# Appendix A

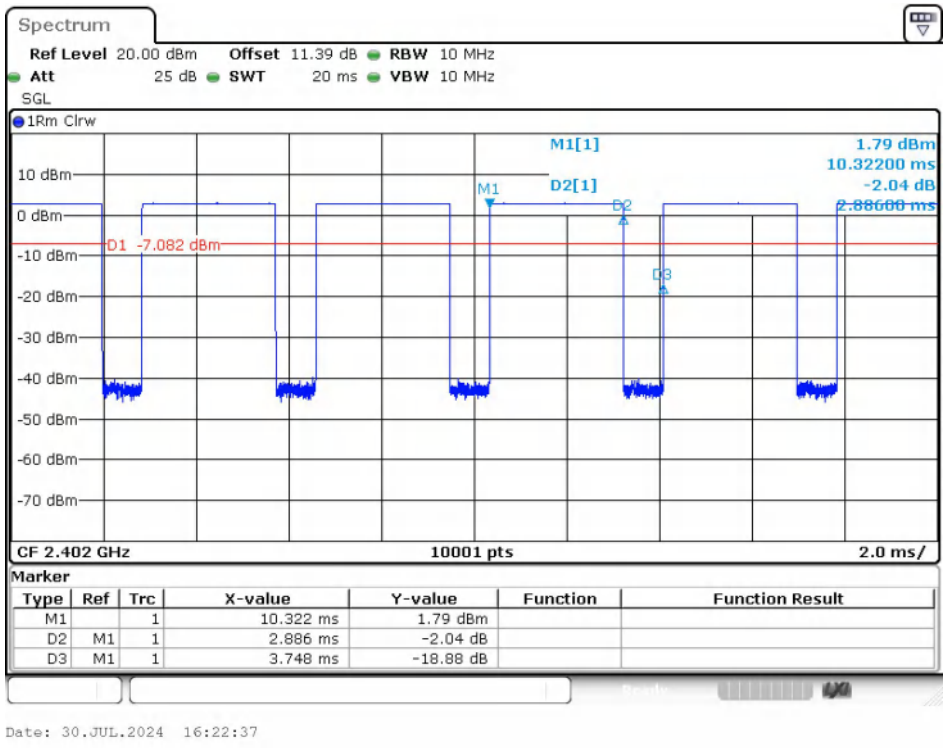
| | |
|---|---|
| Report No.: | CISRR240730137 |
| FCC ID: | UN9-ITALK-PRO |
| Product Name: | USB-Bluetooth Conference Speaker |
| Model No.: | iTalk PRO |
| Test Engineer: | Lucas Huang |
| Supervised by: | Rory Huang |

# 1) Duty Cycle

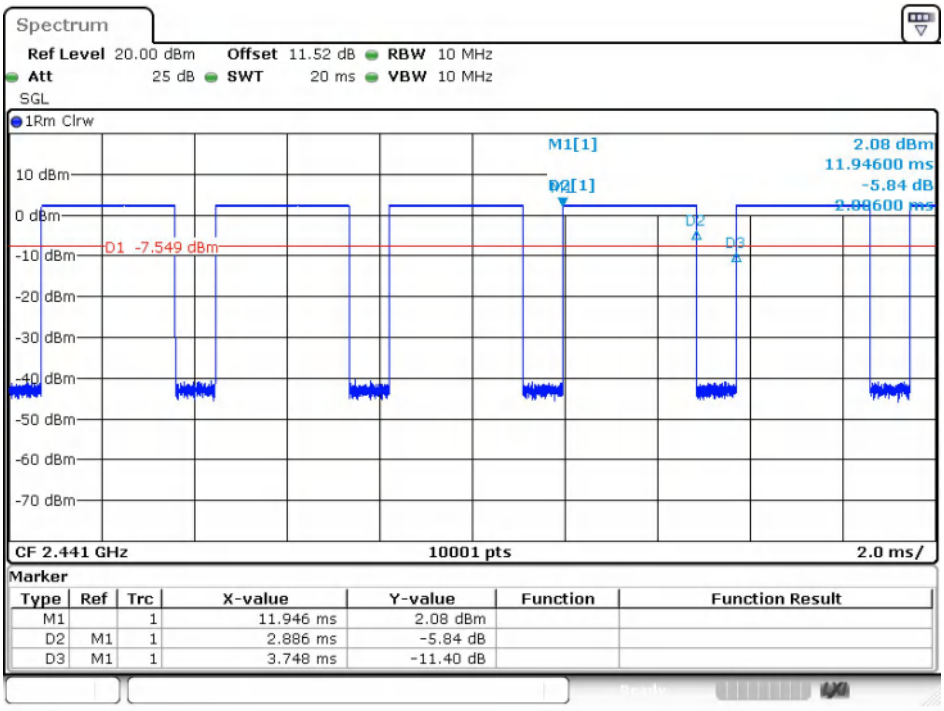
**Test Result**

| Modulation | Packets | Channel | On Time (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle (linear) | Duty Cycle Factor (dB) | 1/T |
|---|---|---|---|---|---|---|---|---|
| GFSK | DH5 | 0 | 2.886 | 3.748 | 77.00 | 0.7700 | 1.1351 | 0.35 |
| | | 39 | 2.886 | 3.748 | 77.00 | 0.7700 | 1.1351 | 0.35 |
| | | 78 | 2.888 | 3.748 | 77.05 | 0.7705 | 1.1323 | 0.35 |
| π/4DQPSK | 2-DH5 | 0 | 2.890 | 3.748 | 77.11 | 0.7711 | 1.1289 | 0.35 |
| | | 39 | 2.892 | 3.748 | 77.16 | 0.7716 | 1.1261 | 0.35 |
| | | 78 | 2.892 | 3.748 | 77.16 | 0.7716 | 1.1261 | 0.35 |
| 8DPSK | 3-DH5 | 0 | 2.894 | 3.748 | 77.21 | 0.7721 | 1.1233 | 0.35 |
| | | 39 | 2.894 | 3.748 | 77.21 | 0.7721 | 1.1233 | 0.35 |
| | | 78 | 2.894 | 3.748 | 77.21 | 0.7721 | 1.1233 | 0.35 |

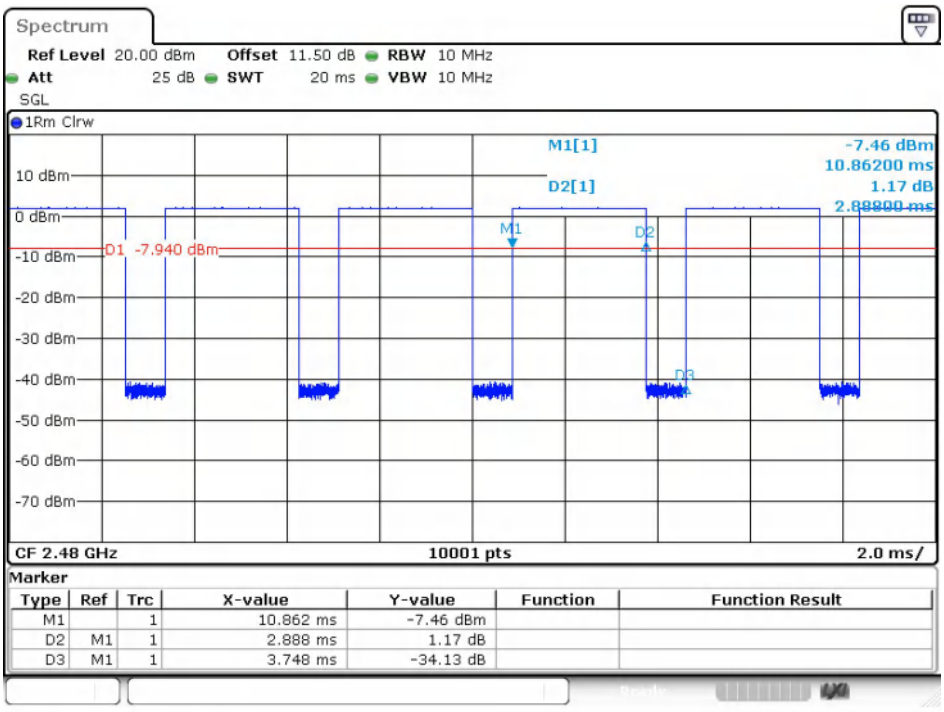
**Test Graphs**



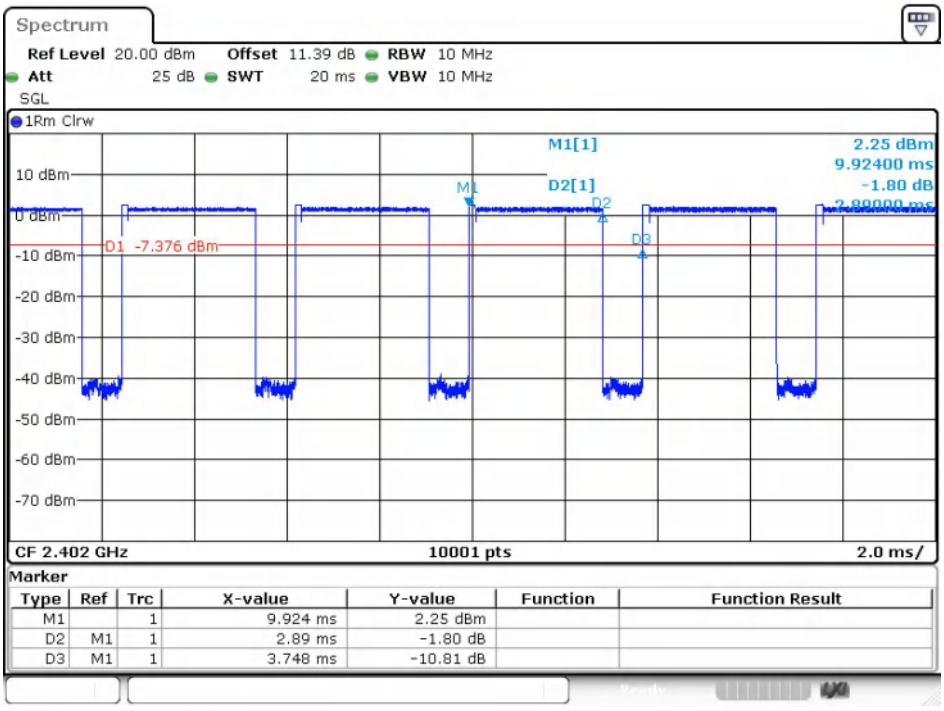

GFSK(DH5)_Channel 0



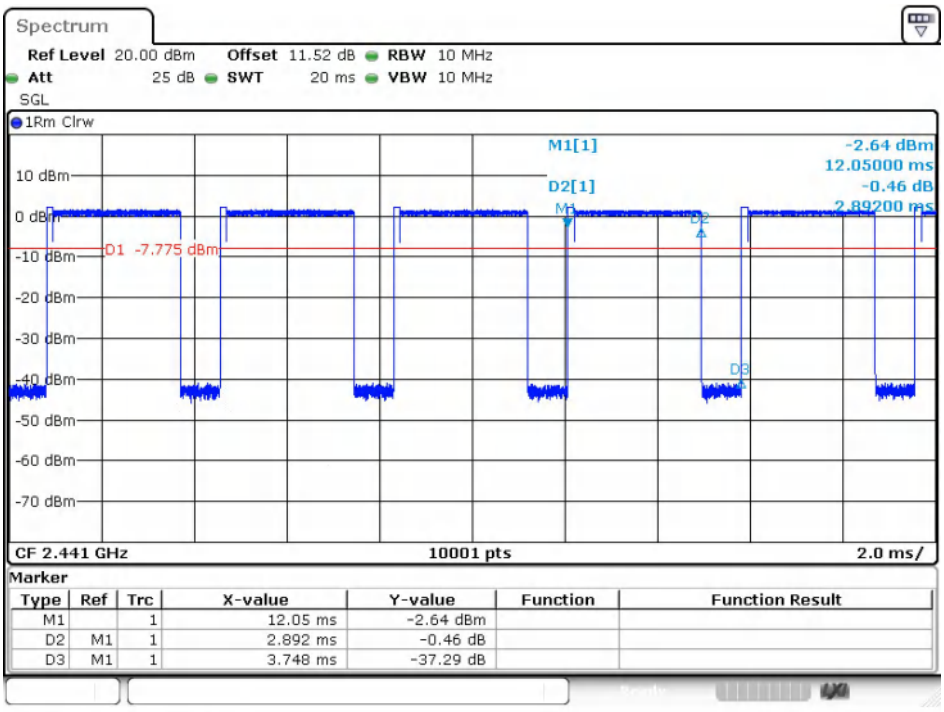

GFSK(DH5)_Channel 39



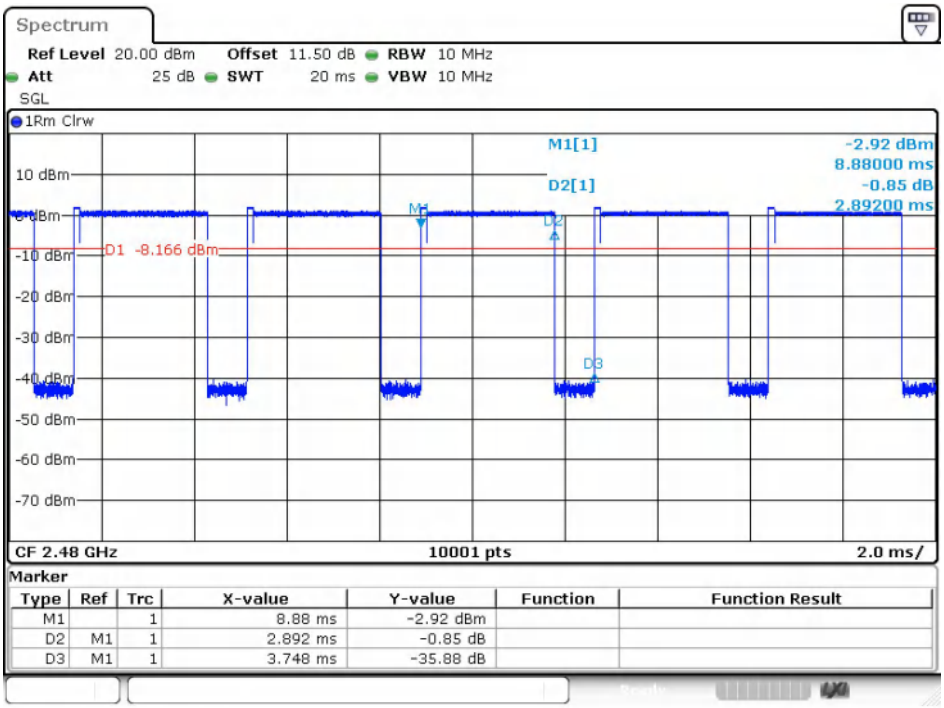

GFSK(DH5)_Channel 78



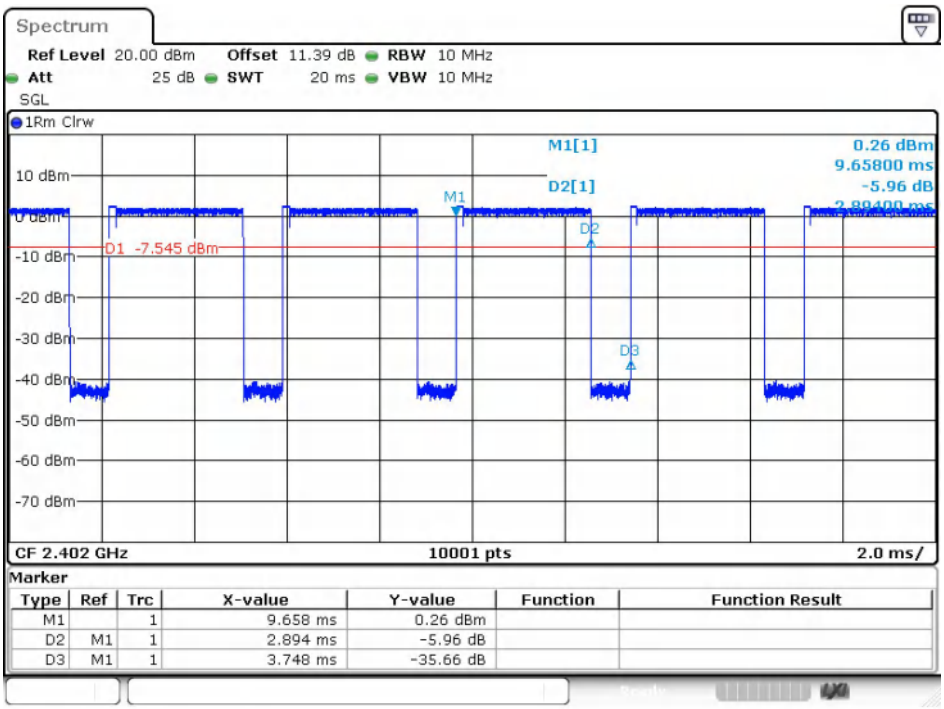

π/4DQPSK(2-DH5)_Channel 0



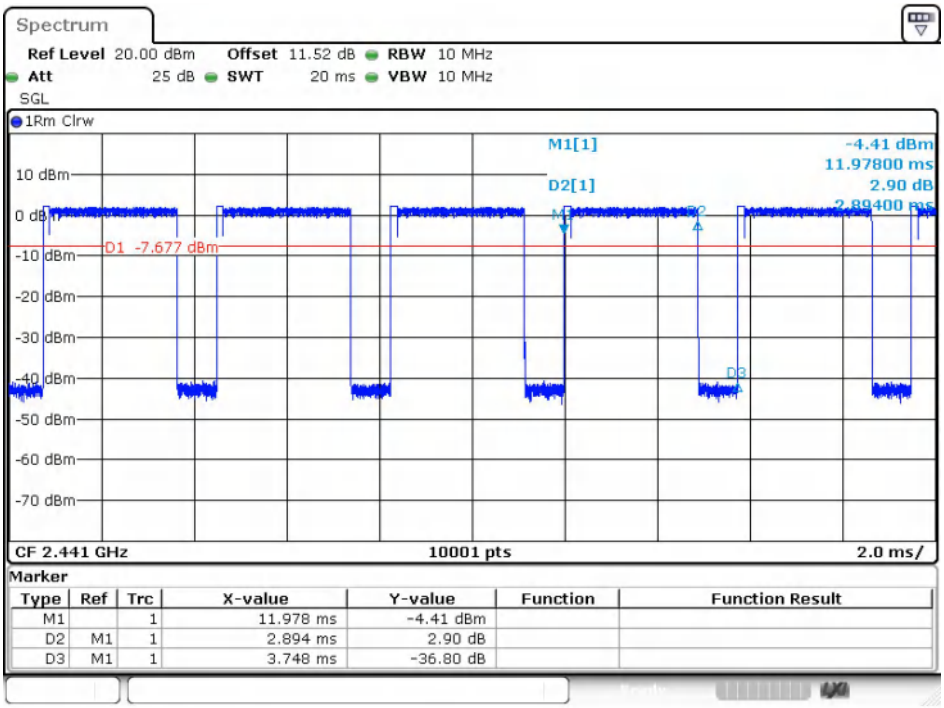

π/4DQPSK(2-DH5)_Channel 39



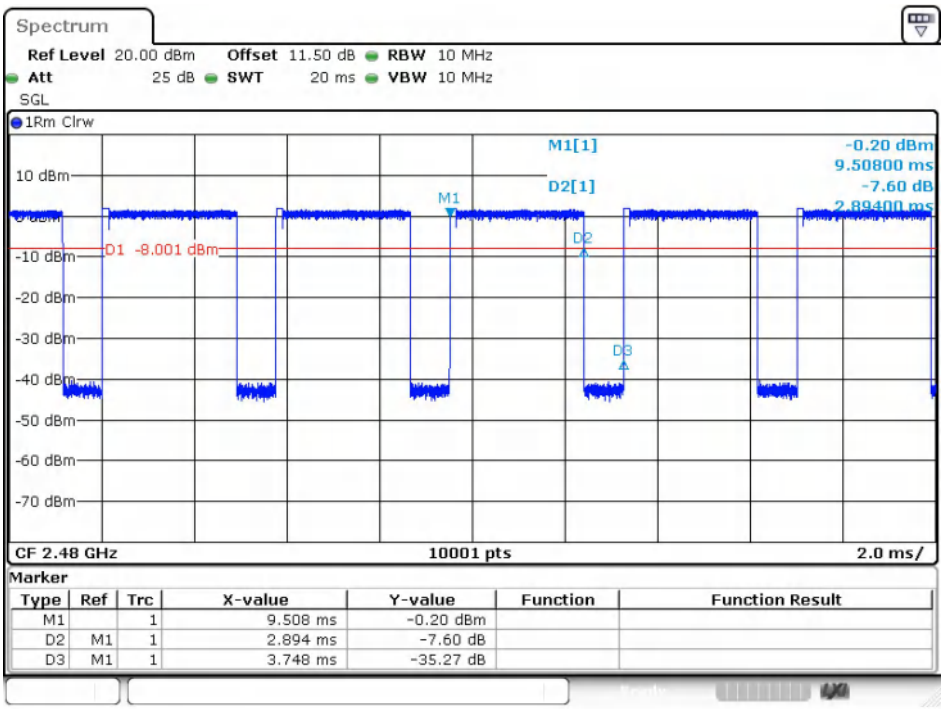

π/4DQPSK(2-DH5)_Channel 78




8DPSK(3-DH5)_Channel 0




8DPSK(3-DH5)_Channel 39



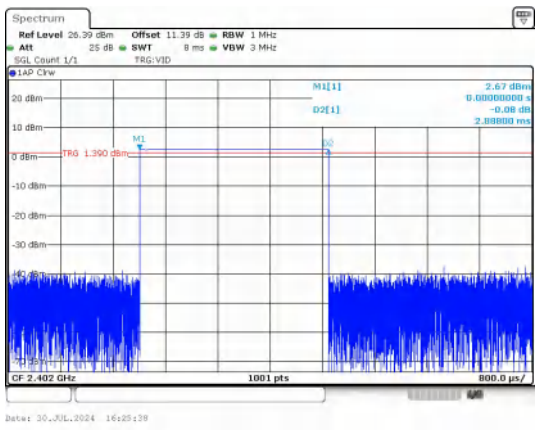

8DPSK(3-DH5)_Channel 78

# 2) Dwell Time

**Test Result**

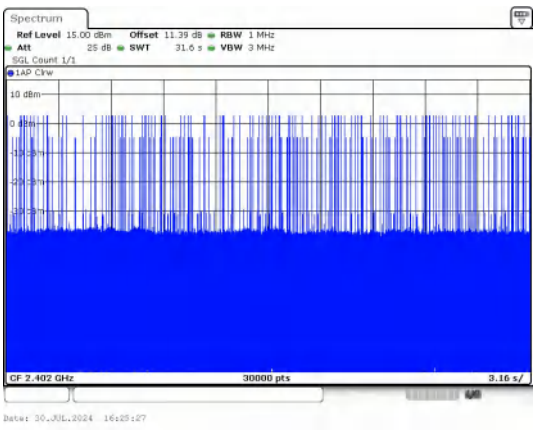
| Modulation | Packet | Channel | Pulse Width (ms) | Number of Pulses in 31.6 seconds | Dwell Time (ms) | Limit (ms) | Result |
|---|---|---|---|---|---|---|---|
| GFSK | DH5 | CH0 (2402MHz) | 2.888 | 112 | 323.46 | < 400 | PASS |
| π/4DQPSK | 2-DH5 | | 2.896 | 112 | 324.35 | | PASS |
| 8DPSK | 3-DH5 | | 2.896 | 99 | 286.7 | | PASS |

**Test Graphs**



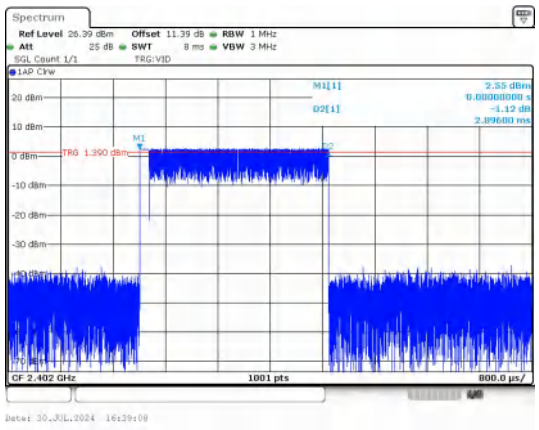

Pulse Width

GFSK_DH5



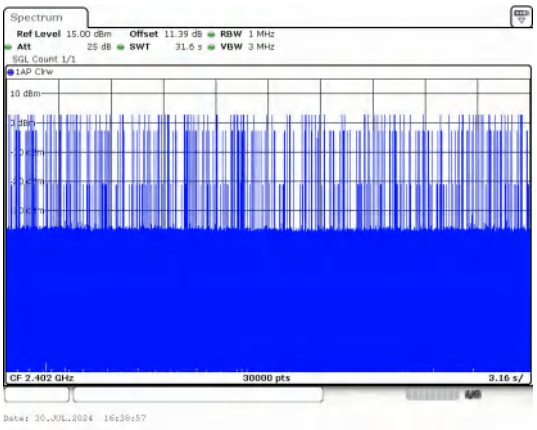

Number of Pulses in 31.6 seconds

GFSK_DH5



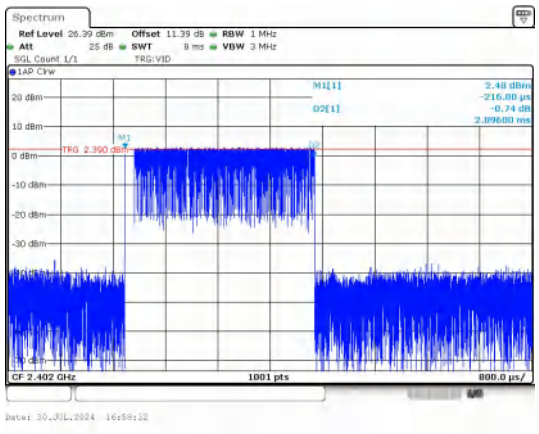
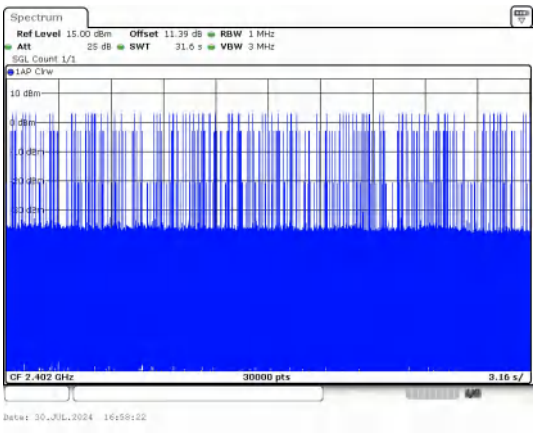

Pulse Width

π/4DQPSK_2-DH5




Number of Pulses in 31.6 seconds

π/4DQPSK_2-DH5

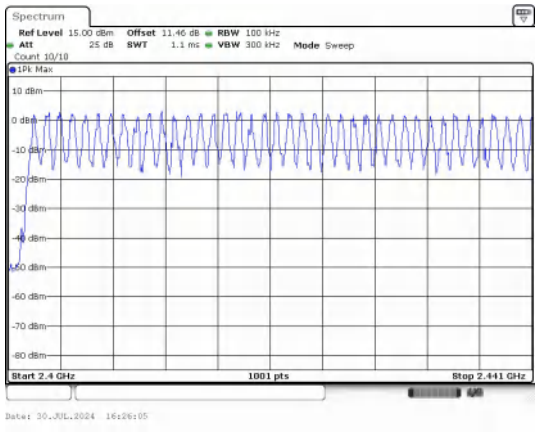
| | |
|---|---|
|  |  |
| **Pulse Width**<br>**8DPSK_3-DH5** | **Number of Pulses in 31.6 seconds**<br>**8DPSK_3-DH5** |

# 3) Number Of Hopping Channel

**Test Result**

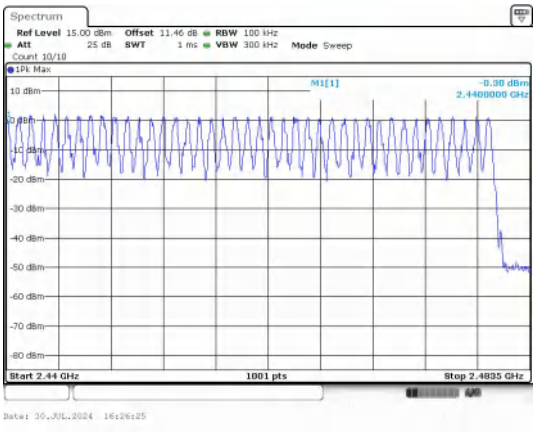
| Modulation | Packet | Number of Hopping Channel | Limit | Result |
|---|---|---|---|---|
| GFSK | DH5 | 79 | 15 | PASS |
| π/4DQPSK | 2-DH5 | 79 | 15 | PASS |
| 8DPSK | 3-DH5 | 79 | 15 | PASS |

**Test Graphs**



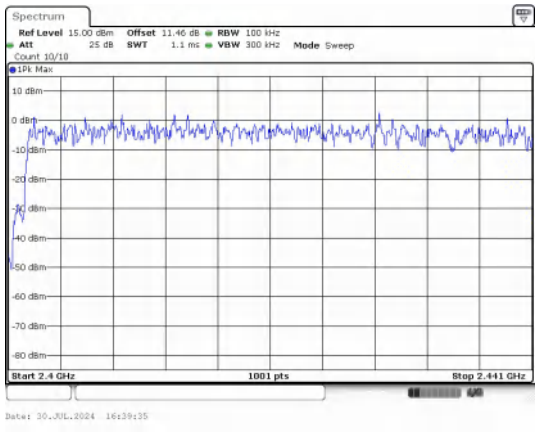

Low End Spectrum Channel Hopping Plot

GFSK



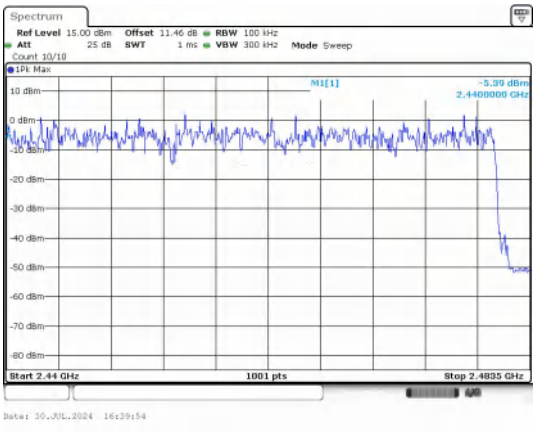

High End Spectrum Channel Hopping Plot

GFSK



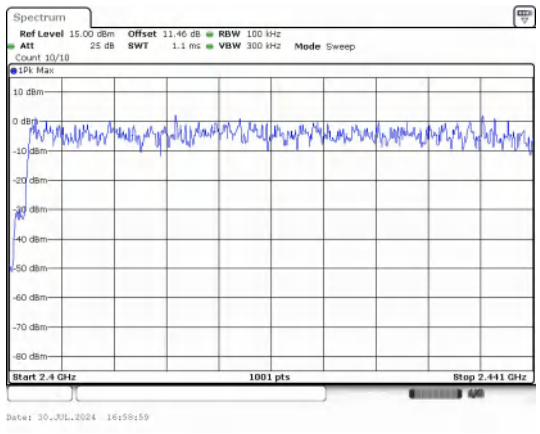
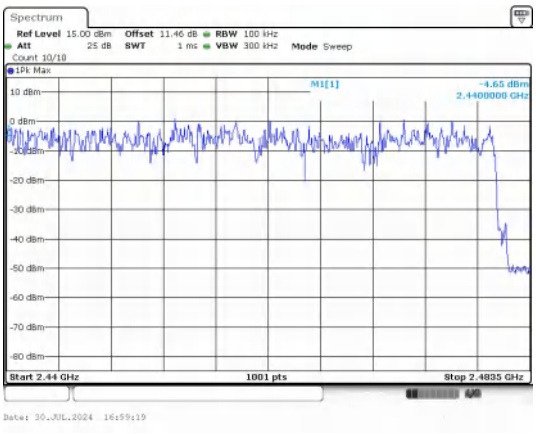

Low End Spectrum Channel Hopping Plot

π/4DQPSK




High End Spectrum Channel Hopping Plot

π/4DQPSK

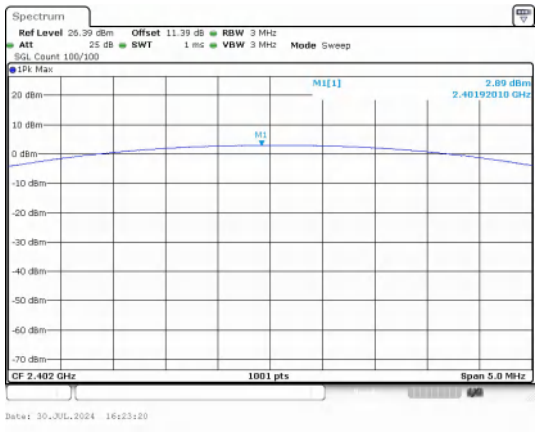
| | |
|---|---|
|  |  |
| **Low End Spectrum Channel Hopping Plot**<br>**8DPSK** | **High End Spectrum Channel Hopping Plot**<br>**8DPSK** |

# 4) Conducted Peak Output Power

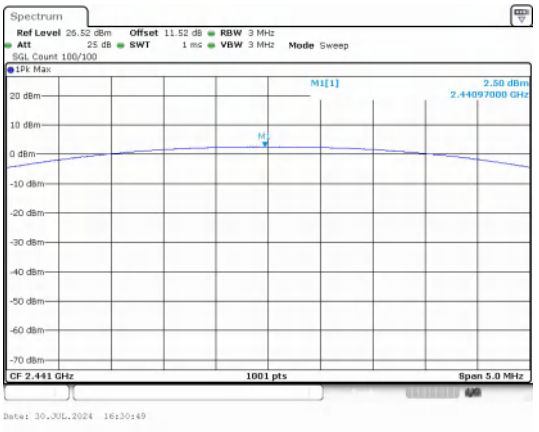
**Test Result**

| Modulation | Packet Type | Channel | Peak Output Power (dBm) | Peak Output Power (mW) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| GFSK | DH5 | 0 | 2.89 | 1.95 | ≤30 | PASS |
| | | 39 | 2.50 | 1.78 | | PASS |
| | | 78 | 2.09 | 1.62 | | PASS |
| π/4DQPSK | 2-DH5 | 0 | 3.17 | 2.08 | ≤20.97 | PASS |
| | | 39 | 2.92 | 1.96 | | PASS |
| | | 78 | 2.57 | 1.81 | | PASS |
| 8DPSK | 3-DH5 | 0 | 3.21 | 2.09 | | PASS |
| | | 39 | 3.26 | 2.12 | | PASS |
| | | 78 | 2.96 | 1.98 | | PASS |

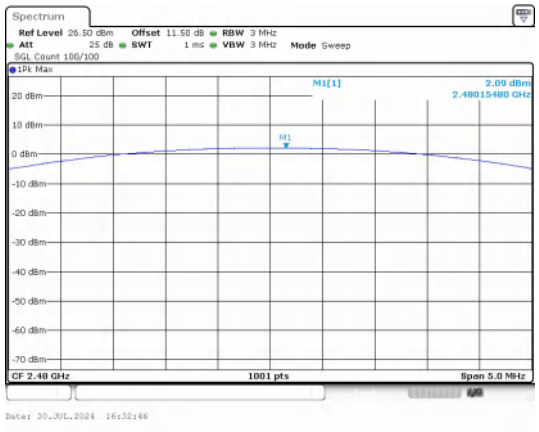
**Test Graphs**



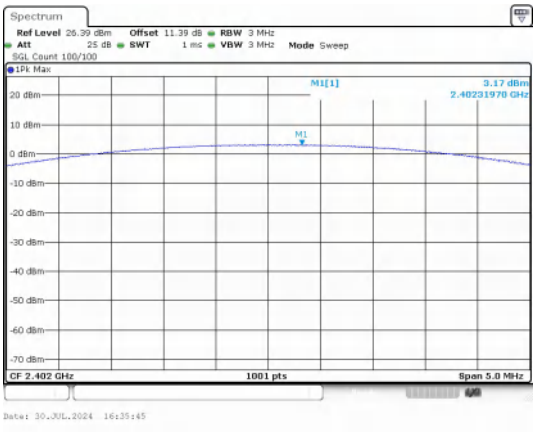

Peak Output Power
GFSK_Channel 0



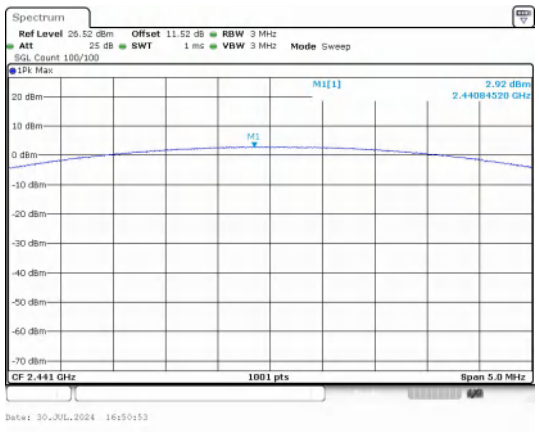

Peak Output Power
GFSK_Channel 39




Peak Output Power
GFSK_Channel 78

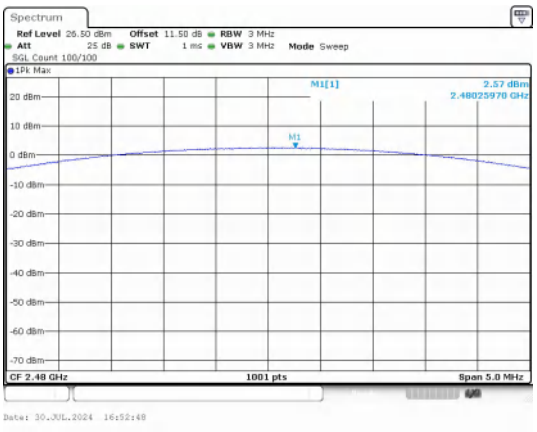



Peak Output Power
π/4DQPSK_Channel 0



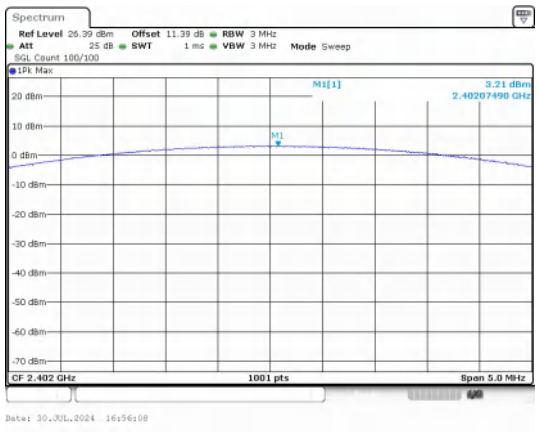

Peak Output Power

π/4DQPSK_Channel 39



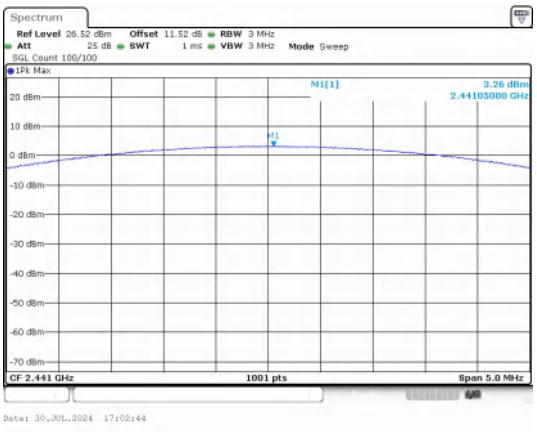

Peak Output Power

π/4DQPSK_Channel 78



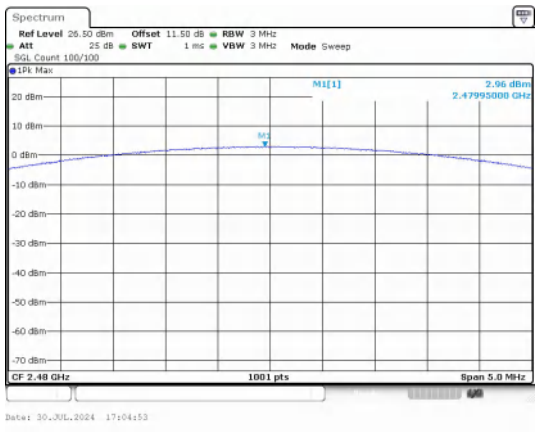

Peak Output Power

8DPSK_Channel 0




Peak Output Power

8DPSK_Channel 39




Peak Output Power

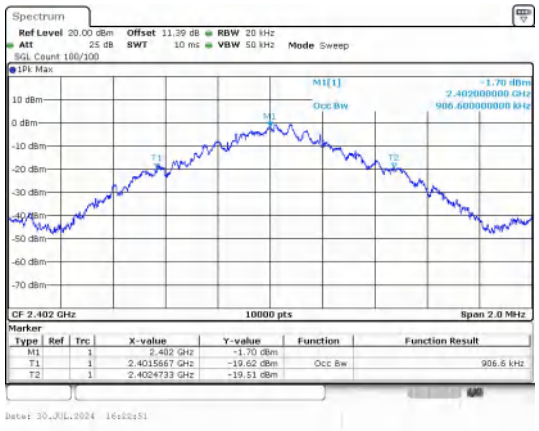
8DPSK_Channel 78

# 5) 99% Bandwidth

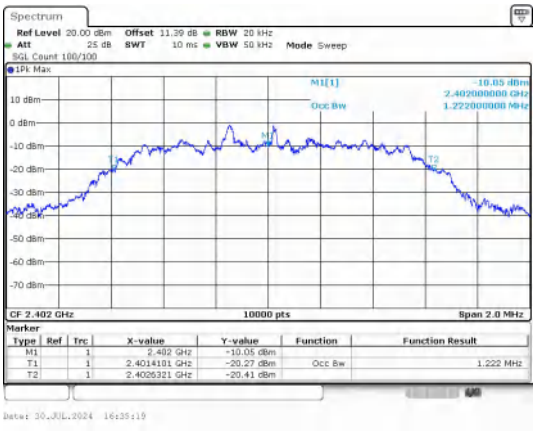
**Test Result**

| Modulation | Channel | Center Frequency (MHz) | 99% BW (MHz) |
|---|---|---|---|
| GFSK | 0 | 2402 | 0.90660 |
| | 39 | 2441 | 0.90480 |
| | 78 | 2480 | 0.89900 |
| π/4DQPSK | 0 | 2402 | 1.2220 |
| | 39 | 2441 | 1.2100 |
| | 78 | 2480 | 1.1936 |
| 8DPSK | 0 | 2402 | 1.2238 |
| | 39 | 2441 | 1.2160 |
| | 78 | 2480 | 1.2102 |

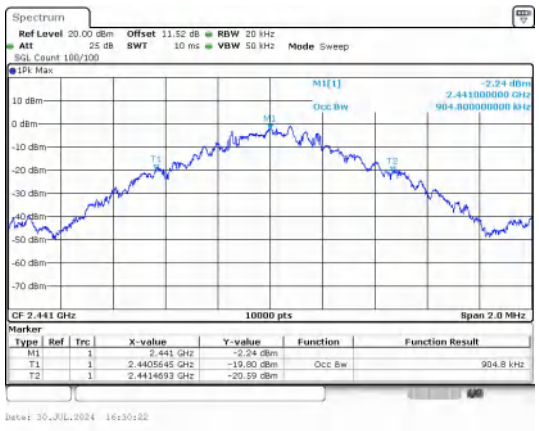
**Test Graphs**



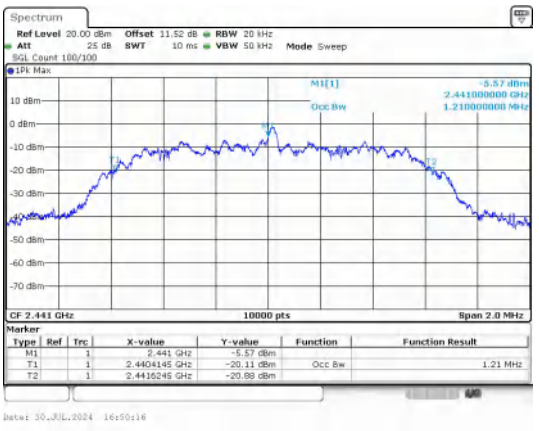

GFSK_DH5_Channel 0



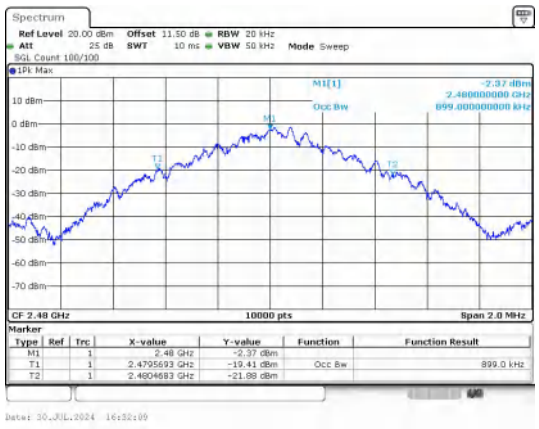

π/4DQPSK_2-DH5_Channel 0



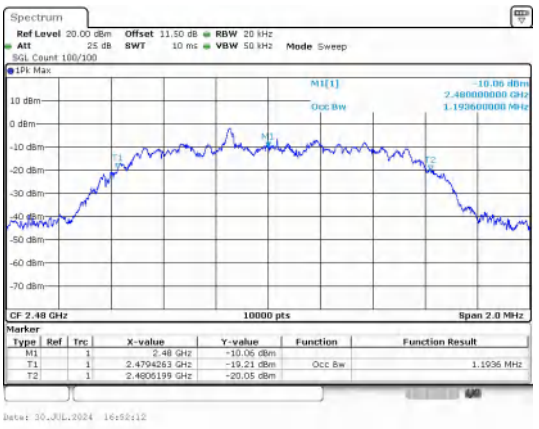

GFSK_DH5_Channel 39



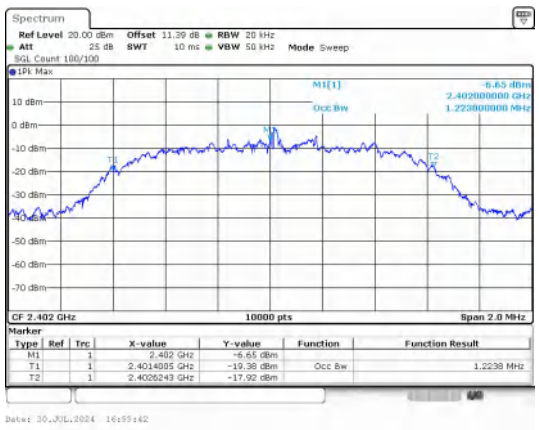

π/4DQPSK_2-DH5_Channel 39



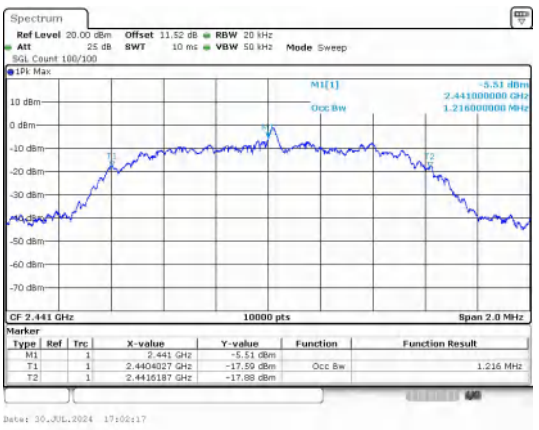

GFSK_DH5_Channel 78



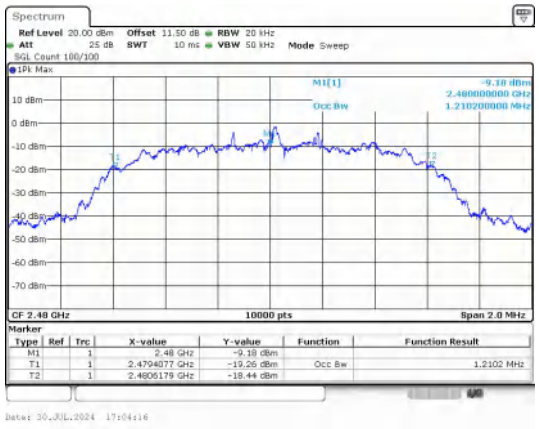

π/4DQPSK_2-DH5_Channel 78




8DPSK_3-DH5_Channel 0




8DPSK_3-DH5_Channel 39



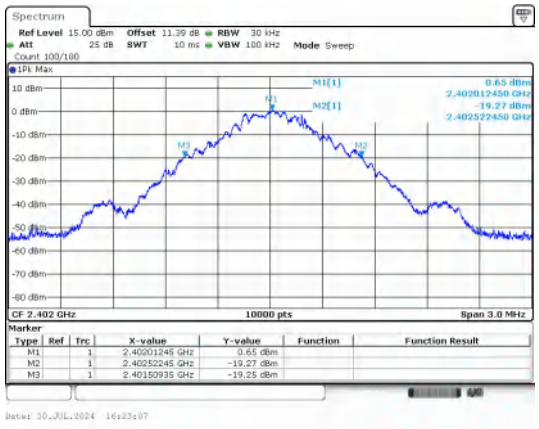

8DPSK_3-DH5_Channel 78

# 6) 20dB Bandwidth

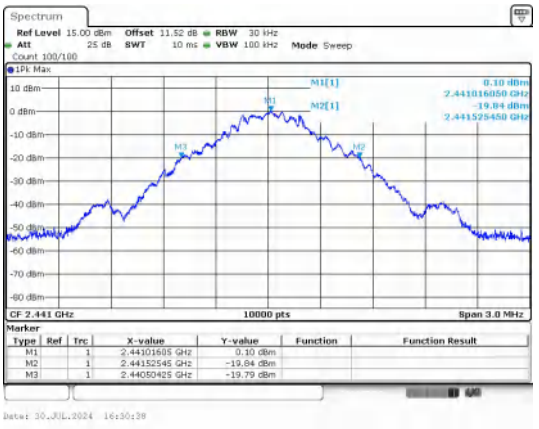
**Test Result**

| Modulation | Channel | Center Frequency (MHz) | 20 dB Bandwidth (MHz) |
|---|---|---|---|
| GFSK | 0 | 2402 MHz | 1.010 |
| | 39 | 2441 MHz | 1.030 |
| | 78 | 2480 MHz | 1.010 |
| π/4DQPSK | 0 | 2402 MHz | 1.310 |
| | 39 | 2441 MHz | 1.310 |
| | 78 | 2480 MHz | 1.310 |
| 8DPSK | 0 | 2402 MHz | 1.300 |
| | 39 | 2441 MHz | 1.290 |
| | 78 | 2480 MHz | 1.300 |

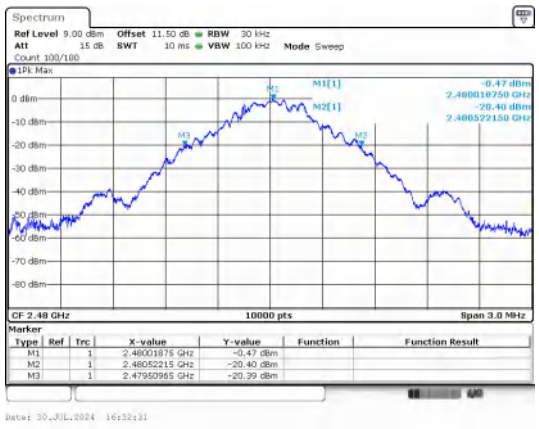
**Test Graphs**



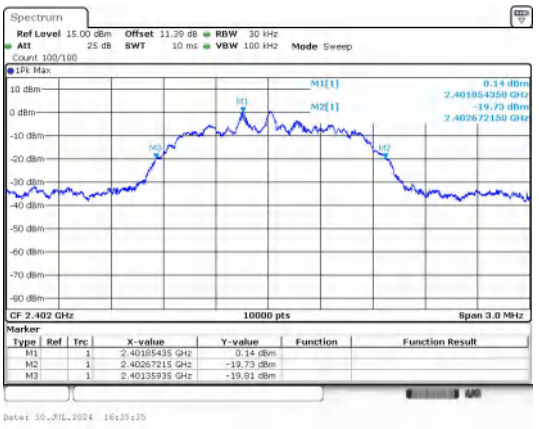

GFSK_DH5_Channel 0



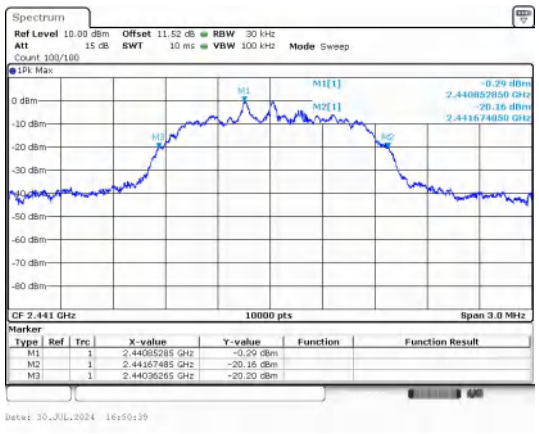

GFSK_DH5_Channel 39



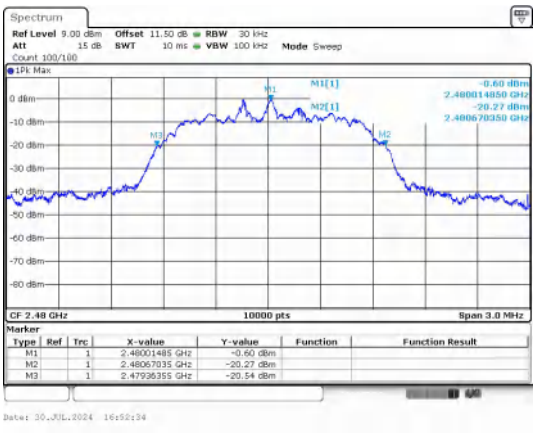

GFSK_DH5_Channel 78



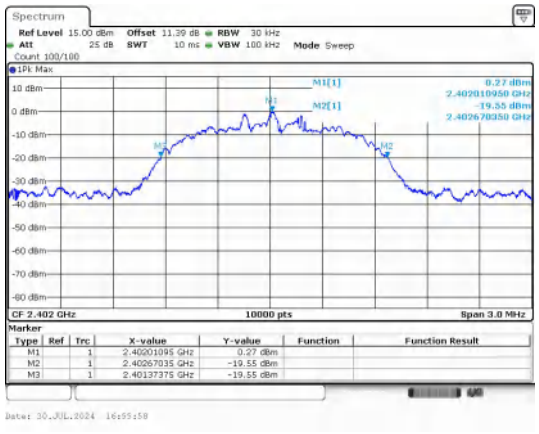

π/4DQPSK_2-DH5_Channel 0



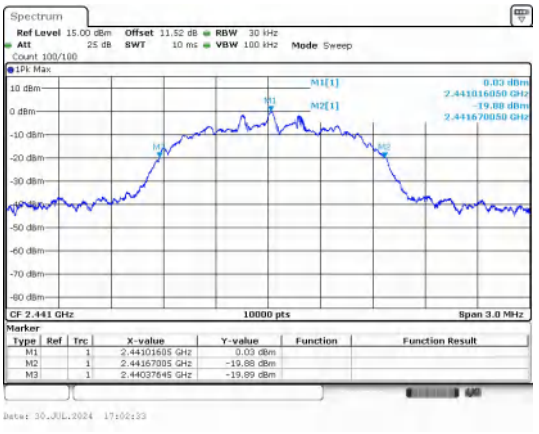

π/4DQPSK_2-DH5_Channel 39



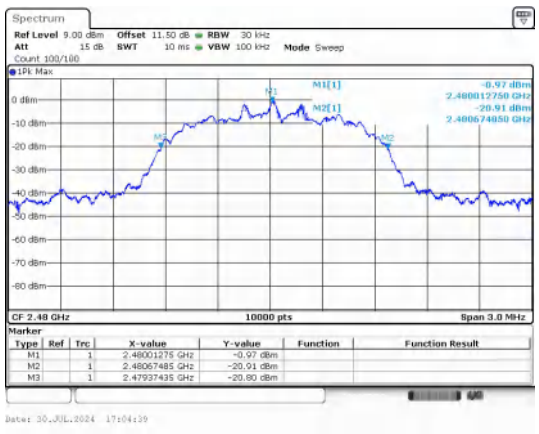

π/4DQPSK_2-DH5_Channel 78




8DPSK_3-DH5_Channel 0




8DPSK_3-DH5_Channel 39



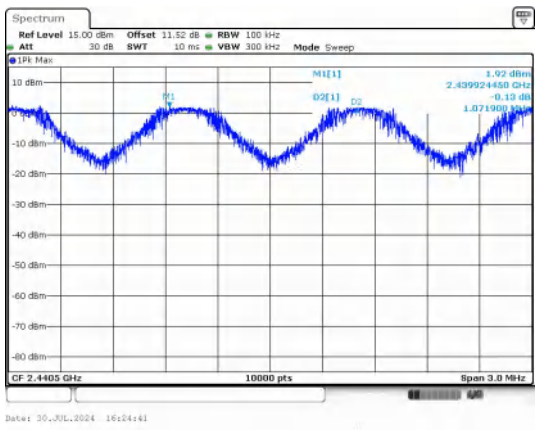

8DPSK_3-DH5_Channel 78

# 7) Carrier Frequencies Separation

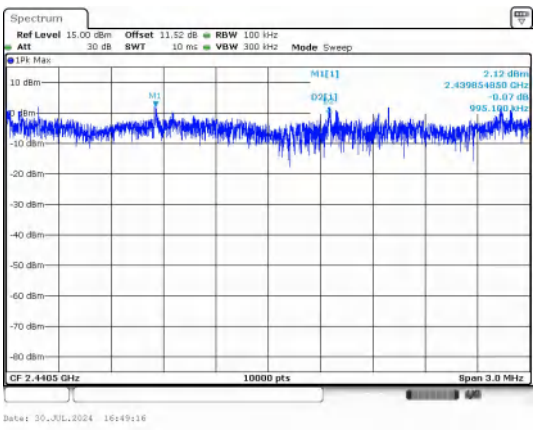
**Test Result**

| Modulation | Packet | Left Center frequency (MHz) | Right Center frequency (MHz) | Hopping Frequency Separation (MHz) | Limit (MHz) | Result |
|---|---|---|---|---|---|---|
| GFSK | DH5 | 2439.9244 | 2440.9963 | 1.0719 | 1.030 | PASS |
| π/4DQPSK | 2-DH5 | 2439.8549 | 2440.8499 | 0.9951 | 0.873 | PASS |
| 8DPSK | 3-DH5 | 2439.8848 | 2440.9931 | 1.1082 | 0.867 | PASS |

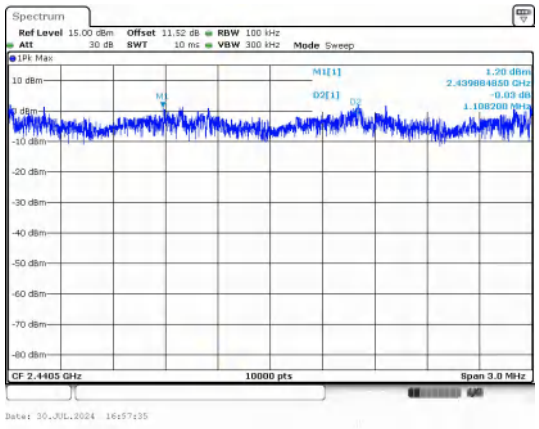
**Test Graphs**




GFSK




π/4DQPSK




8DPSK

# 8) Conducted Out Of Band Emission

**Test Result**

Non-Hopping

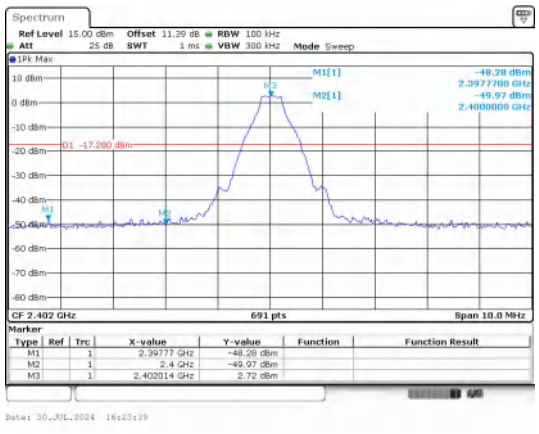
| Modulation | Packet | Channel | OOB Emission Frequency (MHz) | OOB Emission Level (dBm) | Limit (dBm) | Over Limit (dB) | Result |
|---|---|---|---|---|---|---|---|
| GFSK | DH5 | 0 | 2397.77 | -48.279 | -17.28 | -30.999 | PASS |
| | | | 2400.00 | -49.968 | -17.28 | -32.688 | PASS |
| | | | 7206.00 | -40.011 | -17.28 | -22.731 | PASS |
| | | 39 | 9763.72 | -39.625 | -17.62 | -22.005 | PASS |
| | | 78 | 2483.50 | -51.427 | -18.1 | -33.327 | PASS |
| | | | 9920.20 | -39.390 | -18.1 | -21.290 | PASS |
| π/4DQPSK | 2-DH5 | 0 | 2400.00 | -47.072 | -17.75 | -29.322 | PASS |
| | | | 7206.79 | -43.045 | -17.75 | -25.295 | PASS |
| | | 39 | 9763.72 | -40.501 | -17.92 | -22.581 | PASS |
| | | 78 | 2483.50 | -49.368 | -18.28 | -31.088 | PASS |
| | | | 9920.20 | -39.280 | -18.28 | -21.000 | PASS |
| 8DPSK | 3-DH5 | 0 | 2400.00 | -47.875 | -17.75 | -30.125 | PASS |
| | | | 7205.96 | -43.009 | -17.75 | -25.259 | PASS |
| | | 39 | 9763.72 | -40.376 | -18.05 | -22.326 | PASS |
| | | 78 | 2483.50 | -50.024 | -18.15 | -31.874 | PASS |
| | | | 9920.20 | -39.102 | -18.15 | -20.952 | PASS |

Hopping

| Modulation | Packet | Channel | OOB Emission Frequency (MHz) | OOB Emission Level (dBm) | Limit (dBm) | Over Limit (dB) | Result |
|---|---|---|---|---|---|---|---|
| GFSK | DH5 | Hopping | 2396.22 | -47.626 | -17.41 | -30.216 | PASS |
| | | | 2400.00 | -49.351 | -17.41 | -31.941 | PASS |
| | | | 2483.50 | -48.737 | -18.23 | -30.507 | PASS |
| | | | 2396.76 | -48.484 | -17.48 | -31.004 | PASS |
| | | | 2400.00 | -50.502 | -17.48 | -33.022 | PASS |
| | | | 2483.50 | -49.001 | -18.44 | -30.561 | PASS |
| π/4DQPSK | 2-DH5 | | 2396.21 | -48.963 | -18.81 | -30.153 | PASS |
| | | | 2400.00 | -49.892 | -18.81 | -31.082 | PASS |
| | | | 2483.50 | -48.739 | -18.16 | -30.579 | PASS |
| | | | 2397.87 | -49.125 | -18.96 | -30.165 | PASS |
| | | | 2400.00 | -49.927 | -18.96 | -30.967 | PASS |
| | | | 2483.50 | -49.284 | -18.7 | -30.584 | PASS |
| 8DPSK | 3-DH5 | | 2397.57 | -47.790 | -17.4 | -30.390 | PASS |
| | | | 2400.00 | -47.922 | -17.4 | -30.522 | PASS |
| | | | 2483.50 | -48.813 | -18.62 | -30.193 | PASS |

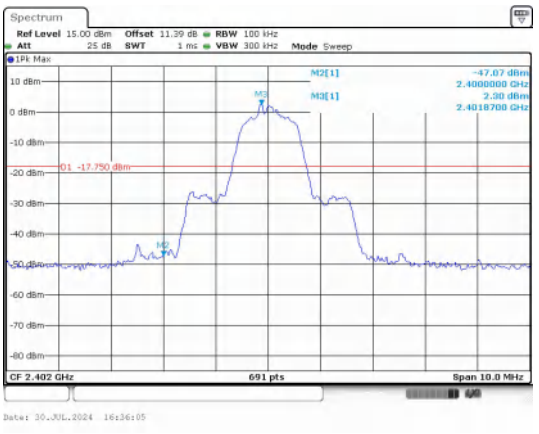
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2395.24 | -48.794 | -17.86 | -30.934 | PASS |
| | | | 2400.00 | -50.689 | -17.86 | -32.829 | PASS |
| | | | 2483.50 | -49.643 | -18.8 | -30.843 | PASS |

**Test Graphs**



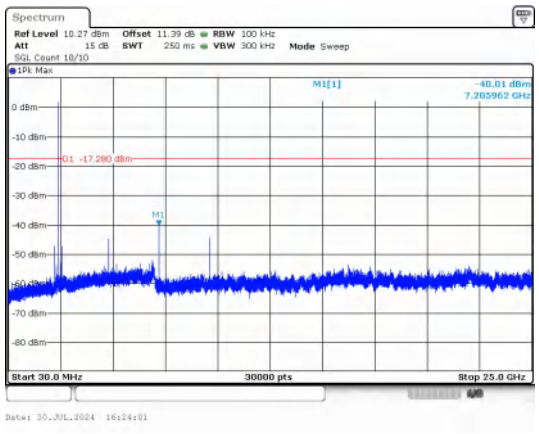

Out Of Band Emission

GFSK_DH5_Channel 0



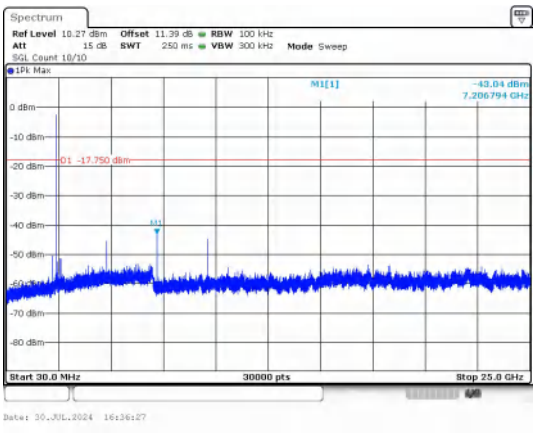

Out Of Band Emission

π/4DQPSK_2-DH5_Channel 0



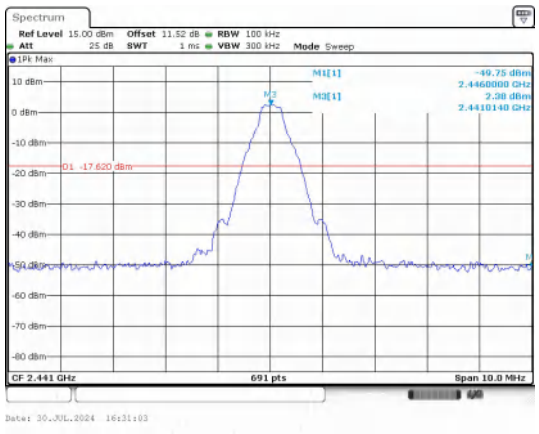

30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 0



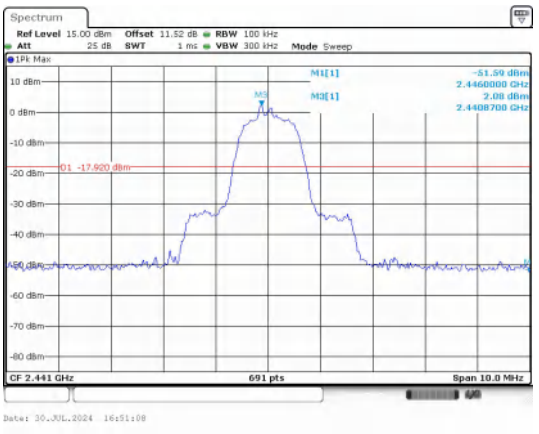

30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 0



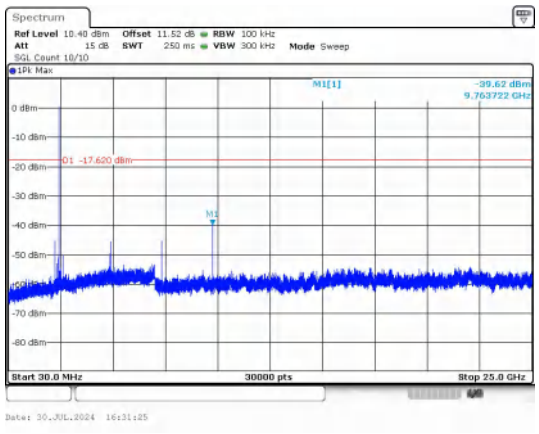

Out Of Band Emission

GFSK_DH5_Channel 39



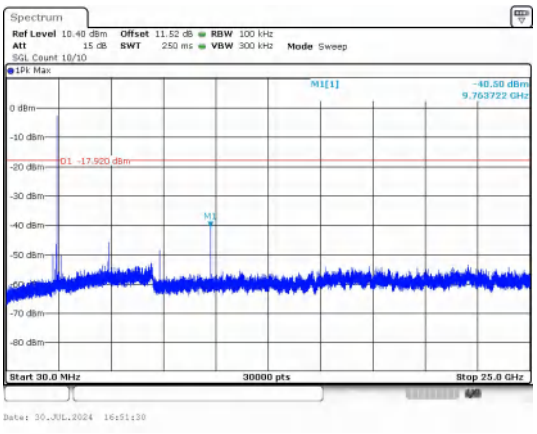

Out Of Band Emission

π/4DQPSK_2-DH5_Channel 39



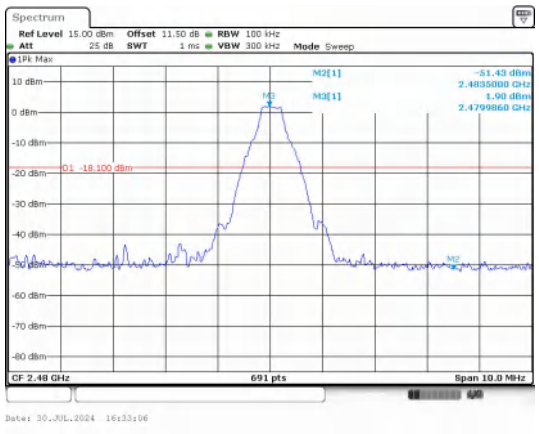

30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 39



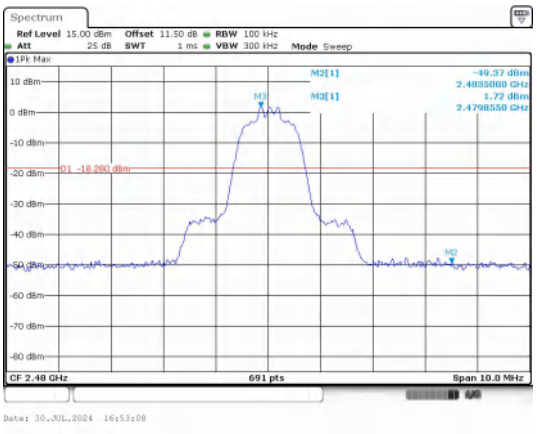

30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 39



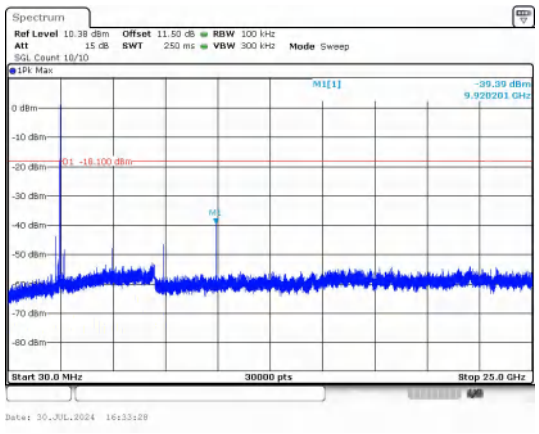

Out Of Band Emission

GFSK_DH5_Channel 78



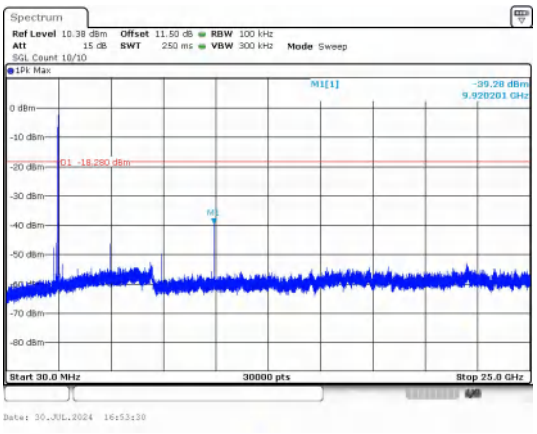

Out Of Band Emission

π/4DQPSK_2-DH5_Channel 78



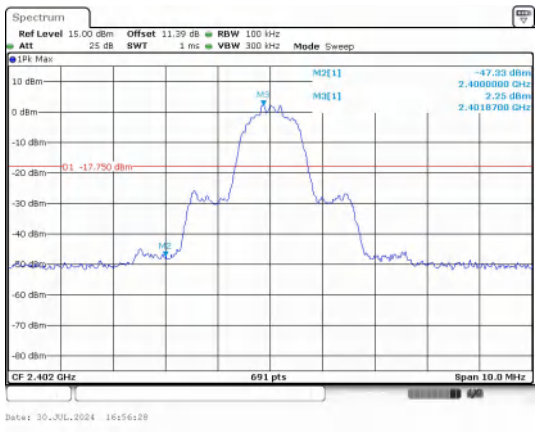
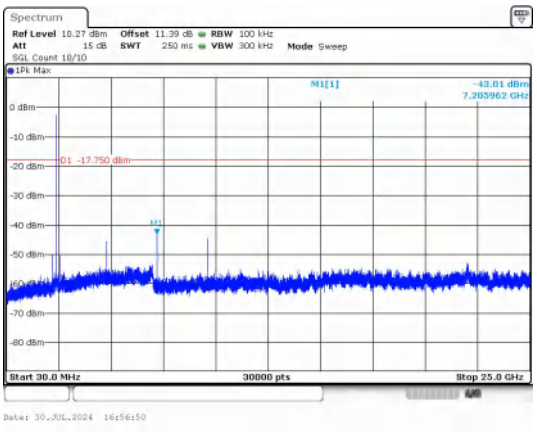
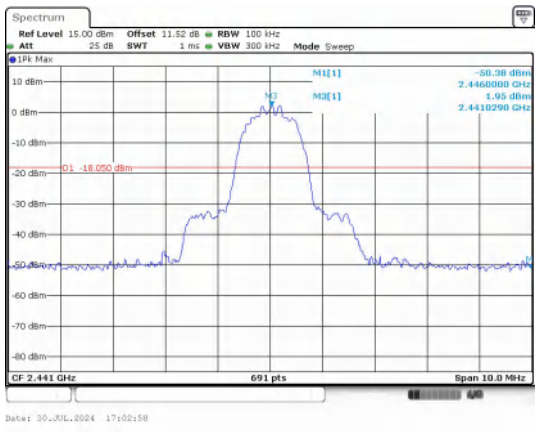
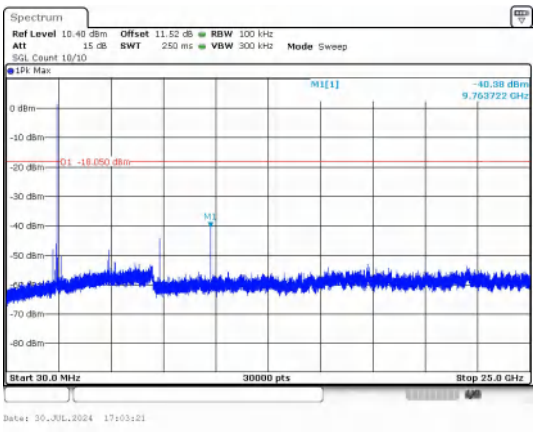
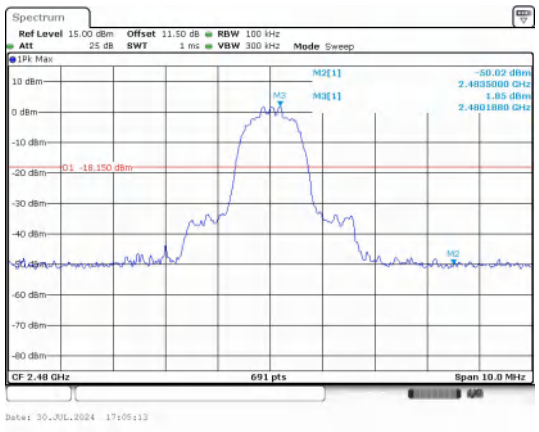
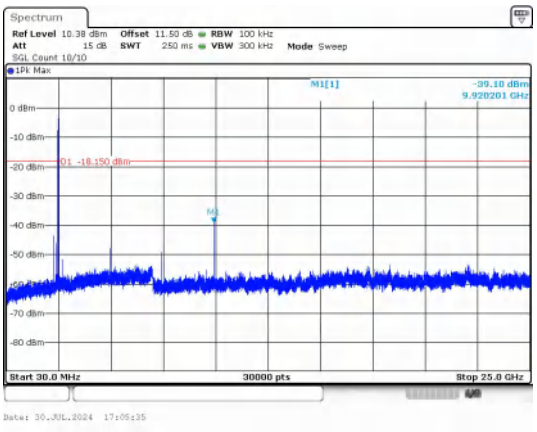

30.0 MHz - 25000.0 MHz

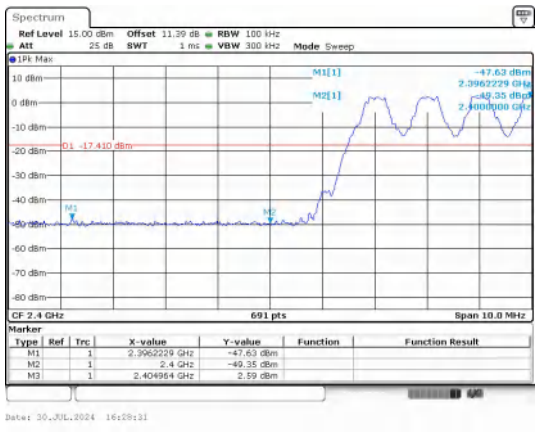
GFSK_DH5_Channel 78




30.0 MHz - 25000.0 MHz

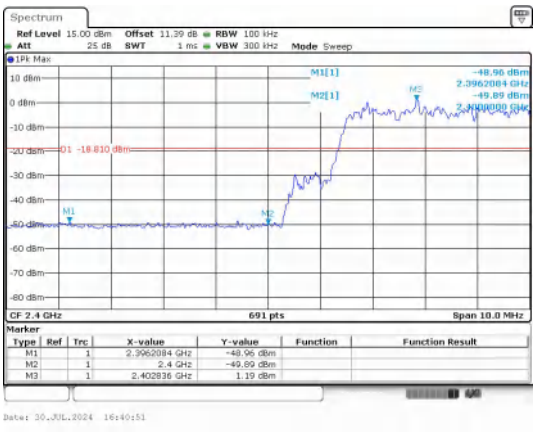
π/4DQPSK_2-DH5_Channel 78

| | |
|---|---|
|  |  |
| **Out Of Band Emission**<br>**8DPSK_3-DH5_Channel 0** | **30.0 MHz - 25000.0 MHz**<br>**8DPSK_3-DH5_Channel 0** |
|  |  |
| **Out Of Band Emission**<br>**8DPSK_3-DH5_Channel 39** | **30.0 MHz - 25000.0 MHz**<br>**8DPSK_3-DH5_Channel 39** |
|  |  |
| **Out Of Band Emission**<br>**8DPSK_3-DH5_Channel 78** | **30.0 MHz - 25000.0 MHz**<br>**8DPSK_3-DH5_Channel 78** |



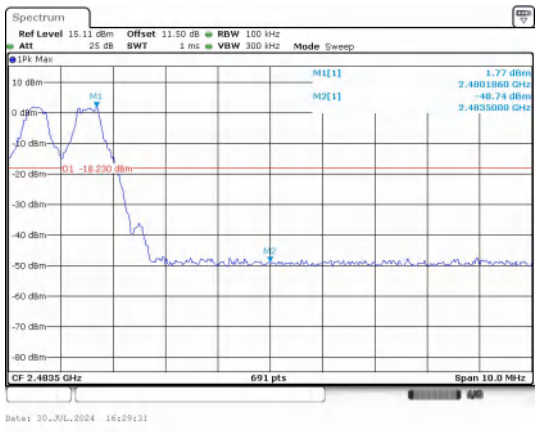

Out Of Band Emission(Left)

GFSK_DH5_Channel Hopping



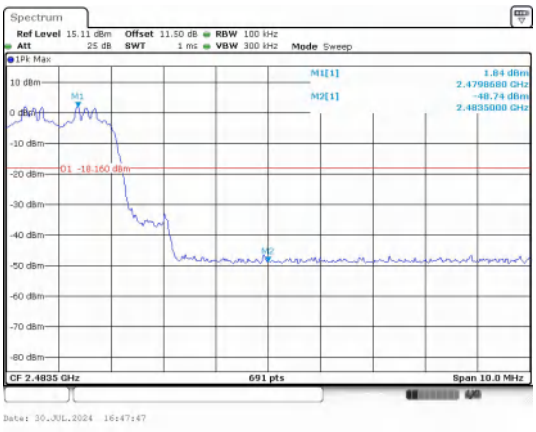

Out Of Band Emission(Left)

π/4DQPSK_2-DH5_Channel Hopping



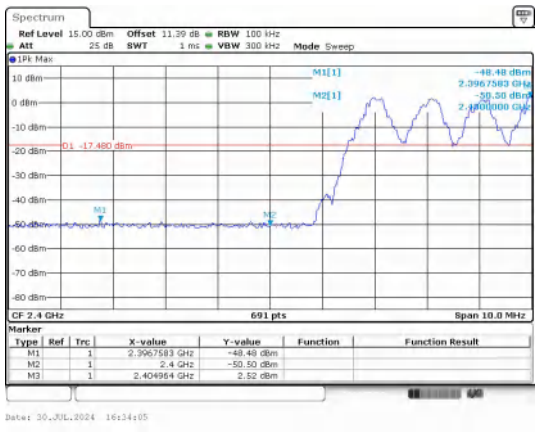

Out Of Band Emission(Right)

GFSK_DH5_Channel Hopping



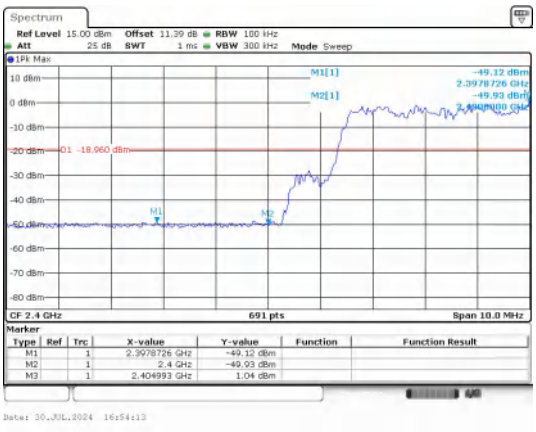

Out Of Band Emission(Right)

π/4DQPSK_2-DH5_Channel Hopping



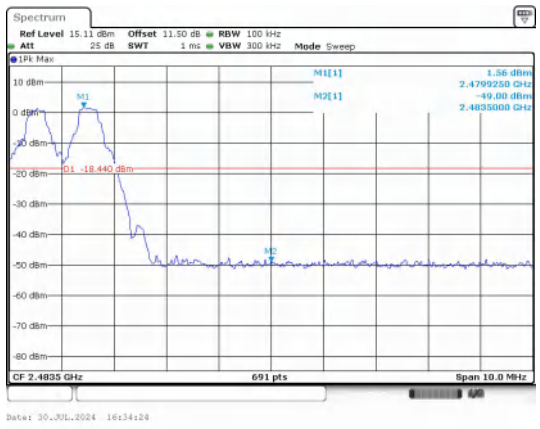

Out Of Band Emission(Left)

GFSK_DH5_Channel Hopping



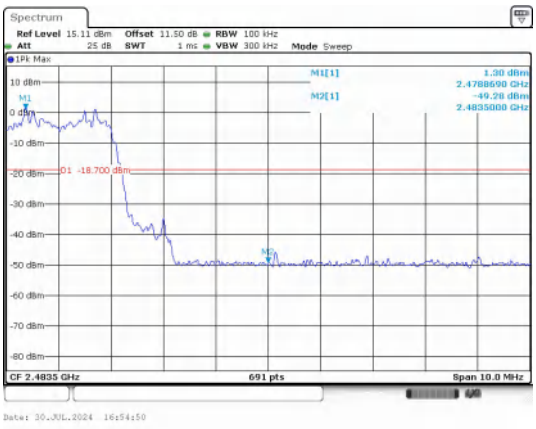

Out Of Band Emission(Left)

π/4DQPSK_2-DH5_Channel Hopping



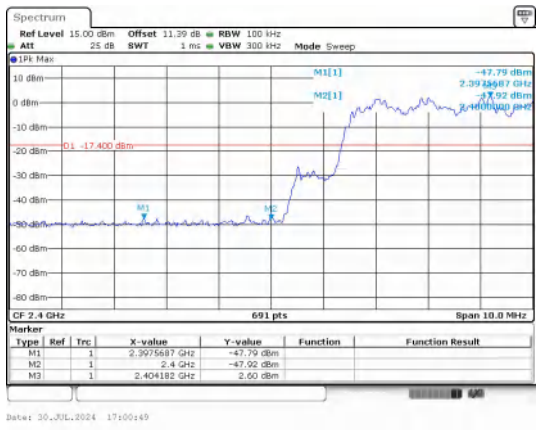

Out Of Band Emission(Right)

GFSK_DH5_Channel Hopping



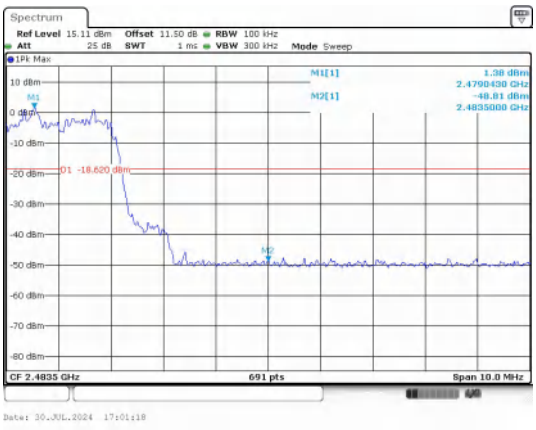

Out Of Band Emission(Right)

π/4DQPSK_2-DH5_Channel Hopping



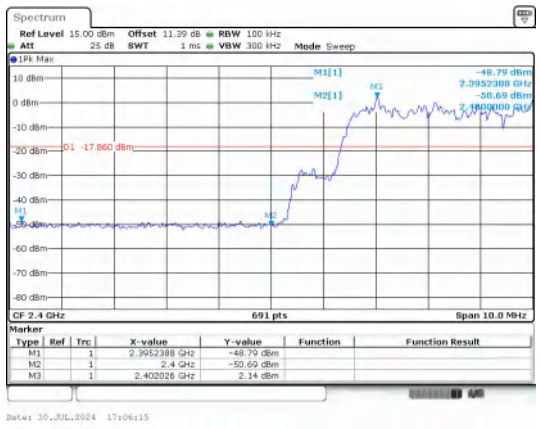

Out Of Band Emission(Left)

8DPSK_3-DH5_Channel Hopping



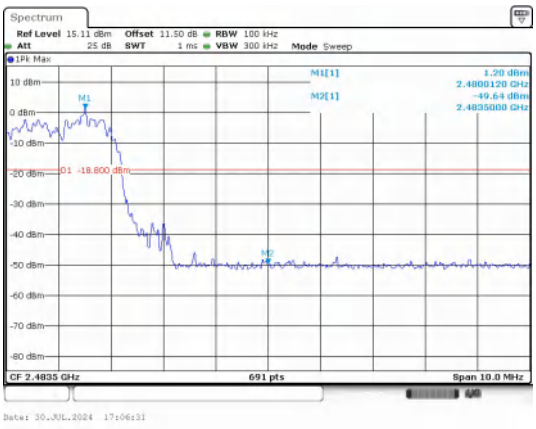

Out Of Band Emission(Right)

8DPSK_3-DH5_Channel Hopping




Out Of Band Emission(Left)

8DPSK_3-DH5_Channel Hopping




Out Of Band Emission(Right)

8DPSK_3-DH5_Channel Hopping