



## Appendix A

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

Product Name: NFC Bluetooth Music player Receiver/ Transmitter

Trade Mark: N/A

Test Model: X6

#### Environmental Conditions

|                    |             |
|--------------------|-------------|
| Temperature:       | 25.2℃       |
| Relative Humidity: | 52.3%       |
| ATM Pressure:      | 101Kpa      |
| 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 Peak Output Power .....  | 9  |
| 2.1 | Test Result.....                           | 9  |
| 2.2 | Test Graphs .....                          | 10 |
| 3   | 20dB Bandwidth .....                       | 15 |
| 3.1 | Test Result.....                           | 15 |
| 3.2 | Test Graphs .....                          | 16 |
| 4   | Carrier Frequency Separation .....         | 21 |
| 4.1 | Test Result.....                           | 21 |
| 4.2 | Test Graphs .....                          | 22 |
| 5   | Hopping Channel Number.....                | 24 |
| 5.1 | Test Result.....                           | 24 |
| 5.2 | Test Graphs .....                          | 25 |
| 6   | Dwell Time .....                           | 27 |
| 6.1 | Test Result.....                           | 27 |
| 6.2 | Test Graphs .....                          | 28 |
| 7   | RF Conducted Spurious Emissions.....       | 31 |
| 7.1 | Test Result.....                           | 31 |
| 7.2 | Test Graphs .....                          | 32 |
| 8   | Band-edge for RF Conducted Emissions ..... | 41 |
| 8.1 | Test Result.....                           | 41 |
| 8.2 | Test Graphs .....                          | 42 |
| 9   | Restrict-band band-edge measurements ..... | 54 |
| 9.1 | Test Result.....                           | 54 |
| 9.2 | Test Graphs .....                          | 56 |

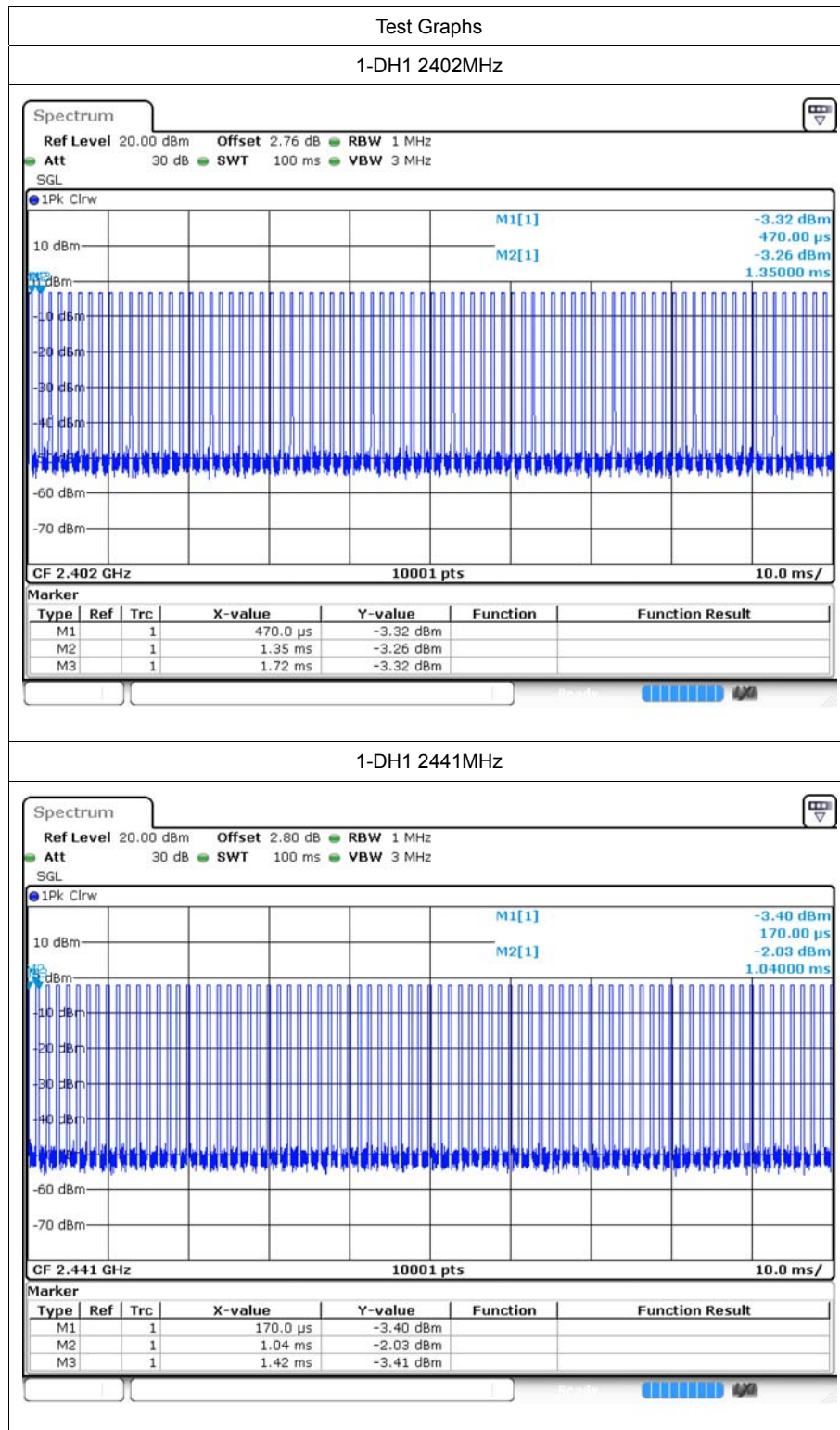


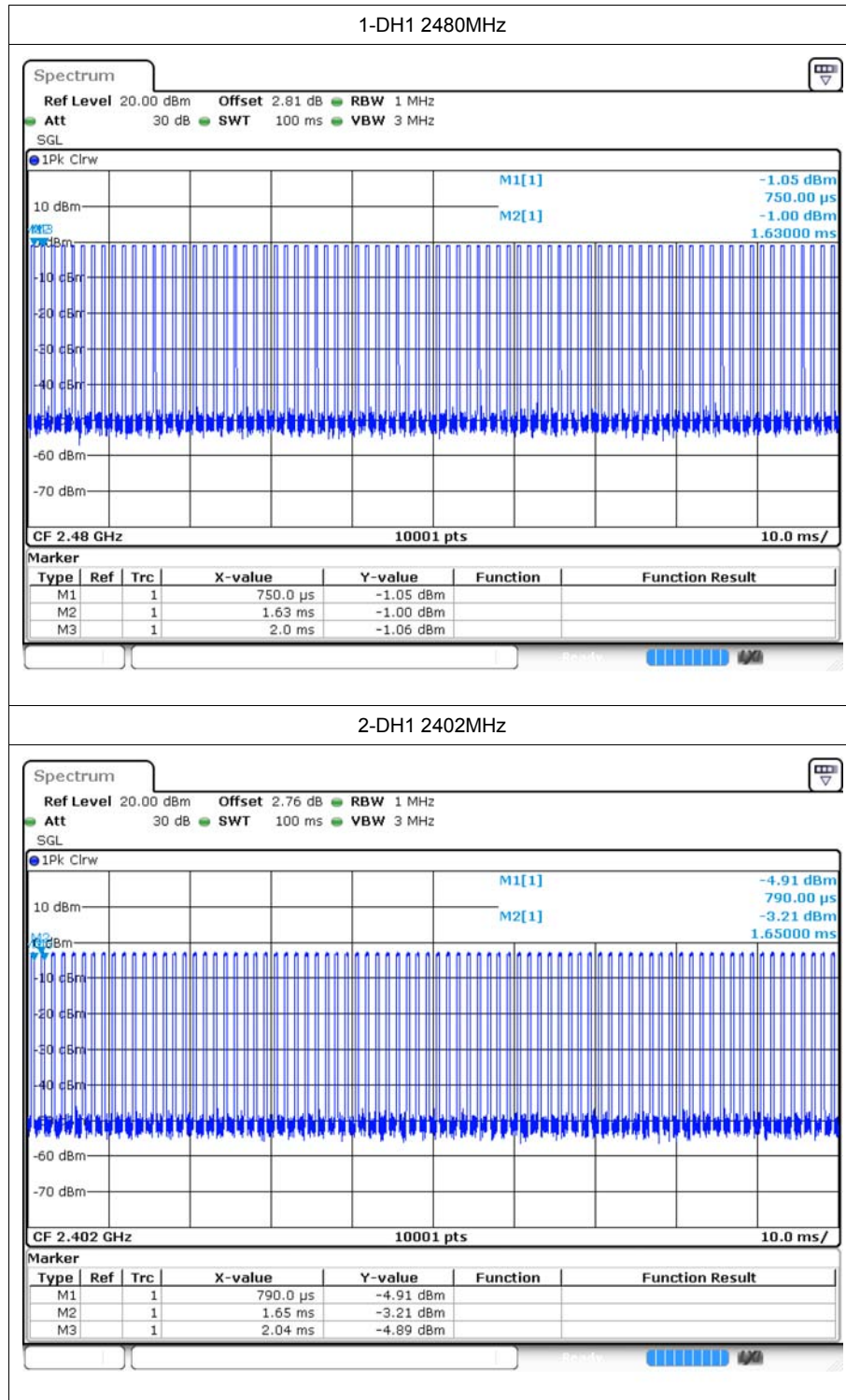
# 1 Duty Cycle

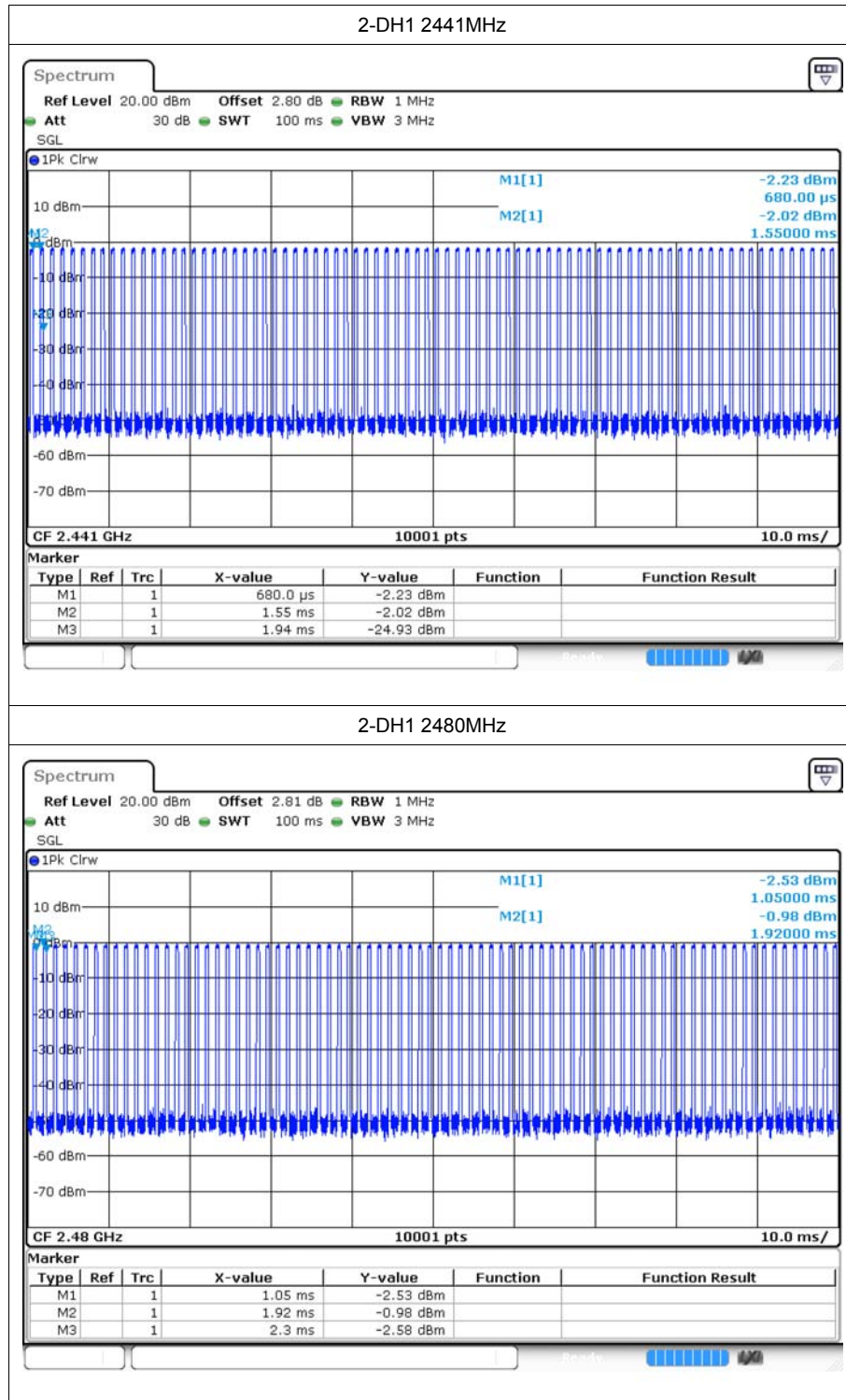
## 1.1 Test Result

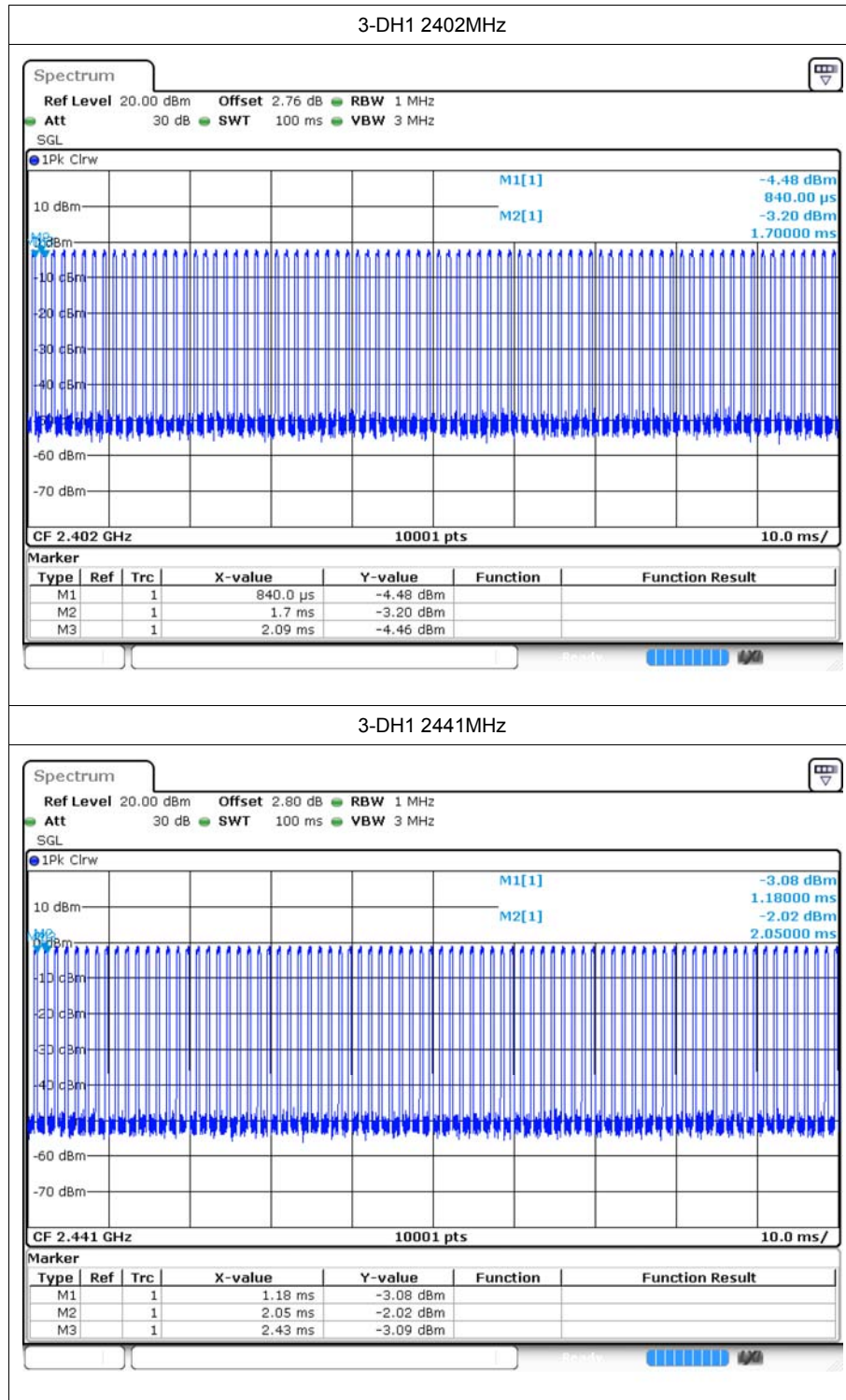
| Mode  | Frequency (MHz) | Duty Cycle (%) | 1/T (kHz) |
|-------|-----------------|----------------|-----------|
| 1-DH1 | 2402            | 30.4           | 2.7       |
| 1-DH1 | 2441            | 31.21          | 2.63      |
| 1-DH1 | 2480            | 30.4           | 2.7       |
| 2-DH1 | 2402            | 32             | 2.56      |
| 2-DH1 | 2441            | 31.99          | 2.56      |
| 2-DH1 | 2480            | 31.2           | 2.63      |
| 3-DH1 | 2402            | 32             | 2.56      |
| 3-DH1 | 2441            | 31.2           | 2.63      |
| 3-DH1 | 2480            | 32             | 2.56      |

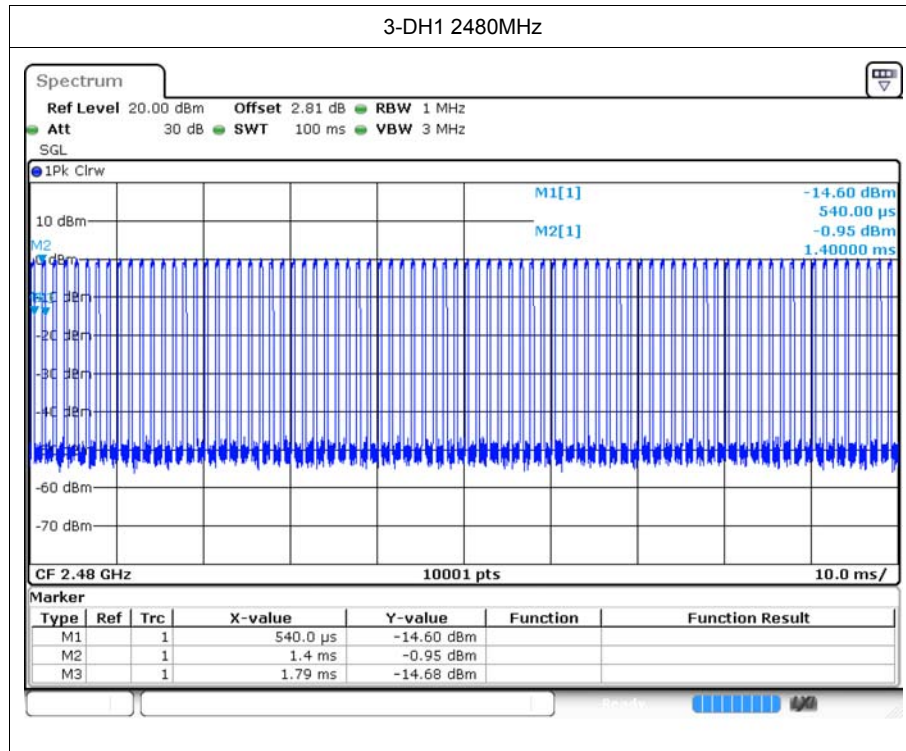
## 1.2 Test Graphs









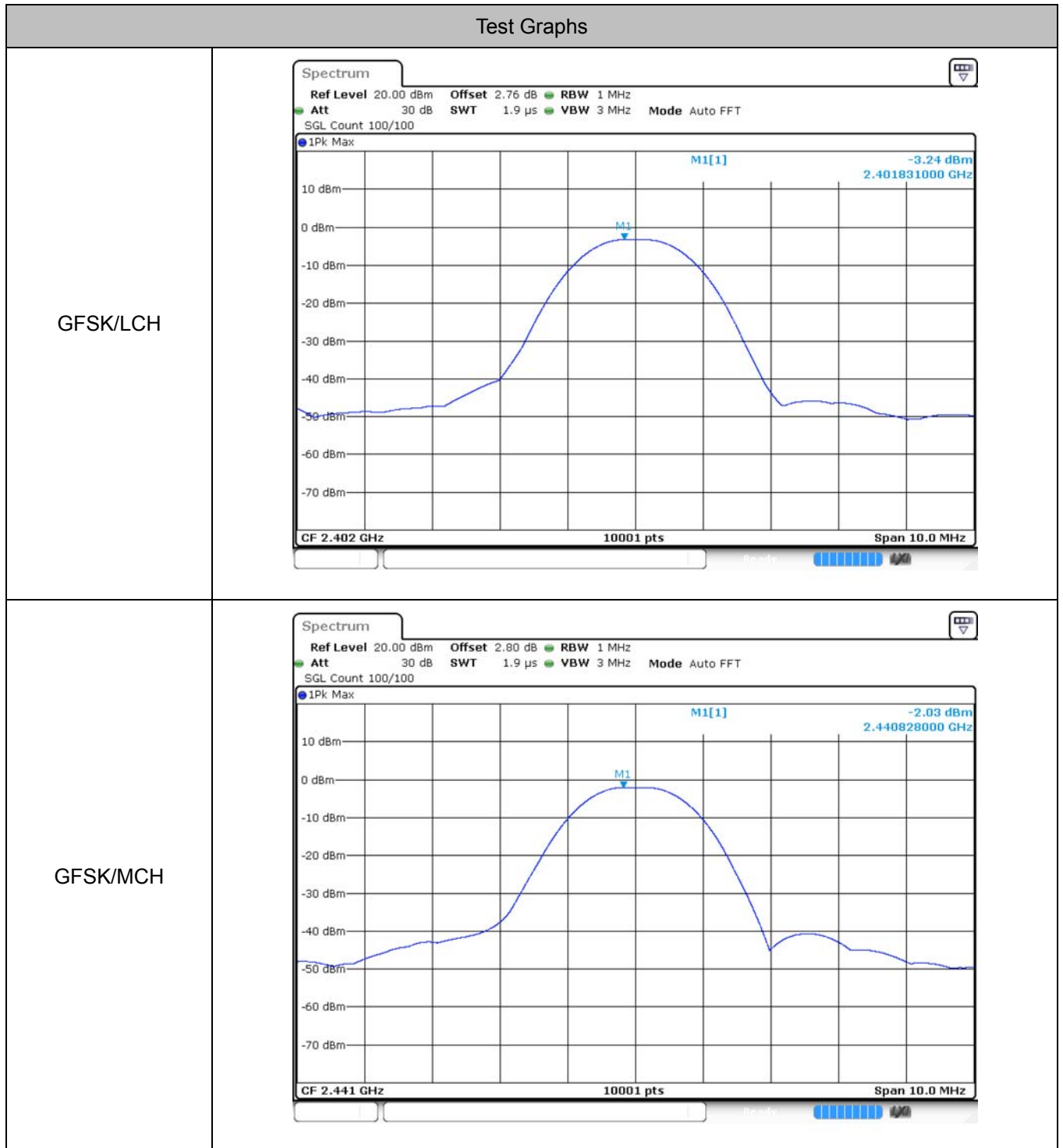


## 2 Maximum Conducted Peak Output Power

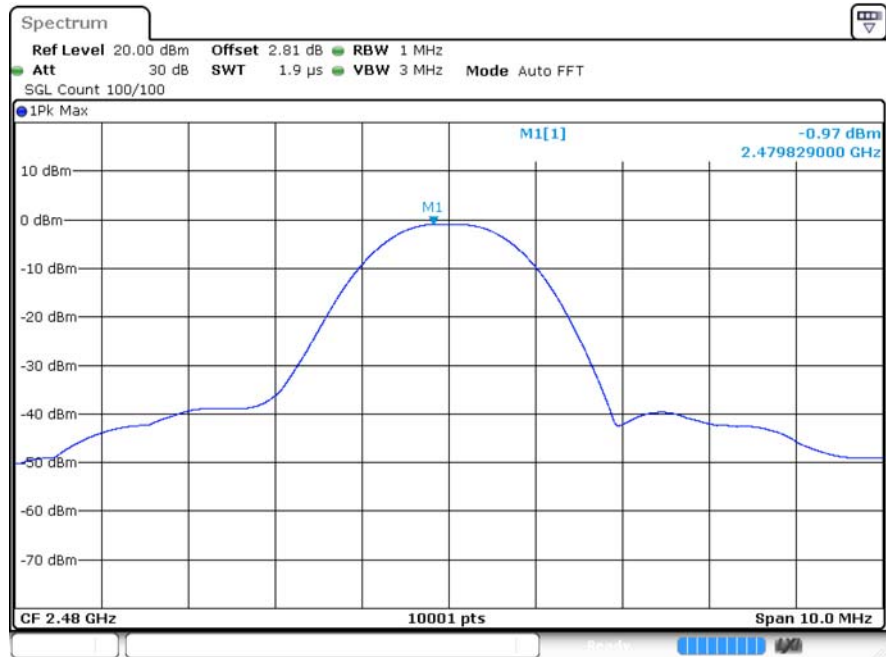
### 2.1 Test Result

| Mode          | Channel. | Maximum Peak Output Power<br>[dBm] | Limit<br>[dBm] | Verdict |
|---------------|----------|------------------------------------|----------------|---------|
| GFSK          | LCH      | -3.24                              | 21             | Pass    |
|               | MCH      | -2.03                              | 21             | Pass    |
|               | HCH      | -0.97                              | 21             | Pass    |
| $\pi/4$ DQPSK | LCH      | -2.77                              | 21             | Pass    |
|               | MCH      | -1.46                              | 21             | Pass    |
|               | HCH      | -0.72                              | 21             | Pass    |
| 8DPSK         | LCH      | -2.45                              | 21             | Pass    |
|               | MCH      | -1.39                              | 21             | Pass    |
|               | HCH      | 0.22                               | 21             | Pass    |

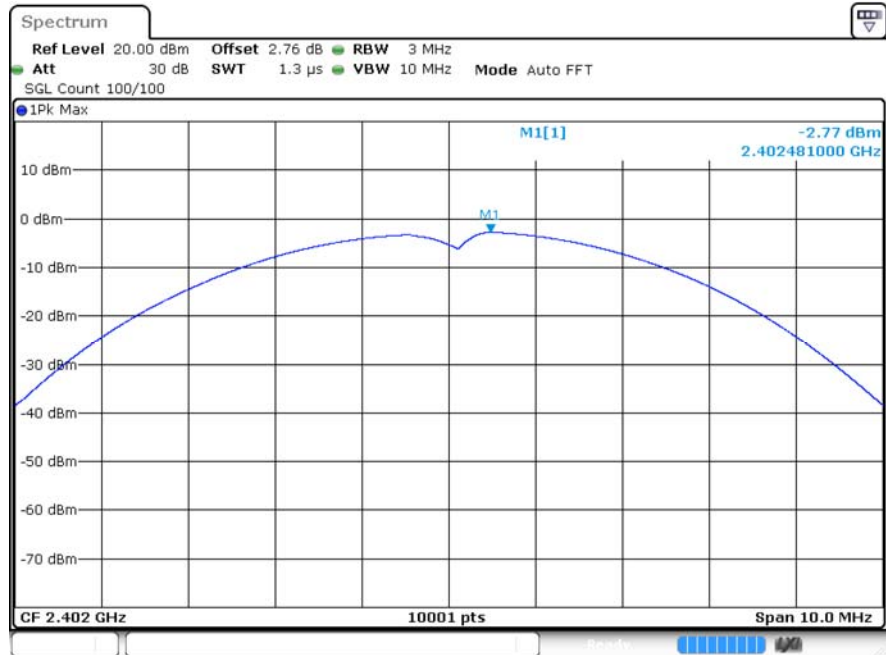
## 2.2 Test Graphs



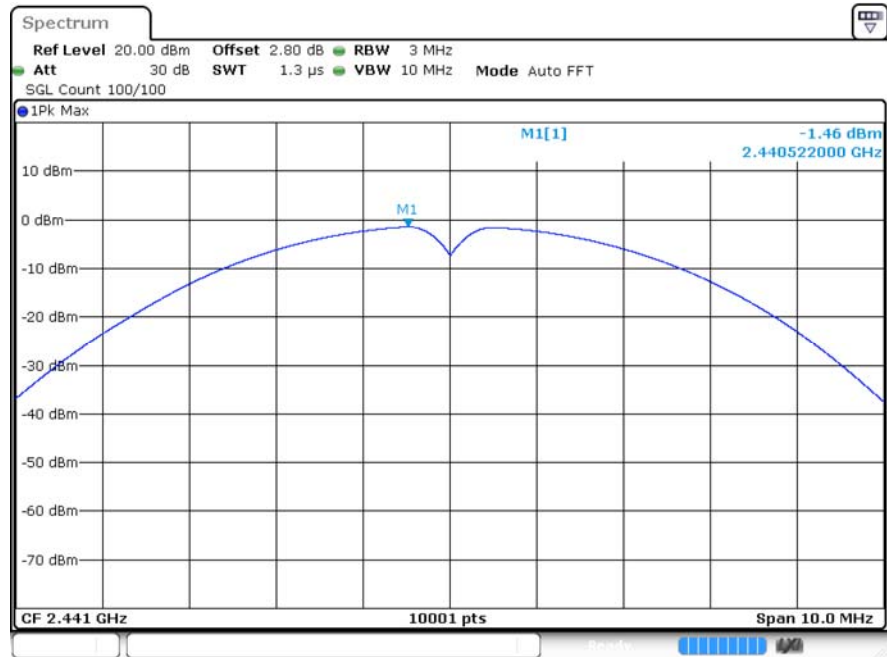
GFSK/HCH



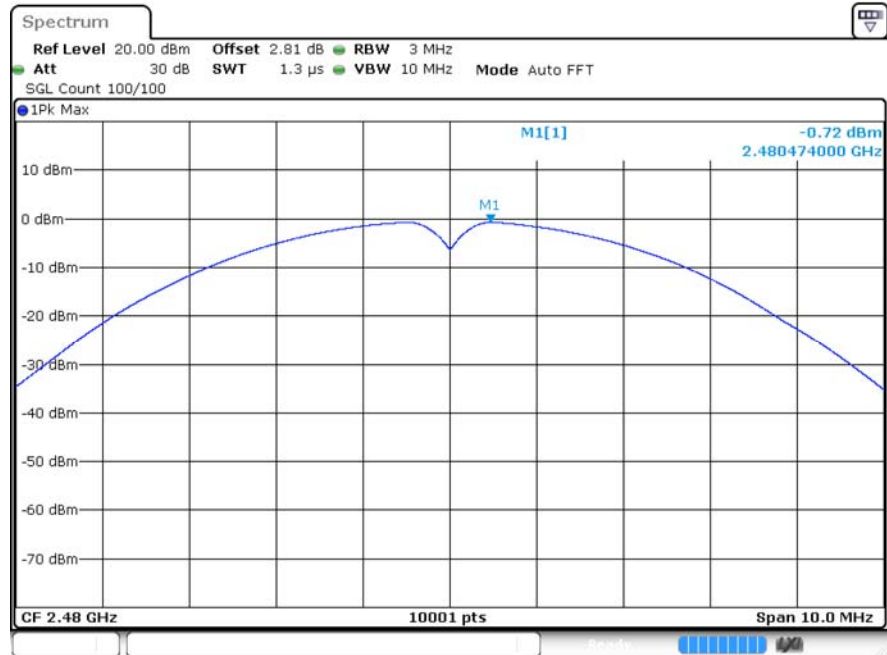
$\pi/4$ DQPSK/LCH



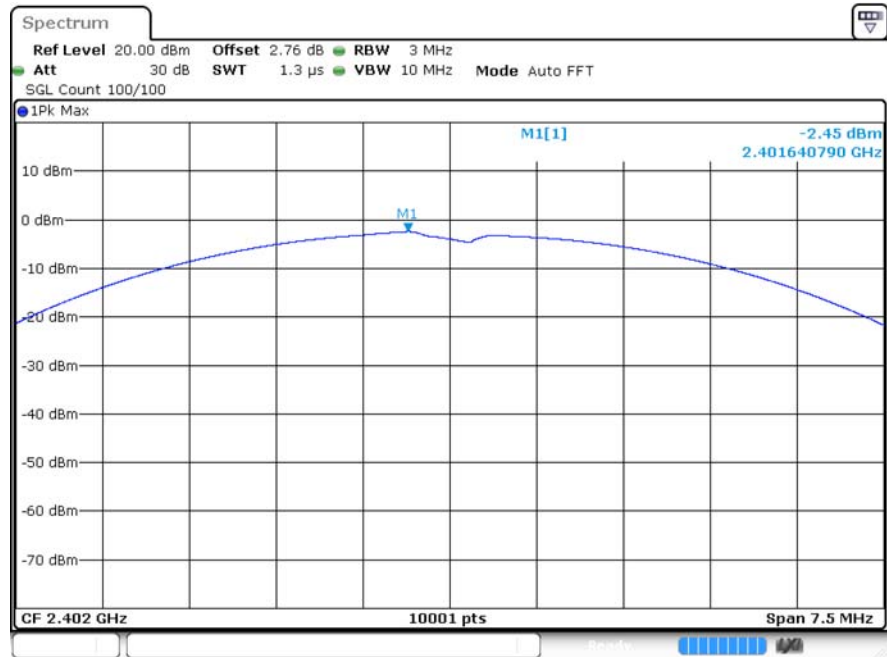
$\pi/4$ DQPSK/MCH



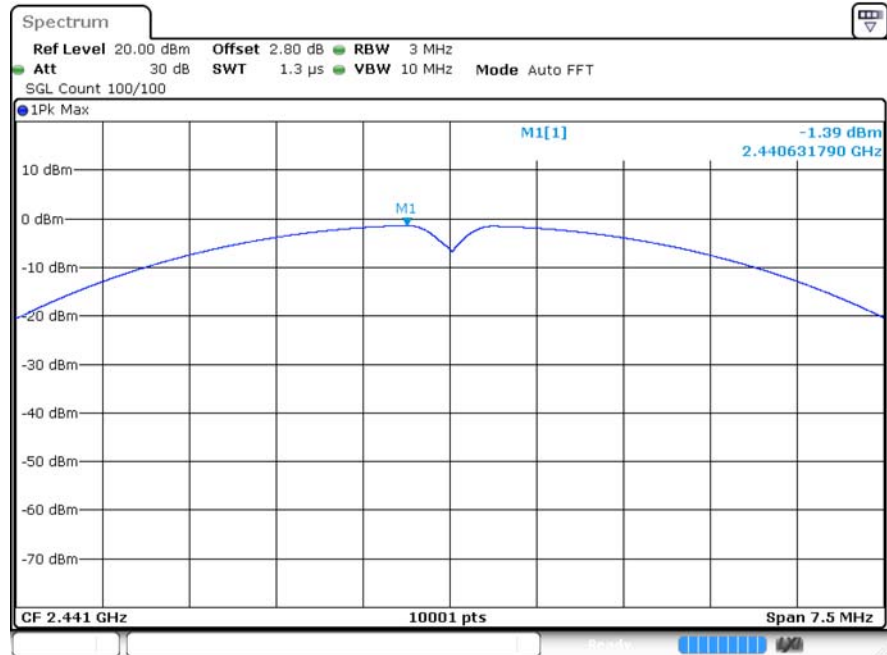
$\pi/4$ DQPSK/HCH



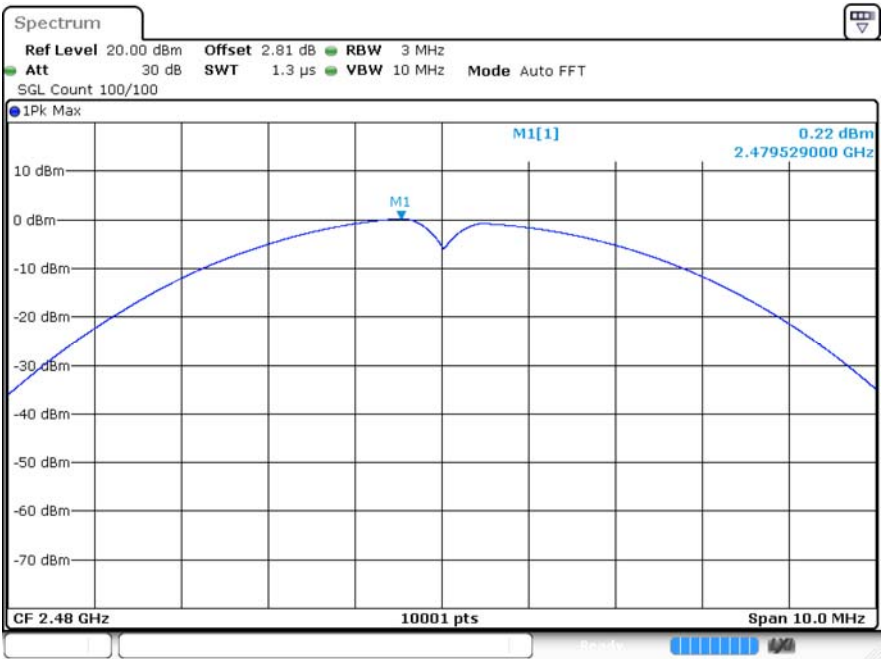
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

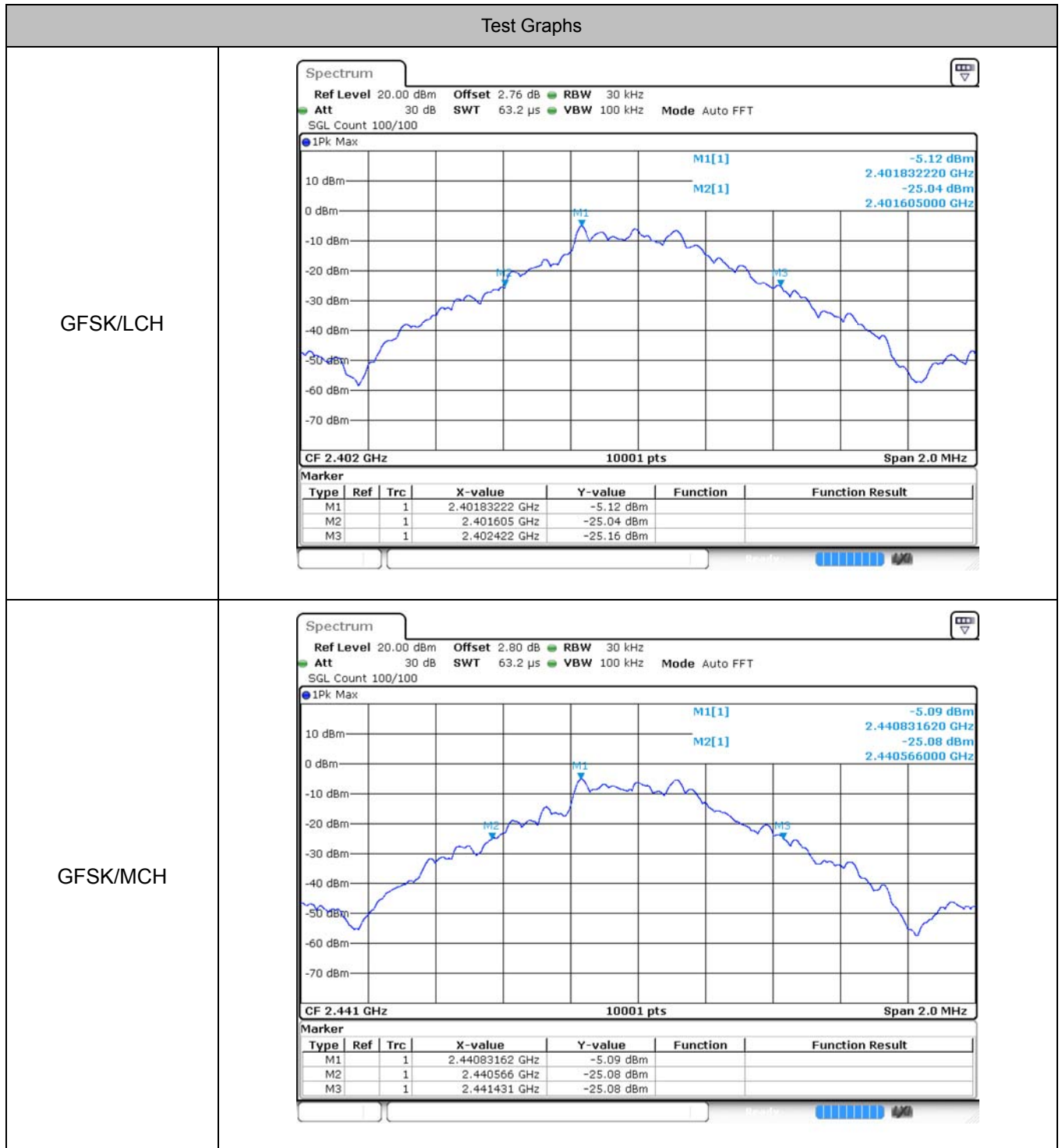


### 3 20dB Bandwidth

#### 3.1 Test Result

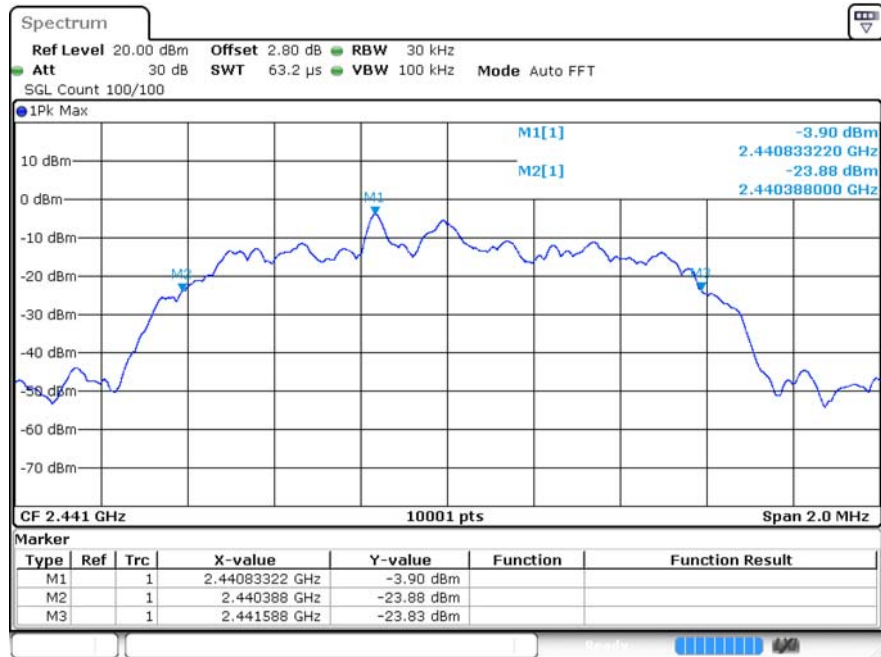
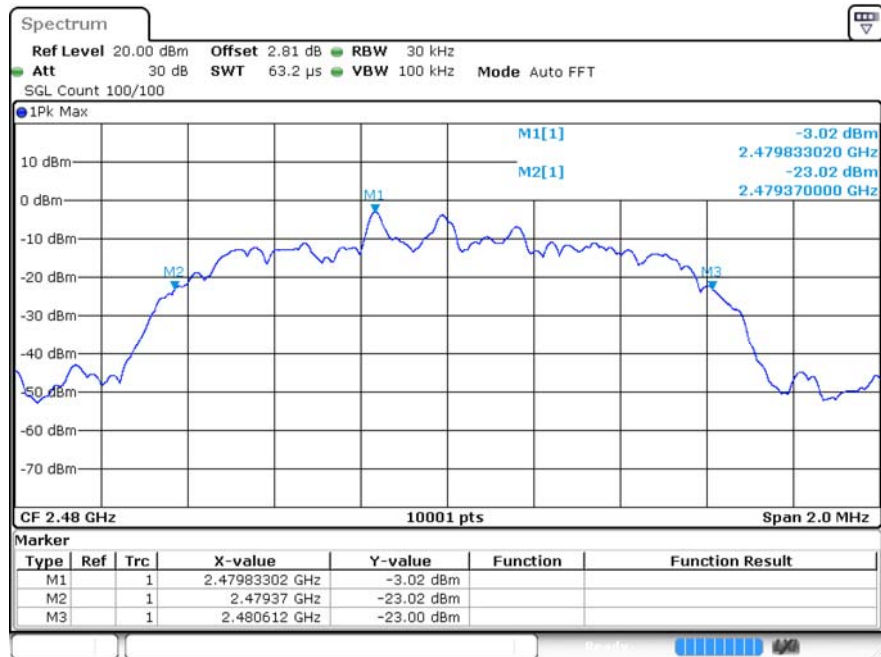
| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.817                | Not Specified | Pass    |
|               | MCH      | 0.865                | Not Specified | Pass    |
|               | HCH      | 0.878                | Not Specified | Pass    |
| $\pi/4$ DQPSK | LCH      | 1.237                | Not Specified | Pass    |
|               | MCH      | 1.201                | Not Specified | Pass    |
|               | HCH      | 1.242                | Not Specified | Pass    |
| 8DPSK         | LCH      | 1.2                  | Not Specified | Pass    |
|               | MCH      | 1.197                | Not Specified | Pass    |
|               | HCH      | 1.201                | Not Specified | Pass    |

## 3.2 Test Graphs

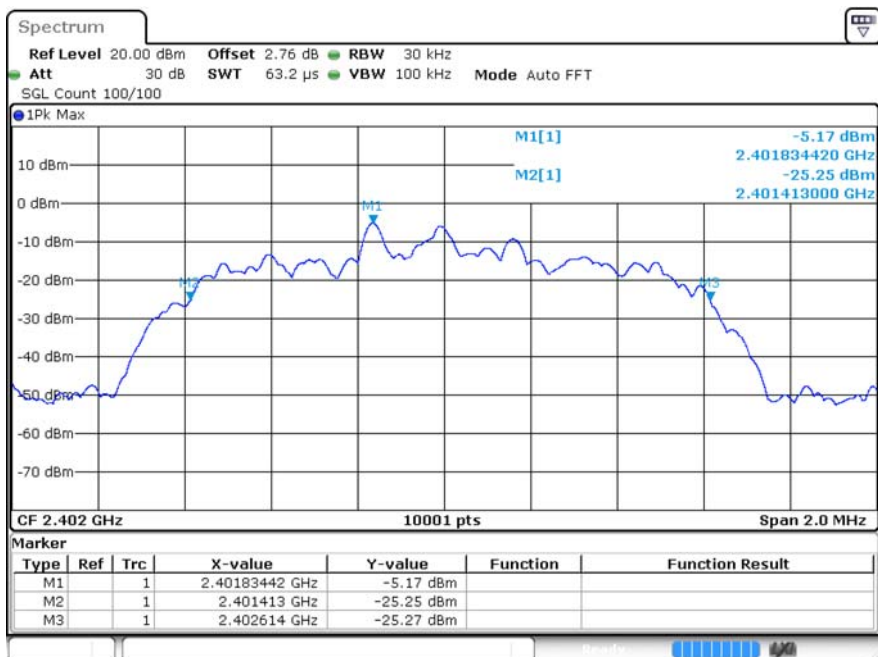


GFSK/HCH

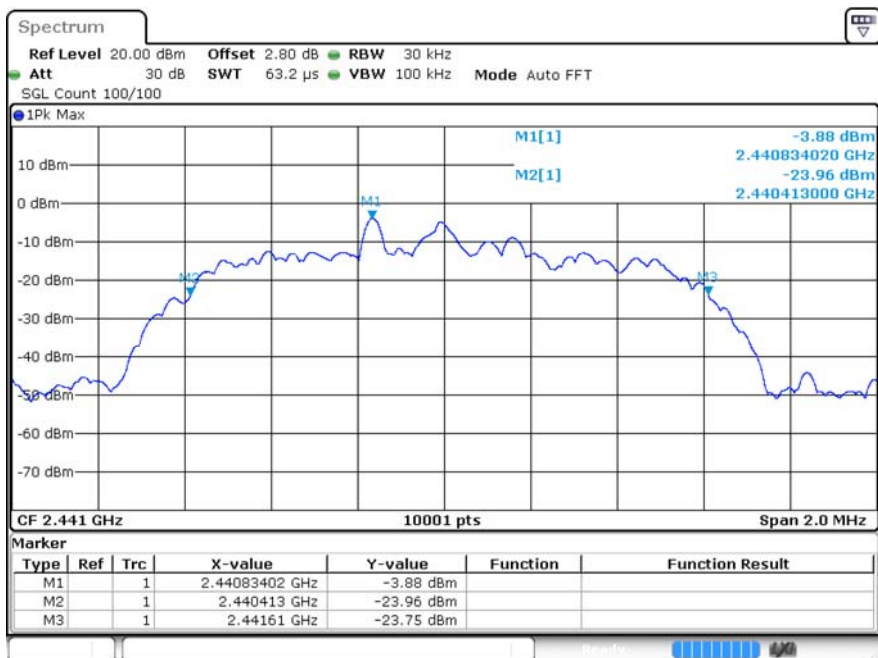

 $\pi/4$ DQPSK/LCH


$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


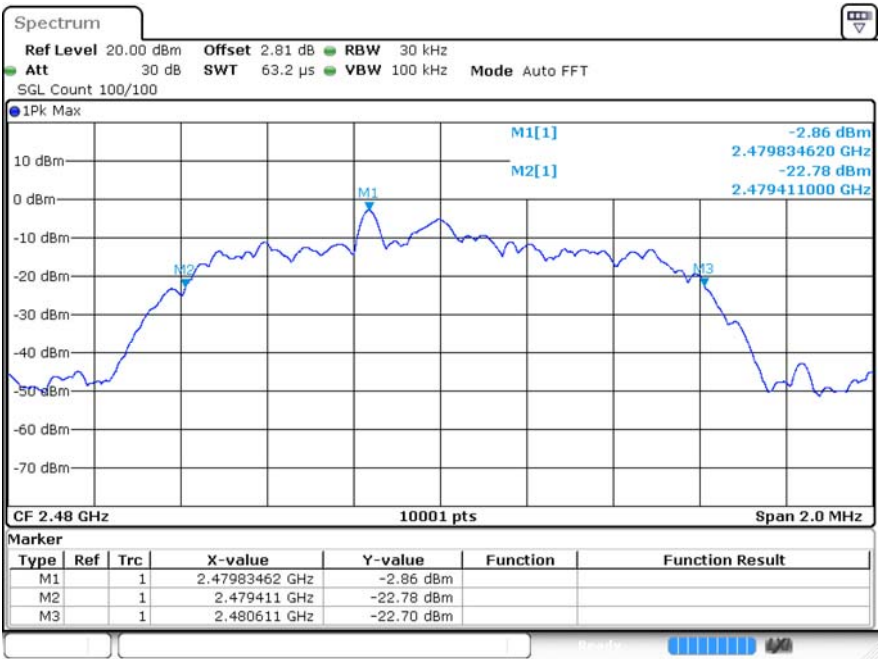
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH



## 4 Carrier Frequency Separation

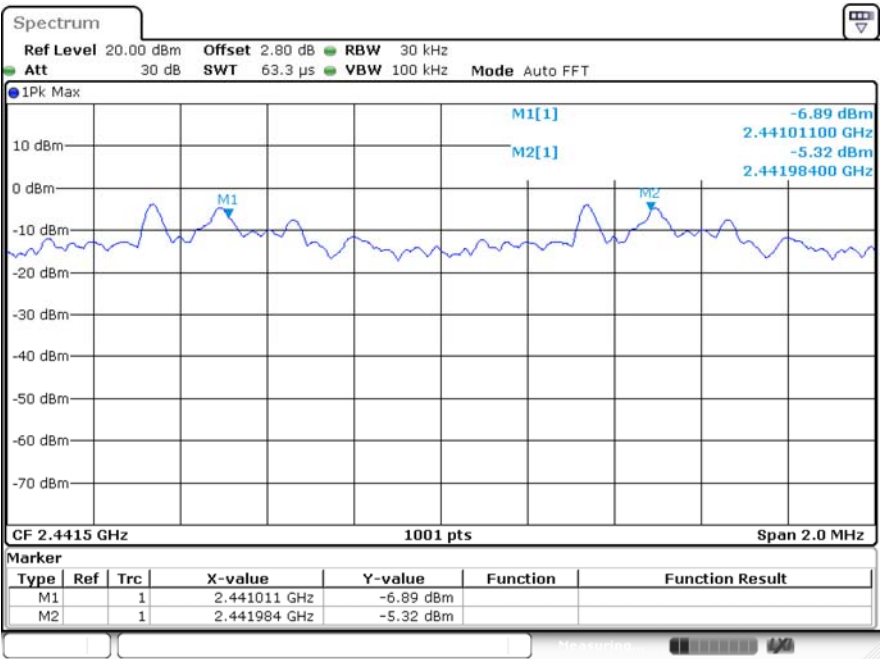
### 4.1 Test Result

| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | MCH      | 1.001                              | 0.577       | Pass    |
| $\pi/4$ DQPSK | MCH      | 0.843                              | 0.801       | Pass    |
| 8DPSK         | MCH      | 0.973                              | 0.798       | Pass    |

## 4.2 Test Graphs



8DPSK/MCH

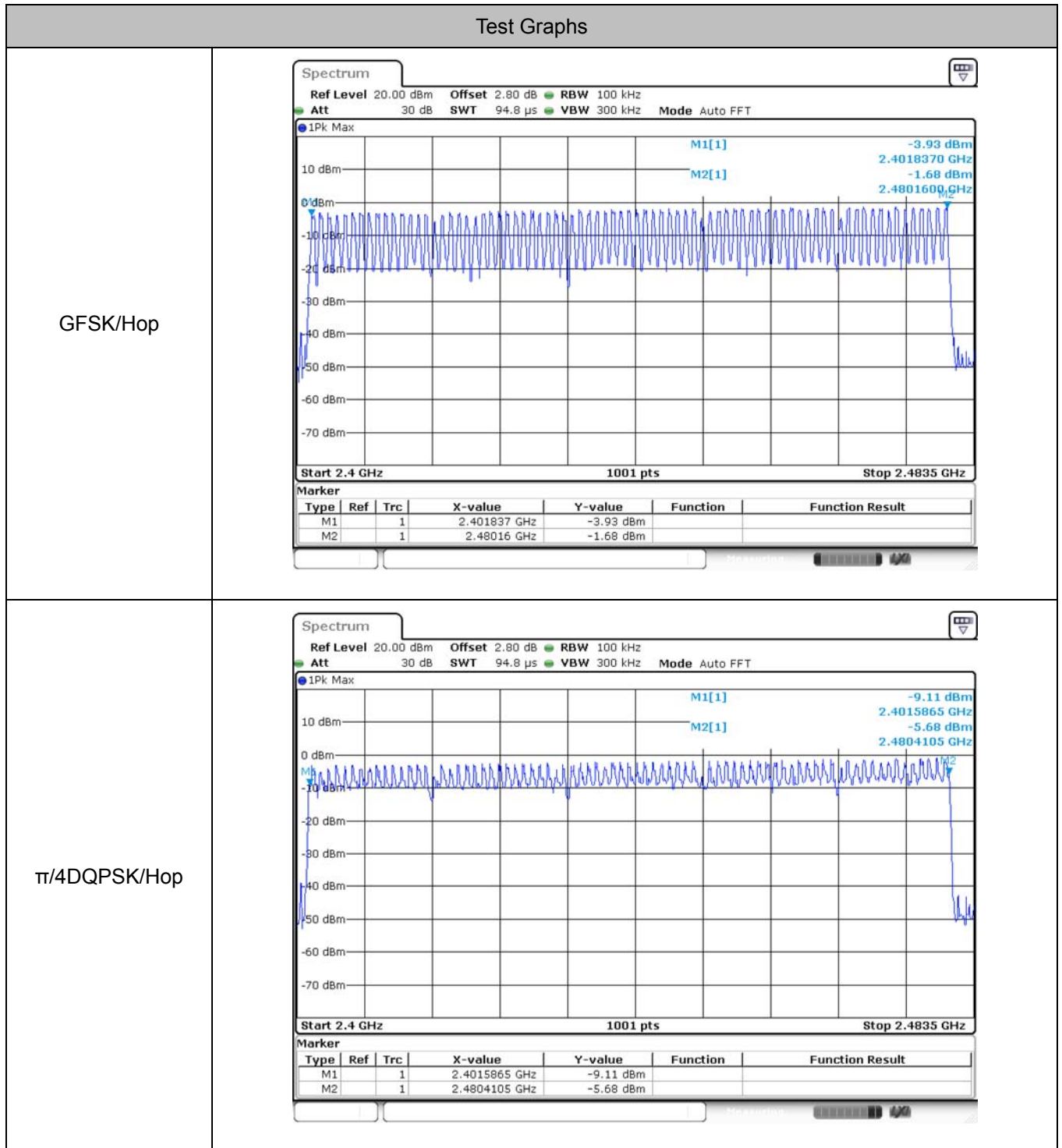


## 5 Hopping Channel Number

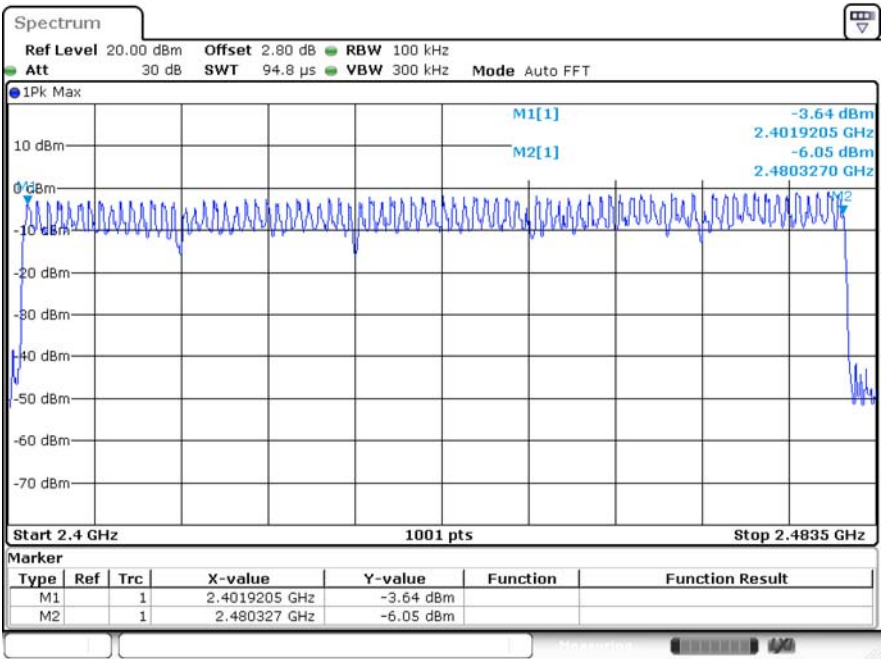
### 5.1 Test Result

| 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

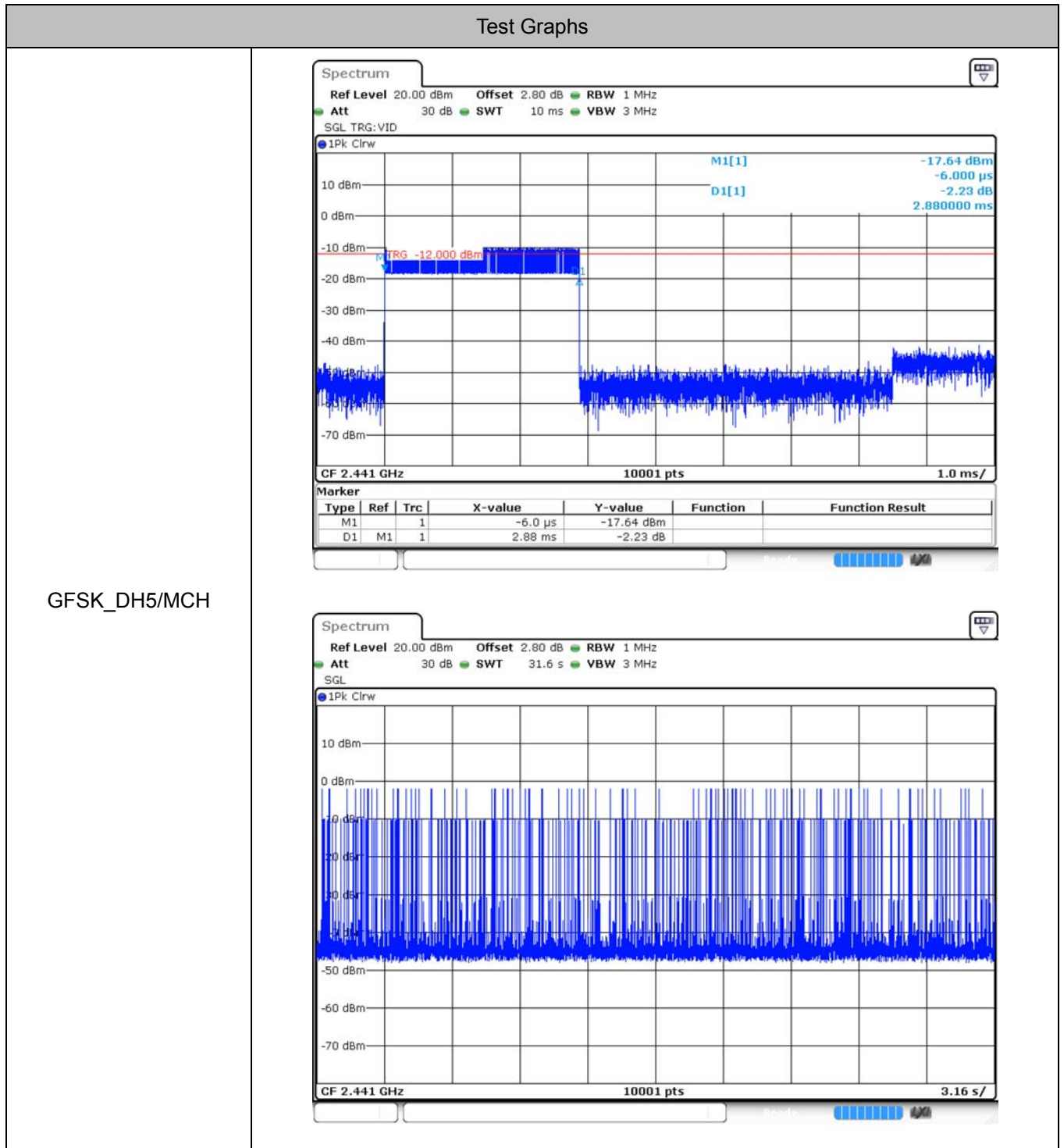


## 6 Dwell Time

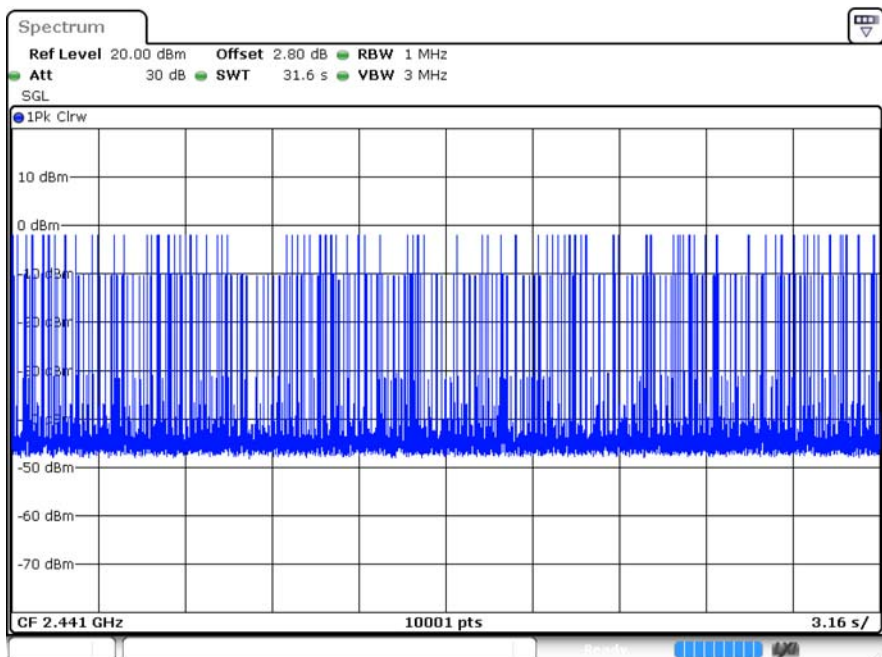
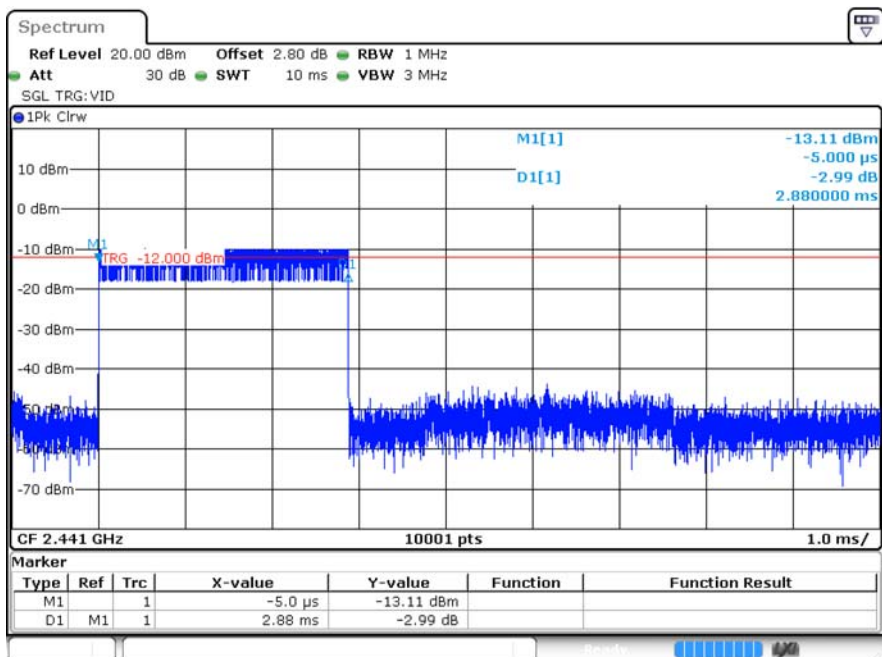
### 6.1 Test Result

| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|---------------|-----------|---------|
| GFSK          | DH5    | MCH     | 2.88                       | 93                    | 267.84        | 0.4       | Pass    |
| $\pi/4$ DQPSK | 2DH5   | MCH     | 2.88                       | 108                   | 311.04        | 0.4       | Pass    |
| 8DPSK         | 3DH5   | MCH     | 2.887                      | 103                   | 297.361       | 0.4       | Pass    |

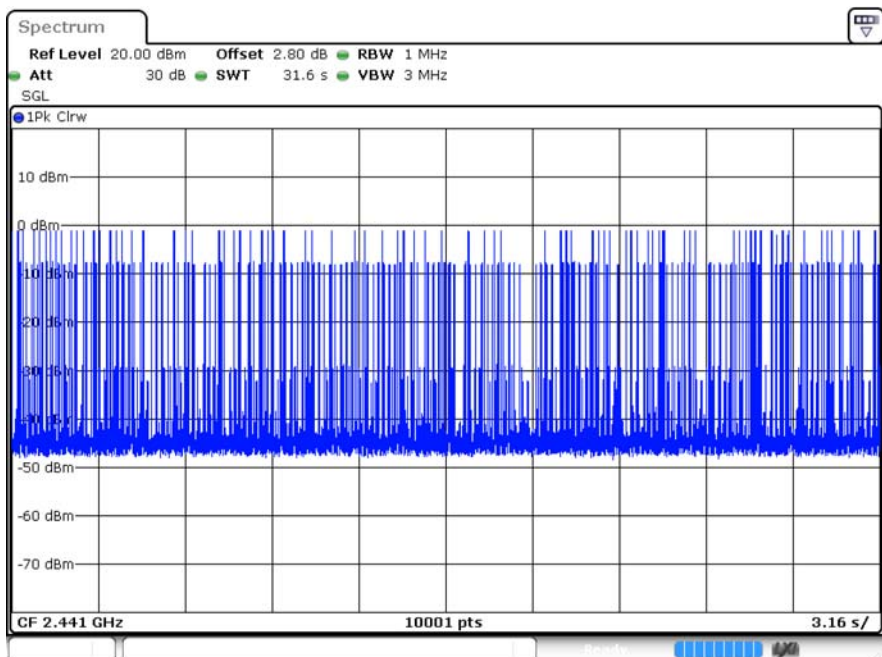
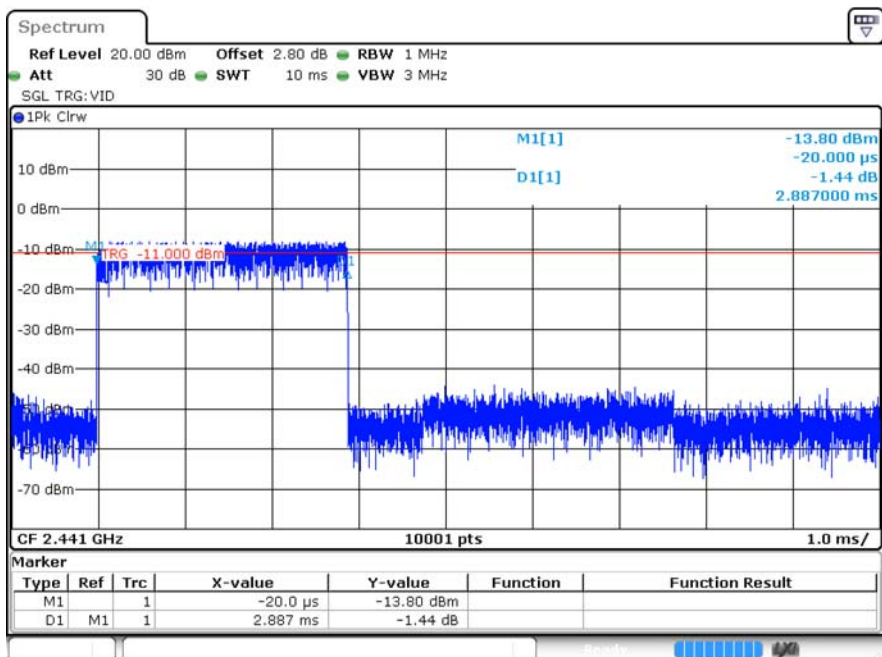
## 6.2 Test Graphs



$\pi/4$ DQPSK  
\_2DH5/MCH



8DPSK\_3DH5/MCH

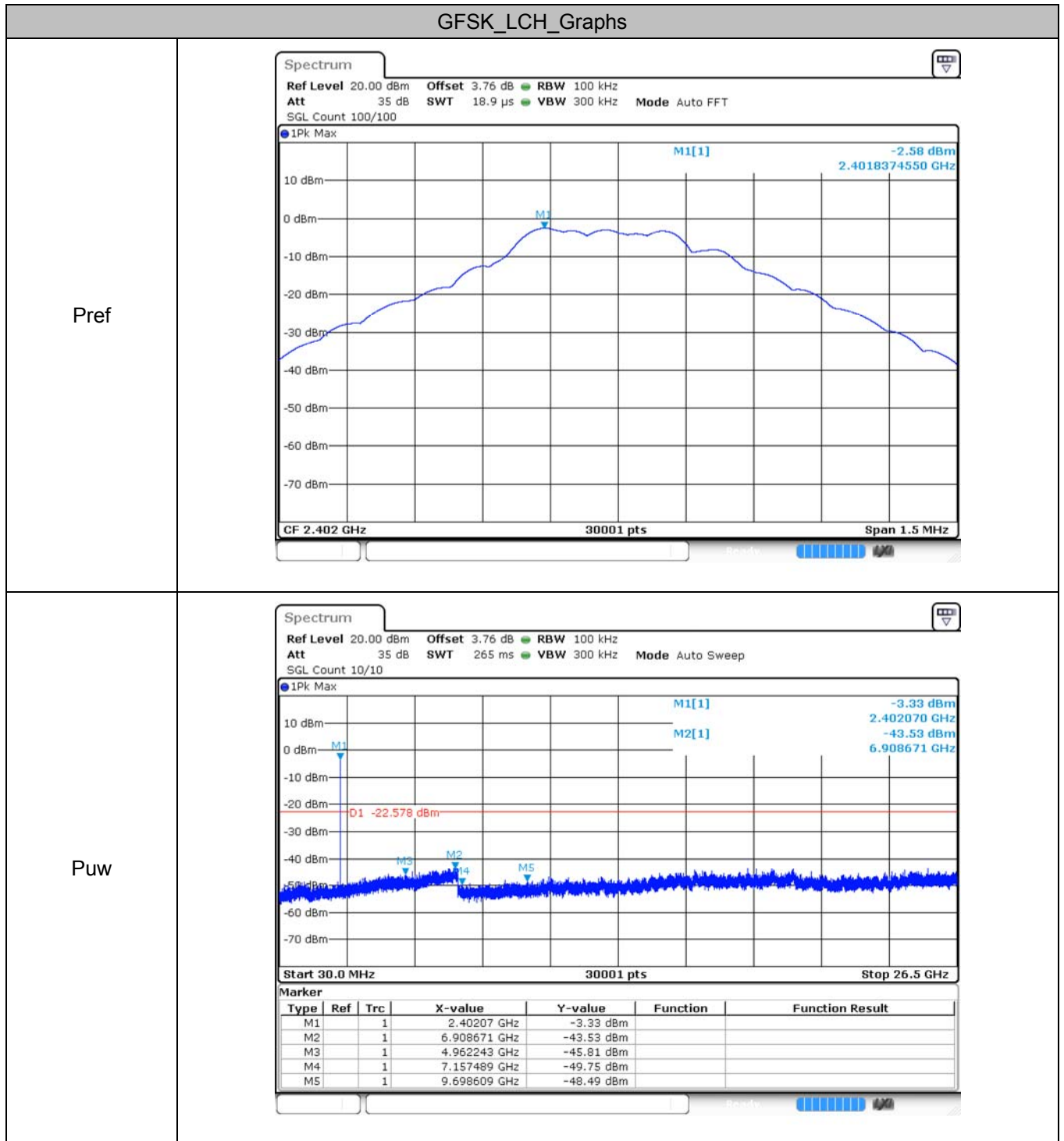


## 7 RF Conducted Spurious Emissions

### 7.1 Test Result

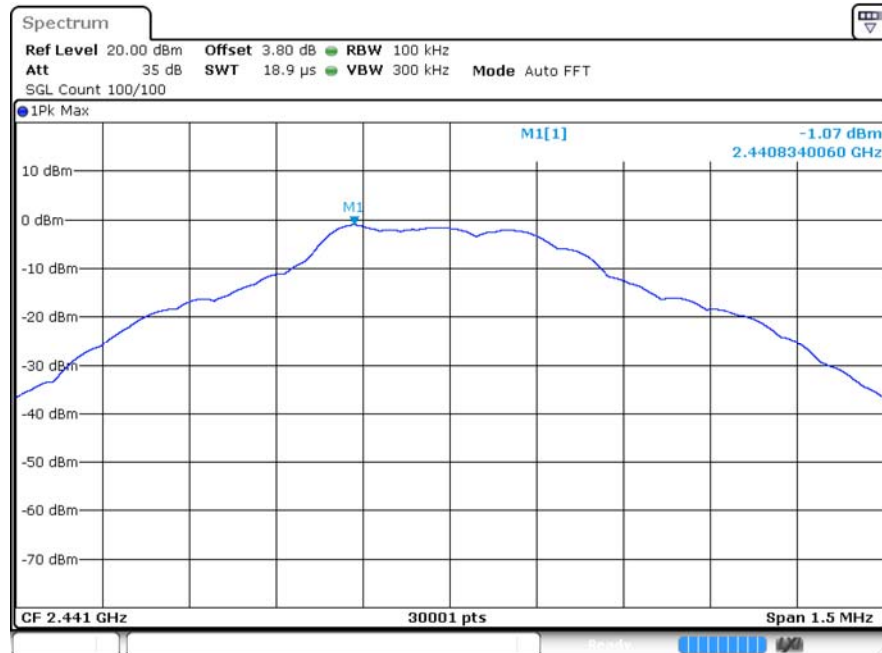
| Mode          | Channel | Max. Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|------------------|-------------|---------|
| GFSK          | LCH     | -40.95           | -20         | Pass    |
|               | MCH     | -41.89           | -20         | Pass    |
|               | HCH     | -42.53           | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | -40.06           | -20         | Pass    |
|               | MCH     | -41.38           | -20         | Pass    |
|               | HCH     | -41.78           | -20         | Pass    |
| 8DPSK         | LCH     | -40.28           | -20         | Pass    |
|               | MCH     | -41.69           | -20         | Pass    |
|               | HCH     | -42.04           | -20         | Pass    |

## 7.2 Test Graphs

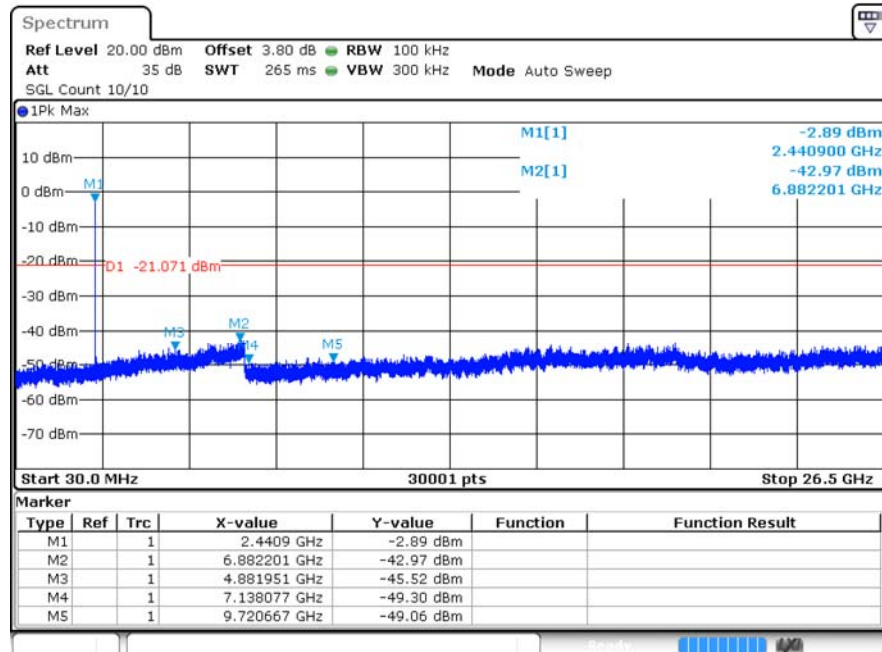


## GFSK\_MCH\_Graphs

Pref



Puw

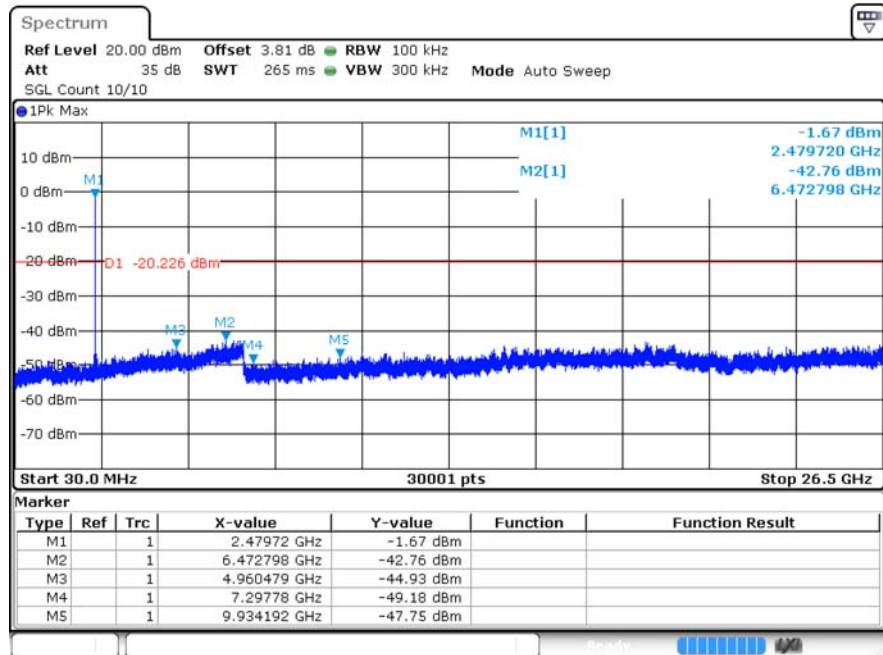


## GFSK\_HCH\_Graphs

Pref

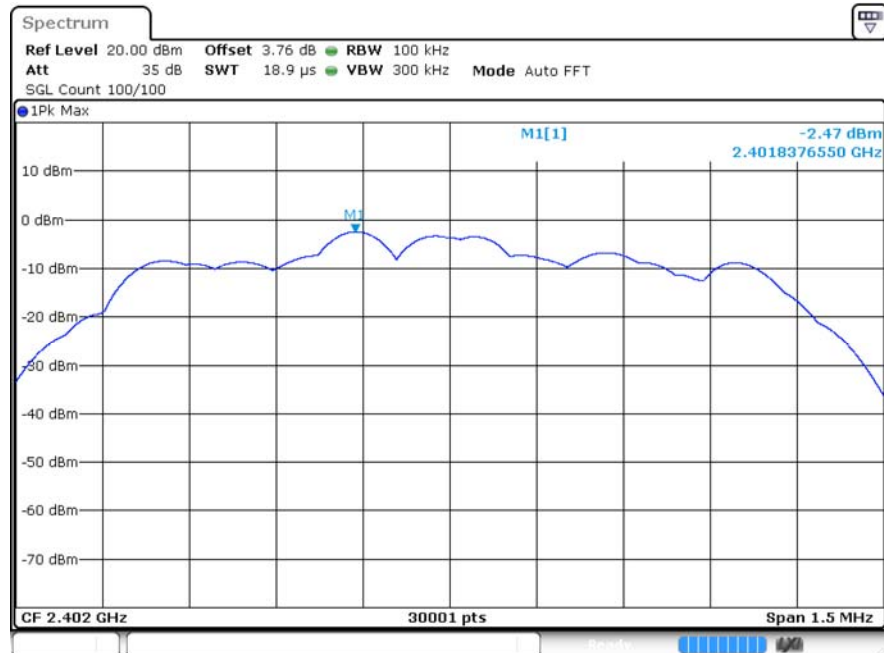


Puw

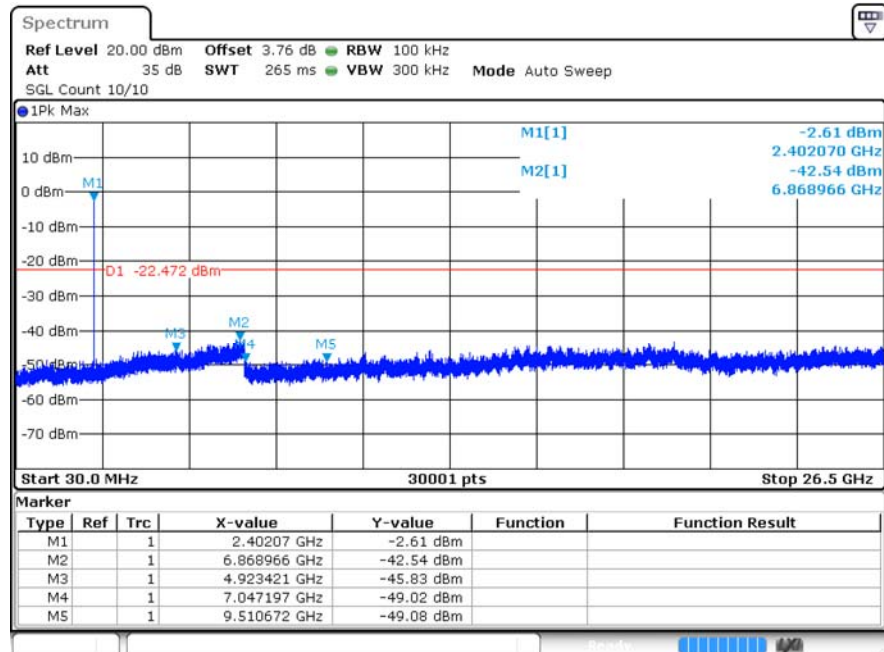


# $\pi/4$ DQPSK\_LCH\_Graphs

Pref

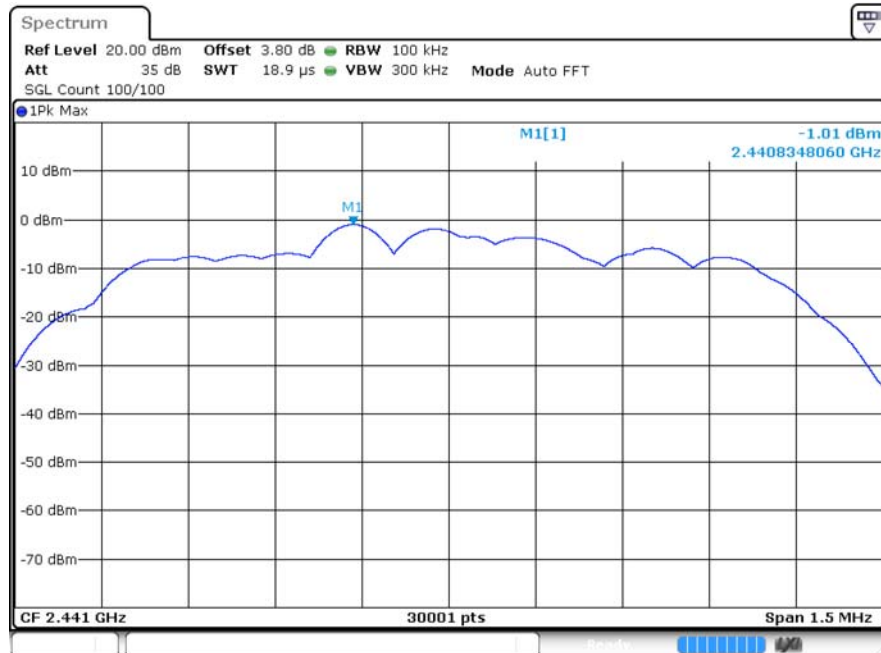


Puw

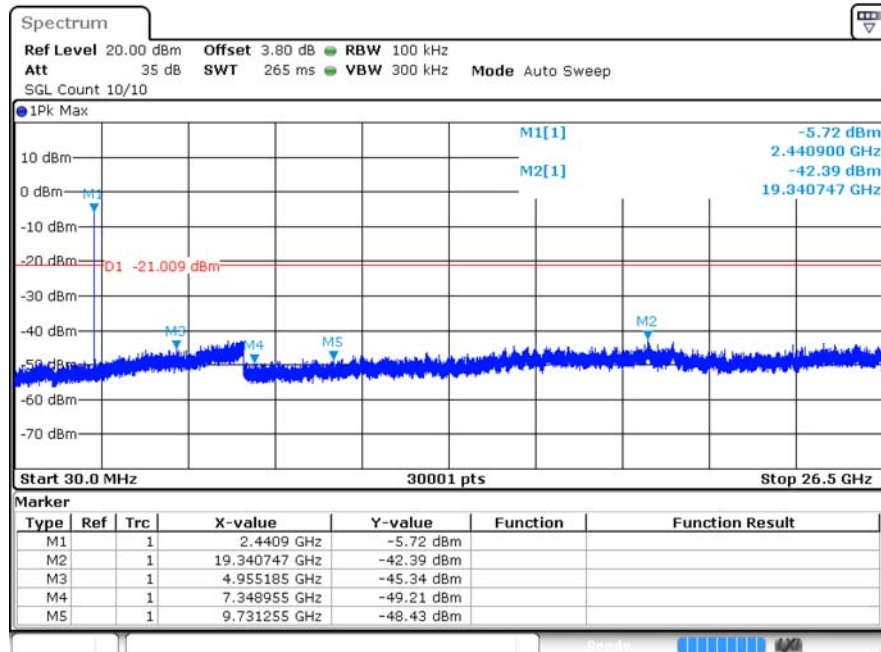


# $\pi/4$ DQPSK\_MCH\_Graphs

Pref

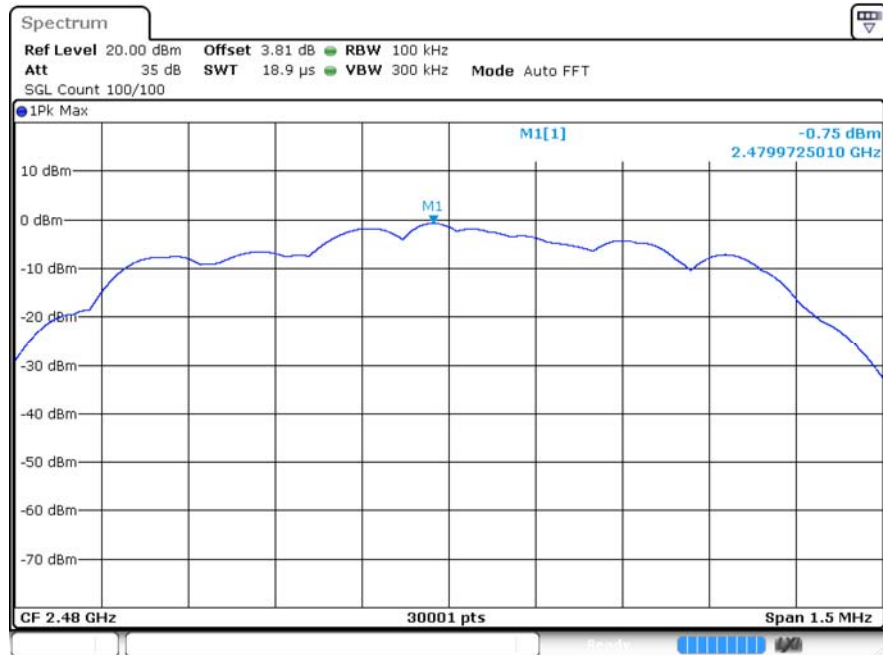


Puw

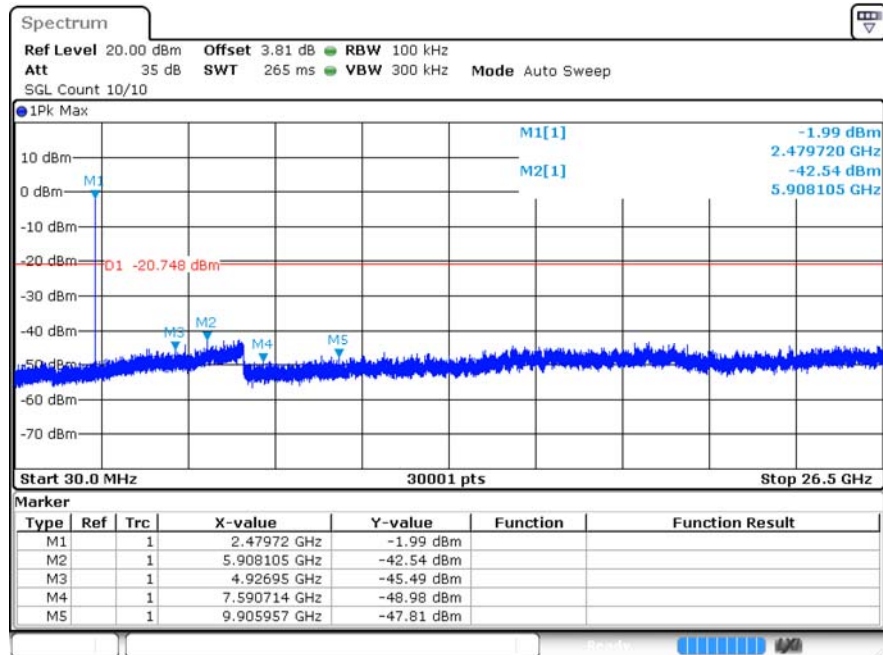


# $\pi/4$ DQPSK\_HCH\_Graphs

Pref

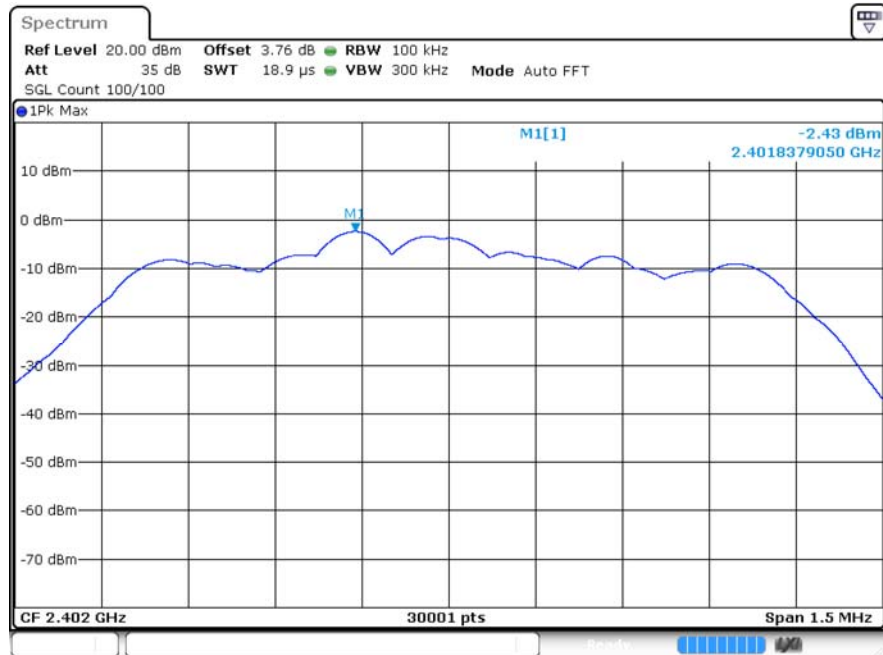


Puw

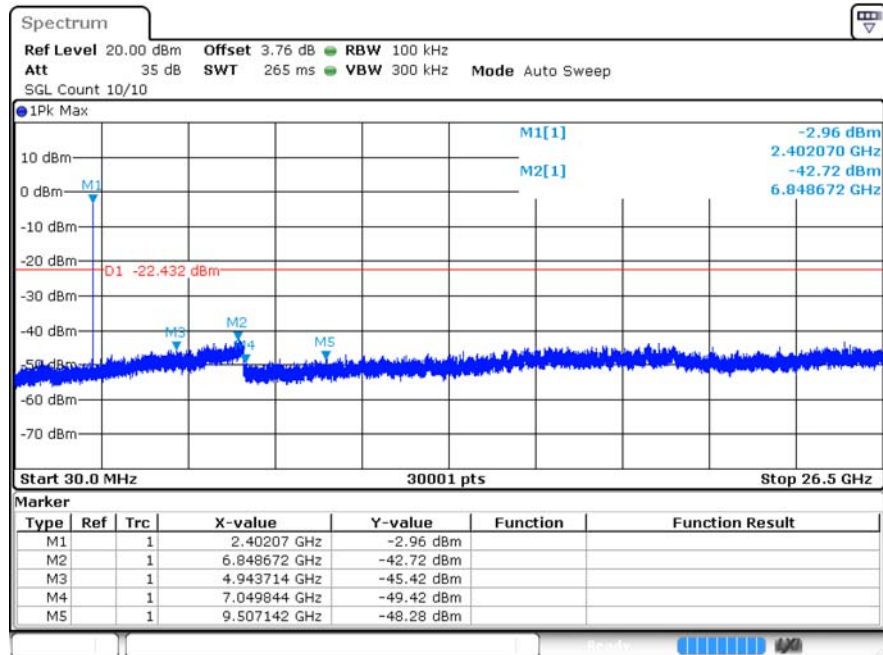


## 8DPSK\_LCH\_Graphs

Pref

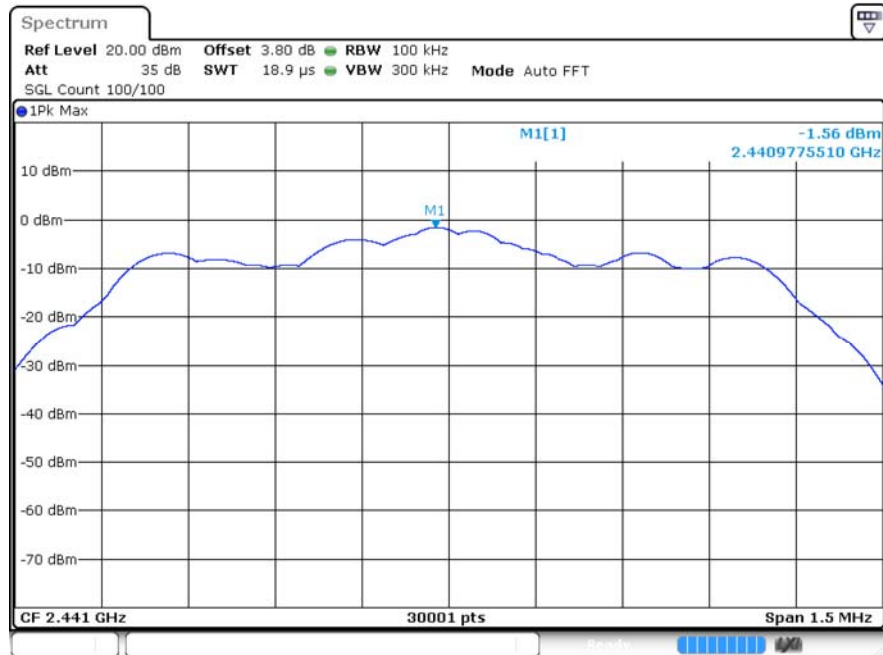


Puw

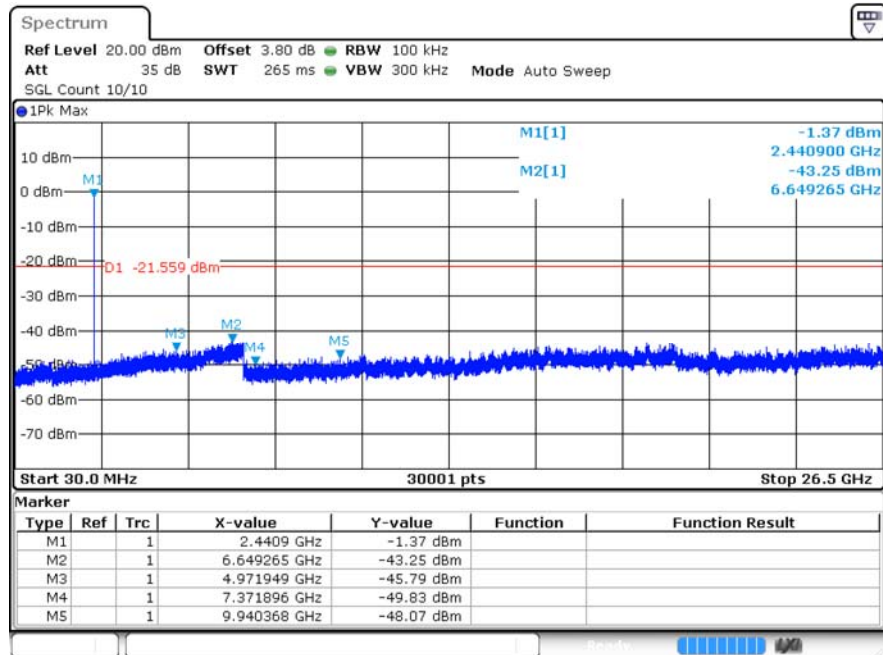


## 8DPSK\_MCH\_Graphs

Pref

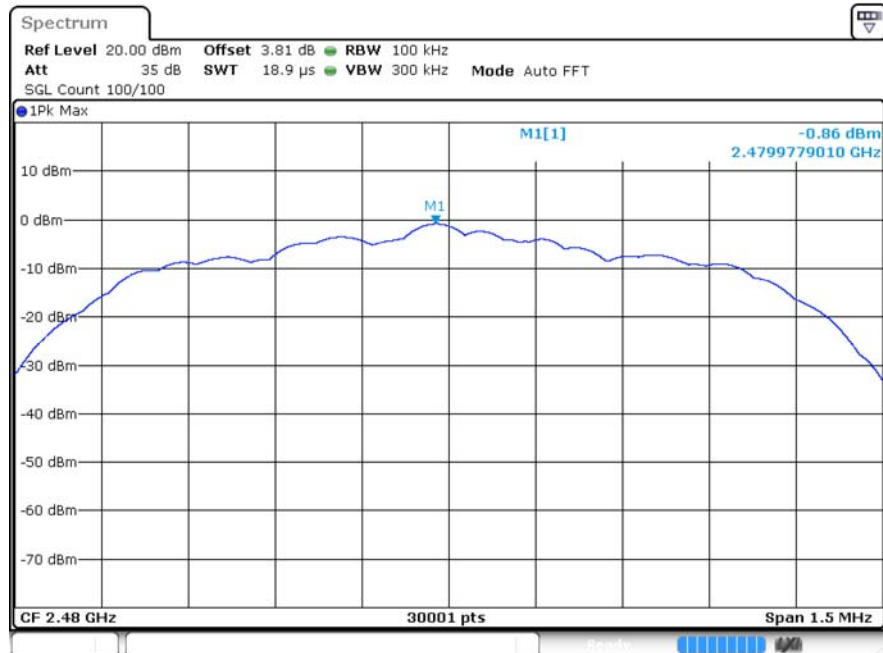


Puw

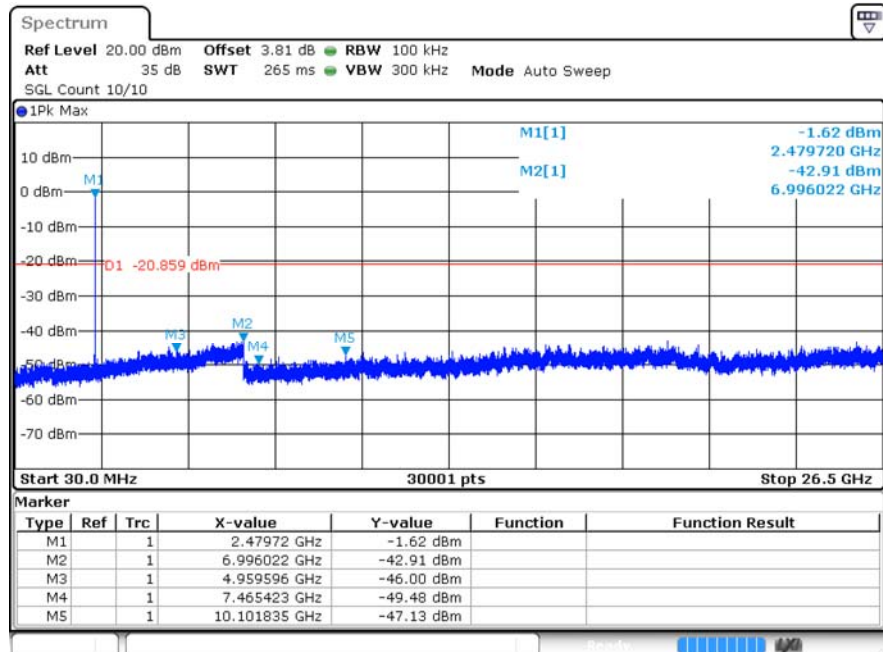


## 8DPSK\_HCH\_Graphs

Pref



Puw

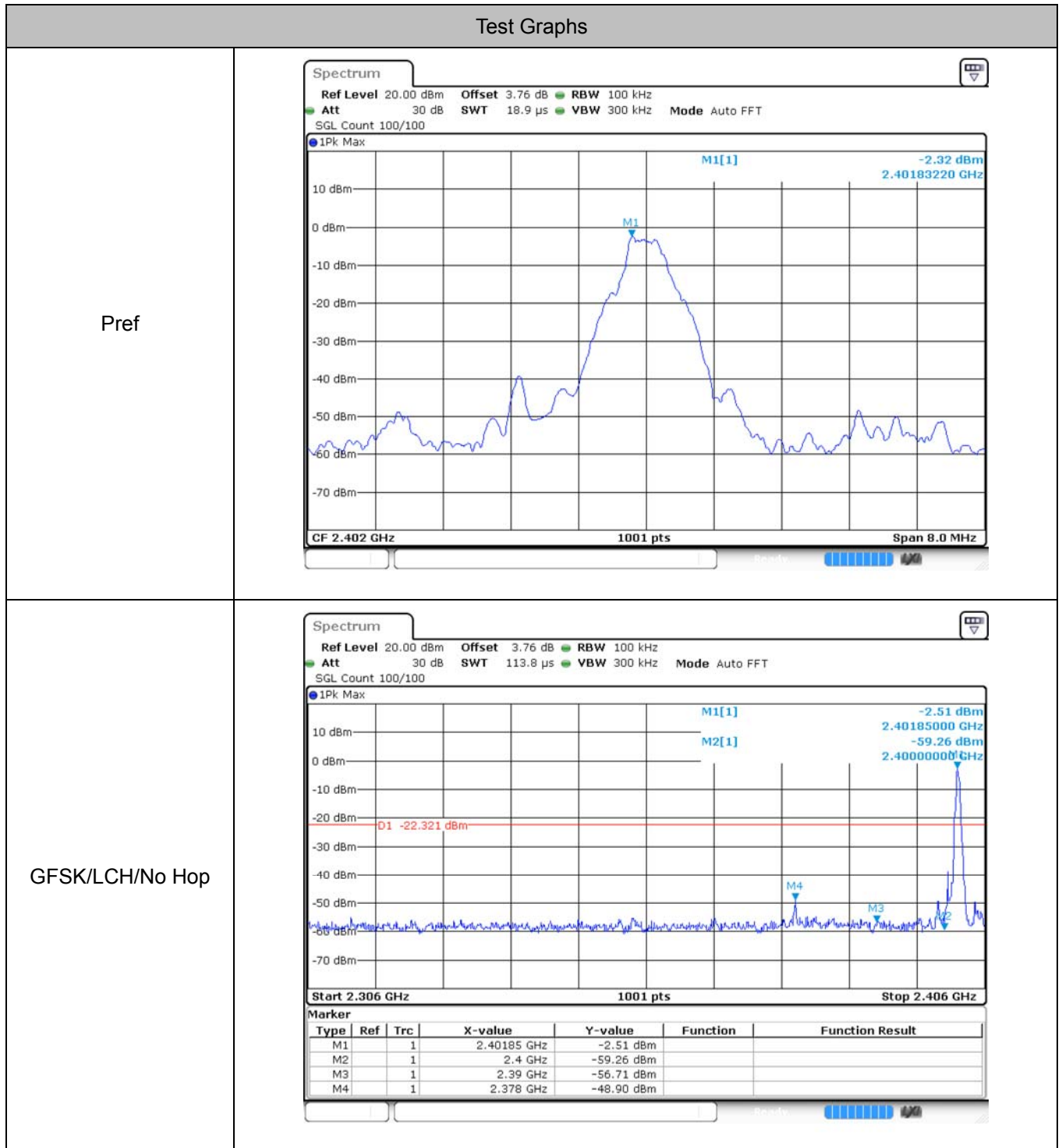


## 8 Band-edge for RF Conducted Emissions

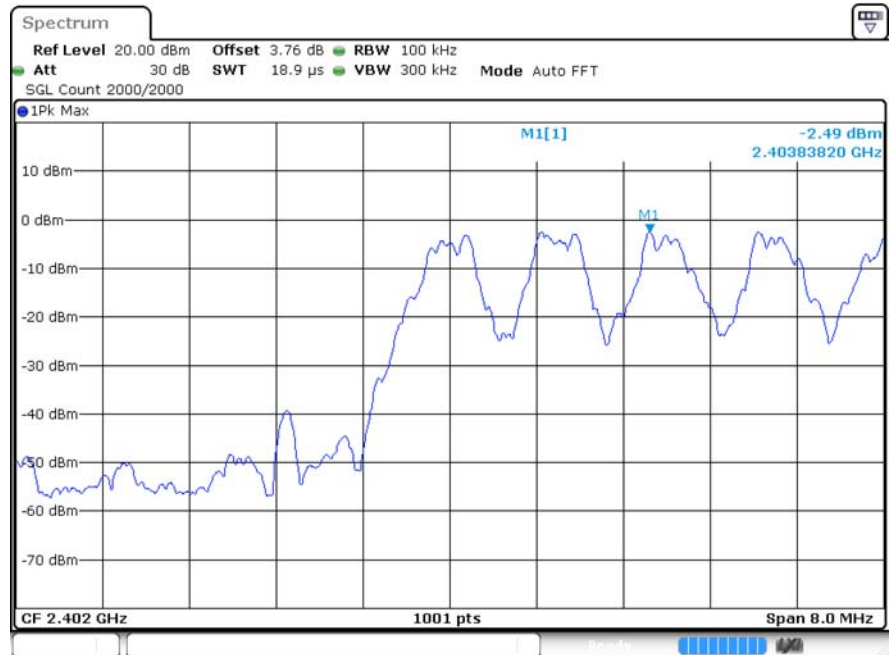
### 8.1 Test Result

| Mode          | Channel | Carrier Frequency [MHz] | Frequency Hopping | Max Spurious Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|-------------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | Off               | -46.57                   | -20         | Pass    |
|               |         |                         | On                | -47.95                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -46.01                   | -20         | Pass    |
|               |         |                         | On                | -45.61                   | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | 2402                    | Off               | -46.97                   | -20         | Pass    |
|               |         |                         | On                | -47.41                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -46.6                    | -20         | Pass    |
|               |         |                         | On                | -46.06                   | -20         | Pass    |
| 8DPSK         | LCH     | 2402                    | Off               | -48.56                   | -20         | Pass    |
|               |         |                         | On                | -47.47                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -49.21                   | -20         | Pass    |
|               |         |                         | On                | -44.95                   | -20         | Pass    |

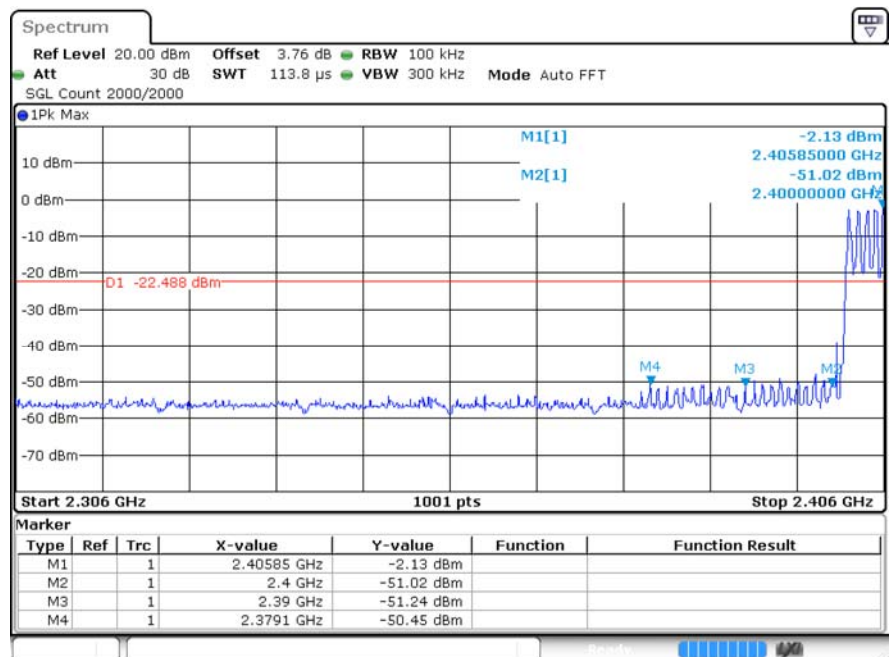
## 8.2 Test Graphs



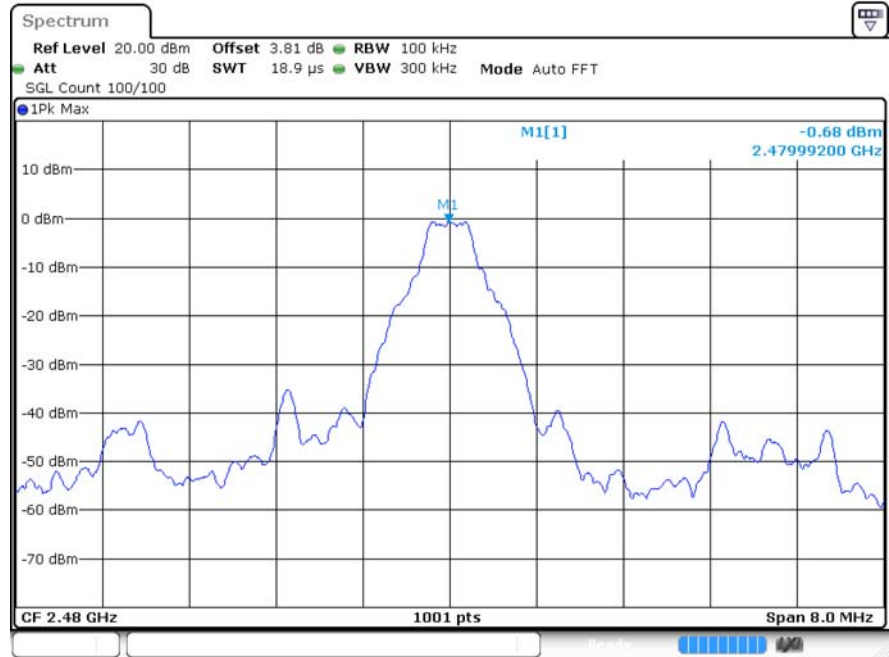
Ref



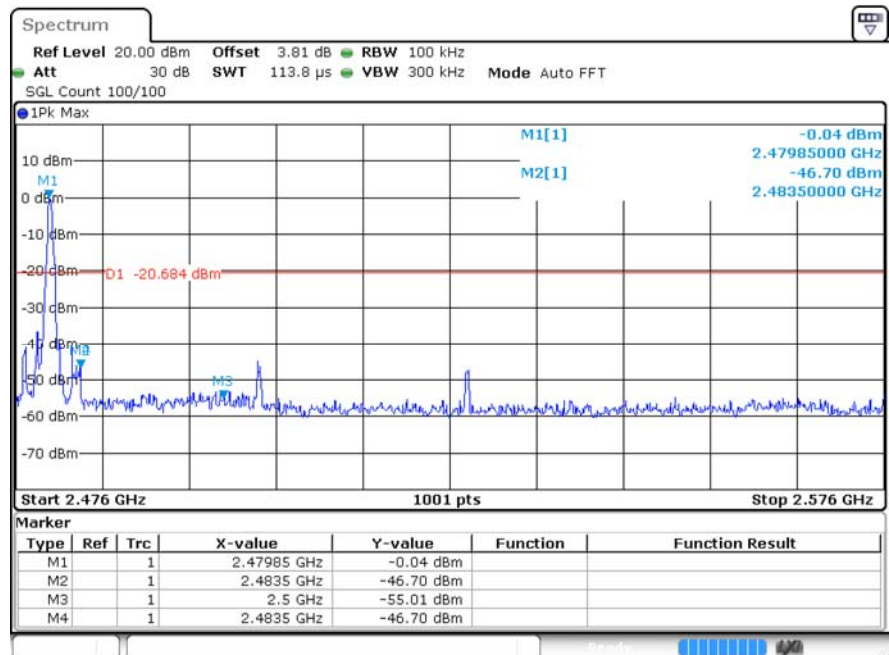
GFSK/LCH/Hop



Ref



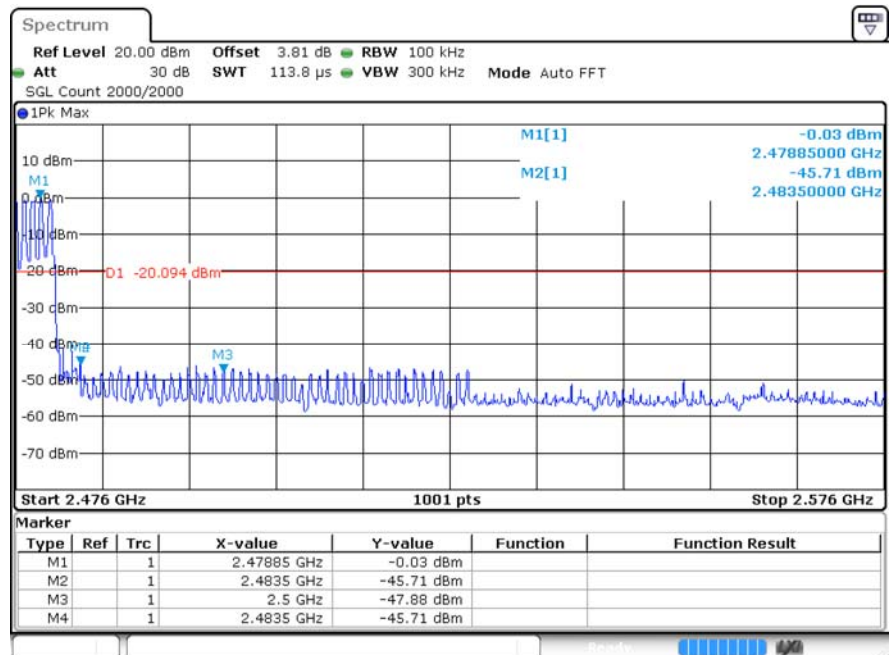
GFSK/HCH/No Hop



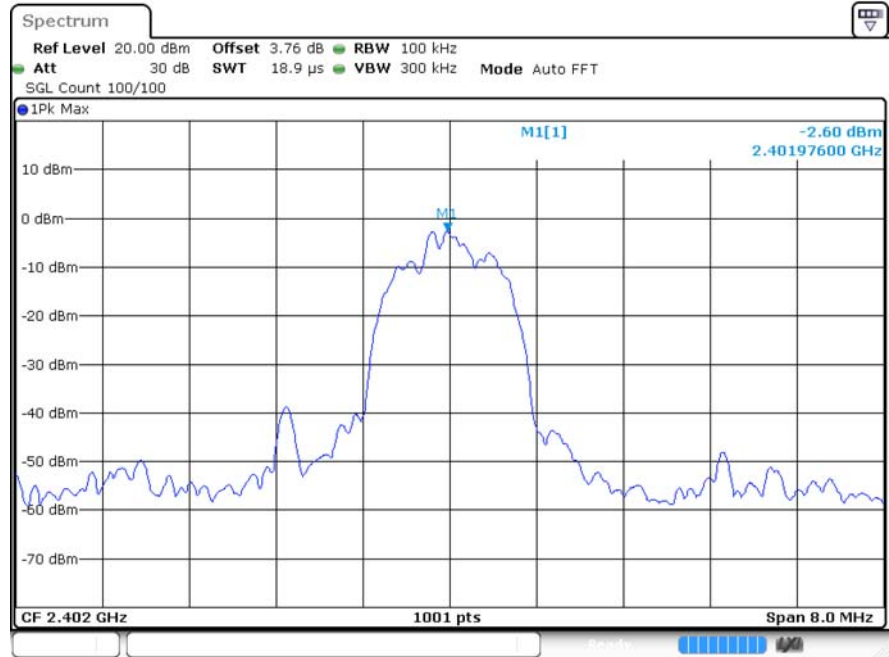
Ref.



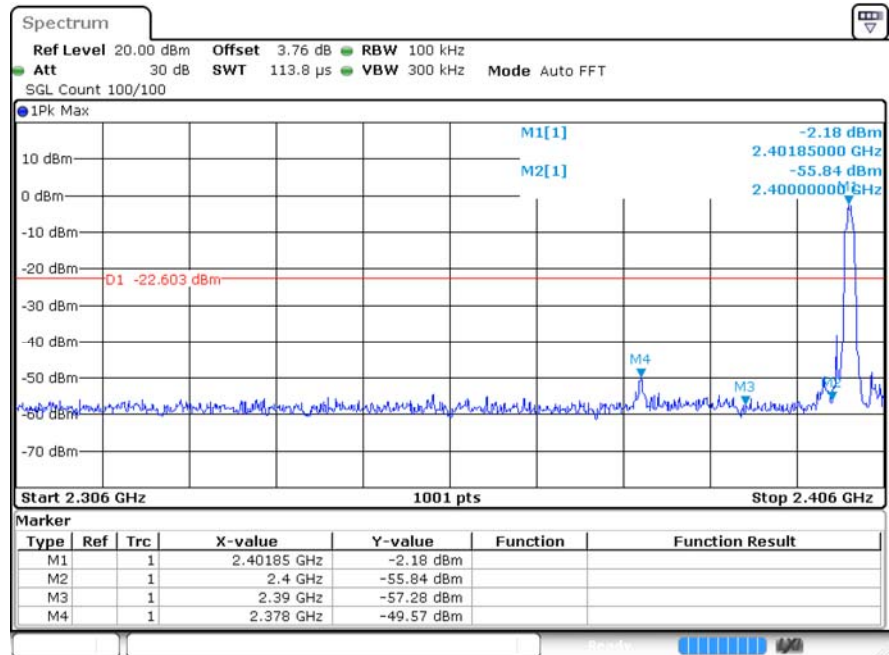
GFSK/HCH/Hop



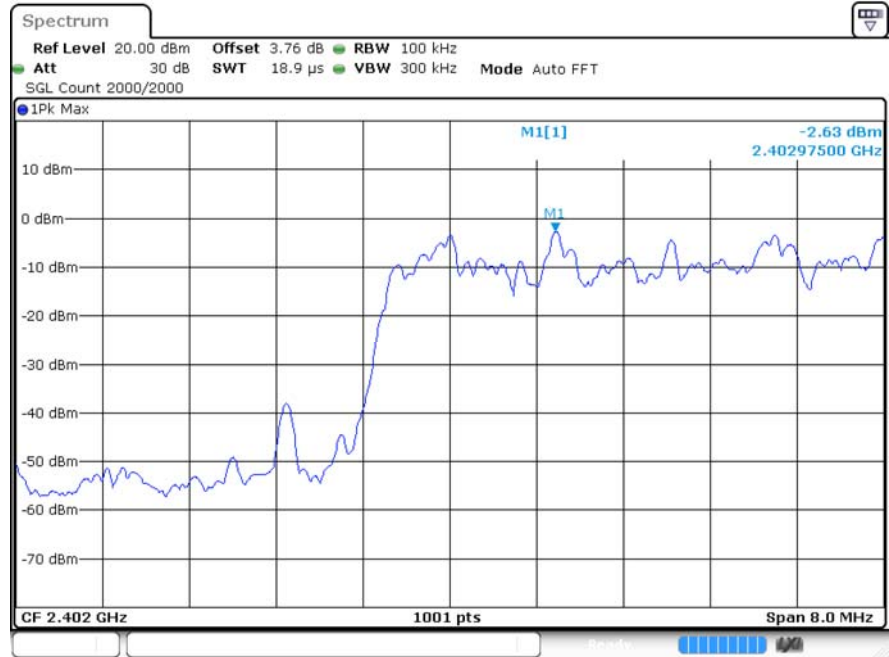
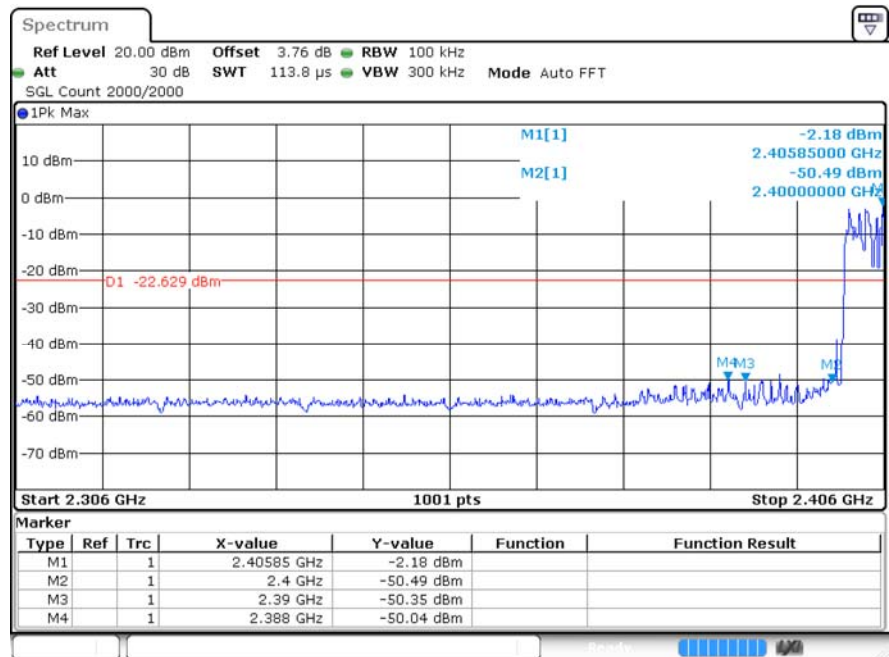
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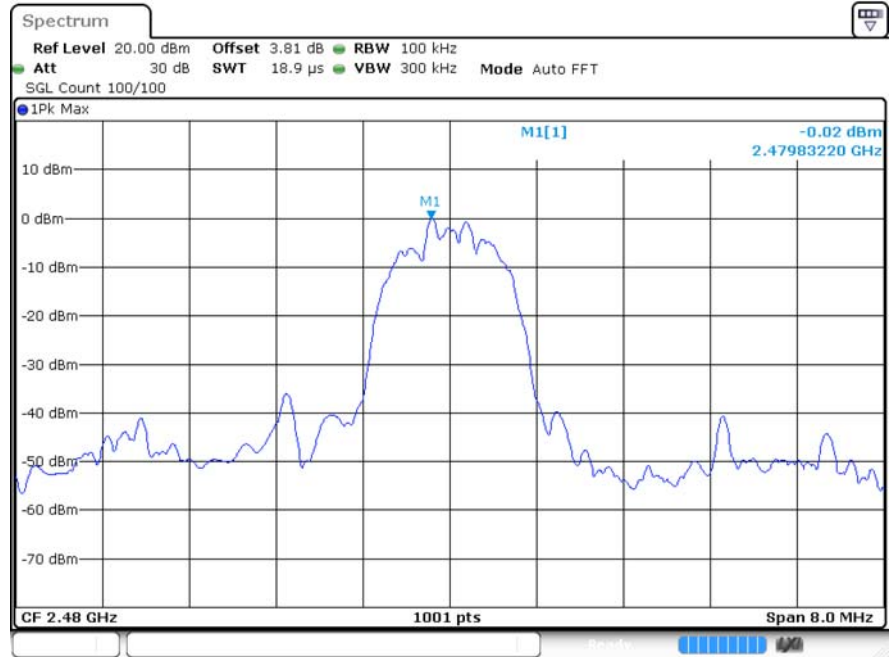
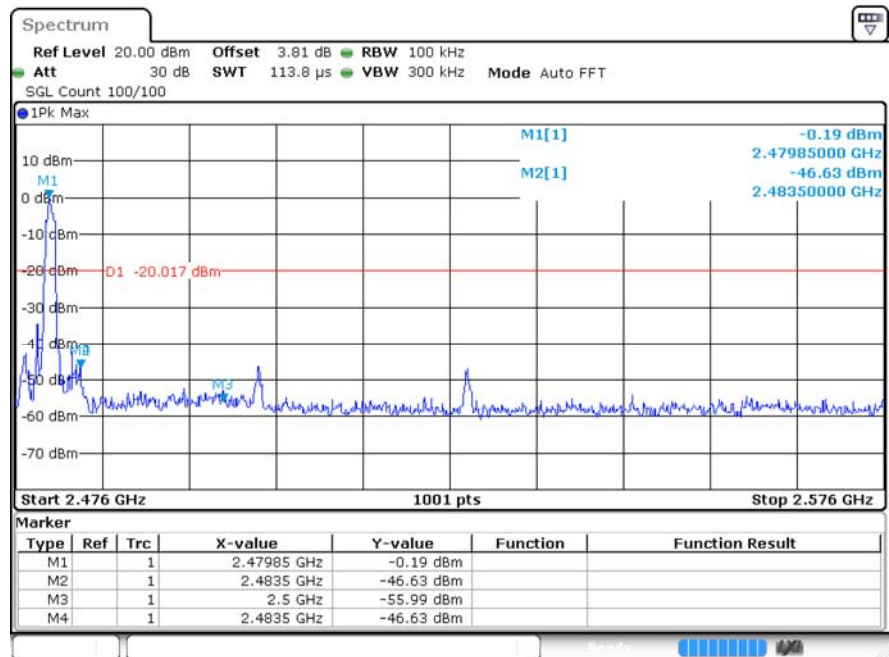
$\pi/4$ DQPSK/LCH/No  
Hop



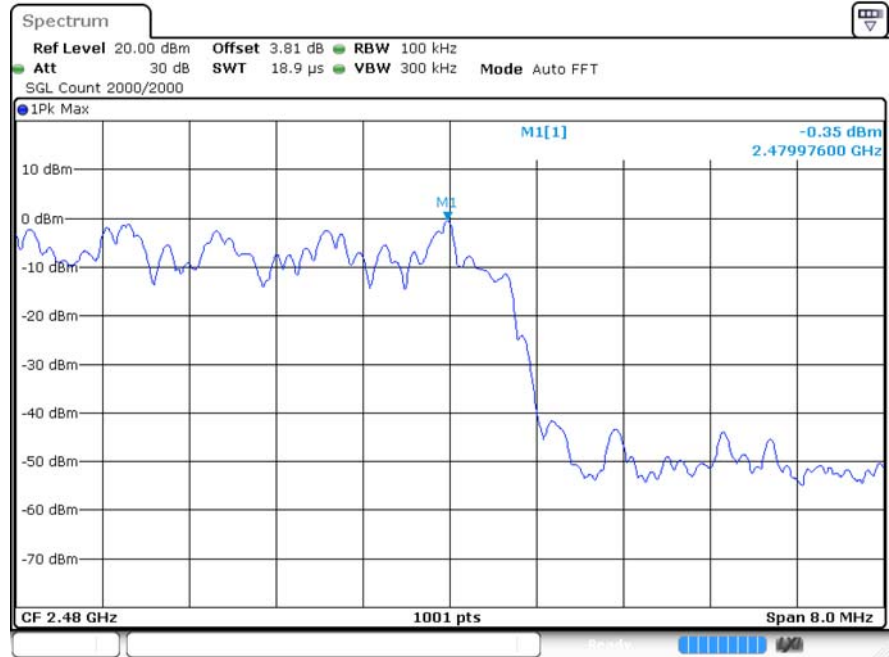
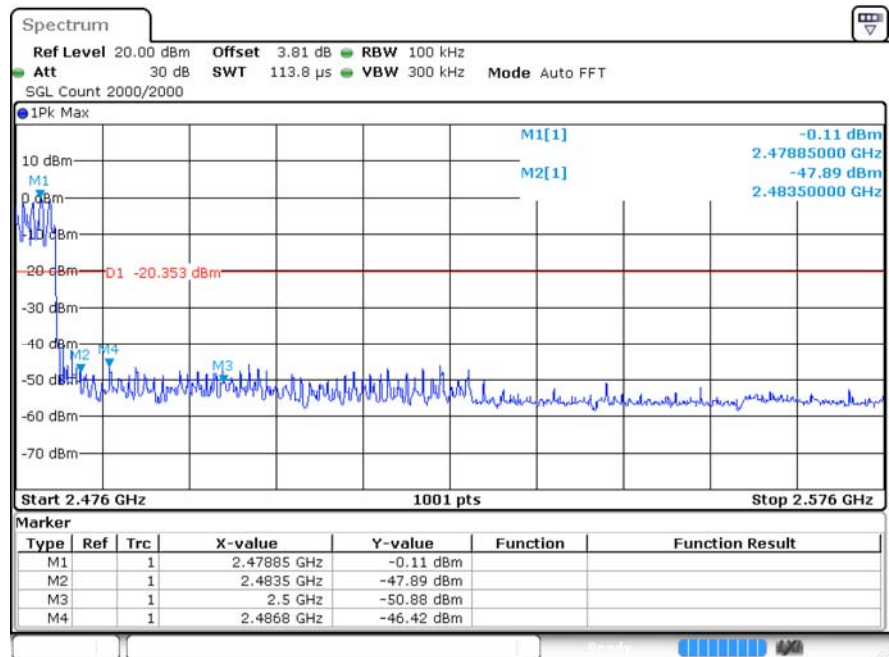
Ref


 $\pi/4$ DQPSK/LCH/Hop


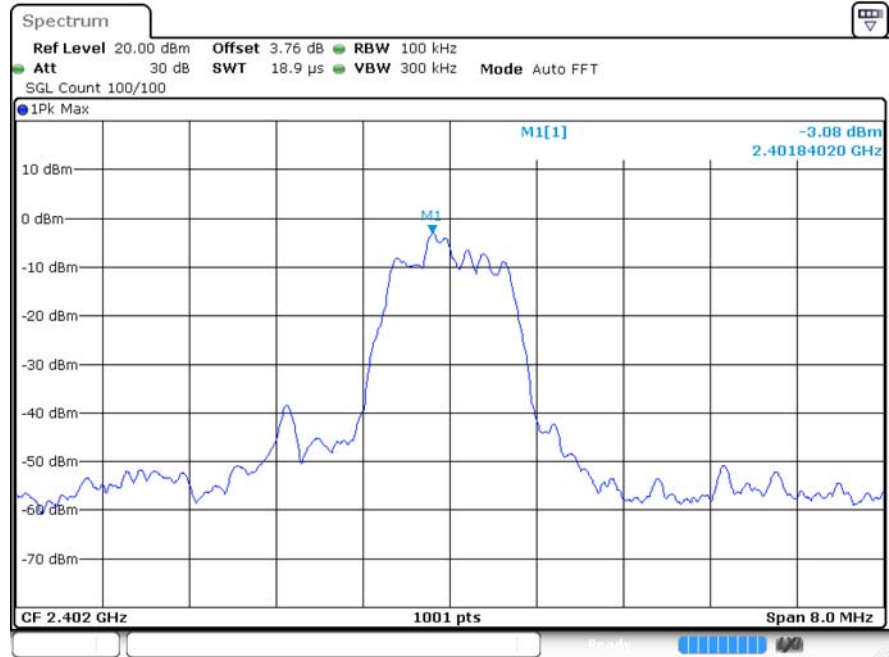
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 $\pi/4$ DQPSK/HCH/No  
Hop


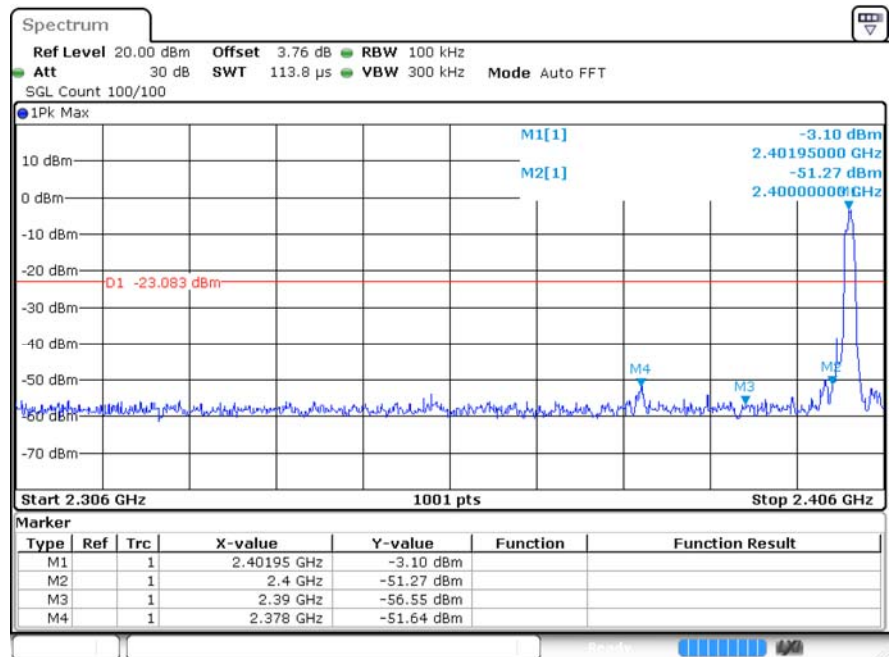
Ref


 $\pi/4$ DQPSK/HCH/Hop


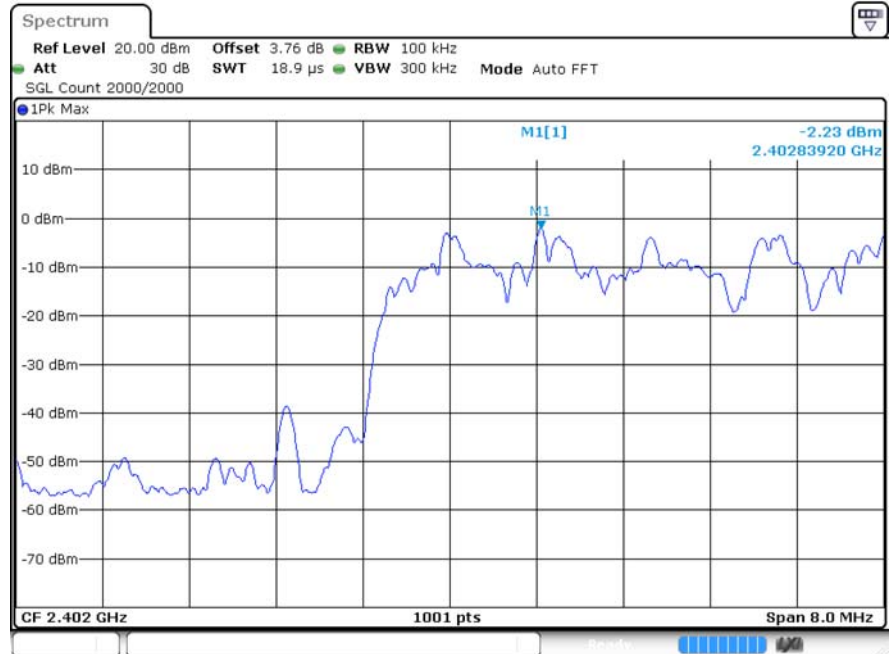
Ref



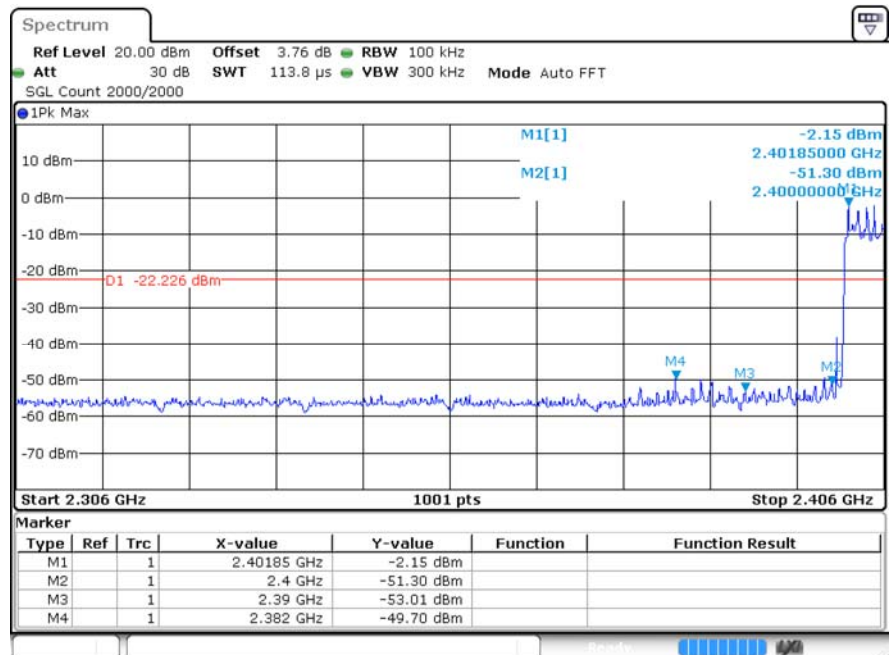
8DPSK/LCH/No Hop



Ref



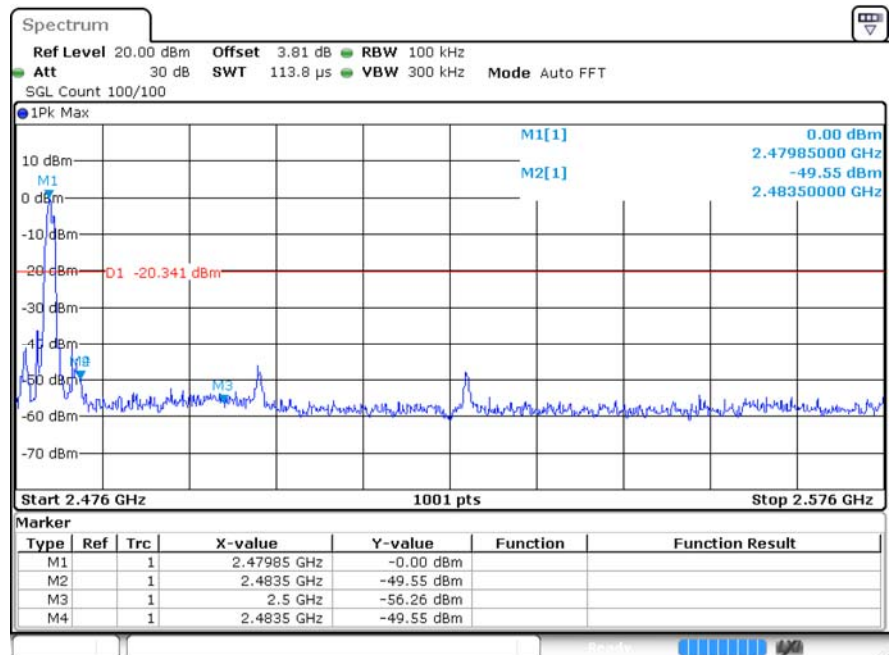
8DPSK/LCH/Hop



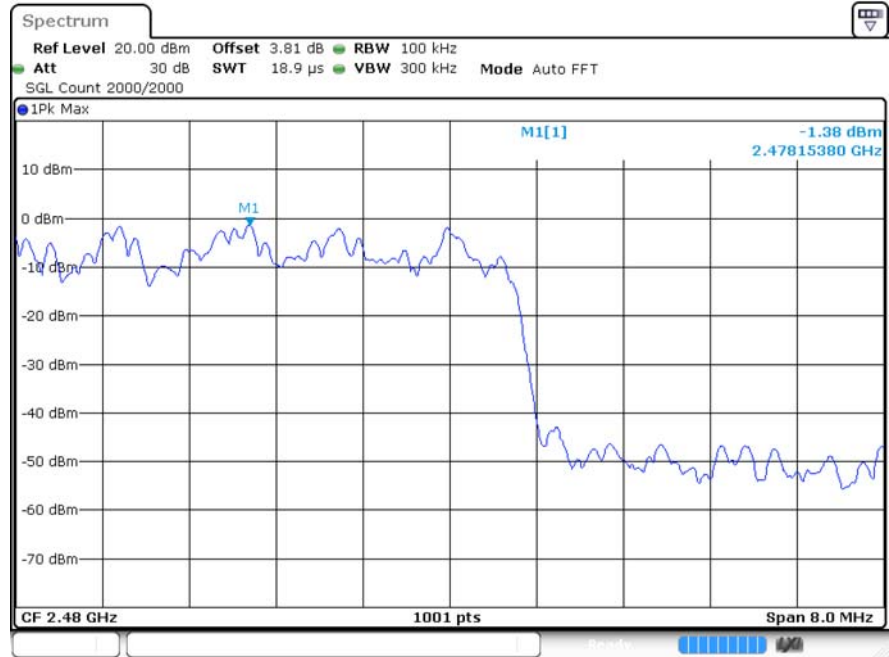
Ref



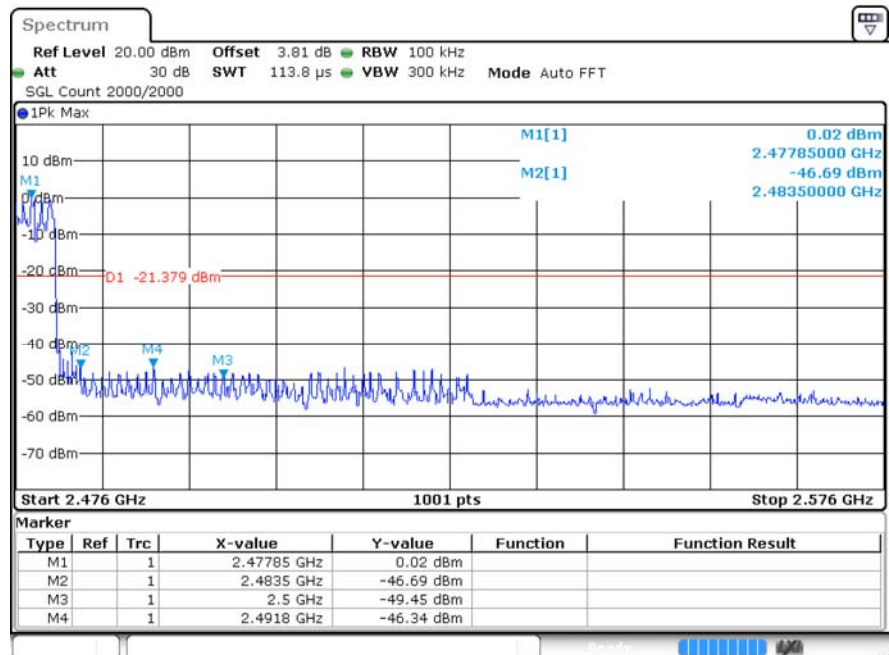
8DPSK/HCH/No Hop



Ref



8DPSK/HCH/Hop



## 9 Restrict-band band-edge measurements

### 9.1 Test Result

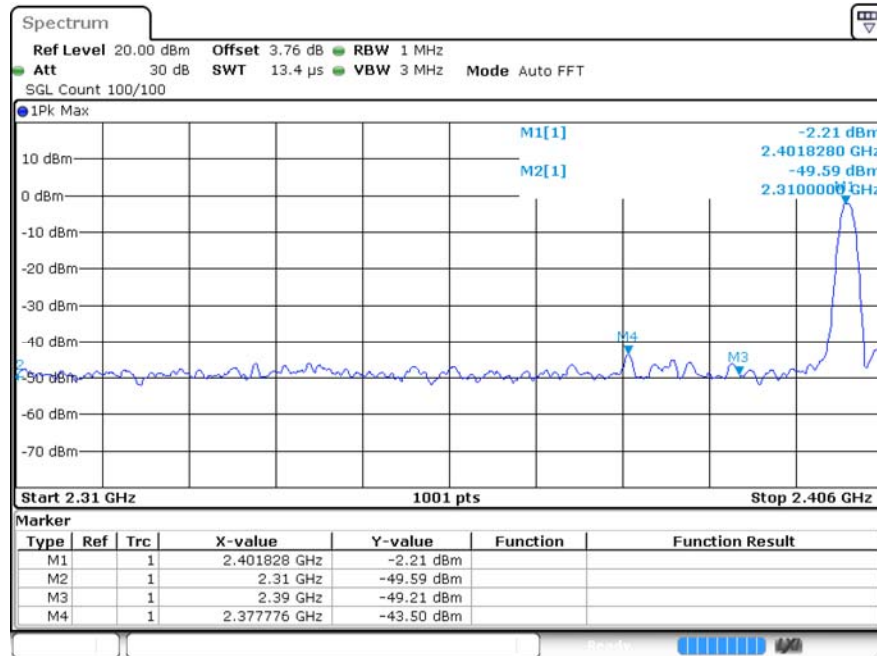
| Test Mode     | Hopping | Freq.    | Power [dBm] | Gain | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|----------|-------------|------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0   | -49.58      | 2    | 47.68      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -57.25      | 2    | 40.01      | AV       | 54             | Pass    |
|               | Off     | 2377.776 | -43.5       | 2    | 53.76      | PEAK     | 74             | Pass    |
|               | Off     | 2377.968 | -50.78      | 2    | 46.48      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -49.21      | 2    | 48.05      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -55.74      | 2    | 41.52      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -40.98      | 2    | 56.28      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -46.56      | 2    | 50.7       | AV       | 54             | Pass    |
|               | Off     | 2483.512 | -40.98      | 2    | 56.28      | PEAK     | 74             | Pass    |
|               | Off     | 2483.512 | -46.56      | 2    | 50.7       | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -42.39      | 2    | 54.87      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -53.52      | 2    | 43.74      | AV       | 54             | Pass    |
| $\pi/4$ DQPSK | Off     | 2310.0   | -47.71      | 2    | 49.55      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -57.15      | 2    | 40.11      | AV       | 54             | Pass    |
|               | Off     | 2342.64  | -45.07      | 2    | 52.19      | PEAK     | 74             | Pass    |
|               | Off     | 2377.968 | -51.63      | 2    | 45.63      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -48.09      | 2    | 49.17      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -55.76      | 2    | 41.5       | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -43.44      | 2    | 53.82      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -49.04      | 2    | 48.22      | AV       | 54             | Pass    |
|               | Off     | 2483.512 | -43.44      | 2    | 53.82      | PEAK     | 74             | Pass    |
|               | Off     | 2483.512 | -49.04      | 2    | 48.22      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -46.69      | 2    | 50.57      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -53.34      | 2    | 43.92      | AV       | 54             | Pass    |
| 8DPSK         | Off     | 2310.0   | -48.47      | 2    | 48.79      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -57.31      | 2    | 39.95      | AV       | 54             | Pass    |
|               | Off     | 2346.768 | -45.58      | 2    | 51.68      | PEAK     | 74             | Pass    |
|               | Off     | 2377.968 | -51.28      | 2    | 45.98      | AV       | 54             | Pass    |



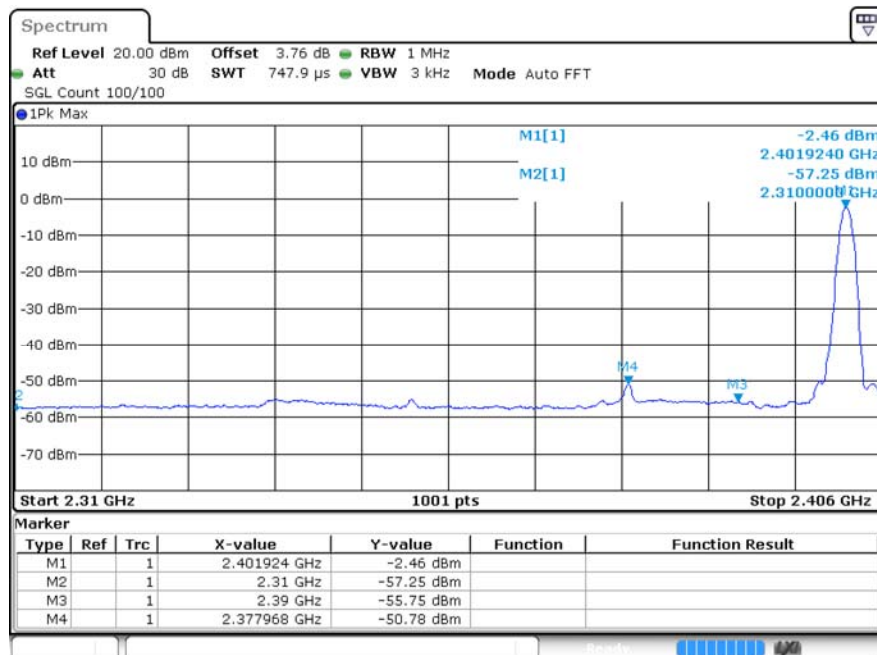
|  |     |          |        |   |       |      |    |      |
|--|-----|----------|--------|---|-------|------|----|------|
|  | Off | 2390.0   | -48.26 | 2 | 49    | PEAK | 74 | Pass |
|  | Off | 2390.0   | -55.56 | 2 | 41.7  | AV   | 54 | Pass |
|  | Off | 2483.5   | -41.01 | 2 | 56.25 | PEAK | 74 | Pass |
|  | Off | 2483.5   | -48.32 | 2 | 48.94 | AV   | 54 | Pass |
|  | Off | 2483.608 | -40.9  | 2 | 56.36 | PEAK | 74 | Pass |
|  | Off | 2483.512 | -48.32 | 2 | 48.94 | AV   | 54 | Pass |
|  | Off | 2500.0   | -45.96 | 2 | 51.3  | PEAK | 74 | Pass |
|  | Off | 2500.0   | -53.34 | 2 | 43.92 | AV   | 54 | Pass |

## 9.2 Test Graphs

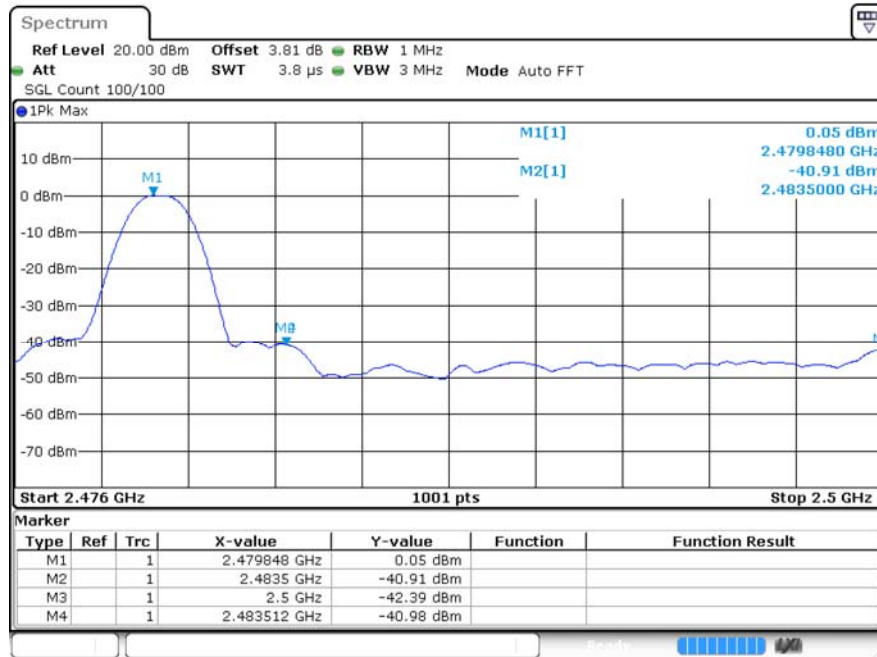
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (Low Channel)



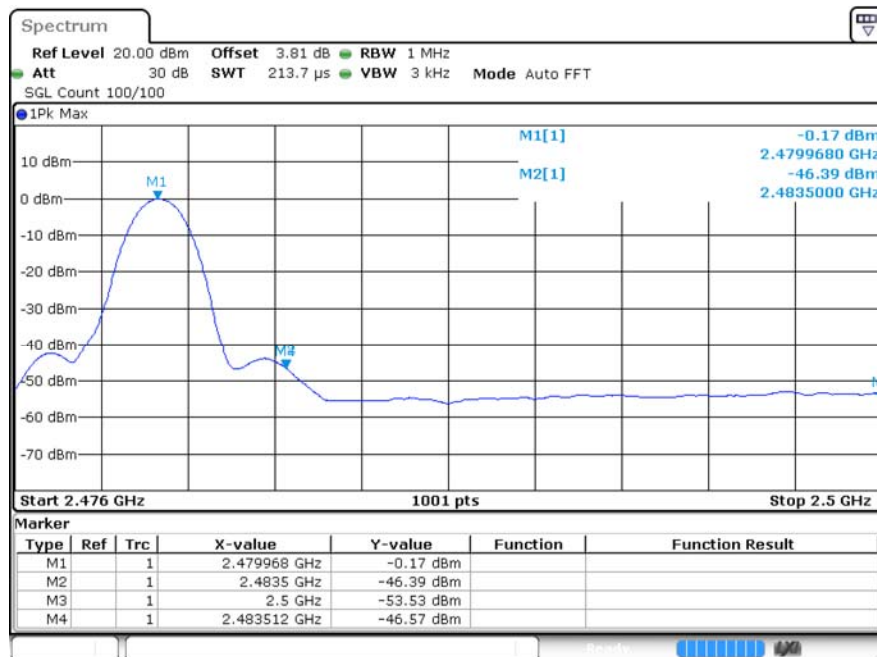
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (Low Channel)



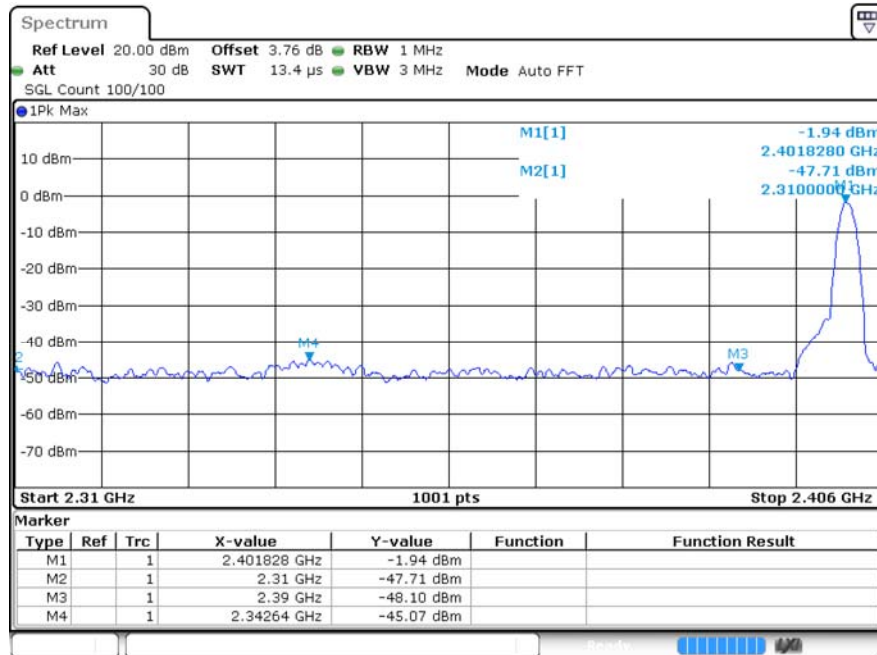
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (High Channel)



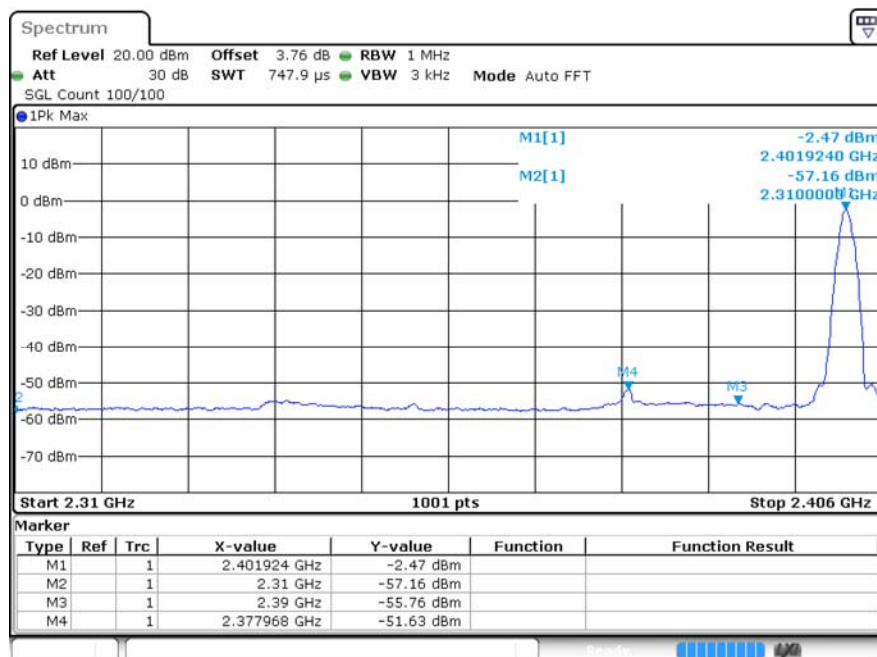
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (High Channel)



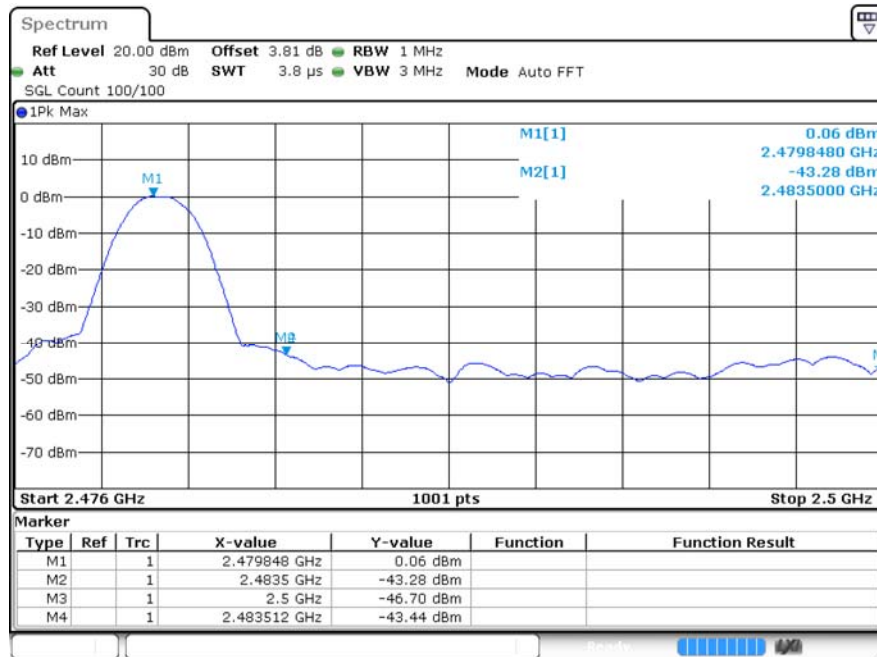
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (Low Channel)



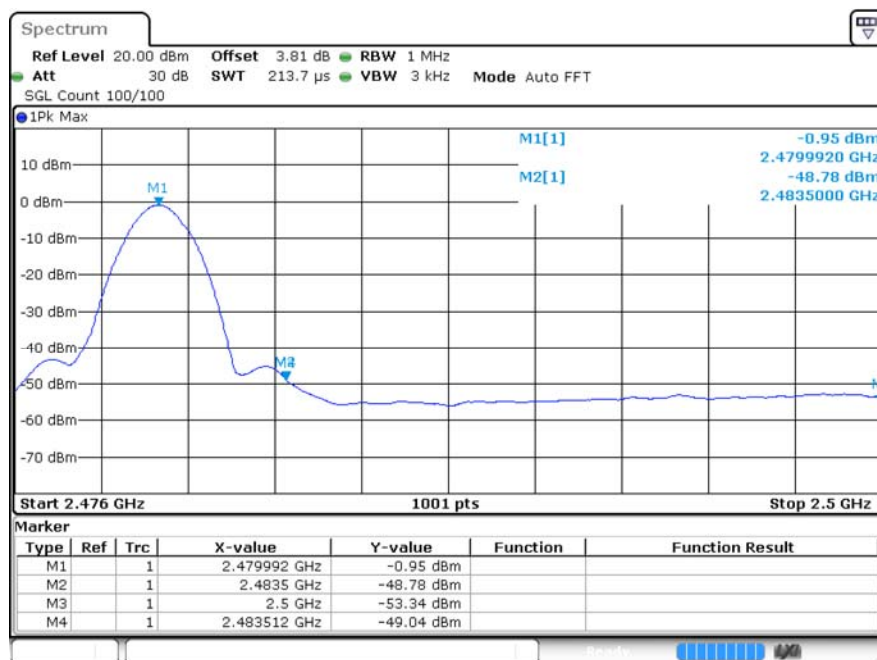
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (Low Channel)



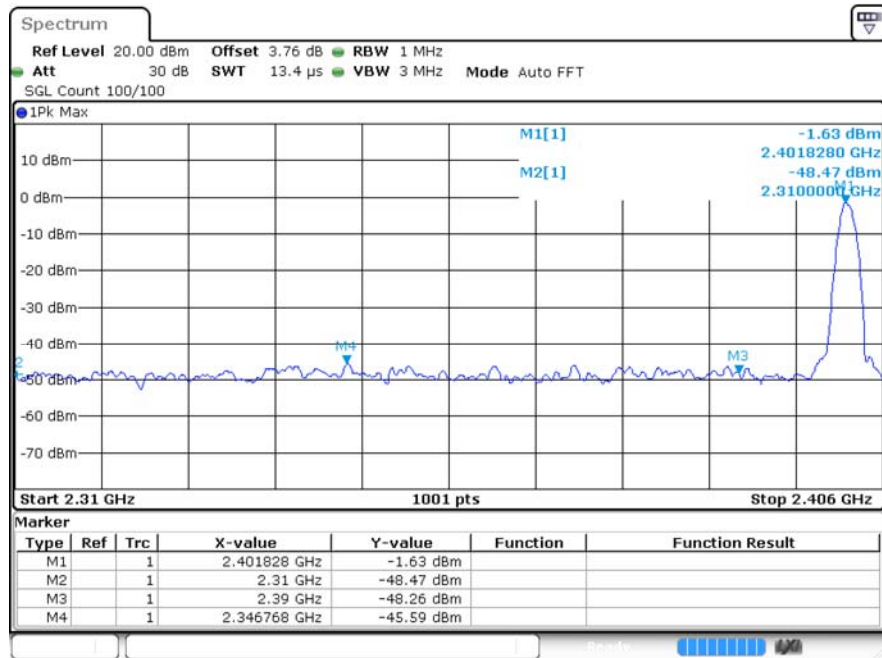
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



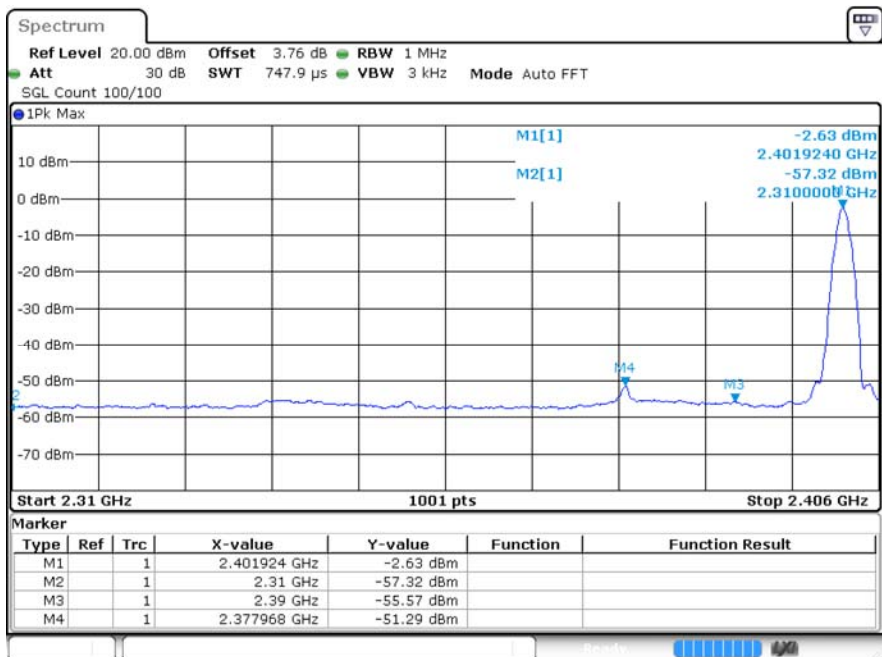
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



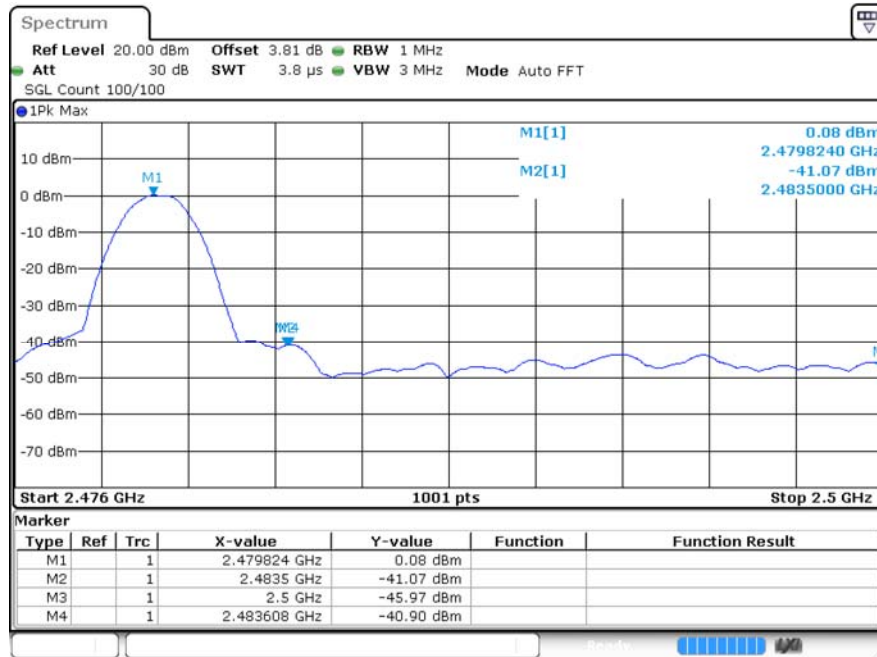
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



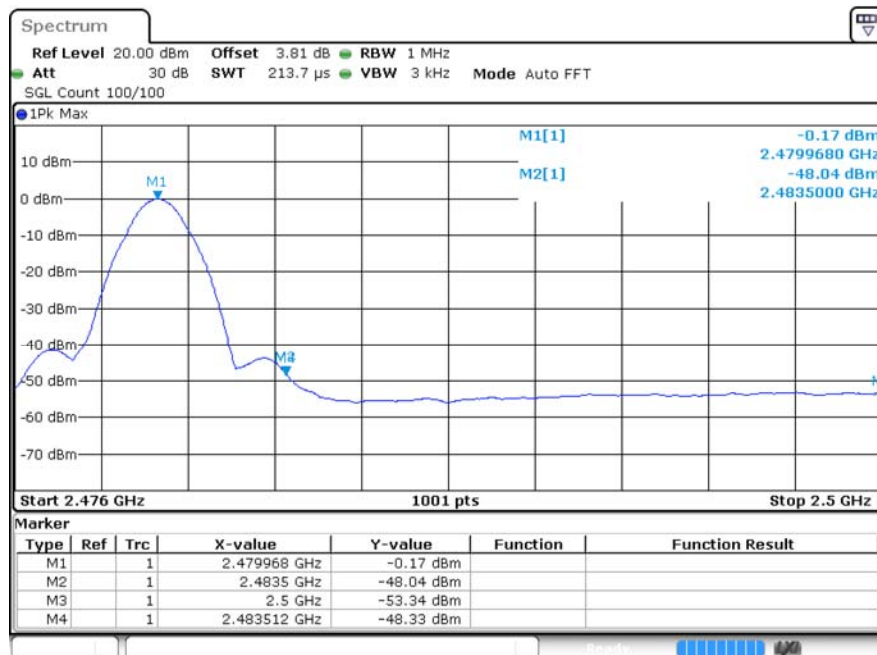
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_Average (Low Channel)



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



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



---The End---