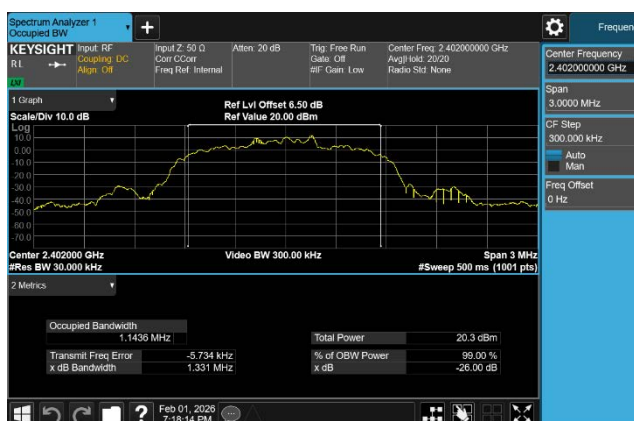


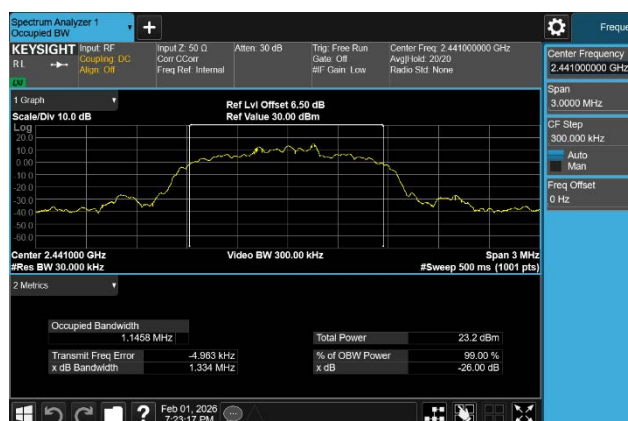
$\pi/4$ -DQPSK HIGH CHANNEL



8-DPSK LOW CHANNEL



8-DPSK MIDDLE CHANNEL



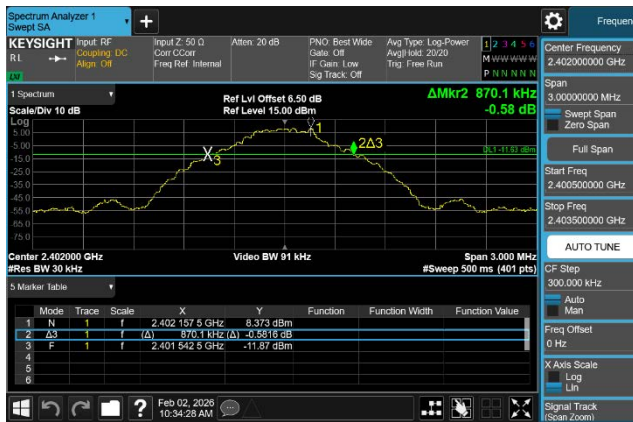
8-DPSK HIGH CHANNEL



Aux. Antenna

20 dB Bandwidth

GFSK LOW CHANNEL



GFSK MIDDLE CHANNEL



GFSK HIGH CHANNEL



π/4-DQPSK LOW CHANNEL



π/4-DQPSK MIDDLE CHANNEL



Keysight Spectrum Analyzer 1

Input: RF
Switch: SA
Coupling: DC
Algs: Off

Input Z: 50 Ω
Corr: Off
Ref Freq: Internal

Attenuation: 20 dB

PNO: Best Wide
Gate: Off
IF Gain: Low
So Track: Off

Avg Type: Log
Power: Power
Appl: Hold: 20/20
Trig: Free Run

Frequency: 1 2 3 4 5
 WWW.WWW.WWW.WWW.WWW

Center Frequency: 2.480000000 GHz
Span: 3.000000000 MHz
Sweep Span: Zero Span
Full Span: [Button]
Start Freq: 2.478500000 GHz
Stop Freq: 2.481500000 GHz
AUTO TUNE: [Button]
CF Step: 300.000 MHz
Auto: [Button]
Man: [Button]
Freq Offset: 0 Hz
X Axis Scale: Log
Link: [Button]
Signal: Train (726)

Measurement Data:
 Ref Lvl Offset: 6.50 dB
 Ref Level: 15.00 dBm
 Video BW: 91 kHz
 Span: 3.000 MHz
 #Res: BW 30 kHz
 #Sweep 500 ms (401 pts)

Marker Table:

Mode	Trace	Scale	Frequency	Amplitude	Function	Function Width	Function Value
1	N	1	2.480150 0 GHz	6.300 dBm			
2	Δ3	1	2.4878 9 MHz (Δ)	-3.692 dBm			
3	F	1	2.479 355 0 GHz	-15.06 dBm			
4							
5							
6							

[illegible]

Spectrum Analyzer 1

KEYSIGHT Input RF Sweep Span
 RL Center Freq: 2.441000 GHz
 ALgs: Coupling DC
 ALgs: Off

Input Z: 50 Ω
 Corr: COor
 Freq Ref: Internal

Atten: 20 dB

PNO: Best Wide
 Gate: Off
 IF Gain: Low
 Sg Track: Off

Avg Type: Log Power
 Avlgi: Feb 02/2020
 Trig: Free Run

1 2 3 4 5
 M www.wv
 P N N N N N

Center Frequency: 2.441000000 GHz

Span: 3.0000000 MHz

Sweep Span: Zero Span

Full Span

Start Freq: 2.439500000 GHz

Stop Freq: 2.442500000 GHz

AUTO TUNE

CF Step: 3.000 MHz

Auto
 Man

Freq Offset: 0 Hz

X Axis Scale: Log
 Lin

Signal Track: Zoom

1 Spectrum
 Scale/Div 10 dB
 Log
 5.00
 0.00
 -5.00
 -10.00
 -15.00
 -20.00
 -25.00
 -30.00
 -35.00
 -40.00
 -45.00
 -50.00

Ref Lvl Offset 6.50 dB
 Ref Level 15.00 dBm

Δ Mrk2 1.260 0 MHz
 -0.64 dB

263

0.1 -0.43 dB

Center 2.441000 GHz
 #Res BW 30 kHz

Video BW 01 kHz

Span 3.000 MHz
 #Sweep 500 ms (401 pts)

Marker Table

Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	f	2.441 150 0 GHz	3.570 dBm			
2	A3	f	(Δ) 1.260 0 MHz (Δ)	-0.6447 dB			
3	F	f	2.440 355 0 GHz	-16.53 dBm			
4							
5							

Feb 02, 2026
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Spectrum Analyzer 1

KEYSIGHT Input RF Sweep SA Input 2: 50 Ω Attenuation: 20 dB PNO: Best Wide Gain: Off Avg Time: Log Power 1 2 3 4 5 MWW: WWH W P N N N N N N N

RF Coupling: DC Algs: Off Corr: Corr Freq Ref: Internal

Center Frequency: 2.480000 GHz Span: 3.000000 MHz

Resolution: #Res BW 30 kHz Video BW 91 kHz

Ref Lvl Offset: 6.50 dB Ref Level: 15.00 dB

ΔMkr2: 1.260 0 MHz -0.88 dB

Marker 1: 2.483 GHz

Marker 2: 2.483 GHz

Marker 3: 2.483 GHz

Marker 4: 2.483 GHz

Marker 5: 2.483 GHz

Marker 6: 2.483 GHz

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Marker 204: 2.483 GHz

Marker 205: 2.483 GHz

Marker 206: 2.483 GHz

Marker 207: 2.483 GHz

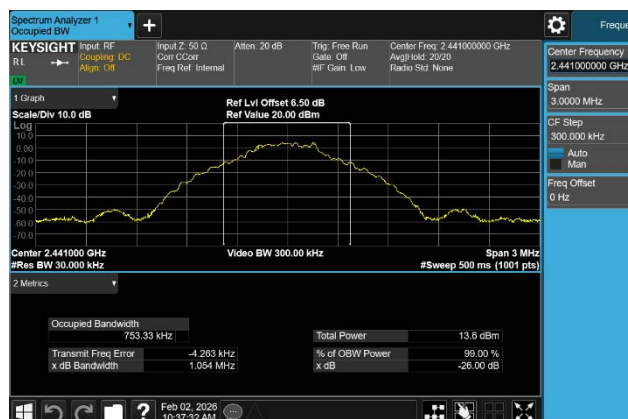
Marker 208:

99% Bandwidth

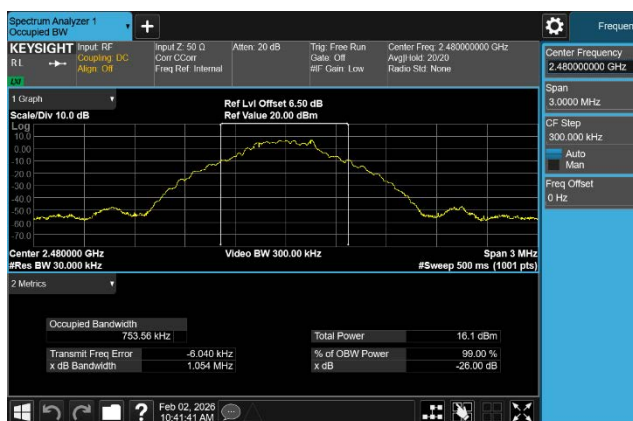
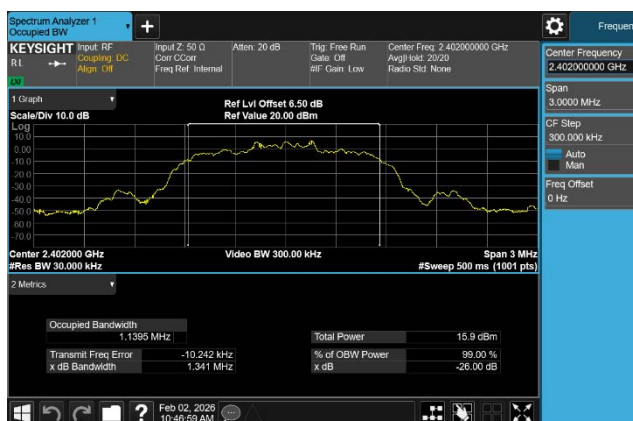
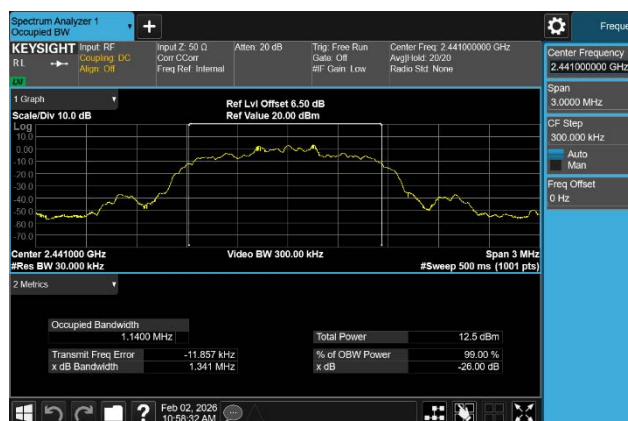
GFSK LOW CHANNEL



GFSK MIDDLE CHANNEL



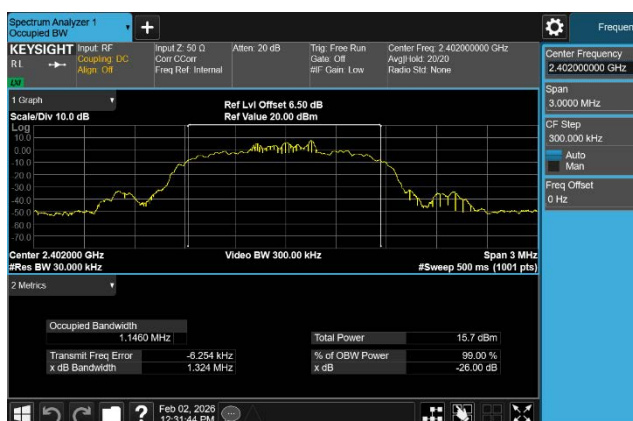
GFSK HIGH CHANNEL

 $\pi/4$ -DQPSK LOW CHANNEL $\pi/4$ -DQPSK MIDDLE CHANNEL

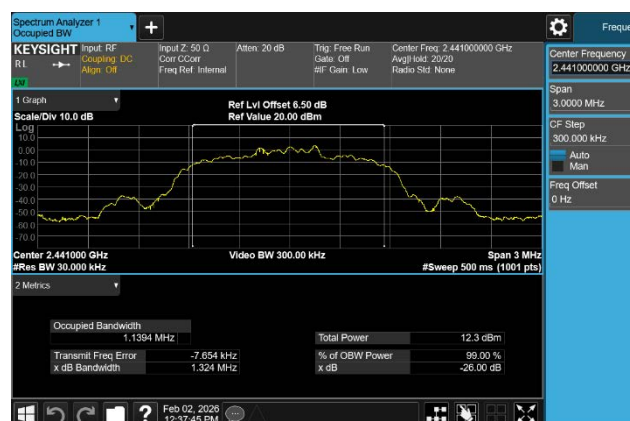
$\pi/4$ -DQPSK HIGH CHANNEL



8-DPSK LOW CHANNEL



8-DPSK MIDDLE CHANNEL



8-DPSK HIGH CHANNEL



A.4 Carrier Frequency Separation

Main Antenna

Test Data

Mode	Frequency separation (MHz)	2/3 of the 20 dB Bandwidth (MHz)	Verdict
GFSK	1.000	0.580	Pass
8-DPSK	1.000	0.845	Pass

Test Plots

GFSK



8-DPSK



Aux. Antenna

Test Data

Mode	Frequency separation (MHz)	2/3 of the 20 dB Bandwidth (MHz)	Verdict
GFSK	1.000	0.580	Pass
8-DPSK	1.000	0.840	Pass

Test Plots

GFSK



8-DPSK



A.5 Time of Occupancy (Dwell time)

Test Data

Main Antenna

GFSK				
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.37330	119.456	0.4	Pass
DH 3	1.62700	260.320	0.4	Pass
DH 5	2.88200	307.413	0.4	Pass
8-DPSK				
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.38000	121.600	0.4	Pass
DH 3	1.62700	260.320	0.4	Pass
DH 5	2.88200	307.413	0.4	Pass
AFH Mode				
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.37330	59.728	0.4	Pass
DH 3	1.63300	130.640	0.4	Pass
DH 5	2.88200	153.707	0.4	Pass

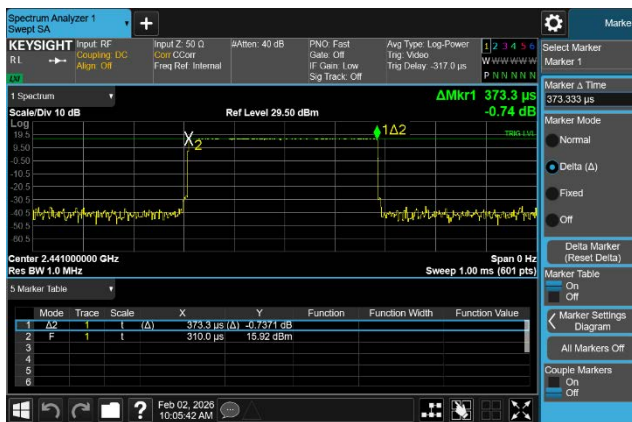
Aux. Antenna

GFSK				
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.37330	119.456	0.4	Pass
DH 3	1.63300	261.280	0.4	Pass
DH 5	2.87000	306.133	0.4	Pass
8-DPSK				
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.38000	121.600	0.4	Pass
DH 3	1.62700	260.320	0.4	Pass
DH 5	2.88200	307.413	0.4	Pass
AFH Mode				
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.37330	59.728	0.4	Pass
DH 3	1.63300	130.640	0.4	Pass
DH 5	2.88200	153.707	0.4	Pass

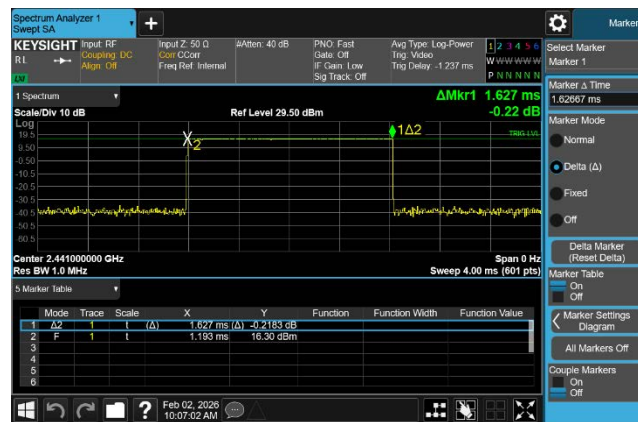
Main Antenna

Test Plots

GFSK DH1



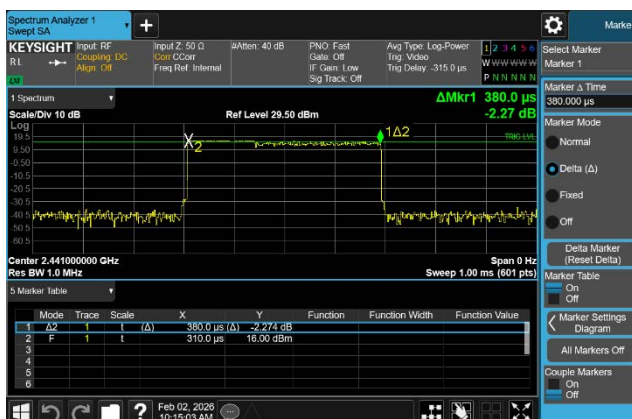
GFSK DH3



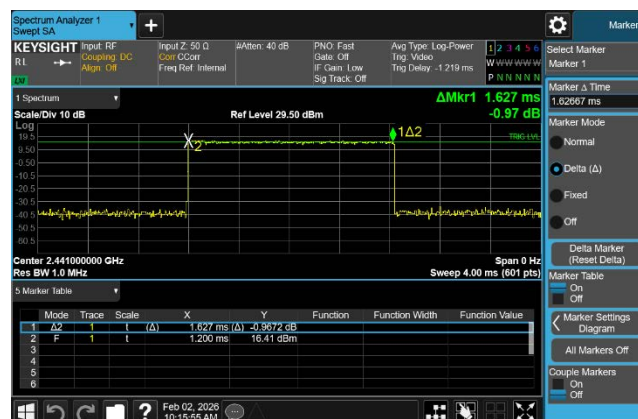
GFSK DH5



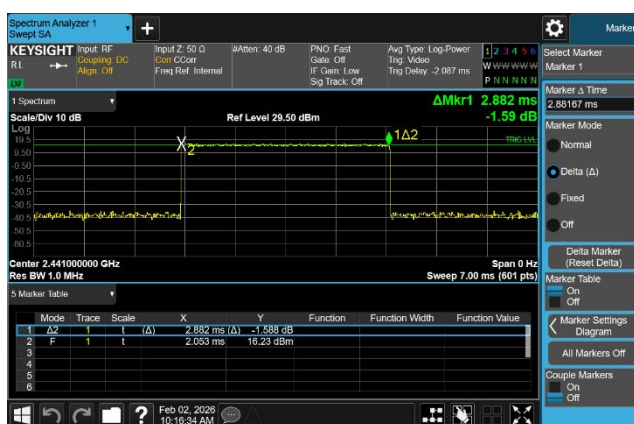
8-DPSK DH1



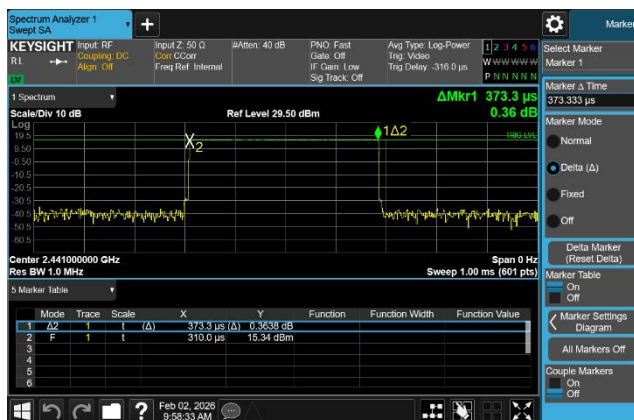
8-DPSK DH3



8-DPSK DH5



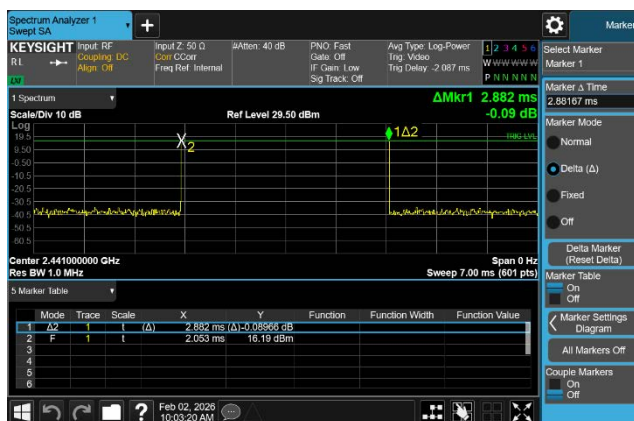
AFH Mode DH1



AFH Mode DH3



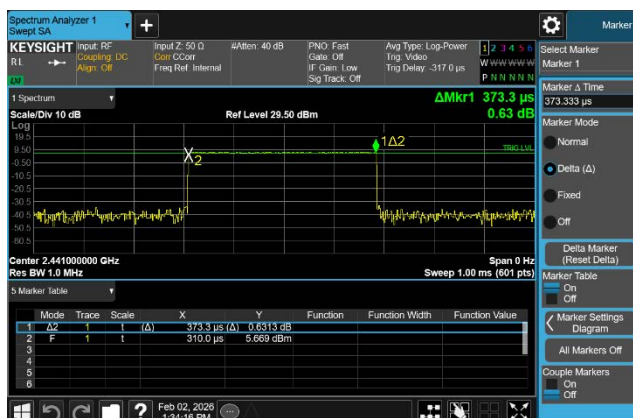
AFH Mode DH5



Aux.Antenna

Test Plots

GFSK DH1



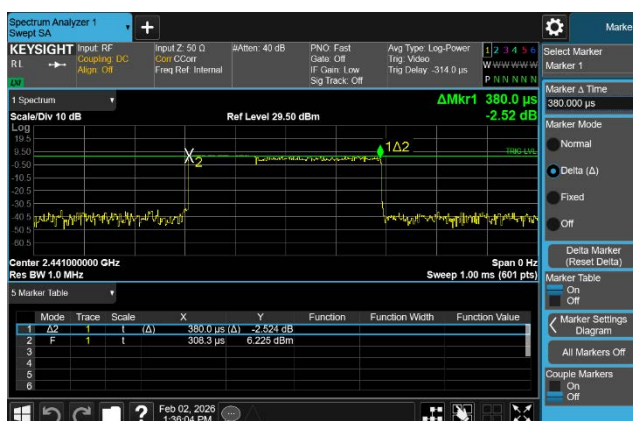
GFSK DH3



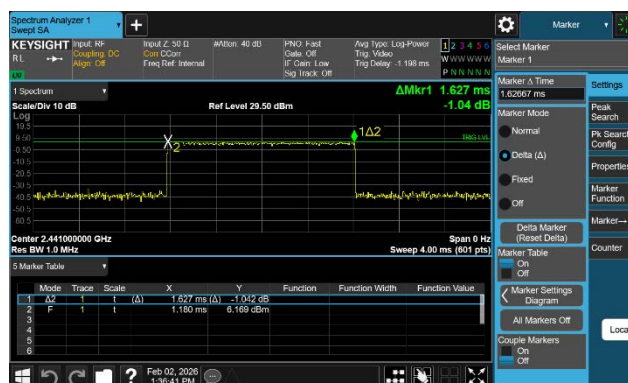
GFSK DH5



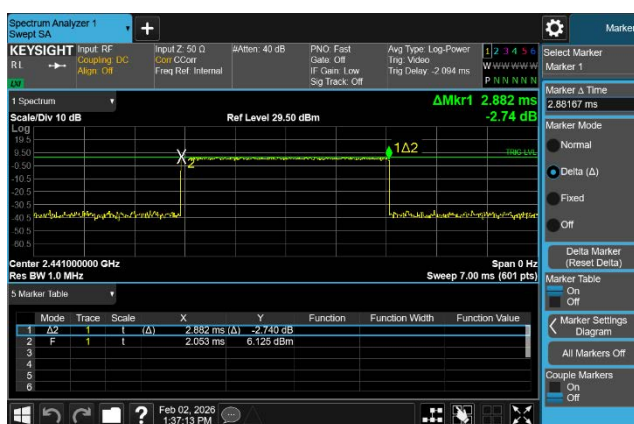
8-DPSK DH1



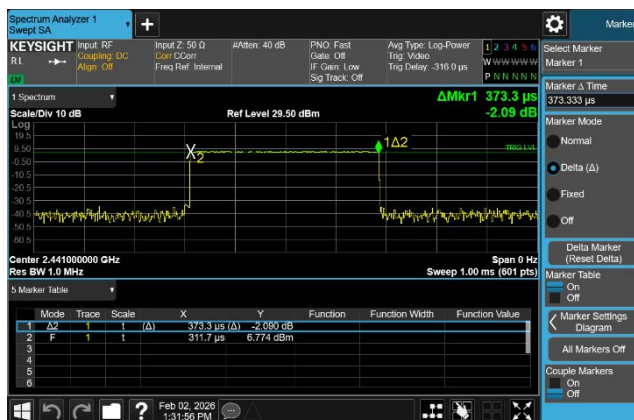
8-DPSK DH3



8-DPSK DH5



AFH Mode DH1



AFH Mode DH3



AFH Mode DH5



A.6 Conducted Spurious Emissions & Authorized-band band-edge

Test Data

Main Antenna

GFSK				
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-37.18	13.55	-6.45	Pass
Middle	-36.76	15.44	-4.56	Pass
High	-36.63	14.69	-5.31	Pass
8-DPSK				
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-36.57	13.41	-6.59	Pass
Middle	-36.37	15.83	-4.17	Pass
High	-36.64	14.38	-5.62	Pass
Hopping Mode				
Mode	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
GFSK	-37.48	15.80	-4.20	Pass
8-DPSK	-36.39	16.55	-3.45	Pass

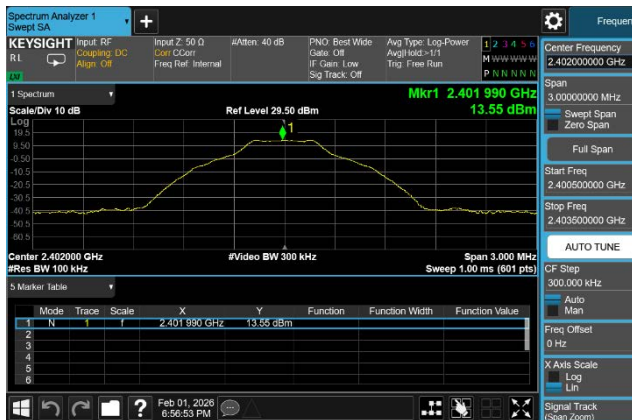
Aux. Antenna

GFSK				
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-37.17	10.81	-9.19	Pass
Middle	-36.74	6.53	-13.47	Pass
High	-37.17	8.92	-11.08	Pass
8-DPSK				
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-37.11	9.87	-10.13	Pass
Middle	-38.04	5.94	-14.06	Pass
High	-36.44	8.39	-11.61	Pass
Hopping Mode				
Mode	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
GFSK	-37.29	16.84	-3.16	Pass
8-DPSK	-36.80	13.68	-6.32	Pass

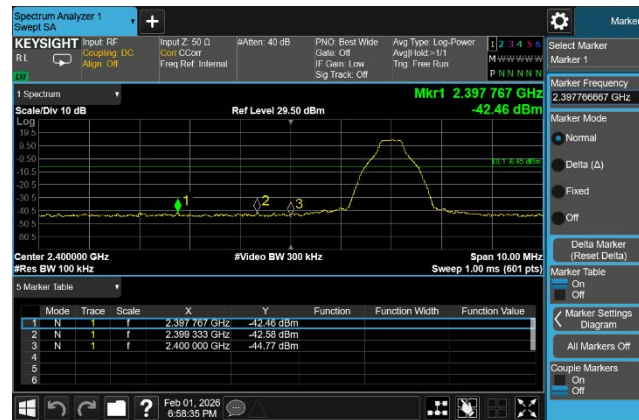
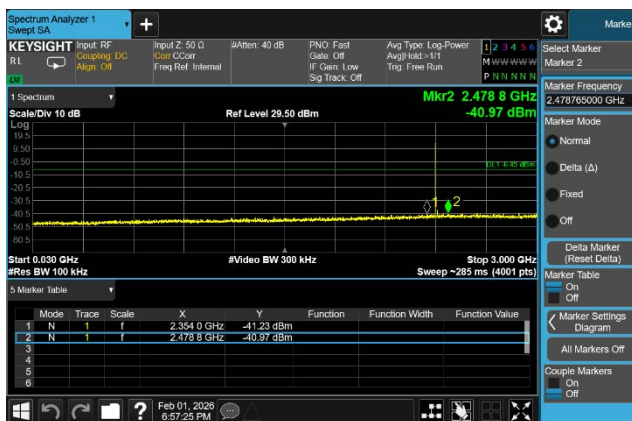
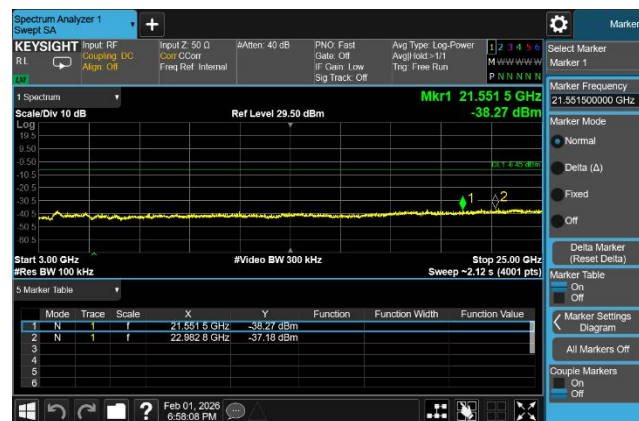
Main Antenna

Test Plots

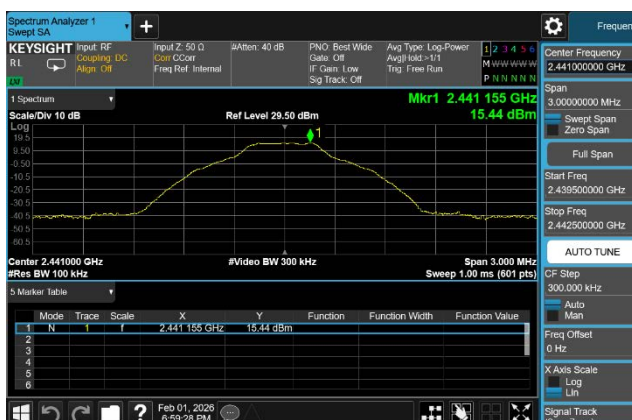
GFSK LOW CHANNEL, CARRIER LEVEL



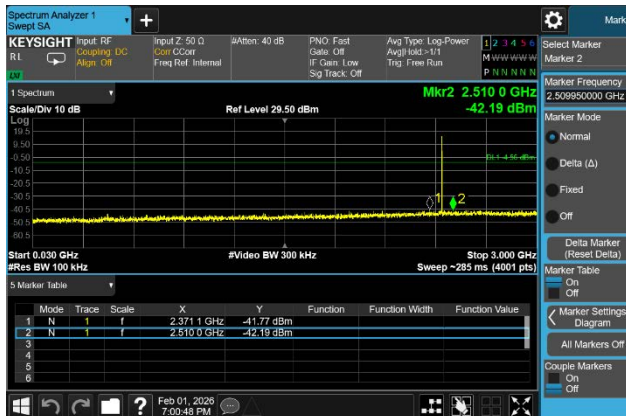
GFSK LOW CHANNEL, BAND EDGE

GFSK LOW CHANNEL, SPURIOUS
30 MHz ~ 3 GHzGFSK LOW CHANNEL, SPURIOUS
3 GHz ~ 25 GHz

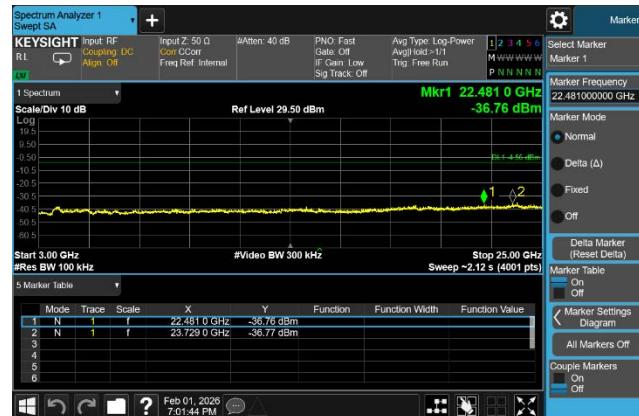
GFSK MIDDLE CHANNEL, CARRIER LEVEL



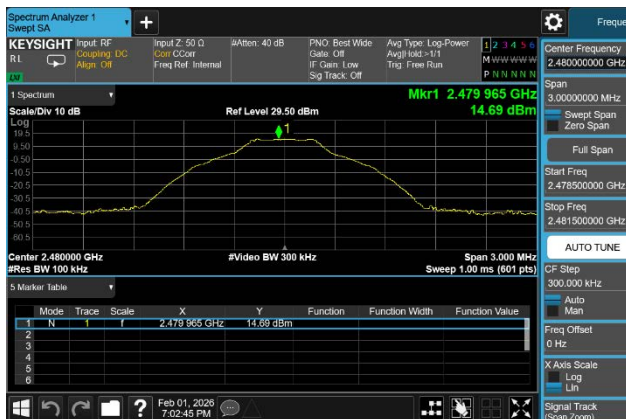
GFSK MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



GFSK MIDDLE CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



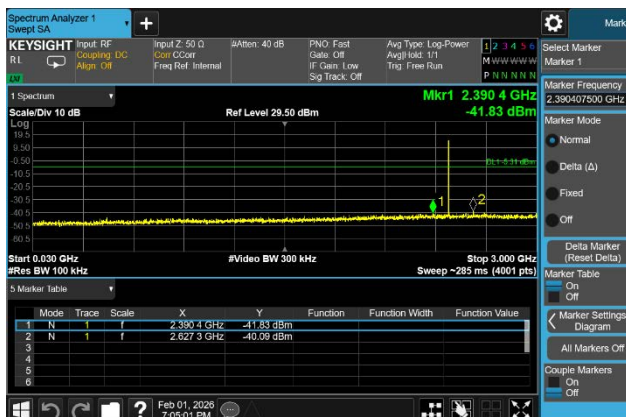
GFSK HIGH CHANNEL, CARRIER LEVEL



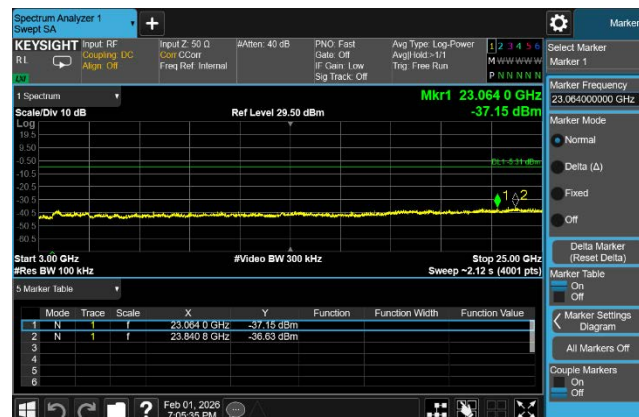
GFSK HIGH CHANNEL, BAND EDGE



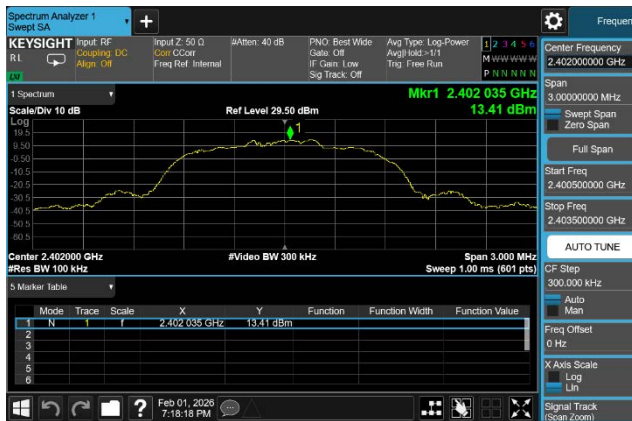
GFSK HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



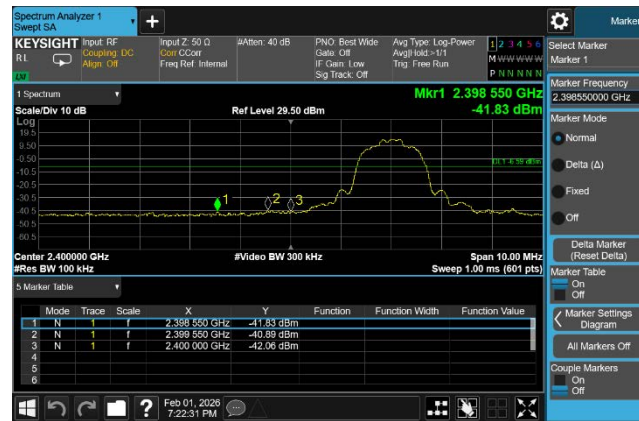
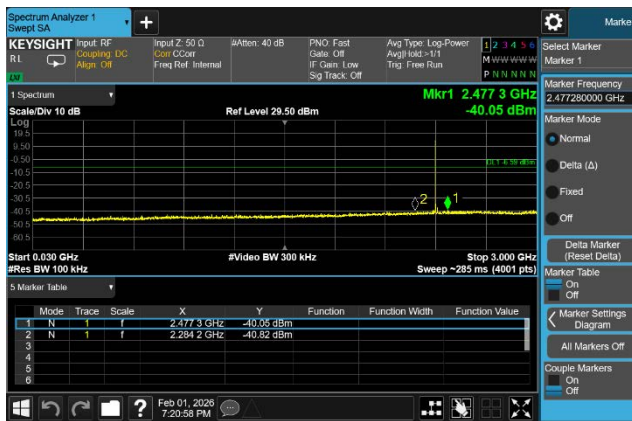
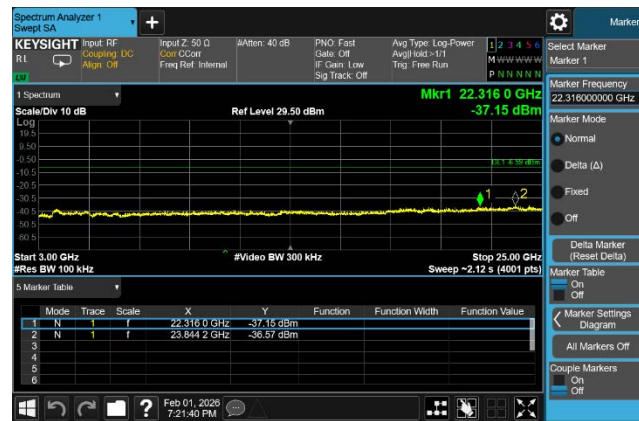
GFSK HIGH CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



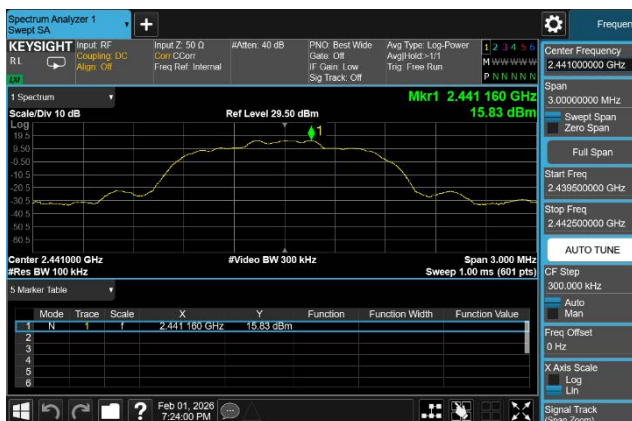
8-DPSK LOW CHANNEL, CARRIER LEVEL



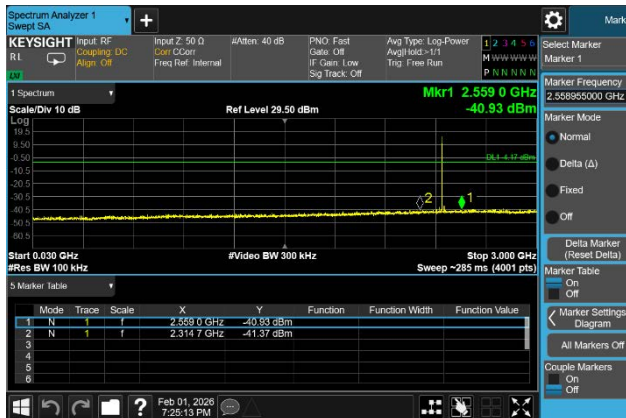
8-DPSK LOW CHANNEL, BAND EDGE

8-DPSK LOW CHANNEL, SPURIOUS
30 MHz ~ 3 GHz8-DPSK LOW CHANNEL, SPURIOUS
3 GHz ~ 25 GHz

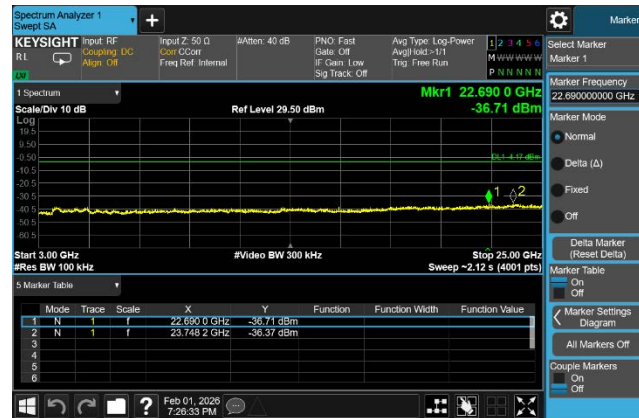
8-DPSK MIDDLE CHANNEL, CARRIER LEVEL



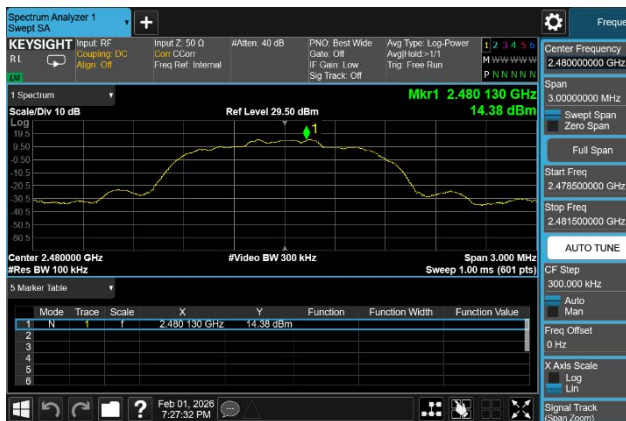
8-DPSK MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



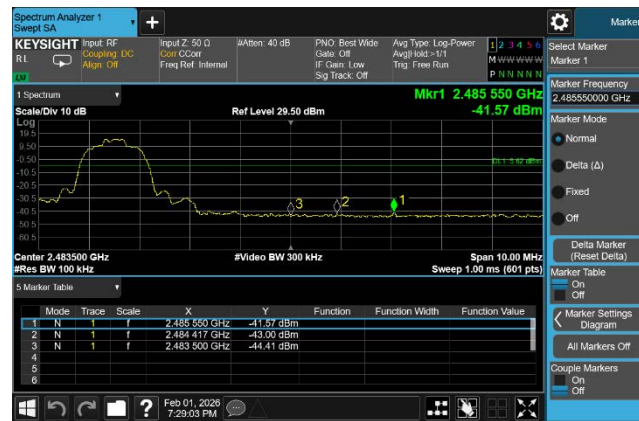
8-DPSK MIDDLE CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



8-DPSK HIGH CHANNEL, CARRIER LEVEL



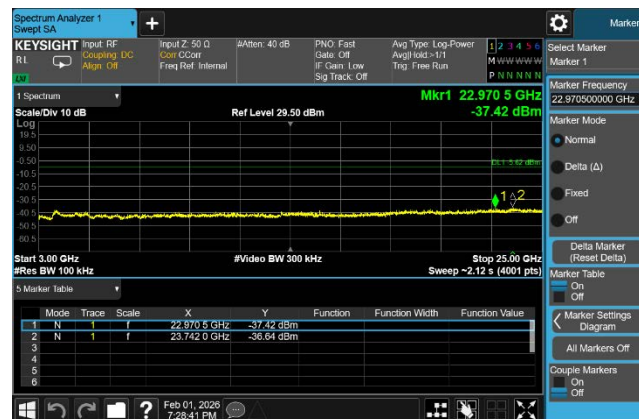
8-DPSK HIGH CHANNEL, BAND EDGE



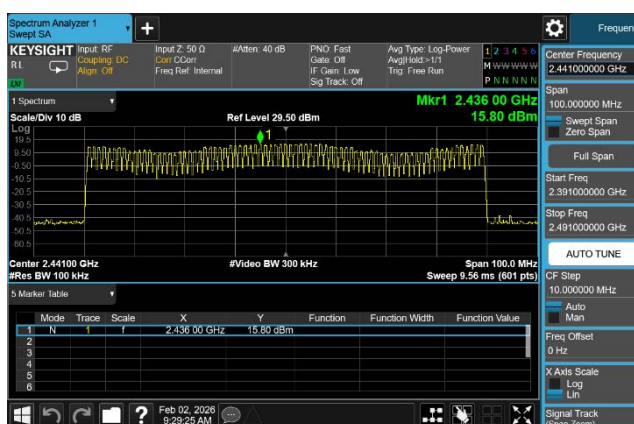
8-DPSK HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



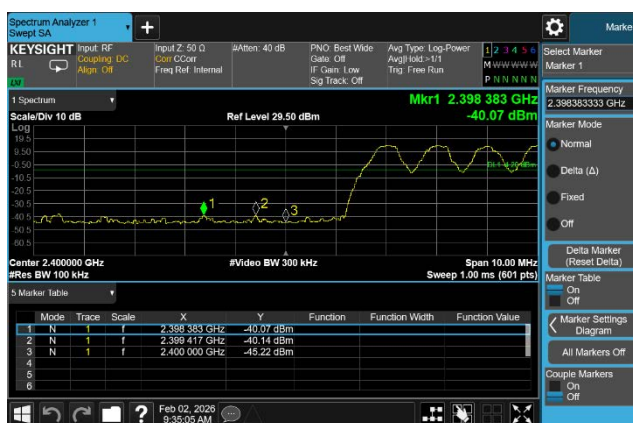
8-DPSK HIGH CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



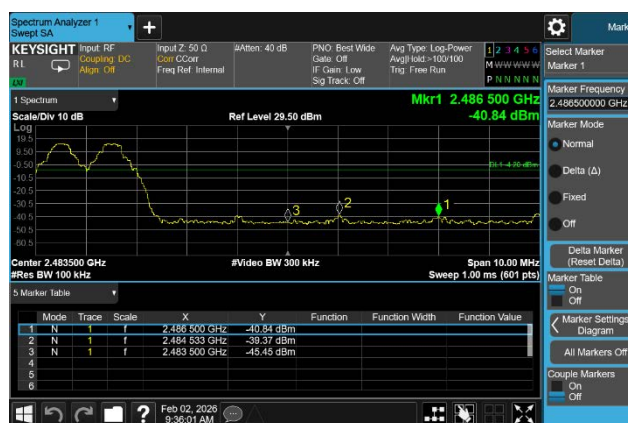
GFSK HOPPING, CARRIER LEVEL



GFSK HOPPING BAND EDGE (LOW)

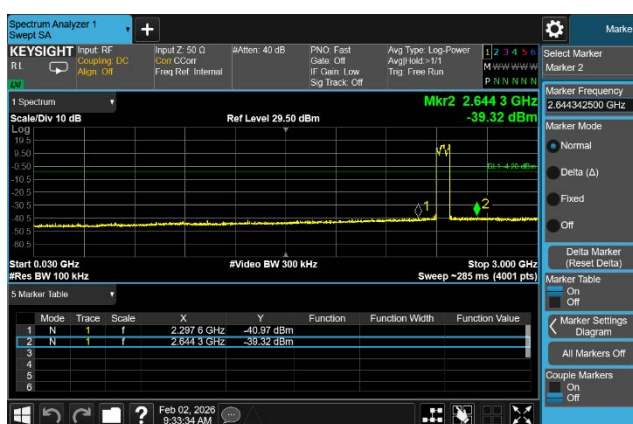


GFSK HOPPING BAND EDGE (HIGH)



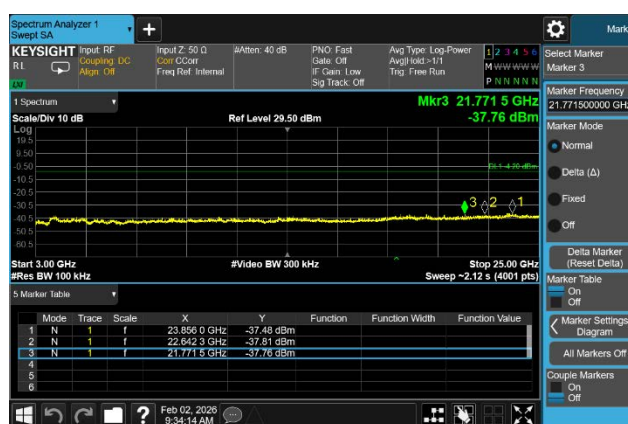
GFSK Hopping Mode, SPURIOUS

30 MHz ~ 3 GHz

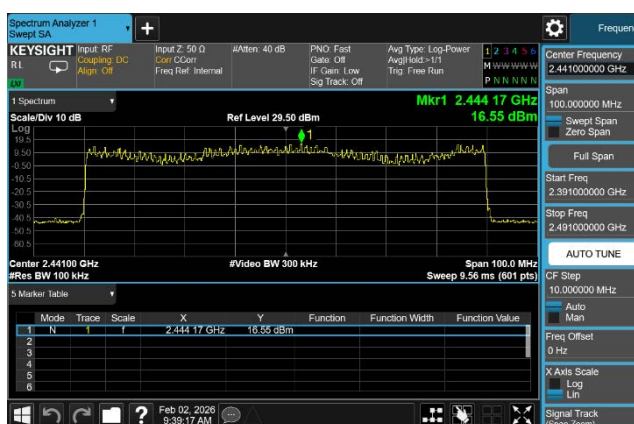


GFSK Hopping Mode, SPURIOUS

3GHz ~ 25 GHz



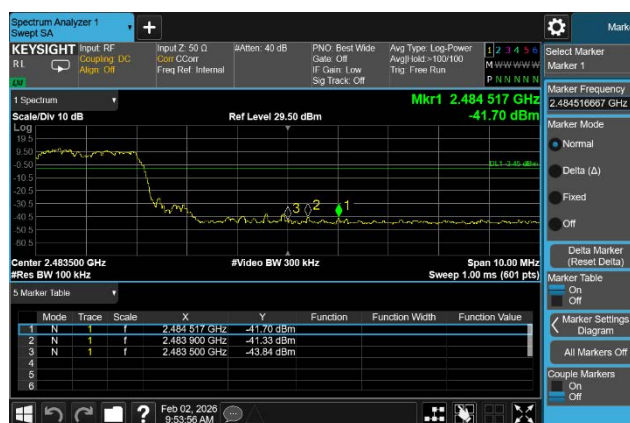
8-DPSK HOPPING, CARRIER LEVEL



8-DPSK Hopping BAND EDGE (LOW)

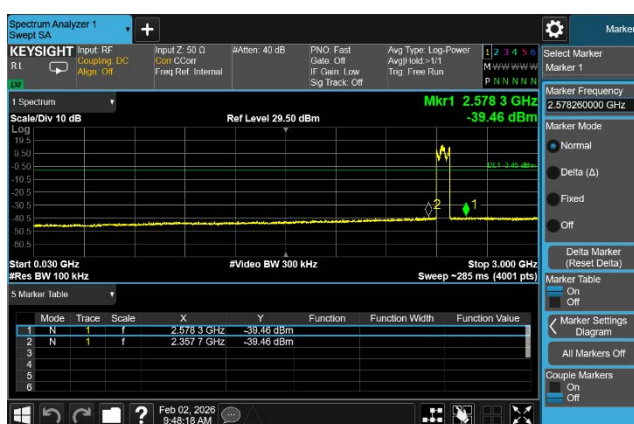


8-DPSK Hopping BAND EDGE (HIGH)



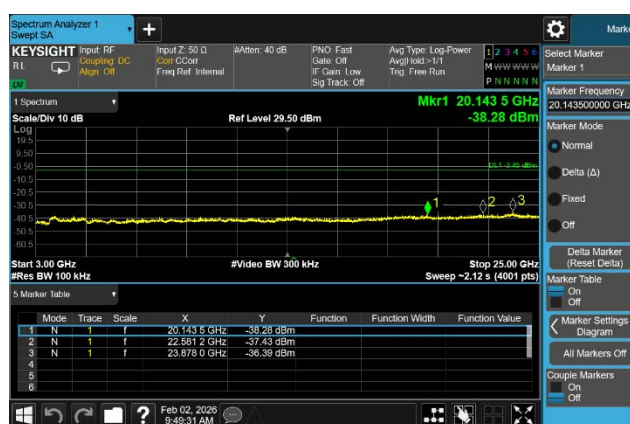
8-DPSK Hopping Mode, SPURIOUS

30 MHz ~ 3 GHz



8-DPSK Hopping Mode, SPURIOUS

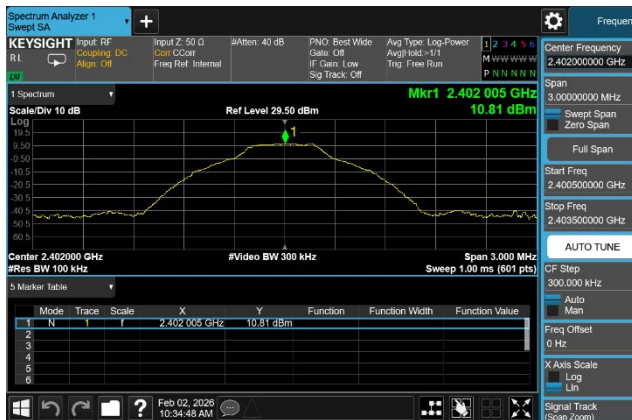
3GHz ~ 25 GHz



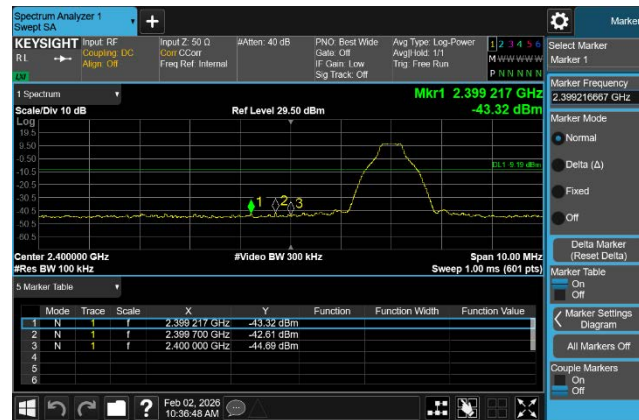
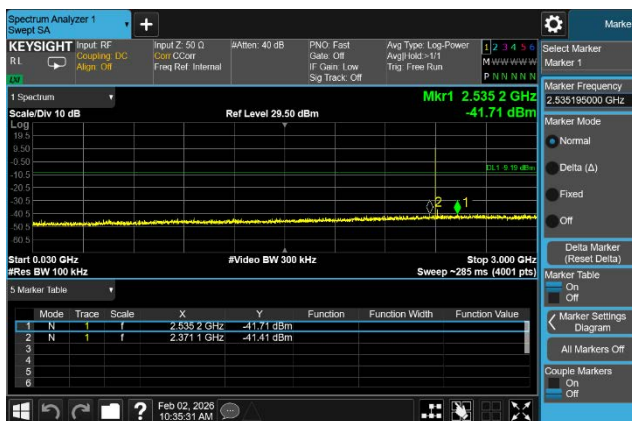
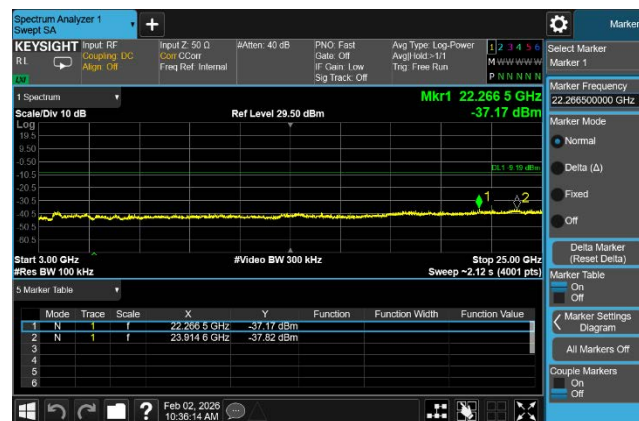
Aux. Antenna

Test Plots

GFSK LOW CHANNEL, CARRIER LEVEL



GFSK LOW CHANNEL, BAND EDGE

GFSK LOW CHANNEL, SPURIOUS
30 MHz ~ 3 GHzGFSK LOW CHANNEL, SPURIOUS
3 GHz ~ 25 GHz

GFSK MIDDLE CHANNEL, CARRIER LEVEL

