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

Product Name: WIFI TOUCH SCREEN KARAOKE SYSTEM

Trade Mark: singing machine

Test Model: ISM9033

FCC ID: 2AAXO-ISM9033

Environmental Conditions

Temperature:	23.5℃
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	0.972	2401.433	2402.405	---	---
DH5	Ant1	2441	0.987	2440.406	2441.393	---	---
DH5	Ant1	2480	0.918	2479.448	2480.366	---	---
2DH5	Ant1	2402	1.296	2401.253	2402.549	---	---
2DH5	Ant1	2441	1.296	2440.262	2441.558	---	---
2DH5	Ant1	2480	1.293	2479.250	2480.543	---	---
3DH5	Ant1	2402	1.308	2401.253	2402.561	---	---
3DH5	Ant1	2441	1.338	2440.238	2441.576	---	---
3DH5	Ant1	2480	1.308	2479.241	2480.549	---	---

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

Test Graphs

DH5-Ant1-2402

DH5-Ant1-2441

DH5-Ant1-2480

2DH5-Ant1-2402

2DH5-Ant1-2441

2DH5-Ant1-2480

3DH5-Ant1-2402

3DH5-Ant1-2441

3DH5-Ant1-2480

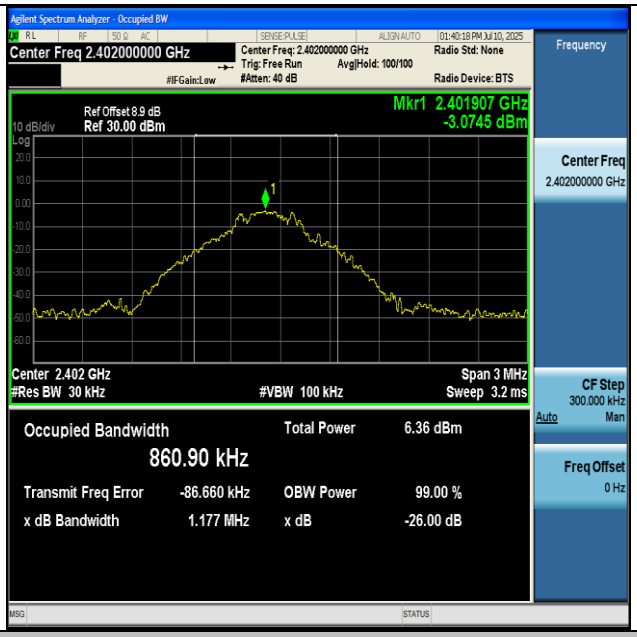
Appendix B: Occupied Channel Bandwidth

Test Result

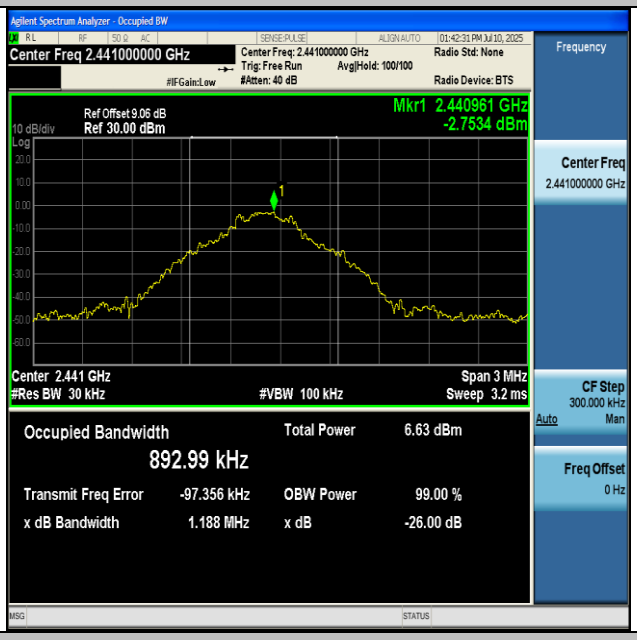
Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
DH5	Ant1	2402	0.86090	2401.4829	2402.3438	---	---
DH5	Ant1	2441	0.89299	2440.4561	2441.3491	---	---
DH5	Ant1	2480	0.88068	2479.4583	2480.3390	---	---
2DH5	Ant1	2402	1.2187	2401.2945	2402.5132	---	---
2DH5	Ant1	2441	1.2098	2440.2998	2441.5096	---	---
2DH5	Ant1	2480	1.1977	2479.3030	2480.5007	---	---
3DH5	Ant1	2402	1.2006	2401.3046	2402.5052	---	---
3DH5	Ant1	2441	1.2057	2440.2973	2441.5030	---	---
3DH5	Ant1	2480	1.1987	2479.2971	2480.4958	---	---

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

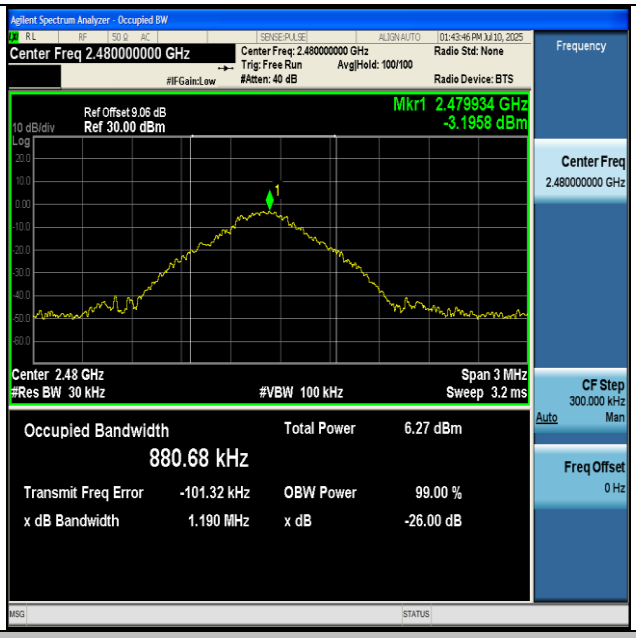
Test Graphs



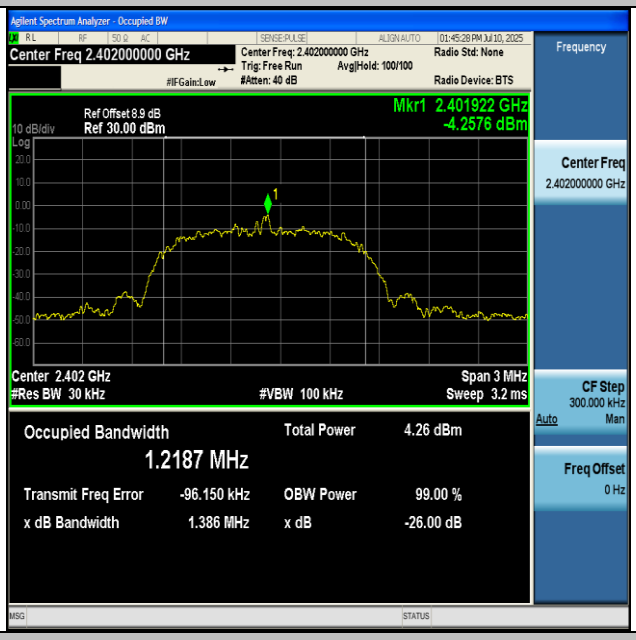
DH5-Ant1-2402



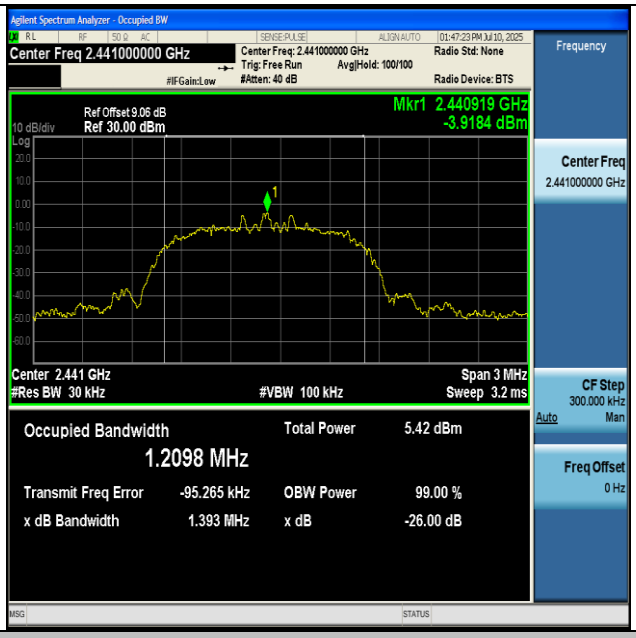
DH5-Ant1-2441



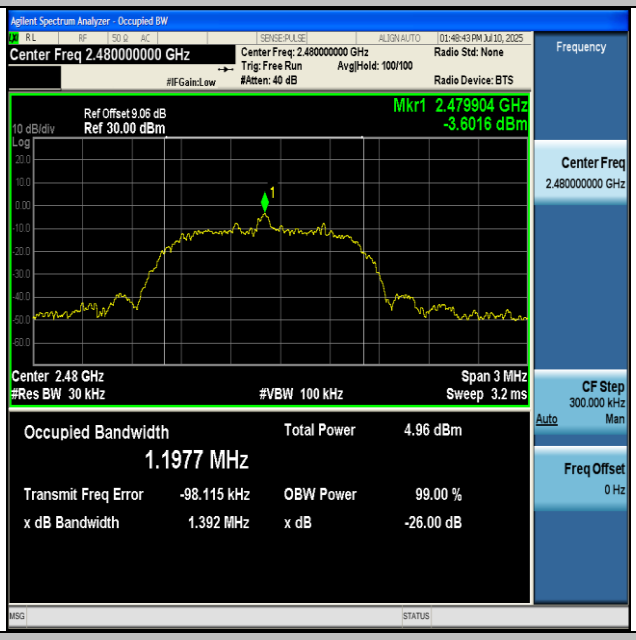
DH5-Ant1-2480



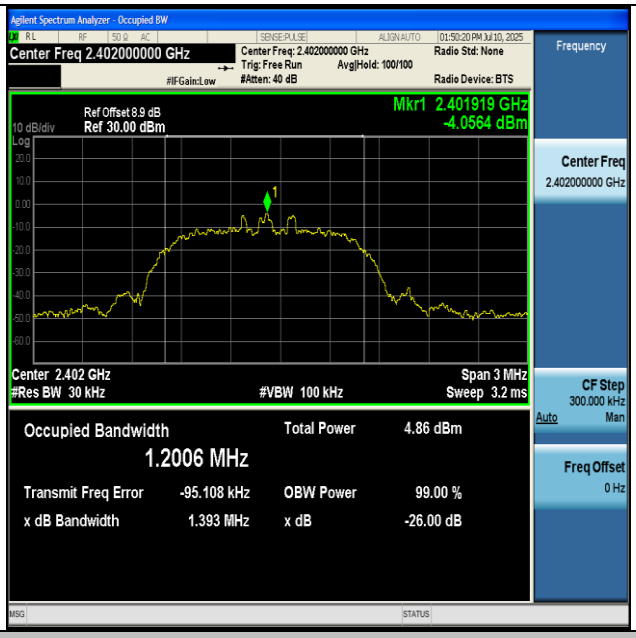
2DH5-Ant1-2402



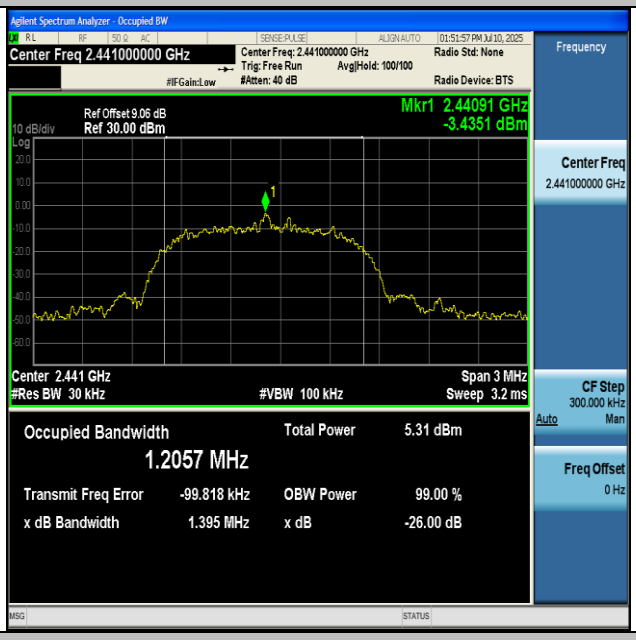
2DH5-Ant1-2441



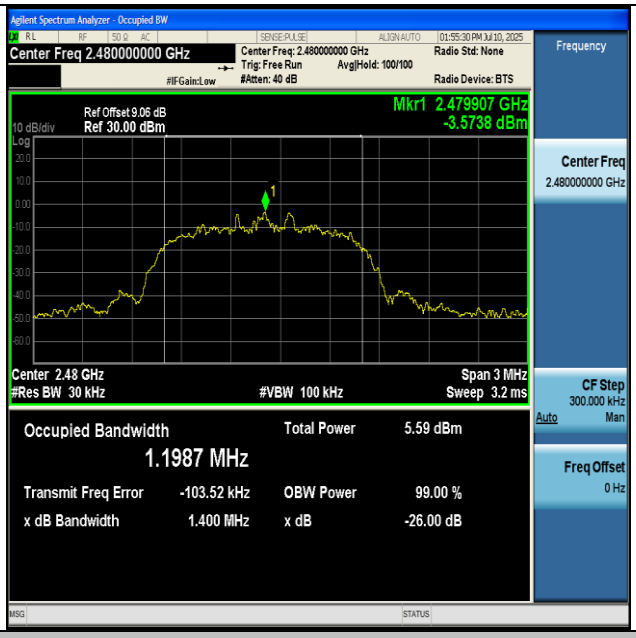
2DH5-Ant1-2480



3DH5-Ant1-2402



3DH5-Ant1-2441



3DH5-Ant1-2480

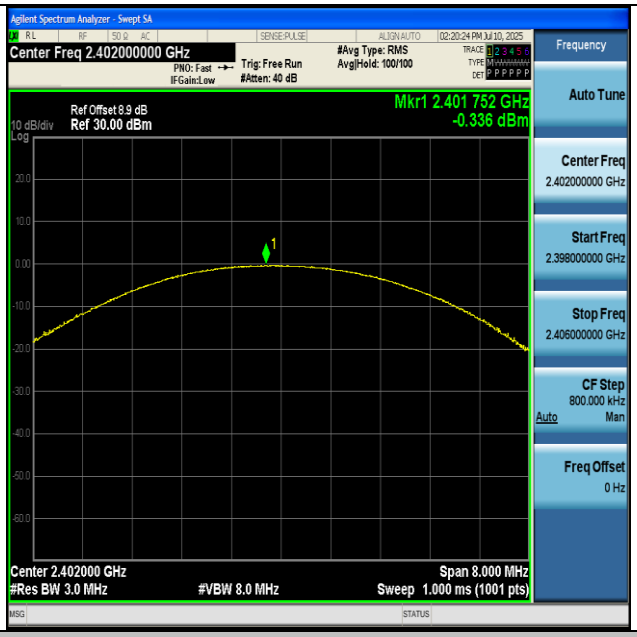
Appendix C: Maximum peak conducted output power

Test Result

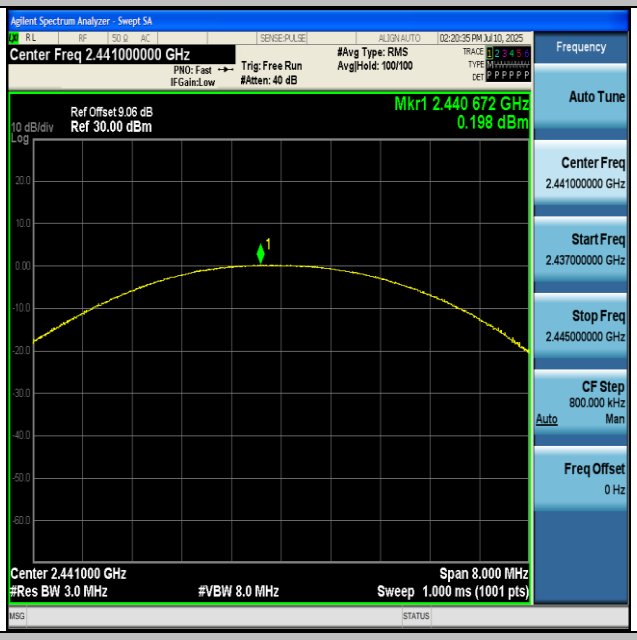
Test Mode	Antenna	Frequency [MHz]	Conducted Peak Power [dBm]	Conducted Limit [dBm]	Verdict
DH5	Ant1	2402	-0.34	≤20.97	PASS
DH5	Ant1	2441	0.20	≤20.97	PASS
DH5	Ant1	2480	0.03	≤20.97	PASS
2DH5	Ant1	2402	-0.40	≤20.97	PASS
2DH5	Ant1	2441	0.20	≤20.97	PASS
2DH5	Ant1	2480	0.03	≤20.97	PASS
3DH5	Ant1	2402	-0.22	≤20.97	PASS
3DH5	Ant1	2441	0.38	≤20.97	PASS
3DH5	Ant1	2480	0.10	≤20.97	PASS

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

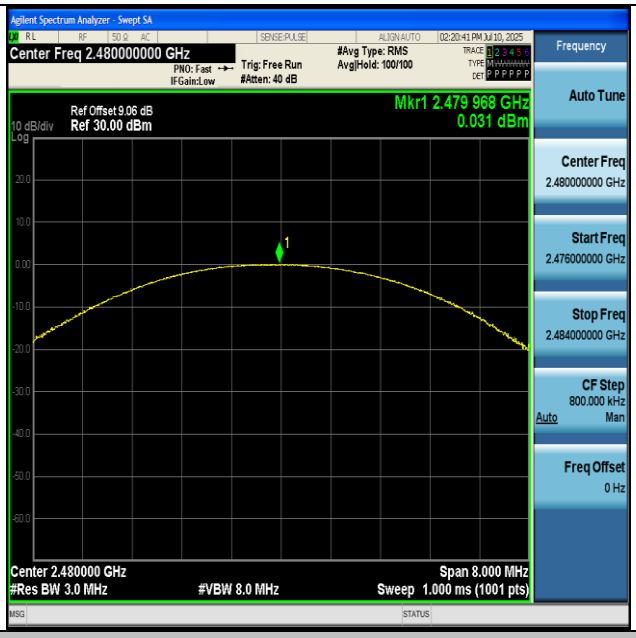
Test Graphs



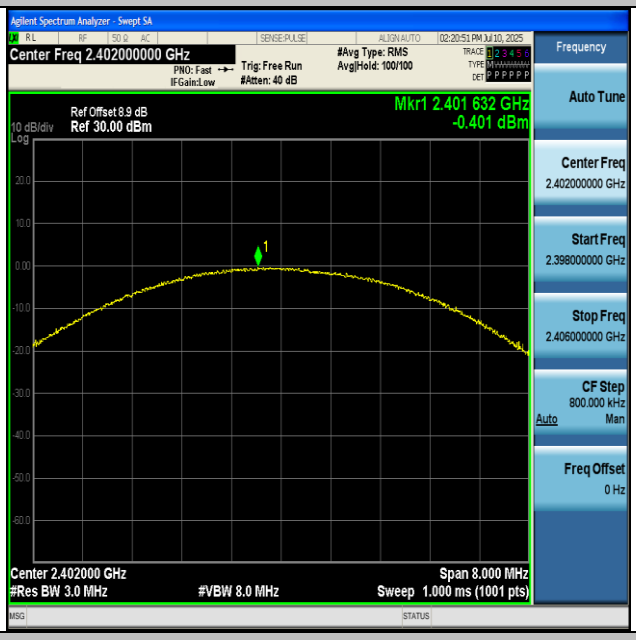
DH5-Ant1-2402-PASS



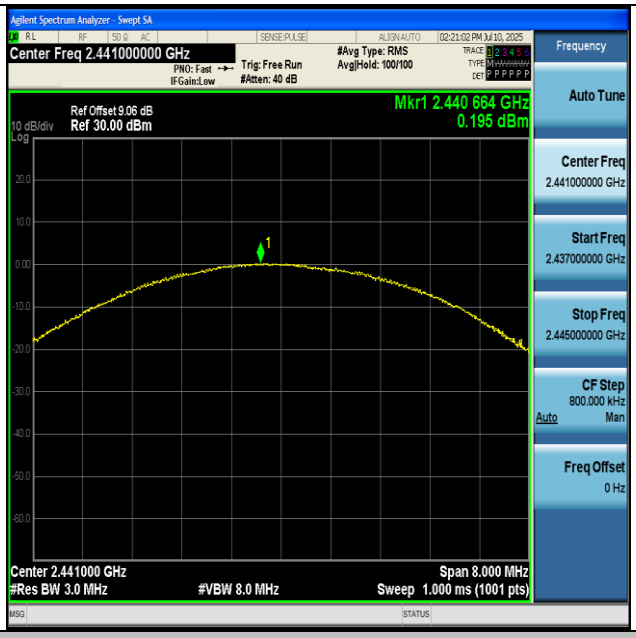
DH5-Ant1-2441-PASS



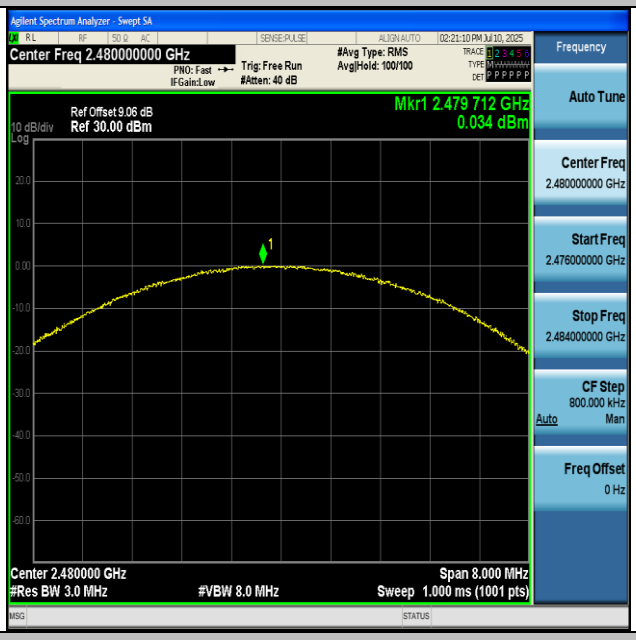
DH5-Ant1-2480-PASS



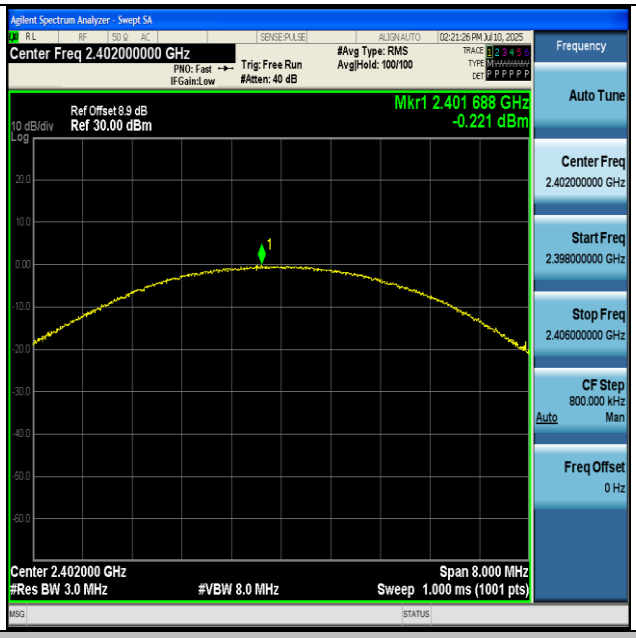
2DH5-Ant1-2402-PASS



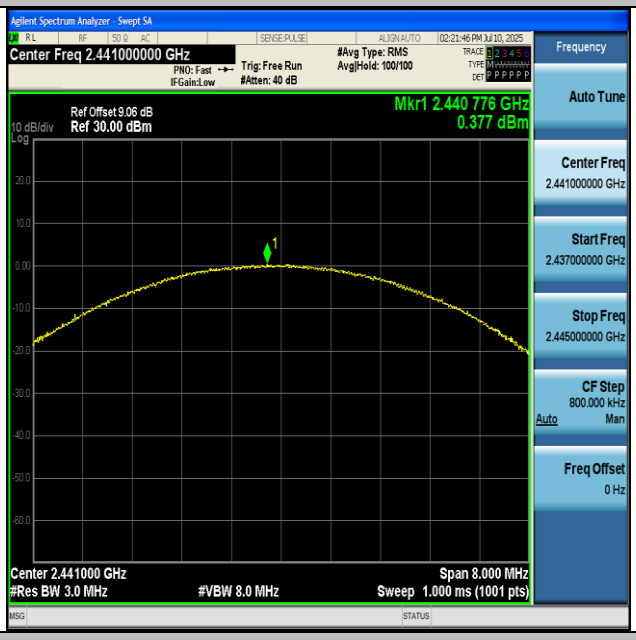
2DH5-Ant1-2441-PASS



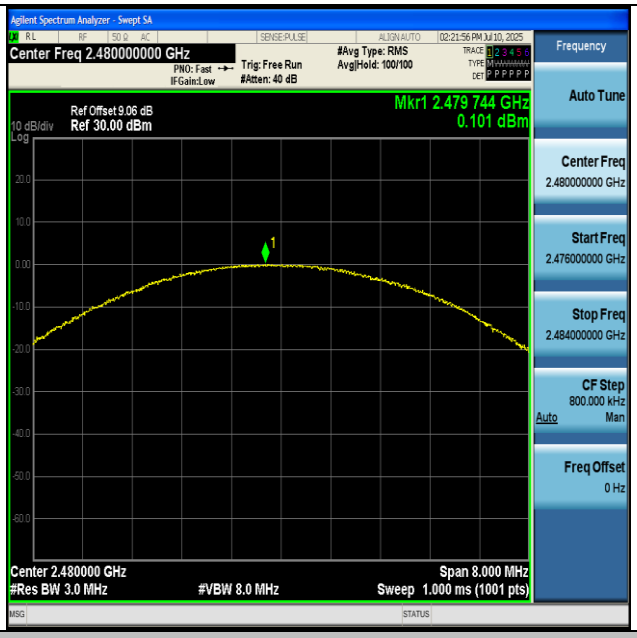
2DH5-Ant1-2480-PASS



3DH5-Ant1-2402-PASS



3DH5-Ant1-2441-PASS



3DH5-Ant1-2480-PASS

Appendix D: Carrier frequency separation

Test Result

Test Mode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
DH5	Ant1	Hop	0.986	≥0.658	PASS
2DH5	Ant1	Hop	0.994	≥0.864	PASS
3DH5	Ant1	Hop	0.992	≥0.892	PASS

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

Test Graphs

DH5-Ant1-Hop-PASS

2DH5-Ant1-Hop-PASS

3DH5-Ant1-Hop-PASS

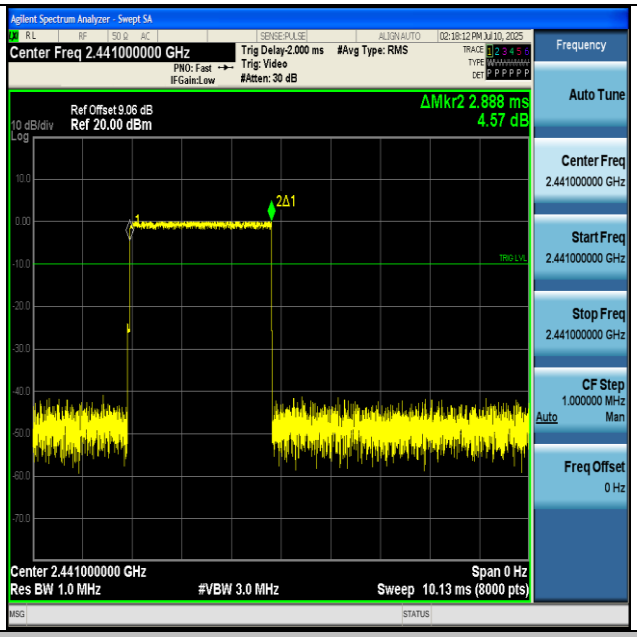
Appendix E: Time of occupancy

Test Result

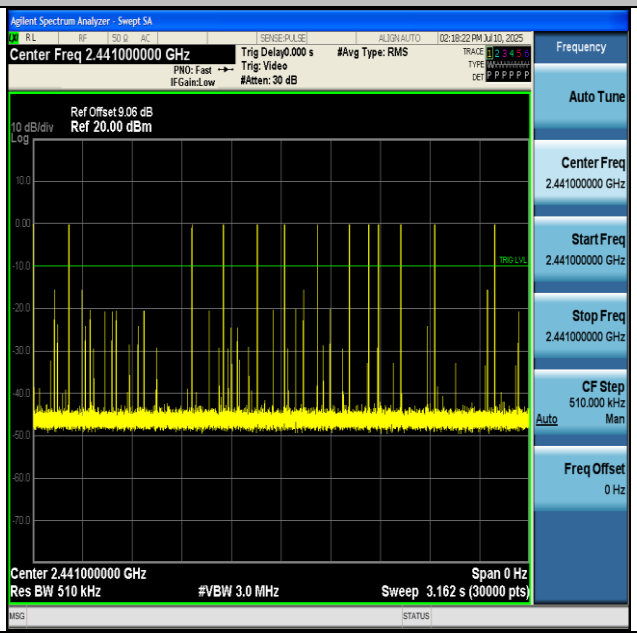
Test Mode	Antenna	Frequency [MHz]	Burst Width [ms]	TotalHops [Num]	Result [s]	Limit [s]	Verdict
DH5	Ant1	Hop	2.888	130	0.375	≤0.4	PASS
2DH5	Ant1	Hop	2.883	90	0.259	≤0.4	PASS
3DH5	Ant1	Hop	2.883	90	0.259	≤0.4	PASS

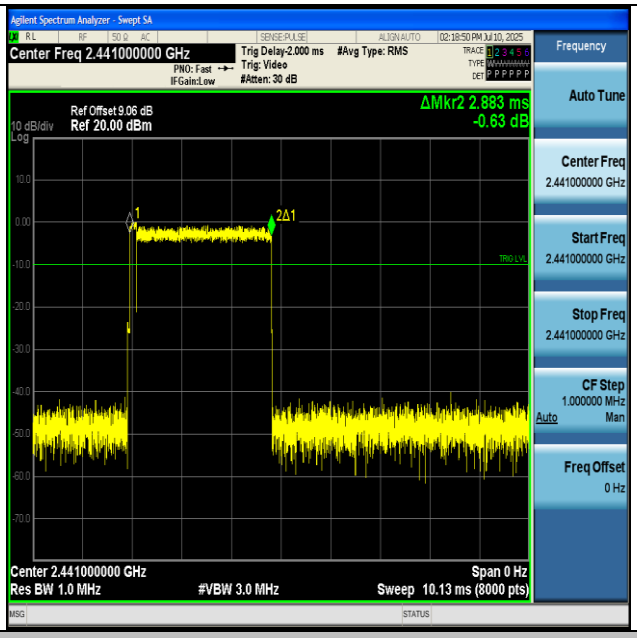
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)

Test Graphs

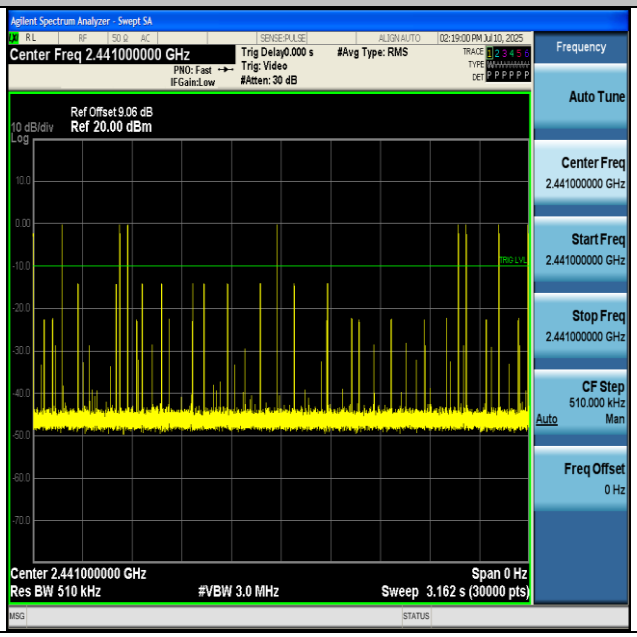


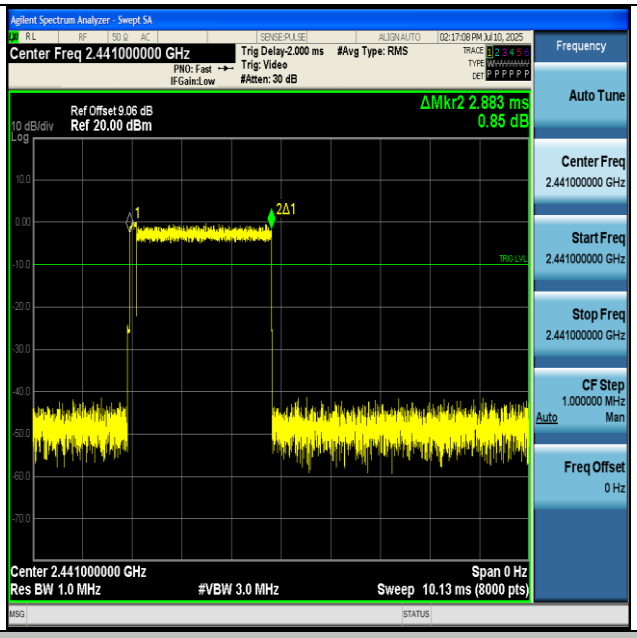
DH5-Ant1-Hop-PASS



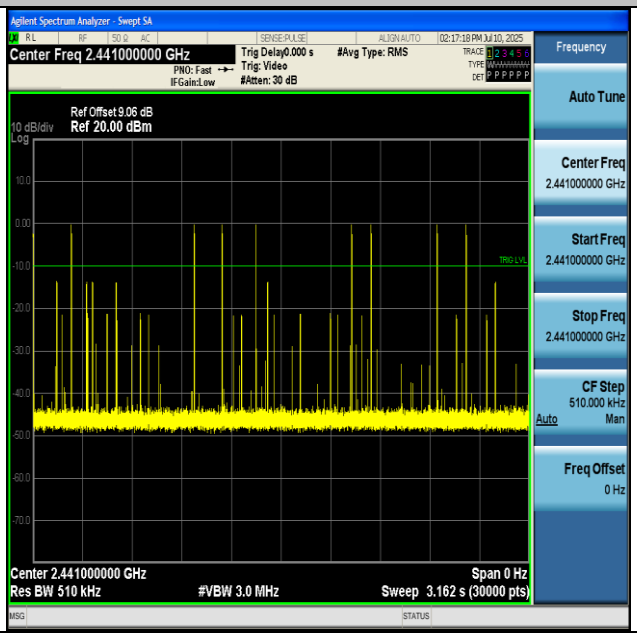


2DH5-Ant1-Hop-PASS





3DH5-Ant1-Hop-PASS



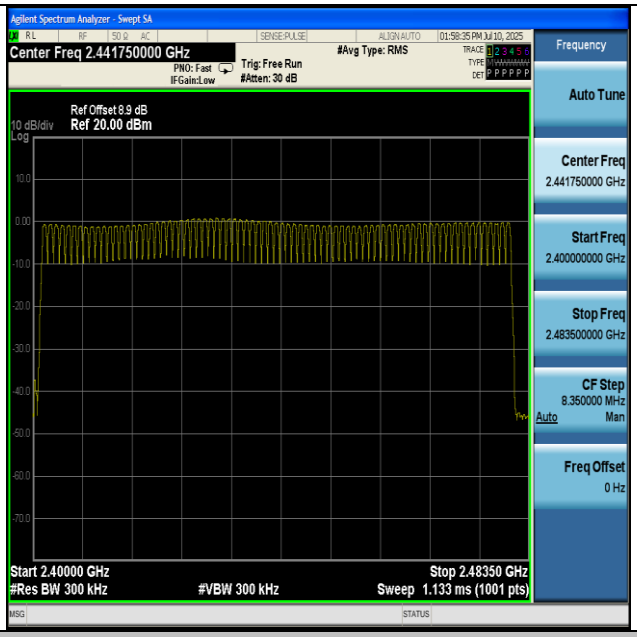
Appendix F: Number of hopping channels

Test Result

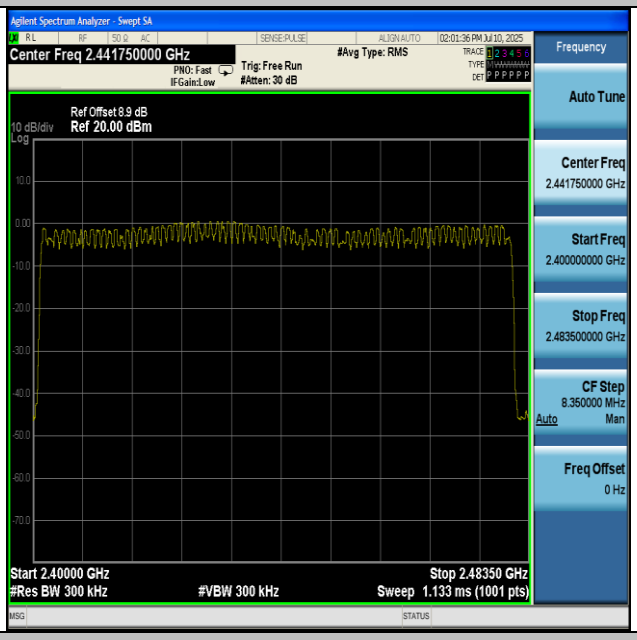
Test Mode	Antenna	Frequency [MHz]	Result [Num]	Limit [Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

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

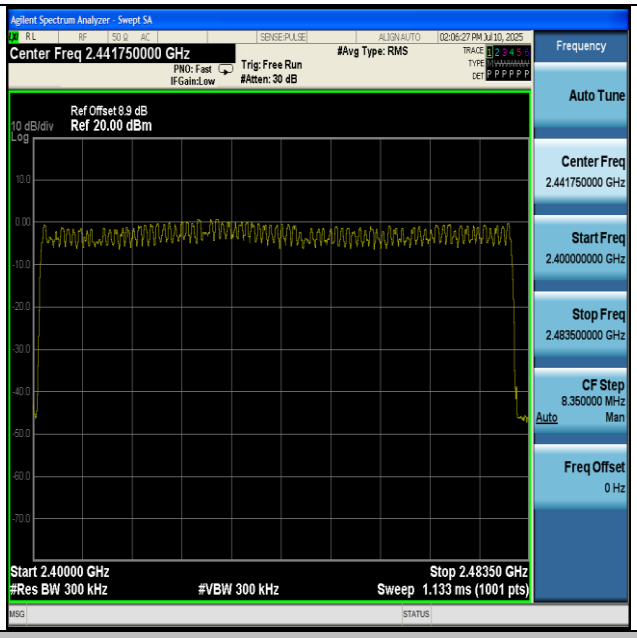
Test Graphs



DH5-Ant1-Hop-PASS



2DH5-Ant1-Hop-PASS



3DH5-Ant1-Hop-PASS

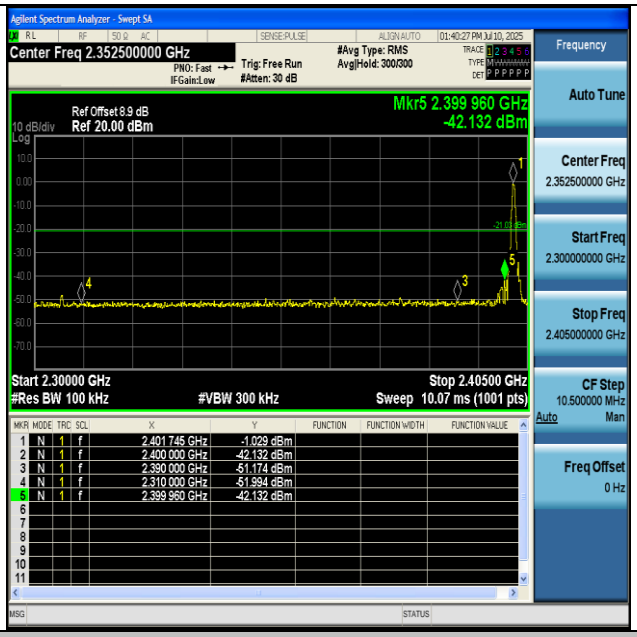
Appendix G: Band edge measurements

Test Result

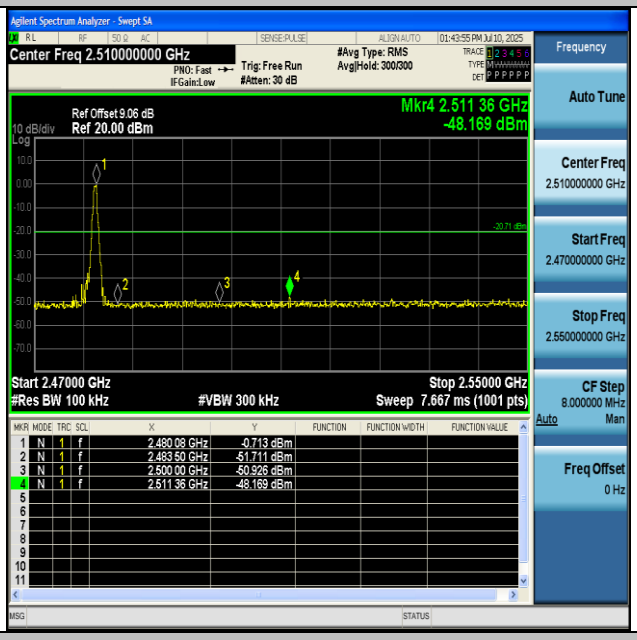
Test Mode	Antenna	Ch.Name	Frequency [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-1.03	-42.13	≤-21.03	PASS
DH5	Ant1	High	2480	-0.71	-48.17	≤-20.71	PASS
DH5	Ant1	Low	Hop_2402	-2.20	-47.72	≤-22.2	PASS
DH5	Ant1	High	Hop_2480	-0.76	-44.9	≤-20.76	PASS
2DH5	Ant1	Low	2402	-2.83	-42.37	≤-22.83	PASS
2DH5	Ant1	High	2480	-4.14	-48.72	≤-24.14	PASS
2DH5	Ant1	Low	Hop_2402	-6.56	-49.58	≤-26.56	PASS
2DH5	Ant1	High	Hop_2480	-5.44	-45.46	≤-25.44	PASS
3DH5	Ant1	Low	2402	-1.22	-42.37	≤-21.22	PASS
3DH5	Ant1	High	2480	-2.21	-48.77	≤-22.21	PASS
3DH5	Ant1	Low	Hop_2402	-3.24	-49.35	≤-23.24	PASS
3DH5	Ant1	High	Hop_2480	-0.85	-45.92	≤-20.85	PASS

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

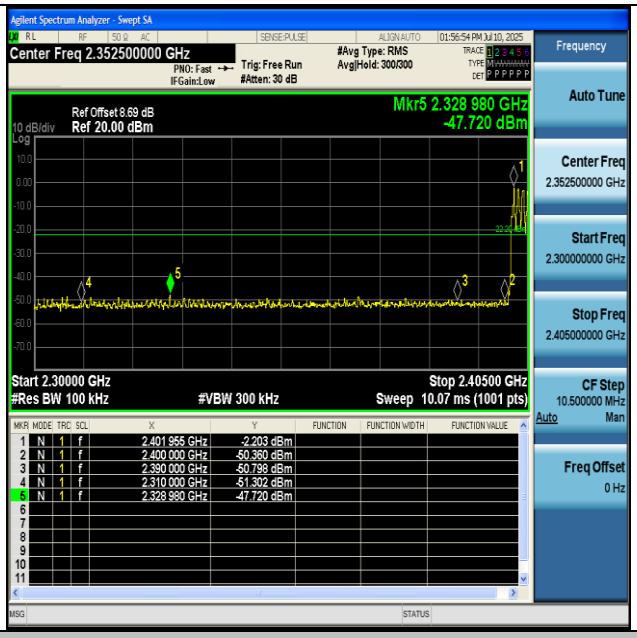
Test Graphs



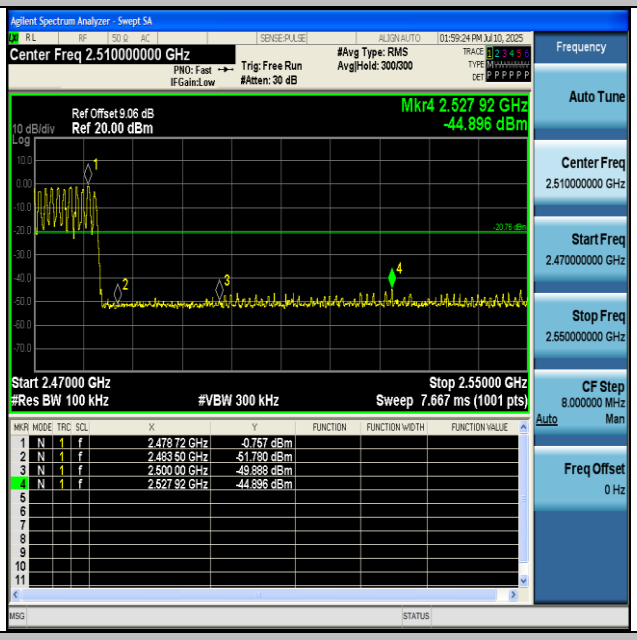
DH5-Ant1-2402-PASS



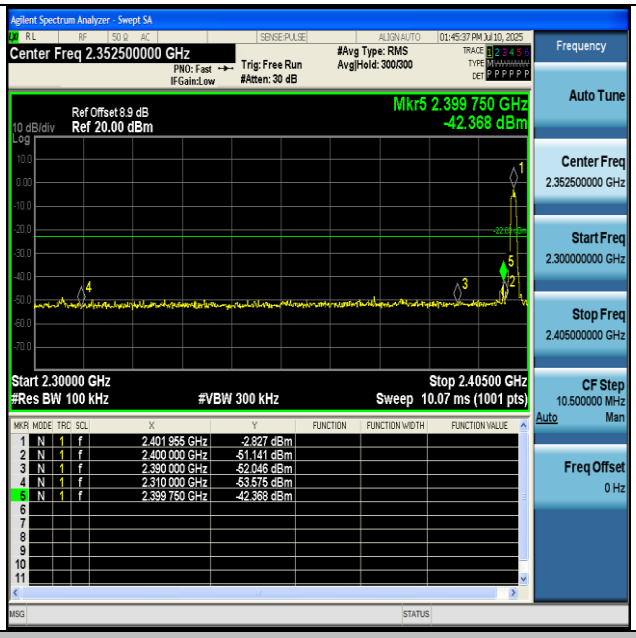
DH5-Ant1-2480-PASS



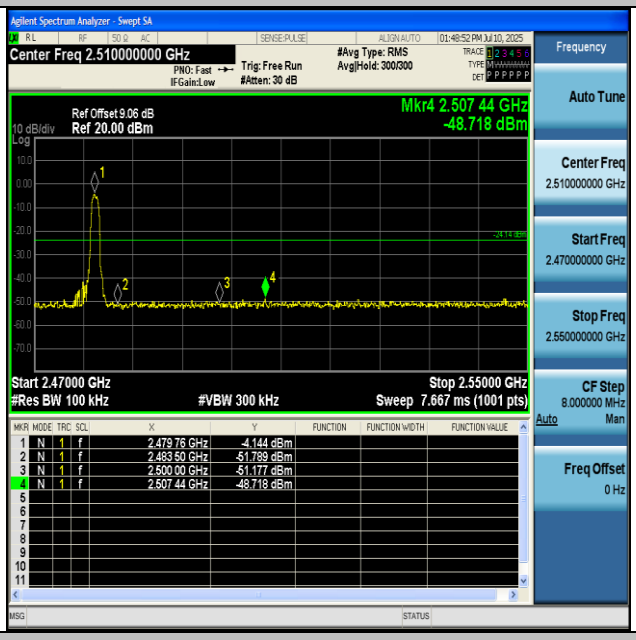
DH5-Ant1-Hop_2402-PASS



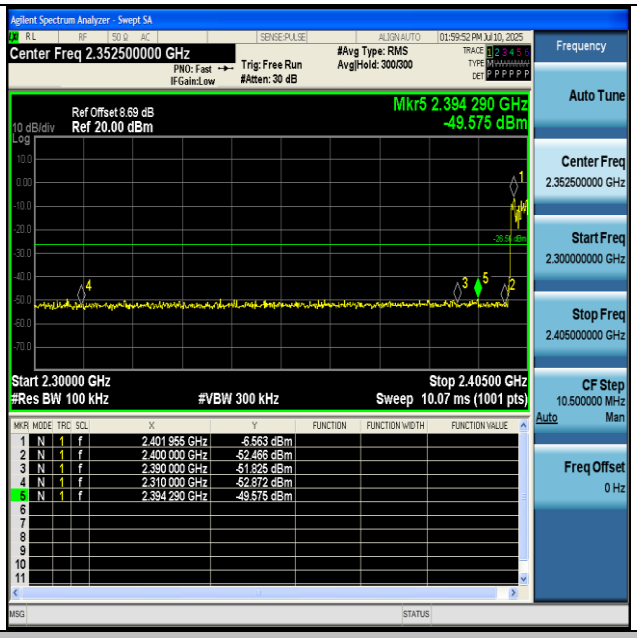
DH5-Ant1-Hop_2480-PASS



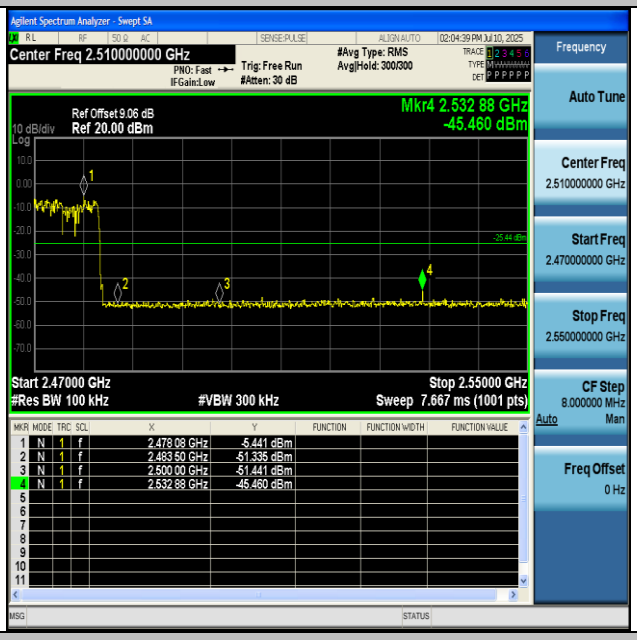
2DH5-Ant1-2402-PASS



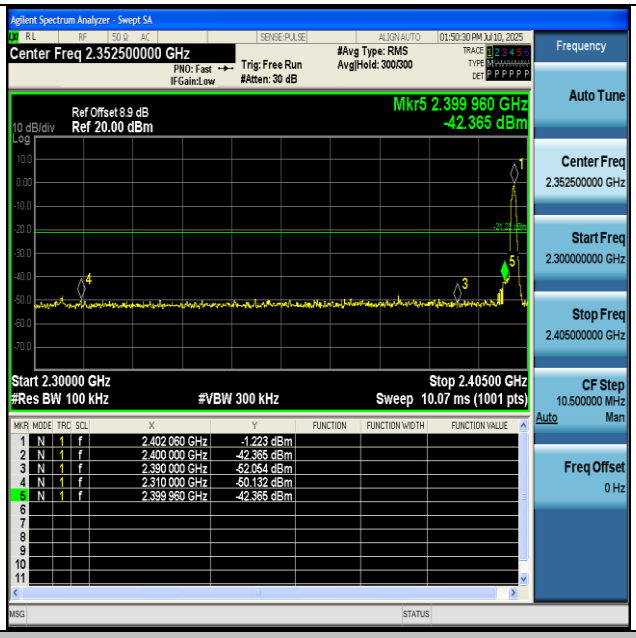
2DH5-Ant1-2480-PASS



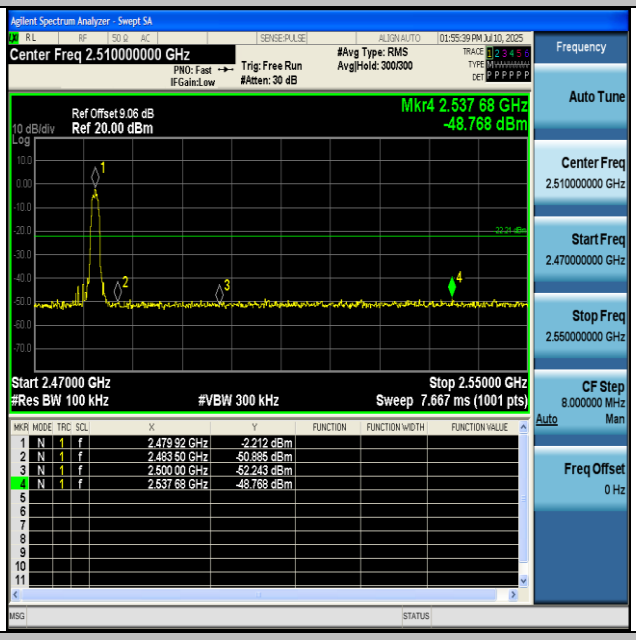
2DH5-Ant1-Hop_2402-PASS



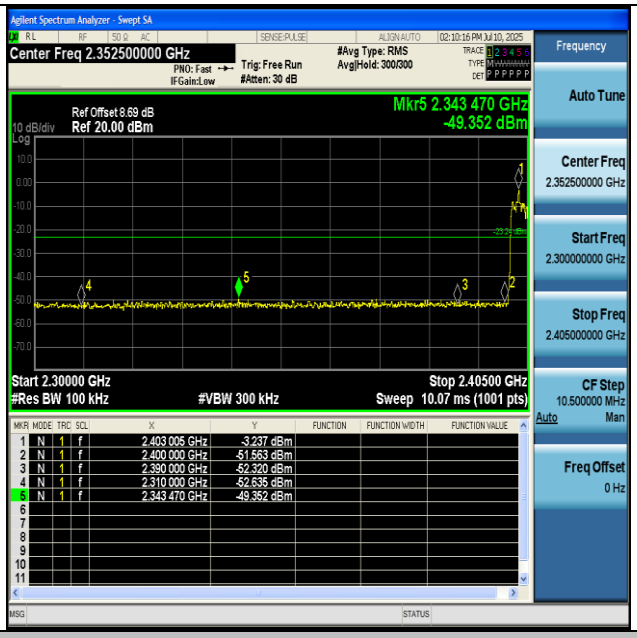
2DH5-Ant1-Hop_2480-PASS



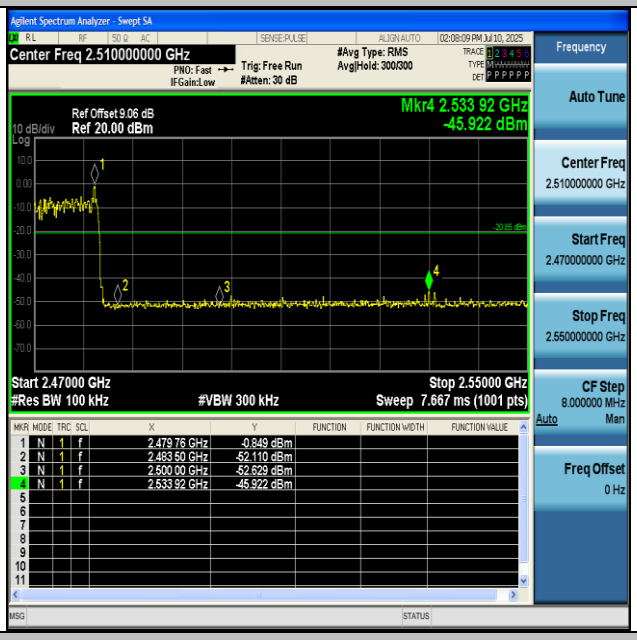
3DH5-Ant1-2402-PASS



3DH5-Ant1-2480-PASS



3DH5-Ant1-Hop_2402-PASS



3DH5-Ant1-Hop_2480-PASS

Appendix H: Conducted Spurious Emission

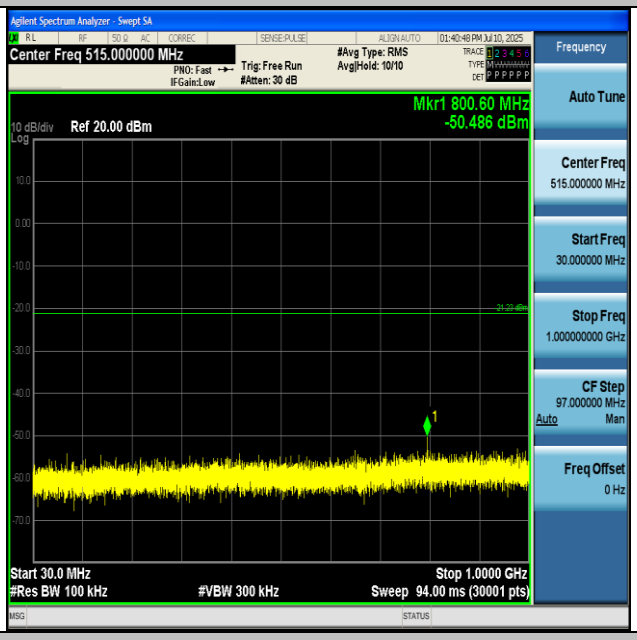
Test Result

Test Mode	Antenna	Frequency [MHz]	Freq. Range [MHz]	Ref. Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	0~Reference	-1.23	-1.23	---	PASS
DH5	Ant1	2402	30~1000	-1.23	-50.49	≤-21.23	PASS
DH5	Ant1	2402	1000~26500	-1.23	-35.47	≤-21.23	PASS
DH5	Ant1	2441	0~Reference	-1.03	-1.03	---	PASS
DH5	Ant1	2441	30~1000	-1.03	-51.11	≤-21.03	PASS
DH5	Ant1	2441	1000~26500	-1.03	-35.25	≤-21.03	PASS
DH5	Ant1	2480	0~Reference	-1.51	-1.51	---	PASS
DH5	Ant1	2480	30~1000	-1.51	-52.04	≤-21.51	PASS
DH5	Ant1	2480	1000~26500	-1.51	-35.01	≤-21.51	PASS
2DH5	Ant1	2402	0~Reference	-7.03	-7.03	---	PASS
2DH5	Ant1	2402	30~1000	-7.03	-51.49	≤-27.03	PASS
2DH5	Ant1	2402	1000~26500	-7.03	-35.12	≤-27.03	PASS
2DH5	Ant1	2441	0~Reference	-0.72	-0.72	---	PASS
2DH5	Ant1	2441	30~1000	-0.72	-52.31	≤-20.72	PASS
2DH5	Ant1	2441	1000~26500	-0.72	-35.16	≤-20.72	PASS
2DH5	Ant1	2480	0~Reference	-6.00	-6.00	---	PASS
2DH5	Ant1	2480	30~1000	-6.00	-51.74	≤-26	PASS
2DH5	Ant1	2480	1000~26500	-6.00	-34.87	≤-26	PASS
3DH5	Ant1	2402	0~Reference	-1.81	-1.81	---	PASS
3DH5	Ant1	2402	30~1000	-1.81	-52.3	≤-21.81	PASS
3DH5	Ant1	2402	1000~26500	-1.81	-34.41	≤-21.81	PASS
3DH5	Ant1	2441	0~Reference	-2.47	-2.47	---	PASS
3DH5	Ant1	2441	30~1000	-2.47	-52.88	≤-22.47	PASS
3DH5	Ant1	2441	1000~26500	-2.47	-34.5	≤-22.47	PASS
3DH5	Ant1	2480	0~Reference	-2.65	-2.65	---	PASS
3DH5	Ant1	2480	30~1000	-2.65	-52.57	≤-22.65	PASS
3DH5	Ant1	2480	1000~26500	-2.65	-33.79	≤-22.65	PASS

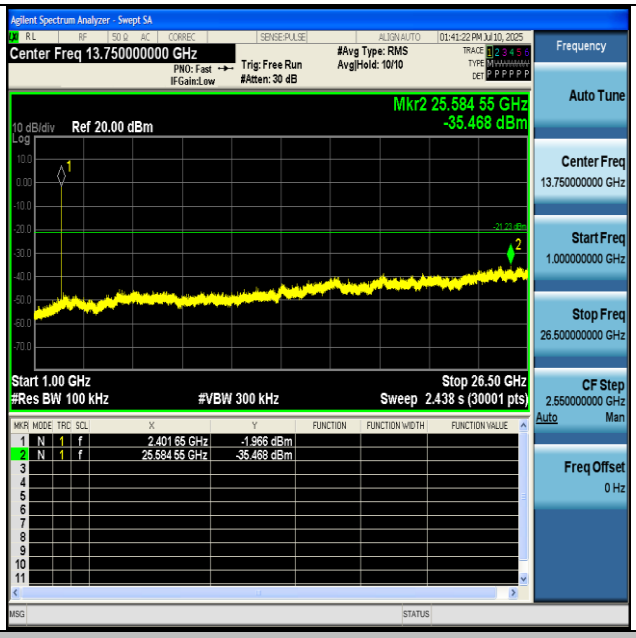
Note: offset(dB) in Reference test plots = cable loss(dB) + attenuator factor(dB); For spurious emissions plots from 30MHz to 26.5GHz, the cable loss and attenuator factors have been set in the 'Input Correction' of the Spectrum Analyzer during the test.

Test Graphs

DH5-Ant1-2402-0~Reference-PASS

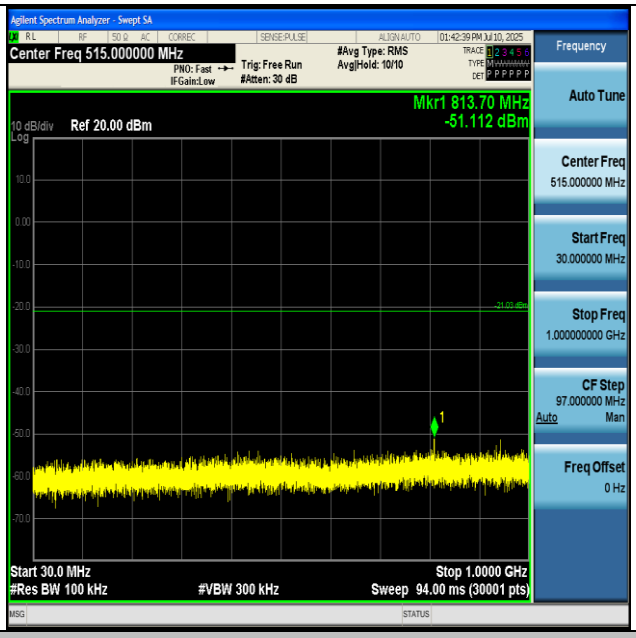


DH5-Ant1-2402-30~1000-PASS

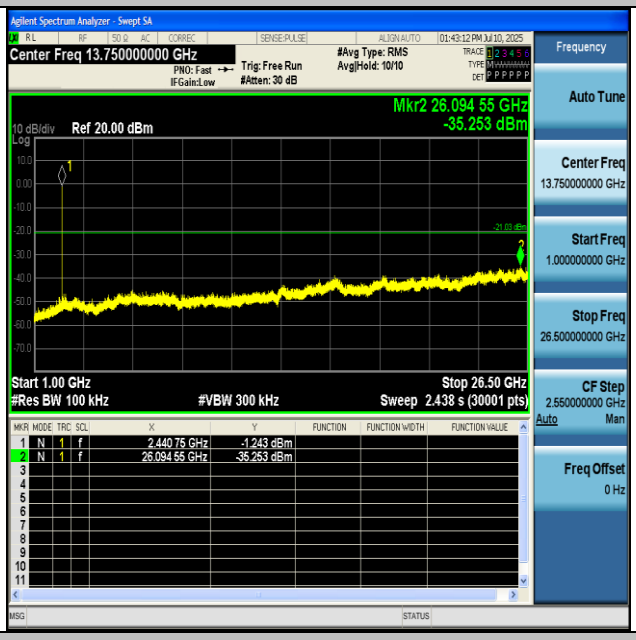


DH5-Ant1-2402-1000~26500-PASS

DH5-Ant1-2441-0~Reference-PASS

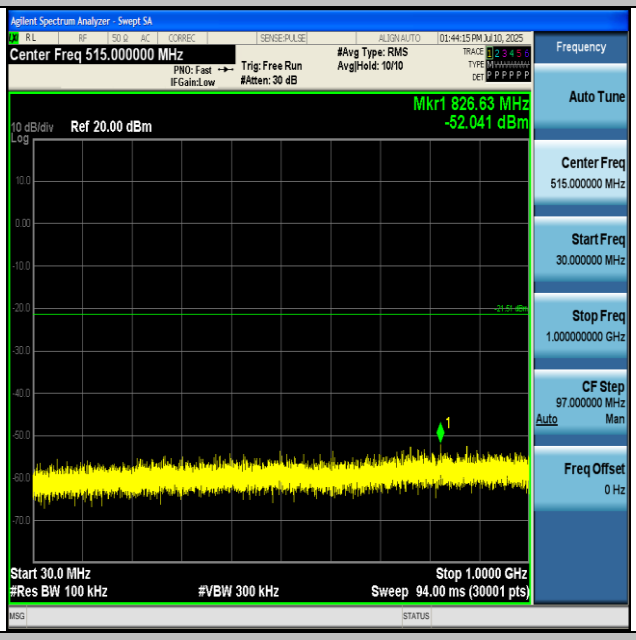


DH5-Ant1-2441-30~1000-PASS

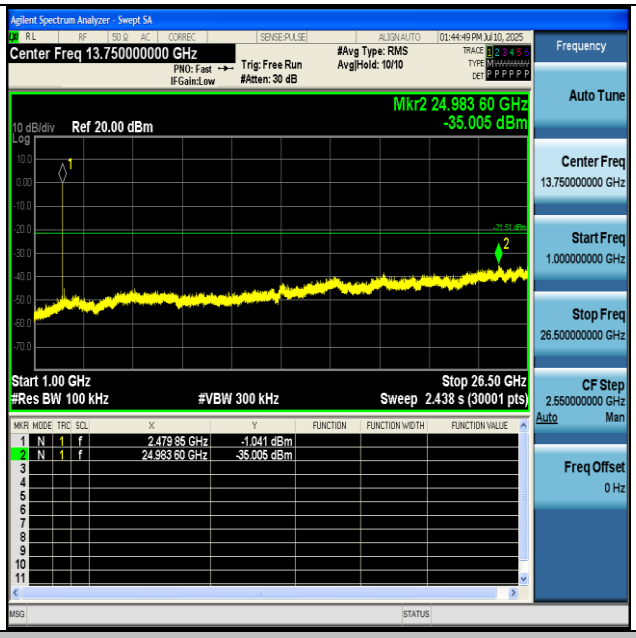


DH5-Ant1-2441-1000~26500-PASS

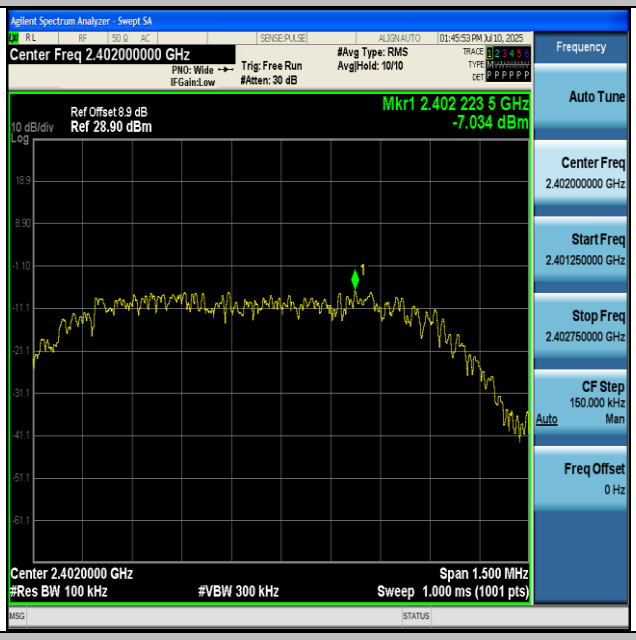
DH5-Ant1-2480-0~Reference-PASS



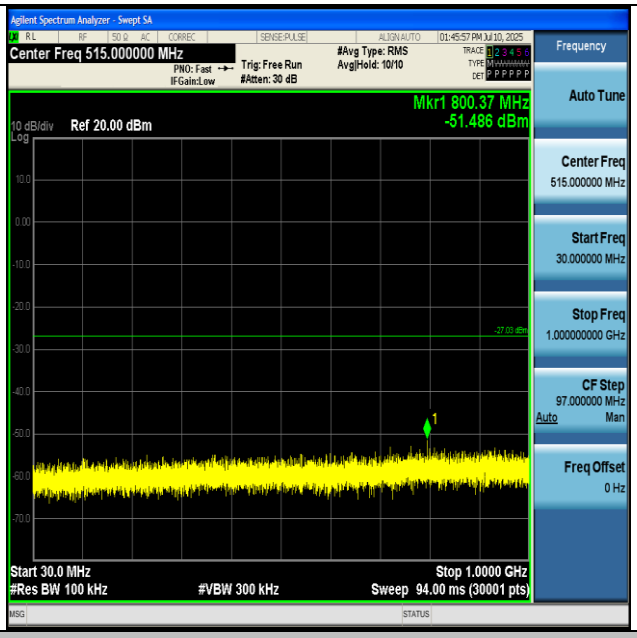
DH5-Ant1-2480-30~1000-PASS



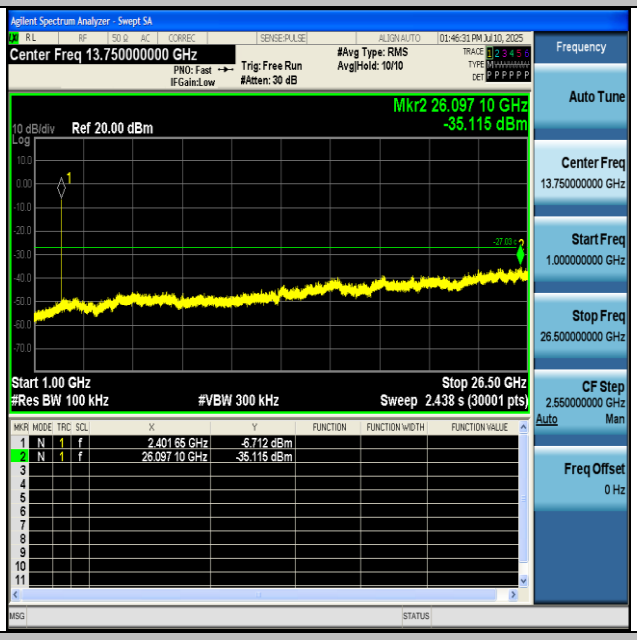
DH5-Ant1-2480-1000~26500-PASS



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

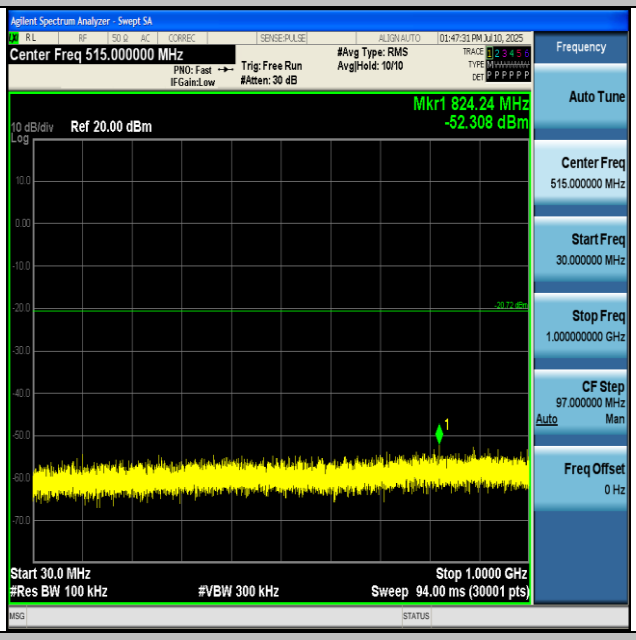


2DH5-Ant1-2402-30~1000-PASS

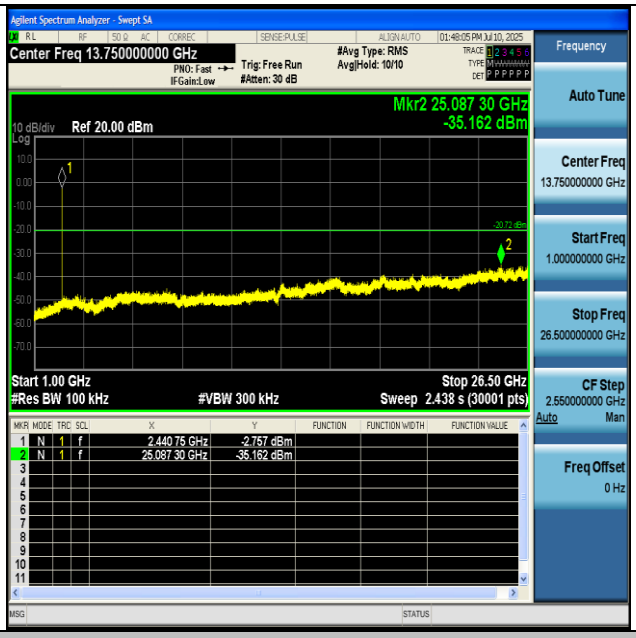


2DH5-Ant1-2402-1000~26500-PASS

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

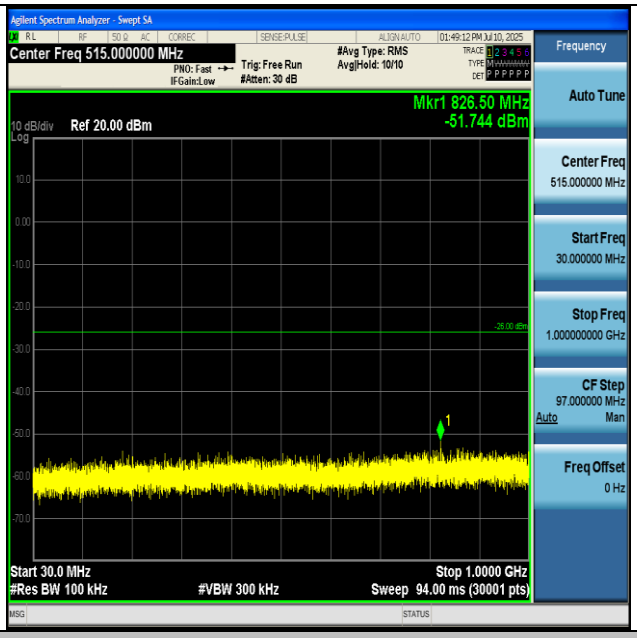


2DH5-Ant1-2441-30~1000-PASS

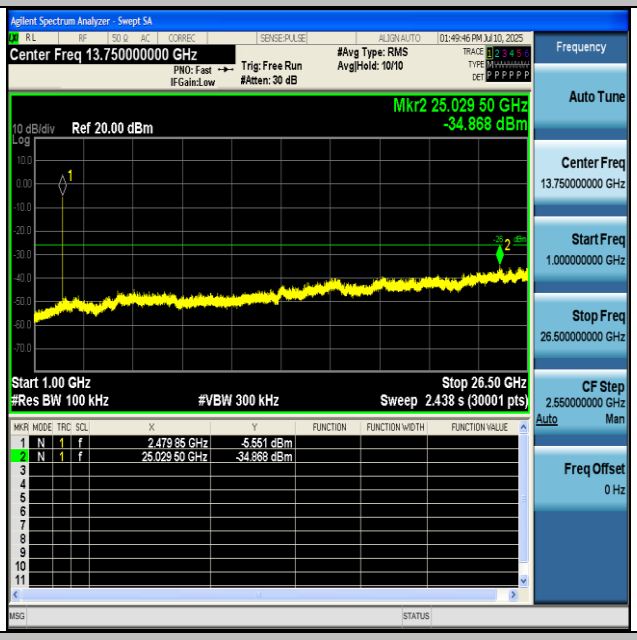


2DH5-Ant1-2441-1000~26500-PASS

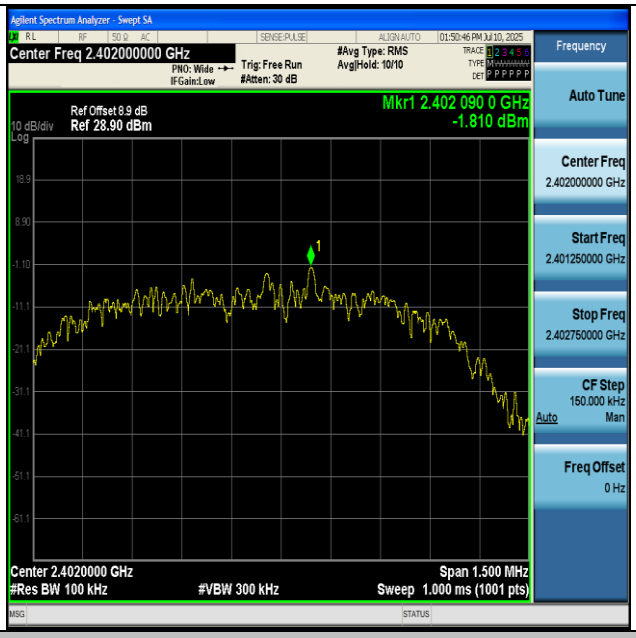
2DH5-Ant1-2480-0~Reference-PASS



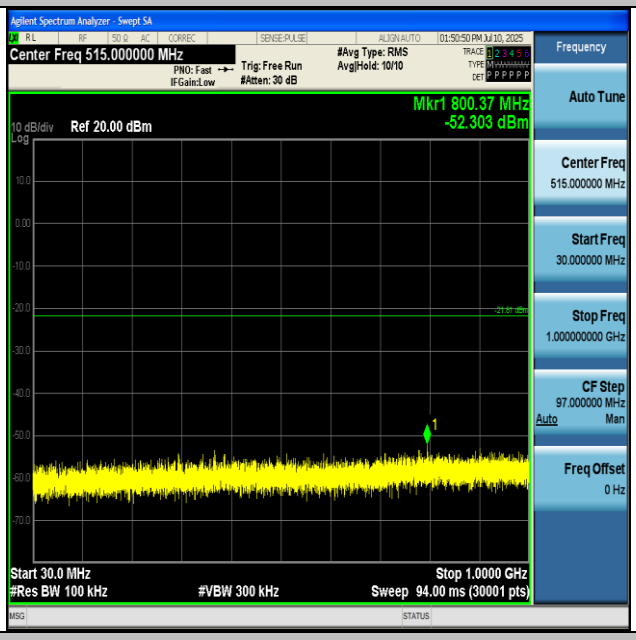
2DH5-Ant1-2480-30~1000-PASS



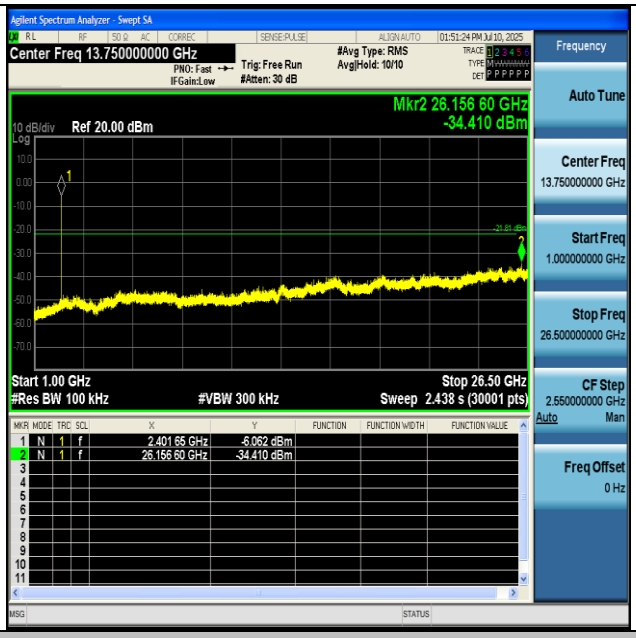
2DH5-Ant1-2480-1000~26500-PASS



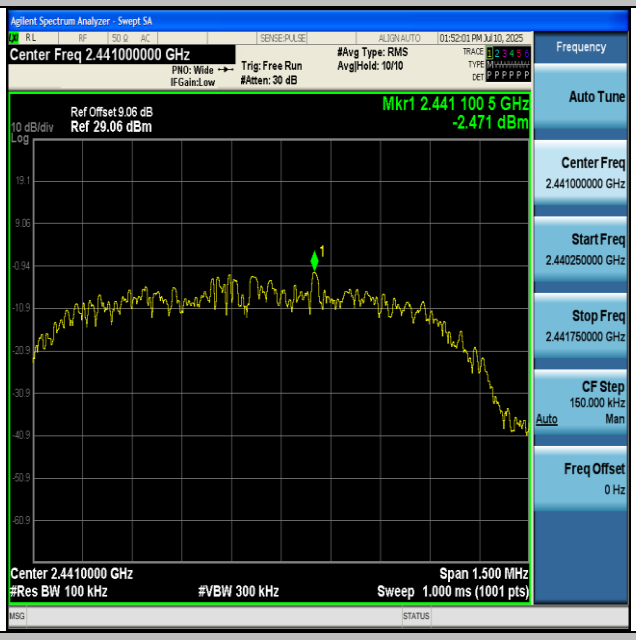
3DH5-Ant1-2402-0~Reference-PASS



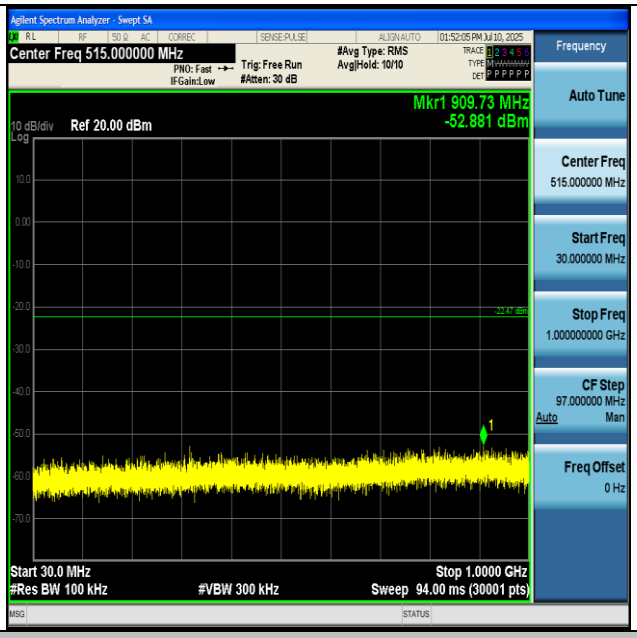
3DH5-Ant1-2402-30~1000-PASS



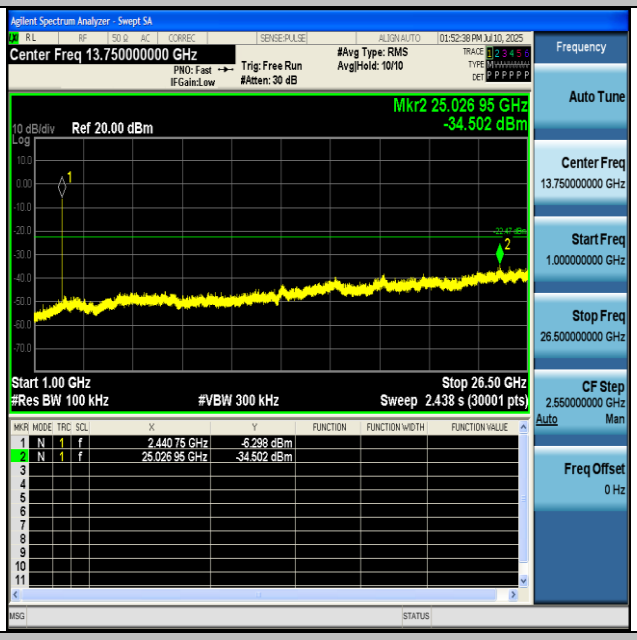
3DH5-Ant1-2402-1000~26500-PASS



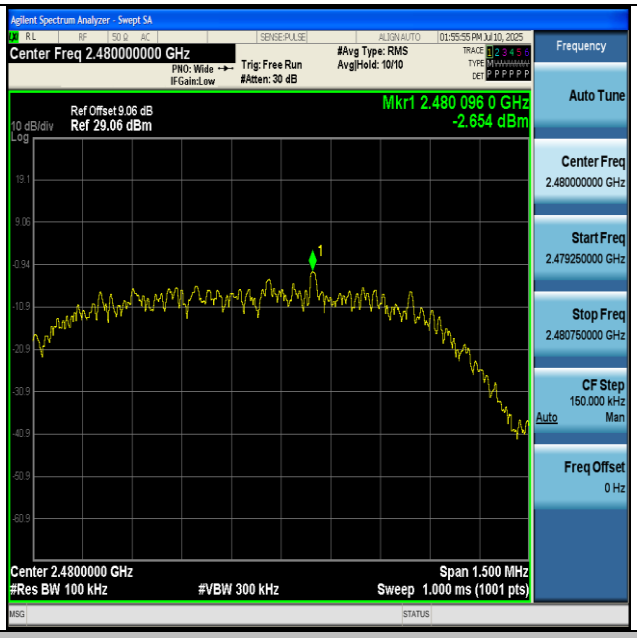
3DH5-Ant1-2441-0~Reference-PASS



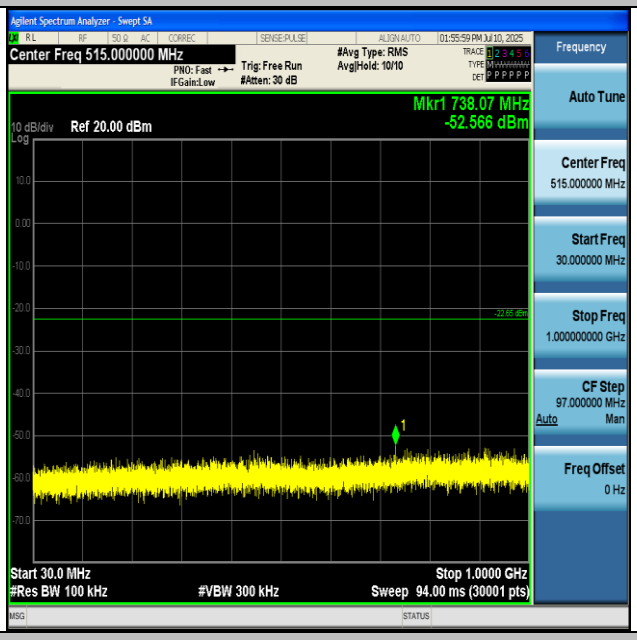
3DH5-Ant1-2441-30~1000-PASS



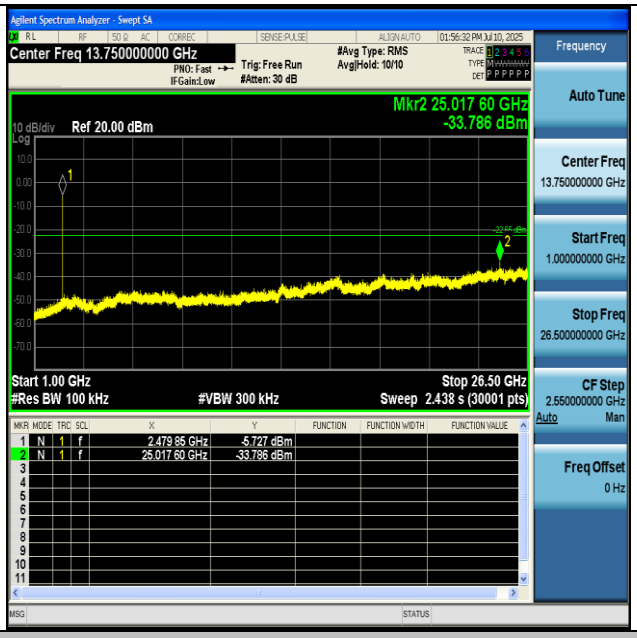
3DH5-Ant1-2441-1000~26500-PASS



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



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



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

Appendix I: Duty Cycle

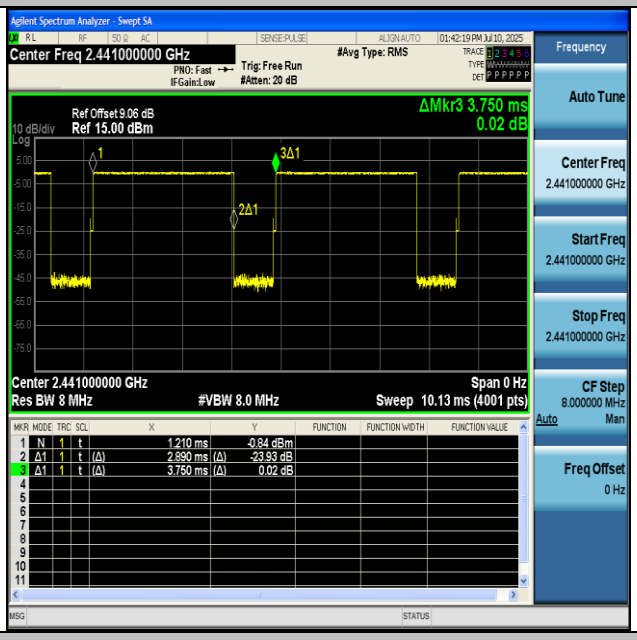
Test Result

Test Mode	Antenna	Frequency [MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor [dB]
DH5	Ant1	2402	2.90	3.76	77.13	1.13
DH5	Ant1	2441	2.89	3.75	77.07	1.13
DH5	Ant1	2480	2.89	3.75	77.07	1.13
2DH5	Ant1	2402	2.75	3.62	75.97	1.19
2DH5	Ant1	2441	2.88	3.75	76.80	1.15
2DH5	Ant1	2480	2.75	3.61	76.18	1.18
3DH5	Ant1	2402	2.75	3.62	75.97	1.19
3DH5	Ant1	2441	2.75	3.61	76.18	1.18
3DH5	Ant1	2480	2.75	3.61	76.18	1.18

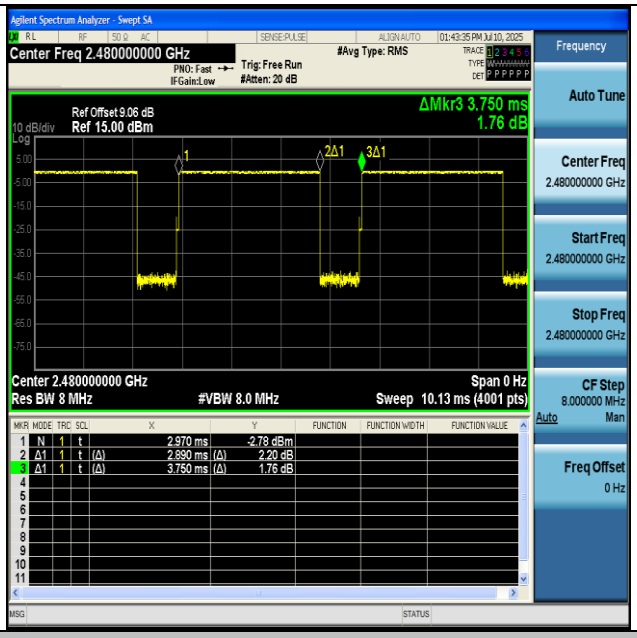
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)

Test Graphs

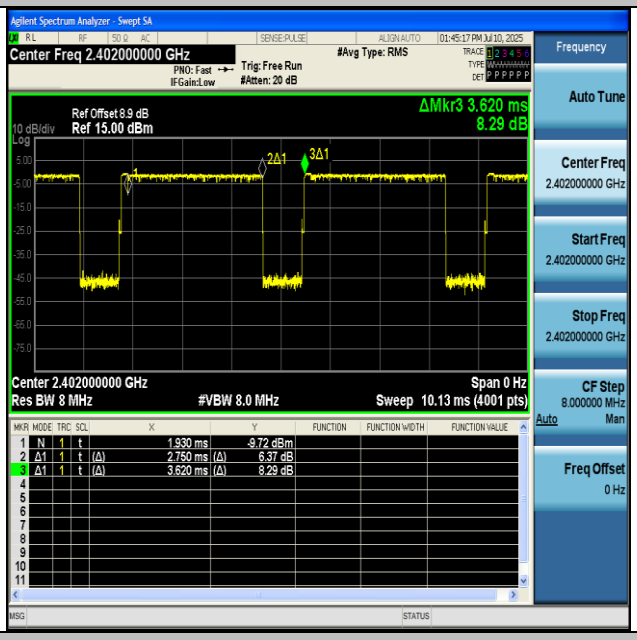
NTNV-DH5-Ant1-2402



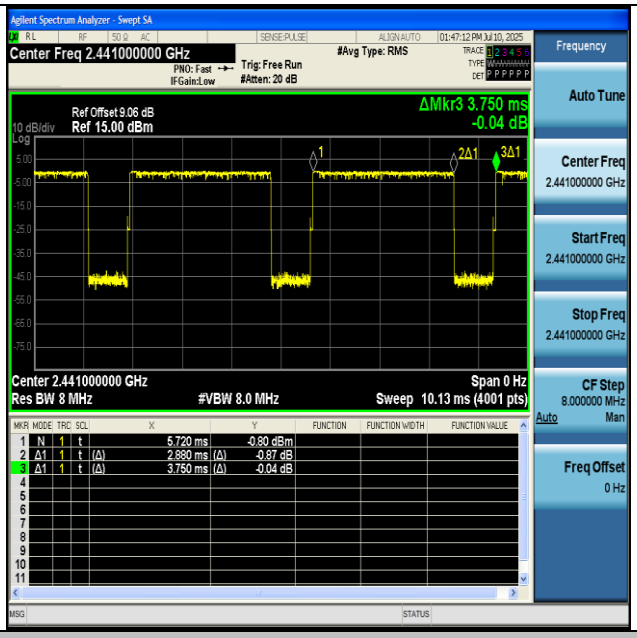
NTNV-DH5-Ant1-2441



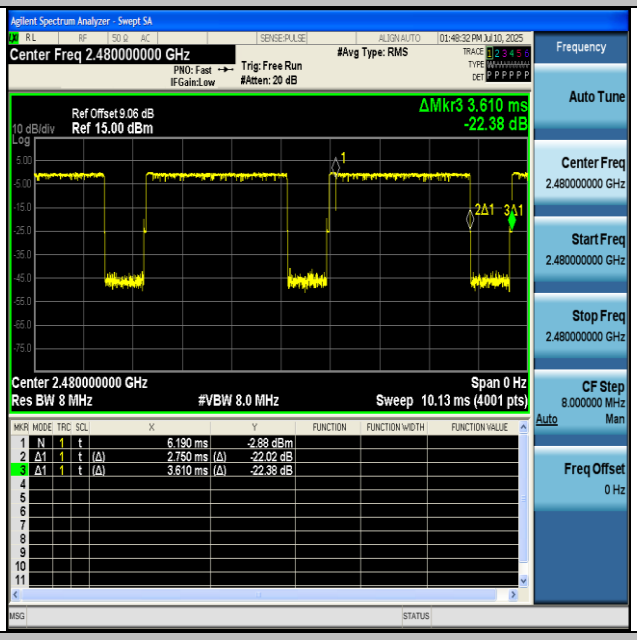
NTNV-DH5-Ant1-2480



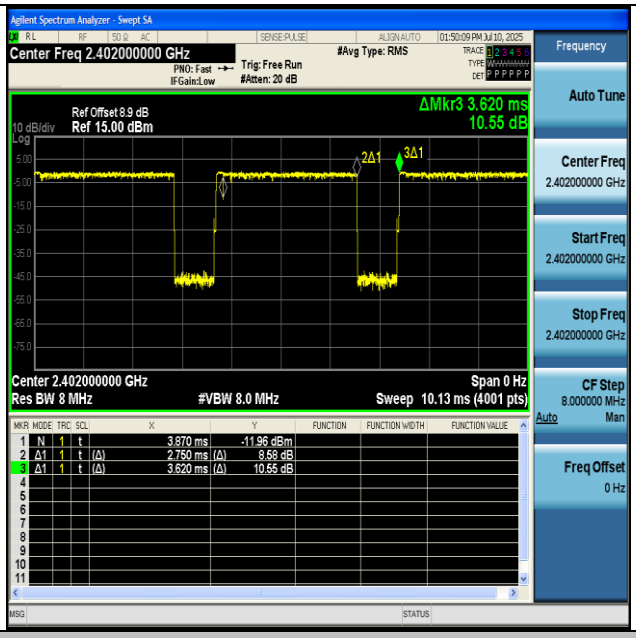
NTNV-2DH5-Ant1-2402



NTNV-2DH5-Ant1-2441

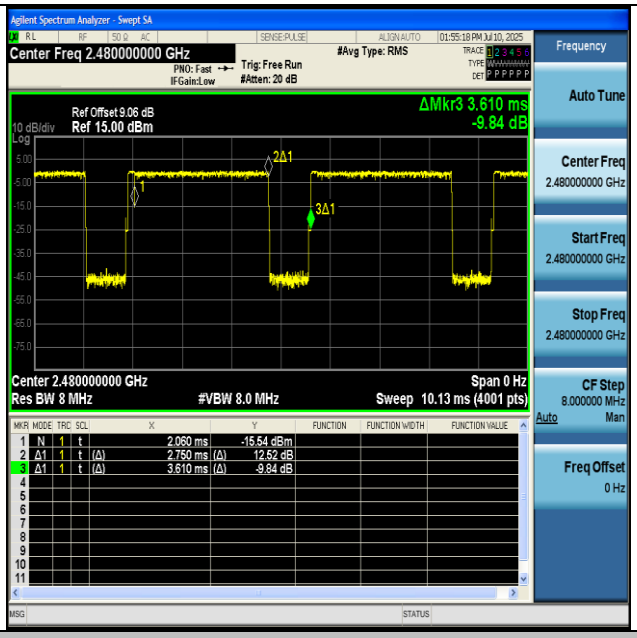


NTNV-2DH5-Ant1-2480



NTNV-3DH5-Ant1-2402

NTNV-3DH5-Ant1-2441



NTNV-3DH5-Ant1-2480