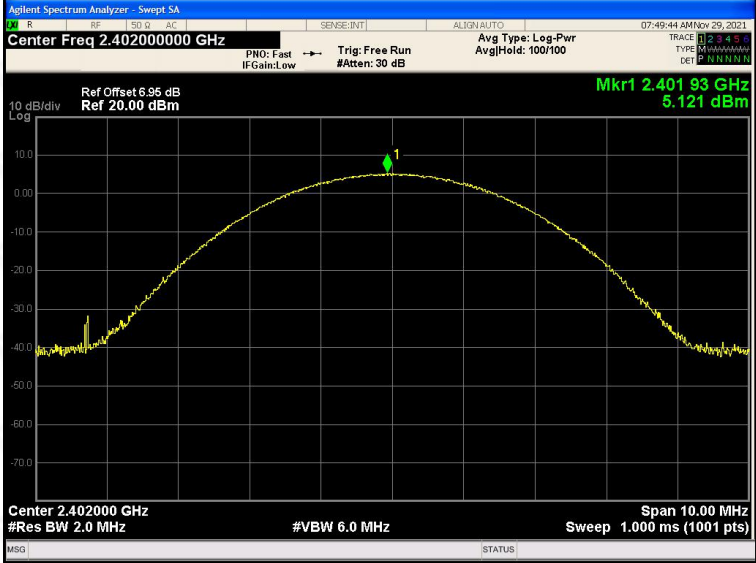
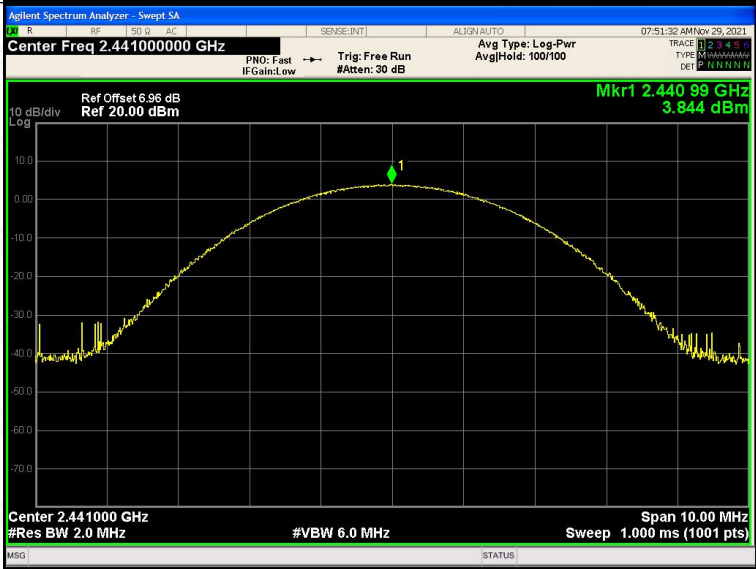
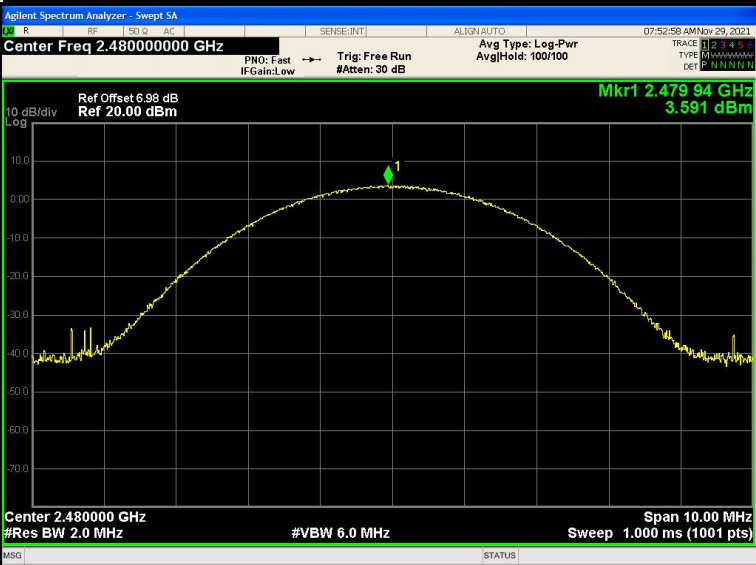
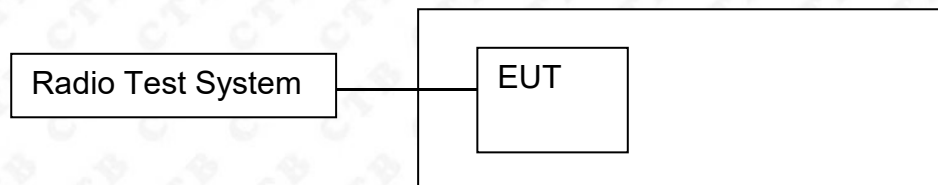


8DPSK/LCH	 <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Center Freq 2.40200000 GHz</p> <p>Ref Offset 6.95 dB Ref 20.00 dBm</p> <p>Mkr1 2.40193 GHz 5.121 dBm</p> <p>Center 2.402000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p>
8DPSK /MCH	 <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Center Freq 2.441000000 GHz</p> <p>Ref Offset 6.96 dB Ref 20.00 dBm</p> <p>Mkr1 2.44099 GHz 3.844 dBm</p> <p>Center 2.441000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p>
8DPSK /HCH	 <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Center Freq 2.480000000 GHz</p> <p>Ref Offset 6.98 dB Ref 20.00 dBm</p> <p>Mkr1 2.47994 GHz 3.591 dBm</p> <p>Center 2.480000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p>

## 10. 20DB OCCUPIED BANDWIDTH

### 10.1 Block Diagram Of Test Setup



### 10.2 Limit

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125mw.

### 10.3 Test procedure

1. Rem1. Set RBW = 30 kHz.
2. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 10.4 Test Result


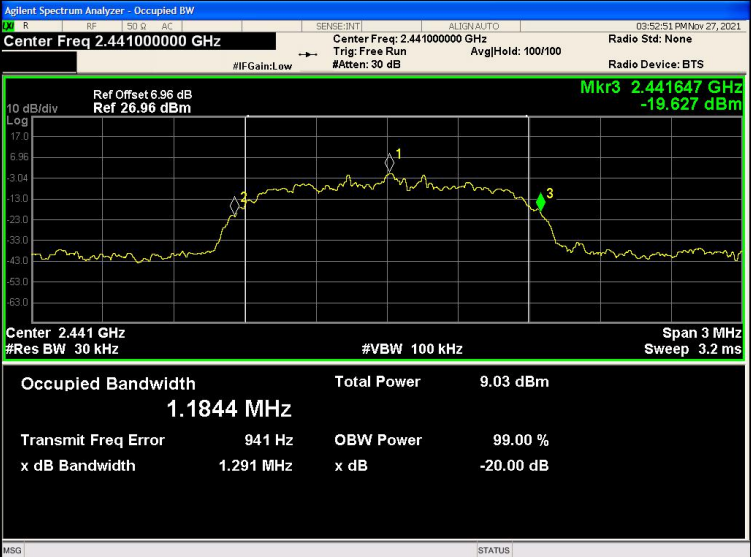
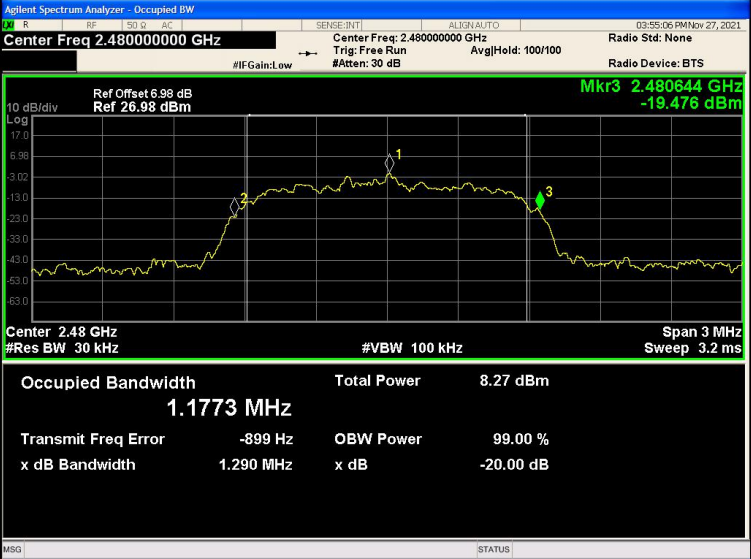
Test Mode	Frequency	20dB Bandwidth (MHz)	Result
GFSK	Low channel	0.921	<b>PASS</b>
	Mid channel	0.942	<b>PASS</b>
	High channel	0.92	<b>PASS</b>
$\pi/4$ DQPSK	Low channel	1.284	<b>PASS</b>
	Mid channel	1.291	<b>PASS</b>
	High channel	1.29	<b>PASS</b>
8DPSK	Low channel	1.298	<b>PASS</b>
	Mid channel	1.311	<b>PASS</b>
	High channel	1.295	<b>PASS</b>

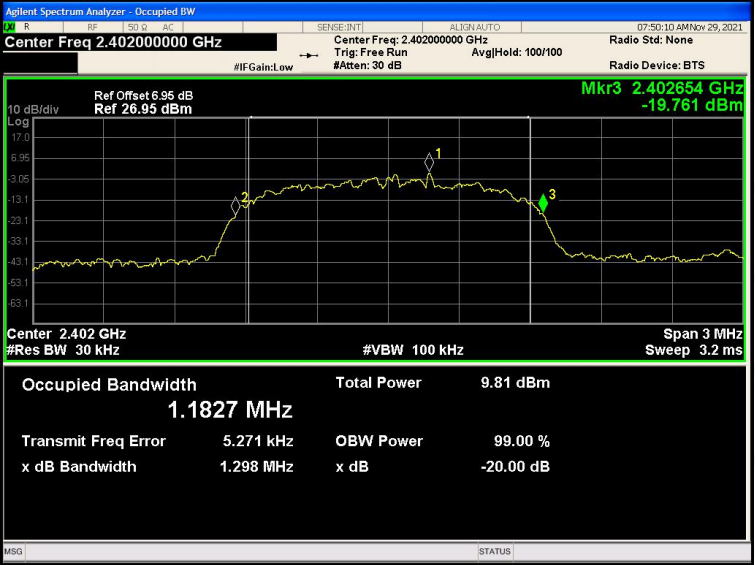
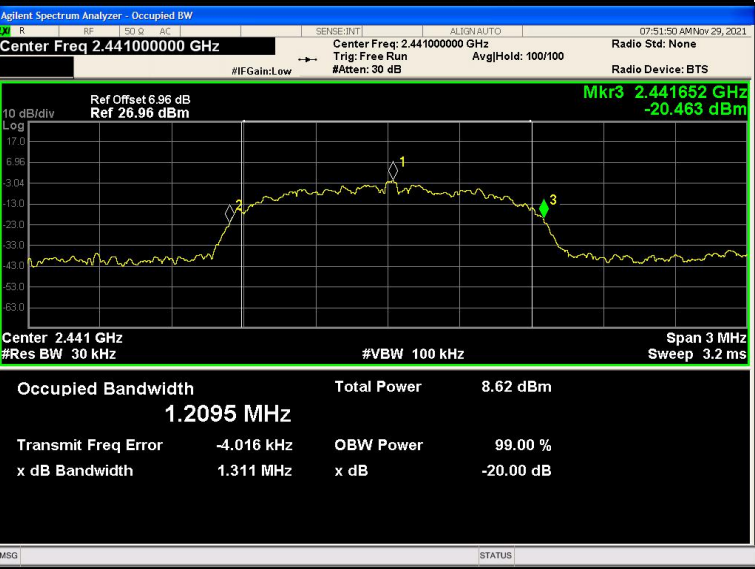
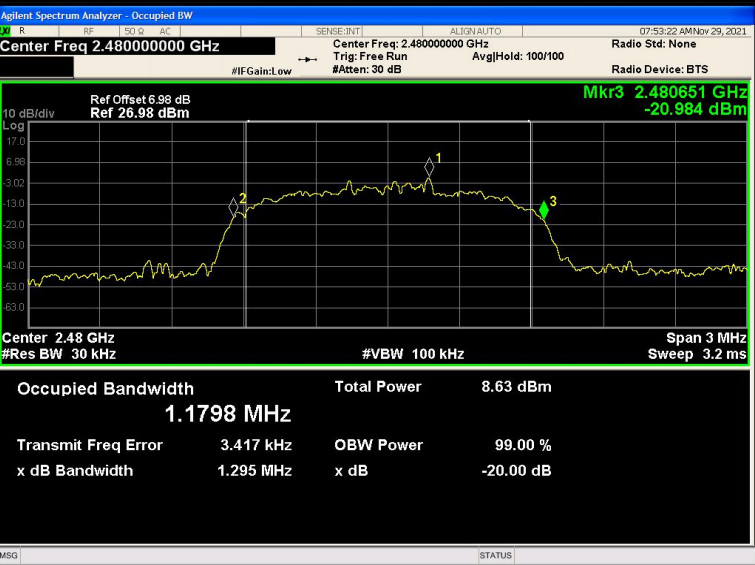
Note: All modes of operation were Pre-scan and the worst-case emissions are reported.

## Test Graph:

<p>GFSK Low channel</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.40200000 GHz</p> <p>Mkr3: 2.40246 GHz, -17.952 dBm</p> <p>Occupied Bandwidth: 836.66 kHz</p> <p>Total Power: 11.6 dBm</p>	
<p>GFSK Mid channel</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.44100000 GHz</p> <p>Mkr3: 2.441473 GHz, -18.899 dBm</p> <p>Occupied Bandwidth: 847.86 kHz</p> <p>Total Power: 10.4 dBm</p>	
<p>GFSK High channel</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.48000000 GHz</p> <p>Mkr3: 2.480463 GHz, -18.393 dBm</p> <p>Occupied Bandwidth: 842.53 kHz</p> <p>Total Power: 10.1 dBm</p>	

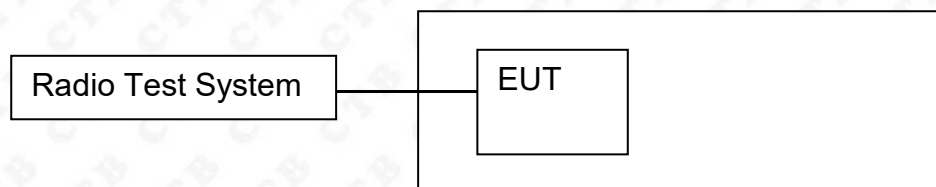


$\pi/4$ -DQPSK Low channel	
$\pi/4$ -DQPSK Mid channel	
$\pi/4$ -DQPSK High channel	

<p>8DPSK Low channel</p>	 <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.40200000 GHz</p> <p>Mkr3 2.402654 GHz -19.761 dBm</p> <p>Occupied Bandwidth 1.1827 MHz</p> <p>Total Power 9.81 dBm</p> <p>Transmit Freq Error 5.271 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 1.298 MHz</p> <p>x dB -20.00 dB</p>
<p>8DPSK Mid channel</p>	 <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.441000000 GHz</p> <p>Mkr3 2.441652 GHz -20.463 dBm</p> <p>Occupied Bandwidth 1.2095 MHz</p> <p>Total Power 8.62 dBm</p> <p>Transmit Freq Error -4.016 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 1.311 MHz</p> <p>x dB -20.00 dB</p>
<p>8DPSK High channel</p>	 <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.480000000 GHz</p> <p>Mkr3 2.480651 GHz -20.984 dBm</p> <p>Occupied Bandwidth 1.1798 MHz</p> <p>Total Power 8.63 dBm</p> <p>Transmit Freq Error 3.417 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 1.295 MHz</p> <p>x dB -20.00 dB</p>

## 11. CARRIER FREQUENCIES SEPARATION

### 11.1 Block Diagram Of Test Setup



### 11.2 Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 0.125W.

### 11.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 100kHz. VBW = 300kHz , Span = 3.0MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

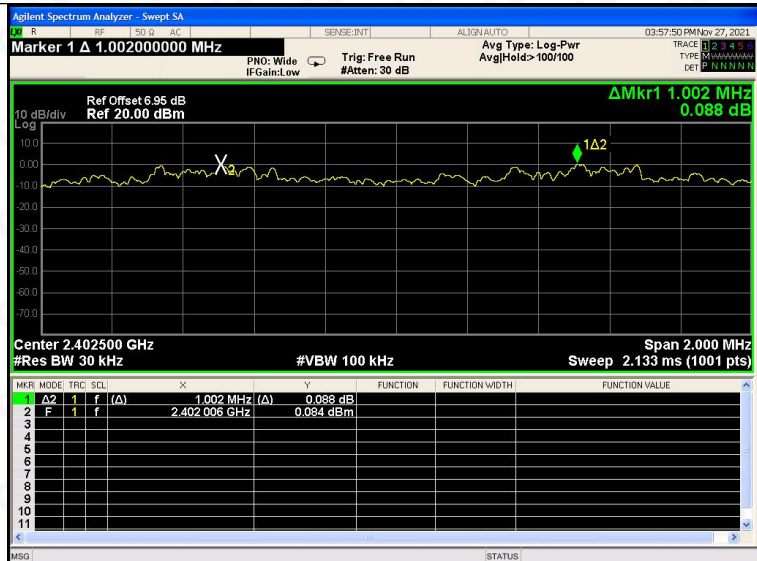
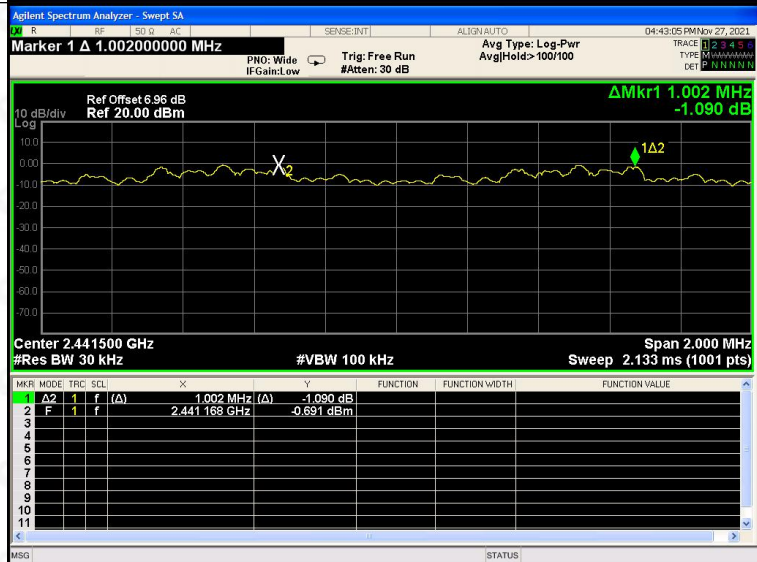
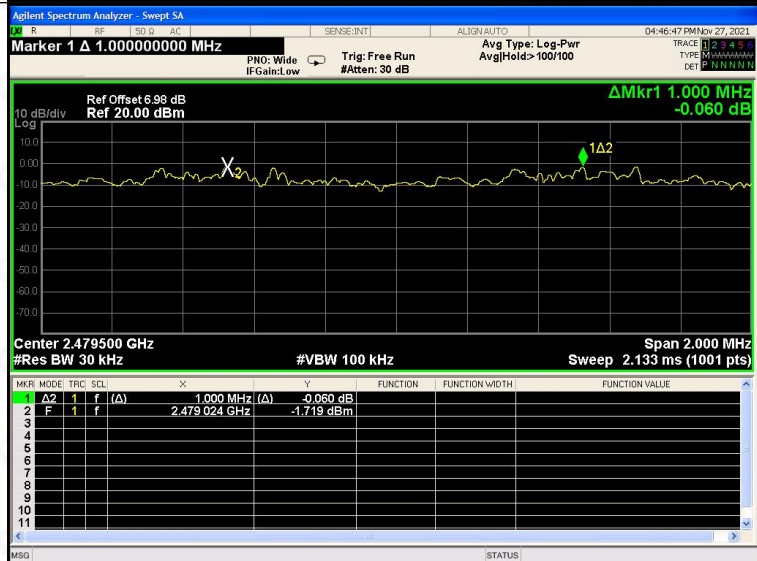
### 11.4 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Verdict
GFSK	LCH	1.000	PASS
GFSK	MCH	1.000	PASS
GFSK	HCH	1.000	PASS
$\pi/4$ DQPSK	LCH	1.002	PASS
$\pi/4$ DQPSK	MCH	1.002	PASS
$\pi/4$ DQPSK	HCH	1.000	PASS
8DPSK	LCH	1.002	PASS
8DPSK	MCH	1.000	PASS
8DPSK	HCH	1.000	PASS



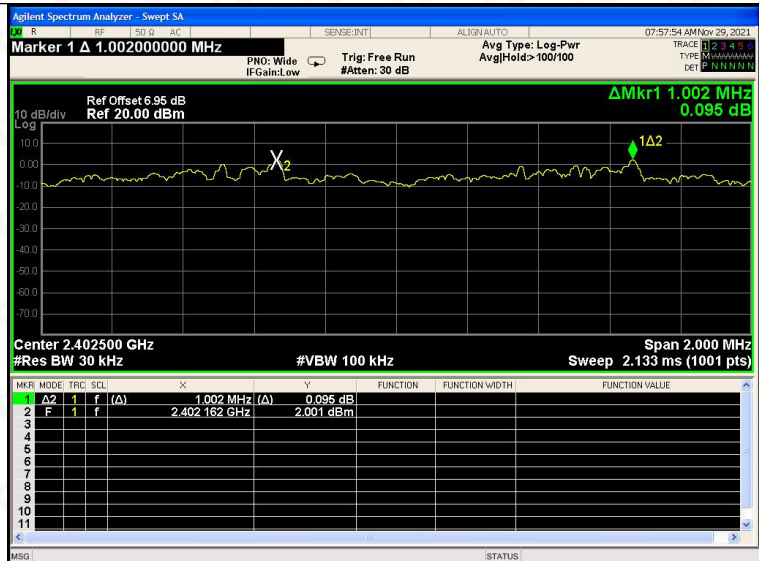
# Test Graph



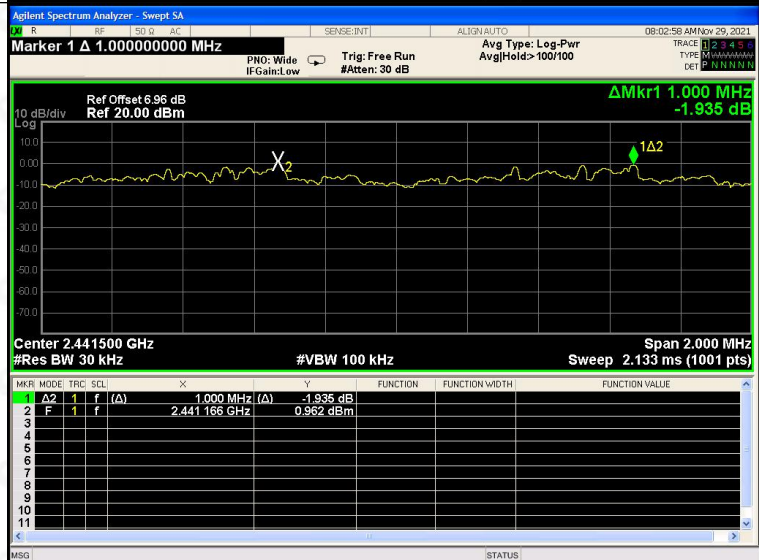
$\pi/4$ DQPSK/LCH

 $\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH




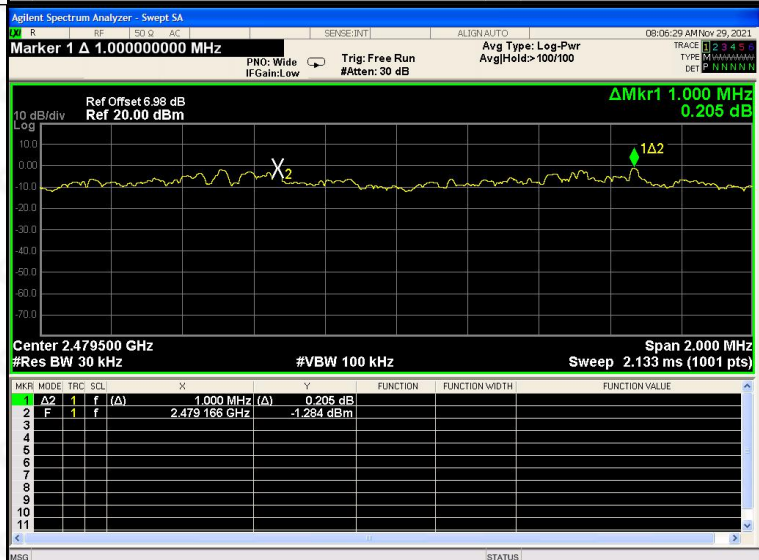
8DPSK/LCH



8DPSK /MCH

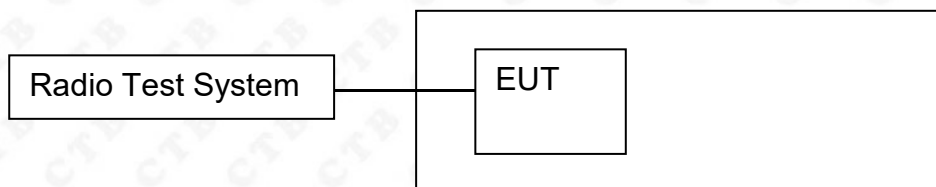


8DPSK /HCH



## 12. HOPPING CHANNEL NUMBER

### 12.1 Block Diagram Of Test Setup



### 12.2 Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

### 12.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 100kHz. VBW = 300kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.
4. Set the spectrum analyzer: Start Frequency = 2.4GHz, Stop Frequency = 2.4835GHz. Sweep=auto;

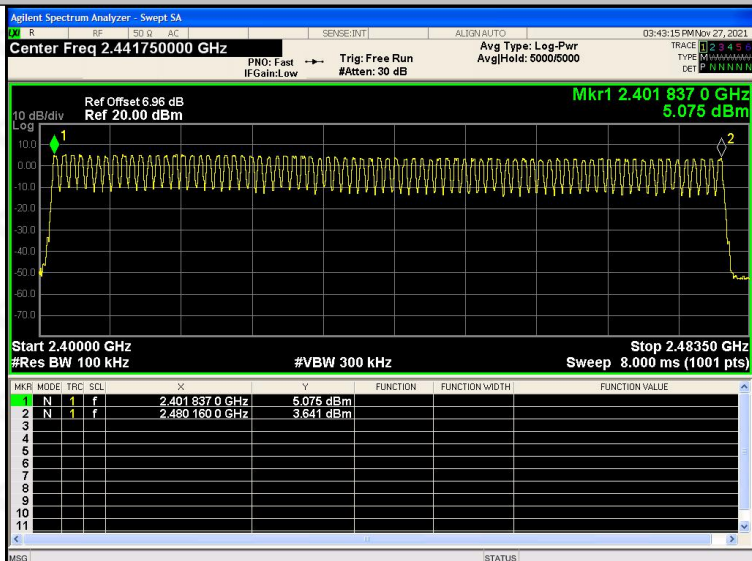
### 12.4 Test Result

Mode	Channel.	Number of Hopping Channel	Verdict
GFSK	Hop	79	PASS
$\pi/4$ DQPSK	Hop	79	PASS
8DPSK	Hop	79	PASS

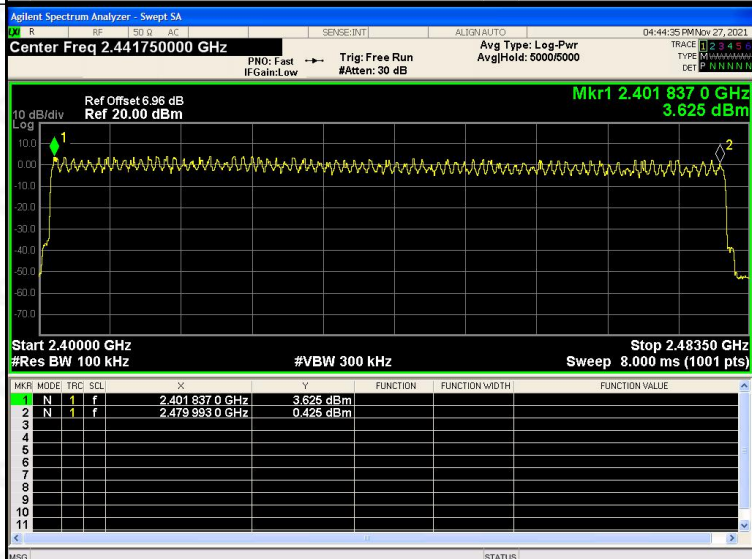
# Test Graph

## Graphs

GFSK/Hop



$\pi/4$ DQPSK/Hop



8DPSK/Hop

