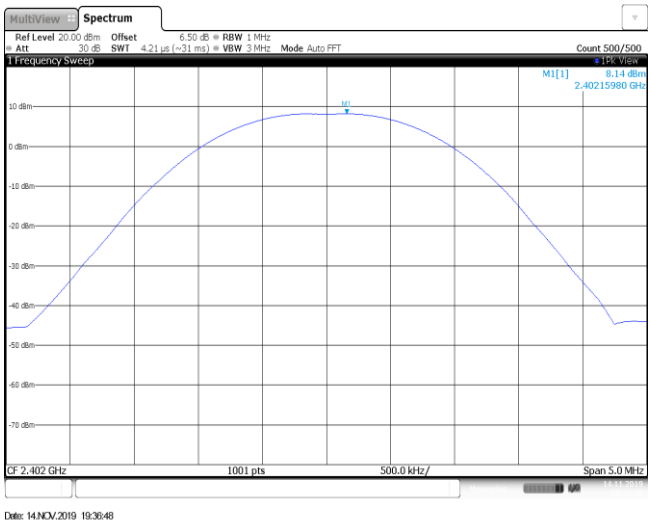
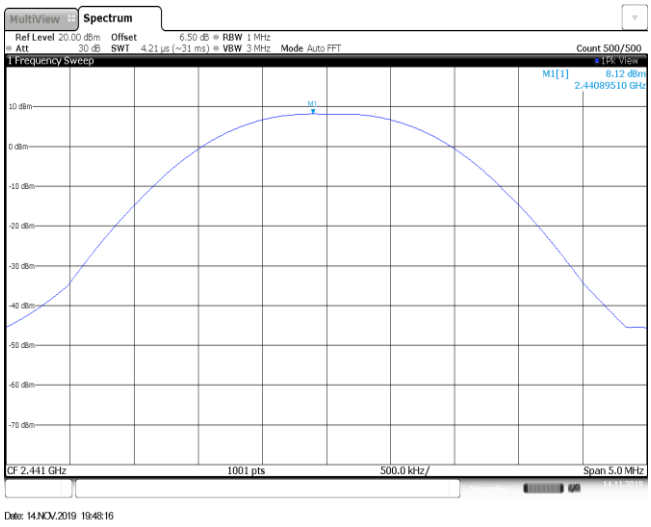
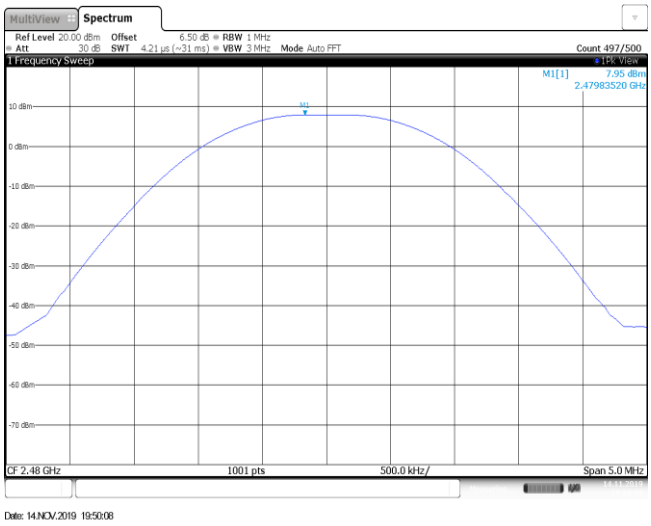
APPENDIX REPORT

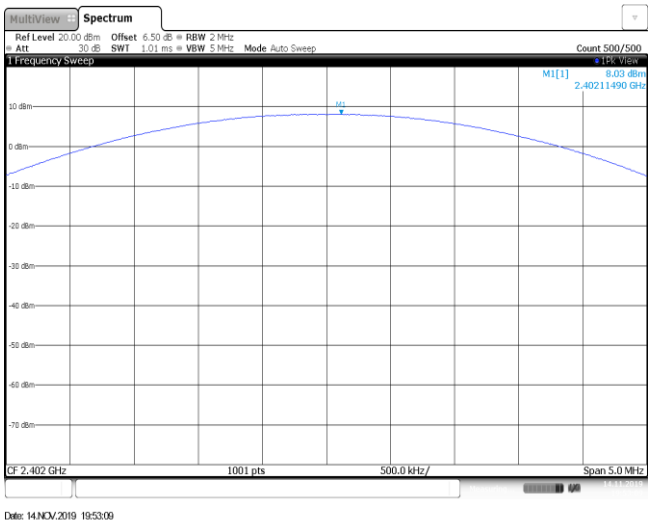
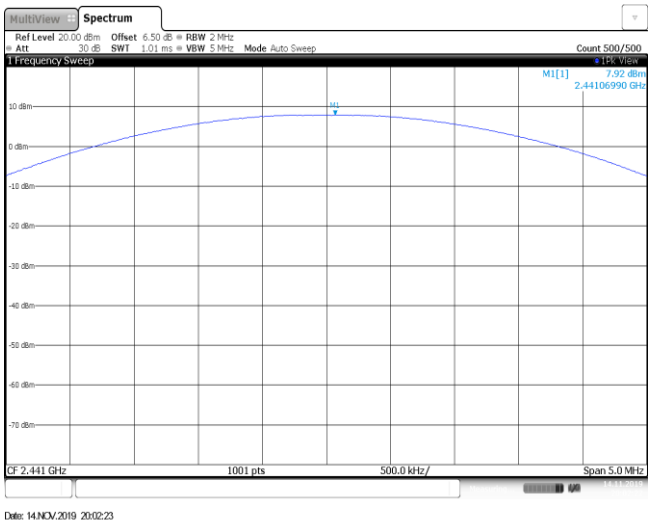
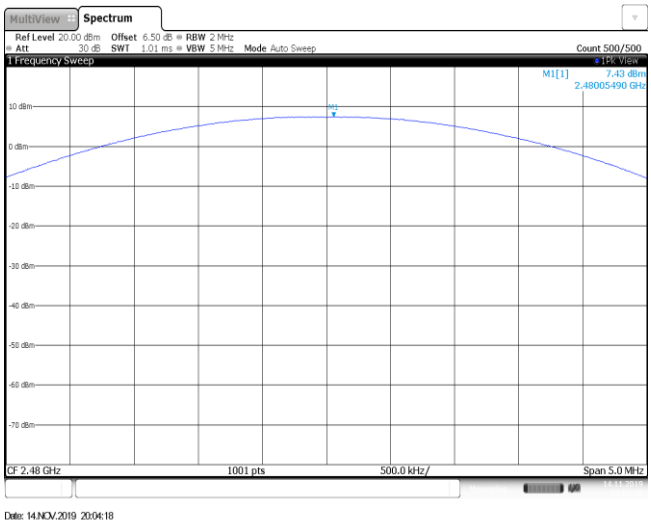
Project No.	SHT1911030001EW	Radio Specification	Bluetooth EDR
Test sample No.	YPHT19110300002	Model No.	K402
Start test date	2019/11/14	Finish date	2019/11/14
Temperature	25°C	Humidity	50%
Test Engineer	JiongSheng.Feng	Auditor	William.wang

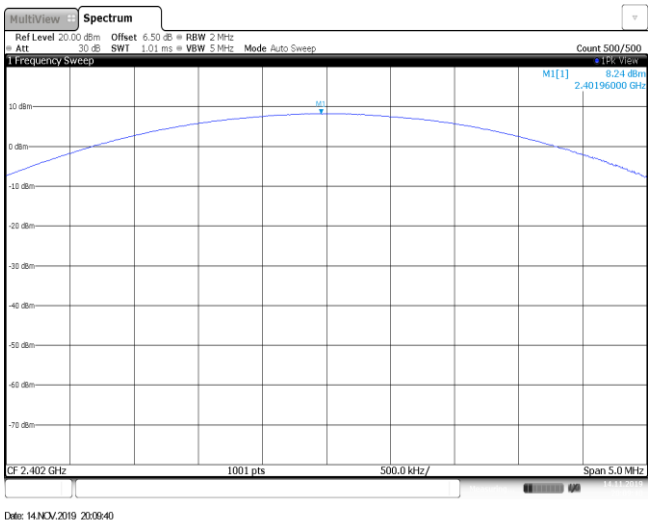
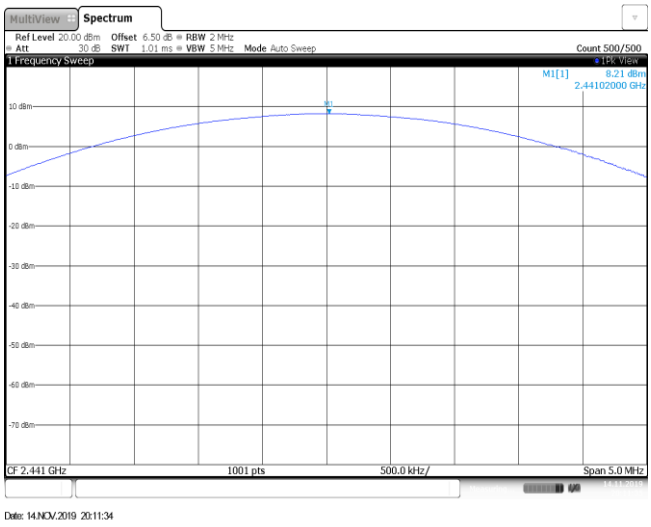
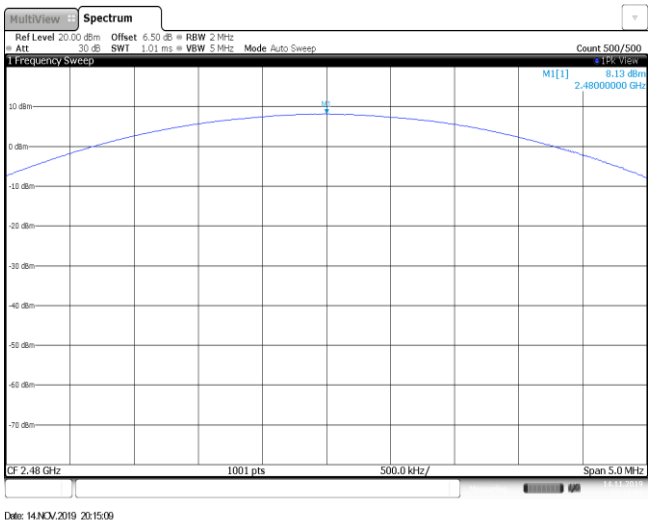
Appendix clause	Test item	Result
A	Peak Output Power	PASS
B	20 dB Bandwidth	PASS
C	99% Occupied Bandwidth	PASS
D	Carrier Frequencies Separation	PASS
E	Hopping Channel Number	PASS
F	Dwell Time	PASS
G	Duty Cycle Correction Factor (DCCF)	PASS
H	Band edge and Spurious Emissions(coducted)	PASS

Appendix A：Peak Output Power

Modulation type	Channel	Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
GFSK	00	8.14	8.12	≤ 30.00	Pass
	39	8.12	8.10		
	78	7.95	7.93		
π/4DQPSK	00	8.03	7.4	≤ 21.00	Pass
	39	7.92	7.33		
	78	7.43	6.83		
8DPSK	00	8.24	7.6	≤ 21.00	Pass
	39	8.21	7.47		
	78	8.13	7.4		

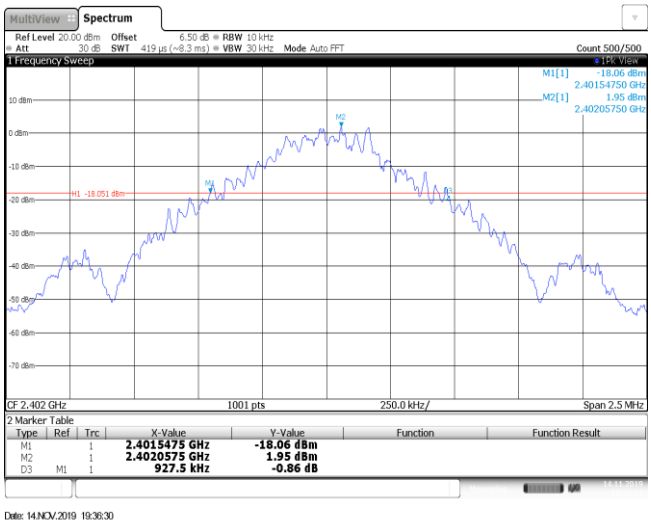
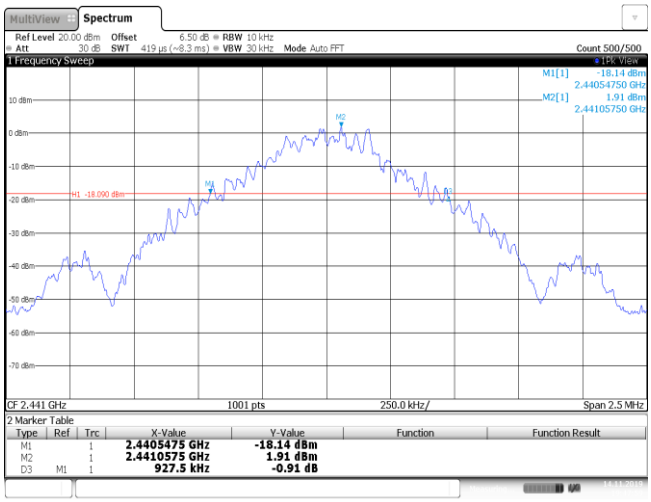
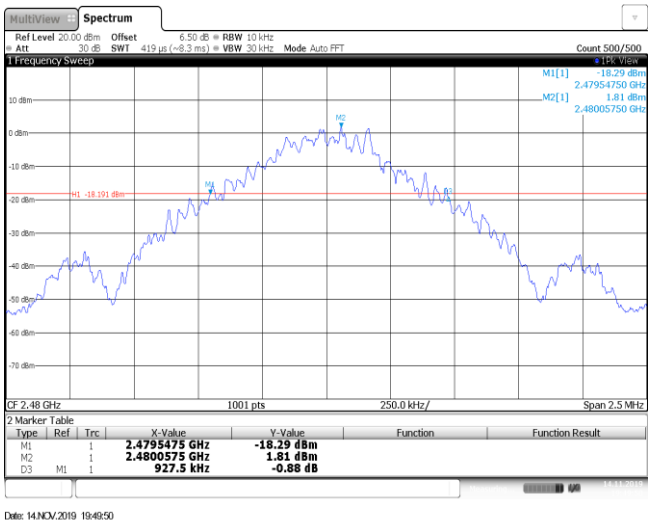
Modulation Type:	GFSK
CH00	
CH39	
CH78	

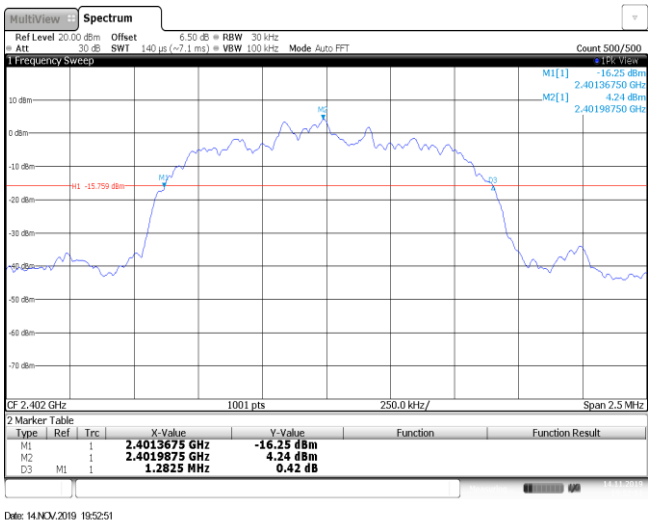
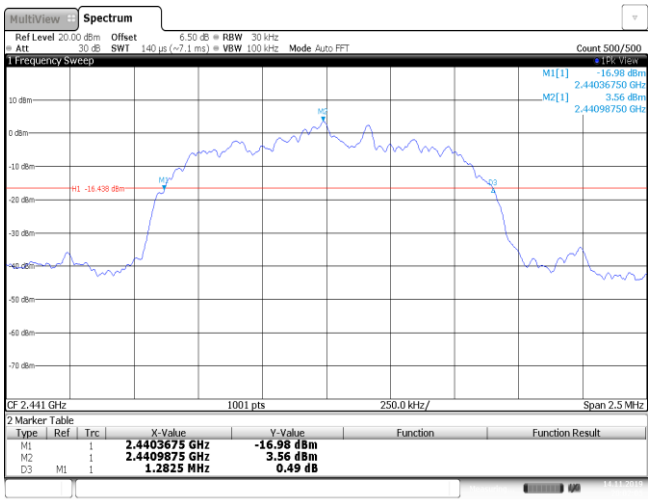
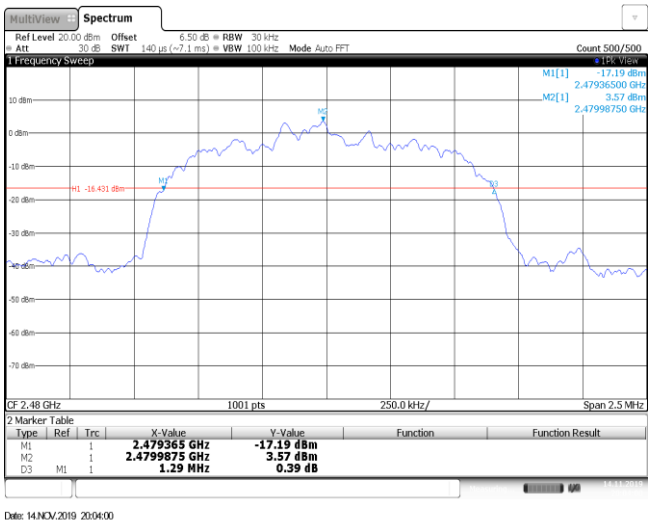
Modulation Type:	**π/4DQPSK**
CH00	
CH39	
CH78	

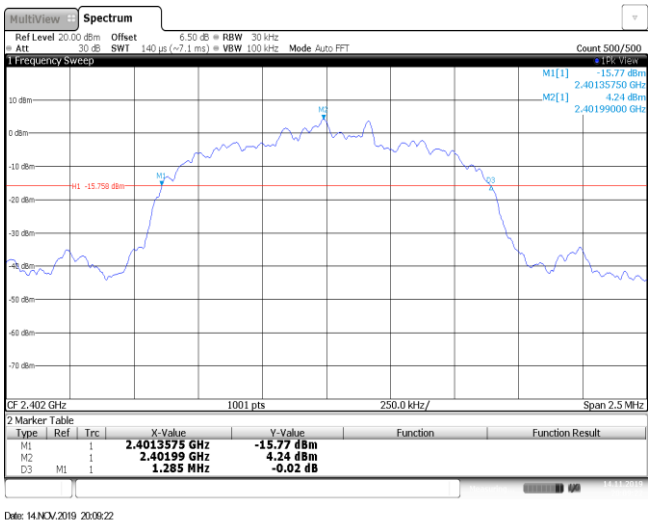
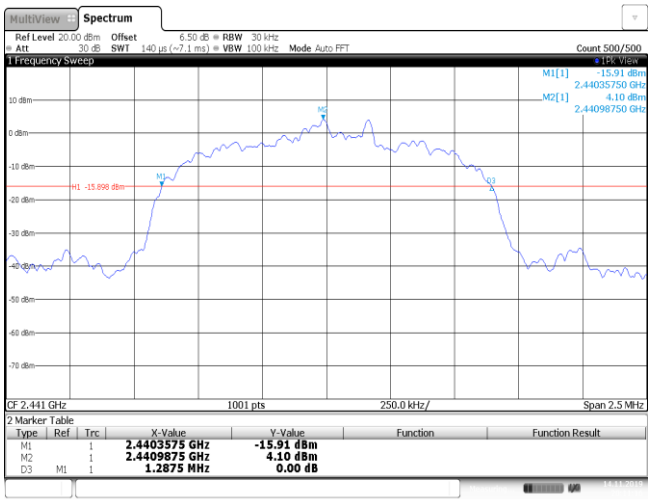
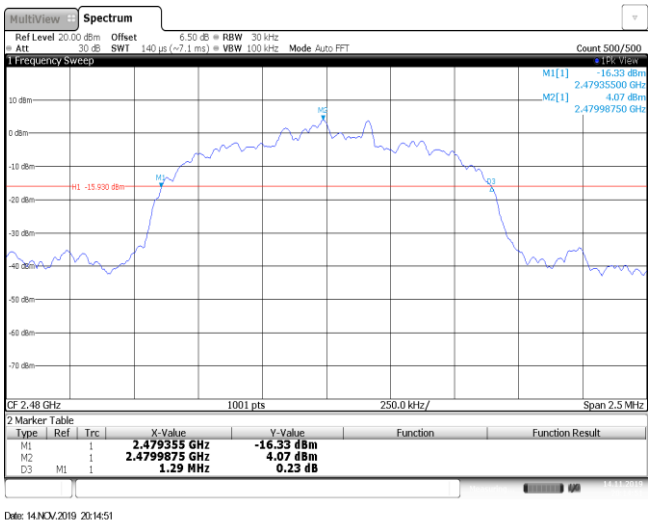
Modulation Type:	8DPSK
CH00	
CH39	
CH78	

Appendix B : 20 dB Bandwidth

Modulation type	Channel	20 dB Bandwidth (MHz)	Limit (MHz)	Result
GFSK	00	0.93	-	Pass
	39	0.93		
	78	0.93		
π/4DQPSK	00	1.28	-	Pass
	39	1.28		
	78	1.29		
8DPSK	00	1.29	-	Pass
	39	1.29		
	78	1.29		

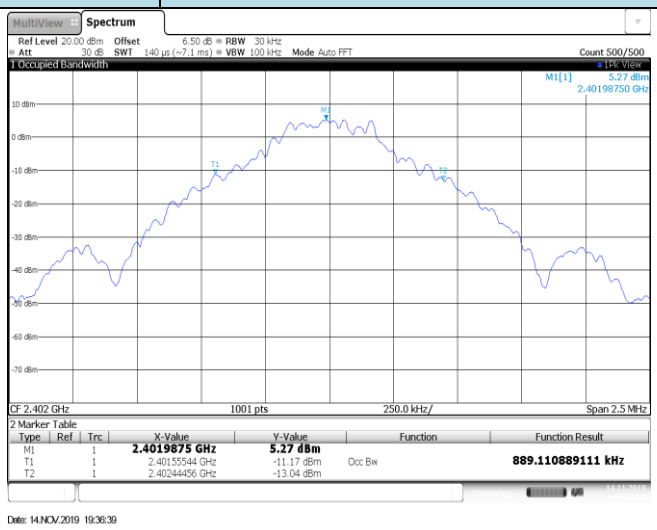
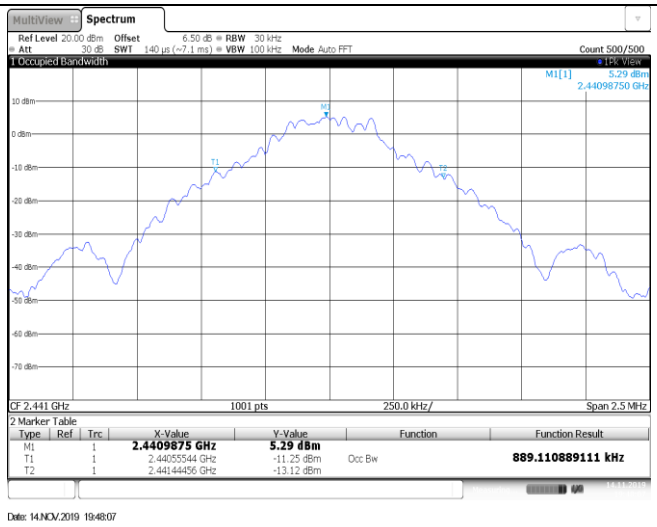
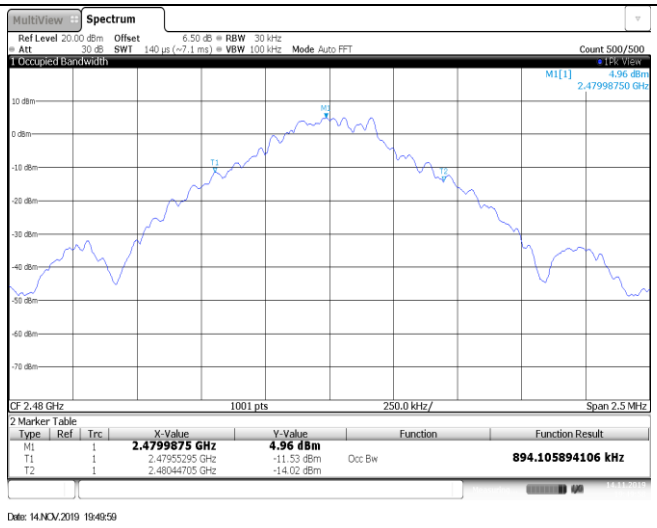
Modulation Type:	GFSK
CH00	
CH39	
CH78	

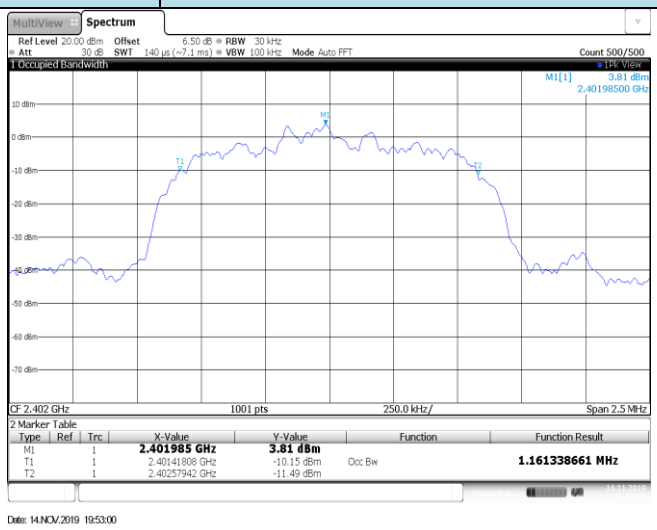
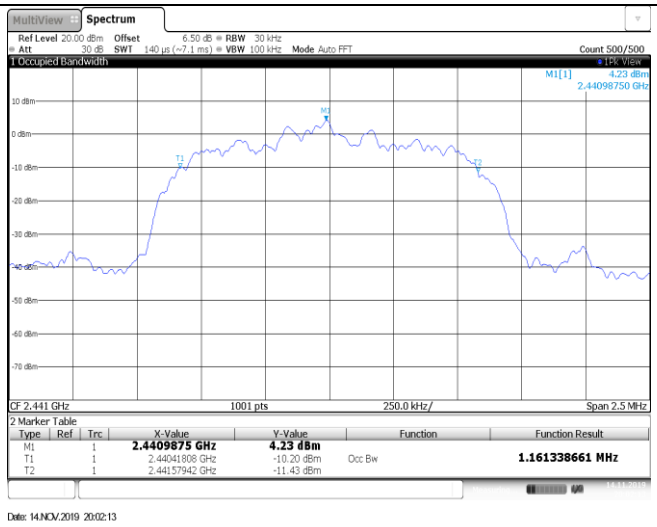
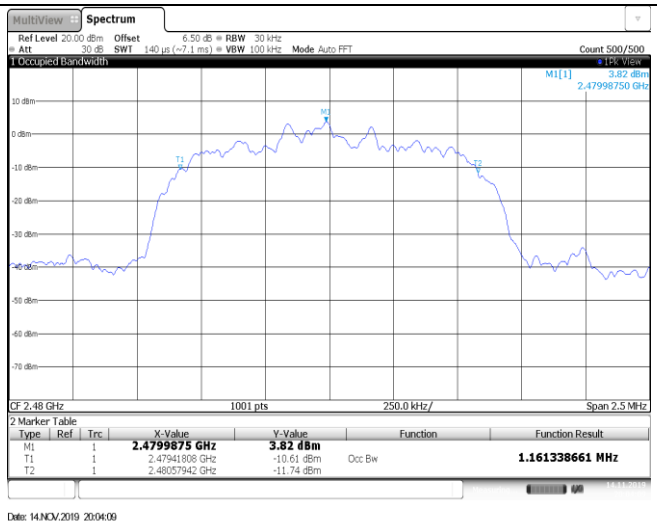
Modulation Type:	π/4DQPSK
CH00	
CH39	
CH78	

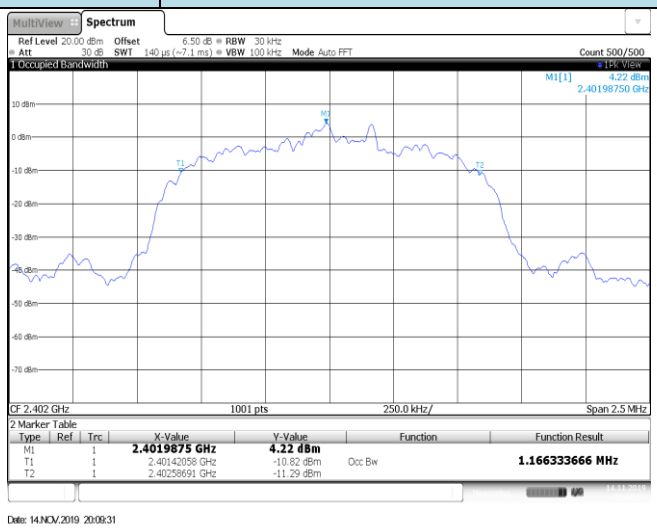
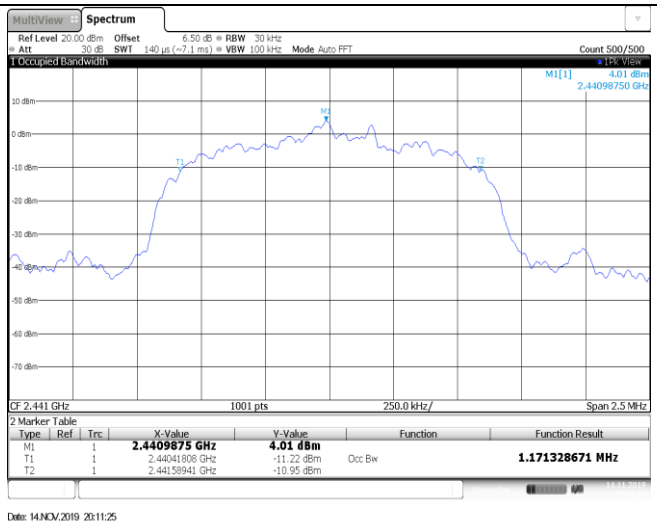
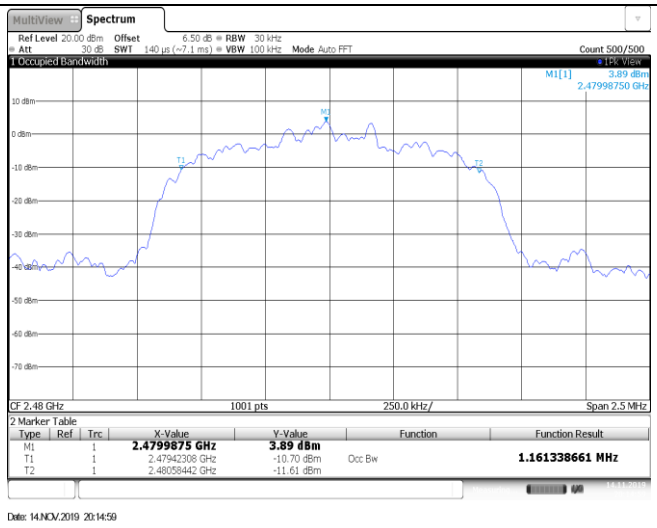
Modulation Type:	**8DPSK**
CH00	
CH39	
CH78	

Appendix C：99% Occupied Bandwidth

Modulation type	Channel	99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
GFSK	00	0.89	-	Pass
	39	0.89		
	78	0.89		
π/4DQPSK	00	1.16	-	Pass
	39	1.16		
	78	1.16		
8DPSK	00	1.17	-	Pass
	39	1.17		
	78	1.16		

Modulation Type:	GFSK
CH00	
CH39	
CH78	

Modulation Type:	π/4DQPSK
CH00	
CH39	
CH78	

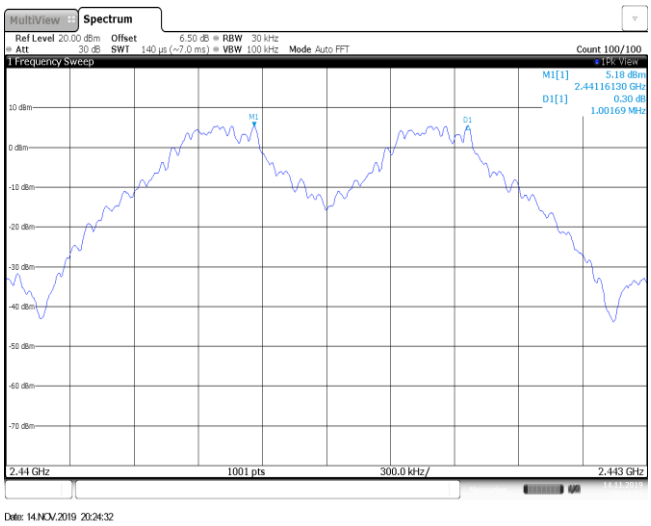
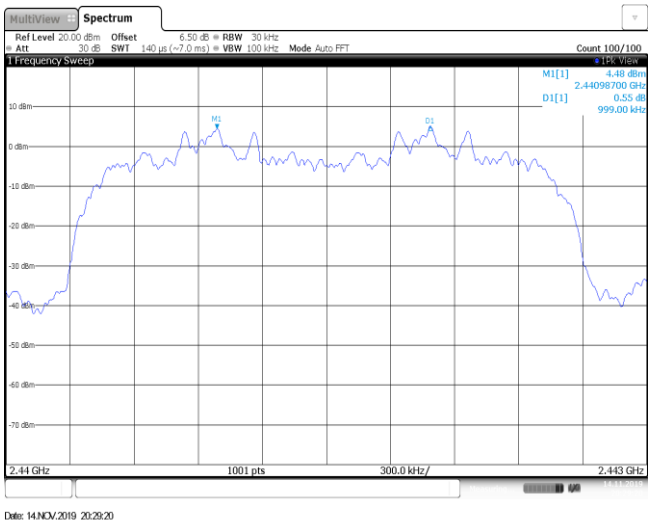
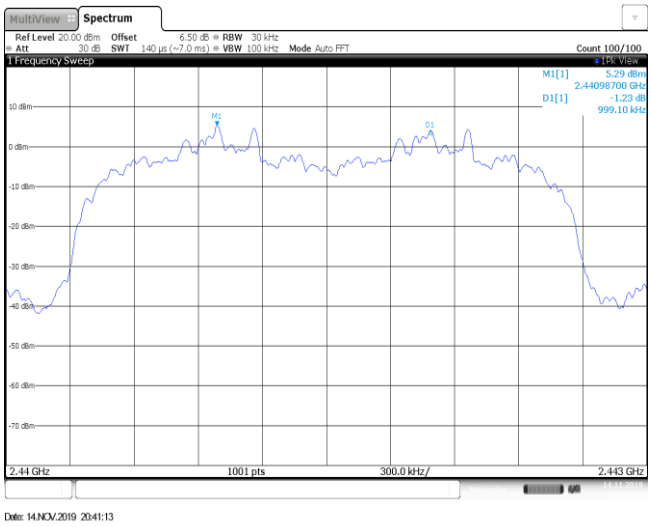
Modulation Type:	8DPSK
CH00	
CH39	
CH78	

Appendix D：Carrier Frequencies Separation

Modulation type	Channel	Carrier Frequencies Separation (MHz)	Limit (MHz) *	Result
GFSK	39	1.00	≥0.93	Pass
π/4DQPSK	39	1.00	≥0.86	Pass
8DPSK	39	1.00	≥0.86	Pass

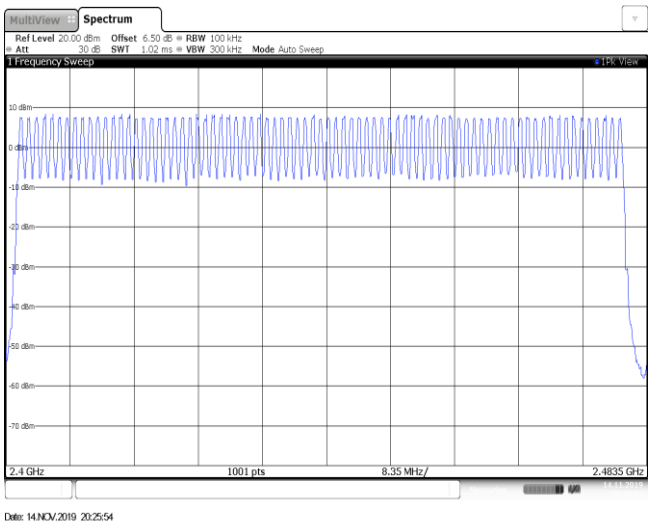
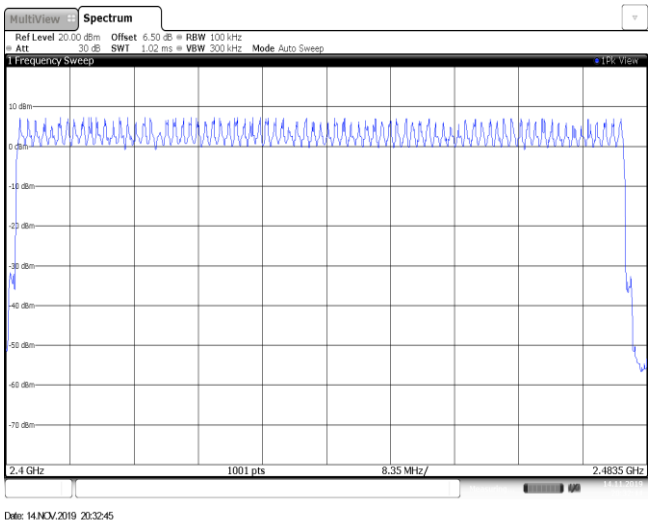
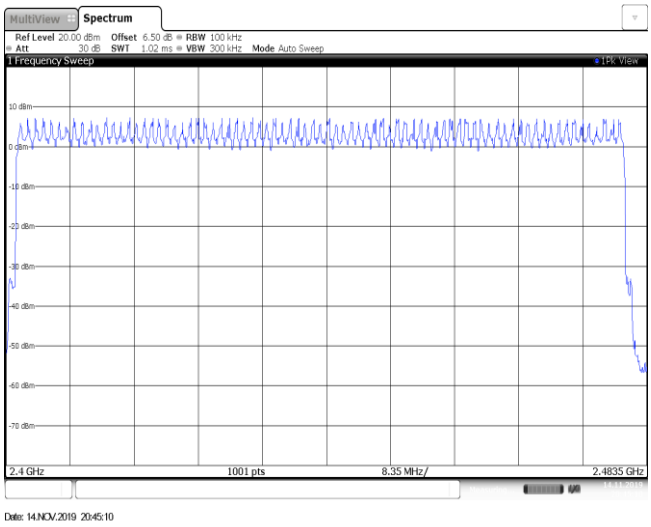
Note:

*: GFSK limit = The maximum 20 dB Bandwidth for GFSK modulation on the section 5.4.
π/4DQPSK limit = 2/3 * The maximum 20 dB Bandwidth for π/4DQPSK modulation on the section 5.4.
8DPSK limit = 2/3 * The maximum 20 dB Bandwidth for 8DPSK modulation on the section 5.4

GFSK	
π/4DQPSK	
8DPSK	

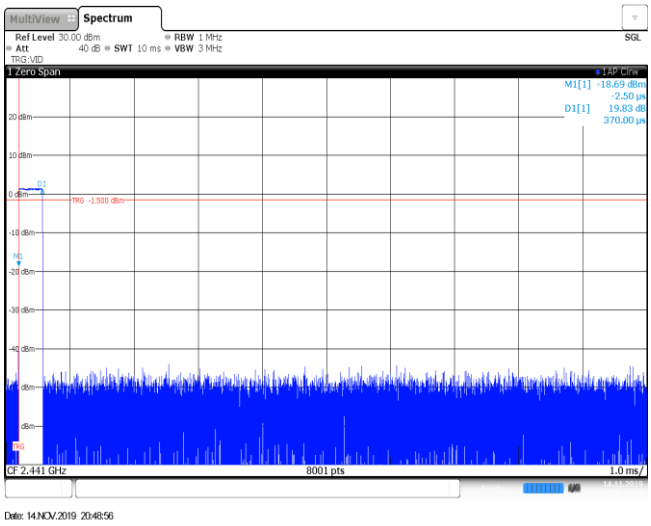
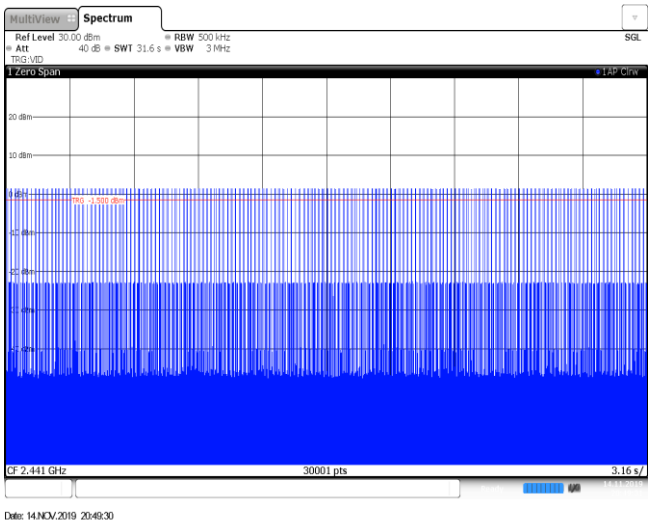
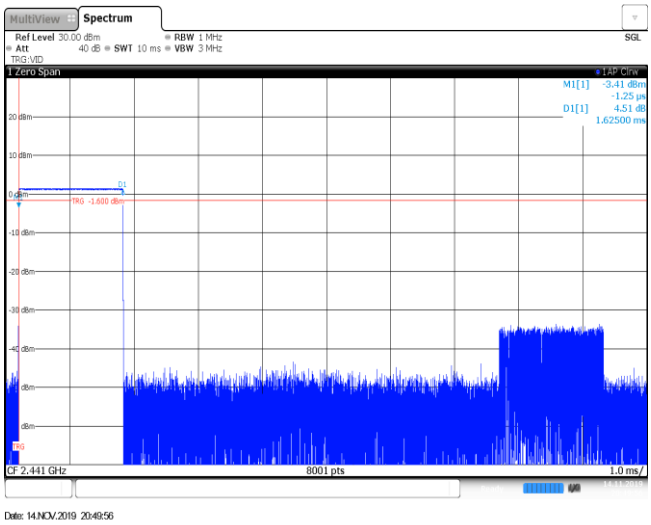
Appendix E：Hopping Channel Number

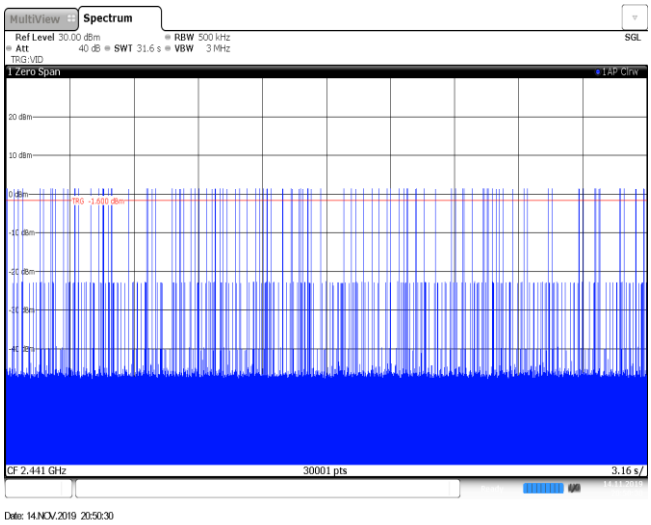
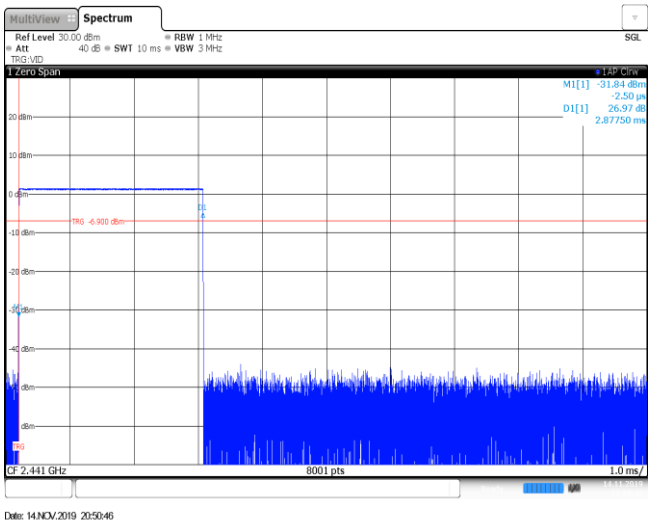
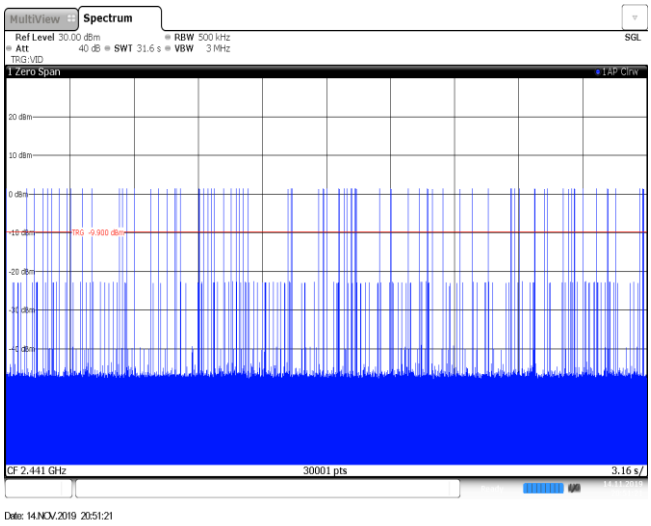
Modulation type	Channel number	Limit	Result
GFSK	79	≥15.00	Pass
π/4DQPSK	79		
8DPSK	79		

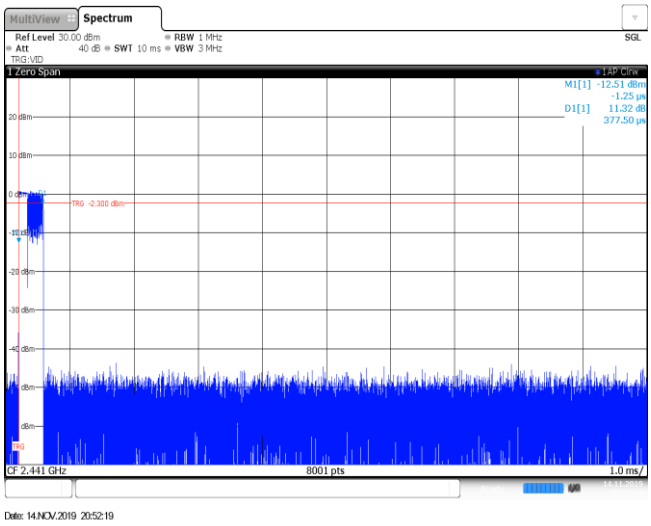
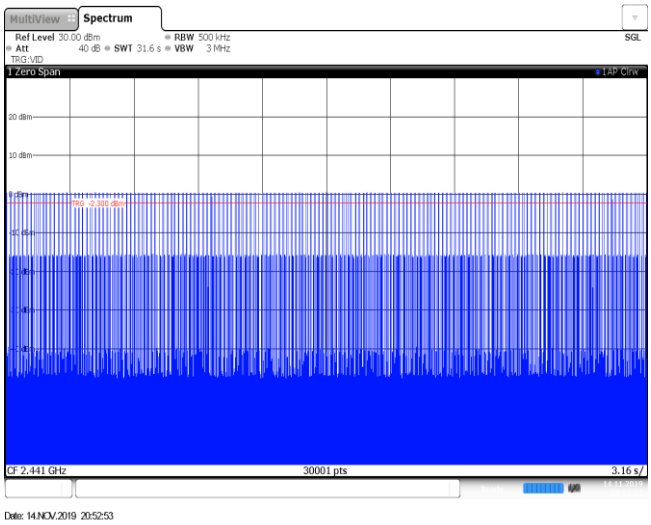
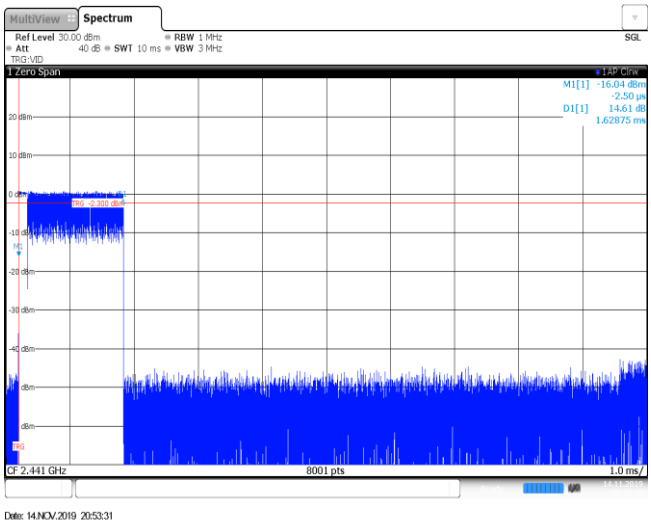
GFSK	
π/4DQPSK	
8DPSK	

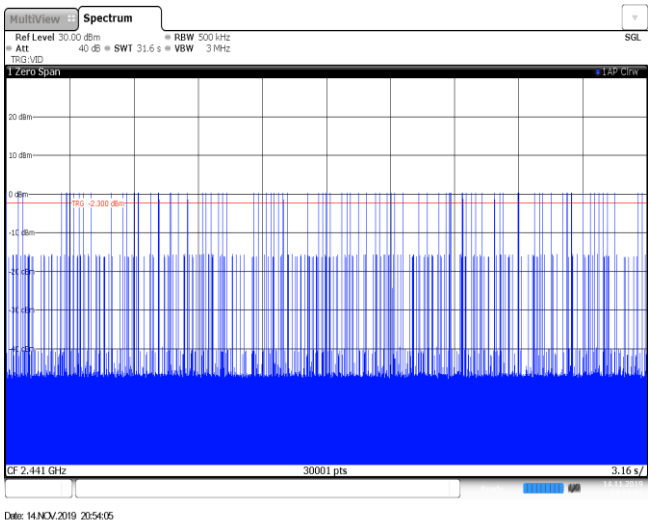
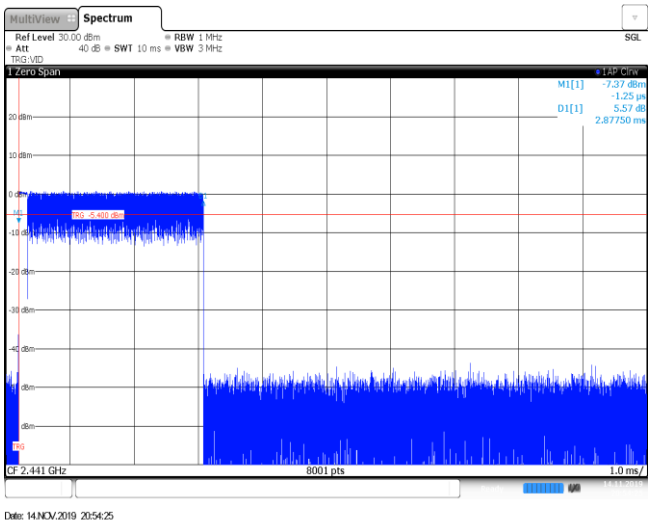
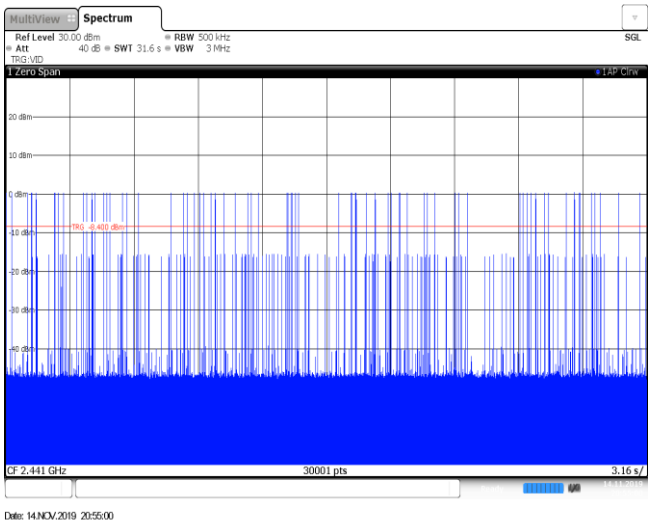
Appendix F：Dwell Time

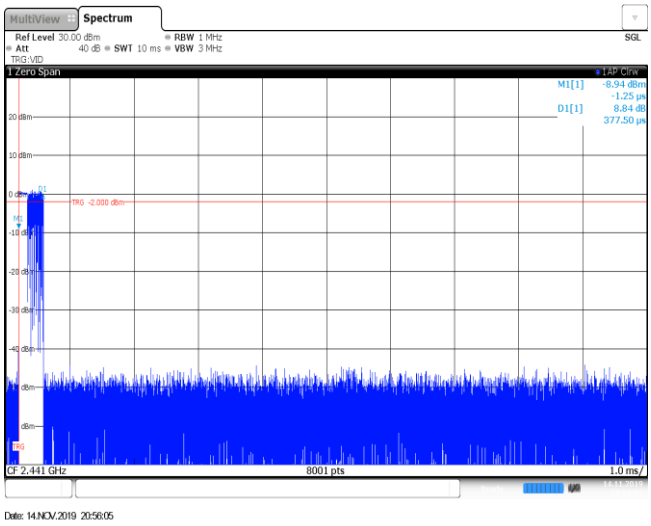
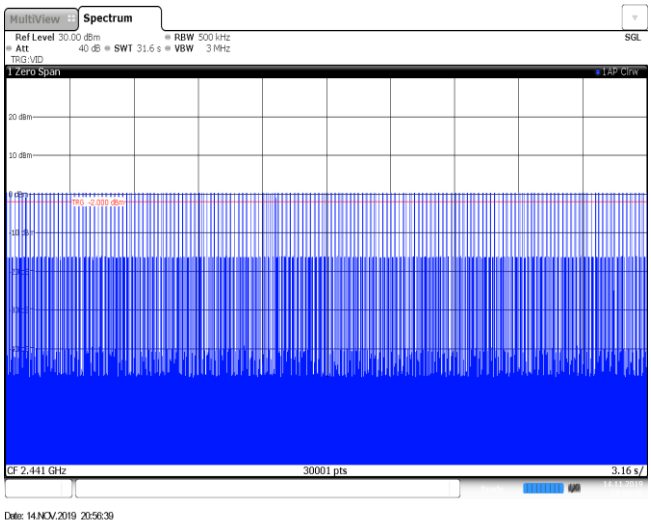
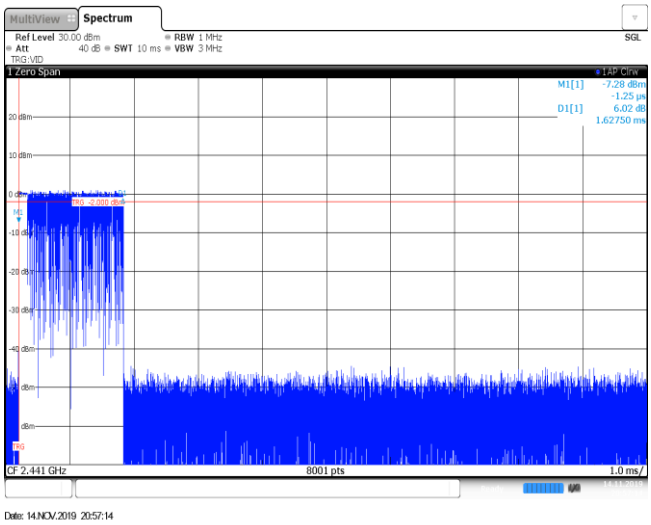
Modulation type	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell time (Second)	Limit (Second)	Result
GFSK	DH1	0.37	317.00	0.12	≤ 0.40	Pass
	DH3	1.63	105.00	0.17		
	DH5	2.88	74.00	0.21		
π/4DQPSK	2DH1	0.38	321.00	0.12	≤ 0.40	Pass
	2DH3	1.63	91.00	0.15		
	2DH5	2.88	72.00	0.21		
8DPSK	3DH1	0.38	321.00	0.12	≤ 0.40	Pass
	3DH3	1.63	102.00	0.17		
	3DH5	2.88	62.00	0.18		

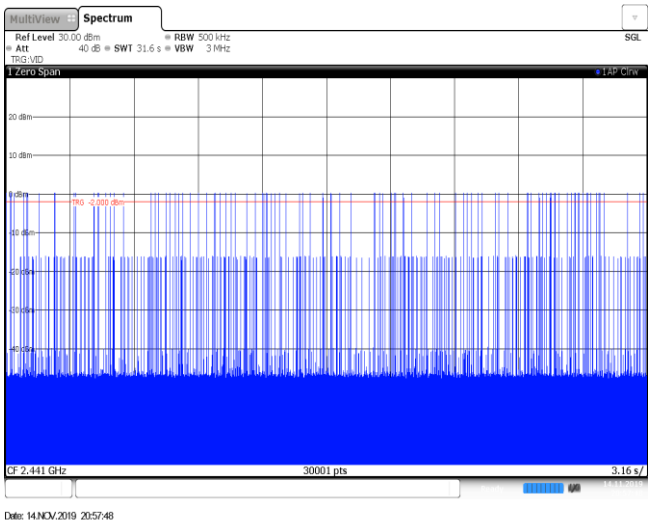
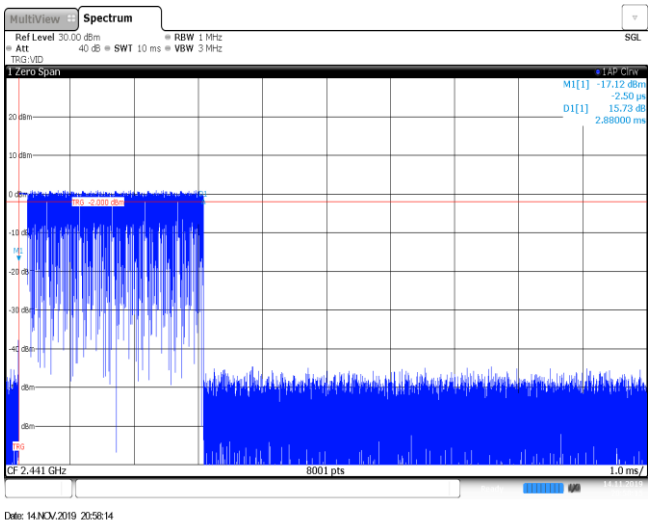
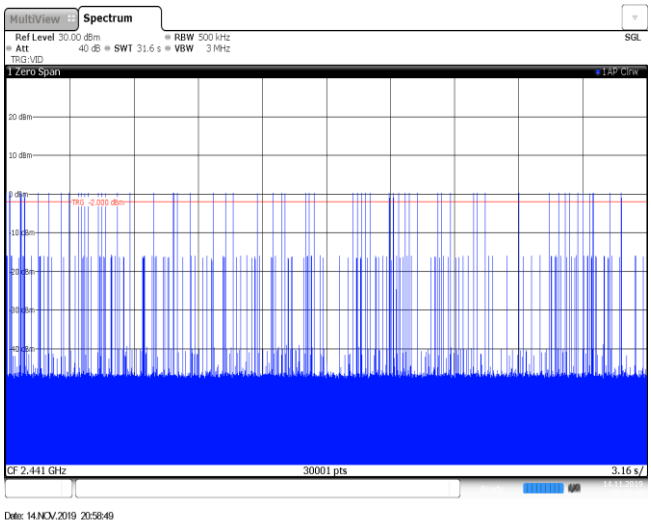
Modulation Type:	**GFSK**
DH1 Burst width	
DH1 Burst number	
DH3 Burst width	

DH3 Burst number	
DH5 Burst width	
DH5 Burst number	

Modulation Type:	**π/4DQPSK**
2DH1 Burst width	
2DH1 Burst number	
2DH3 Burst width	

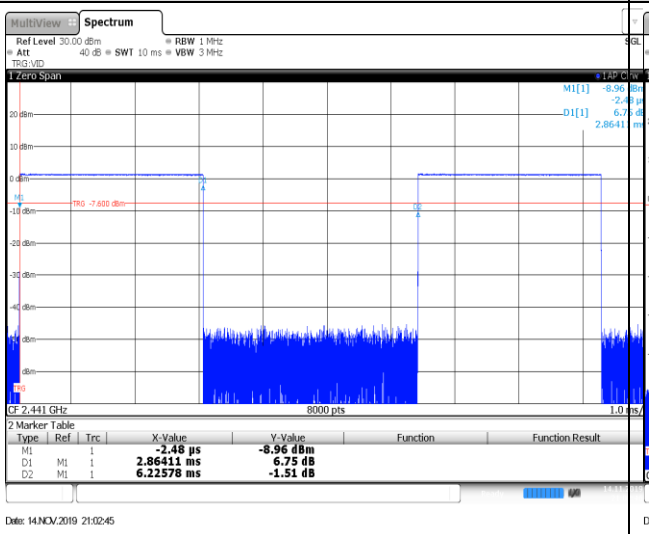
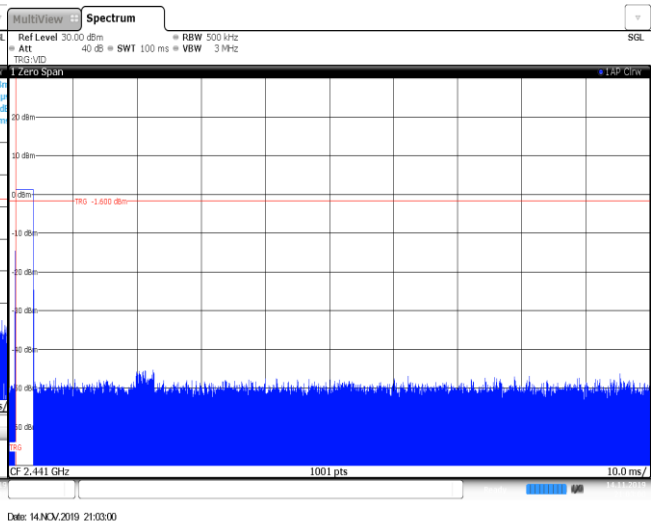
2DH3 Burst number	
2DH5 Burst width	
2DH5 Burst number	

Modulation Type:	8DPSK
3DH1 Burst width	
3DH1 Burst number	
3DH3 Burst width	

3DH3 Burst number	
3DH5 Burst width	
3DH5 Burst number	

Appendix G：Duty Cycle Correction Factor (DCCF)

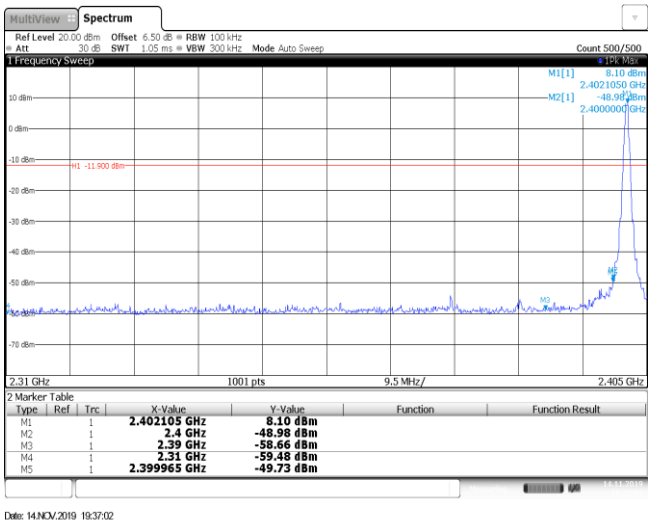
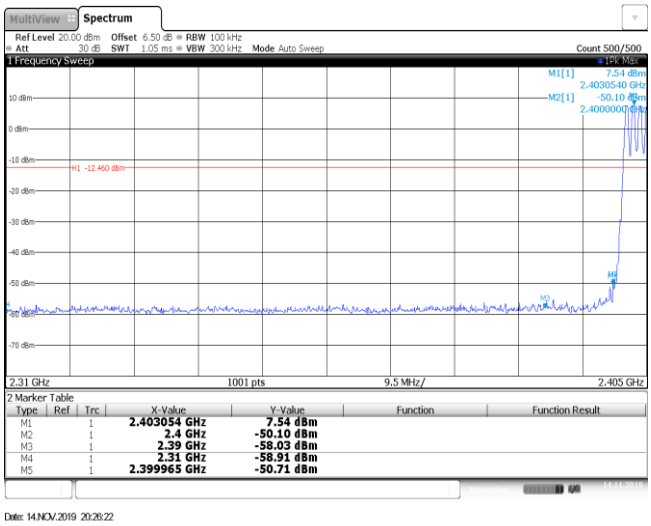
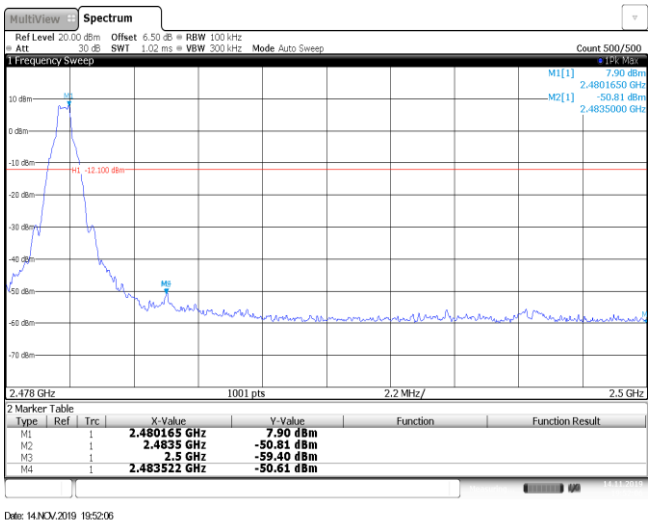
DCCF Calculate Formula					
DCCF=20 * Log(duty cycle) = 20 * Log($T_{on\ time}$ / T_{period}) =20 * Log($T_{on\ time}$ / 100ms) = 20 * Log(2.86 ms*1/100ms)					
Modulation type	Test Frequency （MHz）	$T_{on\ time}$ for single burst	T_{period}	Burst Quantity	DCCF
GFSK	2441	2.86	100ms	1.00	-30.87

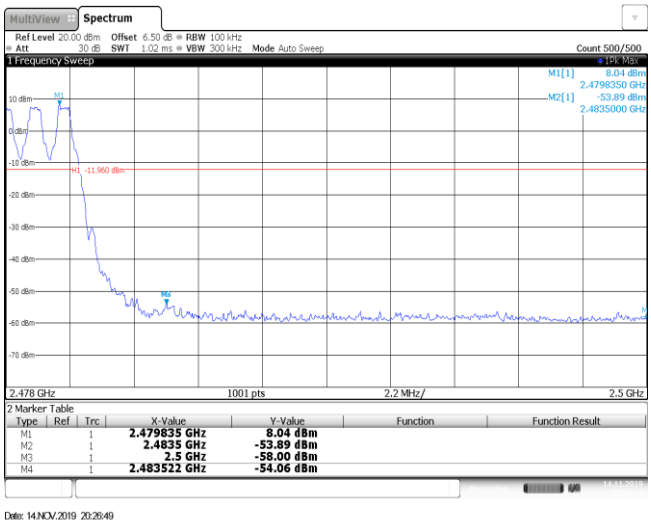
$T_{on\ time}$ for single burst	Burst Quantity
	
$T_{on\ time}$=2.86	Burst Quantity =1.00

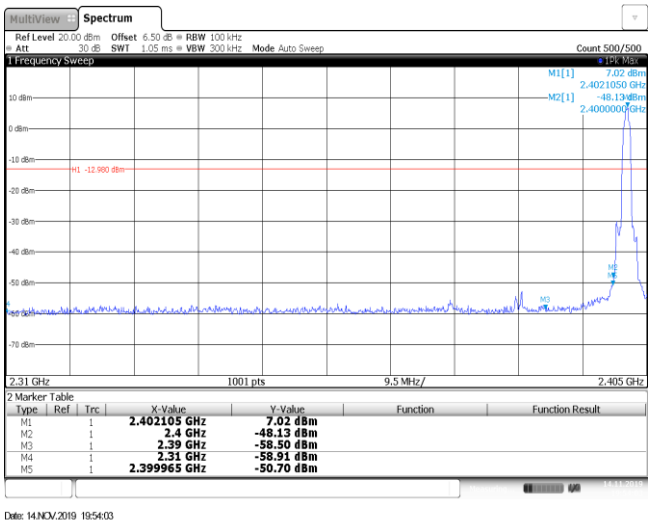
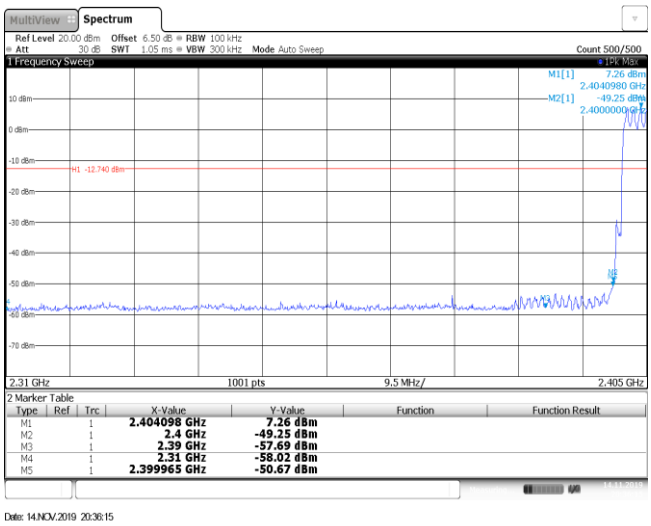
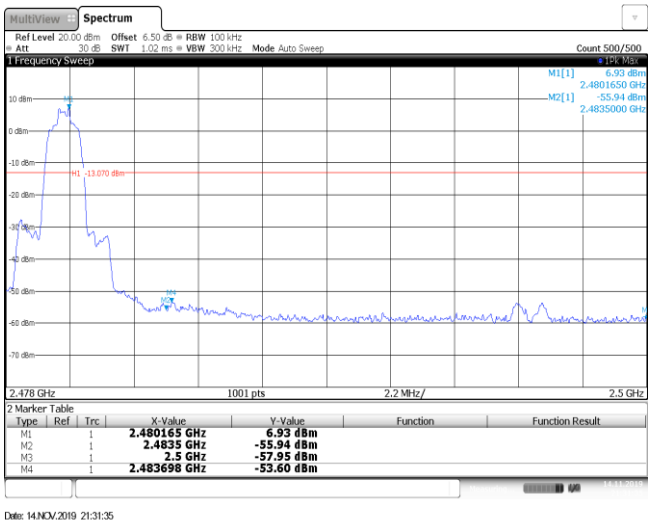
DCCF Calculate Formula：

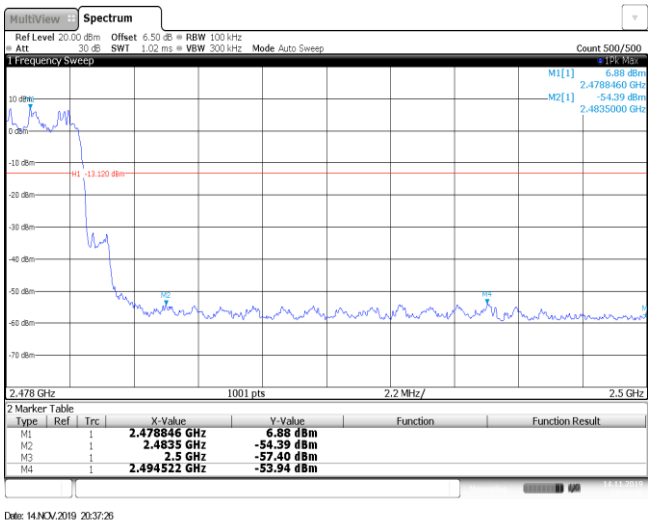
DCCF=20 * Log(duty cycle) = 20 * Log($T_{on\ time}$ / T_{period}) =20 * Log($T_{on\ time}$ / 100ms)

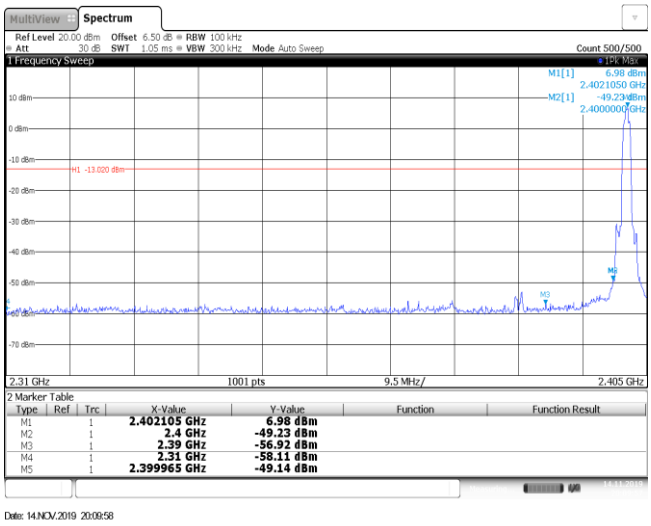
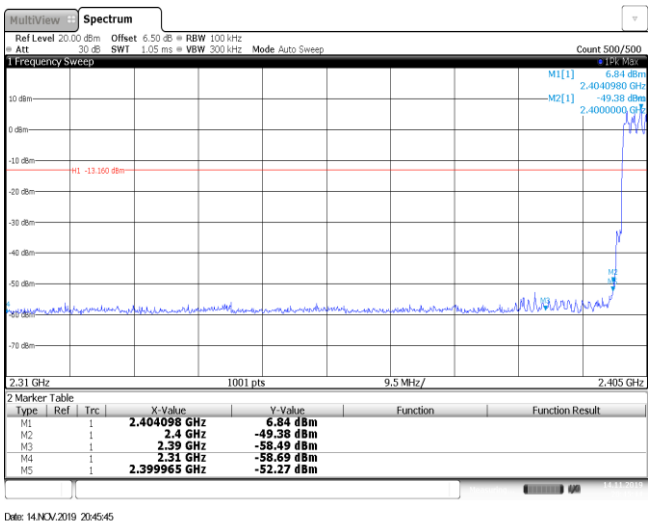
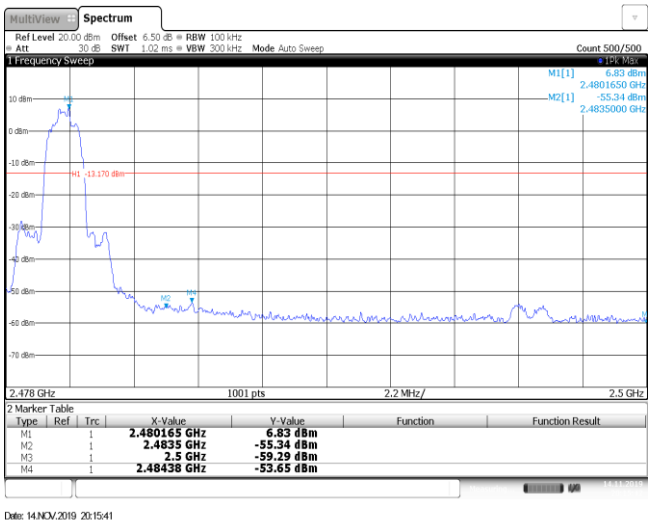
Appendix H：Band edge and Spurious Emissions (conducted)

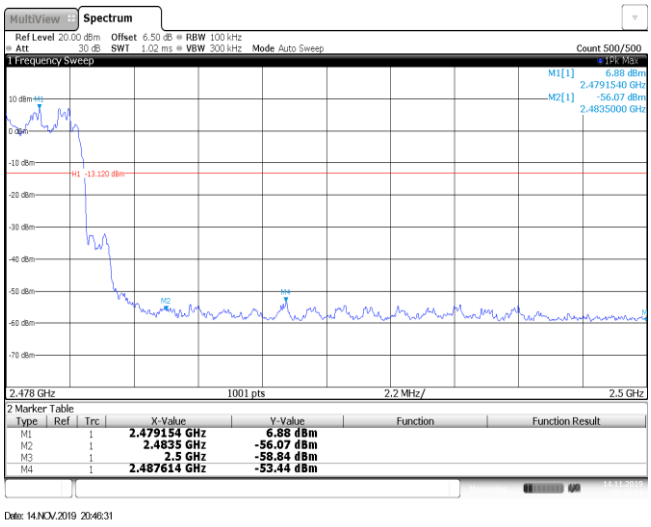
Test Item:	Band edge	Modulation type:	GFSK
CH00 No hopping mode			
CH00 Hopping mode			
CH78 No hopping mode			

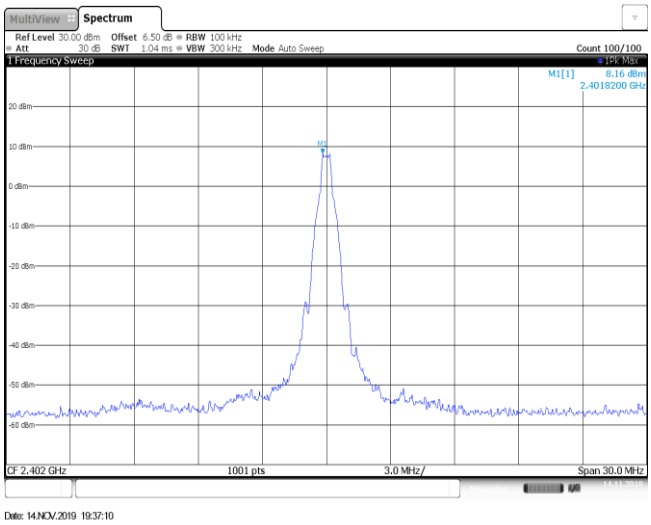
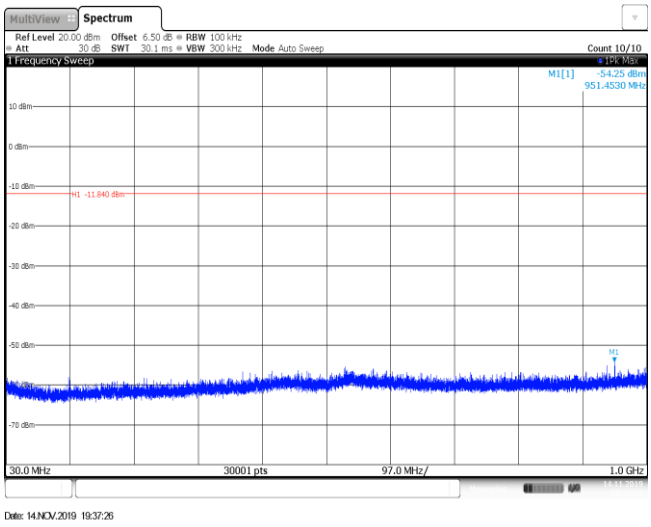
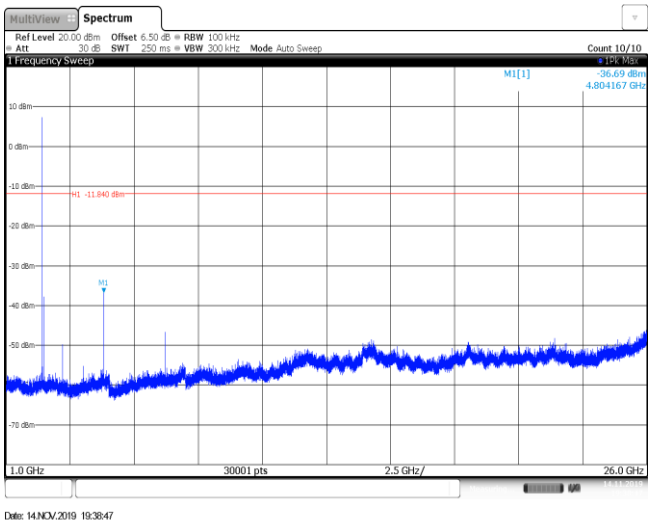
CH78 Hopping mode	

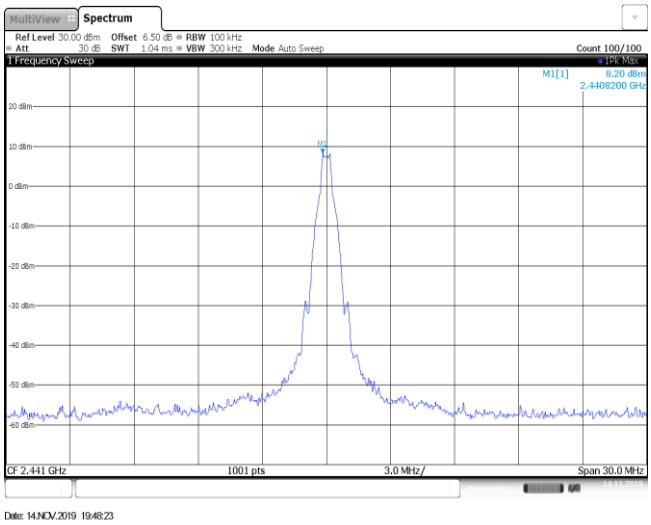
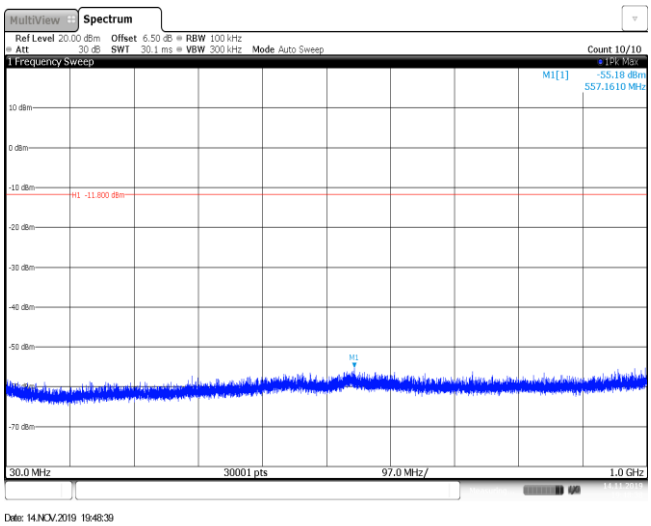
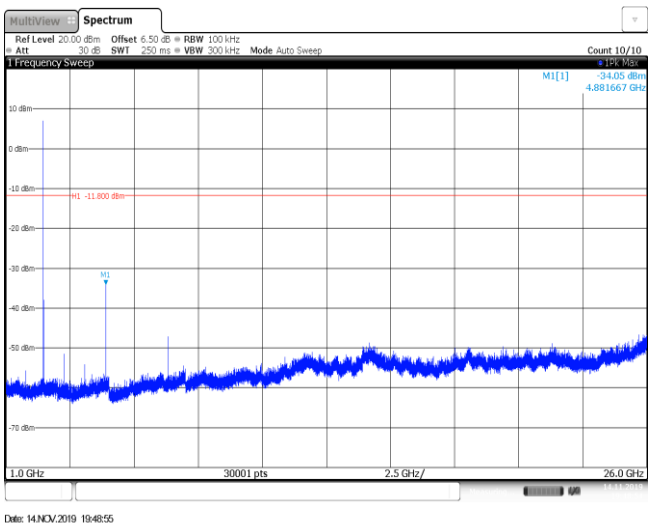
Test Item:	Band edge	Modulation type:	π/4DQPSK
CH00 No hopping mode			
CH00 Hopping mode			
CH78 No hopping mode			

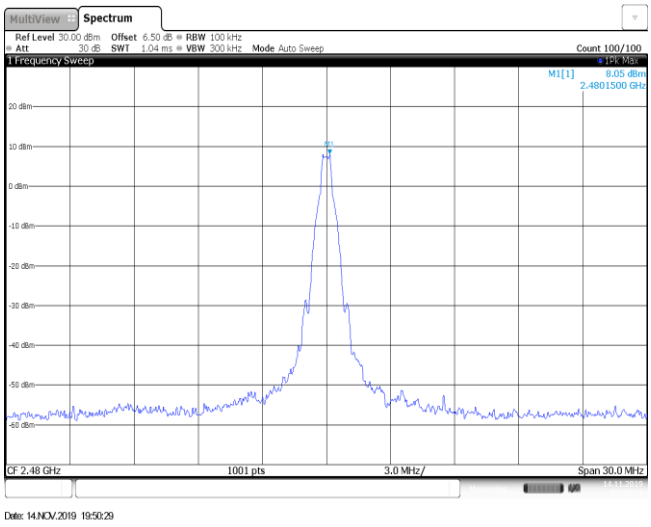
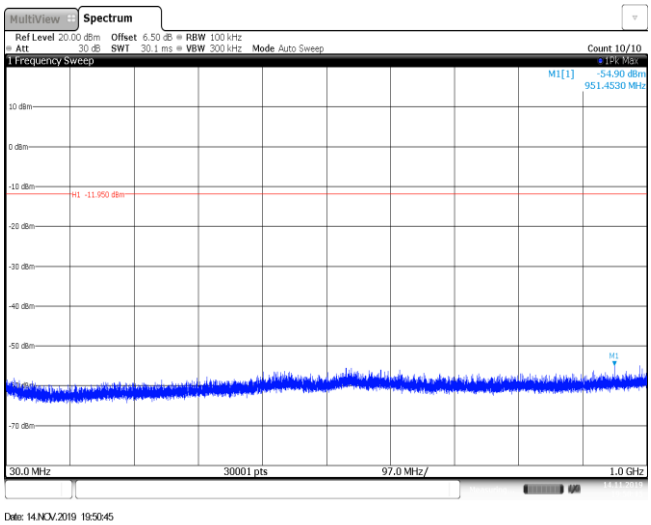
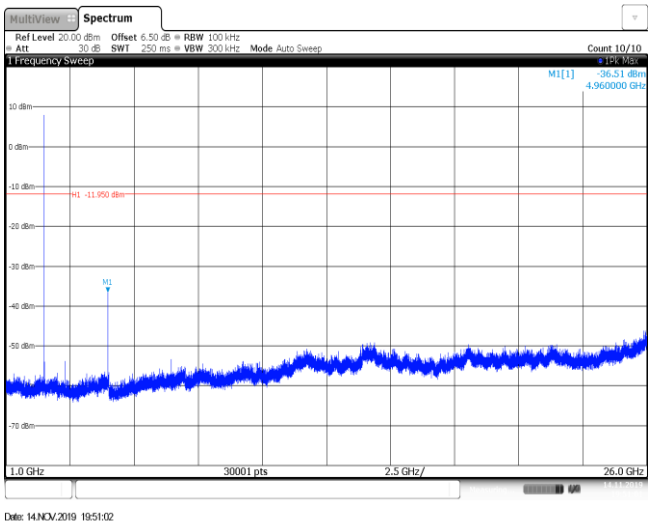
CH78 Hopping mode	

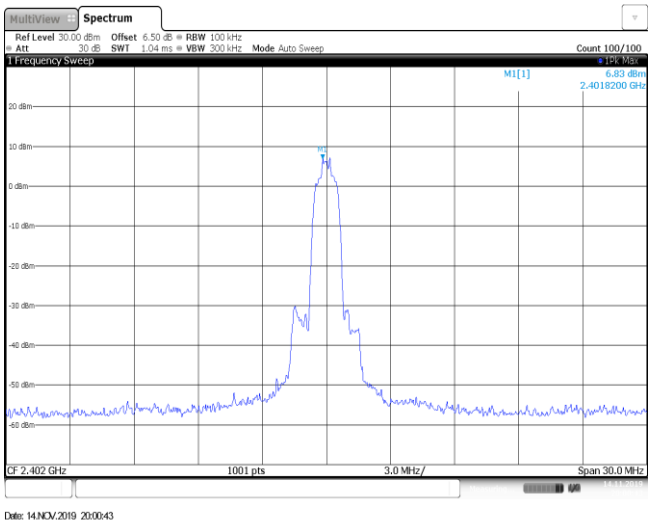
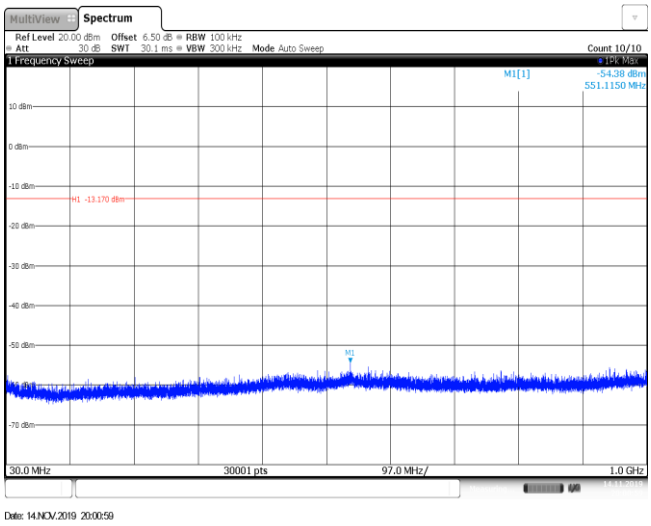
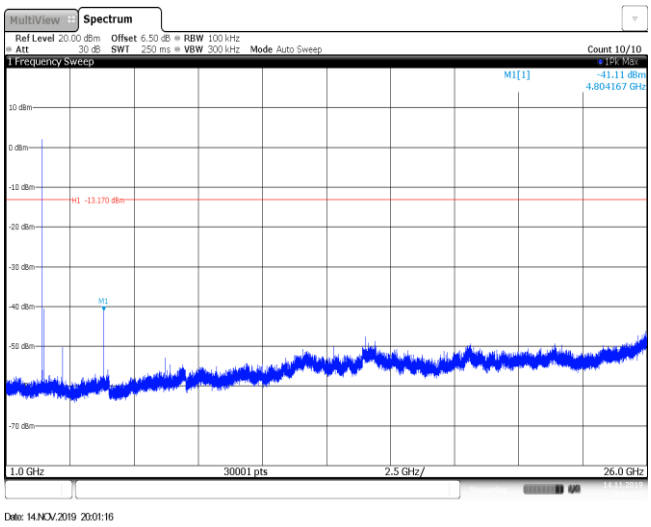
Test Item:	Band edge	Modulation type:	8DPSK
CH00 No hopping mode			
CH00 Hopping mode			
CH78 No hopping mode			

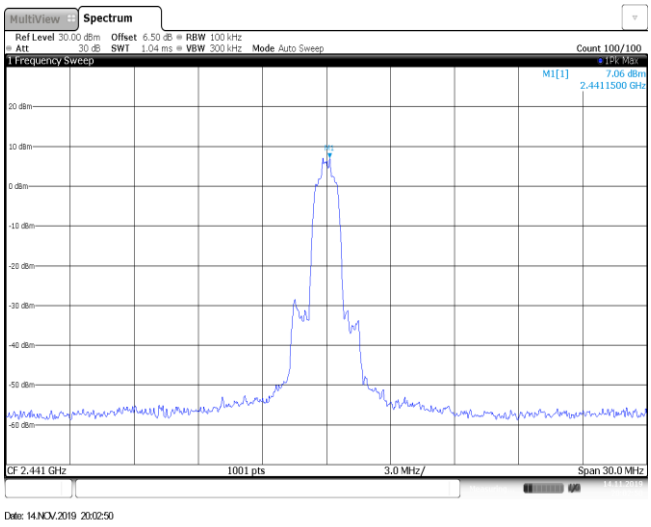
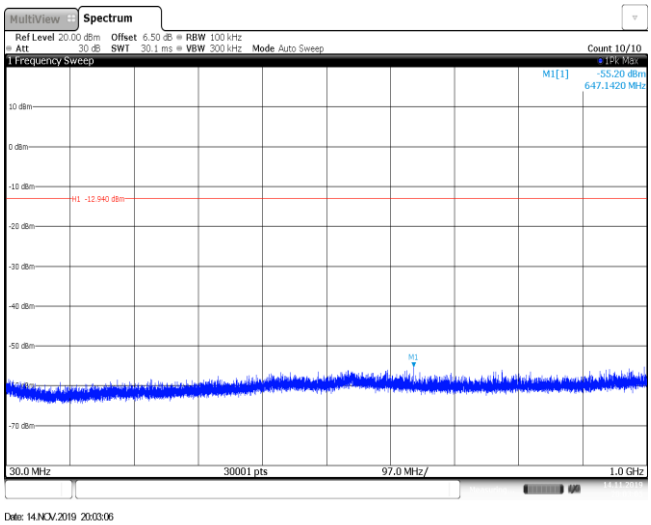
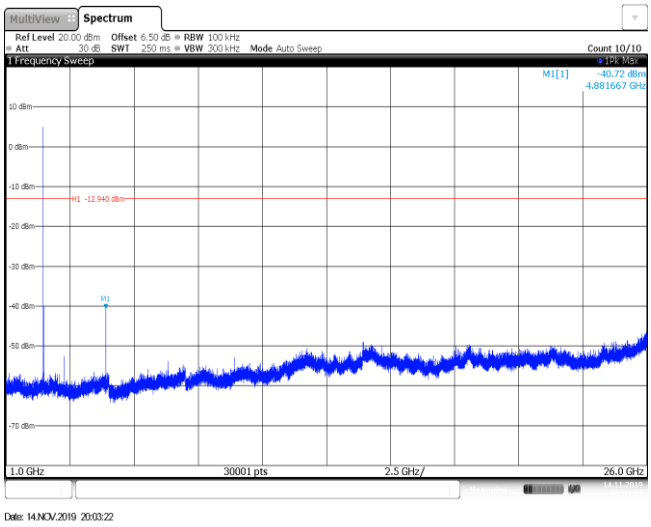
CH78 Hoppig mode	

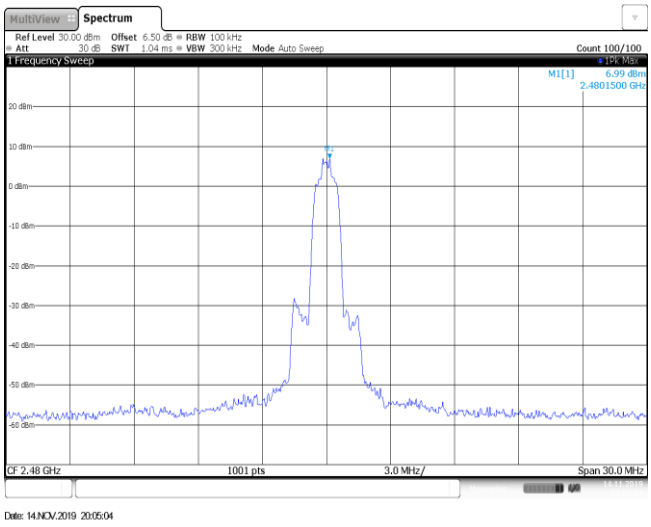
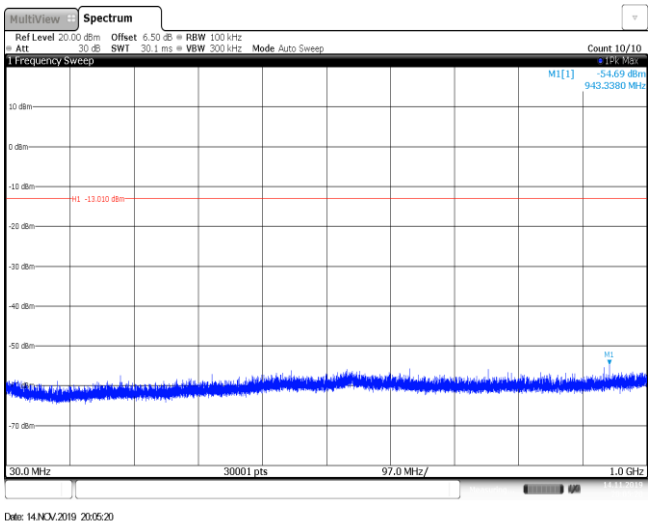
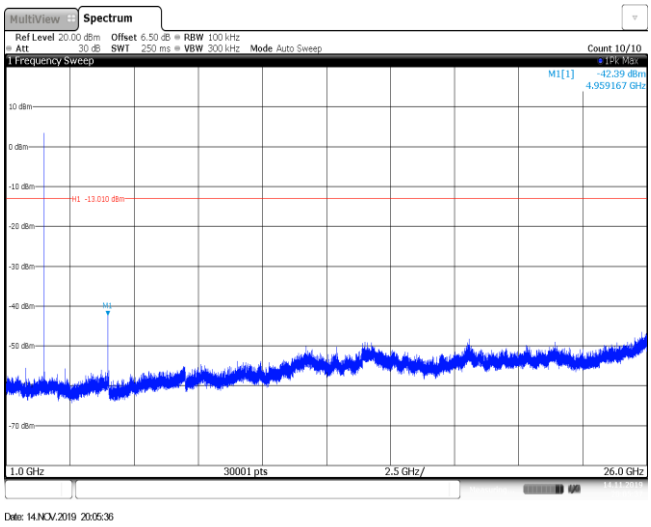
Test Item:	Spurious Emission	Modulation type:	GFSK
CH00 Reference level	
CH00 30MHz~1000MHz	
CH00 1GHz~26GHz	

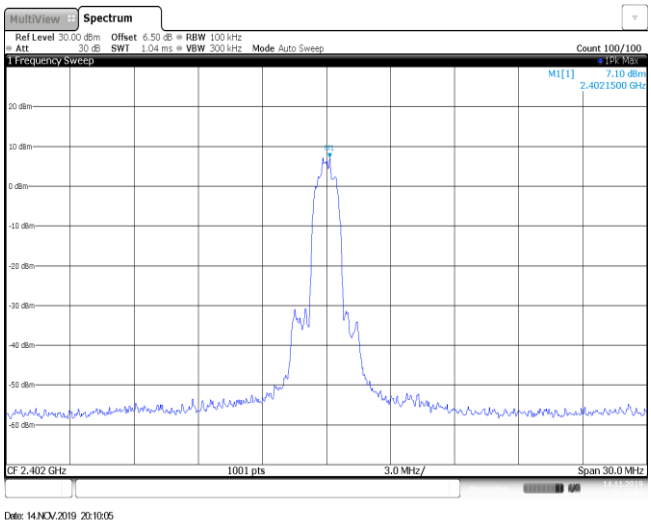
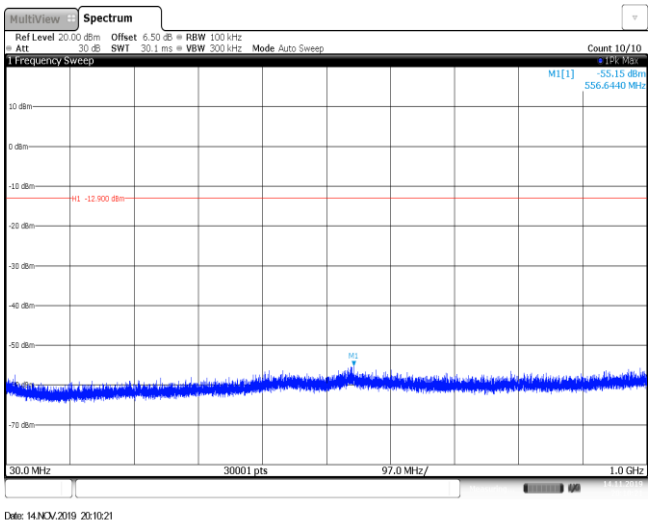
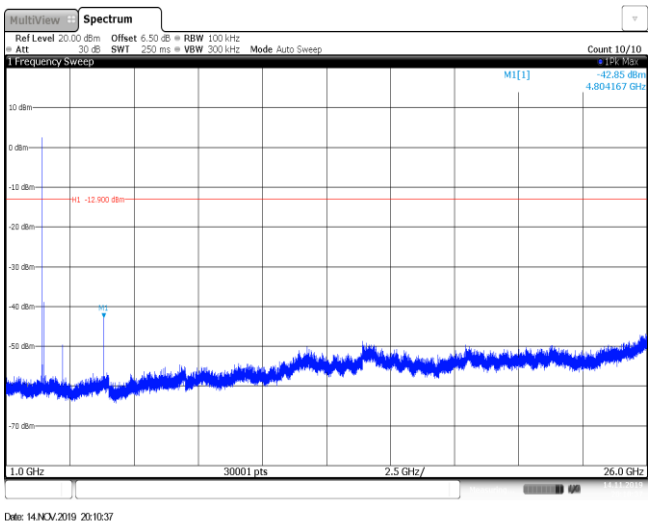
CH39 Reference level	
CH39 30MHz~1000MHz	
CH39 1GHz~26GHz	

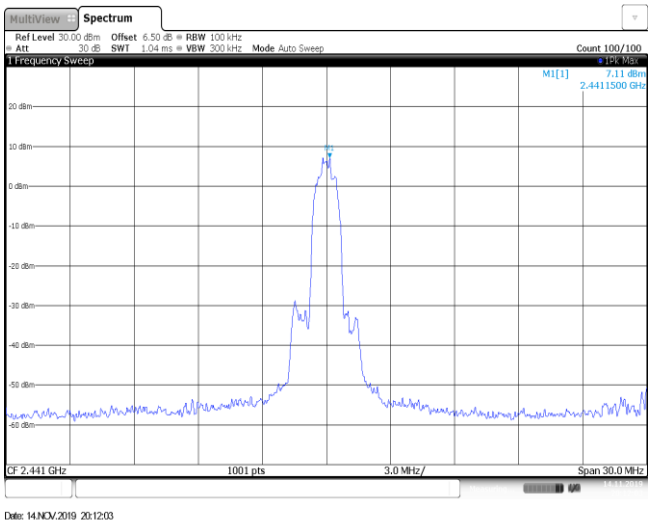
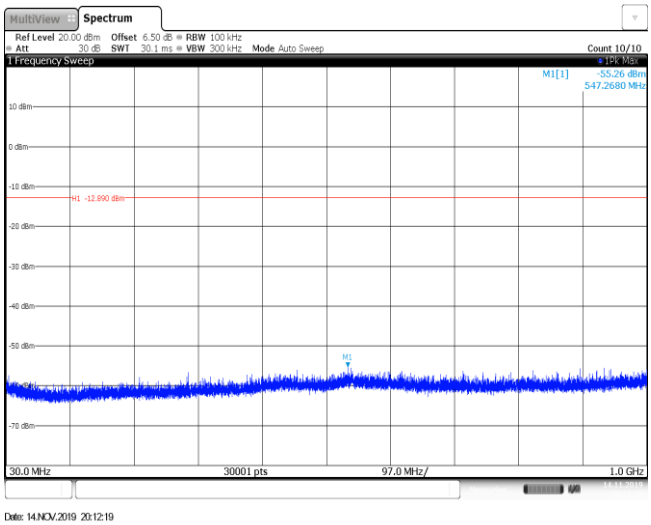
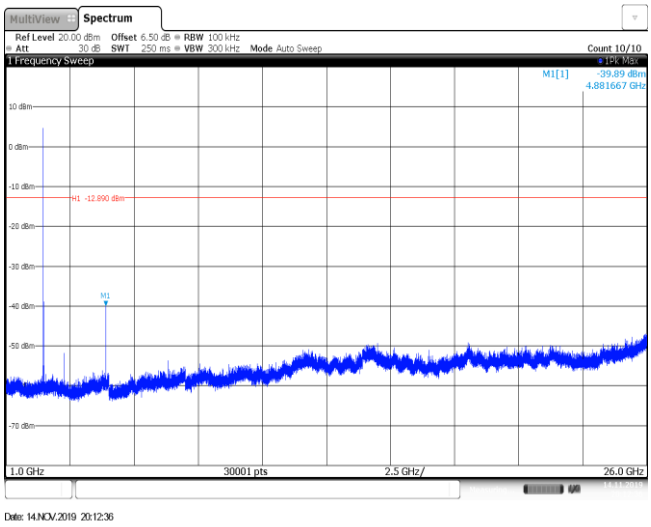
CH78 Reference level	
CH78 30MHz~1000MHz	
CH78 1GHz~26GHz	

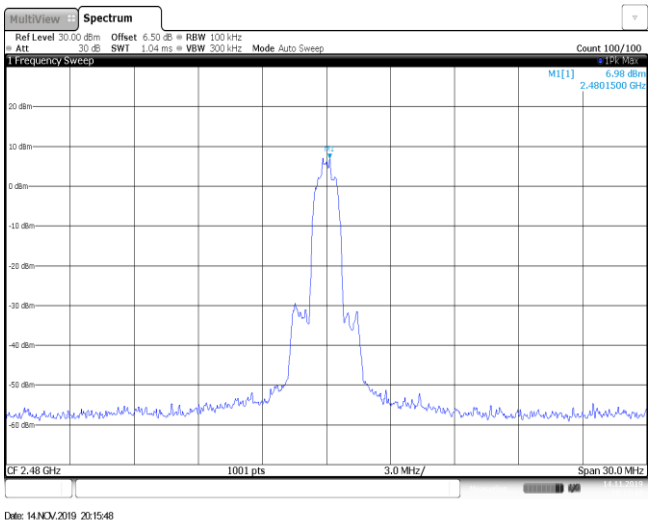
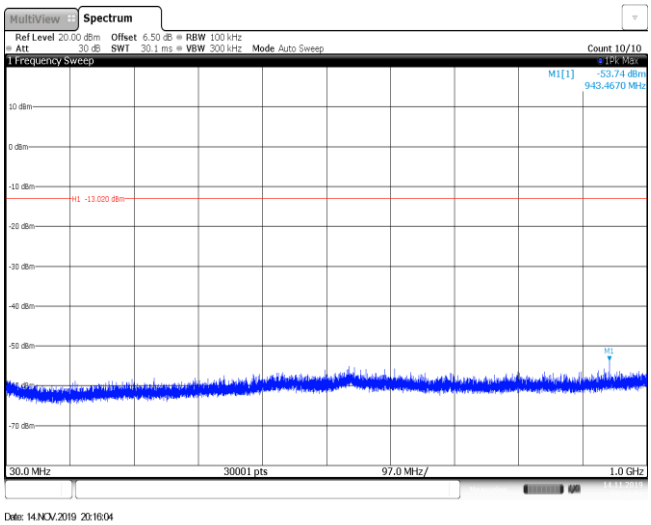
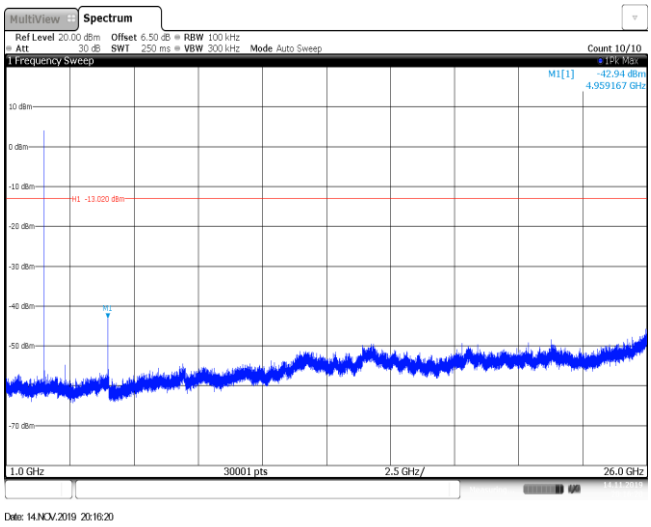
Test Item:	Spurious Emission	Modulation type:	π/4DQPSK
CH00 Reference level			
CH00 30MHz~1000MHz			
CH00 1GHz~26GHz			

CH39 Reference level	
CH39 30MHz~1000MHz	
CH39 1GHz~26GHz	

CH78 Reference level	
CH78 30MHz~1000MHz	
CH78 1GHz~26GHz	

Test Item:	Spurious Emission	Modulation type:	8DPSK
CH00 Reference level	
CH00 30MHz~1000MHz	
CH00 1GHz~26GHz	

CH39 Reference level	
CH39 30MHz~1000MHz	
CH39 1GHz~26GHz	

CH78 Reference level	
CH78 30MHz~1000MHz	
CH78 1GHz~26GHz	

--------End of Report--------