



## Appendix A

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

Product Name: SPEAKER

Trade Mark: PYLE

Test Model: PWMA230BT

#### Environmental Conditions

|                    |             |
|--------------------|-------------|
| Temperature:       | 24. 6℃      |
| Relative Humidity: | 52.4%       |
| ATM Pressure:      | 101Kpa      |
| Test Engineer:     | Simba Huang |
| Supervised by:     | Seal Chen   |

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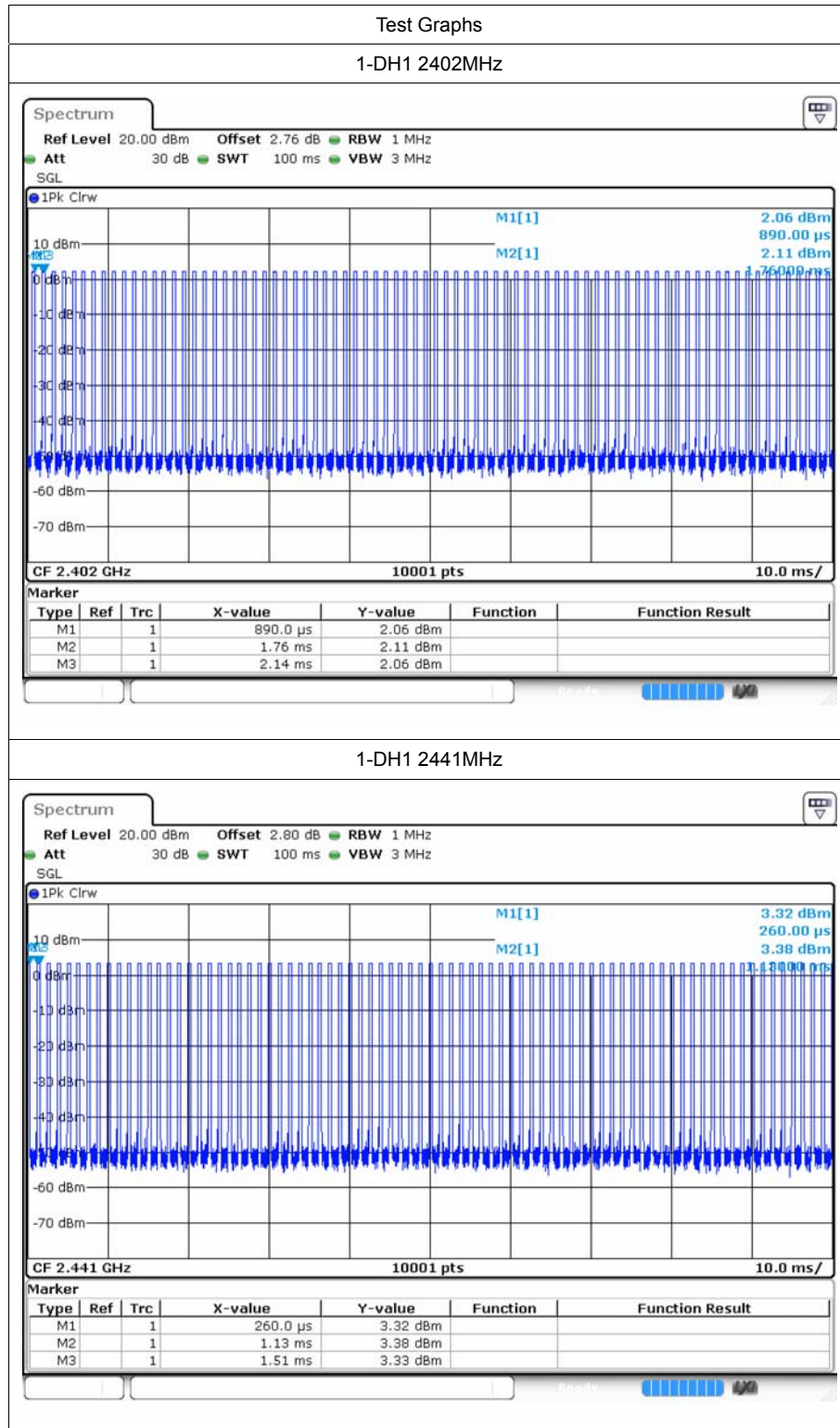


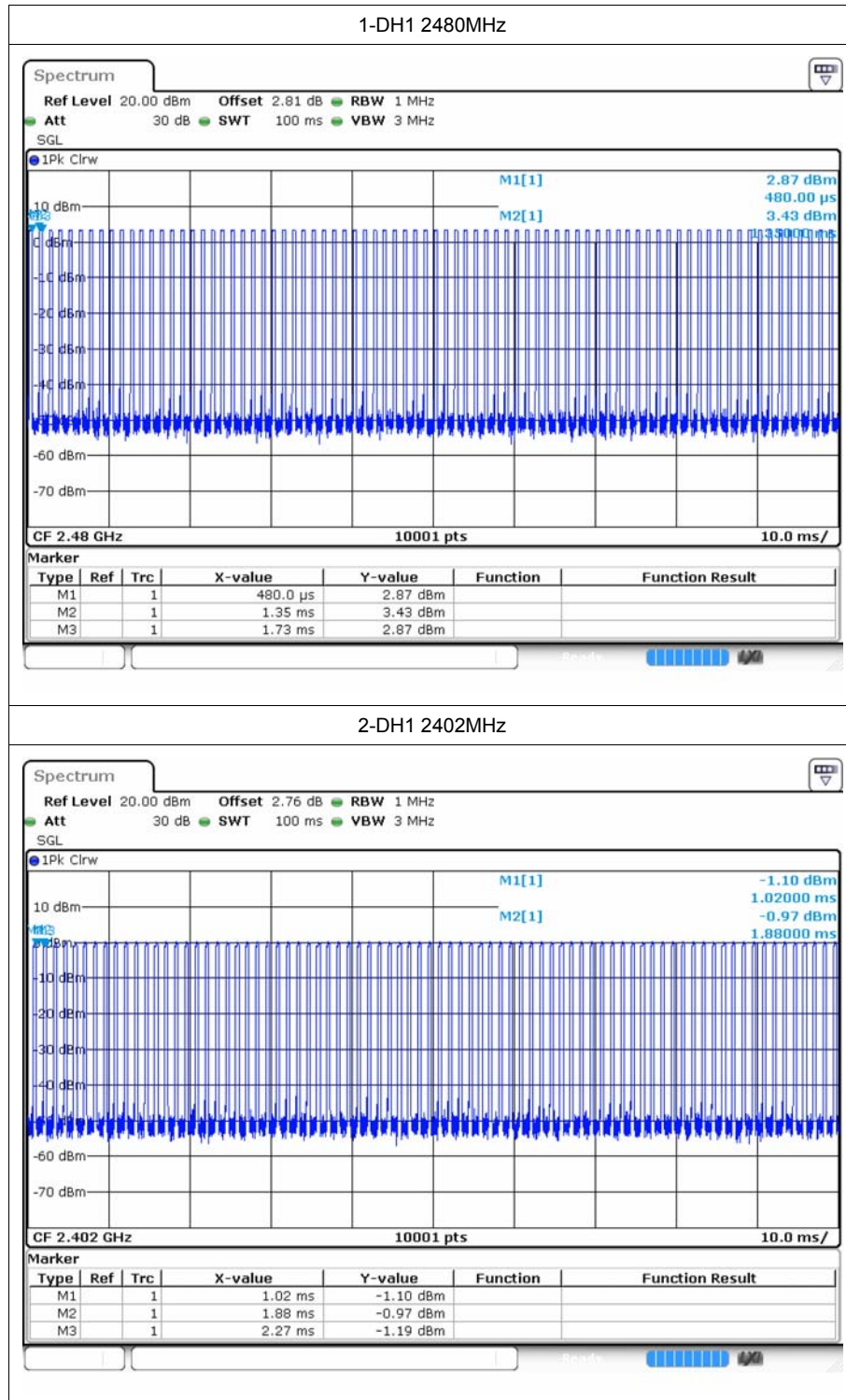
# 1 Duty Cycle

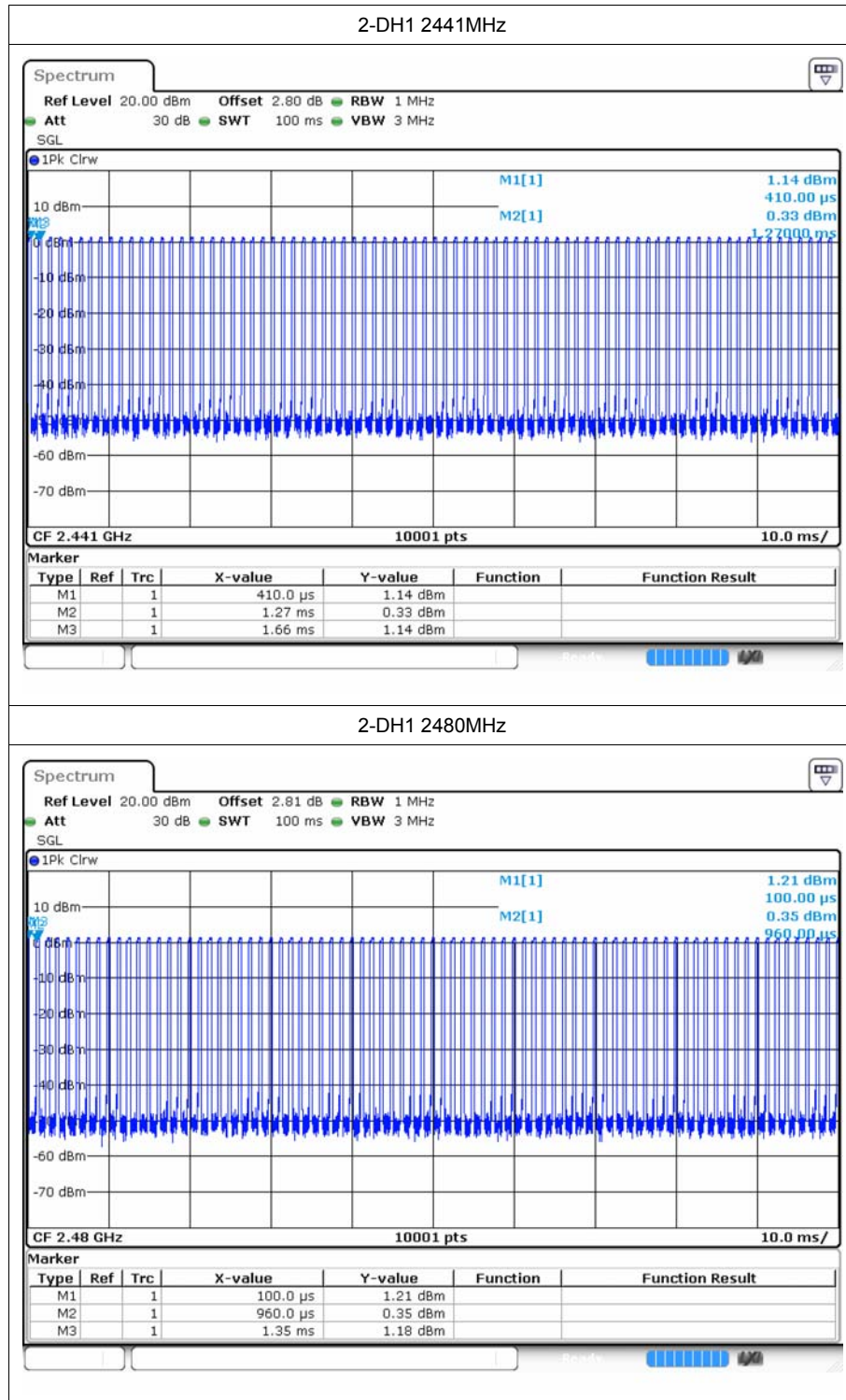
## 1.1 Test Result

| Mode  | Frequency (MHz) | Duty Cycle (%) | 1/T (kHz) |
|-------|-----------------|----------------|-----------|
| 1-DH1 | 2402            | 31.2           | 2.63      |
| 1-DH1 | 2441            | 31.21          | 2.63      |
| 1-DH1 | 2480            | 31.2           | 2.63      |
| 2-DH1 | 2402            | 32             | 2.56      |
| 2-DH1 | 2441            | 32             | 2.56      |
| 2-DH1 | 2480            | 32.01          | 2.56      |

## 1.2 Test Graphs





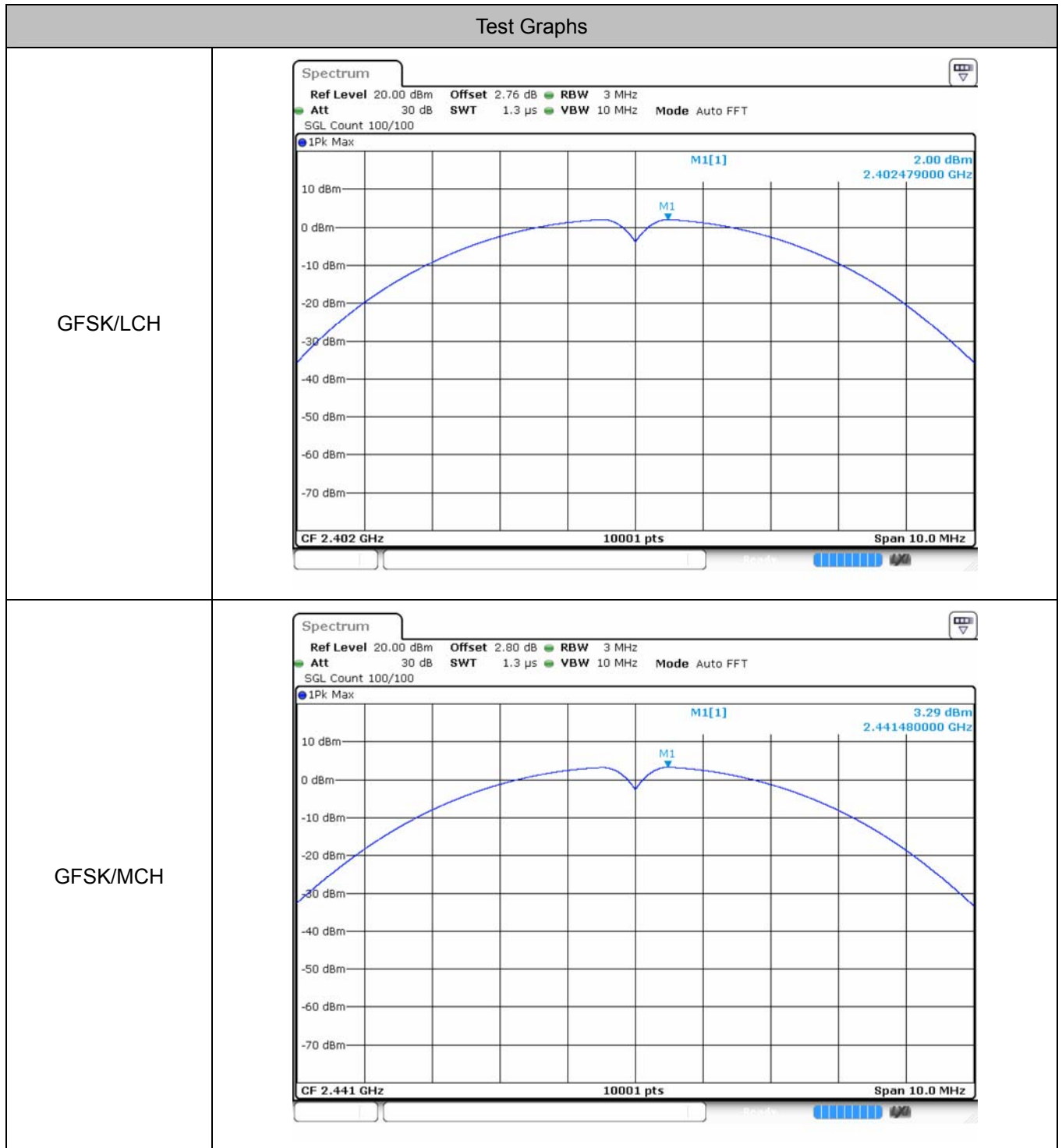


## 2 Maximum Conducted Peak Output Power

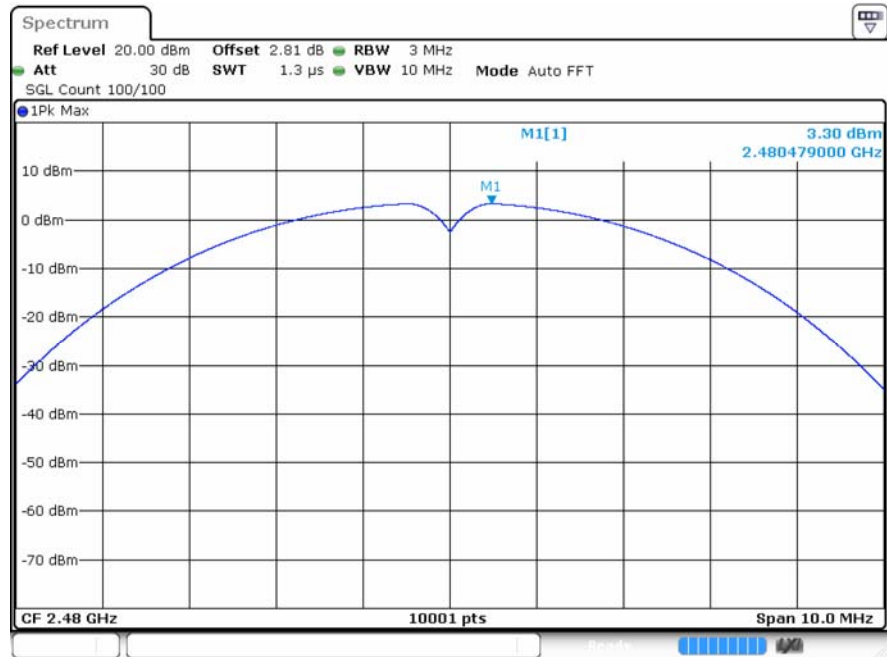
### 2.1 Test Result

| Mode          | Channel. | Maximum Peak Output Power<br>[dBm] | Limit<br>[dBm] | Verdict |
|---------------|----------|------------------------------------|----------------|---------|
| GFSK          | LCH      | 2                                  | 21             | Pass    |
|               | MCH      | 3.29                               | 21             | Pass    |
|               | HCH      | 3.3                                | 21             | Pass    |
| $\pi/4$ DQPSK | LCH      | 1.34                               | 21             | Pass    |
|               | MCH      | 2.31                               | 21             | Pass    |
|               | HCH      | 2.46                               | 21             | Pass    |

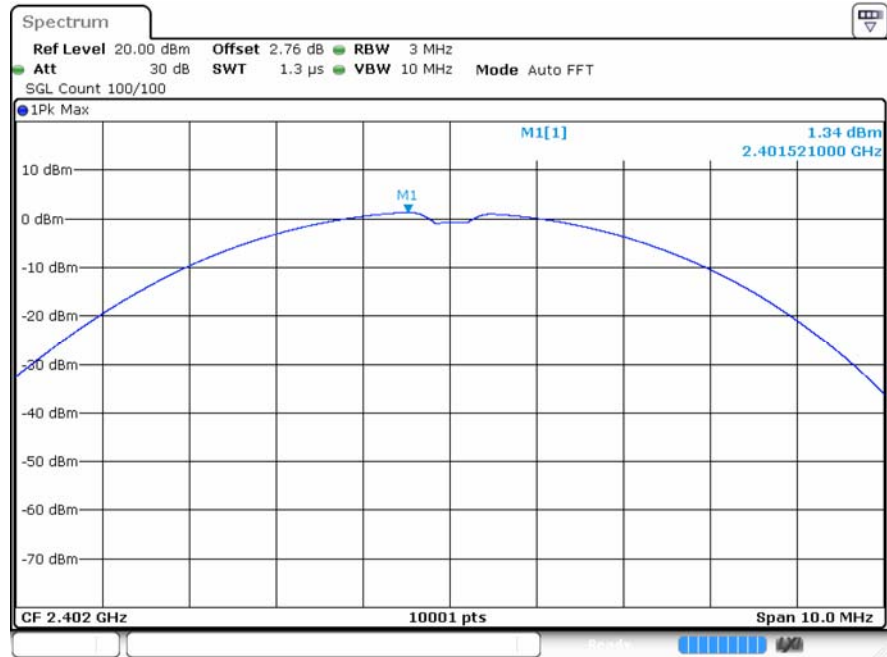
## 2.2 Test Graphs



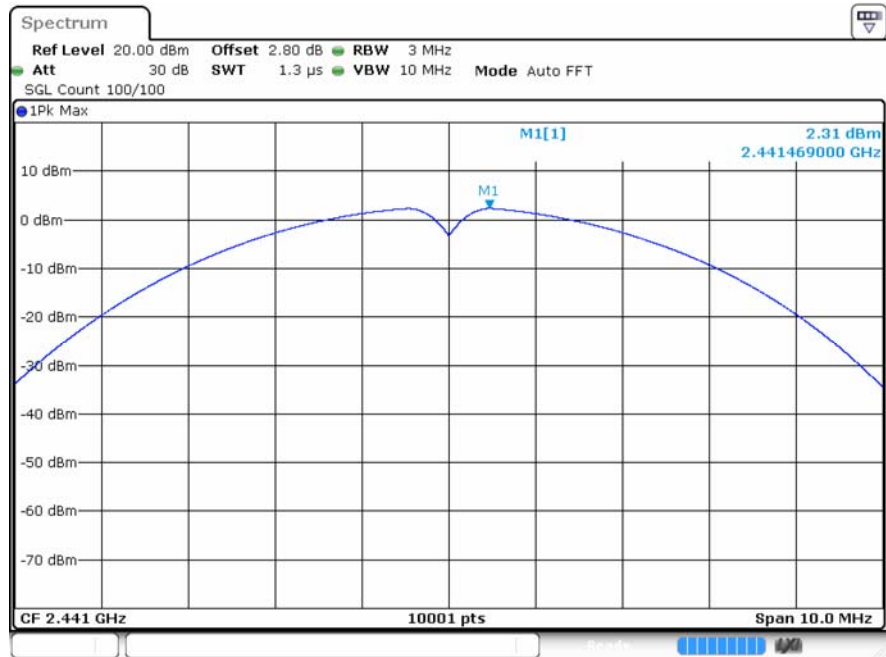
GFSK/HCH



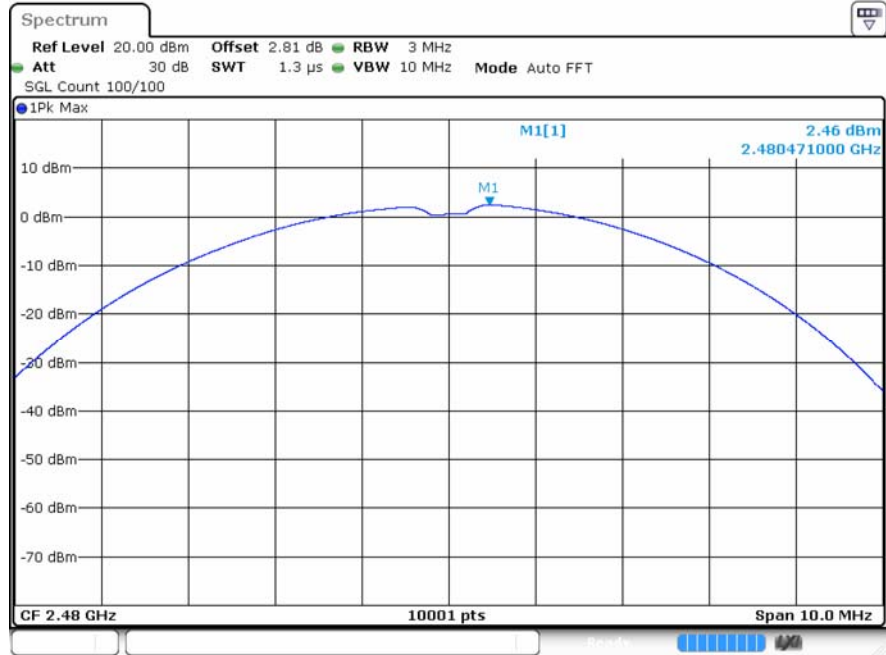
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

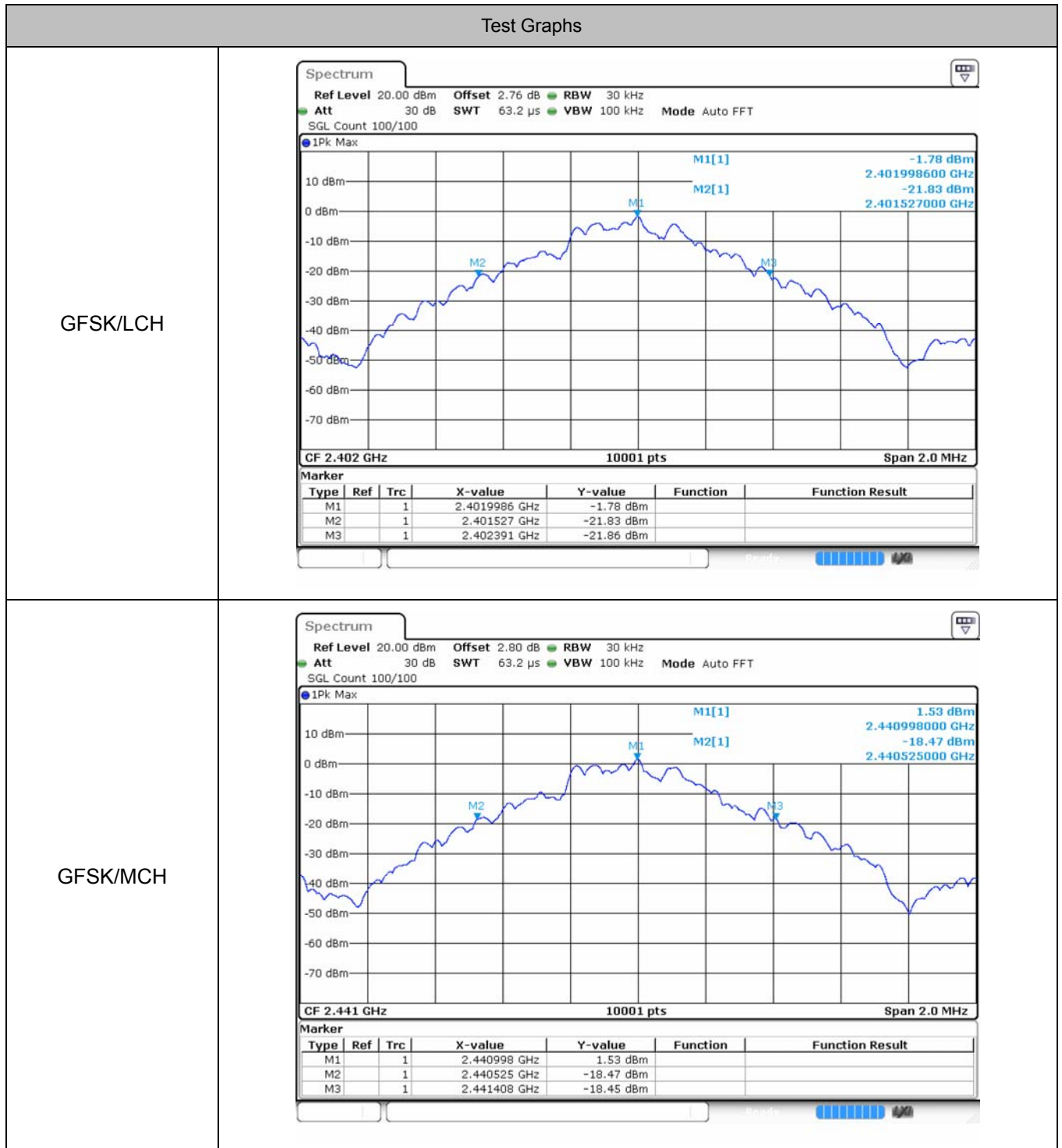


### 3 20dB Bandwidth

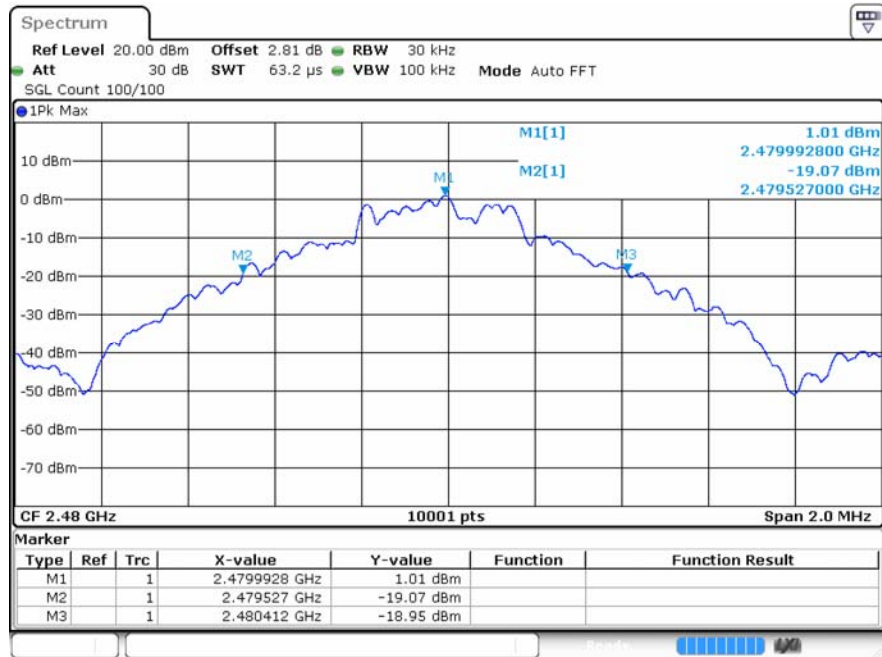
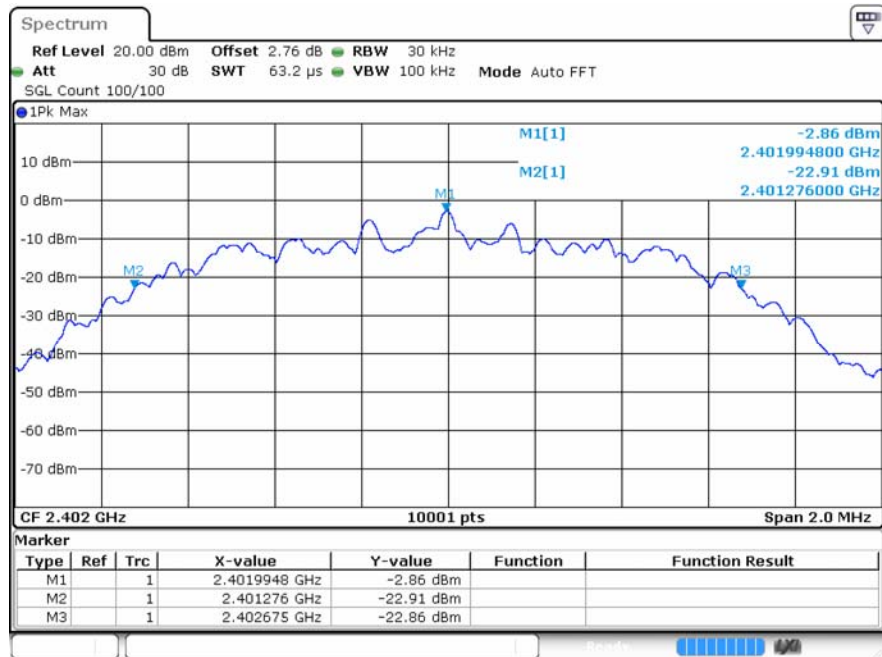
#### 3.1 Test Result

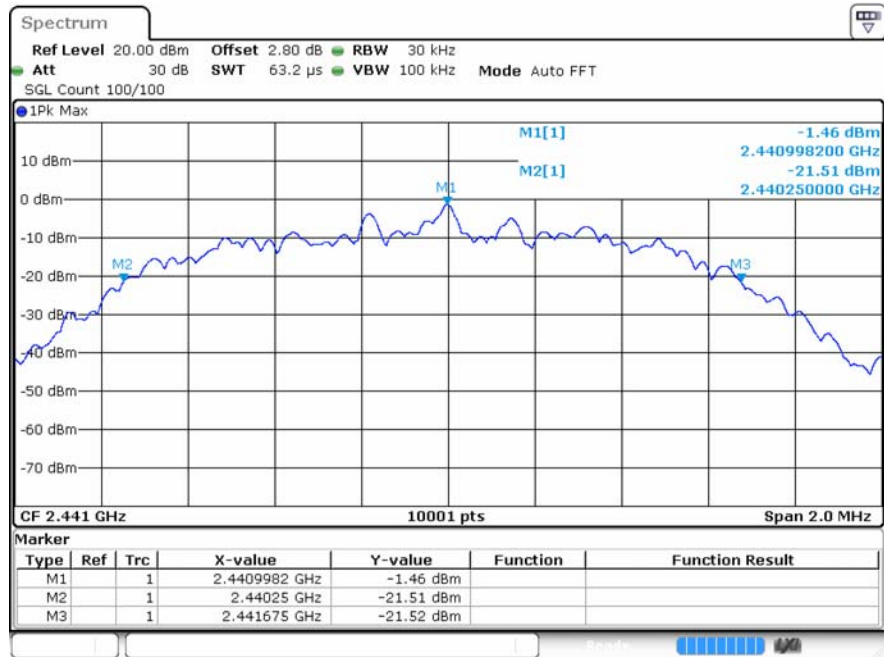
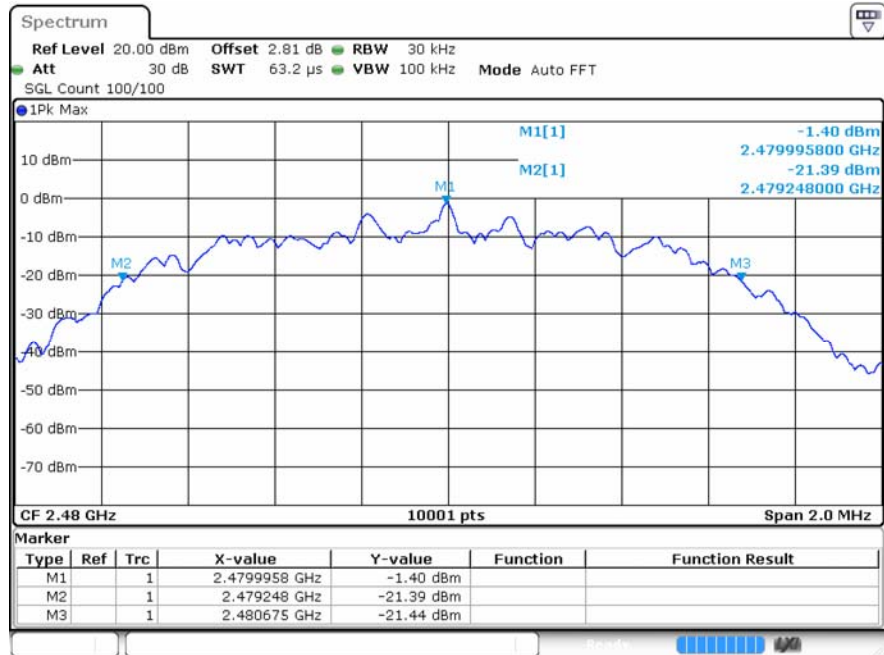
| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.863                | Not Specified | Pass    |
|               | MCH      | 0.884                | Not Specified | Pass    |
|               | HCH      | 0.885                | Not Specified | Pass    |
| $\pi/4$ DQPSK | LCH      | 1.398                | Not Specified | Pass    |
|               | MCH      | 1.424                | Not Specified | Pass    |
|               | HCH      | 1.427                | Not Specified | Pass    |

### 3.2 Test Graphs



GFSK/HCH


 $\pi/4$ DQPSK/LCH


$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


## 4 Carrier Frequency Separation

### 4.1 Test Result

| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | MCH      | 1.001                              | 0.589       | Pass    |
| $\pi/4$ DQPSK | MCH      | 0.99                               | 0.949       | Pass    |

## 4.2 Test Graphs

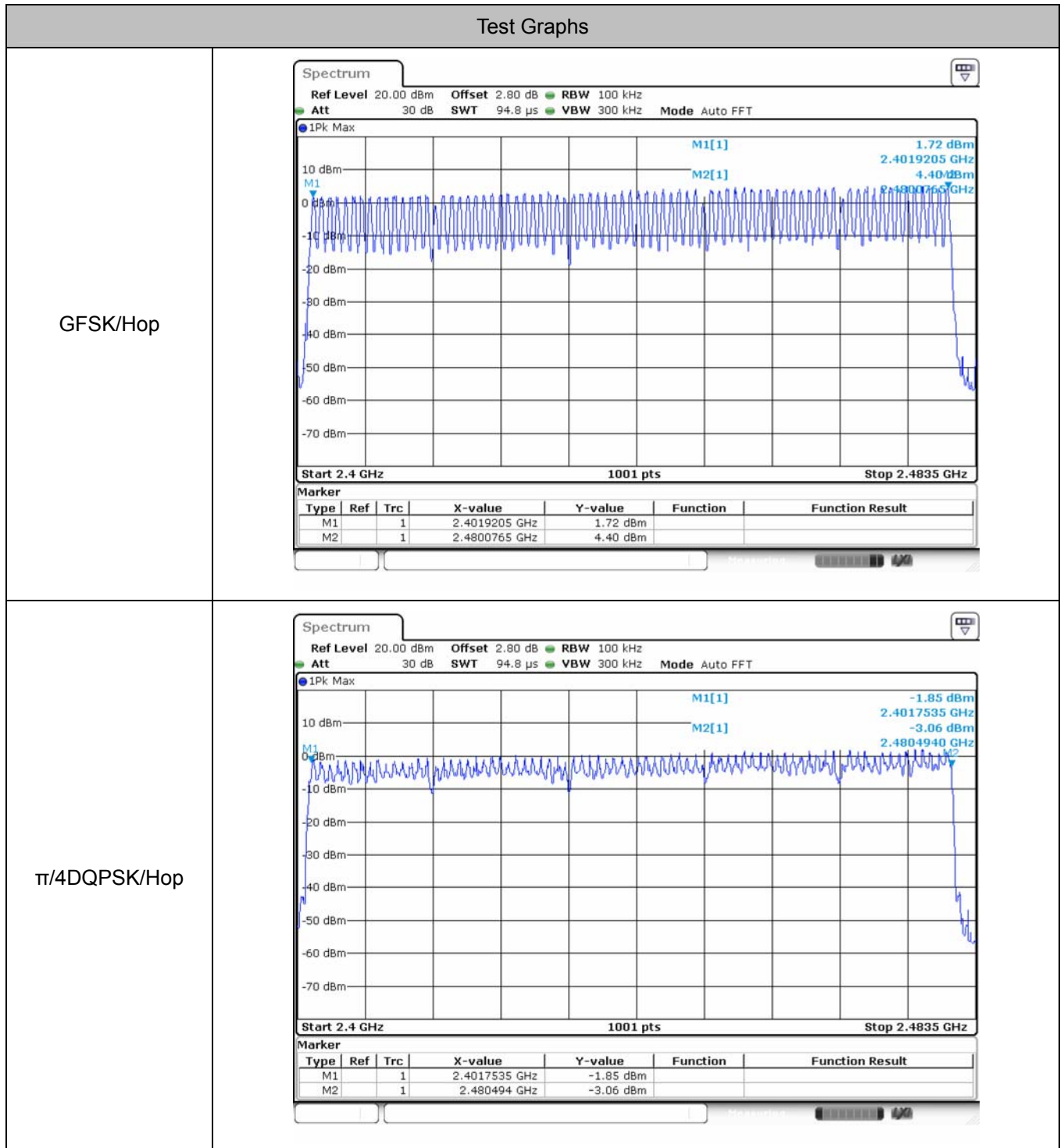


## 5 Hopping Channel Number

### 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    |

## 5.2 Test Graphs

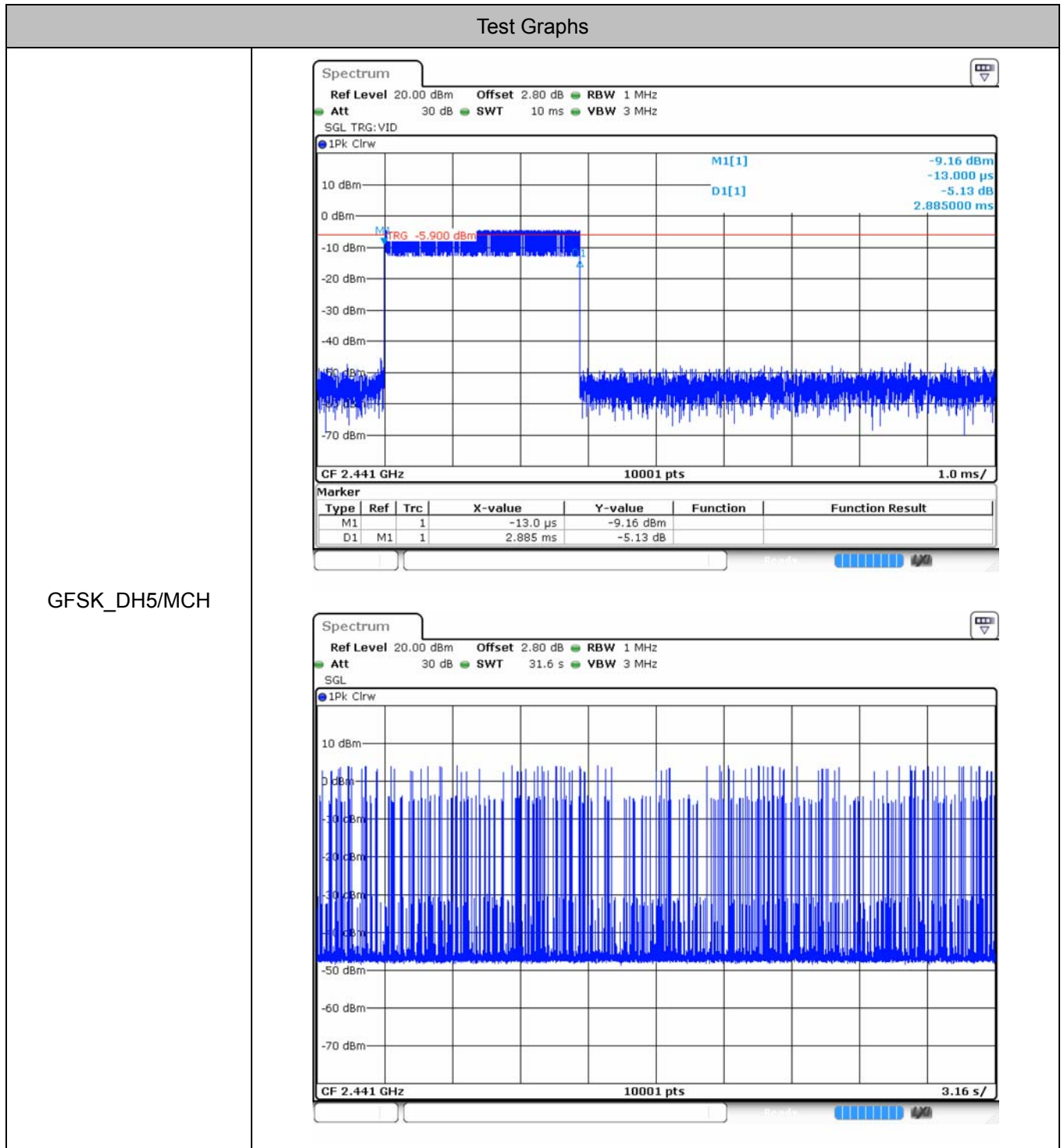


## 6 Dwell Time

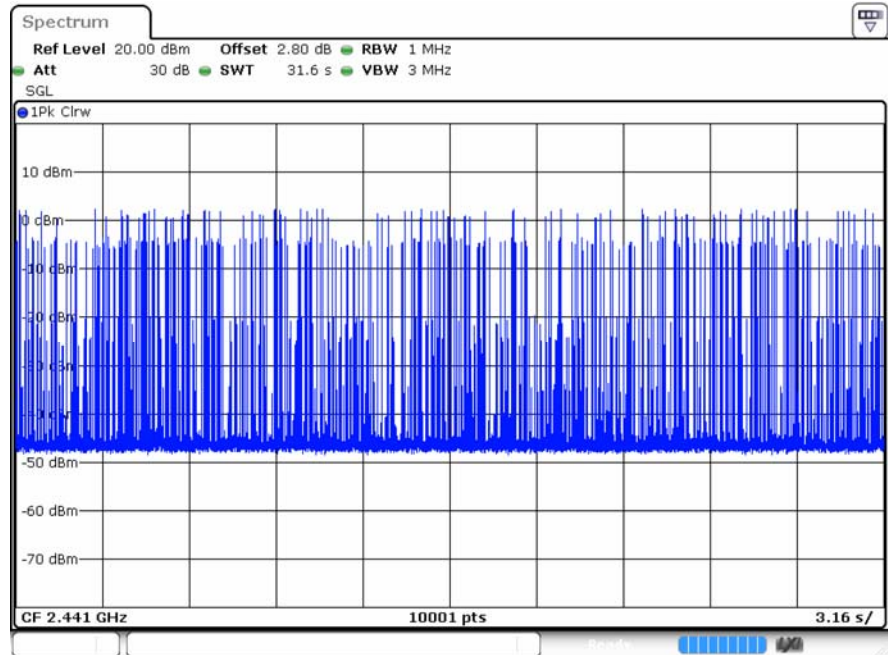
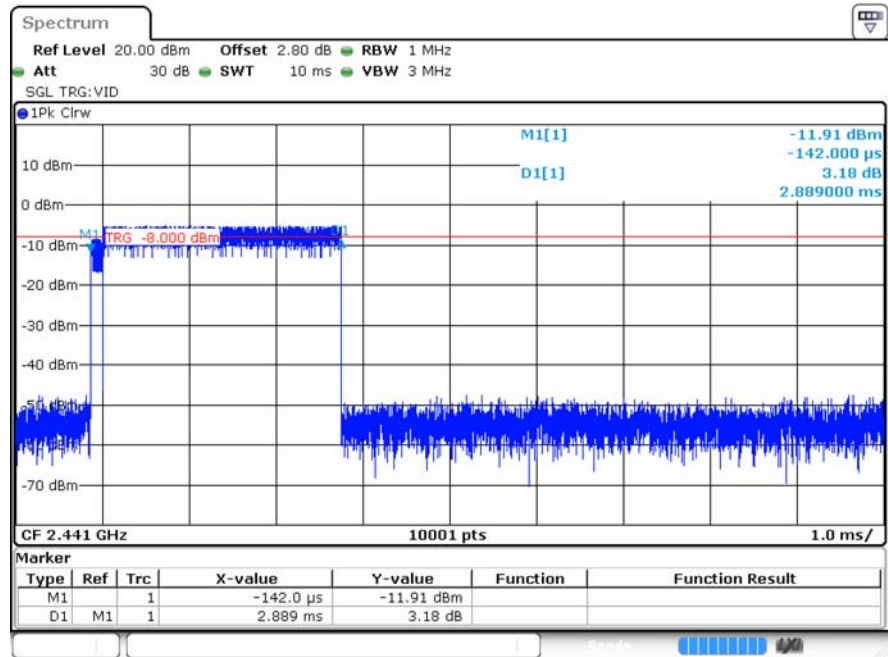
### 6.1 Test Result

| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[ms] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|----------------|-----------|---------|
| GFSK          | DH5    | MCH     | 2.885                      | 101                   | 291.385        | 0.4       | Pass    |
| $\pi/4$ DQPSK | 2DH5   | MCH     | 2.889                      | 102                   | 294.678        | 0.4       | Pass    |

## 6.2 Test Graphs



$\pi/4$ DQPSK  
\_2DH5/MCH

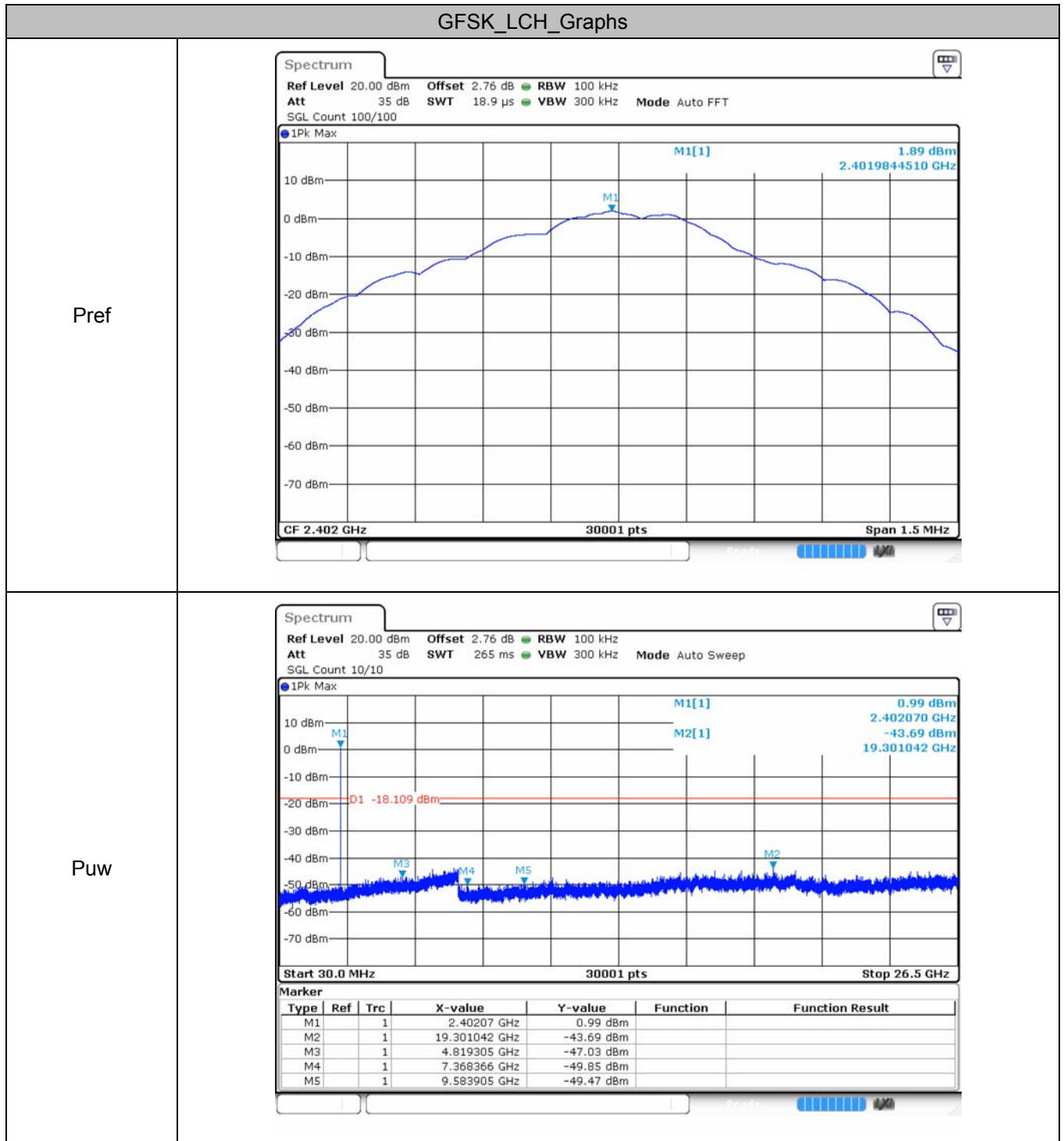


## 7 RF Conducted Spurious Emissions

### 7.1 Test Result

| Mode          | Channel | Max. Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|------------------|-------------|---------|
| GFSK          | LCH     | -45.57           | -20         | Pass    |
|               | MCH     | -46.68           | -20         | Pass    |
|               | HCH     | -47.02           | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | -43.53           | -20         | Pass    |
|               | MCH     | -43.36           | -20         | Pass    |
|               | HCH     | -44.34           | -20         | Pass    |

## 7.2 Test Graphs

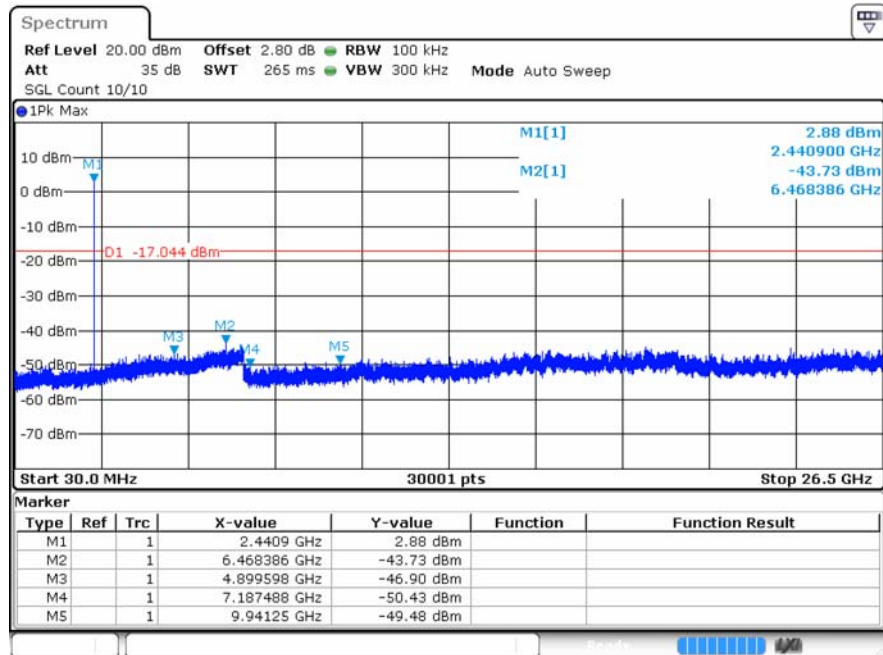


## GFSK\_MCH\_Graphs

Pref

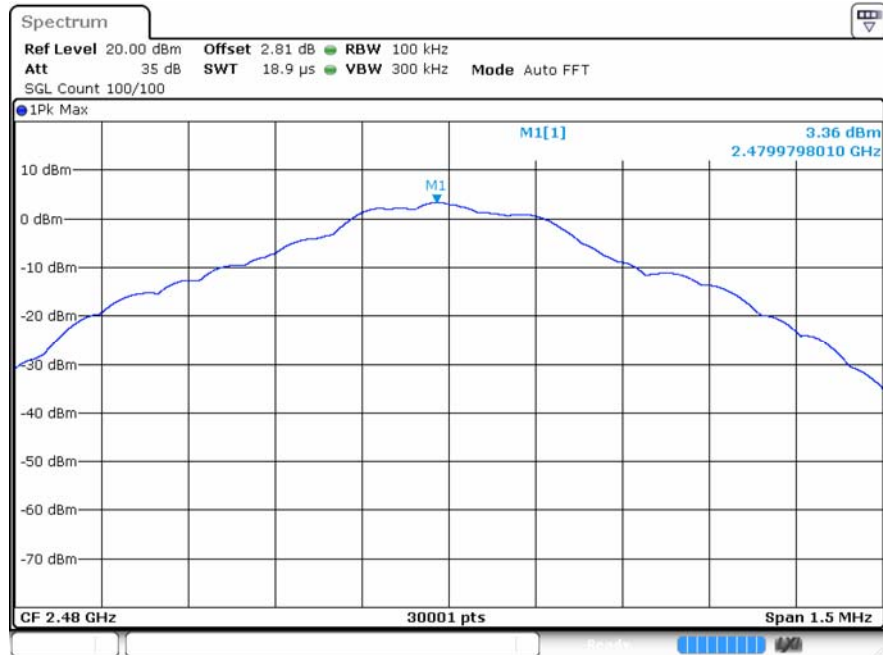


Puw

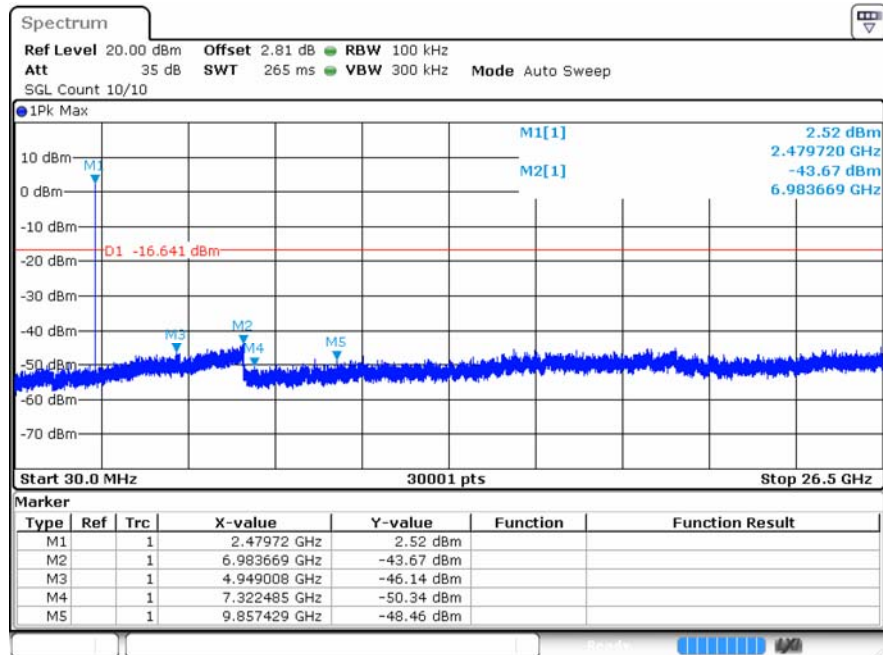


## GFSK\_HCH\_Graphs

Pref

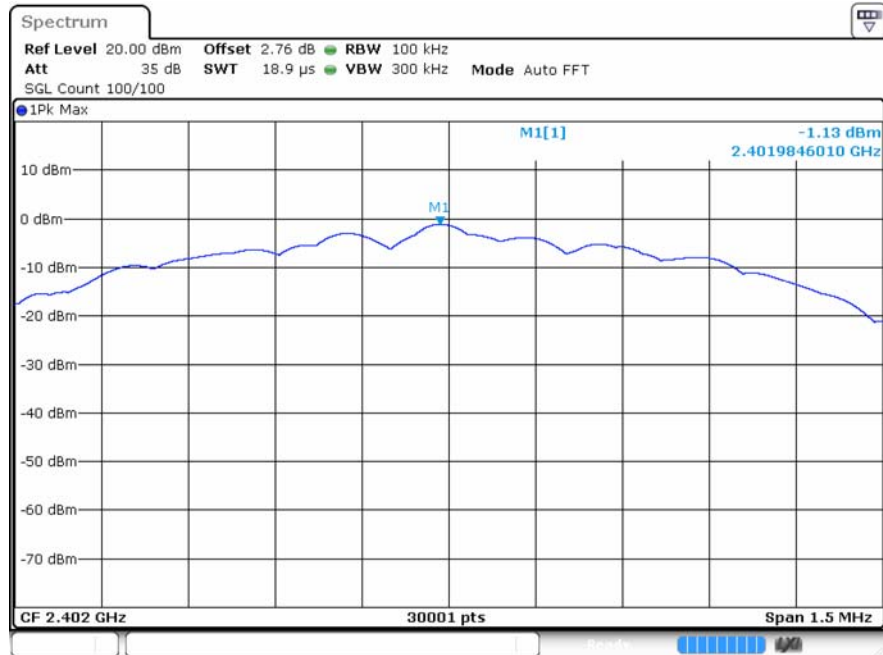


Puw

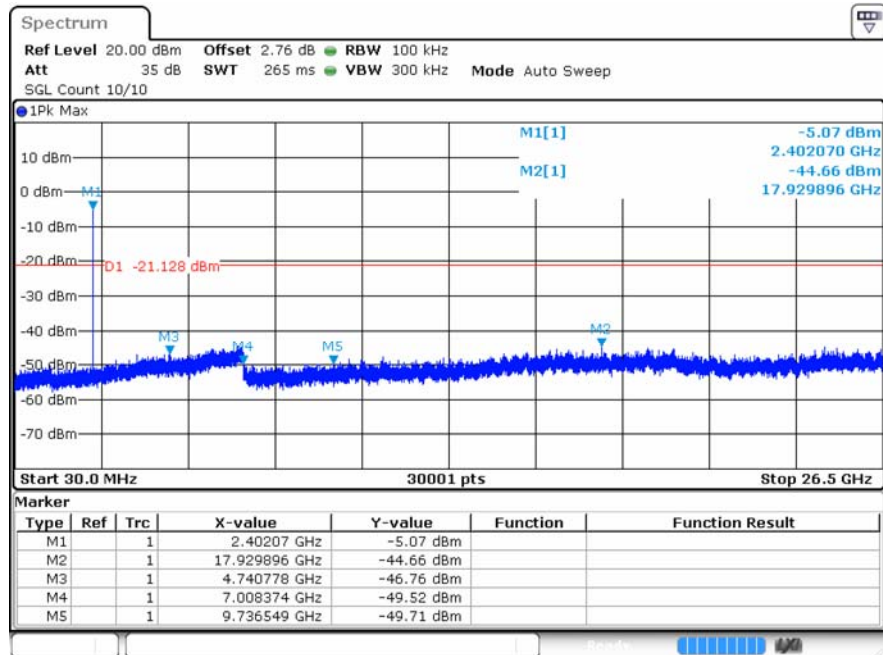


### $\pi/4$ DQPSK\_LCH\_Graphs

Pref

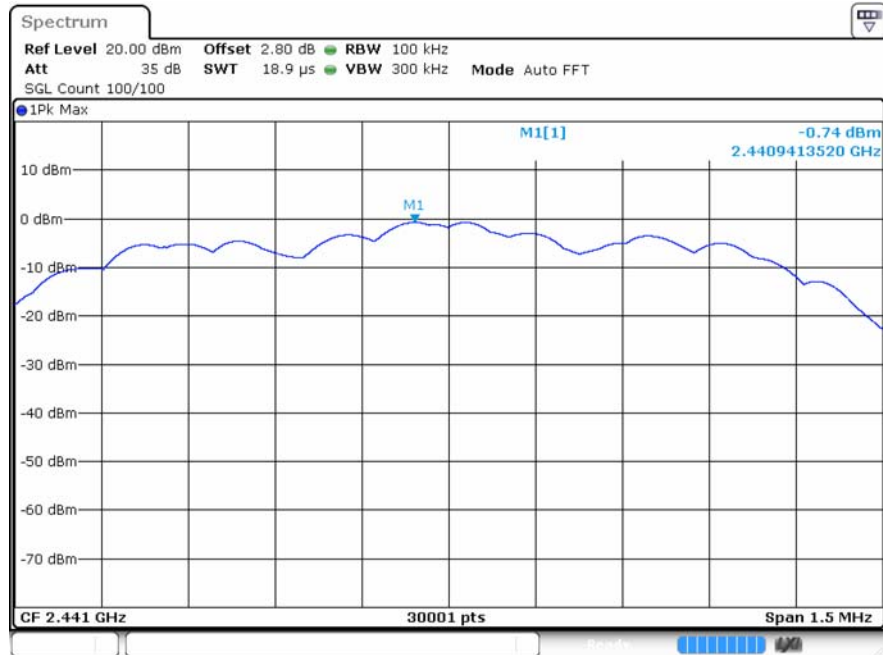


Puw

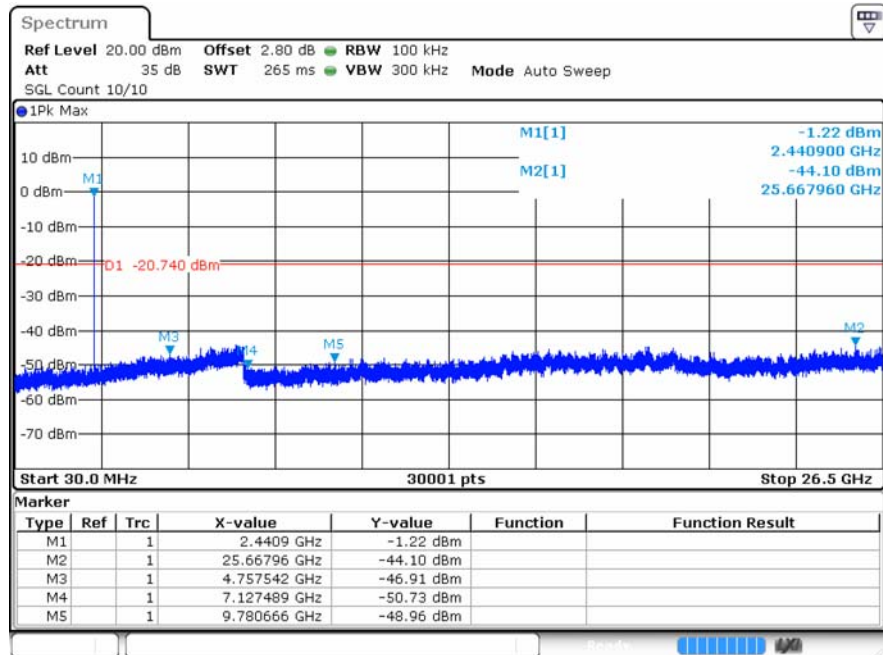


# $\pi/4$ DQPSK\_MCH\_Graphs

Pref

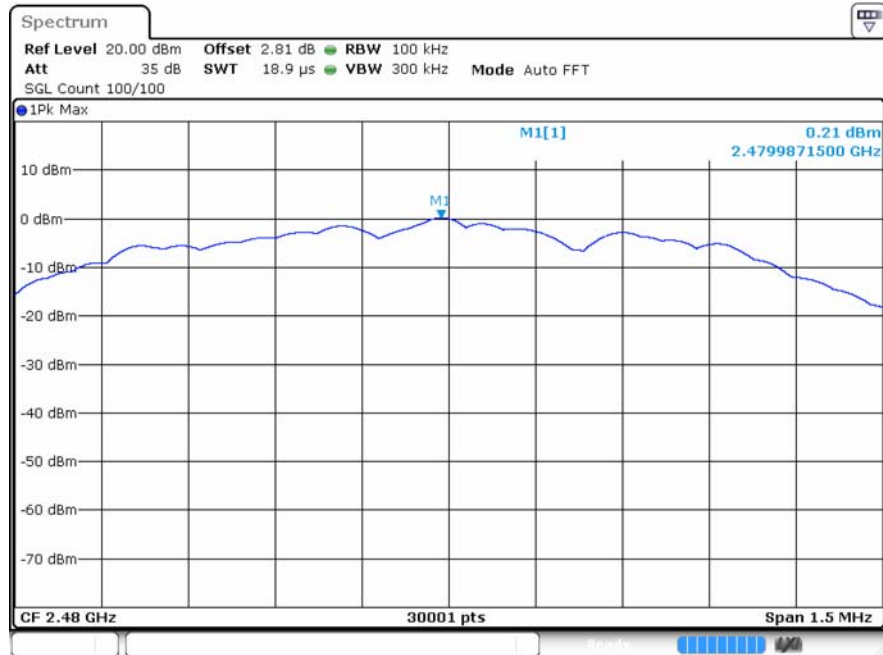


Puw

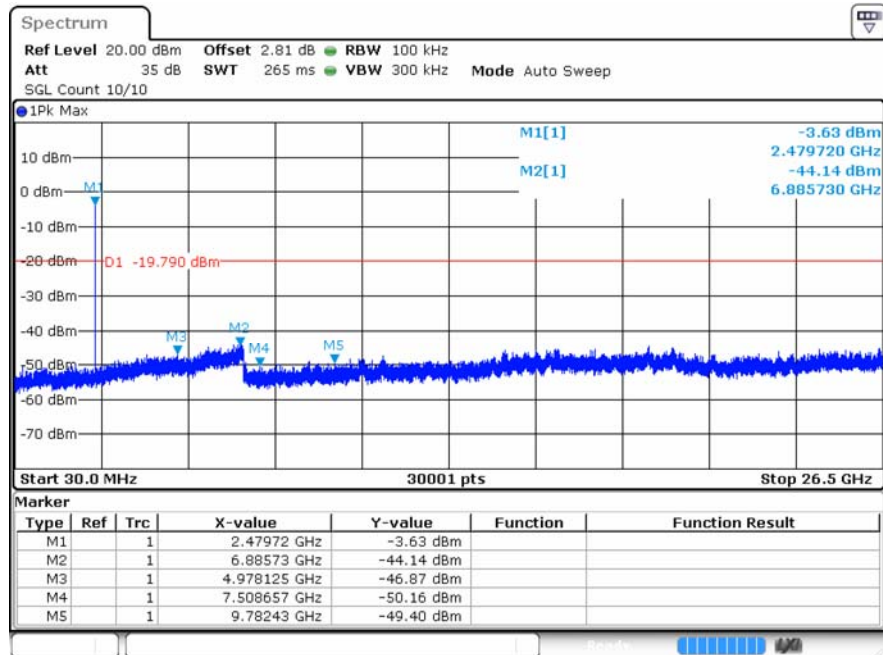


### $\pi/4$ DQPSK\_HCH\_Graphs

Pref



Puw

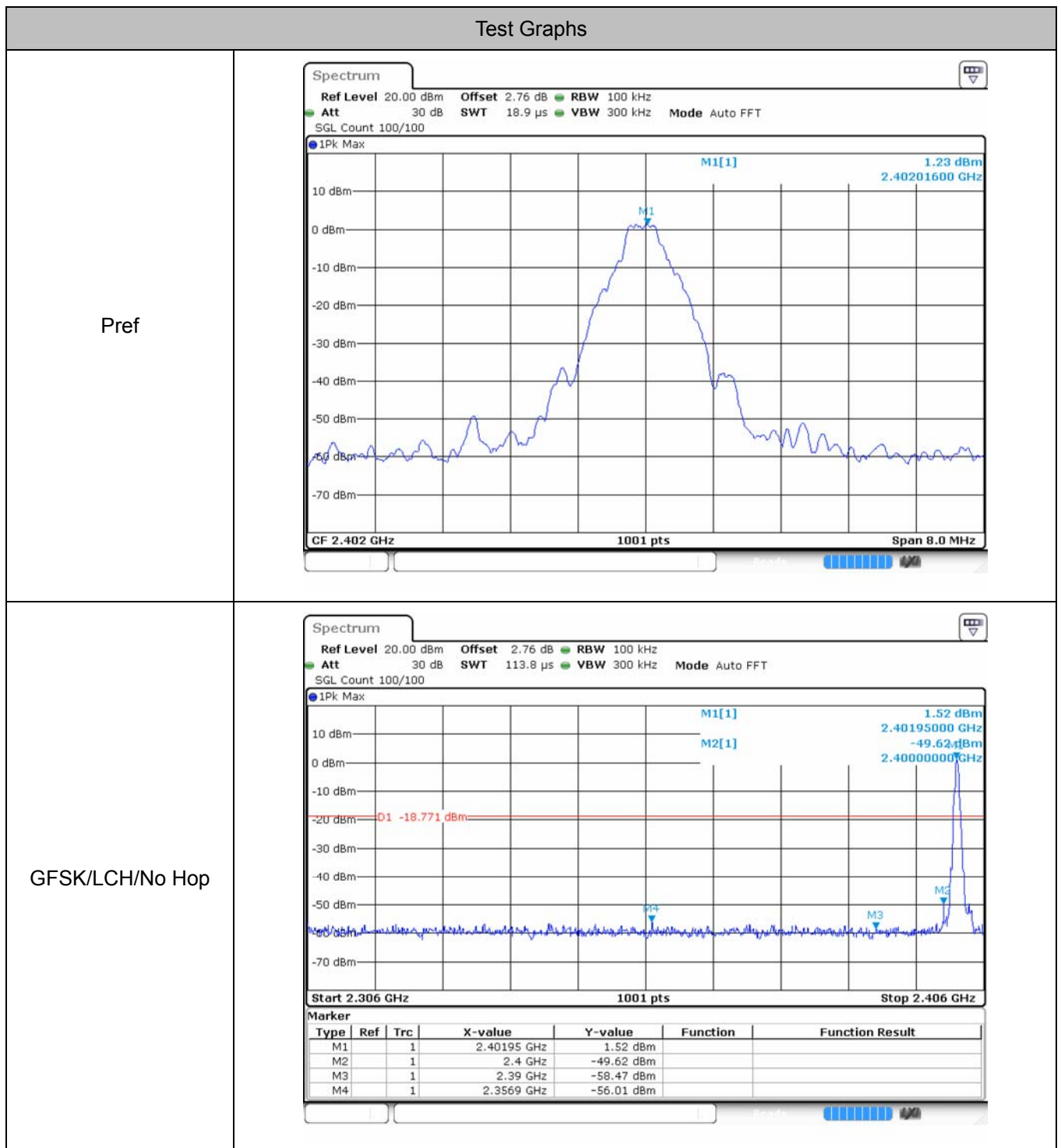


## 8 Band-edge for RF Conducted Emissions

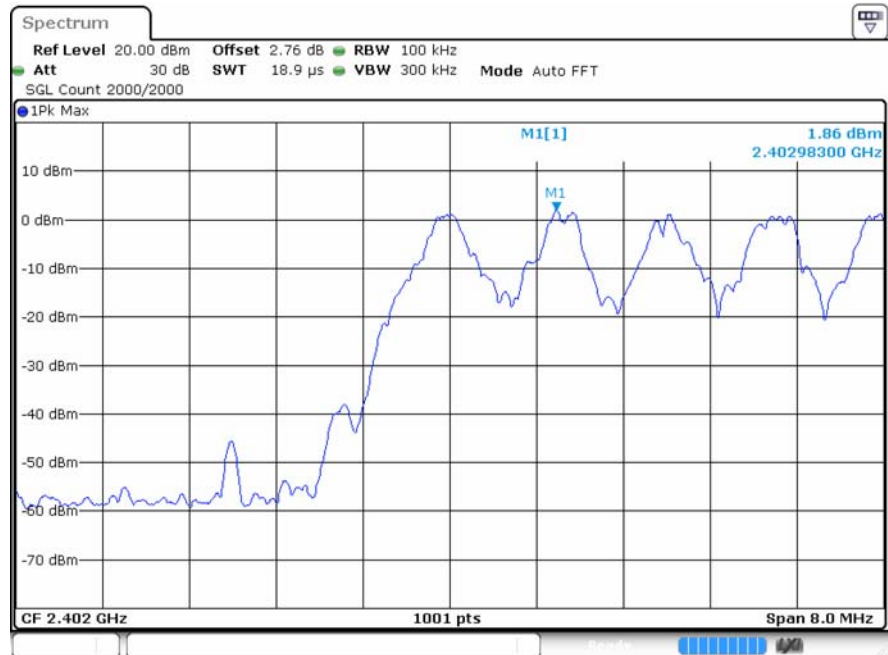
### 8.1 Test Result

| Mode          | Channel | Carrier Frequency [MHz] | Frequency Hopping | Max Spurious Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|-------------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | Off               | -57.23                   | -20         | Pass    |
|               |         |                         | On                | -55.95                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -53.33                   | -20         | Pass    |
|               |         |                         | On                | -59.56                   | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | 2402                    | Off               | -54.76                   | -20         | Pass    |
|               |         |                         | On                | -52.73                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -44.81                   | -20         | Pass    |
|               |         |                         | On                | -49.73                   | -20         | Pass    |

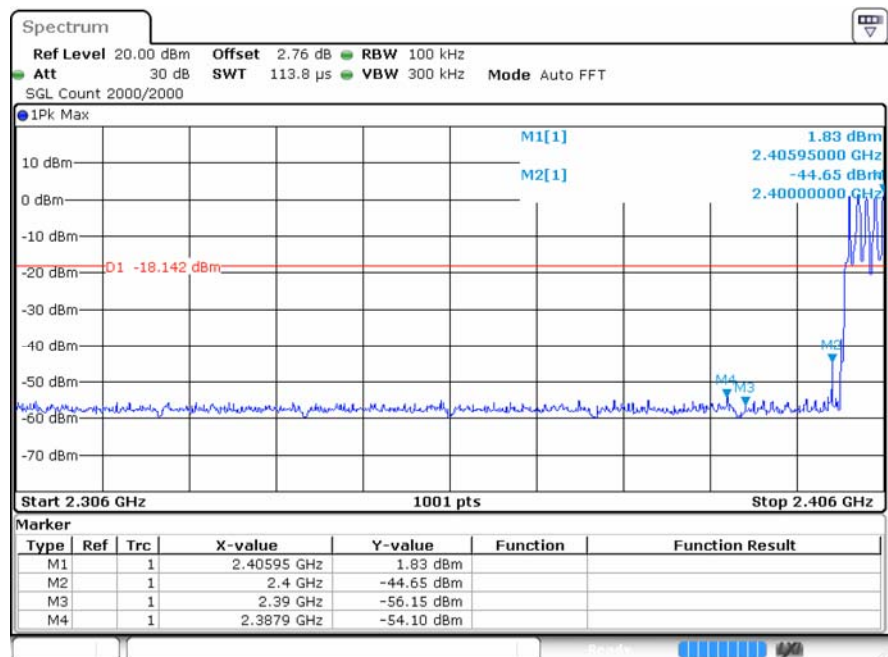
## 8.2 Test Graphs



Ref



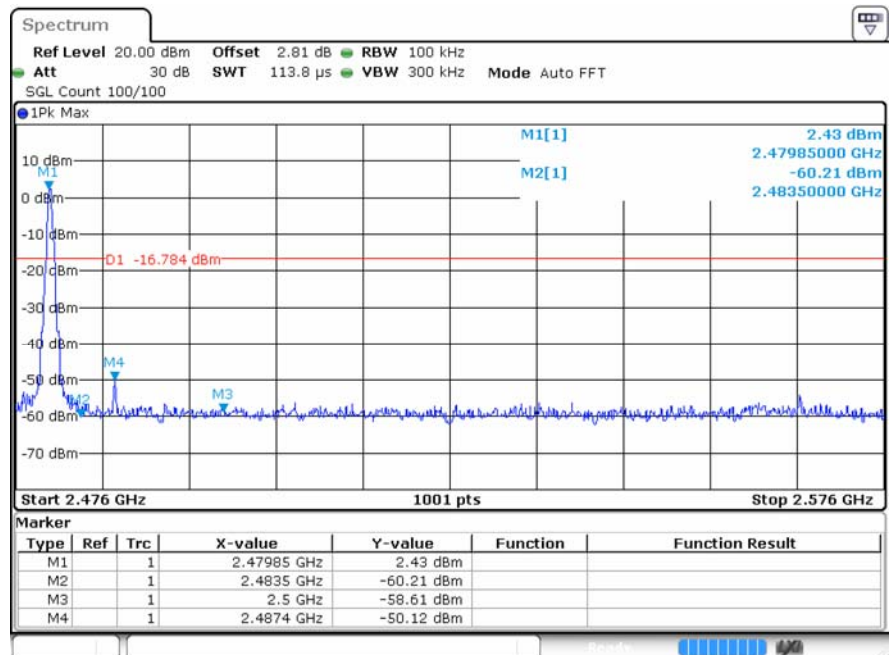
GFSK/LCH/Hop

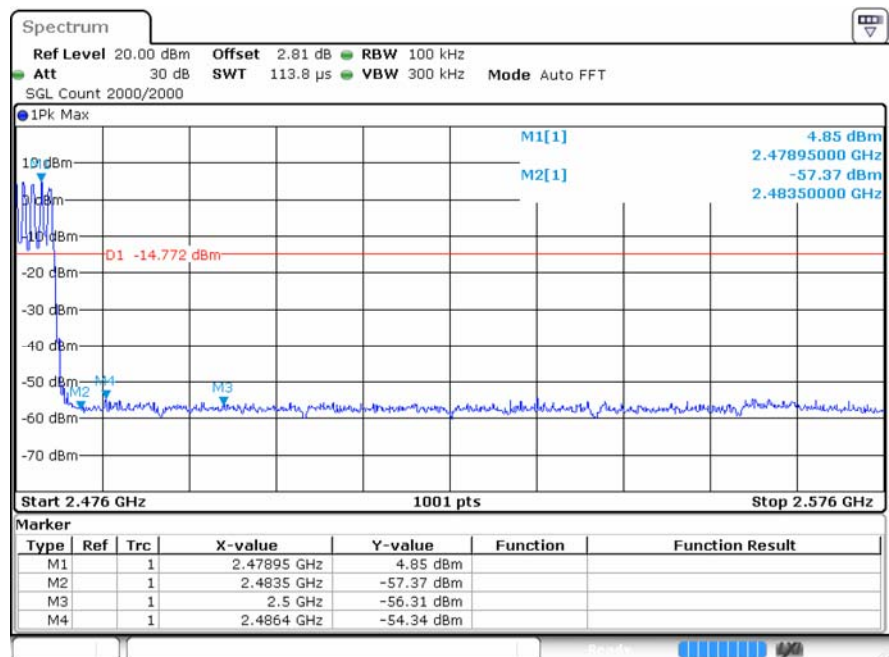
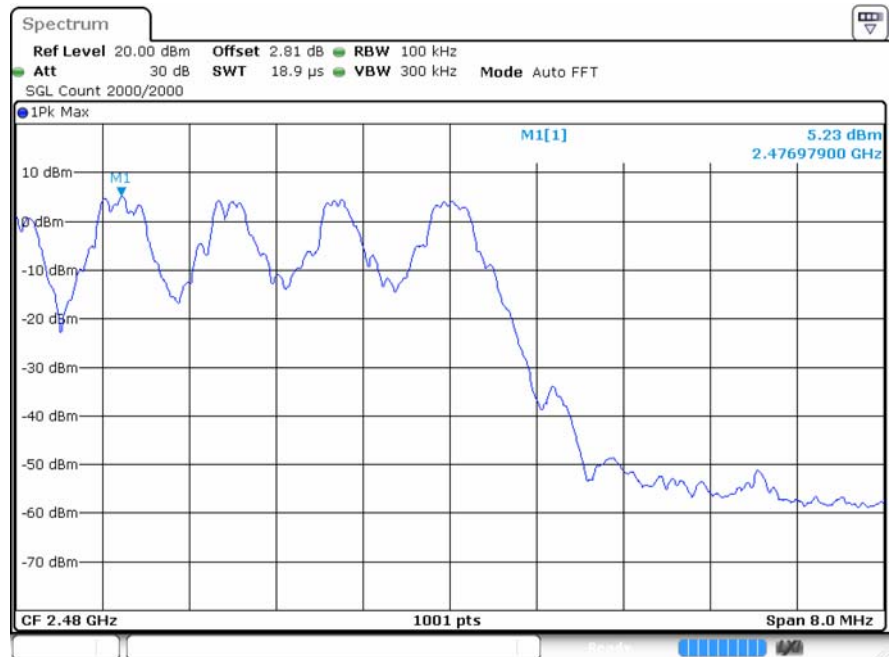


Ref



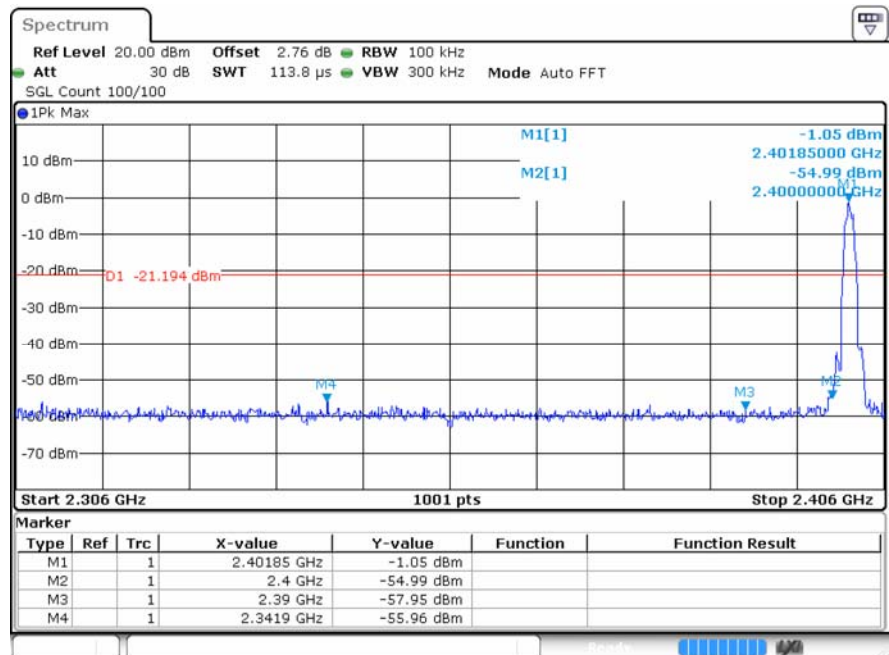
GFSK/HCH/No Hop



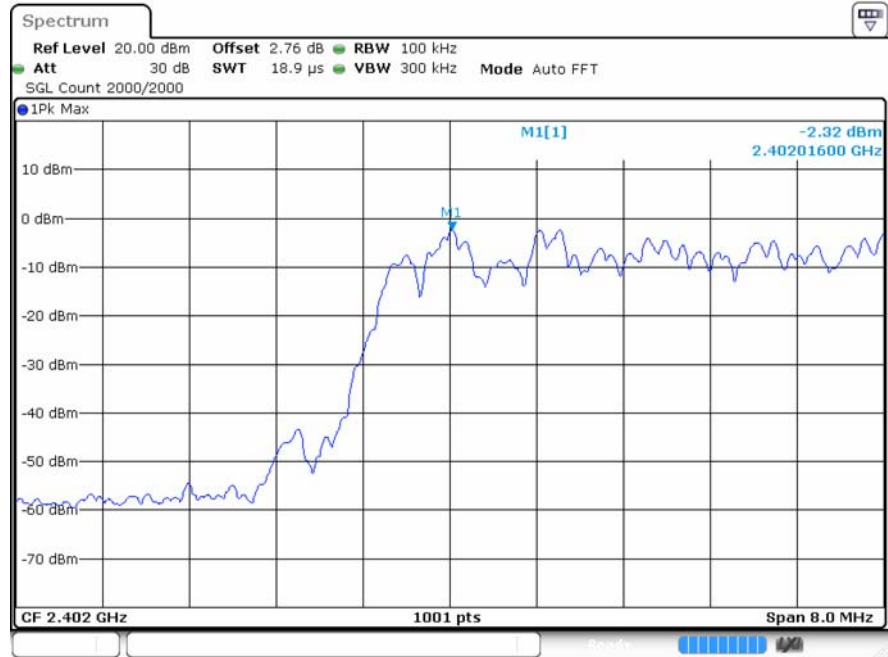
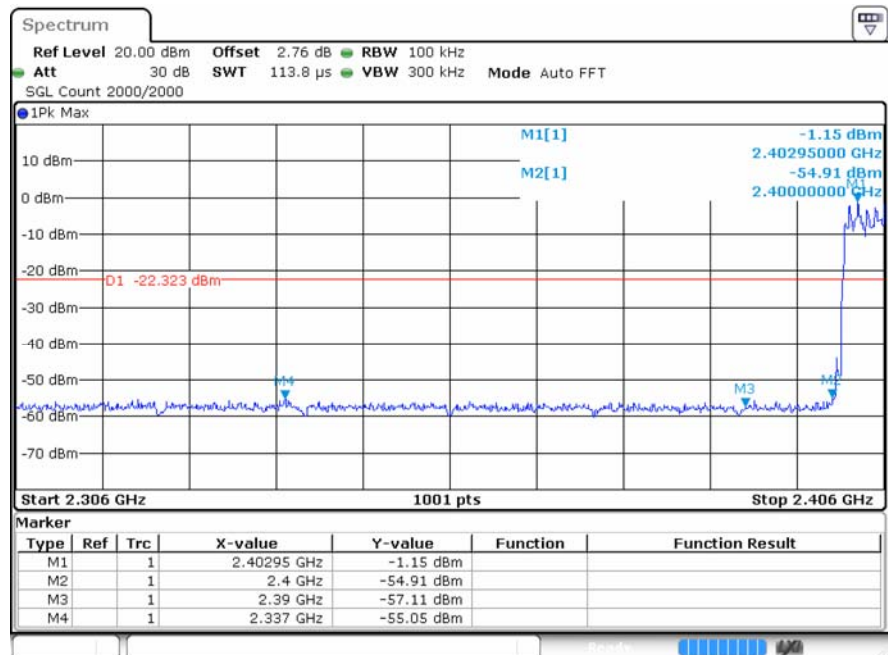




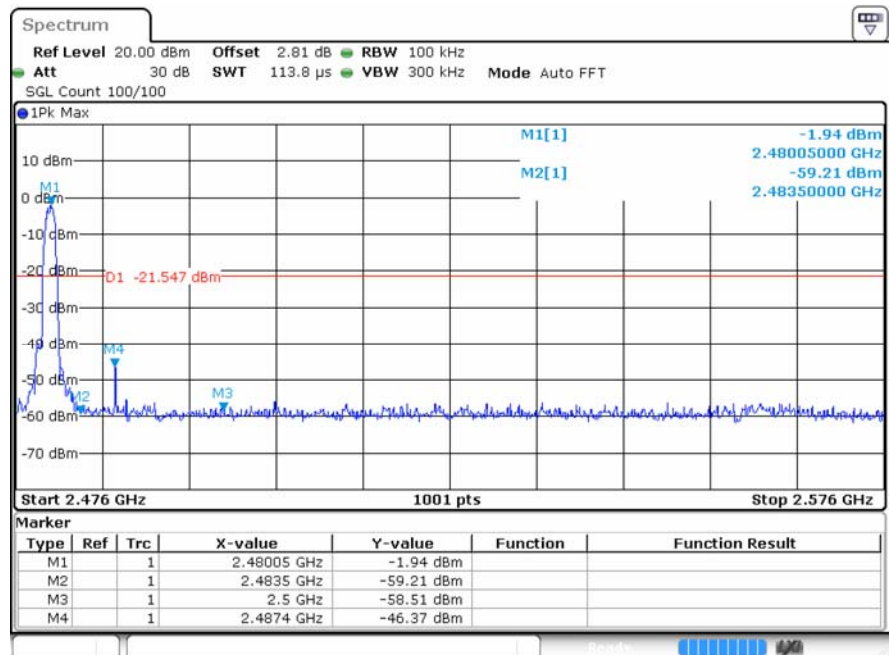
$\pi/4$ DQPSK/LCH/No  
Hop



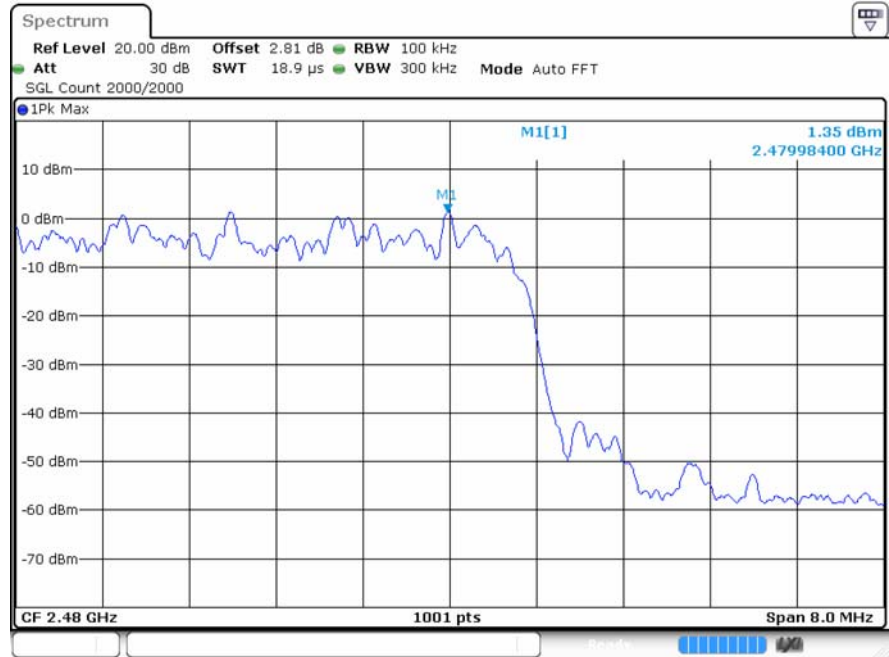
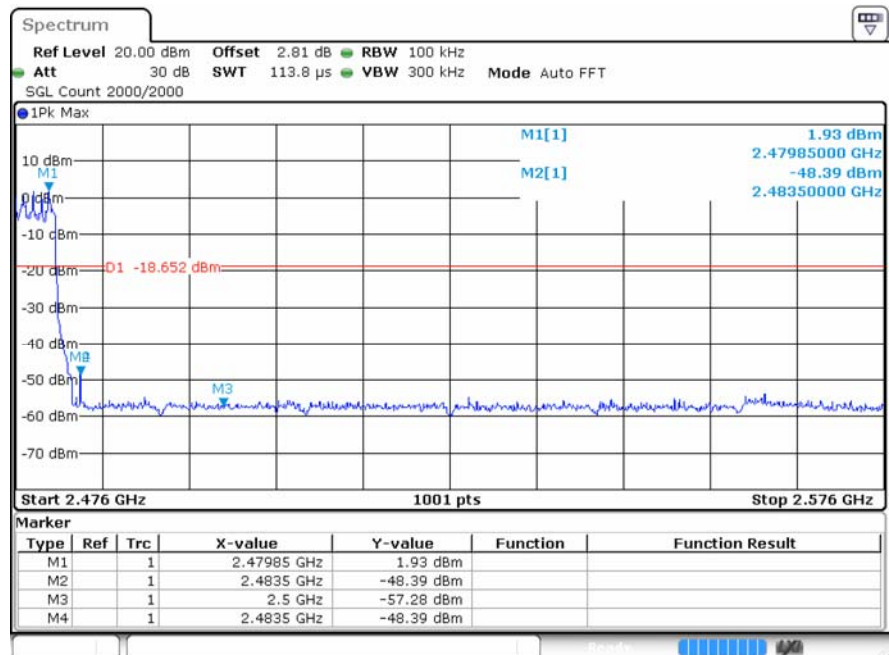
Ref


 $\pi/4$ DQPSK/LCH/Hop


Ref


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


Ref


 $\pi/4$ DQPSK/HCH/Hop


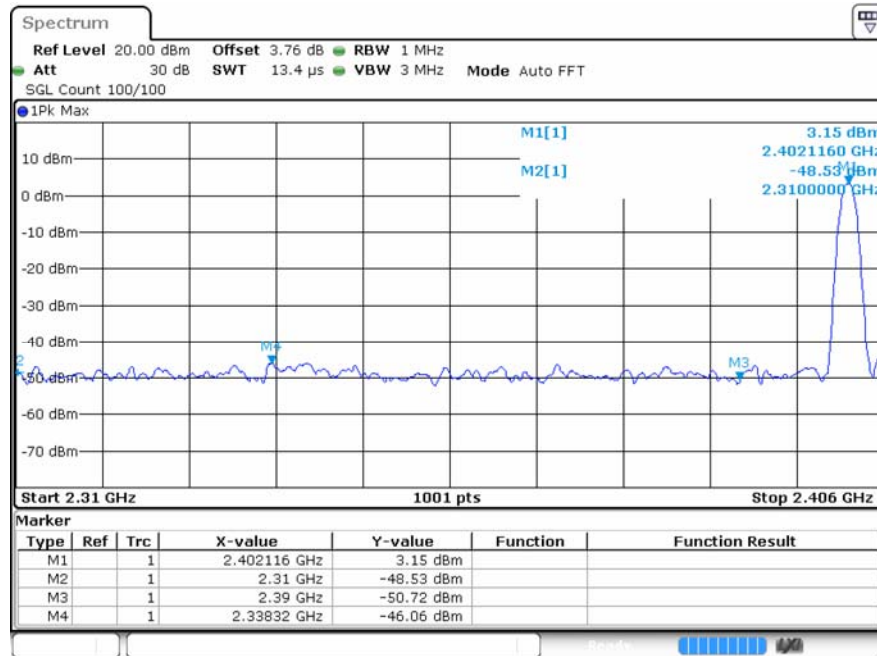
## 9 Restrict-band band-edge measurements

### 9.1 Test Result

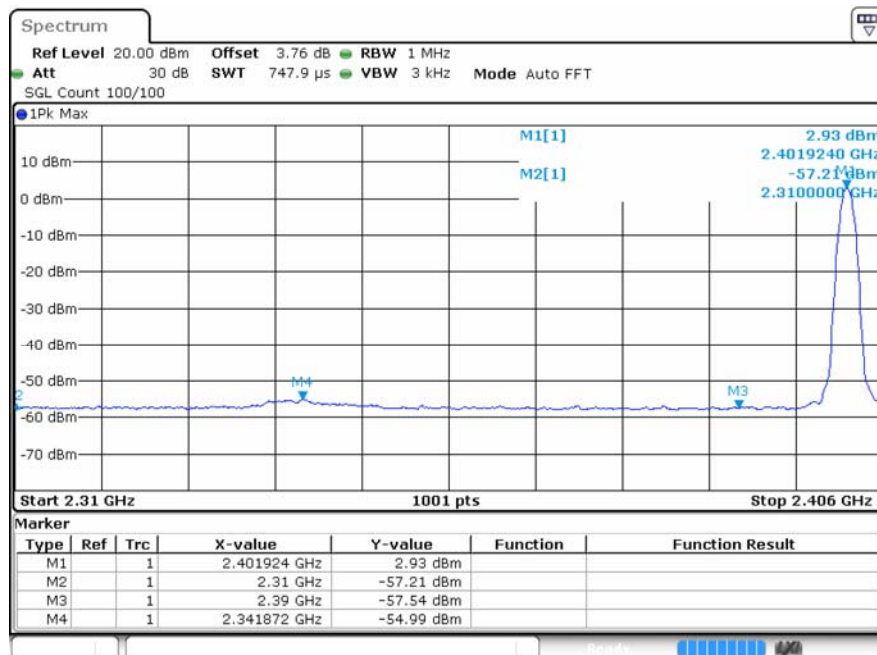
| Test Mode     | Hopping | Freq.    | Power [dBm] | Gain | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|----------|-------------|------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0   | -48.52      | 2    | 48.74      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -57.21      | 2    | 40.05      | AV       | 54             | Pass    |
|               | Off     | 2338.32  | -46.05      | 2    | 51.21      | PEAK     | 74             | Pass    |
|               | Off     | 2341.872 | -54.99      | 2    | 42.27      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -50.71      | 2    | 46.55      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -57.53      | 2    | 39.73      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -47.72      | 2    | 49.54      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -55.18      | 2    | 42.08      | AV       | 54             | Pass    |
|               | Off     | 2496.976 | -46.52      | 2    | 50.74      | PEAK     | 74             | Pass    |
|               | Off     | 2487.424 | -54.88      | 2    | 42.38      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -49.66      | 2    | 47.6       | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -57.08      | 2    | 40.18      | AV       | 54             | Pass    |
| $\pi/4$ DQPSK | Off     | 2310.0   | -49.18      | 2    | 48.08      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -57.23      | 2    | 40.03      | AV       | 54             | Pass    |
|               | Off     | 2377.392 | -44.05      | 2    | 53.21      | PEAK     | 74             | Pass    |
|               | Off     | 2341.2   | -55.04      | 2    | 42.22      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -48.59      | 2    | 48.67      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -57.02      | 2    | 40.24      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -46.91      | 2    | 50.35      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -54.68      | 2    | 42.58      | AV       | 54             | Pass    |
|               | Off     | 2488.576 | -45.12      | 2    | 52.14      | PEAK     | 74             | Pass    |
|               | Off     | 2483.512 | -54.68      | 2    | 42.58      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -46.49      | 2    | 50.77      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -57.12      | 2    | 40.14      | AV       | 54             | Pass    |

## 9.2 Test Graphs

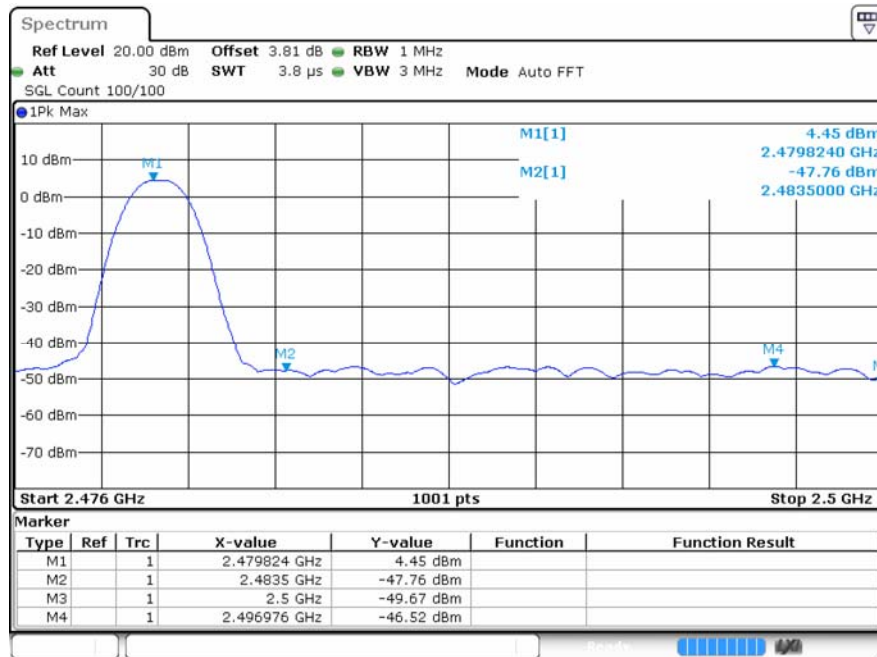
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (Low Channel)



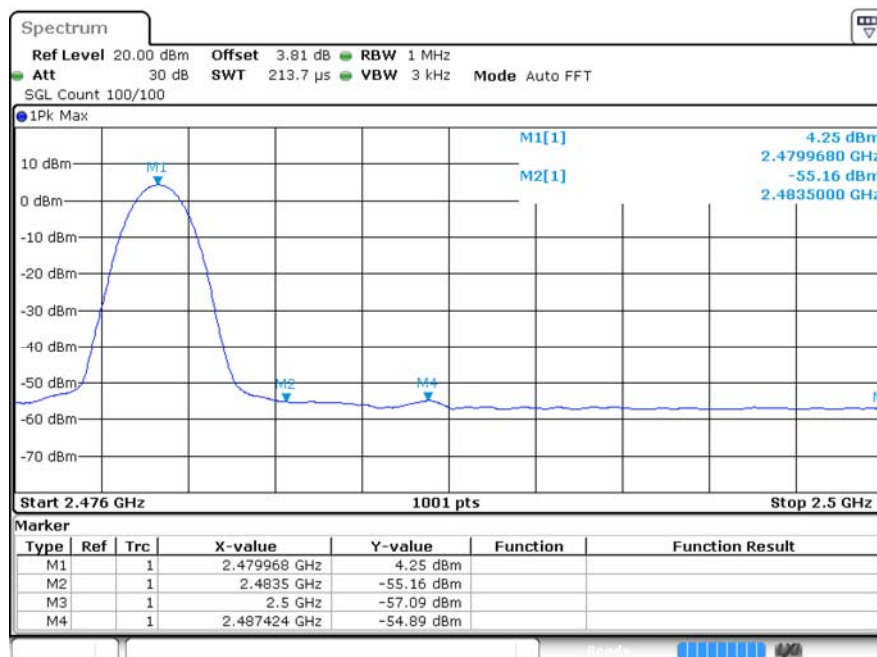
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (Low Channel)



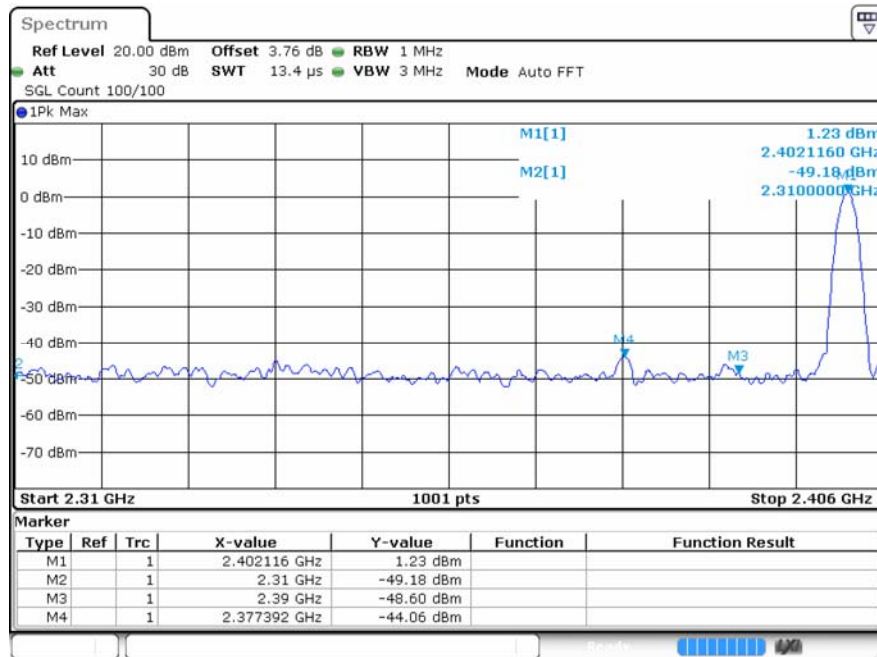
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (High Channel)



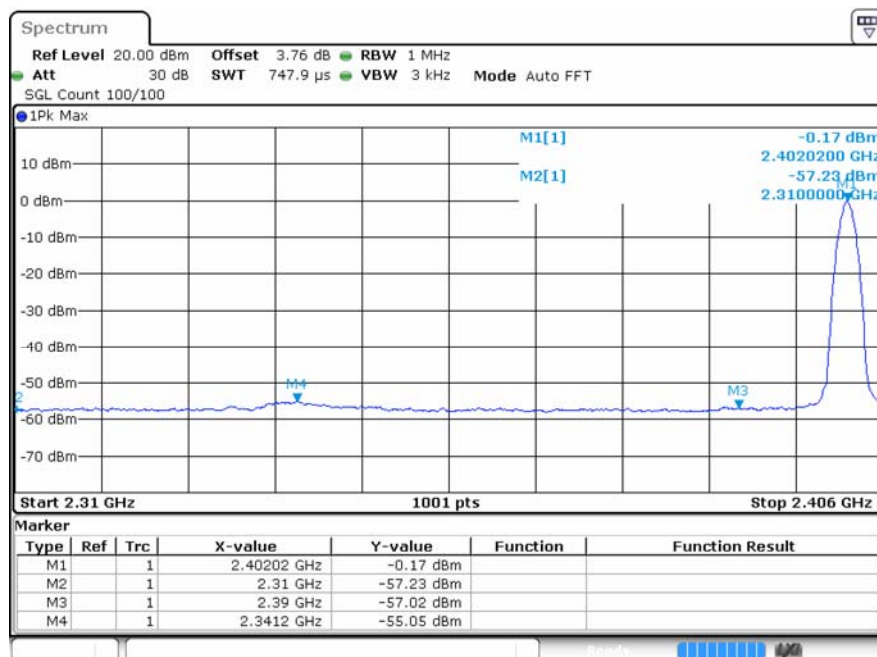
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (High Channel)



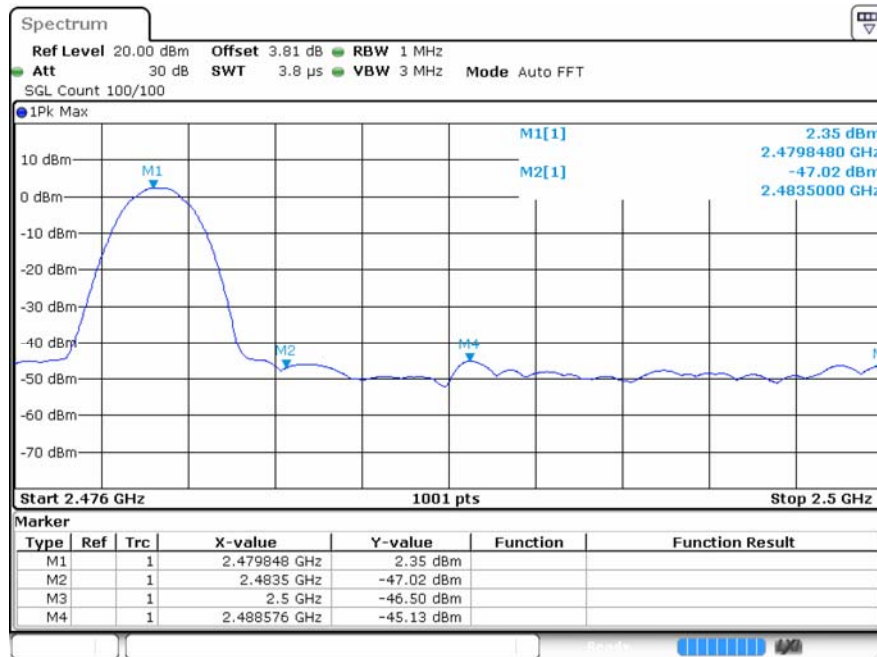
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (Low Channel)



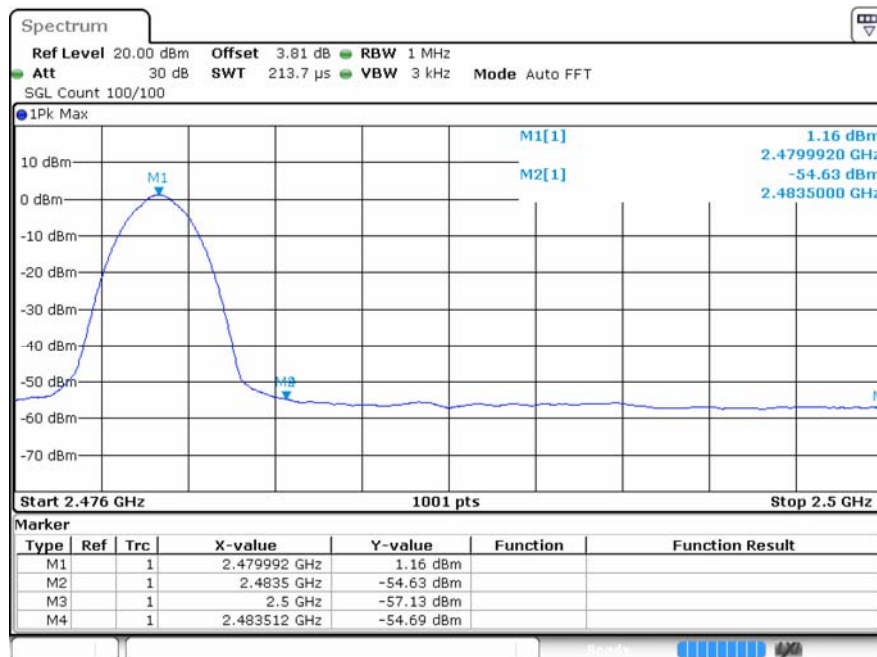
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (Low Channel)



### 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)



---The End---