# Appendix C

## RF Test Data for 2.4GWIFI (Conducted Measurement)

**Product Name: Automatic 2-in-1 Pet Feeder & Water Dispenser**

**Trade Mark: N/A**

**Test Model: A7**

**Environmental Conditions**

| | |
|---|---|
| Temperature: | 25.5° C |
| Relative Humidity: | 52.4% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | Simba Huang |
| Supervised by: | Seal Chen |

# Contents

Page

**COVER PAGE**

1 Duty Cycle....3
1.1 Test Result....3
1.2 Test Graphs....4
2 Maximum Conducted Output Power....9
2.1 Test Result....9
3 -6dB Bandwidth....10
3.1 Test Result....10
3.2 Test Graphs....11
4 Maximum Power Spectral Density Level....16
4.1 Test Result....16
4.2 Test Graphs....17
5 Band Edge....22
5.1 Test Result....22
5.2 Test Graphs....23
6 Conducted RF Spurious Emission....29
6.1 Test Result....29
6.2 Test Graphs....30
7 Restrict Band....39
7.1 Test Result....39
7.2 Test Graphs....41

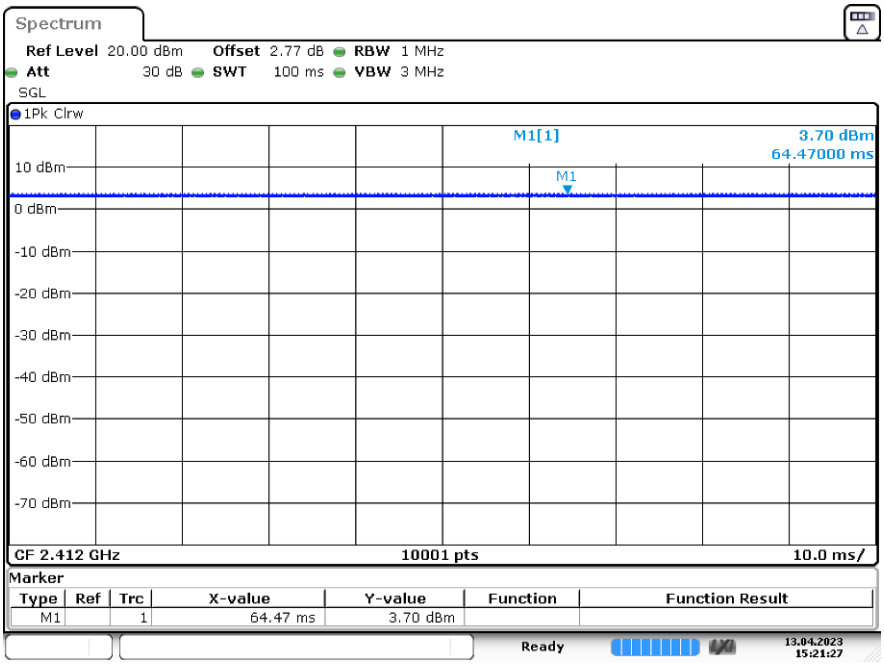
# 1 Duty Cycle

## 1.1 Test Result

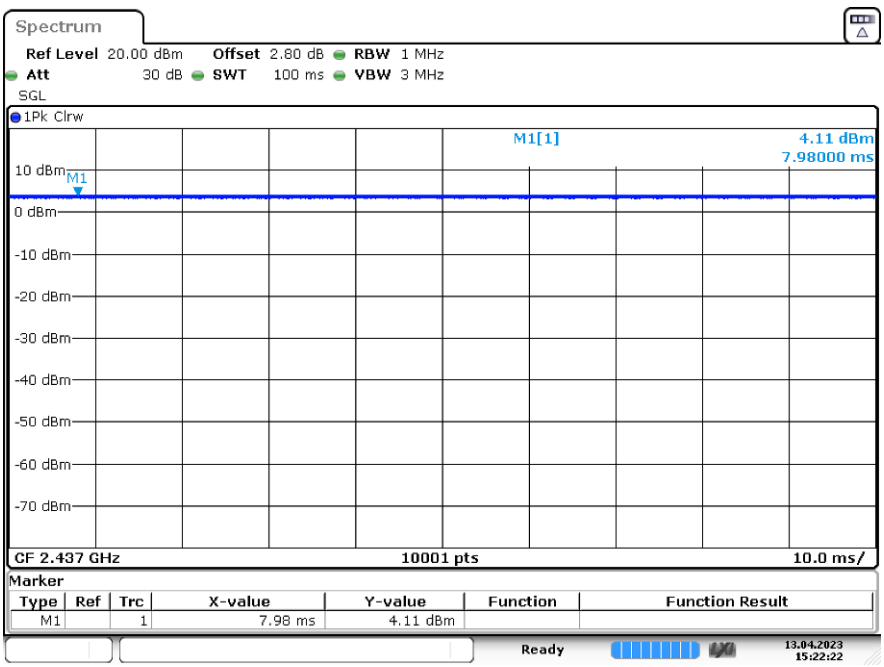
| Mode | Frequency (MHz) | Antenna | Duty Cycle (%) | 1/T (kHz) |
|---|---|---|---|---|
| b | 2412 | Ant1 | 100 | 0 |
| b | 2437 | Ant1 | 100 | 0 |
| b | 2462 | Ant1 | 100 | 0 |
| g | 2412 | Ant1 | 100 | 0 |
| g | 2437 | Ant1 | 100 | 0 |
| g | 2462 | Ant1 | 100 | 0 |
| n20 | 2412 | Ant1 | 100 | 0 |
| n20 | 2437 | Ant1 | 100 | 0 |
| n20 | 2462 | Ant1 | 100 | 0 |

## 1.2 Test Graphs

| Test Graphs |
|---|
| b 2412MHz Ant1 |

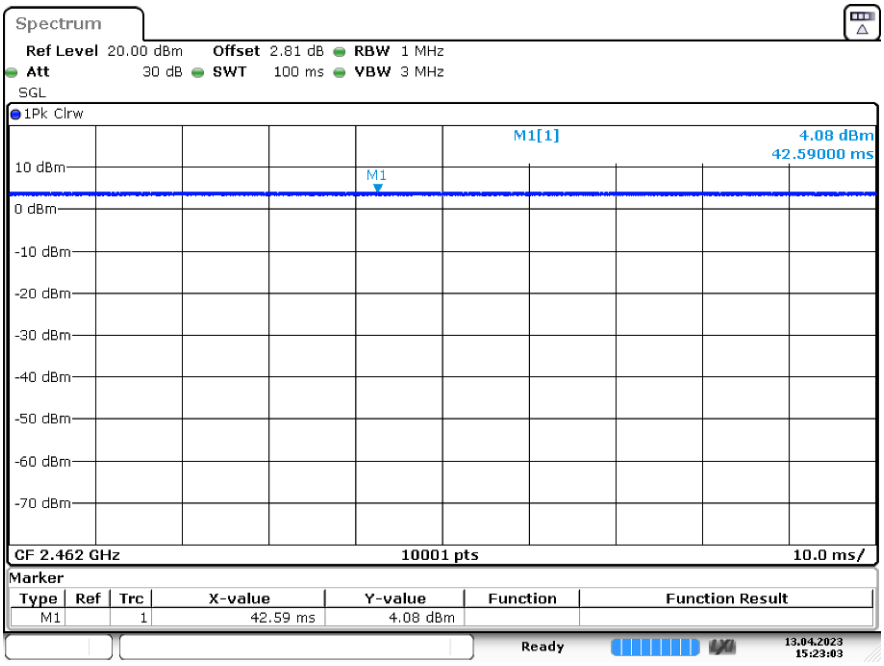



| b 2437MHz Ant1 |
|---|

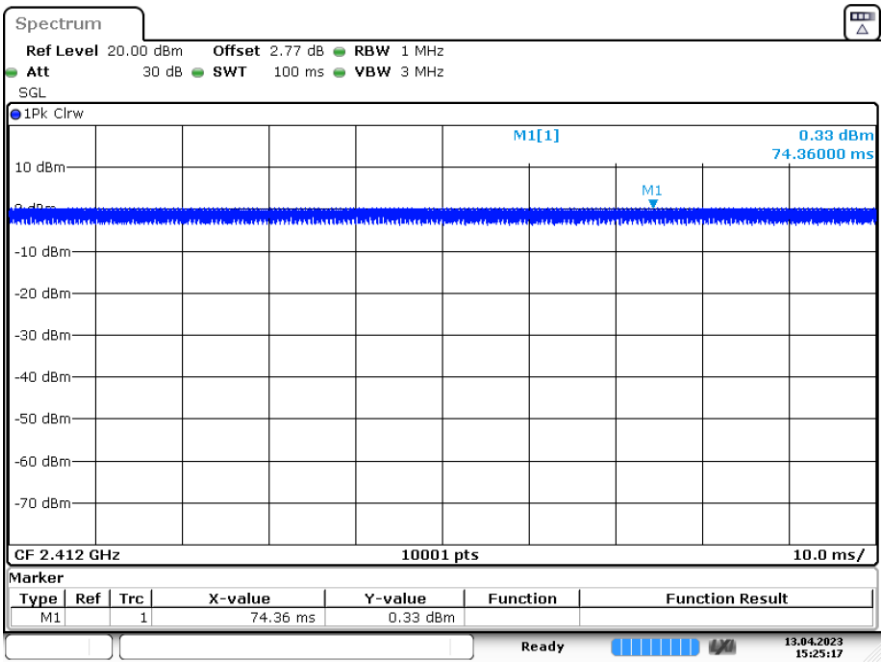


Test Graphs

b 2462MHz Ant1

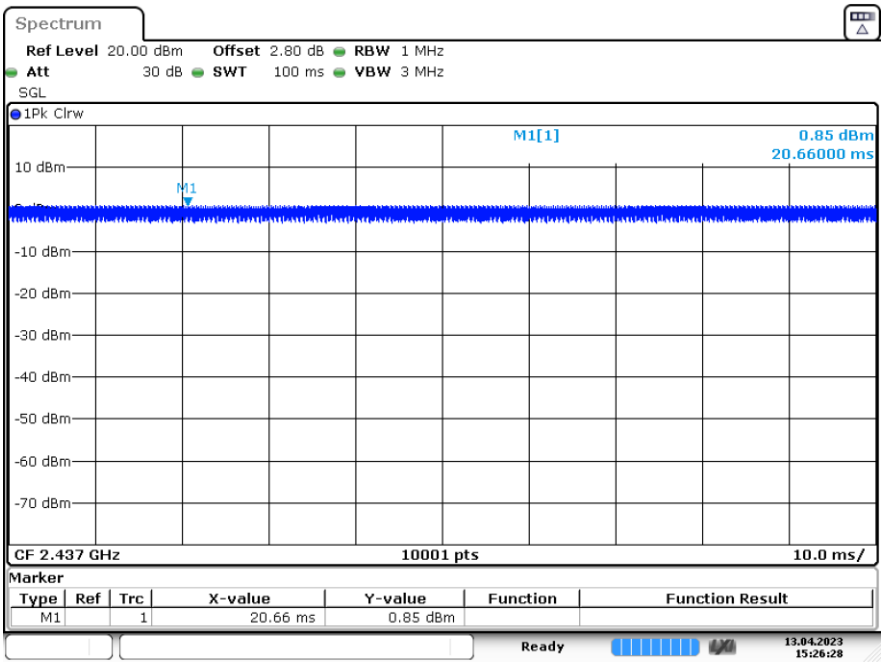



g 2412MHz Ant1

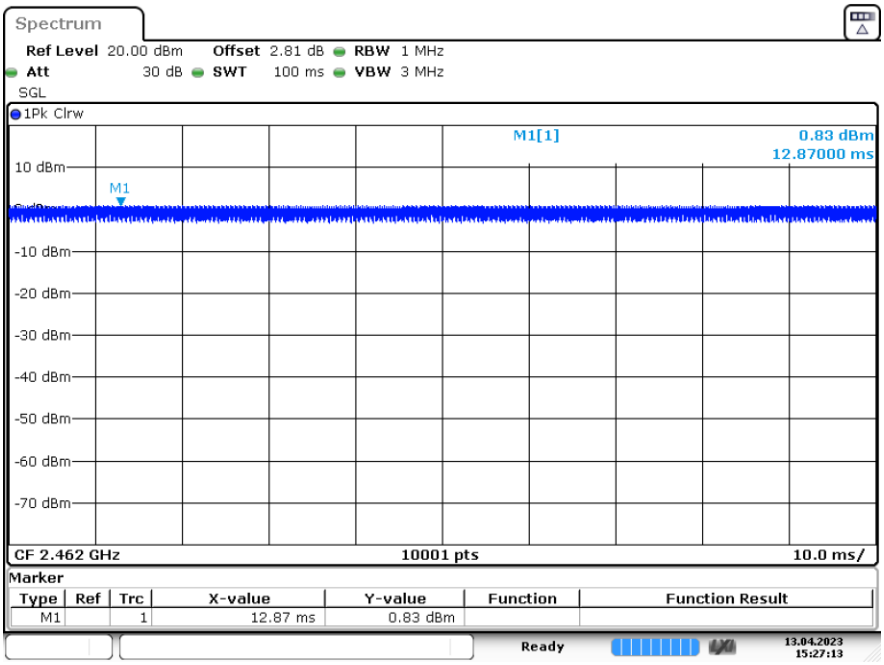


Test Graphs

g 2437MHz Ant1

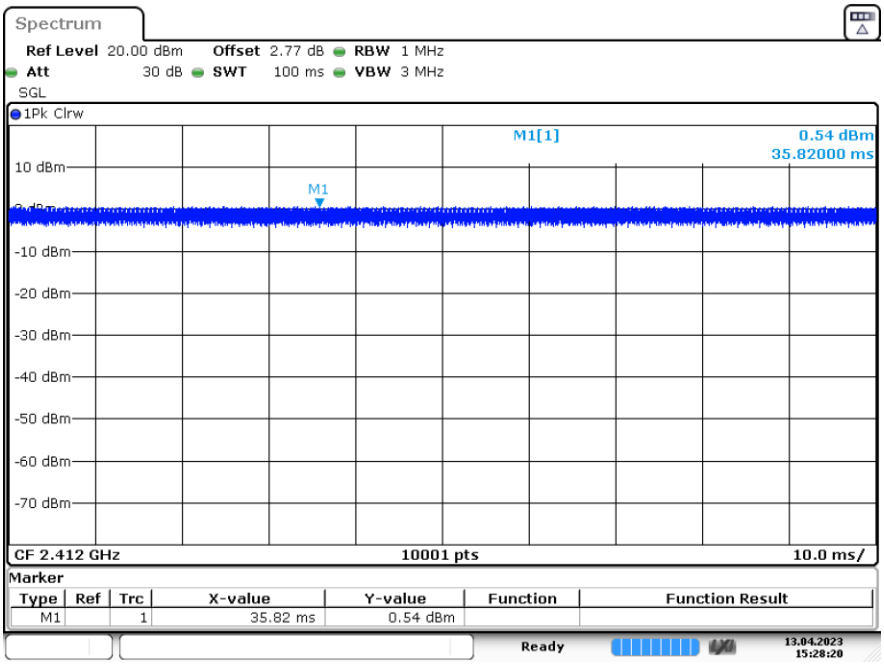



g 2462MHz Ant1

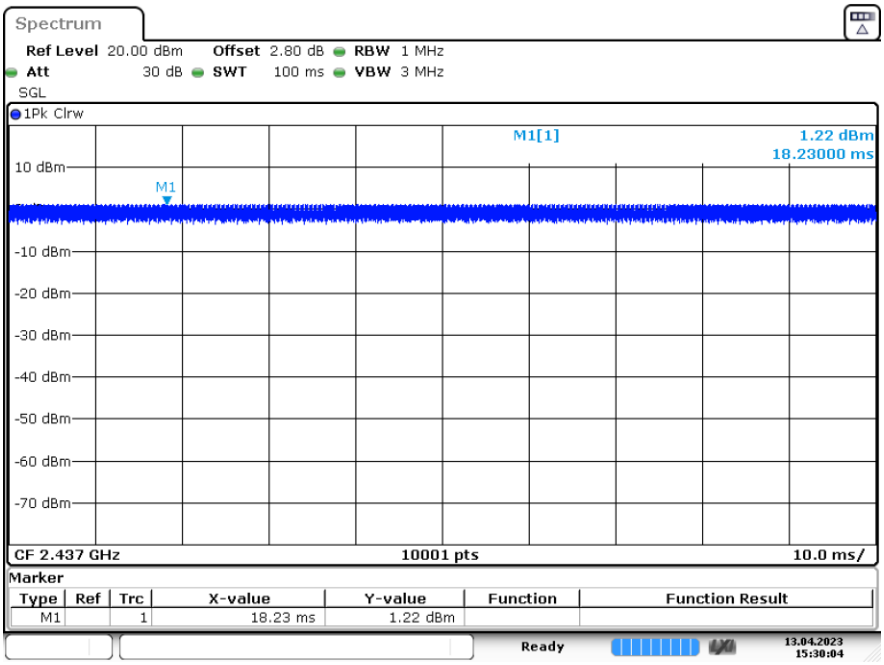


Test Graphs

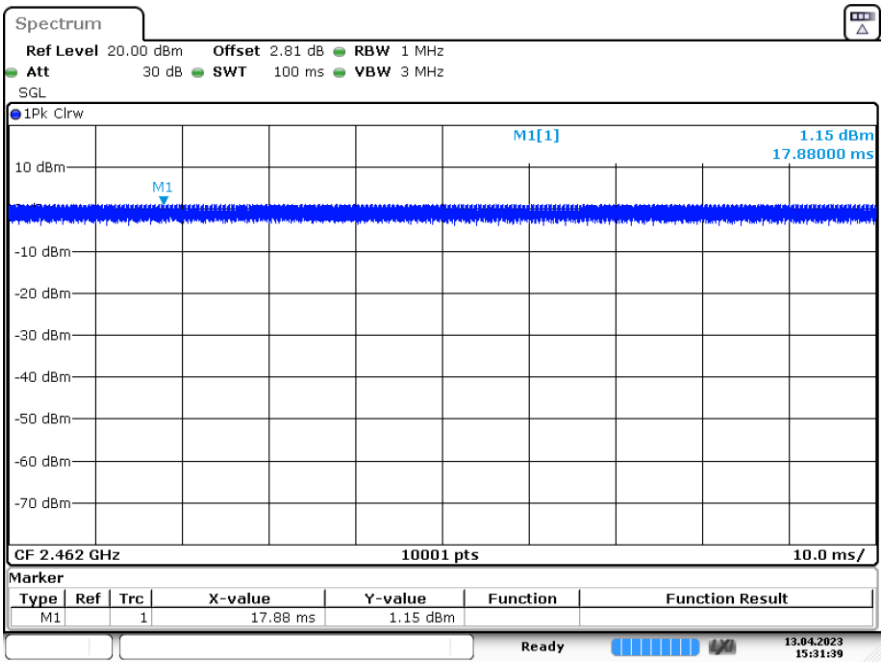
n20 2412MHz Ant1




n20 2437MHz Ant1



| Test Graphs |
|---|
| n20 2462MHz Ant1 |



# 2 Maximum Conducted Output Power

## 2.1 Test Result

| Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Limit (dBm) | Verdict |
|---|---|---|---|---|---|
| b | 2412 | Ant1 | 12.41 | 30 | Pass |
| b | 2437 | Ant1 | 12.78 | 30 | Pass |
| b | 2462 | Ant1 | 12.74 | 30 | Pass |
| g | 2412 | Ant1 | 12.11 | 30 | Pass |
| g | 2437 | Ant1 | 12.55 | 30 | Pass |
| g | 2462 | Ant1 | 12.58 | 30 | Pass |
| n20 | 2412 | Ant1 | 11.88 | 30 | Pass |
| n20 | 2437 | Ant1 | 12.45 | 30 | Pass |
| n20 | 2462 | Ant1 | 12.51 | 30 | Pass |

# 3 -6dB Bandwidth

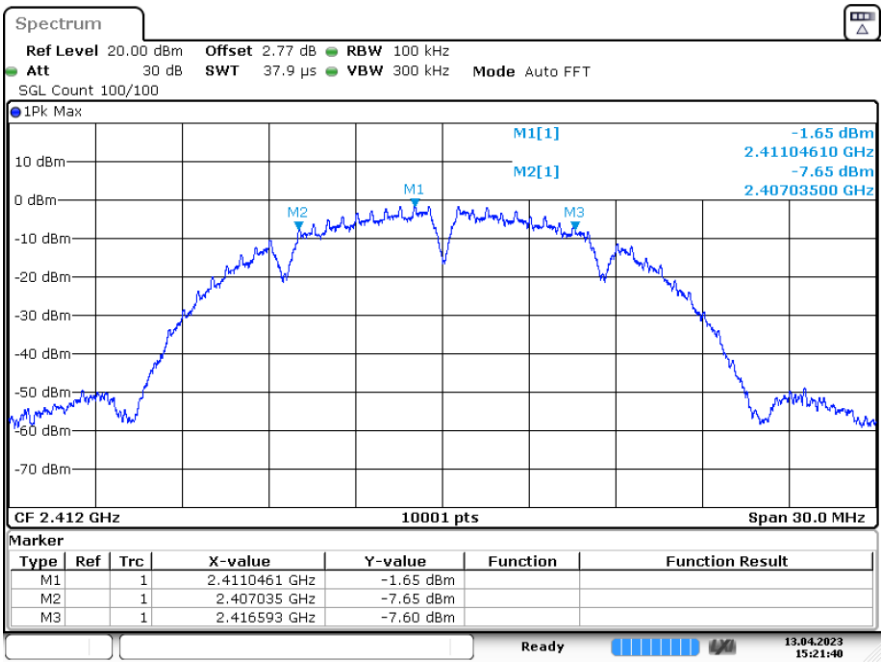
## 3.1 Test Result

| Mode | Frequency (MHz) | Antenna | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|---|---|---|---|---|---|
| b | 2412 | Ant1 | 9.558 | 0.5 | Pass |
| b | 2437 | Ant1 | 9.069 | 0.5 | Pass |
| b | 2462 | Ant1 | 9.084 | 0.5 | Pass |
| g | 2412 | Ant1 | 16.551 | 0.5 | Pass |
| g | 2437 | Ant1 | 16.464 | 0.5 | Pass |
| g | 2462 | Ant1 | 16.533 | 0.5 | Pass |
| n20 | 2412 | Ant1 | 17.646 | 0.5 | Pass |
| n20 | 2437 | Ant1 | 17.784 | 0.5 | Pass |
| n20 | 2462 | Ant1 | 17.79 | 0.5 | Pass |

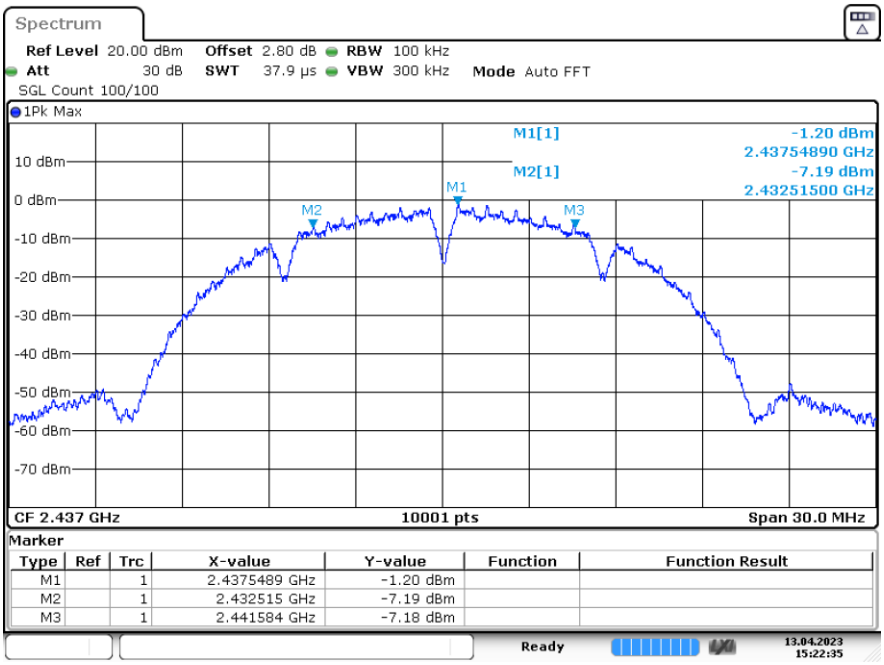
## 3.2 Test Graphs

Test Graphs

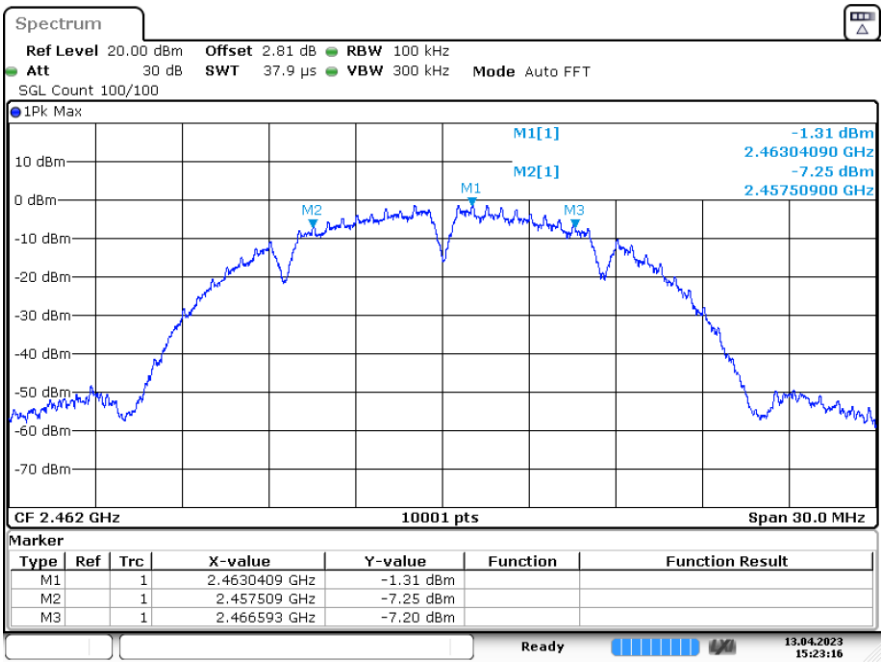
b 2412MHz Ant1



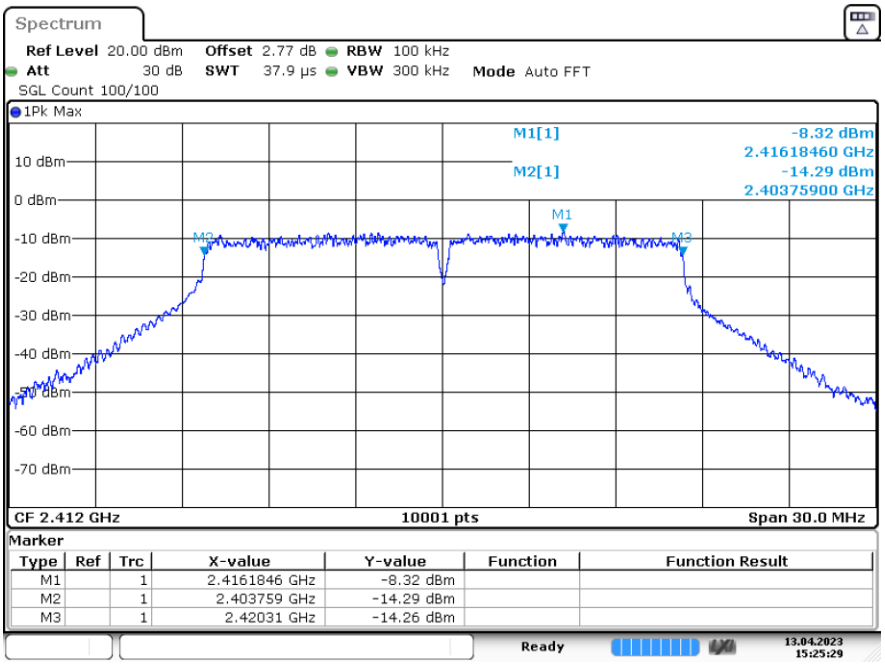

b 2437MHz Ant1



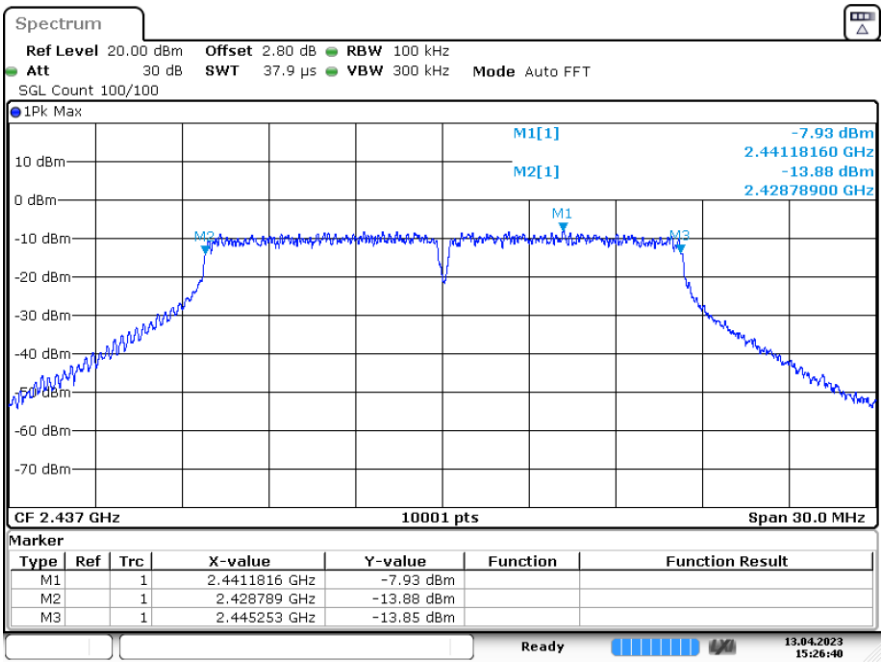
b 2462MHz Ant1



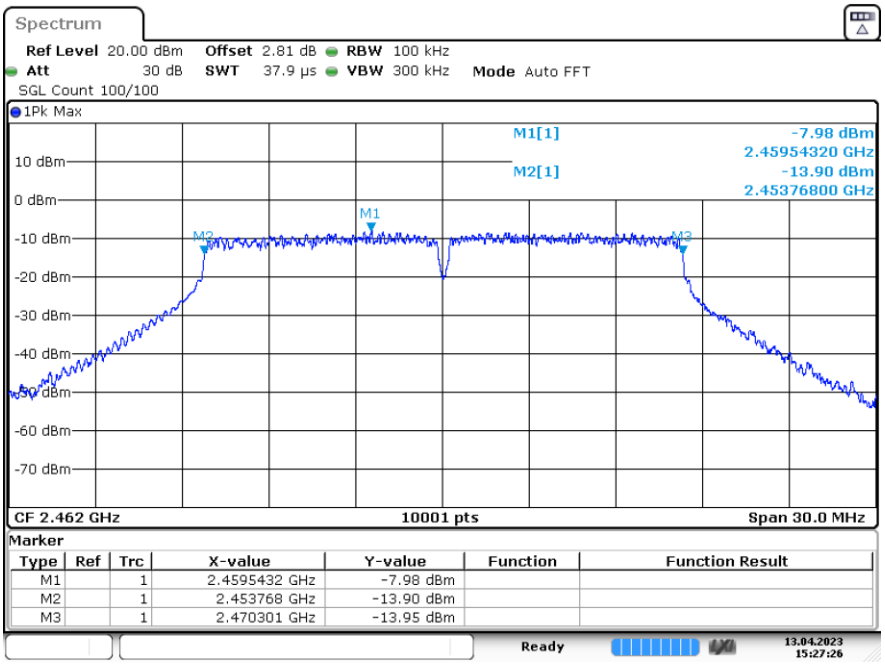

g 2412MHz Ant1



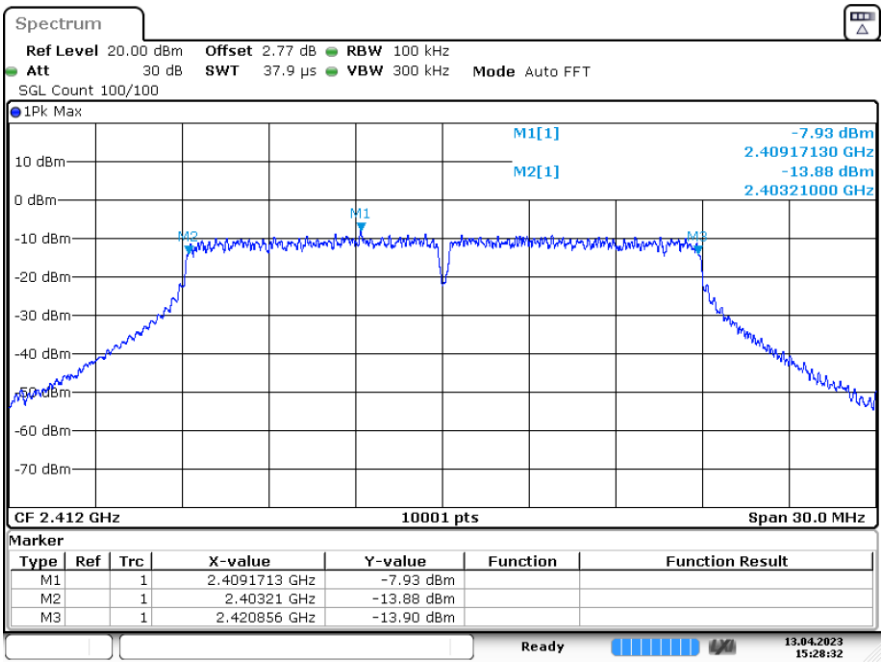
g 2437MHz Ant1



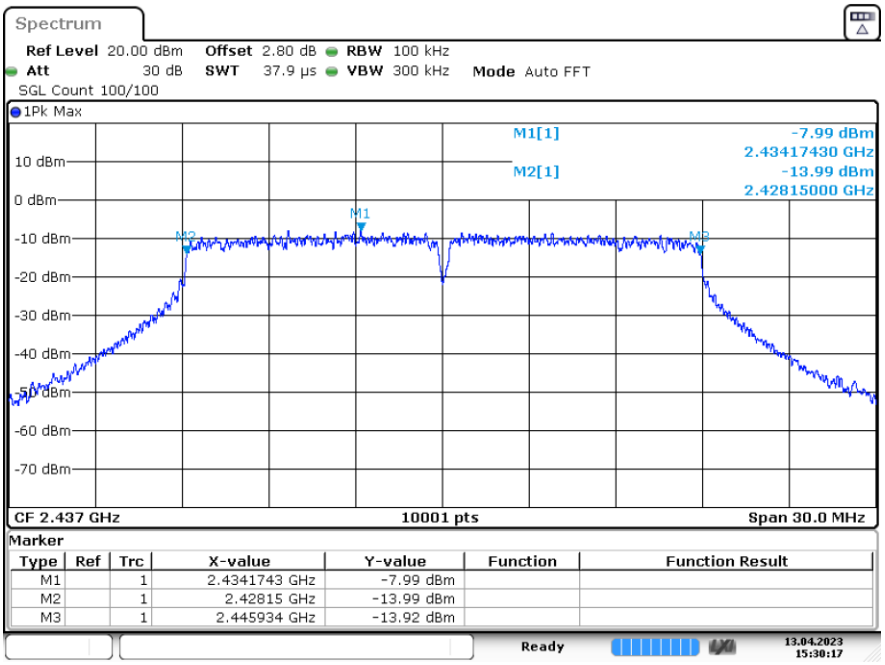

g 2462MHz Ant1



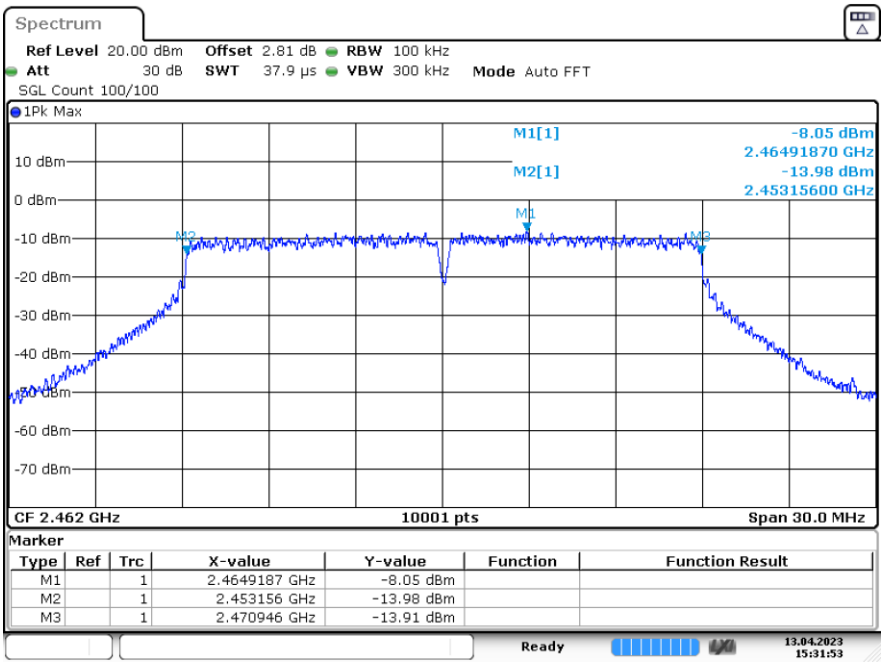
n20 2412MHz Ant1




n20 2437MHz Ant1



n20 2462MHz Ant1



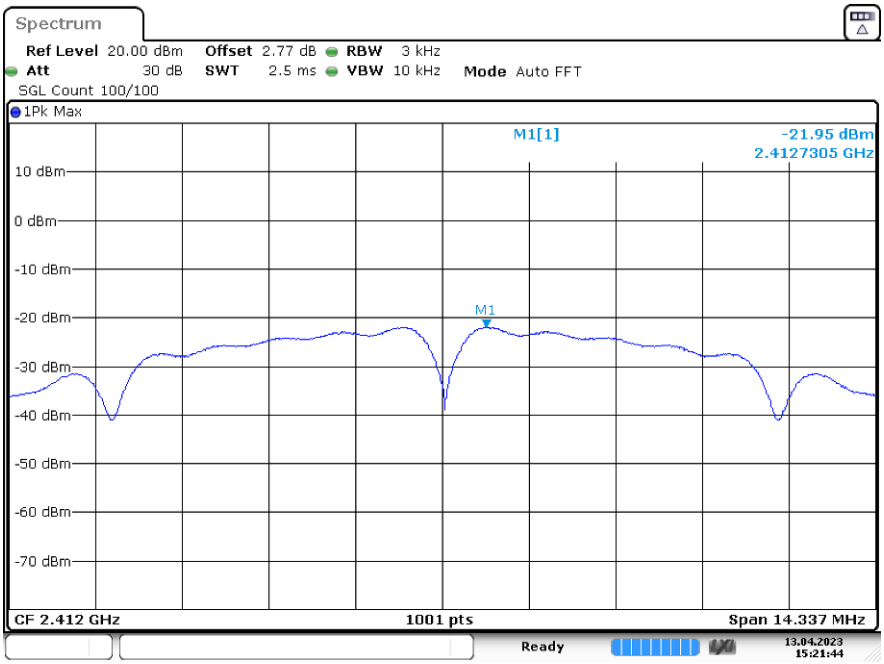
# 4 Maximum Power Spectral Density Level

## 4.1 Test Result

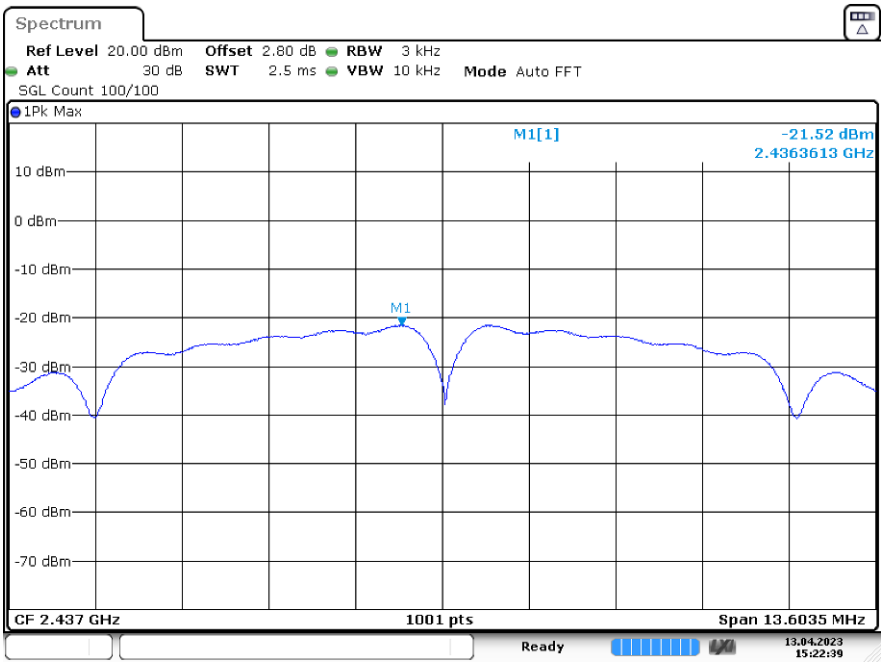
| Mode | Frequency (MHz) | Antenna | Conducted PSD (dBm/3-100kHz) | Limit (dBm/3kHz) | Verdict |
|---|---|---|---|---|---|
| b | 2412 | Ant1 | -21.95 | ≤8 | Pass |
| b | 2437 | Ant1 | -21.52 | ≤8 | Pass |
| b | 2462 | Ant1 | -21.57 | ≤8 | Pass |
| g | 2412 | Ant1 | -22.9 | ≤8 | Pass |
| g | 2437 | Ant1 | -22.4 | ≤8 | Pass |
| g | 2462 | Ant1 | -22.4 | ≤8 | Pass |
| n20 | 2412 | Ant1 | -22.34 | ≤8 | Pass |
| n20 | 2437 | Ant1 | -21.72 | ≤8 | Pass |
| n20 | 2462 | Ant1 | -21.7 | ≤8 | Pass |

## 4.2 Test Graphs

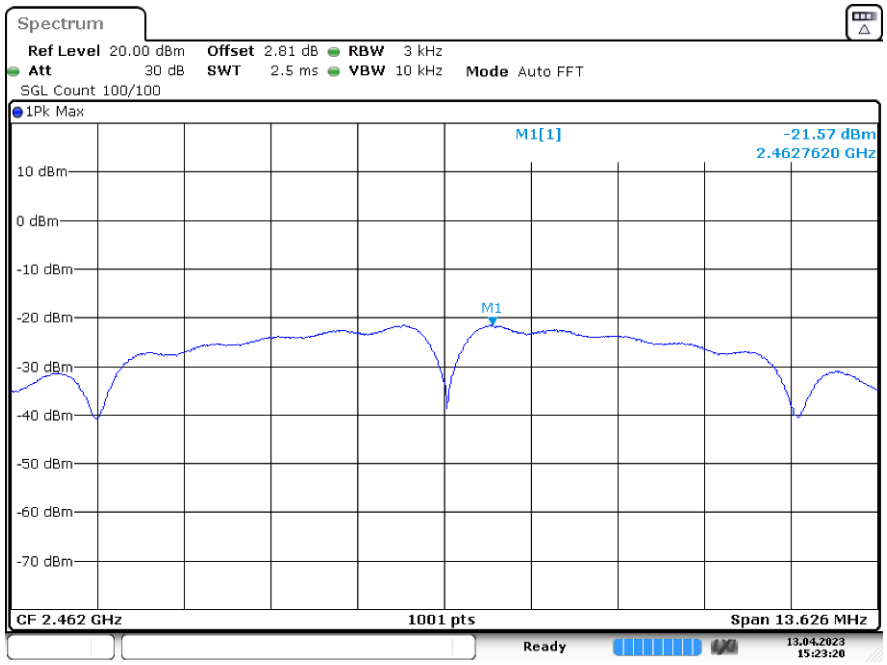
| Test Graphs |
|---|
| b 2412MHz Ant1 |



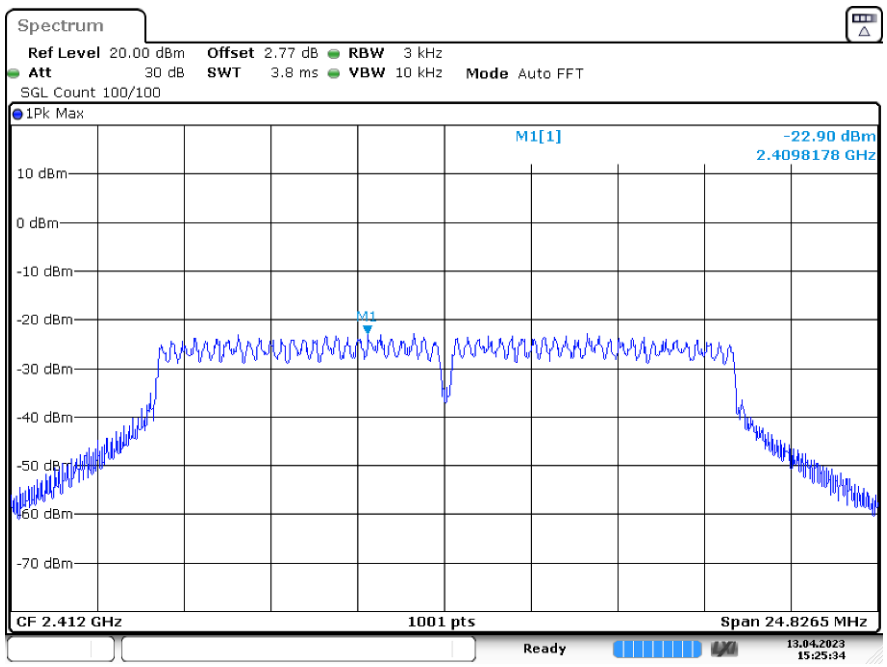

| b 2437MHz Ant1 |
|---|



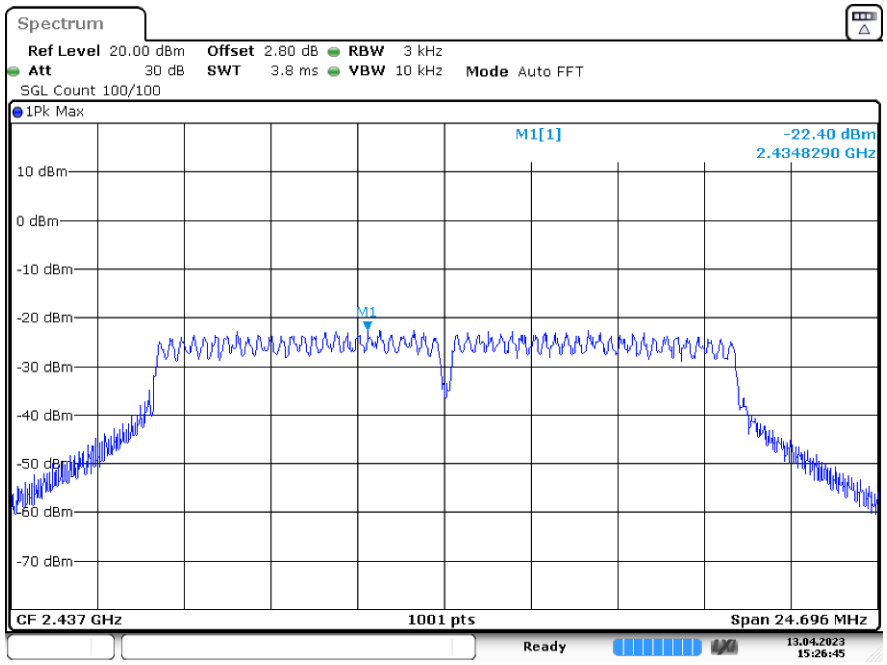
b 2462MHz Ant1



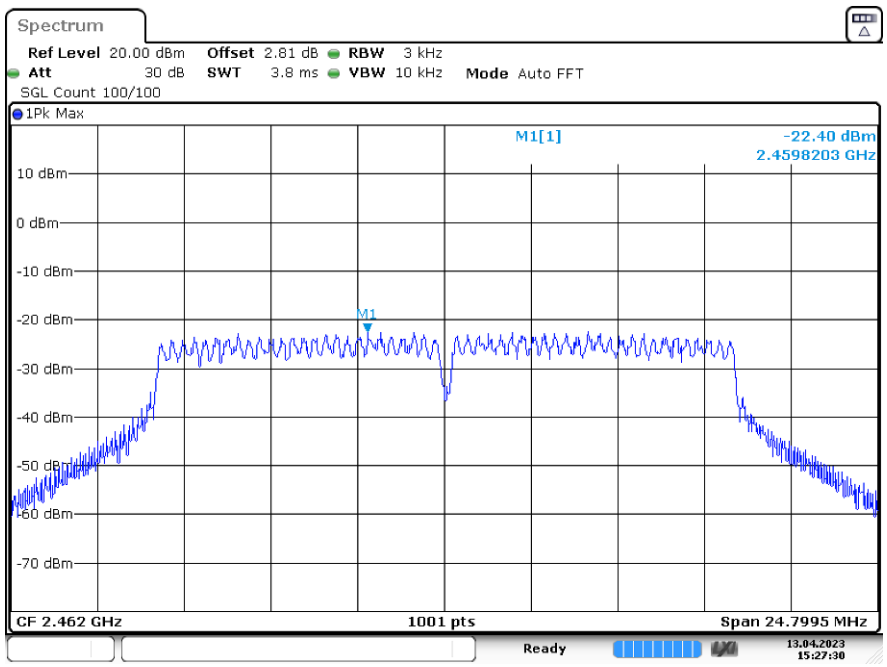

g 2412MHz Ant1



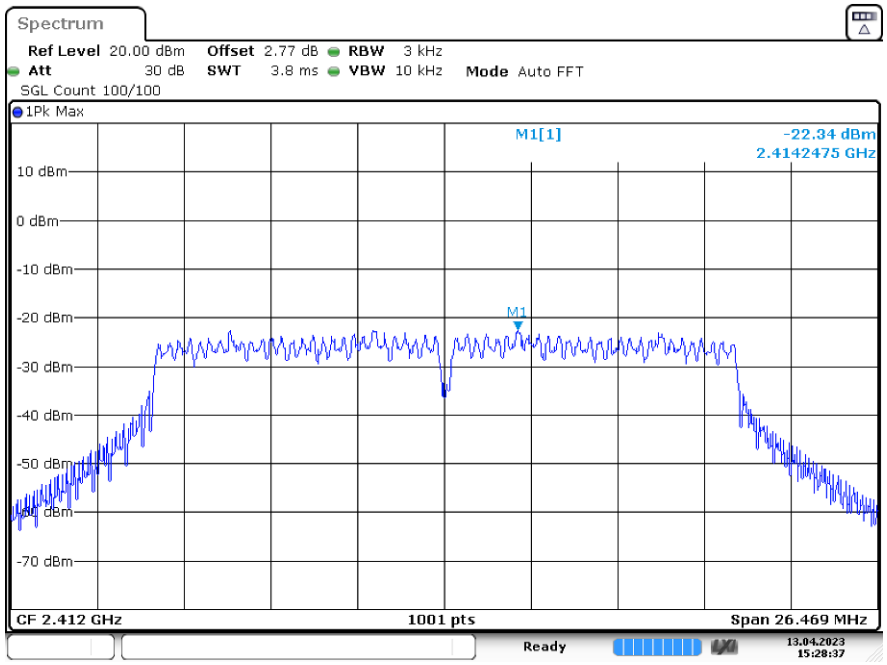
g 2437MHz Ant1



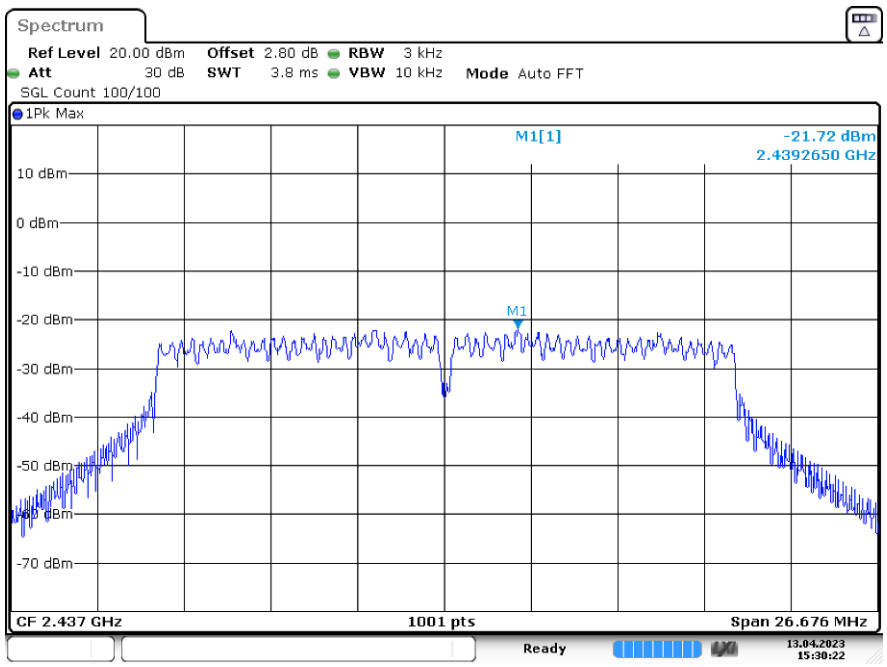

g 2462MHz Ant1



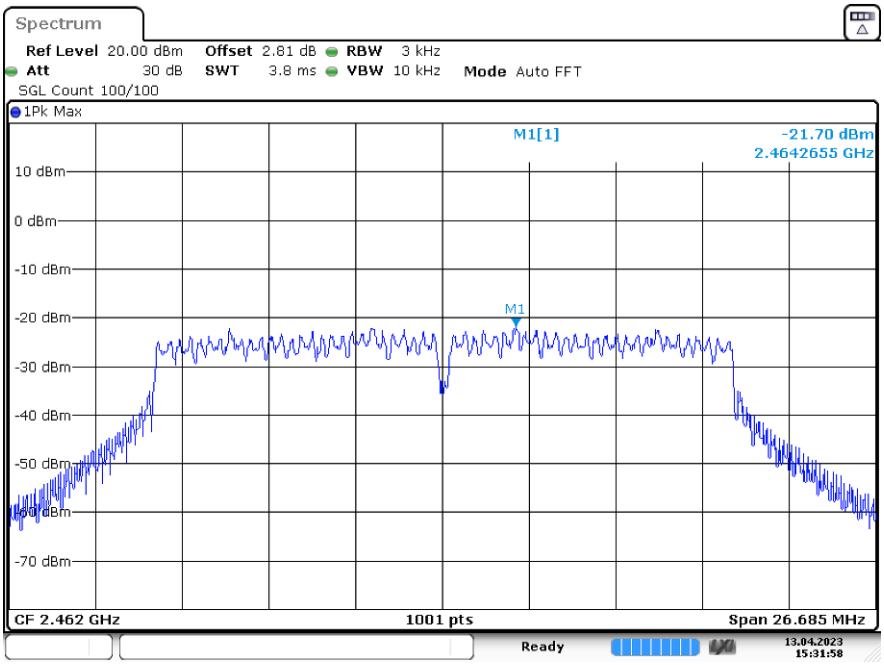
n20 2412MHz Ant1




n20 2437MHz Ant1



n20 2462MHz Ant1



# 5 Band Edge

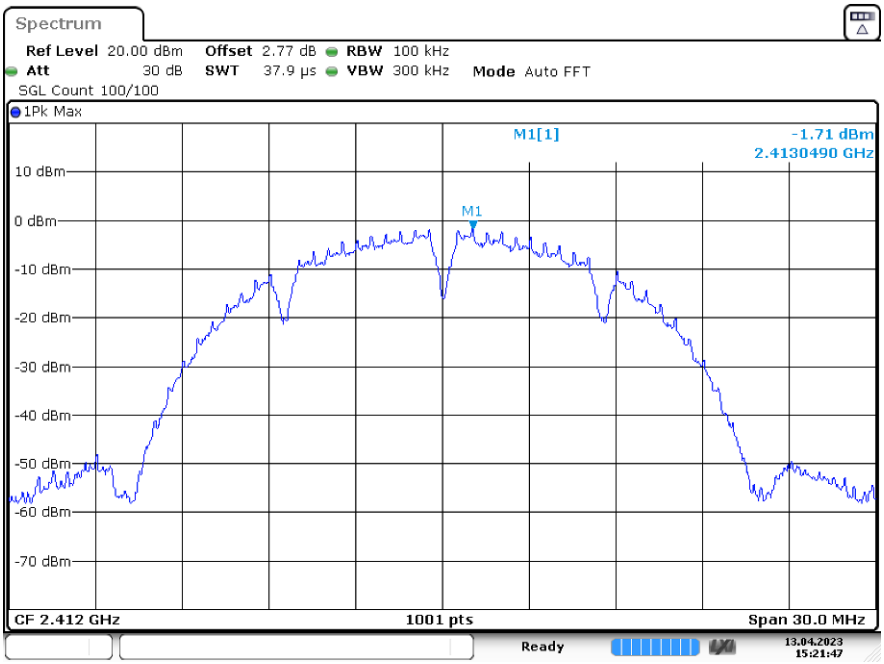
## 5.1 Test Result

| Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|---|---|---|---|---|---|
| b | 2412 | Ant1 | -53.53 | -20 | -53.53 |
| b | 2462 | Ant1 | -53.85 | -20 | Pass |
| g | 2412 | Ant1 | -46.46 | -20 | Pass |
| g | 2462 | Ant1 | -47.13 | -20 | Pass |
| n20 | 2412 | Ant1 | -46.11 | -20 | Pass |
| n20 | 2462 | Ant1 | -47.21 | -20 | Pass |

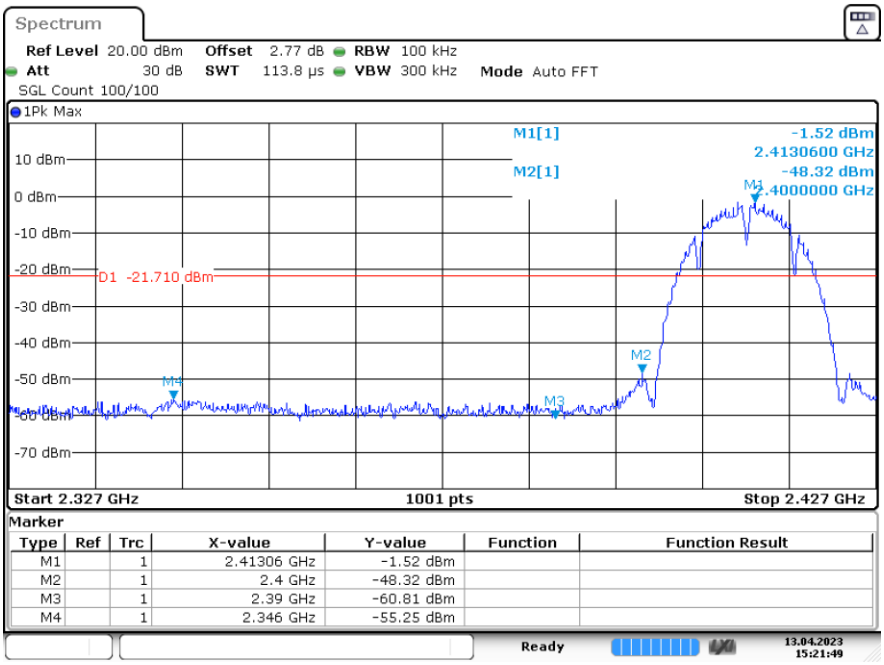
## 5.2 Test Graphs

Test Graphs

b 2412MHz Ant1 Ref



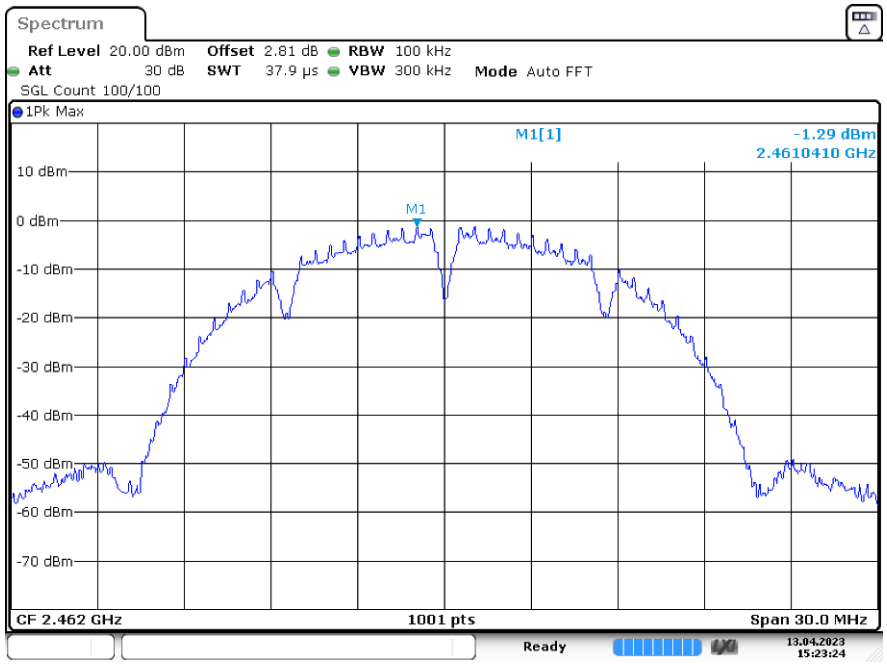

b 2412MHz Ant1 Emission



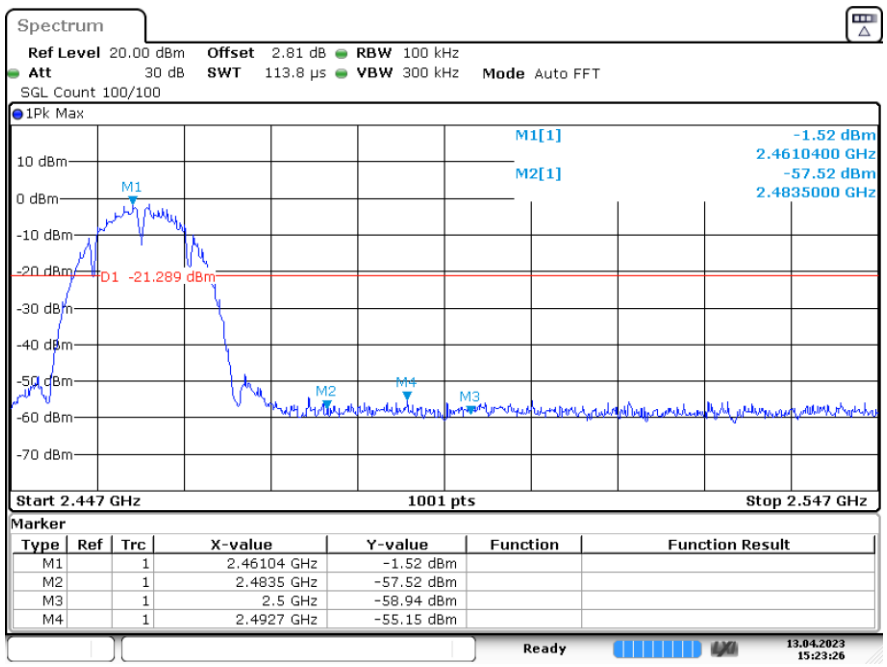

Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 2.41306 GHz | -1.52 dBm | | |
| M2 | | 1 | 2.4 GHz | -48.32 dBm | | |
| M3 | | 1 | 2.39 GHz | -60.81 dBm | | |
| M4 | | 1 | 2.346 GHz | -55.25 dBm | | |

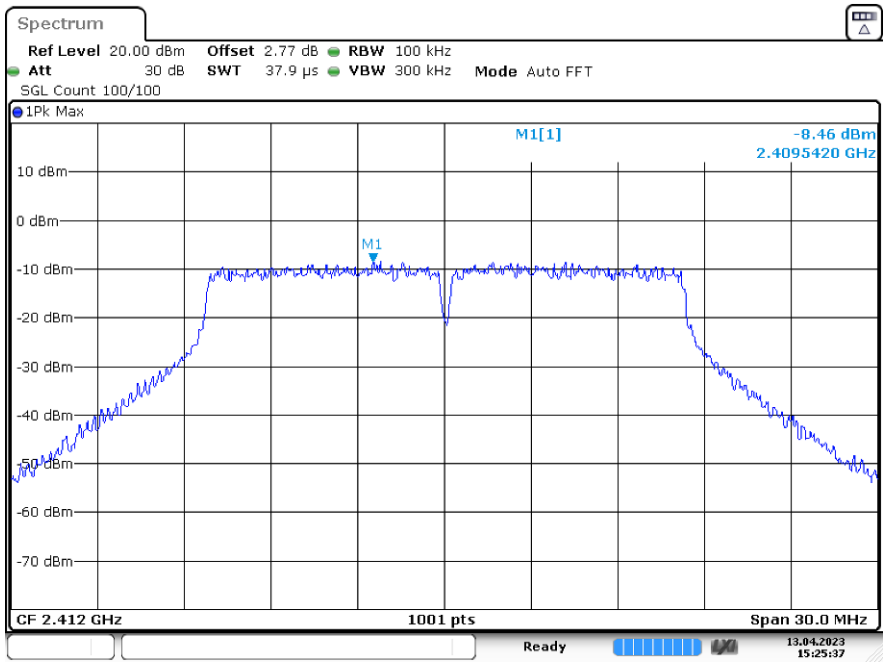
b 2462MHz Ant1 Ref



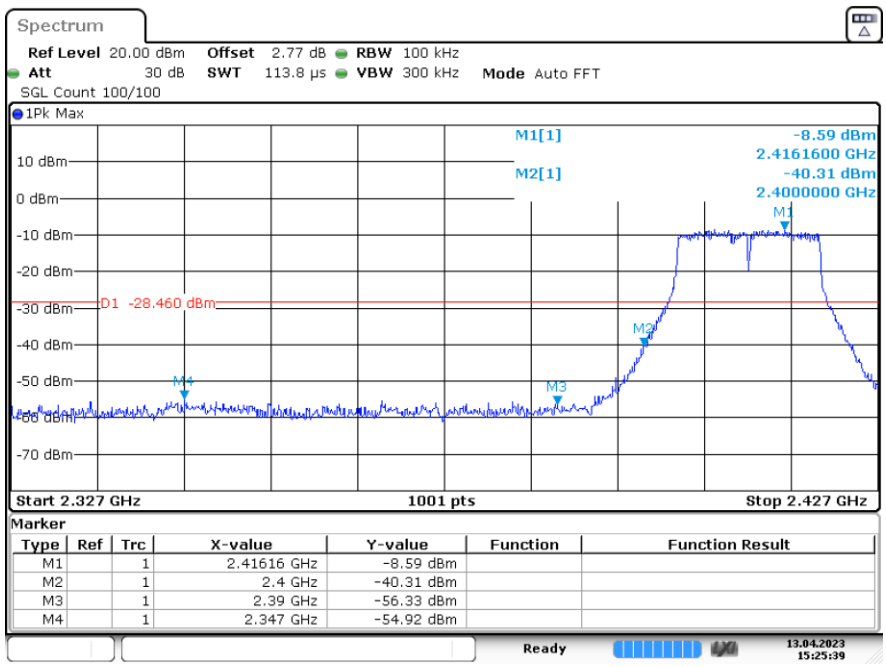

b 2462MHz Ant1 Emission



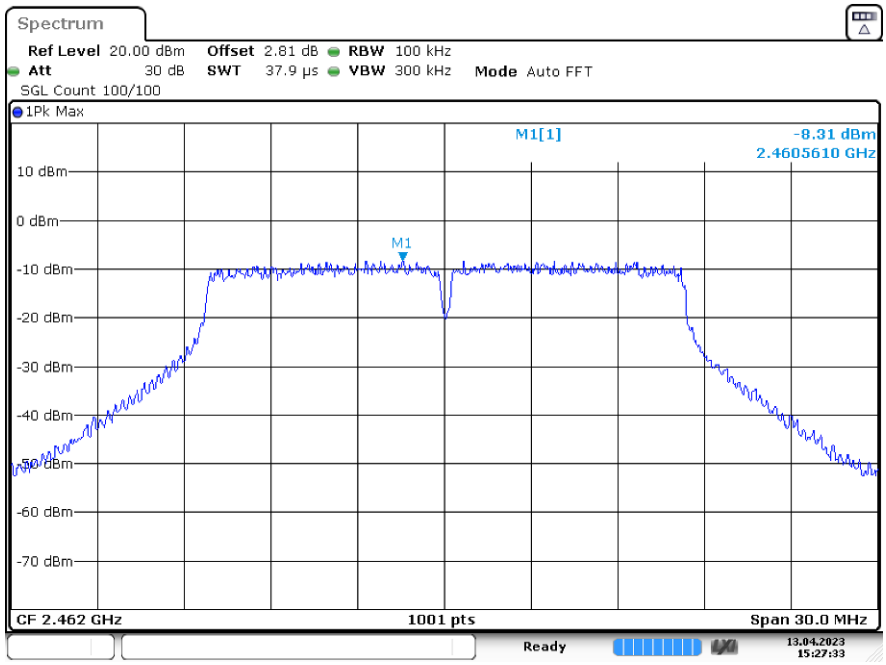
g 2412MHz Ant1 Ref



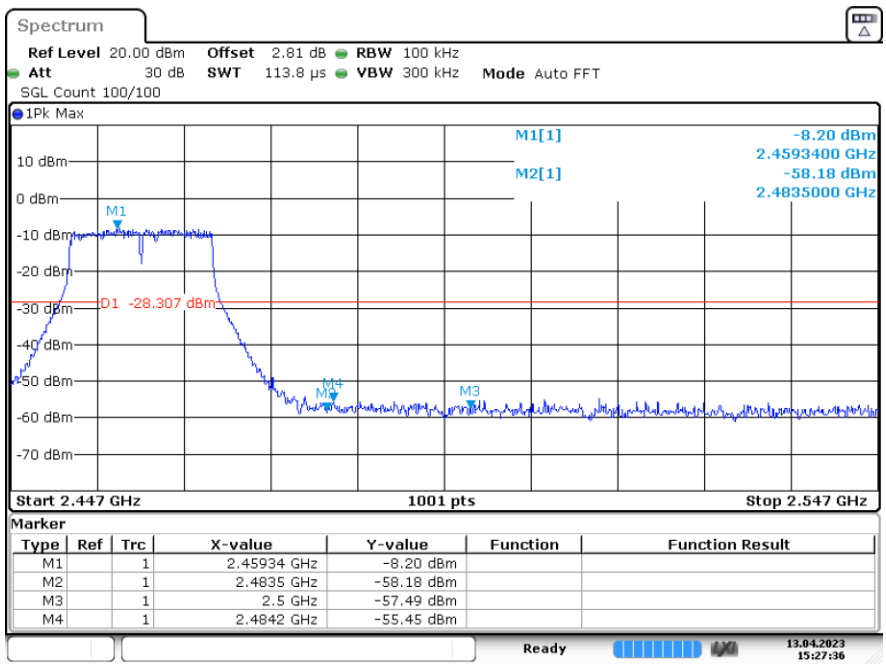

g 2412MHz Ant1 Emission



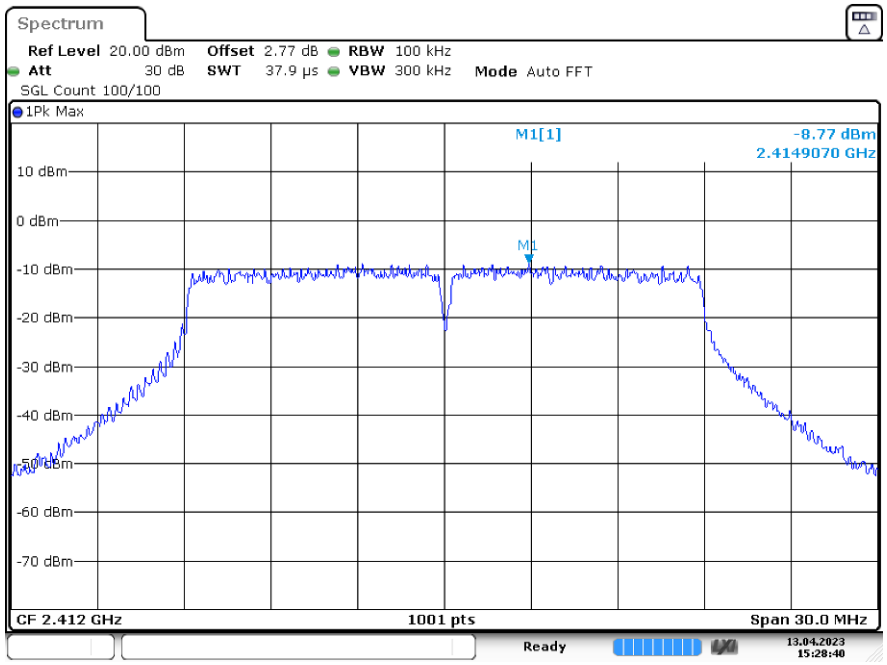
g 2462MHz Ant1 Ref



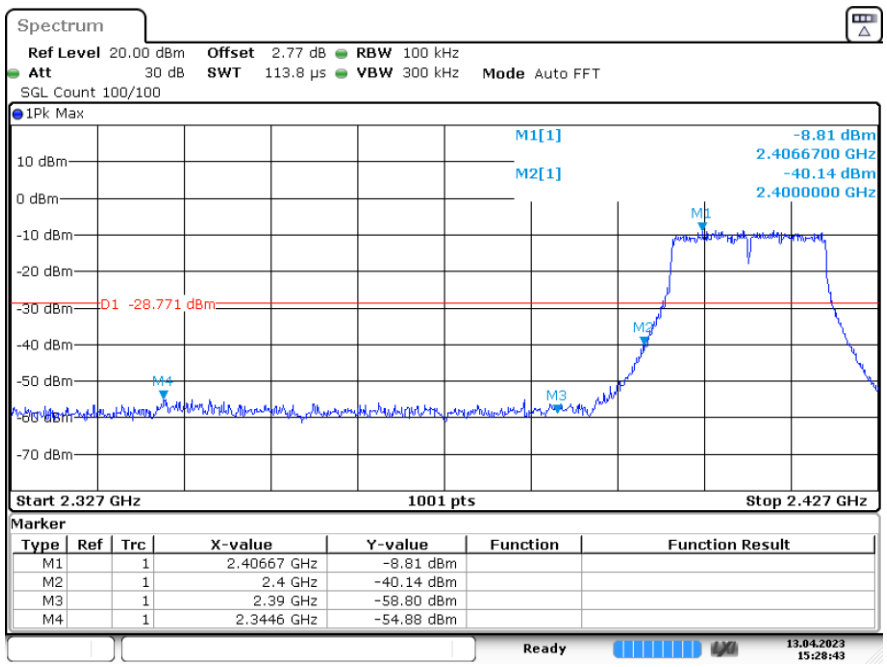

g 2462MHz Ant1 Emission



n20 2412MHz Ant1 Ref



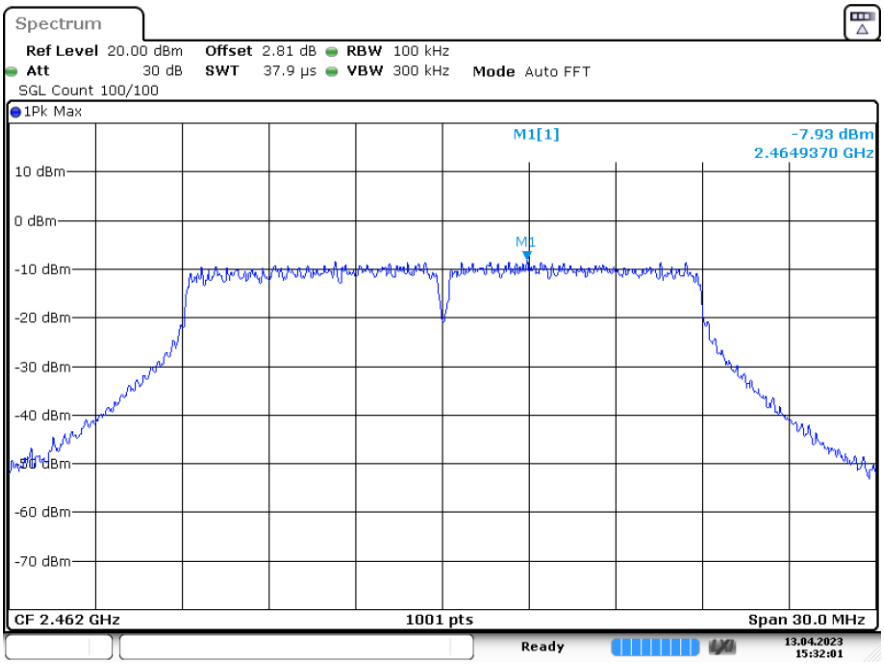

n20 2412MHz Ant1 Emission



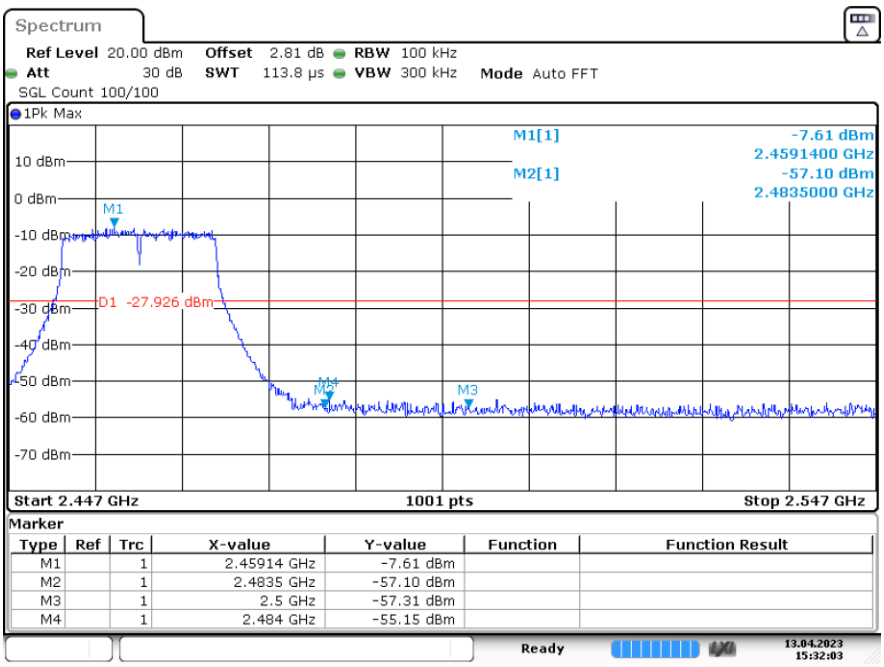

Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 2.40667 GHz | -8.81 dBm | | |
| M2 | | 1 | 2.4 GHz | -40.14 dBm | | |
| M3 | | 1 | 2.39 GHz | -58.80 dBm | | |
| M4 | | 1 | 2.3446 GHz | -54.88 dBm | | |

n20 2462MHz Ant1 Ref




n20 2462MHz Ant1 Emission



# 6 Conducted RF Spurious Emission

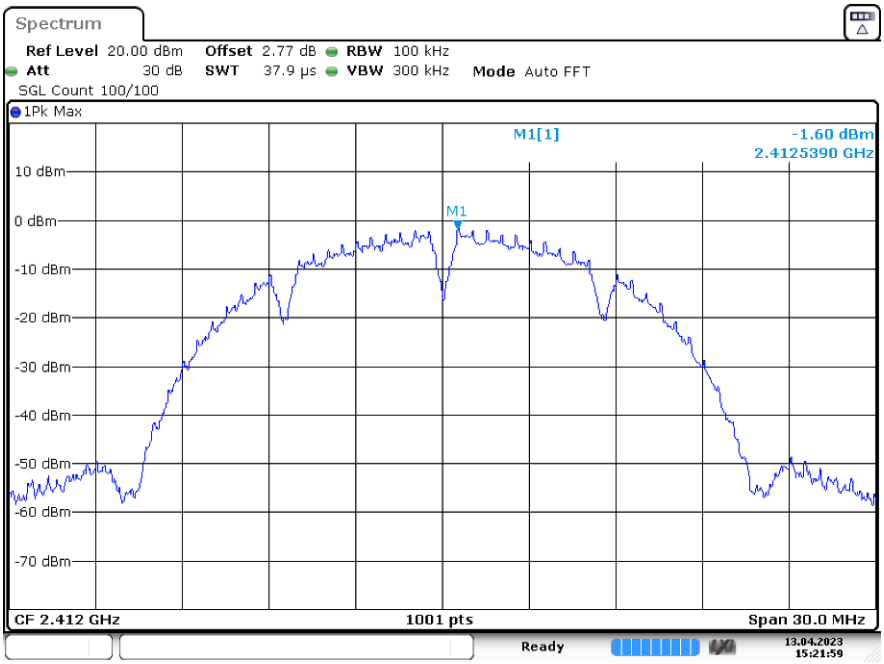
## 6.1 Test Result

| Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|---|---|---|---|---|---|
| b | 2412 | Ant1 | -41.61 | -20 | Pass |
| b | 2437 | Ant1 | -42.55 | -20 | Pass |
| b | 2462 | Ant1 | -42.37 | -20 | Pass |
| g | 2412 | Ant1 | -35.04 | -20 | Pass |
| g | 2437 | Ant1 | -35.14 | -20 | Pass |
| g | 2462 | Ant1 | -35.77 | -20 | Pass |
| n20 | 2412 | Ant1 | -35.82 | -20 | Pass |
| n20 | 2437 | Ant1 | -35.43 | -20 | Pass |
| n20 | 2462 | Ant1 | -33.99 | -20 | Pass |

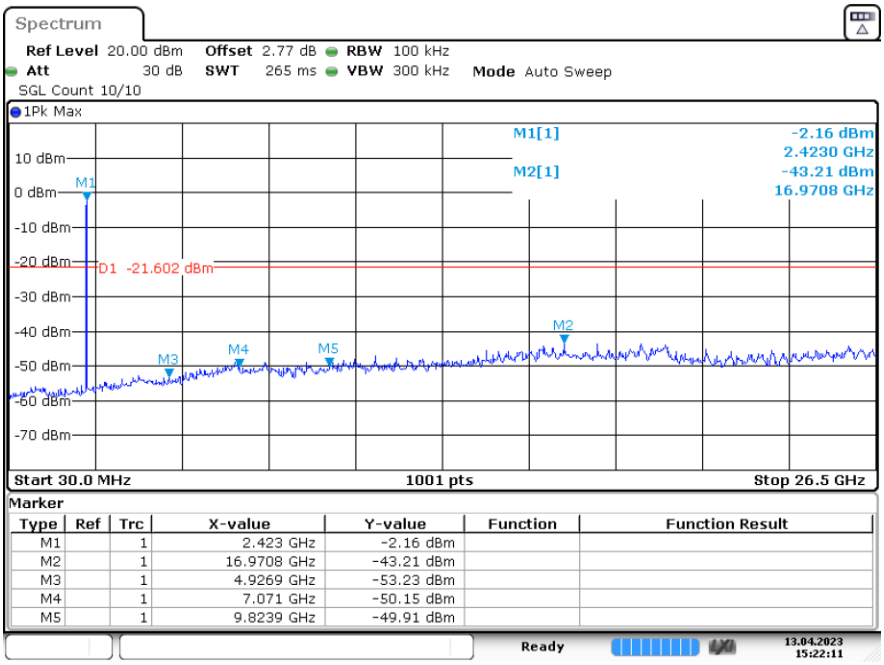
## 6.2 Test Graphs

Test Graphs

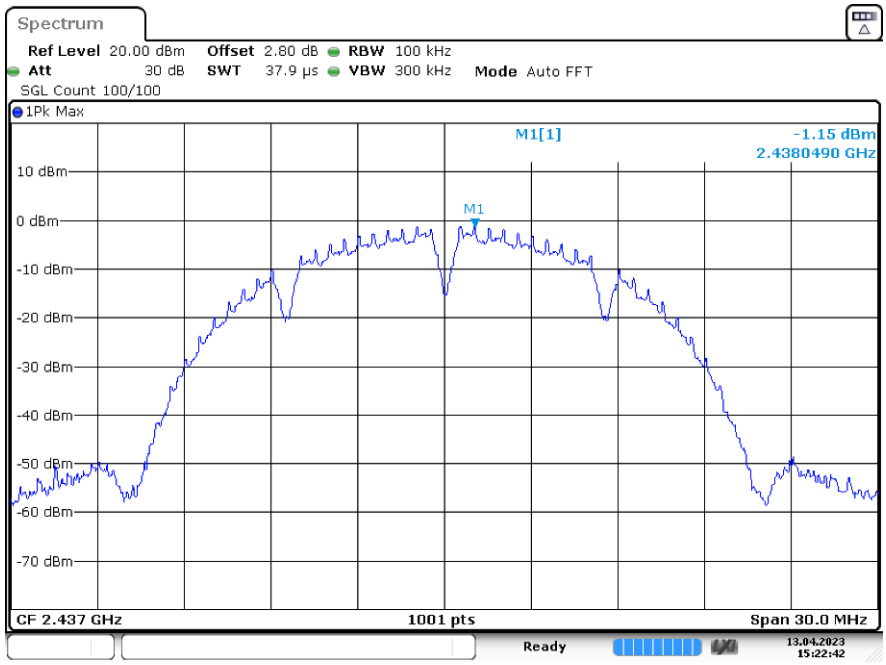
b 2412MHz Ant1 Ref



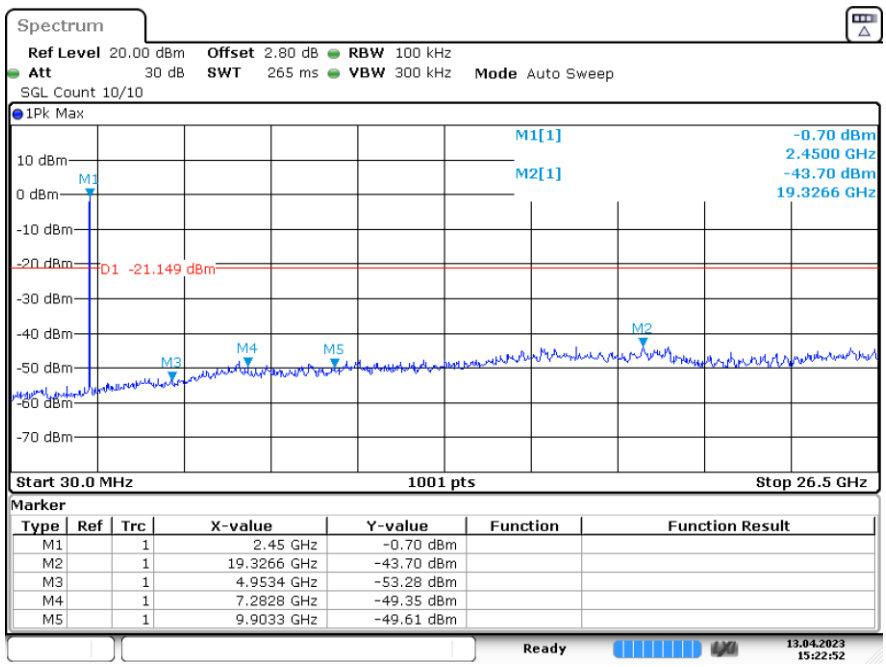

b 2412MHz Ant1 Emission



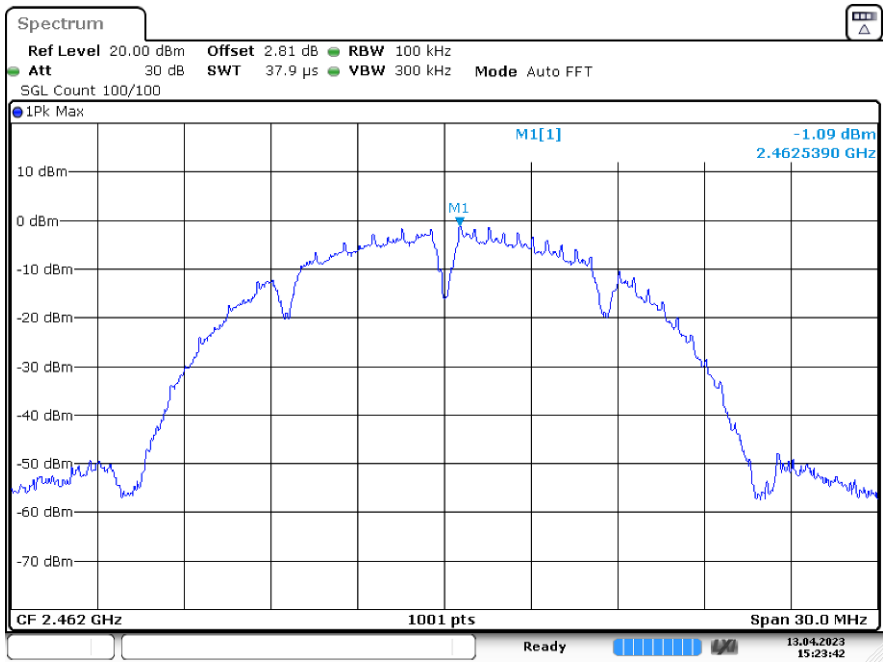
b 2437MHz Ant1 Ref



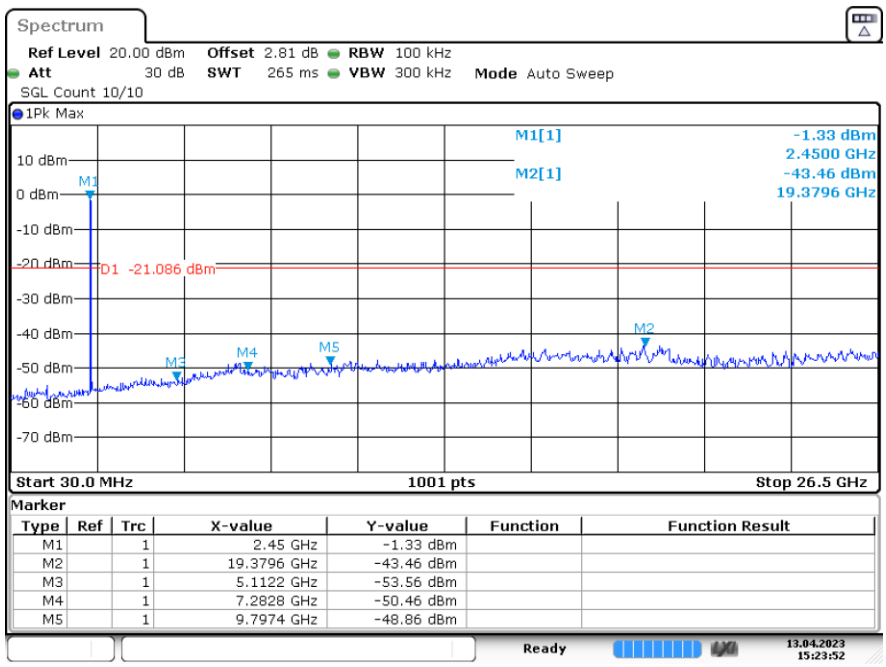

b 2437MHz Ant1 Emission



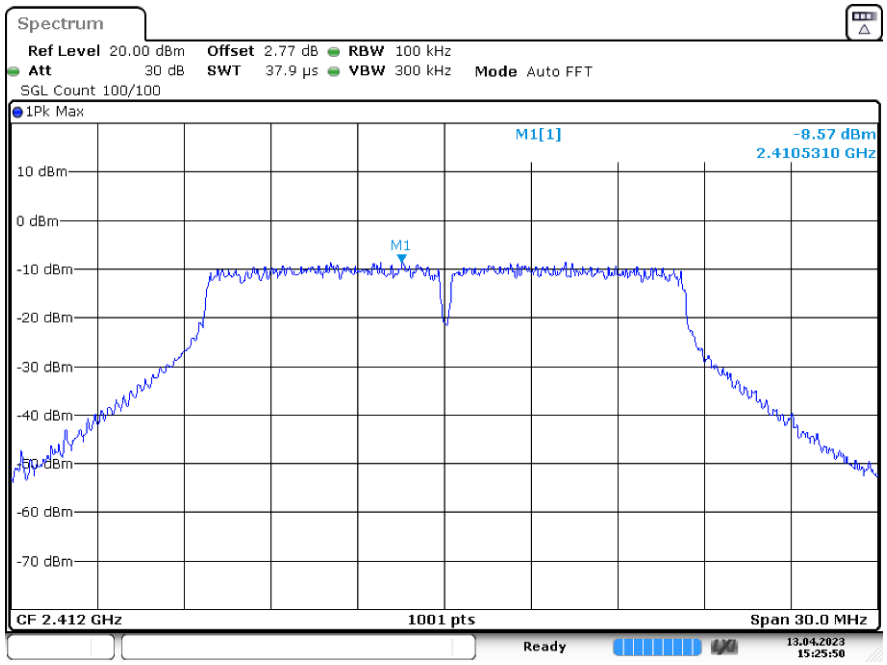
b 2462MHz Ant1 Ref



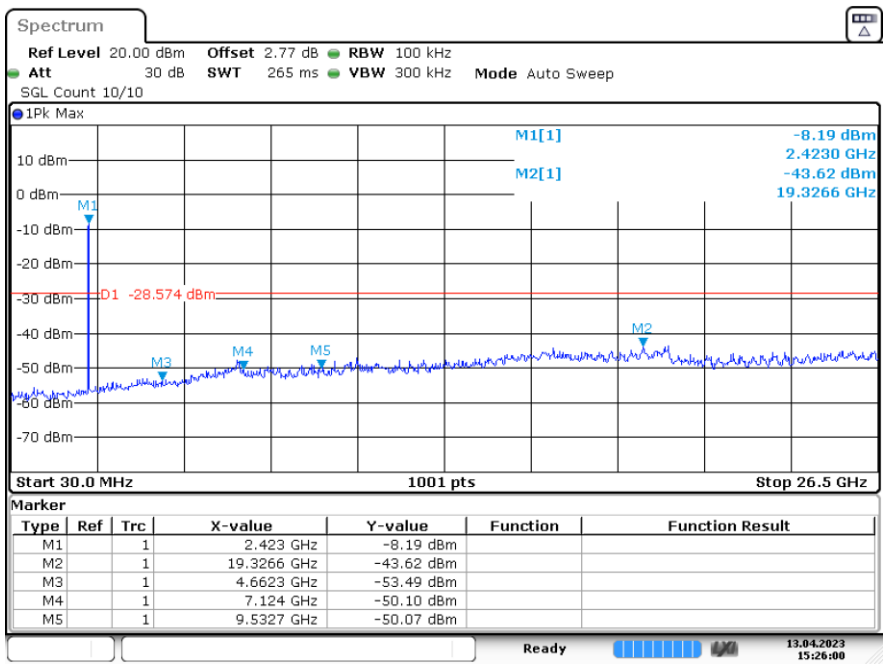

b 2462MHz Ant1 Emission



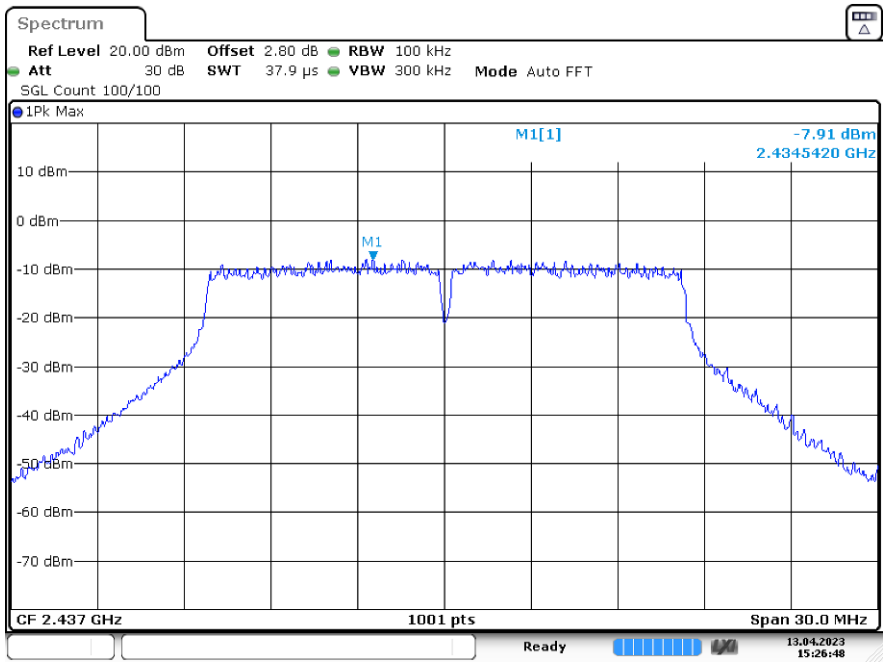
g 2412MHz Ant1 Ref



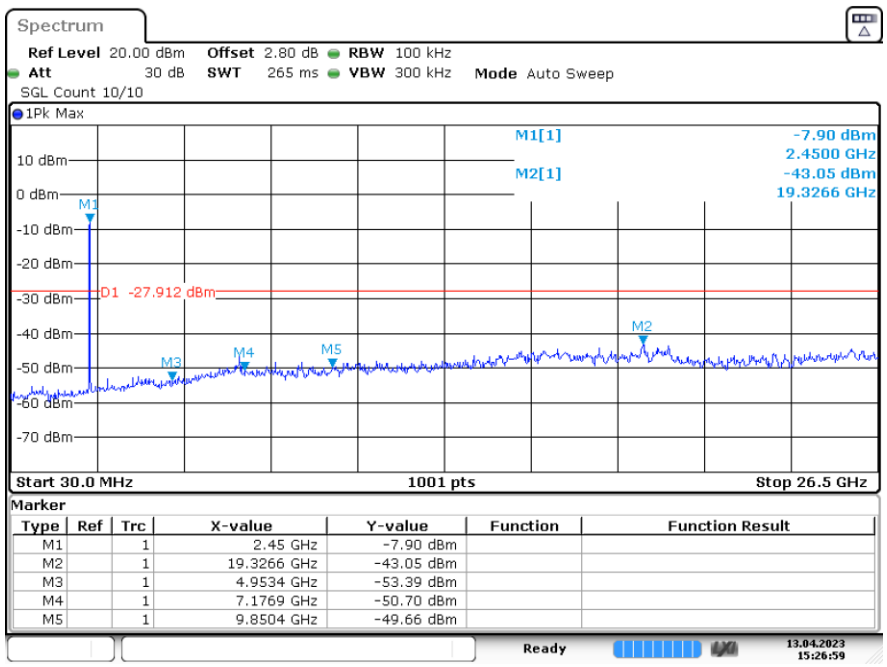

g 2412MHz Ant1 Emission



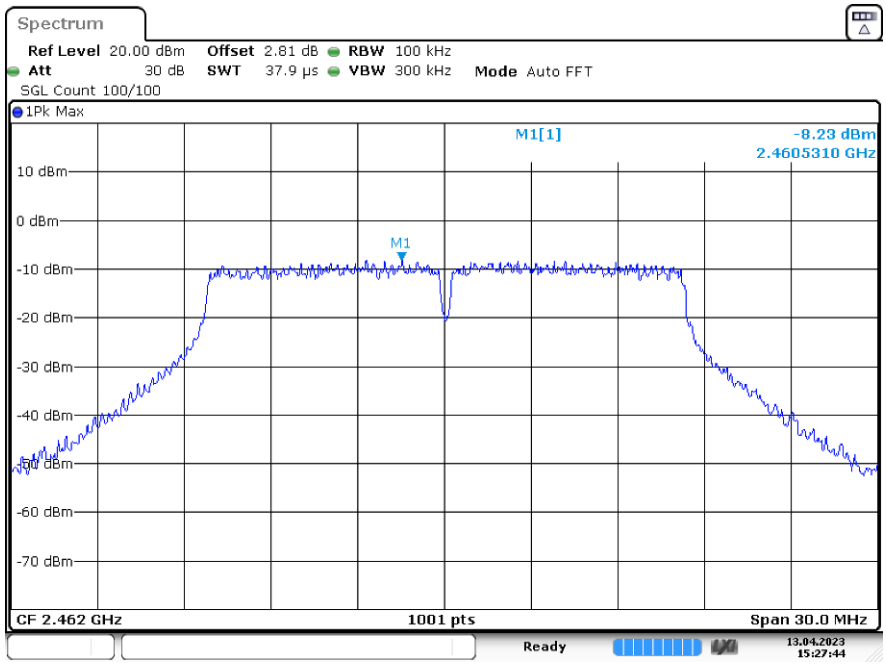
g 2437MHz Ant1 Ref



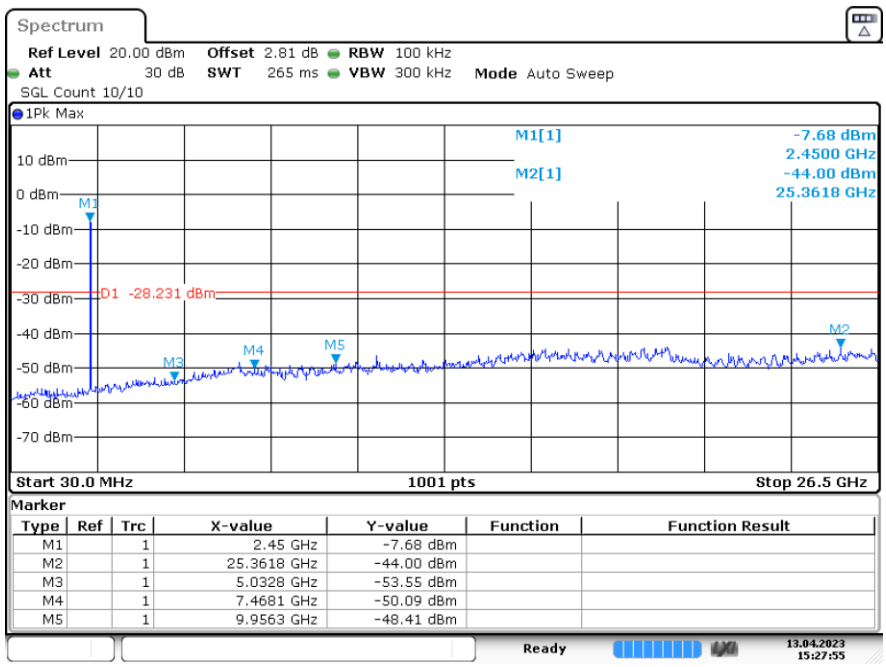

g 2437MHz Ant1 Emission



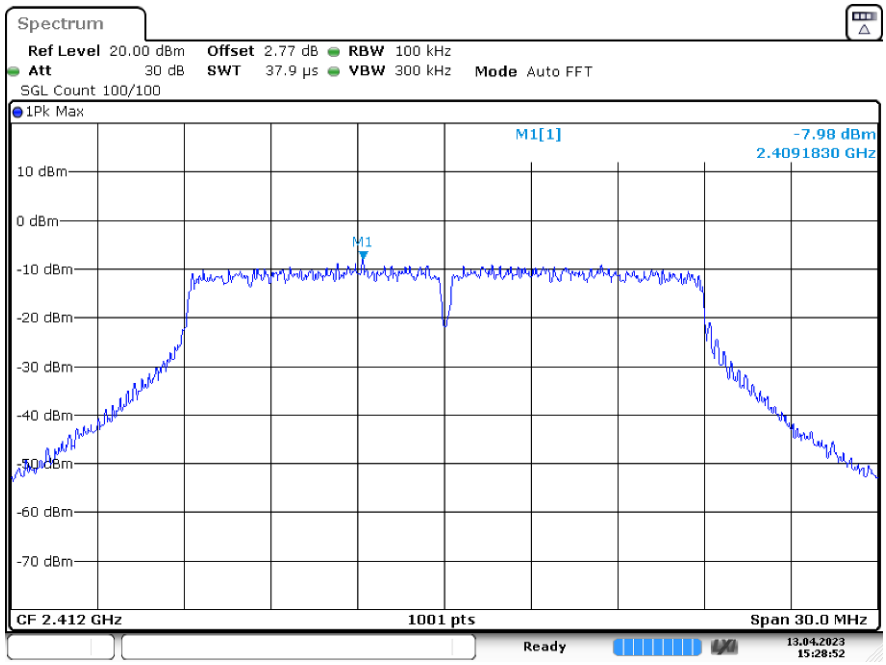
g 2462MHz Ant1 Ref



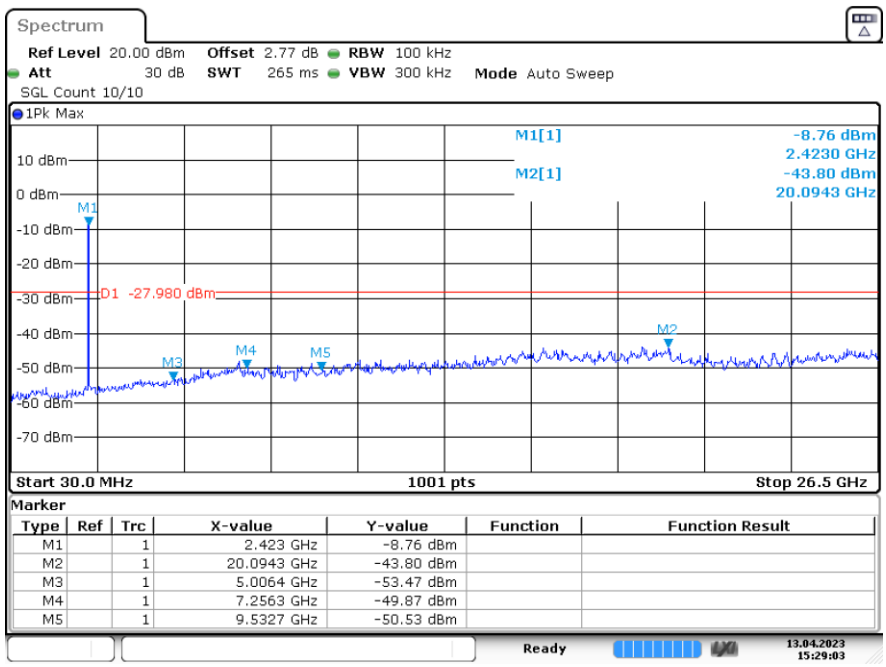

g 2462MHz Ant1 Emission



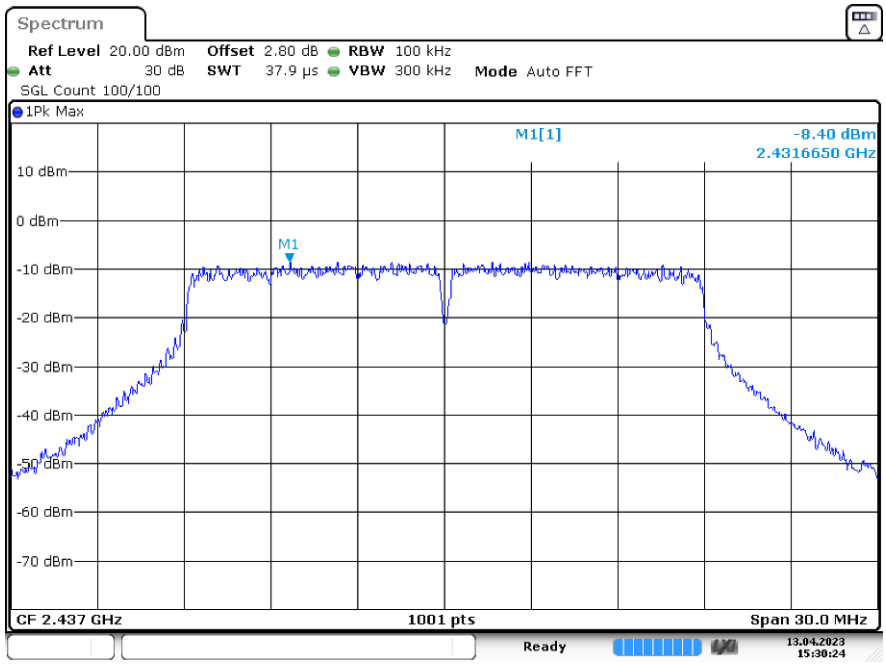
n20 2412MHz Ant1 Ref



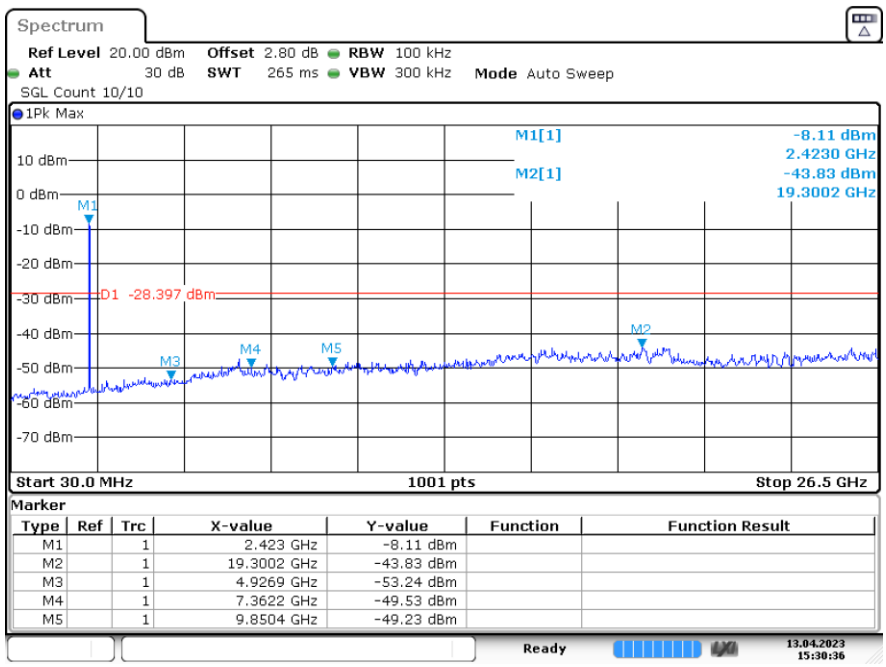

n20 2412MHz Ant1 Emission



n20 2437MHz Ant1 Ref



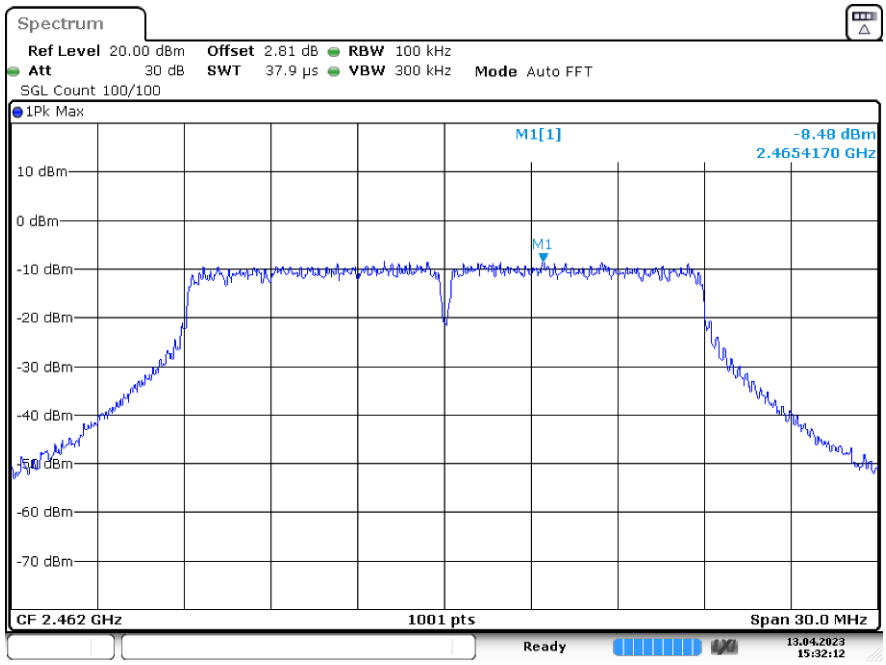

n20 2437MHz Ant1 Emission



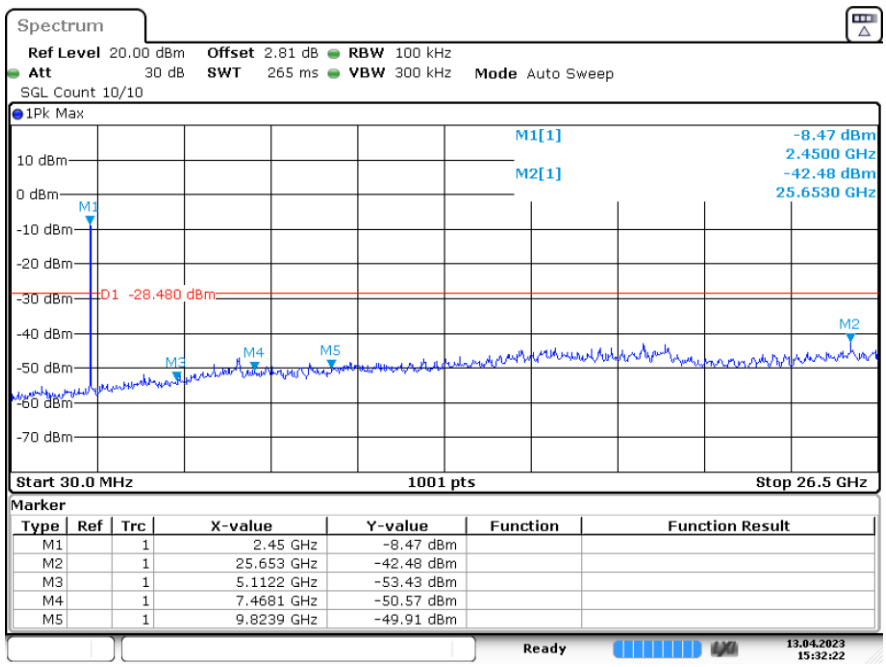

Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 2.423 GHz | -8.11 dBm | | |
| M2 | | 1 | 19.3002 GHz | -43.83 dBm | | |
| M3 | | 1 | 4.9269 GHz | -53.24 dBm | | |
| M4 | | 1 | 7.3622 GHz | -49.53 dBm | | |
| M5 | | 1 | 9.8504 GHz | -49.23 dBm | | |

n20 2462MHz Ant1 Ref




n20 2462MHz Ant1 Emission



# 7 Restrict Band

## 7.1 Test Result

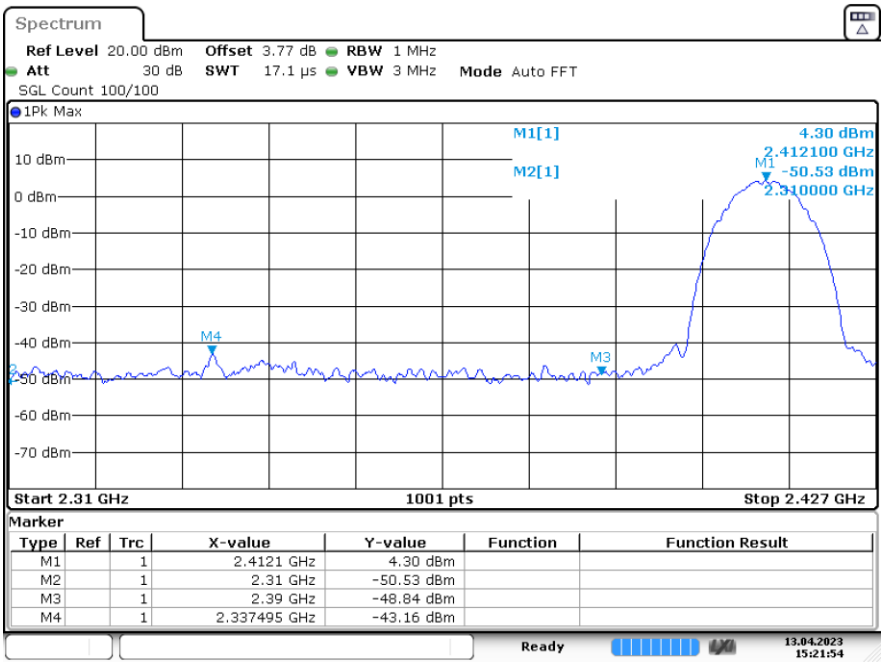
| Mode | Frequency (MHz) | Antenna | Spur Freq (MHz) | Power (dBm) | Gain (dBi) | E (dBuV/m) | Detector | Limit (dBuV/m) | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| b | 2412 | Ant1 | 2310 | -50.53 | 2 | 46.73 | Peak | 74 | Pass |
| b | 2412 | Ant1 | 2310 | -57.64 | 2 | 39.62 | Average | 54 | Pass |
| b | 2412 | Ant1 | 2337.495 | -43.16 | 2 | 54.1 | Peak | 74 | Pass |
| b | 2412 | Ant1 | 2337.144 | -55.79 | 2 | 41.47 | Average | 54 | Pass |
| b | 2412 | Ant1 | 2390 | -48.83 | 2 | 48.43 | Peak | 74 | Pass |
| b | 2412 | Ant1 | 2390 | -57.68 | 2 | 39.58 | Average | 54 | Pass |
| b | 2462 | Ant1 | 2483.5 | -48.06 | 2 | 49.2 | Peak | 74 | 49.2 |
| b | 2462 | Ant1 | 2483.5 | -57.21 | 2 | 40.05 | Average | 54 | Pass |
| b | 2462 | Ant1 | 2498.622 | -46.47 | 2 | 50.79 | Peak | 74 | Pass |
| b | 2462 | Ant1 | 2500 | -56.76 | 2 | 40.5 | Average | 54 | Pass |
| b | 2462 | Ant1 | 2500 | -47.58 | 2 | 49.68 | Peak | 74 | Pass |
| b | 2462 | Ant1 | 2500 | -56.76 | 2 | 40.5 | Average | 54 | Pass |
| g | 2412 | Ant1 | 2310 | -48.3 | 2 | 48.96 | Peak | 74 | Pass |
| g | 2412 | Ant1 | 2310 | -57.16 | 2 | 40.1 | Average | 54 | Pass |
| g | 2412 | Ant1 | 2340.42 | -44.28 | 2 | 52.98 | Peak | 74 | Pass |
| g | 2412 | Ant1 | 2337.378 | -54.61 | 2 | 42.65 | Average | 54 | Pass |
| g | 2412 | Ant1 | 2390 | -47.83 | 2 | 48.43 | Peak | 74 | Pass |
| g | 2412 | Ant1 | 2390 | -56.51 | 2 | 40.75 | Average | 54 | Pass |
| g | 2462 | Ant1 | 2483.5 | -44.86 | 2 | 52.4 | Peak | 74 | Pass |
| g | 2462 | Ant1 | 2483.5 | -53.9 | 2 | 43.36 | Average | 54 | Pass |
| g | 2462 | Ant1 | 2498.622 | -44.38 | 2 | 52.88 | Peak | 74 | Pass |
| g | 2462 | Ant1 | 2483.517 | -53.9 | 2 | 43.36 | Average | 54 | Pass |
| g | 2462 | Ant1 | 2500 | -47.41 | 2 | 49.68 | Peak | 74 | Pass |
| g | 2462 | Ant1 | 2500 | -55.98 | 2 | 41.28 | Average | 54 | Pass |
| n20 | 2412 | Ant1 | 2310 | -49.62 | 2 | 47.64 | Peak | 74 | Pass |
| n20 | 2412 | Ant1 | 2310 | -56.84 | 2 | 40.42 | Average | 54 | Pass |
| n20 | 2412 | Ant1 | 2345.334 | -44.69 | 2 | 52.57 | Peak | 74 | Pass |
| n20 | 2412 | Ant1 | 2336.91 | -55.07 | 2 | 42.19 | Average | 54 | Pass |
| n20 | 2412 | Ant1 | 2390 | -46.57 | 2 | 50.69 | Peak | 74 | Pass |
| n20 | 2412 | Ant1 | 2390 | -55.49 | 2 | 41.77 | Average | 54 | Pass |
| n20 | 2462 | Ant1 | 2483.5 | -44.44 | 2 | 52.82 | Peak | 74 | Pass |
| n20 | 2462 | Ant1 | 2483.5 | -54.57 | 2 | 42.69 | Average | 54 | Pass |
| n20 | 2462 | Ant1 | 2483.517 | -44.44 | 2 | 52.82 | Peak | 74 | Pass |
| n20 | 2462 | Ant1 | 2483.676 | -54.5 | 2 | 42.76 | Average | 54 | Pass |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| n20 | 2462 | Ant1 | 2500 | -48.2 | 2 | 49.06 | Peak | 74 | Pass |
| n20 | 2462 | Ant1 | 2500 | -56.12 | 2 | 41.14 | Average | 54 | Pass |

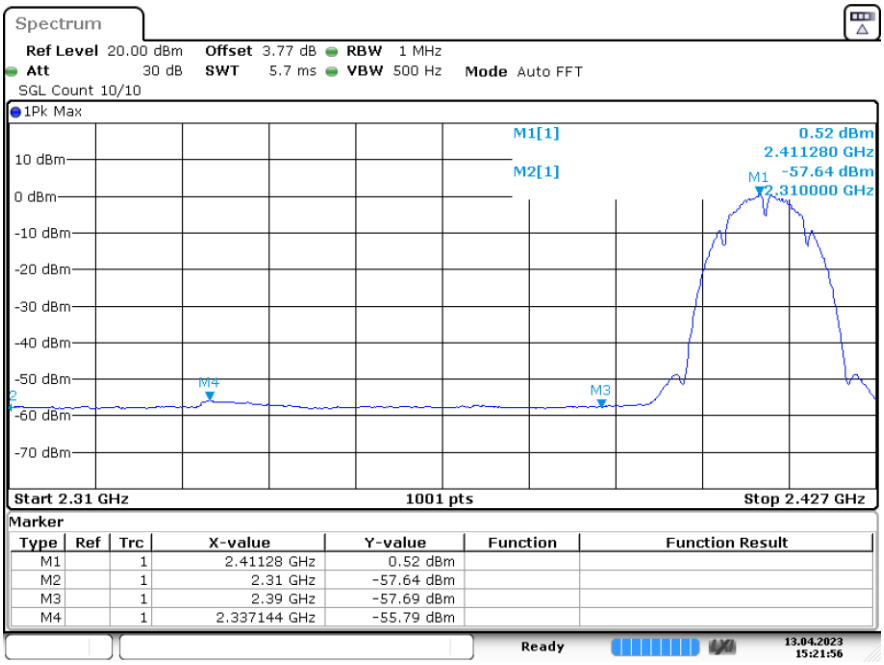
## 7.2 Test Graphs

Test Graphs

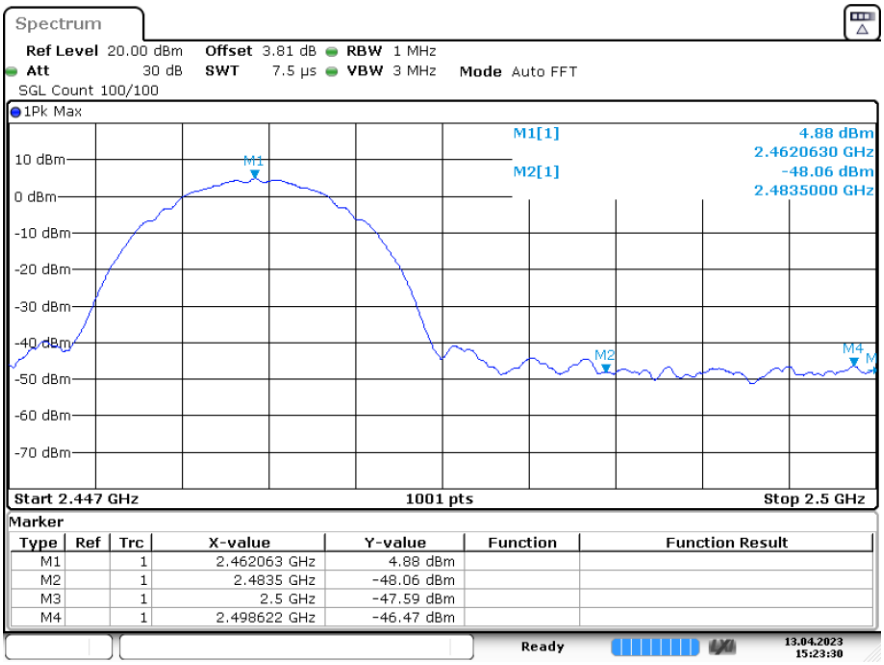
b 2412MHz Ant1 Peak



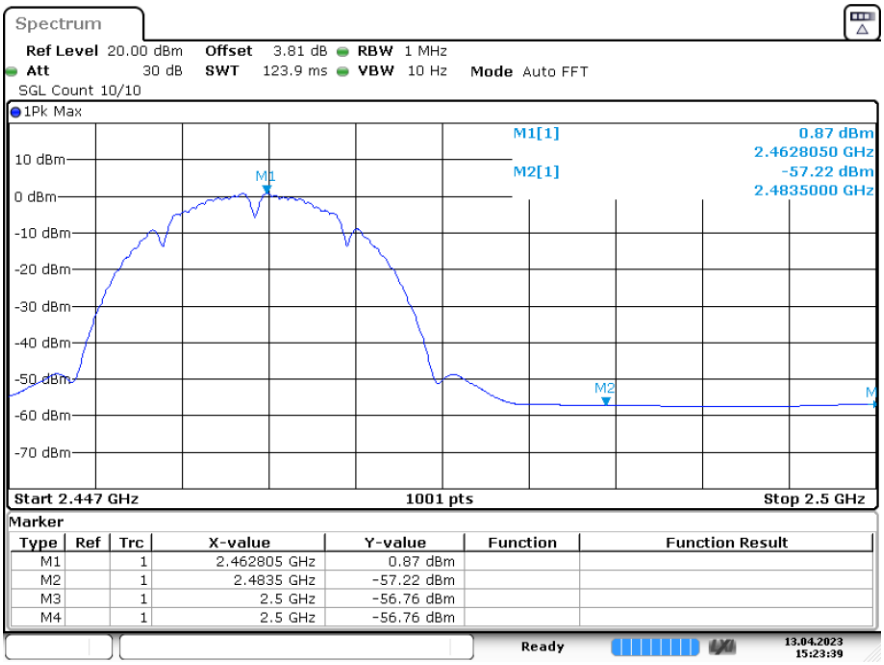

b 2412MHz Ant1 Average



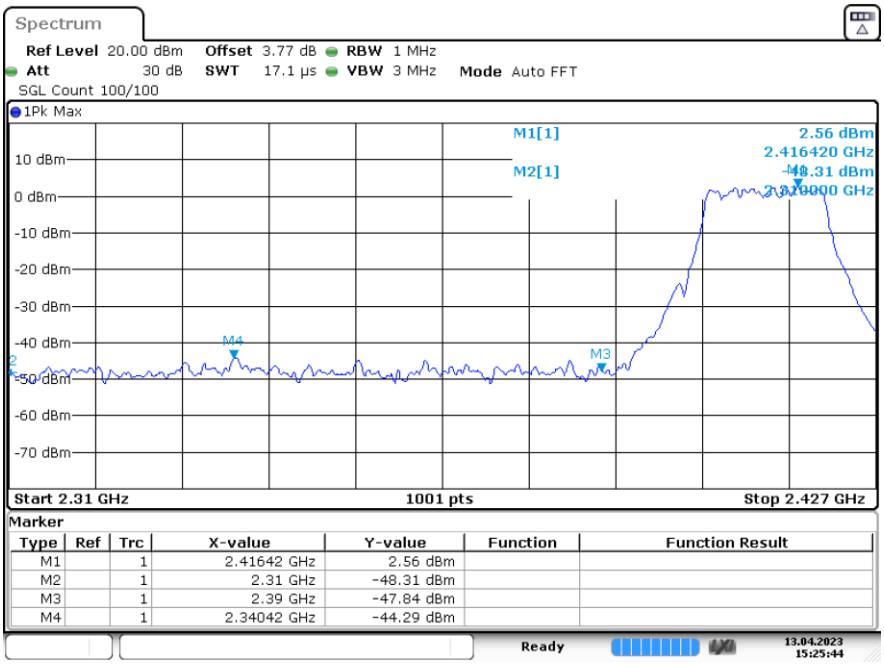
b 2462MHz Ant1 Peak



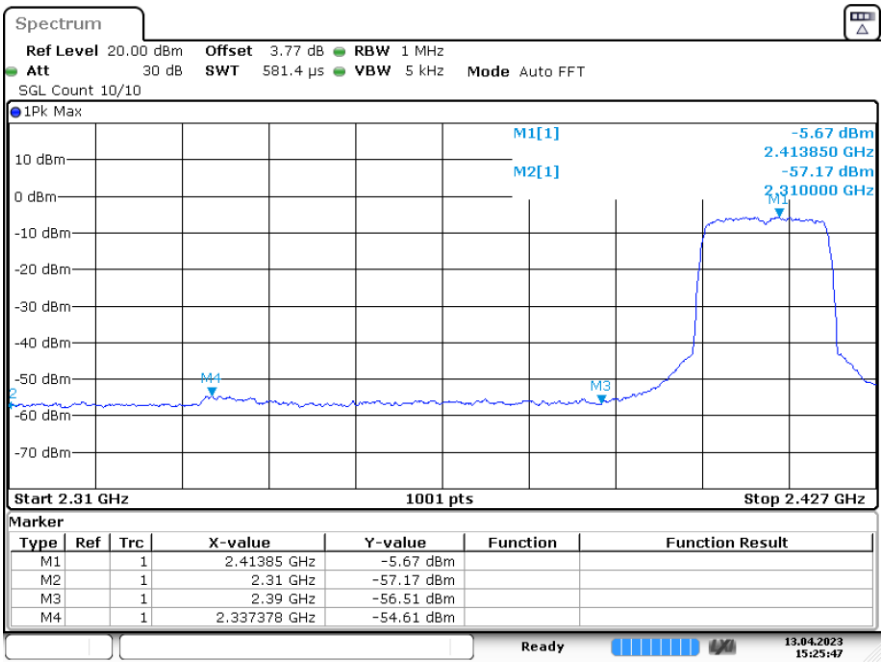

b 2462MHz Ant1 Average



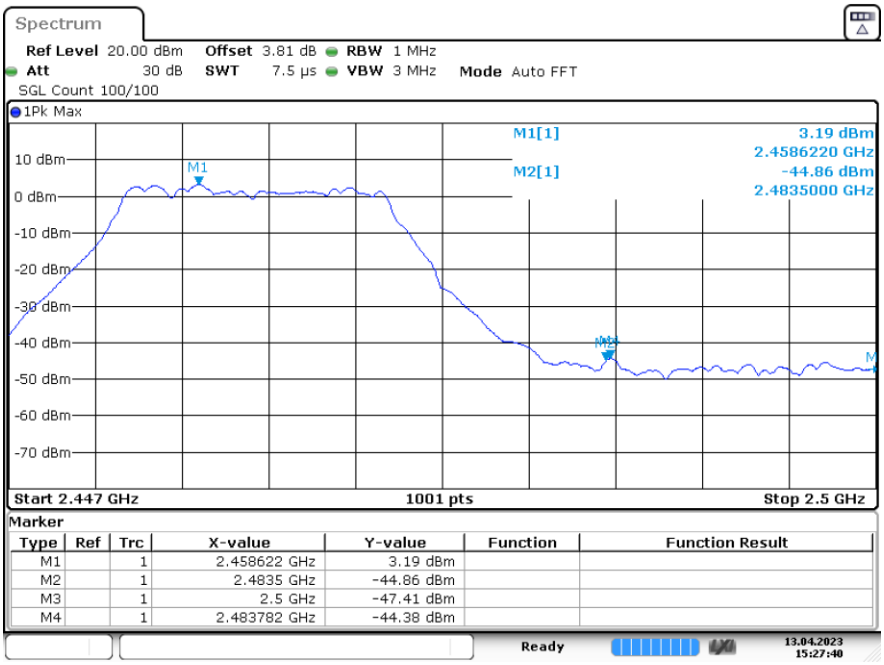
g 2412MHz Ant1 Peak



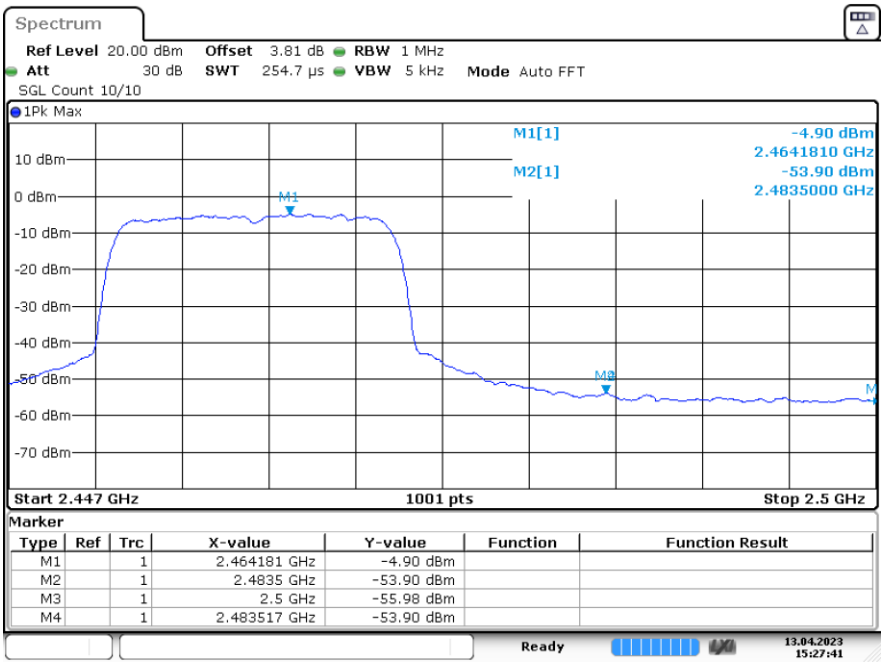

g 2412MHz Ant1 Average



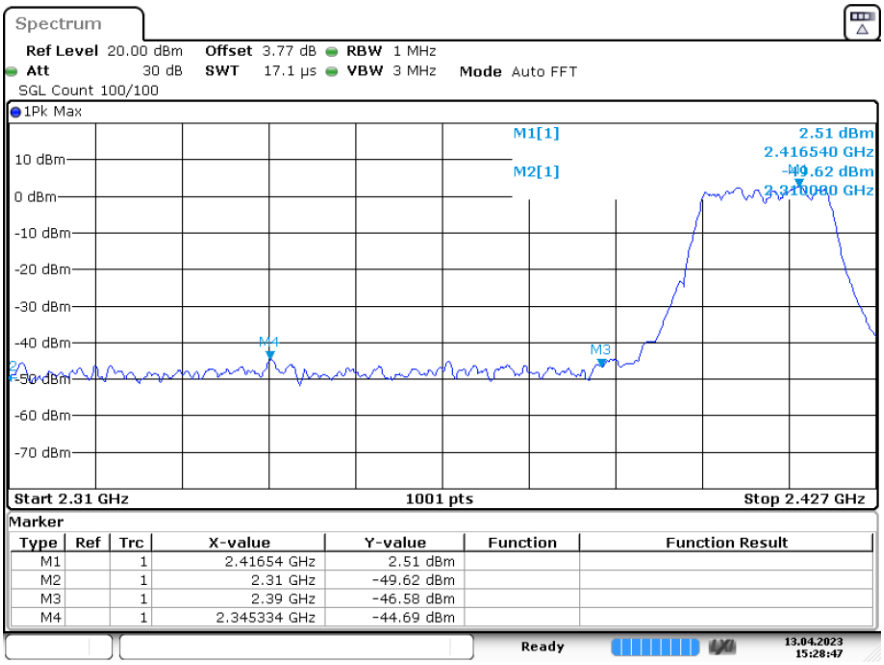
g 2462MHz Ant1 Peak



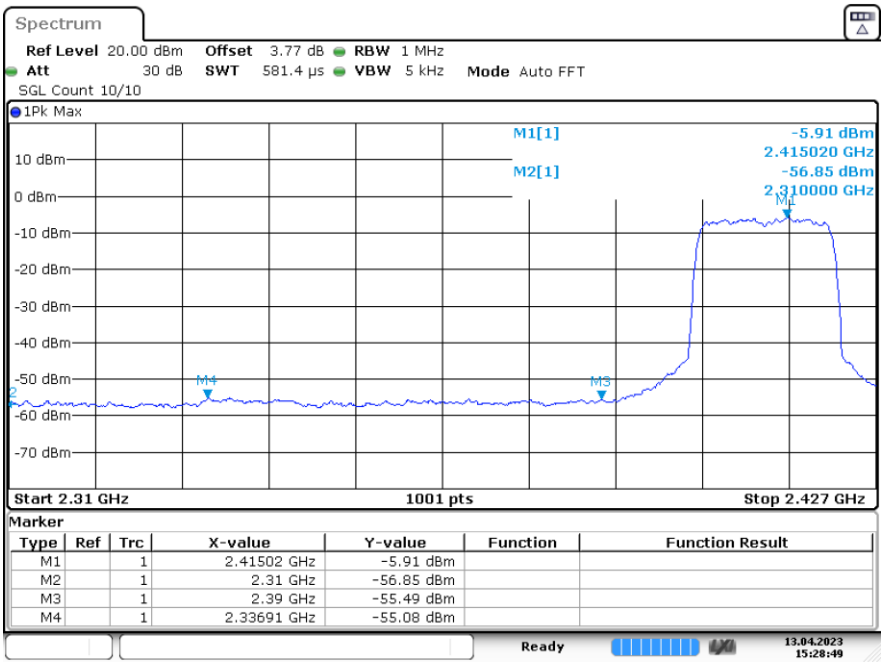

g 2462MHz Ant1 Average



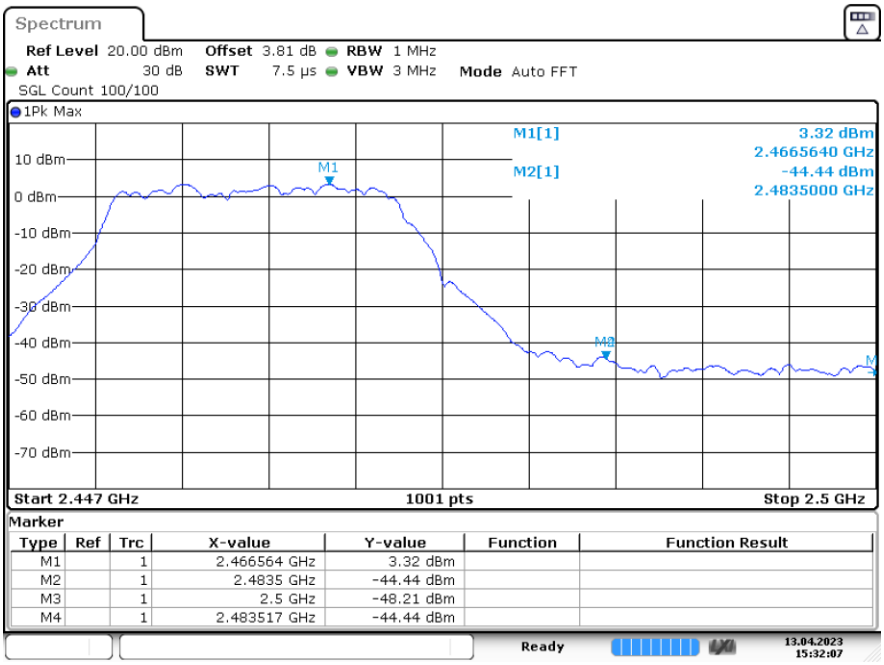
n20 2412MHz Ant1 Peak



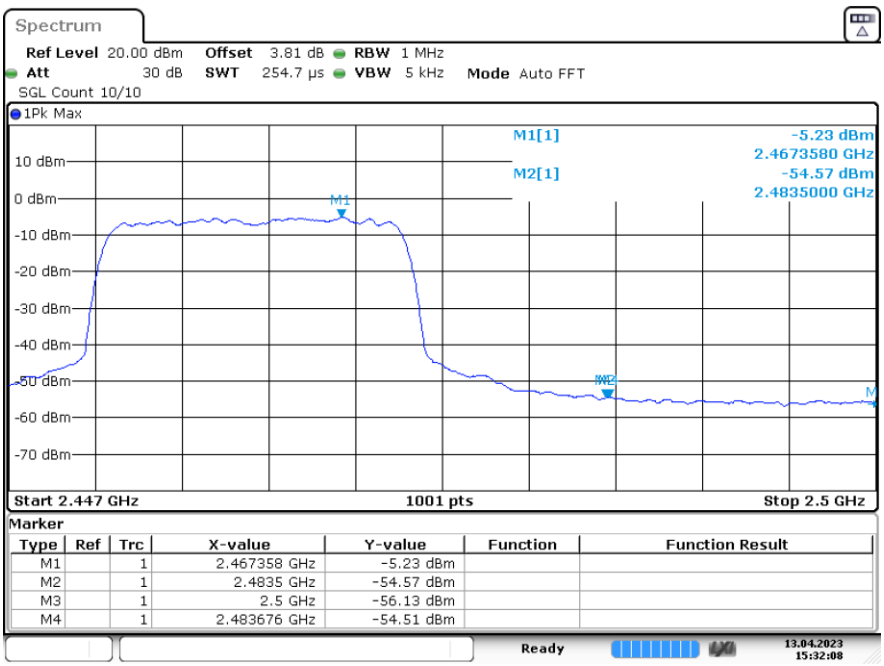

n20 2412MHz Ant1 Average



n20 2462MHz Ant1 Peak




n20 2462MHz Ant1 Average




---The End---