# Appendix C

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

**Product Name: WIFI Photo Frame**

**Trade Mark: N/A**

**Test Model: PF-1034W**

**Environmental Conditions**

| | |
|---|---|
| Temperature: | 24.6° C |
| Relative Humidity: | 52.4% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | Emiya lin |
| Supervised by: | Simba Haung |

# 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

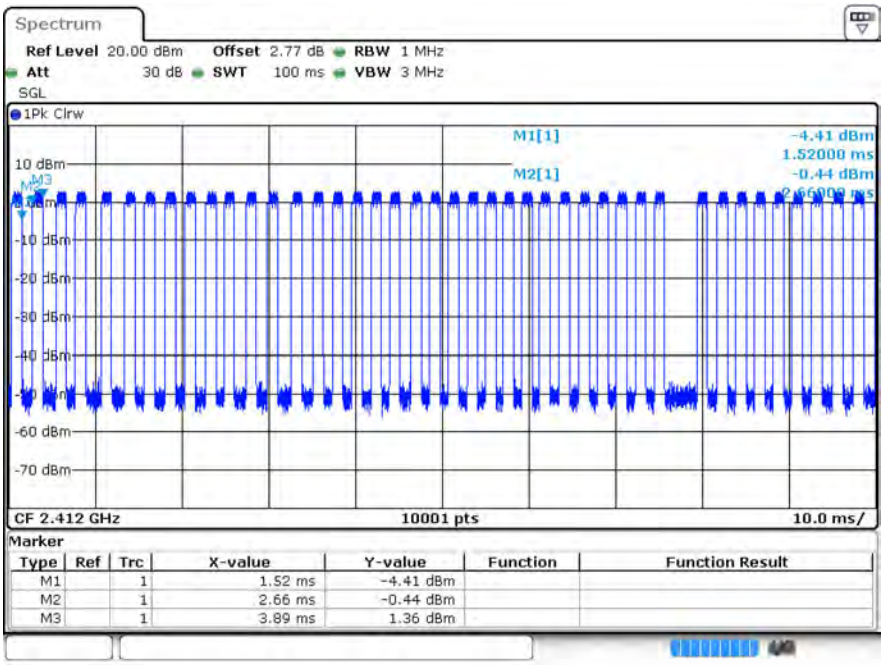
## 1.1 Test Result

| Mode | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor | 1/T (kHz) |
|---|---|---|---|---|---|
| b | 2412 | Ant1 | 52.33 | 2.81 | 0.81 |
| b | 2437 | Ant1 | 39.44 | 4.04 | 0.81 |
| b | 2462 | Ant1 | 50.28 | 2.99 | 0.81 |
| g | 2412 | Ant1 | 15.2 | 8.18 | 4.35 |
| g | 2437 | Ant1 | 20.67 | 6.85 | 4.17 |
| g | 2462 | Ant1 | 8.88 | 10.52 | 4.17 |
| n20 | 2412 | Ant1 | 12.74 | 8.95 | 4.55 |
| n20 | 2437 | Ant1 | 10.31 | 9.87 | 4.55 |
| n20 | 2462 | Ant1 | 17.92 | 7.47 | 4.55 |

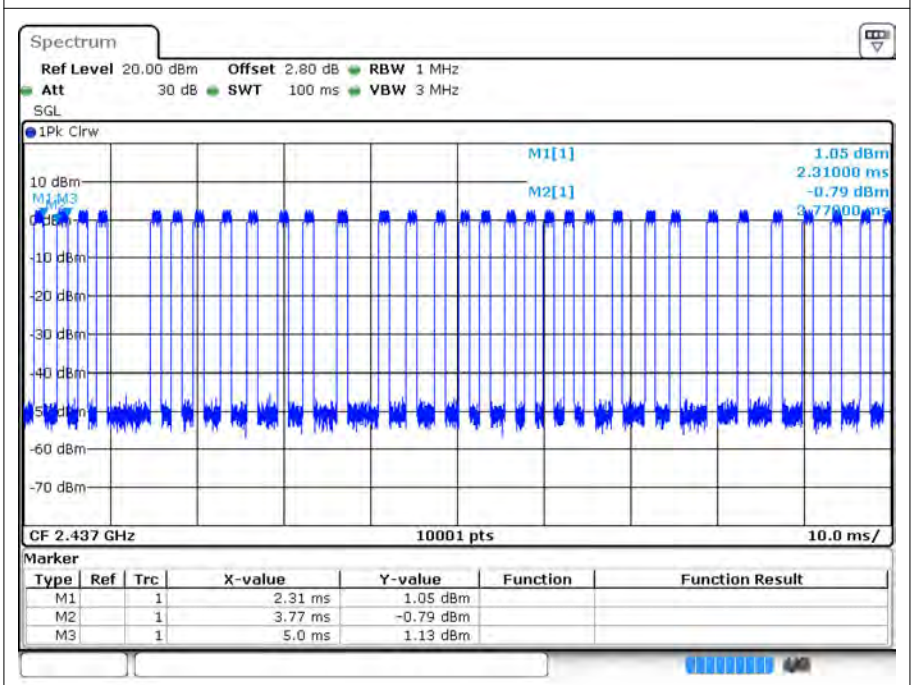
## 1.2 Test Graphs

Test Graphs

b 2412MHz Ant1

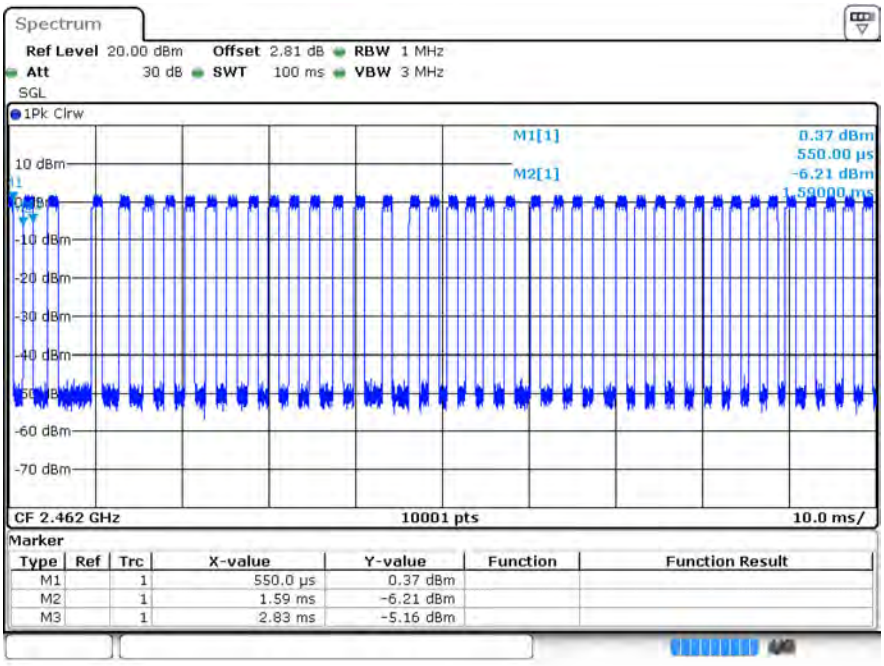



b 2437MHz Ant1

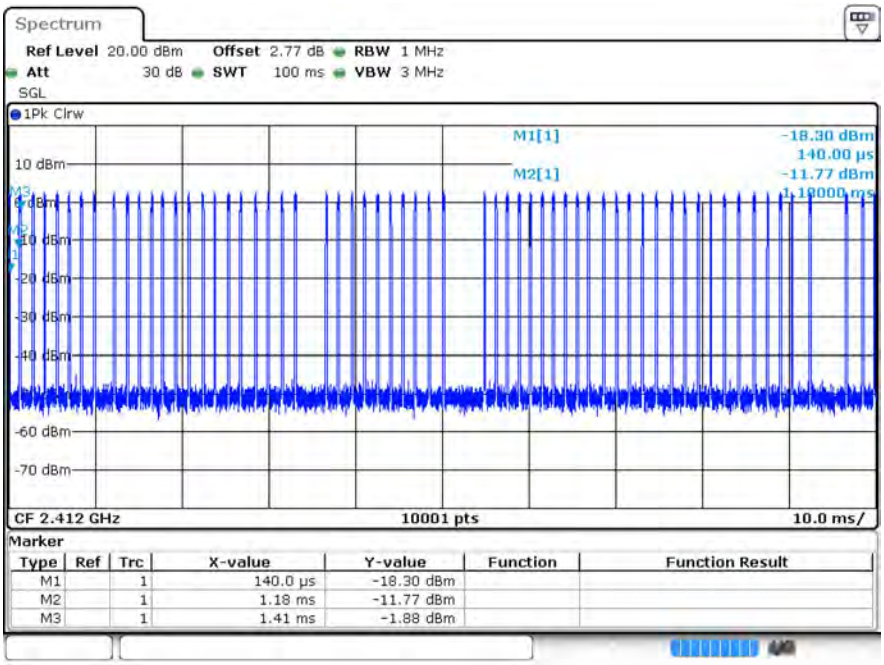


Test Graphs

b 2462MHz Ant1

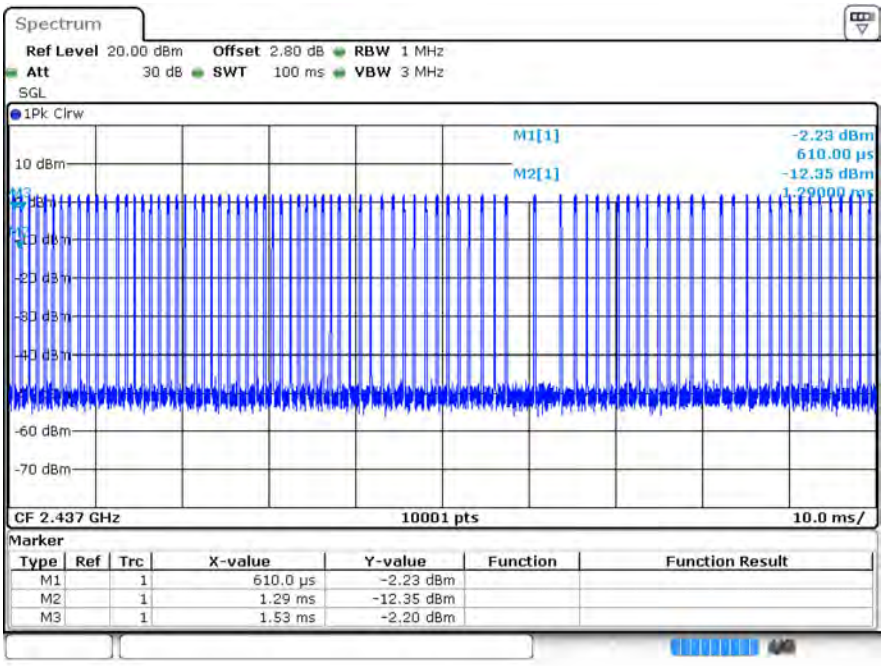



g 2412MHz Ant1

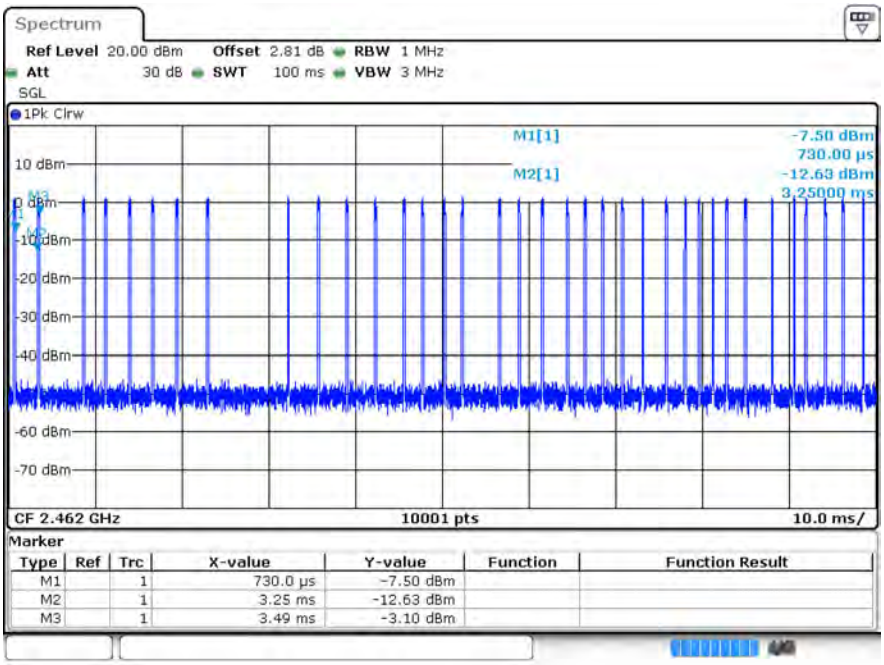


Test Graphs

g 2437MHz Ant1

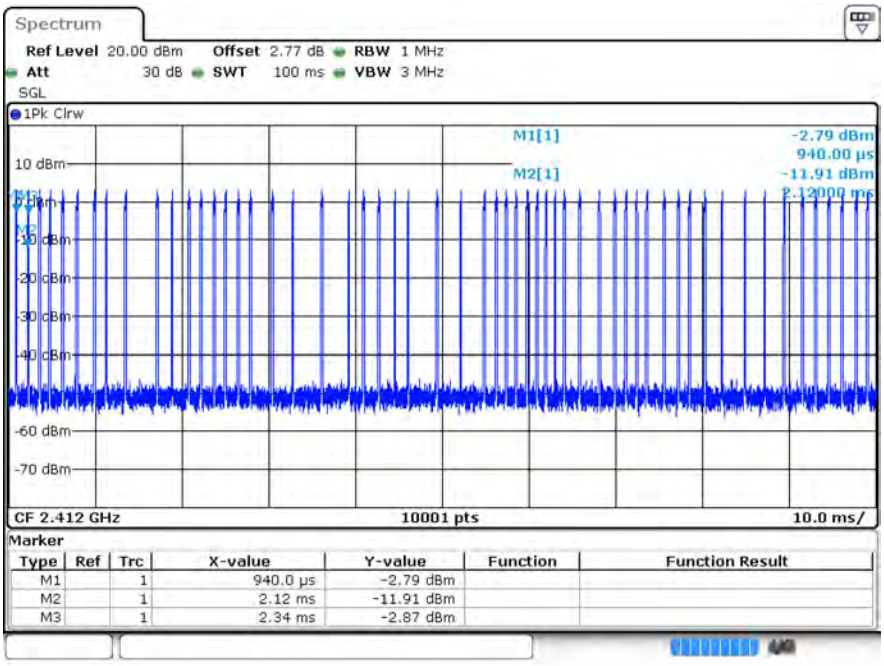



g 2462MHz Ant1

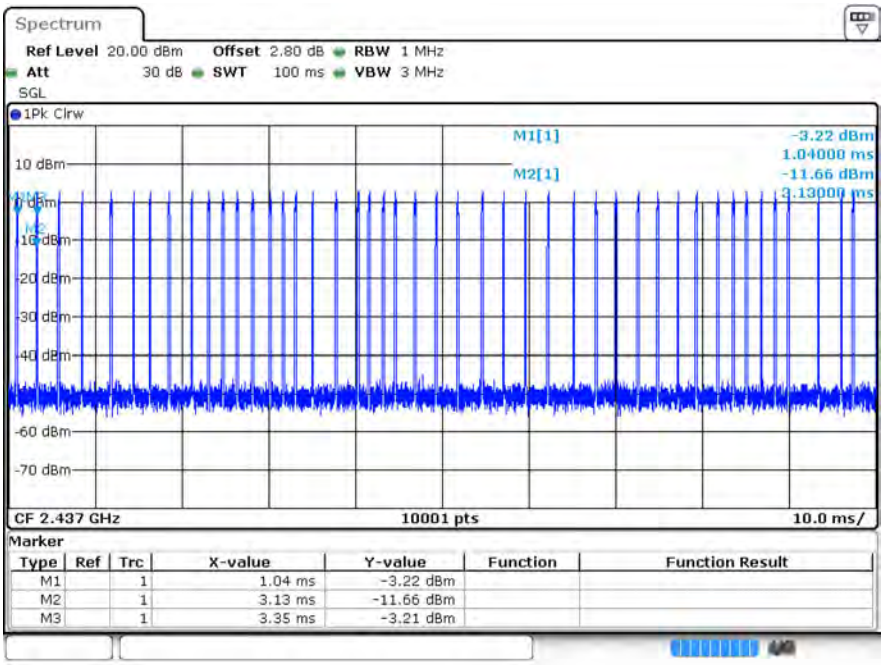


Test Graphs

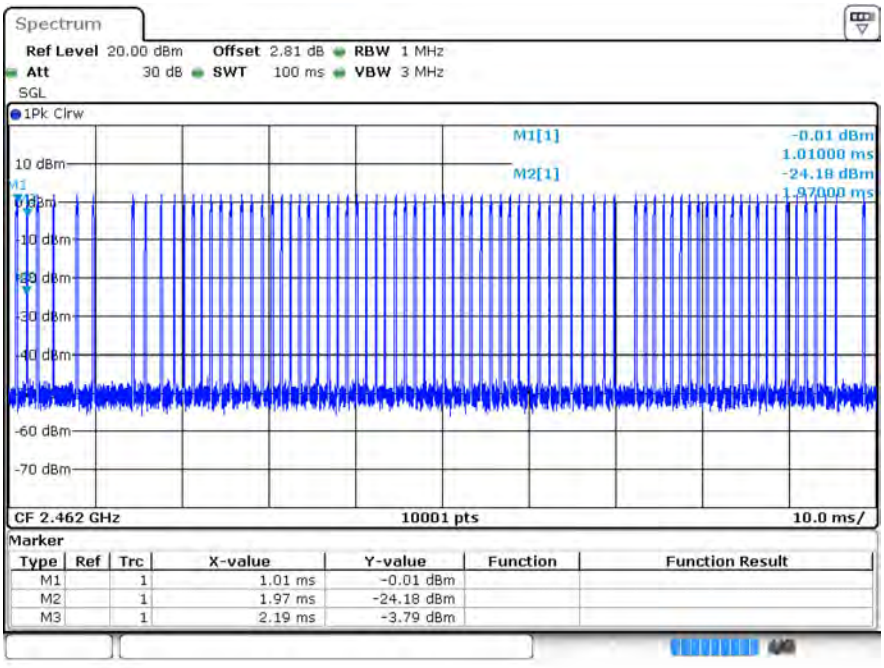
n20 2412MHz Ant1




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 | 12.12 | 30 | Pass |
| b | 2437 | Ant1 | 11.93 | 30 | Pass |
| b | 2462 | Ant1 | 11.17 | 30 | Pass |
| g | 2412 | Ant1 | 12.42 | 30 | Pass |
| g | 2437 | Ant1 | 12.73 | 30 | Pass |
| g | 2462 | Ant1 | 11.47 | 30 | Pass |
| n20 | 2412 | Ant1 | 13.26 | 30 | Pass |
| n20 | 2437 | Ant1 | 12.18 | 30 | Pass |
| n20 | 2462 | Ant1 | 11.91 | 30 | Pass |

# 3 -6dB Bandwidth

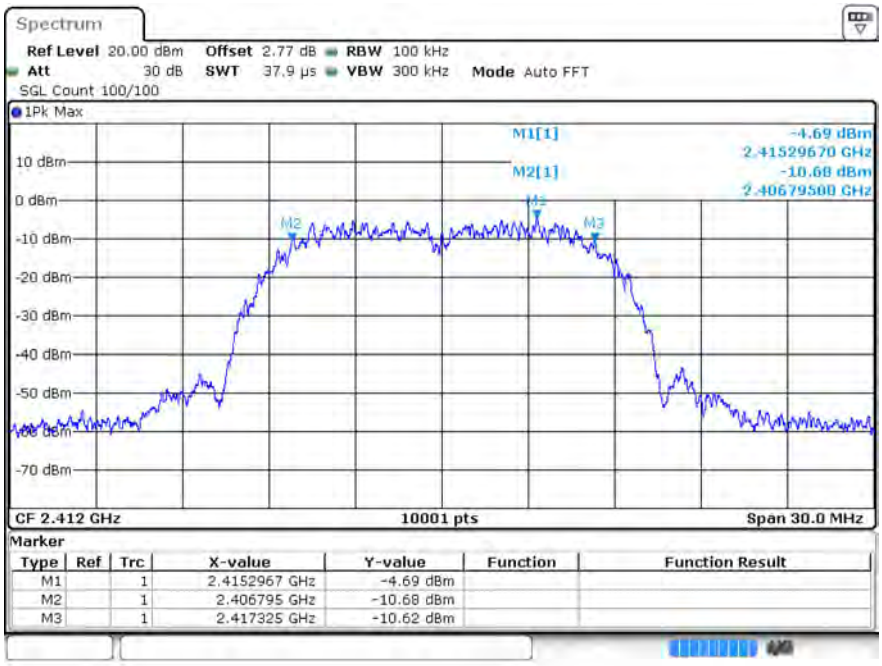
## 3.1 Test Result

| Mode | Frequency (MHz) | Antenna | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|---|---|---|---|---|---|
| b | 2412 | Ant1 | 10.53 | 0.5 | Pass |
| b | 2437 | Ant1 | 9.339 | 0.5 | Pass |
| b | 2462 | Ant1 | 10.443 | 0.5 | Pass |
| g | 2412 | Ant1 | 16.386 | 0.5 | Pass |
| g | 2437 | Ant1 | 16.47 | 0.5 | Pass |
| g | 2462 | Ant1 | 16.341 | 0.5 | Pass |
| n20 | 2412 | Ant1 | 17.337 | 0.5 | Pass |
| n20 | 2437 | Ant1 | 17.712 | 0.5 | Pass |
| n20 | 2462 | Ant1 | 17.589 | 0.5 | Pass |

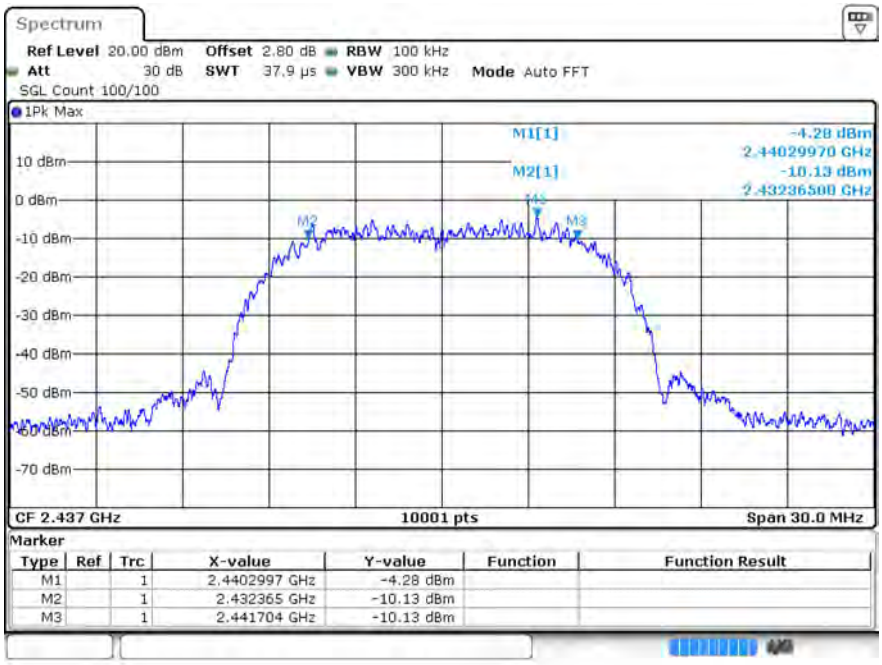
## 3.2 Test Graphs

Test Graphs

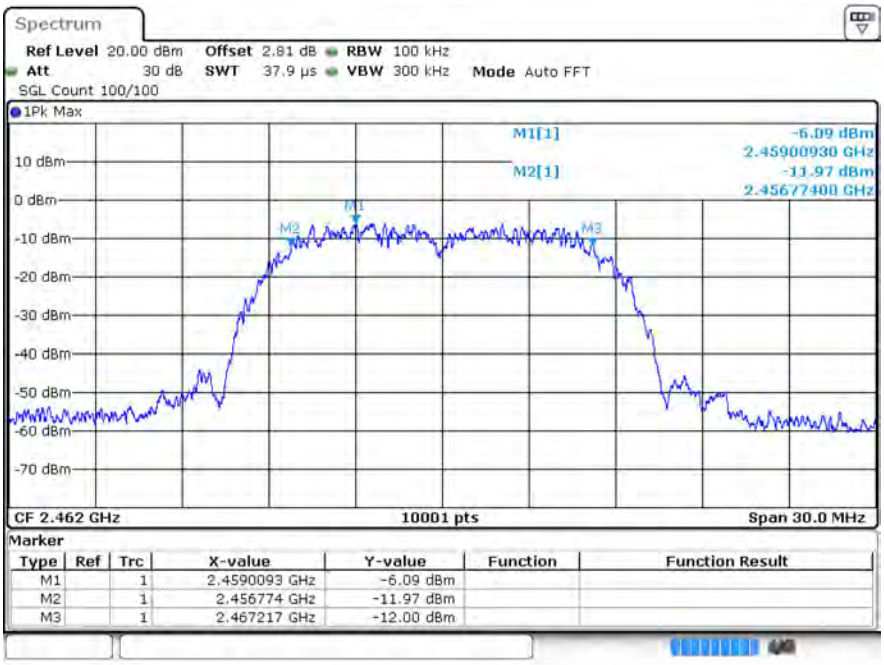
b 2412MHz Ant1



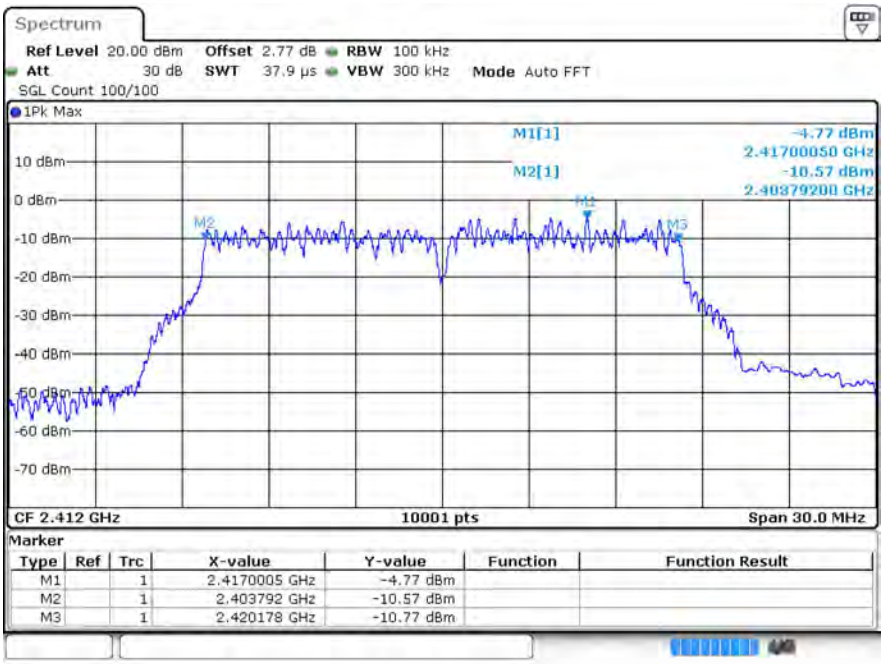

b 2437MHz Ant1



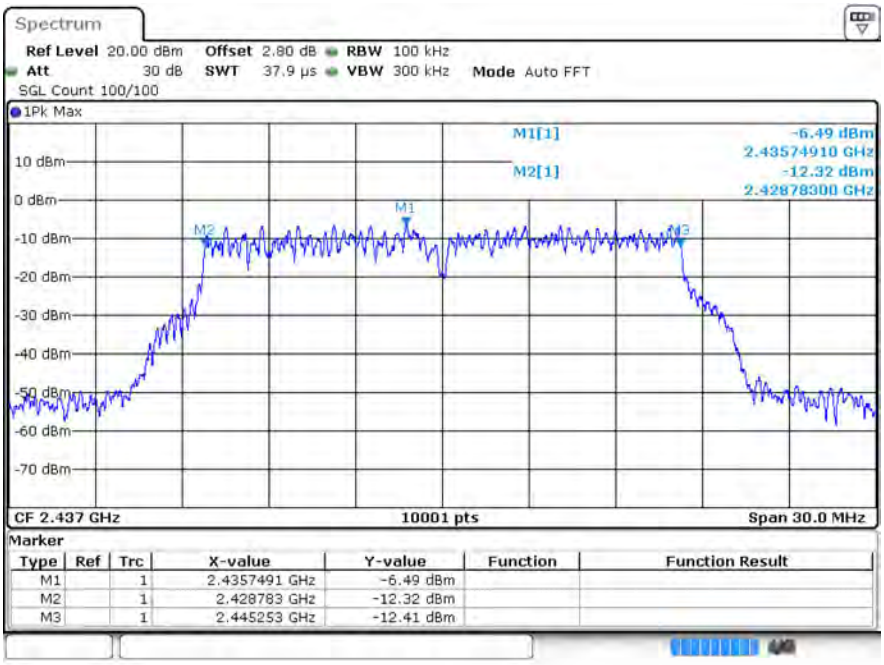
b 2462MHz Ant1



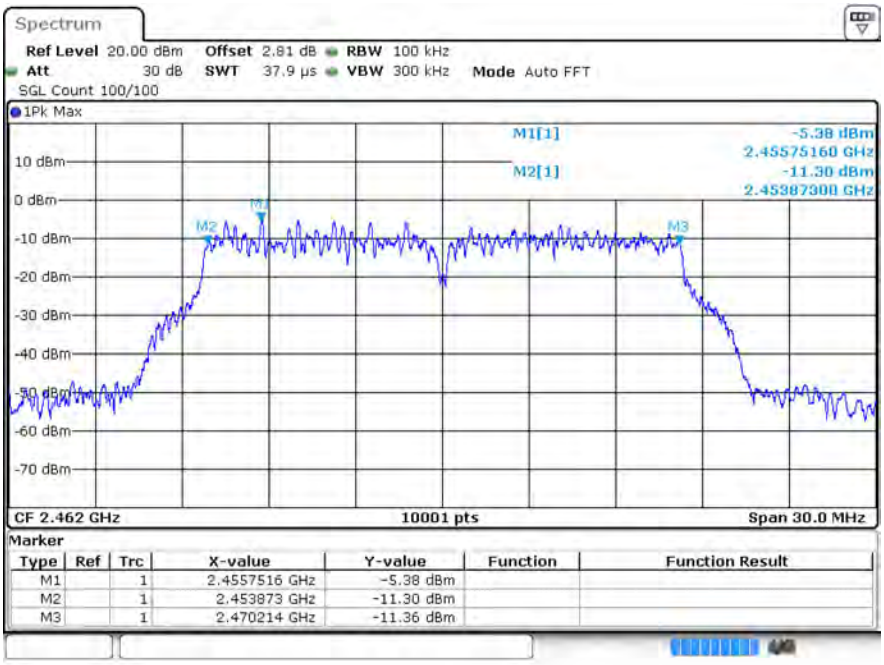

g 2412MHz Ant1



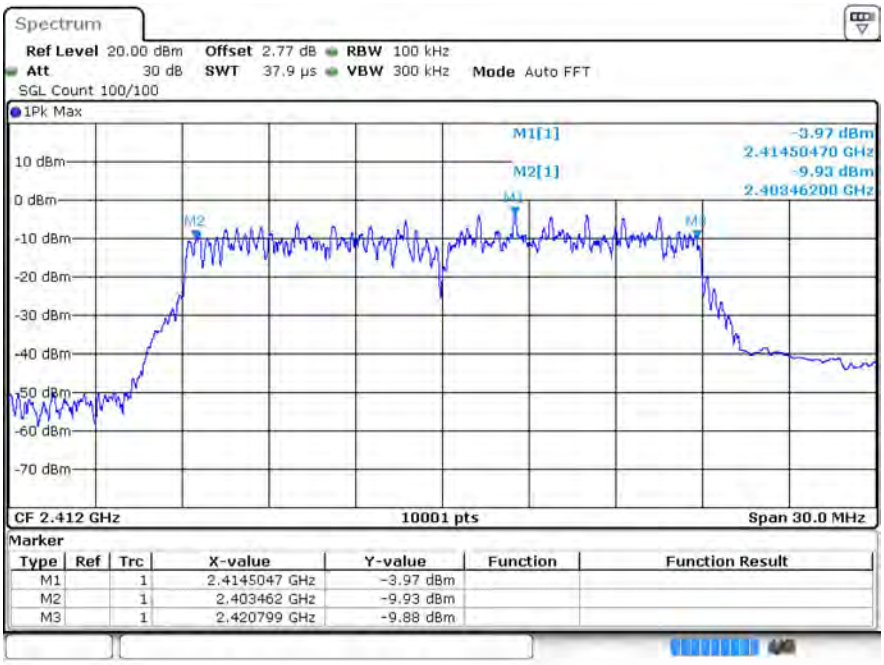
g 2437MHz Ant1



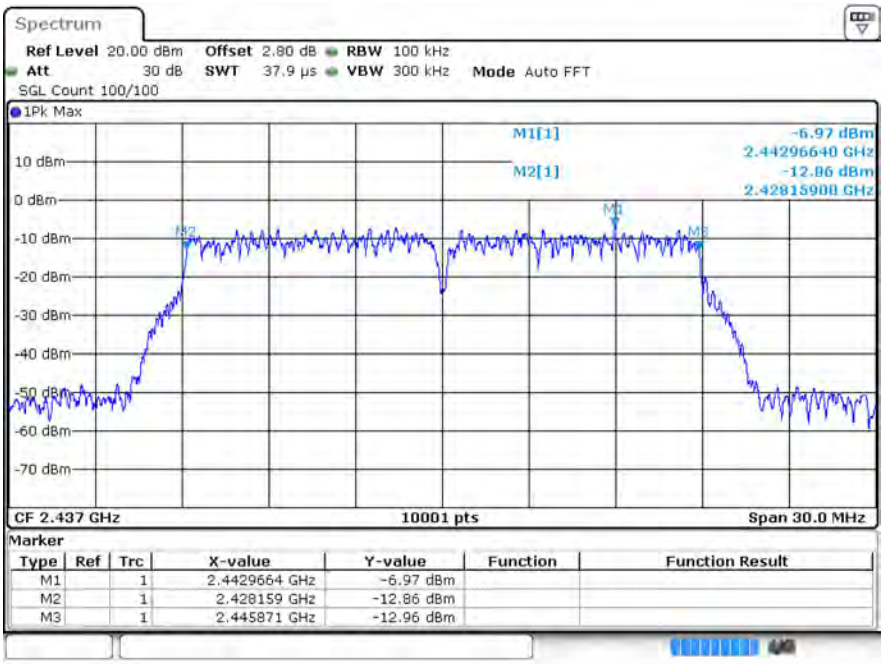

g 2462MHz Ant1



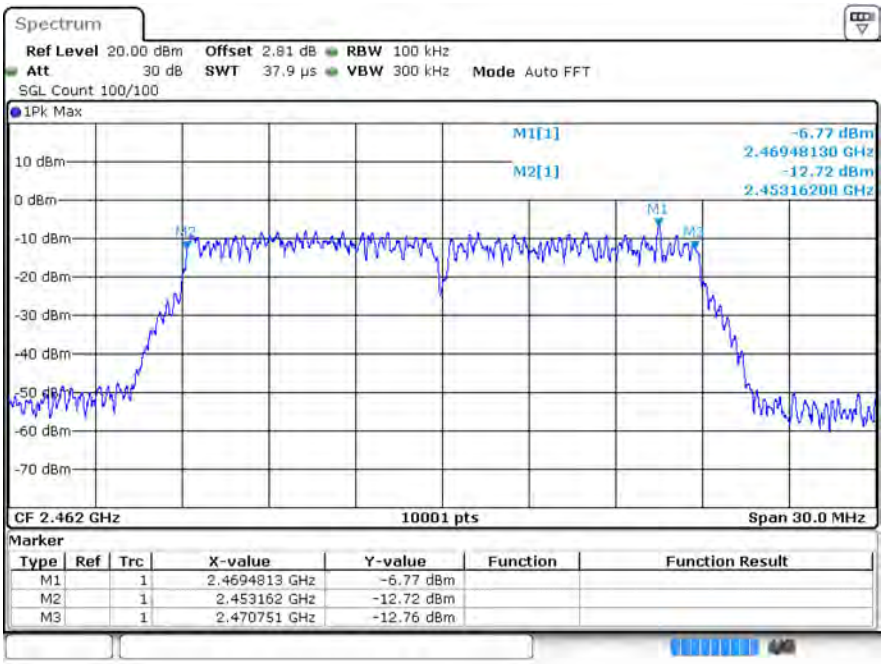
n20 2412MHz Ant1




n20 2437MHz Ant1



n20 2462MHz Ant1

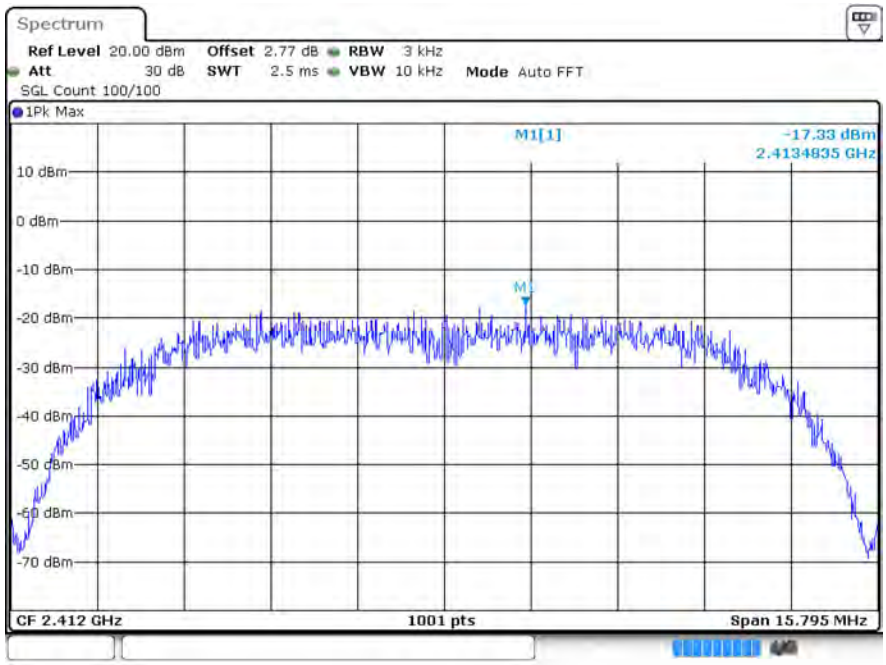
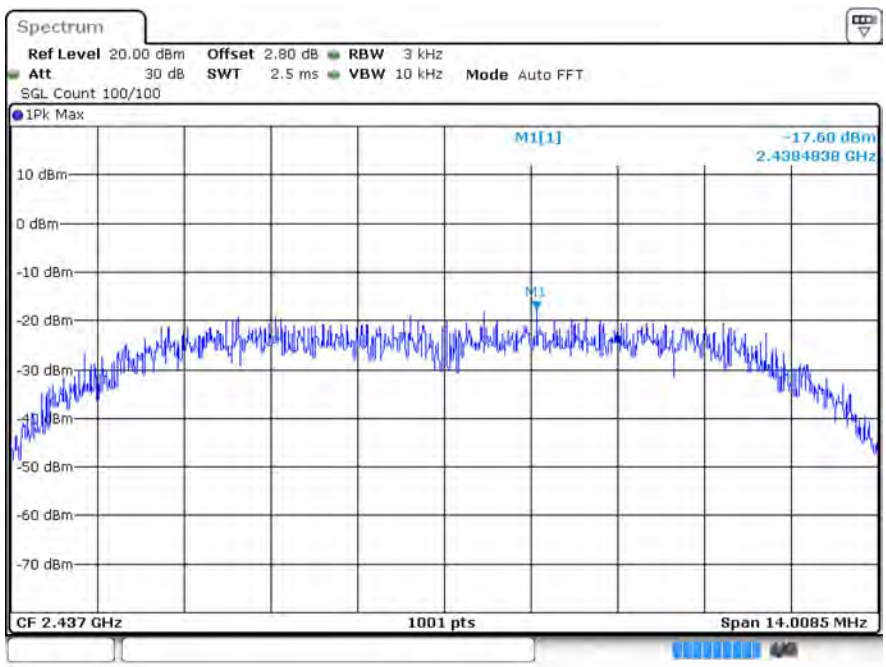


# 4 Maximum Power Spectral Density Level

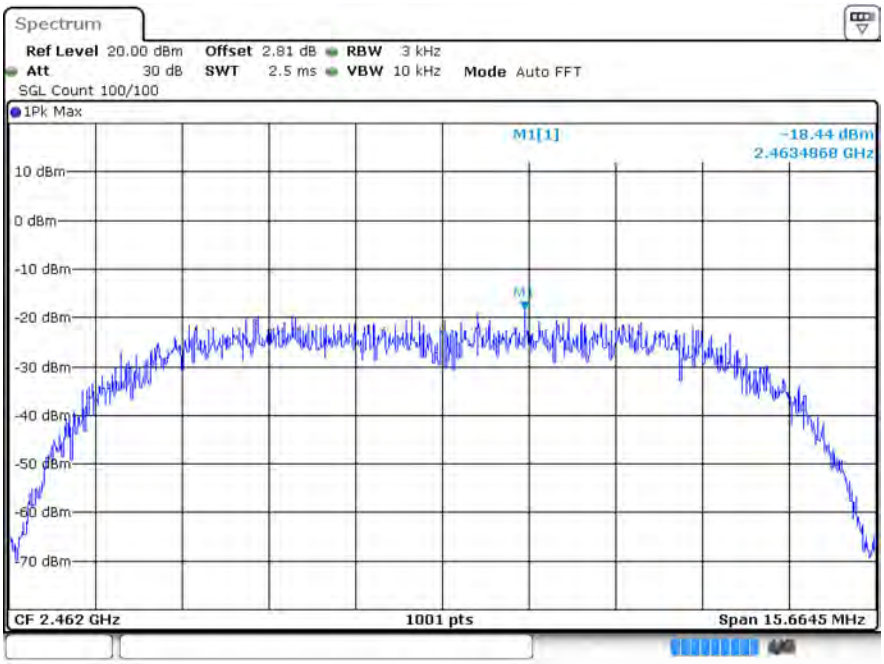
## 4.1 Test Result

| Mode | Frequency (MHz) | Antenna | Conducted PSD (dBm/3-100kHz) | Limit (dBm/3kHz) | Verdict |
|---|---|---|---|---|---|
| b | 2412 | Ant1 | -17.33 | ≤8 | Pass |
| b | 2437 | Ant1 | -17.6 | ≤8 | Pass |
| b | 2462 | Ant1 | -18.44 | ≤8 | Pass |
| g | 2412 | Ant1 | -19.2 | ≤8 | Pass |
| g | 2437 | Ant1 | -20 | ≤8 | Pass |
| g | 2462 | Ant1 | -20.08 | ≤8 | Pass |
| n20 | 2412 | Ant1 | -20.83 | ≤8 | Pass |
| n20 | 2437 | Ant1 | -21.25 | ≤8 | Pass |
| n20 | 2462 | Ant1 | -21.84 | ≤8 | Pass |

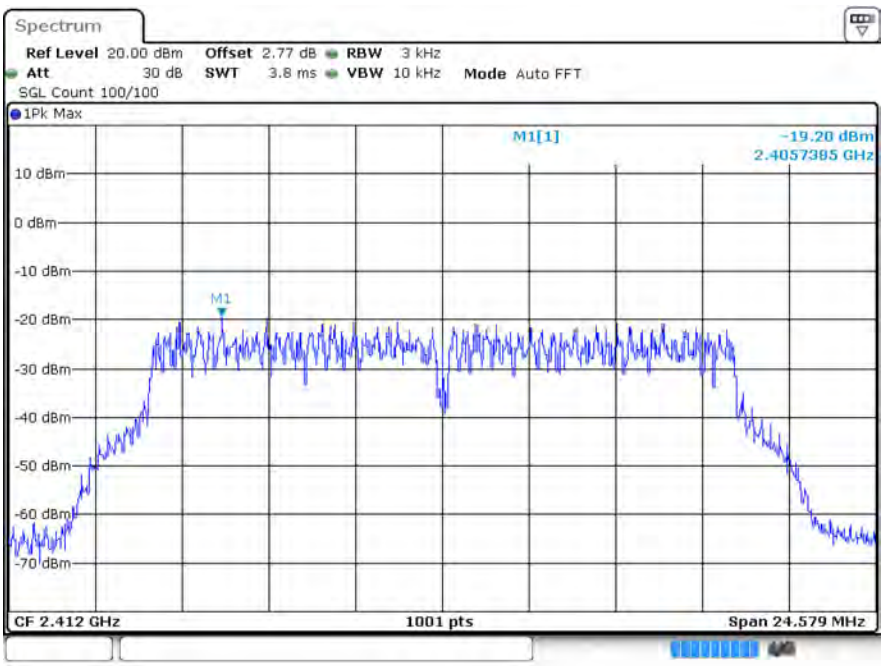
## 4.2 Test Graphs

| Test Graphs |
| --- |
| b 2412MHz Ant1 |
|  |
| b 2437MHz Ant1 |
|  |

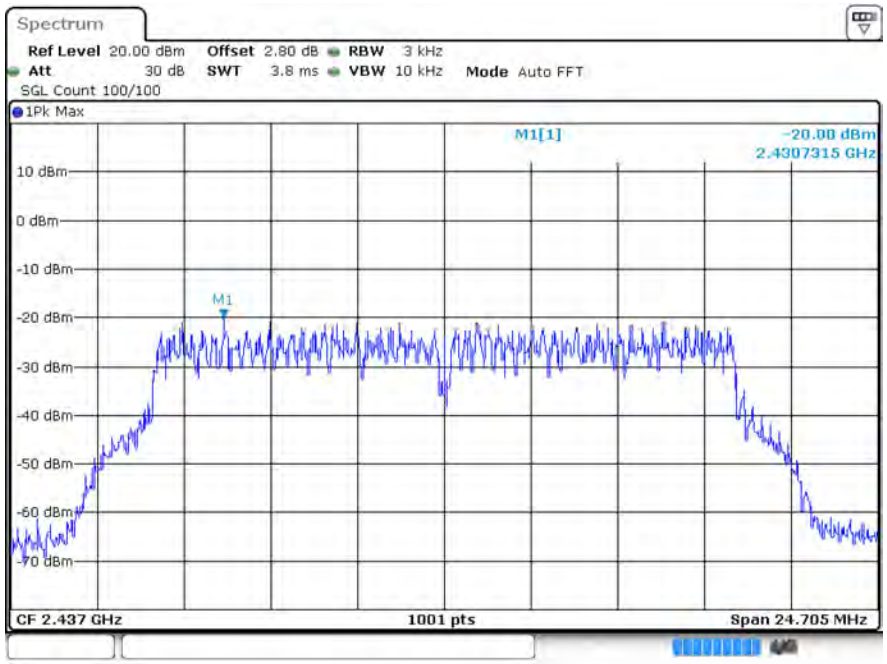
b 2462MHz Ant1



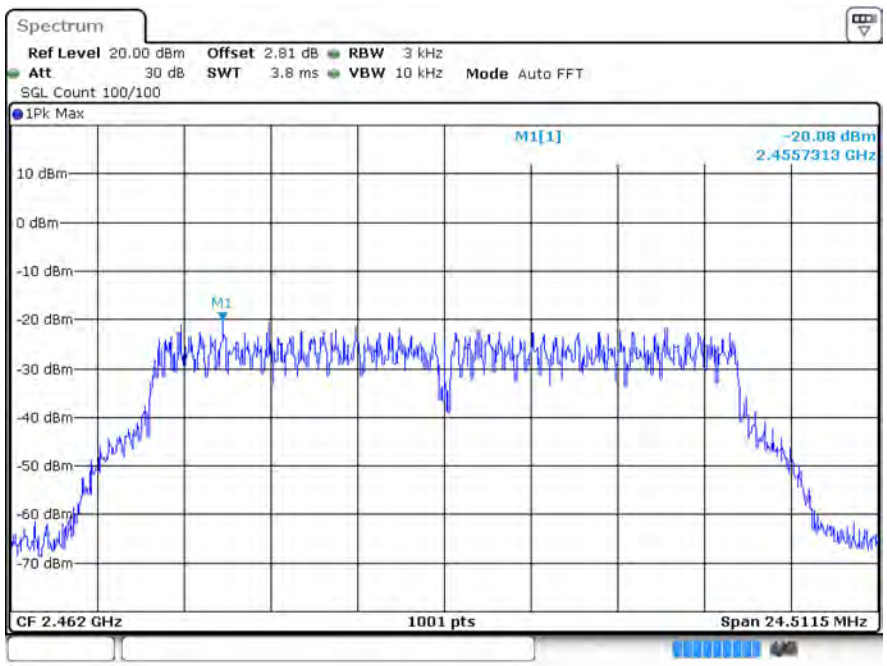

g 2412MHz Ant1



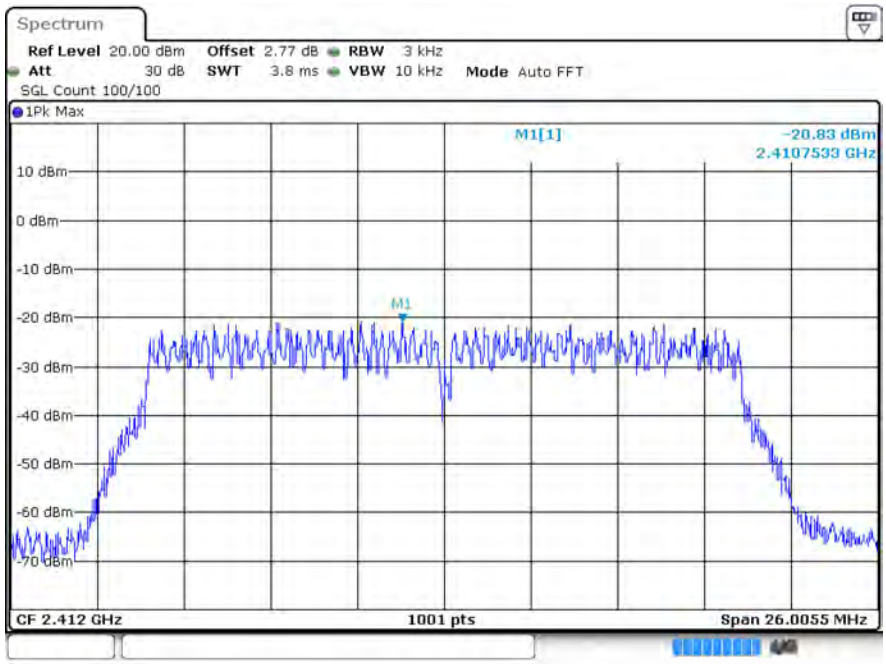
g 2437MHz Ant1



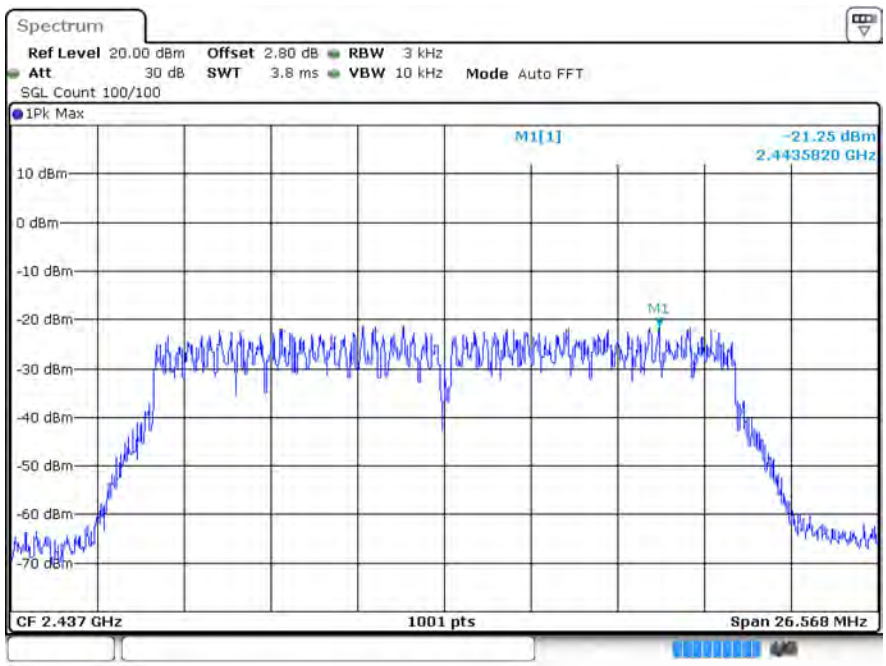

g 2462MHz Ant1



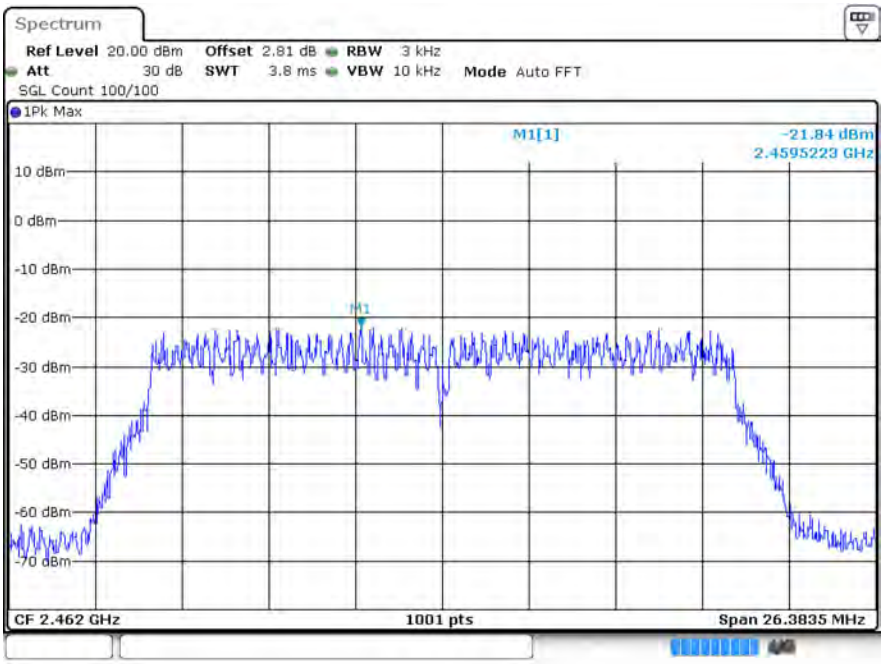
n20 2412MHz Ant1




n20 2437MHz Ant1



n20 2462MHz Ant1



# 5 Band Edge

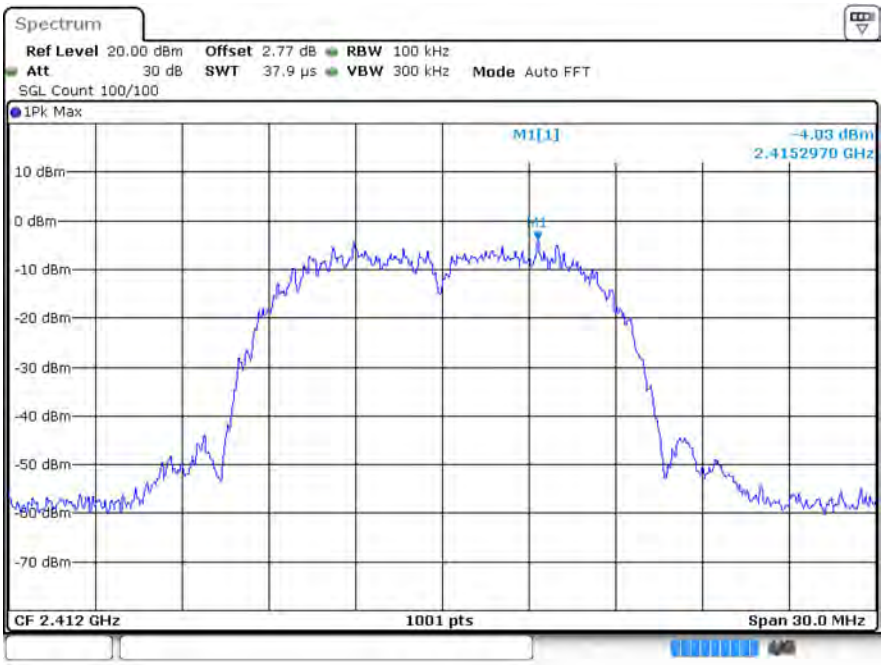
## 5.1 Test Result

| Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|---|---|---|---|---|---|
| b | 2412 | Ant1 | -49.97 | -20 | Pass |
| b | 2462 | Ant1 | -50.88 | -20 | Pass |
| g | 2412 | Ant1 | -49.79 | -20 | Pass |
| g | 2462 | Ant1 | -48.01 | -20 | Pass |
| n20 | 2412 | Ant1 | -47.89 | -20 | Pass |
| n20 | 2462 | Ant1 | -46.32 | -20 | Pass |

## 5.2 Test Graphs

Test Graphs

b 2412MHz Ant1 Ref

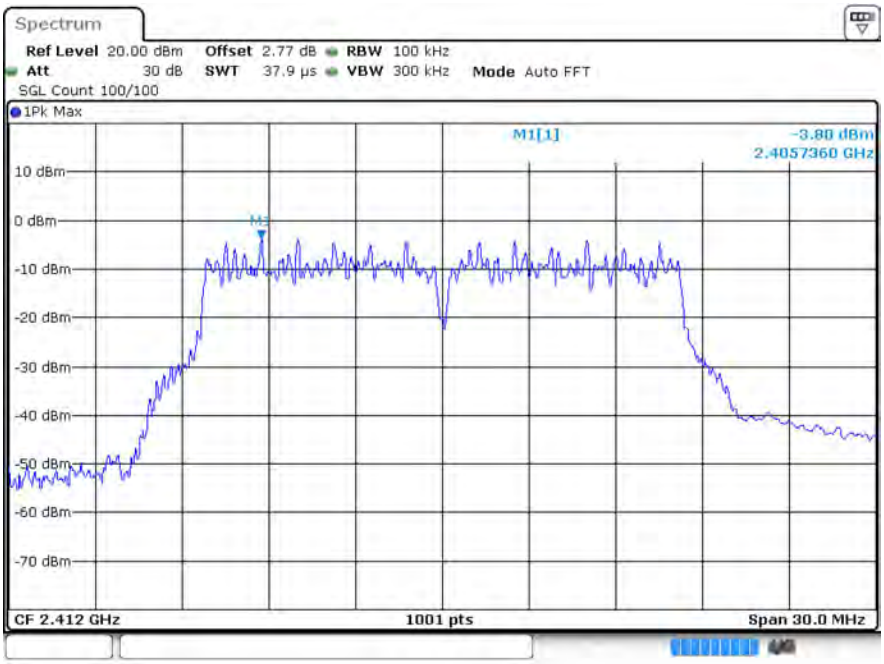



b 2412MHz Ant1 Emission

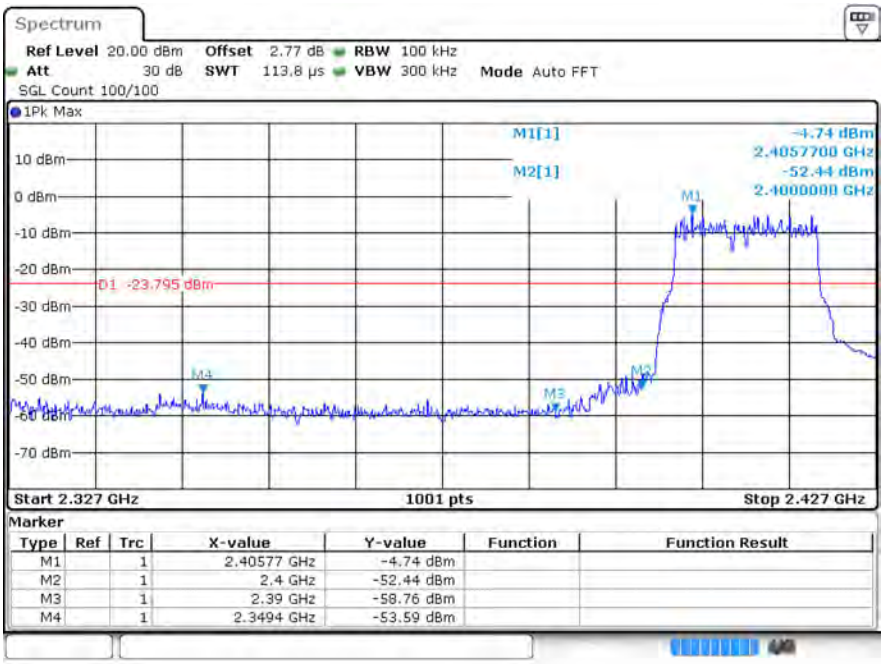
b 2462MHz Ant1 Ref

b 2462MHz Ant1 Emission

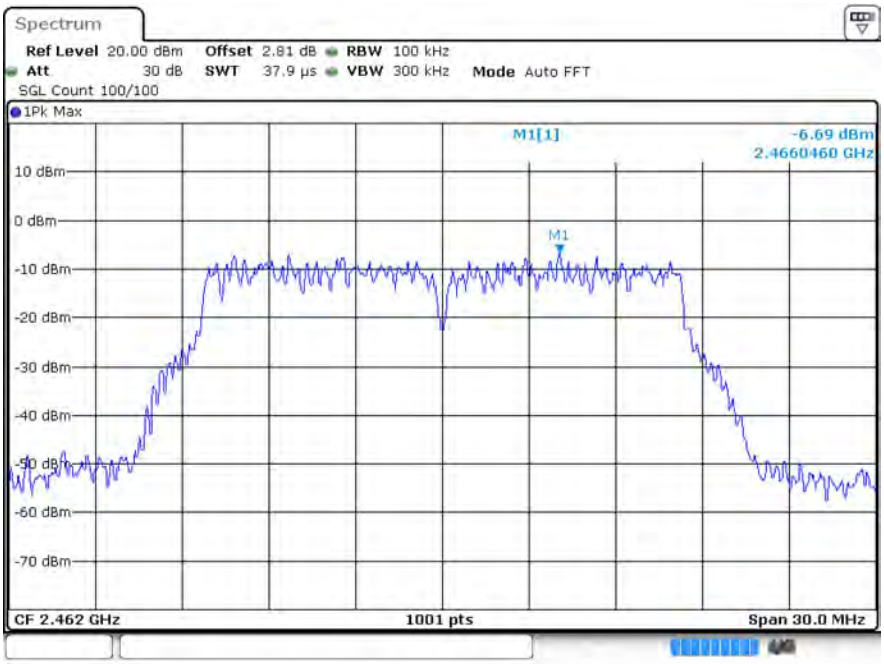
g 2412MHz Ant1 Ref



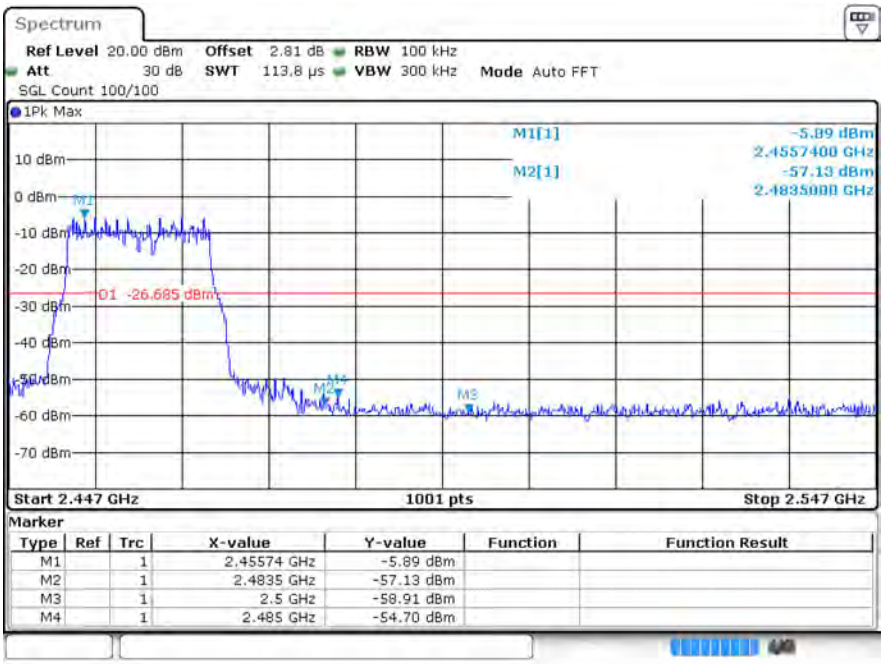

g 2412MHz Ant1 Emission



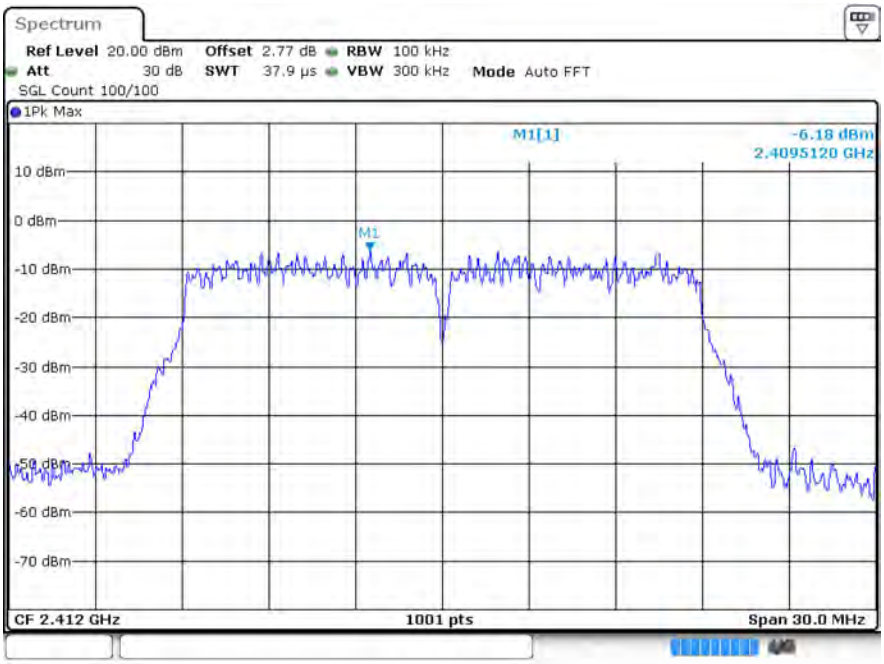
g 2462MHz Ant1 Ref



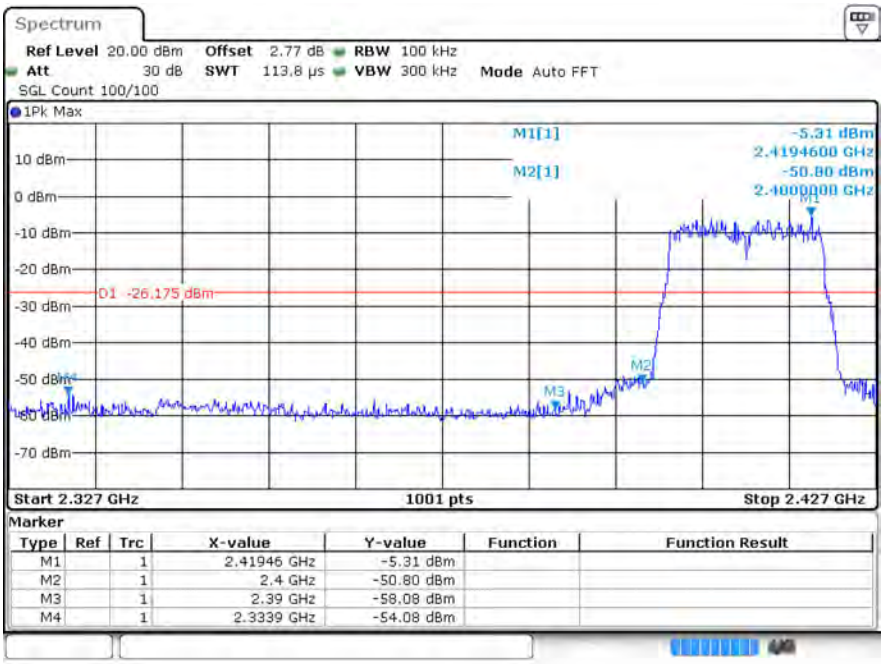

g 2462MHz Ant1 Emission



n20 2412MHz Ant1 Ref



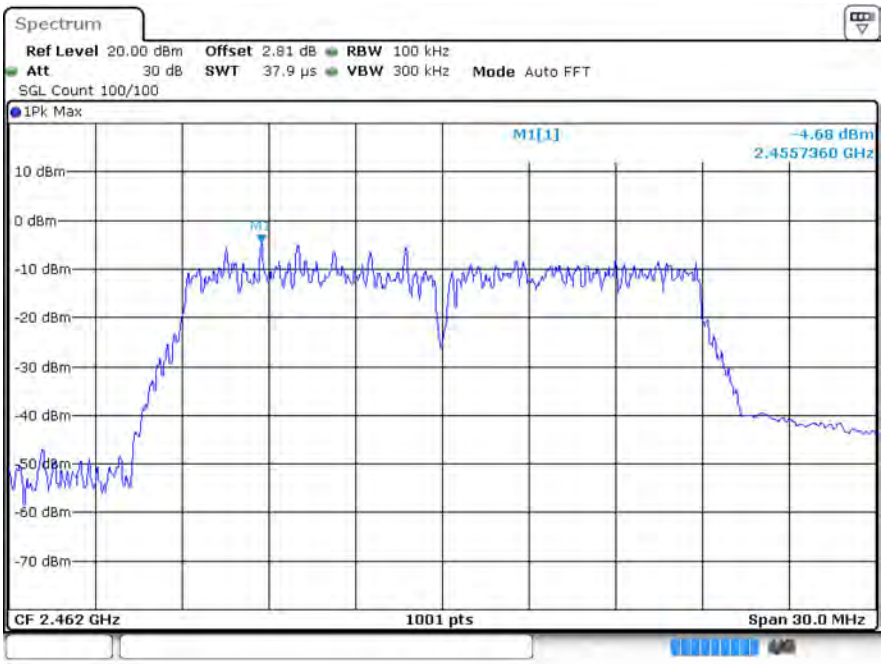

n20 2412MHz Ant1 Emission



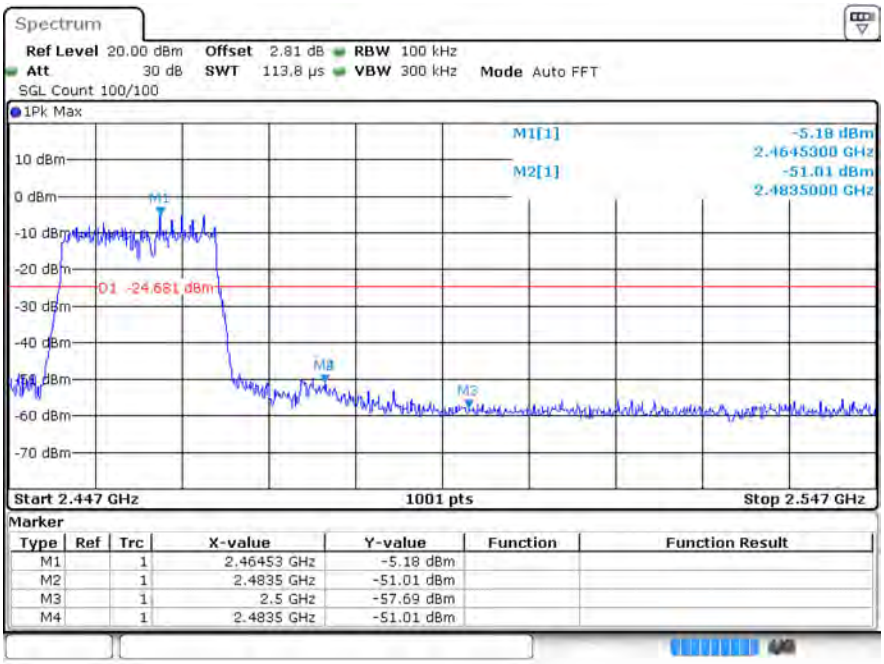

Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 2.41946 GHz | -5.31 dBm | | |
| M2 | | 1 | 2.4 GHz | -50.80 dBm | | |
| M3 | | 1 | 2.39 GHz | -58.08 dBm | | |
| M4 | | 1 | 2.3339 GHz | -54.08 dBm | | |

n20 2462MHz Ant1 Ref




n20 2462MHz Ant1 Emission




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 2.46453 GHz | -5.18 dBm | | |
| M2 | | 1 | 2.4835 GHz | -51.01 dBm | | |
| M3 | | 1 | 2.5 GHz | -57.69 dBm | | |
| M4 | | 1 | 2.4835 GHz | -51.01 dBm | | |

# 6 Conducted RF Spurious Emission

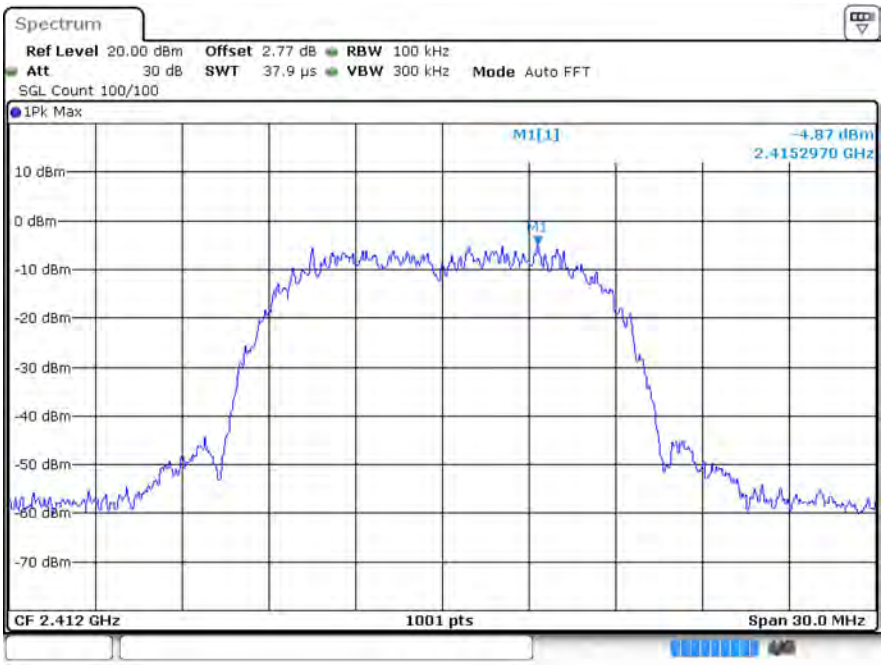
## 6.1 Test Result

| Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|---|---|---|---|---|---|
| b | 2412 | Ant1 | -37.54 | -20 | Pass |
| b | 2437 | Ant1 | -38.74 | -20 | Pass |
| b | 2462 | Ant1 | -37.55 | -20 | Pass |
| g | 2412 | Ant1 | -37.87 | -20 | Pass |
| g | 2437 | Ant1 | -37.71 | -20 | Pass |
| g | 2462 | Ant1 | -36.47 | -20 | Pass |
| n20 | 2412 | Ant1 | -37 | -20 | Pass |
| n20 | 2437 | Ant1 | -37.51 | -20 | Pass |
| n20 | 2462 | Ant1 | -35.96 | -20 | Pass |

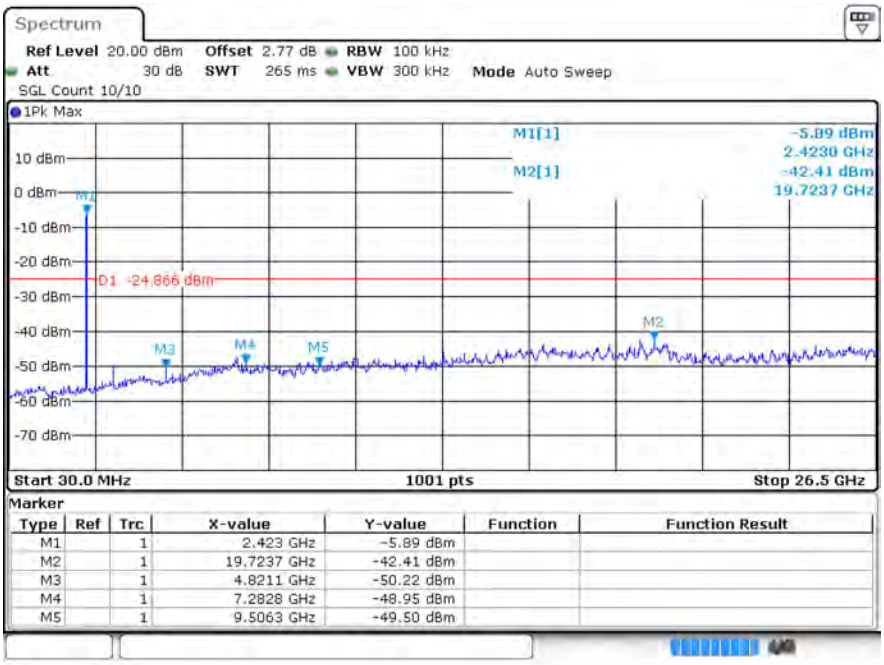
## 6.2 Test Graphs

Test Graphs

b 2412MHz Ant1 Ref



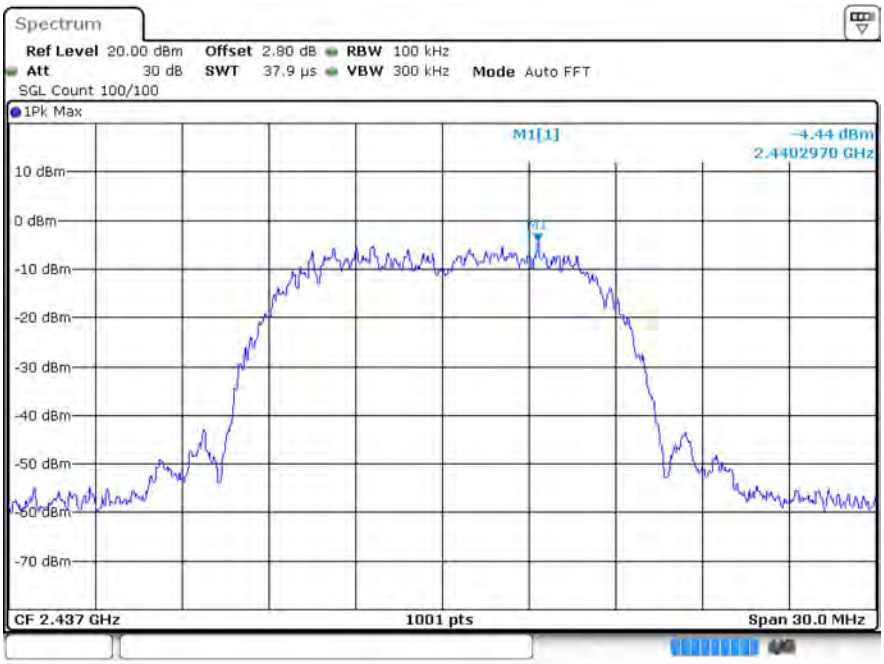

b 2412MHz Ant1 Emission



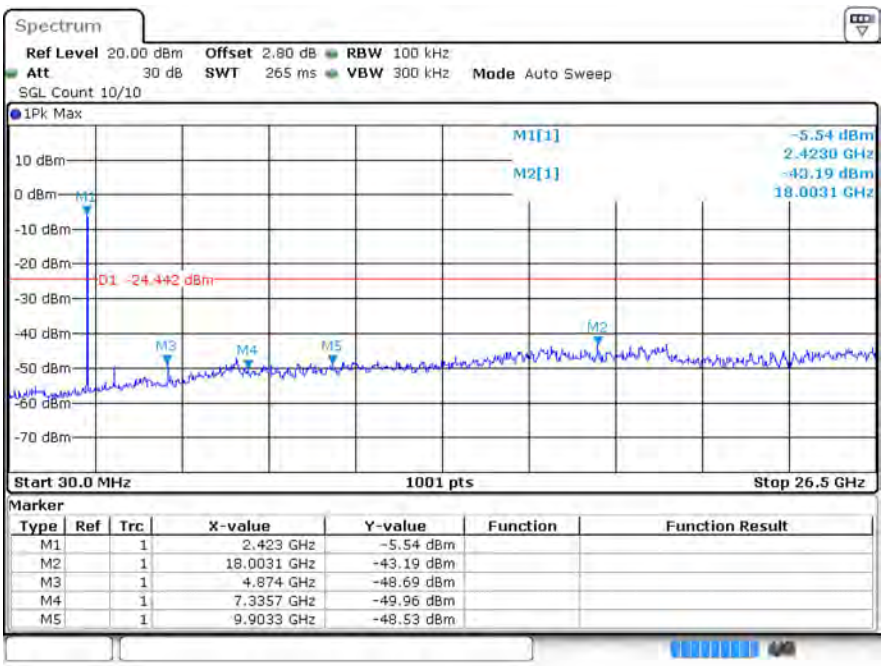

Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 2.423 GHz | -5.89 dBm | | |
| M2 | | 1 | 19.7237 GHz | -42.41 dBm | | |
| M3 | | 1 | 4.8211 GHz | -50.22 dBm | | |
| M4 | | 1 | 7.2828 GHz | -48.95 dBm | | |
| M5 | | 1 | 9.5063 GHz | -49.50 dBm | | |

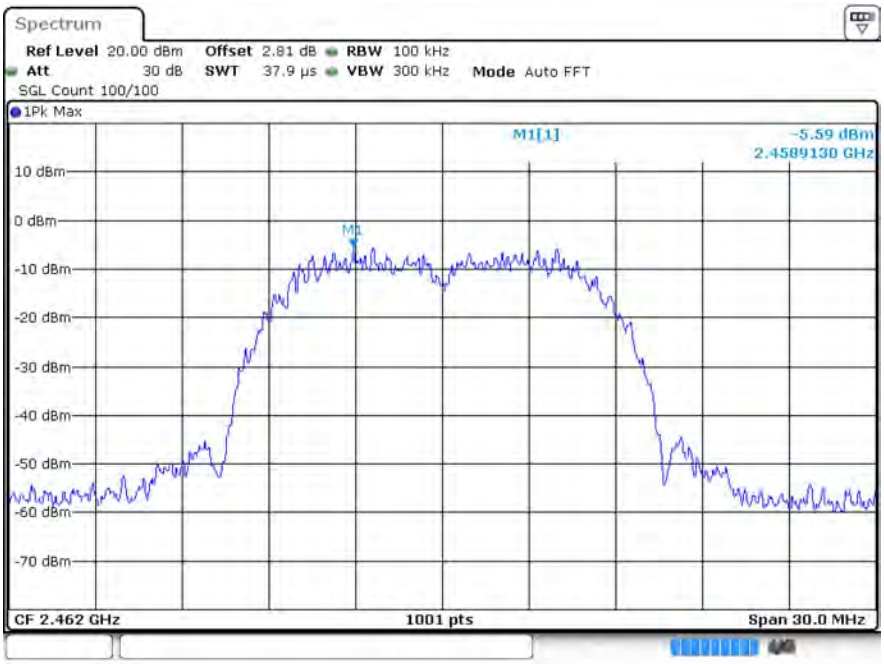
b 2437MHz Ant1 Ref



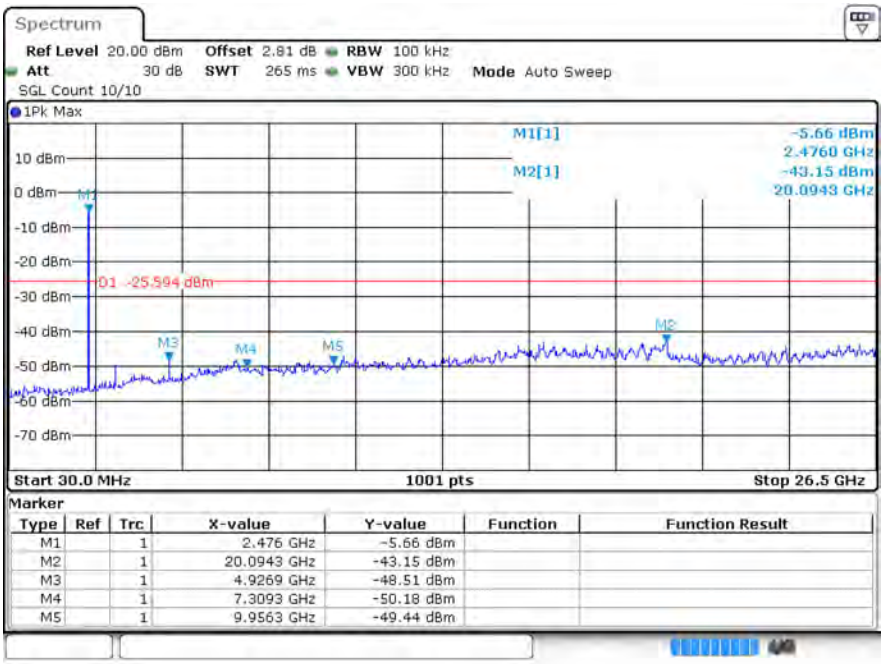

b 2437MHz Ant1 Emission



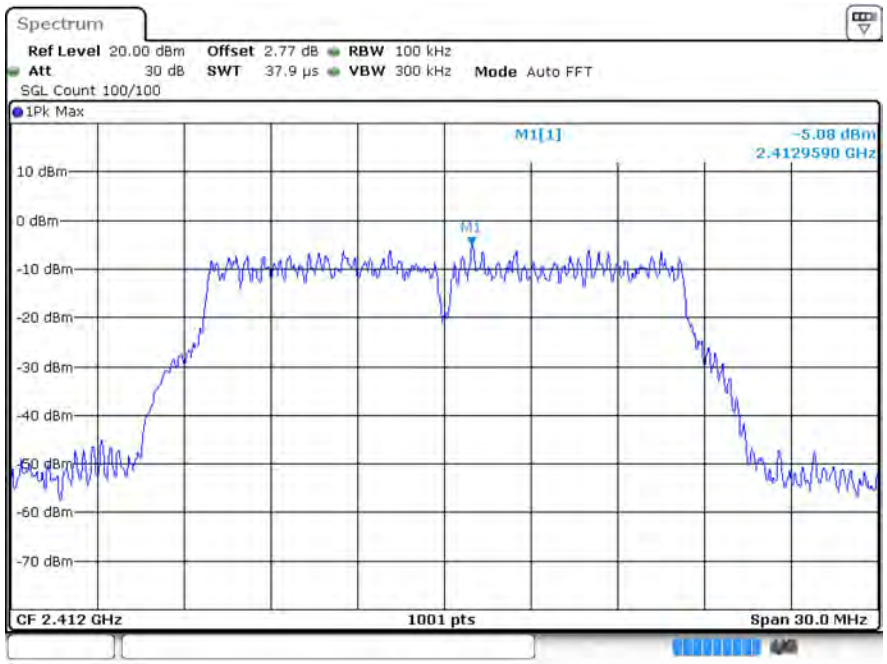
b 2462MHz Ant1 Ref



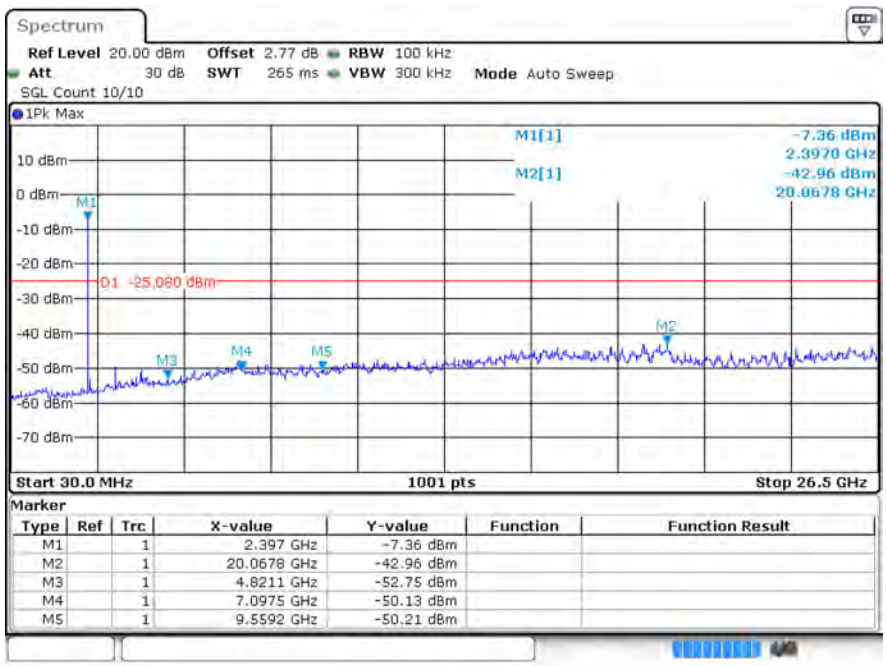

b 2462MHz Ant1 Emission



g 2412MHz Ant1 Ref



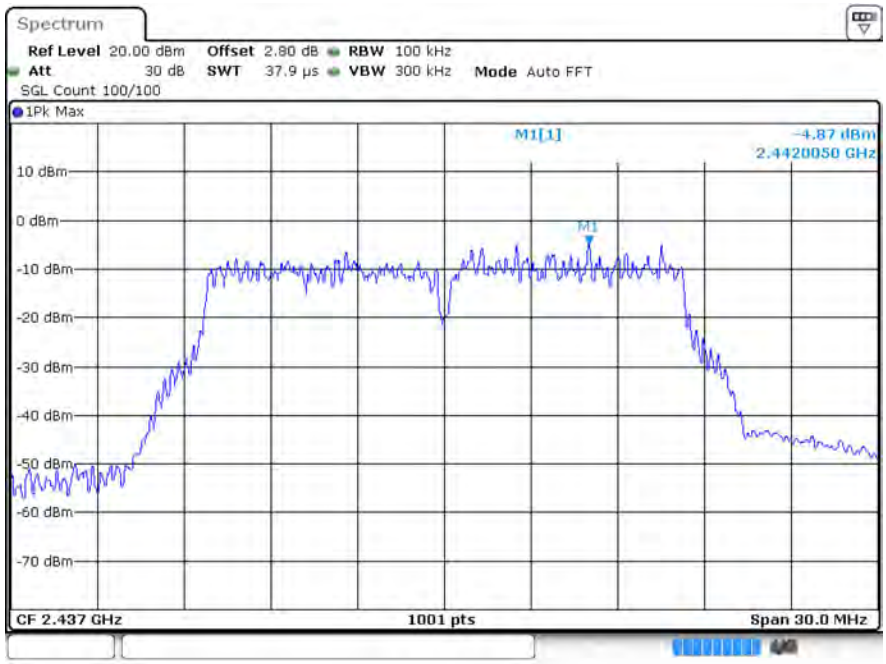

g 2412MHz Ant1 Emission



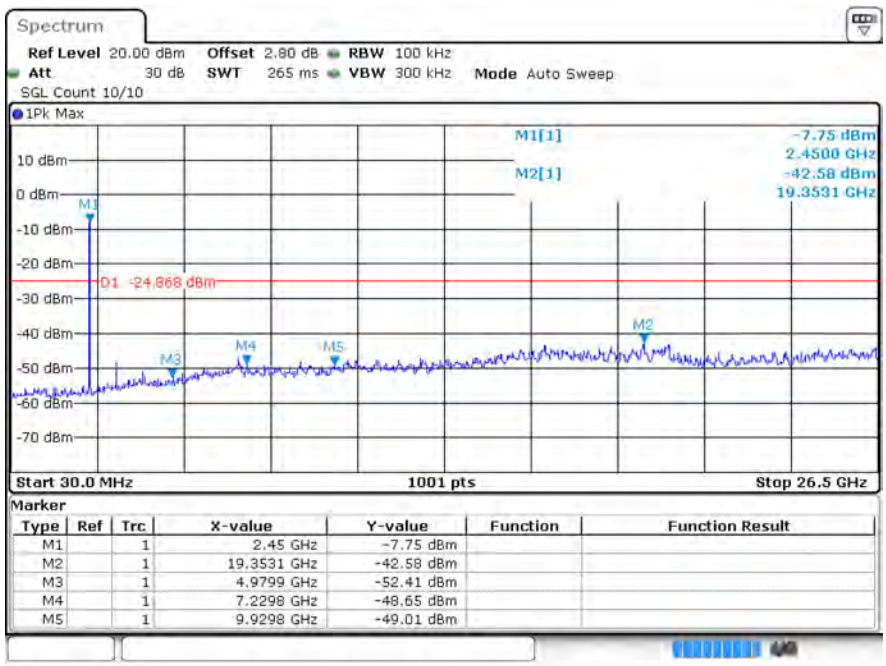

Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 2.397 GHz | -7.36 dBm | | |
| M2 | | 1 | 20.0678 GHz | -42.96 dBm | | |
| M3 | | 1 | 4.8211 GHz | -52.75 dBm | | |
| M4 | | 1 | 7.0975 GHz | -50.13 dBm | | |
| M5 | | 1 | 9.5592 GHz | -50.21 dBm | | |

g 2437MHz Ant1 Ref



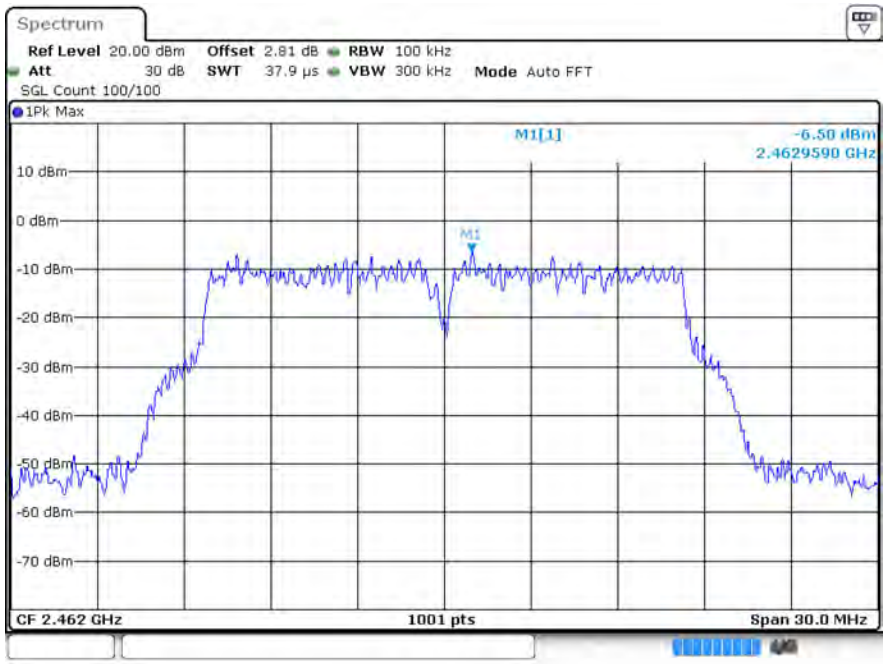

g 2437MHz Ant1 Emission



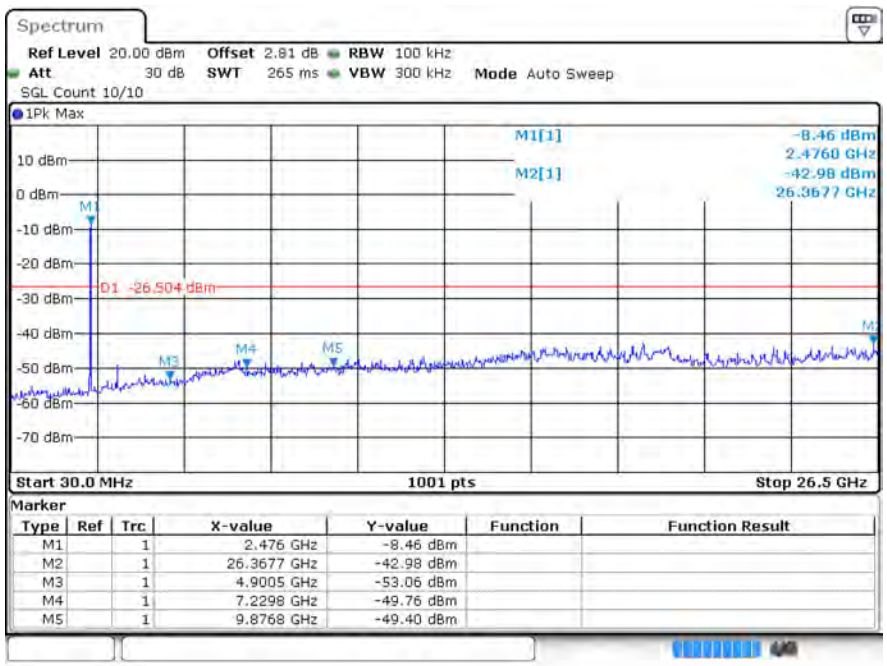

Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 2.45 GHz | -7.75 dBm | | |
| M2 | | 1 | 19.3531 GHz | -42.58 dBm | | |
| M3 | | 1 | 4.9799 GHz | -52.41 dBm | | |
| M4 | | 1 | 7.2298 GHz | -48.65 dBm | | |
| M5 | | 1 | 9.9298 GHz | -49.01 dBm | | |

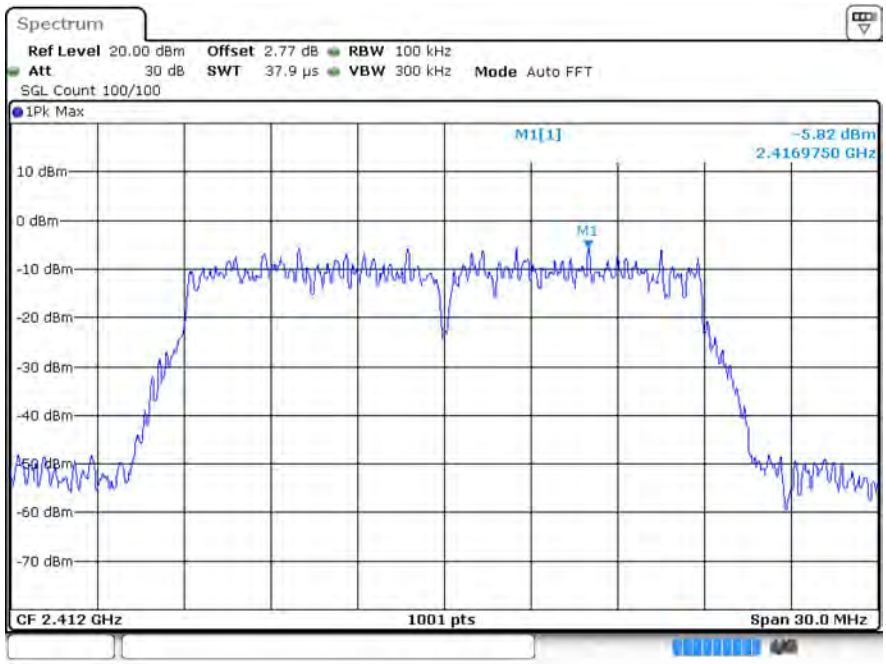
g 2462MHz Ant1 Ref



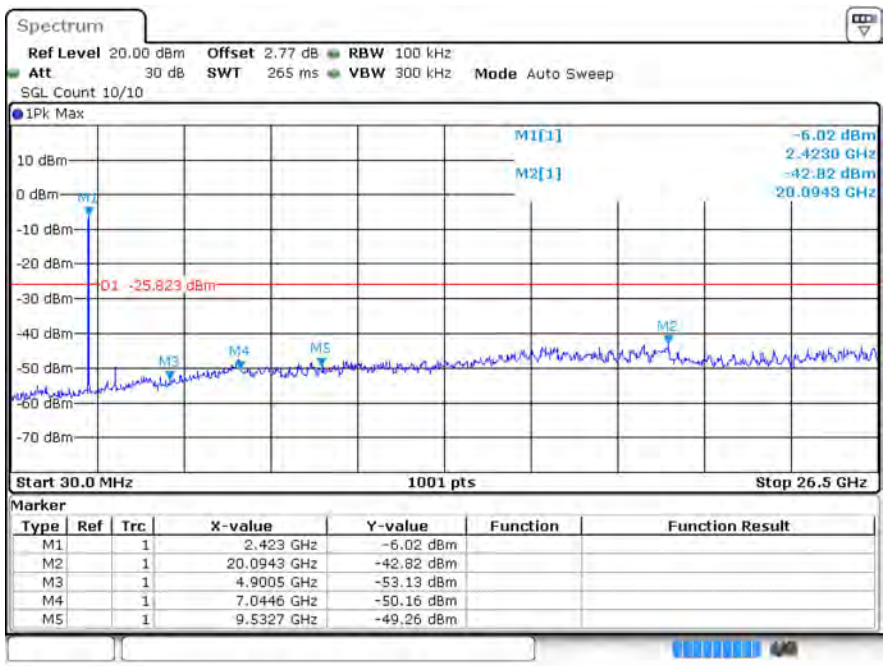

g 2462MHz Ant1 Emission



n20 2412MHz Ant1 Ref



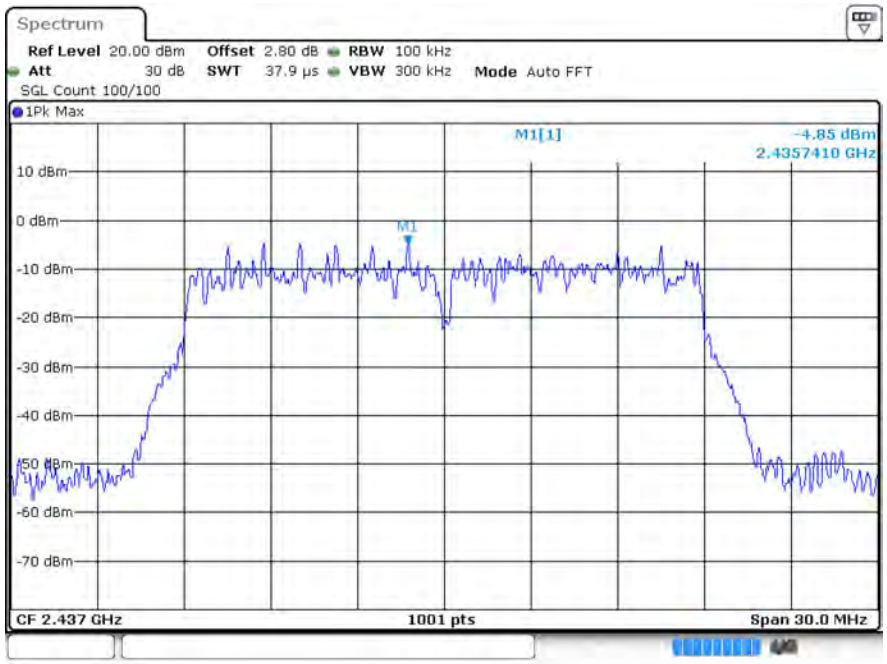

n20 2412MHz Ant1 Emission



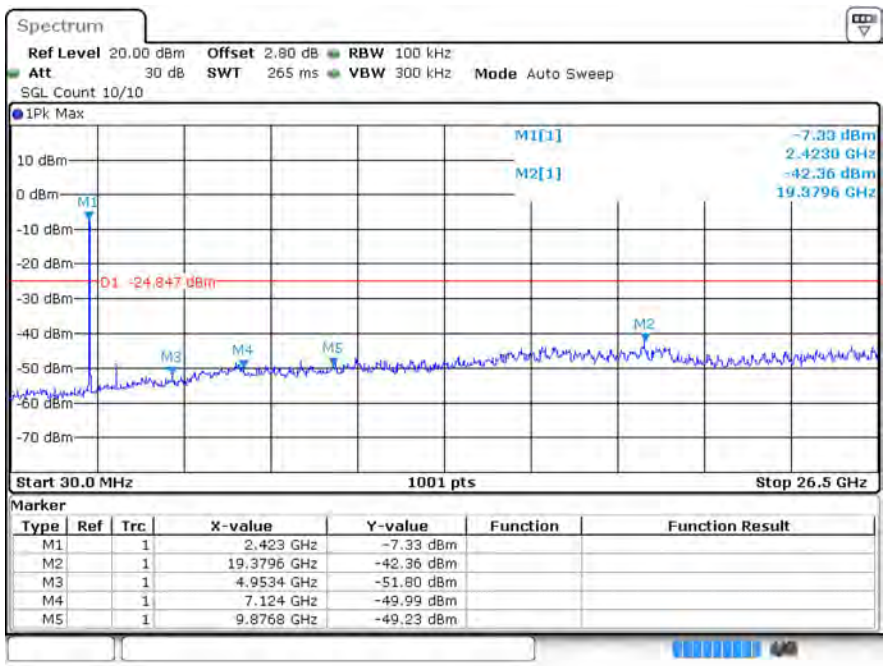

Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 2.423 GHz | -6.02 dBm | | |
| M2 | | 1 | 20.0943 GHz | -42.82 dBm | | |
| M3 | | 1 | 4.9005 GHz | -53.13 dBm | | |
| M4 | | 1 | 7.0446 GHz | -50.16 dBm | | |
| M5 | | 1 | 9.5327 GHz | -49.26 dBm | | |

n20 2437MHz Ant1 Ref



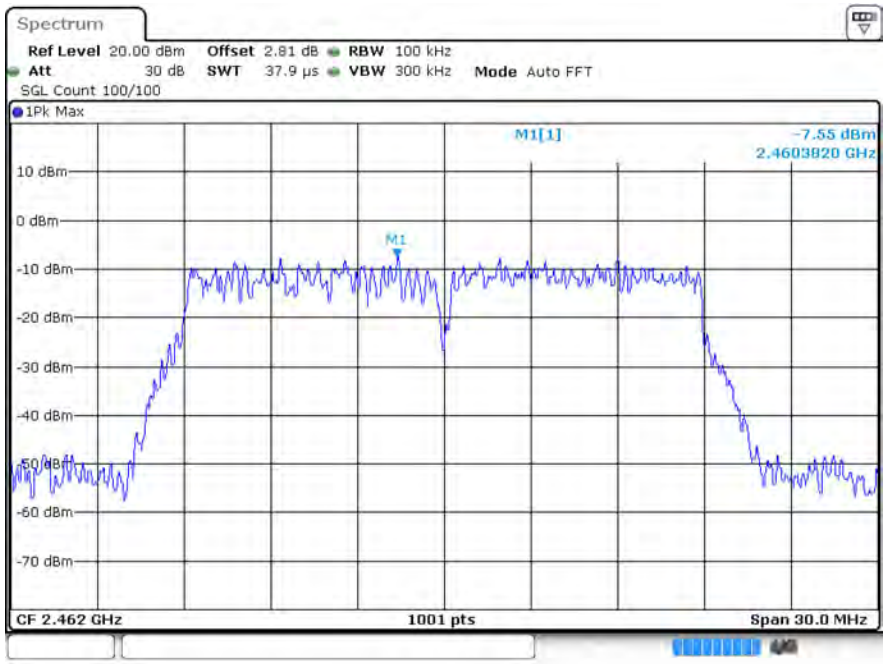

n20 2437MHz Ant1 Emission



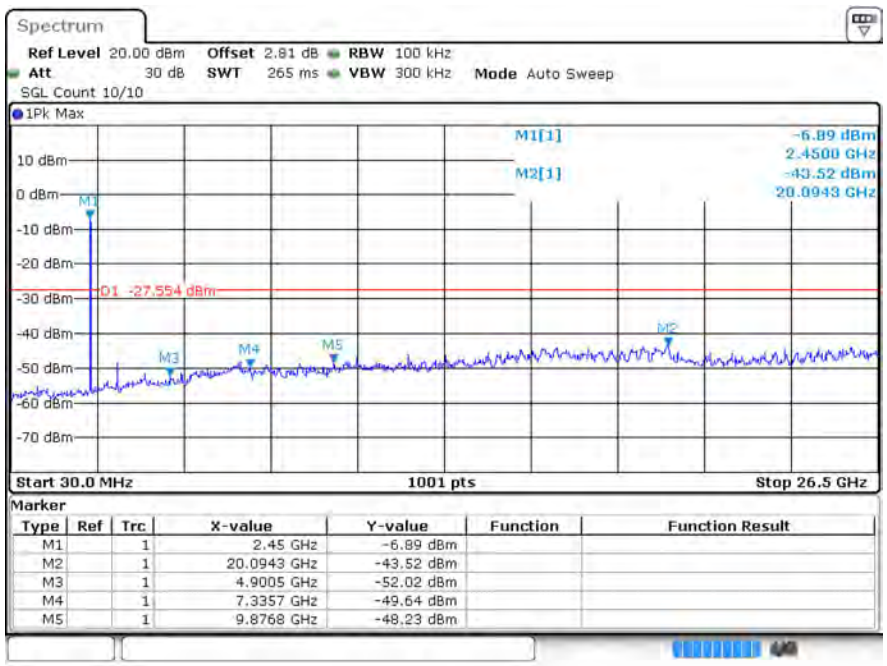

Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 2.423 GHz | -7.33 dBm | | |
| M2 | | 1 | 19.3796 GHz | -42.36 dBm | | |
| M3 | | 1 | 4.9534 GHz | -51.80 dBm | | |
| M4 | | 1 | 7.124 GHz | -49.99 dBm | | |
| M5 | | 1 | 9.8768 GHz | -49.23 dBm | | |

n20 2462MHz Ant1 Ref




n20 2462MHz Ant1 Emission



# 7 Restrict Band

## 7.1 Test Result

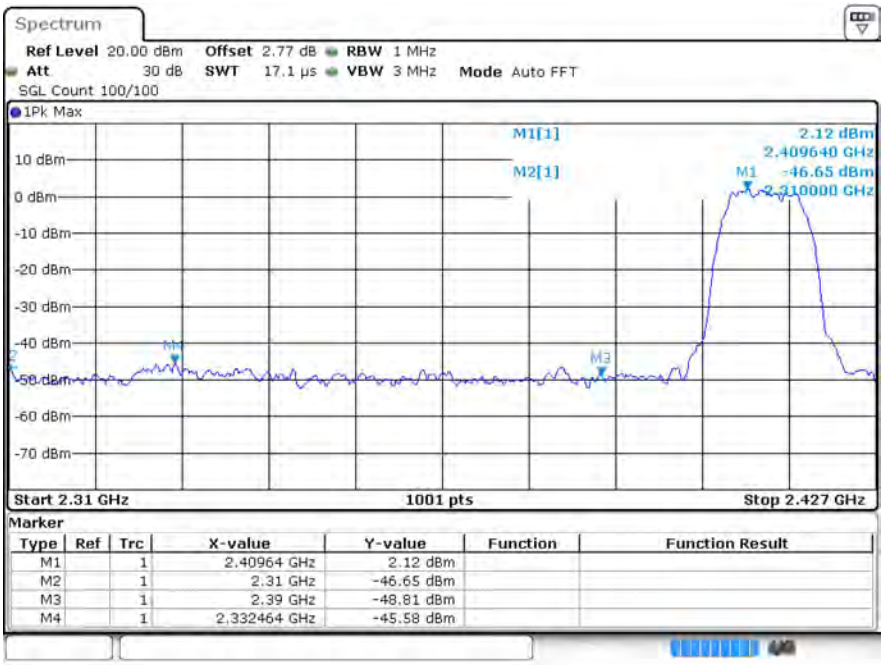
| Mode | Frequency (MHz) | Antenna | Spur Freq (MHz) | Power (dBm) | Gain (dBi) | Duty Factor | E (dBuV/m) | Detector | Limit (dBuV/m) | Verdict |
|---|---|---|---|---|---|---|---|---|---|---|
| b | 2412 | Ant1 | 2310 | -46.65 | 2 | - | 50.61 | Peak | 74 | Pass |
| b | 2412 | Ant1 | 2310 | -56.78 | 2 | 2.81 | 43.29 | Average | 54 | Pass |
| b | 2412 | Ant1 | 2332.464 | -45.58 | 2 | - | 51.68 | Peak | 74 | Pass |
| b | 2412 | Ant1 | 2336.091 | -53.93 | 2 | 2.81 | 46.14 | Average | 54 | Pass |
| b | 2412 | Ant1 | 2390 | -48.81 | 2 | - | 48.45 | Peak | 74 | Pass |
| b | 2412 | Ant1 | 2390 | -56.52 | 2 | 2.81 | 43.55 | Average | 54 | Pass |
| b | 2462 | Ant1 | 2483.5 | -47.11 | 2 | - | 50.15 | Peak | 74 | Pass |
| b | 2462 | Ant1 | 2483.5 | -56.73 | 2 | 2.99 | 43.52 | Average | 54 | Pass |
| b | 2462 | Ant1 | 2491.997 | -46.76 | 2 | - | 50.5 | Peak | 74 | Pass |
| b | 2462 | Ant1 | 2490.937 | -55.78 | 2 | 2.99 | 44.47 | Average | 54 | Pass |
| b | 2462 | Ant1 | 2500 | -47.68 | 2 | - | 49.58 | Peak | 74 | Pass |
| b | 2462 | Ant1 | 2500 | -56.72 | 2 | 2.99 | 43.53 | Average | 54 | Pass |
| g | 2412 | Ant1 | 2310 | -49.31 | 2 | - | 47.95 | Peak | 74 | Pass |
| g | 2412 | Ant1 | 2310 | -56.95 | 2 | 8.18 | 48.49 | Average | 54 | Pass |
| g | 2412 | Ant1 | 2337.612 | -45.47 | 2 | - | 51.79 | Peak | 74 | Pass |
| g | 2412 | Ant1 | 2339.133 | -54.59 | 2 | 8.18 | 50.85 | Average | 54 | Pass |
| g | 2412 | Ant1 | 2390 | -49.12 | 2 | - | 48.45 | Peak | 74 | Pass |
| g | 2412 | Ant1 | 2390 | -56.8 | 2 | 8.18 | 48.64 | Average | 54 | Pass |
| g | 2462 | Ant1 | 2483.5 | -48.02 | 2 | - | 49.24 | Peak | 74 | Pass |
| g | 2462 | Ant1 | 2483.5 | -56.58 | 2 | 10.52 | 51.2 | Average | 54 | Pass |
| g | 2462 | Ant1 | 2491.997 | -47.38 | 2 | - | 49.88 | Peak | 74 | Pass |
| g | 2462 | Ant1 | 2487.386 | -55.47 | 2 | 10.52 | 52.31 | Average | 54 | Pass |
| g | 2462 | Ant1 | 2500 | -49.45 | 2 | - | 49.58 | Peak | 74 | Pass |
| g | 2462 | Ant1 | 2500 | -55.97 | 2 | 10.52 | 51.81 | Average | 54 | Pass |
| n20 | 2412 | Ant1 | 2310 | -50.4 | 2 | - | 46.86 | Peak | 74 | Pass |
| n20 | 2412 | Ant1 | 2310 | -56.82 | 2 | 8.95 | 49.39 | Average | 54 | Pass |
| n20 | 2412 | Ant1 | 2328.837 | -46.14 | 2 | - | 51.12 | Peak | 74 | Pass |
| n20 | 2412 | Ant1 | 2336.559 | -53.6 | 2 | 8.95 | 52.61 | Average | 54 | Pass |
| n20 | 2412 | Ant1 | 2390 | -49.75 | 2 | - | 47.51 | Peak | 74 | Pass |
| n20 | 2412 | Ant1 | 2390 | -55.93 | 2 | 8.95 | 50.28 | Average | 54 | Pass |
| n20 | 2462 | Ant1 | 2483.5 | -47.52 | 2 | - | 49.74 | Peak | 74 | Pass |
| n20 | 2462 | Ant1 | 2483.5 | -55.95 | 2 | 7.47 | 48.78 | Average | 54 | Pass |
| n20 | 2462 | Ant1 | 2484.153 | -46.22 | 2 | - | 51.04 | Peak | 74 | Pass |
| n20 | 2462 | Ant1 | 2490.884 | -55.81 | 2 | 7.47 | 48.92 | Average | 54 | Pass |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| n20 | 2462 | Ant1 | 2500 | -50.54 | 2 | - | 46.72 | Peak | 74 | Pass |
| n20 | 2462 | Ant1 | 2500 | -56.58 | 2 | 7.47 | 48.15 | Average | 54 | Pass |

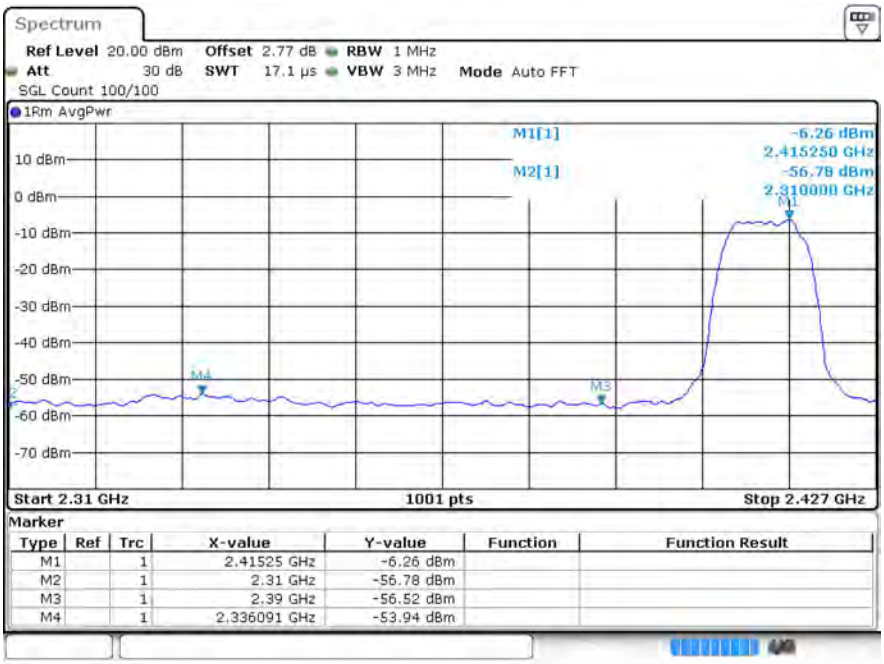
## 7.2 Test Graphs

Test Graphs

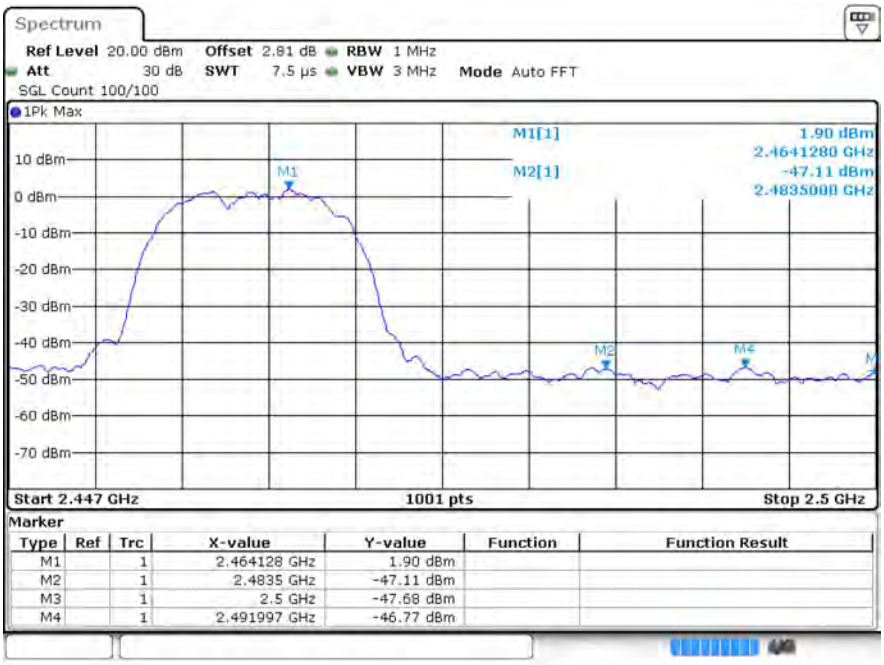
b 2412MHz Ant1 Peak



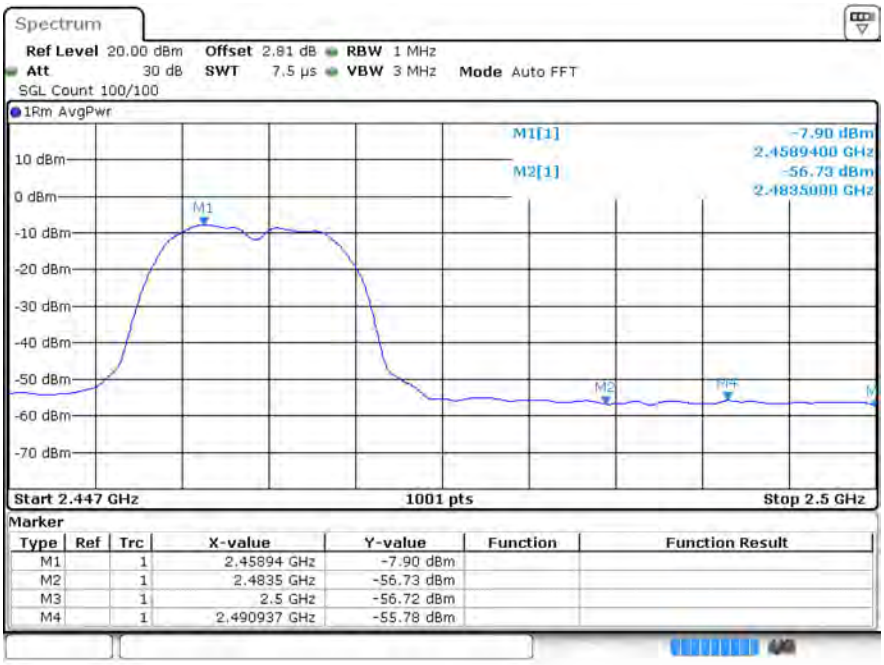

b 2412MHz Ant1 Average



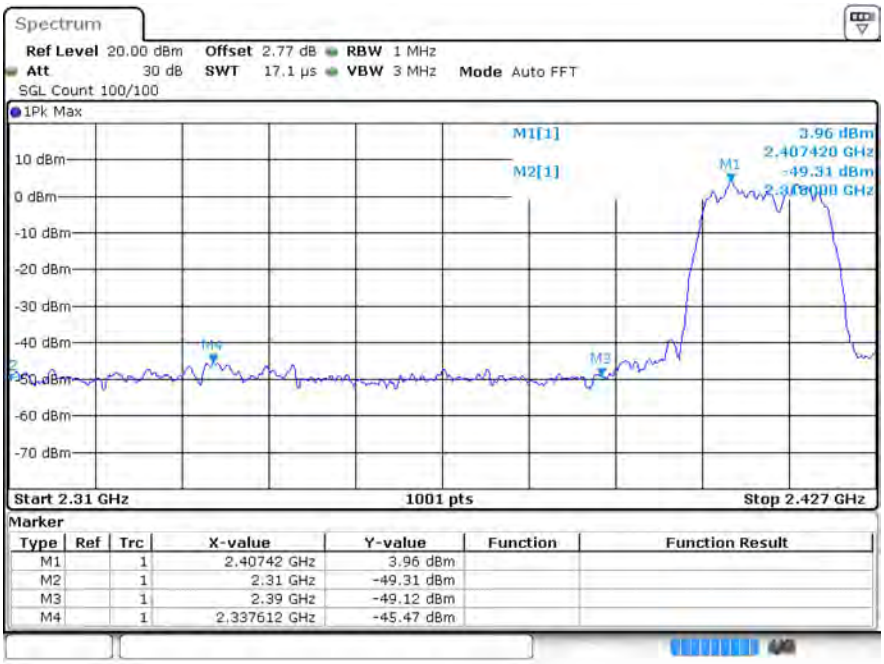
b 2462MHz Ant1 Peak



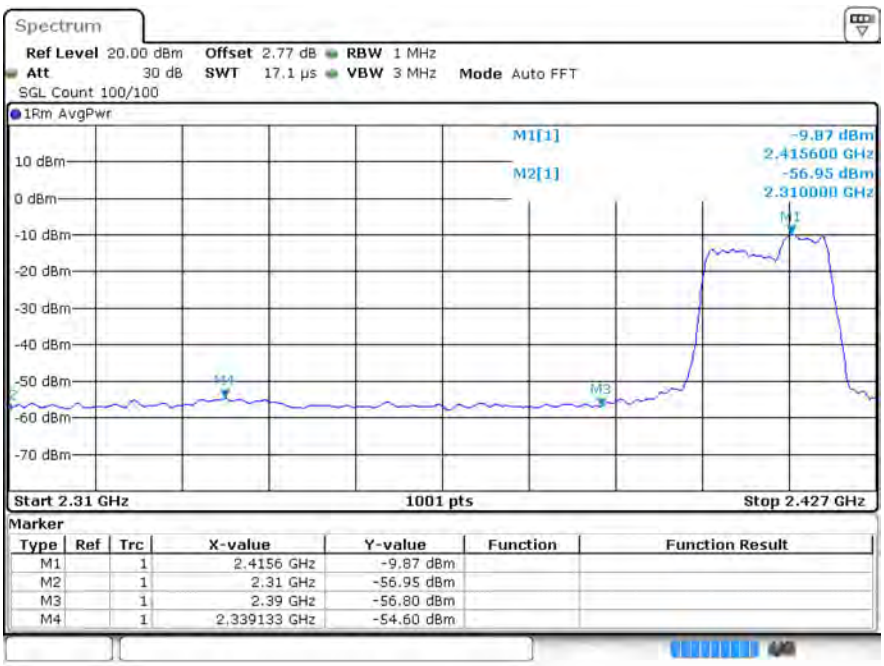

b 2462MHz Ant1 Average



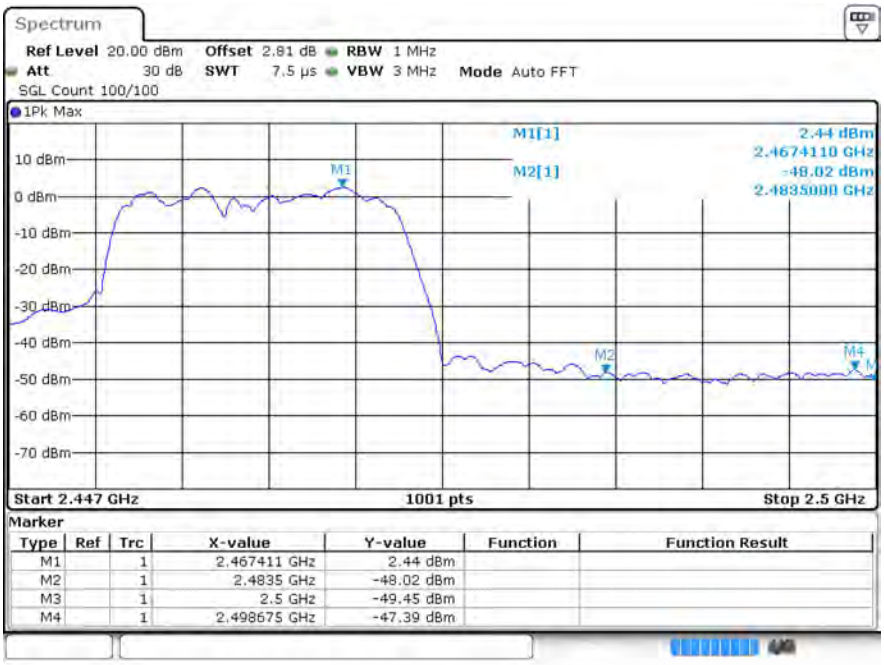
g 2412MHz Ant1 Peak



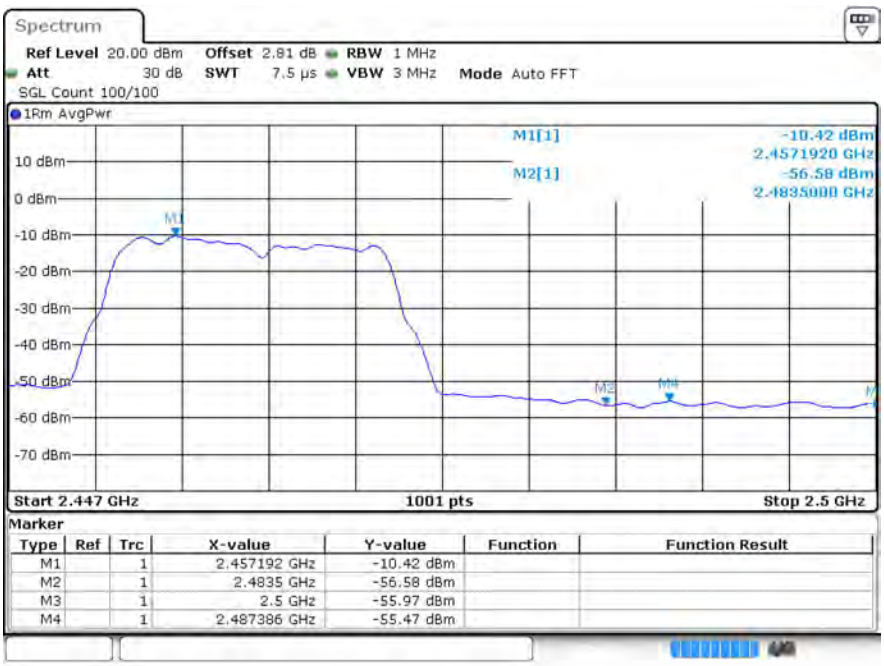

g 2412MHz Ant1 Average



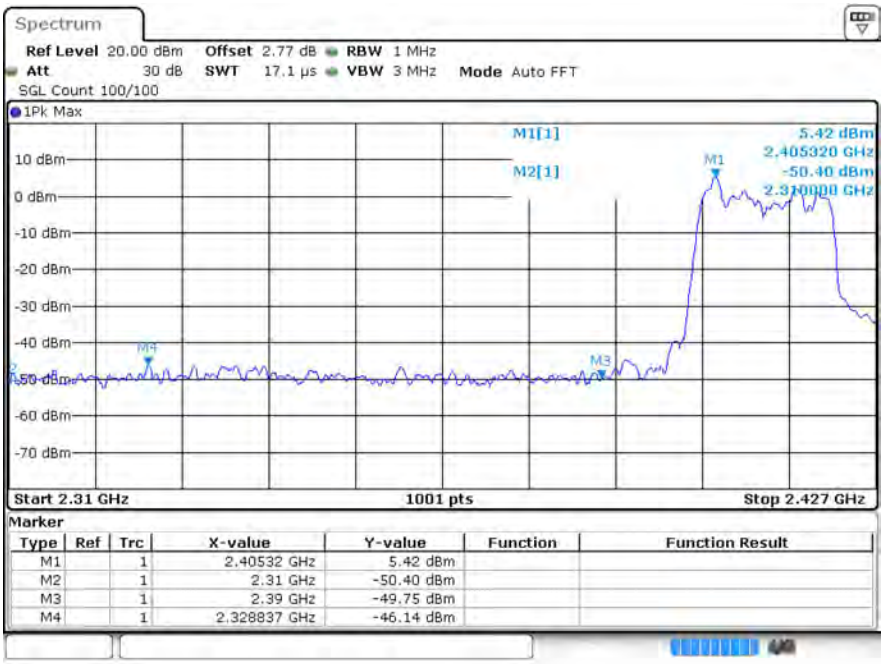
g 2462MHz Ant1 Peak



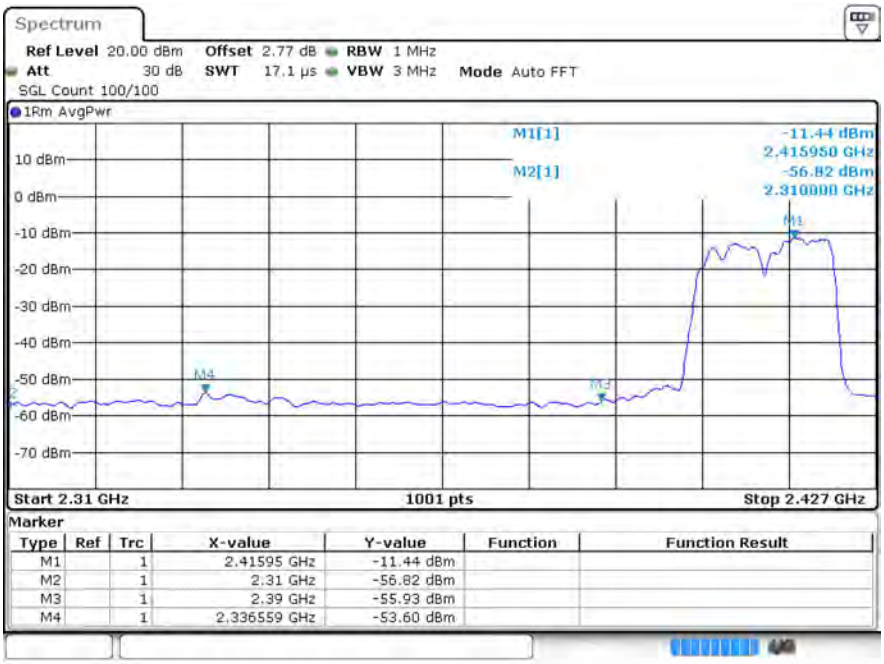

g 2462MHz Ant1 Average



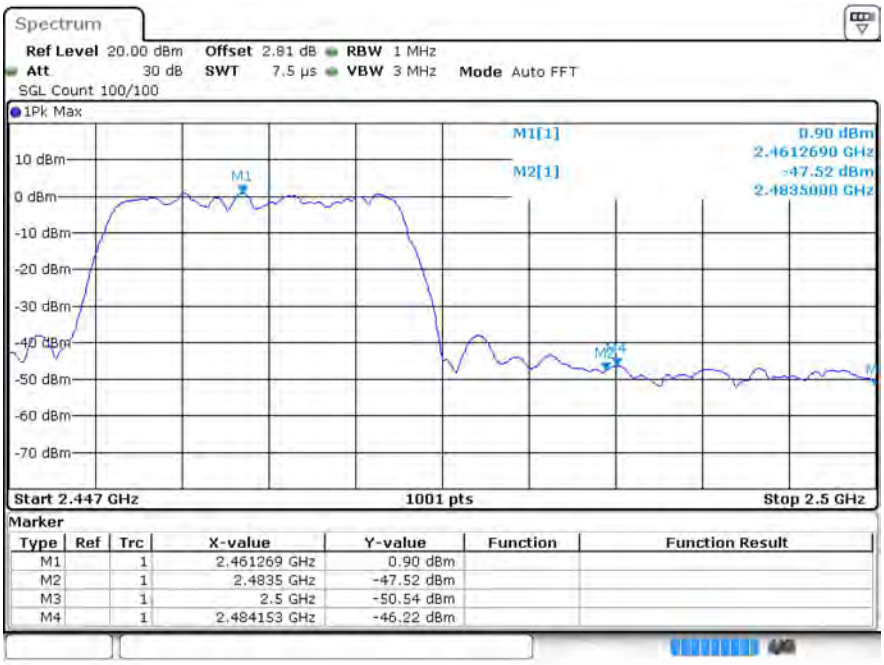
n20 2412MHz Ant1 Peak



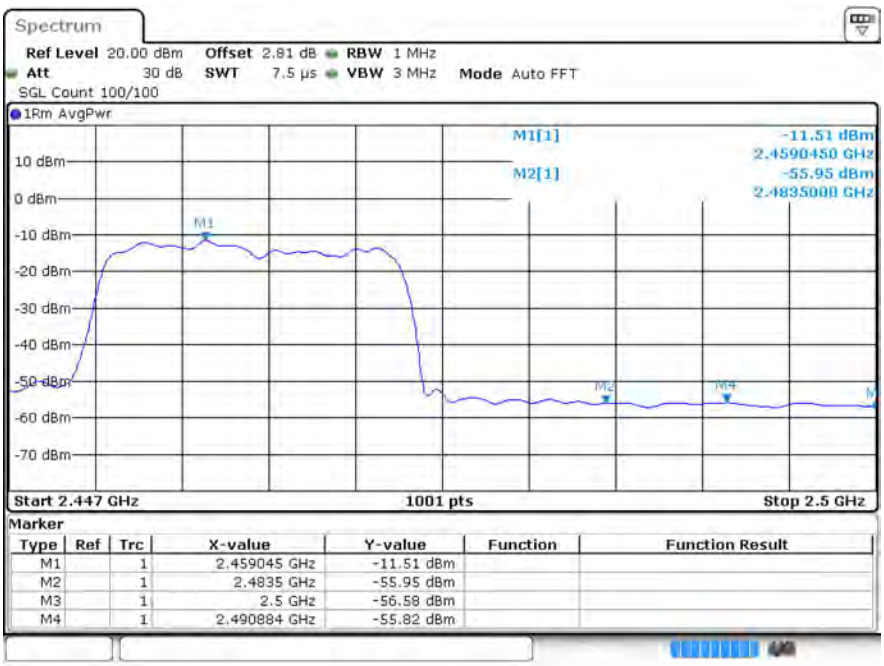

n20 2412MHz Ant1 Average



n20 2462MHz Ant1 Peak




n20 2462MHz Ant1 Average




---The End---