



## Appendix A

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

Product Name: Powered Monitor Speaker

Trade Mark: ELAC

Test Model: DCB41

#### Environmental Conditions

|                    |             |
|--------------------|-------------|
| Temperature:       | 25.4° C     |
| Relative Humidity: | 51.2%       |
| ATM Pressure:      | 101Kpa      |
| Test Engineer:     | Simba Huang |
| Supervised by:     | Seal Chen   |



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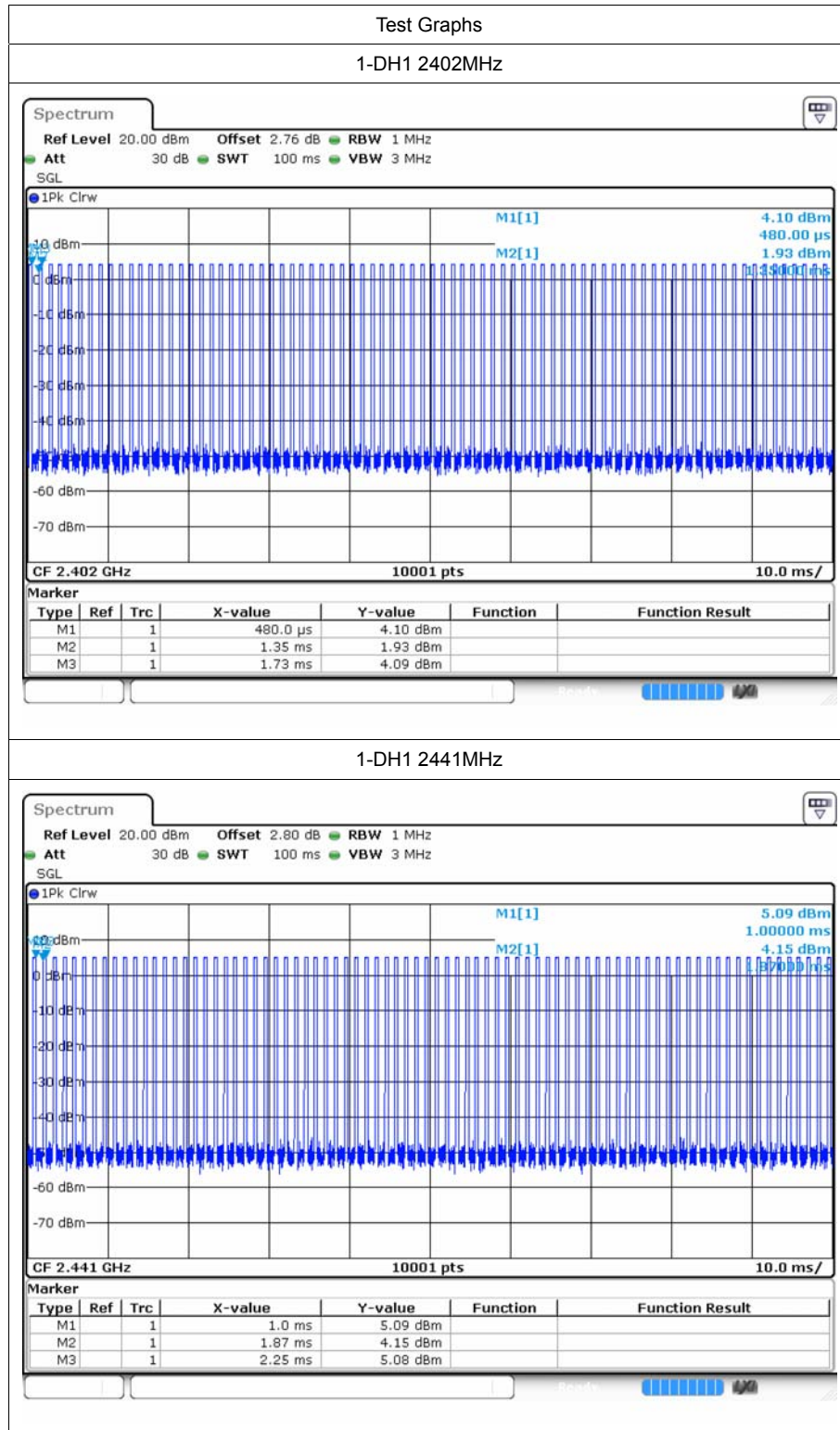
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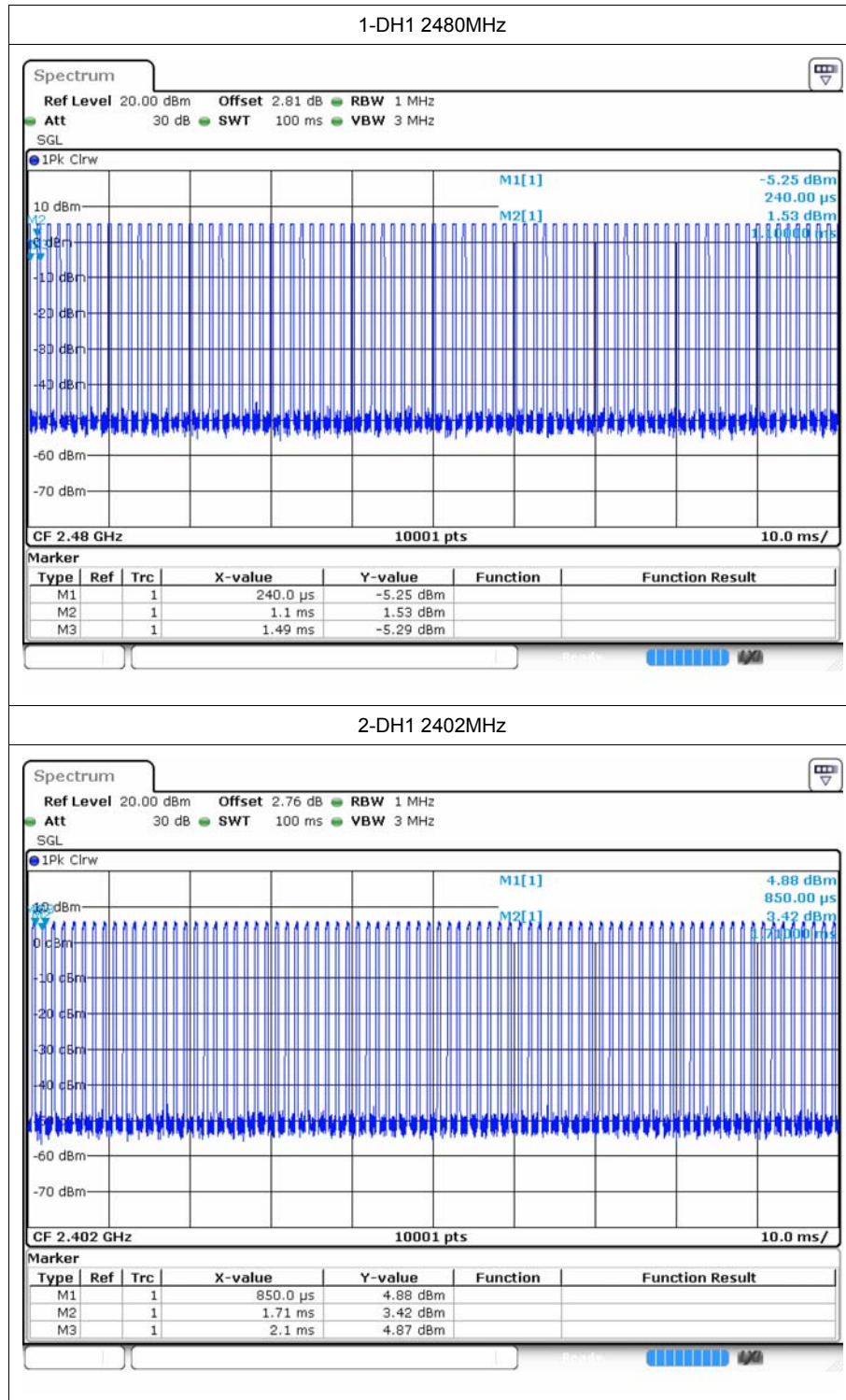
# 1 Duty Cycle

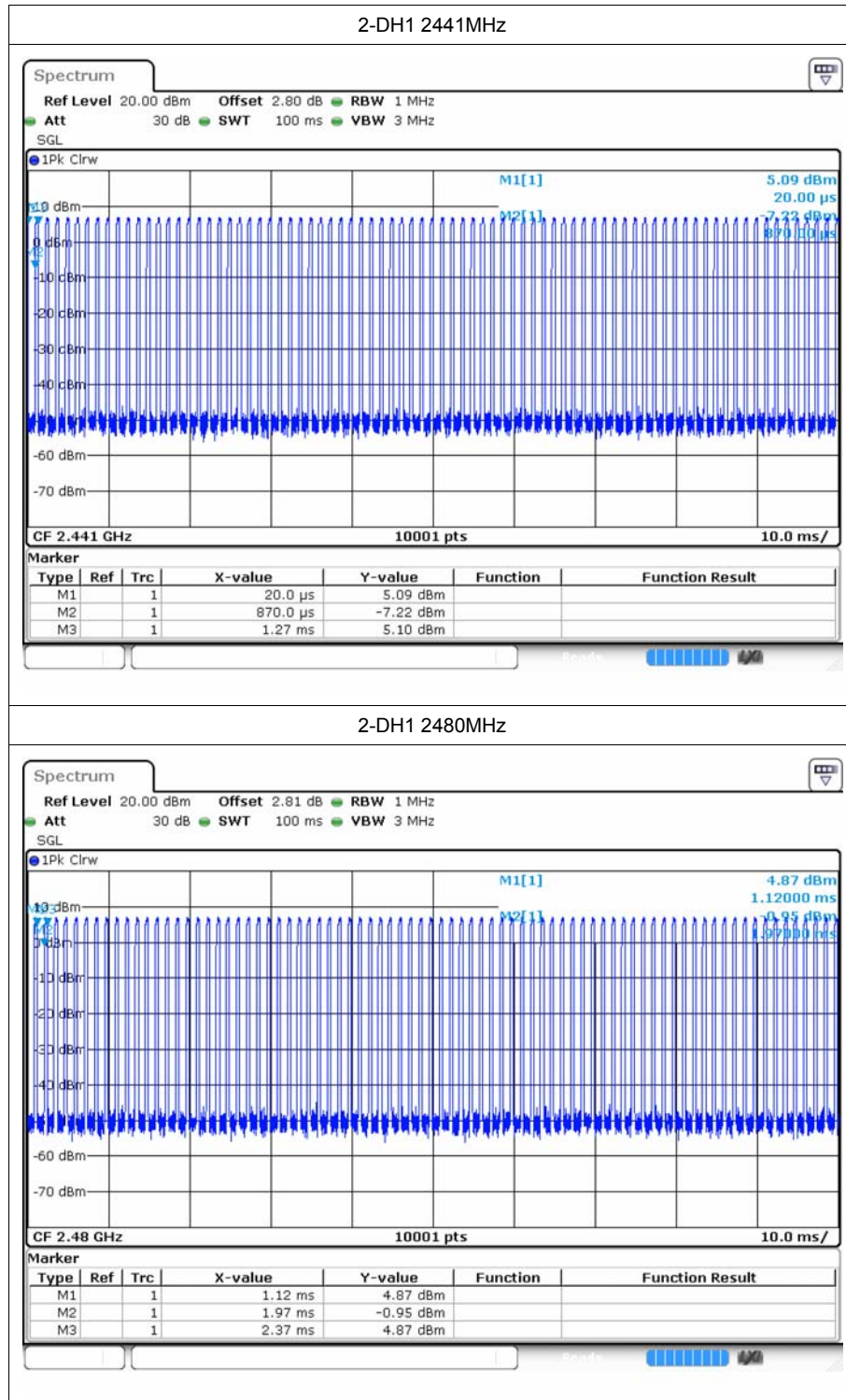
## 1.1 Test Result

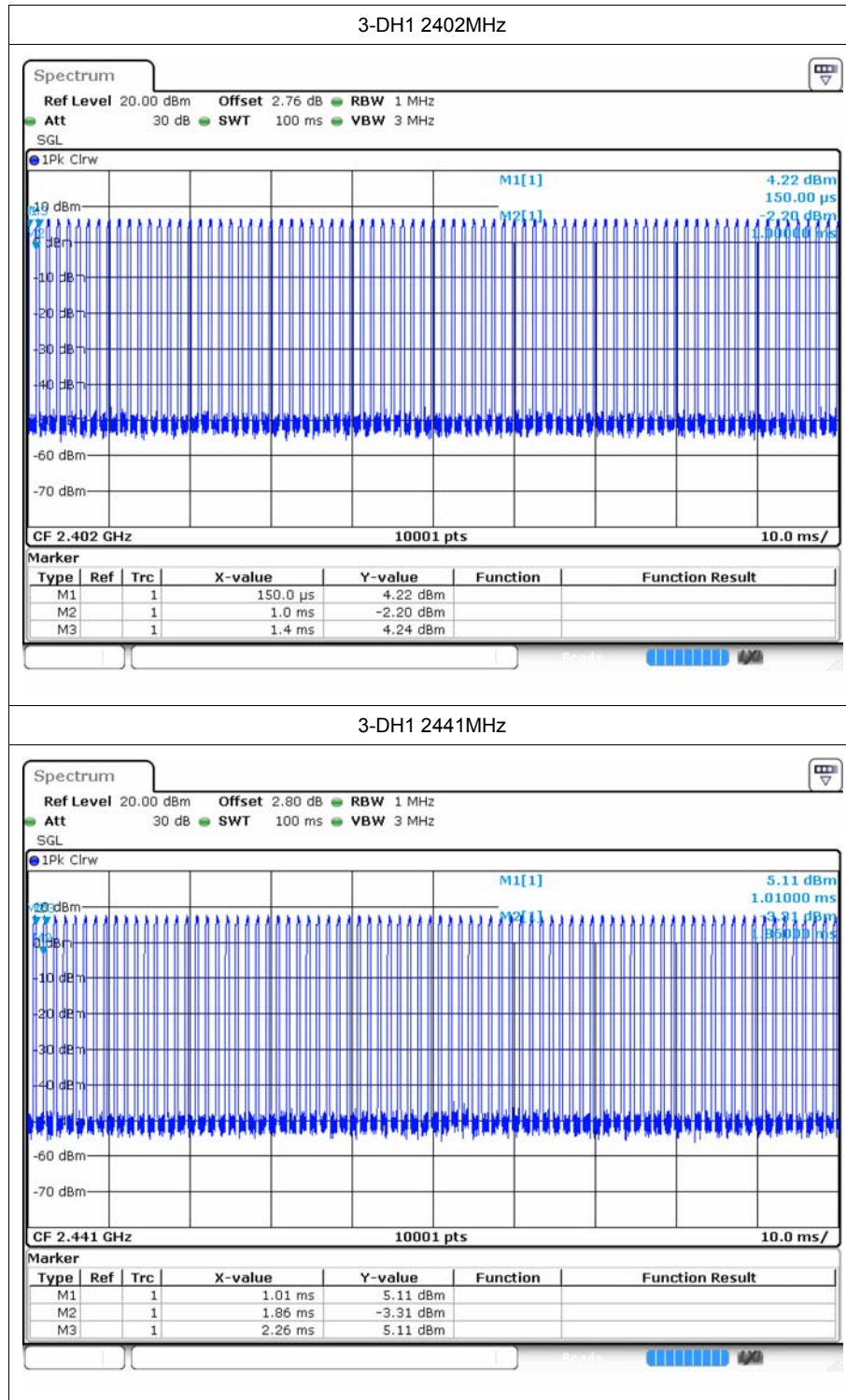
| Mode  | Frequency (MHz) | Duty Cycle (%) | 1/T (kHz) |
|-------|-----------------|----------------|-----------|
| 1-DH1 | 2402            | 31.2           | 2.63      |
| 1-DH1 | 2441            | 31.2           | 2.63      |
| 1-DH1 | 2480            | 32.01          | 2.56      |
| 2-DH1 | 2402            | 32             | 2.56      |
| 2-DH1 | 2441            | 32.81          | 2.5       |
| 2-DH1 | 2480            | 32.8           | 2.5       |
| 3-DH1 | 2402            | 32.81          | 2.5       |
| 3-DH1 | 2441            | 32.8           | 2.5       |
| 3-DH1 | 2480            | 32.01          | 2.56      |

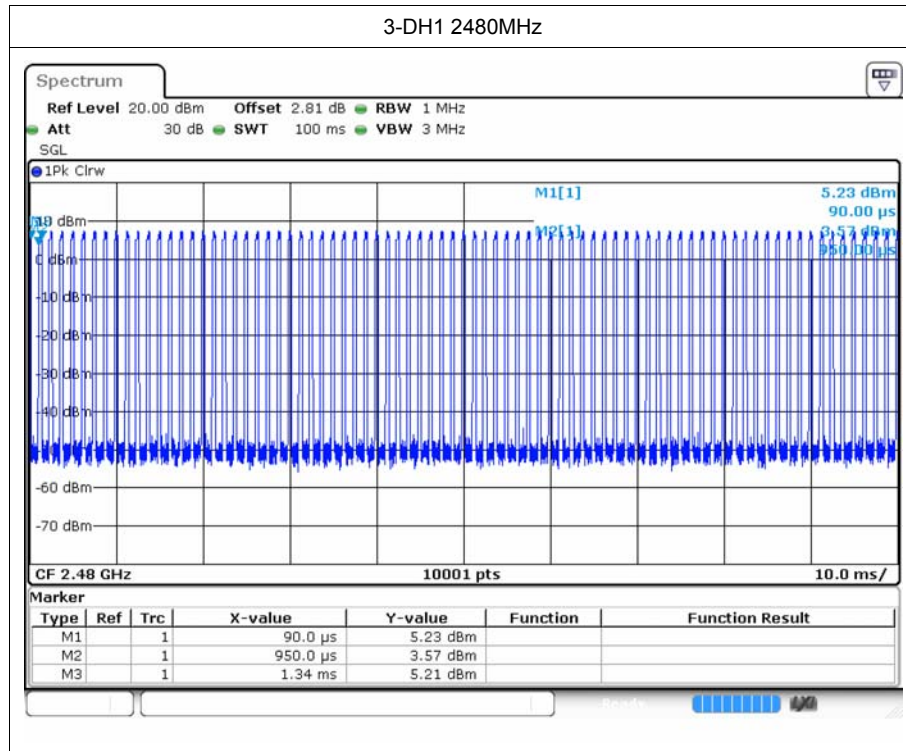
## 1.2 Test Graphs









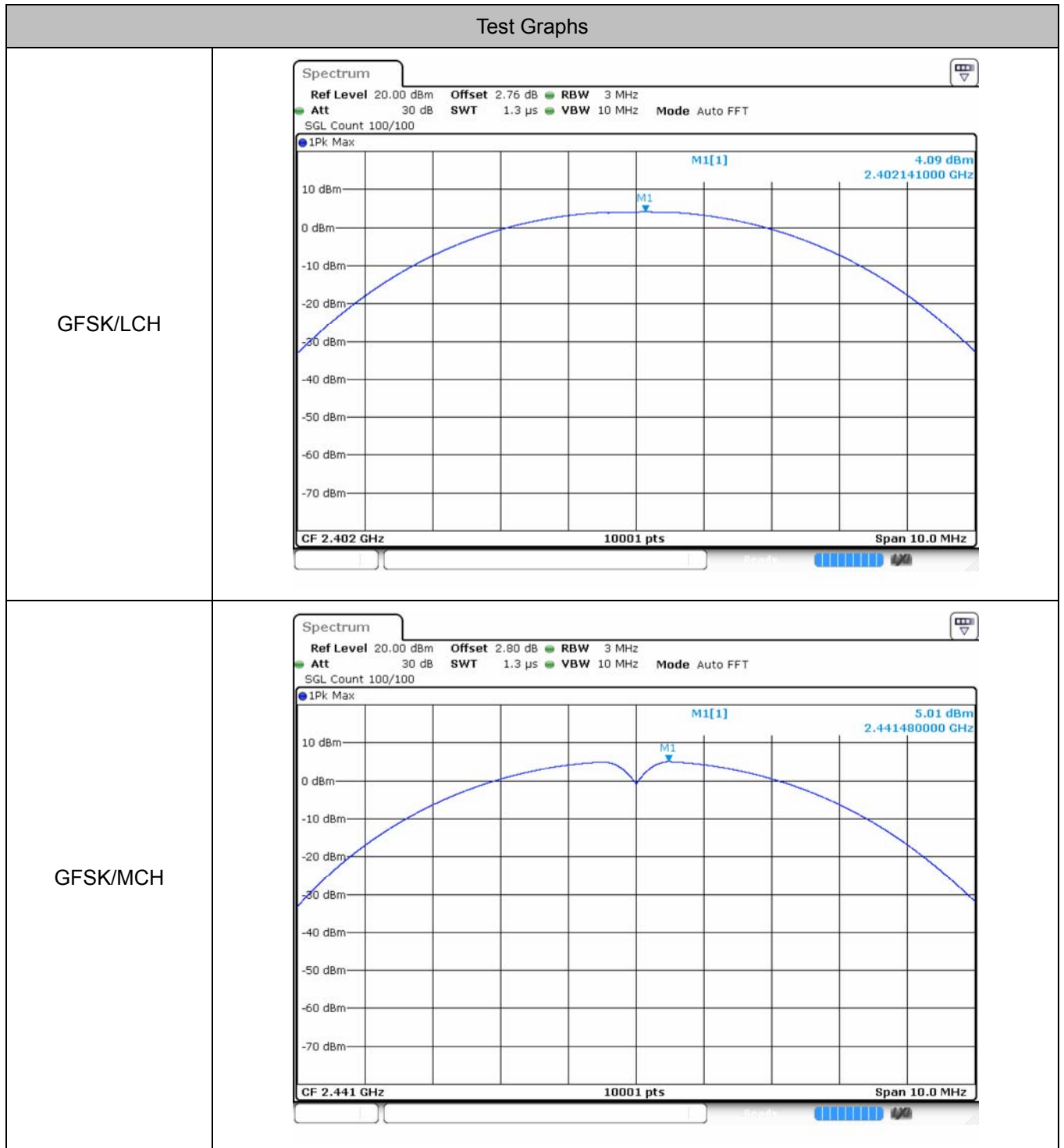


## 2 Maximum Conducted Peak Output Power

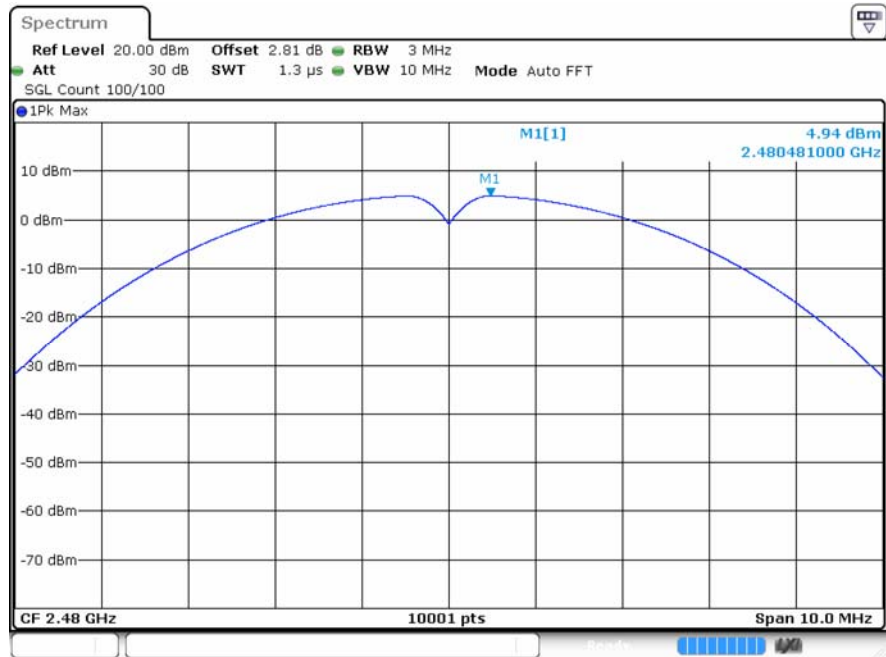
### 2.1 Test Result

| Mode          | Channel. | Maximum Peak Output Power<br>[dBm] | Limit<br>[dBm] | Verdict |
|---------------|----------|------------------------------------|----------------|---------|
| GFSK          | LCH      | 4.09                               | 21             | Pass    |
|               | MCH      | 5.01                               | 21             | Pass    |
|               | HCH      | 4.94                               | 21             | Pass    |
| $\pi/4$ DQPSK | LCH      | 5.92                               | 21             | Pass    |
|               | MCH      | 7.07                               | 21             | Pass    |
|               | HCH      | 6.91                               | 21             | Pass    |
| 8DPSK         | LCH      | 6.47                               | 21             | Pass    |
|               | MCH      | 7.29                               | 21             | Pass    |
|               | HCH      | 6.83                               | 21             | Pass    |

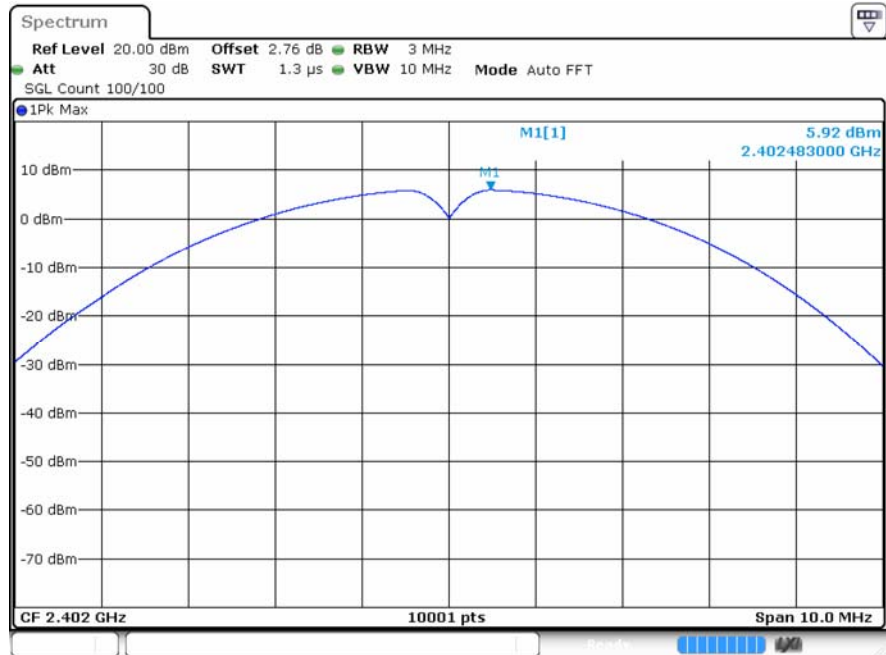
## 2.2 Test Graphs



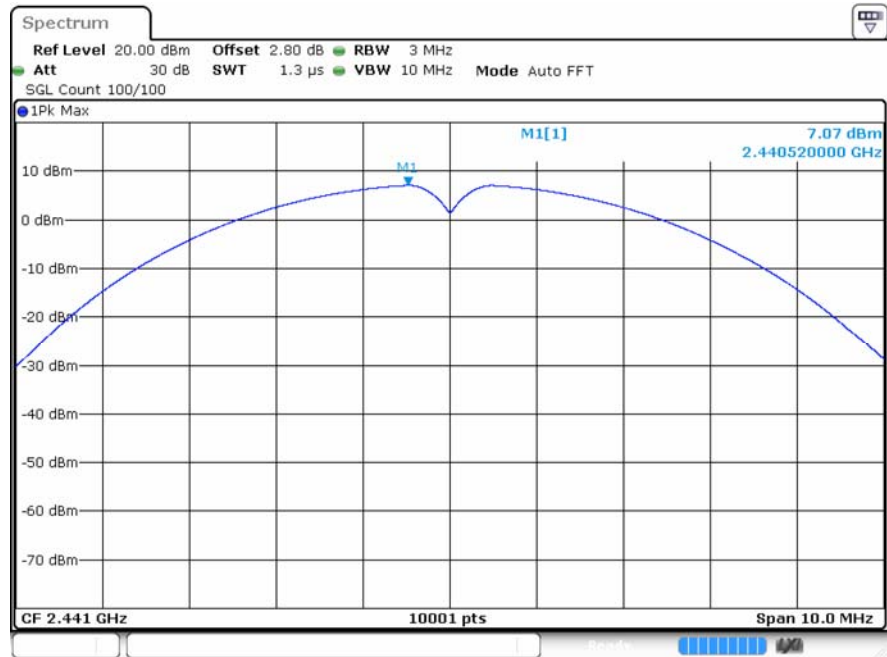
GFSK/HCH



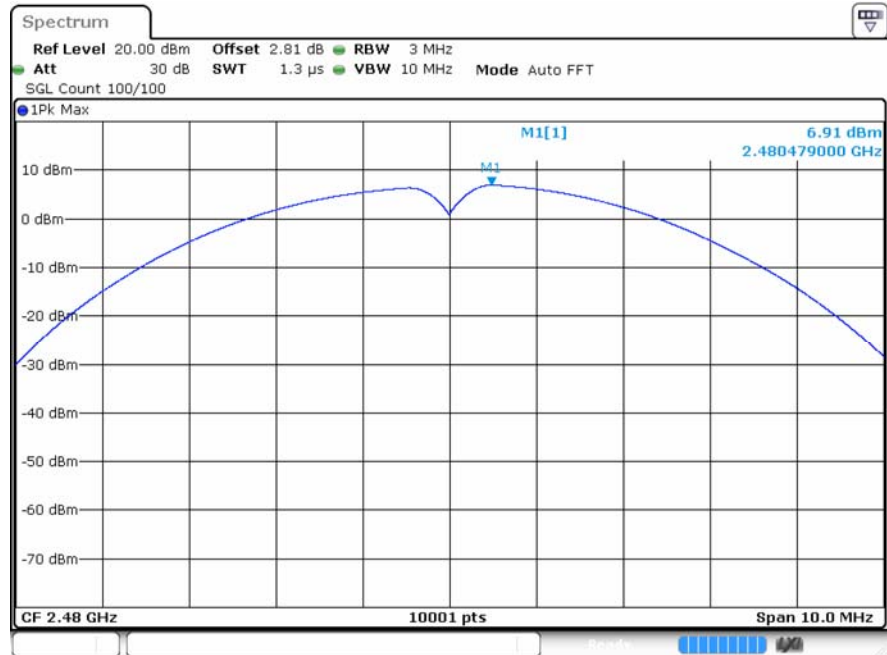
$\pi/4$ DQPSK/LCH



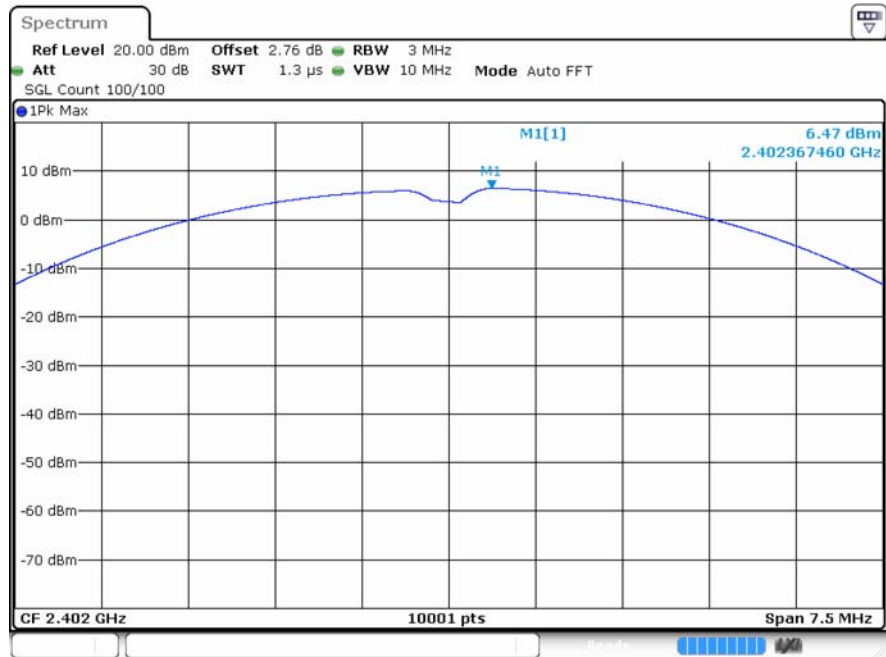
$\pi/4$ DQPSK/MCH



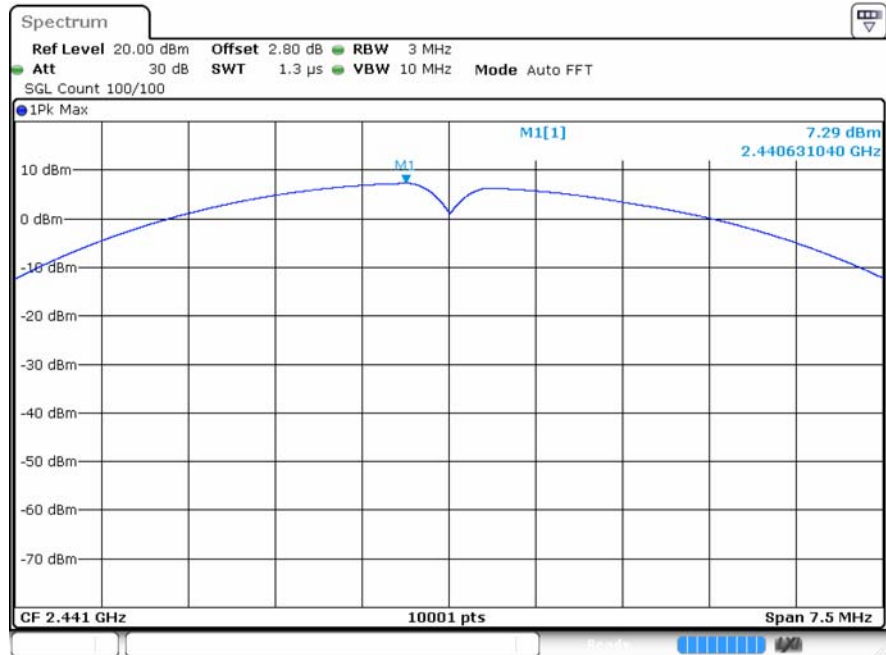
$\pi/4$ DQPSK/HCH



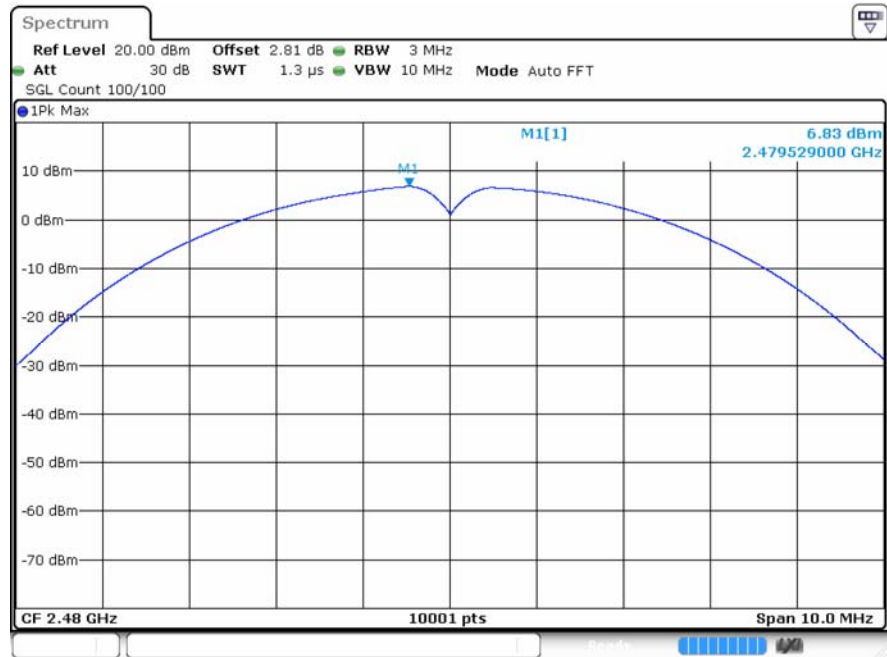
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

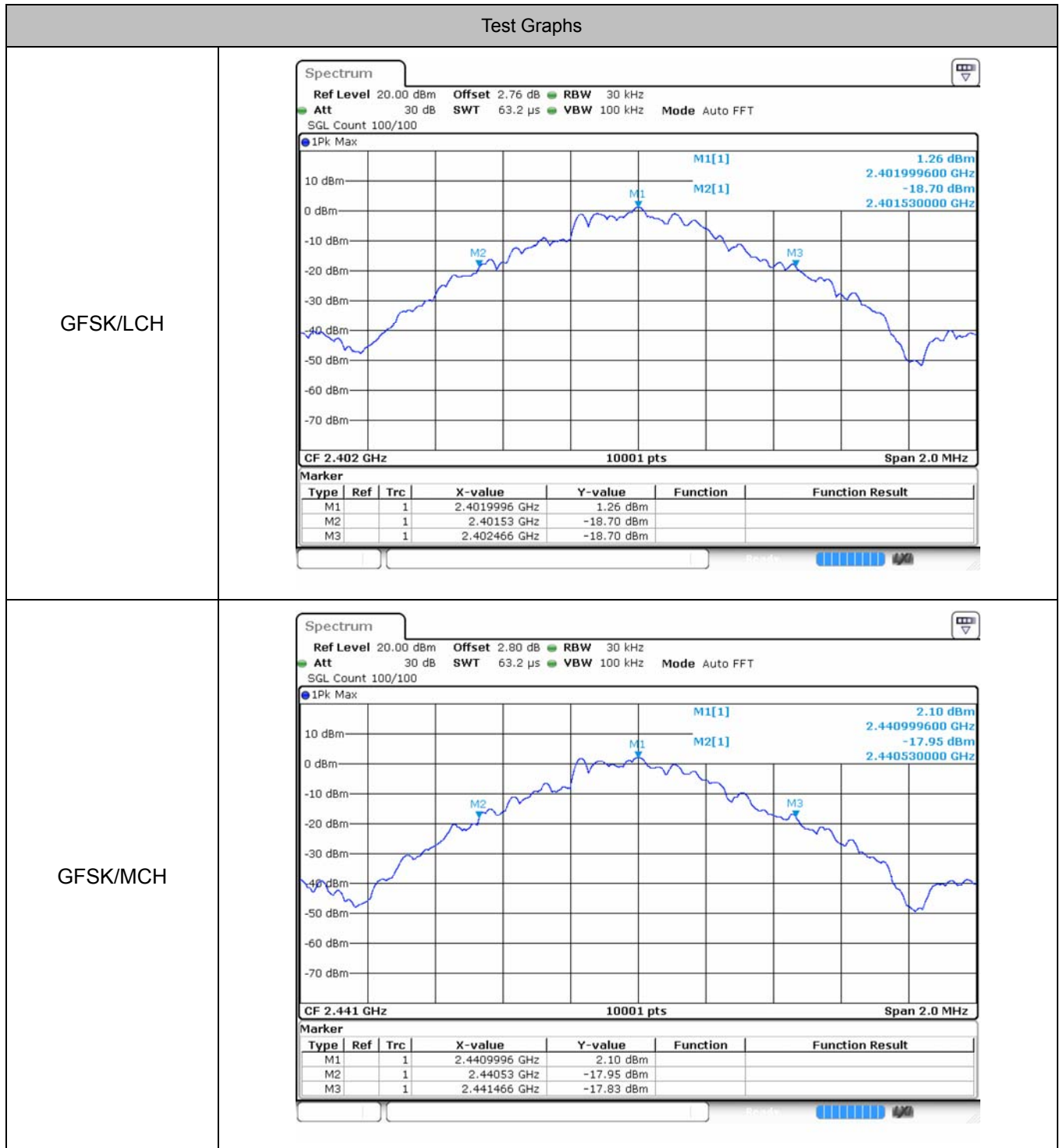


### 3 20dB Bandwidth

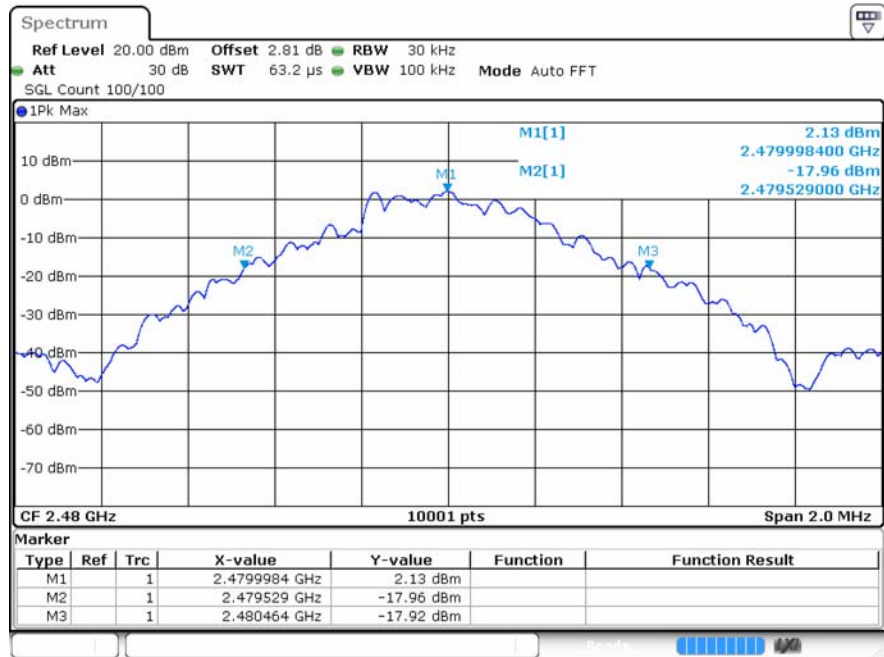
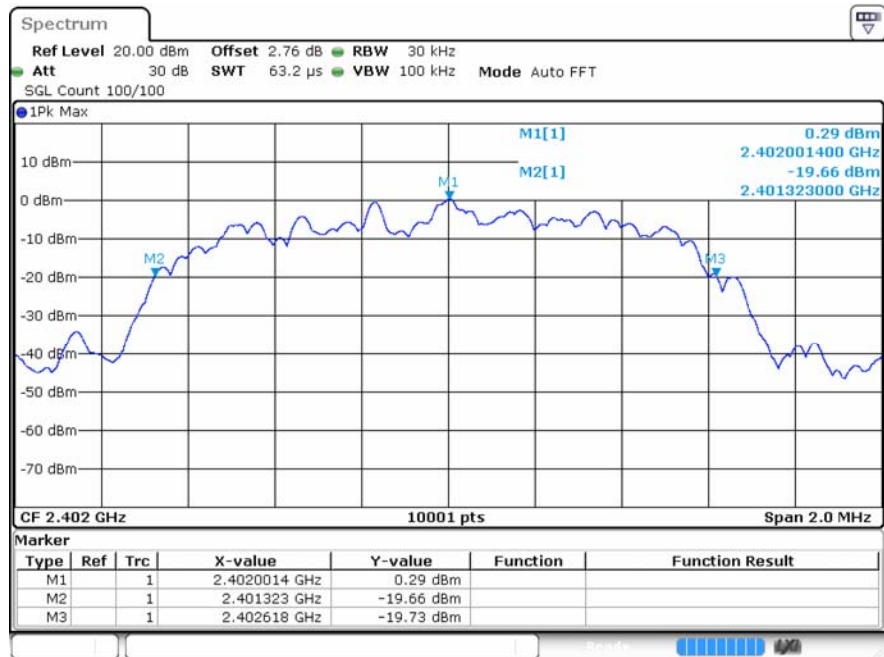
#### 3.1 Test Result

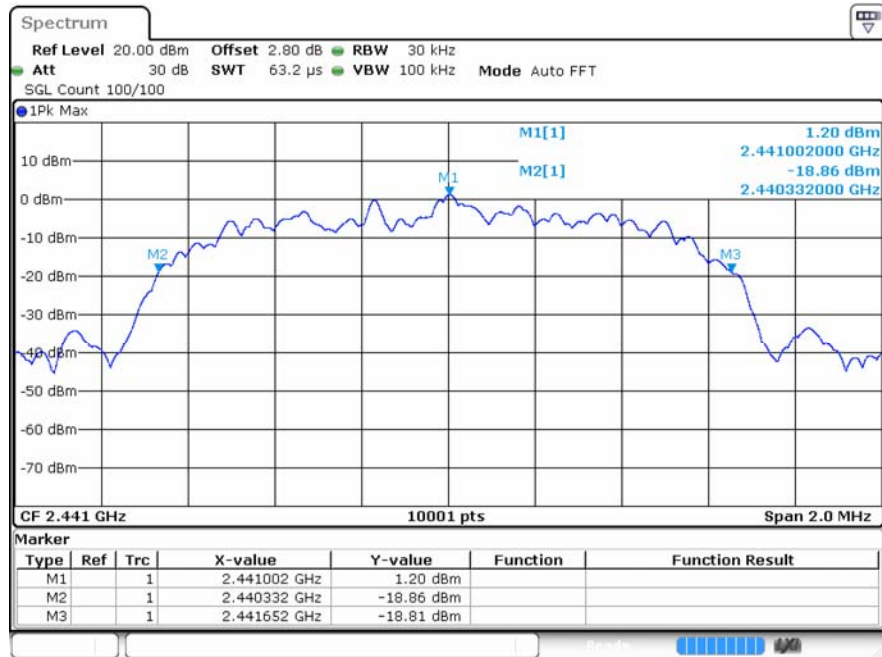
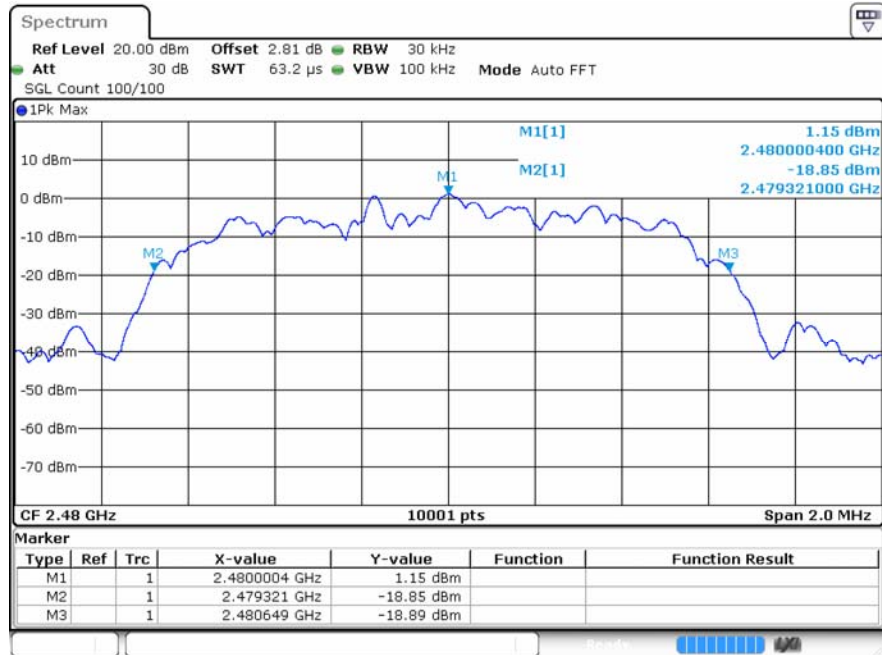
| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.936                | Not Specified | Pass    |
|               | MCH      | 0.936                | Not Specified | Pass    |
|               | HCH      | 0.934                | Not Specified | Pass    |
| $\pi/4$ DQPSK | LCH      | 1.295                | Not Specified | Pass    |
|               | MCH      | 1.32                 | Not Specified | Pass    |
|               | HCH      | 1.328                | Not Specified | Pass    |
| 8DPSK         | LCH      | 1.297                | Not Specified | Pass    |
|               | MCH      | 1.286                | Not Specified | Pass    |
|               | HCH      | 1.302                | Not Specified | Pass    |

### 3.2 Test Graphs

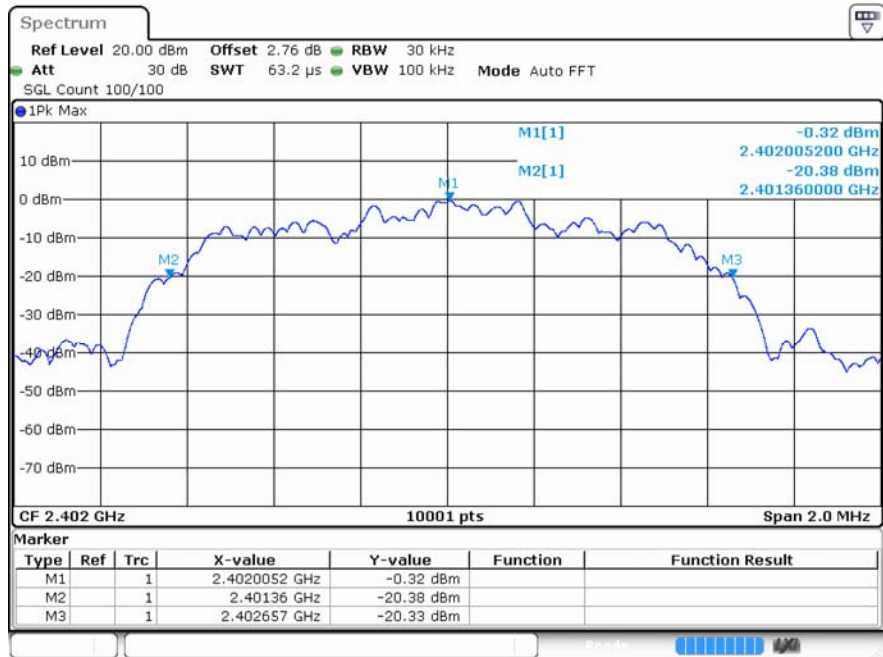


GFSK/HCH

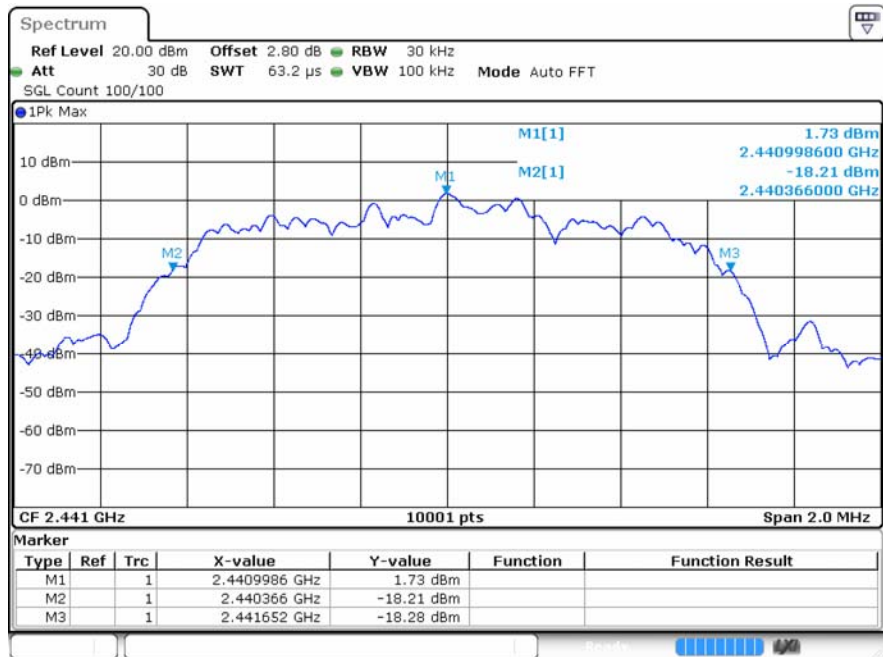

 $\pi/4$ DQPSK/LCH


$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


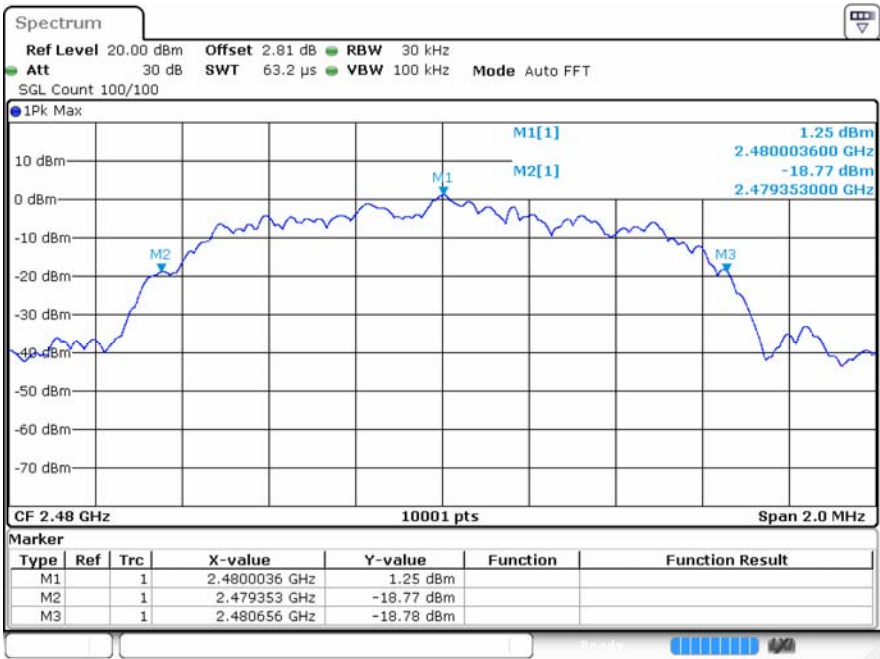
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH



## 4 Carrier Frequency Separation

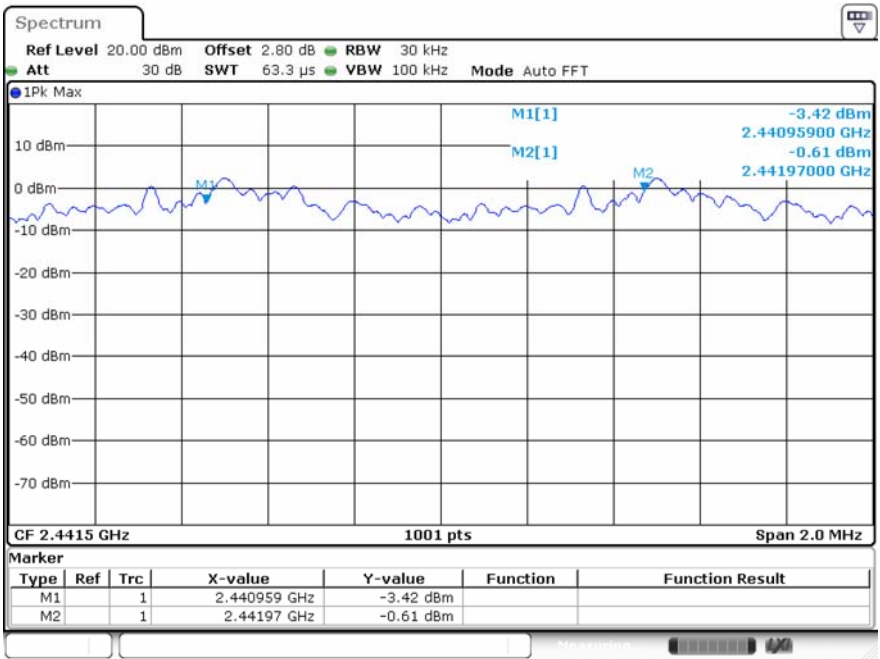
### 4.1 Test Result

| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | MCH      | 1.001                              | 0.624       | Pass    |
| $\pi/4$ DQPSK | MCH      | 1.127                              | 0.88        | Pass    |
| 8DPSK         | MCH      | 1.011                              | 0.857       | Pass    |

## 4.2 Test Graphs



8DPSK/MCH

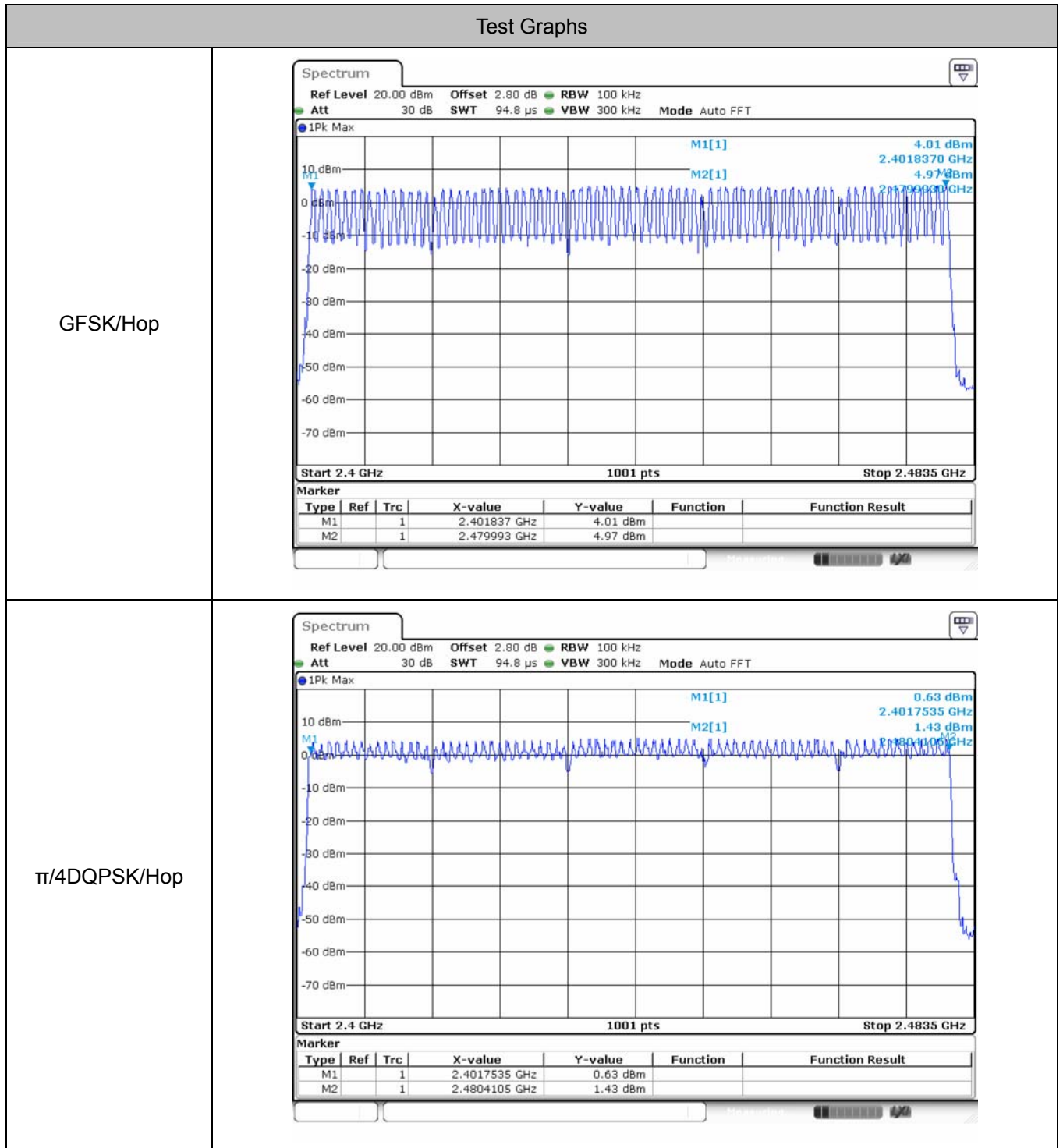


## 5 Hopping Channel Number

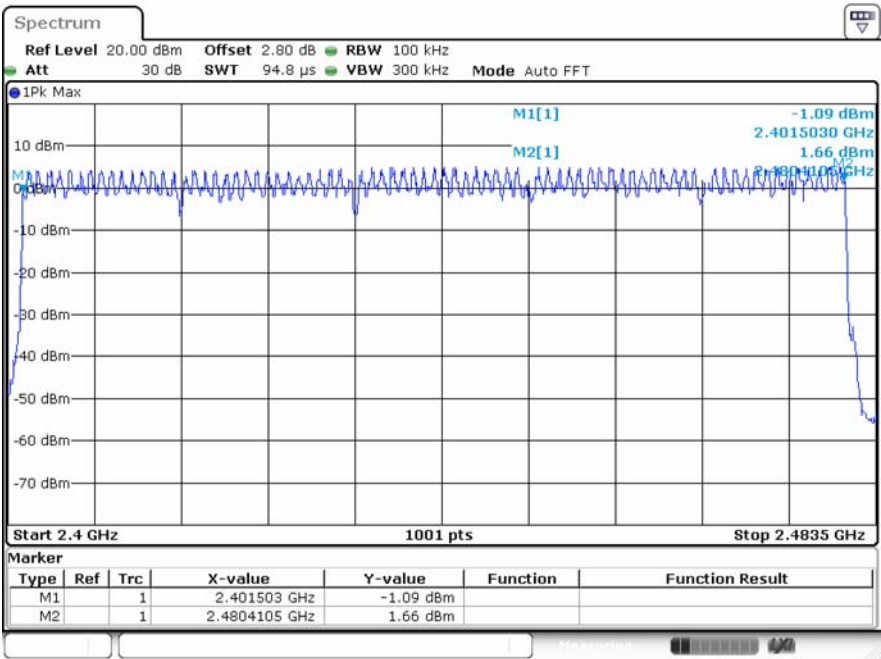
### 5.1 Test Result

| 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

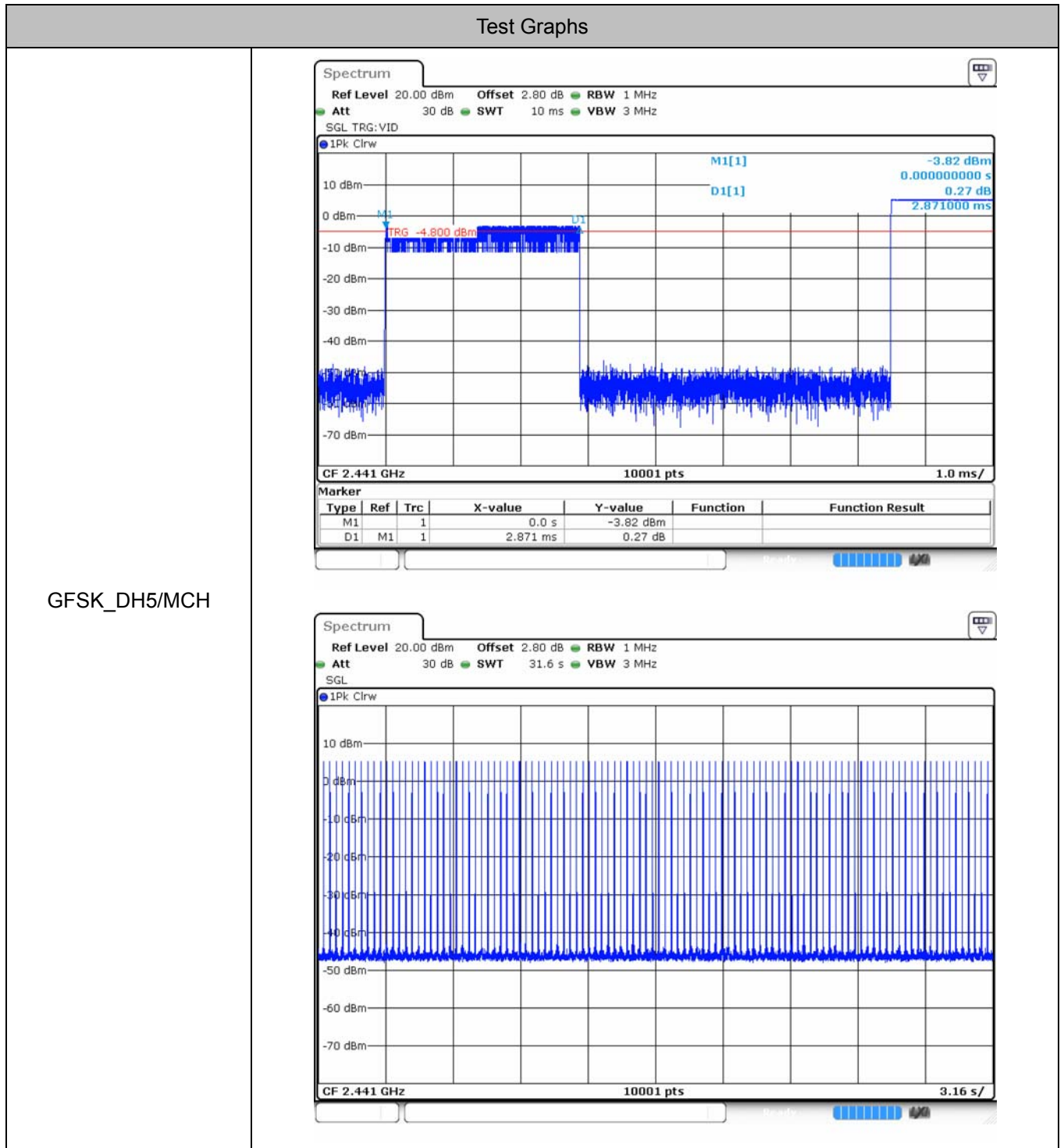


## 6 Dwell Time

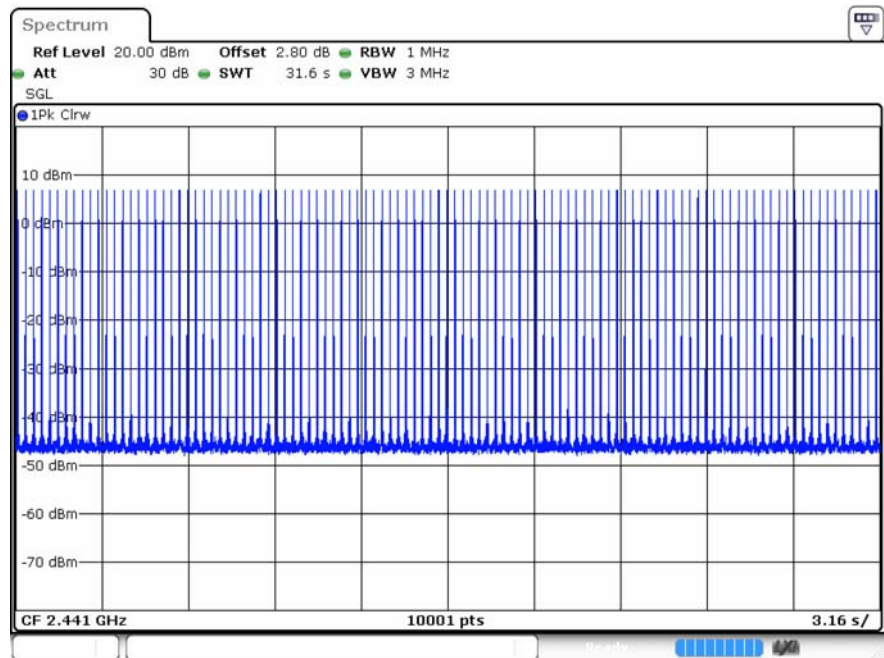
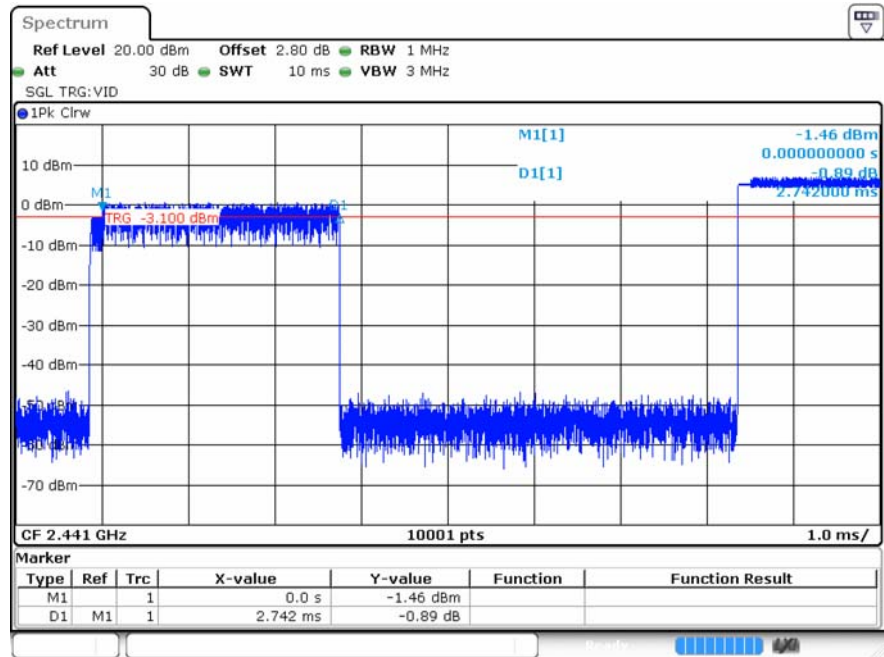
### 6.1 Test Result

| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[ms] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|----------------|-----------|---------|
| GFSK          | DH5    | MCH     | 2.871                      | 105                   | 301.455        | 0.4       | Pass    |
| $\pi/4$ DQPSK | 2DH5   | MCH     | 2.742                      | 107                   | 293.394        | 0.4       | Pass    |
| 8DPSK         | 3DH5   | MCH     | 2.742                      | 106                   | 290.652        | 0.4       | Pass    |

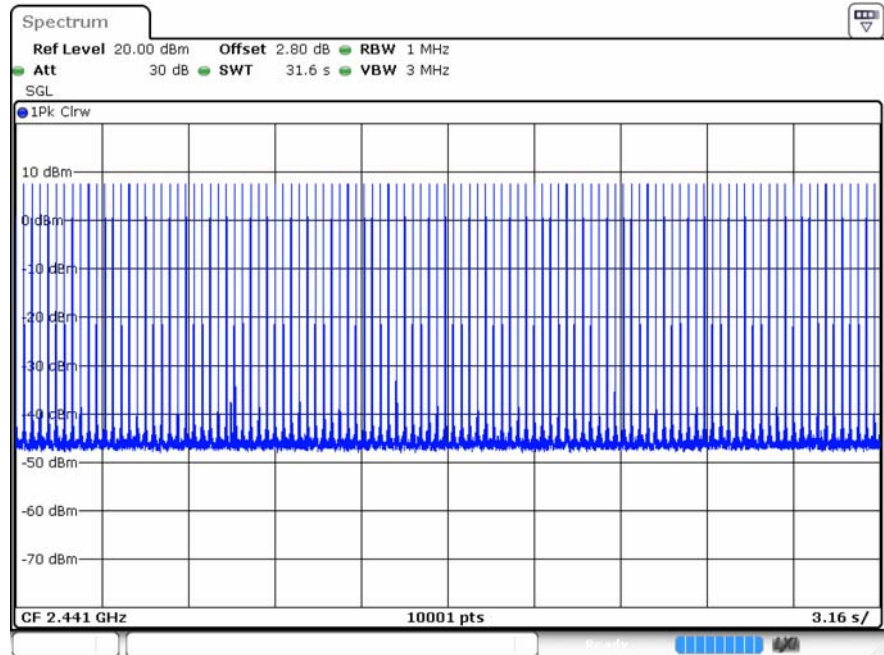
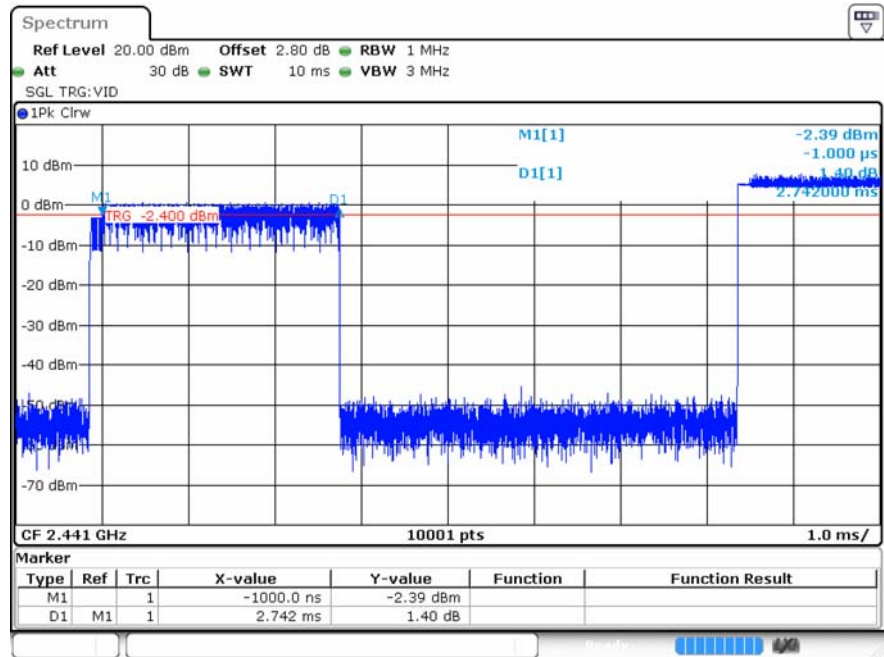
## 6.2 Test Graphs



$\pi/4$ DQPSK  
\_2DH5/MCH



8DPSK\_3DH5/MCH

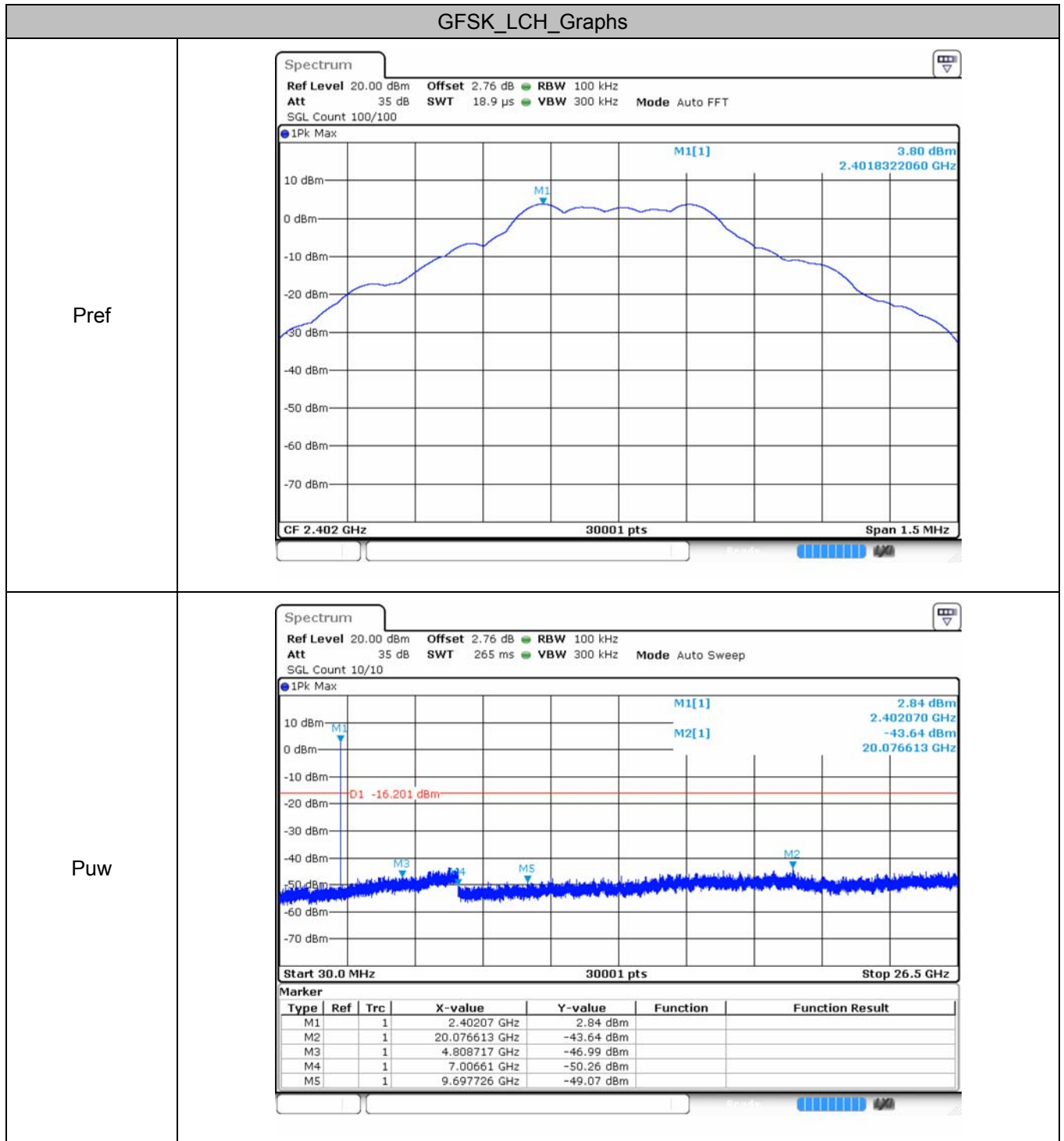


## 7 RF Conducted Spurious Emissions

### 7.1 Test Result

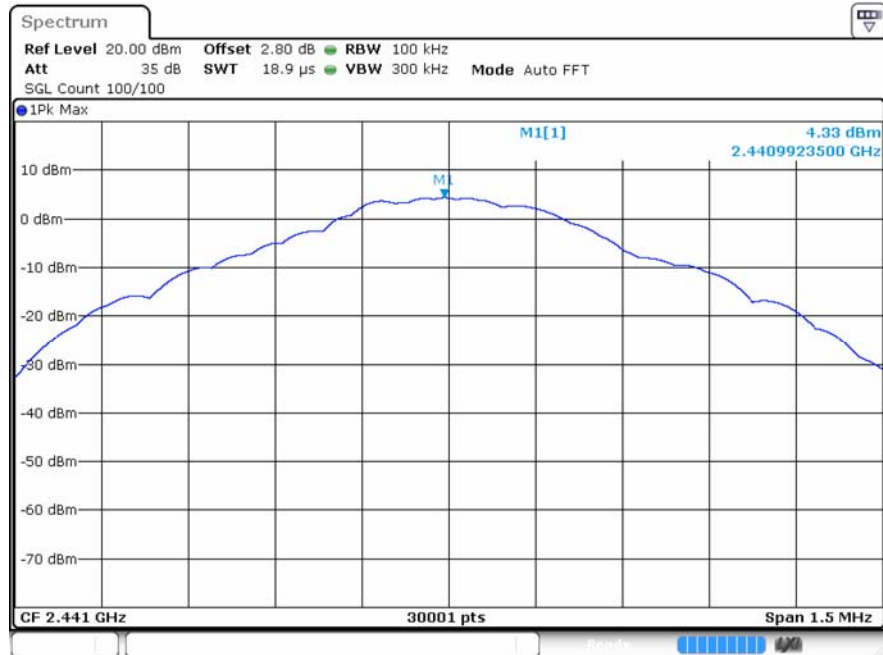
| Mode          | Channel | Max. Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|------------------|-------------|---------|
| GFSK          | LCH     | -47.43           | -20         | Pass    |
|               | MCH     | -48.05           | -20         | Pass    |
|               | HCH     | -47.66           | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | -46.85           | -20         | Pass    |
|               | MCH     | -47.82           | -20         | Pass    |
|               | HCH     | -47.19           | -20         | Pass    |
| 8DPSK         | LCH     | -47.23           | -20         | Pass    |
|               | MCH     | -48.76           | -20         | Pass    |
|               | HCH     | -48.54           | -20         | Pass    |

## 7.2 Test Graphs

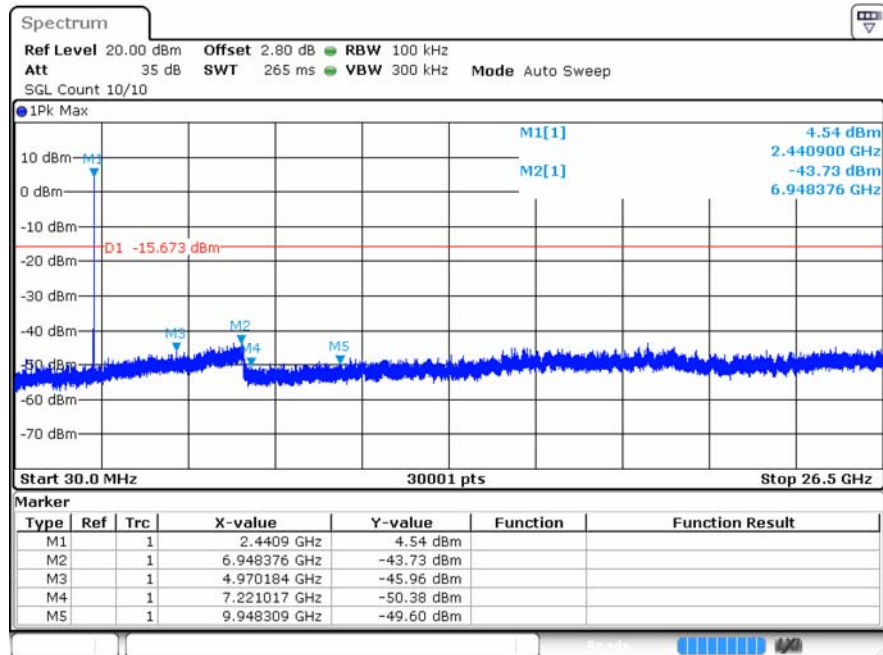


## GFSK\_MCH\_Graphs

Pref



Puw

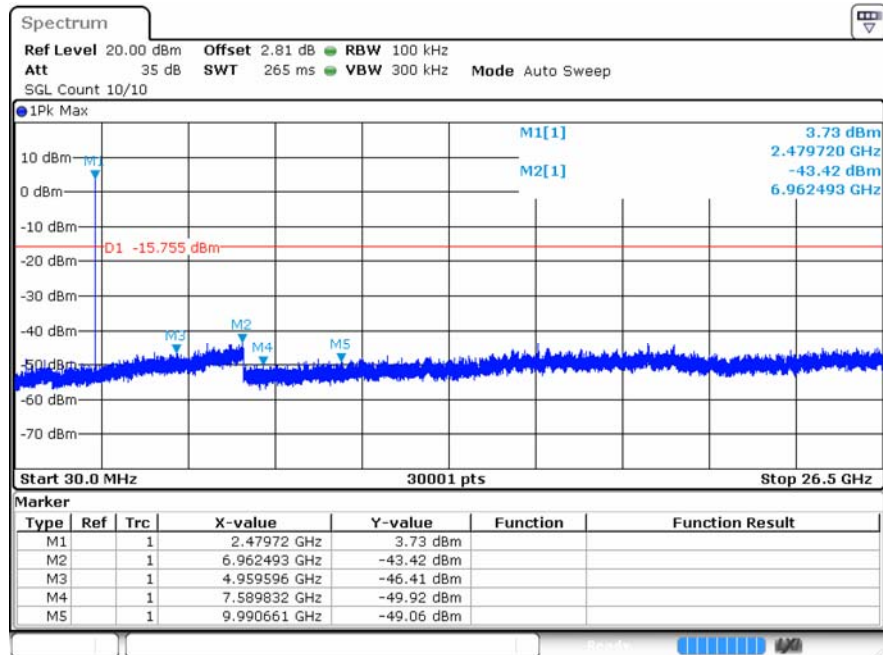


## GFSK\_HCH\_Graphs

Pref

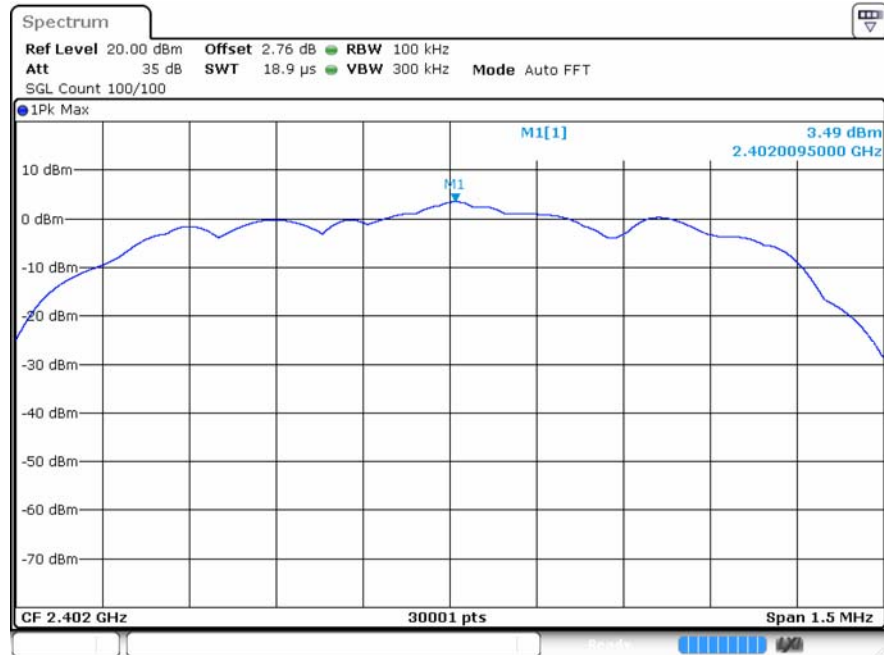


Puw

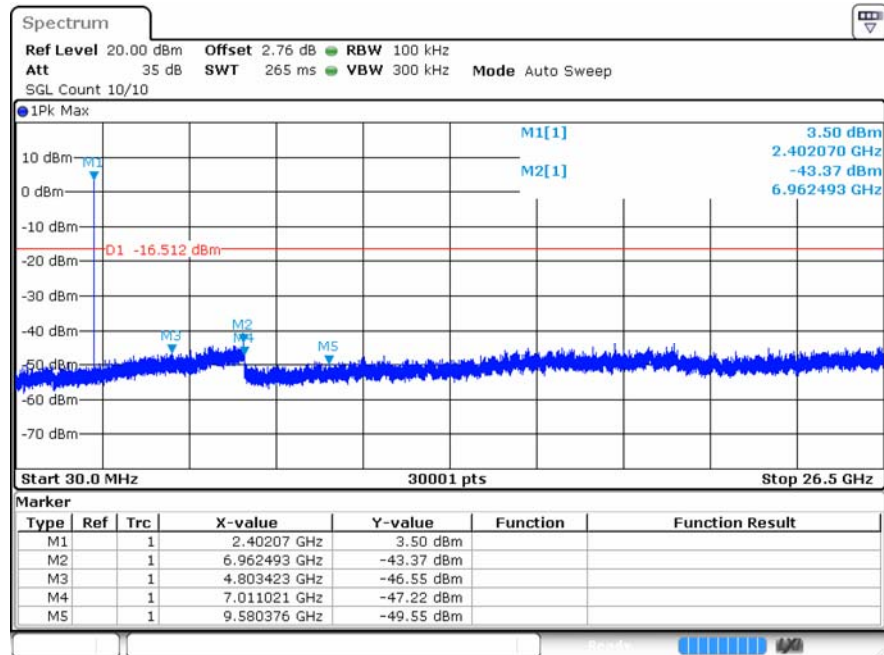


### $\pi/4$ DQPSK\_LCH\_Graphs

Pref

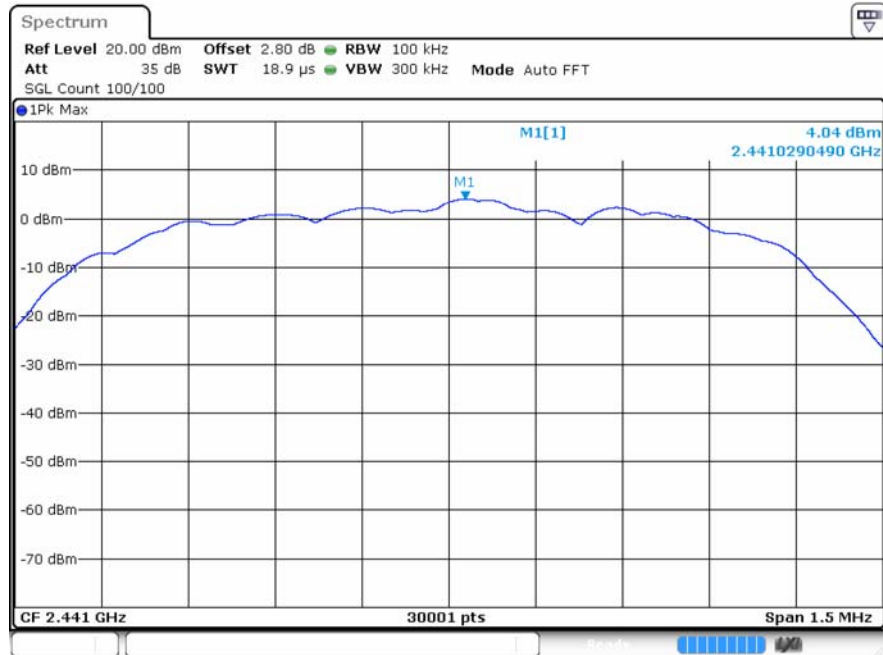


Puw

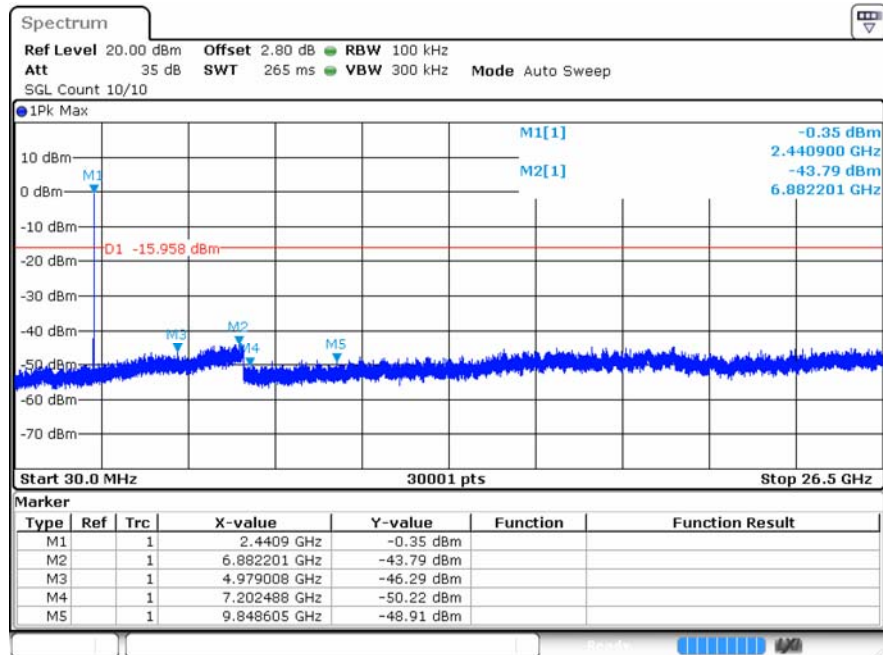


# $\pi/4$ DQPSK\_MCH\_Graphs

Pref

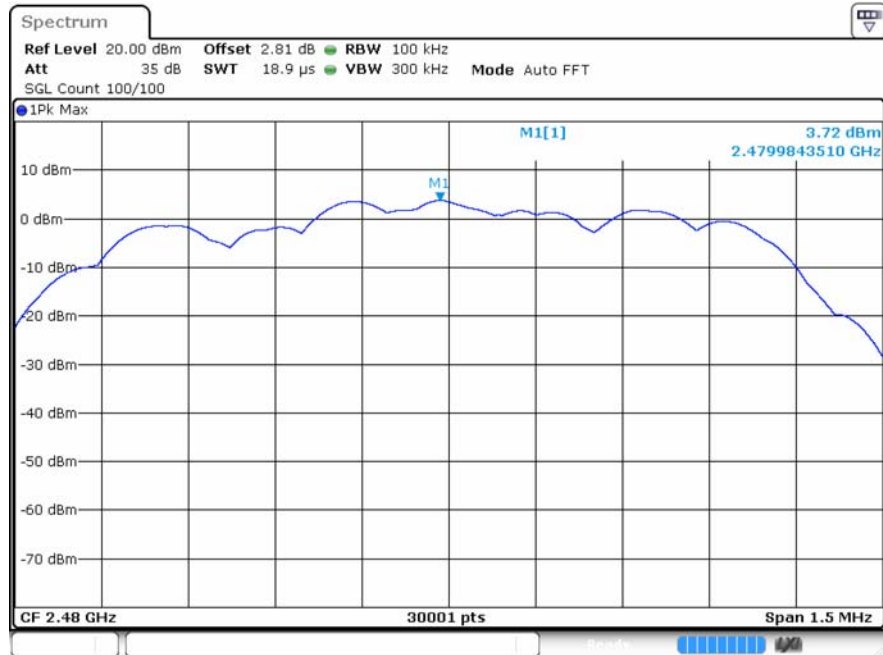


Puw

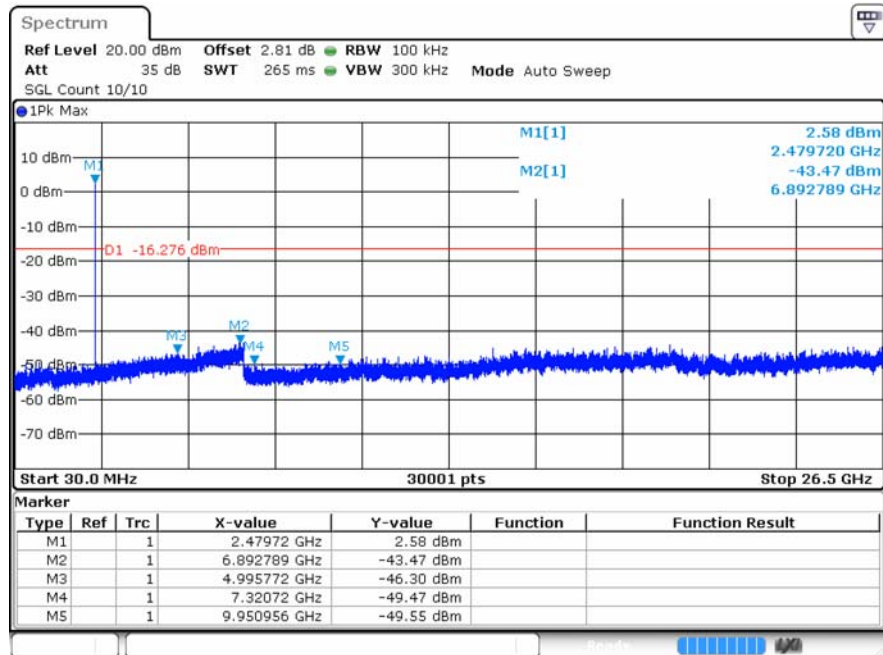


### $\pi/4$ DQPSK\_HCH\_Graphs

Pref

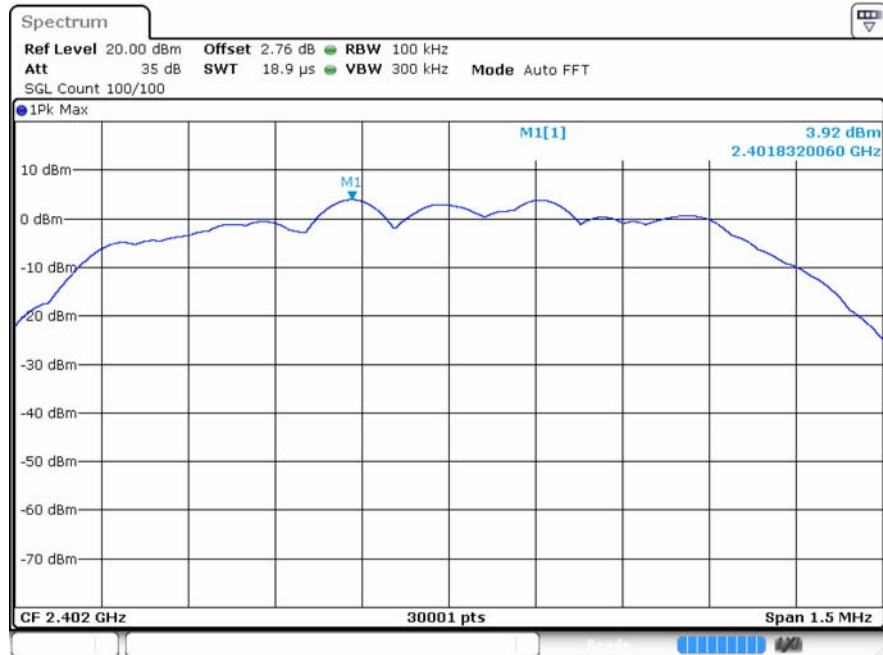


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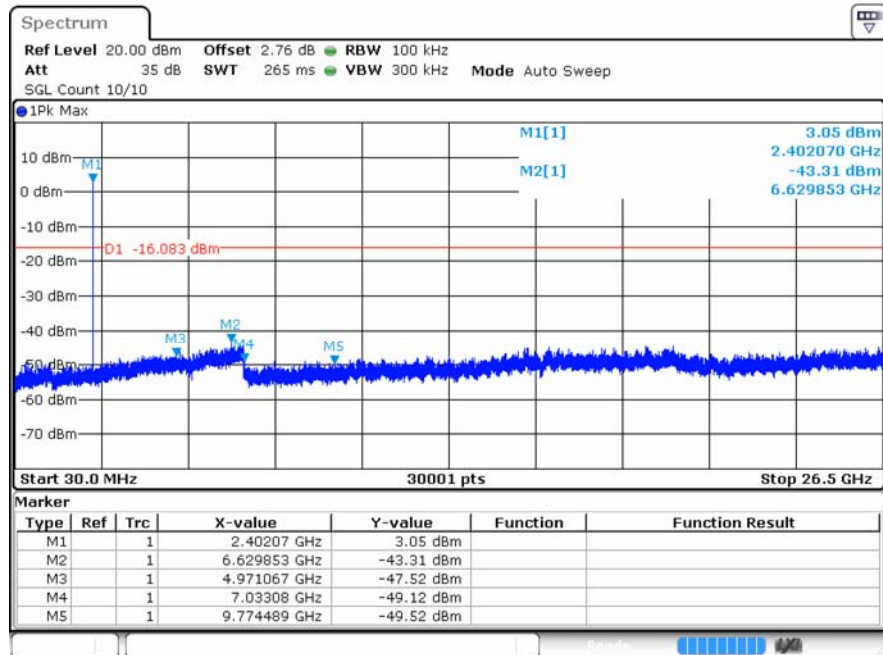


## 8DPSK\_LCH\_Graphs

Pref

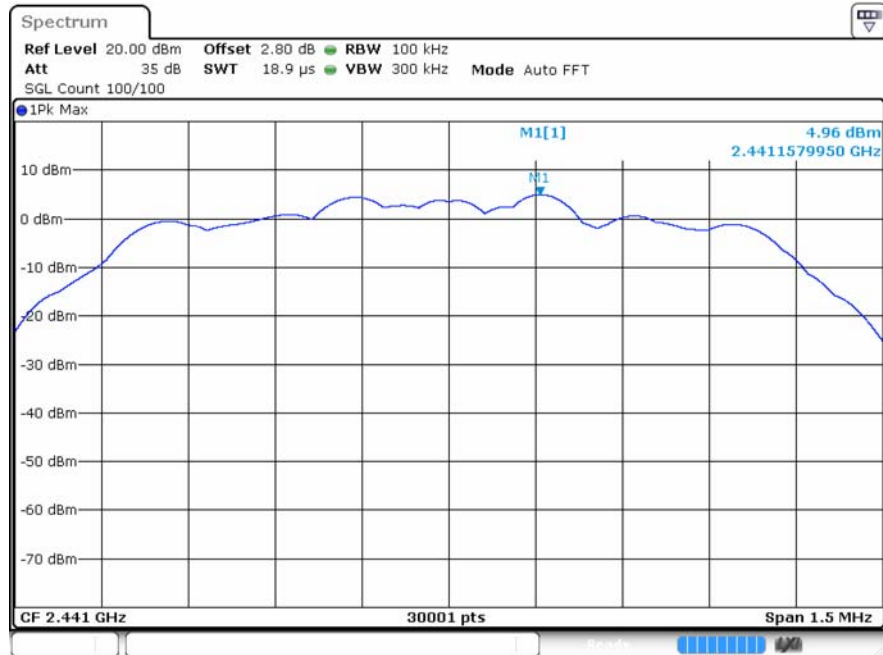


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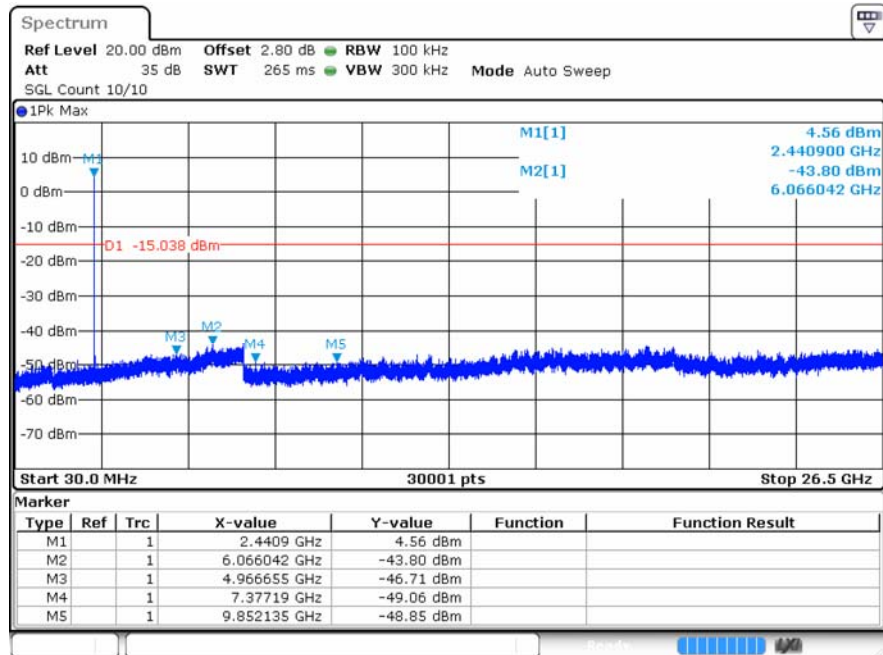


## 8DPSK\_MCH\_Graphs

Pref

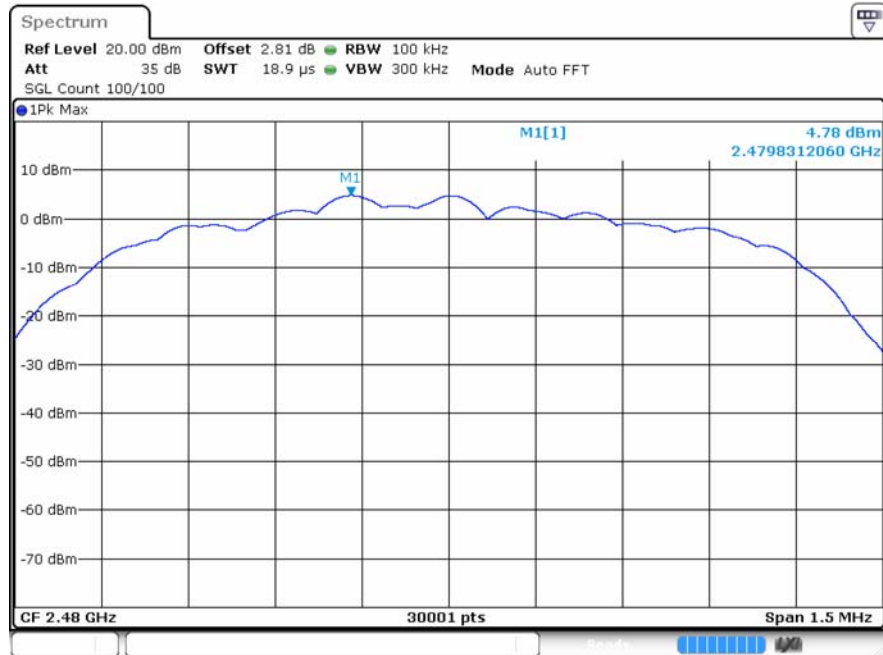


Puw

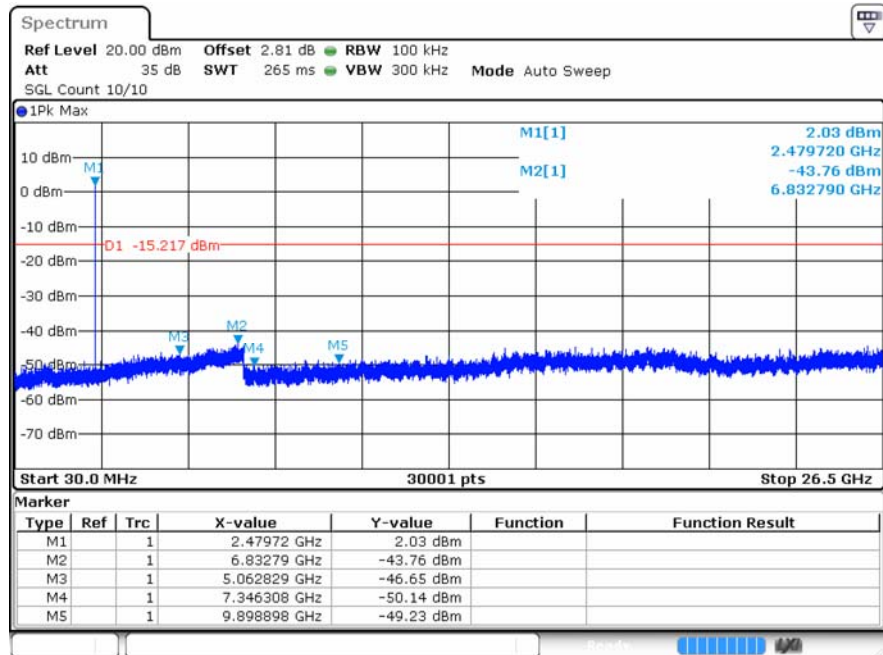


## 8DPSK\_HCH\_Graphs

Pref



Puw

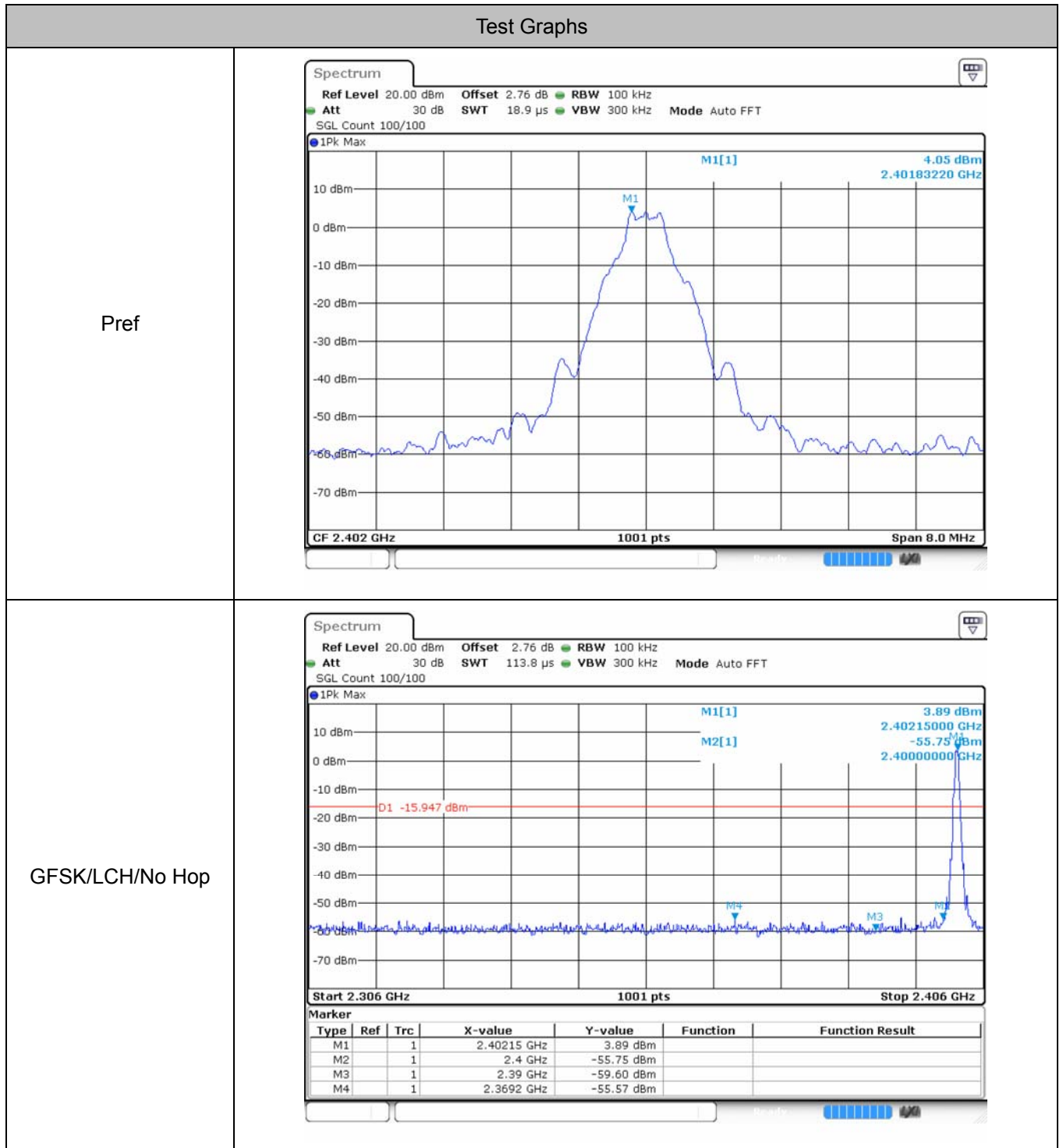


## 8 Band-edge for RF Conducted Emissions

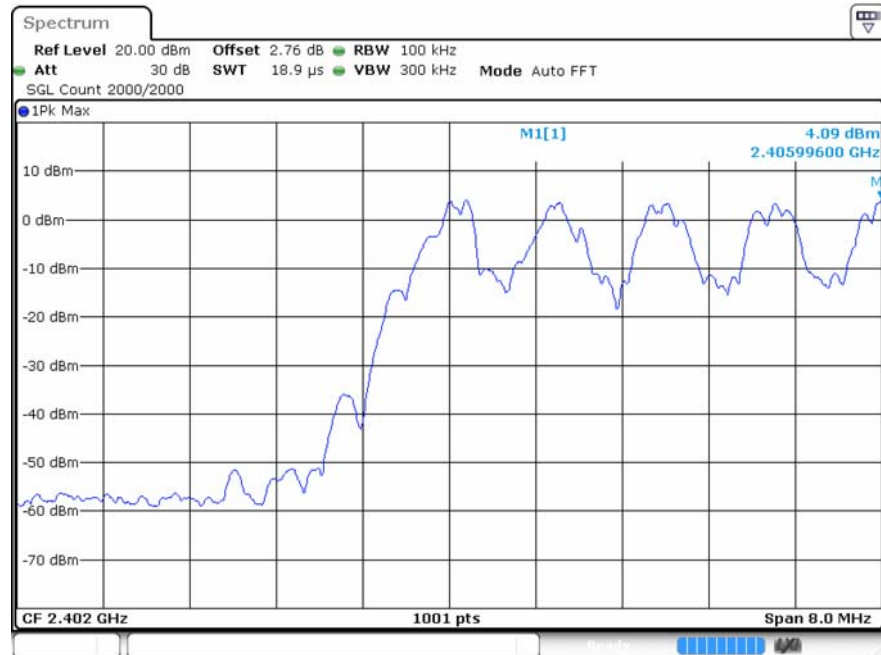
### 8.1 Test Result

| Mode          | Channel | Carrier Frequency [MHz] | Frequency Hopping | Max Spurious Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|-------------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | Off               | -59.62                   | -20         | Pass    |
|               |         |                         | On                | -58.84                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -55.65                   | -20         | Pass    |
|               |         |                         | On                | -59.36                   | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | 2402                    | Off               | -58.19                   | -20         | Pass    |
|               |         |                         | On                | -58.93                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -56.31                   | -20         | Pass    |
|               |         |                         | On                | -59.76                   | -20         | Pass    |
| 8DPSK         | LCH     | 2402                    | Off               | -59.14                   | -20         | Pass    |
|               |         |                         | On                | -58.62                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -56.21                   | -20         | Pass    |
|               |         |                         | On                | -58.93                   | -20         | Pass    |

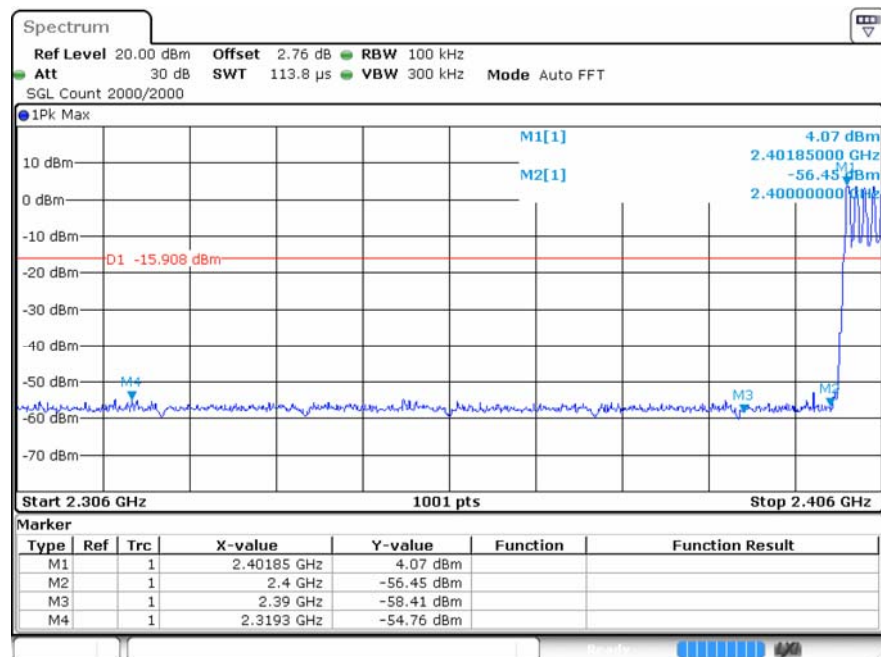
## 8.2 Test Graphs



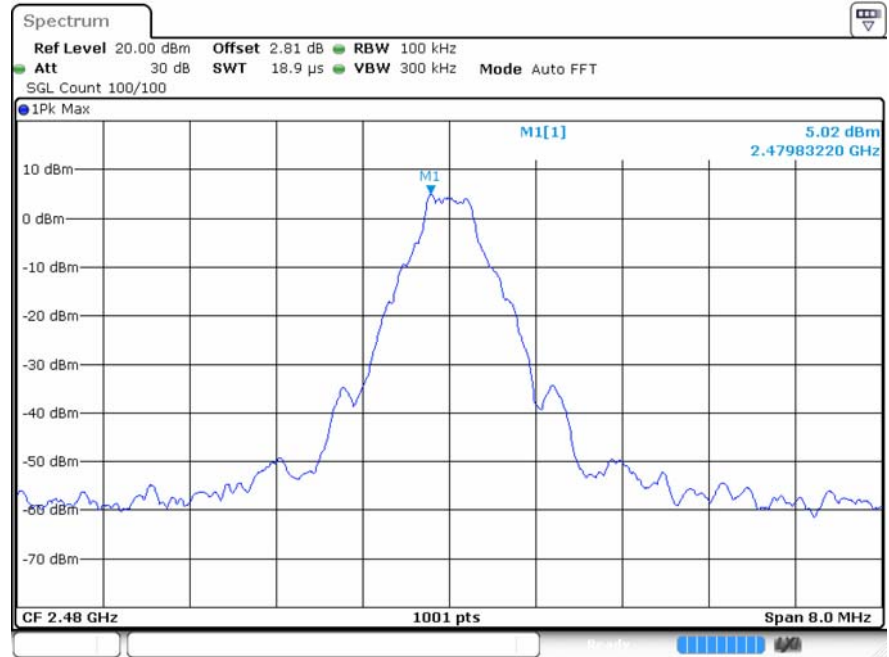
Ref



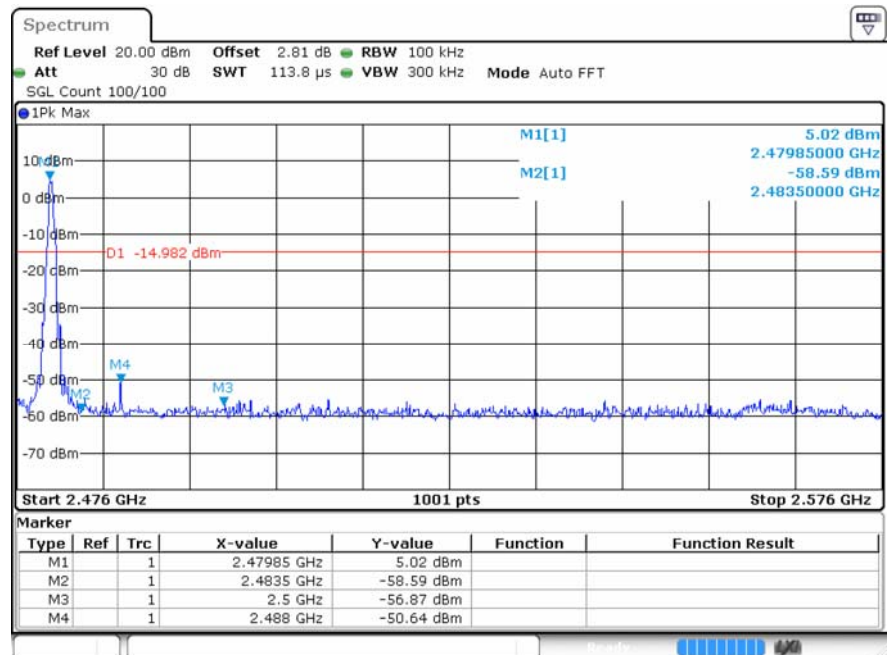
GFSK/LCH/Hop



Ref



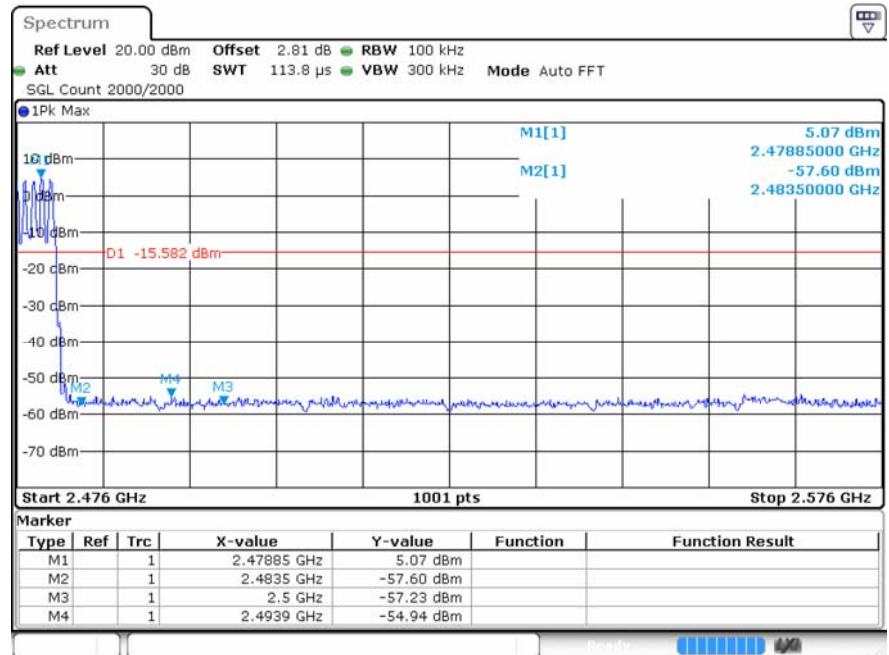
GFSK/HCH/No Hop



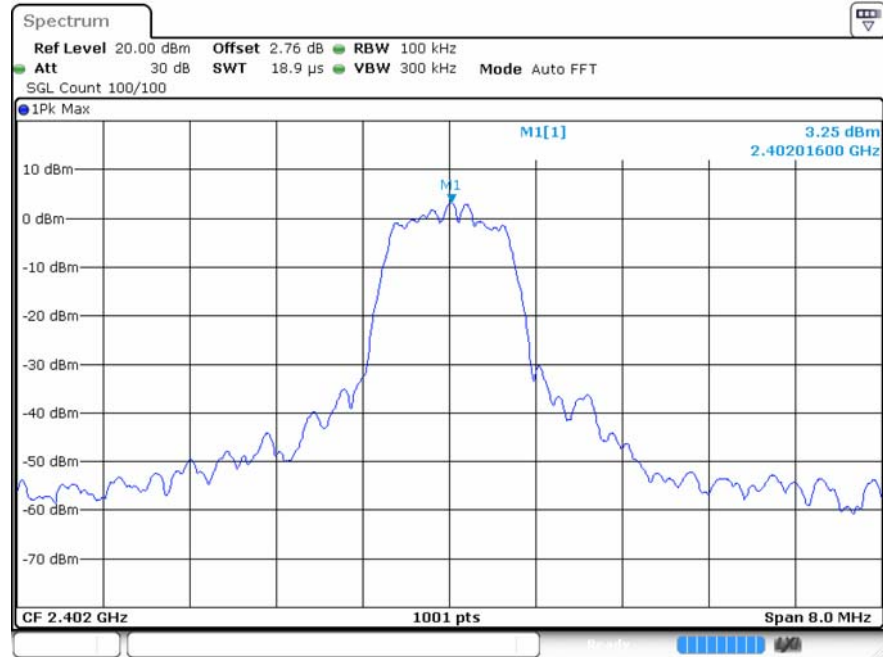
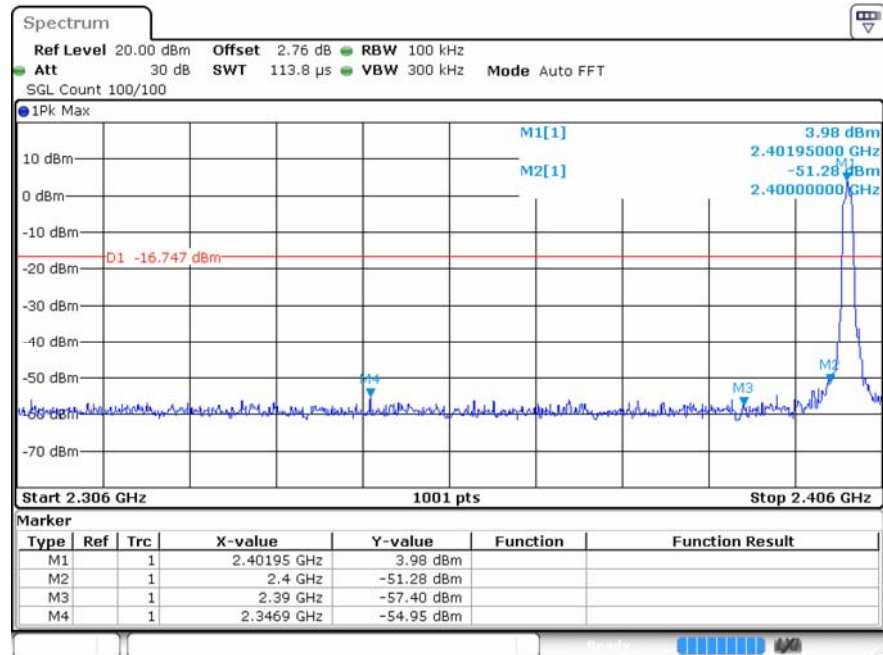
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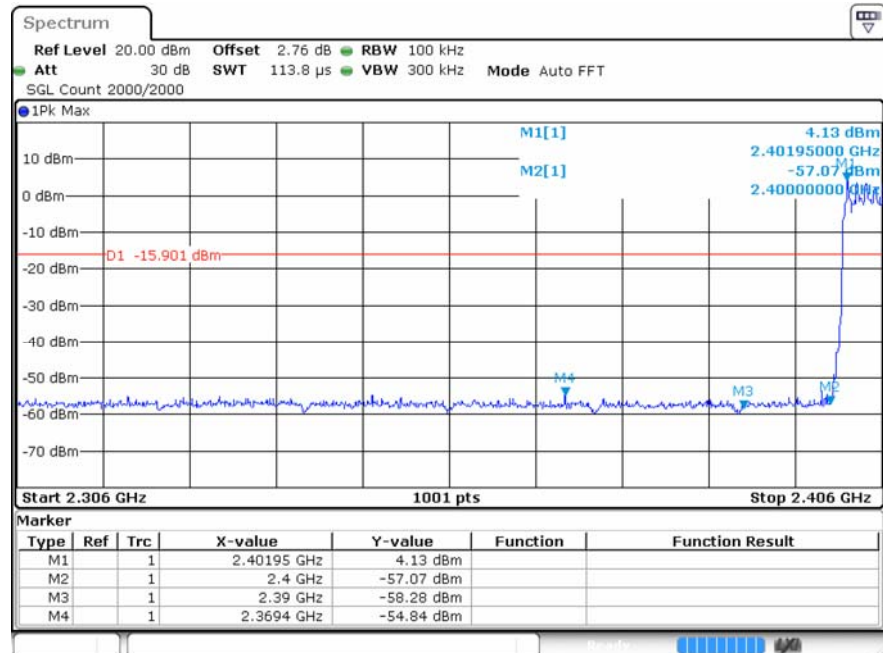
GFSK/HCH/Hop



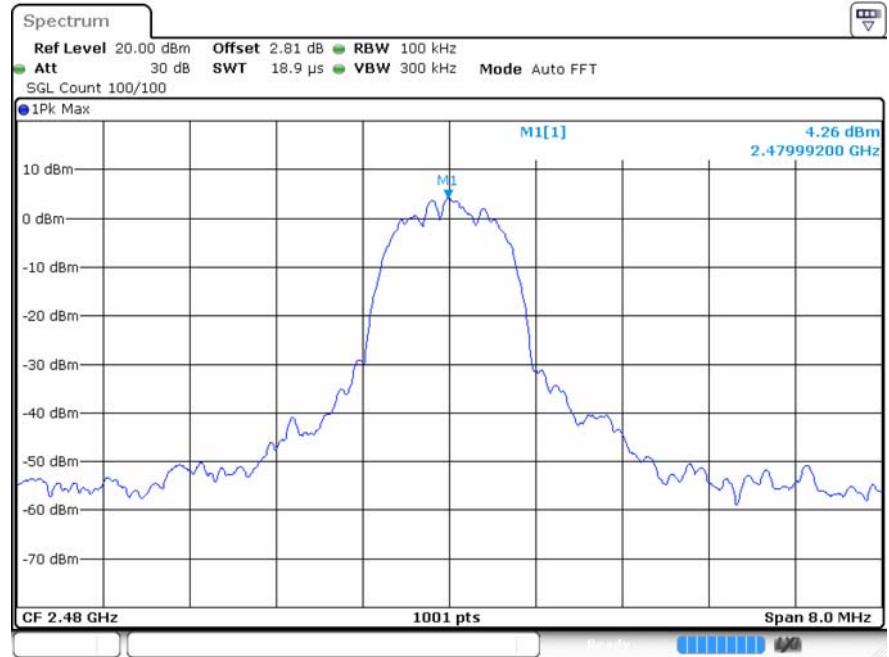
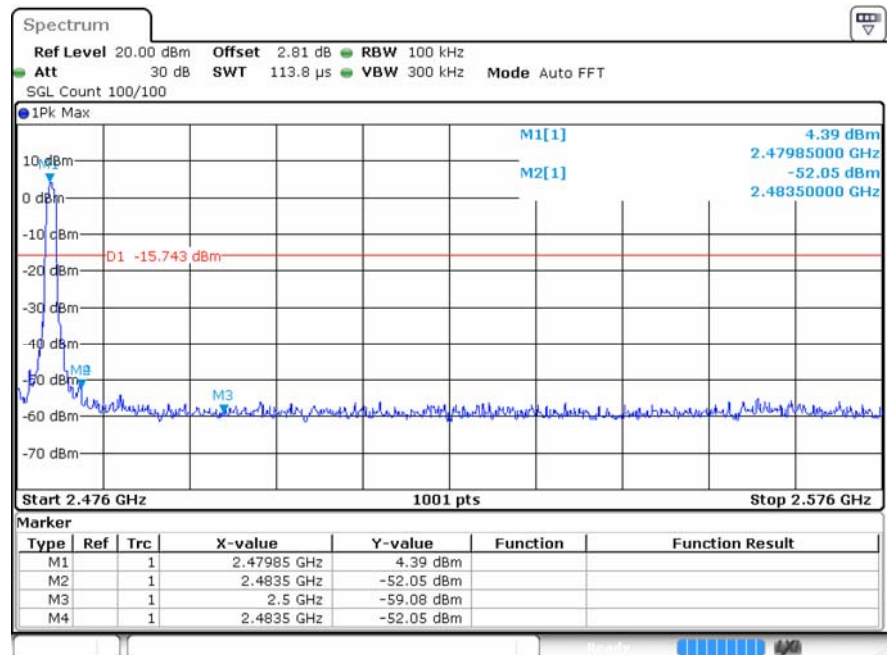
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 $\pi/4$ DQPSK/LCH/No  
Hop


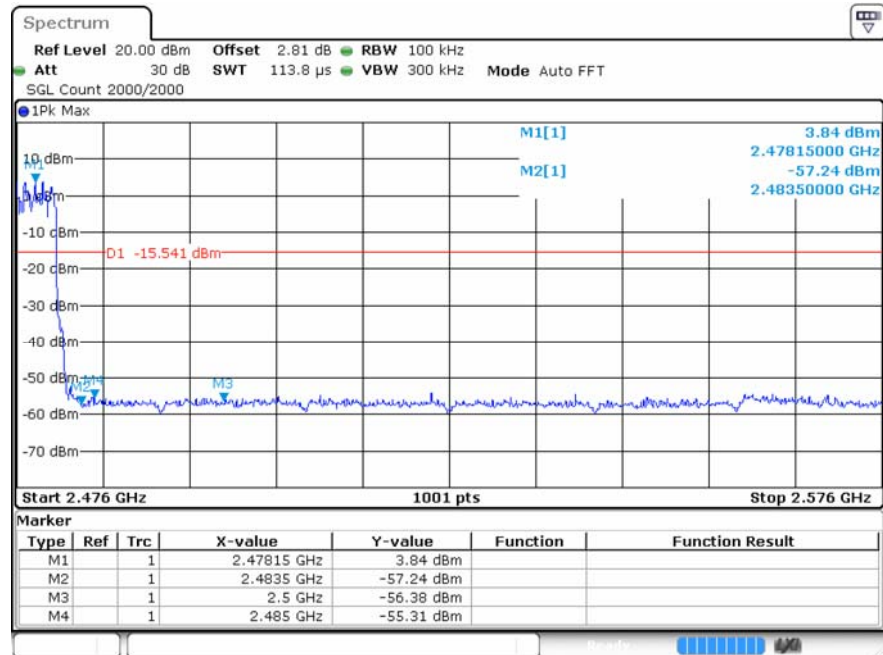
Ref


 $\pi/4$ DQPSK/LCH/Hop


Ref


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


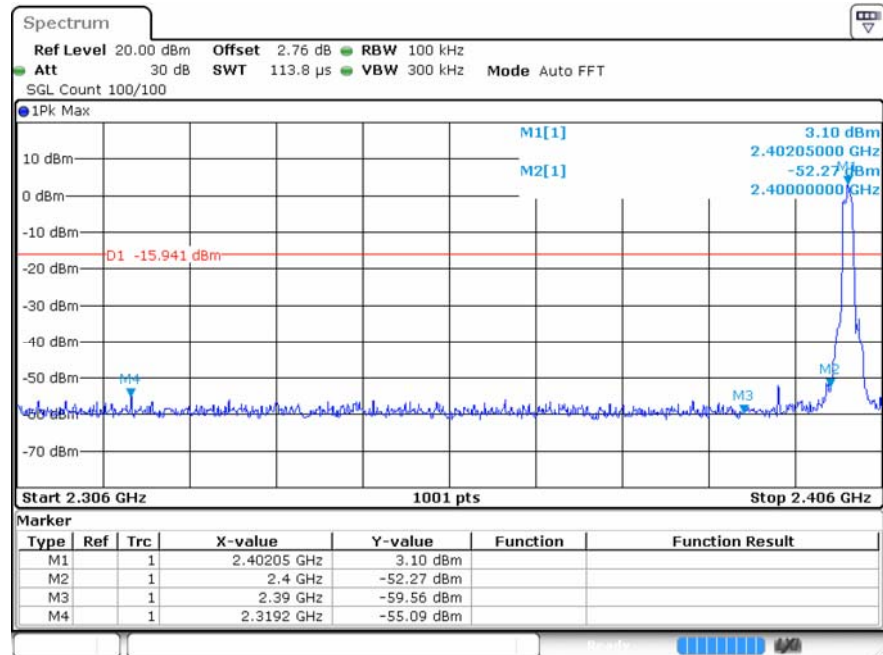
Ref


 $\pi/4$ DQPSK/HCH/Hop


Ref



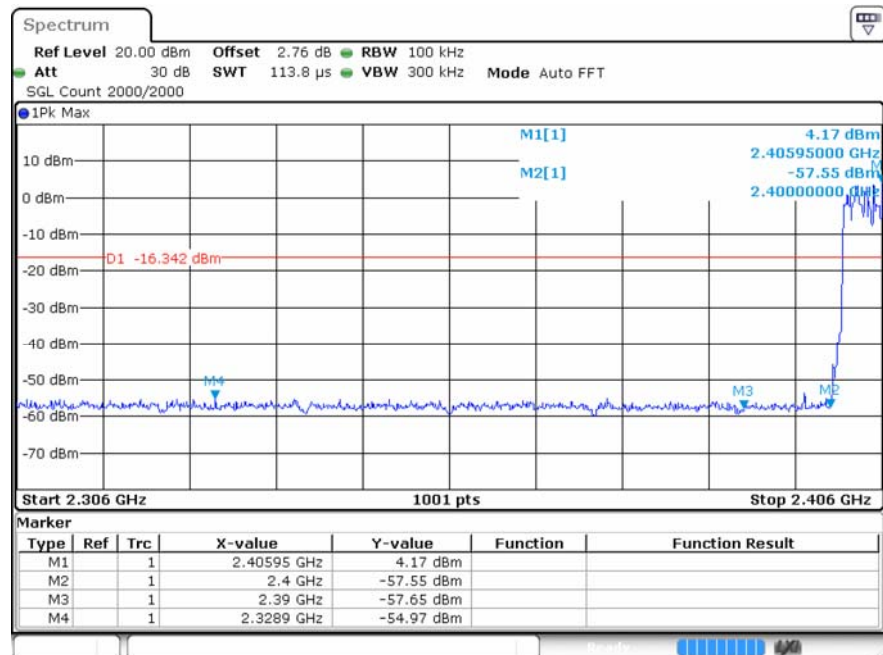
8DPSK/LCH/No Hop



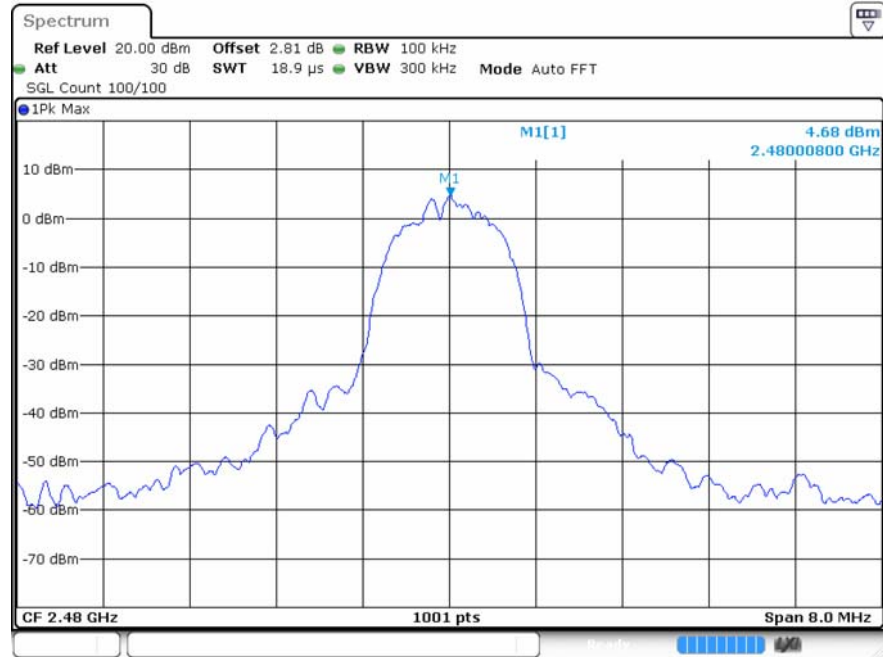
Ref



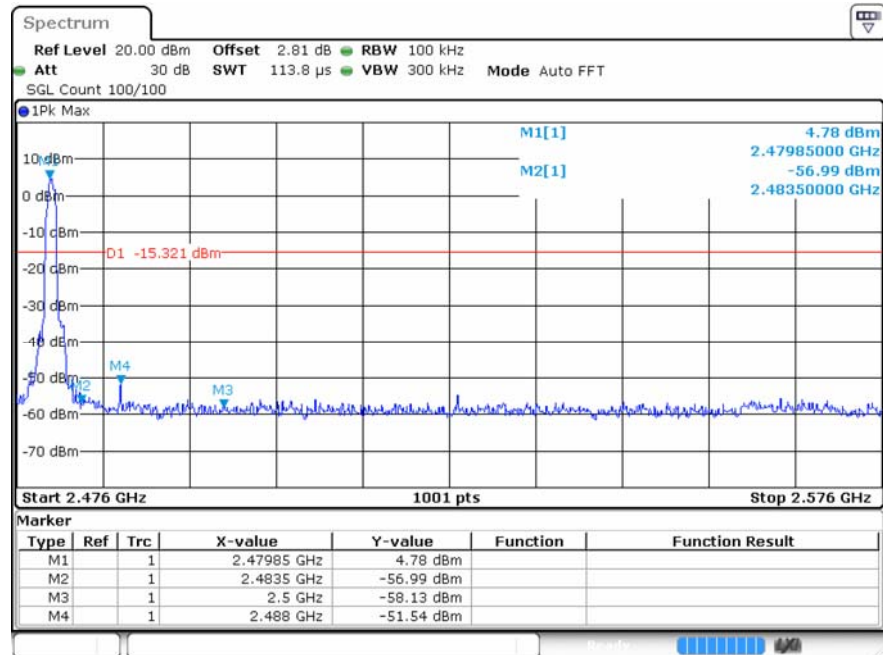
8DPSK/LCH/Hop



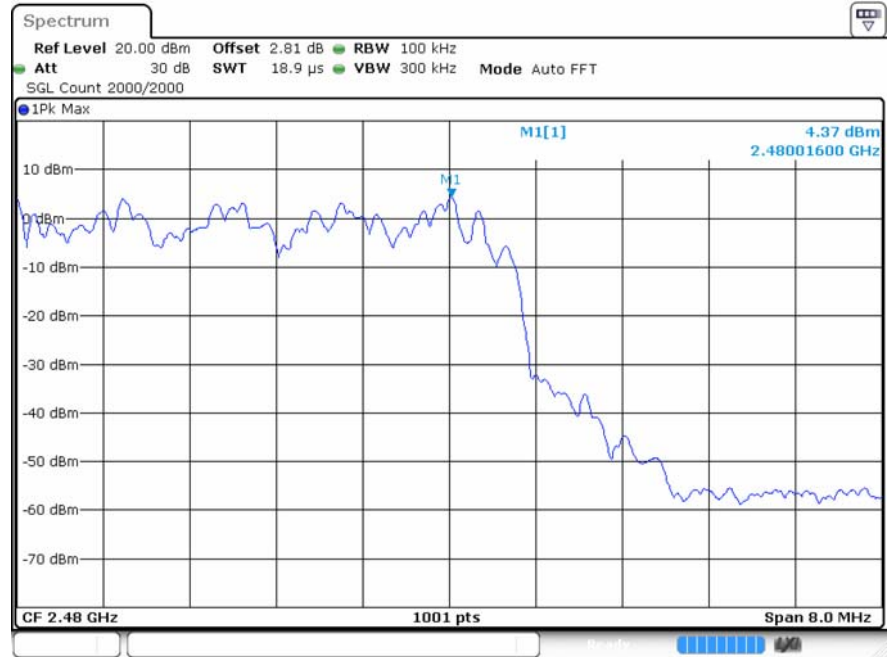
Ref



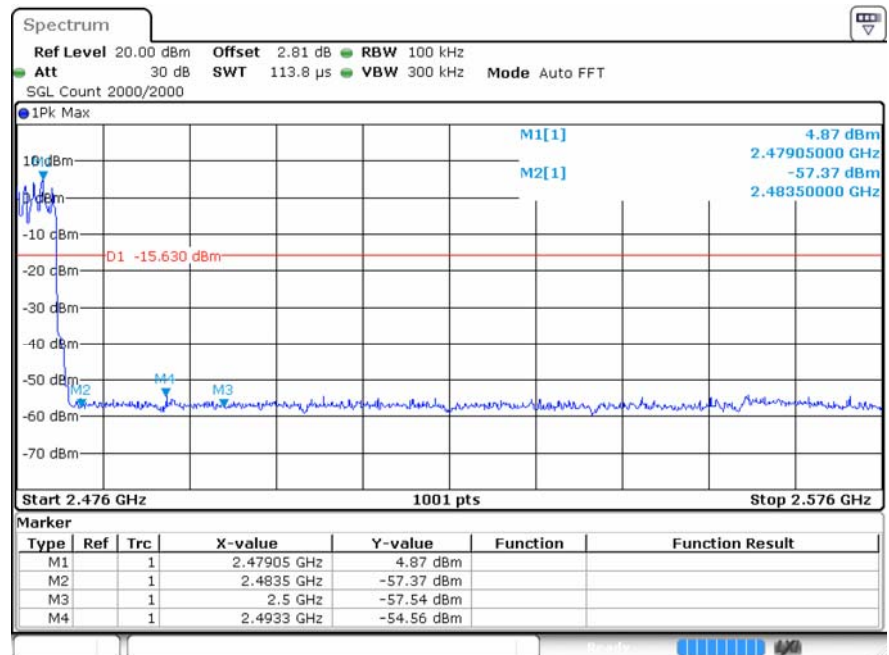
8DPSK/HCH/No Hop



Ref



8DPSK/HCH/Hop



## 9 Restrict-band band-edge measurements

### 9.1 Test Result

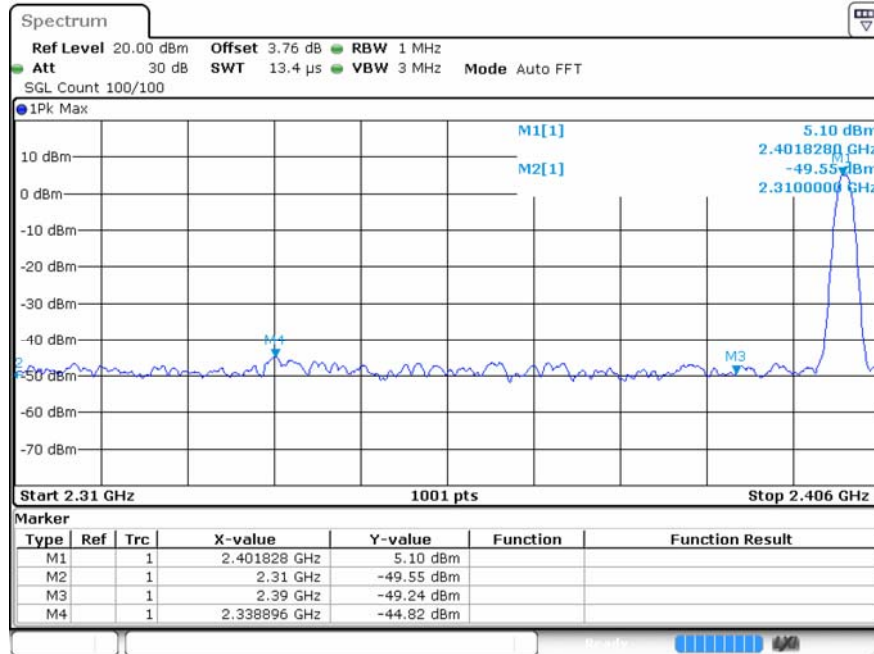
| Test Mode     | Hopping | Freq.    | Power [dBm] | Gain | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|----------|-------------|------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0   | -49.54      | 2    | 47.72      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -57.01      | 2    | 40.25      | AV       | 54             | Pass    |
|               | Off     | 2338.896 | -44.81      | 2    | 52.45      | PEAK     | 74             | Pass    |
|               | Off     | 2338.128 | -54.79      | 2    | 42.47      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -49.23      | 2    | 48.03      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -56.69      | 2    | 40.57      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -44.88      | 2    | 52.38      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -55.23      | 2    | 42.03      | AV       | 54             | Pass    |
|               | Off     | 2484.064 | -44.39      | 2    | 52.87      | PEAK     | 74             | Pass    |
|               | Off     | 2485.192 | -55.12      | 2    | 42.14      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -48.91      | 2    | 48.35      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -56.65      | 2    | 40.61      | AV       | 54             | Pass    |
| $\pi/4$ DQPSK | Off     | 2310.0   | -48.56      | 2    | 48.7       | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -57.3       | 2    | 39.96      | AV       | 54             | Pass    |
|               | Off     | 2338.224 | -43.97      | 2    | 53.29      | PEAK     | 74             | Pass    |
|               | Off     | 2338.992 | -54.75      | 2    | 42.51      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -47.71      | 2    | 49.55      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -56.71      | 2    | 40.55      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -46.35      | 2    | 50.91      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -51.83      | 2    | 45.43      | AV       | 54             | Pass    |
|               | Off     | 2497.576 | -44.03      | 2    | 53.23      | PEAK     | 74             | Pass    |
|               | Off     | 2483.512 | -51.83      | 2    | 45.43      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -48.1       | 2    | 49.16      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -56.81      | 2    | 40.45      | AV       | 54             | Pass    |
| 8DPSK         | Off     | 2310.0   | -48.88      | 2    | 48.38      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -56.73      | 2    | 40.53      | AV       | 54             | Pass    |
|               | Off     | 2353.488 | -45.79      | 2    | 51.47      | PEAK     | 74             | Pass    |
|               | Off     | 2339.952 | -54.77      | 2    | 42.49      | AV       | 54             | Pass    |



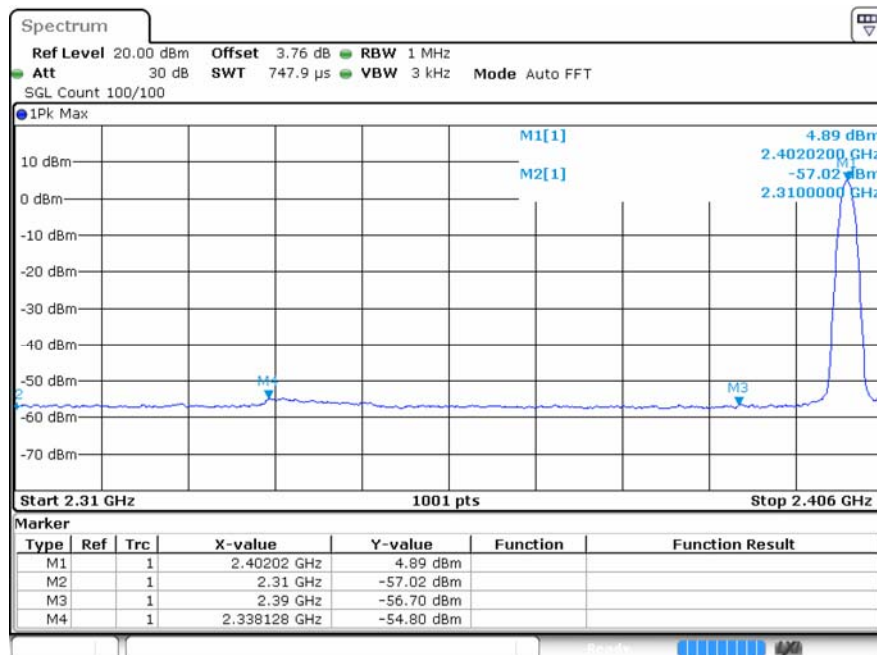
|  |     |          |        |   |       |      |    |      |
|--|-----|----------|--------|---|-------|------|----|------|
|  | Off | 2390.0   | -49.42 | 2 | 47.84 | PEAK | 74 | Pass |
|  | Off | 2390.0   | -56.66 | 2 | 40.6  | AV   | 54 | Pass |
|  | Off | 2483.5   | -45.34 | 2 | 51.92 | PEAK | 74 | Pass |
|  | Off | 2483.5   | -53.3  | 2 | 43.96 | AV   | 54 | Pass |
|  | Off | 2486.104 | -44.83 | 2 | 52.43 | PEAK | 74 | Pass |
|  | Off | 2483.8   | -53.27 | 2 | 43.99 | AV   | 54 | Pass |
|  | Off | 2500.0   | -49.63 | 2 | 47.63 | PEAK | 74 | Pass |
|  | Off | 2500.0   | -56.01 | 2 | 41.25 | AV   | 54 | Pass |

## 9.2 Test Graphs

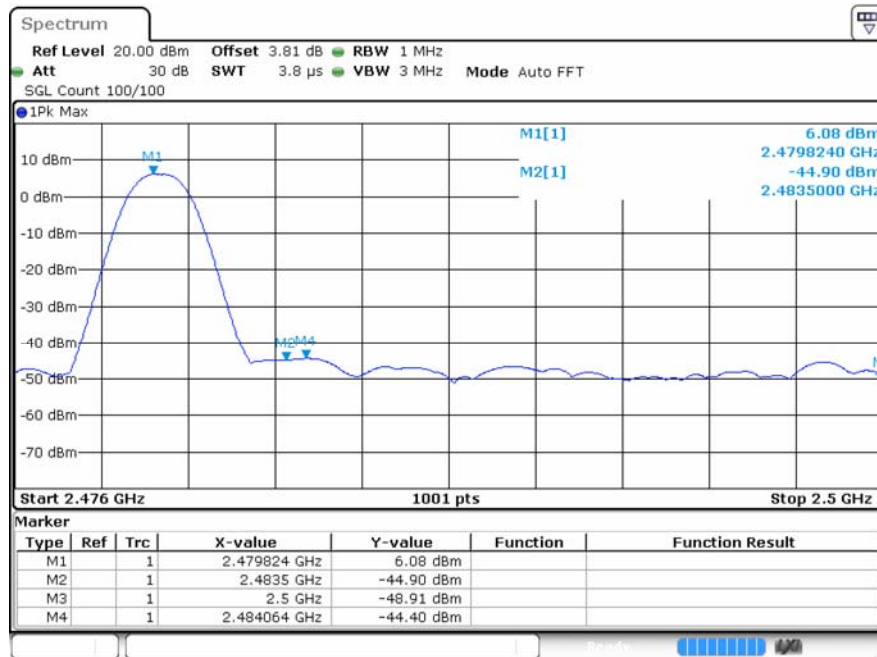
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (Low Channel)



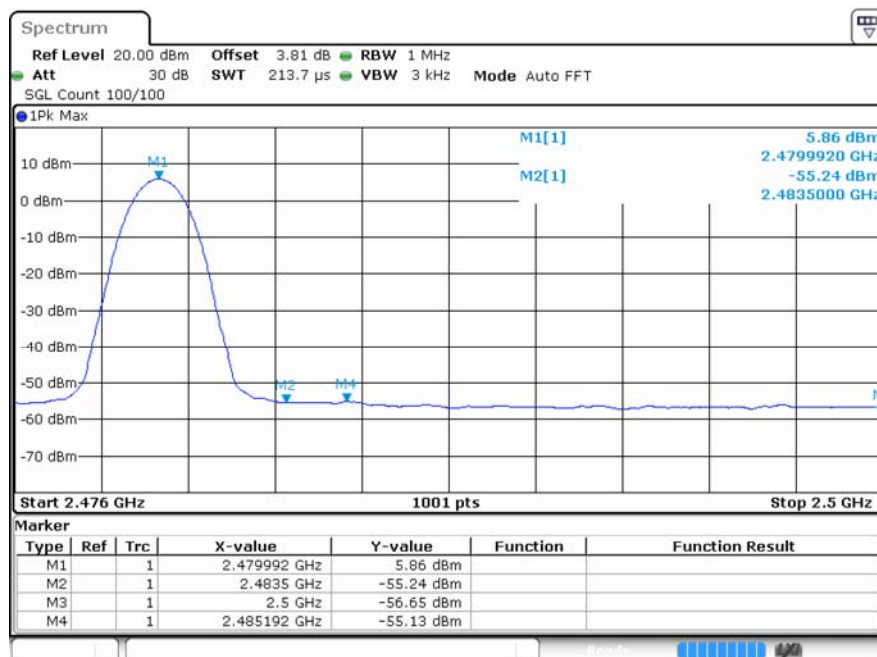
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (Low Channel)



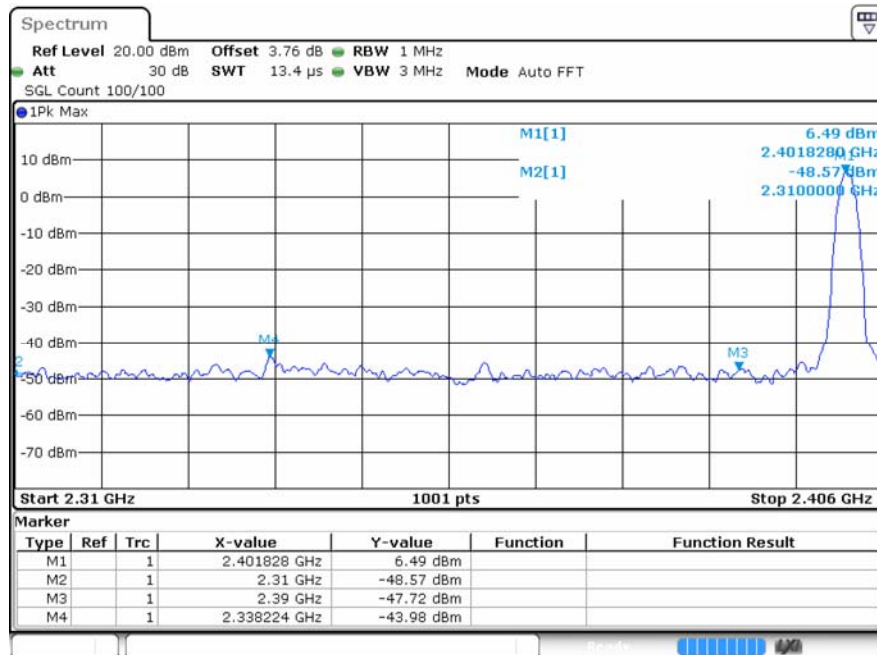
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (High Channel)



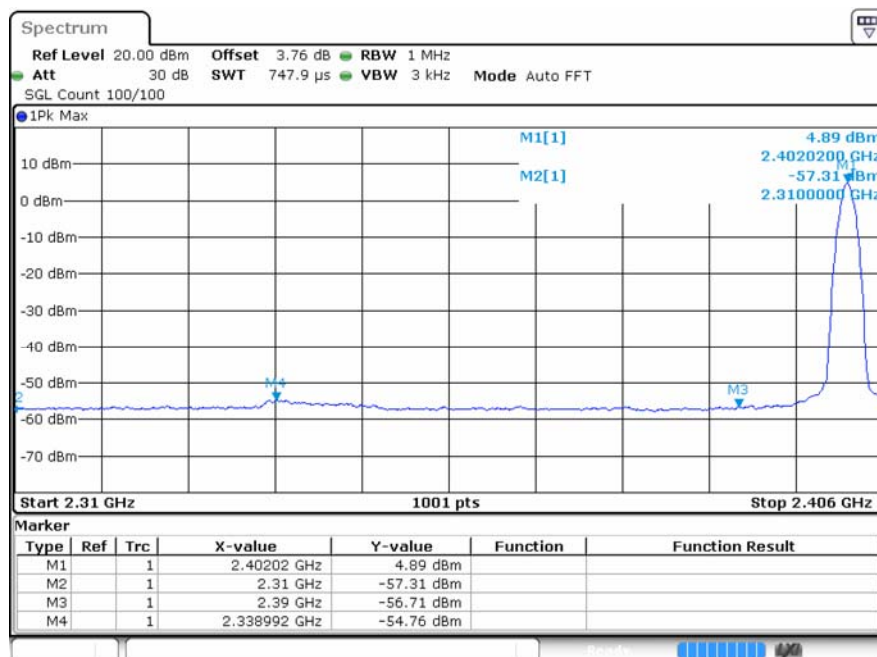
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (High Channel)



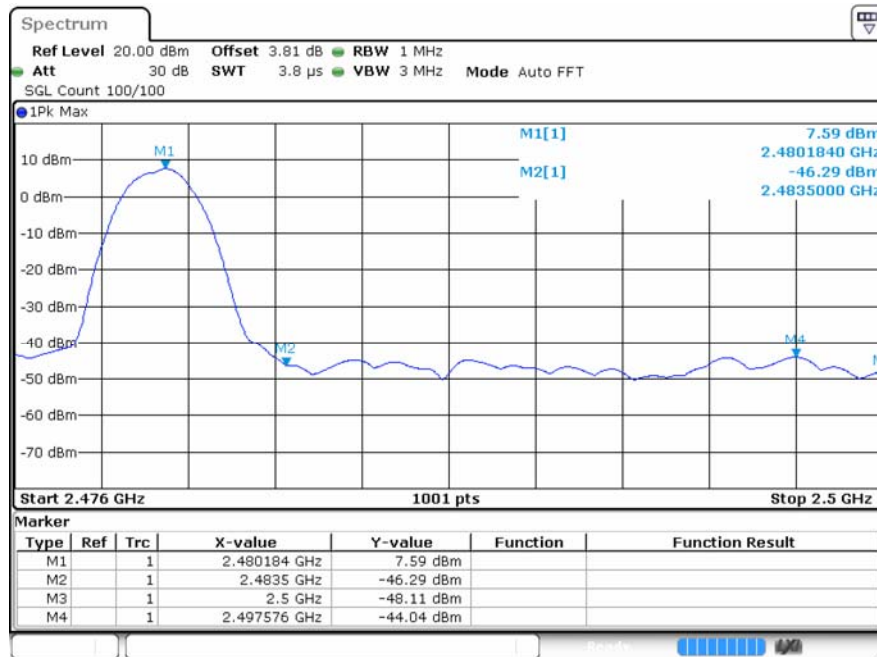
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (Low Channel)



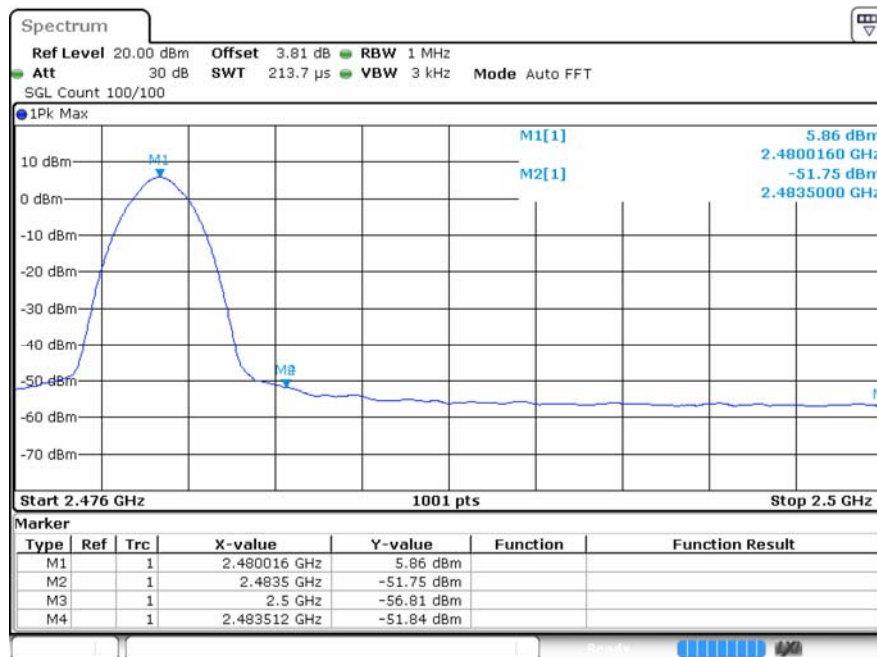
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (Low Channel)



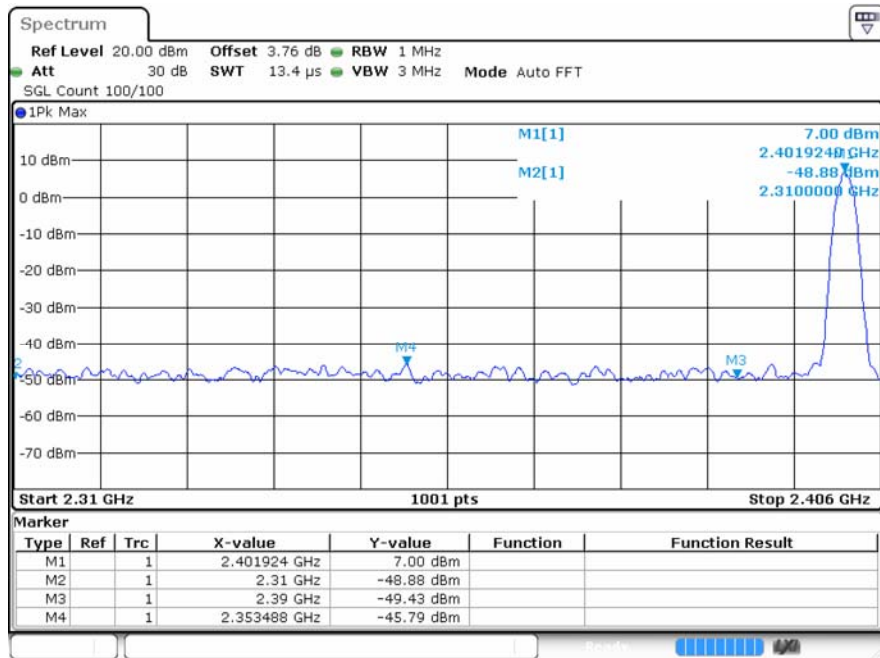
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



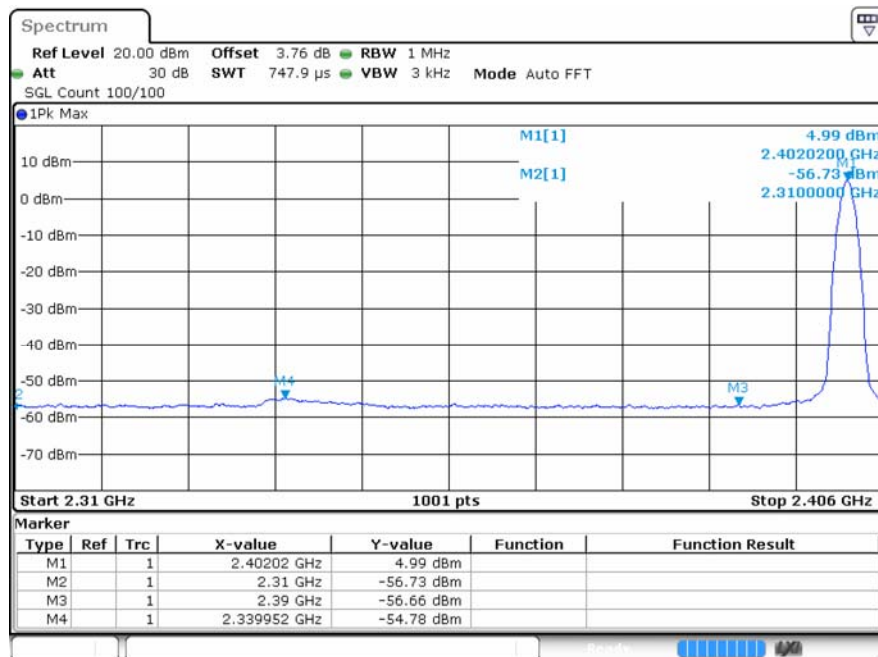
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



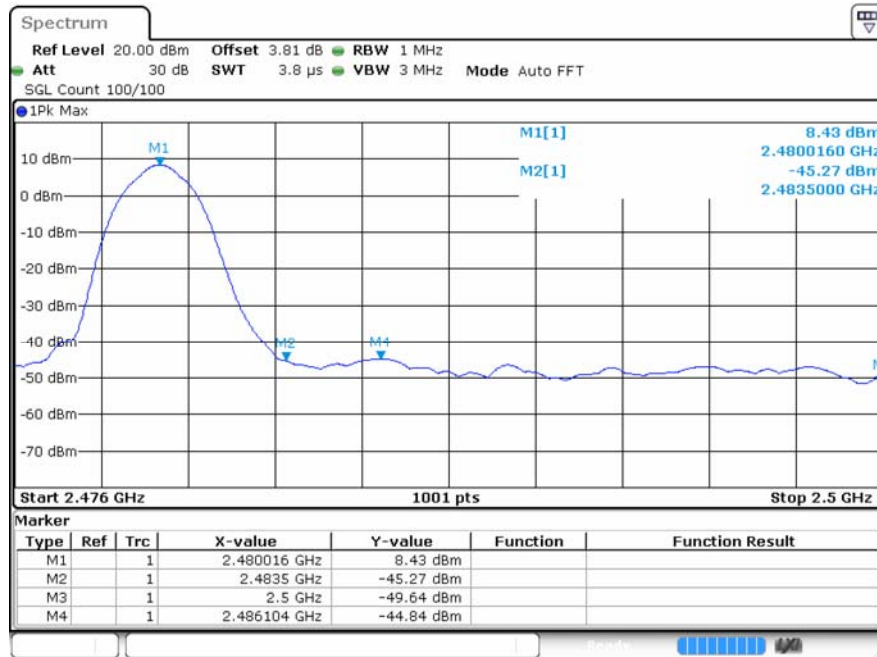
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



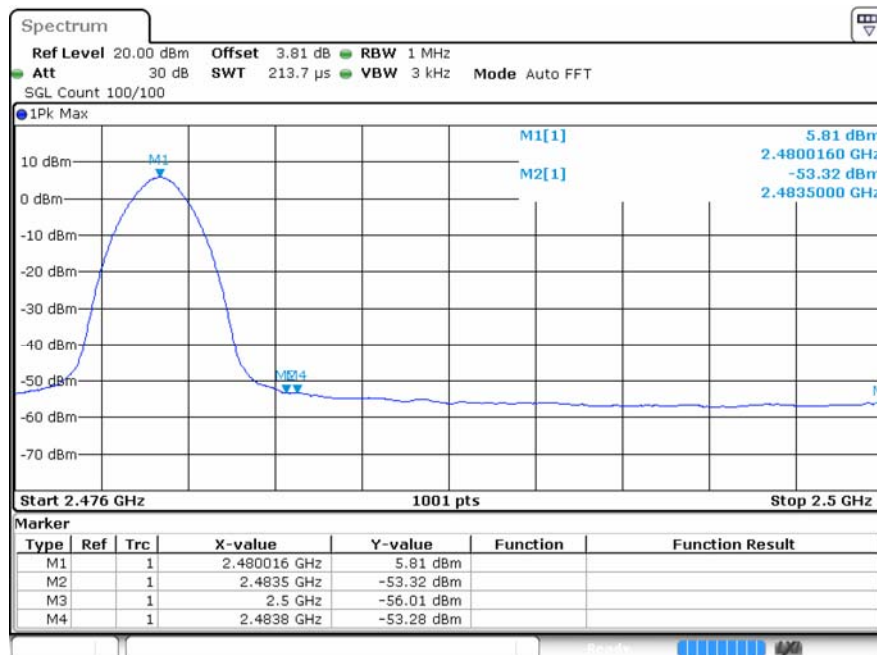
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_Average (Low Channel)



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



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



---The End---