



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

Product Name: Wireless Gaming Headset Receiver

Trade Mark: GravaStar

Test Model: GS MH1R

FCC ID: 2ASXF-GS-MH1R

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	0.948	2401.505	2402.453	---	---
DH5	Ant1	2441	1.026	2440.430	2441.456	---	---
DH5	Ant1	2480	0.942	2479.499	2480.441	---	---
2DH5	Ant1	2402	1.320	2401.304	2402.624	---	---
2DH5	Ant1	2441	1.305	2440.322	2441.627	---	---
2DH5	Ant1	2480	1.290	2479.328	2480.618	---	---
3DH5	Ant1	2402	1.236	2401.343	2402.579	---	---
3DH5	Ant1	2441	1.299	2440.313	2441.612	---	---
3DH5	Ant1	2480	1.200	2479.373	2480.573	---	---

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





3DH5-Ant1-2480





Appendix B: Occupied Channel Bandwidth

Test Result

Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
DH5	Ant1	2402	0.88227	2401.5240	2402.4062	---	---
DH5	Ant1	2441	0.89456	2440.5236	2441.4182	---	---
DH5	Ant1	2480	0.88424	2479.5248	2480.4091	---	---
2DH5	Ant1	2402	1.1643	2401.3810	2402.5453	---	---
2DH5	Ant1	2441	1.1732	2440.3791	2441.5523	---	---
2DH5	Ant1	2480	1.1594	2479.3795	2480.5389	---	---
3DH5	Ant1	2402	1.1935	2401.3650	2402.5585	---	---
3DH5	Ant1	2441	1.1643	2440.3820	2441.5463	---	---
3DH5	Ant1	2480	1.1613	2479.3873	2480.5486	---	---

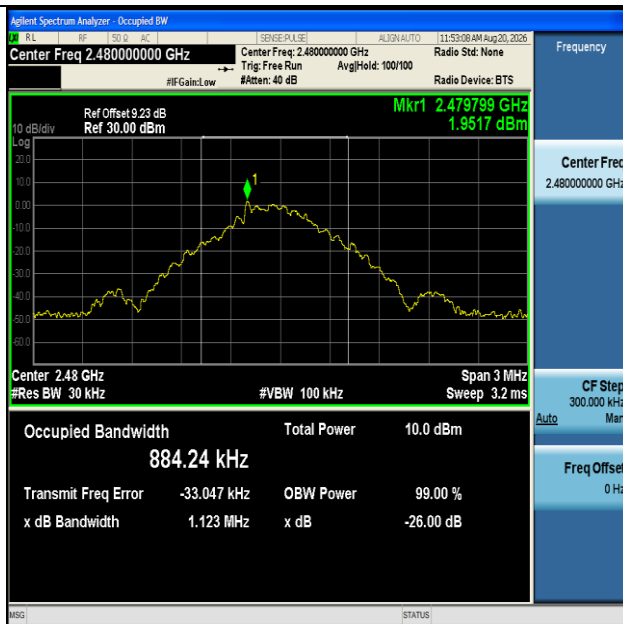
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



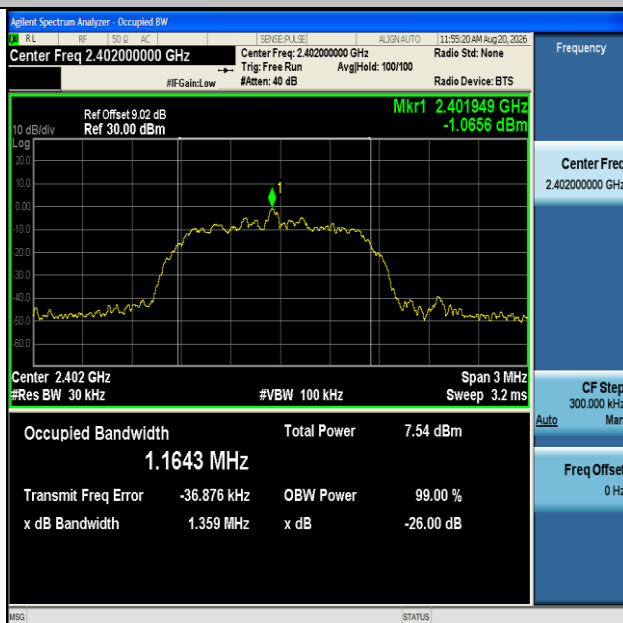


Test Graphs



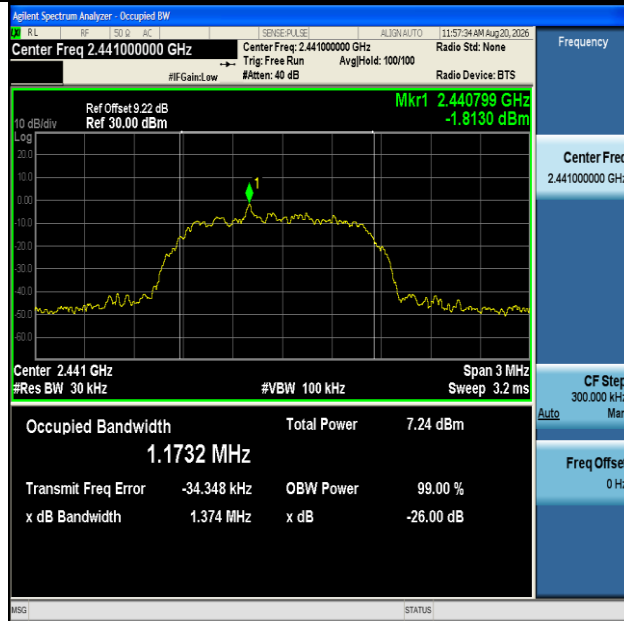


DH5-Ant1-2480

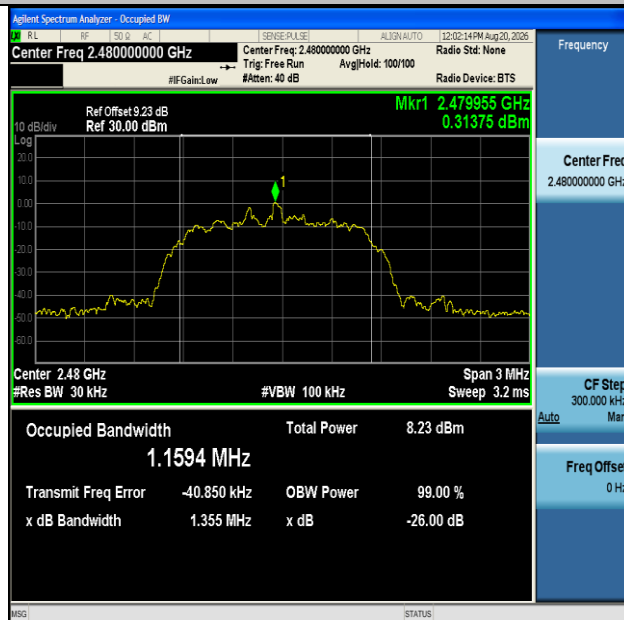


2DH5-Ant1-2402



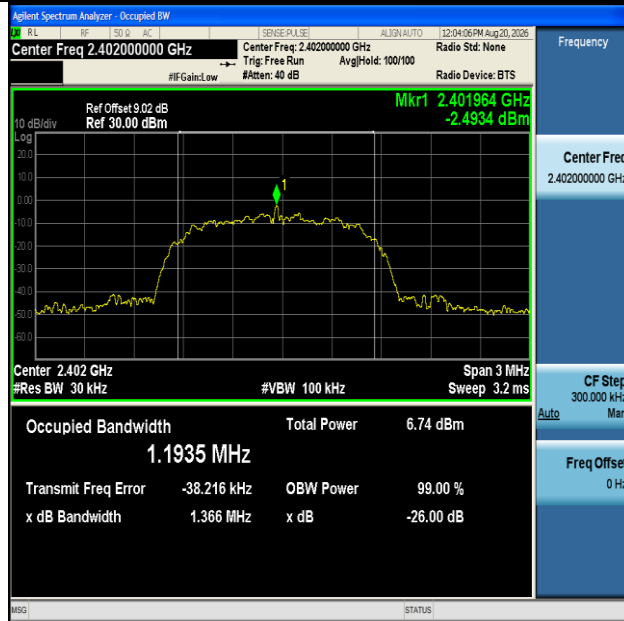


2DH5-Ant1-2441

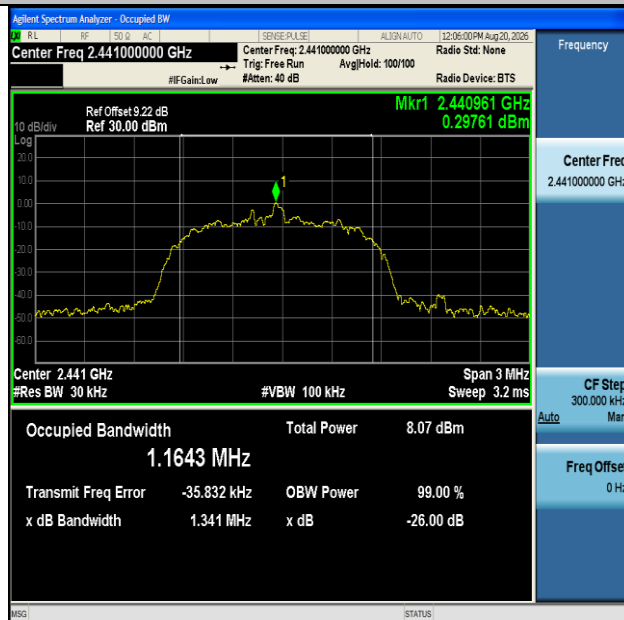


2DH5-Ant1-2480



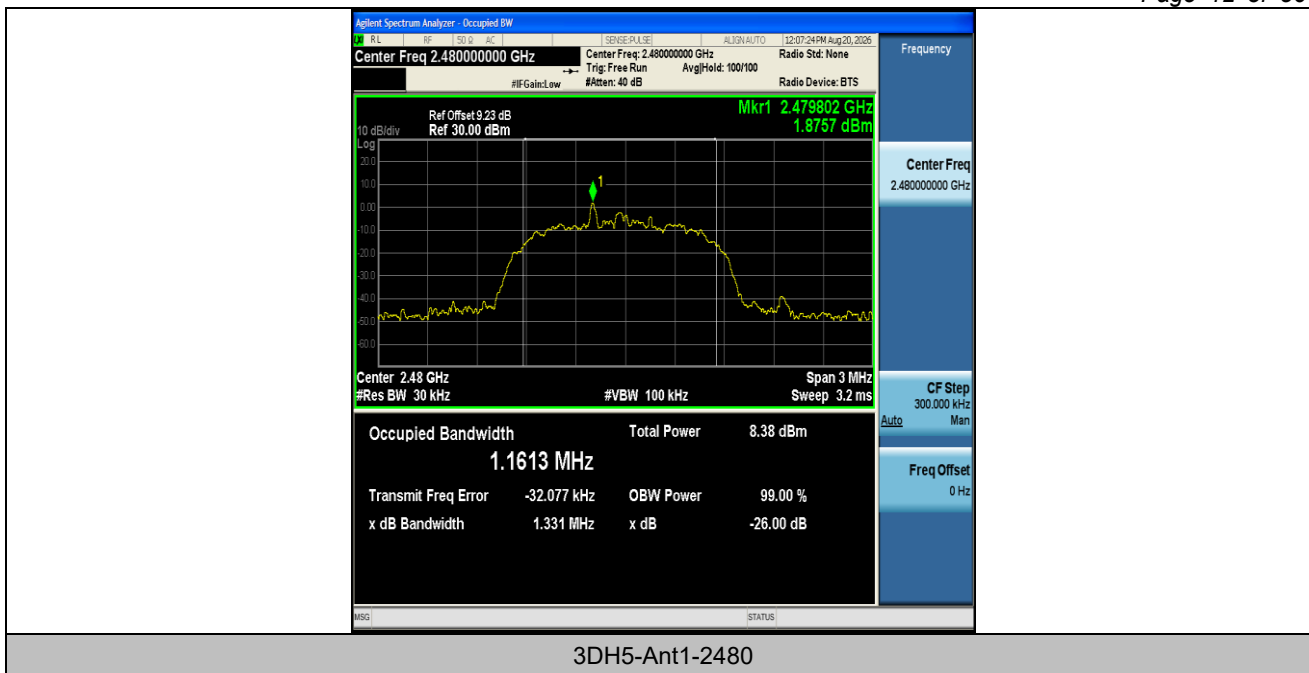


3DH5-Ant1-2402



3DH5-Ant1-2441







Appendix C: Maximum peak conducted output power

Test Result

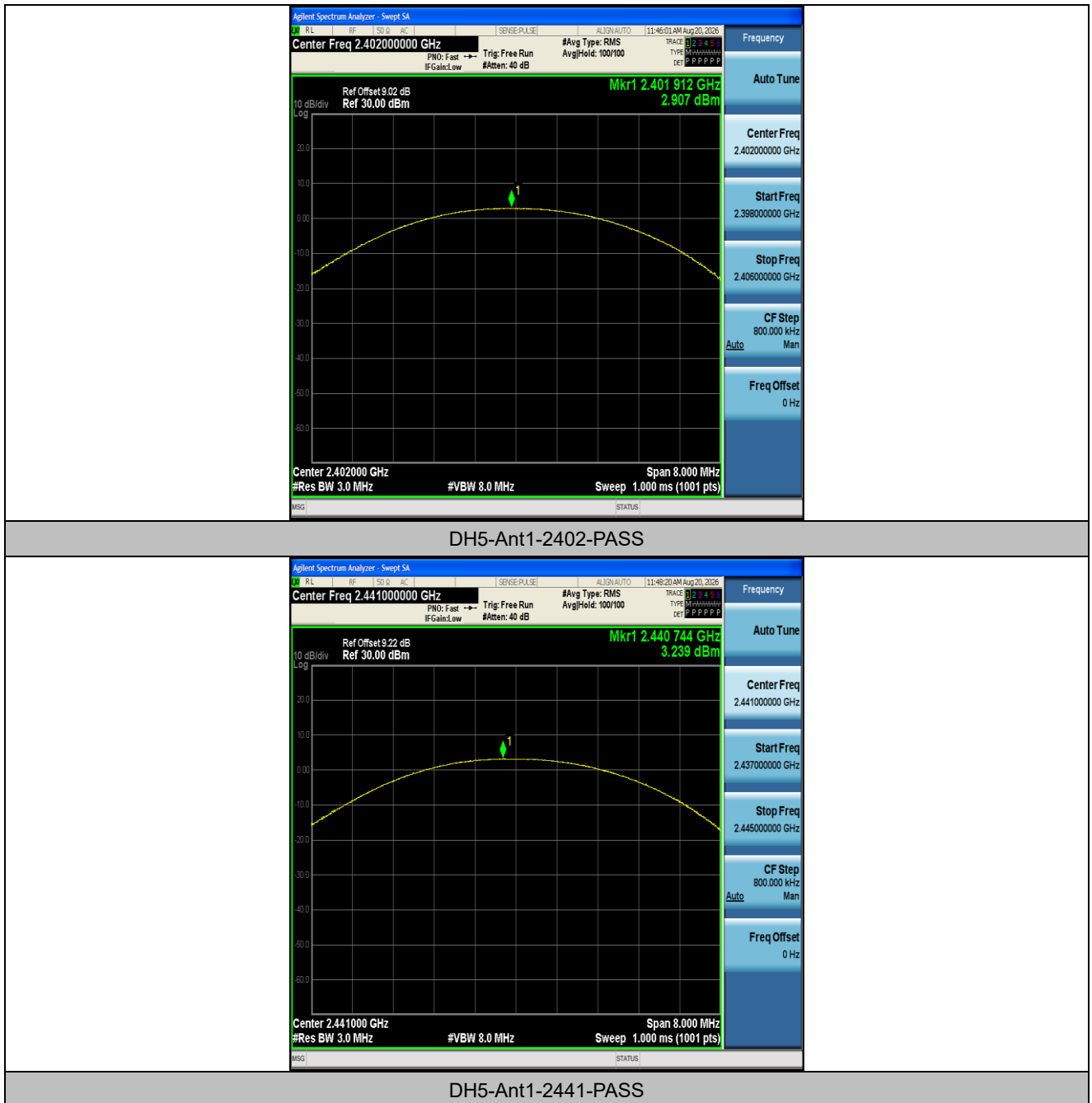
Test Mode	Antenna	Frequency [MHz]	Conducted Peak Power [dBm]	Conducted Limit [dBm]	Verdict
DH5	Ant1	2402	2.91	≤20.97	PASS
DH5	Ant1	2441	3.24	≤20.97	PASS
DH5	Ant1	2480	3.30	≤20.97	PASS
2DH5	Ant1	2402	2.75	≤20.97	PASS
2DH5	Ant1	2441	3.10	≤20.97	PASS
2DH5	Ant1	2480	3.21	≤20.97	PASS
3DH5	Ant1	2402	3.15	≤20.97	PASS
3DH5	Ant1	2441	3.34	≤20.97	PASS
3DH5	Ant1	2480	3.49	≤20.97	PASS

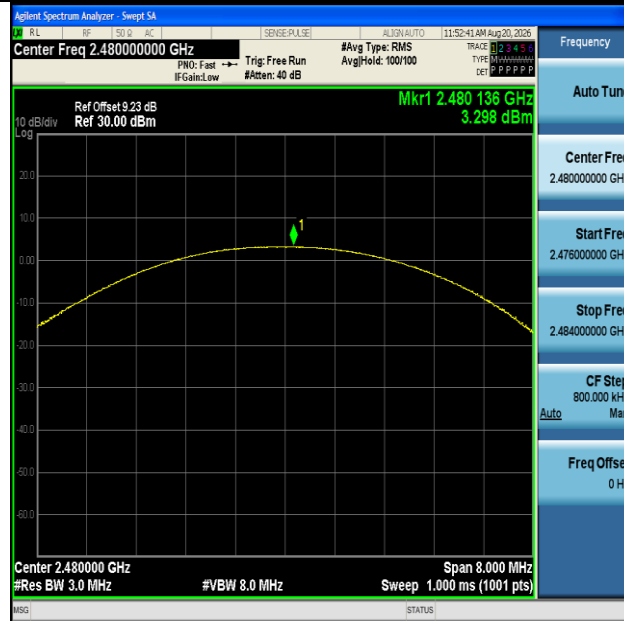
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



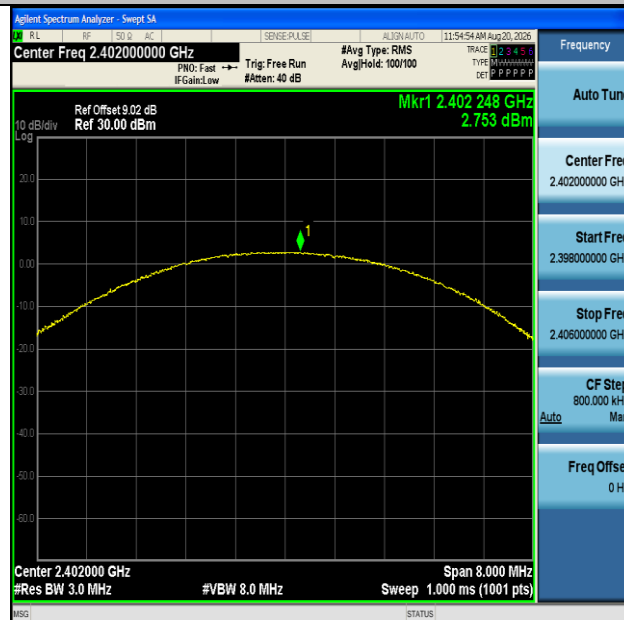


Test Graphs



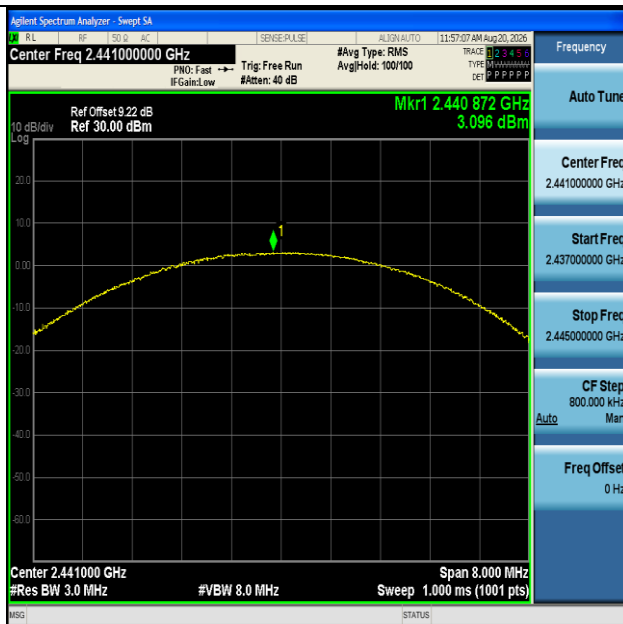


DH5-Ant1-2480-PASS

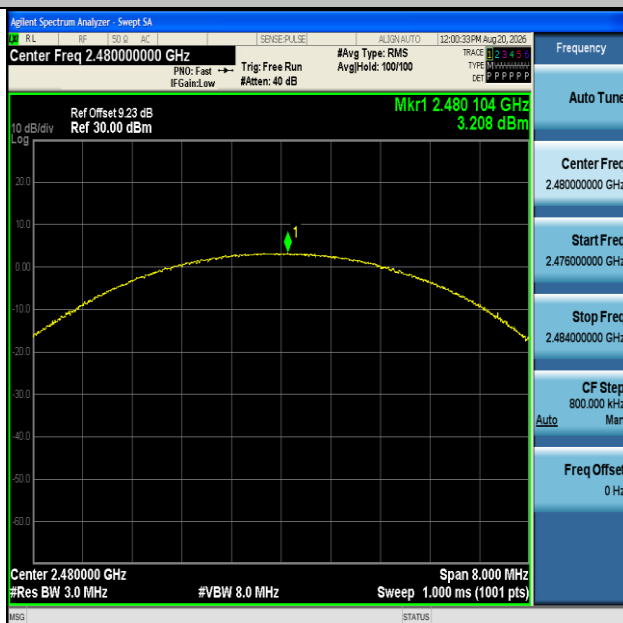


2DH5-Ant1-2402-PASS



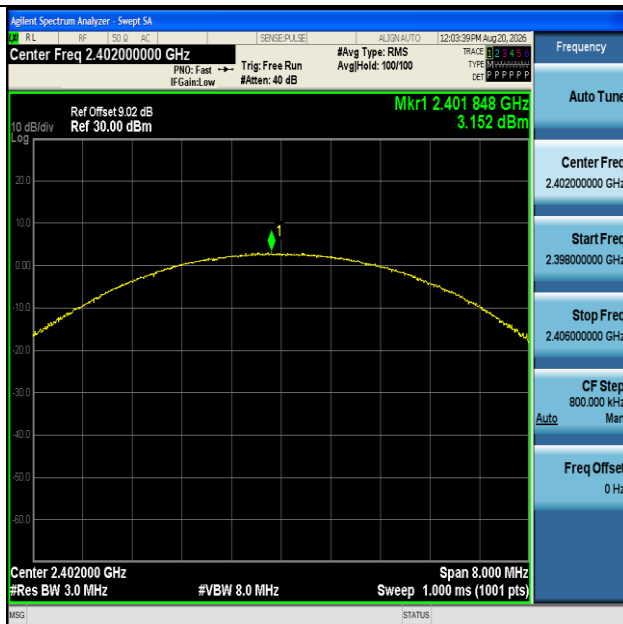


2DH5-Ant1-2441-PASS

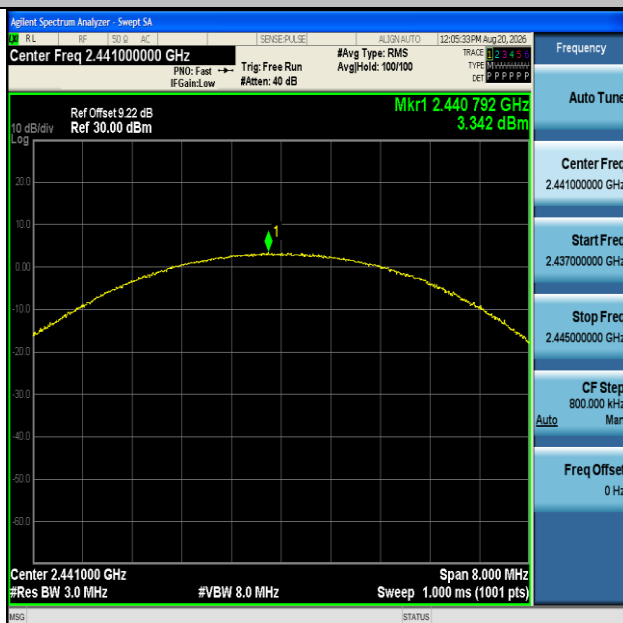


2DH5-Ant1-2480-PASS



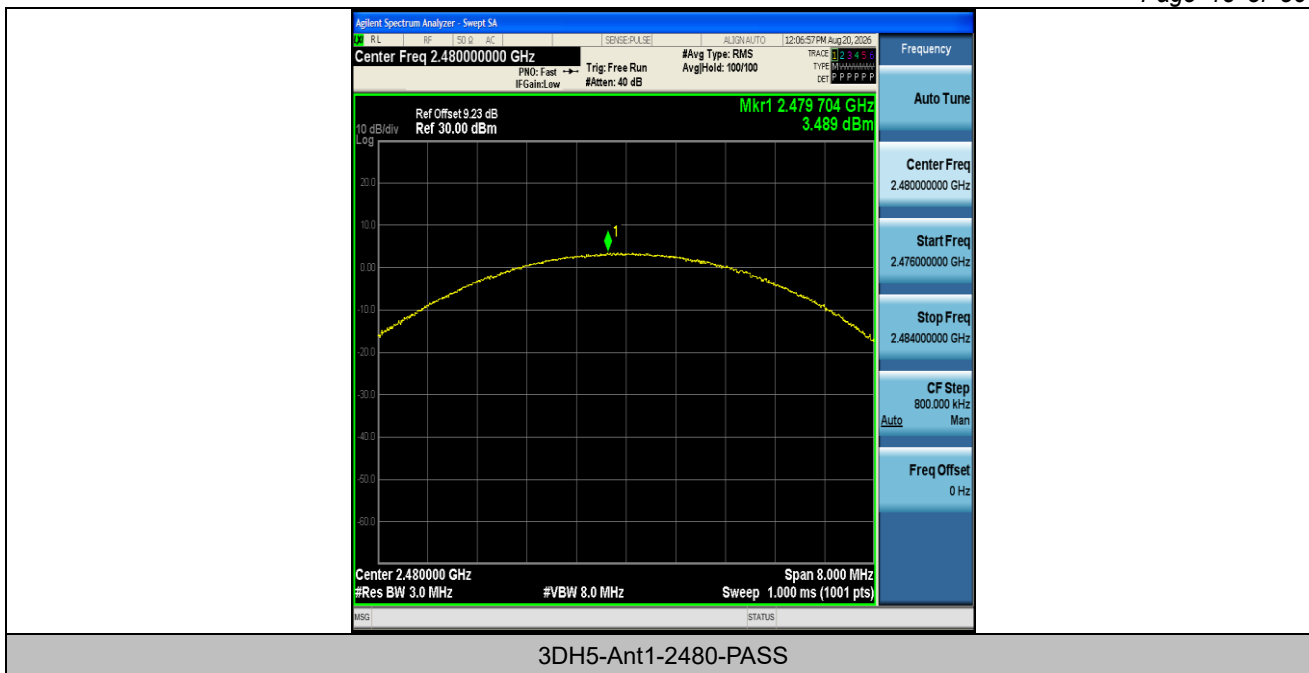


3DH5-Ant1-2402-PASS



3DH5-Ant1-2441-PASS







Appendix D: Carrier frequency separation

Test Result

Test Mode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
DH5	Ant1	Hop	1.008	≥ 0.684	PASS
2DH5	Ant1	Hop	0.982	≥ 0.880	PASS
3DH5	Ant1	Hop	0.914	≥ 0.866	PASS

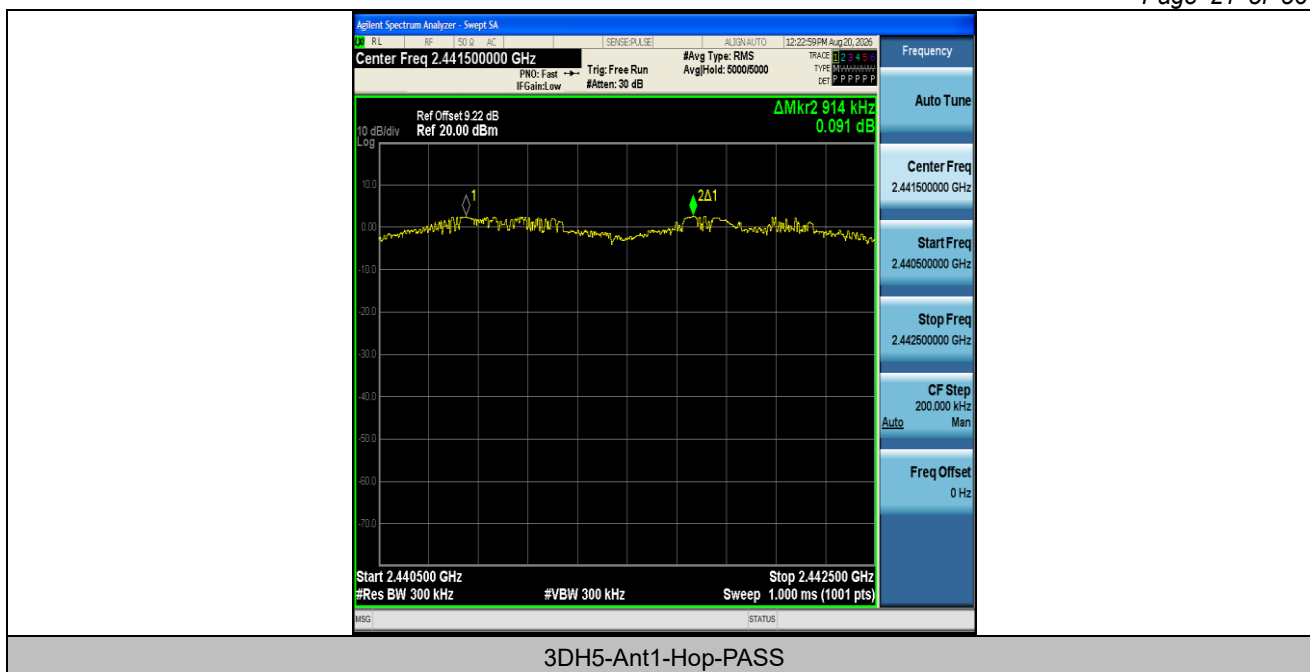
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs







Appendix E: Time of occupancy

Test Result

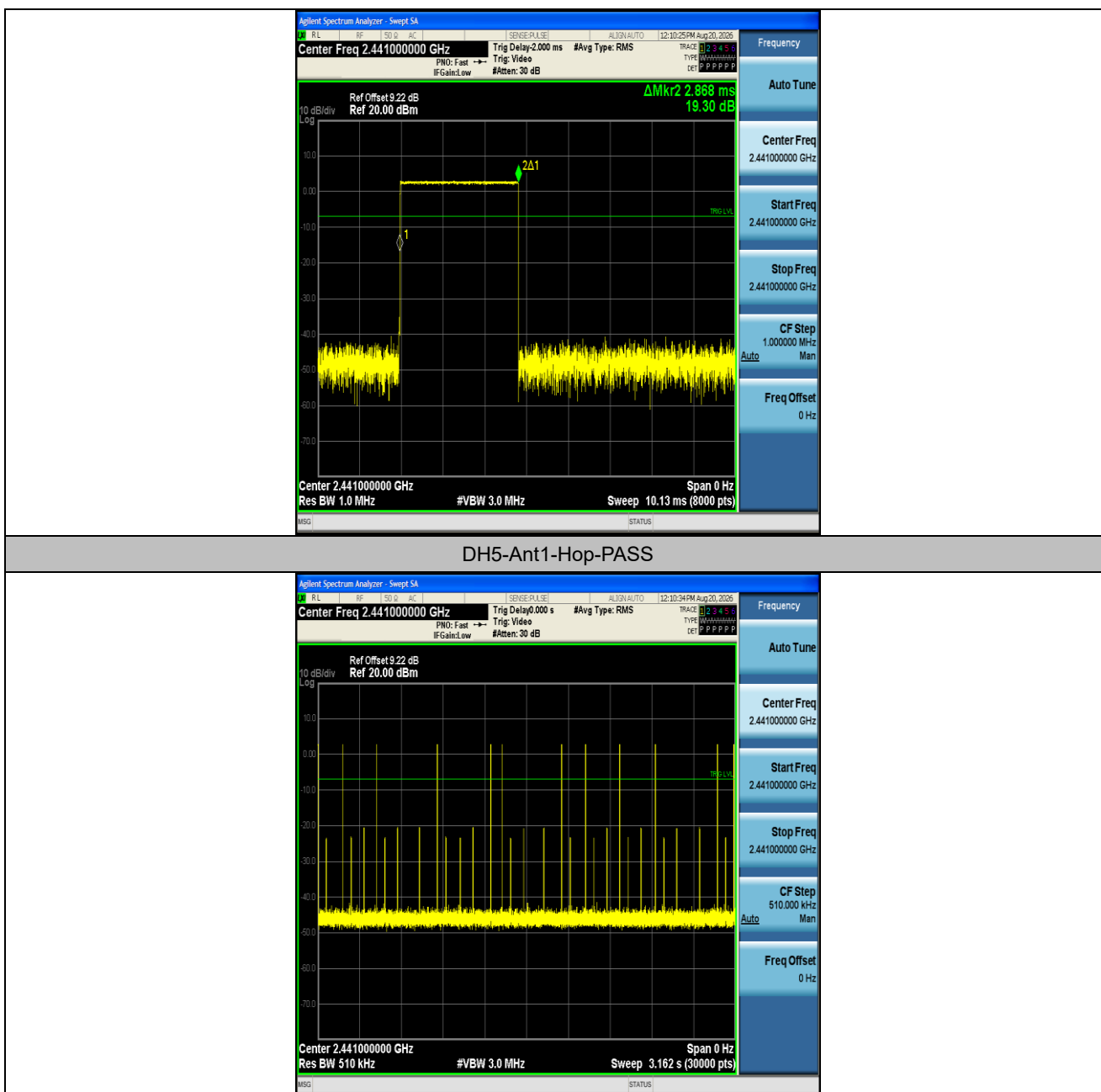
Test Mode	Antenna	Frequency [MHz]	Burst Width [ms]	TotalHops [Num]	Result [s]	Limit [s]	Verdict
DH5	Ant1	Hop	2.868	120	0.344	≤0.4	PASS
2DH5	Ant1	Hop	2.879	110	0.317	≤0.4	PASS
3DH5	Ant1	Hop	2.880	110	0.317	≤0.4	PASS

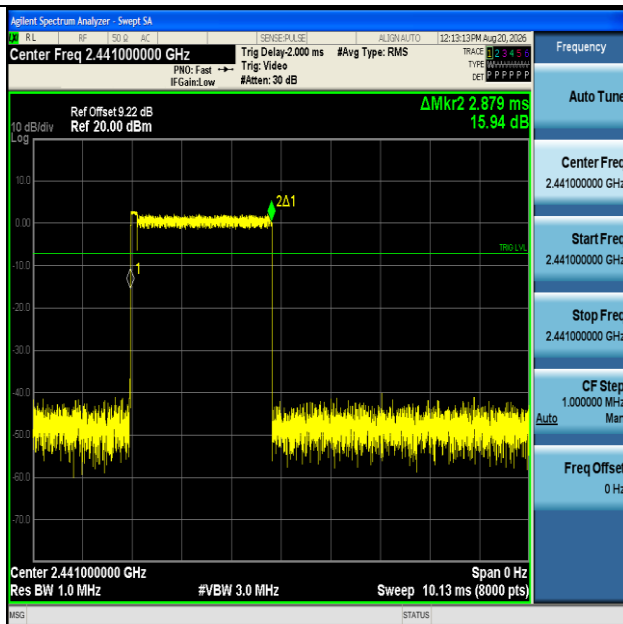
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



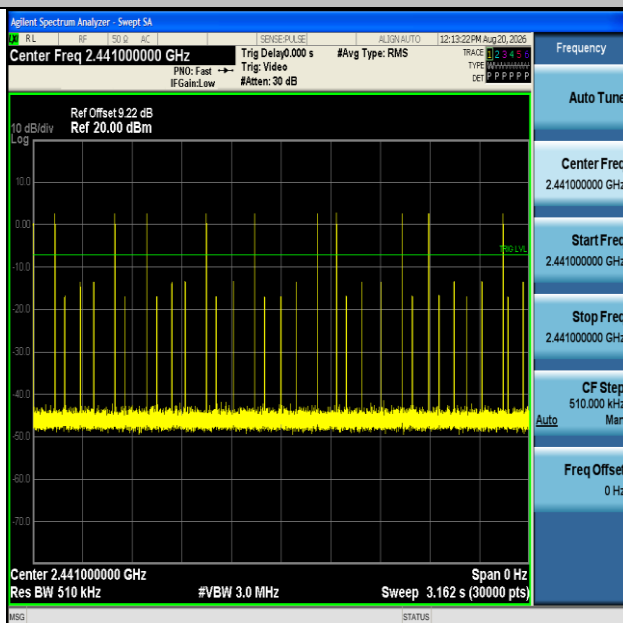


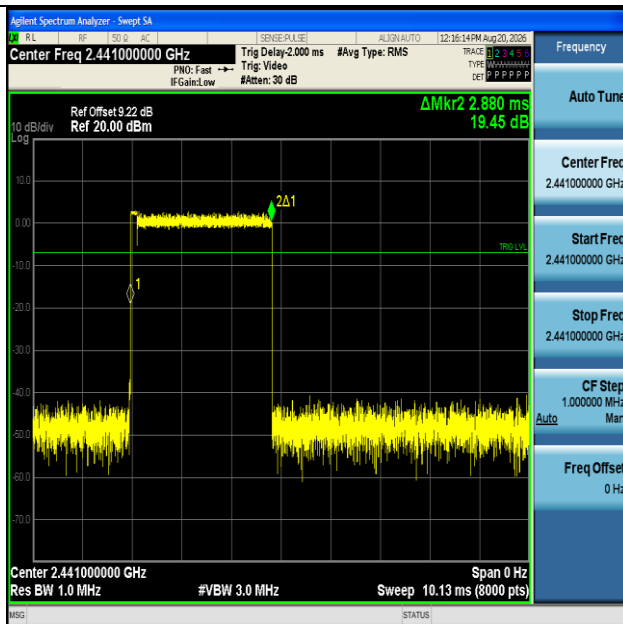
Test Graphs



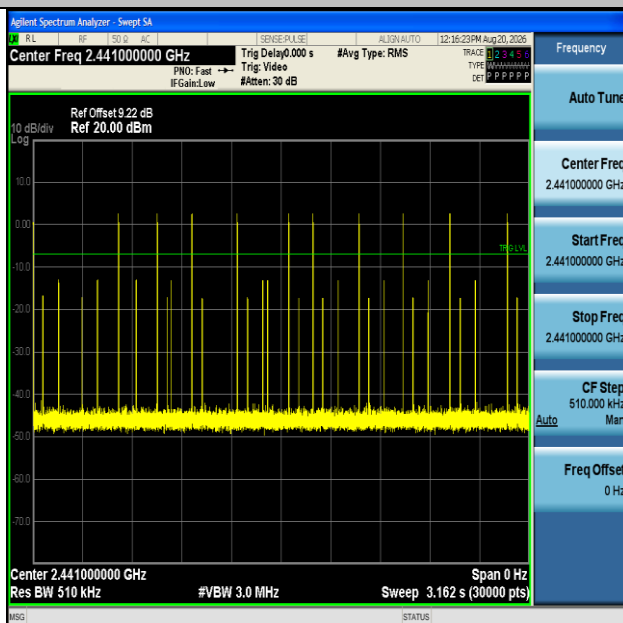


2DH5-Ant1-Hop-PASS





3DH5-Ant1-Hop-PASS





Appendix F: Number of hopping channels

Test Result

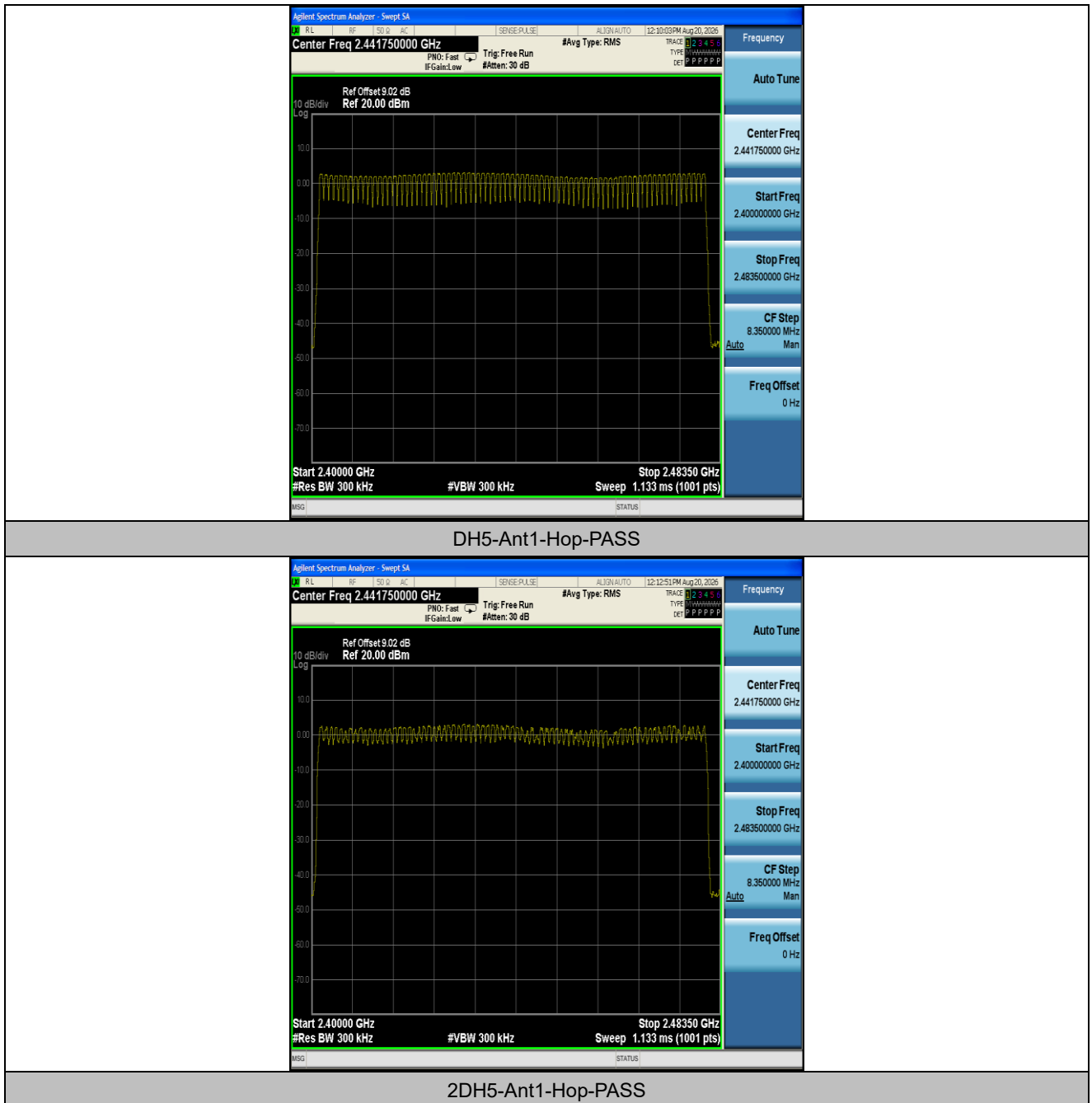
Test Mode	Antenna	Frequency [MHz]	Result [Num]	Limit [Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

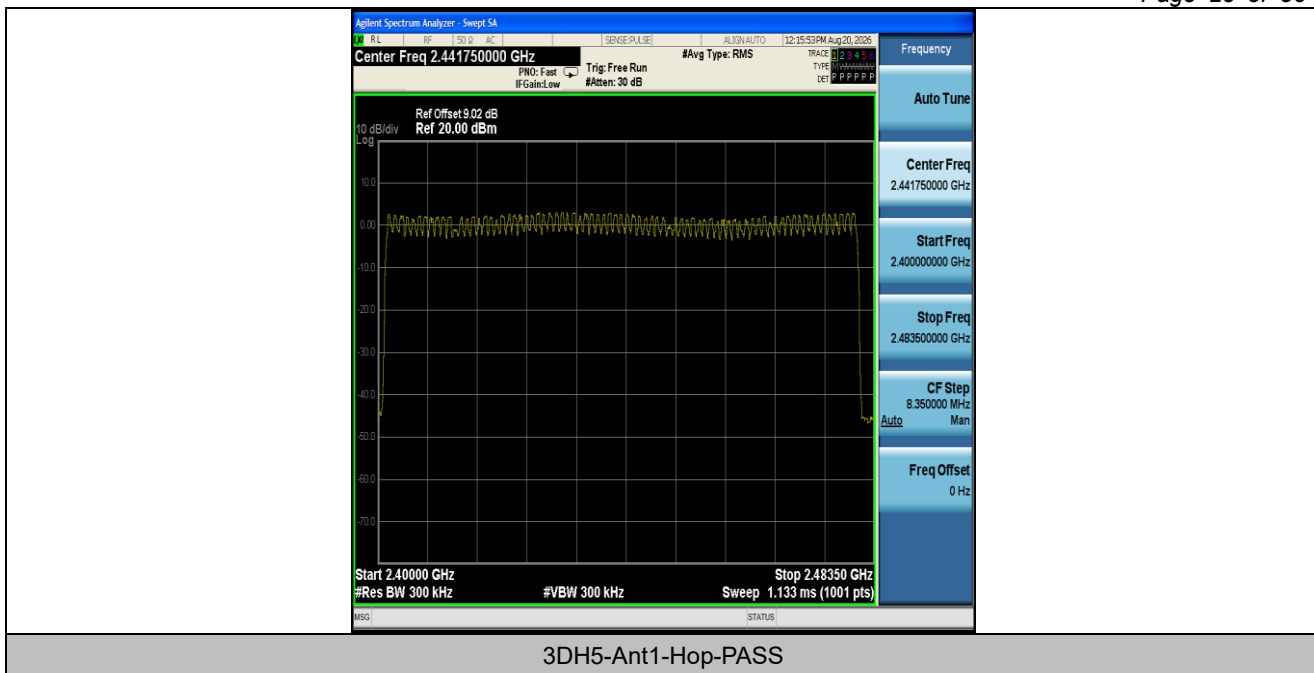
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs







Appendix G: Band edge measurements

Test Result

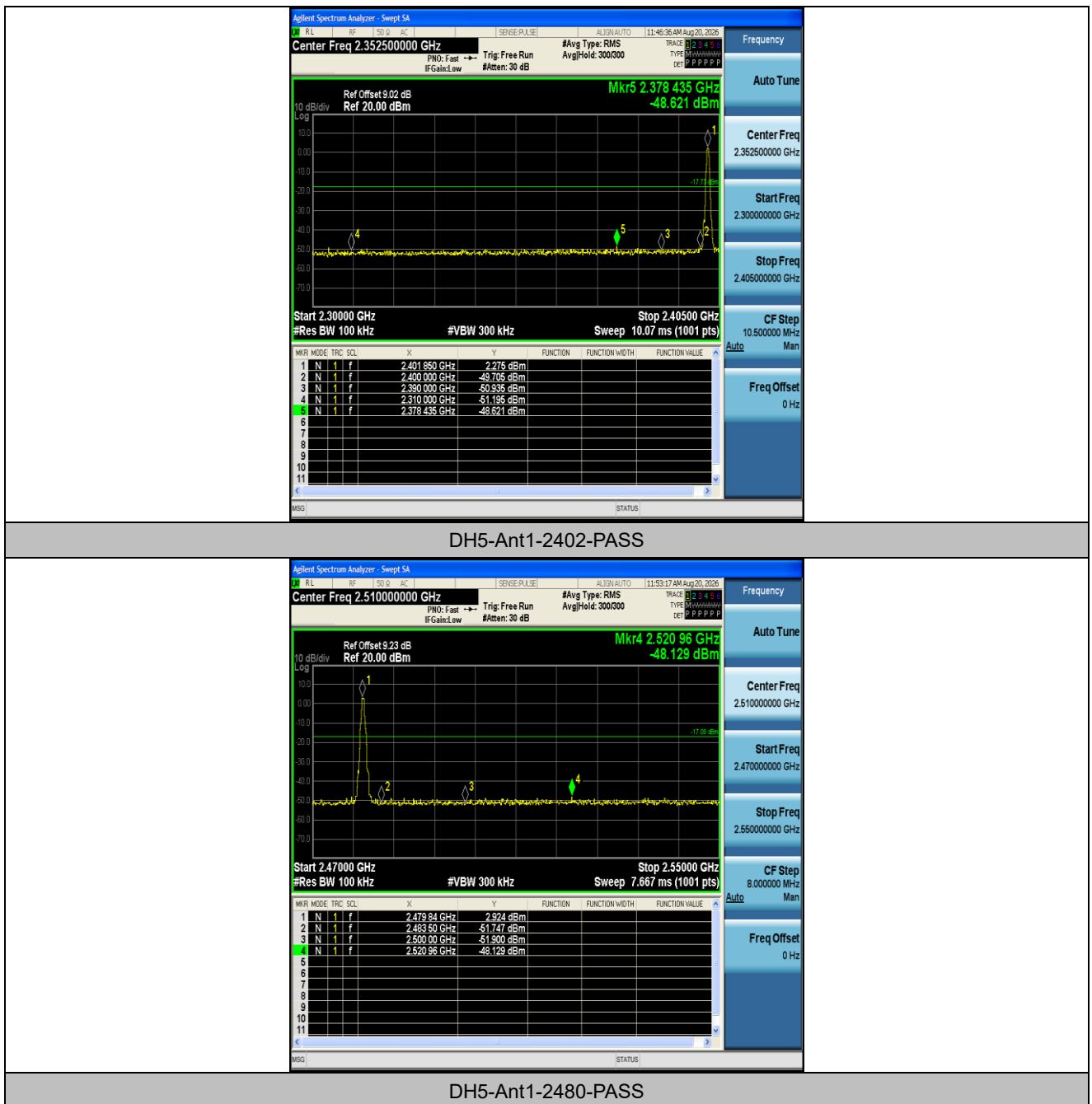
Test Mode	Antenna	Ch.Name	Frequency [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	2.28	-48.62	≤-17.73	PASS
DH5	Ant1	High	2480	2.92	-48.13	≤-17.08	PASS
DH5	Ant1	Low	Hop_2402	1.45	-49.15	≤-18.55	PASS
DH5	Ant1	High	Hop_2480	2.65	-48.32	≤-17.35	PASS
2DH5	Ant1	Low	2402	1.22	-48.96	≤-18.78	PASS
2DH5	Ant1	High	2480	2.94	-48.14	≤-17.06	PASS
2DH5	Ant1	Low	Hop_2402	-2.91	-48.07	≤-22.91	PASS
2DH5	Ant1	High	Hop_2480	2.05	-48.41	≤-17.95	PASS
3DH5	Ant1	Low	2402	2.47	-49.04	≤-17.53	PASS
3DH5	Ant1	High	2480	2.88	-48.41	≤-17.12	PASS
3DH5	Ant1	Low	Hop_2402	-3.45	-48.59	≤-23.45	PASS
3DH5	Ant1	High	Hop_2480	-0.74	-44.61	≤-20.74	PASS

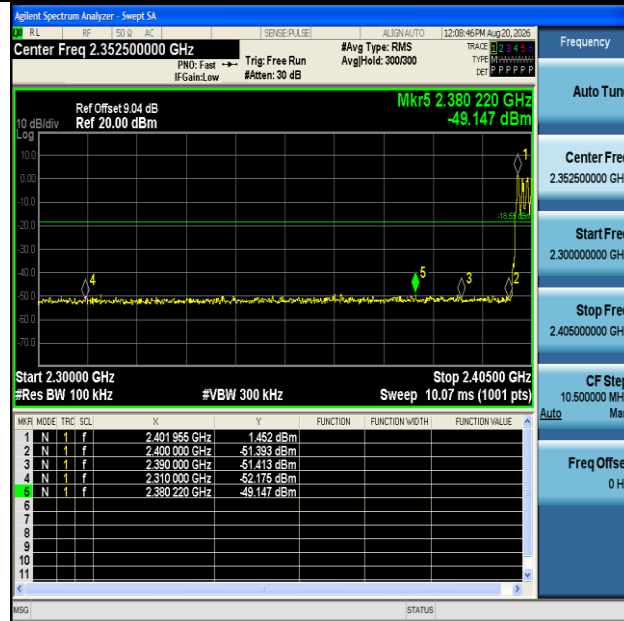
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



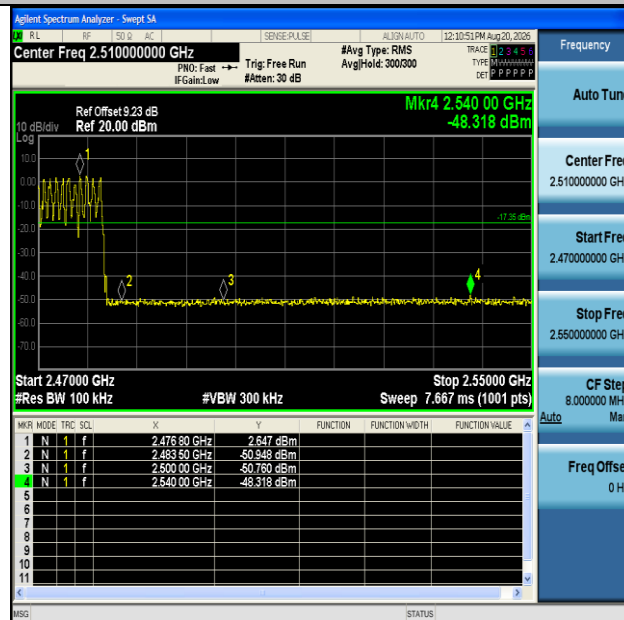


Test Graphs



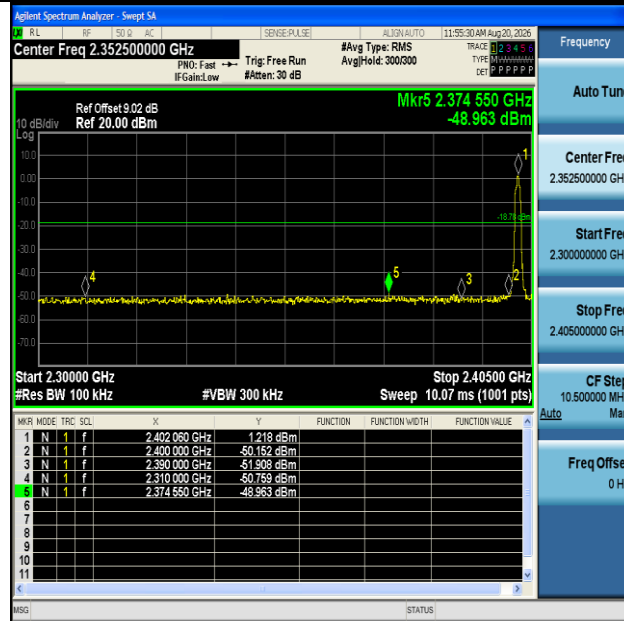


DH5-Ant1-Hop_2402-PASS

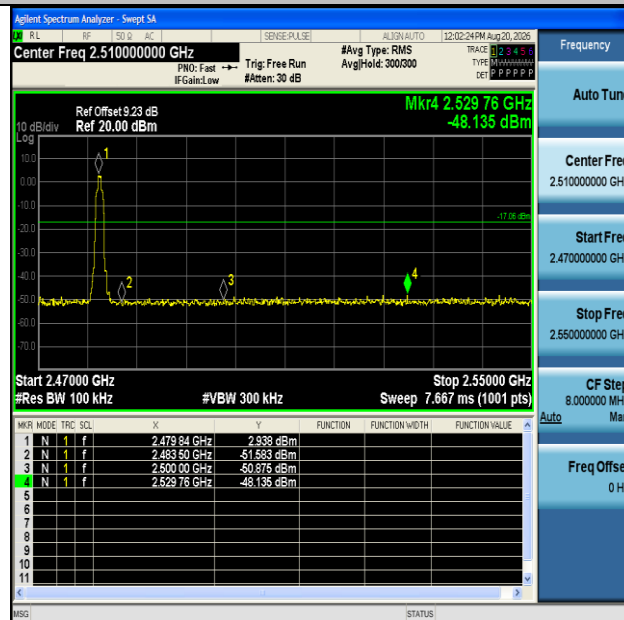


DH5-Ant1-Hop_2480-PASS



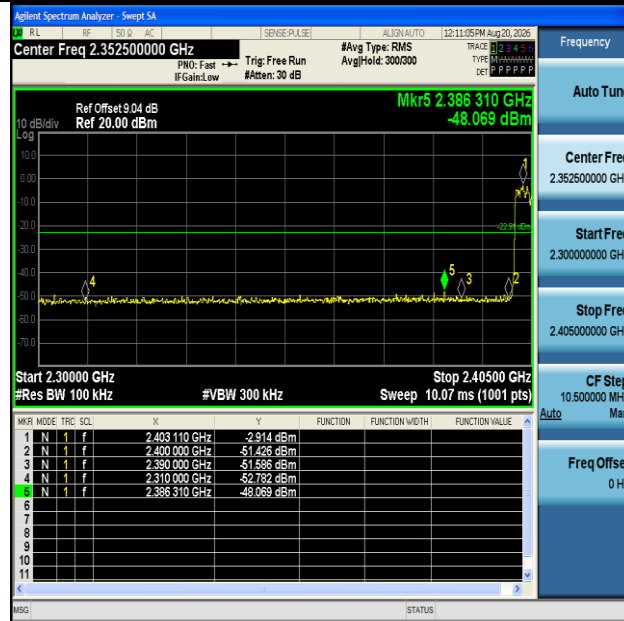


2DH5-Ant1-2402-PASS

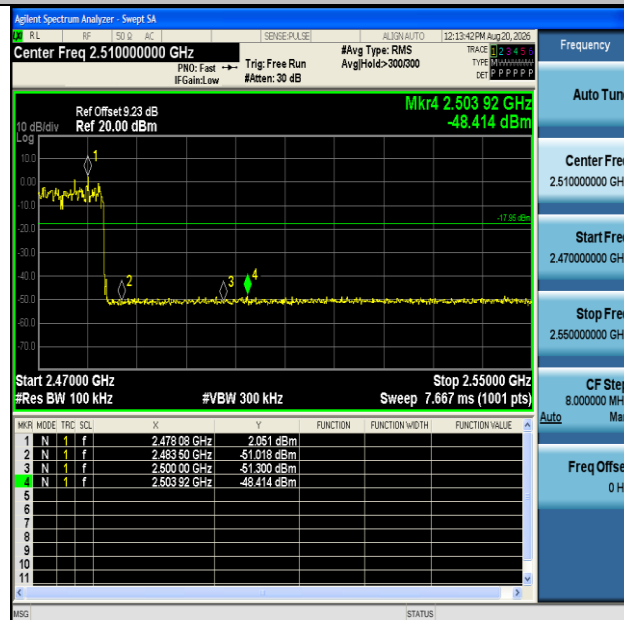


2DH5-Ant1-2480-PASS



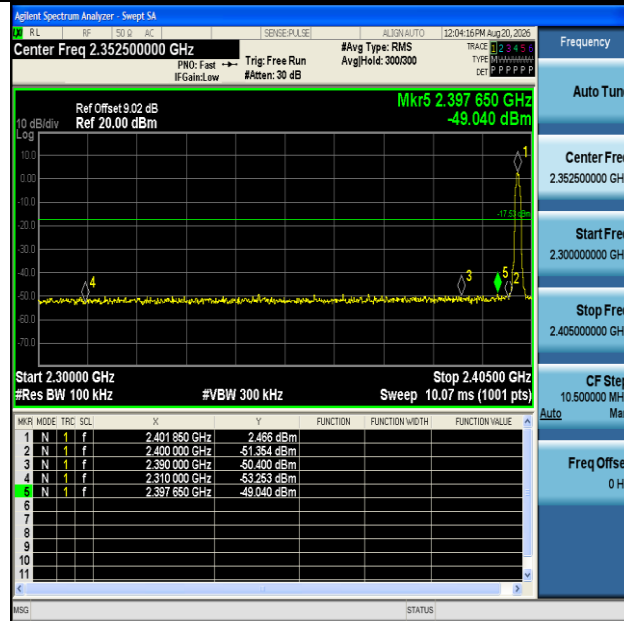


2DH5-Ant1-Hop_2402-PASS

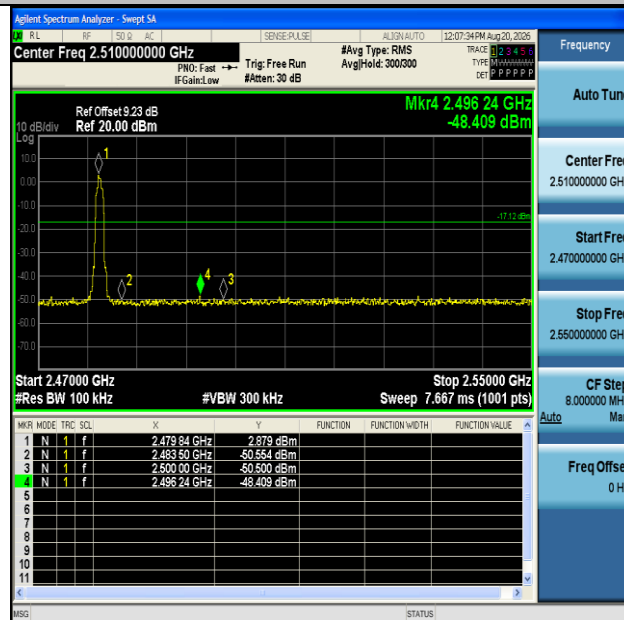


2DH5-Ant1-Hop_2480-PASS



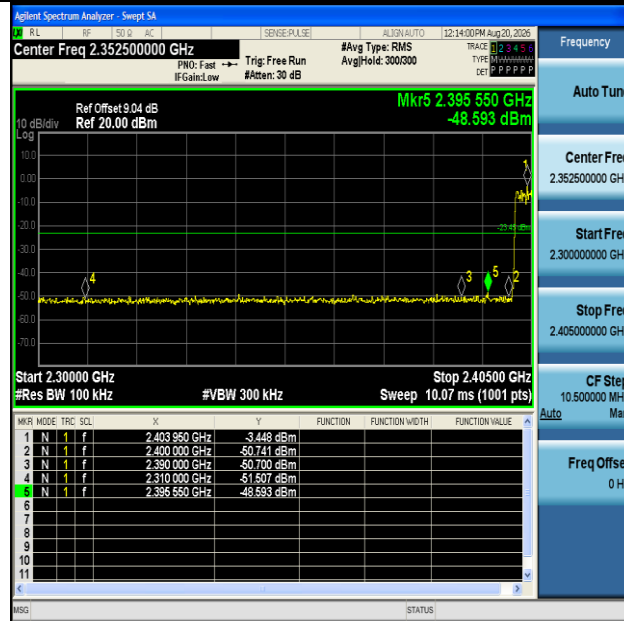


3DH5-Ant1-2402-PASS

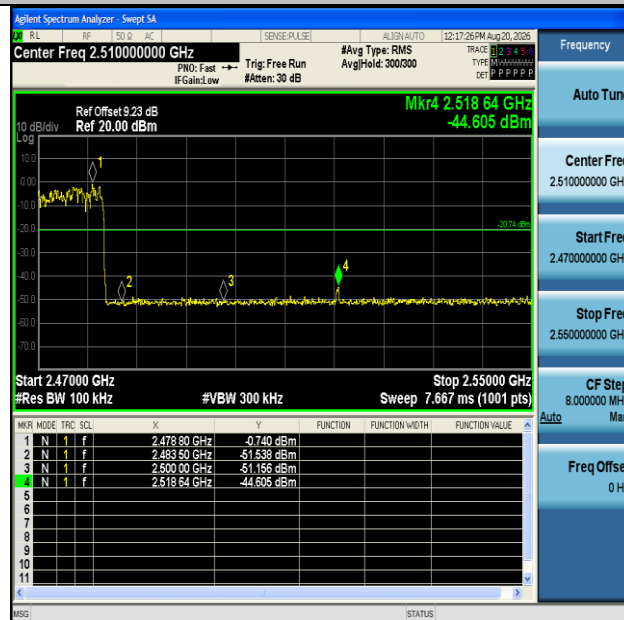


3DH5-Ant1-2480-PASS





3DH5-Ant1-Hop_2402-PASS



3DH5-Ant1-Hop_2480-PASS





Appendix H: Conducted Spurious Emission

Test Result

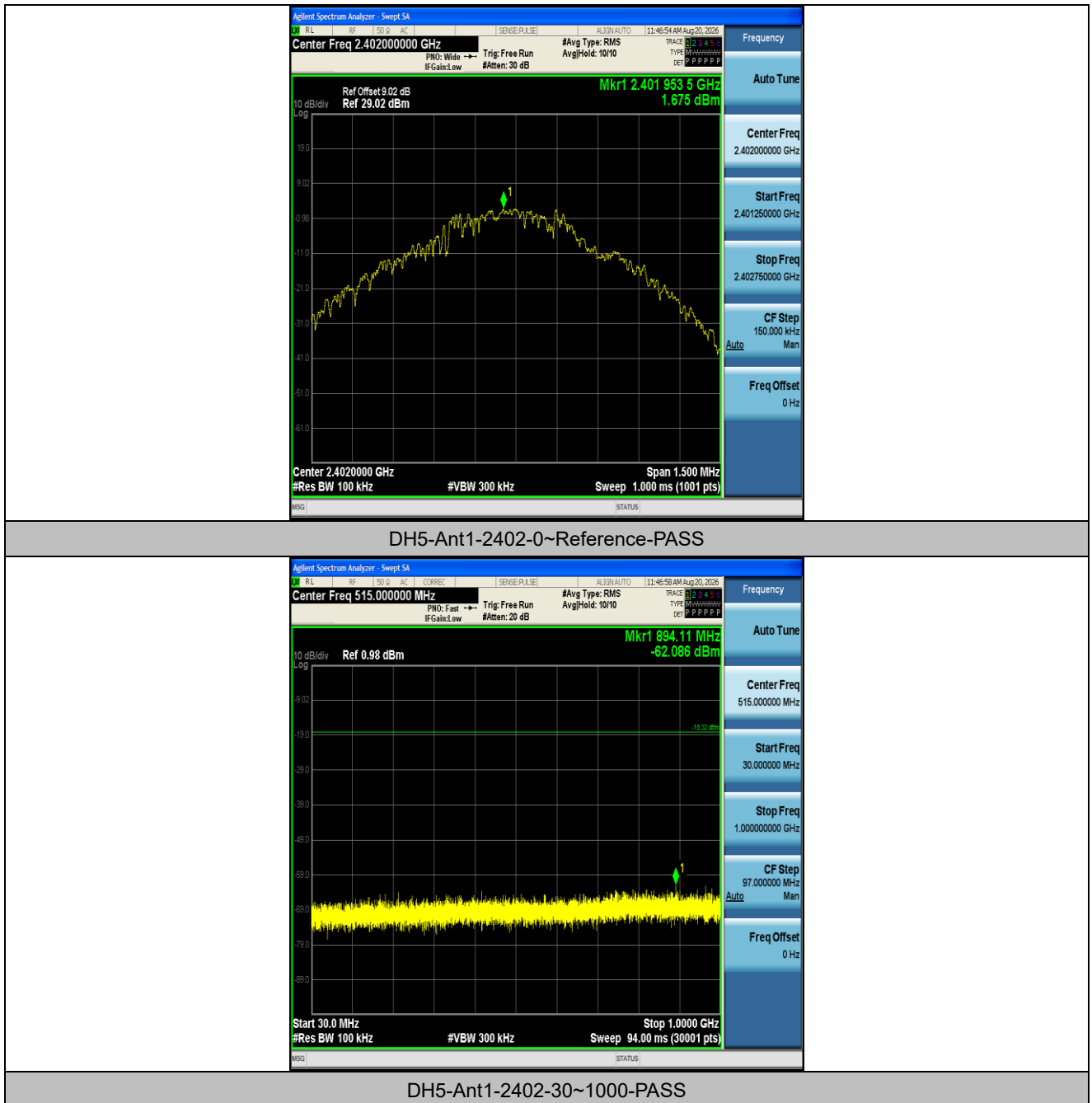
Test Mode	Antenna	Frequency [MHz]	Freq. Range [MHz]	Ref. Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	0~Reference	1.68	1.68	---	PASS
DH5	Ant1	2402	30~1000	1.68	-62.09	≤-18.32	PASS
DH5	Ant1	2402	1000~26500	1.68	-34.29	≤-18.32	PASS
DH5	Ant1	2441	0~Reference	1.90	1.90	---	PASS
DH5	Ant1	2441	30~1000	1.90	-62.22	≤-18.1	PASS
DH5	Ant1	2441	1000~26500	1.90	-37.08	≤-18.1	PASS
DH5	Ant1	2480	0~Reference	2.18	2.18	---	PASS
DH5	Ant1	2480	30~1000	2.18	-62.83	≤-17.82	PASS
DH5	Ant1	2480	1000~26500	2.18	-38.31	≤-17.82	PASS
2DH5	Ant1	2402	0~Reference	-2.22	-2.22	---	PASS
2DH5	Ant1	2402	30~1000	-2.22	-62.86	≤-22.22	PASS
2DH5	Ant1	2402	1000~26500	-2.22	-37.95	≤-22.22	PASS
2DH5	Ant1	2441	0~Reference	-1.91	-1.91	---	PASS
2DH5	Ant1	2441	30~1000	-1.91	-62.55	≤-21.91	PASS
2DH5	Ant1	2441	1000~26500	-1.91	-37.58	≤-21.91	PASS
2DH5	Ant1	2480	0~Reference	-2.28	-2.28	---	PASS
2DH5	Ant1	2480	30~1000	-2.28	-62.79	≤-22.28	PASS
2DH5	Ant1	2480	1000~26500	-2.28	-36.58	≤-22.28	PASS
3DH5	Ant1	2402	0~Reference	-2.77	-2.77	---	PASS
3DH5	Ant1	2402	30~1000	-2.77	-62.82	≤-22.77	PASS
3DH5	Ant1	2402	1000~26500	-2.77	-37.6	≤-22.77	PASS
3DH5	Ant1	2441	0~Reference	2.68	2.68	---	PASS
3DH5	Ant1	2441	30~1000	2.68	-63.08	≤-17.32	PASS
3DH5	Ant1	2441	1000~26500	2.68	-37.28	≤-17.32	PASS
3DH5	Ant1	2480	0~Reference	-2.12	-2.12	---	PASS
3DH5	Ant1	2480	30~1000	-2.12	-63.09	≤-22.12	PASS
3DH5	Ant1	2480	1000~26500	-2.12	-37.67	≤-22.12	PASS

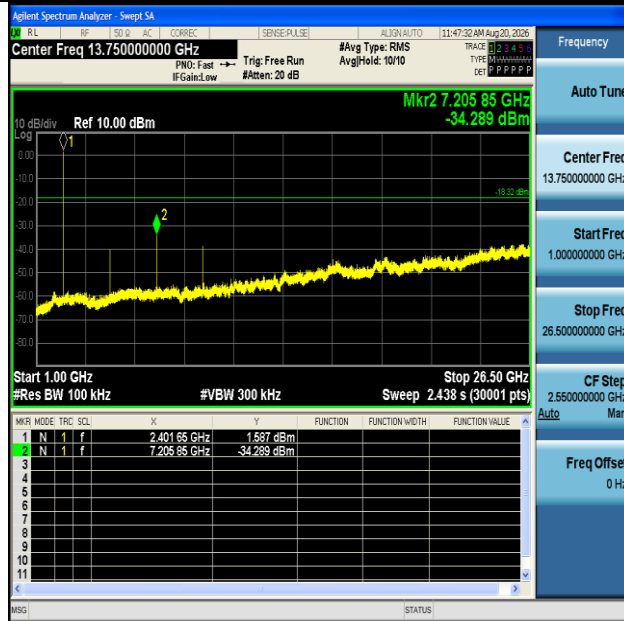
Note: offset(dB) in Reference test plots = cable loss(dB) + attenuator factor(dB); For spurious emissions plots from 30MHz to 26.5GHz, the cable loss and attenuator factors have been set in the 'Input Correction' of the Spectrum Analyzer during the test.



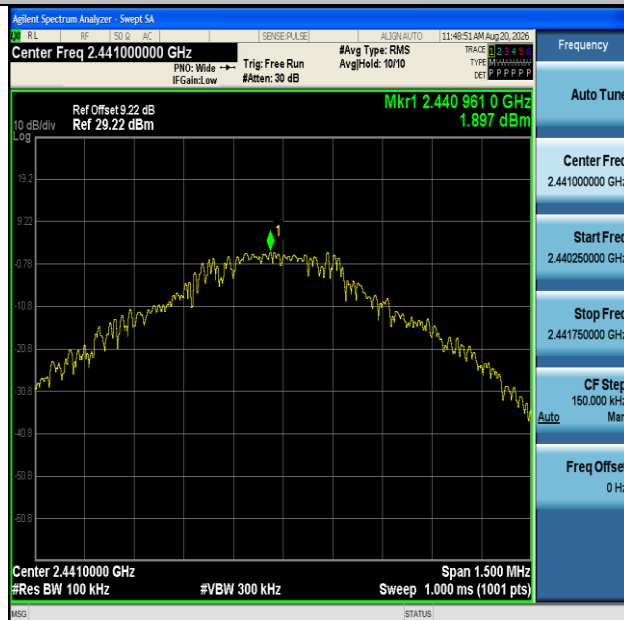


Test Graphs





DH5-Ant1-2402-1000~26500-PASS

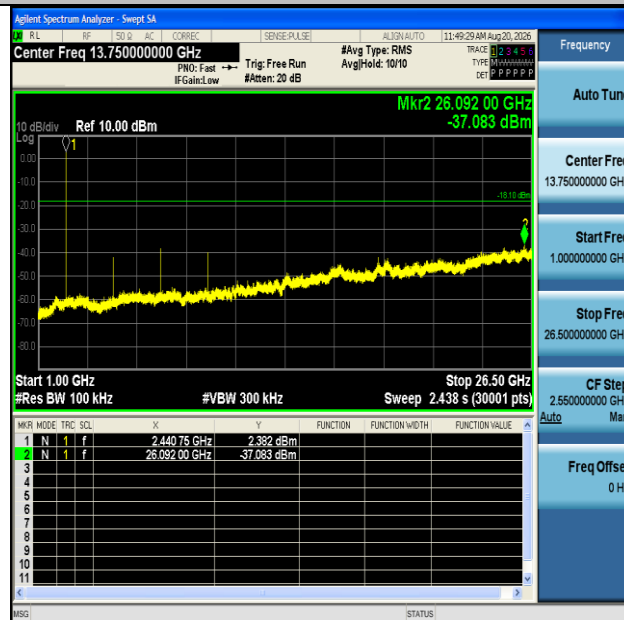


DH5-Ant1-2441-0~Reference-PASS



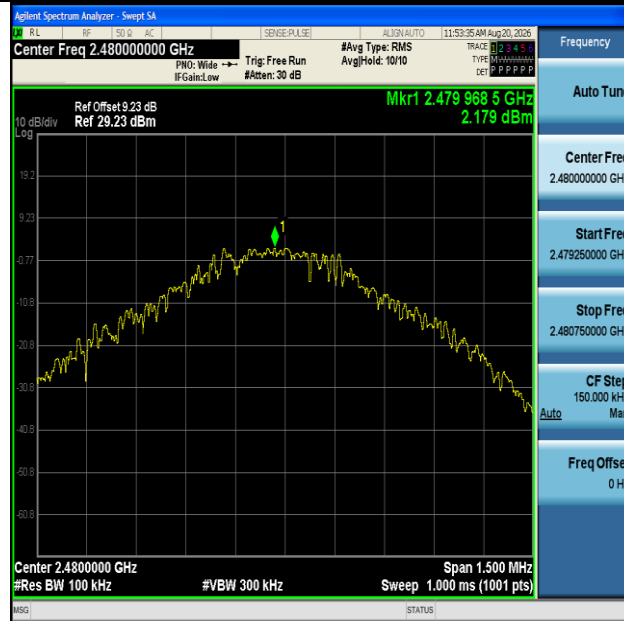


DH5-Ant1-2441-30~1000-PASS

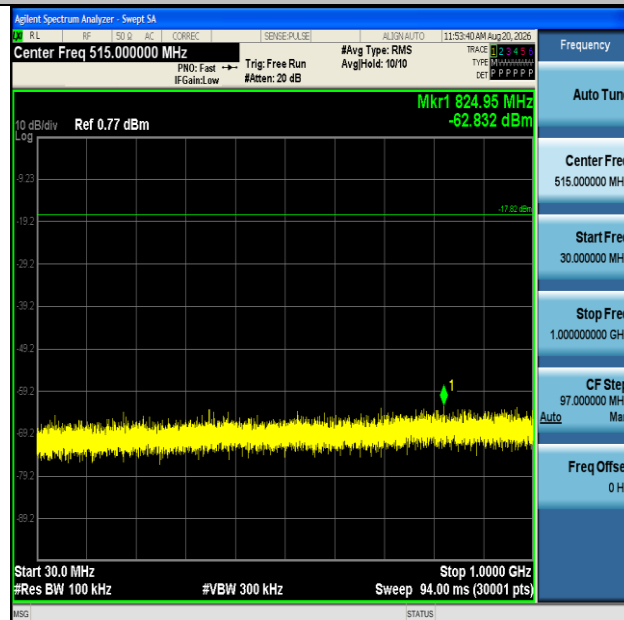


DH5-Ant1-2441-1000~26500-PASS



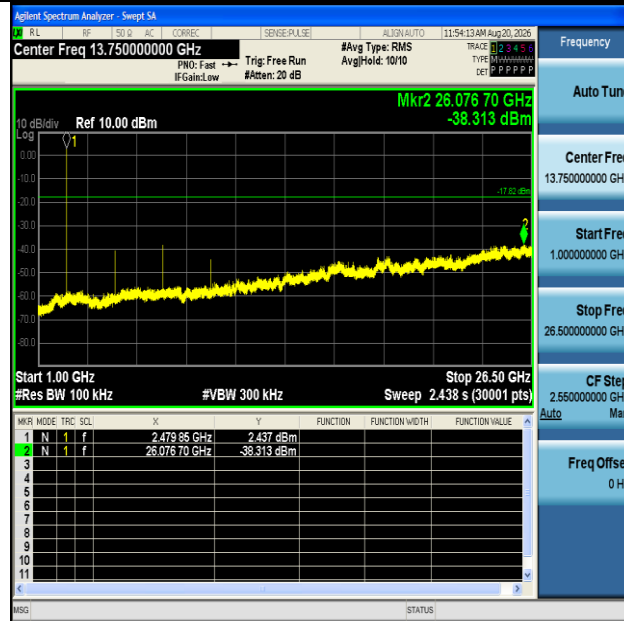


DH5-Ant1-2480-0~Reference-PASS

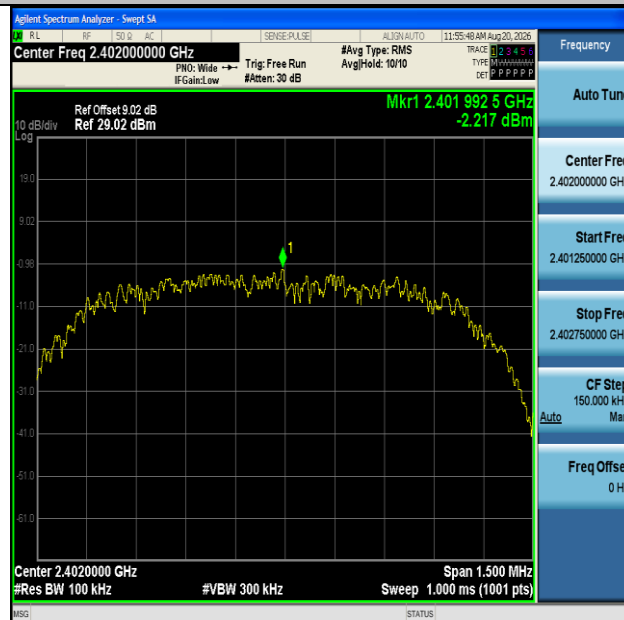


DH5-Ant1-2480-30~1000-PASS



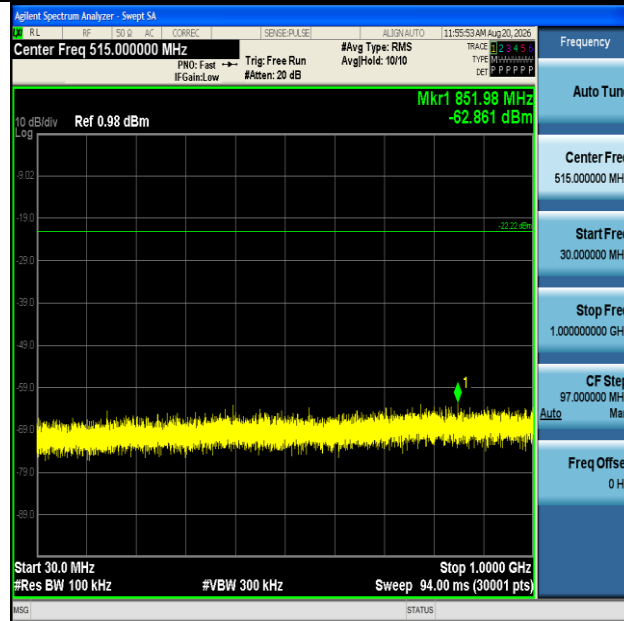


DH5-Ant1-2480-1000~26500-PASS

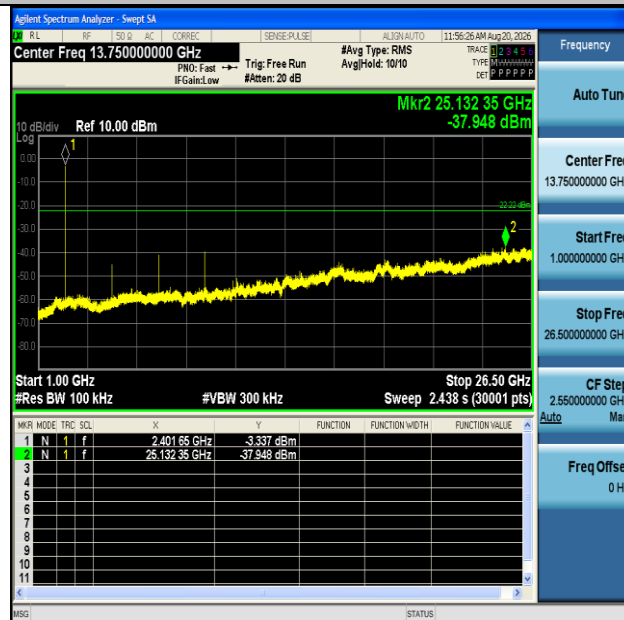


2DH5-Ant1-2402-0~Reference-PASS



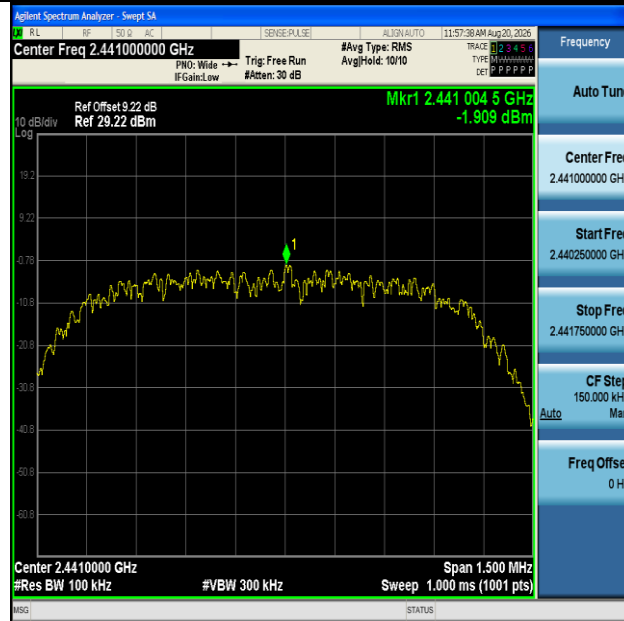


2DH5-Ant1-2402-30~1000-PASS

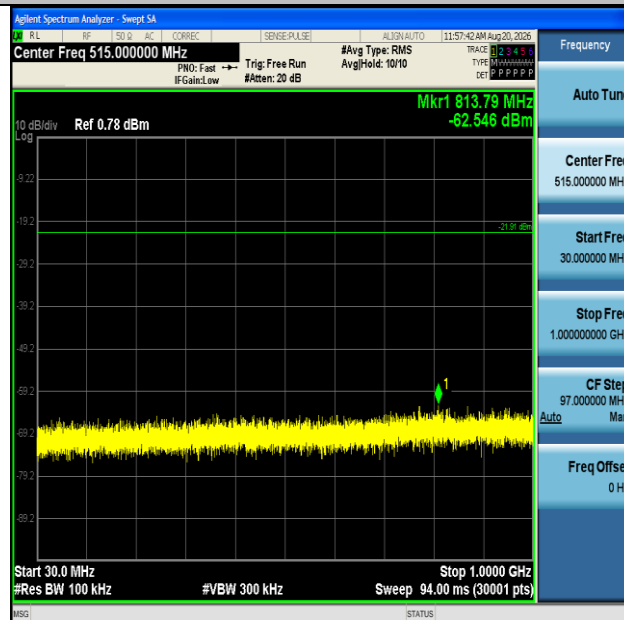


2DH5-Ant1-2402-1000~26500-PASS



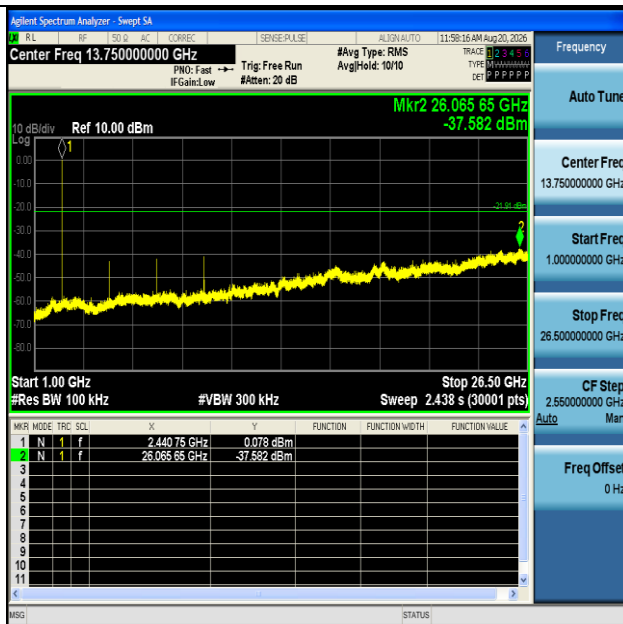


2DH5-Ant1-2441-0~Reference-PASS

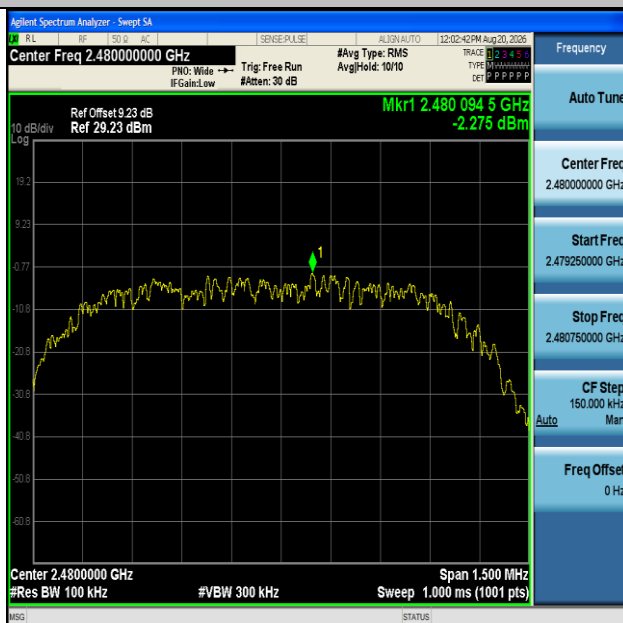


2DH5-Ant1-2441-30~1000-PASS



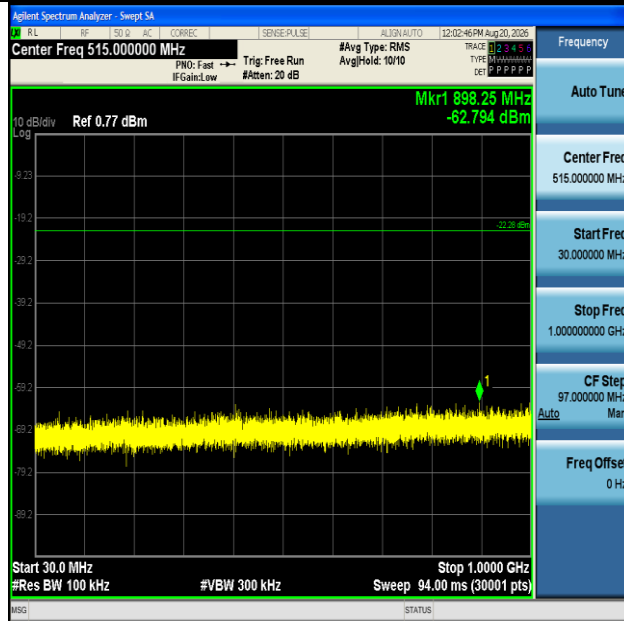


2DH5-Ant1-2441-1000~26500-PASS

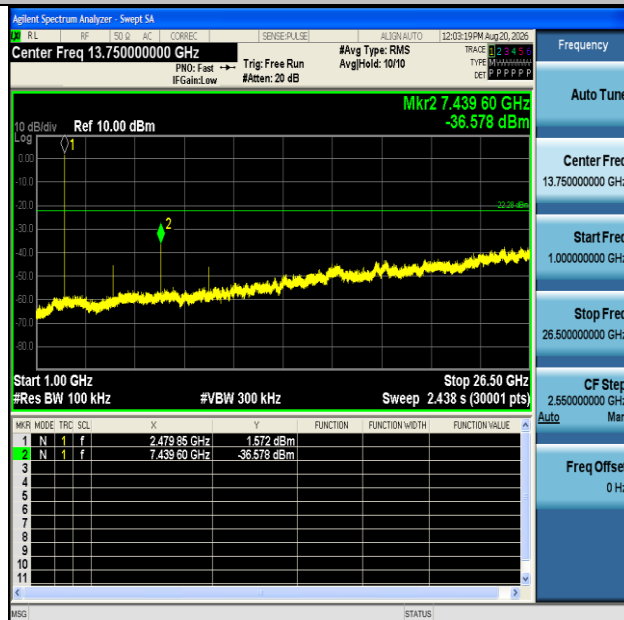


2DH5-Ant1-2480-0~Reference-PASS



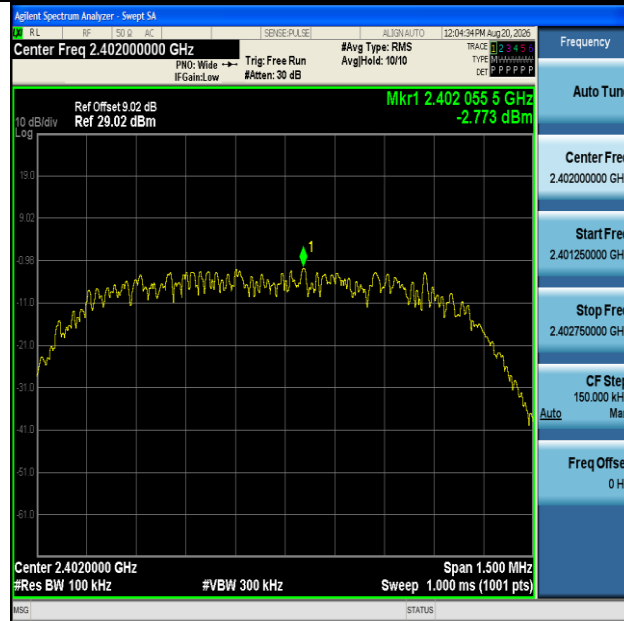


2DH5-Ant1-2480-30~1000-PASS

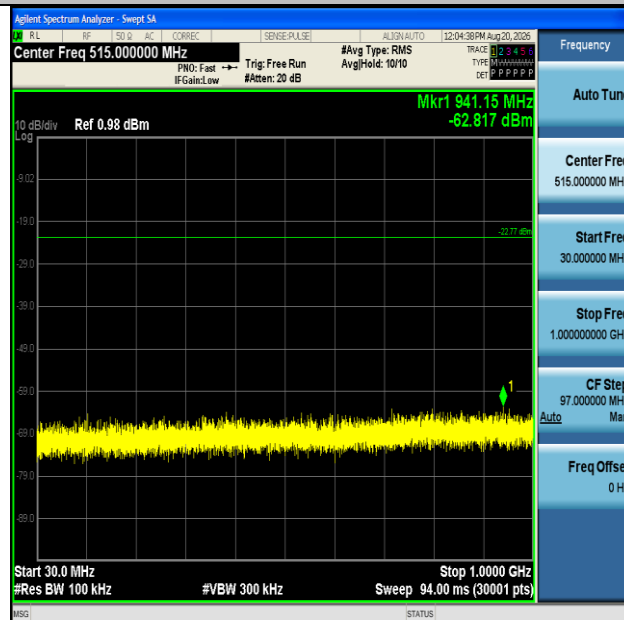


2DH5-Ant1-2480-1000~26500-PASS



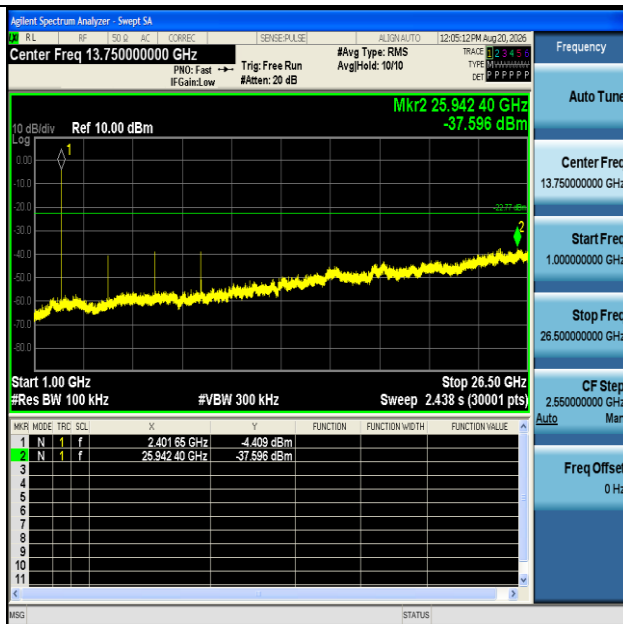


3DH5-Ant1-2402-0~Reference-PASS

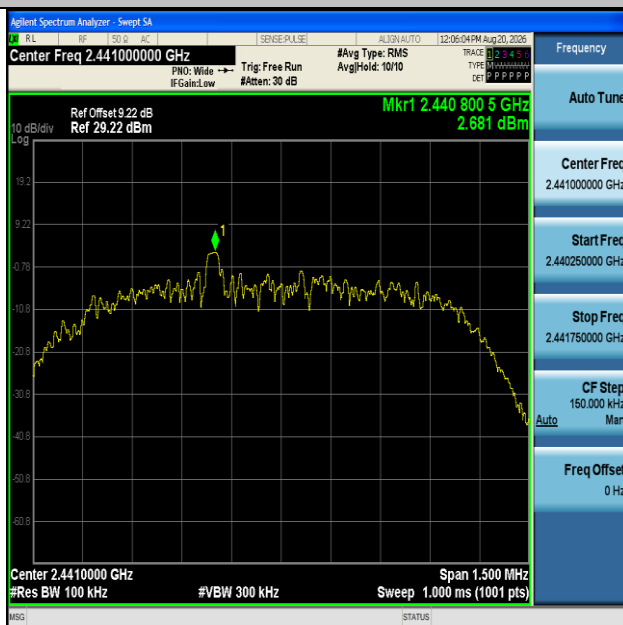


3DH5-Ant1-2402-30~1000-PASS



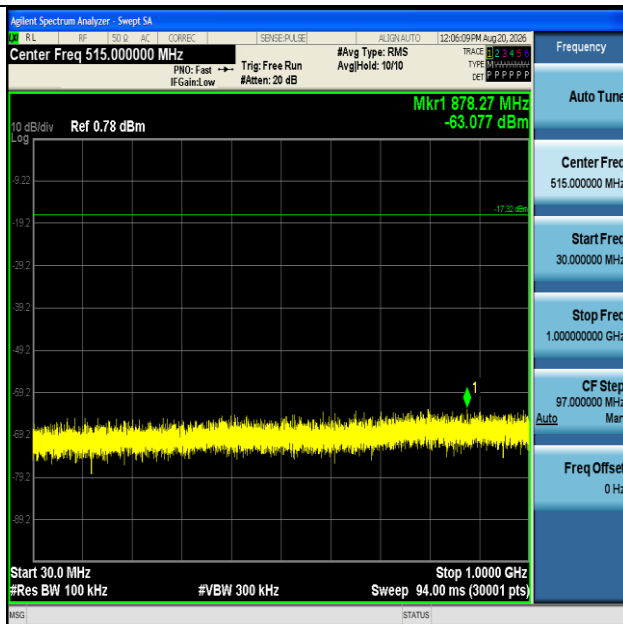


3DH5-Ant1-2402-1000~26500-PASS

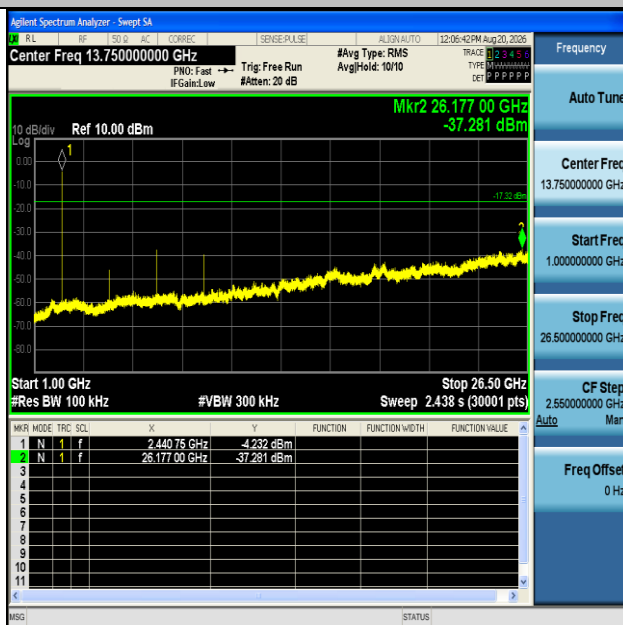


3DH5-Ant1-2441-0~Reference-PASS





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

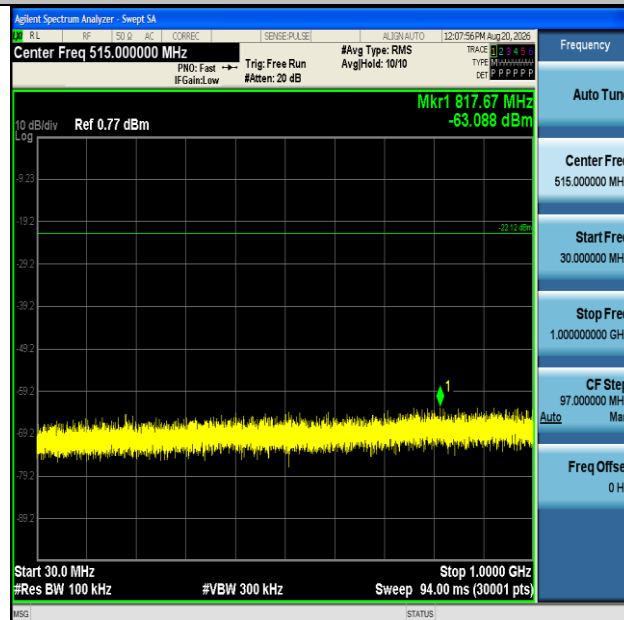


3DH5-Ant1-2441-1000~26500-PASS



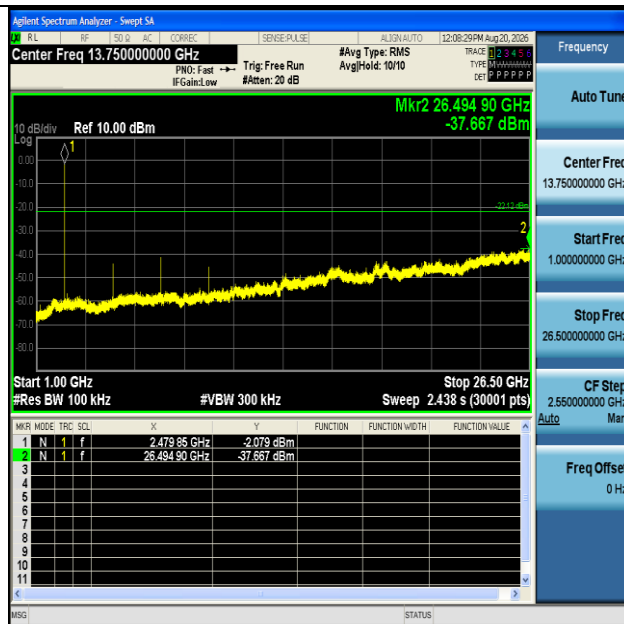


3DH5-Ant1-2480-0~Reference-PASS



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	2.87	3.75	76.53	1.16
DH5	Ant1	2441	2.87	3.75	76.53	1.16
DH5	Ant1	2480	2.86	3.75	76.27	1.18
2DH5	Ant1	2402	2.88	3.75	76.80	1.15
2DH5	Ant1	2441	2.88	3.75	76.80	1.15
2DH5	Ant1	2480	2.89	3.75	77.07	1.13
3DH5	Ant1	2402	2.88	3.75	76.80	1.15
3DH5	Ant1	2441	2.88	3.75	76.80	1.15
3DH5	Ant1	2480	2.88	3.75	76.80	1.15

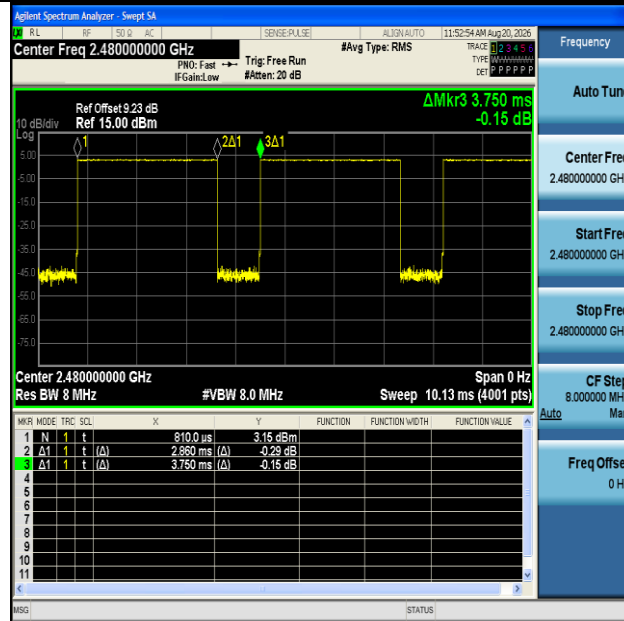
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs



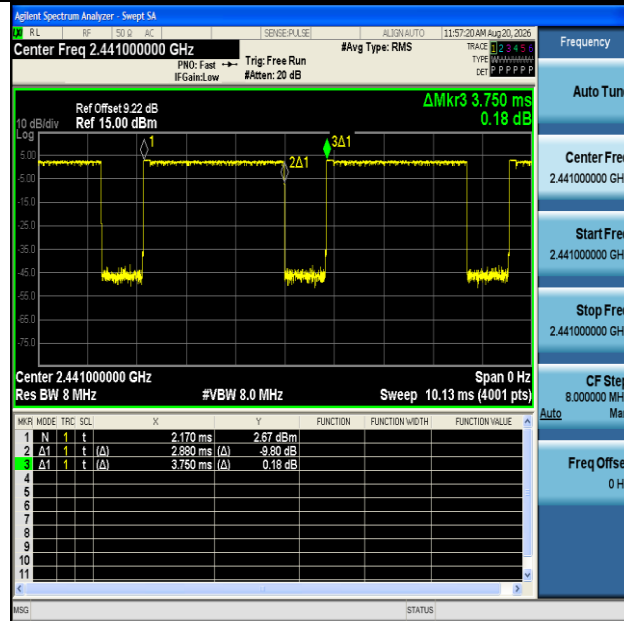


NTNV-DH5-Ant1-2480

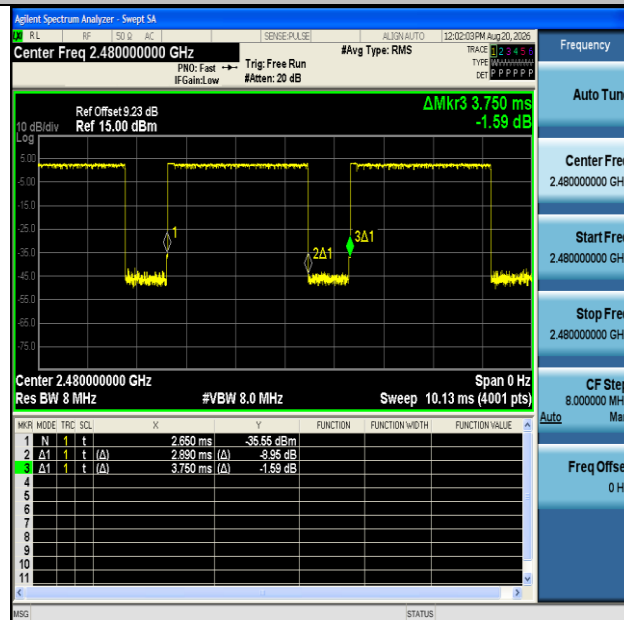


NTNV-2DH5-Ant1-2402



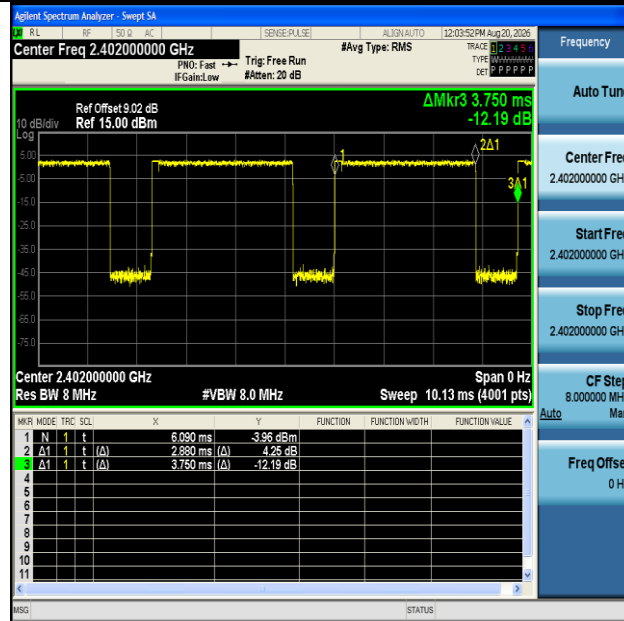


NTNV-2DH5-Ant1-2441

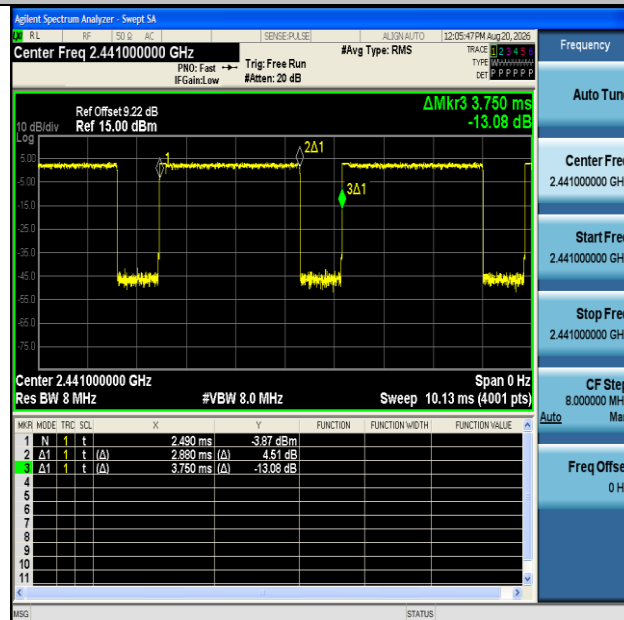


NTNV-2DH5-Ant1-2480



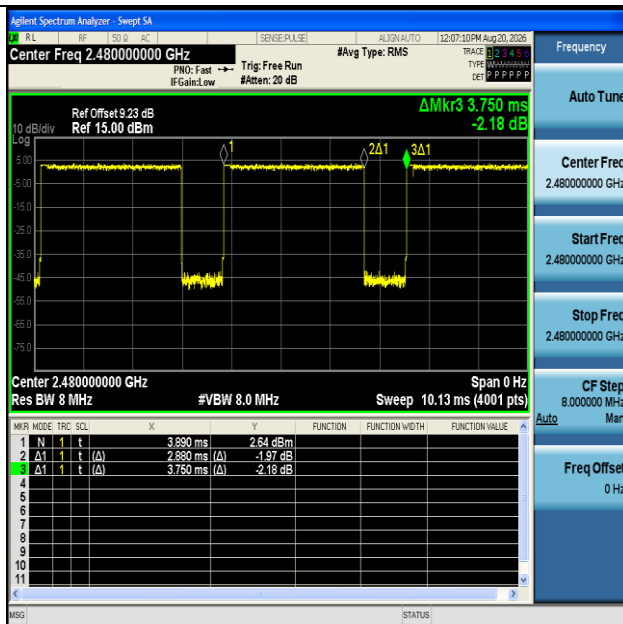


NTNV-3DH5-Ant1-2402



NTNV-3DH5-Ant1-2441





NTNV-3DH5-Ant1-2480

