



## Appendix A

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

Product Name: AI Speech Processor

Trade Mark: OEQ®

Test Model: D8

#### Environmental Conditions

|                    |          |
|--------------------|----------|
| Temperature:       | 25.8°C   |
| Relative Humidity: | 52.2%    |
| ATM Pressure:      | 101Kpa   |
| Test Engineer:     | Leon.yi  |
| Supervised by:     | Sean She |



# Contents

Page

**COVER PAGE**

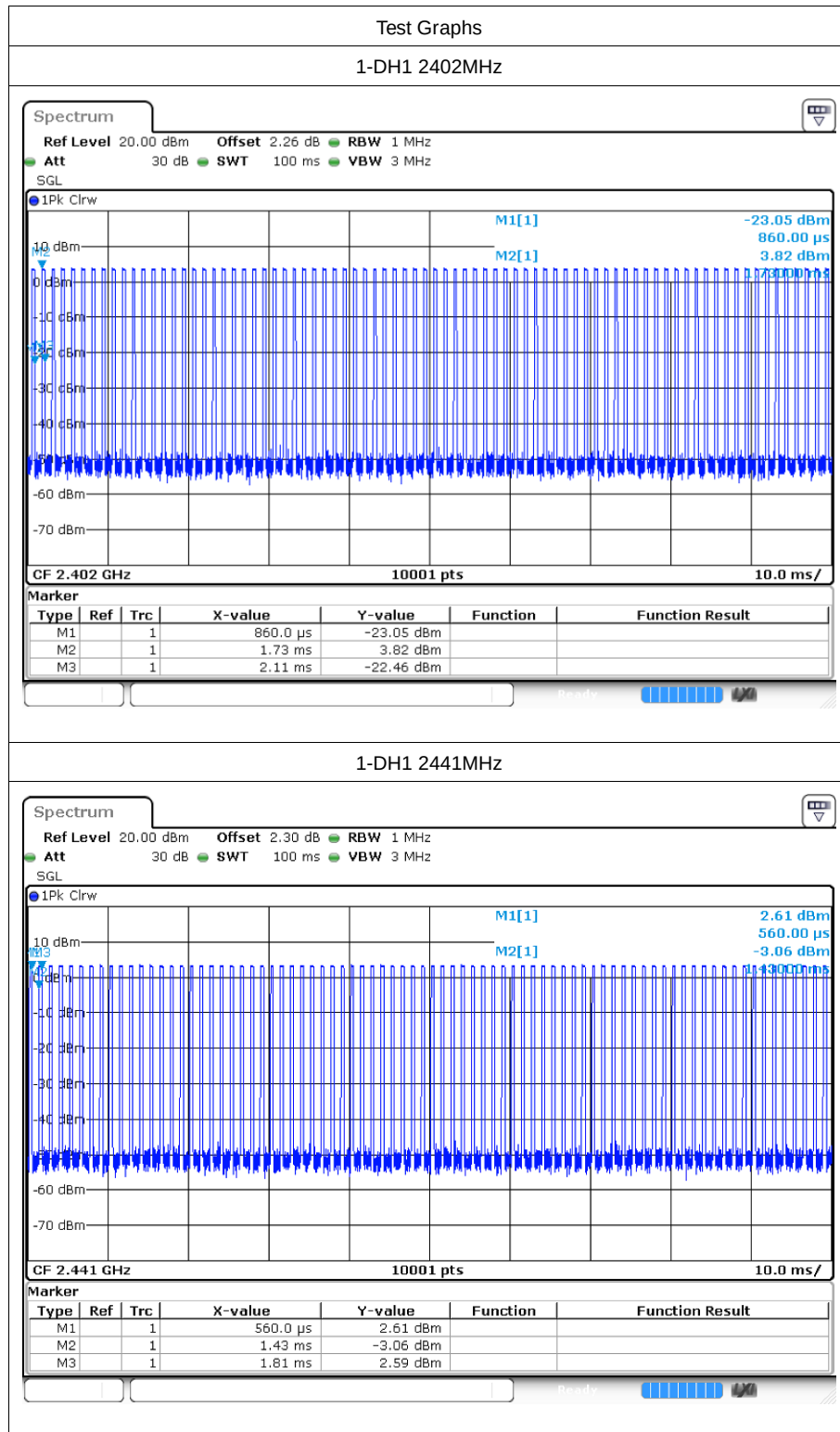
|     |                                            |    |
|-----|--------------------------------------------|----|
| 1   | Duty Cycle.....                            | 3  |
| 1.1 | Test Result.....                           | 3  |
| 1.2 | Test Graphs .....                          | 4  |
| 2   | Maximum Conducted Peak Output Power .....  | 9  |
| 2.1 | Test Result.....                           | 9  |
| 2.2 | Test Graphs .....                          | 10 |
| 3   | 20dB Bandwidth.....                        | 15 |
| 3.1 | Test Result.....                           | 15 |
| 3.2 | Test Graphs .....                          | 16 |
| 4   | Carrier Frequency Separation .....         | 21 |
| 4.1 | Test Result.....                           | 21 |
| 4.2 | Test Graphs .....                          | 22 |
| 5   | Hopping Channel Number.....                | 24 |
| 5.1 | Test Result.....                           | 24 |
| 5.2 | Test Graphs .....                          | 25 |
| 6   | Dwell Time .....                           | 27 |
| 6.1 | Test Result.....                           | 27 |
| 6.2 | Test Graphs .....                          | 28 |
| 7   | RF Conducted Spurious Emissions .....      | 31 |
| 7.1 | Test Result.....                           | 31 |
| 7.2 | Test Graphs .....                          | 32 |
| 8   | Band-edge for RF Conducted Emissions ..... | 41 |
| 8.1 | Test Result.....                           | 41 |
| 8.2 | Test Graphs .....                          | 42 |

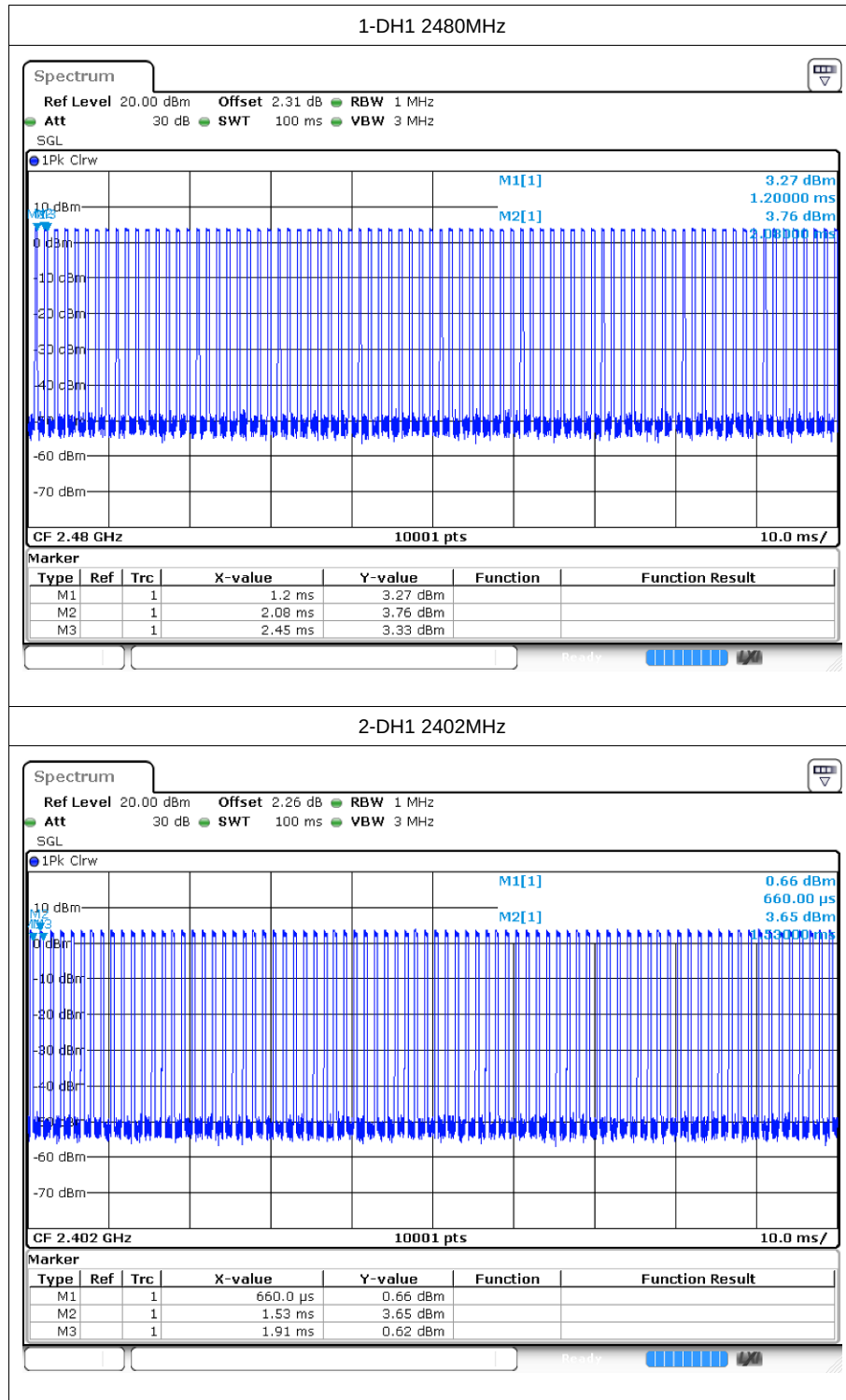
# 1 Duty Cycle

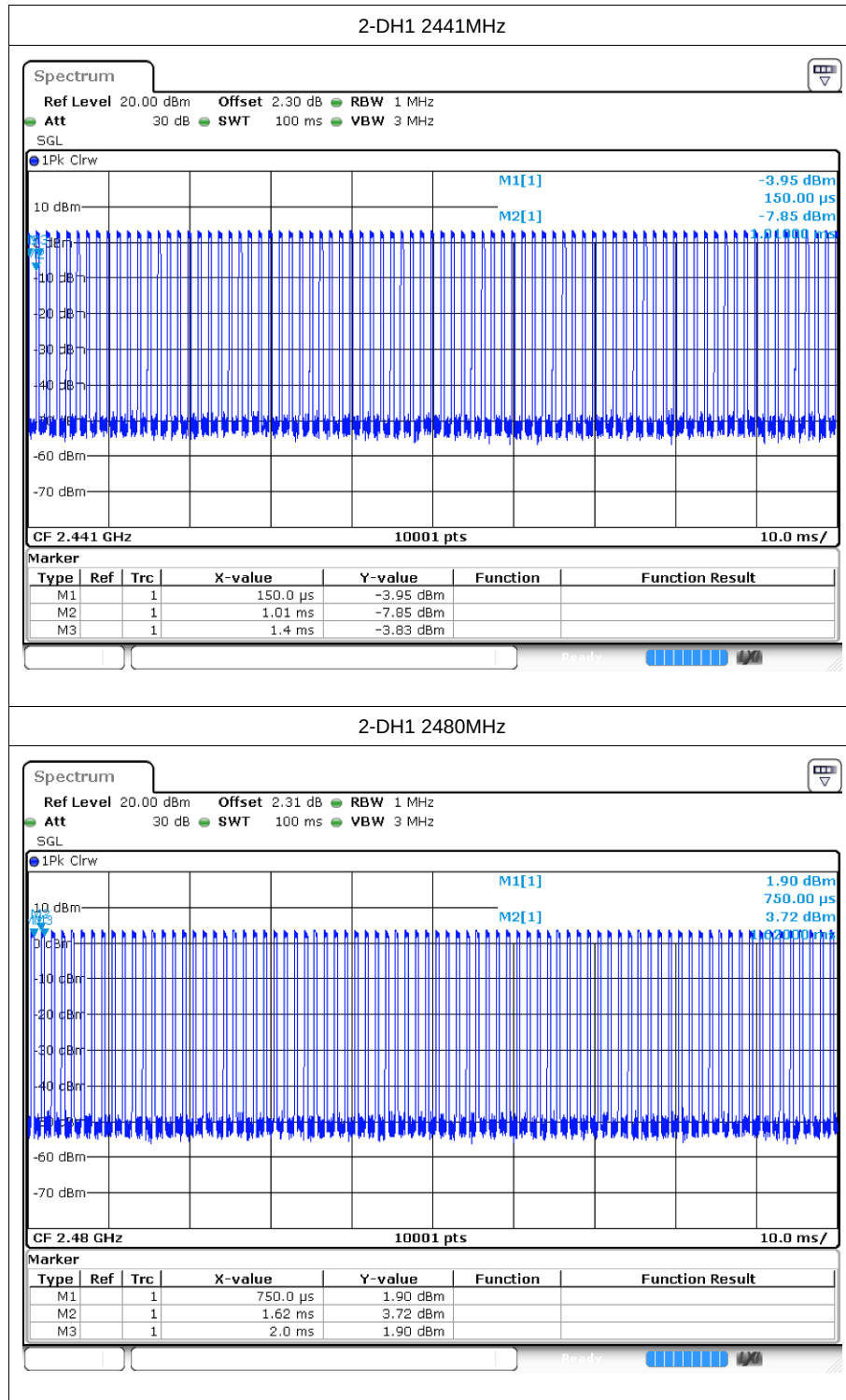
## 1.1 Test Result

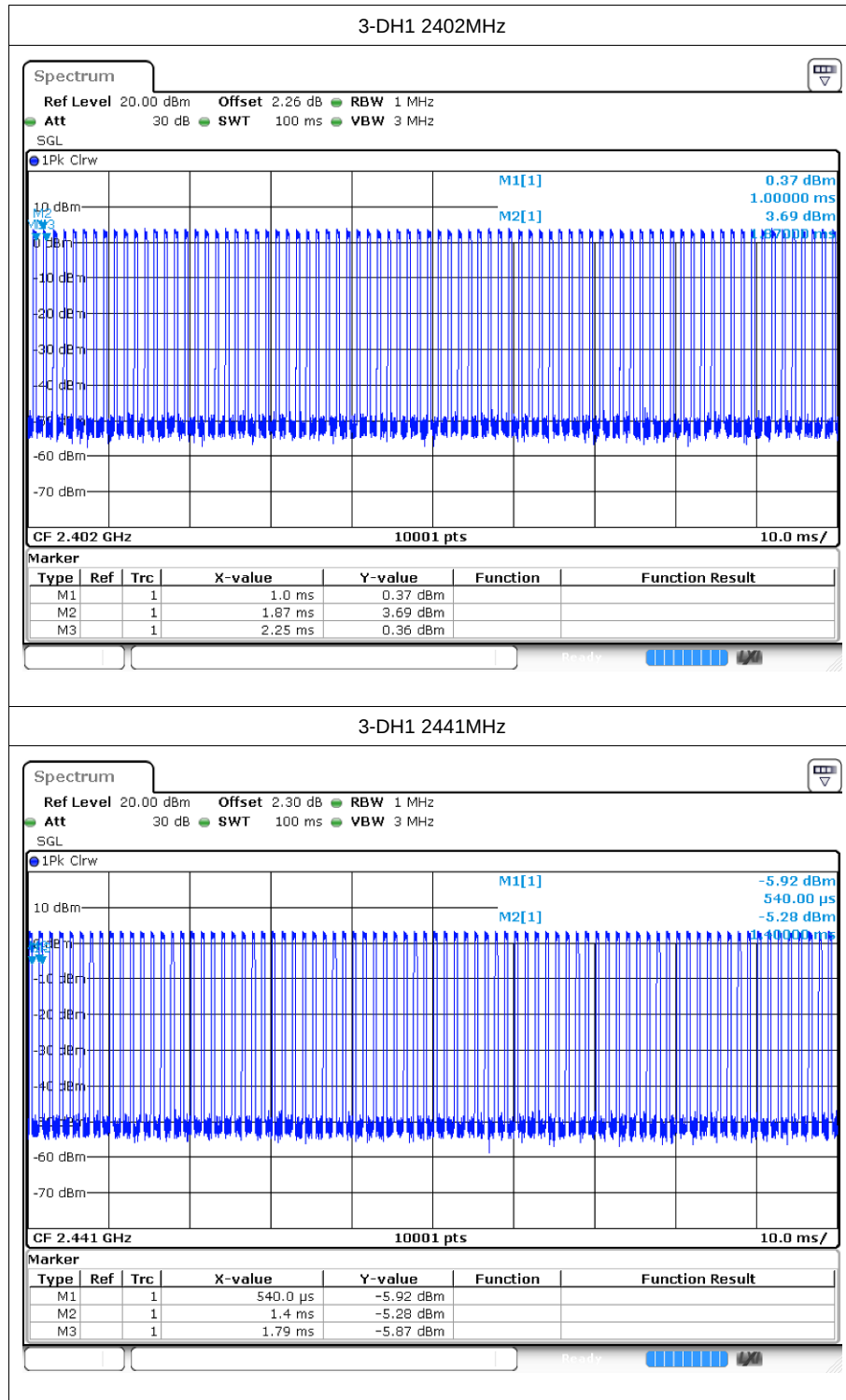
| Mode  | Frequency (MHz) | Duty Cycle (%) | 1/T (kHz) |
|-------|-----------------|----------------|-----------|
| 1-DH1 | 2402            | 31.2           | 2.63      |
| 1-DH1 | 2441            | 31.2           | 2.63      |
| 1-DH1 | 2480            | 30.71          | 2.7       |
| 2-DH1 | 2402            | 31.2           | 2.63      |
| 2-DH1 | 2441            | 32.01          | 2.56      |
| 2-DH1 | 2480            | 31.2           | 2.63      |
| 3-DH1 | 2402            | 31.2           | 2.63      |
| 3-DH1 | 2441            | 32             | 2.56      |
| 3-DH1 | 2480            | 31.21          | 2.63      |

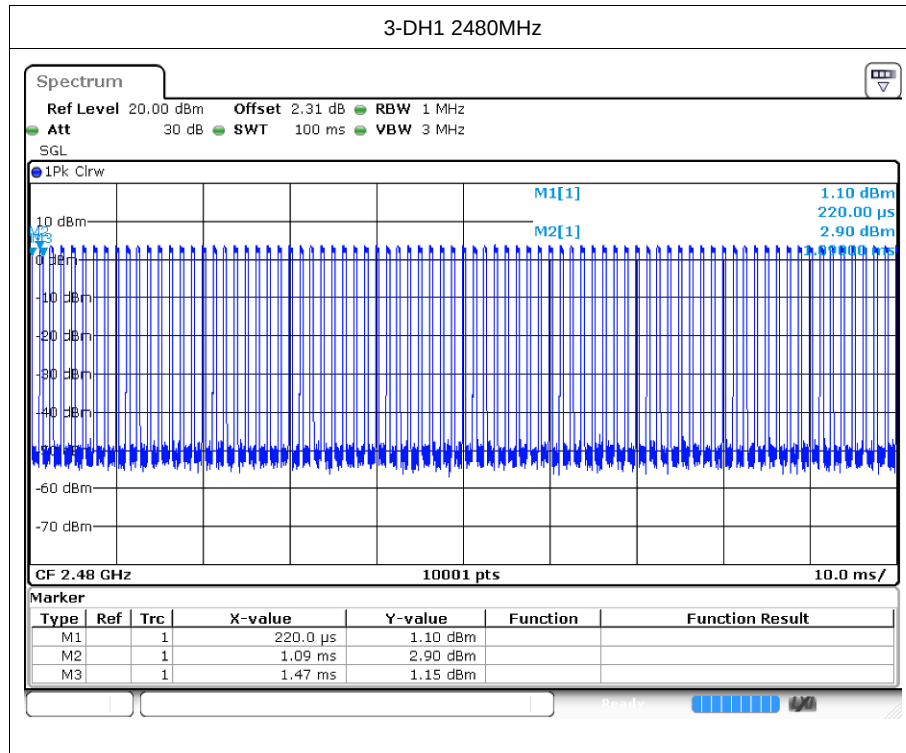
## 1.2 Test Graphs









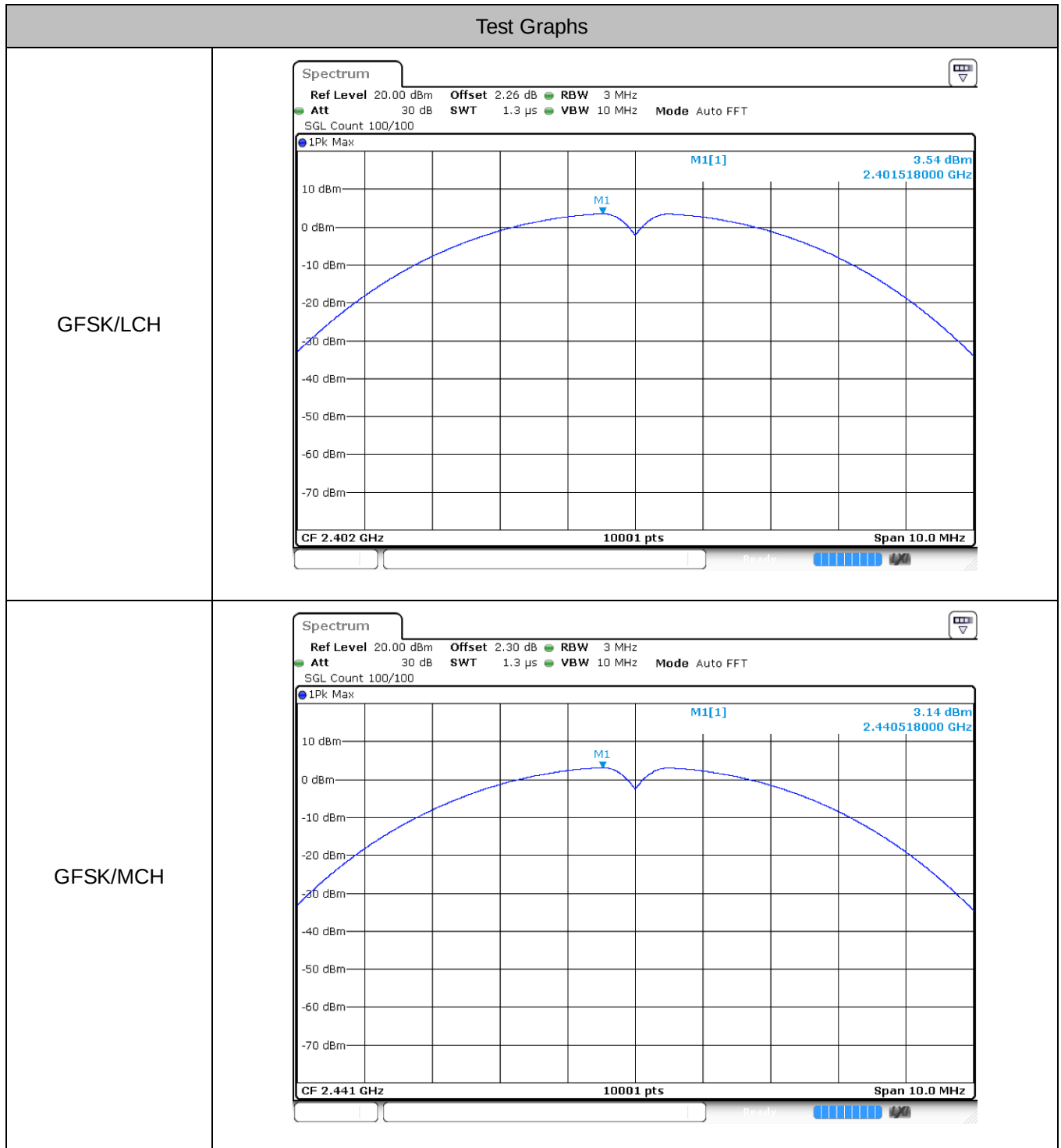


## 2 Maximum Conducted Peak Output Power

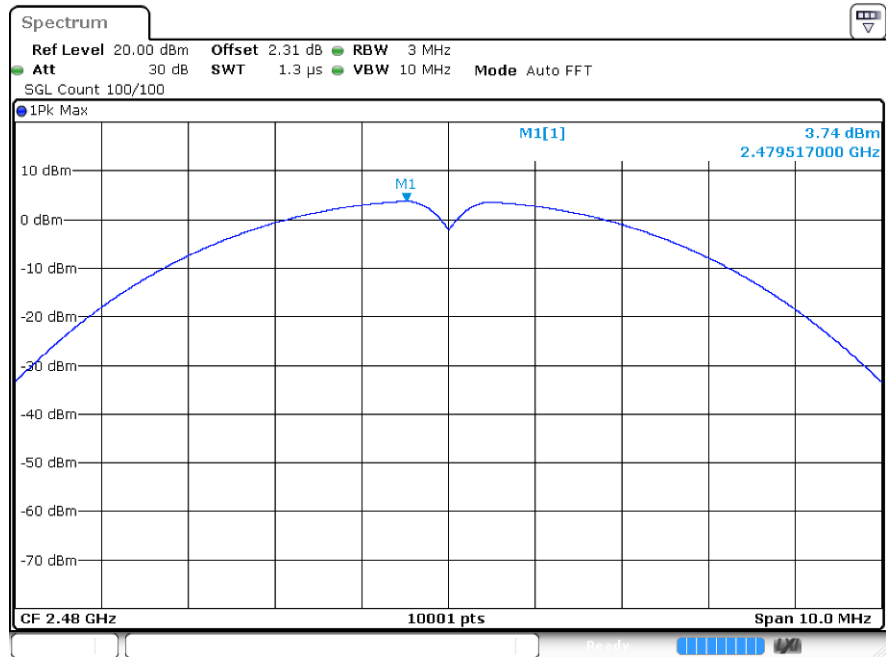
### 2.1 Test Result

| Mode          | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK          | LCH      | 3.54                            | 21          | Pass    |
|               | MCH      | 3.14                            | 21          | Pass    |
|               | HCH      | 3.74                            | 21          | Pass    |
| $\pi/4$ DQPSK | LCH      | 3.59                            | 21          | Pass    |
|               | MCH      | 3.02                            | 21          | Pass    |
|               | HCH      | 3.38                            | 21          | Pass    |
| 8DPSK         | LCH      | 3.42                            | 21          | Pass    |
|               | MCH      | 3.27                            | 21          | Pass    |
|               | HCH      | 3.51                            | 21          | Pass    |

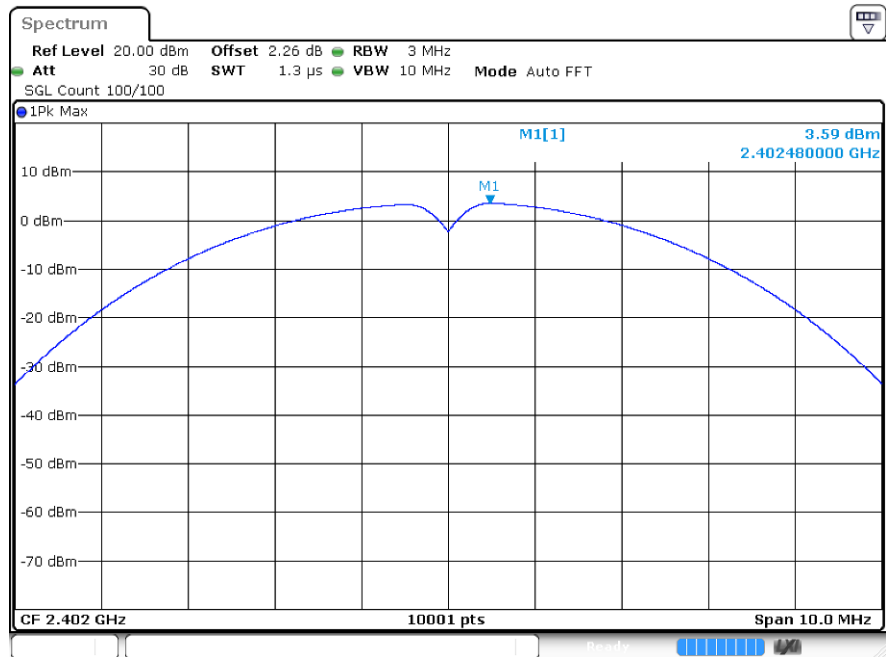
## 2.2 Test Graphs



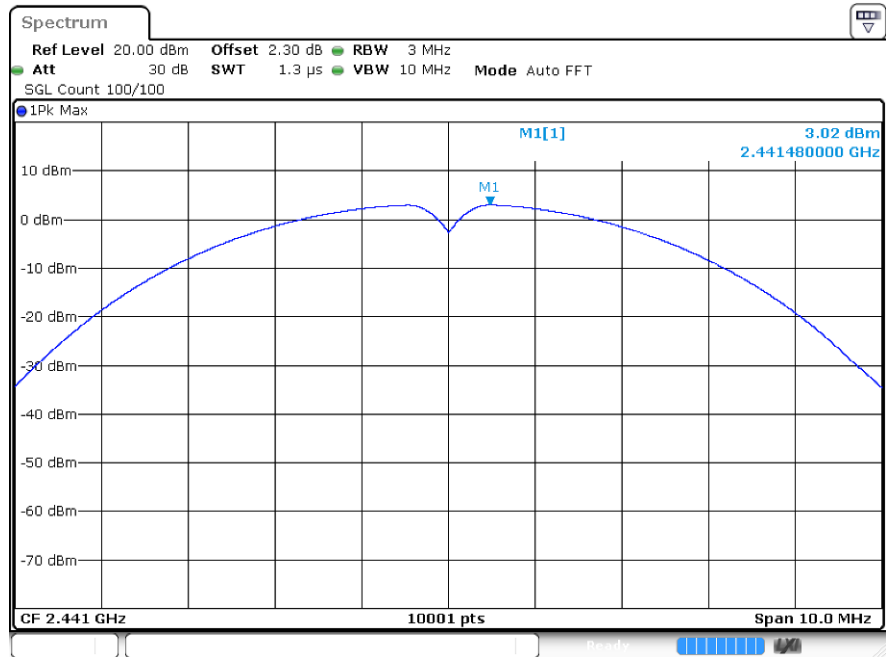
GFSK/HCH



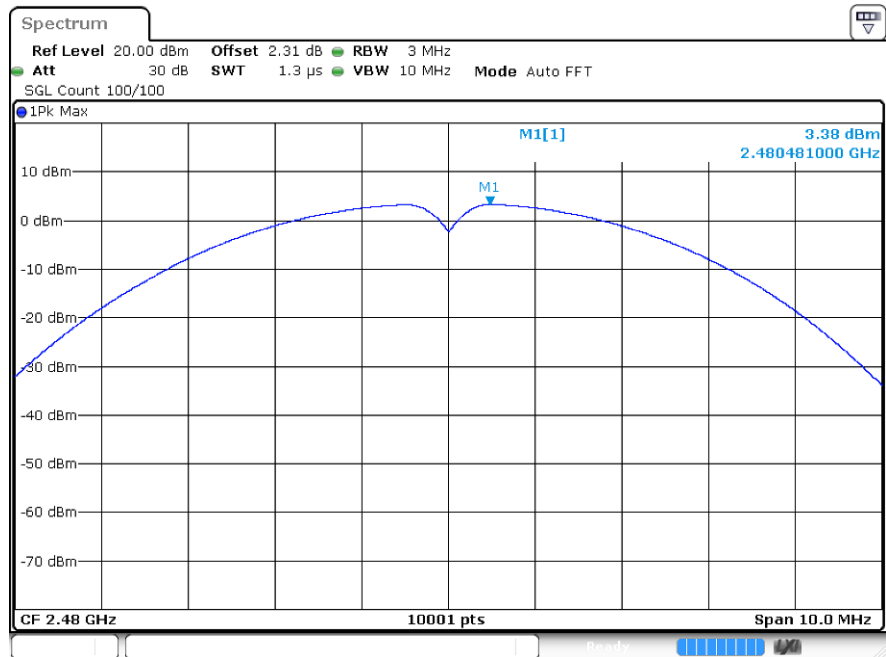
$\pi/4$ DQPSK/LCH



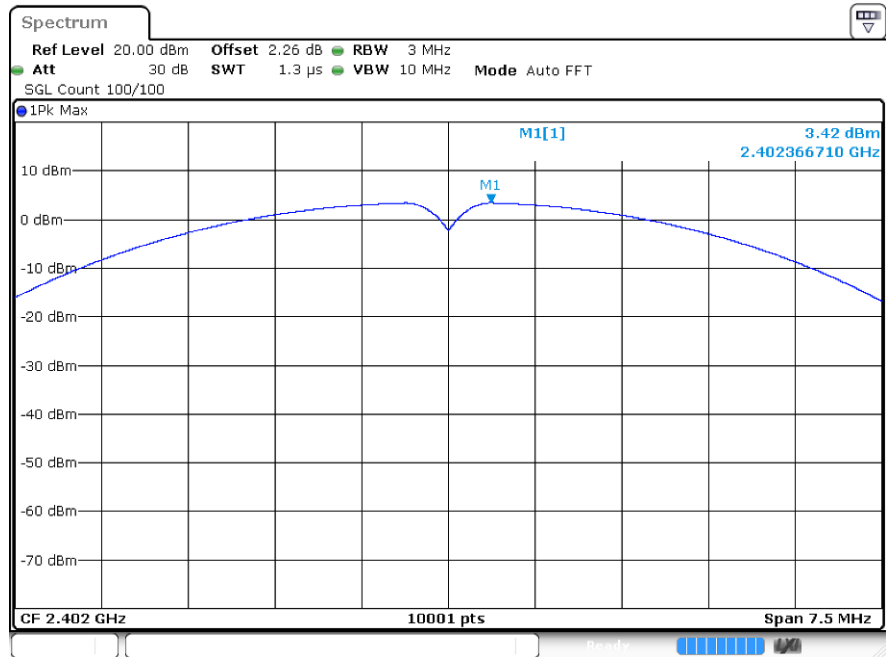
$\pi/4$ DQPSK/MCH



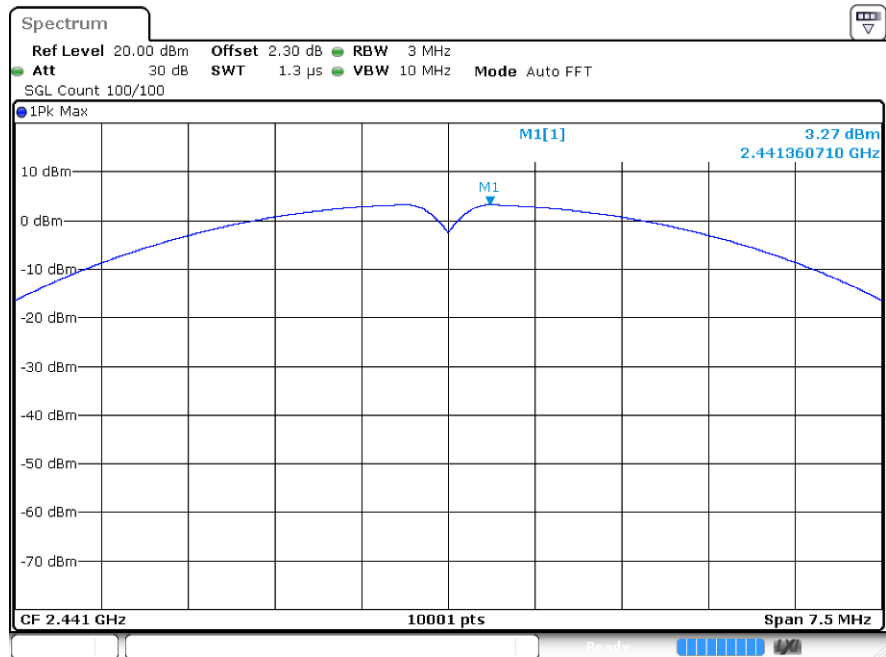
$\pi/4$ DQPSK/HCH



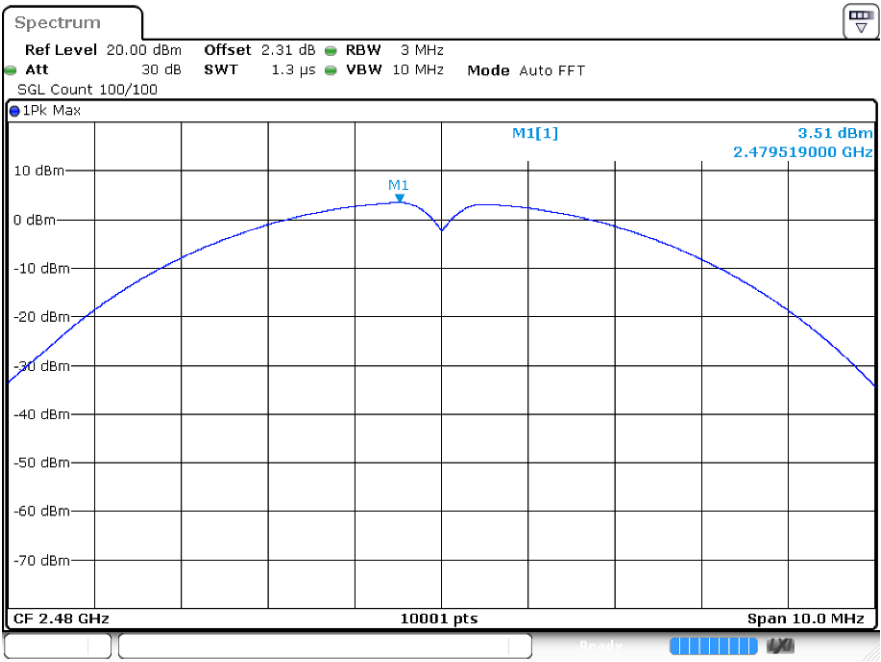
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

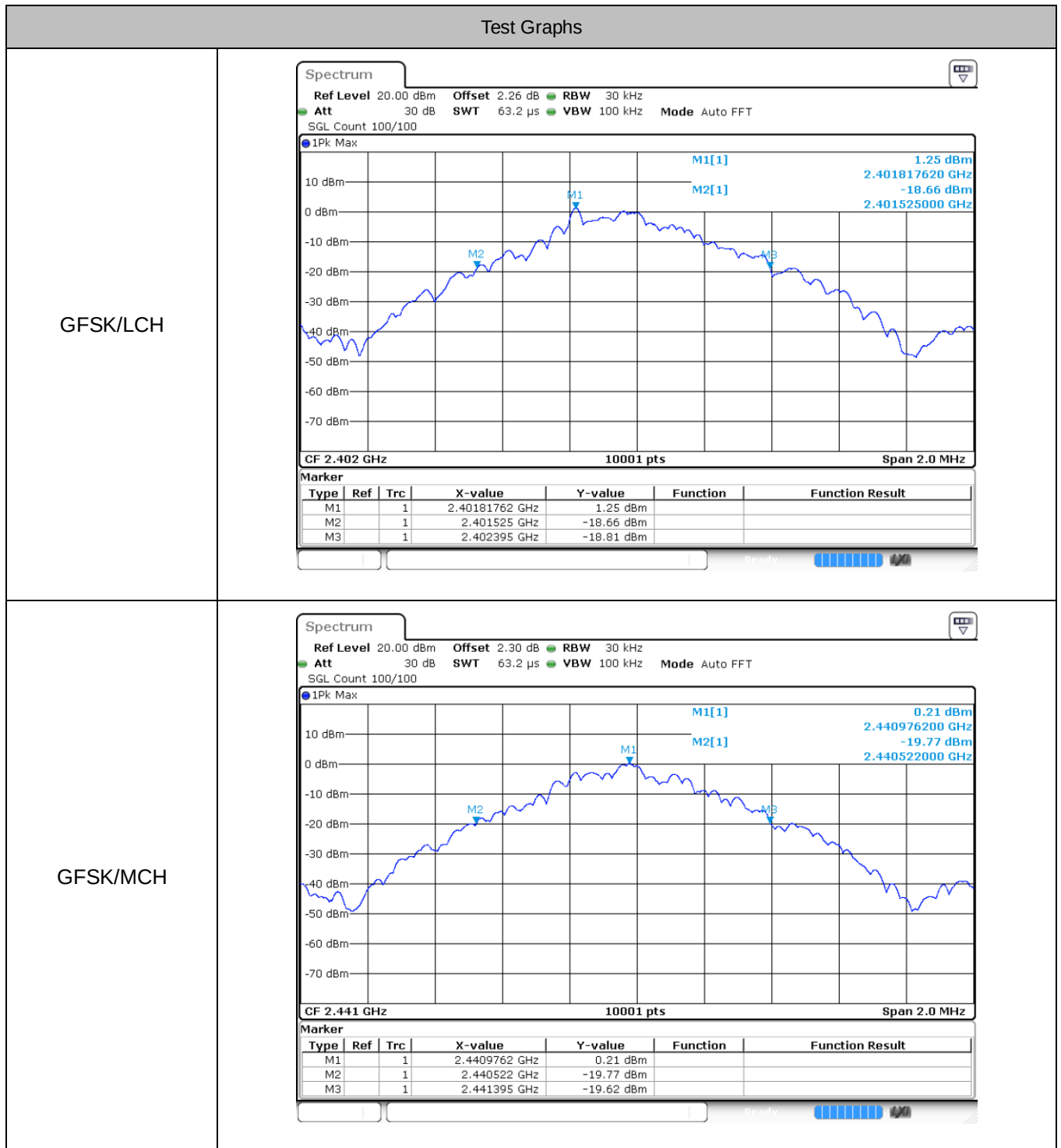


### 3 20dB Bandwidth

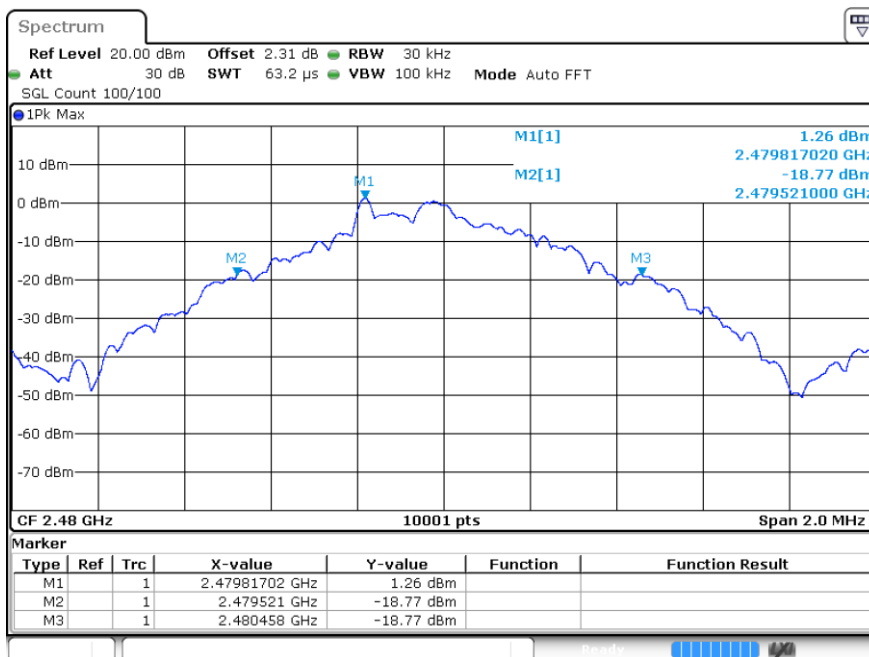
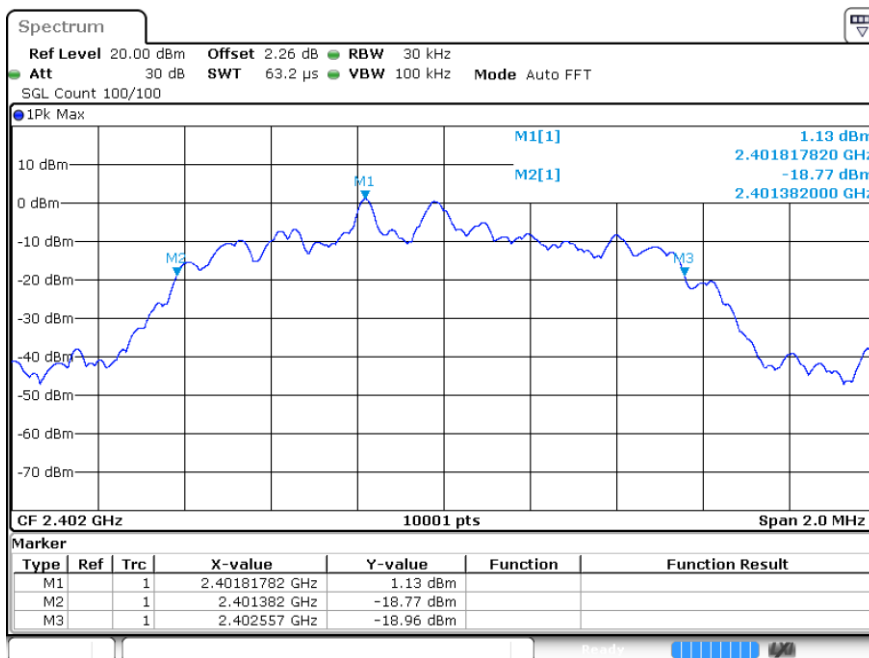
#### 3.1 Test Result

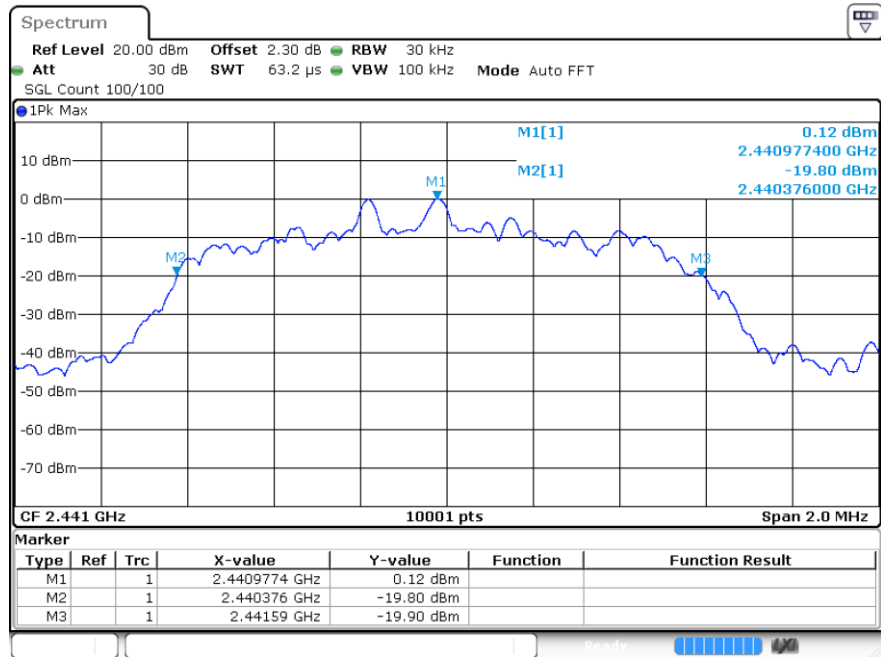
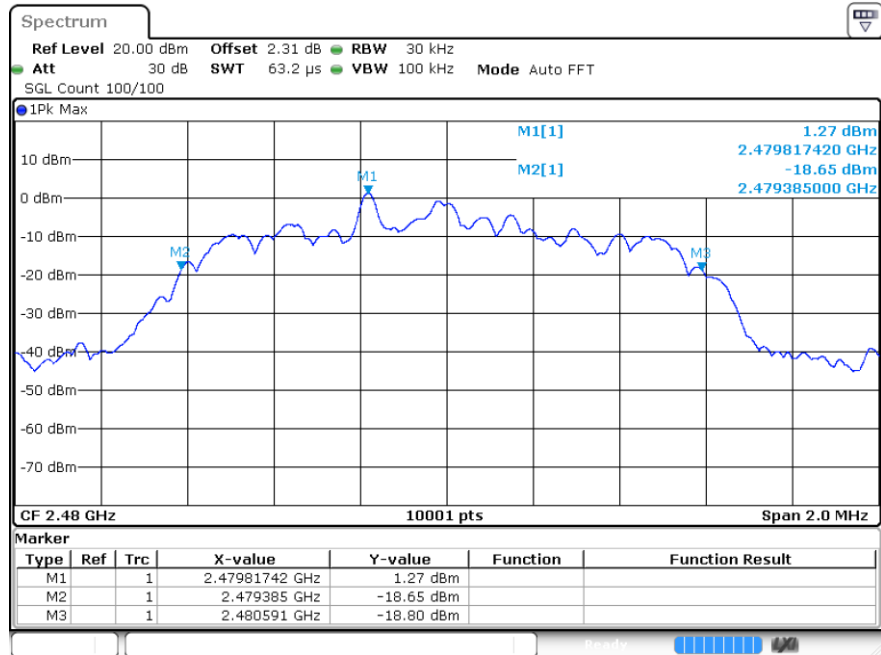
| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.87                 | Not Specified | Pass    |
|               | MCH      | 0.873                | Not Specified | Pass    |
|               | HCH      | 0.937                | Not Specified | Pass    |
| $\pi/4$ DQPSK | LCH      | 1.175                | Not Specified | Pass    |
|               | MCH      | 1.214                | Not Specified | Pass    |
|               | HCH      | 1.206                | Not Specified | Pass    |
| 8DPSK         | LCH      | 1.189                | Not Specified | Pass    |
|               | MCH      | 1.209                | Not Specified | Pass    |
|               | HCH      | 1.211                | Not Specified | Pass    |

### 3.2 Test Graphs

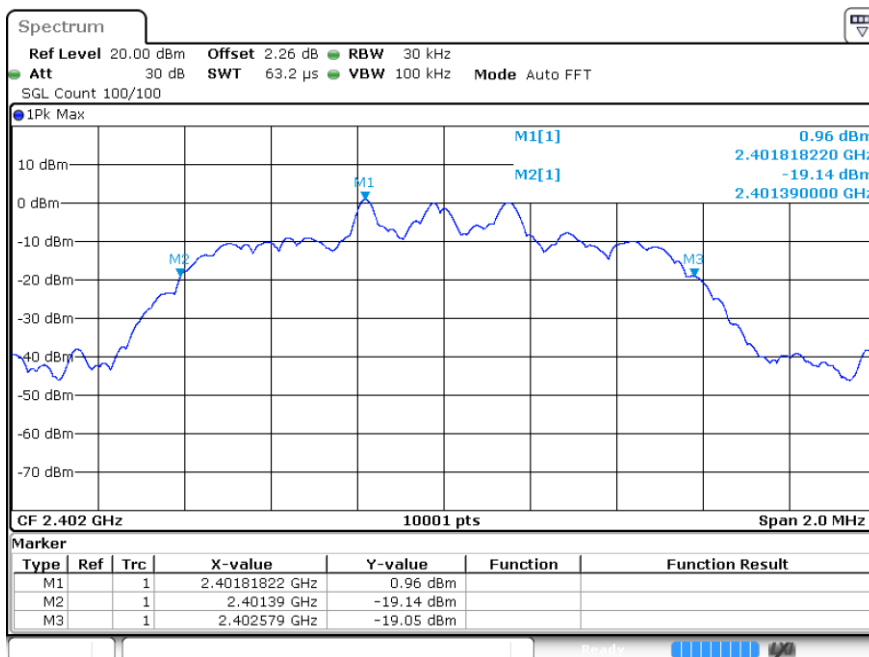


GFSK/HCH

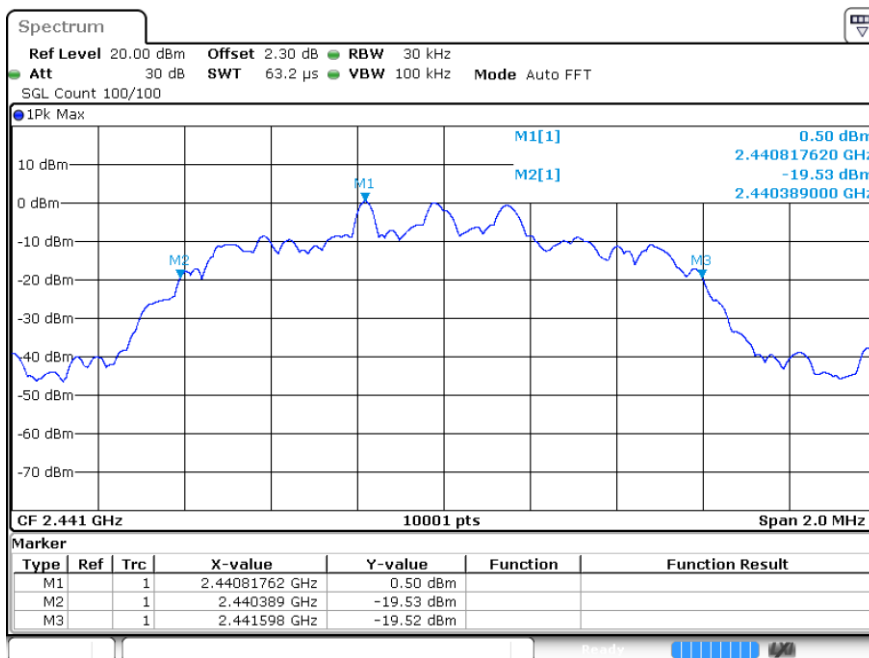

 $\pi/4$ DQPSK/LCH


$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


8DPSK/LCH

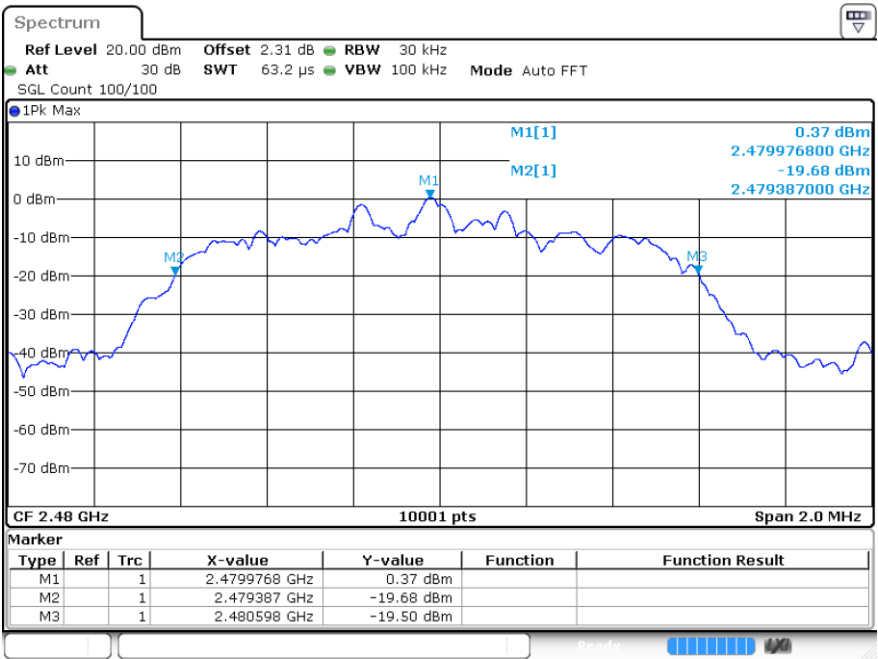


8DPSK/MCH





8DPSK/HCH

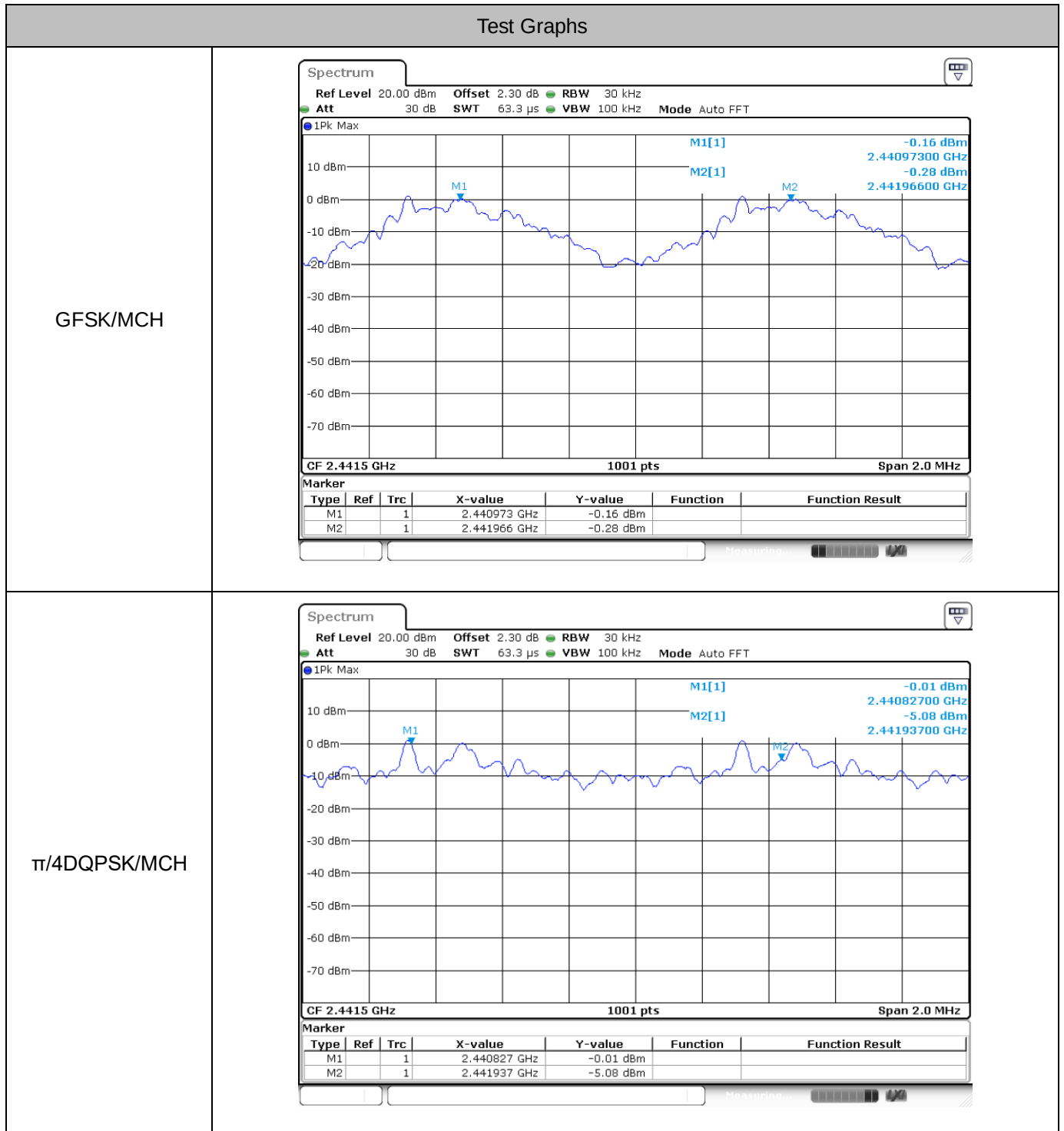


## 4 Carrier Frequency Separation

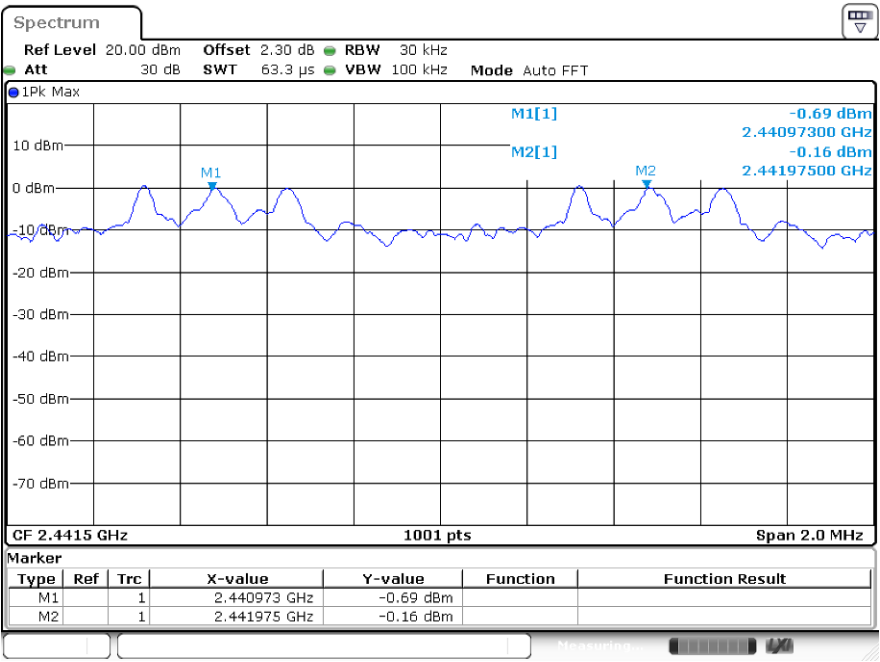
### 4.1 Test Result

| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | MCH      | 0.993                              | 0.582       | Pass    |
| $\pi/4$ DQPSK | MCH      | 1.11                               | 0.809       | Pass    |
| 8DPSK         | MCH      | 1.002                              | 0.806       | Pass    |

## 4.2 Test Graphs



8DPSK/MCH

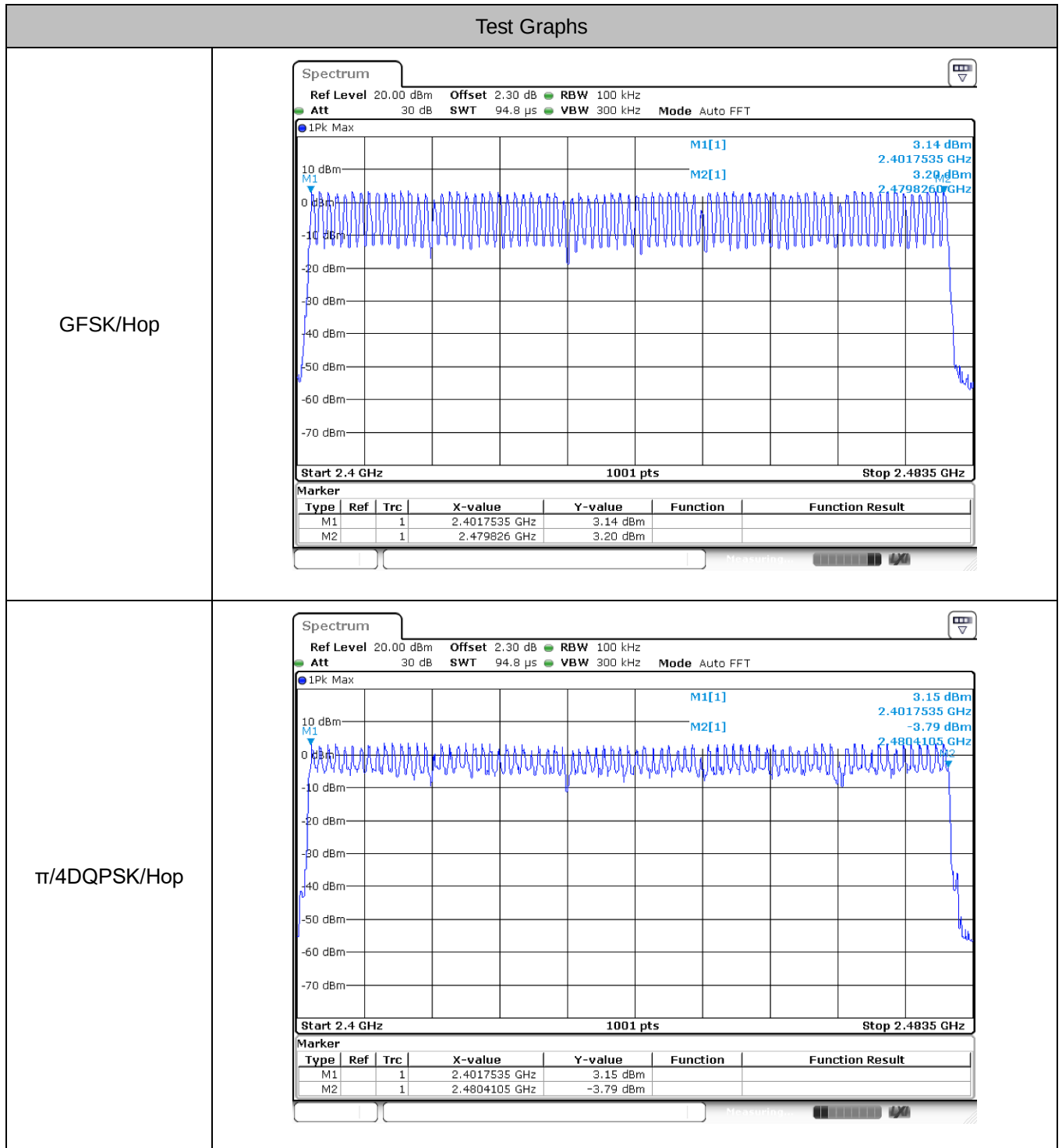


## 5 Hopping Channel Number

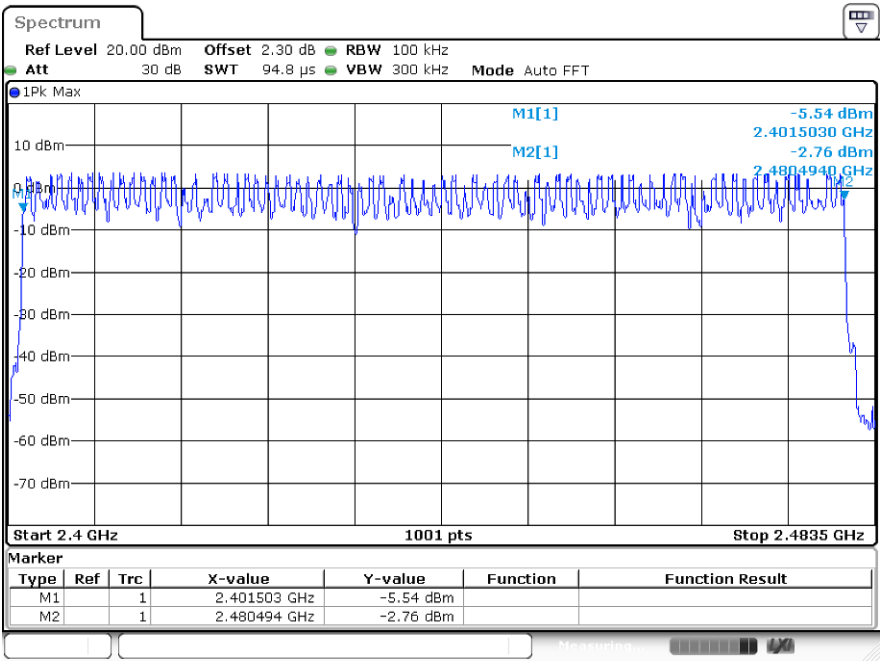
### 5.1 Test Result

| 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

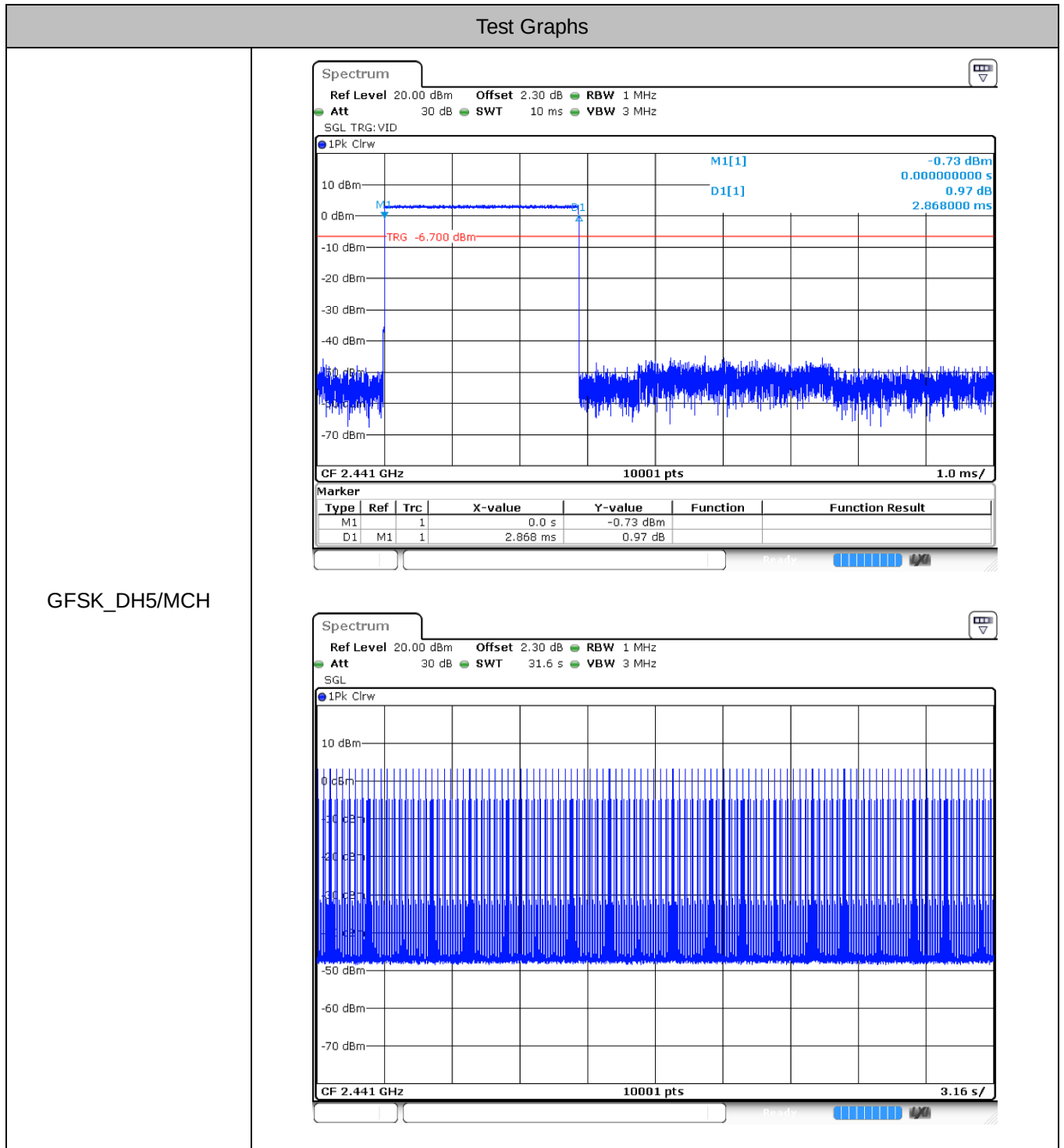


## 6 Dwell Time

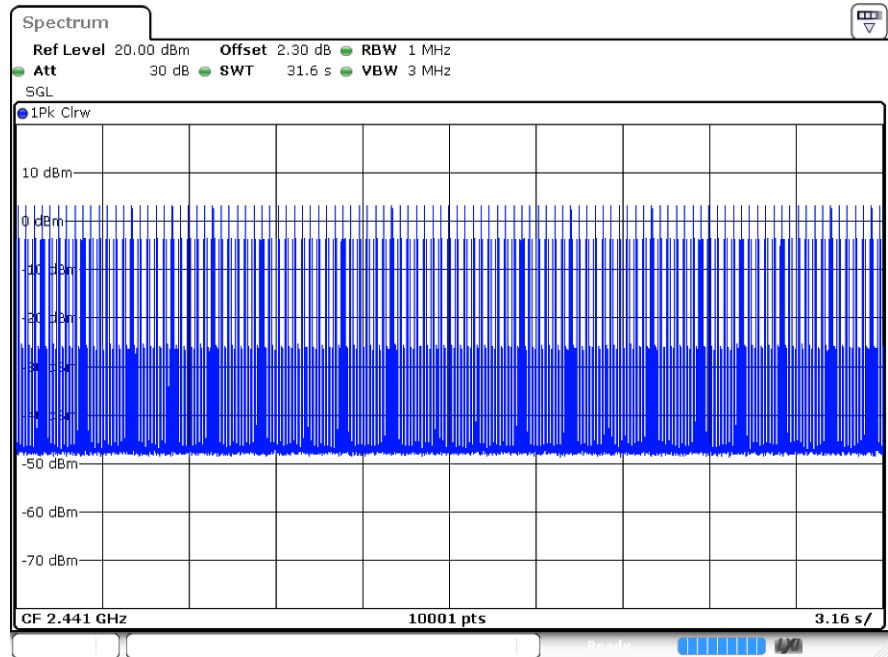
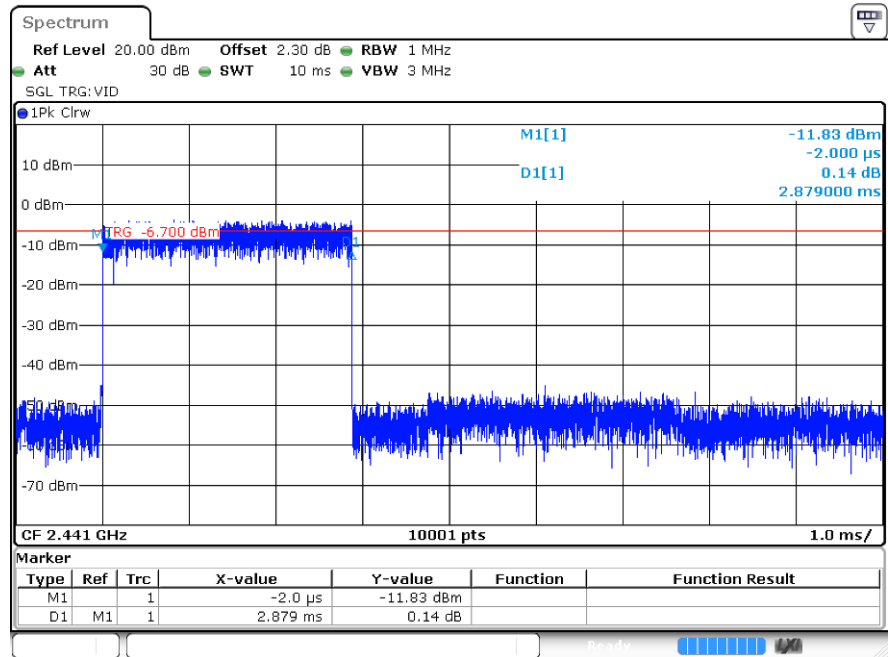
### 6.1 Test Result

| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[ms] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|----------------|-----------|---------|
| GFSK          | DH5    | MCH     | 2.868                      | 107                   | 306.876        | 0.4       | Pass    |
| $\pi/4$ DQPSK | 2DH5   | MCH     | 2.879                      | 106                   | 305.174        | 0.4       | Pass    |
| 8DPSK         | 3DH5   | MCH     | 2.88                       | 107                   | 308.16         | 0.4       | Pass    |

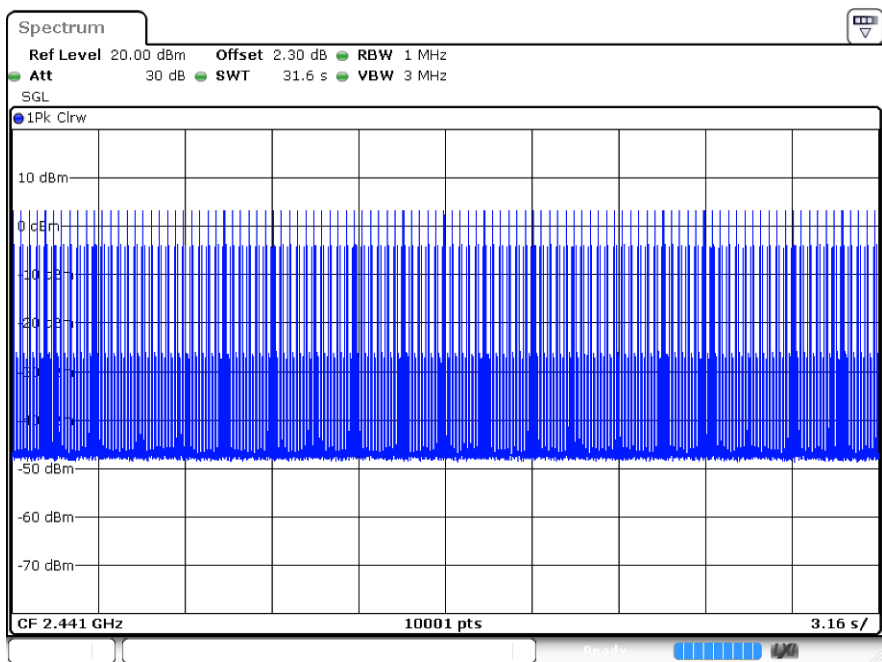
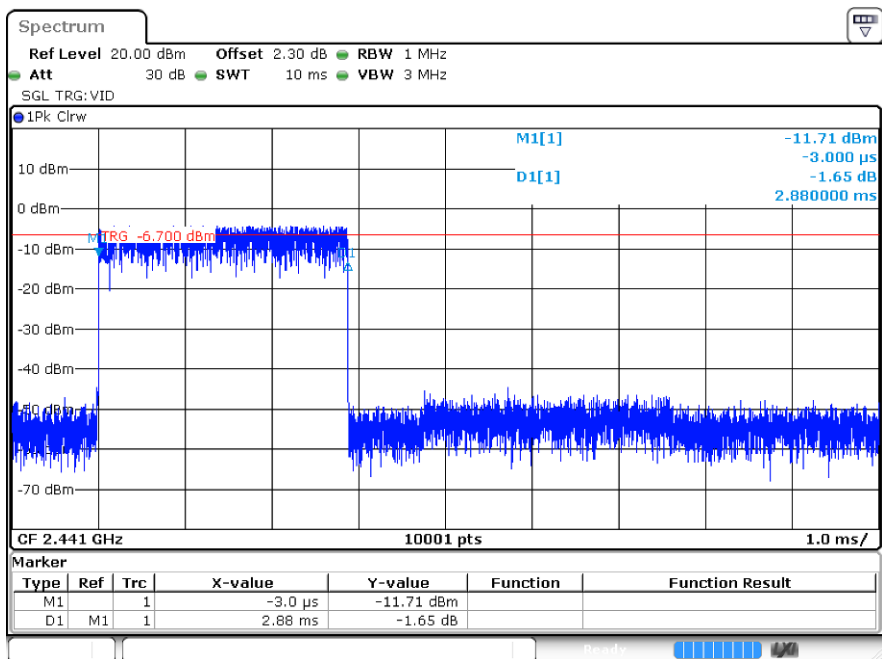
## 6.2 Test Graphs



$\pi/4$ DQPSK  
\_2DH5/MCH



8DPSK\_3DH5/MCH

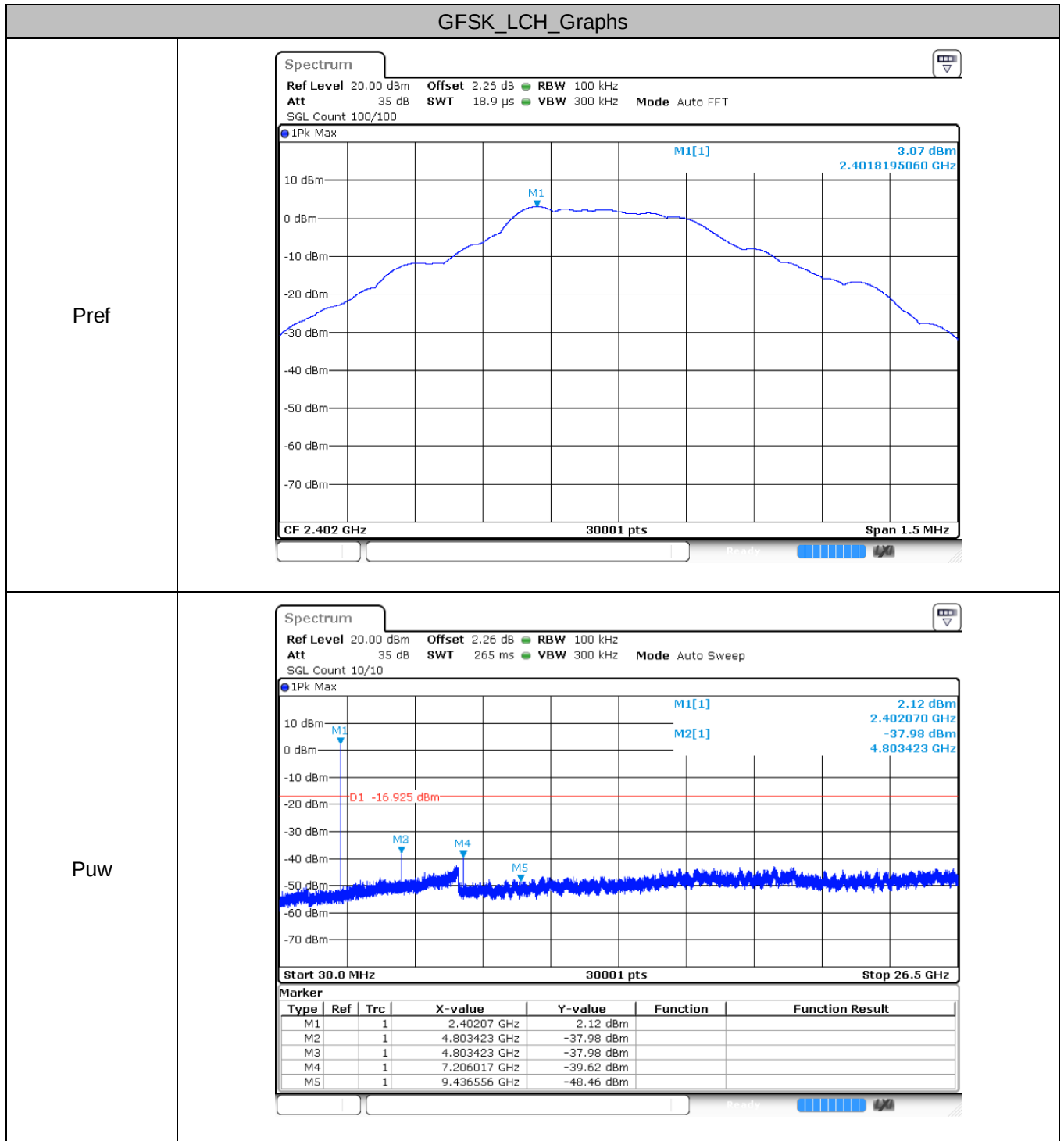


## 7 RF Conducted Spurious Emissions

### 7.1 Test Result

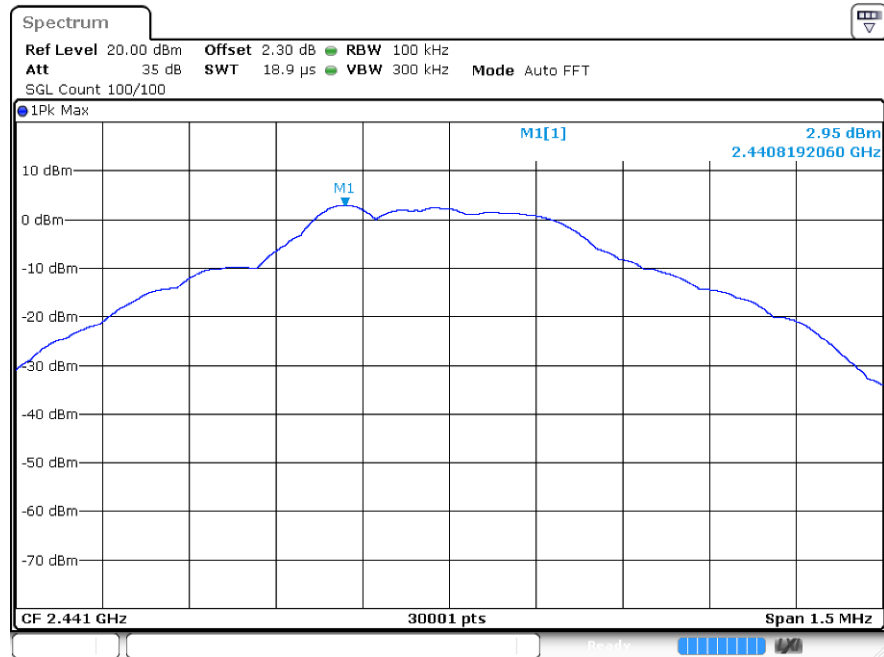
| Mode          | Channel | Max. Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|------------------|-------------|---------|
| GFSK          | LCH     | -41.04           | -20         | Pass    |
|               | MCH     | -41.31           | -20         | Pass    |
|               | HCH     | -44.22           | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | -45.56           | -20         | Pass    |
|               | MCH     | -44.66           | -20         | Pass    |
|               | HCH     | -45.58           | -20         | Pass    |
| 8DPSK         | LCH     | -40.28           | -20         | Pass    |
|               | MCH     | -43.28           | -20         | Pass    |
|               | HCH     | -44.84           | -20         | Pass    |

## 7.2 Test Graphs

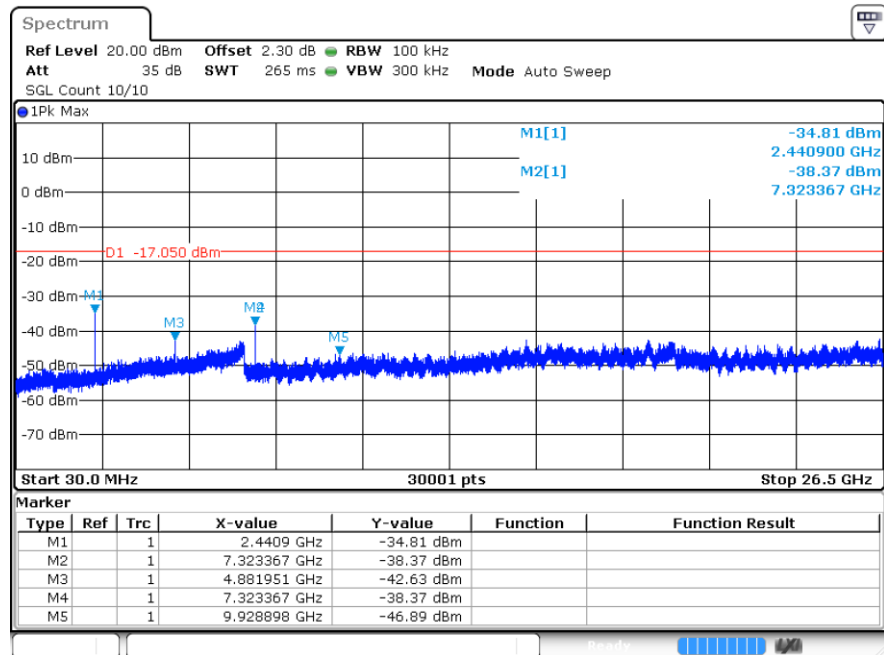


## GFSK\_MCH\_Graphs

Pref

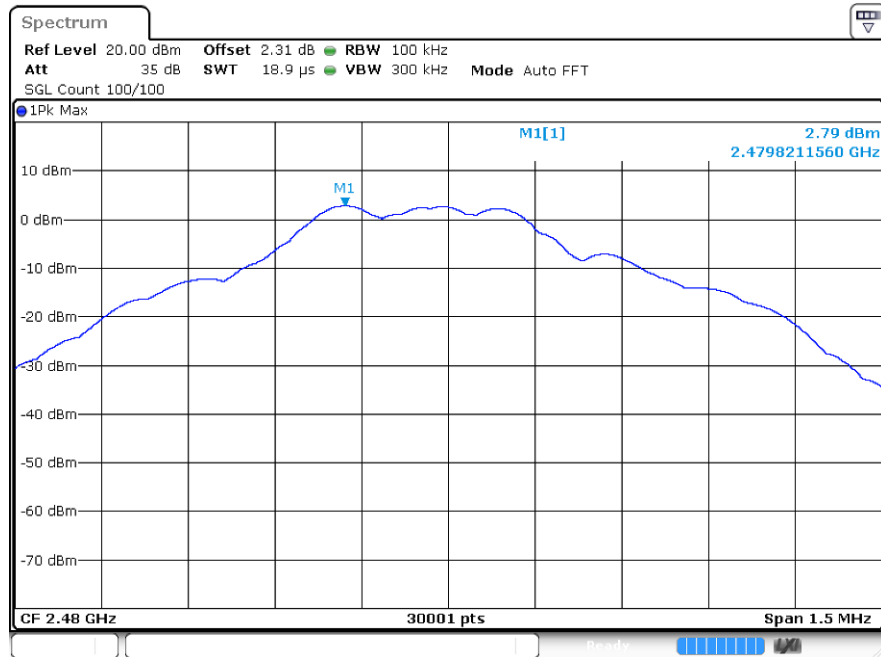


Puw

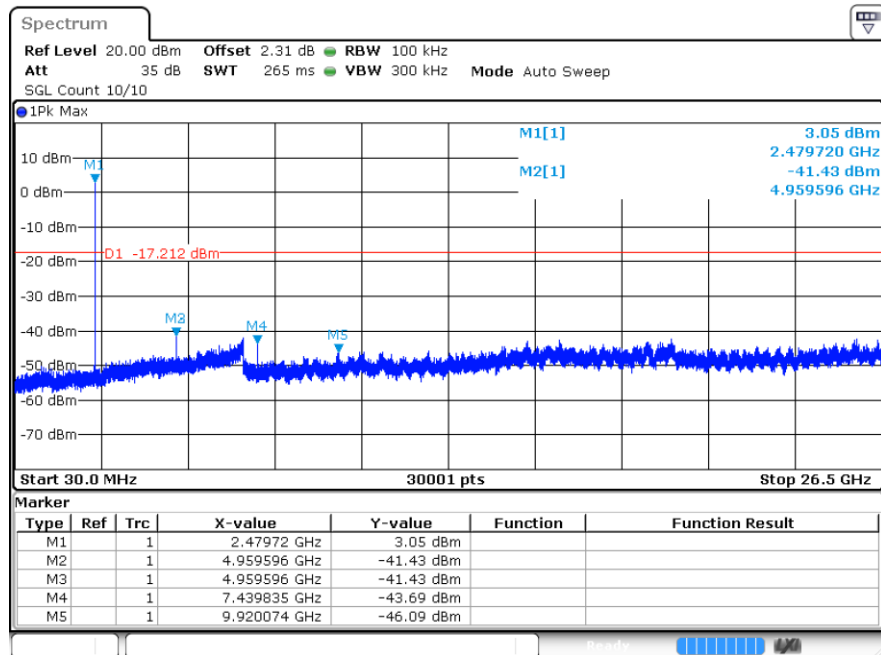


## GFSK\_HCH\_Graphs

Pref

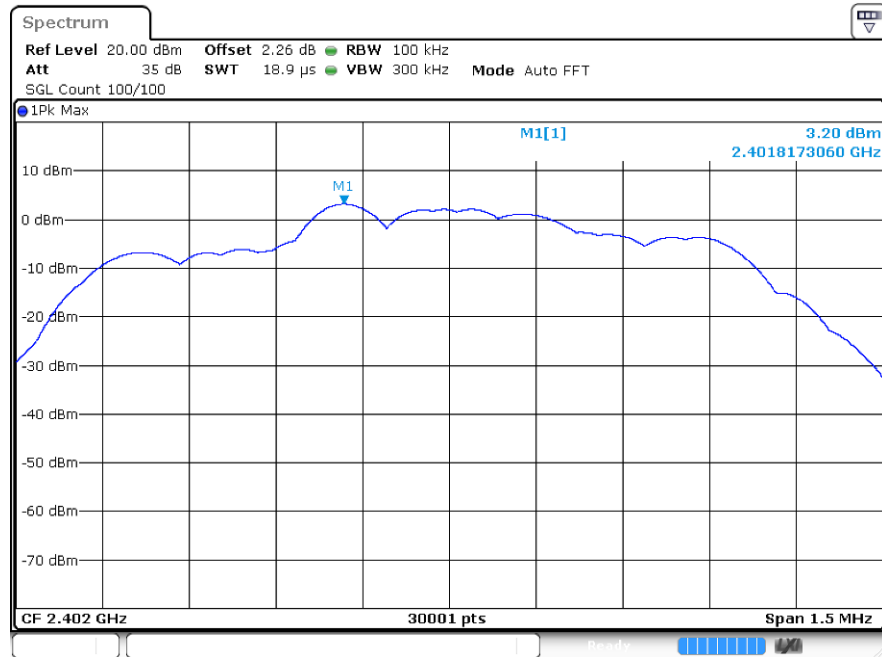


Puw

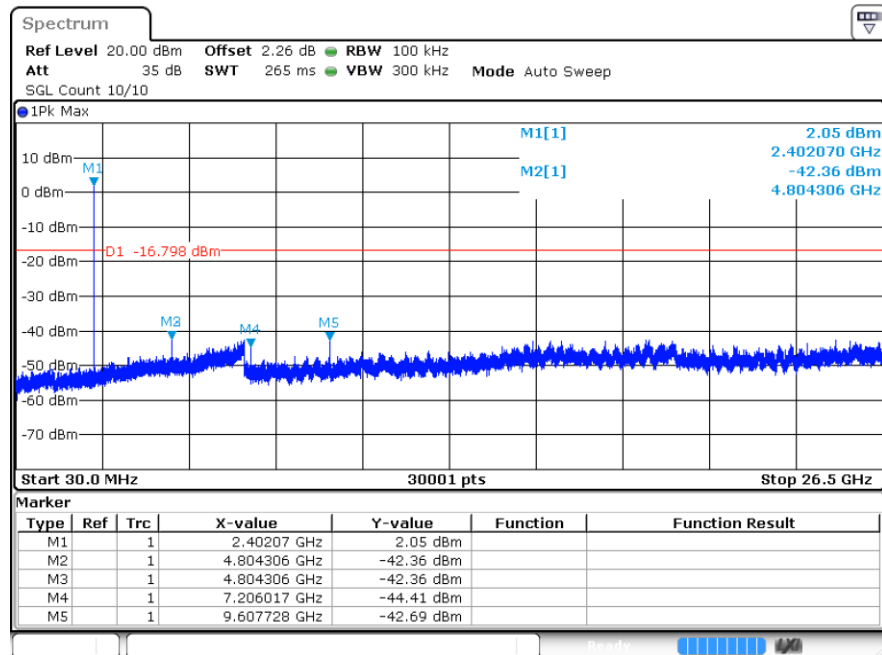


$\pi/4$ DQPSK\_LCH\_Graphs

Pref

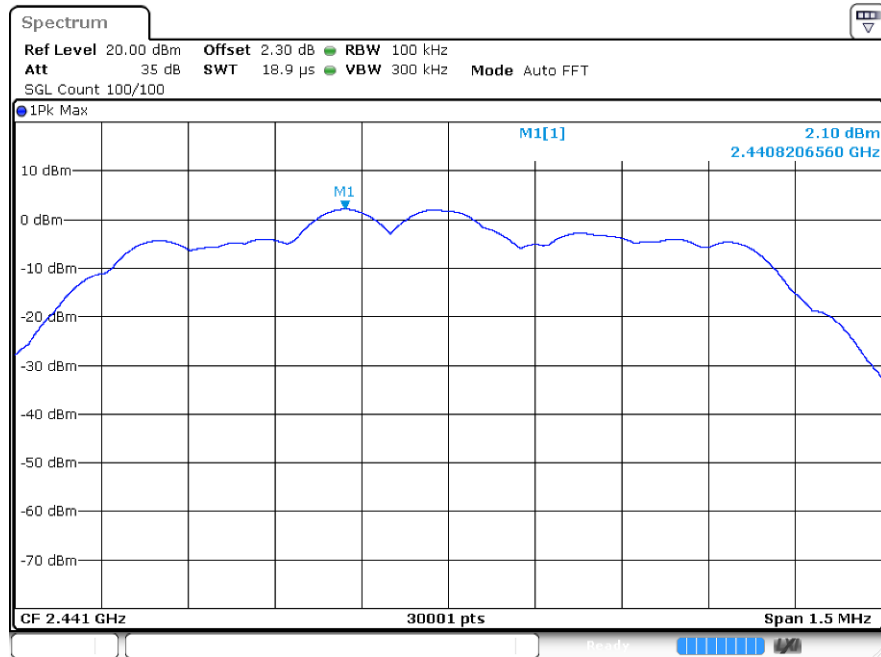


Puw

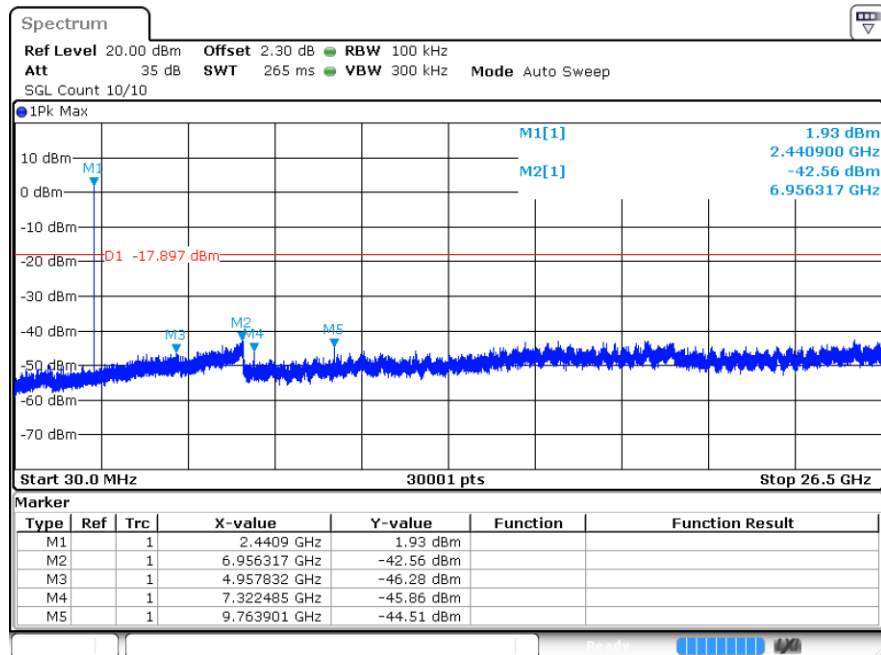


$\pi/4$ DQPSK\_MCH\_Graphs

Pref

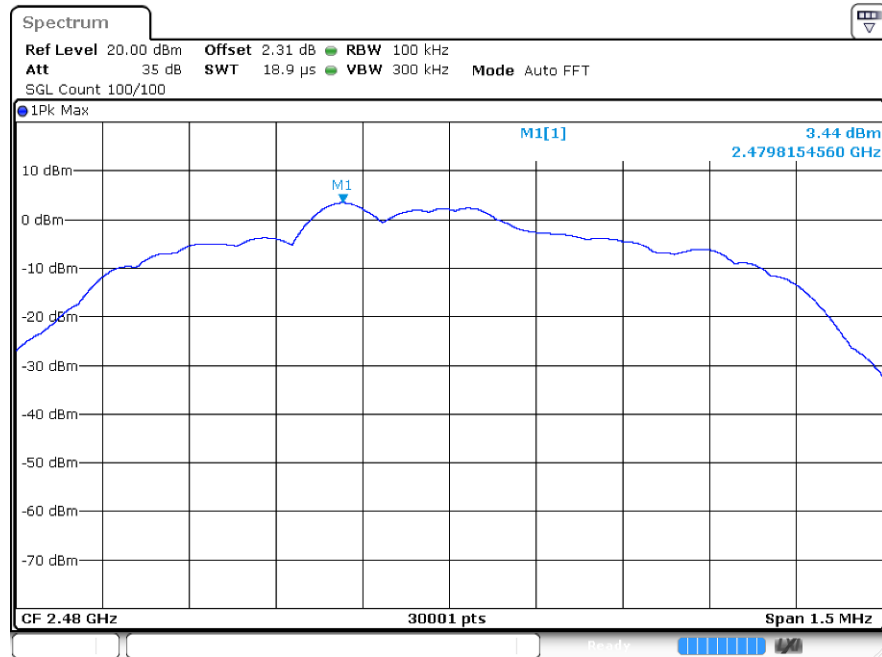


Puw

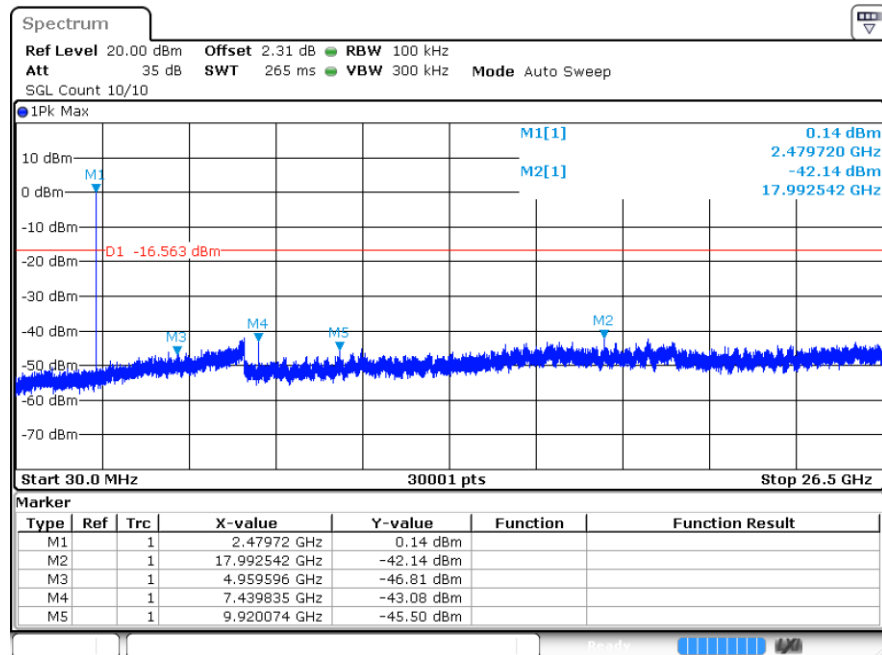


$\pi/4$ DQPSK\_HCH\_Graphs

Pref

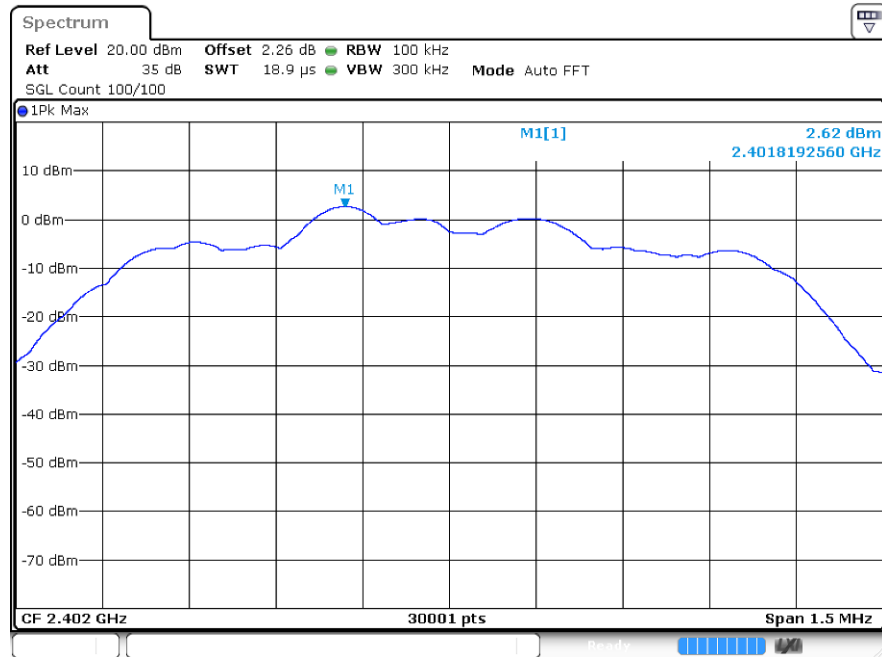


Puw

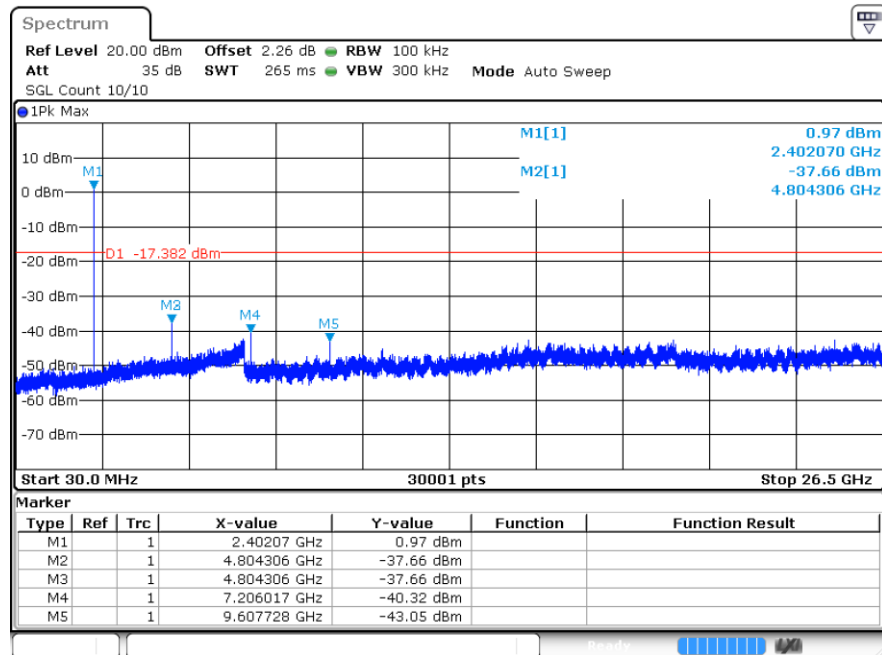


## 8DPSK\_LCH\_Graphs

Pref

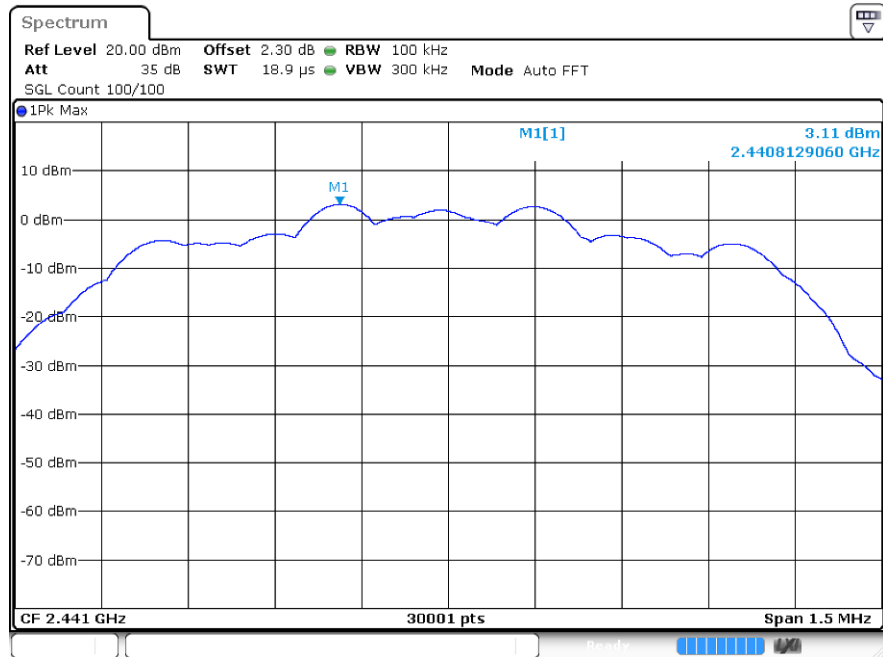


Puw

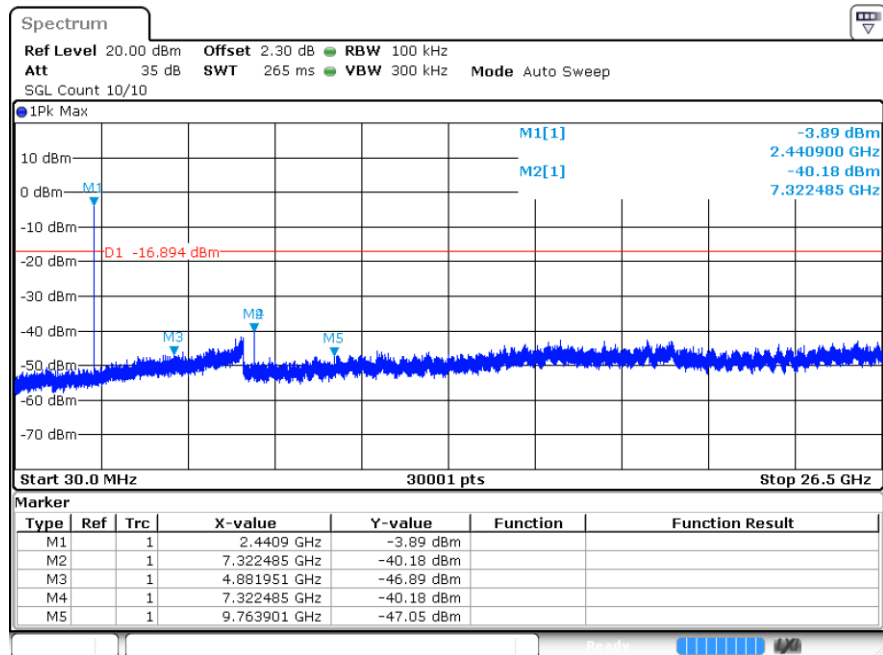


## 8DPSK\_MCH\_Graphs

Pref

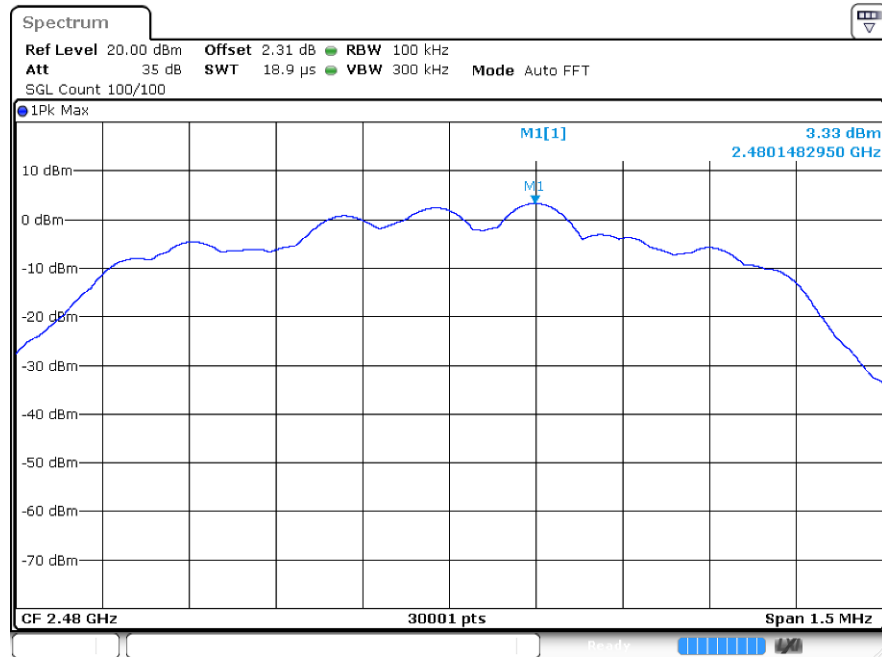


Puw

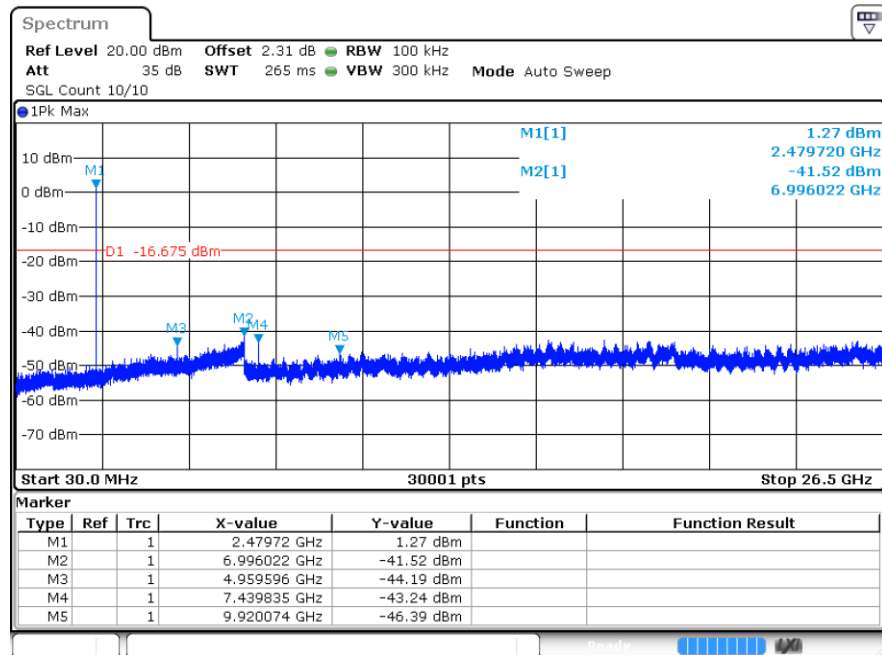


## 8DPSK\_HCH\_Graphs

Pref



Puw

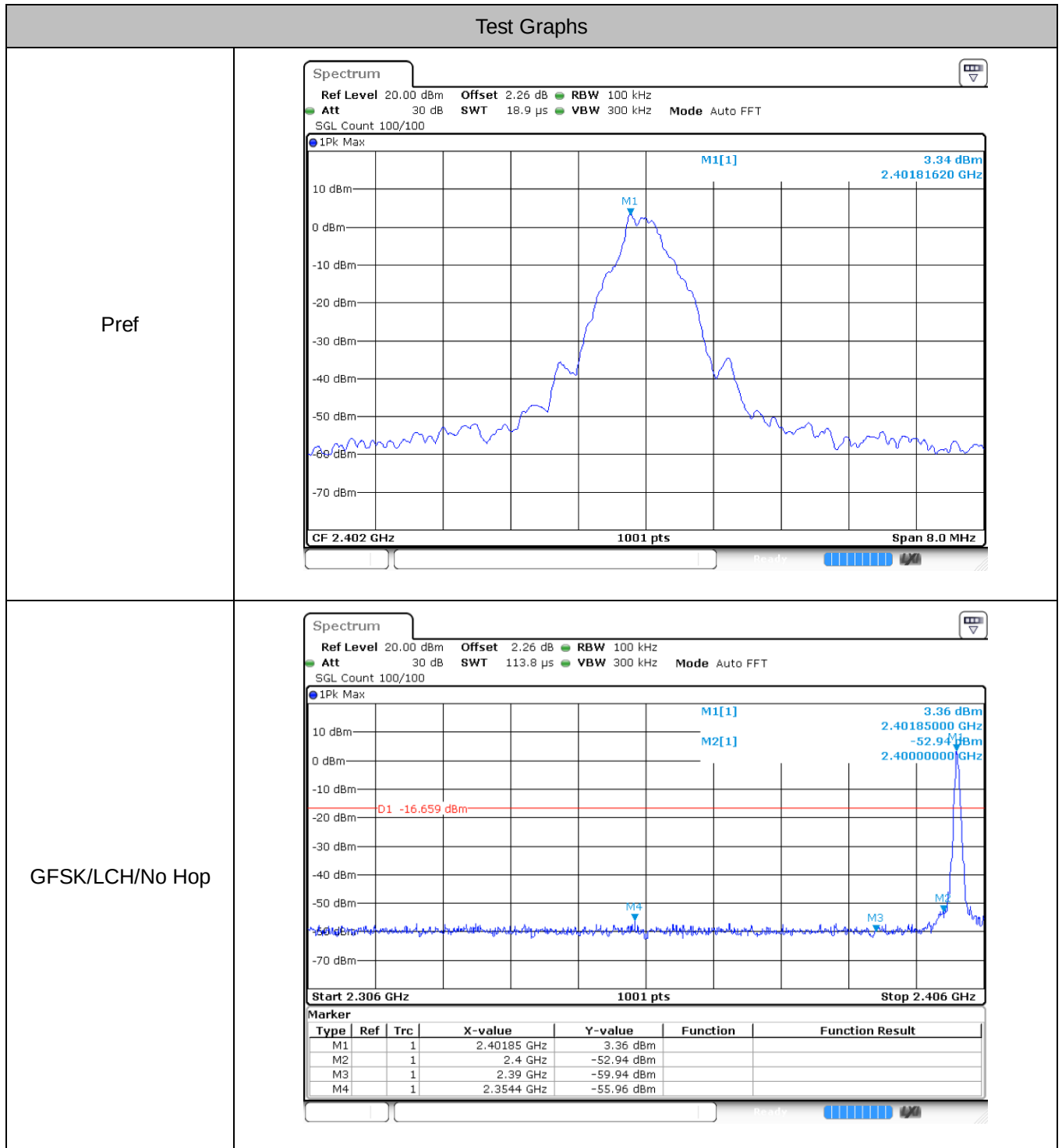


## 8 Band-edge for RF Conducted Emissions

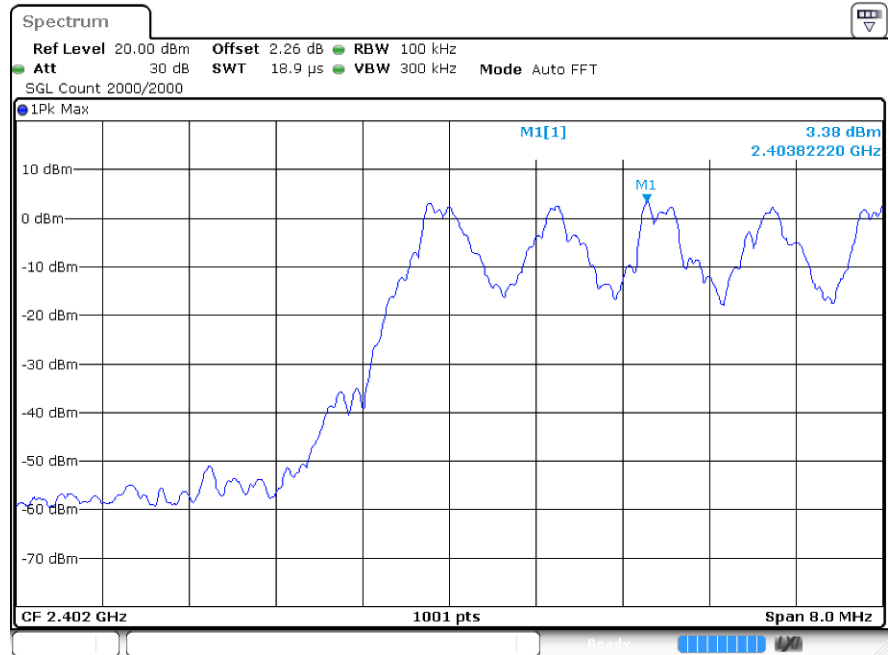
### 8.1 Test Result

| Mode          | Channel | Carrier Frequency [MHz] | Frequency Hopping | Max Spurious Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|-------------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | Off               | -59.29                   | -20         | Pass    |
|               |         |                         | On                | -58.34                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -58.18                   | -20         | Pass    |
|               |         |                         | On                | -58.85                   | -20         | Pass    |
| $\pi/4$ DQPSK | LCH     | 2402                    | Off               | -58.14                   | -20         | Pass    |
|               |         |                         | On                | -58.34                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -59.2                    | -20         | Pass    |
|               |         |                         | On                | -57.71                   | -20         | Pass    |
| 8DPSK         | LCH     | 2402                    | Off               | -59.41                   | -20         | Pass    |
|               |         |                         | On                | -58.14                   | -20         | Pass    |
|               | HCH     | 2480                    | Off               | -55.16                   | -20         | Pass    |
|               |         |                         | On                | -57.96                   | -20         | Pass    |

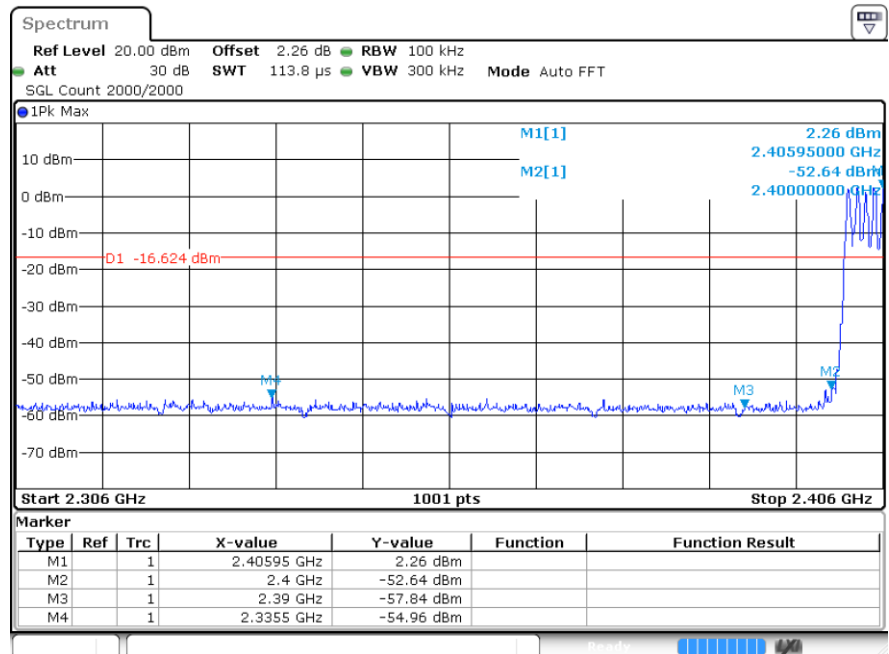
## 8.2 Test Graphs



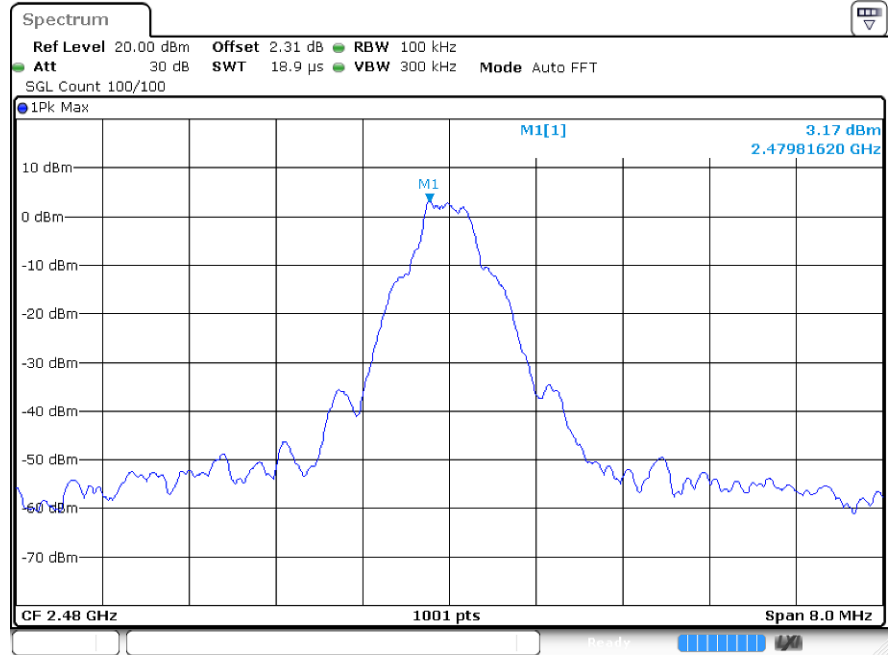
Ref



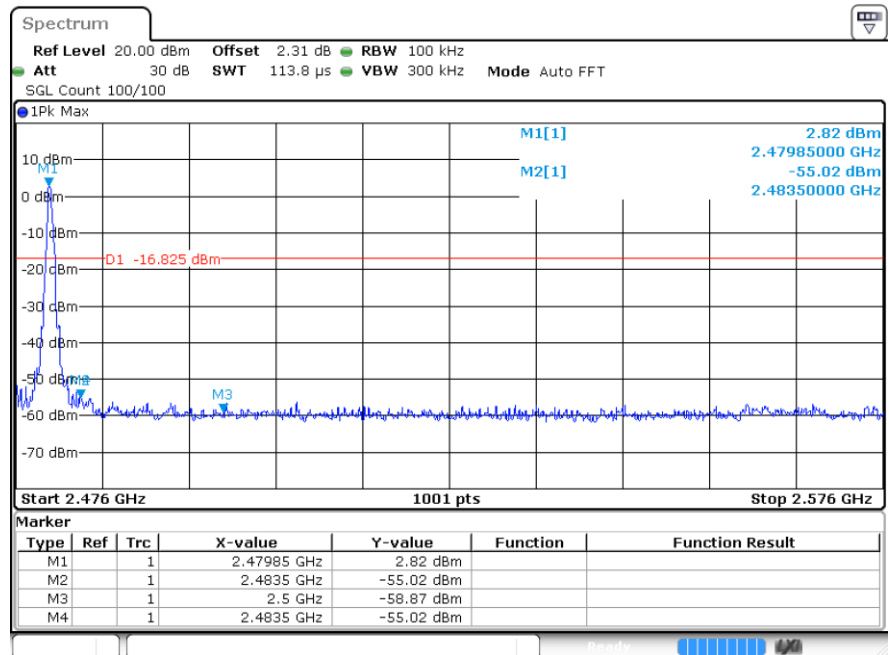
GFSK/LCH/Hop



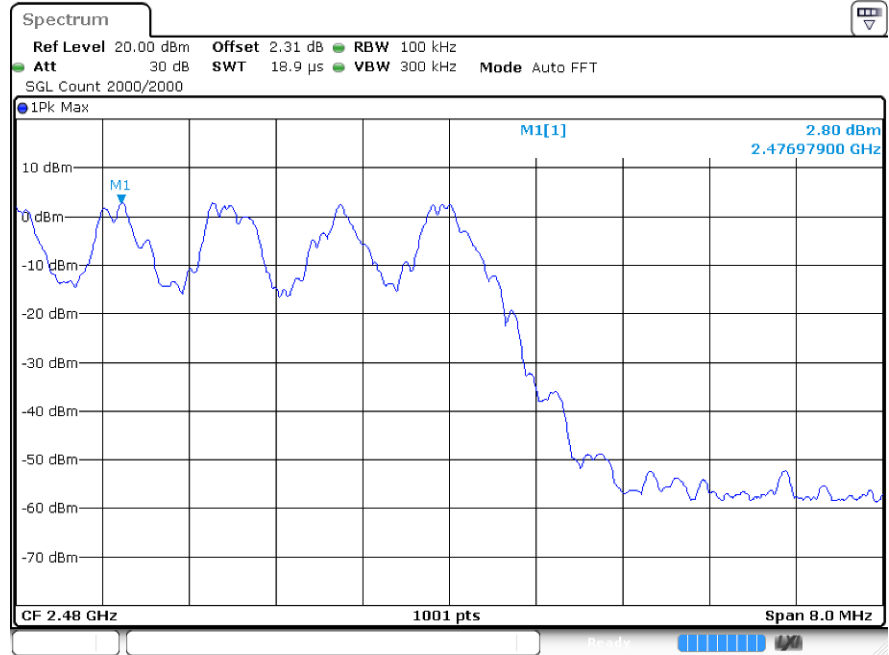
Ref



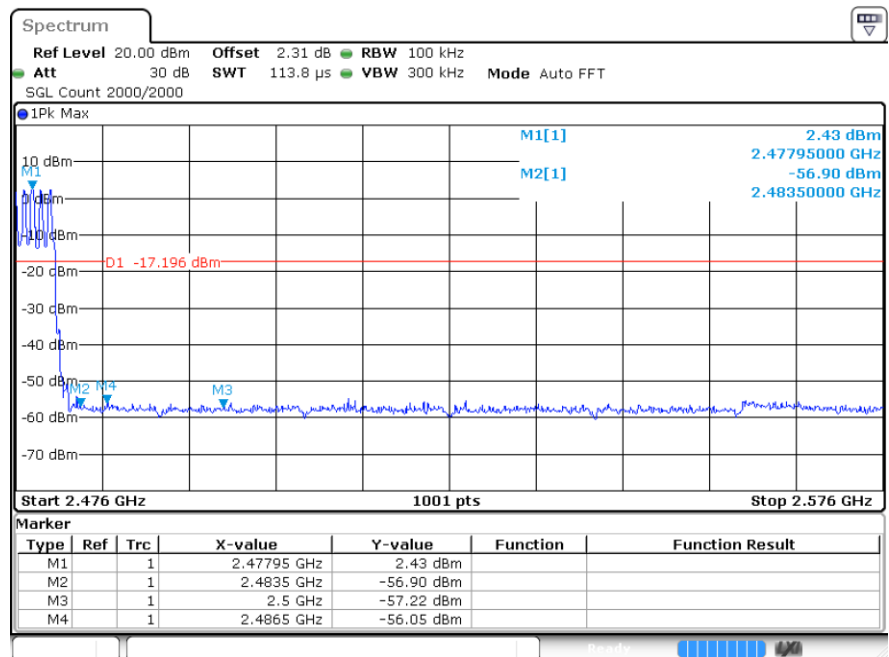
GFSK/HCH/No Hop



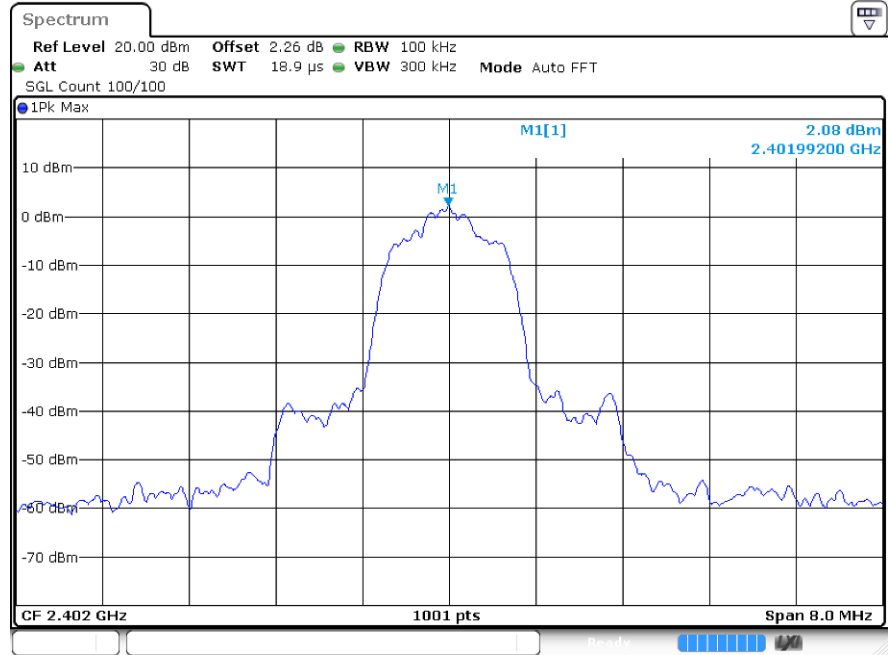
Ref.



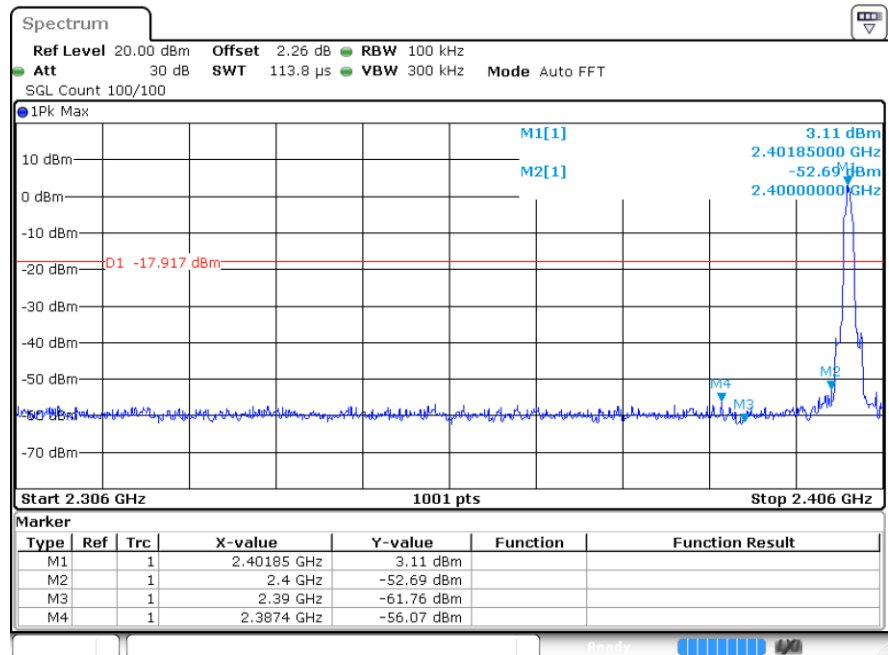
GFSK/HCH/Hop



Ref



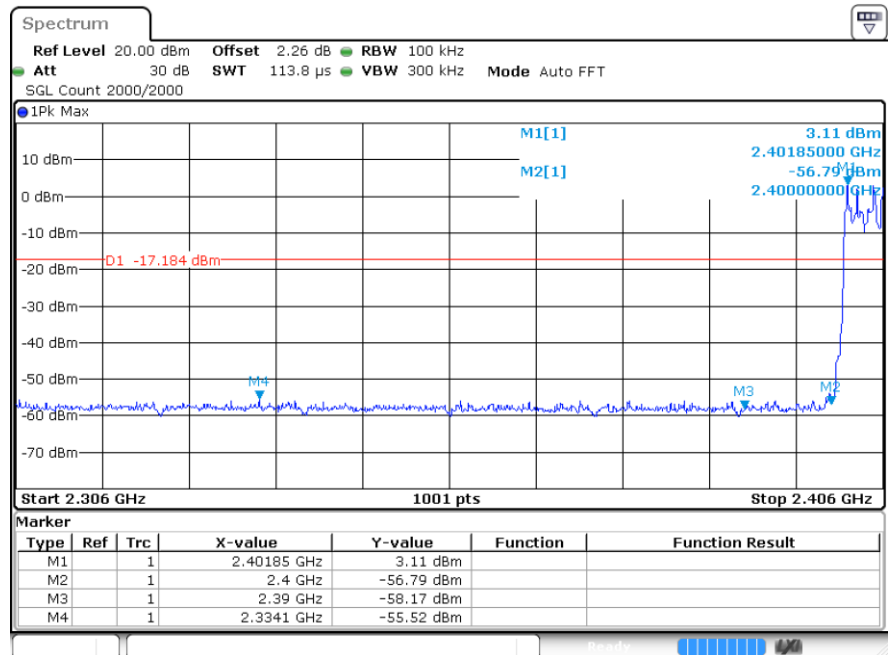
$\pi/4$ DQPSK/LCH/No  
Hop



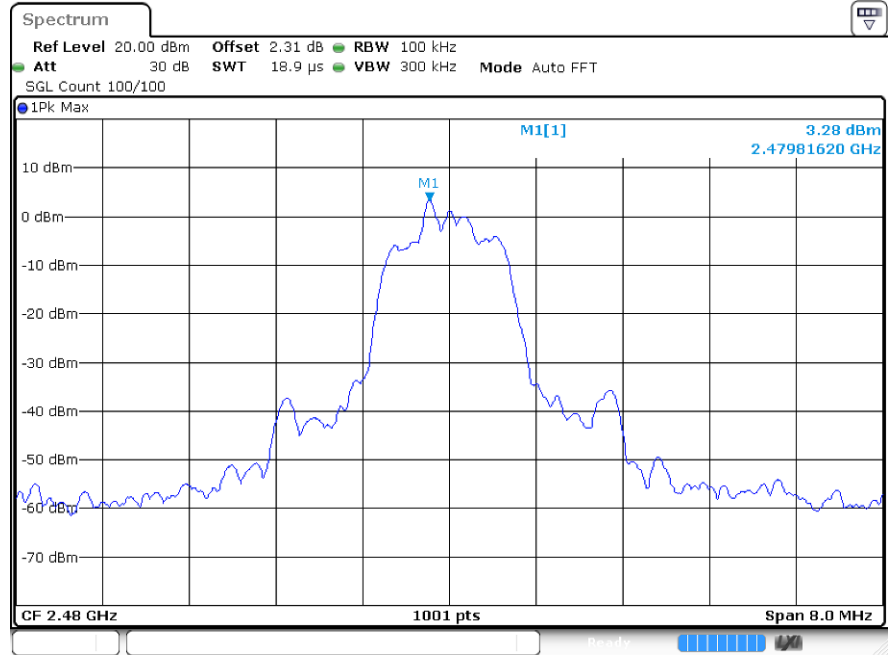
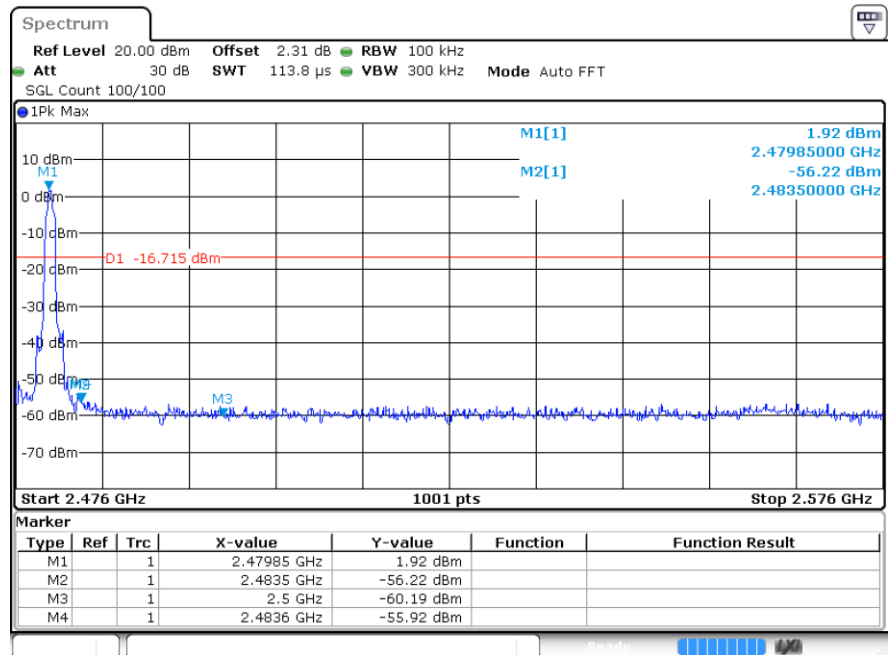
Ref



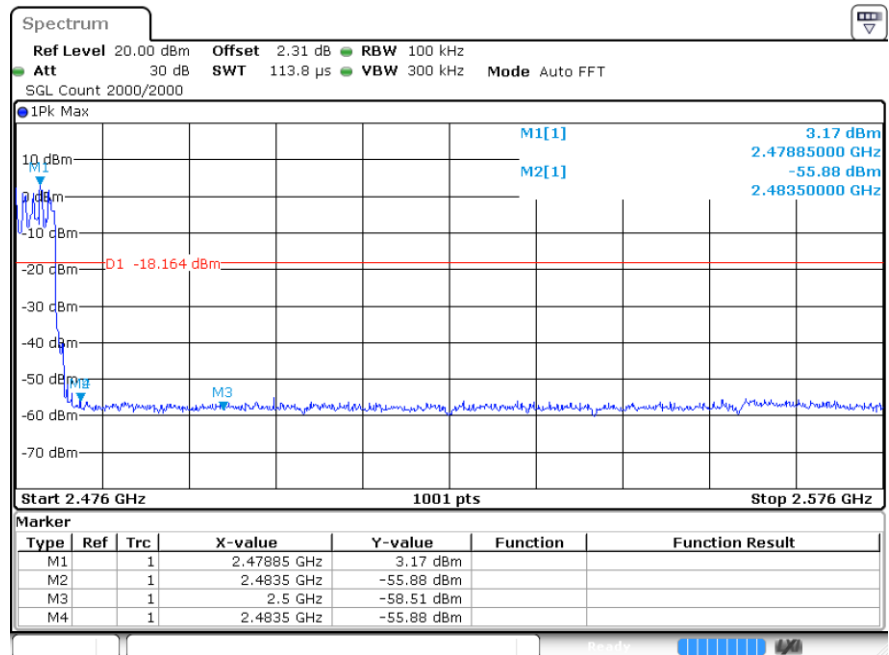
$\pi/4$ DQPSK/LCH/Hop



Ref


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


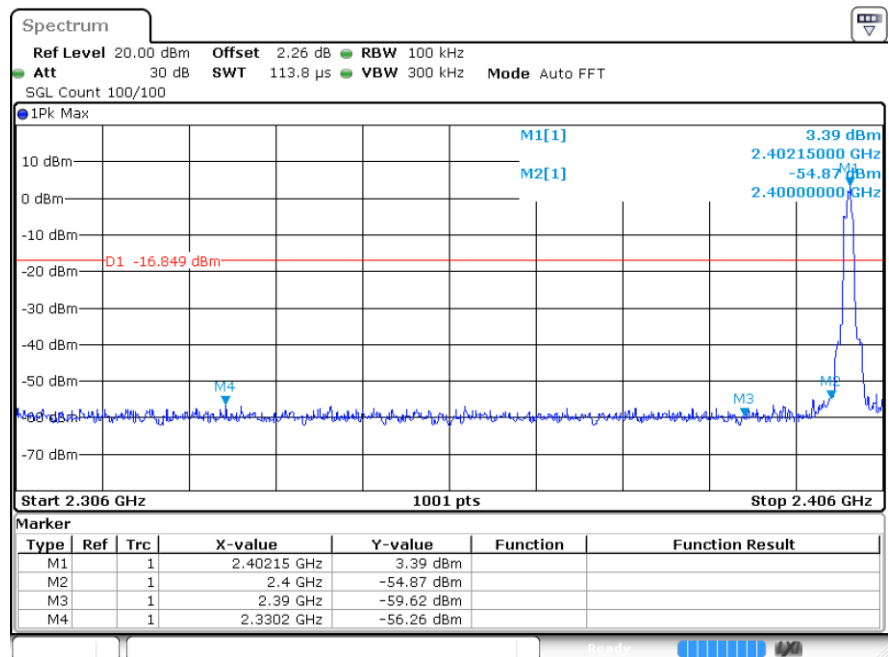
Ref


 $\pi/4$ DQPSK/HCH/Hop


Ref



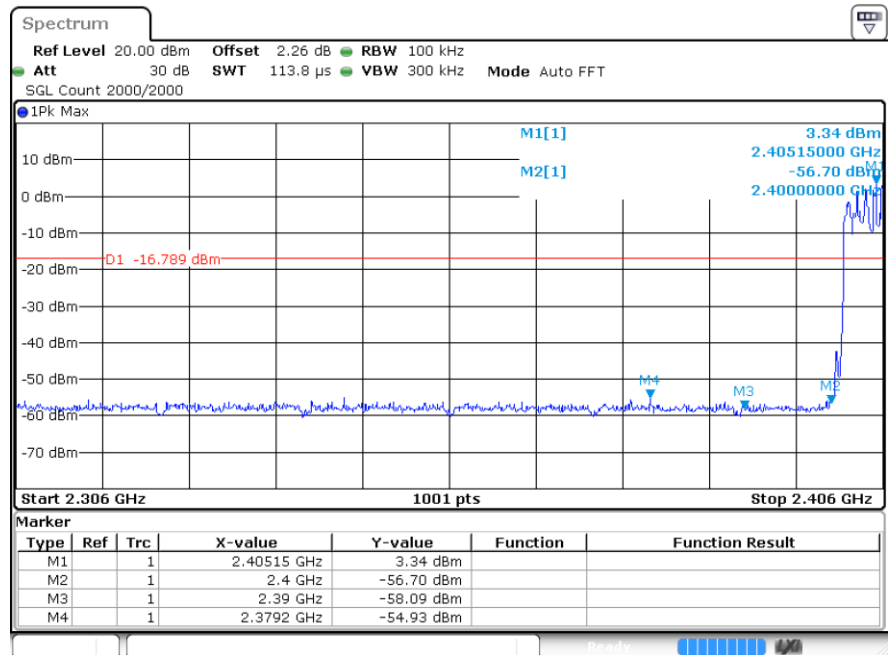
8DPSK/LCH/No Hop



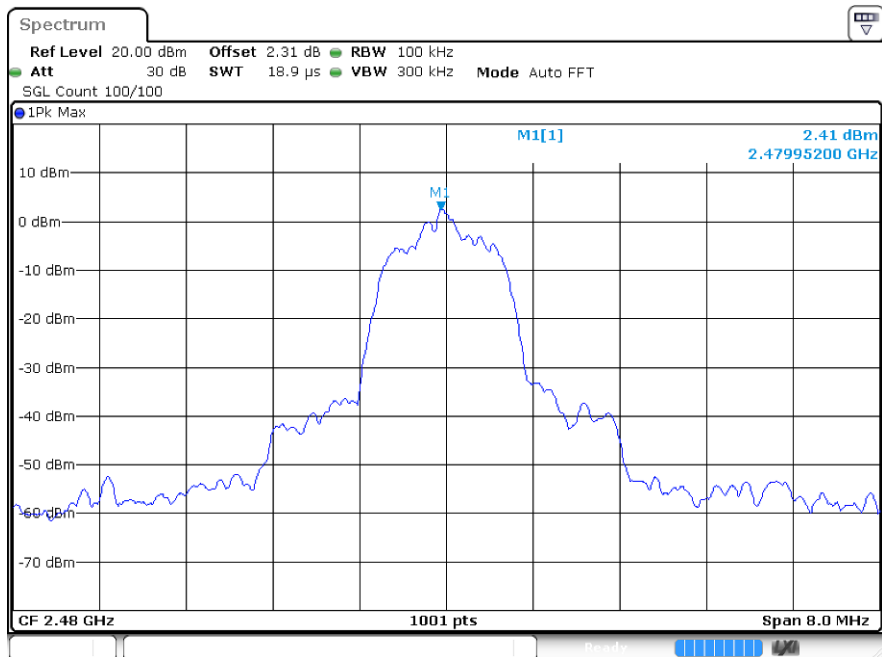
Ref



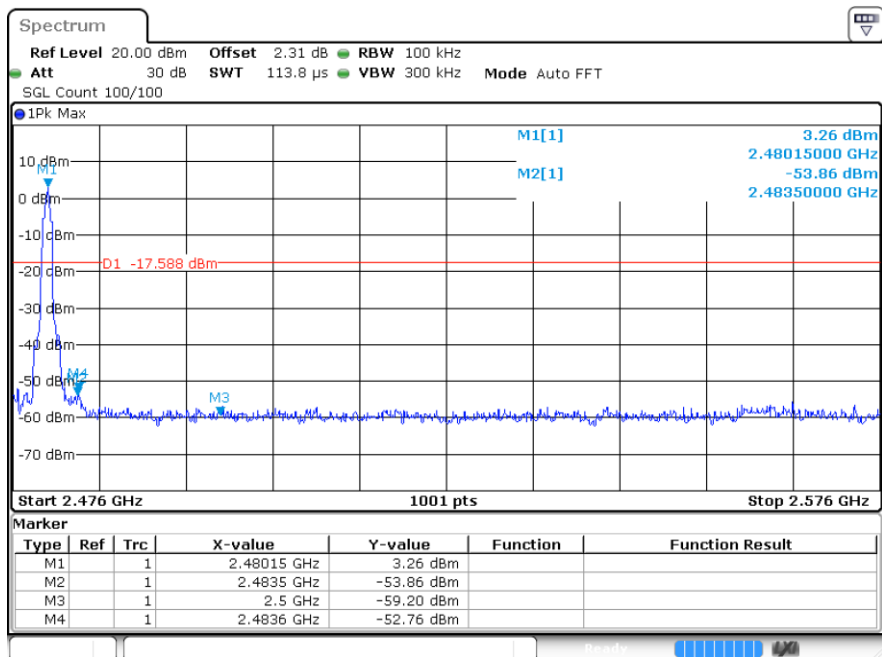
8DPSK/LCH/Hop



Ref



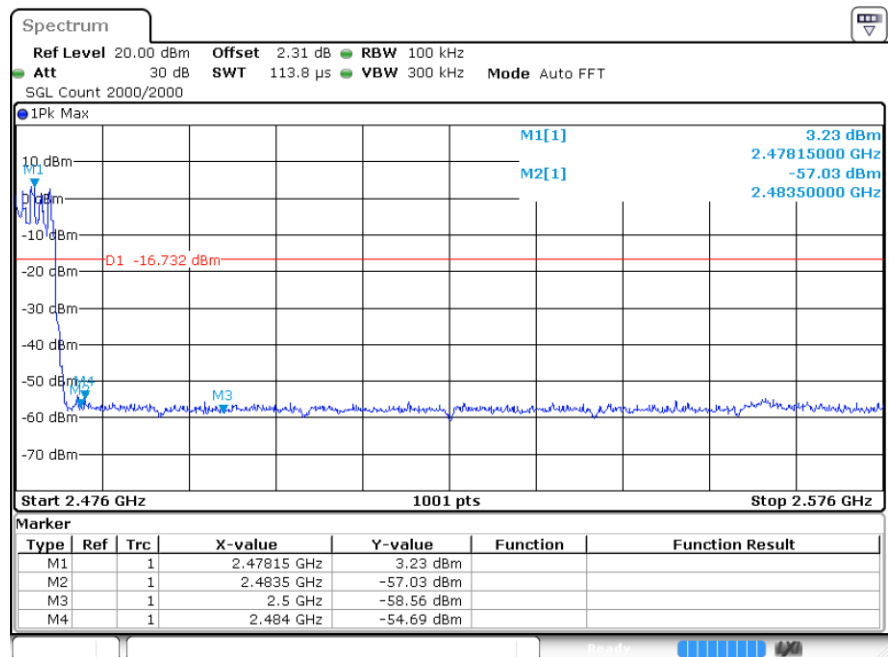
8DPSK/HCH/No Hop



Ref



8DPSK/HCH/Hop



---The End---