

## Appendix A

### RF Test Data for BT(BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth stereo

Trade Mark: N/A

Test Model: k10

#### Environmental Conditions

|                    |             |
|--------------------|-------------|
| Temperature:       | 26.2℃       |
| Relative Humidity: | 54.9%       |
| ATM Pressure:      | 101Kpa      |
| Test Engineer:     | Emiya lin   |
| Supervised by:     | Simba Haung |



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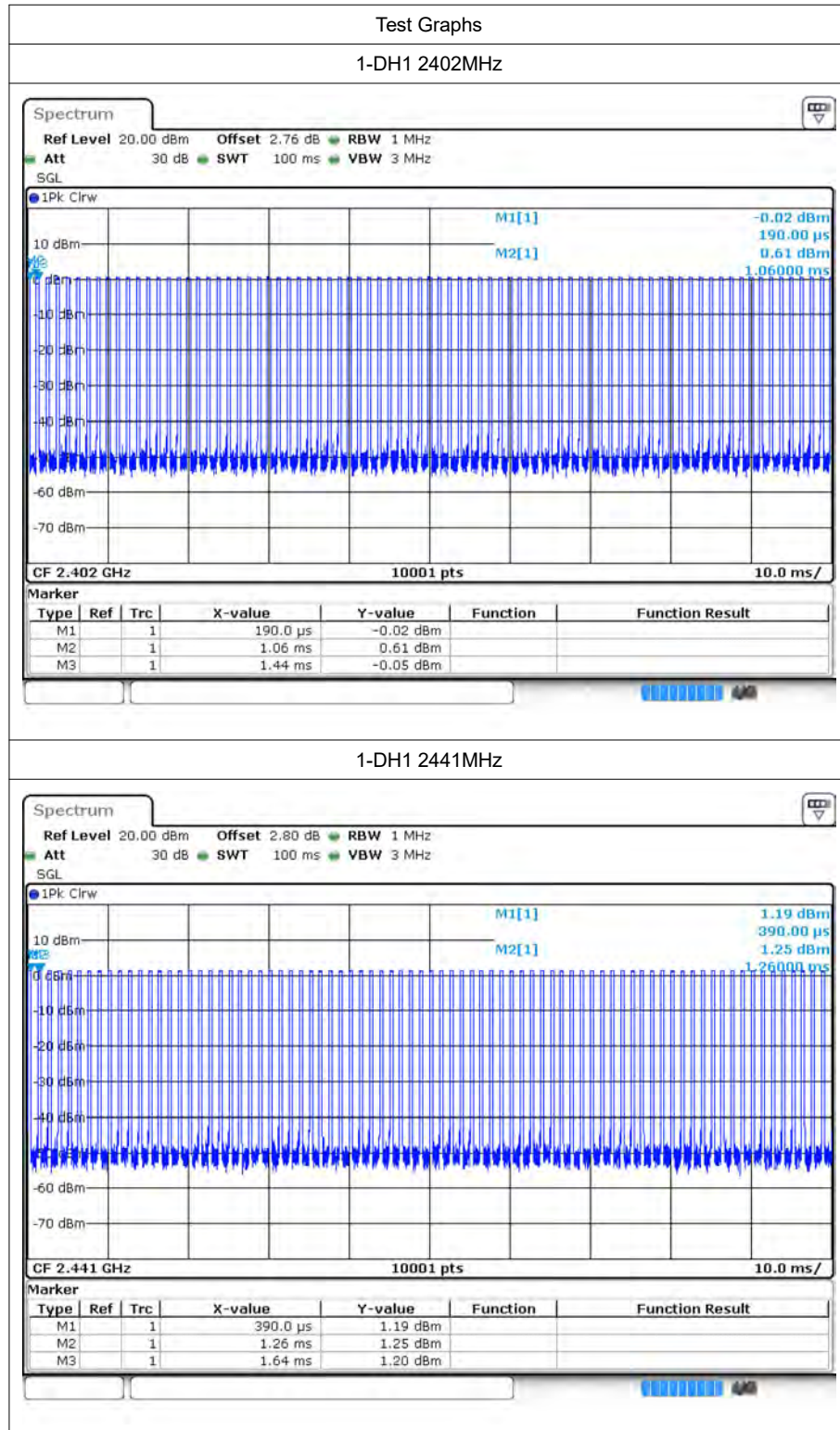
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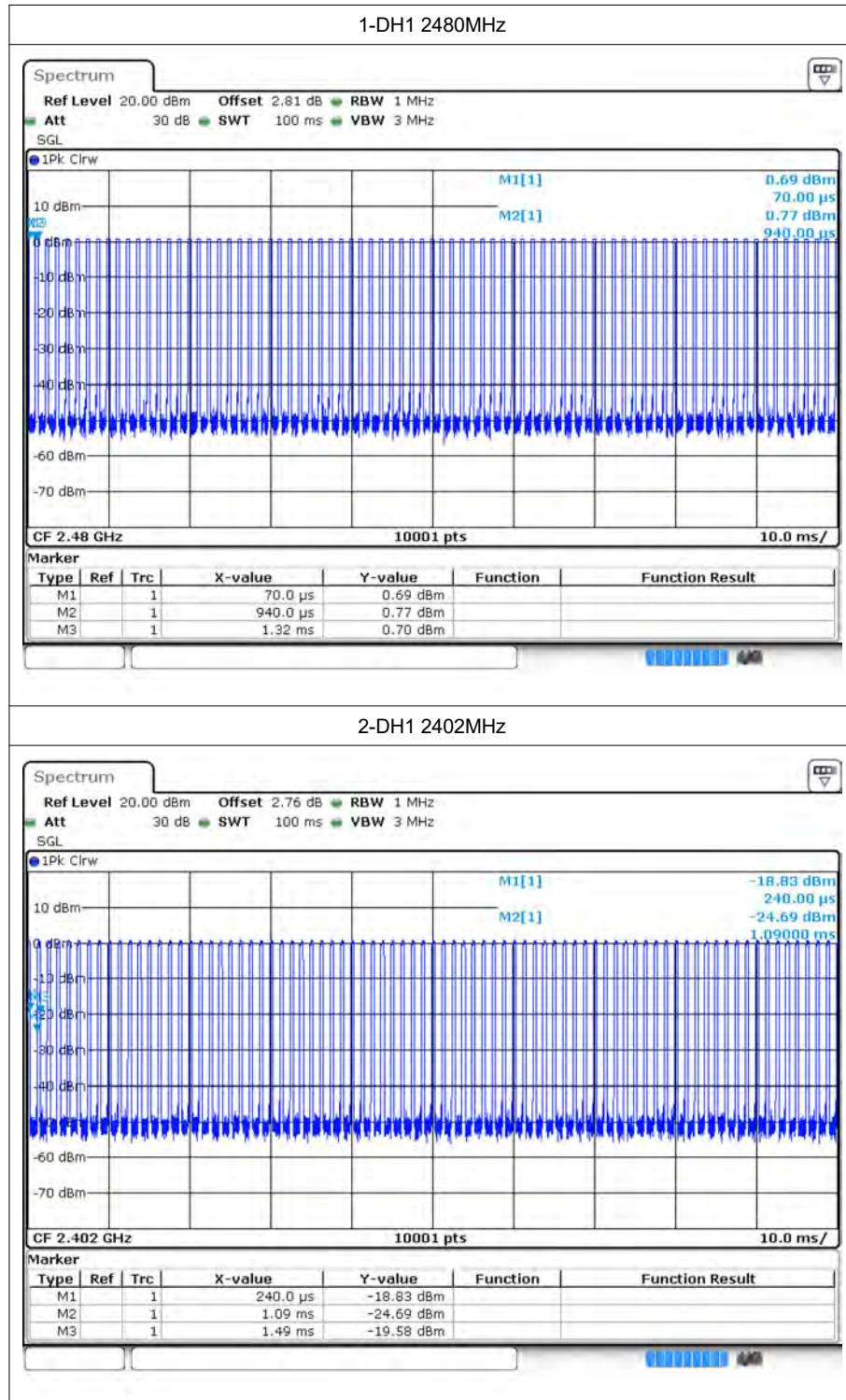
# 1 Duty Cycle

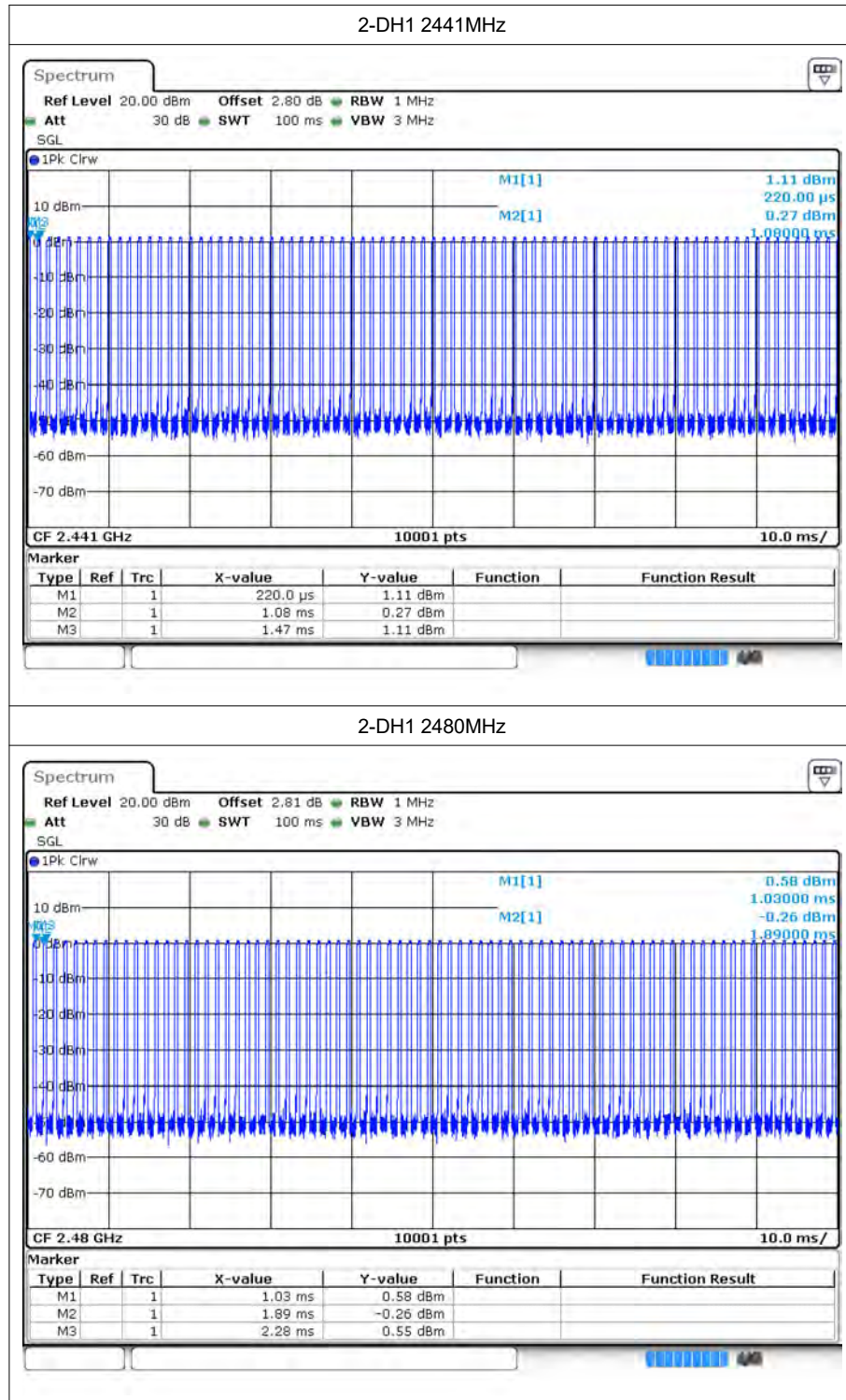
## 1.1 Test Result

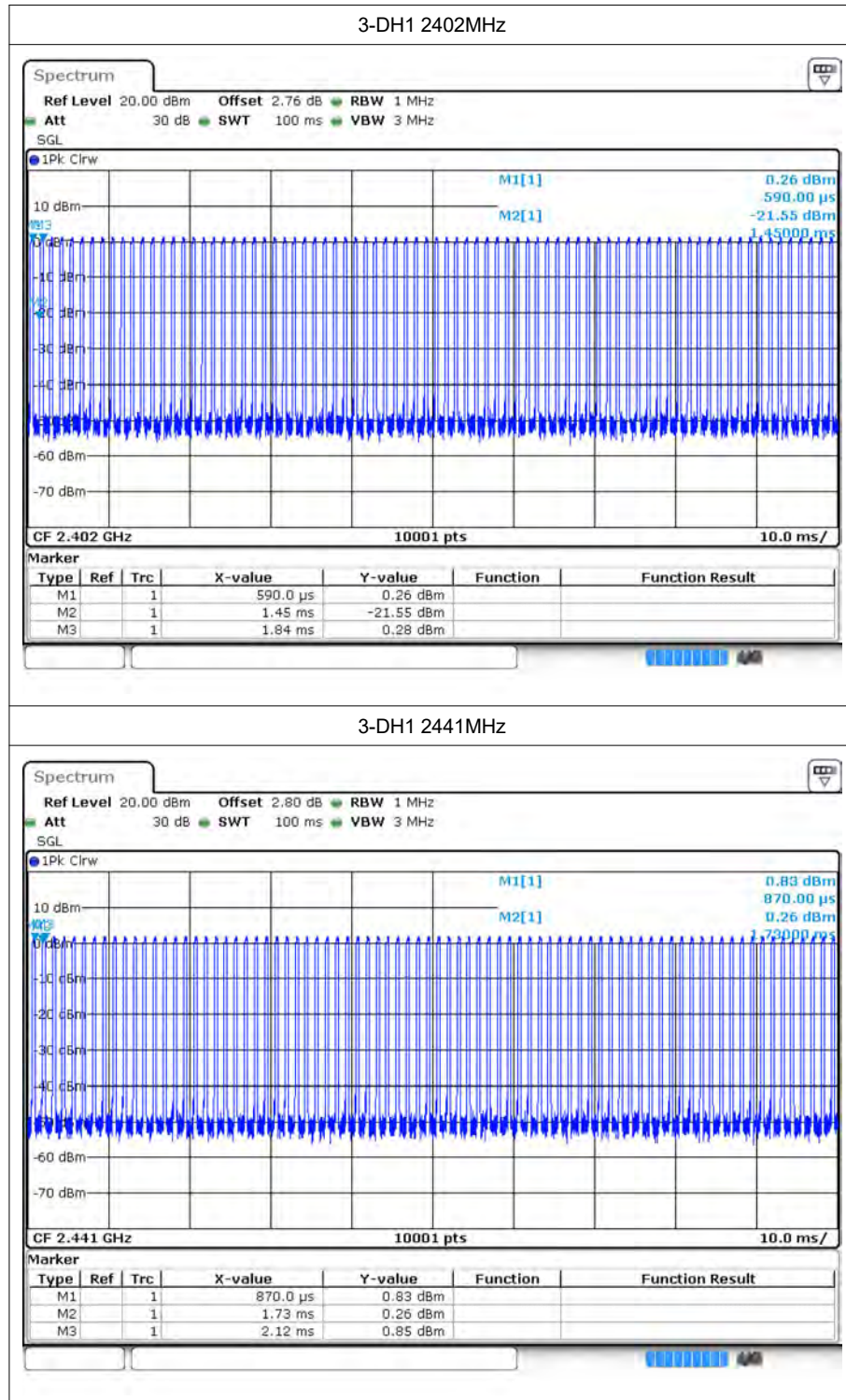
| Mode  | Frequency (MHz) | Duty Cycle (%) | Correction Factor | 1/T (kHz) |
|-------|-----------------|----------------|-------------------|-----------|
| 1-DH1 | 2402            | 31.21          | 5.06              | 2.63      |
| 1-DH1 | 2441            | 31.2           | 5.06              | 2.63      |
| 1-DH1 | 2480            | 31.21          | 5.06              | 2.63      |
| 2-DH1 | 2402            | 32.02          | 4.95              | 2.5       |
| 2-DH1 | 2441            | 32.01          | 4.95              | 2.56      |
| 2-DH1 | 2480            | 32             | 4.95              | 2.56      |
| 3-DH1 | 2402            | 32.05          | 4.94              | 2.56      |
| 3-DH1 | 2441            | 32             | 4.95              | 2.56      |
| 3-DH1 | 2480            | 32             | 4.95              | 2.56      |

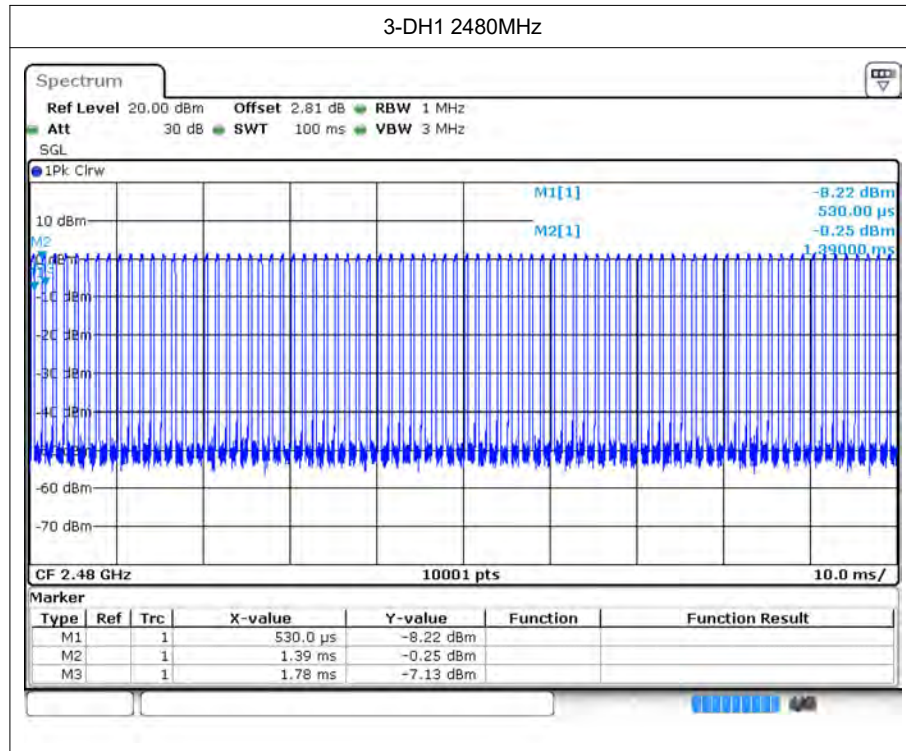
## 1.2 Test Graphs









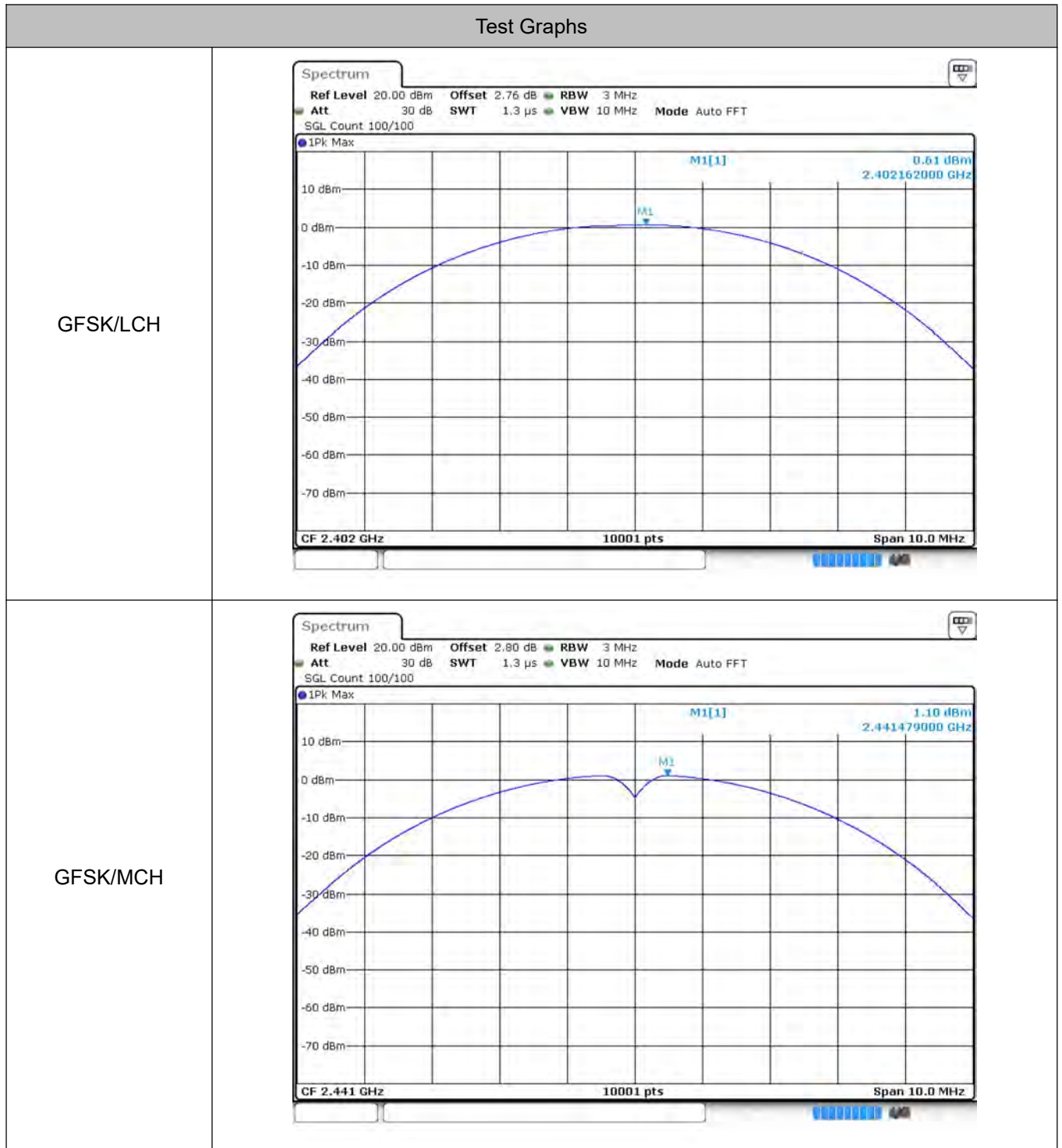


## 2 Maximum Conducted Peak Output Power

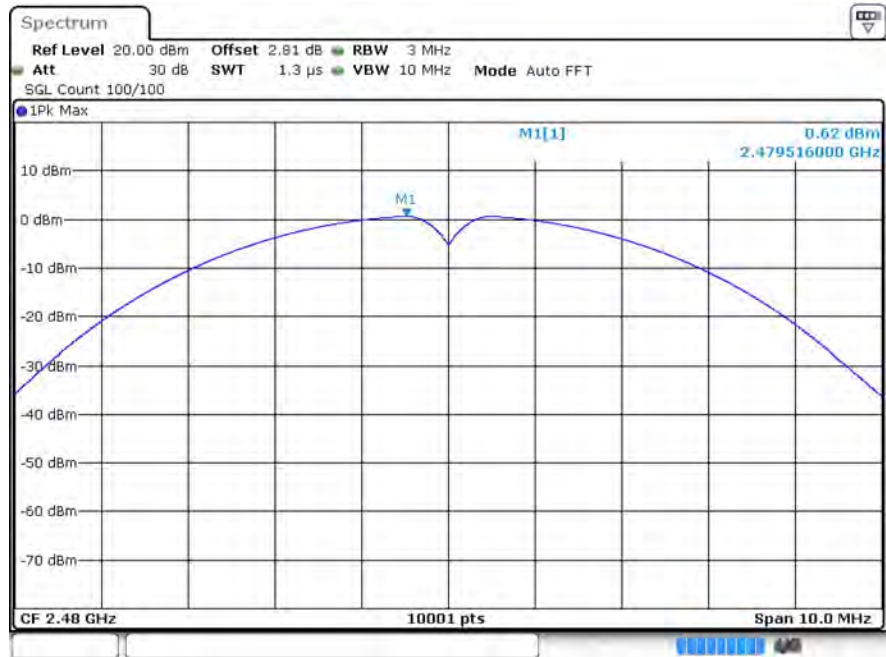
### 2.1 Test Result

| Mode          | Channel. | Maximum Peak Output Power<br>[dBm] | Limit<br>[dBm] | Verdict |
|---------------|----------|------------------------------------|----------------|---------|
| GFSK          | LCH      | 0.61                               | 21             | Pass    |
|               | MCH      | 1.1                                | 21             | Pass    |
|               | HCH      | 0.62                               | 21             | Pass    |
| $\pi/4$ DQPSK | LCH      | 1.74                               | 21             | Pass    |
|               | MCH      | 2.34                               | 21             | Pass    |
|               | HCH      | 1.83                               | 21             | Pass    |
| 8DPSK         | LCH      | 1.91                               | 21             | Pass    |
|               | MCH      | 2.2                                | 21             | Pass    |
|               | HCH      | 1.91                               | 21             | Pass    |

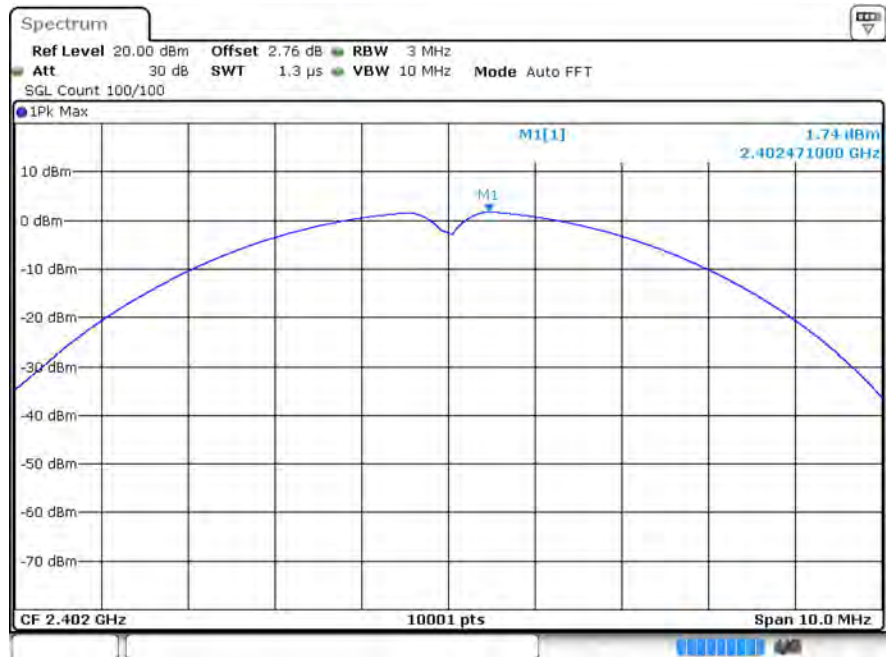
## 2.2 Test Graphs



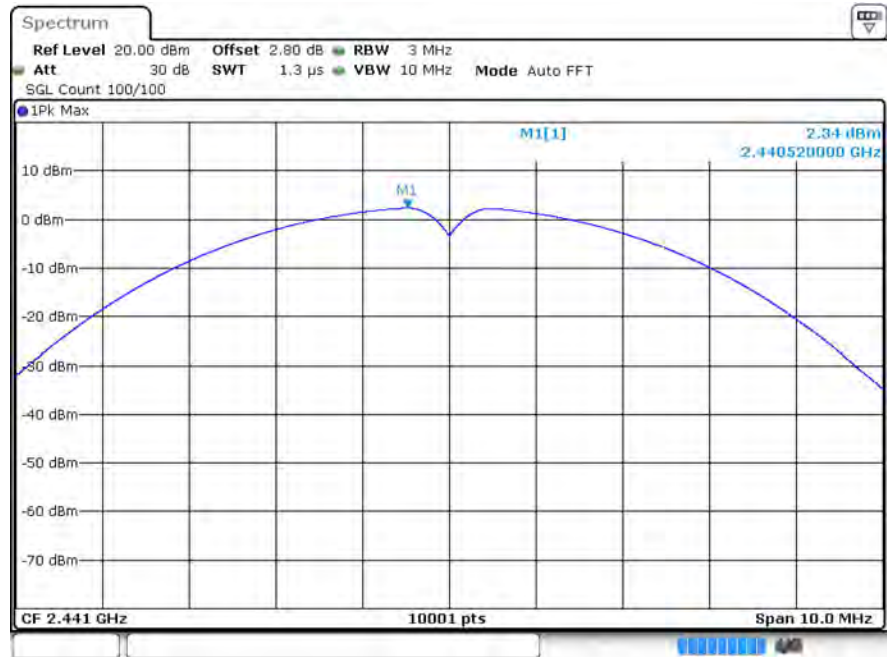
GFSK/HCH



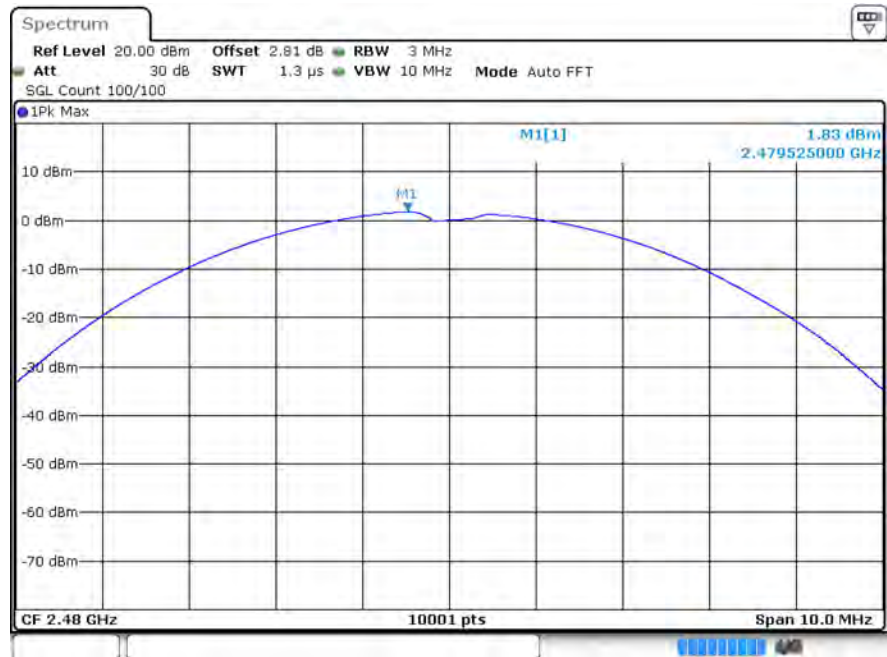
$\pi/4$ DQPSK/LCH



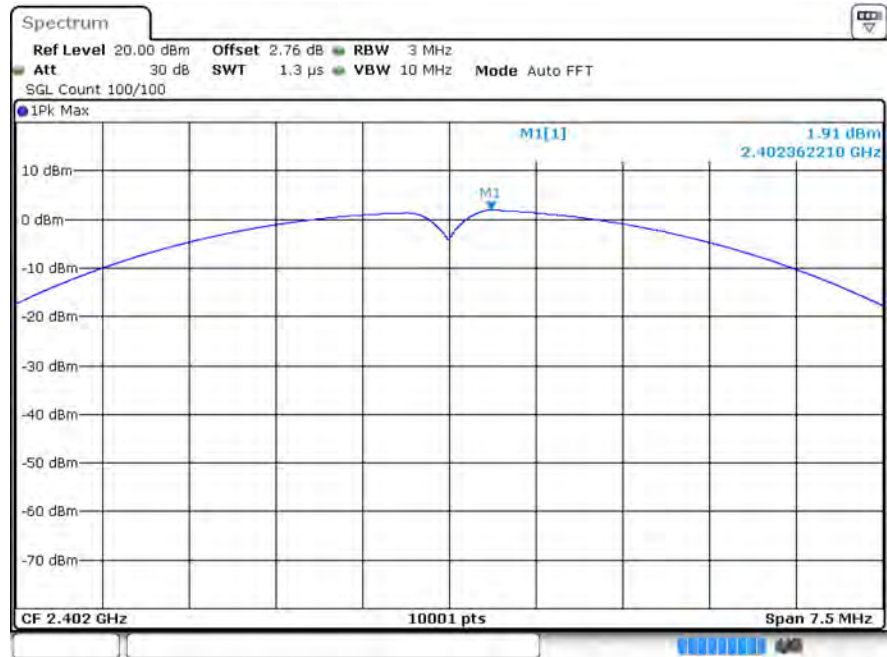
$\pi/4$ DQPSK/MCH



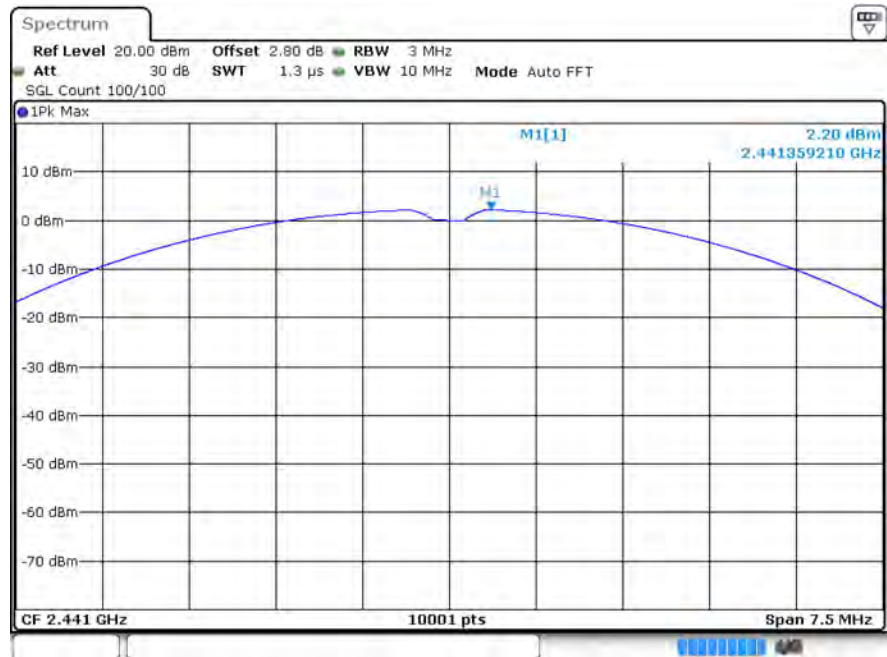
$\pi/4$ DQPSK/HCH



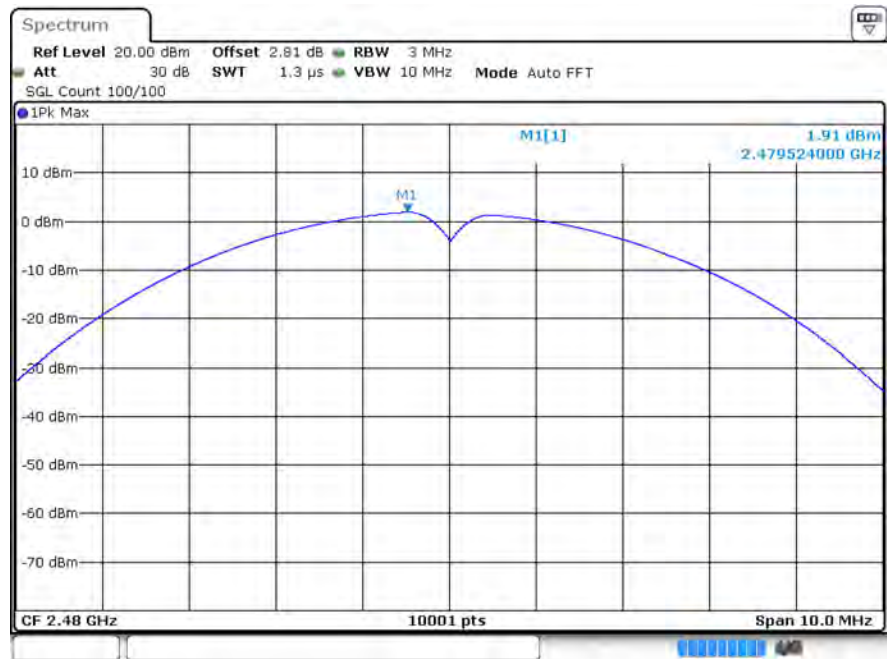
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

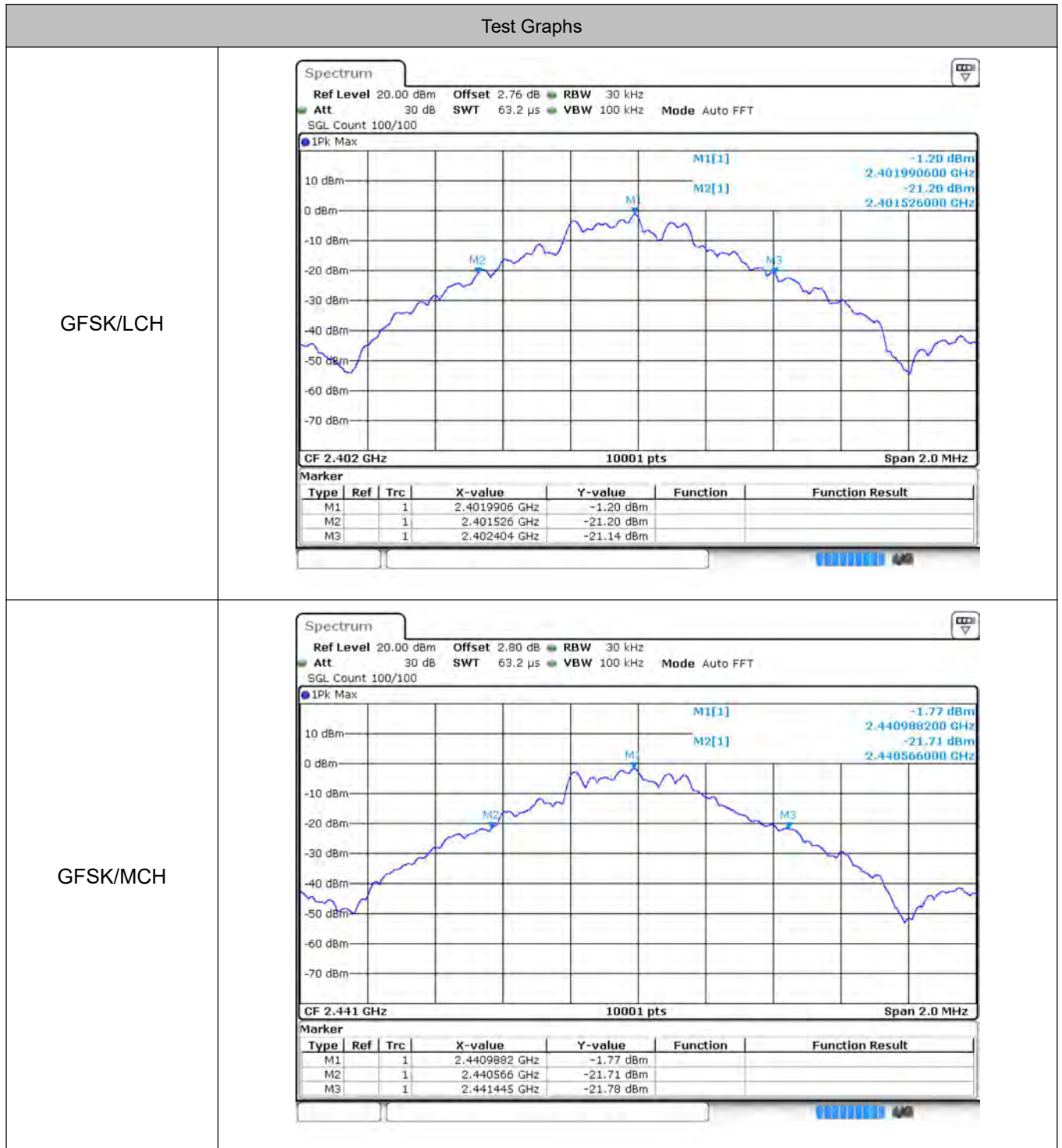


### 3 20dB Bandwidth

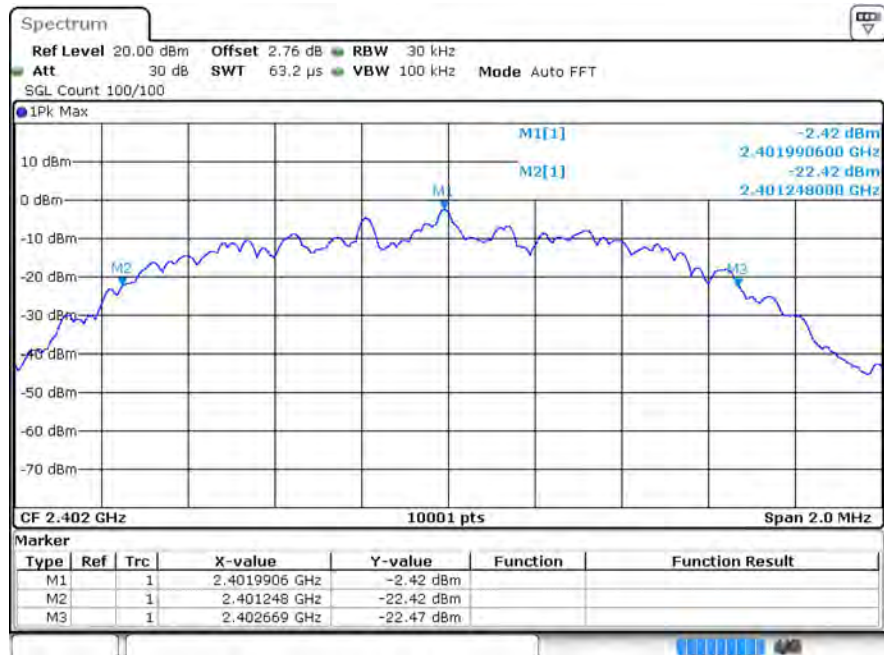
#### 3.1 Test Result

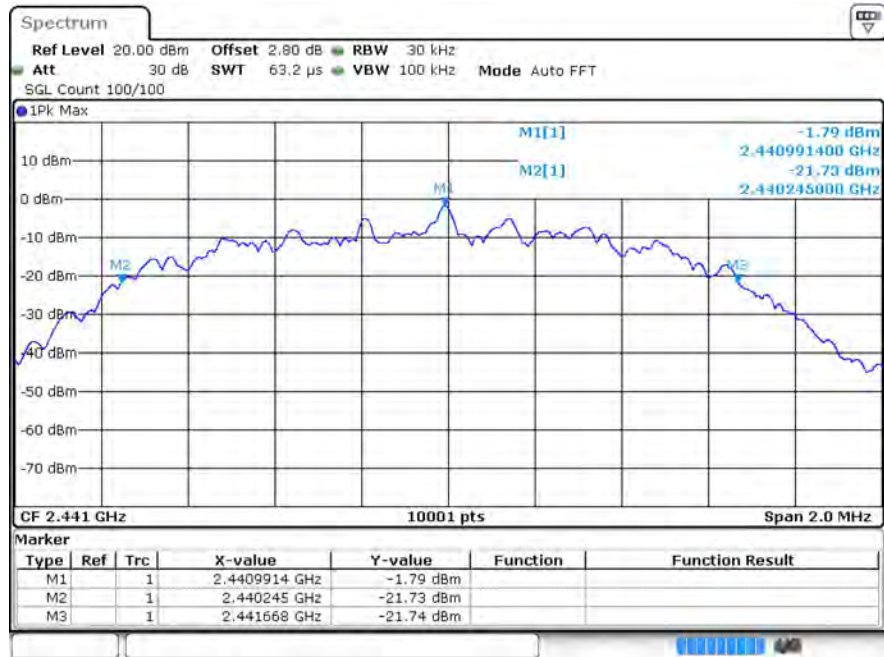
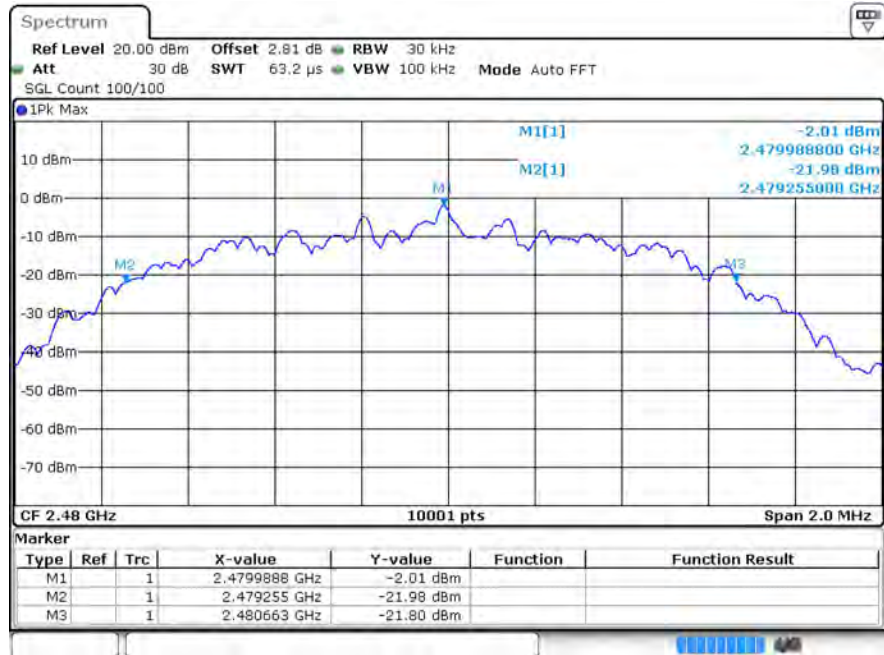
| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.878                | Not Specified | Pass    |
|               | MCH      | 0.879                | Not Specified | Pass    |
|               | HCH      | 0.885                | Not Specified | Pass    |
| $\pi/4$ DQPSK | LCH      | 1.421                | Not Specified | Pass    |
|               | MCH      | 1.424                | Not Specified | Pass    |
|               | HCH      | 1.409                | Not Specified | Pass    |
| 8DPSK         | LCH      | 1.416                | Not Specified | Pass    |
|               | MCH      | 1.411                | Not Specified | Pass    |
|               | HCH      | 1.417                | Not Specified | Pass    |

### 3.2 Test Graphs

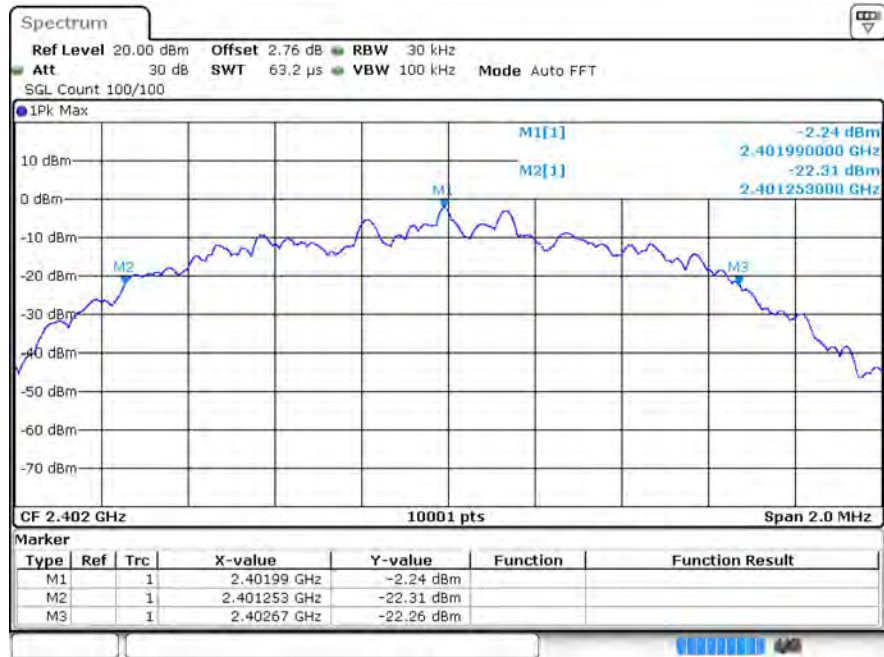


GFSK/HCH

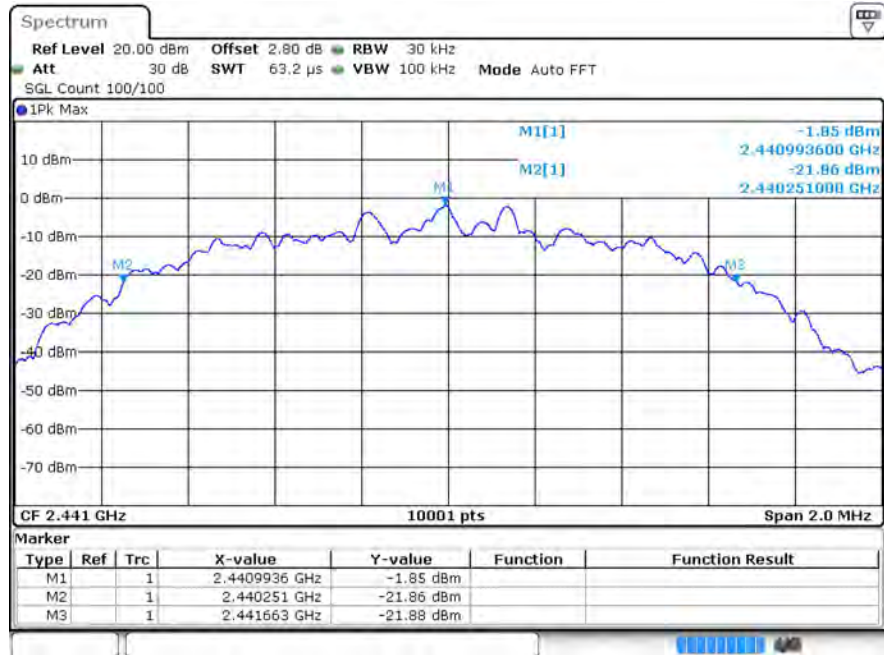

 $\pi/4$ DQPSK/LCH


$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


8DPSK/LCH

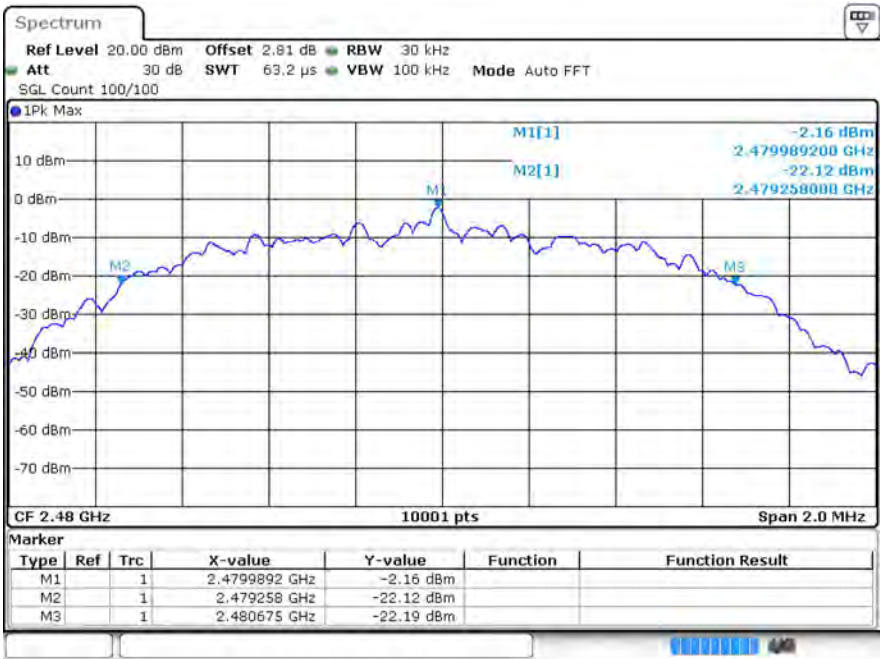


8DPSK/MCH





8DPSK/HCH



## 4 Carrier Frequency Separation

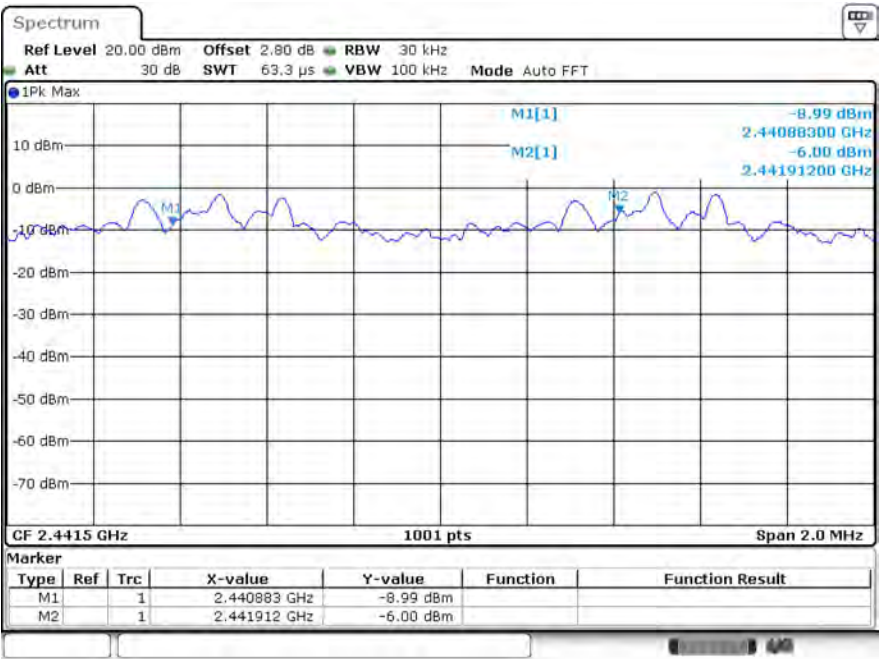
### 4.1 Test Result

| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | MCH      | 1.001                              | 0.586       | Pass    |
| $\pi/4$ DQPSK | MCH      | 0.994                              | 0.949       | Pass    |
| 8DPSK         | MCH      | 1.029                              | 0.941       | Pass    |

## 4.2 Test Graphs



8DPSK/MCH

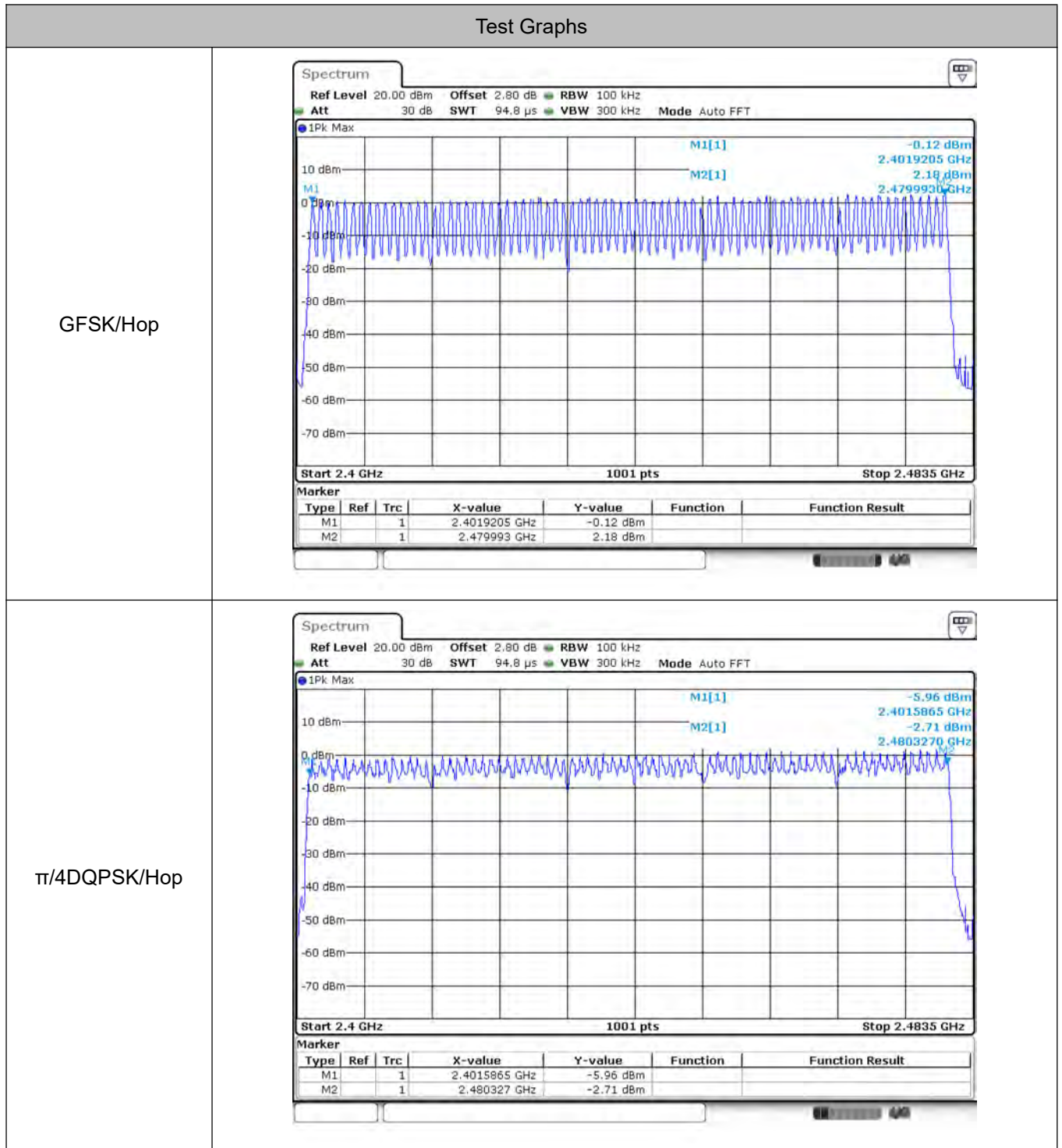


## 5 Hopping Channel Number

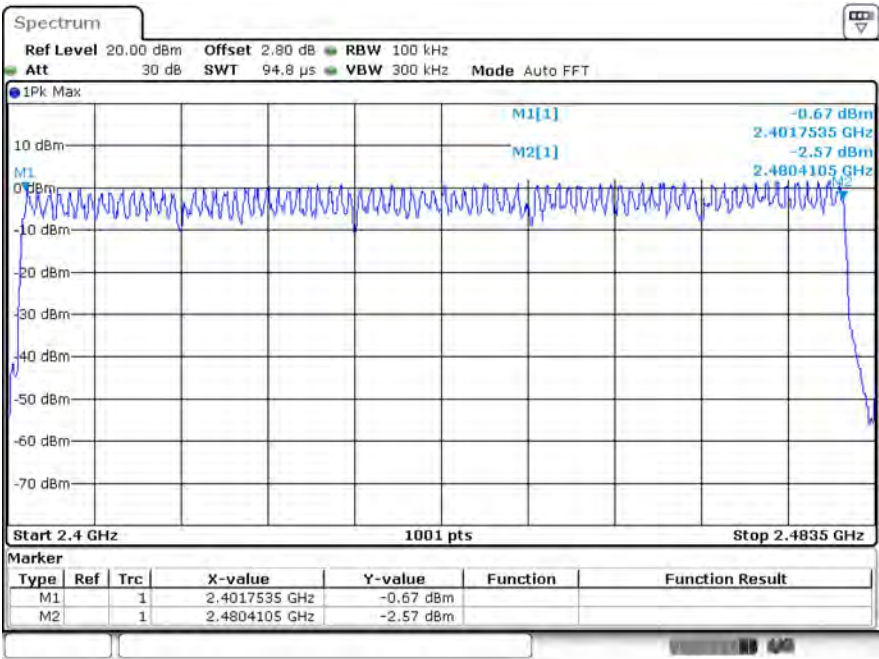
### 5.1 Test Result

| Mode          | Channel. | Number of Hopping Channel [N] | Limit [N] | Verdict |
|---------------|----------|-------------------------------|-----------|---------|
| GFSK          | Hop      | 79                            | $\geq 15$ | PASS    |
| $\pi/4$ DQPSK | Hop      | 79                            | $\geq 15$ | PASS    |
| 8DPSK         | Hop      | 79                            | $\geq 15$ | PASS    |

## 5.2 Test Graphs



8DPSK/Hop



## 6 Dwell Time

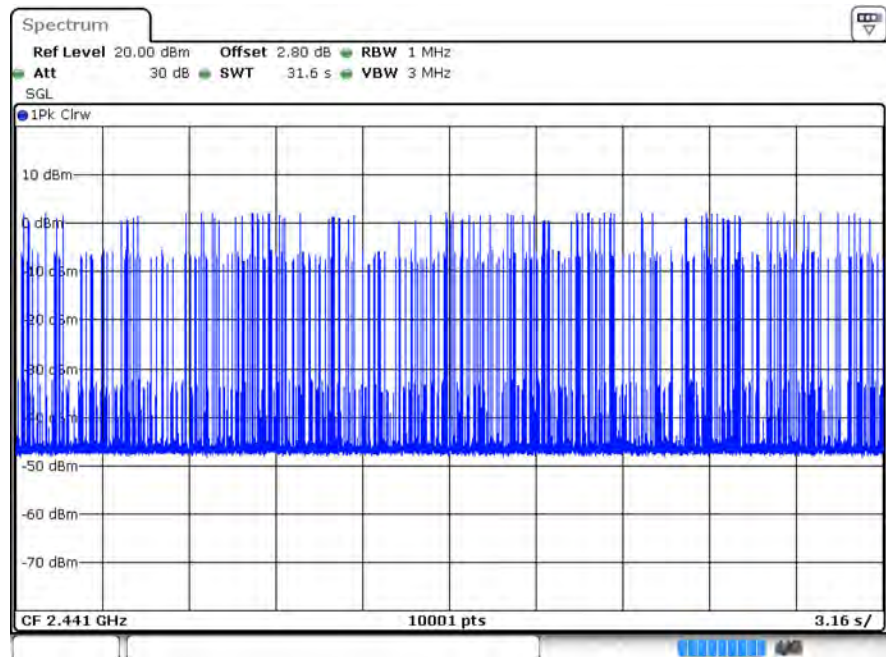
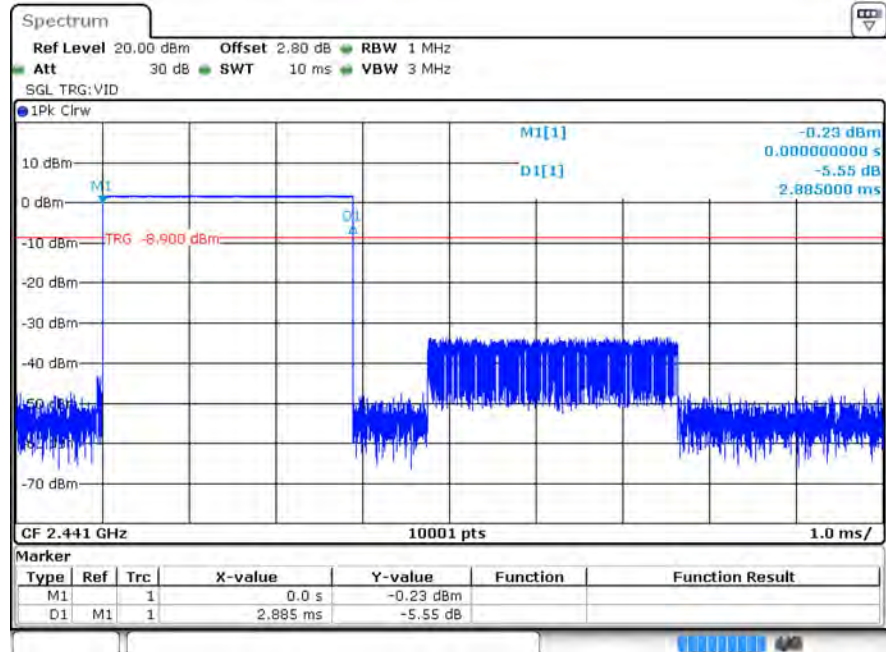
### 6.1 Test Result

| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[ms] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|----------------|-----------|---------|
| GFSK          | DH5    | MCH     | 2.885                      | 101                   | 291.385        | 0.4       | Pass    |
| $\pi/4$ DQPSK | 2DH5   | MCH     | 2.889                      | 114                   | 329.346        | 0.4       | Pass    |
| 8DPSK         | 3DH5   | MCH     | 2.891                      | 115                   | 332.465        | 0.4       | Pass    |

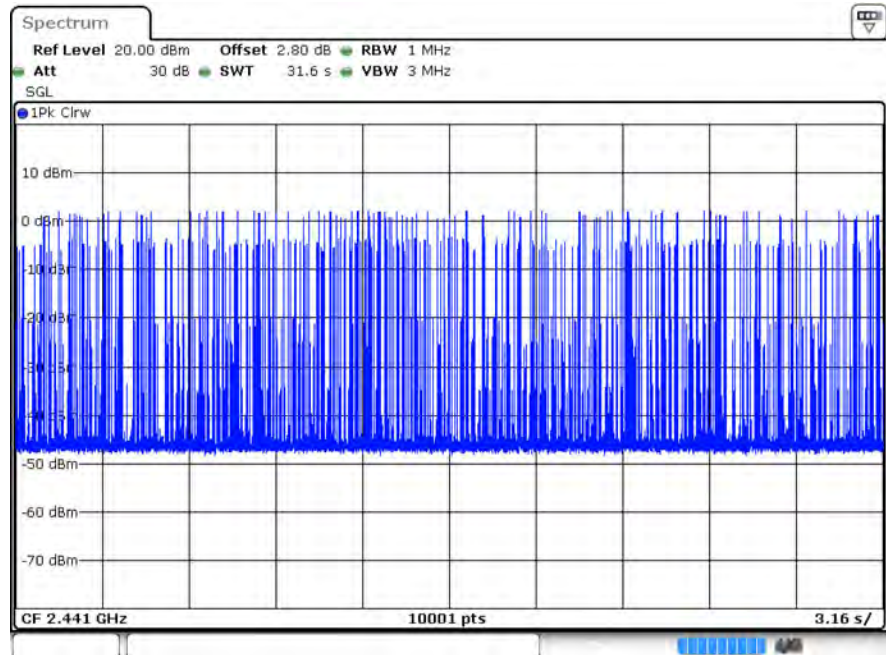
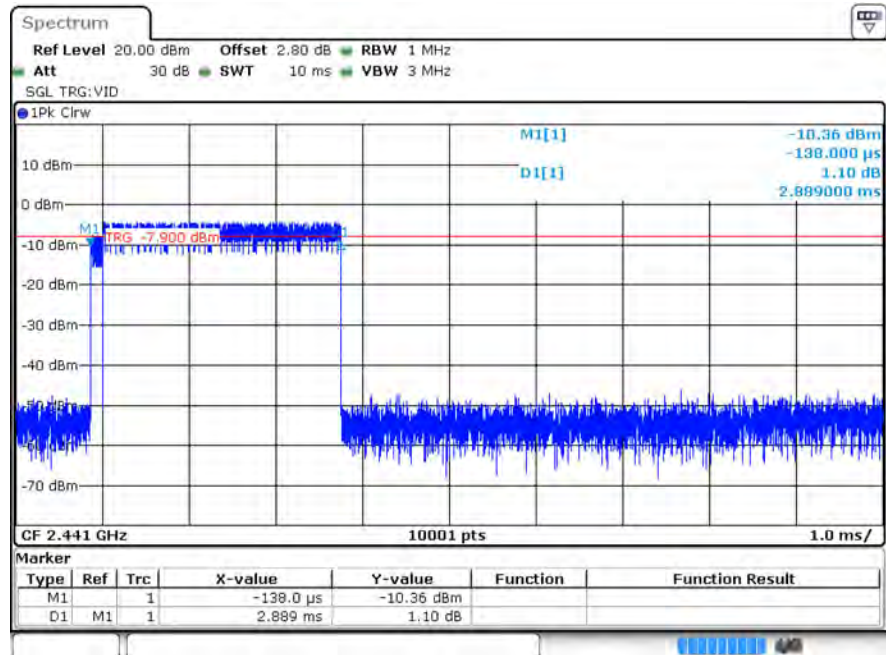
## 6.2 Test Graphs

### Test Graphs

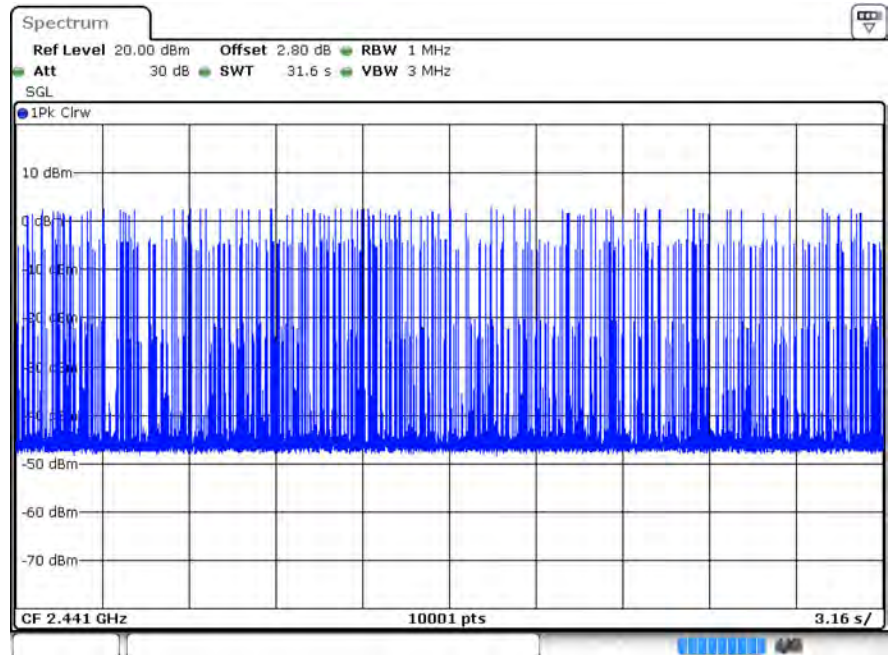
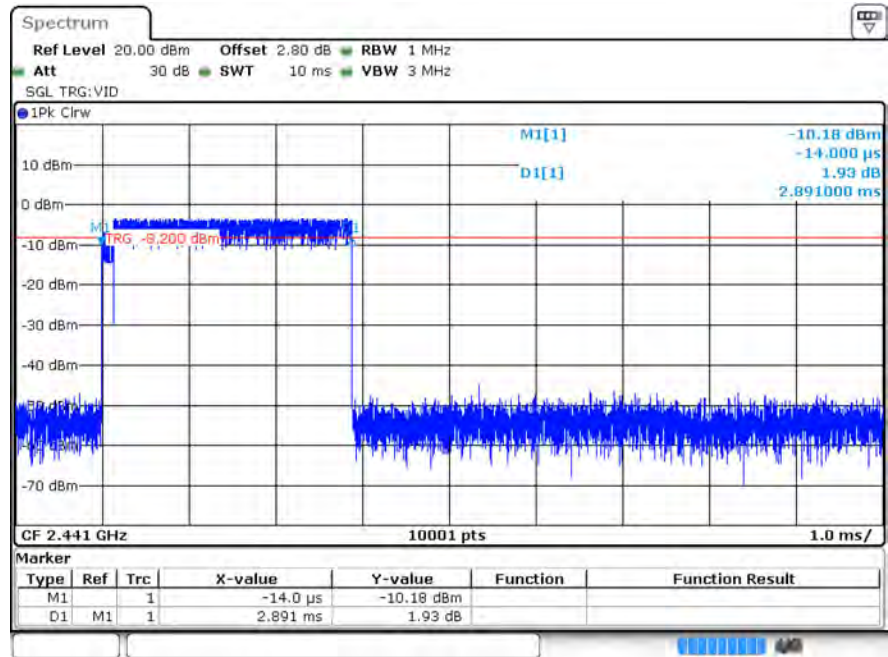
GFSK\_DH5/MCH



$\pi/4$ DQPSK  
\_2DH5/MCH



8DPSK\_3DH5/MCH



## 7 RF Conducted Spurious Emissions

### 7.1 Test Result

| Mode          | Channel | Max. Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|------------------|-------------|---------|
| GFSK          | LCH     | -41.7            | -20         | Pass    |
|               | MCH     | -43.42           | -20         | Pass    |
|               | HCH     | -41.56           | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | -40.47           | -20         | Pass    |
|               | MCH     | -42.08           | -20         | Pass    |
|               | HCH     | -41.03           | -20         | Pass    |
| 8DPSK         | LCH     | -41.32           | -20         | Pass    |
|               | MCH     | -42.2            | -20         | Pass    |
|               | HCH     | -41.2            | -20         | Pass    |

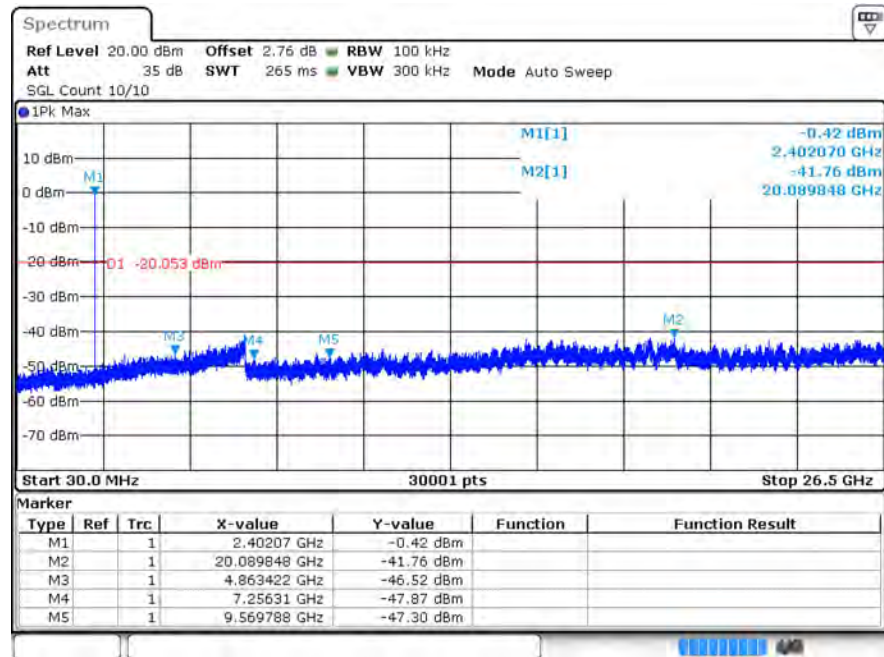
## 7.2 Test Graphs

GFSK\_LCH\_Graphs

Pref



Puw

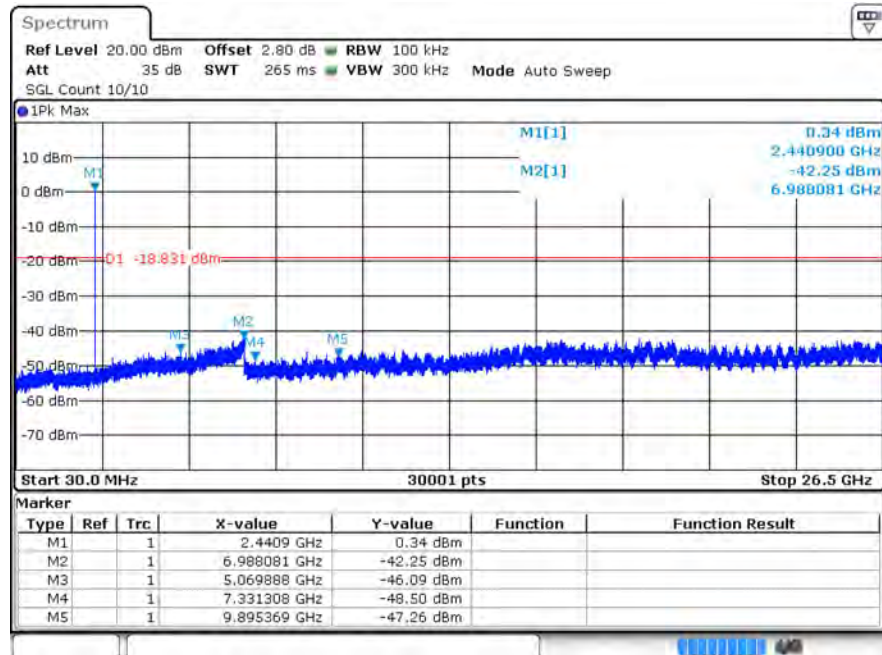


## GFSK\_MCH\_Graphs

Pref



Puw

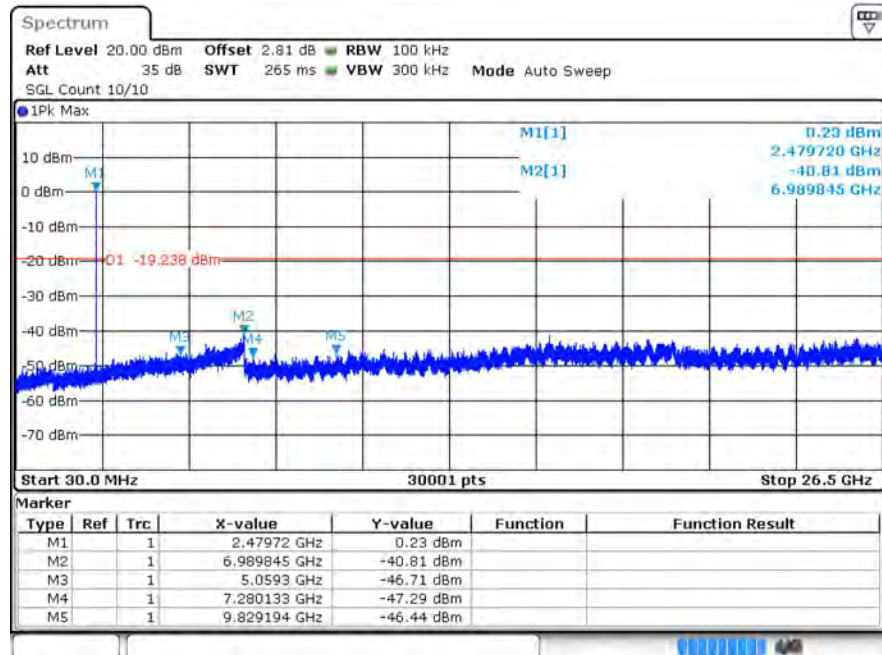


## GFSK\_HCH\_Graphs

Pref

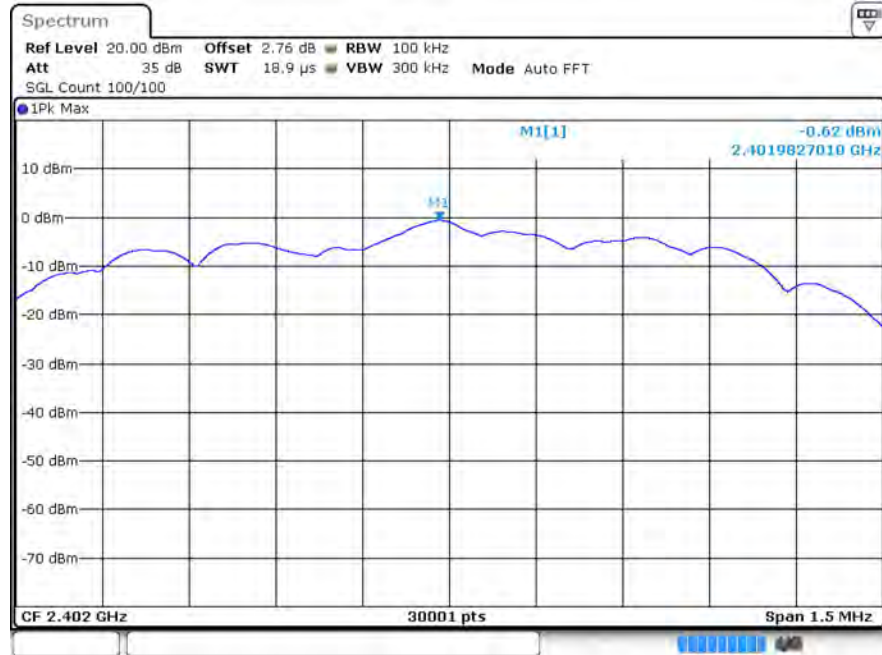


Puw

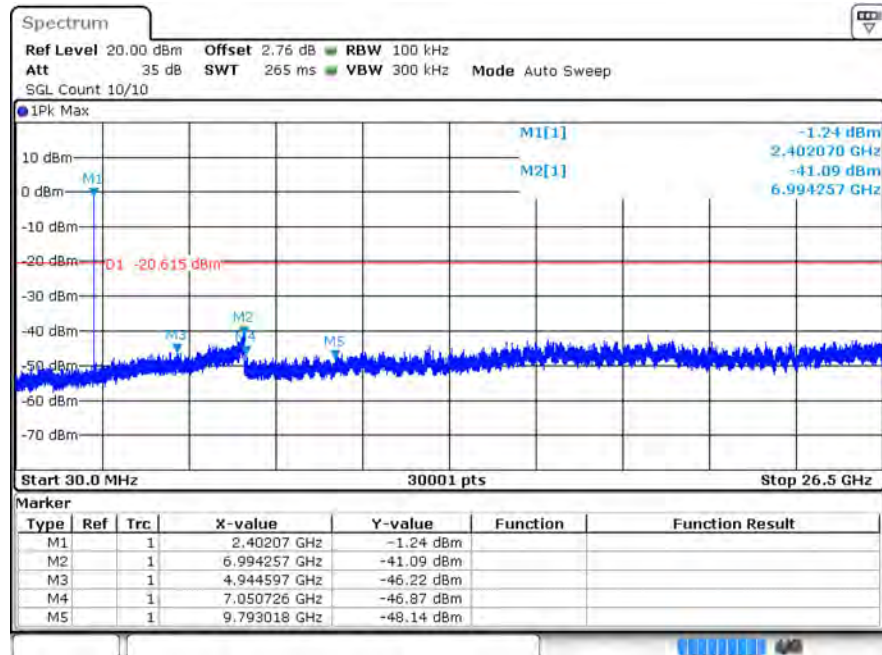


### $\pi/4$ DQPSK\_LCH\_Graphs

Pref

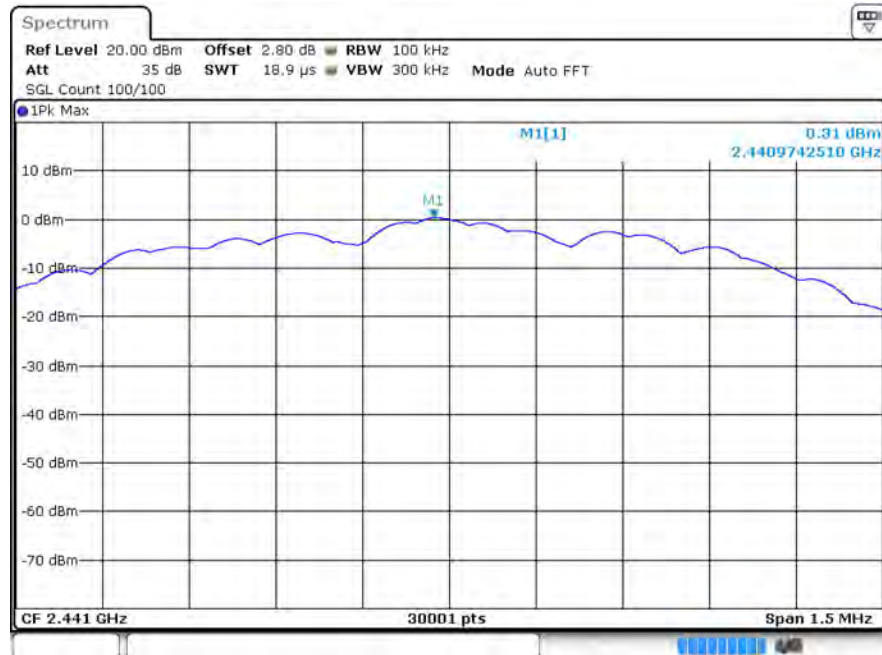


Puw

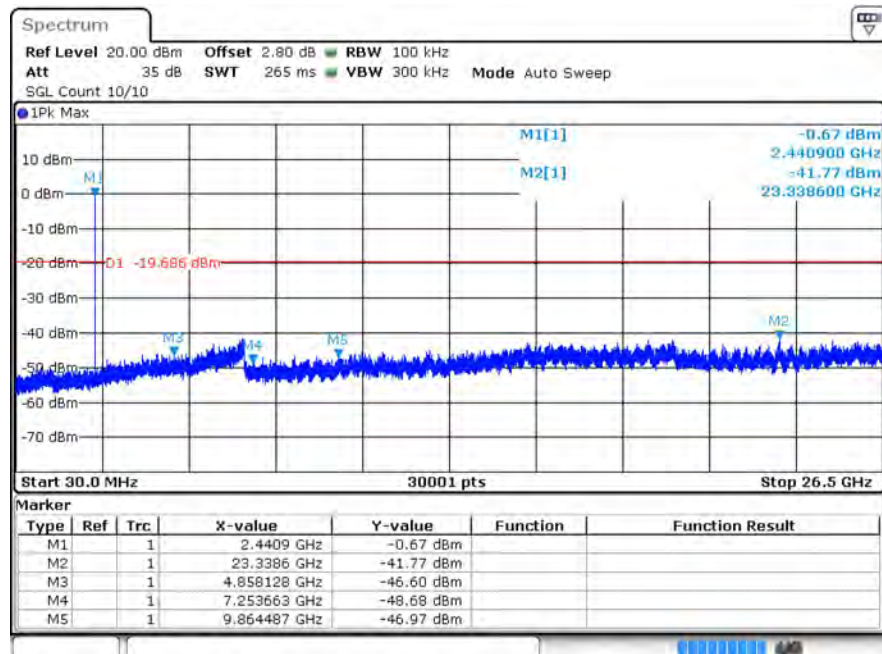


# $\pi/4$ DQPSK\_MCH\_Graphs

Pref

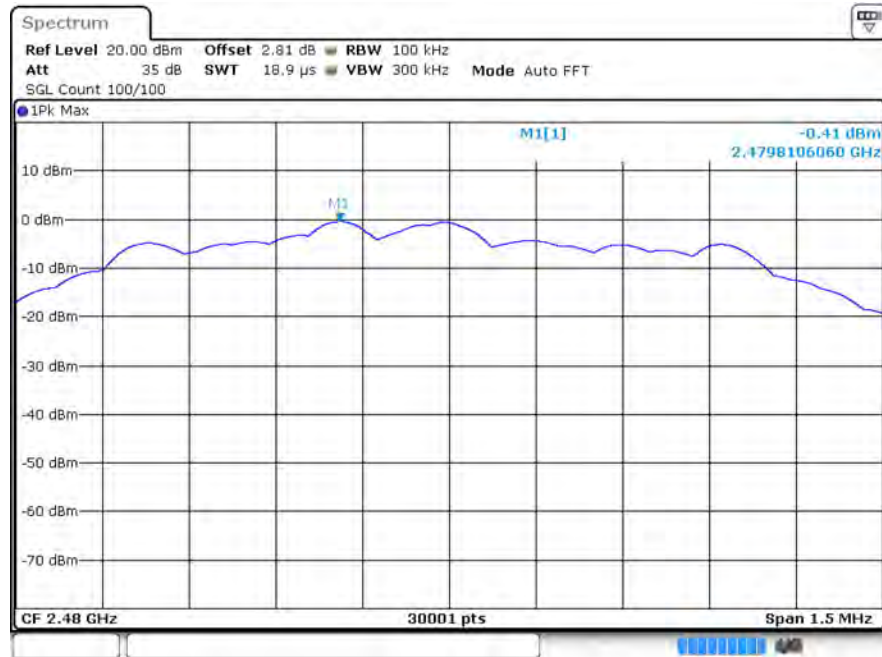


Puw

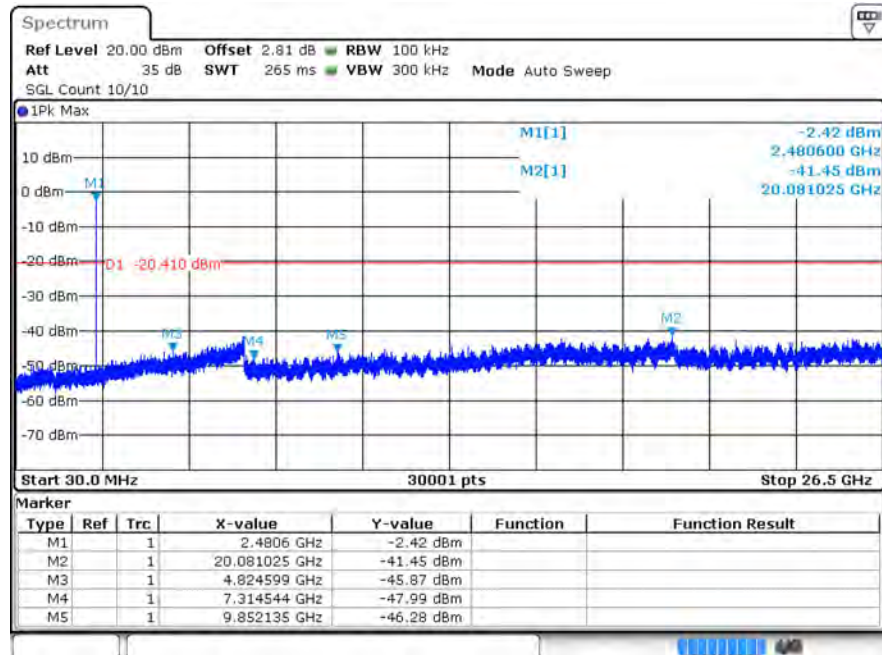


### $\pi/4$ DQPSK\_HCH\_Graphs

Pref



Puw

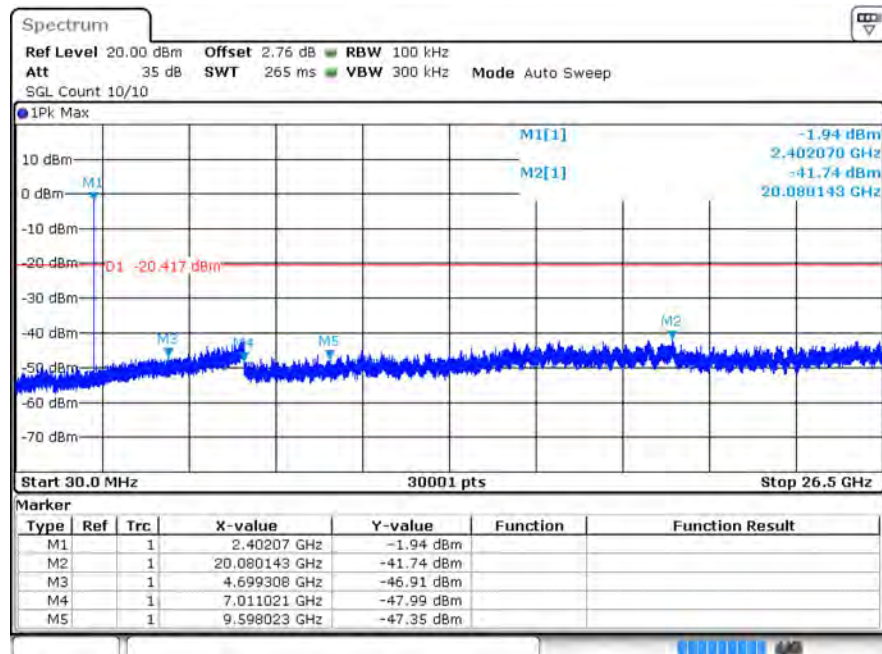


## 8DPSK\_LCH\_Graphs

Pref



Puw

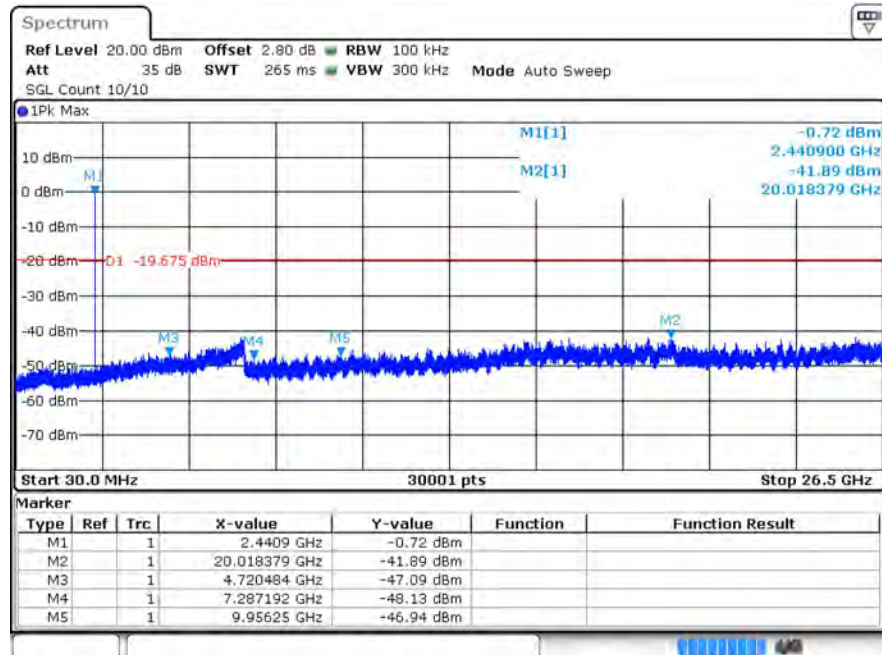


## 8DPSK\_MCH\_Graphs

Pref

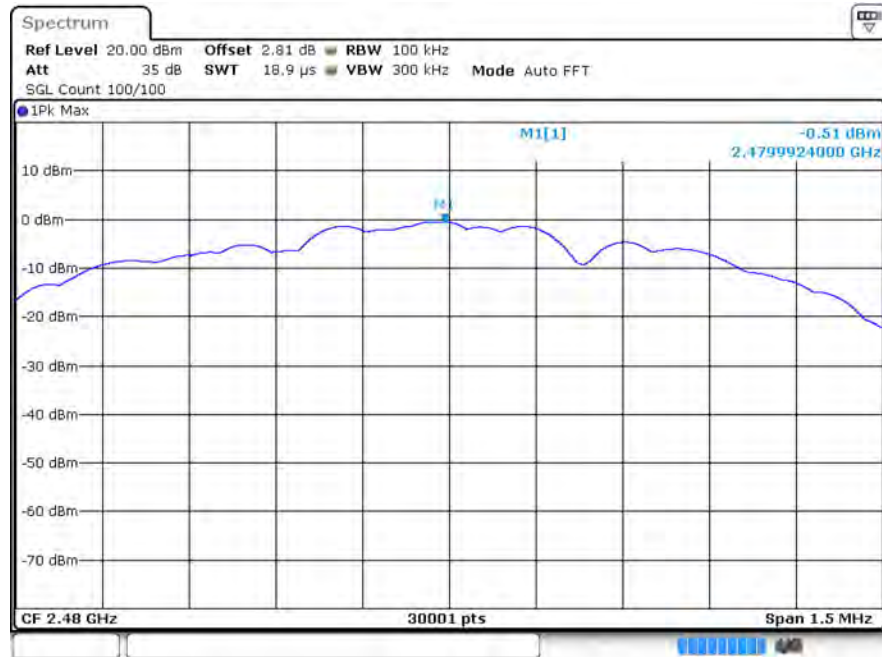


Puw

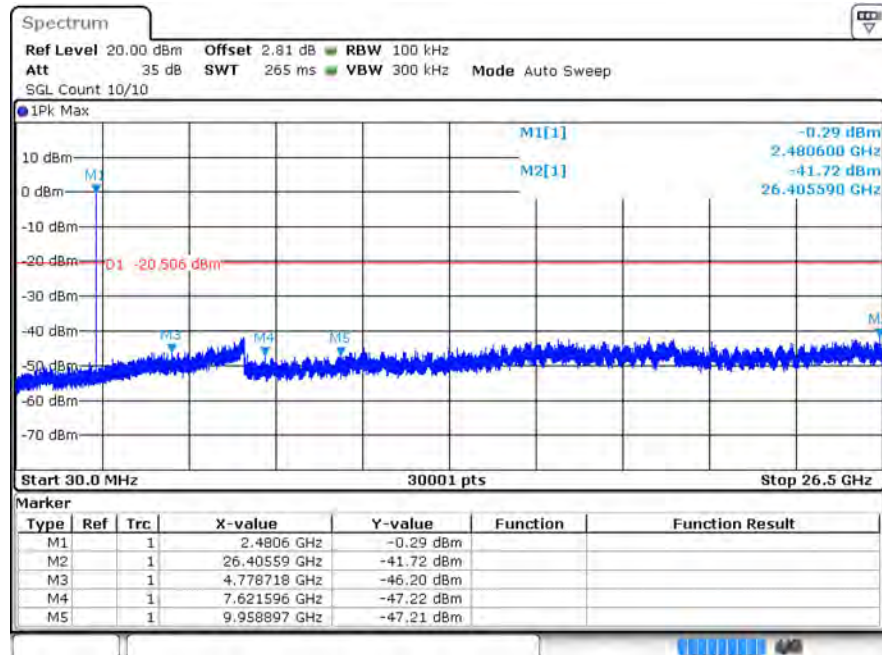


## 8DPSK\_HCH\_Graphs

Pref



Puw

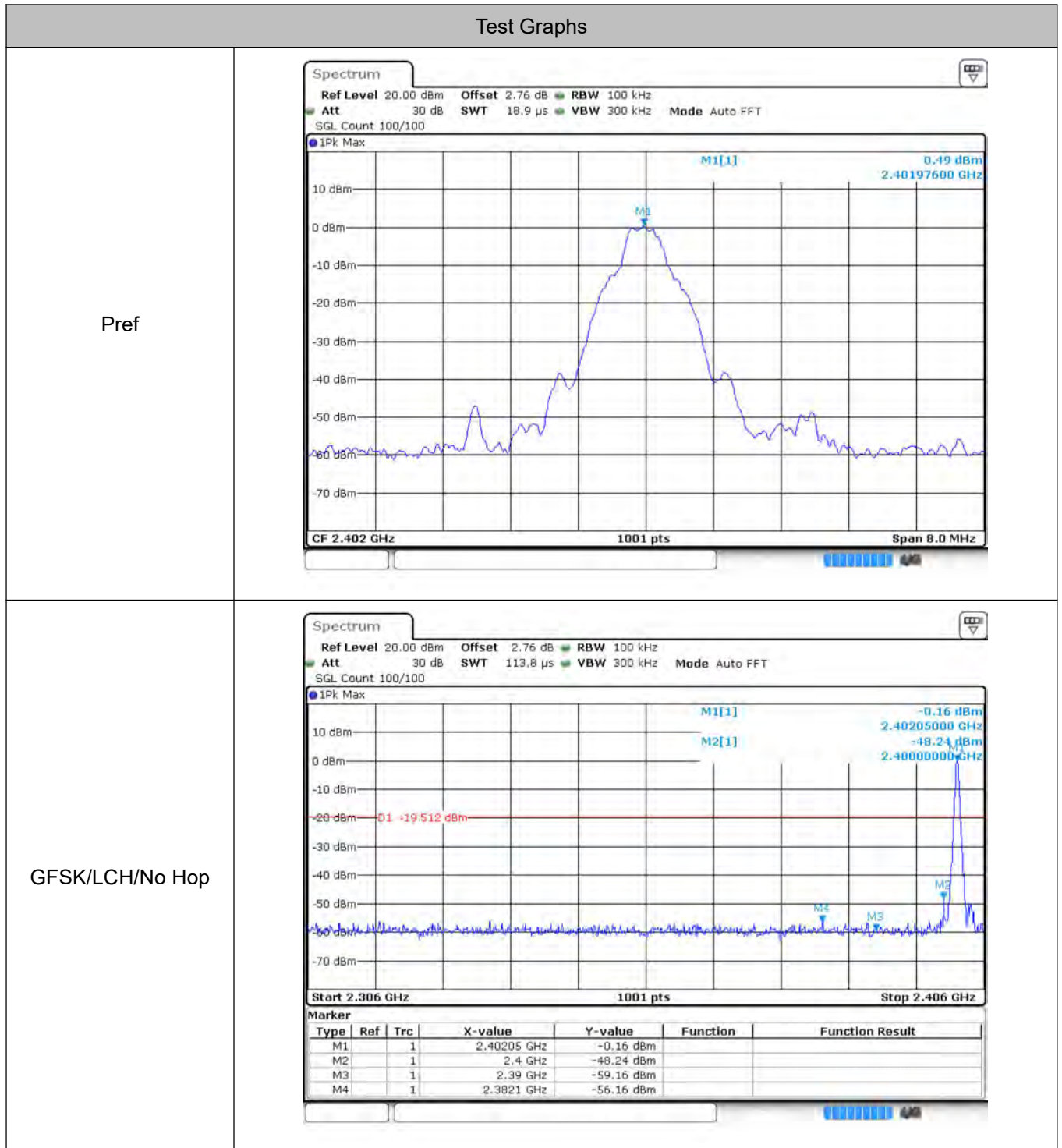


## 8 Band-edge for RF Conducted Emissions

### 8.1 Test Result

| Mode          | Channel | Carrier Frequency [MHz] | Frequency Hopping | Max Spurious Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|-------------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | Off               | -56.65                   | -20         | Pass    |
|               |         |                         | On                | -54.49                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -48.39                   | -20         | Pass    |
|               |         |                         | On                | -51.69                   | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | 2402                    | Off               | -54.42                   | -20         | Pass    |
|               |         |                         | On                | -53.76                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -55.94                   | -20         | Pass    |
|               |         |                         | On                | -47.09                   | -20         | Pass    |
| 8DPSK         | LCH     | 2402                    | Off               | -54.73                   | -20         | Pass    |
|               |         |                         | On                | -53.89                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -55.15                   | -20         | Pass    |
|               |         |                         | On                | -55.55                   | -20         | Pass    |

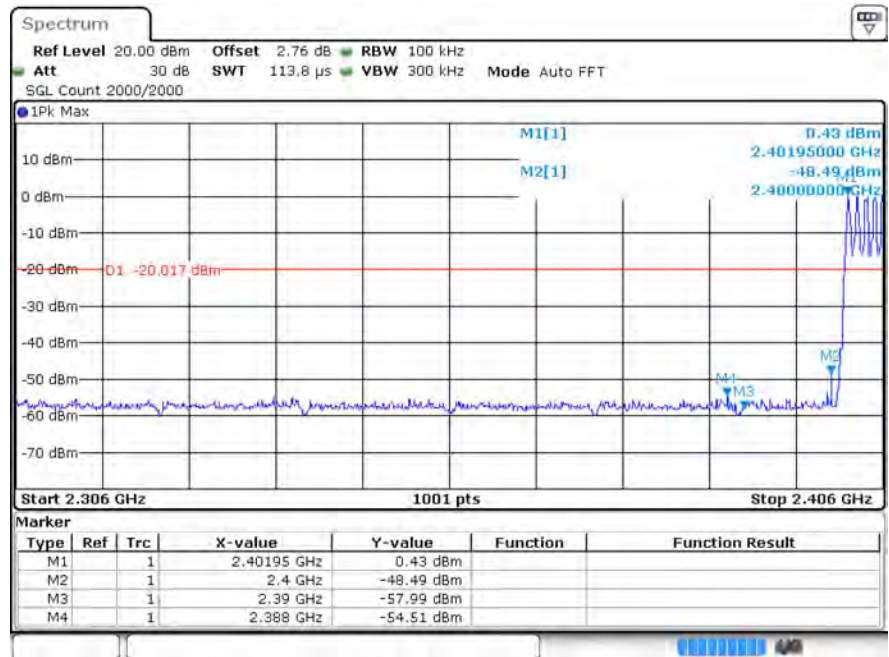
## 8.2 Test Graphs



Ref



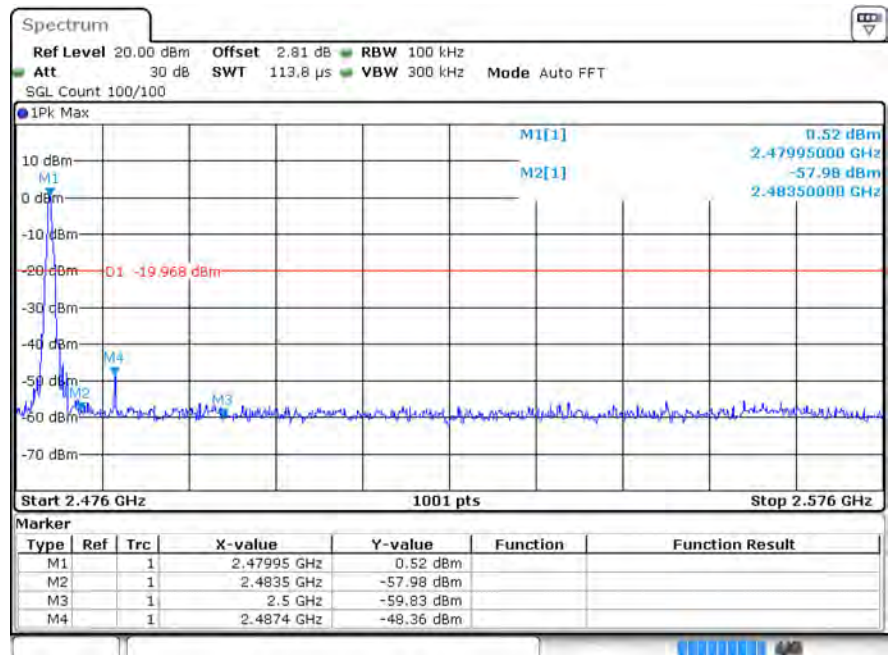
GFSK/LCH/Hop



Ref



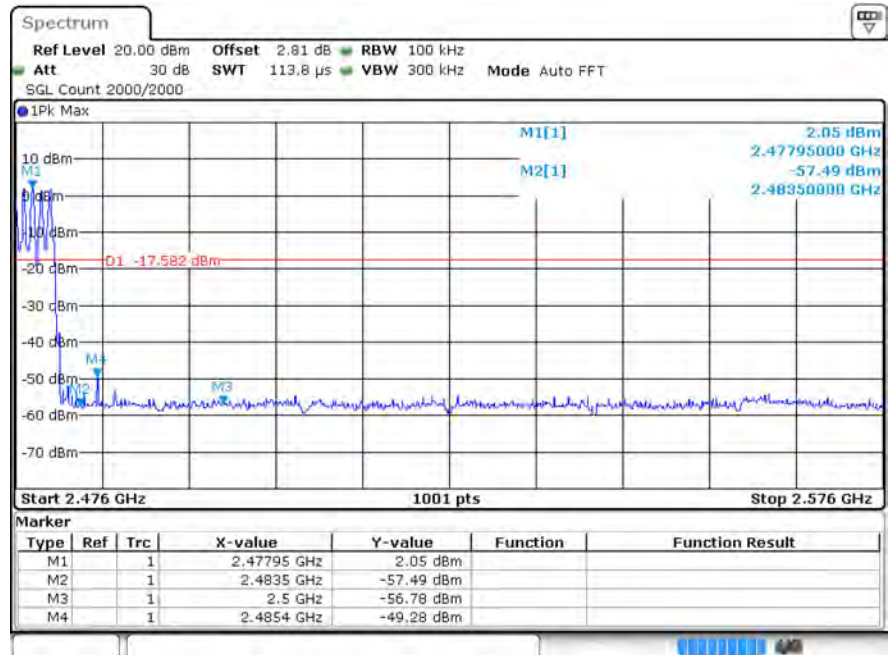
GFSK/HCH/No Hop



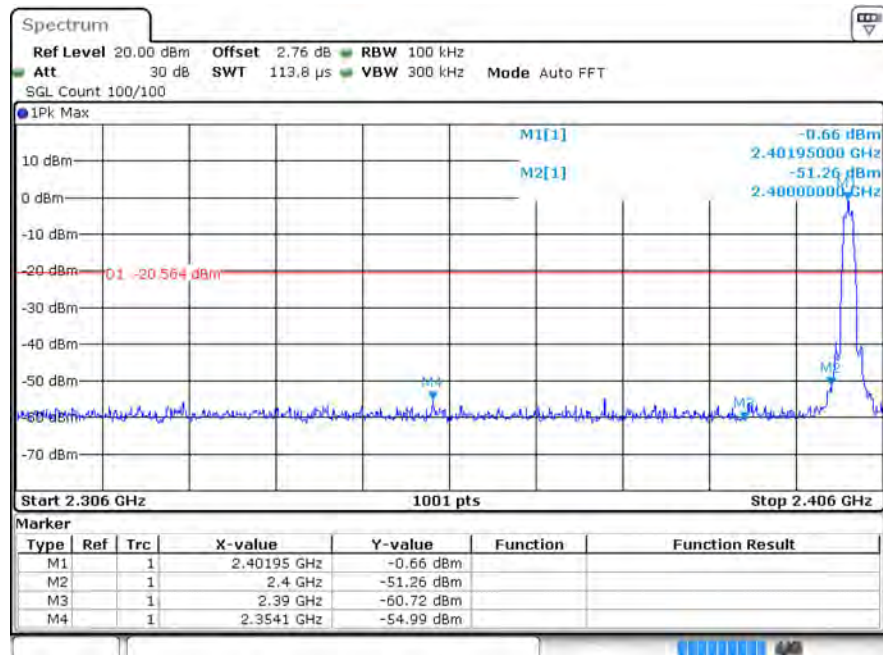
Ref.



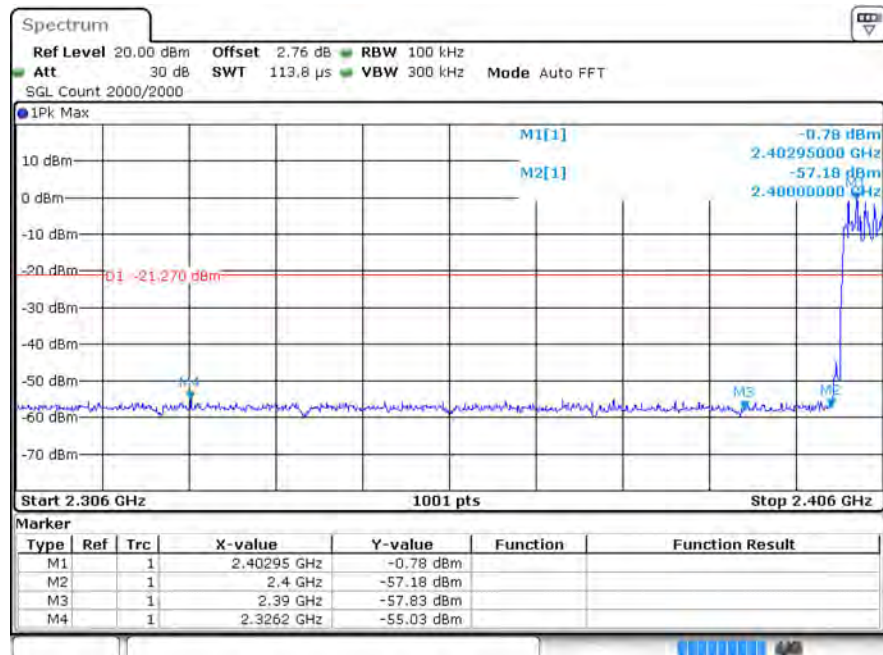
GFSK/HCH/Hop



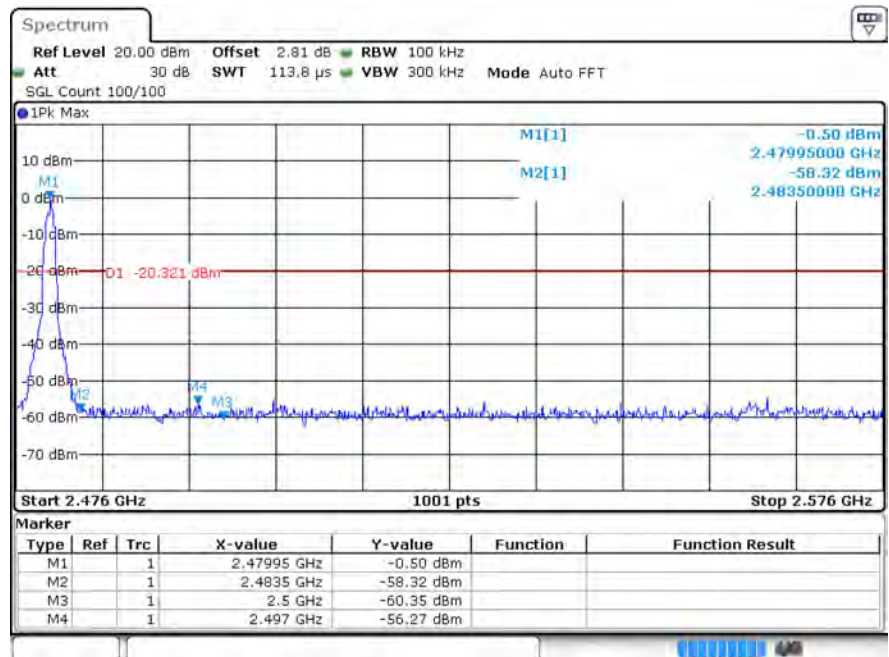
Ref


 $\pi/4$ DQPSK/LCH/No Hop


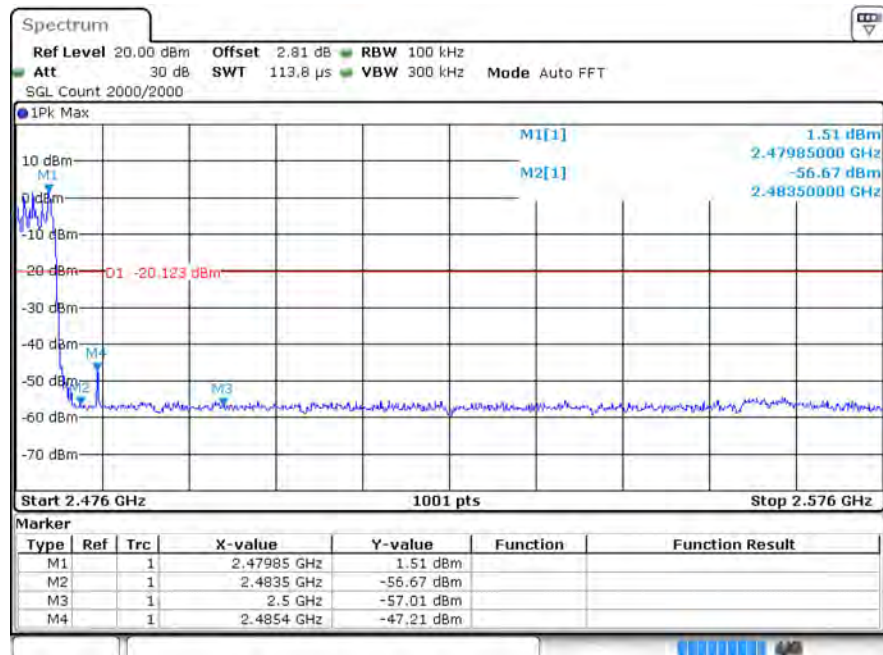
Ref


 $\pi/4$ DQPSK/LCH/Hop


Ref


 $\pi/4$ DQPSK/HCH/No Hop


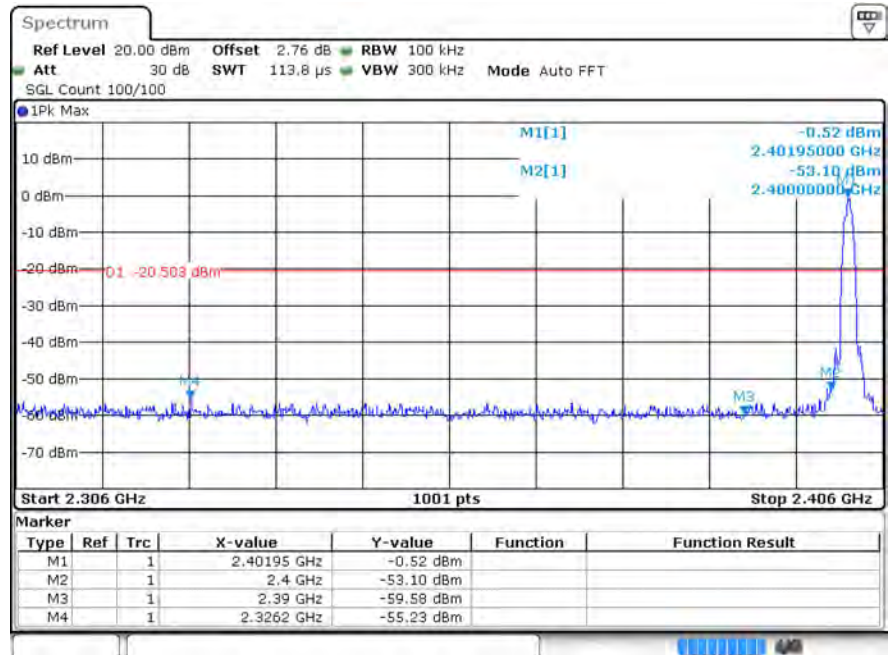
Ref


 $\pi/4$ DQPSK/HCH/Hop


Ref



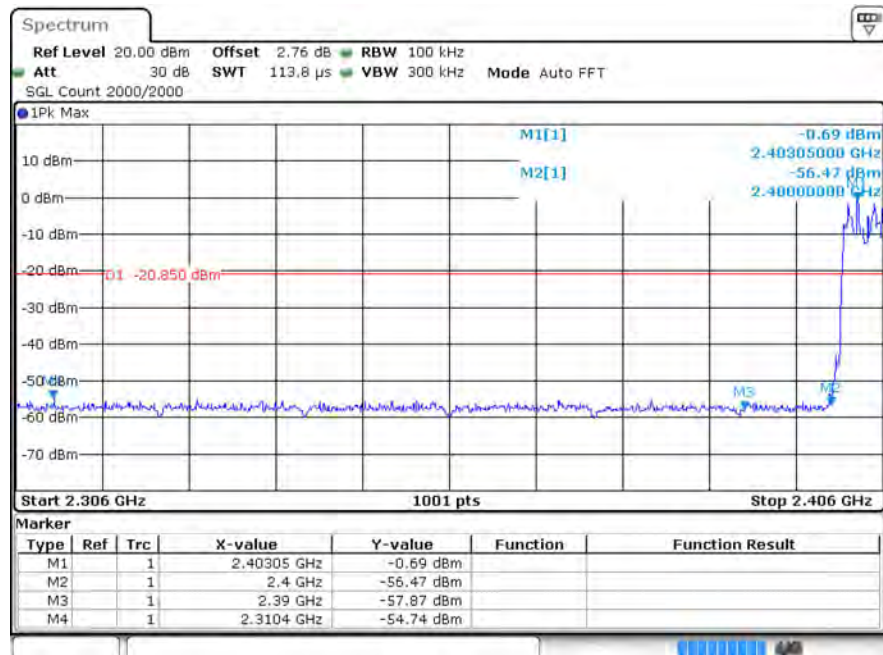
8DPSK/LCH/No Hop



Ref



8DPSK/LCH/Hop



Ref

Spectrum

Ref Level 20.00 dBm Offset 2.81 dB RBW 100 kHz  
Att 30 dB SWT 18.9  $\mu$ s VBW 300 kHz Mode Auto FFT  
SGL Count 100/100

1Pk Max

M1[1] -0.30 dBm 2.48012790 GHz

10 dBm  
0 dBm  
-10 dBm  
-20 dBm  
-30 dBm  
-40 dBm  
-50 dBm  
-60 dBm  
-70 dBm

CF 2.48 GHz 1001 pts Span 8.0 MHz

8DPSK/HCH/No Hop

Spectrum

Ref Level 20.00 dBm Offset 2.81 dB RBW 100 kHz  
Att 30 dB SWT 113.8  $\mu$ s VBW 300 kHz Mode Auto FFT  
SGL Count 100/100

1Pk Max

M1[1] -0.36 dBm 2.47995000 GHz  
M2[1] -57.78 dBm 2.48350000 GHz

O1 -20.301 dBm

M3  
M4

10 dBm  
0 dBm  
-10 dBm  
-20 dBm  
-30 dBm  
-40 dBm  
-50 dBm  
-60 dBm  
-70 dBm

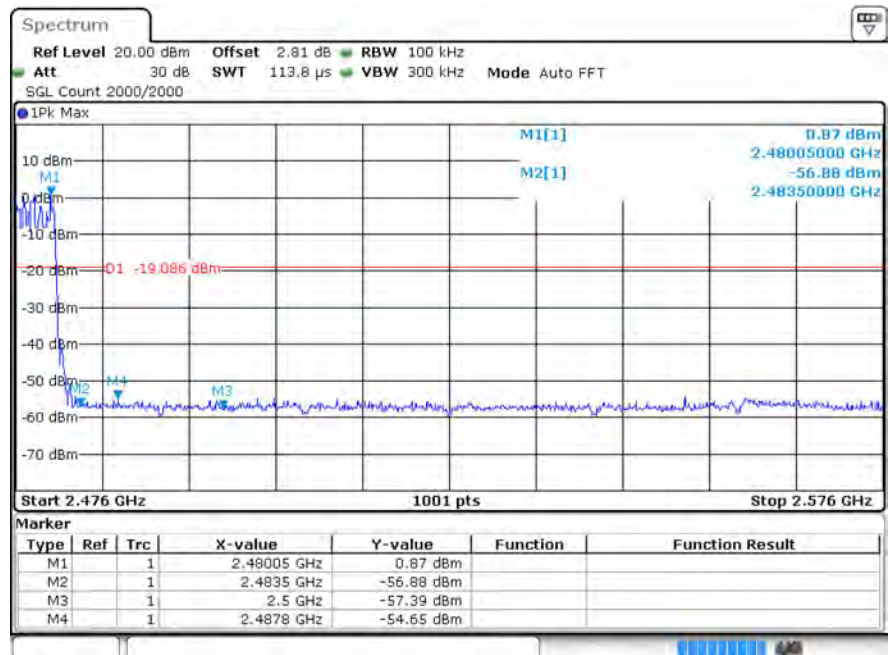
Start 2.476 GHz 1001 pts Stop 2.576 GHz

| Marker | Type | Ref | Trc | X-value     | Y-value    | Function | Function Result |
|--------|------|-----|-----|-------------|------------|----------|-----------------|
| M1     | 1    | 1   | 1   | 2.47995 GHz | -0.36 dBm  |          |                 |
| M2     | 1    | 1   | 1   | 2.4835 GHz  | -57.78 dBm |          |                 |
| M3     | 1    | 1   | 1   | 2.5 GHz     | -59.35 dBm |          |                 |
| M4     | 1    | 1   | 1   | 2.4879 GHz  | -55.45 dBm |          |                 |

Ref



8DPSK/HCH/Hop



## 9 Restrict-band band-edge measurements

### 9.1 Test Result

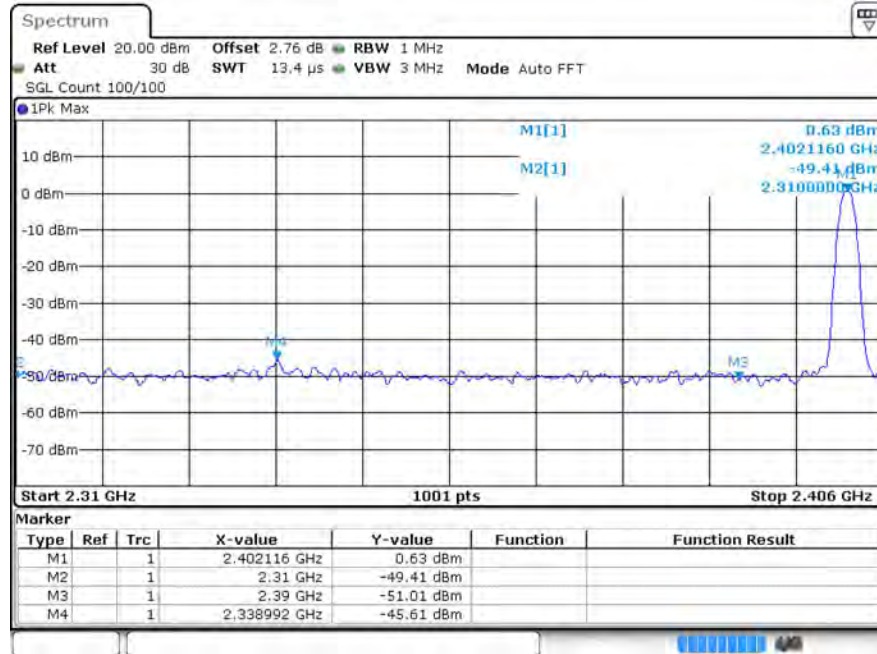
| Test Mode     | Hopping | Freq.    | Power [dBm] | Gain | Duty Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|----------|-------------|------|-------------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0   | -49.41      | 2    | -           | 47.85      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -57.1       | 2    | 5.06        | 45.22      | AV       | 54             | Pass    |
|               | Off     | 2338.992 | -45.6       | 2    | -           | 51.66      | PEAK     | 74             | Pass    |
|               | Off     | 2342.16  | -53.9       | 2    | 5.06        | 48.42      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -51.01      | 2    | -           | 46.25      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -56.69      | 2    | 5.06        | 45.63      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -50.52      | 2    | -           | 46.74      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -56.07      | 2    | 5.06        | 46.25      | AV       | 54             | Pass    |
|               | Off     | 2496.832 | -47.91      | 2    | -           | 49.35      | PEAK     | 74             | Pass    |
|               | Off     | 2487.352 | -54.57      | 2    | 5.06        | 47.75      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -50.13      | 2    | -           | 47.13      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -56.91      | 2    | 5.06        | 45.41      | AV       | 54             | Pass    |
| $\pi/4$ DQPSK | Off     | 2310.0   | -51.1       | 2    | -           | 46.16      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -57.39      | 2    | 4.95        | 44.82      | AV       | 54             | Pass    |
|               | Off     | 2339.376 | -46.08      | 2    | -           | 51.18      | PEAK     | 74             | Pass    |
|               | Off     | 2339.664 | -54.52      | 2    | 4.95        | 47.69      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -50.35      | 2    | -           | 46.91      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -58.37      | 2    | 4.95        | 43.84      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -50.16      | 2    | -           | 47.1       | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -55.84      | 2    | 4.95        | 46.37      | AV       | 54             | Pass    |
|               | Off     | 2493.592 | -46         | 2    | -           | 51.26      | PEAK     | 74             | Pass    |
|               | Off     | 2483.752 | -55.71      | 2    | 4.95        | 46.5       | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -49.61      | 2    | -           | 47.65      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -56.02      | 2    | 4.95        | 46.19      | AV       | 54             | Pass    |
| 8DPSK         | Off     | 2310.0   | -51         | 2    | -           | 46.26      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -56.99      | 2    | 4.94        | 45.21      | AV       | 54             | Pass    |
|               | Off     | 2342.448 | -45.98      | 2    | -           | 51.28      | PEAK     | 74             | Pass    |
|               | Off     | 2339.856 | -54.28      | 2    | 4.94        | 47.92      | AV       | 54             | Pass    |



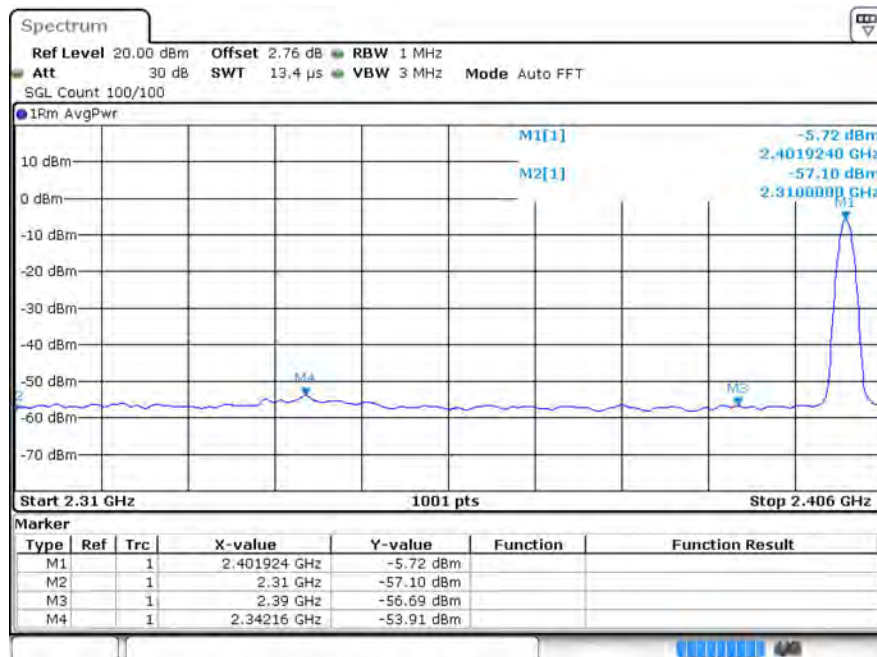
|     |          |        |   |      |       |      |    |      |
|-----|----------|--------|---|------|-------|------|----|------|
| Off | 2390.0   | -51    | 2 | -    | 46.26 | PEAK | 74 | Pass |
| Off | 2390.0   | -56.87 | 2 | 4.94 | 45.33 | AV   | 54 | Pass |
| Off | 2483.5   | -47.31 | 2 | -    | 49.95 | PEAK | 74 | Pass |
| Off | 2483.5   | -55.26 | 2 | 4.95 | 46.95 | AV   | 54 | Pass |
| Off | 2487.376 | -43.2  | 2 | -    | 54.06 | PEAK | 74 | Pass |
| Off | 2483.8   | -55.04 | 2 | 4.95 | 47.17 | AV   | 54 | Pass |
| Off | 2500.0   | -49.94 | 2 | -    | 47.32 | PEAK | 74 | Pass |
| Off | 2500.0   | -56.53 | 2 | 4.95 | 45.68 | AV   | 54 | Pass |

## 9.2 Test Graphs

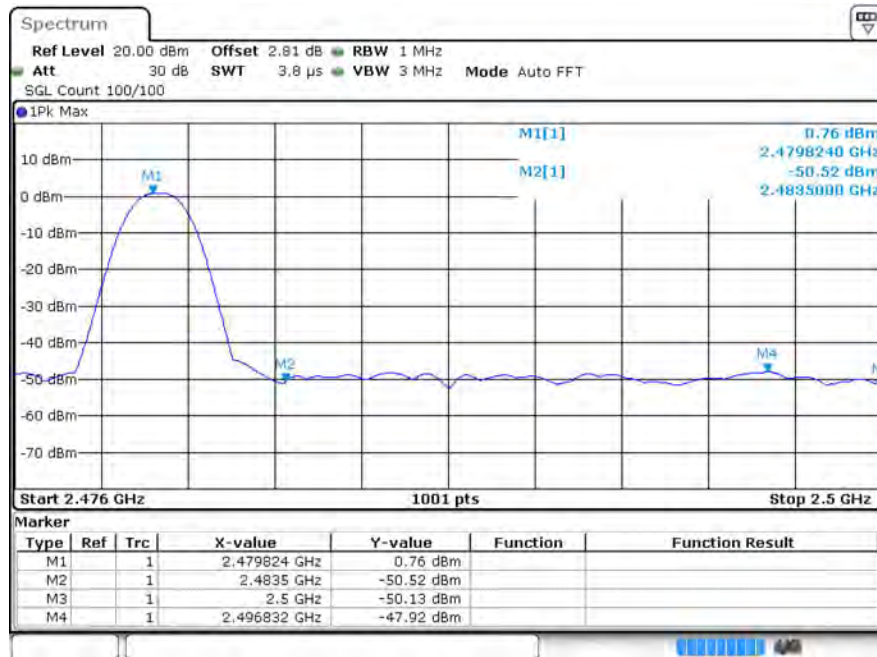
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (Low Channel)



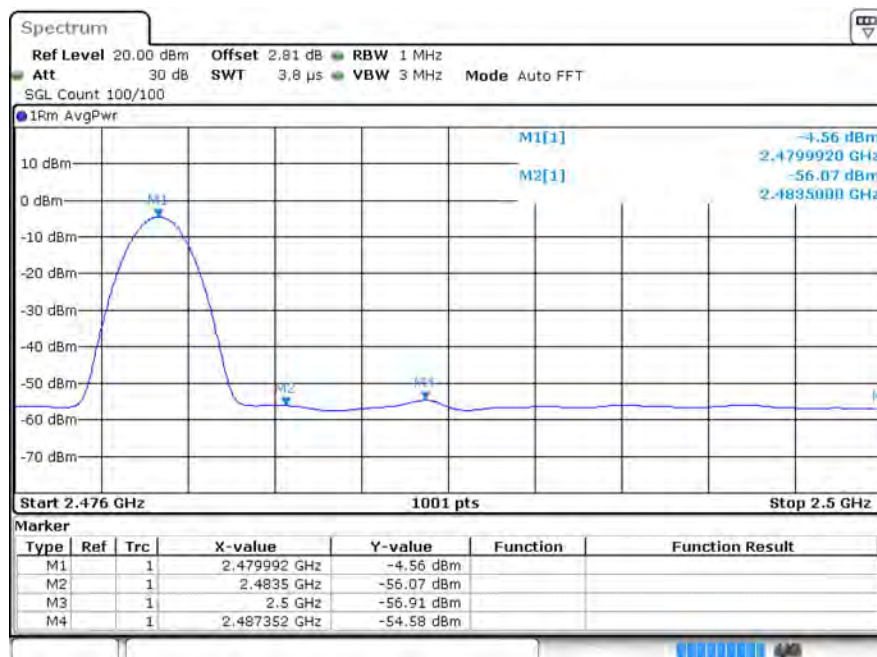
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (Low Channel)



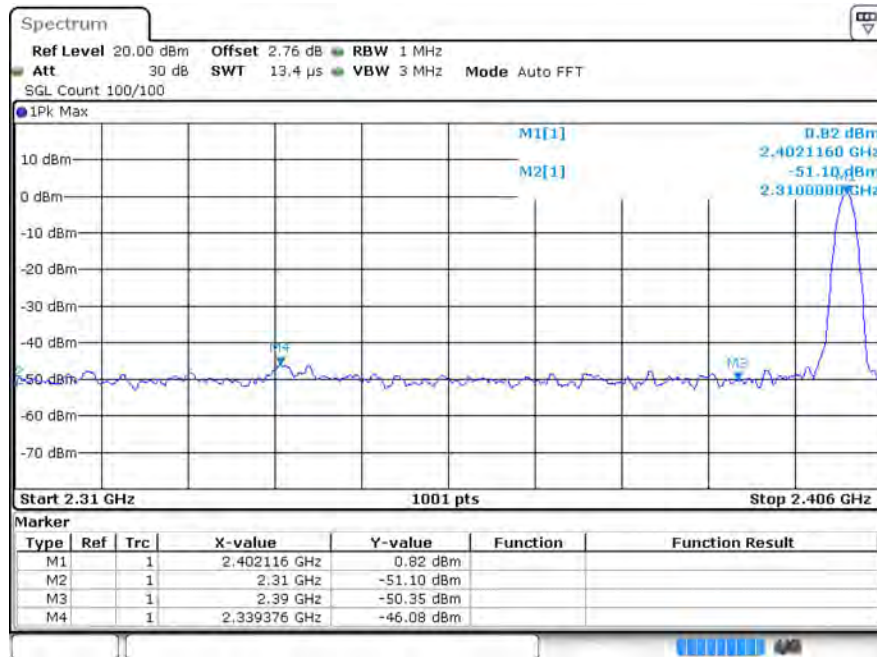
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (High Channel)



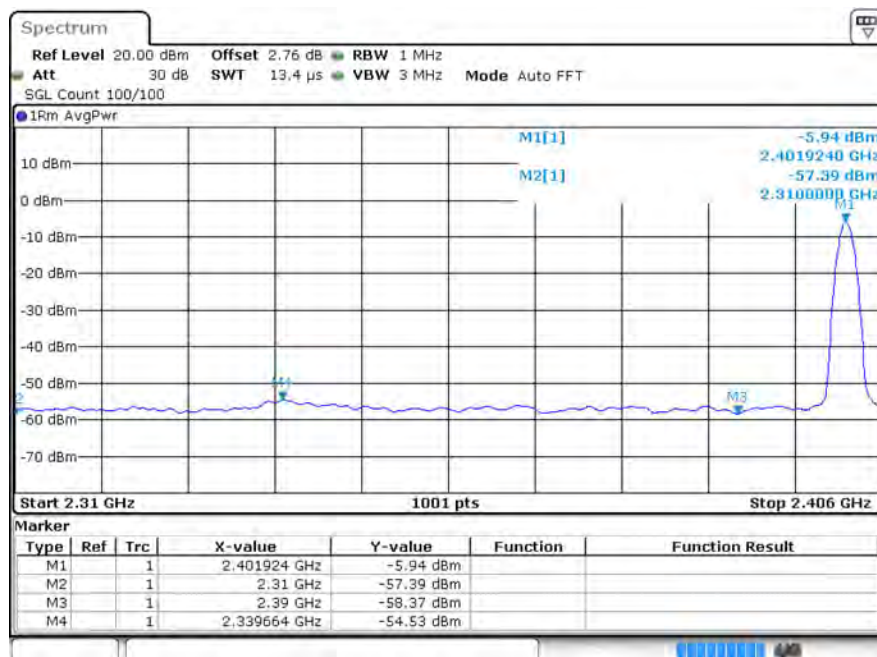
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (High Channel)



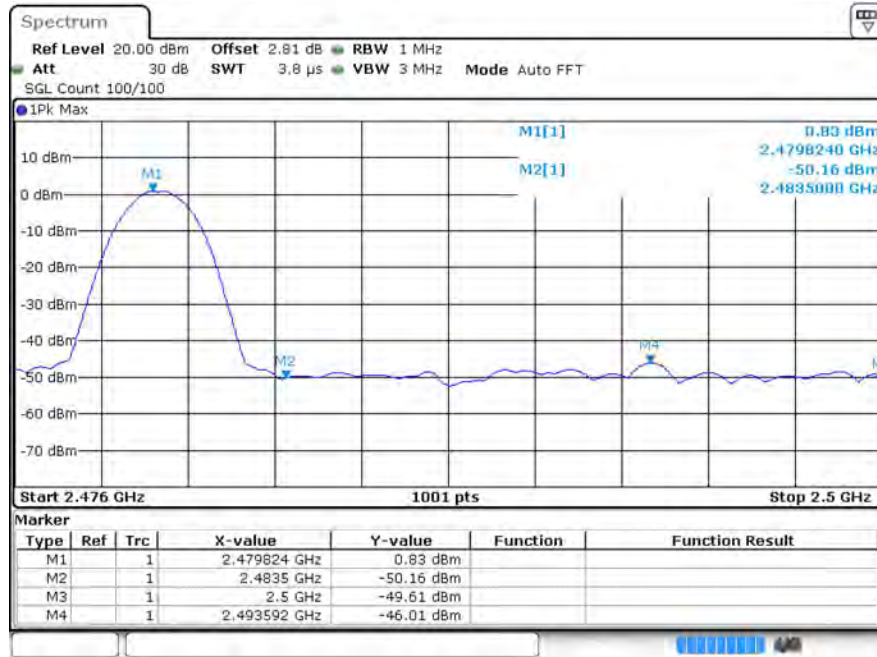
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (Low Channel)



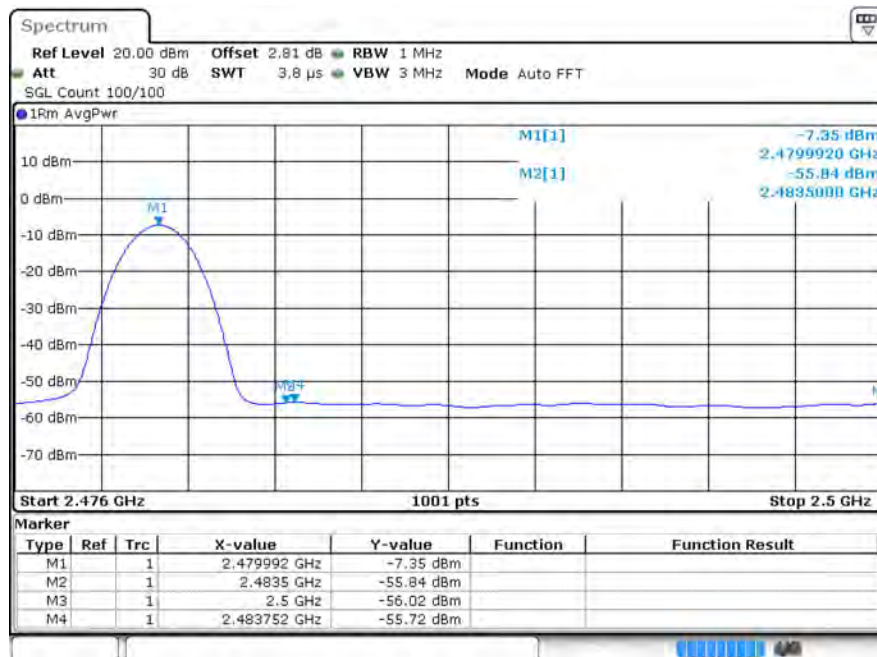
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (Low Channel)



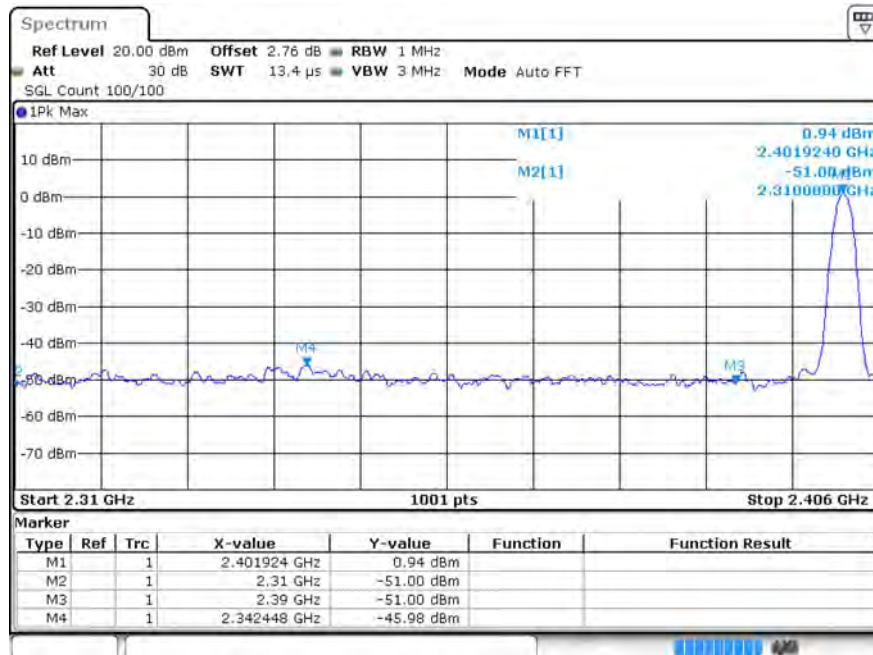
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



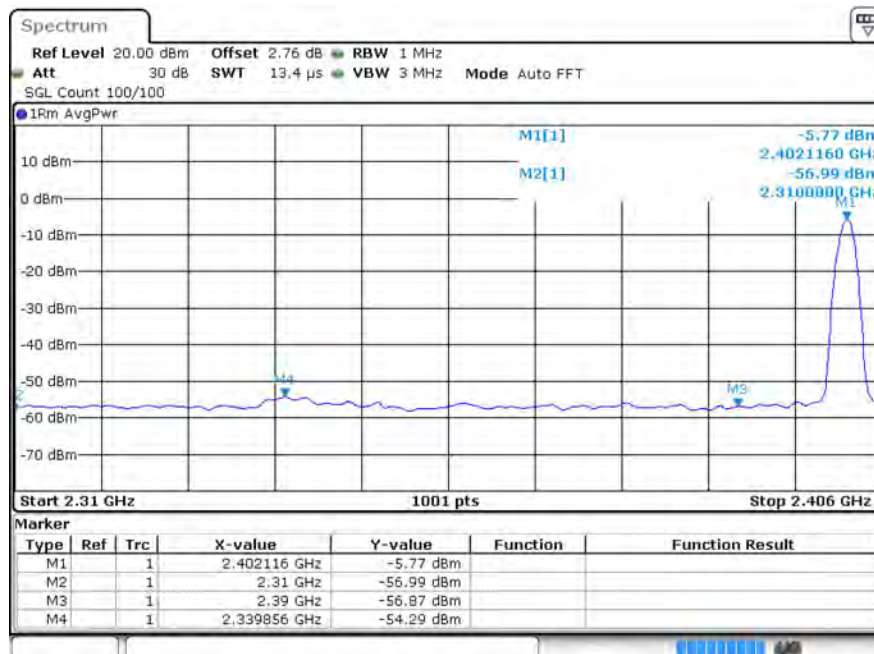
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



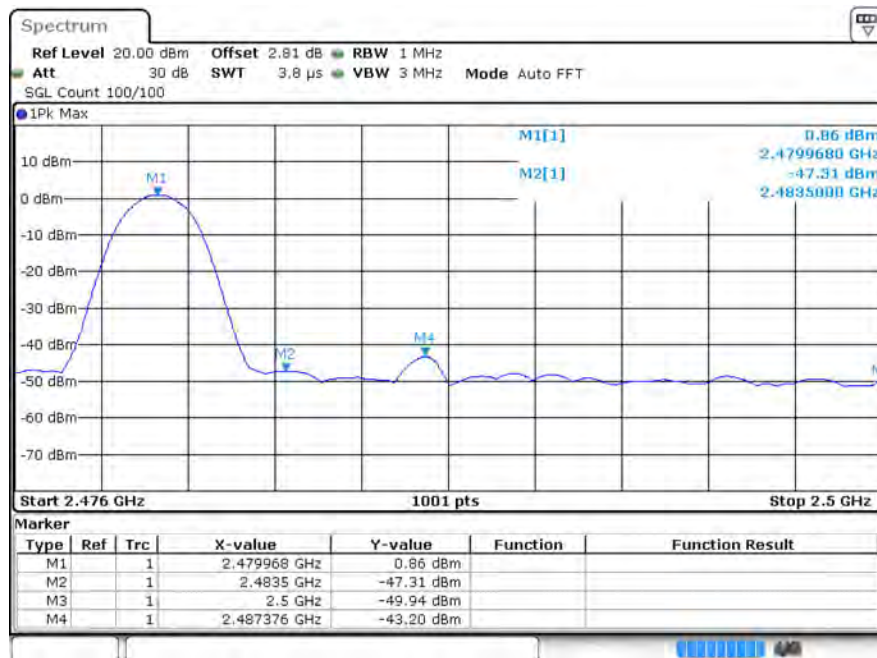
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



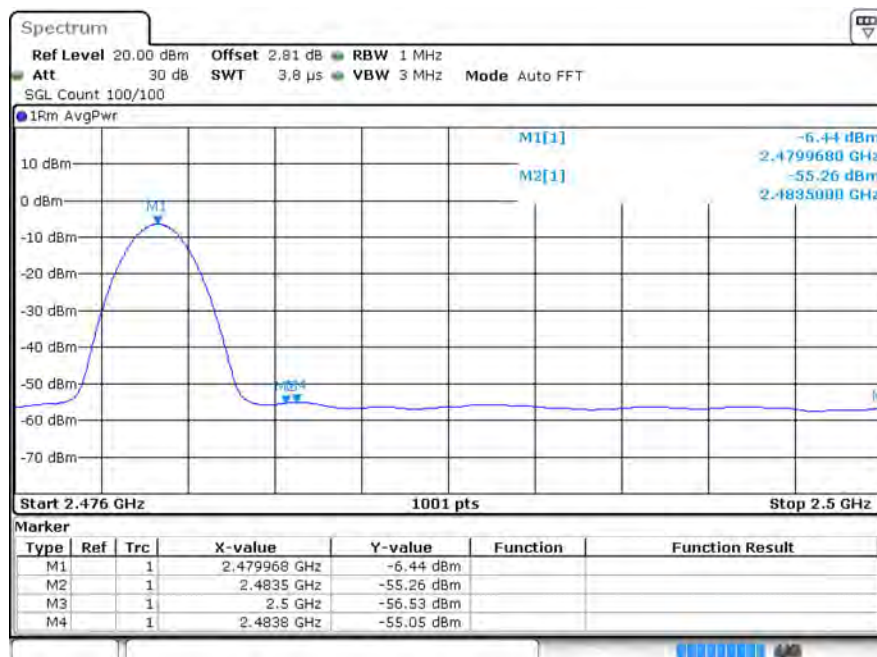
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_Average (Low Channel)



## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (High Channel)



## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_Average (High Channel)



---The End---