# Appendix Test Data for WLAN(2.4G) (Conducted Measurement)

**Product Name: projector**

**Trade Mark: umiio**

**Test Model: A007**

**FCC ID: 2BAHIA007**

# Environmental Conditions

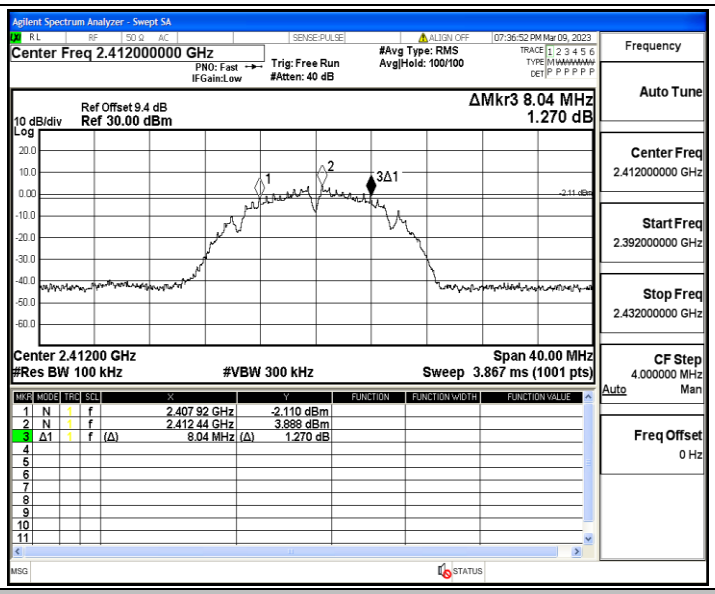
| | |
|---|---|
| Temperature: | 25.5°C |
| Relative Humidity: | 55% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | Anna Hu |
| Supervised by: | Hugo Chen |
| NOTE | N/A |

## Appendix A: DTS Bandwidth

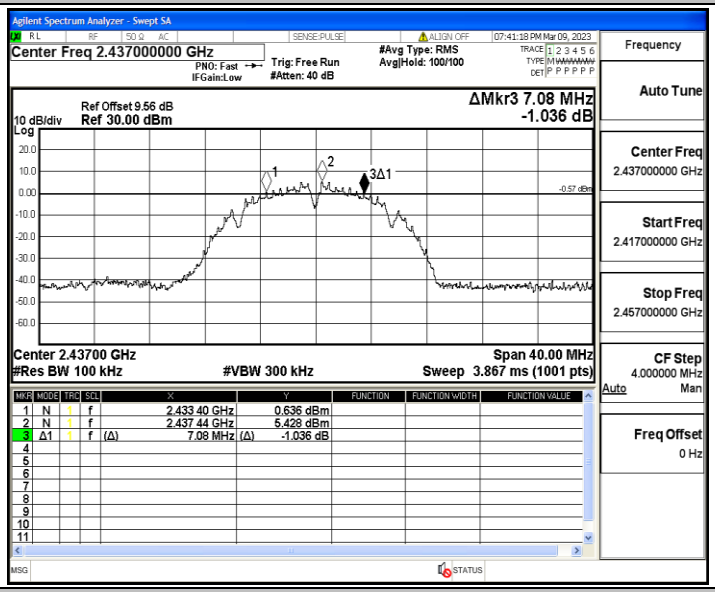
### Test Result

| TestMode | Antenna | Channel | DTS BW [MHz] | FL[MHz] | FH[MHz] | Limit[MHz] | Verdict |
|---|---|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 8.040 | 2407.920 | 2415.960 | 0.5 | PASS |
| | | 2437 | 7.080 | 2433.400 | 2440.480 | 0.5 | PASS |
| | | 2462 | 8.560 | 2457.920 | 2466.480 | 0.5 | PASS |
| 11G | Ant1 | 2412 | 15.400 | 2404.440 | 2419.840 | 0.5 | PASS |
| | | 2437 | 15.280 | 2429.200 | 2444.480 | 0.5 | PASS |
| | | 2462 | 16.000 | 2454.080 | 2470.080 | 0.5 | PASS |
| 11N20SISO | Ant1 | 2412 | 15.000 | 2404.480 | 2419.480 | 0.5 | PASS |
| | | 2437 | 14.480 | 2429.960 | 2444.440 | 0.5 | PASS |
| | | 2462 | 15.080 | 2454.400 | 2469.480 | 0.5 | PASS |
| 11N40SISO | Ant1 | 2422 | 30.080 | 2408.160 | 2438.240 | 0.5 | PASS |
| | | 2437 | 35.120 | 2419.400 | 2454.520 | 0.5 | PASS |
| | | 2452 | 35.120 | 2434.400 | 2469.520 | 0.5 | PASS |

## Test Graphs




11B_Ant1_2412

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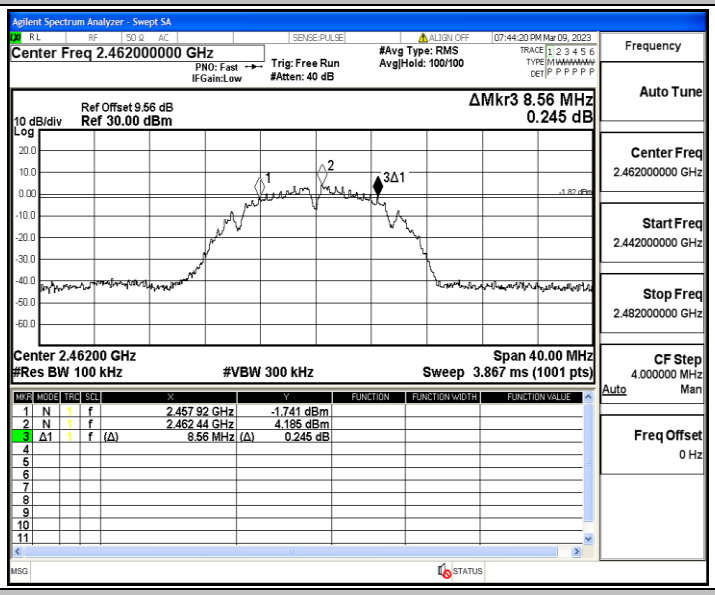


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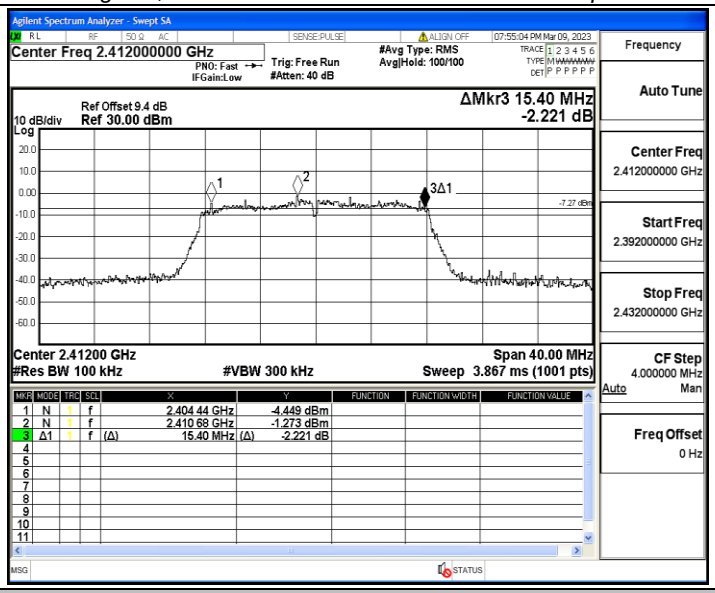


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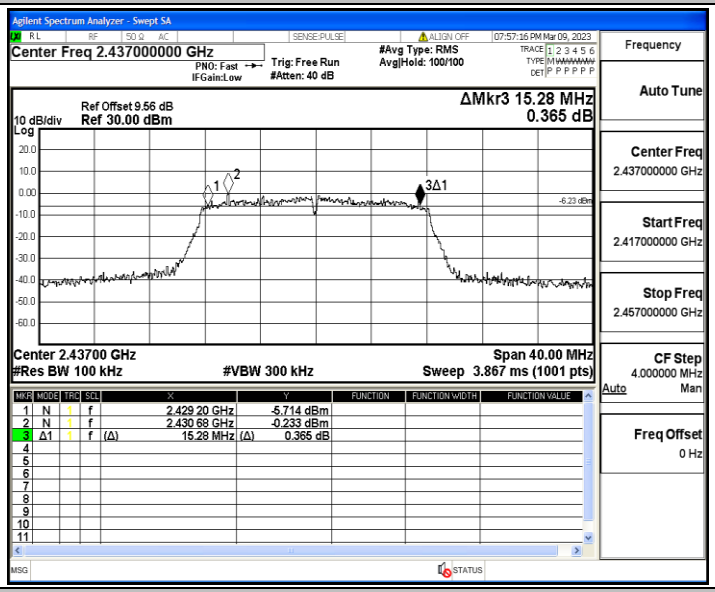
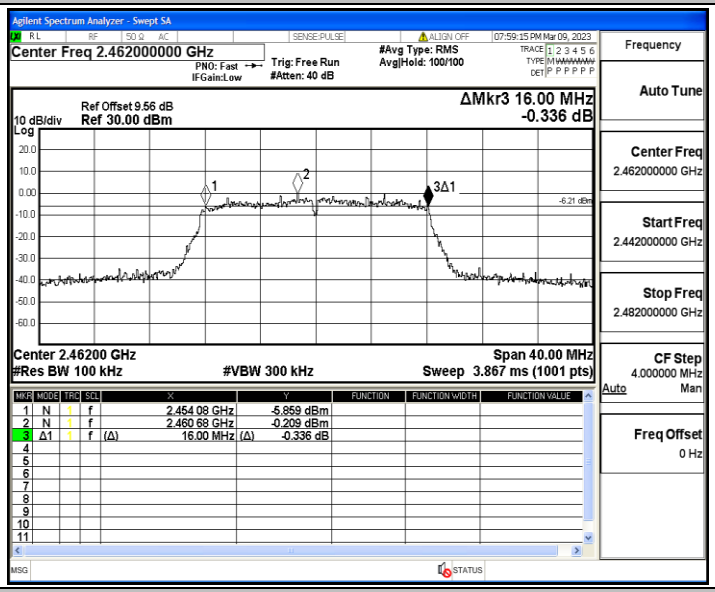



11G_Ant1_2437

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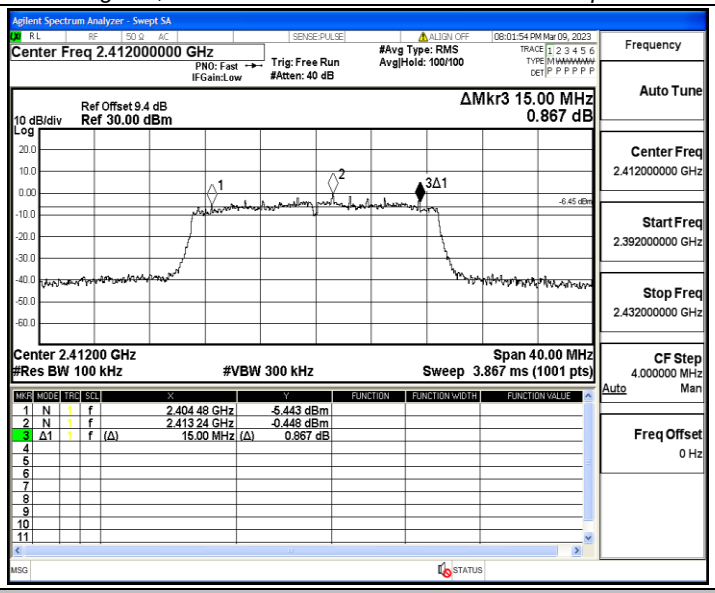


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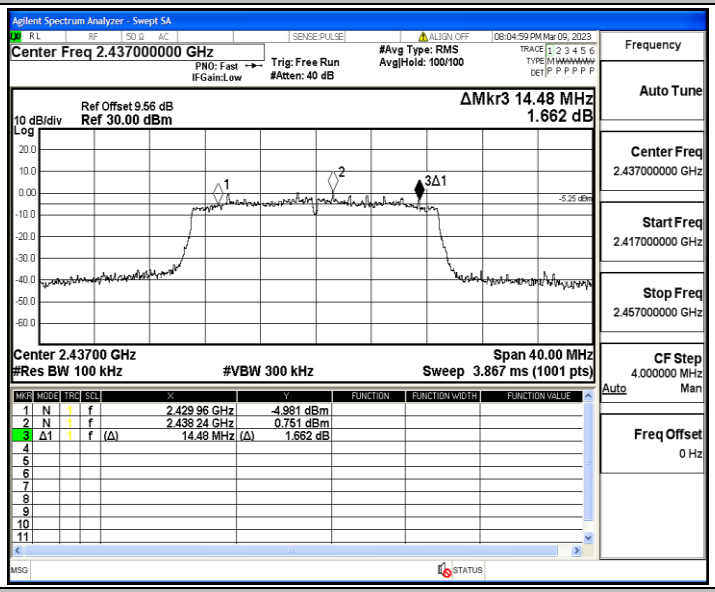


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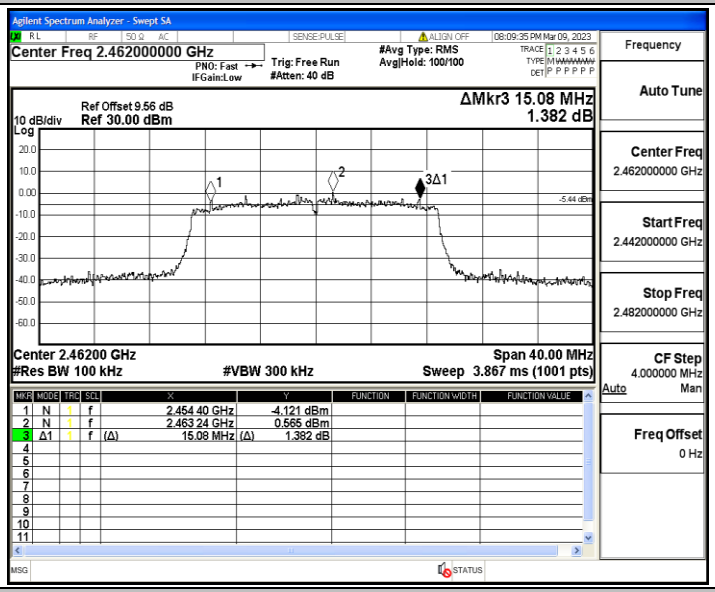
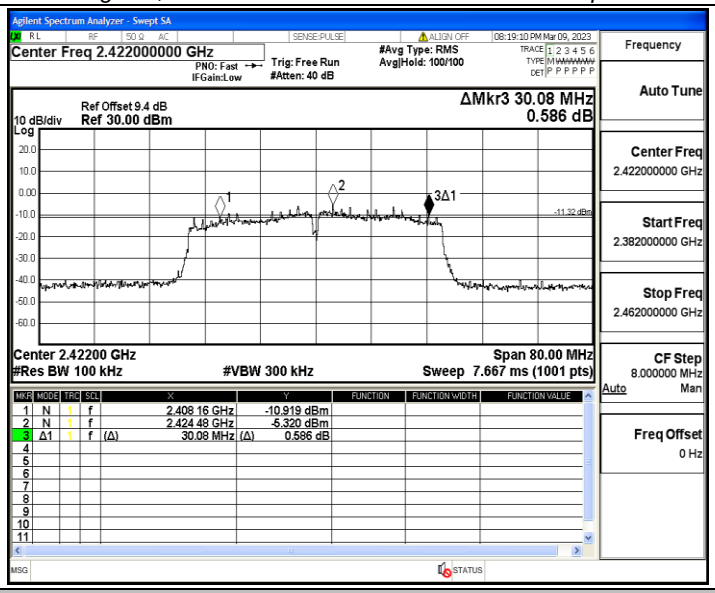
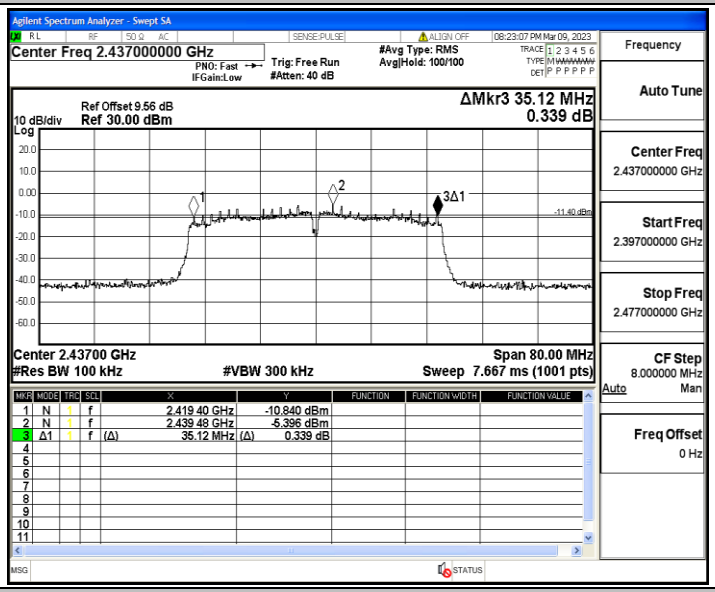



11N20SISO_Ant1_2462




11N40SISO_Ant1_2422

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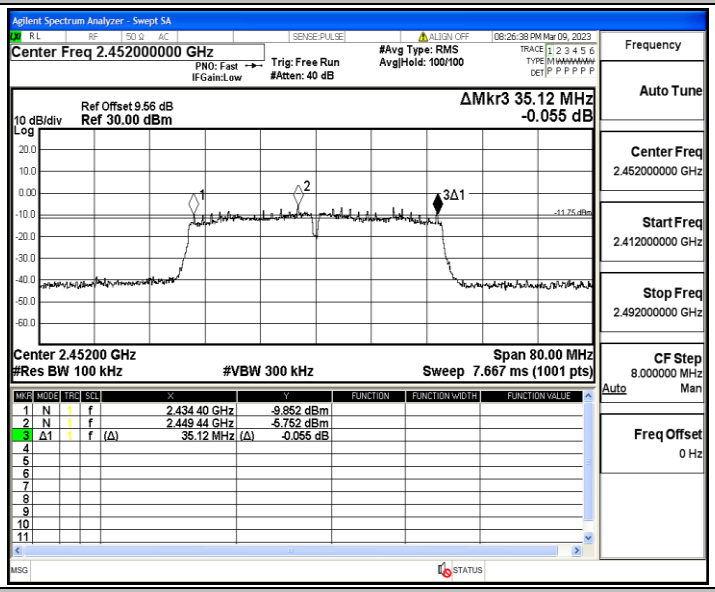


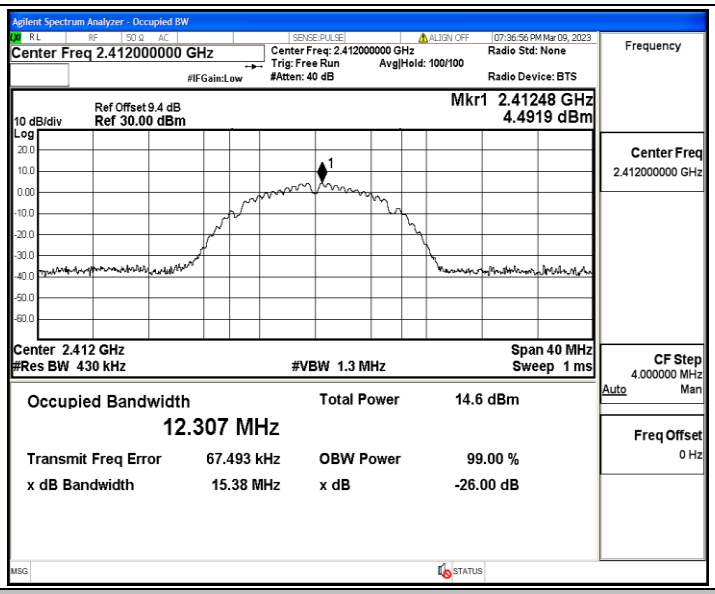

11N40SISO_Ant1_2452

# Appendix B: Occupied Channel Bandwidth

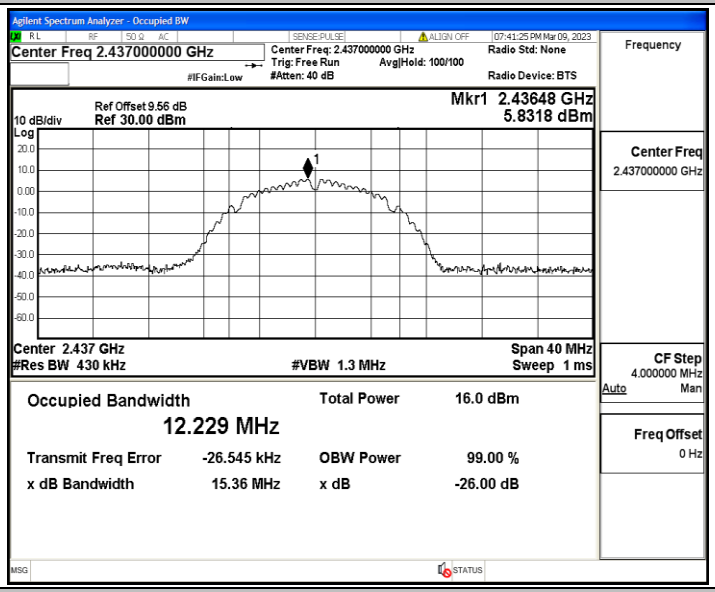
## Test Result

| TestMode | Antenna | Channel | OCB [MHz] | FL[MHz] | FH[MHz] | Limit[MHz] | Verdict |
|---|---|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 12.307 | 2405.9140 | 2418.2210 | --- | --- |
| | | 2437 | 12.229 | 2430.8590 | 2443.0880 | --- | --- |
| | | 2462 | 12.275 | 2455.8997 | 2468.1747 | --- | --- |
| 11G | Ant1 | 2412 | 16.608 | 2403.7273 | 2420.3353 | --- | --- |
| | | 2437 | 16.653 | 2428.6276 | 2445.2806 | --- | --- |
| | | 2462 | 16.656 | 2453.6998 | 2470.3558 | --- | --- |
| 11N20SISO | Ant1 | 2412 | 17.665 | 2403.1747 | 2420.8397 | --- | --- |
| | | 2437 | 17.604 | 2428.1513 | 2445.7553 | --- | --- |
| | | 2462 | 17.644 | 2453.1635 | 2470.8075 | --- | --- |
| 11N40SISO | Ant1 | 2422 | 35.983 | 2404.1496 | 2440.1326 | --- | --- |
| | | 2437 | 35.989 | 2419.0490 | 2455.0380 | --- | --- |
| | | 2452 | 36.163 | 2433.9597 | 2470.1227 | --- | --- |

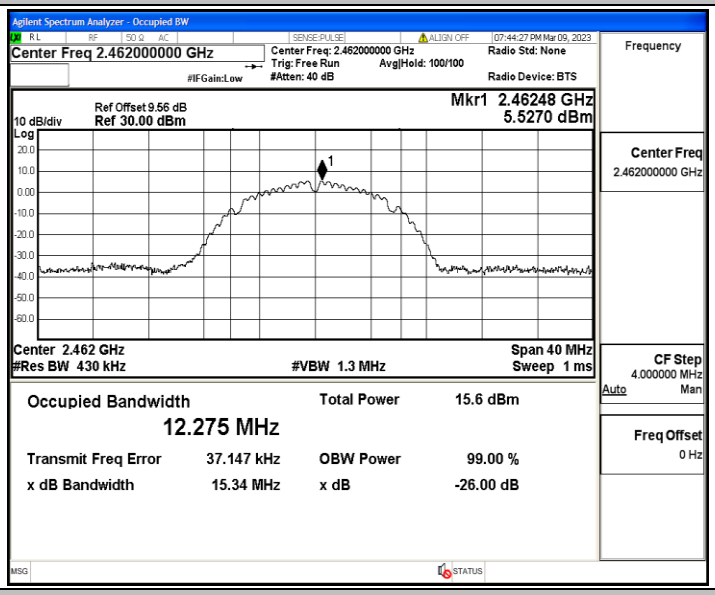
## Test Graphs



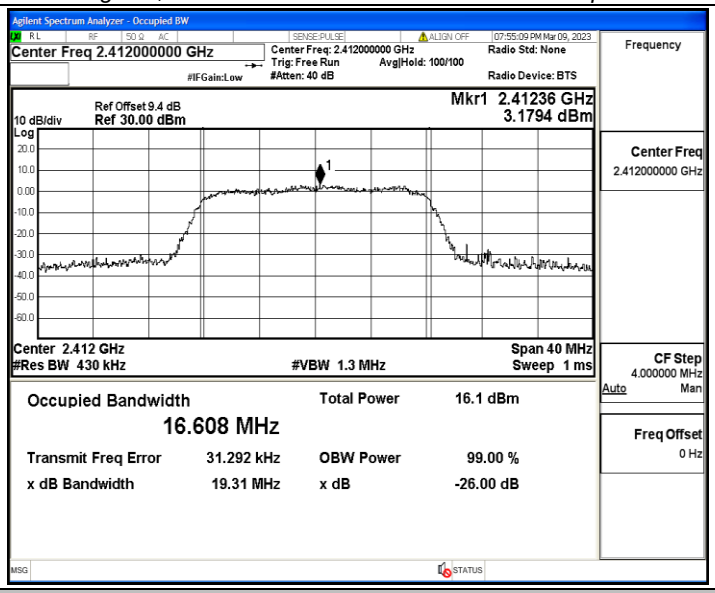

11B_Ant1_2412



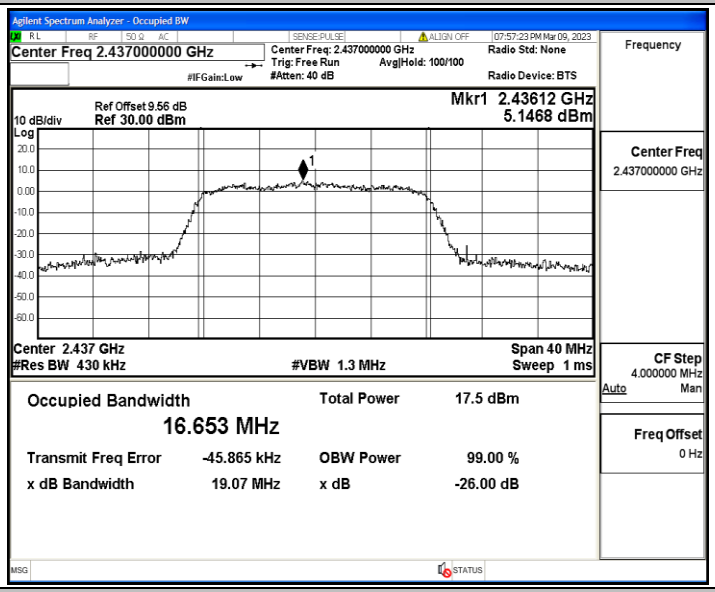

11B_Ant1_2437



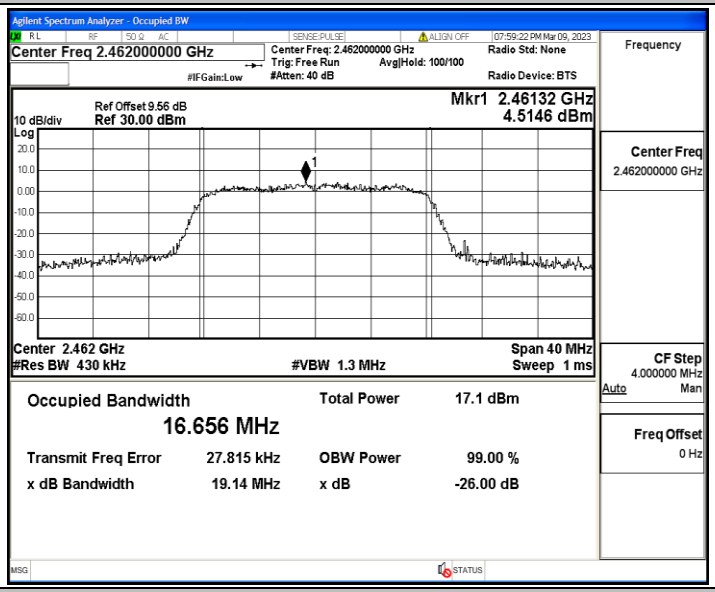

11B_Ant1_2462



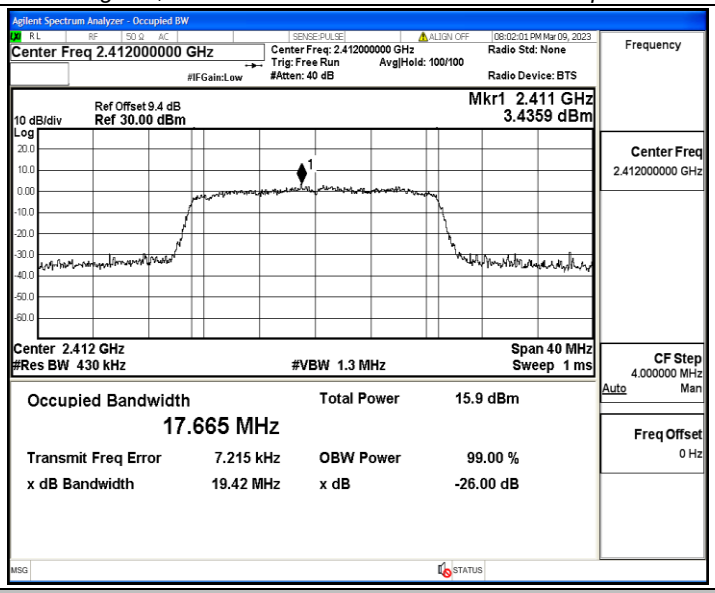

11G_Ant1_2412



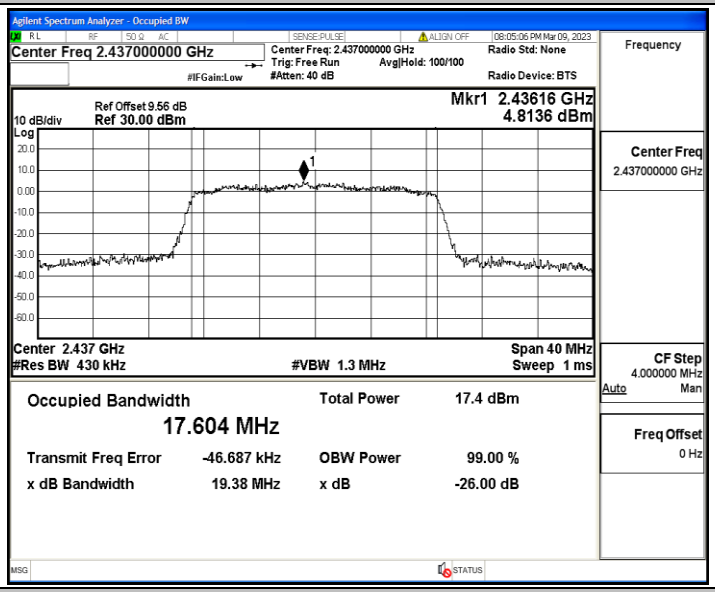

11G_Ant1_2437



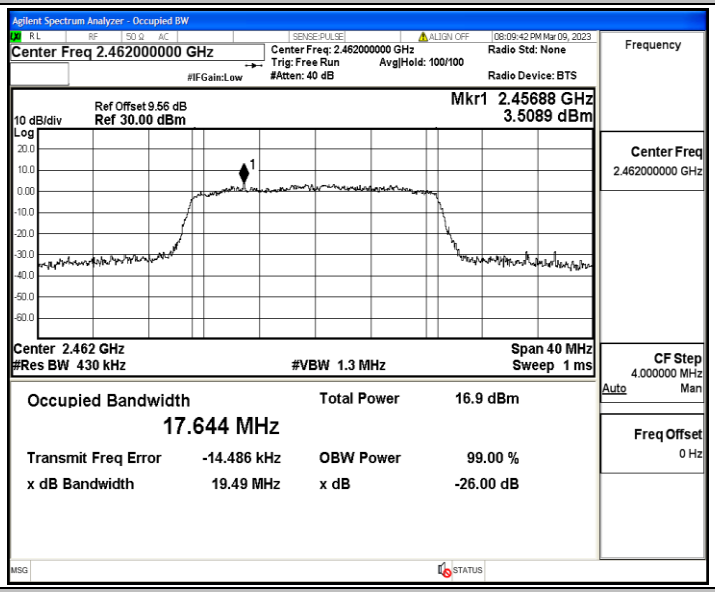

11G_Ant1_2462



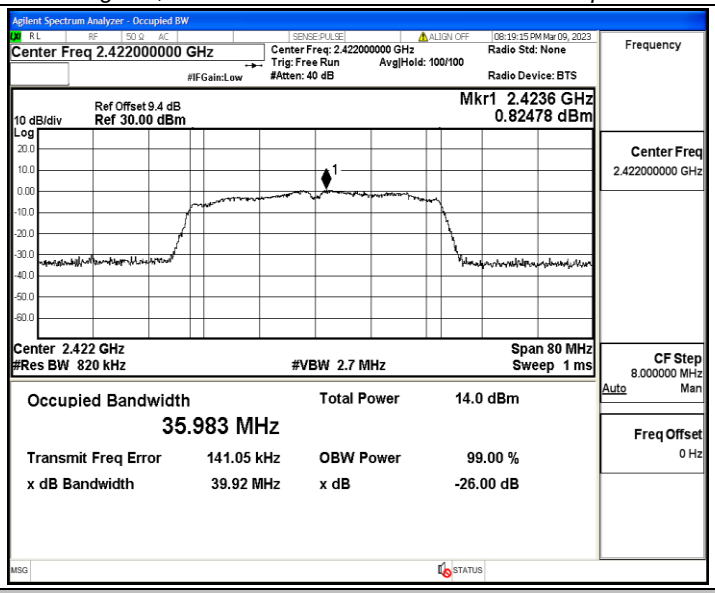

11N20SISO_Ant1_2412



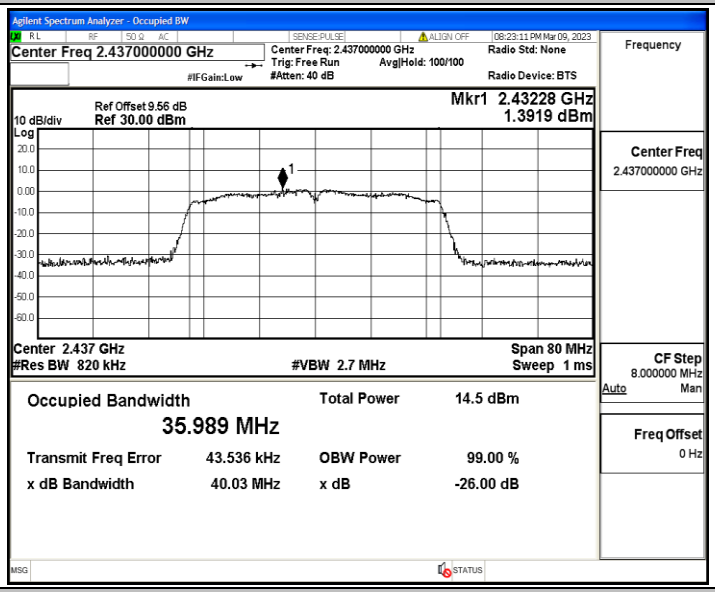

11N20SISO_Ant1_2437



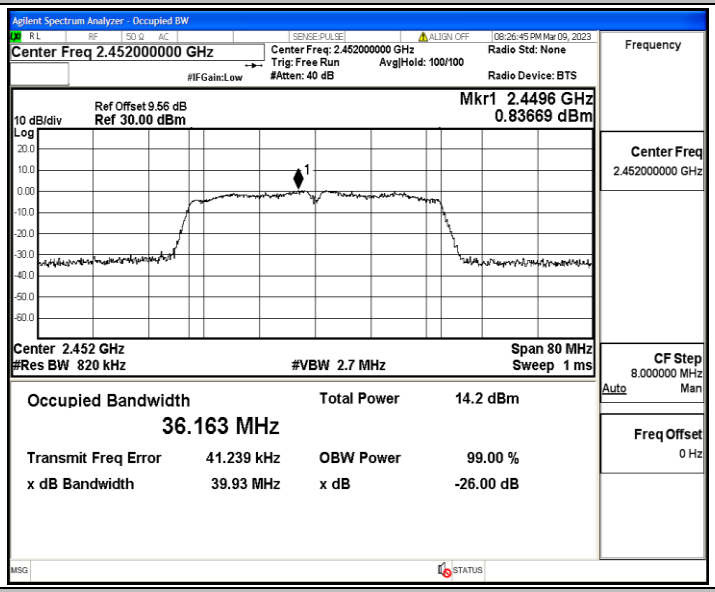

11N20SISO_Ant1_2462




11N40SISO_Ant1_2422




11N40SISO_Ant1_2437




11N40SISO_Ant1_2452

# Appendix C: Maximum conducted output power

## Test Result

| TestMode | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 11.46 | ≤30.00 | PASS |
| | | 2437 | 13.14 | ≤30.00 | PASS |
| | | 2462 | 12.62 | ≤30.00 | PASS |
| 11G | Ant1 | 2412 | 9.99 | ≤30.00 | PASS |
| | | 2437 | 11.38 | ≤30.00 | PASS |
| | | 2462 | 10.97 | ≤30.00 | PASS |
| 11N20SISO | Ant1 | 2412 | 9.89 | ≤30.00 | PASS |
| | | 2437 | 11.32 | ≤30.00 | PASS |
| | | 2462 | 10.82 | ≤30.00 | PASS |
| 11N40SISO | Ant1 | 2422 | 7.14 | ≤30.00 | PASS |
| | | 2437 | 7.50 | ≤30.00 | PASS |
| | | 2452 | 7.28 | ≤30.00 | PASS |

Note：The Duty Cycle Factor is compensated in the test result.

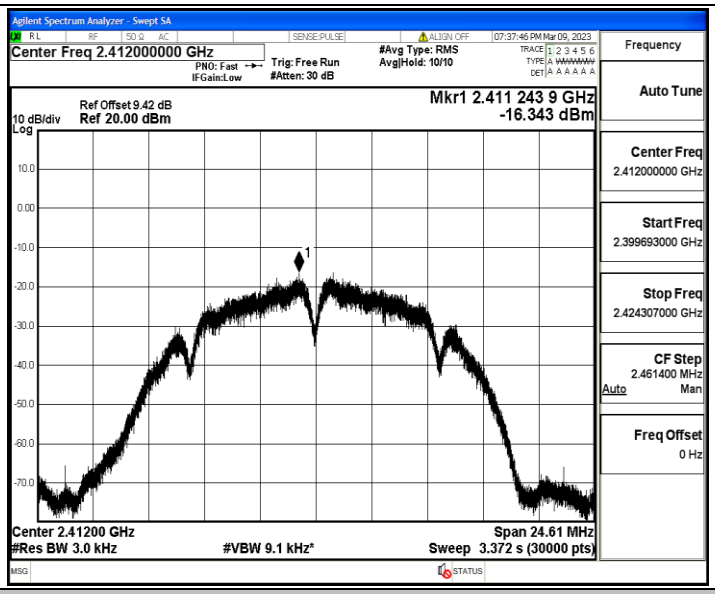
# Appendix D: Maximum power spectral density

## Test Result

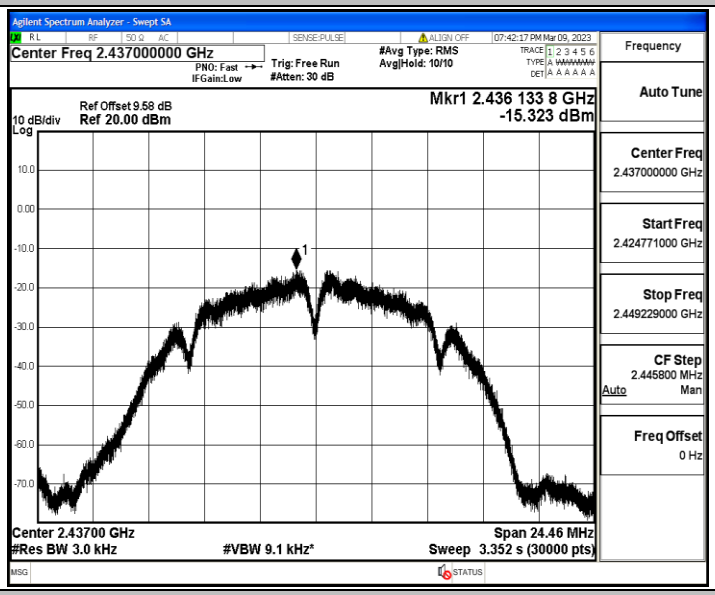
| TestMode | Antenna | Channel | Result[dBm/3-100kHz] | Limit[dBm/3kHz] | Verdict |
|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | -16.34 | ≤8.00 | PASS |
| | | 2437 | -15.32 | ≤8.00 | PASS |
| | | 2462 | -15.37 | ≤8.00 | PASS |
| 11G | Ant1 | 2412 | -21.36 | ≤8.00 | PASS |
| | | 2437 | -18.87 | ≤8.00 | PASS |
| | | 2462 | -19.83 | ≤8.00 | PASS |
| 11N20SISO | Ant1 | 2412 | -21.48 | ≤8.00 | PASS |
| | | 2437 | -19.25 | ≤8.00 | PASS |
| | | 2462 | -19.32 | ≤8.00 | PASS |
| 11N40SISO | Ant1 | 2422 | -25.98 | ≤8.00 | PASS |
| | | 2437 | -26.64 | ≤8.00 | PASS |
| | | 2452 | -26.63 | ≤8.00 | PASS |

Note：The Duty Cycle Factor is compensated in the test result.

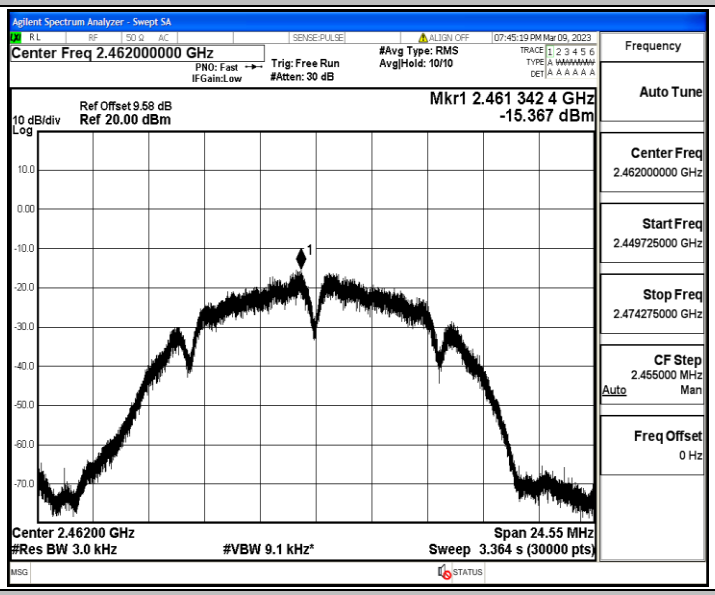
## Test Graphs



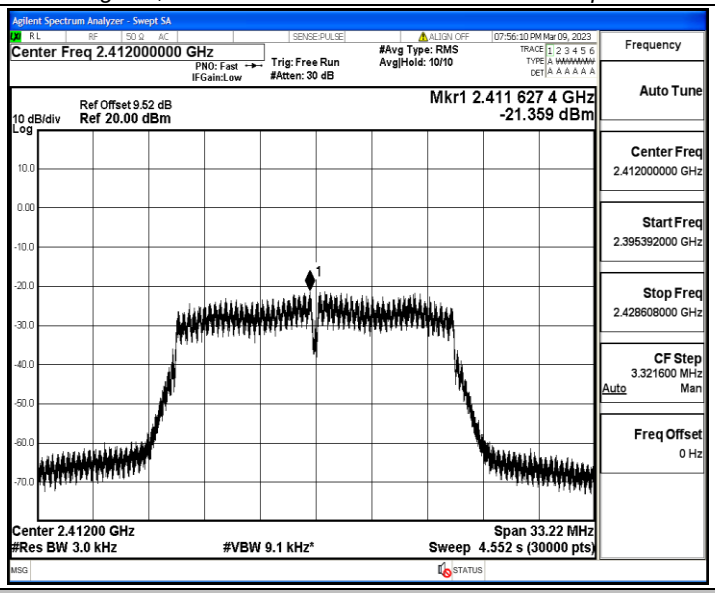

11B_Ant1_2412



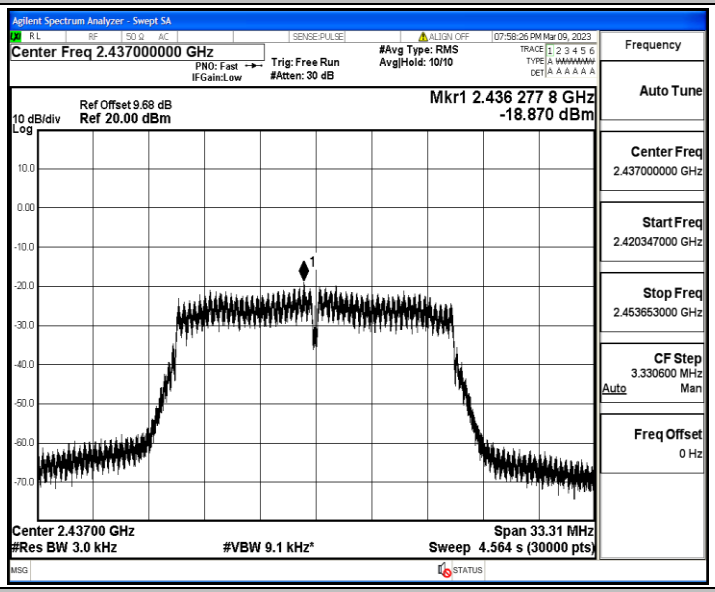

11B_Ant1_2437



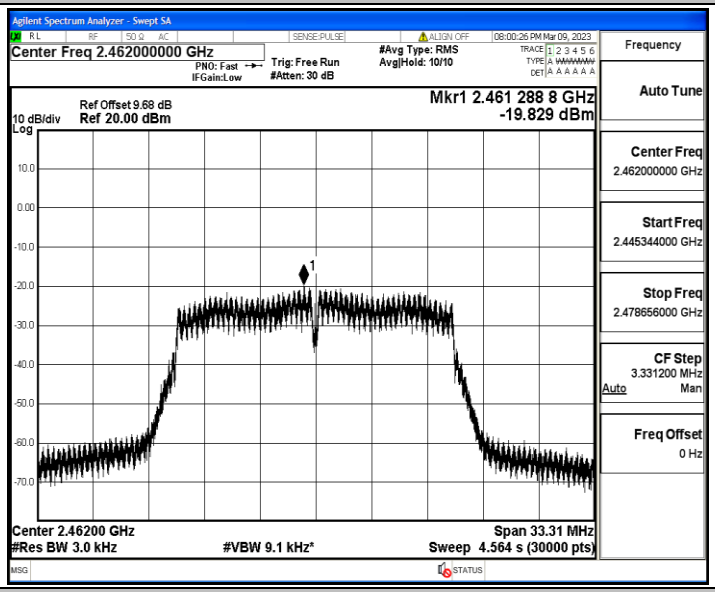

11B_Ant1_2462



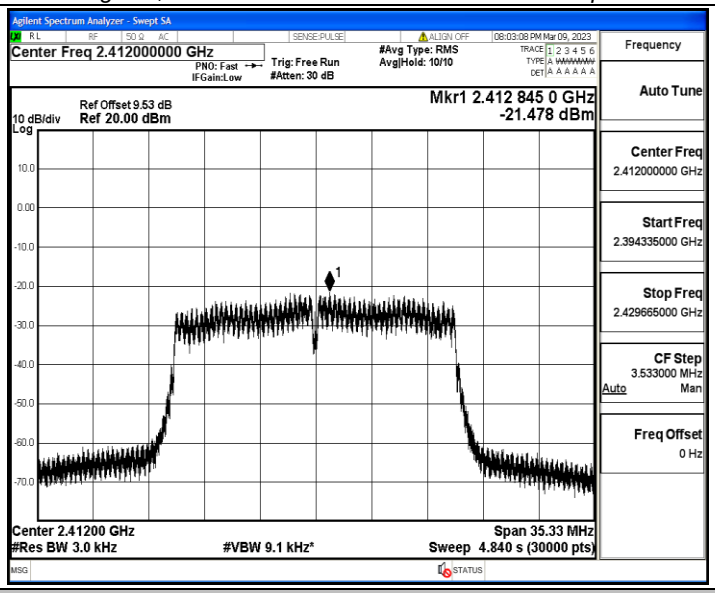

11G_Ant1_2412



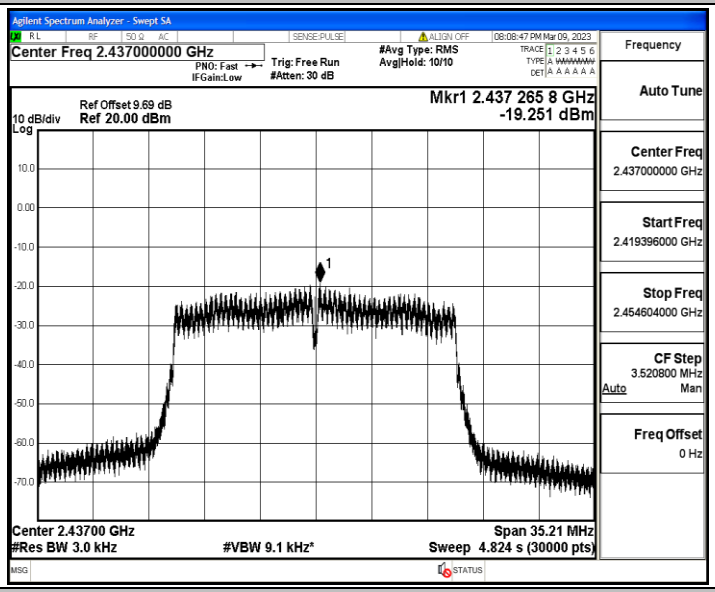

11G_Ant1_2437




11G_Ant1_2462




11N20SISO_Ant1_2412

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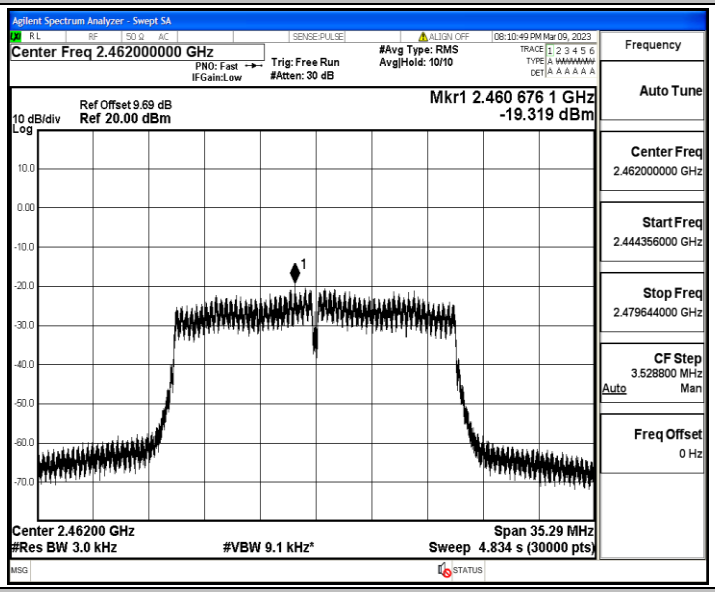
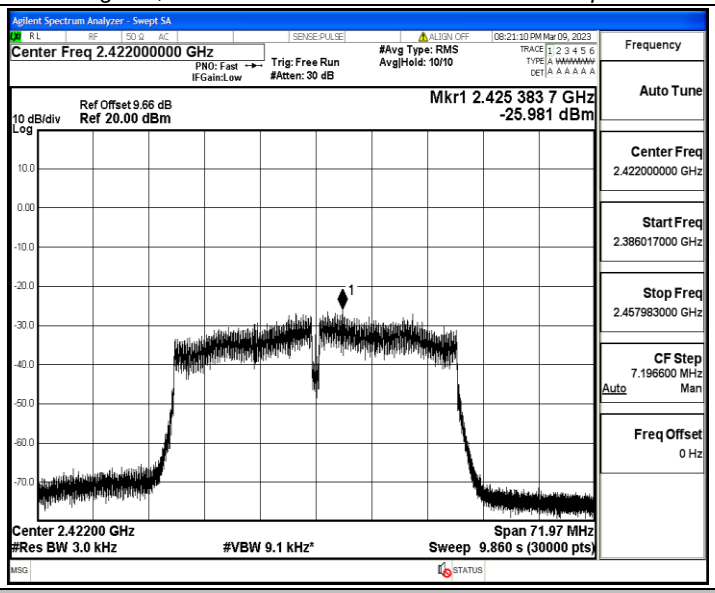
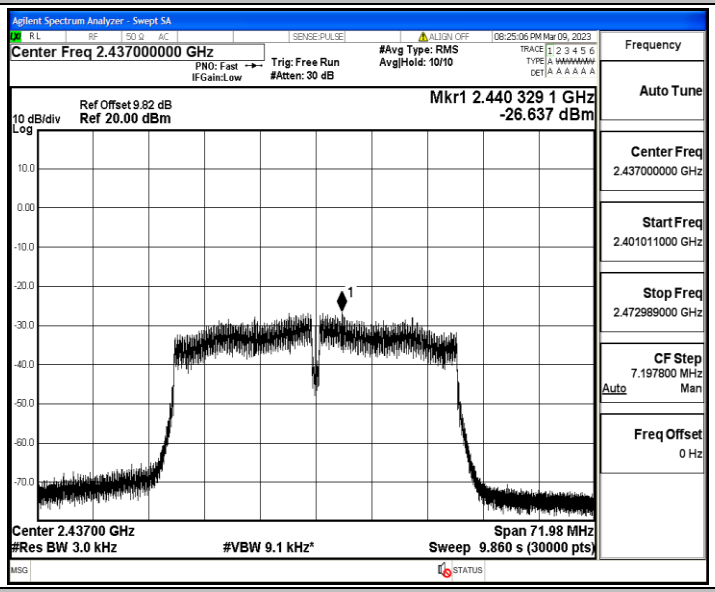


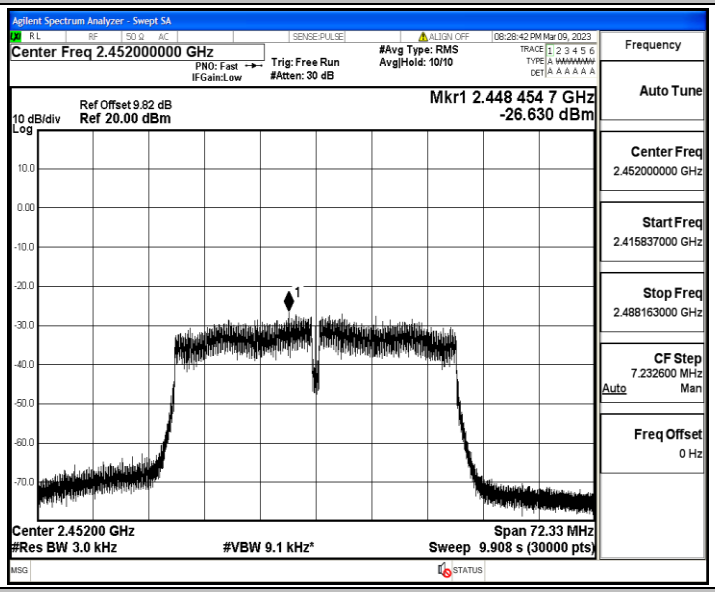

11N20SISO_Ant1_2462




11N40SISO_Ant1_2422




11N40SISO_Ant1_2437



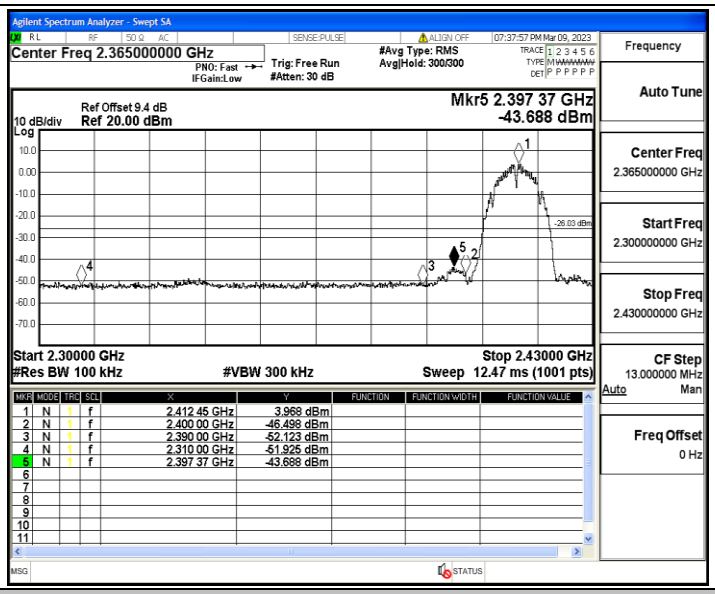

11N40SISO_Ant1_2452

# Appendix E: Band edge measurements

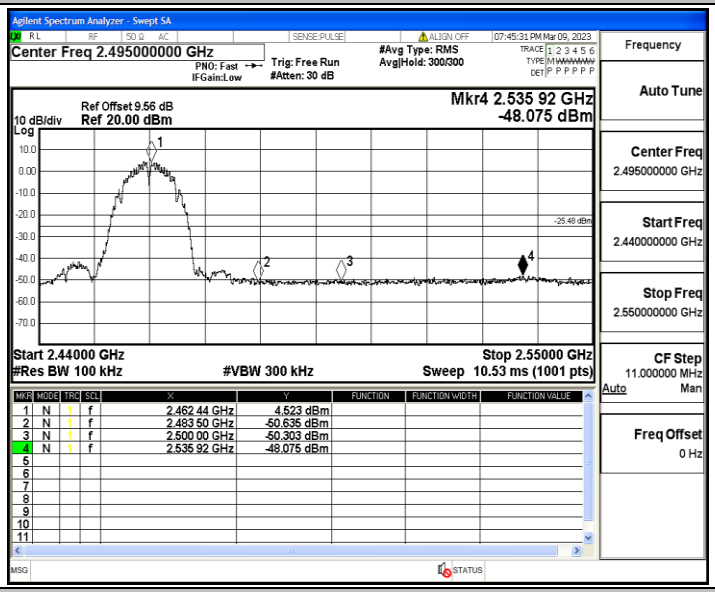
## Test Result

| TestMode | Antenna | ChName | Channel | RefLevel[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|---|---|---|---|---|---|---|---|
| 11B | Ant1 | Low | 2412 | 3.97 | -43.69 | ≤-26.03 | PASS |
| | | High | 2462 | 4.52 | -48.08 | ≤-25.48 | PASS |
| 11G | Ant1 | Low | 2412 | -0.04 | -37.69 | ≤-30.04 | PASS |
| | | High | 2462 | 0.80 | -42.35 | ≤-29.2 | PASS |
| 11N20SISO | Ant1 | Low | 2412 | -0.13 | -37.98 | ≤-30.13 | PASS |
| | | High | 2462 | 0.90 | -42.38 | ≤-29.1 | PASS |
| 11N40SISO | Ant1 | Low | 2422 | -5.25 | -42.73 | ≤-35.25 | PASS |
| | | High | 2452 | -5.95 | -48.41 | ≤-35.95 | PASS |

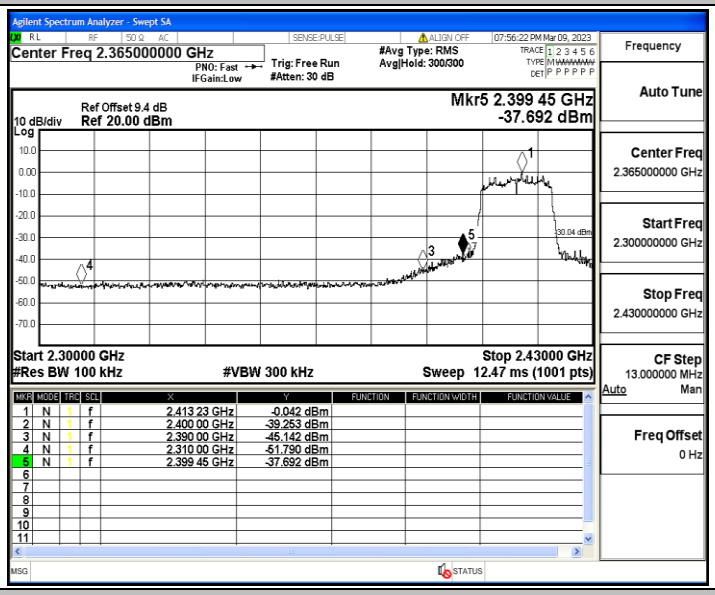
## Test Graphs



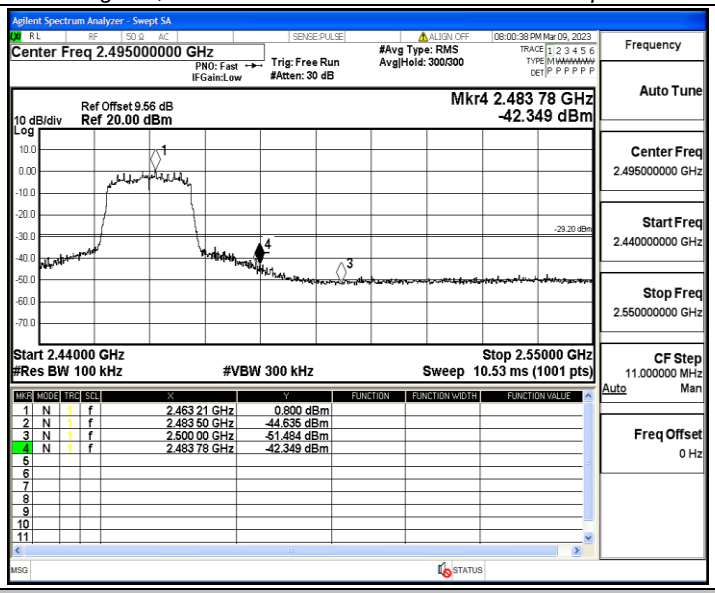

11B_Ant1_Low_2412



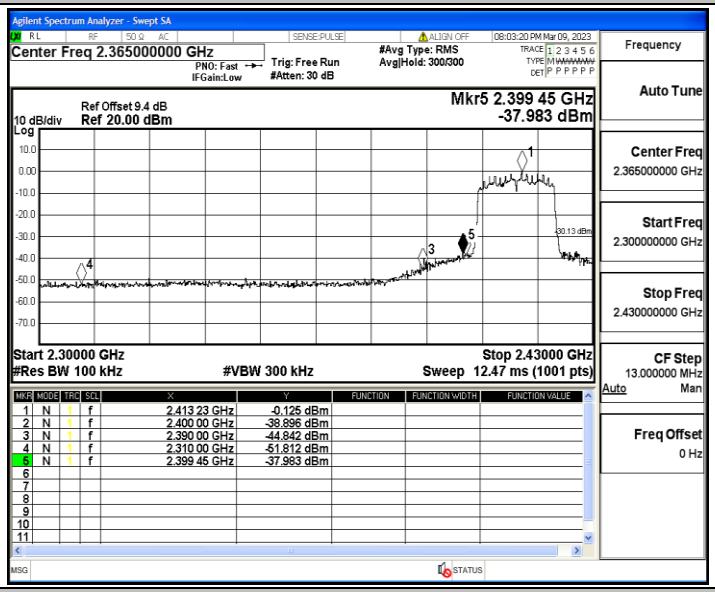

11B_Ant1_High_2462



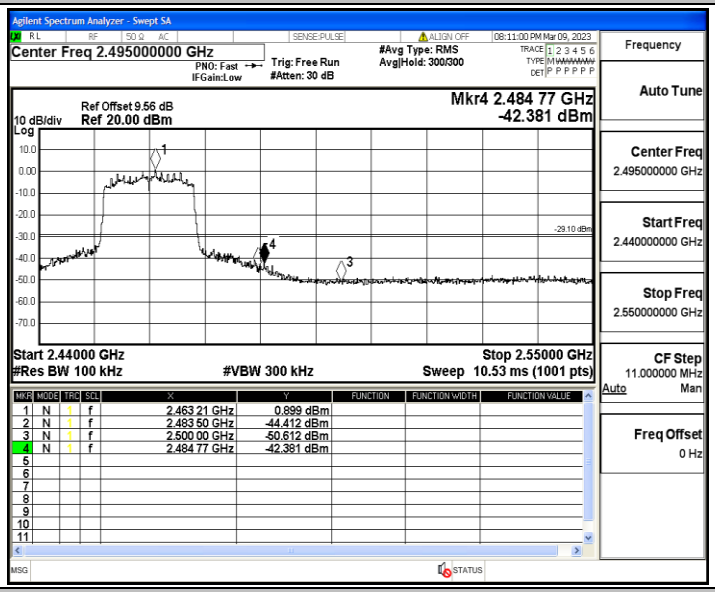

11G_Ant1_Low_2412



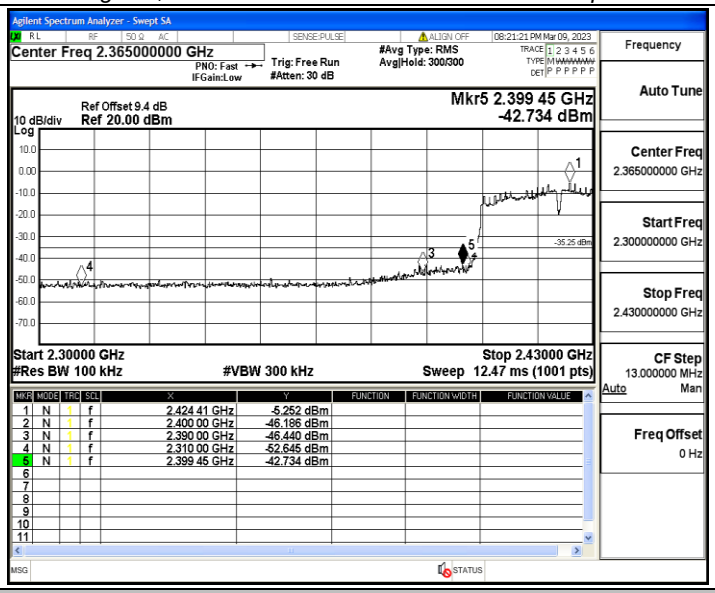

11G_Ant1_High_2462



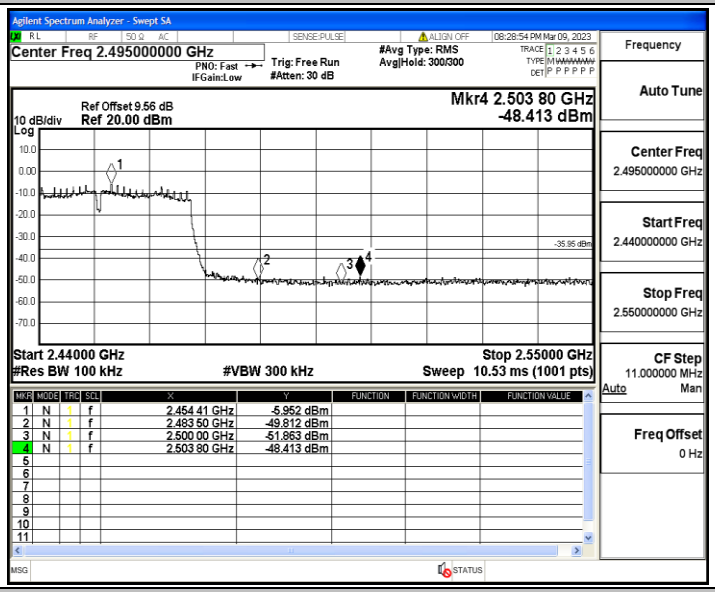

11N20SISO_Ant1_Low_2412




11N20SISO_Ant1_High_2462




11N40SISO_Ant1_Low_2422



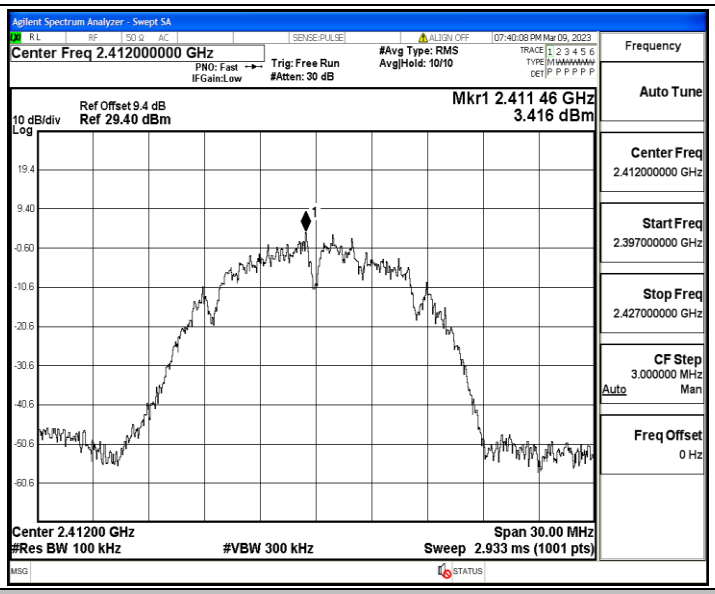

11N40SISO_Ant1_High_2452

# Appendix F: Conducted Spurious Emission

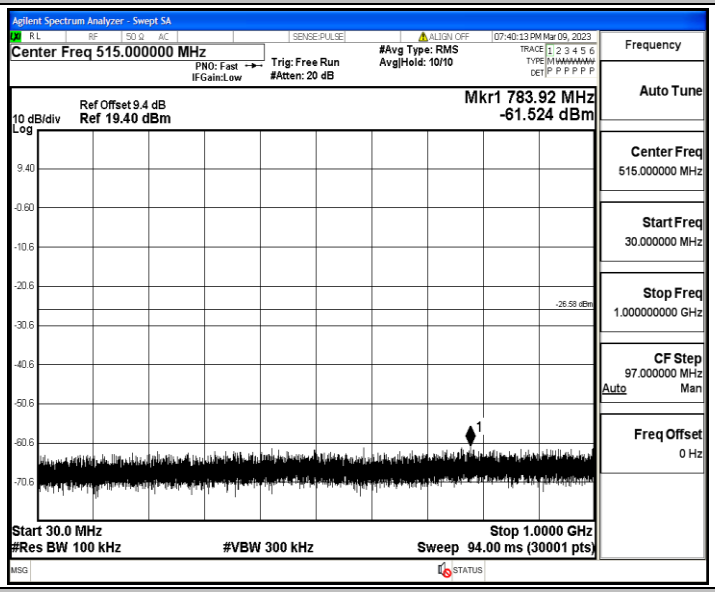
## Test Result

| TestMode | Antenna | Channel | FreqRange [Mhz] | RefLevel [dBm] | Result [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | Reference | 3.42 | 3.42 | --- | PASS |
| | | | 30~1000 | 3.42 | -61.52 | ≤-26.58 | PASS |
| | | | 1000~26500 | 3.42 | -51.06 | ≤-26.58 | PASS |
| | | 2437 | Reference | 5.34 | 5.34 | --- | PASS |
| | | | 30~1000 | 5.34 | -60.4 | ≤-24.66 | PASS |
| | | | 1000~26500 | 5.34 | -50.86 | ≤-24.66 | PASS |
| | | 2462 | Reference | 2.47 | 2.47 | --- | PASS |
| | | | 30~1000 | 2.47 | -60.45 | ≤-27.53 | PASS |
| | | | 1000~26500 | 2.47 | -49.66 | ≤-27.53 | PASS |
| 11G | Ant1 | 2412 | Reference | -4.06 | -4.06 | --- | PASS |
| | | | 30~1000 | -4.06 | -61.15 | ≤-34.06 | PASS |
| | | | 1000~26500 | -4.06 | -50.96 | ≤-34.06 | PASS |
| | | 2437 | Reference | -2.74 | -2.74 | --- | PASS |
| | | | 30~1000 | -2.74 | -61.32 | ≤-32.74 | PASS |
| | | | 1000~26500 | -2.74 | -49.2 | ≤-32.74 | PASS |
| | | 2462 | Reference | -1.37 | -1.37 | --- | PASS |
| | | | 30~1000 | -1.37 | -60.75 | ≤-31.37 | PASS |
| | | | 1000~26500 | -1.37 | -50.83 | ≤-31.37 | PASS |
| 11N20SISO | Ant1 | 2412 | Reference | -2.59 | -2.59 | --- | PASS |
| | | | 30~1000 | -2.59 | -61.55 | ≤-32.59 | PASS |
| | | | 1000~26500 | -2.59 | -50.35 | ≤-32.59 | PASS |
| | | 2437 | Reference | 1.22 | 1.22 | --- | PASS |
| | | | 30~1000 | 1.22 | -60.77 | ≤-28.78 | PASS |
| | | | 1000~26500 | 1.22 | -50.41 | ≤-28.78 | PASS |
| | | 2462 | Reference | -3.05 | -3.05 | --- | PASS |
| | | | 30~1000 | -3.05 | -61.11 | ≤-33.05 | PASS |
| | | | 1000~26500 | -3.05 | -50.87 | ≤-33.05 | PASS |
| 11N40SISO | Ant1 | 2422 | Reference | -7.77 | -7.77 | --- | PASS |
| | | | 30~1000 | -7.77 | -61.27 | ≤-37.77 | PASS |
| | | | 1000~26500 | -7.77 | -50.2 | ≤-37.77 | PASS |
| | | 2437 | Reference | -7.17 | -7.17 | --- | PASS |
| | | | 30~1000 | -7.17 | -60.89 | ≤-37.17 | PASS |
| | | | 1000~26500 | -7.17 | -50.48 | ≤-37.17 | PASS |
| | | 2452 | Reference | -6.38 | -6.38 | --- | PASS |
| | | | 30~1000 | -6.38 | -60.48 | ≤-36.38 | PASS |
| | | | 1000~26500 | -6.38 | -50.76 | ≤-36.38 | PASS |

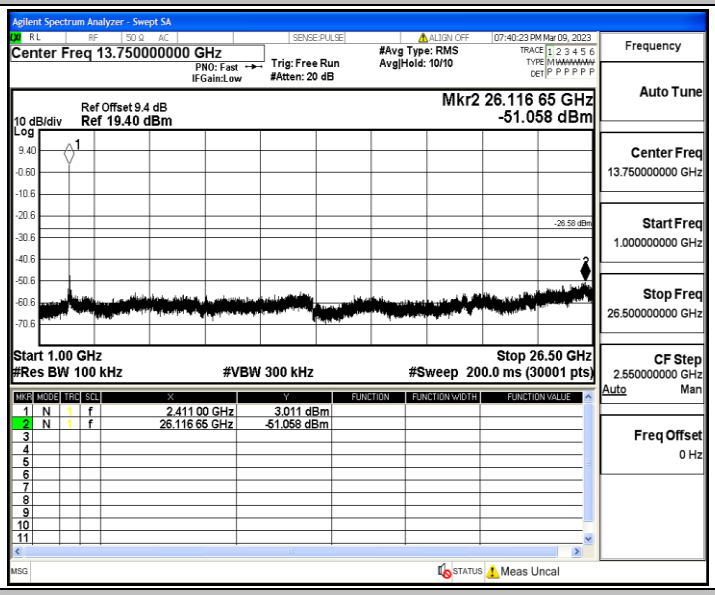
## Test Graphs



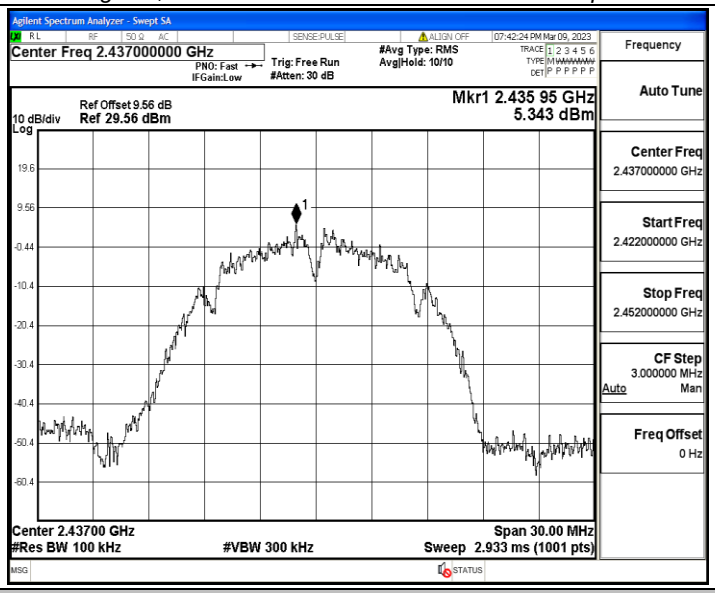

11B_Ant1_2412_0~Reference



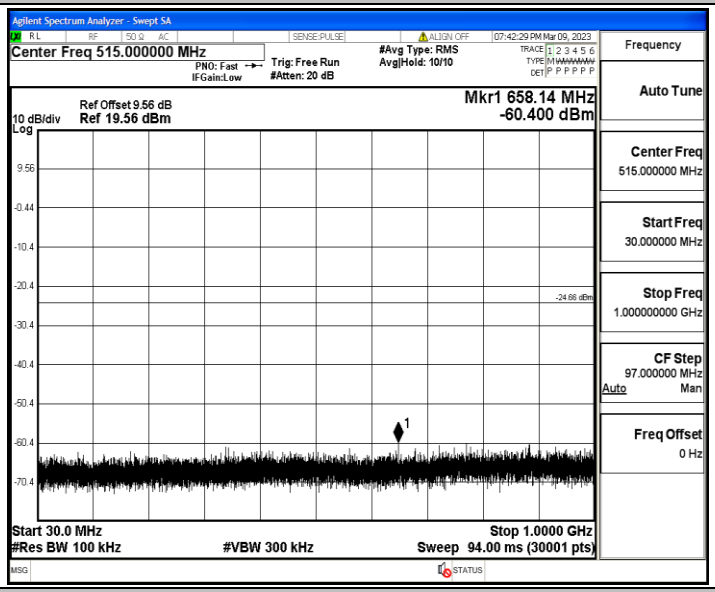

11B_Ant1_2412_30~1000



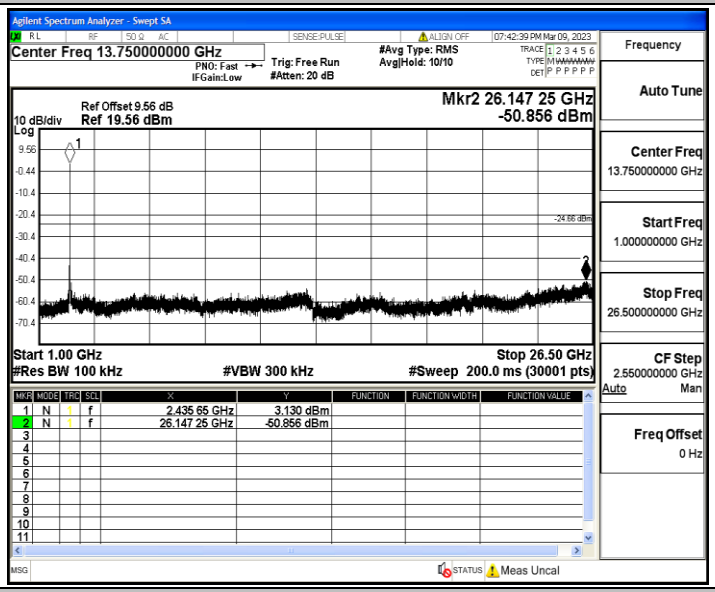

11B_Ant1_2412_1000~26500



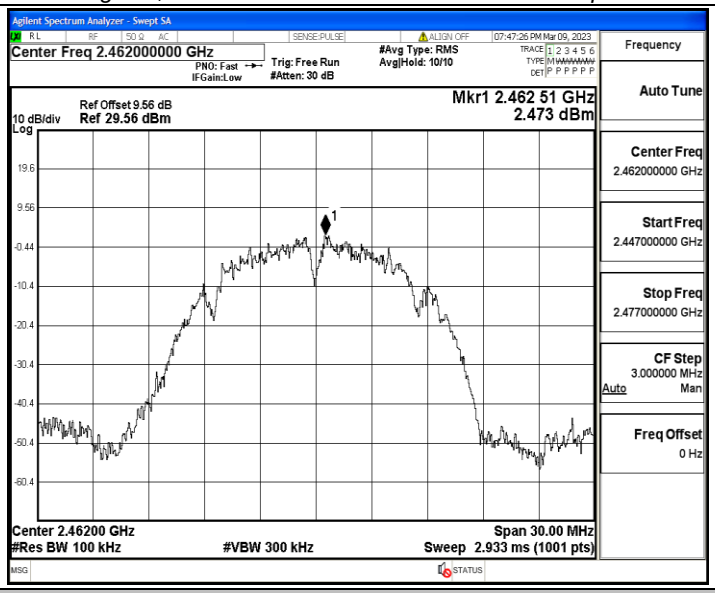

11B_Ant1_2437_0~Reference



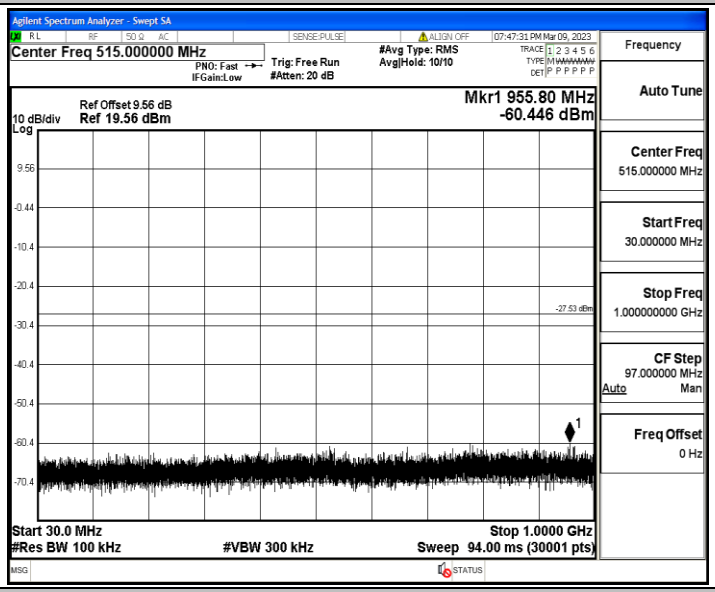

11B_Ant1_2437_30~1000



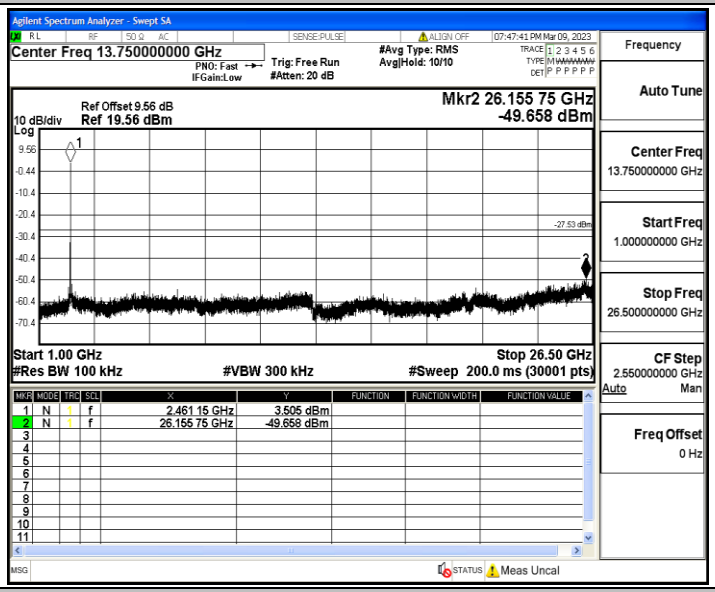

11B_Ant1_2437_1000~26500




11B_Ant1_2462_0~Reference




11B_Ant1_2462_30~1000

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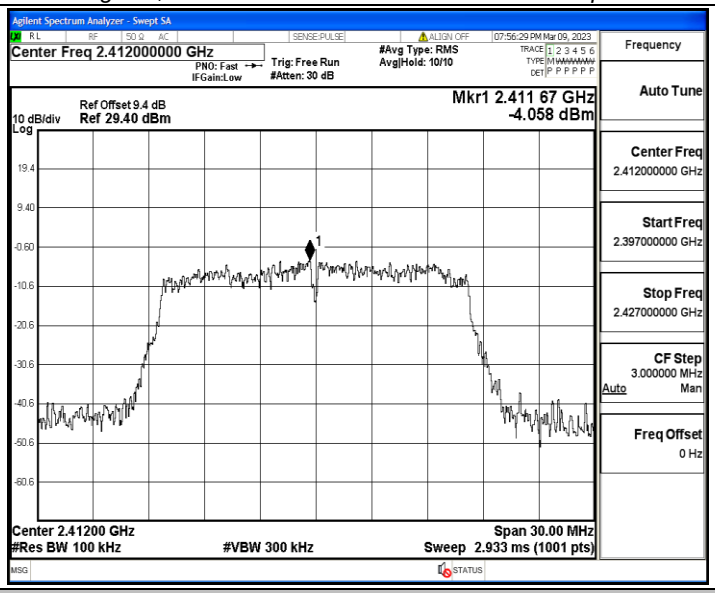


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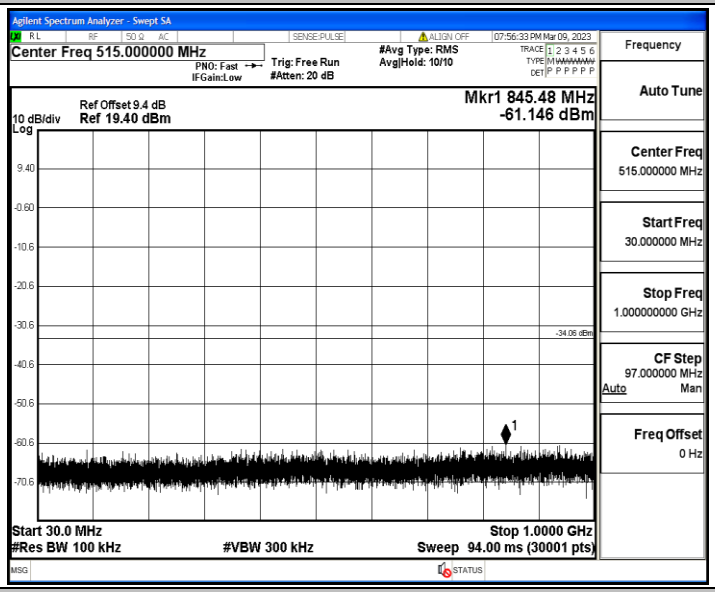
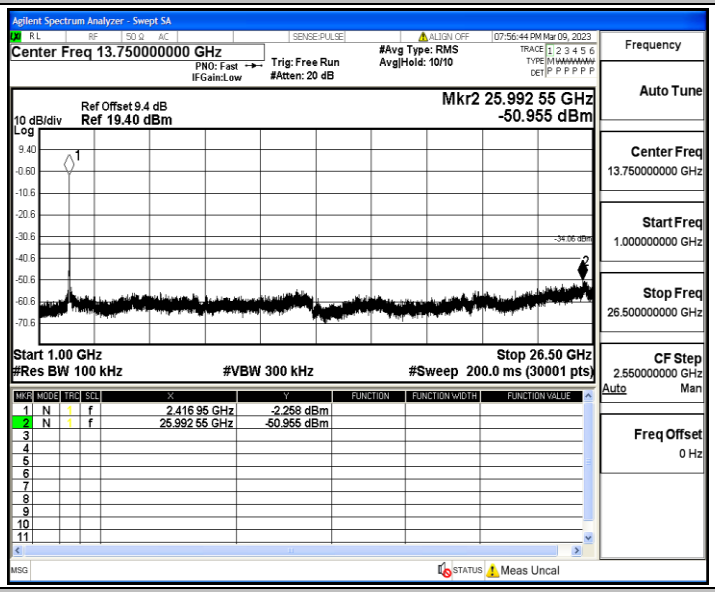
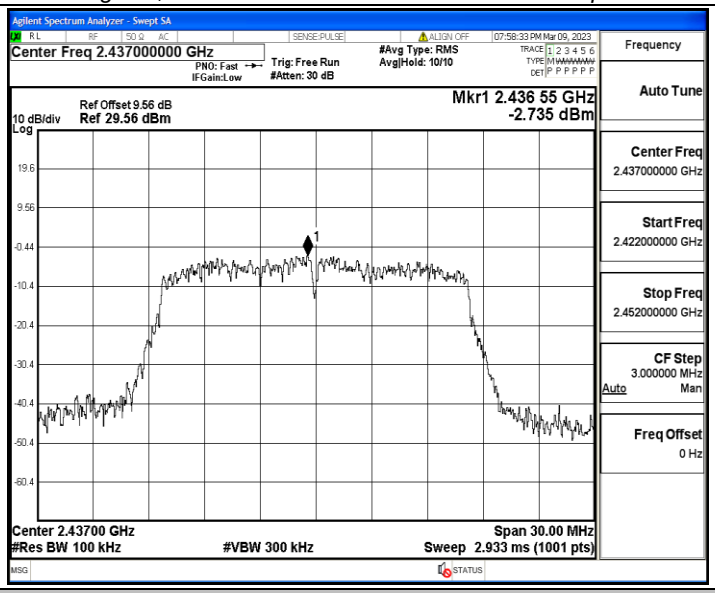


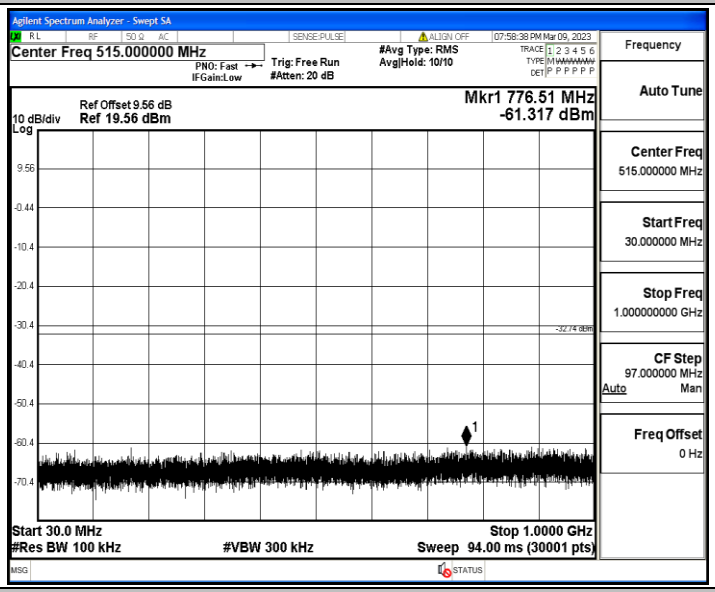

11G_Ant1_2412_30~1000



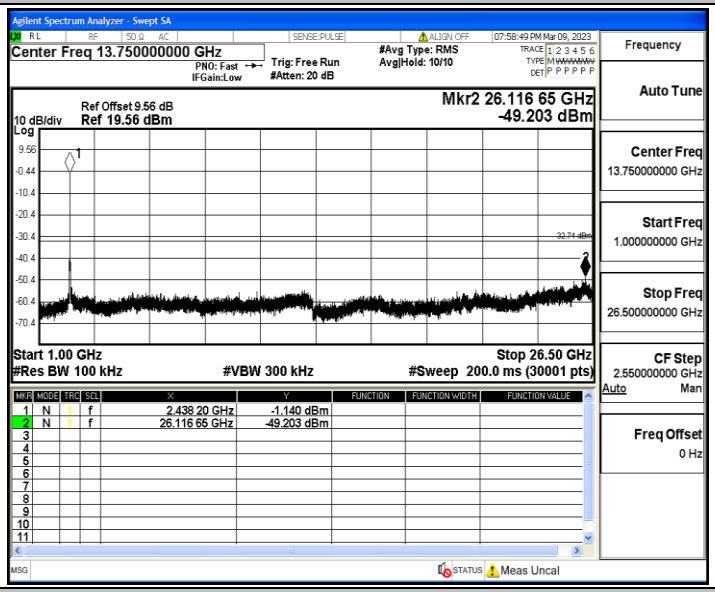

11G_Ant1_2412_1000~26500



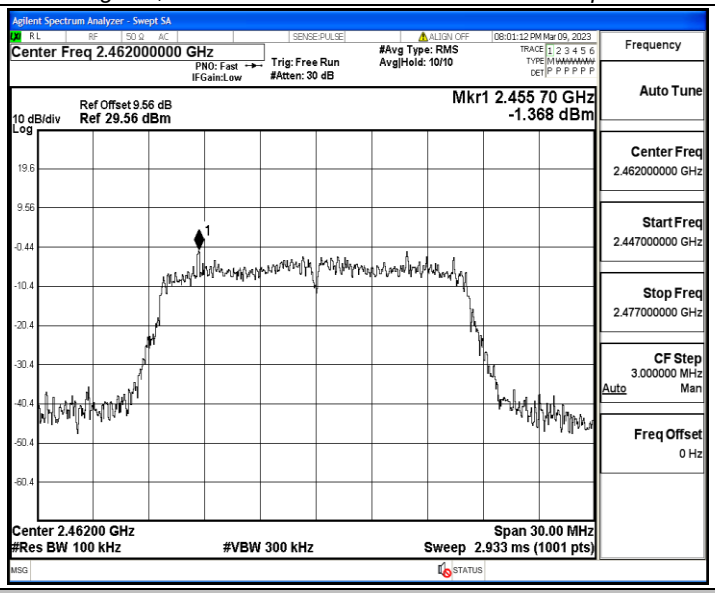

11G_Ant1_2437_0~Reference




11G_Ant1_2437_30~1000




11G_Ant1_2437_1000~26500

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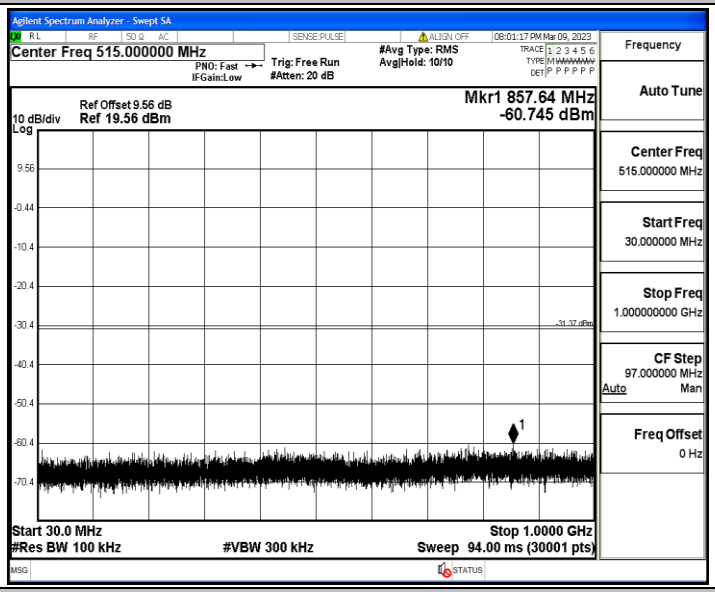


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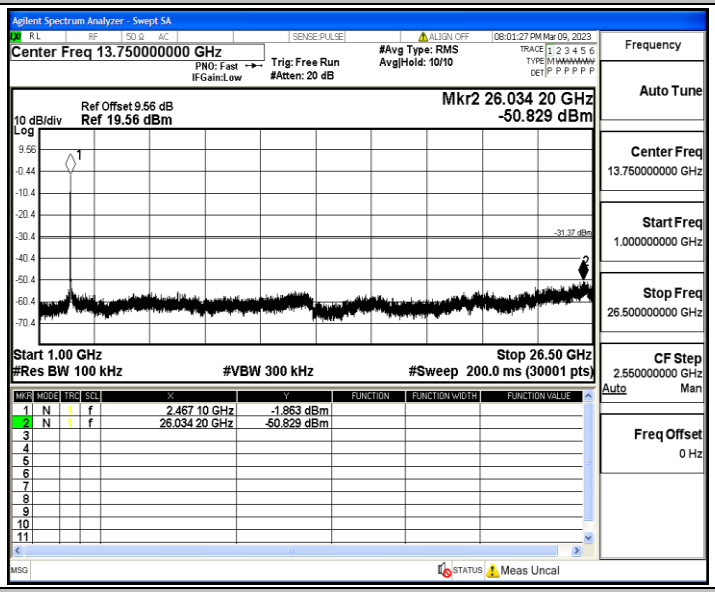


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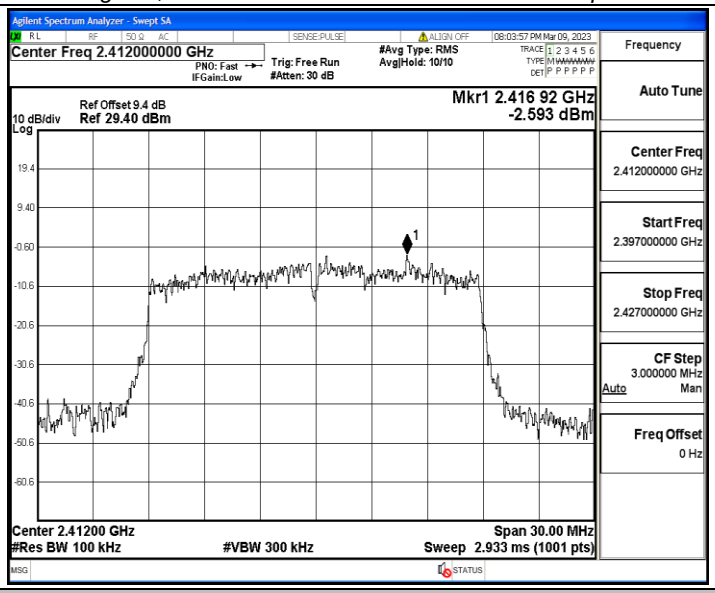


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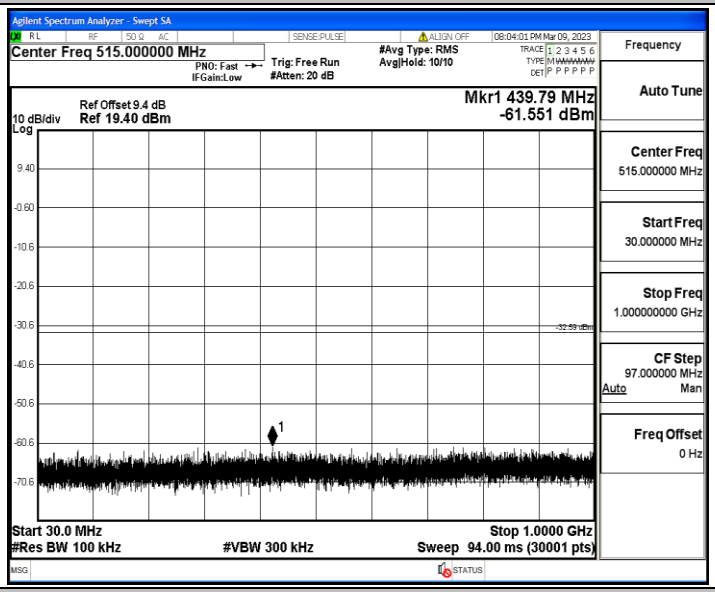


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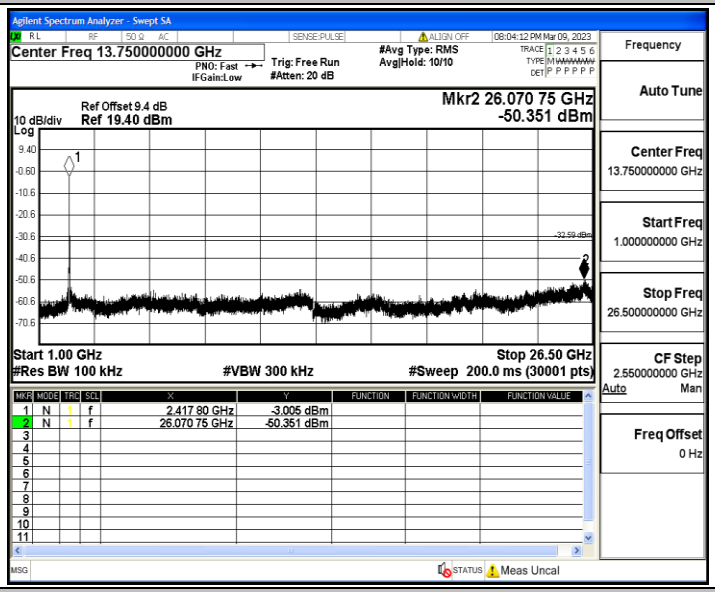
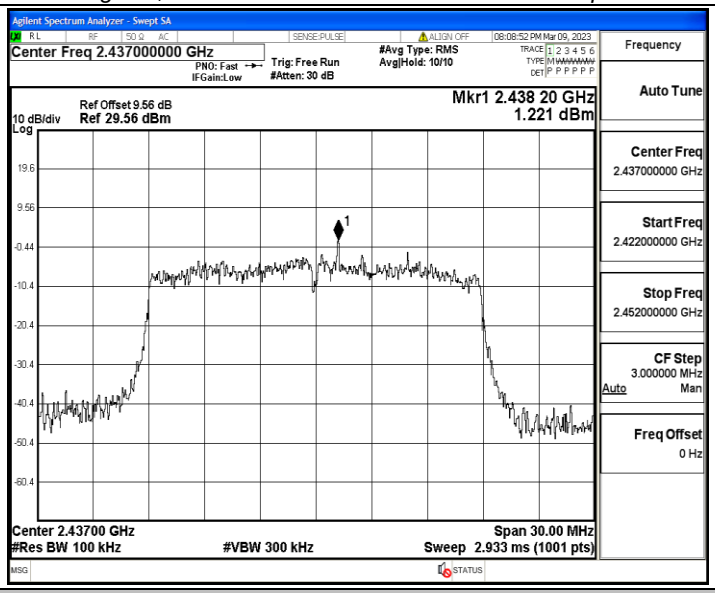



11N20SISO_Ant1_2412_1000~26500

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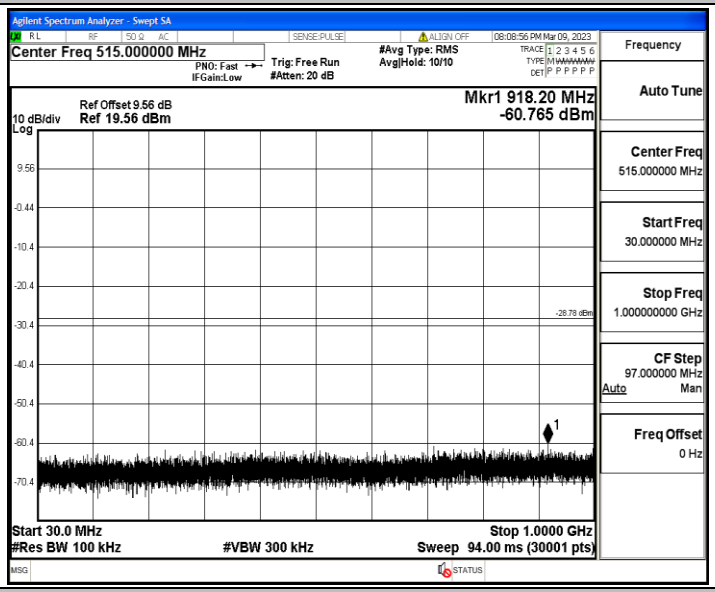
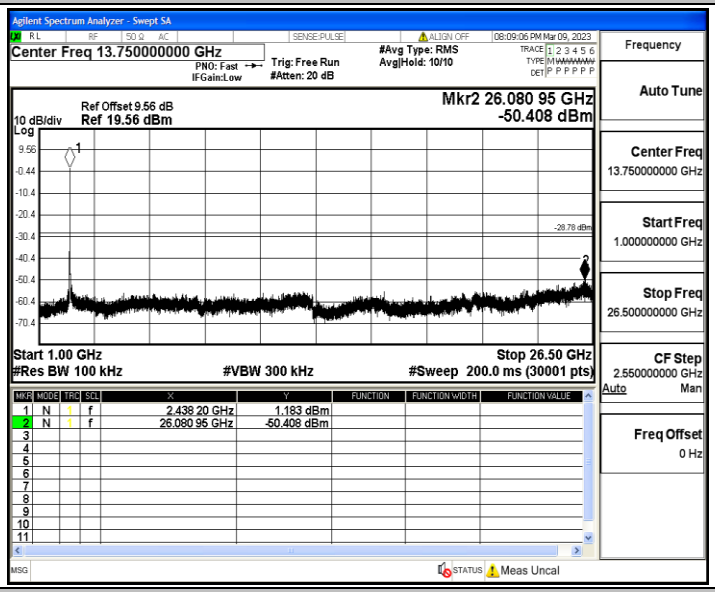
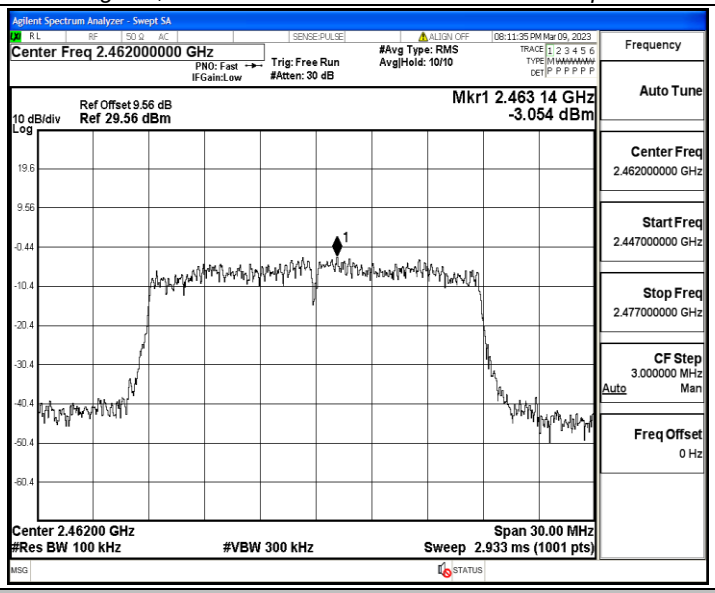



11N20SISO_Ant1_2437_30~1000




11N20SISO_Ant1_2437_1000~26500

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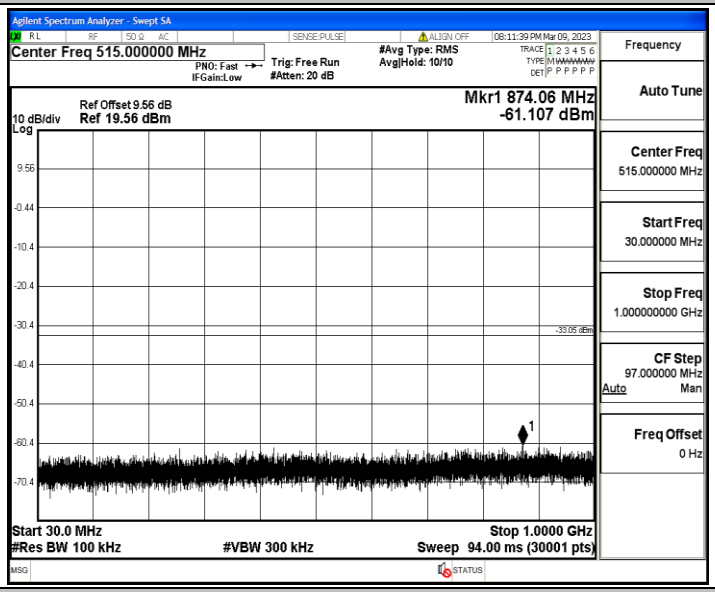


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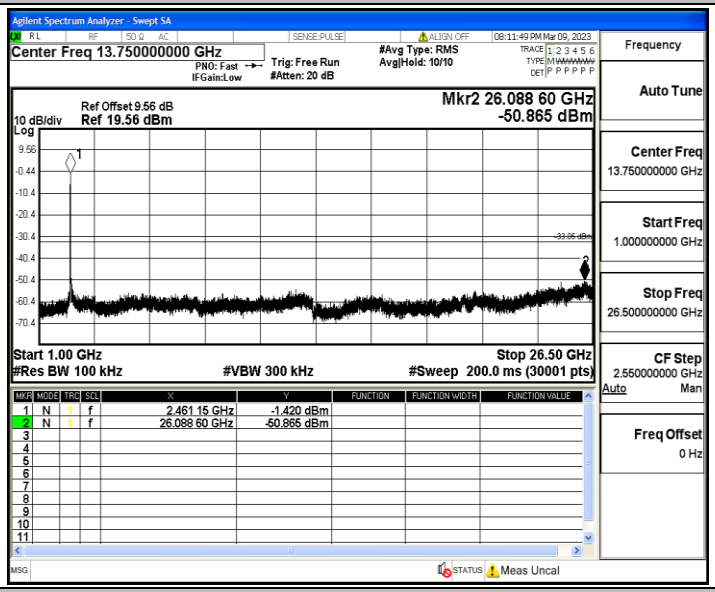
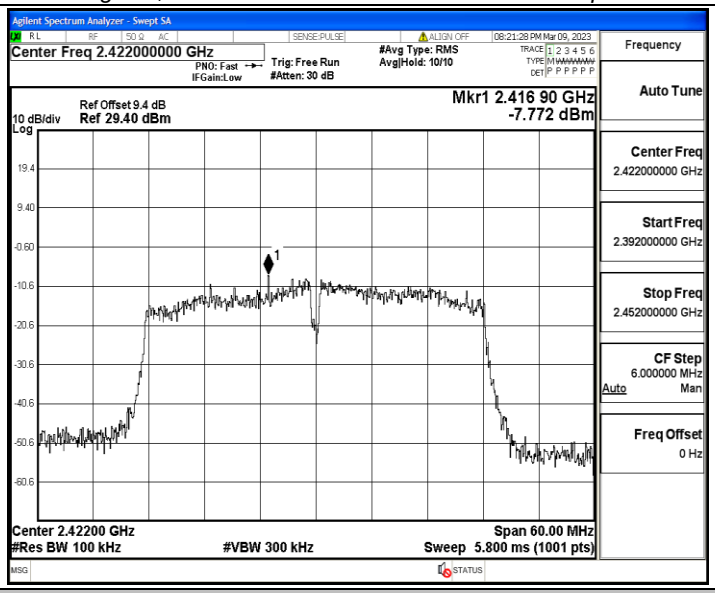
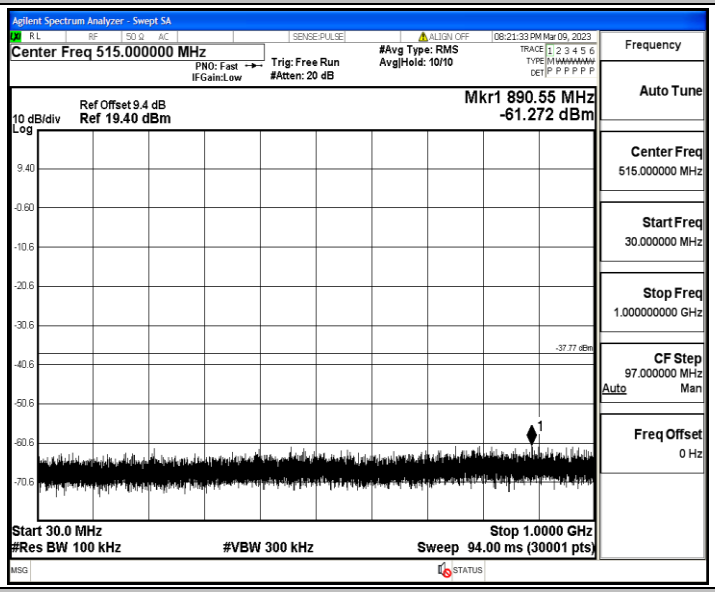



11N20SISO_Ant1_2462_1000~26500




11N40SISO_Ant1_2422_0~Reference

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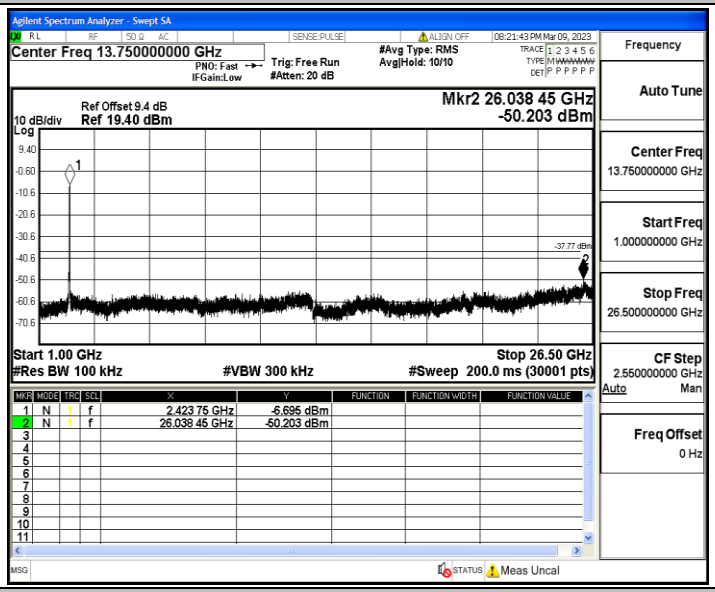
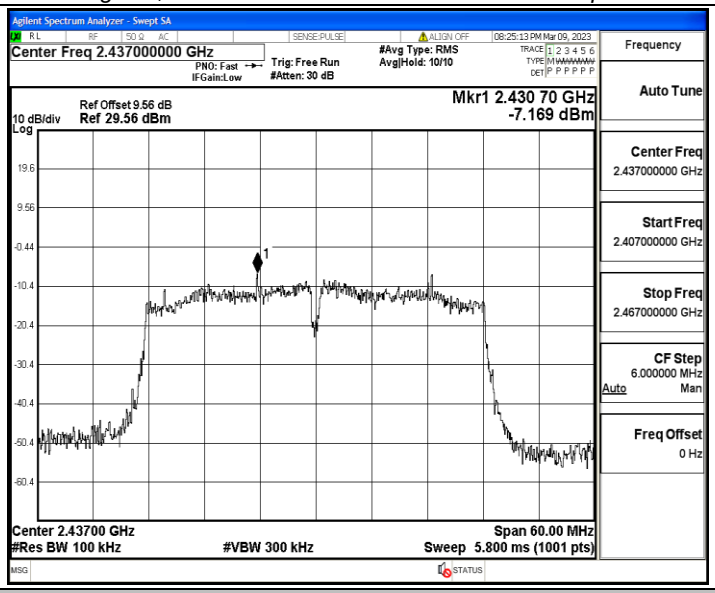
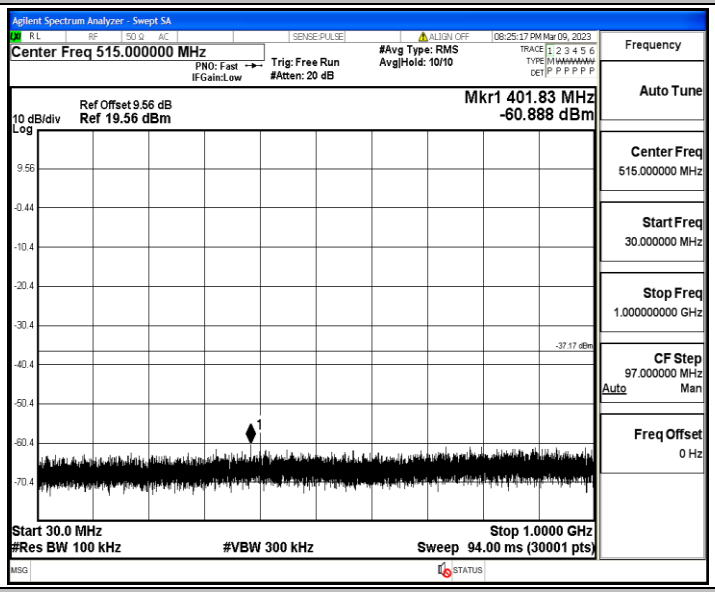


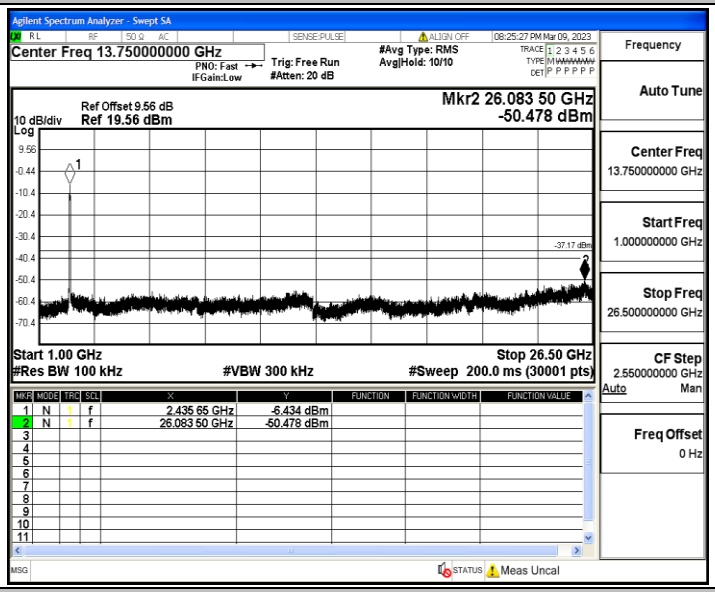

11N40SISO_Ant1_2422_1000~26500



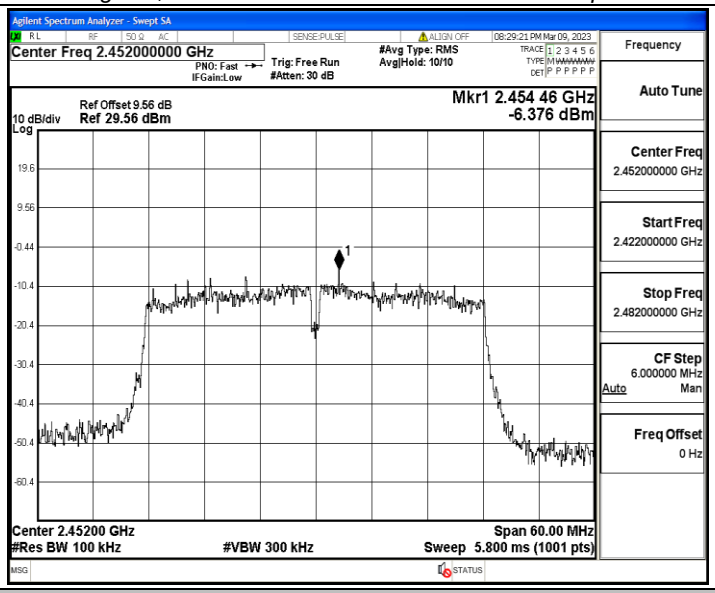

11N40SISO_Ant1_2437_0~Reference



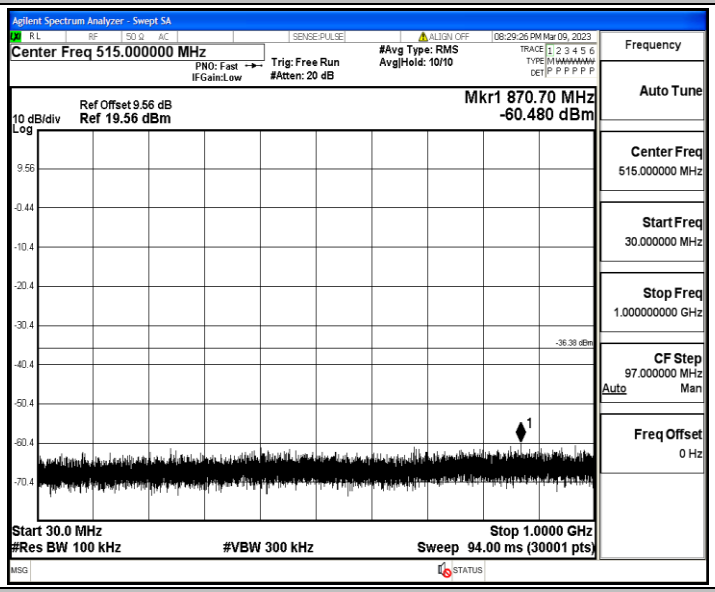

11N40SISO_Ant1_2437_30~1000



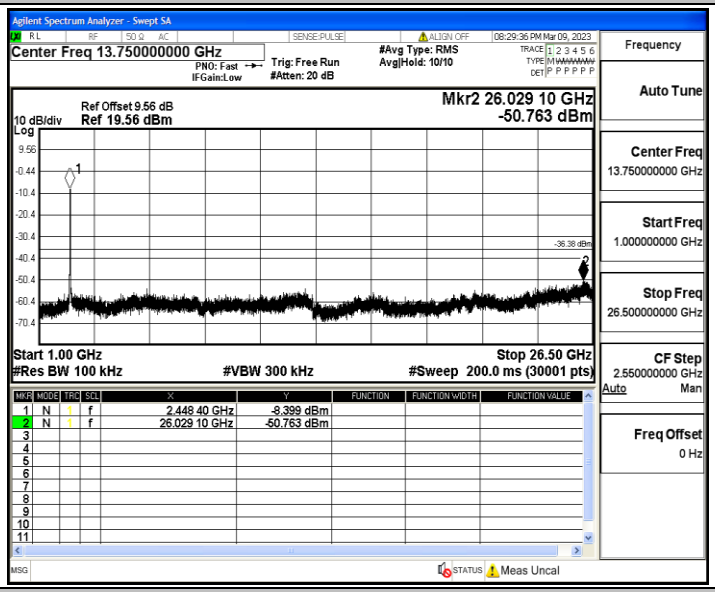

11N40SISO_Ant1_2437_1000~26500




11N40SISO_Ant1_2452_0~Reference




11N40SISO_Ant1_2452_30~1000



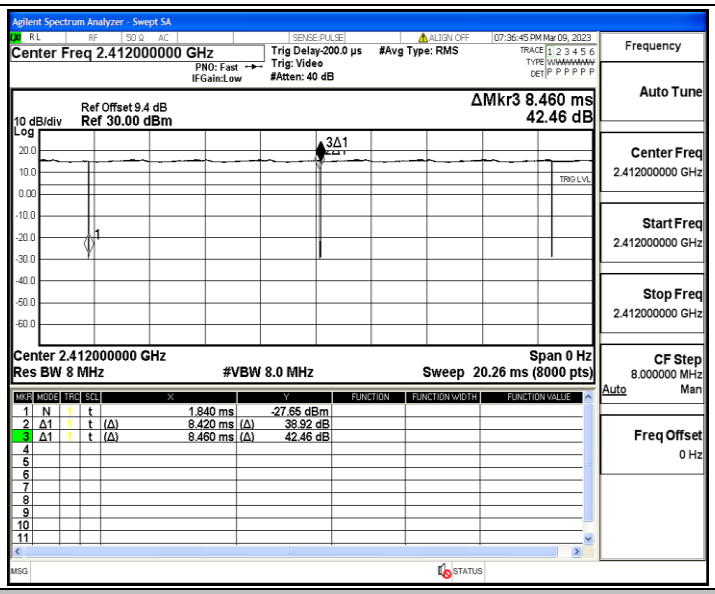

11N40SISO_Ant1_2452_1000~26500

# Appendix G: Duty Cycle

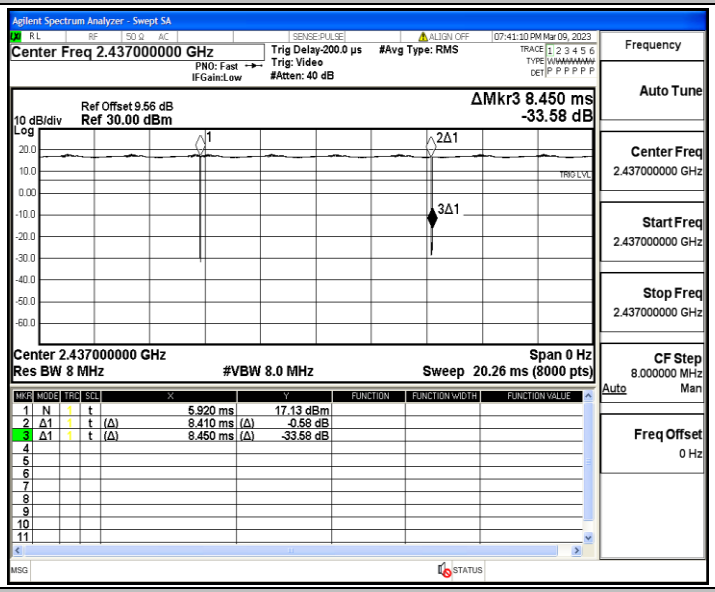
## Test Result

| TestMode | Antenna | Channel | Transmission Duration [ms] | Transmission Period [ms] | Duty Cycle [%] | 1/T |
|---|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 8.42 | 8.46 | 99.53 | 0.12 |
| | | 2437 | 8.41 | 8.45 | 99.53 | 0.12 |
| | | 2462 | 8.41 | 8.45 | 99.53 | 0.12 |
| 11G | Ant1 | 2412 | 1.40 | 1.44 | 97.22 | 0.71 |
| | | 2437 | 1.40 | 1.44 | 97.22 | 0.71 |
| | | 2462 | 1.39 | 1.43 | 97.20 | 0.72 |
| 11N20SISO | Ant1 | 2412 | 1.30 | 1.34 | 97.01 | 0.77 |
| | | 2437 | 1.30 | 1.34 | 97.01 | 0.77 |
| | | 2462 | 1.31 | 1.35 | 97.04 | 0.76 |
| 11N40SISO | Ant1 | 2422 | 0.64 | 0.68 | 94.12 | 1.56 |
| | | 2437 | 0.64 | 0.68 | 94.12 | 1.56 |
| | | 2452 | 0.64 | 0.68 | 94.12 | 1.56 |

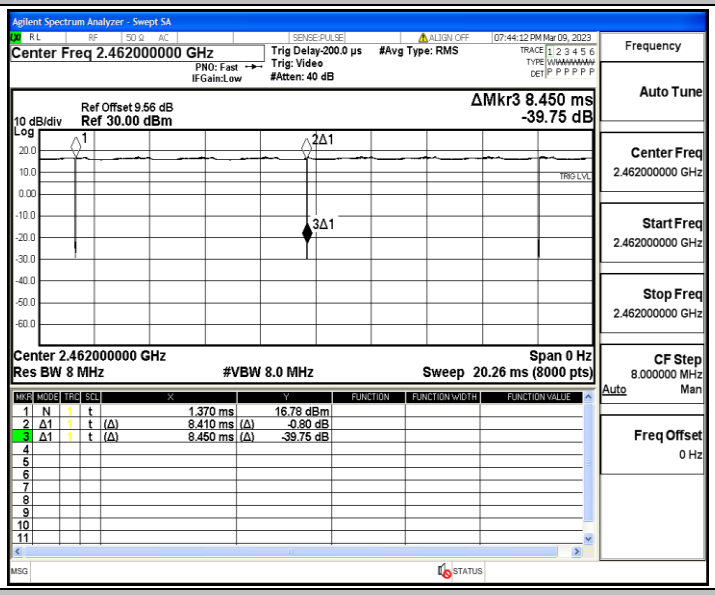
## Test Graphs




11B_Ant1_2412




11B_Ant1_2437

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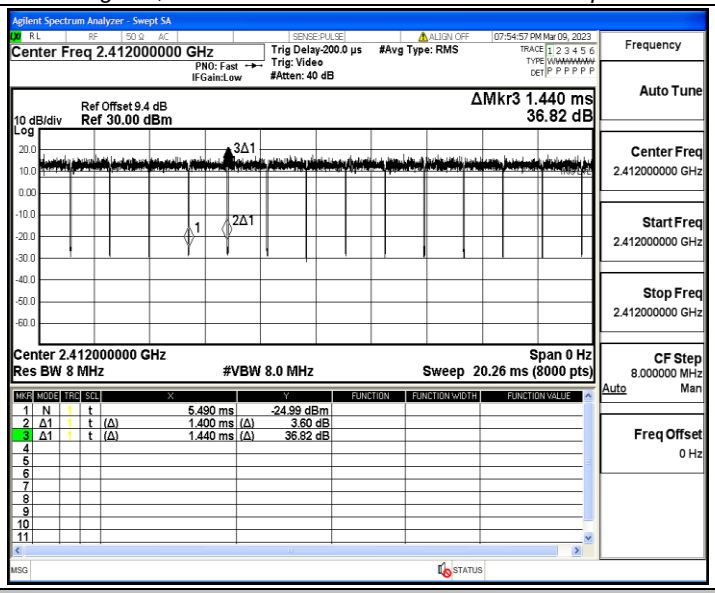


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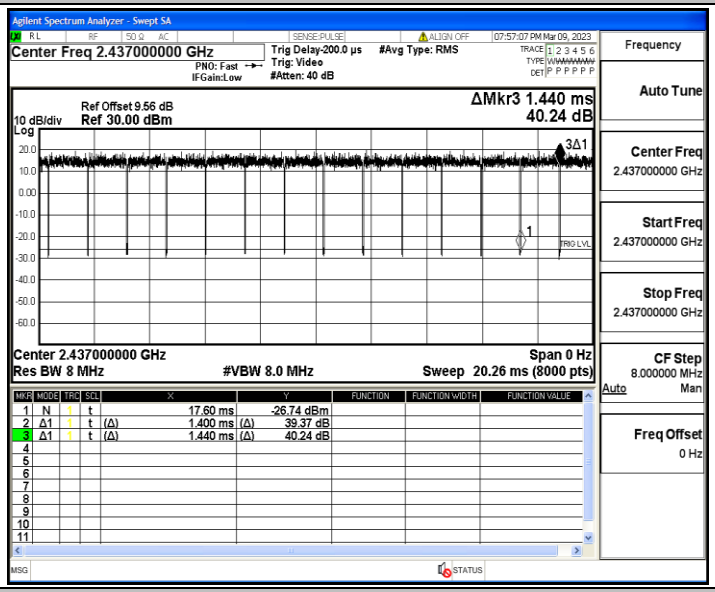


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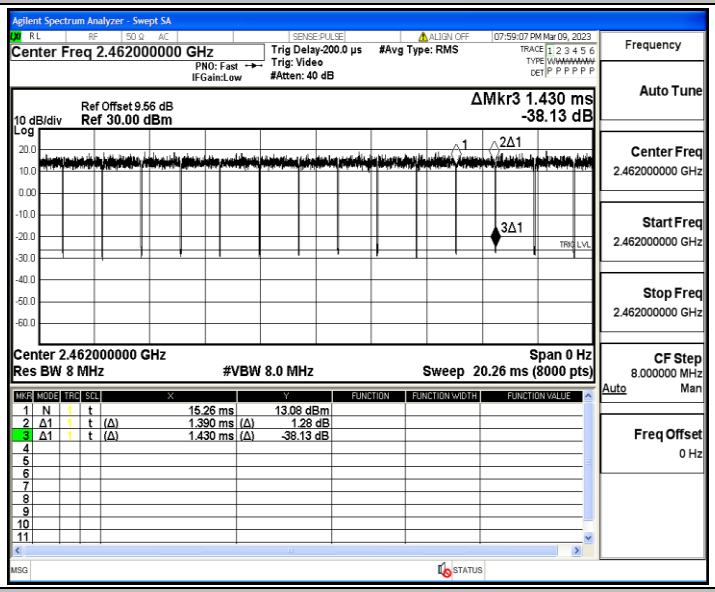


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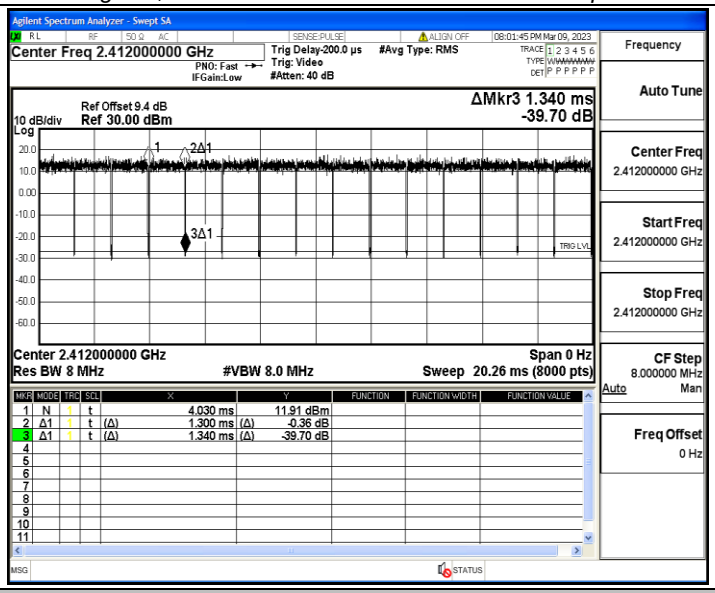


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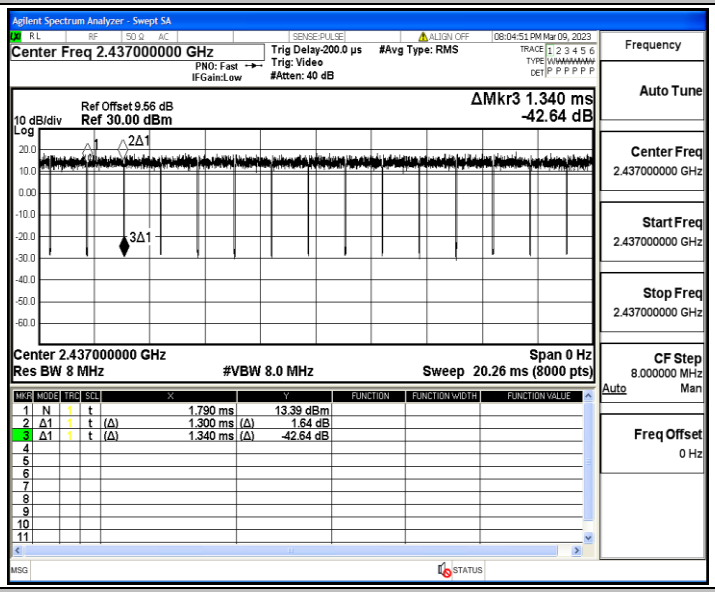


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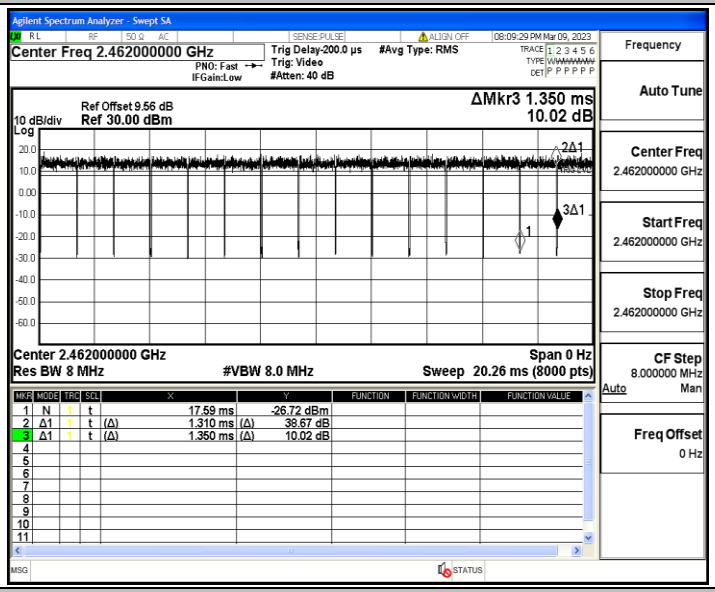


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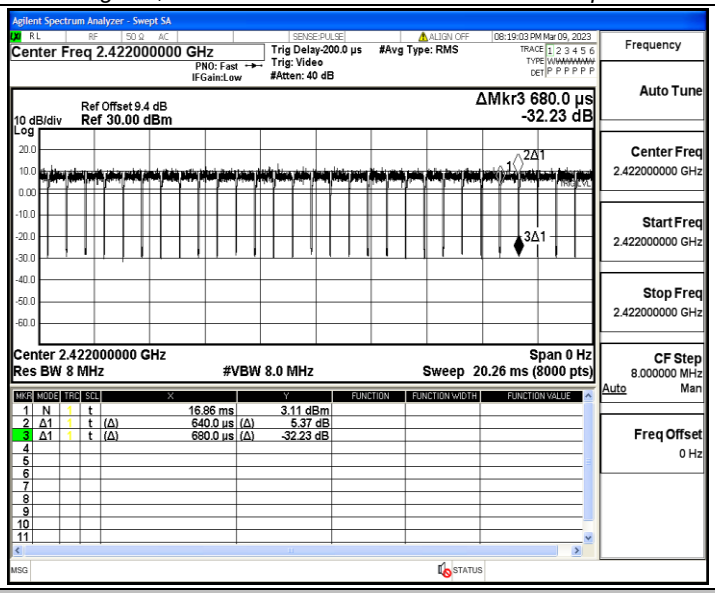


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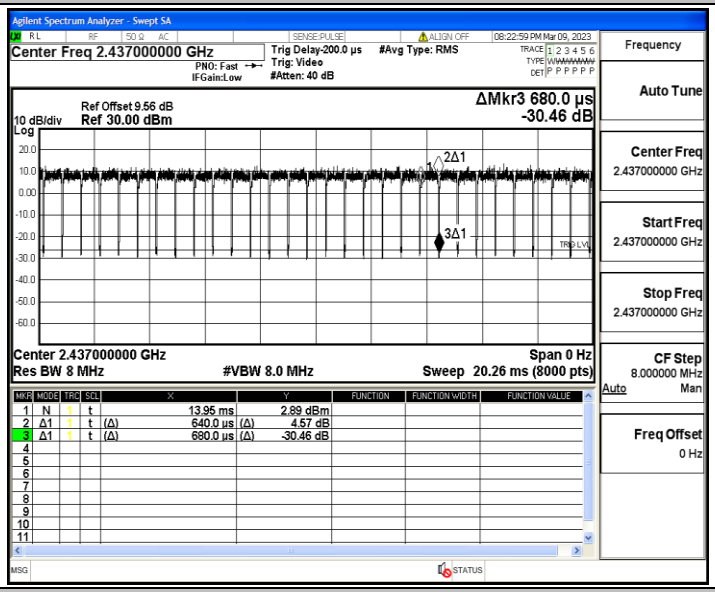


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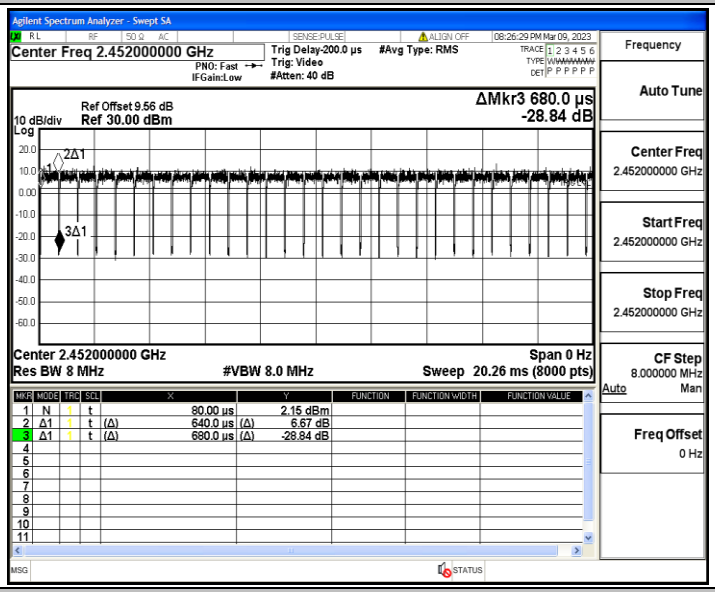


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