



## Appendix A

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

Product Name: wireless speaker

Trade Mark: N/A

Test Model: NR-5506

#### Environmental Conditions

|                    |             |
|--------------------|-------------|
| Temperature:       | 25.7℃       |
| Relative Humidity: | 52.4%       |
| ATM Pressure:      | 101Kpa      |
| Test Engineer:     | Emiya lin   |
| Supervised by:     | Simba Haung |



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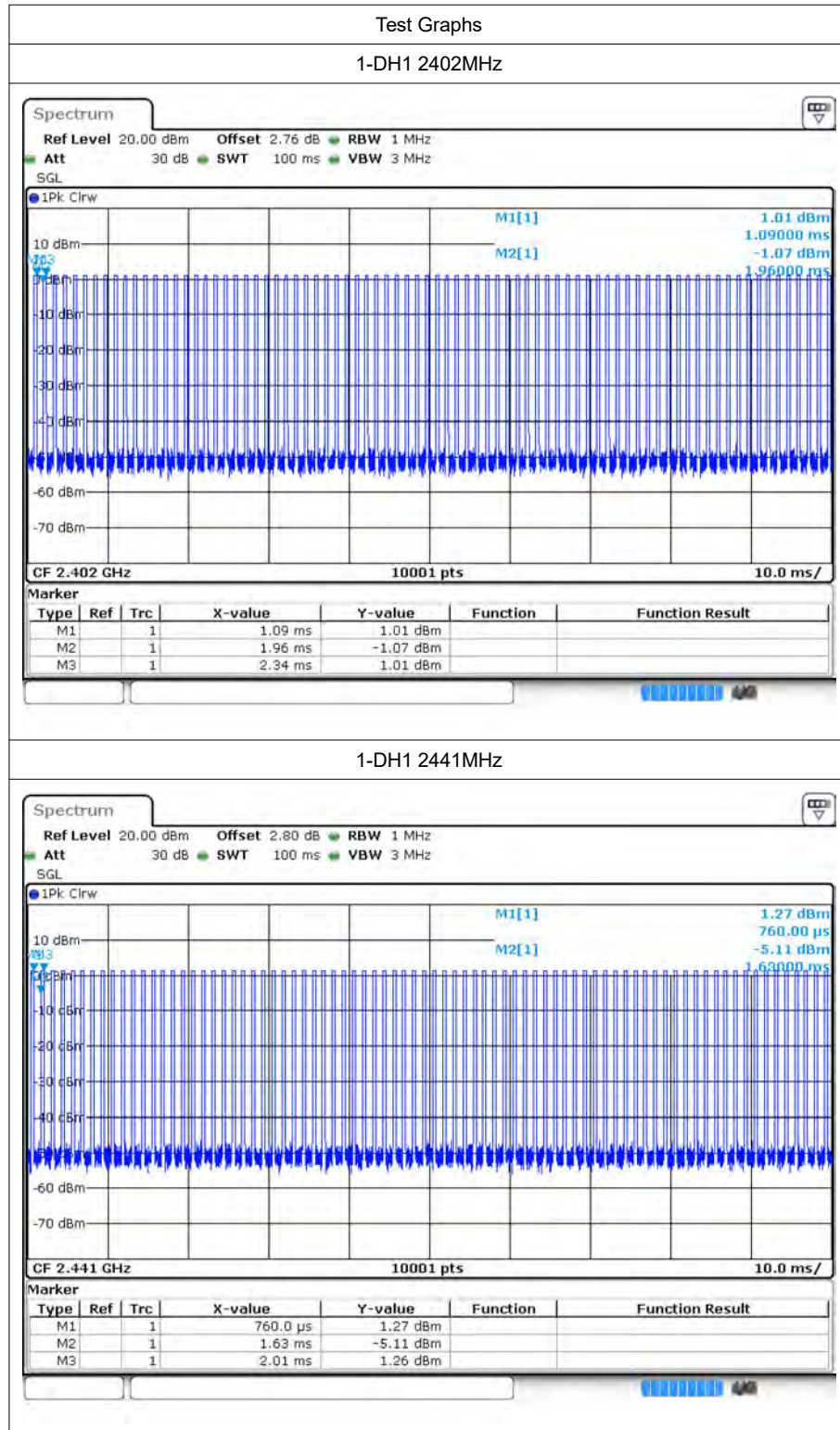
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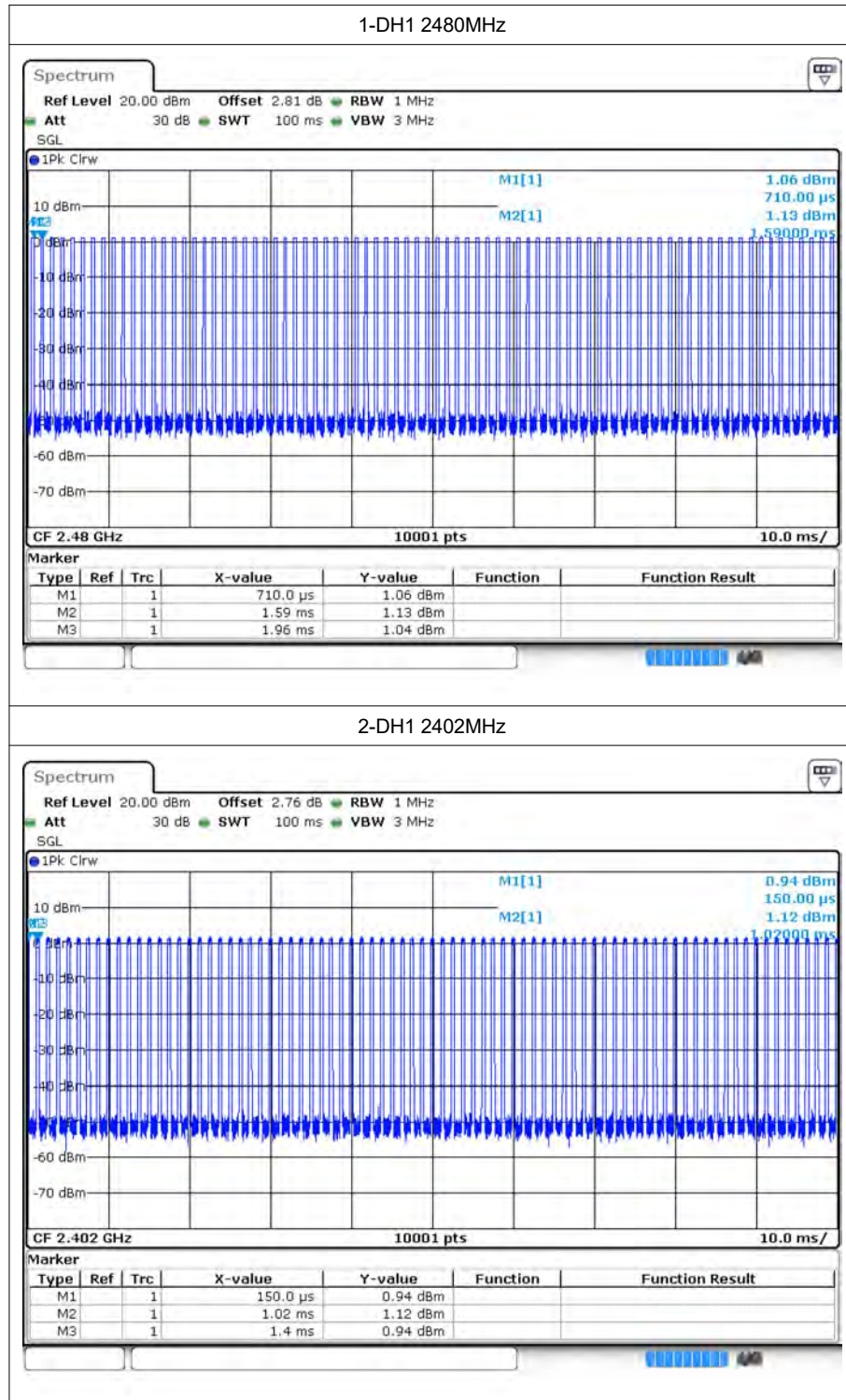
# 1 Duty Cycle

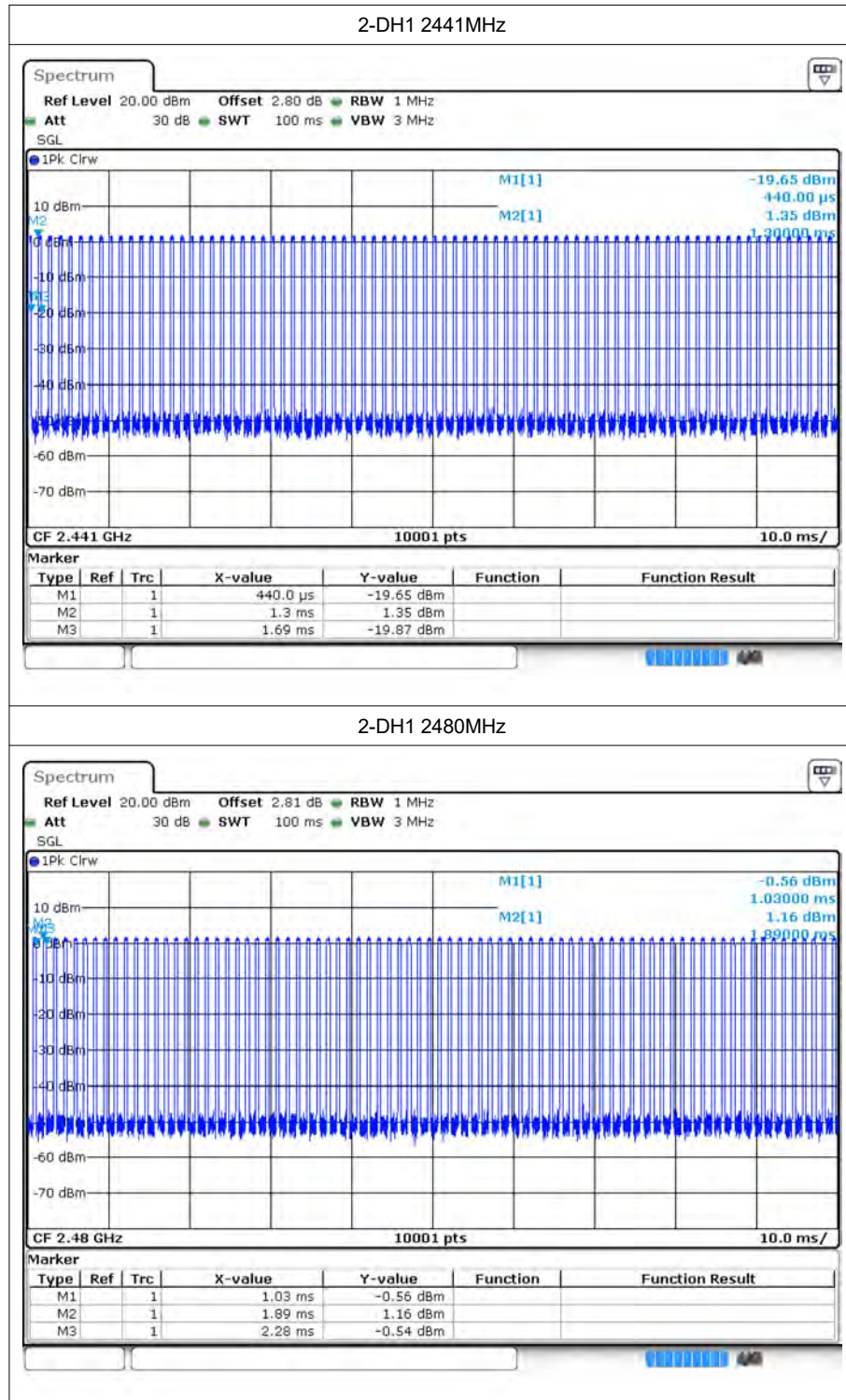
## 1.1 Test Result

| Mode  | Frequency (MHz) | Duty Cycle (%) | Correction Factor | 1/T (kHz) |
|-------|-----------------|----------------|-------------------|-----------|
| 1-DH1 | 2402            | 31.2           | 5.06              | 2.63      |
| 1-DH1 | 2441            | 31.2           | 5.06              | 2.63      |
| 1-DH1 | 2480            | 31.06          | 5.08              | 2.7       |
| 2-DH1 | 2402            | 31.21          | 5.06              | 2.63      |
| 2-DH1 | 2441            | 31.45          | 5.02              | 2.56      |
| 2-DH1 | 2480            | 32             | 4.95              | 2.56      |
| 3-DH1 | 2402            | 32             | 4.95              | 2.56      |
| 3-DH1 | 2441            | 32             | 4.95              | 2.56      |
| 3-DH1 | 2480            | 32.01          | 4.95              | 2.56      |

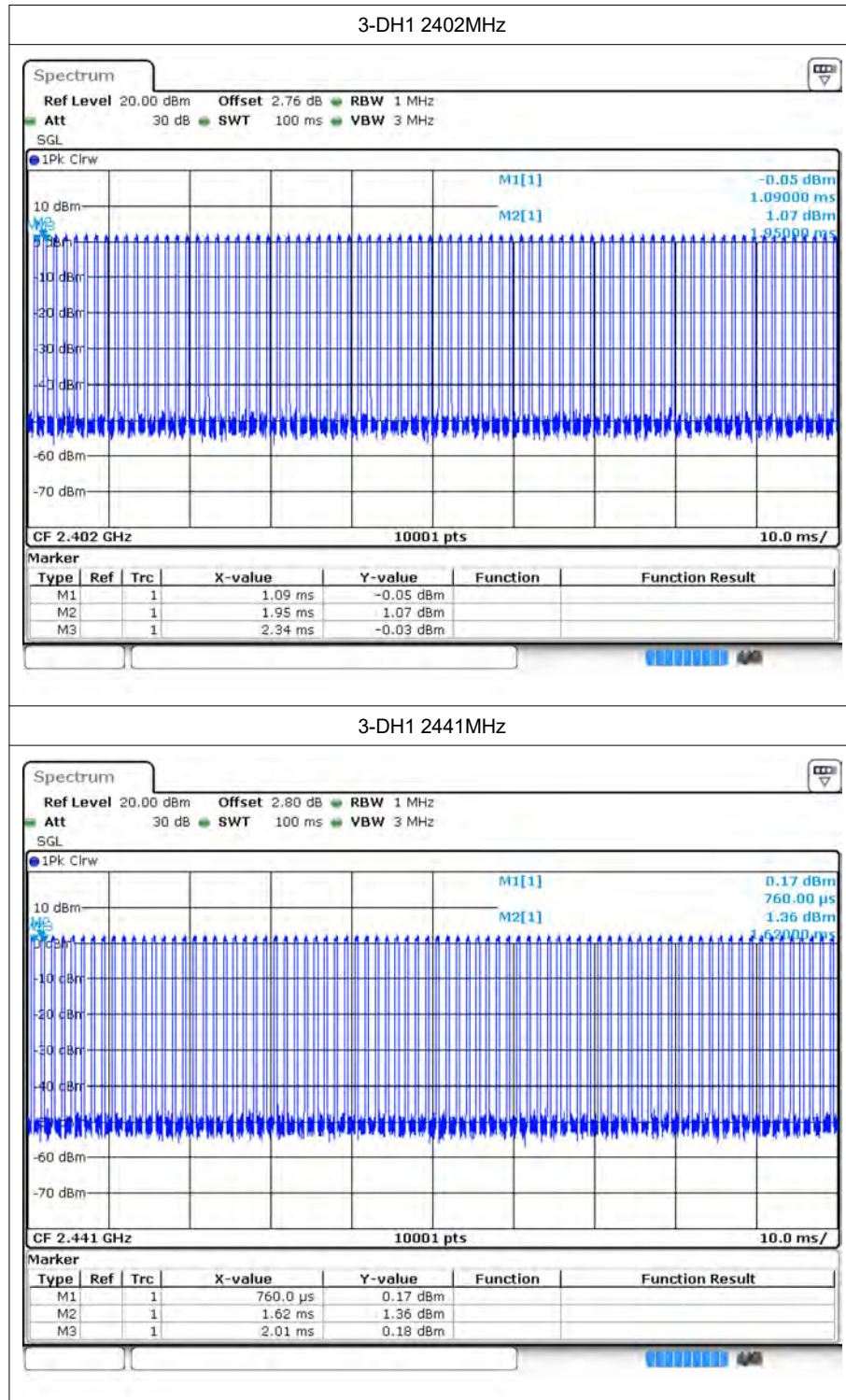
## 1.2 Test Graphs

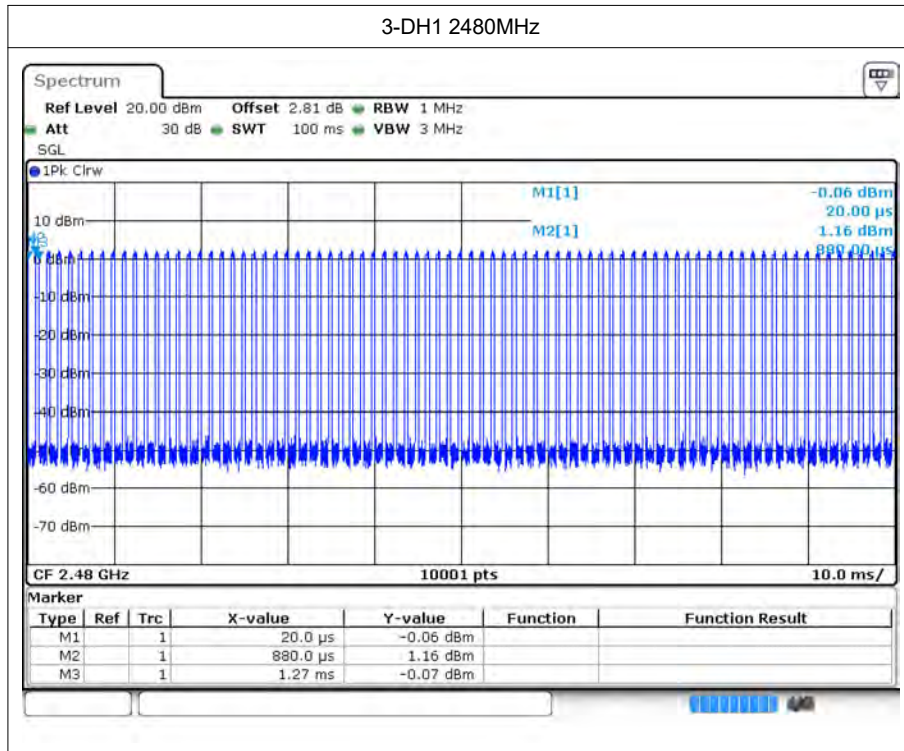












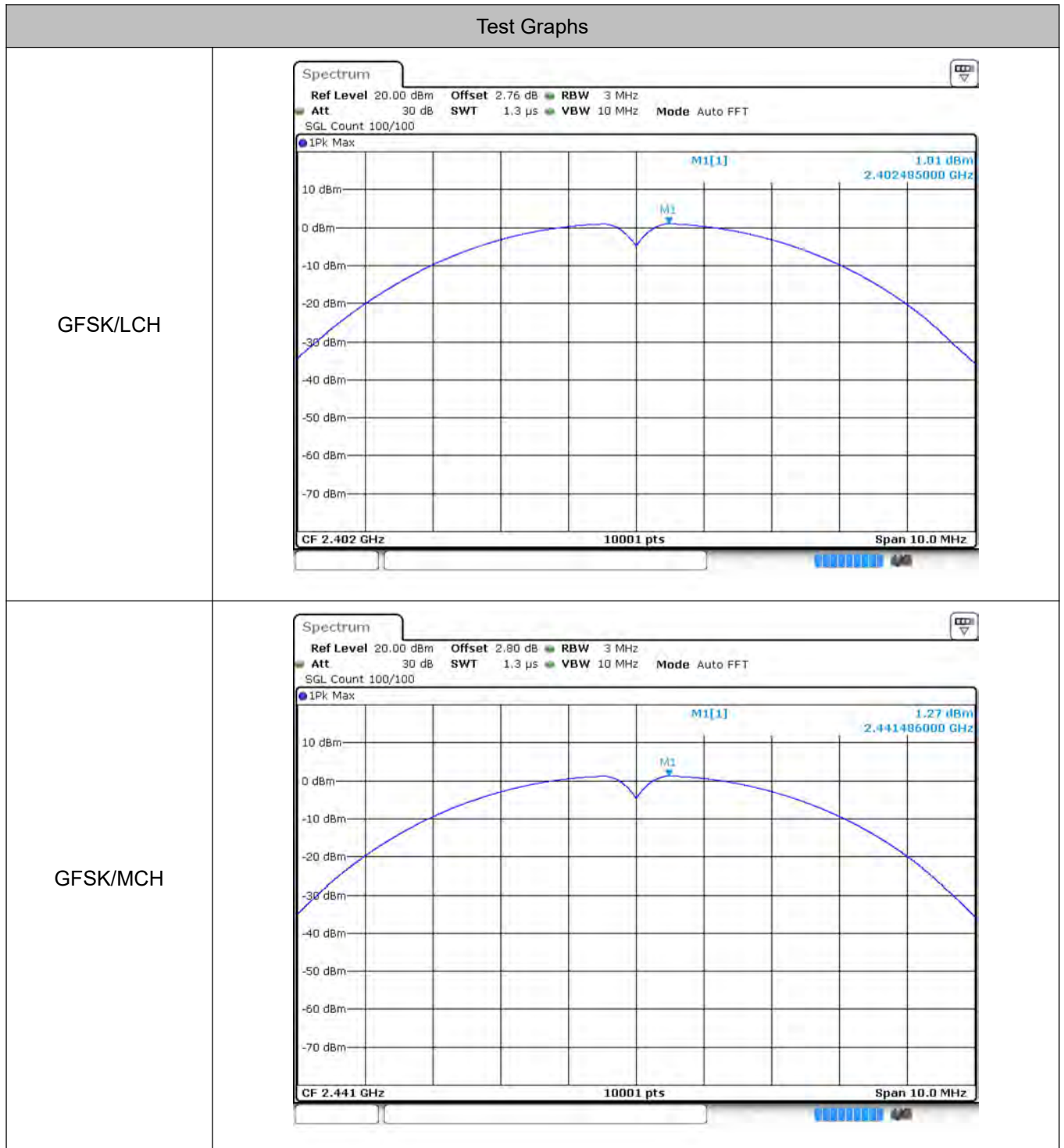


## 2 Maximum Conducted Peak Output Power

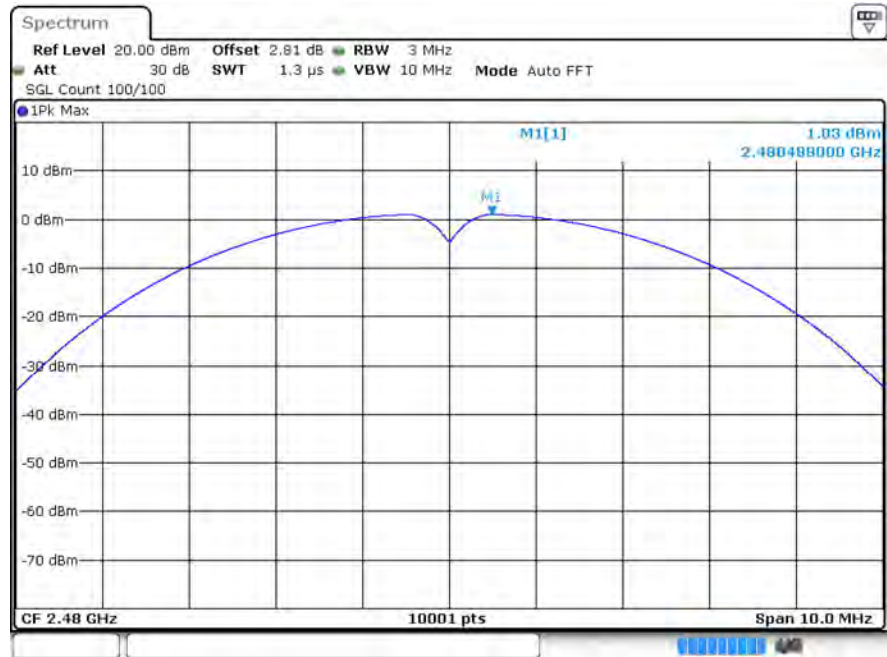
### 2.1 Test Result

| Mode          | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK          | LCH      | 1.01                            | 21          | Pass    |
|               | MCH      | 1.27                            | 21          | Pass    |
|               | HCH      | 1.03                            | 21          | Pass    |
| $\pi/4$ DQPSK | LCH      | 1.55                            | 21          | Pass    |
|               | MCH      | 1.7                             | 21          | Pass    |
|               | HCH      | 1.52                            | 21          | Pass    |
| 8DPSK         | LCH      | 1.53                            | 21          | Pass    |
|               | MCH      | 1.98                            | 21          | Pass    |
|               | HCH      | 1.64                            | 21          | Pass    |

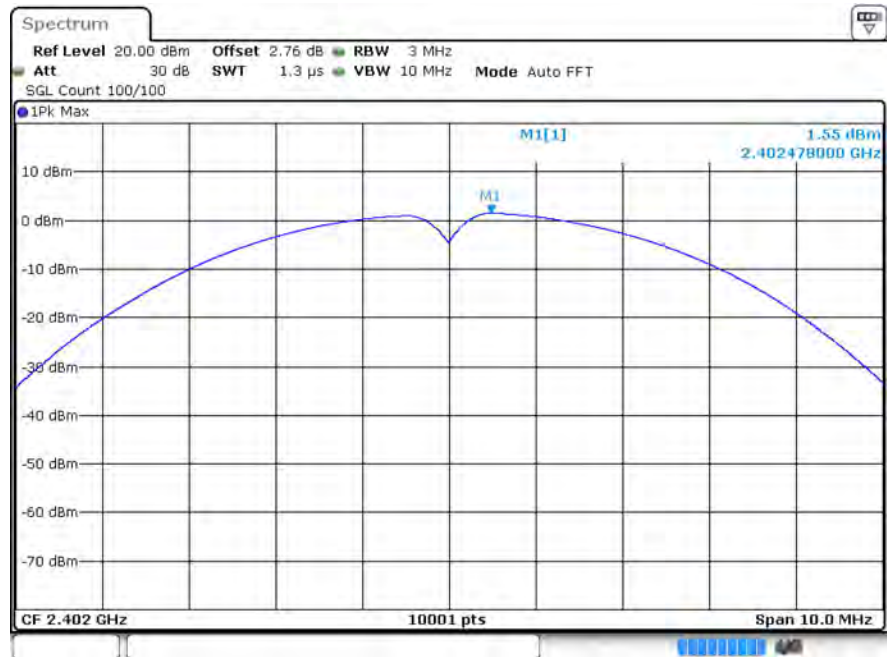
## 2.2 Test Graphs



GFSK/HCH



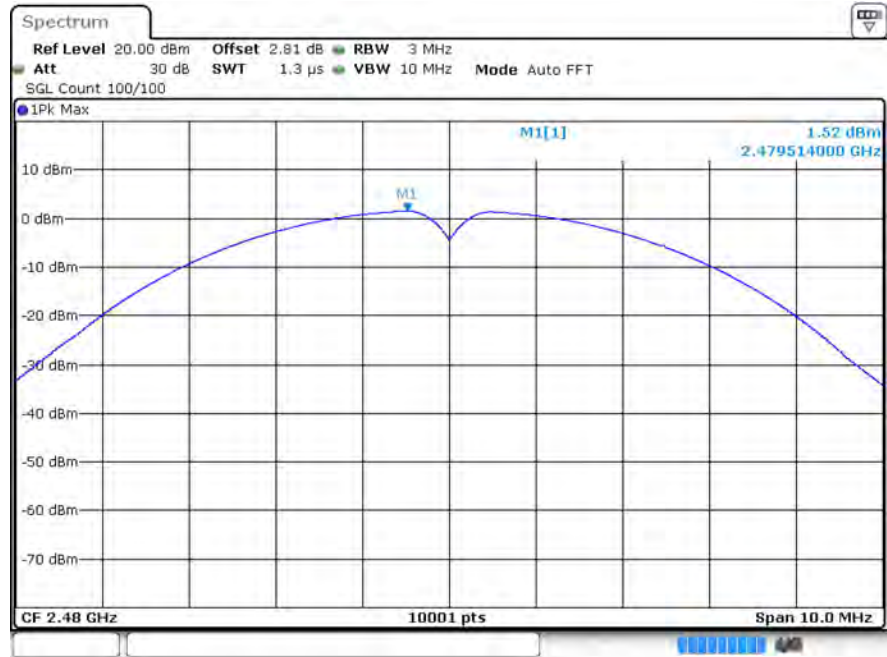
$\pi/4$ DQPSK/LCH



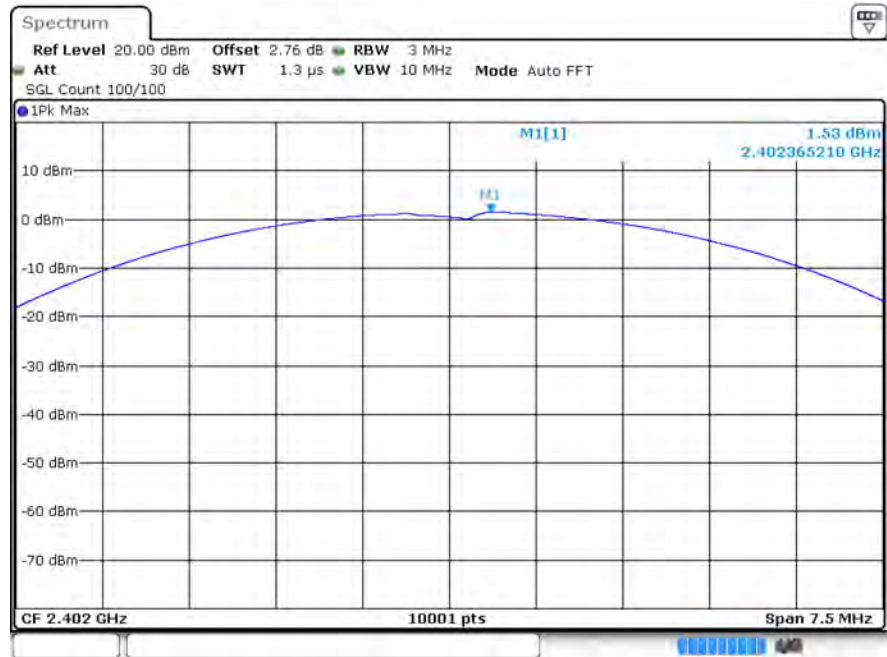
$\pi/4$ DQPSK/MCH



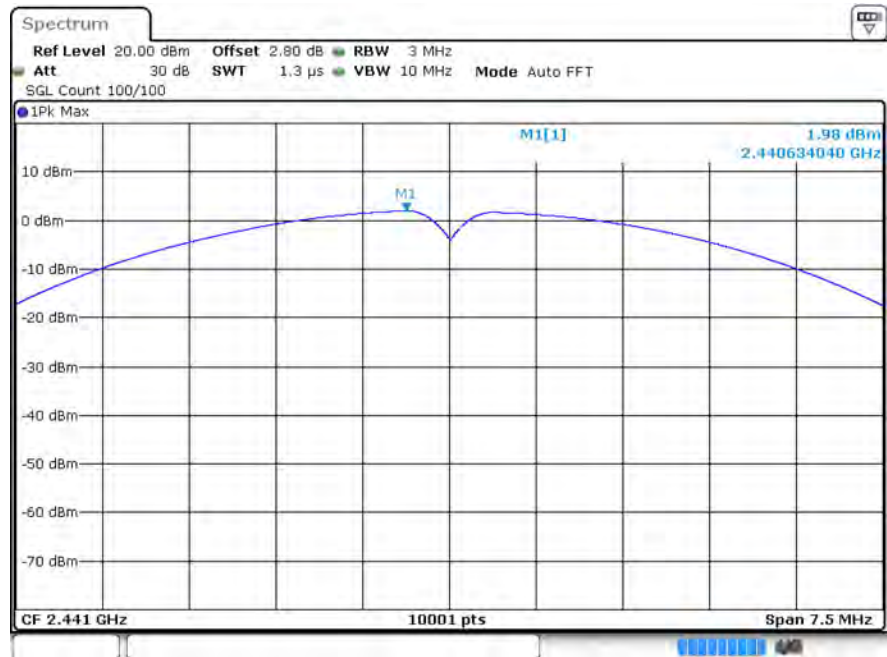
$\pi/4$ DQPSK/HCH



8DPSK/LCH

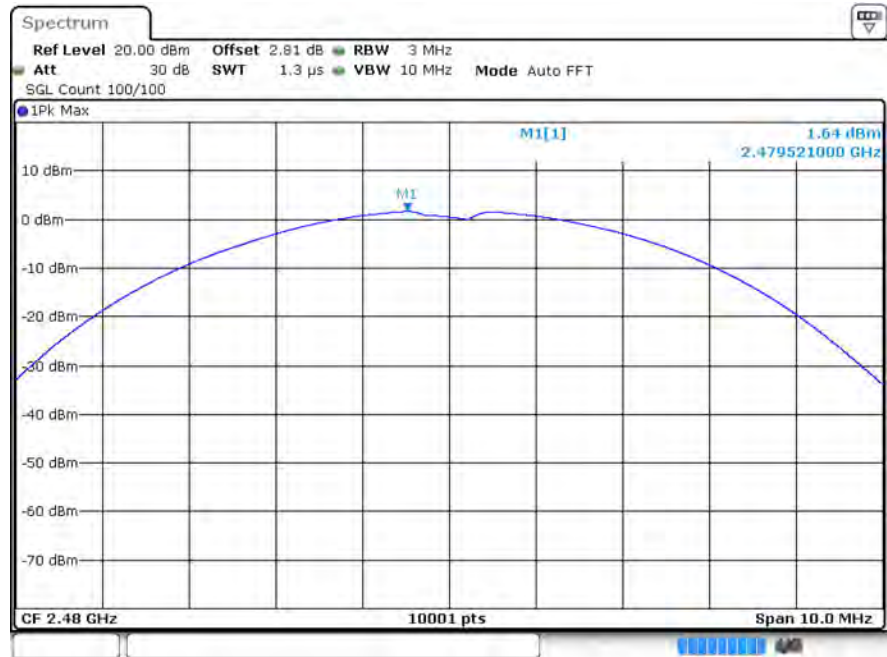


8DPSK/MCH





8DPSK/HCH

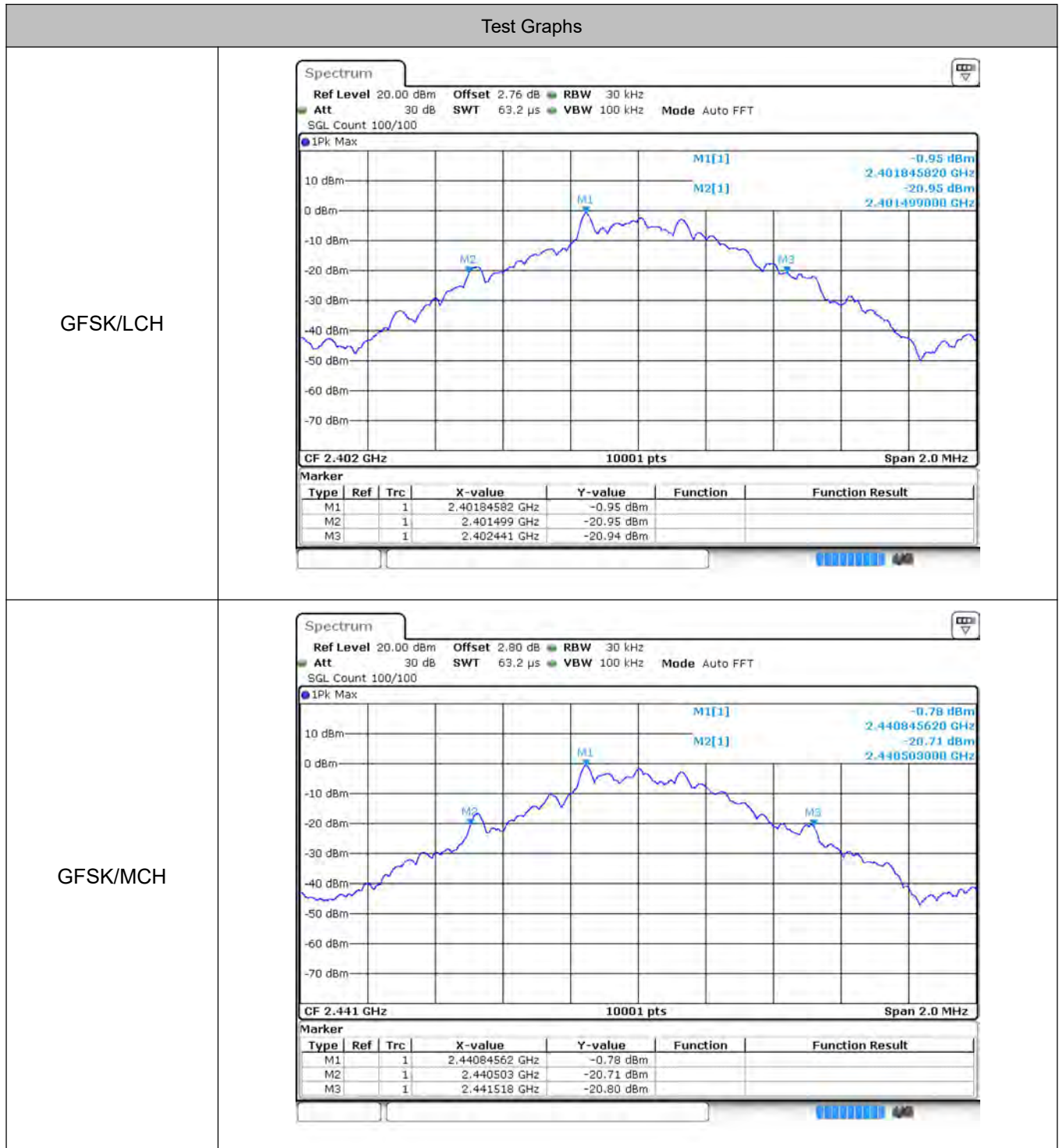


### 3 20dB Bandwidth

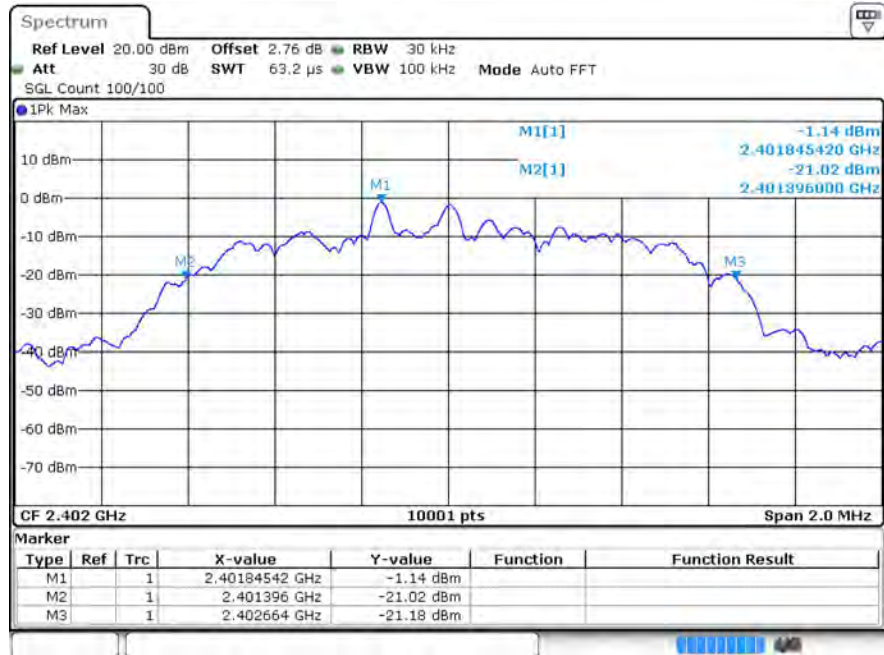
#### 3.1 Test Result

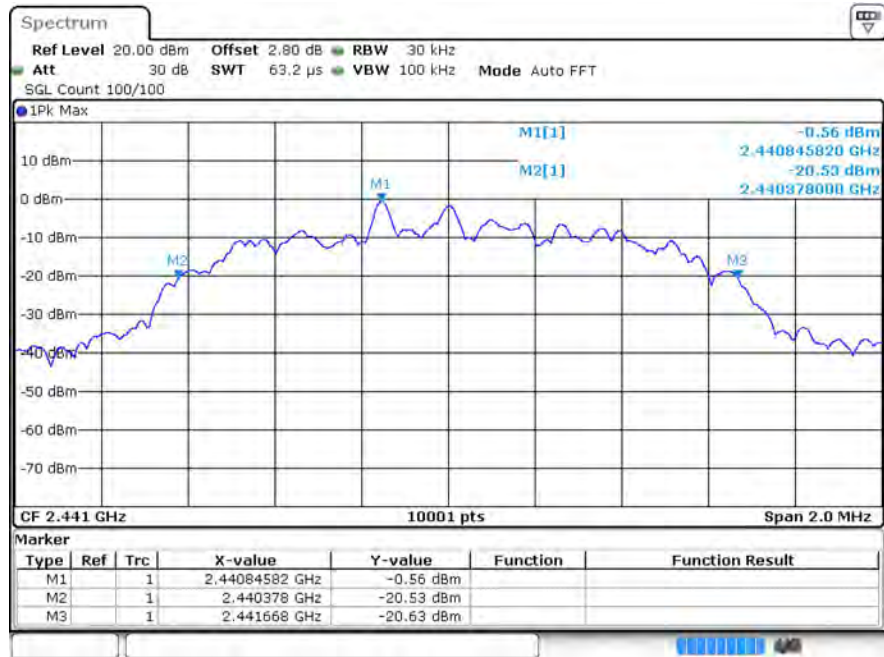
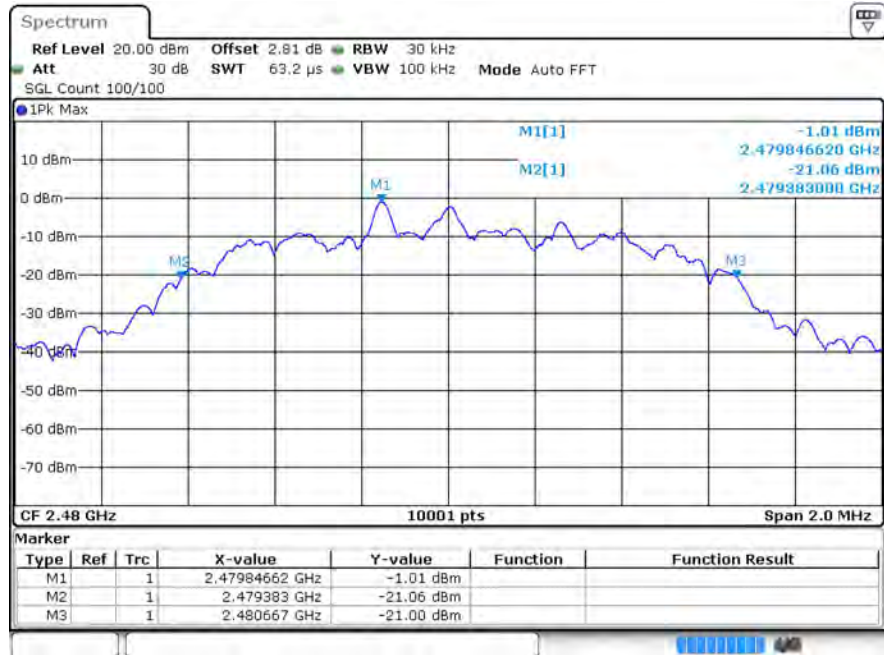
| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.942                | Not Specified | Pass    |
|               | MCH      | 1.015                | Not Specified | Pass    |
|               | HCH      | 1.031                | Not Specified | Pass    |
| $\pi/4$ DQPSK | LCH      | 1.268                | Not Specified | Pass    |
|               | MCH      | 1.29                 | Not Specified | Pass    |
|               | HCH      | 1.284                | Not Specified | Pass    |
| 8DPSK         | LCH      | 1.25                 | Not Specified | Pass    |
|               | MCH      | 1.213                | Not Specified | Pass    |
|               | HCH      | 1.242                | Not Specified | Pass    |

### 3.2 Test Graphs



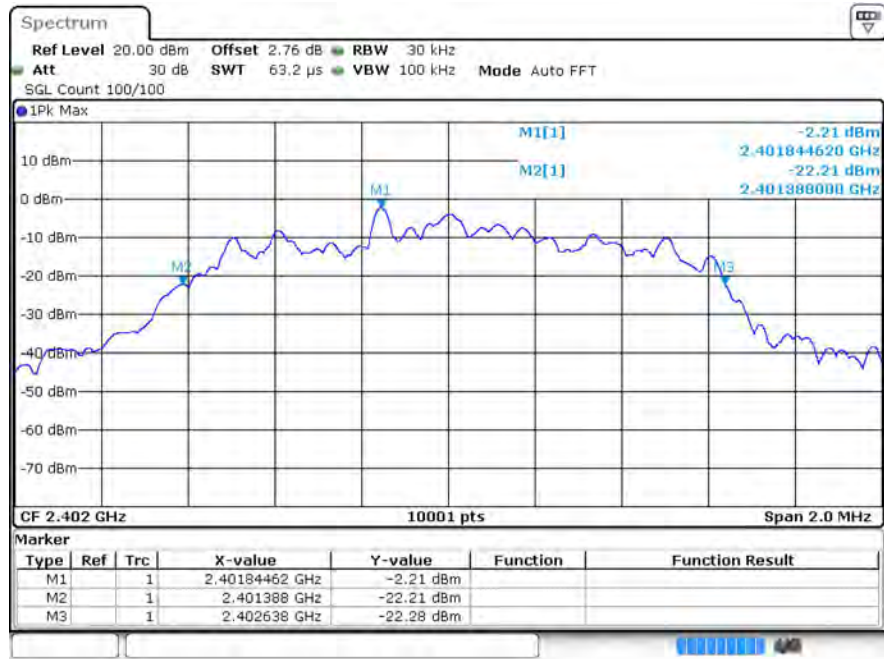
GFSK/HCH


 $\pi/4$ DQPSK/LCH


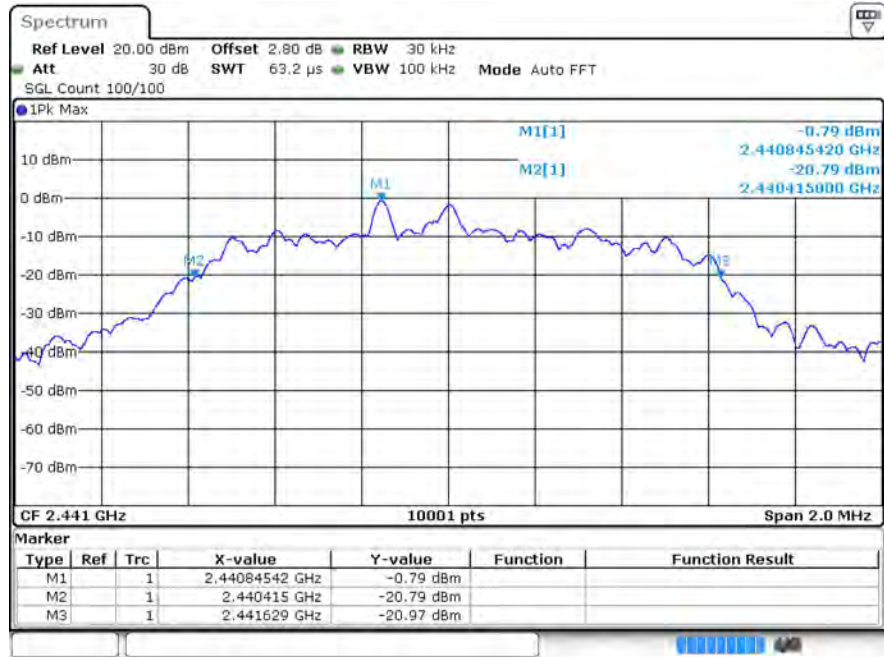
$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH




8DPSK/LCH

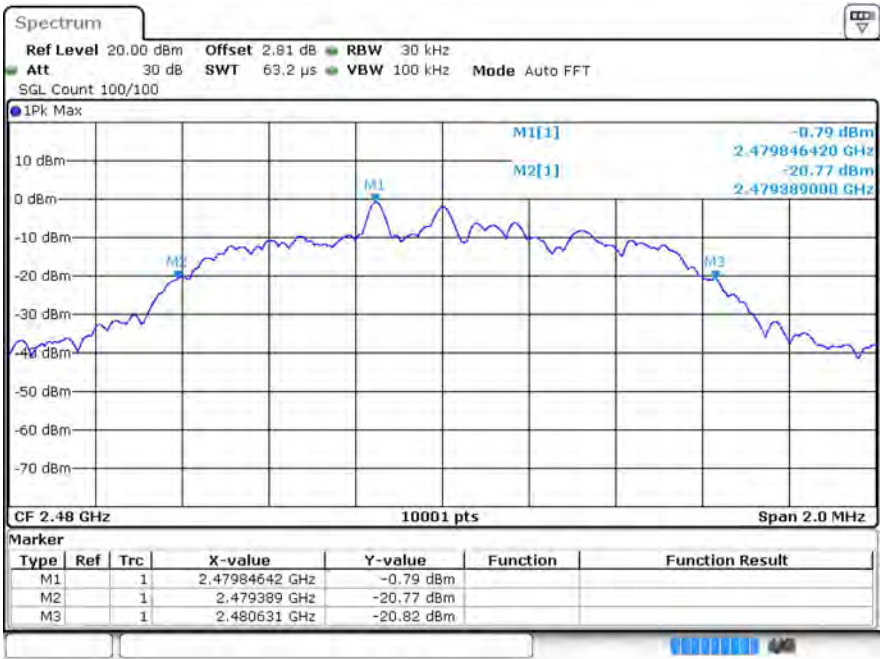


8DPSK/MCH





8DPSK/HCH



## 4 Carrier Frequency Separation

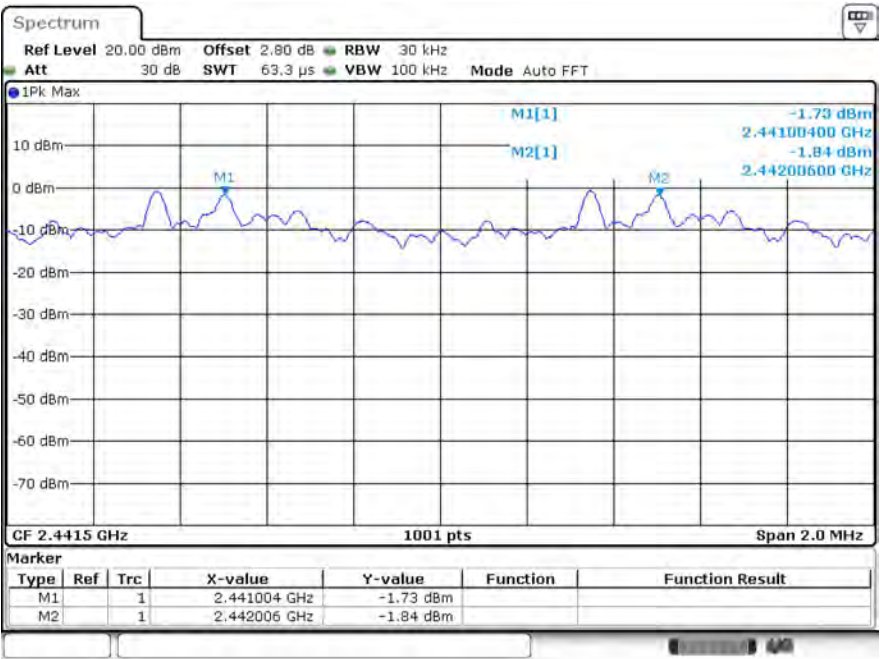
### 4.1 Test Result

| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | MCH      | 1.001                              | 0.677       | Pass    |
| $\pi/4$ DQPSK | MCH      | 1.002                              | 0.86        | Pass    |
| 8DPSK         | MCH      | 1.002                              | 0.809       | Pass    |

## 4.2 Test Graphs



8DPSK/MCH

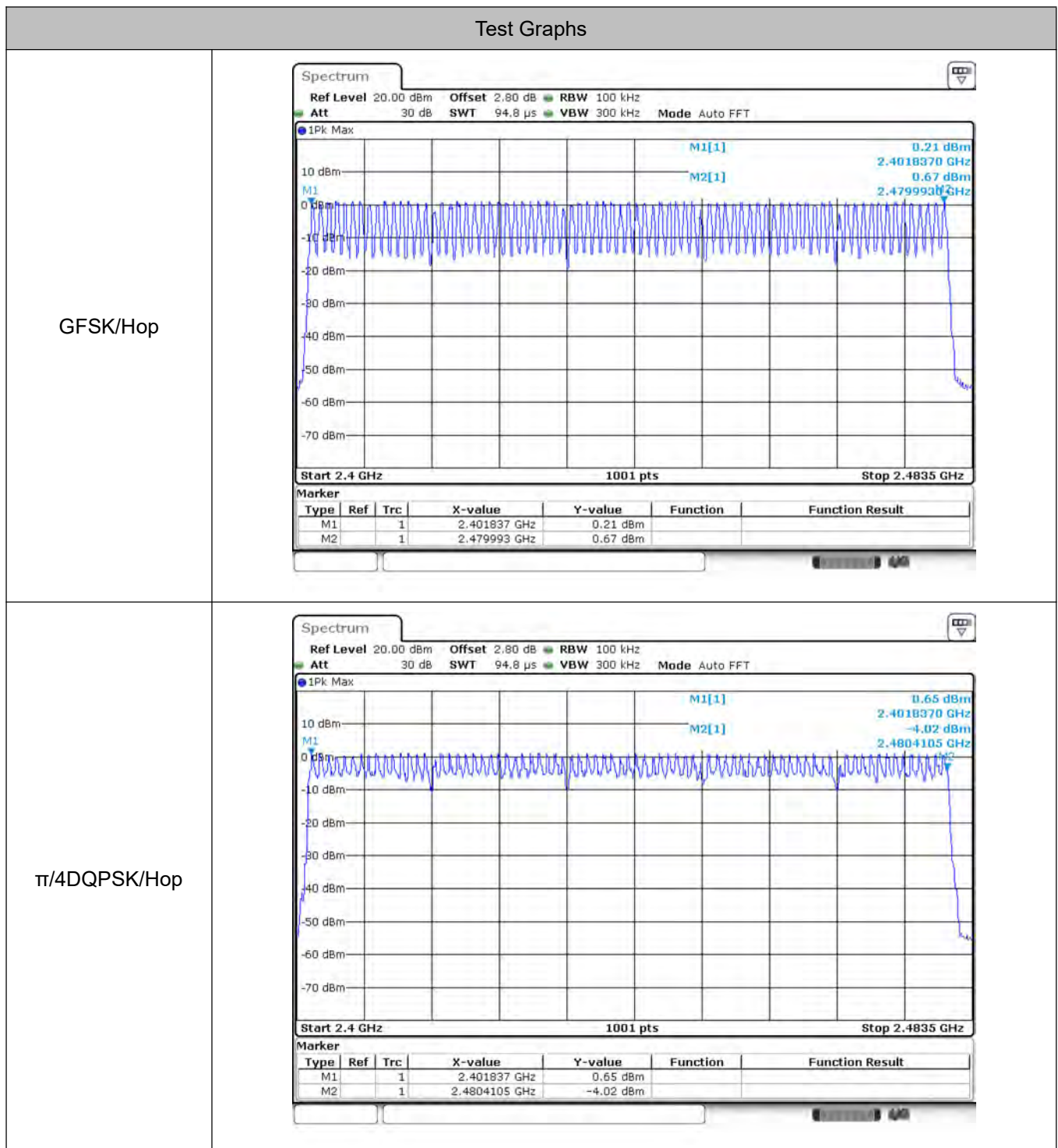


## 5 Hopping Channel Number

### 5.1 Test Result

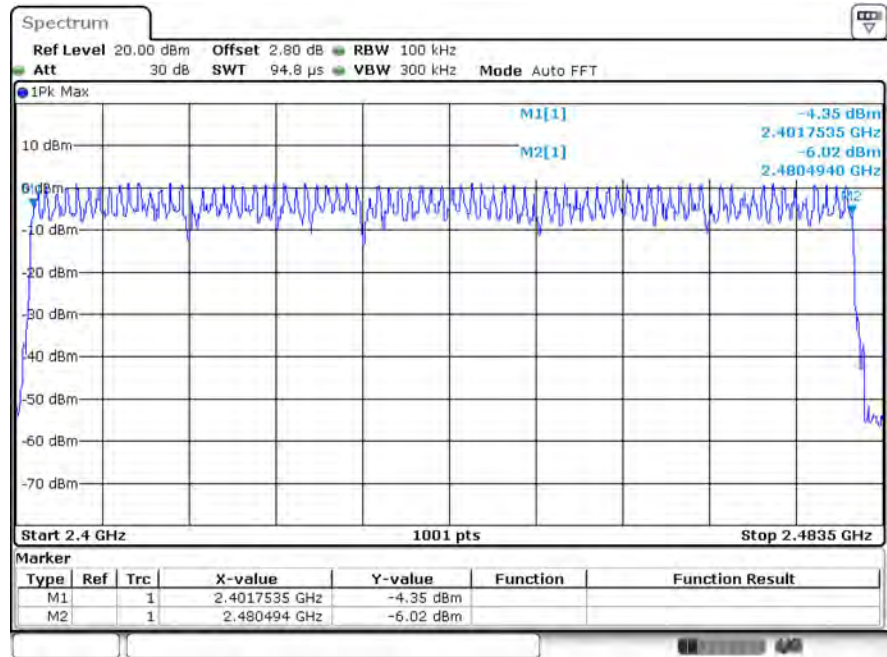
| Mode          | Channel. | Number of Hopping Channel [N] | Limit [N] | Verdict |
|---------------|----------|-------------------------------|-----------|---------|
| GFSK          | Hop      | 79                            | $\geq 15$ | PASS    |
| $\pi/4$ DQPSK | Hop      | 79                            | $\geq 15$ | PASS    |
| 8DPSK         | Hop      | 79                            | $\geq 15$ | PASS    |

## 5.2 Test Graphs





8DPSK/Hop





## 6 Dwell Time

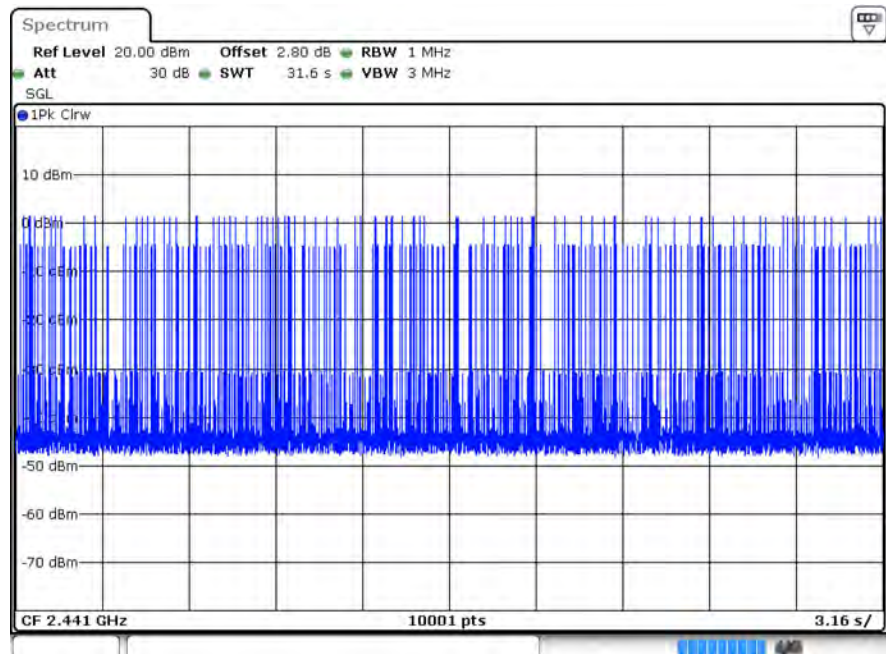
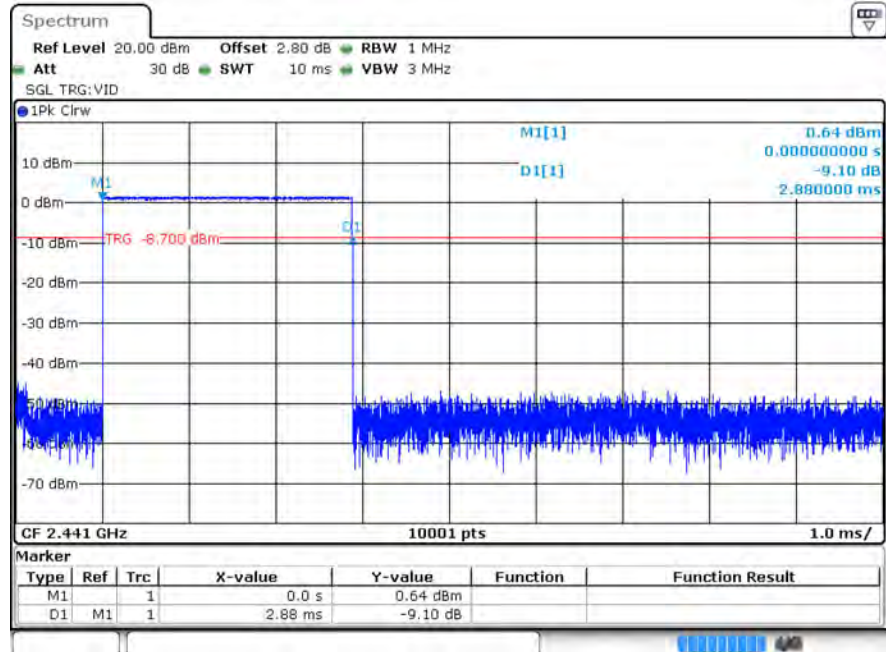
### 6.1 Test Result

| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[ms] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|----------------|-----------|---------|
| GFSK          | DH5    | MCH     | 2.88                       | 91                    | 262.08         | 0.4       | Pass    |
| $\pi/4$ DQPSK | 2DH5   | MCH     | 2.885                      | 111                   | 320.235        | 0.4       | Pass    |
| 8DPSK         | 3DH5   | MCH     | 2.887                      | 94                    | 271.378        | 0.4       | Pass    |

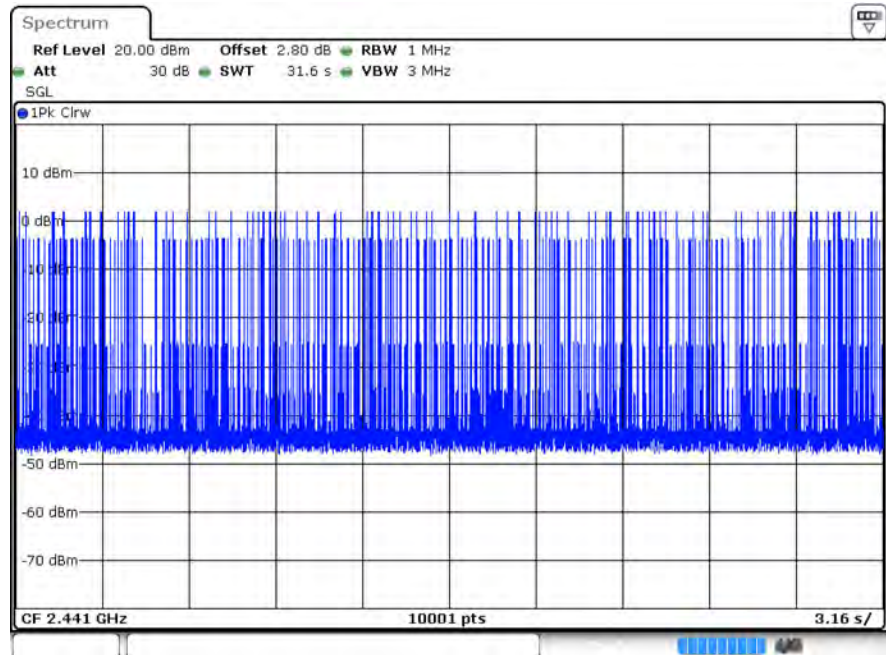
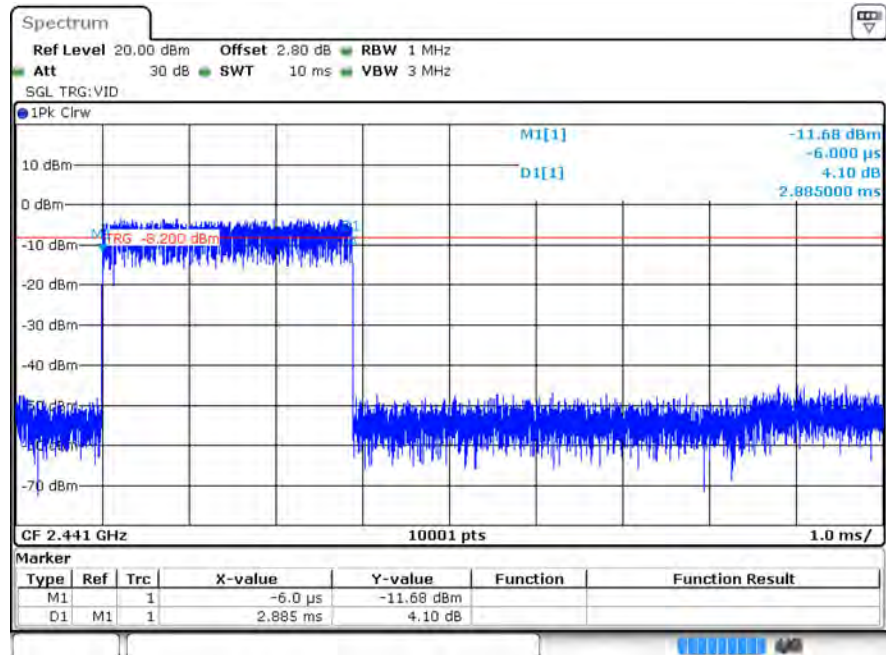
## 6.2 Test Graphs

### Test Graphs

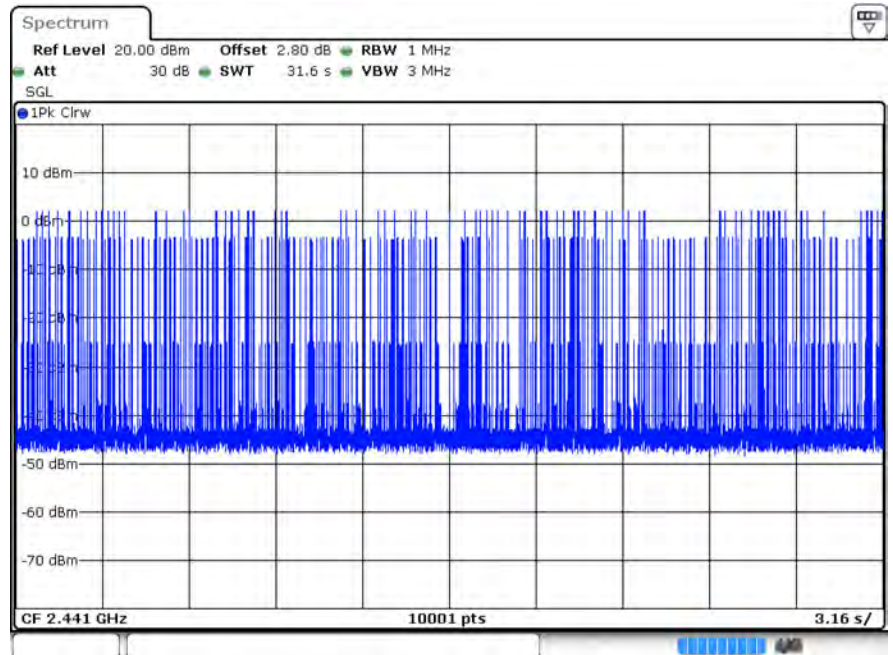
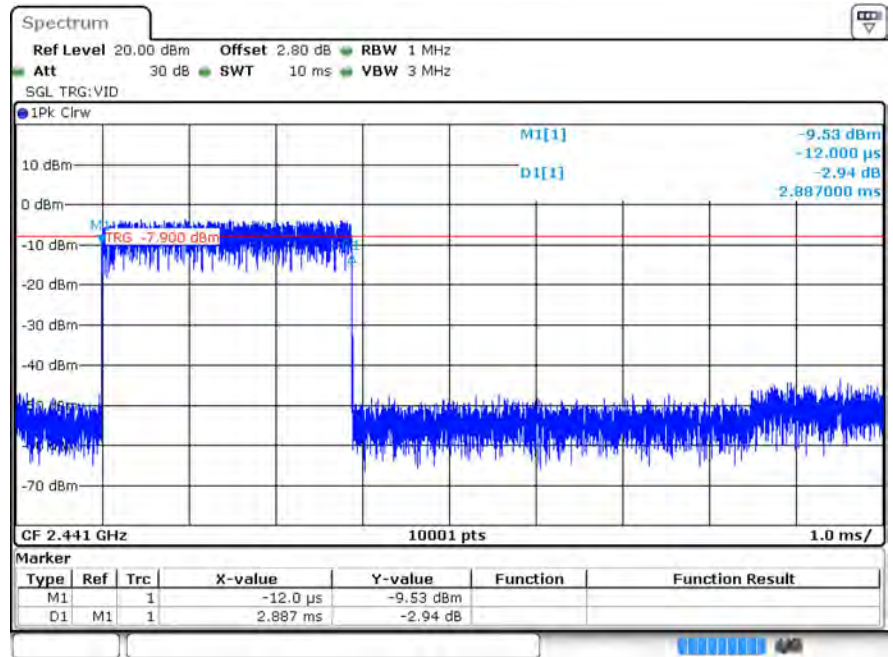
GFSK\_DH5/MCH



$\pi/4$ 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     | -41.86           | -20         | Pass    |
|               | MCH     | -42.71           | -20         | Pass    |
|               | HCH     | -42.3            | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | -42.48           | -20         | Pass    |
|               | MCH     | -41.88           | -20         | Pass    |
|               | HCH     | -41.94           | -20         | Pass    |
| 8DPSK         | LCH     | -42.52           | -20         | Pass    |
|               | MCH     | -42.5            | -20         | Pass    |
|               | HCH     | -42.22           | -20         | Pass    |



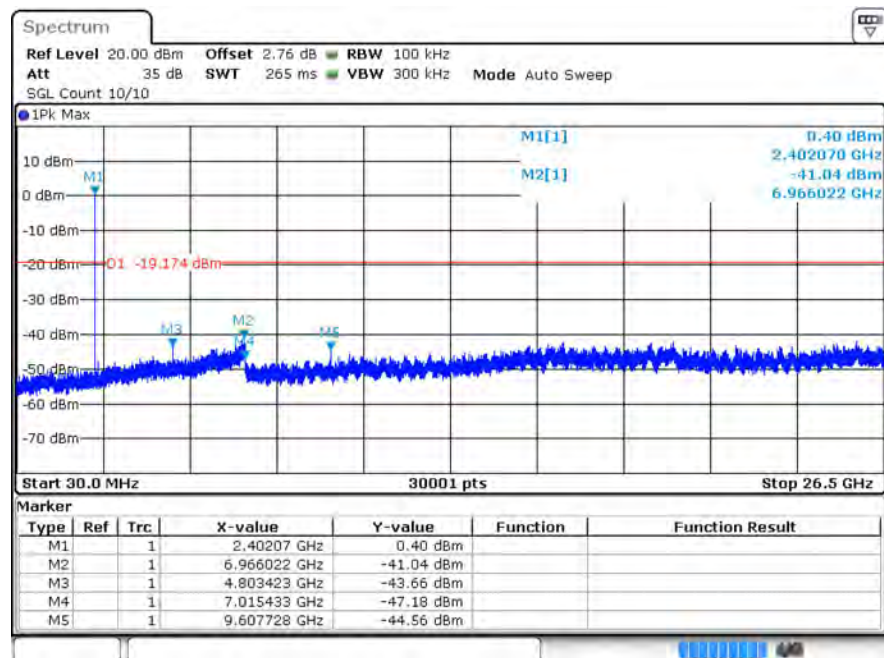
## 7.2 Test Graphs

GFSK\_LCH\_Graphs

Pref



Puw

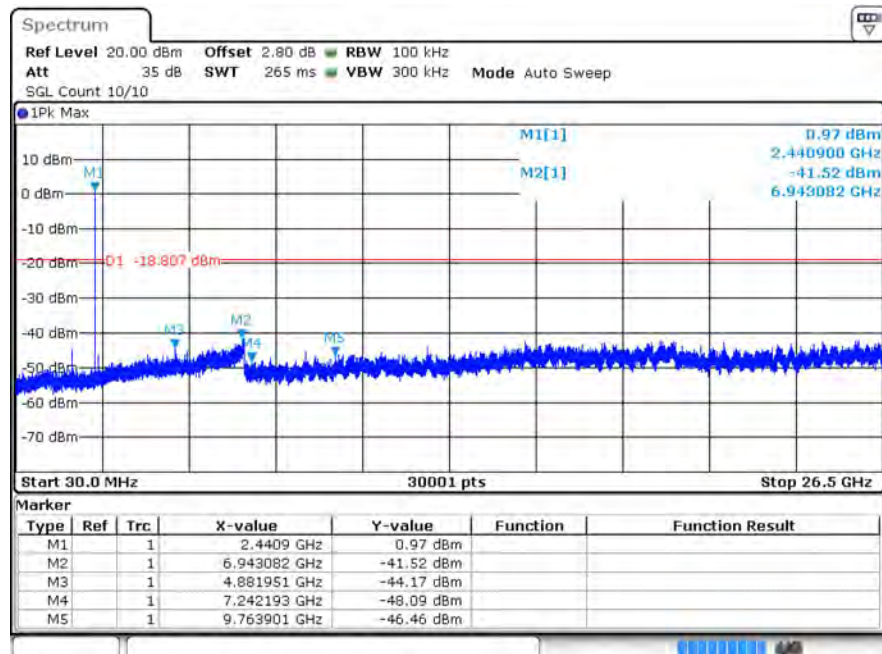


## GFSK\_MCH\_Graphs

Pref



Puw

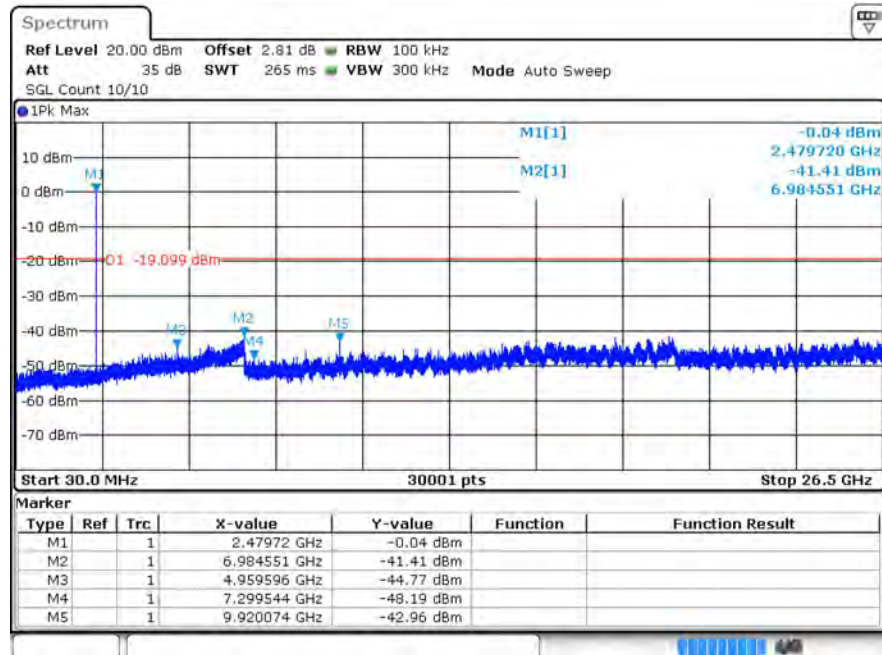


## GFSK\_HCH\_Graphs

Pref



Puw

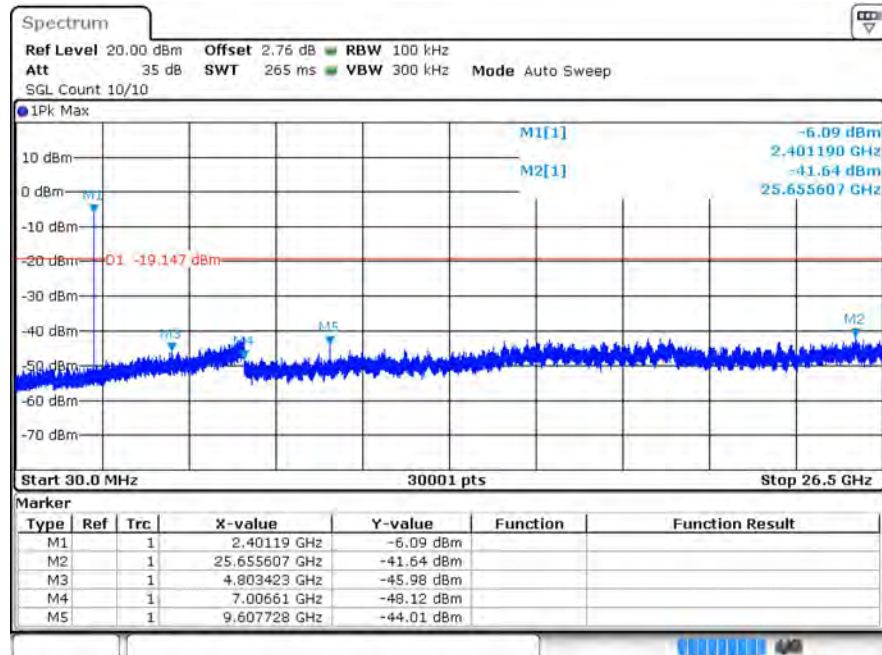


### $\pi/4$ DQPSK\_LCH\_Graphs

Pref



Puw



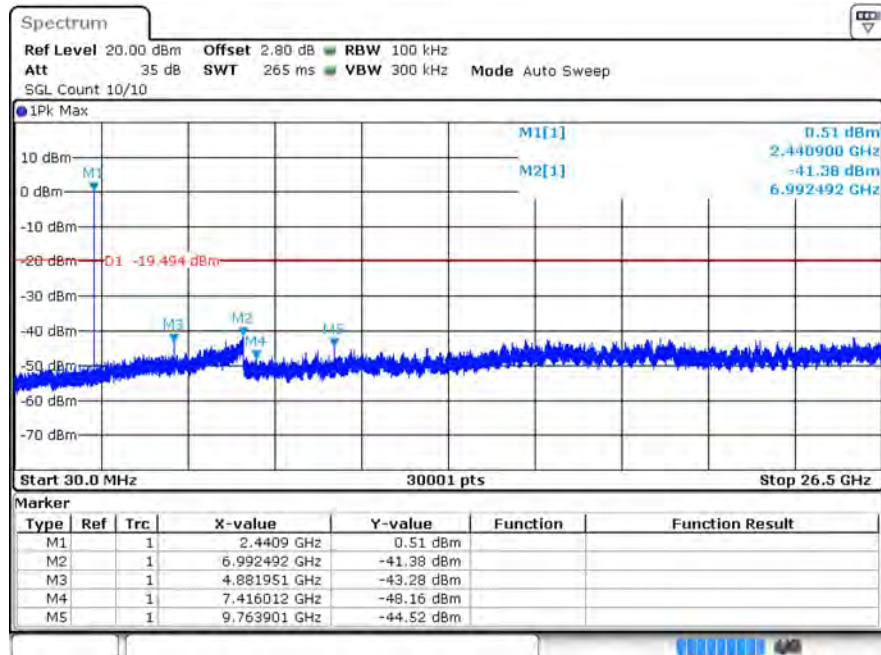


# $\pi/4$ DQPSK\_MCH\_Graphs

Pref



Puw

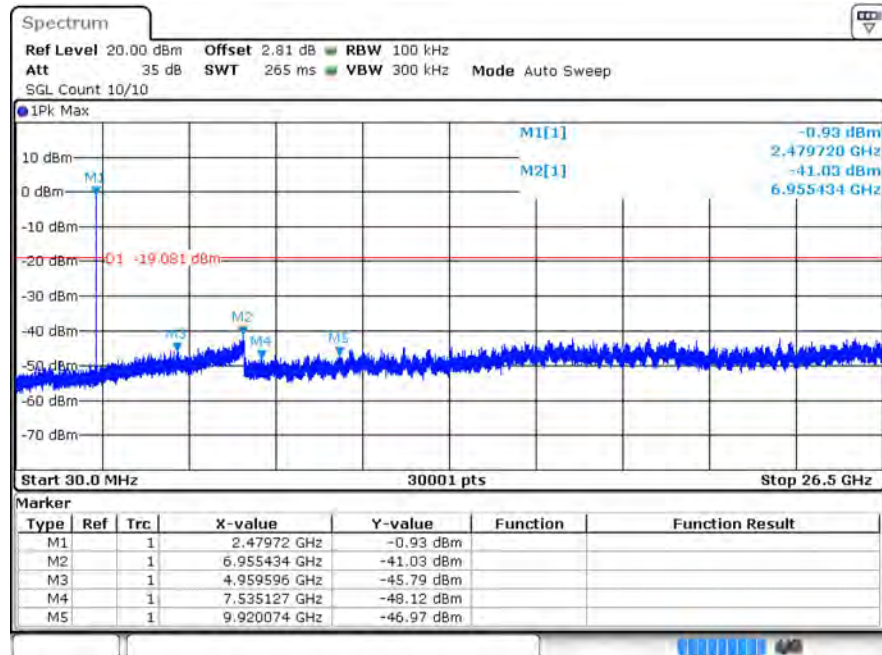


### $\pi/4$ DQPSK\_HCH\_Graphs

Pref



Puw



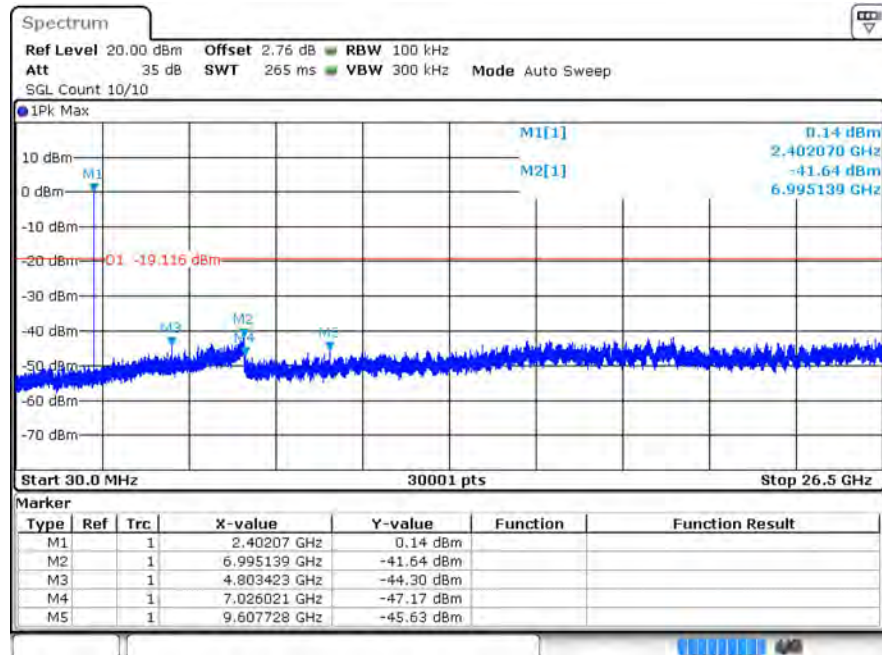


## 8DPSK\_LCH\_Graphs

Pref



Puw

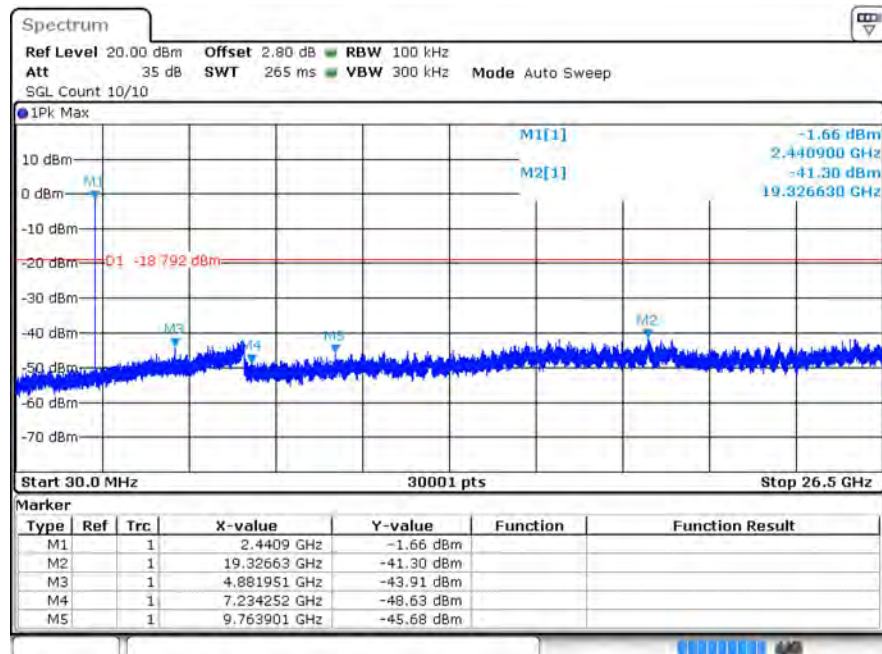


## 8DPSK\_MCH\_Graphs

Pref



Puw

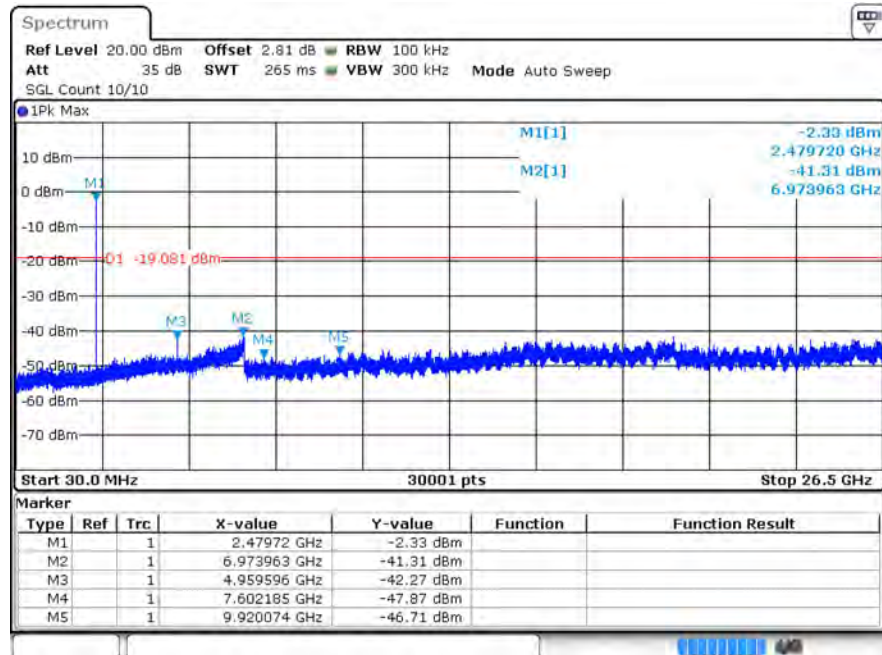


## 8DPSK\_HCH\_Graphs

Pref



Puw

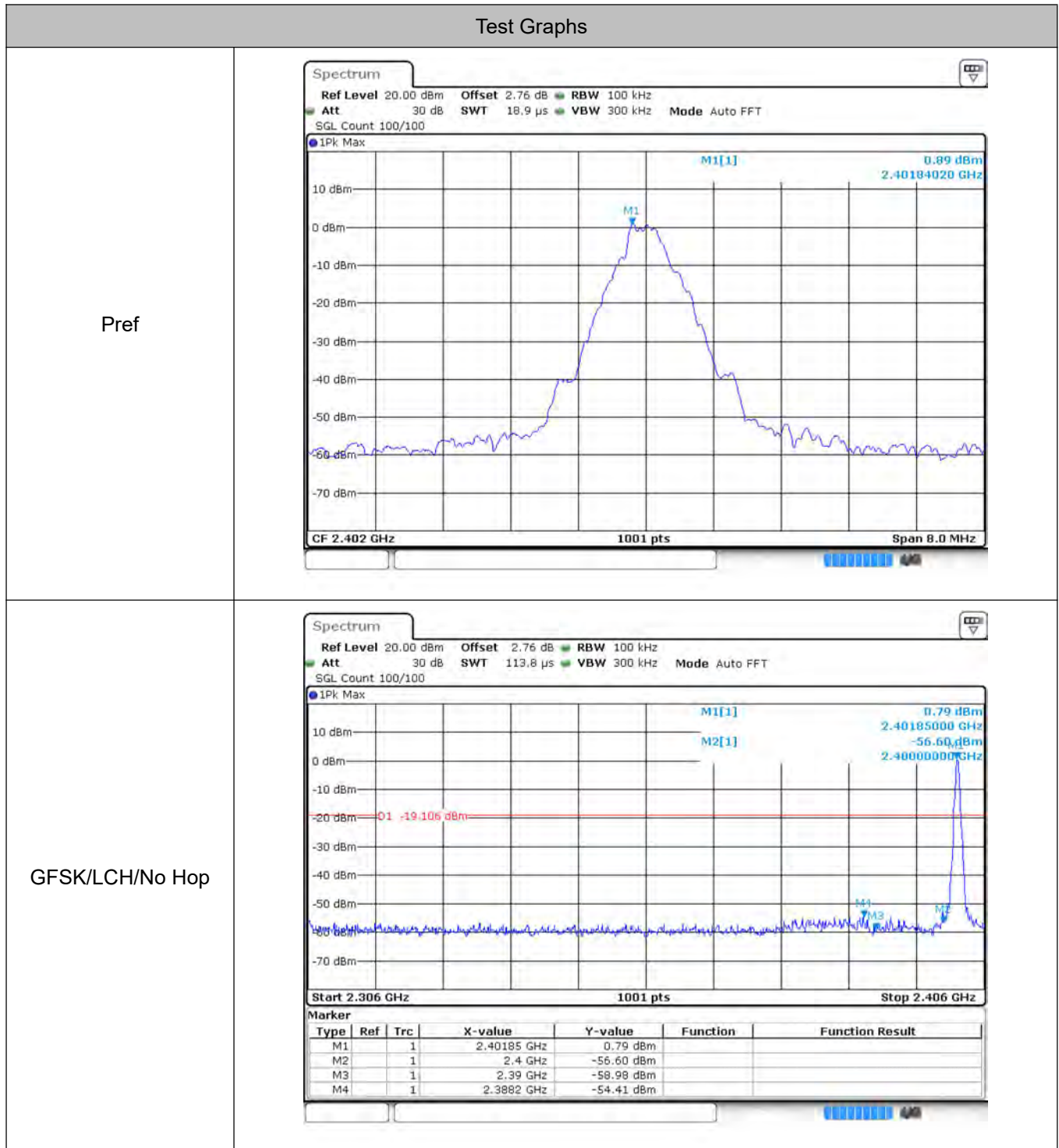


## 8 Band-edge for RF Conducted Emissions

### 8.1 Test Result

| Mode          | Channel | Carrier Frequency [MHz] | Frequency Hopping | Max Spurious Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|-------------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | Off               | -55.29                   | -20         | Pass    |
|               |         |                         | On                | -53.19                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -54.13                   | -20         | Pass    |
|               |         |                         | On                | -49.68                   | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | 2402                    | Off               | -55.03                   | -20         | Pass    |
|               |         |                         | On                | -53.11                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -54.17                   | -20         | Pass    |
|               |         |                         | On                | -51.38                   | -20         | Pass    |
| 8DPSK         | LCH     | 2402                    | Off               | -55.28                   | -20         | Pass    |
|               |         |                         | On                | -53.46                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -55.31                   | -20         | Pass    |
|               |         |                         | On                | -53.23                   | -20         | Pass    |

## 8.2 Test Graphs

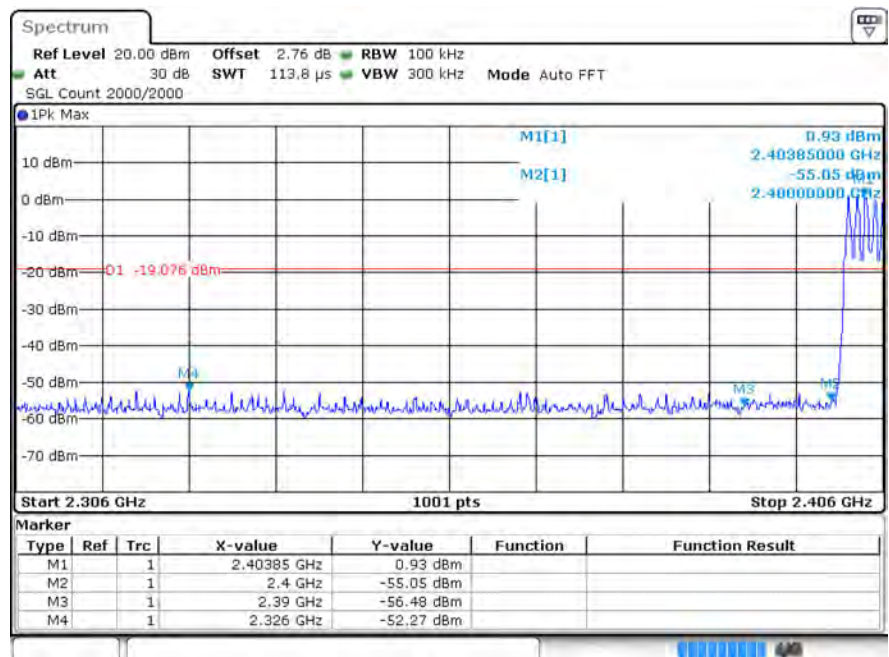




Ref

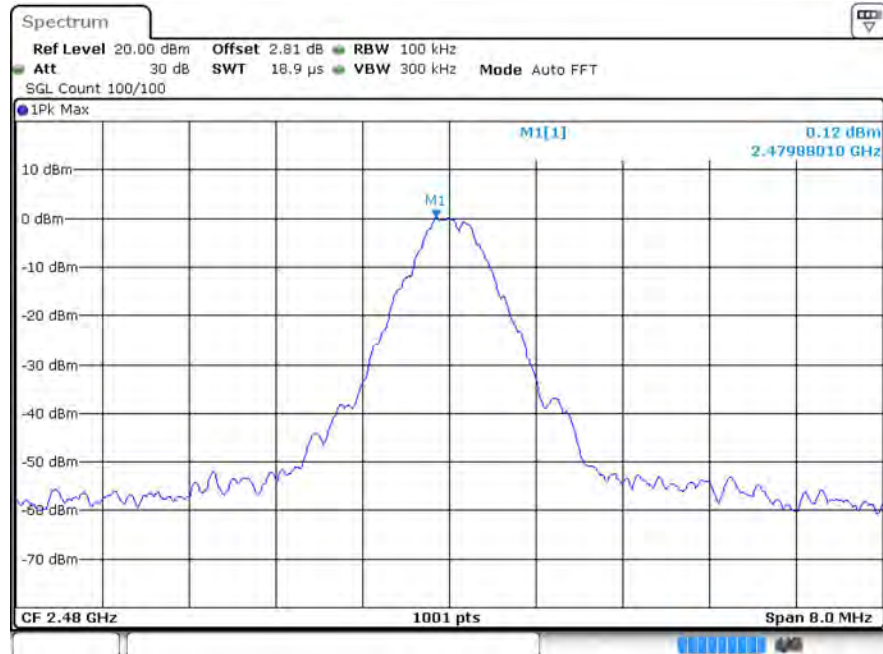


GFSK/LCH/Hop

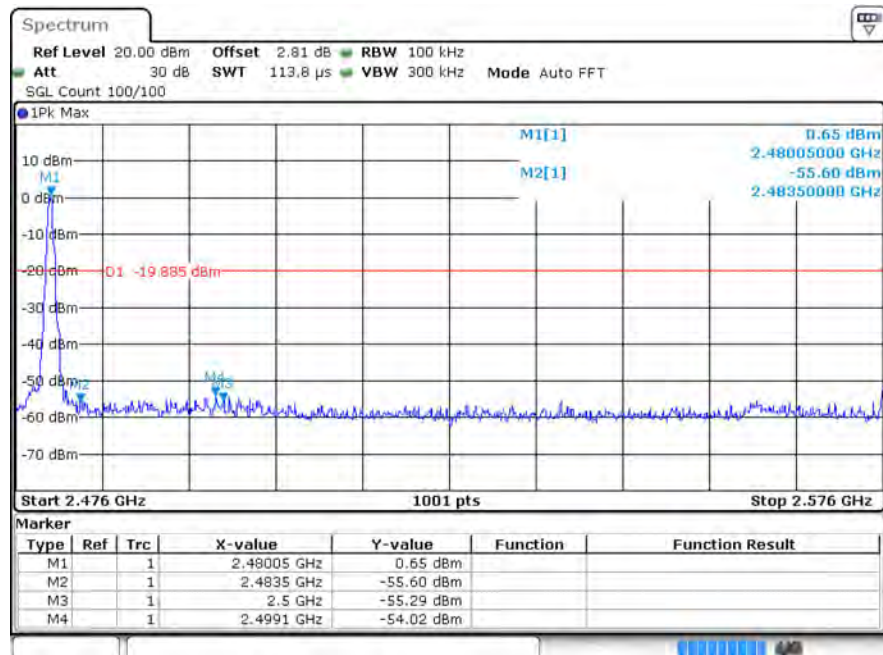




Ref



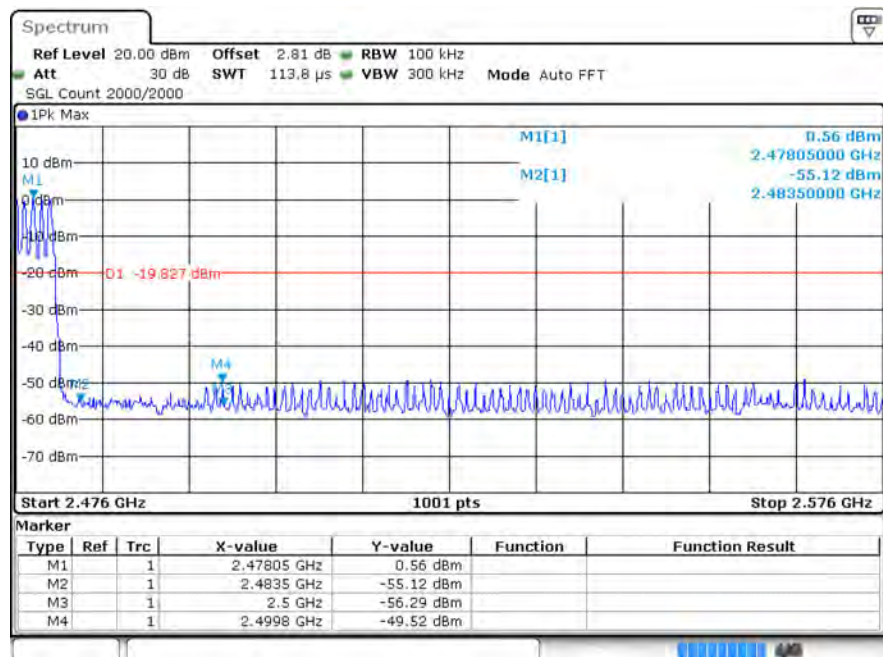
GFSK/HCH/No Hop



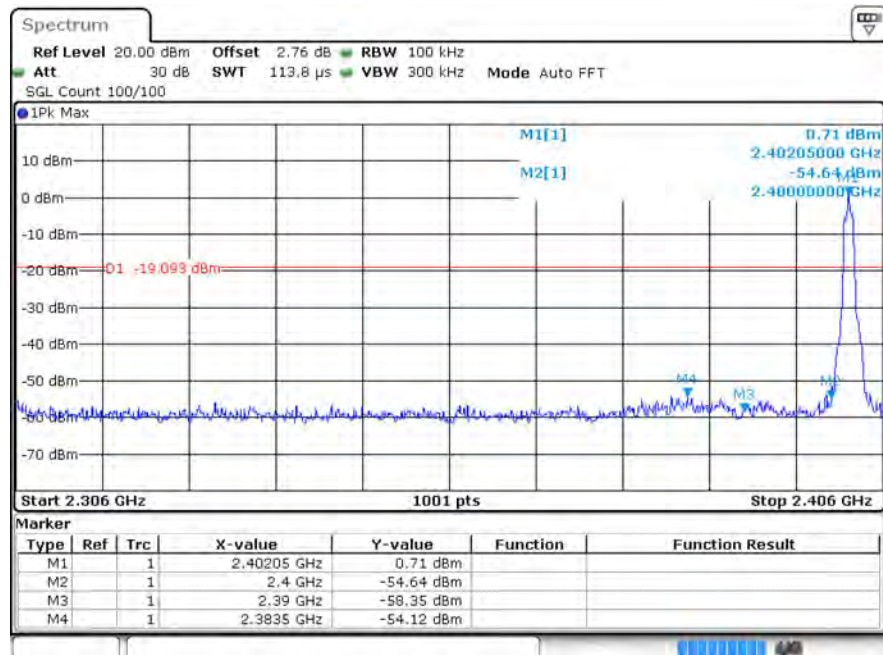
Ref.



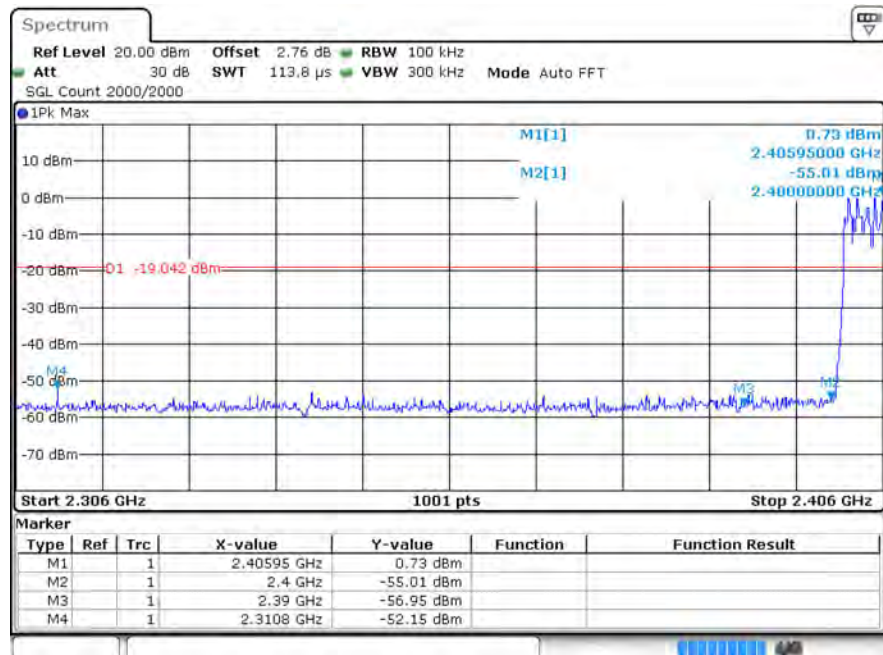
GFSK/HCH/Hop



Ref

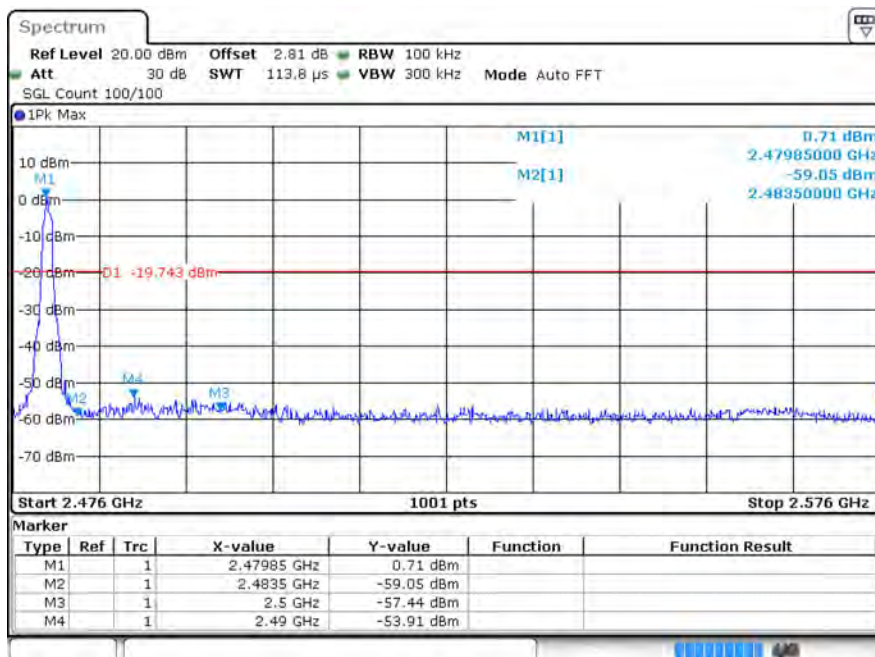

 $\pi/4$ DQPSK/LCH/No Hop


Ref

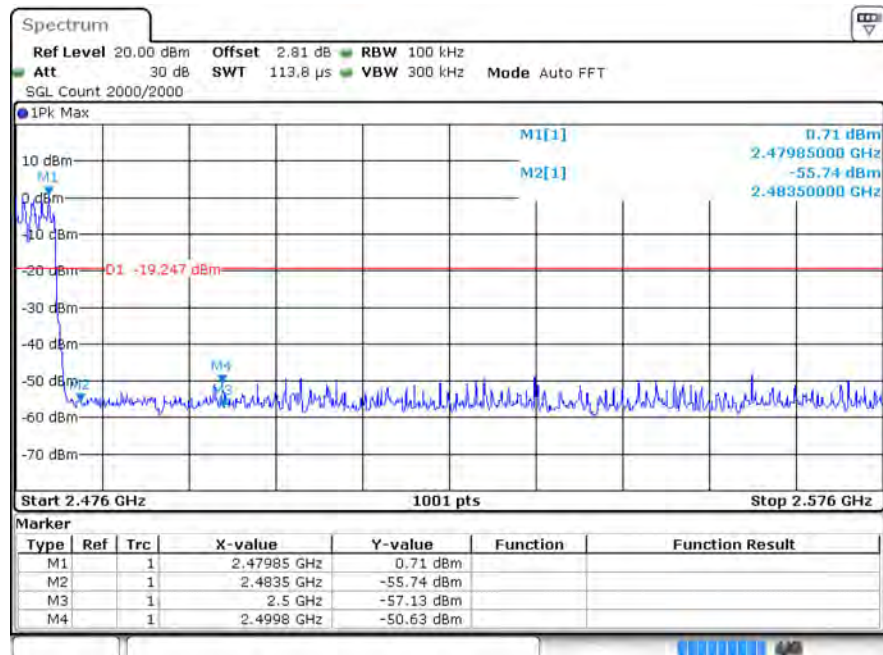

 $\pi/4$ DQPSK/LCH/Hop




Ref


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


Ref

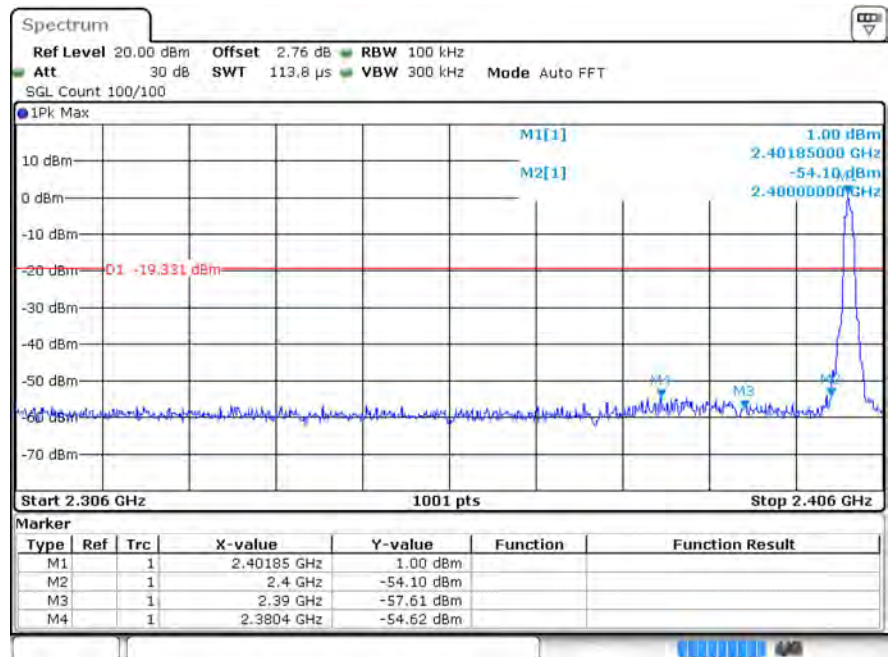

 $\pi/4$ DQPSK/HCH/Hop




Ref



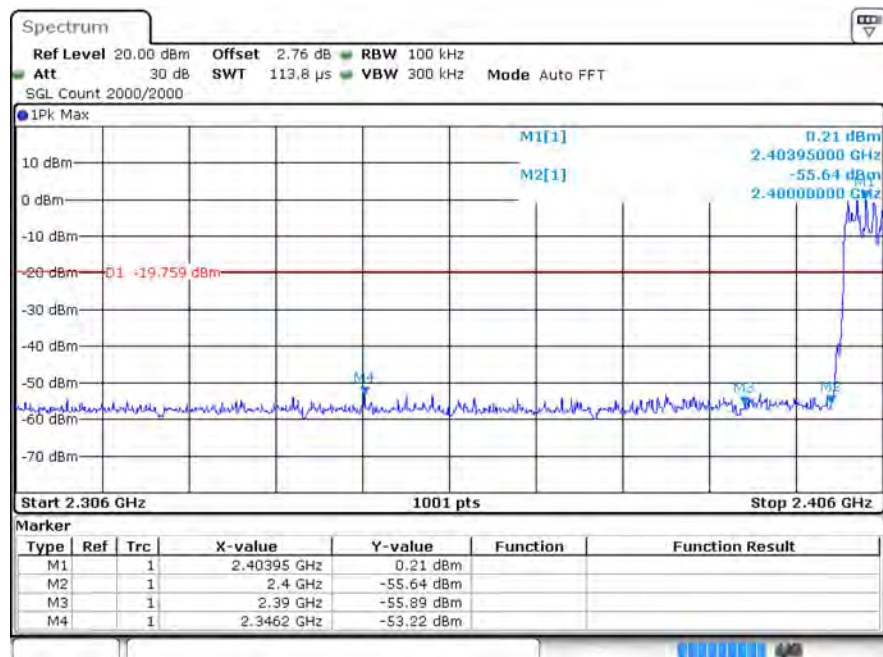
8DPSK/LCH/No Hop



Ref



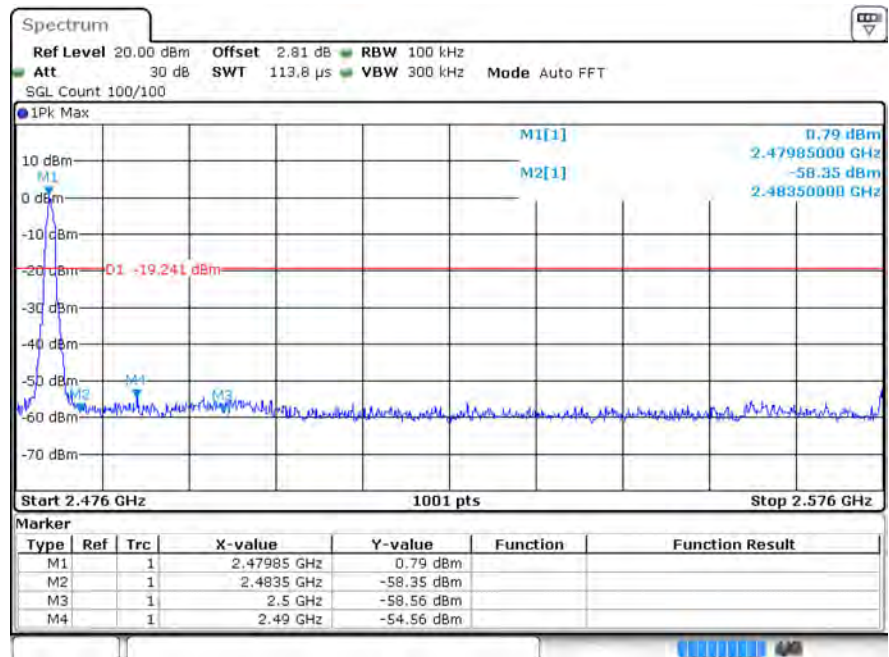
8DPSK/LCH/Hop



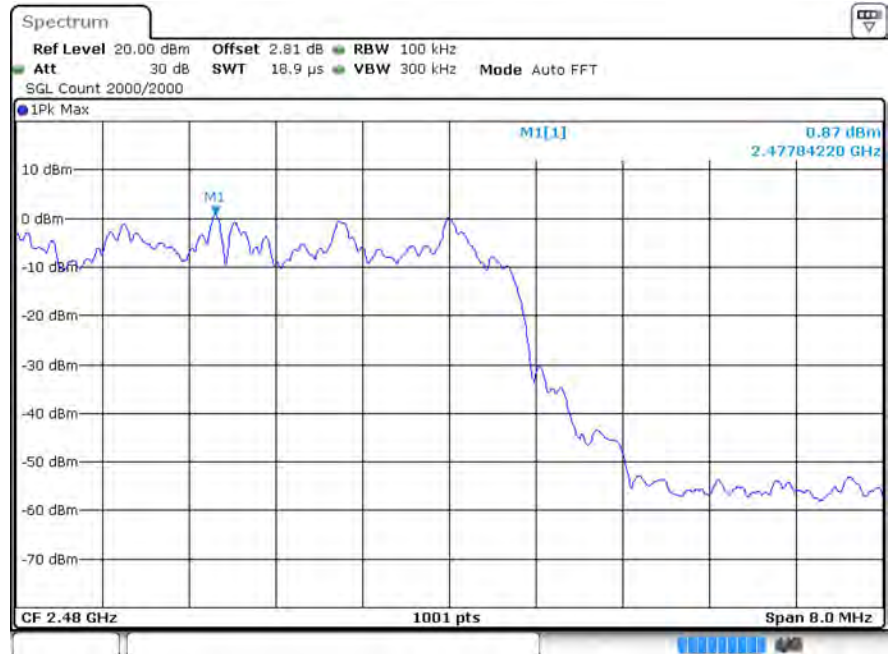
Ref



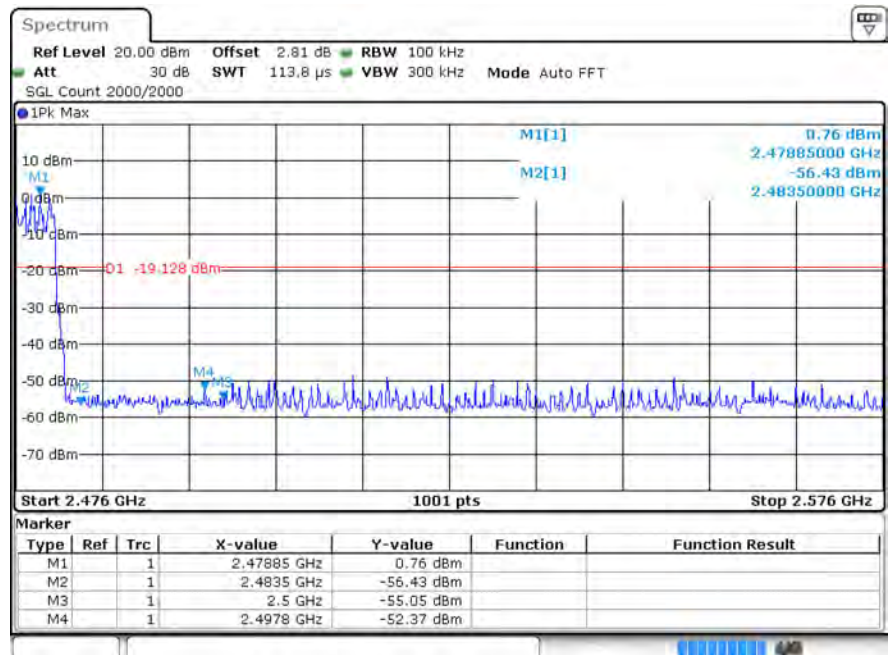
8DPSK/HCH/No Hop



Ref



8DPSK/HCH/Hop



## 9 Restrict-band band-edge measurements

### 9.1 Test Result

| Test Mode     | Hopping | Freq.    | Power [dBm] | Gain | Duty Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|----------|-------------|------|-------------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0   | -50.15      | 2    | -           | 47.11      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -55.87      | 2    | 5.06        | 46.45      | AV       | 54             | Pass    |
|               | Off     | 2387.28  | -45.58      | 2    | -           | 51.68      | PEAK     | 74             | Pass    |
|               | Off     | 2338.512 | -53.82      | 2    | 5.06        | 48.5       | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -47.31      | 2    | -           | 49.95      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -55.9       | 2    | 5.06        | 46.42      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -48.7       | 2    | -           | 48.56      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -55.96      | 2    | 5.08        | 46.38      | AV       | 54             | Pass    |
|               | Off     | 2499.568 | -46.32      | 2    | -           | 50.94      | PEAK     | 74             | Pass    |
|               | Off     | 2491.96  | -55.17      | 2    | 5.08        | 47.17      | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -48.27      | 2    | -           | 48.99      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -55.8       | 2    | 5.08        | 46.54      | AV       | 54             | Pass    |
| $\pi/4$ DQPSK | Off     | 2310.0   | -49         | 2    | -           | 48.26      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -57.37      | 2    | 5.06        | 44.95      | AV       | 54             | Pass    |
|               | Off     | 2387.76  | -45.43      | 2    | -           | 51.83      | PEAK     | 74             | Pass    |
|               | Off     | 2339.088 | -54.44      | 2    | 5.06        | 47.88      | AV       | 54             | Pass    |
|               | Off     | 2390.0   | -47.68      | 2    | -           | 49.58      | PEAK     | 74             | Pass    |
|               | Off     | 2390.0   | -56.61      | 2    | 5.06        | 45.71      | AV       | 54             | Pass    |
|               | Off     | 2483.5   | -50.37      | 2    | -           | 46.89      | PEAK     | 74             | Pass    |
|               | Off     | 2483.5   | -55.61      | 2    | 4.95        | 46.6       | AV       | 54             | Pass    |
|               | Off     | 2493.208 | -45.29      | 2    | -           | 51.97      | PEAK     | 74             | Pass    |
|               | Off     | 2499.256 | -54.61      | 2    | 4.95        | 47.6       | AV       | 54             | Pass    |
|               | Off     | 2500.0   | -48.07      | 2    | -           | 49.19      | PEAK     | 74             | Pass    |
|               | Off     | 2500.0   | -55.13      | 2    | 4.95        | 47.08      | AV       | 54             | Pass    |
| 8DPSK         | Off     | 2310.0   | -49.63      | 2    | -           | 47.63      | PEAK     | 74             | Pass    |
|               | Off     | 2310.0   | -56.74      | 2    | 4.95        | 45.47      | AV       | 54             | Pass    |
|               | Off     | 2380.944 | -44         | 2    | -           | 53.26      | PEAK     | 74             | Pass    |
|               | Off     | 2343.216 | -54.46      | 2    | 4.95        | 47.75      | AV       | 54             | Pass    |

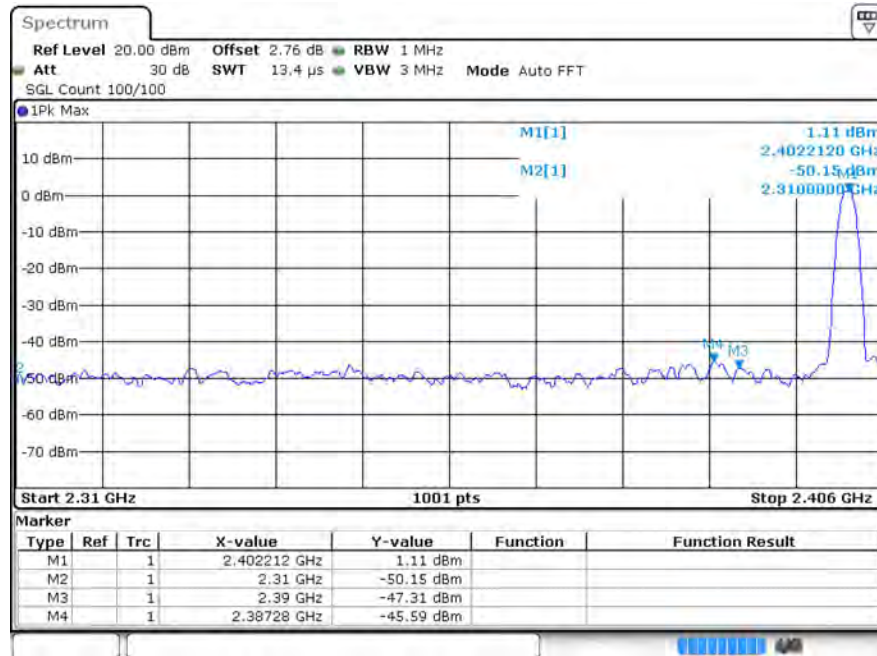




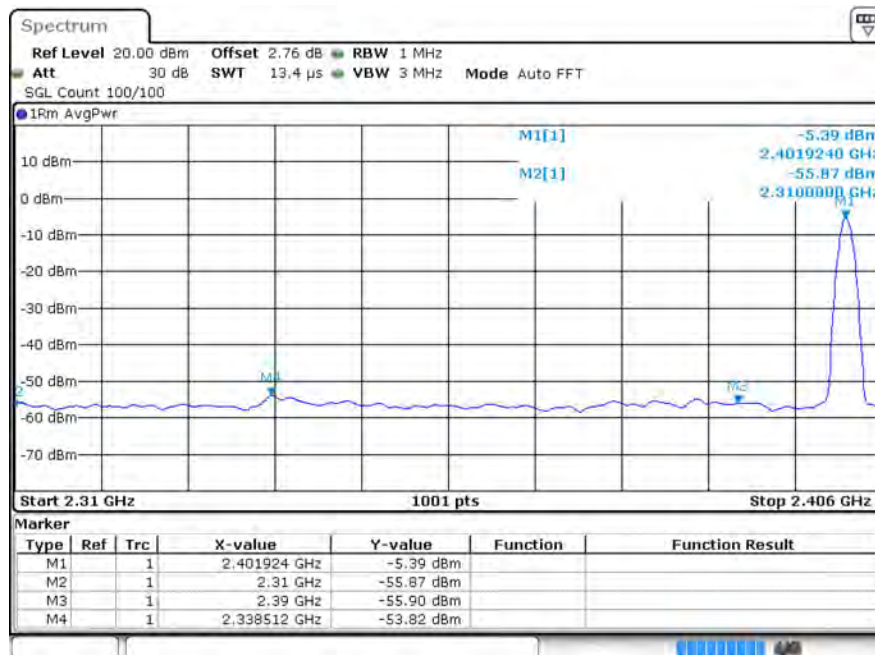
|     |          |        |   |      |       |      |    |      |
|-----|----------|--------|---|------|-------|------|----|------|
| Off | 2390.0   | -49.27 | 2 | -    | 47.99 | PEAK | 74 | Pass |
| Off | 2390.0   | -54.95 | 2 | 4.95 | 47.26 | AV   | 54 | Pass |
| Off | 2483.5   | -48.34 | 2 | -    | 48.92 | PEAK | 74 | Pass |
| Off | 2483.5   | -55.31 | 2 | 4.95 | 46.9  | AV   | 54 | Pass |
| Off | 2498.536 | -46.15 | 2 | -    | 51.11 | PEAK | 74 | Pass |
| Off | 2499.568 | -54.68 | 2 | 4.95 | 47.53 | AV   | 54 | Pass |
| Off | 2500.0   | -48.7  | 2 | -    | 48.56 | PEAK | 74 | Pass |
| Off | 2500.0   | -55.01 | 2 | 4.95 | 47.2  | AV   | 54 | Pass |

## 9.2 Test Graphs

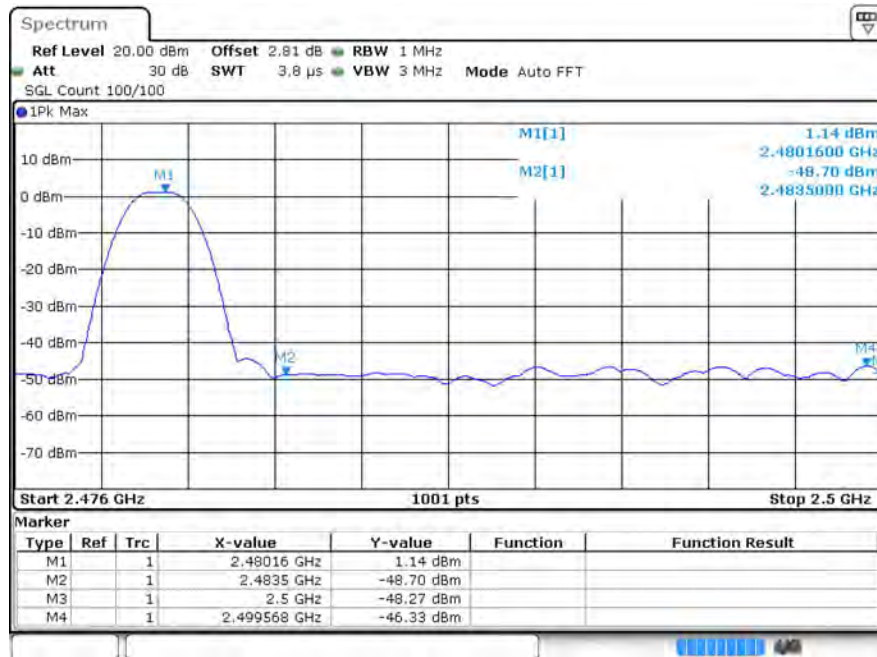
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (Low Channel)



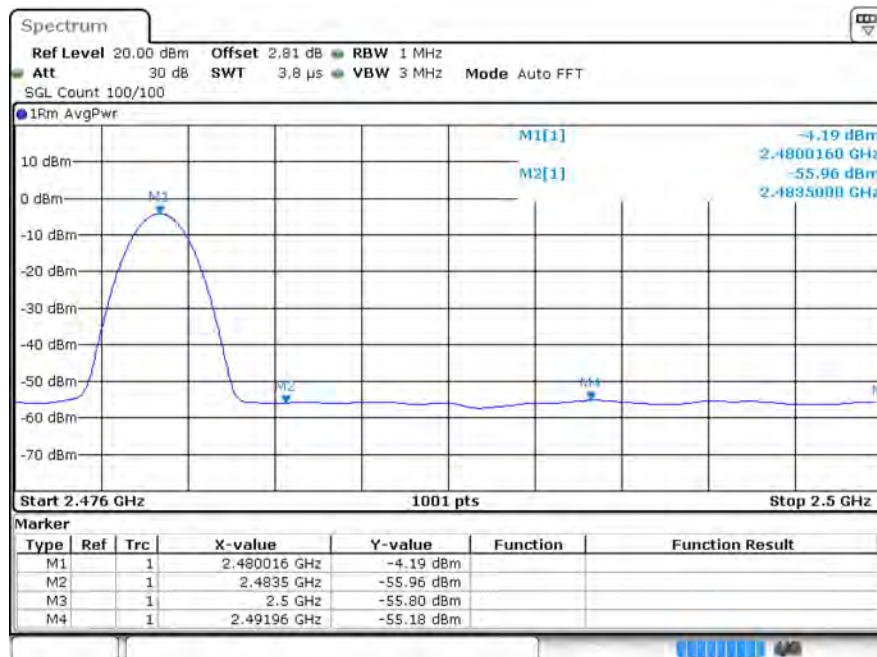
Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (Low Channel)



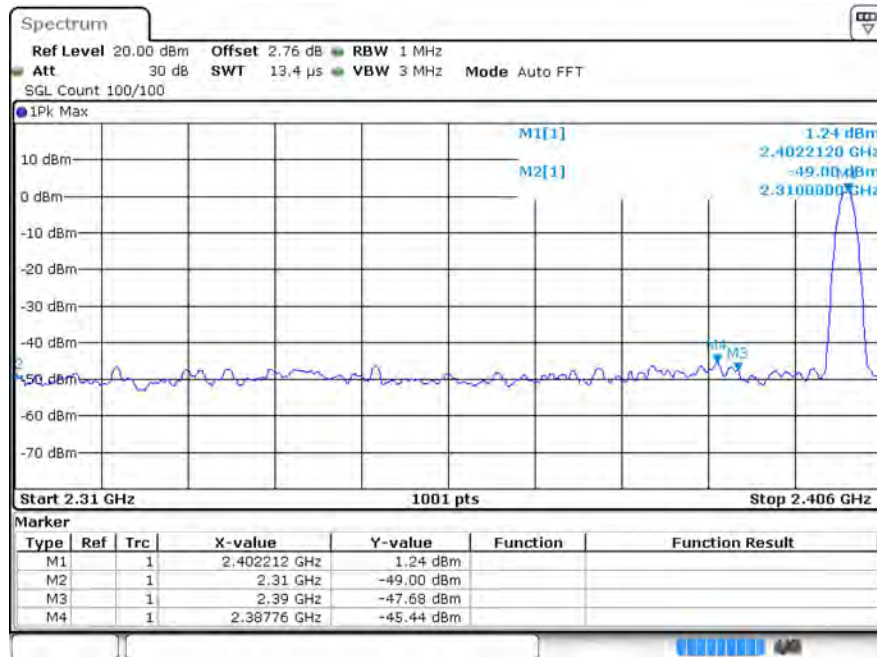
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (High Channel)



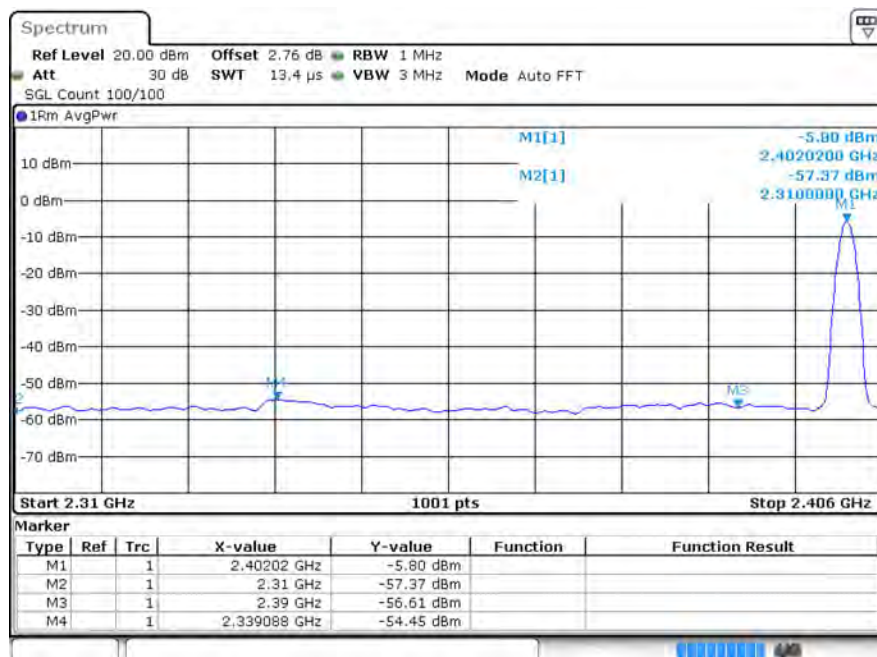
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (High Channel)



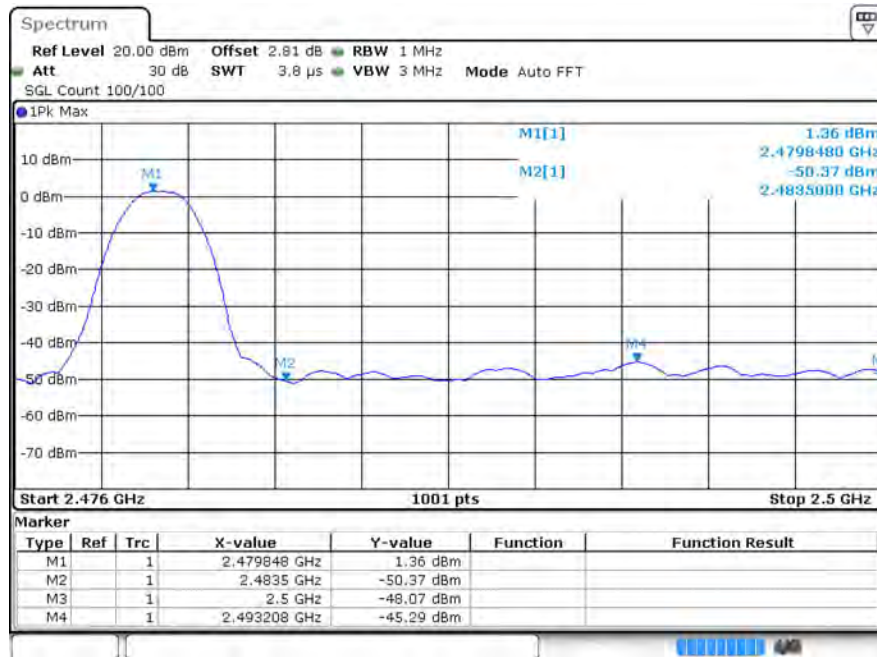
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (Low Channel)



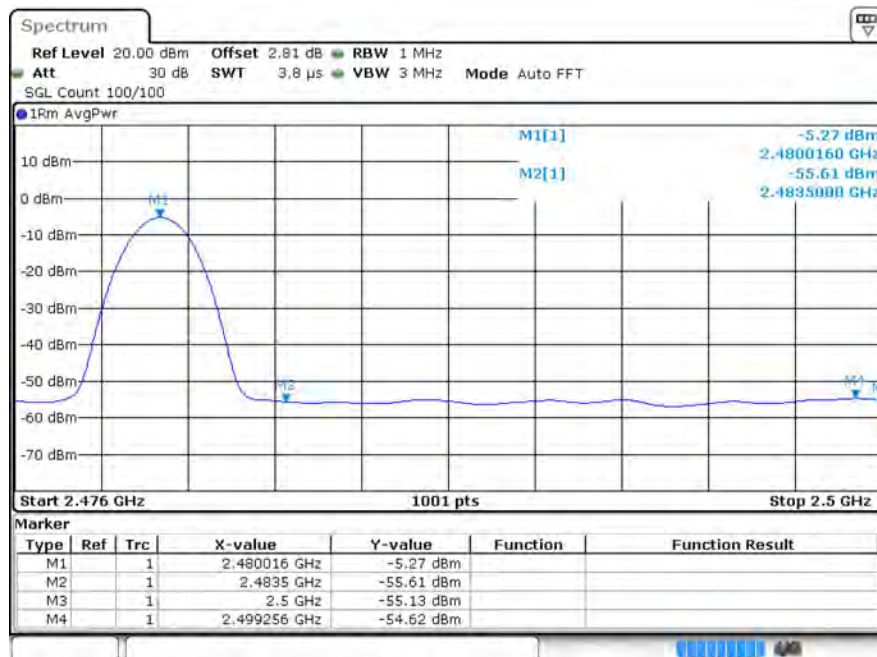
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (Low Channel)



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

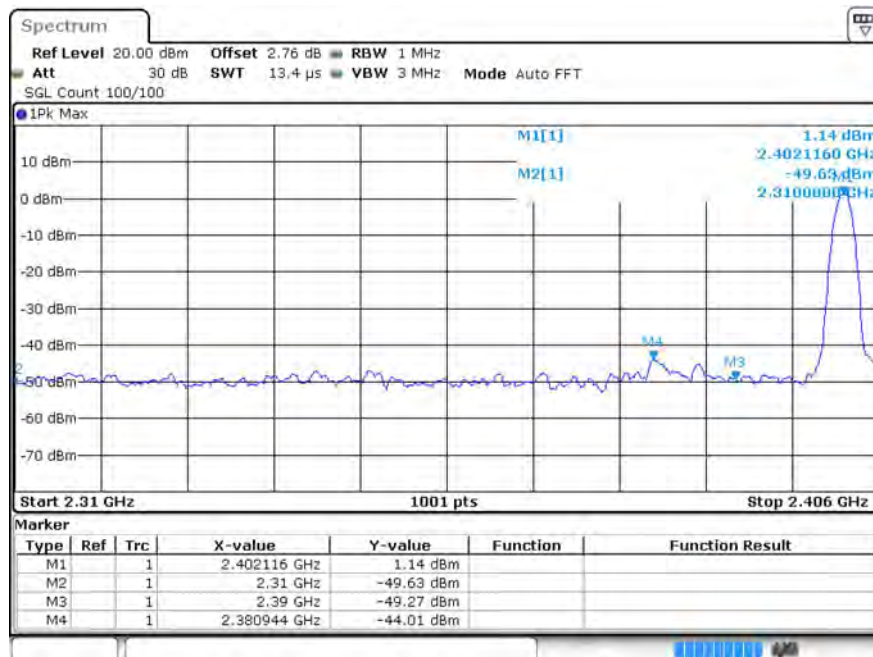


## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)

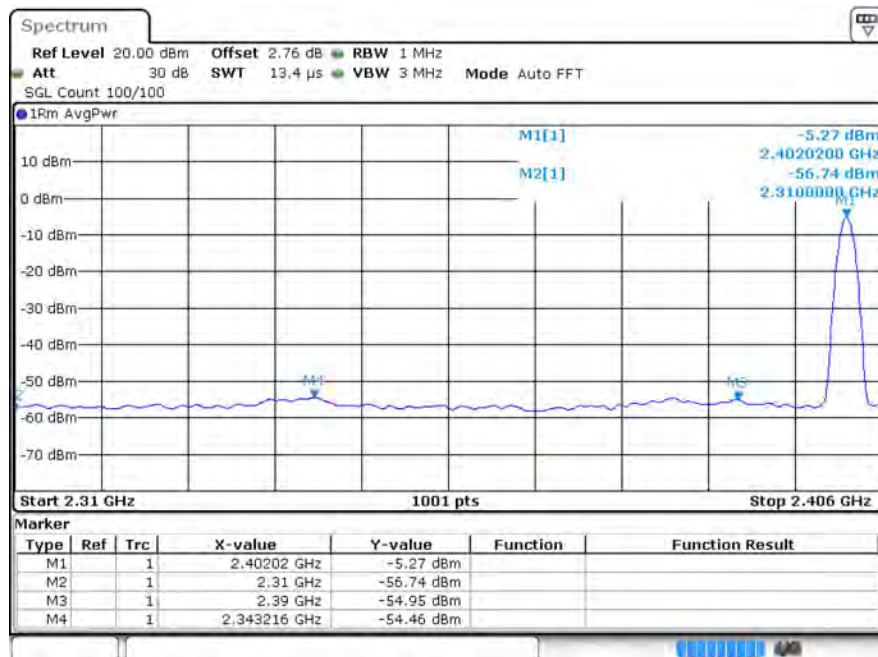




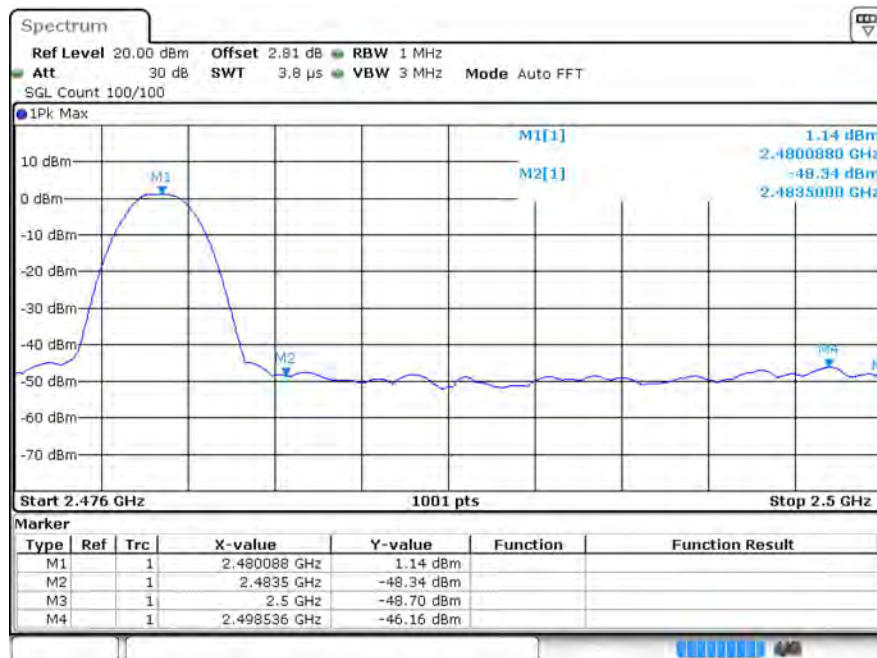
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



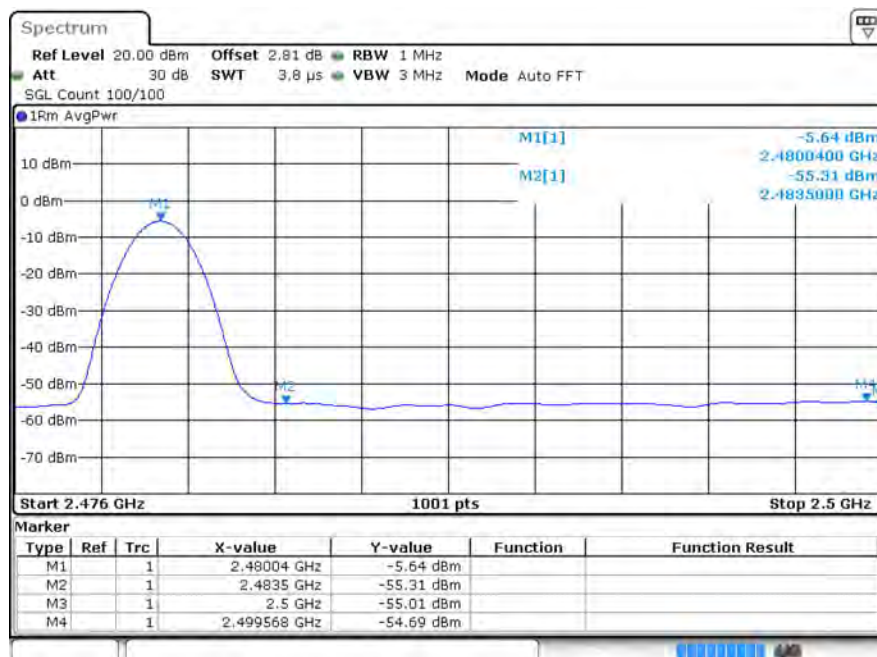
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_Average (Low Channel)



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



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



---The End---