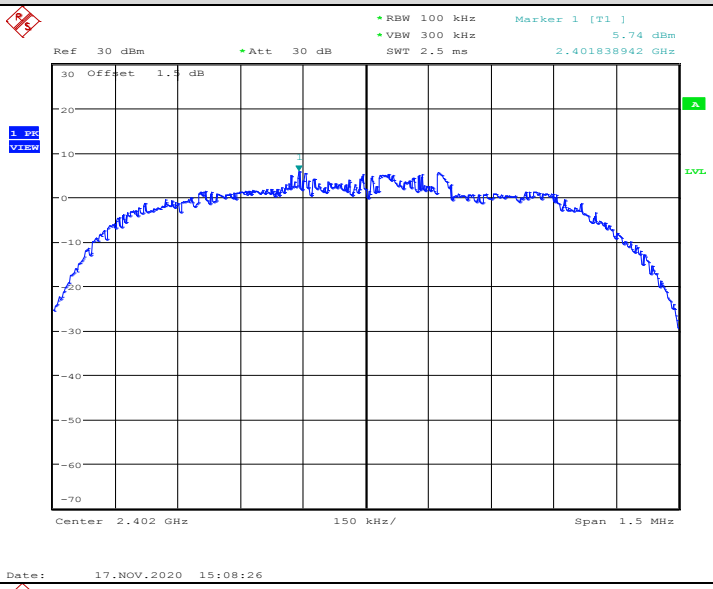
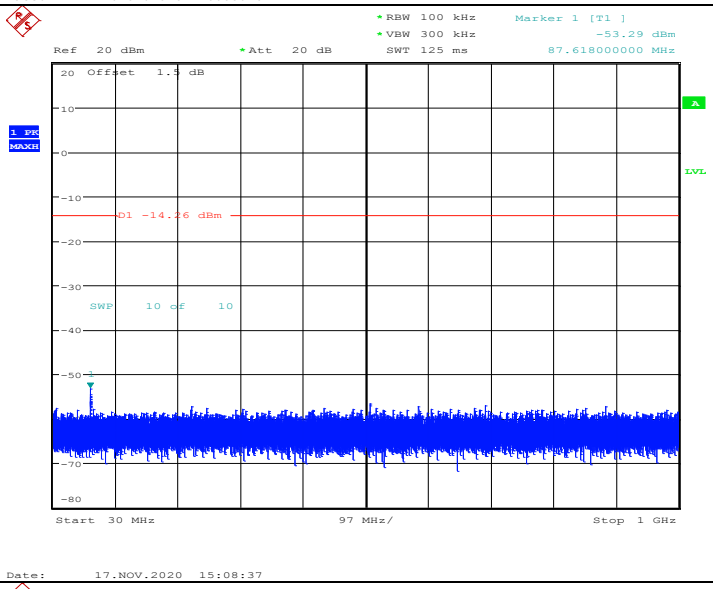
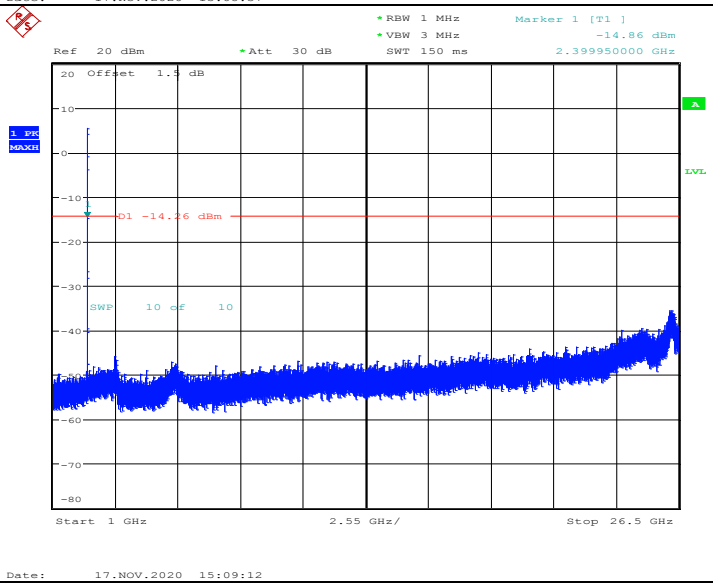
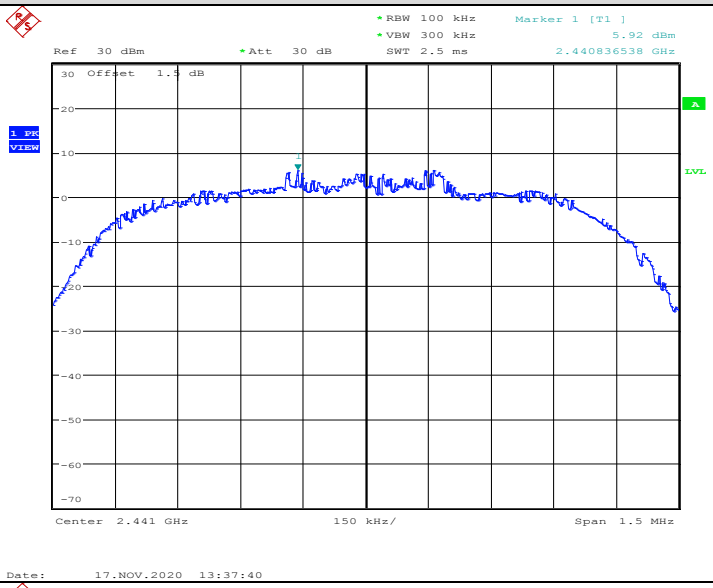
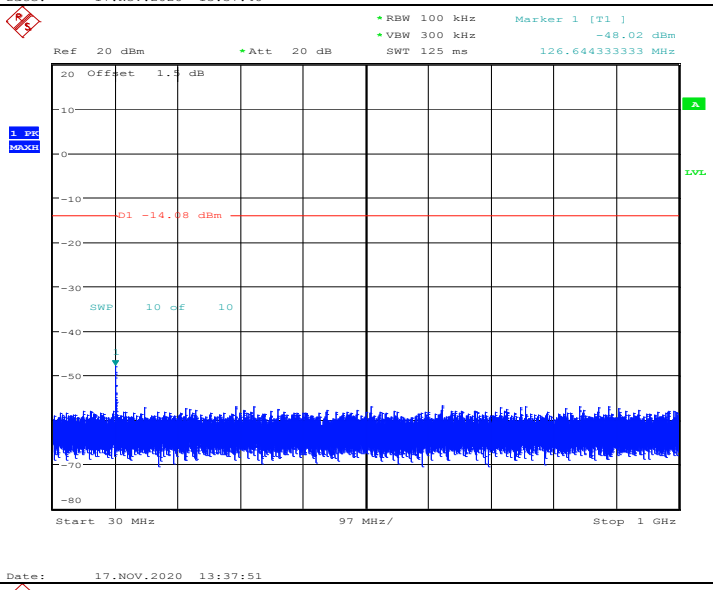
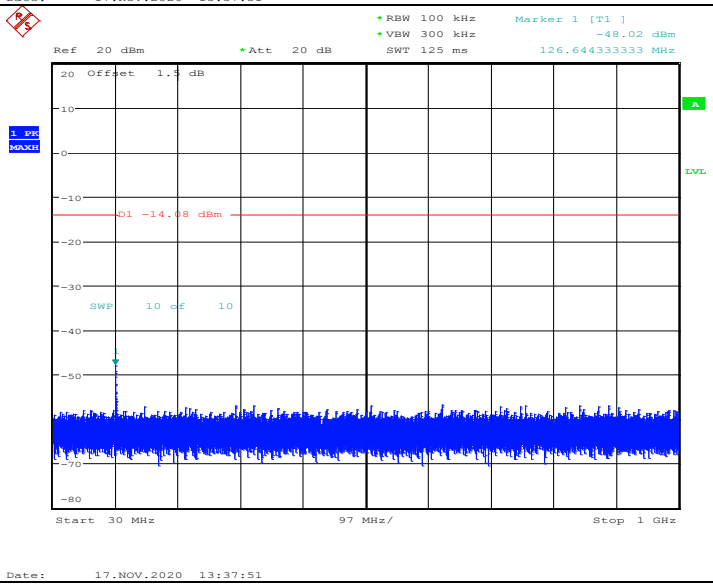
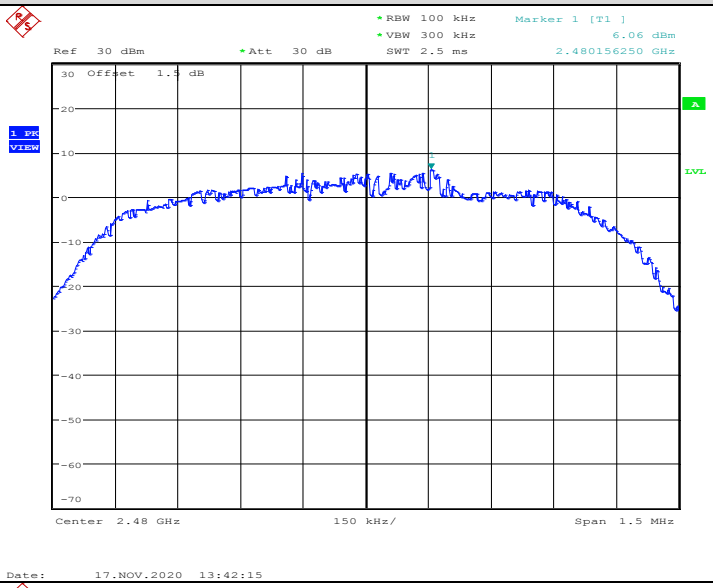
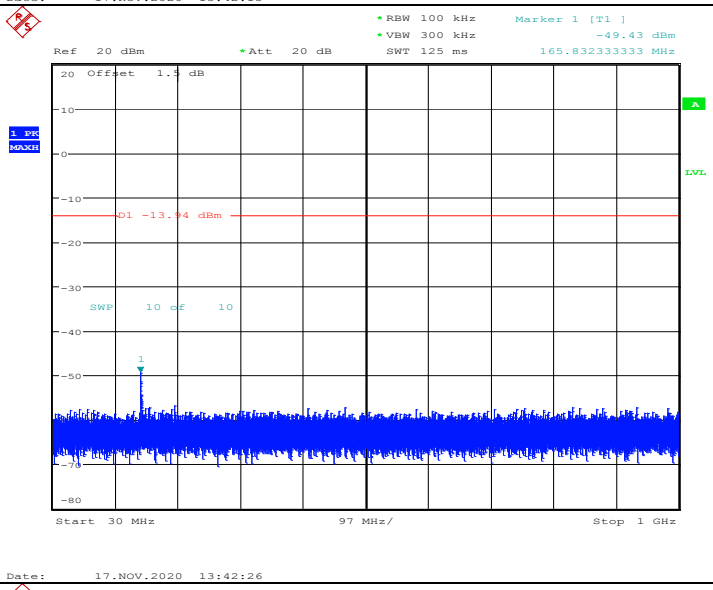
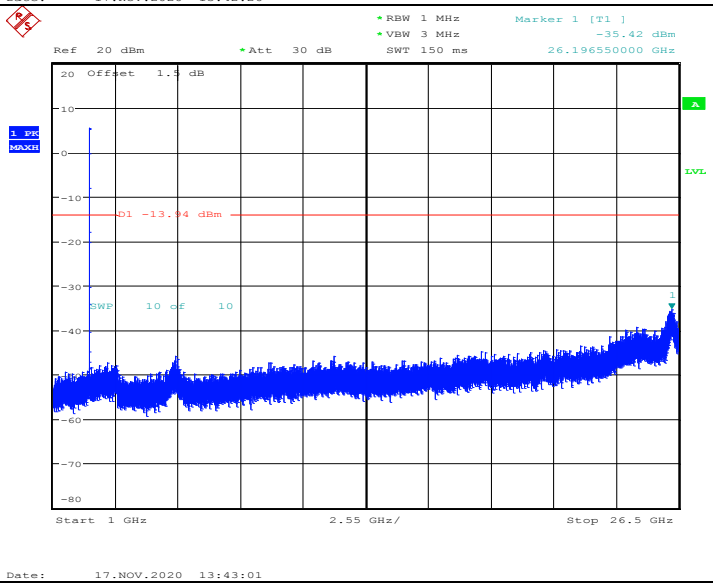
Test Mode: 8-DPSK Mode 2402MHz	
CH00	  

Test Mode: 8-DPSK Mode 2441 MHz	
CH39	  

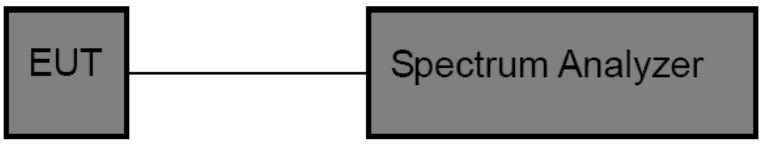
Test Mode: 8-DPSK Mode 2480 MHz	
CH78	  

3.4. 20dB Bandwidth

Limit

N/A

Test Configuration



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:
   (1) Set RBW = 100 kHz.
   (2) Set the video bandwidth (VBW) ≥ 3 RBW.
   (3) Detector = Peak.
   (4) Trace mode = Max hold.
   (5) Sweep = Auto couple.

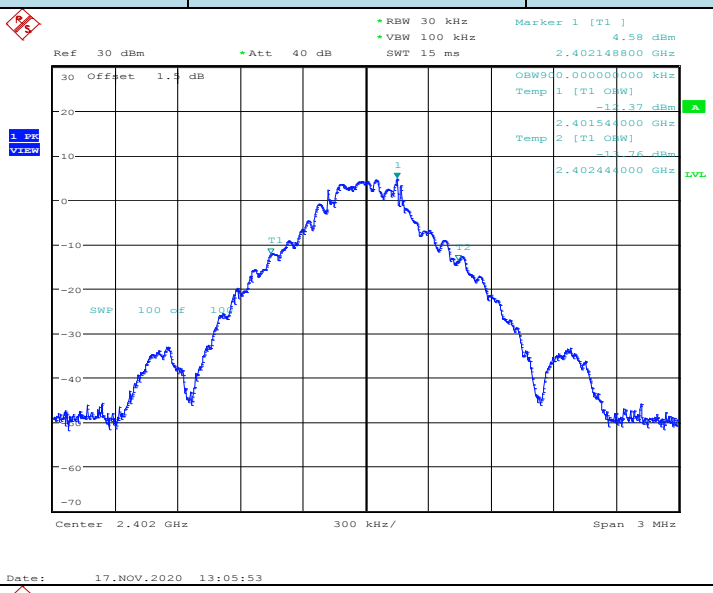
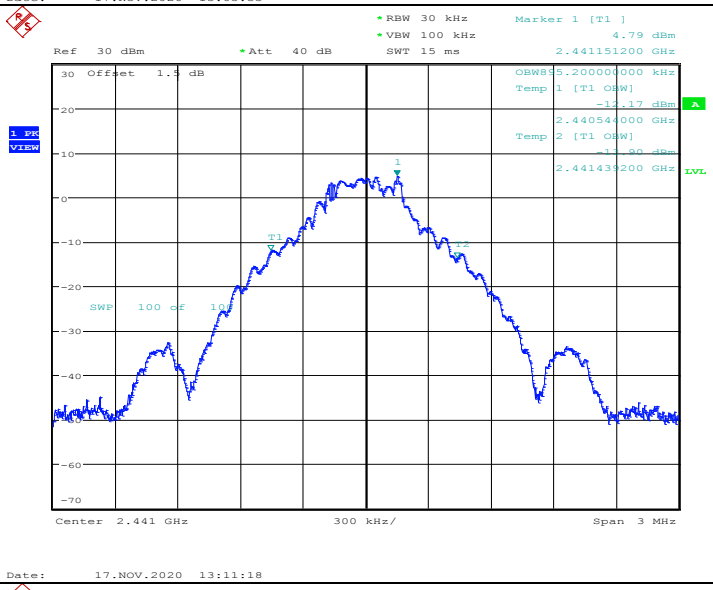
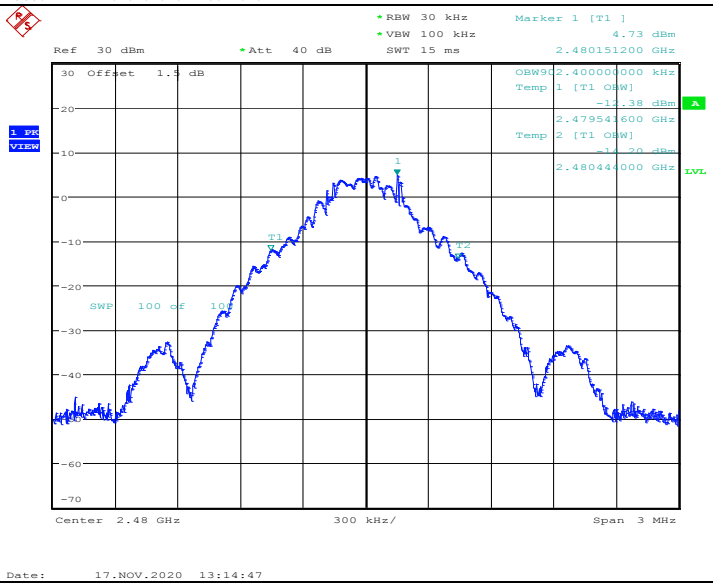
NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

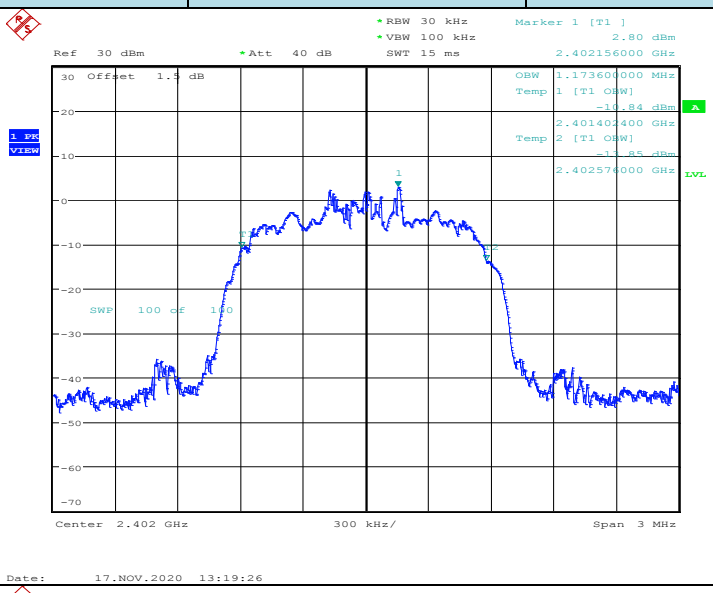
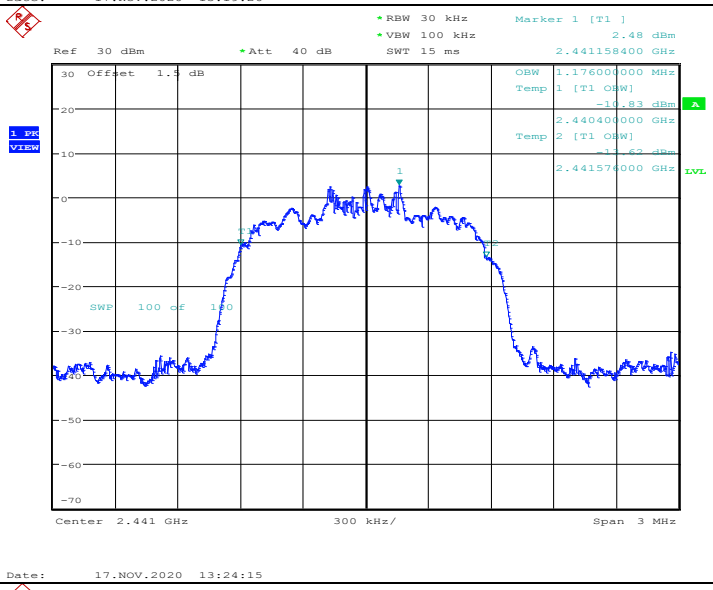
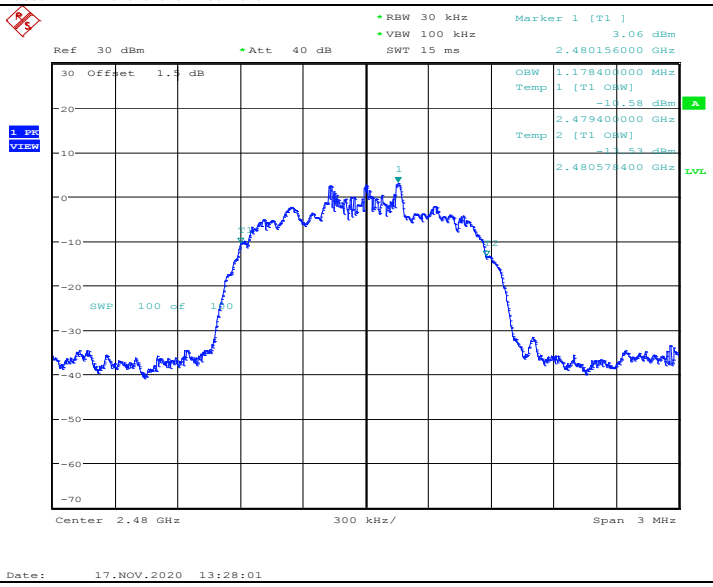
Test Mode

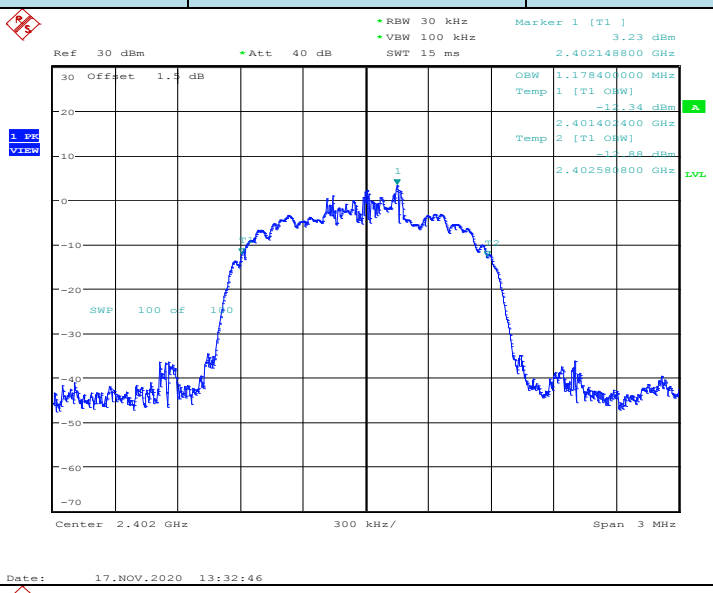
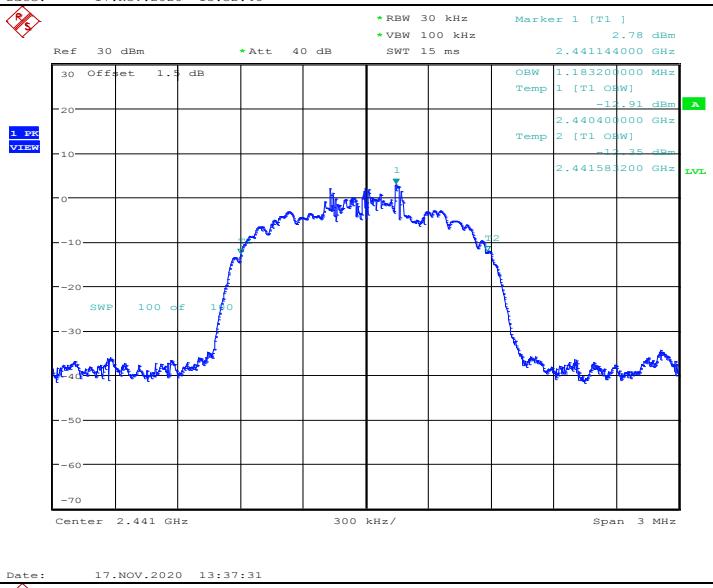
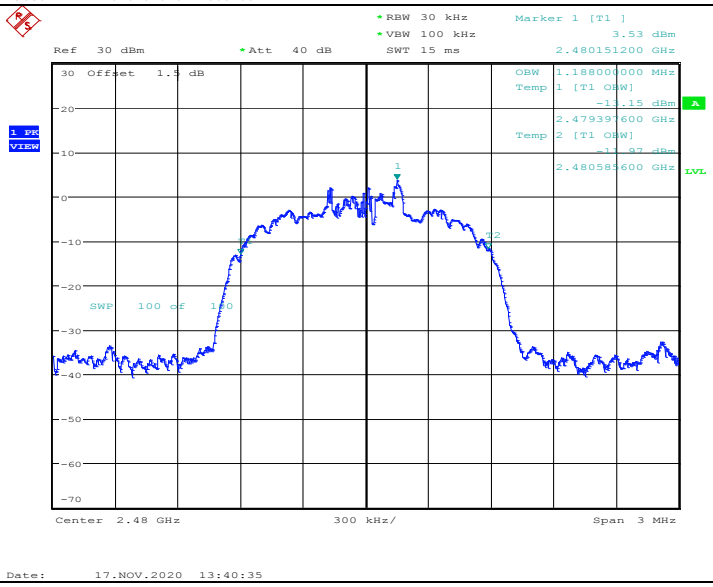
Please refer to the clause 2.3.

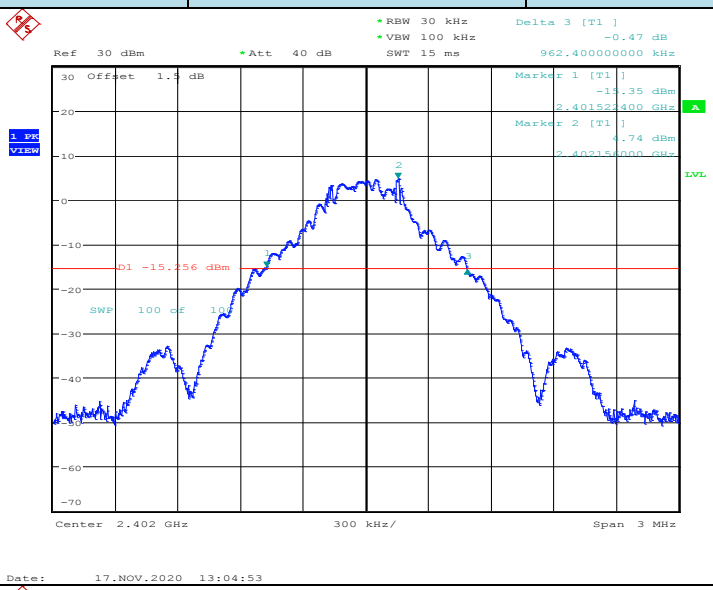
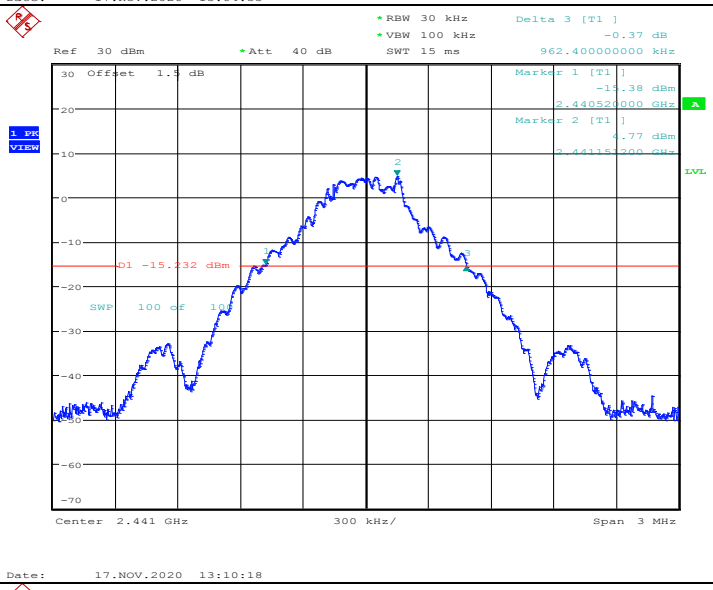
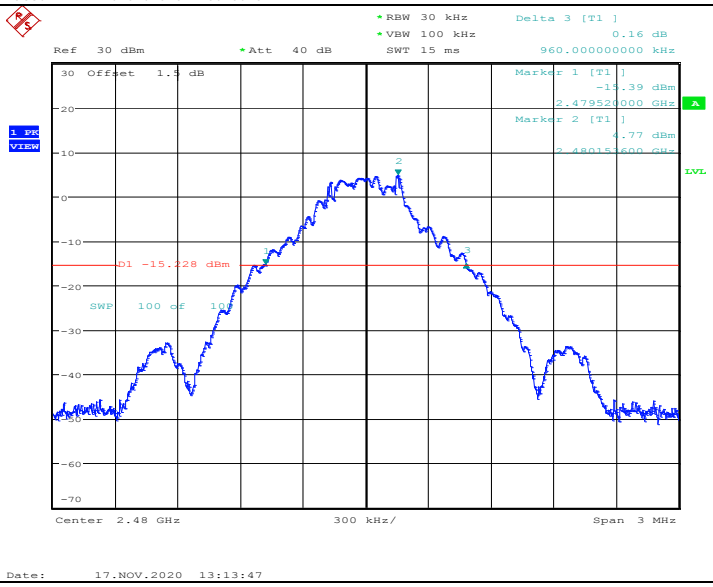
Test Results

Modulation type	Channel	99% Bandwidth (kHz)	20 dB Bandwidth (kHz)	20dB Bandwidth *2/3 (kHz)
GFSK	00	900.0	962.0	641.3
	39	895.0	962.0	641.3
	78	902.0	960.0	640.0
π /4-DQPSK	00	1174.0	1286.0	857.3
	39	1176.0	1286.0	857.3
	78	1178.0	1291.0	860.7
8-DPSK	00	1178.0	1291.0	860.7
	39	1183.0	1291.0	860.7
	78	1188.0	1294.0	862.7

99% Bandwidth	Modulation Type:	GFSK
CH00		
CH39		
CH78		

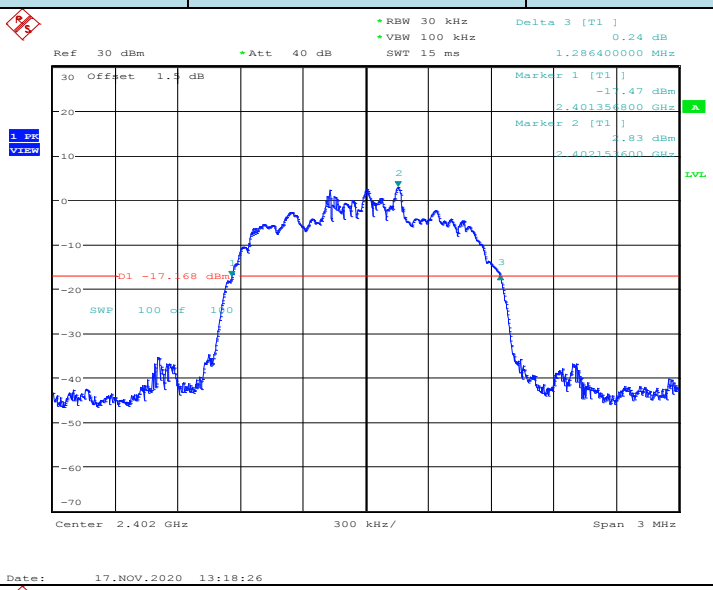
99% Bandwidth	Modulation Type:	π /4-DQPSK
CH00		
CH39		
CH78		

99% Bandwidth	Modulation Type:	8-DPSK
CH00		
CH39		
CH78		

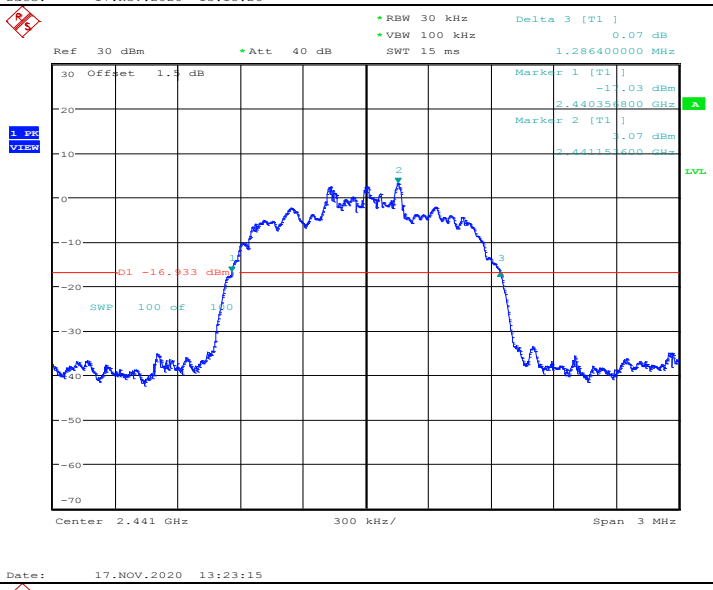
20 dB Bandwidth	Modulation Type:	GFSK
CH00	
CH39	
CH78	

20 dB Bandwidth	Modulation Type:	π /4-DQPSK

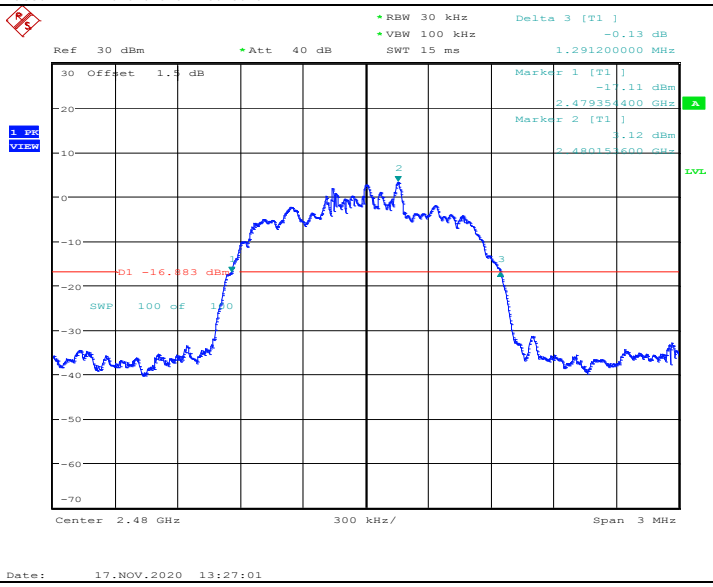
CH00

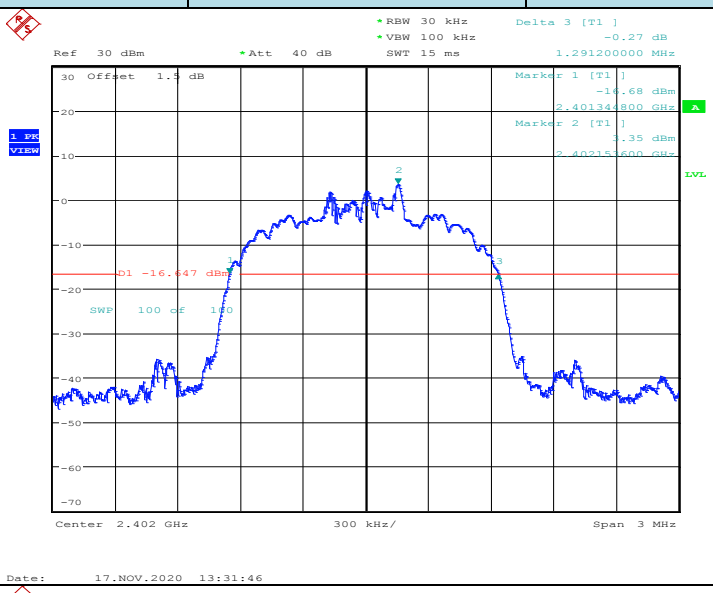
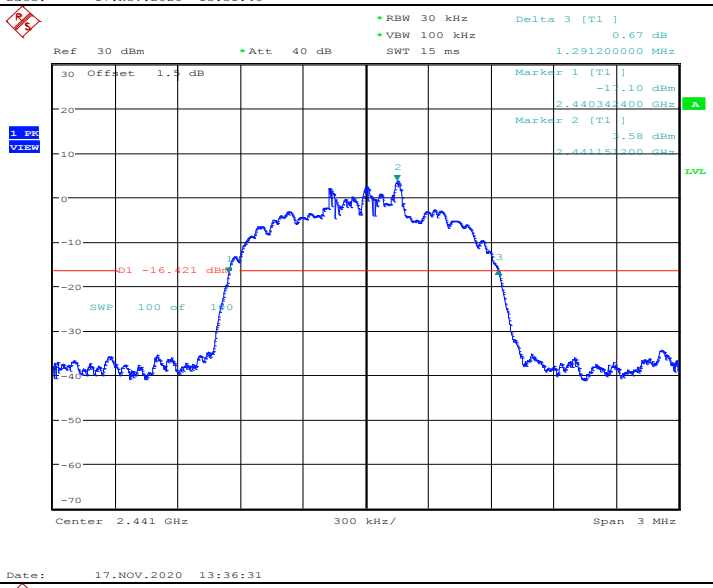
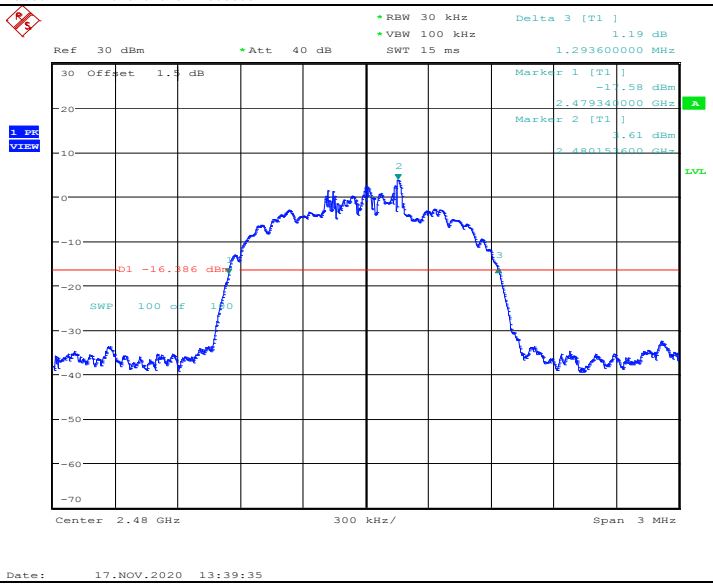


CH39



CH78



20 dB Bandwidth	Modulation Type:	8-DPSK
CH00	
CH39	
CH78	

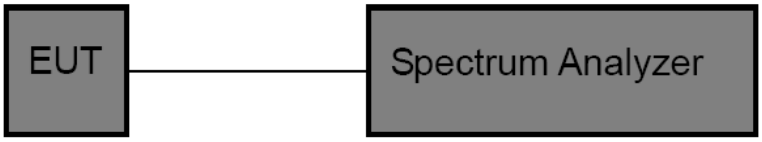
3.5. Channel Separation

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1)/ RSS-247 5.1 b :

Test Item	Limit	Frequency Range(MHz)
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

Test Configuration



Test Procedure

3. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
4. Spectrum Setting:
   (1) Set RBW = 100 kHz.
   (2) Set the video bandwidth (VBW) ≥ 3 RBW.
   (3) Detector = Peak.
   (4) Trace mode = Max hold.
   (5) Sweep = Auto couple.

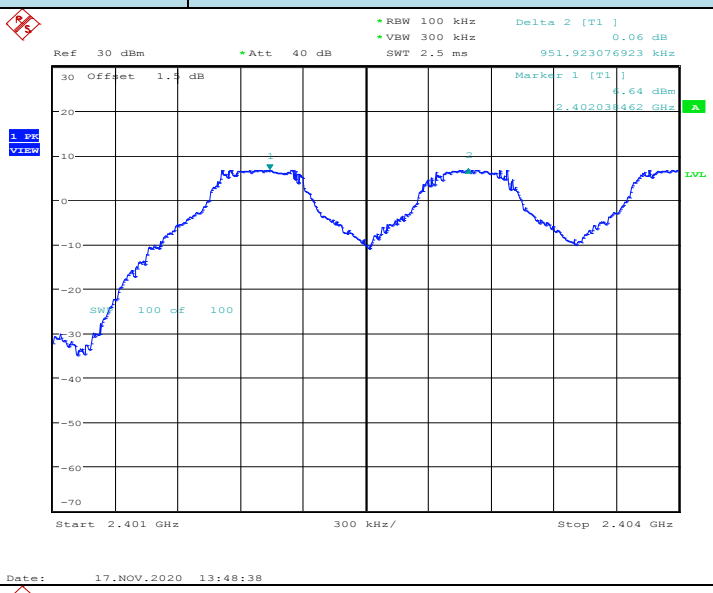
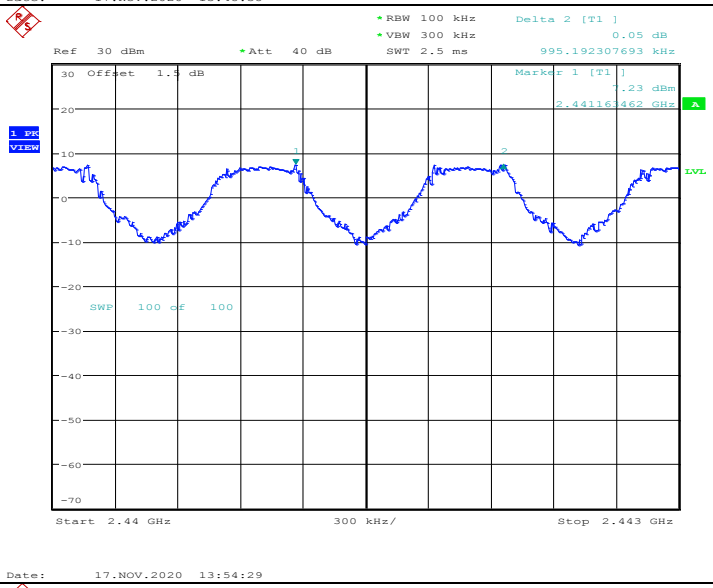
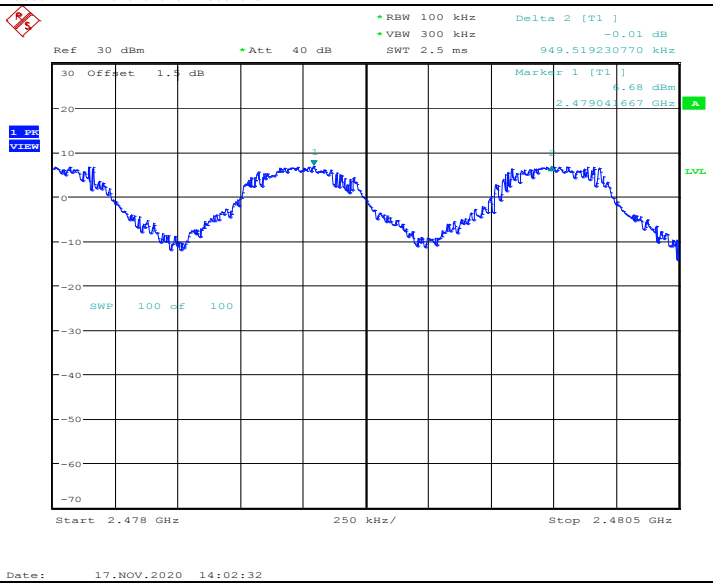
NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

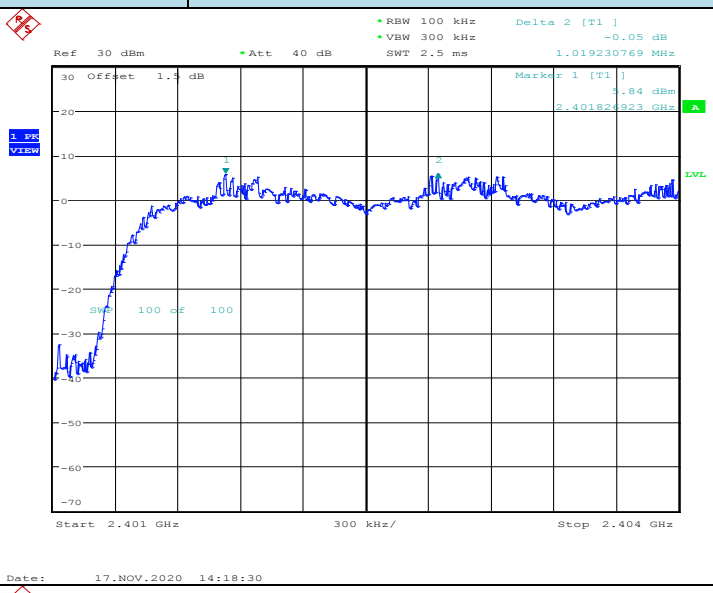
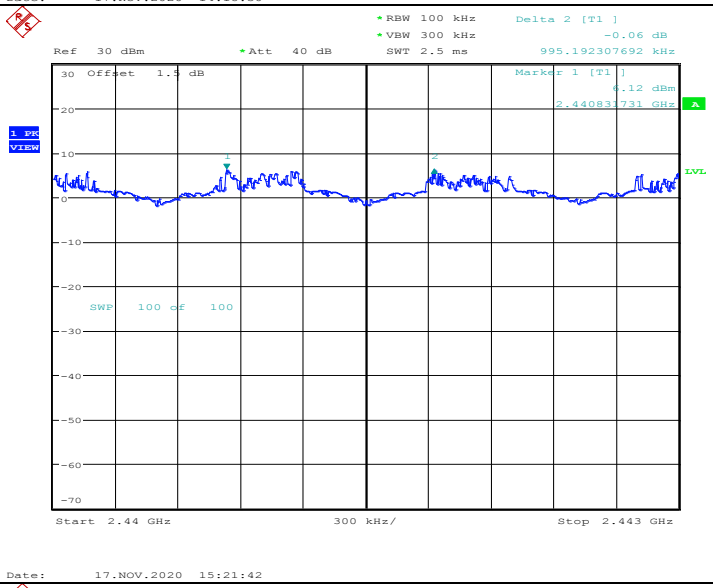
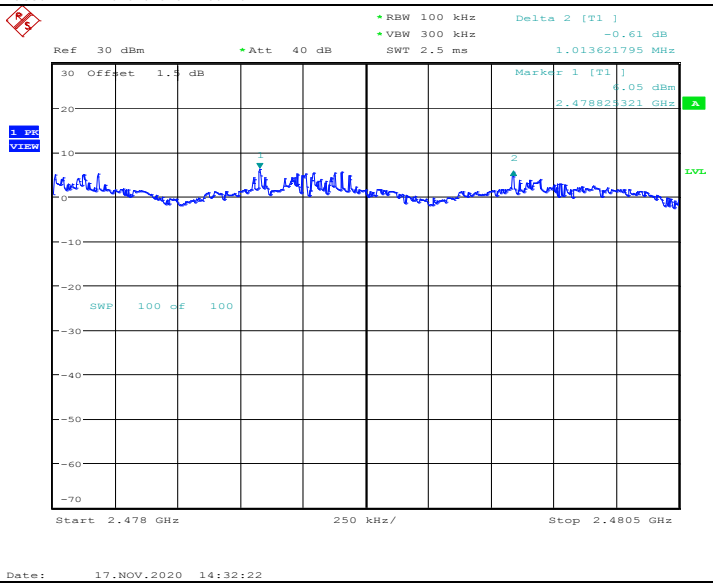
Test Mode

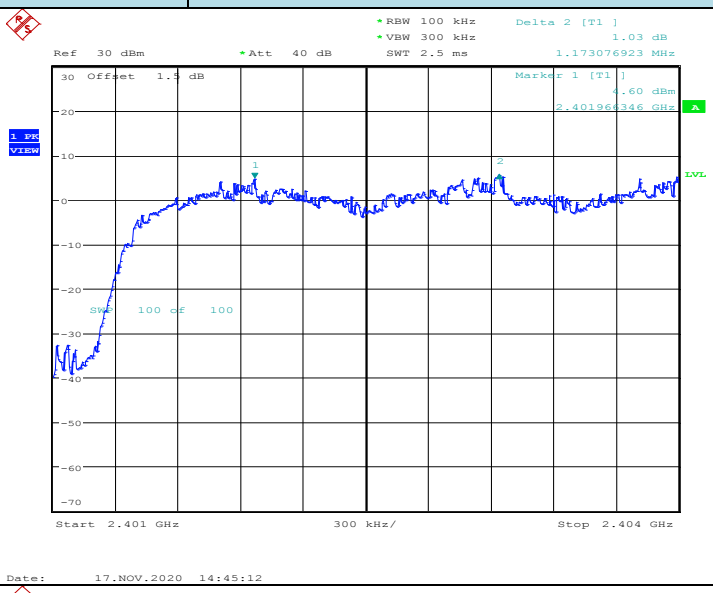
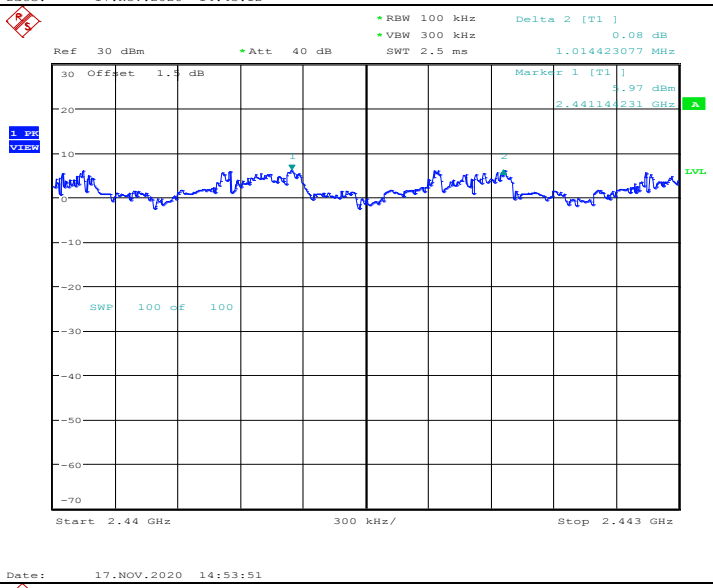
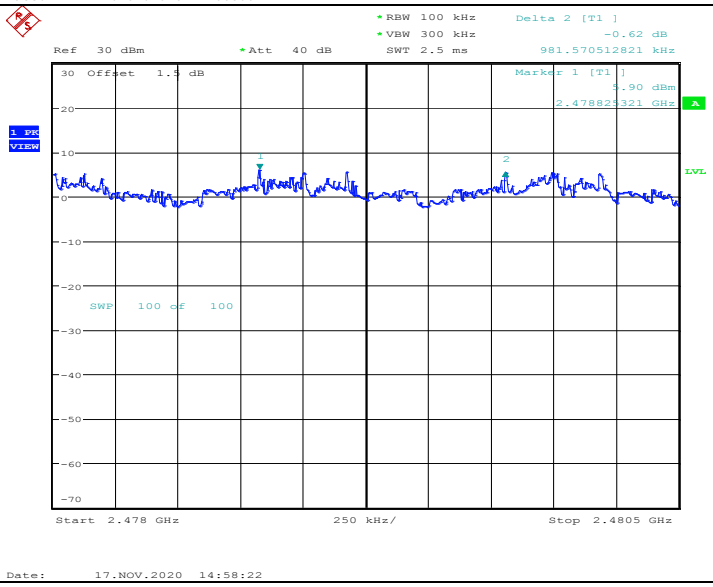
Please refer to the clause 2.3.

Test Results

Modulation type	Channel	Carrier Frequencies Separation (MHz)	Limit (kHz)	Result
GFSK	00	0.952	641.0	Pass
	39	0.995	962.0	
	78	0.950	641.0	
π /4-DQPSK	00	1.019	861.0	Pass
	39	0.995	861.0	
	78	1.014	861.0	
8-DPSK	00	1.173	863.0	Pass
	39	1.014	863.0	
	78	0.982	863.0	

Modulation Type:	GFSK
CH00	
CH39	
CH78	

Modulation Type:	π /4-DQPSK
CH00	
CH39	
CH78	

Modulation Type:	8-DPSK
CH00	
CH39	
CH78	

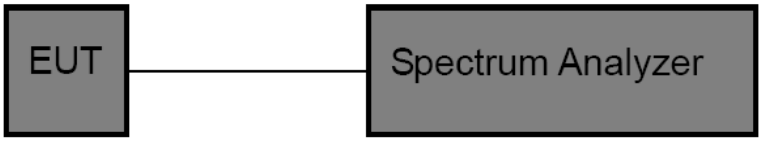
3.6. Number of Hopping Channel

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(iii)/ RSS-247 5.1 d:

Section	Test Item	Limit
15.247 (a)(iii)/ RSS-247 5.1 d:	Number of Hopping Channel	>15

Test Configuration



Test Procedure

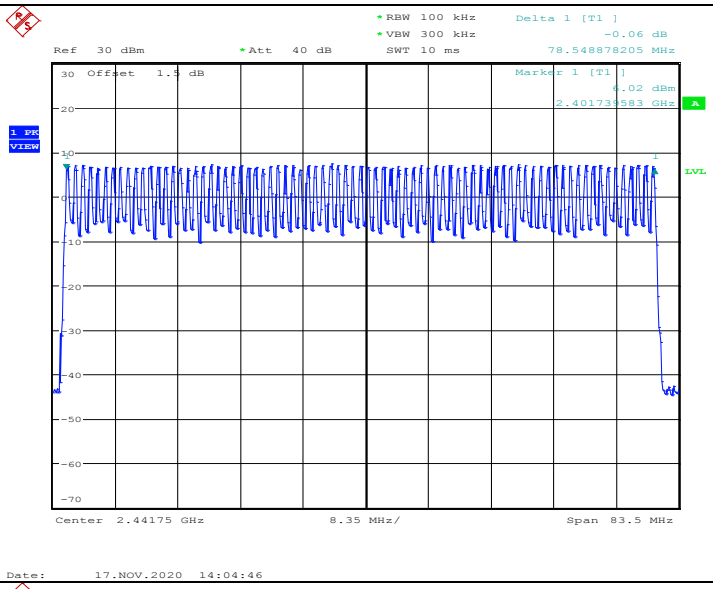
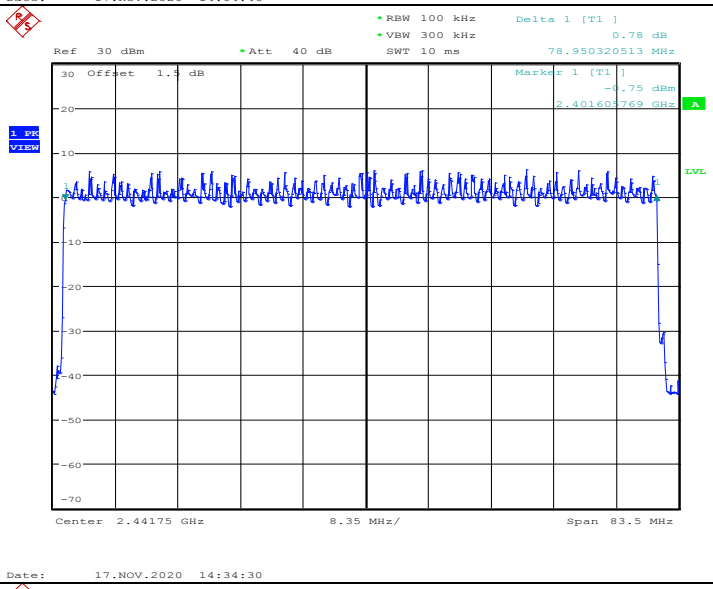
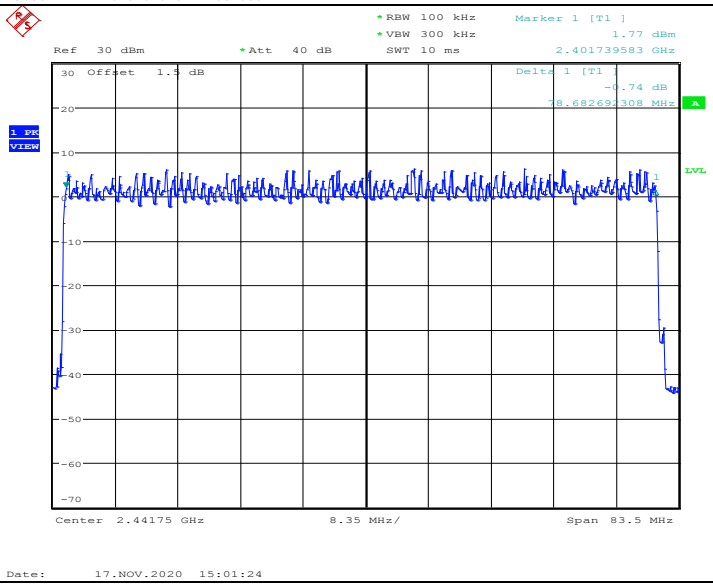
1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:
   (1) Peak Detector: RBW=100 kHz, VBW⩾RBW, Sweep time= Auto.

Test Mode

Please refer to the clause 2.3.

Test Result

Modulation type	Channel number	Limit	Result
GFSK	79	≥15.00	Pass
π /4-DQPSK	79		
8DPSK	79		

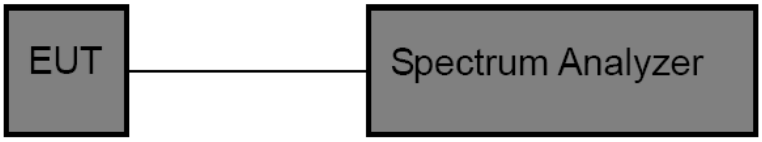
GFSK	
π /4-DQPSK	
8-DPSK	

3.7. Dwell Time

Limit

Section	Test Item	Limit
15.247(a)(iii)/ RSS-247 5.1 d	Average Time of Occupancy	0.4 sec

Test Configuration



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:
   (1) Spectrum Setting: RBW=1MHz, VBW≥RBW.
   (2) Use video trigger with the trigger level set to enable triggering only on full pulses.
   (3) Sweep Time is more than once pulse time.
   (4) Set the center frequency on any frequency would be measure and set the frequency span to zero.
   (5) Measure the maximum time duration of one single pulse.
   (6) Set the EUT for packet transmitting.

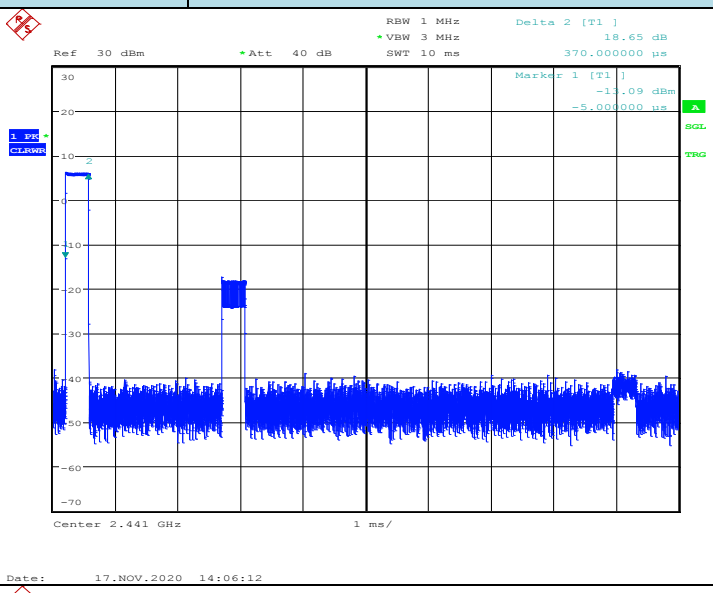
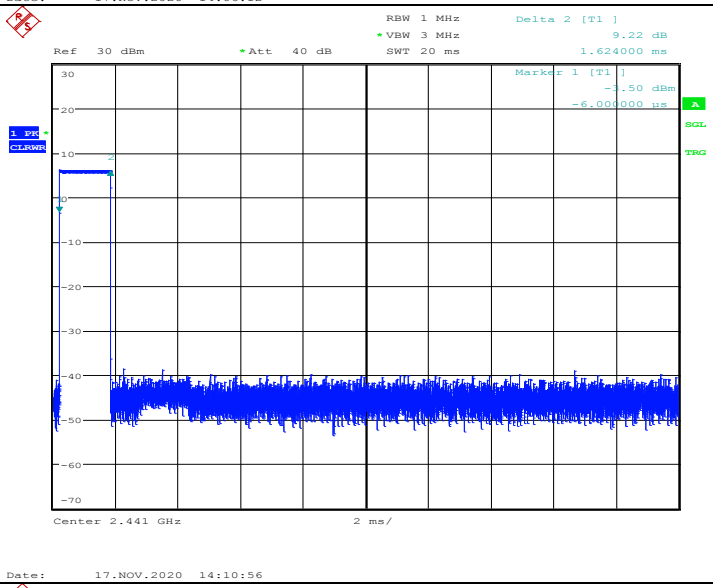
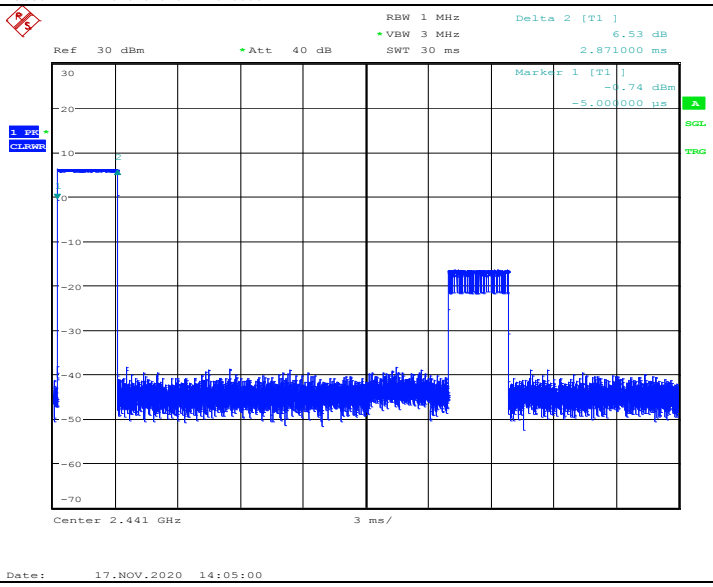
Test Mode

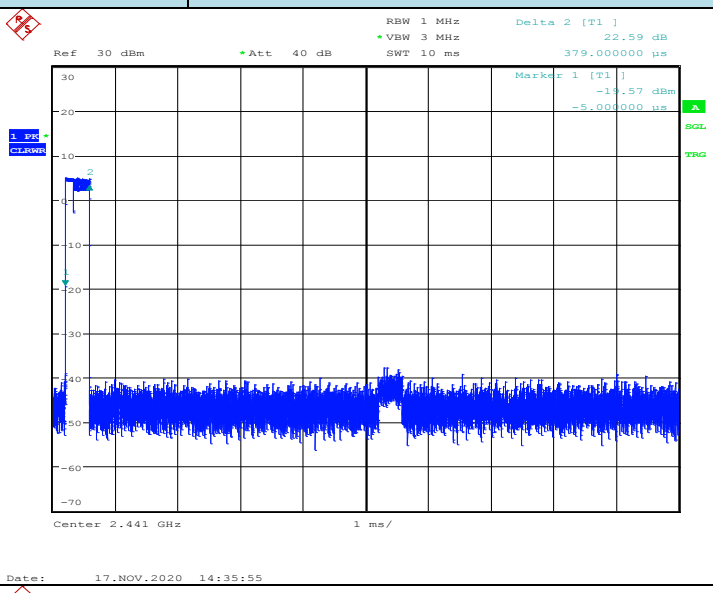
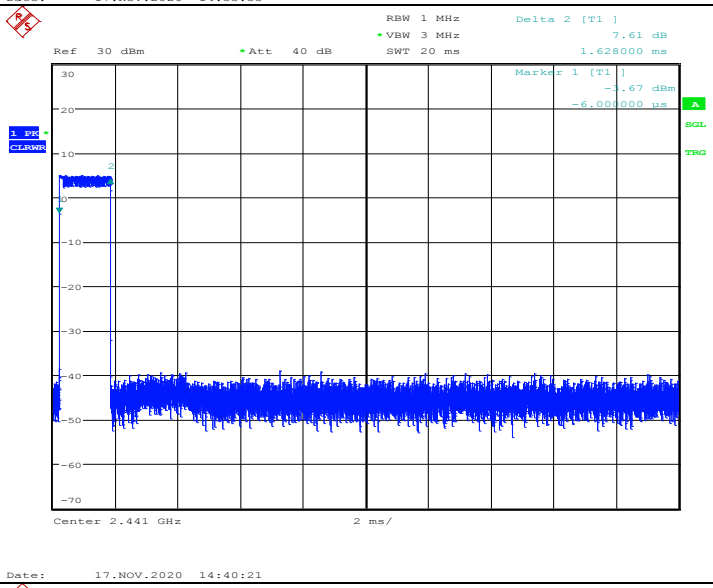
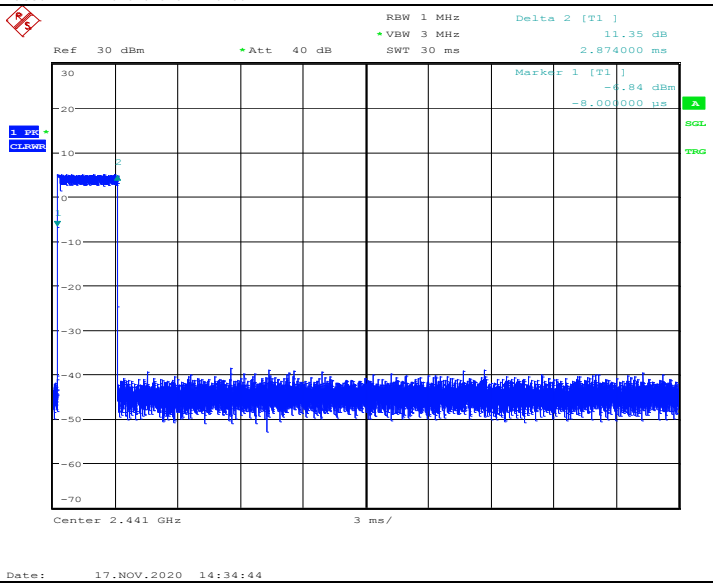
Please refer to the clause 2.3.

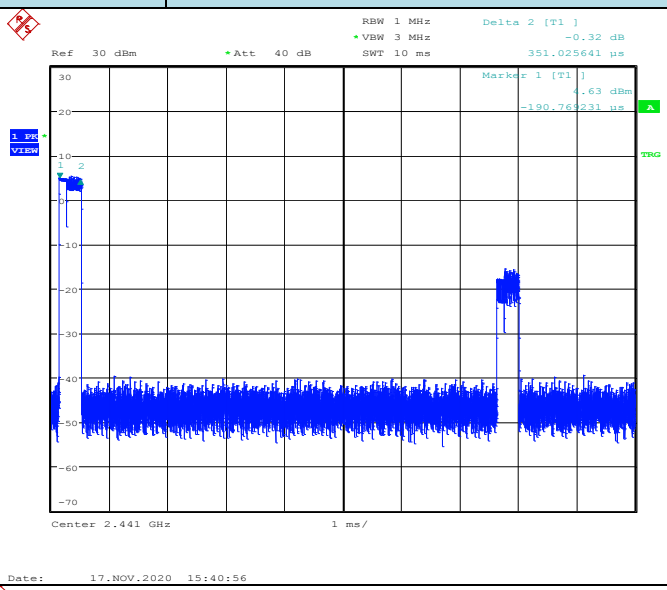
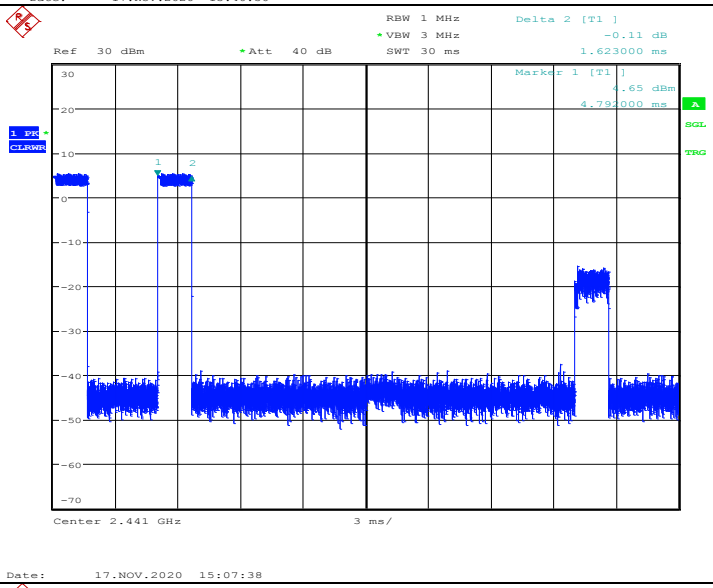
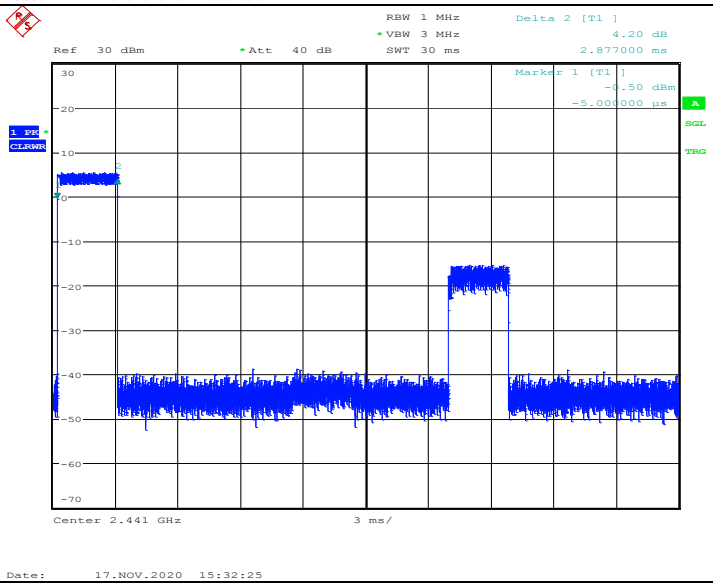
Test Result

Modulation type	Channel	Channel (MHz)	Pulse Time (ms)	Total of Dwell (ms)	Period Time (ms)	Limit (Second)	Result
GFSK	DH1	2441	0.37	118.40	31.60	≤ 0.40	Pass
	DH3	2441	1.62	259.20	31.60		
	DH5	2441	2.87	306.13	31.60		
π /4-DQPSK	2DH1	2441	0.38	121.60	31.60	≤ 0.40	Pass
	2DH3	2441	1.63	260.80	31.60		
	2DH5	2441	2.87	306.13	31.60		
8-DPSK	3DH1	2441	0.01	3.20	31.60	≤ 0.40	Pass
	3DH3	2441	1.62	259.20	31.60		
	3DH5	2441	2.88	307.20	31.60		

Note: 1DH1/2DH1/3DH1Total of Dwell= Pulse Time(1600/2)*31.6/79*
1DH3/2DH3/3DH3 Total of Dwell= Pulse Time(1600/4)*31.6/79*
1DH5/2DH5/3DH5 Total of Dwell= Pulse Time(1600/6)*31.6/79*

Modulation Type:	GFSK
DH1	
DH3	
DH5	

Modulation Type:	π /4-DQPSK
2DH1	
2DH3	
2DH5	

Modulation Type:	8-DPSK
3DH1	
3DH3	
3DH5	

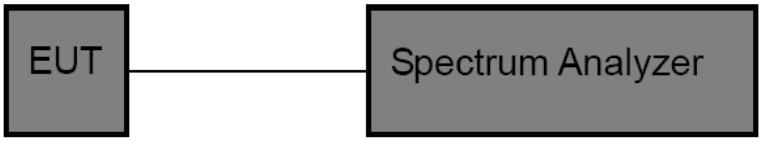
3.8. Peak Output Power

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(1) / RSS-247 5.4 b:

Test Item	Limit	Frequency Range(MHz)
Peak Output Power	Hopping Channels>75 Power<1W(30dBm) Other <125mW(21dBm)	2400~2483.5

Test Configuration



Test Procedure

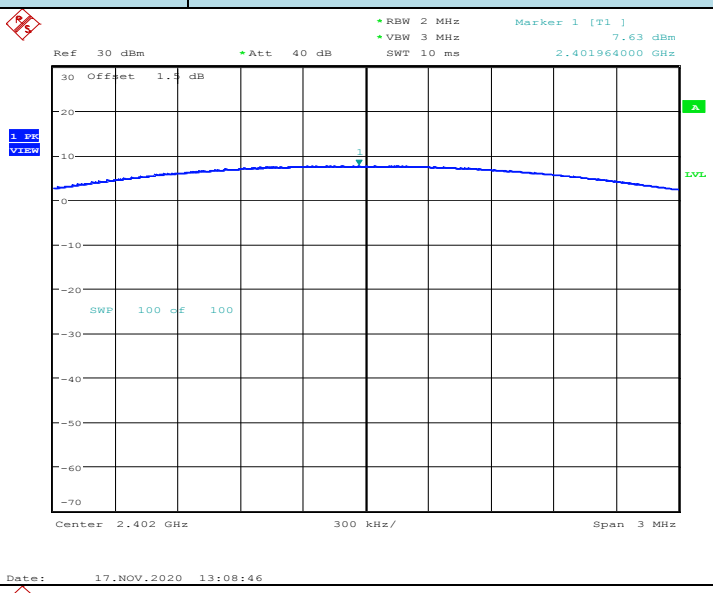
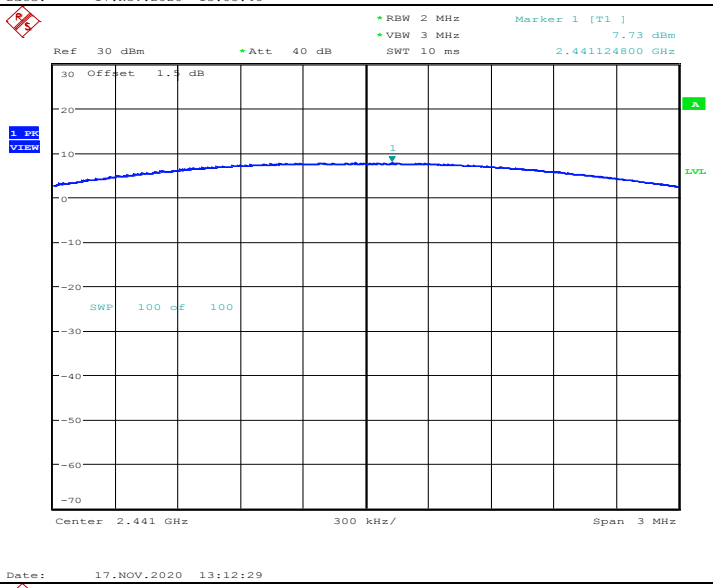
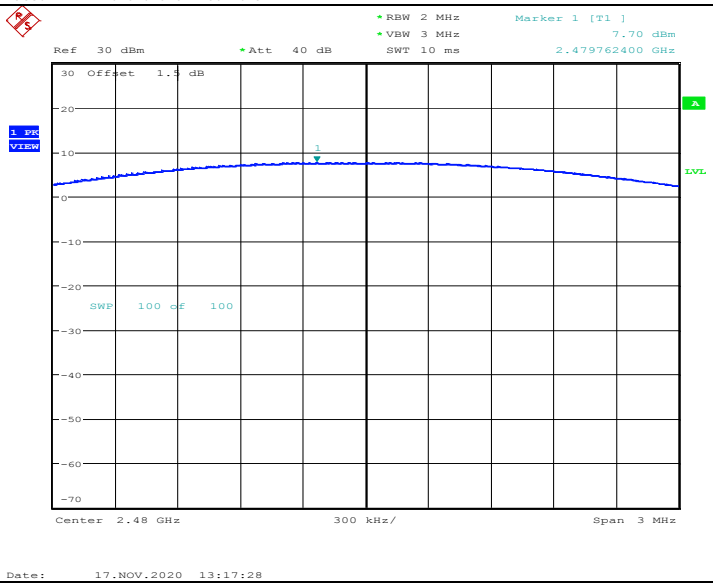
1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:
   Peak Detector: RBW=1 MHz, VBW=3 MHz for bandwidth less than 1MHz.
   RBW=3 MHz, VBW=3 MHz for bandwidth more than 1MHz.

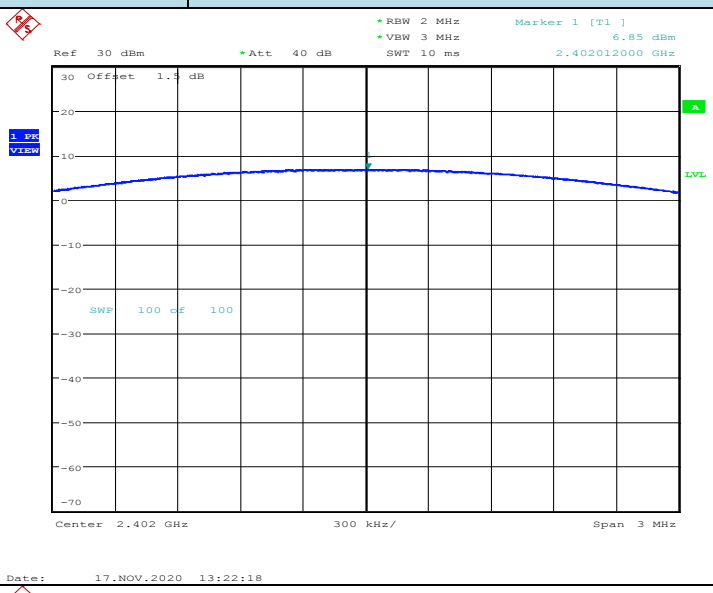
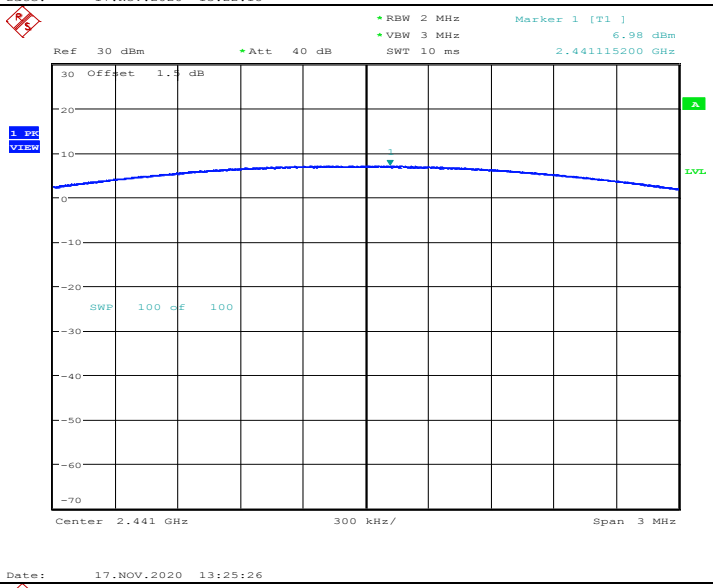
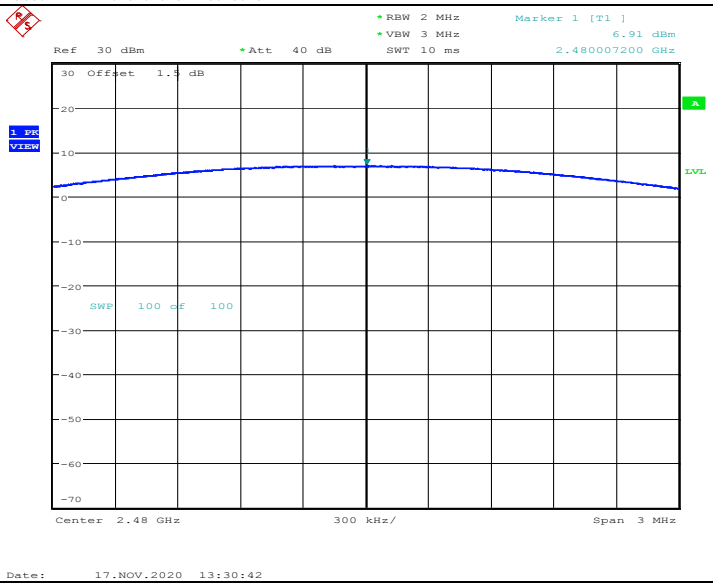
Test Mode

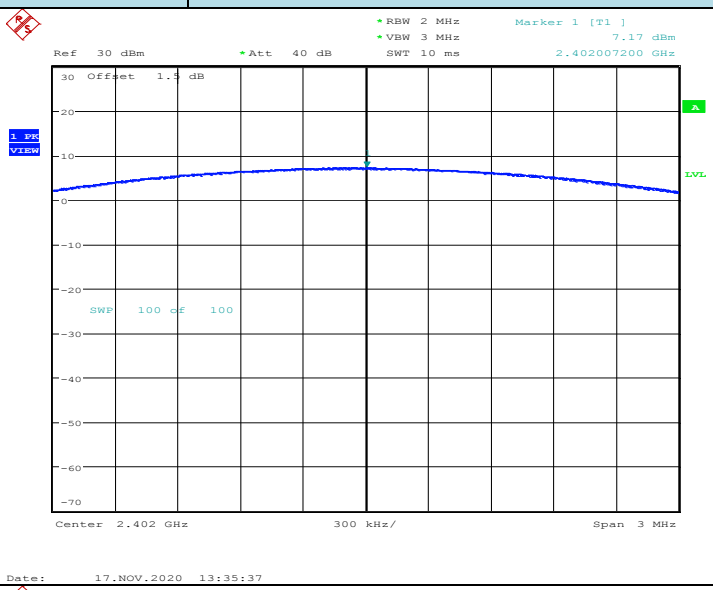
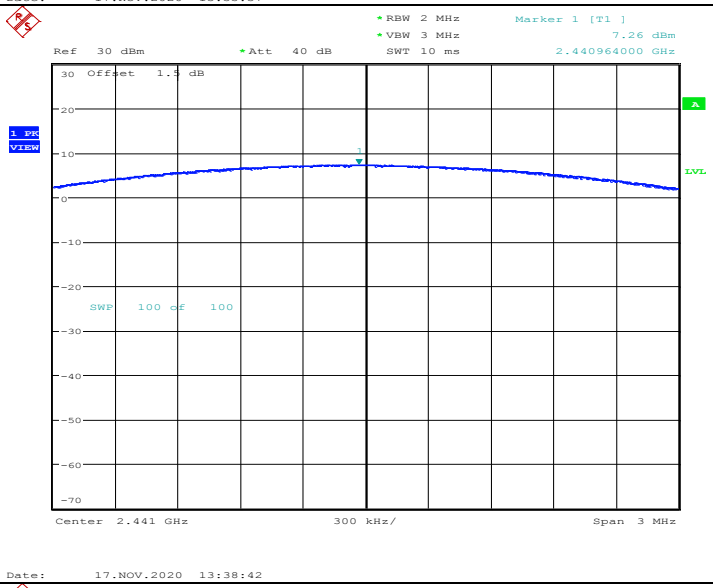
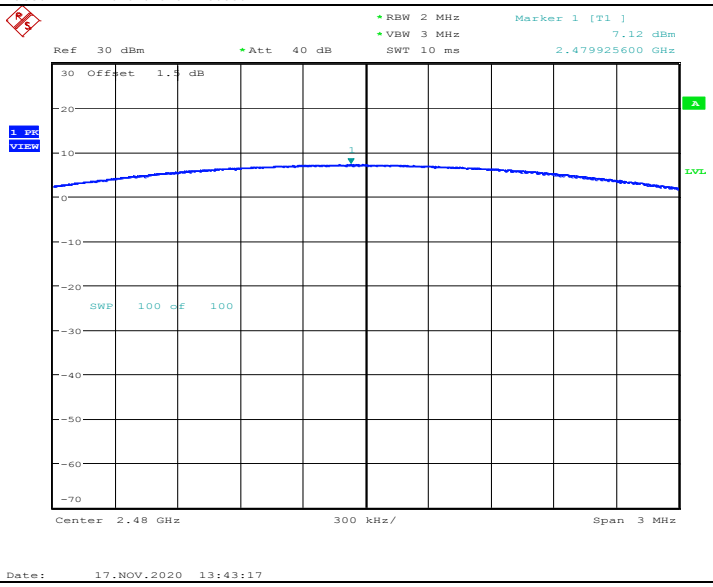
Please refer to the clause 2.3.

Test Result

Modulation type	Channel	Output power (dBm)	Limit (dBm)	Result
GFSK	00	7.63	≤ 30.00	Pass
	39	7.73		
	78	7.70		
π /4-DQPSK	00	6.85	≤ 21.00	Pass
	39	6.98		
	78	6.91		
8-DPSK	00	7.17	≤ 21.00	Pass
	39	7.26		
	78	7.12		

Modulation Type:	GFSK
CH00	
CH39	
CH78	

Modulation Type:	π /4-DQPSK
CH00	
CH39	
CH78	

Modulation Type:	8-DPSK
CH00	
CH39	
CH78	

3.9. Antenna requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):

(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

Test Result

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.

**********THE END**********