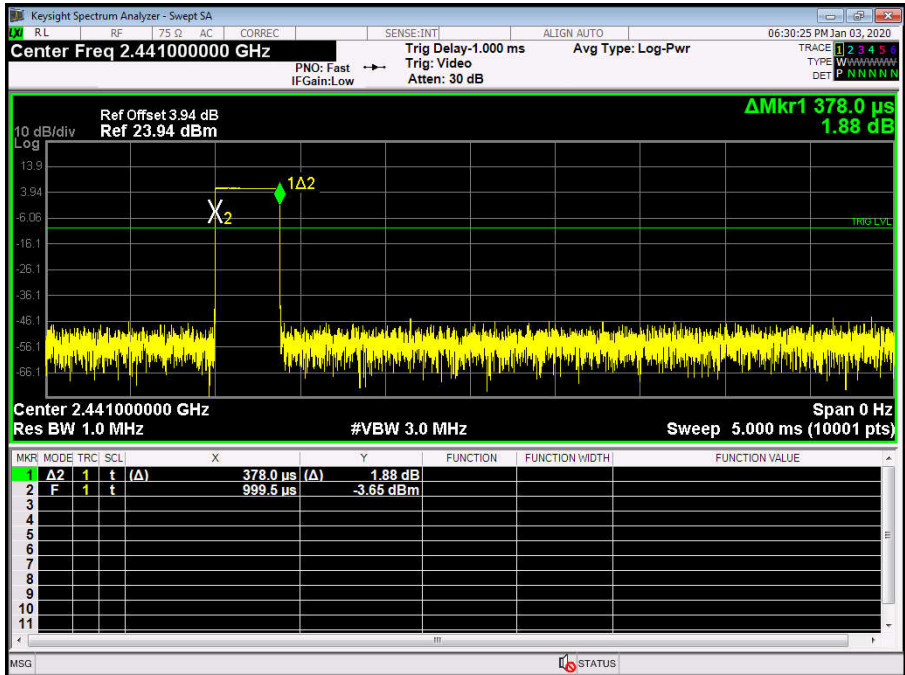


## Attachment E-- Average Time of Occupancy Test Data

|                                                  |               |                     |                     |                    |            |        |  |
|--------------------------------------------------|---------------|---------------------|---------------------|--------------------|------------|--------|--|
| Temperature:                                     |               | 25℃                 |                     | Relative Humidity: |            | 55%    |  |
| Test Voltage:                                    |               | DC 3.8V             |                     |                    |            |        |  |
| Test Mode:                                       |               | Hopping Mode (GFSK) |                     |                    |            |        |  |
| Test Mode                                        | Channel (MHz) | Pulse Time (ms)     | Total of Dwell (ms) | Period Time (s)    | Limit (ms) | Result |  |
| 1DH1                                             | 2441          | 0.378               | 120.96              | 31.60              | 400        | PASS   |  |
| 1DH3                                             | 2441          | 1.634               | 261.44              | 31.60              | 400        | PASS   |  |
| 1DH5                                             | 2441          | 2.882               | 307.41              | 31.60              | 400        | PASS   |  |
| 1DH1 Total of Dwell= Pulse Time*(1600/2)*31.6/79 |               |                     |                     |                    |            |        |  |
| 1DH3 Total of Dwell= Pulse Time*(1600/4)*31.6/79 |               |                     |                     |                    |            |        |  |
| 1DH5 Total of Dwell= Pulse Time*(1600/6)*31.6/79 |               |                     |                     |                    |            |        |  |
| GFSK Hopping Mode 1DH1                           |               |                     |                     |                    |            |        |  |
| 2441 MHz                                         |               |                     |                     |                    |            |        |  |



Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Trig Delay: 1.000 ms

Trig: Video

Avg Type: Log-Pwr

Ref Offset 3.94 dB

Ref 23.94 dBm

ΔMkr1 378.0 μs

1.88 dB

Center 2.441000000 GHz

Res BW 1.0 MHz

#VBW 3.0 MHz

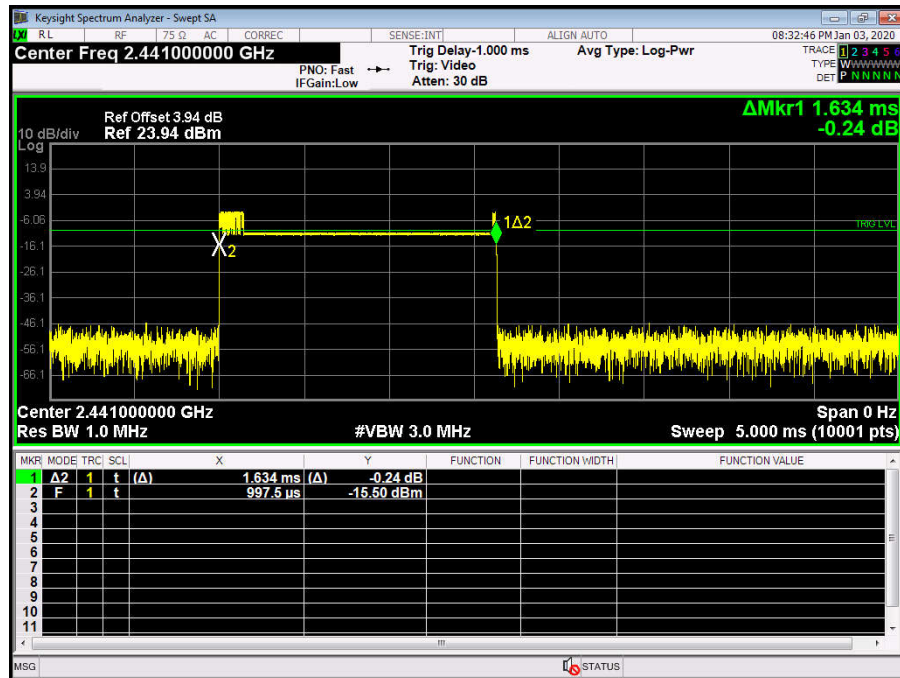
Sweep 5.000 ms (10001 pts)

Span 0 Hz

| MKR | MODE | TRC | SCL | X   | Y        | FUNCTION  | FUNCTION WIDTH | FUNCTION VALUE |
|-----|------|-----|-----|-----|----------|-----------|----------------|----------------|
| 1   | Δ2   | 1   | t   | (Δ) | 378.0 μs | (Δ)       | 1.88 dB        |                |
| 2   | F    | 1   | t   | (Δ) | 999.5 μs | -3.65 dBm |                |                |

## GFSK Hopping Mode 1DH3

2441 MHz

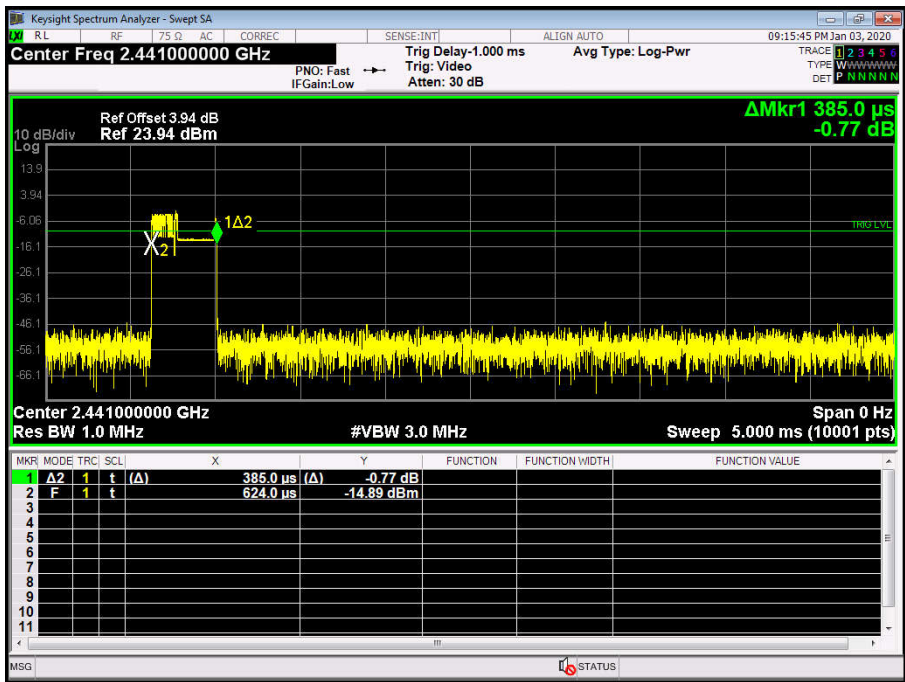


## GFSK Hopping Mode 1DH5

2441 MHz



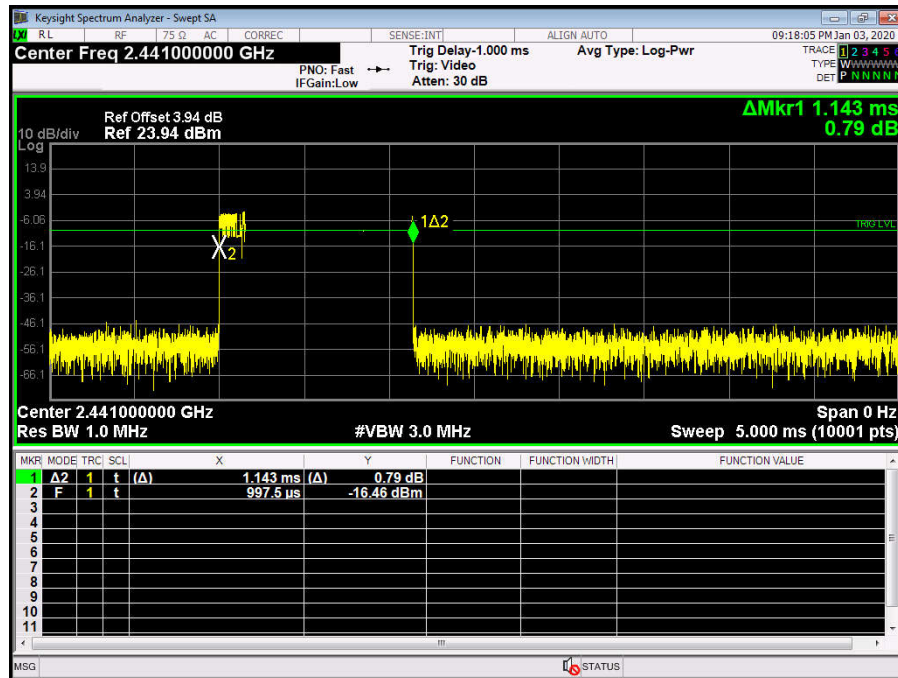
| Temperature:                                     |               | 25℃                            |                     | Relative Humidity: |            | 55%    |
|--------------------------------------------------|---------------|--------------------------------|---------------------|--------------------|------------|--------|
| Test Voltage:                                    |               | DC 3.8V                        |                     |                    |            |        |
| Test Mode:                                       |               | Hopping Mode ( $\pi$ /4-DQPSK) |                     |                    |            |        |
| Test Mode                                        | Channel (MHz) | Pulse Time (ms)                | Total of Dwell (ms) | Period Time (s)    | Limit (ms) | Result |
| 2DH1                                             | 2441          | 0.385                          | 123.20              | 31.60              | 400        | PASS   |
| 2DH3                                             | 2441          | 1.143                          | 182.88              | 31.60              | 400        | PASS   |
| 2DH5                                             | 2441          | 2.886                          | 307.84              | 31.60              | 400        | PASS   |
| 2DH1 Total of Dwell= Pulse Time*(1600/2)*31.6/79 |               |                                |                     |                    |            |        |
| 2DH3 Total of Dwell= Pulse Time*(1600/4)*31.6/79 |               |                                |                     |                    |            |        |
| 2DH5 Total of Dwell= Pulse Time*(1600/6)*31.6/79 |               |                                |                     |                    |            |        |
| $\pi$ /4-DQPSK Hopping Mode 2DH1                 |               |                                |                     |                    |            |        |
| 2441 MHz                                         |               |                                |                     |                    |            |        |



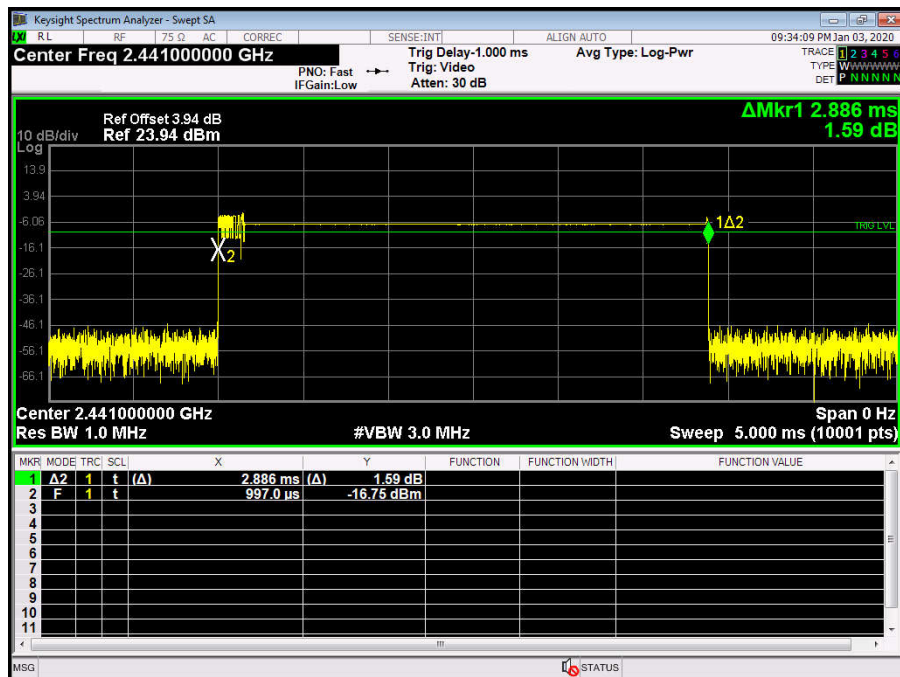
| MKR | MODE | TRC | SCL | X   | Y        | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE |
|-----|------|-----|-----|-----|----------|----------|----------------|----------------|
| 1   | Δ2   | ↑   | t   | (Δ) | 385.0 μs | (Δ)      |                | -0.77 dB       |
| 2   | F    | ↑   | t   |     | 624.0 μs |          |                | -14.89 dBm     |
| 3   |      |     |     |     |          |          |                |                |
| 4   |      |     |     |     |          |          |                |                |
| 5   |      |     |     |     |          |          |                |                |
| 6   |      |     |     |     |          |          |                |                |
| 7   |      |     |     |     |          |          |                |                |
| 8   |      |     |     |     |          |          |                |                |
| 9   |      |     |     |     |          |          |                |                |
| 10  |      |     |     |     |          |          |                |                |
| 11  |      |     |     |     |          |          |                |                |

$\pi/4$ -DQPSK Hopping Mode 2DH3

2441 MHz

 $\pi/4$ -DQPSK Hopping Mode 2DH5

2441 MHz



|               |               |                       |                     |                    |            |        |  |
|---------------|---------------|-----------------------|---------------------|--------------------|------------|--------|--|
| Temperature:  |               | 25°C                  |                     | Relative Humidity: |            | 55%    |  |
| Test Voltage: |               | DC 3.8V               |                     |                    |            |        |  |
| Test Mode:    |               | Hopping Mode (8-DPSK) |                     |                    |            |        |  |
| Test Mode     | Channel (MHz) | Pulse Time (ms)       | Total of Dwell (ms) | Period Time (s)    | Limit (ms) | Result |  |
| 3DH1          | 2441          | 0.387                 | 123.84              | 31.60              | 400        | PASS   |  |
| 3DH3          | 2441          | 1.637                 | 261.92              | 31.60              | 400        | PASS   |  |
| 3DH5          | 2441          | 2.888                 | 308.05              | 31.60              | 400        | PASS   |  |

1DH1 Total of Dwell= Pulse Time\*(1600/2)\*31.6/79

1DH3 Total of Dwell= Pulse Time\*(1600/4)\*31.6/79

1DH5 Total of Dwell= Pulse Time\*(1600/6)\*31.6/79

8-DPSK Hopping Mode 3DH1

2441 MHz

Keysight Spectrum Analyzer - Swept SA

RL

RF

75 Ω

AC

CORREC

SENSE:INT

ALIGN AUTO

10:15:43 PM Jan 03, 2020

Center Freq 2.441000000 GHz

Trig Delay-1.000 ms

Trig: Video

Avg Type: Log-Pwr

PNO: Fast

IF Gain: Low

Atten: 30 dB

TRACE 1

TYPE WWWWWW

DET P NNNNN

Ref Offset 3.94 dB

Ref 23.94 dBm

10 dB/div

Log

13.9

3.94

-6.06

-16.1

-26.1

-36.1

-46.1

-56.1

-66.1

ΔMkr1 387.0 μs

1.47 dB

X2

1Δ2

100% LVL

Center 2.441000000 GHz

Res BW 1.0 MHz

#VBW 3.0 MHz

Sweep 5.000 ms (10001 pts)

Span 0 Hz

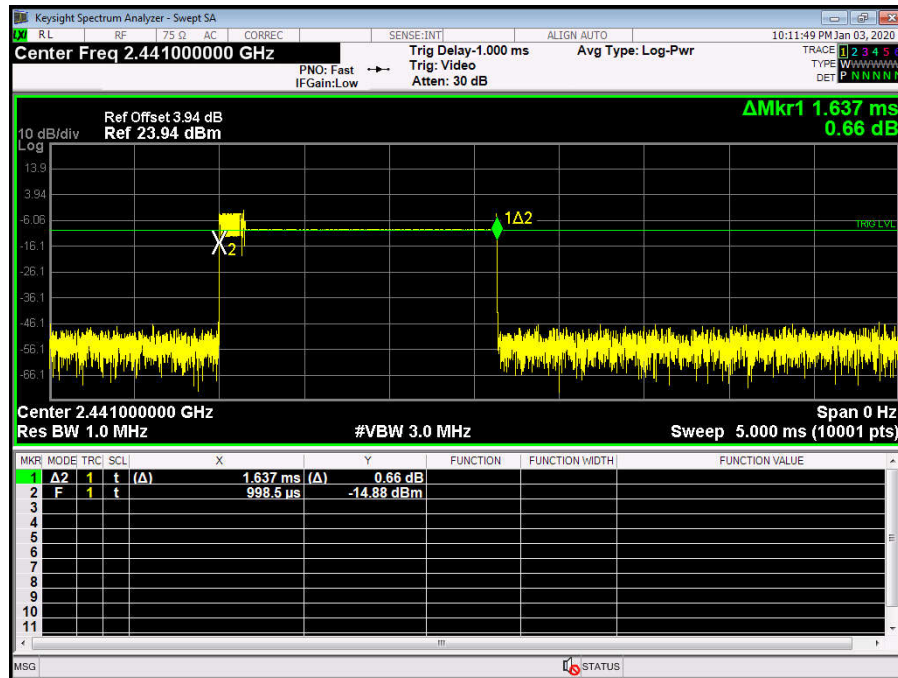
| MKR | MODE | TRC | SCL | X   | Y        | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE |
|-----|------|-----|-----|-----|----------|----------|----------------|----------------|
| 1   | Δ2   | 1   | t   | (Δ) | 387.0 μs | (Δ)      | 1.47 dB        |                |
| 2   | F    | 1   | t   |     | 999.0 μs |          | -9.07 dBm      |                |
| 3   |      |     |     |     |          |          |                |                |
| 4   |      |     |     |     |          |          |                |                |
| 5   |      |     |     |     |          |          |                |                |
| 6   |      |     |     |     |          |          |                |                |
| 7   |      |     |     |     |          |          |                |                |
| 8   |      |     |     |     |          |          |                |                |
| 9   |      |     |     |     |          |          |                |                |
| 10  |      |     |     |     |          |          |                |                |
| 11  |      |     |     |     |          |          |                |                |

MSG

STATUS

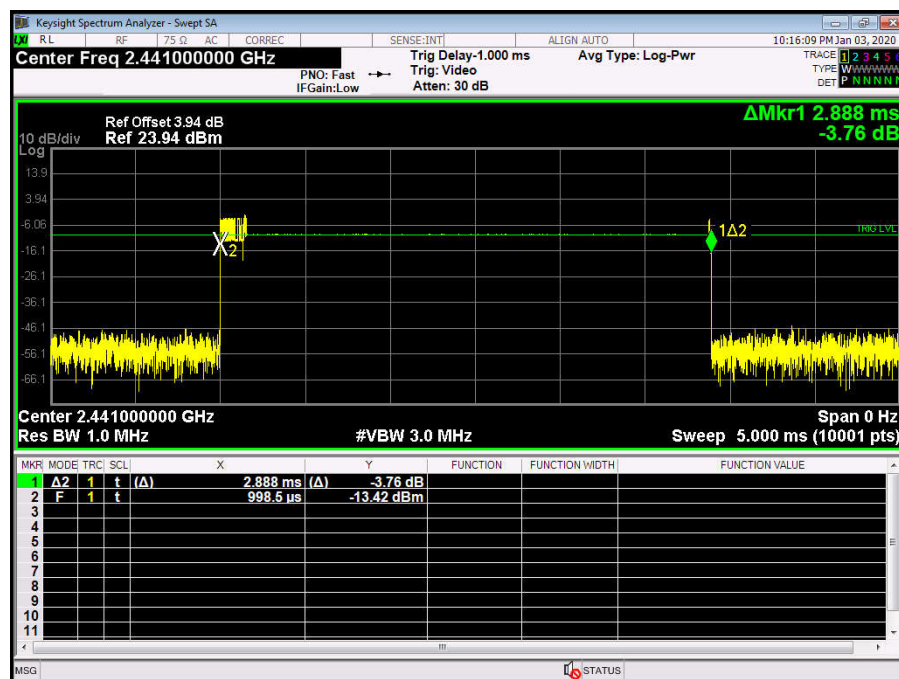
## 8-DPSK Hopping Mode 3DH3

2441 MHz



## 8-DPSK Hopping Mode 3DH5

2441 MHz



## Attachment F-- Channel Separation and Bandwidth Test Data

|                         |                |                      |                           |
|-------------------------|----------------|----------------------|---------------------------|
| Temperature:            | 25°C           | Relative Humidity:   | 55%                       |
| Test Voltage:           | DC 3.8V        |                      |                           |
| Test Mode:              | TX Mode (GFSK) |                      |                           |
| Channel frequency (MHz) | 99% OBW (kHz)  | 20dB Bandwidth (kHz) | 20dB Bandwidth *2/3 (kHz) |
| 2402                    | 844.59         | 812.0                |                           |
| 2441                    | 849.94         | 820.4                |                           |
| 2480                    | 852.96         | 818.3                |                           |

GFSK TX Mode

2402 MHz

Keysight Spectrum Analyzer - Occupied BW

RL

RF

75 Ω

AC

CORREC

SENSE:INT

ALIGN AUTO

06:19:31 PM Jan 03, 2020

Center Freq 2.402000000 GHz

Center Freq: 2.402000000 GHz

Trig: Free Run

Avg/Hold: >10/10

Radio Std: None

#FGain: Low

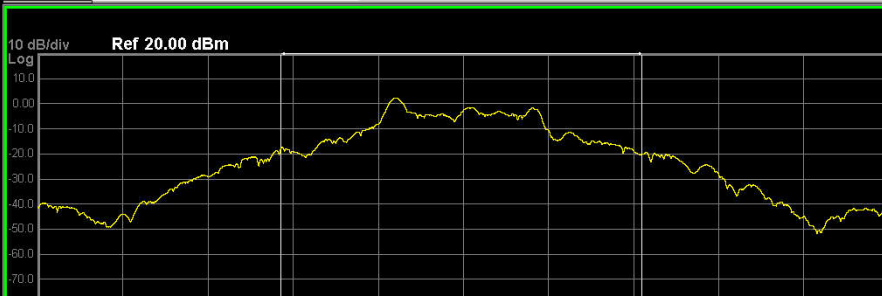
#Atten: 30 dB

Radio Device: BTS

10 dB/div

Ref 20.00 dBm

Log



Center 2.402 GHz

#Res BW 30 kHz

#VBW 100 kHz

Span 2 MHz

Sweep 2.667 ms

Occupied Bandwidth

844.59 kHz

Total Power

8.33 dBm

Transmit Freq Error

-3.104 kHz

% of OBW Power

99.00 %

x dB Bandwidth

812.0 kHz

x dB

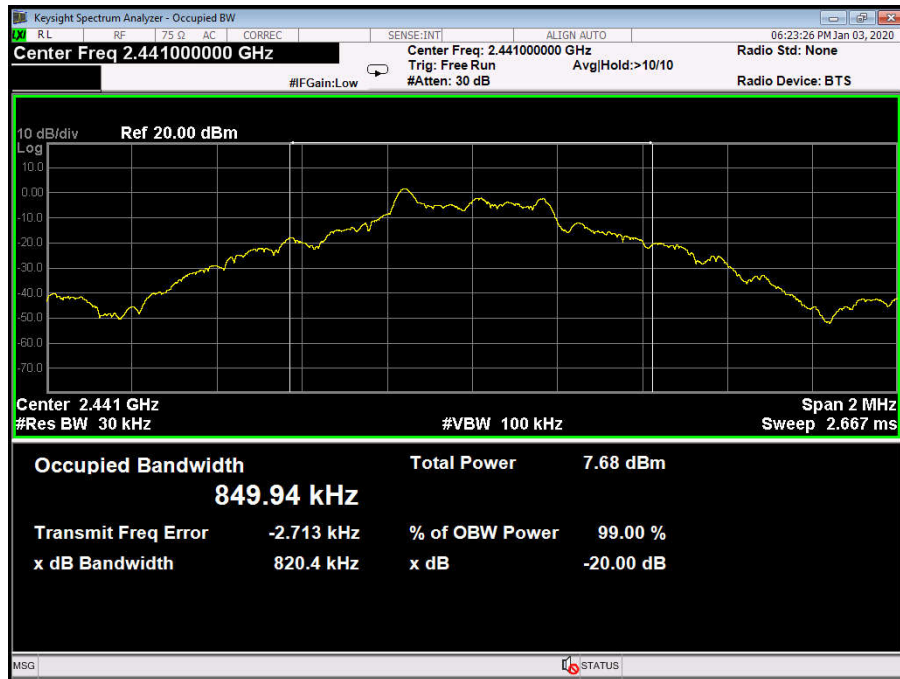
-20.00 dB

MSG

STATUS

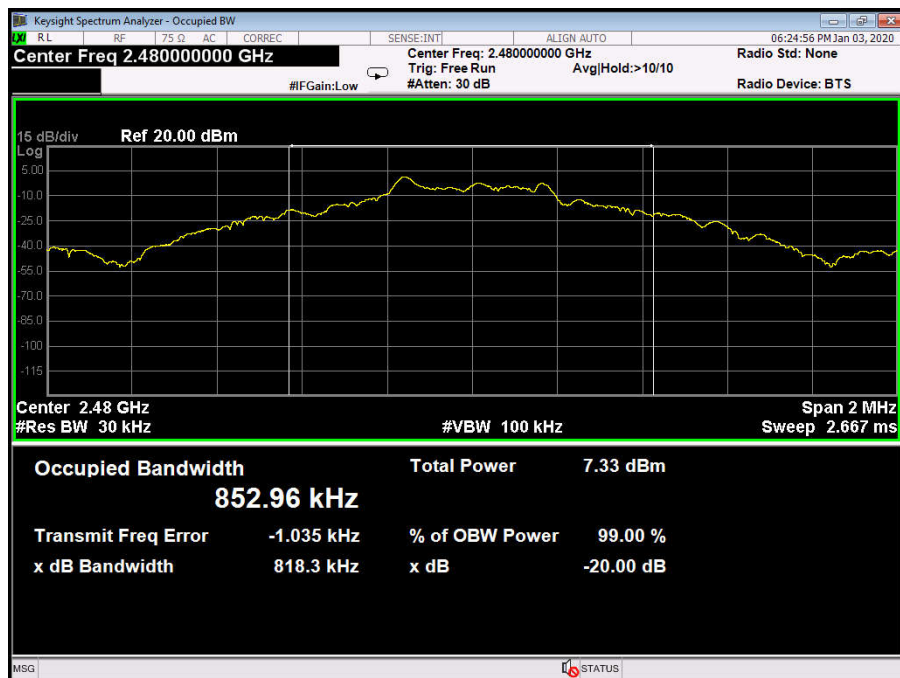
## GFSK TX Mode

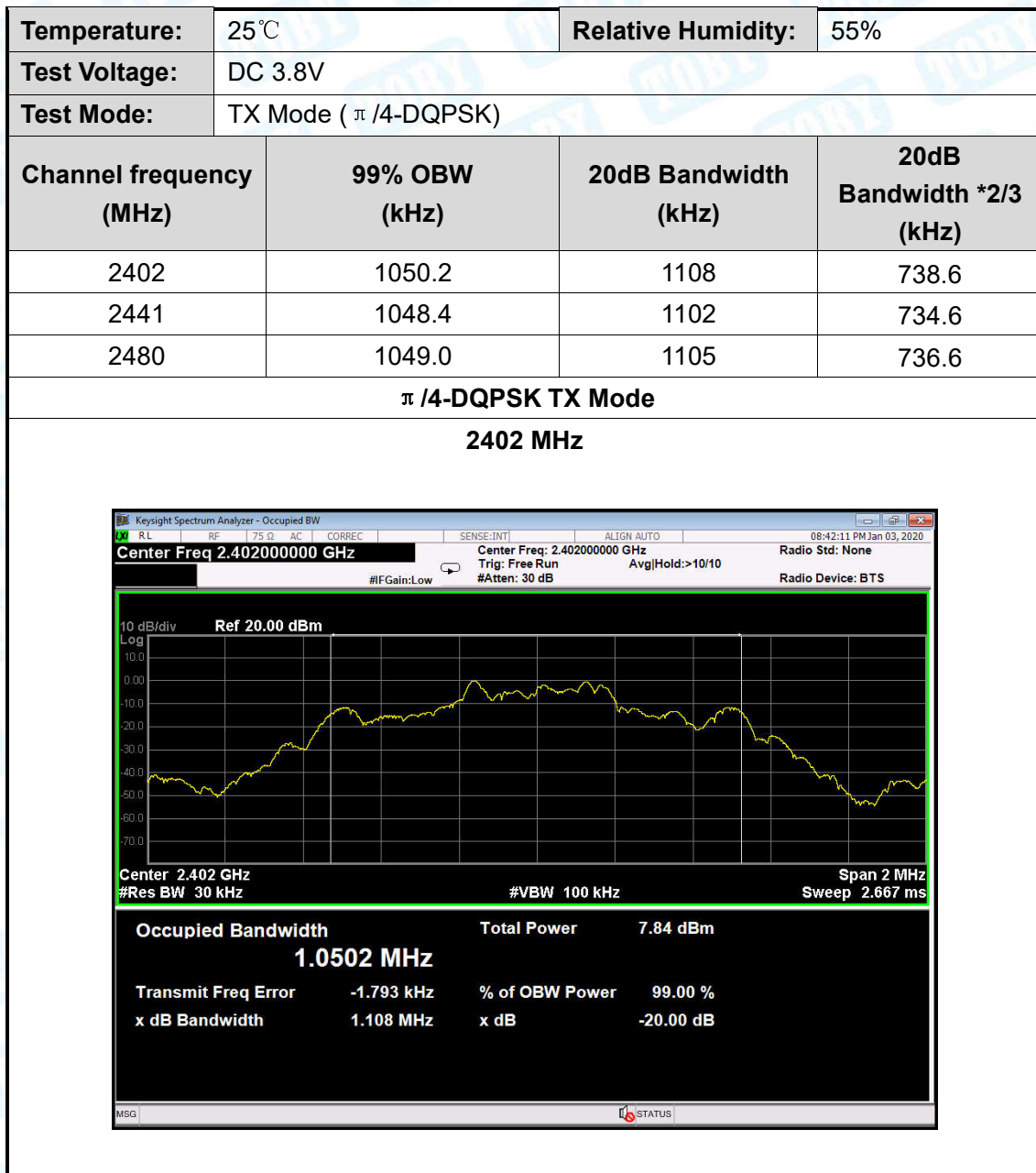
2441 MHz



## GFSK TX Mode

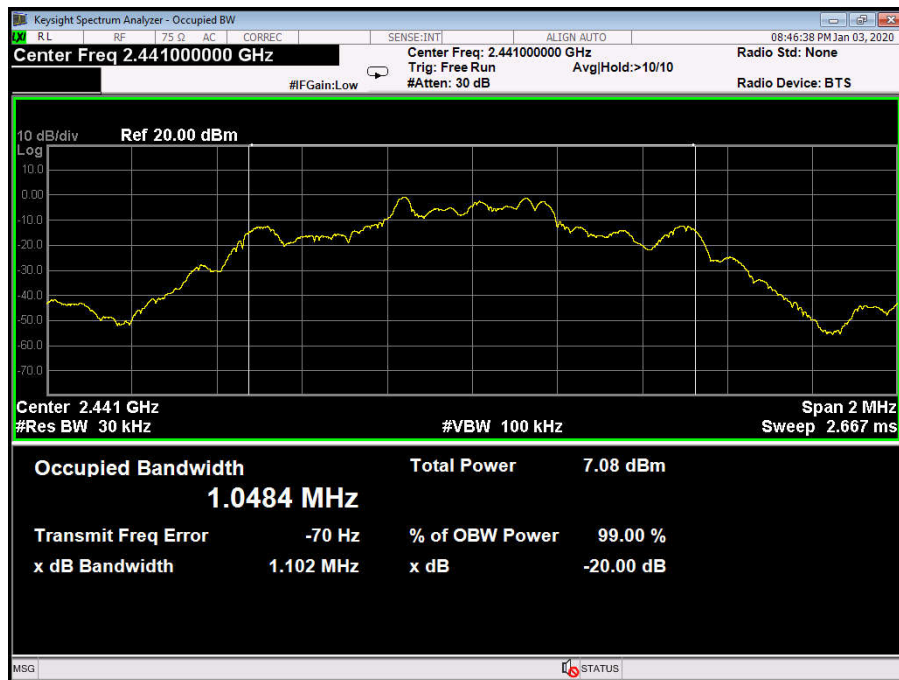
2480 MHz



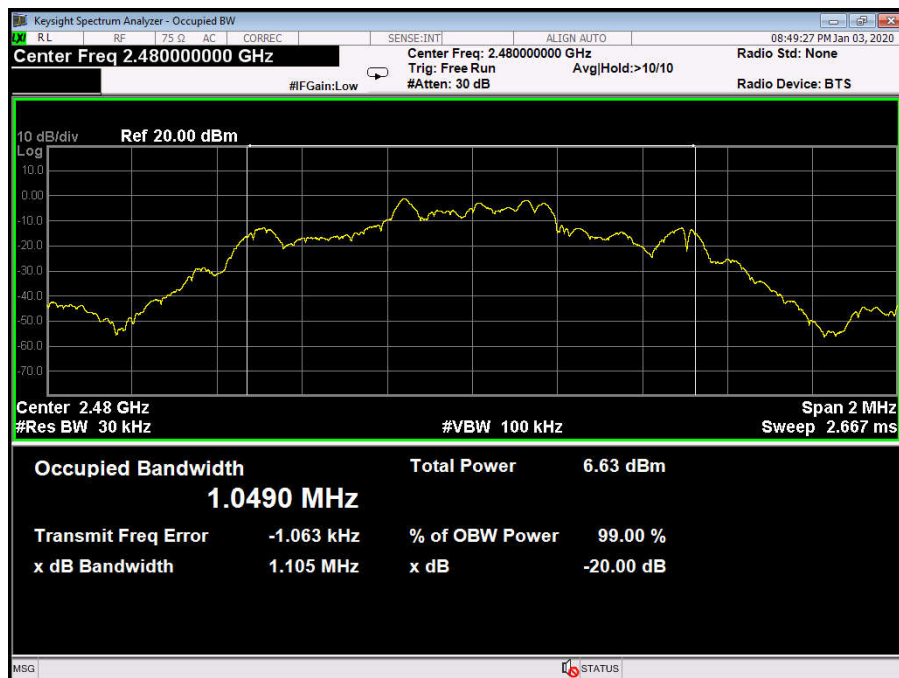


$\pi$  /4-DQPSK TX Mode

2441 MHz

 $\pi$  /4-DQPSK TX Mode

2480 MHz



|                         |                  |                      |                           |
|-------------------------|------------------|----------------------|---------------------------|
| Temperature:            | 25°C             | Relative Humidity:   | 55%                       |
| Test Voltage:           | DC 3.8V          |                      |                           |
| Test Mode:              | TX Mode (8-DPSK) |                      |                           |
| Channel frequency (MHz) | 99% OBW (kHz)    | 20dB Bandwidth (kHz) | 20dB Bandwidth *2/3 (kHz) |
| 2402                    | 1085.0           | 1151                 | 767.3                     |
| 2441                    | 1084.5           | 1154                 | 769.3                     |
| 2480                    | 1081.4           | 1156                 | 770.6                     |

**8-DPSK TX Mode**

**2402 MHz**

Keysight Spectrum Analyzer - Occupied BW

Center Freq: 2.40200000 GHz  
Trig: Free Run  
#Atten: 30 dB  
Avg|Hold: >10/10  
Radio Device: BTS  
Radio Std: None  
09:48:35 PM Jan 03, 2020

10 dB/div  
Ref 20.00 dBm

Center 2.402 GHz  
#Res BW 30 kHz  
#VBW 100 kHz  
Span 2 MHz  
Sweep 2.667 ms

Occupied Bandwidth  
**1.0850 MHz**

Total Power  
7.28 dBm

Transmit Freq Error  
-2.668 kHz

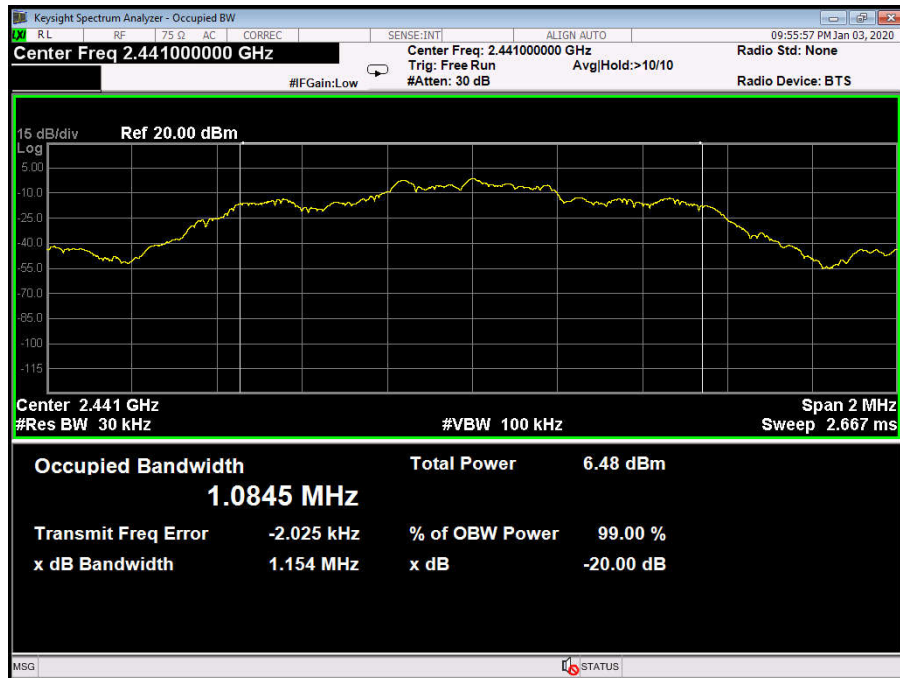
% of OBW Power  
99.00 %

x dB Bandwidth  
1.151 MHz

x dB  
-20.00 dB

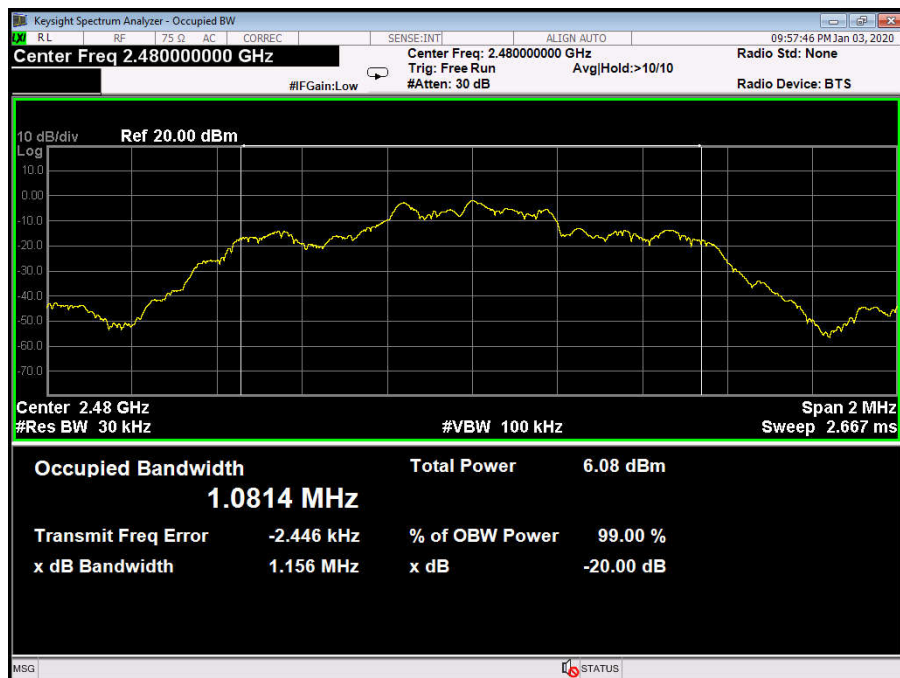
## 8-DPSK TX Mode

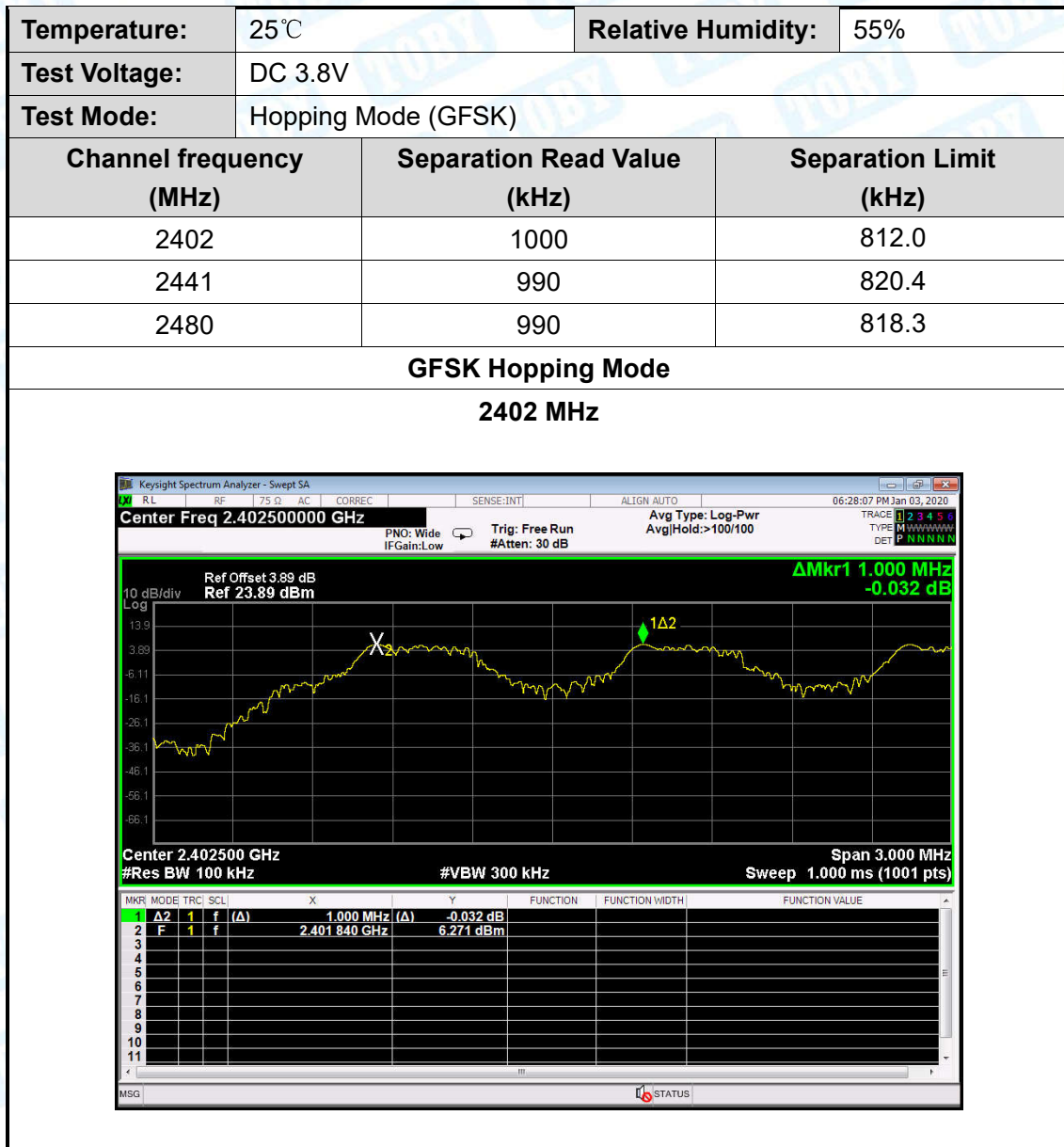
2441 MHz



## 8-DPSK TX Mode

2480 MHz





## GFSK Hopping Mode

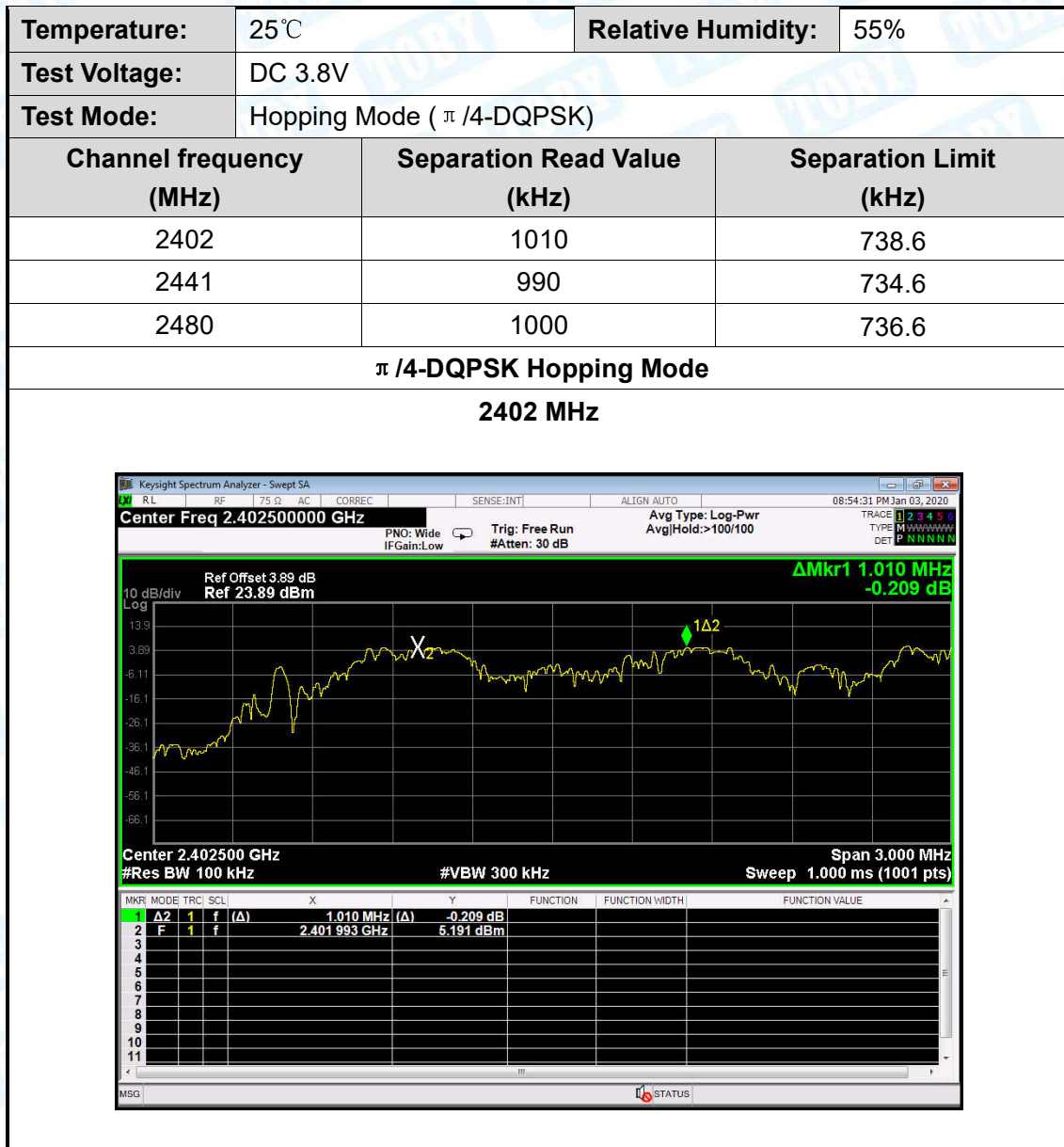
2441 MHz



## GFSK Hopping Mode

2480 MHz





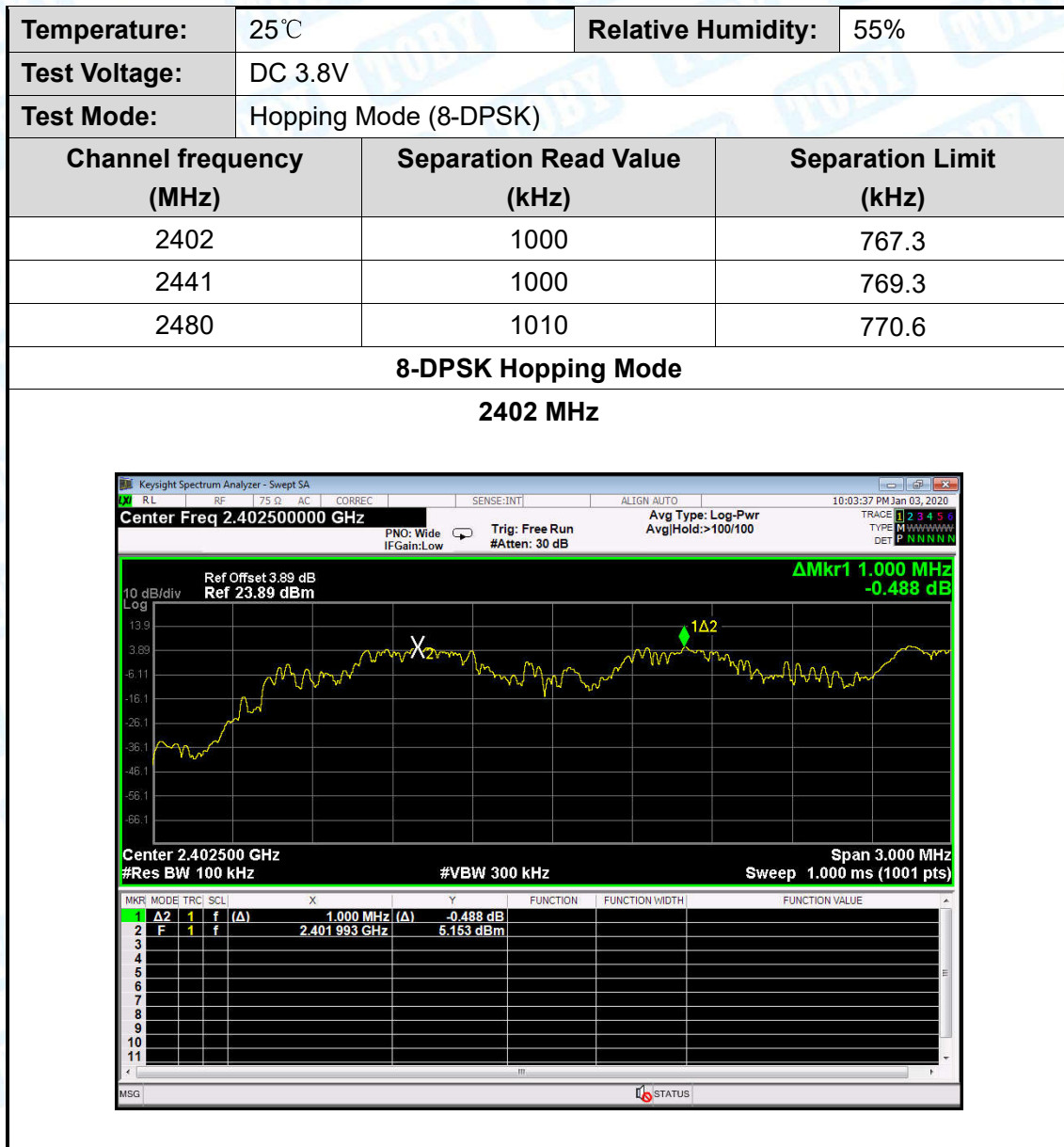
$\pi$  /4-DQPSK Hopping Mode

2441 MHz

 $\pi$  /4-DQPSK Hopping Mode

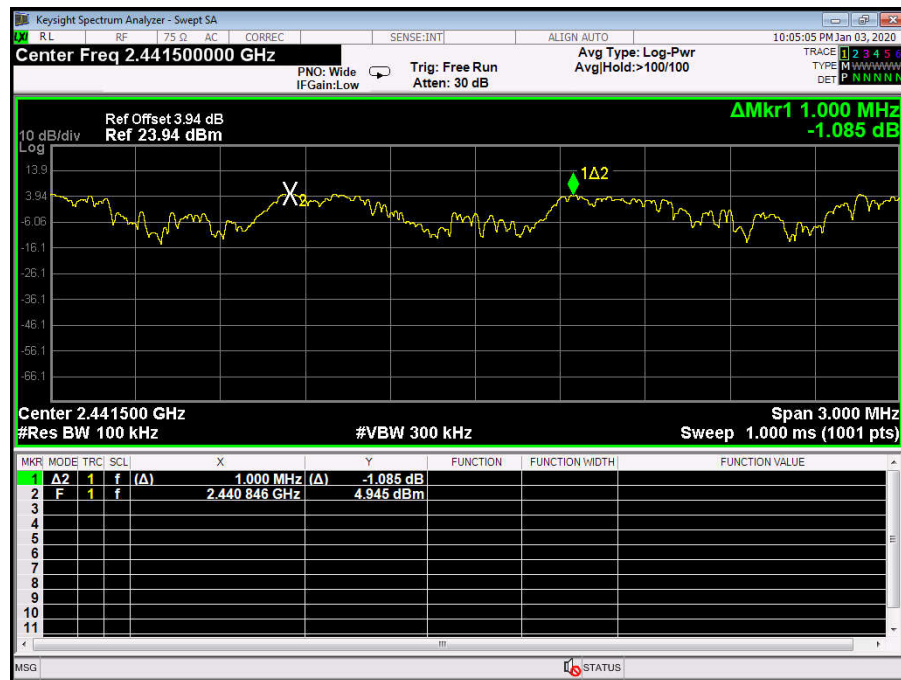
2480 MHz





## 8-DPSK Hopping Mode

2441 MHz



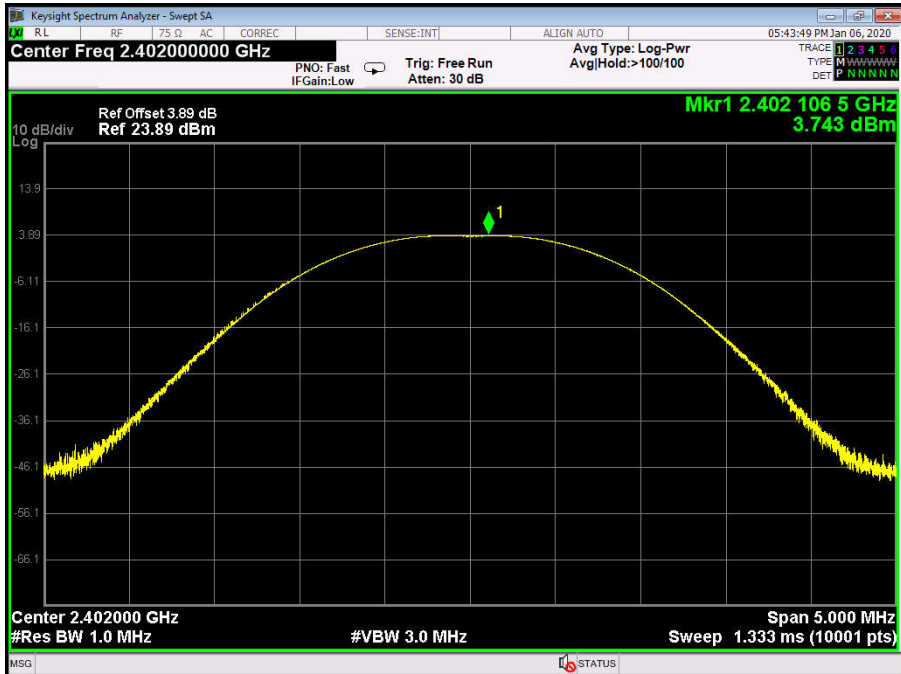
## 8-DPSK Hopping Mode

2480 MHz



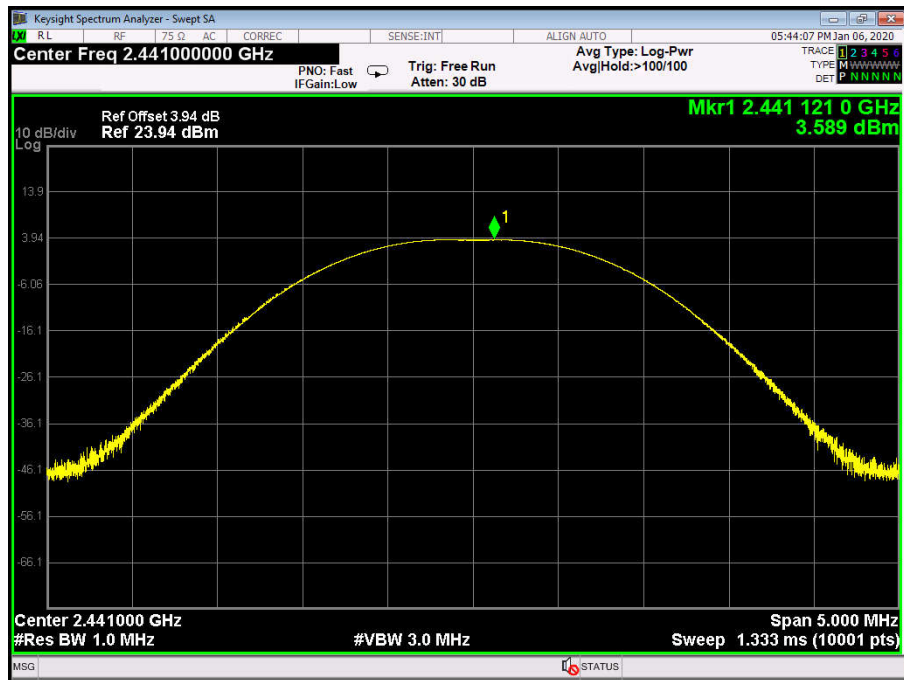
## Attachment G-- Peak Output Power Test Data

|                         |                   |                    |     |
|-------------------------|-------------------|--------------------|-----|
| Temperature:            | 25℃               | Relative Humidity: | 55% |
| Test Voltage:           | DC 3.8V           |                    |     |
| Test Mode:              | TX Mode (GFSK)    |                    |     |
| Channel frequency (MHz) | Test Result (dBm) | Limit (dBm)        |     |
| 2402                    | 3.743             | 30                 |     |
| 2441                    | 3.589             |                    |     |
| 2480                    | 3.575             |                    |     |
| GFSK TX Mode            |                   |                    |     |
| 2402 MHz                |                   |                    |     |



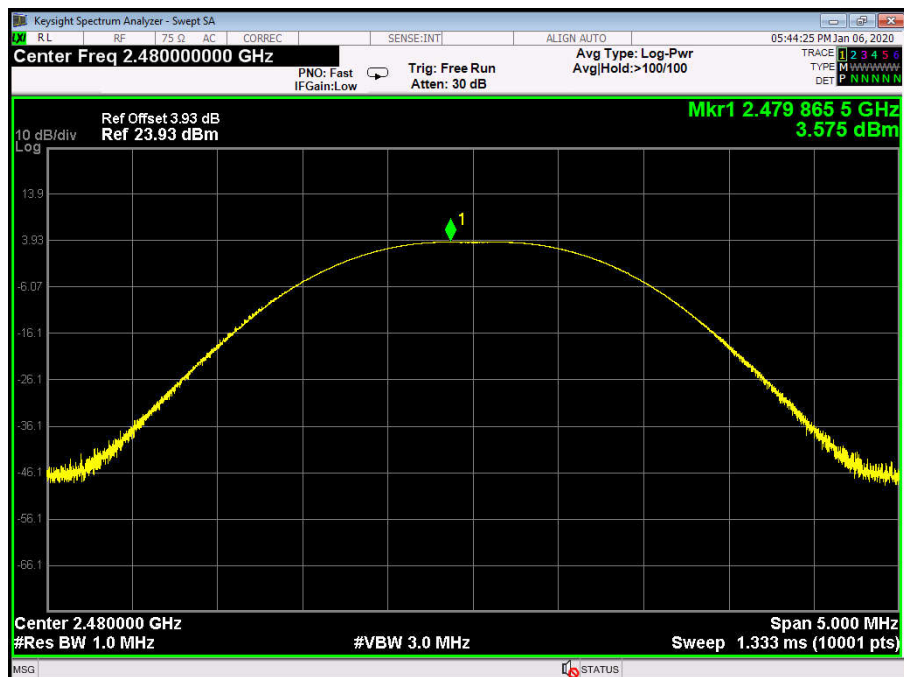
## GFSK TX Mode

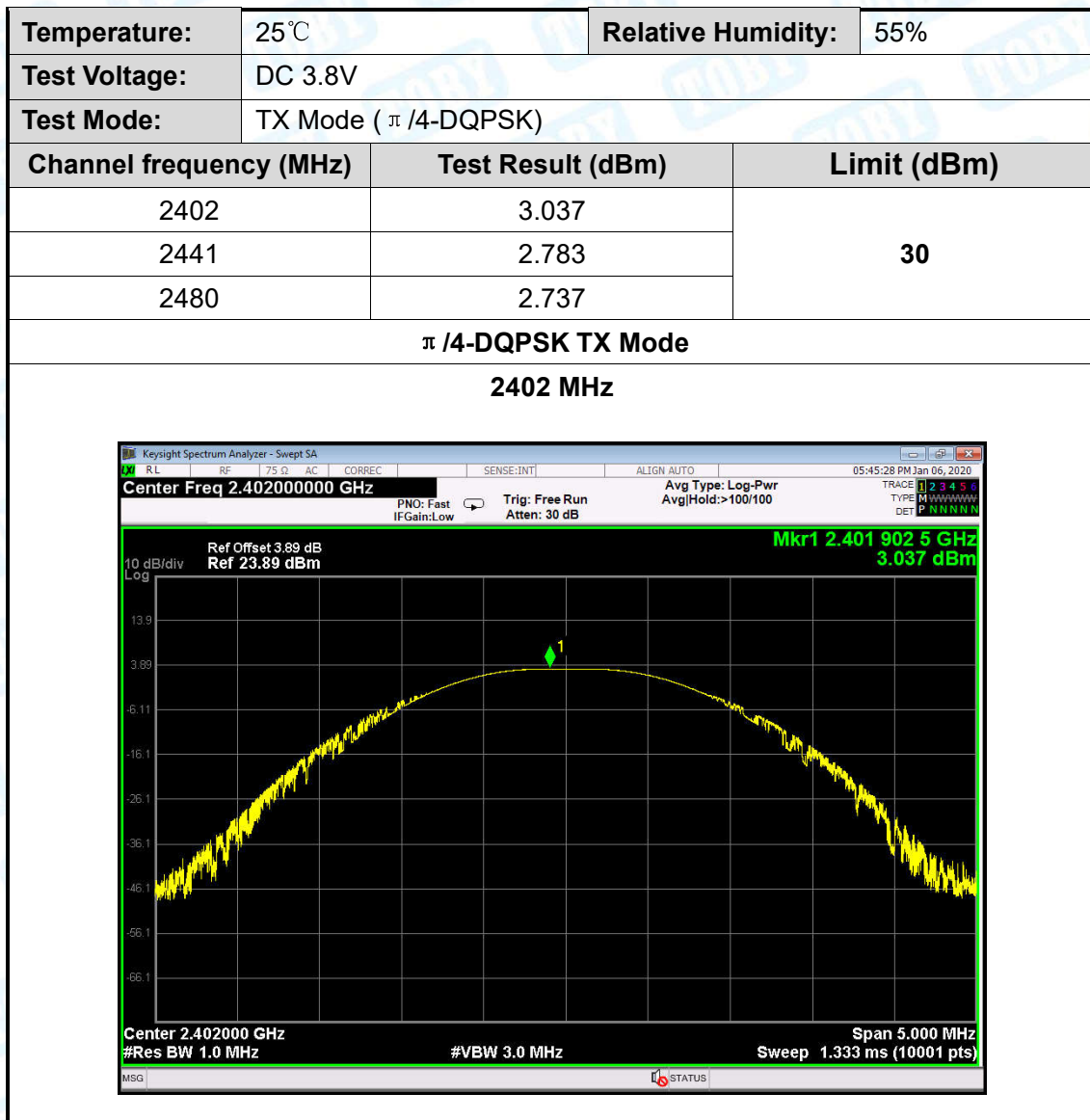
2441 MHz



## GFSK TX Mode

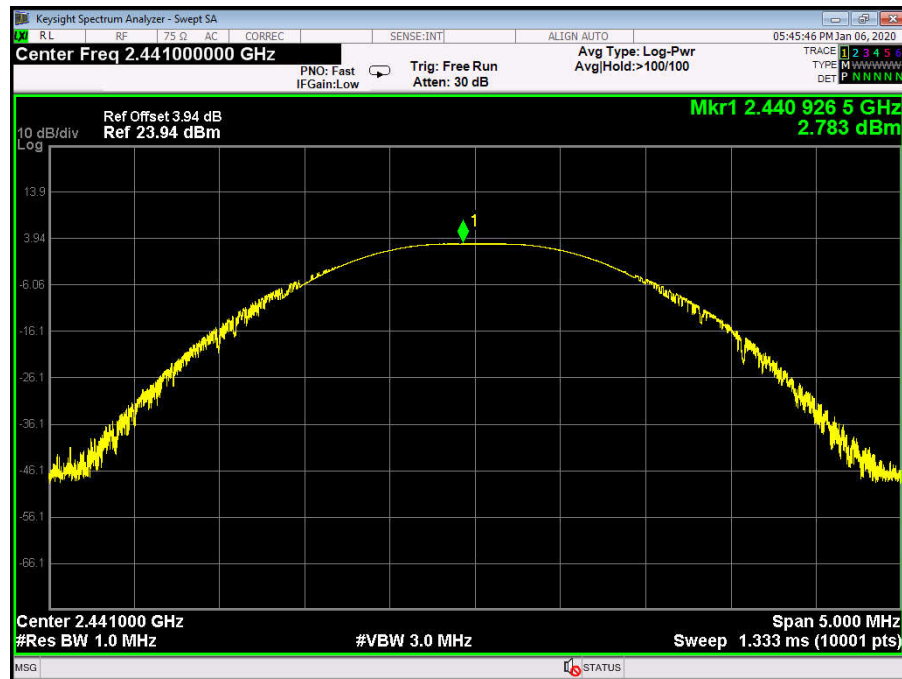
2480 MHz





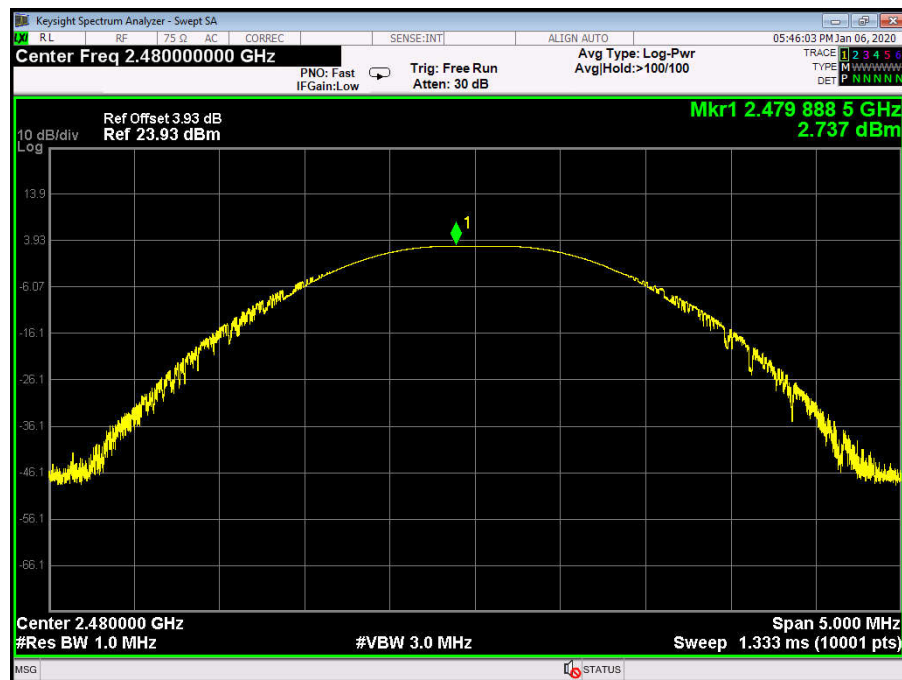
$\pi/4$ -DQPSK TX Mode

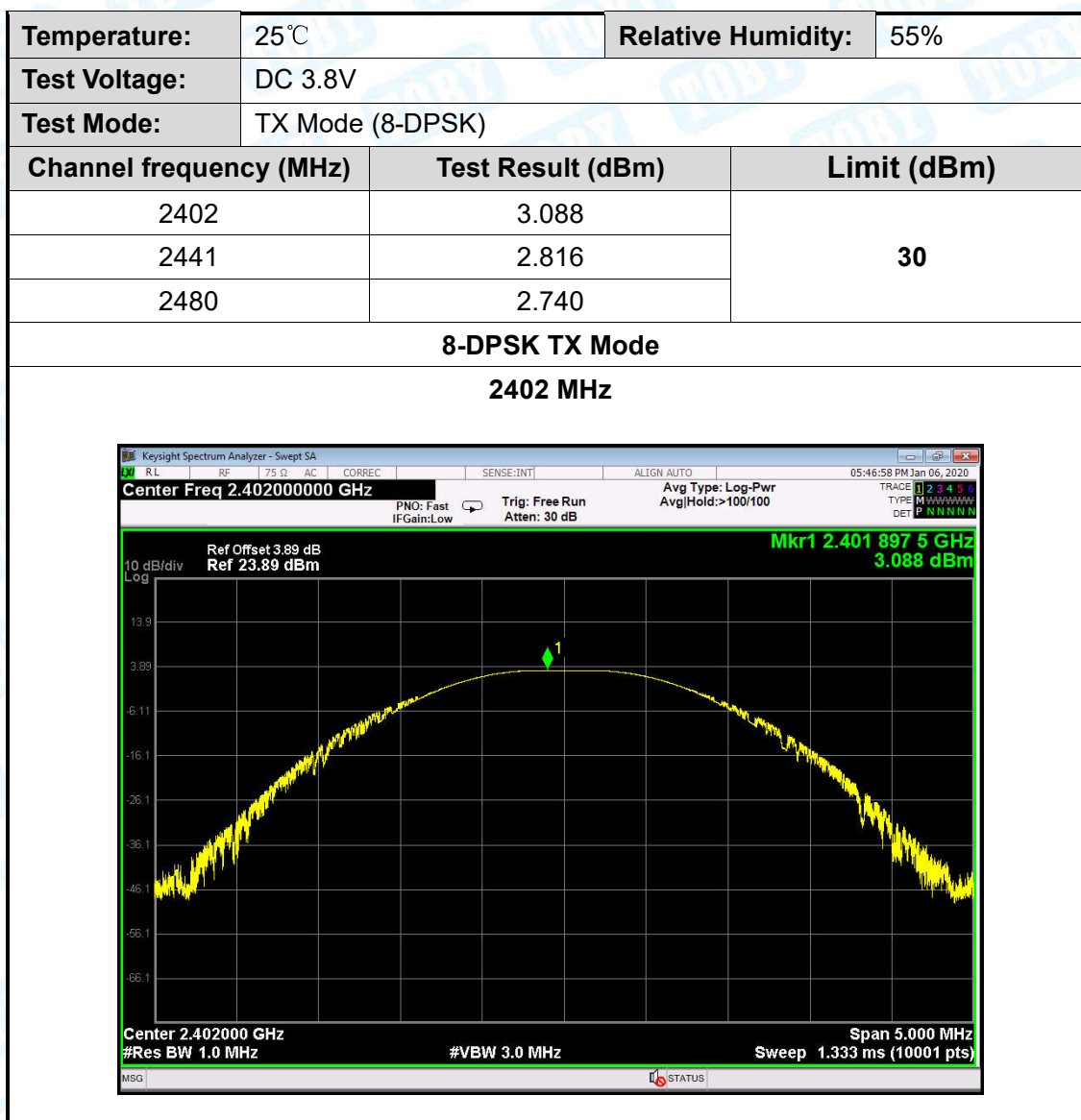
2441 MHz



$\pi/4$ -DQPSK TX Mode

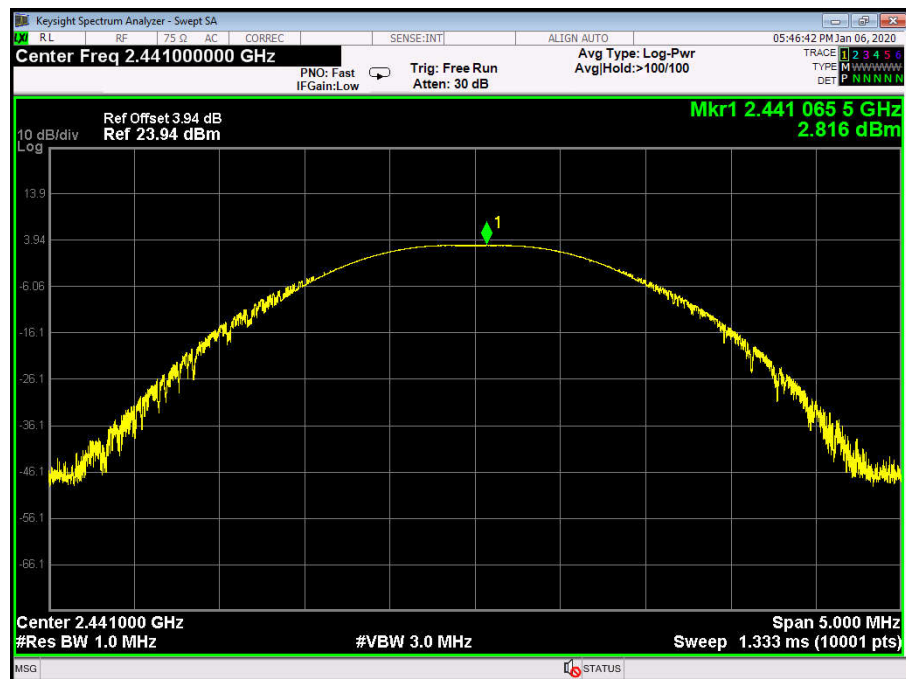
2480 MHz





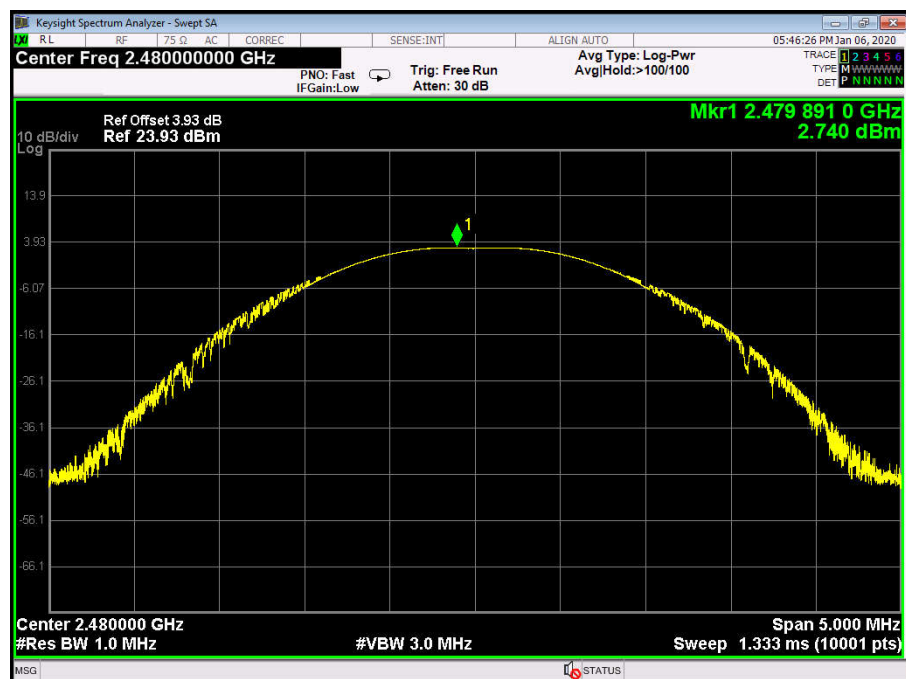
## 8-DPSK TX Mode

2441 MHz



## 8-DPSK TX Mode

2480 MHz



-----END OF REPORT-----