

Appendix A

RF Test Data for BT V4.2 (BDR/EDR) (Conducted Measurement)

Product Name: Metallic Wireless Neckrest Earbuds

Trade Mark: N/A

Test Model: LG-BT800

Environmental Conditions

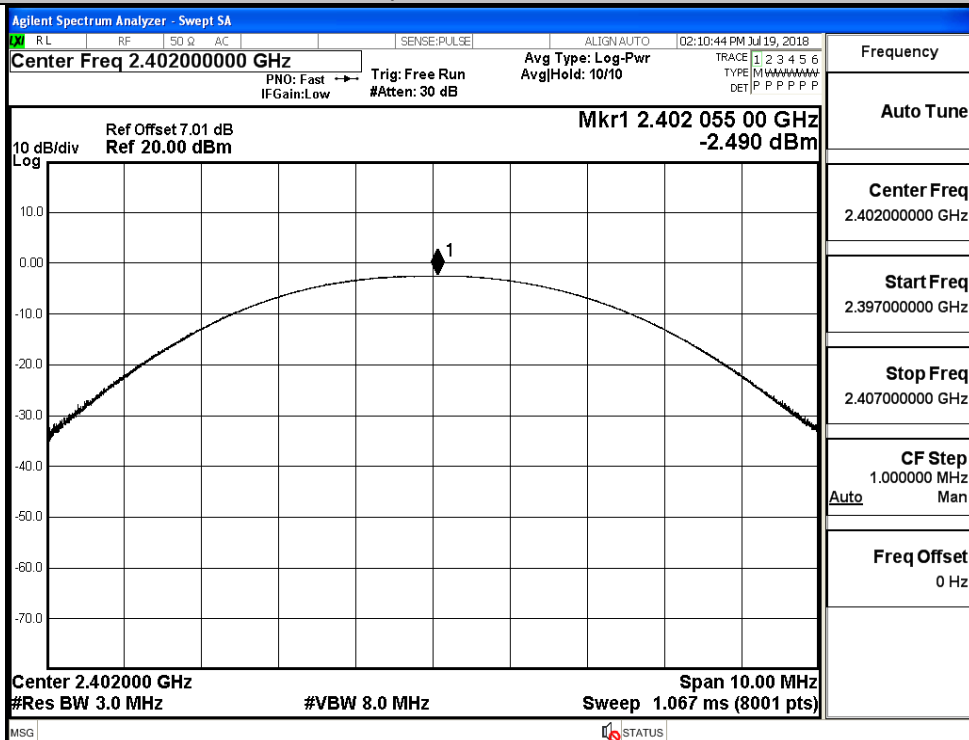
| | |
|--------------------|-------------|
| Temperature: | 23.2 ° C |
| Relative Humidity: | 53.4% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | Diamond.Lu |
| Supervised by: | Jayden.Zhuo |

A.1 Maximum Conducted Peak Output Power

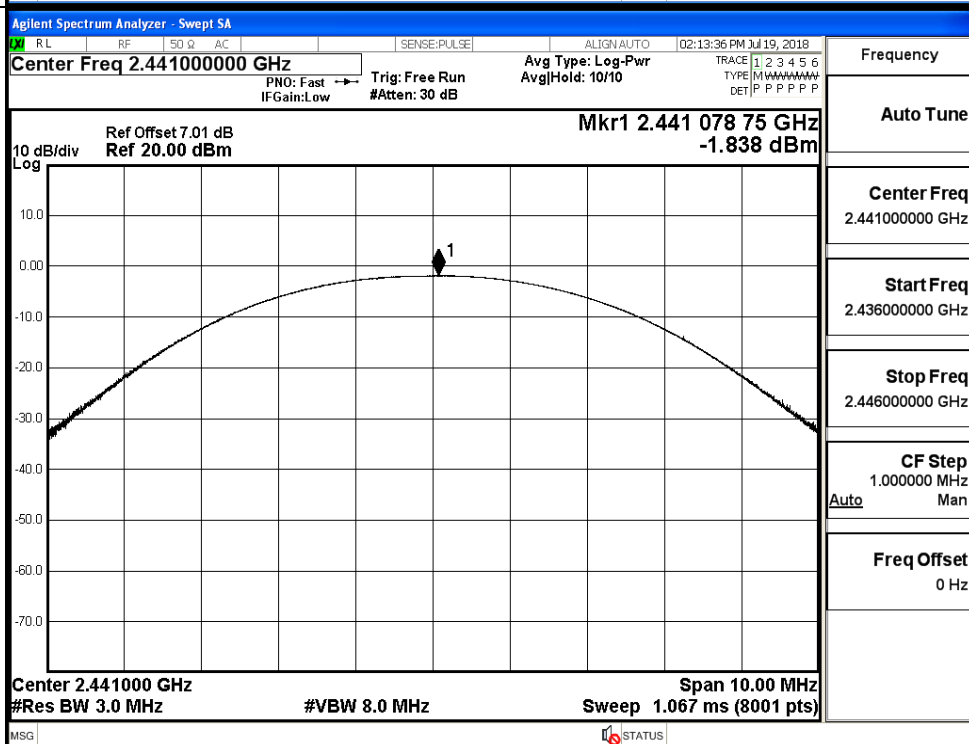
| Mode | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK | LCH | -2.490 | 30 | PASS |
| | MCH | -1.838 | 30 | PASS |
| | HCH | -1.372 | 30 | PASS |
| $\pi/4$ DQPSK | LCH | -3.393 | 21 | PASS |
| | MCH | -2.419 | 21 | PASS |
| | HCH | -1.977 | 21 | PASS |
| 8DPSK | LCH | -2.881 | 21 | PASS |
| | MCH | -2.256 | 21 | PASS |
| | HCH | -1.837 | 21 | PASS |

Test Graphs

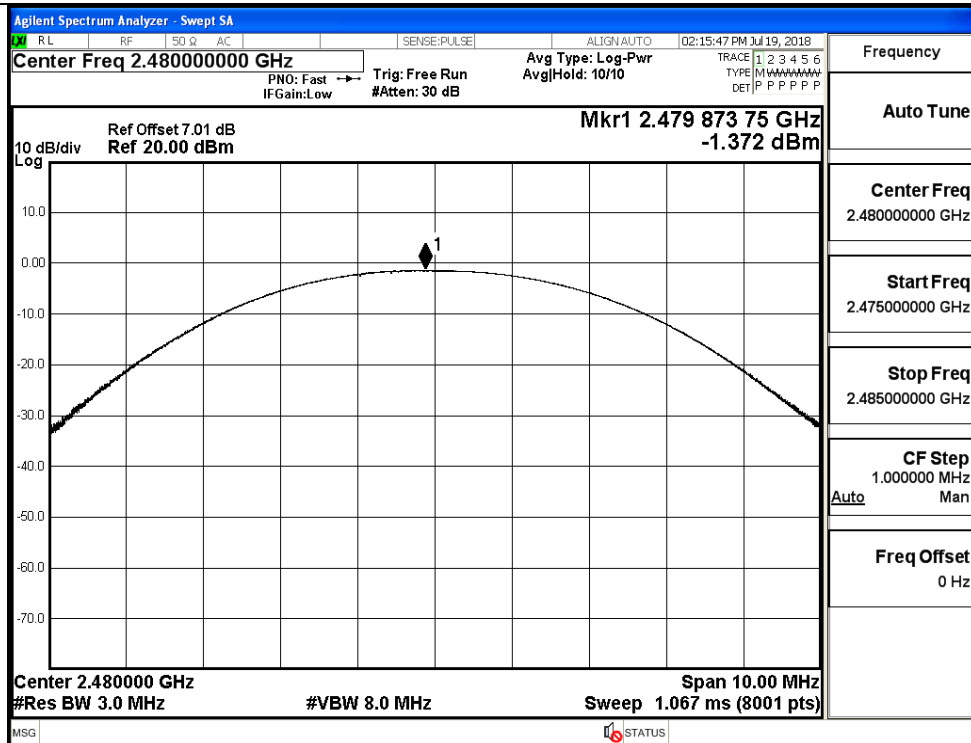
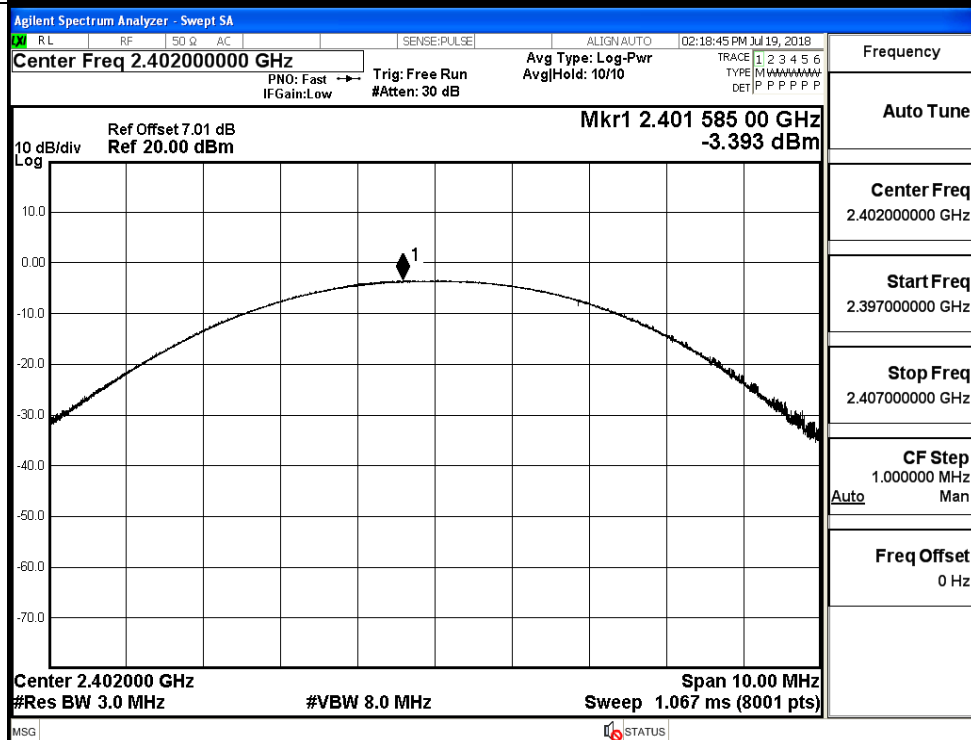
GFSK/LCH

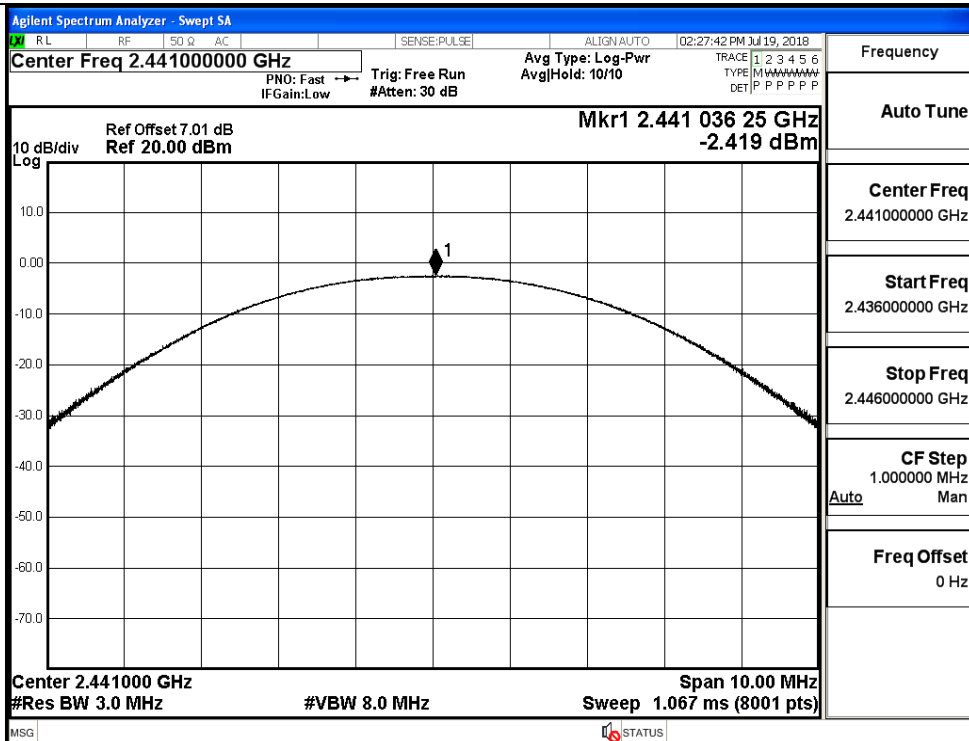
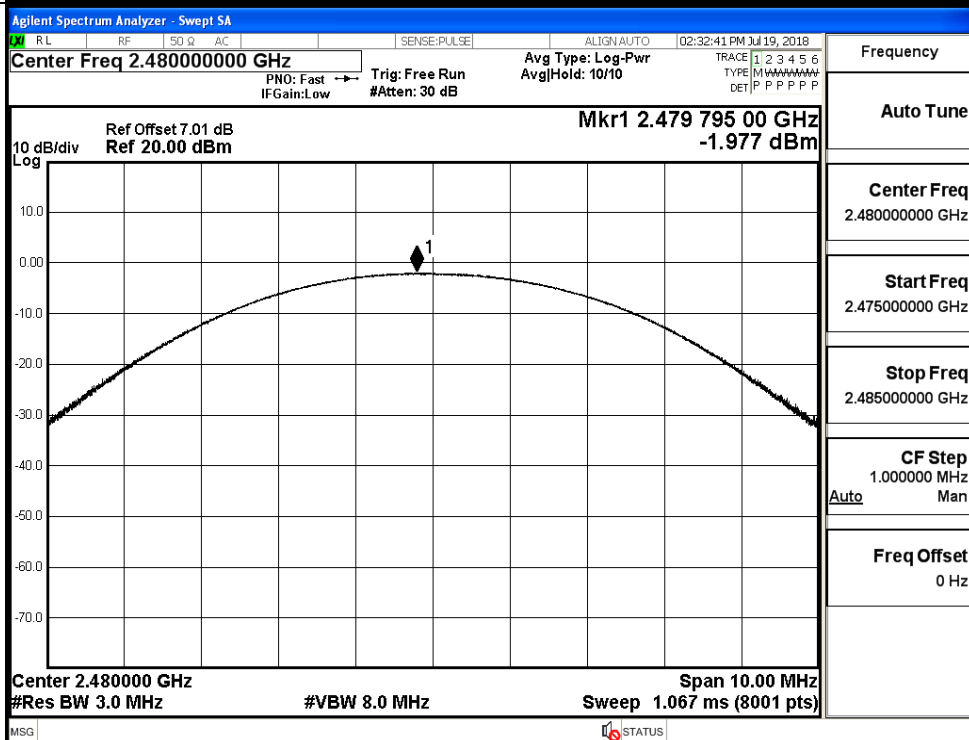


GFSK/MCH

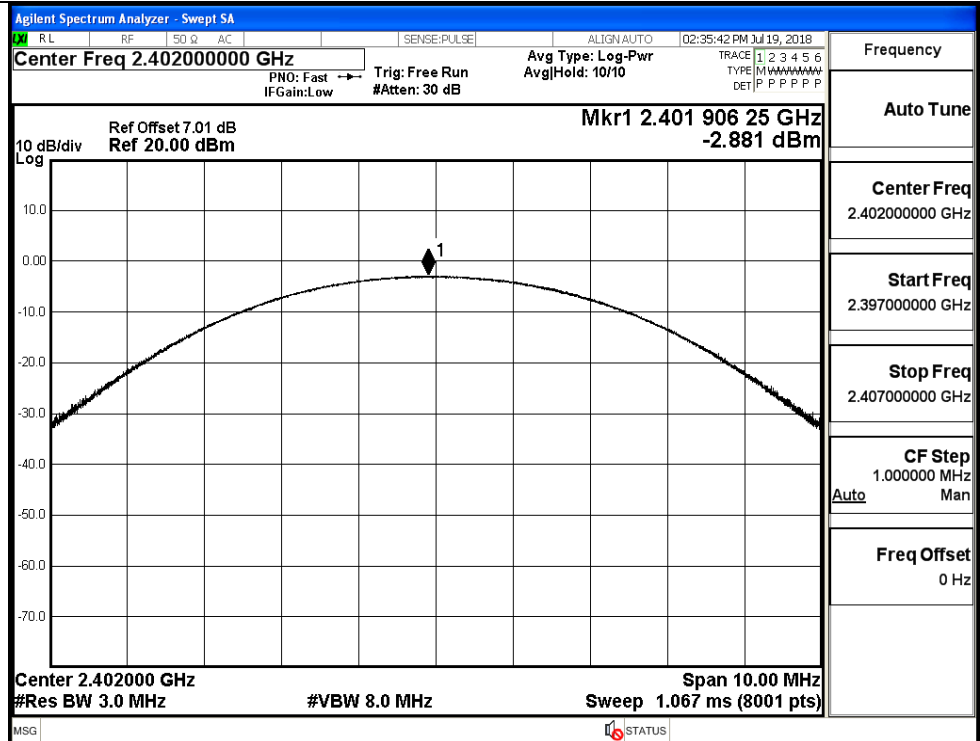


GFSK/HCH

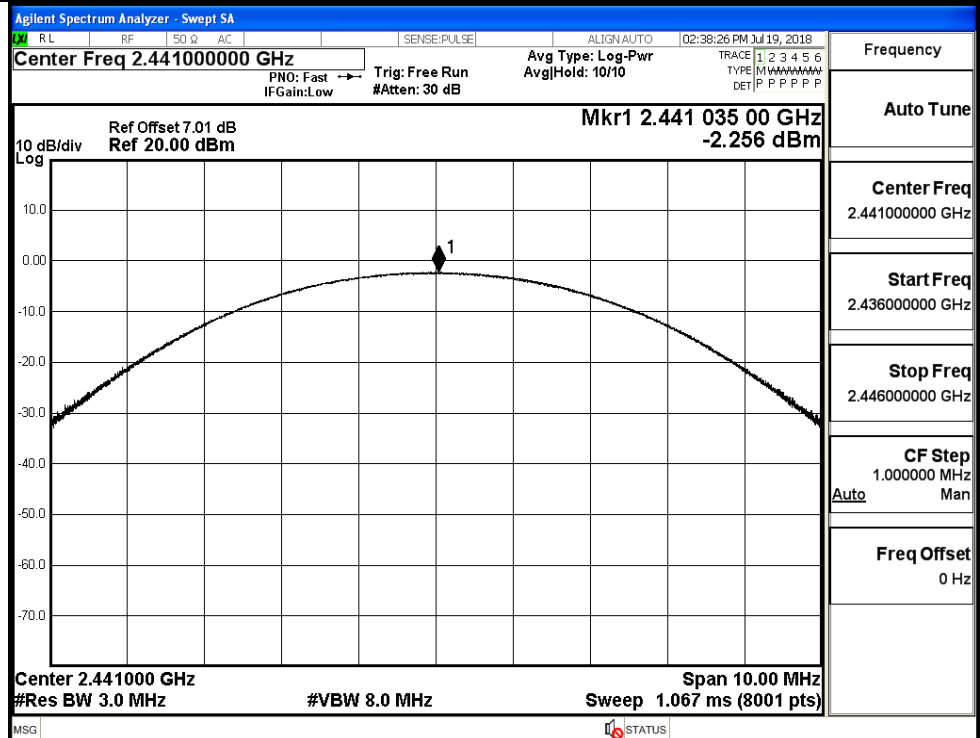
 π /4DQPSK/LCH

$\pi/4$ DQPSK/MCH $\pi/4$ DQPSK/HCH

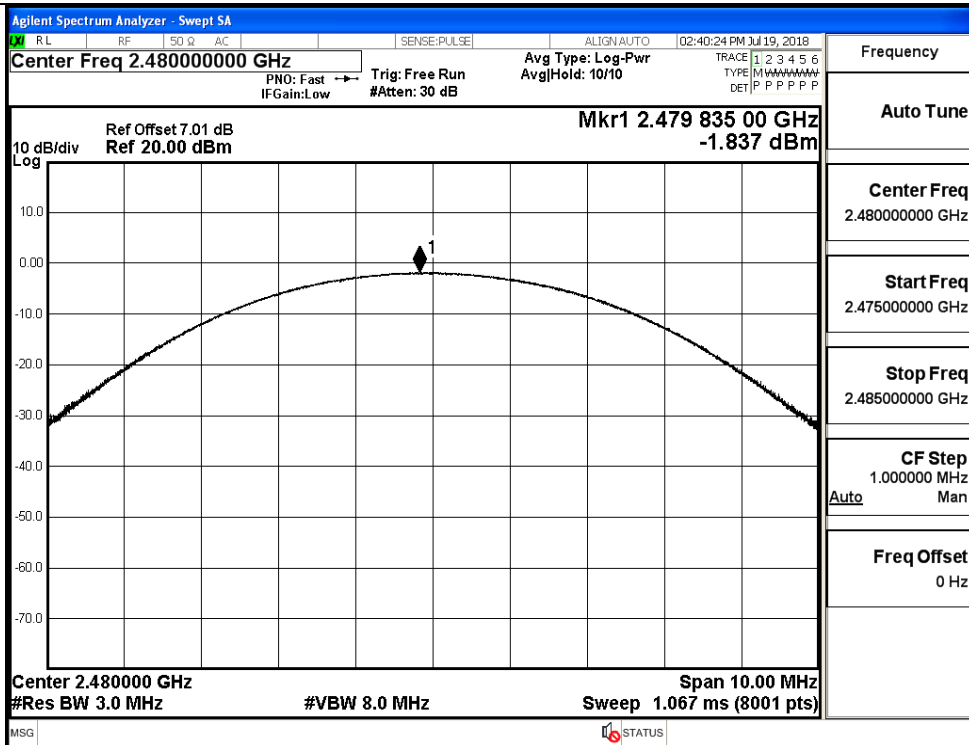
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

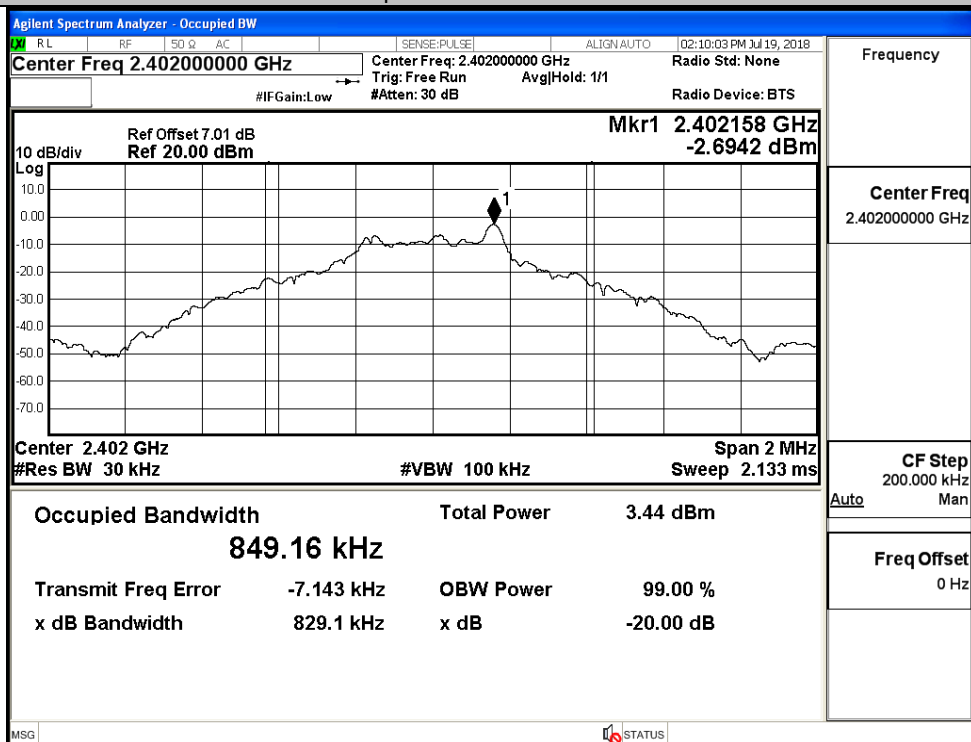


A.2 20dB Bandwidth

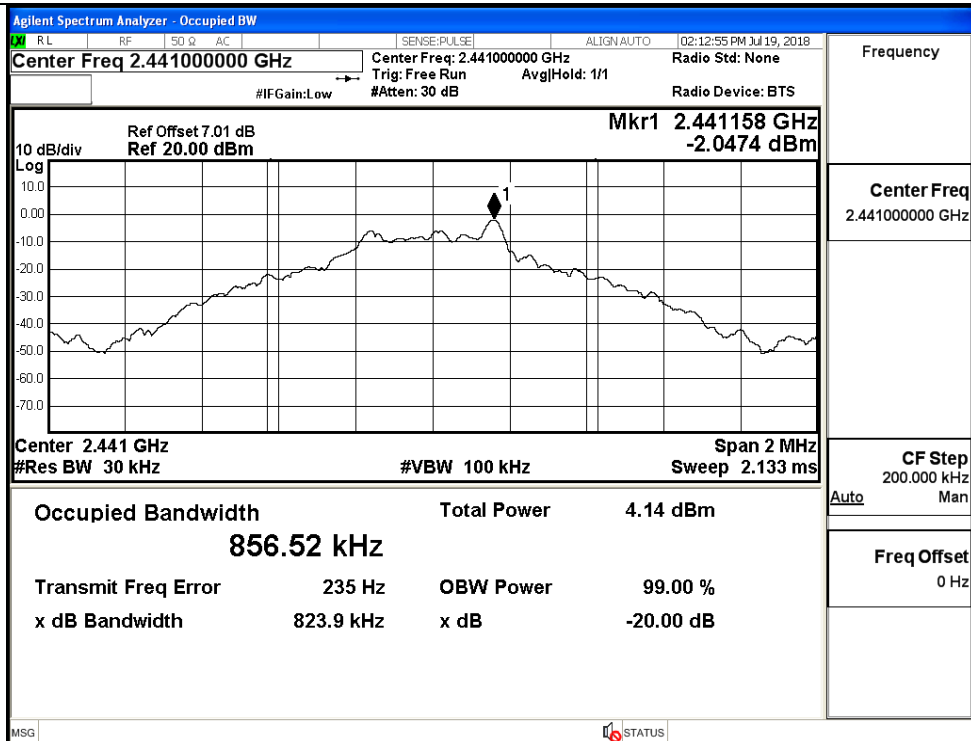
| Mode | Channel. | 99% Bandwidth [MHz] | 20dB Bandwidth [MHz] | Limit [MHz] | Verdict |
|---------------|----------|---------------------|----------------------|---------------|---------|
| GFSK | LCH | 0.84916 | 0.8291 | Not Specified | PASS |
| | MCH | 0.85652 | 0.8239 | Not Specified | PASS |
| | HCH | 0.85451 | 0.8278 | Not Specified | PASS |
| π /4DQPSK | LCH | 1.1733 | 1.2270 | Not Specified | PASS |
| | MCH | 1.1804 | 1.2950 | Not Specified | PASS |
| | HCH | 1.1751 | 1.3130 | Not Specified | PASS |
| 8DPSK | LCH | 1.1900 | 1.2950 | Not Specified | PASS |
| | MCH | 1.1879 | 1.2990 | Not Specified | PASS |
| | HCH | 1.1872 | 1.2970 | Not Specified | PASS |

Test Graphs

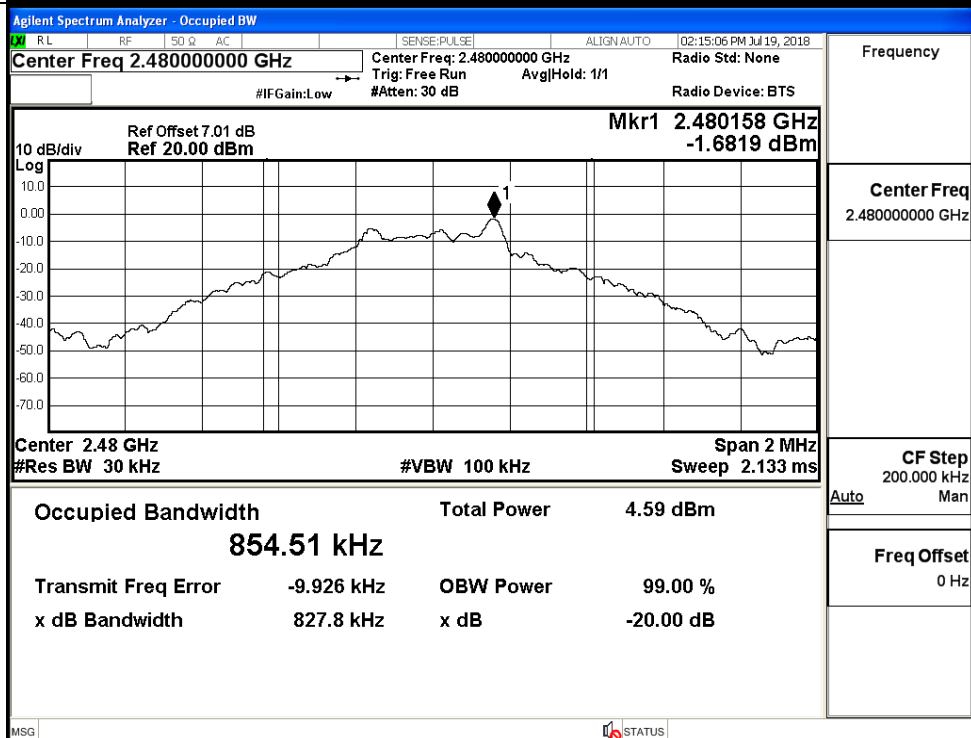
GFSK/LCH

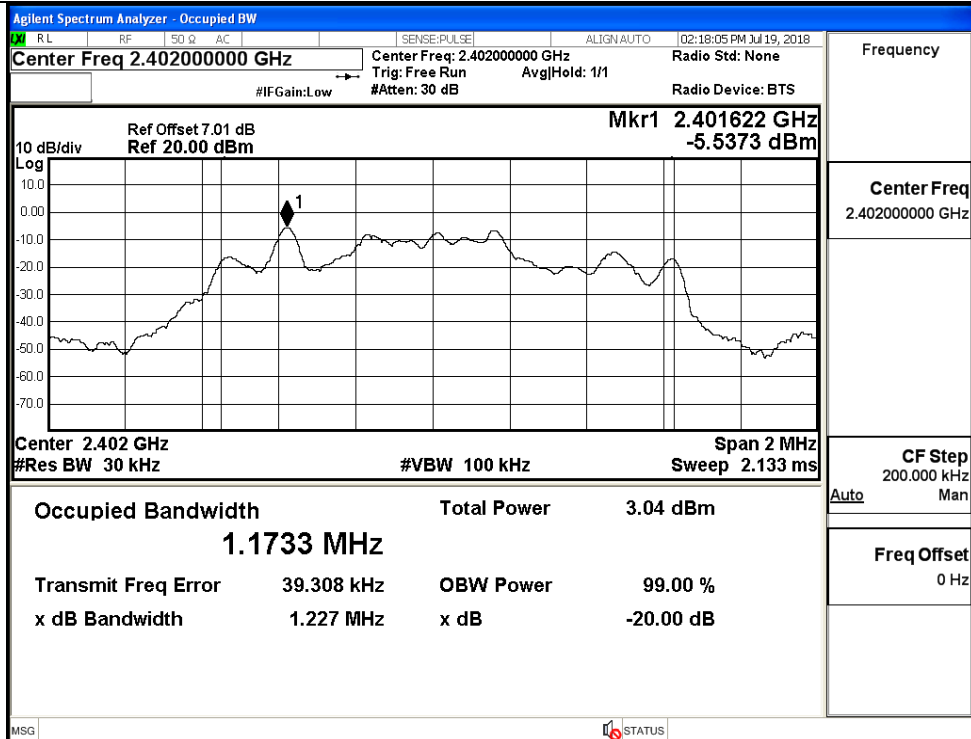
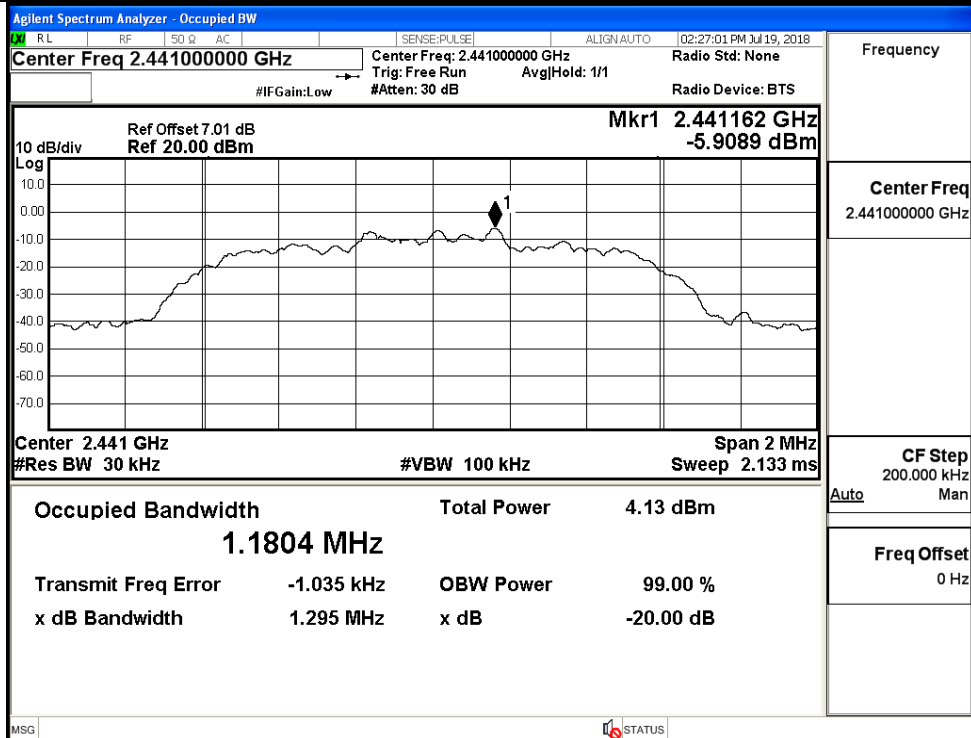


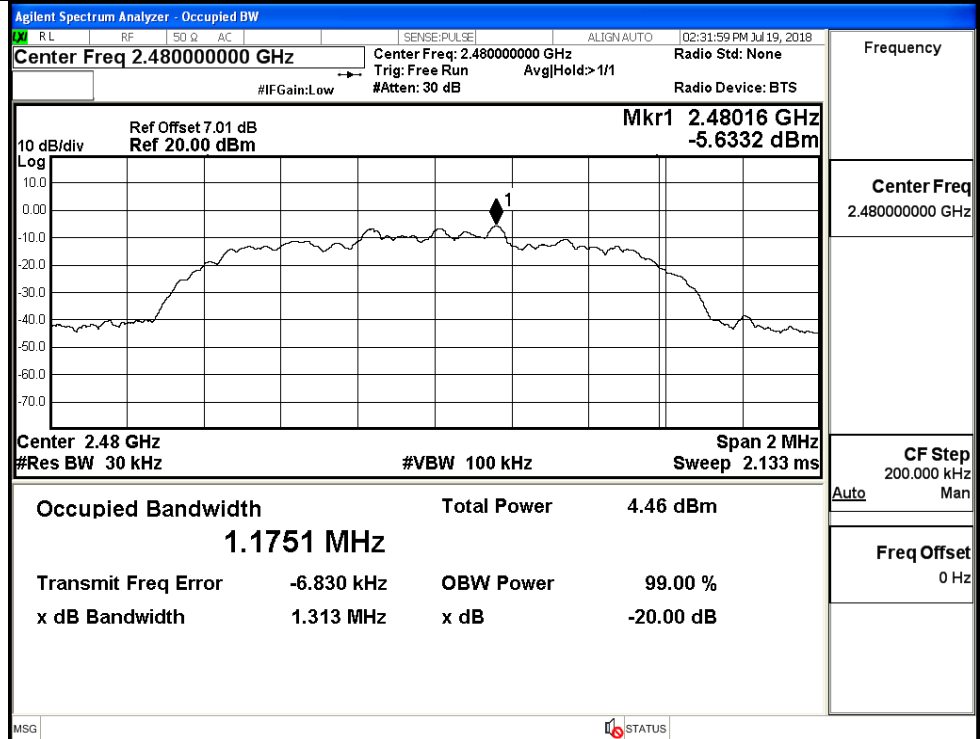
GFSK/MCH



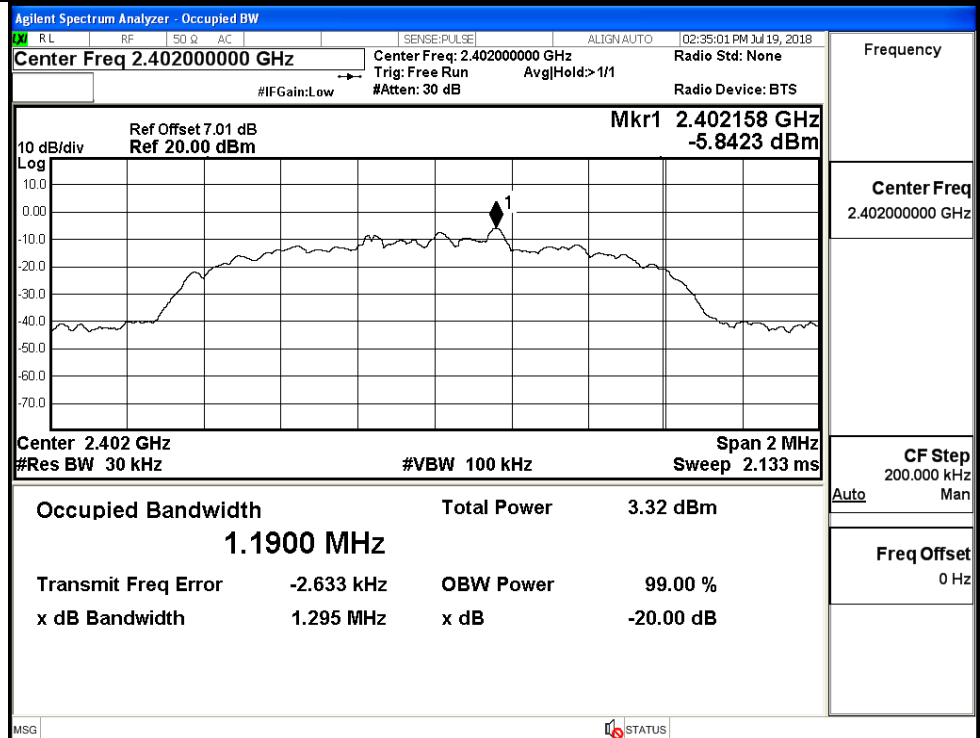
GFSK/HCH



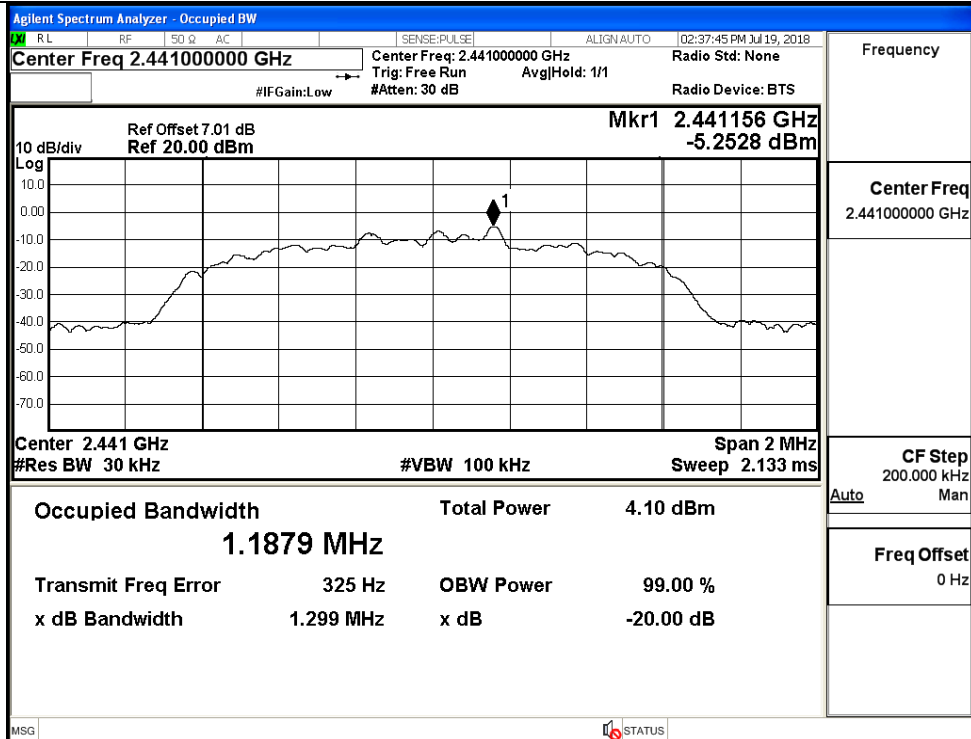
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

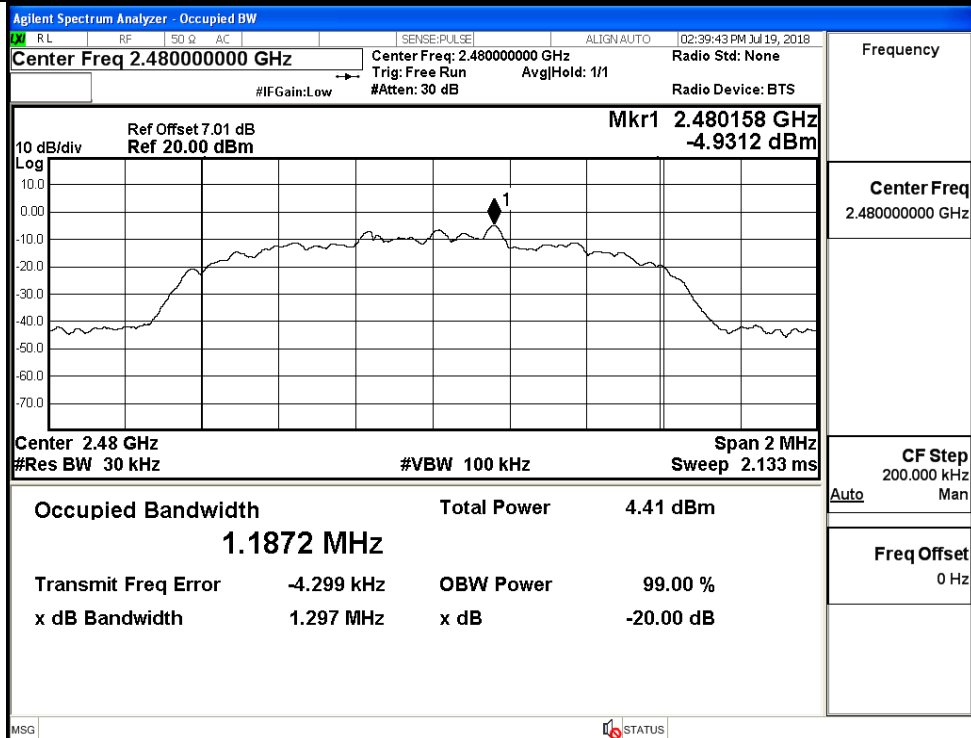
8DPSK/LCH



8DPSK/MCH



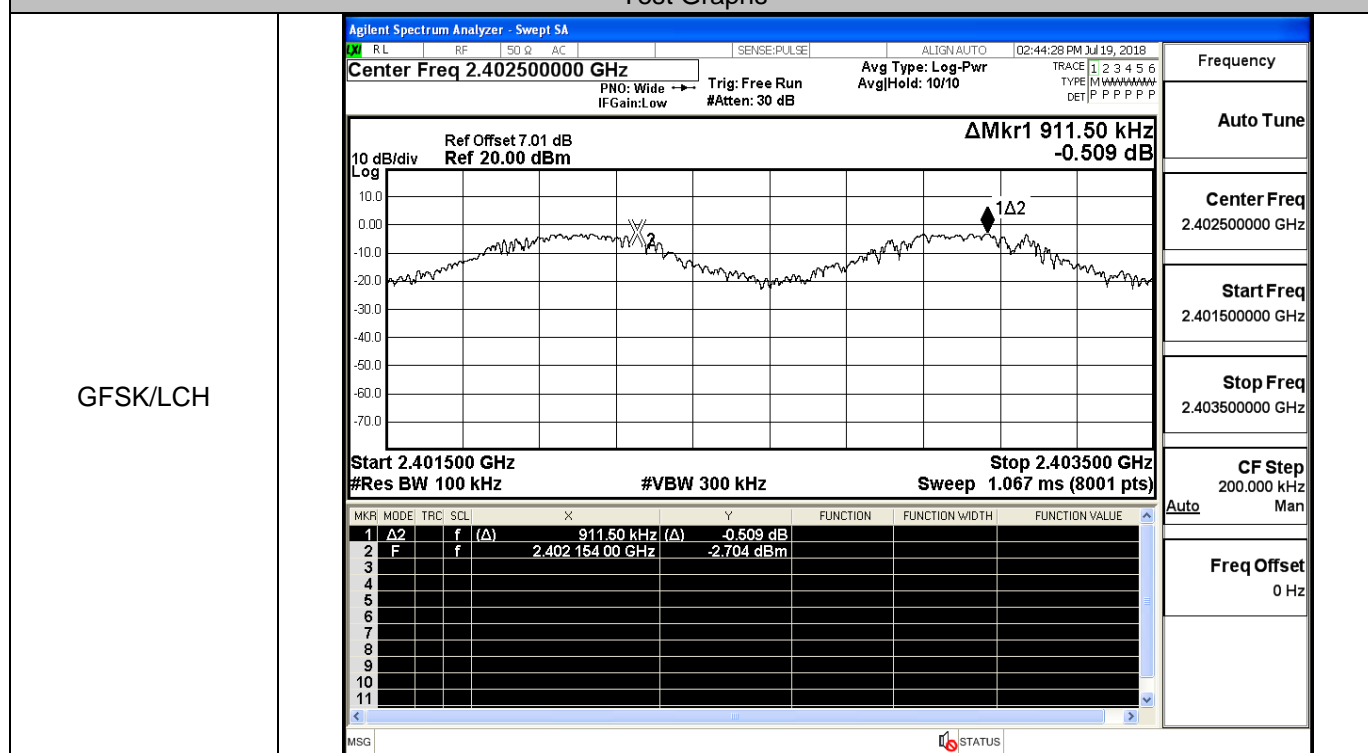
8DPSK/HCH



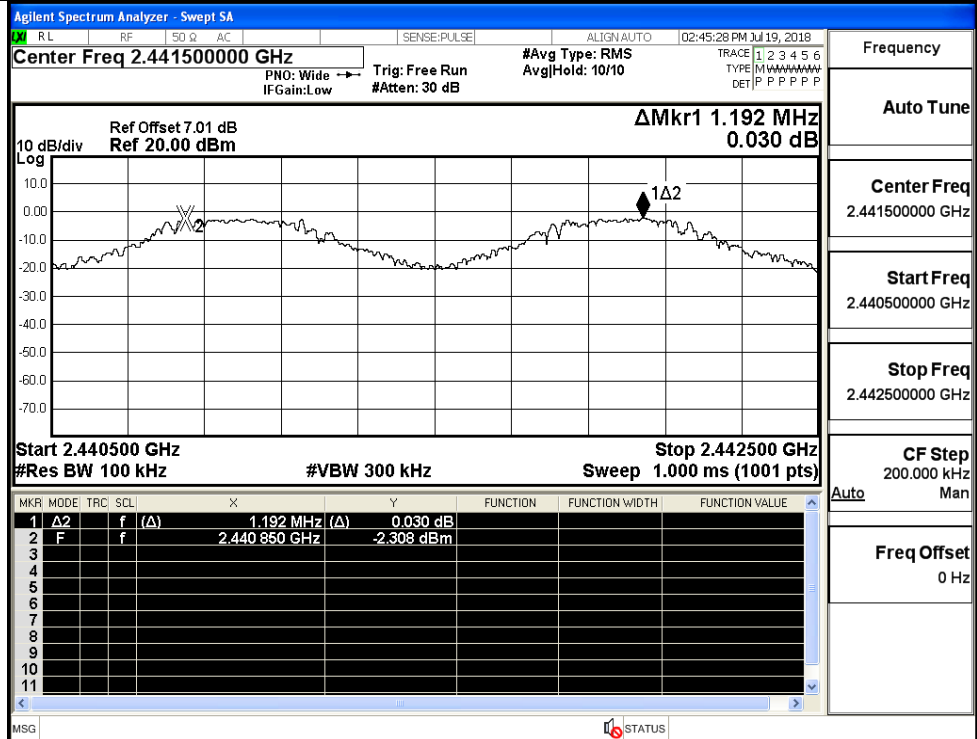
A.3 Carrier Frequency Separation

| Mode | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK | LCH | 0.912 | 0.553 | PASS |
| | MCH | 1.192 | 0.553 | PASS |
| | HCH | 1.202 | 0.553 | PASS |
| π /4DQPSK | LCH | 1.230 | 0.875 | PASS |
| | MCH | 1.028 | 0.875 | PASS |
| | HCH | 1.022 | 0.875 | PASS |
| 8DPSK | LCH | 0.992 | 0.866 | PASS |
| | MCH | 1.194 | 0.866 | PASS |
| | HCH | 0.980 | 0.866 | PASS |

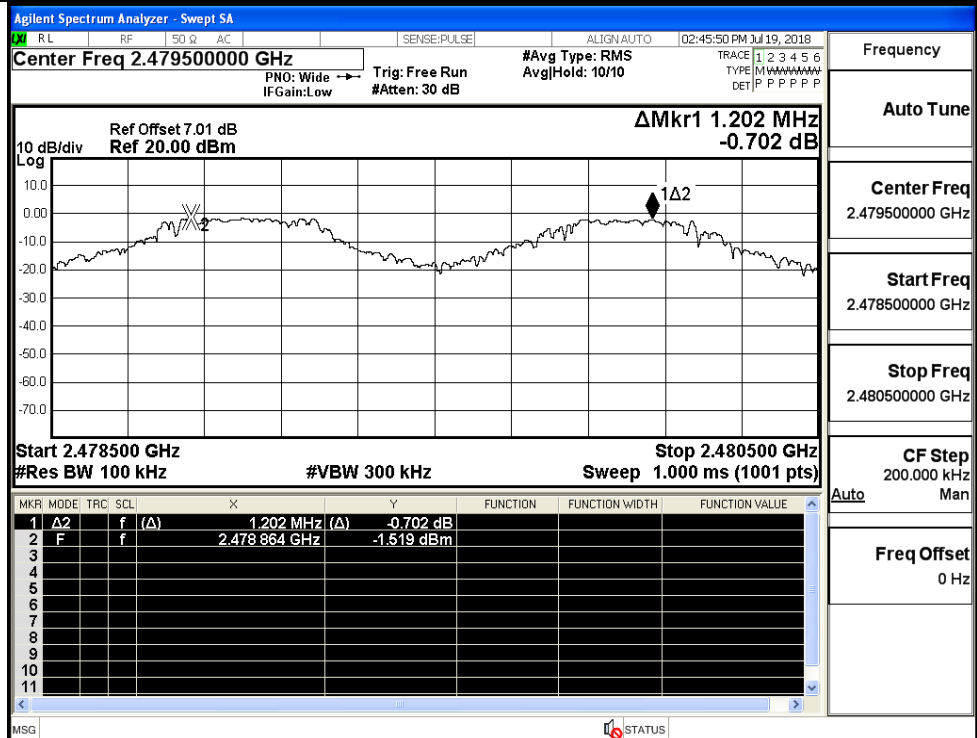
Test Graphs

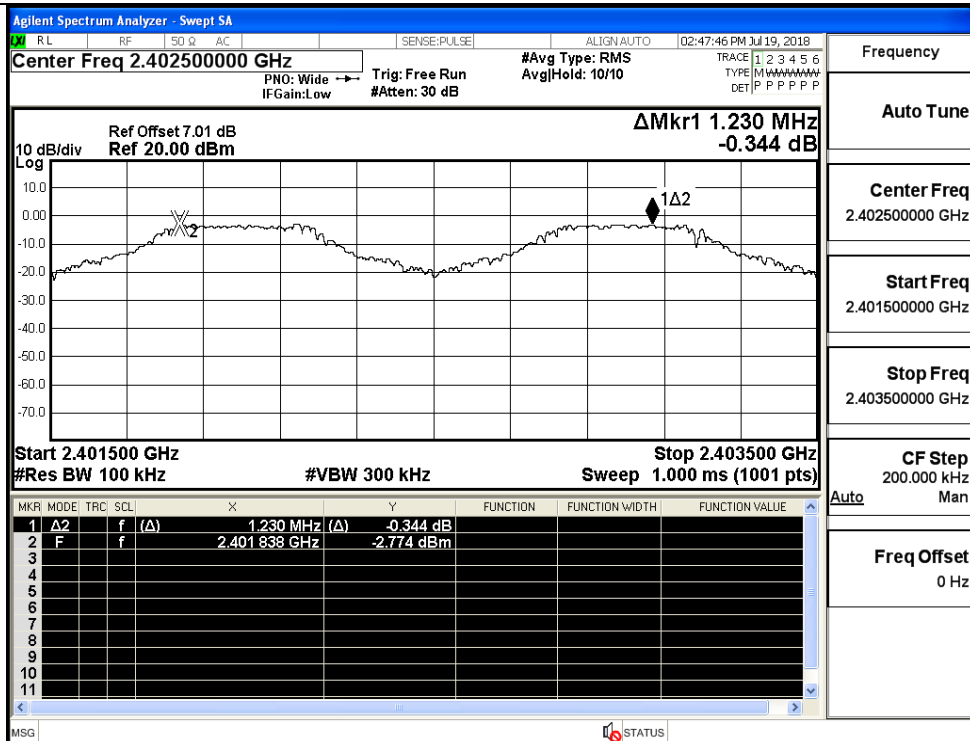


GFSK/MCH



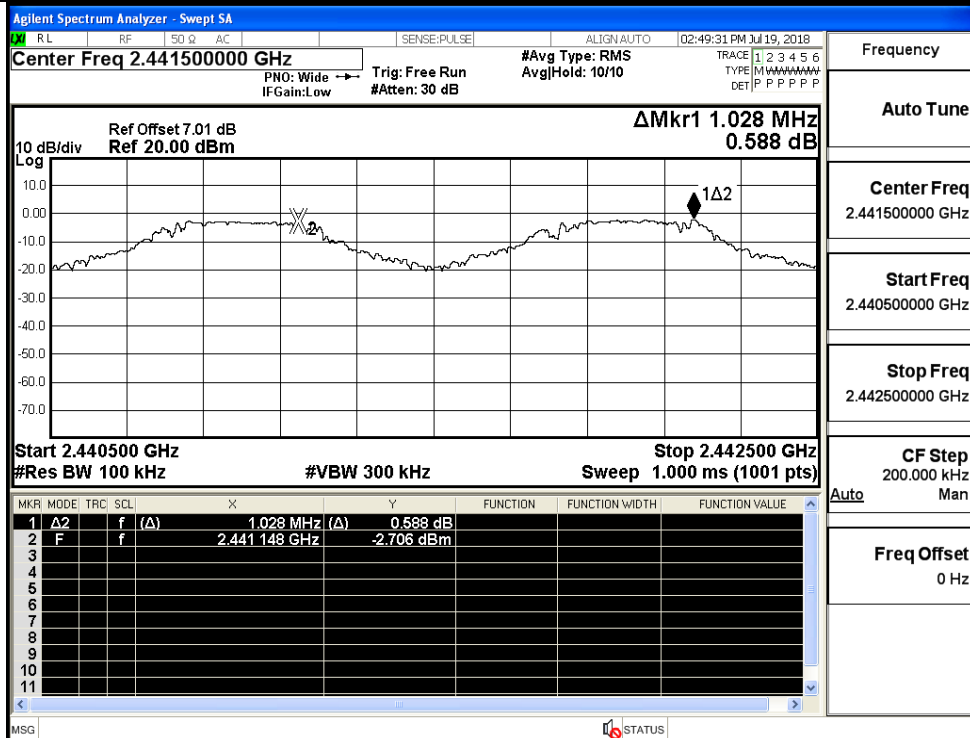
GFSK/HCH



$\pi/4$ DQPSK/LCH

Frequency

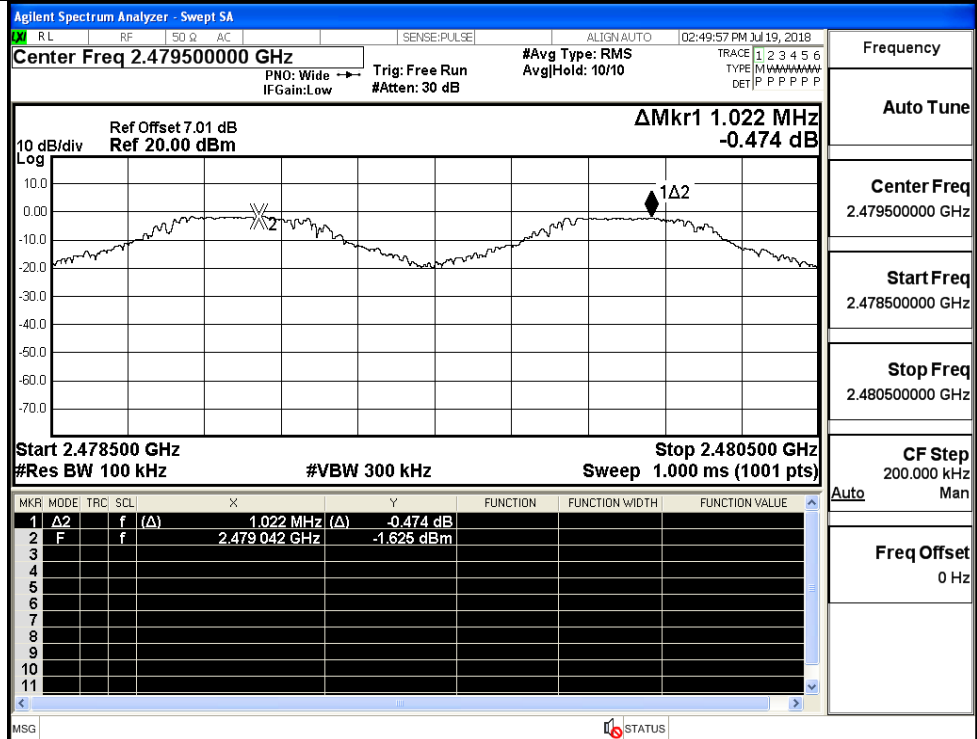
Auto Tune

Center Freq
2.402500000 GHzStart Freq
2.401500000 GHzStop Freq
2.403500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/MCH

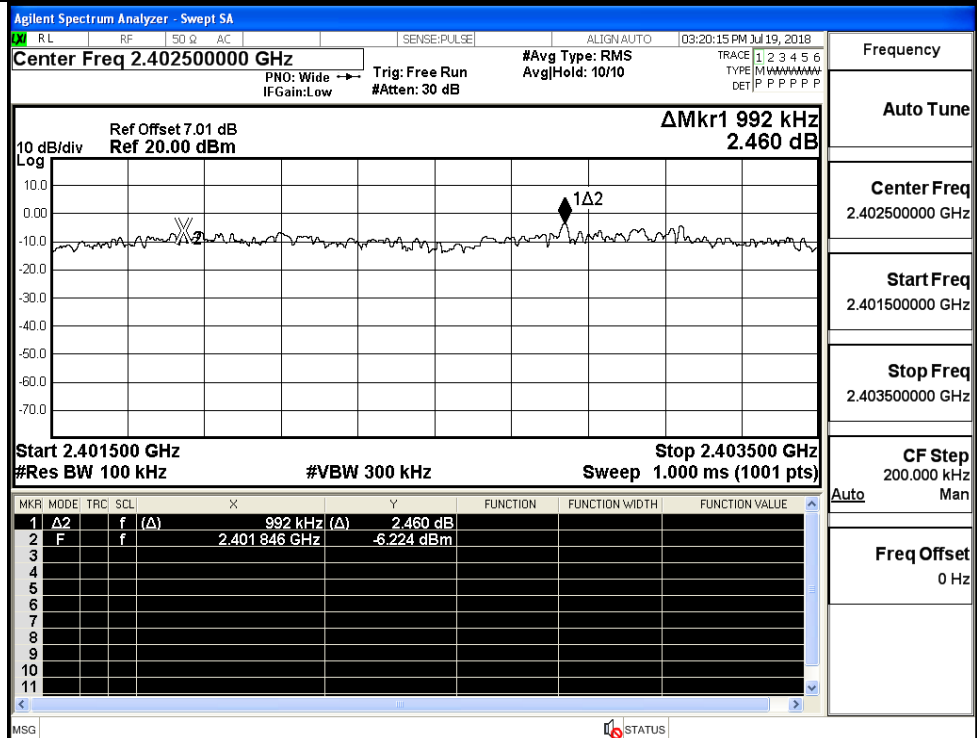
Frequency

Auto Tune

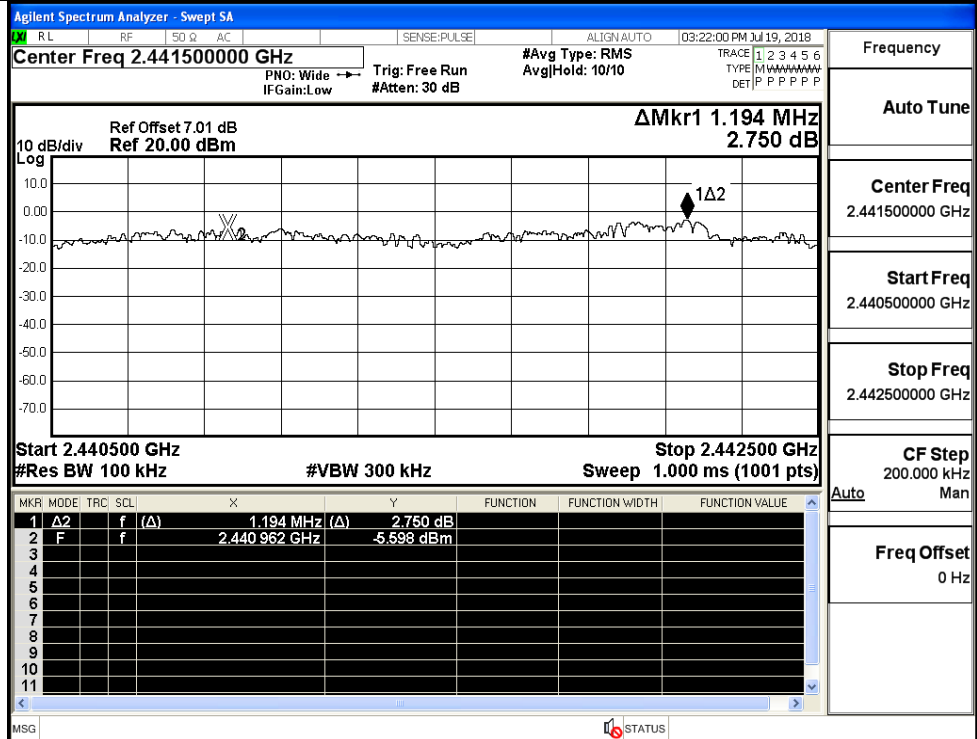
Center Freq
2.441500000 GHzStart Freq
2.440500000 GHzStop Freq
2.442500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH

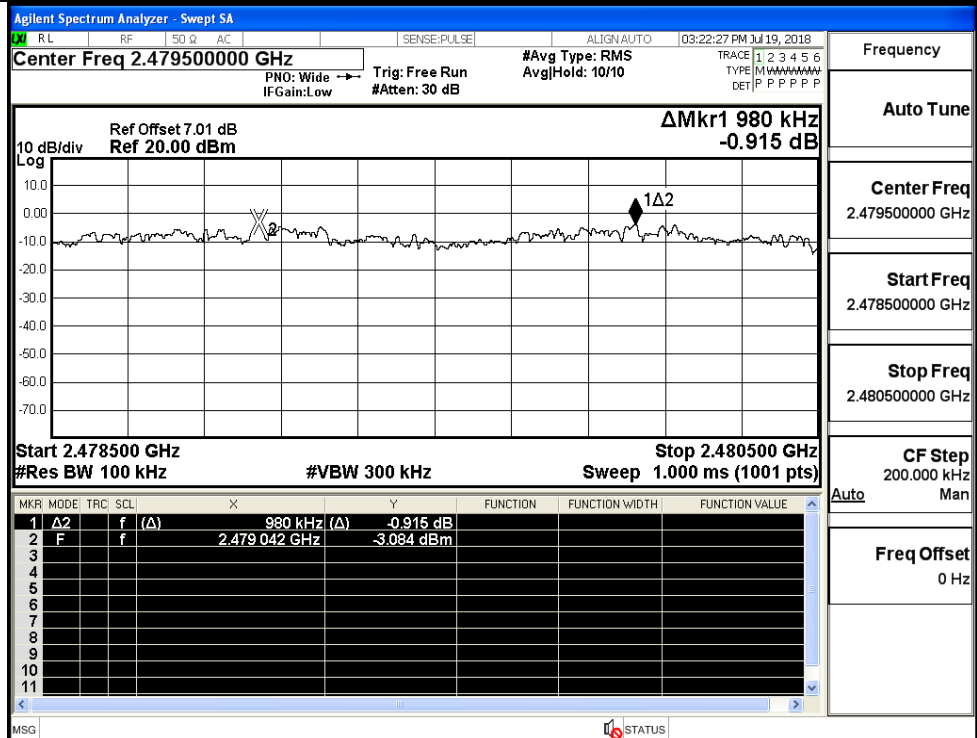
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

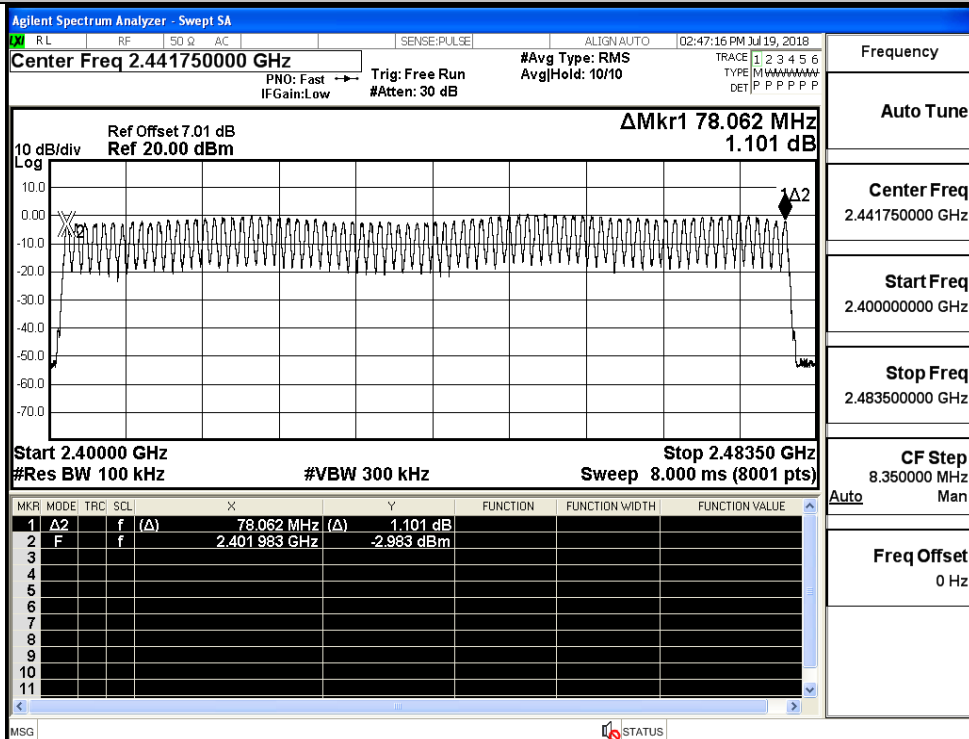
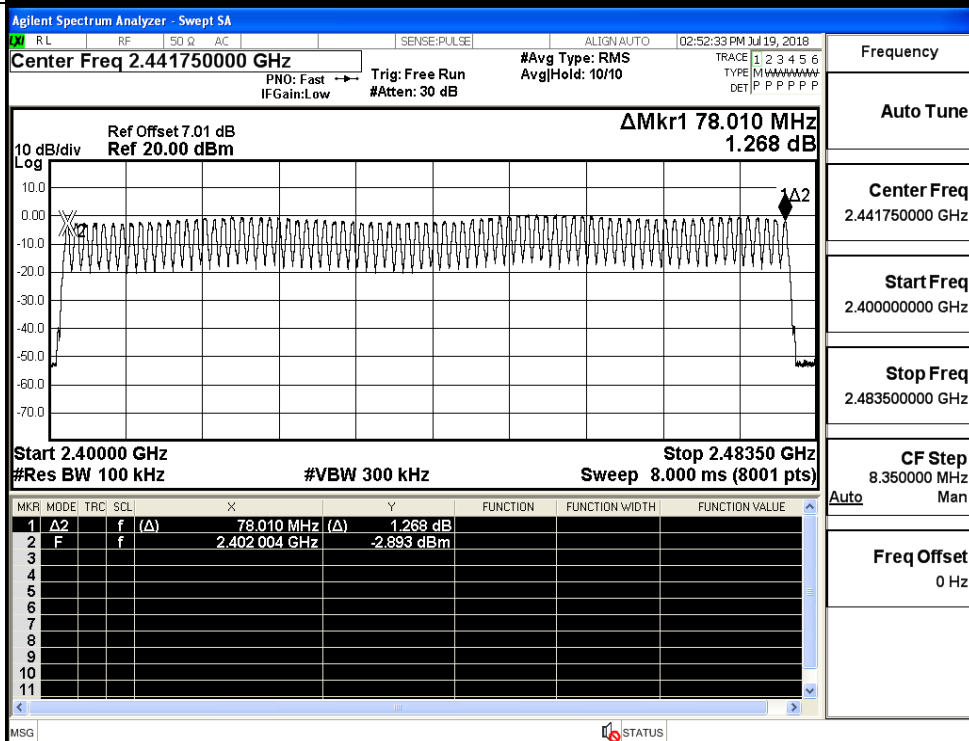


A.4 Hopping Channel Number

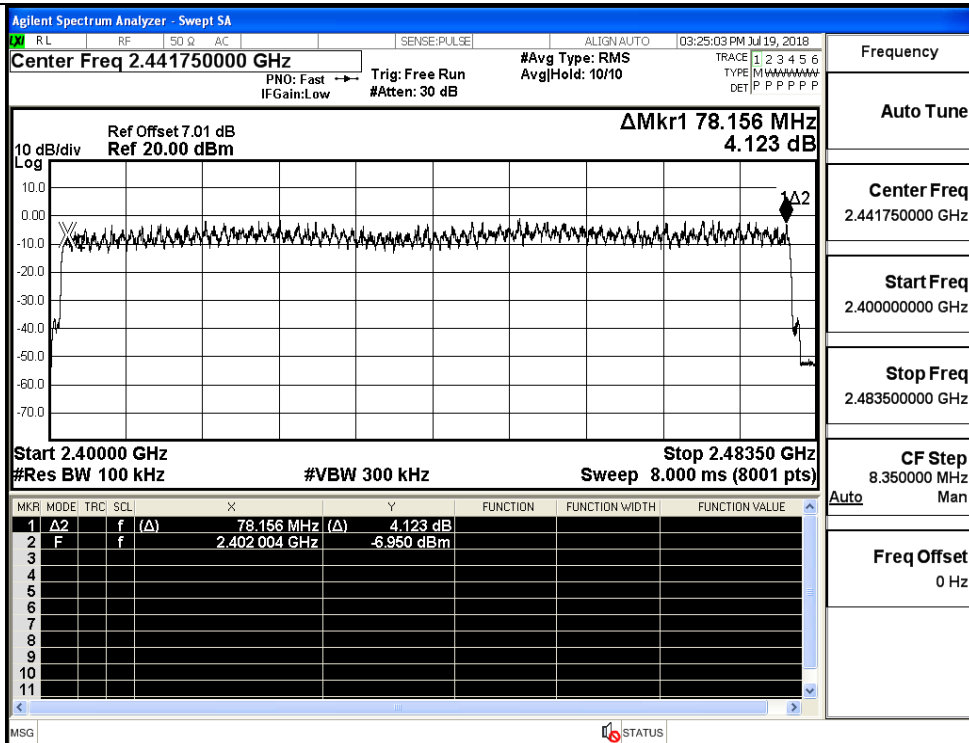
| Mode | Channel. | Number of Hopping Channel [N] | Limit [N] | Verdict |
|---------------|----------|-------------------------------|-----------|---------|
| GFSK | Hop | 79 | ≥ 15 | PASS |
| $\pi/4$ DQPSK | Hop | 79 | ≥ 15 | PASS |
| 8DPSK | Hop | 79 | ≥ 15 | PASS |

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

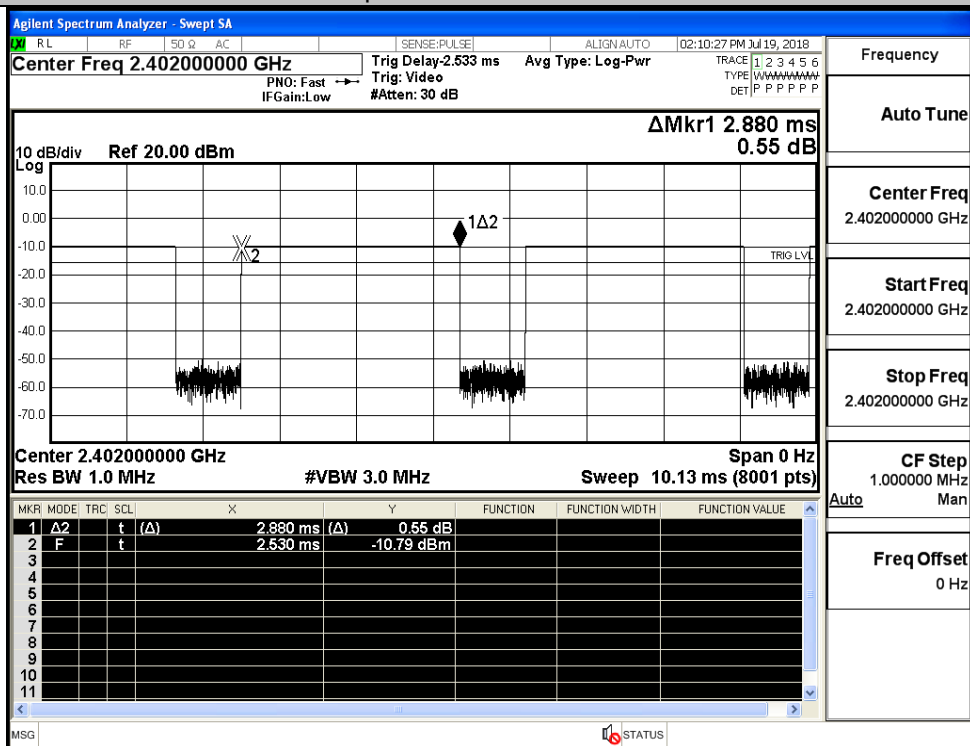


A.5 Dwell Time

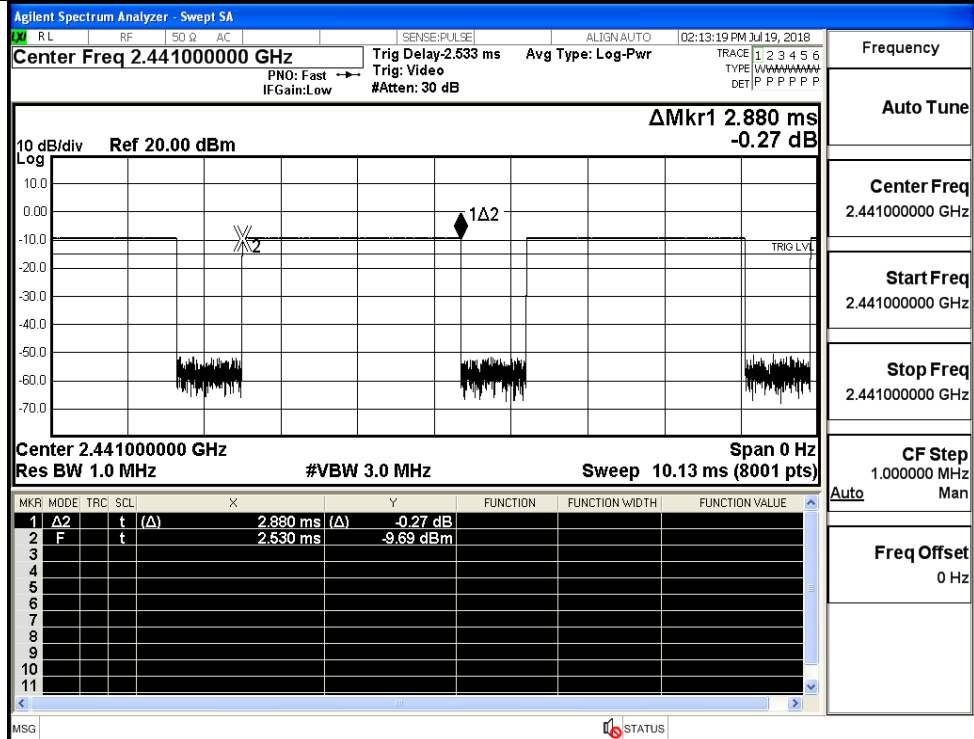
| Mode | Packet | Channel | Burst Width [ms/hop/ch] | Total Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|---------------|-----------|---------|
| GFSK | DH5 | LCH | 2.88 | 106.7 | 0.307 | 0.4 | PASS |
| | DH5 | MCH | 2.88 | 106.7 | 0.307 | 0.4 | PASS |
| | DH5 | HCH | 2.88 | 106.7 | 0.307 | 0.4 | PASS |
| $\pi/4$ DQPSK | 2DH5 | LCH | 2.88 | 106.7 | 0.307 | 0.4 | PASS |
| | 2DH5 | MCH | 2.88 | 106.7 | 0.307 | 0.4 | PASS |
| | 2DH5 | HCH | 2.88 | 106.7 | 0.307 | 0.4 | PASS |
| 8DPSK | 3DH5 | LCH | 2.88 | 106.7 | 0.308 | 0.4 | PASS |
| | 3DH5 | MCH | 2.88 | 106.7 | 0.308 | 0.4 | PASS |
| | 3DH5 | HCH | 2.88 | 106.7 | 0.308 | 0.4 | PASS |

Test Graphs

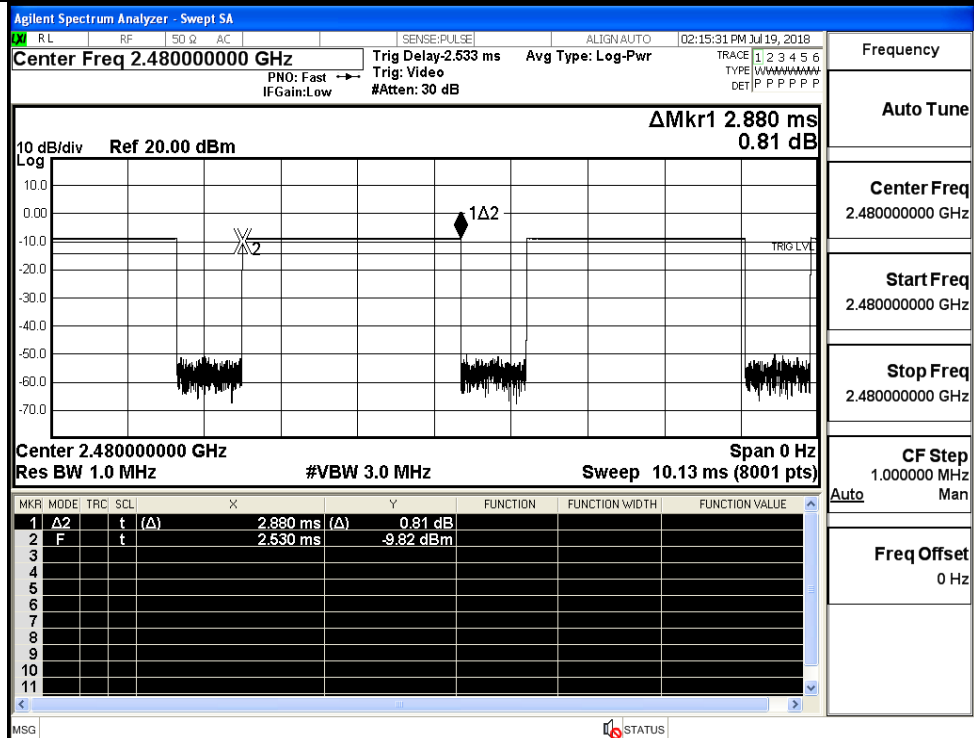
GFSK_DH5/LCH



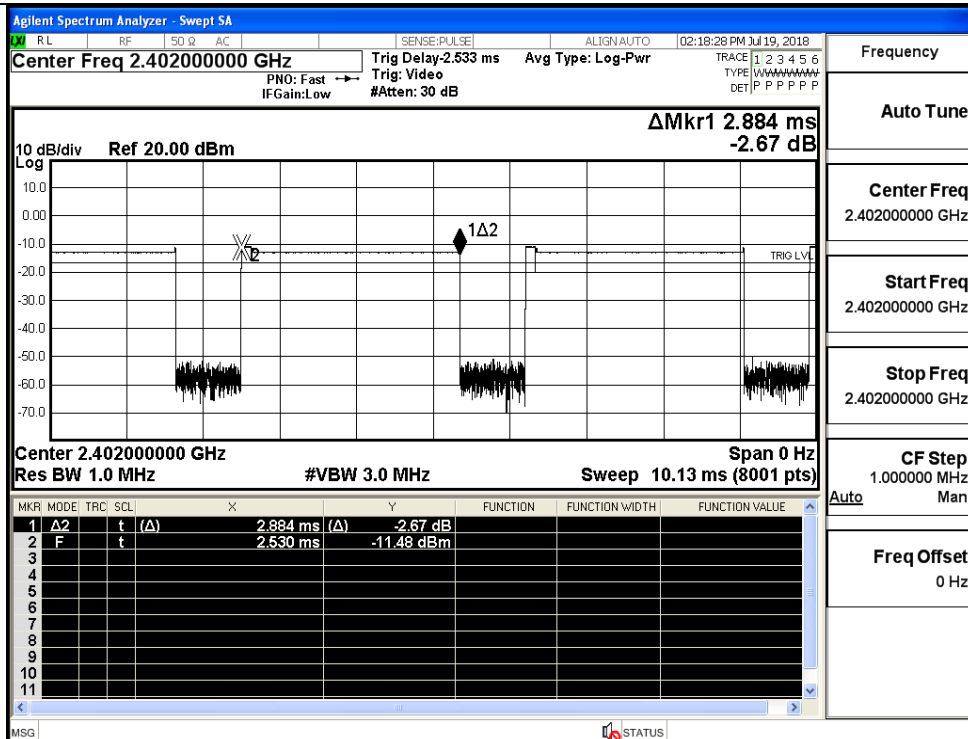
GFSK_DH5/MCH



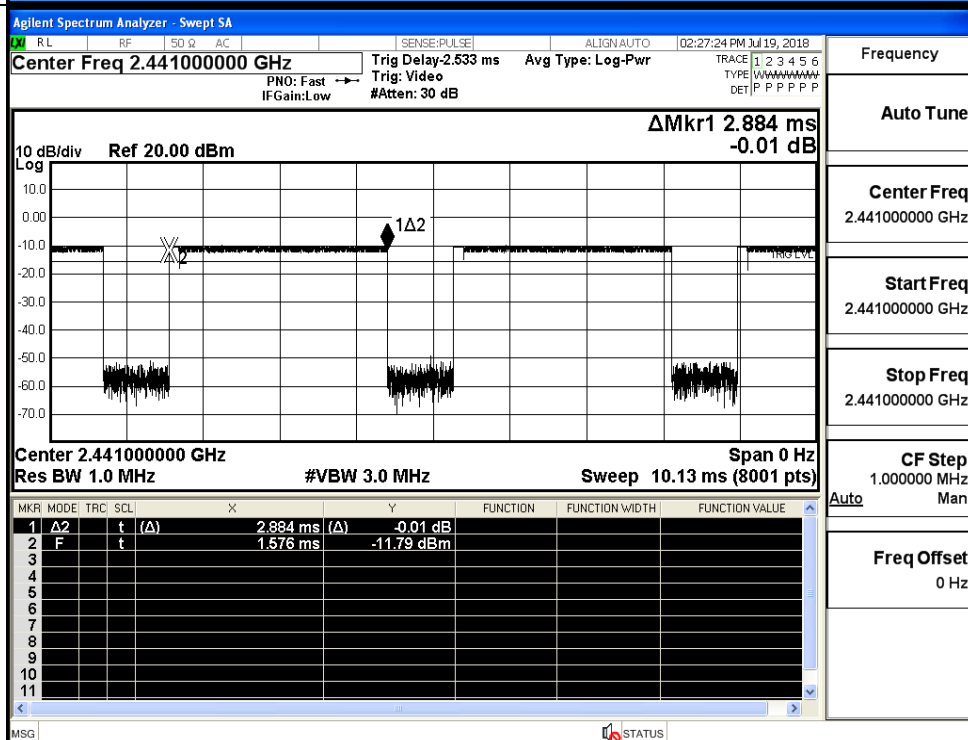
GFSK_DH5/HCH



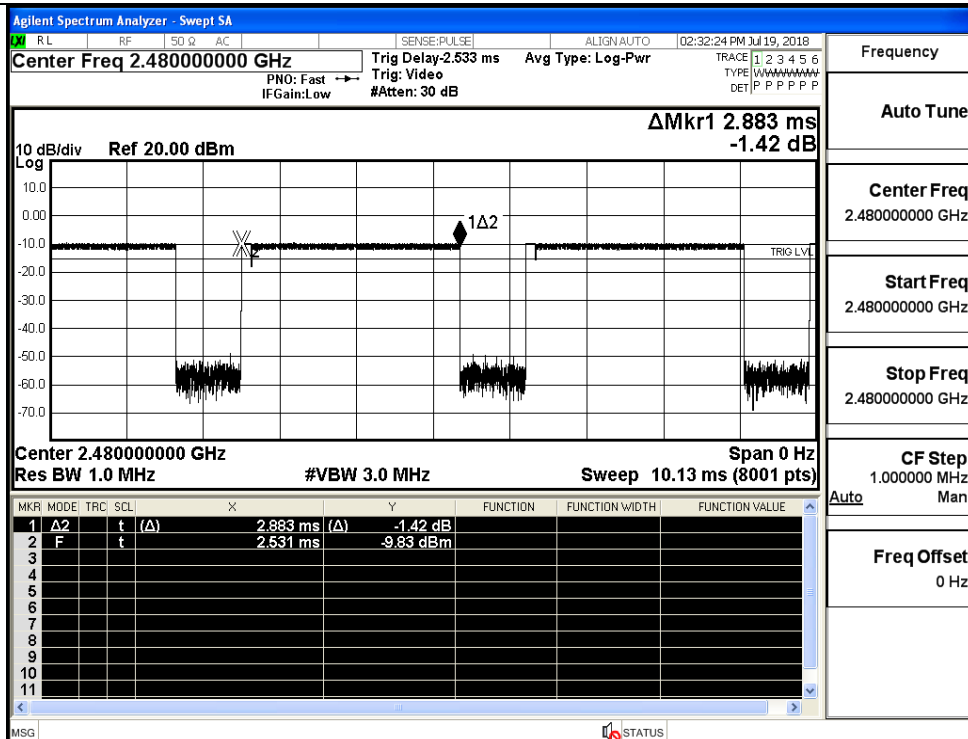
$\pi/4$ DQPSK
_2DH5/LCH



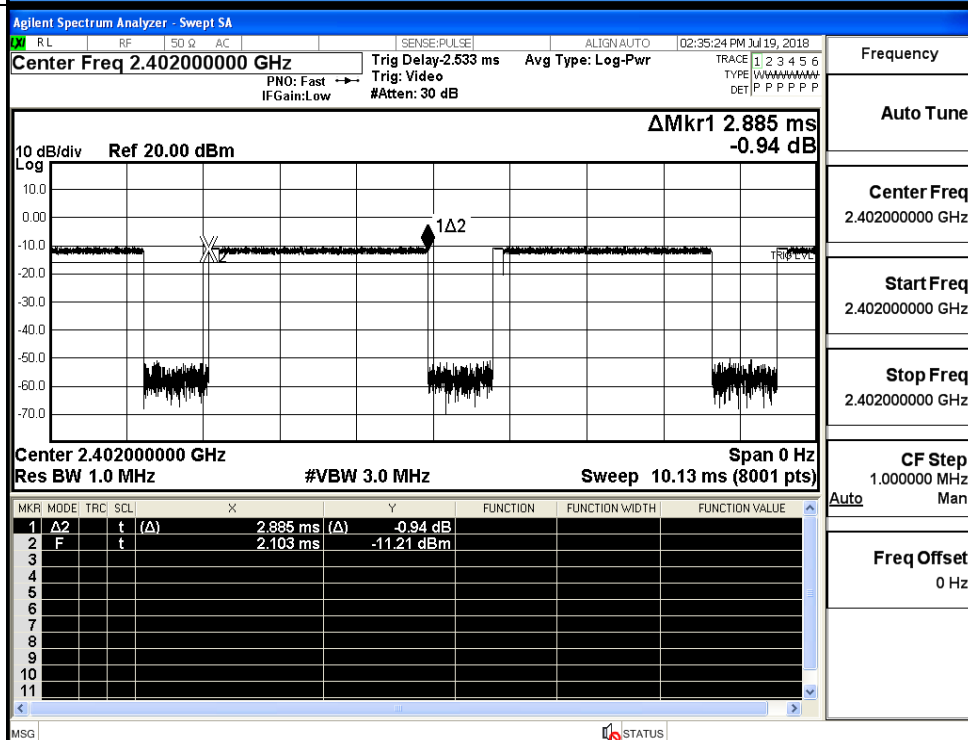
$\pi/4$ DQPSK
_2DH5/MCH



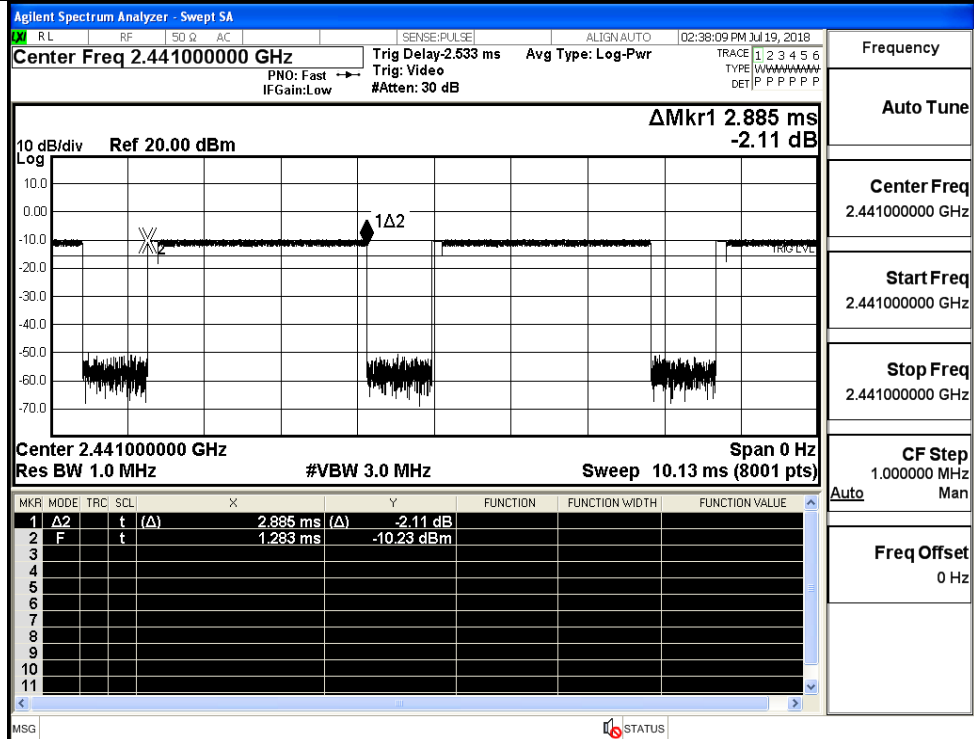
$\pi/4$ DQPSK
_2DH5/HCH



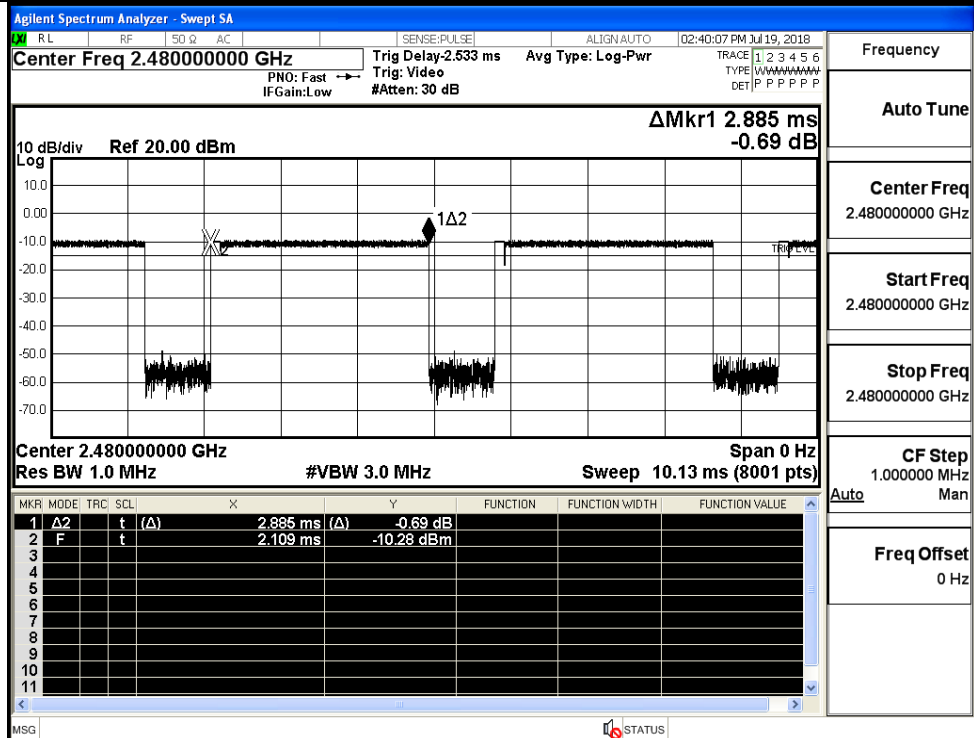
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

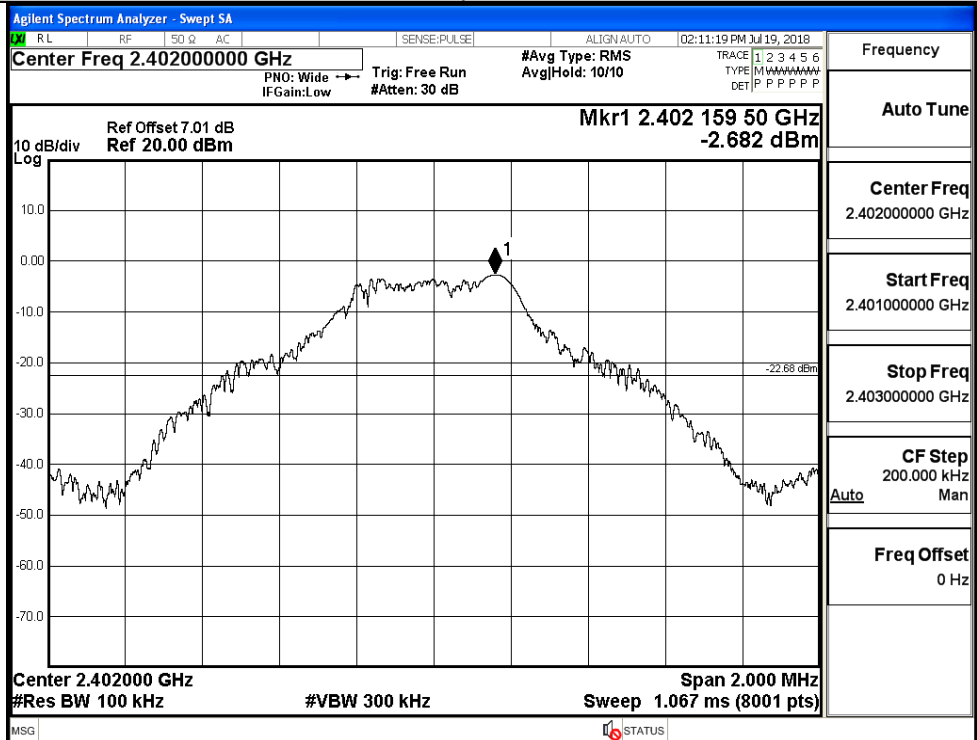


A.6 RF Conducted Spurious Emissions

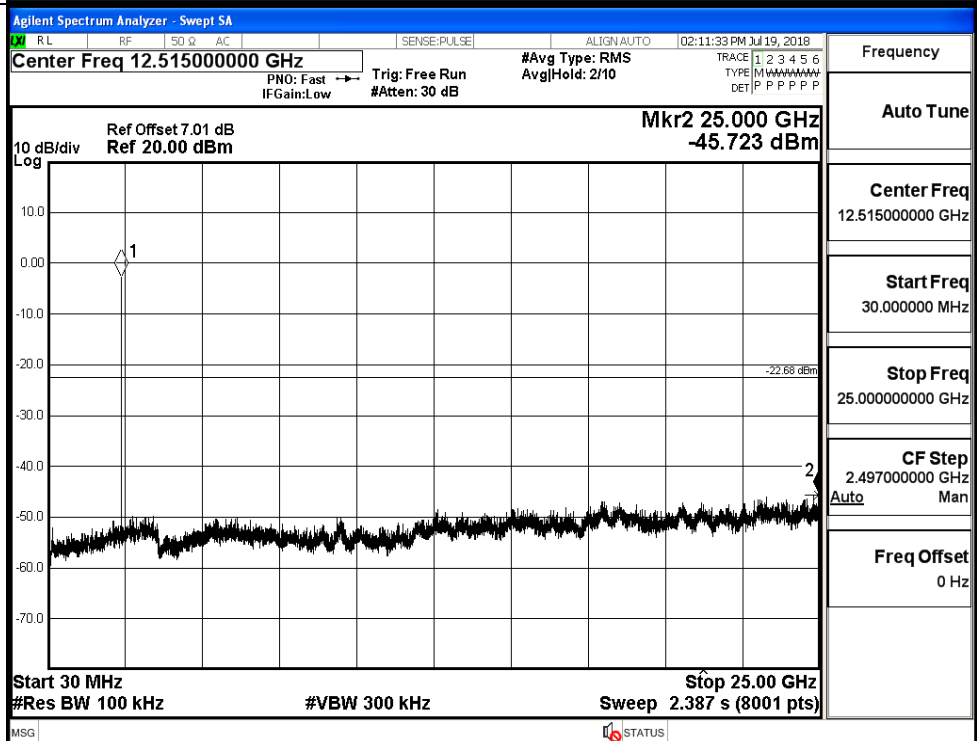
| Mode | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| GFSK | LCH | -2.682 | -45.723 | -22.682 | PASS |
| | MCH | -2.04 | -45.330 | -22.040 | PASS |
| | HCH | -1.602 | -45.564 | -21.602 | PASS |
| $\pi/4$ DQPSK | LCH | -4.509 | -46.600 | -24.509 | PASS |
| | MCH | -3.18 | -46.321 | -23.180 | PASS |
| | HCH | -2.953 | -45.602 | -22.953 | PASS |
| 8DPSK | LCH | -3.947 | -45.475 | -23.947 | PASS |
| | MCH | -3.231 | -46.347 | -23.231 | PASS |
| | HCH | -2.859 | -45.290 | -22.859 | PASS |

GFSK_LCH_Graphs

Pref

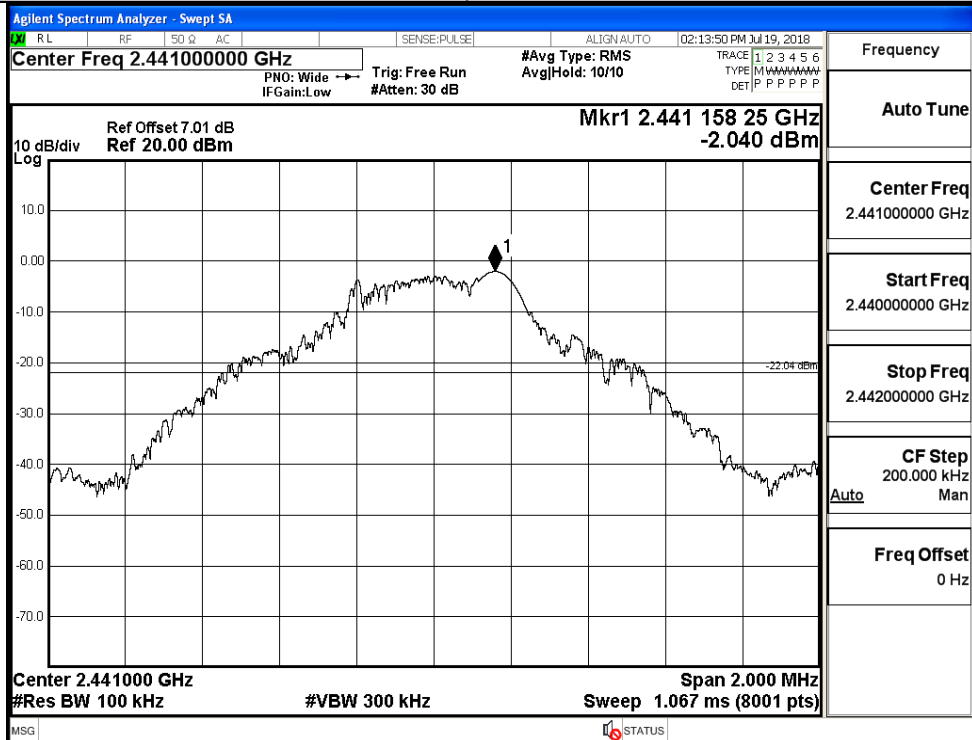


Puw

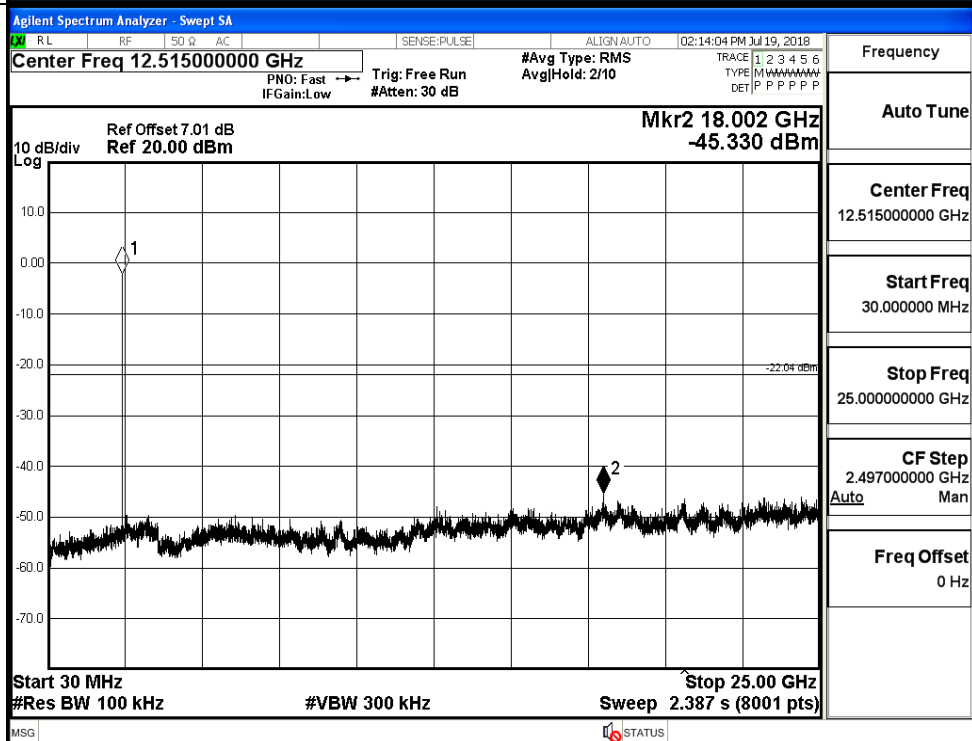


GFSK_MCH_Graphs

Pref

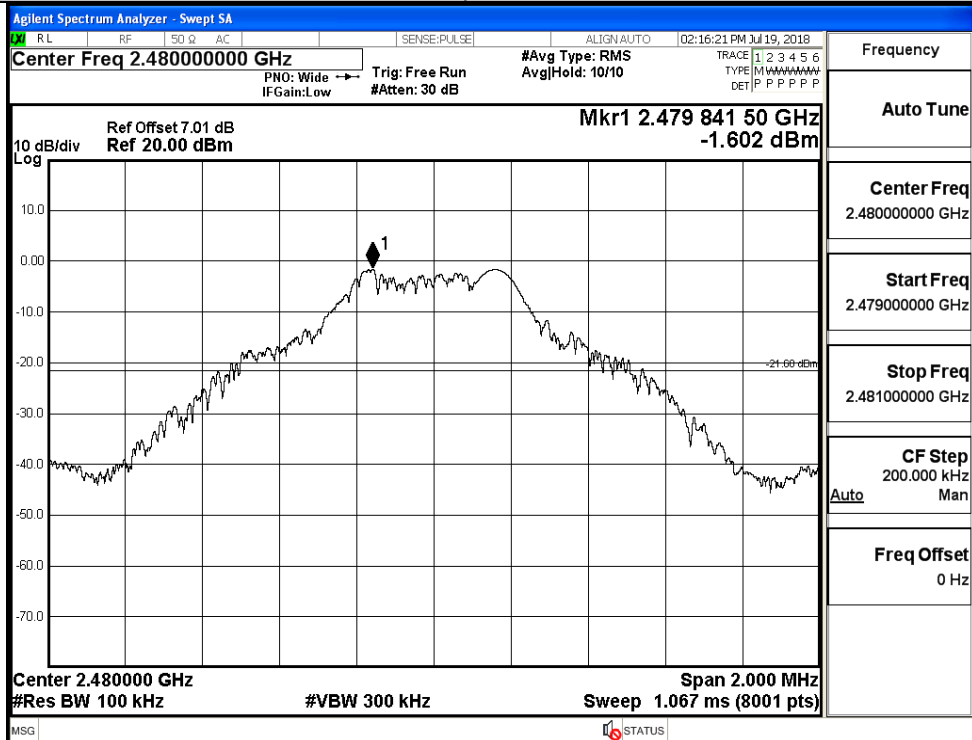


Puw

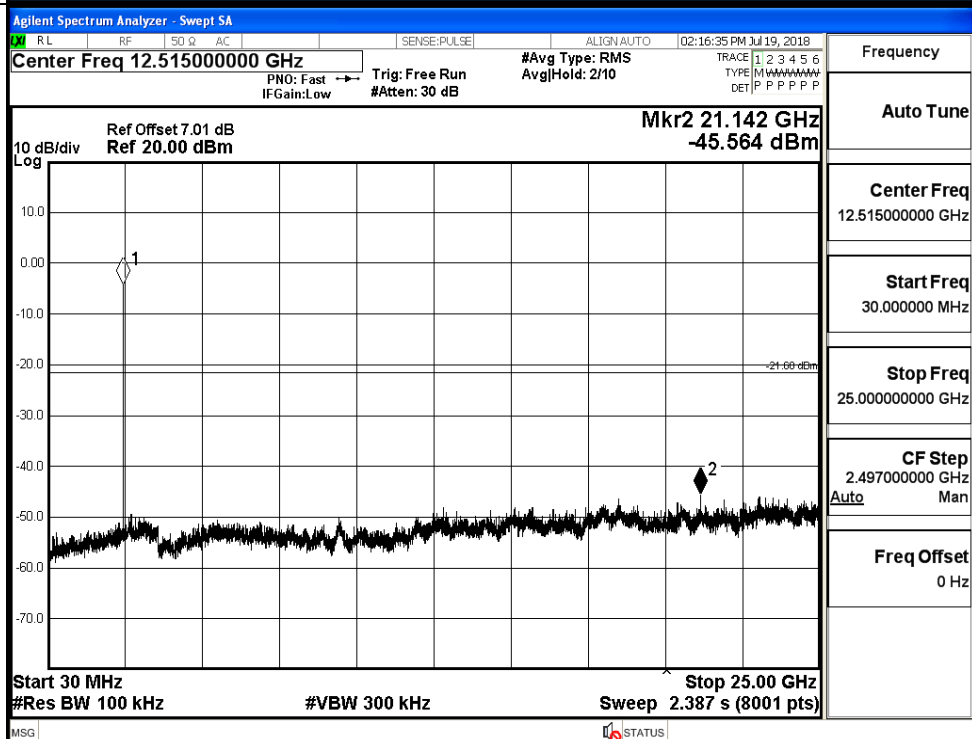


GFSK_HCH_Graphs

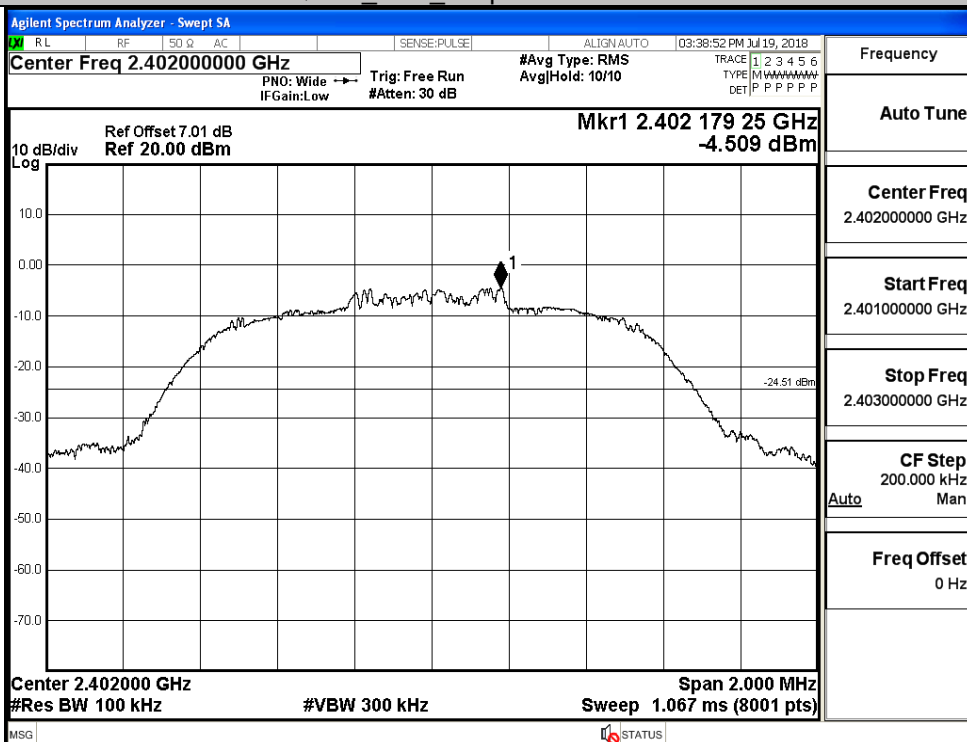
Pref



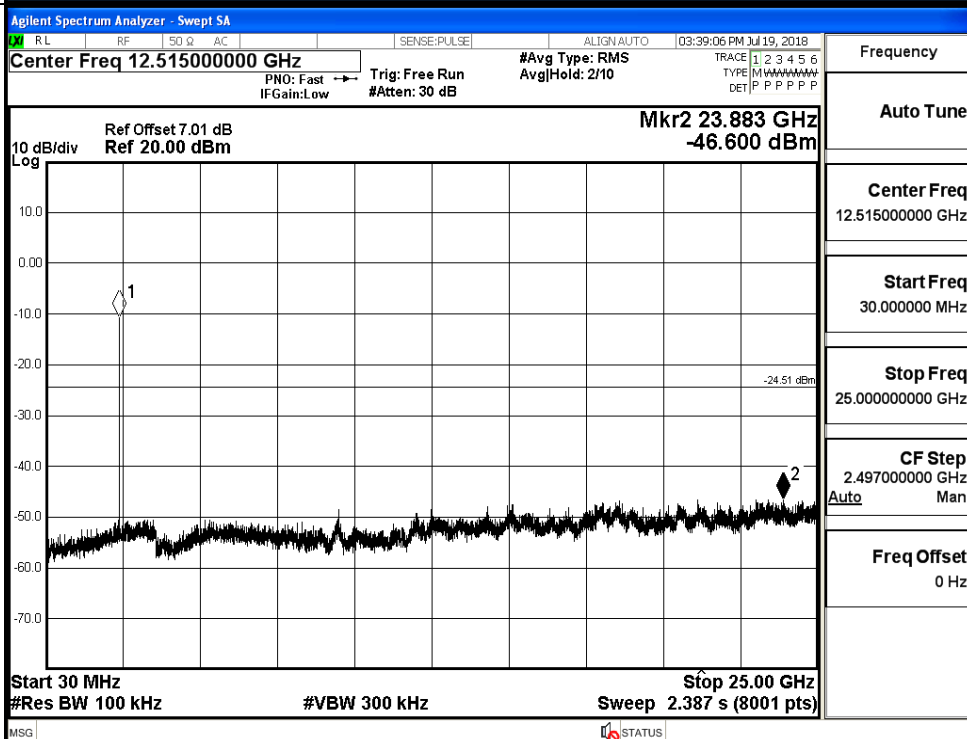
Puw



Pref

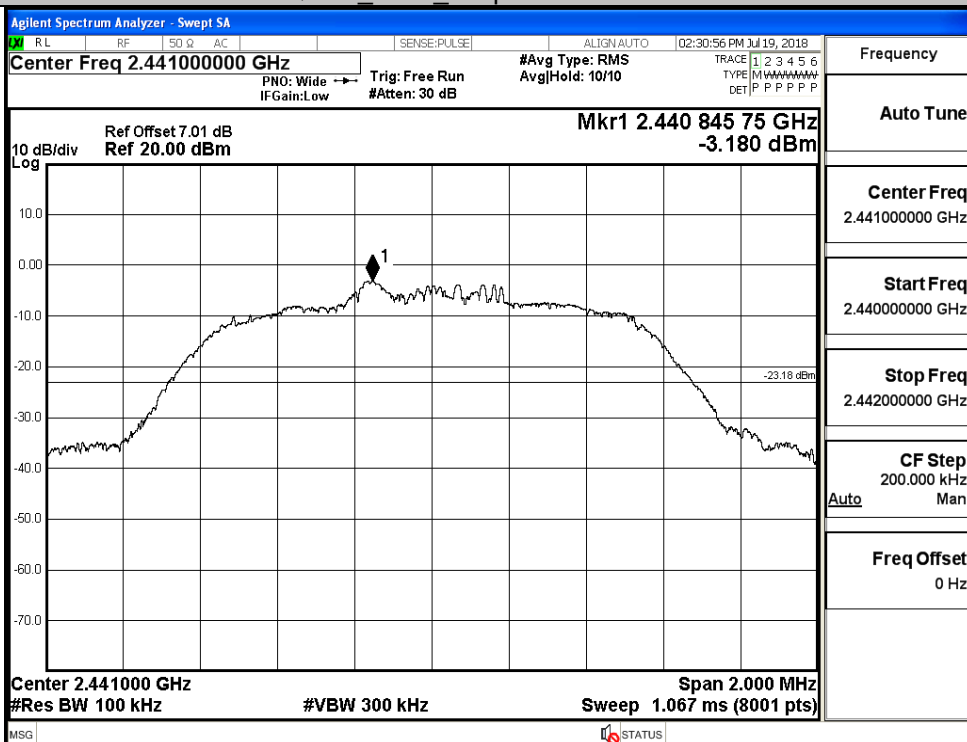


Puw

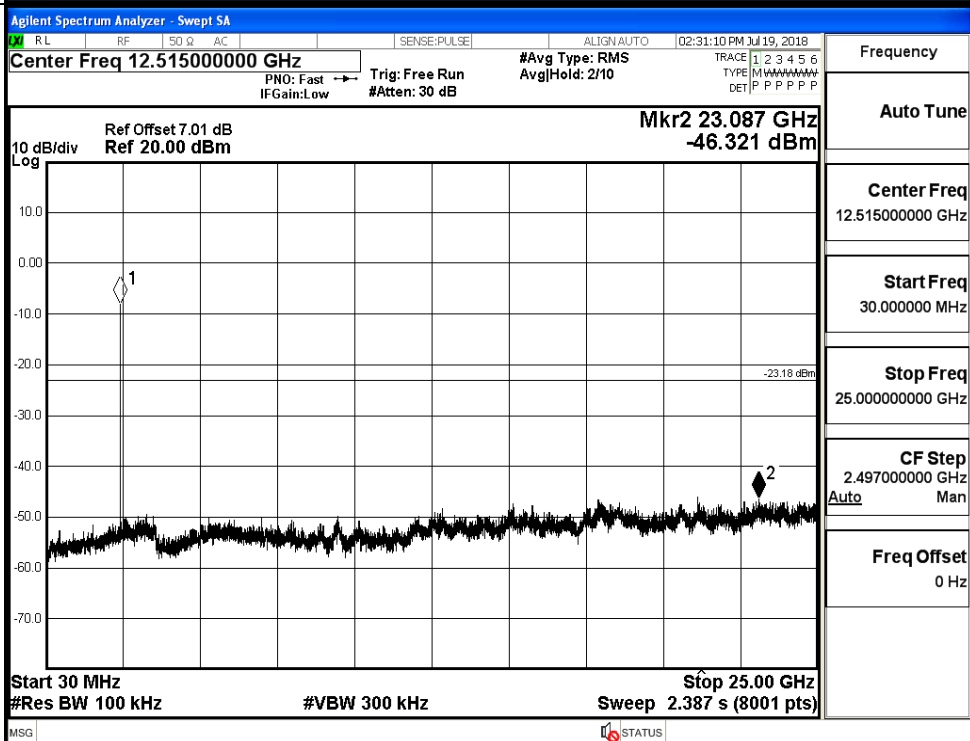


π /4DQPSK_MCH_Graphs

Pref

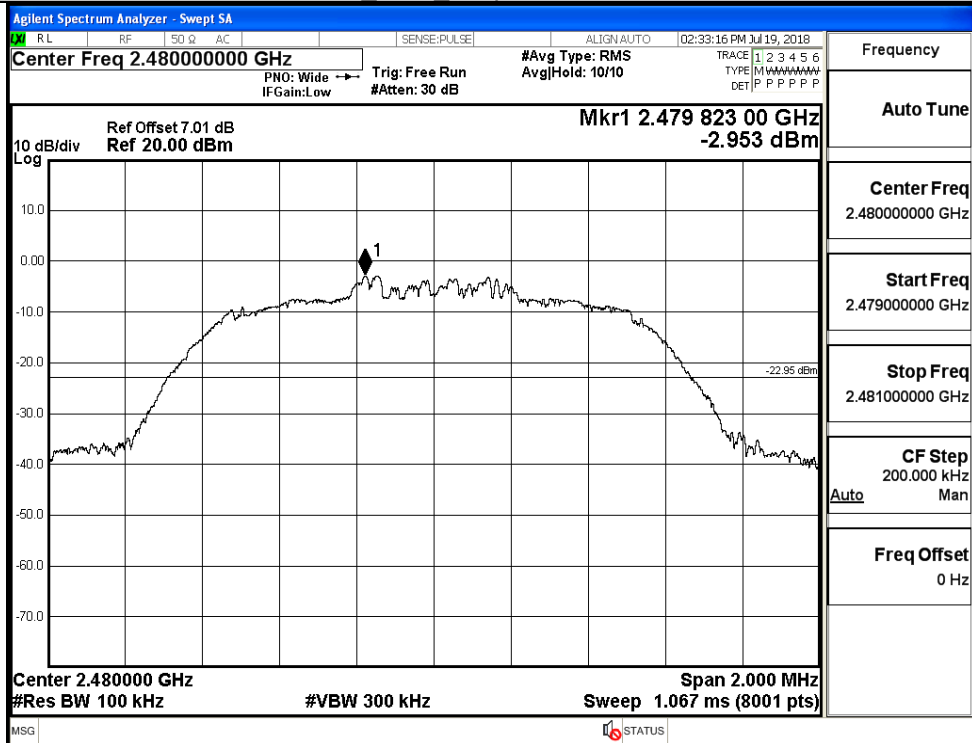


Puw

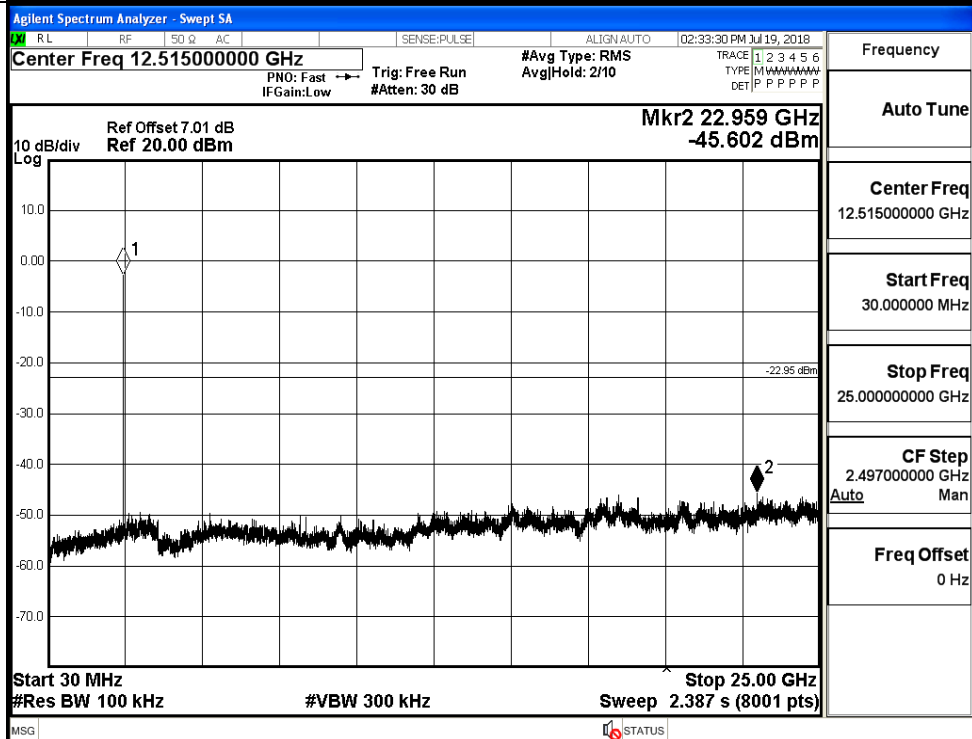


π /4DQPSK_HCH_Graphs

Pref

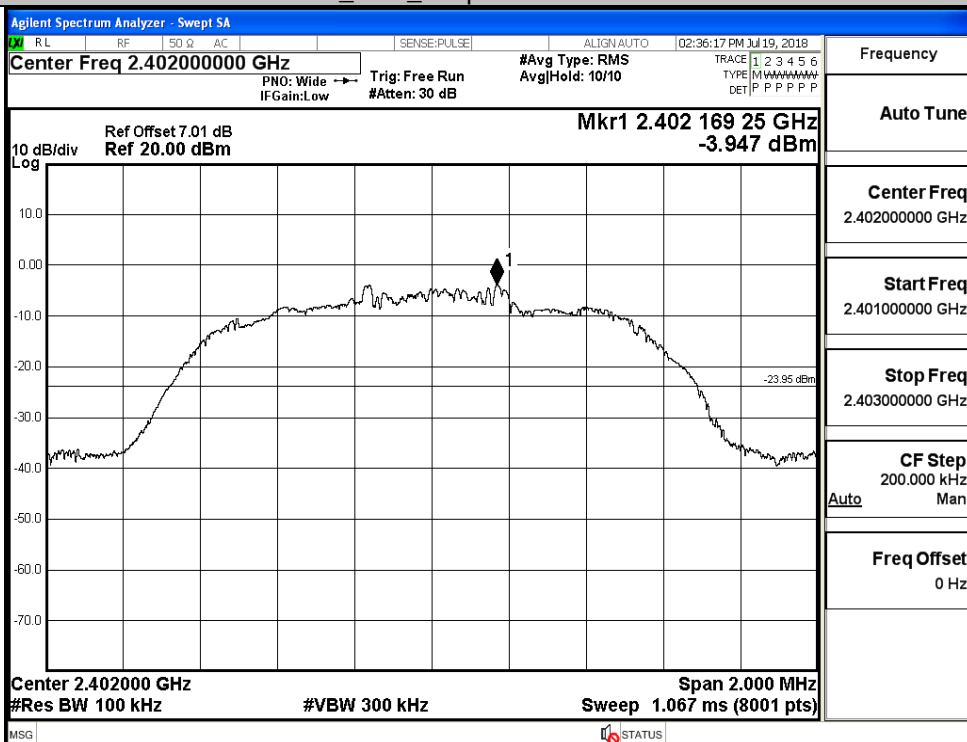


Puw

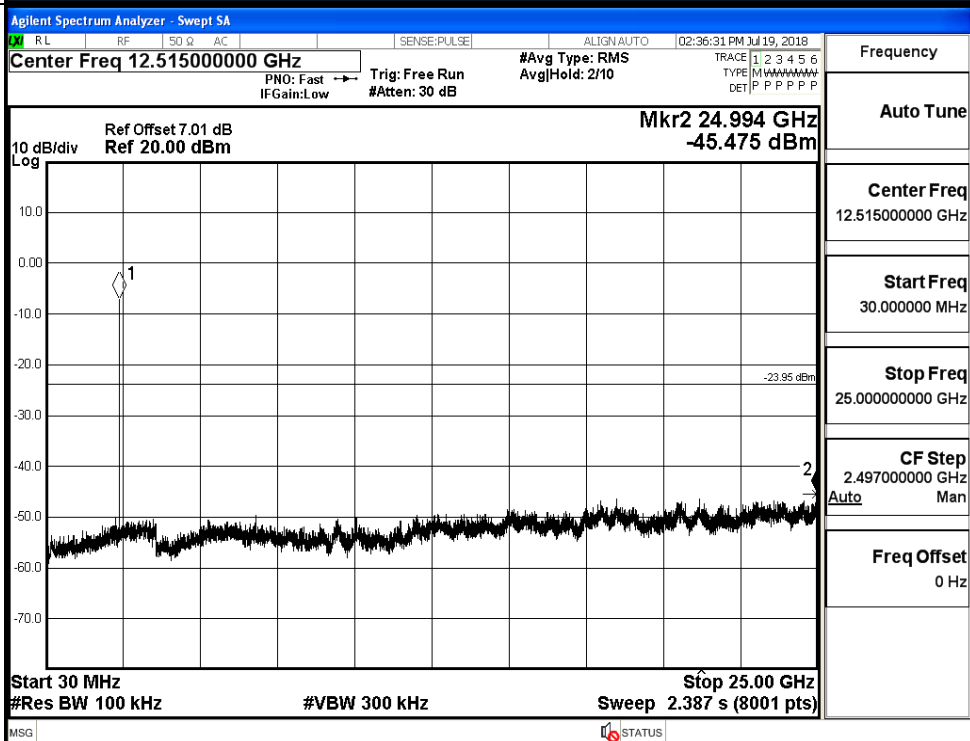


8DPSK_LCH_Graphs

Pref

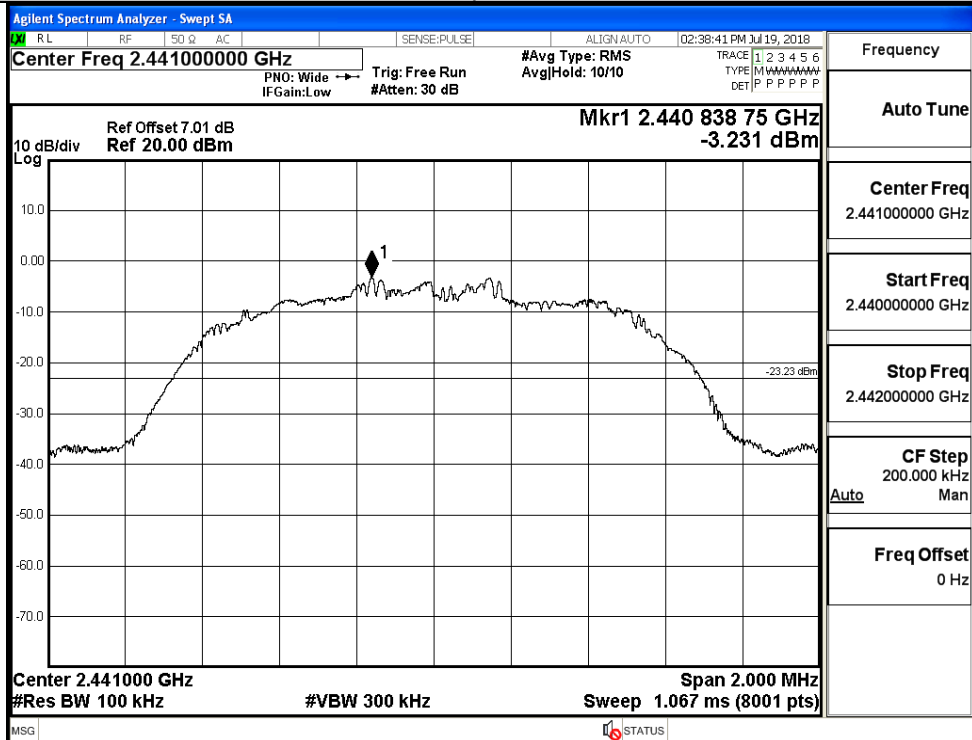


Puw

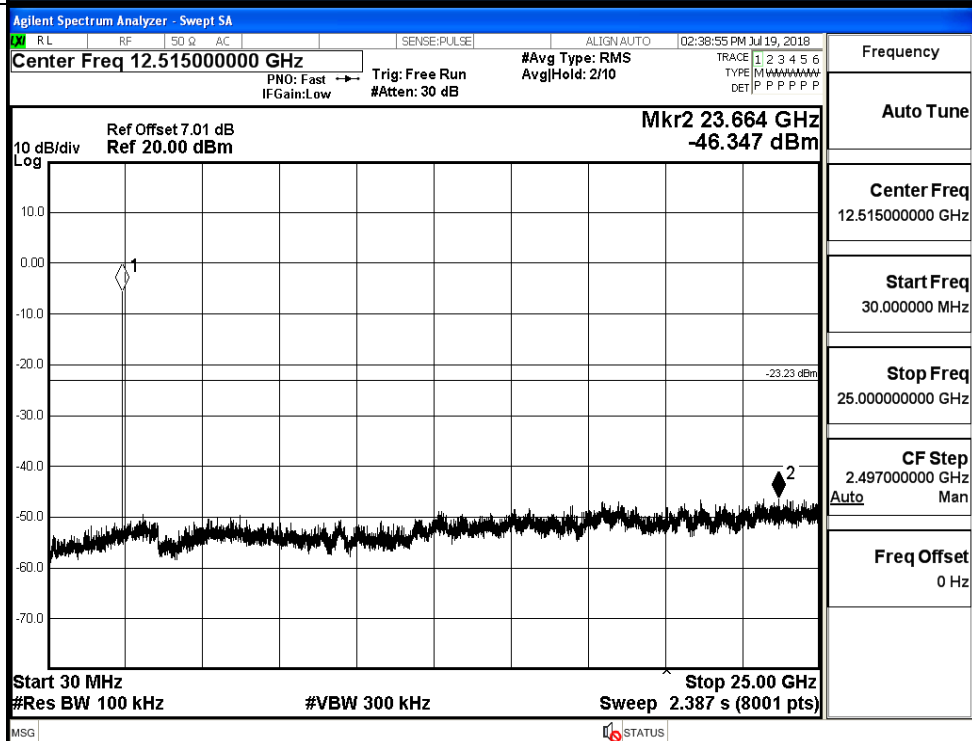


8DPSK_MCH_Graphs

Pref

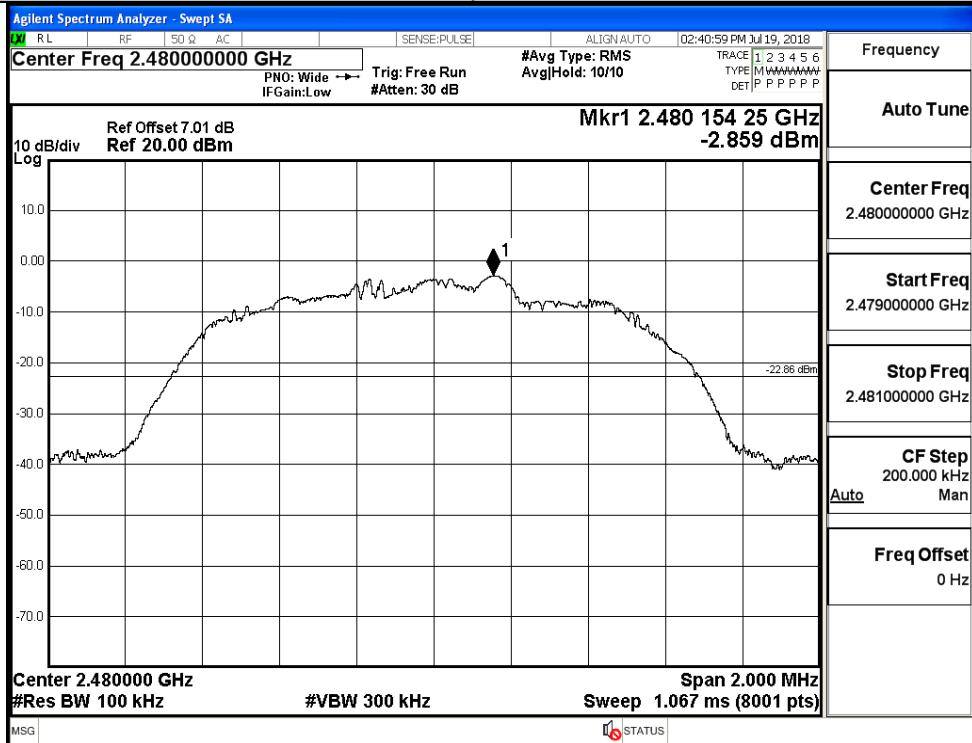


Puw

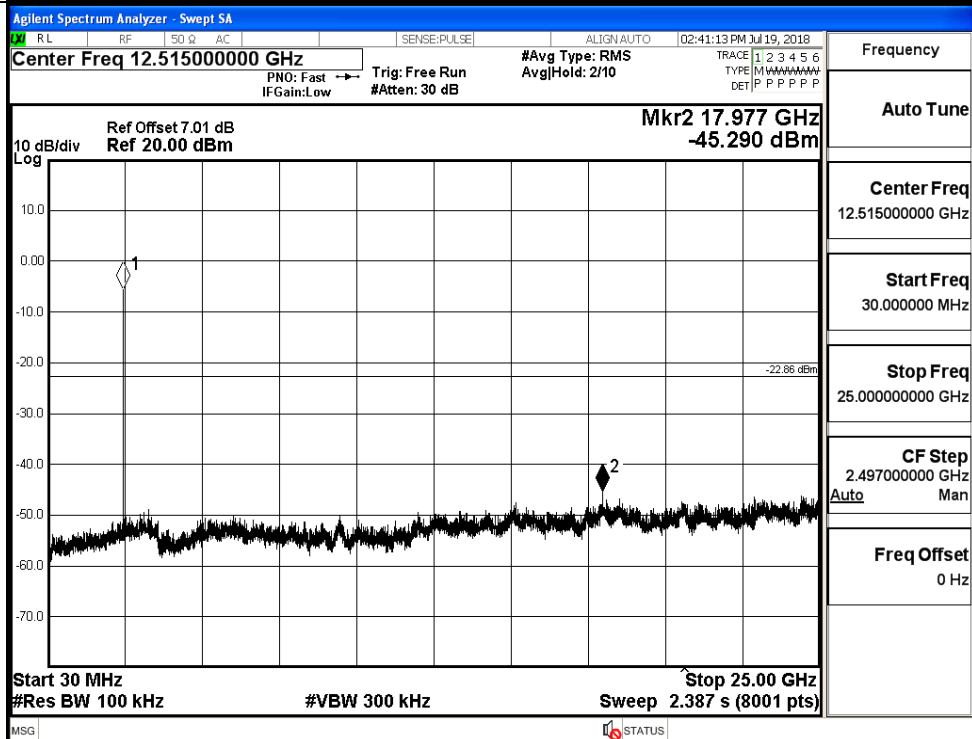


8DPSK_HCH_Graphs

Pref



Puw

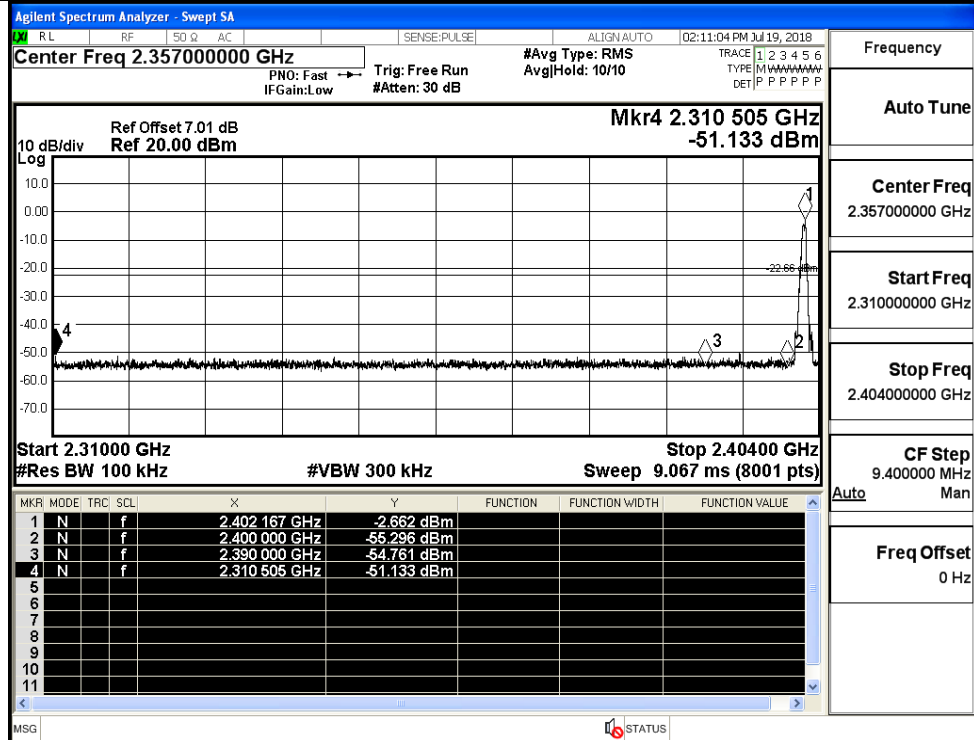


A.7 Band-edge for RF Conducted Emissions

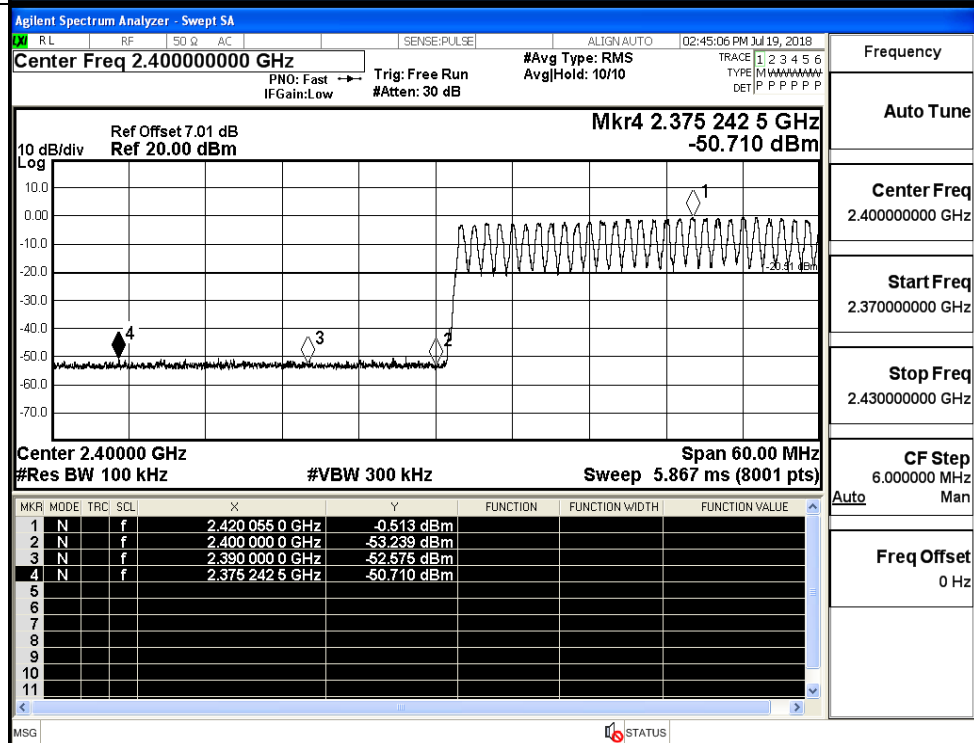
| Mode | Channel | Carrier Frequency [MHz] | Carrier Power [dBm] | Frequency Hopping | Max Spurious Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|-------------------------|---------------------|-------------------|--------------------------|-------------|---------|
| GFSK | LCH | 2402 | -2.662 | Off | -51.133 | -22.66 | PASS |
| | | | -0.513 | On | -50.710 | -20.51 | PASS |
| | HCH | 2480 | -1.471 | Off | -50.685 | -21.47 | PASS |
| | | | 0.564 | On | -50.882 | -19.44 | PASS |
| $\pi/4$ DQPSK | LCH | 2402 | -5.495 | Off | -51.131 | -25.5 | PASS |
| | | | -0.065 | On | -50.764 | -20.07 | PASS |
| | HCH | 2480 | -2.711 | Off | -51.024 | -22.71 | PASS |
| | | | 0.389 | On | -50.177 | -19.61 | PASS |
| 8DPSK | LCH | 2402 | -3.860 | Off | -50.592 | -23.86 | PASS |
| | | | -1.750 | On | -50.624 | -21.75 | PASS |
| | HCH | 2480 | -3.782 | Off | -50.834 | -23.78 | PASS |
| | | | -0.768 | On | -50.309 | -20.77 | PASS |

Test Graphs

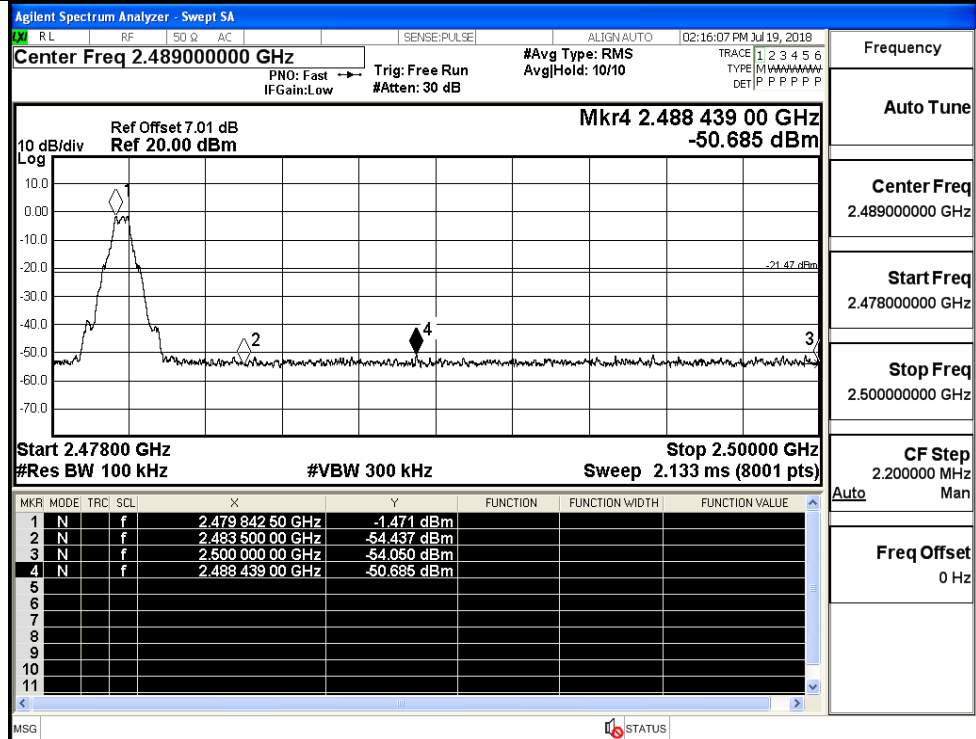
GFSK/LCH/No Hop



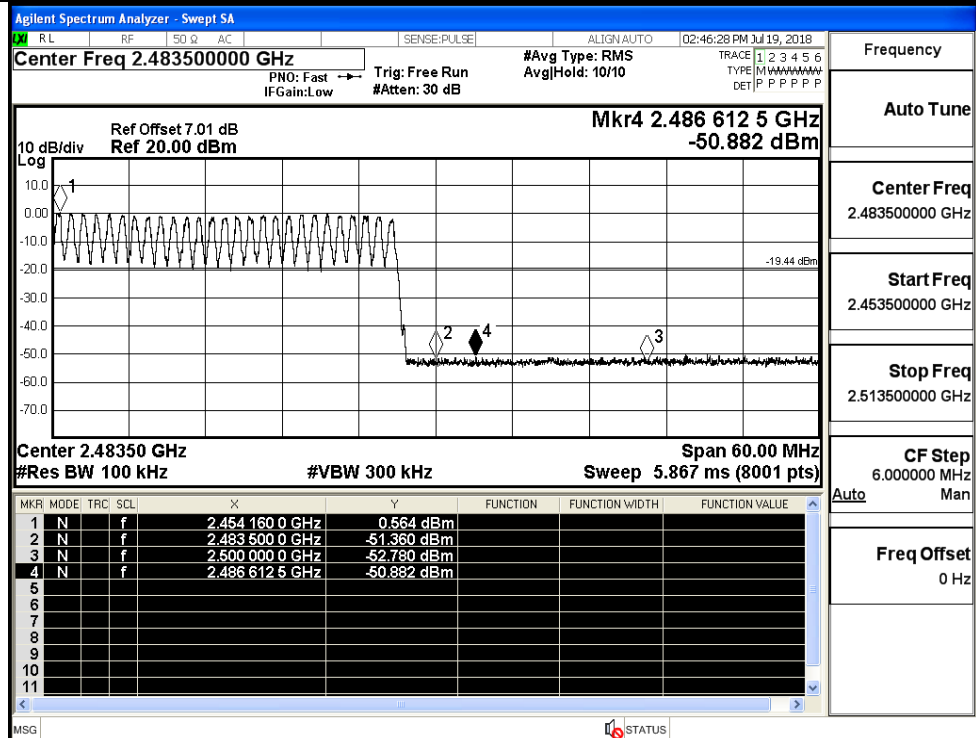
GFSK/LCH/Hop



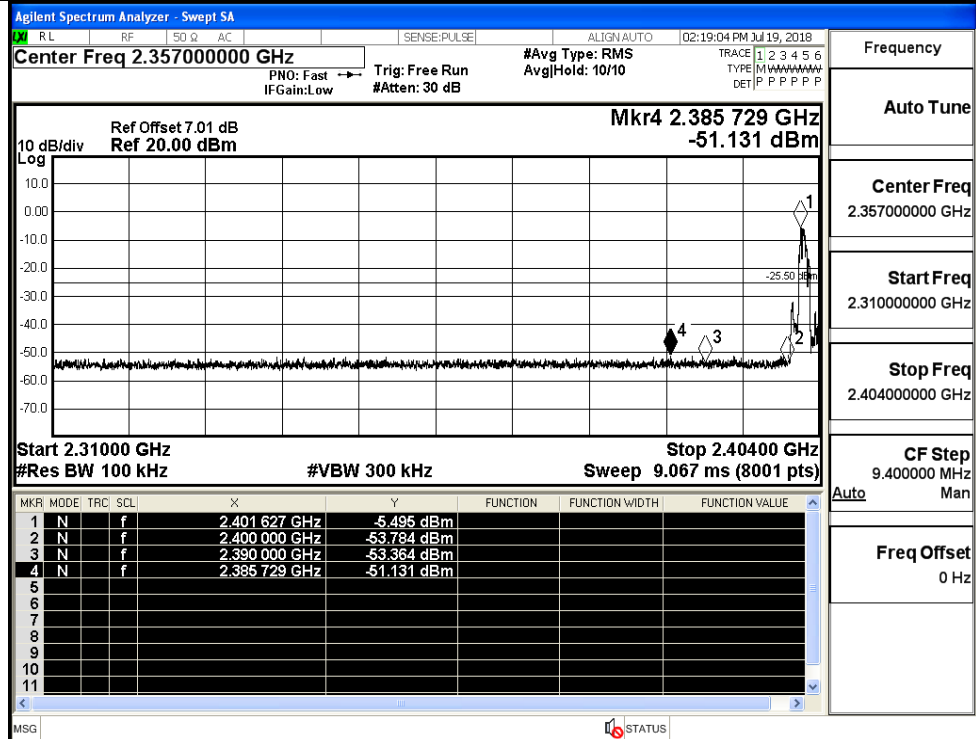
GFSK/HCH/No Hop



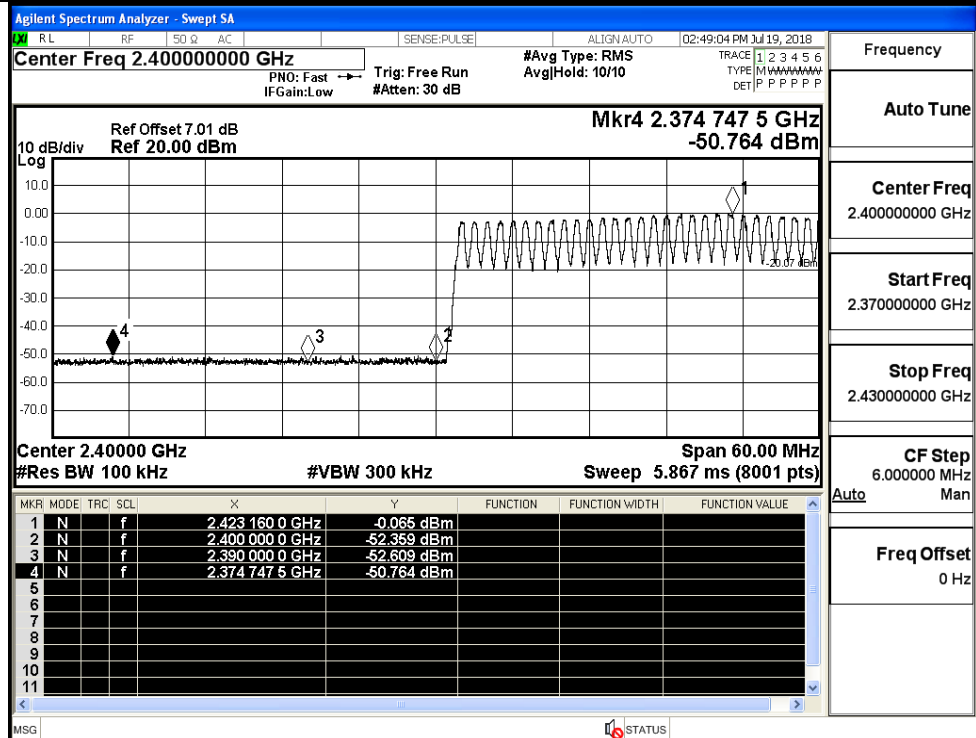
GFSK/HCH/Hop



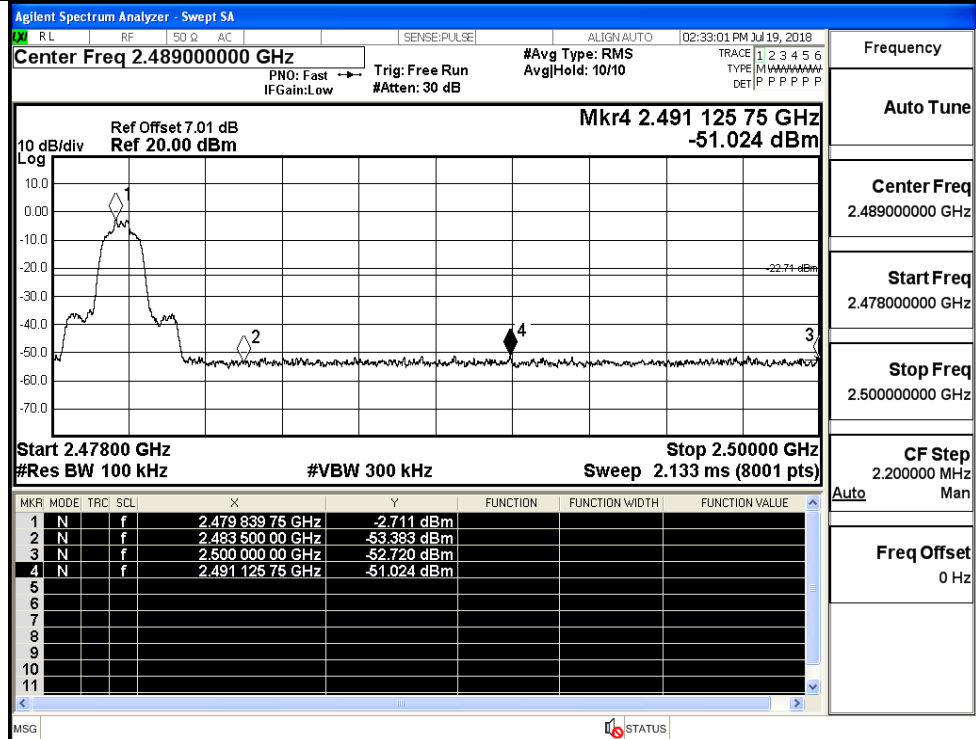
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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

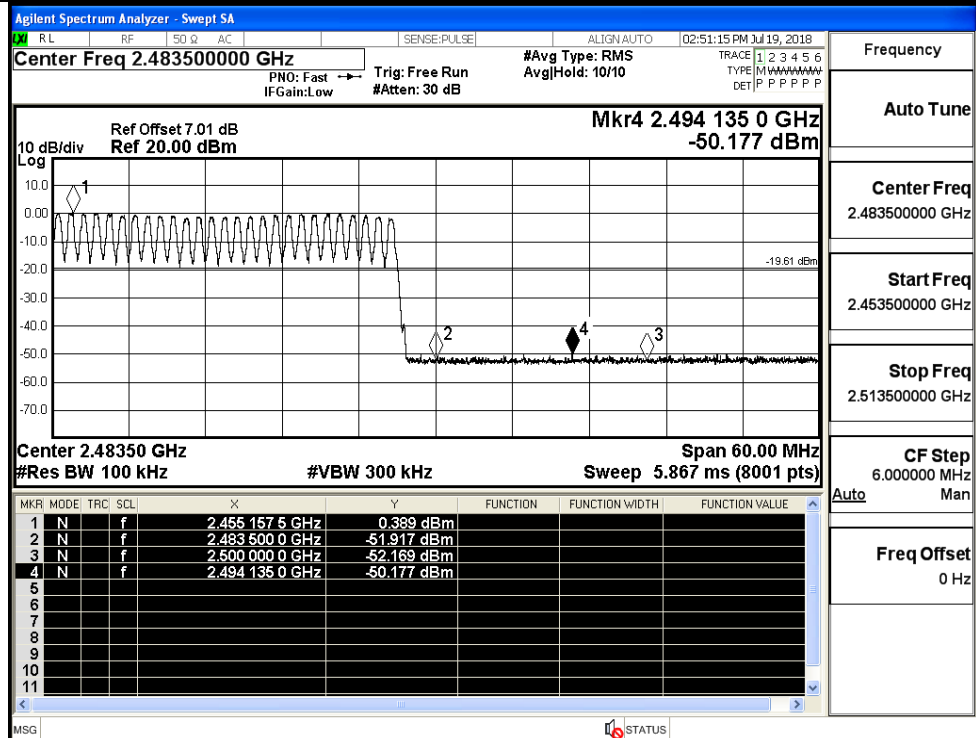


Frequency

Auto Tune

Center Freq
2.489000000 GHzStart Freq
2.478000000 GHzStop Freq
2.500000000 GHzCF Step
2.200000 MHz
Auto ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop

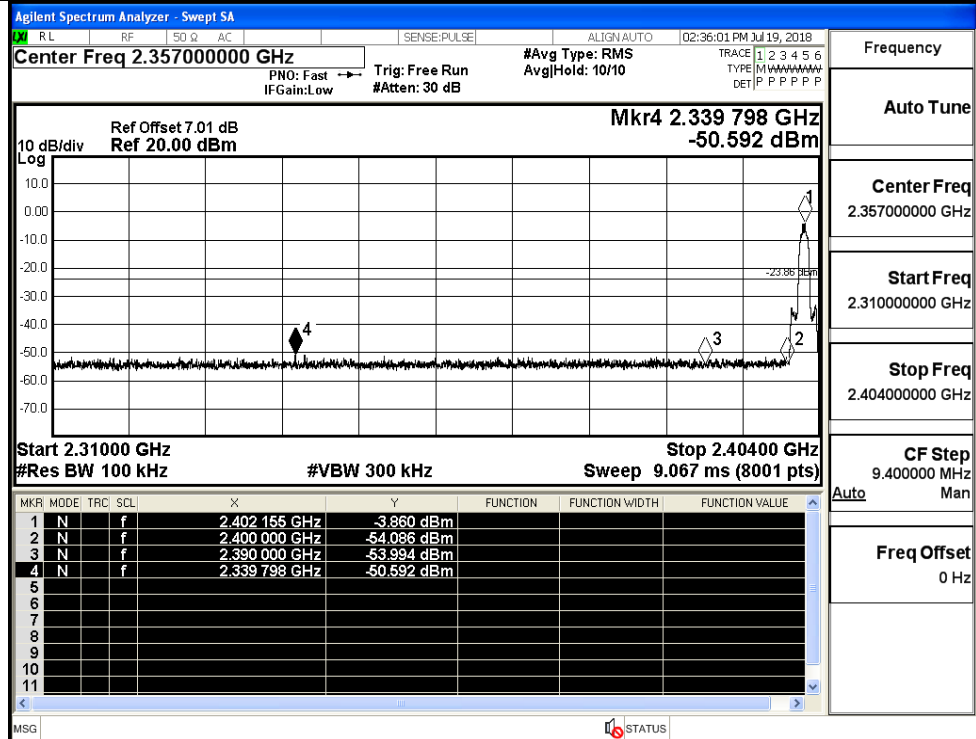


Frequency

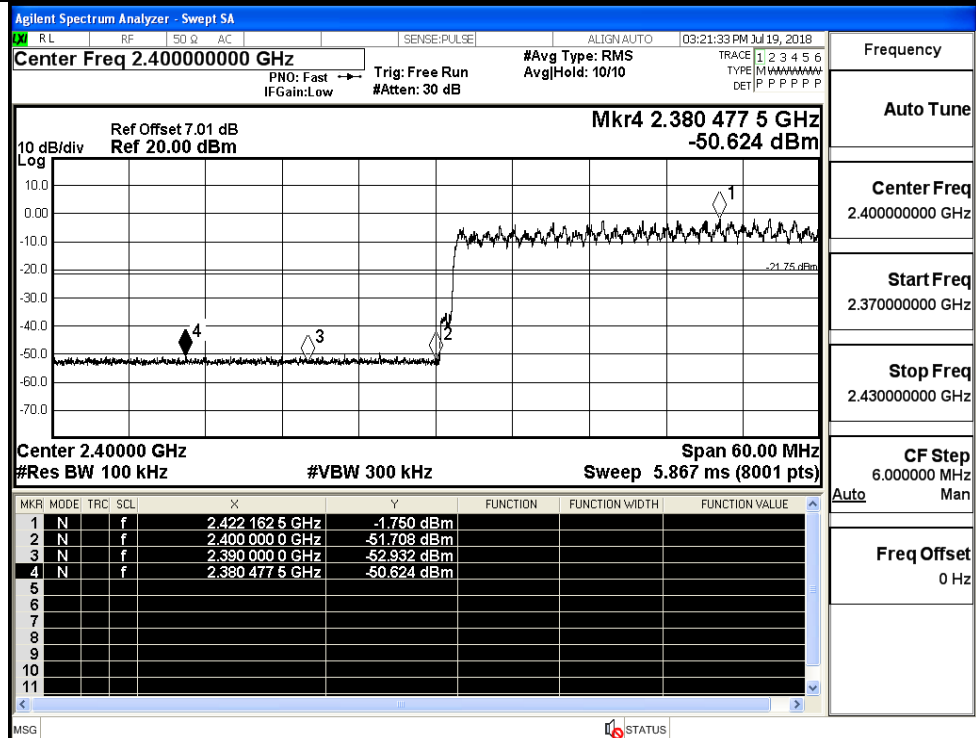
Auto Tune

Center Freq
2.483500000 GHzStart Freq
2.453500000 GHzStop Freq
2.513500000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

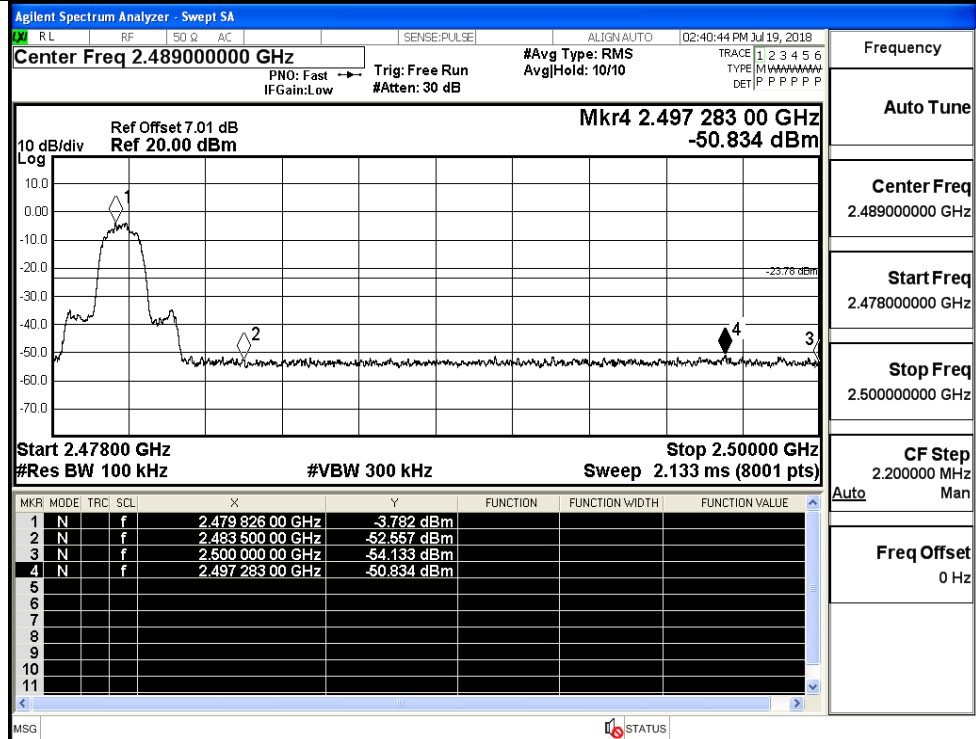
8DPSK/LCH/No Hop



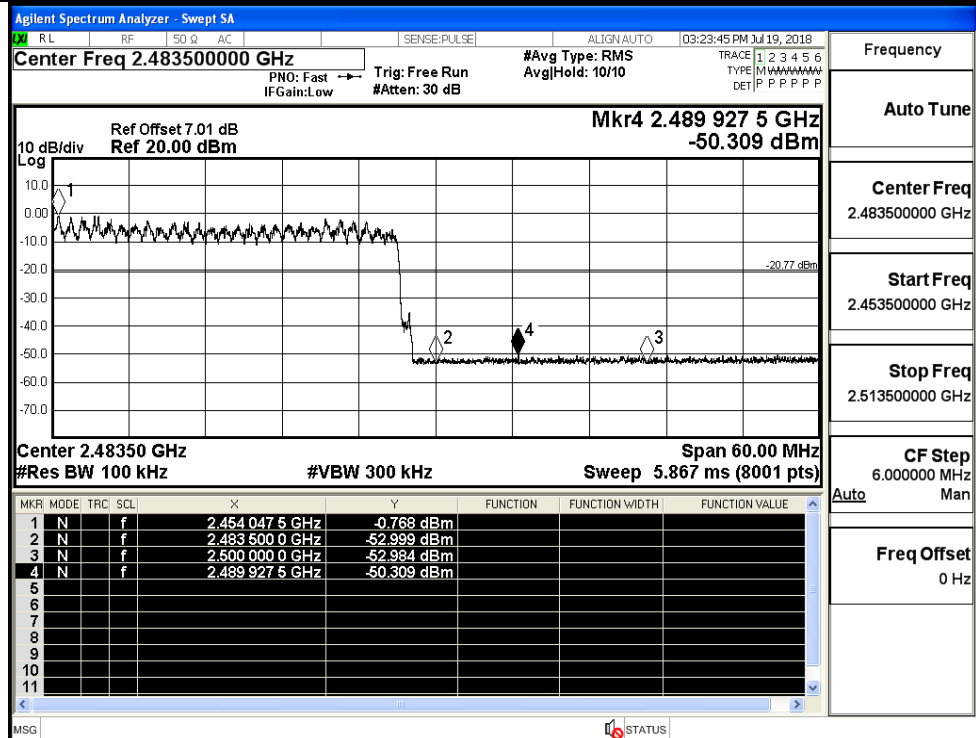
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



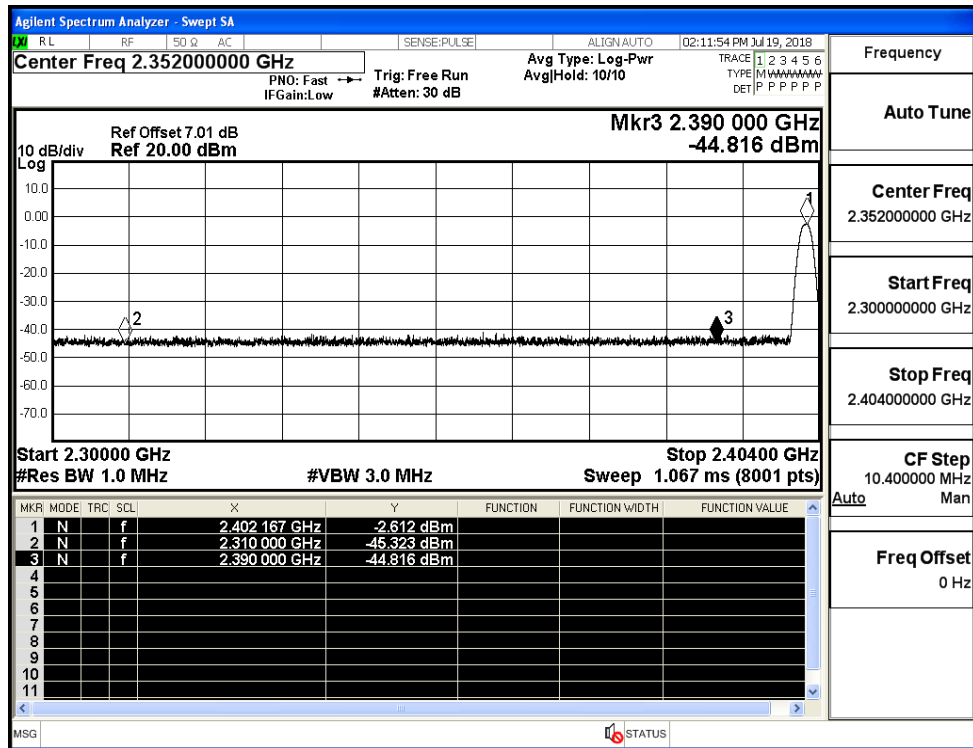
8DPSK/HCH/Hop



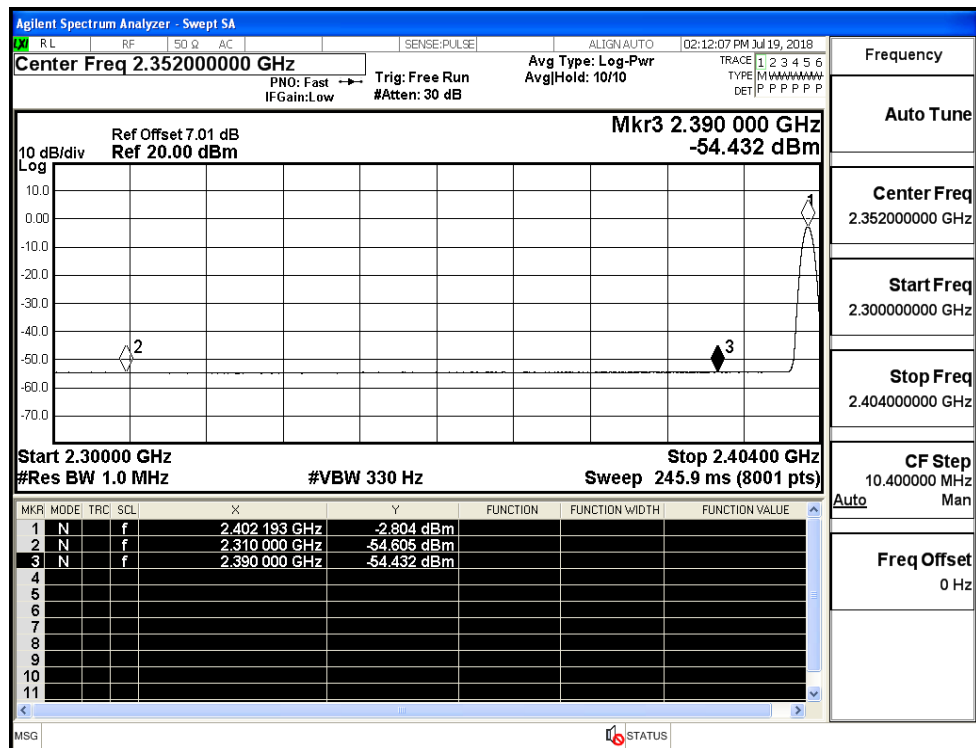
A.8 Restrict-band band-edge measurements

| Test Mode | Hopping | Freq. | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| GFSK | Off | 2310.0 | -45.32 | 2.0 | 0 | 49.93 | PEAK | 74 | PASS |
| | Off | 2310.0 | -54.61 | 2.0 | 0 | 40.65 | AV | 54 | PASS |
| | Off | 2390.0 | -44.82 | 2.0 | 0 | 50.44 | PEAK | 74 | PASS |
| | Off | 2390.0 | -54.43 | 2.0 | 0 | 40.83 | AV | 54 | PASS |
| | Off | 2483.5 | -43.59 | 2.0 | 0 | 51.67 | PEAK | 74 | PASS |
| | Off | 2483.5 | -54.22 | 2.0 | 0 | 41.04 | AV | 54 | PASS |
| | Off | 2500.0 | -42.13 | 2.0 | 0 | 53.13 | PEAK | 74 | PASS |
| | Off | 2500.0 | -54.02 | 2.0 | 0 | 41.24 | AV | 54 | PASS |
| $\pi/4$ DQPSK | Off | 2310.0 | -44.38 | 2.0 | 0 | 50.88 | PEAK | 74 | PASS |
| | Off | 2310.0 | -54.62 | 2.0 | 0 | 40.64 | AV | 54 | PASS |
| | Off | 2390.0 | -44.04 | 2.0 | 0 | 51.21 | PEAK | 74 | PASS |
| | Off | 2390.0 | -54.45 | 2.0 | 0 | 40.80 | AV | 54 | PASS |
| | Off | 2483.5 | -44.19 | 2.0 | 0 | 51.07 | PEAK | 74 | PASS |
| | Off | 2483.5 | -54.16 | 2.0 | 0 | 41.10 | AV | 54 | PASS |
| | Off | 2500.0 | -42.36 | 2.0 | 0 | 52.89 | PEAK | 74 | PASS |
| | Off | 2500.0 | -54.04 | 2.0 | 0 | 41.22 | AV | 54 | PASS |
| 8DPSK | Off | 2310.0 | -44.69 | 2.0 | 0 | 50.57 | PEAK | 74 | PASS |
| | Off | 2310.0 | -54.77 | 2.0 | 0 | 40.49 | AV | 54 | PASS |
| | Off | 2390.0 | -43.47 | 2.0 | 0 | 51.79 | PEAK | 74 | PASS |
| | Off | 2390.0 | -54.43 | 2.0 | 0 | 40.83 | AV | 54 | PASS |
| | Off | 2483.5 | -43.99 | 2.0 | 0 | 51.26 | PEAK | 74 | PASS |
| | Off | 2483.5 | -54.08 | 2.0 | 0 | 41.18 | AV | 54 | PASS |
| | Off | 2500.0 | -43.70 | 2.0 | 0 | 51.56 | PEAK | 74 | PASS |
| | Off | 2500.0 | -54.05 | 2.0 | 0 | 41.21 | AV | 54 | PASS |

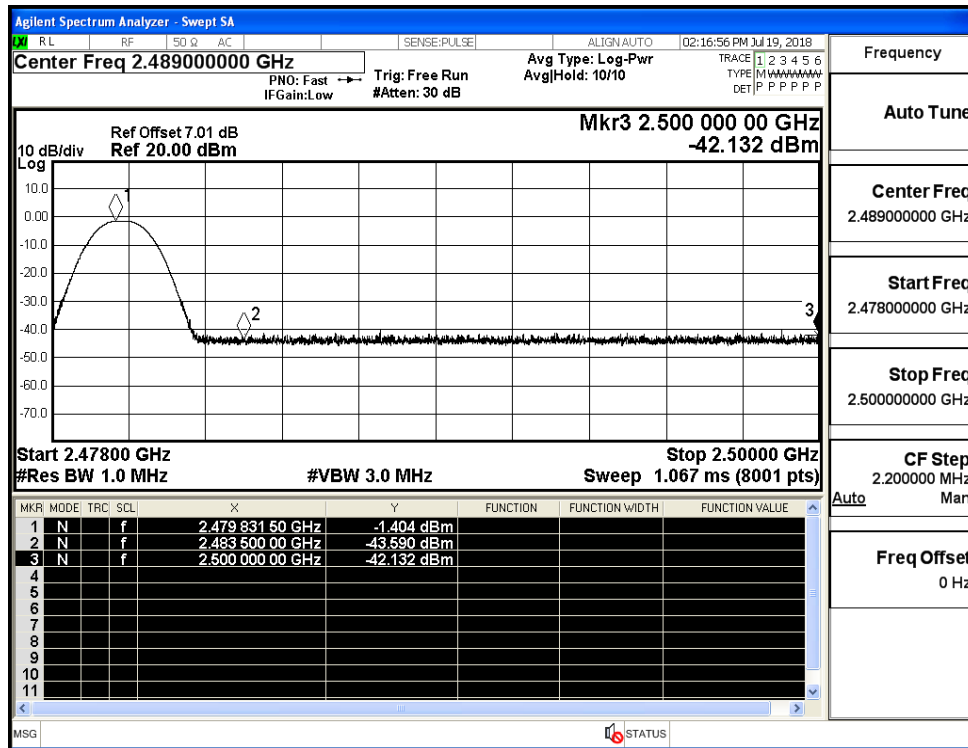
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



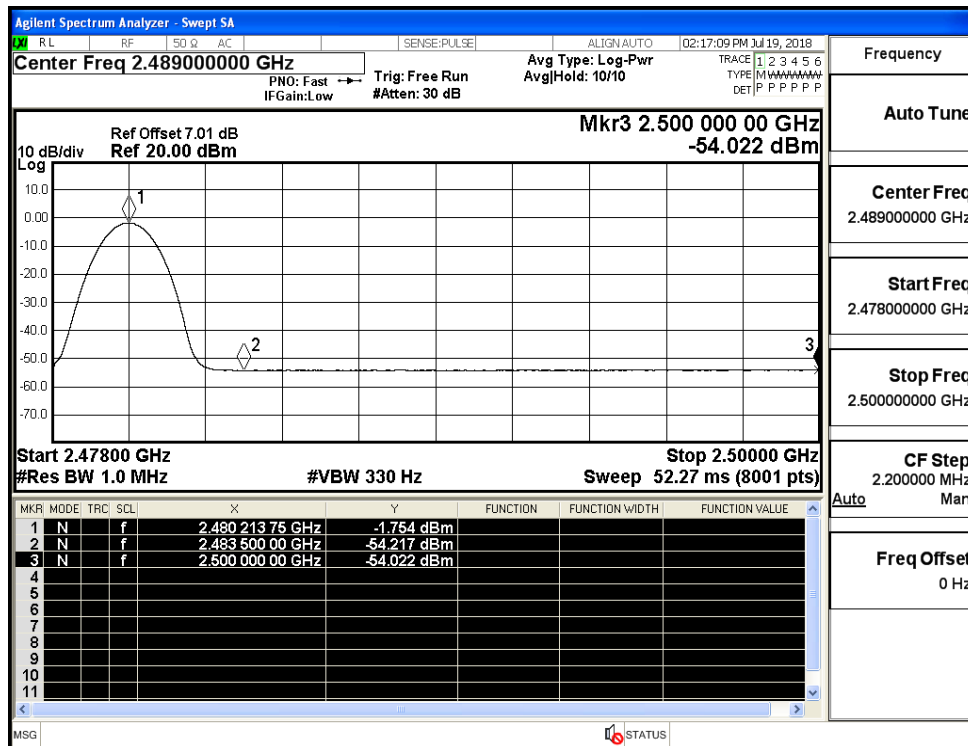
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

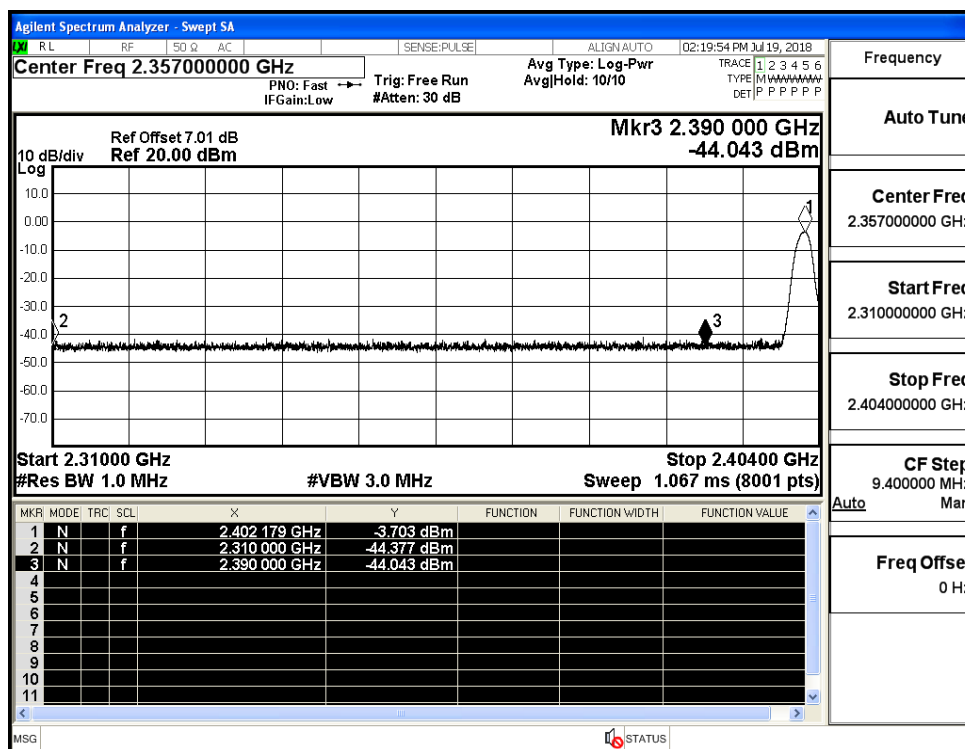
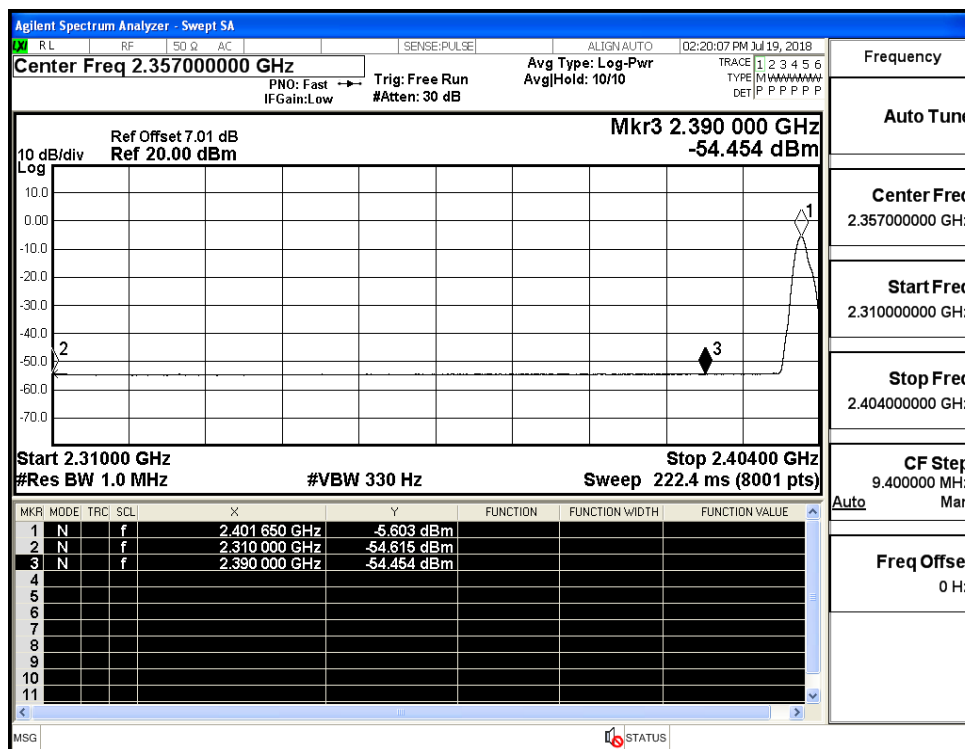


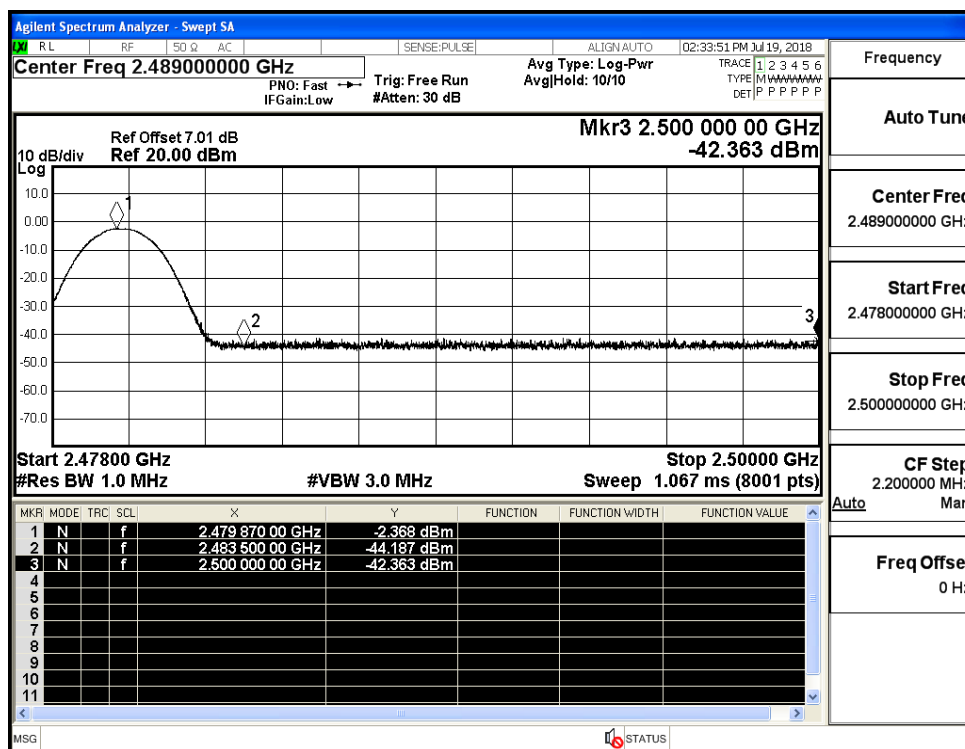
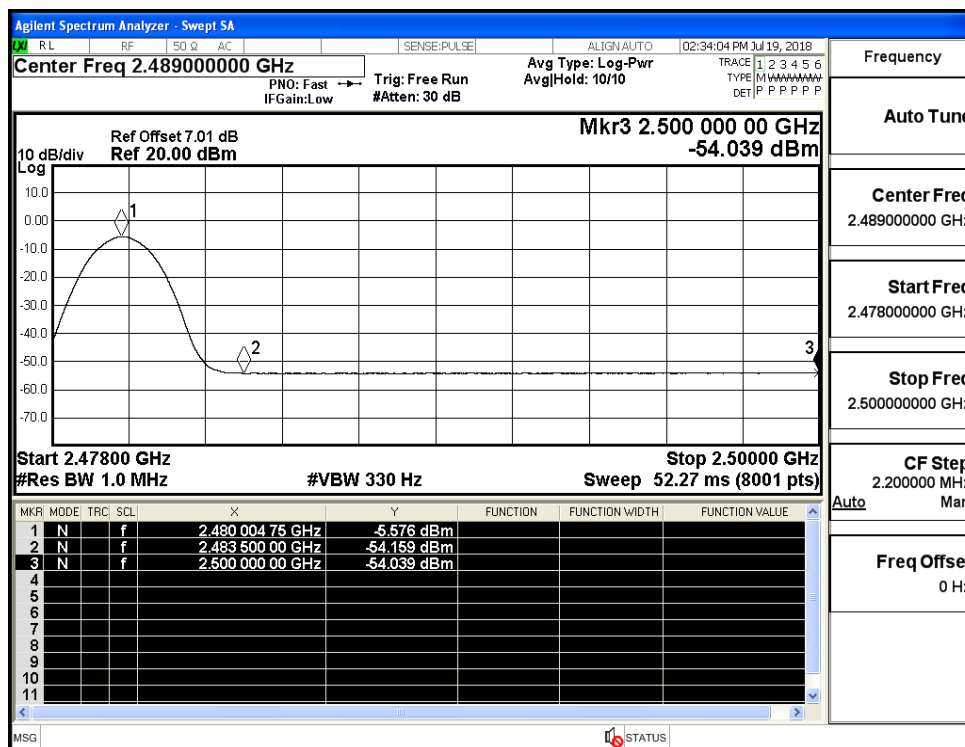
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



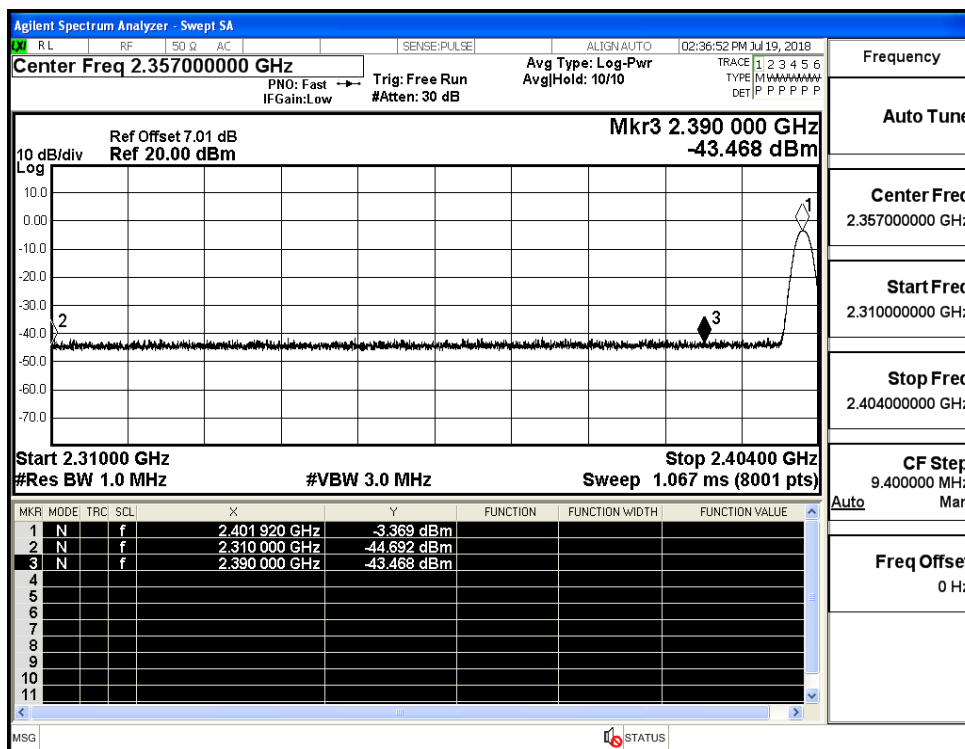
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



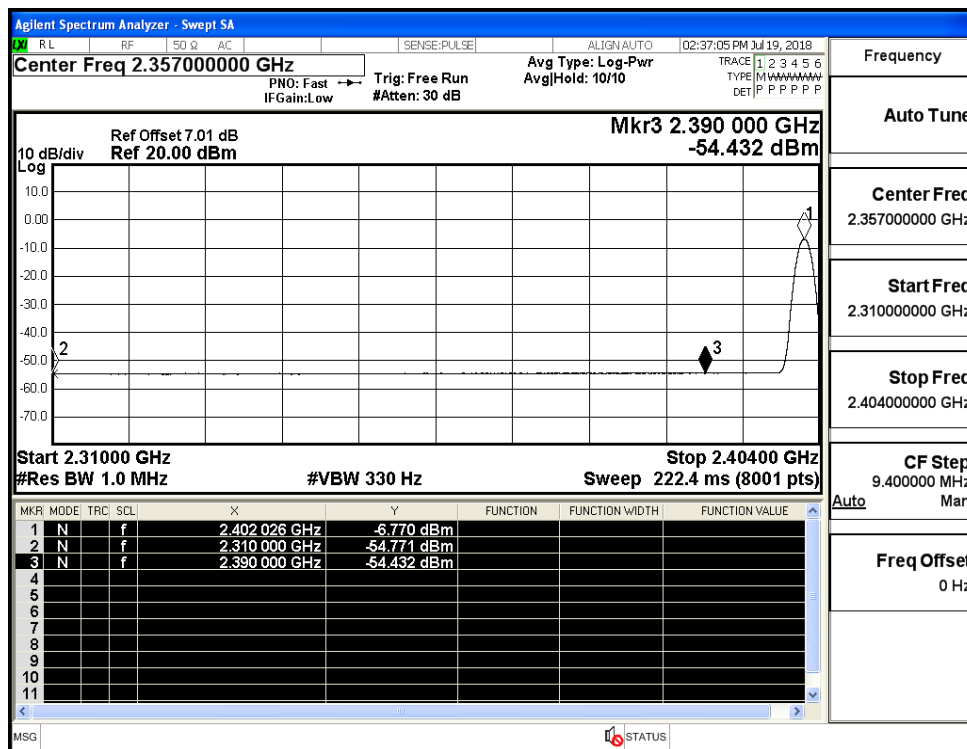
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

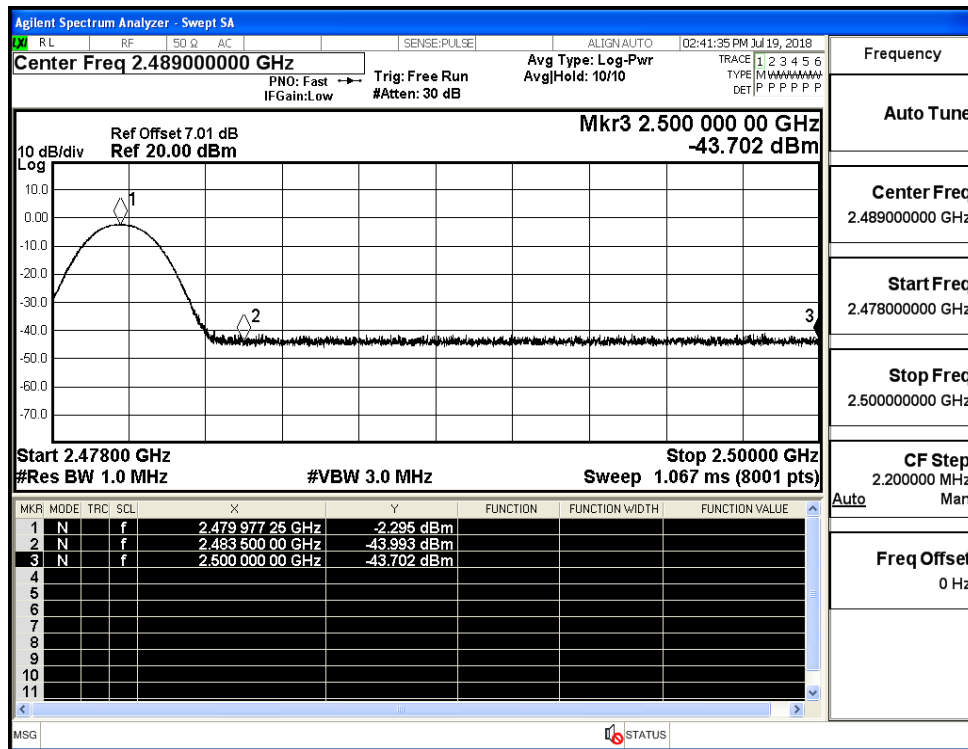
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

