



## Appendix A

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

Product Name: Bluetooth Speakers  
Trade Mark: UEME  
Test Model: JK-01

#### Environmental Conditions

|                    |             |
|--------------------|-------------|
| Temperature:       | 22.8℃       |
| Relative Humidity: | 50.6%       |
| ATM Pressure:      | 101Kpa      |
| Test Engineer:     | Simba Huang |
| Supervised by:     | Seal Chen   |

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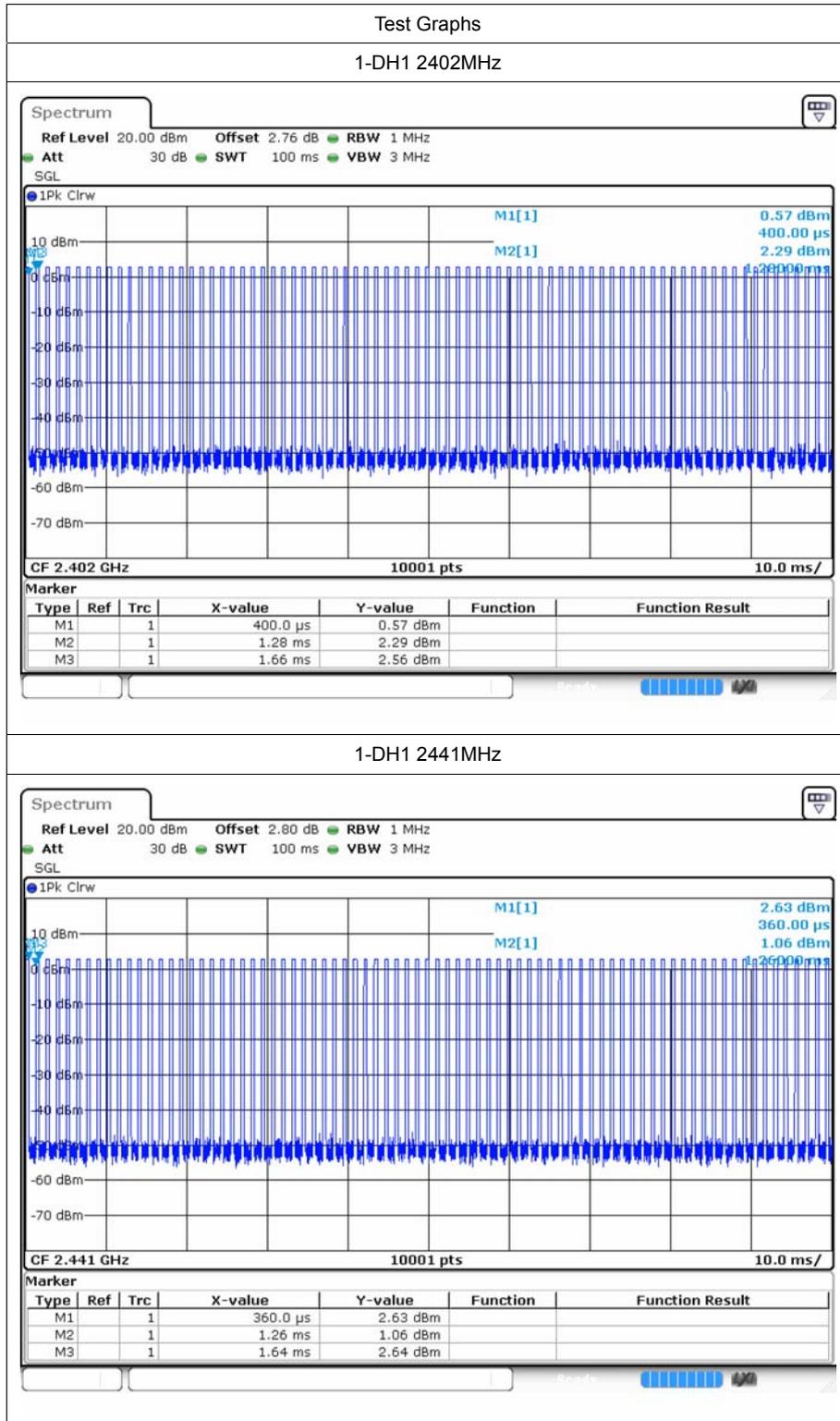


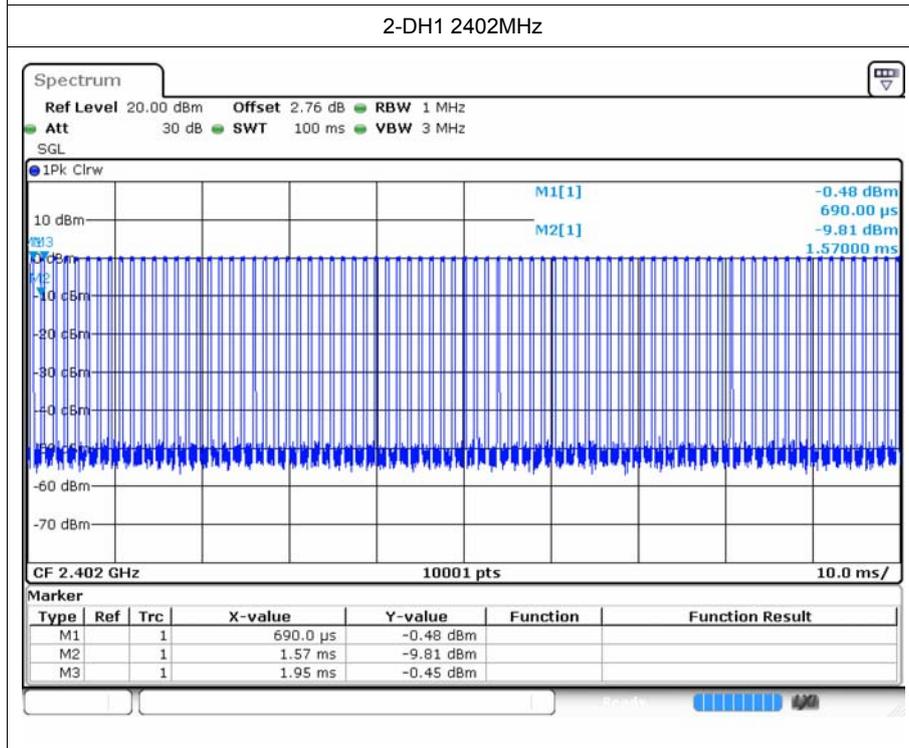
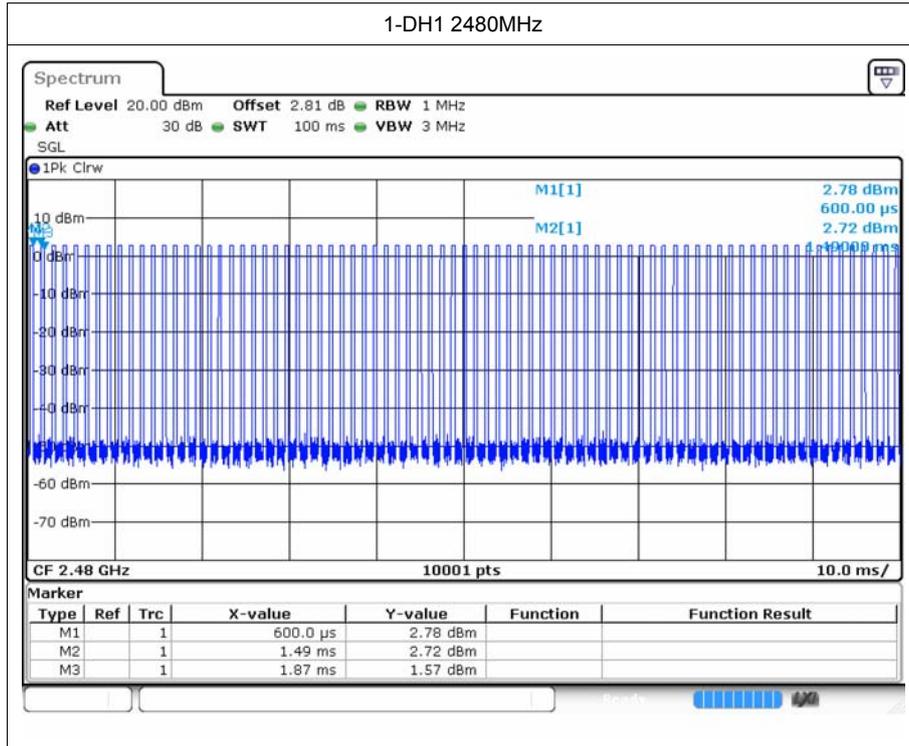
# 1 Duty Cycle

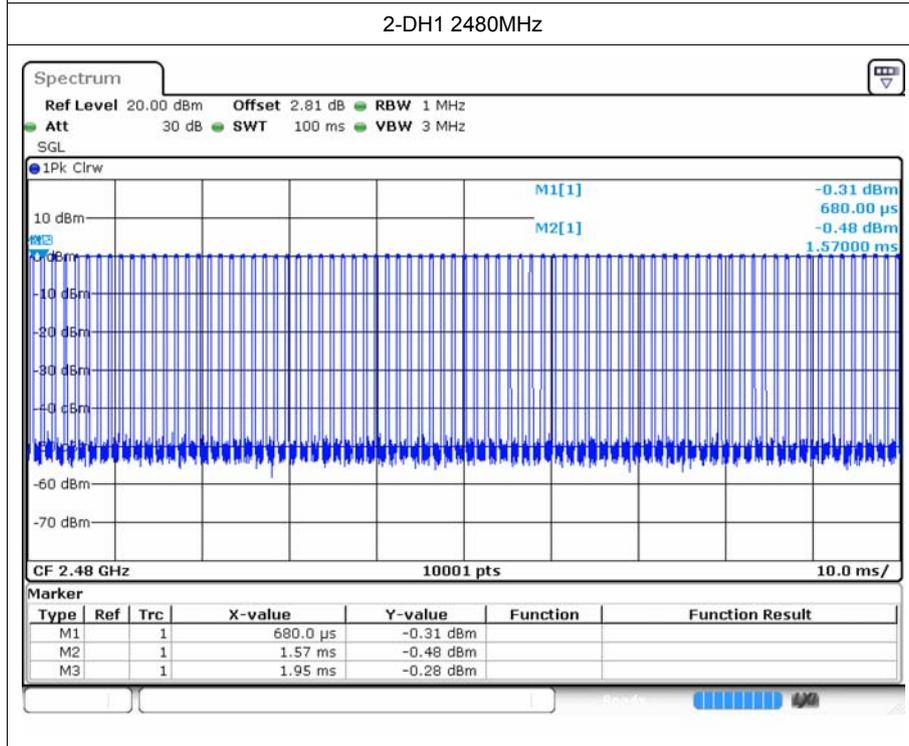
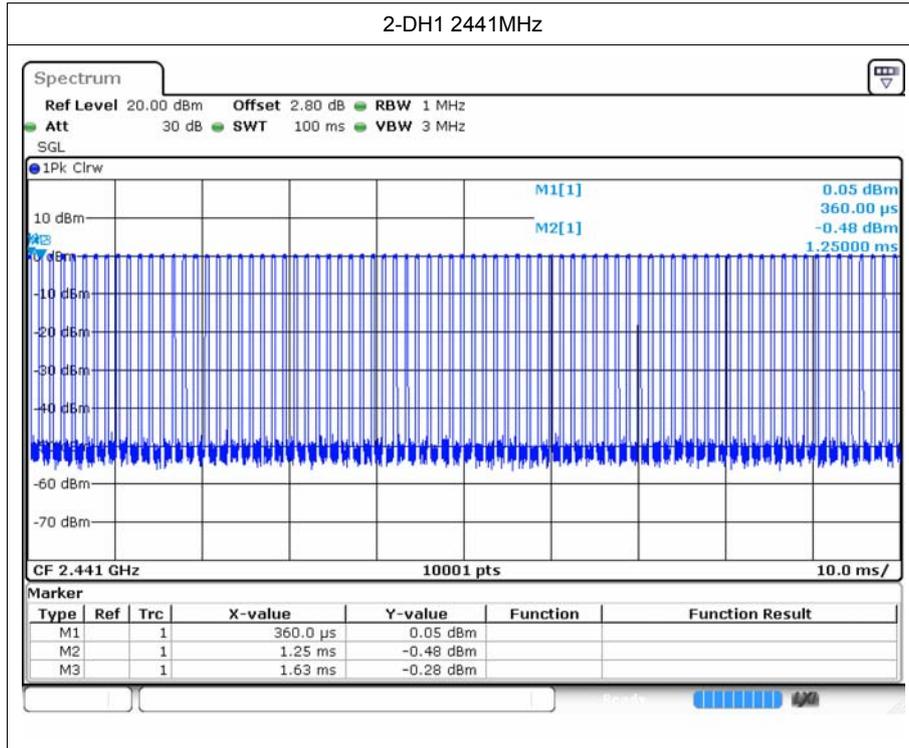
## 1.1 Test Result

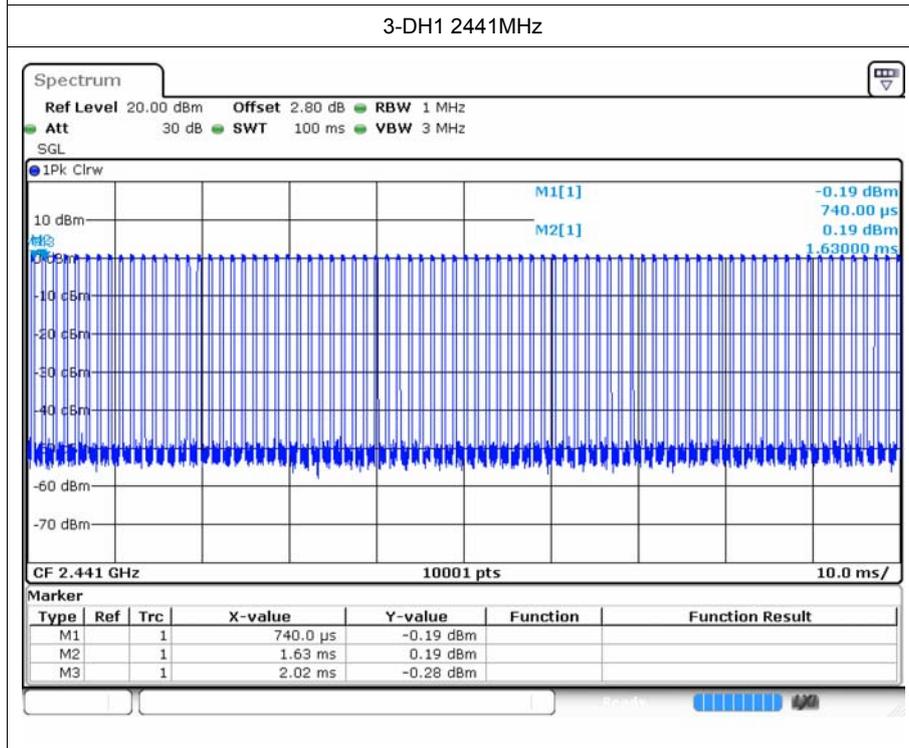
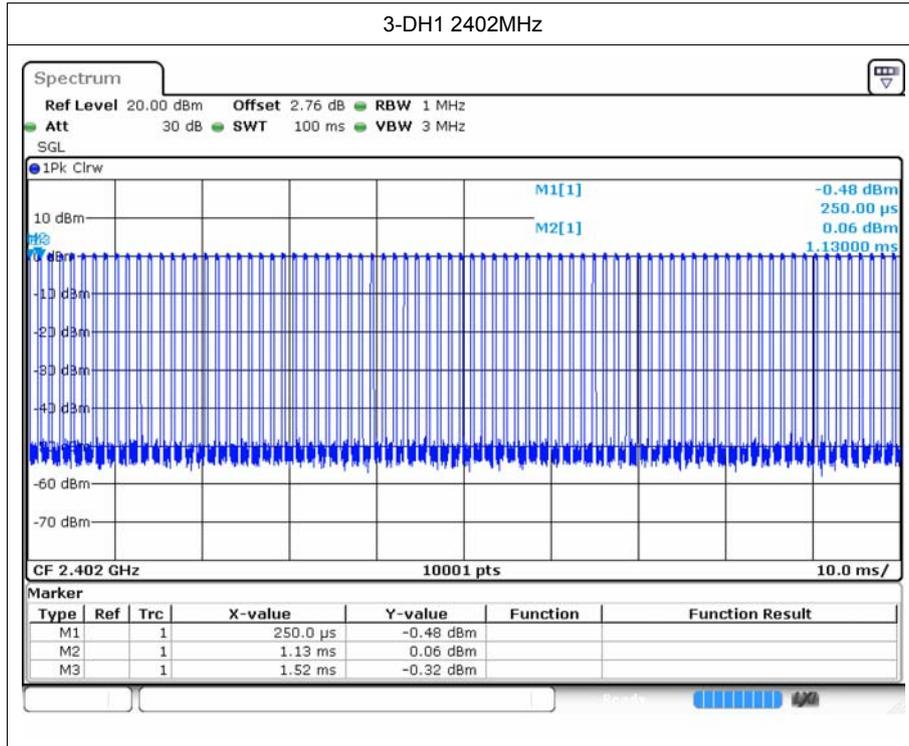
| Mode  | Frequency (MHz) | Duty Cycle (%) | 1/T (kHz) |
|-------|-----------------|----------------|-----------|
| 1-DH1 | 2402            | 31.2           | 2.63      |
| 1-DH1 | 2441            | 31.14          | 2.63      |
| 1-DH1 | 2480            | 31.22          | 2.63      |
| 2-DH1 | 2402            | 31.03          | 2.63      |
| 2-DH1 | 2441            | 31.1           | 2.63      |
| 2-DH1 | 2480            | 31.01          | 2.63      |
| 3-DH1 | 2402            | 30.94          | 2.56      |
| 3-DH1 | 2441            | 31.11          | 2.56      |
| 3-DH1 | 2480            | 31.02          | 2.56      |

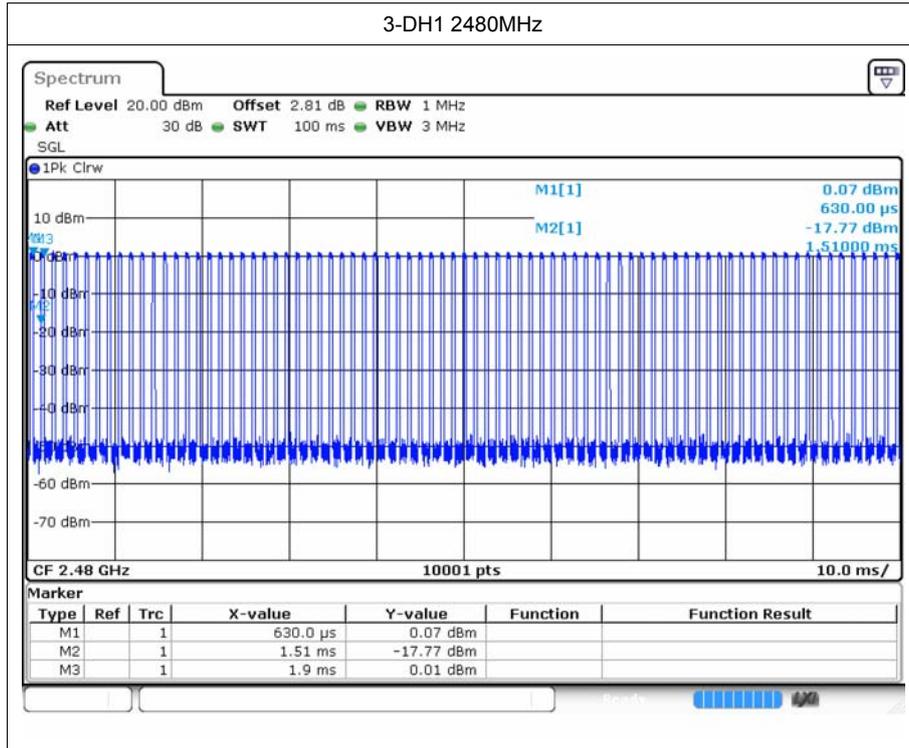
## 1.2 Test Graphs









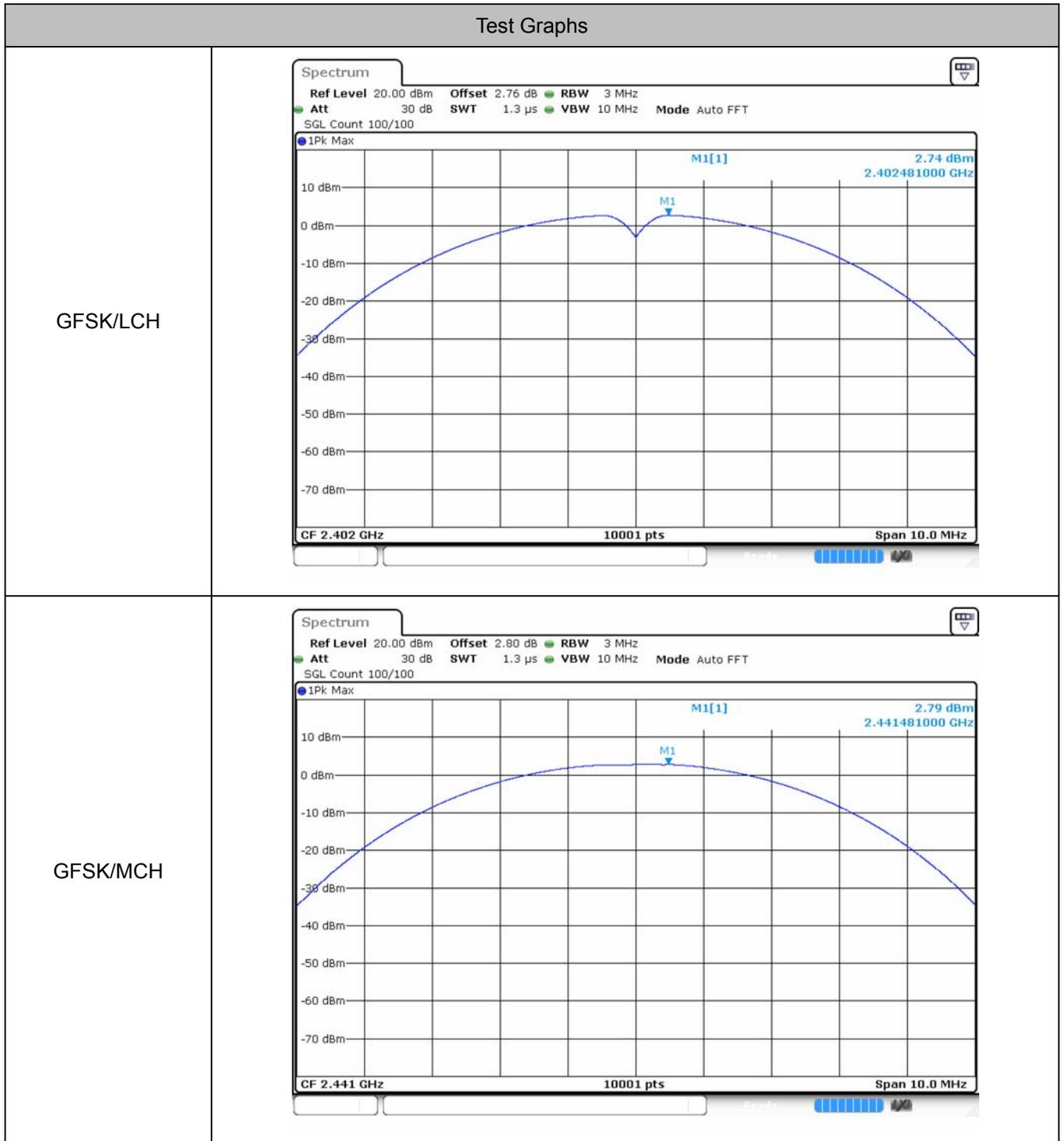


## 2 Maximum Conducted Peak Output Power

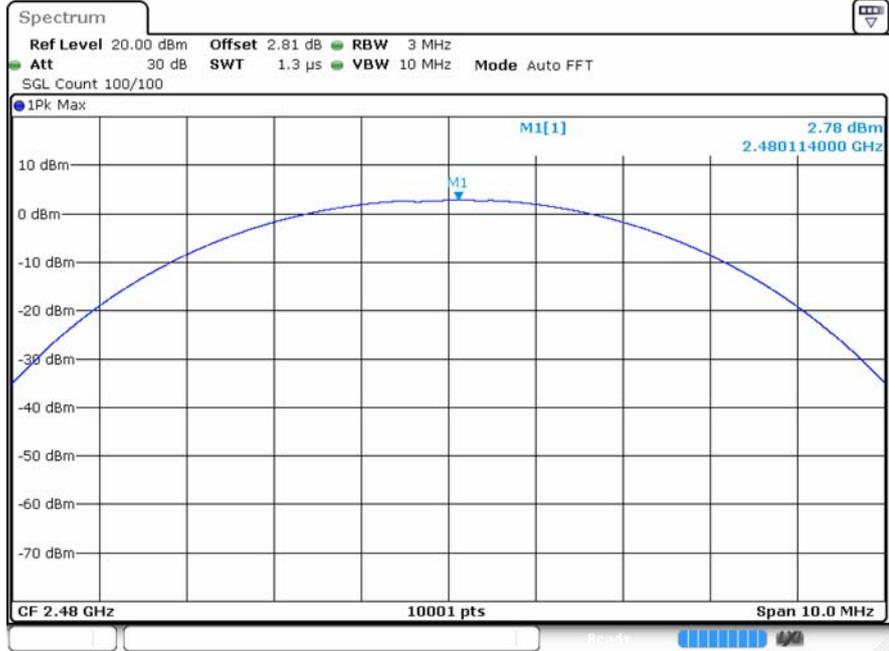
### 2.1 Test Result

| Mode          | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK          | LCH      | 2.74                            | 21          | Pass    |
|               | MCH      | 2.79                            | 21          | Pass    |
|               | HCH      | 2.78                            | 21          | Pass    |
| $\pi/4$ DQPSK | LCH      | 0.26                            | 21          | Pass    |
|               | MCH      | 0.39                            | 21          | Pass    |
|               | HCH      | 0.63                            | 21          | Pass    |
| 8DPSK         | LCH      | 1.01                            | 21          | Pass    |
|               | MCH      | 0.53                            | 21          | Pass    |
|               | HCH      | 0.83                            | 21          | Pass    |

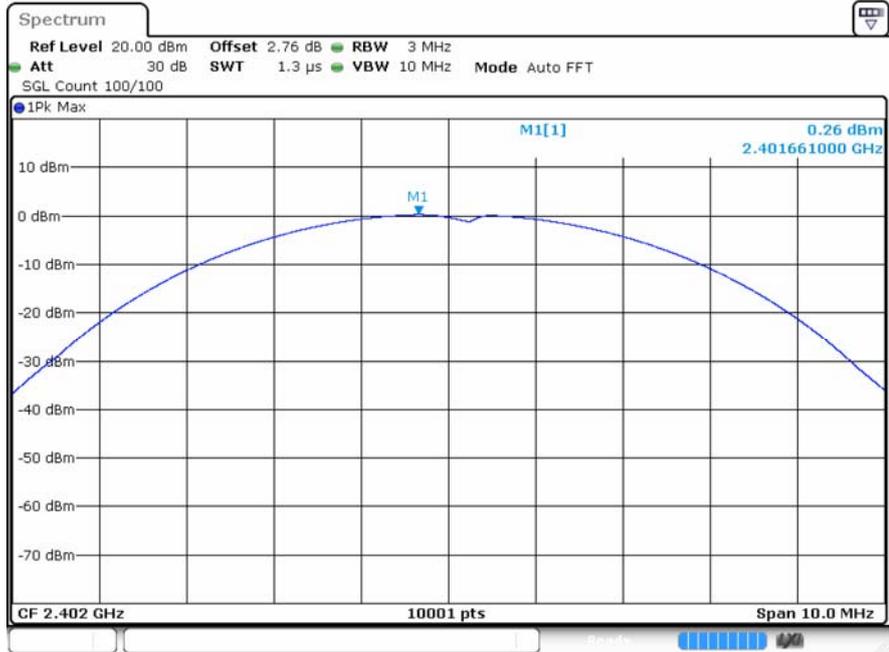
## 2.2 Test Graphs



GFSK/HCH



$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH



8DPSK/LCH



8DPSK/MCH





8DPSK/HCH

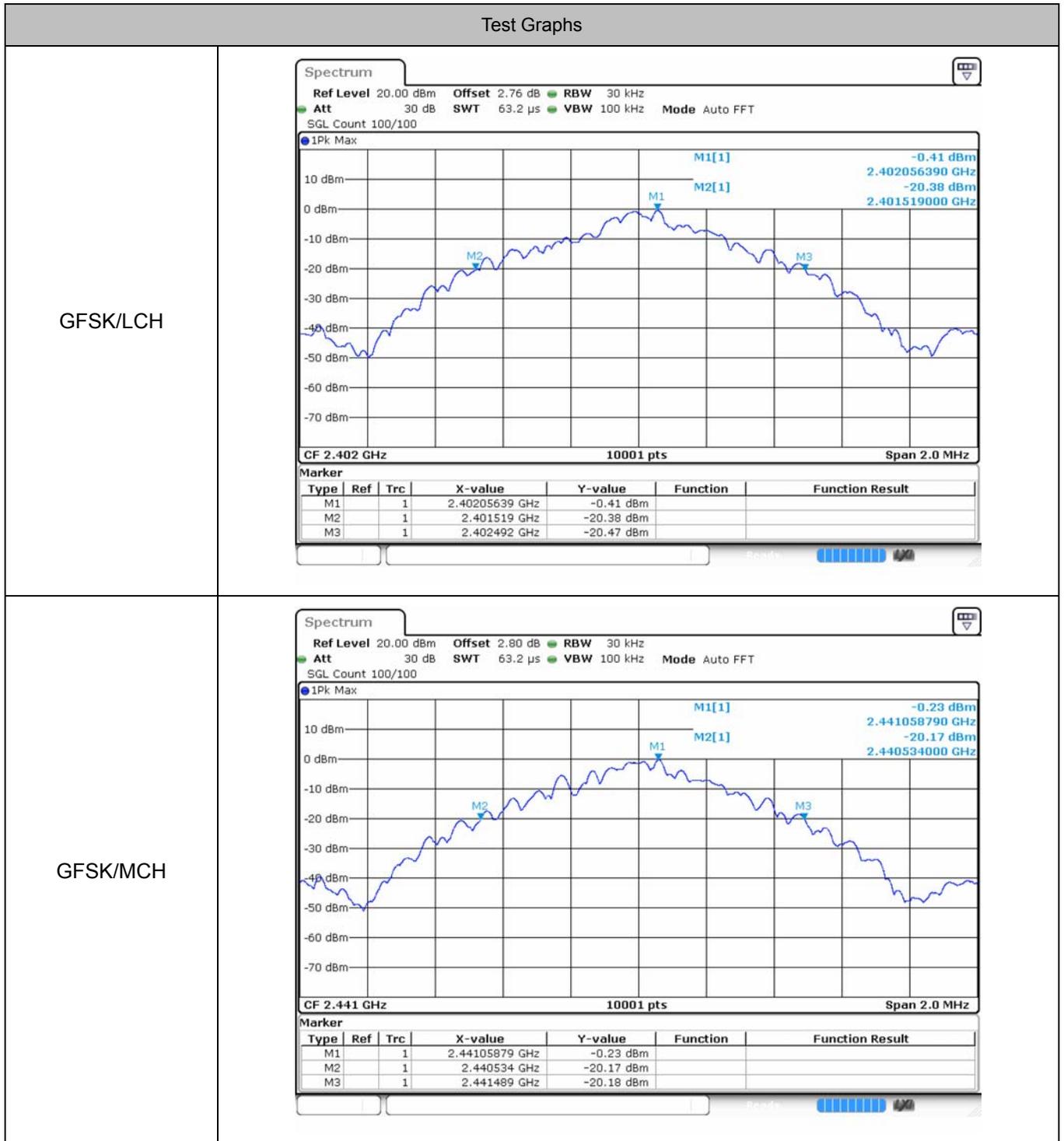


### 3 20dB Bandwidth

#### 3.1 Test Result

| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.973                | Not Specified | Pass    |
|               | MCH      | 0.955                | Not Specified | Pass    |
|               | HCH      | 0.956                | Not Specified | Pass    |
| $\pi/4$ DQPSK | LCH      | 1.355                | Not Specified | Pass    |
|               | MCH      | 1.356                | Not Specified | Pass    |
|               | HCH      | 1.354                | Not Specified | Pass    |
| 8DPSK         | LCH      | 1.345                | Not Specified | Pass    |
|               | MCH      | 1.316                | Not Specified | Pass    |
|               | HCH      | 1.324                | Not Specified | Pass    |

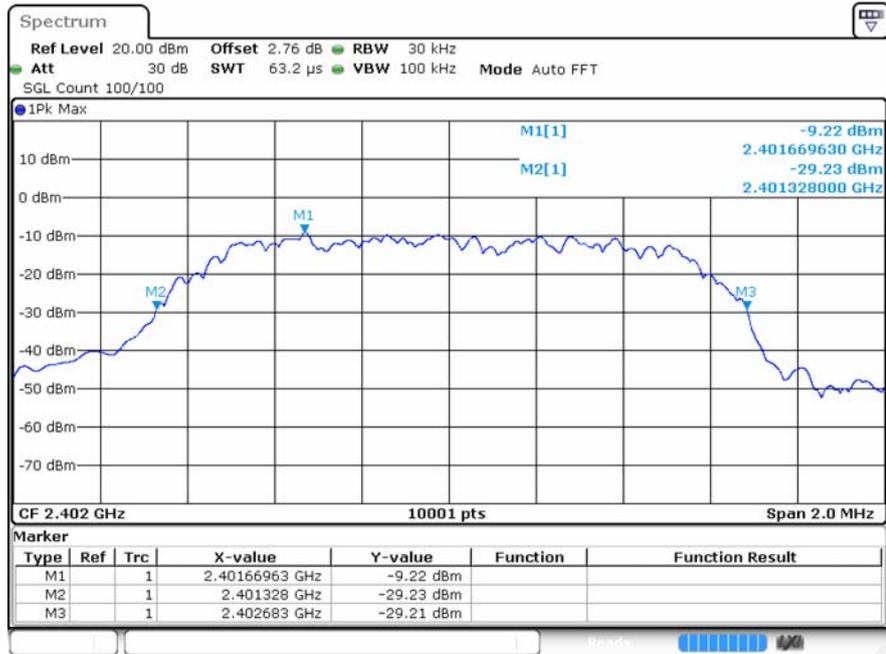
### 3.2 Test Graphs



GFSK/HCH



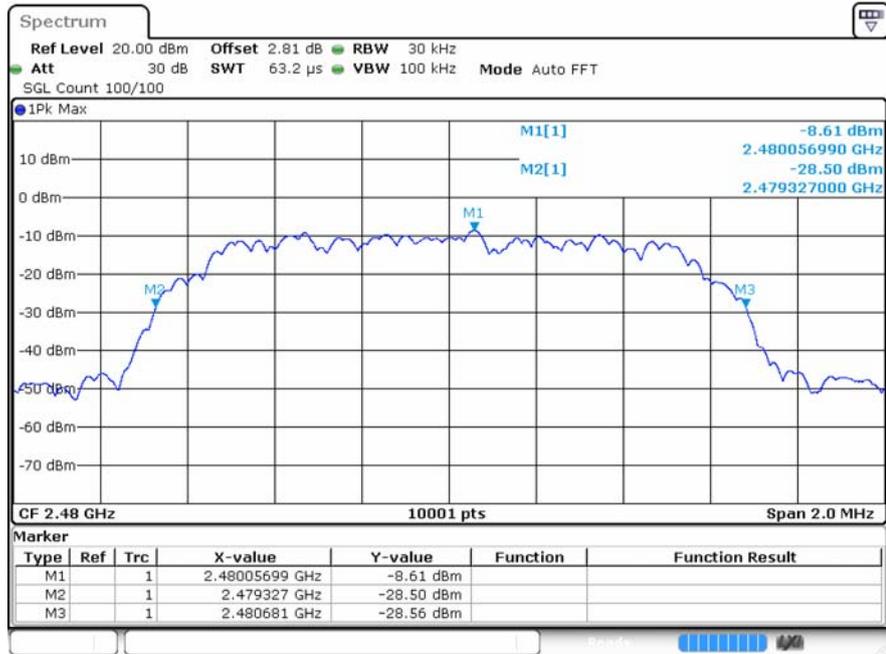
$\pi/4$ DQPSK/LCH



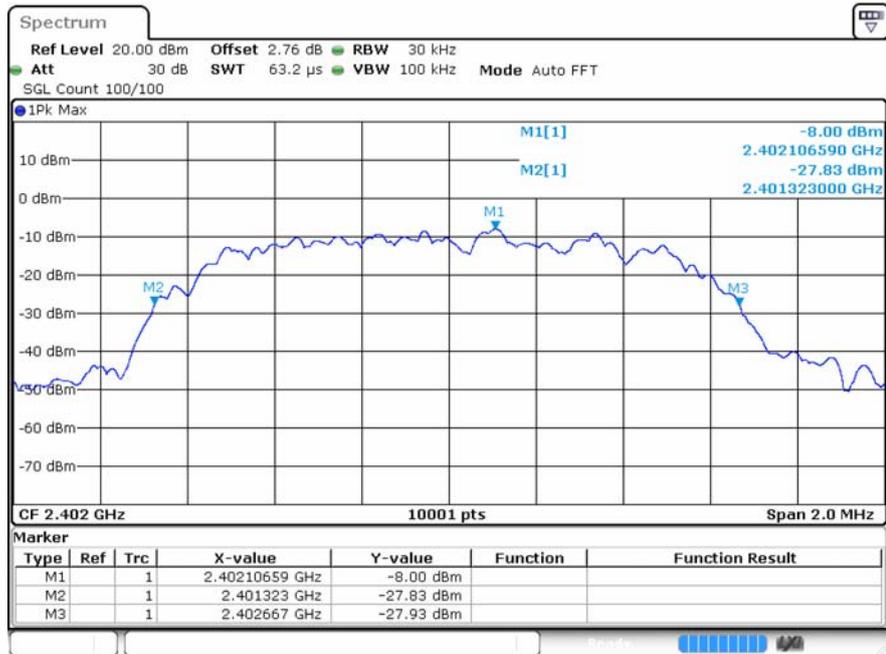
$\pi/4$ DQPSK/MCH



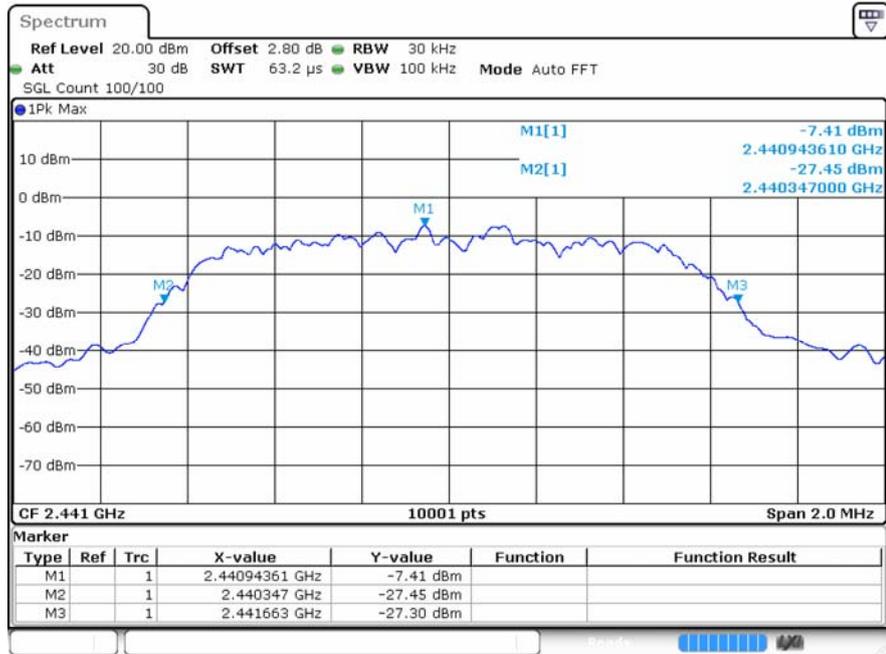
$\pi/4$ DQPSK/HCH



8DPSK/LCH

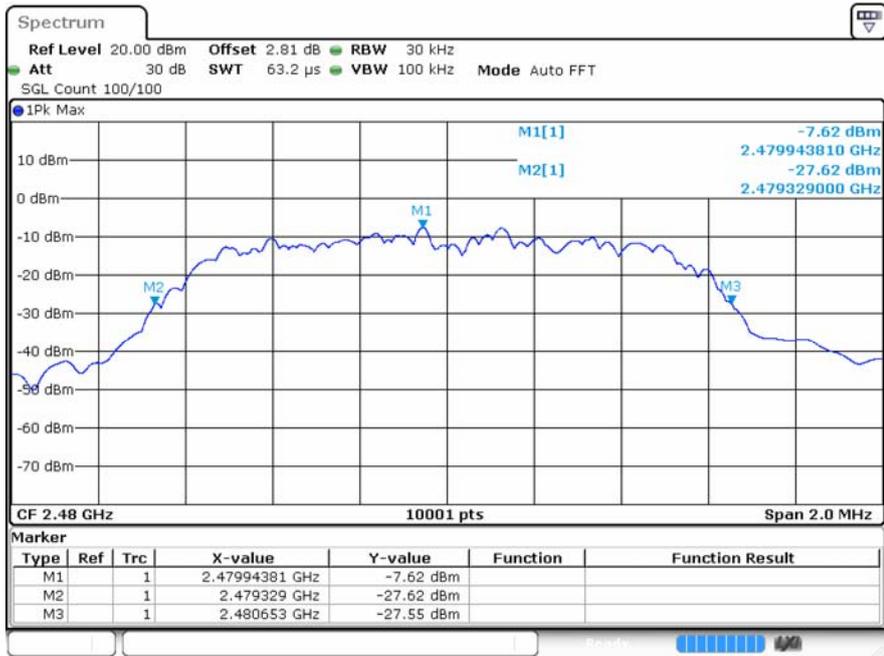


8DPSK/MCH





8DPSK/HCH



## 4 Carrier Frequency Separation

### 4.1 Test Result

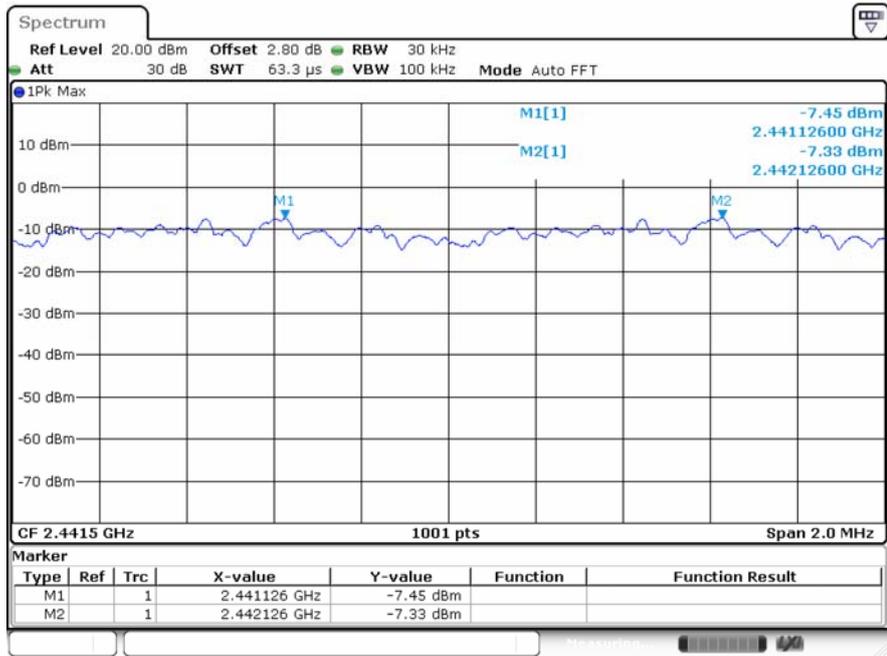
| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | MCH      | 1.001                              | 0.637       | Pass    |
| $\pi/4$ DQPSK | MCH      | 1.162                              | 0.904       | Pass    |
| 8DPSK         | MCH      | 1                                  | 0.877       | Pass    |

## 4.2 Test Graphs





8DPSK/MCH

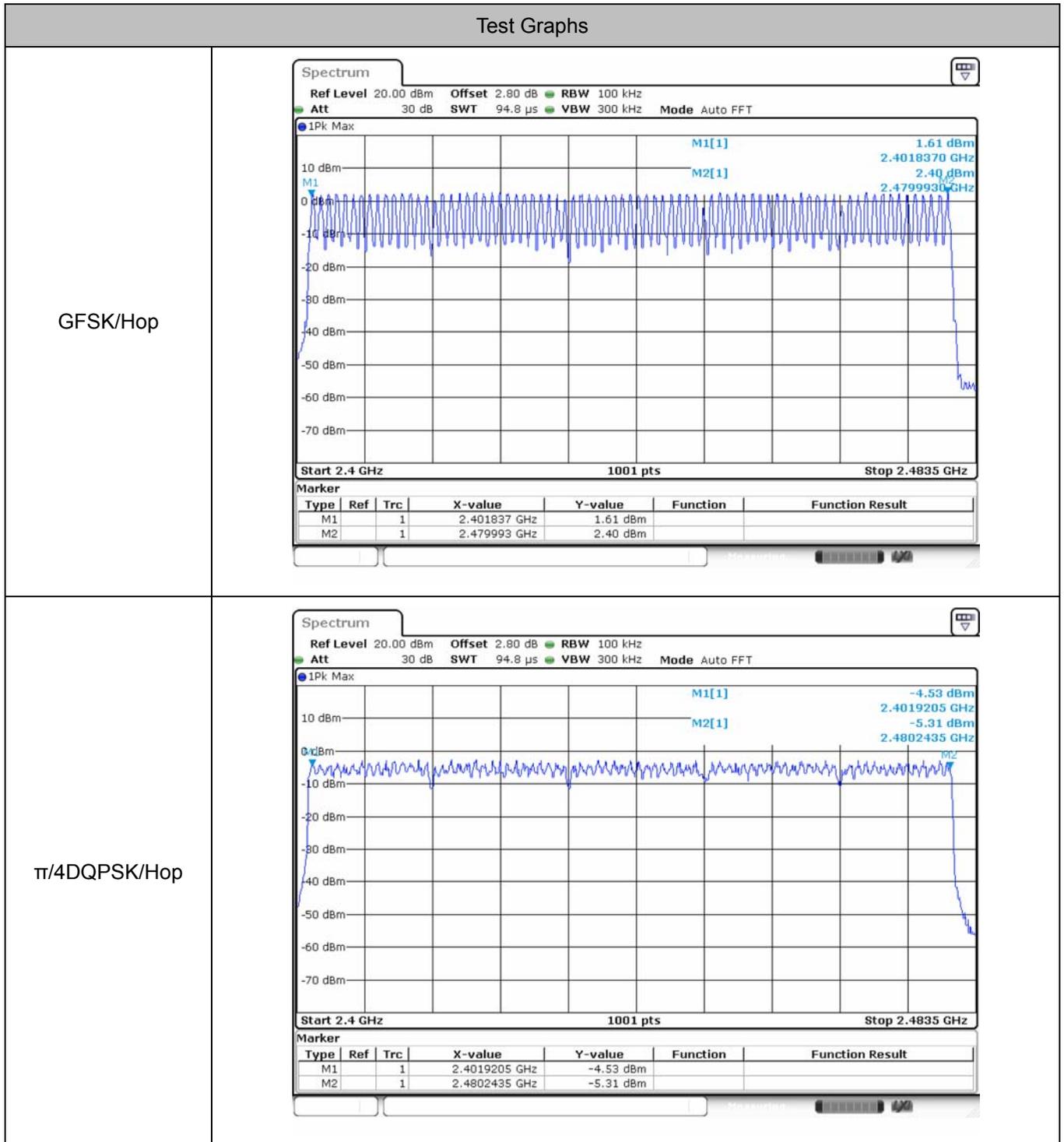


## 5 Hopping Channel Number

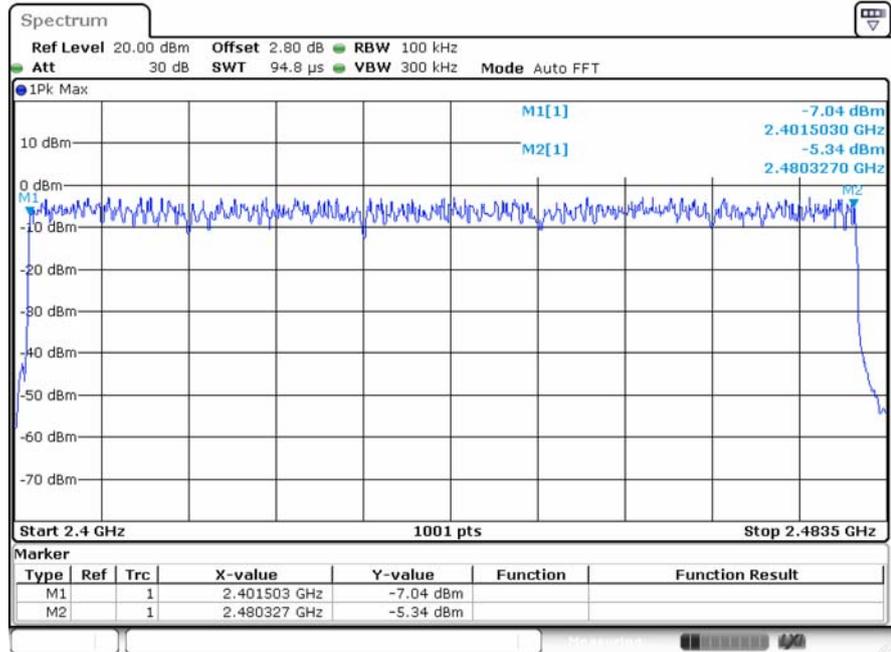
### 5.1 Test Result

| 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

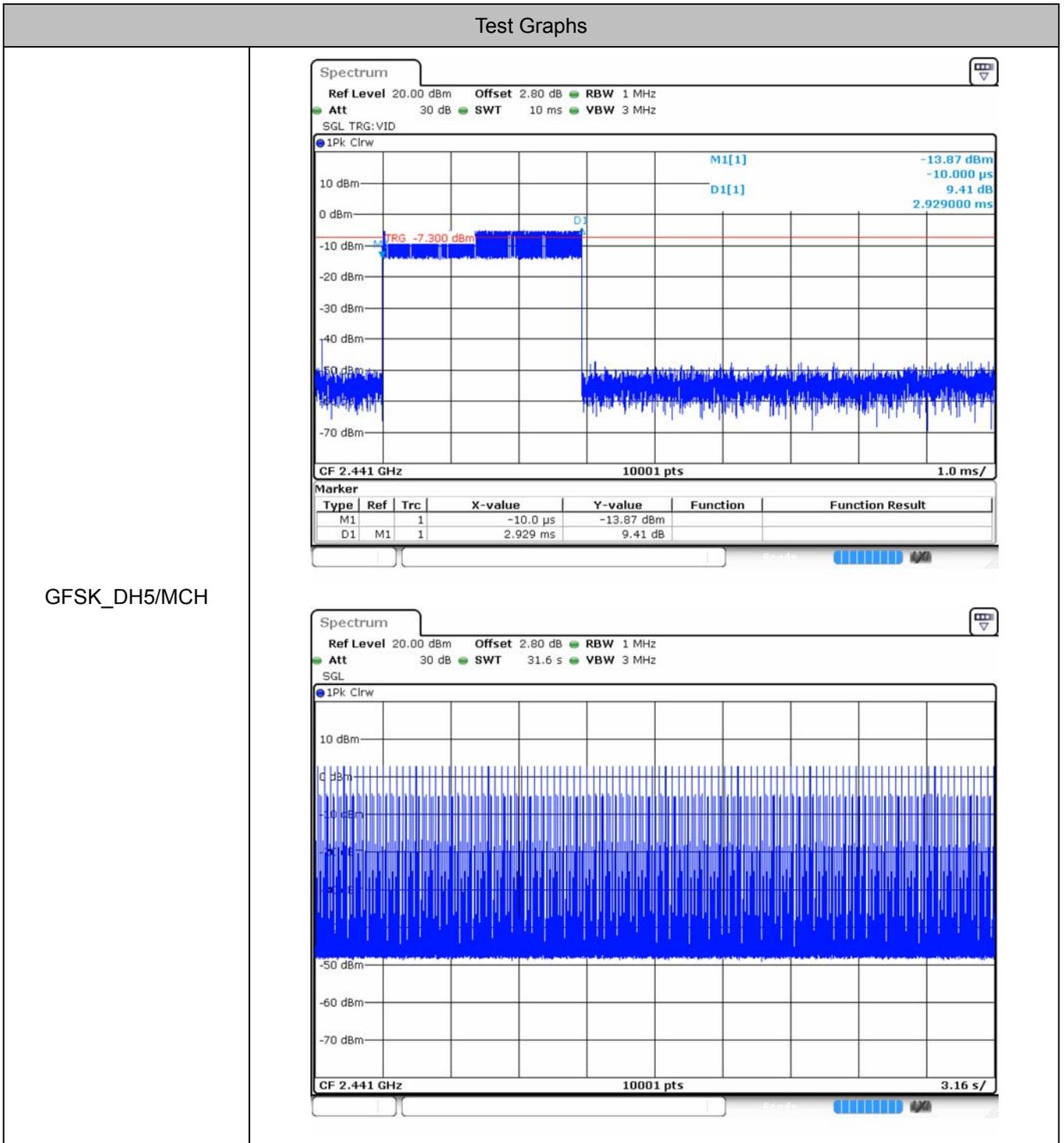


## 6 Dwell Time

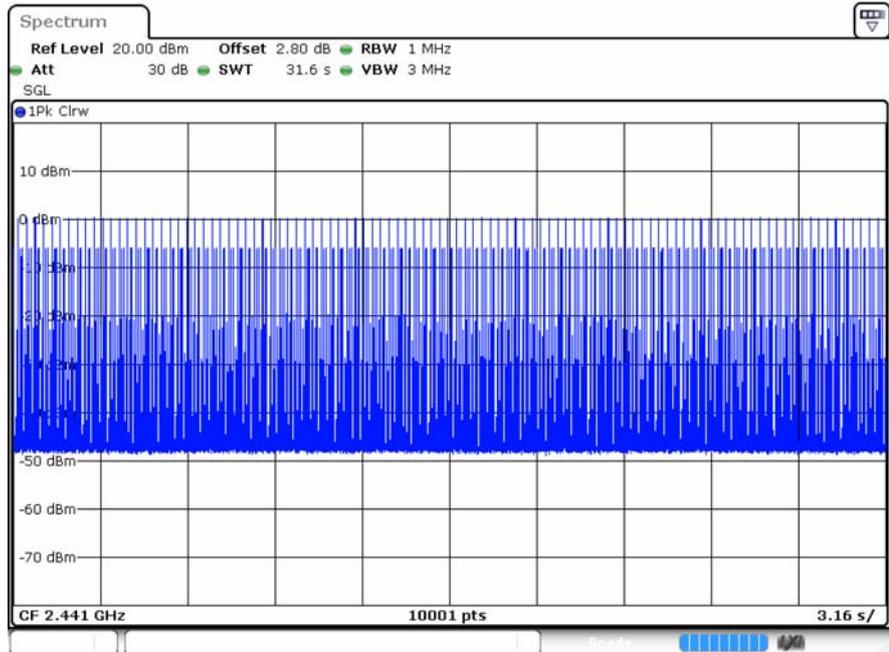
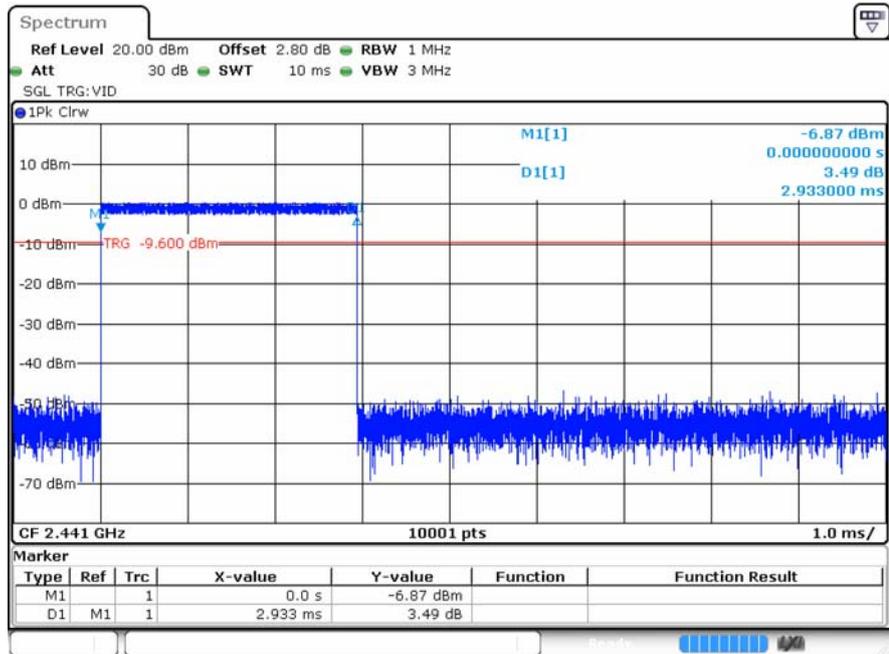
### 6.1 Test Result

| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[ms] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|----------------|-----------|---------|
| GFSK          | DH5    | MCH     | 2.929                      | 104                   | 304.616        | 0.4       | Pass    |
| $\pi/4$ DQPSK | 2DH5   | MCH     | 2.933                      | 102                   | 299.166        | 0.4       | Pass    |
| 8DPSK         | 3DH5   | MCH     | 2.932                      | 103                   | 301.996        | 0.4       | Pass    |

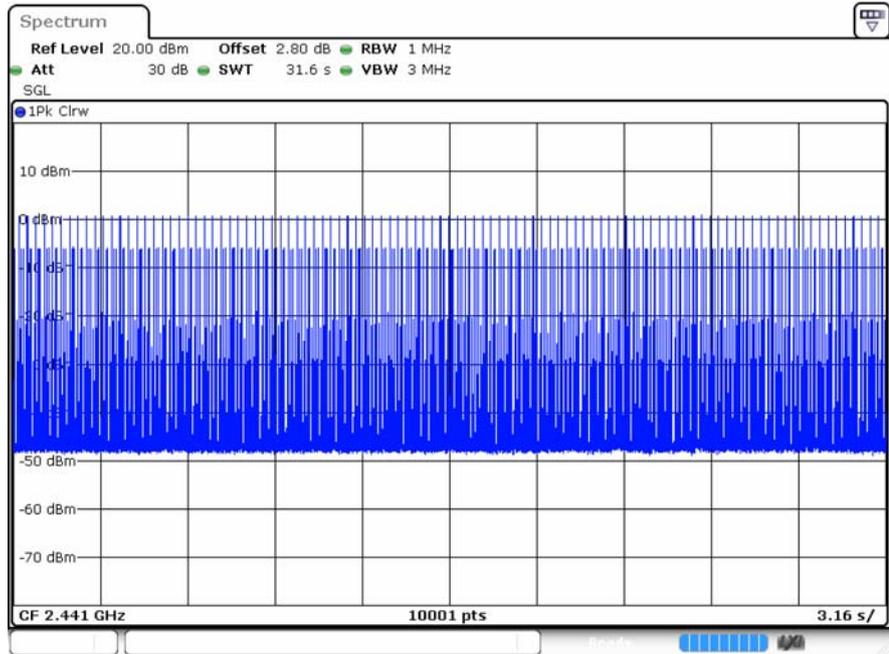
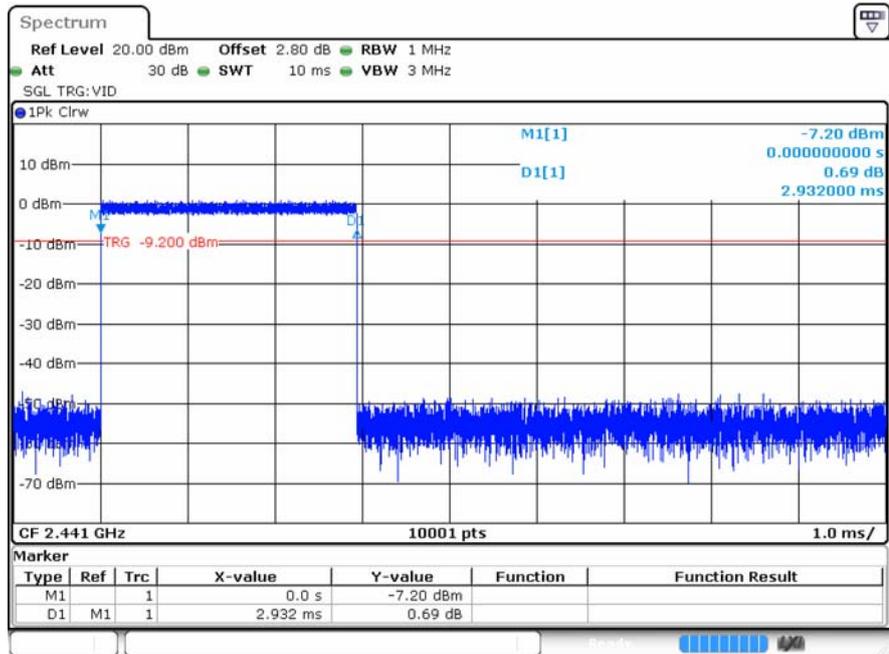
## 6.2 Test Graphs



$\pi/4$ DQPSK  
\_2DH5/MCH



8DPSK\_3DH5/MCH

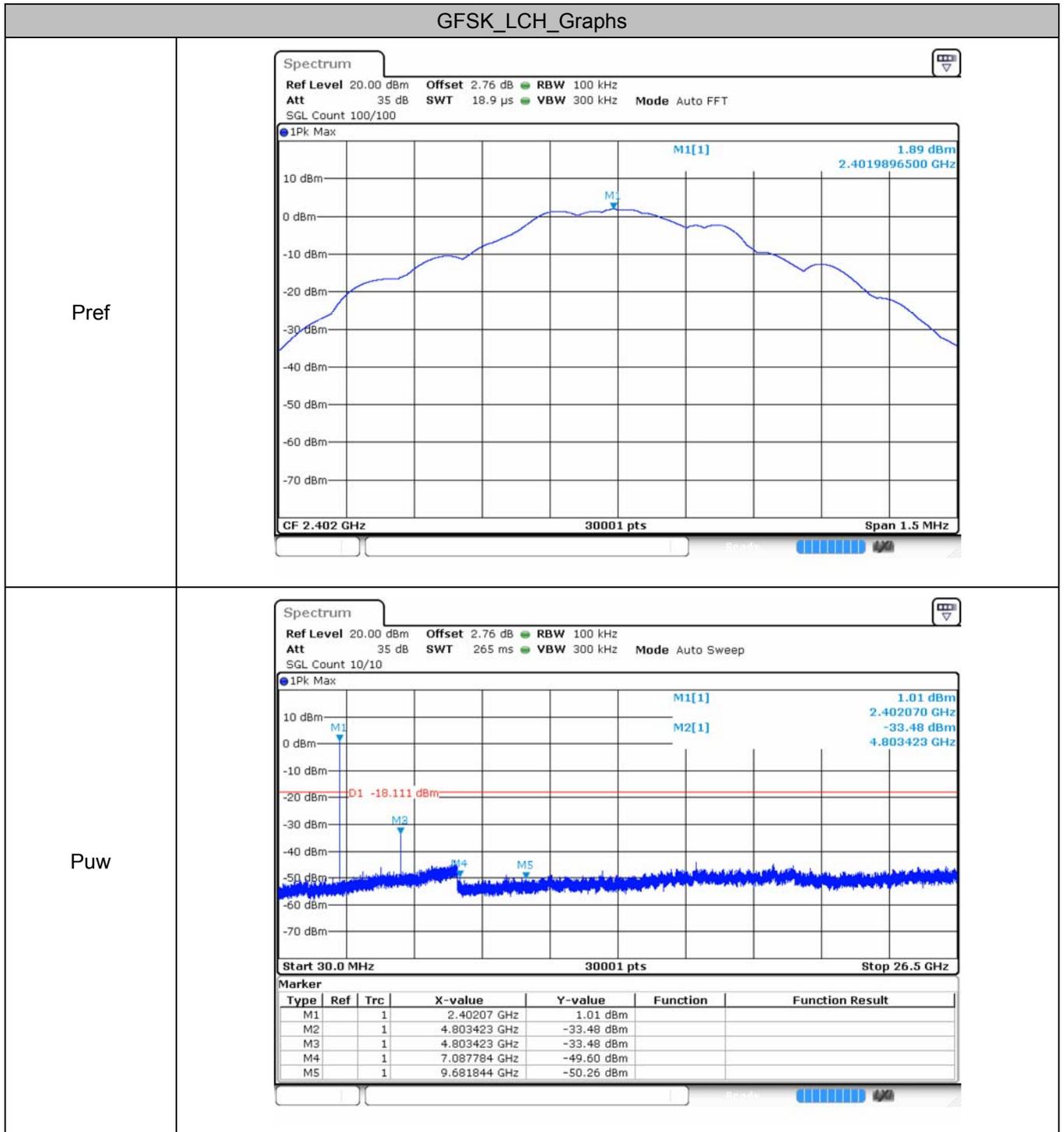


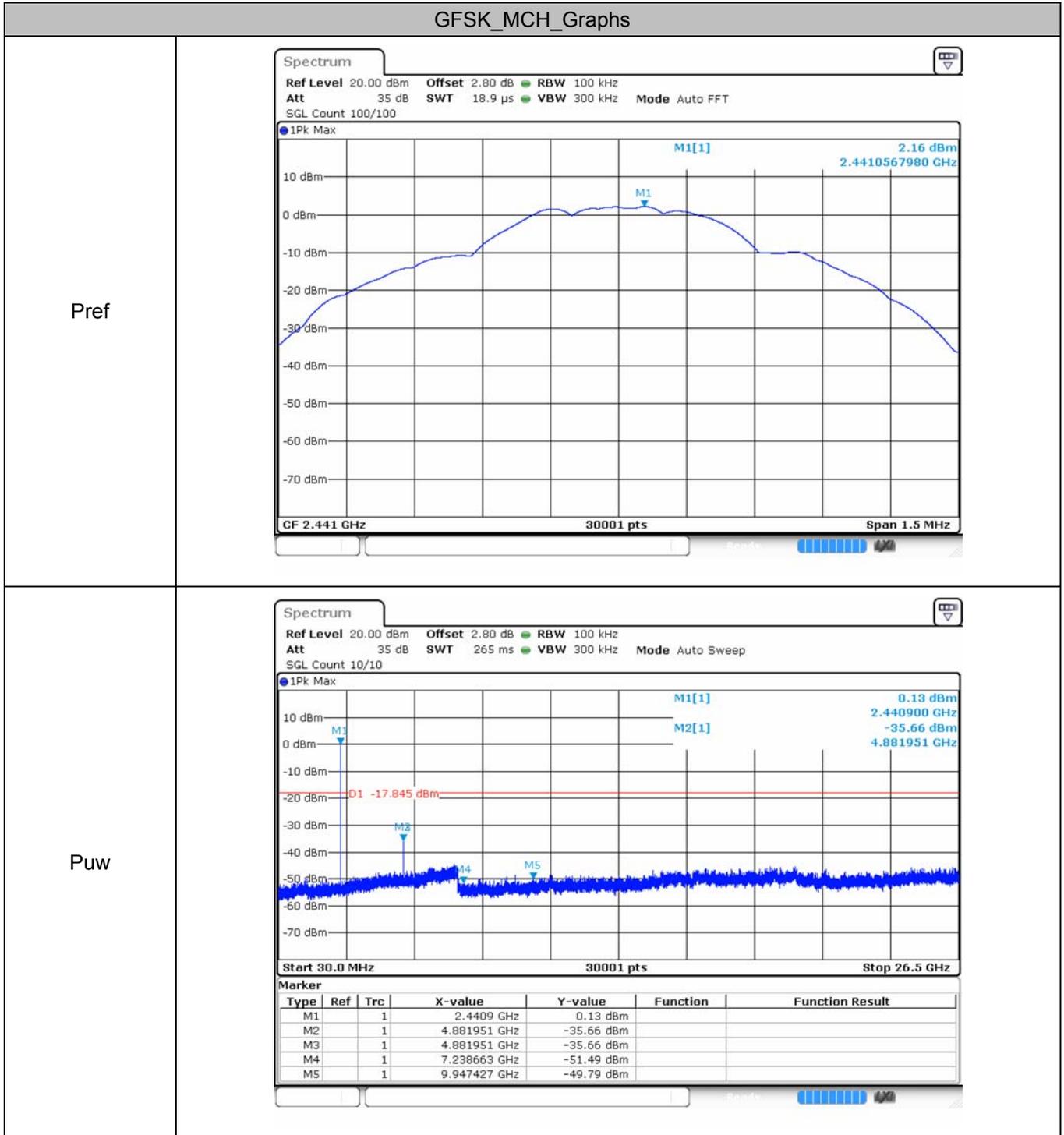
## 7 RF Conducted Spurious Emissions

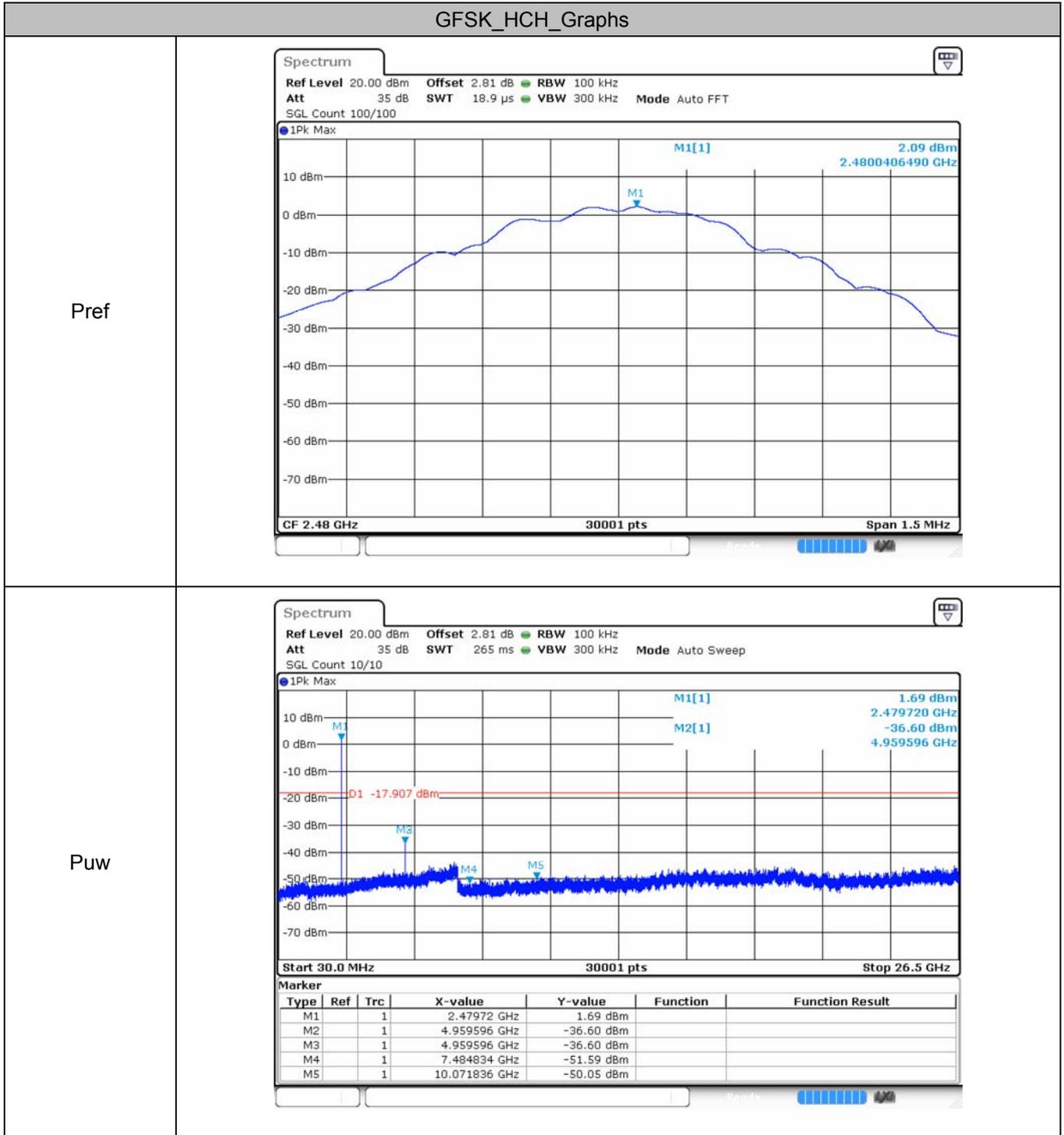
### 7.1 Test Result

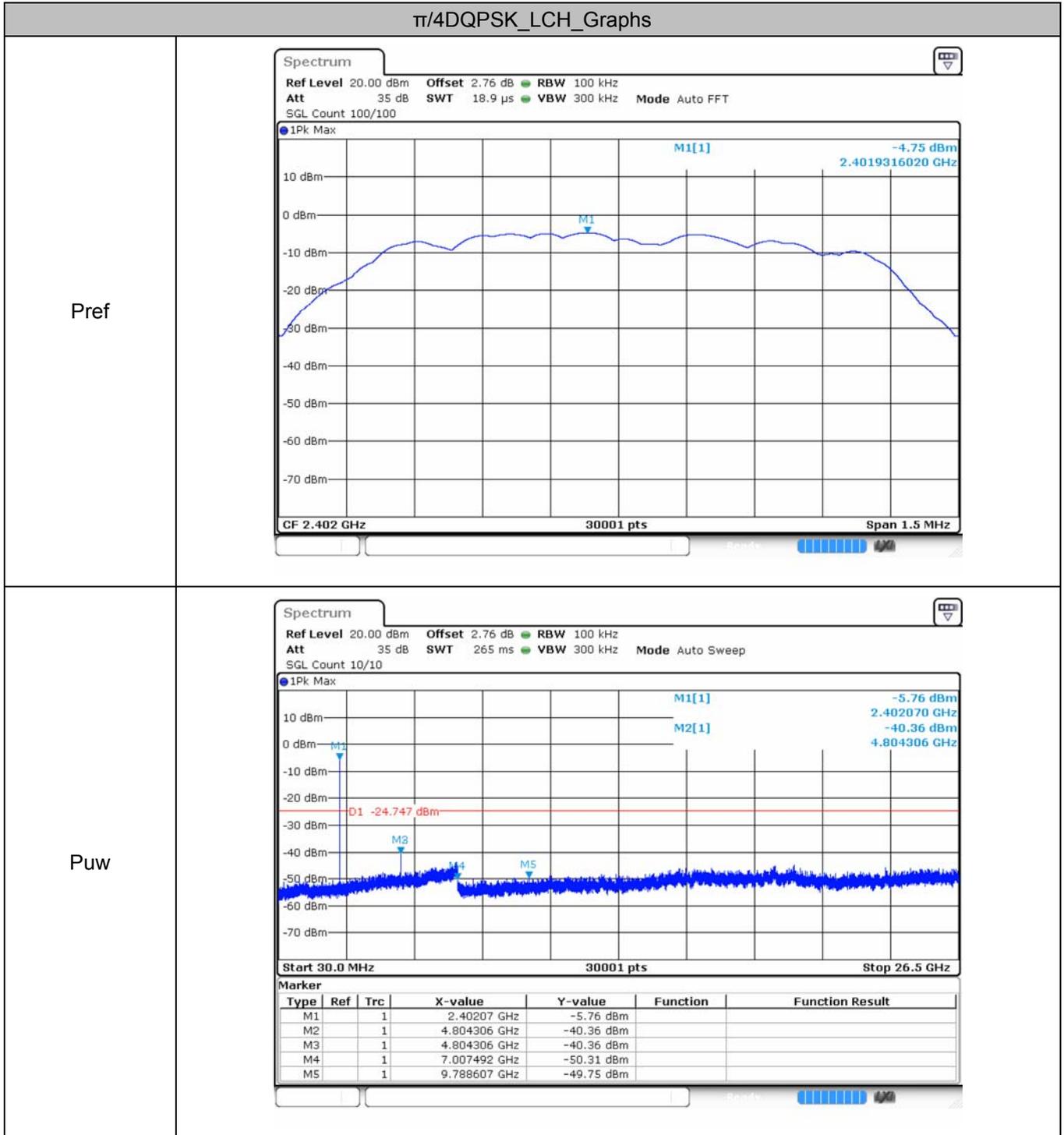
| Mode          | Channel | Max. Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|------------------|-------------|---------|
| GFSK          | LCH     | -35.36           | -20         | Pass    |
|               | MCH     | -37.82           | -20         | Pass    |
|               | HCH     | -38.69           | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | -35.61           | -20         | Pass    |
|               | MCH     | -40.51           | -20         | Pass    |
|               | HCH     | -38.27           | -20         | Pass    |
| 8DPSK         | LCH     | -35.02           | -20         | Pass    |
|               | MCH     | -38.85           | -20         | Pass    |
|               | HCH     | -39.32           | -20         | Pass    |

## 7.2 Test Graphs



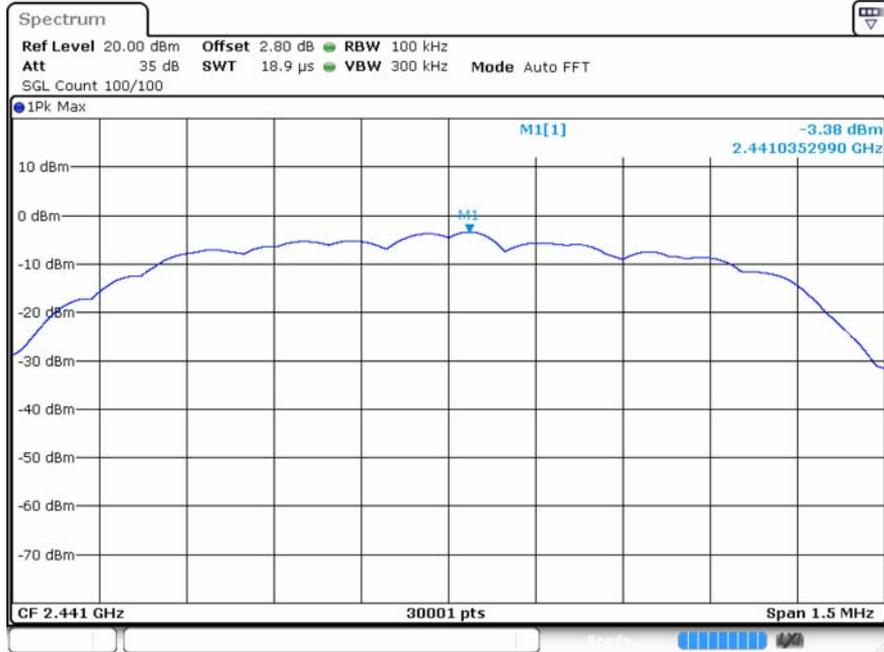




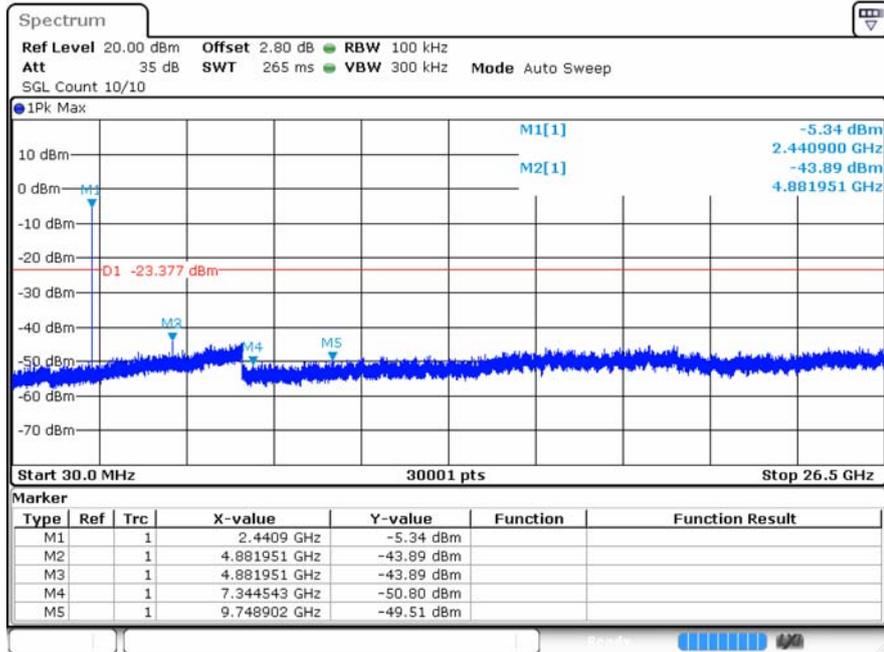


$\pi/4$ DQPSK\_MCH\_Graphs

Pref

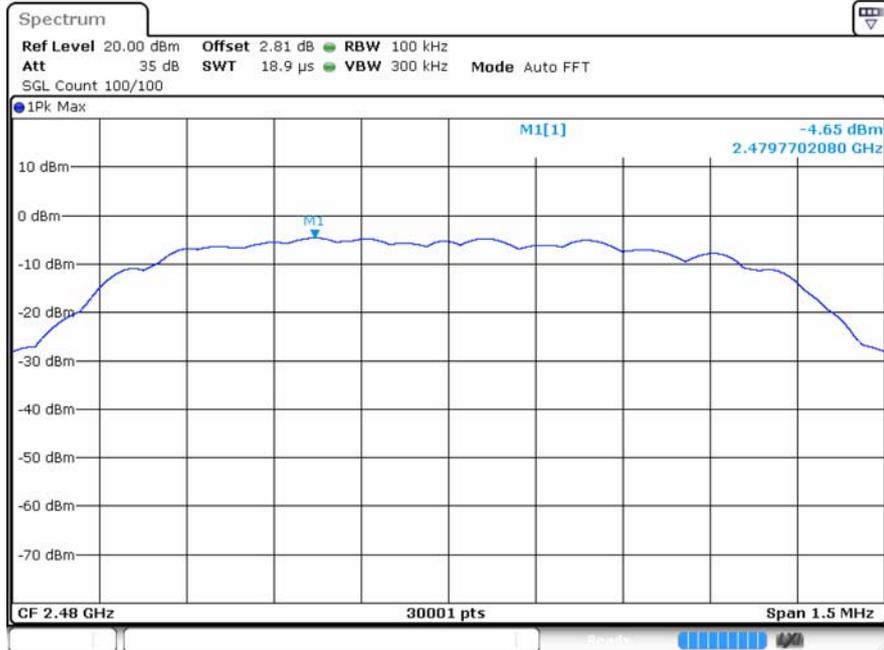


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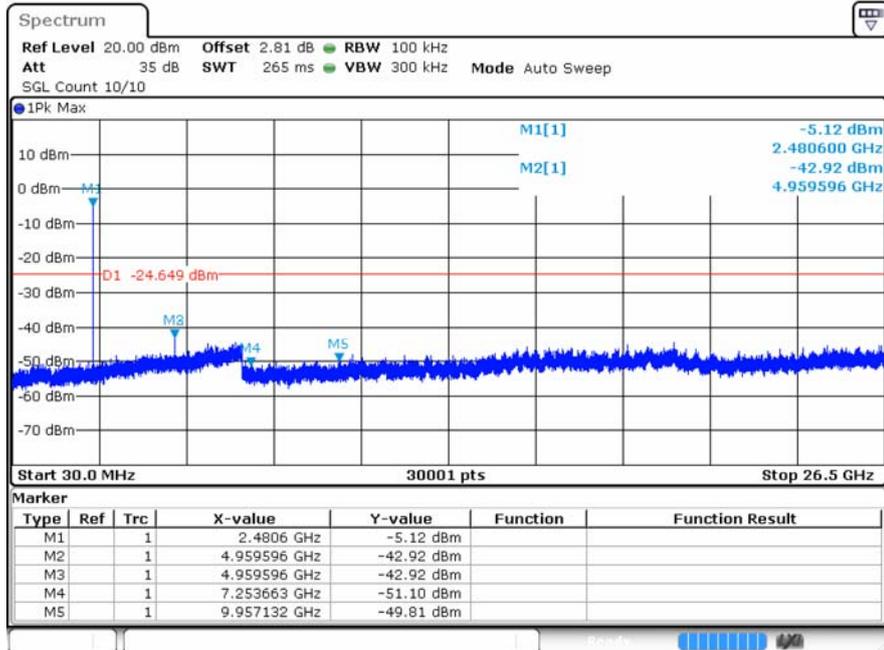


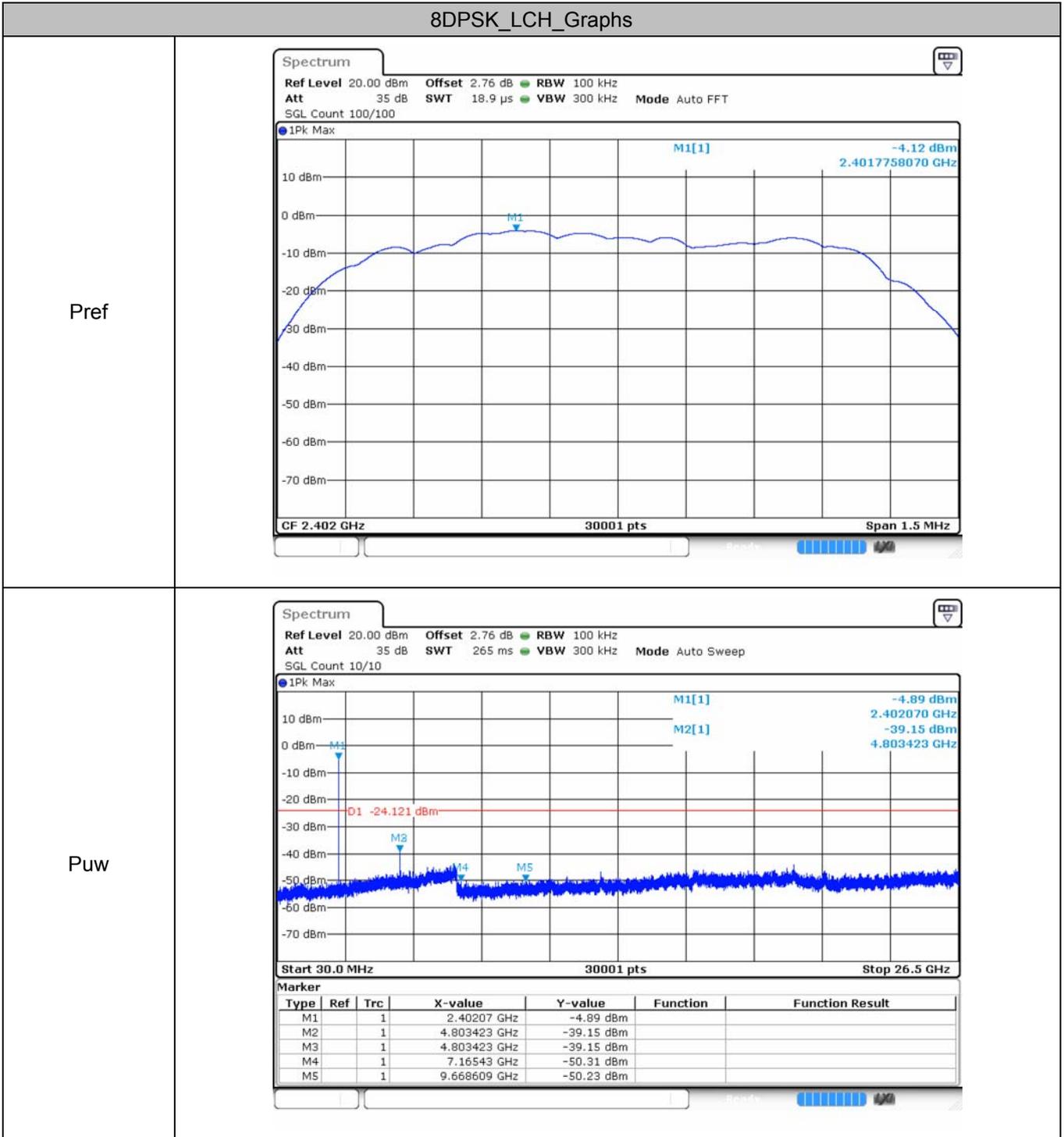
$\pi/4$ DQPSK\_HCH\_Graphs

Pref



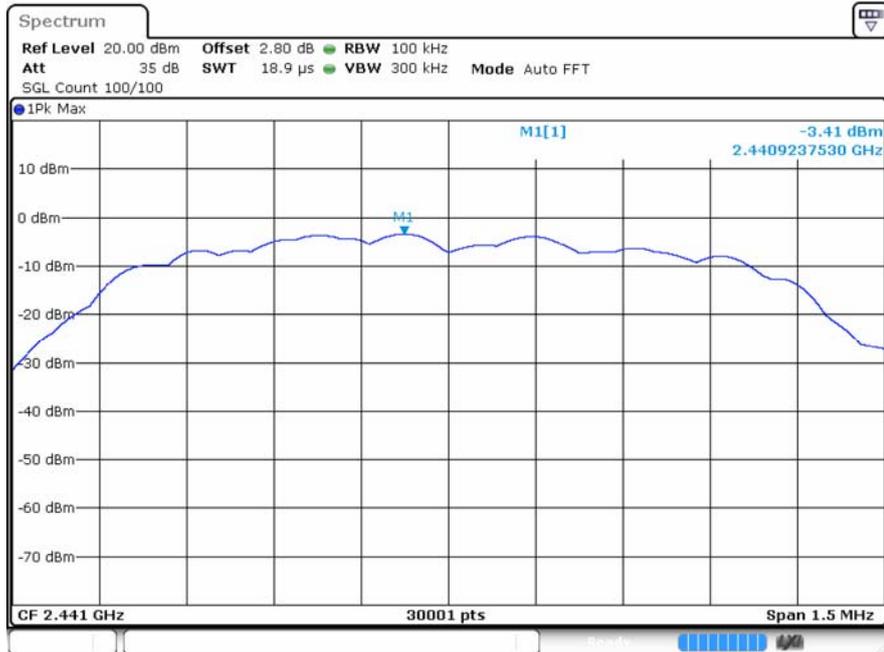
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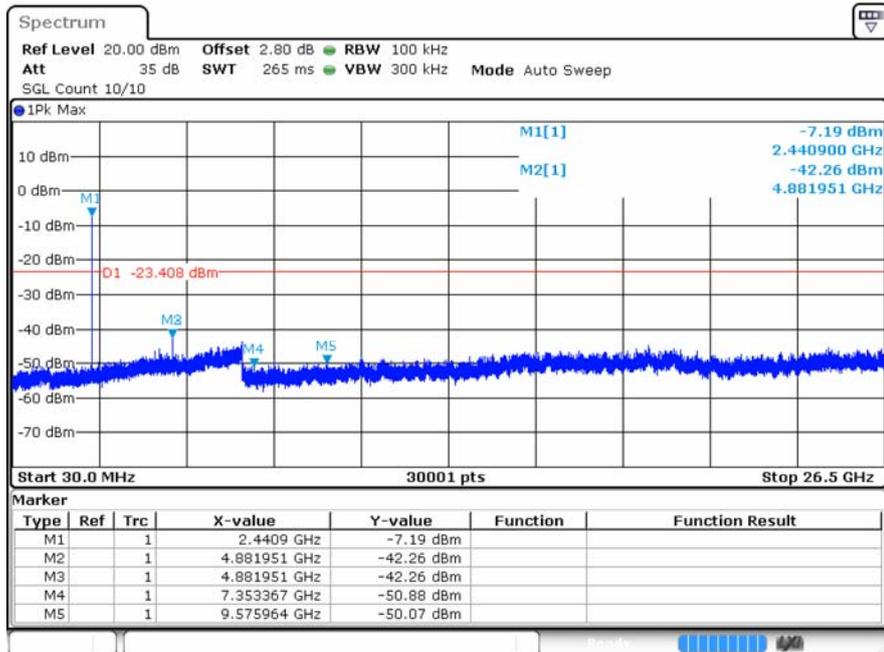


8DPSK\_MCH\_Graphs

Pref



Puw

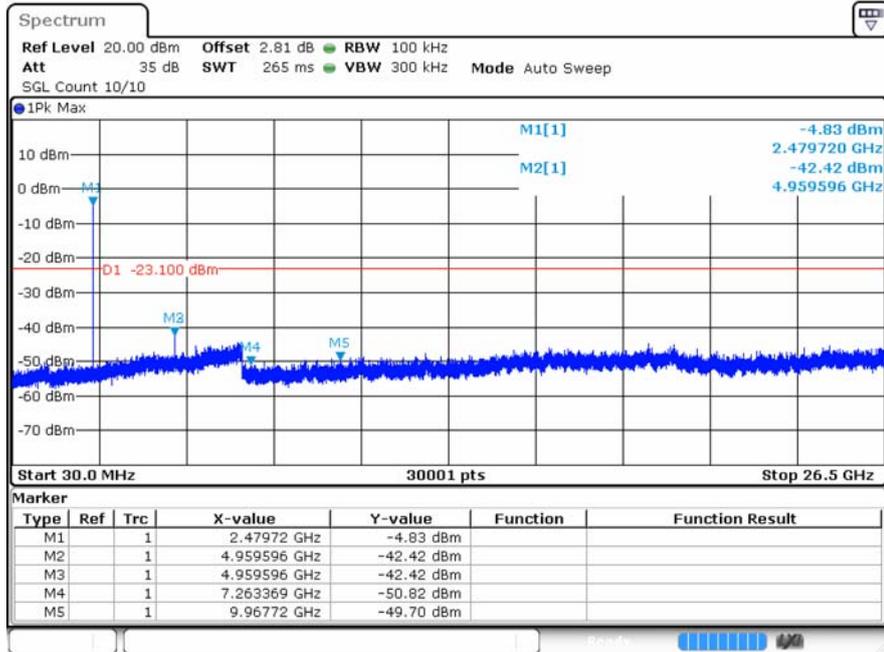


8DPSK\_HCH\_Graphs

Pref



Puw

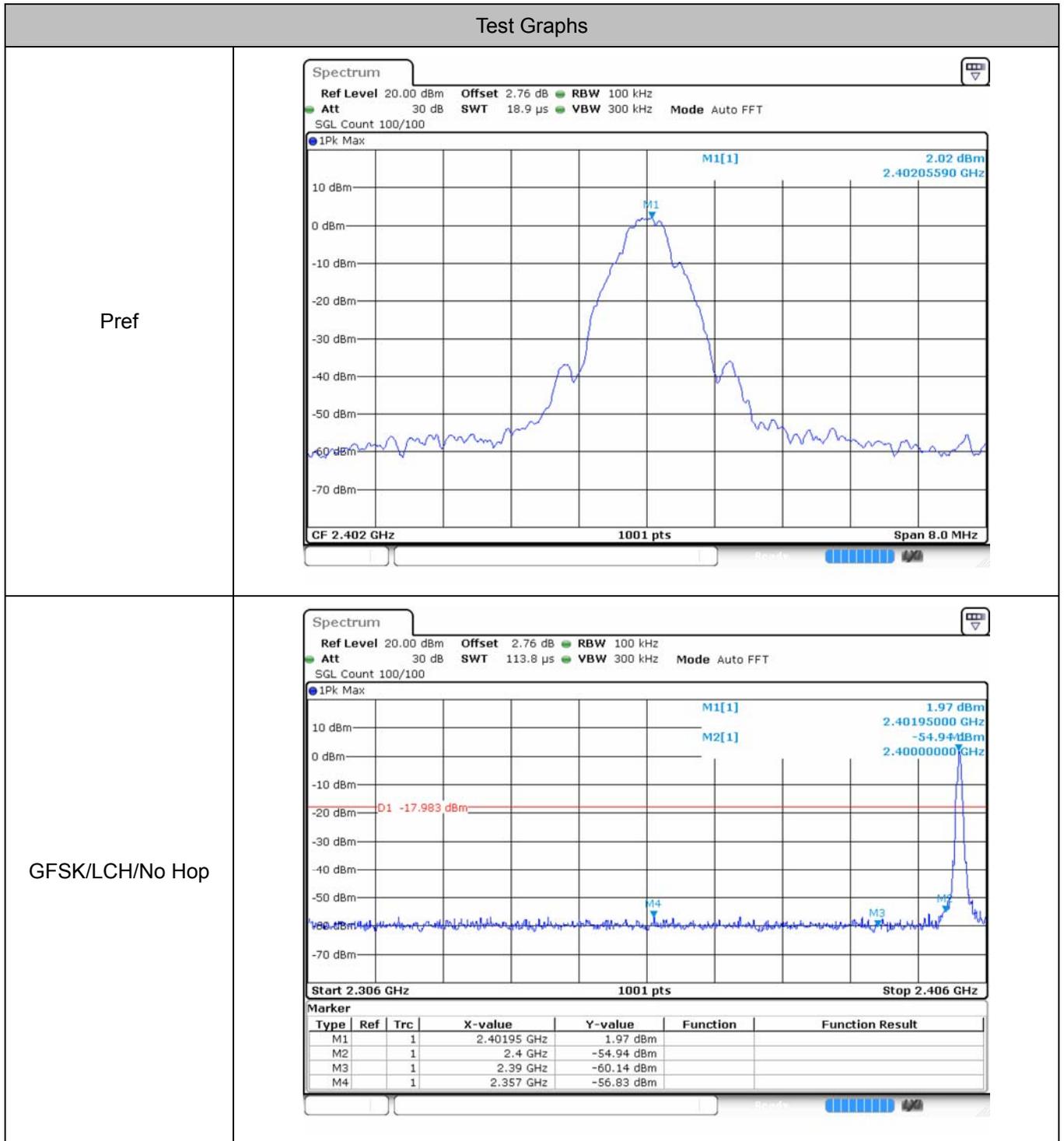


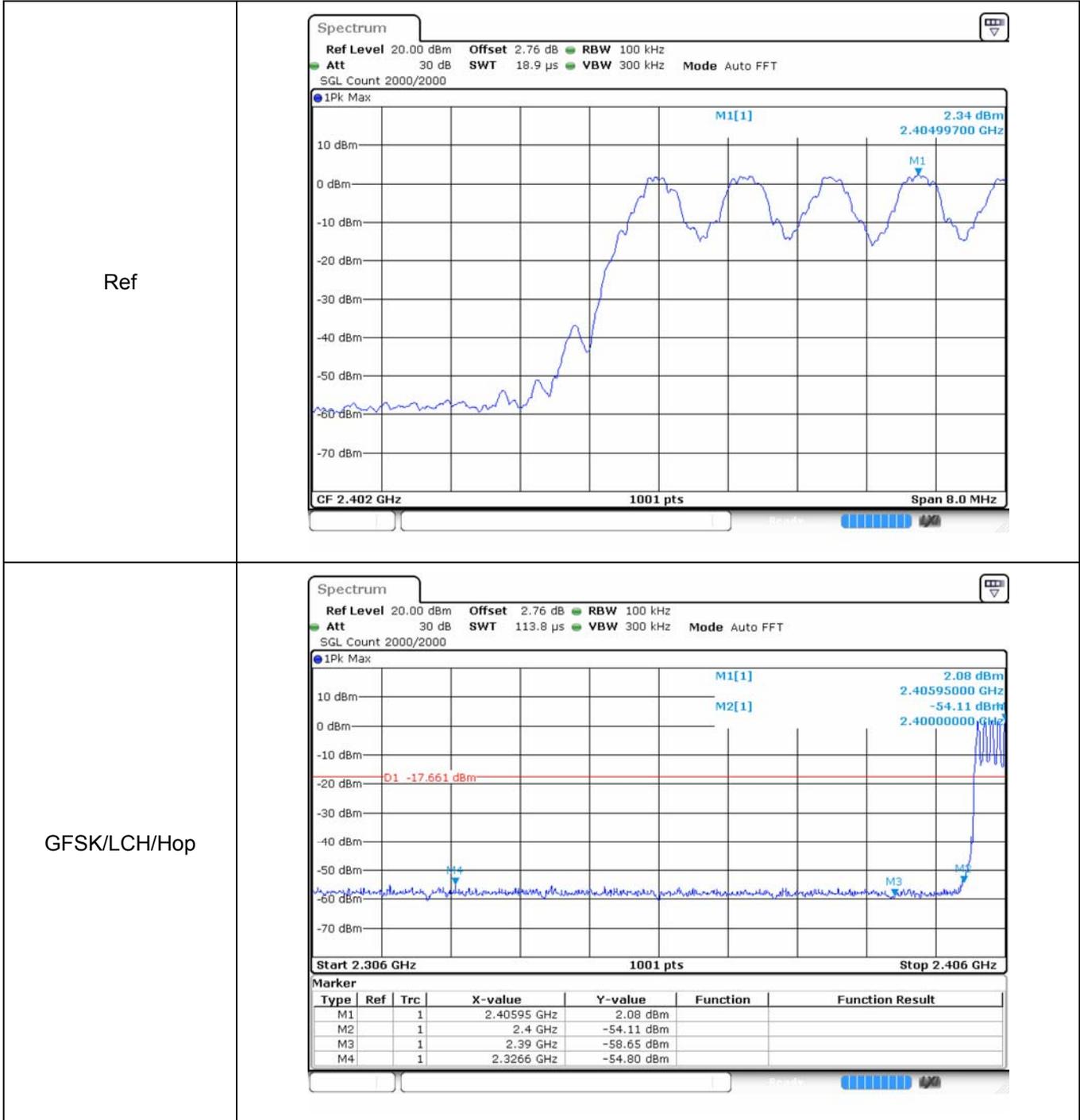
## 8 Band-edge for RF Conducted Emissions

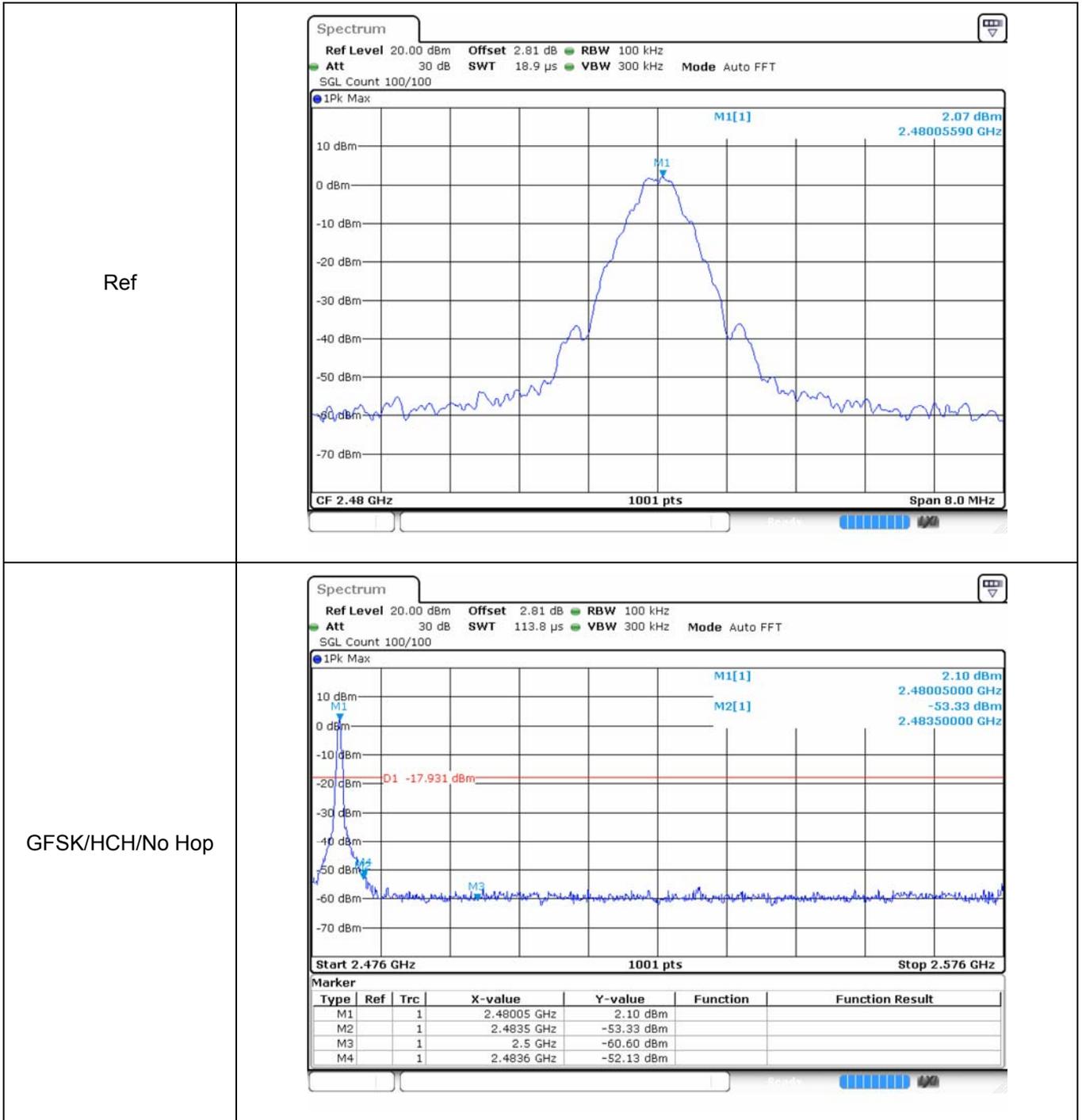
### 8.1 Test Result

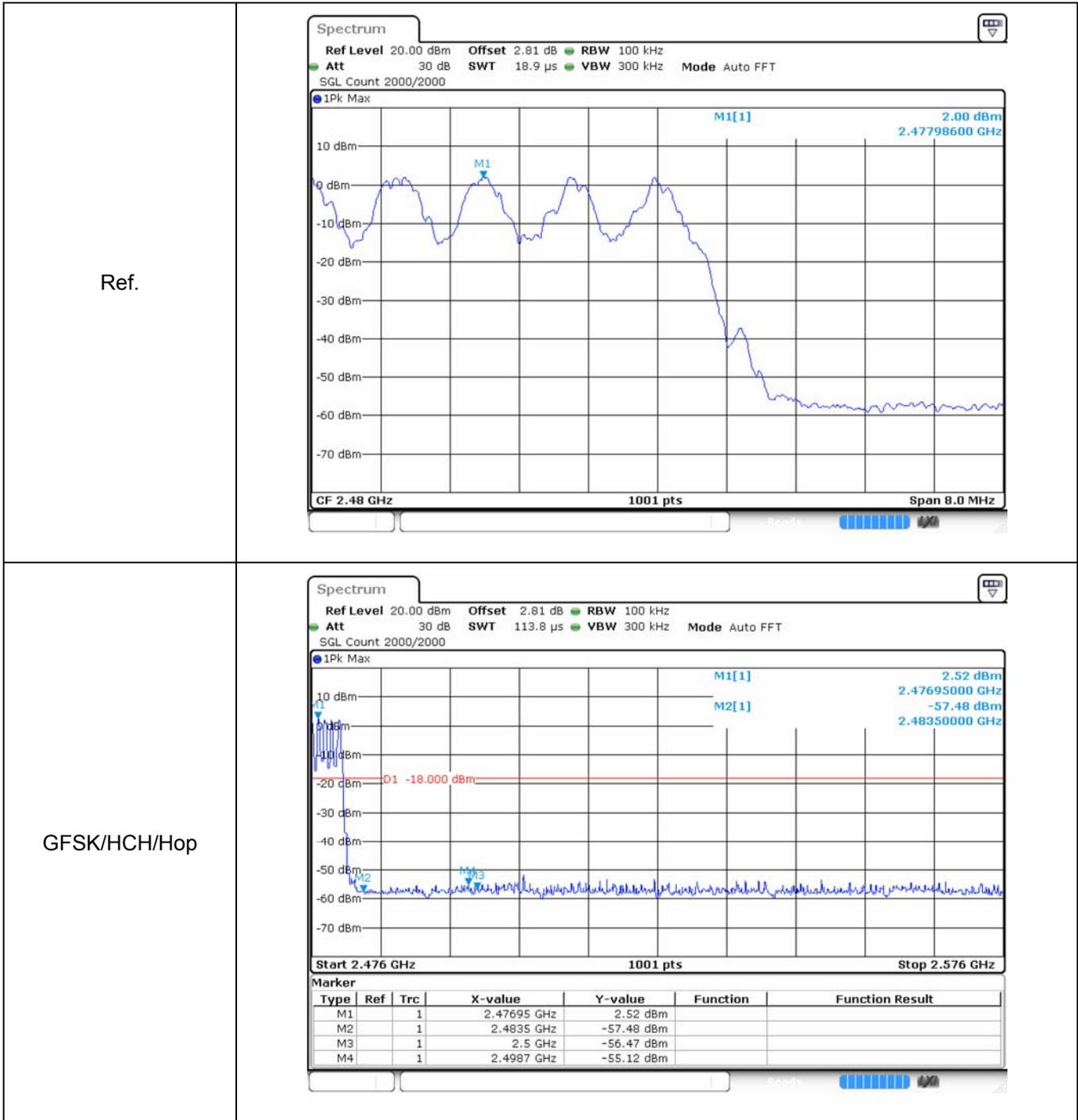
| Mode          | Channel | Carrier Frequency [MHz] | Frequency Hopping | Max Spurious Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|-------------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | Off               | -58.84                   | -20         | Pass    |
|               |         |                         | On                | -57.13                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -54.2                    | -20         | Pass    |
|               |         |                         | On                | -57.11                   | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | 2402                    | Off               | -52.28                   | -20         | Pass    |
|               |         |                         | On                | -49.88                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -52.38                   | -20         | Pass    |
|               |         |                         | On                | -50.98                   | -20         | Pass    |
| 8DPSK         | LCH     | 2402                    | Off               | -52.93                   | -20         | Pass    |
|               |         |                         | On                | -51.87                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -53.87                   | -20         | Pass    |
|               |         |                         | On                | -52.36                   | -20         | Pass    |

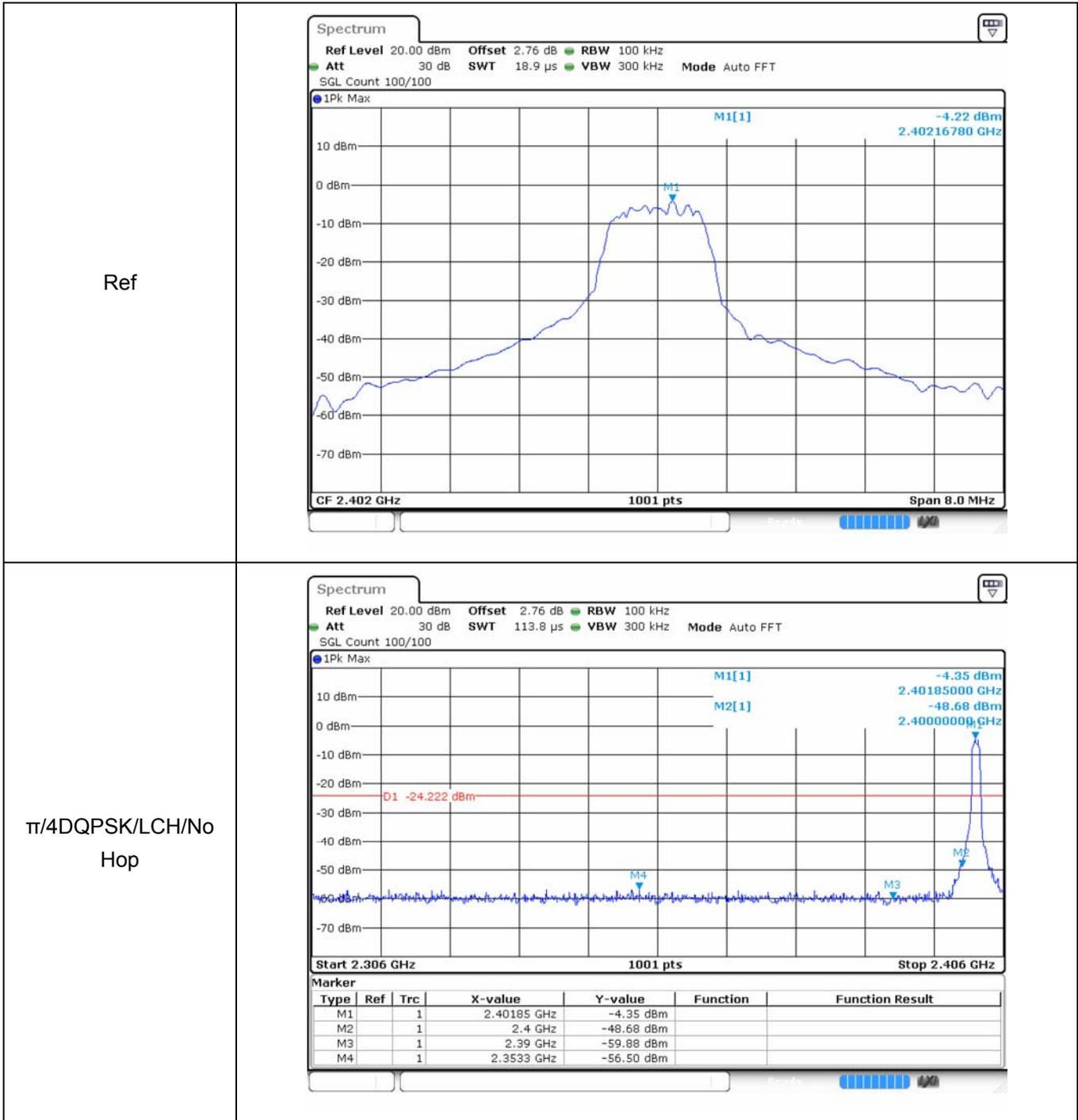
## 8.2 Test Graphs

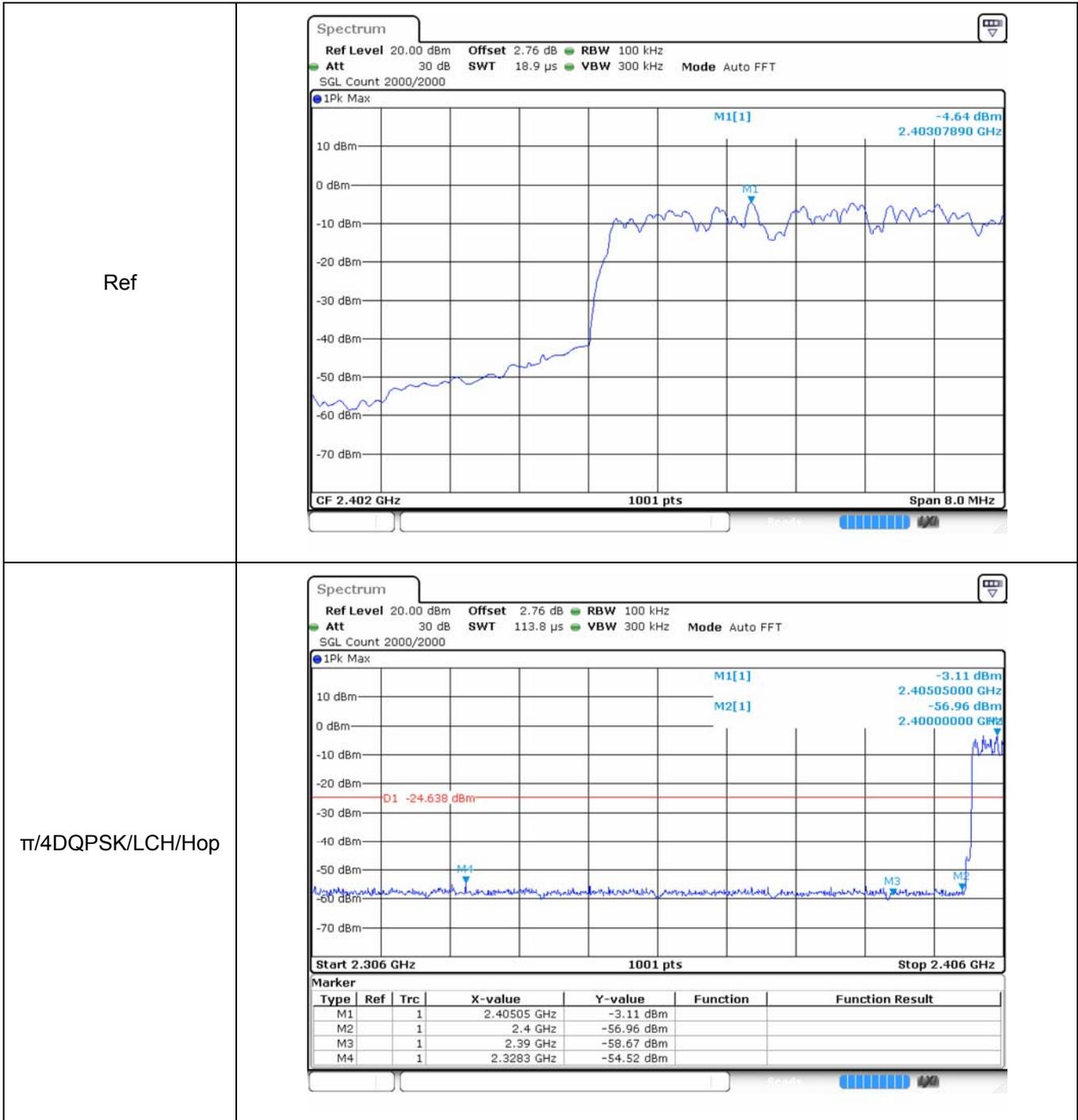


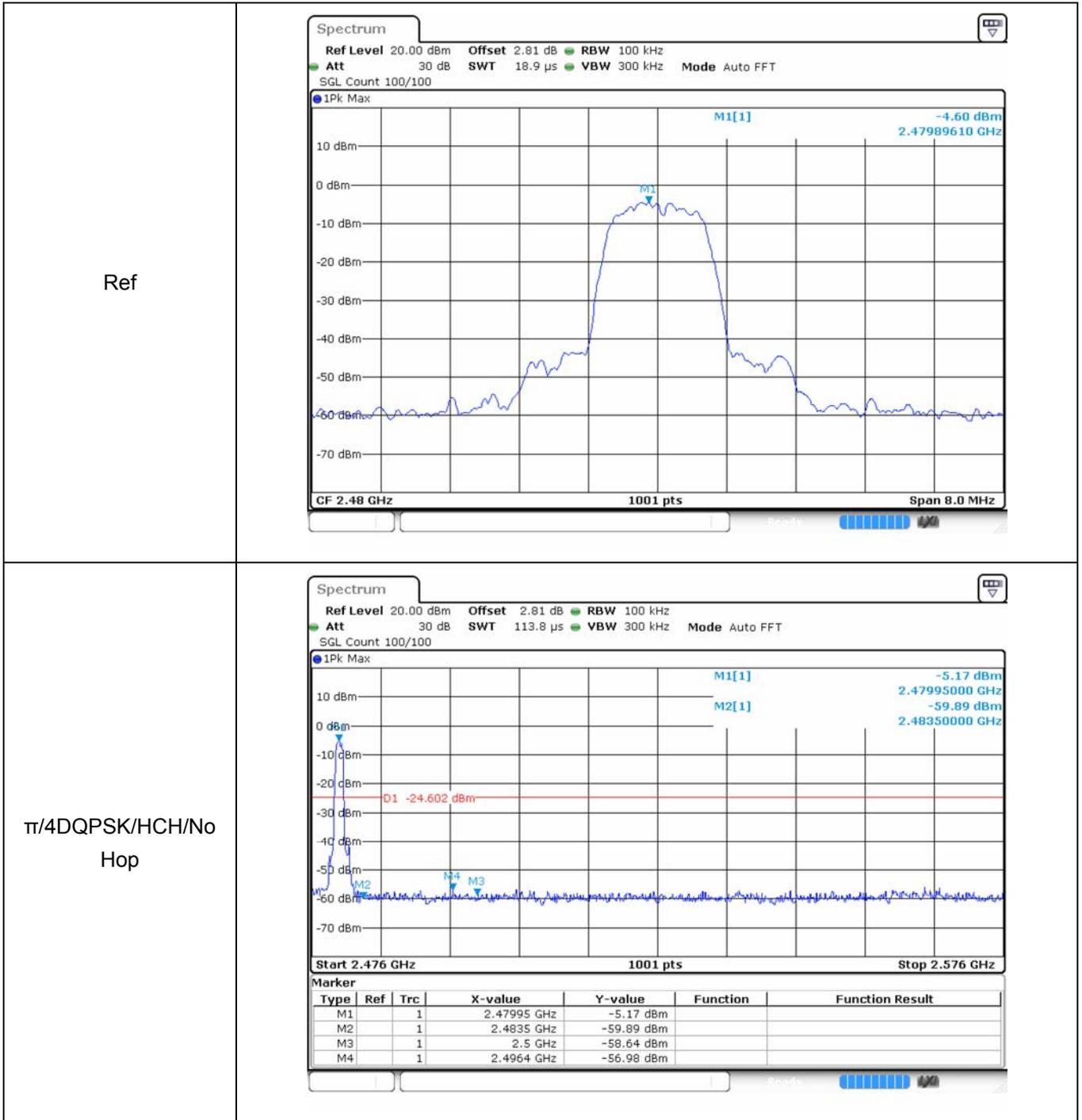


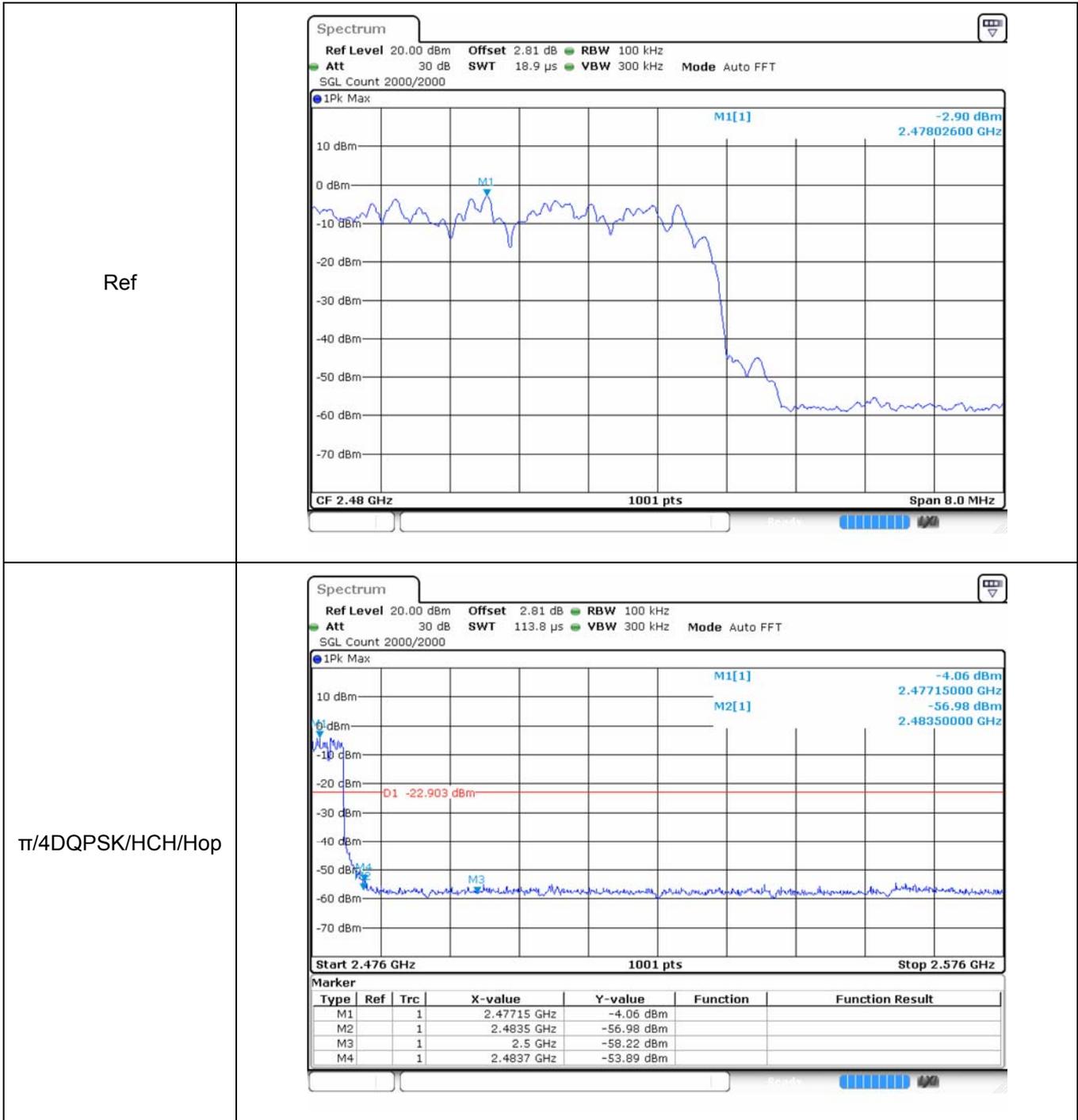


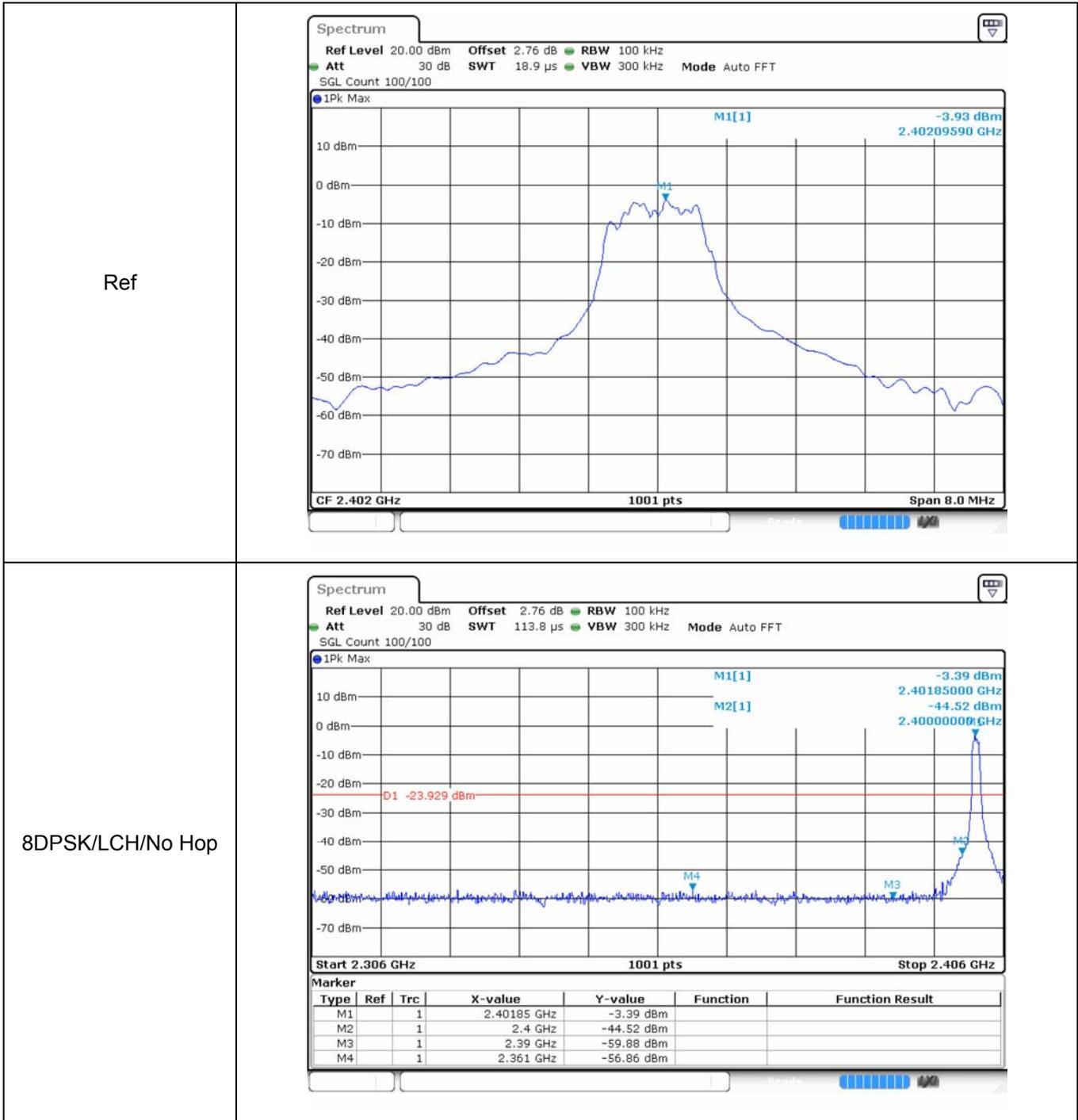


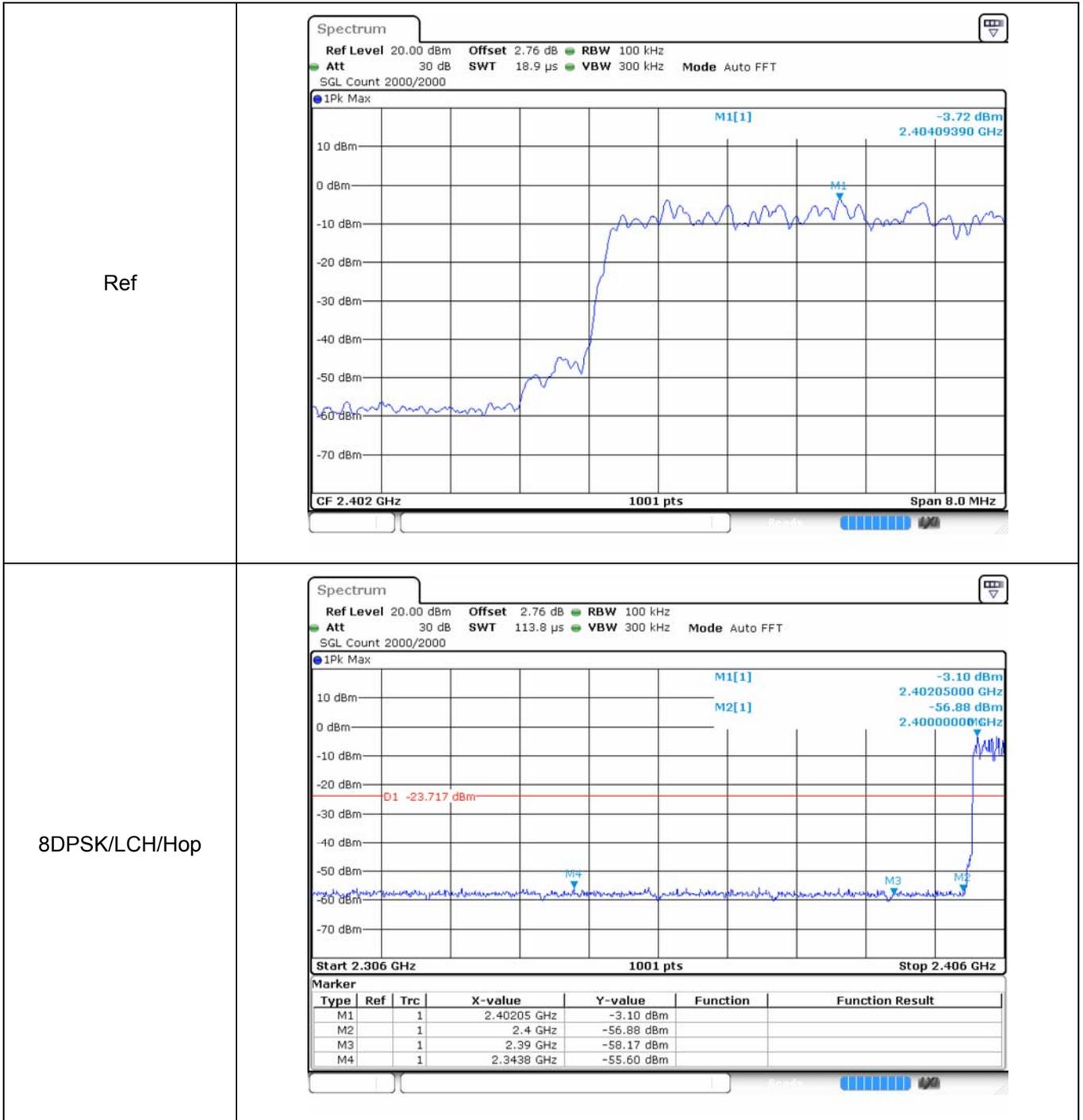


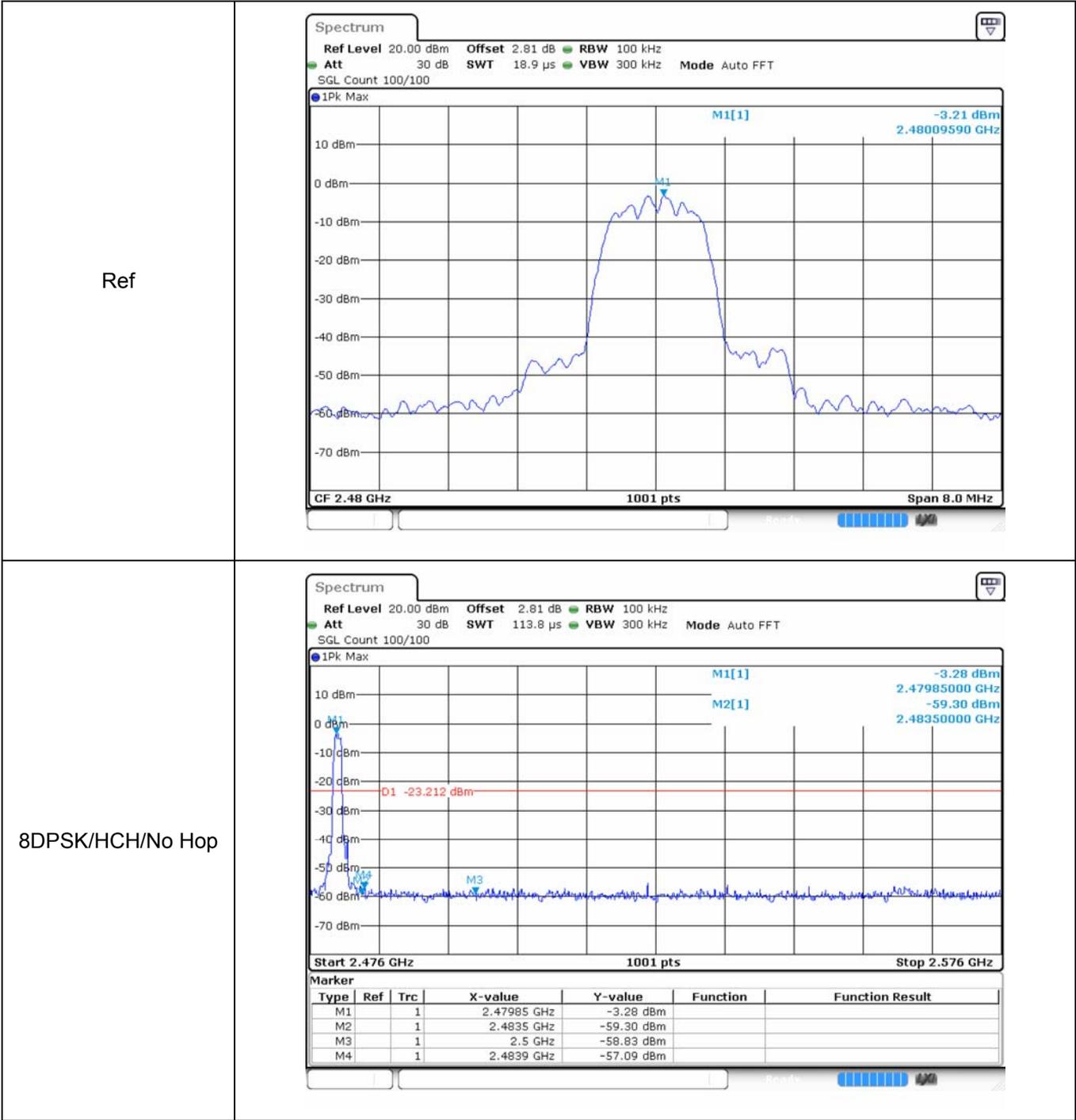


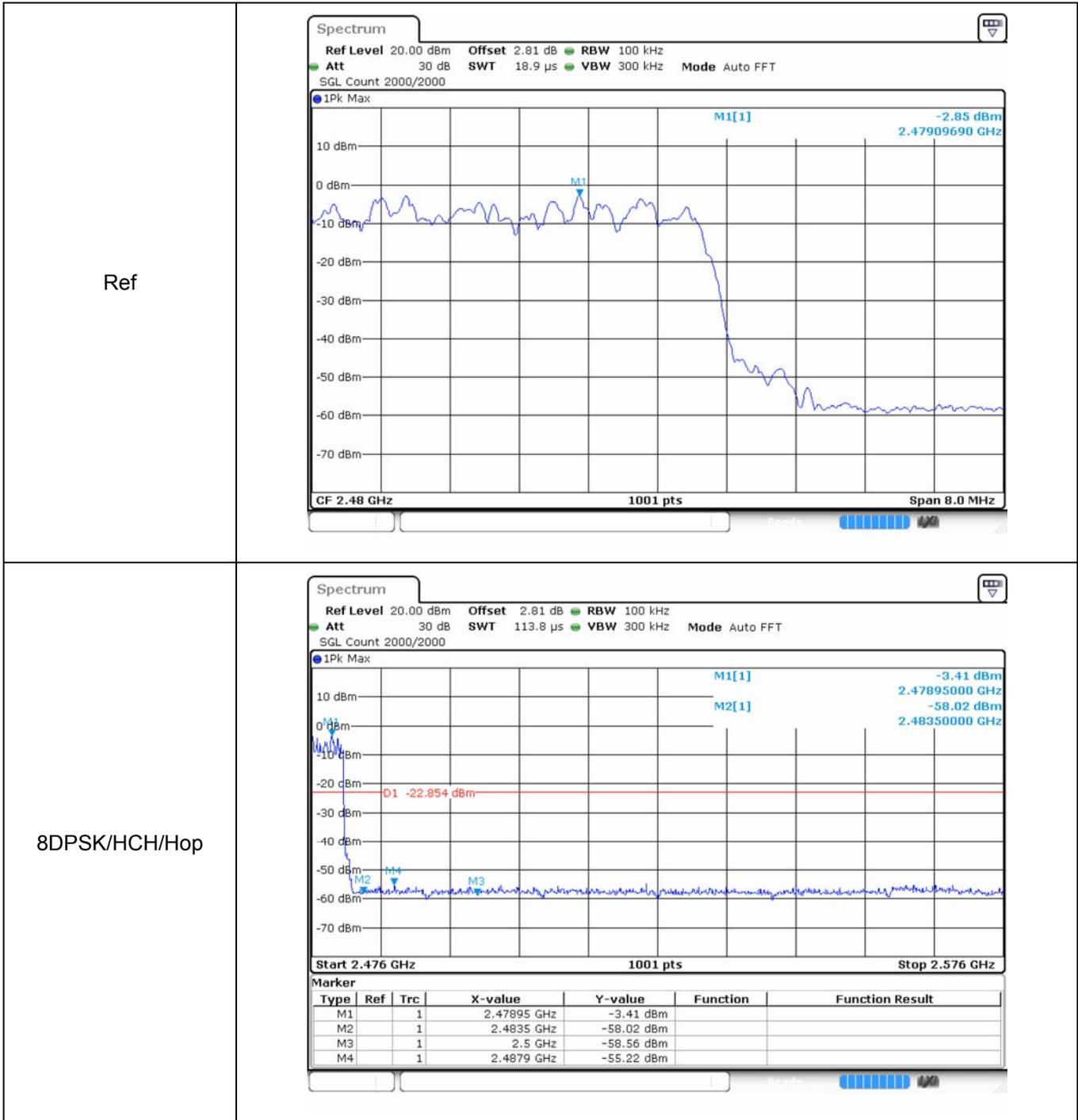












## 9 Restrict-band band-edge measurements

### 9.1 Test Result

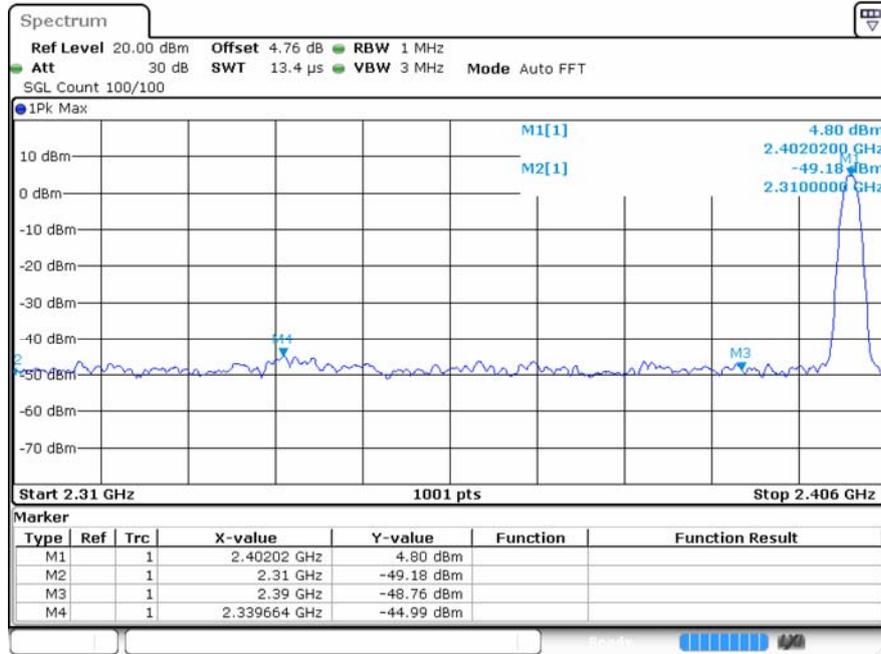
| Test Mode     | Hopping | Freq.    | Power [dBm] | Gain | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|----------|-------------|------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0   | -49.18      | 2    | 48.08      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -56.89      | 2    | 40.37      | AV       | 54             | Pass    |
|               | Off     | 2339.664 | -44.98      | 2    | 52.28      | PEAK     | 74             | Pass    |
|               | Off     | 2338.224 | -54.05      | 2    | 43.21      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -48.76      | 2    | 48.5       | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -56.71      | 2    | 40.55      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -26.1       | 2    | 71.16      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -54.67      | 2    | 42.59      | AV       | 54             | Pass    |
|               | Off     | 2483.512 | -26.1       | 2    | 71.16      | PEAK     | 74             | Pass    |
|               | Off     | 2483.512 | -54.67      | 2    | 42.59      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -48.43      | 2    | 48.83      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -56.46      | 2    | 40.8       | AV       | 54             | Pass    |
| $\pi/4$ DQPSK | Off     | 2310.0   | -47.83      | 2    | 49.43      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -56.45      | 2    | 40.81      | AV       | 54             | Pass    |
|               | Off     | 2340.816 | -45.29      | 2    | 51.97      | PEAK     | 74             | Pass    |
|               | Off     | 2338.128 | -54.48      | 2    | 42.78      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -48.33      | 2    | 48.93      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -56.92      | 2    | 40.34      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -48.31      | 2    | 48.95      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -55.44      | 2    | 41.82      | AV       | 54             | Pass    |
|               | Off     | 2484.136 | -45.91      | 2    | 51.35      | PEAK     | 74             | Pass    |
|               | Off     | 2483.536 | -55.43      | 2    | 41.83      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -48.19      | 2    | 49.07      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -56.1       | 2    | 41.16      | AV       | 54             | Pass    |
| 8DPSK         | Off     | 2310.0   | -48.93      | 2    | 48.33      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -56.39      | 2    | 40.87      | AV       | 54             | Pass    |
|               | Off     | 2344.176 | -44.77      | 2    | 52.49      | PEAK     | 74             | Pass    |
|               | Off     | 2338.32  | -54.64      | 2    | 42.62      | AV       | 54             | Pass    |



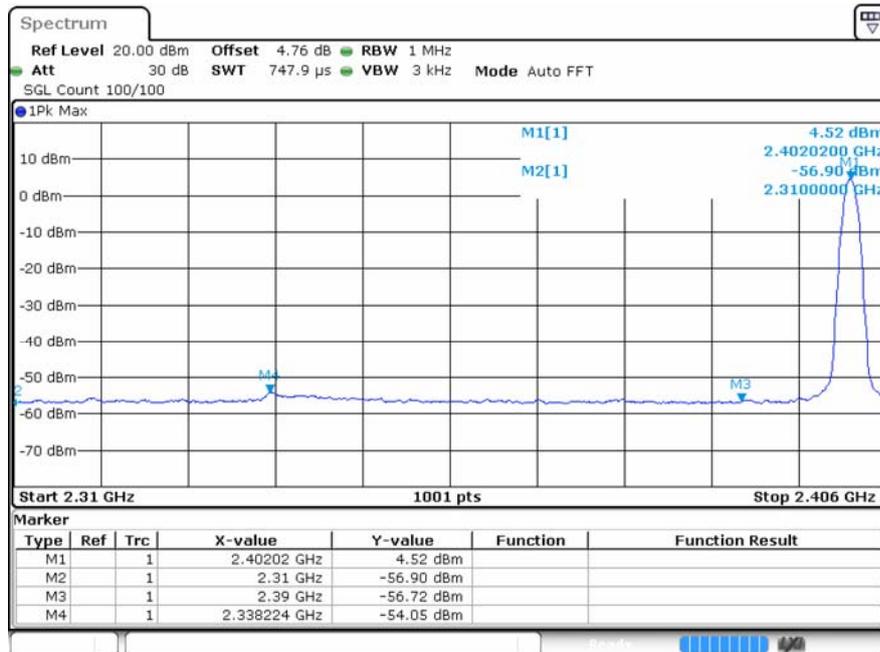
|     |          |        |   |       |      |    |      |
|-----|----------|--------|---|-------|------|----|------|
| Off | 2390.0   | -45.19 | 2 | 52.07 | PEAK | 74 | Pass |
| Off | 2390.0   | -56.59 | 2 | 40.67 | AV   | 54 | Pass |
| Off | 2483.5   | -46.72 | 2 | 50.54 | PEAK | 74 | Pass |
| Off | 2483.5   | -55.09 | 2 | 42.17 | AV   | 54 | Pass |
| Off | 2498.296 | -45.79 | 2 | 51.47 | PEAK | 74 | Pass |
| Off | 2483.56  | -55.05 | 2 | 42.21 | AV   | 54 | Pass |
| Off | 2500.0   | -47.22 | 2 | 50.04 | PEAK | 74 | Pass |
| Off | 2500.0   | -56.19 | 2 | 41.07 | AV   | 54 | Pass |

## 9.2 Test Graphs

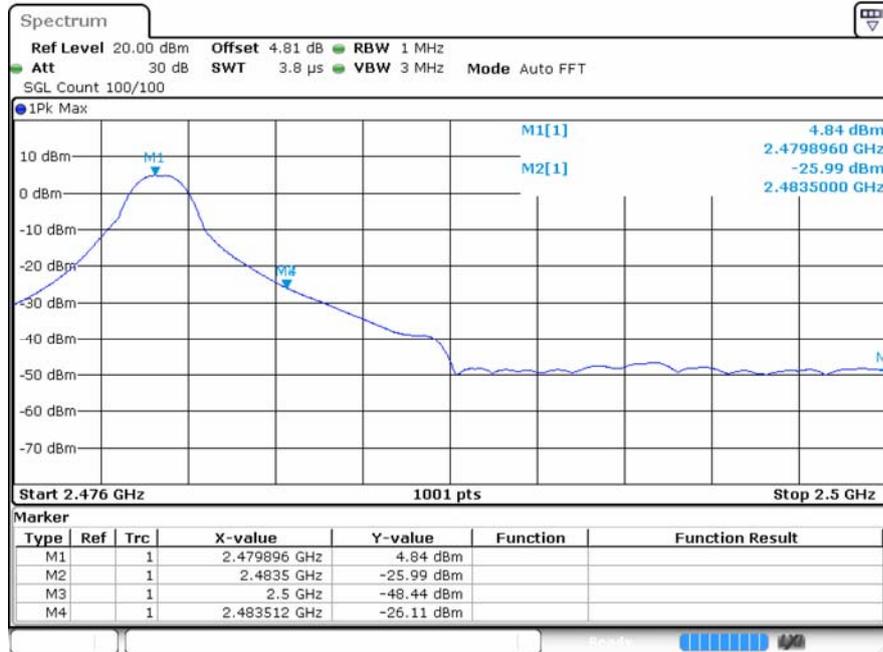
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



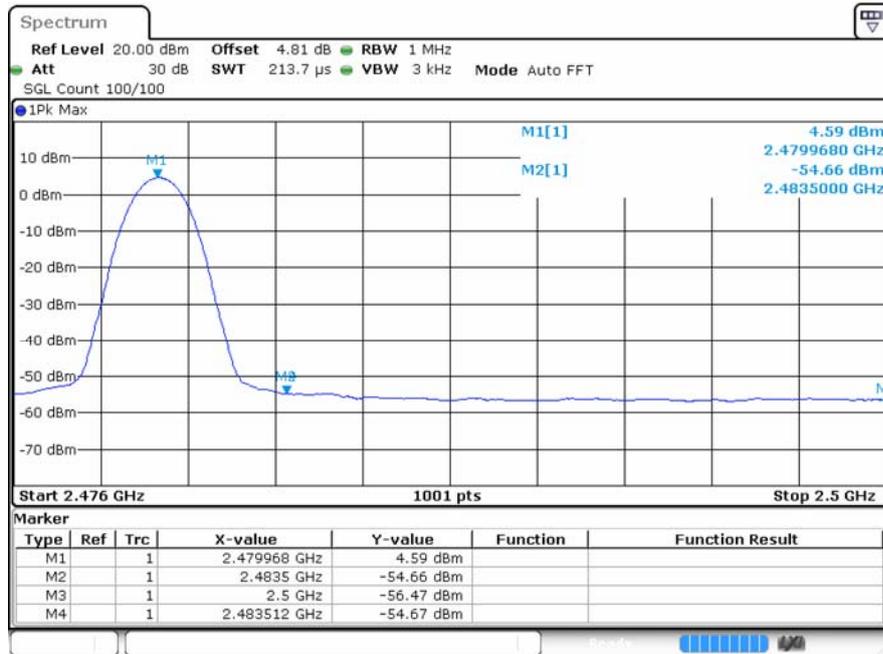
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)



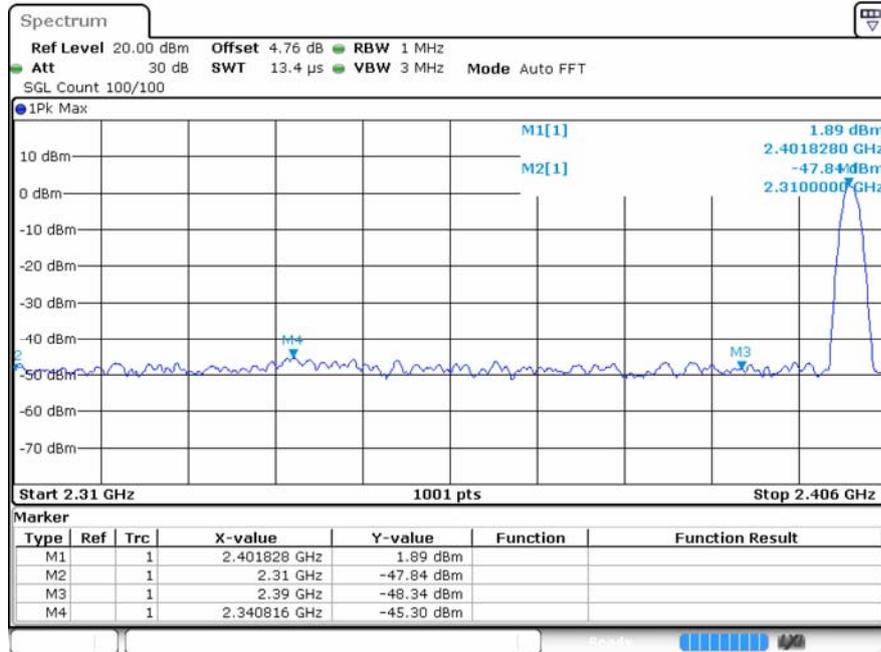
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (High Channel)



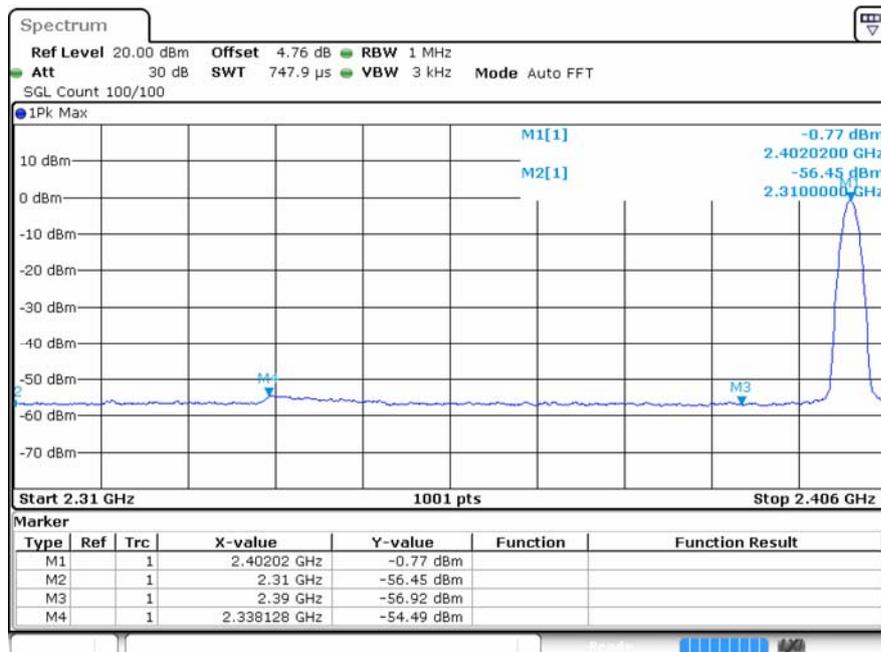
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)



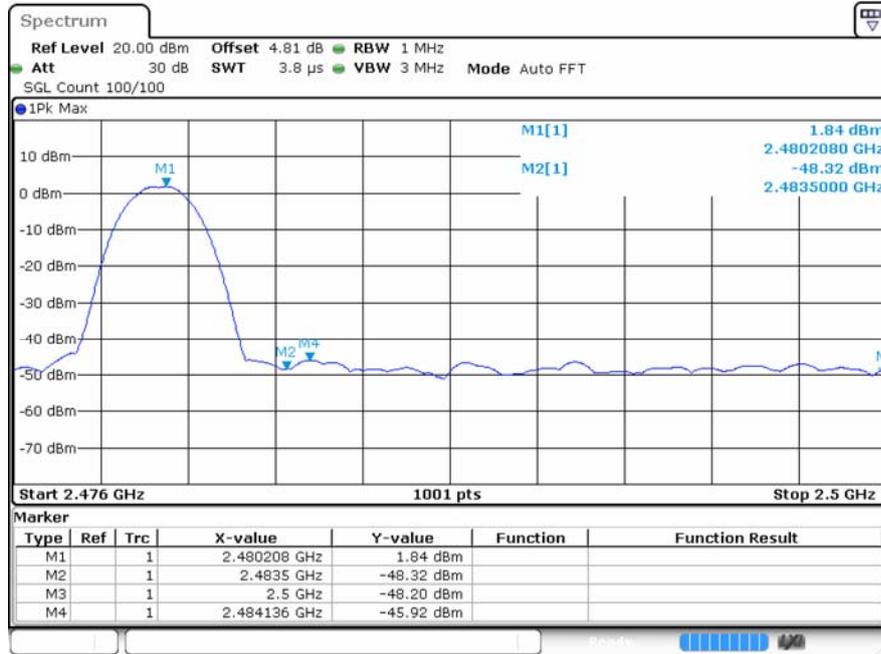
Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (Low Channel)



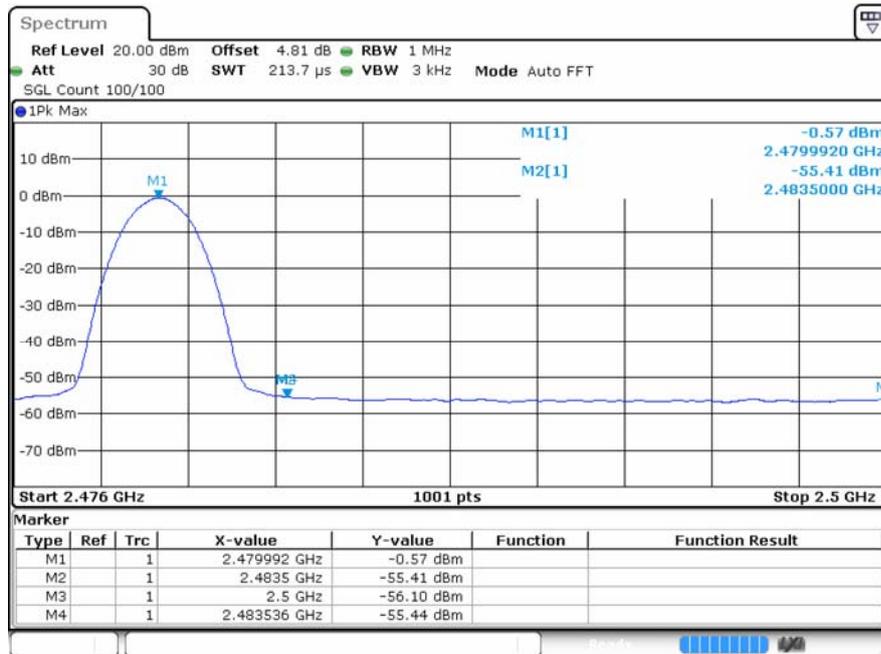
Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (Low Channel)



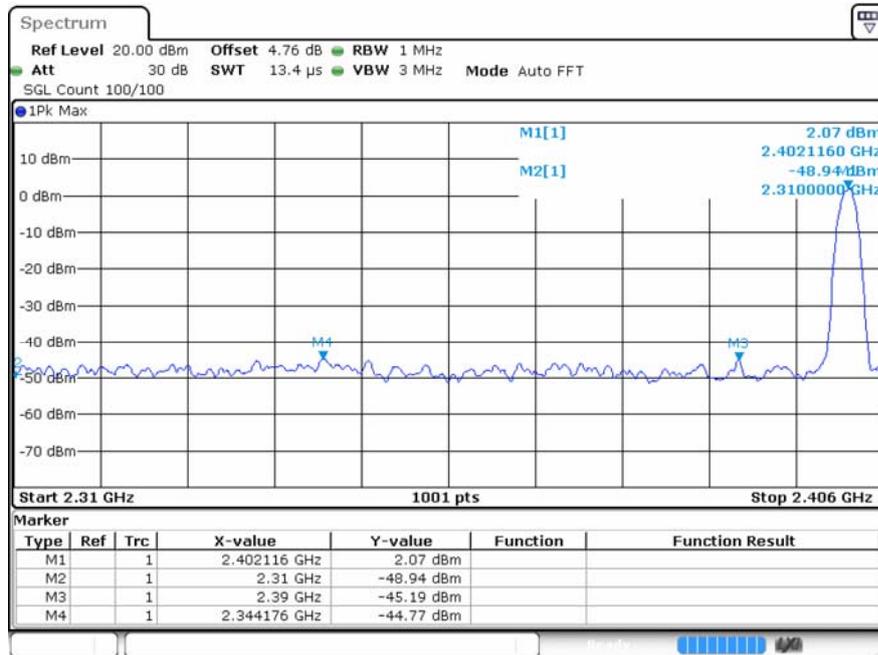
Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



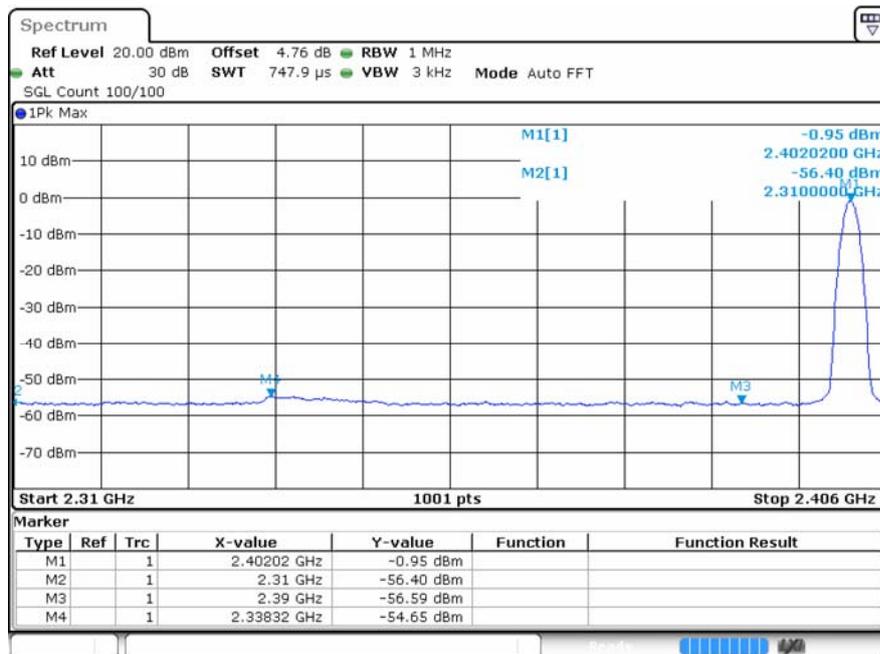
Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



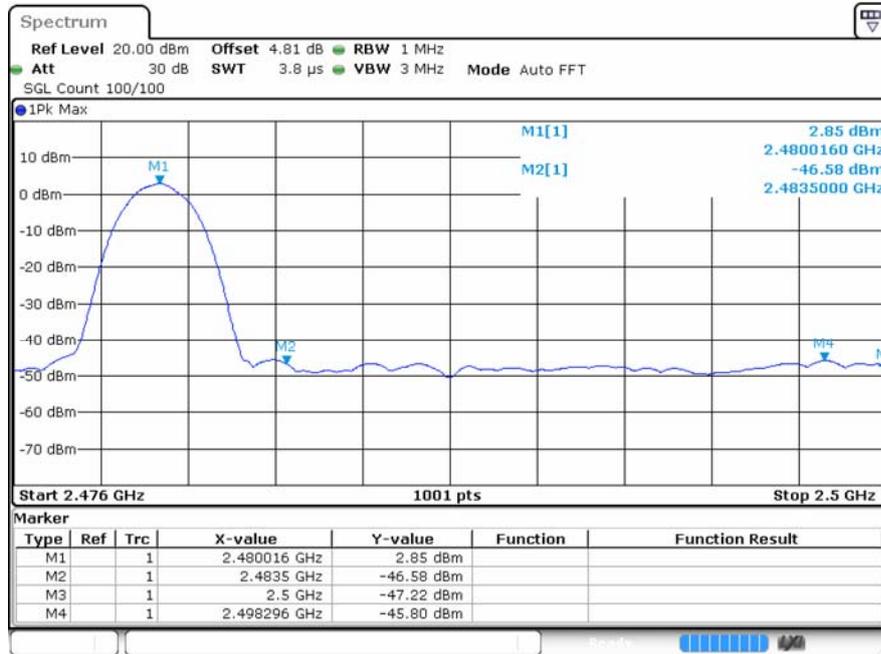
Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



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---