

Appendix A

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

Product Name: Wireless Headphones

Trade Mark: N/A

Test Model: BTH02A

Environmental Conditions

| | |
|--------------------|-------------|
| Temperature: | 23.6°C |
| Relative Humidity: | 55.5% |
| ATM Pressure: | 101Kpa |
| Test Engineer: | Simba Huang |
| Supervised by: | Seal Chen |

Contents

Page

COVER PAGE

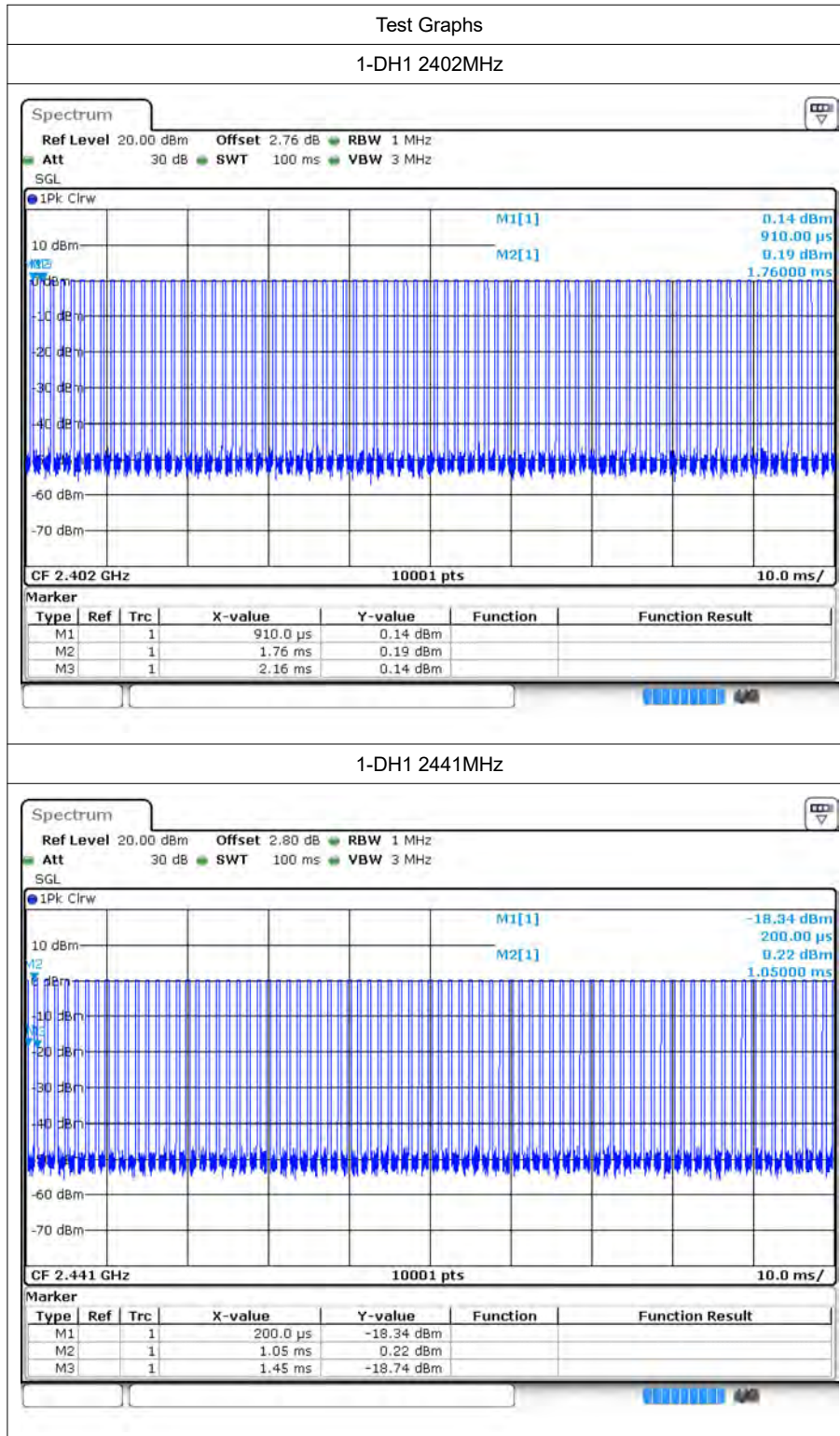
| | | |
|-----|--|----|
| 1 | Duty Cycle | 3 |
| 1.1 | Test Result | 3 |
| 1.2 | Test Graphs | 4 |
| 2 | Maximum Conducted Peak Output Power | 9 |
| 2.1 | Test Result | 9 |
| 2.2 | Test Graphs | 10 |
| 3 | 20dB Bandwidth | 15 |
| 3.1 | Test Result | 15 |
| 3.2 | Test Graphs | 16 |
| 4 | Carrier Frequency 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 |
| 9 | Restrict-band band-edge measurements | 54 |
| 9.1 | Test Result | 54 |
| 9.2 | Test Graphs | 56 |

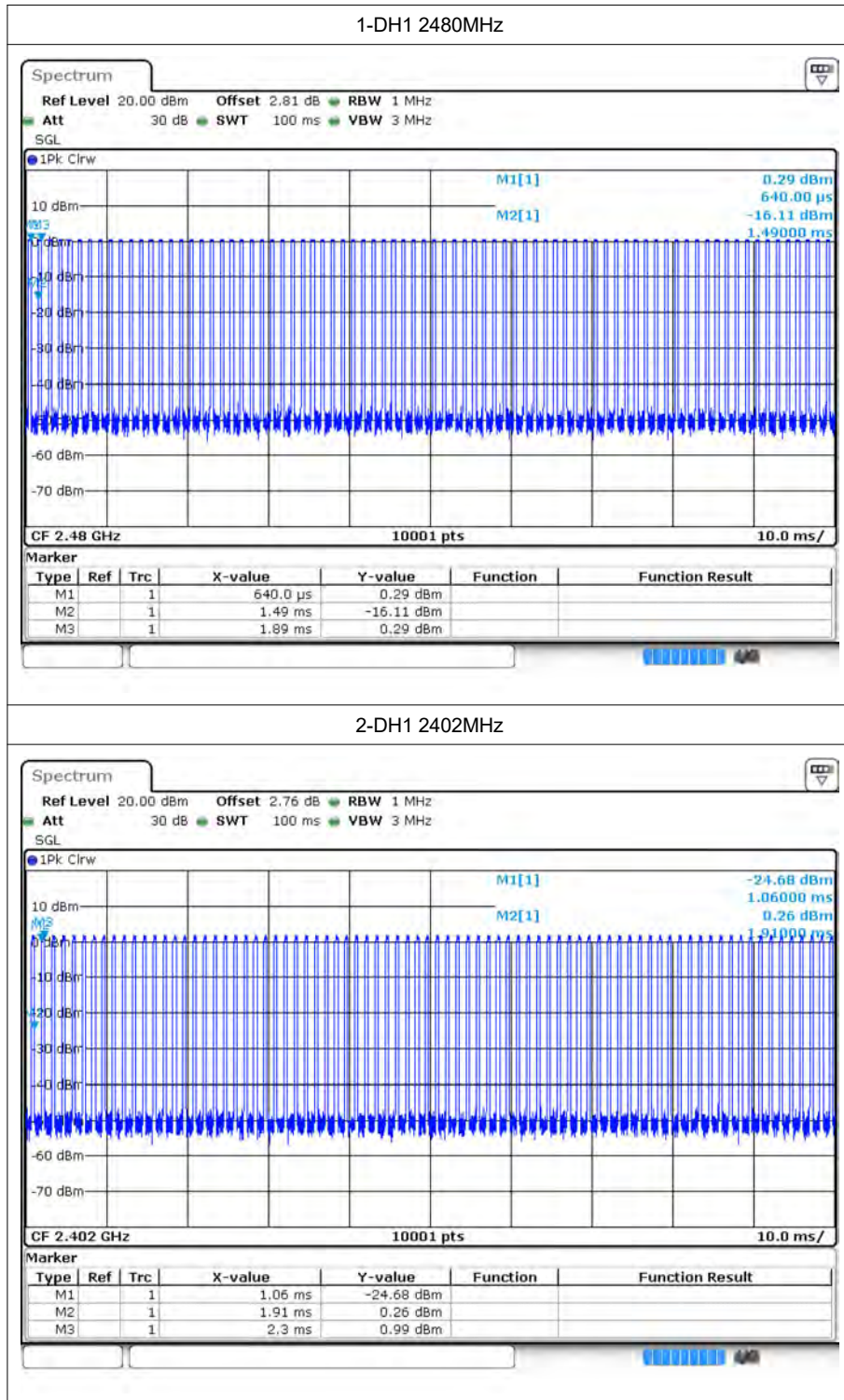
1 Duty Cycle

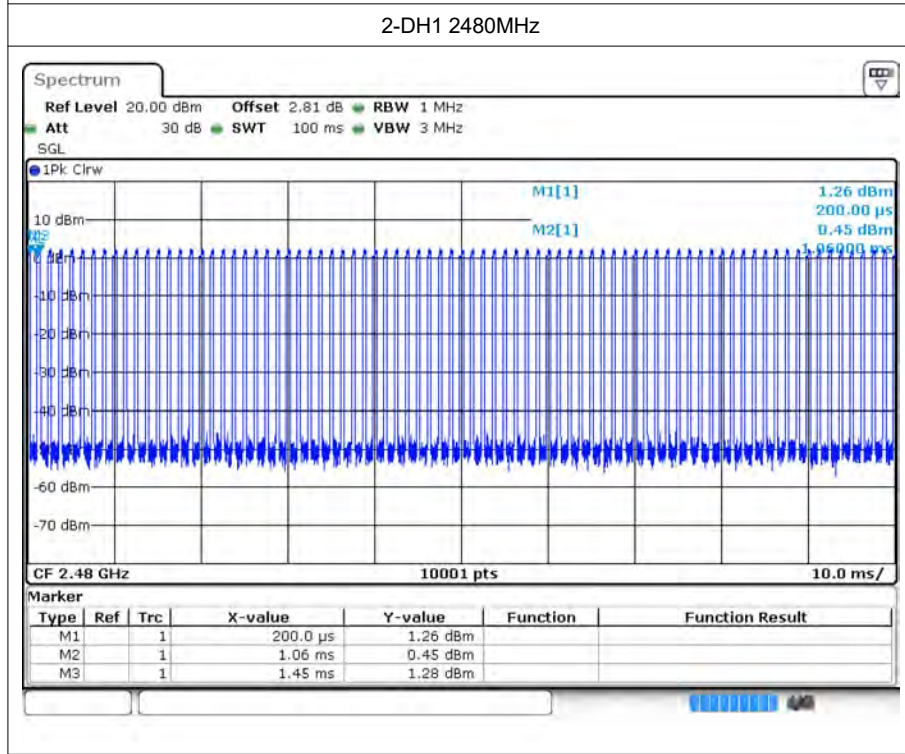
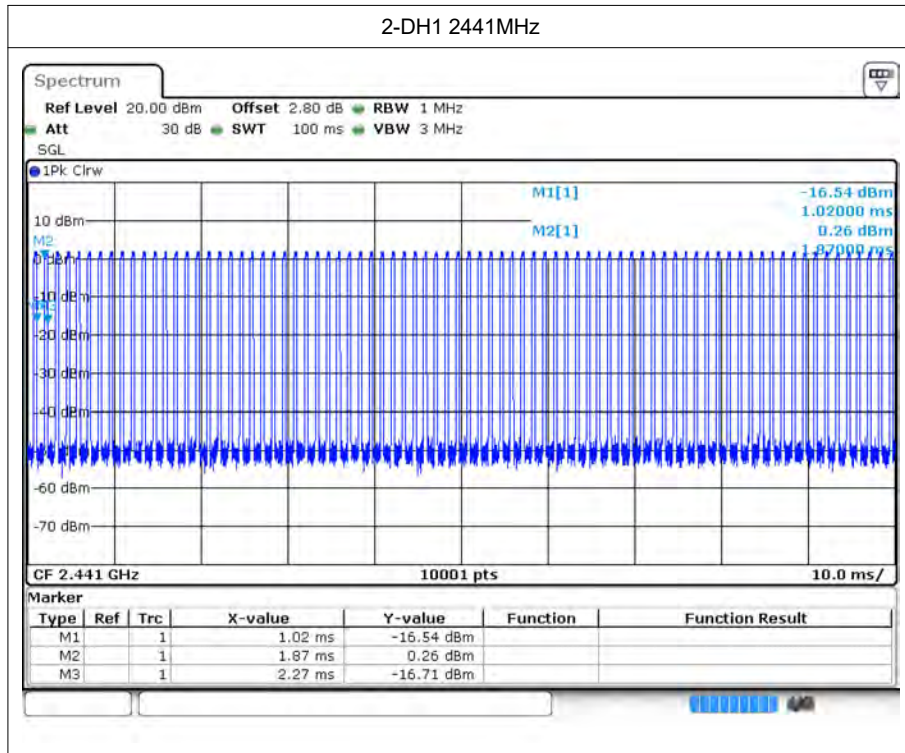
1.1 Test Result

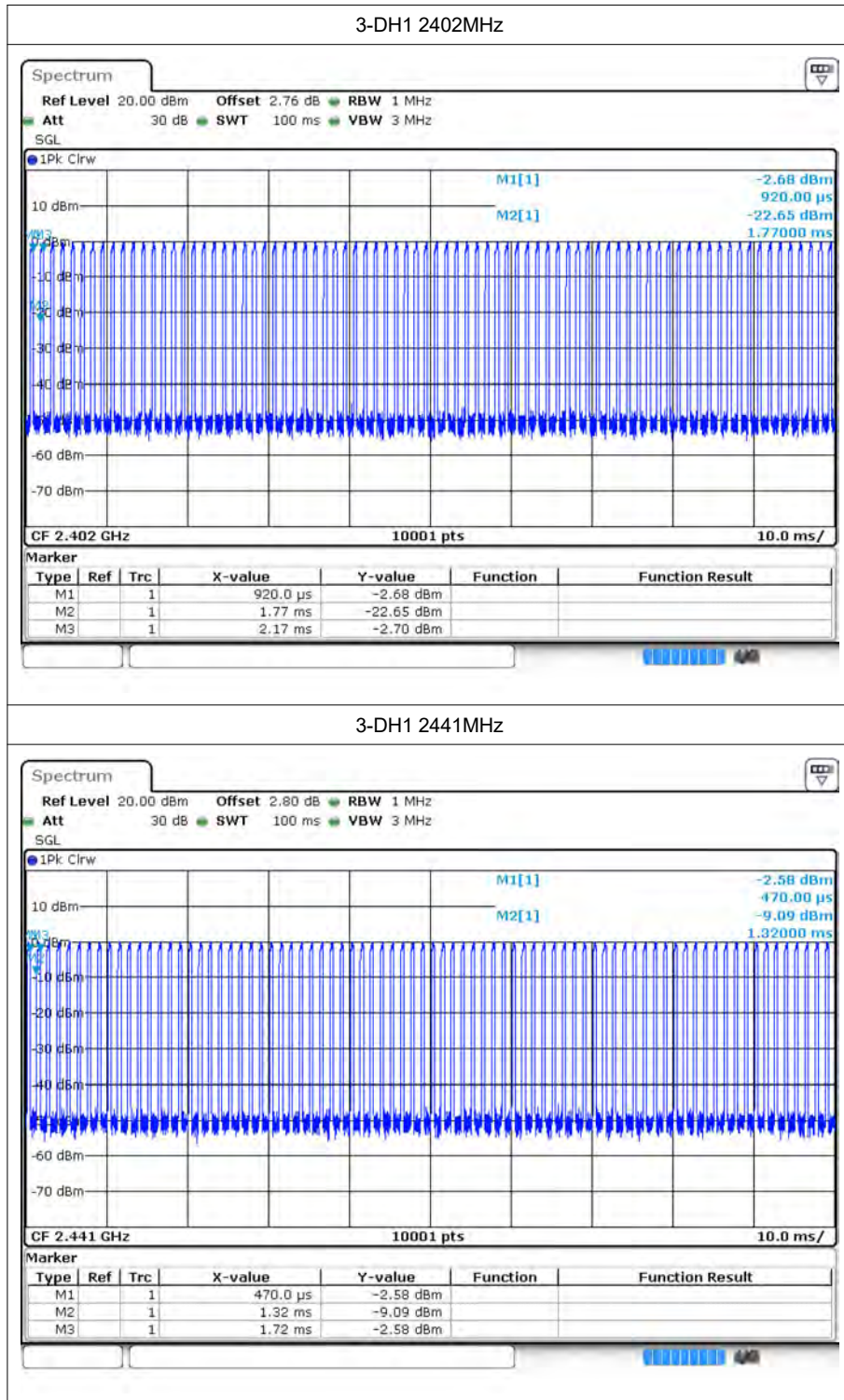
| Mode | Frequency (MHz) | Duty Cycle (%) | Correction Factor | 1/T (kHz) |
|-------|-----------------|----------------|-------------------|-----------|
| 1-DH1 | 2402 | 32.8 | 4.84 | 2.5 |
| 1-DH1 | 2441 | 32.56 | 4.87 | 2.5 |
| 1-DH1 | 2480 | 32.8 | 4.84 | 2.5 |
| 2-DH1 | 2402 | 32.13 | 4.93 | 2.56 |
| 2-DH1 | 2441 | 32.29 | 4.91 | 2.5 |
| 2-DH1 | 2480 | 32.21 | 4.92 | 2.56 |
| 3-DH1 | 2402 | 32.8 | 4.84 | 2.5 |
| 3-DH1 | 2441 | 32.8 | 4.84 | 2.5 |
| 3-DH1 | 2480 | 32 | 4.95 | 2.56 |

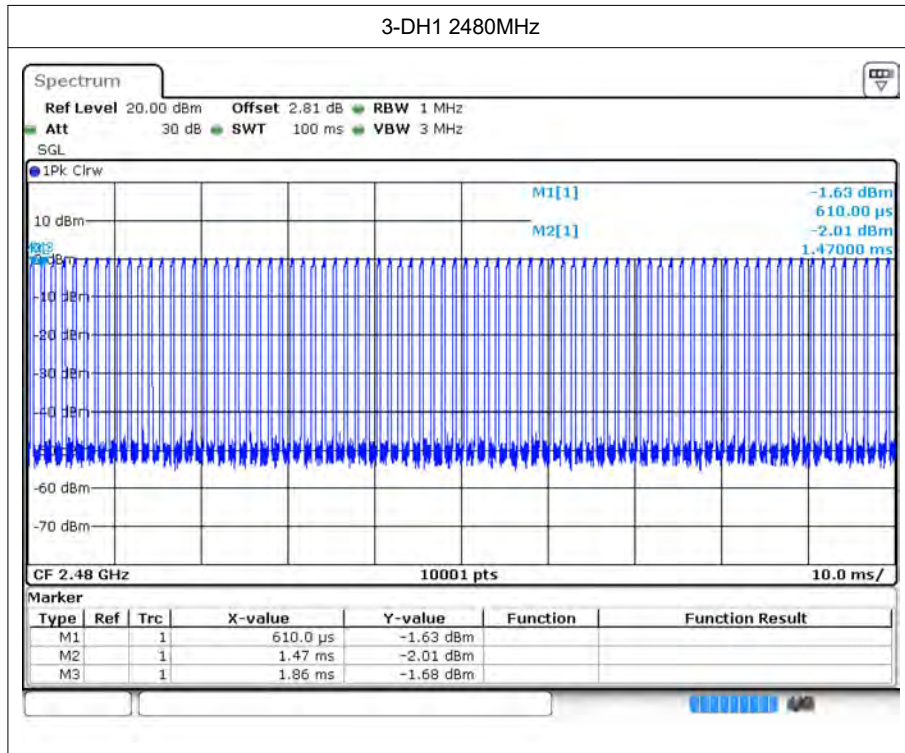
1.2 Test Graphs









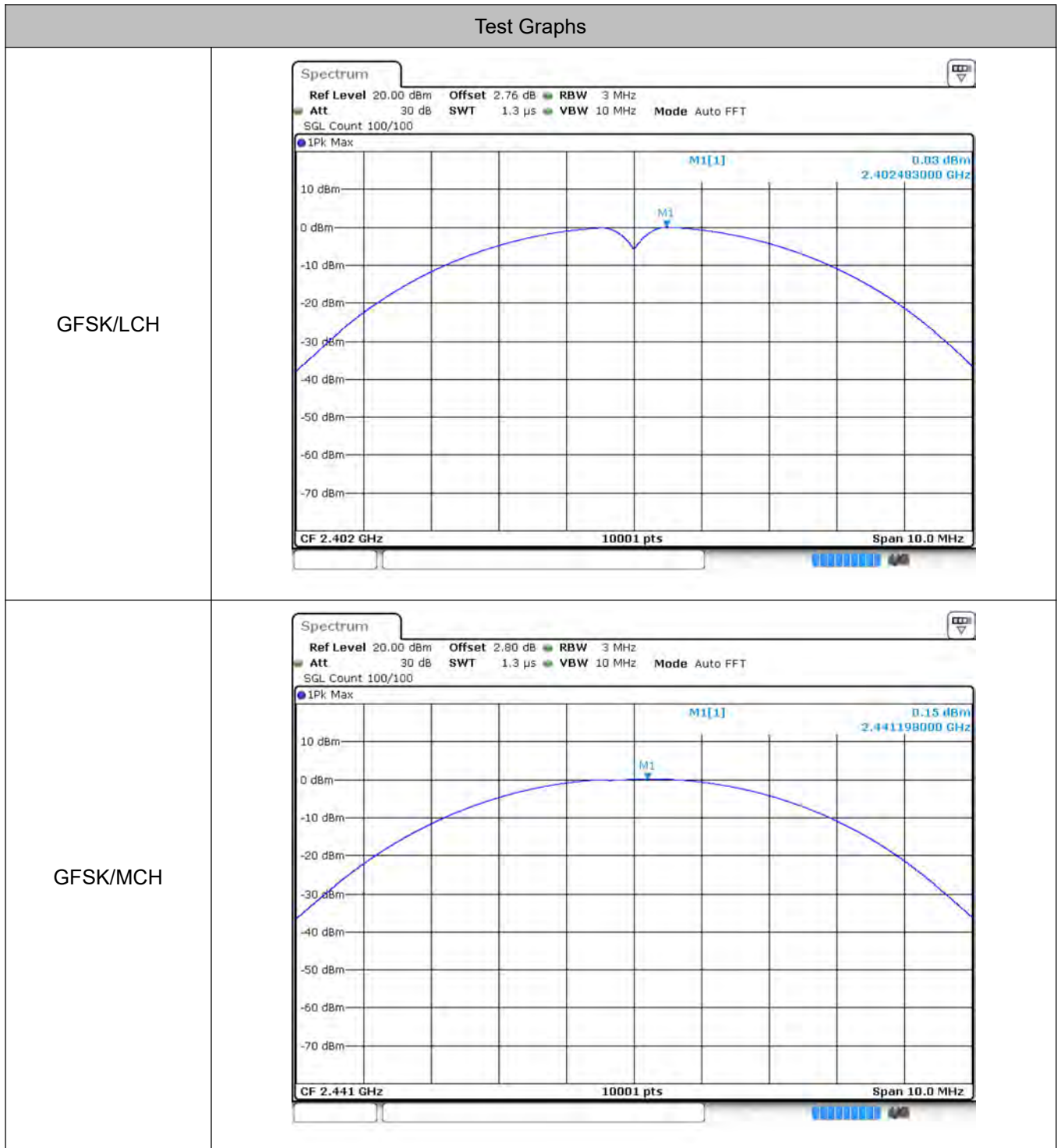


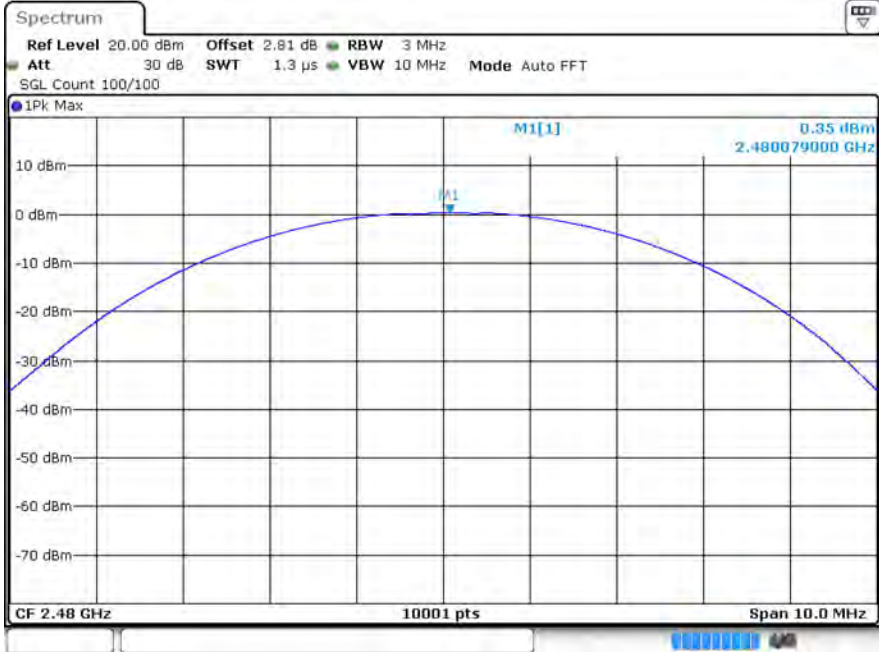

2 Maximum Conducted Peak Output Power

2.1 Test Result

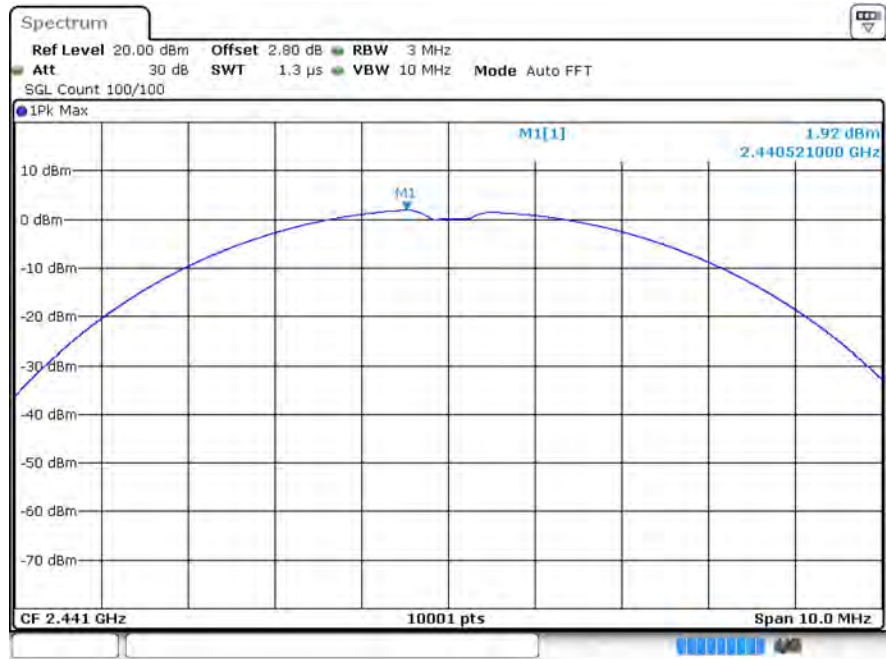
| Mode | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK | LCH | 0.03 | 21 | Pass |
| | MCH | 0.15 | 21 | Pass |
| | HCH | 0.35 | 21 | Pass |
| $\pi/4$ DQPSK | LCH | 1.92 | 21 | Pass |
| | MCH | 1.92 | 21 | Pass |
| | HCH | 1.95 | 21 | Pass |
| 8DPSK | LCH | -0.86 | 21 | Pass |
| | MCH | -0.48 | 21 | Pass |
| | HCH | 0.09 | 21 | Pass |

2.2 Test Graphs



| | |
|------------------------------------|---|
| <p>GFSK/HCH</p> |  |
| <p>$\pi/4$DQPSK/LCH</p> |  |

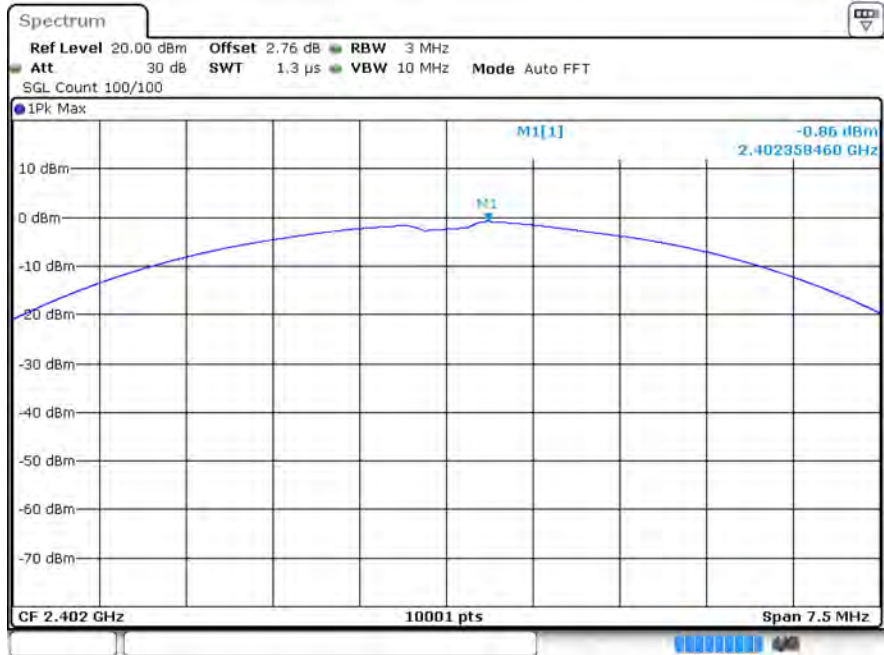
$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH



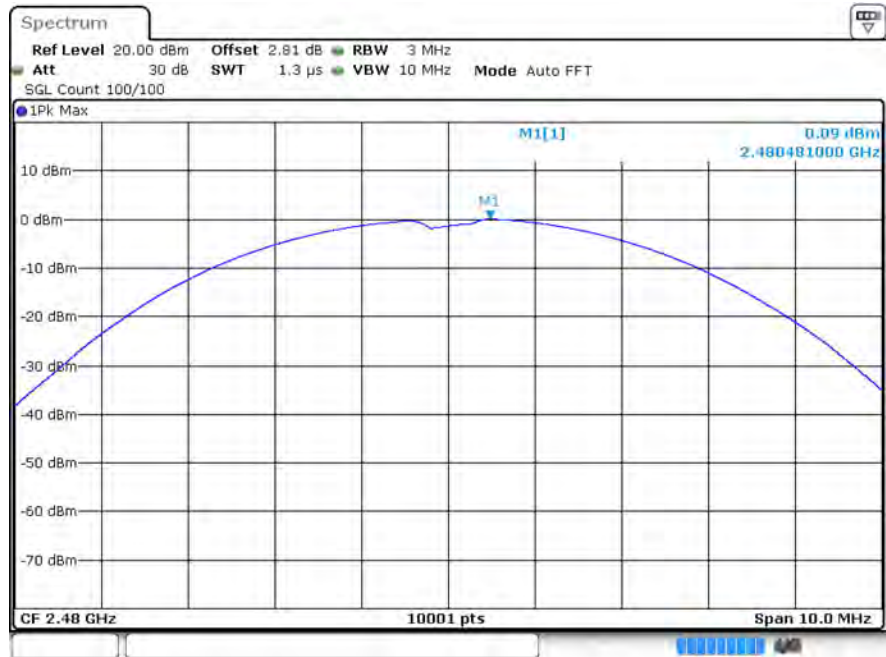
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

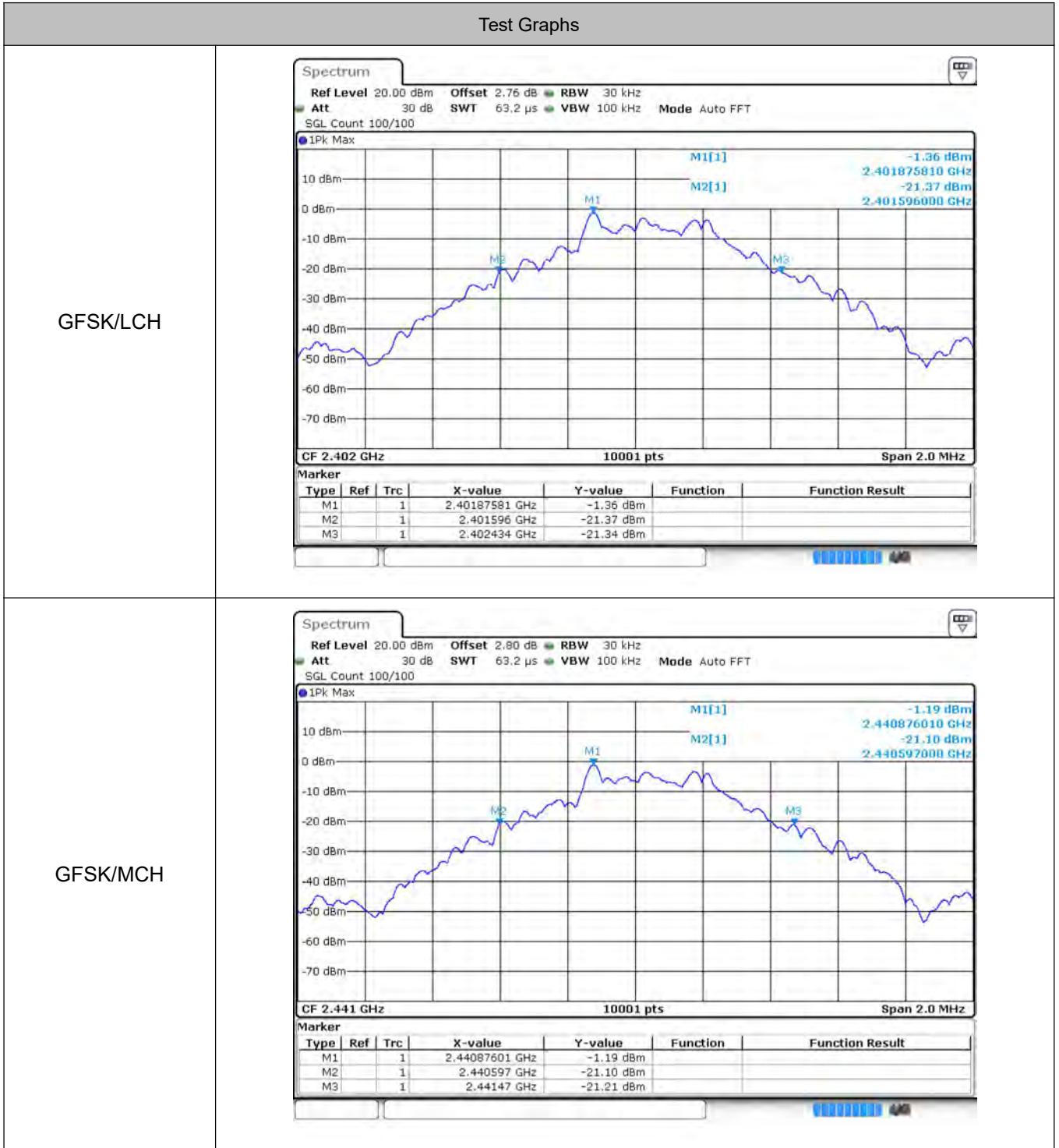


3 20dB Bandwidth

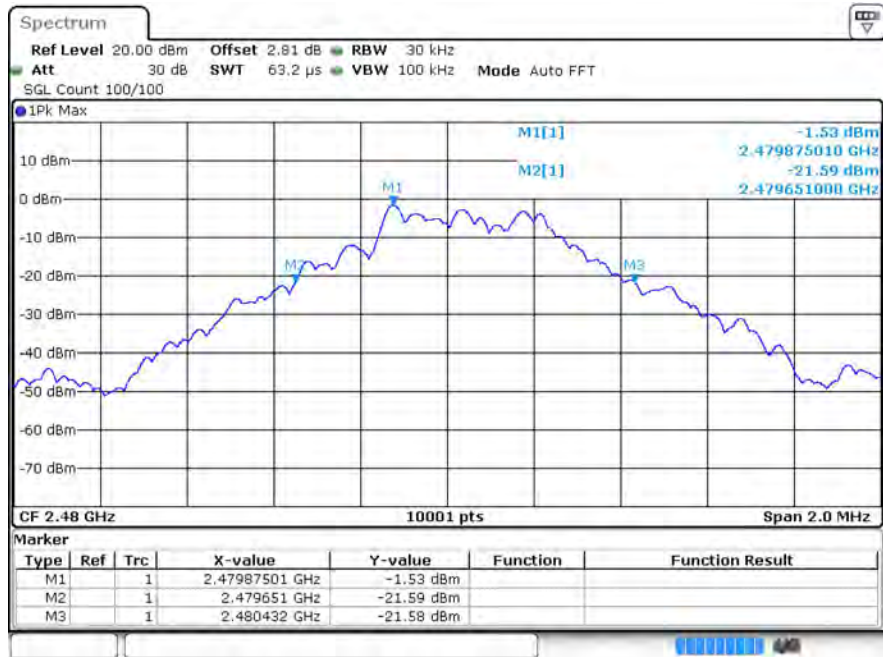
3.1 Test Result

| Mode | Channel. | 20dB Bandwidth [MHz] | Limit [MHz] | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK | LCH | 0.838 | Not Specified | Pass |
| | MCH | 0.873 | Not Specified | Pass |
| | HCH | 0.78 | Not Specified | Pass |
| $\pi/4$ DQPSK | LCH | 1.243 | Not Specified | Pass |
| | MCH | 1.242 | Not Specified | Pass |
| | HCH | 1.247 | Not Specified | Pass |
| 8DPSK | LCH | 1.202 | Not Specified | Pass |
| | MCH | 1.204 | Not Specified | Pass |
| | HCH | 1.238 | Not Specified | Pass |

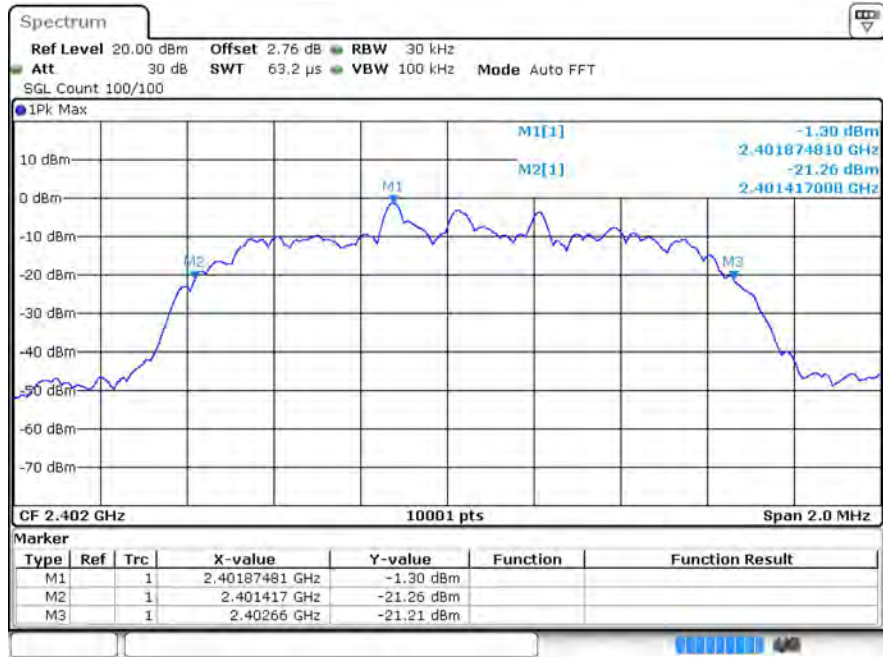
3.2 Test Graphs



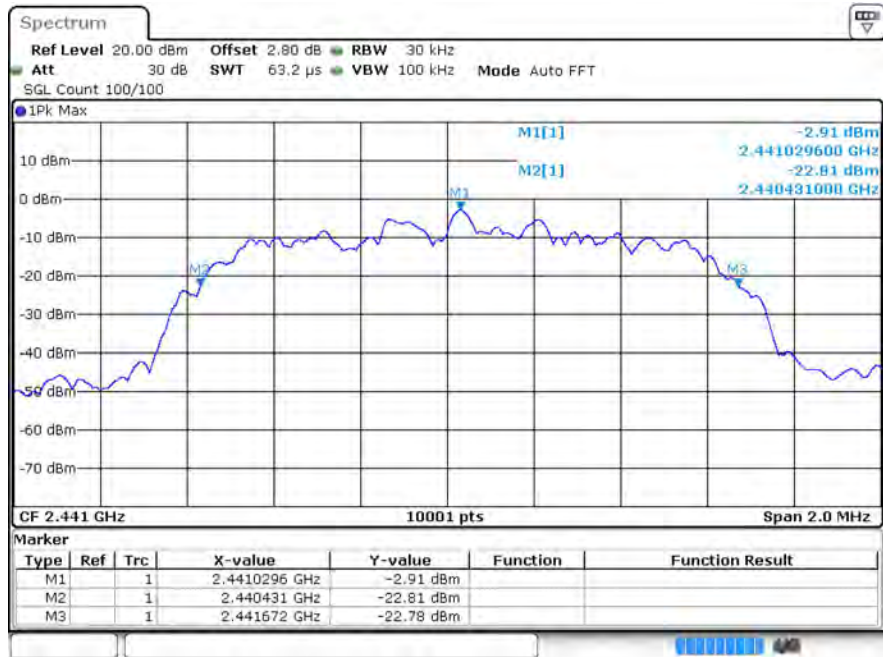
GFSK/HCH



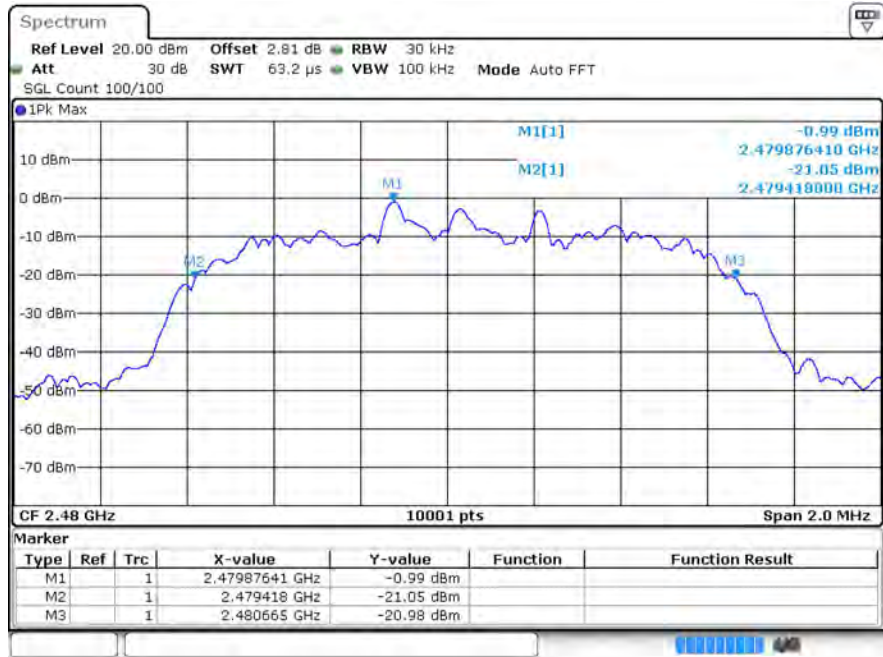
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



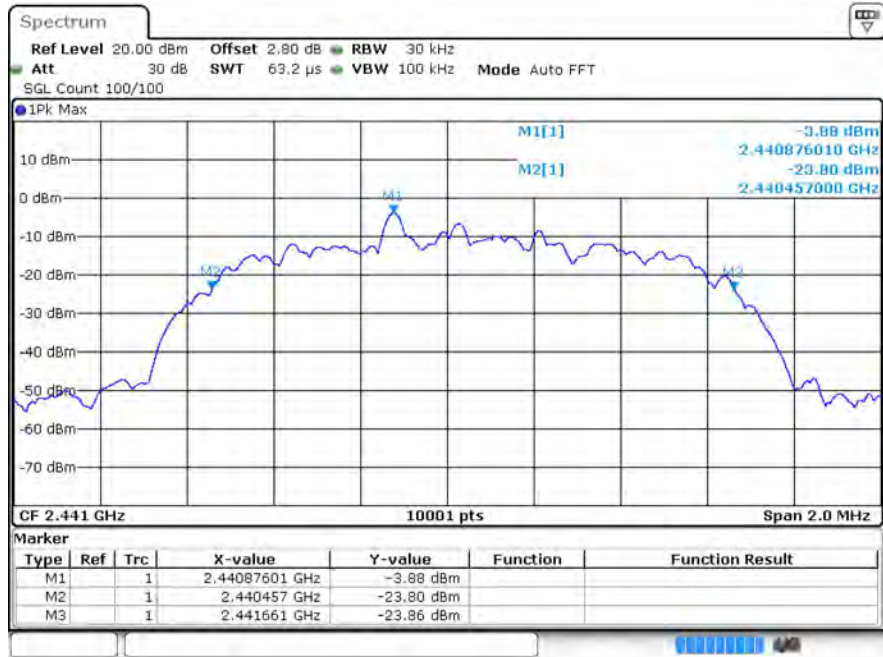
$\pi/4$ DQPSK/HCH



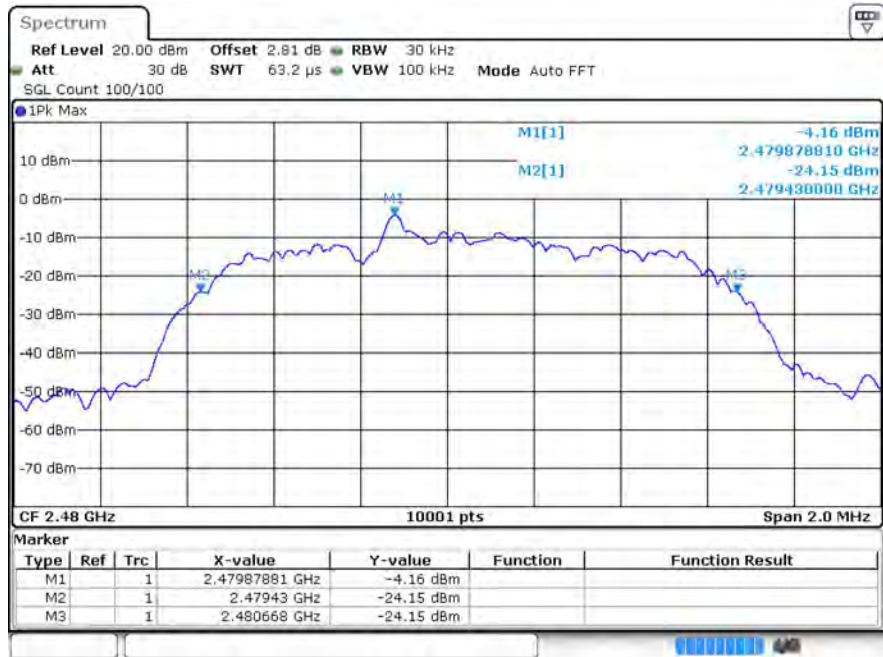
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH



4 Carrier Frequency Separation

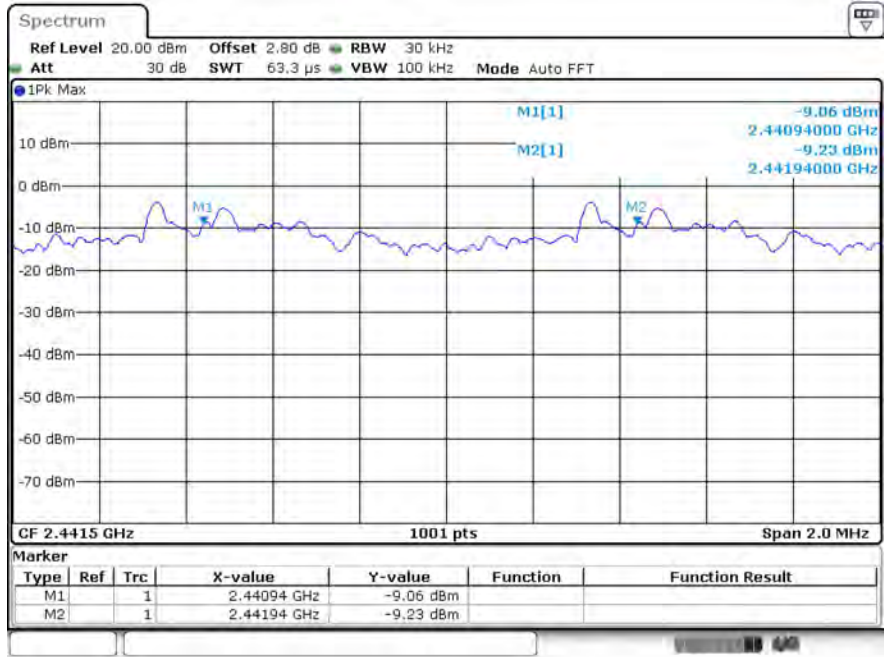
4.1 Test Result

| Mode | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK | MCH | 1 | 0.582 | Pass |
| $\pi/4$ DQPSK | MCH | 1.002 | 0.828 | Pass |
| 8DPSK | MCH | 1 | 0.803 | Pass |

4.2 Test Graphs



8DPSK/MCH

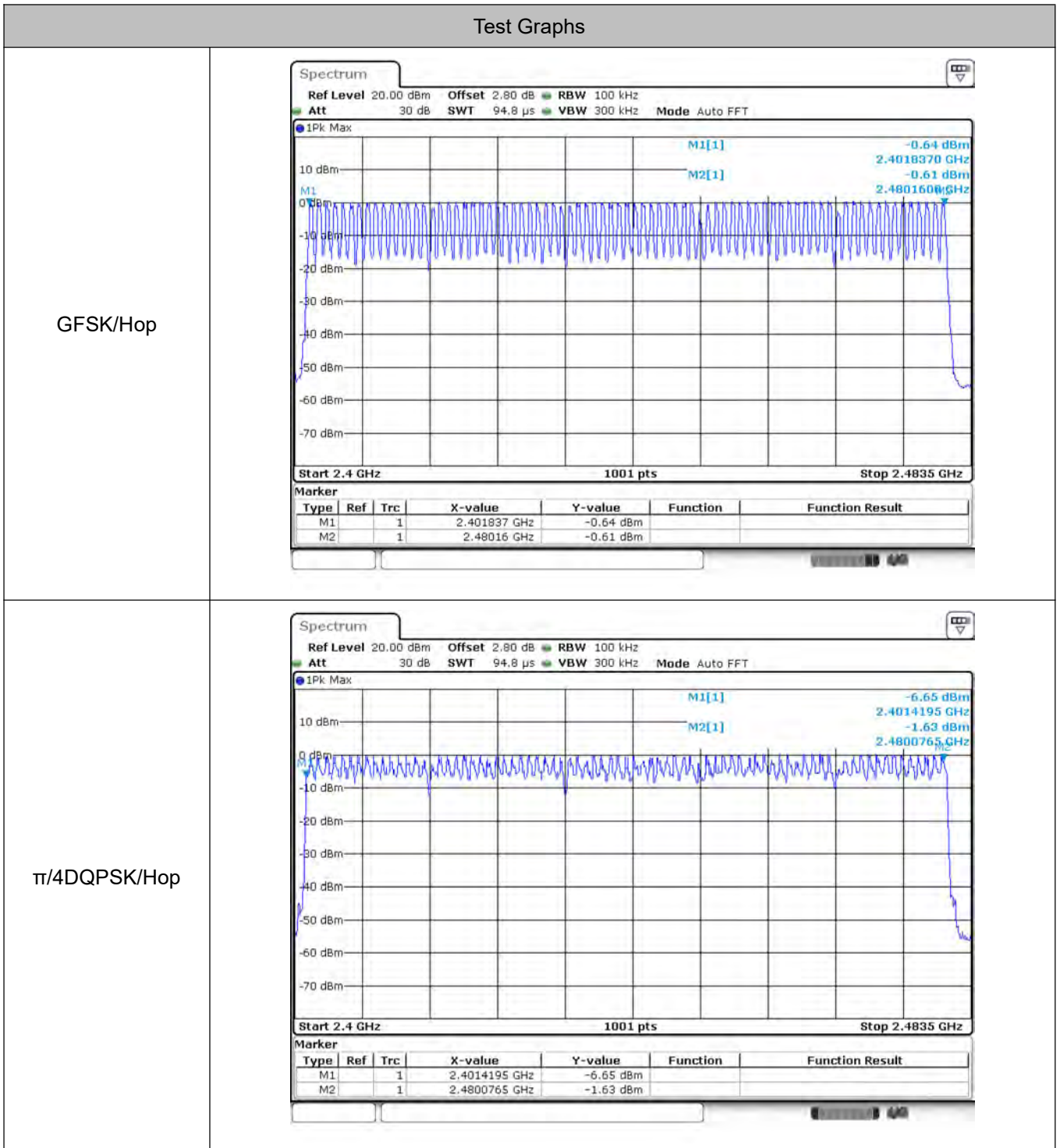


5 Hopping Channel Number

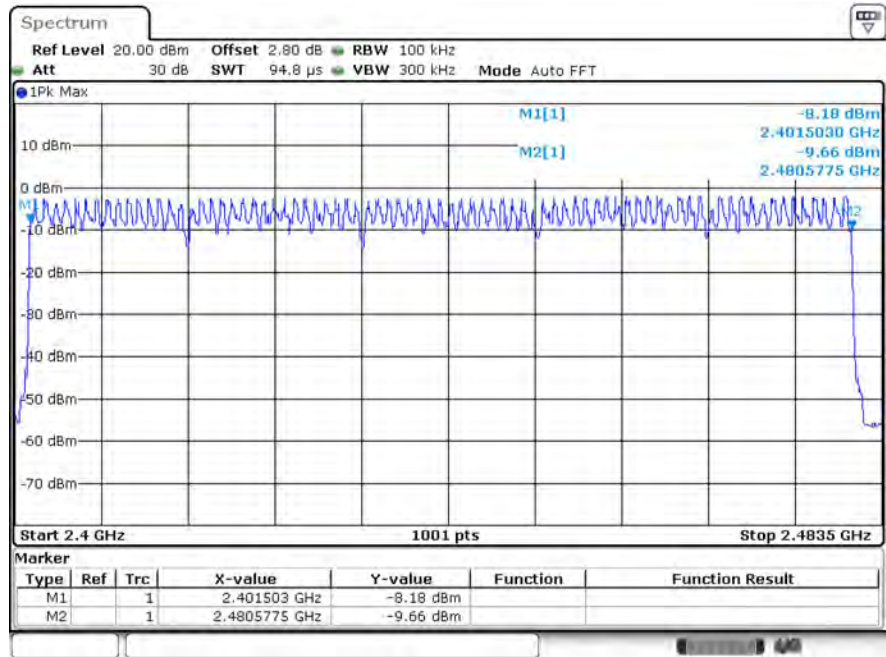
5.1 Test Result

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

5.2 Test Graphs



8DPSK/Hop

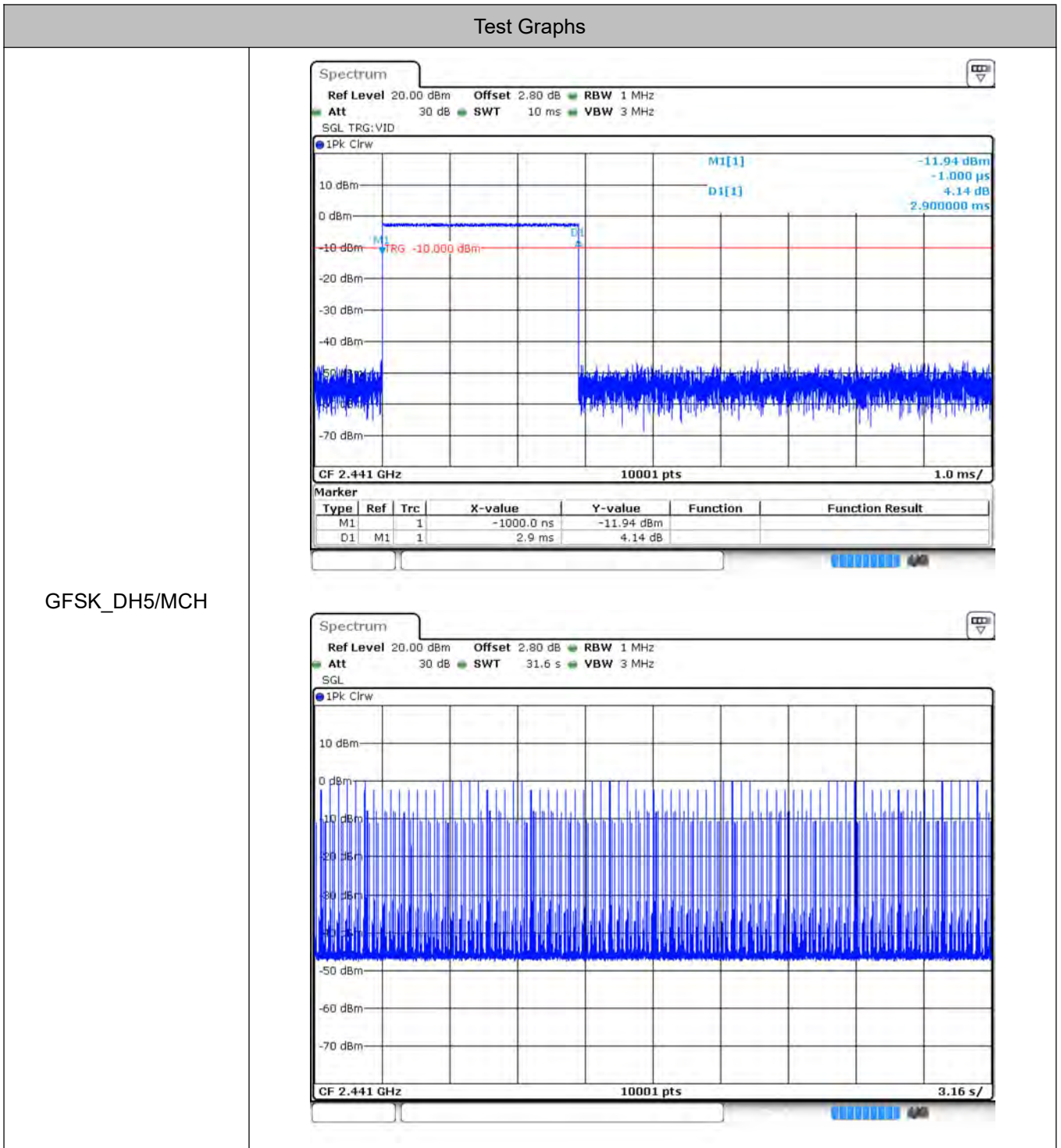


6 Dwell Time

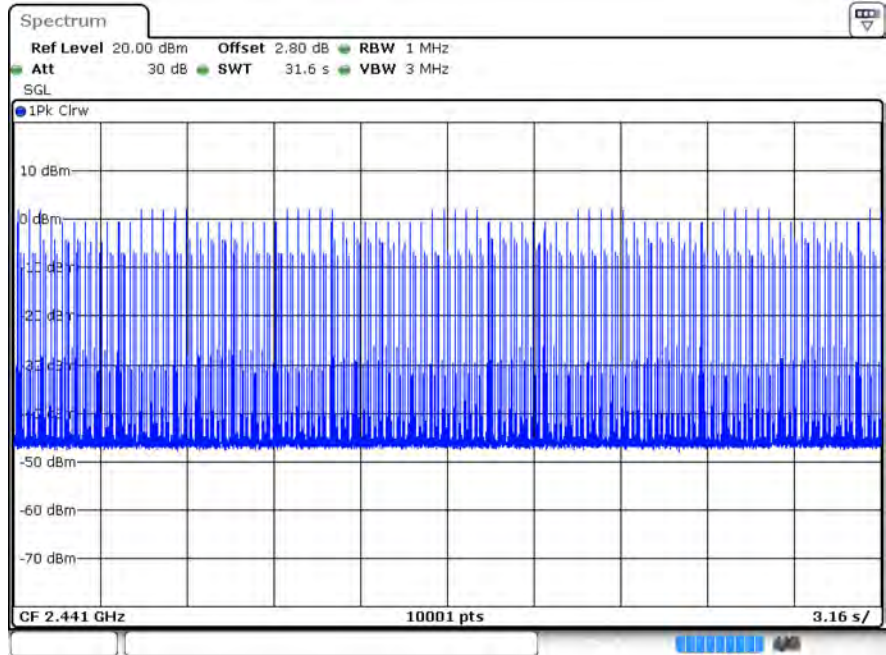
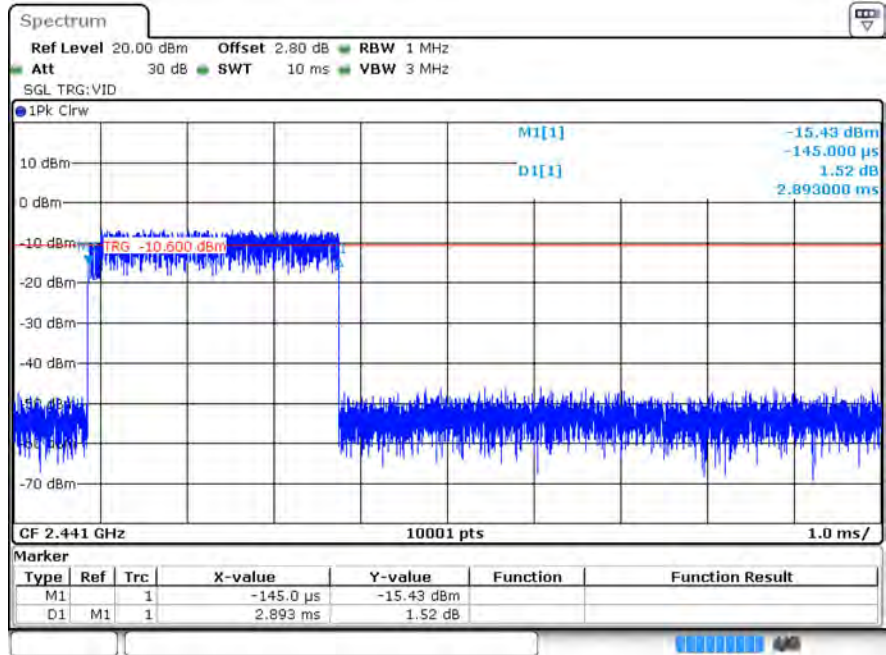
6.1 Test Result

| Mode | Packet | Channel | Burst Width [ms/hop/ch] | Total Hops[hop*ch] | Dwell Time[ms] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|----------------|-----------|---------|
| GFSK | DH5 | MCH | 2.9 | 77 | 223.3 | 0.4 | Pass |
| $\pi/4$ DQPSK | 2DH5 | MCH | 2.893 | 78 | 225.654 | 0.4 | Pass |
| 8DPSK | 3DH5 | MCH | 2.896 | 77 | 222.992 | 0.4 | Pass |

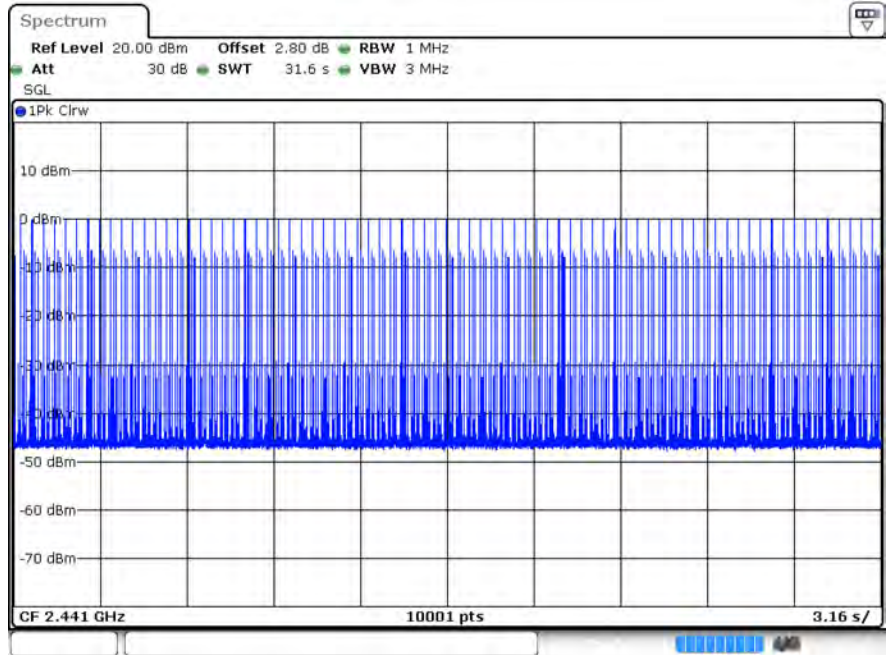
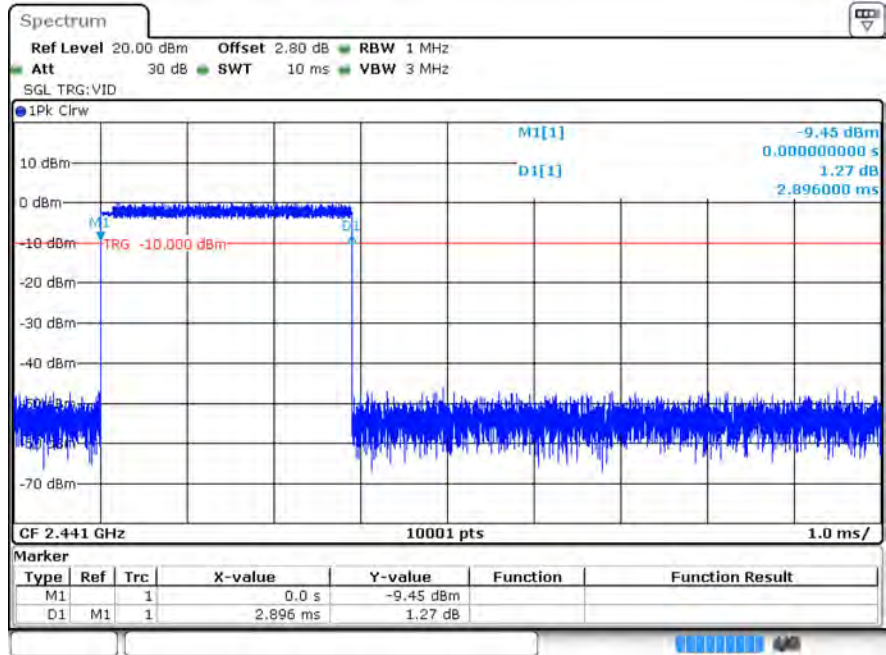
6.2 Test Graphs



$\pi/4$ DQPSK
_2DH5/MCH



8DPSK_3DH5/MCH

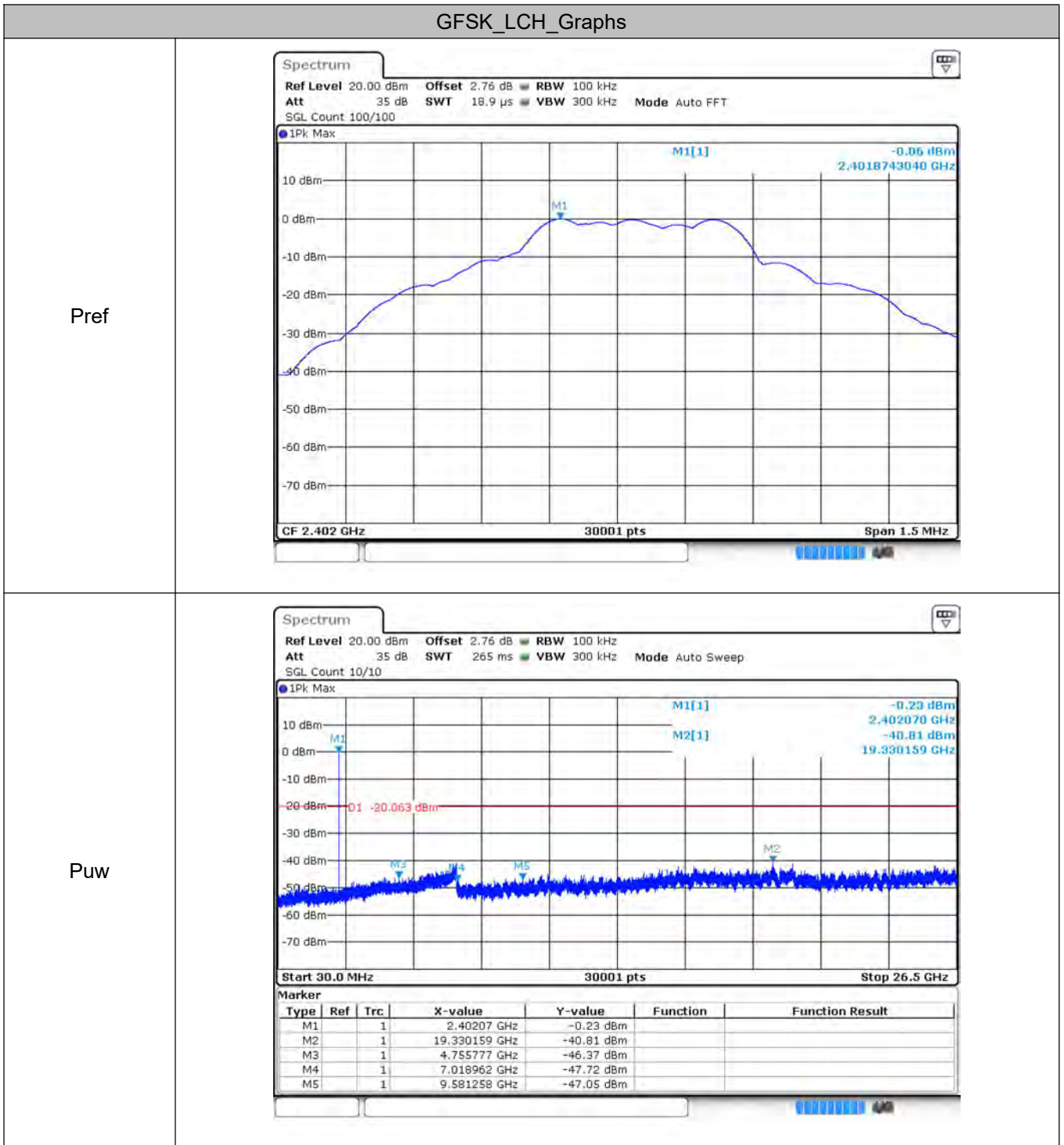


7 RF Conducted Spurious Emissions

7.1 Test Result

| Mode | Channel | Max. Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|------------------|-------------|---------|
| GFSK | LCH | -40.75 | -20 | Pass |
| | MCH | -41.05 | -20 | Pass |
| | HCH | -41.09 | -20 | Pass |
| $\pi/4$ DQPSK | LCH | -41.15 | -20 | Pass |
| | MCH | -41.03 | -20 | Pass |
| | HCH | -40.34 | -20 | Pass |
| 8DPSK | LCH | -37.2 | -20 | Pass |
| | MCH | -39.19 | -20 | Pass |
| | HCH | -38.34 | -20 | Pass |

7.2 Test Graphs

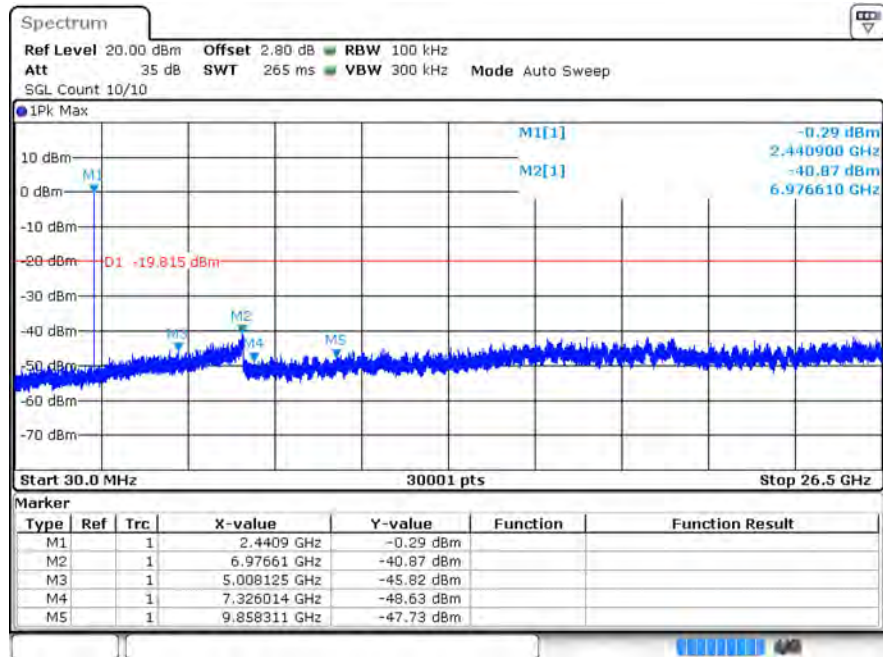


GFSK_MCH_Graphs

Pref



Puw

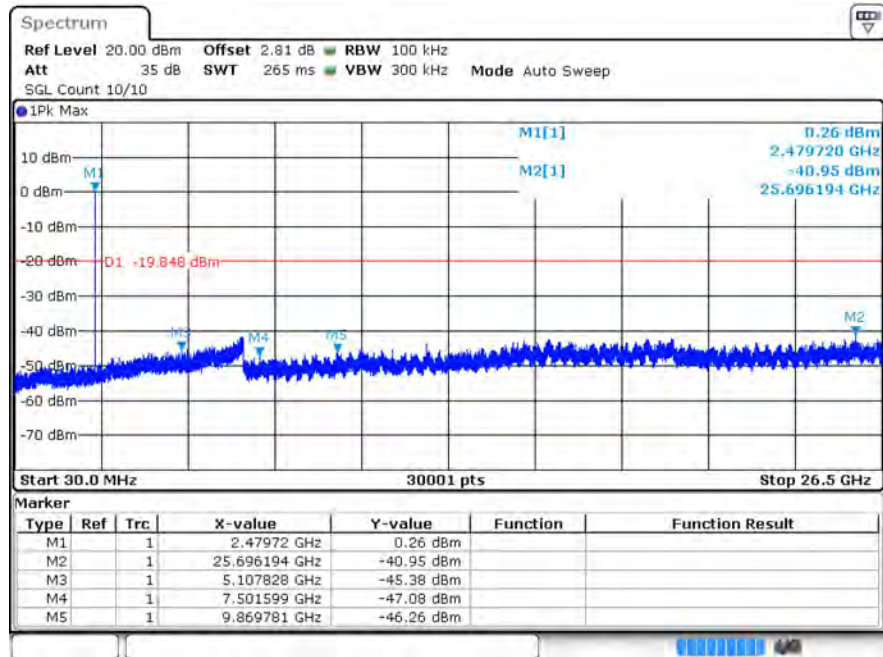


GFSK_HCH_Graphs

Pref



Puw

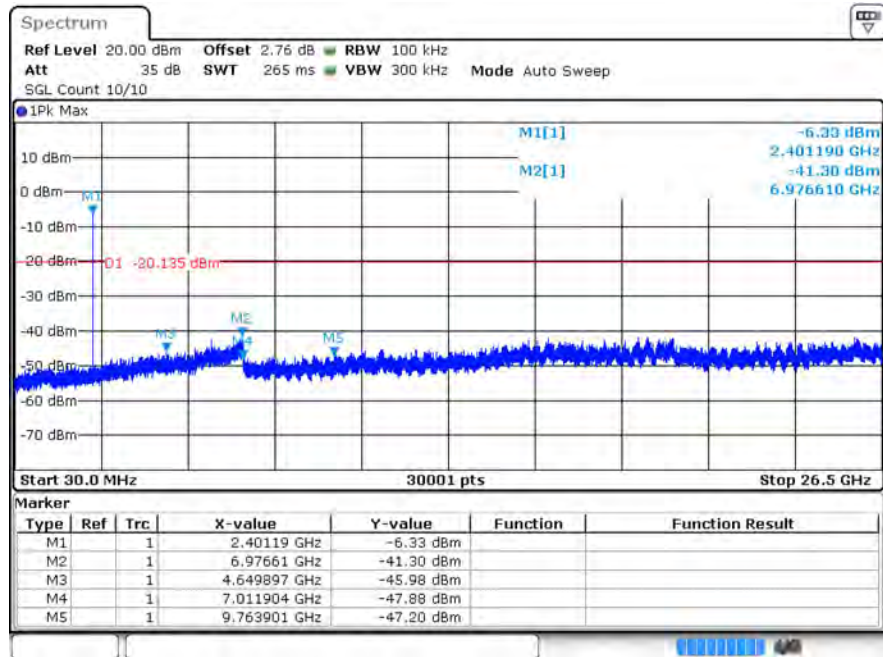


$\pi/4$ DQPSK_LCH_Graphs

Pref



Puw

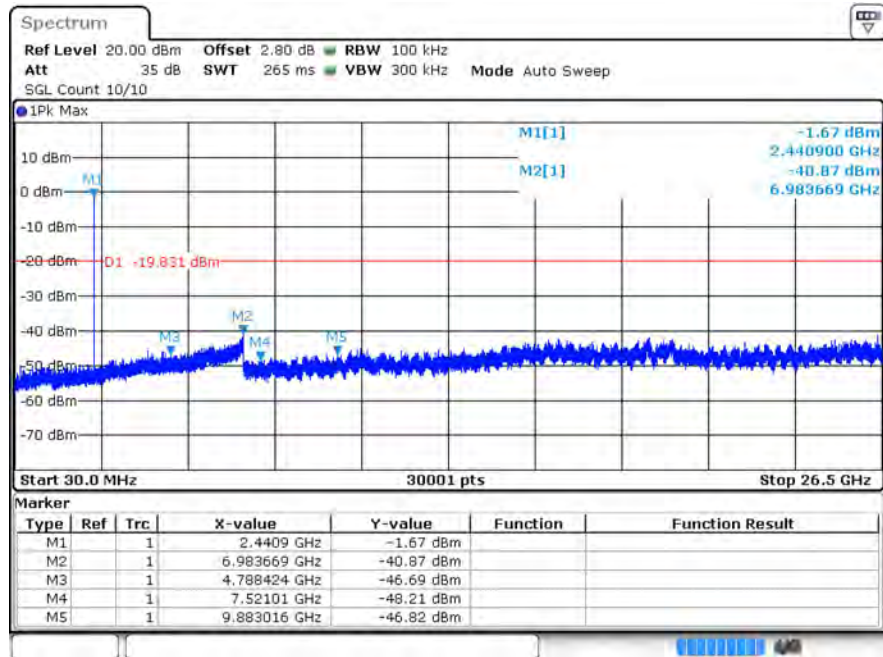


π /4DQPSK_MCH_Graphs

Pref

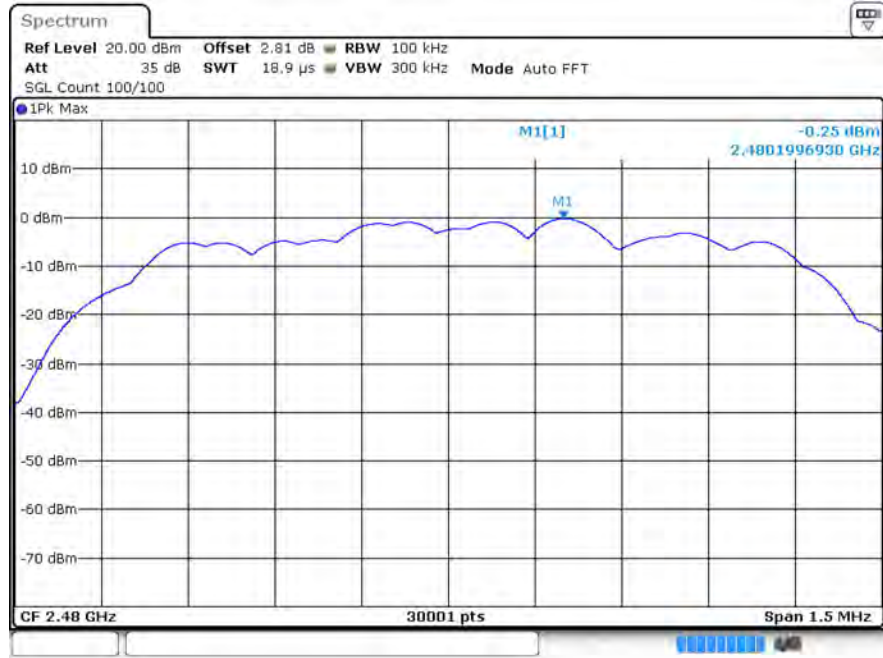


Puw

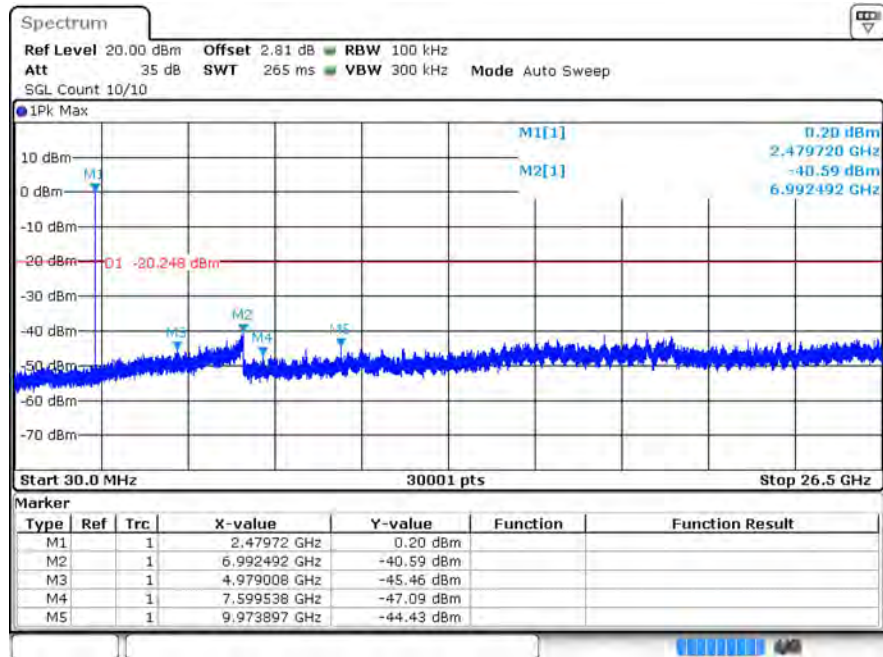


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

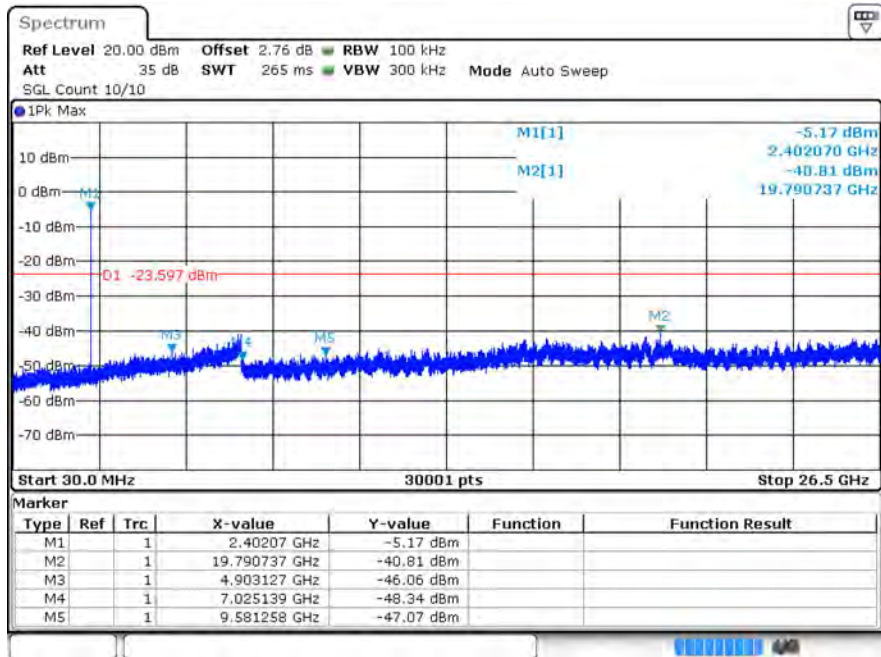


8DPSK_LCH_Graphs

Pref



Puw

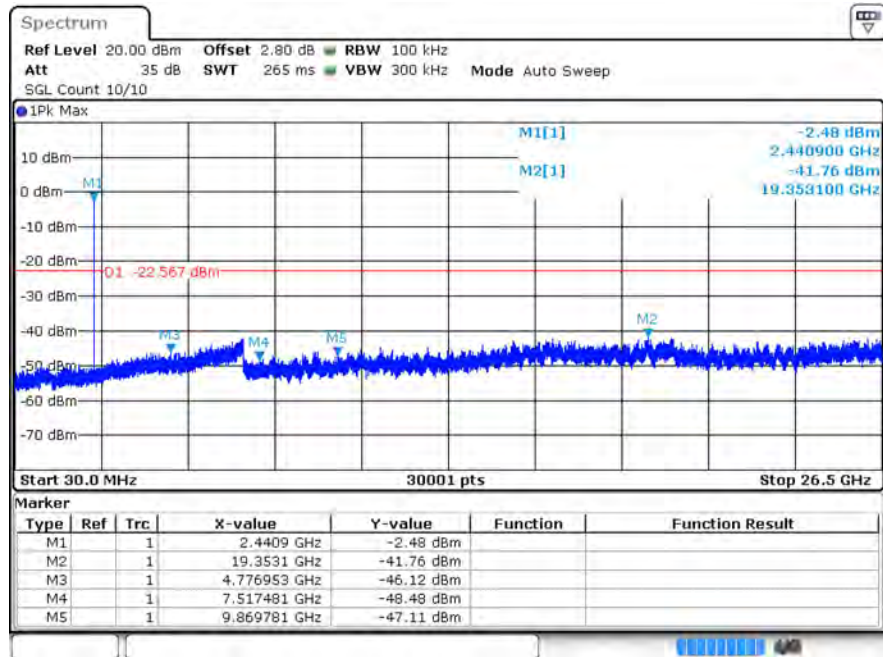


8DPSK_MCH_Graphs

Pref



Puw

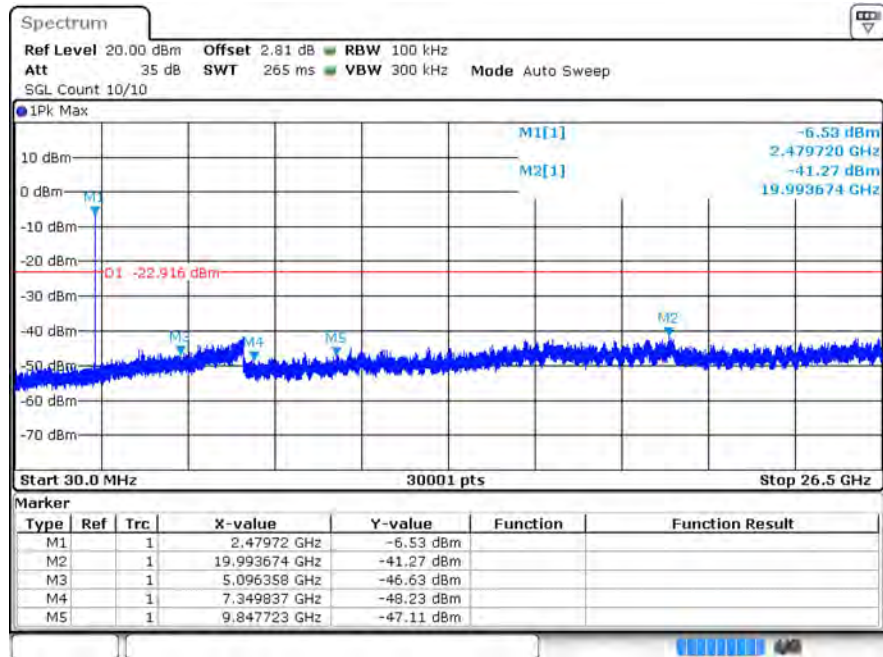


8DPSK_HCH_Graphs

Pref



Puw

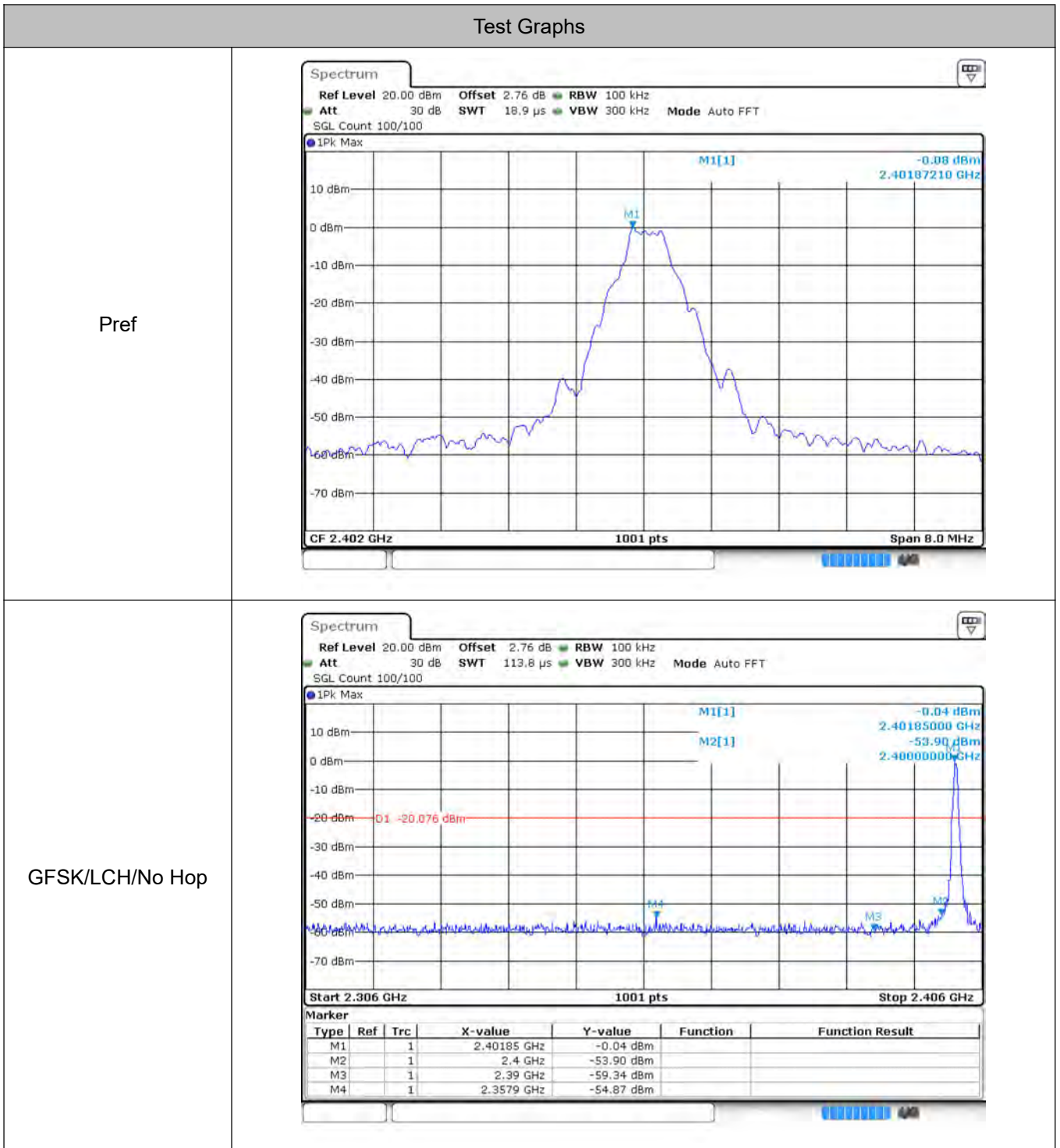


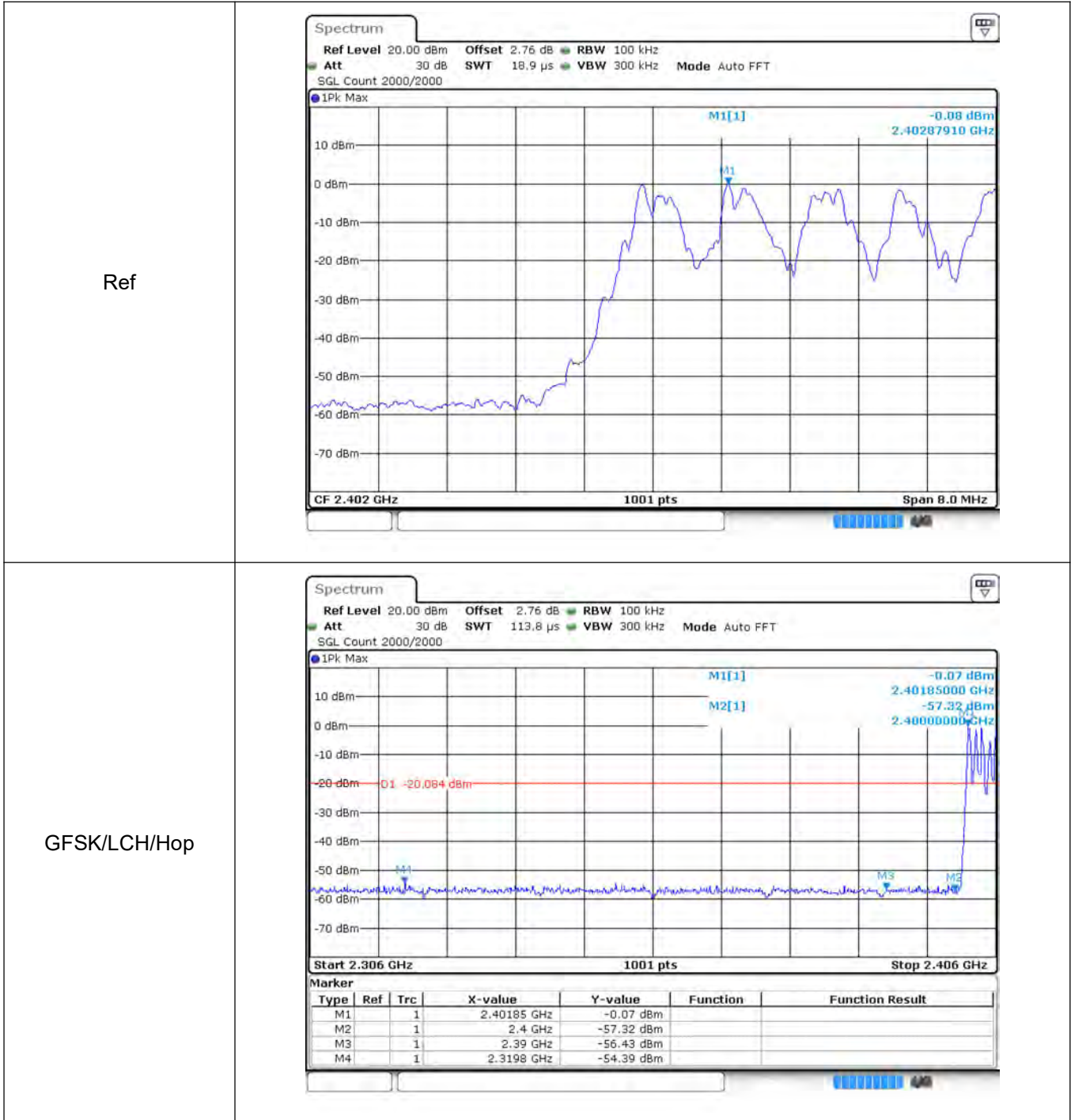
8 Band-edge for RF Conducted Emissions

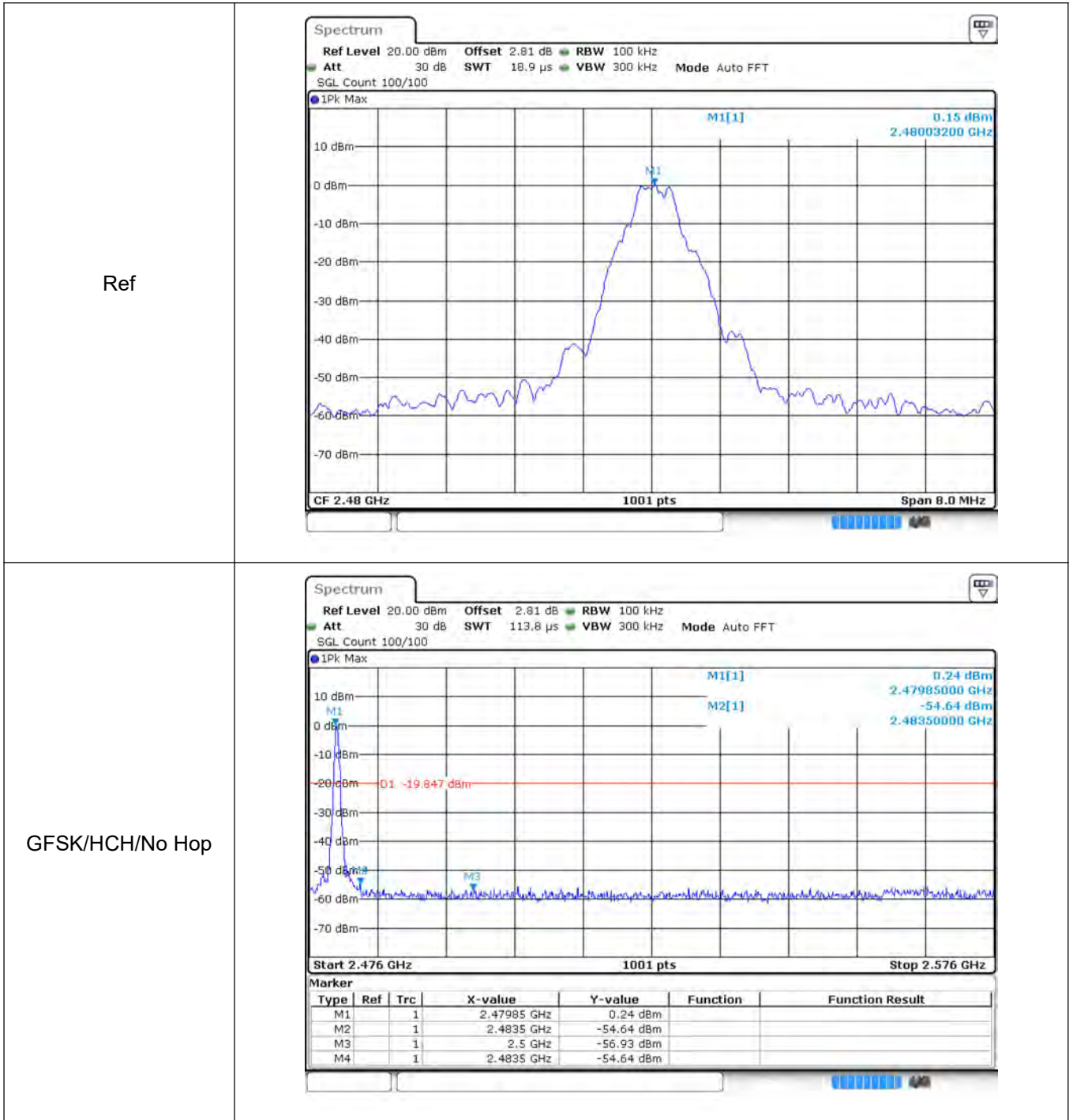
8.1 Test Result

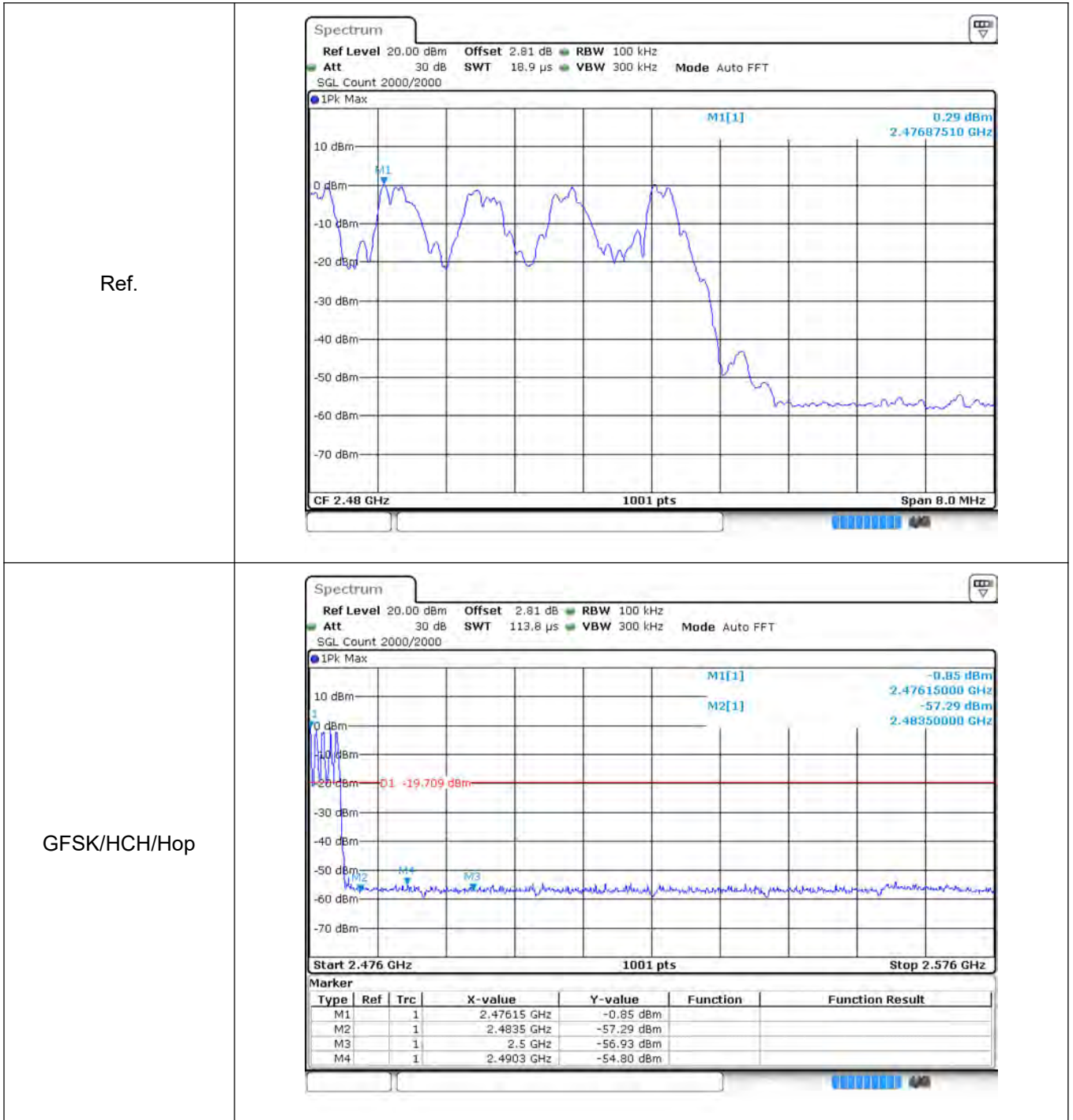
| Mode | Channel | Carrier Frequency [MHz] | Frequency Hopping | Max Spurious Level [dBc] | Limit [dBc] | Verdict |
|---------------|---------|-------------------------|-------------------|--------------------------|-------------|---------|
| GFSK | LCH | 2402 | Off | -54.78 | -20 | Pass |
| | | | On | -54.3 | -20 | Pass |
| | HCH | 2480 | Off | -54.78 | -20 | Pass |
| | | | On | -55.09 | -20 | Pass |
| $\pi/4$ DQPSK | LCH | 2402 | Off | -55.79 | -20 | Pass |
| | | | On | -54.11 | -20 | Pass |
| | HCH | 2480 | Off | -56 | -20 | Pass |
| | | | On | -54.75 | -20 | Pass |
| 8DPSK | LCH | 2402 | Off | -53.02 | -20 | Pass |
| | | | On | -51.24 | -20 | Pass |
| | HCH | 2480 | Off | -52.88 | -20 | Pass |
| | | | On | -52.94 | -20 | Pass |

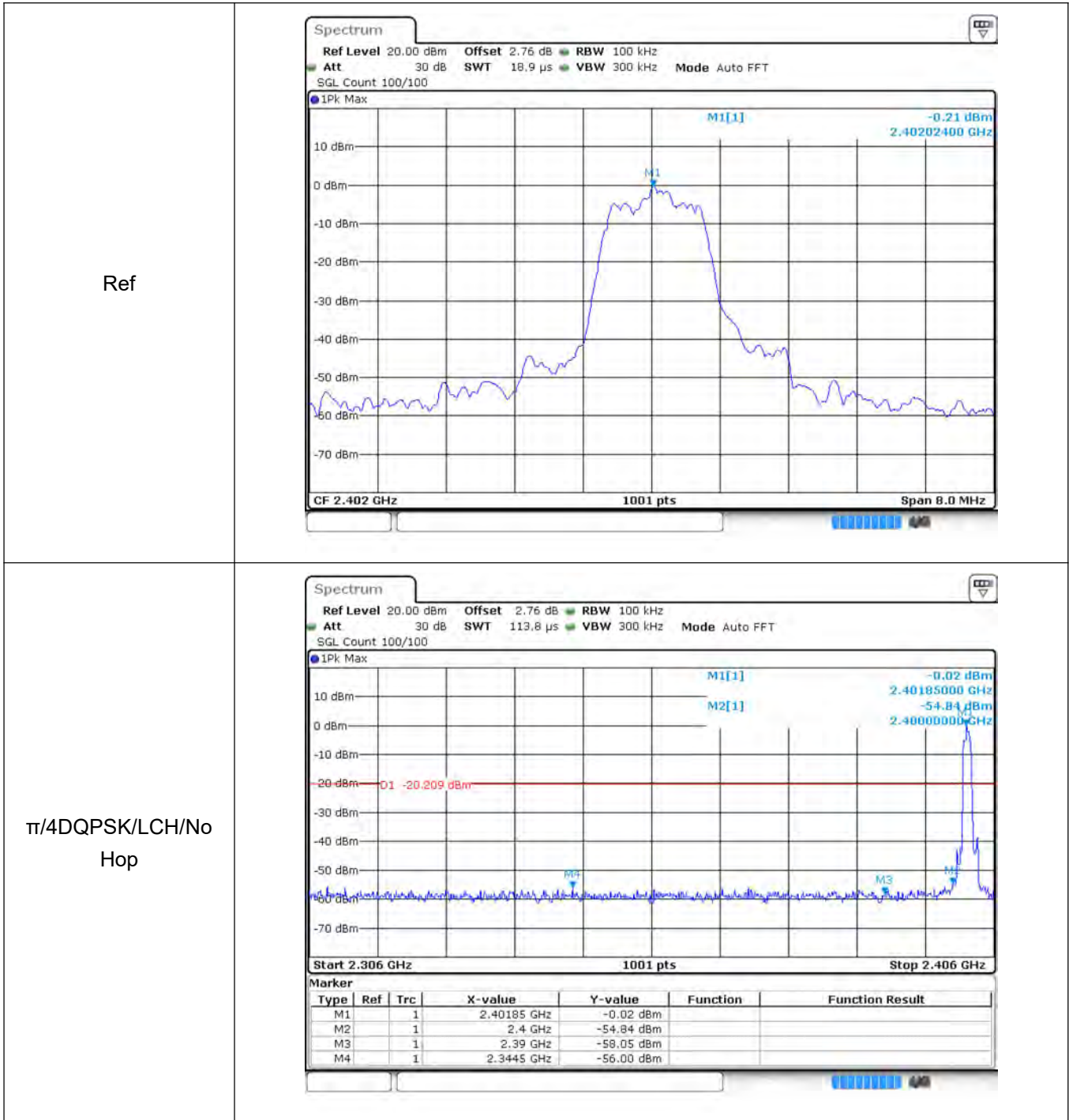
8.2 Test Graphs

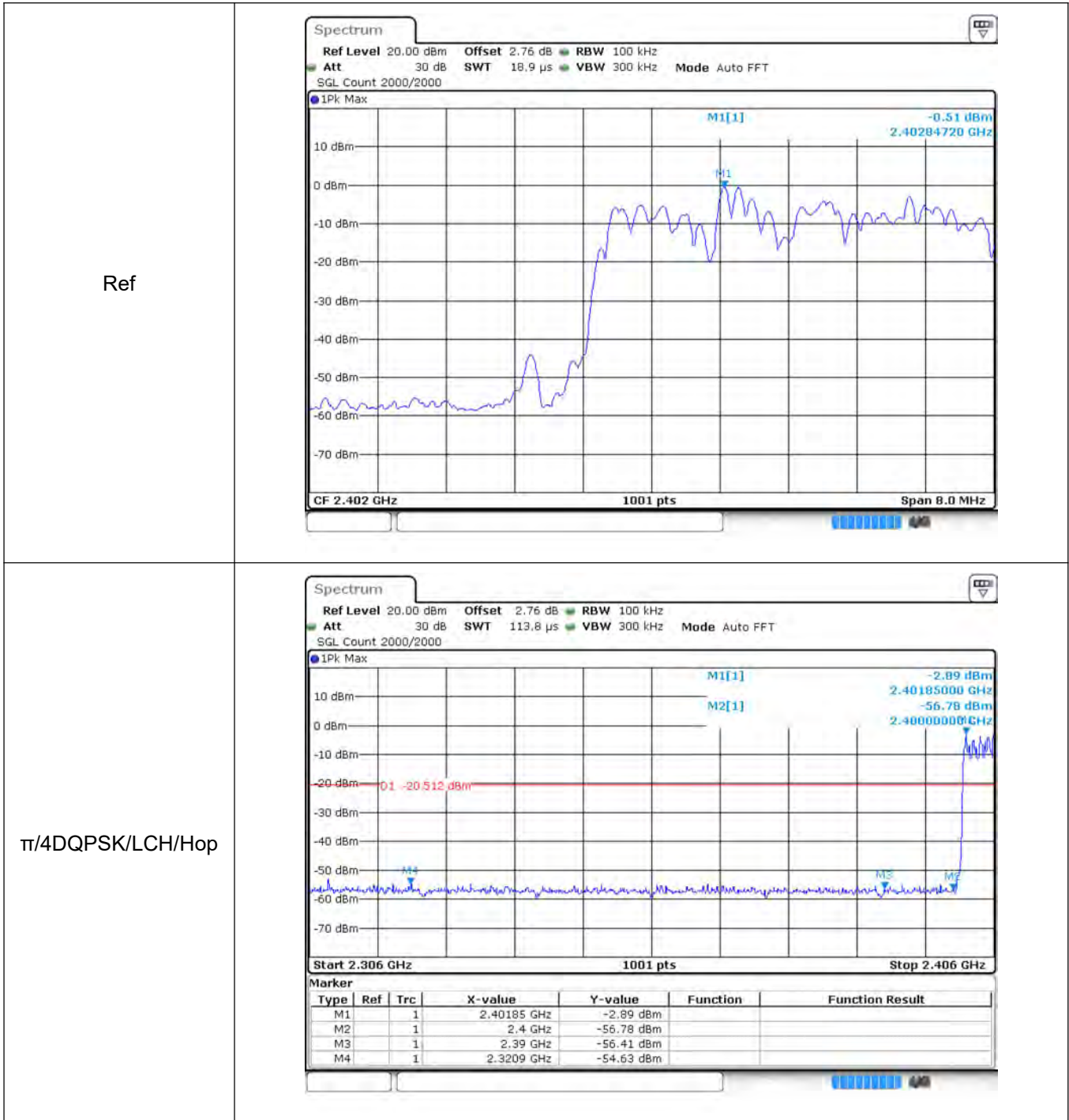


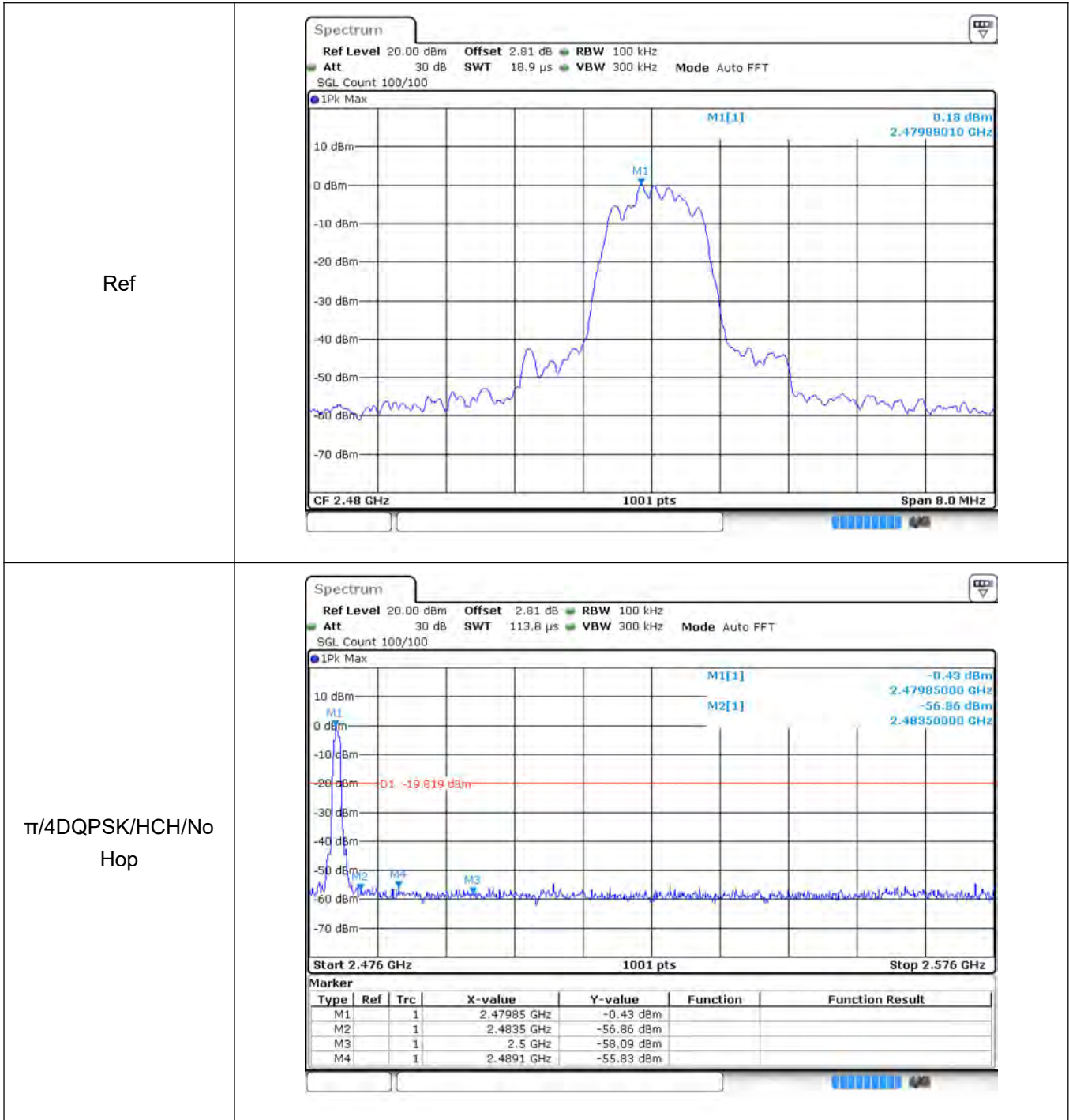


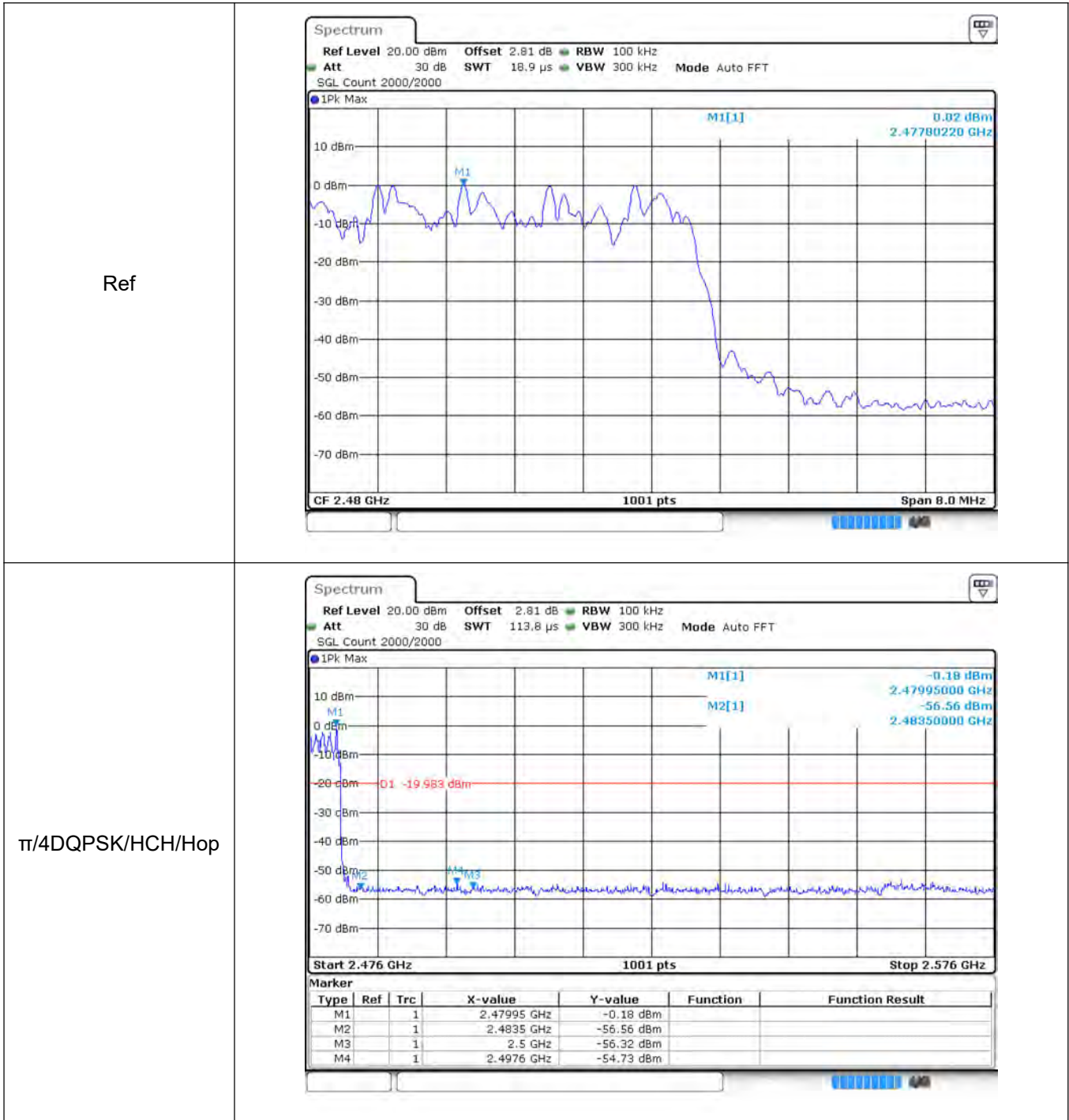


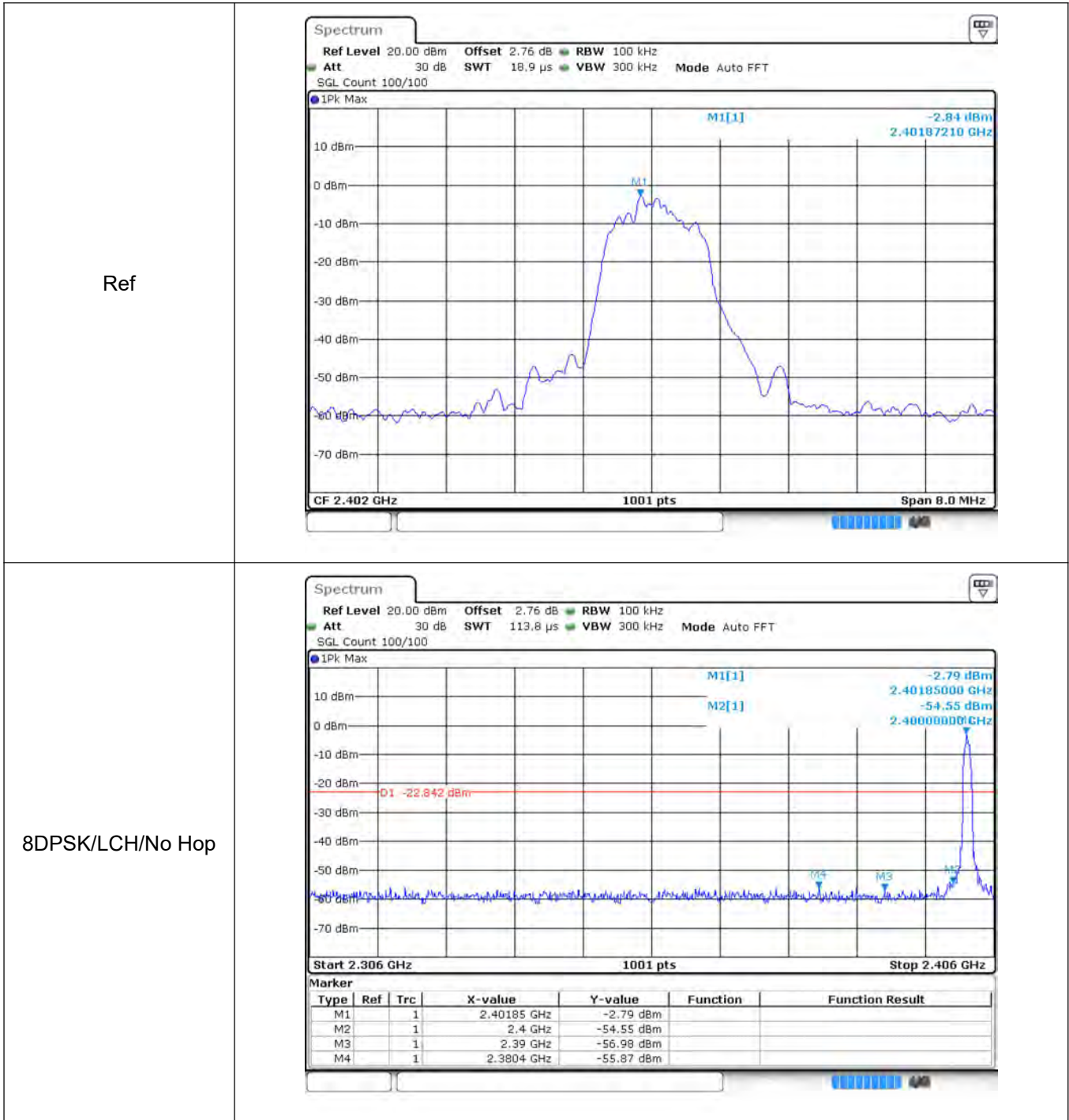


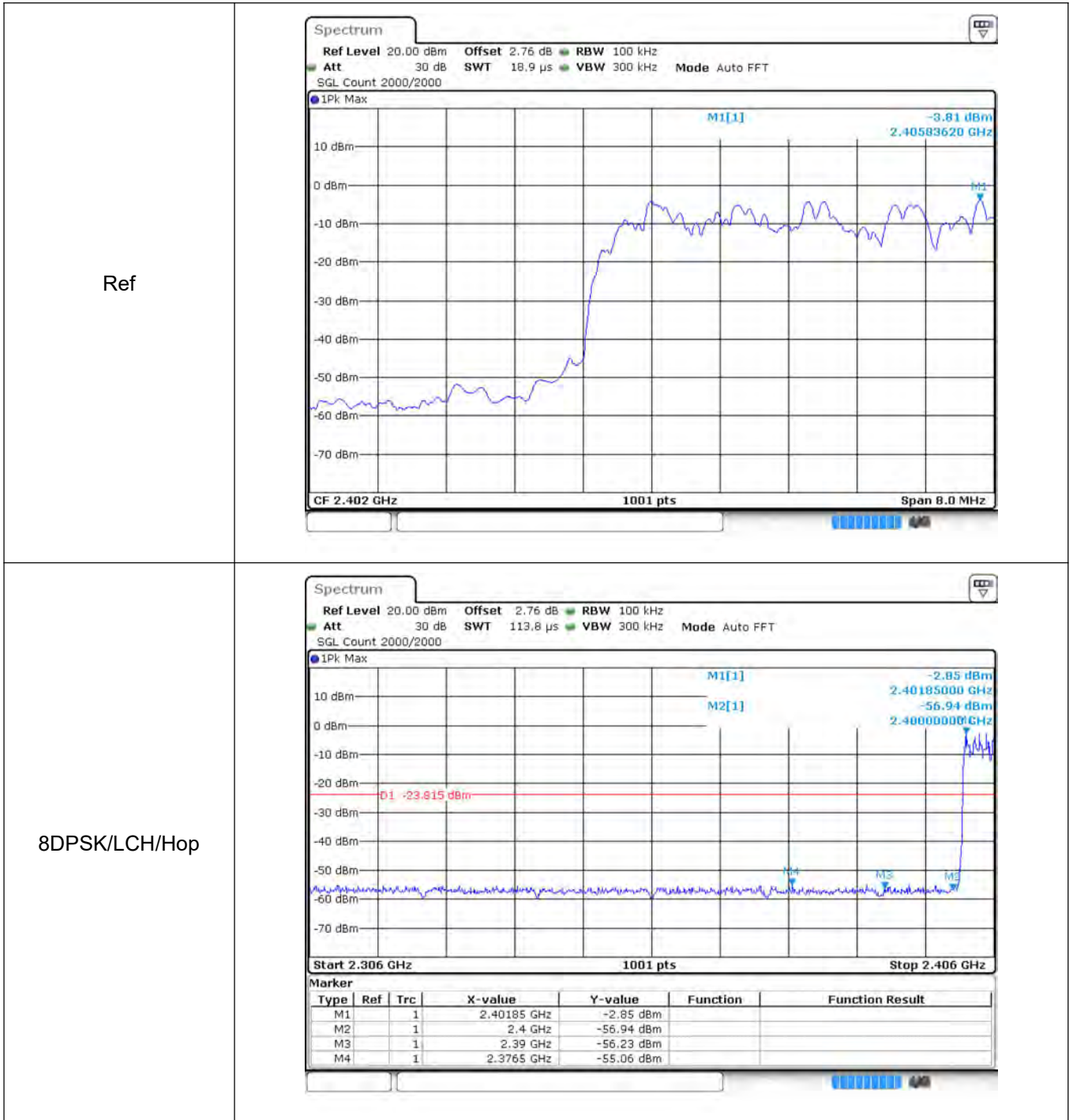


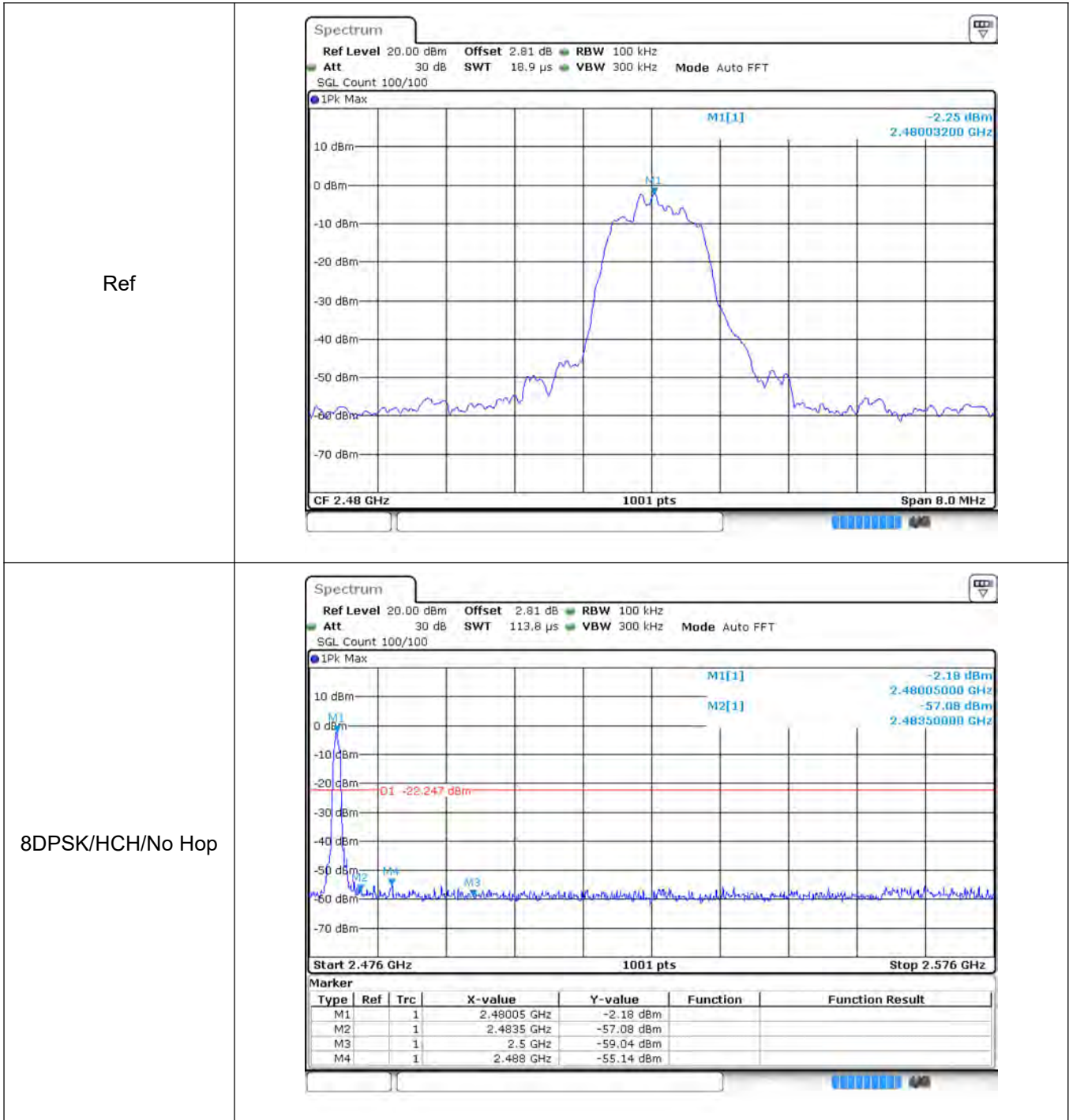


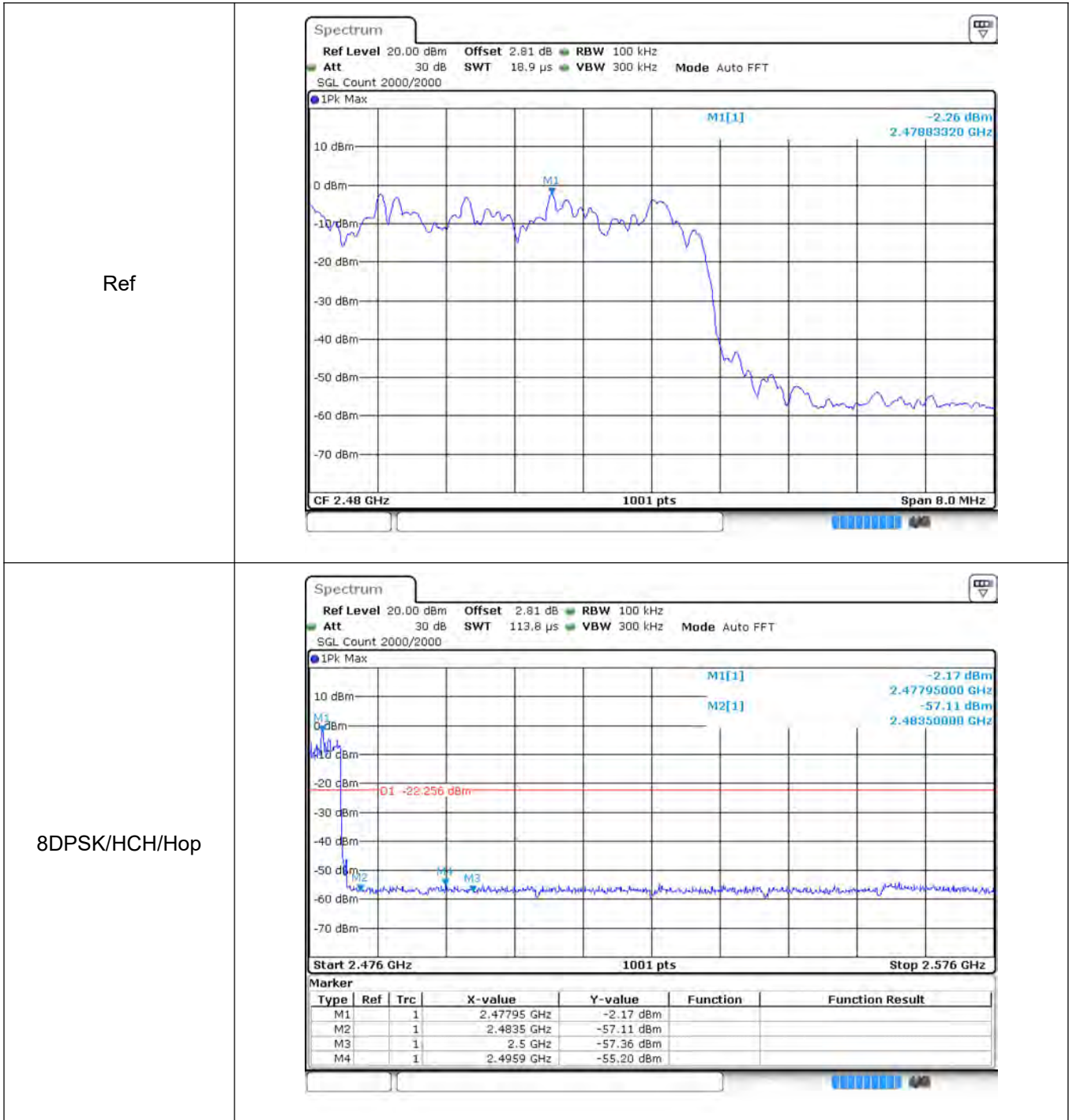












9 Restrict-band band-edge measurements

9.1 Test Result

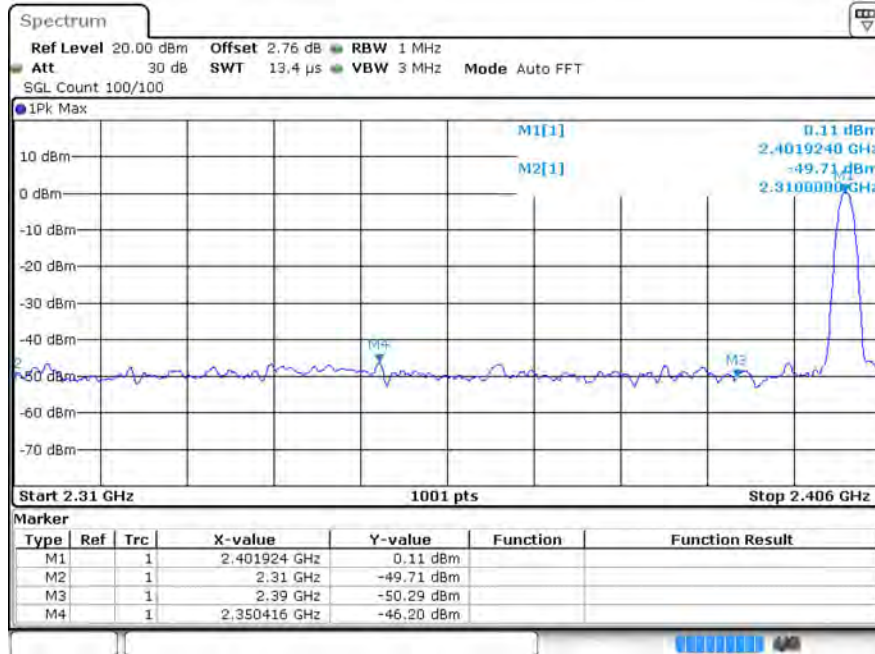
| Test Mode | Hopping | Freq. | Power [dBm] | Gain | Duty Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|----------|-------------|------|-------------|------------|----------|----------------|---------|
| GFSK | Off | 2310.0 | -49.71 | 2 | - | 47.55 | PEAK | 74 | Pass |
| | Off | 2310.0 | -56.46 | 2 | 4.84 | 45.64 | AV | 54 | Pass |
| | Off | 2350.416 | -46.2 | 2 | - | 51.06 | PEAK | 74 | Pass |
| | Off | 2340.432 | -53.8 | 2 | 4.84 | 48.3 | AV | 54 | Pass |
| | Off | 2390.0 | -50.29 | 2 | - | 46.97 | PEAK | 74 | Pass |
| | Off | 2390.0 | -56.41 | 2 | 4.84 | 45.69 | AV | 54 | Pass |
| | Off | 2483.5 | -48.12 | 2 | - | 49.14 | PEAK | 74 | Pass |
| | Off | 2483.5 | -55.47 | 2 | 4.84 | 46.63 | AV | 54 | Pass |
| | Off | 2489.632 | -46.42 | 2 | - | 50.84 | PEAK | 74 | Pass |
| | Off | 2485.672 | -55.1 | 2 | 4.84 | 47 | AV | 54 | Pass |
| | Off | 2500.0 | -50.35 | 2 | - | 46.91 | PEAK | 74 | Pass |
| | Off | 2500.0 | -55.66 | 2 | 4.84 | 46.44 | AV | 54 | Pass |
| $\pi/4$ DQPSK | Off | 2310.0 | -50.22 | 2 | - | 47.04 | PEAK | 74 | Pass |
| | Off | 2310.0 | -56.42 | 2 | 4.93 | 45.77 | AV | 54 | Pass |
| | Off | 2348.304 | -45.06 | 2 | - | 52.2 | PEAK | 74 | Pass |
| | Off | 2338.704 | -54.55 | 2 | 4.93 | 47.64 | AV | 54 | Pass |
| | Off | 2390.0 | -48.73 | 2 | - | 48.53 | PEAK | 74 | Pass |
| | Off | 2390.0 | -56.32 | 2 | 4.93 | 45.87 | AV | 54 | Pass |
| | Off | 2483.5 | -48.34 | 2 | - | 48.92 | PEAK | 74 | Pass |
| | Off | 2483.5 | -55.29 | 2 | 4.92 | 46.89 | AV | 54 | Pass |
| | Off | 2485.72 | -45.13 | 2 | - | 52.13 | PEAK | 74 | Pass |
| | Off | 2485.288 | -54.99 | 2 | 4.92 | 47.19 | AV | 54 | Pass |
| | Off | 2500.0 | -49.94 | 2 | - | 47.32 | PEAK | 74 | Pass |
| | Off | 2500.0 | -56.37 | 2 | 4.92 | 45.81 | AV | 54 | Pass |
| 8DPSK | Off | 2310.0 | -51.05 | 2 | - | 46.21 | PEAK | 74 | Pass |
| | Off | 2310.0 | -56.16 | 2 | 4.84 | 45.94 | AV | 54 | Pass |
| | Off | 2342.928 | -45.69 | 2 | - | 51.57 | PEAK | 74 | Pass |
| | Off | 2338.896 | -54.34 | 2 | 4.84 | 47.76 | AV | 54 | Pass |



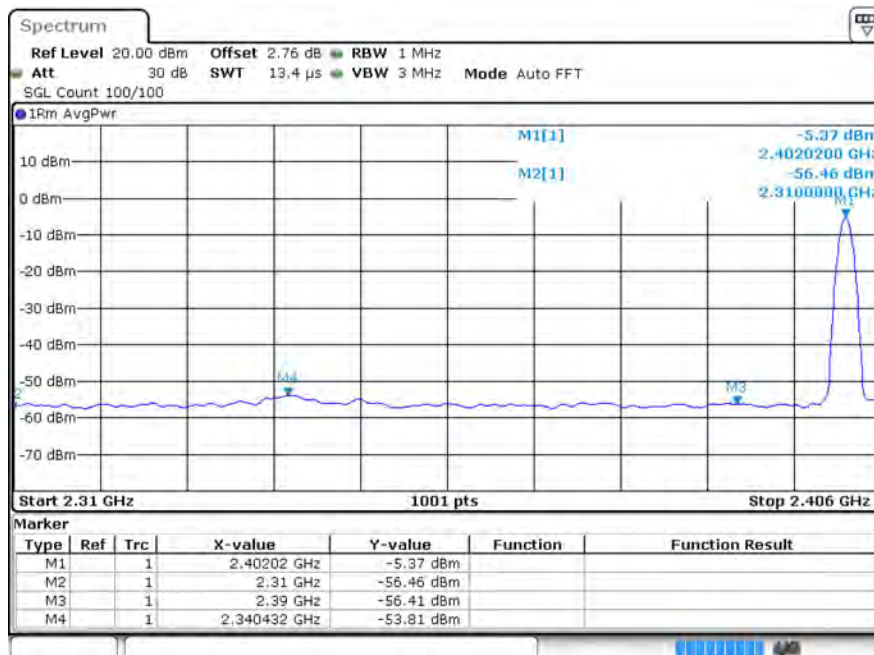
| | | | | | | | | |
|-----|----------|--------|---|------|-------|------|----|------|
| Off | 2390.0 | -52.31 | 2 | - | 44.95 | PEAK | 74 | Pass |
| Off | 2390.0 | -56.83 | 2 | 4.84 | 45.27 | AV | 54 | Pass |
| Off | 2483.5 | -48.88 | 2 | - | 48.38 | PEAK | 74 | Pass |
| Off | 2483.5 | -56.21 | 2 | 4.95 | 46 | AV | 54 | Pass |
| Off | 2496.688 | -46.07 | 2 | - | 51.19 | PEAK | 74 | Pass |
| Off | 2497.576 | -55.66 | 2 | 4.95 | 46.55 | AV | 54 | Pass |
| Off | 2500.0 | -49.31 | 2 | - | 47.95 | PEAK | 74 | Pass |
| Off | 2500.0 | -56.34 | 2 | 4.95 | 45.87 | AV | 54 | Pass |

9.2 Test Graphs

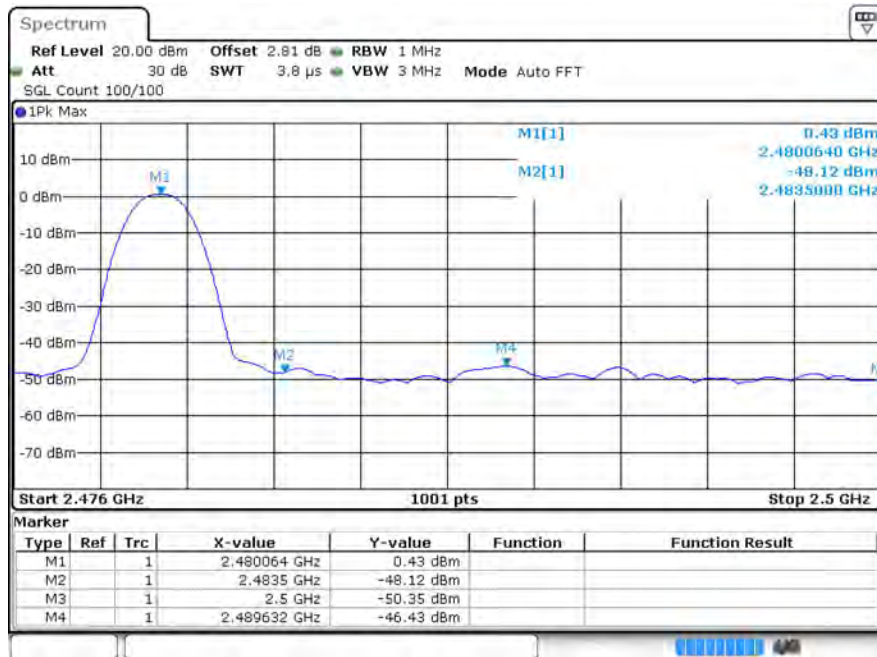
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



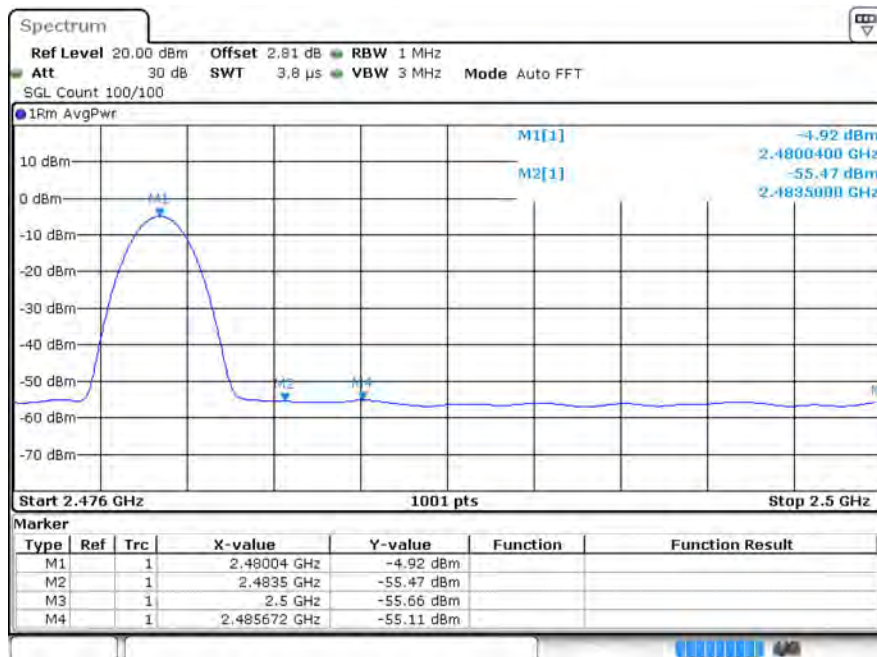
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



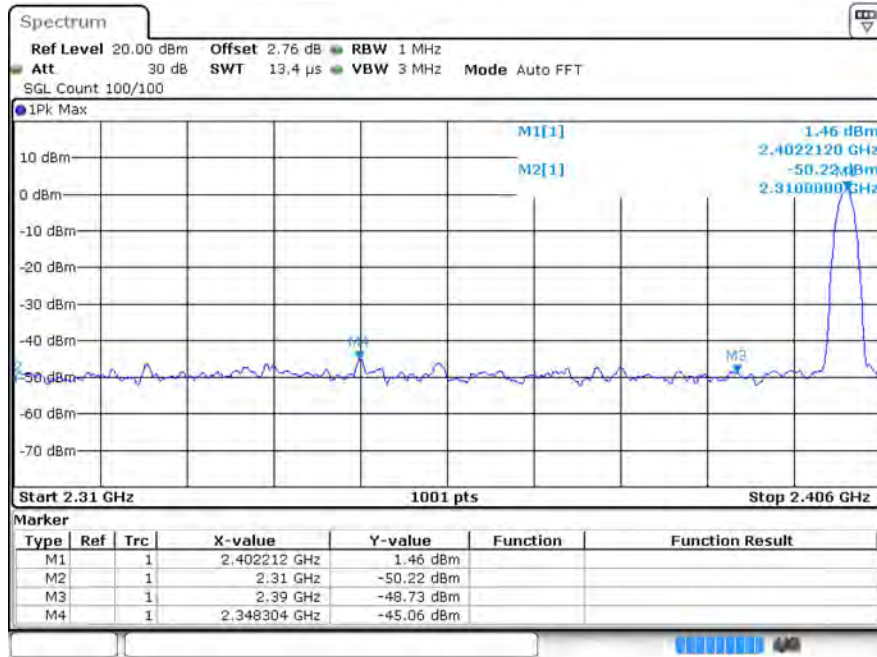
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



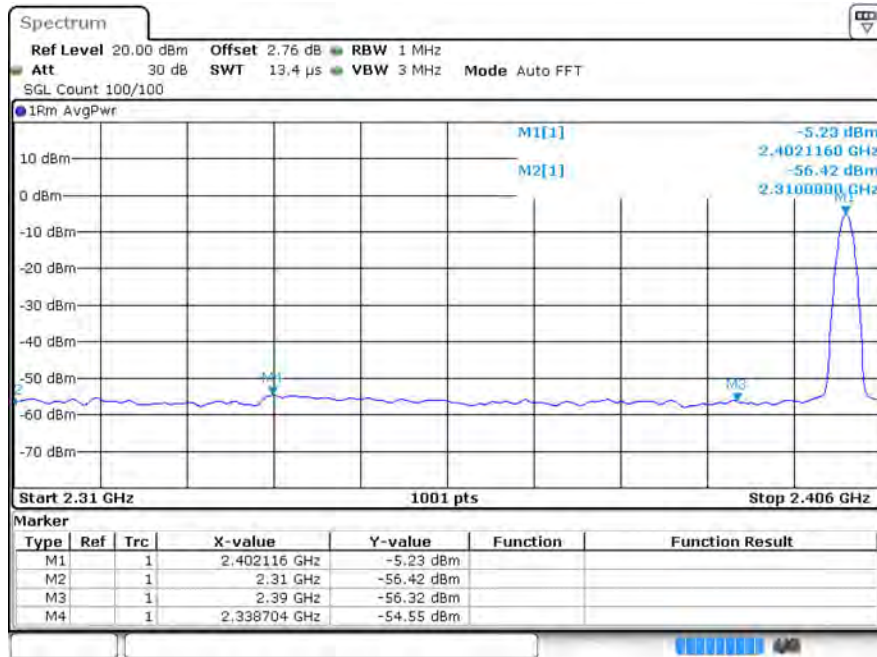
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



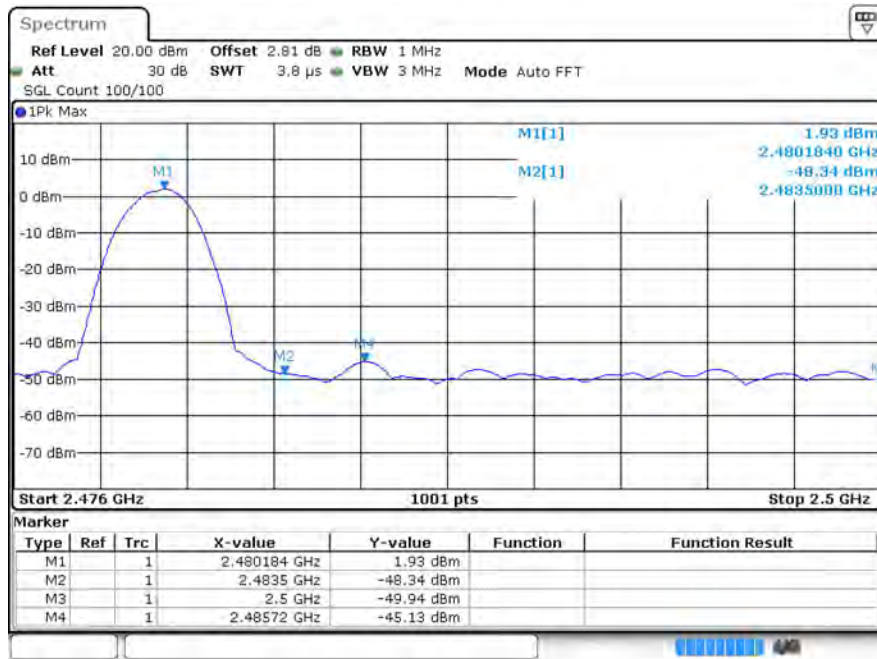
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



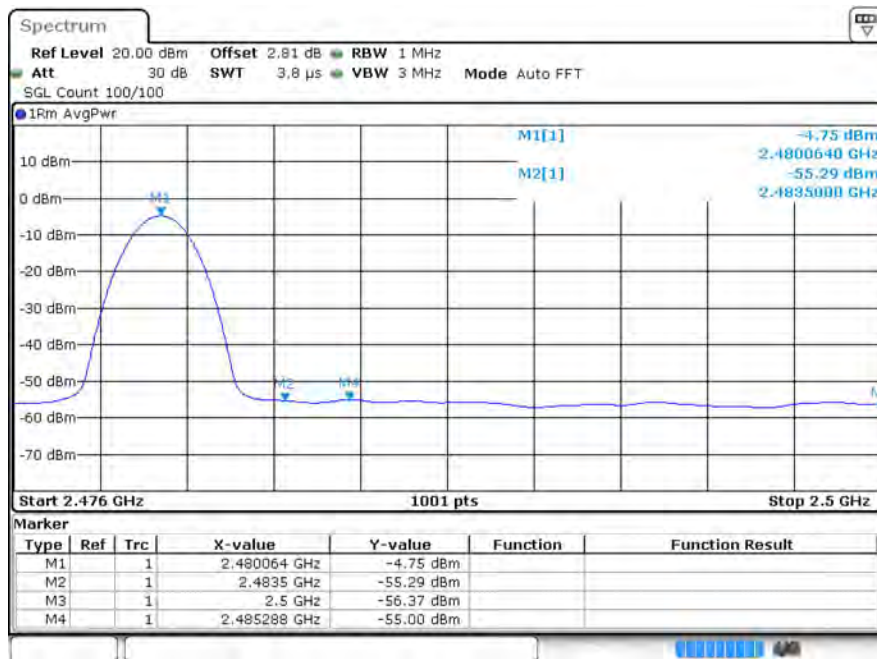
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



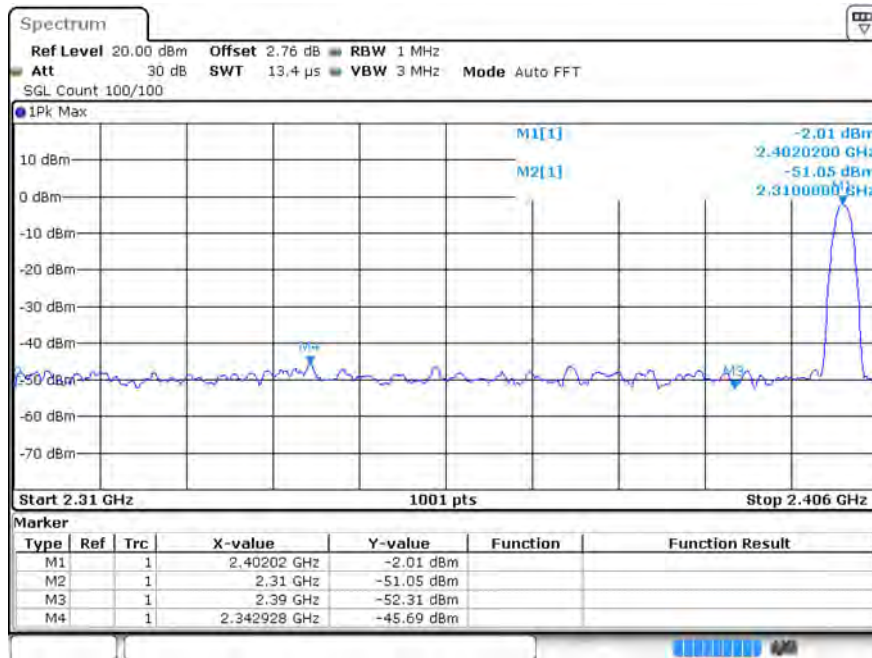
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



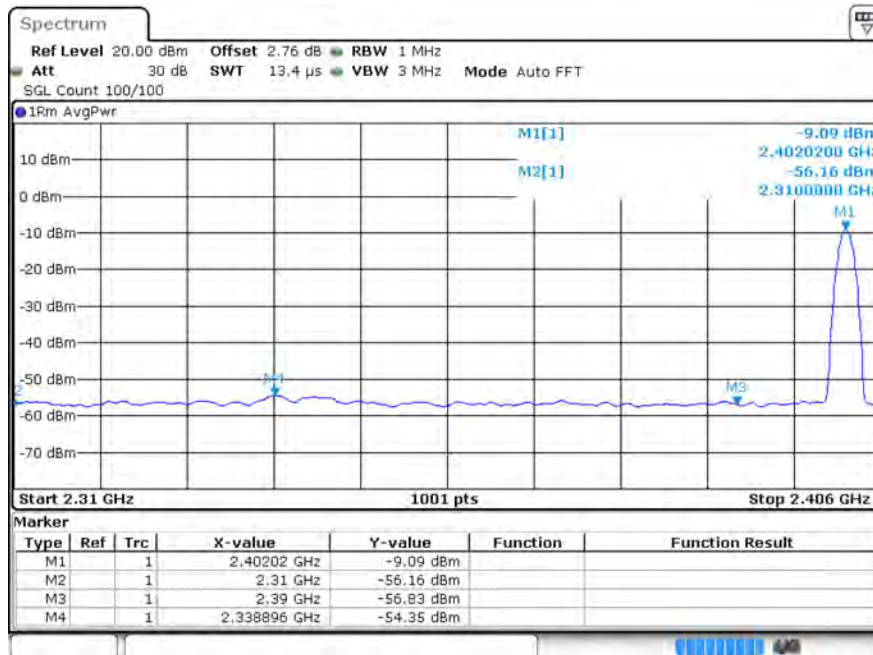
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



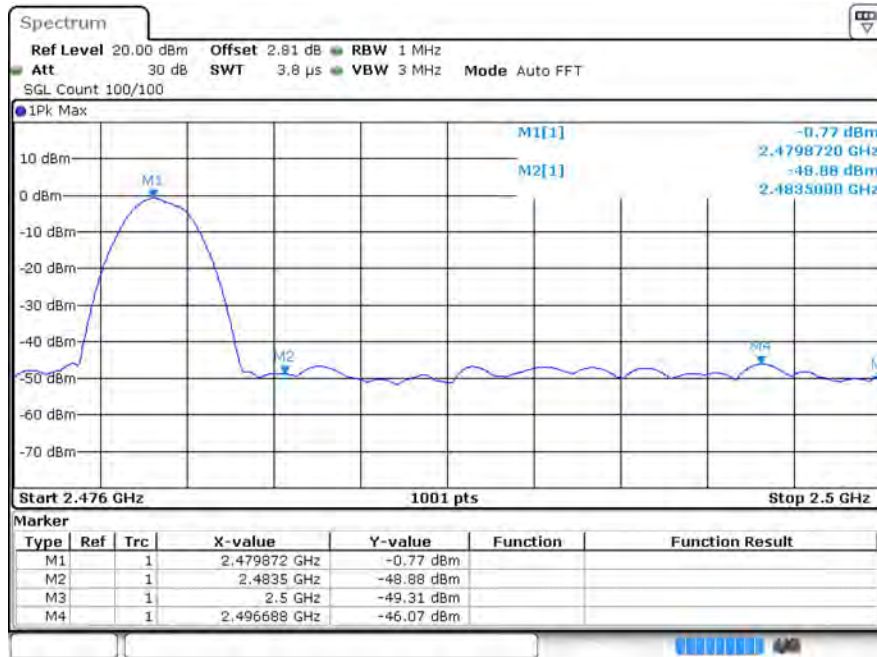
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



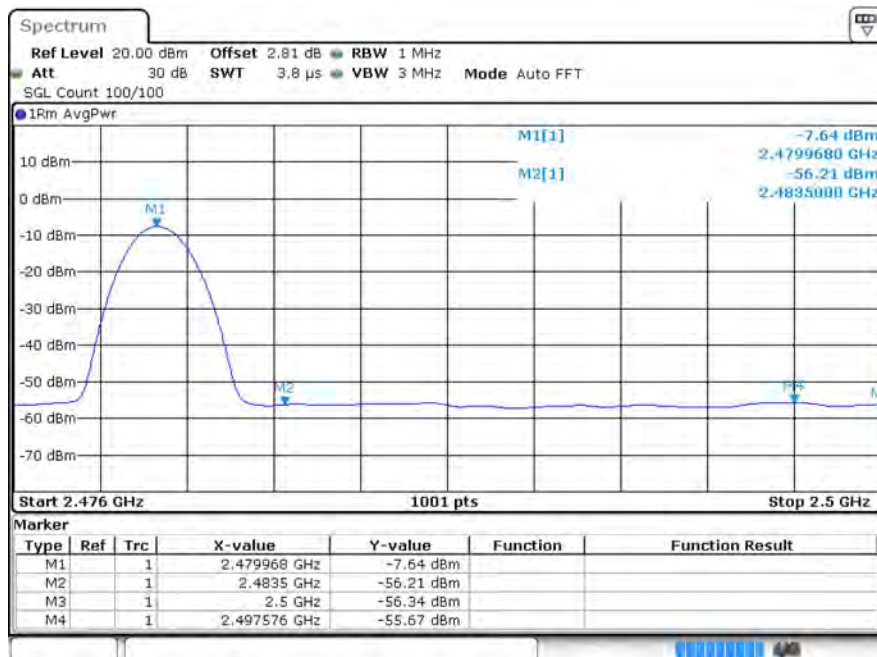
Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (High Channel)



---The End---