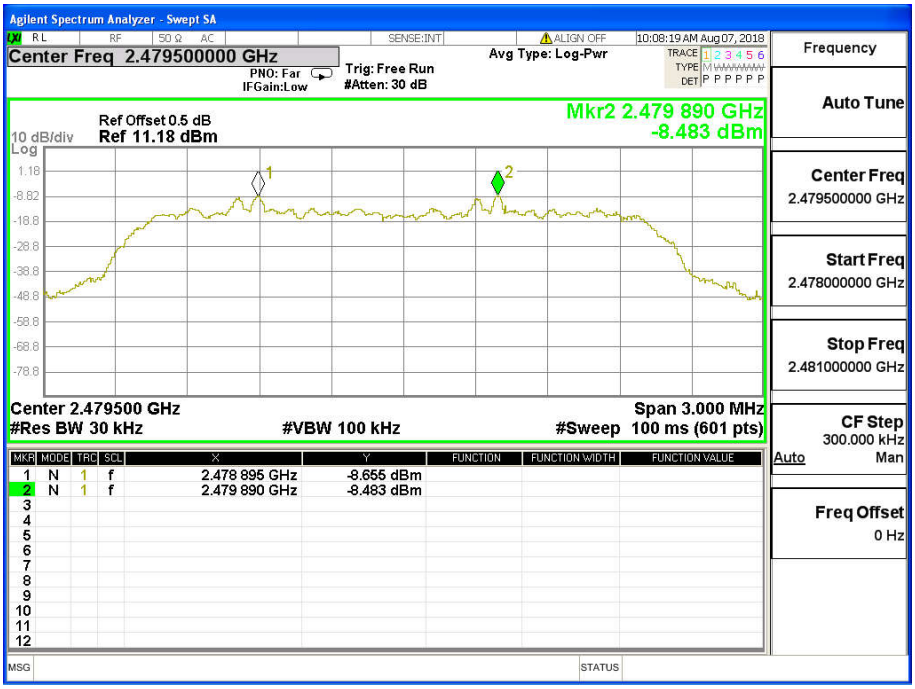
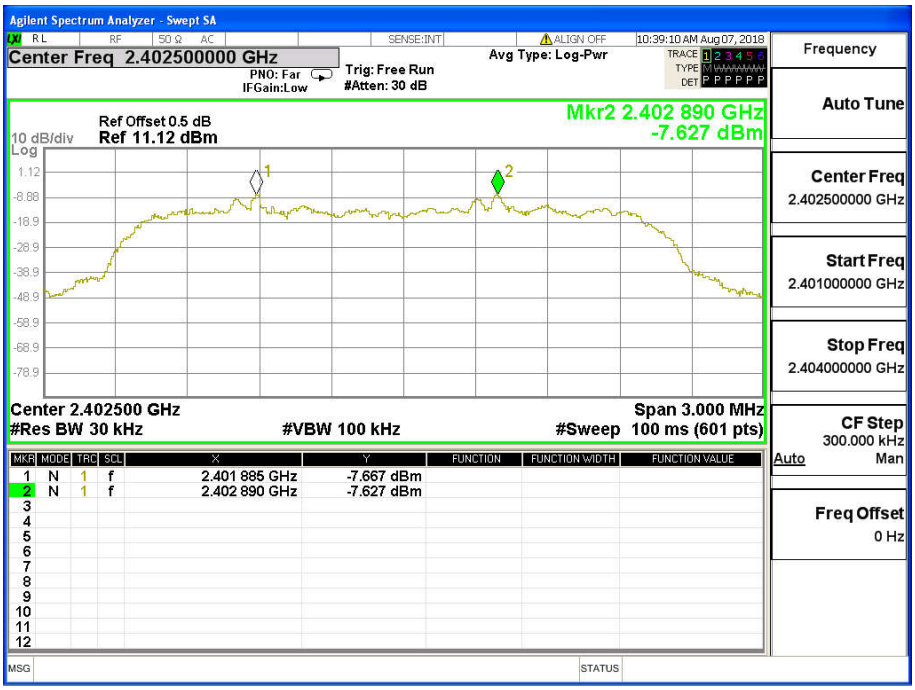
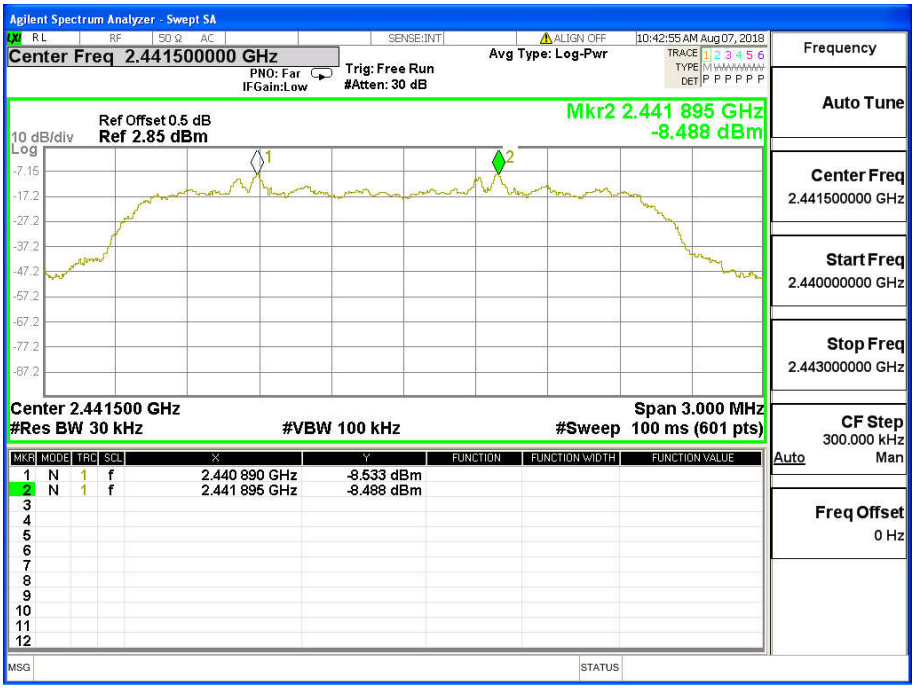
π/4-DQPSK mode-CH78



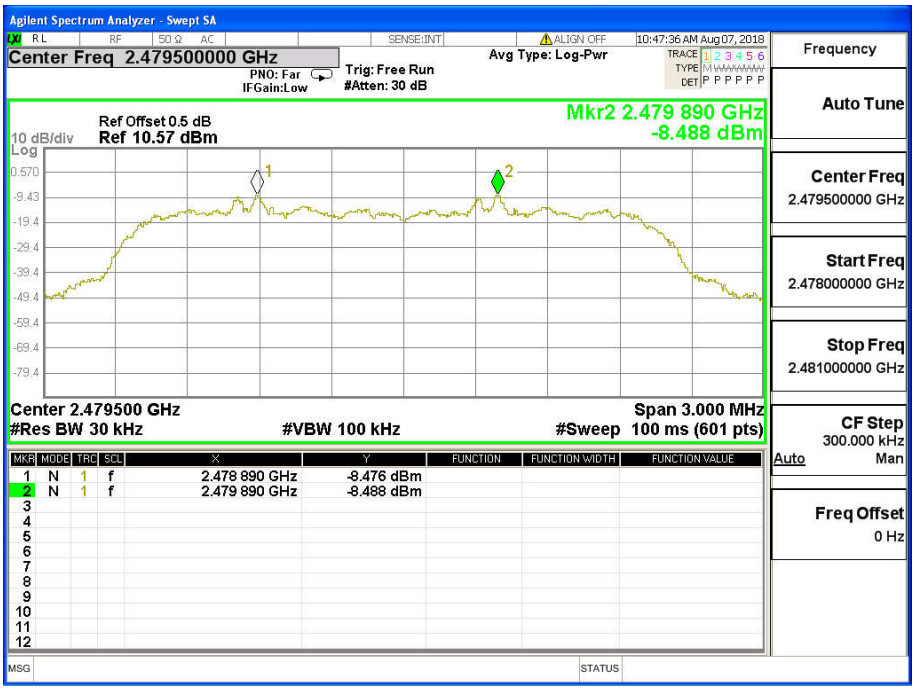
8DPSK mode-CH00



8DPSK mode-CH39



8DPSK mode-CH78

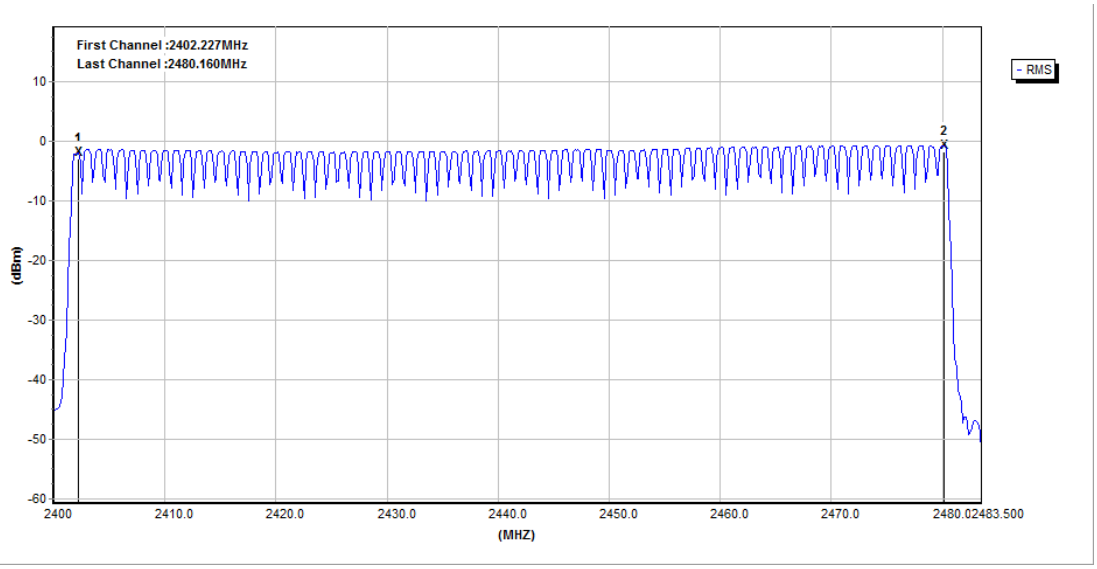


HOPPING CHANNEL

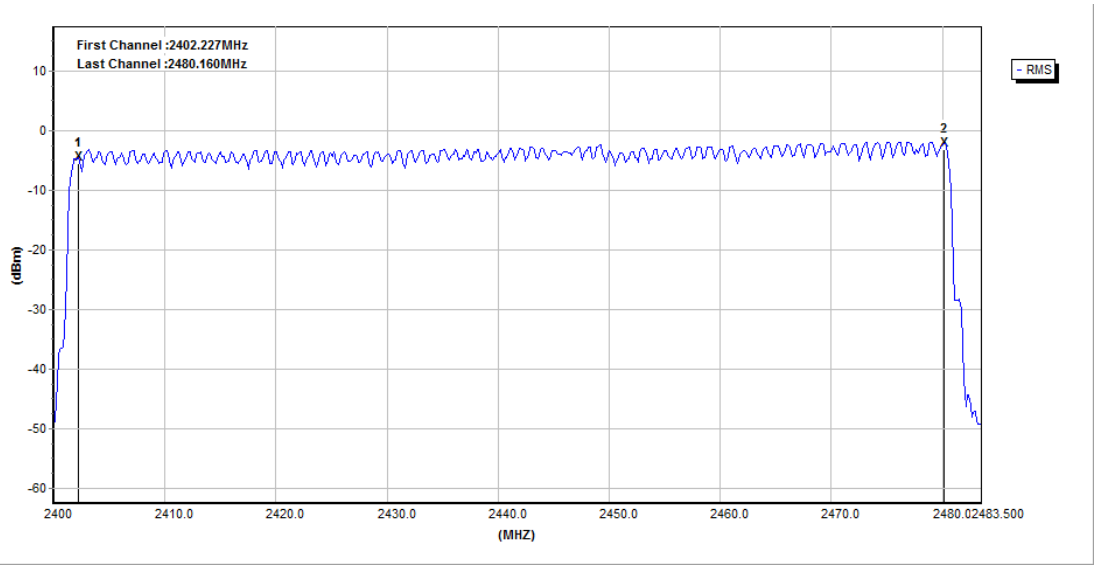
Mode	Quantity of Hopping Channel	Limit	Results
GFSK, π/4-DQPSK,8DPSK	79	>15	Pass

Test plots

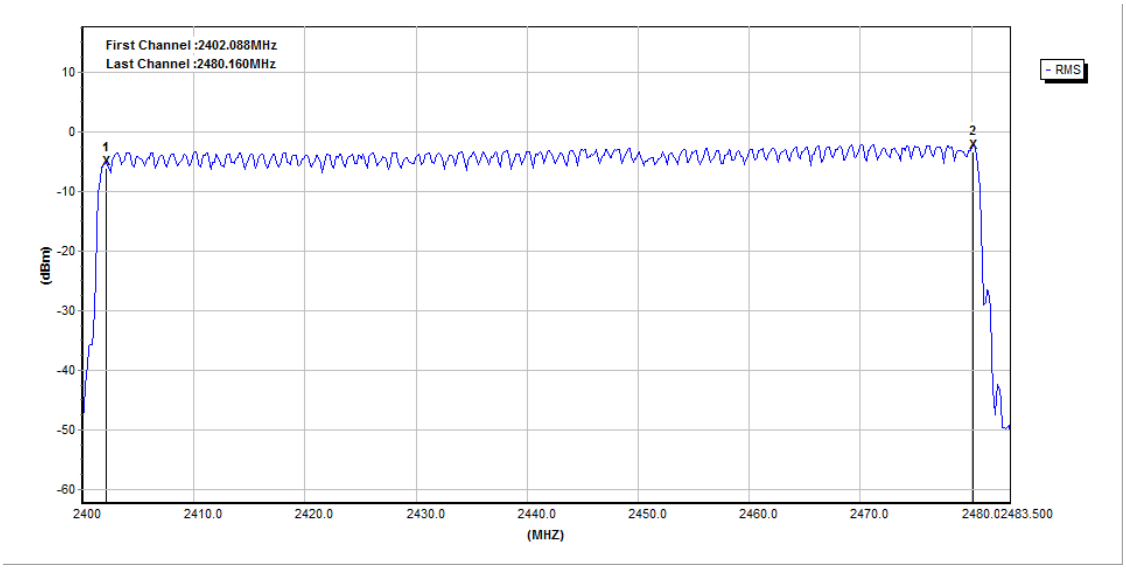
GFSK mode



π/4-DQPSK mode



8DPSK mode

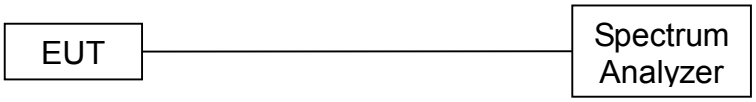

First Channel :2402.088MHz
Last Channel :2480.160MHz
RMS
10
0
-10
-20
-30
-40
-50
-60
(dBm)
1
2
2400
2410.0
2420.0
2430.0
2440.0
2450.0
2460.0
2470.0
2480.02483.500
(MHZ)

5.7 Dwell time

5.7.1 Limit

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
15.247(a)(a)	Dwell time	0.4 sec	2400-2483.5

5.7.2 Test setup



5.7.3 Test procedure

(1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
(2) Spectrum Setting: RBW=1MHz, VBW=1MHz, Span=0Hz, Detector=Peak
(3) Use video trigger with the trigger level set to enable triggering only on full pulses.
(4) Sweep Time is more than once pulse time.
(5) Set the center frequency on any frequency would be measure and set the frequency span to zero span.
(6) Measure the maximum time duration of one single pulse.
(7) Set the EUT for packet transmitting.
(8) Measure the maximum time duration of one single pulse.
(9) The EUT was set to the Hopping Mode for Dwell Time Test

5.7.4 Test results

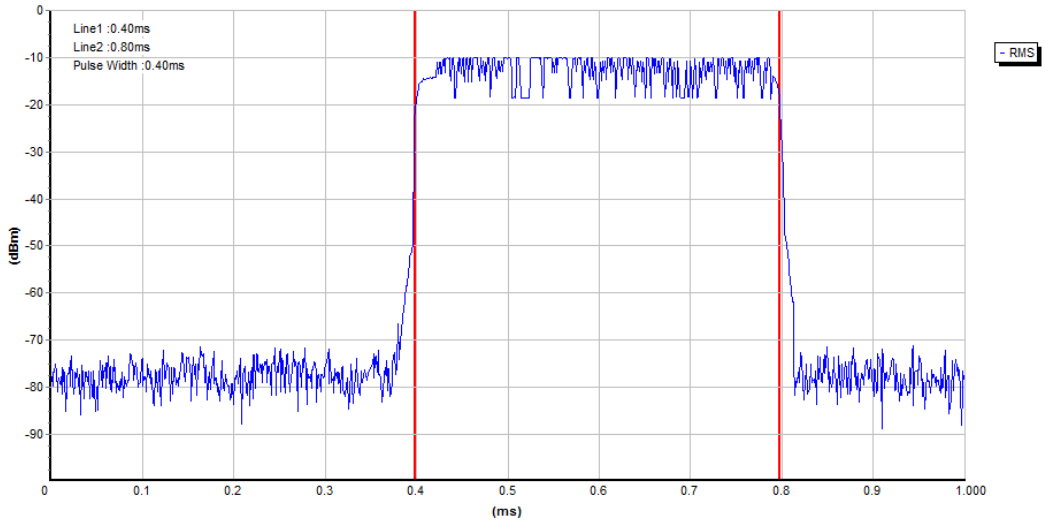
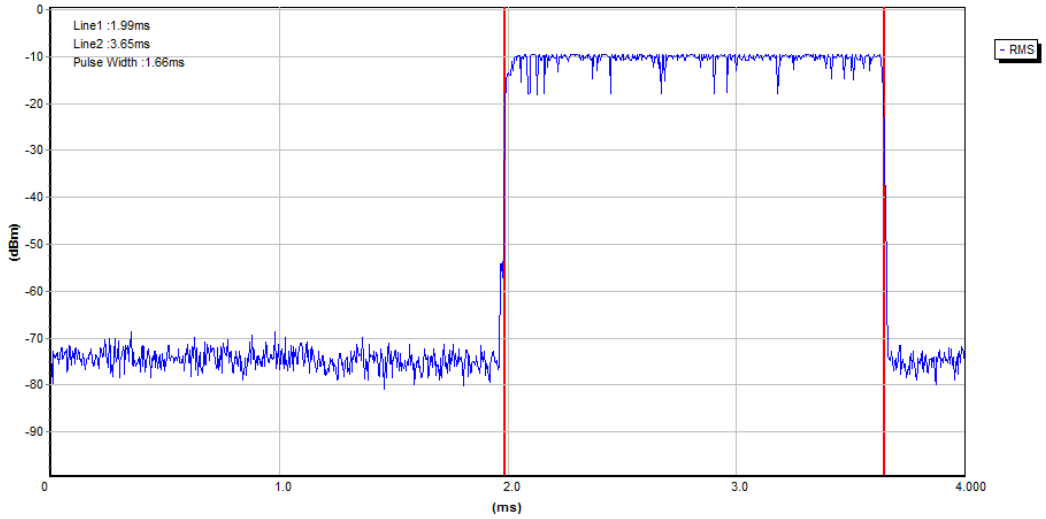
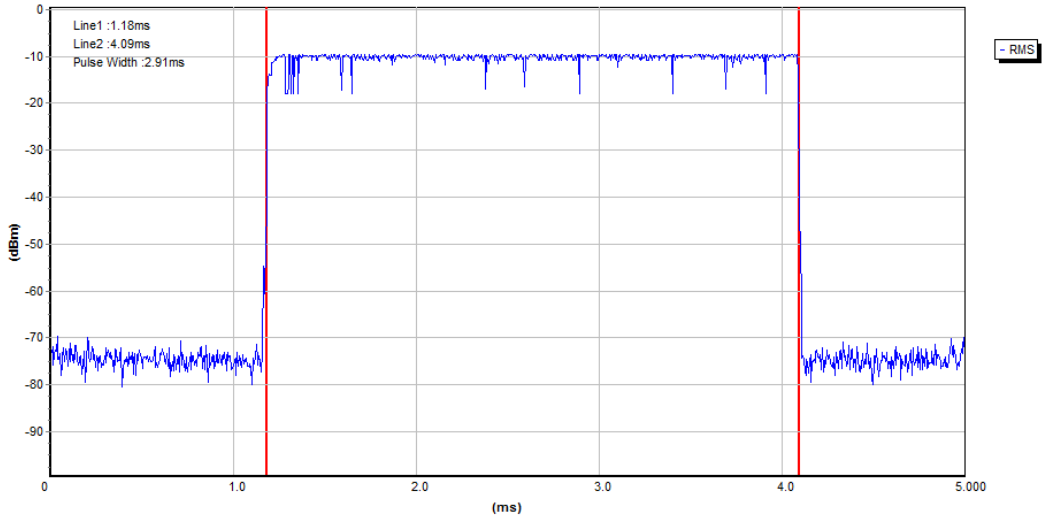
Test data

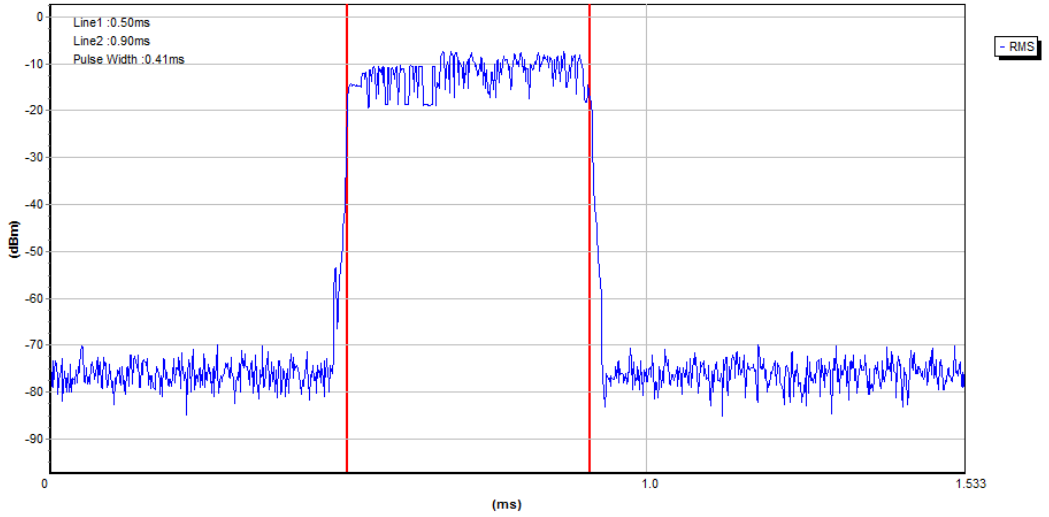
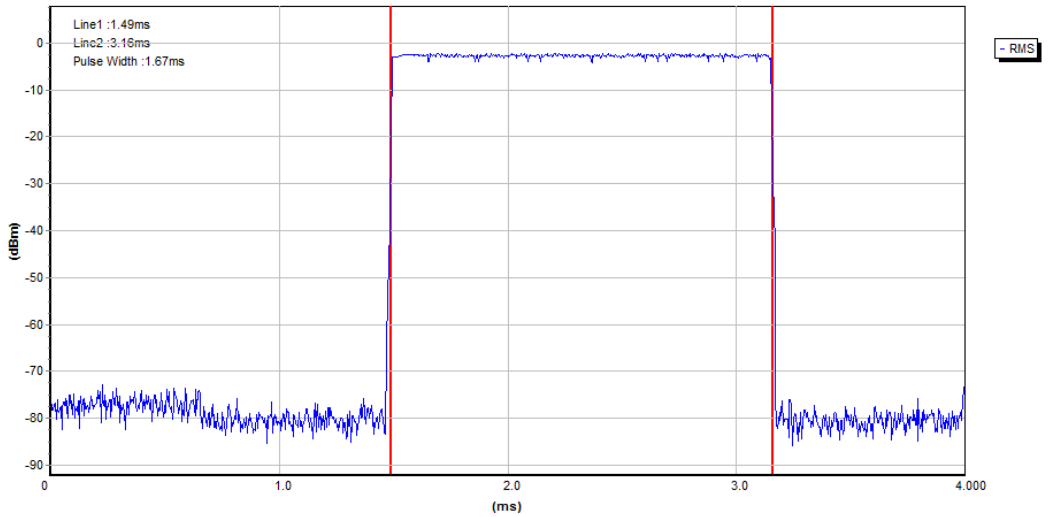
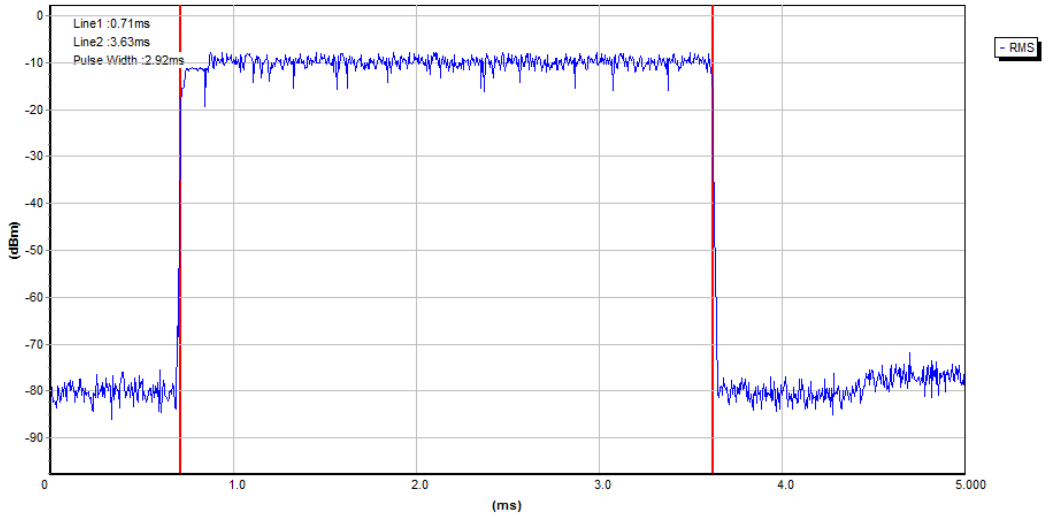
EUT：	XOUNDBAR W	Model Name ：	XAM37
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	GFSK, π/4-DQPSK,8DPSK/CH39		

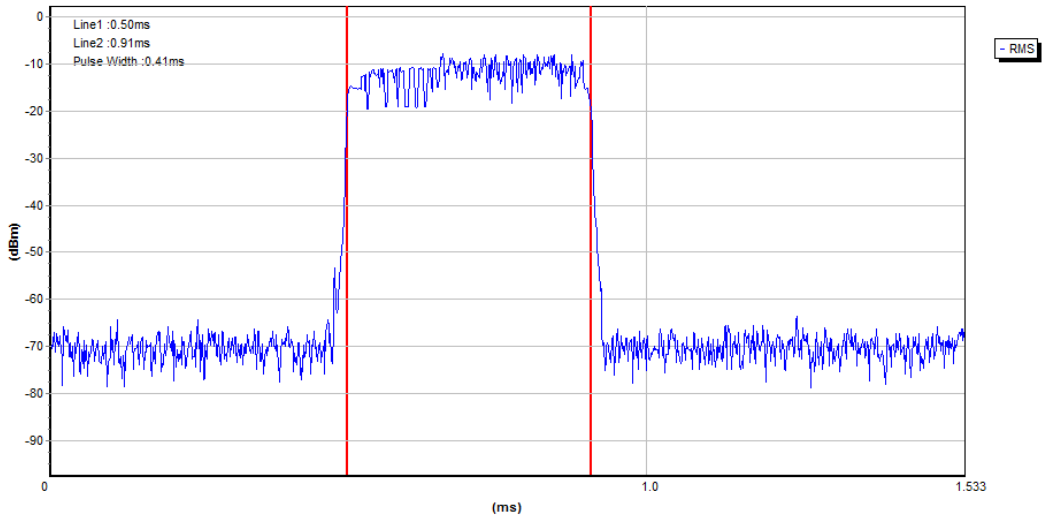
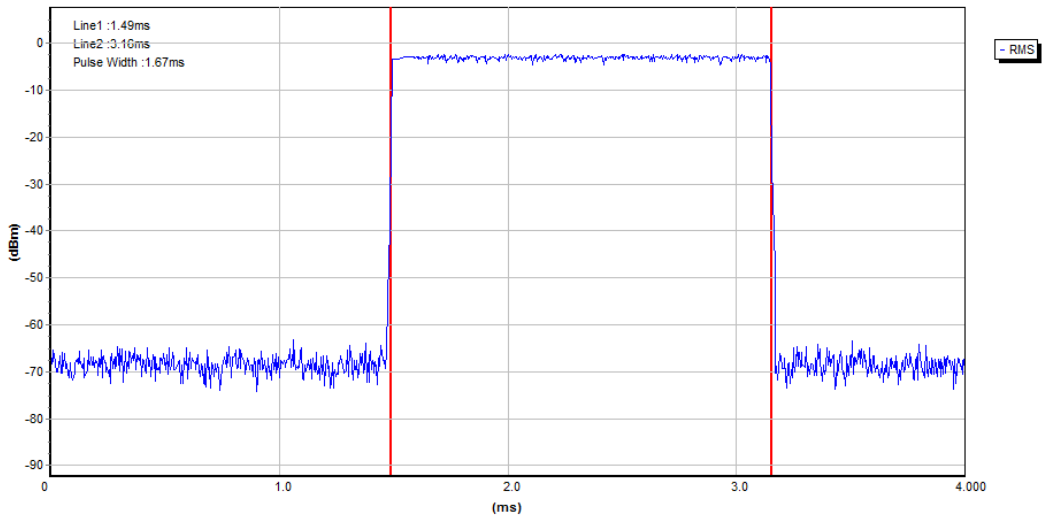
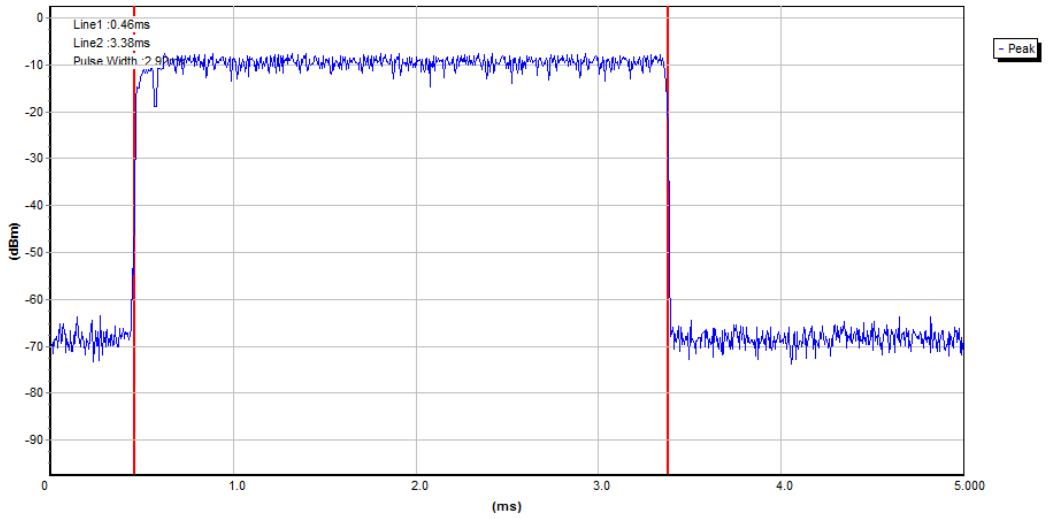
Mode	Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (ms)	Limit(s)	Conclusion
GFSK	DH1	2441	0.40	128.00	<0.4	Pass
	DH3	2441	1.66	265.60	<0.4	Pass
	DH5	2441	2.91	310.40	<0.4	Pass
π/4 DQPSK	2DH1	2441	0.41	131.20	<0.4	Pass
	2DH3	2441	1.67	267.20	<0.4	Pass
	2DH5	2441	2.92	311.47	<0.4	Pass
8DPSK	3DH1	2441	0.41	131.20	<0.4	Pass
	3DH3	2441	1.67	267.20	<0.4	Pass
	3DH5	2441	2.92	311.47	<0.4	Pass

*Note1: A period time = 0.4 (s) * 79 = 31.6(s)*
Note2:
*DH1 time slot = Pulse Duration * (1600/(2*79)) * A period time*
*DH3 time slot = Pulse Duration * (1600/(4*79)) * A period time*
*DH5 time slot = Pulse Duration * (1600/(6*79)) * A period time*
Note3: For GFSK, π/4-DQPSK and 8DPSK: The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

Test plots

Modulation mode	GFSK mode
DH1	
DH3	
DH5	

Modulation mode	π/4-DQPSK mode
2-DH1	
2-DH3	
2-DH5	

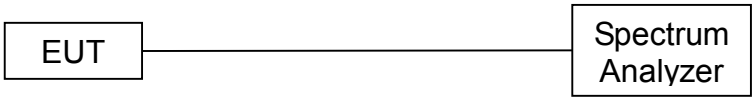
Modulation mode	8DPSK mode
3-DH1	
3-DH3	
3-DH5	

5.8 Conducted spurious emission and bandedge

5.8.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

5.8.2 Test setup



5.8.3 Test procedure

a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
b) Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
c) Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
e) Repeat above procedures until all measured frequencies were complete.

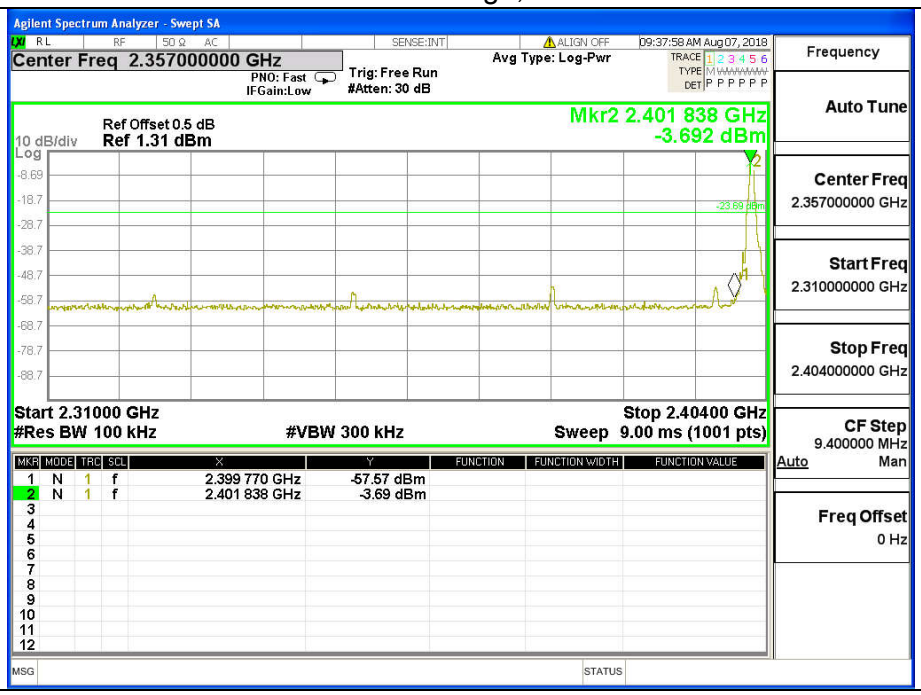
5.8.4 Test results

Test data

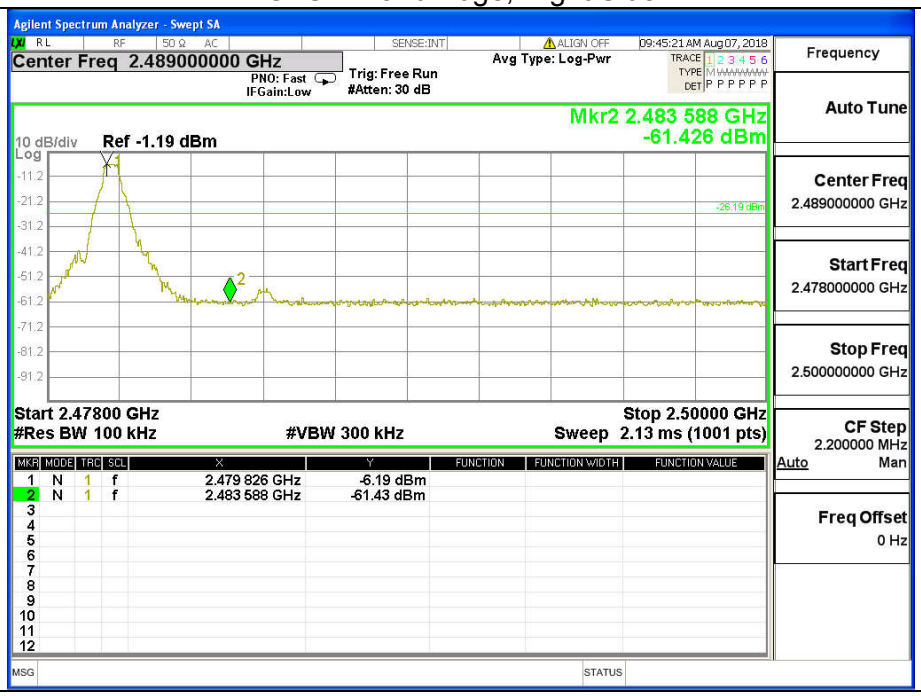
EUT :	XOUNDBAR W	Model Name :	XAM37
Temperature :	25 ℃	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V

Test plots

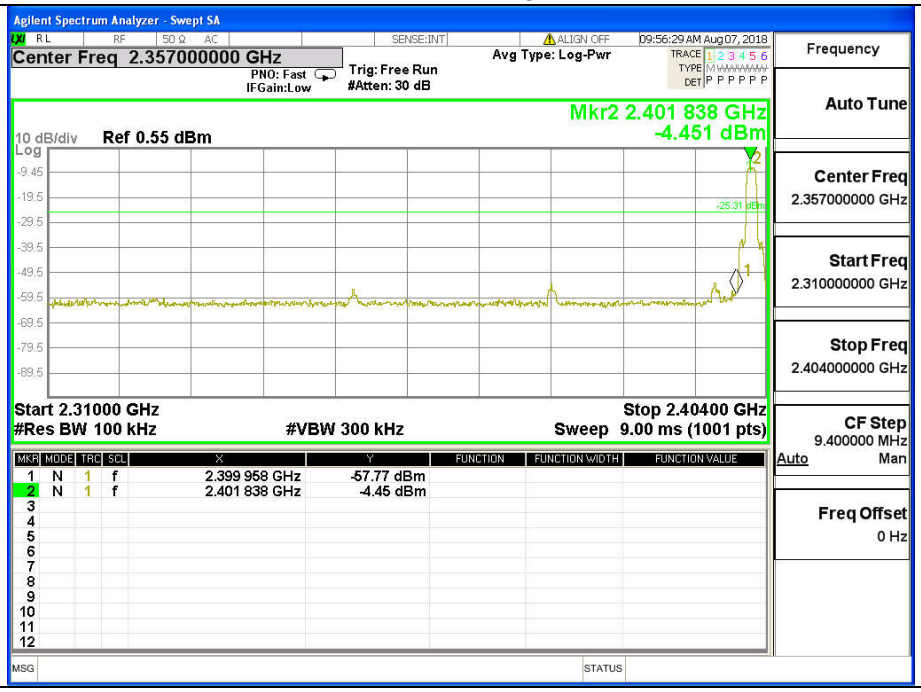
GFSK: Band Edge, Left Side



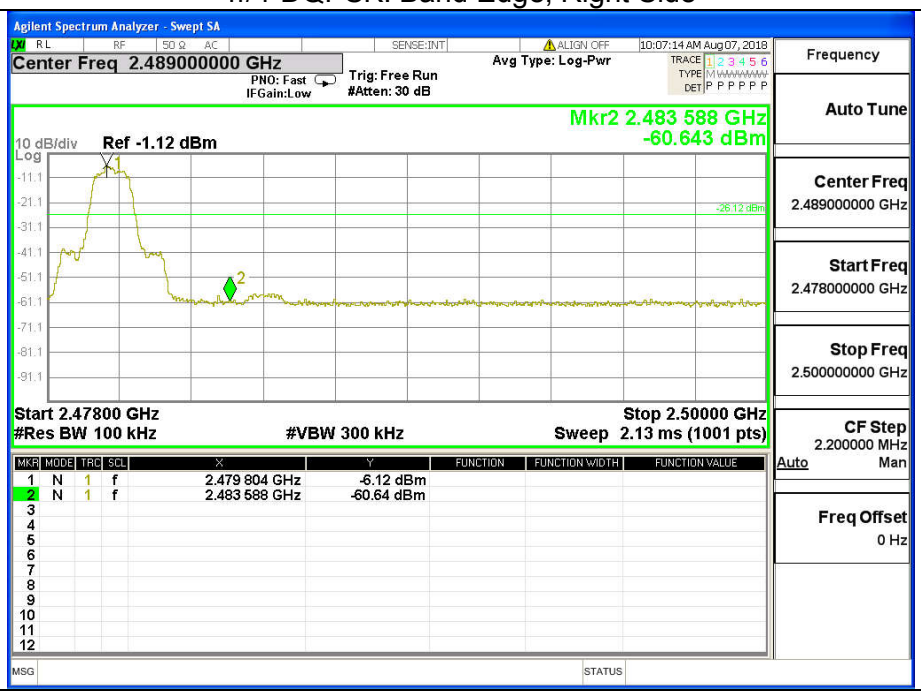
GFSK: Band Edge, Right Side



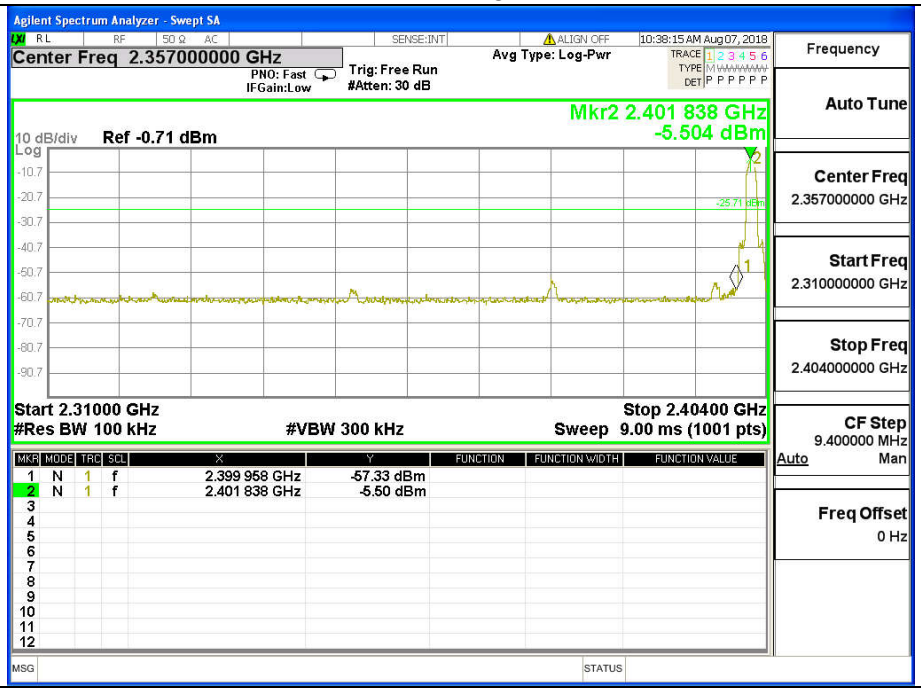
π/4-DQPSK: Band Edge, Left Side



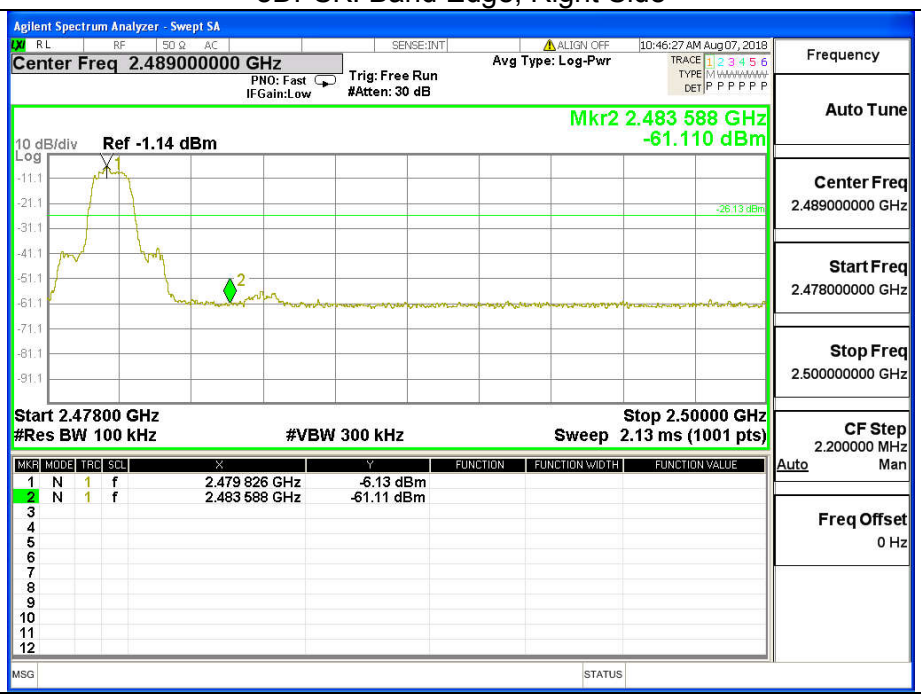
π/4-DQPSK: Band Edge, Right Side



8DPSK: Band Edge, Left Side

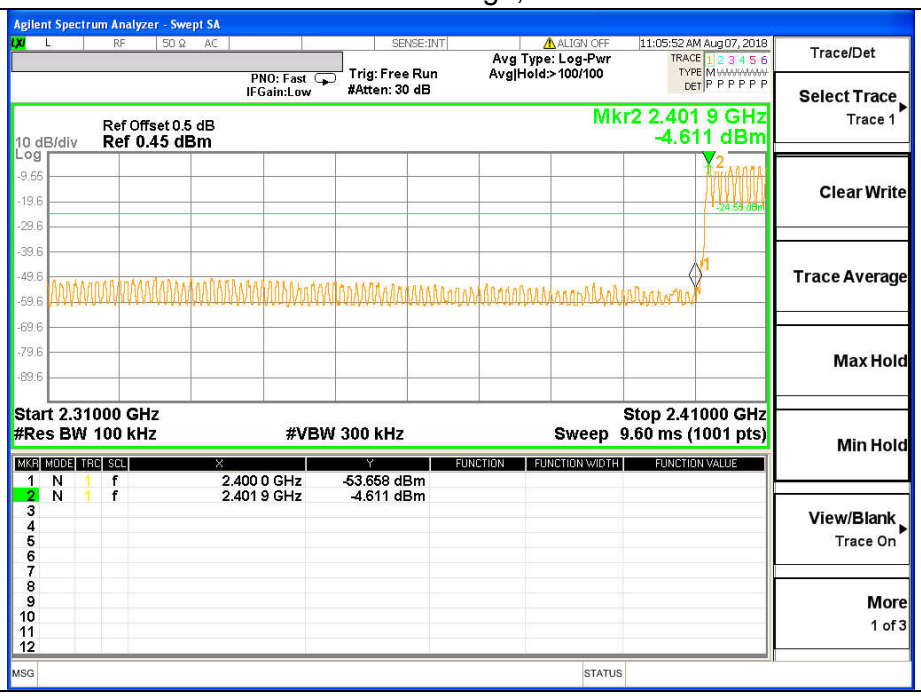


8DPSK: Band Edge, Right Side

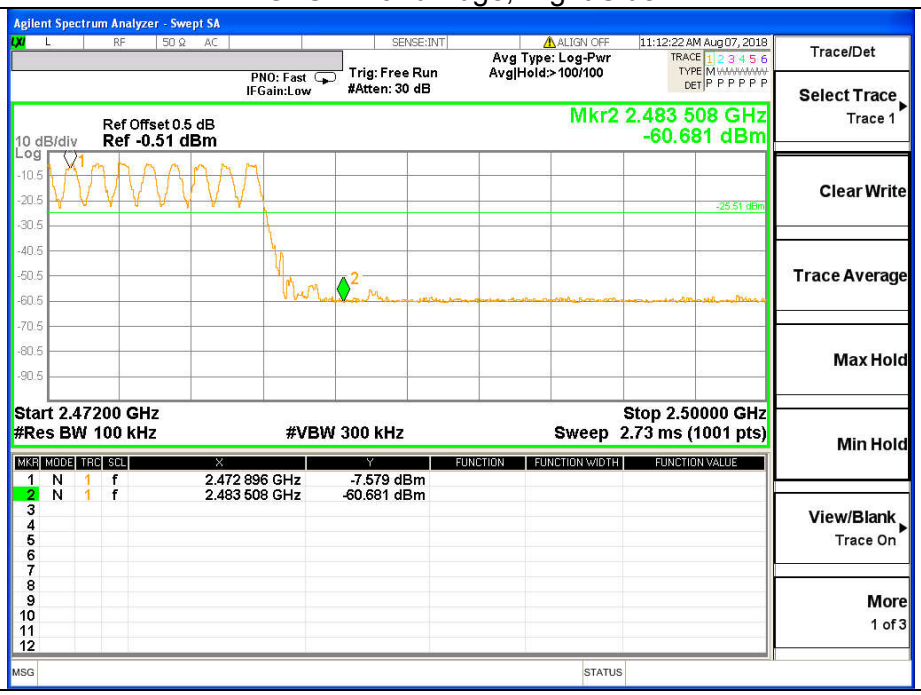


Hopping Mode
Test plots

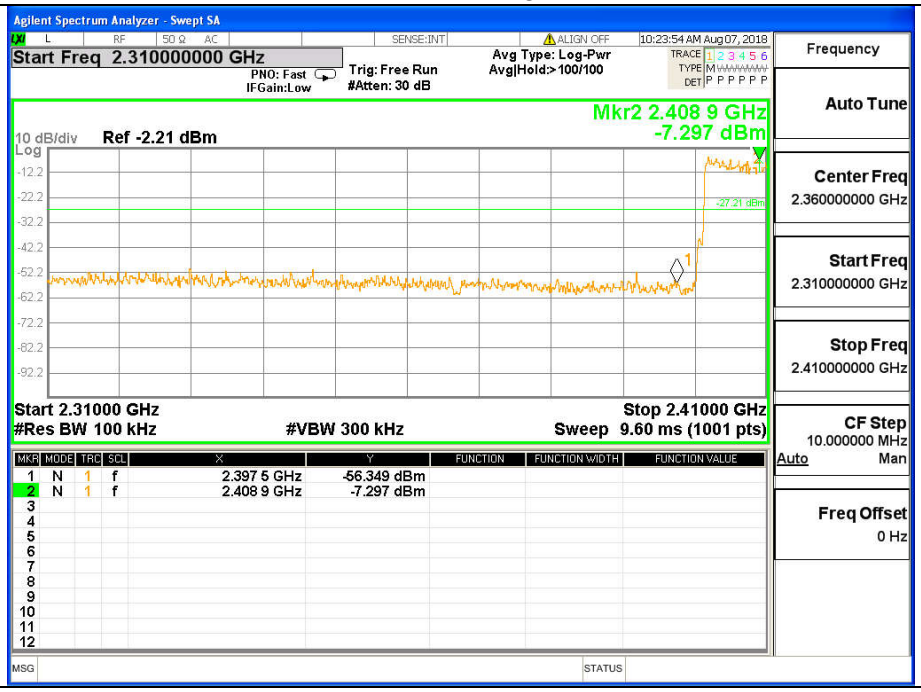
GFSK: Band Edge, Left Side



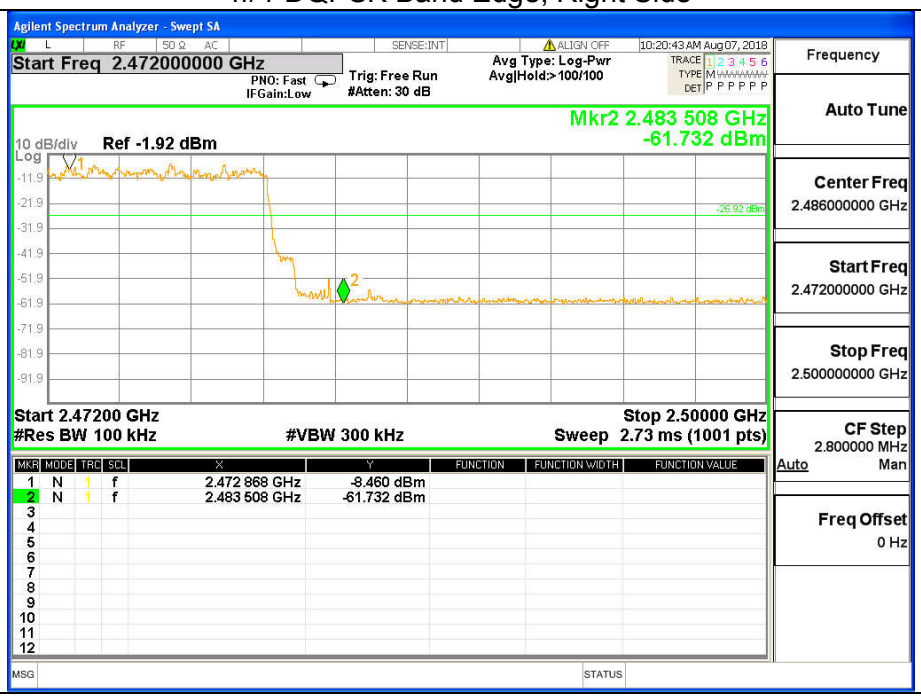
GFSK: Band Edge, Right Side



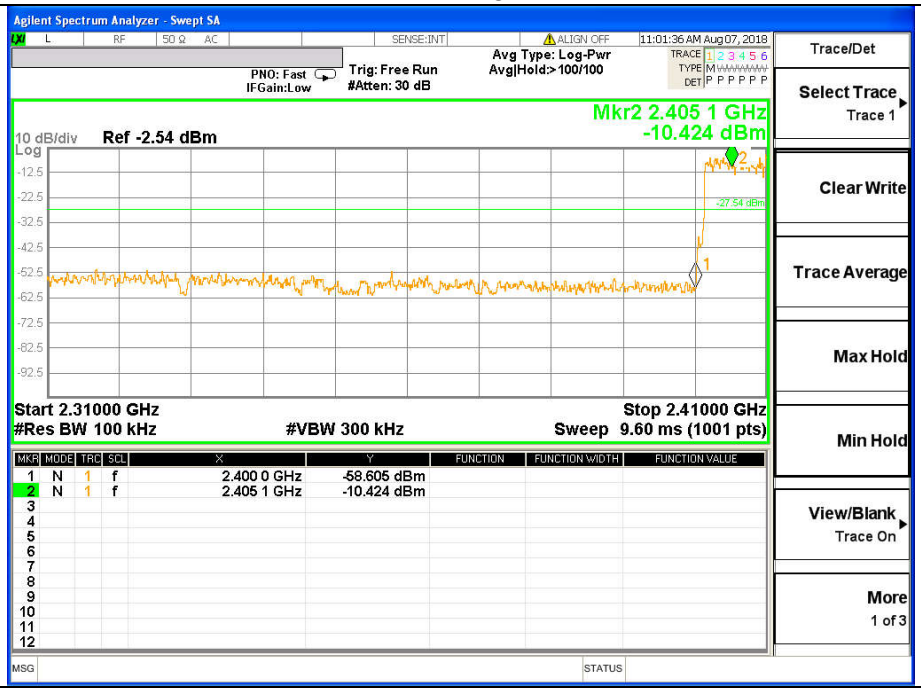
π/4-DQPSK: Band Edge, Left Side



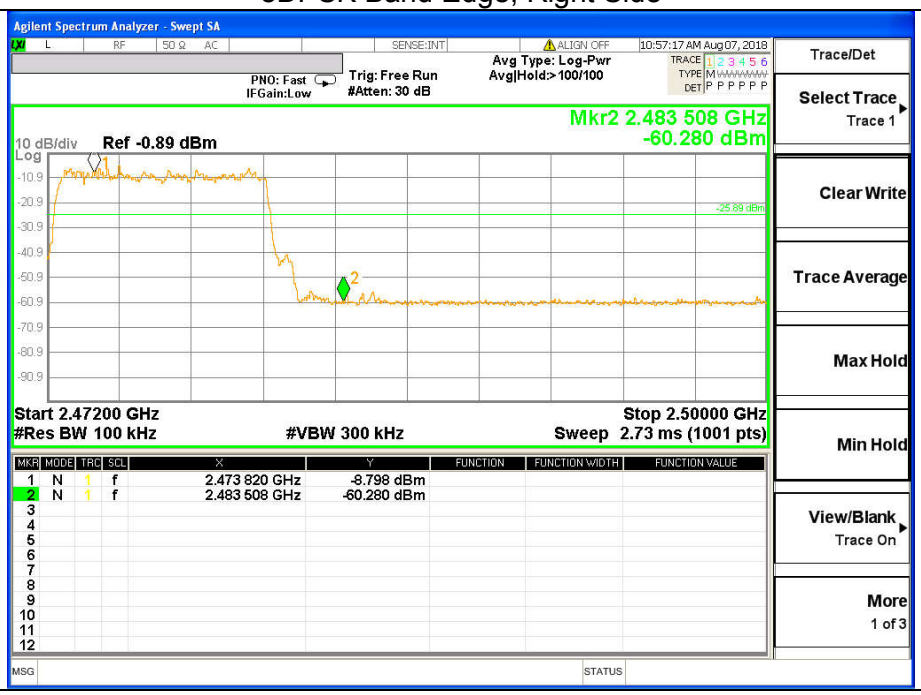
π/4-DQPSK Band Edge, Right Side



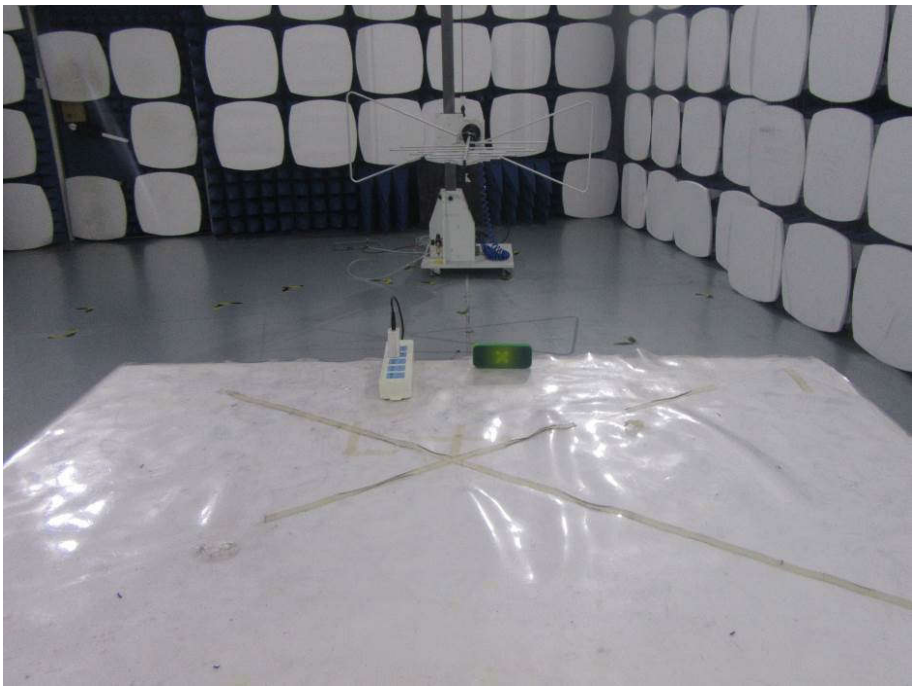
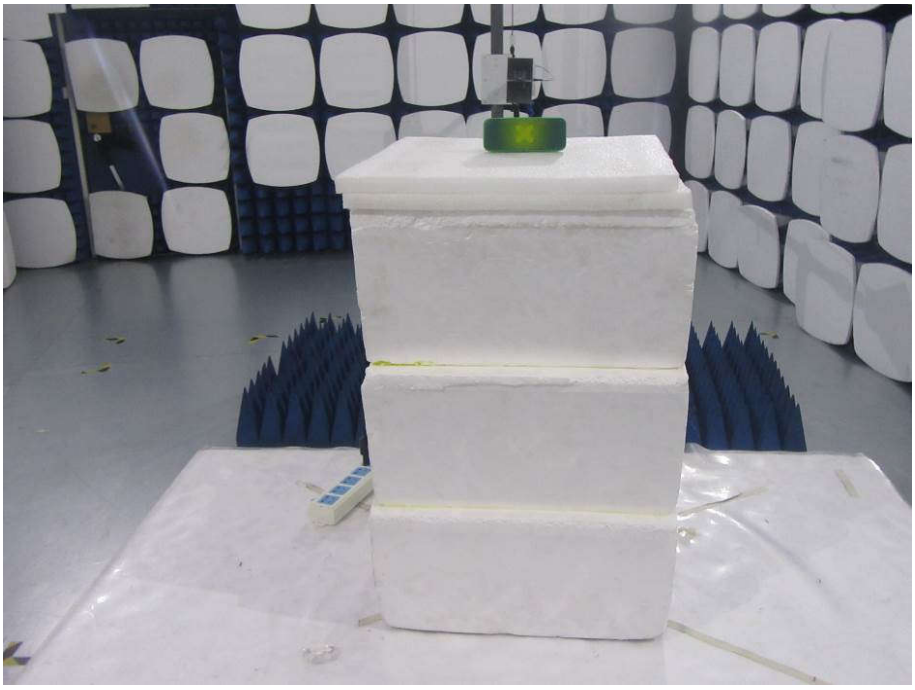
8DPSK: Band Edge, Left Side



8DPSK Band Edge, Right Side



Photographs of the Test Setup

Radiated emission



Conducted emission

PHOTOGRAPHS OF THE EUT

See the APPENDIX 1: EUT PHOTO in the report NO.: MTi180808E033-1

----END OF REPORT----