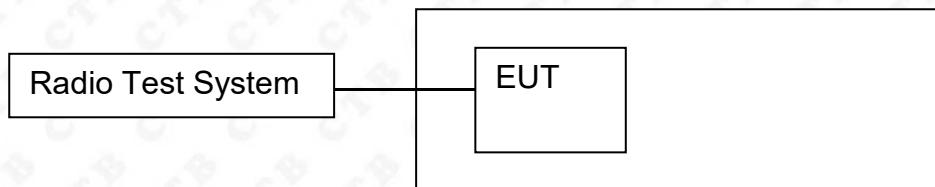


10. 20DB OCCUPIED BANDWIDTH

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 125nw.

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	PASS
	Mid channel	0.942	PASS
	High channel	0.92	PASS
$\pi/4$ DQPSK	Low channel	1.284	PASS
	Mid channel	1.291	PASS
	High channel	1.29	PASS
8DPSK	Low channel	1.298	PASS
	Mid channel	1.311	PASS
	High channel	1.295	PASS

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

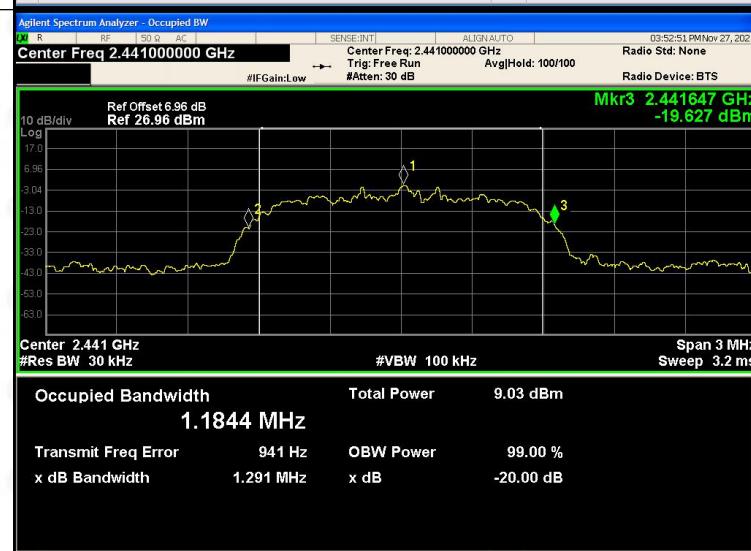
Test Graph:

GFSK Low channel	 <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.402000000 GHz</p> <p>Ref Offset 6.96 dB Ref 26.95 dBm</p> <p>10 dB/div Log</p> <p>Center 2.402 GHz #Res BW 30 kHz #VBW 100 kHz Span 3 MHz Sweep 3.2 ms</p> <p>Occupied Bandwidth: 836.66 kHz Total Power: 11.6 dBm</p> <p>Transmit Freq Error: -349 Hz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 921.2 kHz x dB: -20.00 dB</p>
GFSK Mid channel	 <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.441000000 GHz</p> <p>Ref Offset 6.96 dB Ref 26.96 dBm</p> <p>10 dB/div Log</p> <p>Center 2.441 GHz #Res BW 30 kHz #VBW 100 kHz Span 3 MHz Sweep 3.2 ms</p> <p>Occupied Bandwidth: 847.86 kHz Total Power: 10.4 dBm</p> <p>Transmit Freq Error: 2.573 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 941.8 kHz x dB: -20.00 dB</p>
GFSK High channel	 <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.480000000 GHz</p> <p>Ref Offset 6.96 dB Ref 26.98 dBm</p> <p>10 dB/div Log</p> <p>Center 2.48 GHz #Res BW 30 kHz #VBW 100 kHz Span 3 MHz Sweep 3.2 ms</p> <p>Occupied Bandwidth: 842.53 kHz Total Power: 10.1 dBm</p> <p>Transmit Freq Error: 3.106 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 920.3 kHz x dB: -20.00 dB</p>

π/4-DQPSK
Low channel

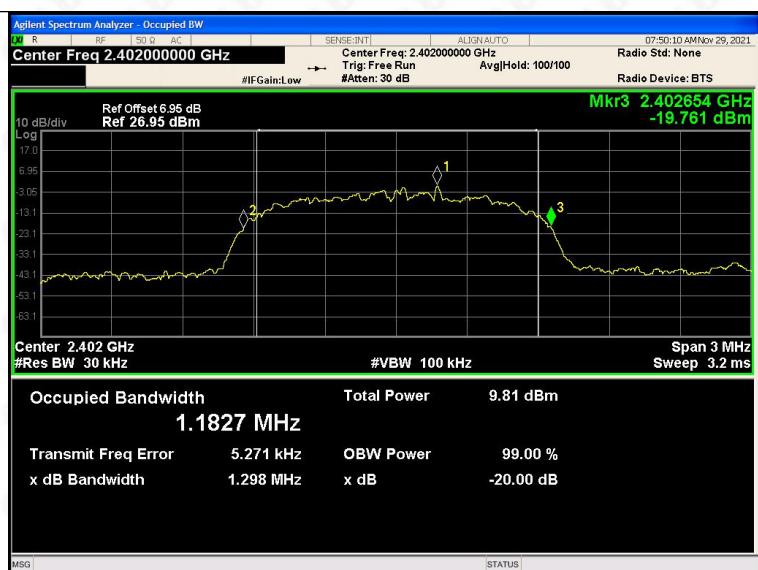
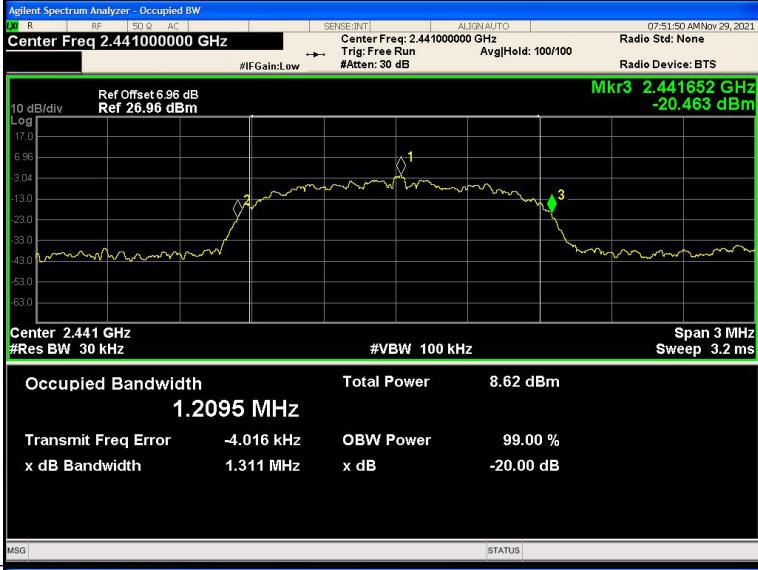
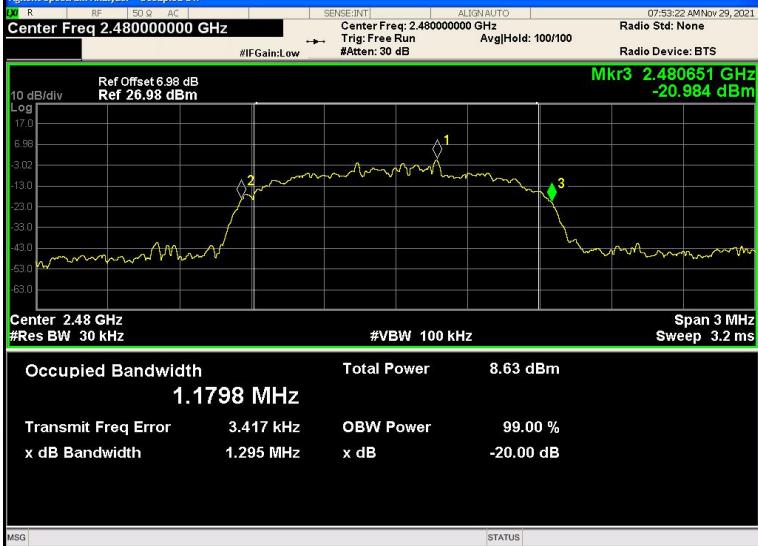


π/4-DQPSK
Mid channel



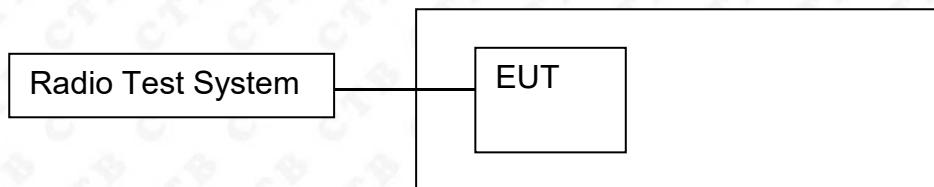
π/4-DQPSK
High channel



8DPSK Low channel	 <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.402000000 GHz</p> <p>Ref Offset 6.95 dB Ref 26.95 dBm</p> <p>Log</p> <p>10 dB/div</p> <p>Center 2.402 GHz</p> <p>#Res BW 30 kHz</p> <p>#VBW 100 kHz</p> <p>Span 3 MHz</p> <p>Sweep 3.2 ms</p> <p>Occupied Bandwidth: 1.1827 MHz</p> <p>Total Power: 9.81 dBm</p> <p>Transmit Freq Error: 5.271 kHz</p> <p>x dB Bandwidth: 1.298 MHz</p> <p>OBW Power: 99.00 %</p> <p>x dB: -20.00 dB</p>
8DPSK Mid channel	 <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.441000000 GHz</p> <p>Ref Offset 6.96 dB Ref 26.96 dBm</p> <p>Log</p> <p>10 dB/div</p> <p>Center 2.441 GHz</p> <p>#Res BW 30 kHz</p> <p>#VBW 100 kHz</p> <p>Span 3 MHz</p> <p>Sweep 3.2 ms</p> <p>Occupied Bandwidth: 1.2095 MHz</p> <p>Total Power: 8.62 dBm</p> <p>Transmit Freq Error: -4.016 kHz</p> <p>x dB Bandwidth: 1.311 MHz</p> <p>OBW Power: 99.00 %</p> <p>x dB: -20.00 dB</p>
8DPSK High channel	 <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.480000000 GHz</p> <p>Ref Offset 6.98 dB Ref 26.98 dBm</p> <p>Log</p> <p>10 dB/div</p> <p>Center 2.48 GHz</p> <p>#Res BW 30 kHz</p> <p>#VBW 100 kHz</p> <p>Span 3 MHz</p> <p>Sweep 3.2 ms</p> <p>Occupied Bandwidth: 1.1798 MHz</p> <p>Total Power: 8.63 dBm</p> <p>Transmit Freq Error: 3.417 kHz</p> <p>x dB Bandwidth: 1.295 MHz</p> <p>OBW Power: 99.00 %</p> <p>x dB: -20.00 dB</p>

11. CARRIERFREQUENCIES 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

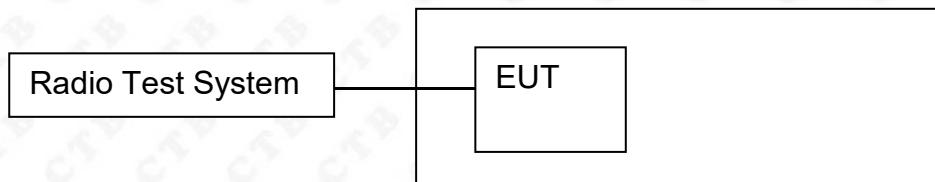






12. HOPPING CHANNEL NUMBER

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

