

Appendix A

RF Test Data for BT V5.0 (BDR/EDR) (Conducted Measurement)

Product Name: Collapsible Bluetooth LED Speaker

Trade Mark: N/A

Test Model: ANC-BS813

Environmental Conditions

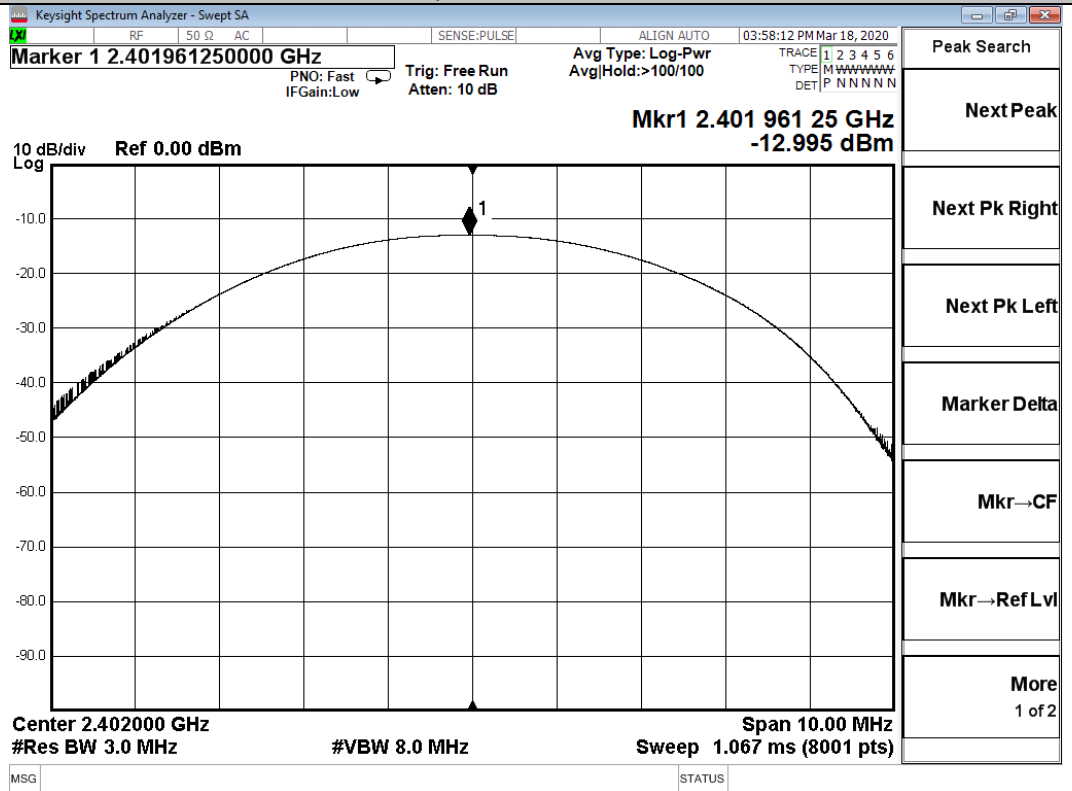
| | |
|--------------------|-------------|
| Temperature: | 23.1 °C |
| Relative Humidity: | 55% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | CHUANG WANG |
| Supervised by: | JAYDEN ZHUO |

A.1 Maximum Conducted Peak Output Power

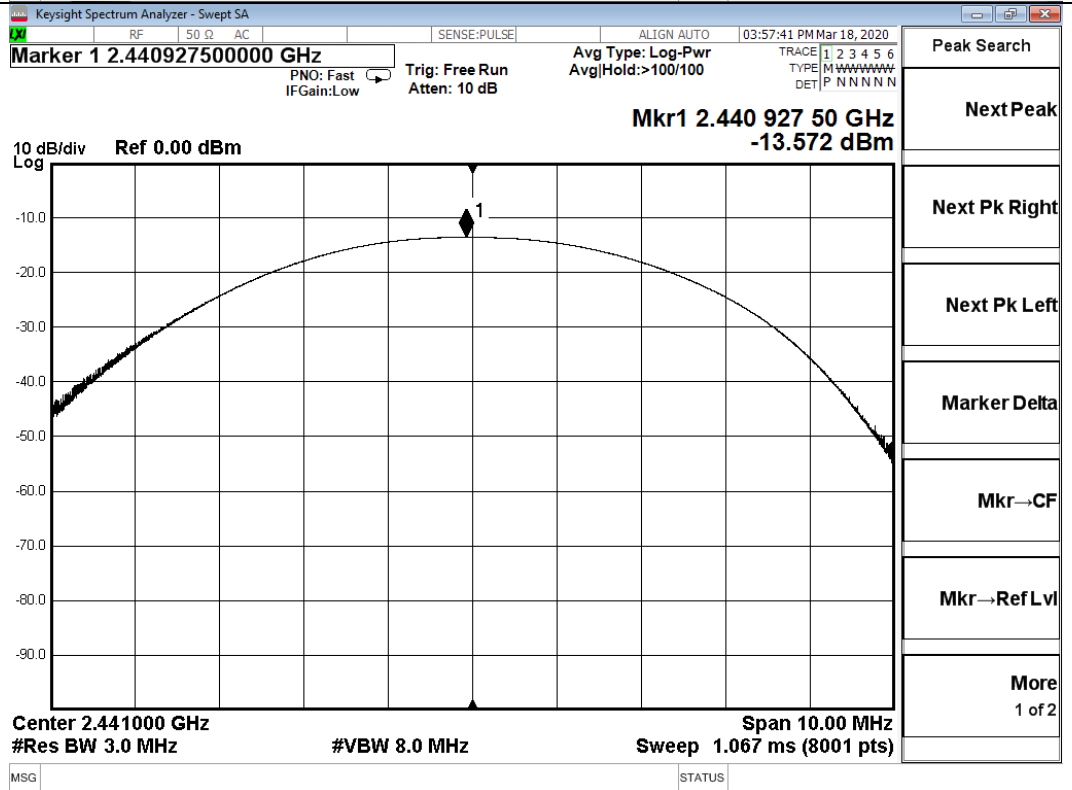
| Mode | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK | LCH | -12.995 | 21 | PASS |
| | MCH | -13.572 | 21 | PASS |
| | HCH | -13.559 | 21 | PASS |
| $\pi/4$ DQPSK | LCH | -10.777 | 21 | PASS |
| | MCH | -11.322 | 21 | PASS |
| | HCH | -11.316 | 21 | PASS |
| 8-DPSK | LCH | -10.184 | 21 | PASS |
| | MCH | -10.761 | 21 | PASS |
| | HCH | -10.728 | 21 | PASS |

Test Graphs

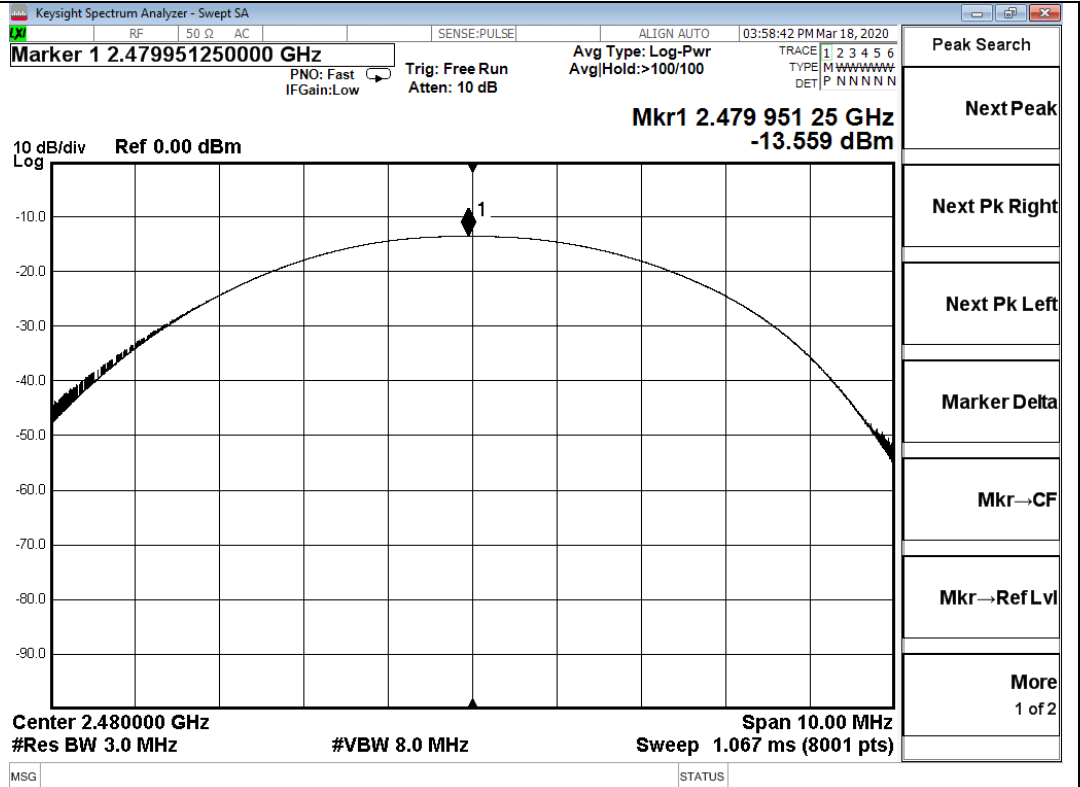
GFSK/LCH



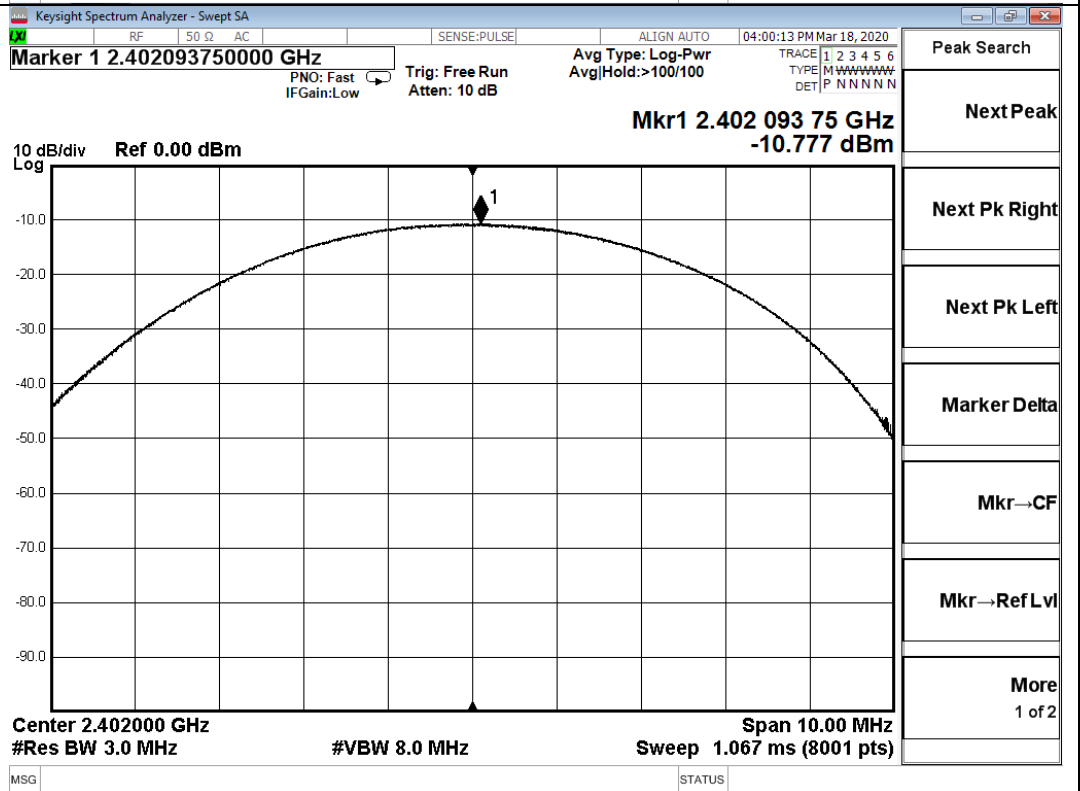
GFSK/MCH



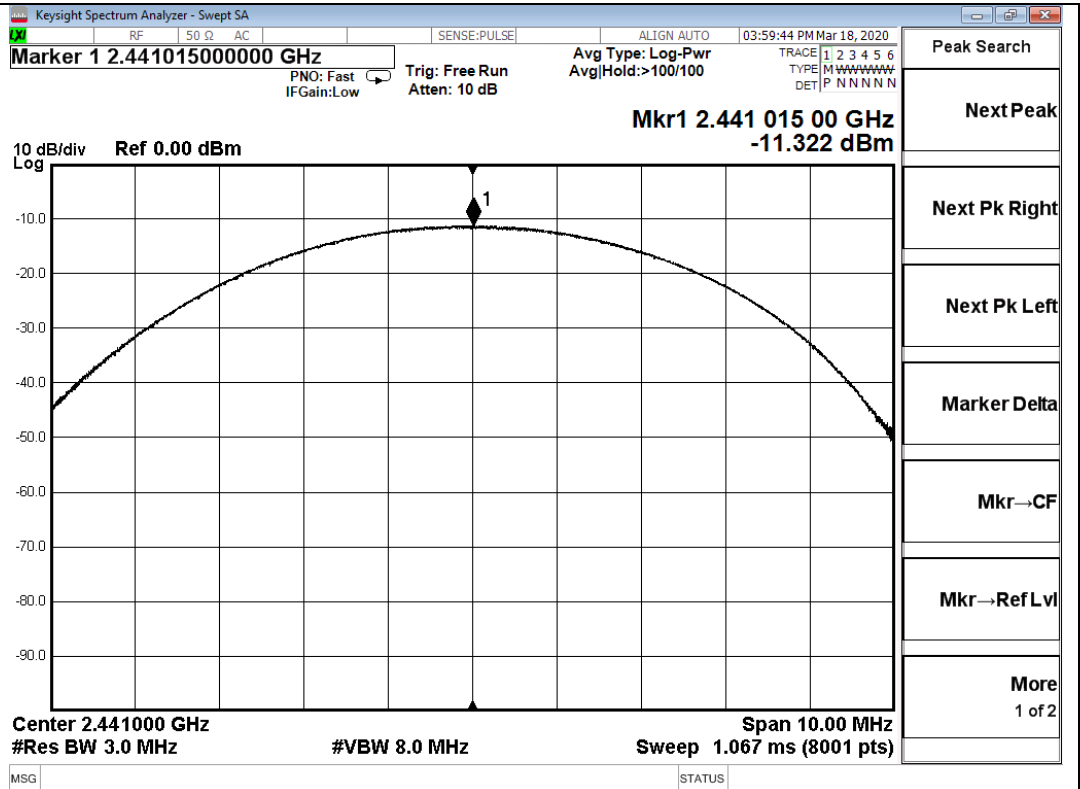
GFSK/HCH



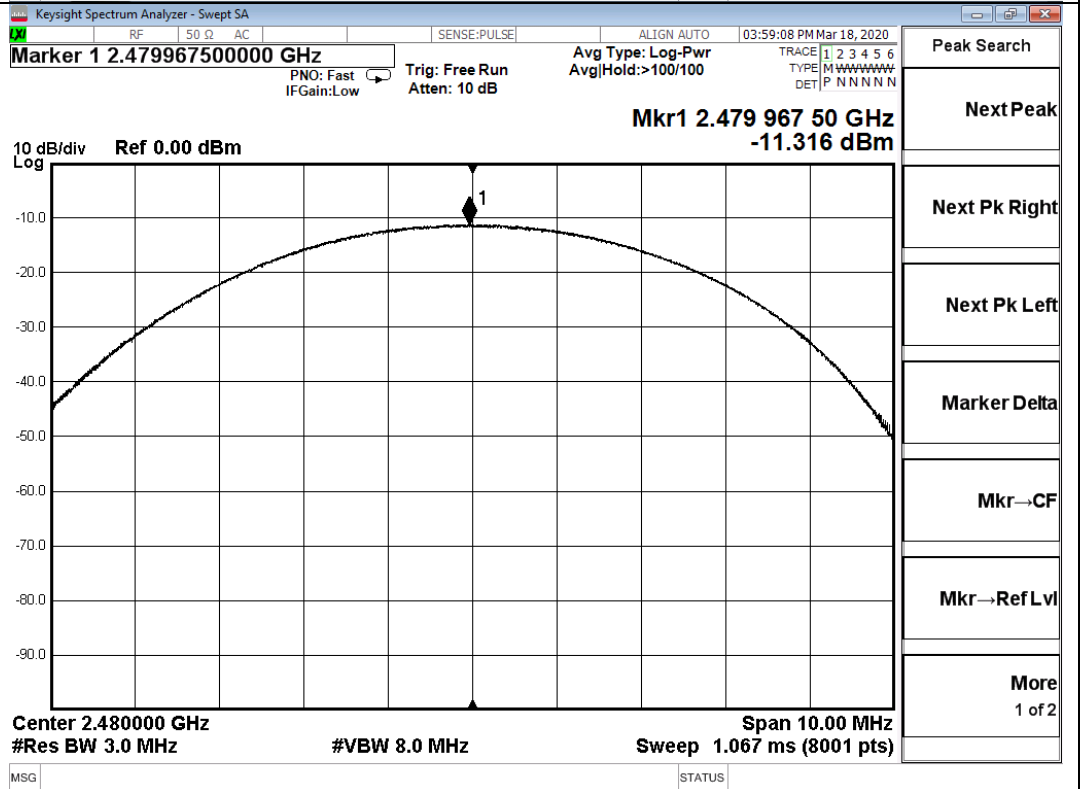
π /4DQPSK/LCH



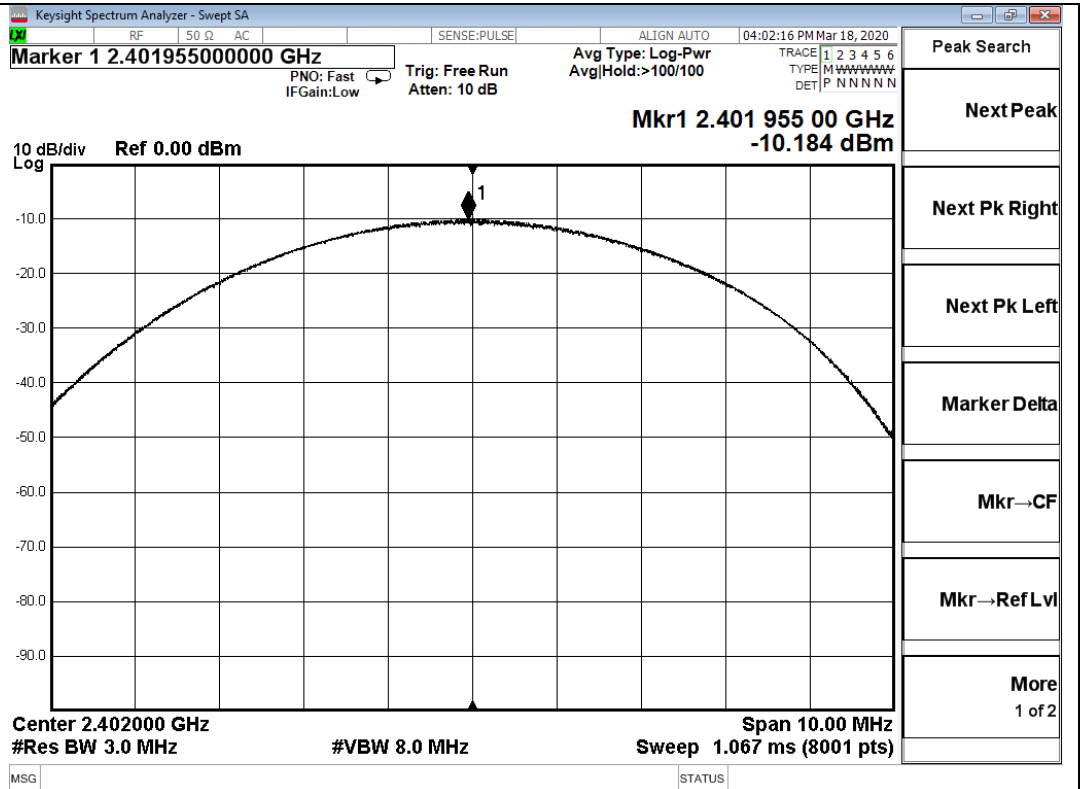
$\pi/4$ DQPSK/MCH



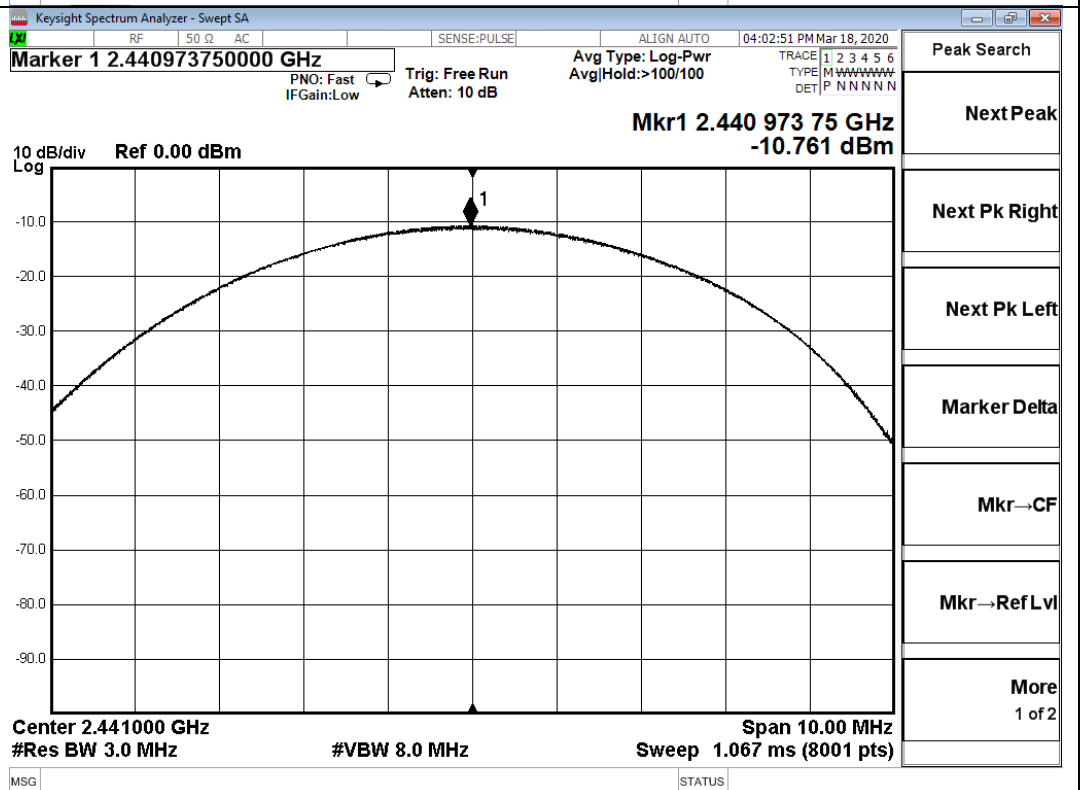
$\pi/4$ DQPSK/HCH

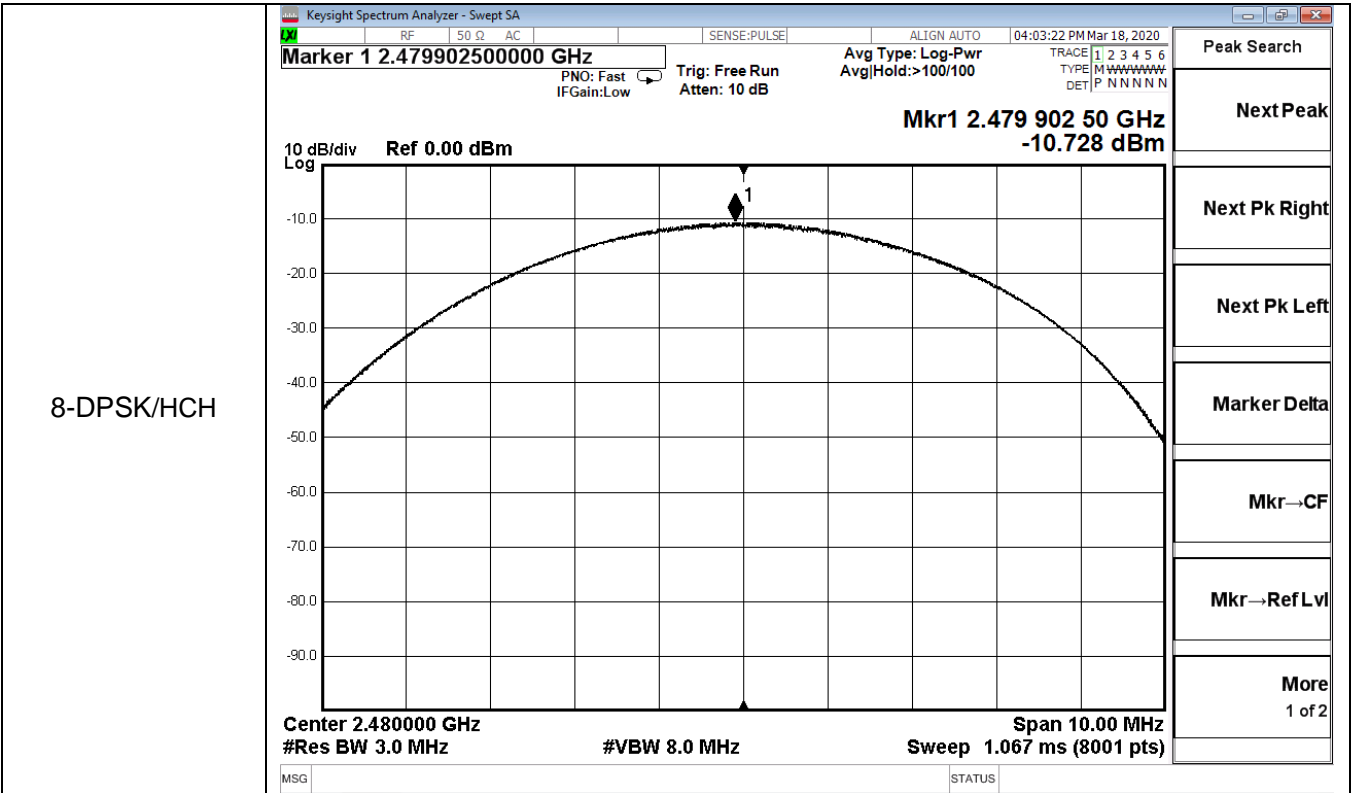


8-DPSK/LCH



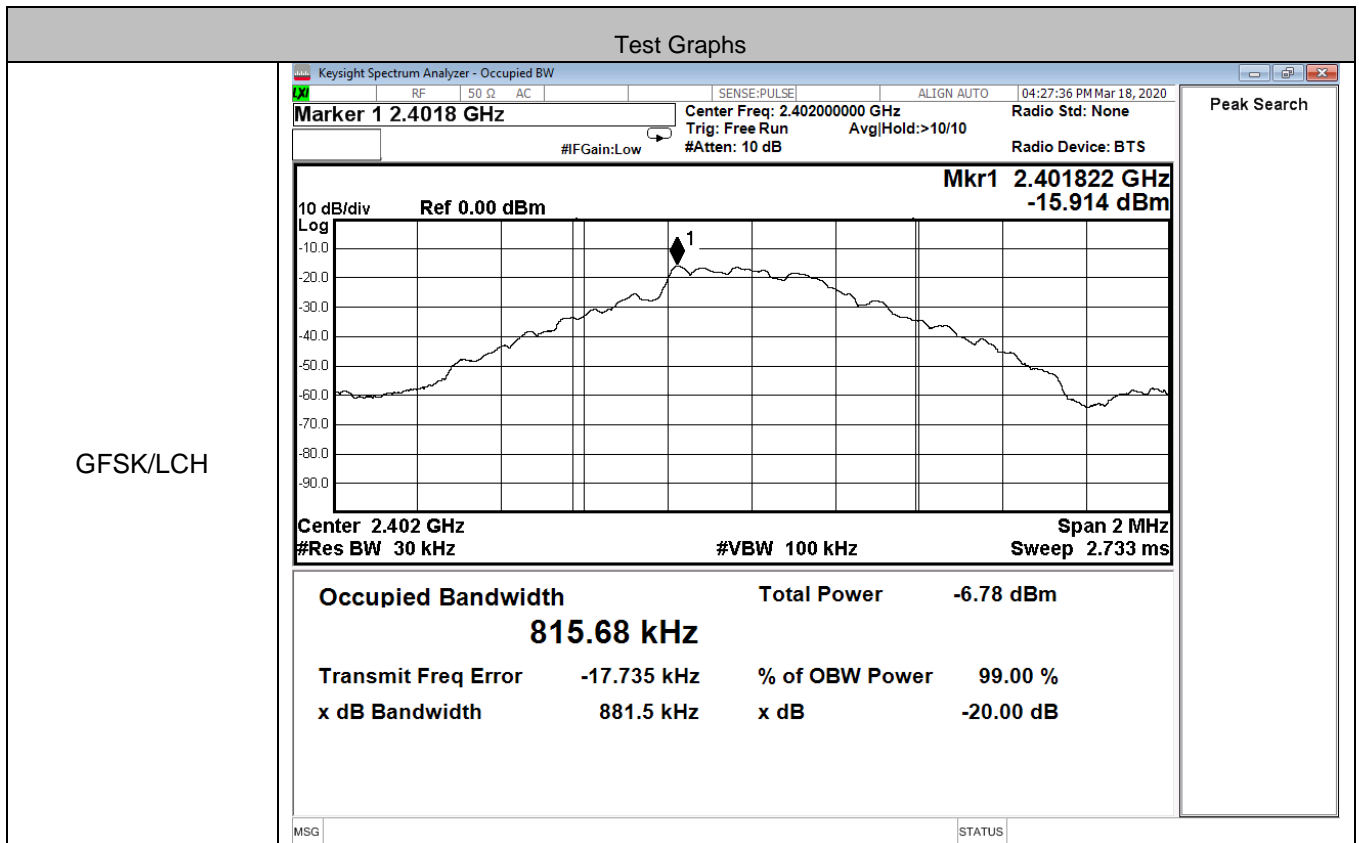
8-DPSK/MCH



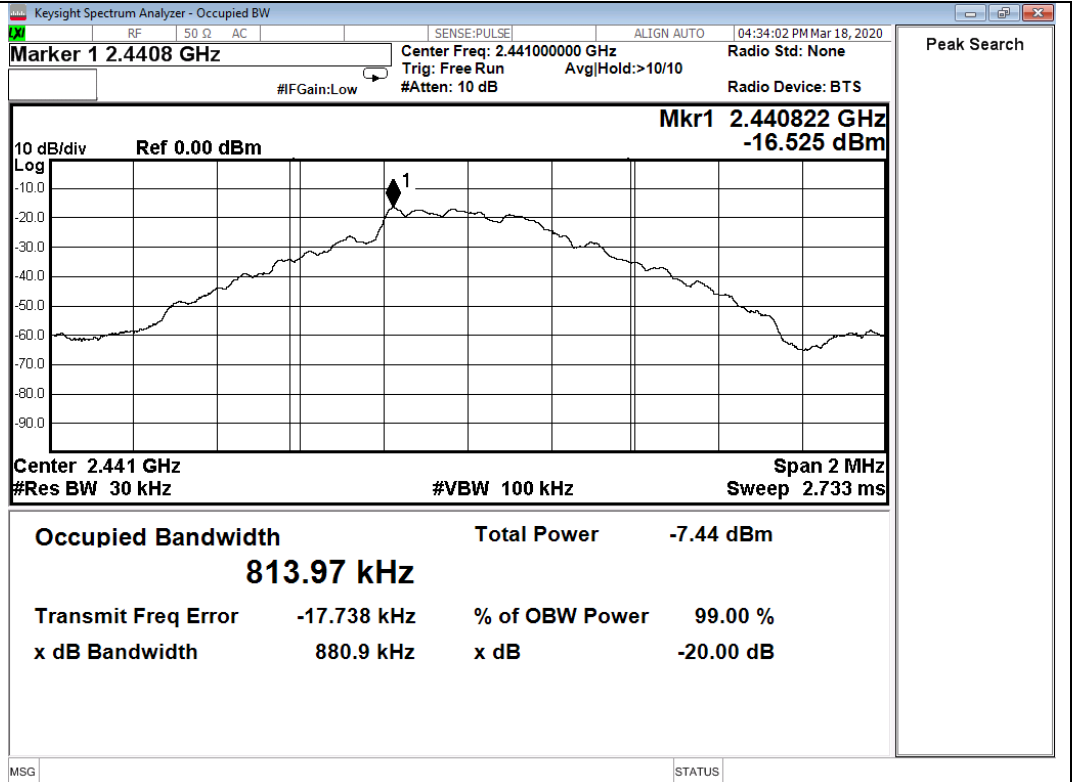


A.2 99% and 20dB Bandwidth

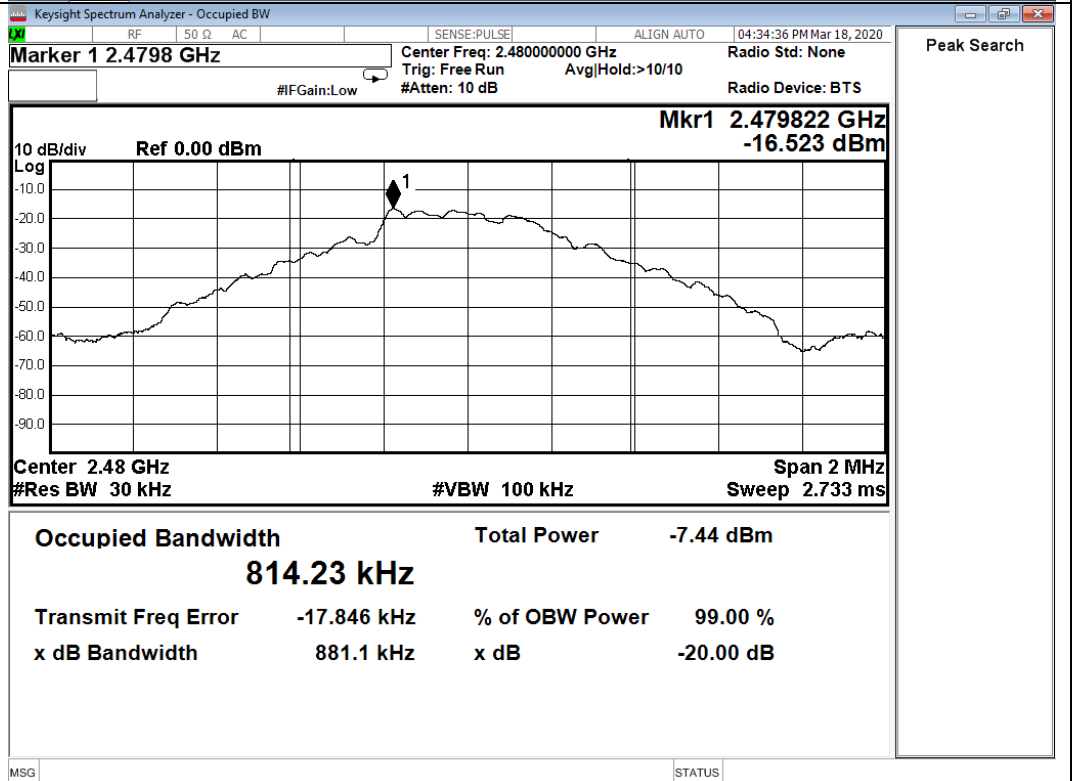
| Mode | Channel. | 99% Bandwidth [MHz] | 20dB Bandwidth [MHz] | Limit [MHz] | Verdict |
|----------|----------|---------------------|----------------------|---------------|---------|
| GFSK | LCH | 0.81568 | 0.8484 | Not Specified | PASS |
| | MCH | 0.81397 | 0.8485 | Not Specified | PASS |
| | HCH | 0.81423 | 0.8835 | Not Specified | PASS |
| π/4DQPSK | LCH | 1.1613 | 1.281 | Not Specified | PASS |
| | MCH | 1.1589 | 1.280 | Not Specified | PASS |
| | HCH | 1.1611 | 1.280 | Not Specified | PASS |
| 8-DPSK | LCH | 1.1503 | 1.267 | Not Specified | PASS |
| | MCH | 1.1502 | 1.265 | Not Specified | PASS |
| | HCH | 1.1511 | 1.253 | Not Specified | PASS |



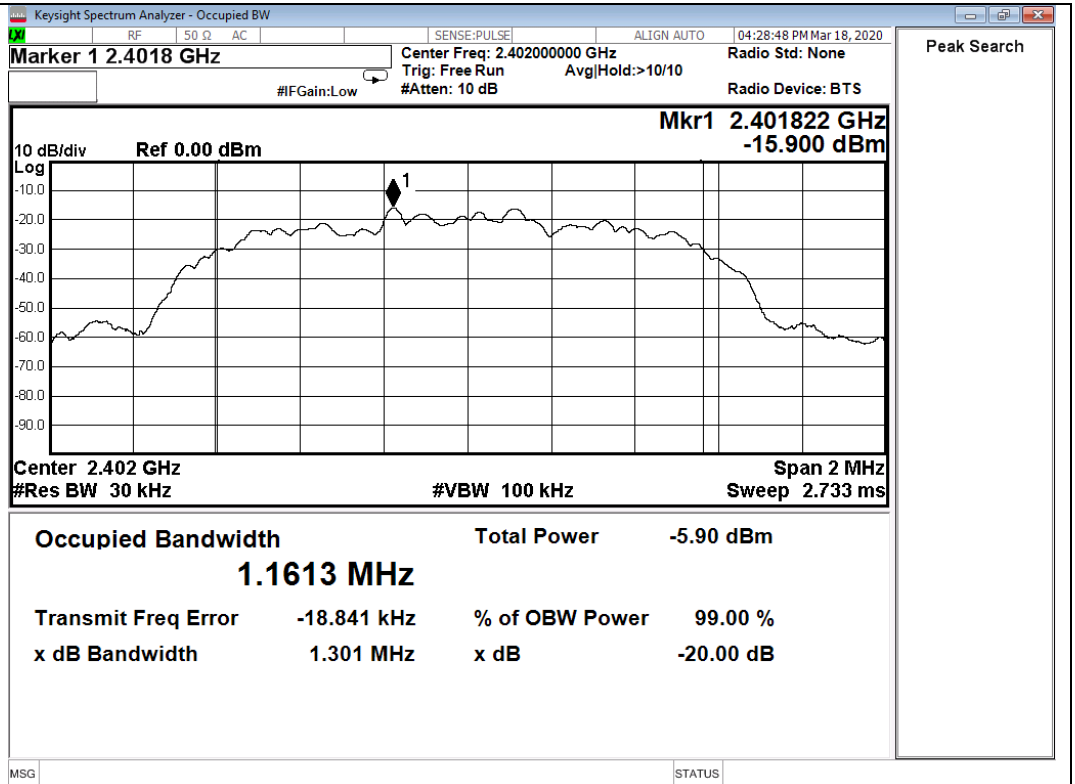
GFSK/MCH



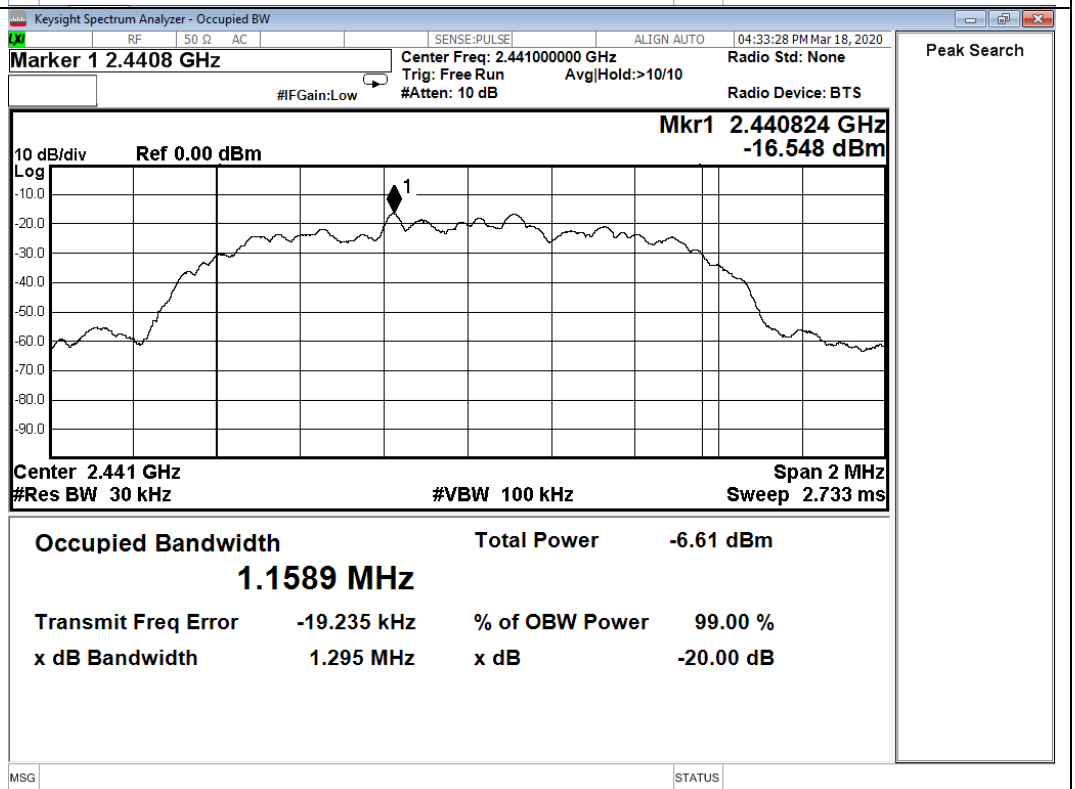
GFSK/HCH



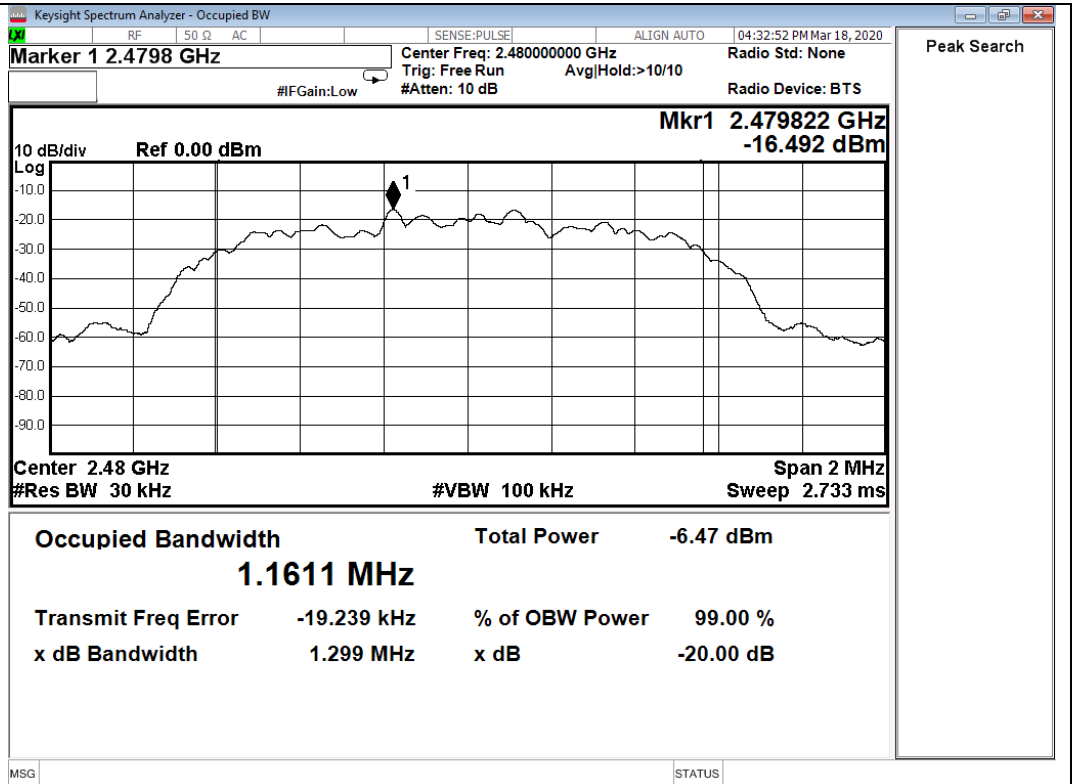
$\pi/4$ DQPSK/LCH



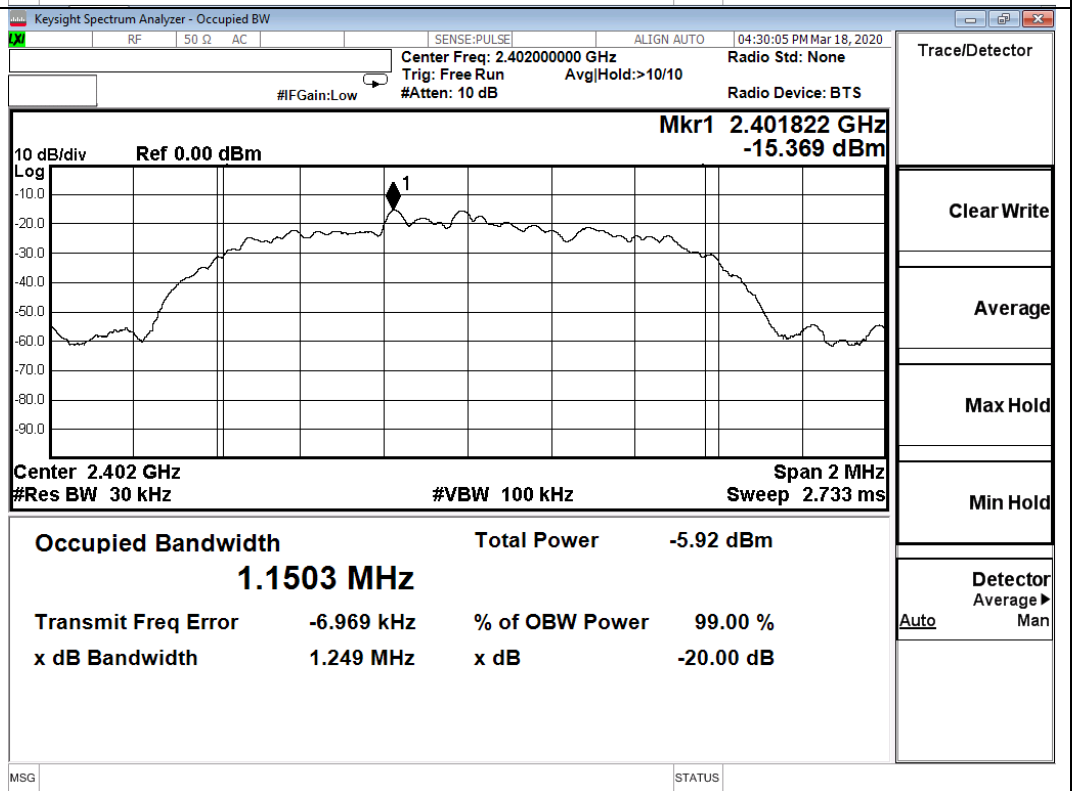
$\pi/4$ DQPSK/MCH



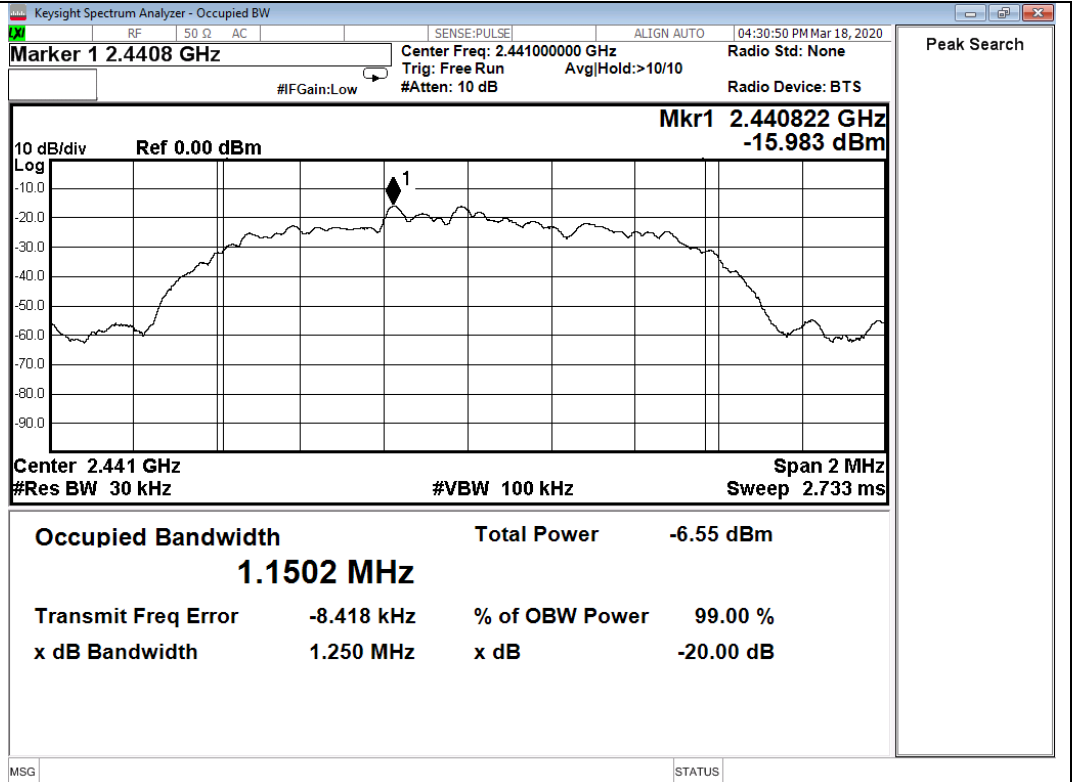
$\pi/4$ DQPSK/HCH



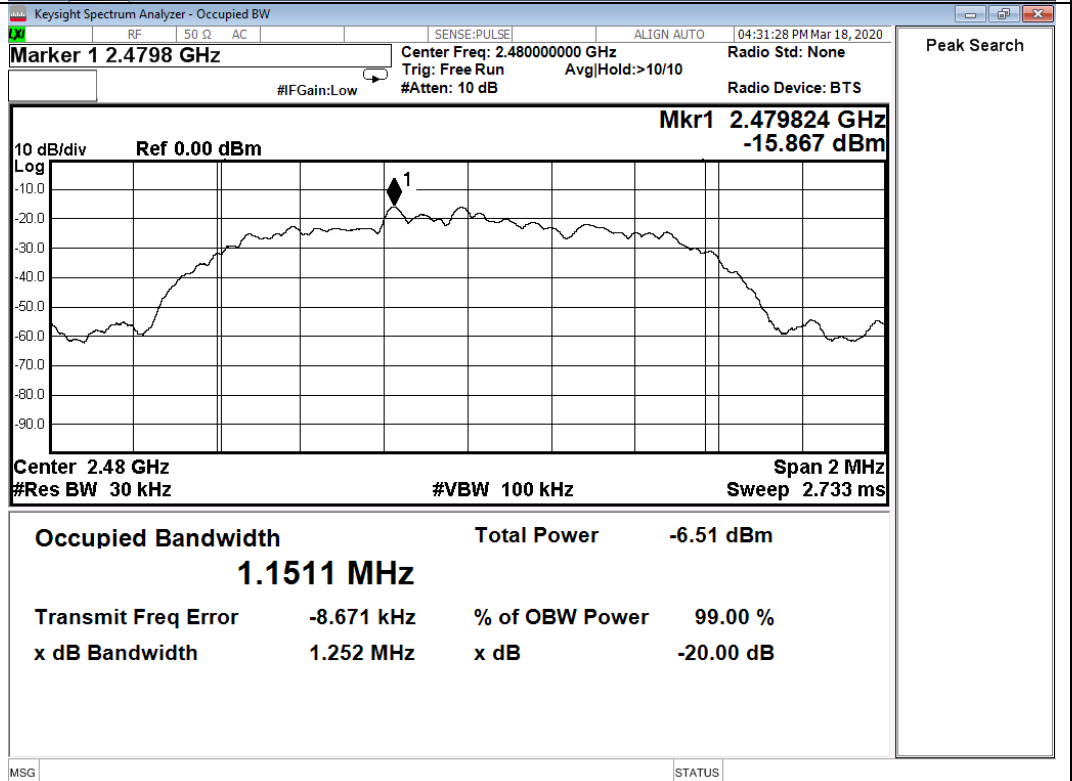
8-DPSK/LCH



8-DPSK/MCH

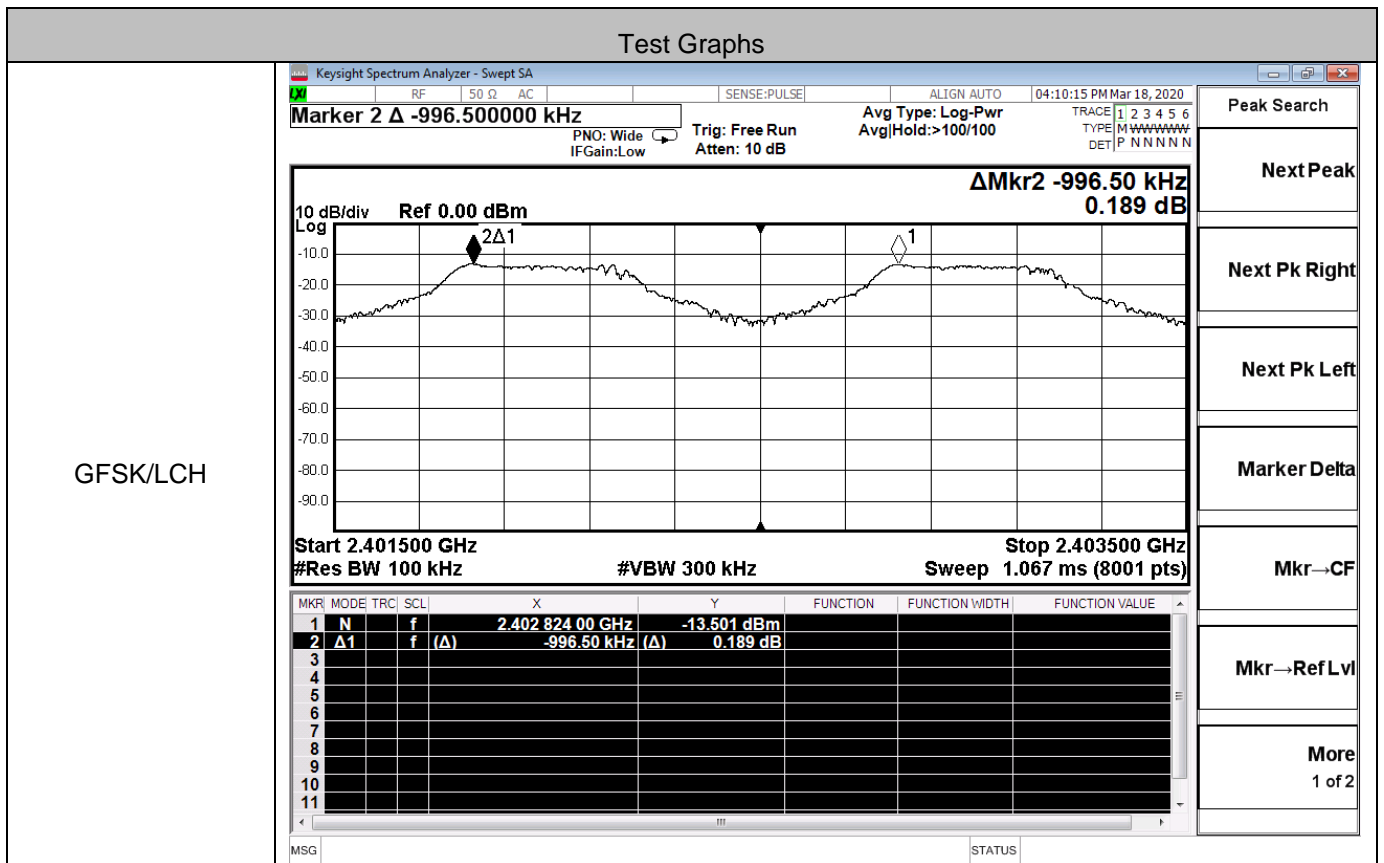


8-DPSK/HCH

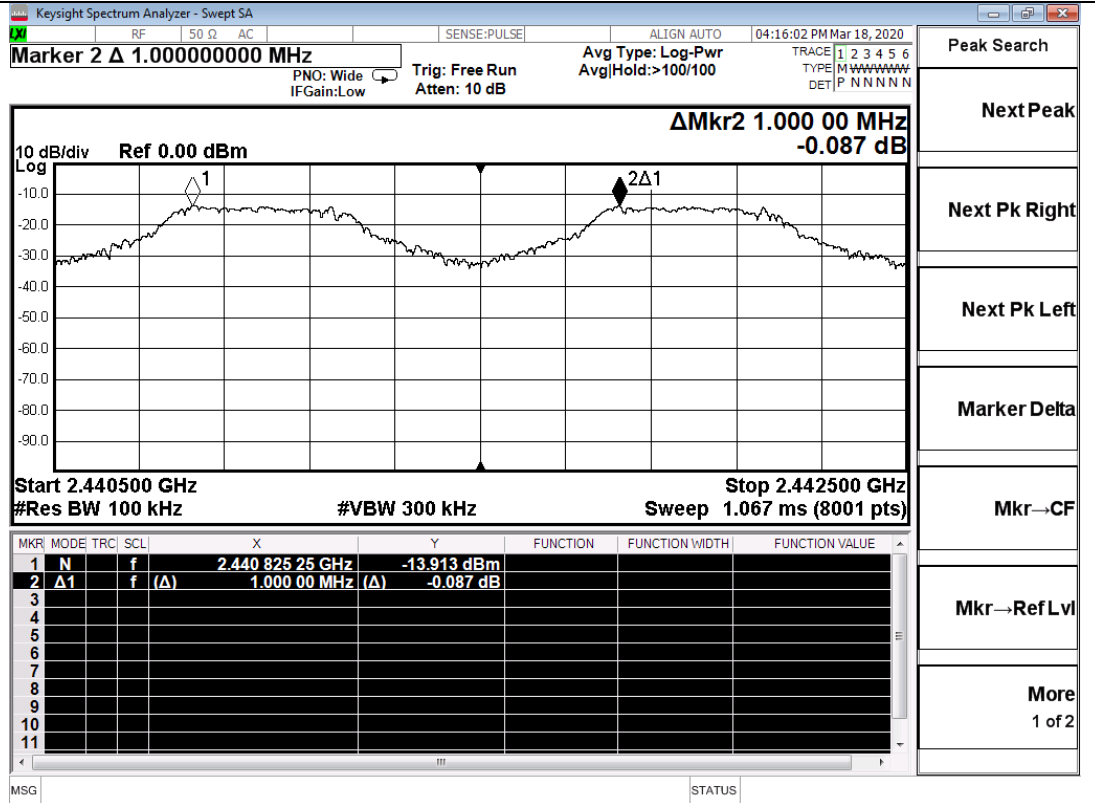


A.3 Carrier Frequency Separation

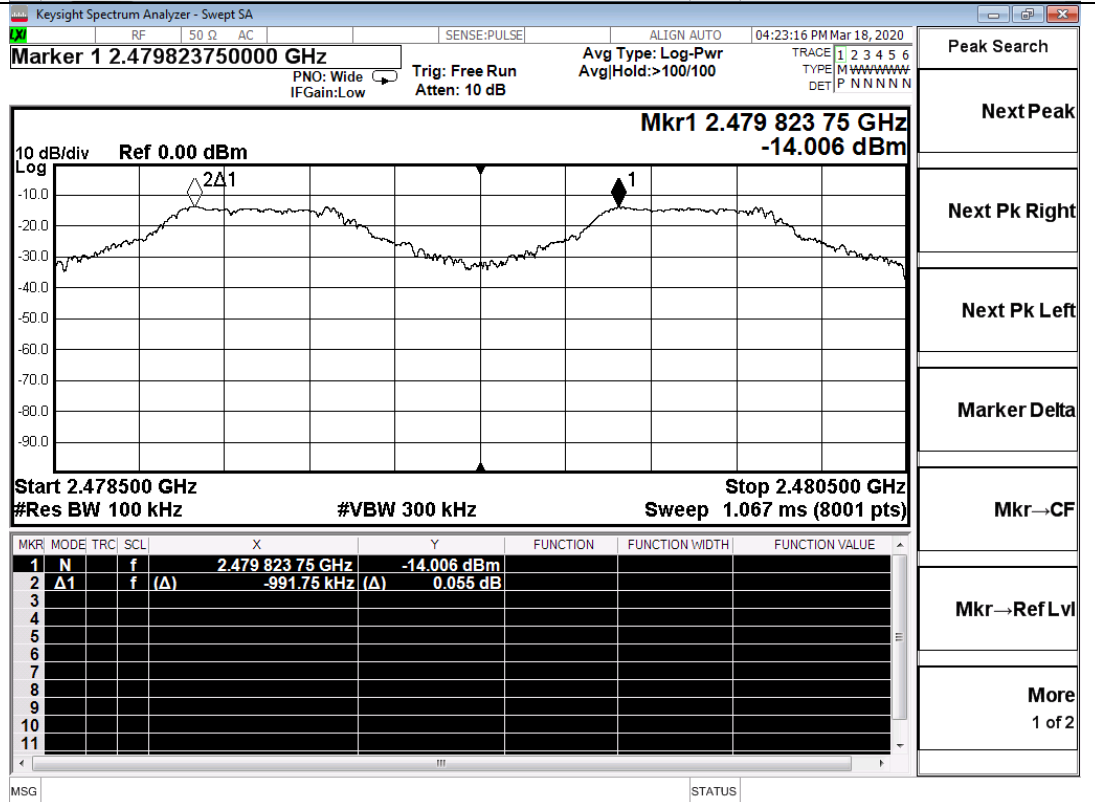
| Mode | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] 2/3*20dB Bandwidth | Verdict |
|----------|----------|------------------------------------|--------------------------------------|---------|
| GFSK | LCH | 0.997 | 0.566 | PASS |
| | MCH | 1.000 | 0.566 | PASS |
| | HCH | 0.992 | 0.589 | PASS |
| π/4DQPSK | LCH | 0.997 | 0.854 | PASS |
| | MCH | 0.980 | 0.853 | PASS |
| | HCH | 1.000 | 0.853 | PASS |
| 8-DPSK | LCH | 1.010 | 0.845 | PASS |
| | MCH | 0.995 | 0.843 | PASS |
| | HCH | 0.997 | 0.835 | PASS |



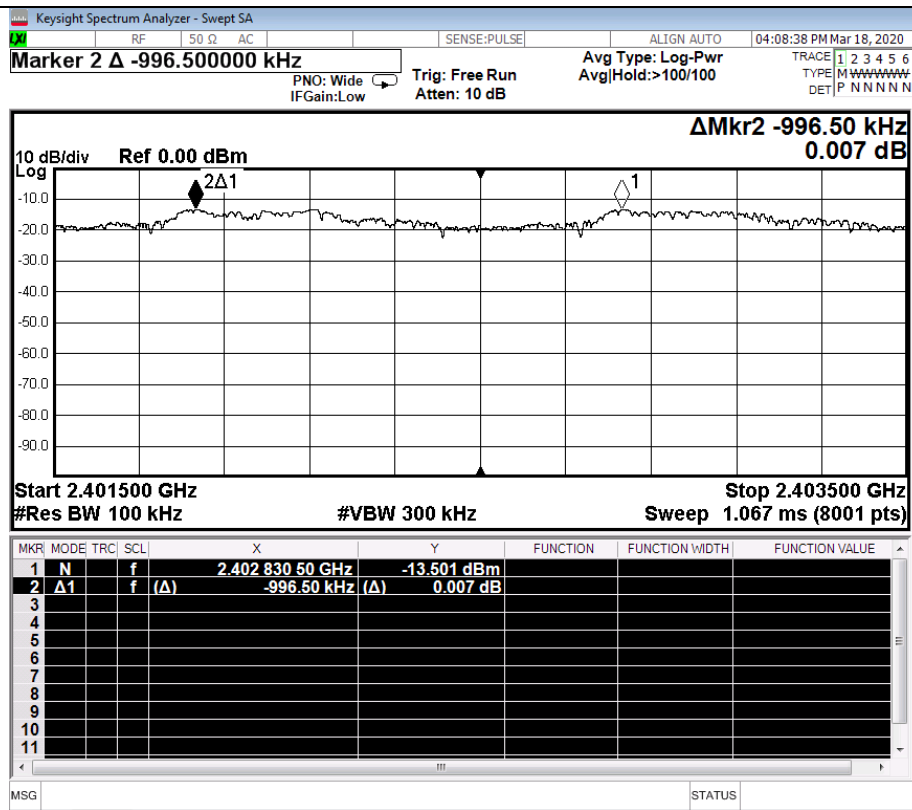
GFSK/MCH



GFSK/HCH



$\pi/4$ DQPSK/LCH



Peak Search

Next Peak

Next Pk Right

Next Pk Left

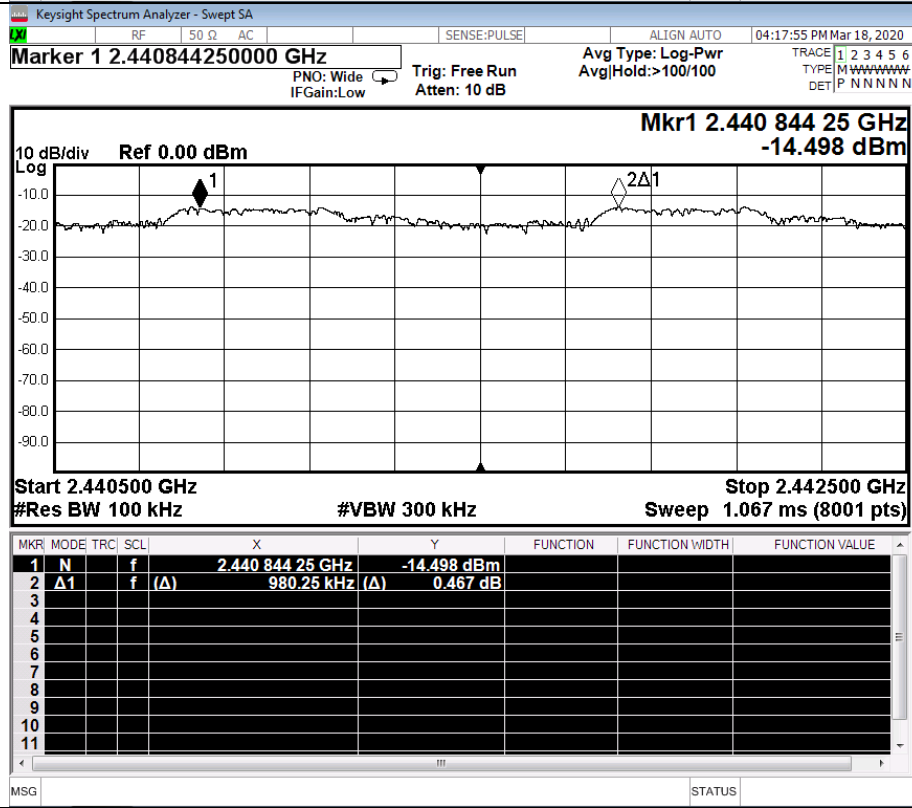
Marker Delta

Mkr→CF

Mkr→Ref Lvl

More
1 of 2

$\pi/4$ DQPSK/MCH



Peak Search

Next Peak

Next Pk Right

Next Pk Left

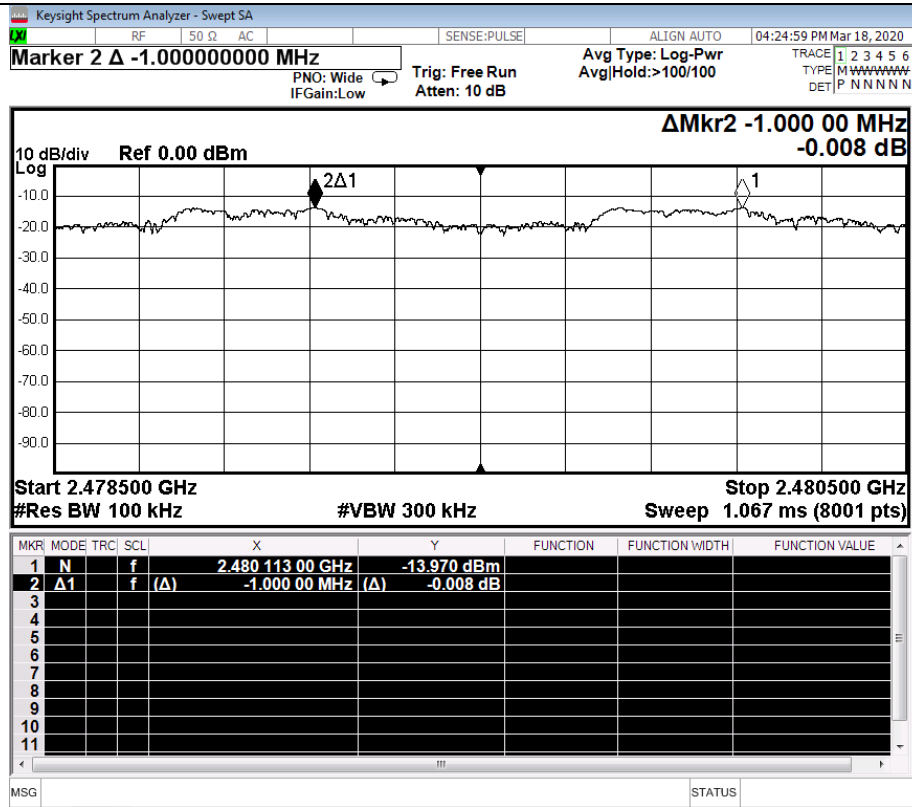
Marker Delta

Mkr→CF

Mkr→Ref Lvl

More
1 of 2

$\pi/4$ DQPSK/HCH



Peak Search

Next Peak

Next Pk Right

Next Pk Left

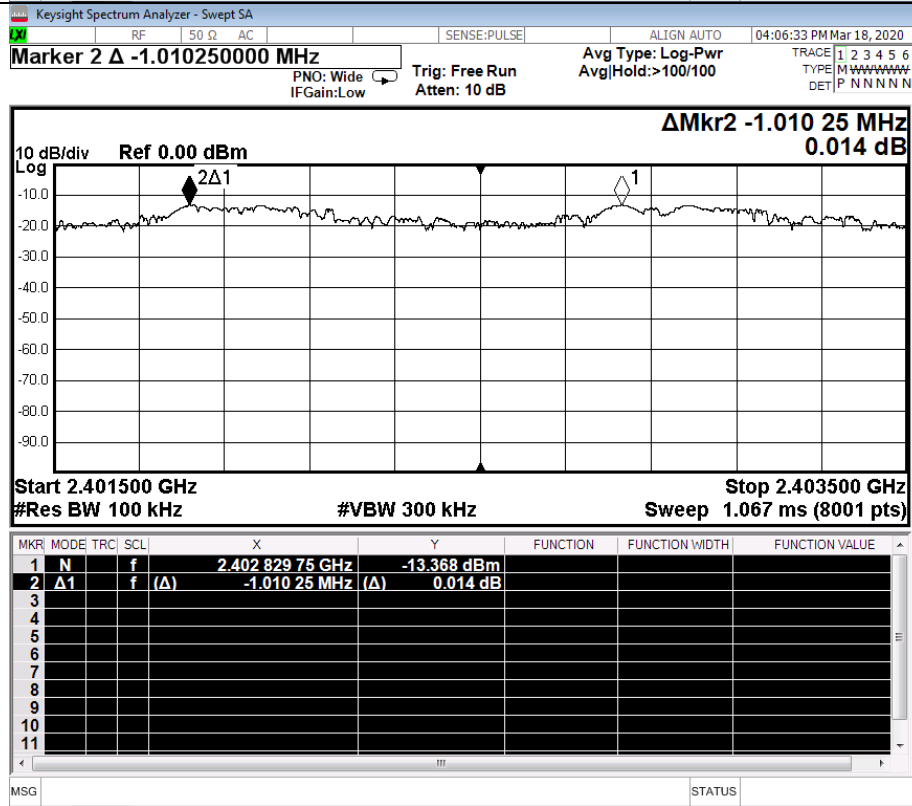
Marker Delta

Mkr→CF

Mkr→Ref Lvl

More 1 of 2

8-DPSK/LCH



Peak Search

Next Peak

Next Pk Right

Next Pk Left

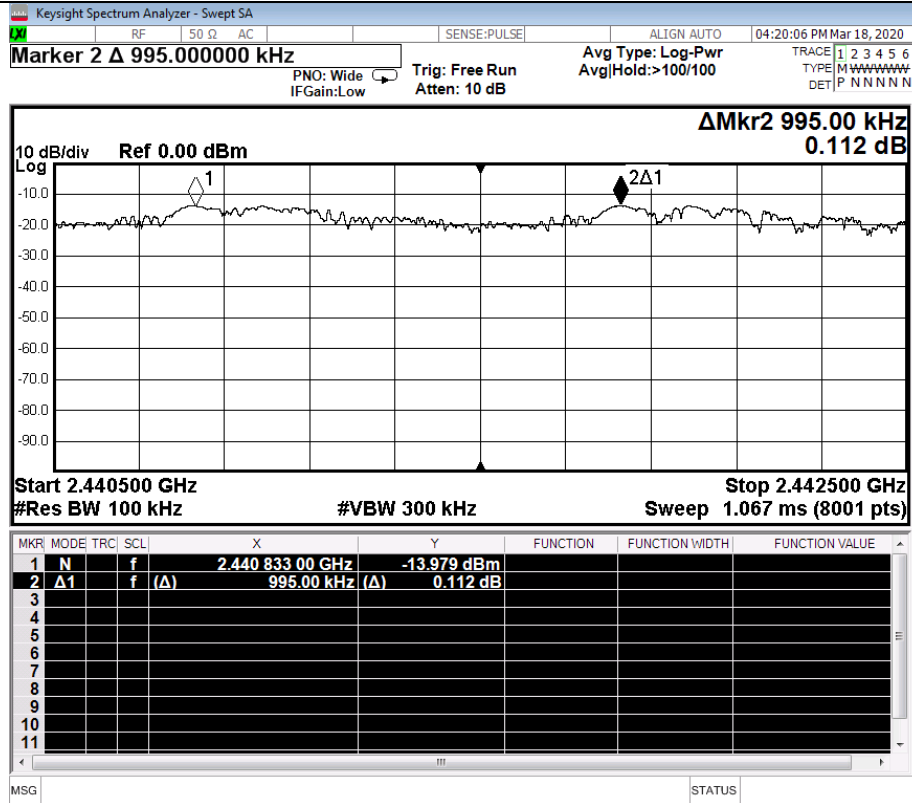
Marker Delta

Mkr→CF

Mkr→Ref Lvl

More 1 of 2

8-DPSK/MCH



Peak Search

Next Peak

Next Pk Right

Next Pk Left

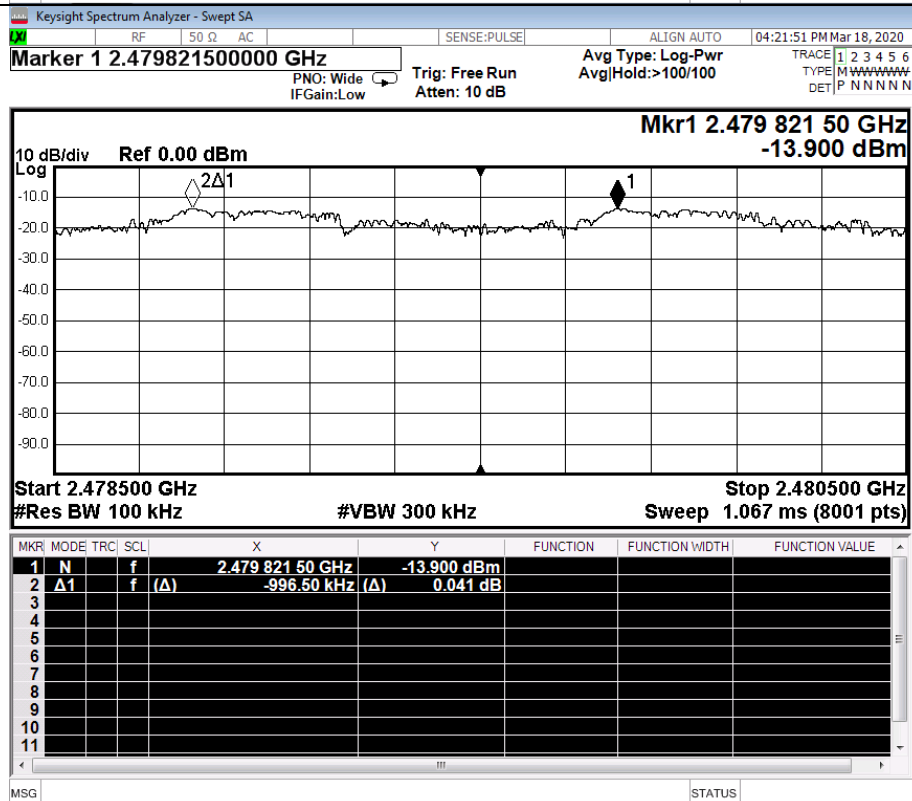
Marker Delta

Mkr→CF

Mkr→Ref Lvl

More
1 of 2

8-DPSK/HCH



Peak Search

Next Peak

Next Pk Right

Next Pk Left

Marker Delta

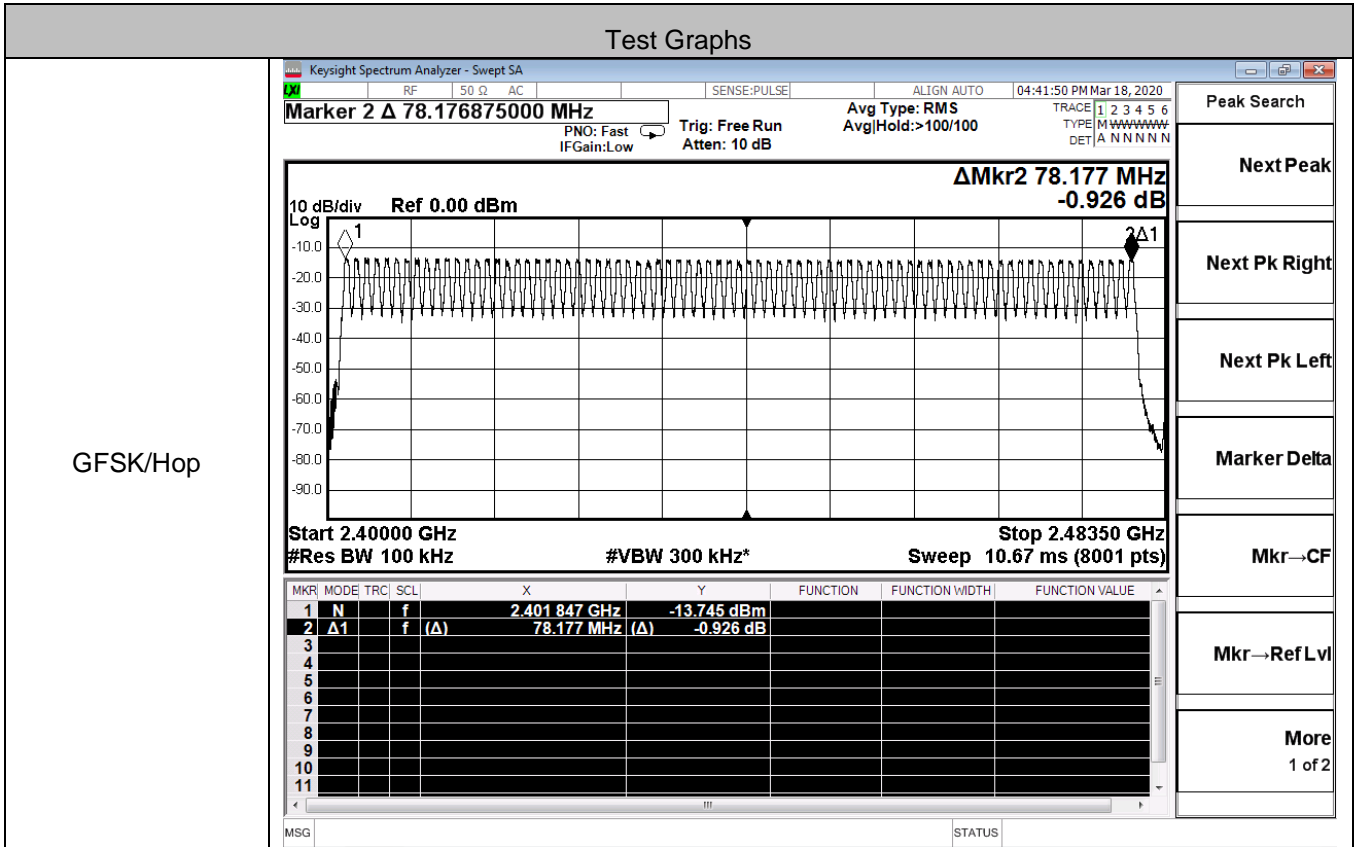
Mkr→CF

Mkr→Ref Lvl

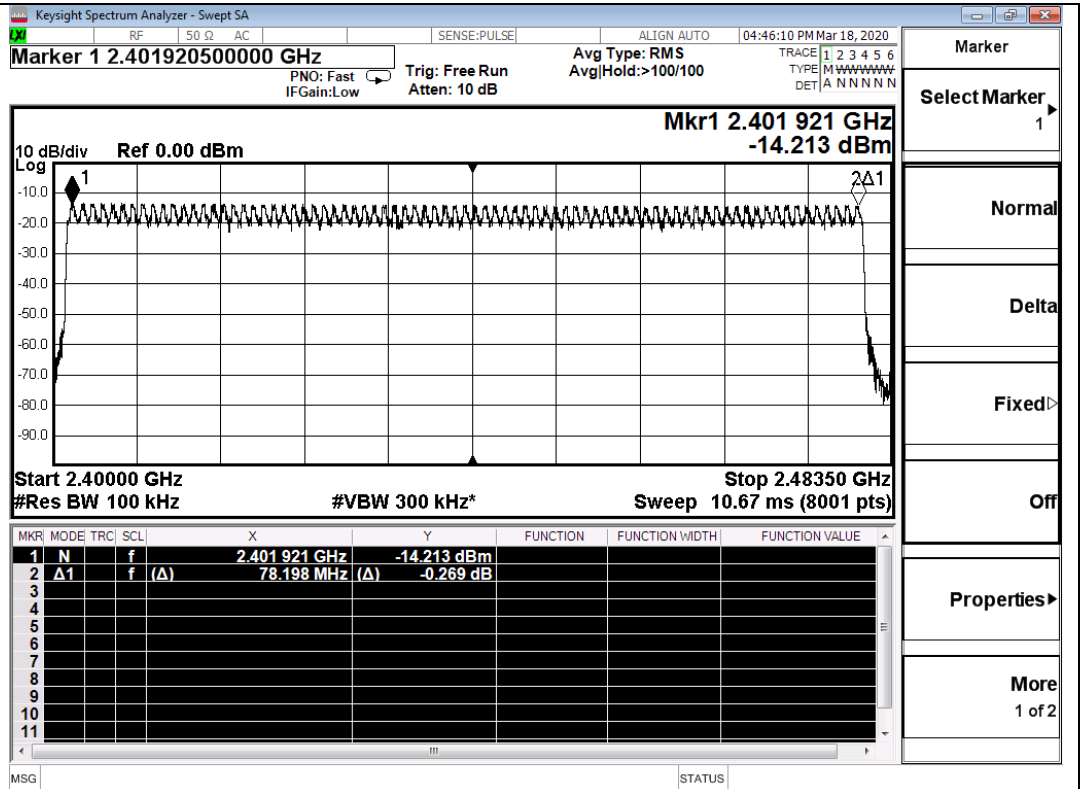
More
1 of 2

A.4 Hopping Channel Number

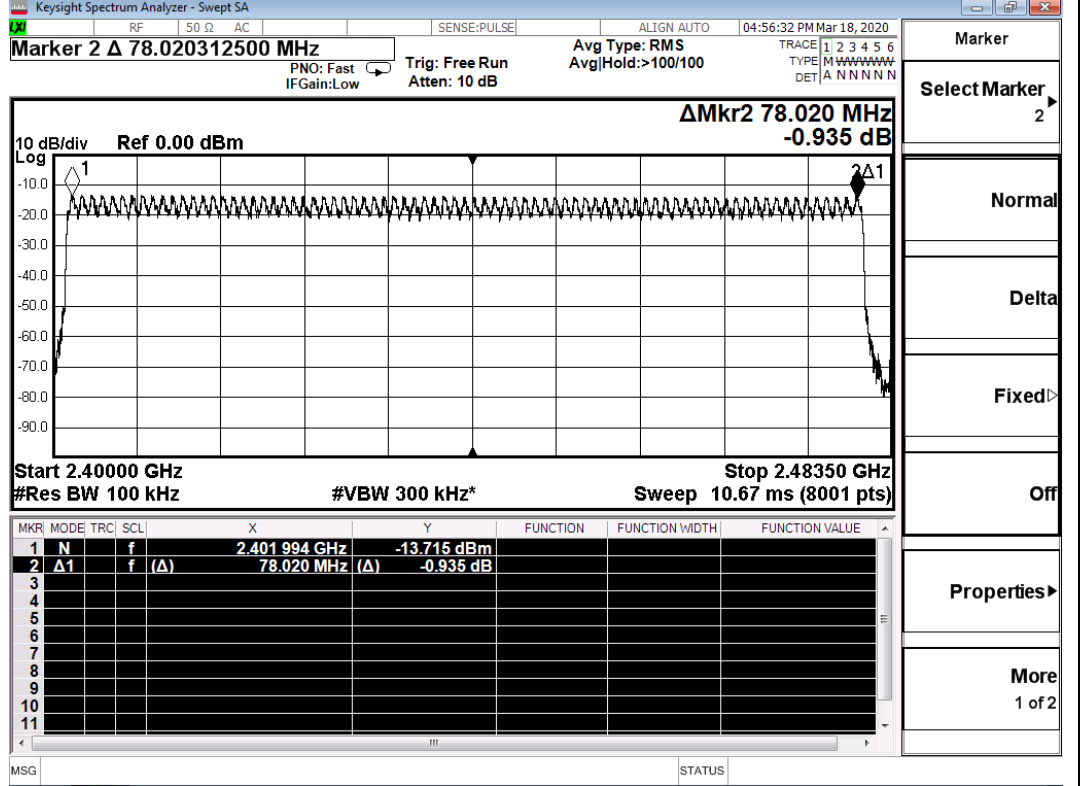
| Mode | Channel. | Number of Hopping Channel [N] | Limit [N] | Verdict |
|---------------|----------|-------------------------------|-----------|---------|
| GFSK | Hop | 79 | >=15 | PASS |
| $\pi/4$ DQPSK | Hop | 79 | >=15 | PASS |
| 8-DPSK | Hop | 79 | >=15 | PASS |



$\pi/4$ DQPSK/Hop

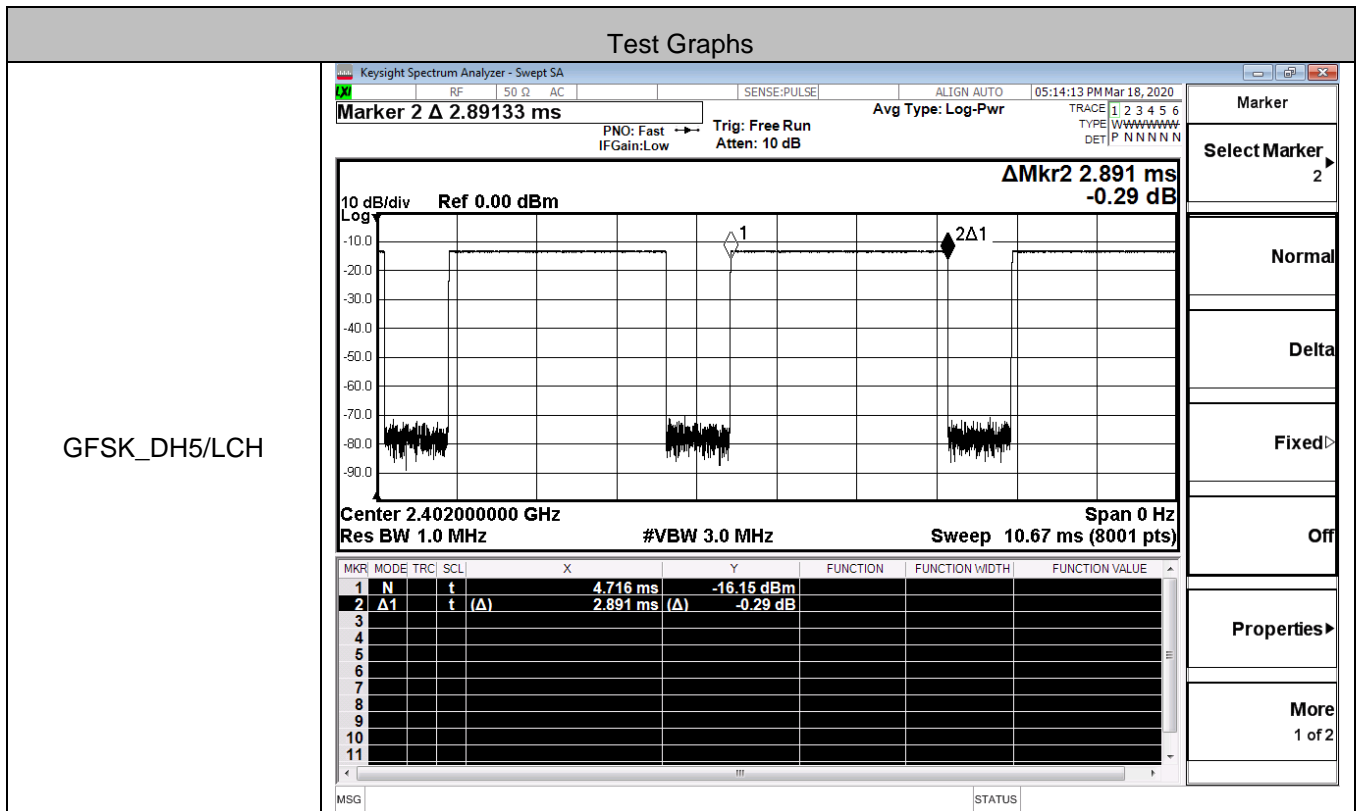


8-DPSK/Hop

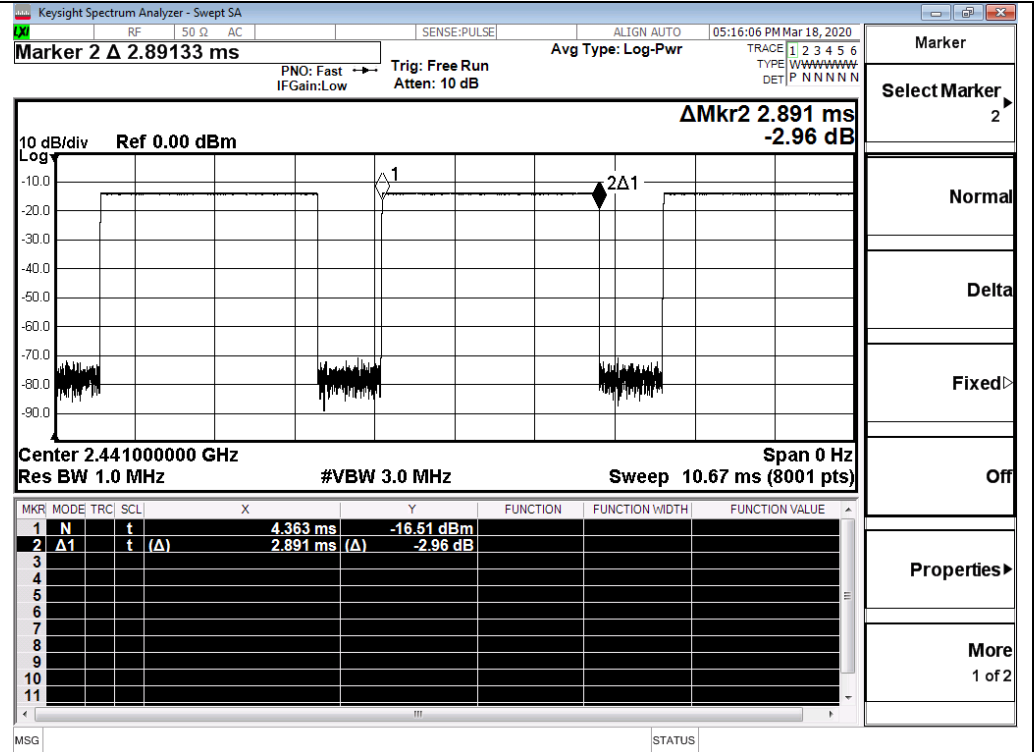


A.5 Dwell Time

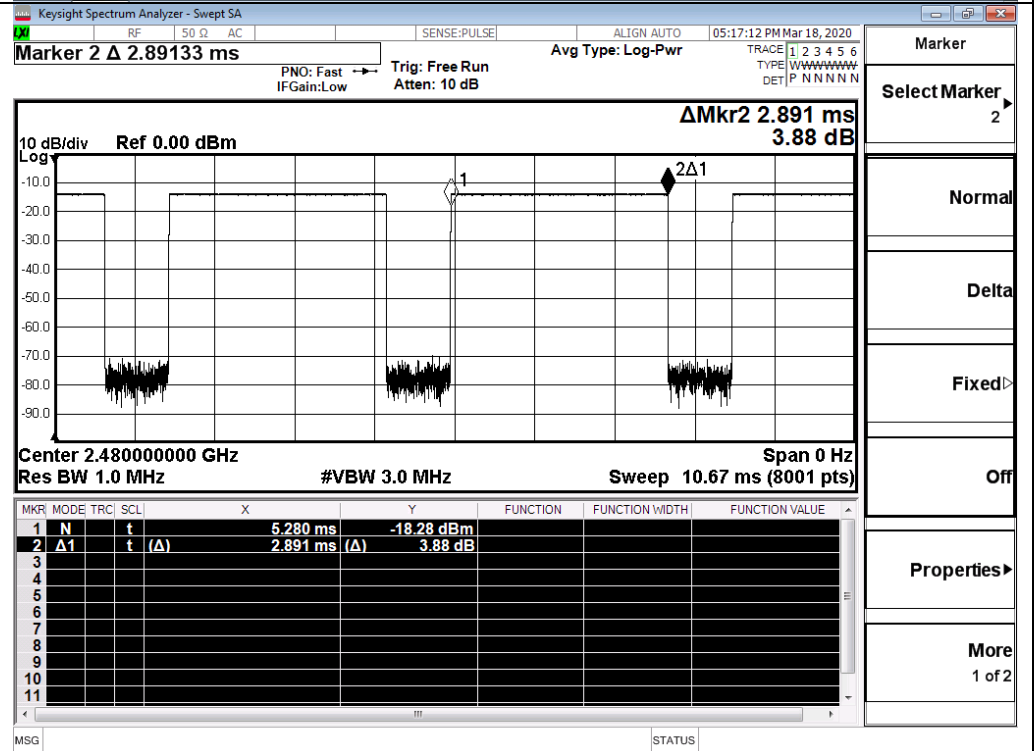
| Mode | Packet | Channel | Burst Width [ms/hop/ch] | Total Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|----------|--------|---------|-------------------------|--------------------|---------------|-----------|---------|
| GFSK | DH5 | LCH | 2.89 | 106.7 | 0.308 | 0.4 | PASS |
| | DH5 | MCH | 2.89 | 106.7 | 0.308 | 0.4 | PASS |
| | DH5 | HCH | 2.89 | 106.7 | 0.308 | 0.4 | PASS |
| π/4DQPSK | 2DH5 | LCH | 2.90 | 106.7 | 0.309 | 0.4 | PASS |
| | 2DH5 | MCH | 2.90 | 106.7 | 0.309 | 0.4 | PASS |
| | 2DH5 | HCH | 2.90 | 106.7 | 0.309 | 0.4 | PASS |
| 8-DPSK | 3DH5 | LCH | 2.90 | 106.7 | 0.309 | 0.4 | PASS |
| | 3DH5 | MCH | 2.90 | 106.7 | 0.309 | 0.4 | PASS |
| | 3DH5 | HCH | 2.90 | 106.7 | 0.309 | 0.4 | PASS |



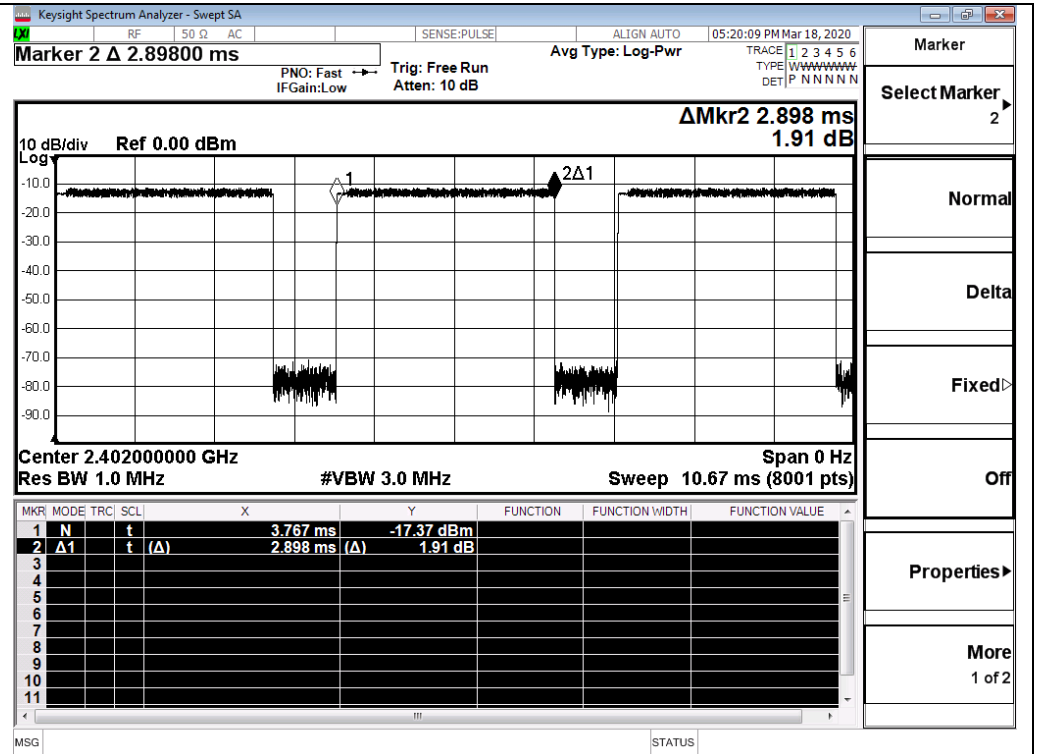
GFSK_DH5/MCH



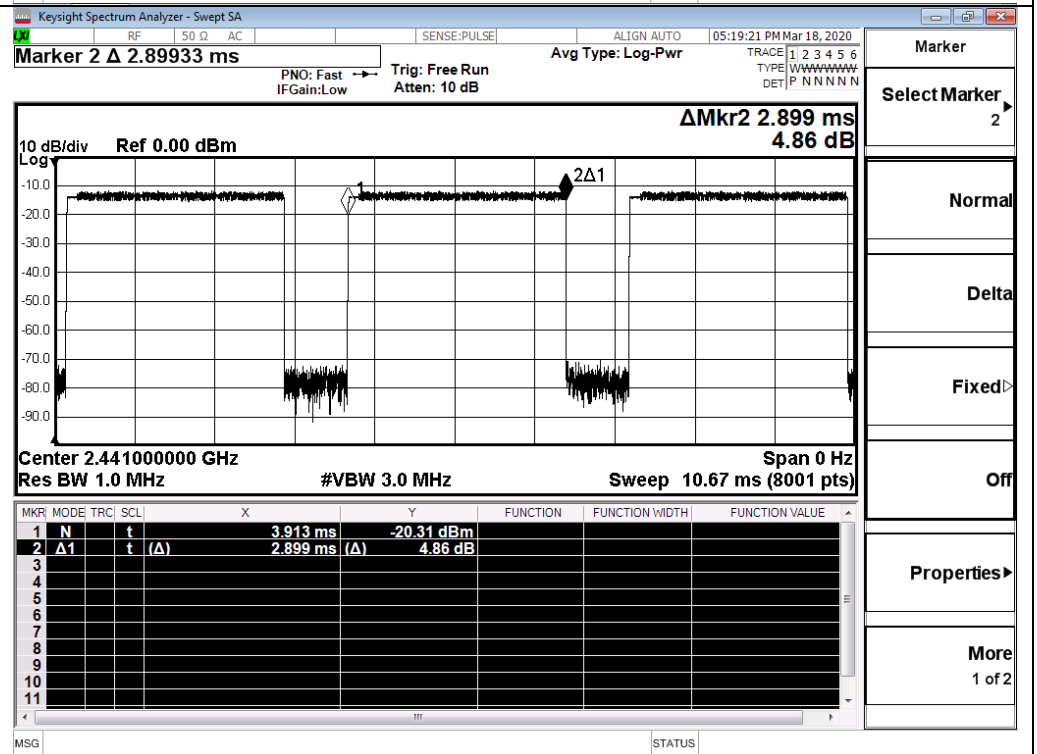
GFSK_DH5/HCH



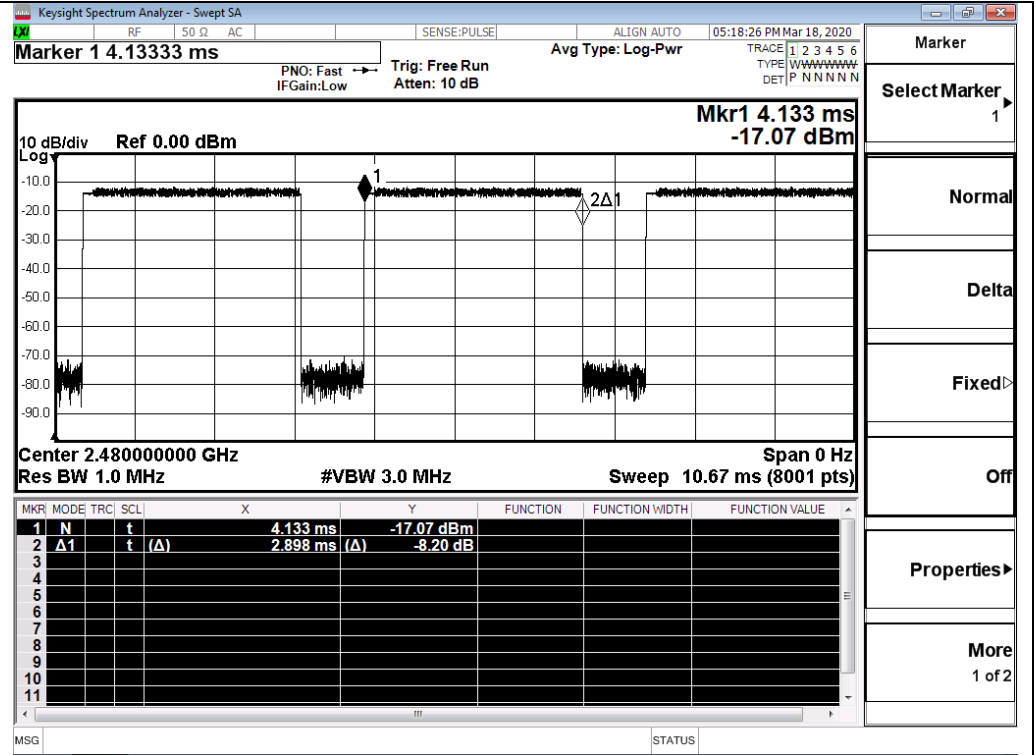
$\pi/4$ DQPSK
_2DH5/LCH



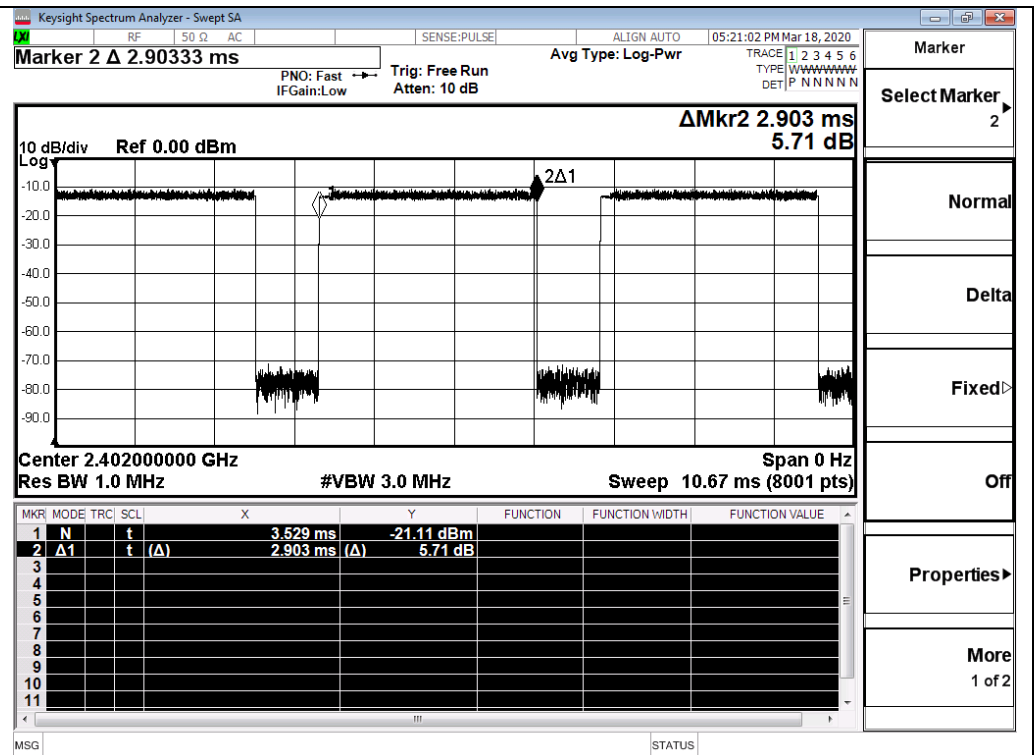
$\pi/4$ DQPSK
_2DH5/MCH



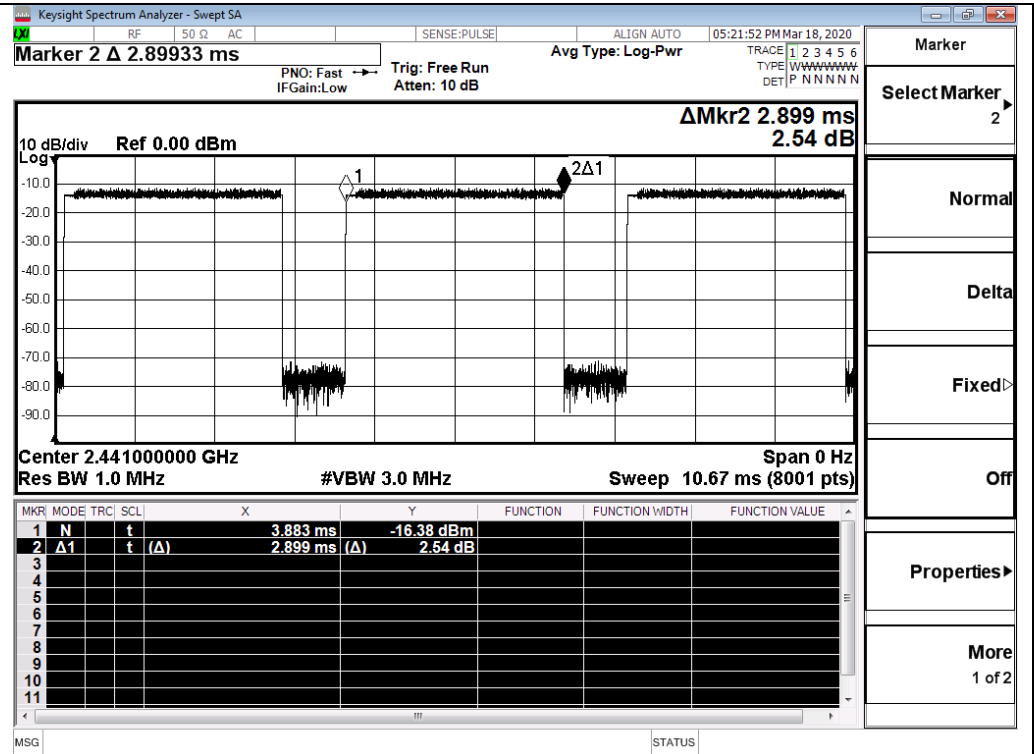
$\pi/4$ DQPSK
_2DH5/HCH



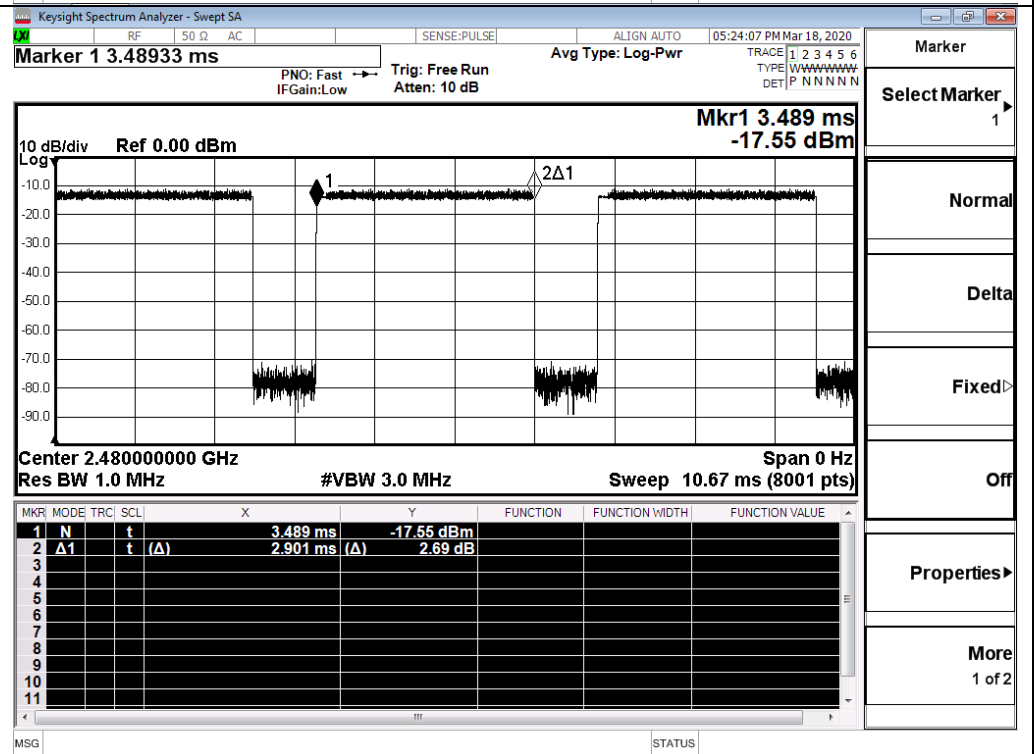
8-DPSK_3DH5/LCH



8-DPSK_3DH5/MCH



8-DPSK_3DH5/HCH

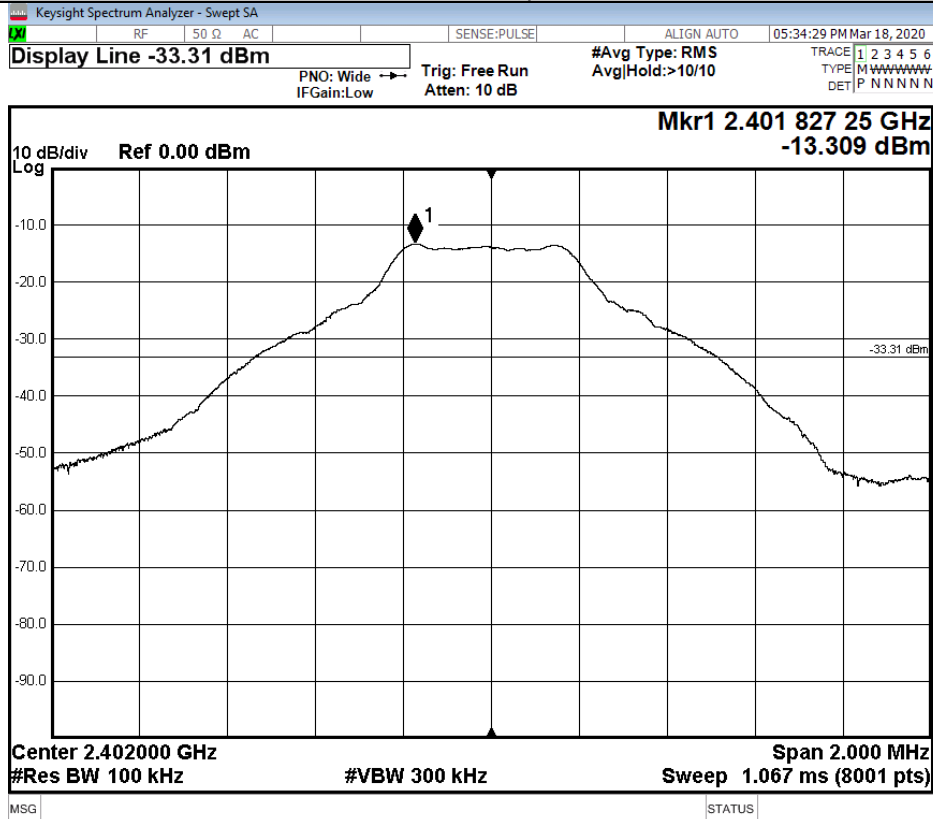


A.6 RF Conducted Spurious Emissions

| Mode | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| GFSK | LCH | -13.309 | -51.301 | -33.31 | PASS |
| | MCH | -13.928 | -52.860 | -33.93 | PASS |
| | HCH | -13.921 | -50.829 | -33.92 | PASS |
| $\pi/4$ DQPSK | LCH | -13.494 | -53.005 | -33.49 | PASS |
| | MCH | -14.091 | -52.972 | -34.09 | PASS |
| | HCH | -14.062 | -50.939 | -34.06 | PASS |
| 8-DPSK | LCH | -13.400 | -52.384 | -33.40 | PASS |
| | MCH | -13.978 | -56.602 | -33.98 | PASS |
| | HCH | -13.965 | -52.396 | -33.97 | PASS |

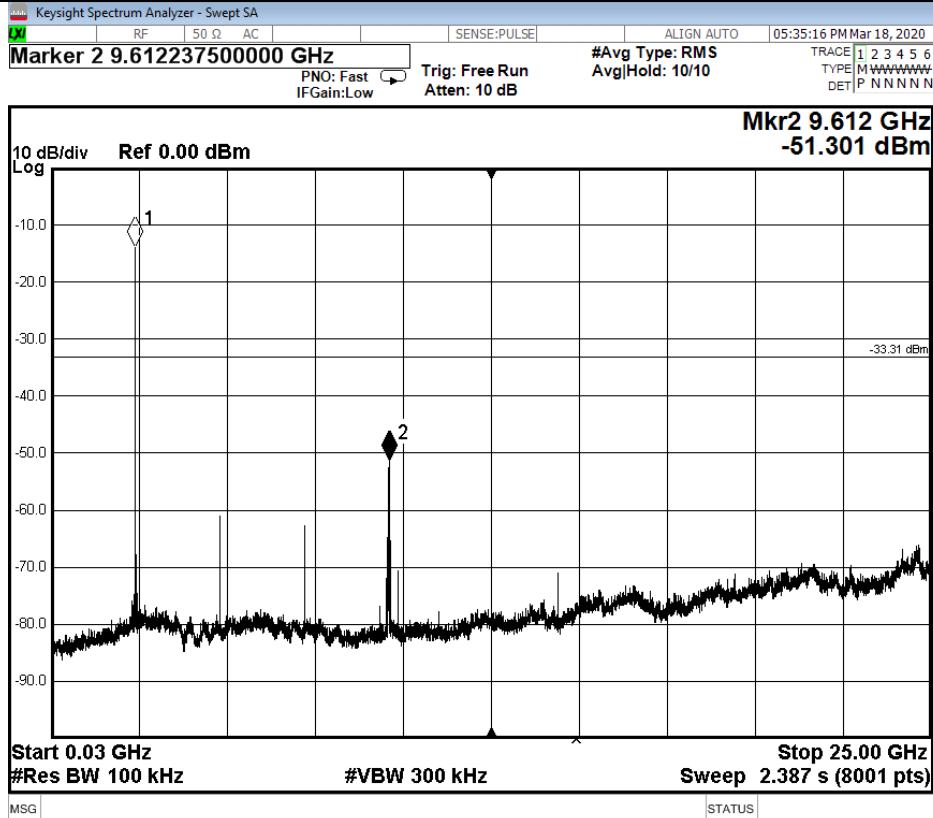
GFSK_LCH_Graphs

Pref



- Display
- Annotation
- Title
- Graticule On Off
- Display Line -33.31 dBm On Off
- System Display Settings

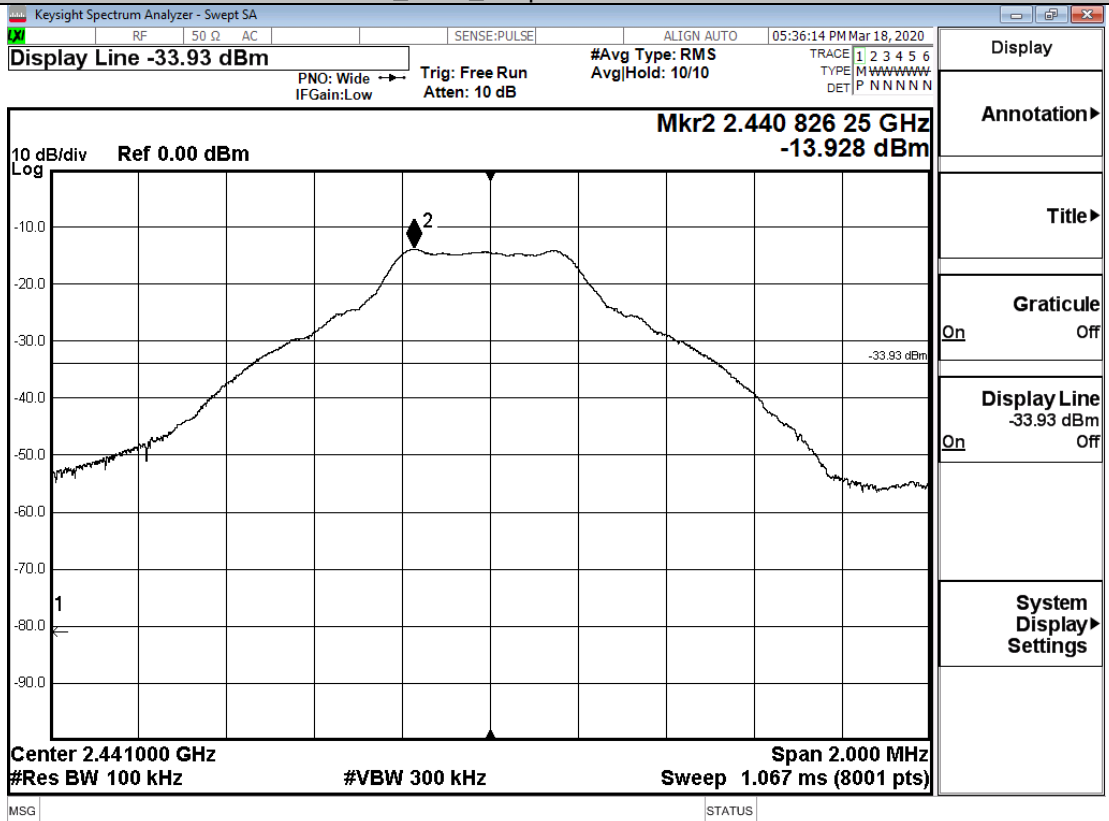
Puw



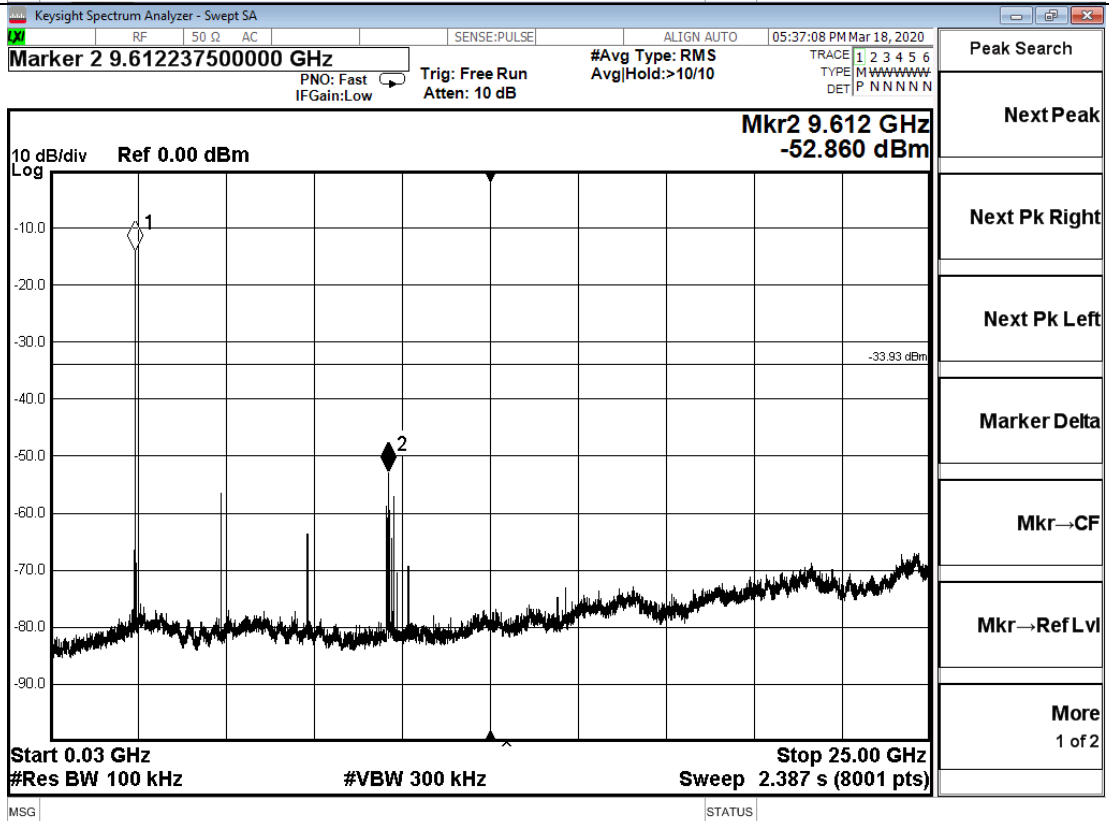
- Peak Search
- Next Peak
- Next Pk Right
- Next Pk Left
- Marker Delta
- Mkr→CF
- Mkr→Ref Lvl
- More 1 of 2

GFSK_MCH_Graphs

Pref

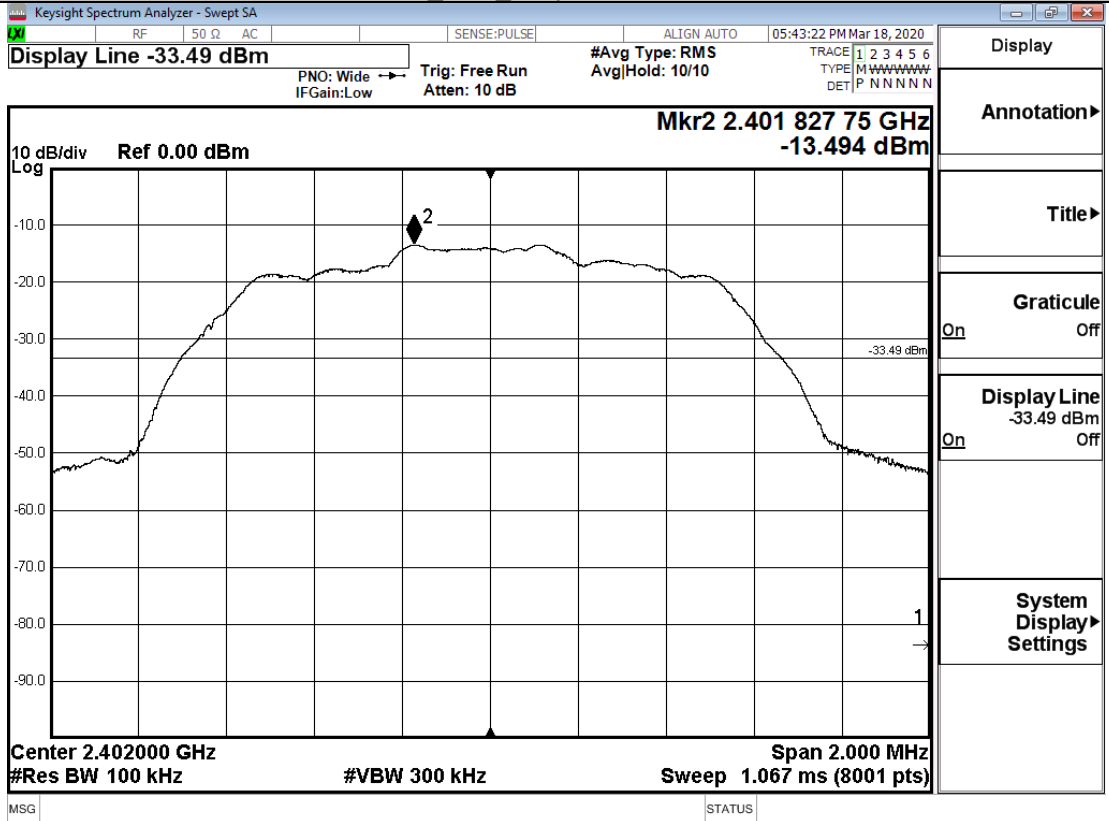


Puw

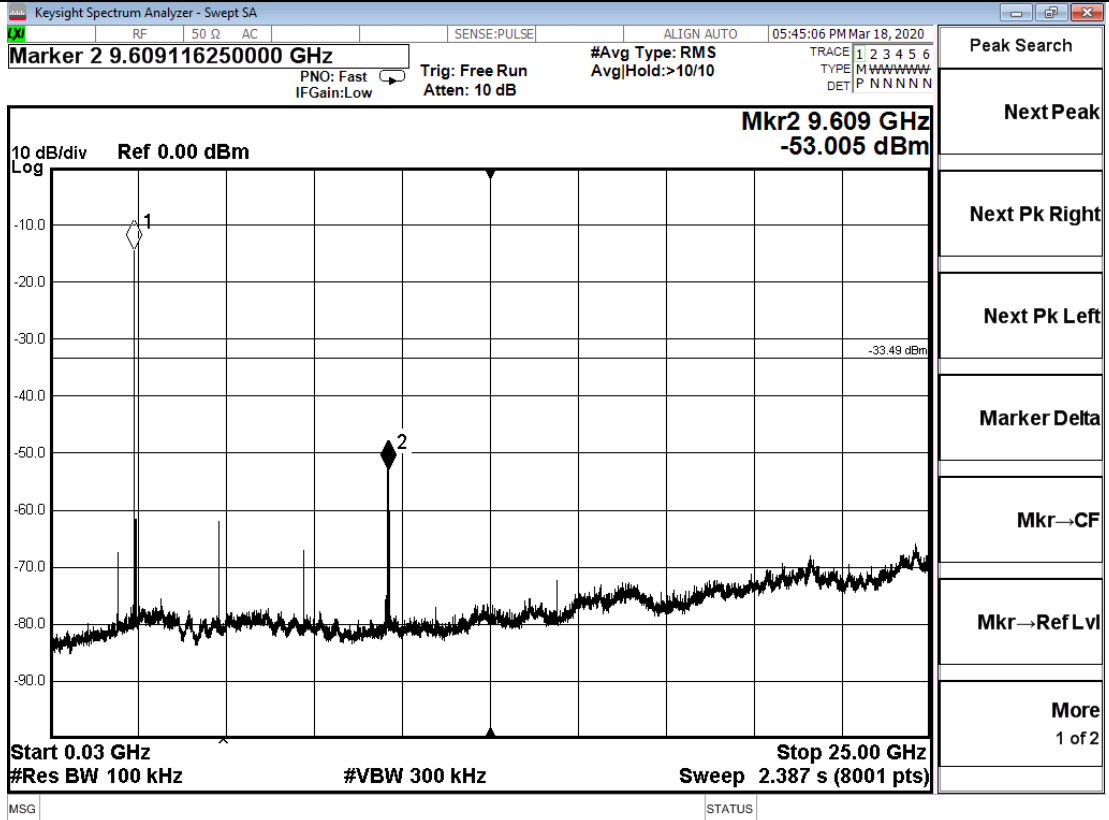


$\pi/4$ DQPSK_LCH_Graphs

Pref

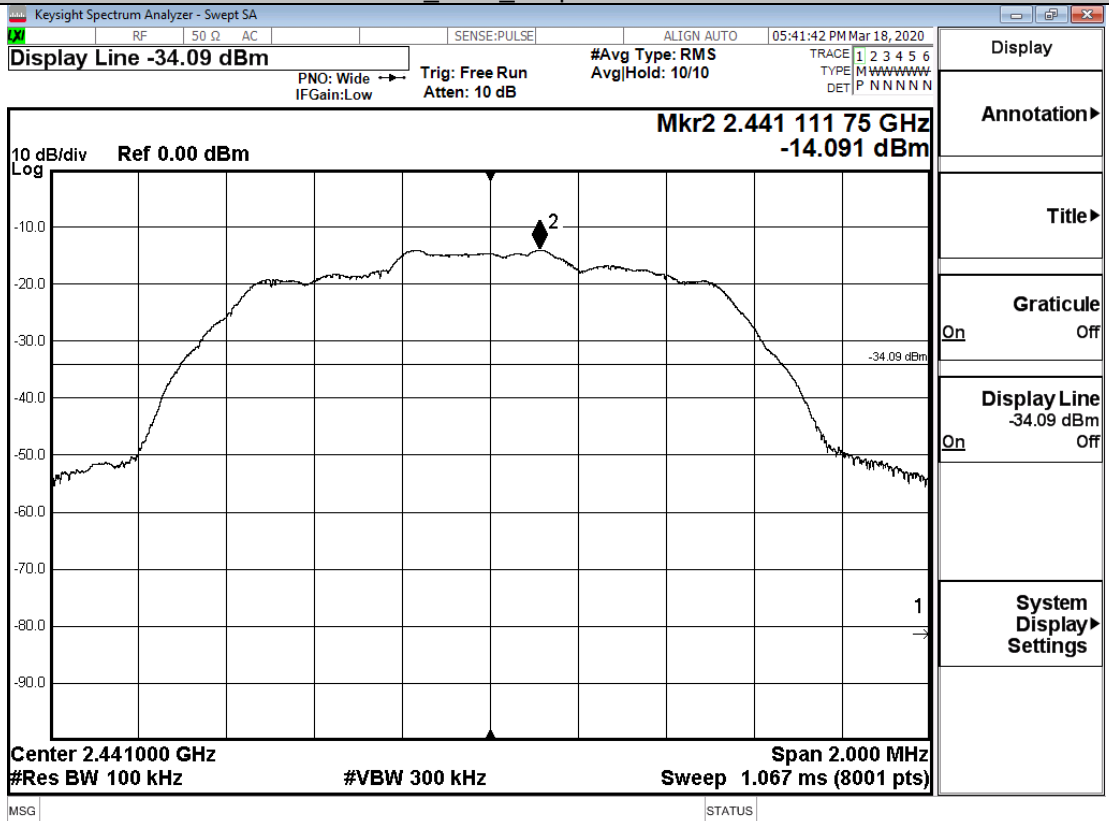


Puw

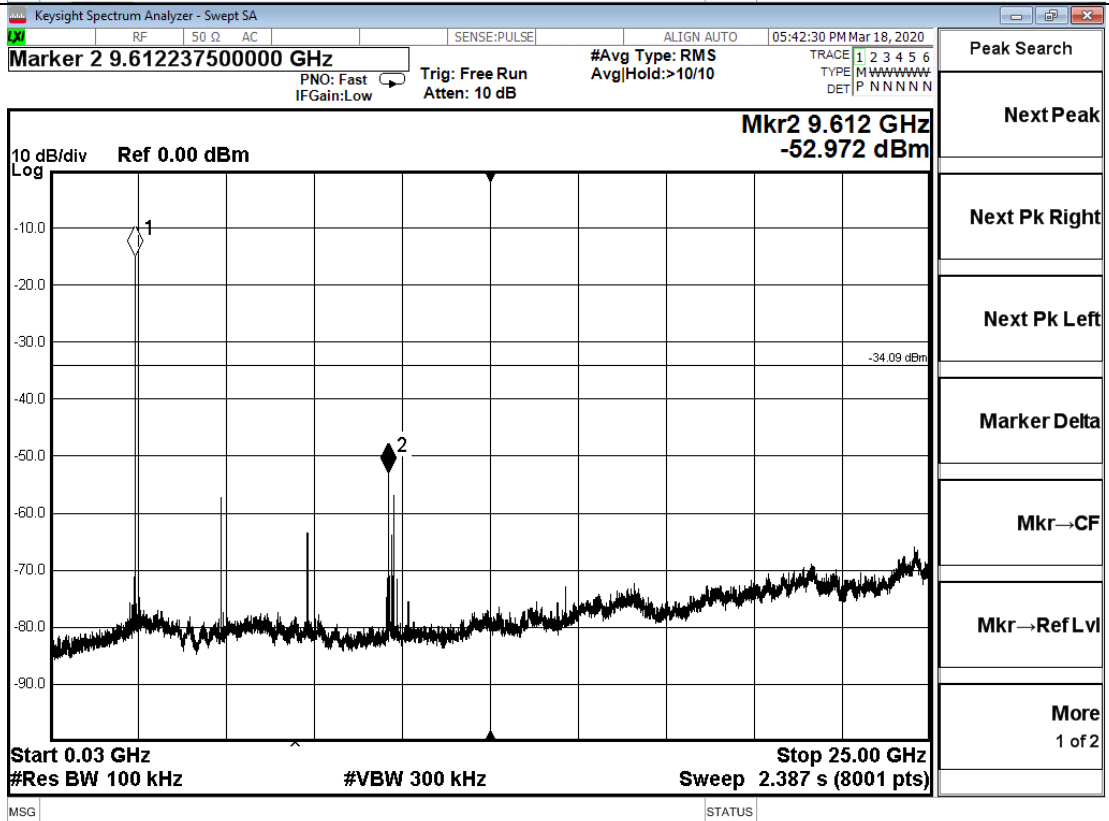


$\pi/4$ DQPSK_MCH_Graphs

Pref

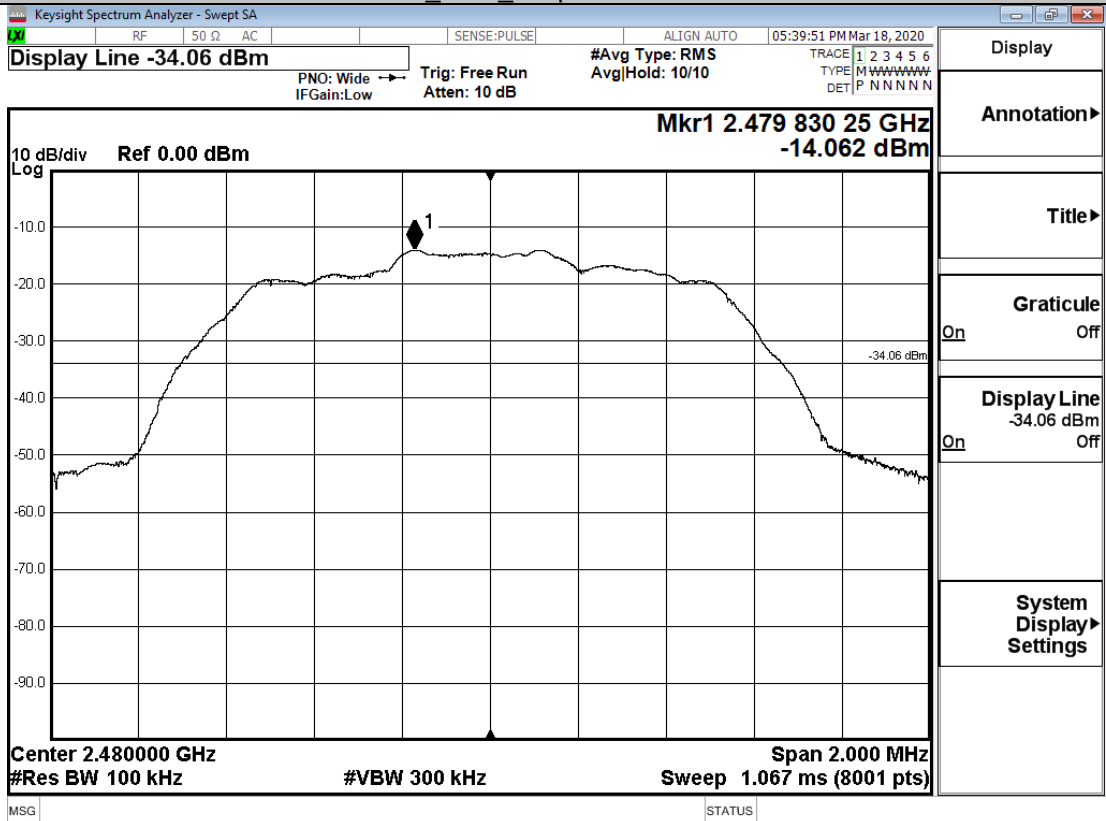


Puw

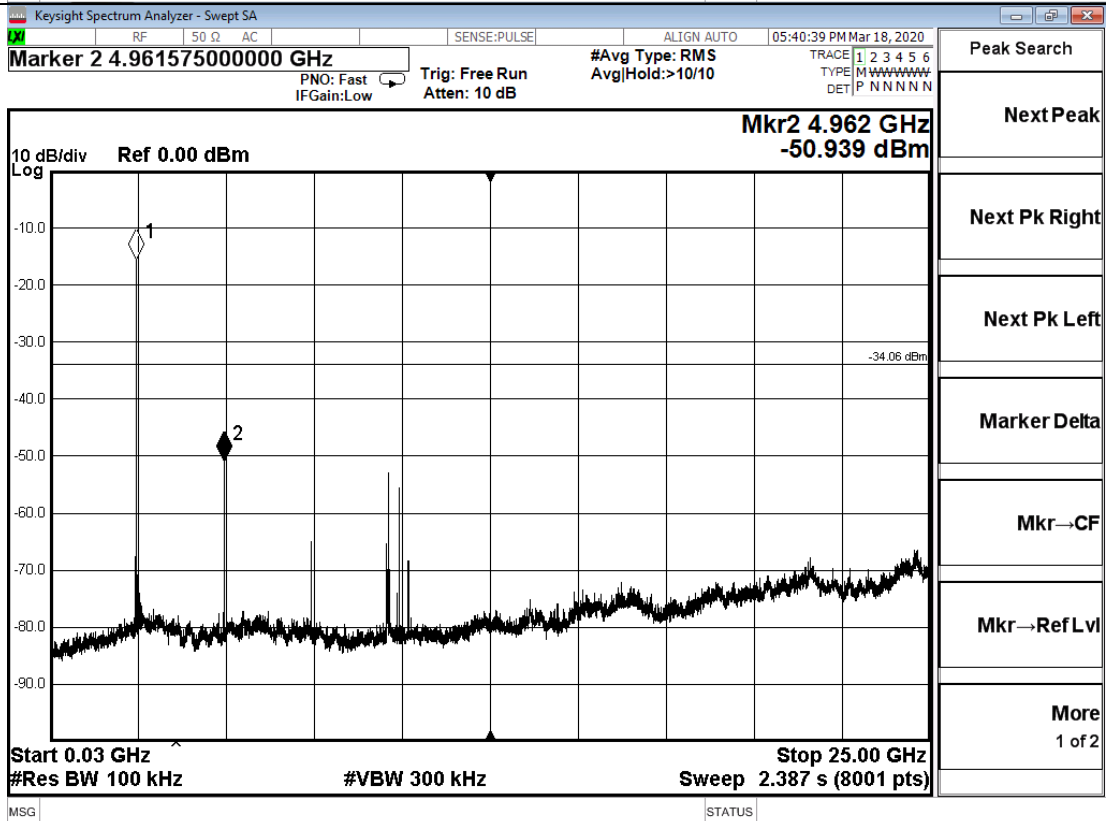


$\pi/4$ DQPSK_HCH_Graphs

Pref

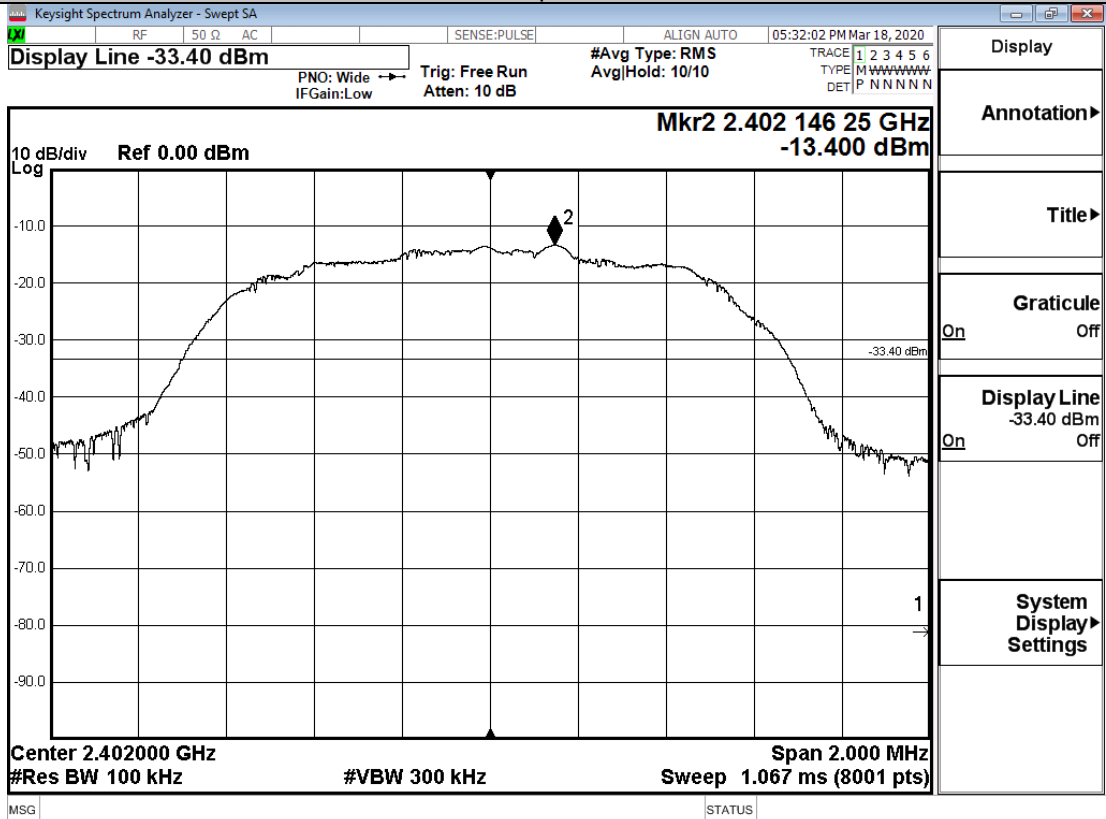


Puw

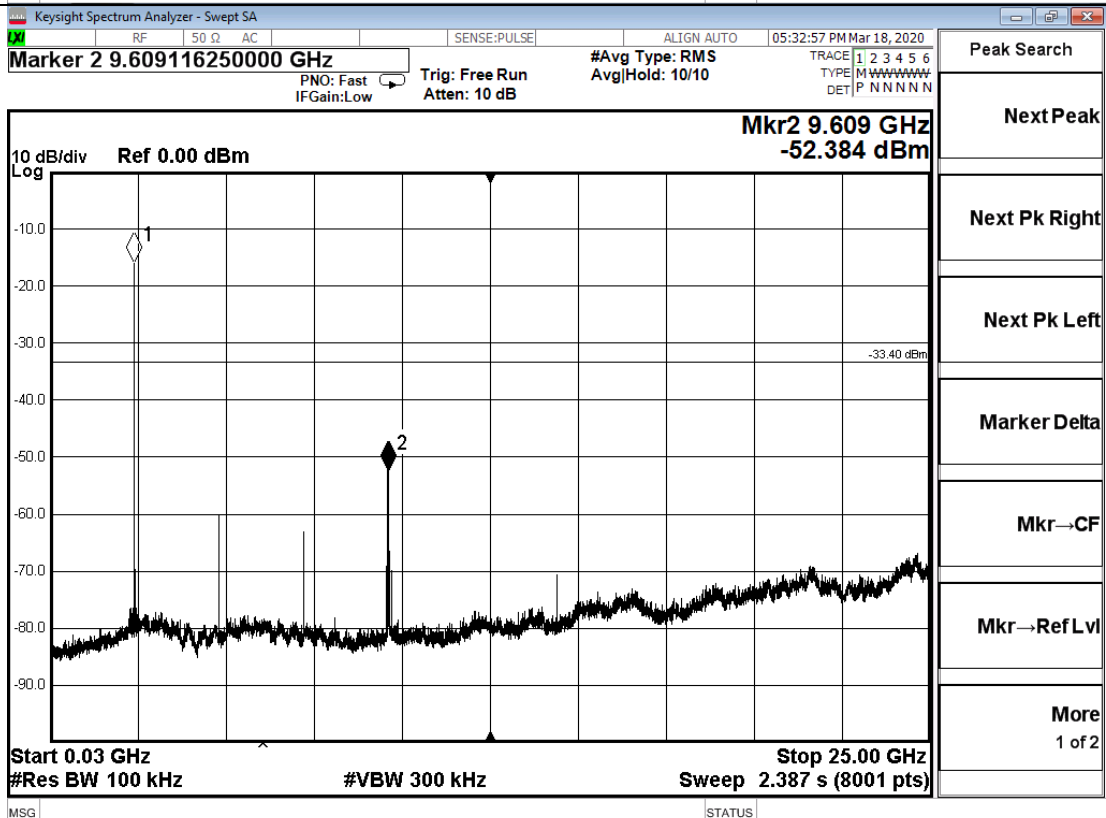


8-DPSK_LCH_Graphs

Pref

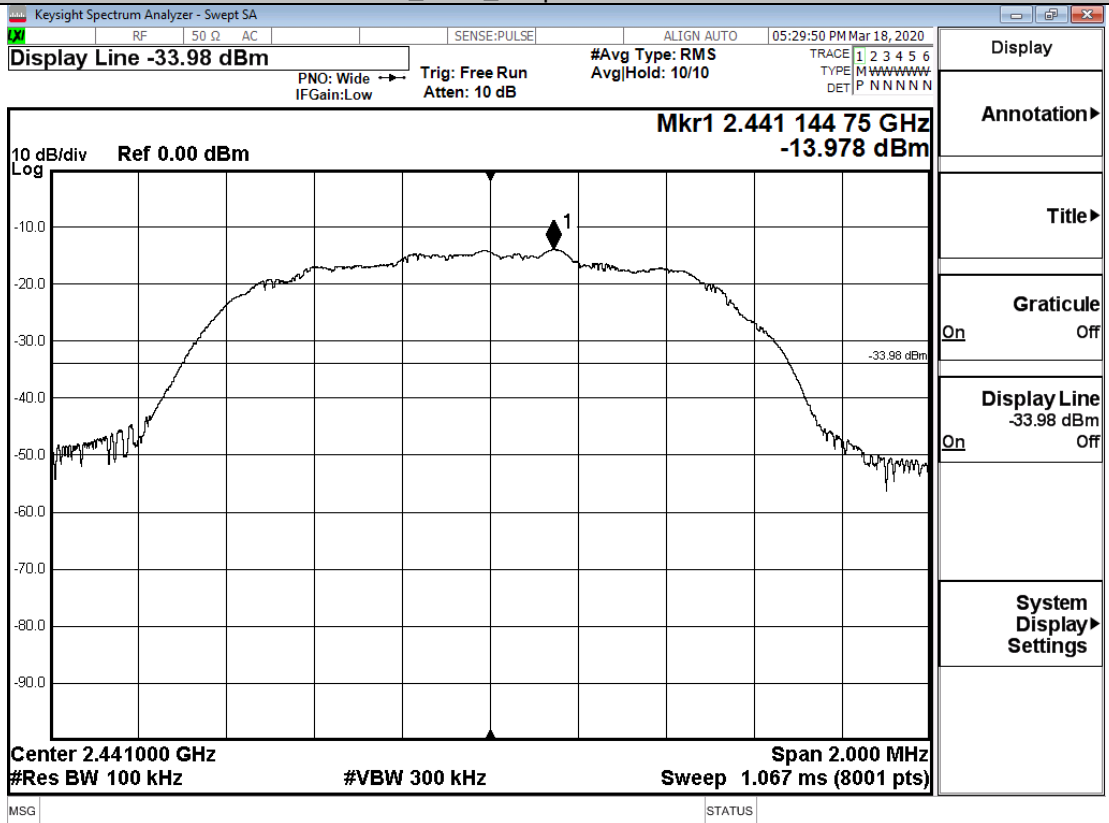


Puw

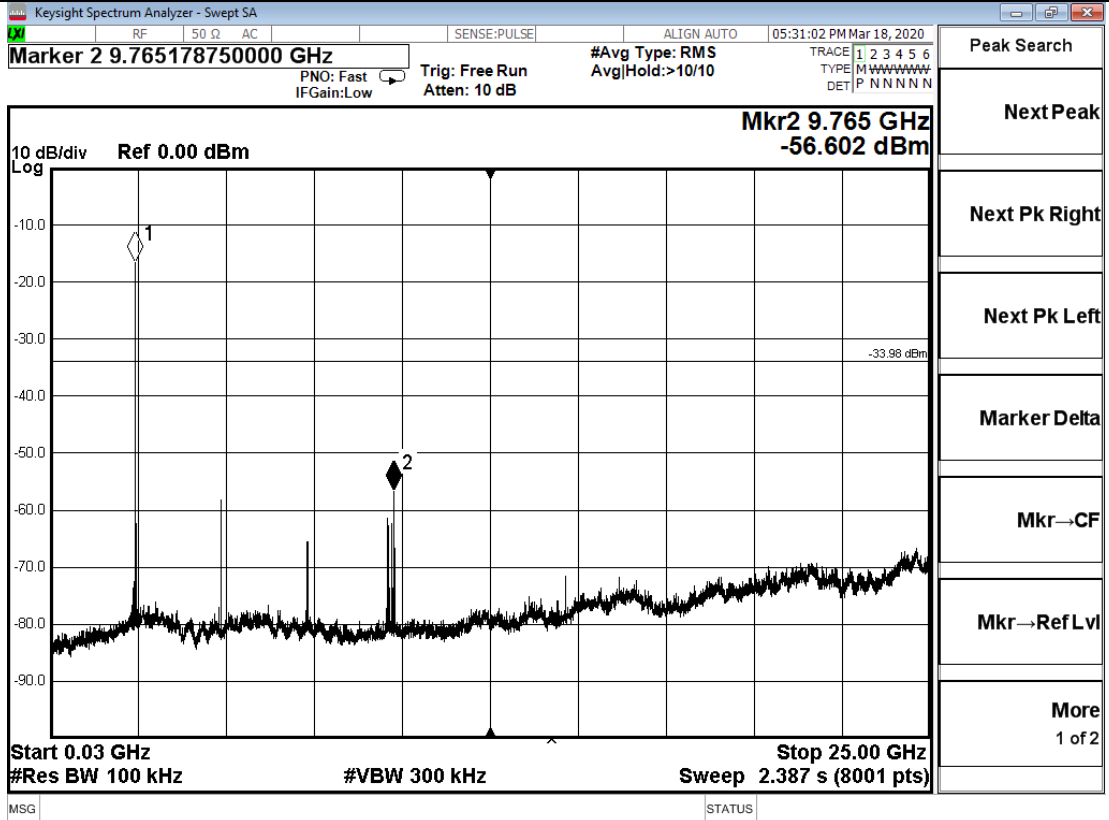


8-DPSK_MCH_Graphs

Pref

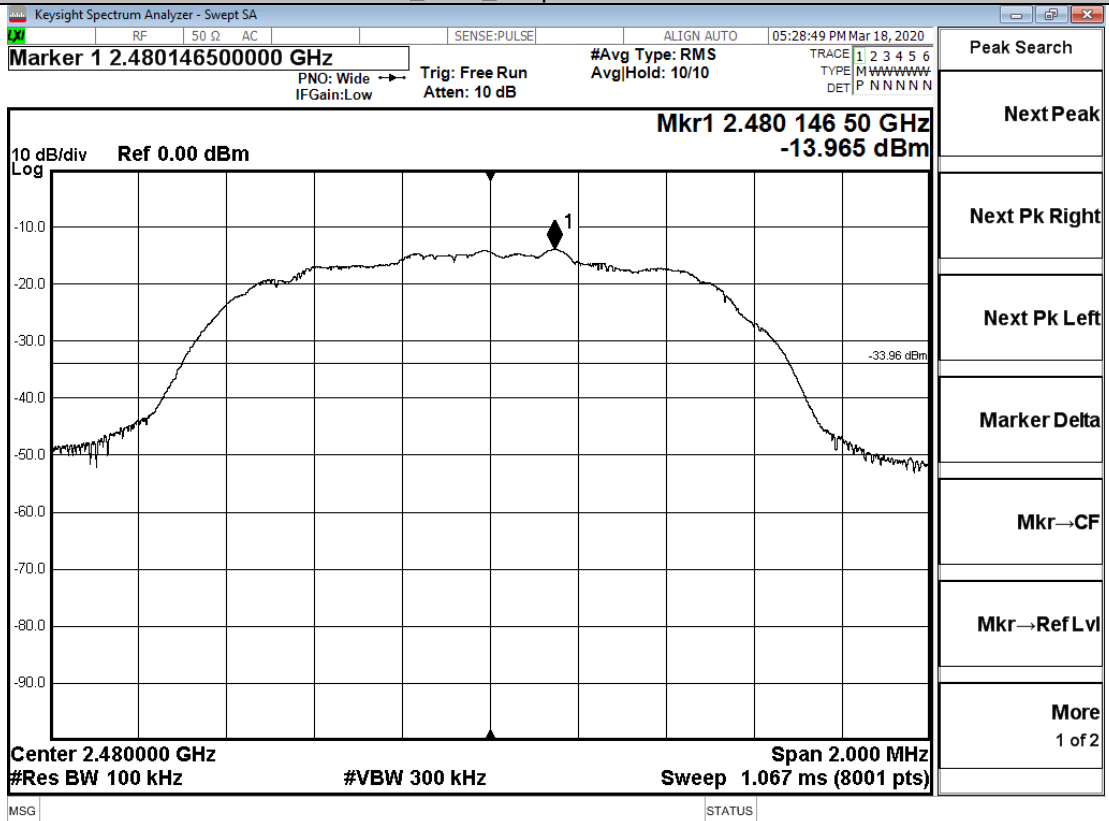


Puw

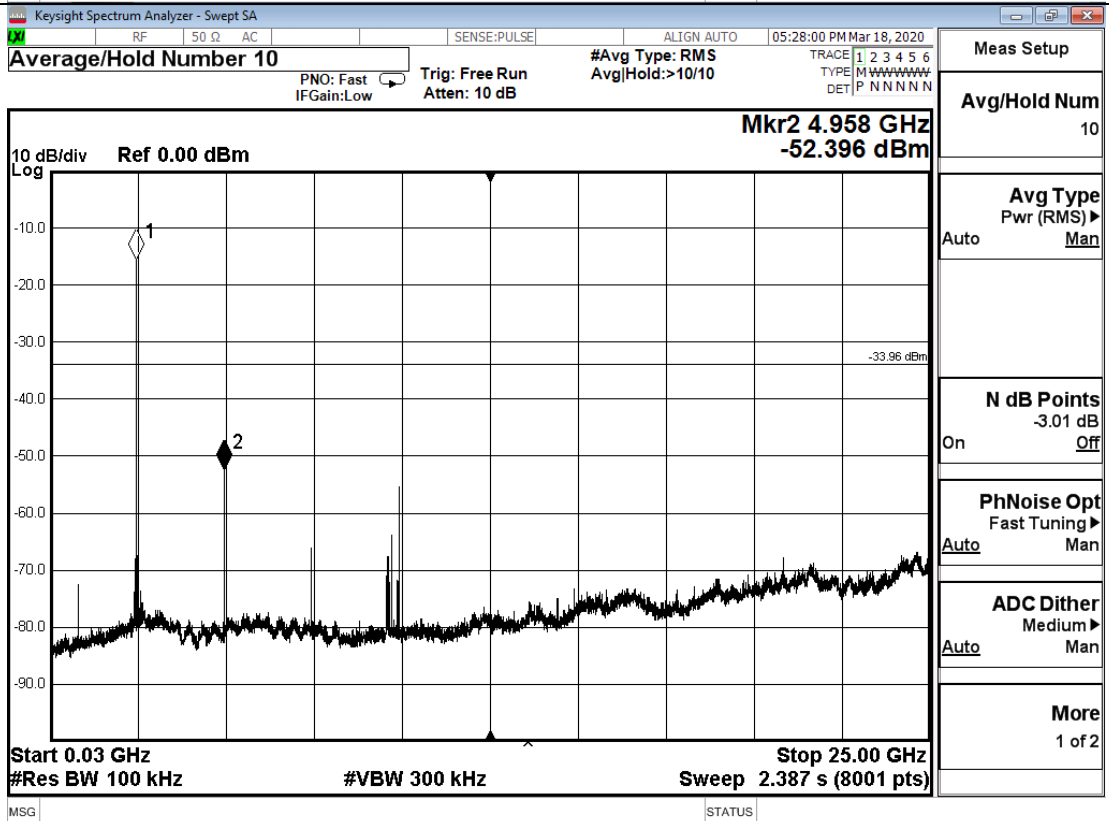


8-DPSK_HCH_Graphs

Pref



Puw

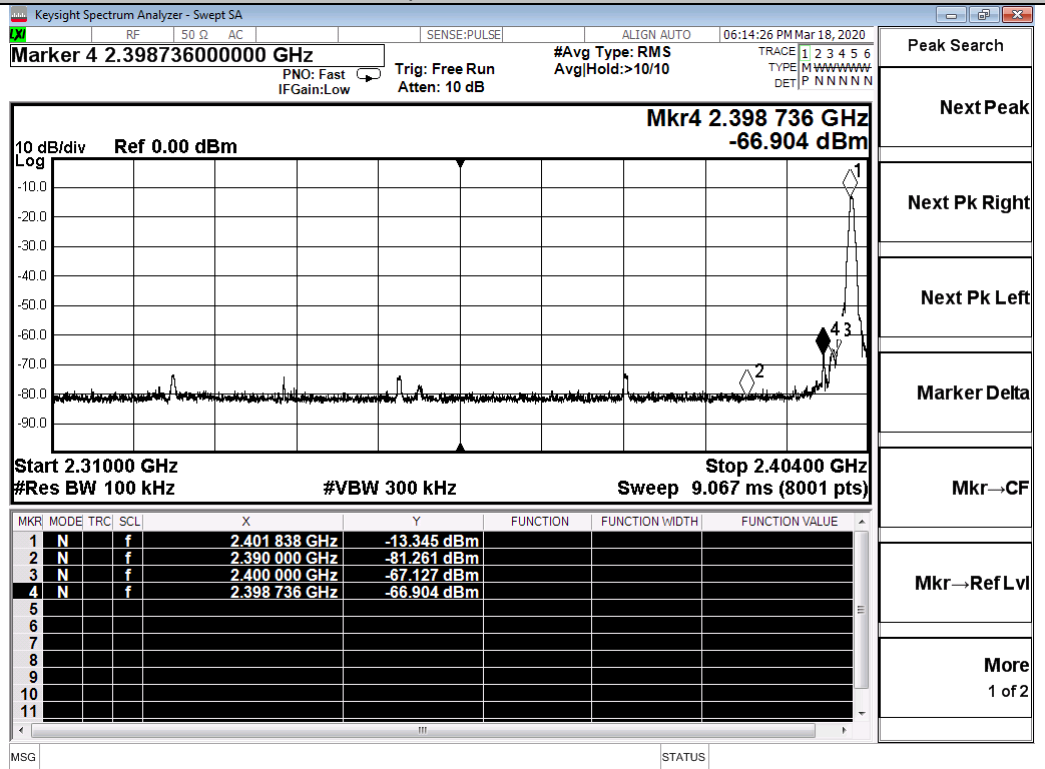


A.7 Band-edge for RF Conducted Emissions

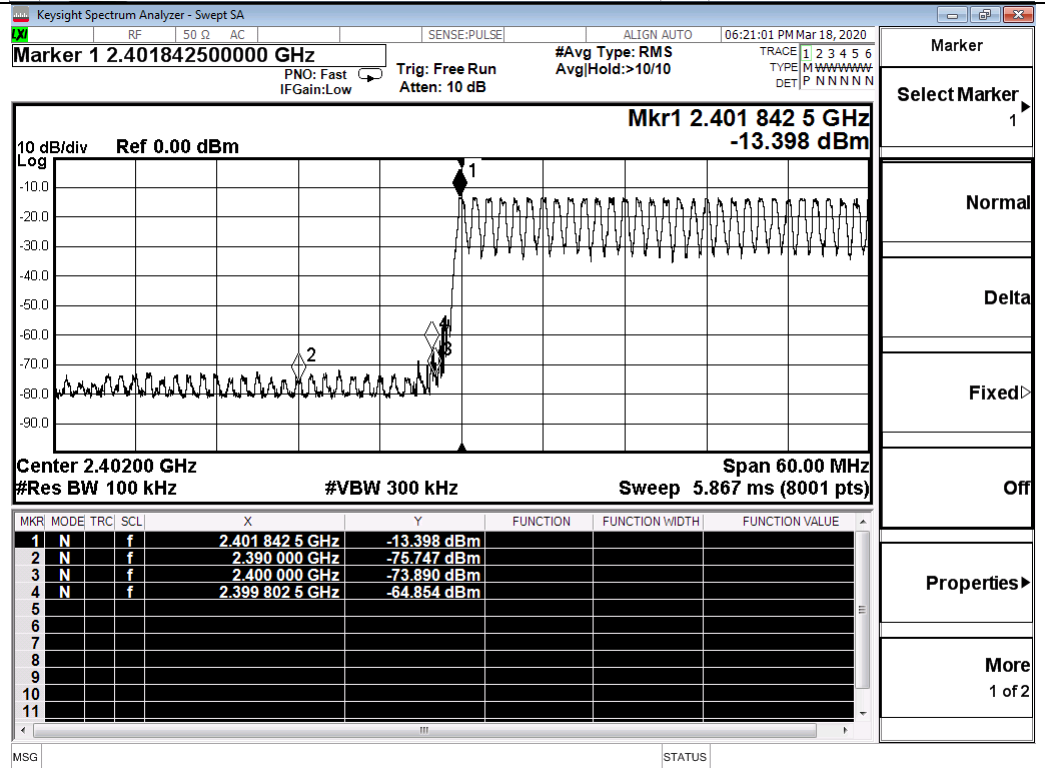
| Mode | Channel | Carrier Frequency [MHz] | Carrier Power [dBm] | Frequency Hopping | Max Spurious Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|-------------------------|---------------------|-------------------|--------------------------|-------------|---------|
| GFSK | LCH | 2402 | -13.345 | Off | -66.904 | -33.35 | PASS |
| | | | -13.398 | On | -64.854 | -33.40 | PASS |
| | HCH | 2480 | -13.777 | Off | -76.159 | -33.78 | PASS |
| | | | -15.054 | On | -53.908 | -35.05 | PASS |
| $\pi/4$ DQPSK | LCH | 2402 | -13.419 | Off | -64.696 | -33.42 | PASS |
| | | | -14.529 | On | -65.534 | -34.53 | PASS |
| | HCH | 2480 | -13.881 | Off | -74.563 | -33.88 | PASS |
| | | | -14.218 | On | -60.374 | -34.22 | PASS |
| $\pi/4$ DQPSK | LCH | 2402 | -13.272 | Off | -64.849 | -33.27 | PASS |
| | | | -13.338 | On | -62.978 | -33.34 | PASS |
| | HCH | 2480 | -13.838 | Off | -73.459 | -33.84 | PASS |
| | | | -14.162 | On | -72.316 | -34.16 | PASS |

Test Graphs

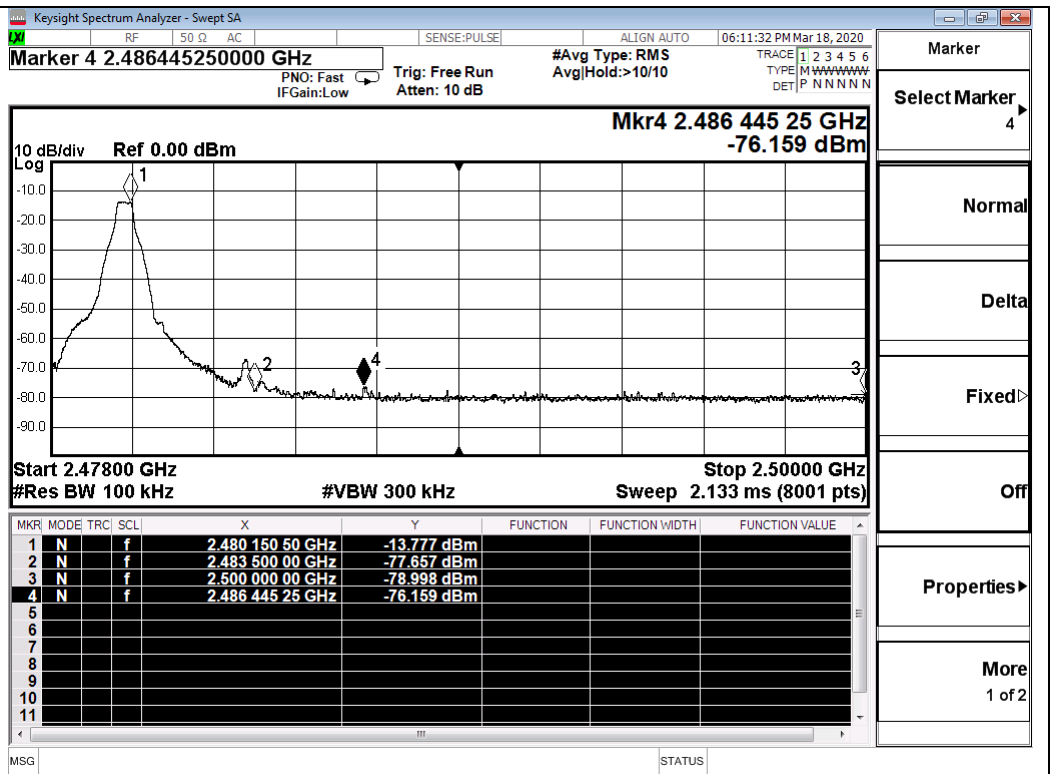
GFSK/LCH/No Hop



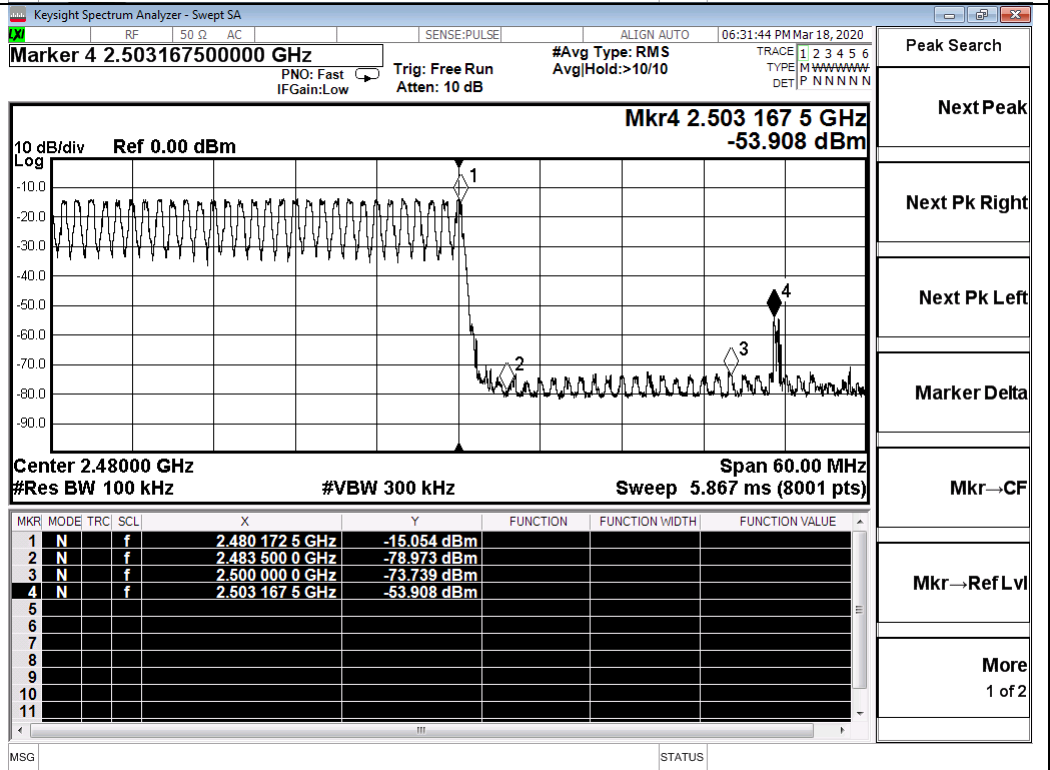
GFSK/LCH/Hop



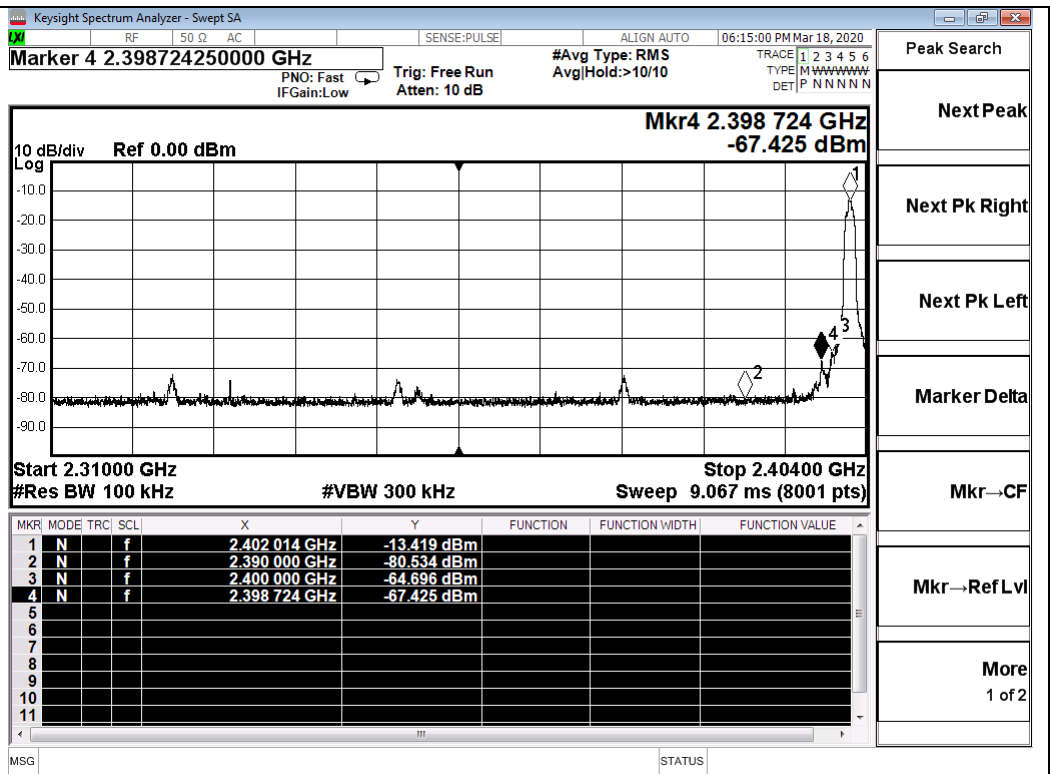
GFSK/HCH/No Hop



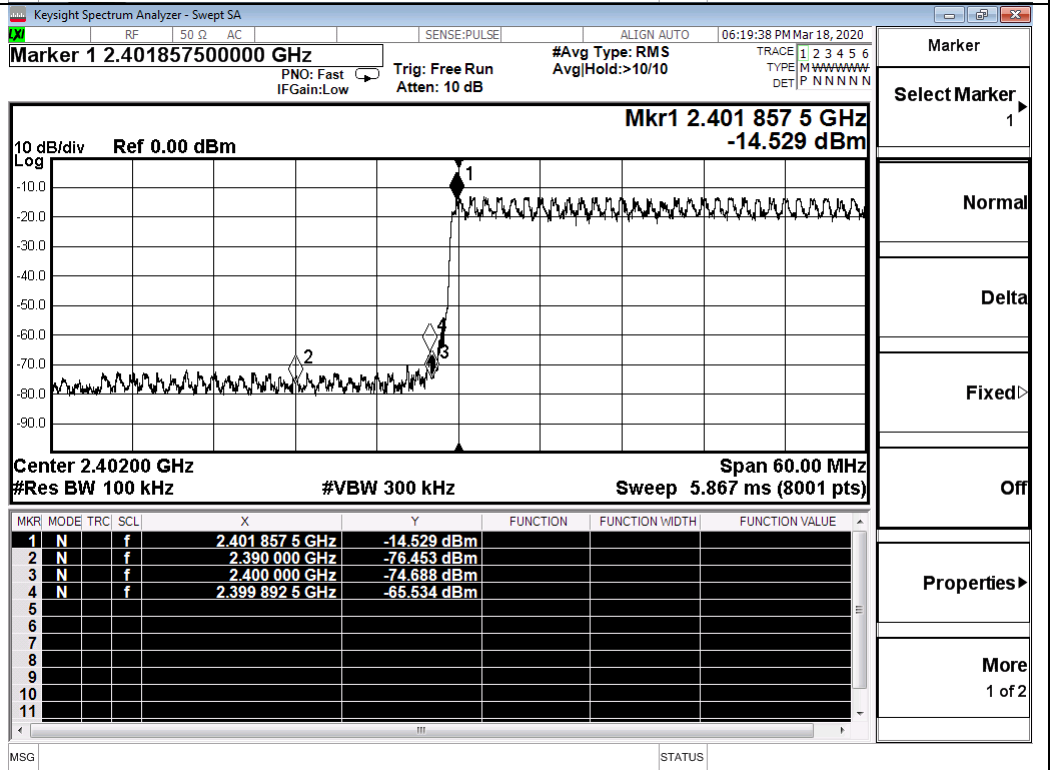
GFSK/HCH/Hop



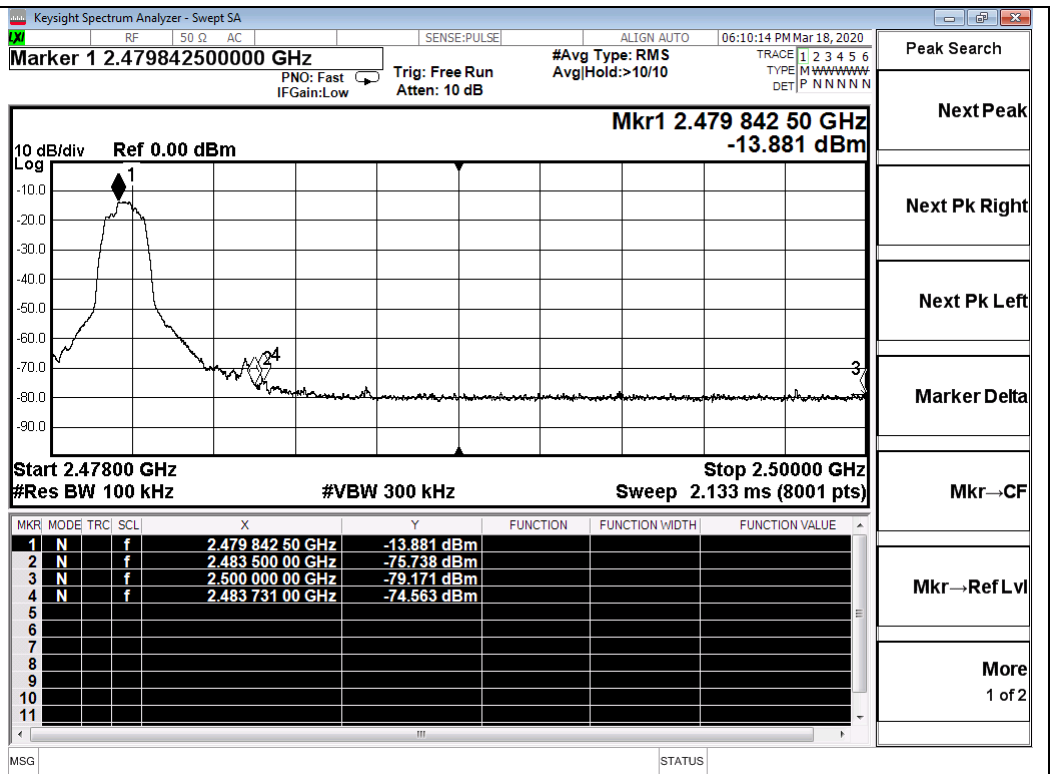
$\pi/4$ DQPSK/LCH/No Hop



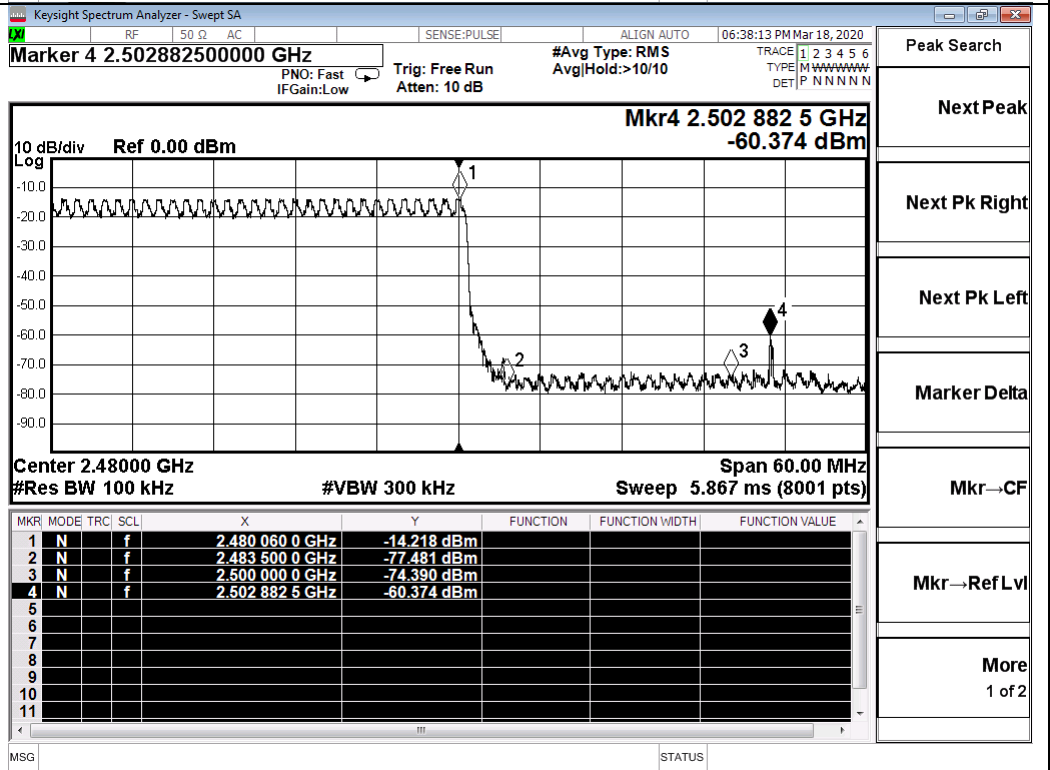
$\pi/4$ DQPSK/LCH/Hop



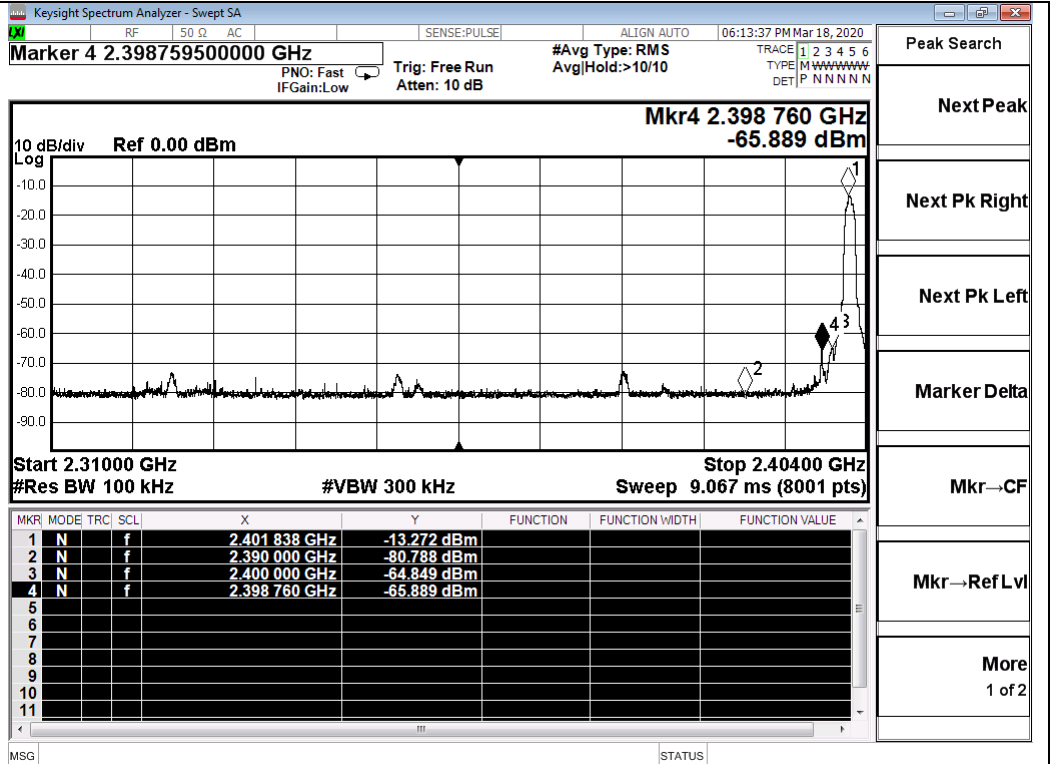
$\pi/4$ DQPSK/HCH/No Hop



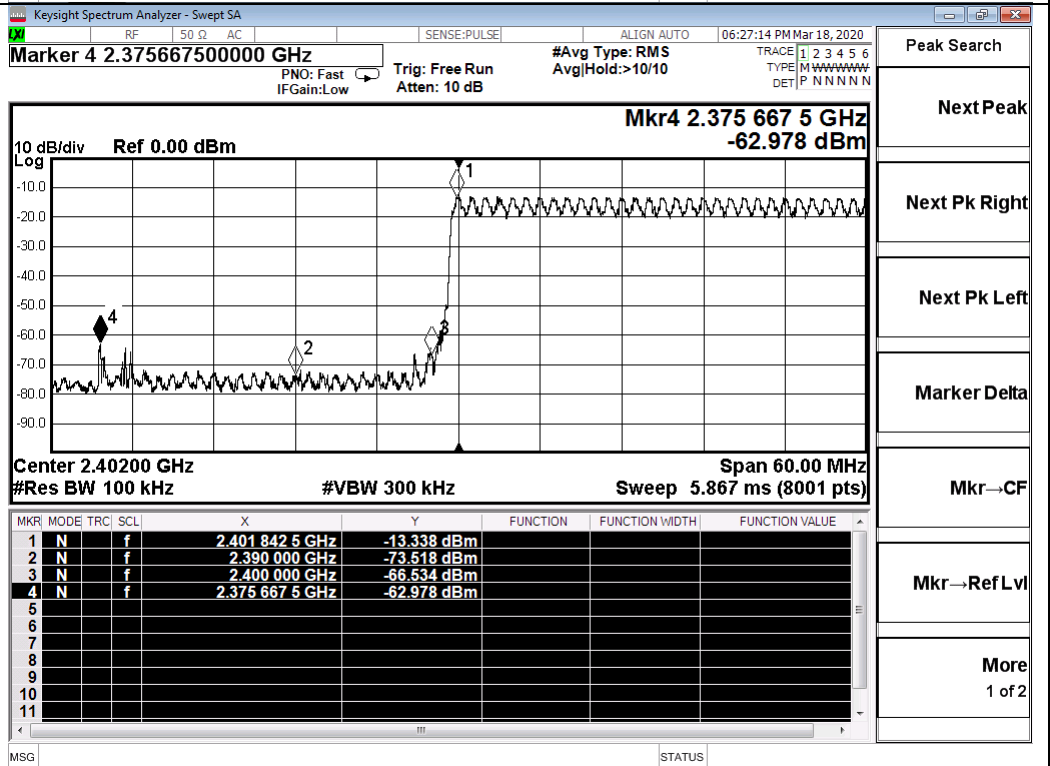
$\pi/4$ DQPSK/HCH/Hop



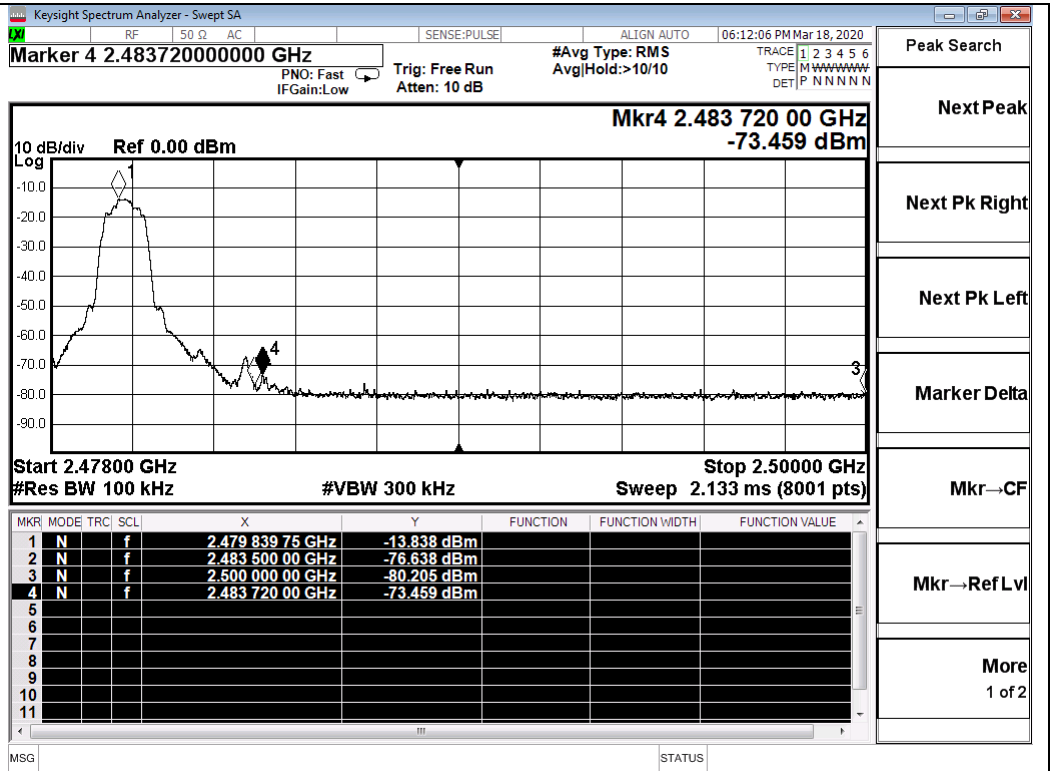
8-DPSK/LCH/No Hop



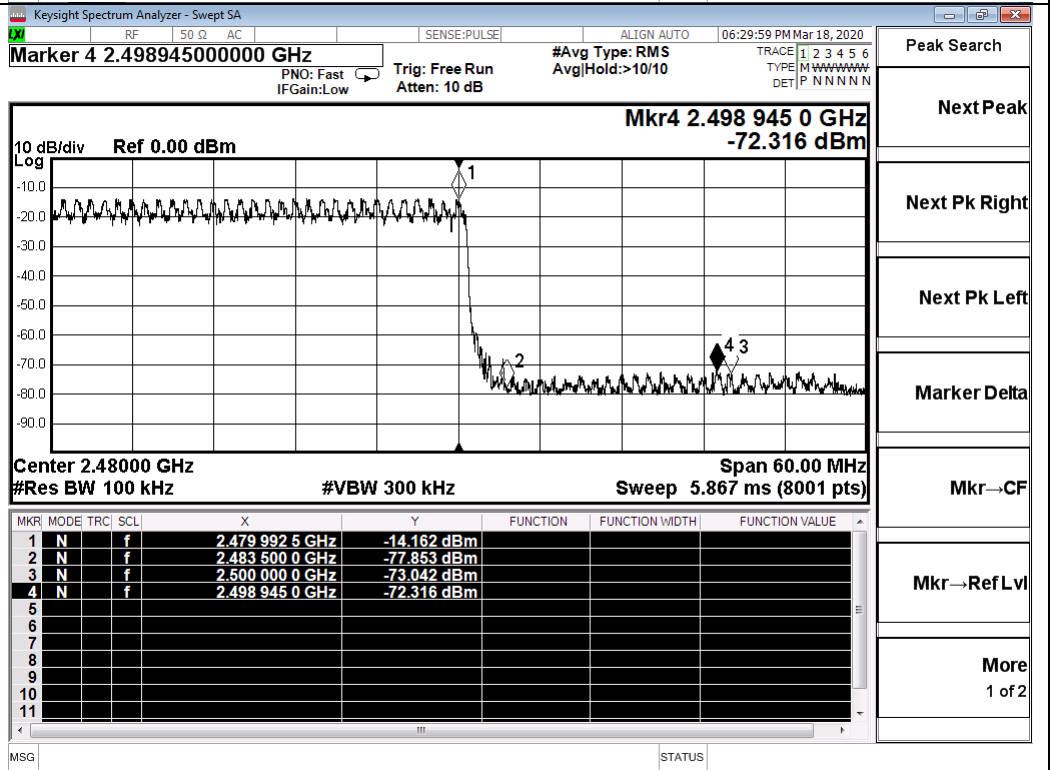
8-DPSK/LCH/Hop



8-DPSK/HCH/No Hop



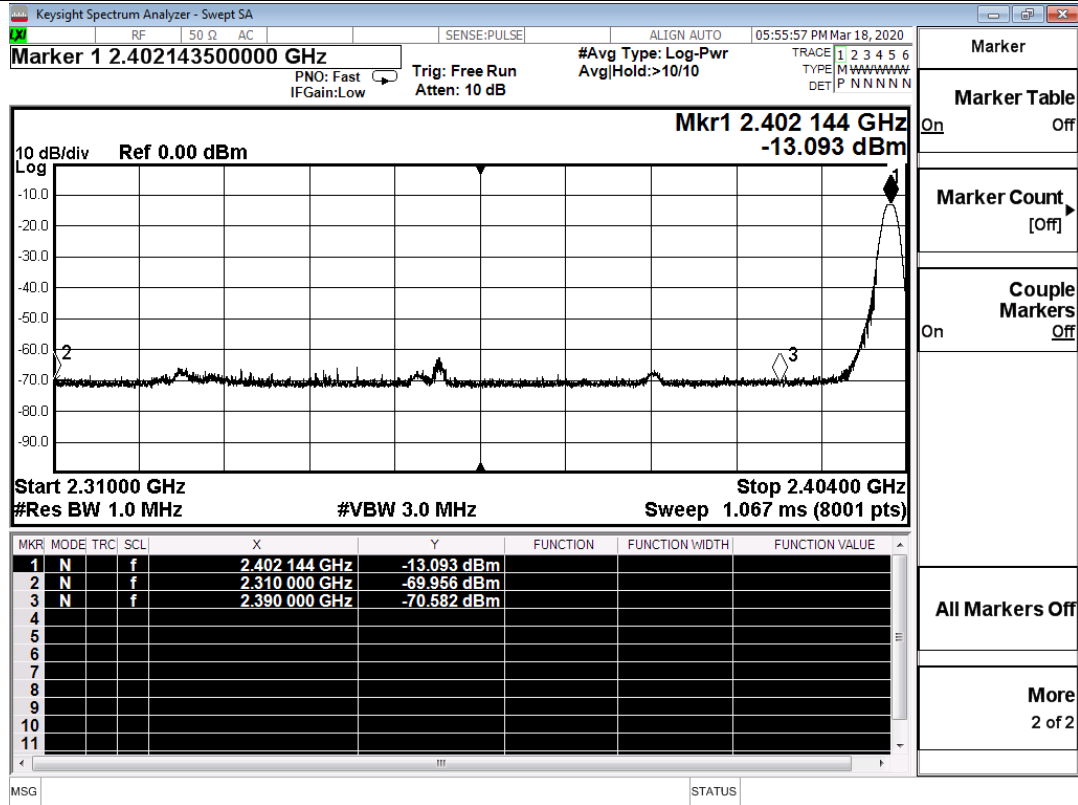
8-DPSK/HCH/Hop



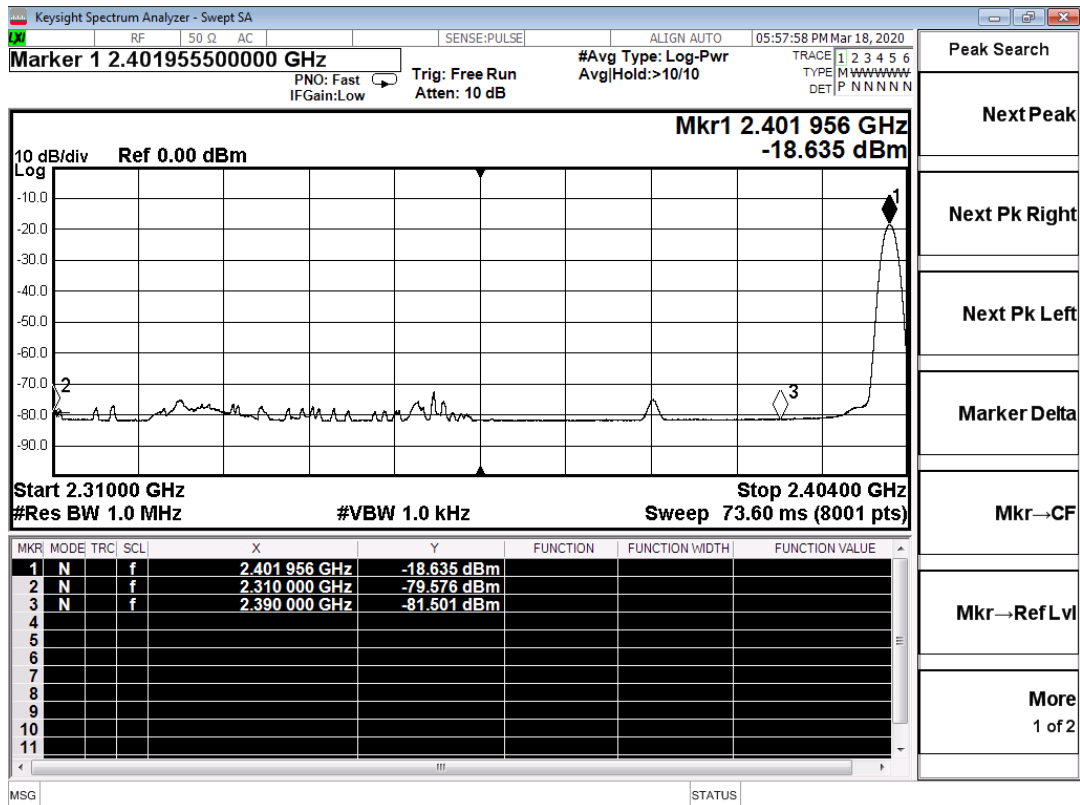
A.8 Restrict-band band-edge measurements

| Test Mode | Hopping | Freq. | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|--------|-------------|-------|---------------|------------|----------|----------------|---------|
| GFSK | Off | 2310.0 | -69.956 | 2.000 | 0 | 27.27 | PEAK | 74 | PASS |
| | Off | 2310.0 | -79.576 | 2.000 | 0 | 17.65 | AV | 54 | PASS |
| | Off | 2390.0 | -70.582 | 2.000 | 0 | 26.65 | PEAK | 74 | PASS |
| | Off | 2390.0 | -81.501 | 2.000 | 0 | 15.73 | AV | 54 | PASS |
| | Off | 2483.5 | -60.341 | 2.000 | 0 | 36.89 | PEAK | 74 | PASS |
| | Off | 2483.5 | -77.95 | 2.000 | 0 | 19.28 | AV | 54 | PASS |
| | Off | 2500.0 | -69.775 | 2.000 | 0 | 27.46 | PEAK | 74 | PASS |
| | Off | 2500.0 | -81.493 | 2.000 | 0 | 15.74 | AV | 54 | PASS |
| $\pi/4$ DQPSK | Off | 2310.0 | -70.874 | 2.000 | 0 | 26.36 | PEAK | 74 | PASS |
| | Off | 2310.0 | -81.653 | 2.000 | 0 | 15.58 | AV | 54 | PASS |
| | Off | 2390.0 | -72.163 | 2.000 | 0 | 25.07 | PEAK | 74 | PASS |
| | Off | 2390.0 | -81.742 | 2.000 | 0 | 15.49 | AV | 54 | PASS |
| | Off | 2483.5 | -60.047 | 2.000 | 0 | 37.18 | PEAK | 74 | PASS |
| | Off | 2483.5 | -78.588 | 2.000 | 0 | 18.64 | AV | 54 | PASS |
| | Off | 2500.0 | -70.917 | 2.000 | 0 | 26.31 | PEAK | 74 | PASS |
| | Off | 2500.0 | -81.314 | 2.000 | 0 | 15.92 | AV | 54 | PASS |
| 8-DPSK | Off | 2310.0 | -71.206 | 2.000 | 0 | 26.02 | PEAK | 74 | PASS |
| | Off | 2310.0 | -81.515 | 2.000 | 0 | 15.72 | AV | 54 | PASS |
| | Off | 2390.0 | -71.882 | 2.000 | 0 | 25.35 | PEAK | 74 | PASS |
| | Off | 2390.0 | -81.447 | 2.000 | 0 | 15.78 | AV | 54 | PASS |
| | Off | 2483.5 | -62.924 | 2.000 | 0 | 34.31 | PEAK | 74 | PASS |
| | Off | 2483.5 | -78.517 | 2.000 | 0 | 18.71 | AV | 54 | PASS |
| | Off | 2500.0 | -70.696 | 2.000 | 0 | 26.53 | PEAK | 74 | PASS |
| | Off | 2500.0 | -76.748 | 2.000 | 0 | 20.48 | AV | 54 | PASS |

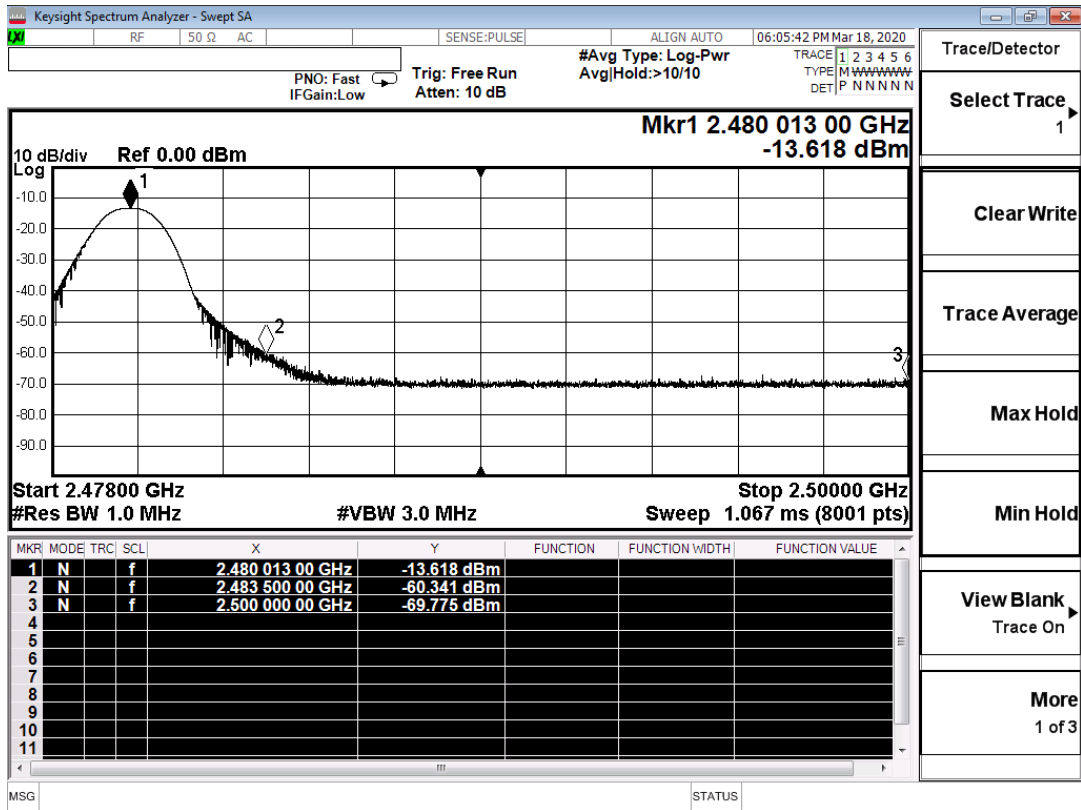
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



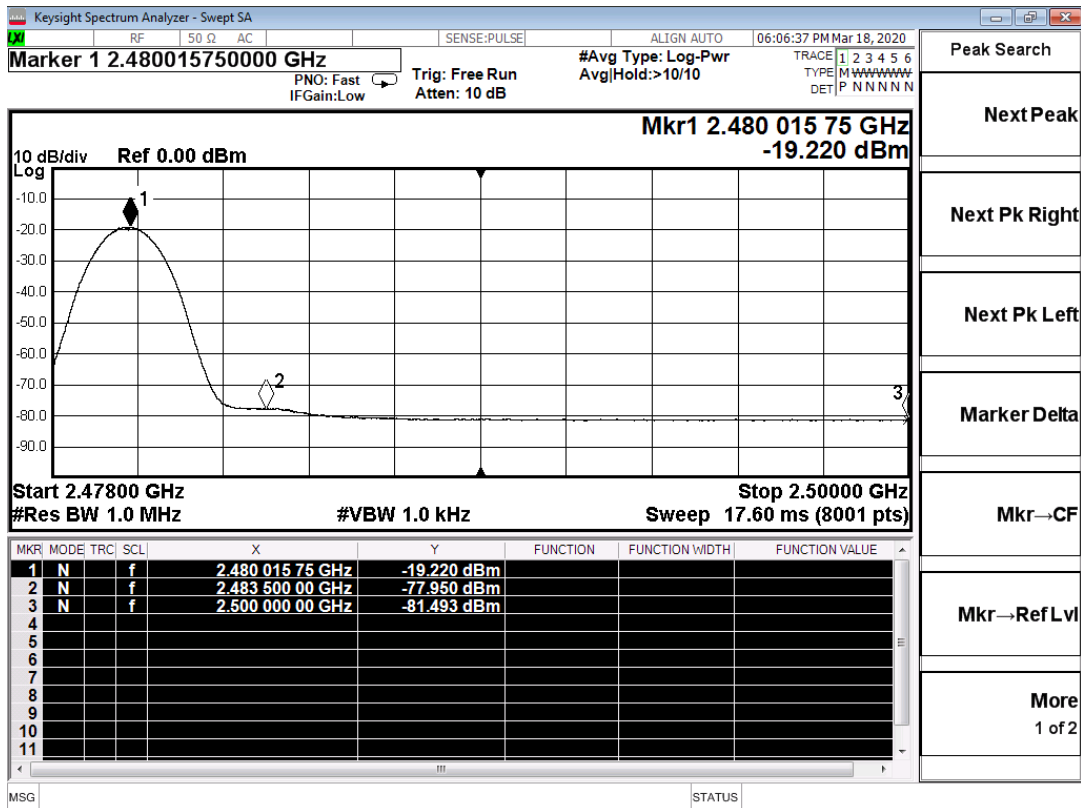
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



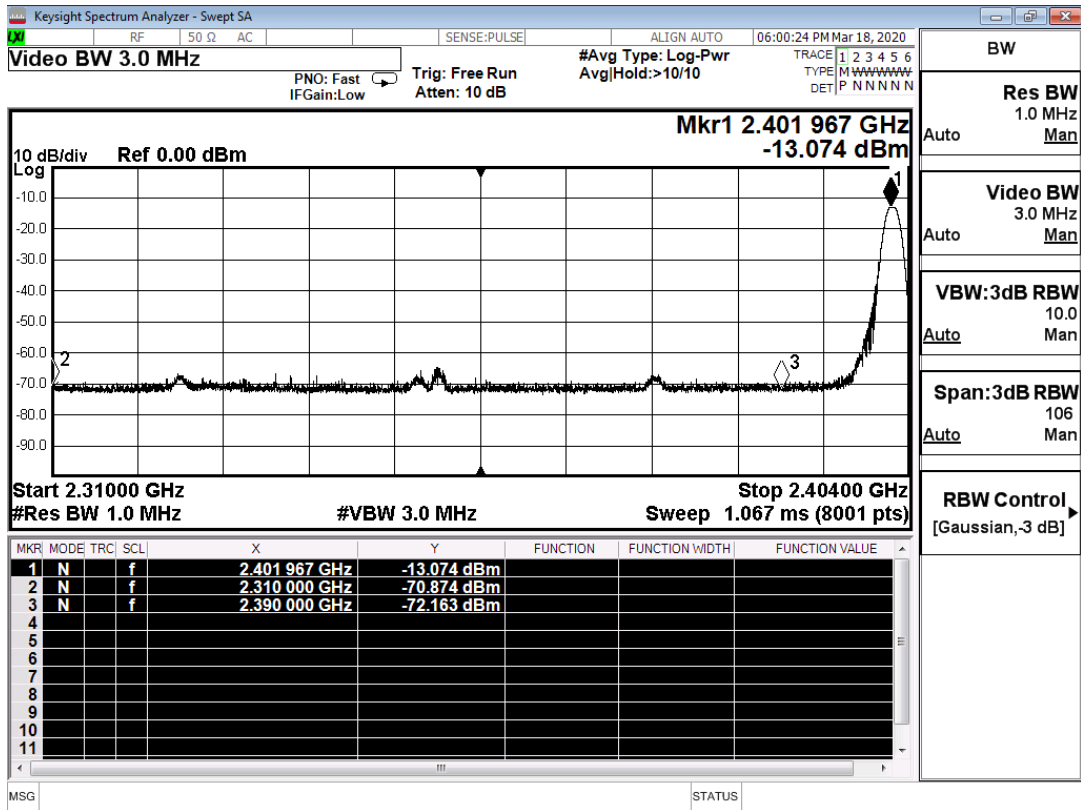
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



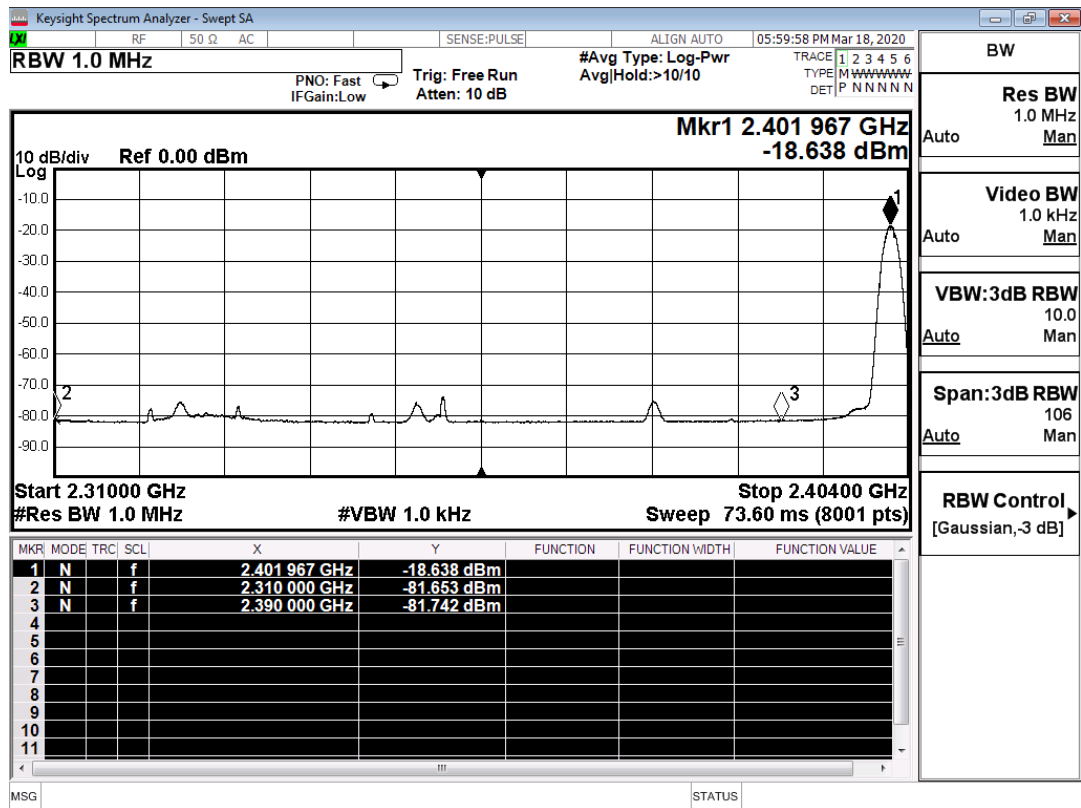
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



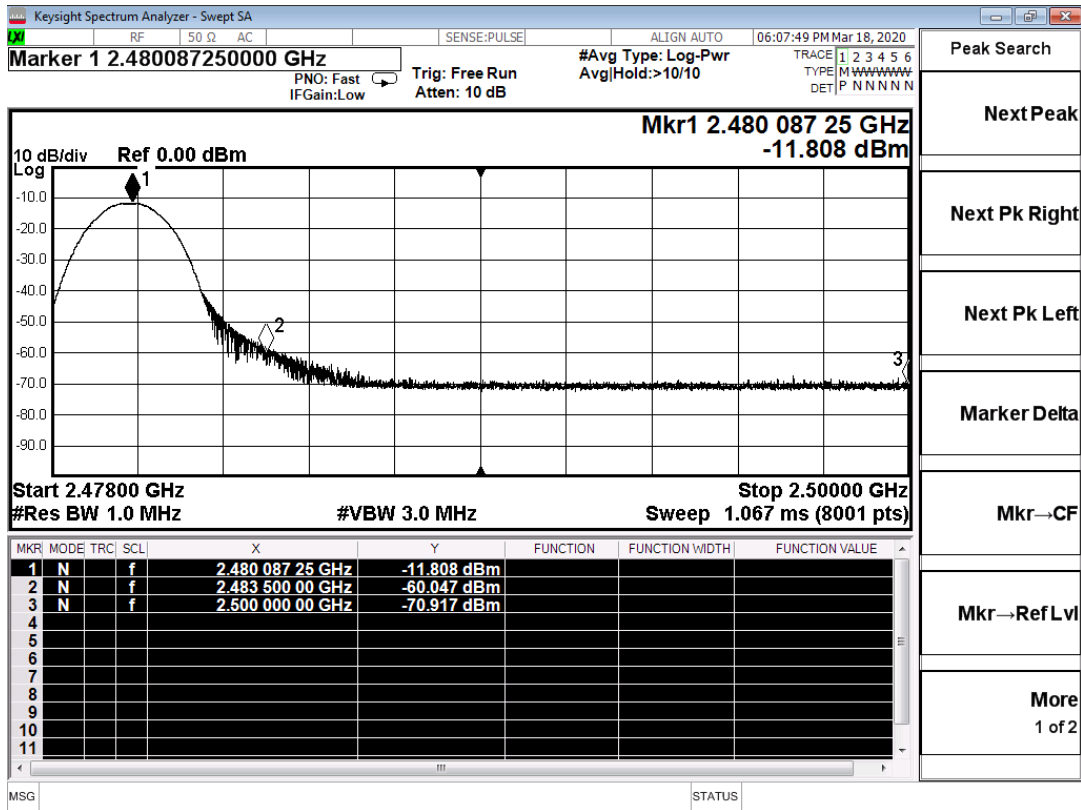
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



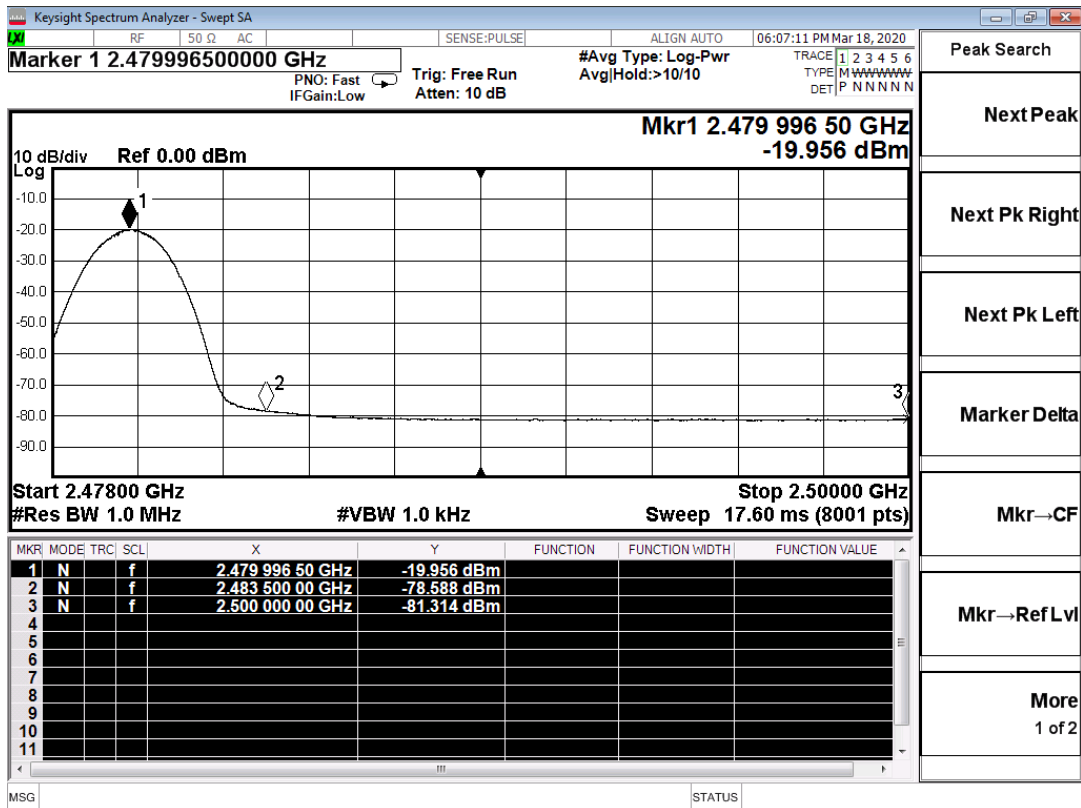
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



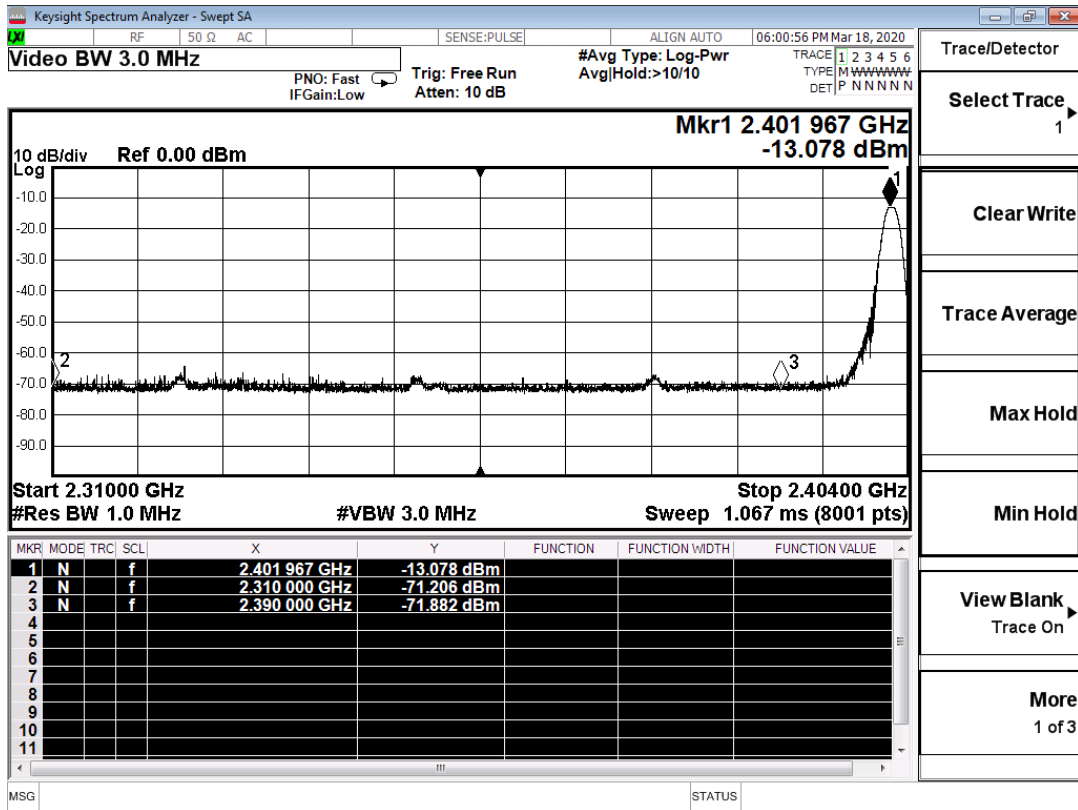
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (High Channel)



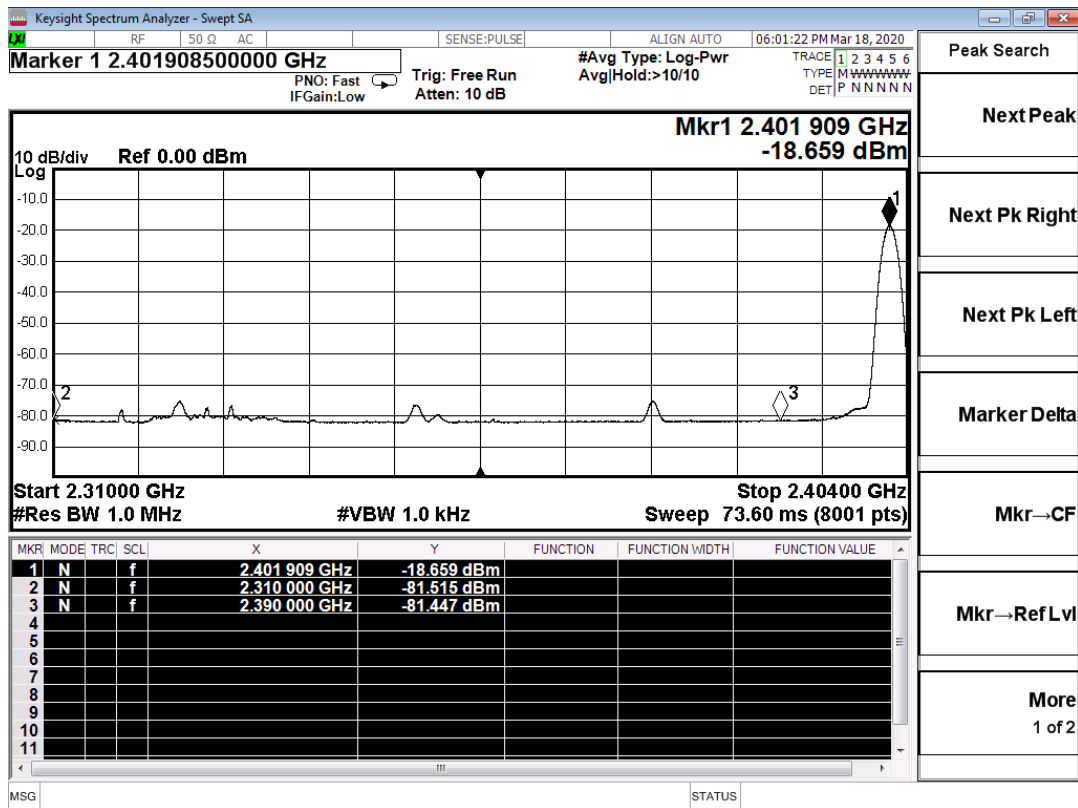
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (High Channel)



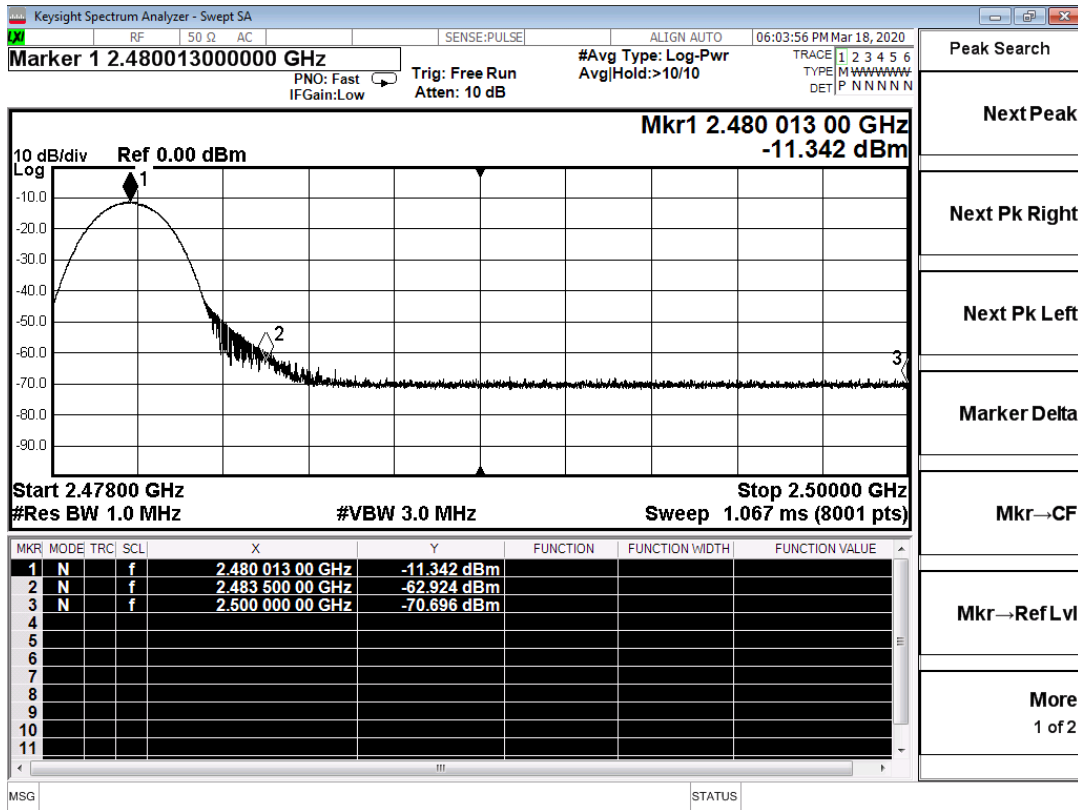
Restrict-band band-edge measurements_Hopping Off_8-DPSK_PEAK (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8-DPSK_Average (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8-DPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off_8-DPSK_Average (High Channel)

