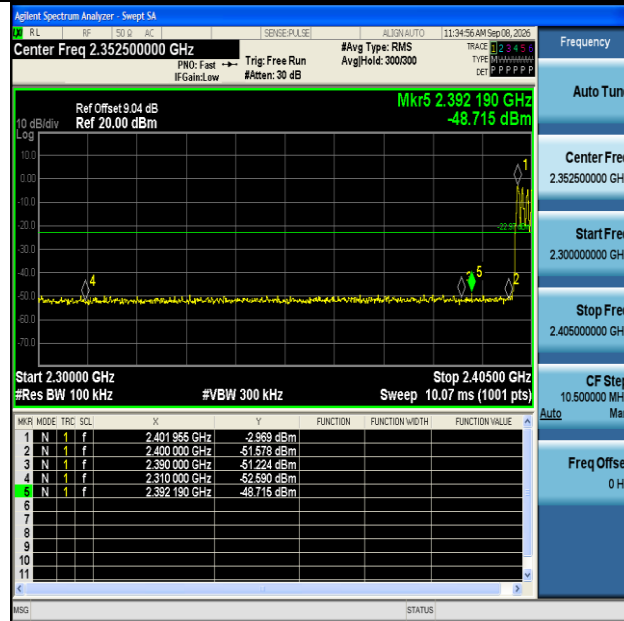
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



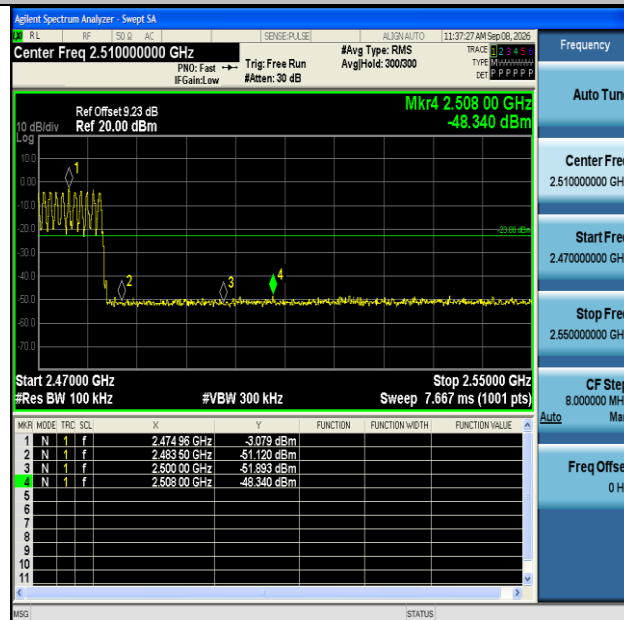


Test Graphs



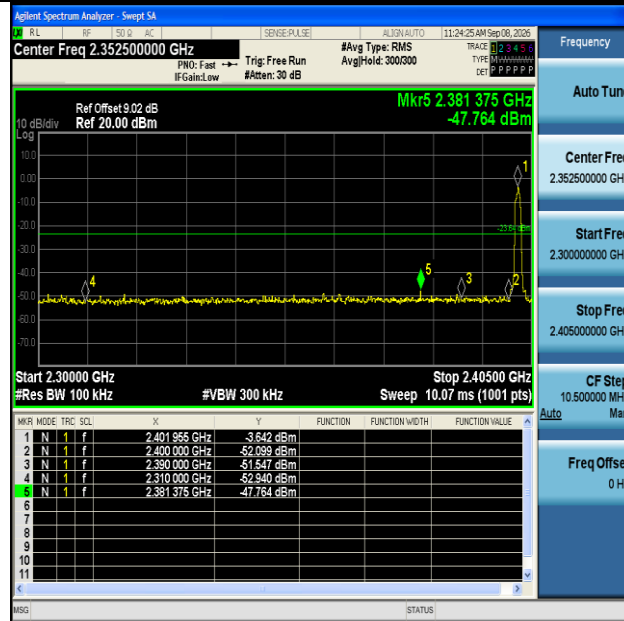


DH5-Ant1-Hop_2402-PASS

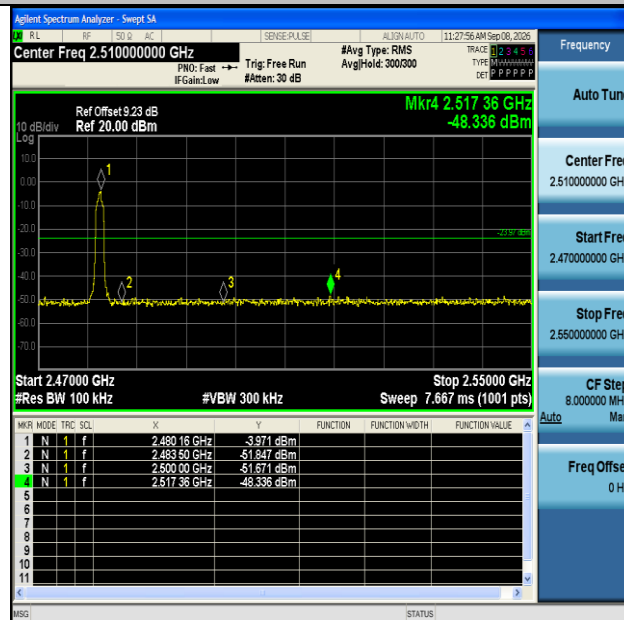


DH5-Ant1-Hop_2480-PASS



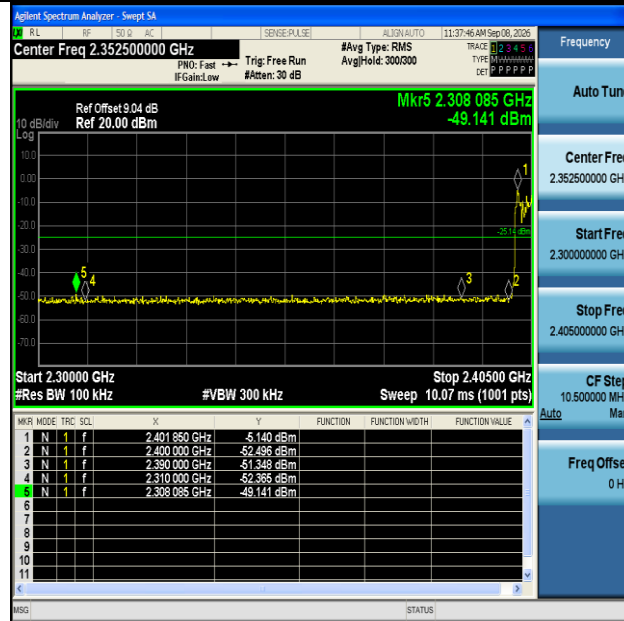


2DH5-Ant1-2402-PASS

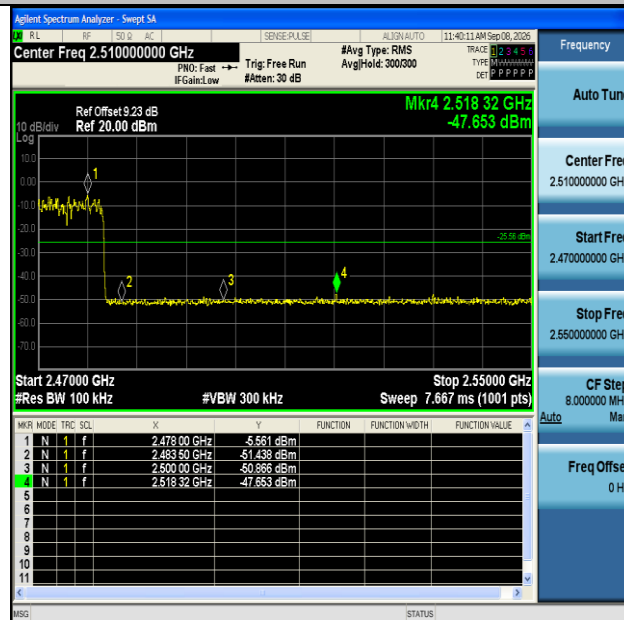


2DH5-Ant1-2480-PASS



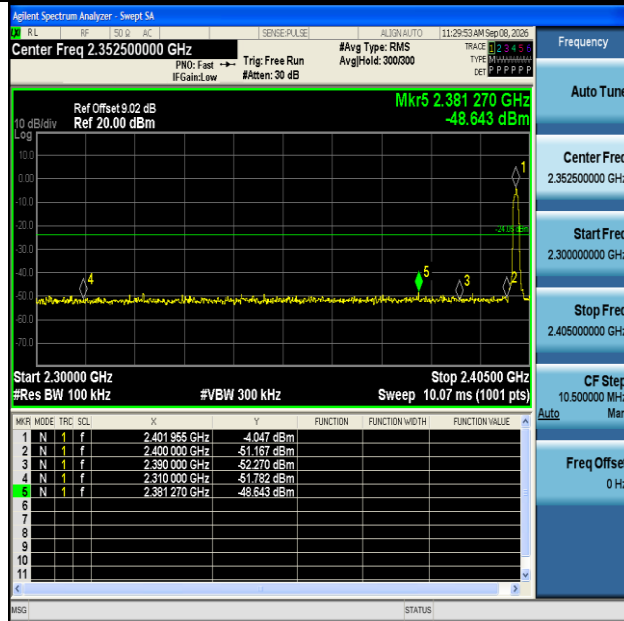


2DH5-Ant1-Hop_2402-PASS

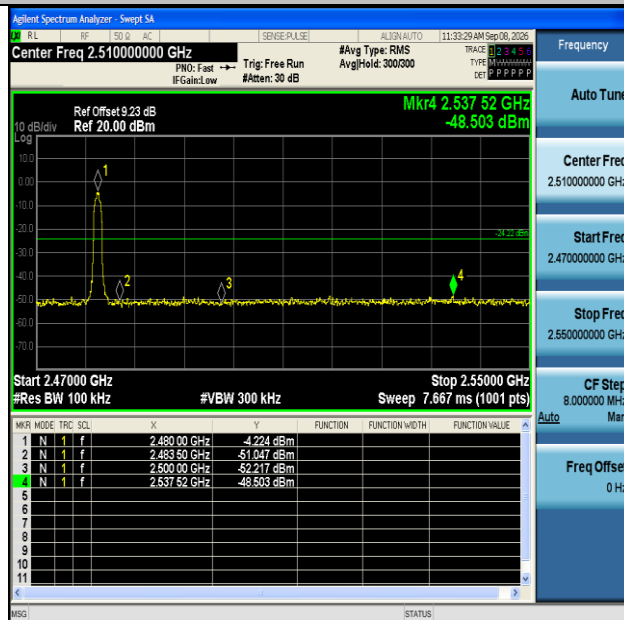


2DH5-Ant1-Hop_2480-PASS



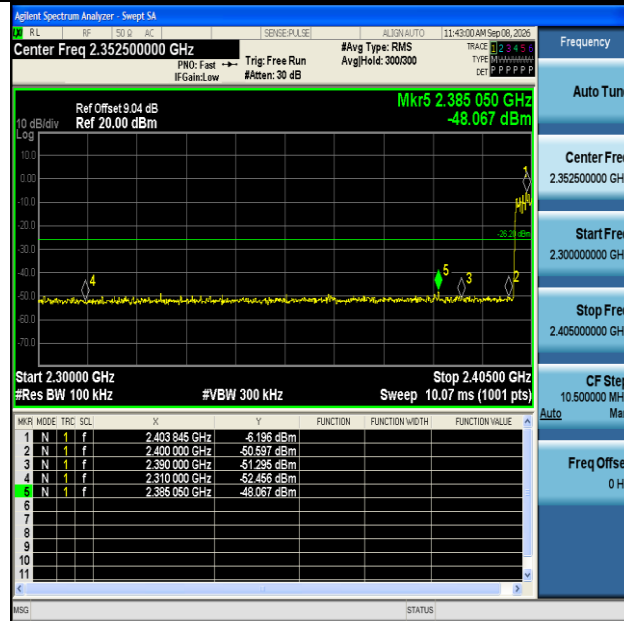


3DH5-Ant1-2402-PASS

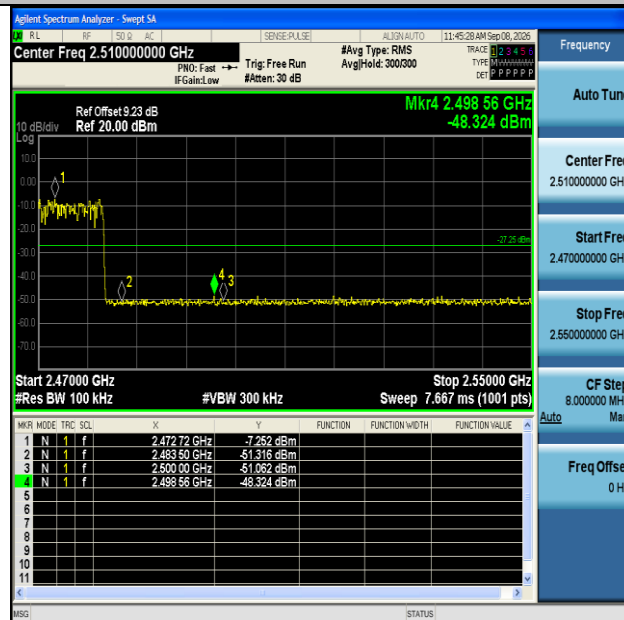


3DH5-Ant1-2480-PASS





3DH5-Ant1-Hop_2402-PASS



3DH5-Ant1-Hop_2480-PASS





Appendix H: Conducted Spurious Emission

Test Result

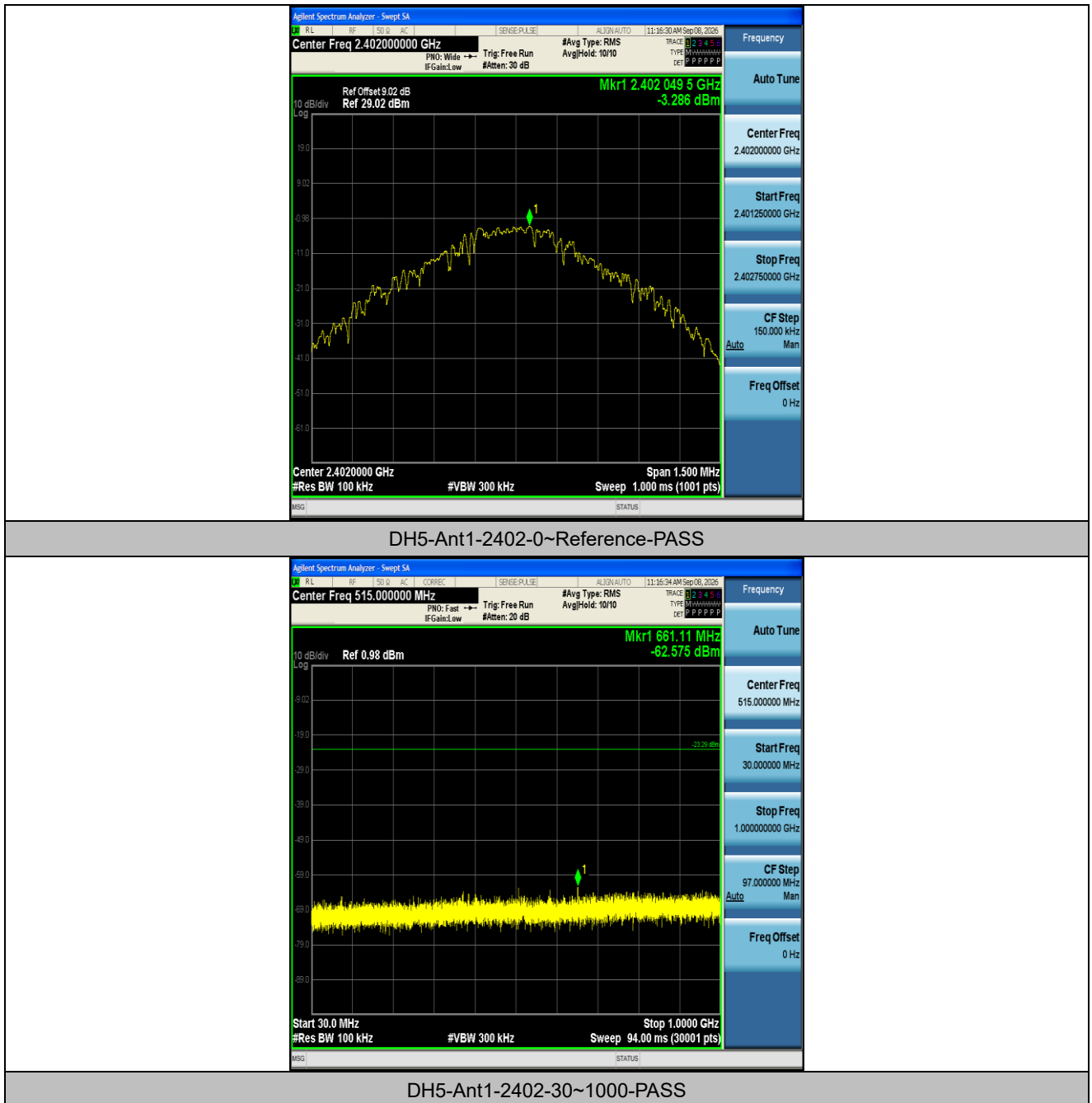
Test Mode	Antenna	Frequency [MHz]	Freq. Range [MHz]	Ref. Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	0~Reference	-3.29	-3.29	---	PASS
DH5	Ant1	2402	30~1000	-3.29	-62.58	≤ -23.29	PASS
DH5	Ant1	2402	1000~26500	-3.29	-37.06	≤ -23.29	PASS
DH5	Ant1	2441	0~Reference	-3.03	-3.03	---	PASS
DH5	Ant1	2441	30~1000	-3.03	-62.23	≤ -23.03	PASS
DH5	Ant1	2441	1000~26500	-3.03	-36.98	≤ -23.03	PASS
DH5	Ant1	2480	0~Reference	-3.59	-3.59	---	PASS
DH5	Ant1	2480	30~1000	-3.59	-61.22	≤ -23.59	PASS
DH5	Ant1	2480	1000~26500	-3.59	-37.38	≤ -23.59	PASS
2DH5	Ant1	2402	0~Reference	-4.85	-4.85	---	PASS
2DH5	Ant1	2402	30~1000	-4.85	-62.52	≤ -24.85	PASS
2DH5	Ant1	2402	1000~26500	-4.85	-37.52	≤ -24.85	PASS
2DH5	Ant1	2441	0~Reference	-6.99	-6.99	---	PASS
2DH5	Ant1	2441	30~1000	-6.99	-62.79	≤ -26.99	PASS
2DH5	Ant1	2441	1000~26500	-6.99	-37.39	≤ -26.99	PASS
2DH5	Ant1	2480	0~Reference	-6.85	-6.85	---	PASS
2DH5	Ant1	2480	30~1000	-6.85	-61.81	≤ -26.85	PASS
2DH5	Ant1	2480	1000~26500	-6.85	-37.38	≤ -26.85	PASS
3DH5	Ant1	2402	0~Reference	-4.02	-4.02	---	PASS
3DH5	Ant1	2402	30~1000	-4.02	-62.64	≤ -24.02	PASS
3DH5	Ant1	2402	1000~26500	-4.02	-37.59	≤ -24.02	PASS
3DH5	Ant1	2441	0~Reference	-3.48	-3.48	---	PASS
3DH5	Ant1	2441	30~1000	-3.48	-62.37	≤ -23.48	PASS
3DH5	Ant1	2441	1000~26500	-3.48	-37.94	≤ -23.48	PASS
3DH5	Ant1	2480	0~Reference	-4.85	-4.85	---	PASS
3DH5	Ant1	2480	30~1000	-4.85	-62.94	≤ -24.85	PASS
3DH5	Ant1	2480	1000~26500	-4.85	-37.07	≤ -24.85	PASS

Note: offset(dB) in Reference test plots = cable loss(dB) + attenuator factor(dB); For spurious emissions plots from 30MHz to 26.5GHz, the cable loss and attenuator factors have been set in the 'Input Correction' of the Spectrum Analyzer during the test.



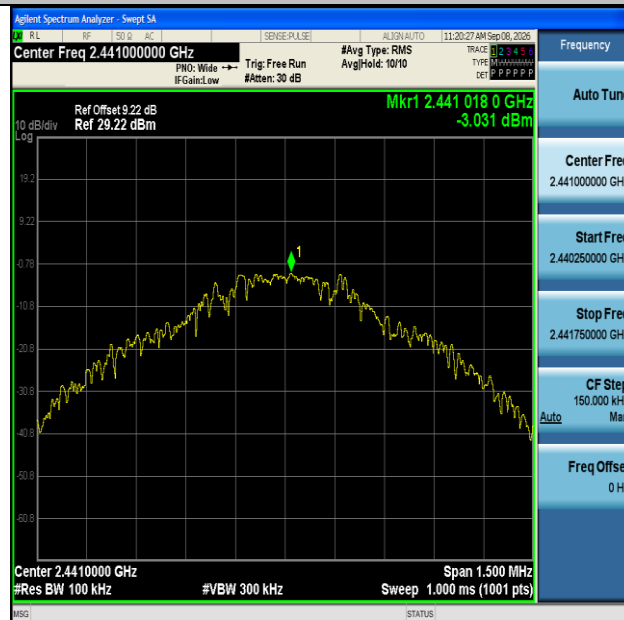


Test Graphs





DH5-Ant1-2402-1000~26500-PASS



DH5-Ant1-2441-0~Reference-PASS



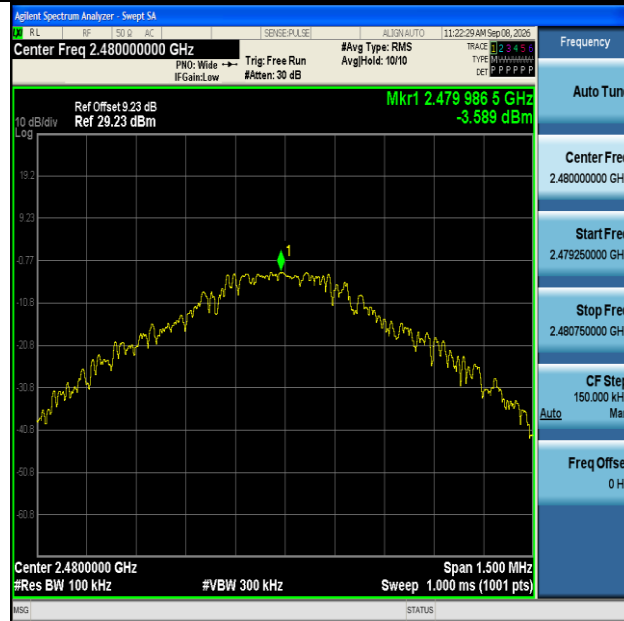


DH5-Ant1-2441-30~1000-PASS

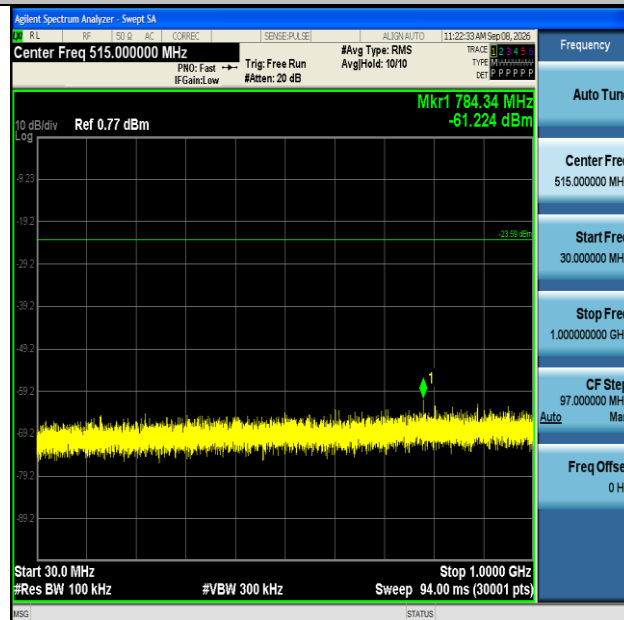


DH5-Ant1-2441-1000~26500-PASS



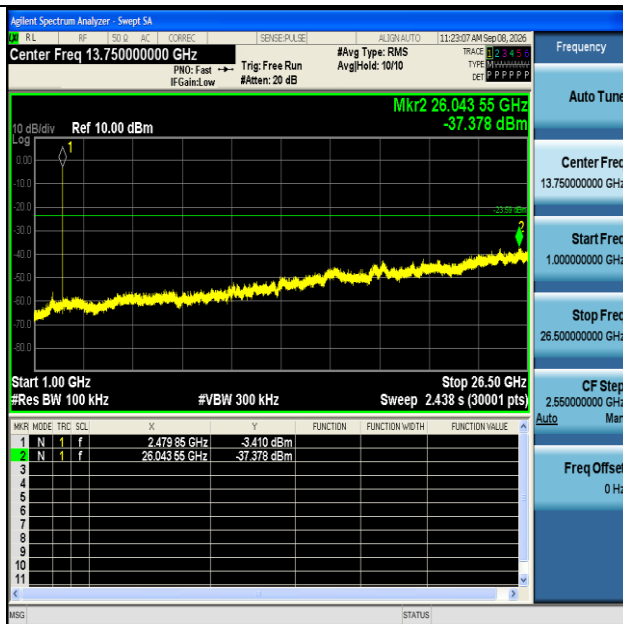


DH5-Ant1-2480-0~Reference-PASS

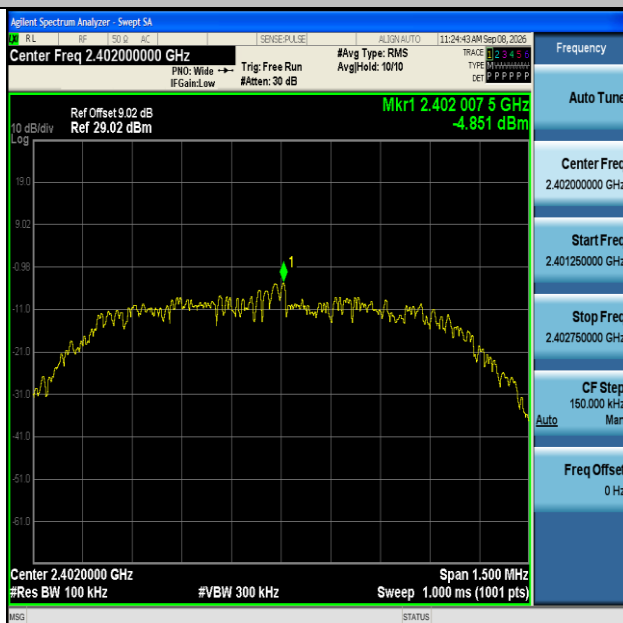


DH5-Ant1-2480-30~1000-PASS



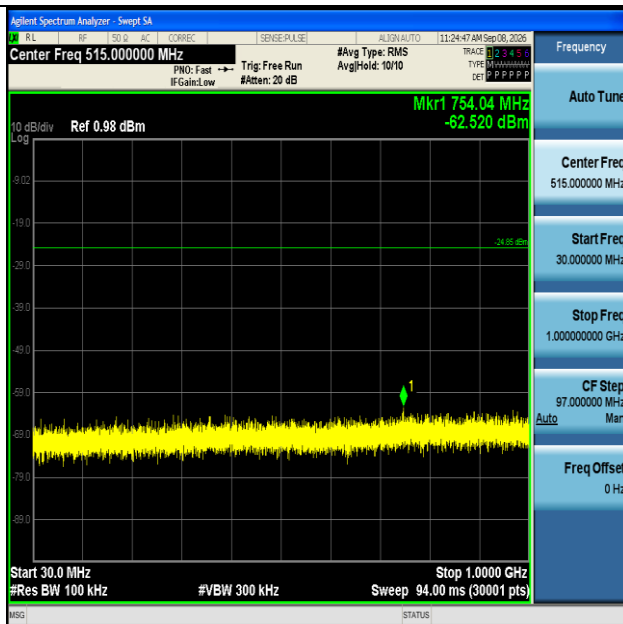


DH5-Ant1-2480-1000~26500-PASS

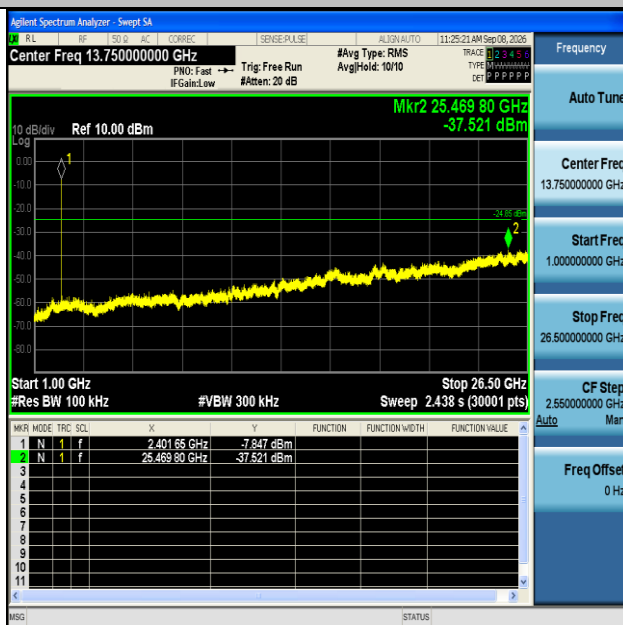


2DH5-Ant1-2402-0~Reference-PASS



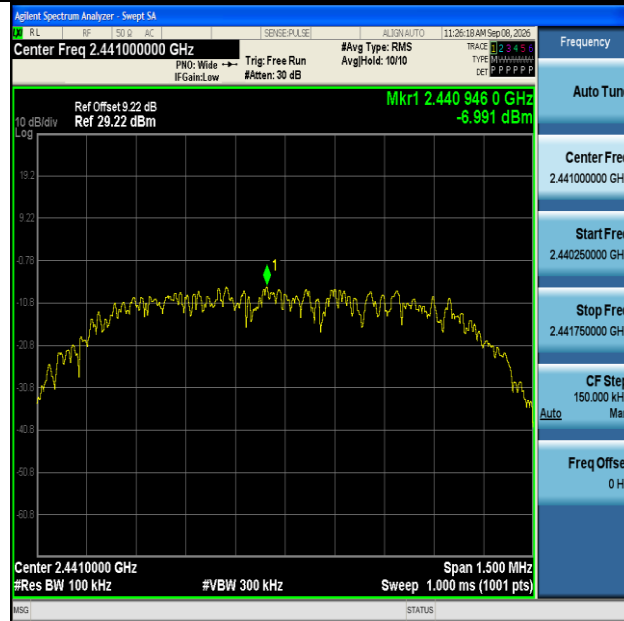


2DH5-Ant1-2402-30~1000-PASS

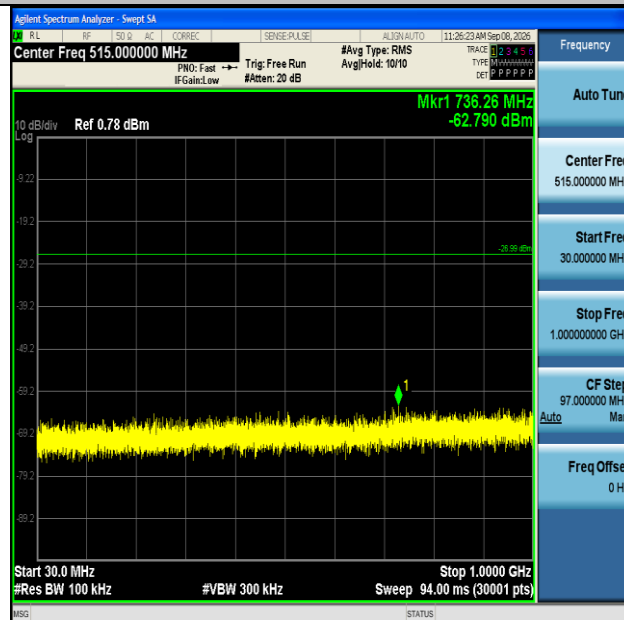


2DH5-Ant1-2402-1000~26500-PASS



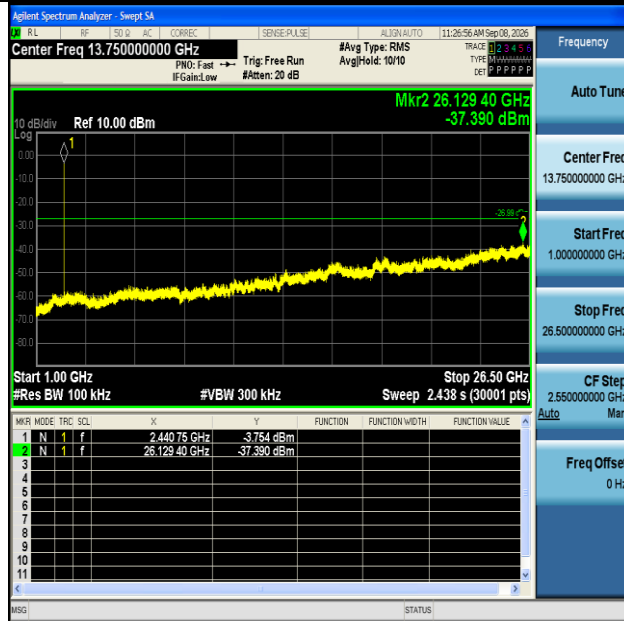


2DH5-Ant1-2441-0~Reference-PASS



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





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

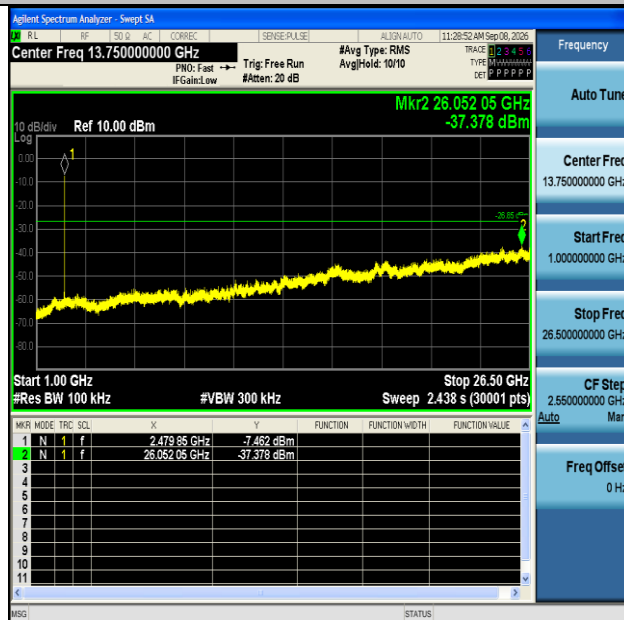


2DH5-Ant1-2480-0~Reference-PASS





2DH5-Ant1-2480-30~1000-PASS

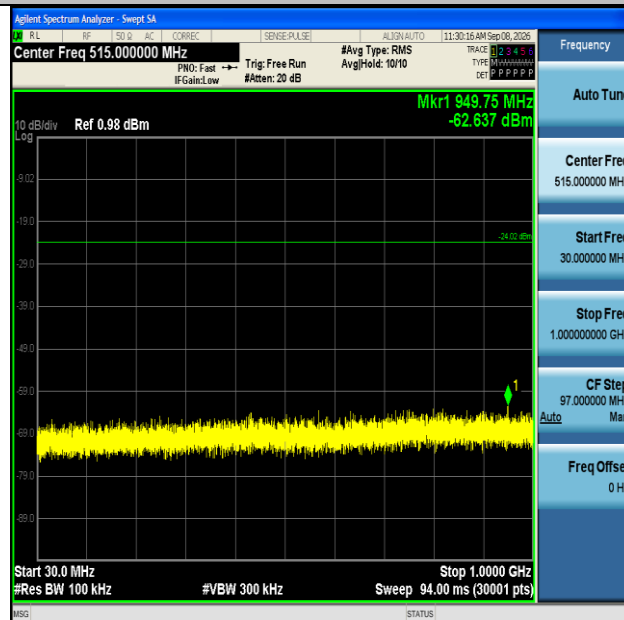


2DH5-Ant1-2480-1000~26500-PASS



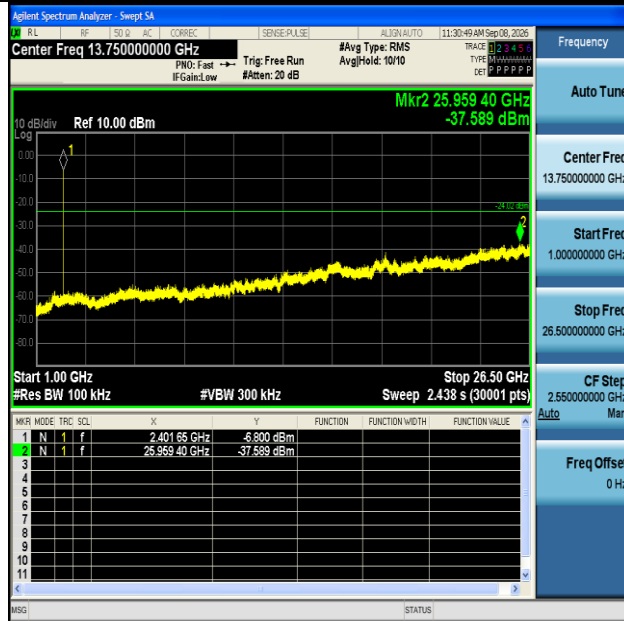


3DH5-Ant1-2402-0~Reference-PASS



3DH5-Ant1-2402-30~1000-PASS





3DH5-Ant1-2402-1000~26500-PASS

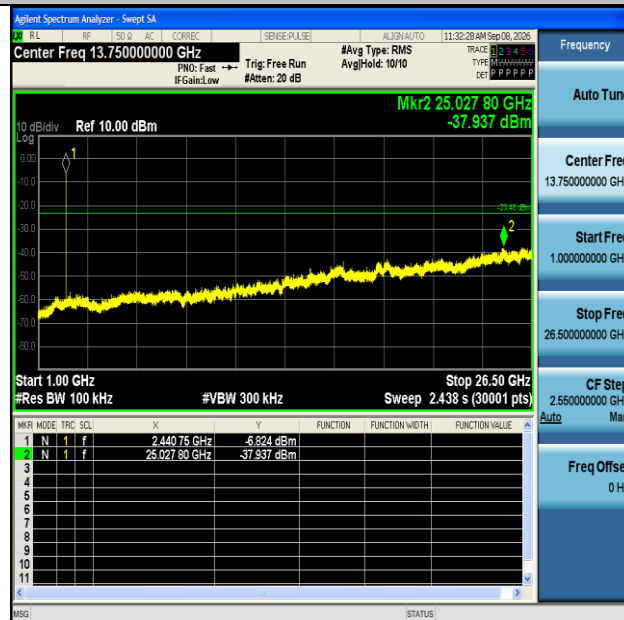


3DH5-Ant1-2441-0~Reference-PASS



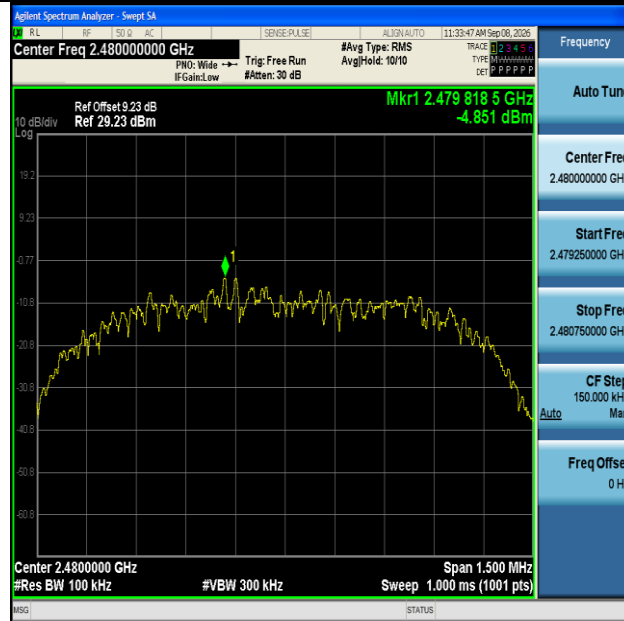


3DH5-Ant1-2441-30~1000-PASS

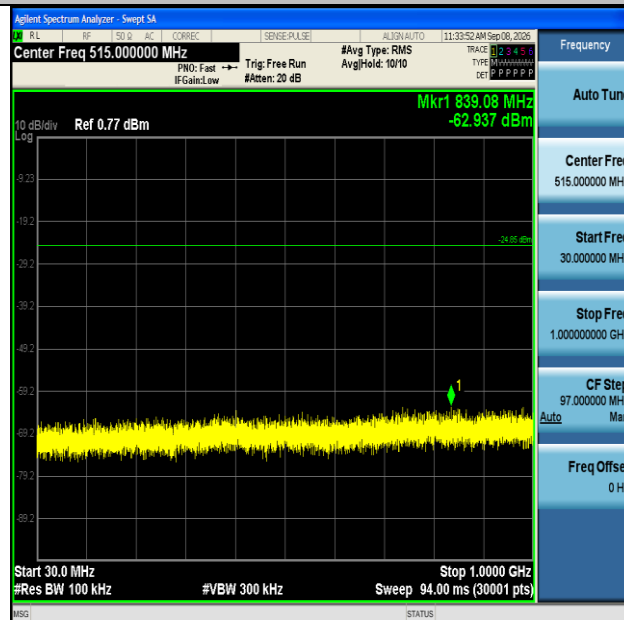


3DH5-Ant1-2441-1000~26500-PASS



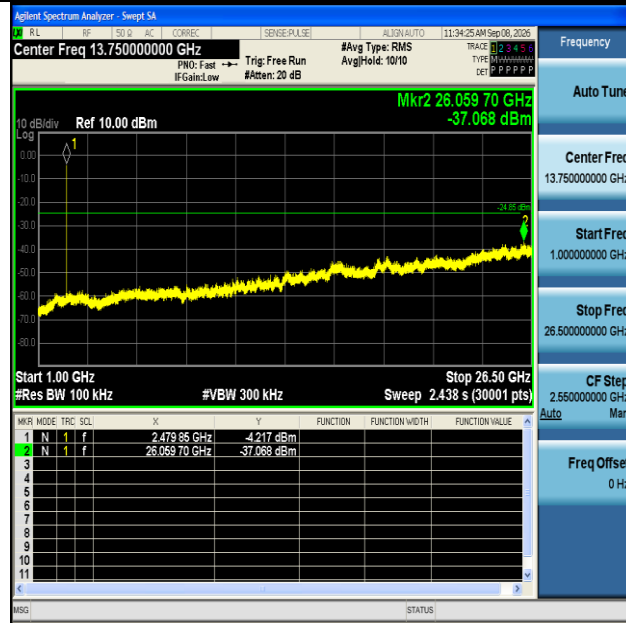


3DH5-Ant1-2480-0~Reference-PASS



3DH5-Ant1-2480-30~1000-PASS





3DH5-Ant1-2480-1000~26500-PASS





Appendix I: Duty Cycle

Test Result

Test Mode	Antenna	Frequency [MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor [dB]
DH5	Ant1	2402	2.89	3.73	77.48	1.11
DH5	Ant1	2441	2.89	3.73	77.48	1.11
DH5	Ant1	2480	2.88	3.73	77.21	1.12
2DH5	Ant1	2402	2.88	3.73	77.21	1.12
2DH5	Ant1	2441	2.89	3.73	77.48	1.11
2DH5	Ant1	2480	2.89	3.74	77.27	1.12
3DH5	Ant1	2402	2.74	3.59	76.32	1.17
3DH5	Ant1	2441	2.89	3.74	77.27	1.12
3DH5	Ant1	2480	2.75	3.59	76.60	1.16

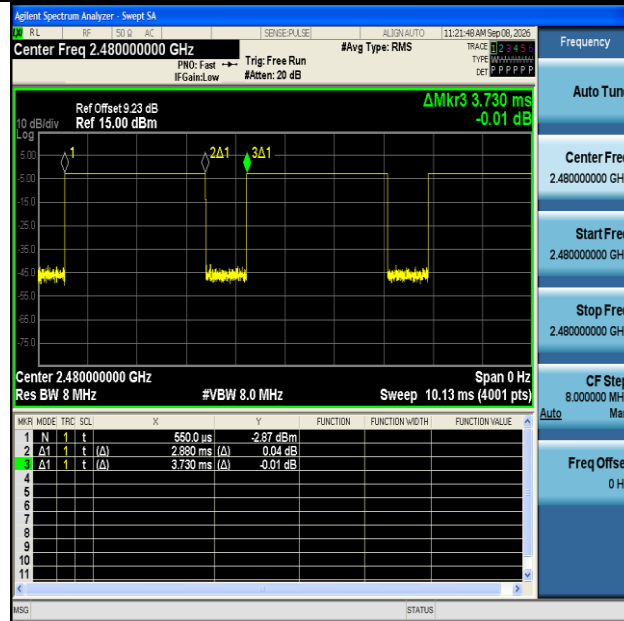
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



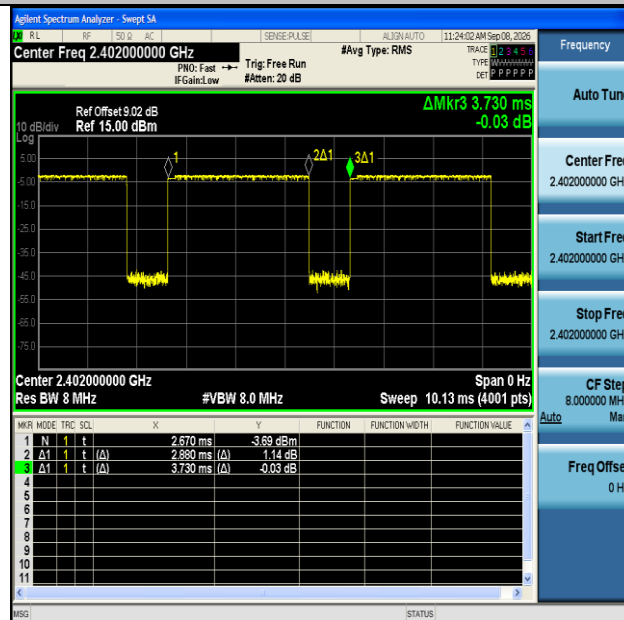


Test Graphs



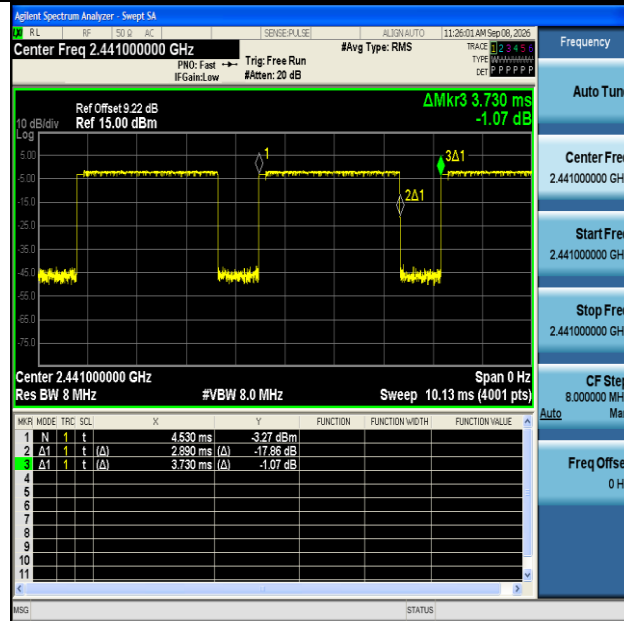


NTNV-DH5-Ant1-2480

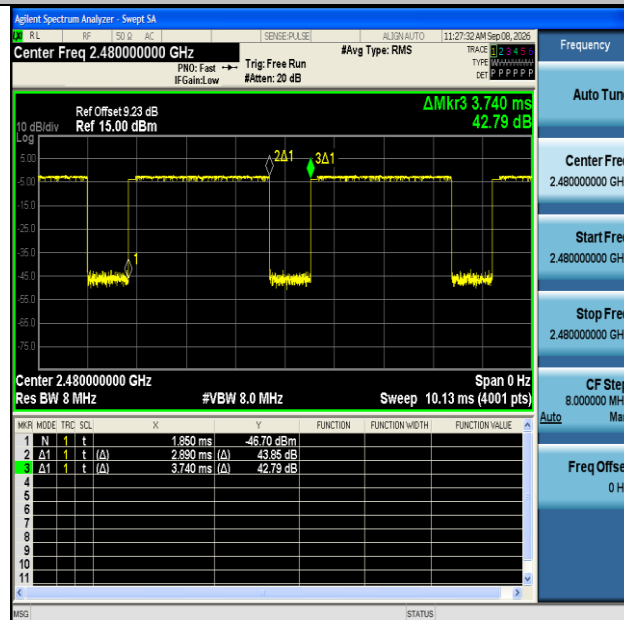


NTNV-2DH5-Ant1-2402



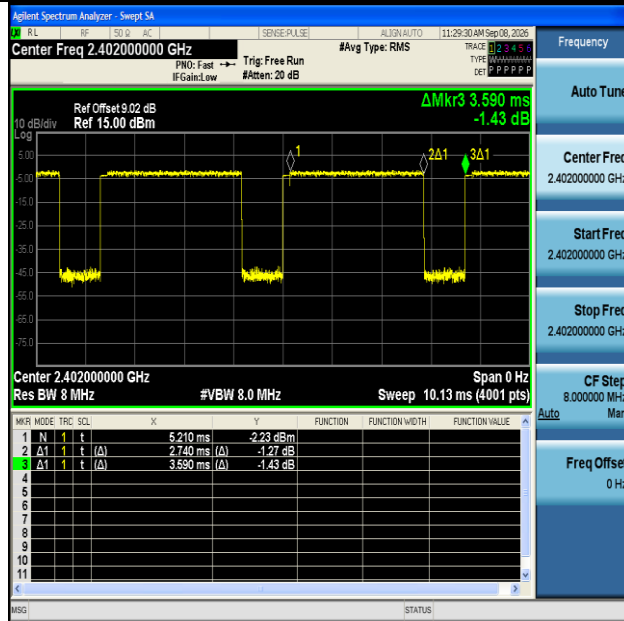


NTNV-2DH5-Ant1-2441

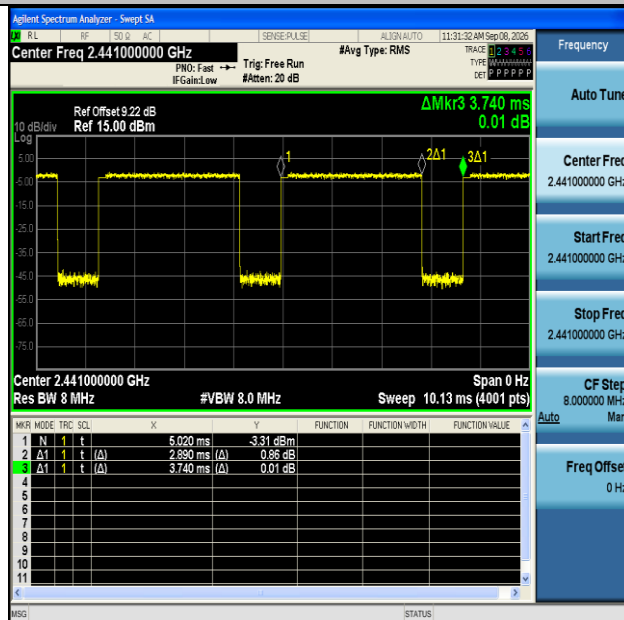


NTNV-2DH5-Ant1-2480



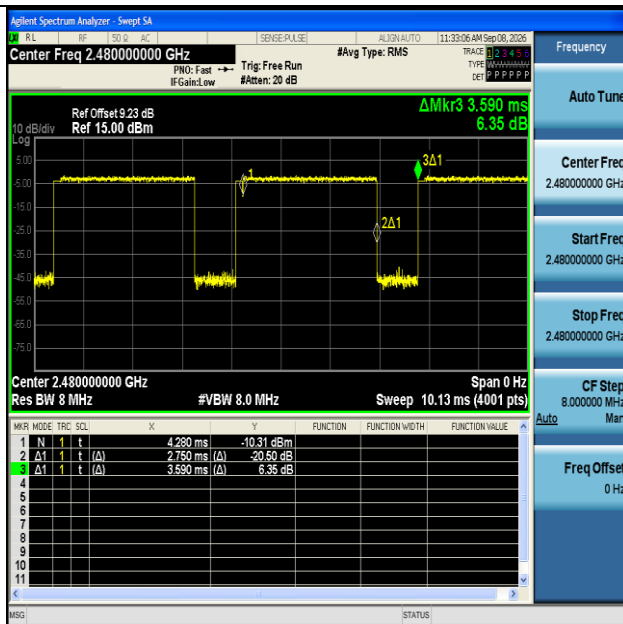


NTNV-3DH5-Ant1-2402



NTNV-3DH5-Ant1-2441





NTNV-3DH5-Ant1-2480

