



## Appendix A

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

Product Name: Portable Speaker

Trade Mark: N/A

Test Model: DTKJ-U-0814

#### Environmental Conditions

|                    |             |
|--------------------|-------------|
| Temperature:       | 24. 5℃      |
| Relative Humidity: | 50.4%       |
| ATM Pressure:      | 101Kpa      |
| Test Engineer:     | Simba Huang |
| Supervised by:     | Seal Chen   |

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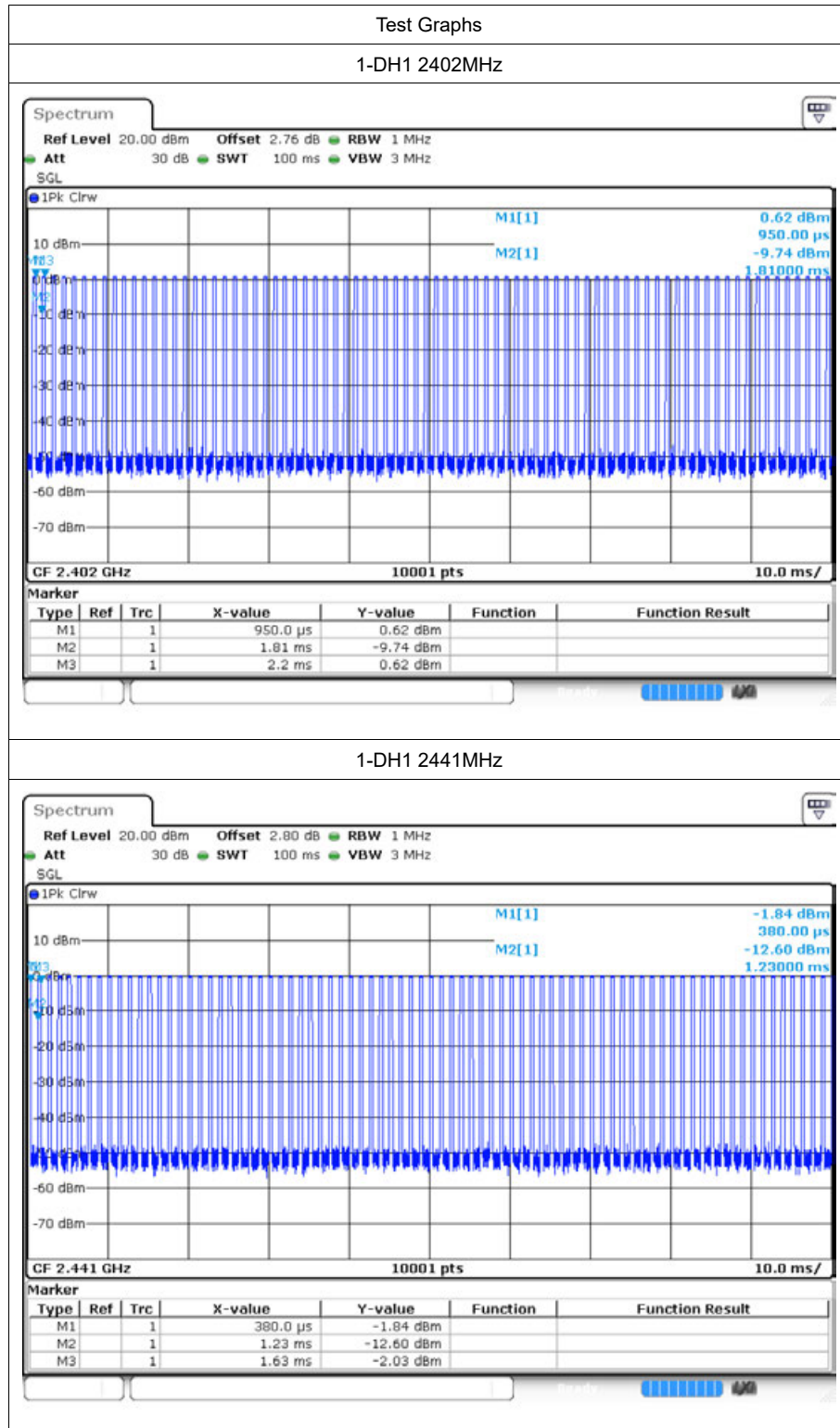
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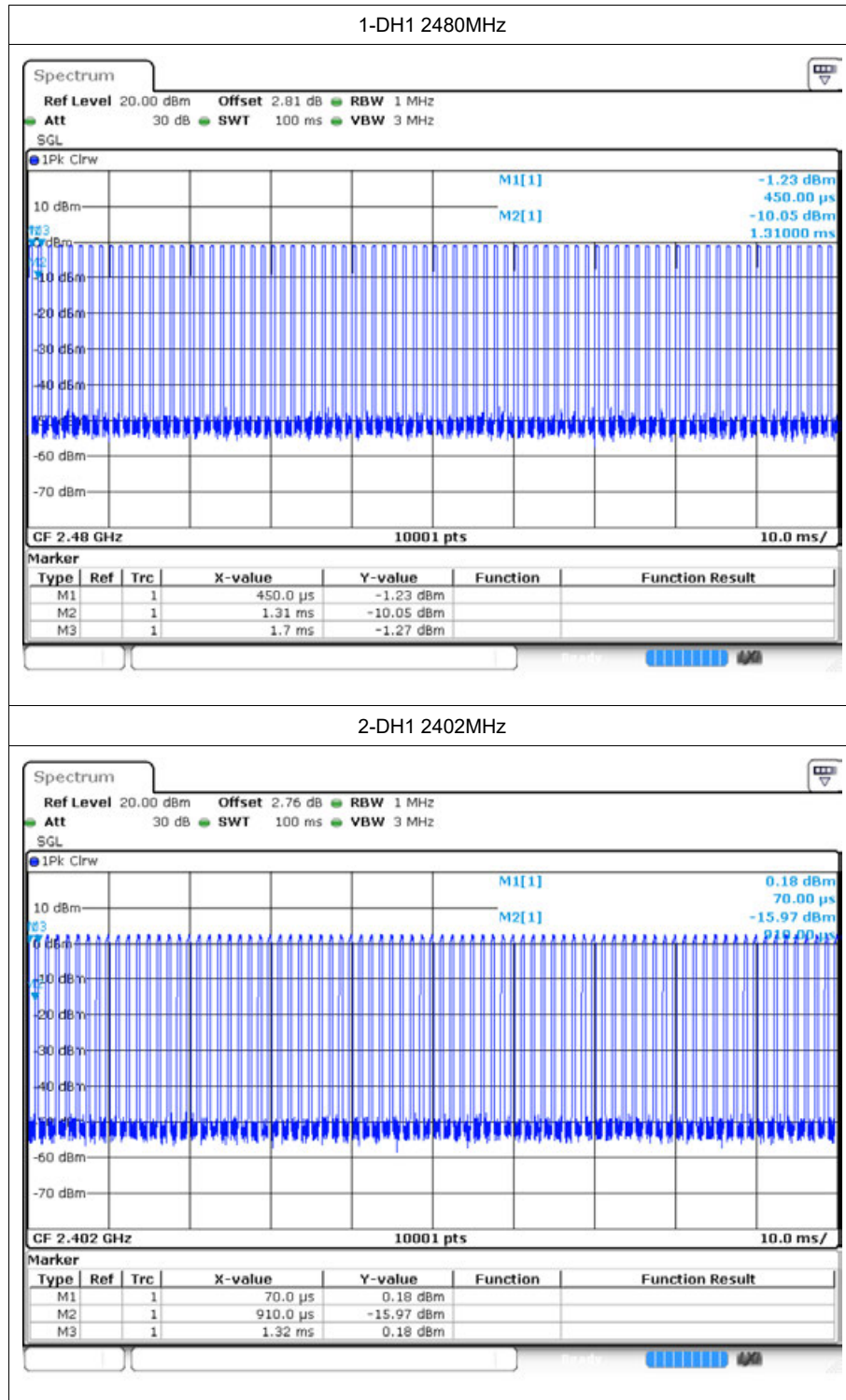
# 1 Duty Cycle

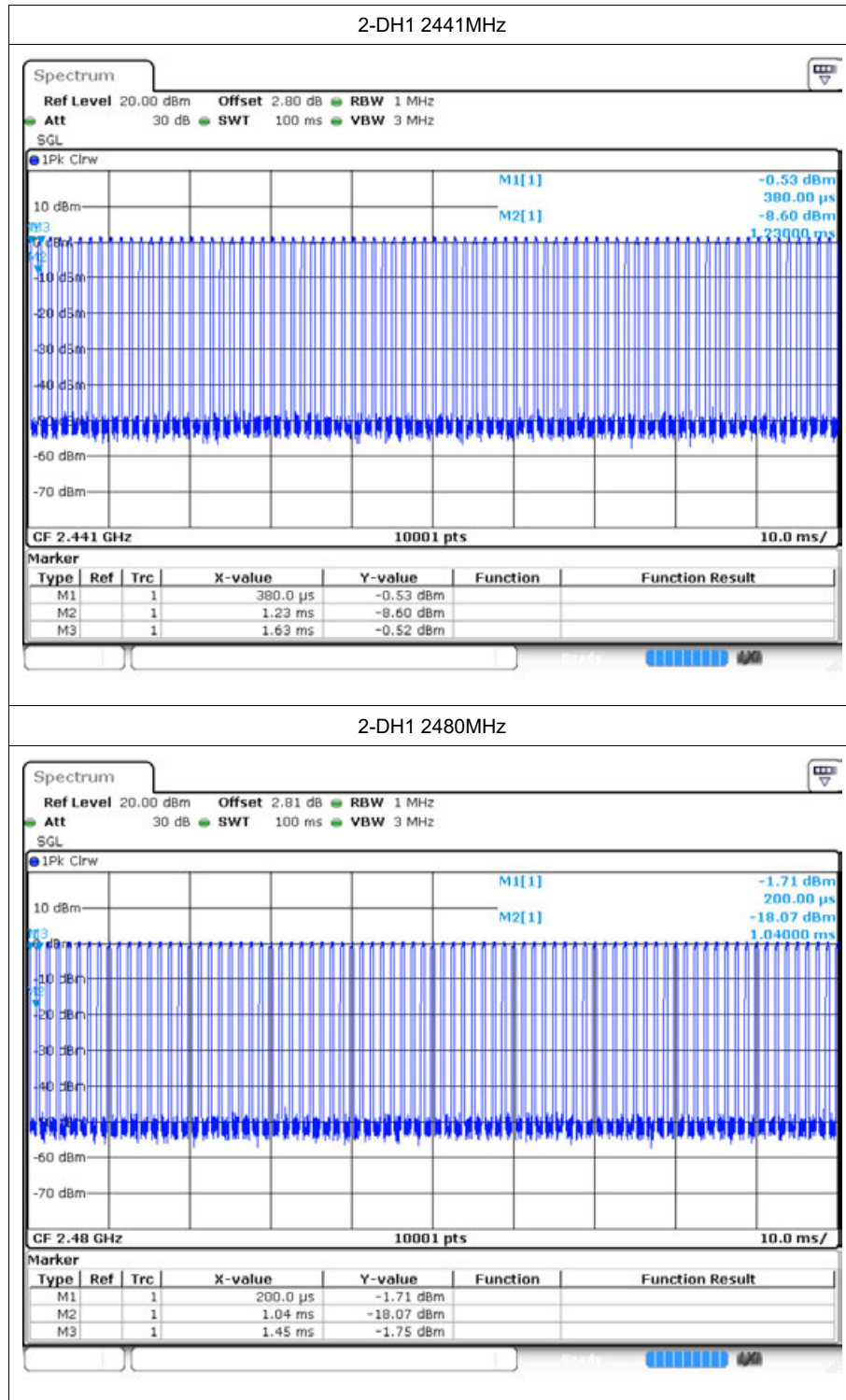
## 1.1 Test Result

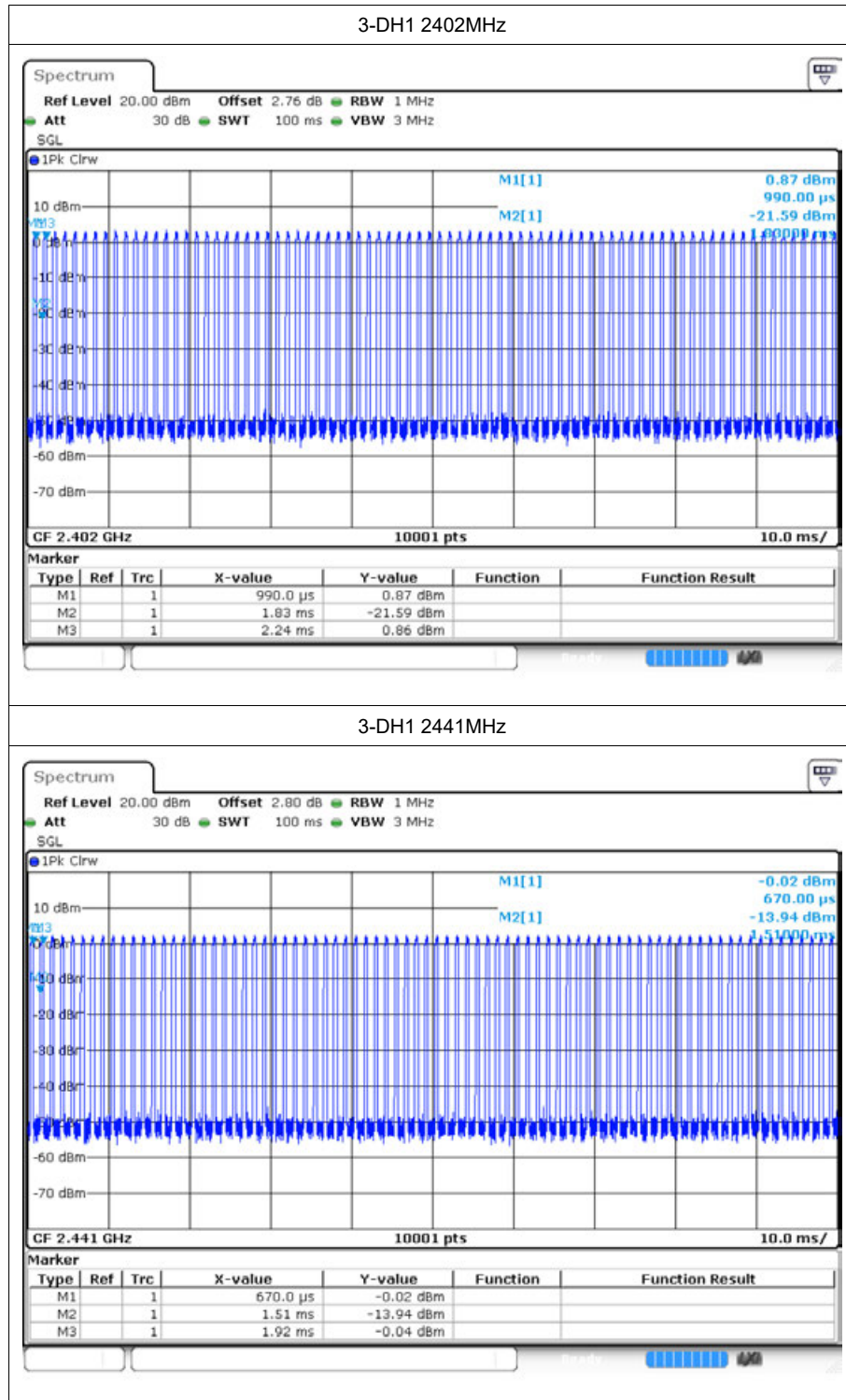
| Mode  | Frequency (MHz) | Duty Cycle (%) | 1/T (kHz) |
|-------|-----------------|----------------|-----------|
| 1-DH1 | 2402            | 32             | 2.56      |
| 1-DH1 | 2441            | 32.47          | 2.5       |
| 1-DH1 | 2480            | 32.36          | 2.56      |
| 2-DH1 | 2402            | 33.61          | 2.44      |
| 2-DH1 | 2441            | 33.33          | 2.5       |
| 2-DH1 | 2480            | 33.61          | 2.44      |
| 3-DH1 | 2402            | 33.6           | 2.44      |
| 3-DH1 | 2441            | 33.6           | 2.44      |
| 3-DH1 | 2480            | 33.6           | 2.44      |

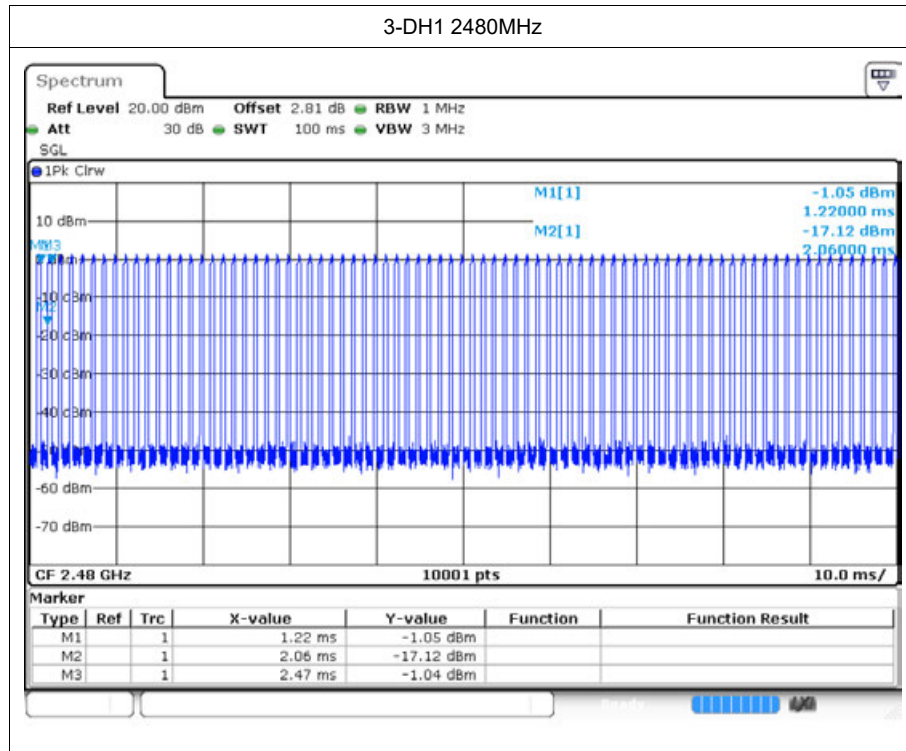
## 1.2 Test Graphs









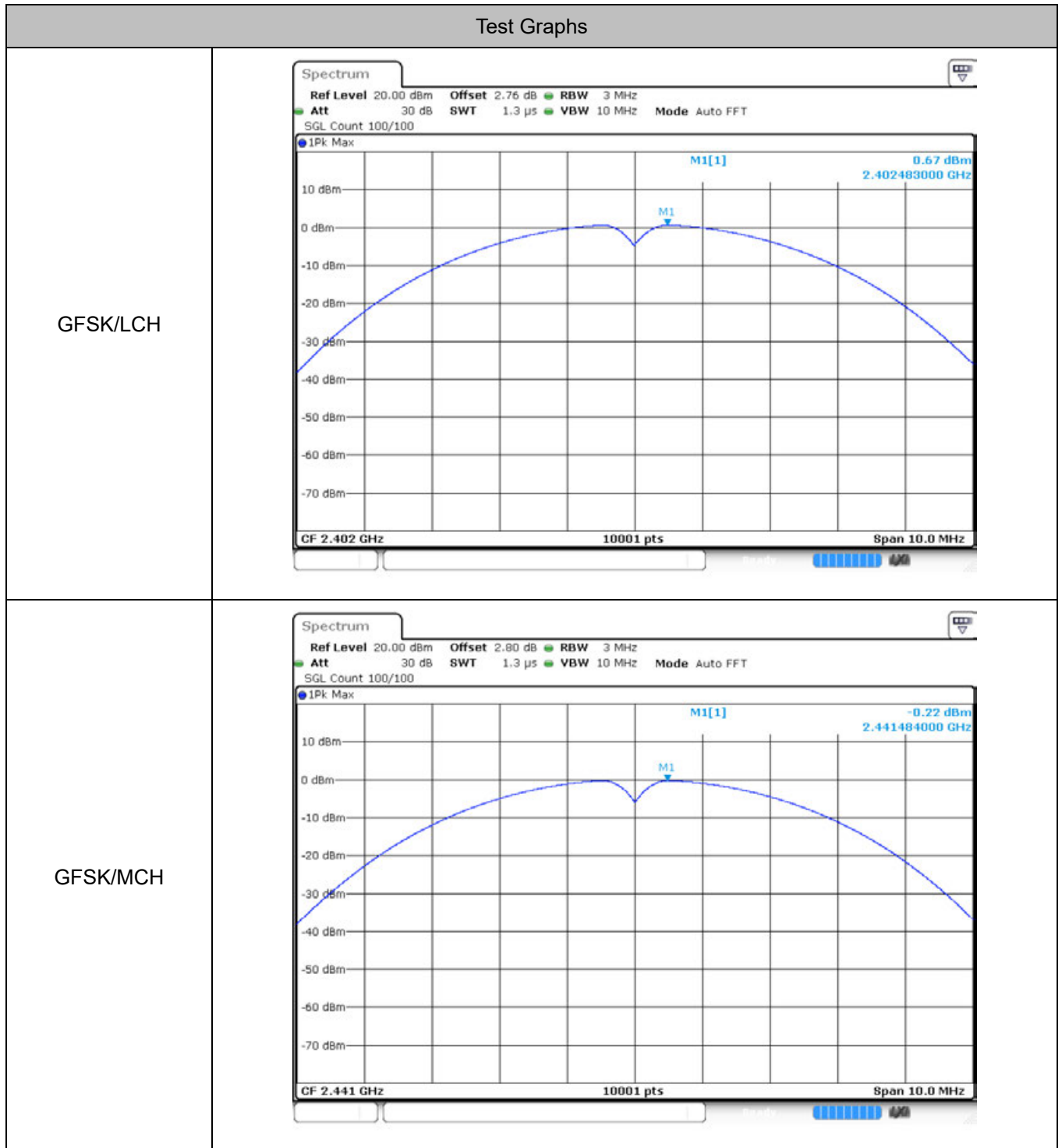


## 2 Maximum Conducted Peak Output Power

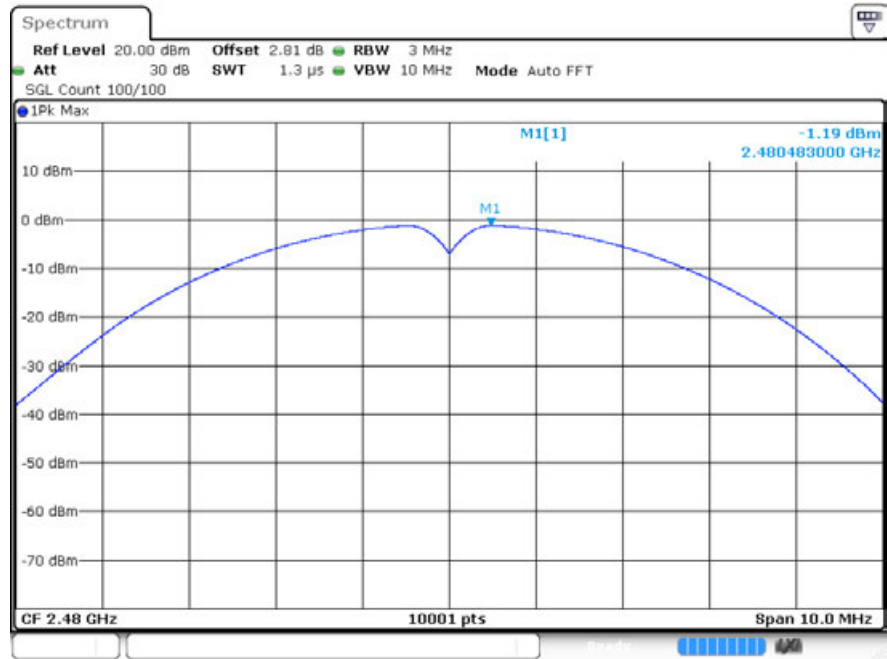
### 2.1 Test Result

| Mode          | Channel. | Maximum Peak Output Power<br>[dBm] | Limit<br>[dBm] | Verdict |
|---------------|----------|------------------------------------|----------------|---------|
| GFSK          | LCH      | 0.67                               | 21             | Pass    |
|               | MCH      | -0.22                              | 21             | Pass    |
|               | HCH      | -1.19                              | 21             | Pass    |
| $\pi/4$ DQPSK | LCH      | 2.36                               | 21             | Pass    |
|               | MCH      | 1.57                               | 21             | Pass    |
|               | HCH      | 0.77                               | 21             | Pass    |
| 8DPSK         | LCH      | 3.12                               | 21             | Pass    |
|               | MCH      | 2.73                               | 21             | Pass    |
|               | HCH      | 0.74                               | 21             | Pass    |

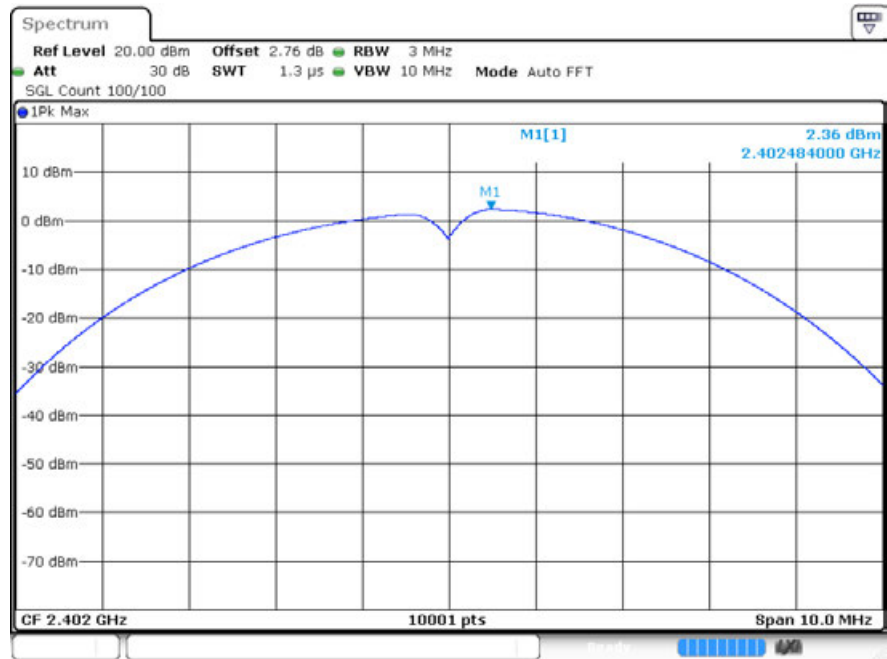
## 2.2 Test Graphs



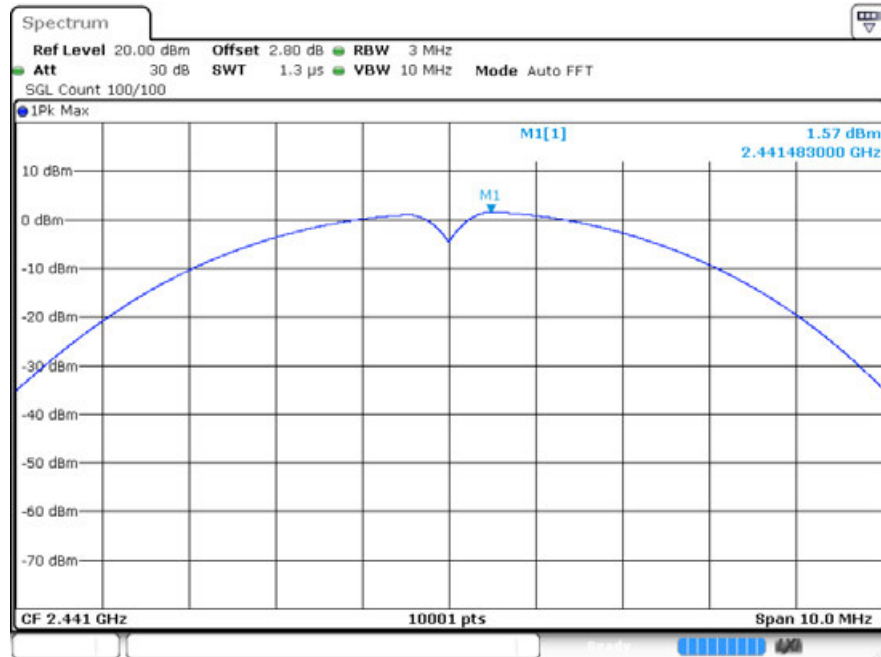
GFSK/HCH



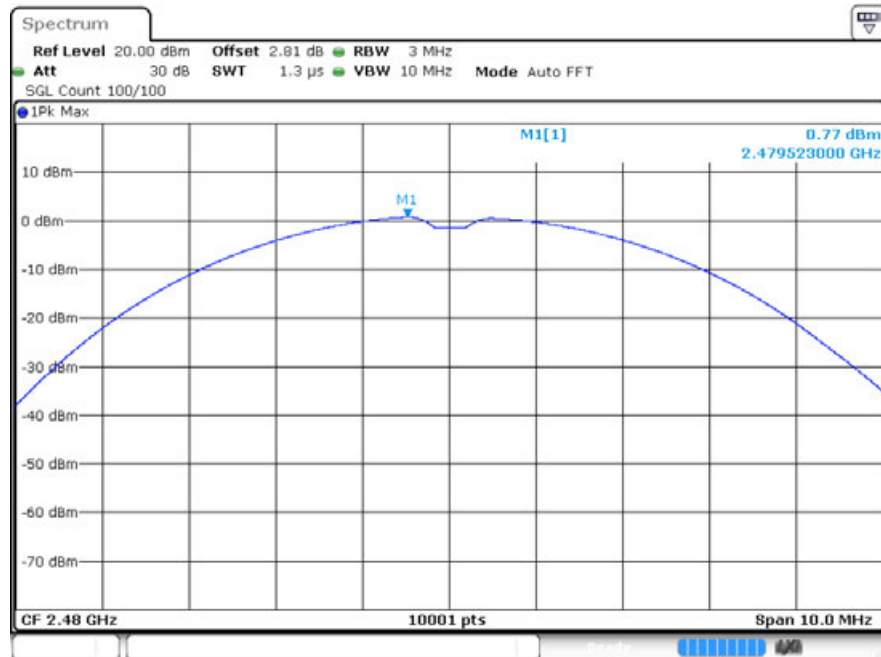
$\pi/4$ DQPSK/LCH



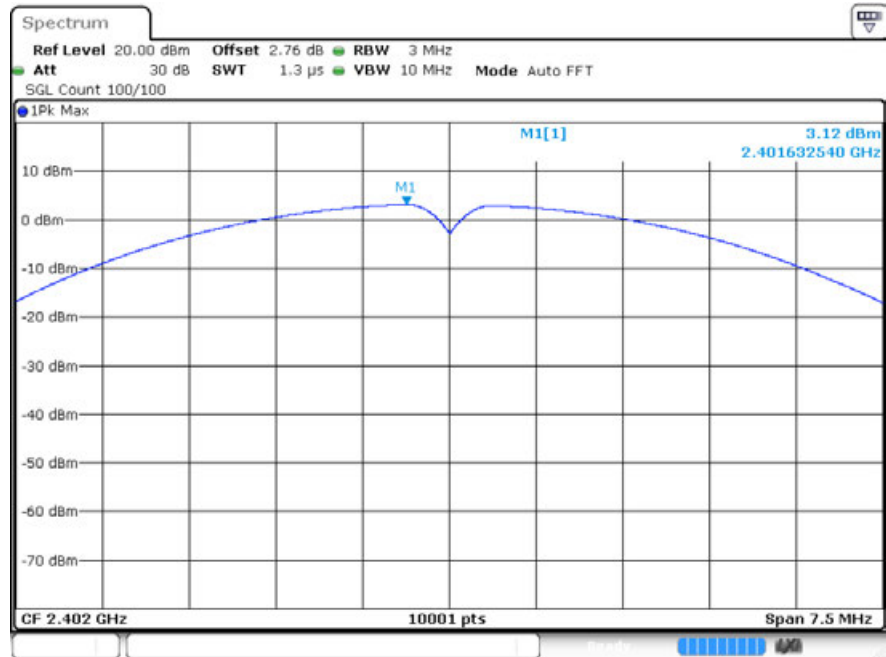
$\pi/4$ DQPSK/MCH



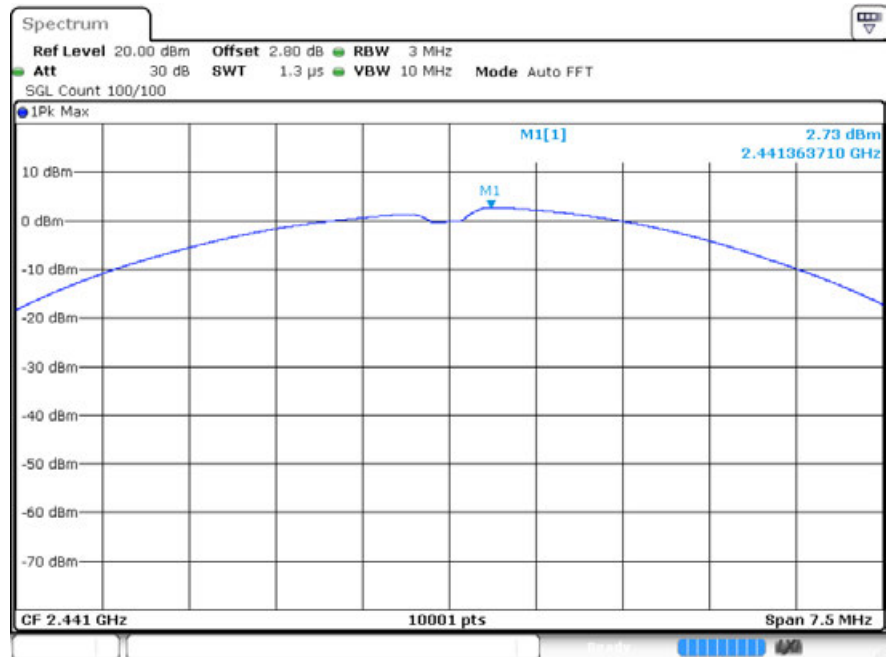
$\pi/4$ DQPSK/HCH



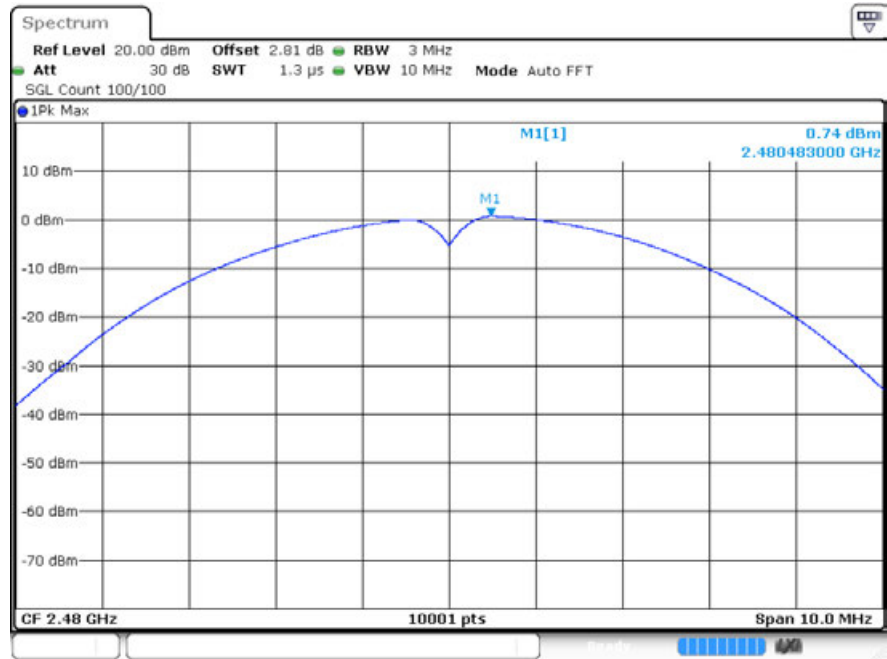
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

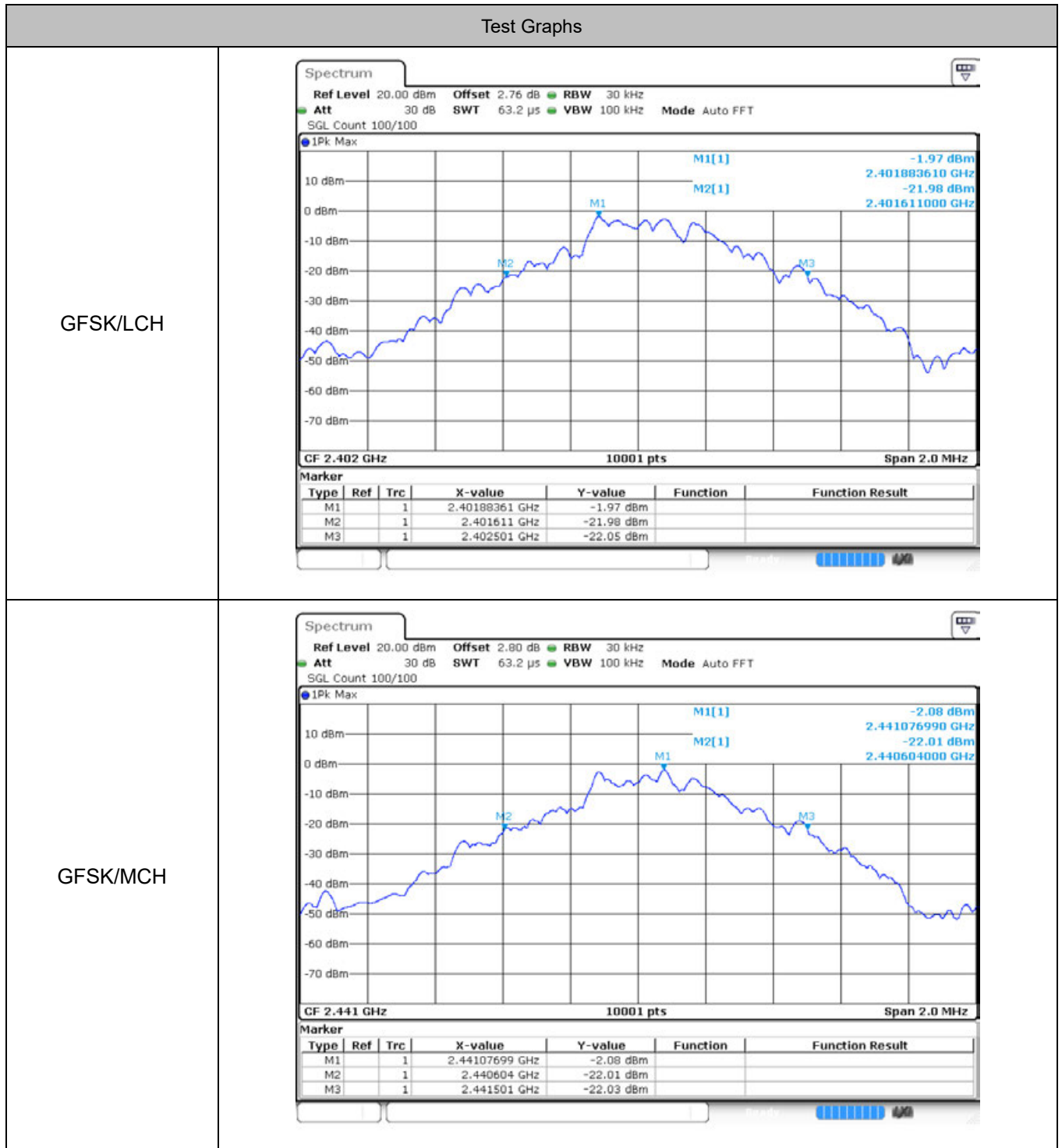


### 3 20dB Bandwidth

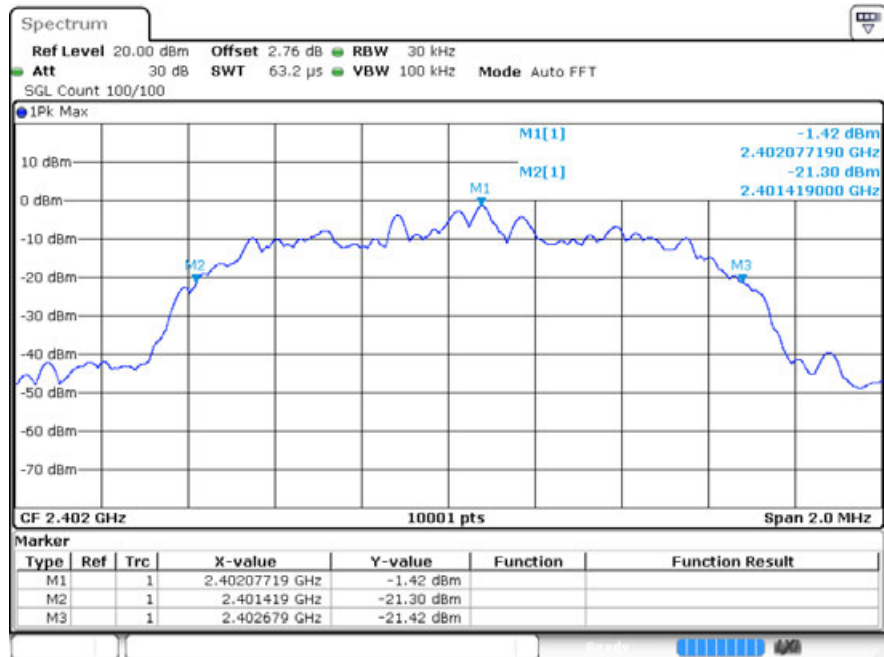
#### 3.1 Test Result

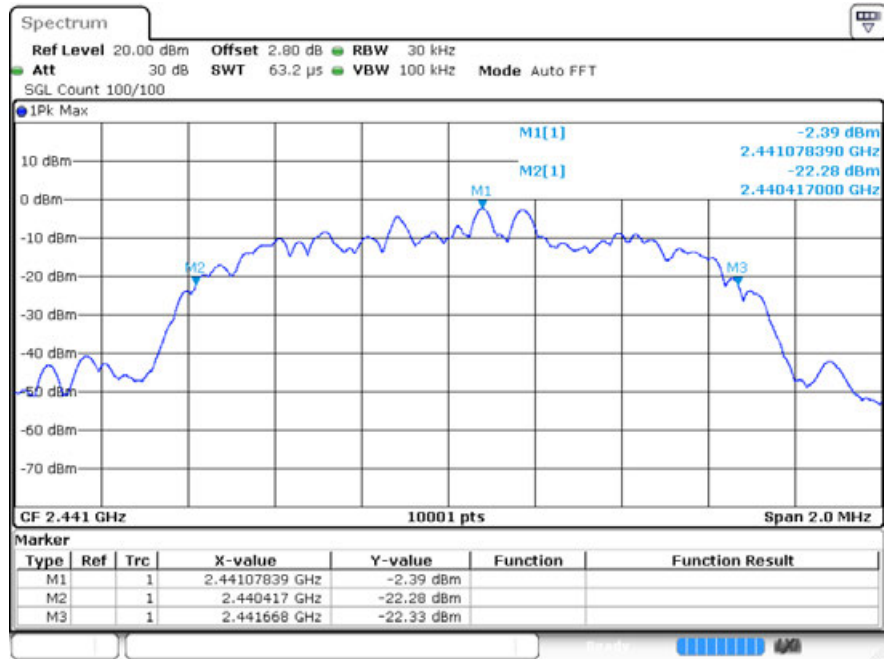
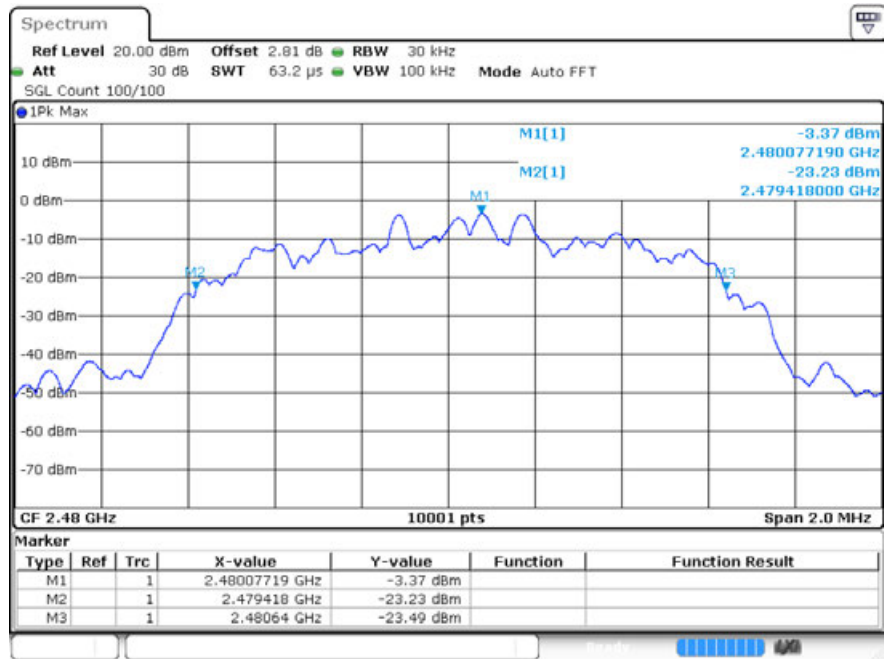
| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.89                 | Not Specified | Pass    |
|               | MCH      | 0.897                | Not Specified | Pass    |
|               | HCH      | 0.906                | Not Specified | Pass    |
| $\pi/4$ DQPSK | LCH      | 1.261                | Not Specified | Pass    |
|               | MCH      | 1.251                | Not Specified | Pass    |
|               | HCH      | 1.222                | Not Specified | Pass    |
| 8DPSK         | LCH      | 1.227                | Not Specified | Pass    |
|               | MCH      | 1.217                | Not Specified | Pass    |
|               | HCH      | 1.23                 | Not Specified | Pass    |

### 3.2 Test Graphs

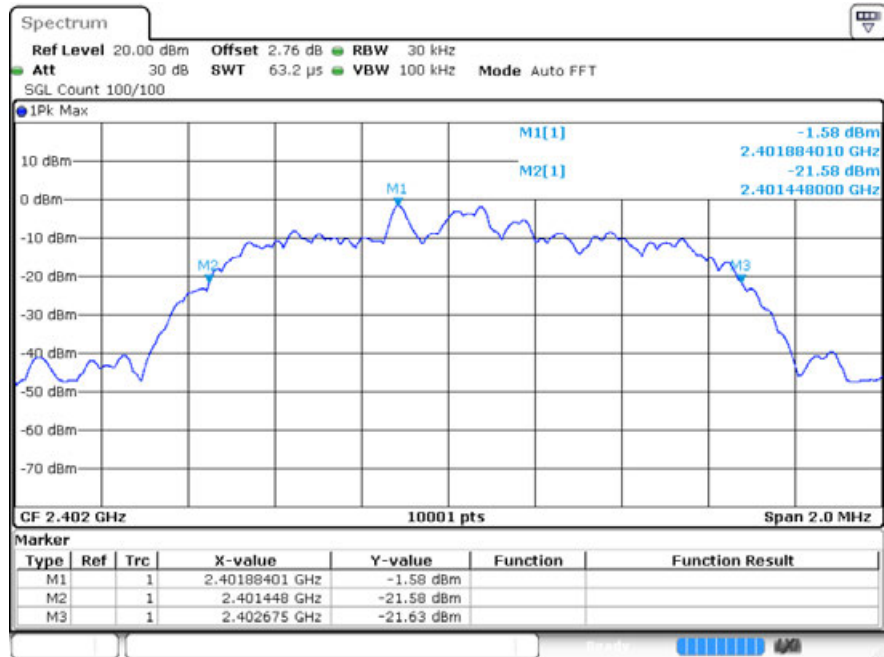


GFSK/HCH

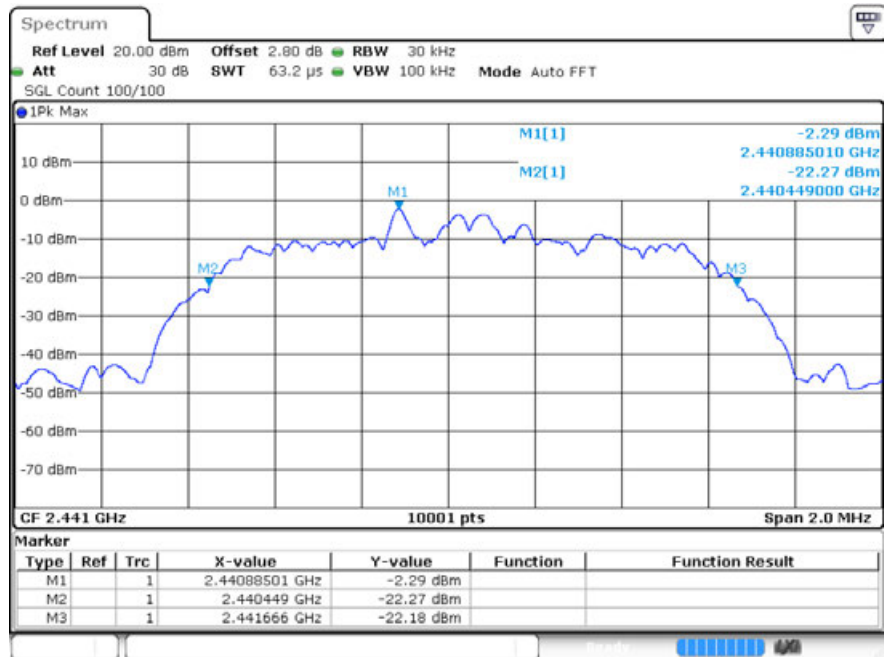

 $\pi/4$ DQPSK/LCH


$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


8DPSK/LCH



8DPSK/MCH



8DPSK/HCH



## 4 Carrier Frequency Separation

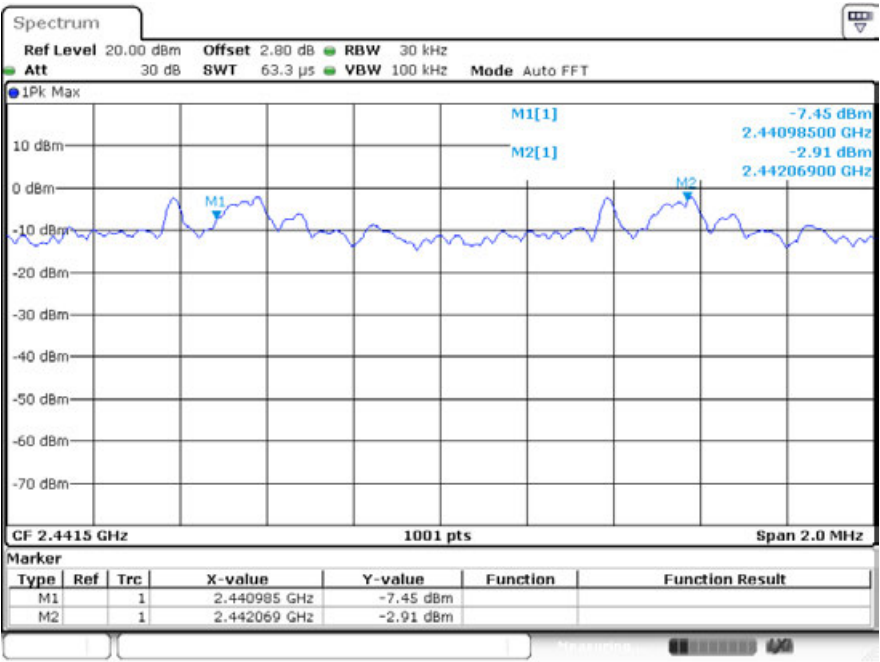
### 4.1 Test Result

| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | MCH      | 1                                  | 0.598       | Pass    |
| $\pi/4$ DQPSK | MCH      | 1.034                              | 0.834       | Pass    |
| 8DPSK         | MCH      | 1.084                              | 0.811       | Pass    |

## 4.2 Test Graphs



8DPSK/MCH

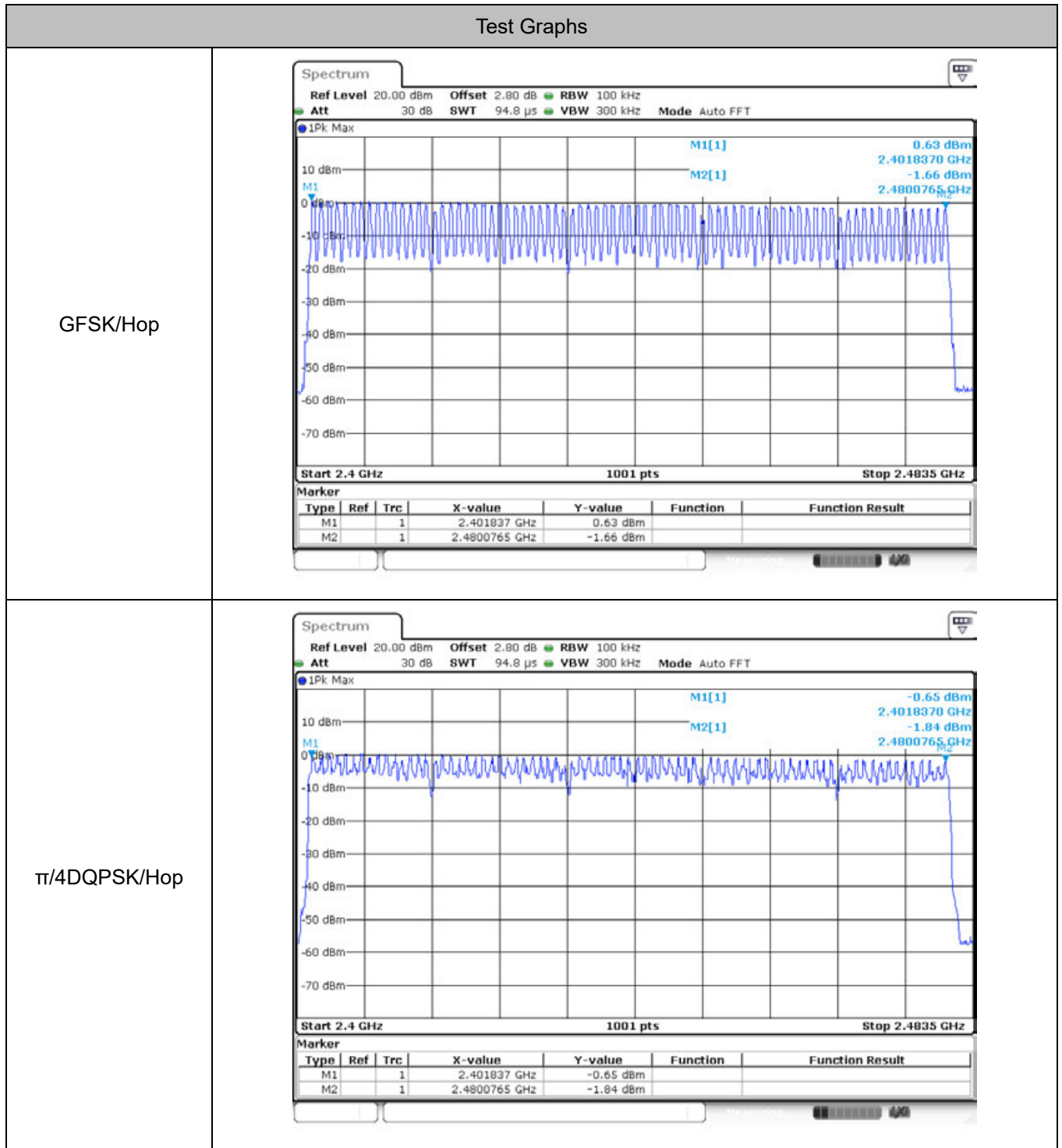


## 5 Hopping Channel Number

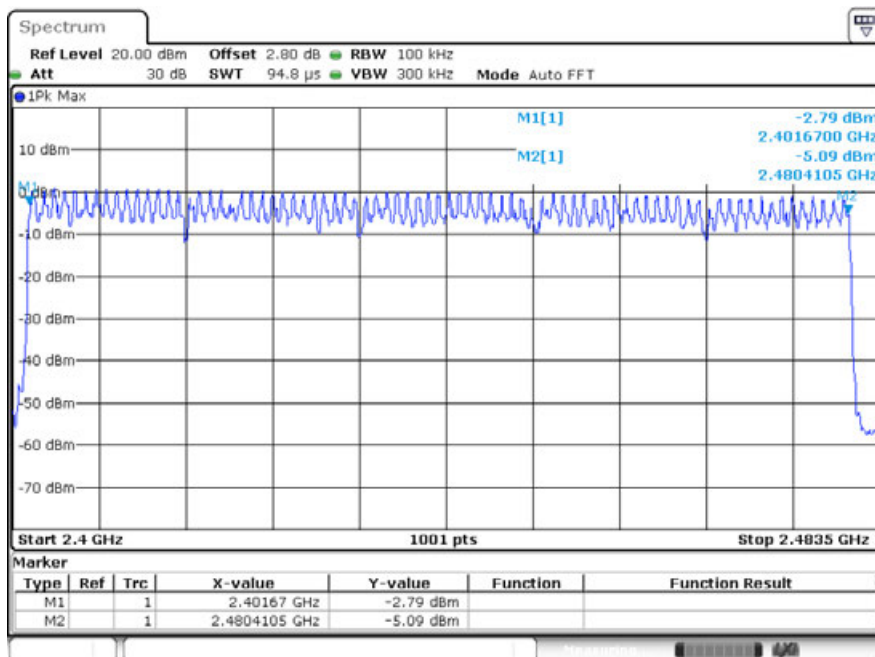
### 5.1 Test Result

| 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

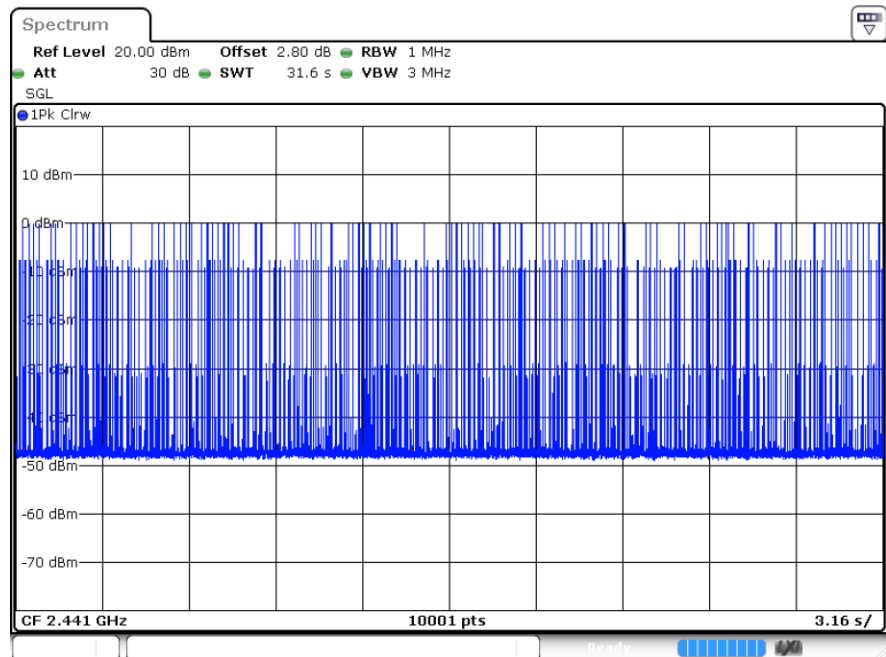
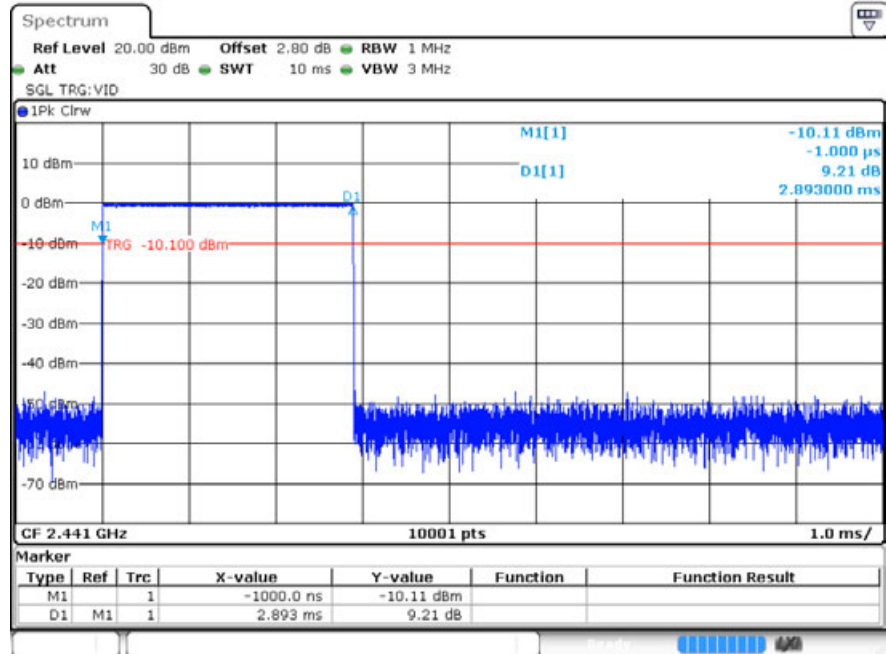
### 6.1 Test Result

| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[ms] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|----------------|-----------|---------|
| GFSK          | DH5    | MCH     | 2.893                      | 116                   | 335.588        | 0.4       | Pass    |
| $\pi/4$ DQPSK | 2DH5   | MCH     | 2.894                      | 113                   | 327.022        | 0.4       | Pass    |
| 8DPSK         | 3DH5   | MCH     | 2.901                      | 122                   | 353.922        | 0.4       | Pass    |

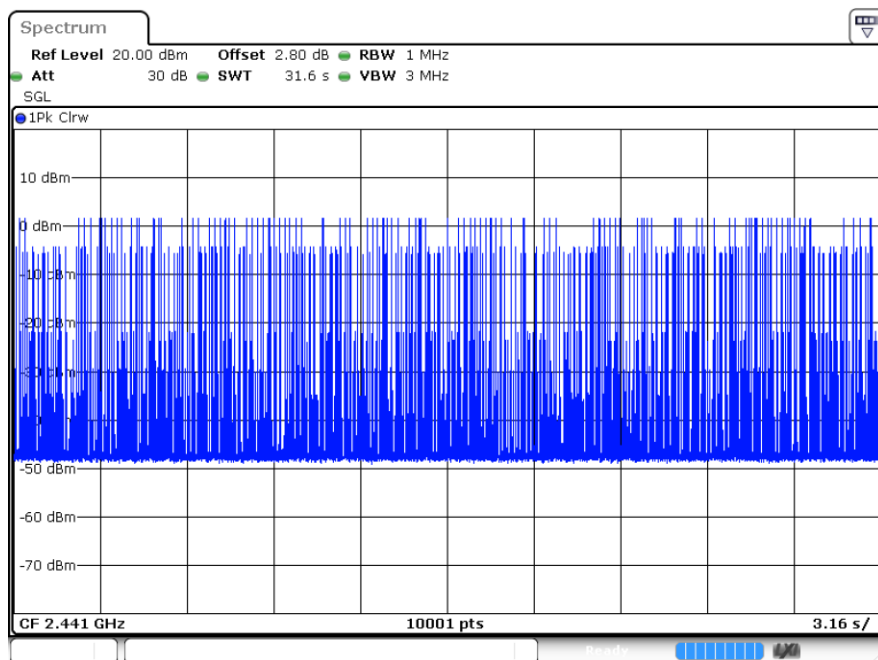
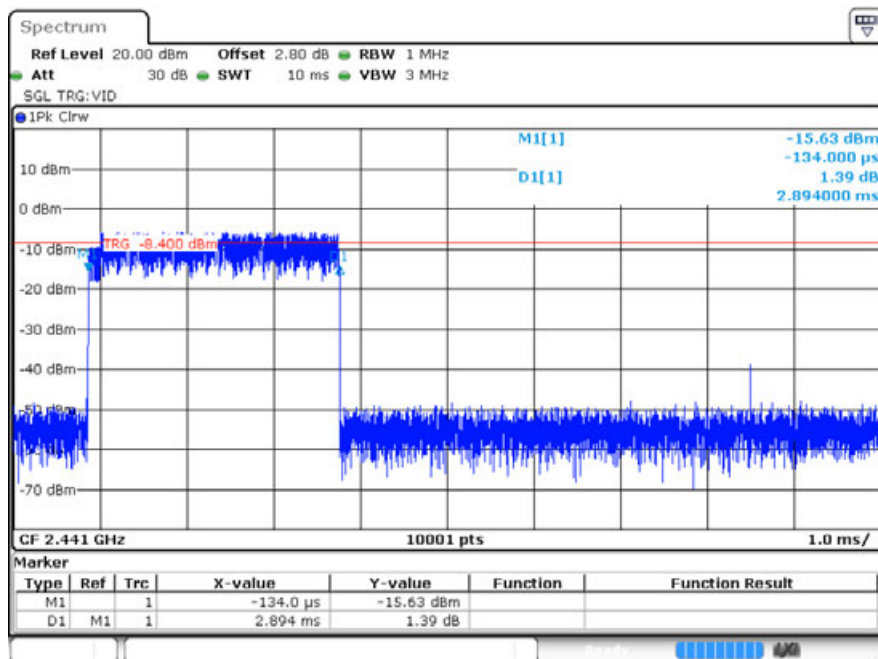
## 6.2 Test Graphs

### Test Graphs

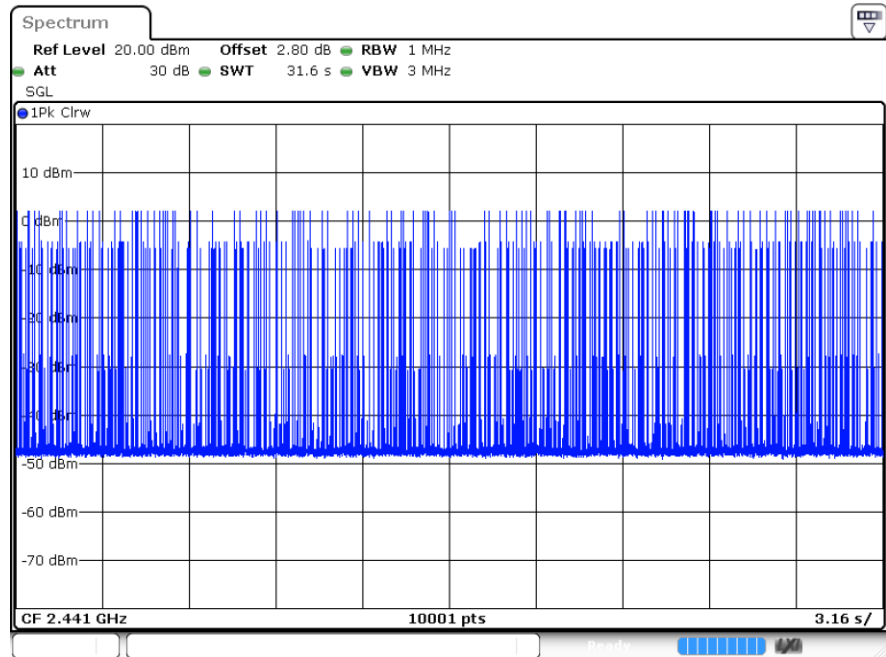
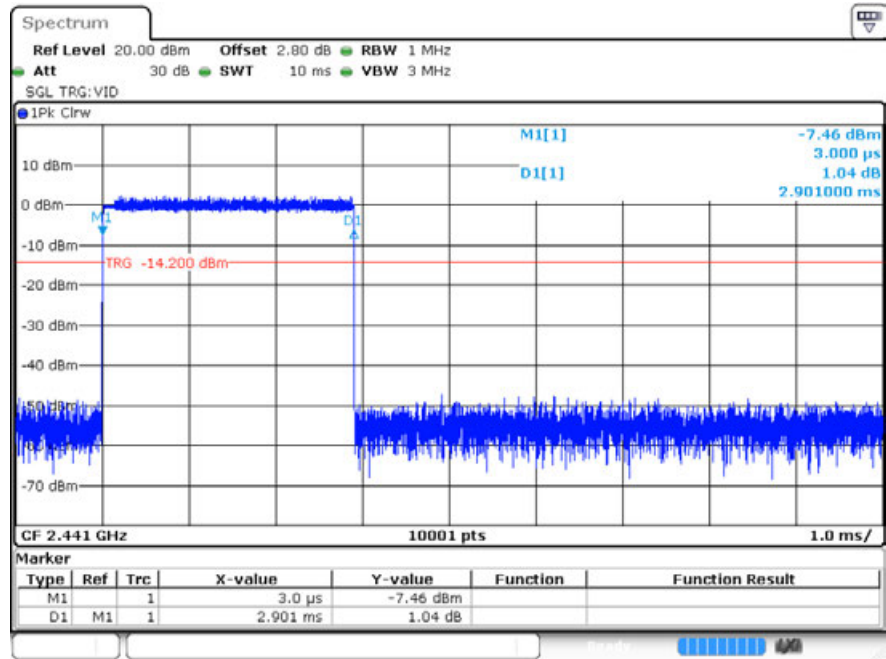
GFSK\_DH5/MCH



$\pi/4$ DQPSK  
\_2DH5/MCH



8DPSK\_3DH5/MCH



## 7 RF Conducted Spurious Emissions

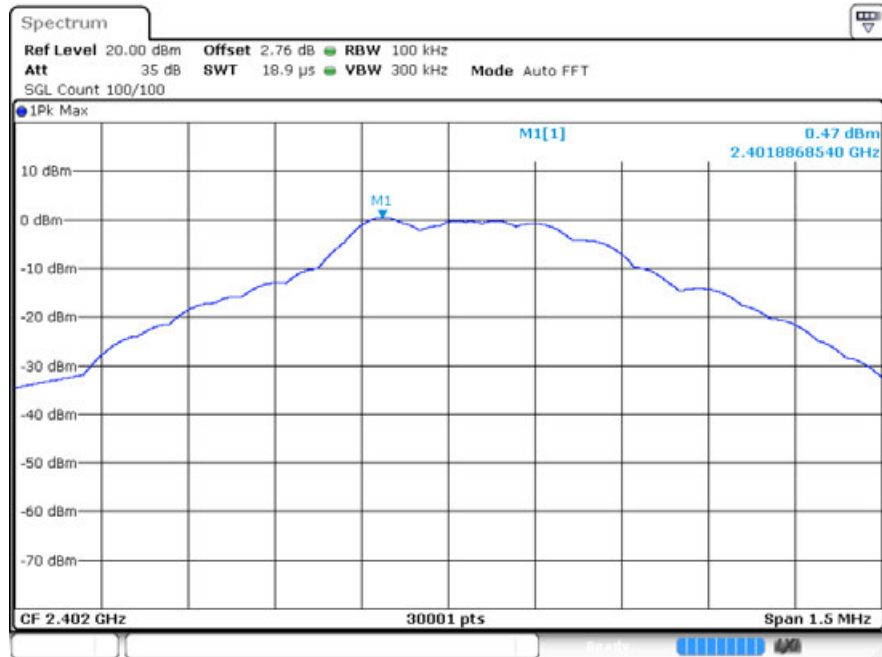
### 7.1 Test Result

| Mode          | Channel | Max. Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|------------------|-------------|---------|
| GFSK          | LCH     | -42.14           | -20         | Pass    |
|               | MCH     | -39.97           | -20         | Pass    |
|               | HCH     | -41.93           | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | -43.67           | -20         | Pass    |
|               | MCH     | -44.03           | -20         | Pass    |
|               | HCH     | -41.46           | -20         | Pass    |
| 8DPSK         | LCH     | -40.82           | -20         | Pass    |
|               | MCH     | -39.24           | -20         | Pass    |
|               | HCH     | -41.68           | -20         | Pass    |

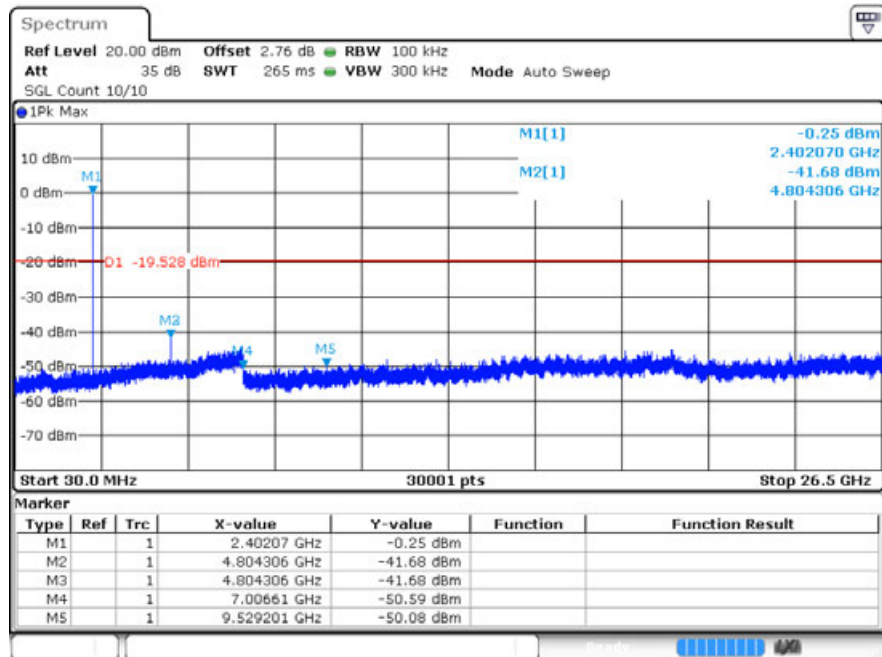
## 7.2 Test Graphs

GFSK\_LCH\_Graphs

Pref

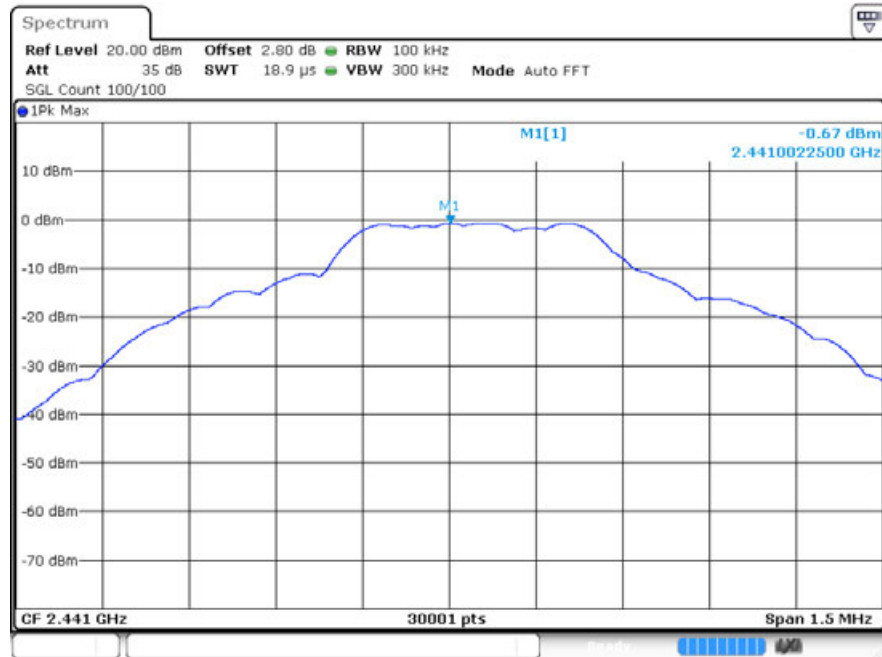


Puw

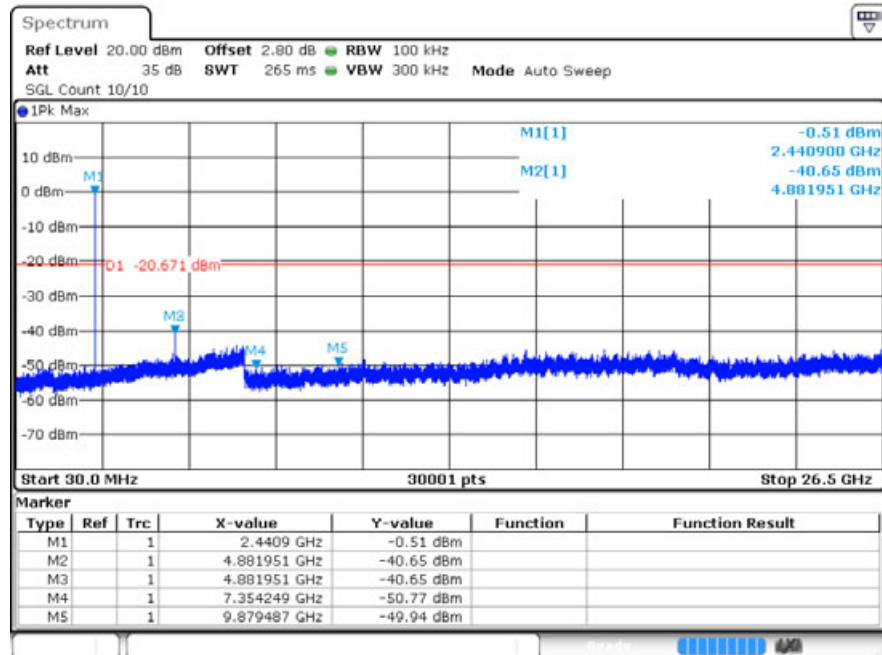


## GFSK\_MCH\_Graphs

Pref

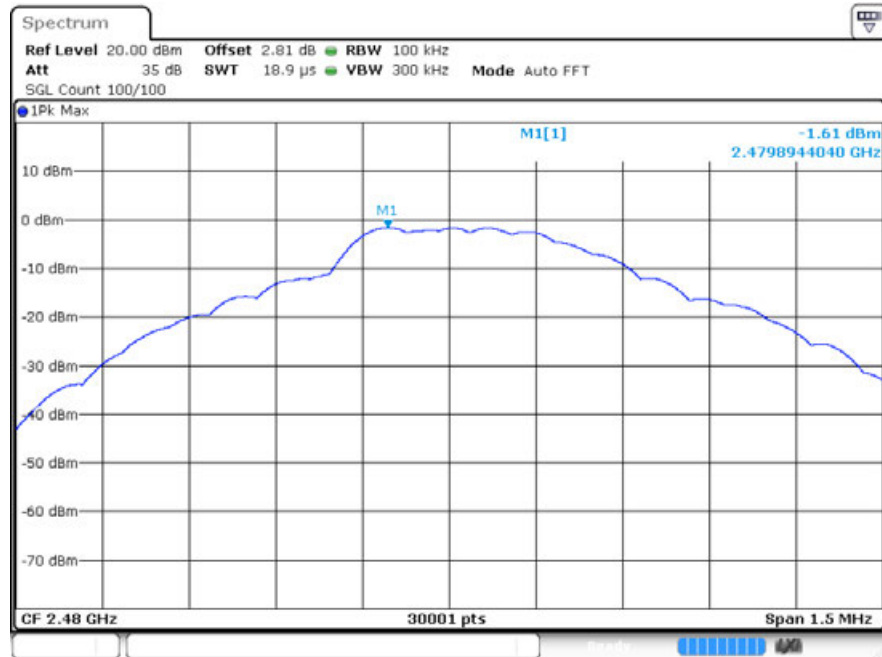


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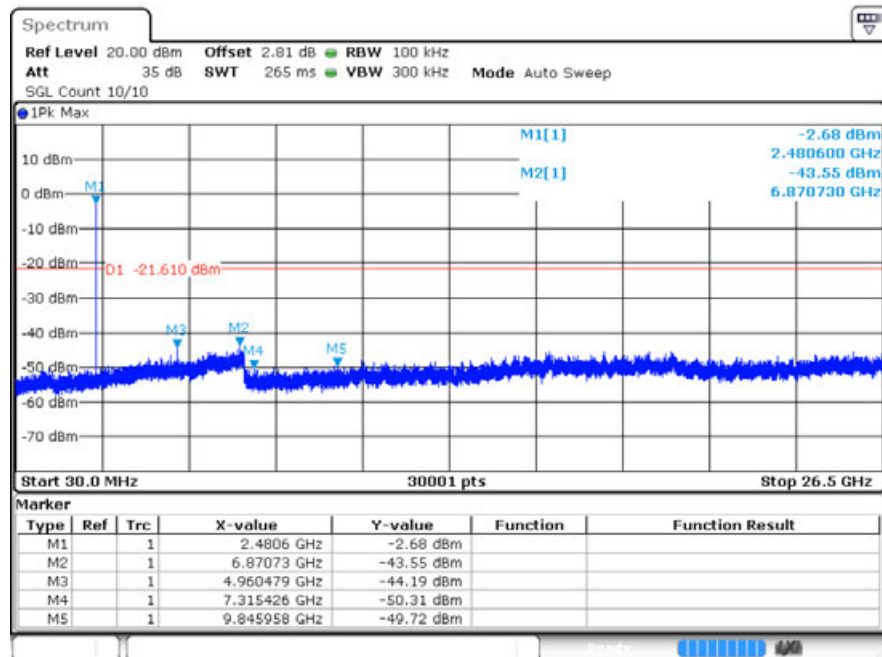


## GFSK\_HCH\_Graphs

Pref

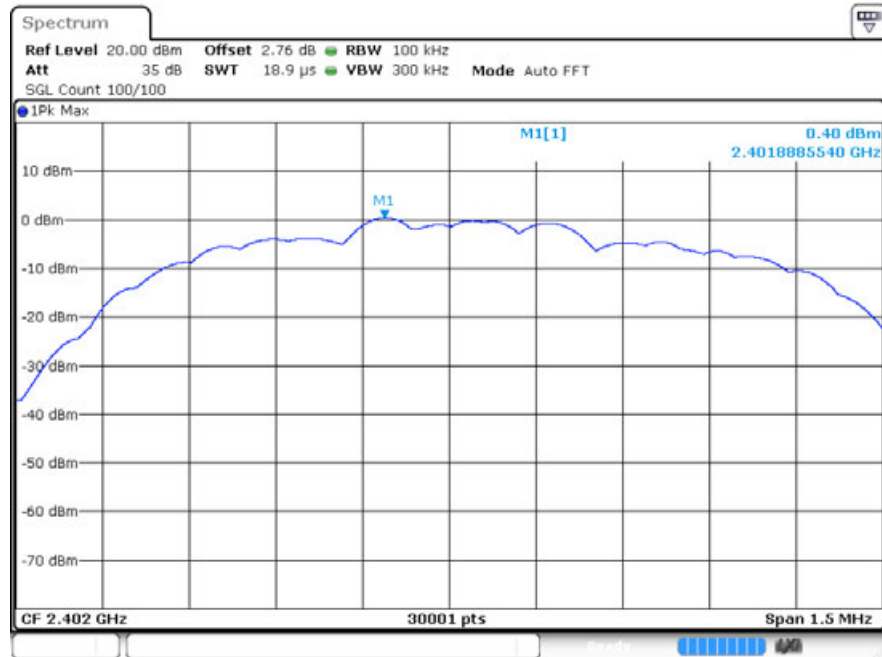


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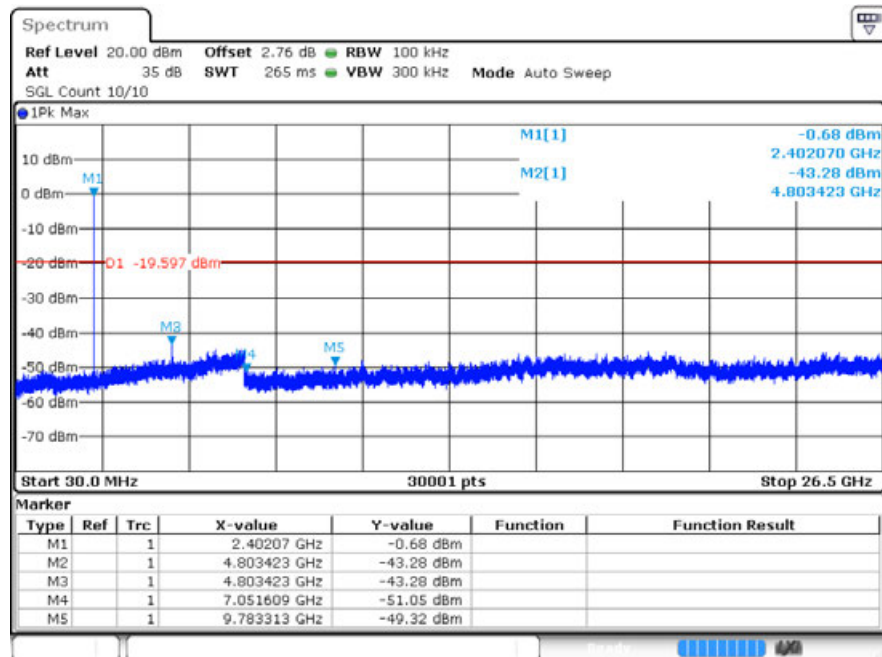


$\pi/4$ DQPSK\_LCH\_Graphs

Pref

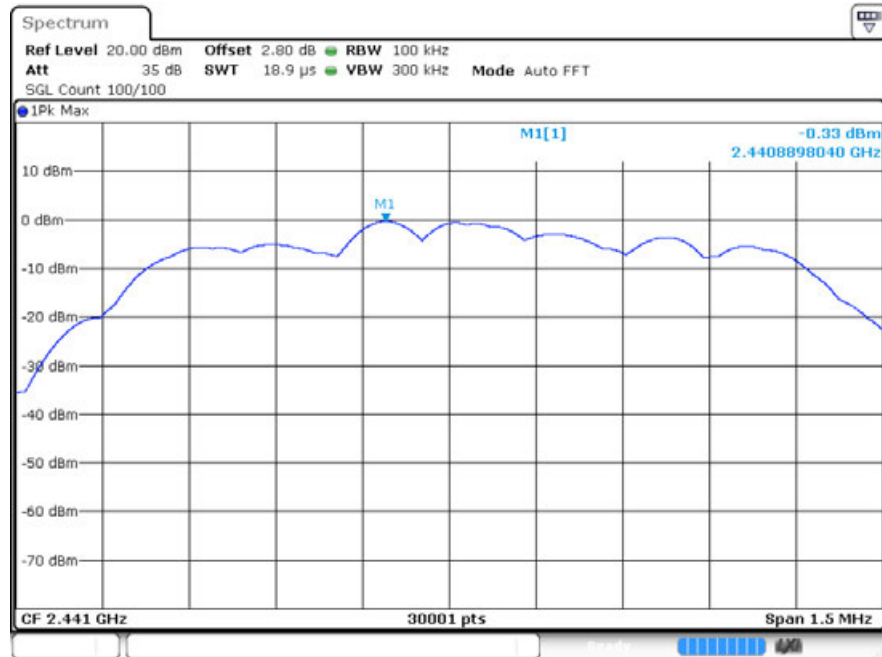


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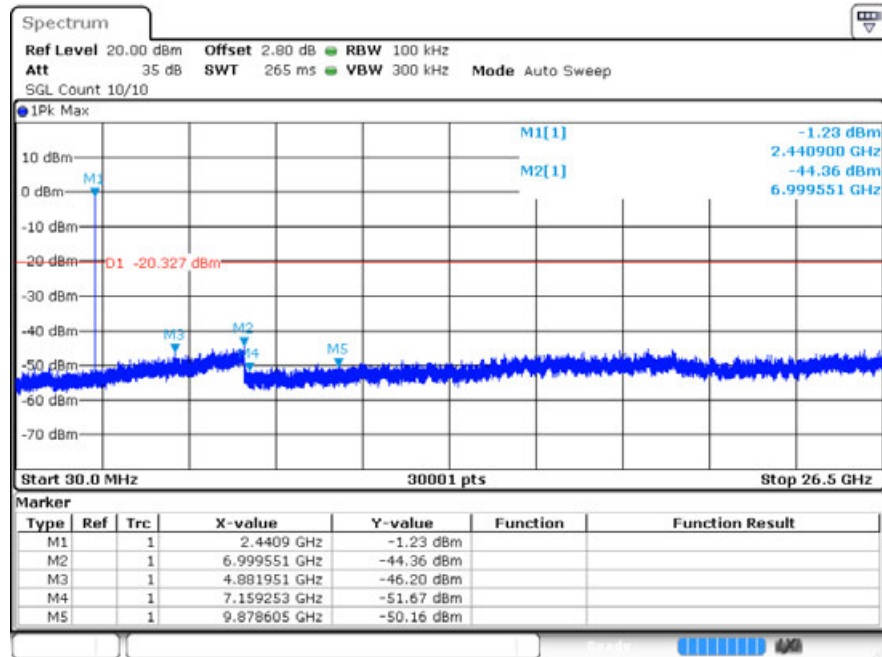


# $\pi/4$ DQPSK\_MCH\_Graphs

Pref

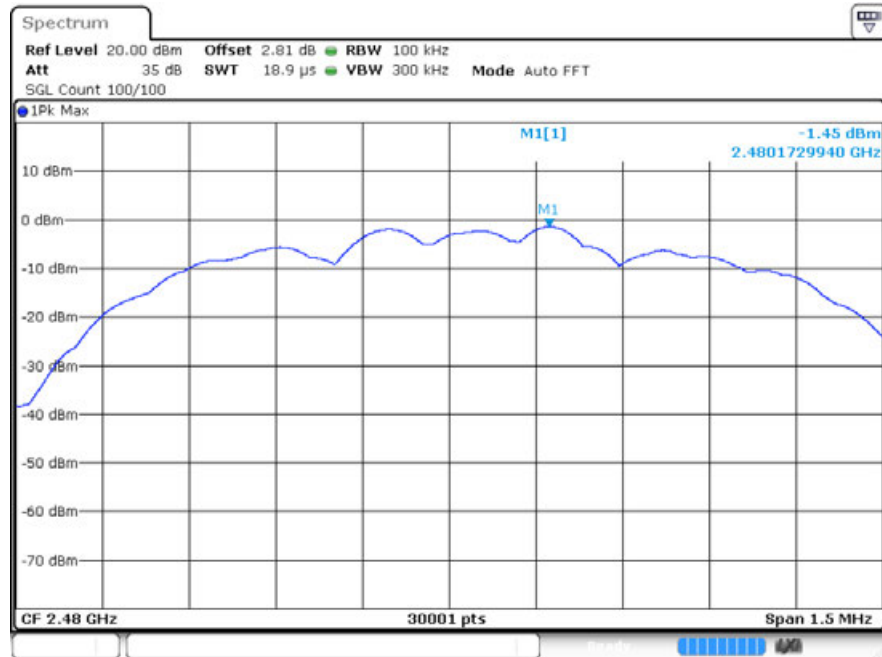


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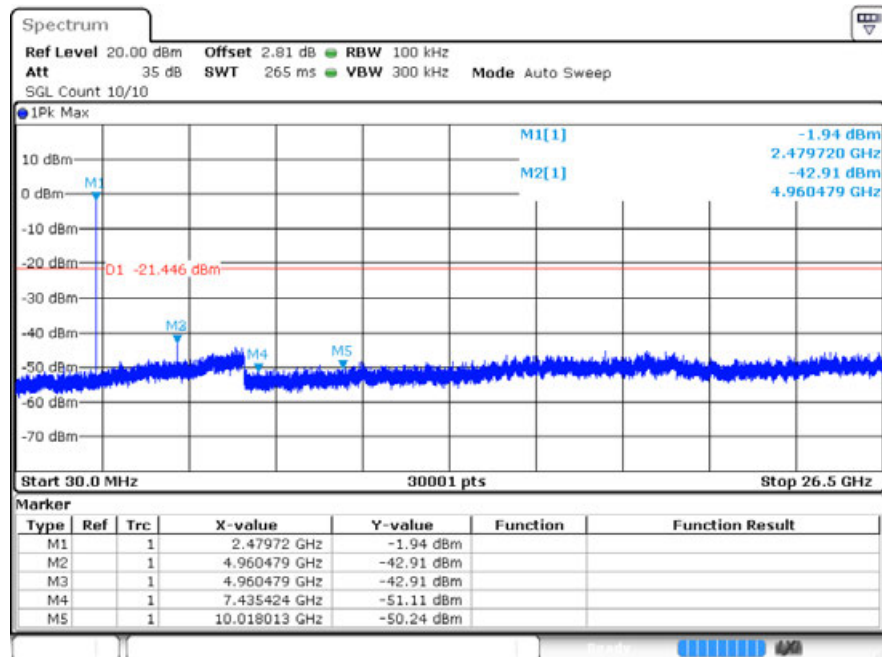


$\pi/4$ DQPSK\_HCH\_Graphs

Pref

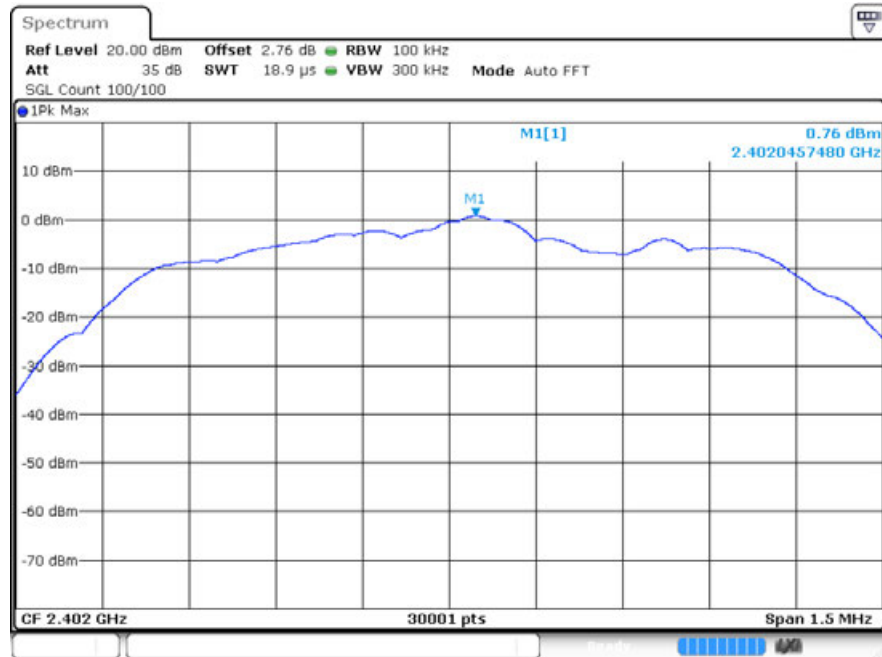


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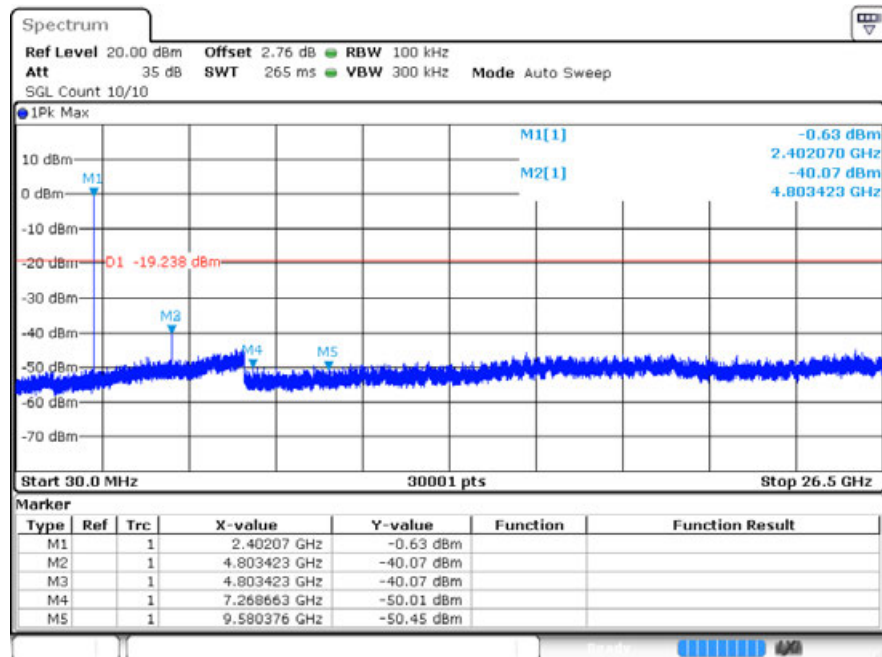


## 8DPSK\_LCH\_Graphs

Pref

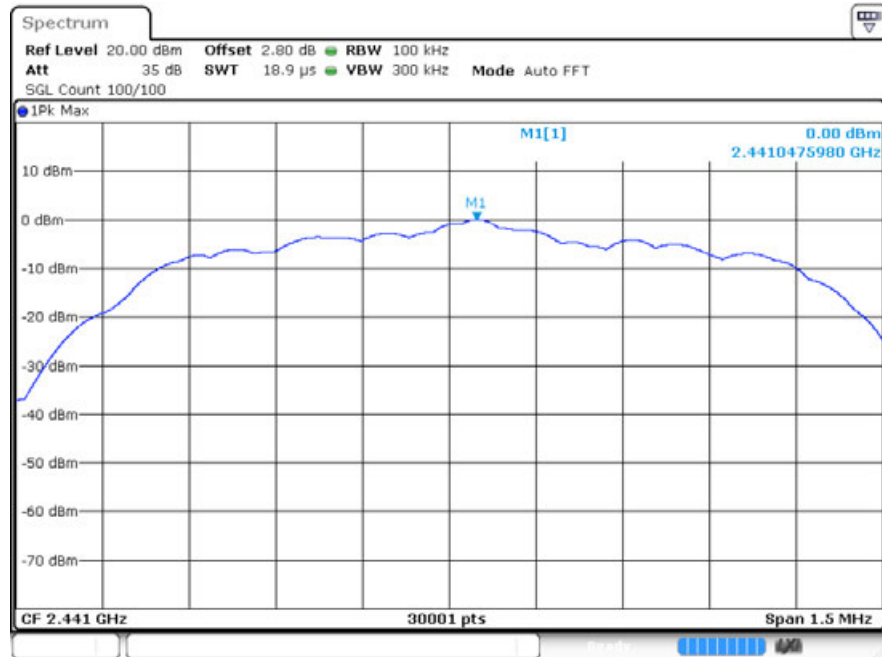


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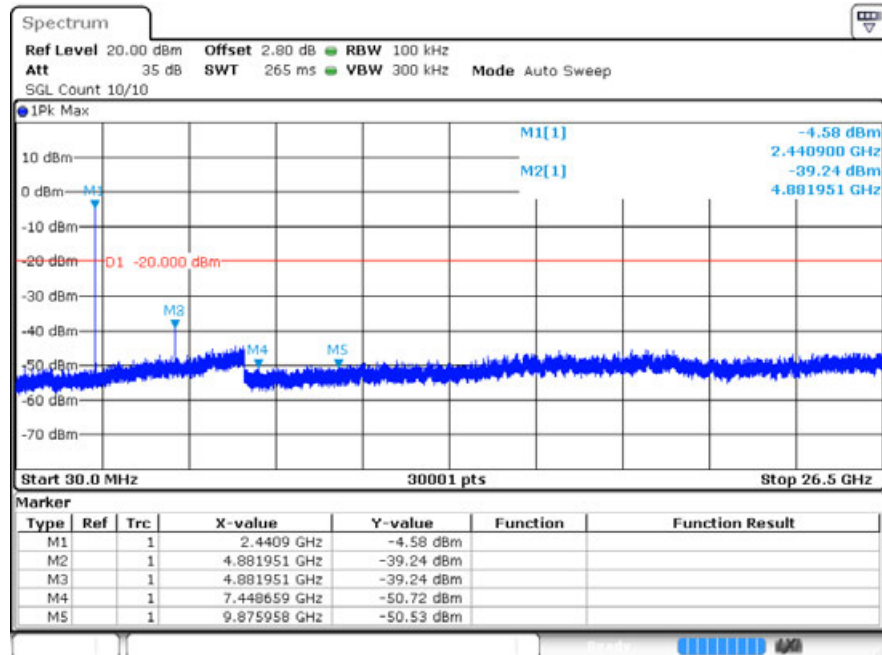


## 8DPSK\_MCH\_Graphs

Pref

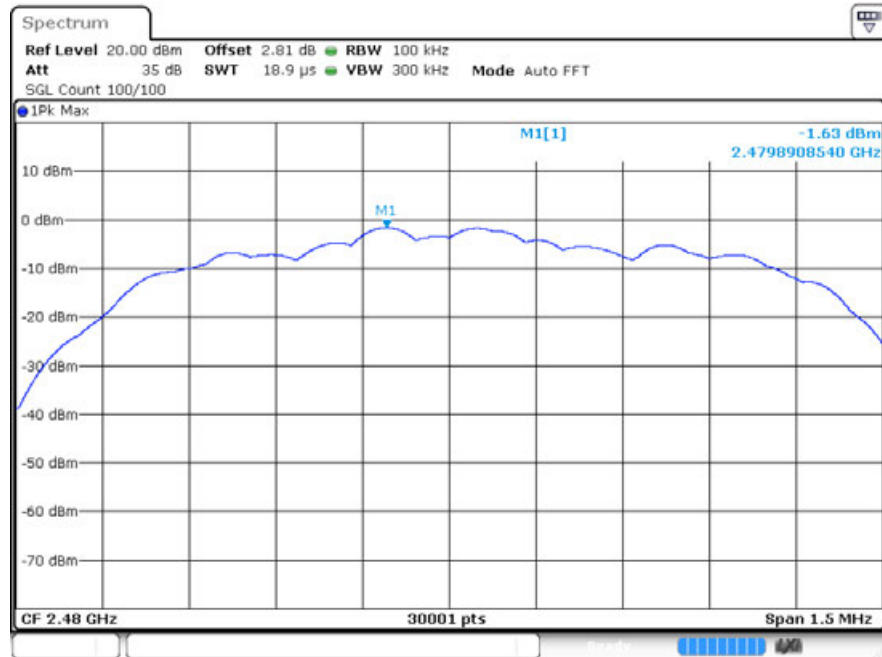


Puw

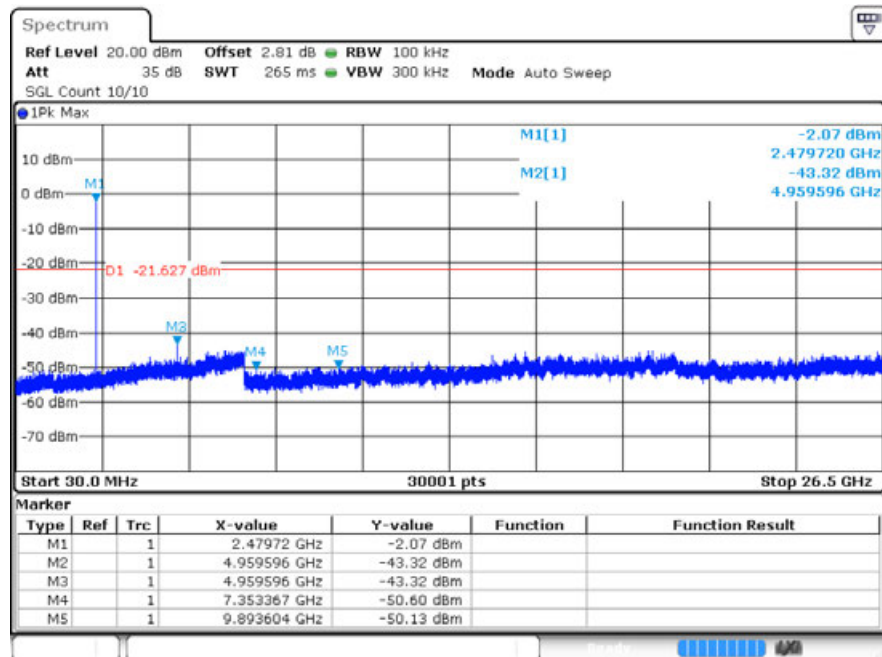


## 8DPSK\_HCH\_Graphs

Pref



Puw

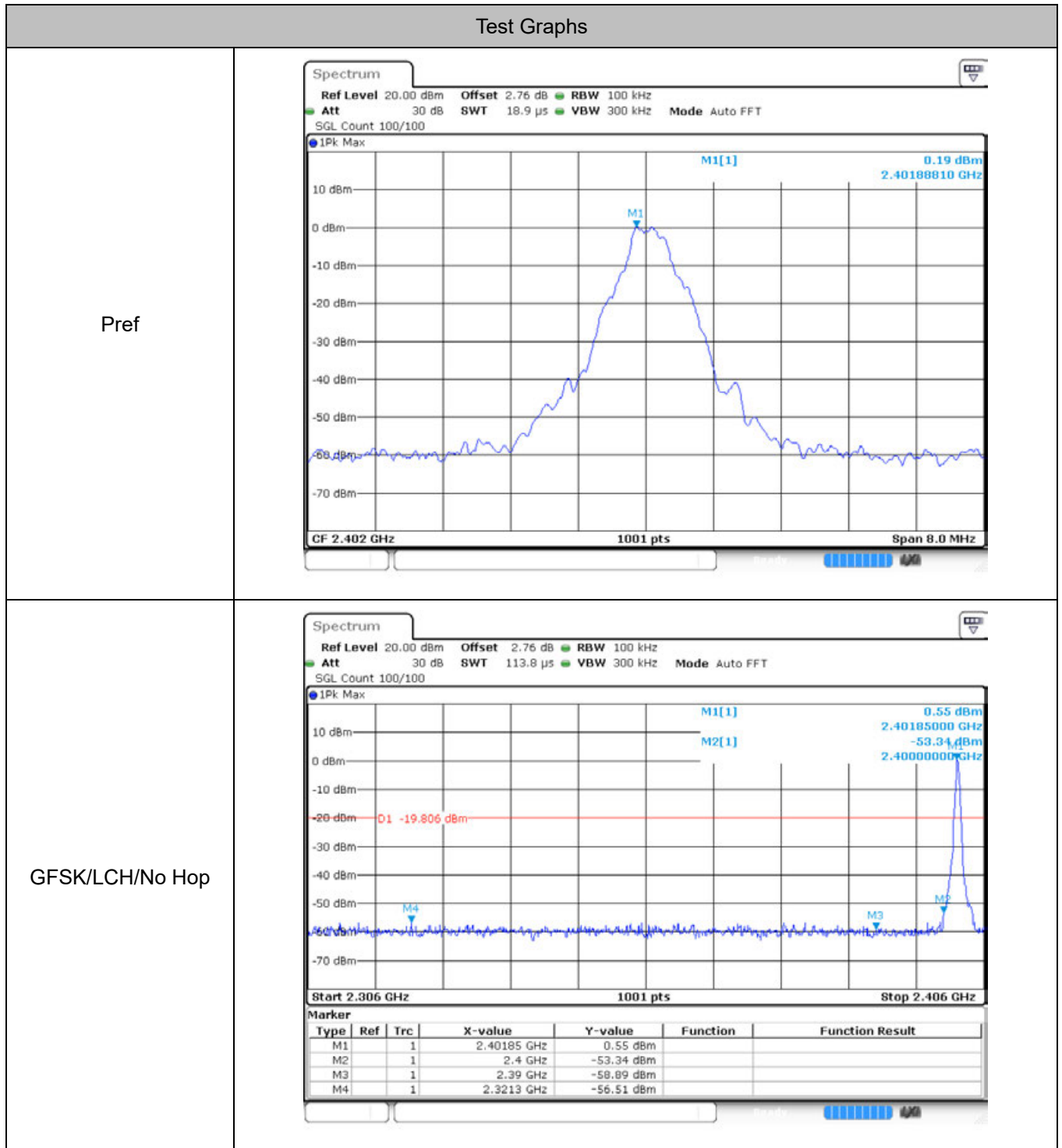


## 8 Band-edge for RF Conducted Emissions

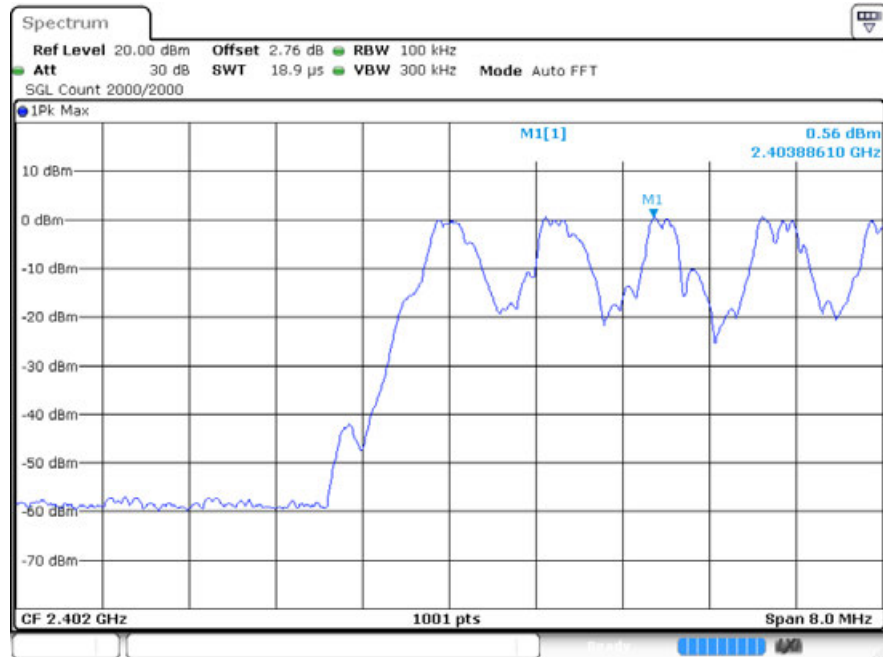
### 8.1 Test Result

| Mode          | Channel | Carrier Frequency [MHz] | Frequency Hopping | Max Spurious Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|-------------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | Off               | -56.7                    | -20         | Pass    |
|               |         |                         | On                | -55.9                    | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -56.07                   | -20         | Pass    |
|               |         |                         | On                | -53.34                   | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | 2402                    | Off               | -56.99                   | -20         | Pass    |
|               |         |                         | On                | -55.22                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -55.6                    | -20         | Pass    |
|               |         |                         | On                | -54.47                   | -20         | Pass    |
| 8DPSK         | LCH     | 2402                    | Off               | -56.3                    | -20         | Pass    |
|               |         |                         | On                | -55.8                    | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -56.31                   | -20         | Pass    |
|               |         |                         | On                | -54.41                   | -20         | Pass    |

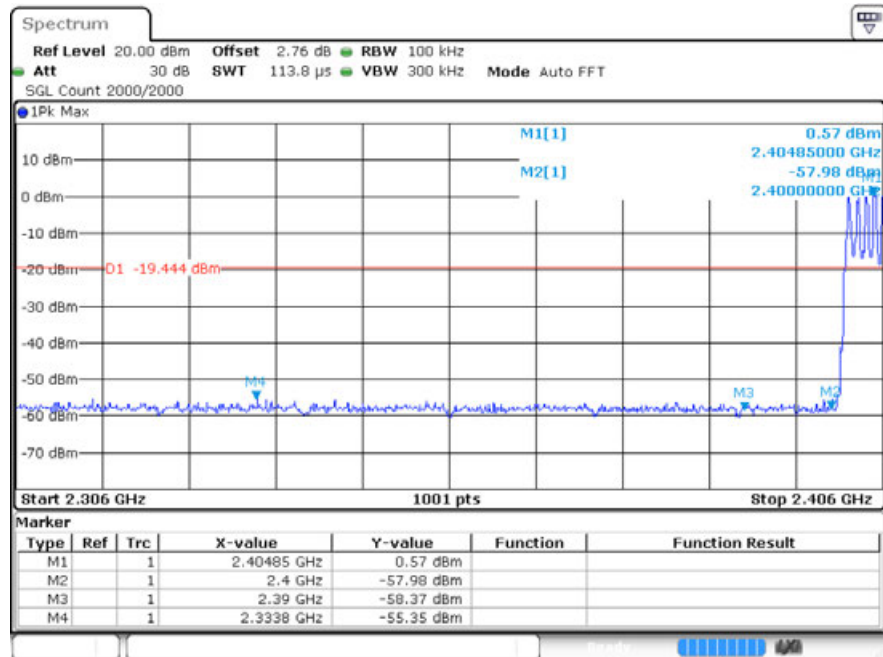
## 8.2 Test Graphs



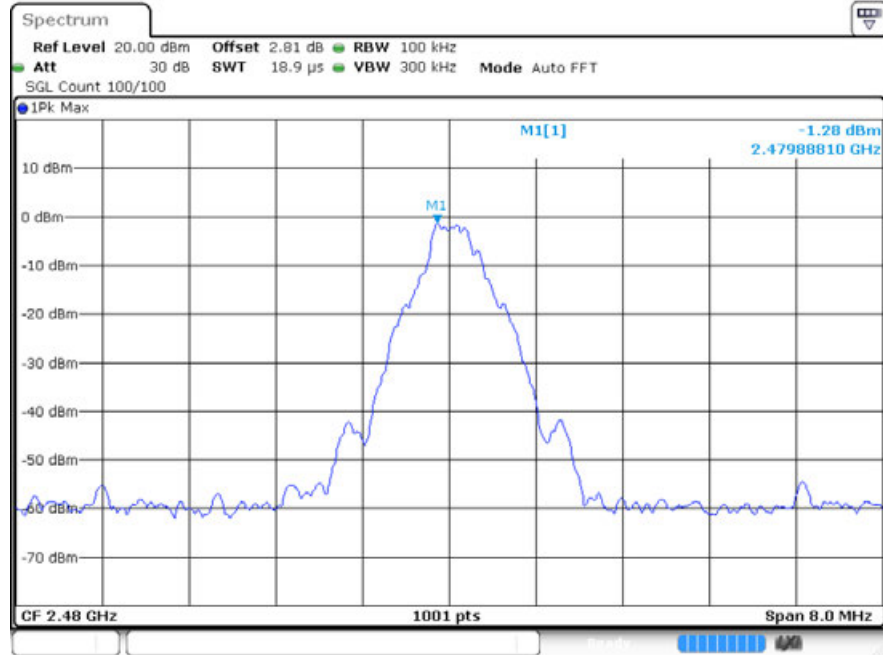
Ref



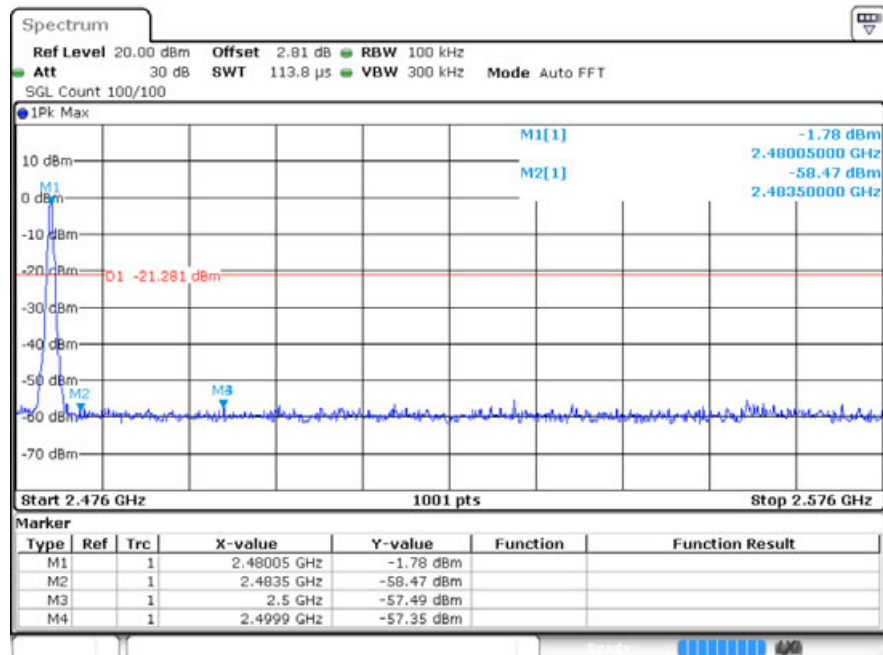
GFSK/LCH/Hop



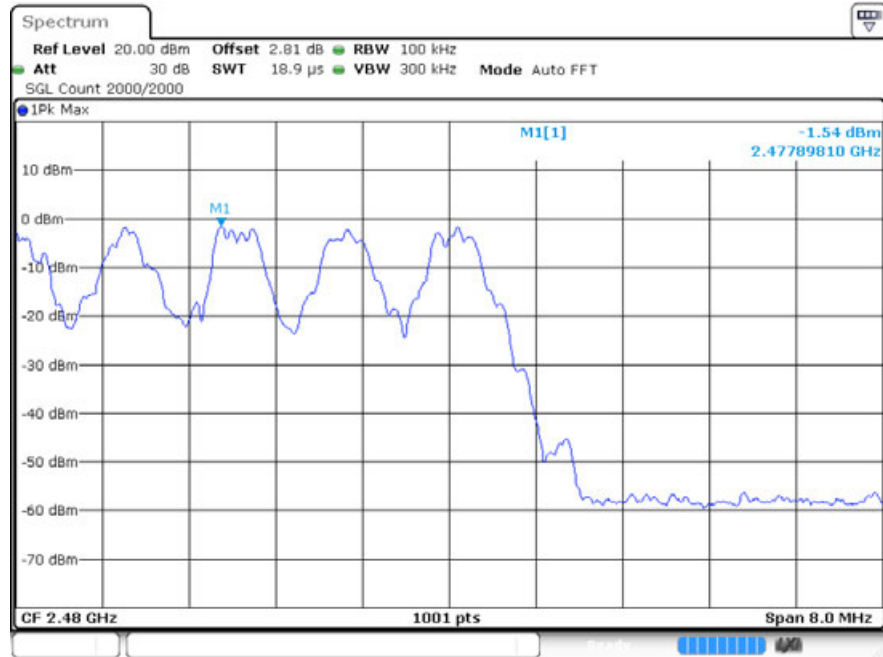
Ref



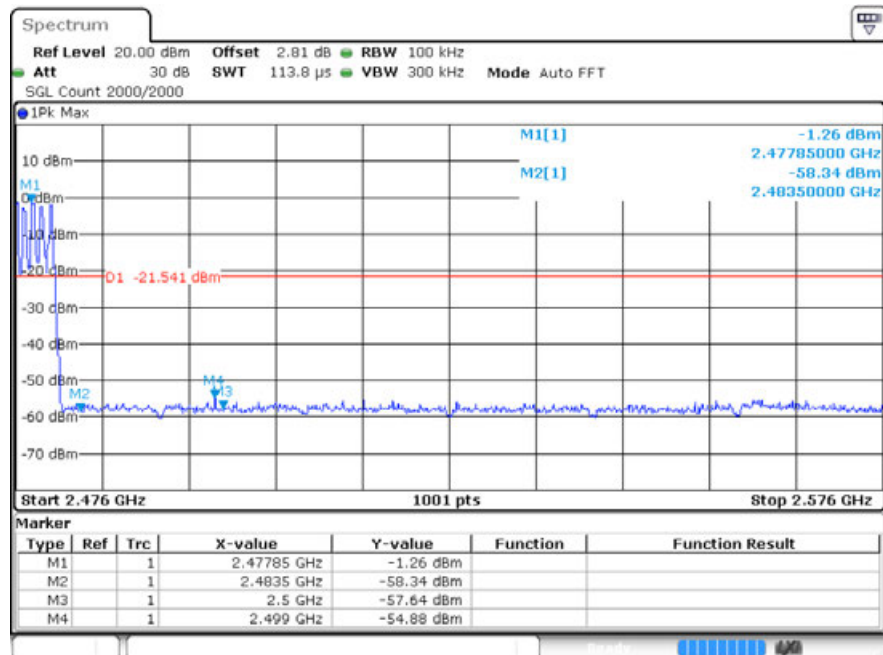
GFSK/HCH/No Hop



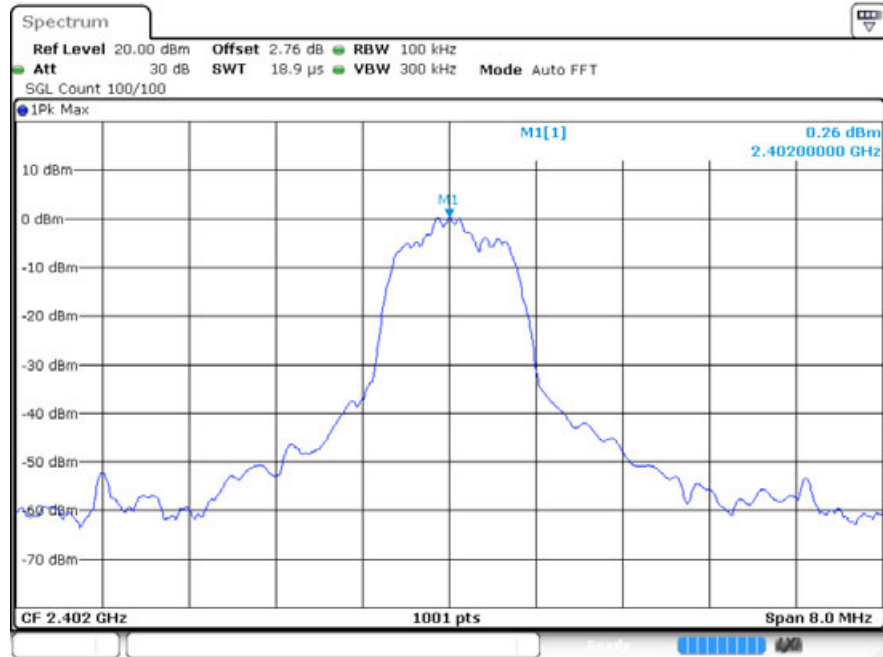
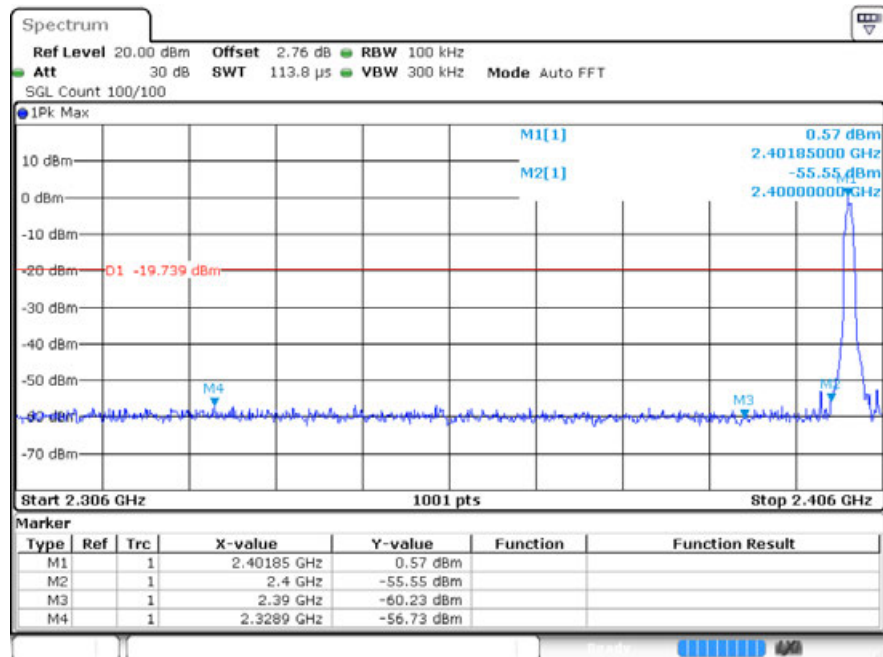
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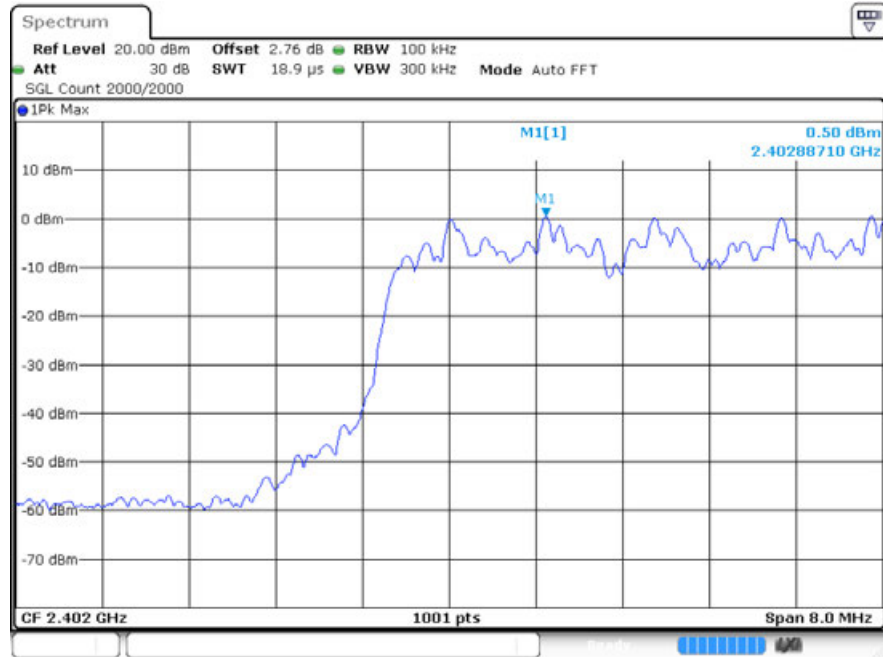
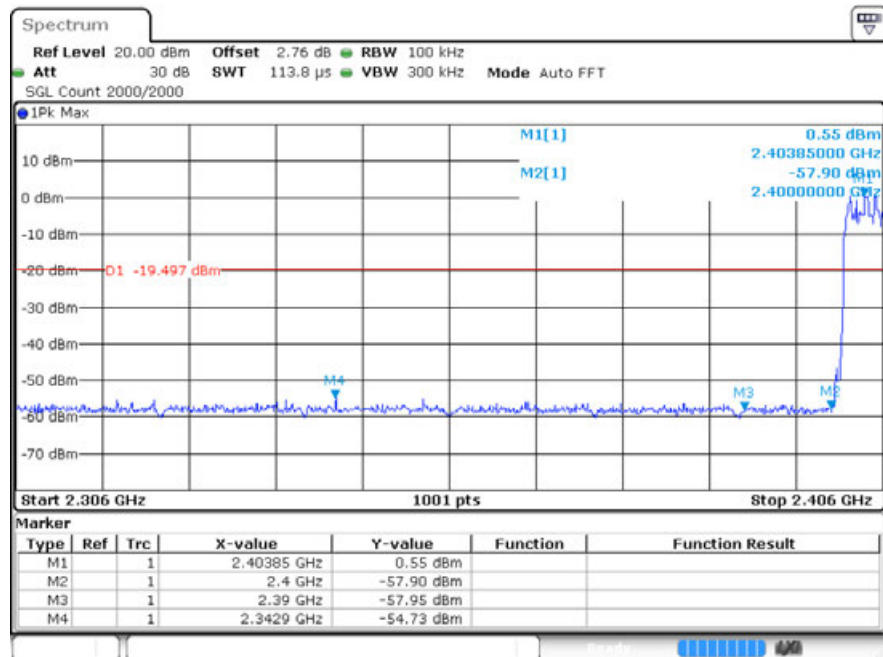
GFSK/HCH/Hop



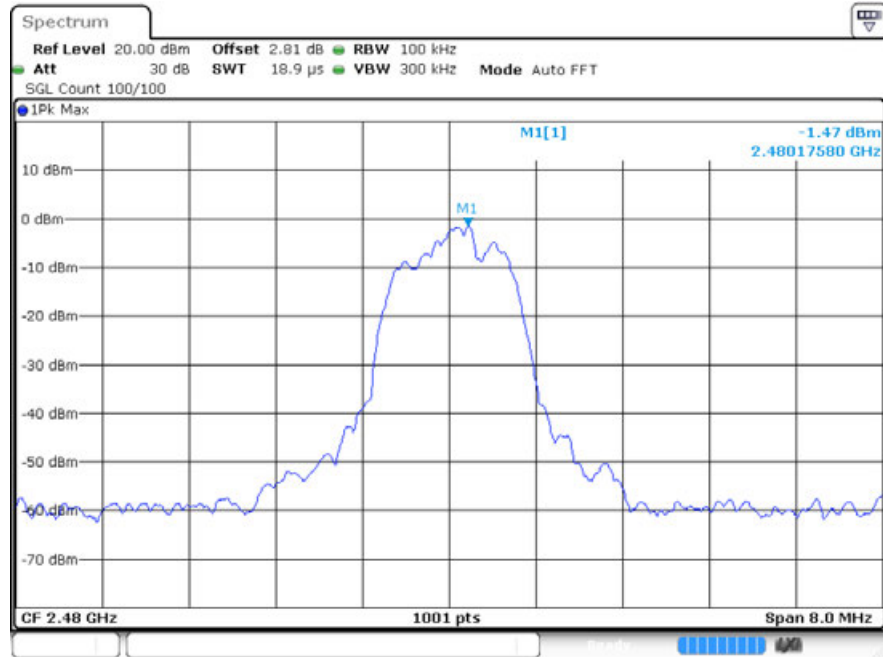
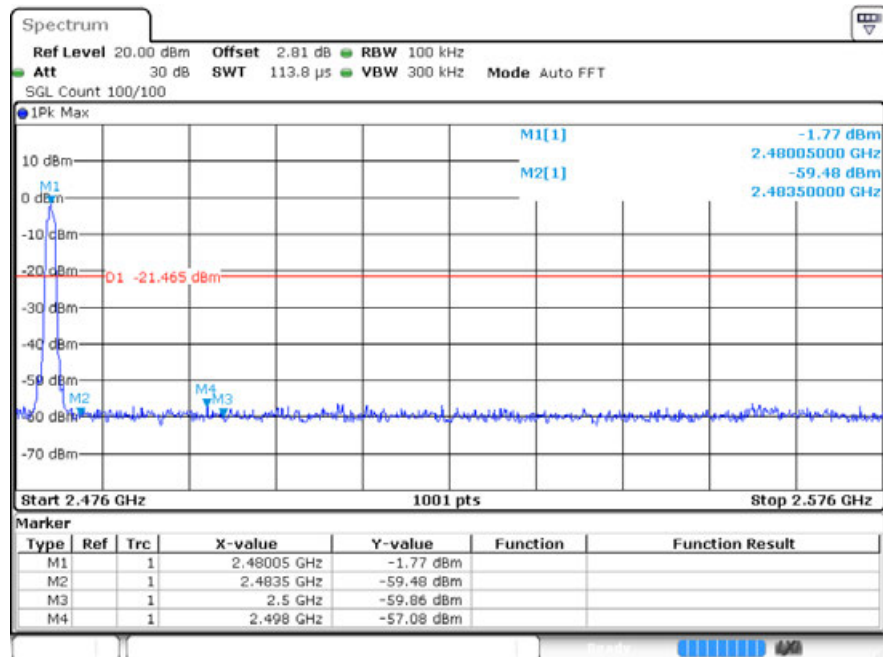
Ref


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


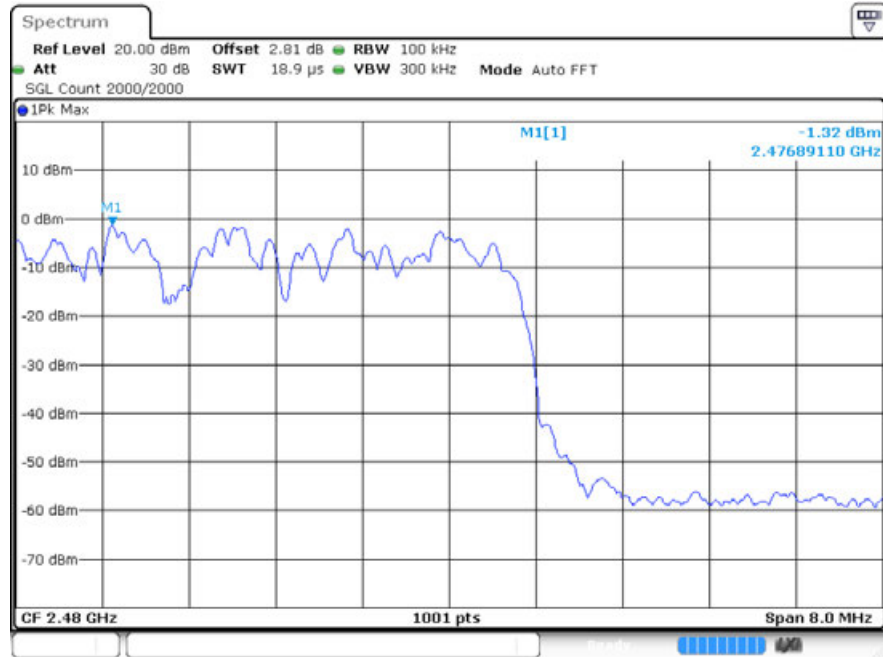
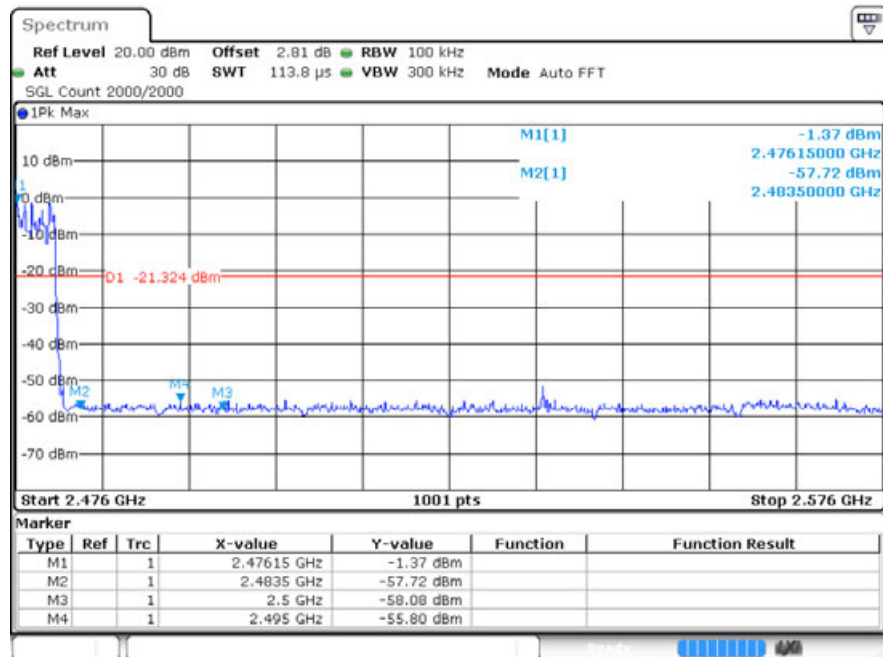
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 $\pi/4$ DQPSK/LCH/Hop


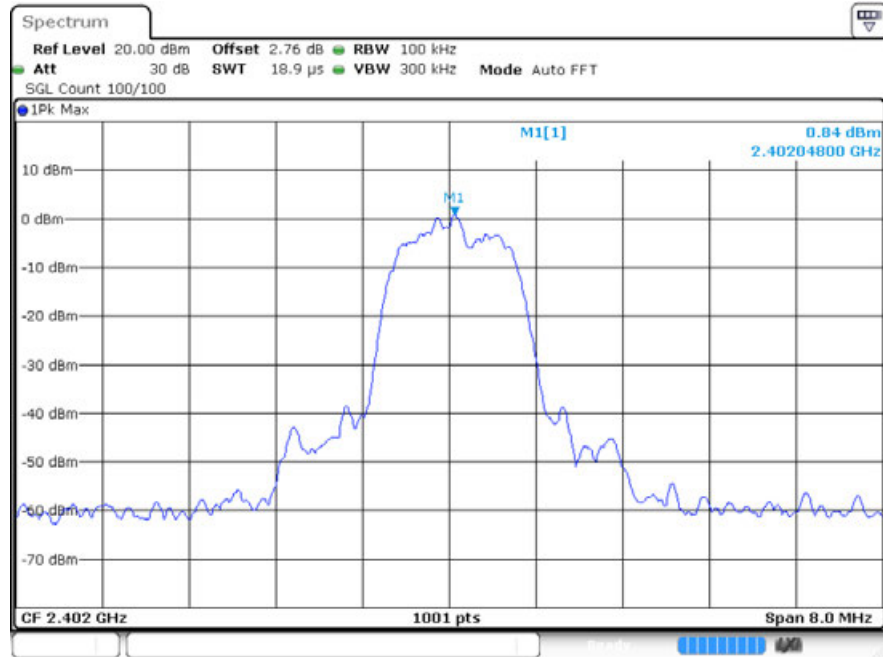
Ref


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


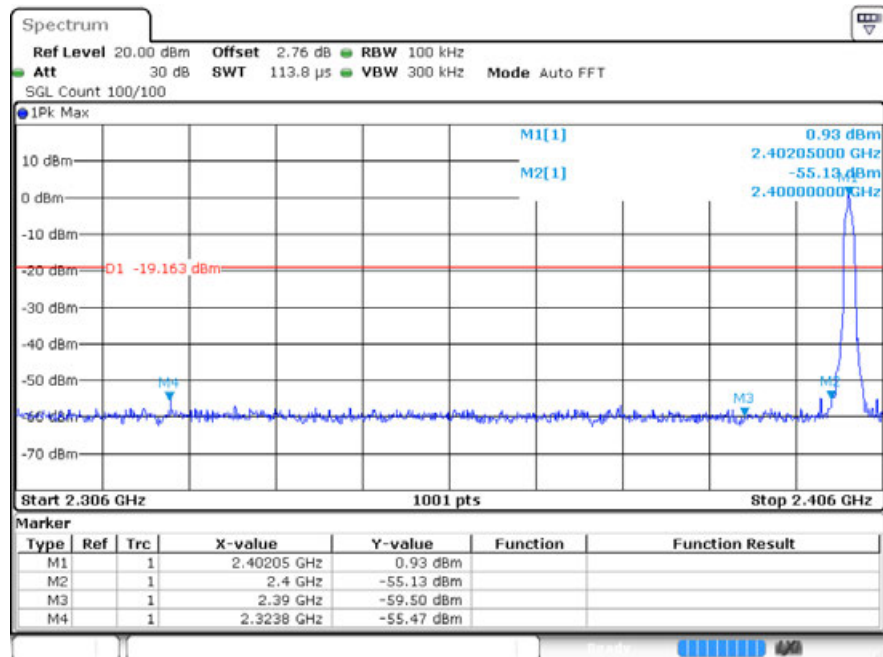
Ref


 $\pi/4$ DQPSK/HCH/Hop


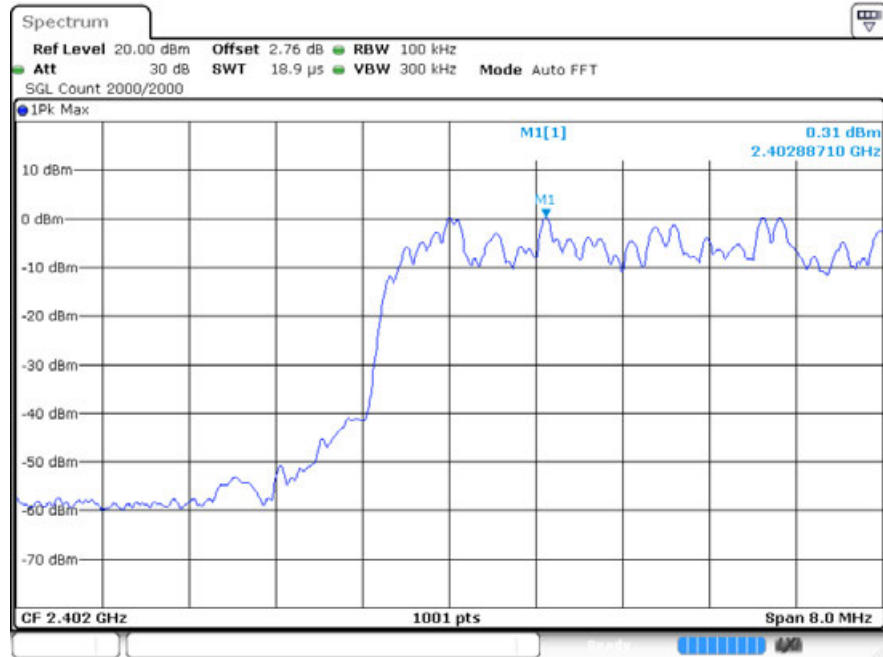
Ref



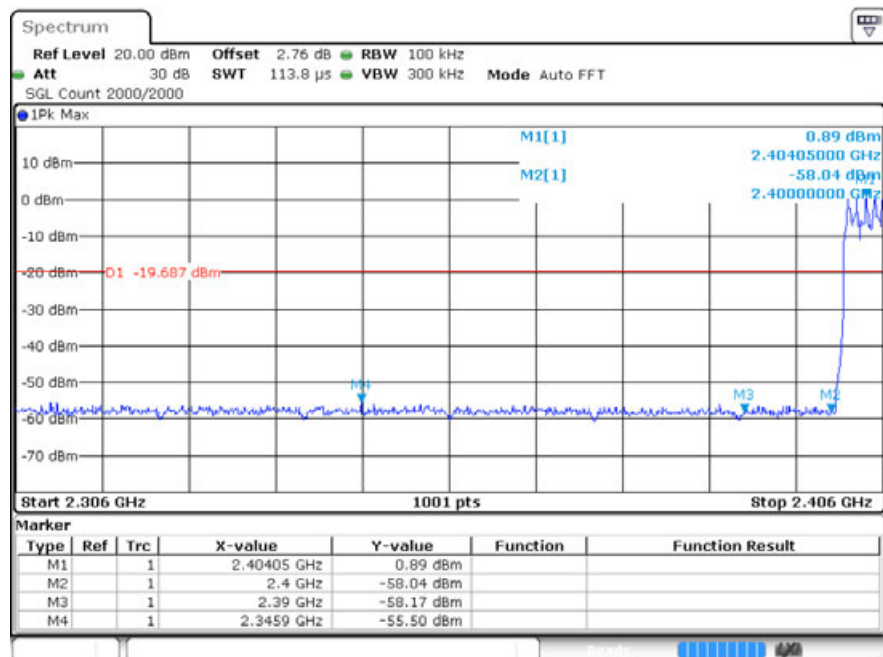
8DPSK/LCH/No Hop



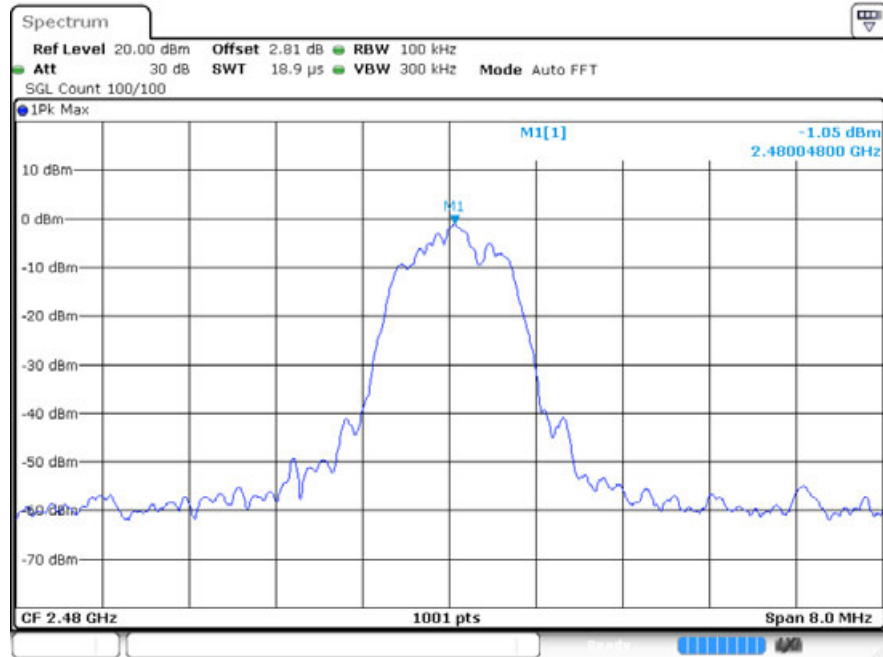
Ref



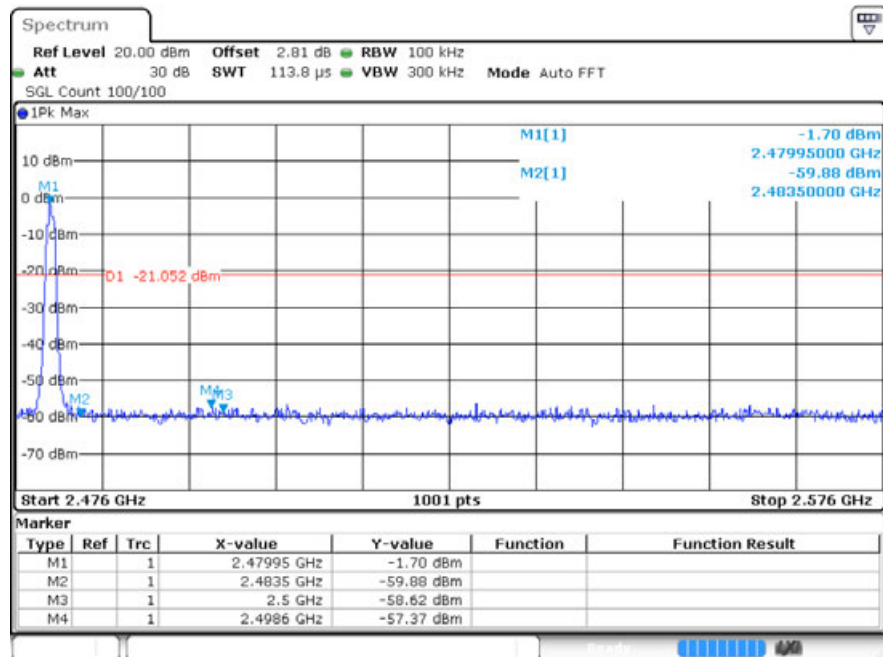
8DPSK/LCH/Hop



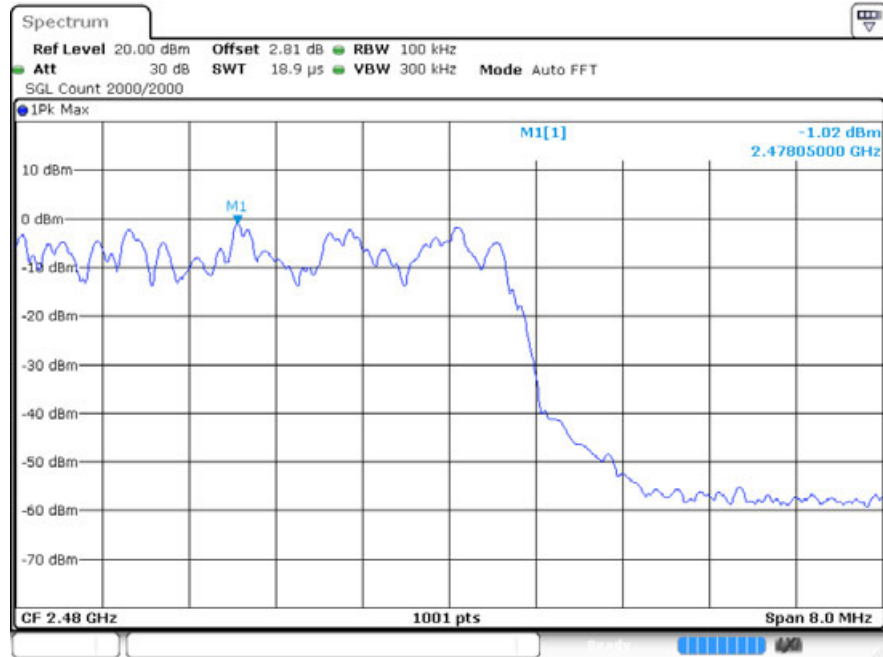
Ref



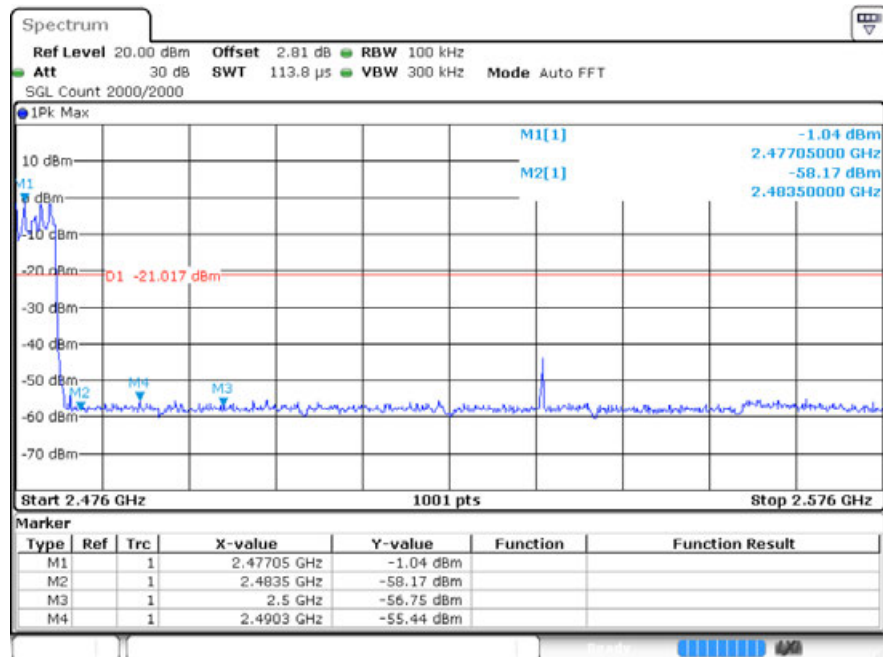
8DPSK/HCH/No Hop



Ref



8DPSK/HCH/Hop



## 9 Restrict-band band-edge measurements

### 9.1 Test Result

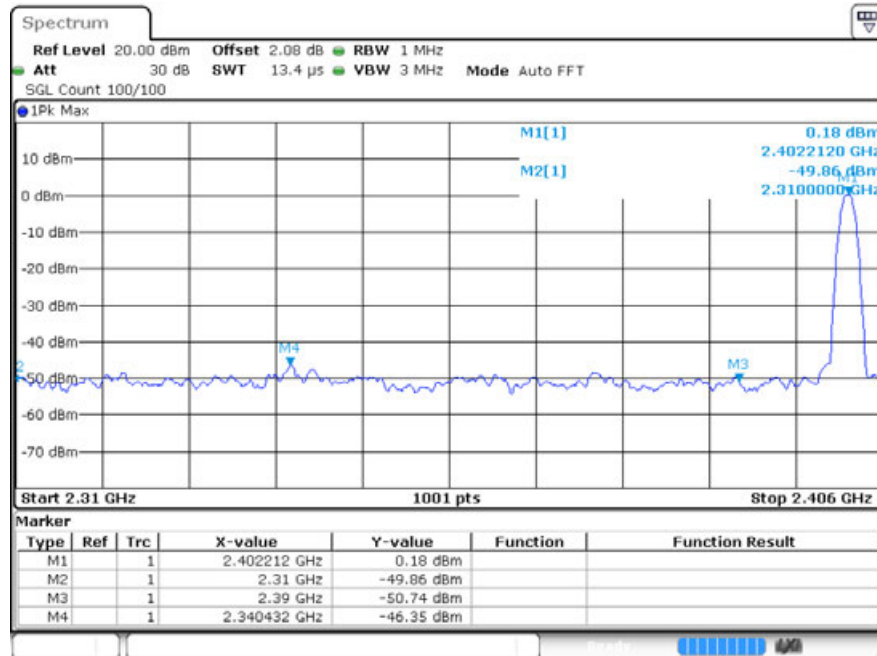
| Test Mode     | Hopping | Freq.    | Power [dBm] | Gain | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|----------|-------------|------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0   | -49.86      | 2    | 47.4       | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -59.33      | 2    | 37.93      | AV       | 54             | Pass    |
|               | Off     | 2340.432 | -46.34      | 2    | 50.92      | PEAK     | 74             | Pass    |
|               | Off     | 2340.528 | -57.33      | 2    | 39.93      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -50.73      | 2    | 46.53      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -59.44      | 2    | 37.82      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -50.16      | 2    | 47.1       | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -58.83      | 2    | 38.43      | AV       | 54             | Pass    |
|               | Off     | 2495.872 | -49.16      | 2    | 48.1       | PEAK     | 74             | Pass    |
|               | Off     | 2484.424 | -58.6       | 2    | 38.66      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -50.42      | 2    | 46.84      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -59.15      | 2    | 38.11      | AV       | 54             | Pass    |
| $\pi/4$ DQPSK | Off     | 2310.0   | -52.57      | 2    | 44.69      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -59.14      | 2    | 38.12      | AV       | 54             | Pass    |
|               | Off     | 2338.224 | -47.96      | 2    | 49.3       | PEAK     | 74             | Pass    |
|               | Off     | 2339.856 | -57.43      | 2    | 39.83      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -52.94      | 2    | 44.32      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -59.44      | 2    | 37.82      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -49.39      | 2    | 47.87      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -58.45      | 2    | 38.81      | AV       | 54             | Pass    |
|               | Off     | 2485.072 | -47.83      | 2    | 49.43      | PEAK     | 74             | Pass    |
|               | Off     | 2483.512 | -58.45      | 2    | 38.81      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -48.11      | 2    | 49.15      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -58.84      | 2    | 38.42      | AV       | 54             | Pass    |
| 8DPSK         | Off     | 2310.0   | -52.38      | 2    | 44.88      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -59.16      | 2    | 38.1       | AV       | 54             | Pass    |
|               | Off     | 2348.496 | -47.13      | 2    | 50.13      | PEAK     | 74             | Pass    |
|               | Off     | 2338.608 | -56.92      | 2    | 40.34      | AV       | 54             | Pass    |



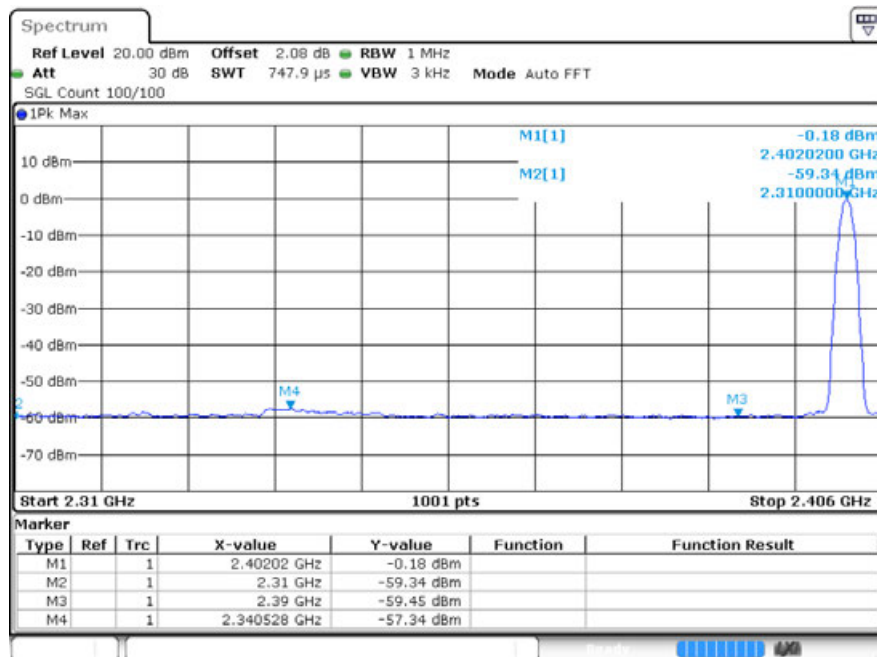
|  |     |          |        |   |       |      |    |      |
|--|-----|----------|--------|---|-------|------|----|------|
|  | Off | 2390.0   | -50.31 | 2 | 46.95 | PEAK | 74 | Pass |
|  | Off | 2390.0   | -59.54 | 2 | 37.72 | AV   | 54 | Pass |
|  | Off | 2483.5   | -49.74 | 2 | 47.52 | PEAK | 74 | Pass |
|  | Off | 2483.5   | -58.7  | 2 | 38.56 | AV   | 54 | Pass |
|  | Off | 2492.584 | -48.58 | 2 | 48.68 | PEAK | 74 | Pass |
|  | Off | 2491.72  | -58.69 | 2 | 38.57 | AV   | 54 | Pass |
|  | Off | 2500.0   | -50.62 | 2 | 46.64 | PEAK | 74 | Pass |
|  | Off | 2500.0   | -58.97 | 2 | 38.29 | AV   | 54 | Pass |

## 9.2 Test Graphs

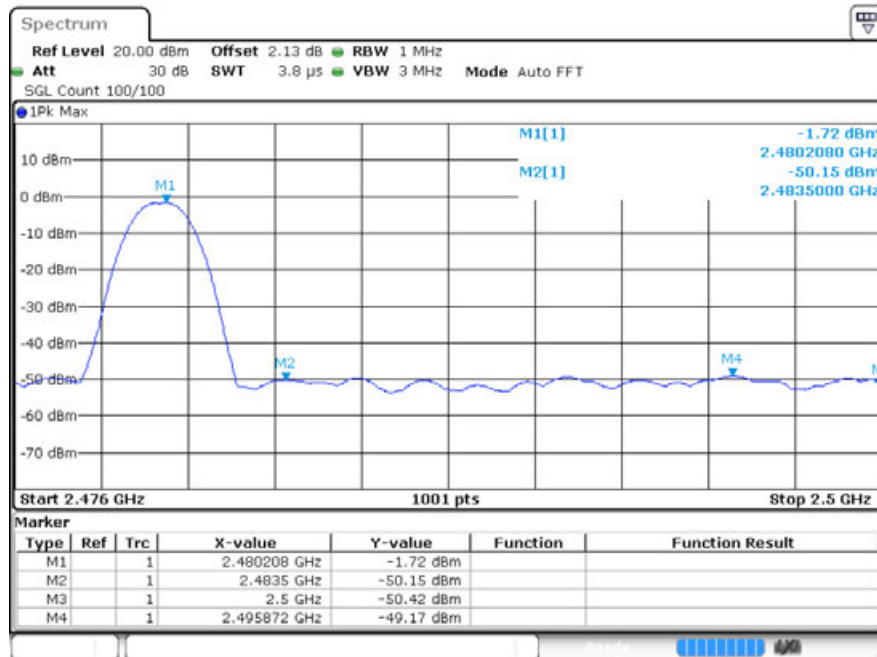
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (Low Channel)



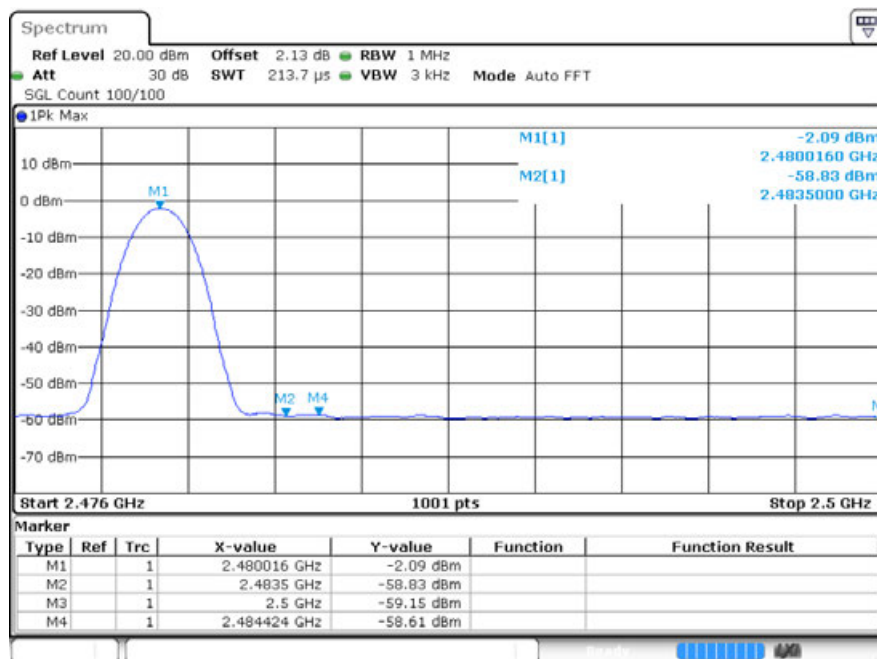
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (Low Channel)



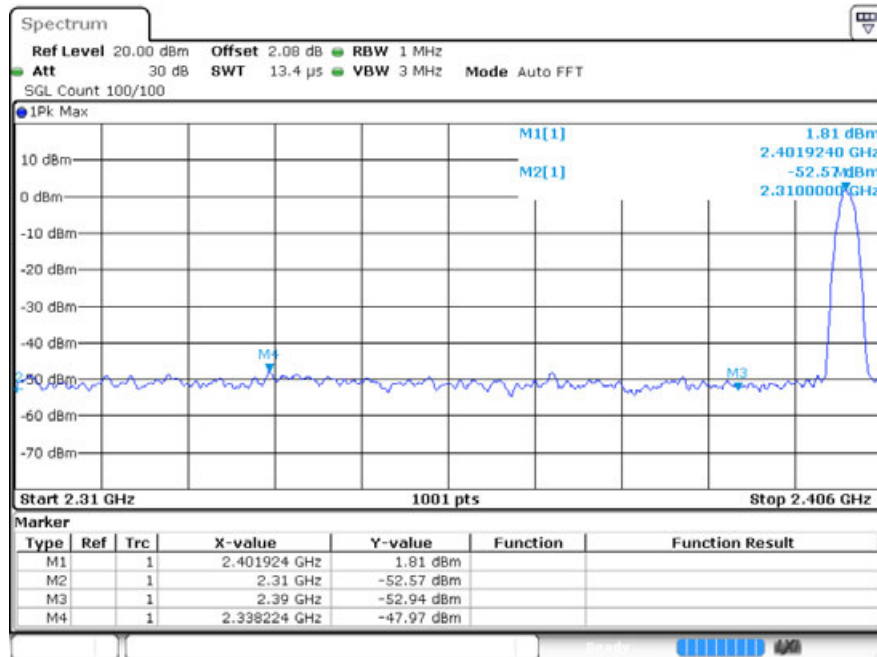
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (High Channel)



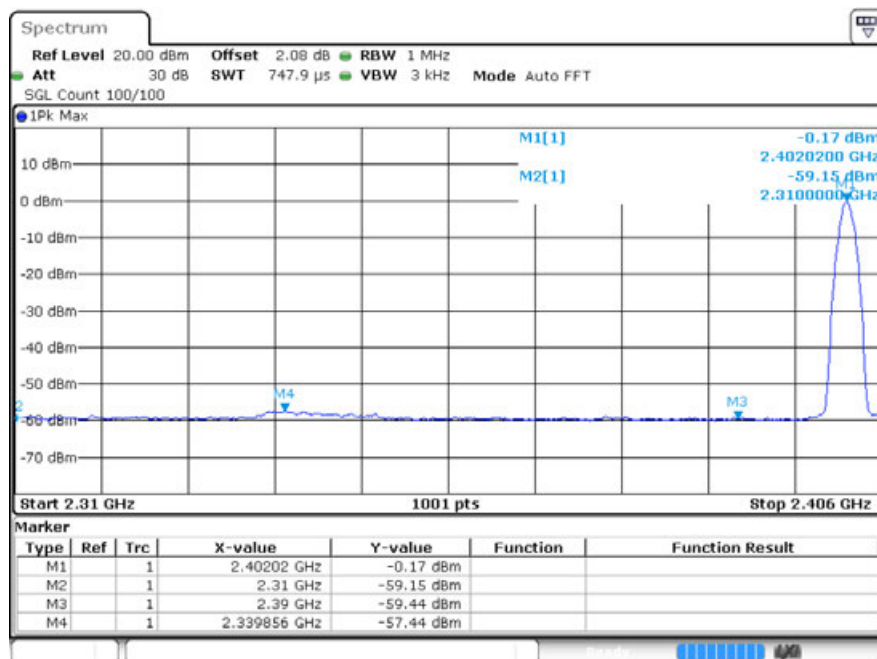
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (High Channel)



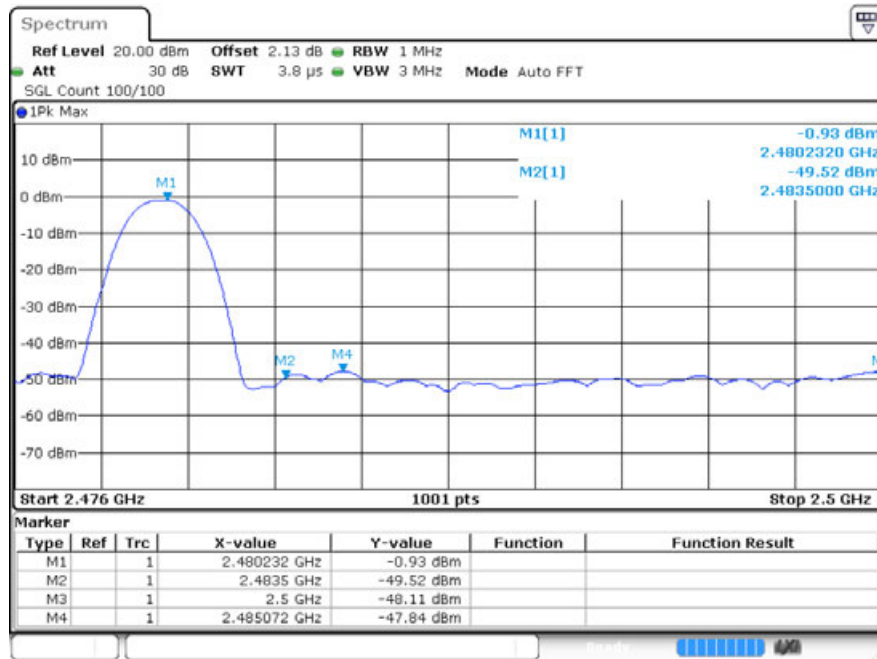
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (Low Channel)



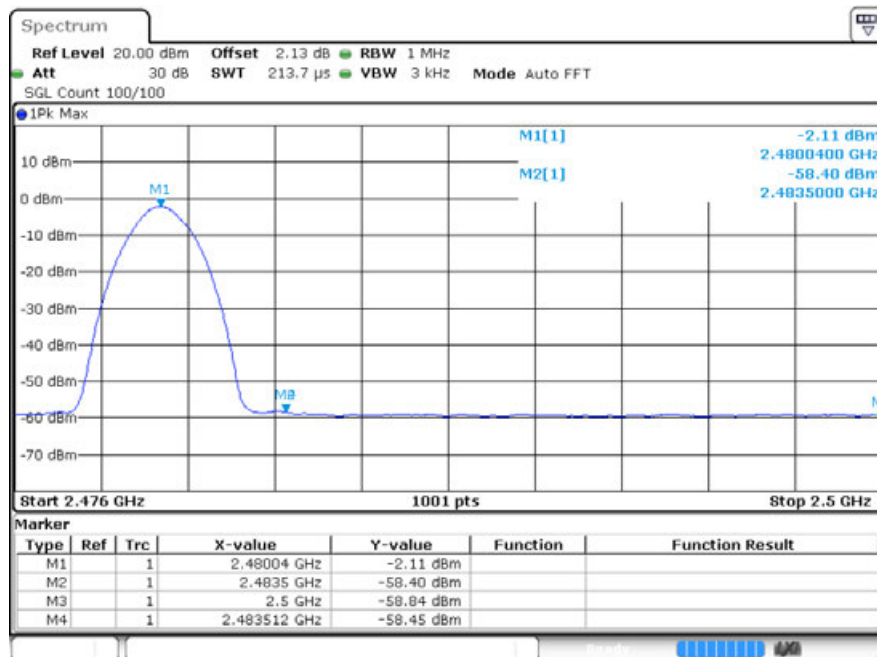
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (Low Channel)



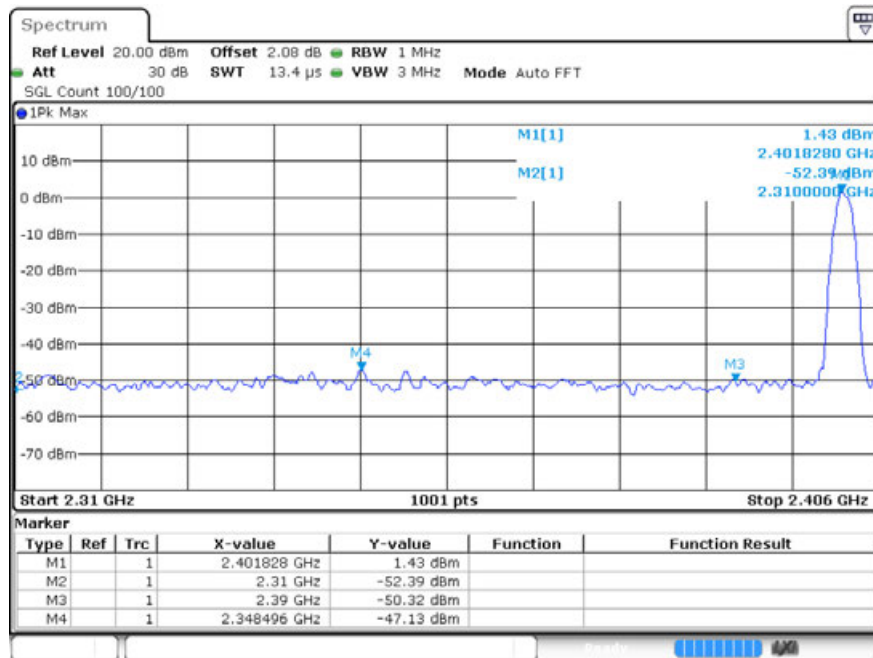
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



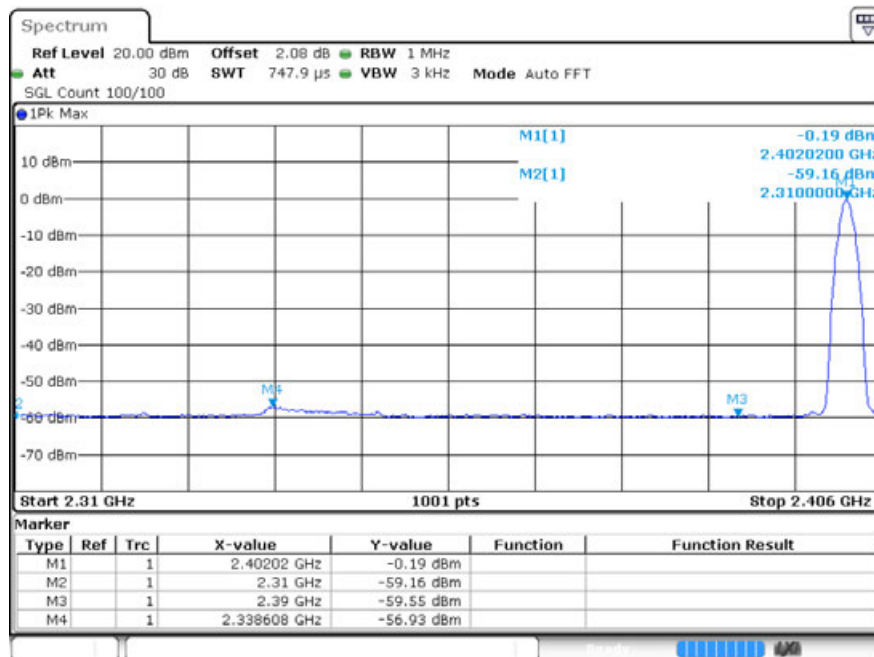
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



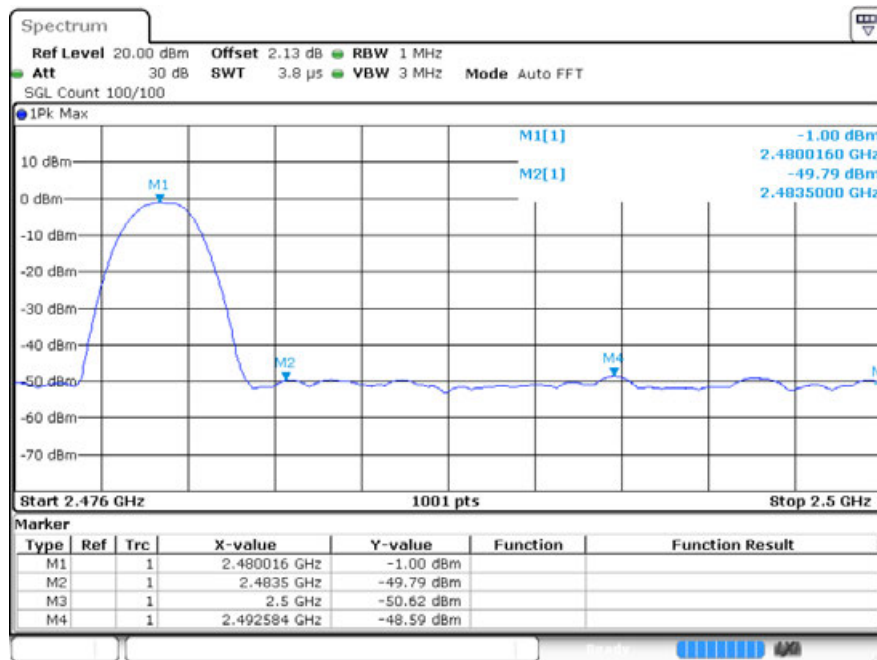
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



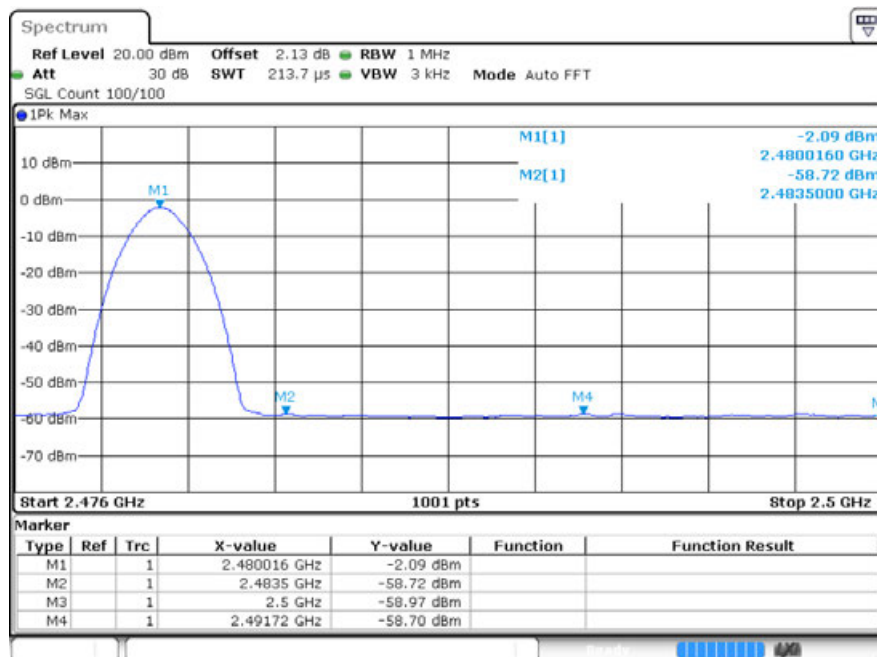
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_Average (Low Channel)



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



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



---The End---