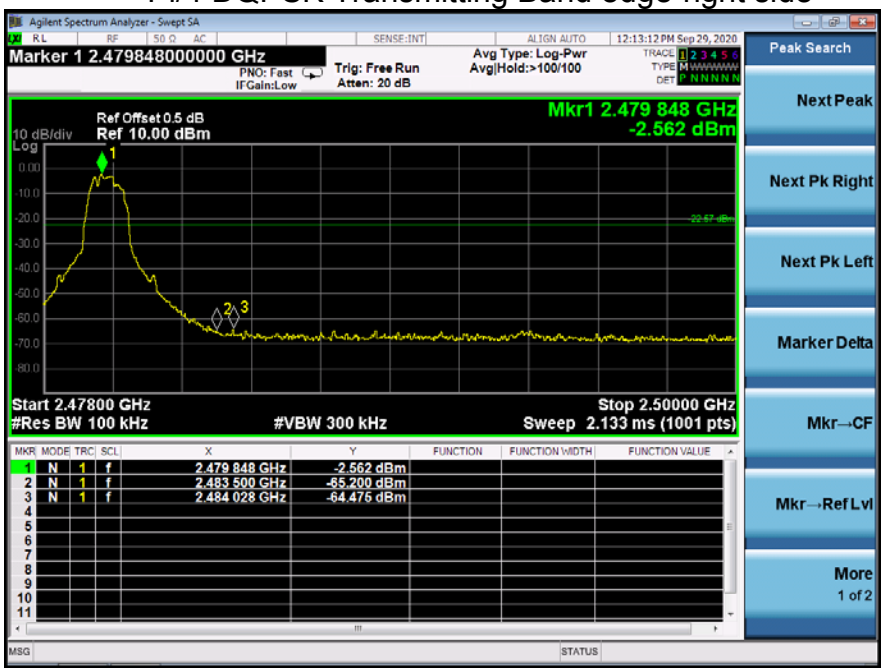
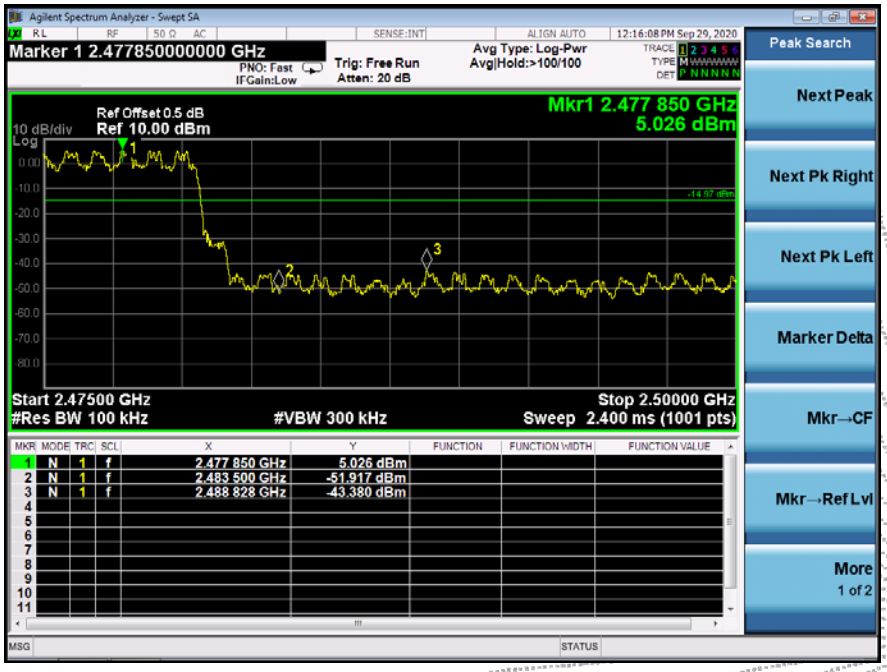
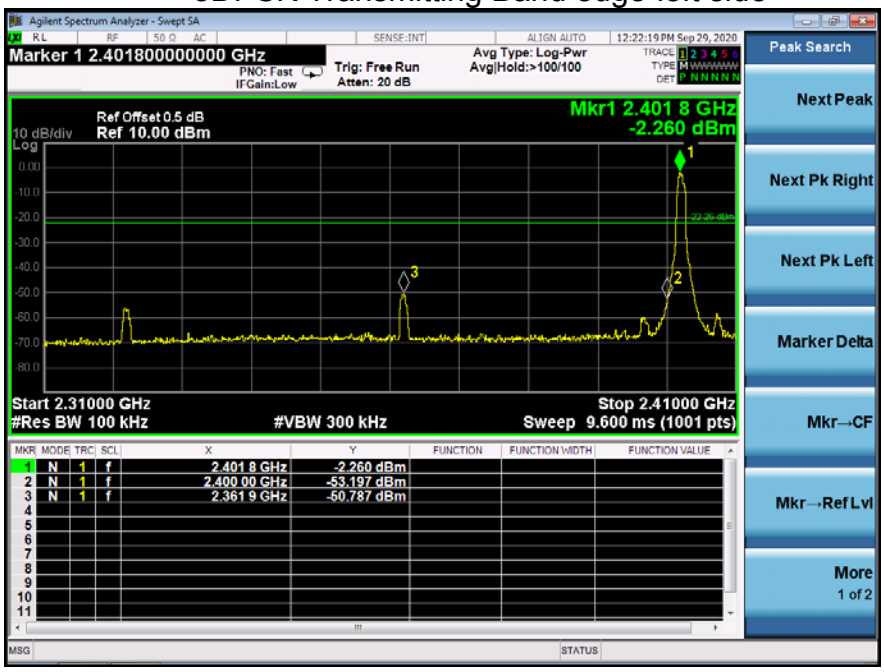
Pi/4 DQPSK Transmitting Band edge-right side



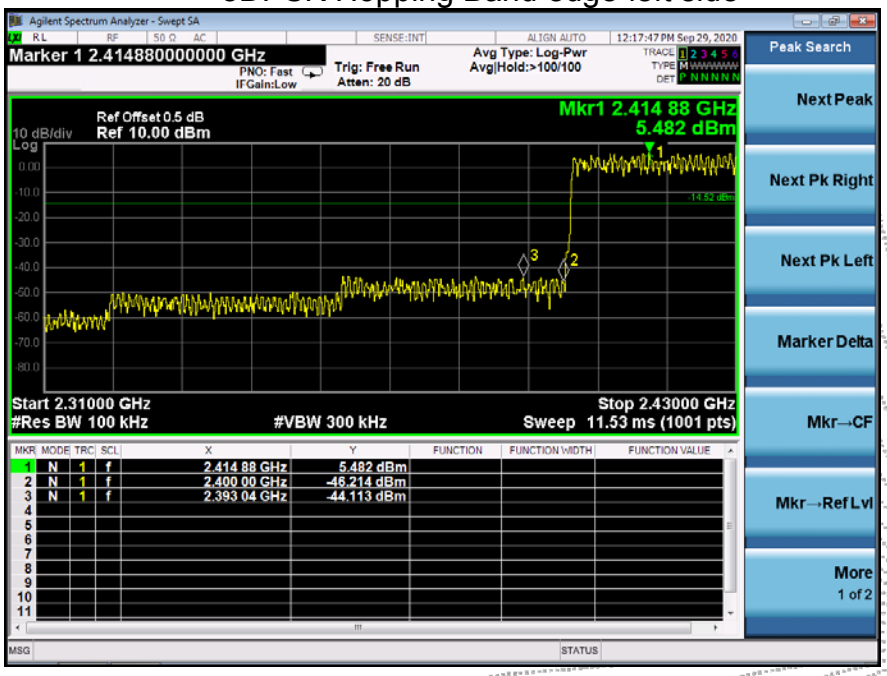
Pi/4 DQPSK Hopping Band edge-right side



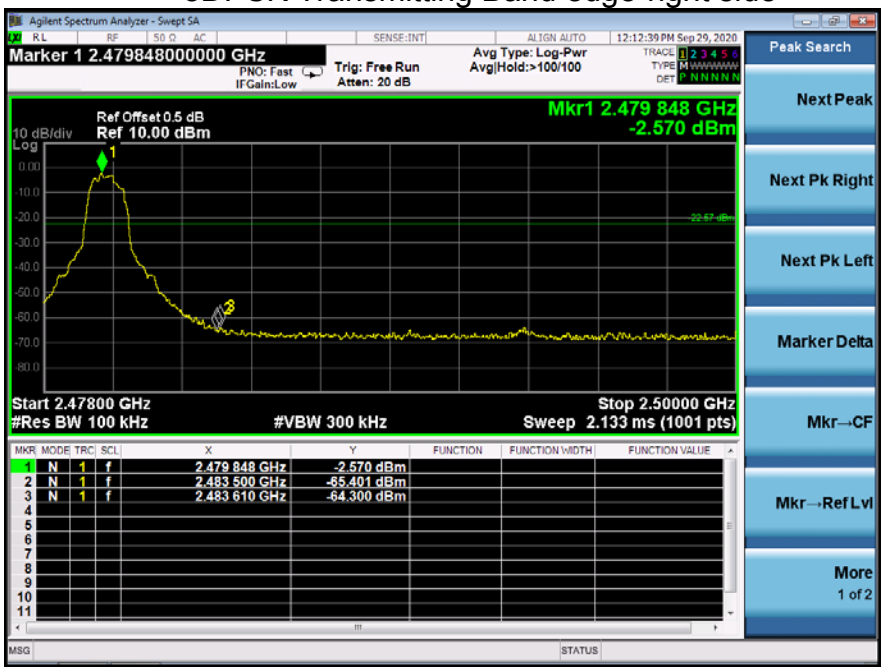
8DPSK Transmitting Band edge-left side



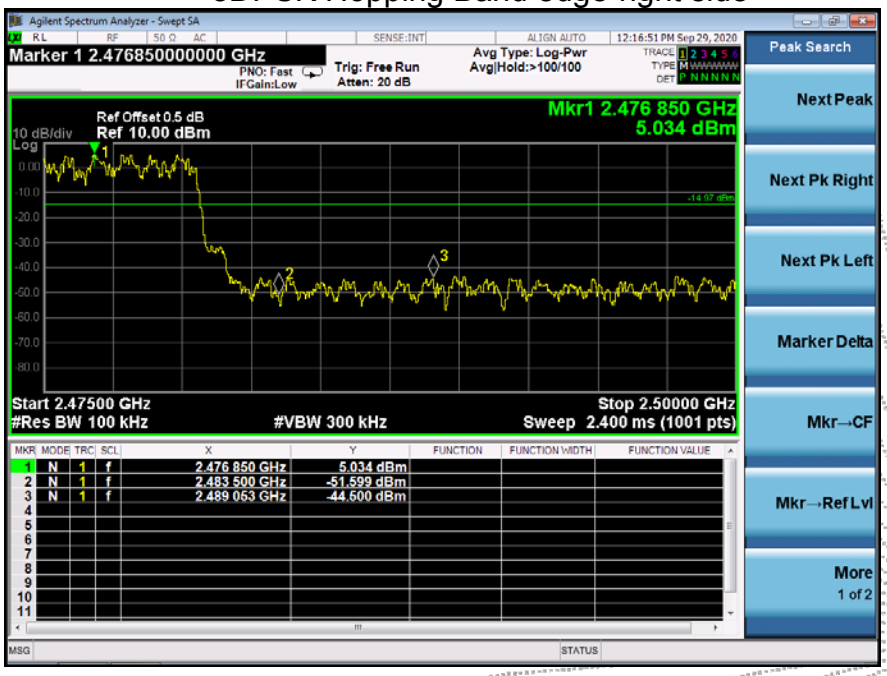
8DPSK Hopping Band edge-left side



8DPSK Transmitting Band edge-right side

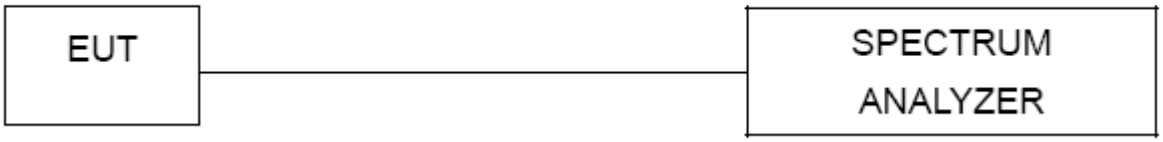


8DPSK Hopping Band edge-right side



10. 20 DB BANDWIDTH

10.1 Block Diagram Of Test Setup



10.2 Limit

N/A

10.3 Test procedure

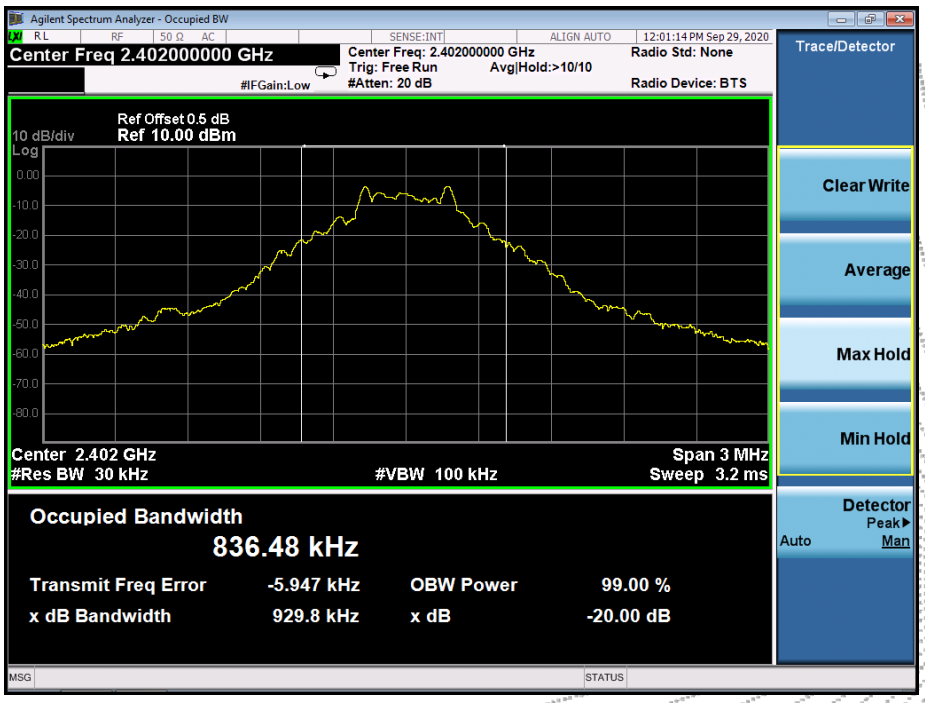
1. Set RBW = 30kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points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

10.4 Test Result

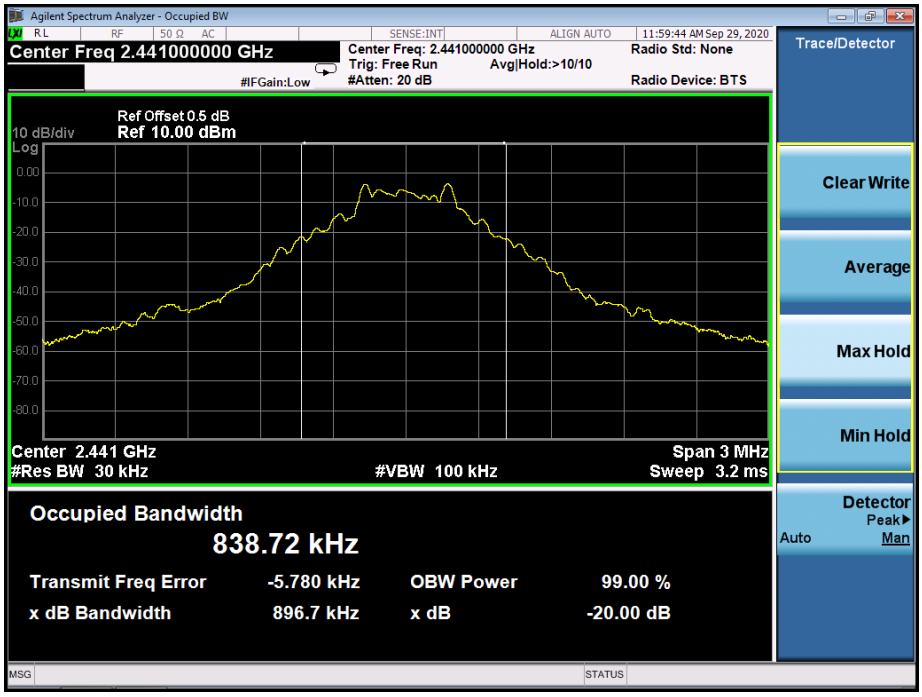
Temperature：	26℃	Relative Humidity：	54%
Test Voltage ：	DC 3.8V	Remark	N/A

Modulation	Test Channel	Bandwidth(MHz)
GFSK	Low	0.930
GFSK	Middle	0.897
GFSK	High	0.895
Pi/4 DQPSK	Low	1.285
Pi/4 DQPSK	Middle	1.285
Pi/4 DQPSK	High	1.287
8DPSK	Low	1.231
8DPSK	Middle	1.227
8DPSK	High	1.230

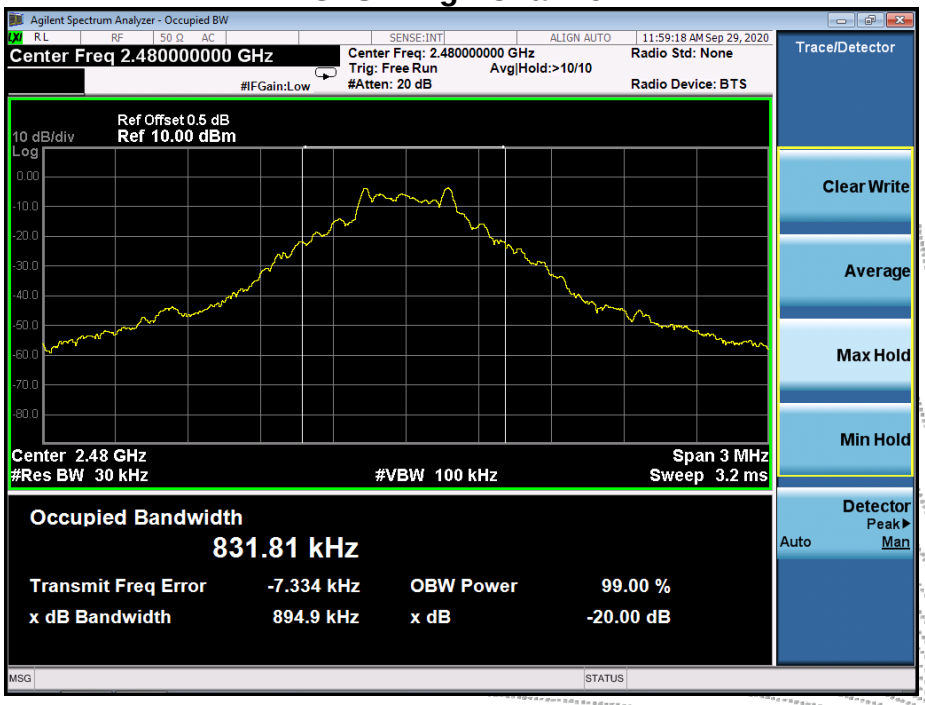
Test plots
GFSK Low Channel



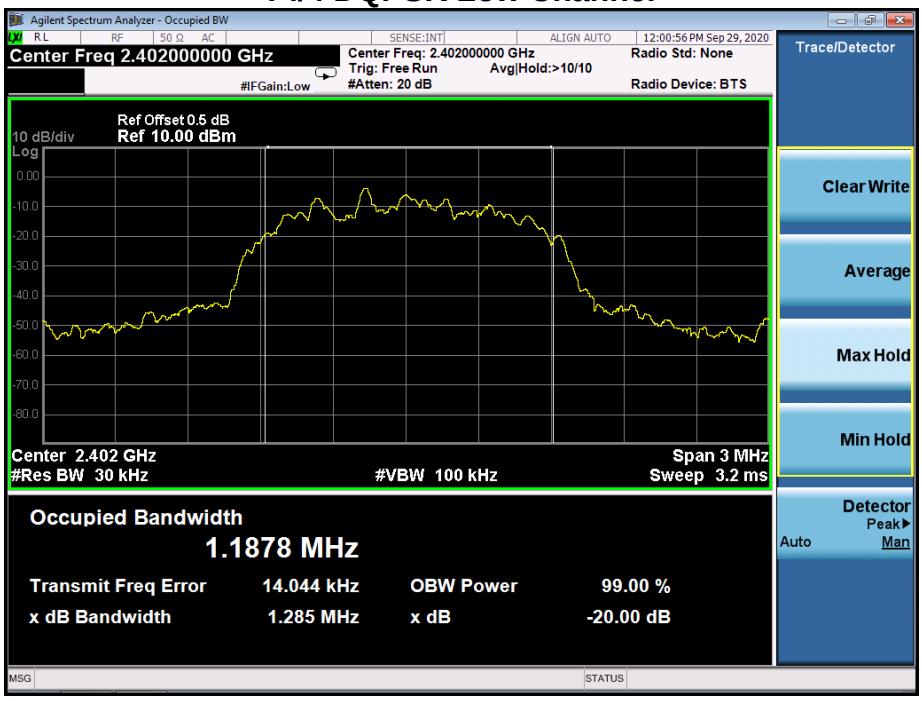
GFSK Middle Channel



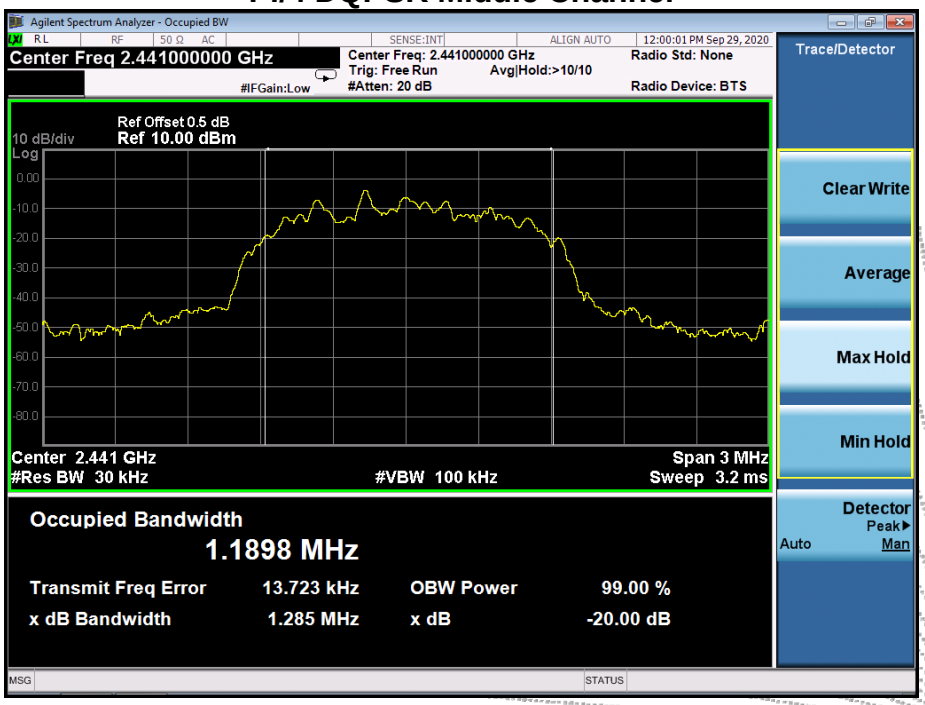
GFSK High Channel



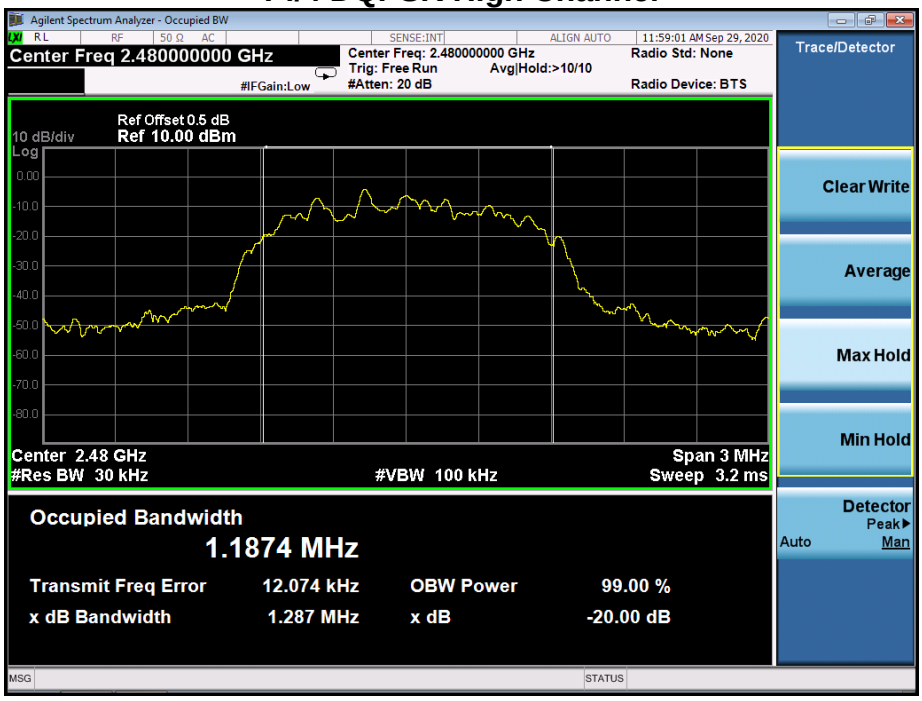
Pi/4 DQPSK Low Channel



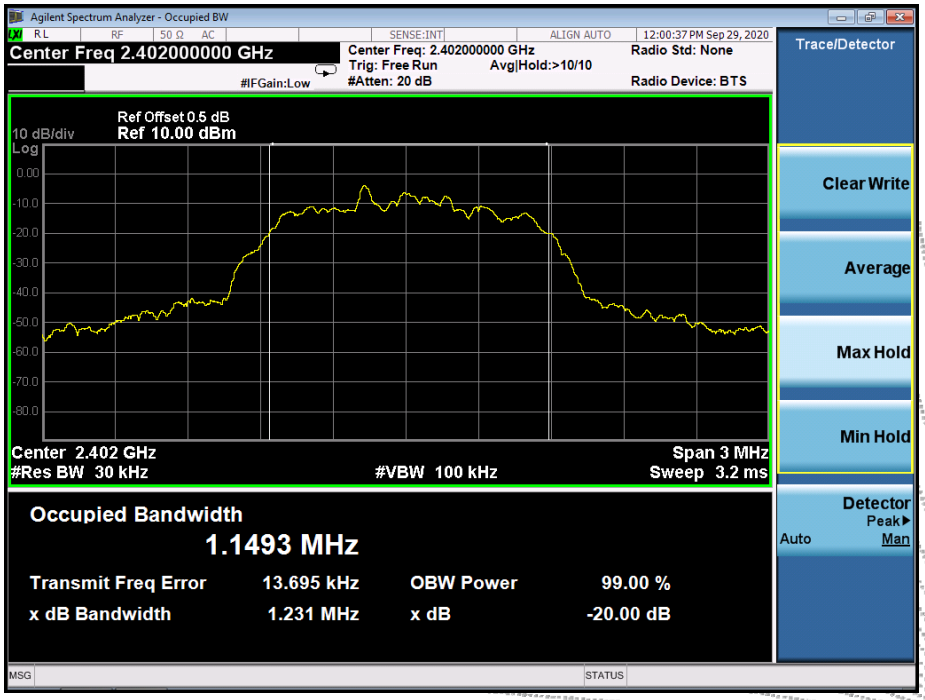
Pi/4 DQPSK Middle Channel



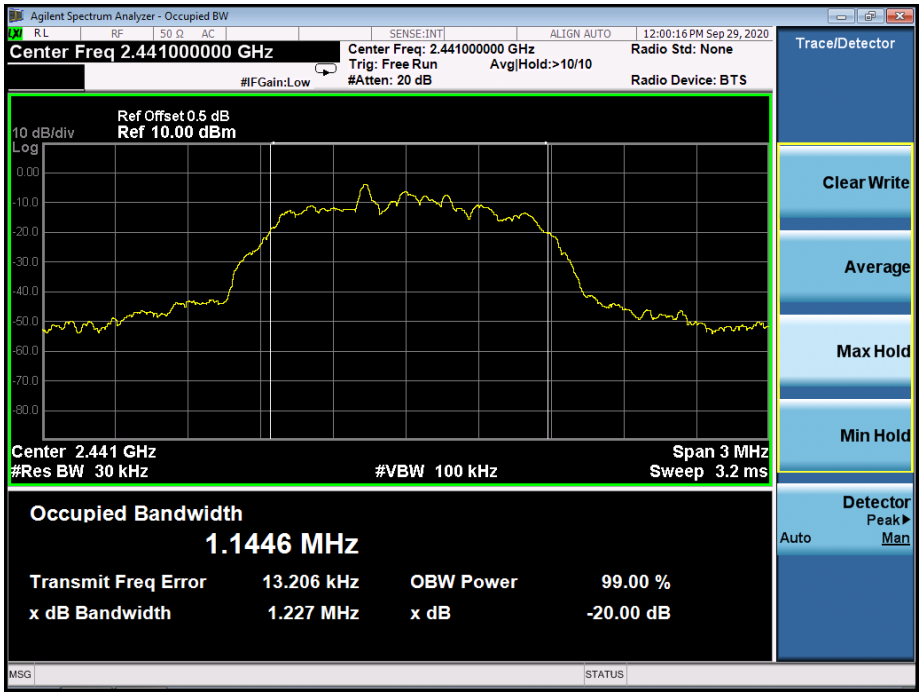
Pi/4 DQPSK High Channel



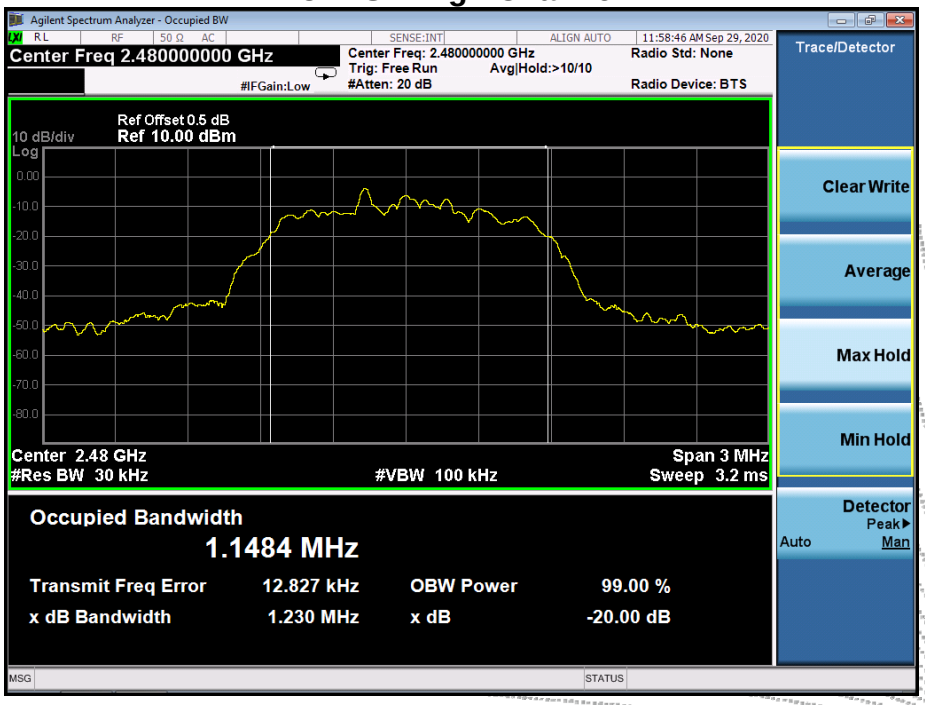
8DPSK Low Channel



8DPSK Middle Channel

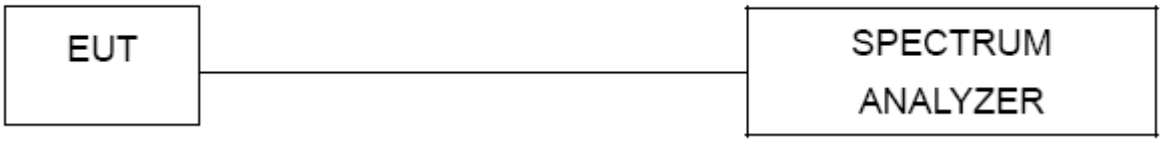


8DPSK High Channel



11. MAXIMUM PEAK OUTPUT POWER

11.1 Block Diagram Of Test Setup



11.2 Limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(1)	Peak Output Power	0.125 watt or 21dBm	2400-2483.5	PASS

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 = 3MHz. VBW = 3MHz. Sweep = auto; Detector Function = Peak.

3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

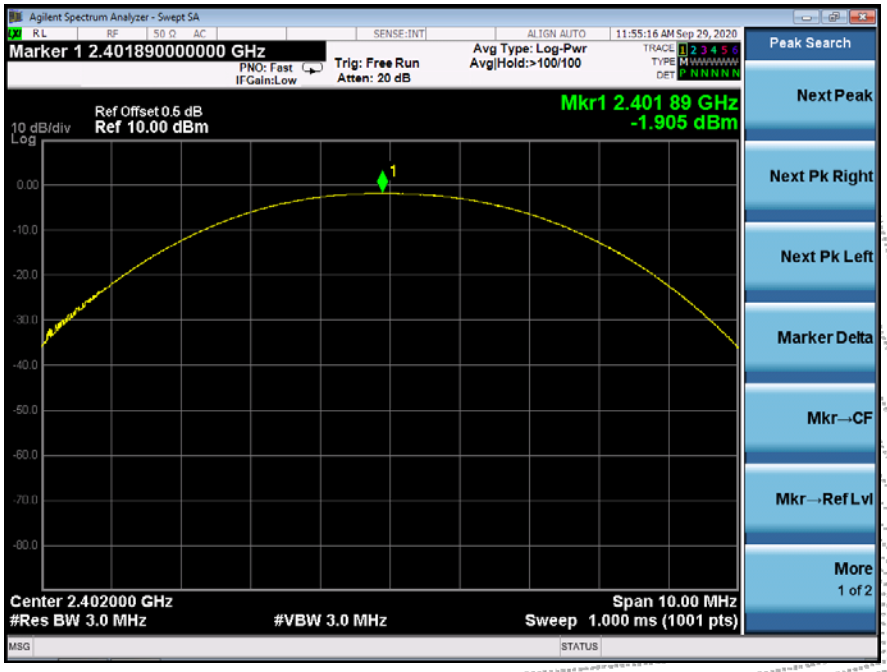
11.4 Test Result

Temperature：	26℃	Relative Humidity：	54%
Test Voltage ：	DC 3.8V	Remark:	N/A

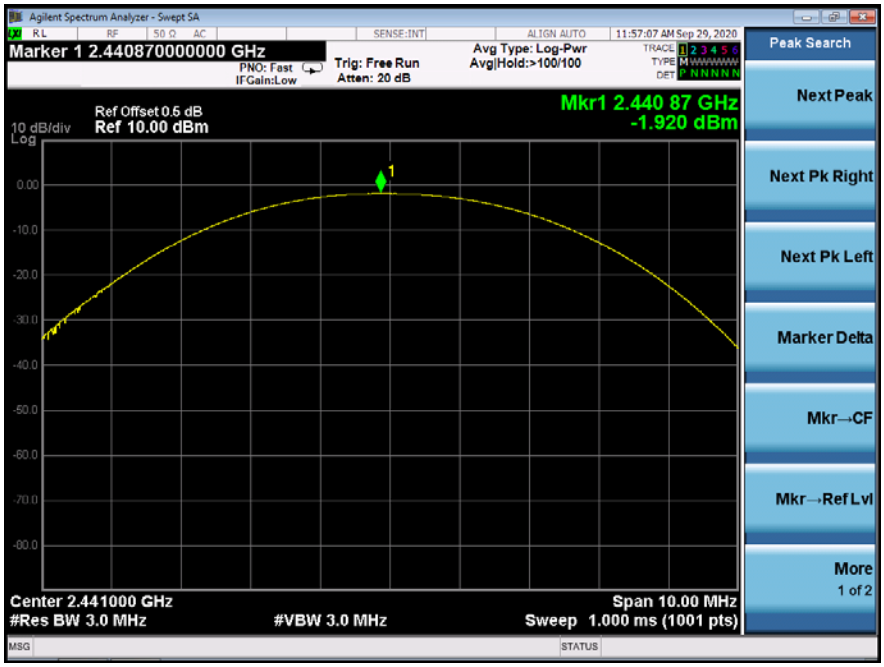
Modulation	Test Channel	Output Power (dBm)	Limit (dBm)
GFSK	Low	-1.905	21
GFSK	Middle	-1.920	21
GFSK	High	-1.880	21
Pi/4 DQPSK	Low	-0.594	21
Pi/4 DQPSK	Middle	-0.614	21
Pi/4 DQPSK	High	-0.678	21
8DPSK	Low	-0.380	21
8DPSK	Middle	-0.359	21
8DPSK	High	-0.391	21

Test plots

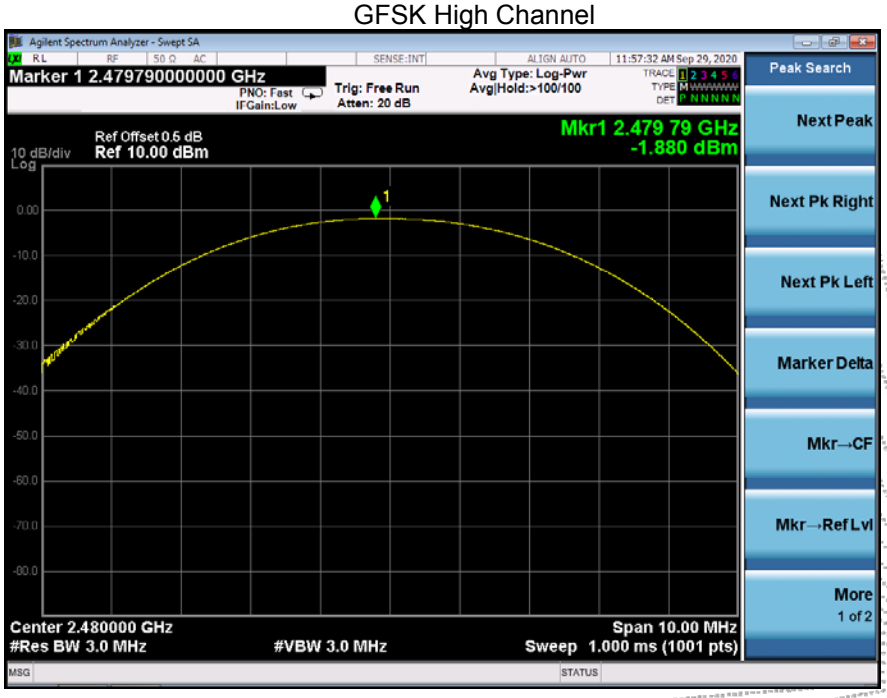
GFSK Low Channel



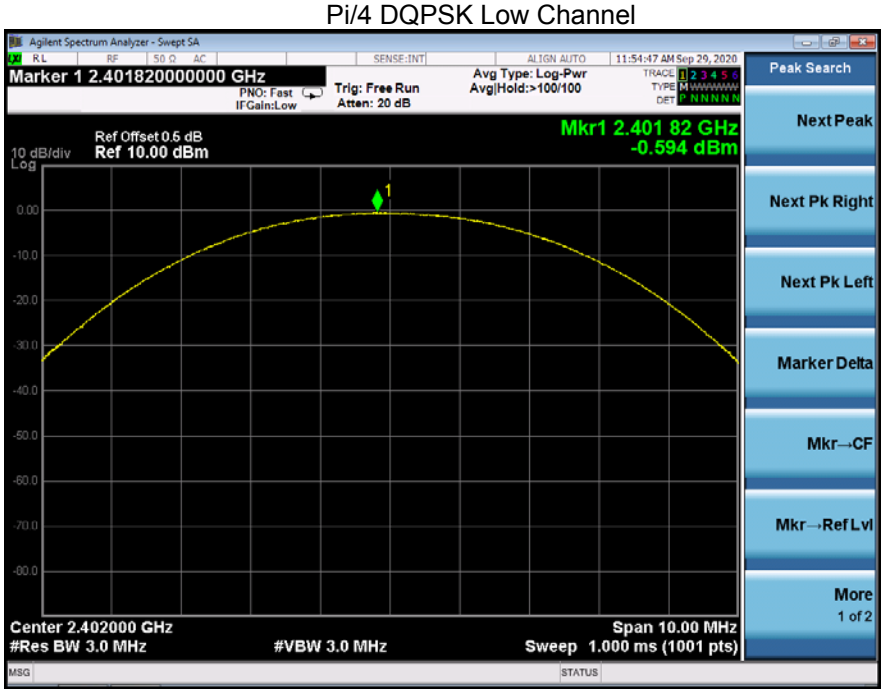
GFSK Middle Channel



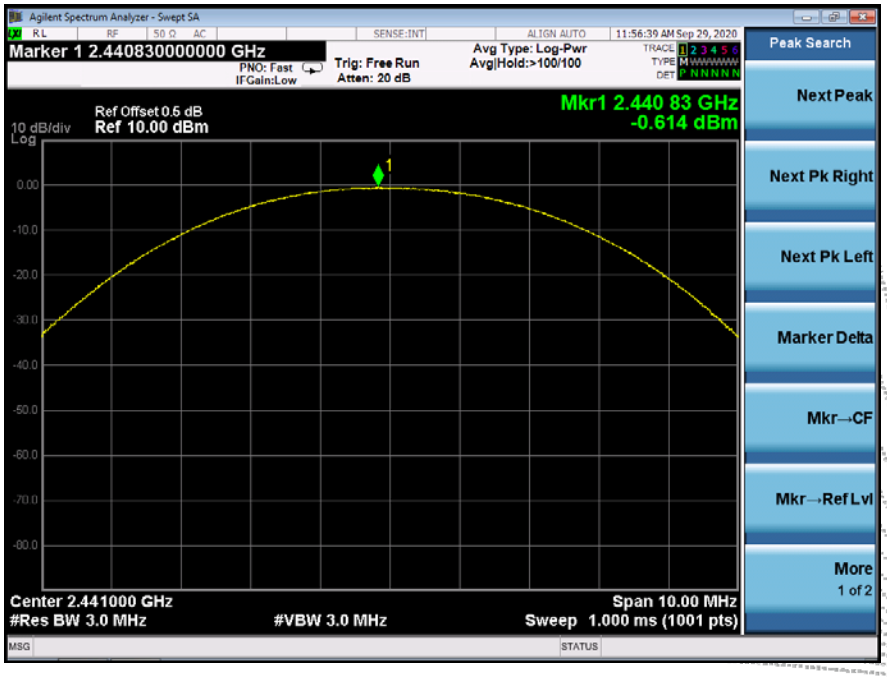
GFSK High Channel



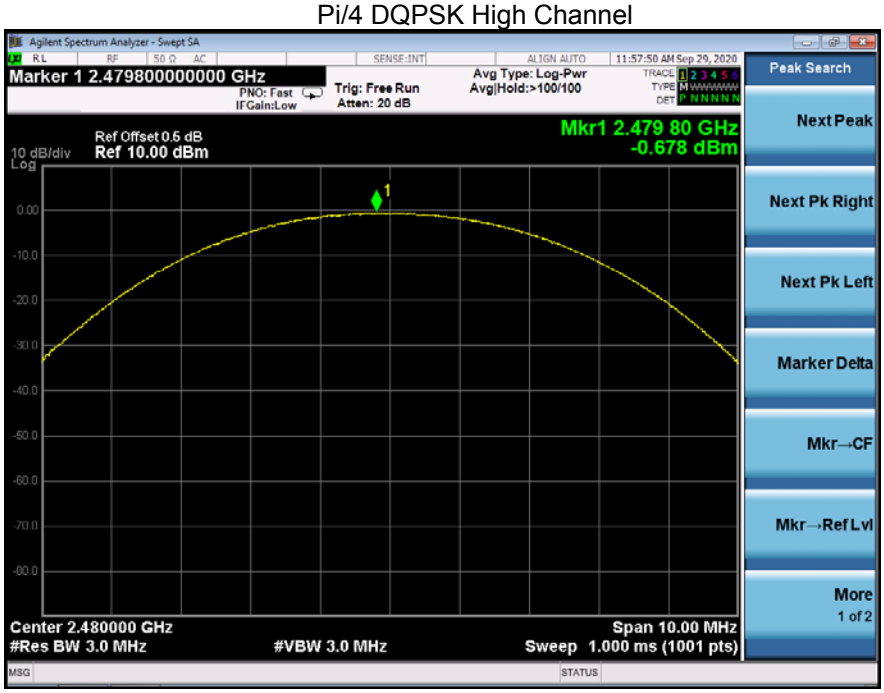
Pi/4 DQPSK Low Channel



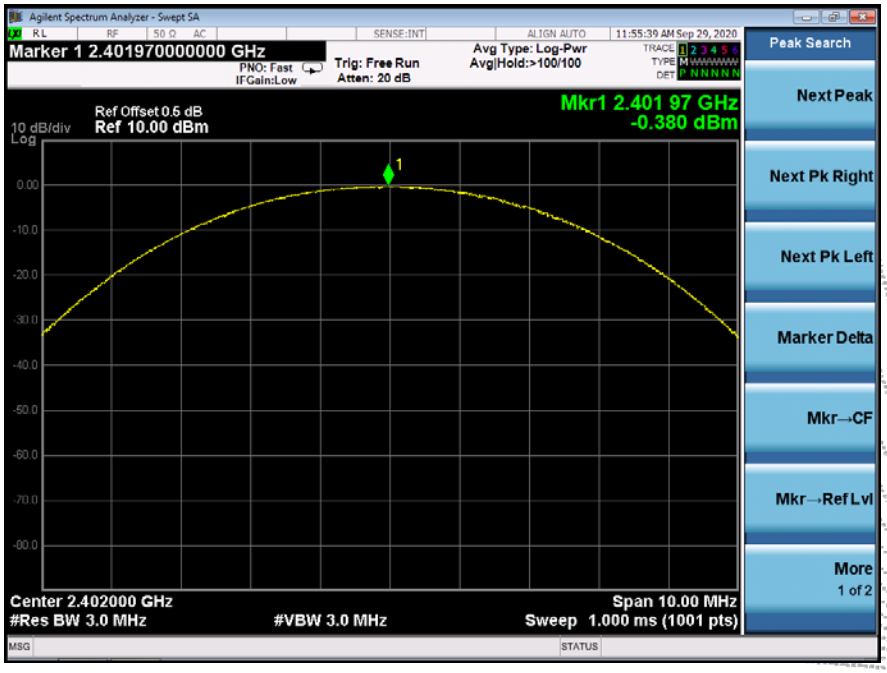
Pi/4 DQPSK Middle Channel



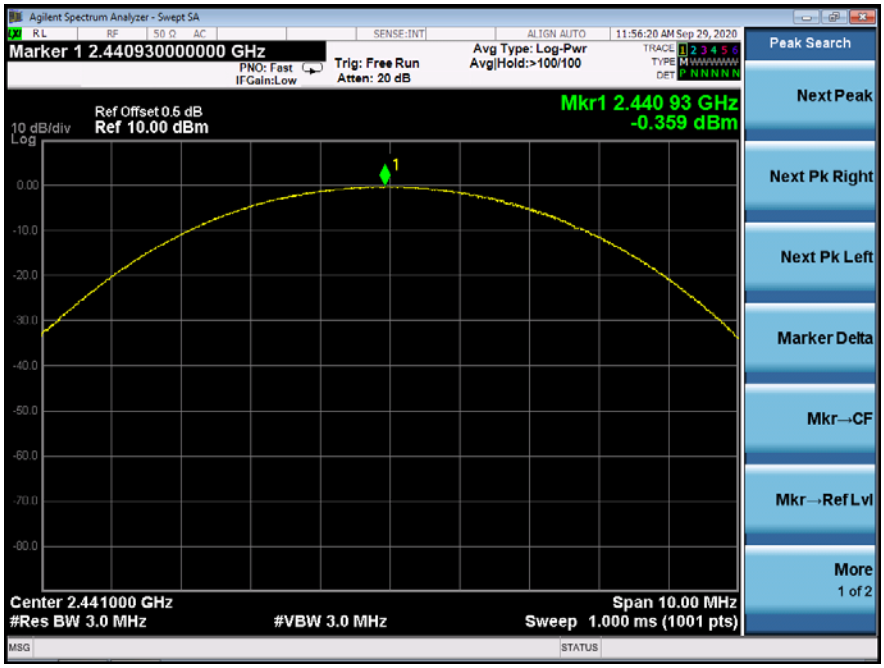
Pi/4 DQPSK High Channel



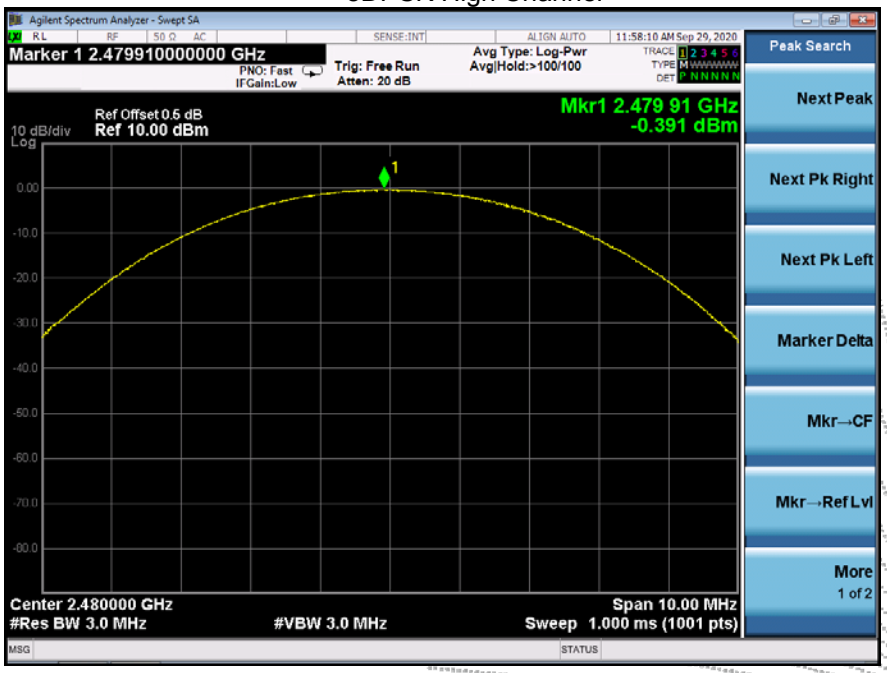
8DPSK Low Channel



8DPSK Middle Channel



8DPSK High Channel



12. HOPPING CHANNEL SEPARATION

12.1 Block Diagram Of Test Setup

12.2 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.

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 = 30kHz. VBW = 100kHz , Span = 2.0MHz. 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.

12.4 Test Result

Modulation	Test Channel	Separation (MHz)	Limit(MHz)	Result
GFSK	Low	0.996	0.620	PASS
GFSK	Middle	0.994	0.598	PASS
GFSK	High	0.988	0.597	PASS
Pi/4 DQPSK	Low	1.000	0.857	PASS
Pi/4 DQPSK	Middle	1.010	0.857	PASS
Pi/4 DQPSK	High	0.996	0.858	PASS
8DPSK	Low	0.998	0.821	PASS
8DPSK	Middle	1.002	0.818	PASS
8DPSK	High	1.004	0.820	PASS

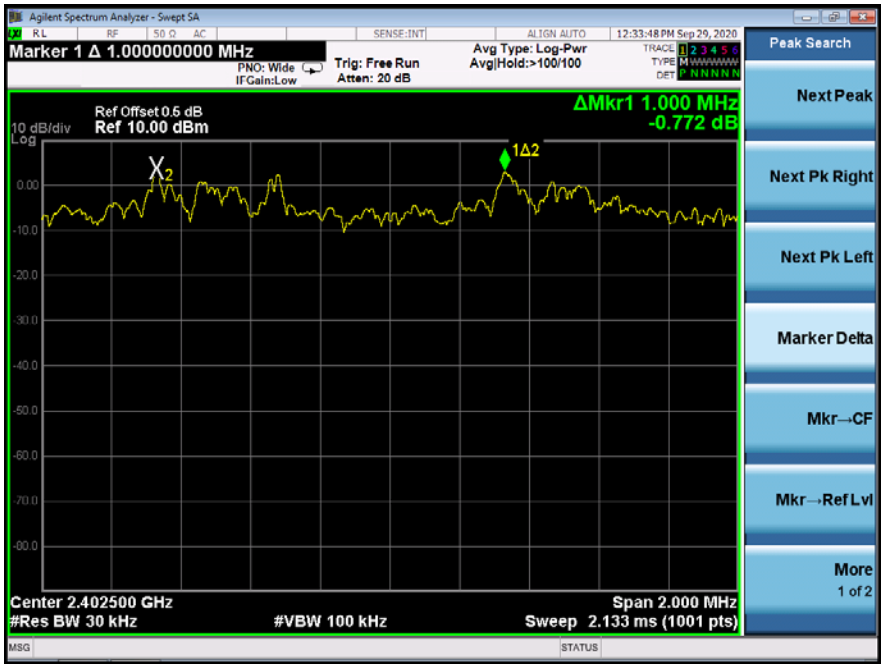
Test plots

GFSK Low Channel

GFSK Middle Channel

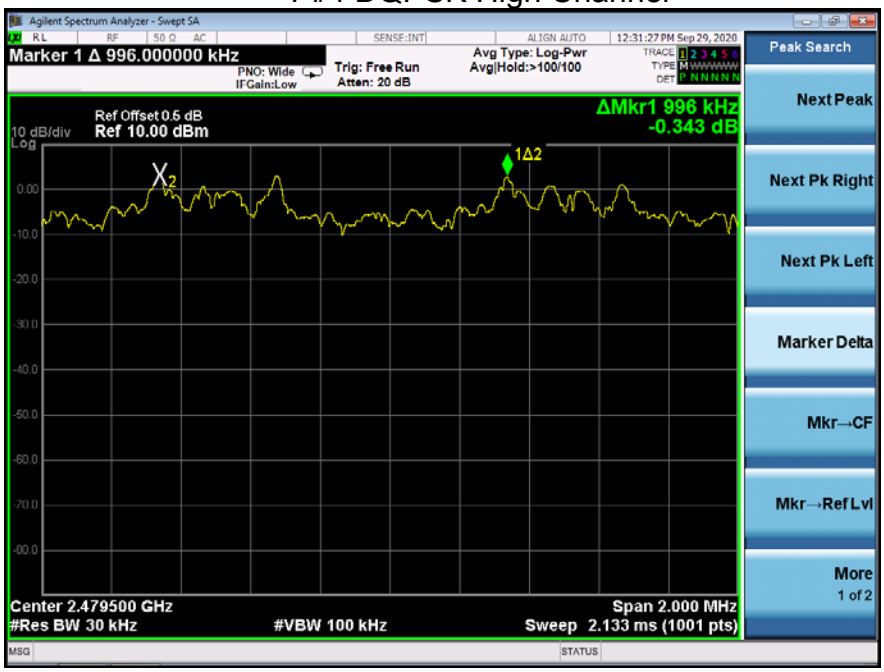
GFSK High Channel

Pi/4 DQPSK Low Channel



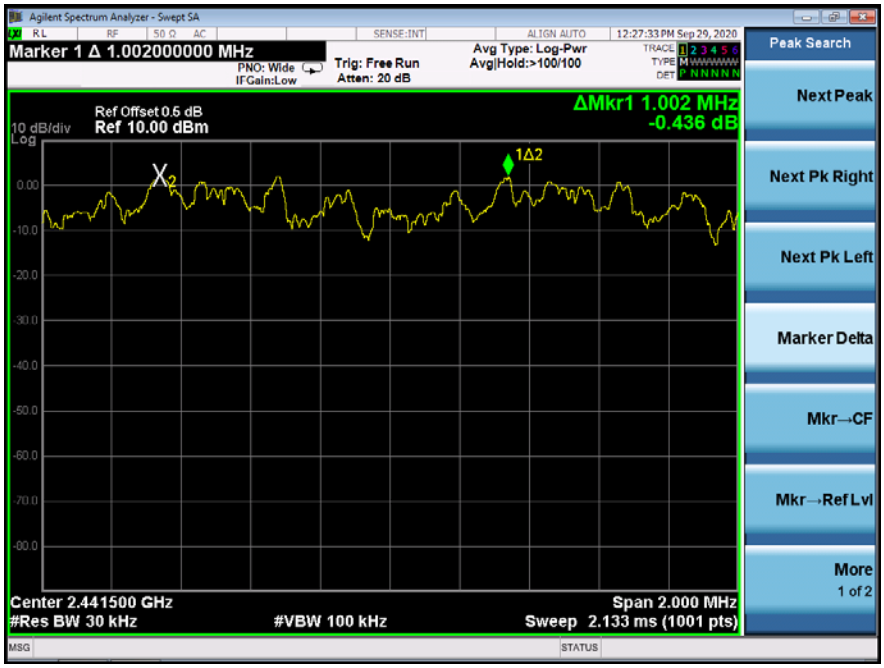
Pi/4 DQPSK Middle Channel

Pi/4 DQPSK High Channel

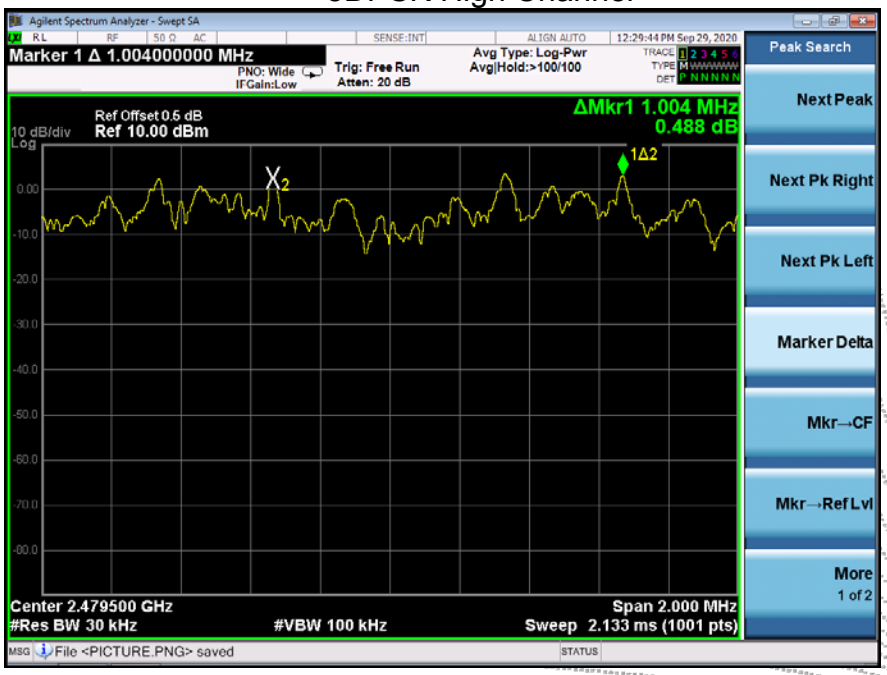


8DPSK Low Channel

8DPSK Middle Channel

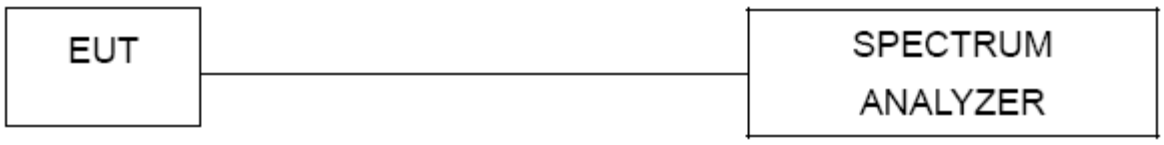


8DPSK High Channel



13. NUMBER OF HOPPING FREQUENCY

13.1 Block Diagram Of Test Setup



13.2 Limit

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

13.3 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;