



## Appendix A

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

Product Name: Comms Gateway

Trade Mark: Acorn Stairlifts

Test Model: T715 Comms Gateway

#### Environmental Conditions

|                    |             |
|--------------------|-------------|
| Temperature:       | 25℃         |
| Relative Humidity: | 53%         |
| ATM Pressure:      | 101Kpa      |
| Test Engineer:     | Simba Huang |
| Supervised by:     | Seal Chen   |



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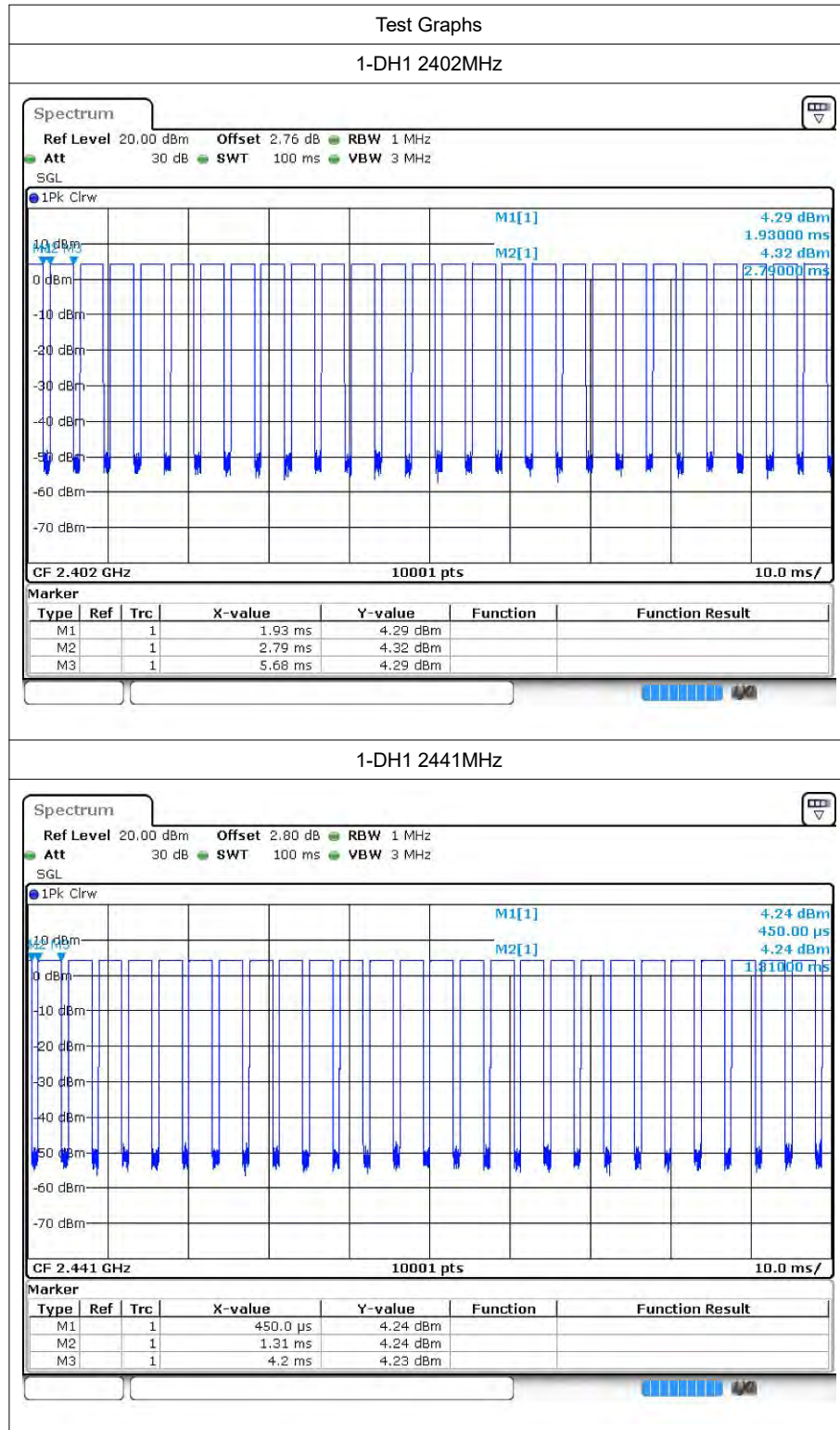
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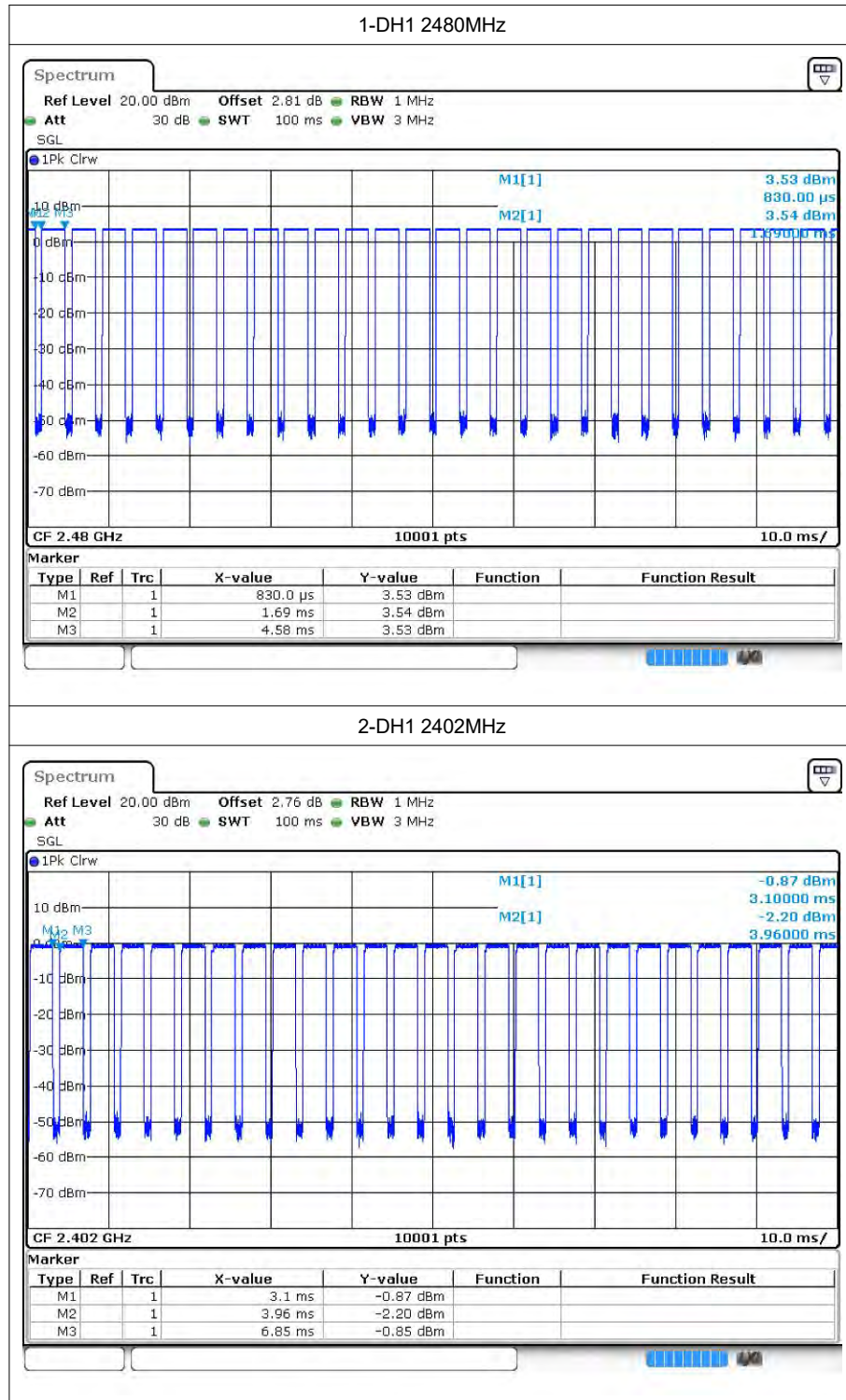
# 1 Duty Cycle

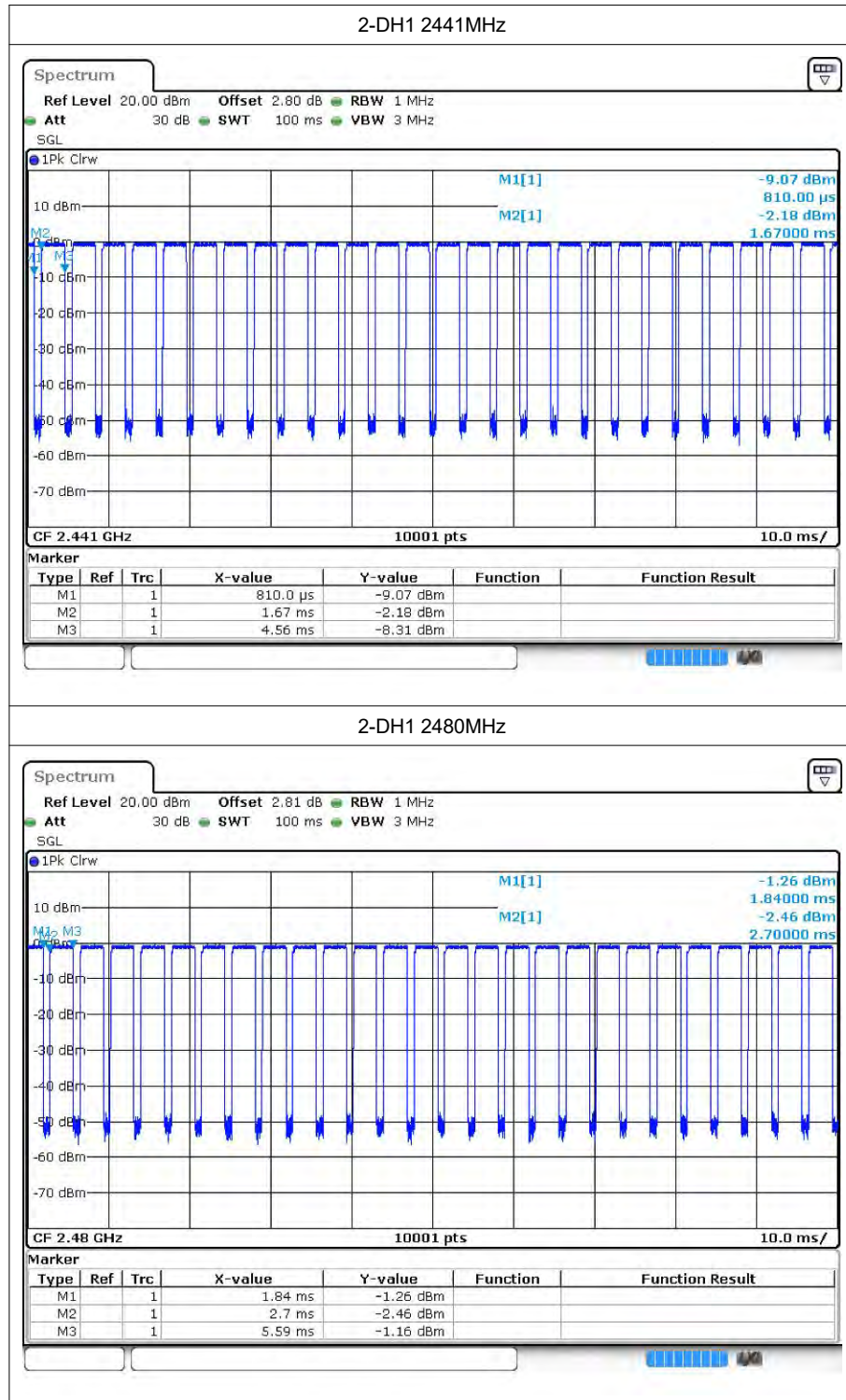
## 1.1 Test Result

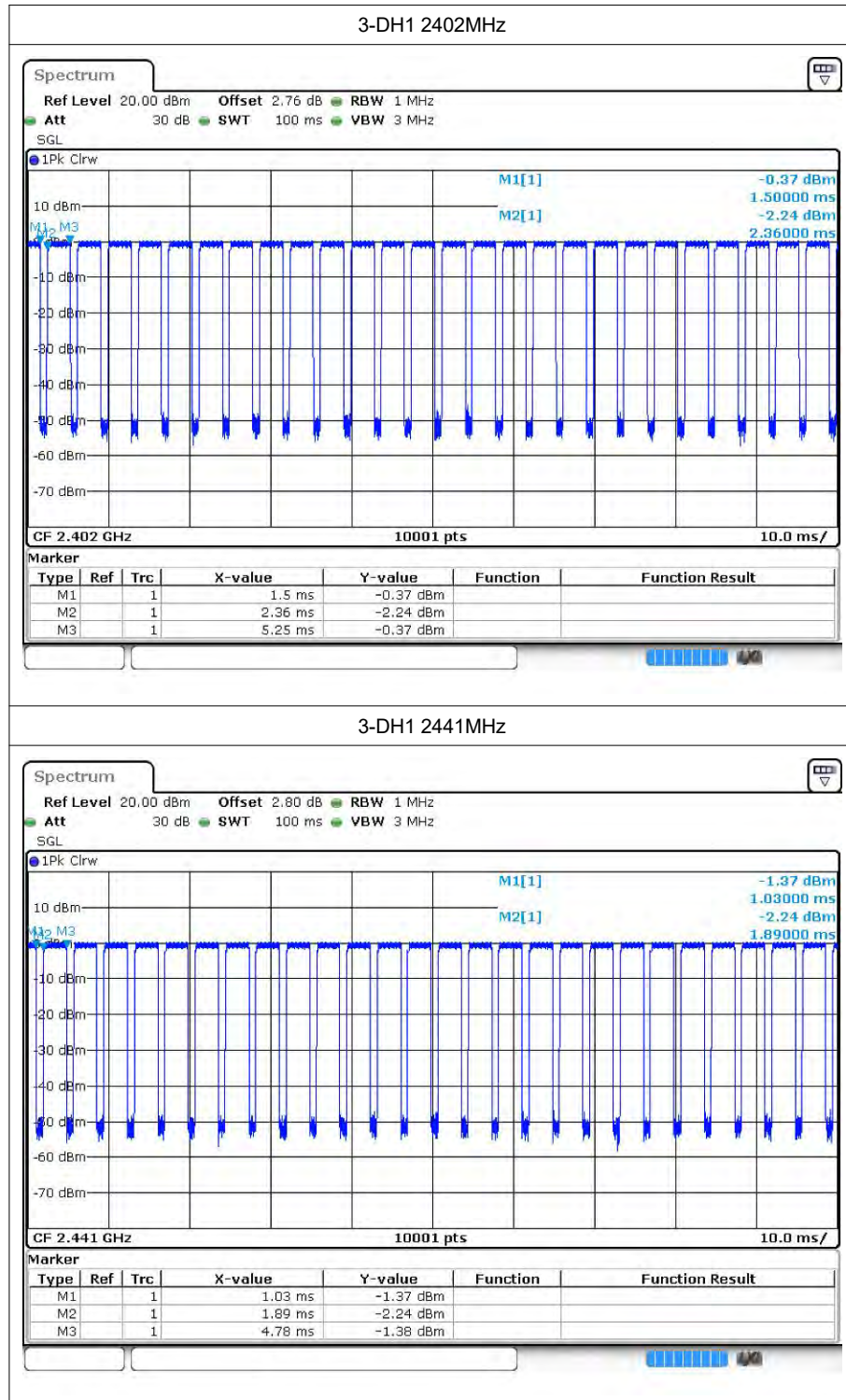
| Mode  | Frequency (MHz) | Duty Cycle (%) | 1/T (kHz) |
|-------|-----------------|----------------|-----------|
| 1-DH1 | 2402            | 77.33          | 0.35      |
| 1-DH1 | 2441            | 77.05          | 0.35      |
| 1-DH1 | 2480            | 77.05          | 0.35      |
| 2-DH1 | 2402            | 77.69          | 0.35      |
| 2-DH1 | 2441            | 77.05          | 0.35      |
| 2-DH1 | 2480            | 77.24          | 0.35      |
| 3-DH1 | 2402            | 77.05          | 0.35      |
| 3-DH1 | 2441            | 77.05          | 0.35      |
| 3-DH1 | 2480            | 77.05          | 0.35      |

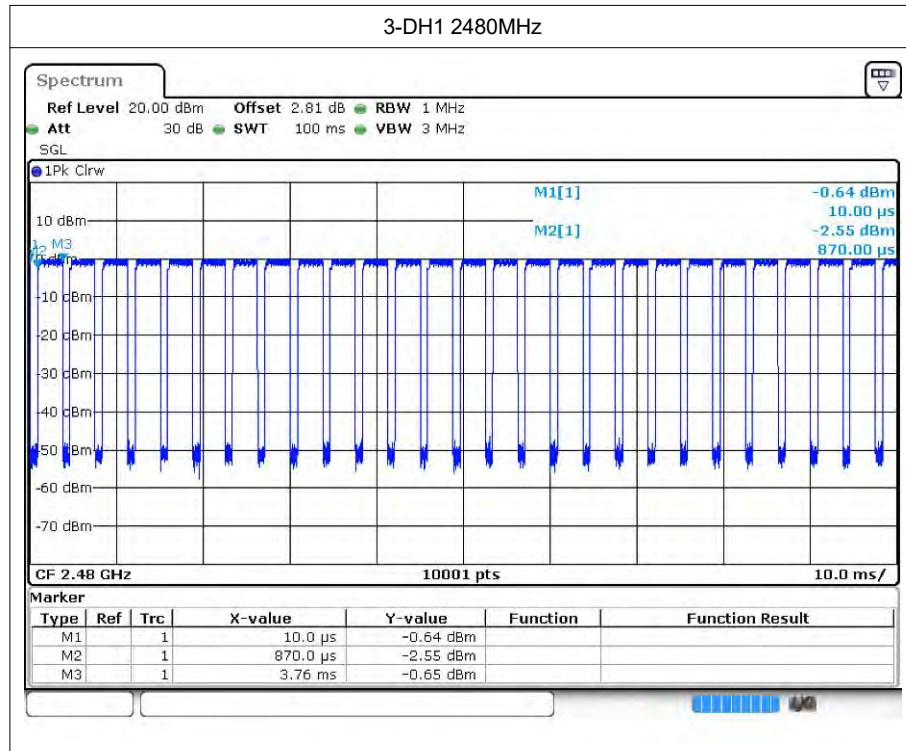
## 1.2 Test Graphs









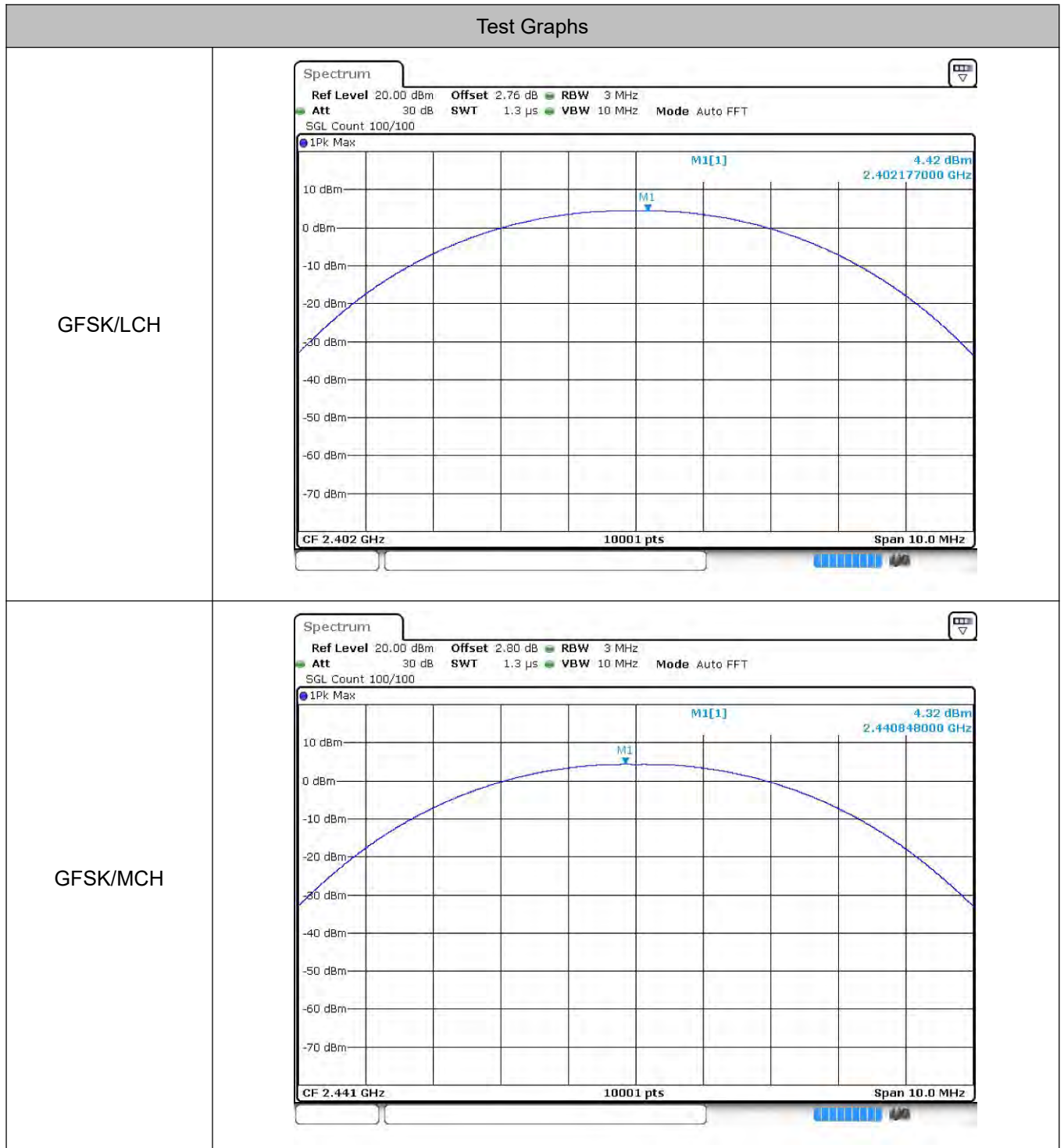


## 2 Maximum Conducted Peak Output Power

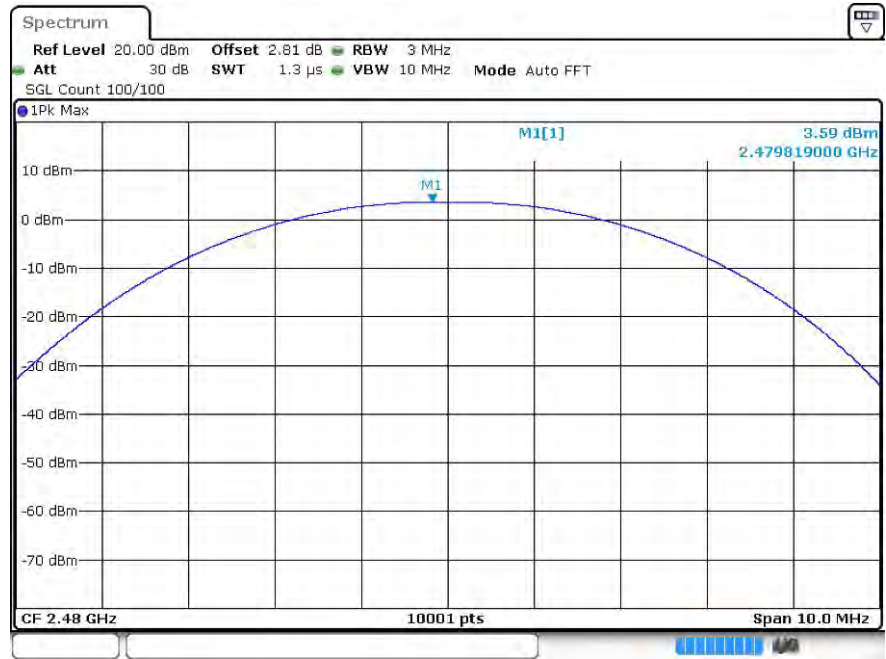
### 2.1 Test Result

| Mode          | Channel. | Maximum Peak Output Power<br>[dBm] | Limit<br>[dBm] | Verdict |
|---------------|----------|------------------------------------|----------------|---------|
| GFSK          | LCH      | 4.42                               | 21             | Pass    |
|               | MCH      | 4.32                               | 21             | Pass    |
|               | HCH      | 3.59                               | 21             | Pass    |
| $\pi/4$ DQPSK | LCH      | -0.21                              | 21             | Pass    |
|               | MCH      | -0.21                              | 21             | Pass    |
|               | HCH      | -0.37                              | 21             | Pass    |
| 8DPSK         | LCH      | 0.41                               | 21             | Pass    |
|               | MCH      | 0.06                               | 21             | Pass    |
|               | HCH      | -0.49                              | 21             | Pass    |

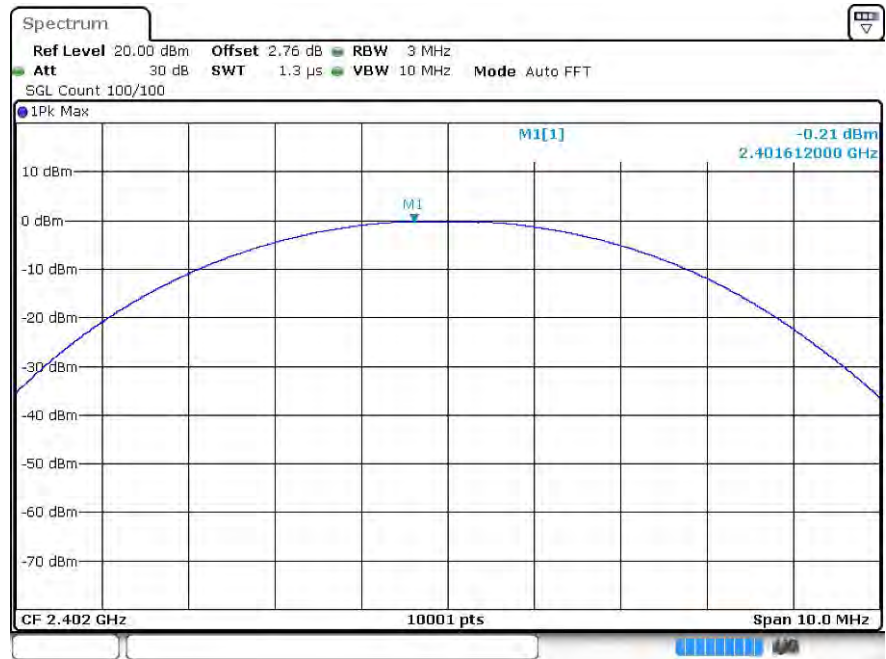
## 2.2 Test Graphs



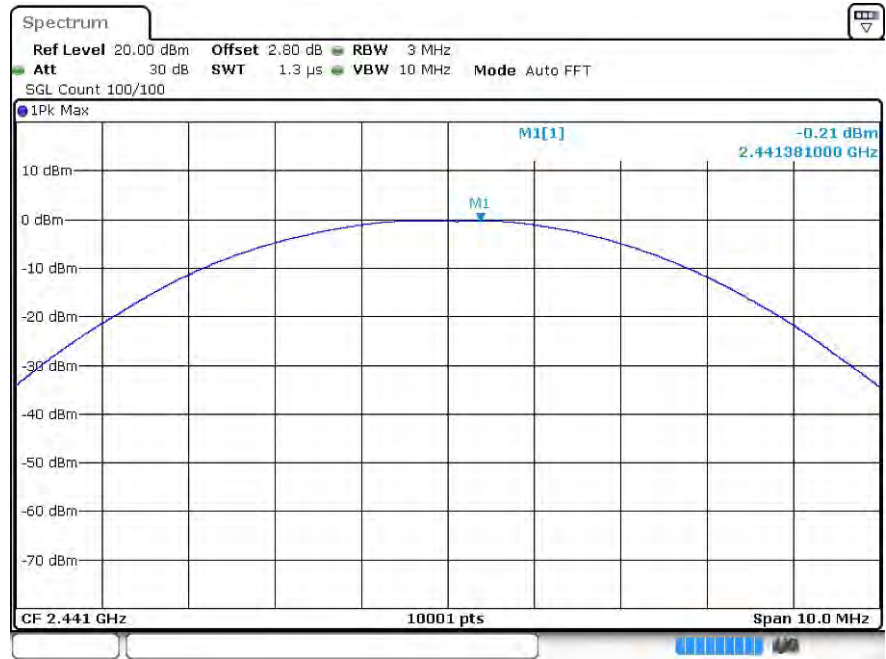
GFSK/HCH



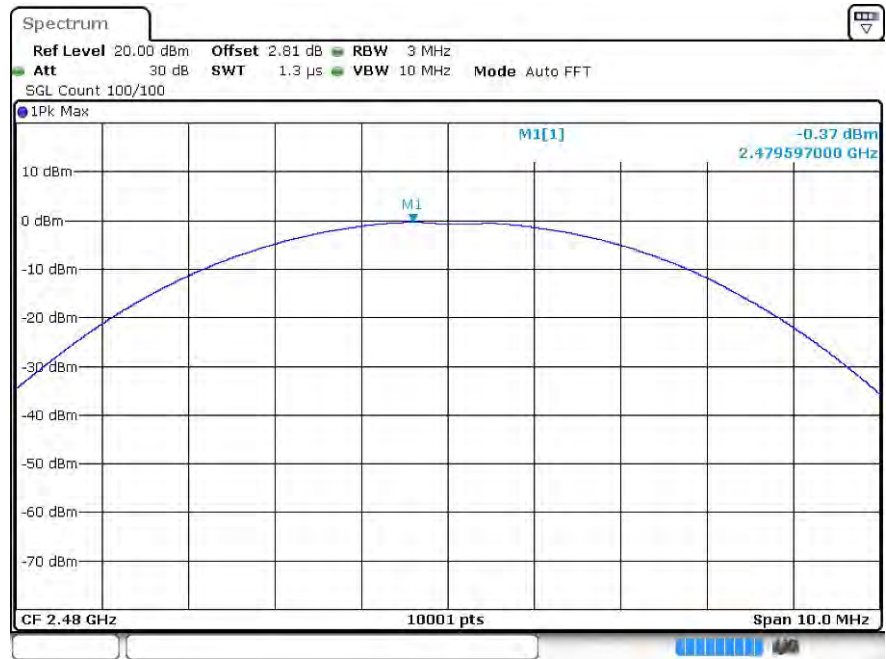
$\pi/4$ DQPSK/LCH



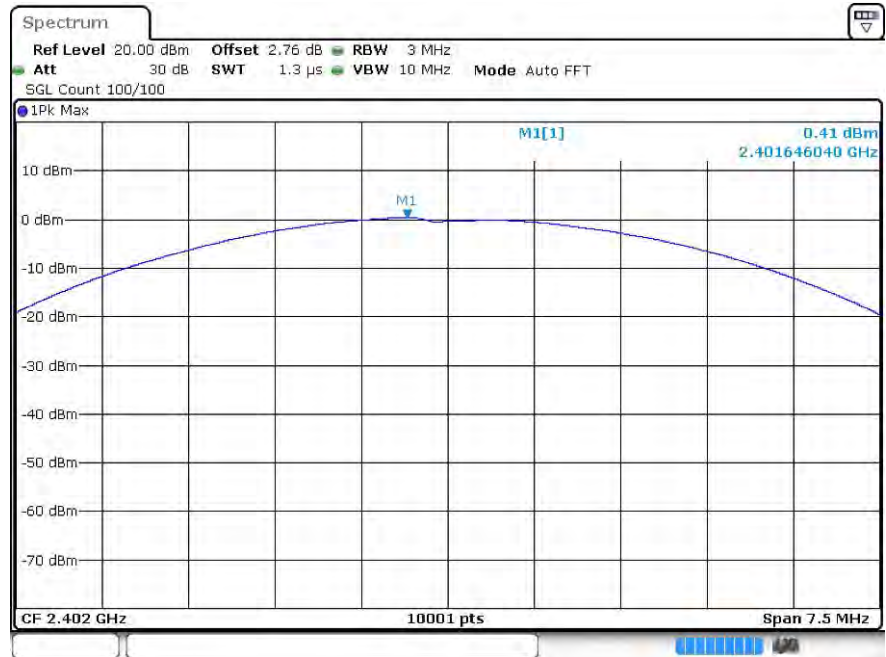
$\pi/4$ DQPSK/MCH



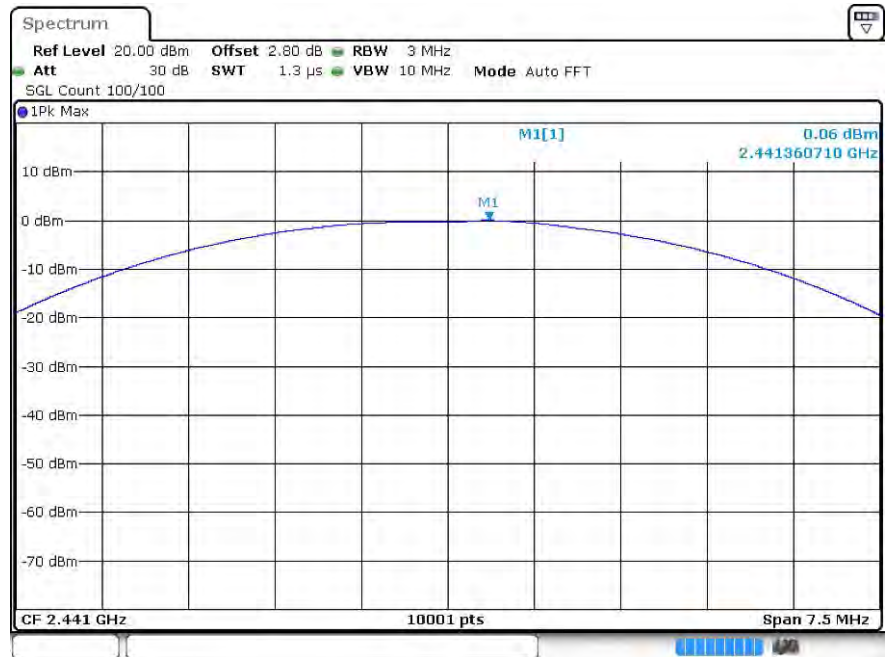
$\pi/4$ DQPSK/HCH



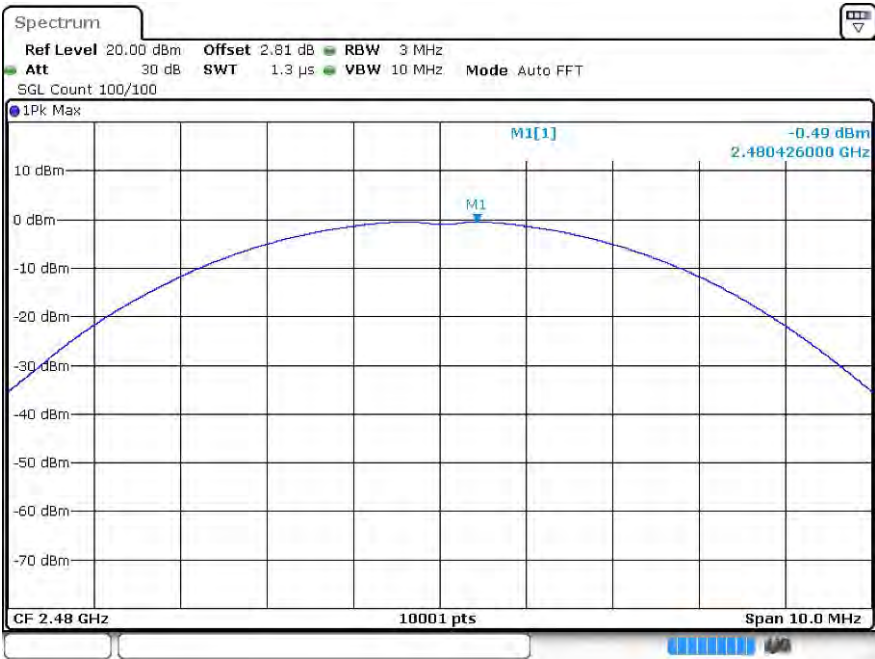
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

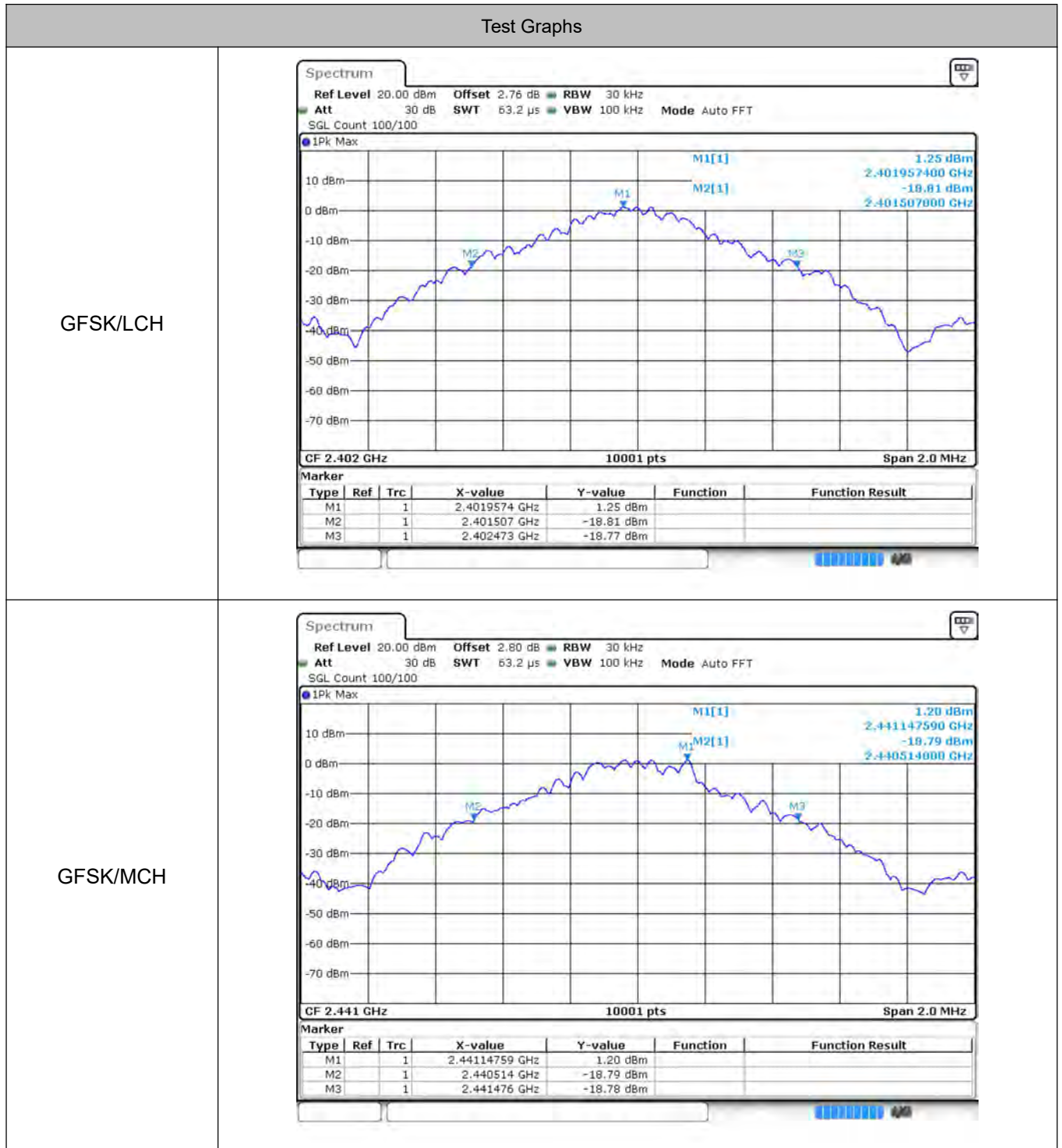


### 3 20dB Bandwidth

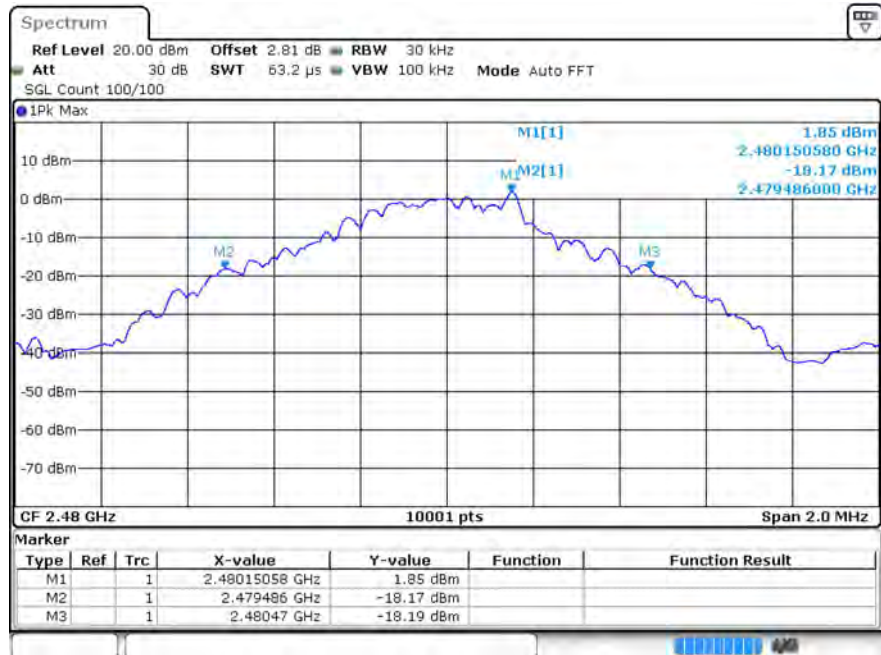
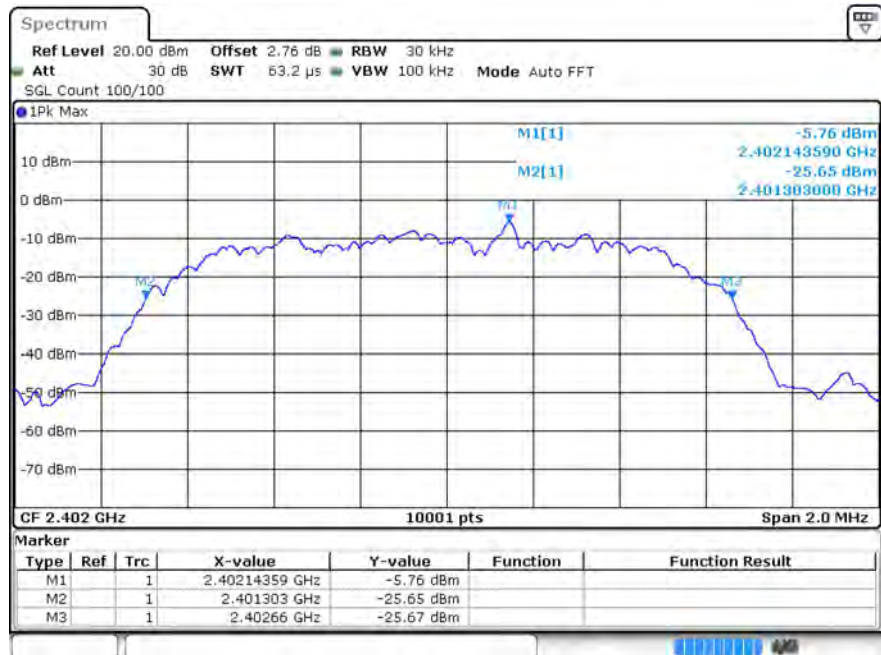
#### 3.1 Test Result

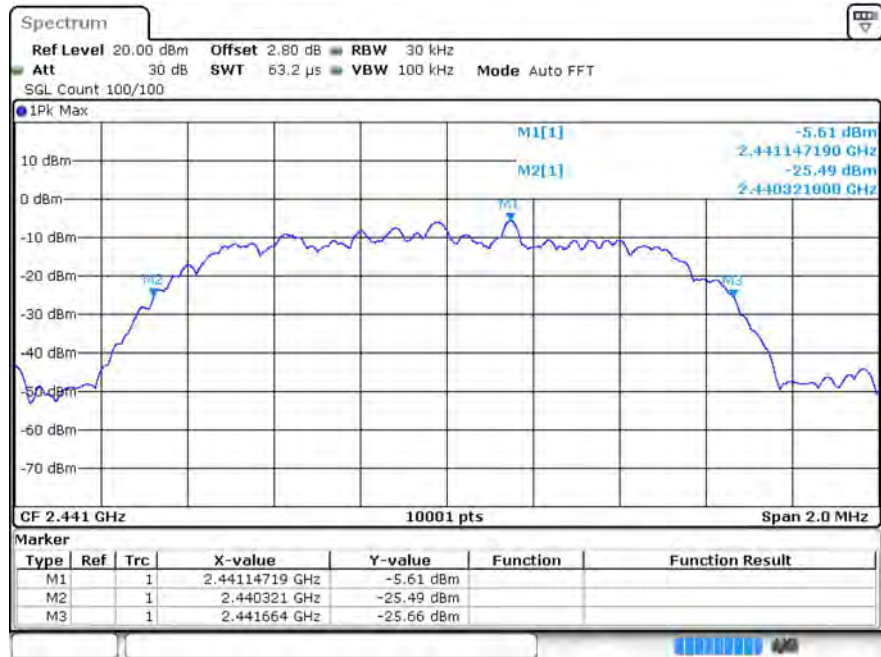
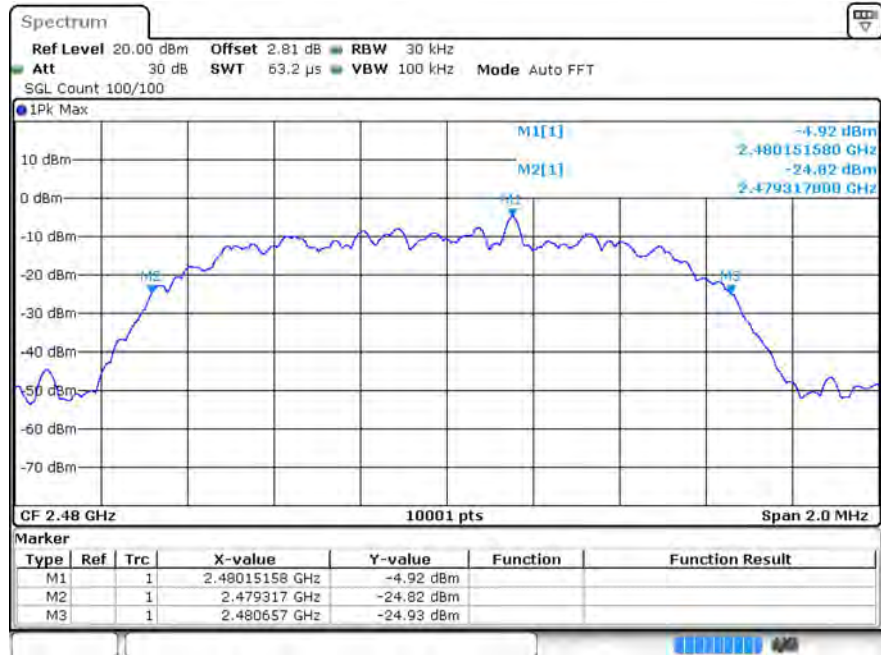
| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.965                | Not Specified | Pass    |
|               | MCH      | 0.962                | Not Specified | Pass    |
|               | HCH      | 0.984                | Not Specified | Pass    |
| $\pi/4$ DQPSK | LCH      | 1.358                | Not Specified | Pass    |
|               | MCH      | 1.343                | Not Specified | Pass    |
|               | HCH      | 1.34                 | Not Specified | Pass    |
| 8DPSK         | LCH      | 1.375                | Not Specified | Pass    |
|               | MCH      | 1.313                | Not Specified | Pass    |
|               | HCH      | 1.354                | Not Specified | Pass    |

## 3.2 Test Graphs

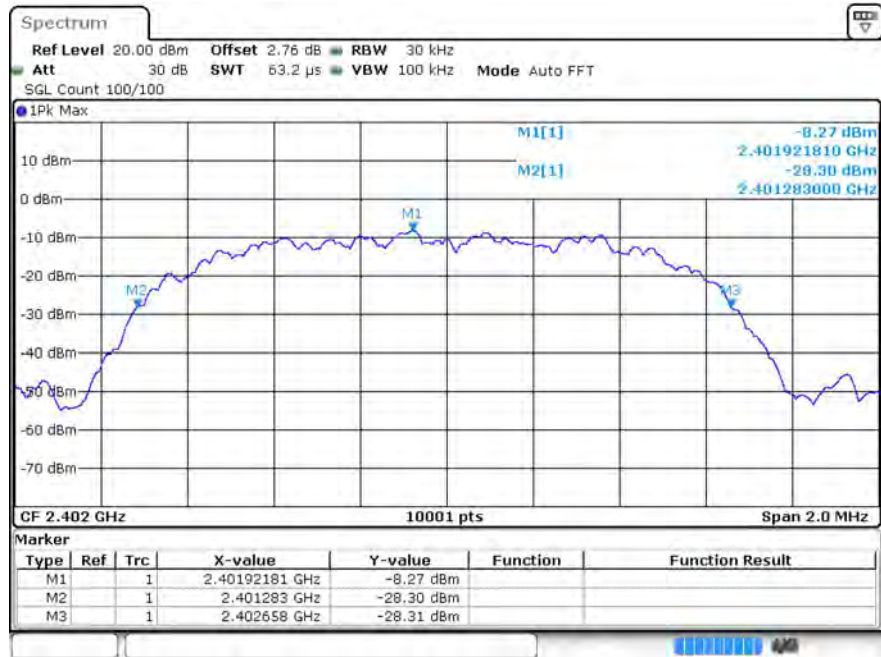


GFSK/HCH

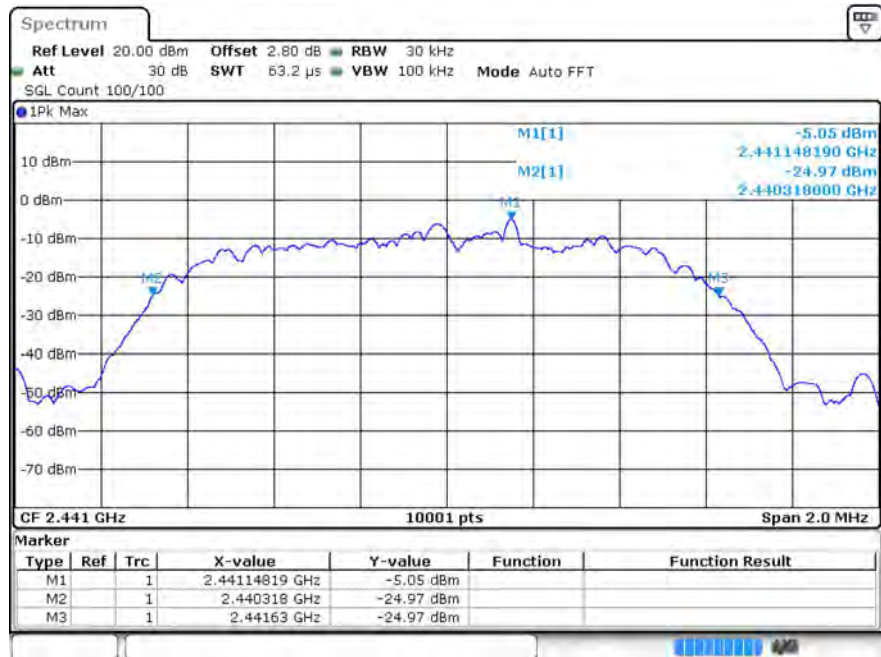

 $\pi/4$ DQPSK/LCH


$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


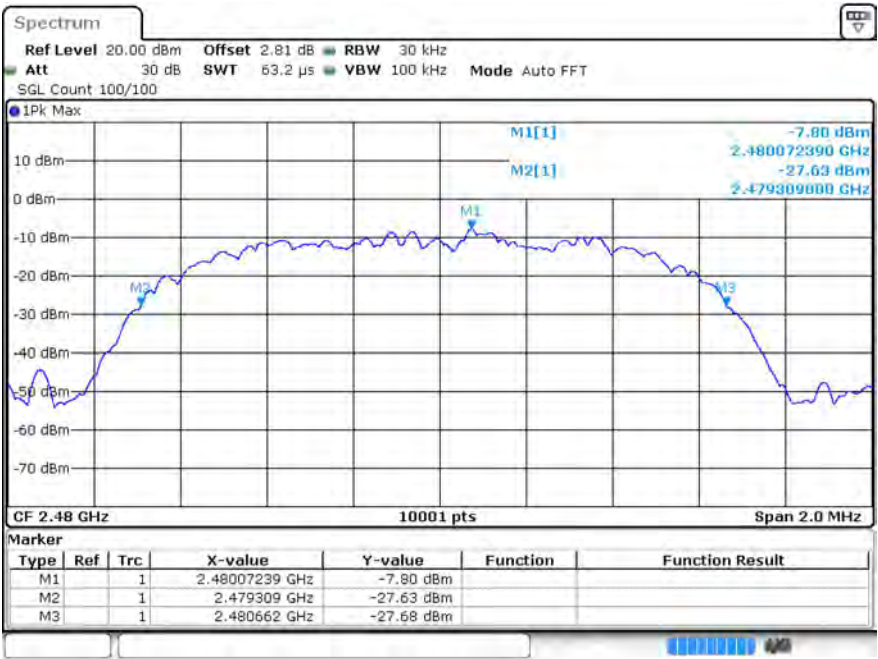
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH



## 4 Carrier Frequency Separation

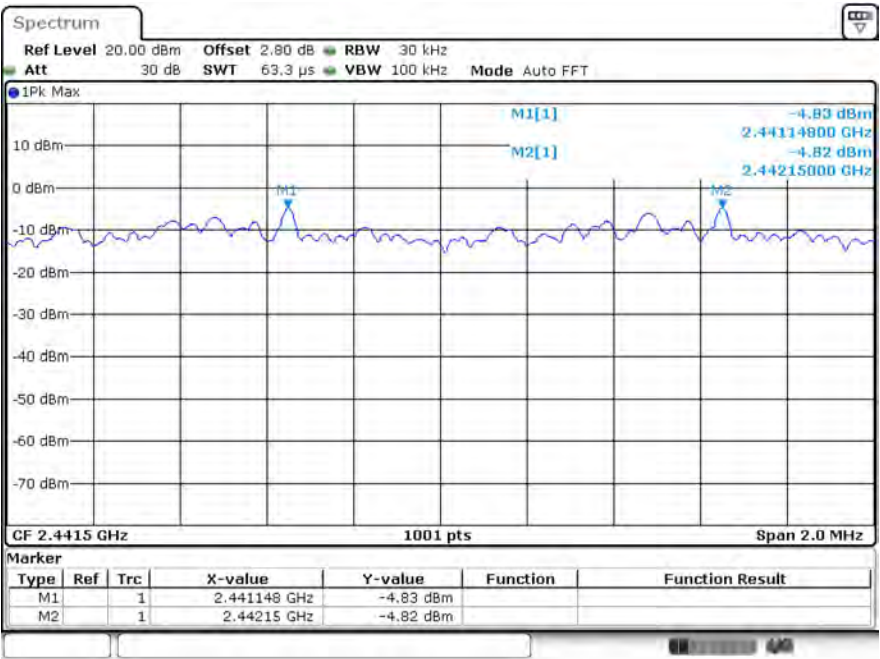
### 4.1 Test Result

| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | MCH      | 1.014                              | 0.641       | Pass    |
| $\pi/4$ DQPSK | MCH      | 1                                  | 0.895       | Pass    |
| 8DPSK         | MCH      | 1.002                              | 0.875       | Pass    |

## 4.2 Test Graphs



8DPSK/MCH

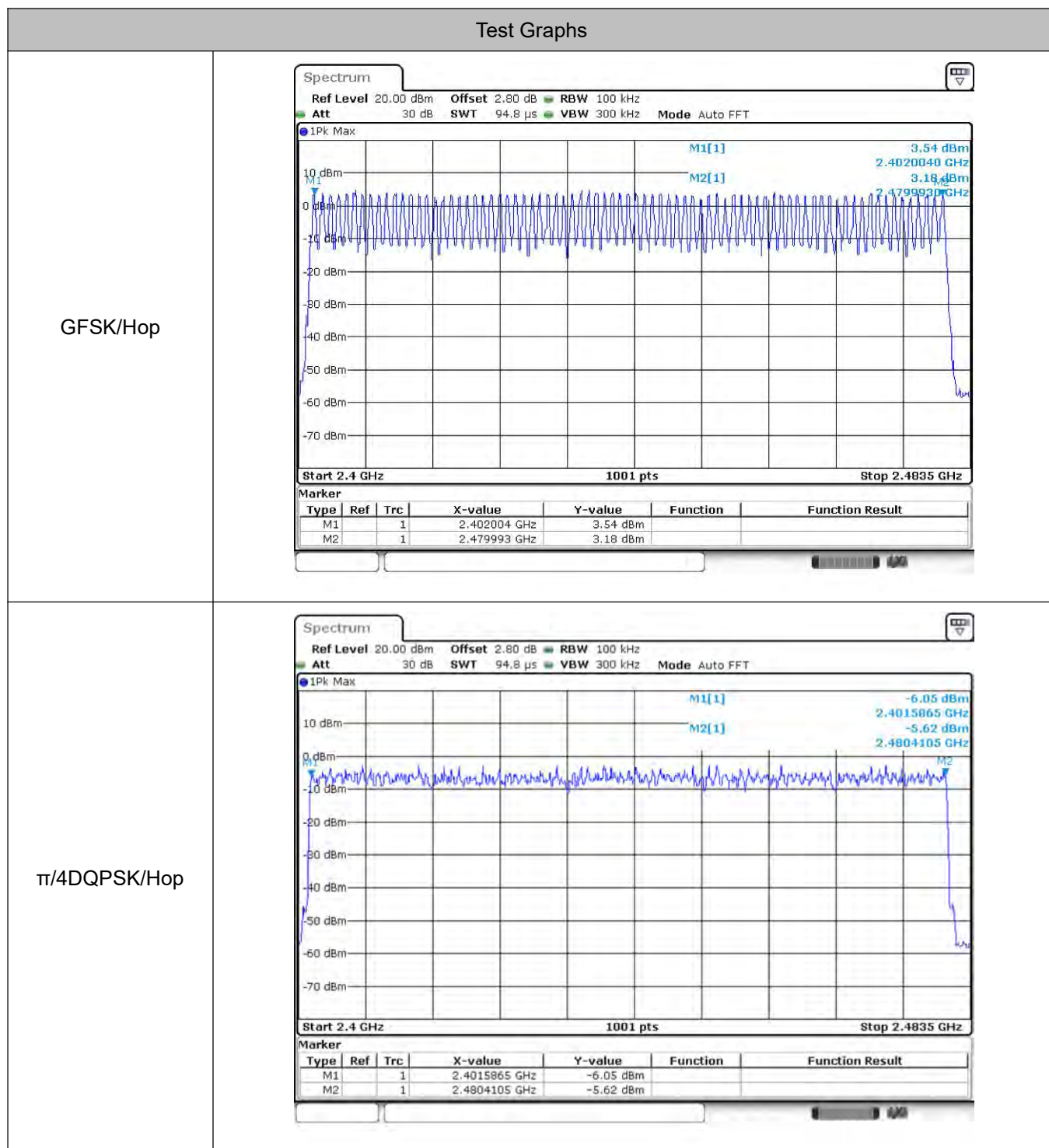


## 5 Hopping Channel Number

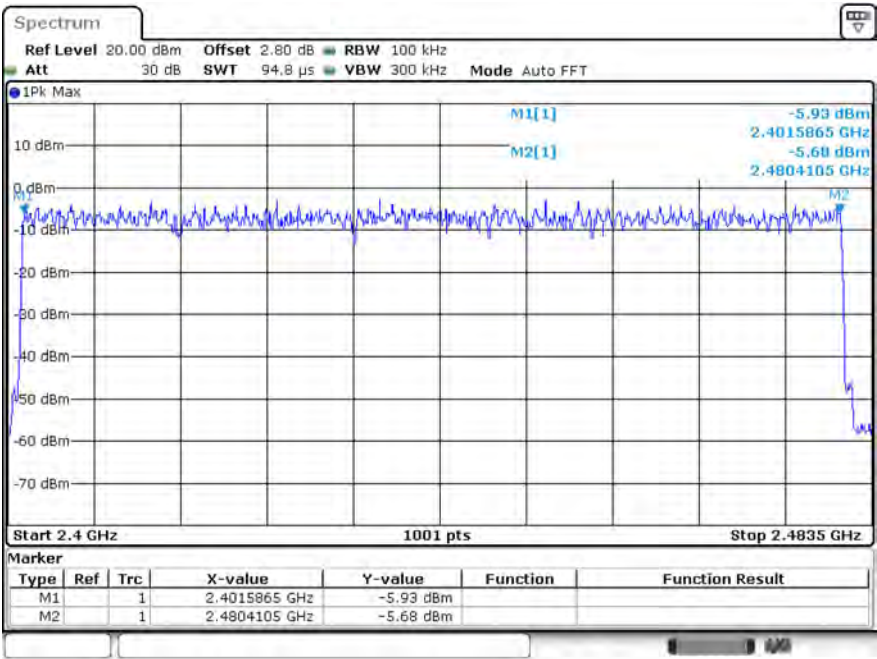
### 5.1 Test Result

| 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

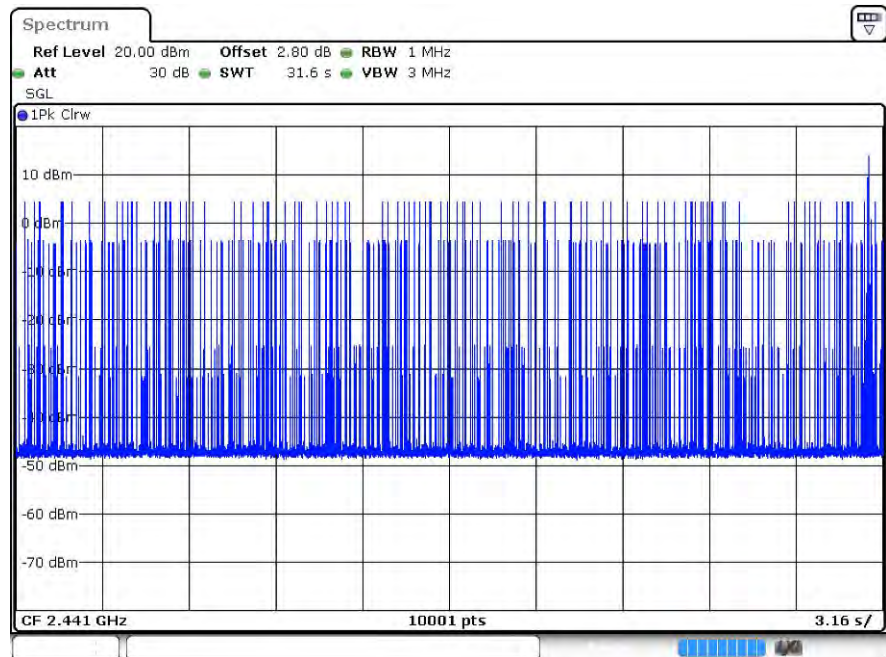
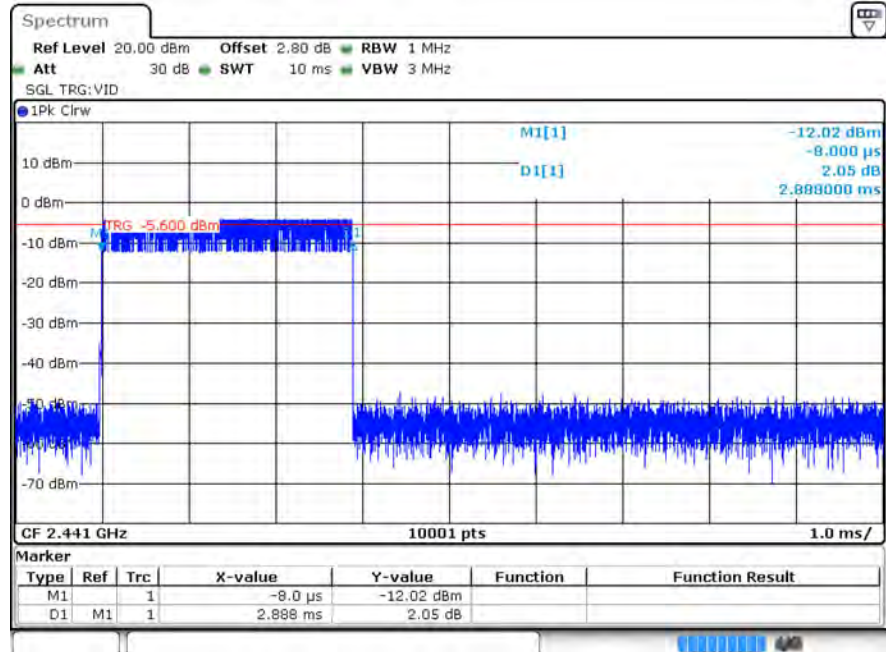
### 6.1 Test Result

| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[ms] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|----------------|-----------|---------|
| GFSK          | DH5    | MCH     | 2.888                      | 3                     | 8.664          | 0.4       | Pass    |
| $\pi/4$ DQPSK | 2DH5   | MCH     | 2.89                       | 106                   | 306.34         | 0.4       | Pass    |
| 8DPSK         | 3DH5   | MCH     | 2.89                       | 104                   | 300.56         | 0.4       | Pass    |

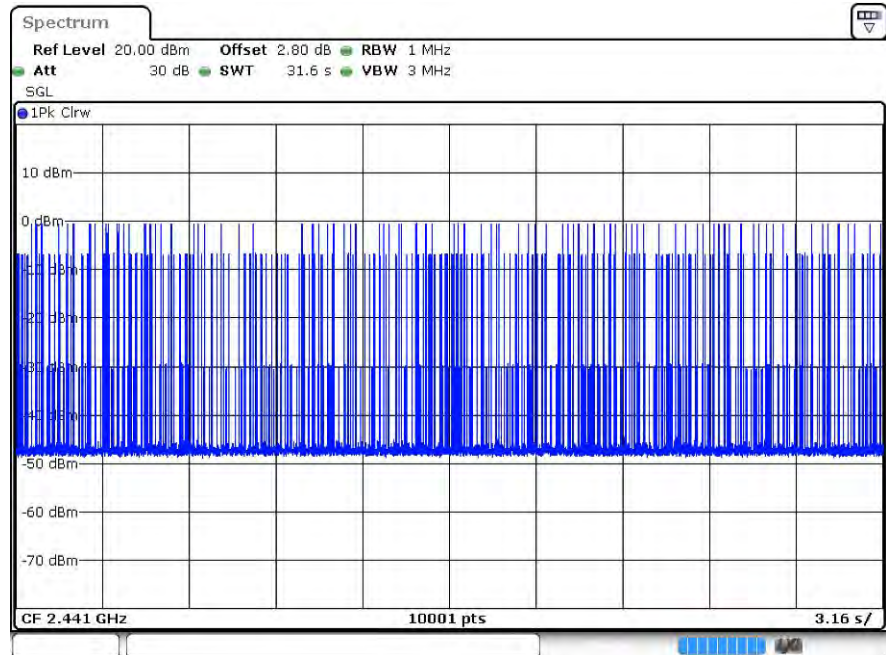
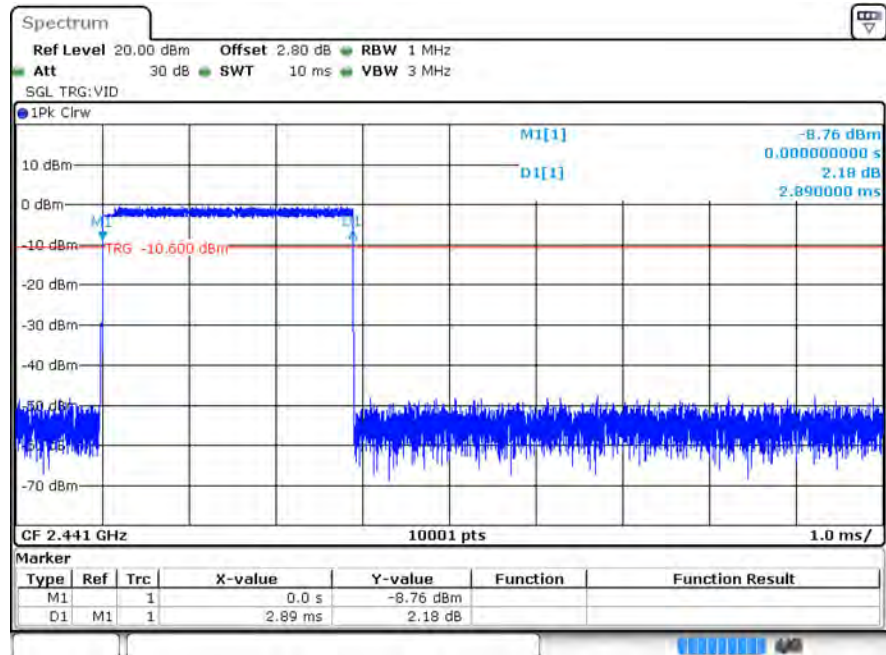
## 6.2 Test Graphs

### Test Graphs

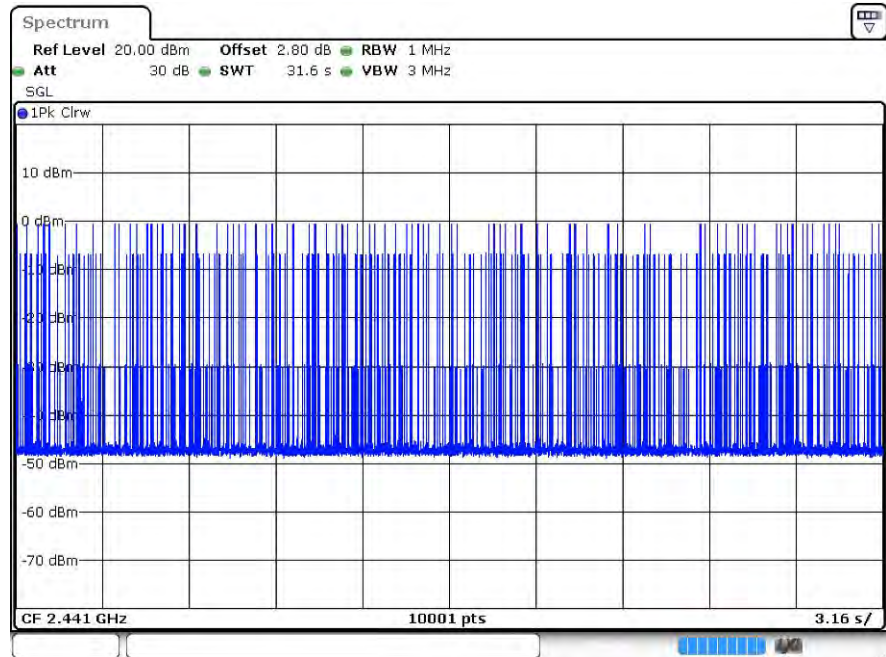
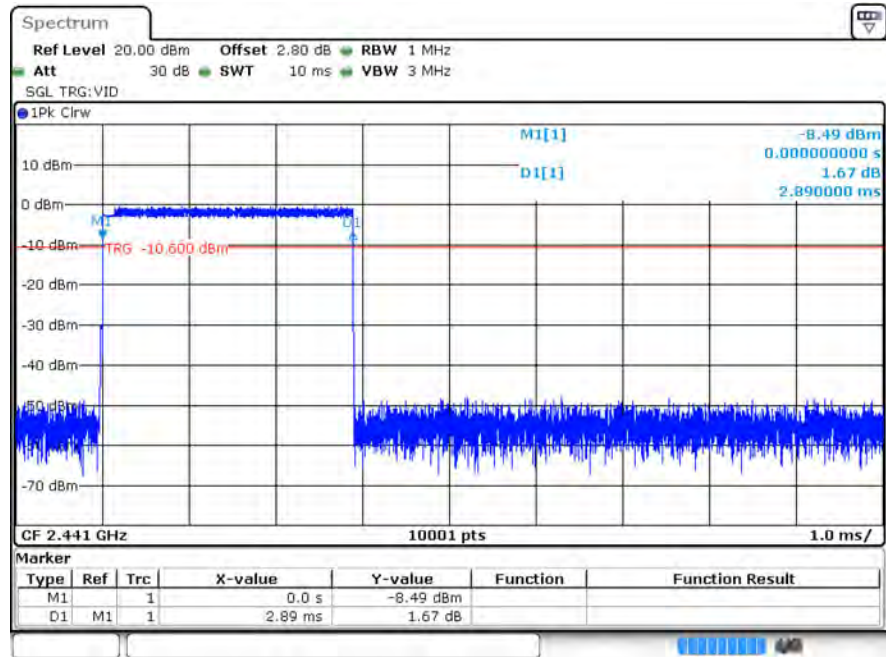
GFSK\_DH5/MCH



$\pi/4$ 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     | -48.74           | -20         | Pass    |
|               | MCH     | -47.83           | -20         | Pass    |
|               | HCH     | -47.3            | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | -40.69           | -20         | Pass    |
|               | MCH     | -41.1            | -20         | Pass    |
|               | HCH     | -41.22           | -20         | Pass    |
| 8DPSK         | LCH     | -41.71           | -20         | Pass    |
|               | MCH     | -41.57           | -20         | Pass    |
|               | HCH     | -40.13           | -20         | Pass    |

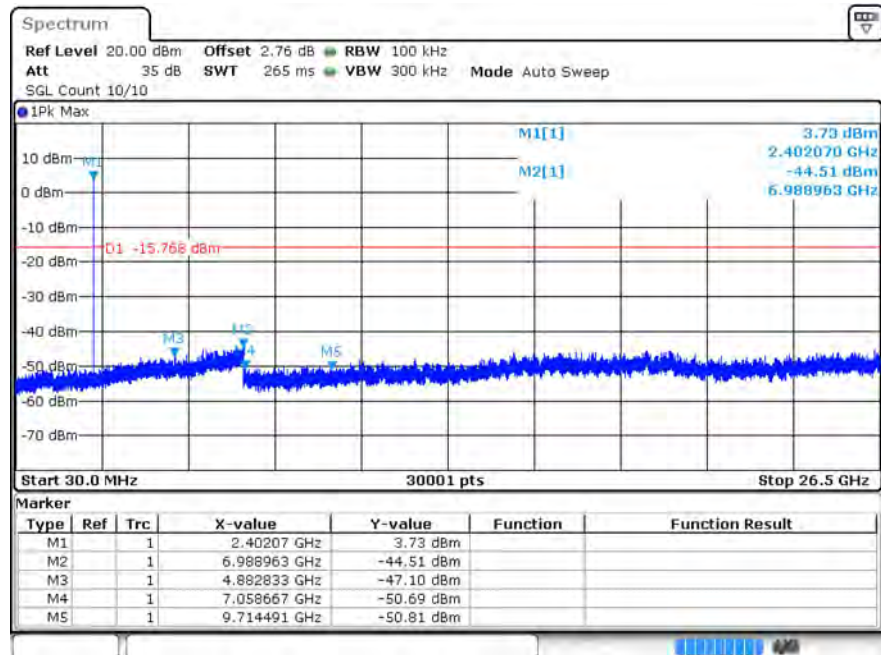
## 7.2 Test Graphs

GFSK\_LCH\_Graphs

Pref



Puw

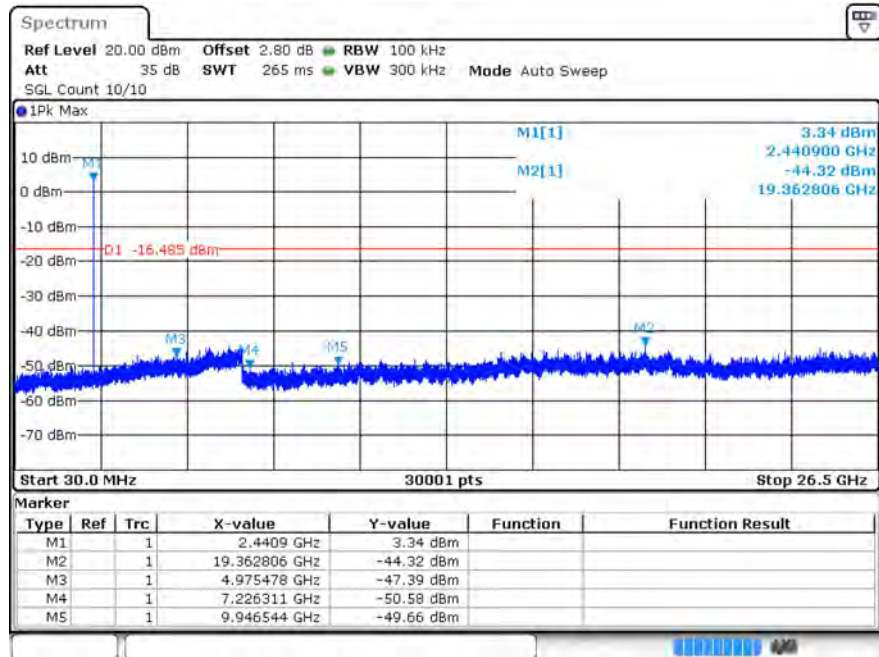


## GFSK\_MCH\_Graphs

Pref



Puw

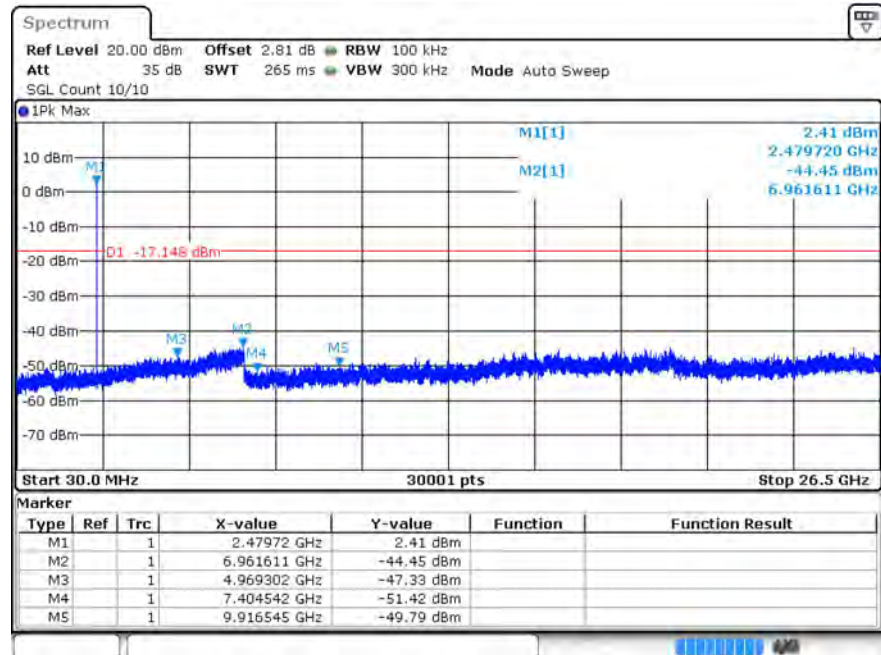


## GFSK\_HCH\_Graphs

Pref

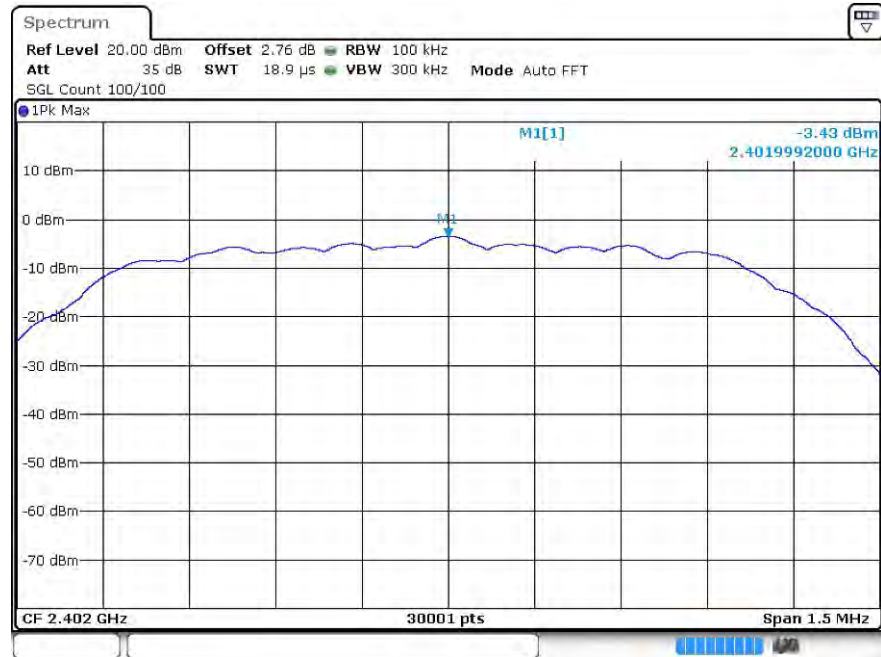


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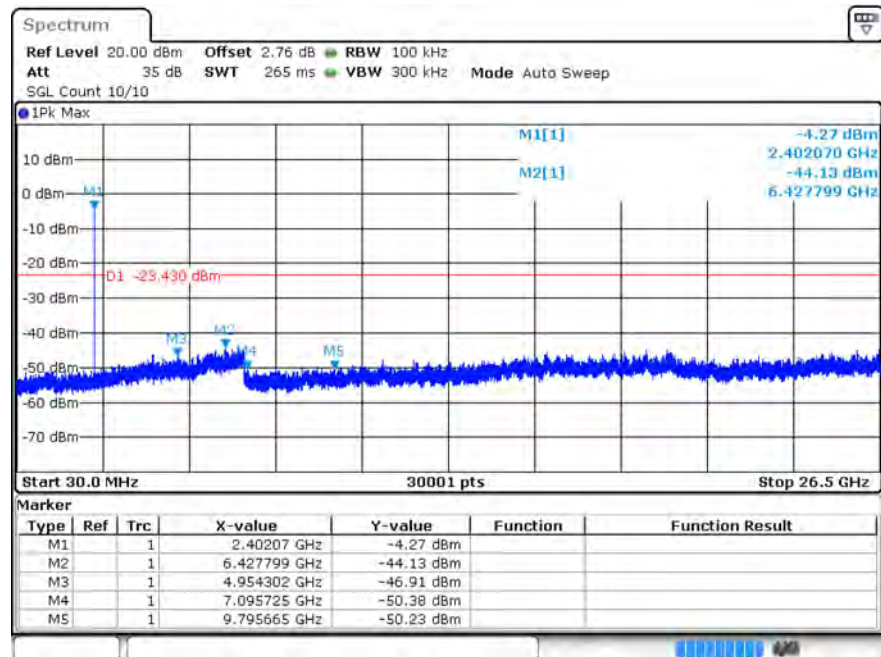


$\pi/4$ DQPSK\_LCH\_Graphs

Pref

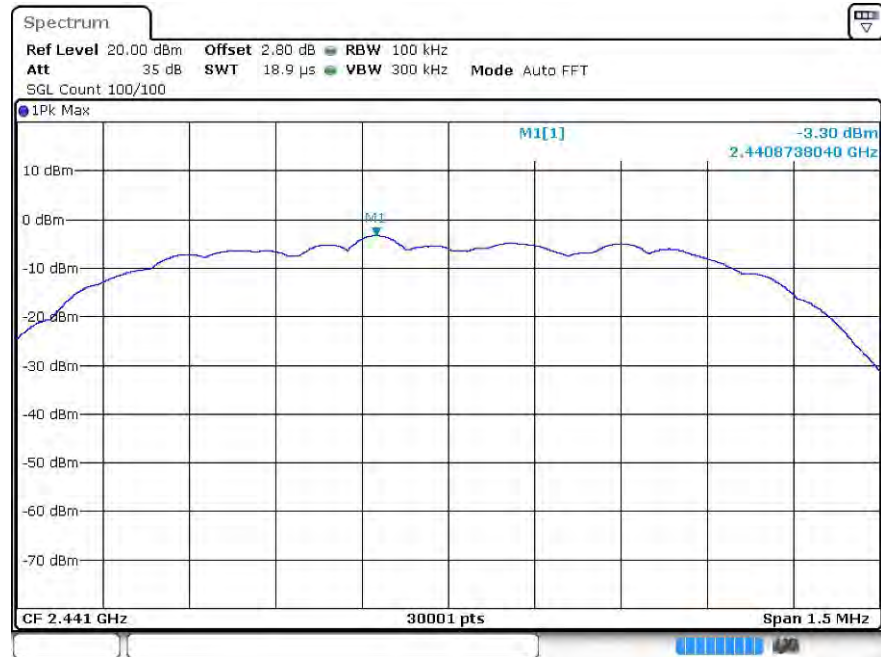


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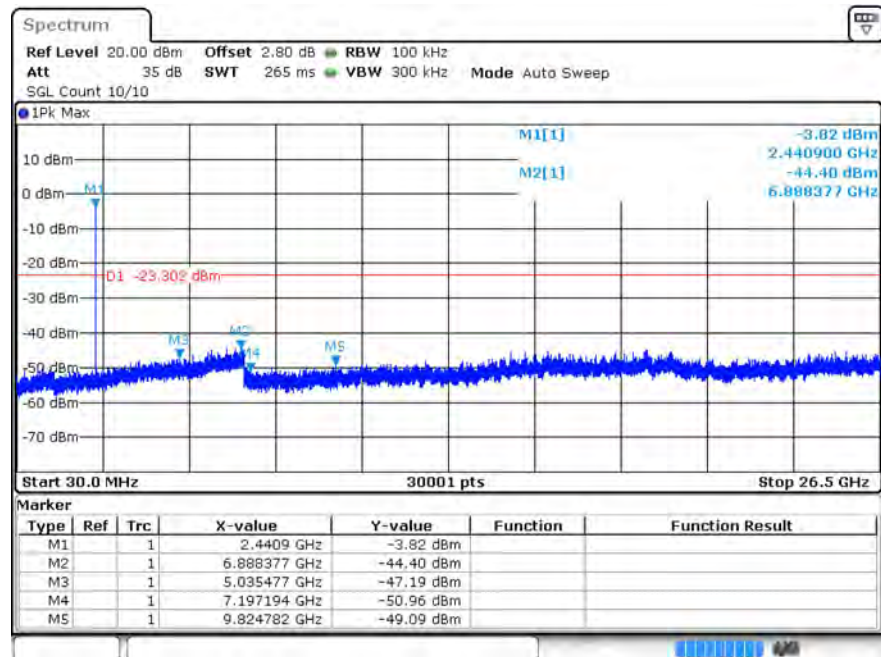


# $\pi/4$ DQPSK\_MCH\_Graphs

Pref

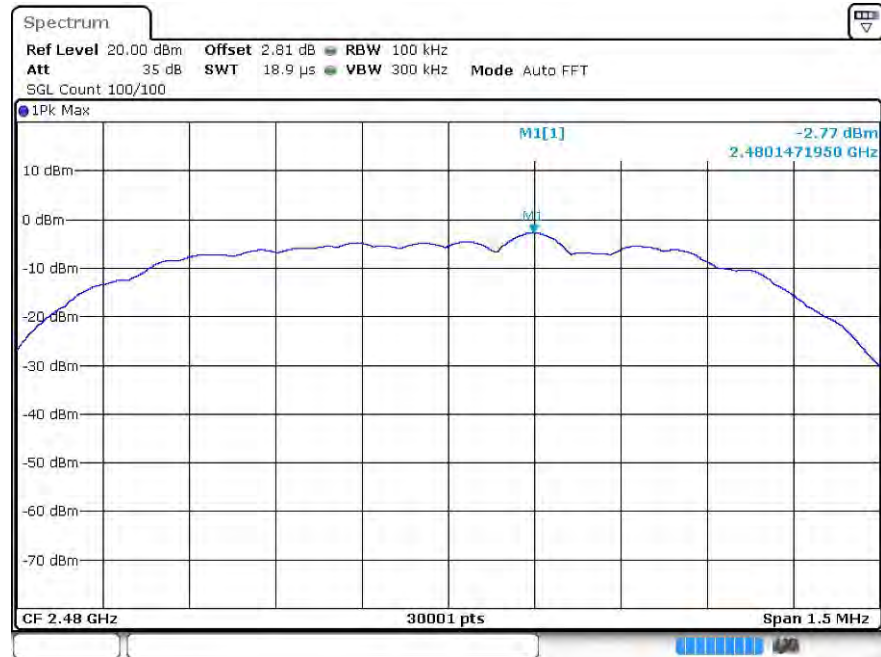


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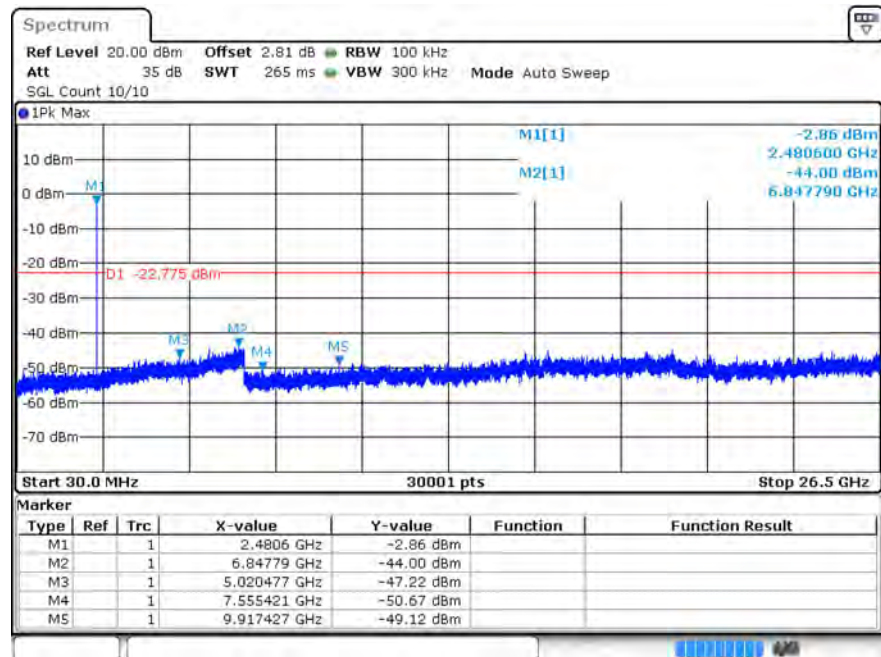


### $\pi/4$ DQPSK\_HCH\_Graphs

Pref

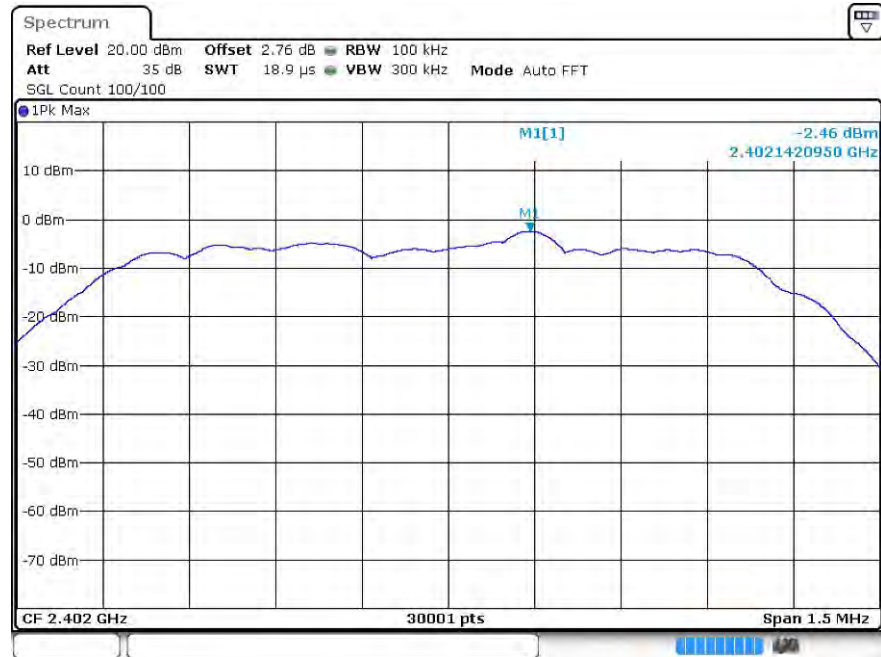


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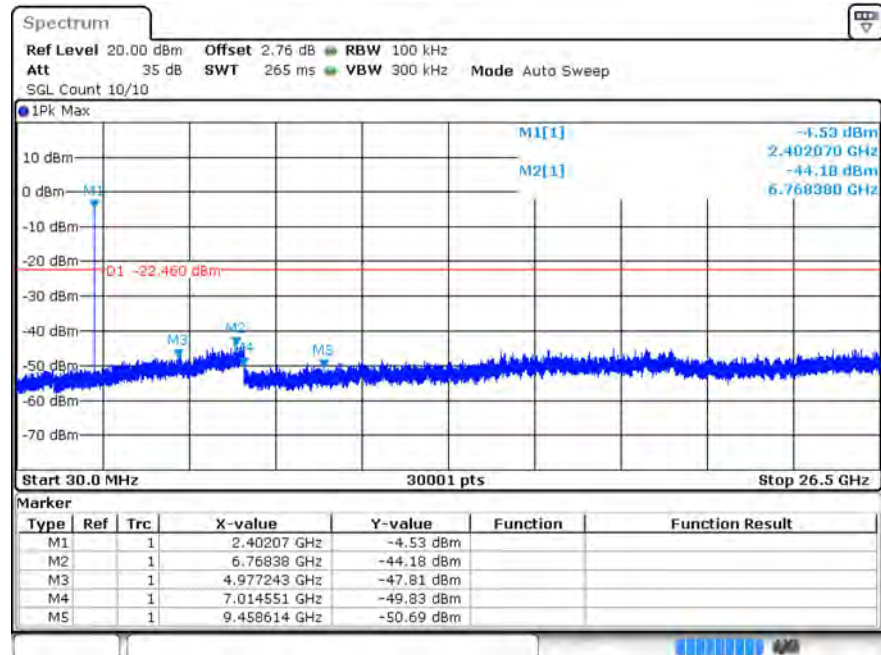


## 8DPSK\_LCH\_Graphs

Pref

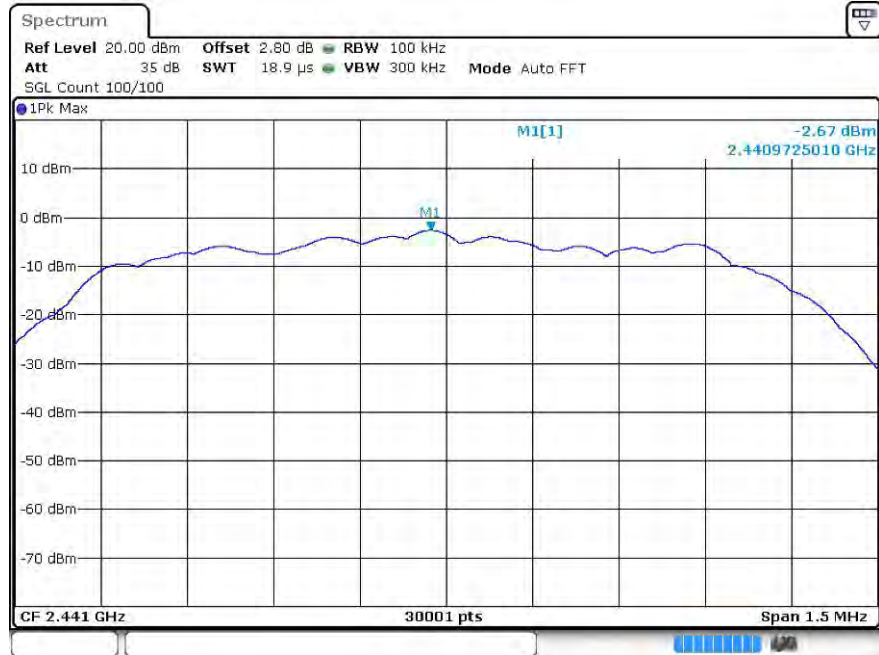


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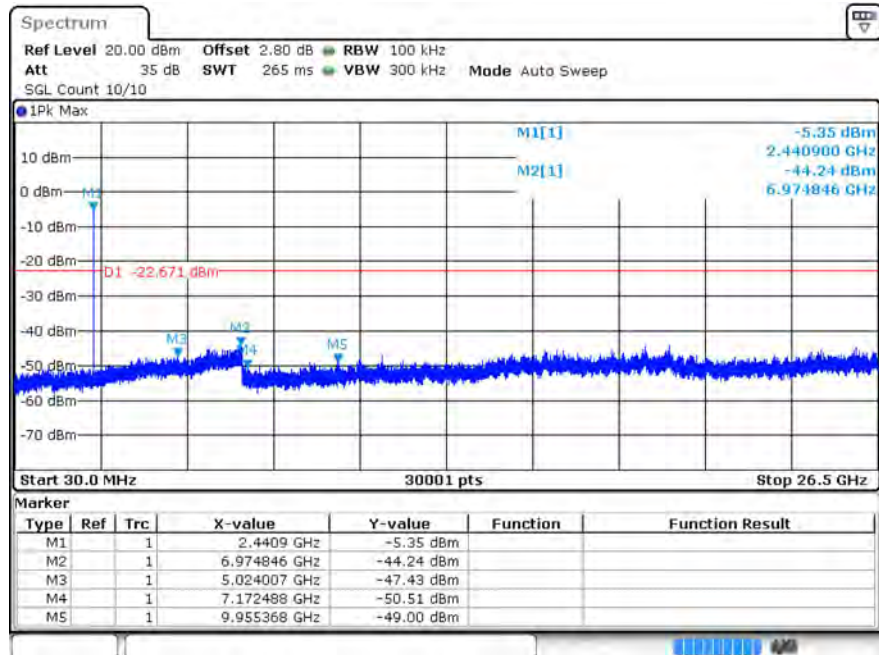


## 8DPSK\_MCH\_Graphs

Pref

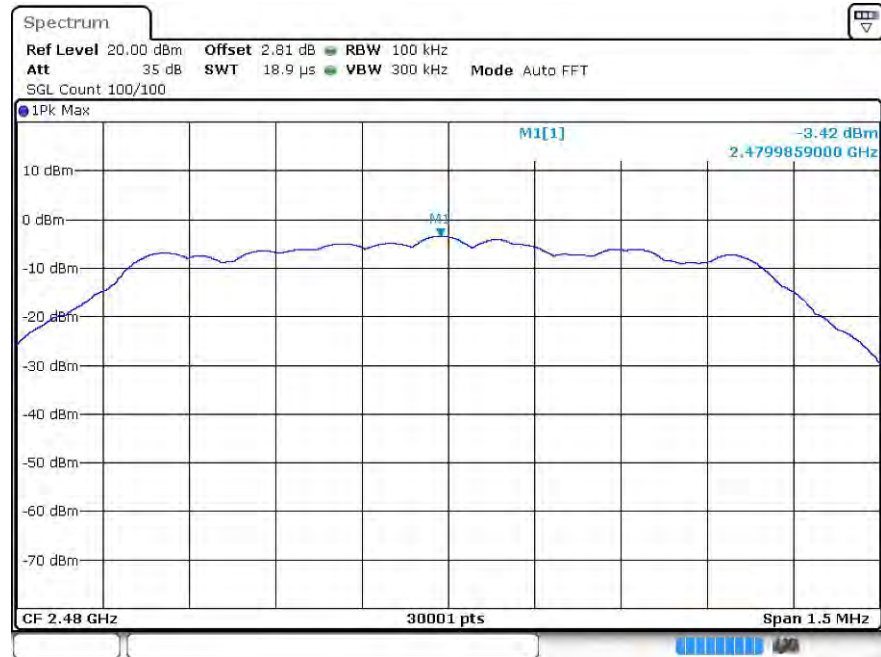


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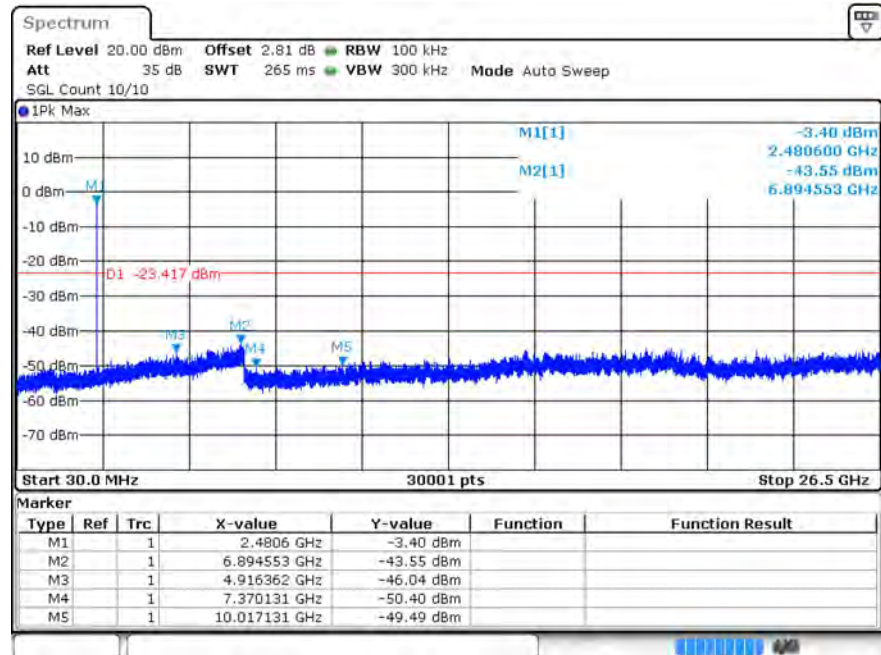


## 8DPSK\_HCH\_Graphs

Pref



Puw

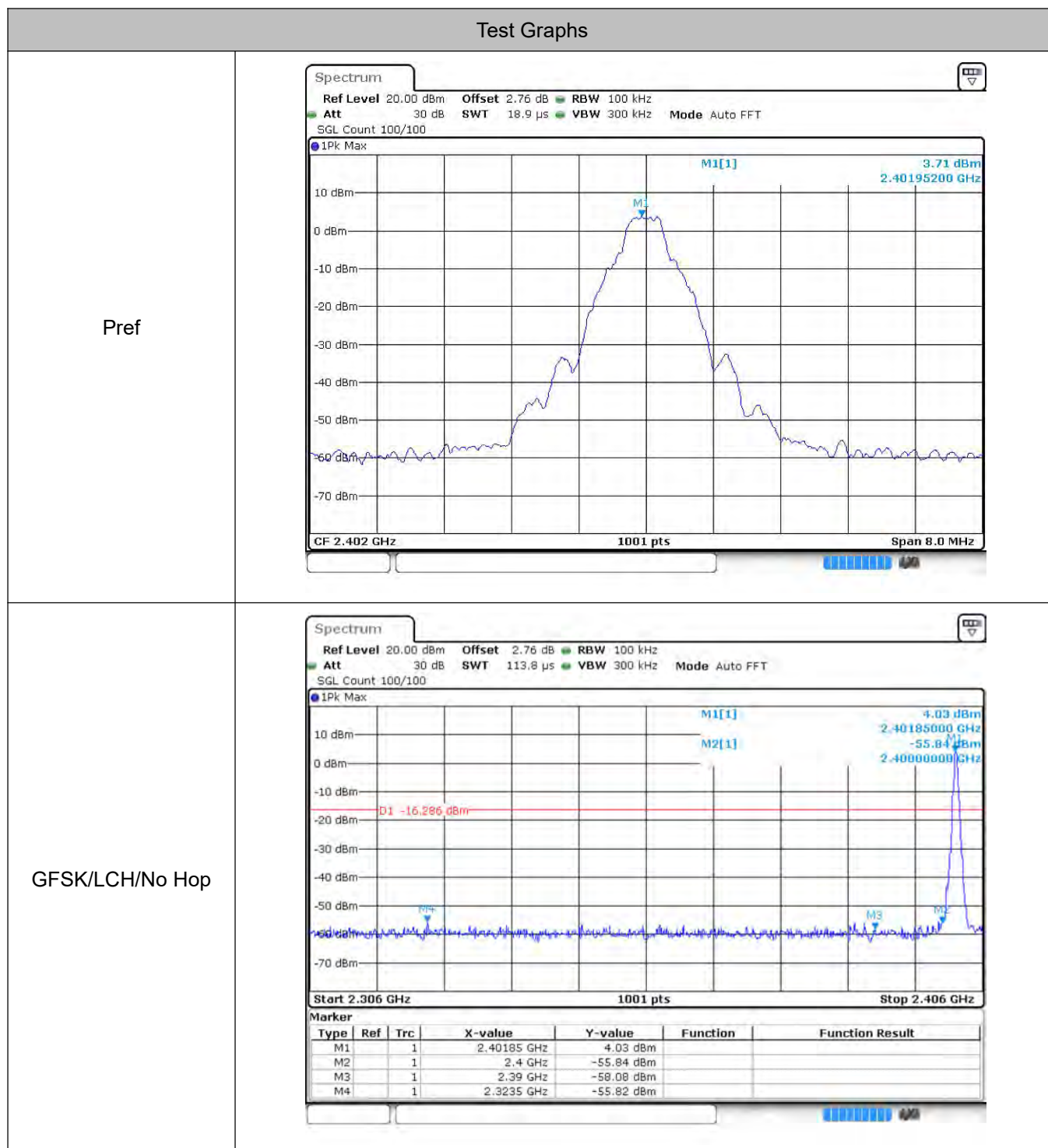


## 8 Band-edge for RF Conducted Emissions

### 8.1 Test Result

| Mode          | Channel | Carrier Frequency [MHz] | Frequency Hopping | Max Spurious Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|-------------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | Off               | -59.52                   | -20         | Pass    |
|               |         |                         | On                | -59.76                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -59.87                   | -20         | Pass    |
|               |         |                         | On                | -59.42                   | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | 2402                    | Off               | -53.79                   | -20         | Pass    |
|               |         |                         | On                | -52.02                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -53.19                   | -20         | Pass    |
|               |         |                         | On                | -50.29                   | -20         | Pass    |
| 8DPSK         | LCH     | 2402                    | Off               | -52.15                   | -20         | Pass    |
|               |         |                         | On                | -52.86                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -52.43                   | -20         | Pass    |
|               |         |                         | On                | -50.68                   | -20         | Pass    |

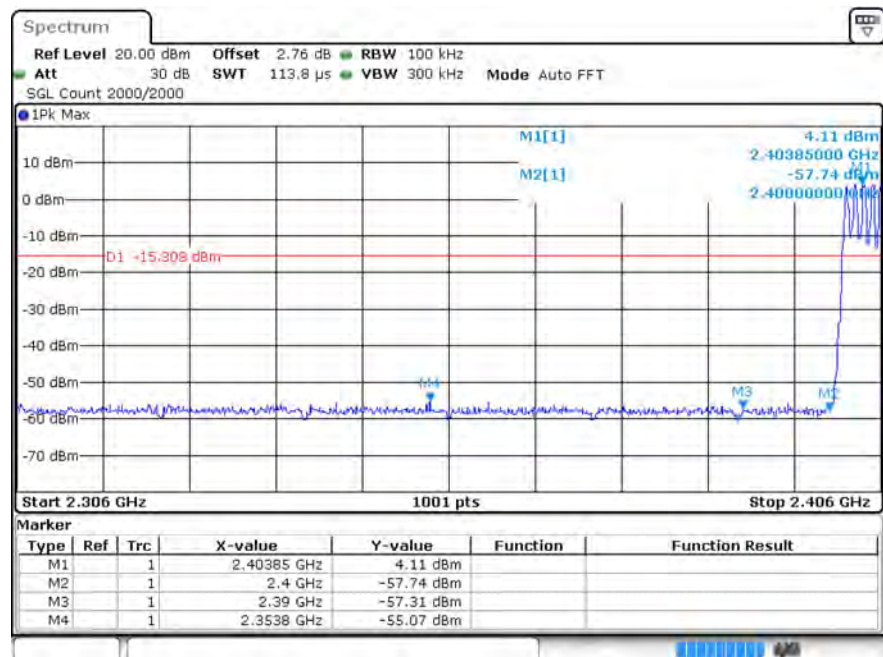
## 8.2 Test Graphs



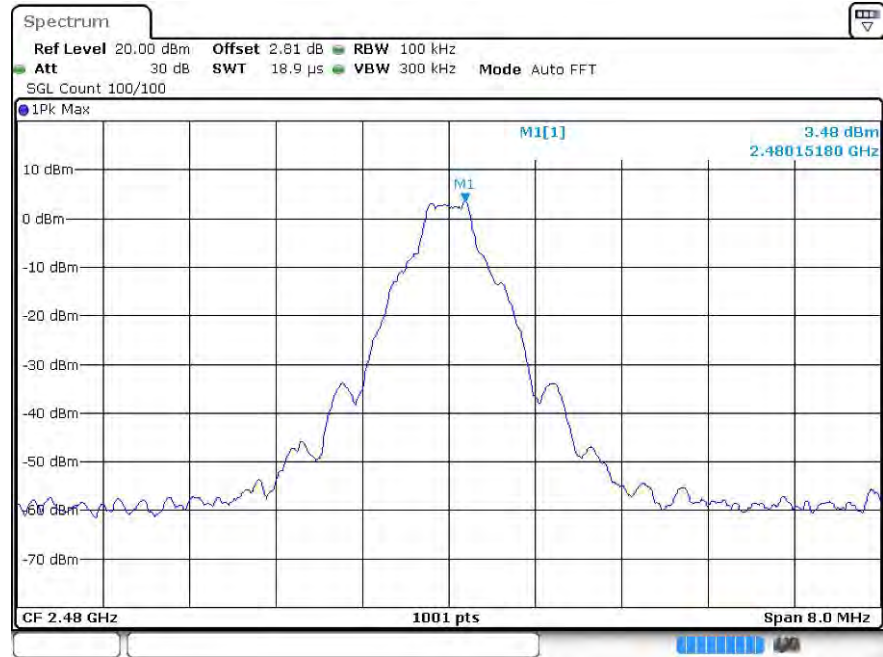
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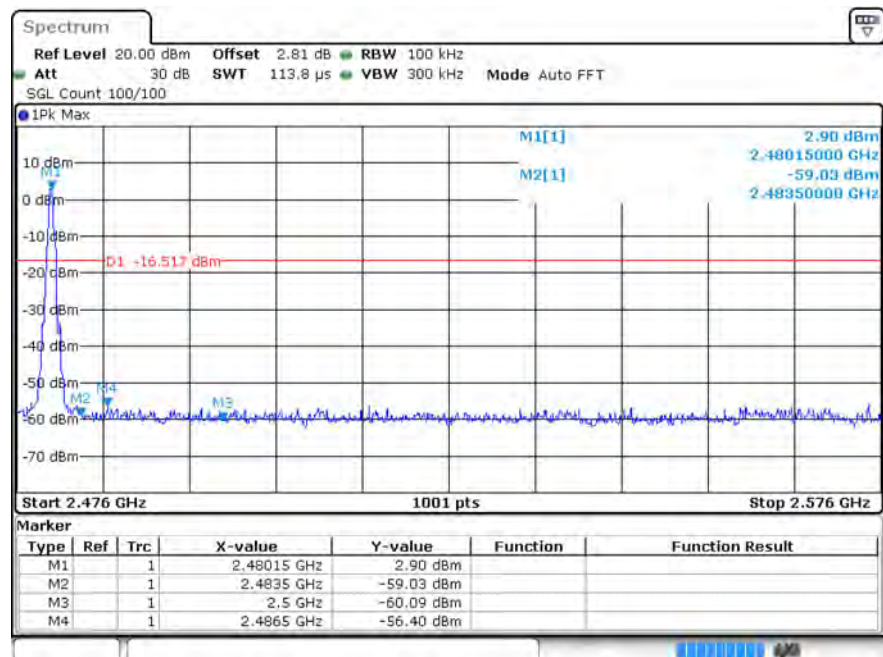
GFSK/LCH/Hop



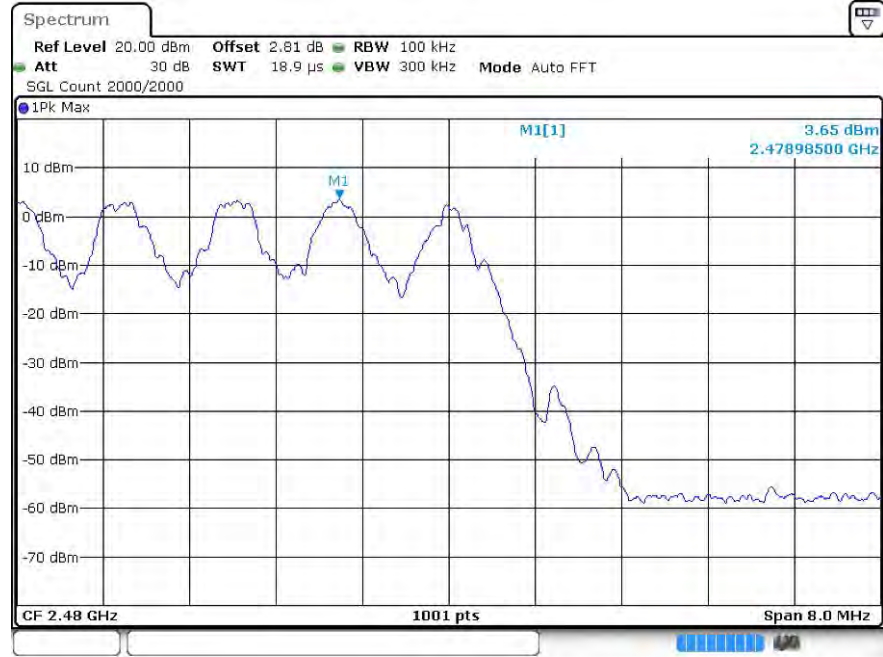
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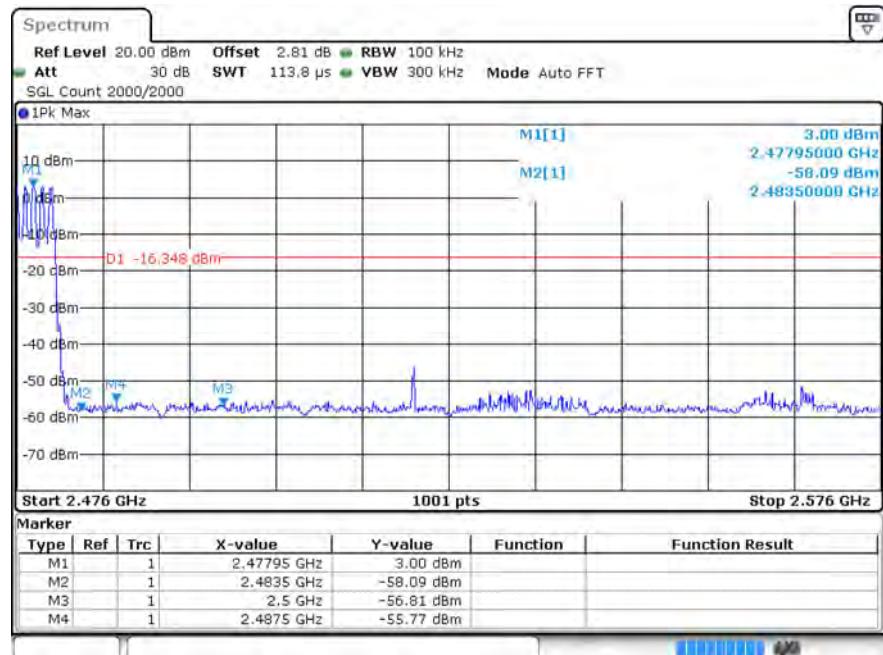
GFSK/HCH/No Hop



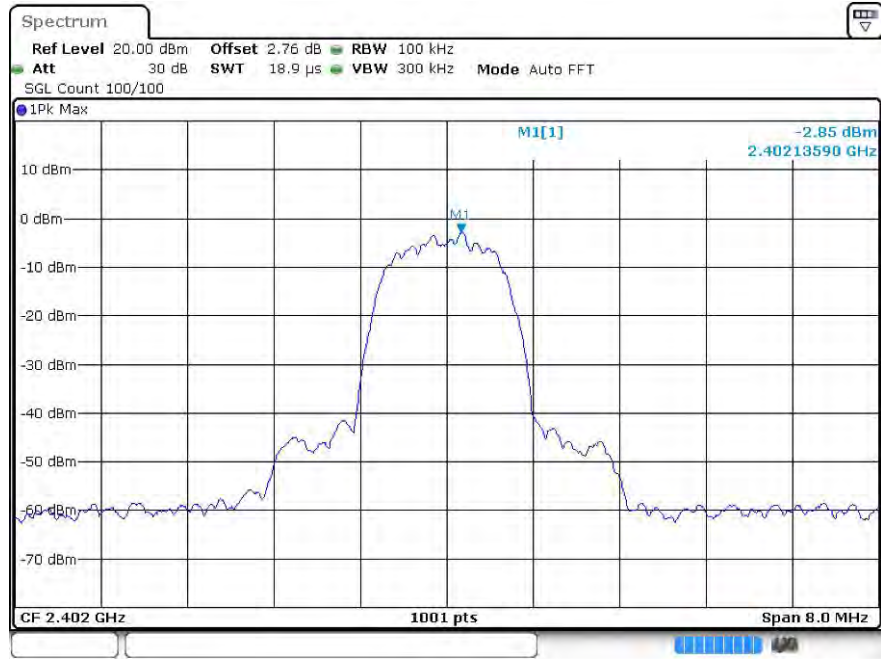
Ref.



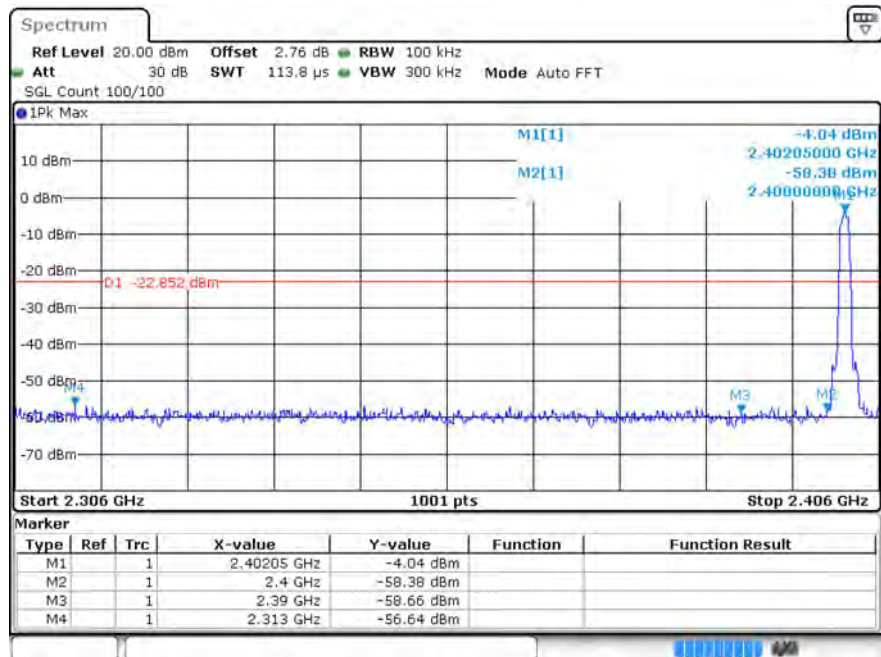
GFSK/HCH/Hop



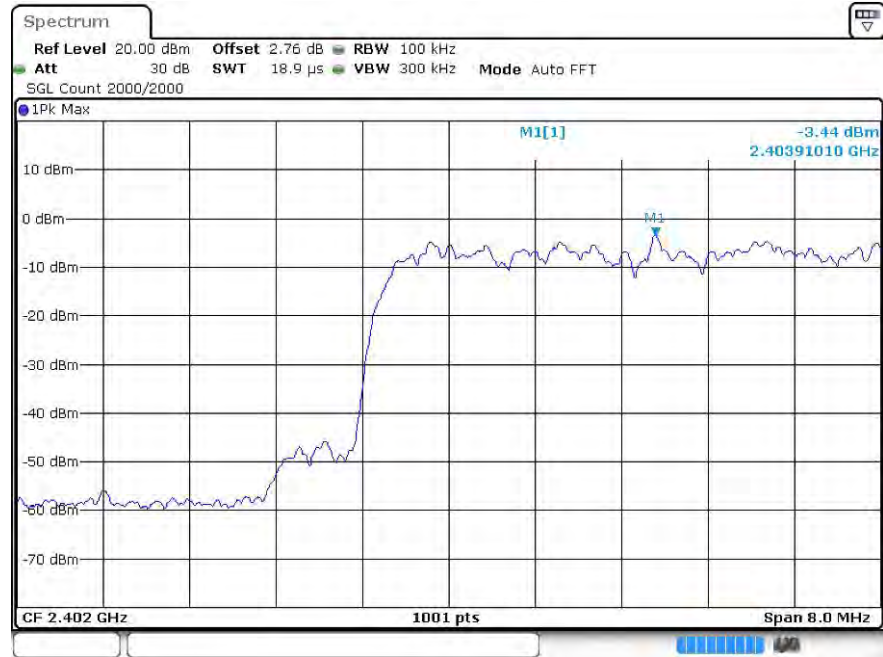
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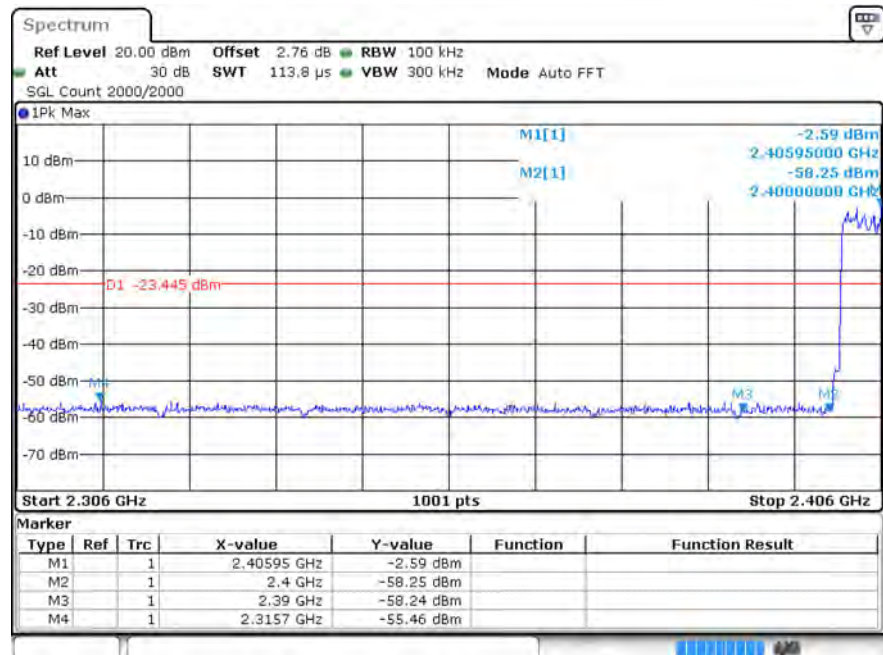
$\pi/4$ DQPSK/LCH/No  
Hop



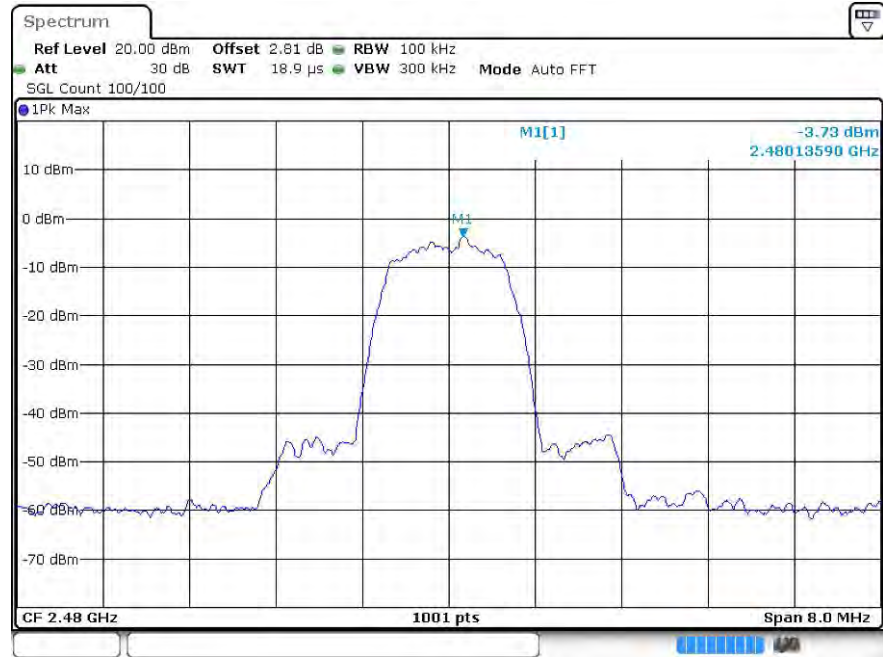
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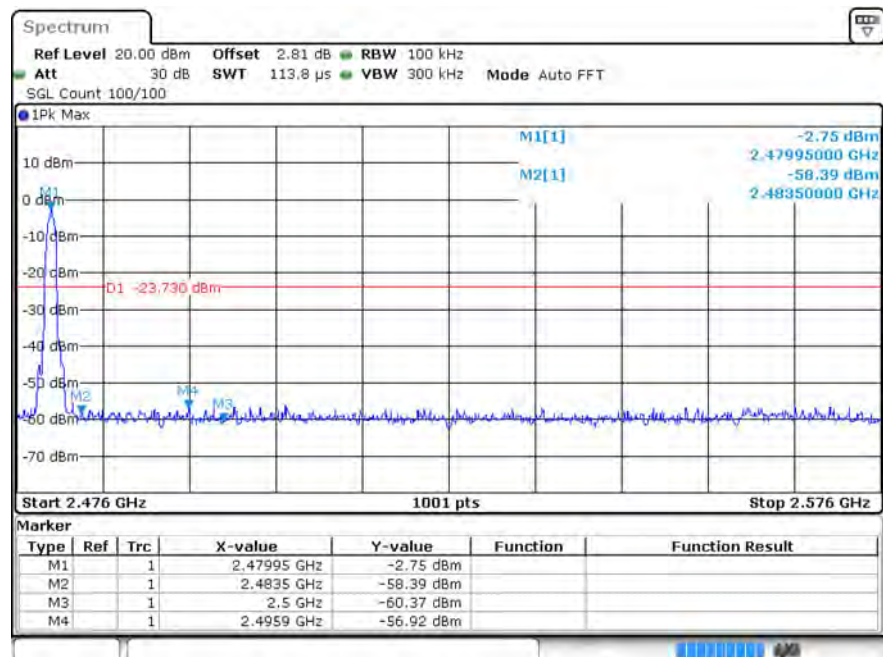
$\pi/4$ DQPSK/LCH/Hop



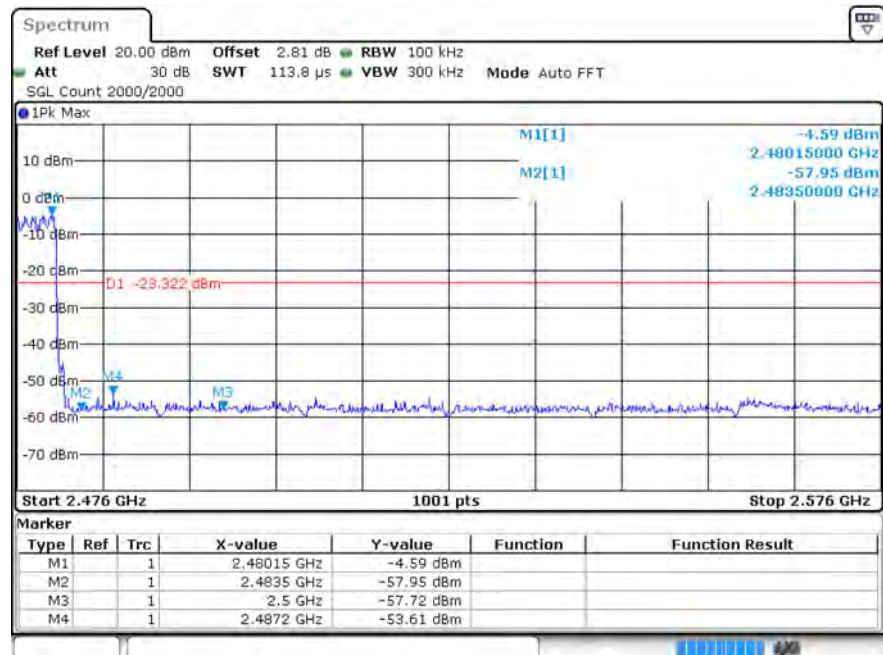
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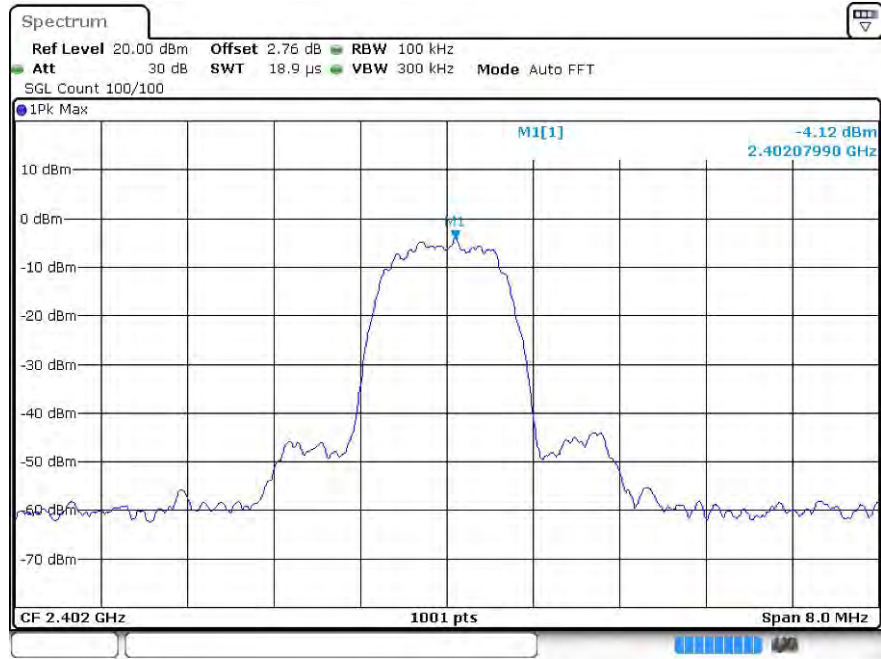
$\pi/4$ DQPSK/HCH/No Hop



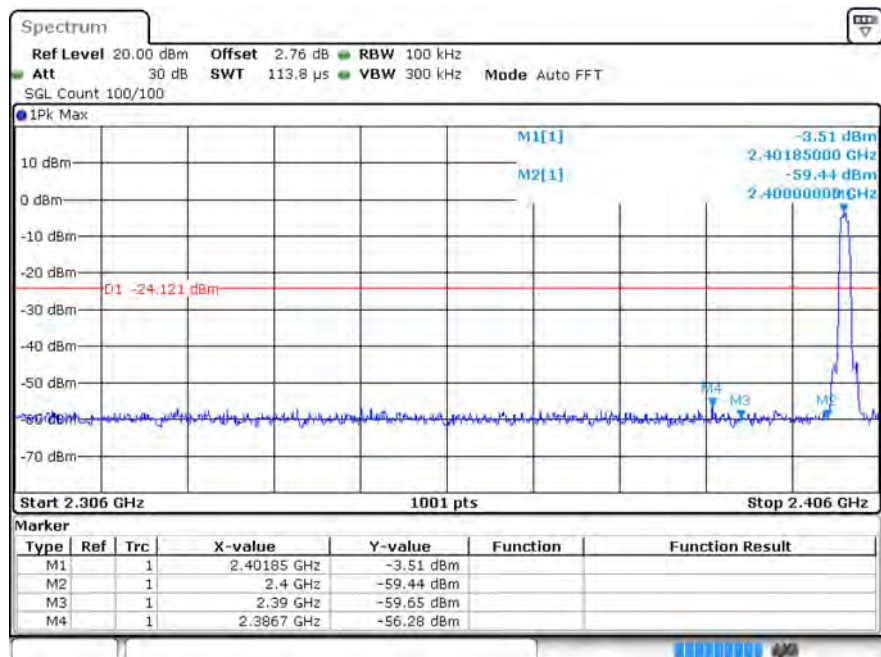
Ref


 $\pi/4$ DQPSK/HCH/Hop


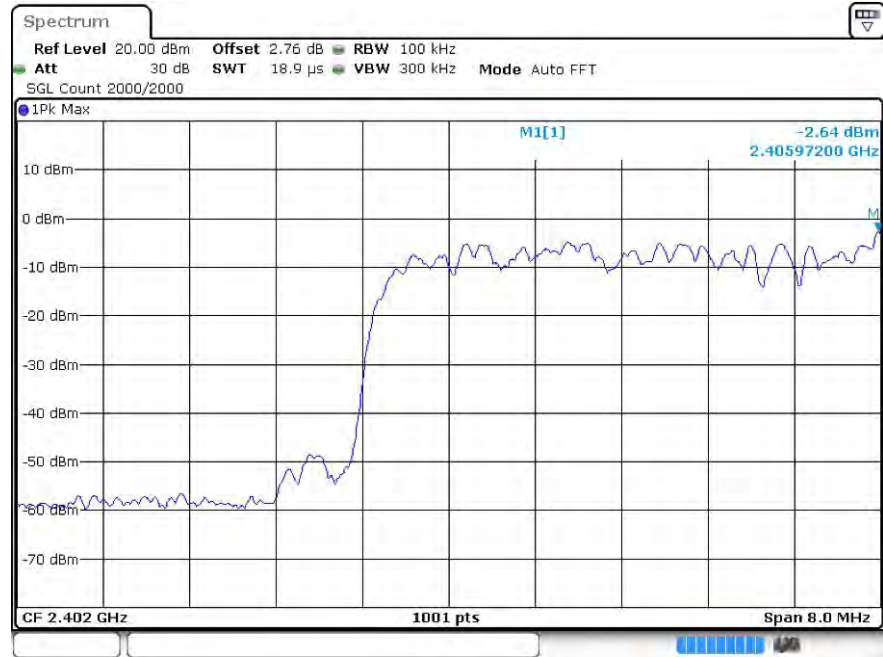
Ref



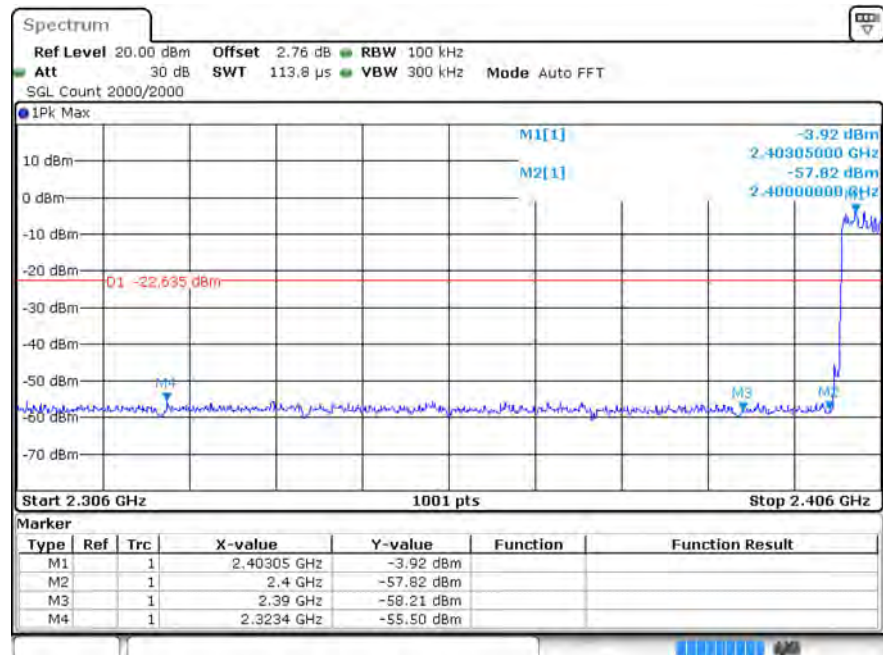
8DPSK/LCH/No Hop



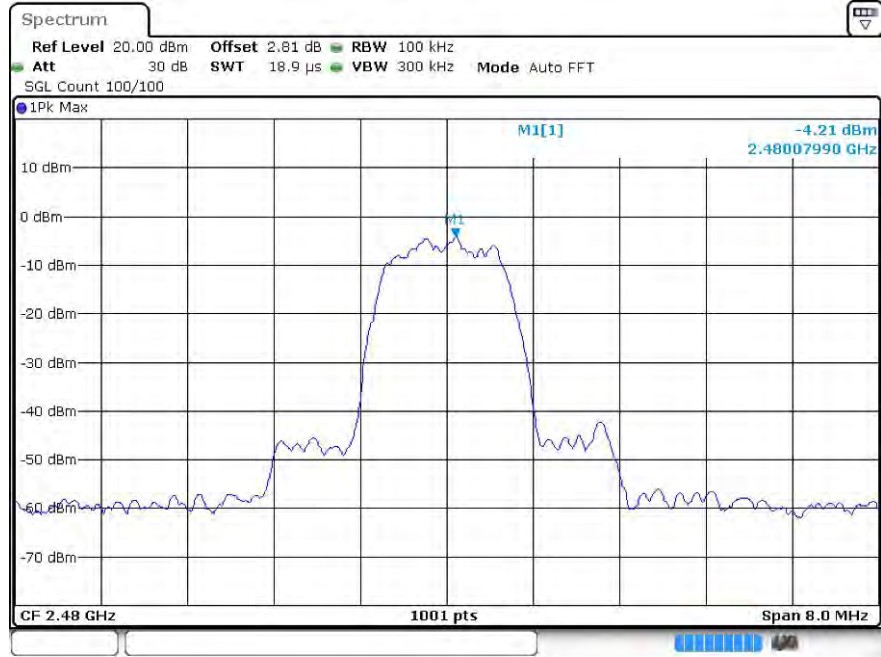
Ref



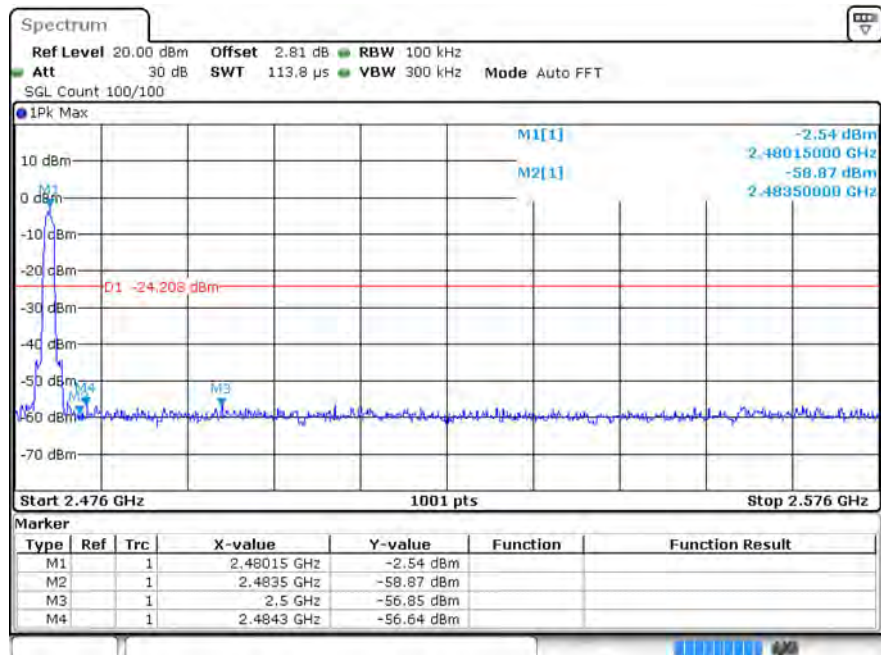
8DPSK/LCH/Hop



Ref



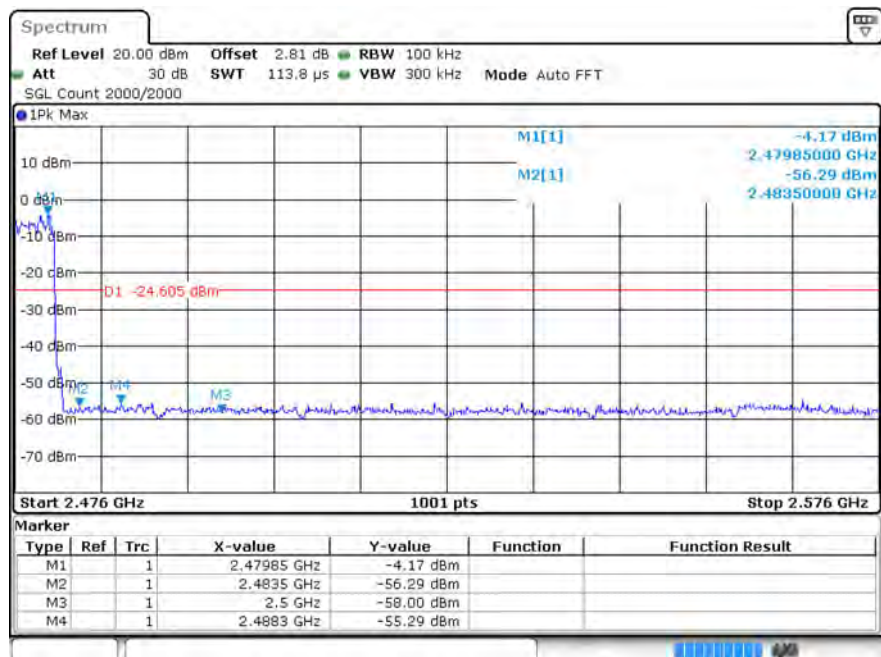
8DPSK/HCH/No Hop



Ref



8DPSK/HCH/Hop



## 9 Restrict-band band-edge measurements

### 9.1 Test Result

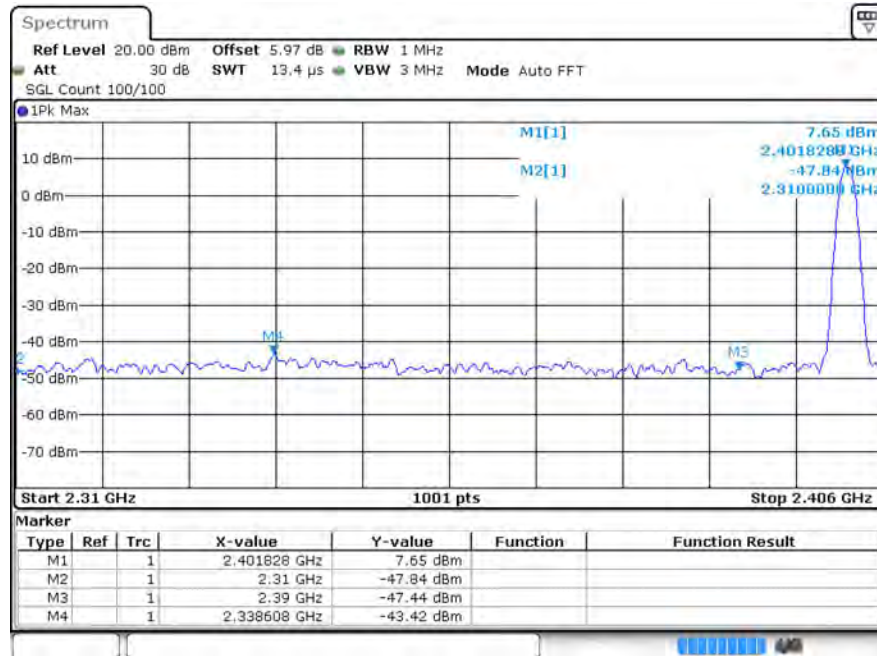
| Test Mode     | Hopping | Freq.    | Power [dBm] | Gain | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|----------|-------------|------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0   | -47.84      | 3.21 | 50.6       | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -55.9       | 3.21 | 42.54      | AV       | 54             | Pass    |
|               | Off     | 2338.608 | -43.41      | 3.21 | 55.03      | PEAK     | 74             | Pass    |
|               | Off     | 2339.184 | -54.21      | 3.21 | 44.23      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -47.43      | 3.21 | 51.01      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -56.22      | 3.21 | 42.22      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -46.2       | 3.21 | 52.24      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -54.98      | 3.21 | 43.46      | AV       | 54             | Pass    |
|               | Off     | 2492.032 | -44.28      | 3.21 | 54.16      | PEAK     | 74             | Pass    |
|               | Off     | 2483.584 | -54.97      | 3.21 | 43.47      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -48.55      | 3.21 | 49.89      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -55.64      | 3.21 | 42.8       | AV       | 54             | Pass    |
| $\pi/4$ DQPSK | Off     | 2310.0   | -47.42      | 3.21 | 51.02      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -56.1       | 3.21 | 42.34      | AV       | 54             | Pass    |
|               | Off     | 2340.816 | -43.76      | 3.21 | 54.68      | PEAK     | 74             | Pass    |
|               | Off     | 2340.72  | -54.11      | 3.21 | 44.33      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -46.07      | 3.21 | 52.37      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -56.21      | 3.21 | 42.23      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -46.73      | 3.21 | 51.71      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -55.57      | 3.21 | 42.87      | AV       | 54             | Pass    |
|               | Off     | 2495.944 | -45.14      | 3.21 | 53.3       | PEAK     | 74             | Pass    |
|               | Off     | 2483.968 | -55.5       | 3.21 | 42.94      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -48.56      | 3.21 | 49.88      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -55.82      | 3.21 | 42.62      | AV       | 54             | Pass    |
| 8DPSK         | Off     | 2310.0   | -47.3       | 3.21 | 51.14      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -56.05      | 3.21 | 42.39      | AV       | 54             | Pass    |
|               | Off     | 2341.296 | -43.34      | 3.21 | 55.1       | PEAK     | 74             | Pass    |
|               | Off     | 2338.032 | -54.02      | 3.21 | 44.42      | AV       | 54             | Pass    |



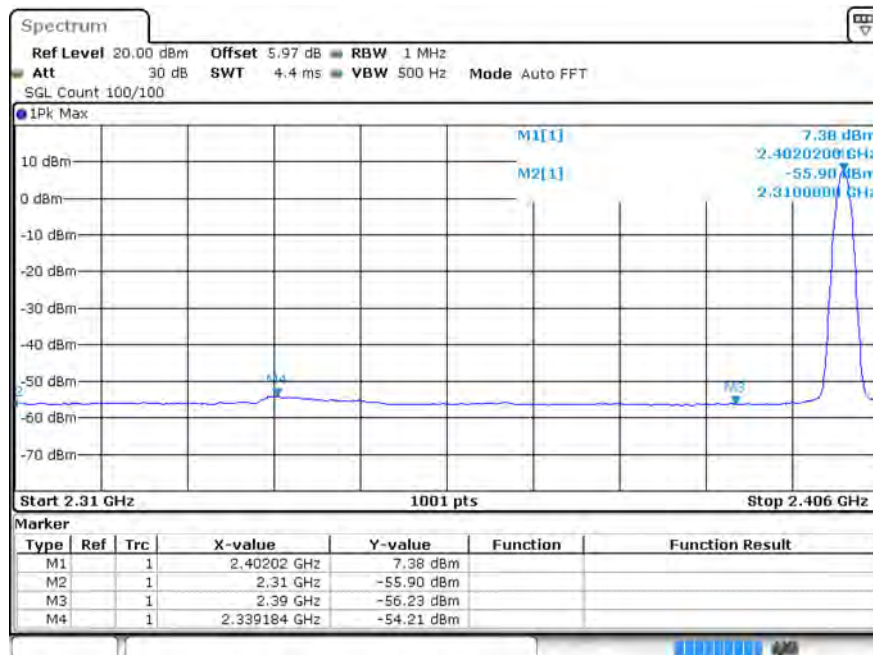
|  |     |          |        |      |       |      |    |      |
|--|-----|----------|--------|------|-------|------|----|------|
|  | Off | 2390.0   | -48.2  | 3.21 | 50.24 | PEAK | 74 | Pass |
|  | Off | 2390.0   | -56.03 | 3.21 | 42.41 | AV   | 54 | Pass |
|  | Off | 2483.5   | -47.1  | 3.21 | 51.34 | PEAK | 74 | Pass |
|  | Off | 2483.5   | -55.49 | 3.21 | 42.95 | AV   | 54 | Pass |
|  | Off | 2498.56  | -45.56 | 3.21 | 52.88 | PEAK | 74 | Pass |
|  | Off | 2483.536 | -55.47 | 3.21 | 42.97 | AV   | 54 | Pass |
|  | Off | 2500.0   | -46.44 | 3.21 | 52    | PEAK | 74 | Pass |
|  | Off | 2500.0   | -55.52 | 3.21 | 42.92 | AV   | 54 | Pass |

## 9.2 Test Graphs

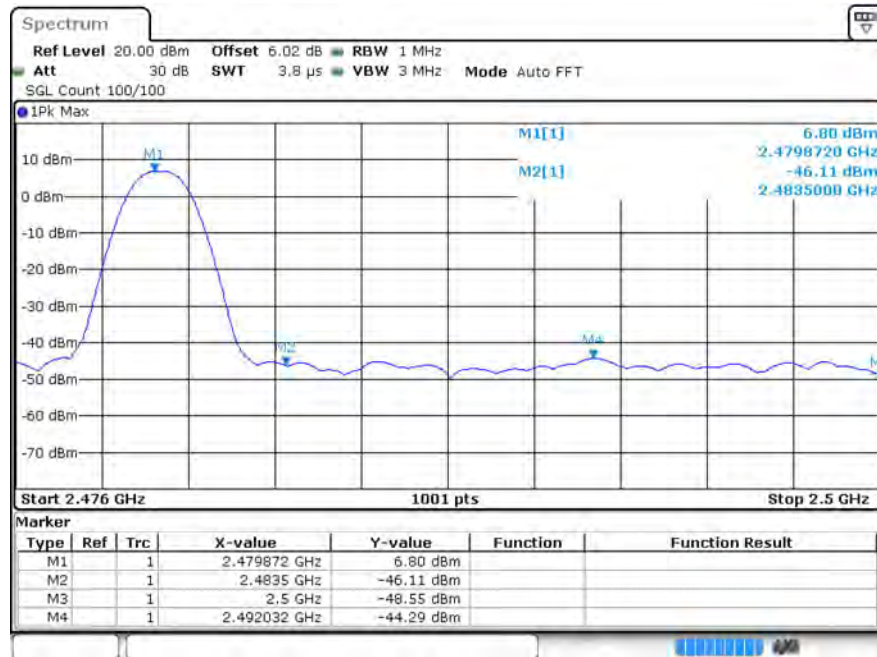
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (Low Channel)



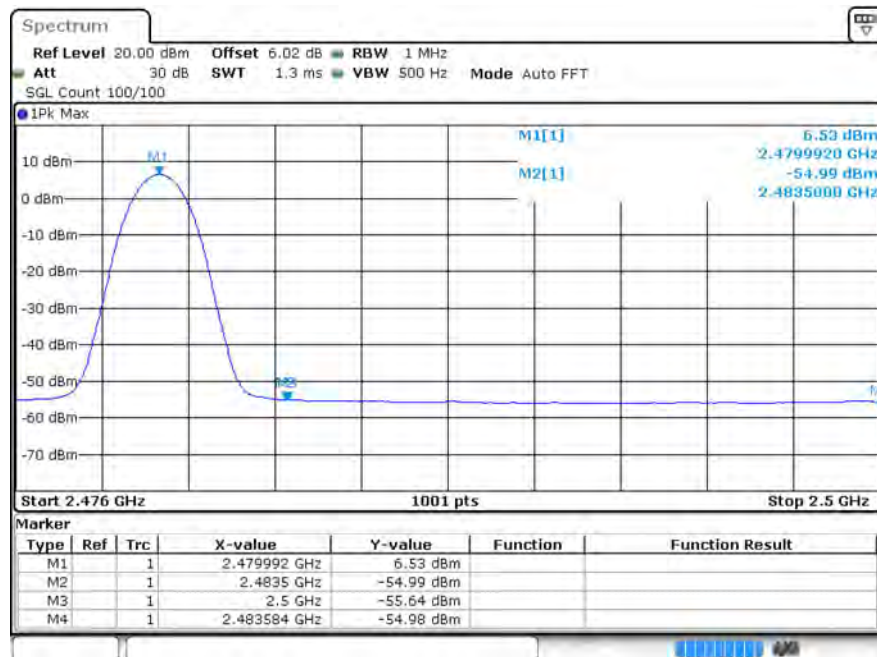
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (Low Channel)



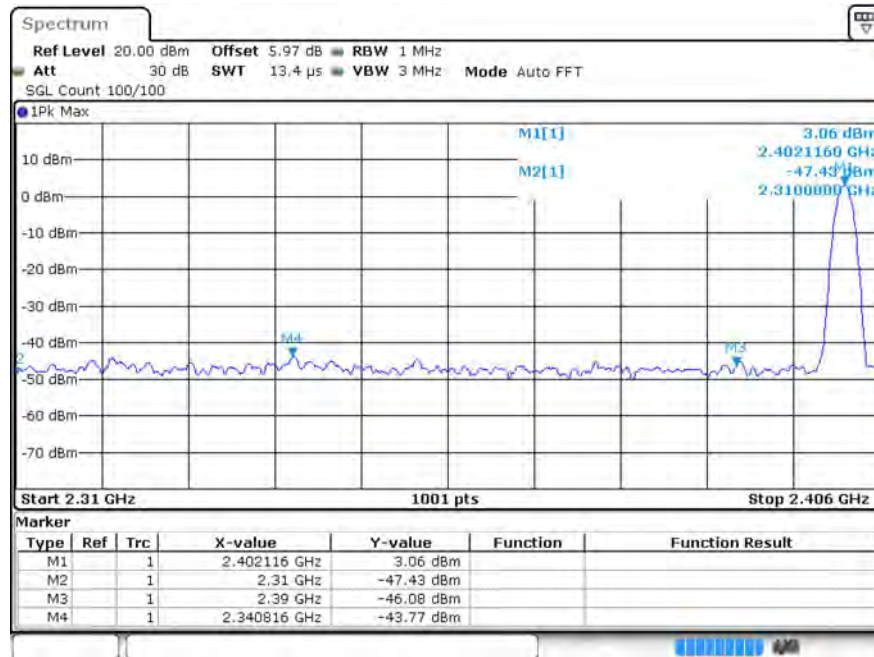
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (High Channel)



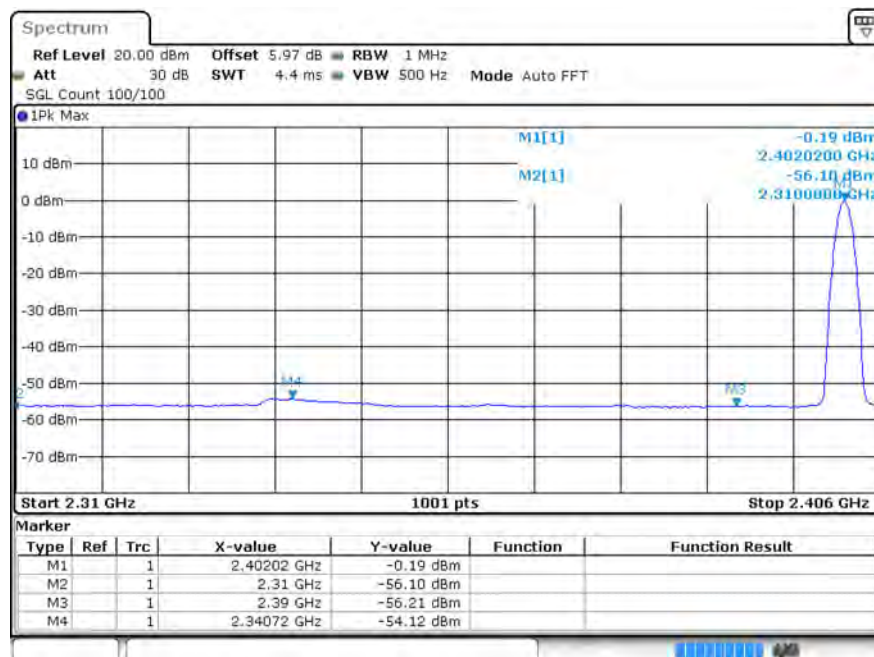
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (High Channel)



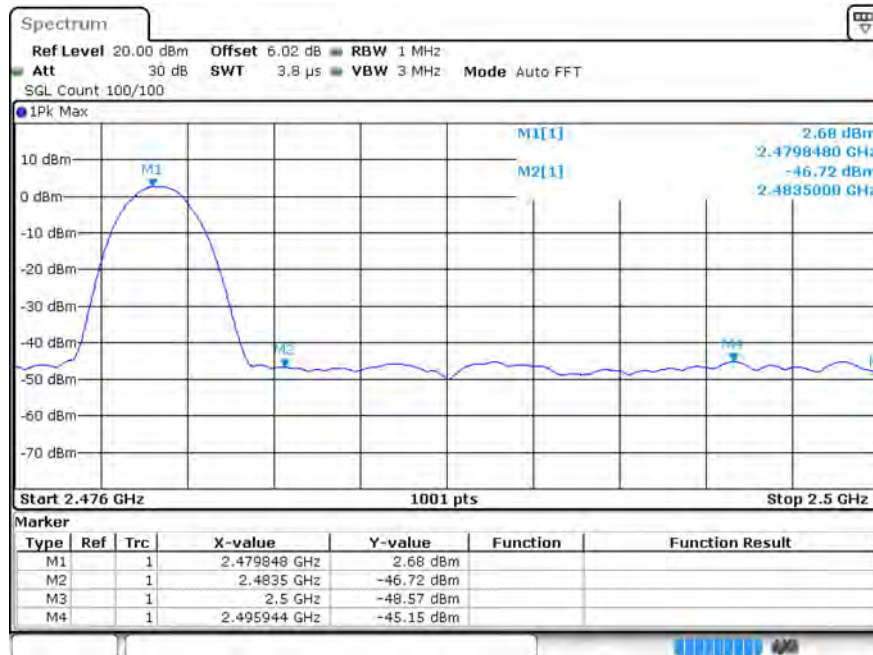
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (Low Channel)



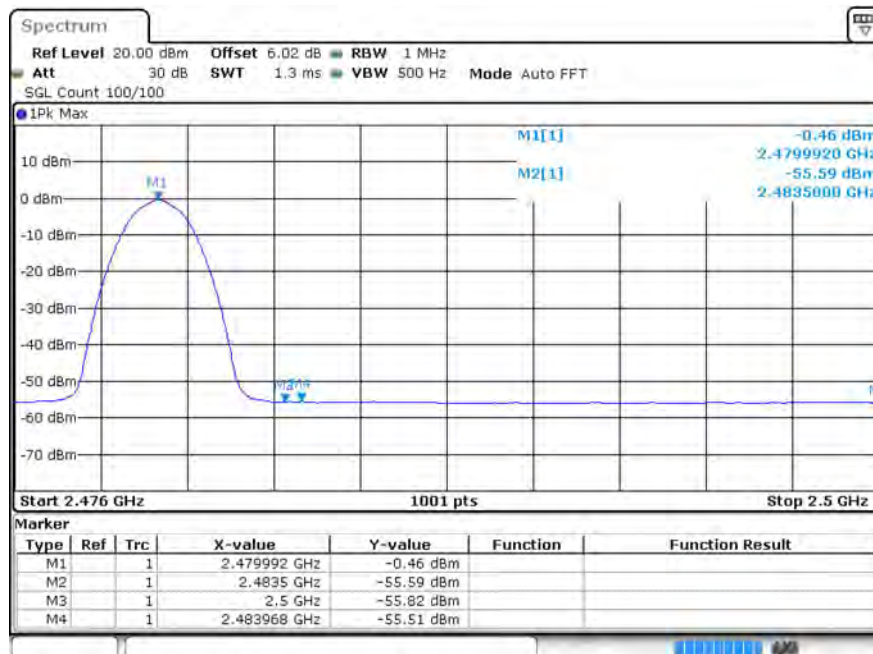
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (Low Channel)



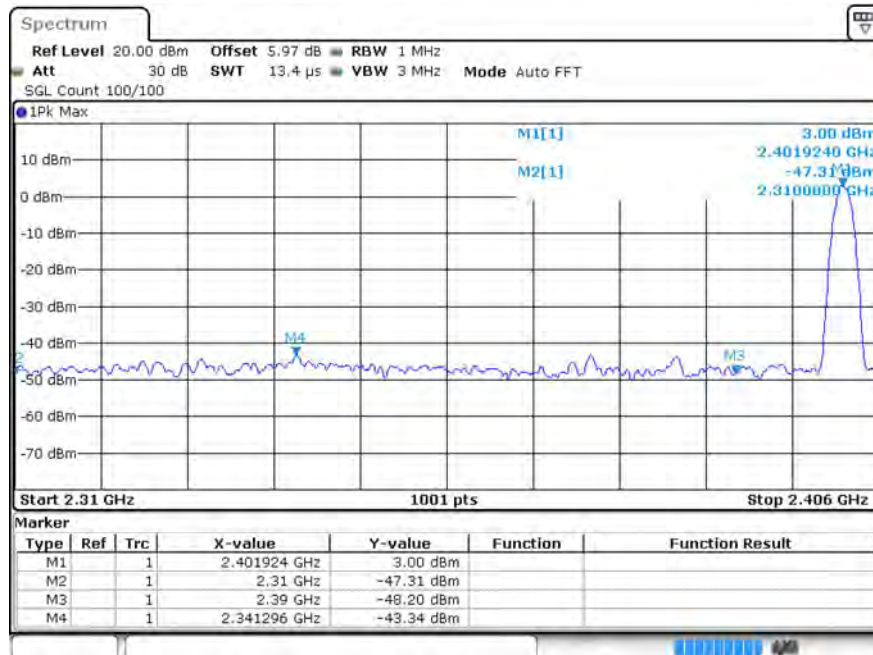
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



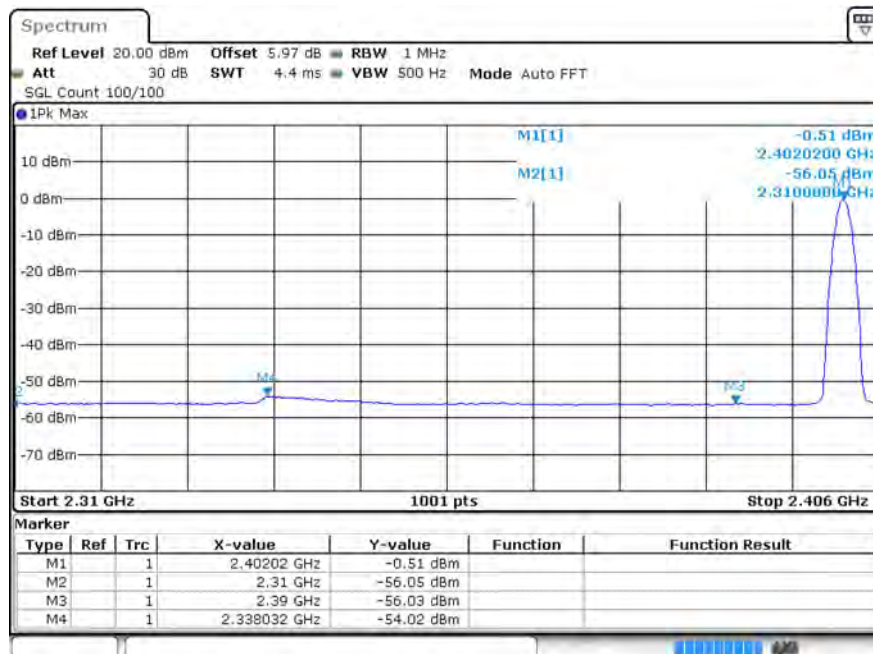
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



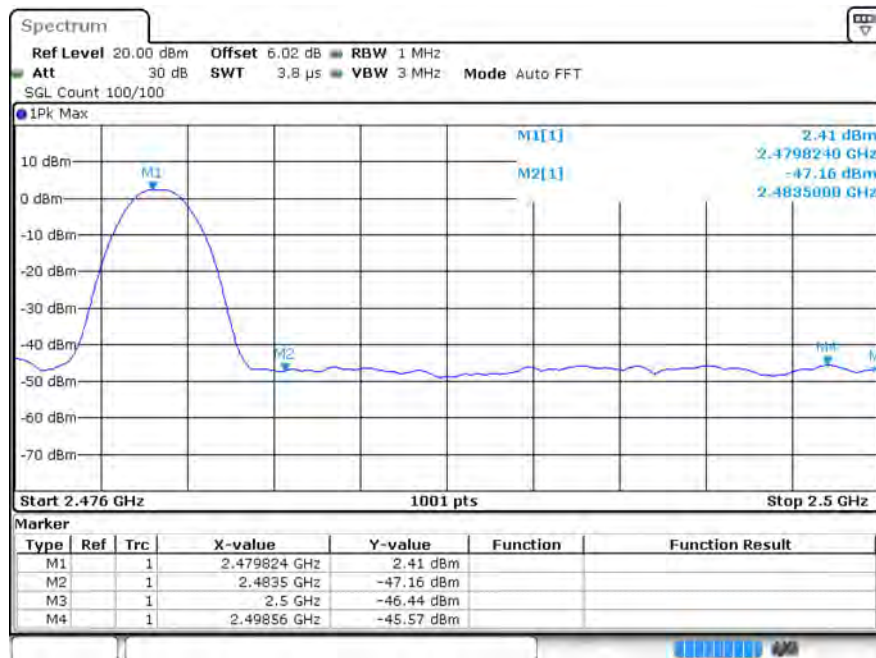
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



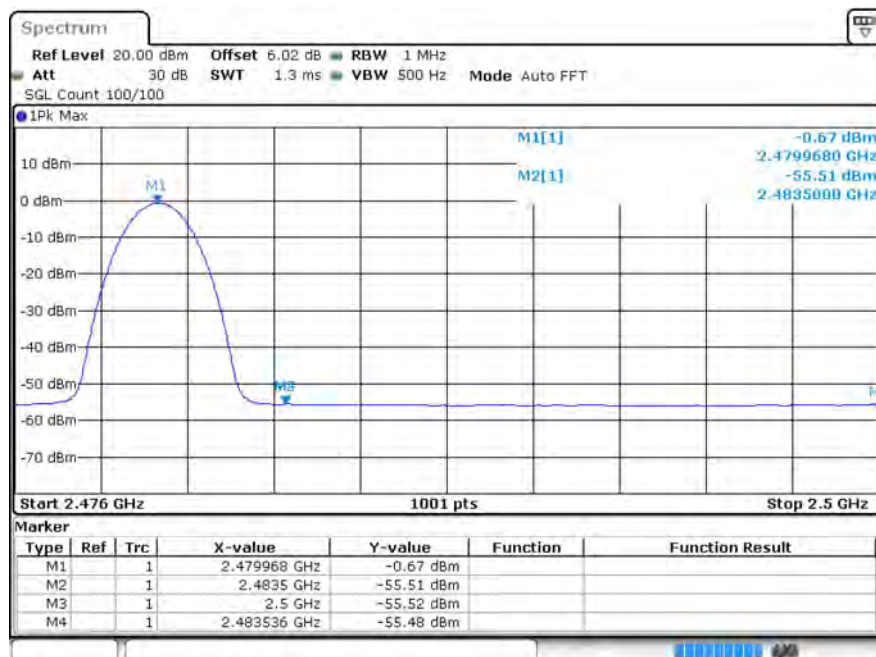
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_Average (Low Channel)



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



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



---The End---