# Appendix A

## RF Test Data for BT V5.1(BDR/EDR) (Conducted Measurement)

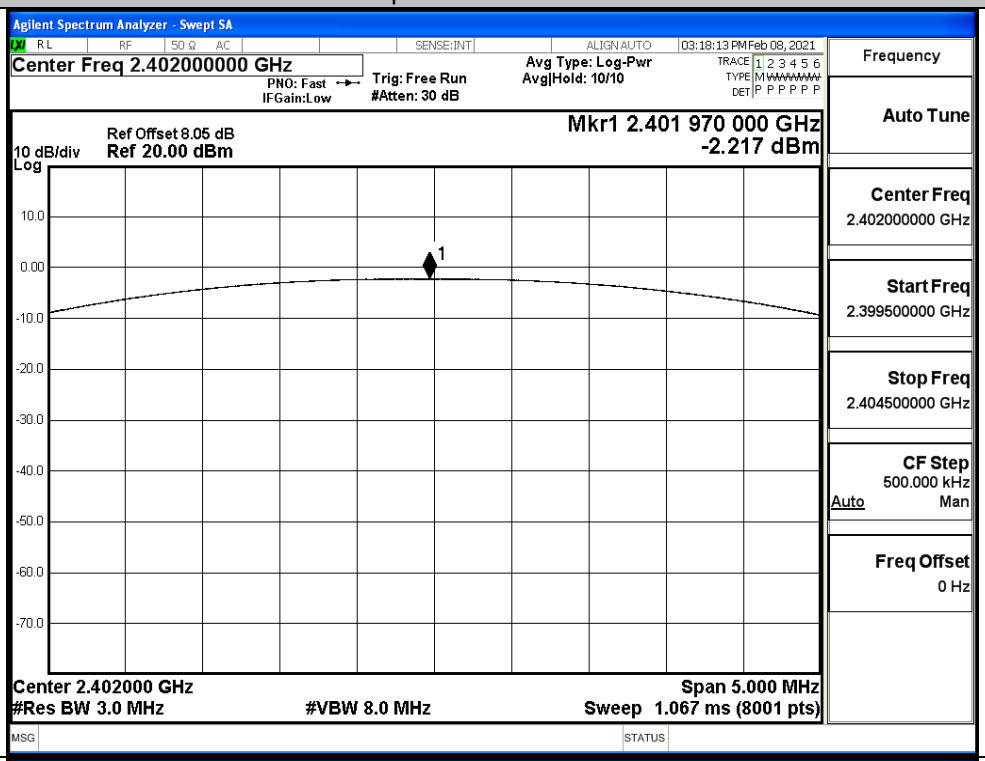
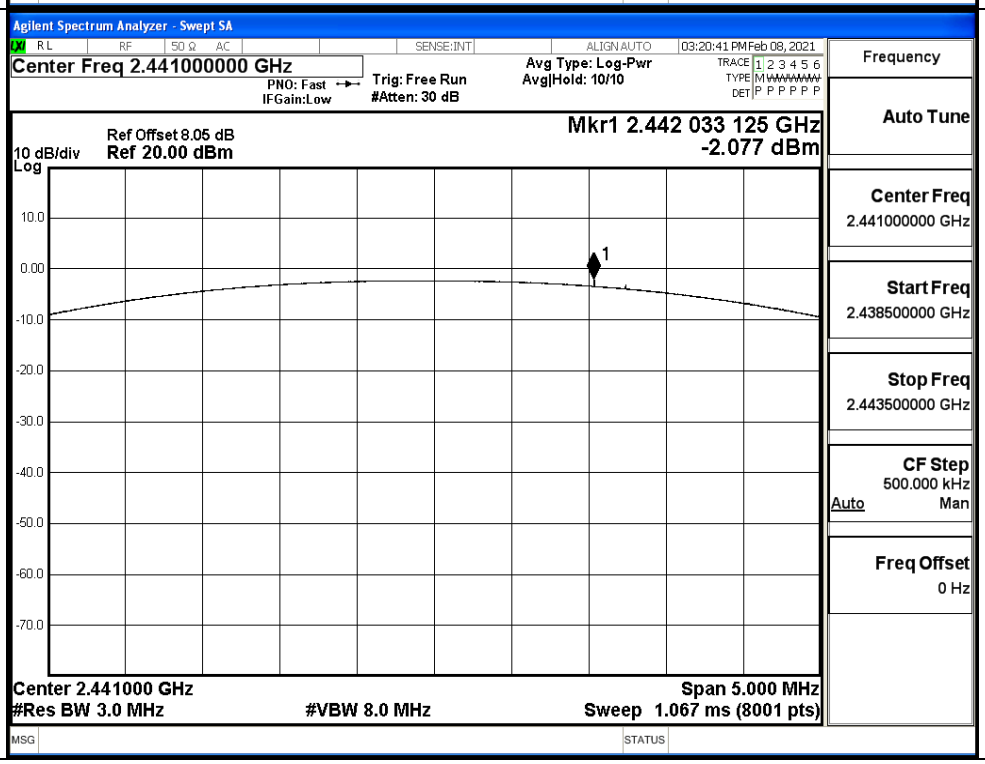
**Product Name: SMART GLASSES**
**Trade Mark: SPEXETEC**
**Test Model: SP03**

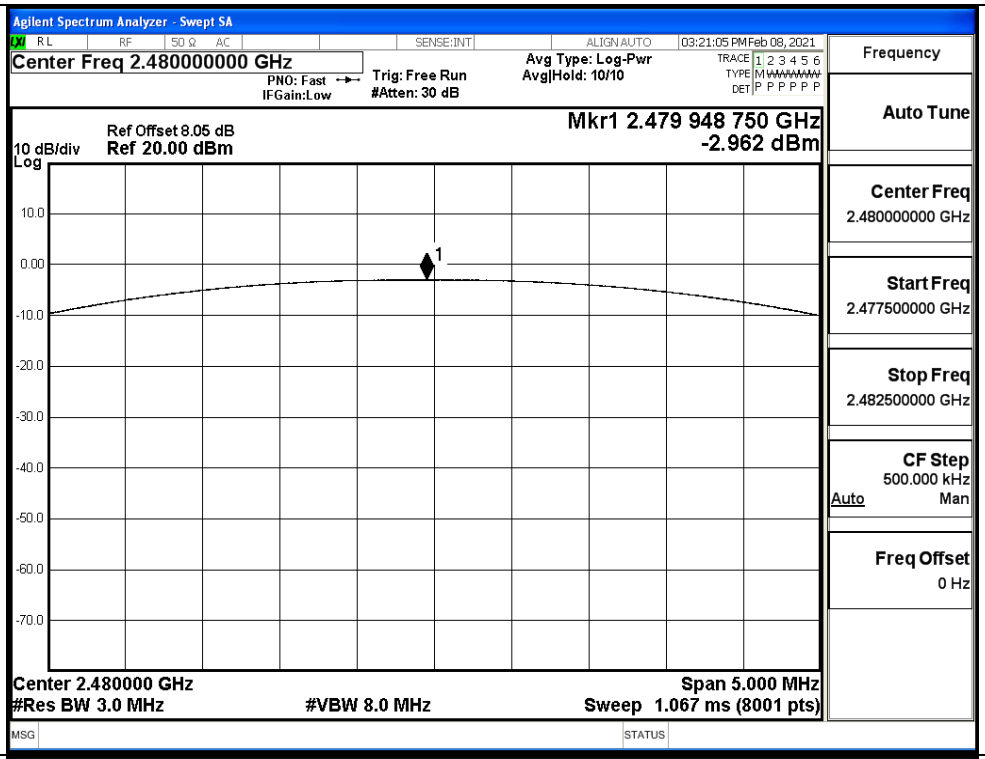
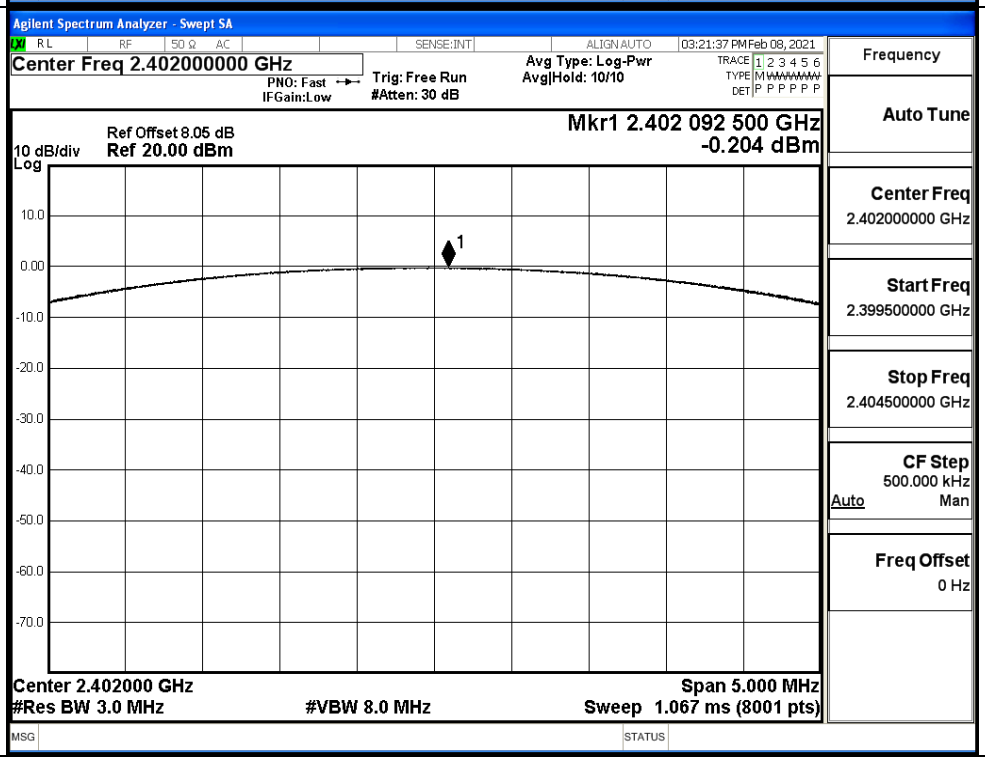
### Environmental Conditions

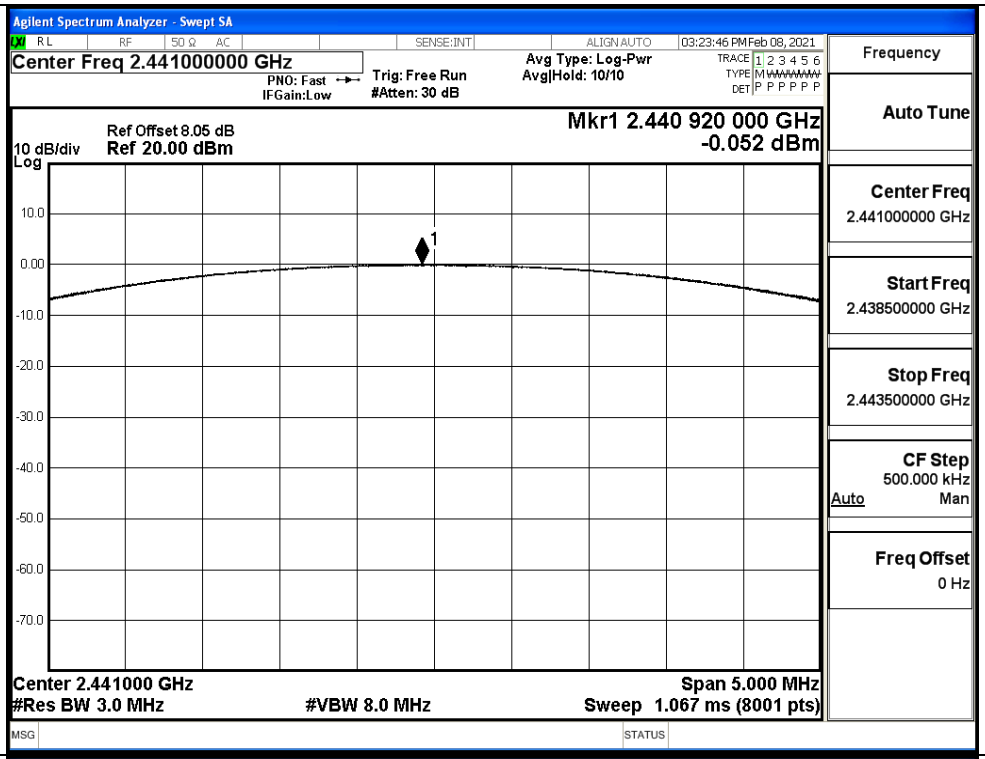
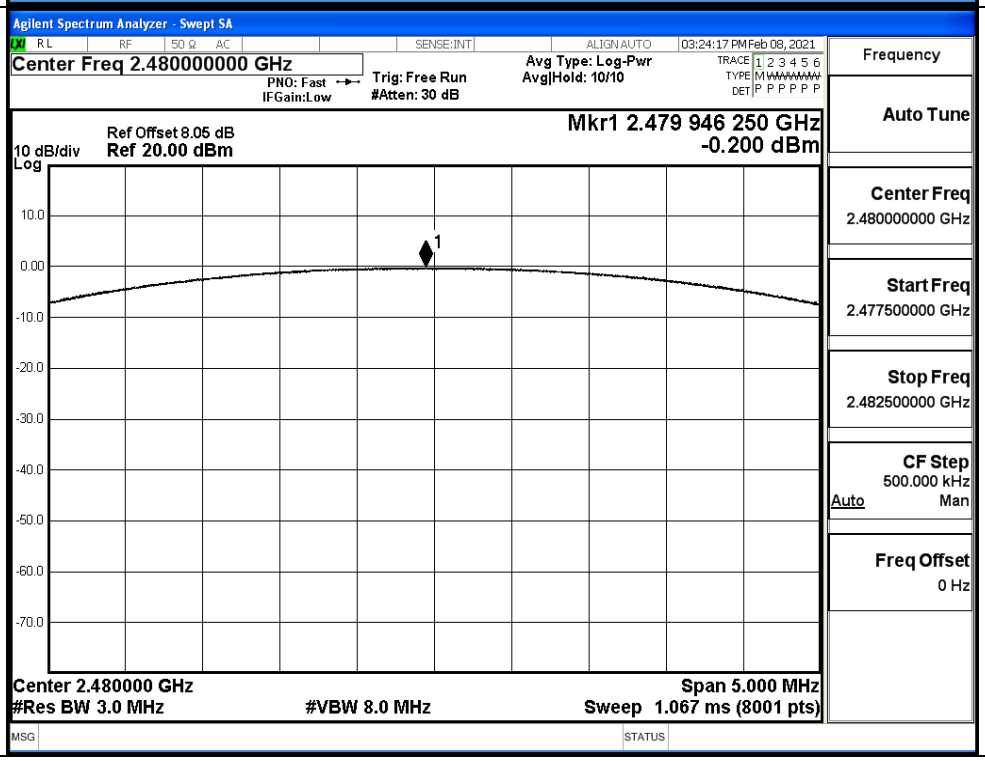
| | |
|---|---|
| Temperature: | 25 ° C |
| Relative Humidity: | 50% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | Kay Hu |
| Supervised by: | Li Huan |

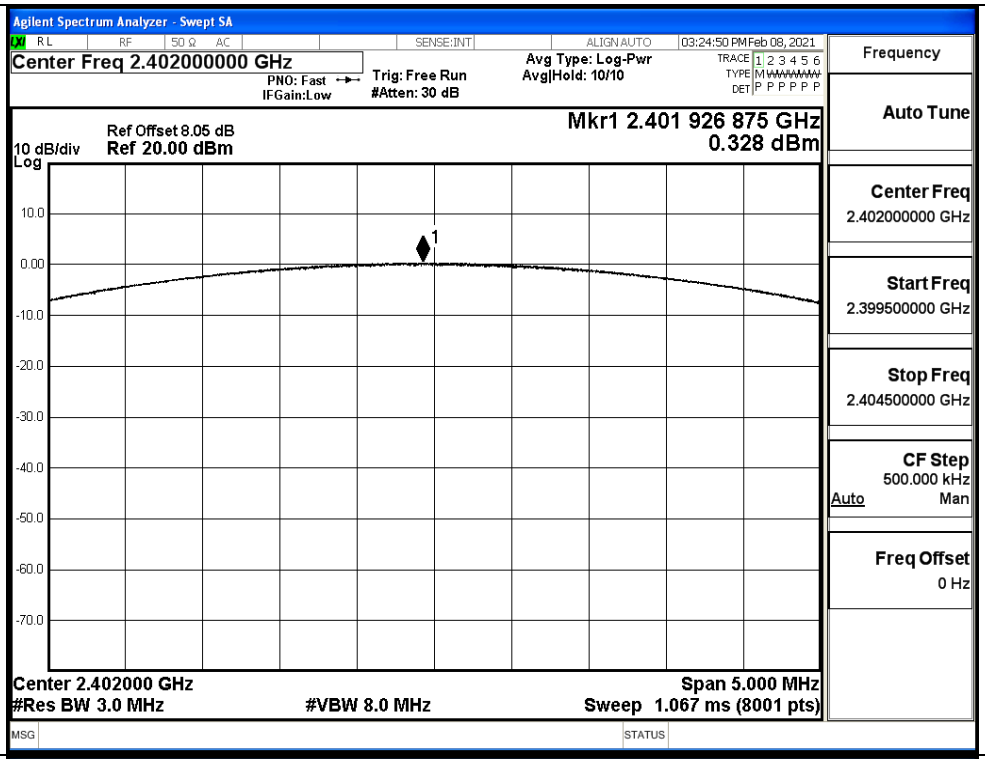
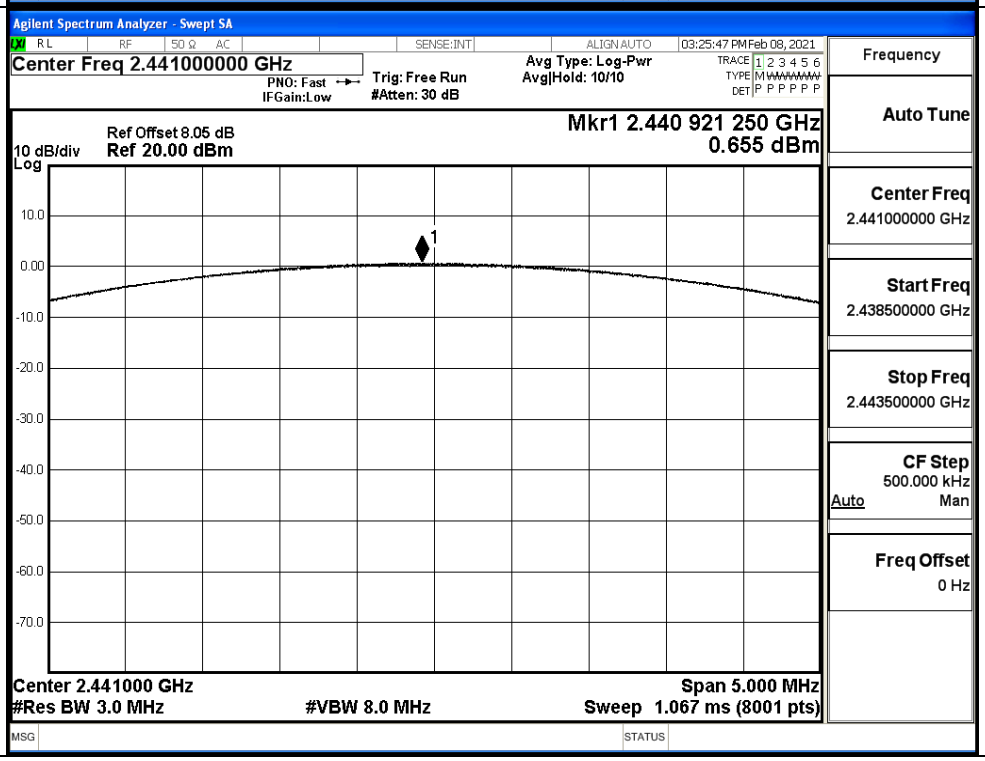
### A.1 Maxmum Conducted Peak Output Power

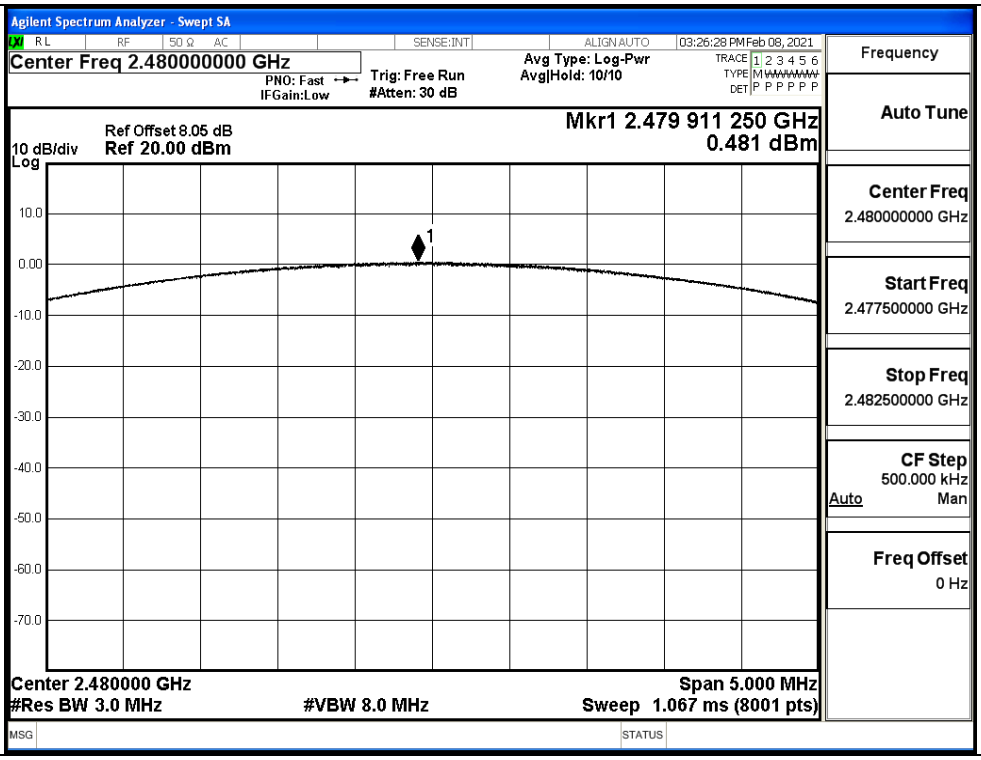
| Mode | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|
| GFSK | LCH | -2.217 | 21 | PASS |
| | MCH | -2.077 | 21 | PASS |
| | HCH | -2.962 | 21 | PASS |
| π/4DQPSK | LCH | -0.204 | 21 | PASS |
| | MCH | -0.052 | 21 | PASS |
| | HCH | -0.200 | 21 | PASS |
| 8DPSK | LCH | 0.328 | 21 | PASS |
| | MCH | 0.655 | 21 | PASS |
| | HCH | 0.481 | 21 | PASS |

| Test Graphs | | |
|---|---|---|
| GFSK/LCH | |  |
| GFSK/MCH | |  |

| | | | |
|---|---|---|---|
| GFSK/HCH | |  | |
| π/4DQPSK/LCH | |  | |

| | | | |
|---|---|---|---|
| π/4DQPSK/MCH | |  | |
| π/4DQPSK/HCH | |  | |

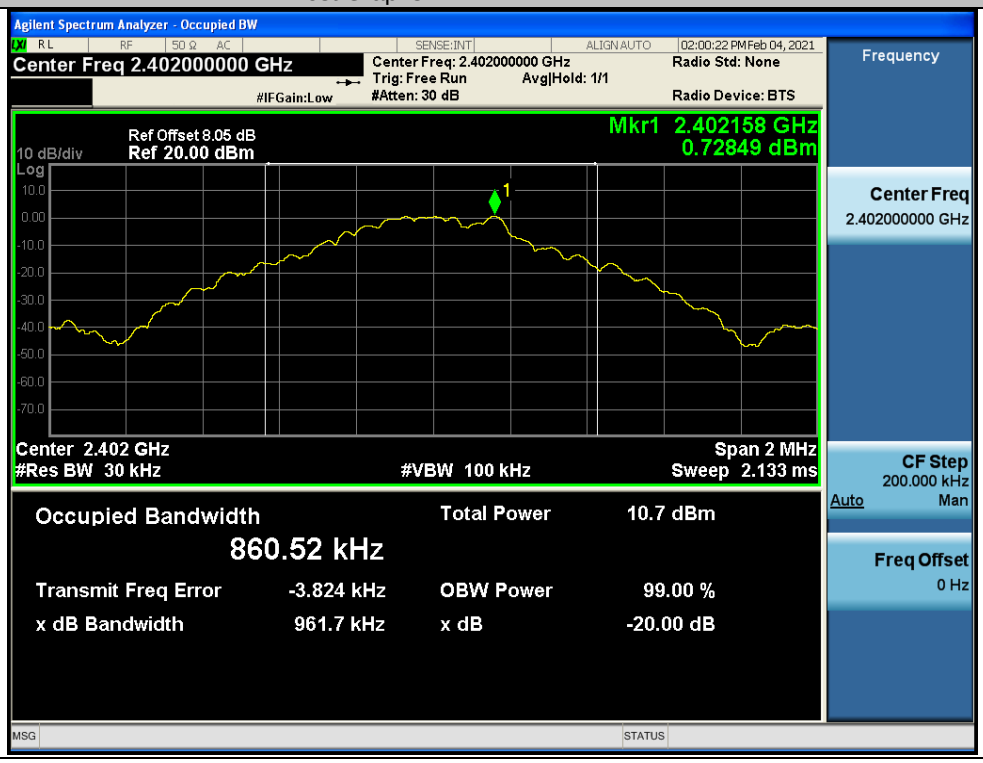
| | | | |
|---|---|---|---|
| 8DPSK/LCH | |  | |
| 8DPSK/MCH | |  | |

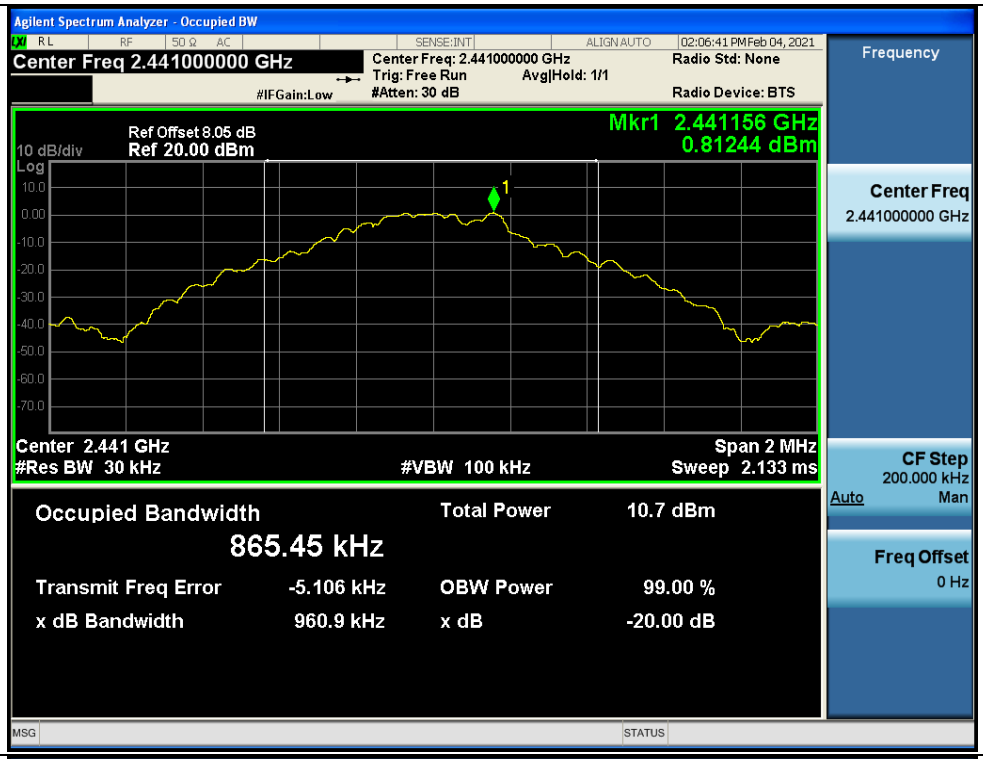
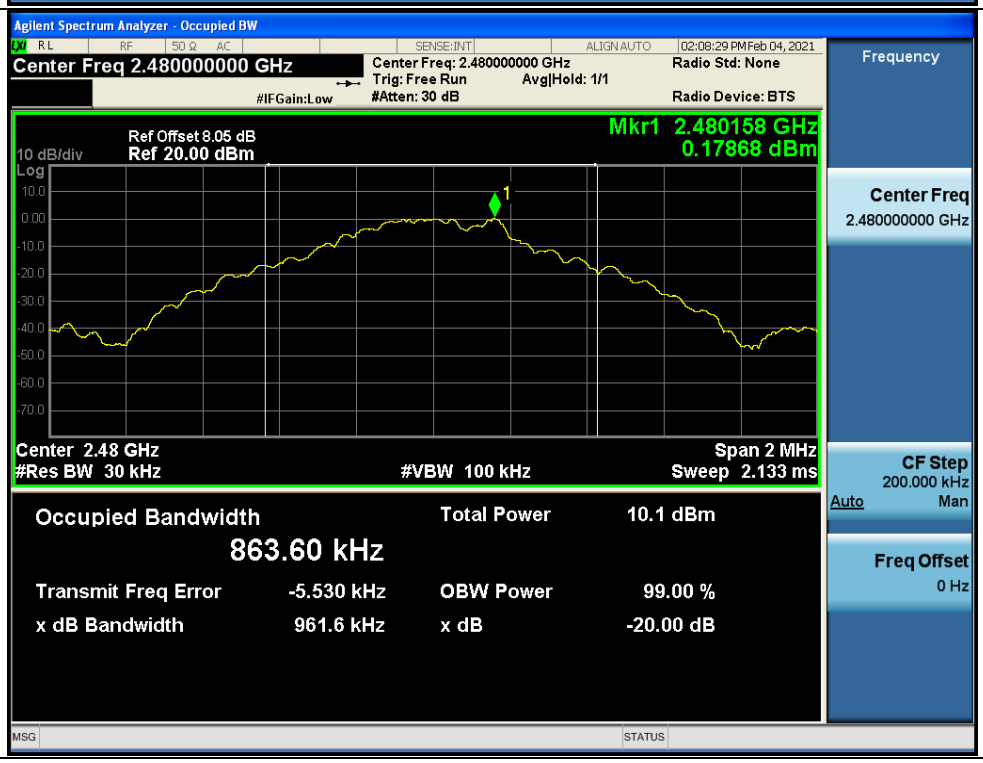
| | | |
|---|---|---|
| 8DPSK/HCH | |  |

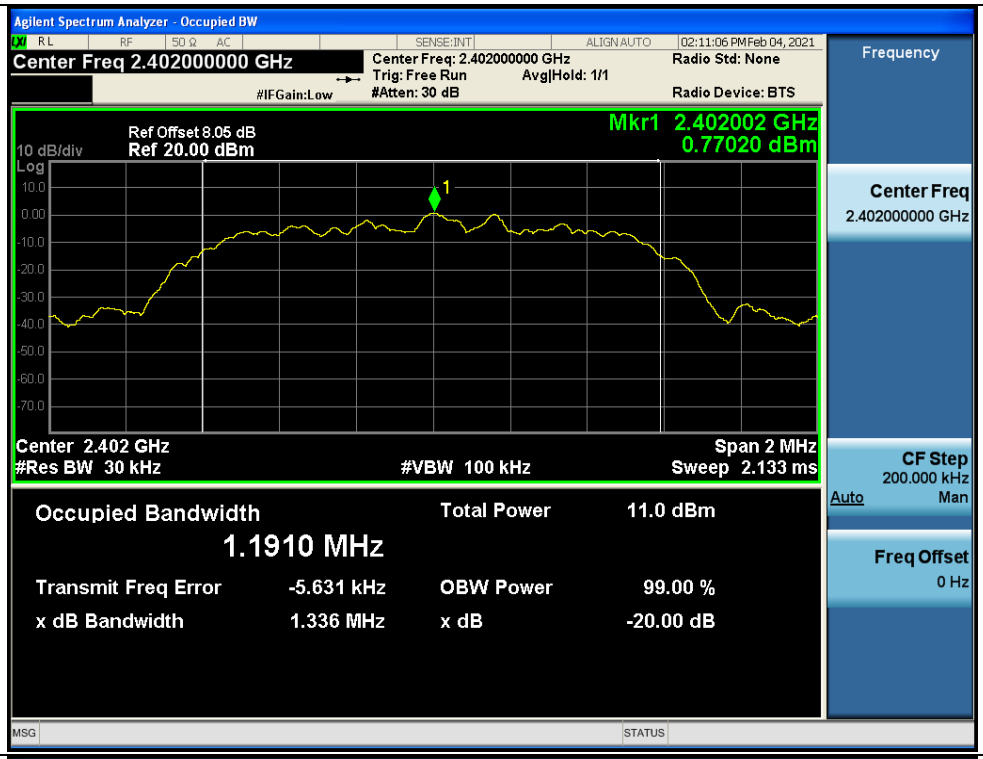
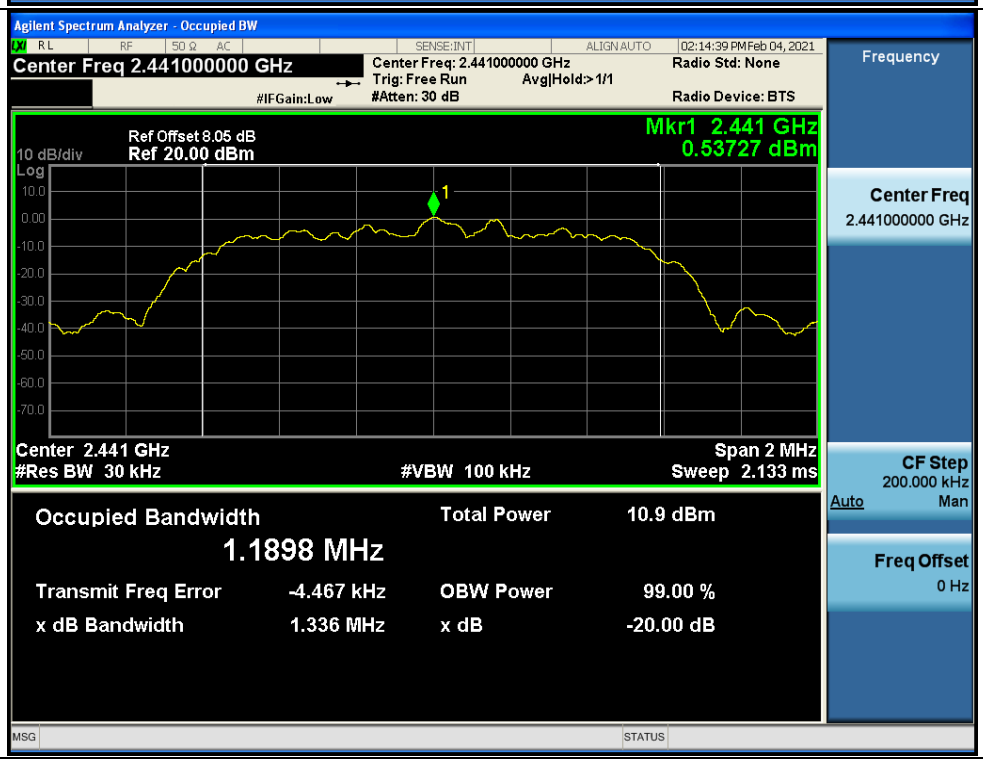
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
03:26:28 PM Feb 08, 2021
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 911 250 GHz
0.481 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 5.000 MHz
Sweep 1.067 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.477500000 GHz
Stop Freq
2.482500000 GHz
CF Step
500.000 kHz
Auto
Man
Freq Offset
0 Hz

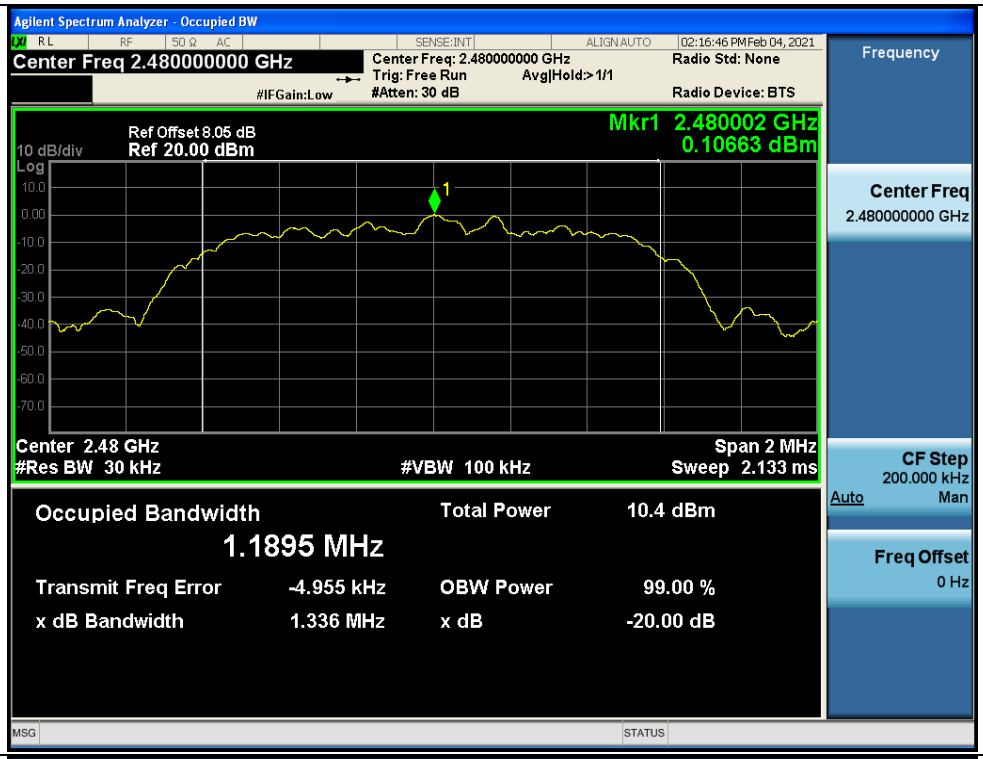
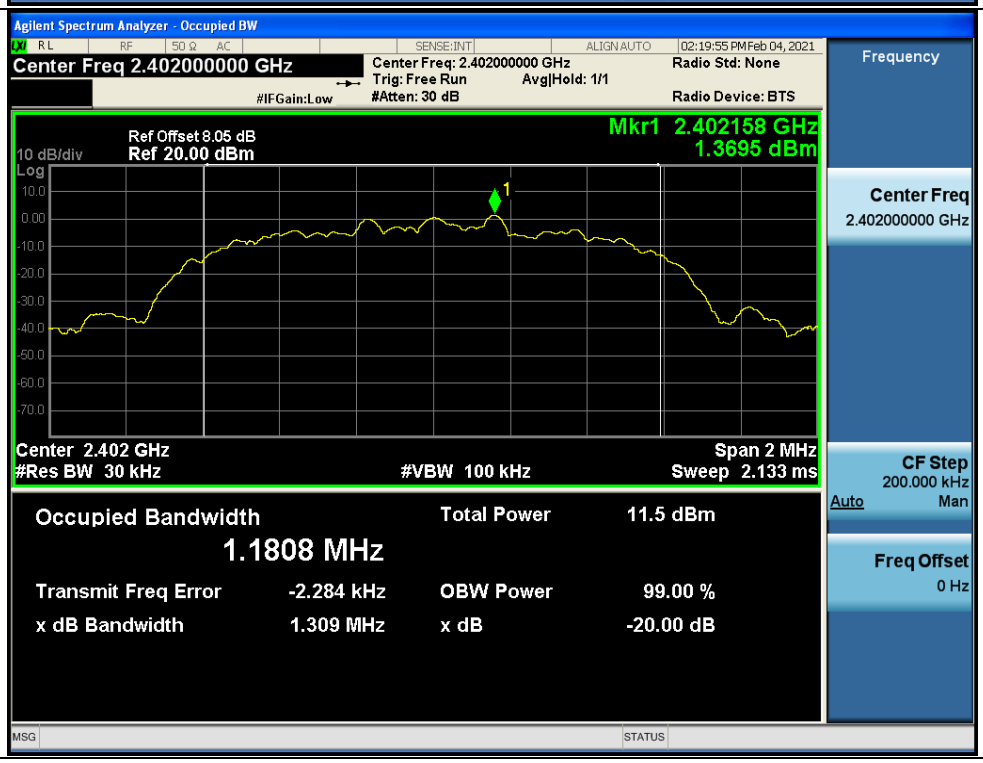
## A.2 20dB Bandwidth

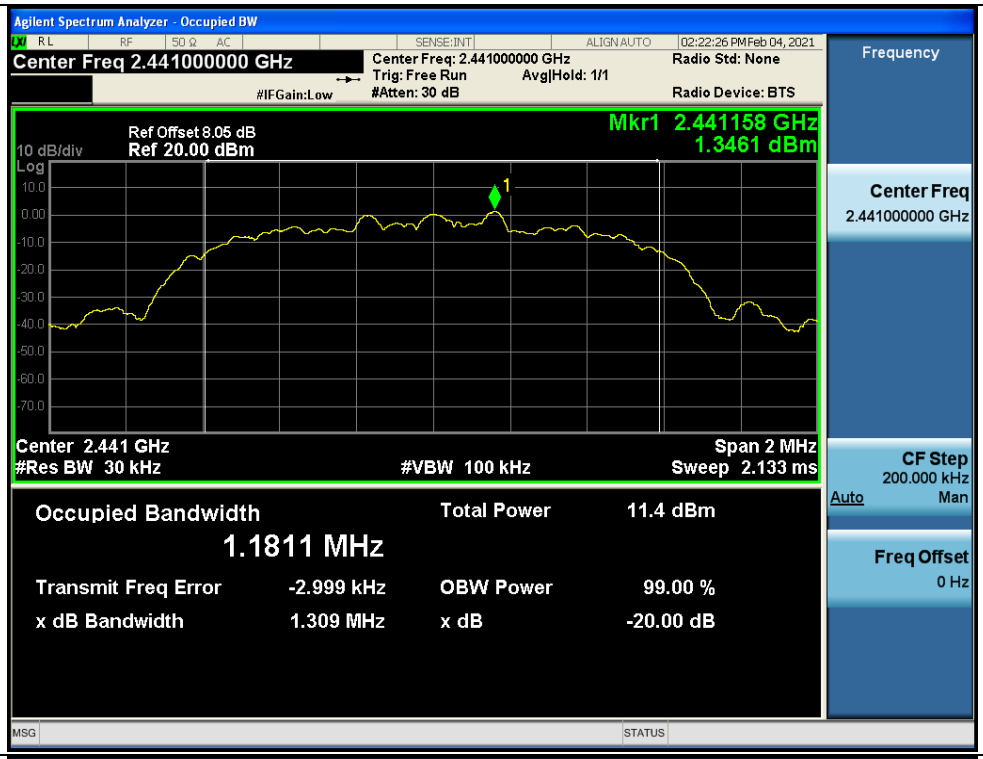
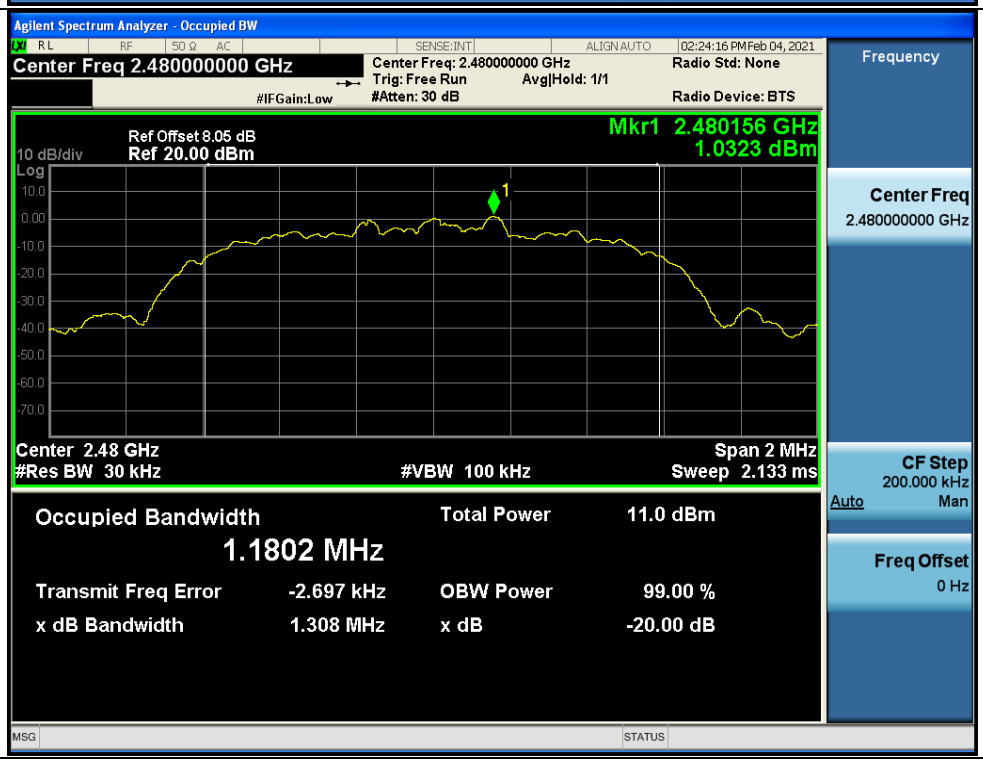
| Mode | Channel. | 20dB Bandwidth [MHz] | Limit [MHz] | Verdict |
|---|---|---|---|---|
| GFSK | LCH | 0.9617 | Not Specified | PASS |
| | MCH | 0.9609 | Not Specified | PASS |
| | HCH | 0.9616 | Not Specified | PASS |
| π/4DQPSK | LCH | 1.336 | Not Specified | PASS |
| | MCH | 1.336 | Not Specified | PASS |
| | HCH | 1.336 | Not Specified | PASS |
| 8DPSK | LCH | 1.309 | Not Specified | PASS |
| | MCH | 1.309 | Not Specified | PASS |
| | HCH | 1.308 | Not Specified | PASS |

| Test Graphs | |
|---|---|
| GFSK/LCH |  |

| | |
|---|---|
| GFSK/MCH |  |
| GFSK/HCH |  |

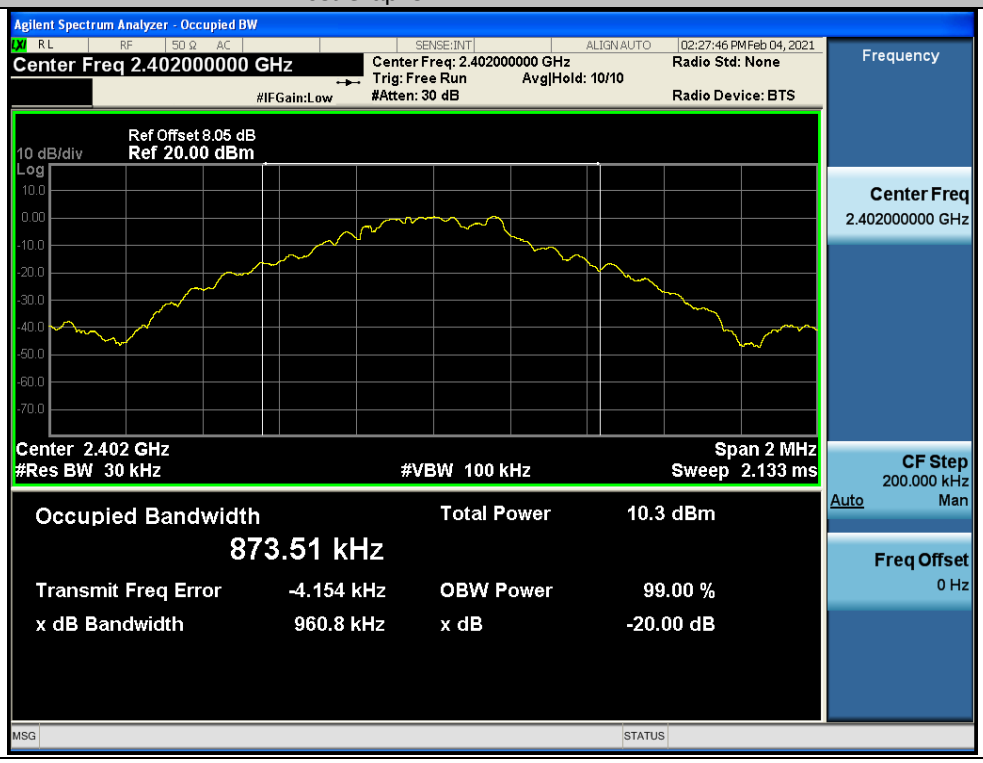
| | |
|---|---|
| π/4DQPSK/LCH |  |
| π/4DQPSK/MCH |  |

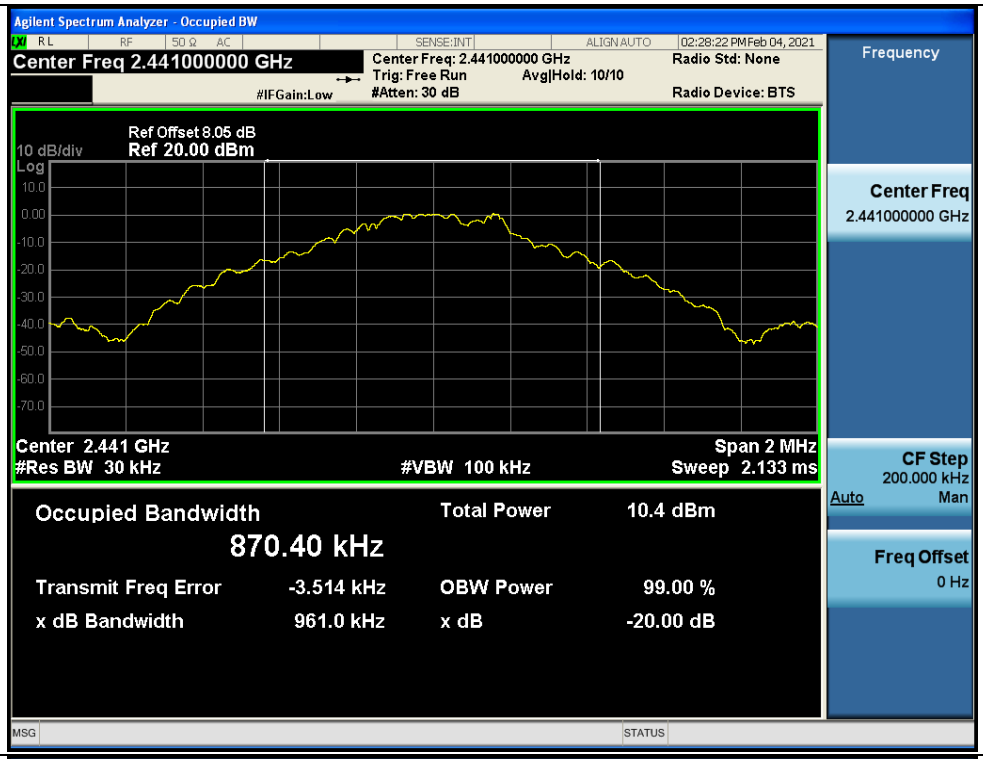
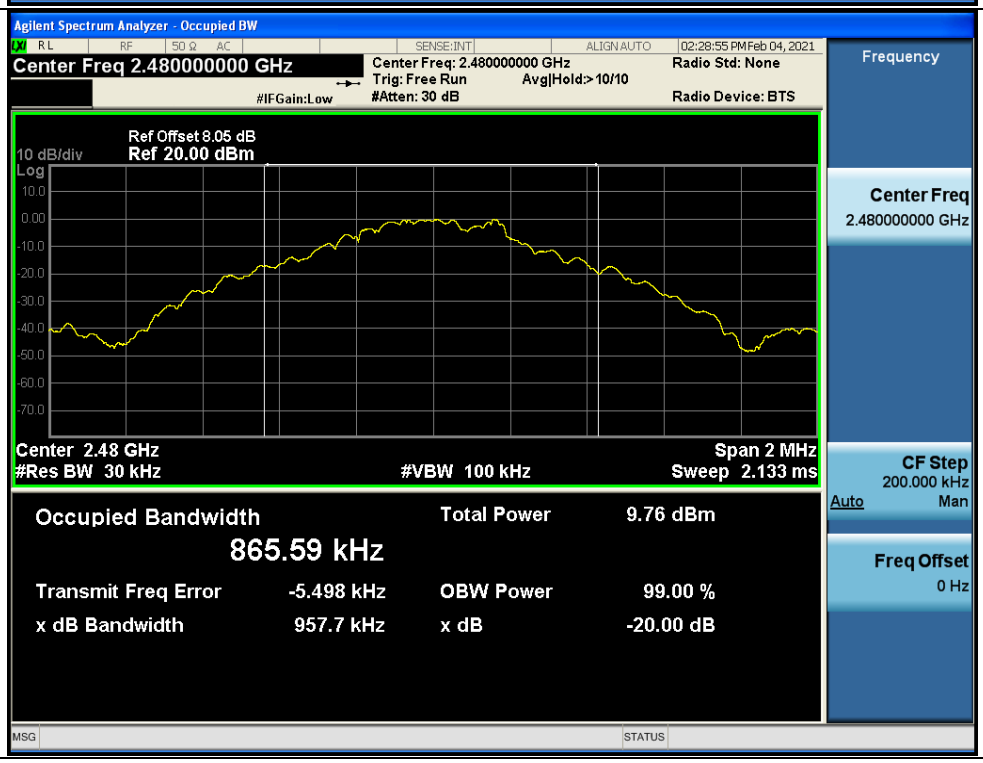
| | |
|---|---|
| π/4DQPSK/HCH |  |
| 8DPSK/LCH |  |

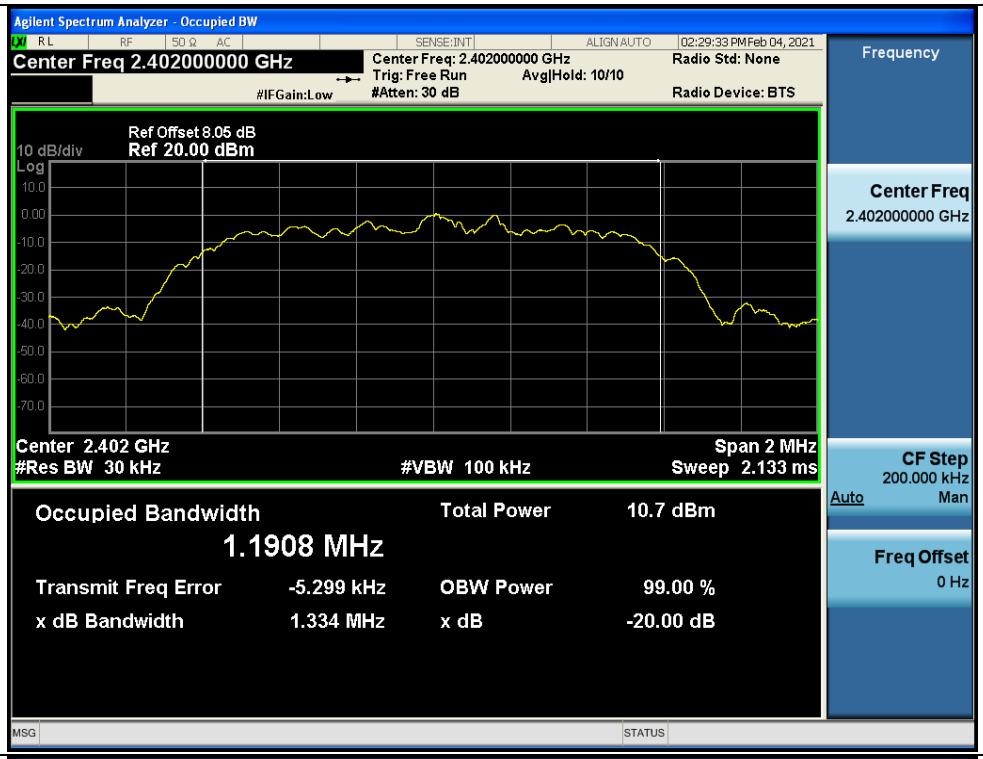
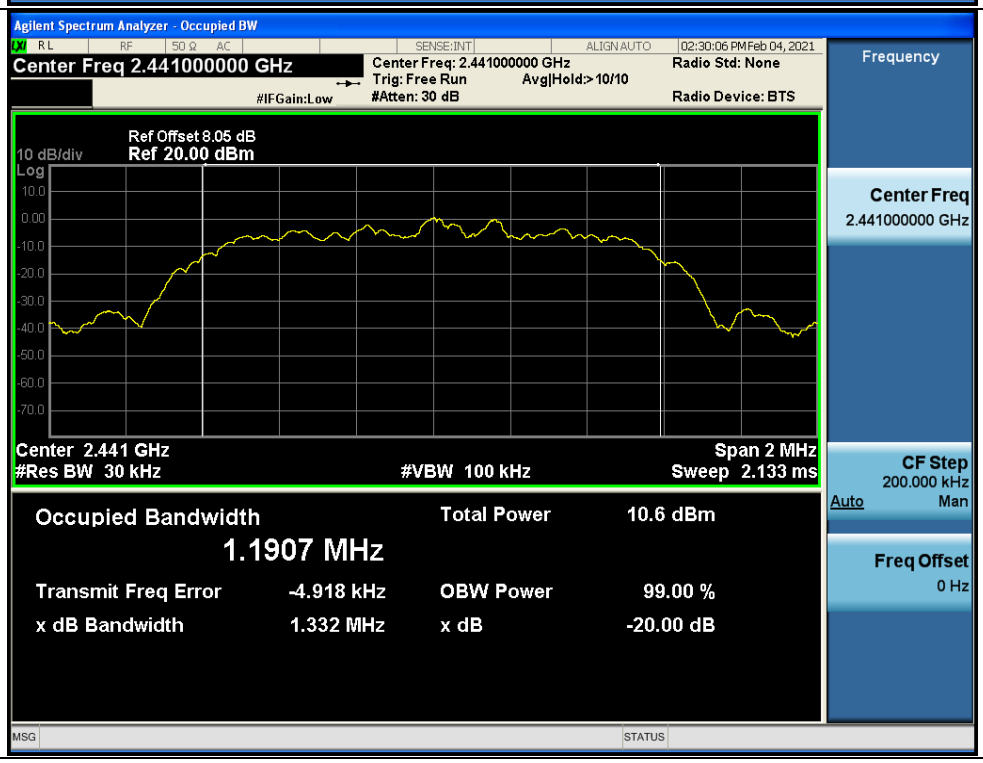
| | |
|---|---|
| 8DPSK/MCH |  |
| 8DPSK/HCH |  |

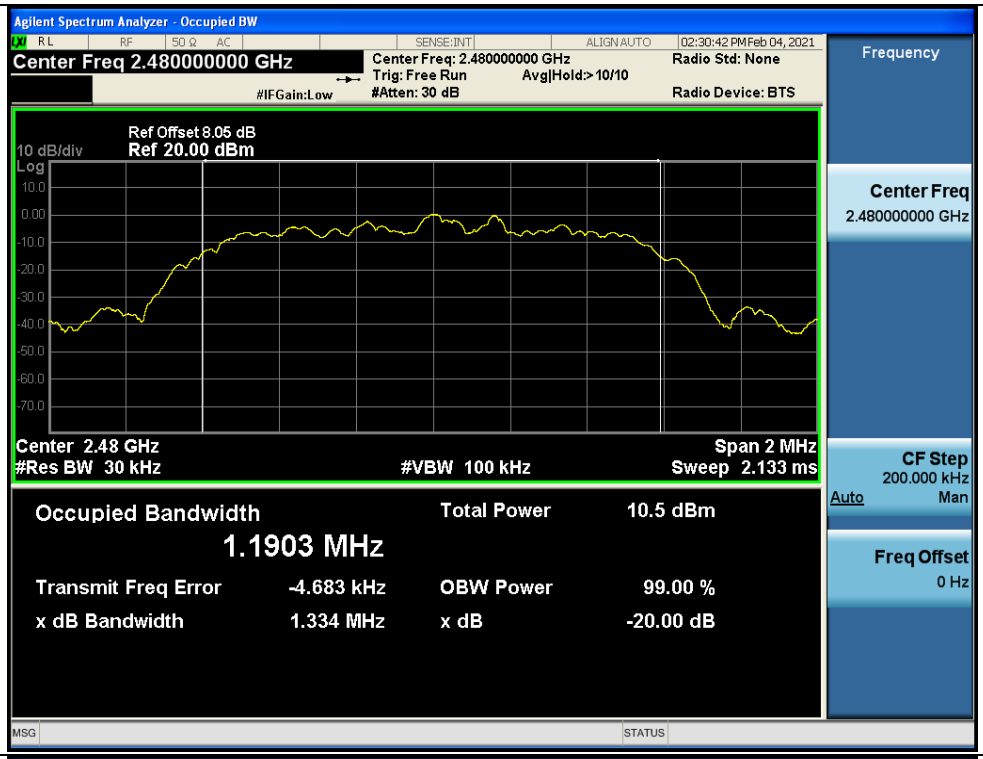
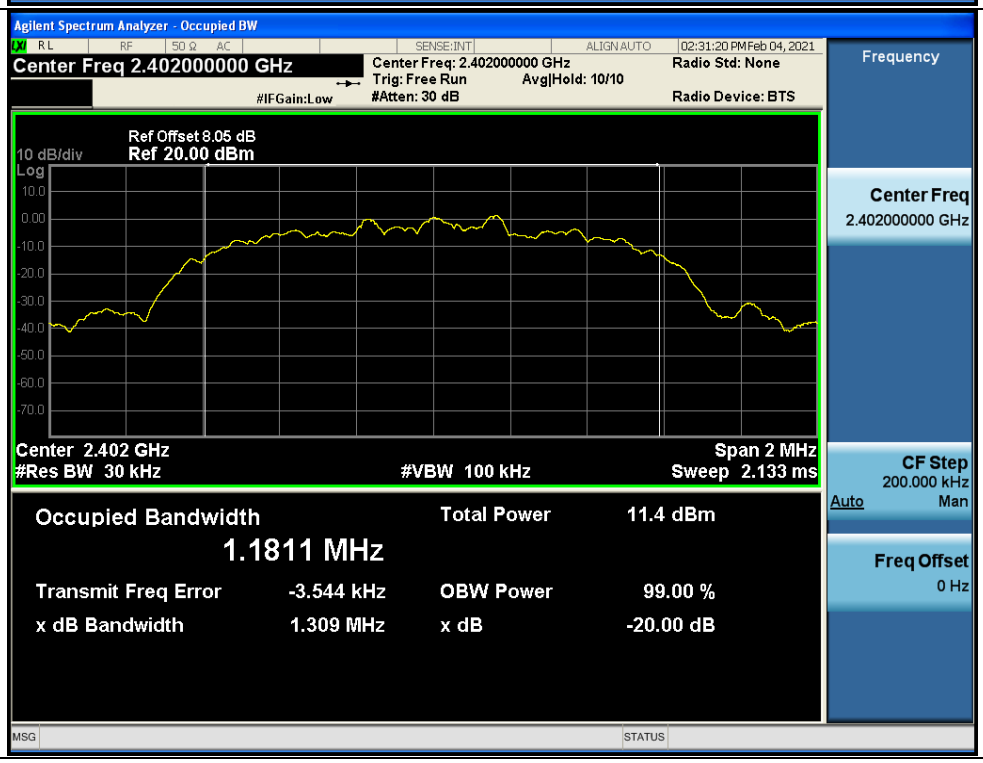
## A.3 Occupied Bandwidth

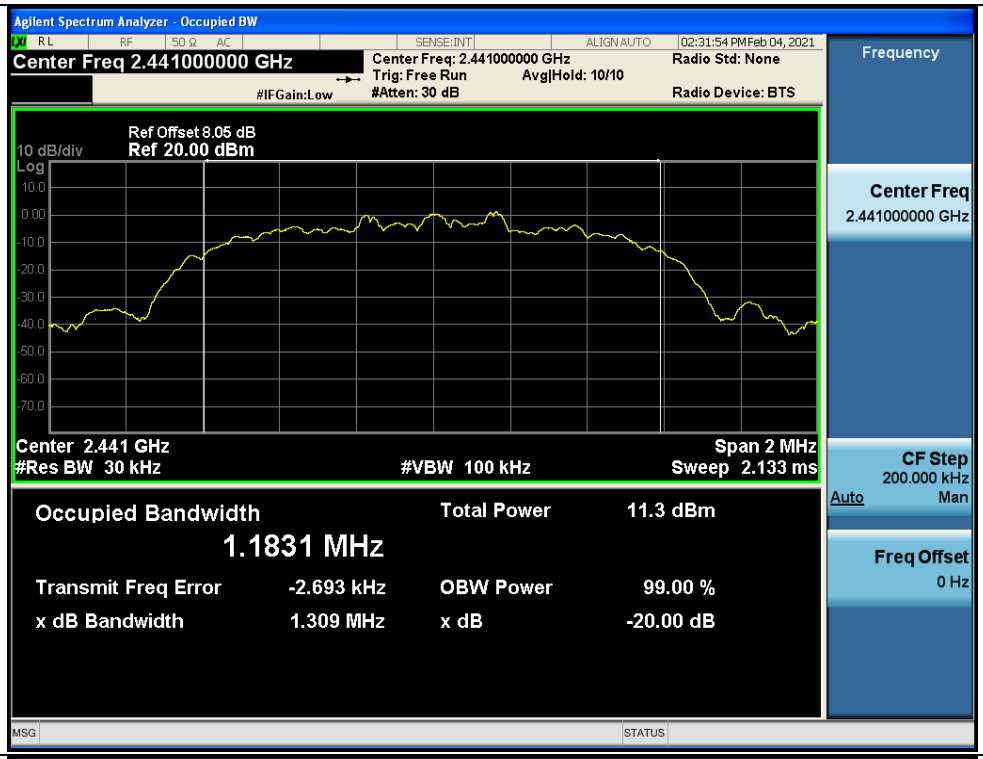
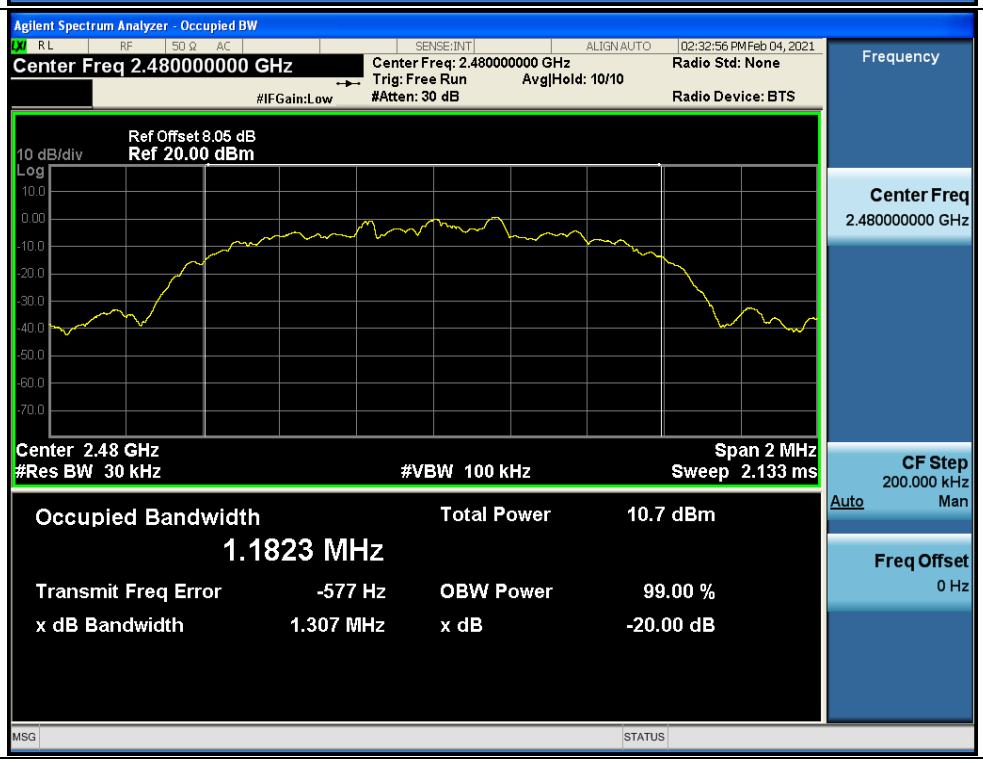
| Mode | Channel. | Occupied Bandwidth [MHz] | Limit [MHz] | Verdict |
|---|---|---|---|---|
| GFSK | LCH | 0.87351 | Not Specified | PASS |
| | MCH | 0.87040 | Not Specified | PASS |
| | HCH | 0.86559 | Not Specified | PASS |
| π/4DQPSK | LCH | 1.1908 | Not Specified | PASS |
| | MCH | 1.1907 | Not Specified | PASS |
| | HCH | 1.1903 | Not Specified | PASS |
| 8DPSK | LCH | 1.1811 | Not Specified | PASS |
| | MCH | 1.1831 | Not Specified | PASS |
| | HCH | 1.1823 | Not Specified | PASS |

| Test Graphs | |
|---|---|
| GFSK/LCH |  |

| | |
|---|---|
| GFSK/MCH |  |
| GFSK/HCH |  |

| | |
|---|---|
| π/4DQPSK/LCH |  |
| π/4DQPSK/MCH |  |

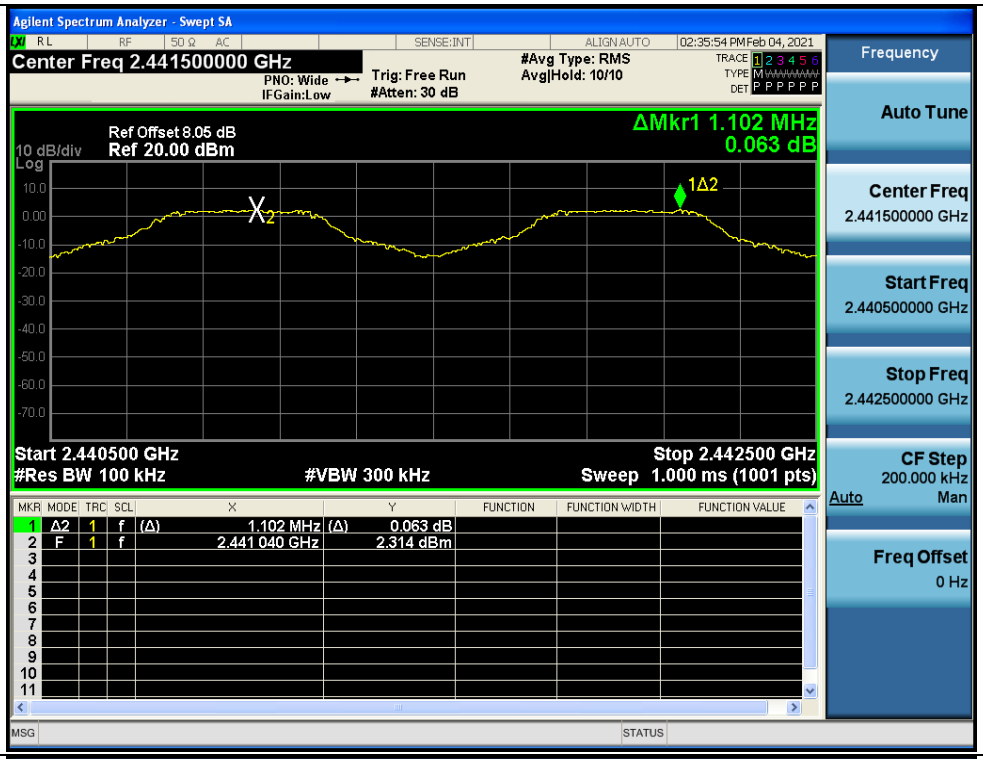
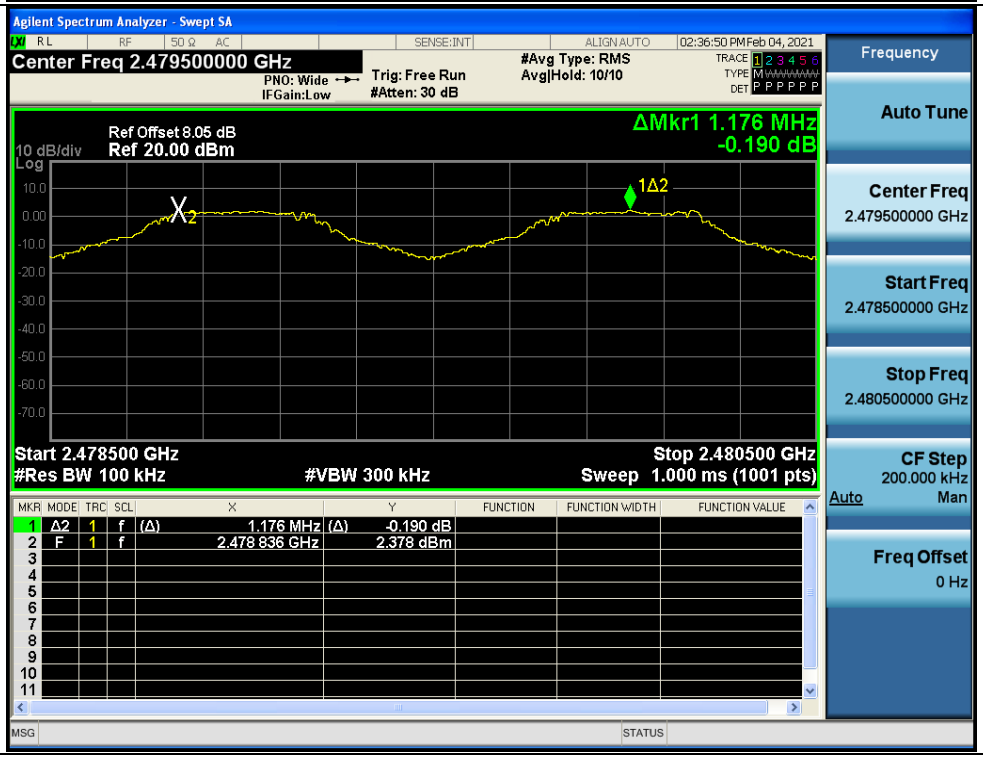
| | |
|---|---|
| π/4DQPSK/HCH |  |
| 8DPSK/LCH |  |

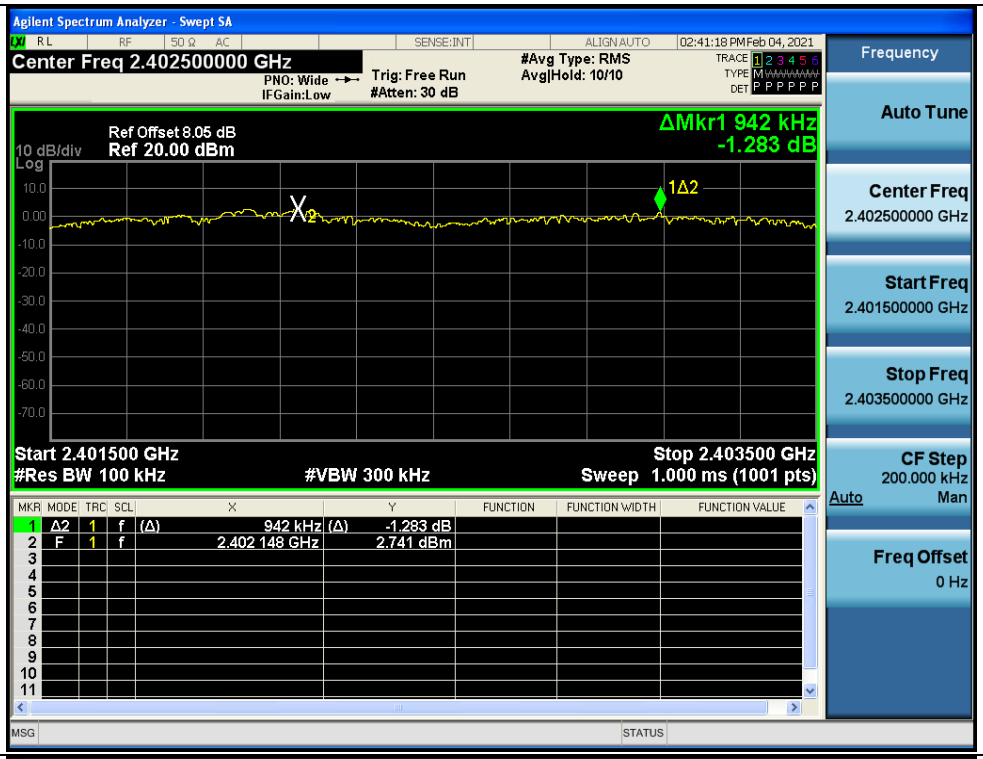
| | |
|---|---|
| 8DPSK/MCH |  |
| 8DPSK/HCH |  |

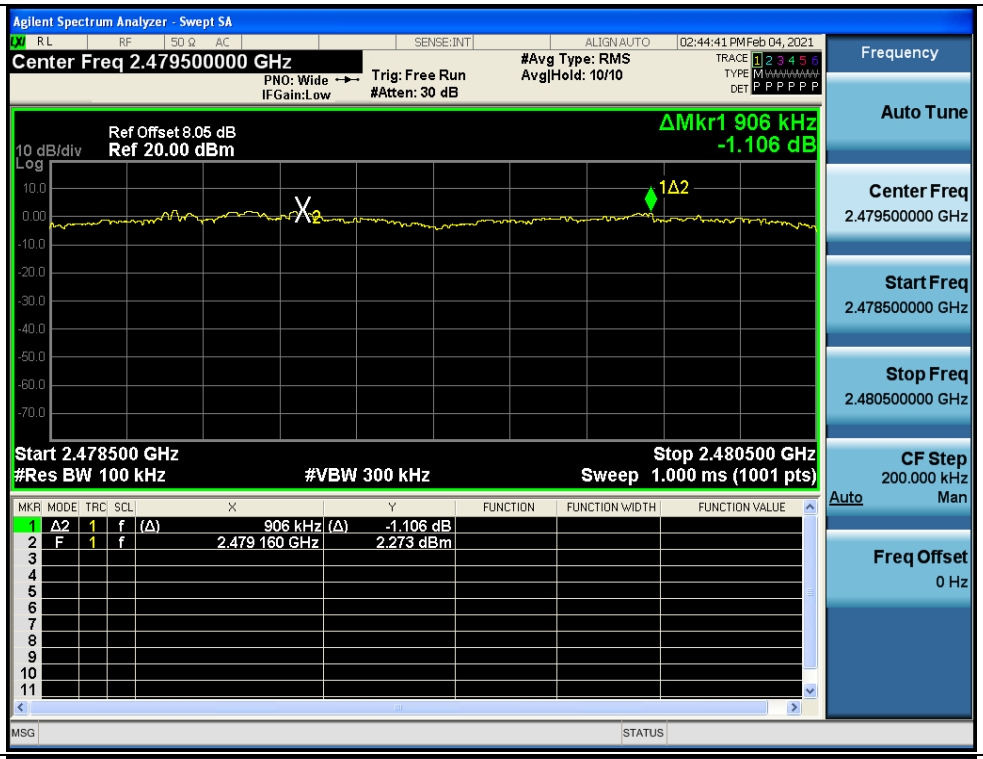
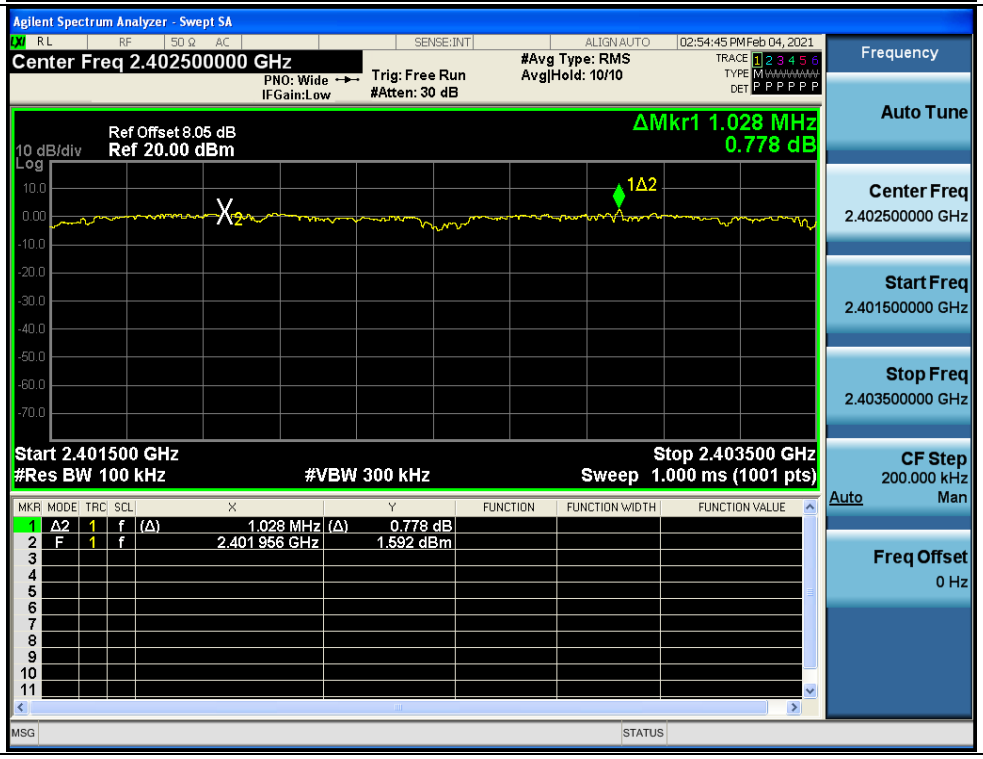
## A.4 Carrier Frequency Separation

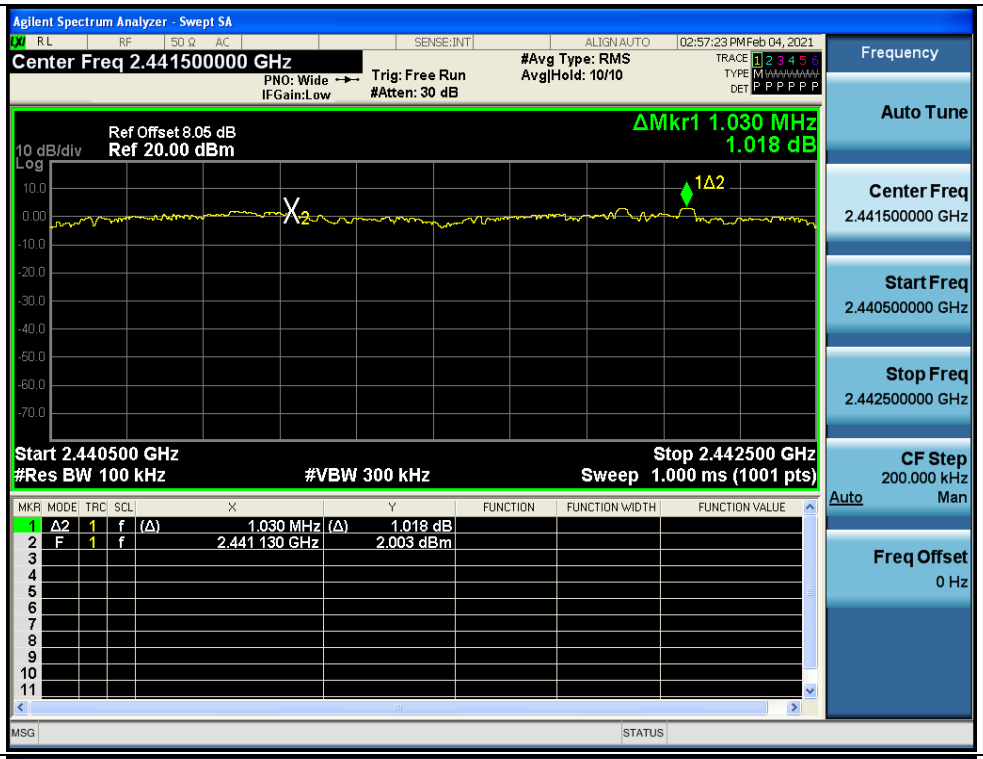
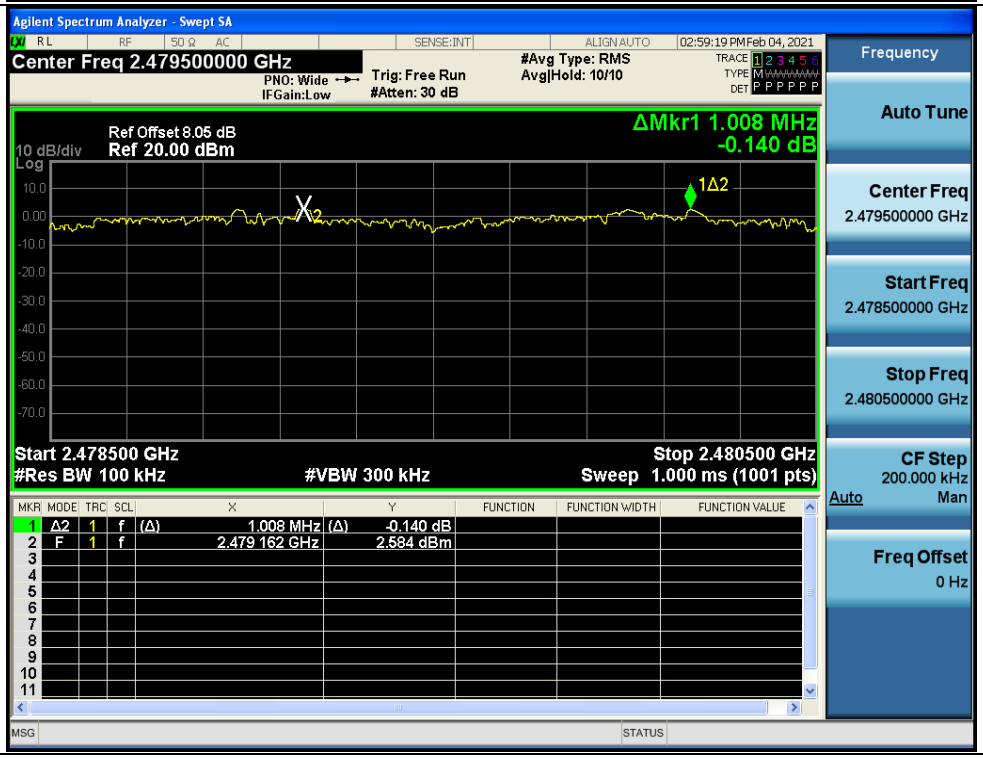
| Mode | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---|---|---|---|---|
| GFSK | LCH | 1.001 | 0.641 | PASS |
| | MCH | 1.102 | 0.641 | PASS |
| | HCH | 1.176 | 0.641 | PASS |
| π/4DQPSK | LCH | 0.942 | 0.891 | PASS |
| | MCH | 0.992 | 0.891 | PASS |
| | HCH | 0.906 | 0.891 | PASS |
| 8DPSK | LCH | 1.028 | 0.873 | PASS |
| | MCH | 1.030 | 0.873 | PASS |
| | HCH | 1.008 | 0.873 | PASS |

| Test Graphs | | |
|---|---|---|
| GFSK/LCH | | |

| | | |
|---|---|---|
| GFSK/MCH | |  |
| GFSK/HCH | |  |

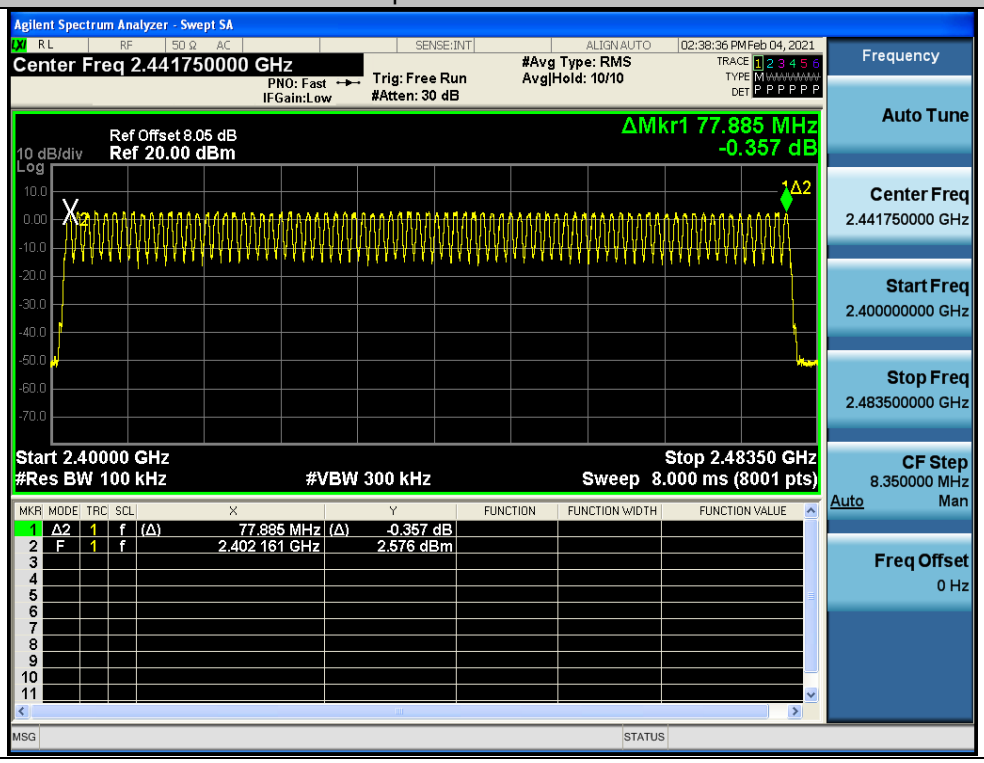
| | | |
|---|---|---|
| π/4DQPSK/LCH | |  |
| π/4DQPSK/MCH | | |

| | | |
|---|---|---|
| π/4DQPSK/HCH | |  |
| 8DPSK/LCH | |  |

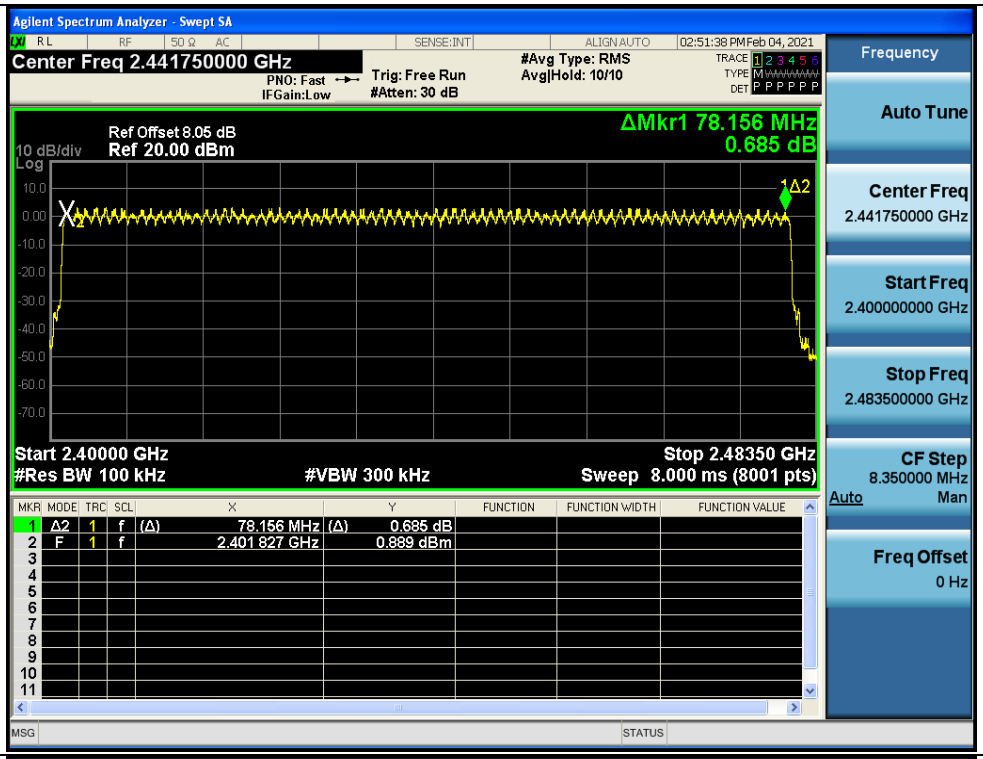
| | |
|---|---|
| 8DPSK/MCH |  |
| 8DPSK/HCH |  |

## A.5 Hopping Channel Number

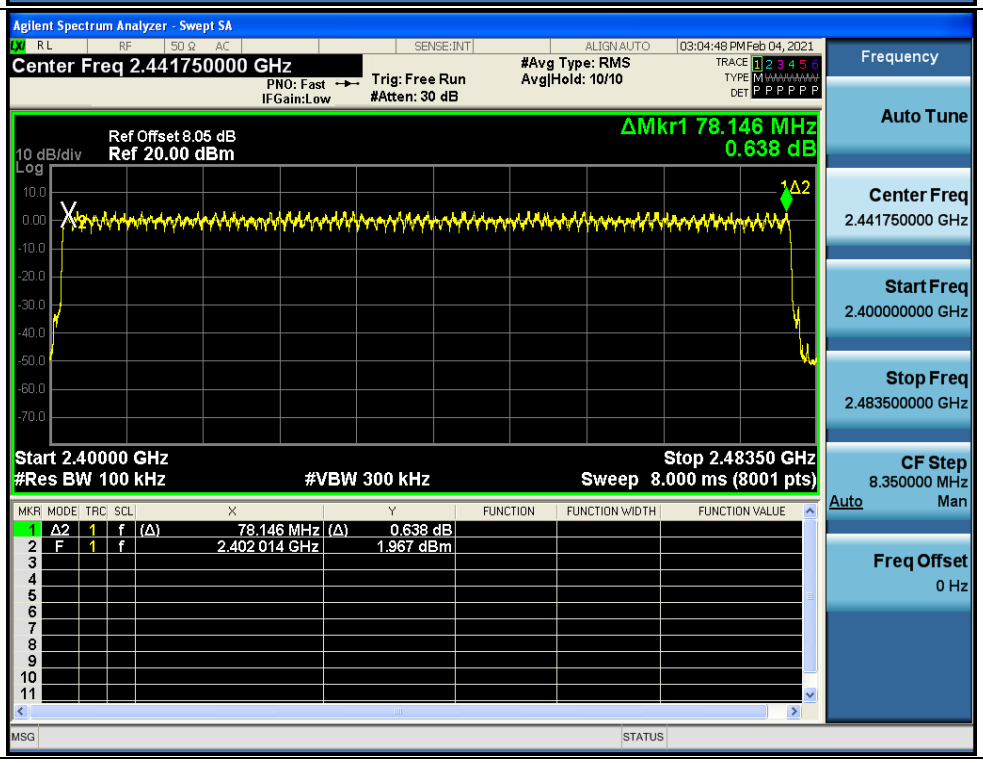
| Mode | Channel. | Number of Hopping Channel [N] | Limit [N] | Verdict |
|---|---|---|---|---|
| GFSK | Hop | 79 | >=15 | PASS |
| π/4DQPSK | Hop | 79 | >=15 | PASS |
| 8DPSK | Hop | 79 | >=15 | PASS |

| Test Graphs | |
|---|---|
| GFSK/Hop |  |

π/4DQPSK/Hop

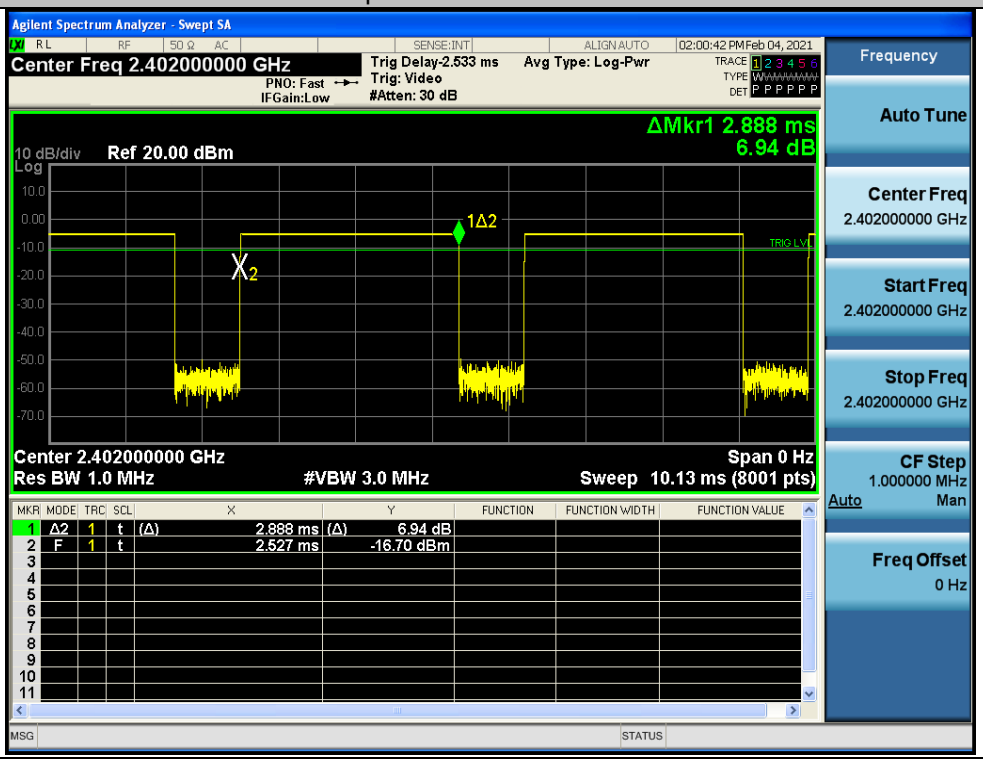


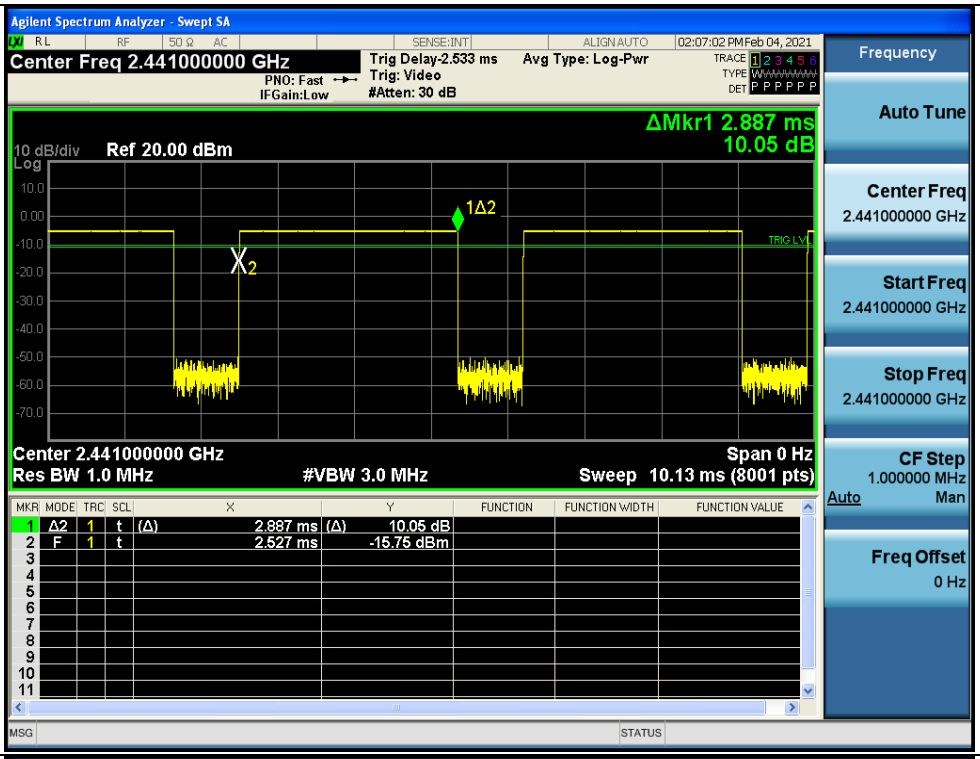
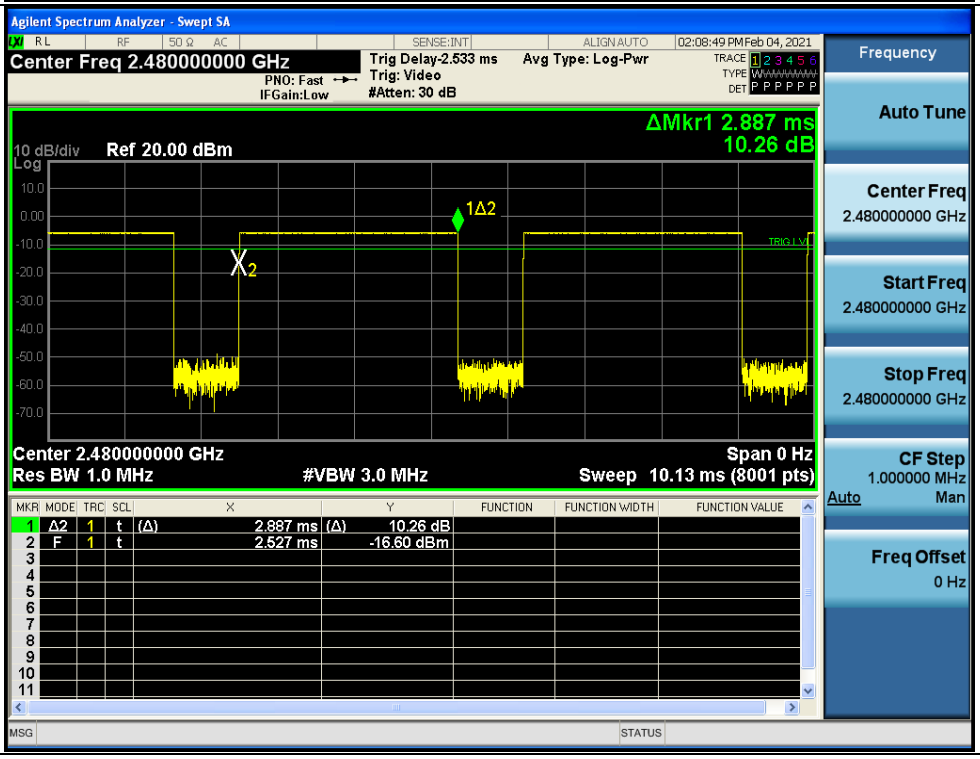

8DPSK/Hop

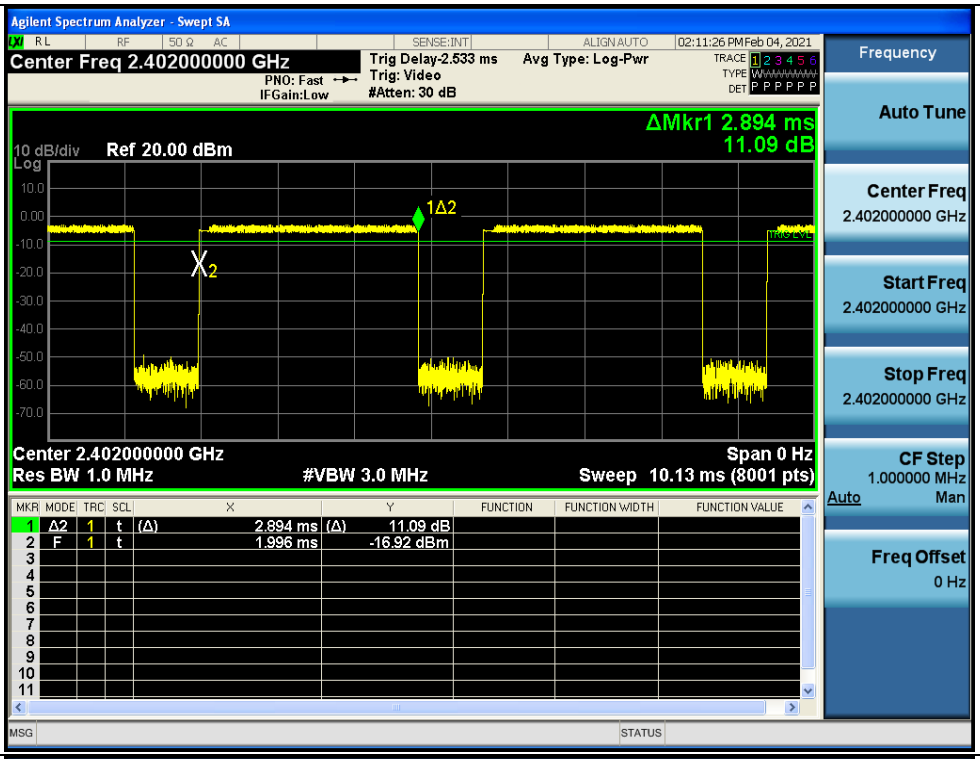
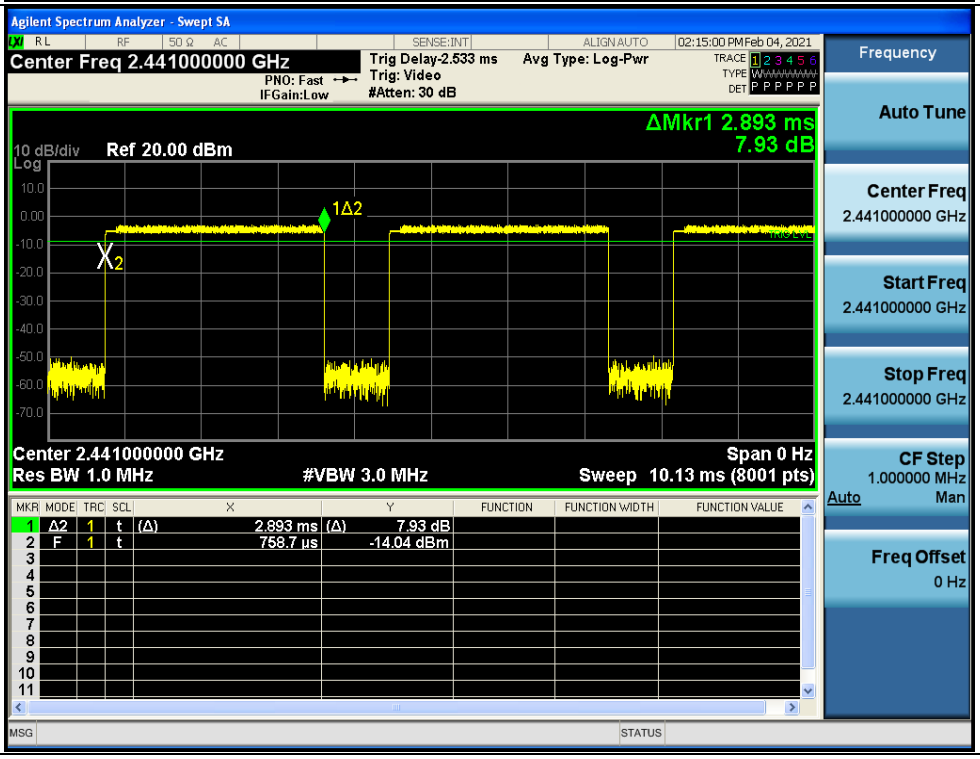


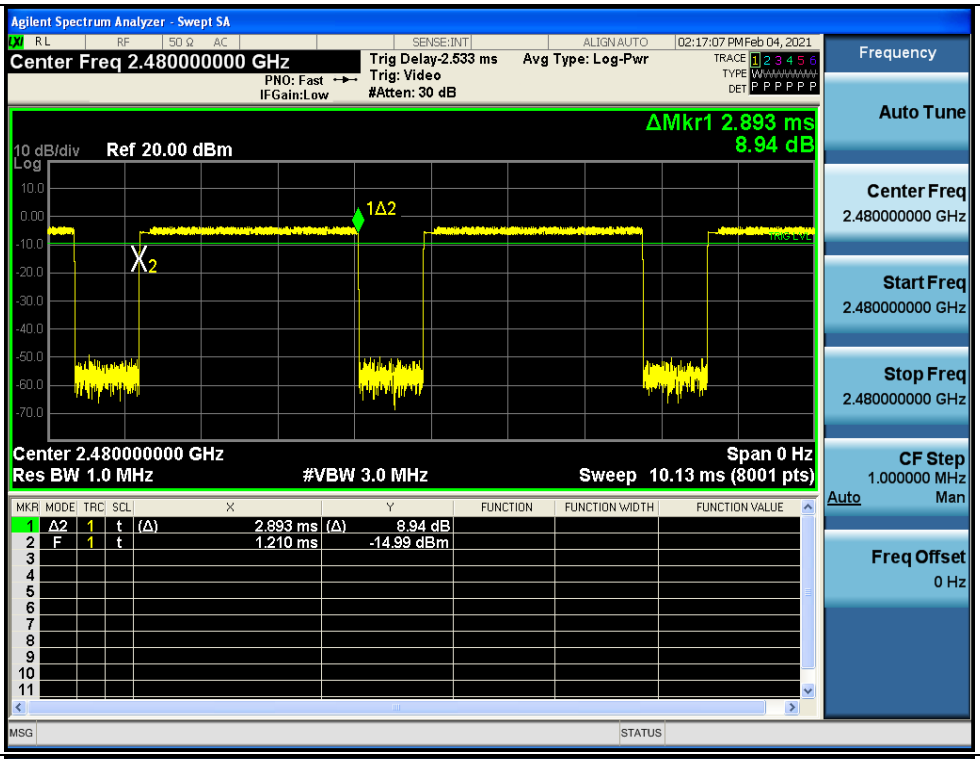
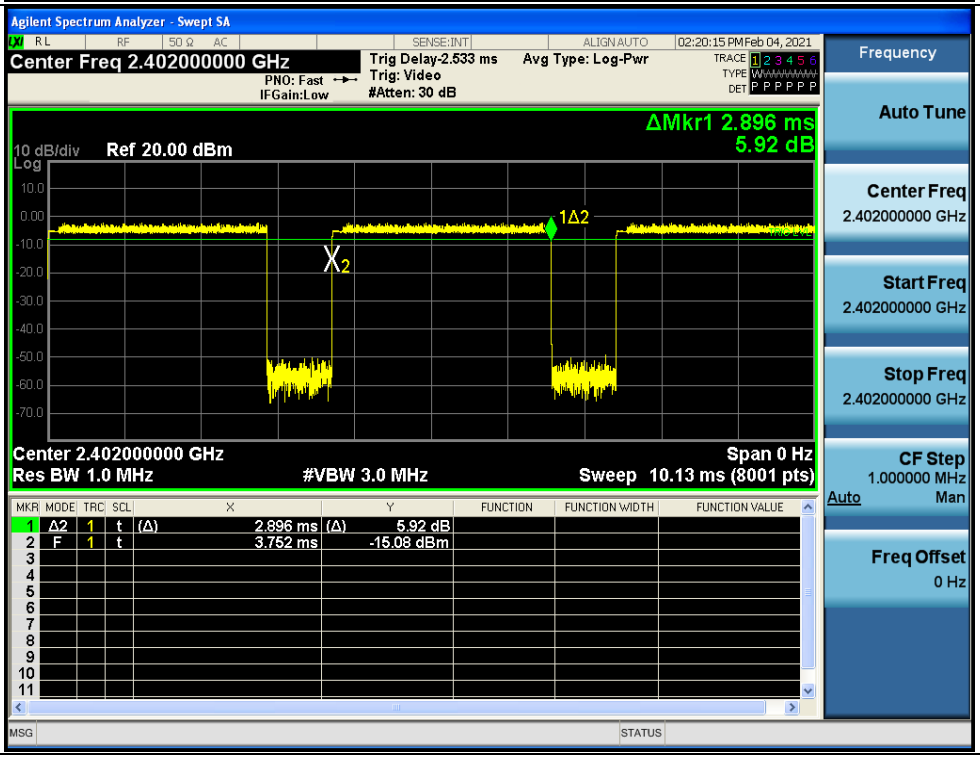
## A.6 Dwell Time

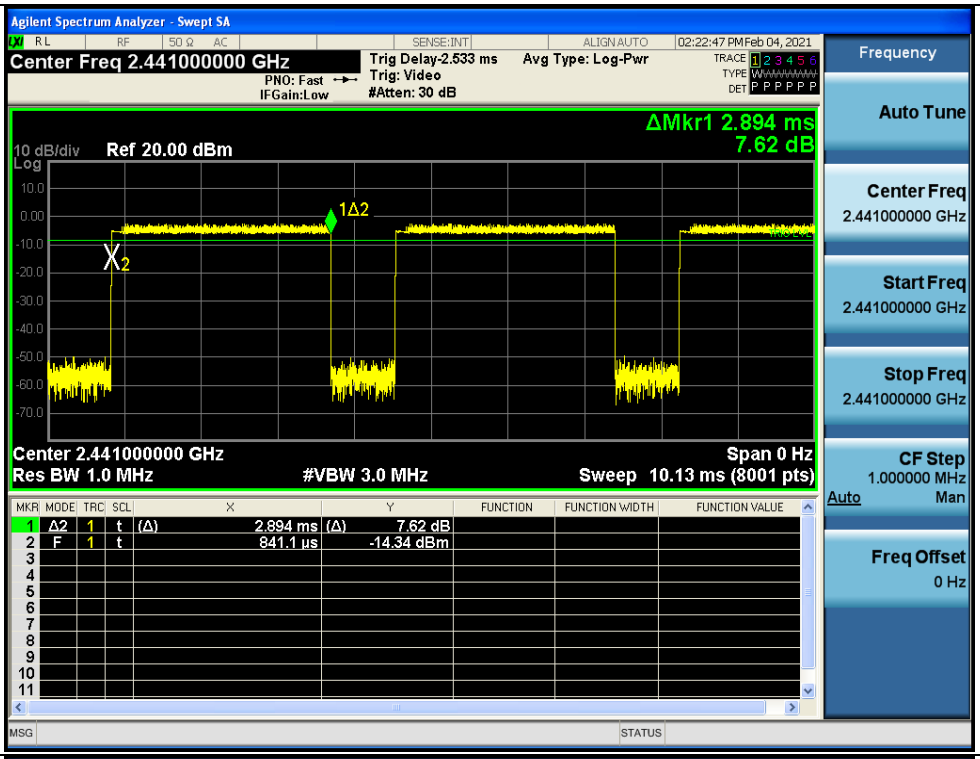
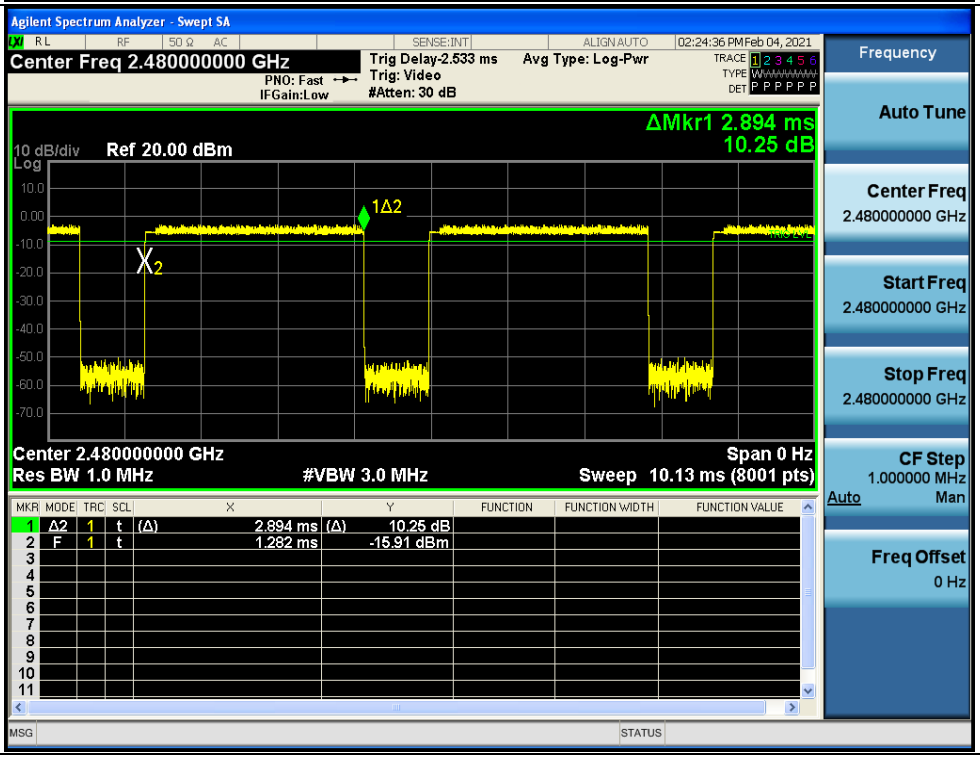
| Mode | Packet | Channel | Burst Width [ms/hop/ch] | Total Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|---|---|---|---|---|---|---|---|
| GFSK | DH5 | LCH | 2.89 | 106.7 | 0.308 | 0.4 | PASS |
| | DH5 | MCH | 2.89 | 106.7 | 0.308 | 0.4 | PASS |
| | DH5 | HCH | 2.89 | 106.7 | 0.308 | 0.4 | PASS |
| π/4DQPSK | 2DH5 | LCH | 2.89 | 106.7 | 0.308 | 0.4 | PASS |
| | 2DH5 | MCH | 2.89 | 106.7 | 0.308 | 0.4 | PASS |
| | 2DH5 | HCH | 2.89 | 106.7 | 0.308 | 0.4 | PASS |
| 8DPSK | 3DH5 | LCH | 2.89 | 106.7 | 0.309 | 0.4 | PASS |
| | 3DH5 | MCH | 2.89 | 106.7 | 0.308 | 0.4 | PASS |
| | 3DH5 | HCH | 2.89 | 106.7 | 0.308 | 0.4 | PASS |

| Test Graphs | |
|---|---|
| GFSK_DH5/LCH |  |

| | |
|---|---|
| GFSK_DH5/MCH |  |
| GFSK_DH5/HCH |  |

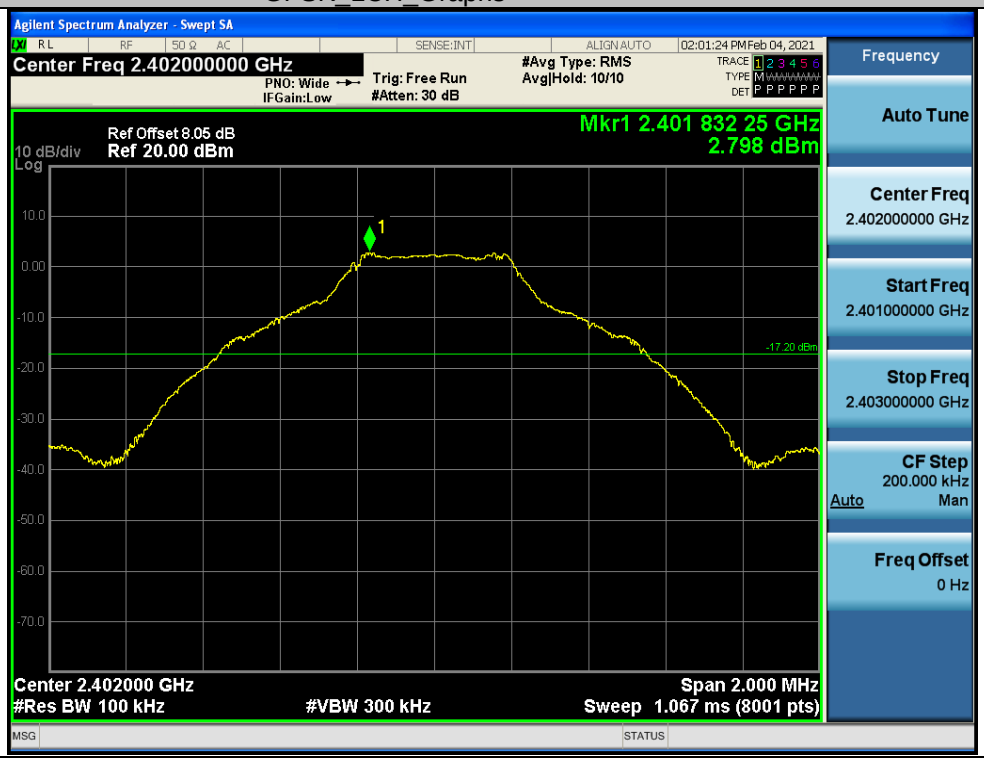
| | |
|---|---|
| π/4DQPSK<br>_2DH5/LCH |  |
| π/4DQPSK<br>_2DH5/MCH |  |

| | |
|---|---|
| π/4DQPSK _2DH5/HCH |   |
| 8DPSK _3DH5/LCH |   |

| | |
|---|---|
| 8DPSK _3DH5/MCH |  |
| 8DPSK _3DH5/HCH |  |

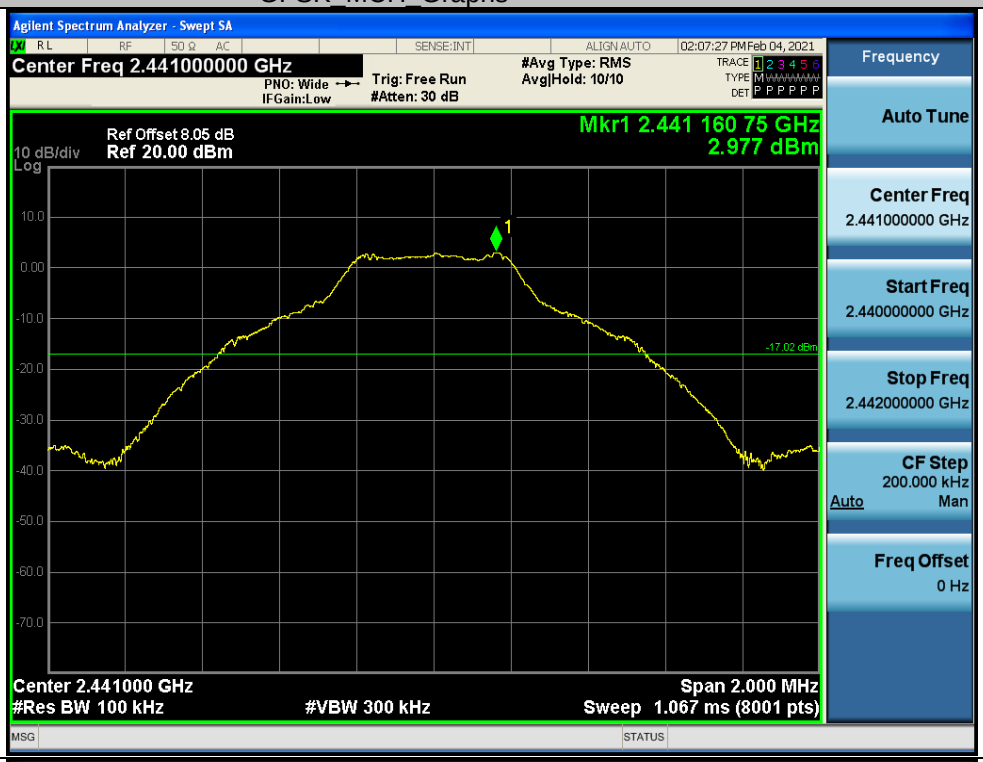
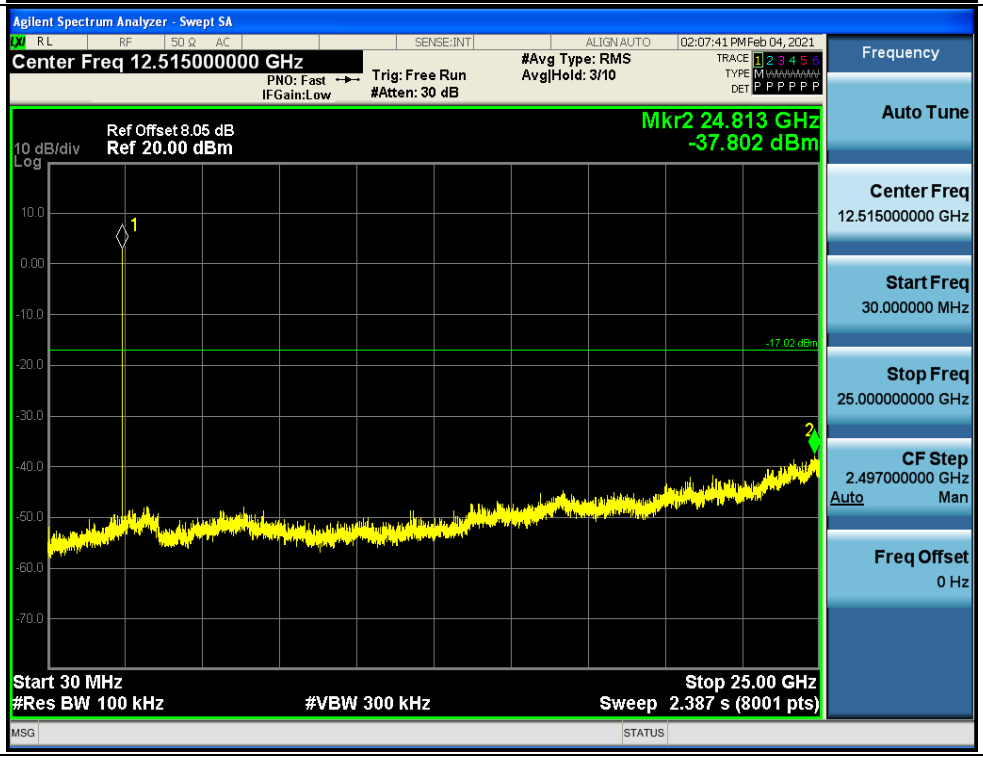
## A.7 RF Conducted Spurious Emissions

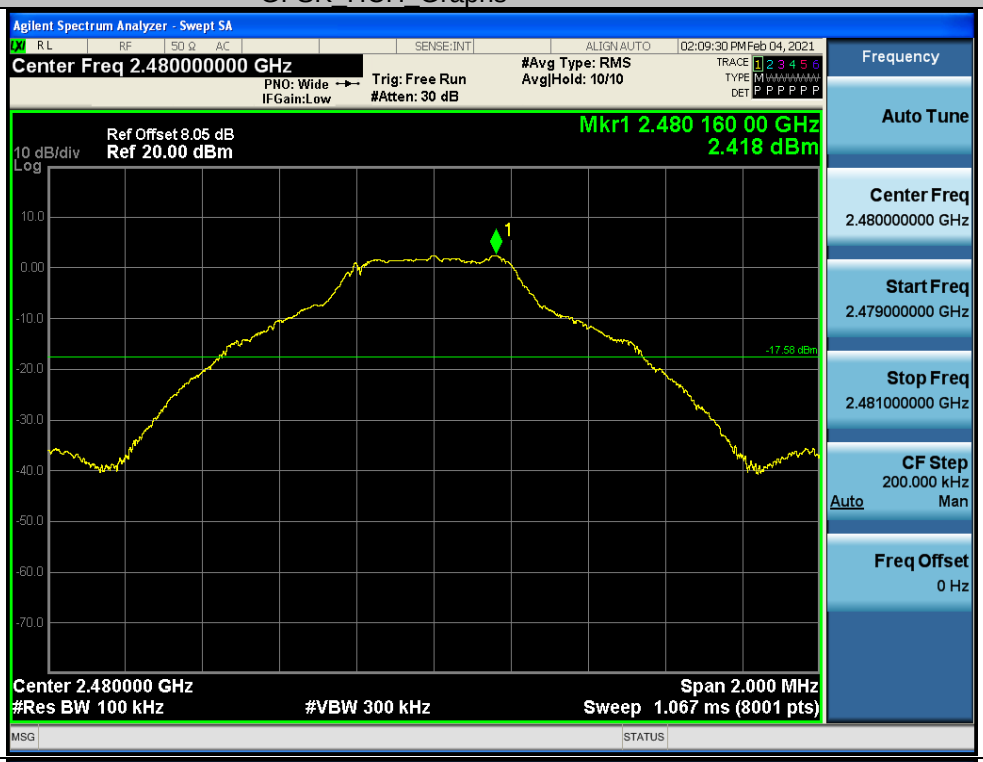
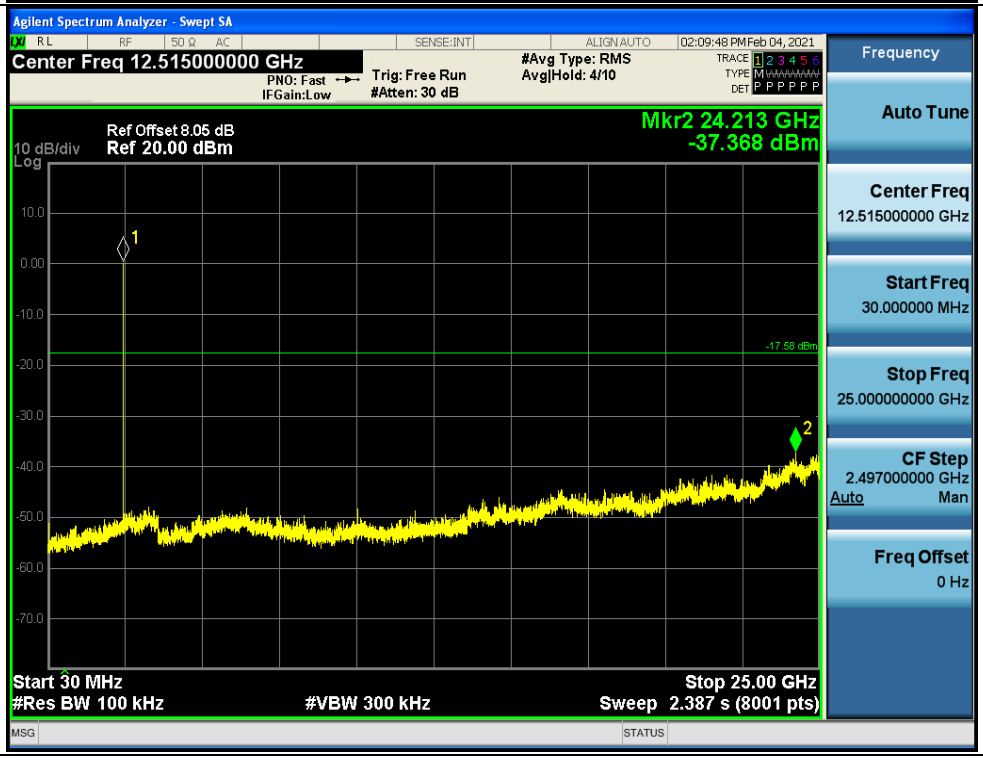
| Mode | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|---|
| GFSK | LCH | 2.798 | -37.548 | -17.202 | PASS |
| | MCH | 2.977 | -37.802 | -17.023 | PASS |
| | HCH | 2.418 | -37.368 | -17.582 | PASS |
| π/4DQPSK | LCH | 2.459 | -37.211 | -17.541 | PASS |
| | MCH | 2.945 | -35.230 | -17.055 | PASS |
| | HCH | 2.378 | -37.250 | -17.622 | PASS |
| 8DPSK | LCH | 2.898 | -37.896 | -17.102 | PASS |
| | MCH | 2.887 | -38.050 | -17.113 | PASS |
| | HCH | 2.575 | -36.779 | -17.425 | PASS |

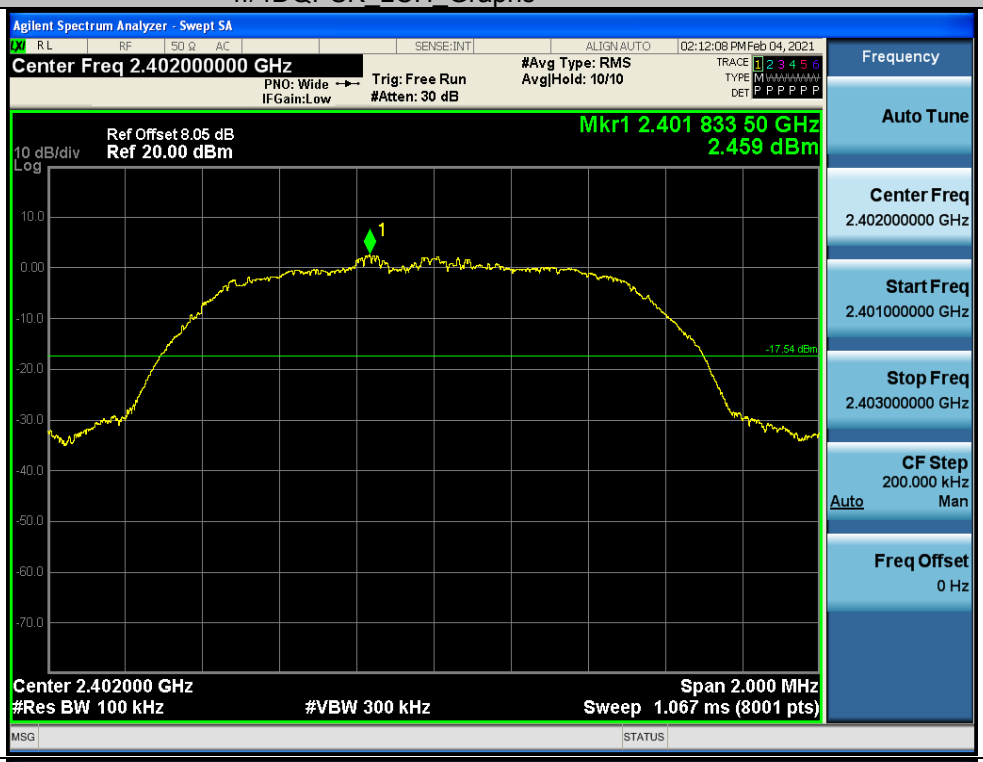
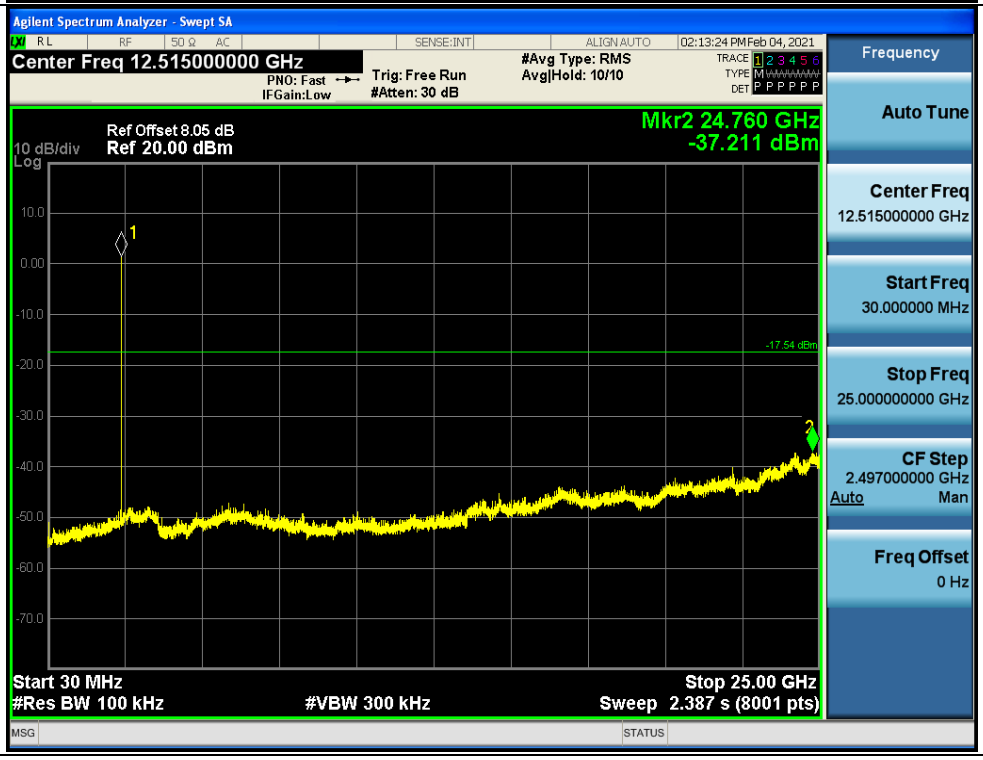
| GFSK_LCH_Graphs | |
|---|---|
| Pref |  |

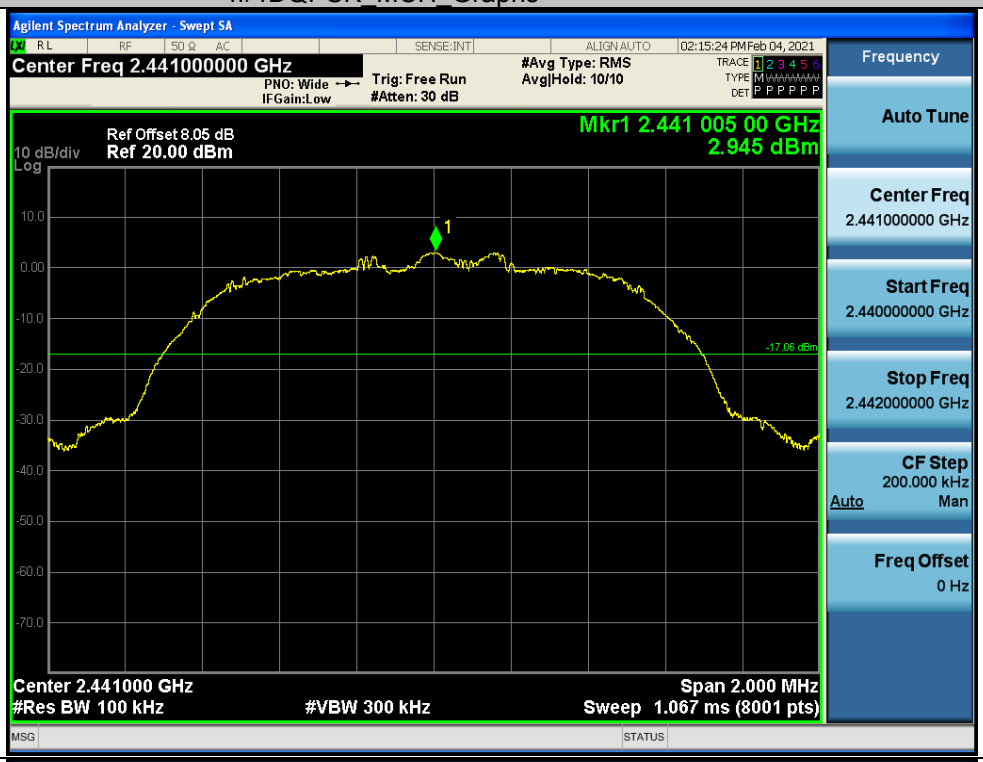
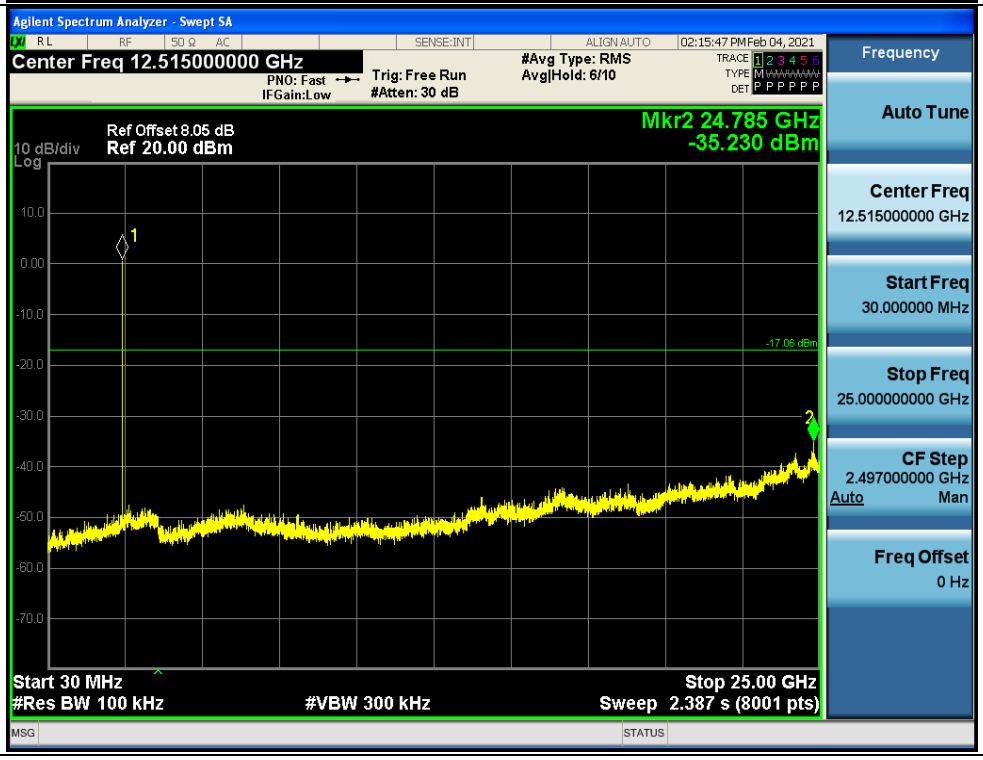
| | | |
|---|---|---|
| Puw | | |

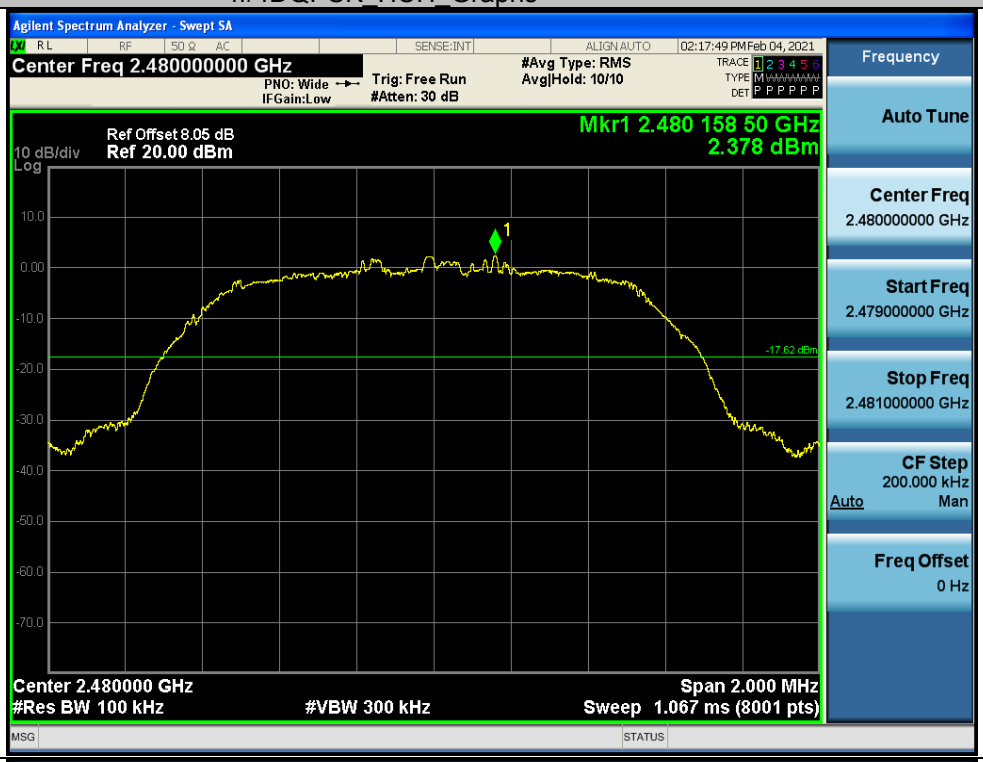
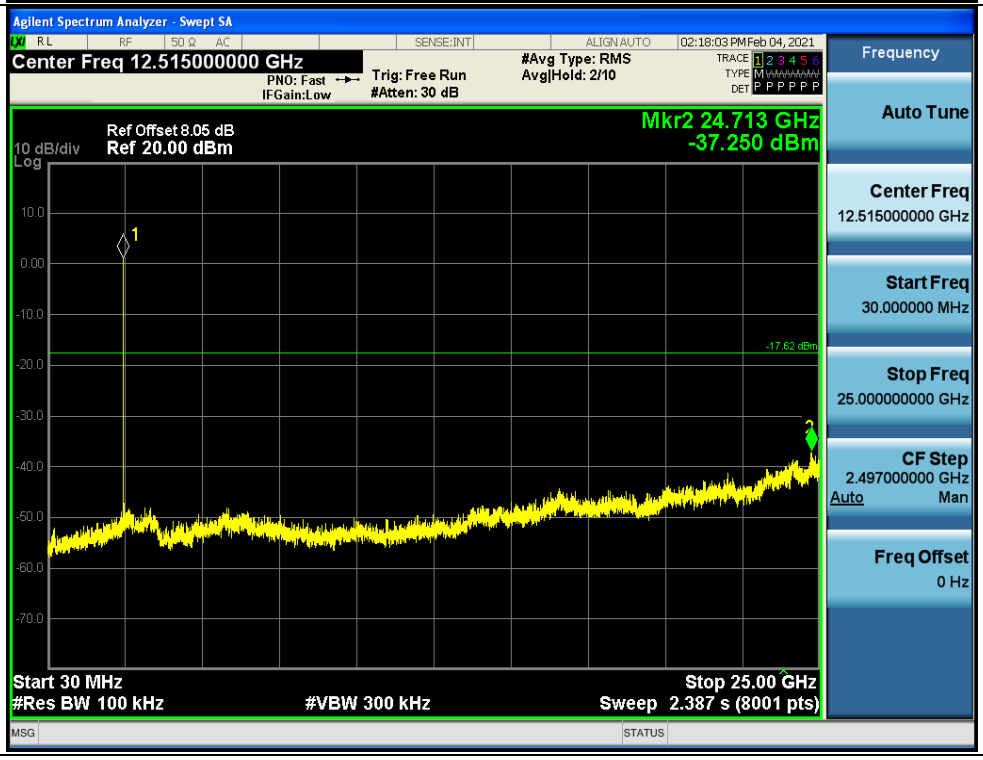
Agilent Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 3/10
02:01:39 PM Feb 04, 2021
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr2 24.728 GHz
-37.548 dBm
-17.20 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (8001 pts)
Frequency
Auto Tune
Center Freq
12.515000000 GHz
Start Freq
30.000000 MHz
Stop Freq
25.000000000 GHz
CF Step
2.497000000 GHz
Auto
Man
Freq Offset
0 Hz

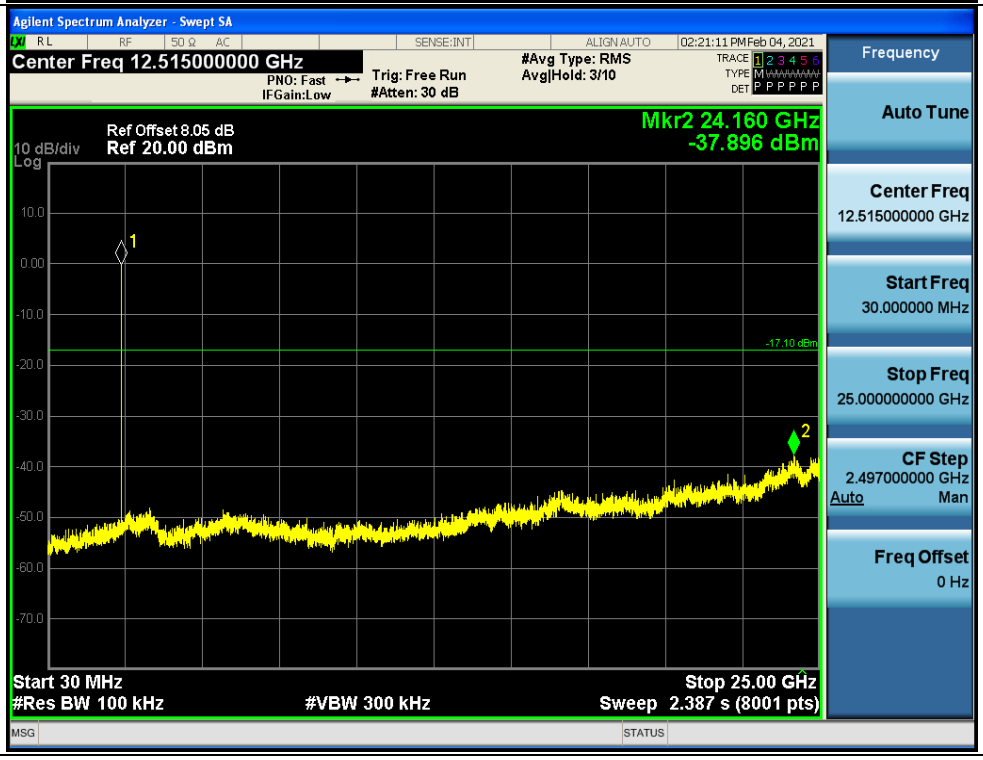
| GFSK_MCH_Graphs | | |
|---|---|---|
| Pref | |  |
| Puw | |  |

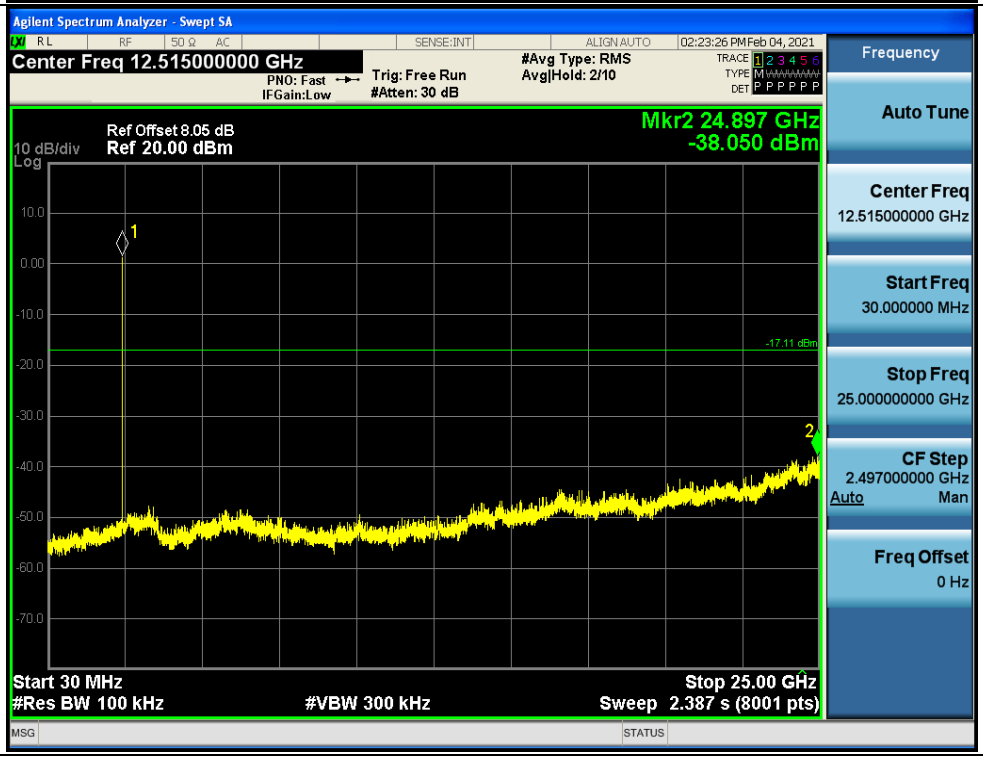
| GFSK_HCH_Graphs | | |
|---|---|---|
| Pref | |  |
| Puw | |  |

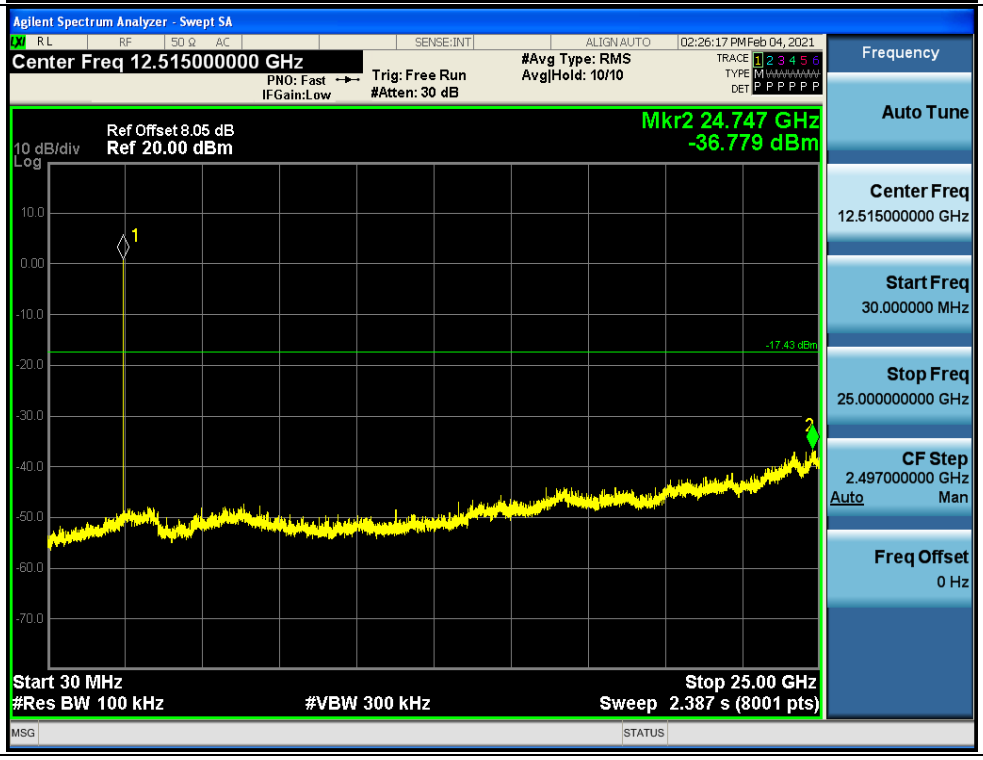
| π/4DQPSK_LCH_Graphs | | |
|---|---|---|
| Pref | |  |
| Puw | |  |

| π/4DQPSK_MCH_Graphs | | |
|---|---|---|
| Pref | |  |
| Puw | |  |

| π/4DQPSK_HCH_Graphs | | |
|---|---|---|
| Pref | |  |
| Puw | |  |

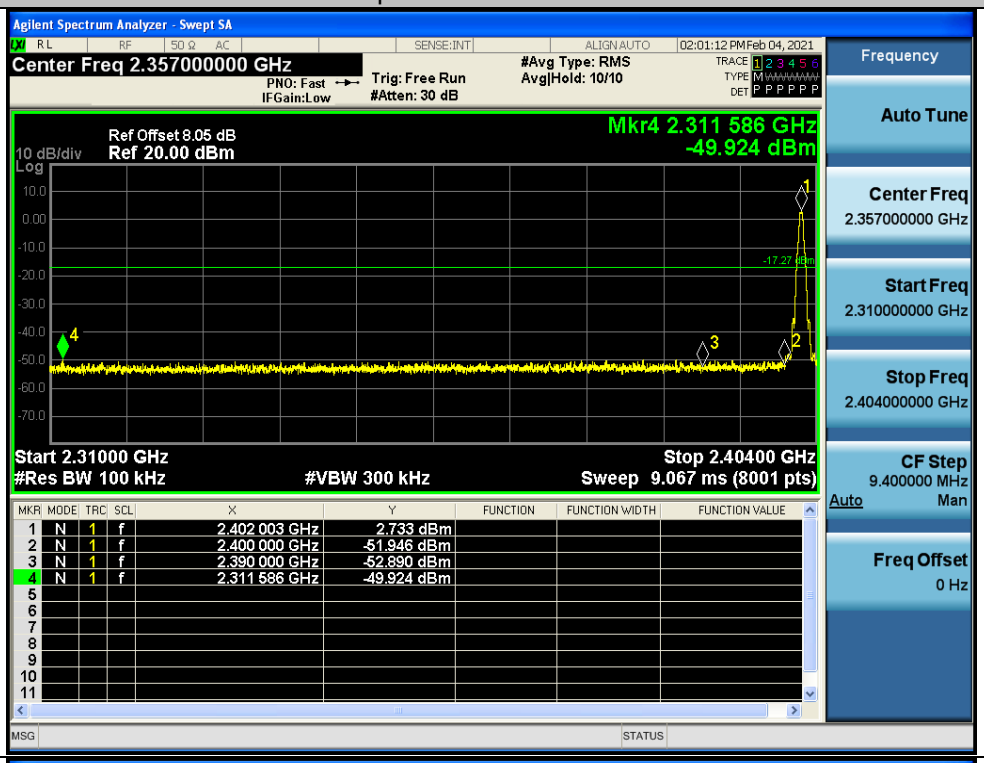
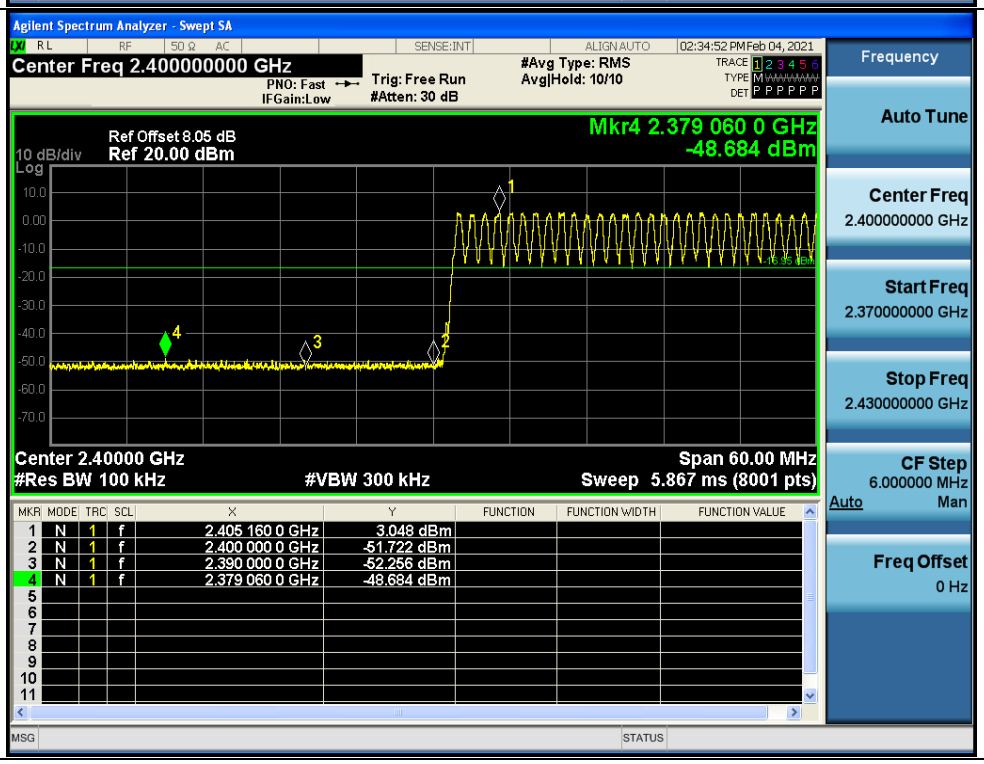
| 8DPSK_LCH_Graphs | | |
|---|---|---|
| Pref | | |
| Puw | |  |

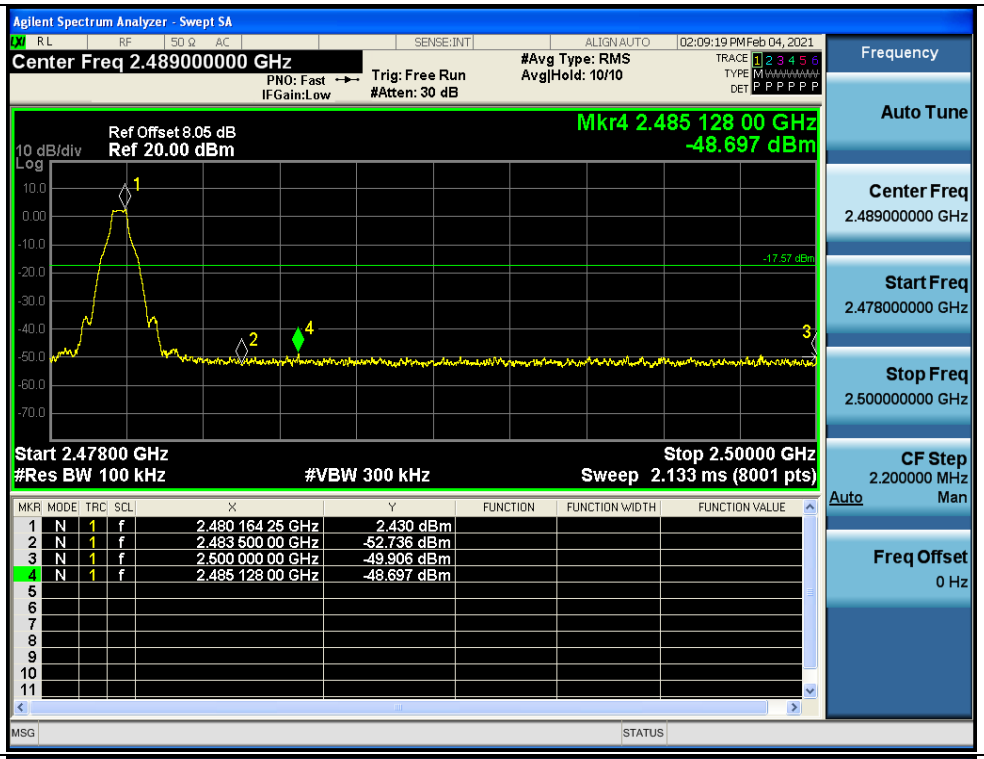
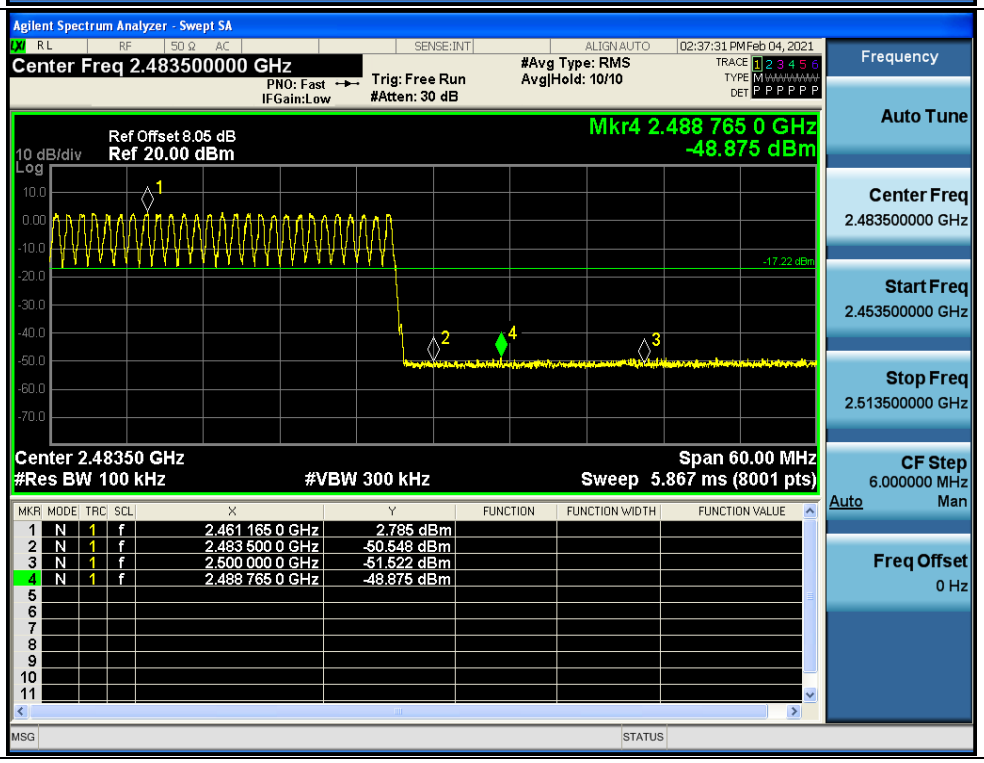
| 8DPSK_MCH_Graphs | | |
|---|---|---|
| Pref | | |
| Puw | |  |

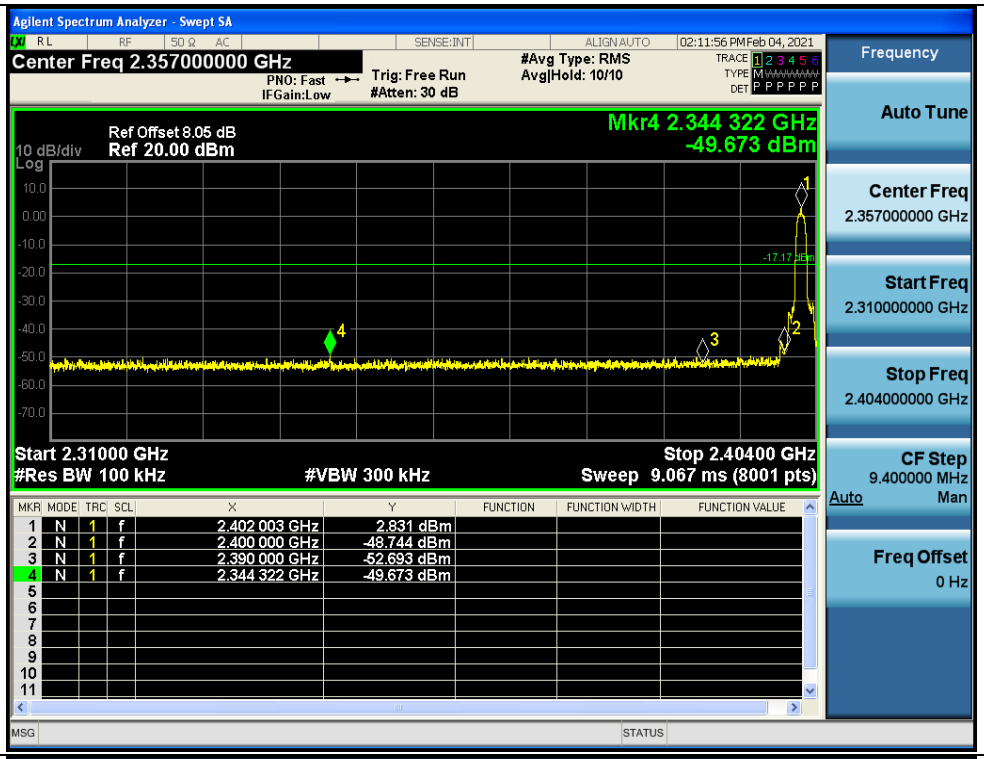
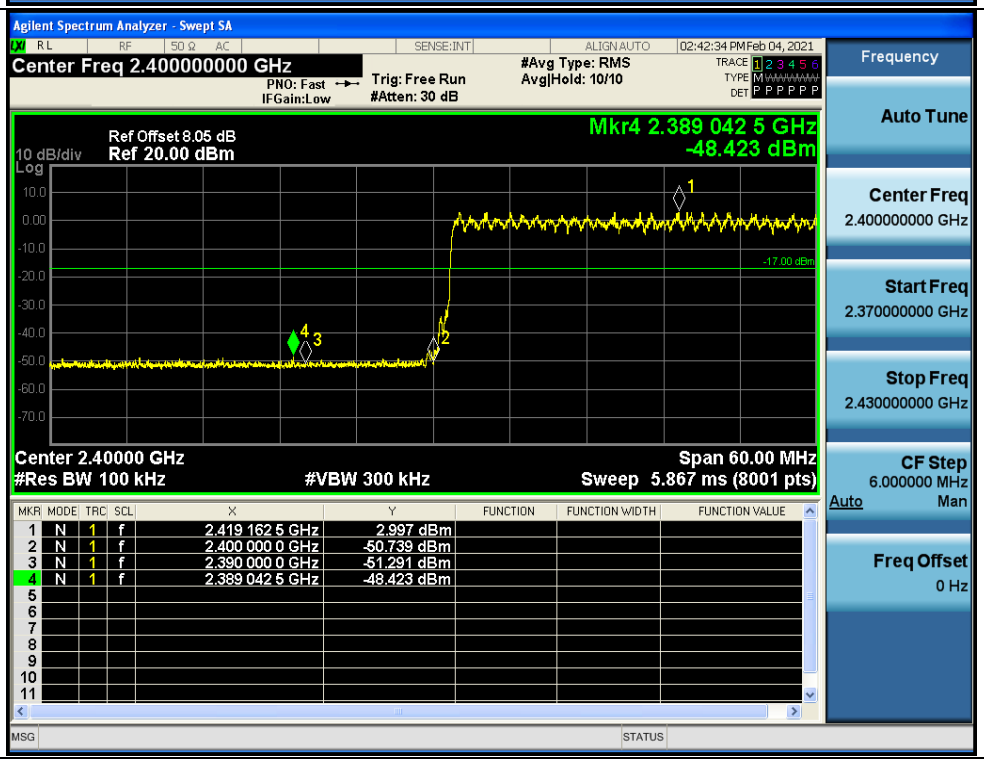
| 8DPSK_HCH_Graphs | | |
|---|---|---|
| Pref | | |
| Puw | |  |

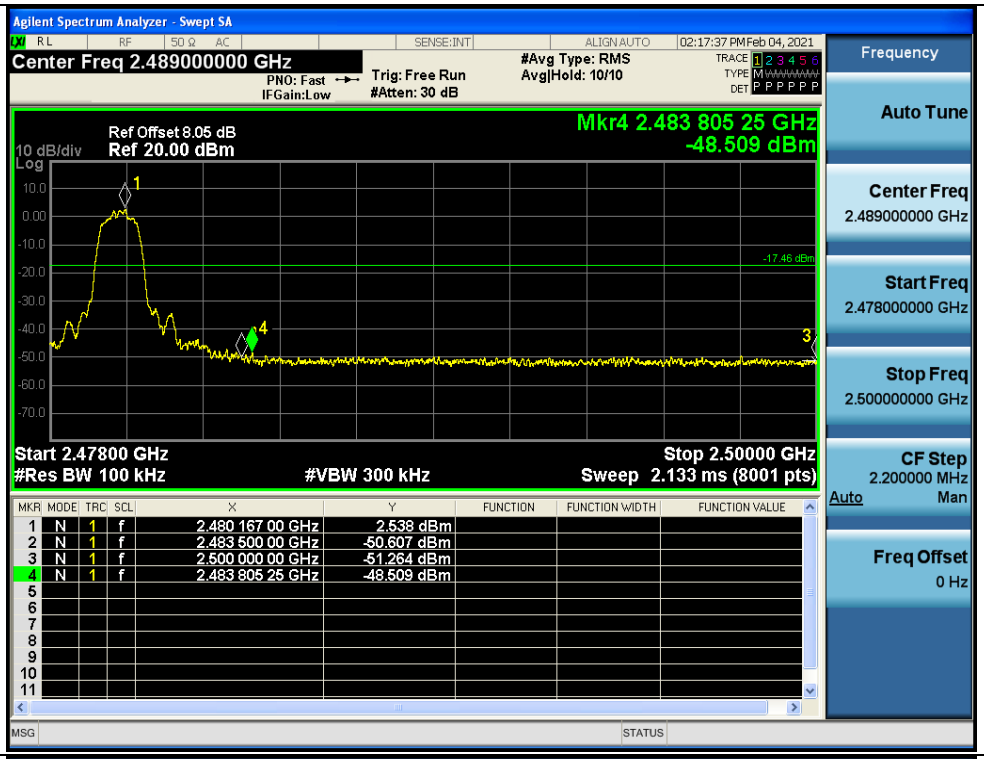
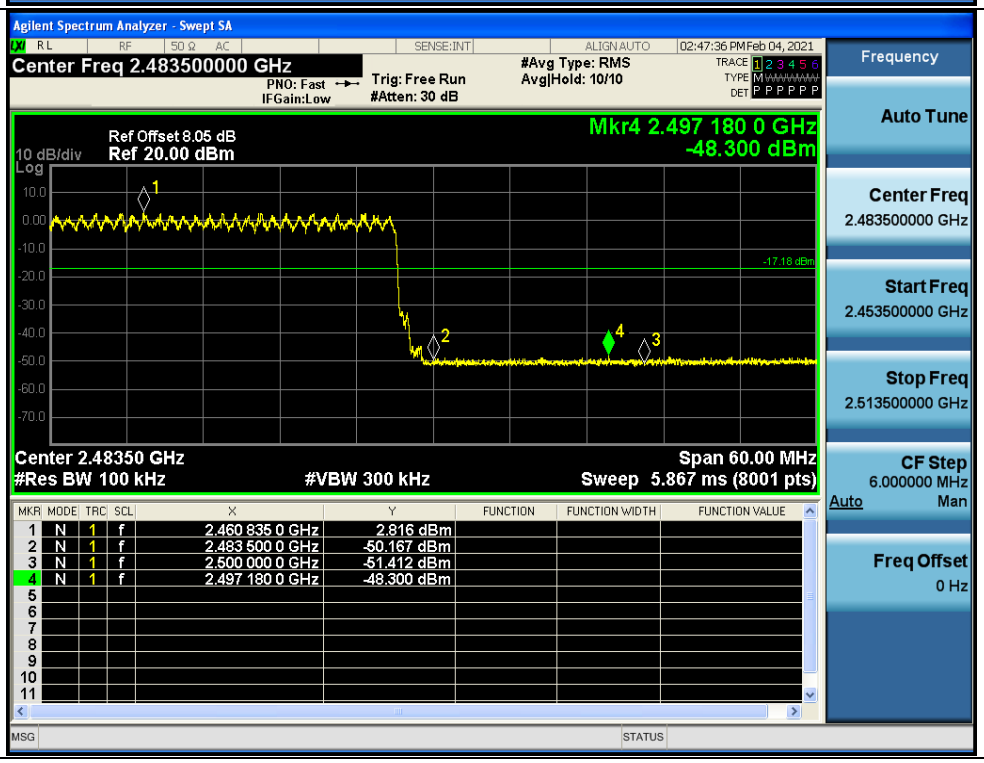
## A.8 Band-edge for RF Conducted Emissions

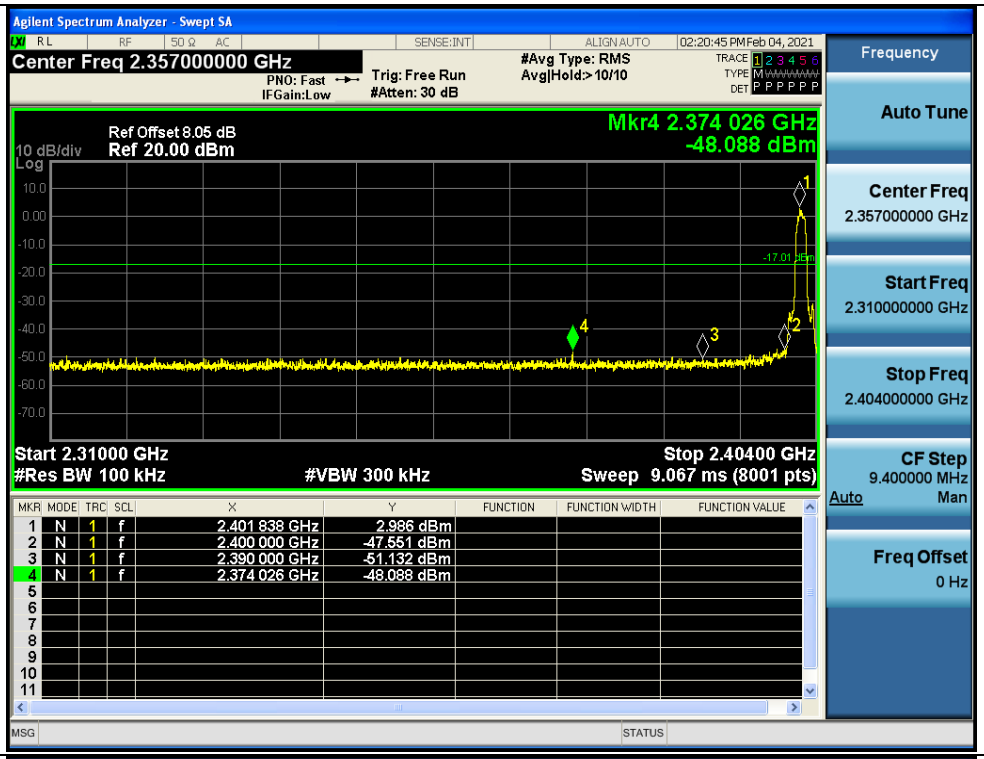
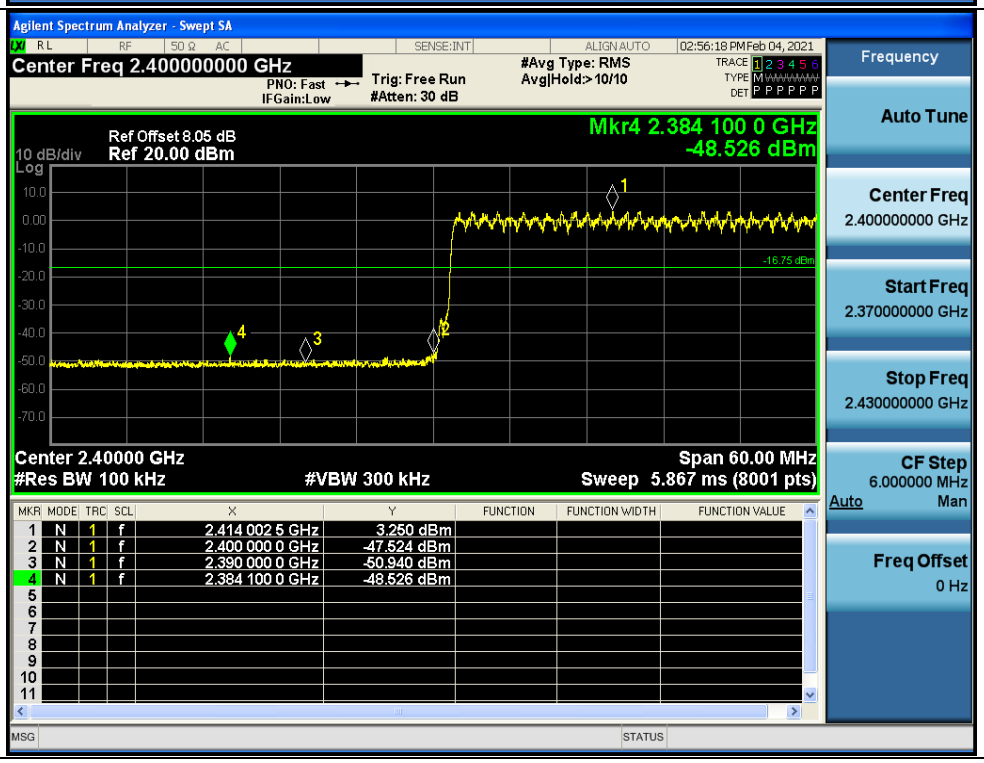
| Mode | Channel | Carrier Frequency [MHz] | Carrier Power [dBm] | Frequency Hopping | Max Spurious Level [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|---|---|---|
| GFSK | LCH | 2402 | 2.733 | Off | -49.924 | -17.27 | PASS |
| | | | 3.048 | On | -48.684 | -16.95 | PASS |
| | HCH | 2480 | 2.430 | Off | -48.697 | -17.57 | PASS |
| | | | 2.785 | On | -48.875 | -17.22 | PASS |
| π/4DQPSK | LCH | 2402 | 2.831 | Off | -49.673 | -17.17 | PASS |
| | | | 2.997 | On | -48.423 | -17.00 | PASS |
| | HCH | 2480 | 2.538 | Off | -48.509 | -17.46 | PASS |
| | | | 2.816 | On | -48.300 | -17.18 | PASS |
| 8DPSK | LCH | 2402 | 2.986 | Off | -48.088 | -17.01 | PASS |
| | | | 3.250 | On | -48.526 | -16.75 | PASS |
| | HCH | 2480 | 2.707 | Off | -46.540 | -17.29 | PASS |
| | | | 3.091 | On | -47.785 | -16.91 | PASS |

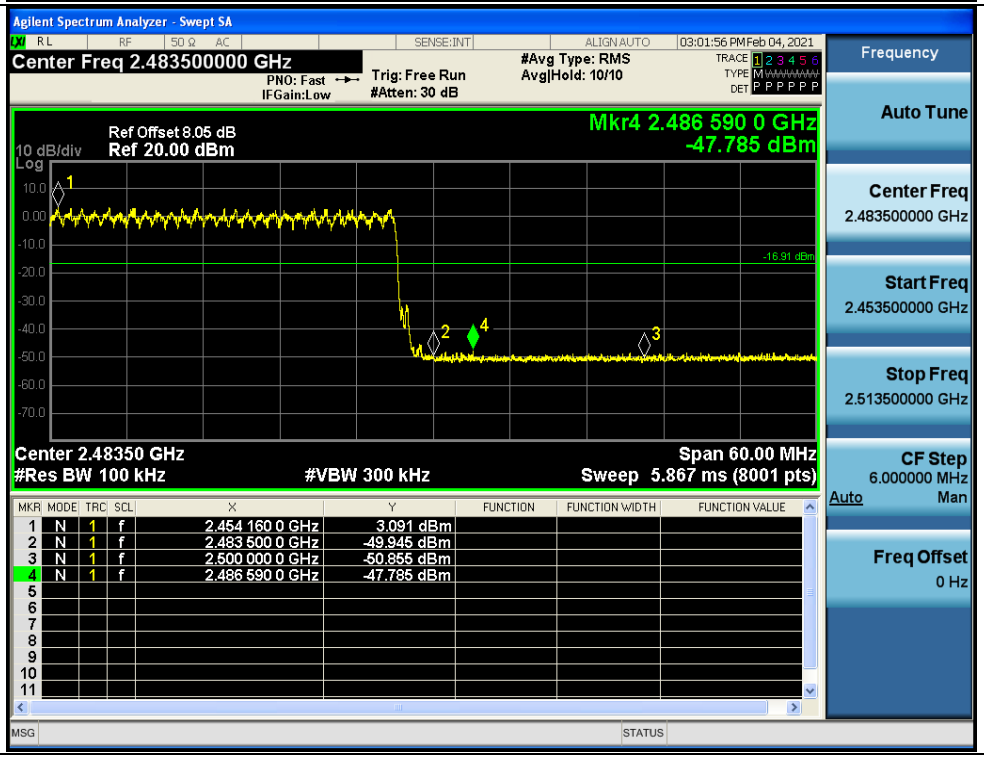
| Test Graphs | |
|---|---|
| GFSK/LCH/No Hop |  |
| GFSK/LCH/Hop |  |

| | |
|---|---|
| GFSK/HCH/No Hop |  |
| GFSK/HCH/Hop |  |

| | |
|---|---|
| π/4DQPSK/LCH/No Hop |  |
| π/4DQPSK/LCH/Hop |  |

| | |
|---|---|
| π/4DQPSK/HCH/No Hop |  |
| π/4DQPSK/HCH/Hop |  |

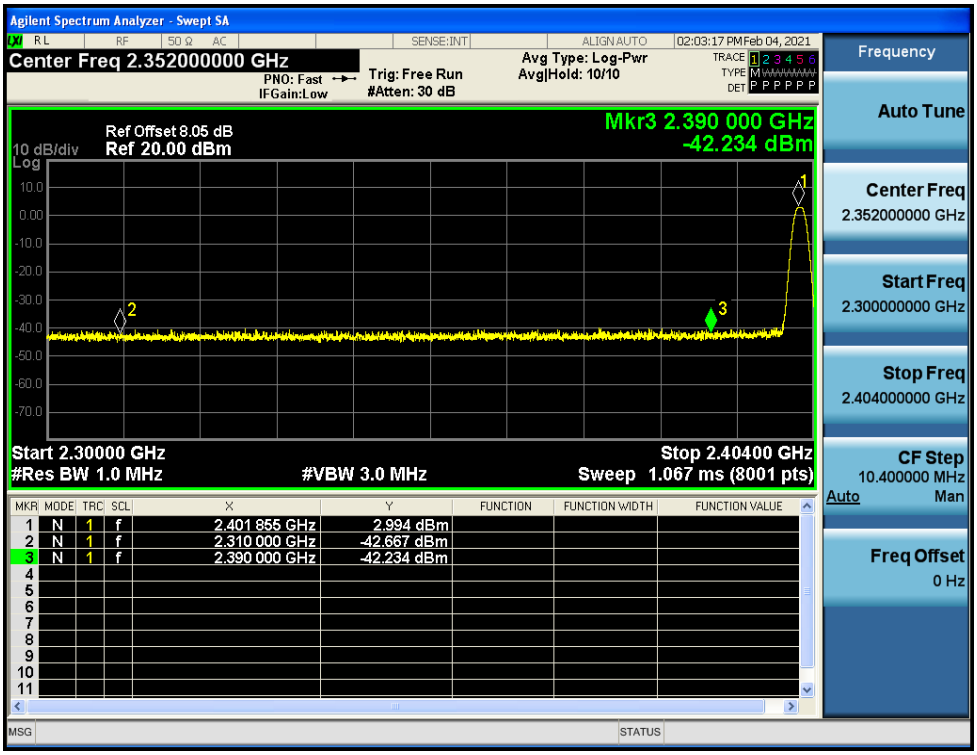
| | |
|---|---|
| 8DPSK/LCH/No Hop |  |
| 8DPSK/LCH/Hop |  |

| | |
|---|---|
| 8DPSK/HCH/No Hop | |
| 8DPSK/HCH/Hop |  |

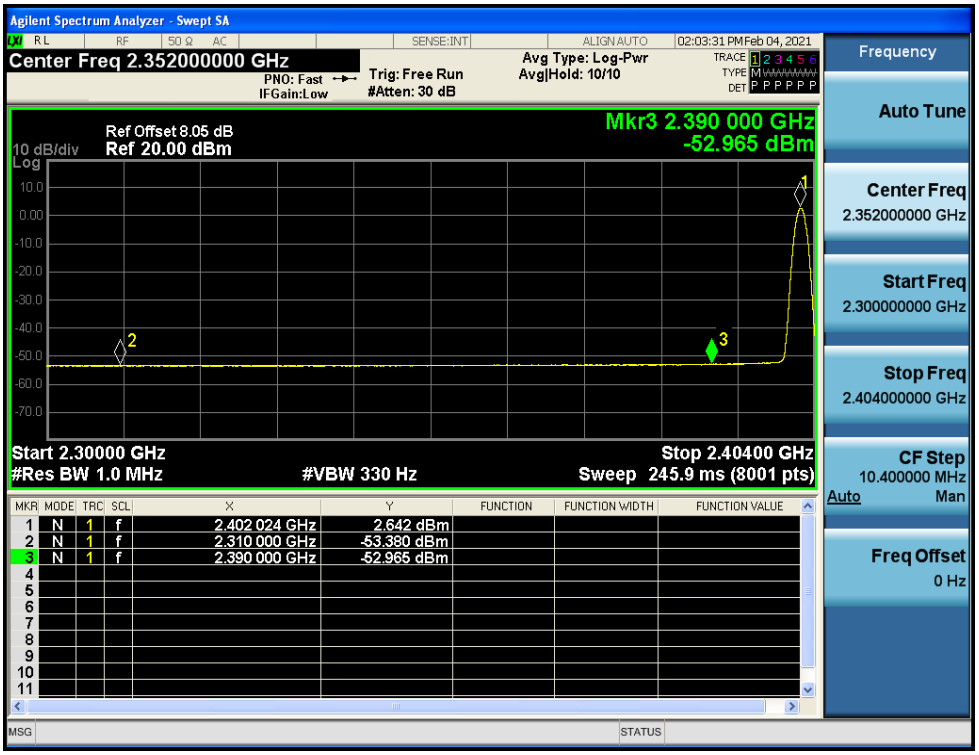
## A.8 Restrict-band band-edge measurements

| Test Mode | Hopping | Freq. | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| GFSK | Off | 2310.0 | -42.67 | 2.5 | 0 | 55.06 | PEAK | 74 | PASS |
| | Off | 2310.0 | -53.38 | 2.5 | 0 | 44.35 | AV | 54 | PASS |
| | Off | 2390.0 | -42.23 | 2.5 | 0 | 55.50 | PEAK | 74 | PASS |
| | Off | 2390.0 | -52.97 | 2.5 | 0 | 44.76 | AV | 54 | PASS |
| | Off | 2483.5 | -41.69 | 2.5 | 0 | 56.04 | PEAK | 74 | PASS |
| | Off | 2483.5 | -52.06 | 2.5 | 0 | 45.67 | AV | 54 | PASS |
| | Off | 2500.0 | -42.25 | 2.5 | 0 | 55.48 | PEAK | 74 | PASS |
| | Off | 2500.0 | -52.42 | 2.5 | 0 | 45.31 | AV | 54 | PASS |
| π/4DQPSK | Off | 2310.0 | -43.66 | 2.5 | 0 | 54.07 | PEAK | 74 | PASS |
| | Off | 2310.0 | -53.46 | 2.5 | 0 | 44.27 | AV | 54 | PASS |
| | Off | 2390.0 | -42.05 | 2.5 | 0 | 55.68 | PEAK | 74 | PASS |
| | Off | 2390.0 | -52.86 | 2.5 | 0 | 44.87 | AV | 54 | PASS |
| | Off | 2483.5 | -39.36 | 2.5 | 0 | 58.37 | PEAK | 74 | PASS |
| | Off | 2483.5 | -51.04 | 2.5 | 0 | 46.69 | AV | 54 | PASS |
| | Off | 2500.0 | -42.54 | 2.5 | 0 | 55.19 | PEAK | 74 | PASS |
| | Off | 2500.0 | -52.40 | 2.5 | 0 | 45.33 | AV | 54 | PASS |
| 8DPSK | Off | 2310.0 | -43.58 | 2.5 | 0 | 54.15 | PEAK | 74 | PASS |
| | Off | 2310.0 | -53.44 | 2.5 | 0 | 44.29 | AV | 54 | PASS |
| | Off | 2390.0 | -41.98 | 2.5 | 0 | 55.75 | PEAK | 74 | PASS |
| | Off | 2390.0 | -52.78 | 2.5 | 0 | 44.95 | AV | 54 | PASS |
| | Off | 2483.5 | -35.85 | 2.5 | 0 | 61.88 | PEAK | 74 | PASS |
| | Off | 2483.5 | -50.66 | 2.5 | 0 | 47.07 | AV | 54 | PASS |
| | Off | 2500.0 | -41.31 | 2.5 | 0 | 56.42 | PEAK | 74 | PASS |
| | Off | 2500.0 | -52.38 | 2.5 | 0 | 45.35 | AV | 54 | PASS |

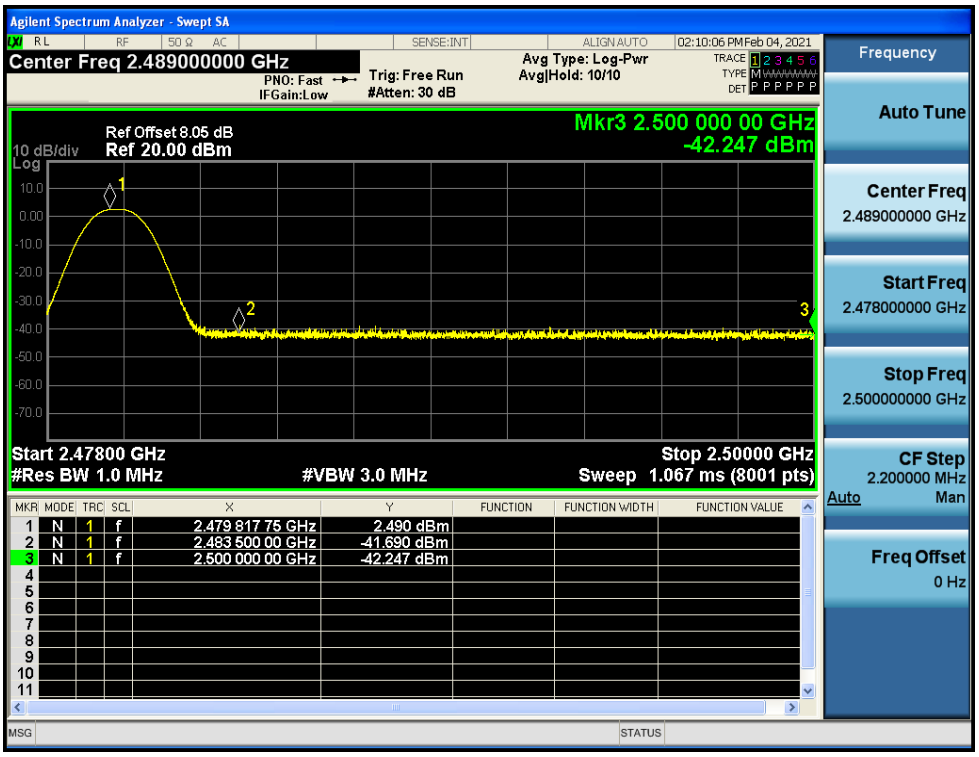
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



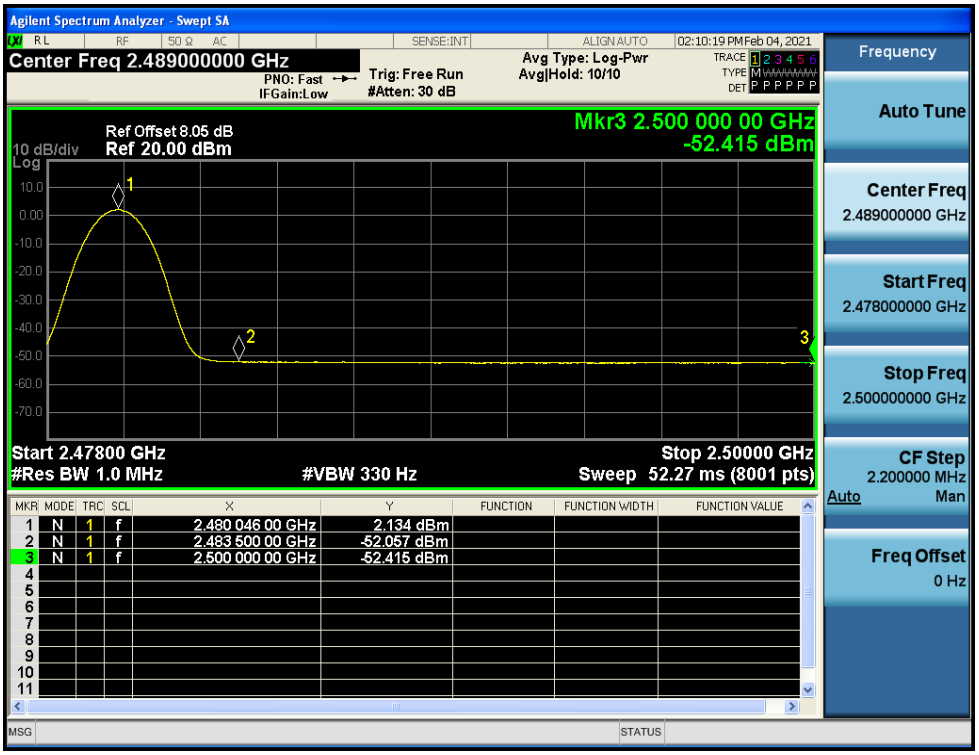

Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



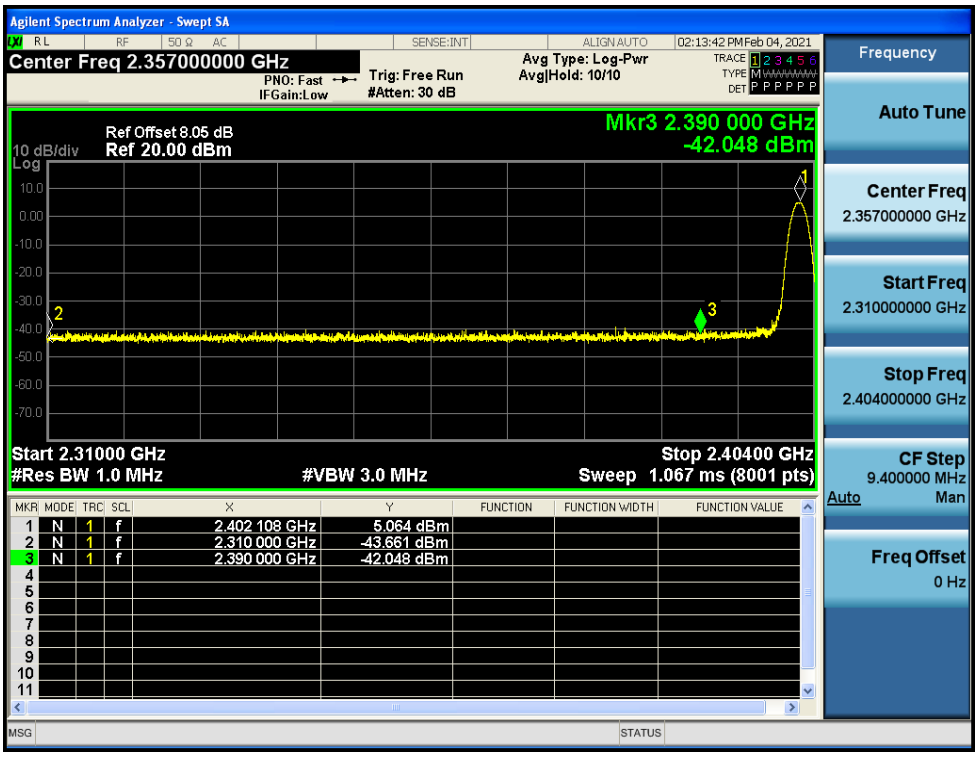

Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



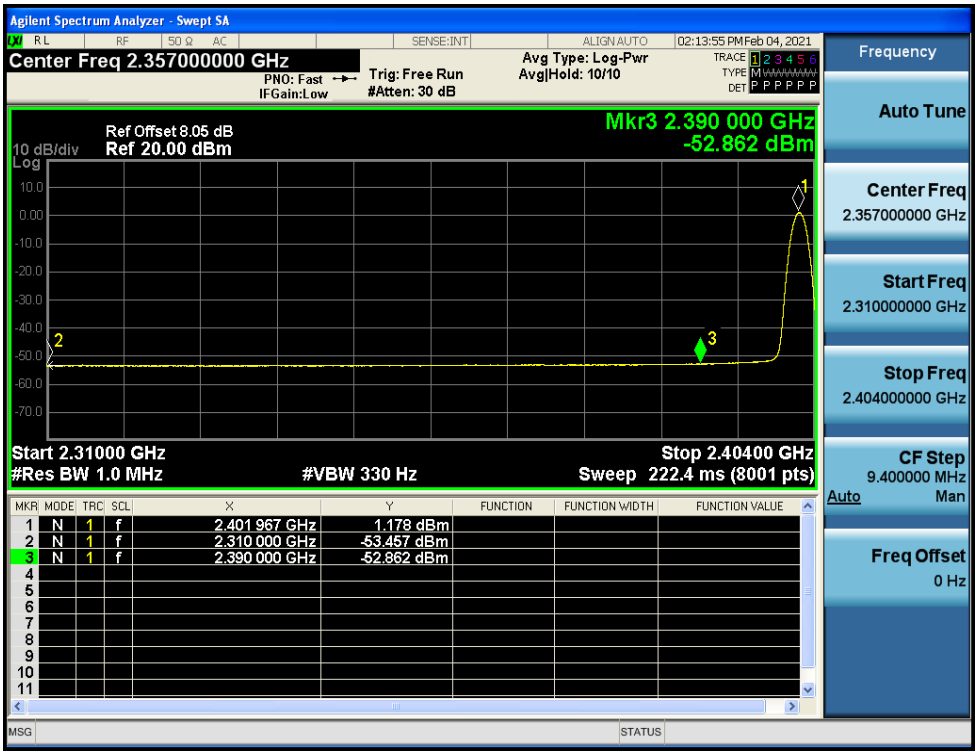

Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)




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

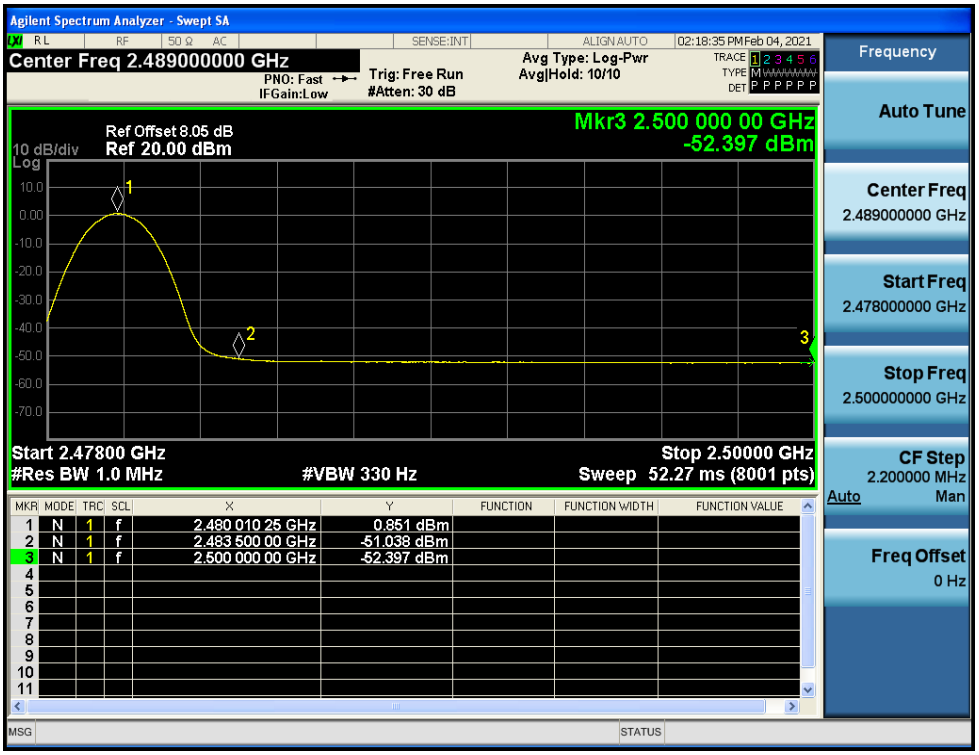



Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)

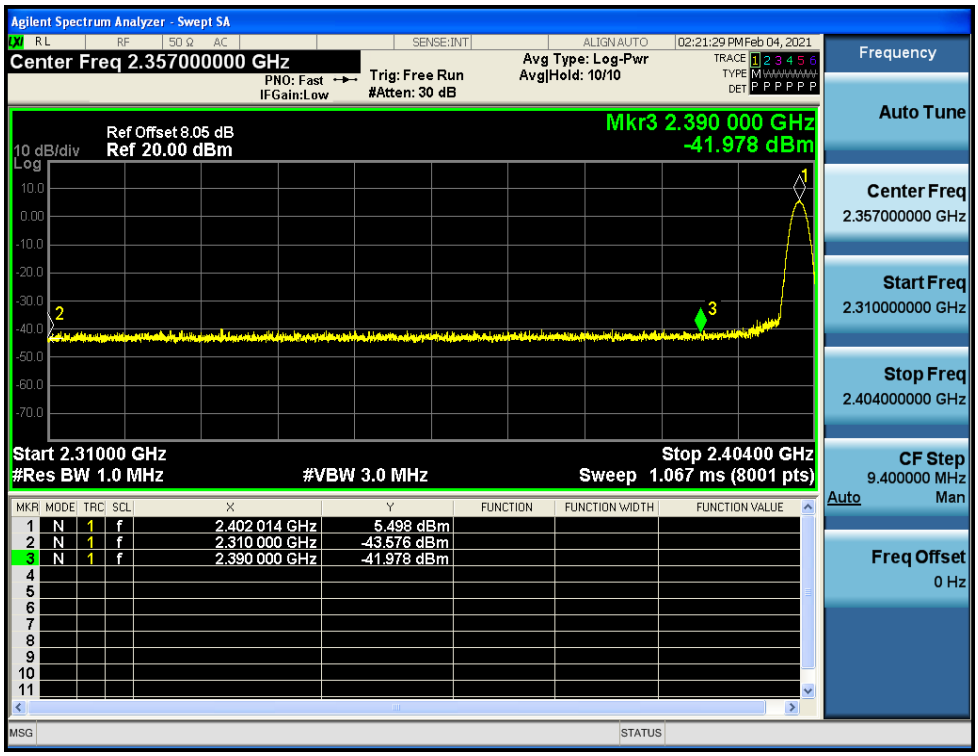



Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)

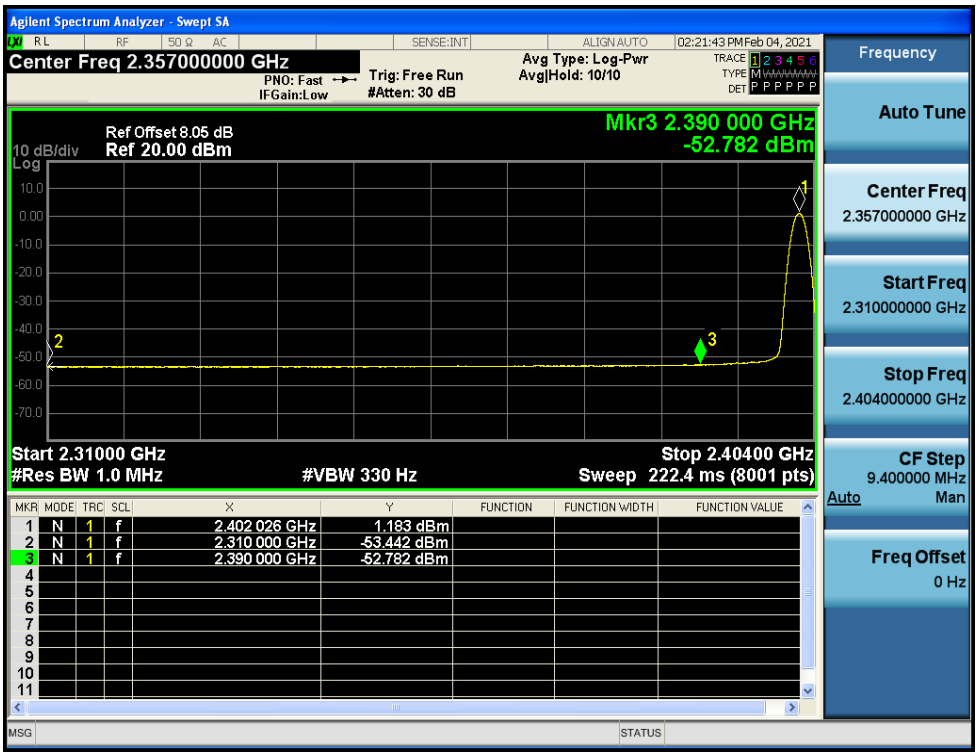
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)

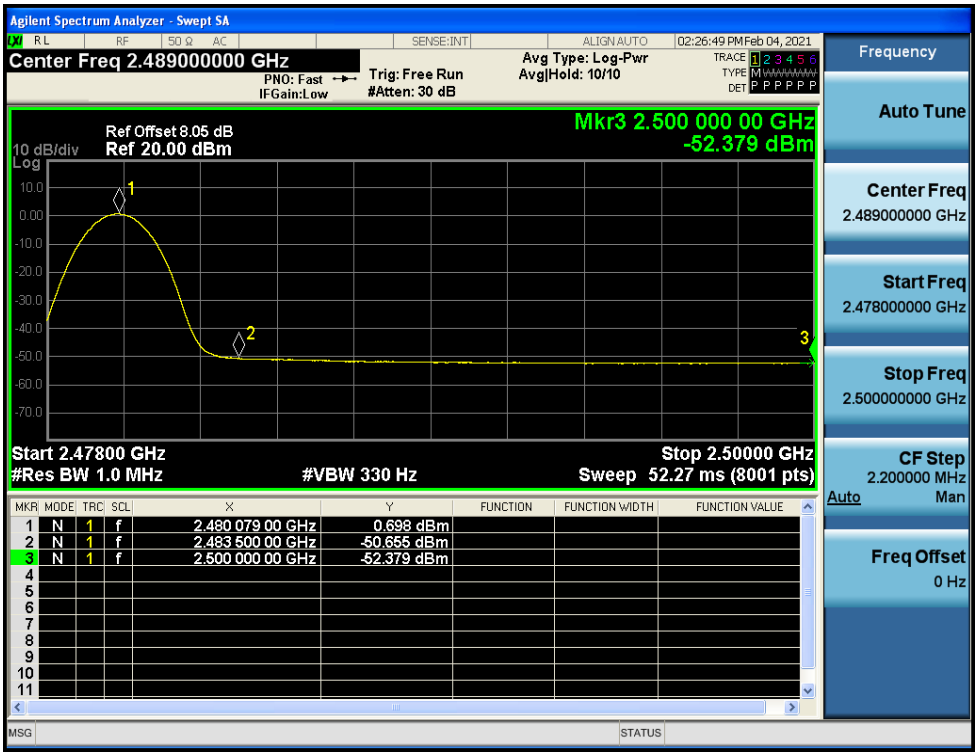



Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)




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)