# Appendix A

## RF Test Data for BT V3.0(BDR) (Conducted Measurement)

**Product Name: Smatree Extendable Bluetooth Selfie Stick**

**Trade Mark: Smatree**

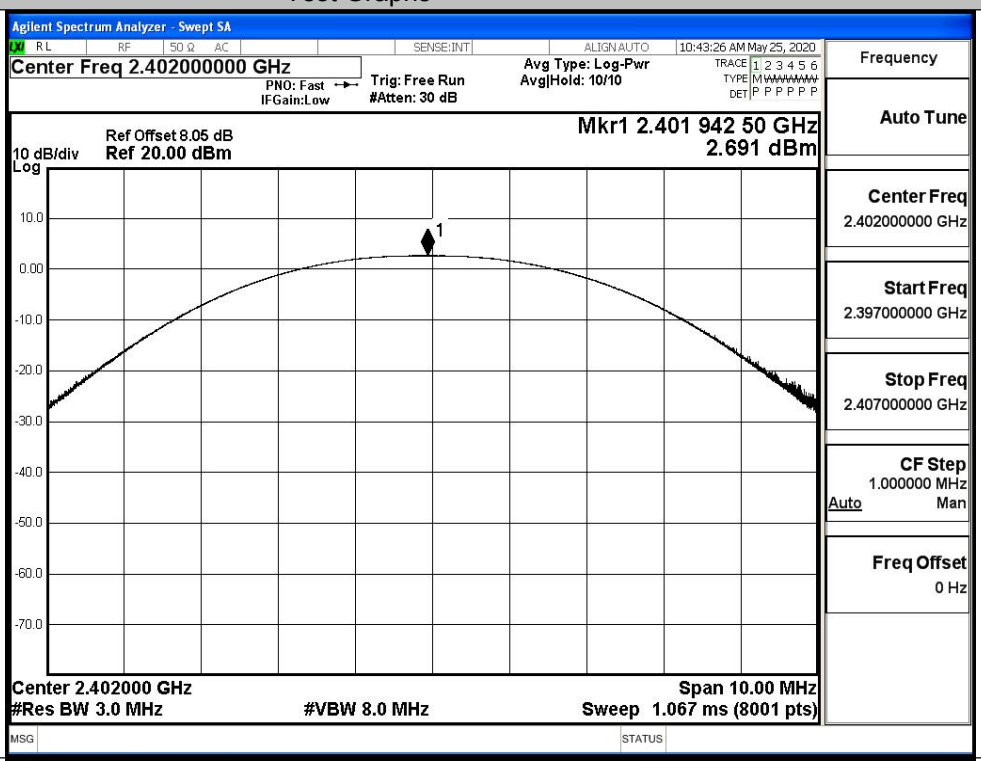
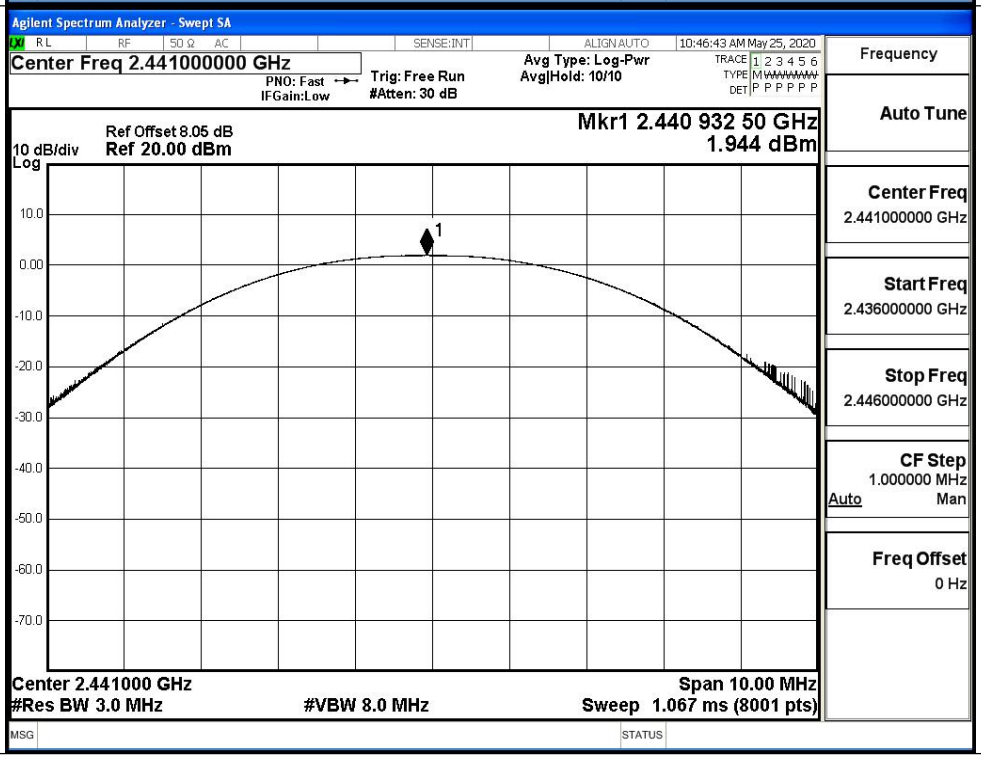
**Test Model: SmaStick**

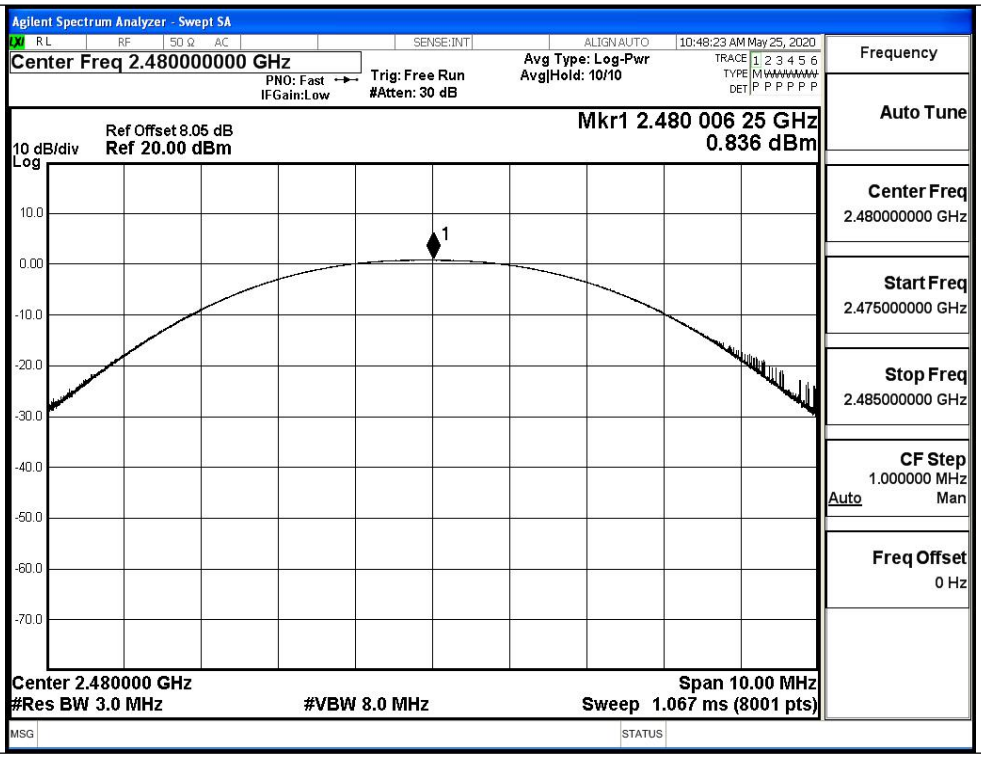
### Environmental Conditions

| | |
|---|---|
| Temperature: | 22.8 ° C |
| Relative Humidity: | 53.3% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | Scout Wu |
| Supervised by: | Li Huan |

### A.1 Maxmum Conducted Peak Output Power

| Mode | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|
| GFSK | LCH | 2.691 | 30 | PASS |
| | MCH | 1.944 | 30 | PASS |
| | HCH | 0.836 | 30 | PASS |

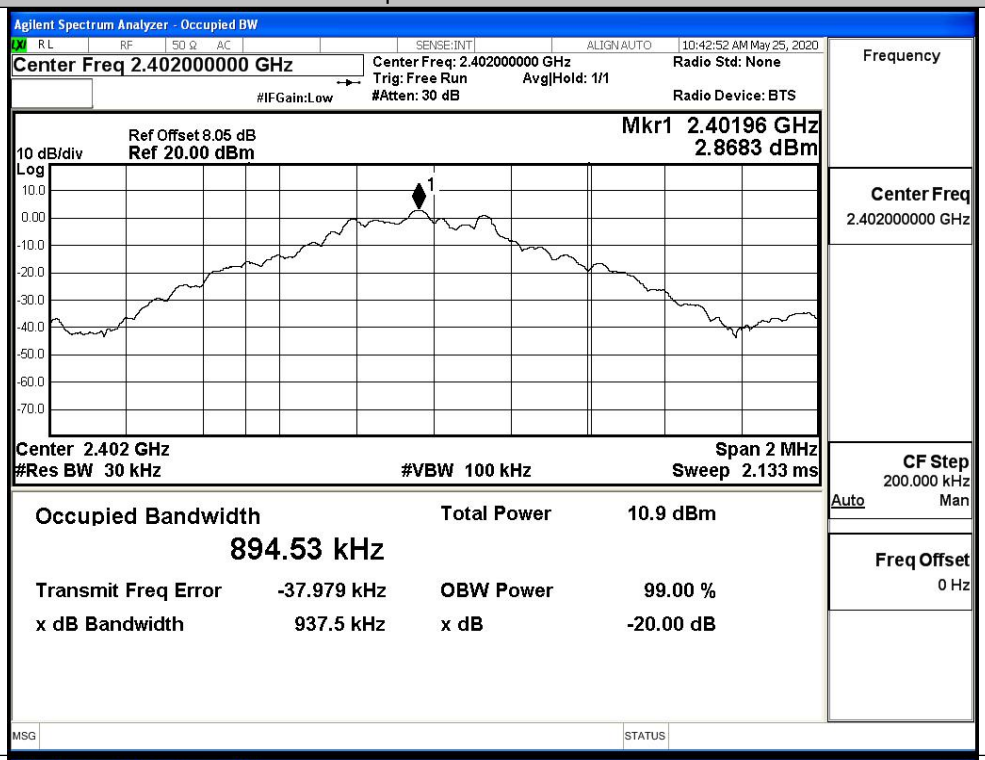
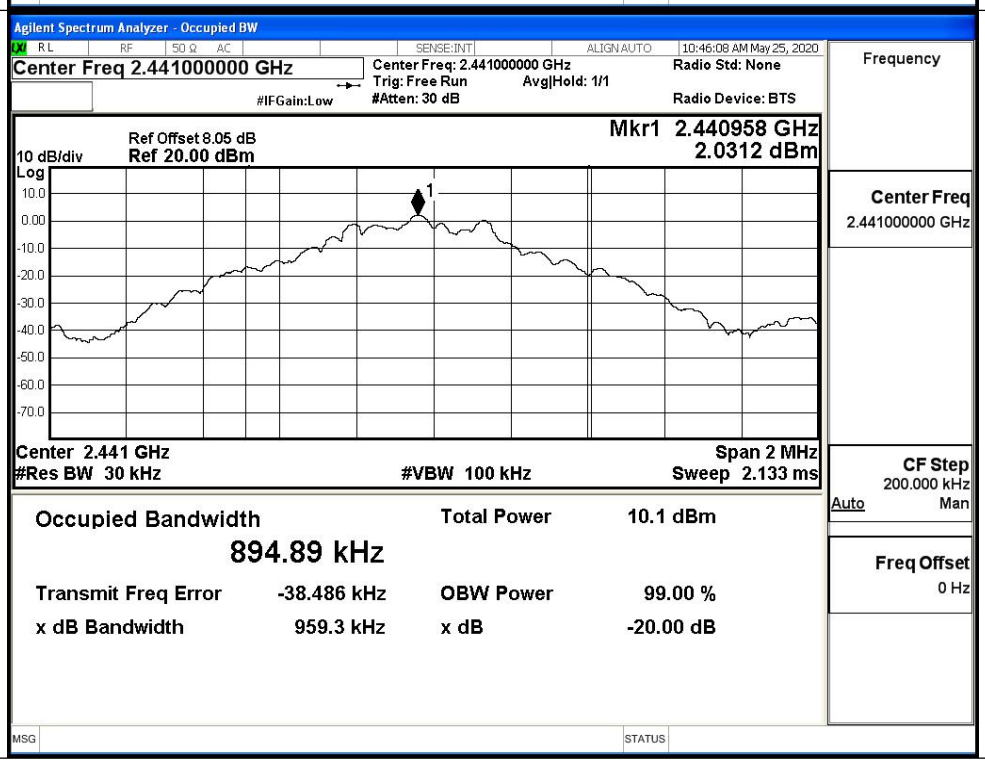
| Test Graphs | | |
|---|---|---|
| GFSK/LCH | |  |
| GFSK/MCH | |  |

| | | |
|---|---|---|
| GFSK/HCH | |  |

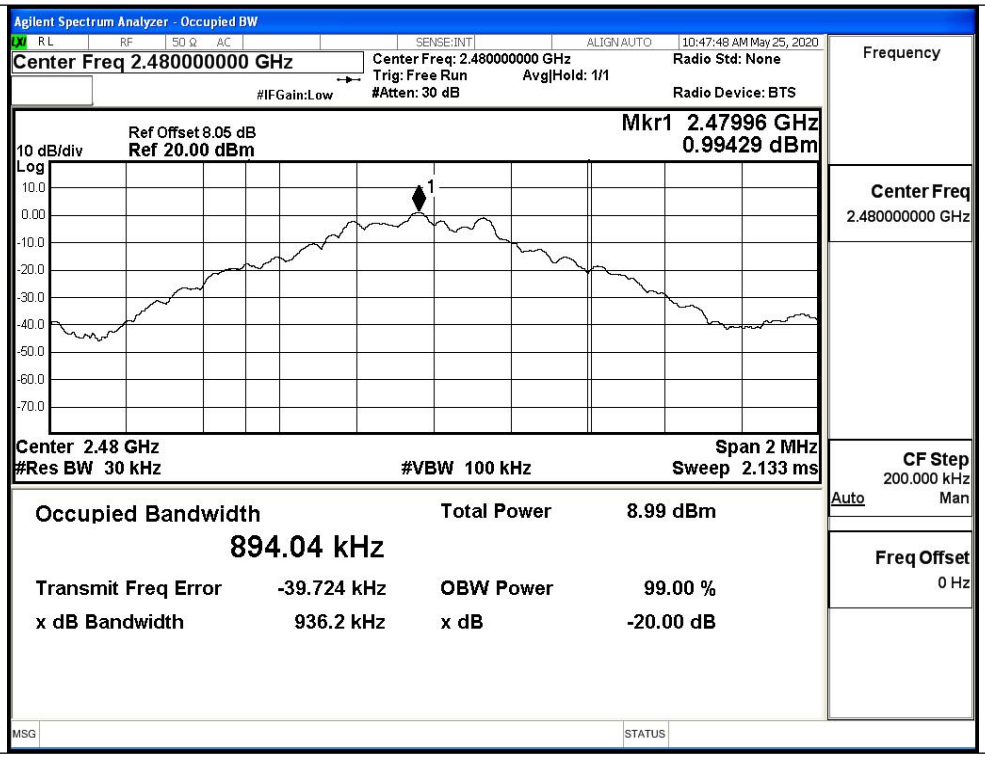
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
10:48:23 AM May 25, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.480 006 25 GHz
0.836 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 10.00 MHz
Sweep 1.067 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.475000000 GHz
Stop Freq
2.485000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz

## A.2 20dB Bandwidth

| Mode | Channel. | 20dB Bandwidth [MHz] | Limit [MHz] | Verdict |
|---|---|---|---|---|
| GFSK | LCH | 0.9375 | Not Specified | PASS |
| | MCH | 0.9593 | Not Specified | PASS |
| | HCH | 0.9362 | Not Specified | PASS |

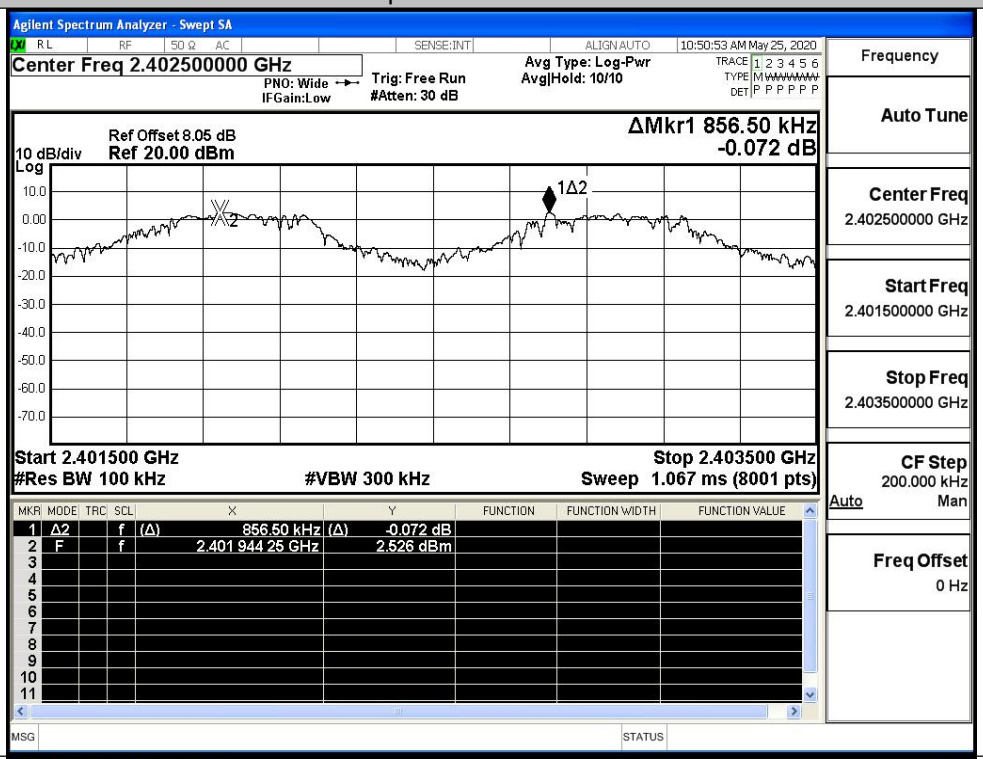
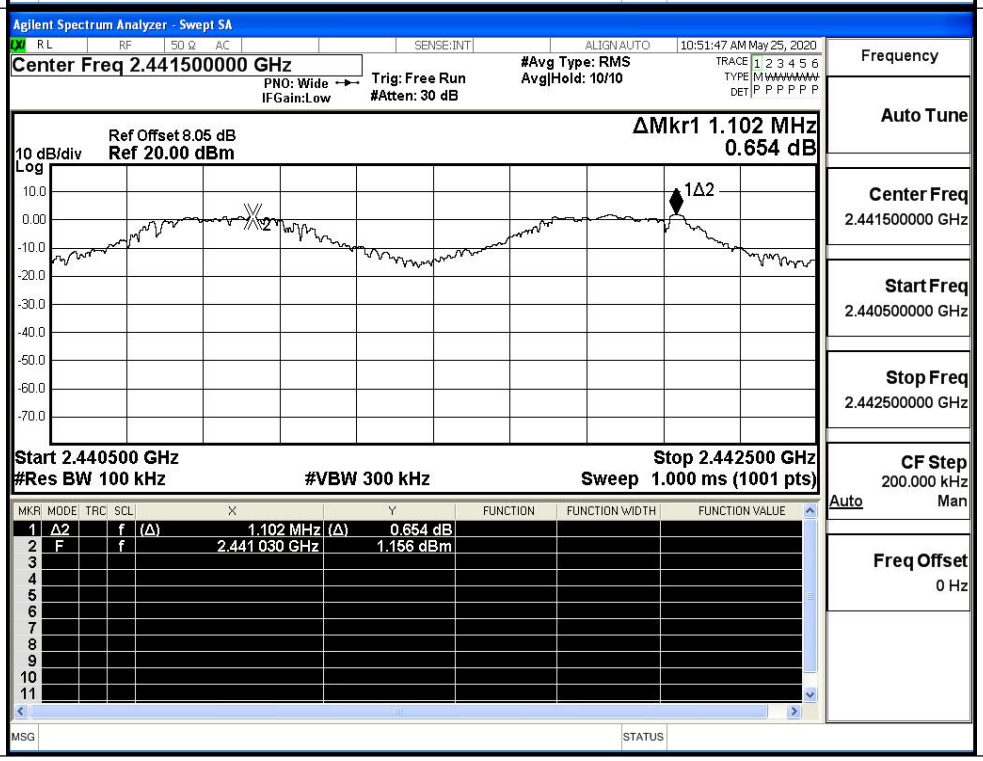
| Test Graphs | |
|---|---|
| GFSK/LCH |  |
| GFSK/MCH |  |

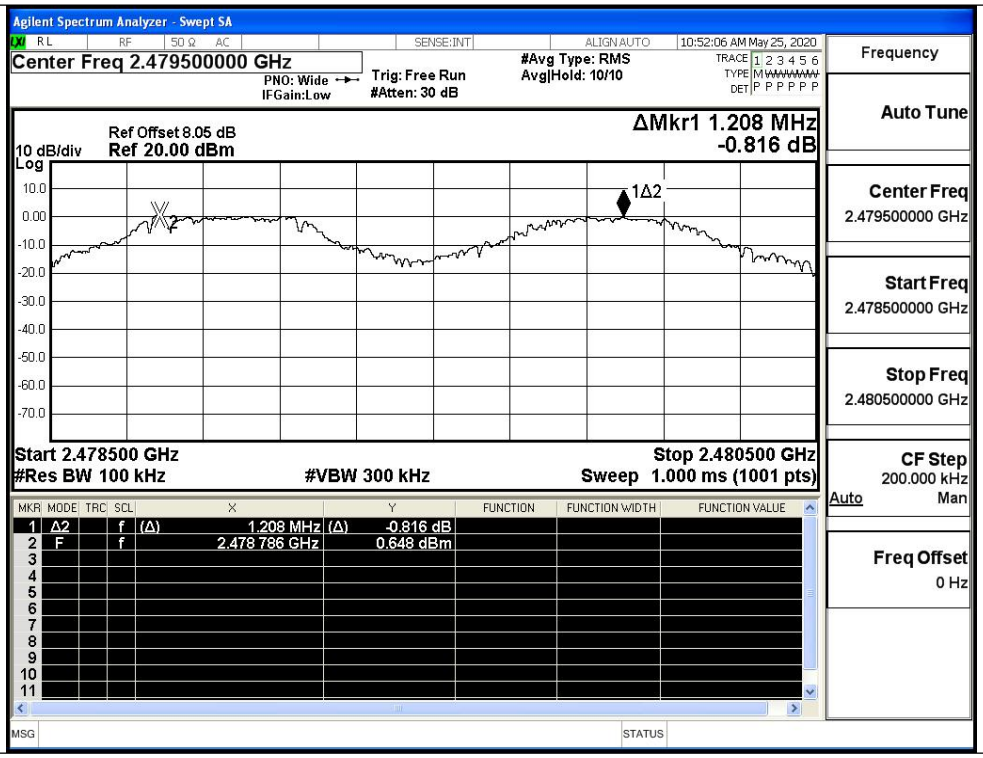
GFSK/HCH


Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 1/1
#Atten: 30 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
10:47:48 AM May 25, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.47996 GHz
0.99429 dBm
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 2 MHz
Sweep 2.133 ms
Occupied Bandwidth
894.04 kHz
Total Power 8.99 dBm
Transmit Freq Error -39.724 kHz
OBW Power 99.00 %
x dB Bandwidth 936.2 kHz
x dB -20.00 dB
Frequency
Center Freq
2.480000000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

## A.3 Carrier Frequency Separation

| Mode | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---|---|---|---|---|
| GFSK | LCH | 0.856 | 0.625 | PASS |
| | MCH | 1.102 | 0.640 | PASS |
| | HCH | 1.208 | 0.624 | PASS |

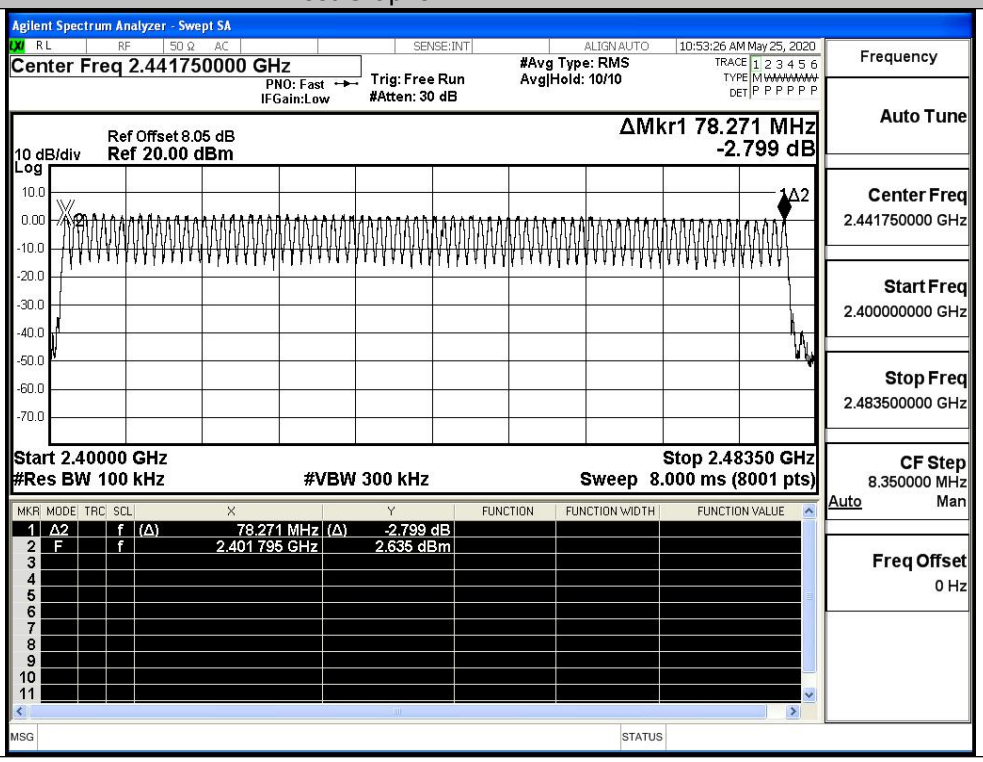
| Test Graphs | | |
|---|---|---|
| GFSK/LCH | |  |
| GFSK/MCH | |  |

| | | |
|---|---|---|
| GFSK/HCH | |  |

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.479500000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
10:52:06 AM May 25, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 1.208 MHz
-0.816 dB
1Δ2
Start 2.478500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.480500 GHz
Sweep 1.000 ms (1001 pts)
1 Δ2 f (Δ) 1.208 MHz (Δ) -0.816 dB
2 F f 2.478 786 GHz 0.648 dBm
Frequency
Auto Tune
Center Freq 2.479500000 GHz
Start Freq 2.478500000 GHz
Stop Freq 2.480500000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz

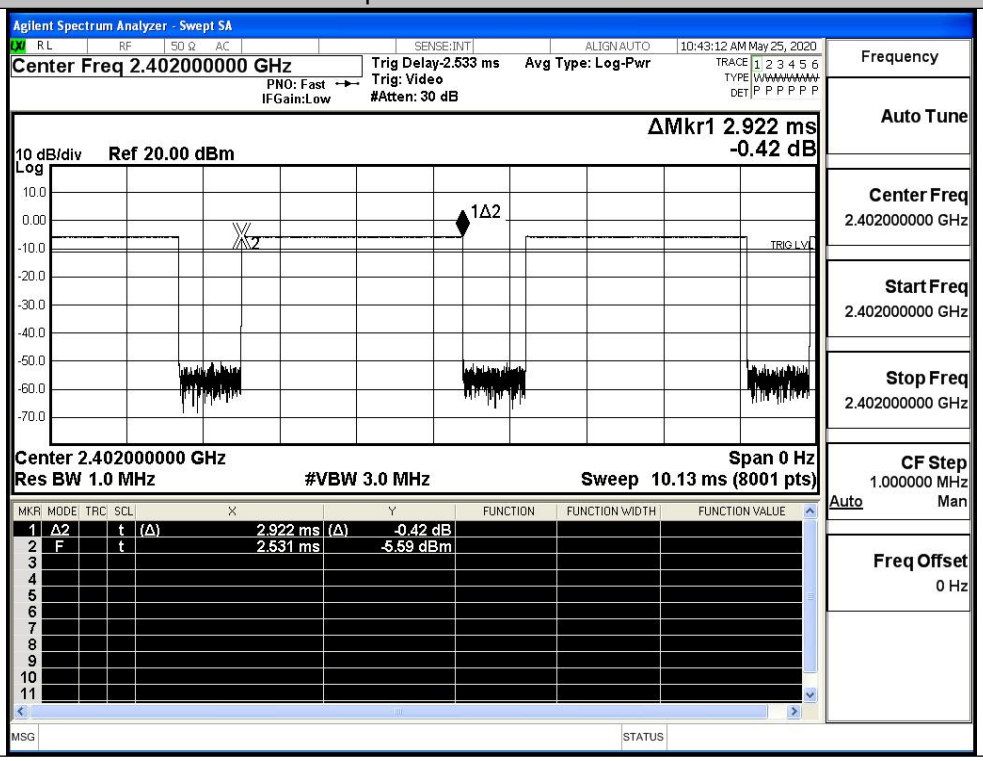
## A.4 Hopping Channel Number

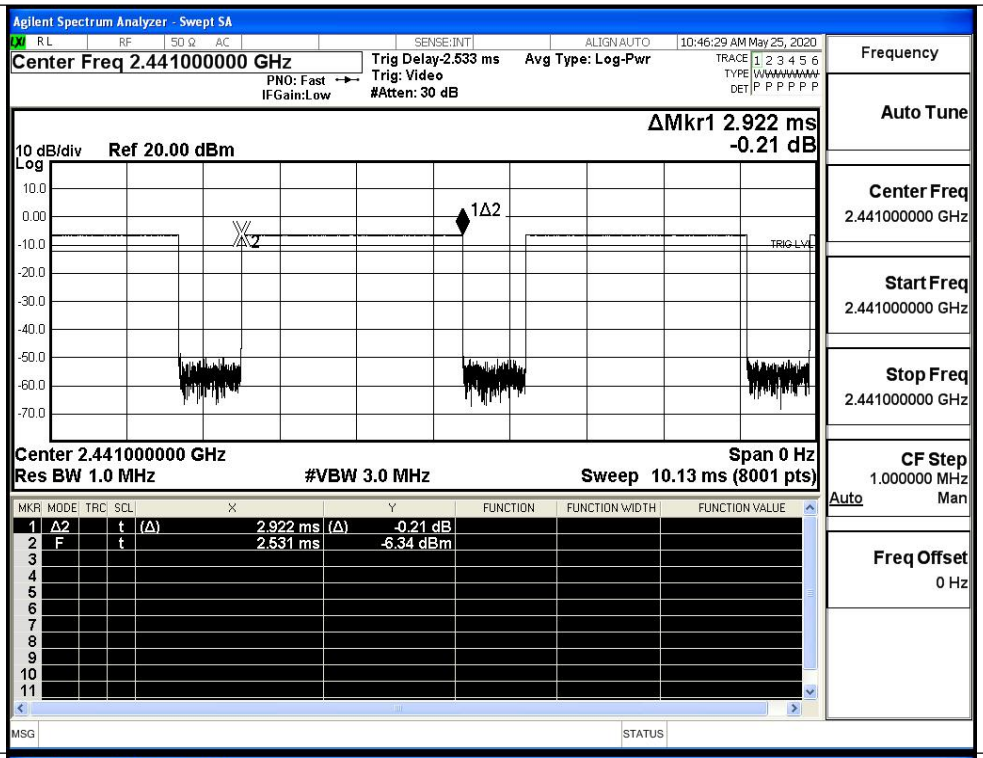
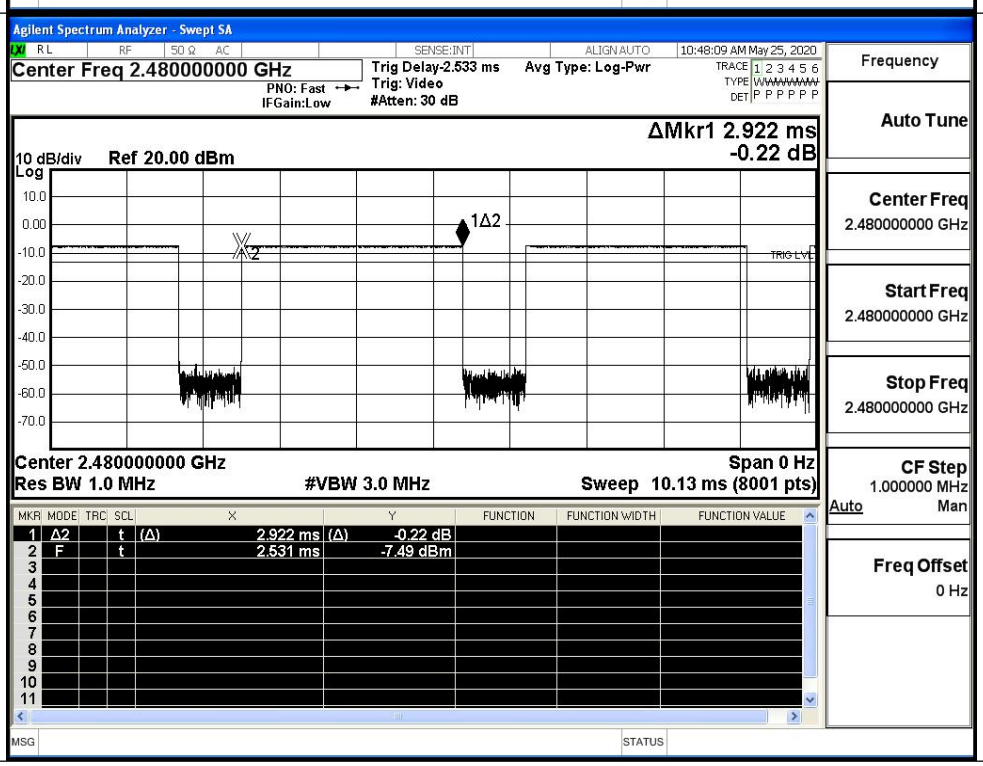
| Mode | Channel. | Number of Hopping Channel [N] | Limit [N] | Verdict |
|---|---|---|---|---|
| GFSK | Hop | 79 | >=15 | PASS |

| Test Graphs | | |
|---|---|---|
| GFSK/Hop | |  |

## A.5 Dwell Time

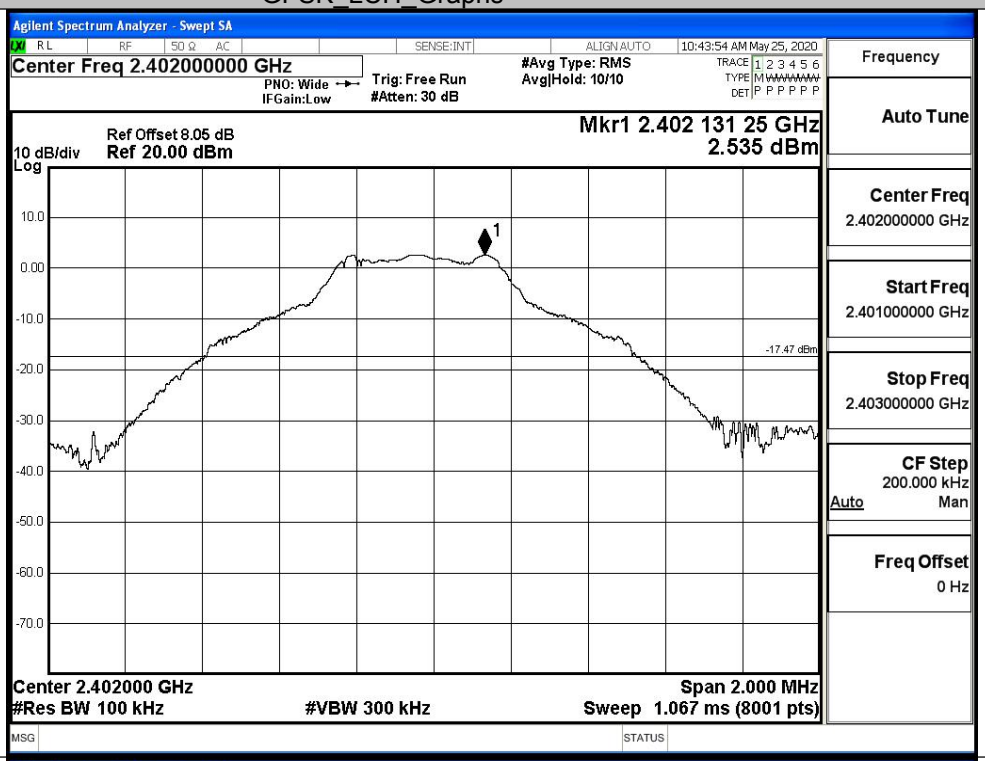
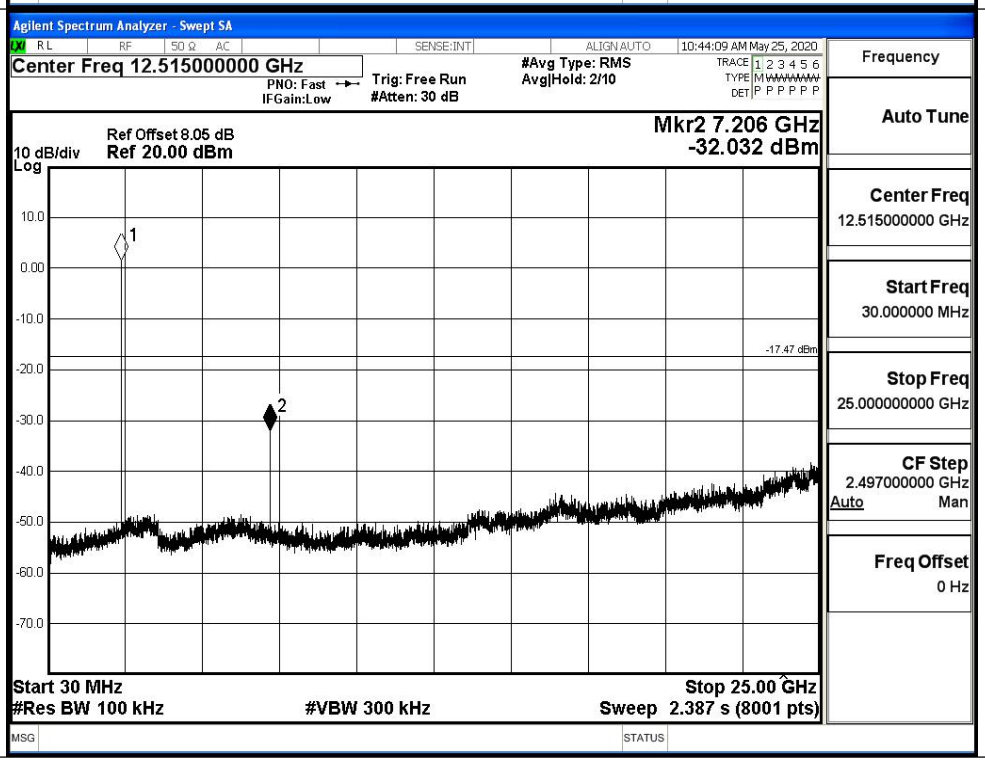
| Mode | Packet | Channel | Burst Width [ms/hop/ch] | Total Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|---|---|---|---|---|---|---|---|
| GFSK | DH5 | LCH | 2.92 | 106.7 | 0.312 | 0.4 | PASS |
| | DH5 | MCH | 2.92 | 106.7 | 0.312 | 0.4 | PASS |
| | DH5 | HCH | 2.92 | 106.7 | 0.312 | 0.4 | PASS |

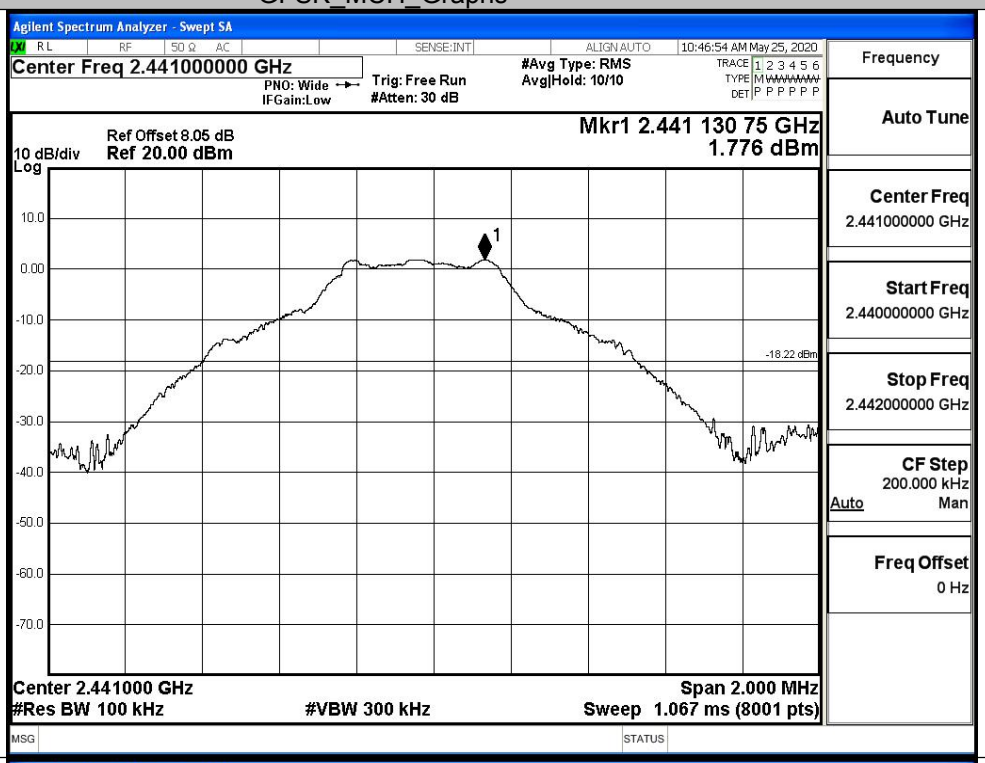
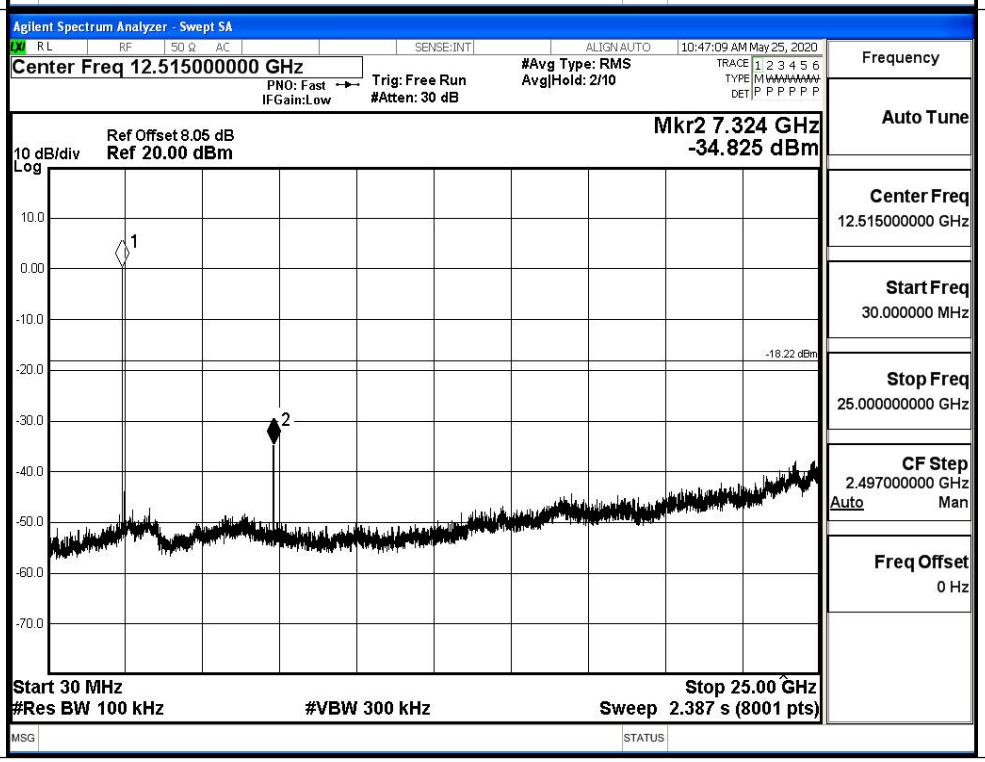
| Test Graphs | |
|---|---|
| GFSK_DH5/LCH |  |

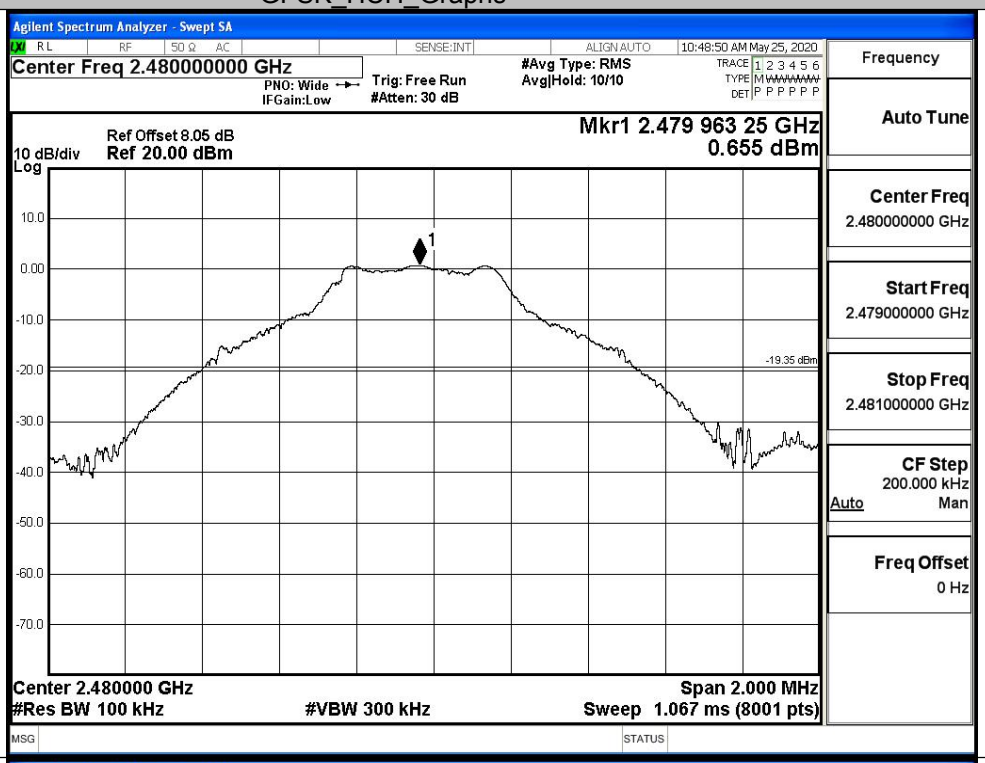
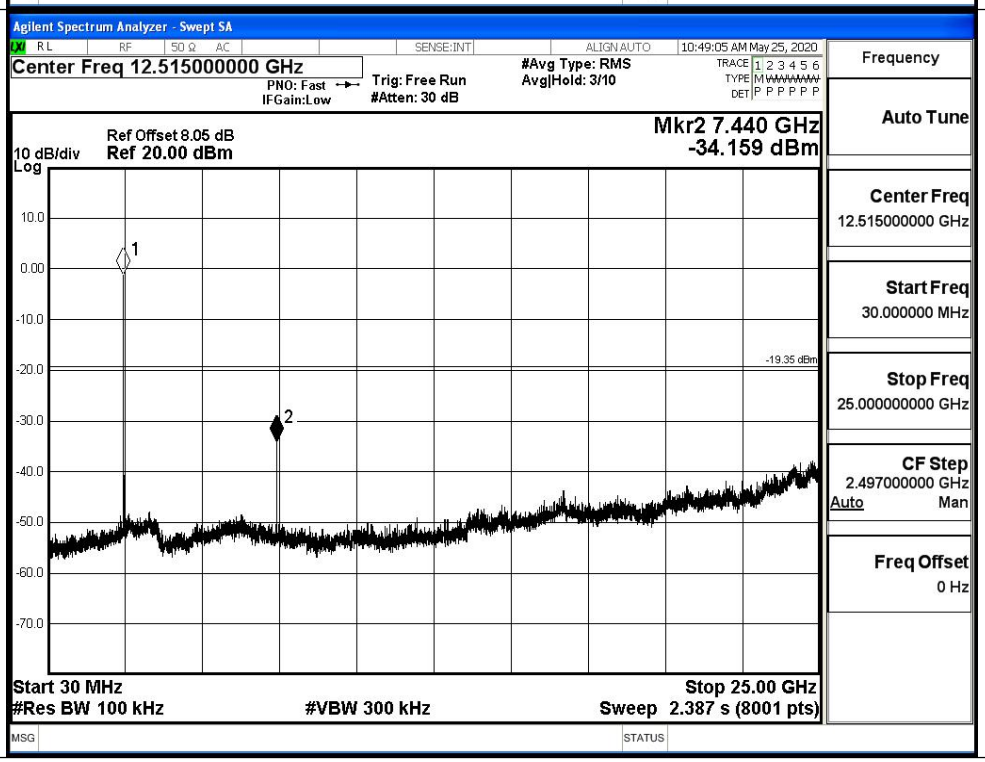
| | |
|---|---|
| GFSK_DH5/MCH |  |
| GFSK_DH5/HCH |  |

## A.6 RF Conducted Spurious Emissions

| Mode | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|---|
| GFSK | LCH | 2.535 | -32.032 | -17.465 | PASS |
| | MCH | 1.776 | -34.825 | -18.224 | PASS |
| | HCH | 0.655 | -34.159 | -19.345 | PASS |

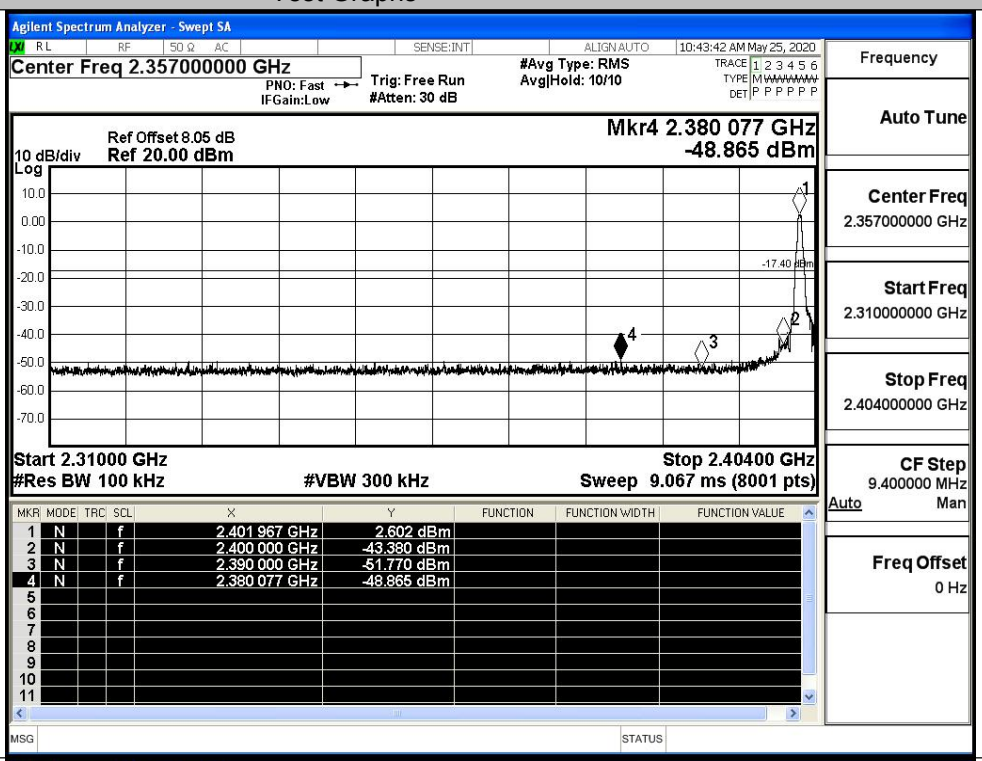
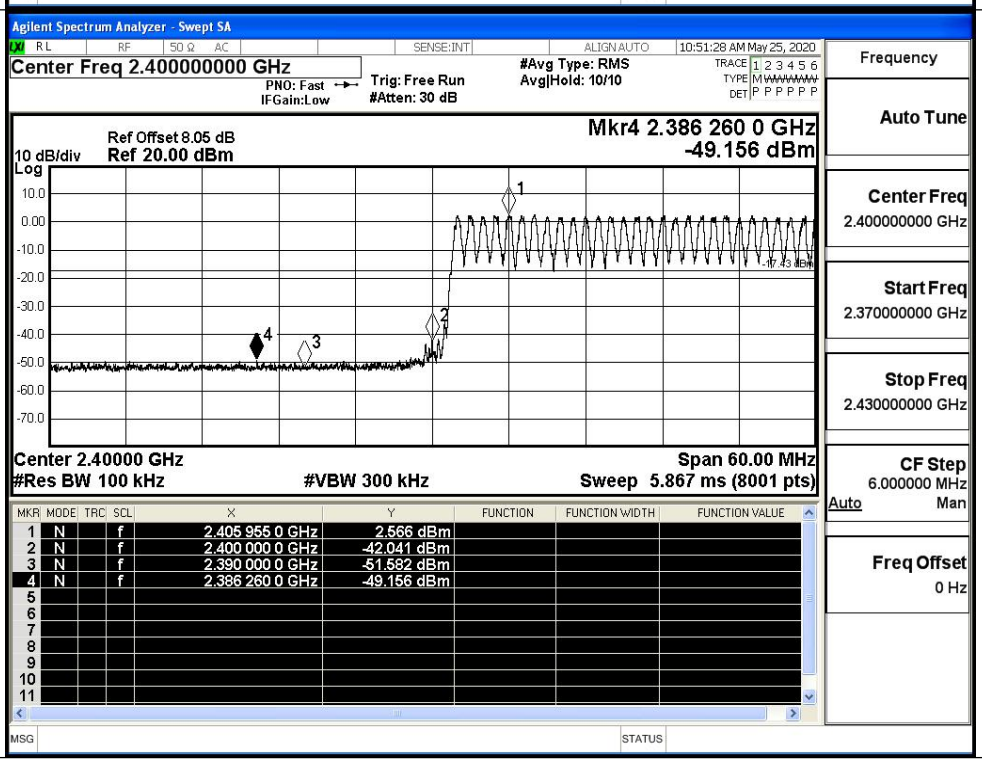
| GFSK_LCH_Graphs | | |
|---|---|---|
| Pref | |  |
| Puw | |  |

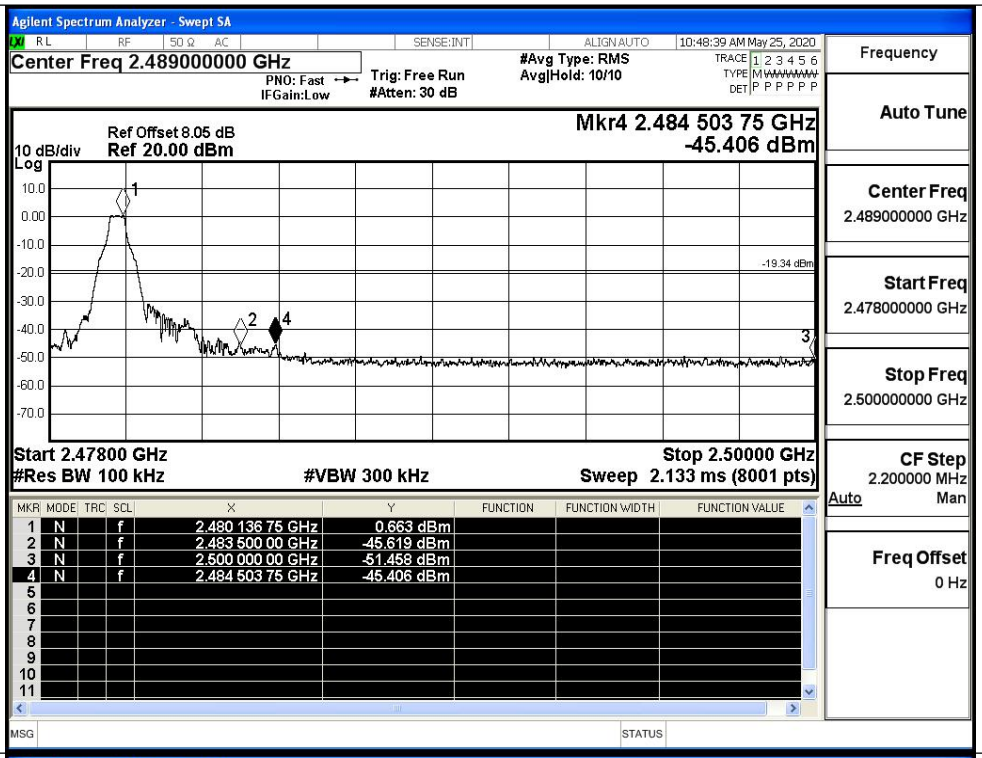
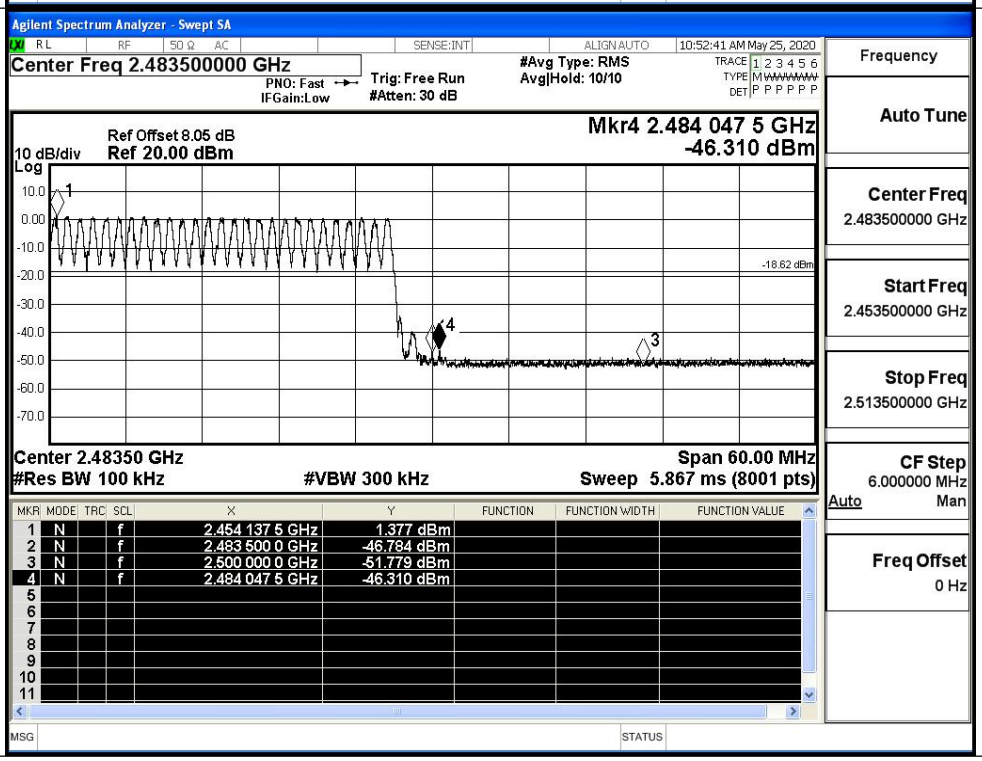
| GFSK_MCH_Graphs | | | |
|---|---|---|---|
| Pref | |  | |
| Puw | |  | |

| GFSK_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 | 2.602 | Off | -48.865 | -17.4 | PASS |
| | | | 2.566 | On | -49.156 | -17.43 | PASS |
| | HCH | 2480 | 0.663 | Off | -45.406 | -19.34 | PASS |
| | | | 1.377 | On | -46.310 | -18.62 | PASS |

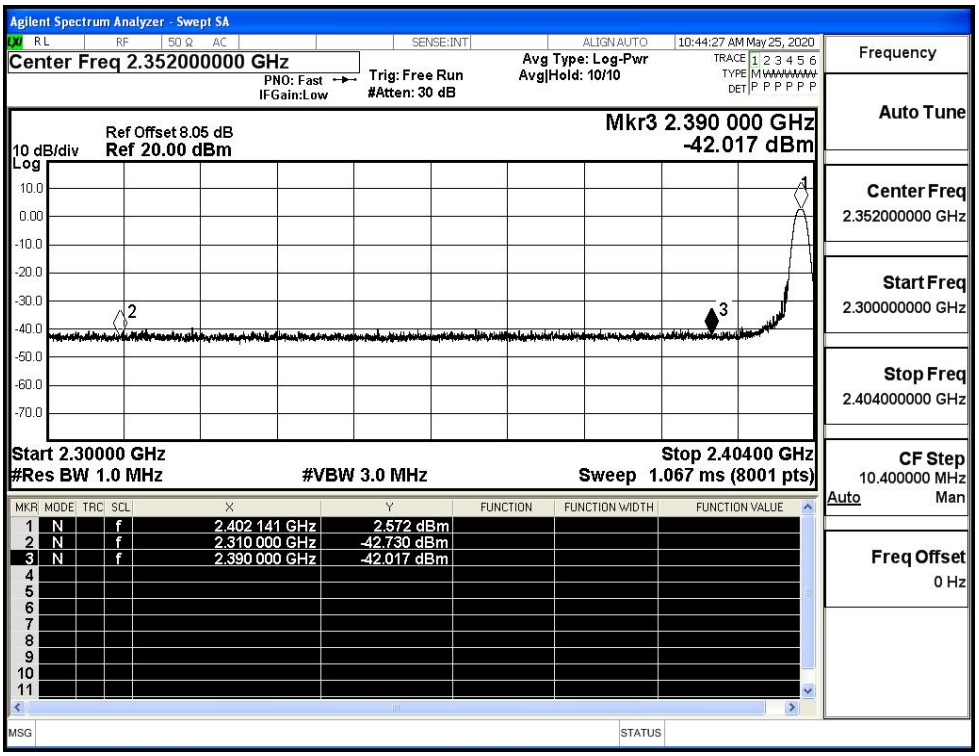
| Test Graphs | |
|---|---|
| GFSK/LCH/No Hop |  |
| GFSK/LCH/Hop |  |

| | |
|---|---|
| GFSK/HCH/No Hop |  |
| GFSK/HCH/Hop |  |

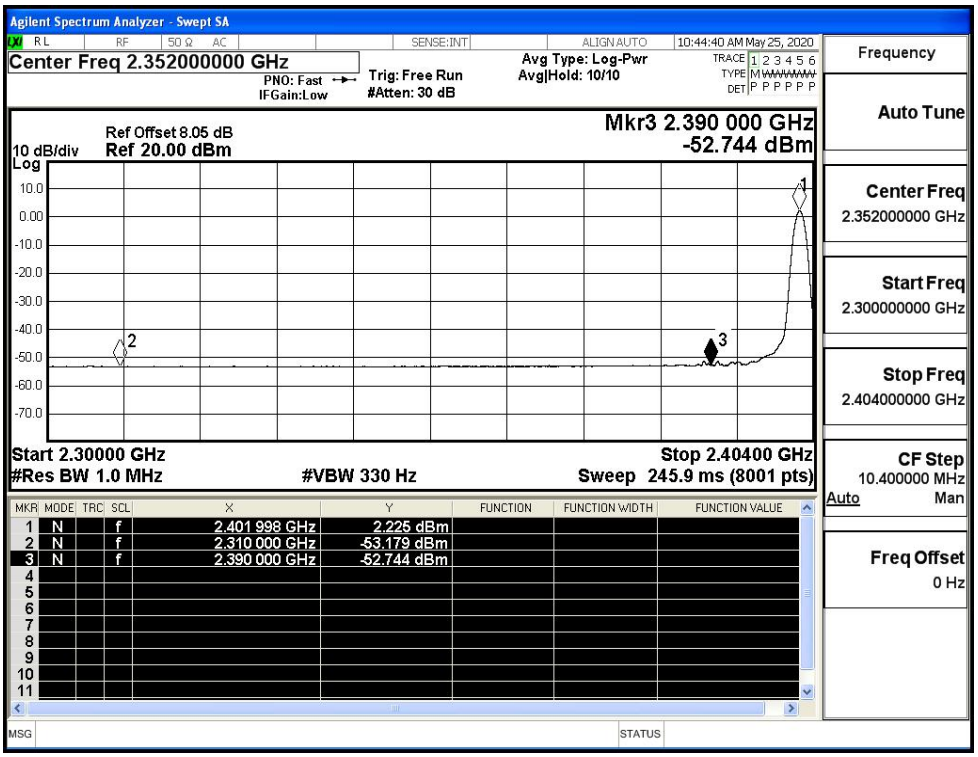
## A.8 Restrict-band band-edge measurements

| Test Mode | Hopping | Freq. | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| GFSK | Off | 2310.0 | -42.73 | 2.3 | 0 | 54.80 | PEAK | 74 | PASS |
| | Off | 2310.0 | -53.18 | 2.3 | 0 | 44.35 | AV | 54 | PASS |
| | Off | 2390.0 | -42.02 | 2.3 | 0 | 55.51 | PEAK | 74 | PASS |
| | Off | 2390.0 | -52.74 | 2.3 | 0 | 44.79 | AV | 54 | PASS |
| | Off | 2483.5 | -38.40 | 2.3 | 0 | 59.13 | PEAK | 74 | PASS |
| | Off | 2483.5 | -48.01 | 2.3 | 0 | 49.52 | AV | 54 | PASS |
| | Off | 2500.0 | -41.57 | 2.3 | 0 | 55.96 | PEAK | 74 | PASS |
| | Off | 2500.0 | -52.29 | 2.3 | 0 | 45.24 | AV | 54 | PASS |

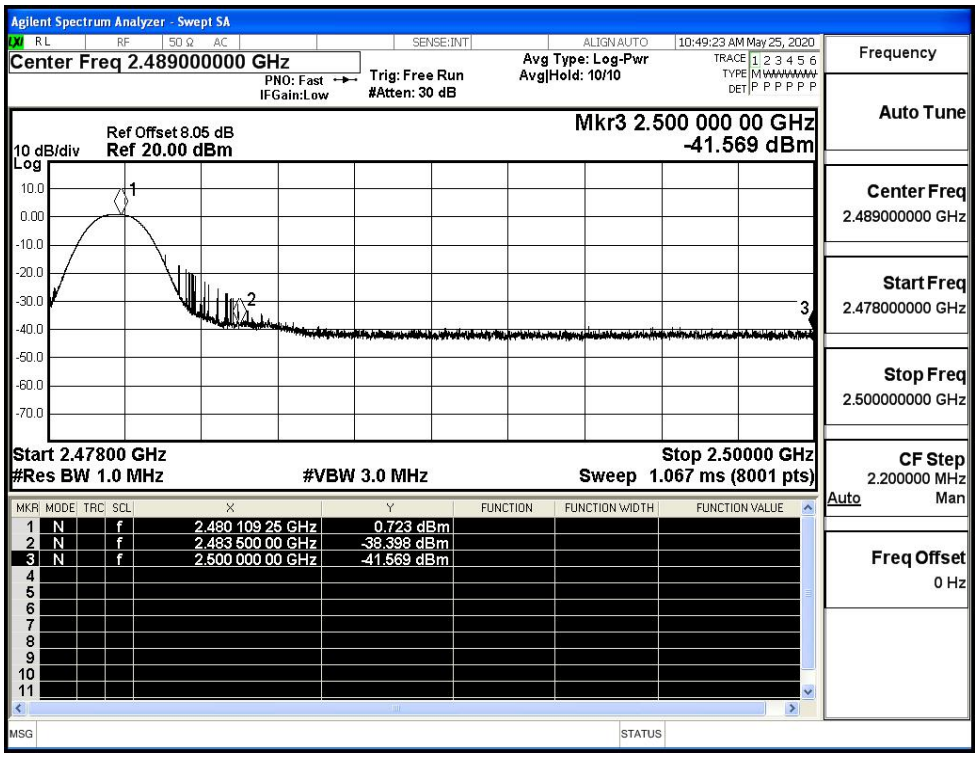
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)

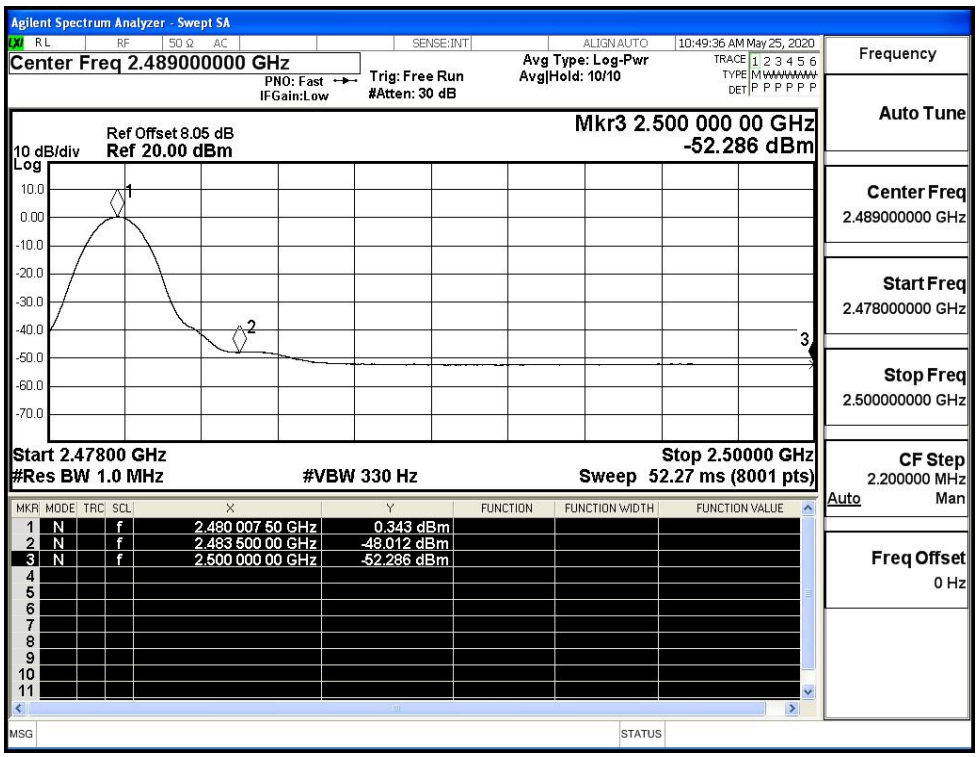



Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



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




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