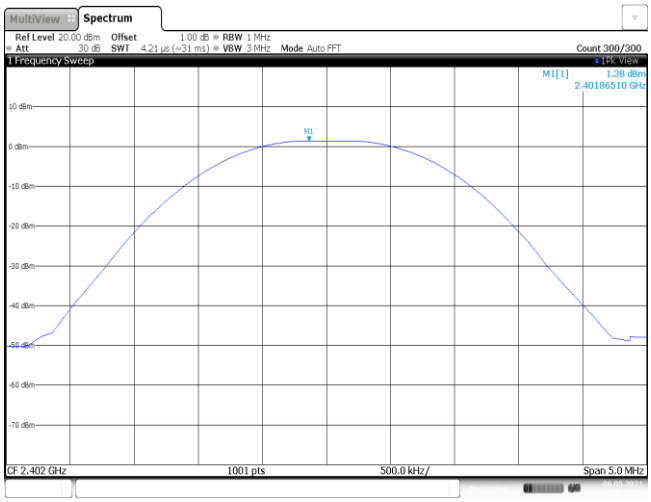
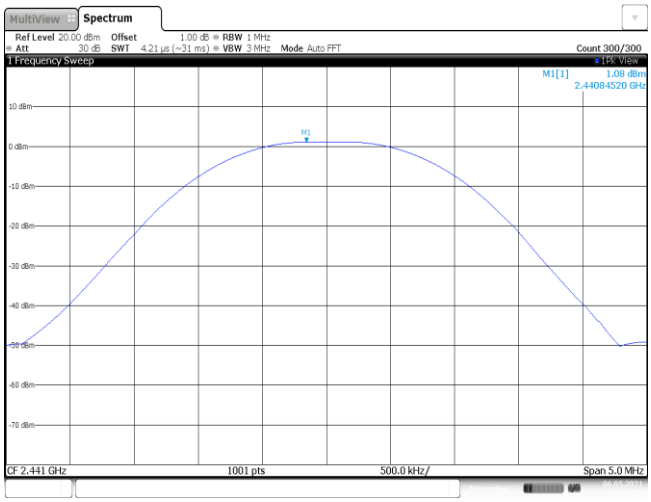
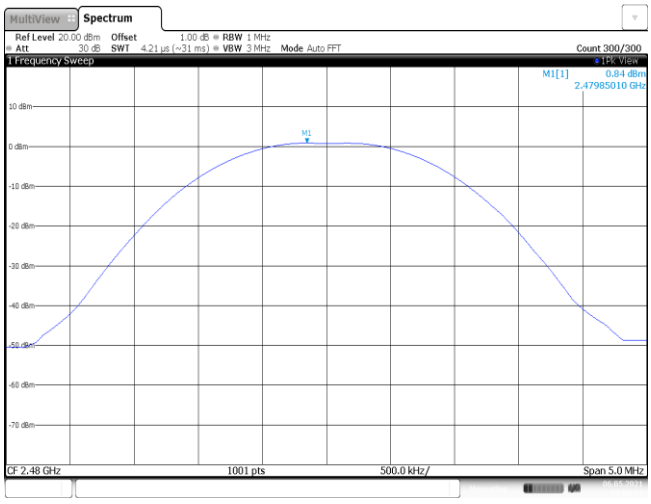
APPENDIX REPORT

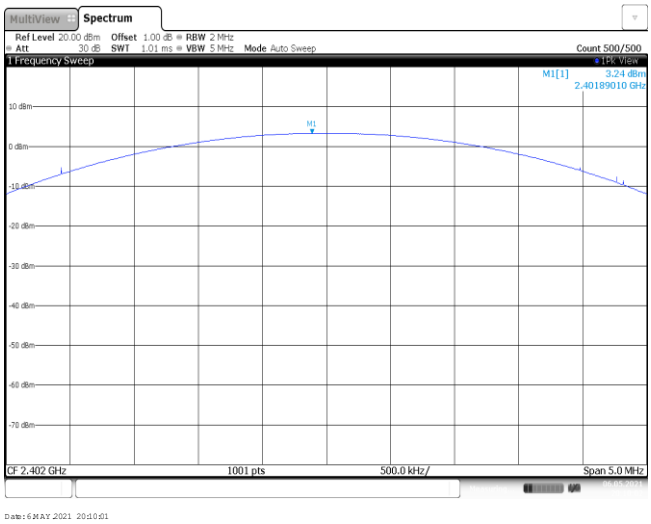
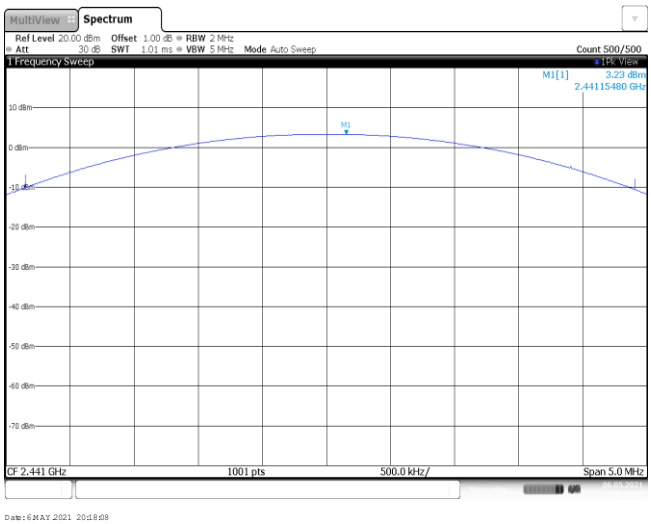
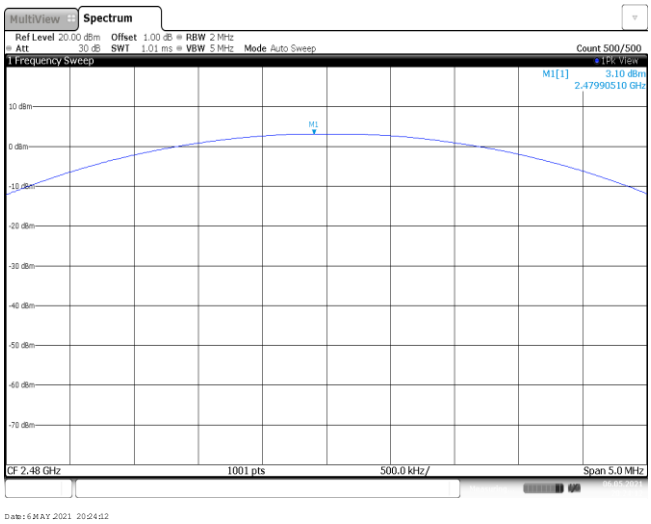
Project No.	SHT2104085601EW	Radio Specification	Bluetooth EDR
Test sample No.	YPHT21040856003	Model No.	ALPHA
Start test date	2021-05-07	Finish date	2021-05-07
Temperature	25.1°C	Humidity	51%
Test Engineer	Hailey Chen	Auditor	Xiaodong Zhao

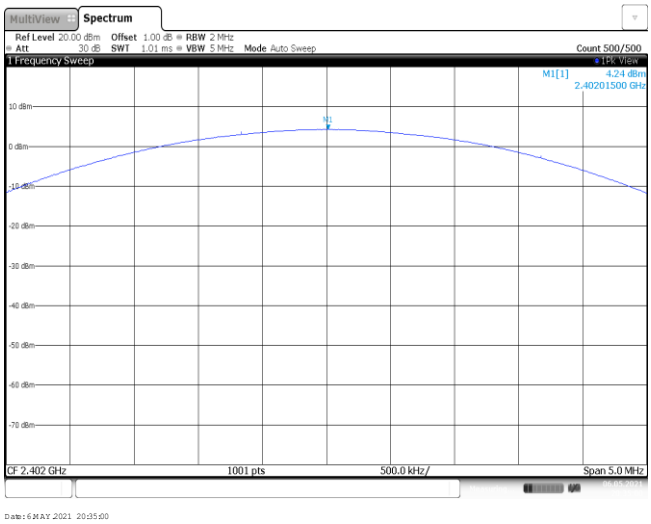
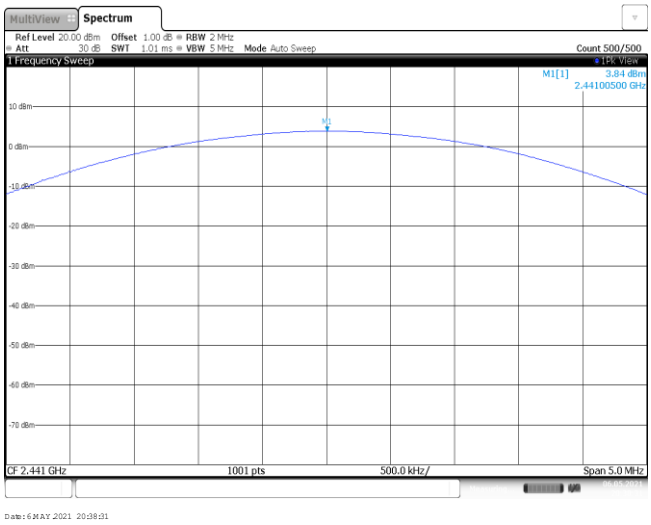
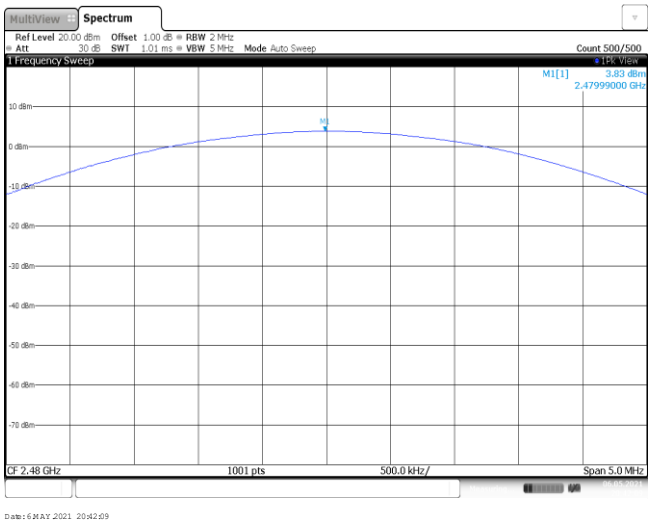
Appendix clause	Test item	Result
A	Peak Output Power	PASS
B	20 dB Bandwidth	PASS
C	99% Occupied Bandwidth	PASS
D	Carrier Frequencies Separation	PASS
E	Hopping Channel Number	PASS
F	Dwell Time	PASS
G	Duty Cycle Correction Factor (DCCF)	PASS
H	Band edge and Spurious Emissions(coducted)	PASS

Appendix A：Peak Output Power

Modulation type	Channel	Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
GFSK	00	1.38	1.36	≤ 30.00	Pass
	39	1.08	1.07		
	78	0.84	0.83		
π/4DQPSK	00	3.24	2.88	≤ 21.00	Pass
	39	3.23	2.77		
	78	3.10	2.63		
8DPSK	00	4.24	3.61	≤ 21.00	Pass
	39	3.84	3.18		
	78	3.83	3.15		

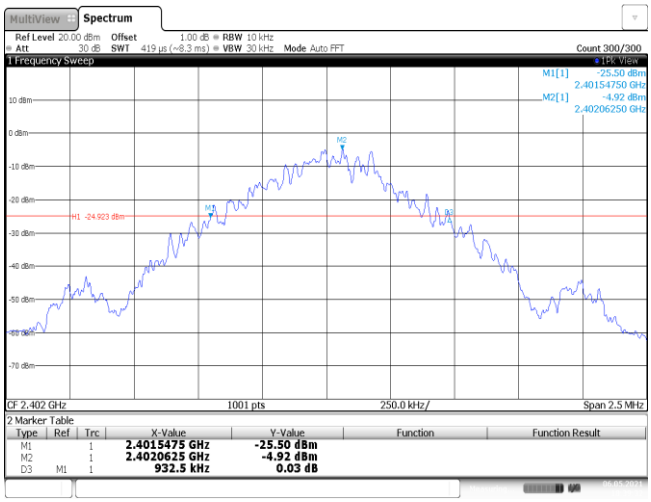
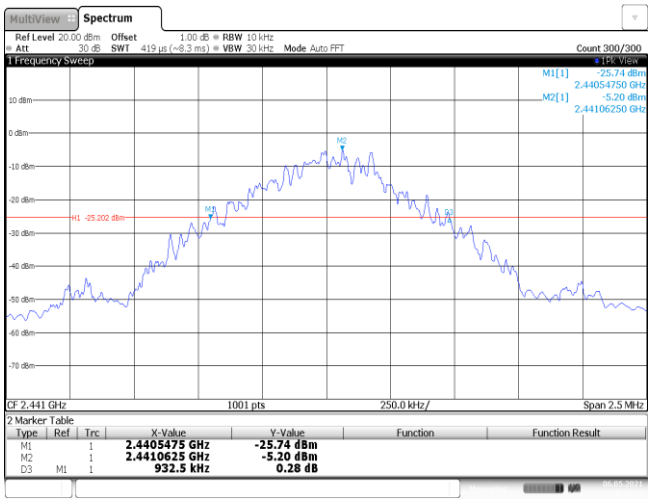
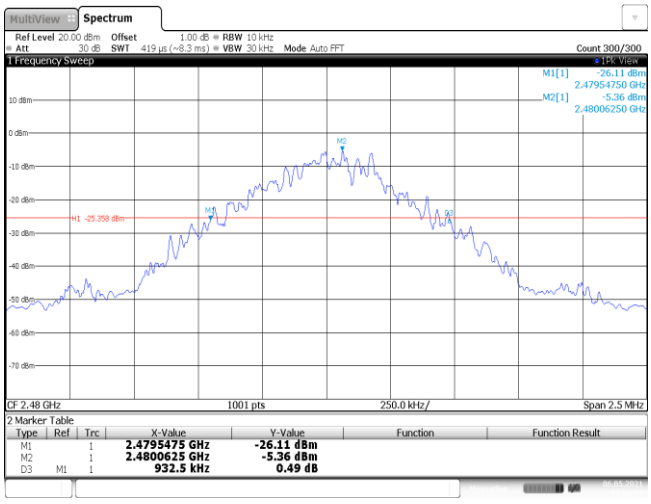
Modulation Type:	**GFSK**
CH00	
CH39	
CH78	

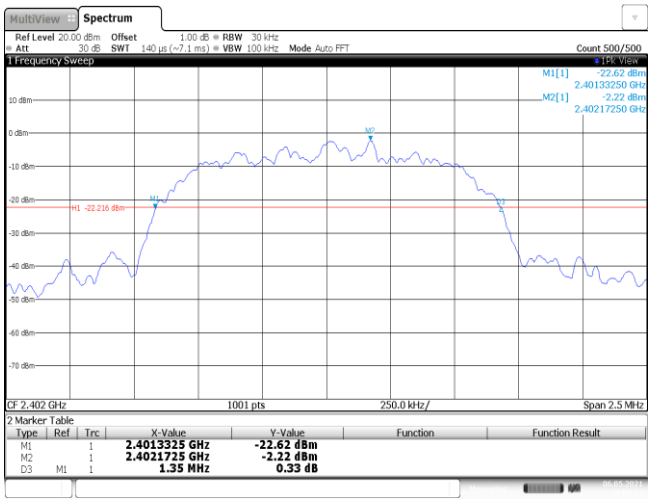
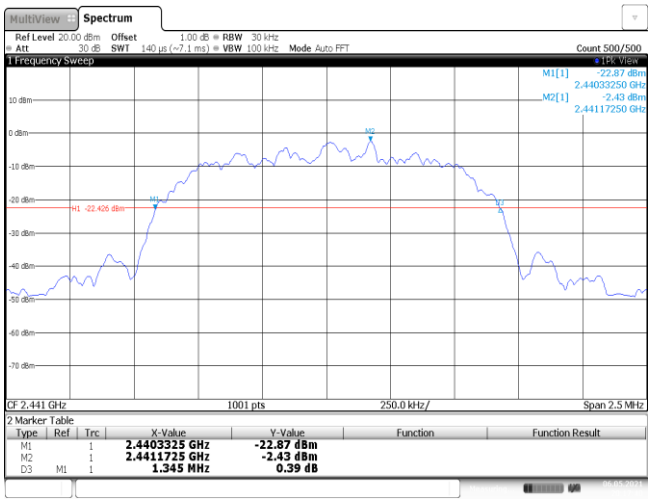
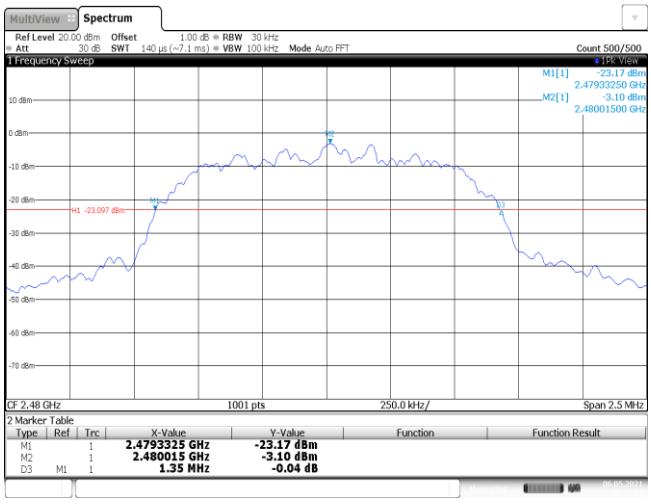
Modulation Type:	π/4DQPSK
CH00	
CH39	
CH78	

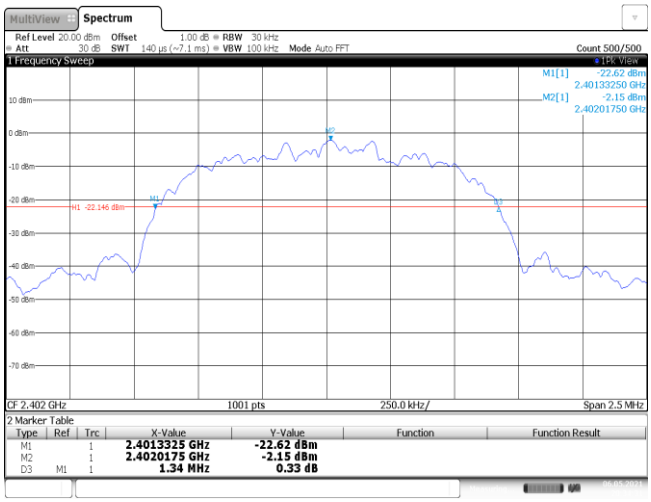
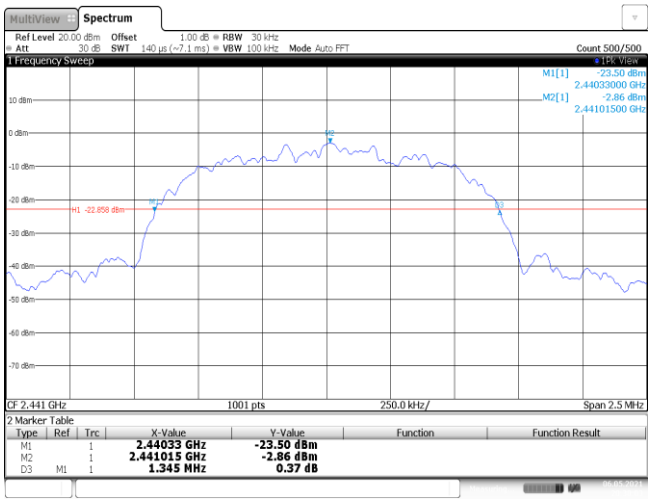
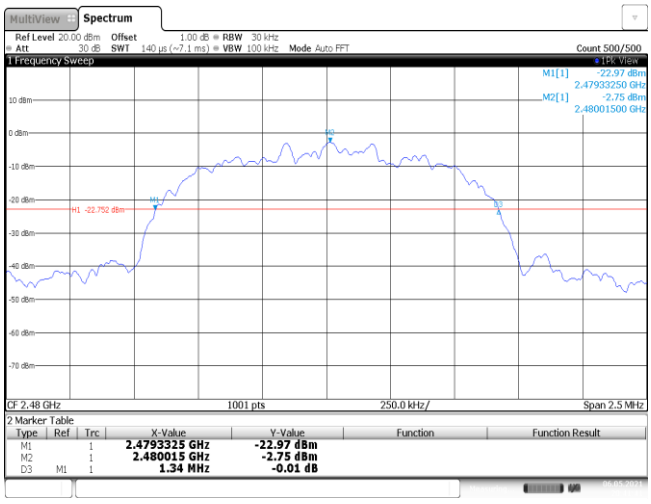
Modulation Type:	**8DPSK**
CH00	
CH39	
CH78	

Appendix B : 20 dB Bandwidth

Modulation type	Channel	20 dB Bandwidth (kHz)	Limit (kHz)	Result
GFSK	00	932.50	-	Pass
	39	932.50		
	78	932.50		
π/4DQPSK	00	1350.00	-	Pass
	39	1345.00		
	78	1350.00		
8DPSK	00	1340.00	-	Pass
	39	1345.00		
	78	1340.00		

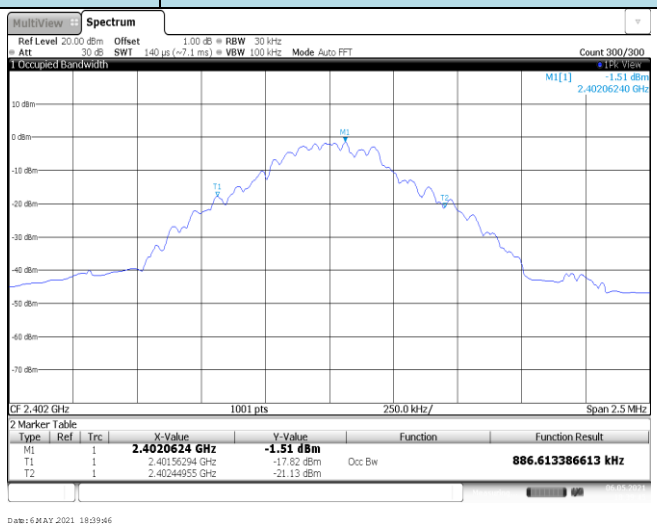
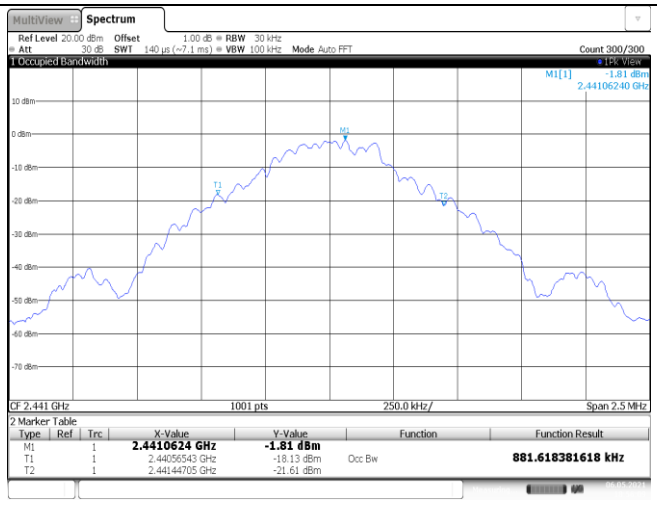
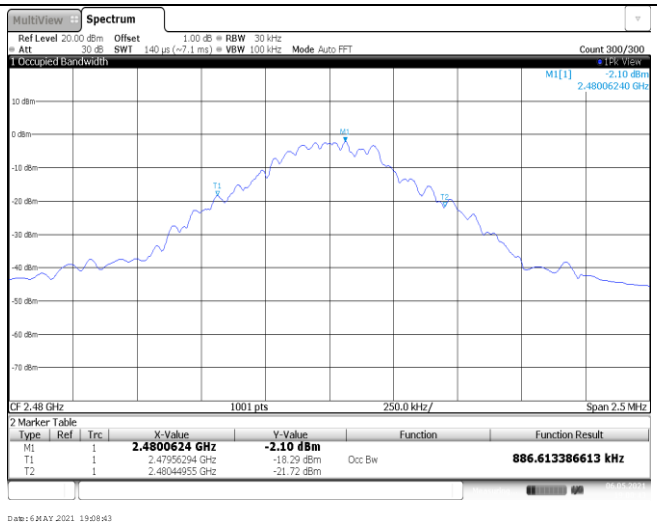
Modulation Type:	GFSK
CH00	
CH39	
CH78	

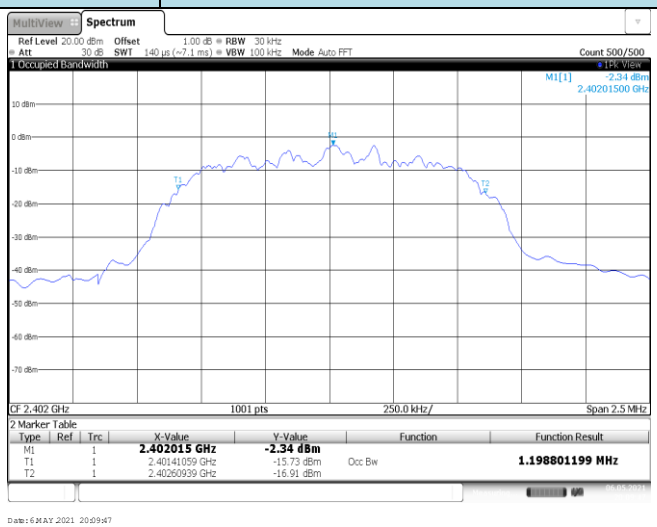
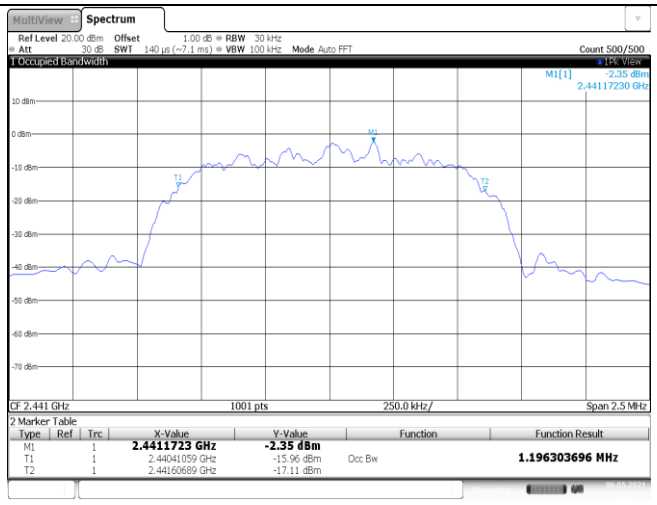
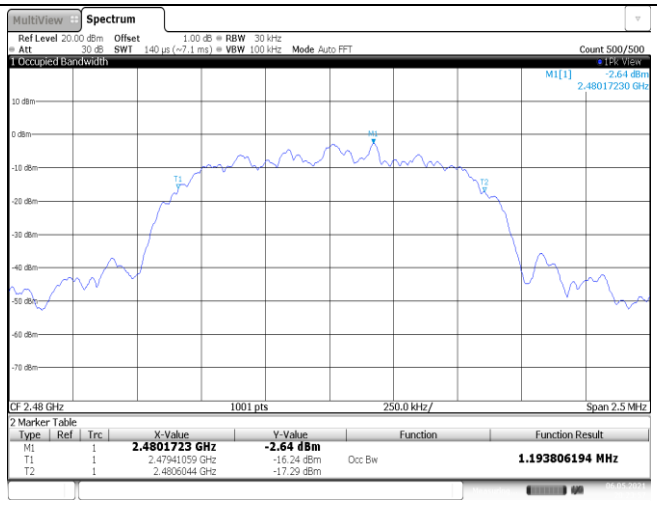
Modulation Type:	**π/4DQPSK**
CH00	
CH39	
CH78	

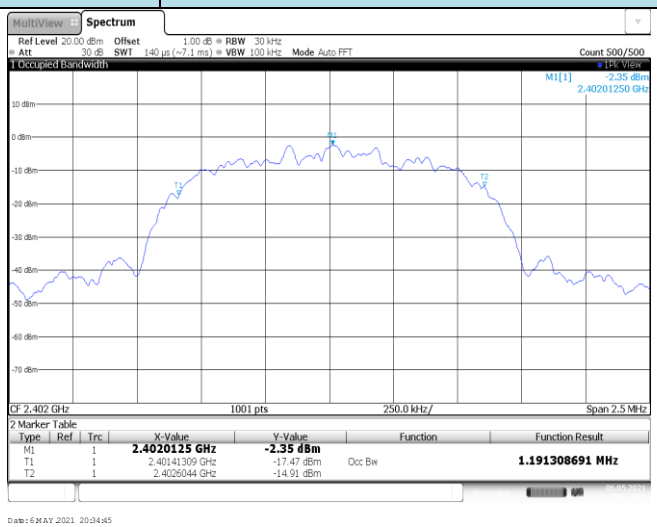
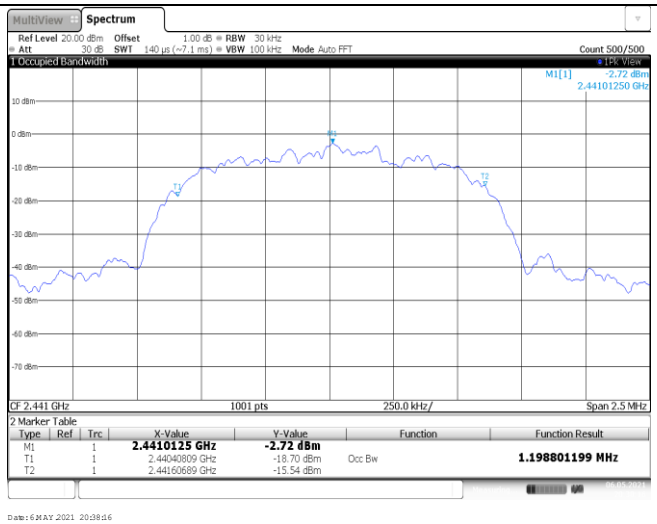
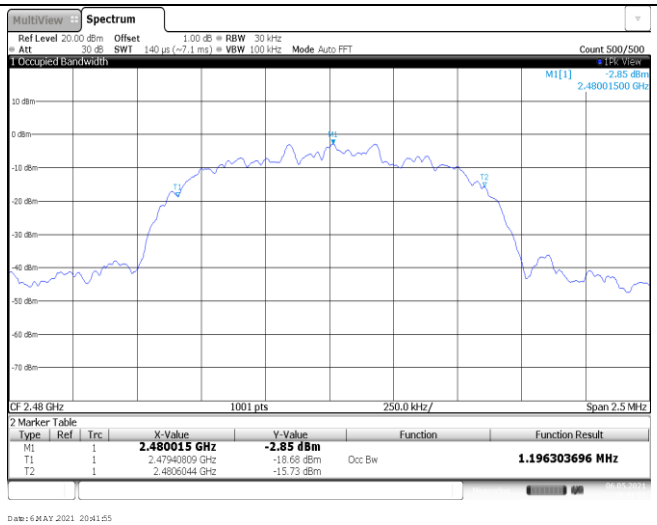
Modulation Type:	**8DPSK**
CH00	
CH39	
CH78	

Appendix C：99% Occupied Bandwidth

Modulation type	Channel	99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
GFSK	00	0.89	-	Pass
	39	0.88		
	78	0.89		
π/4DQPSK	00	1.20	-	Pass
	39	1.20		
	78	1.19		
8DPSK	00	1.19	-	Pass
	39	1.20		
	78	1.20		

Modulation Type:	GFSK
CH00	
CH39	
CH78	

Modulation Type:	π/4DQPSK
CH00	
CH39	
CH78	

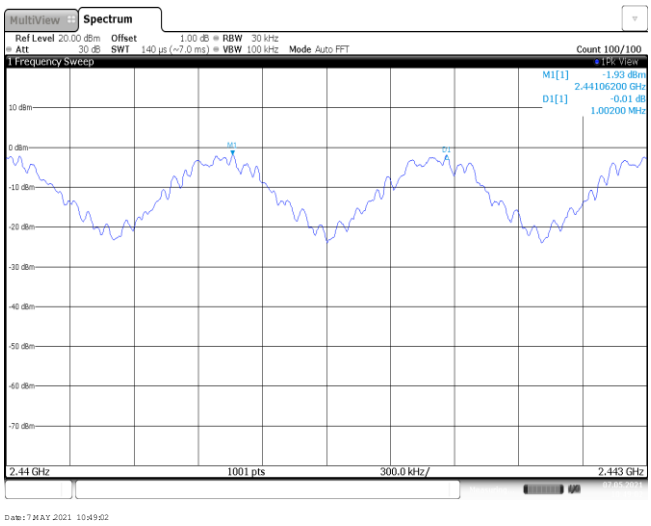
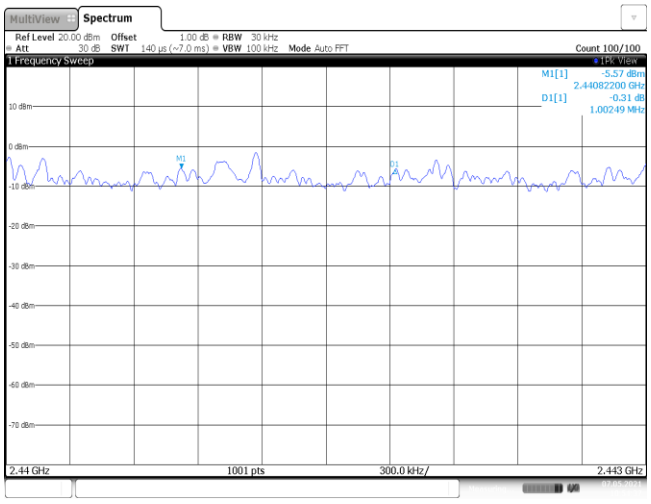
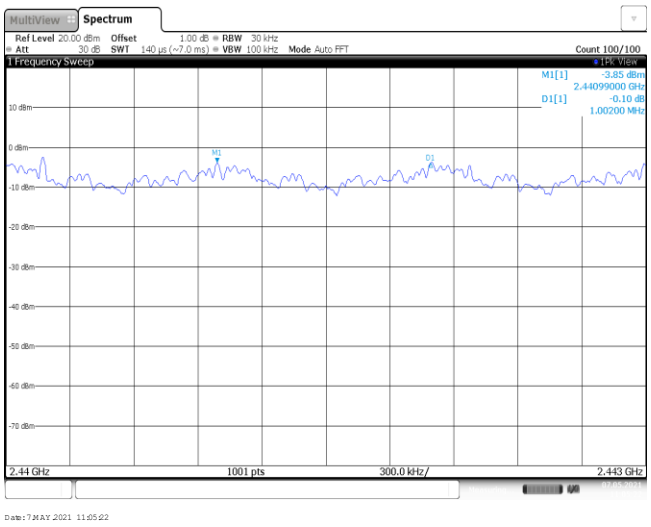
Modulation Type:	8DPSK
CH00	
CH39	
CH78	

Appendix D：Carrier Frequencies Separation

Modulation type	Channel	Carrier Frequencies Separation (MHz)	Limit (kHz) *	Result
GFSK	39	1.00	≥932.50	Pass
π/4DQPSK	39	1.00	≥900.00	Pass
8DPSK	39	1.00	≥896.67	Pass

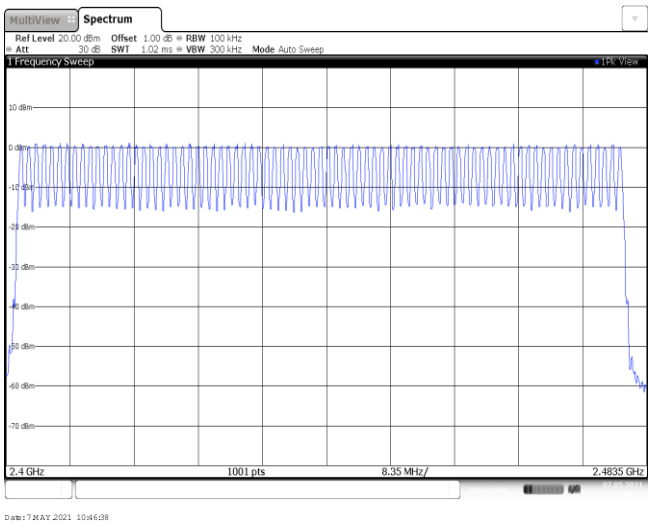
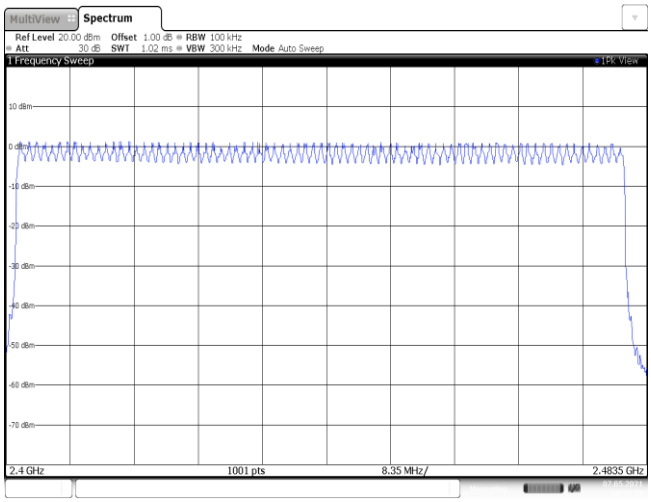
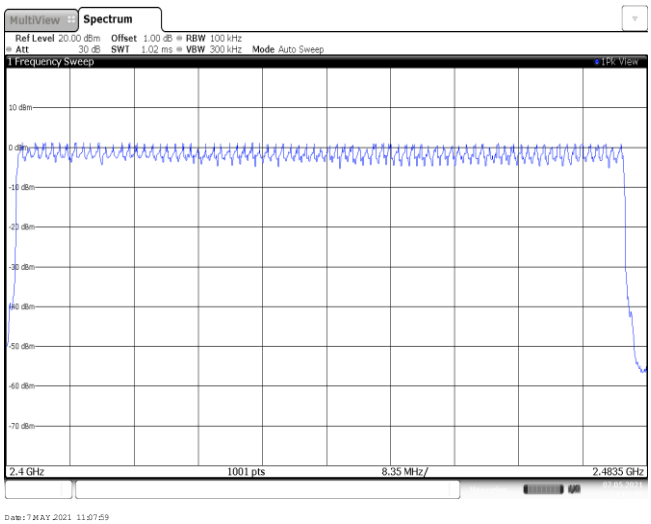
Note:

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

GFSK	
π/4DQPSK	
8DPSK	

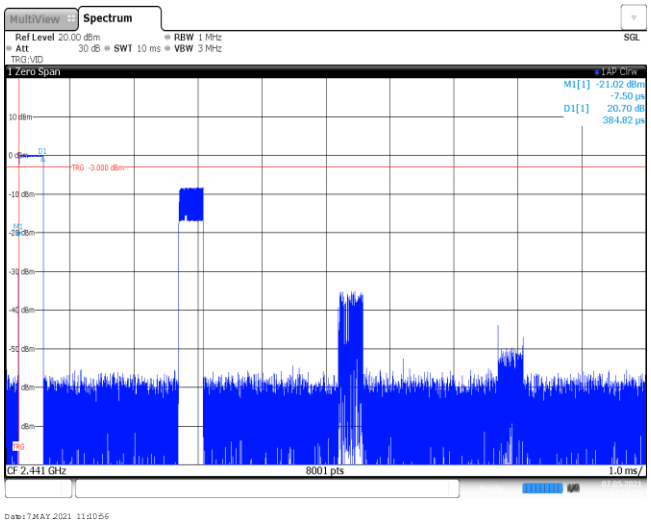
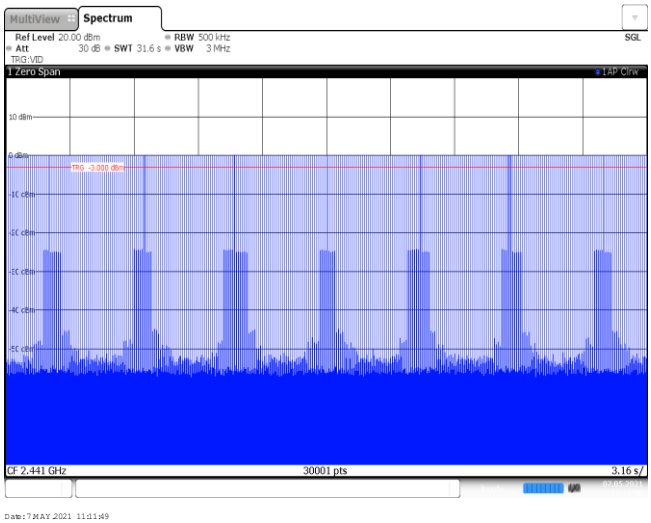
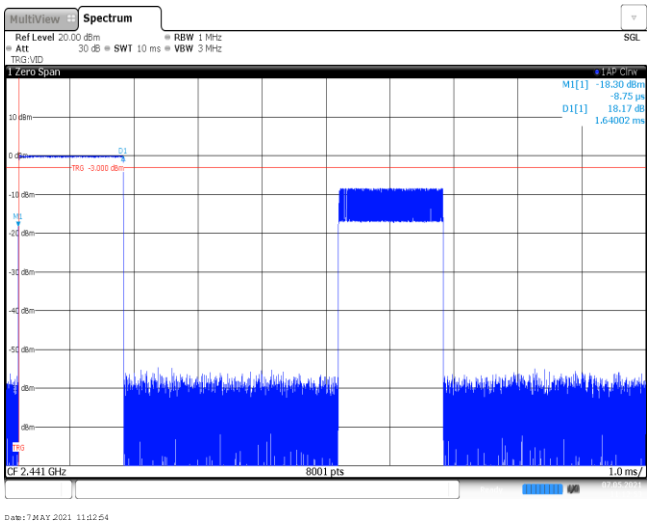
Appendix E：Hopping Channel Number

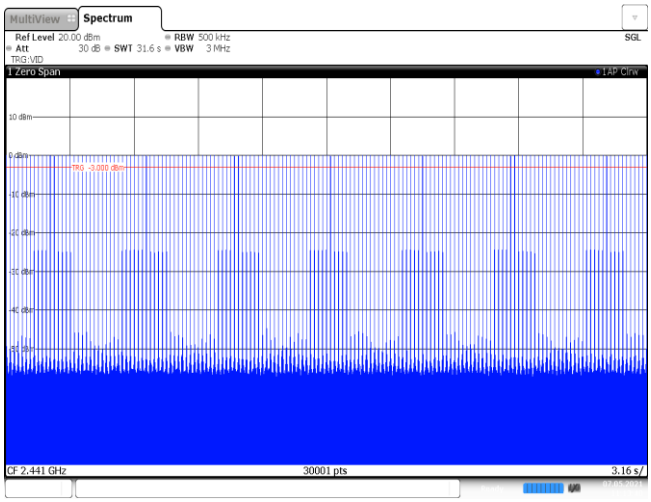
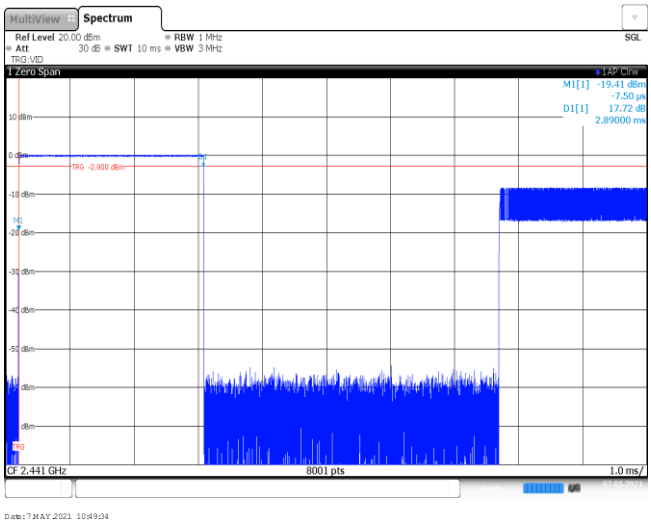
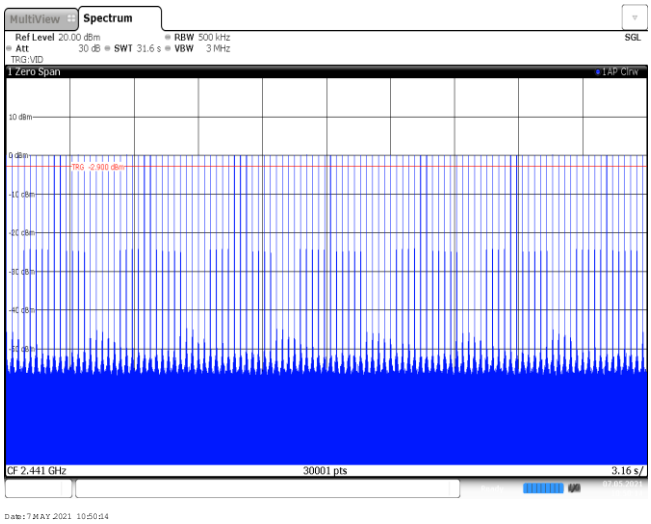
Modulation type	Channel number	Limit	Result
GFSK	79	≥15.00	Pass
π/4DQPSK	79		
8DPSK	79		

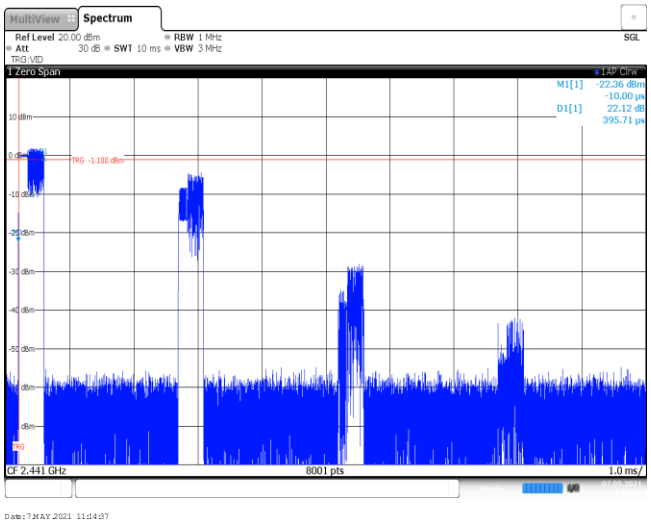
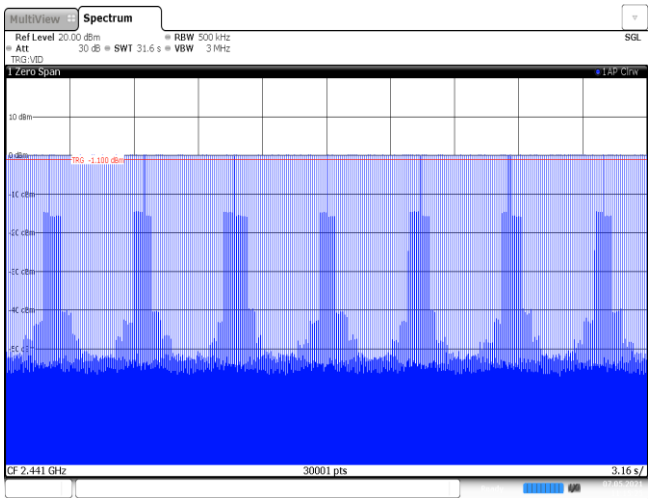
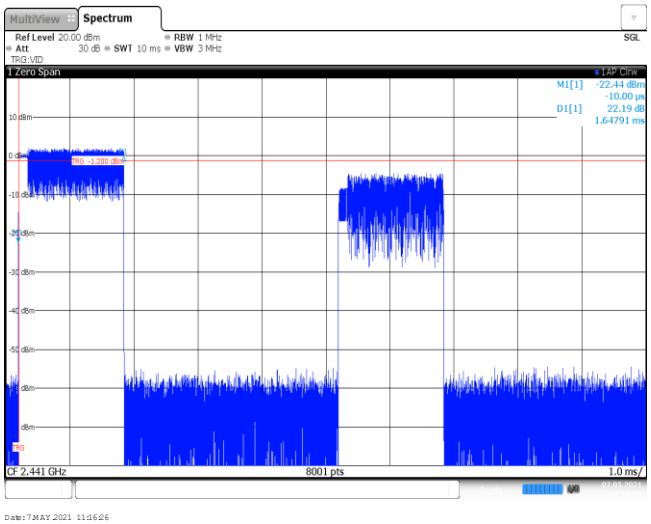
GFSK	
π/4DQPSK	
8DPSK	

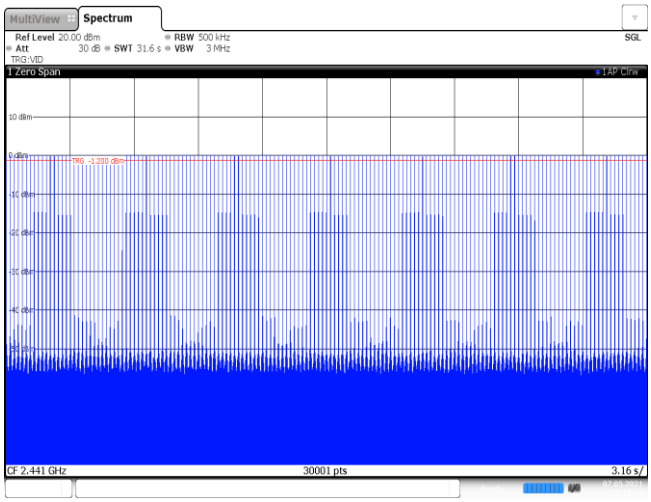
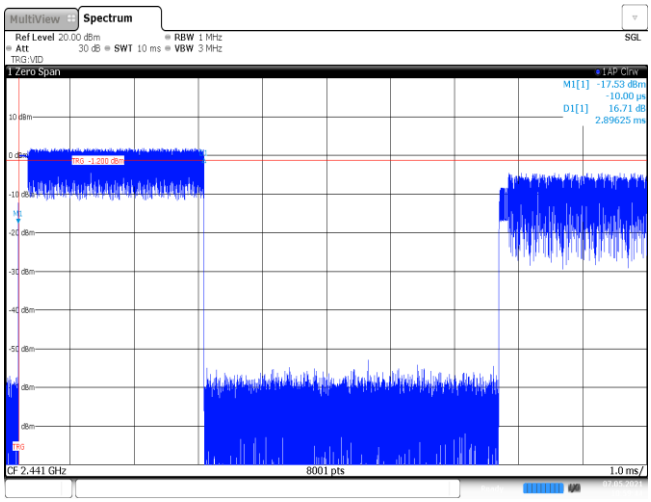
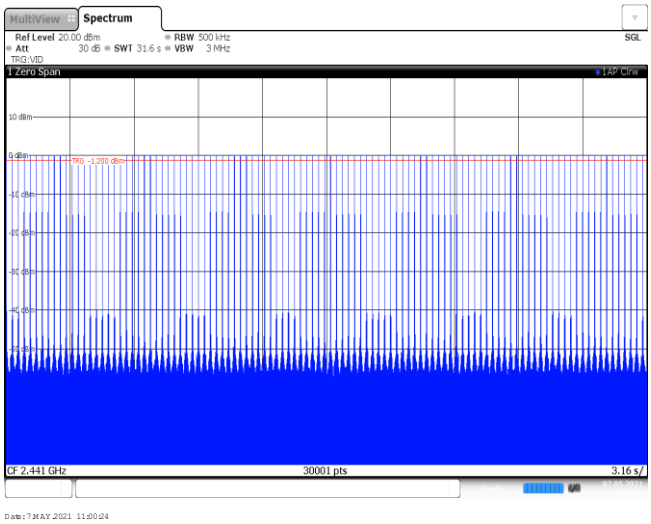
Appendix F：Dwell Time

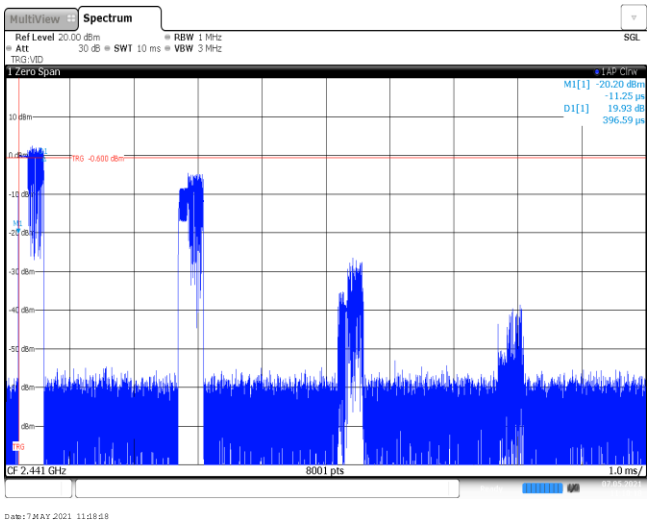
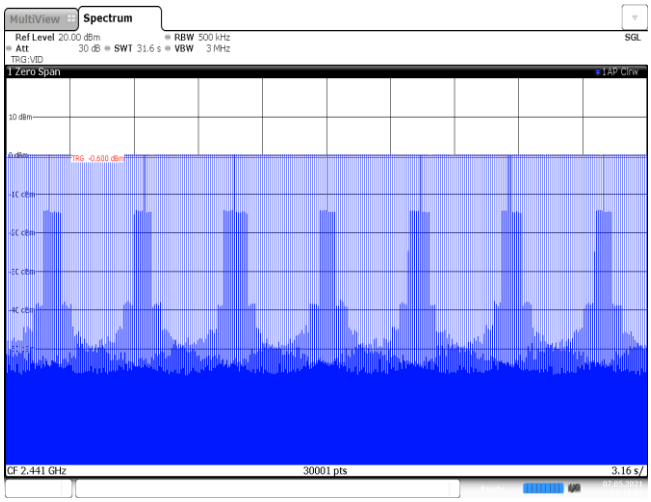
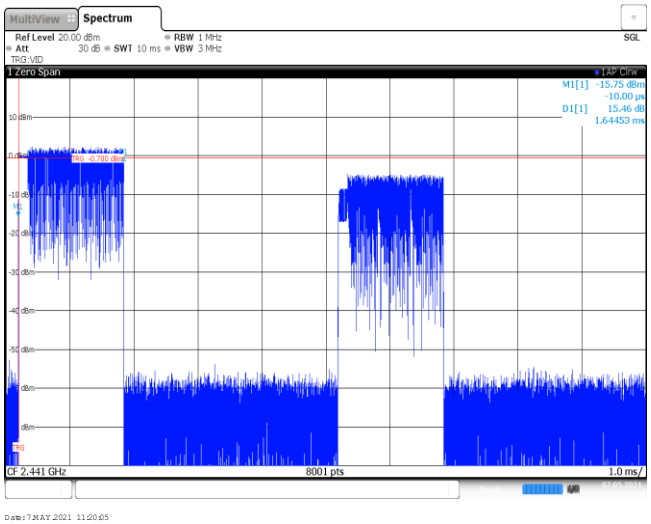
Modulation type	Packet	Burst Width [ms]	Total Hops[hop*ch]	Dwell time (Second)	Limit (Second)	Result
GFSK	DH1	0.38	320	0.12	≤ 0.40	Pass
	DH3	1.64	160	0.26		
	DH5	2.89	107	0.31		
π/4DQPSK	2DH1	0.40	317	0.13	≤ 0.40	Pass
	2DH3	1.65	160	0.26		
	2DH5	2.90	107	0.31		
8DPSK	3DH1	0.40	320	0.13	≤ 0.40	Pass
	3DH3	1.64	160	0.26		
	3DH5	2.90	107	0.31		

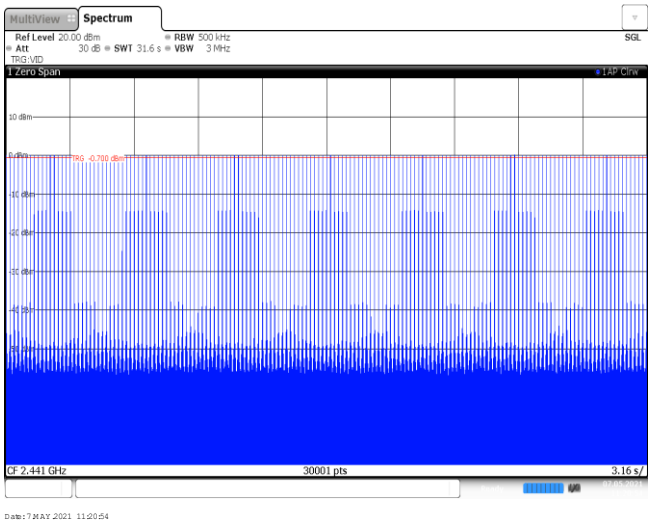
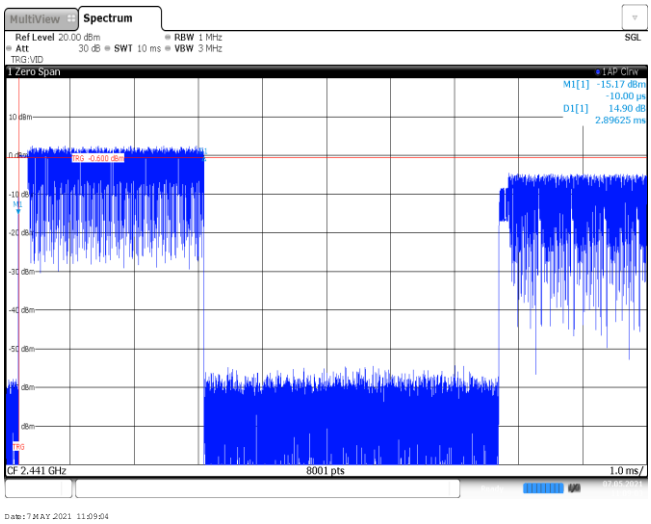
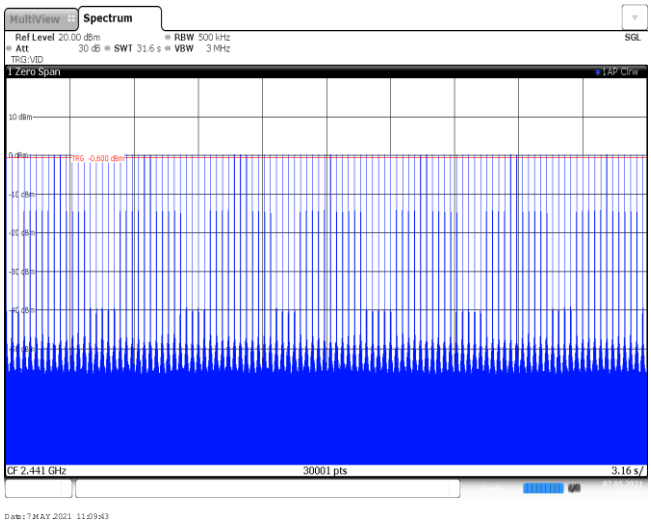
Modulation Type:	**GFSK**
DH1 Burst width	
DH1 Burst number	
DH3 Burst width	

DH3 Burst number	
DH5 Burst width	
DH5 Burst number	

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

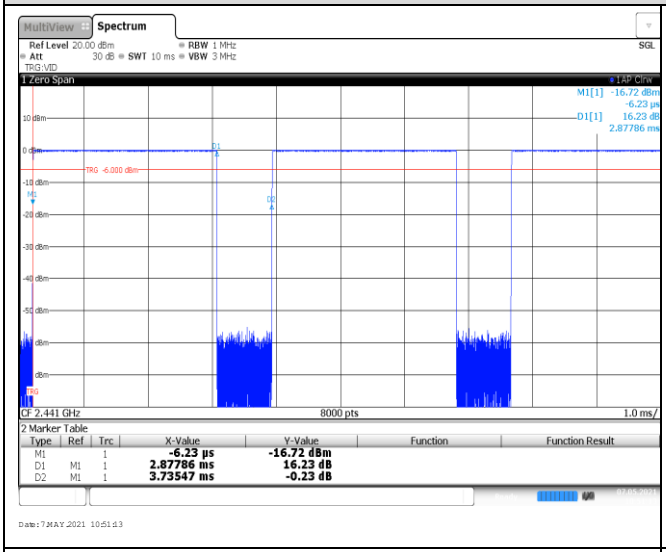
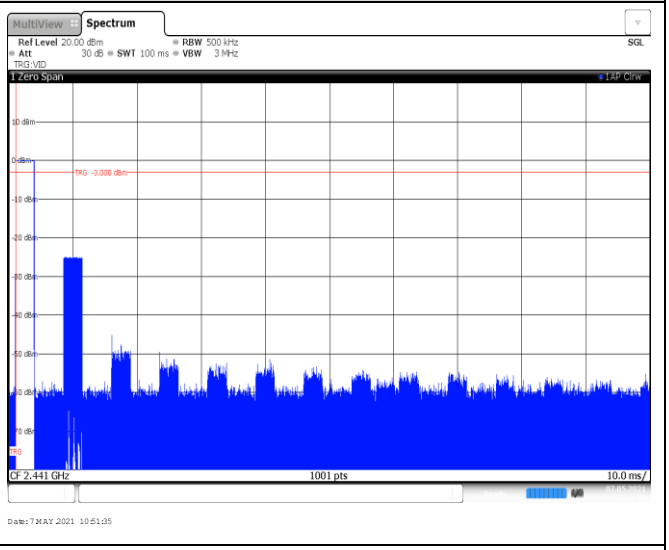
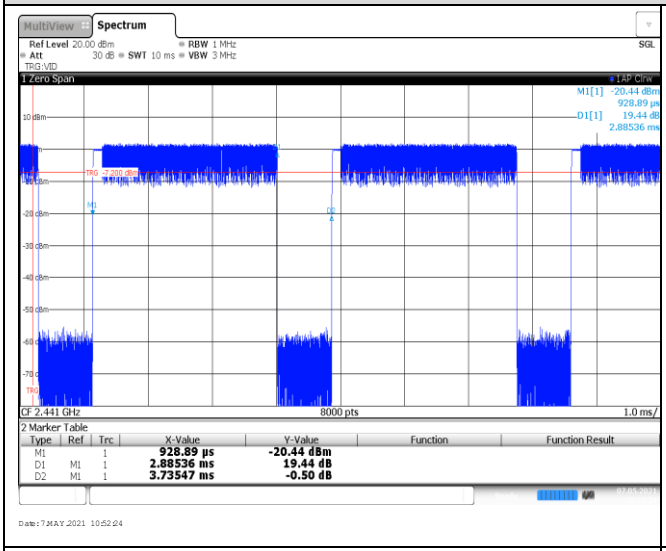
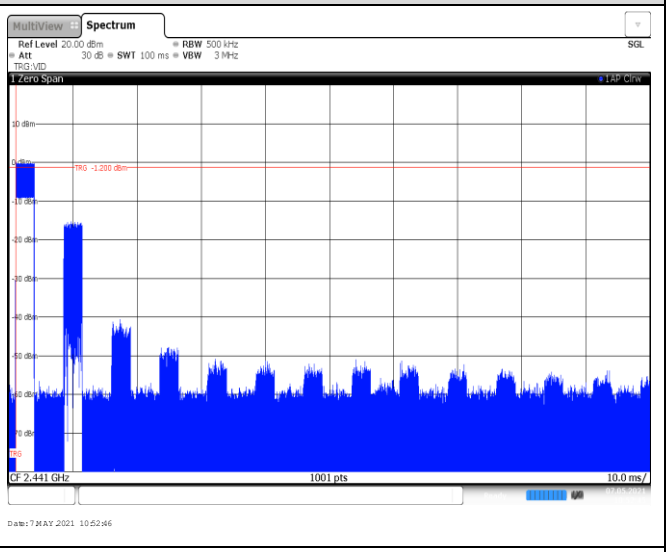
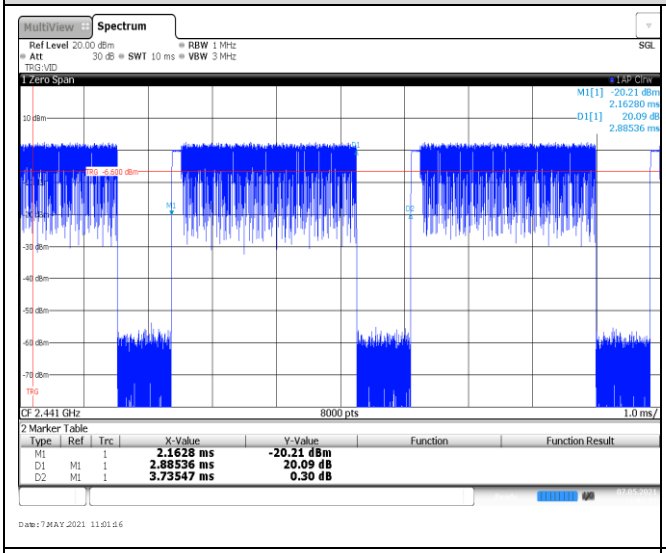
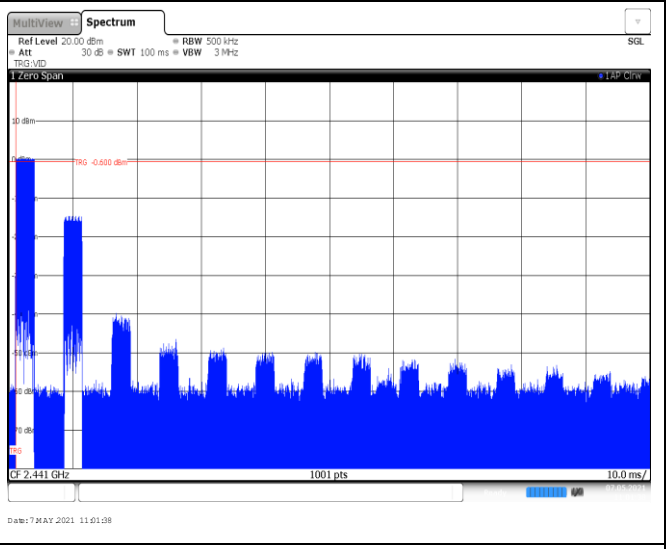
2DH3 Burst number	
2DH5 Burst width	
2DH5 Burst number	

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

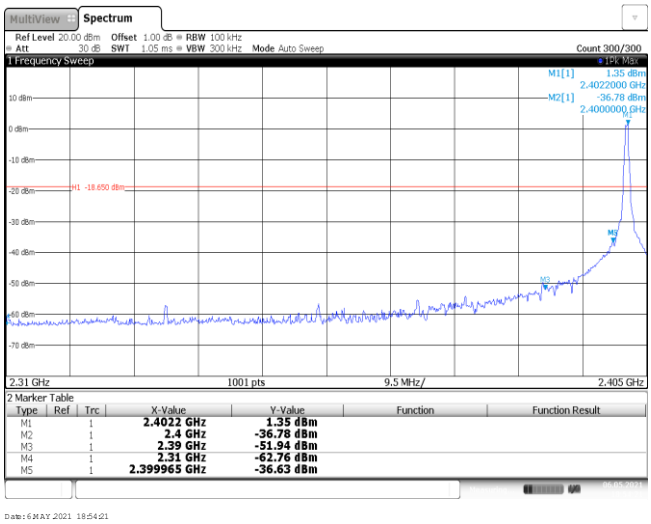
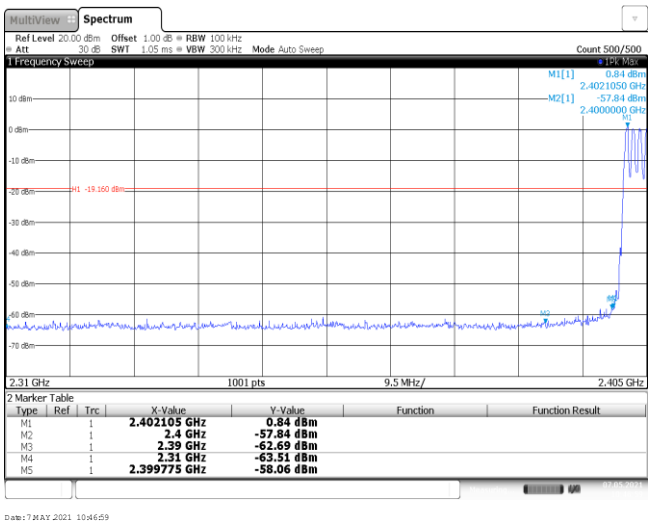
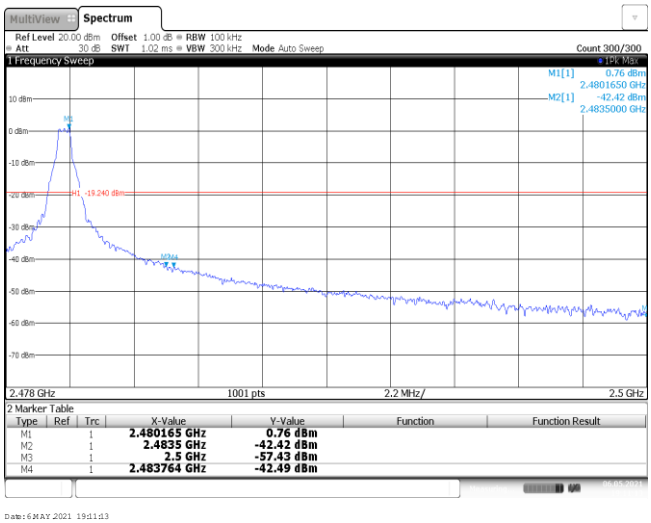
3DH3 Burst number	
3DH5 Burst width	
3DH5 Burst number	

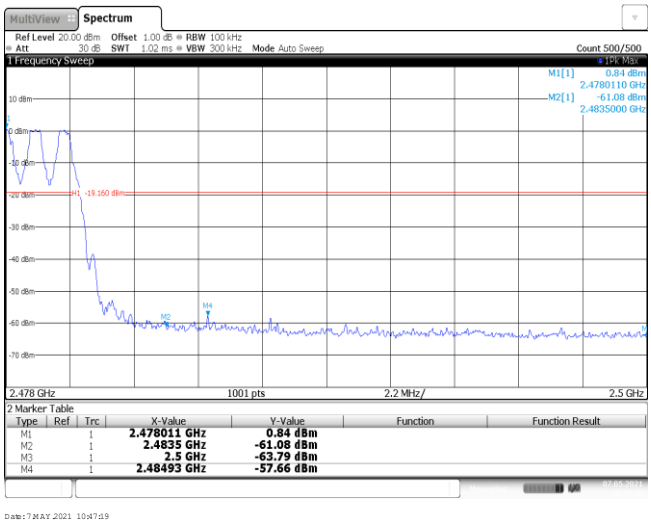
Appendix G：Duty Cycle Correction Factor (DCCF)

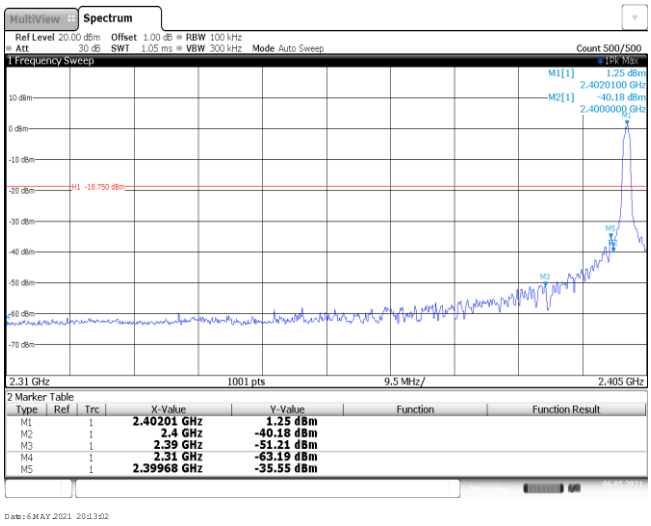
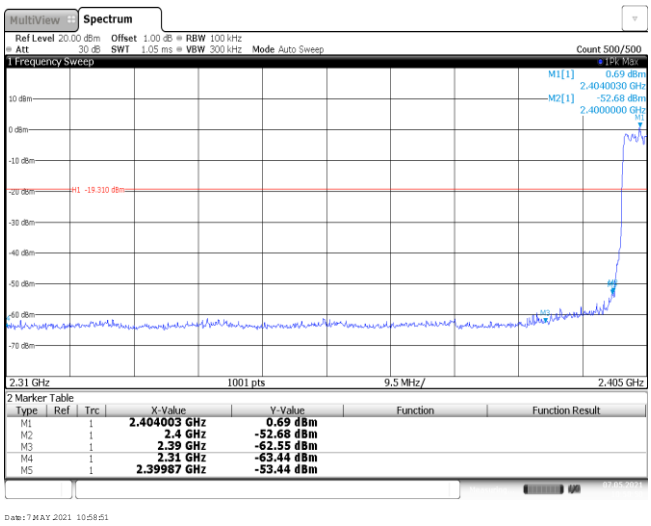
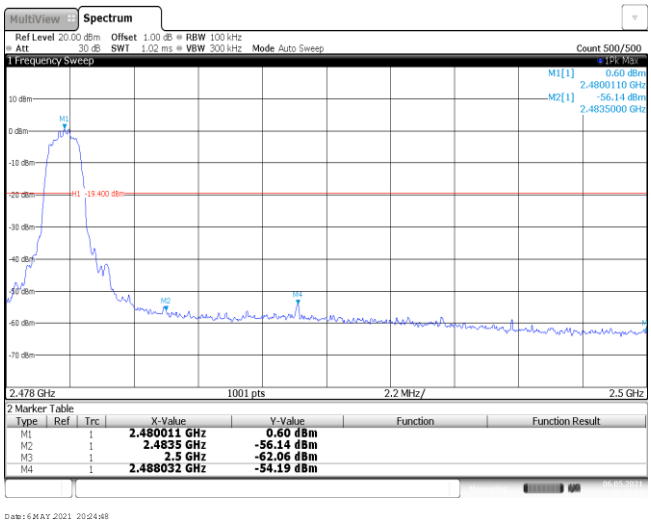
DCCF Calculate Formula					
DCCF=20 * Log(duty cycle) = 20 * Log($T_{on\ time}$ / T_{period})					
Modulation type	Test Frequency（MHz）	$T_{on\ time}$ for single burst [ms]	T_{period} [ms]	Burst Quantity	DCCF [dB]
GFSK	2441	2.88	100	2	-24.79
π/4 DQPSK	2441	2.89	100	2	-24.76
8DPSK	2441	2.89	100	2	-24.76

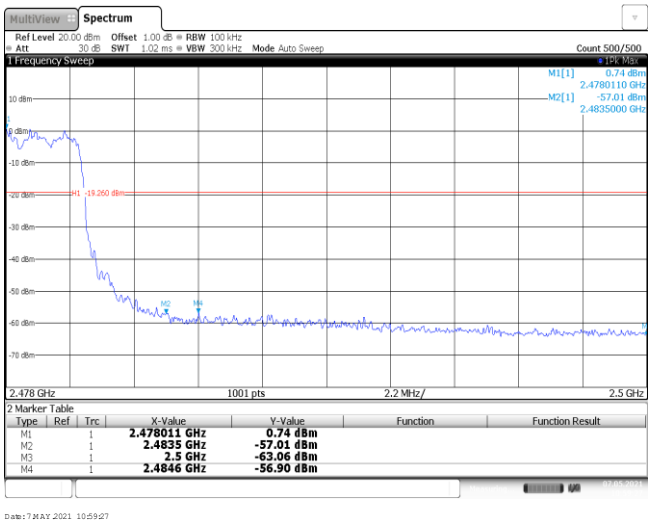
GFSK	
	
$T_{on\ time}$ for single burst	Burst Quantity
π /4 DQPSK	
	
$T_{on\ time}$ for single burst	Burst Quantity
8DPSK	
	
$T_{on\ time}$ for single burst	Burst Quantity

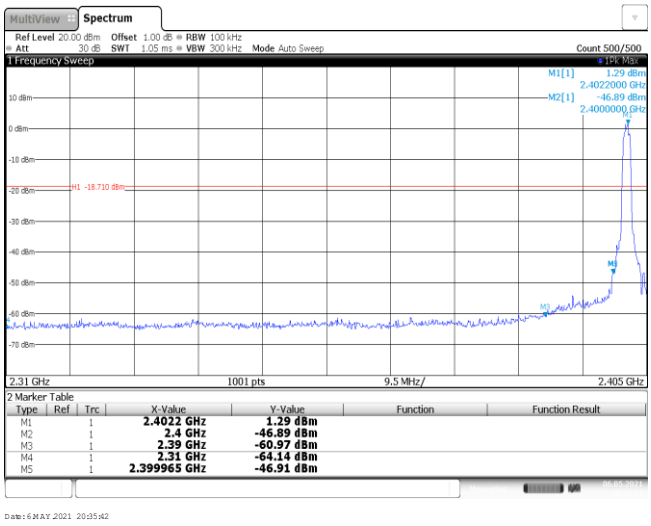
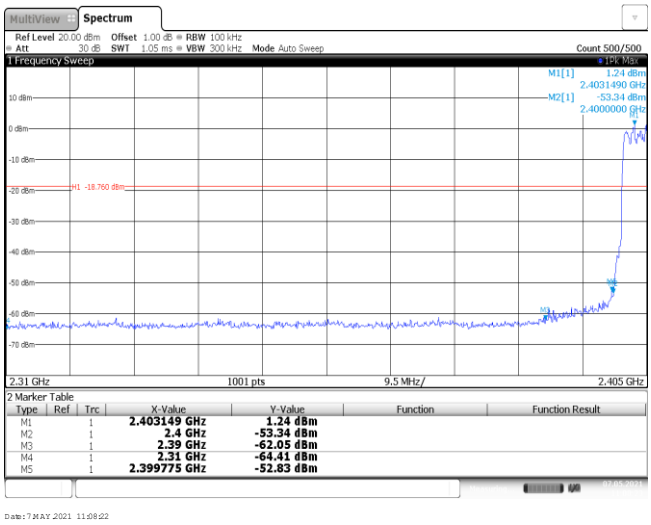
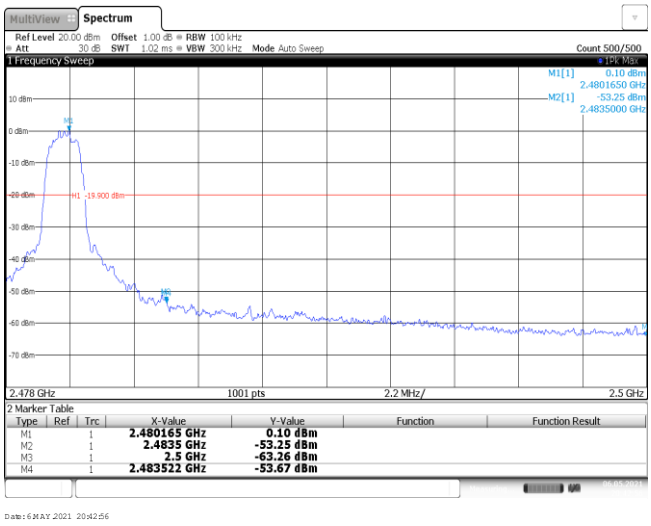
Appendix H：Band edge and Spurious Emissions (conducted)

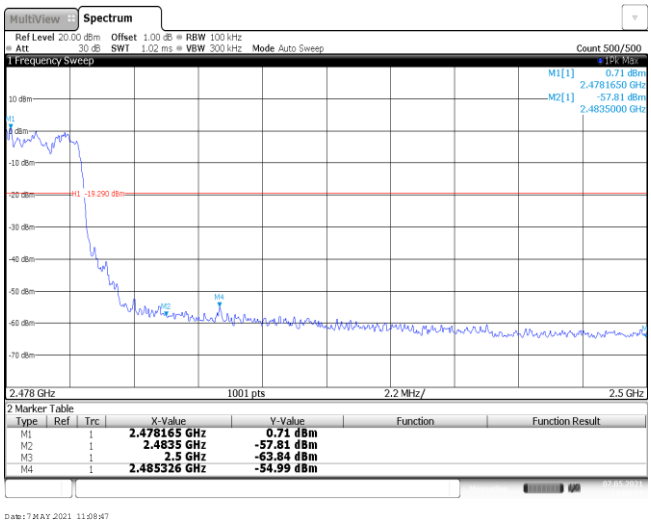
Test Item:	Band edge	Modulation type:	GFSK
CH00 No hopping mode			
CH00 Hopping mode			
CH78 No hopping mode			

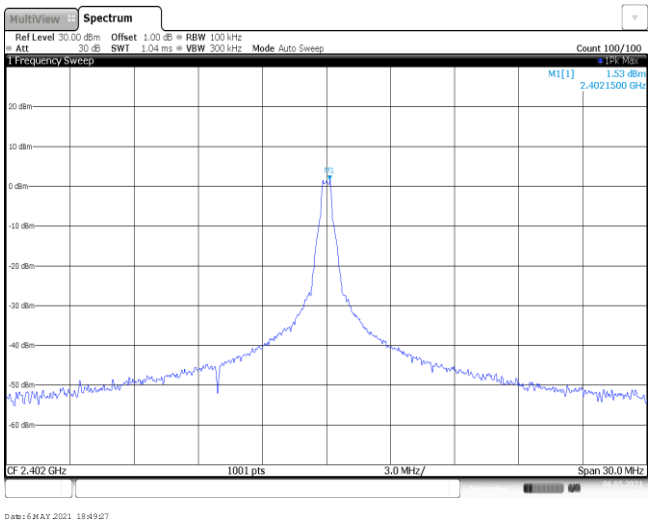
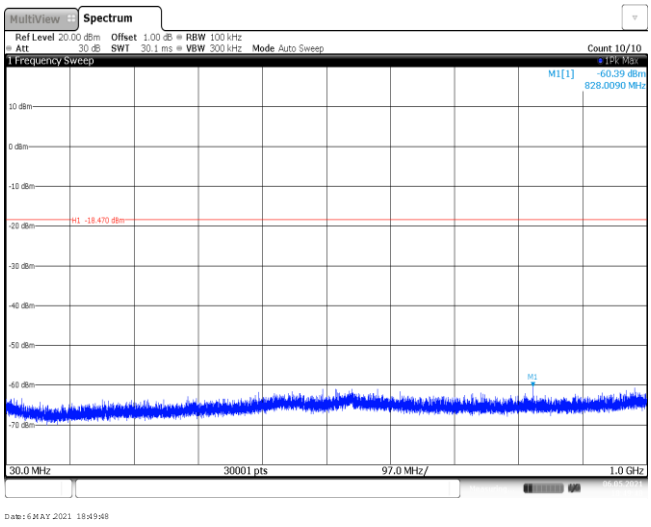
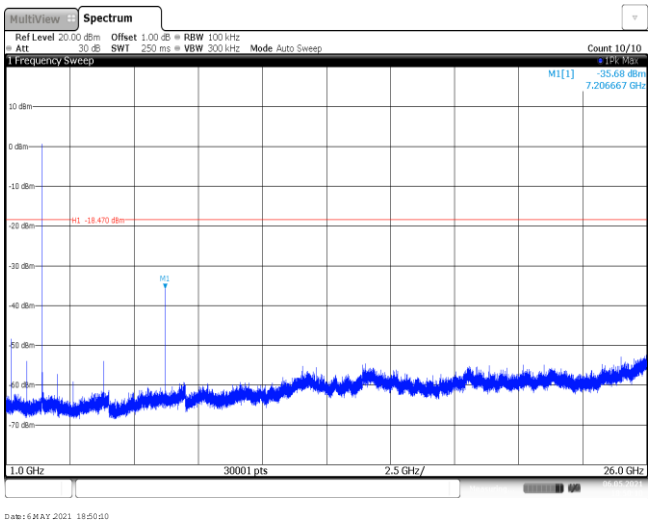
CH78 Hopping mode	

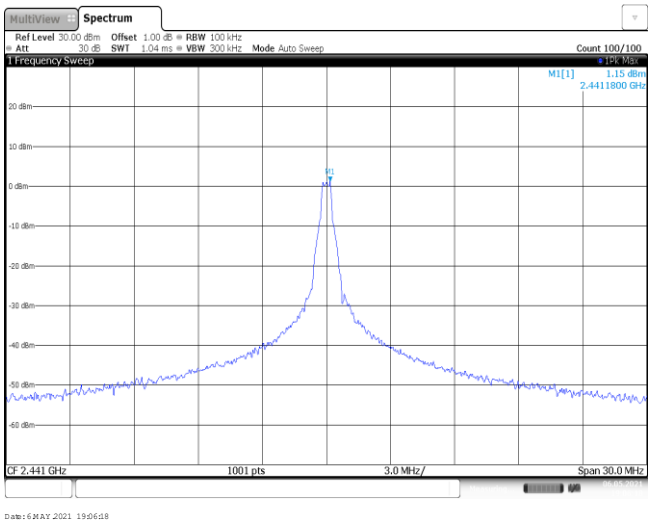
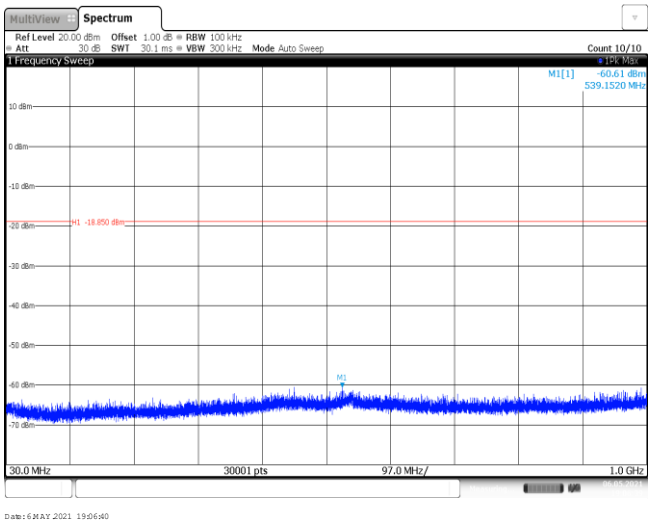
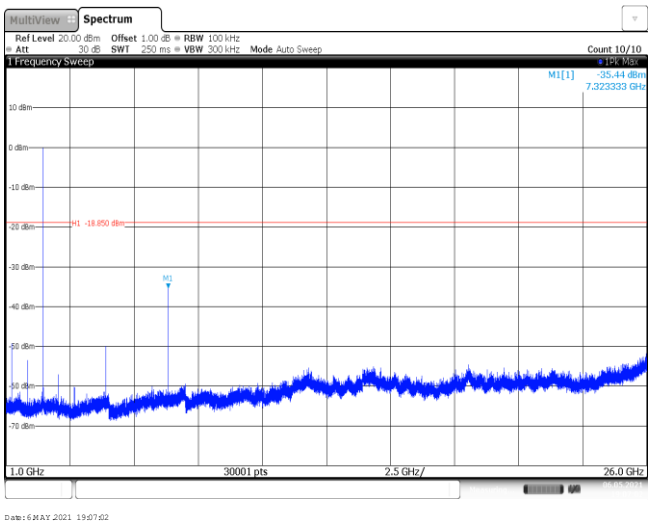
Test Item:	Band edge	Modulation type:	π/4DQPSK
CH00 No hopping mode			
CH00 Hopping mode			
CH78 No hopping mode			

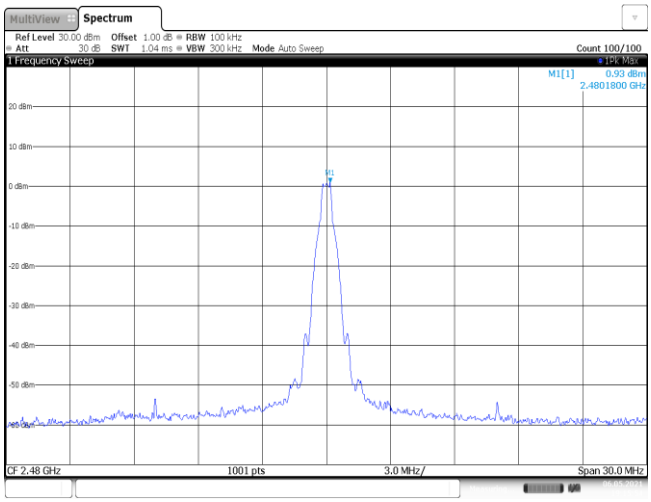
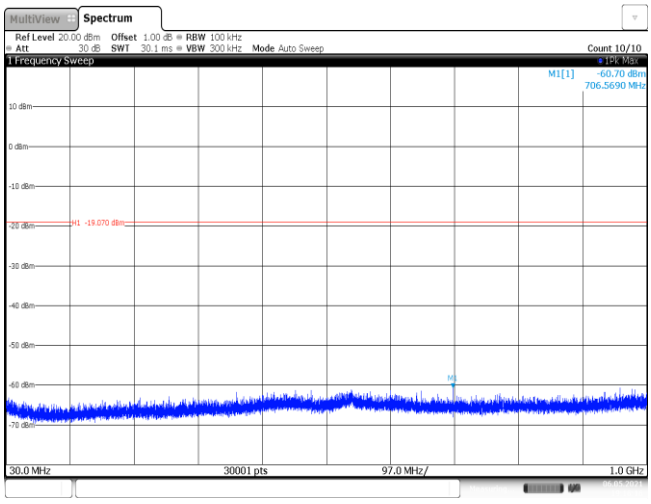
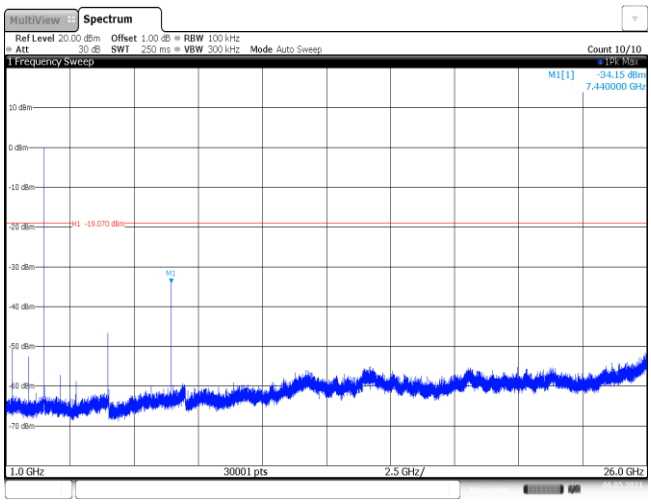
CH78 Hopping mode	

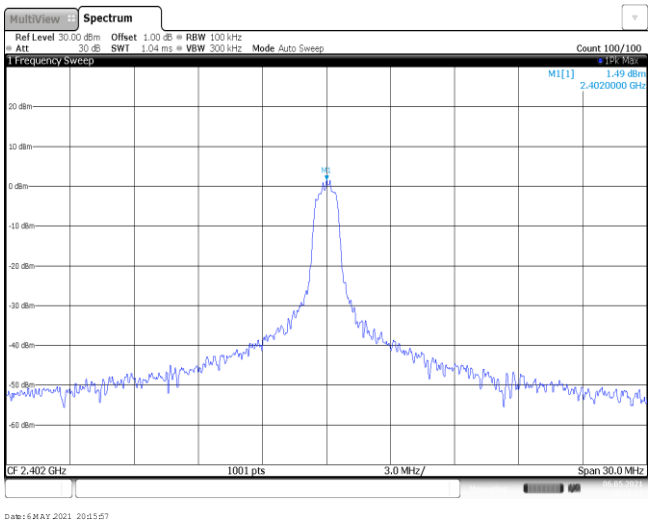
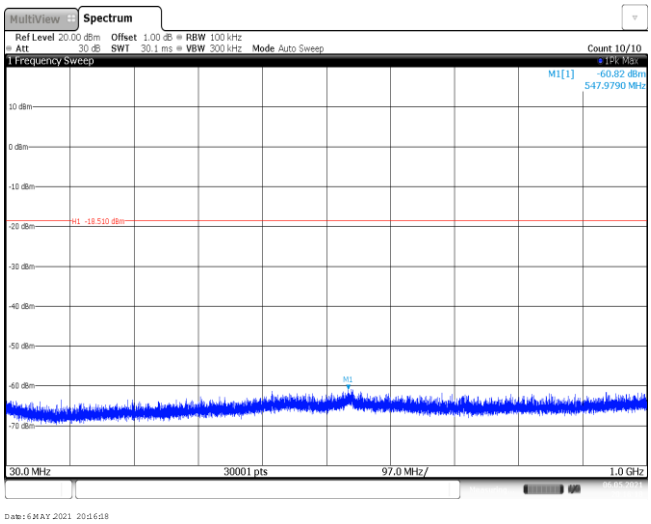
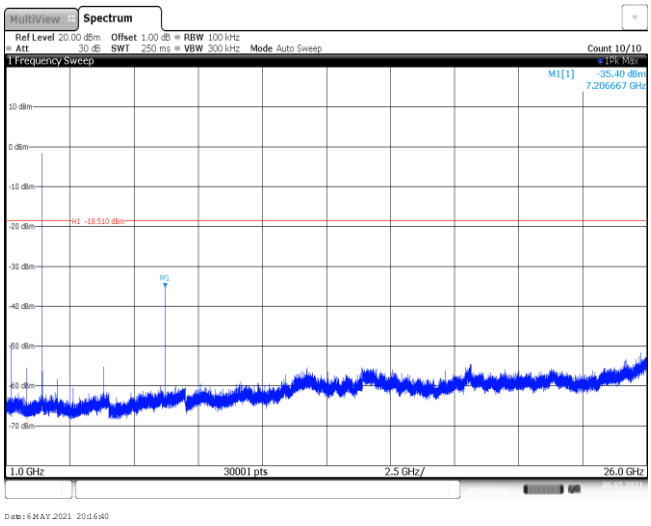
Test Item:	Band edge	Modulation type:	8DPSK
CH00 No hopping mode			
CH00 Hopping mode			
CH78 No hopping mode			

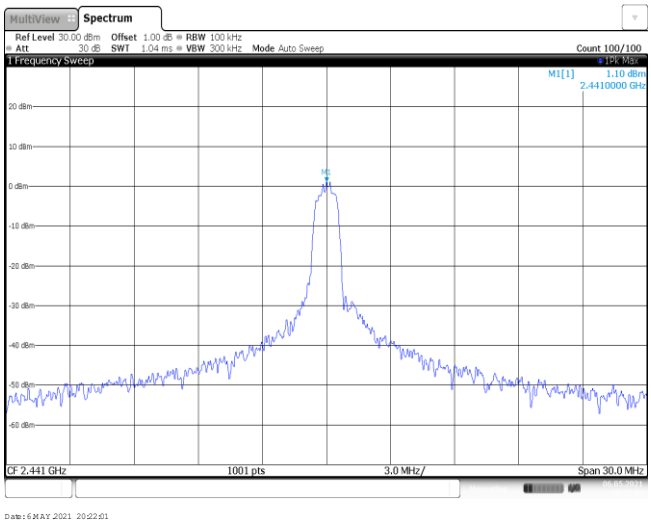
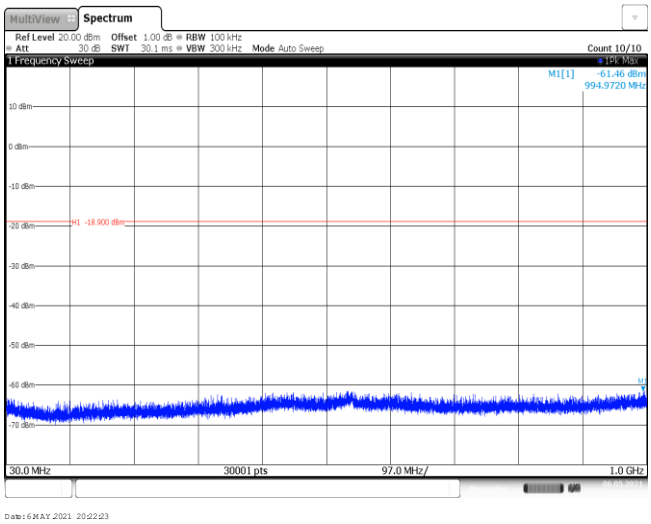
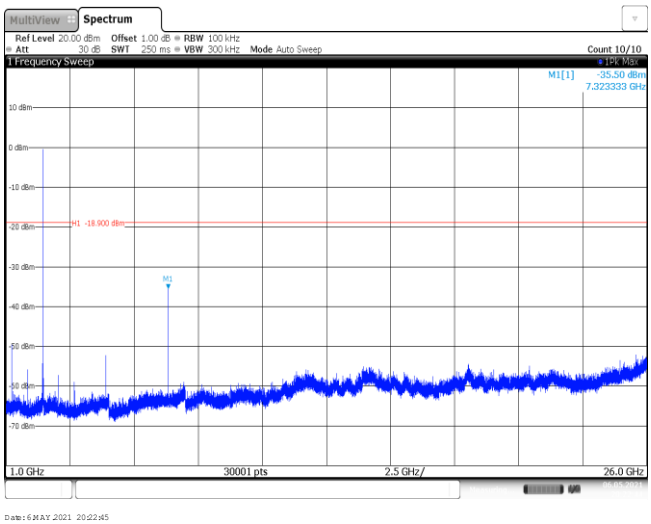
CH78 Hoppig mode	

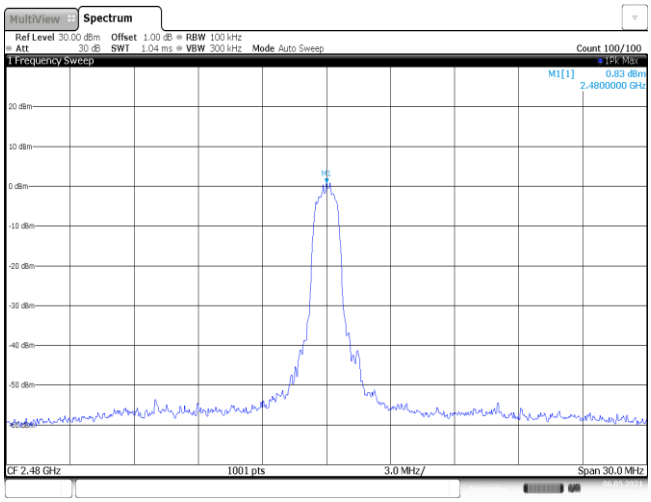
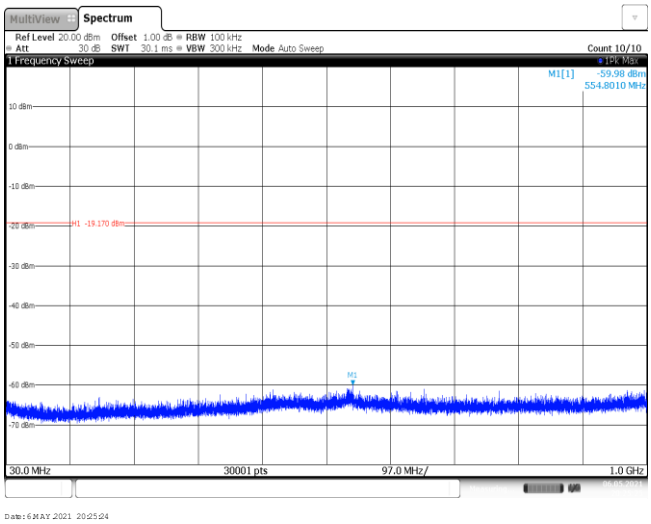
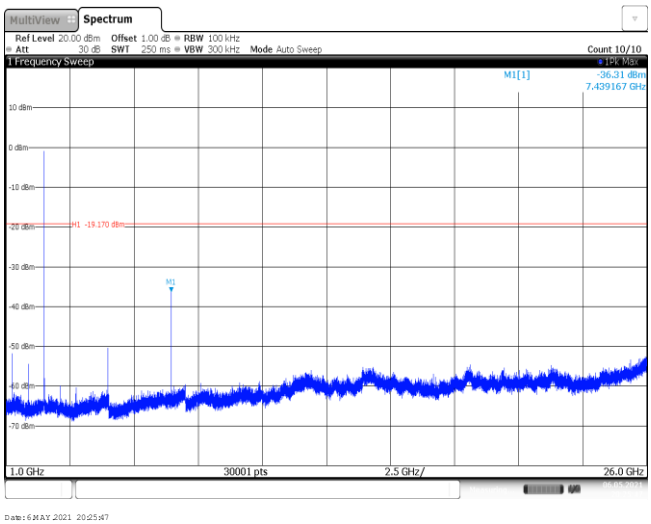
Test Item:	Spurious Emission	Modulation type:	GFSK
CH00 Reference level	
CH00 30MHz~1000MHz	
CH00 1GHz~26GHz	

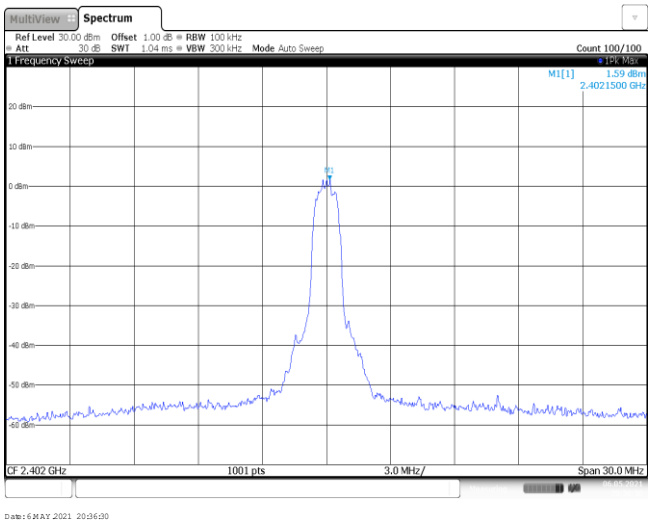
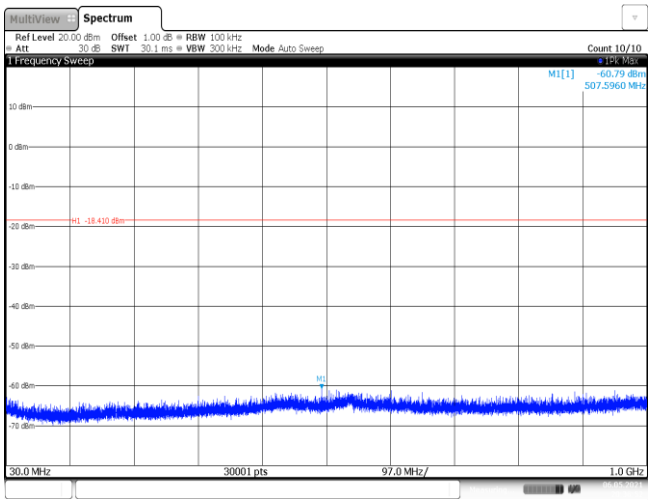
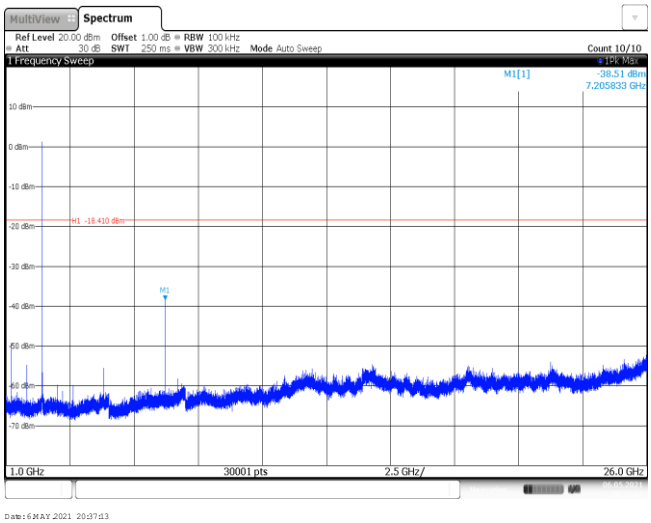
CH39 Reference level	
CH39 30MHz~1000MHz	
CH39 1GHz~26GHz	

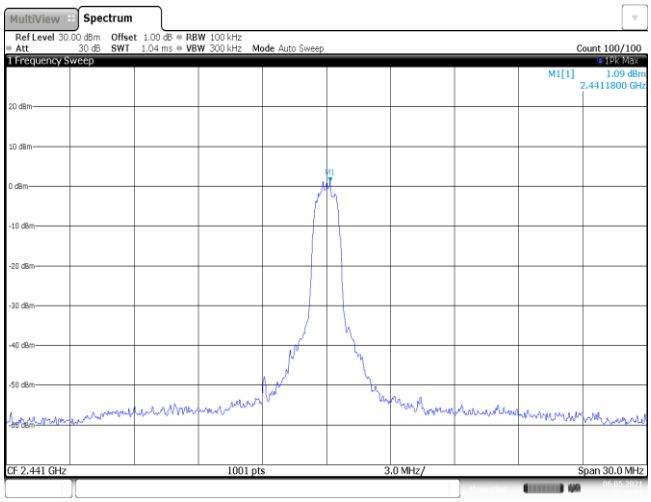
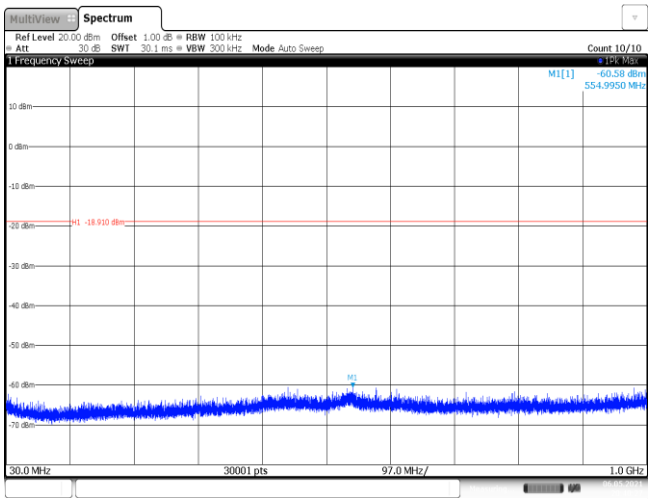
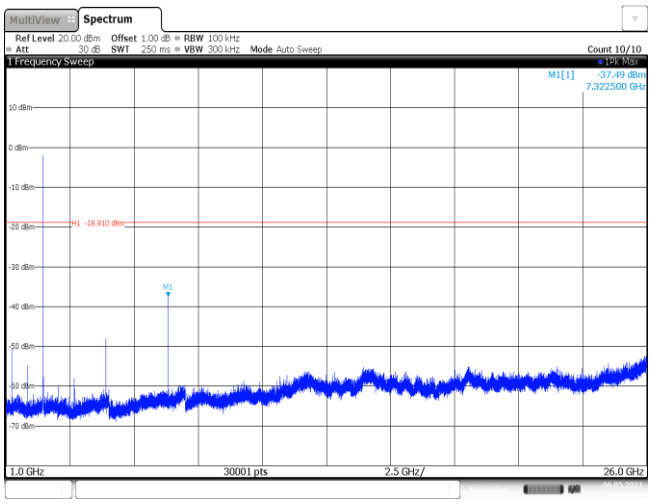
CH78 Reference level	
CH78 30MHz~1000MHz	
CH78 1GHz~26GHz	

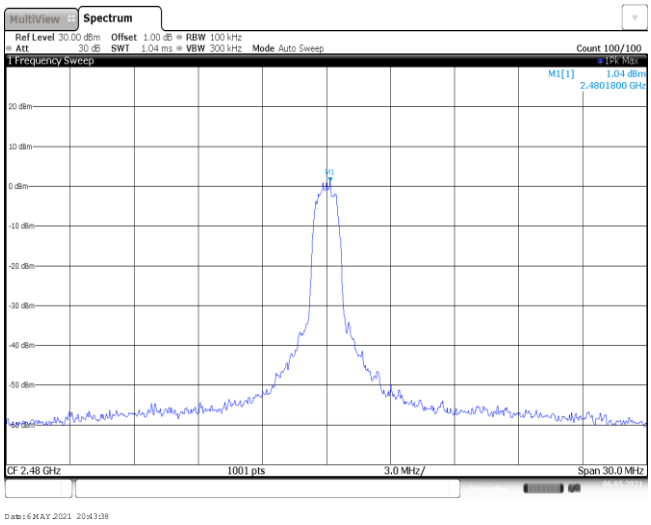
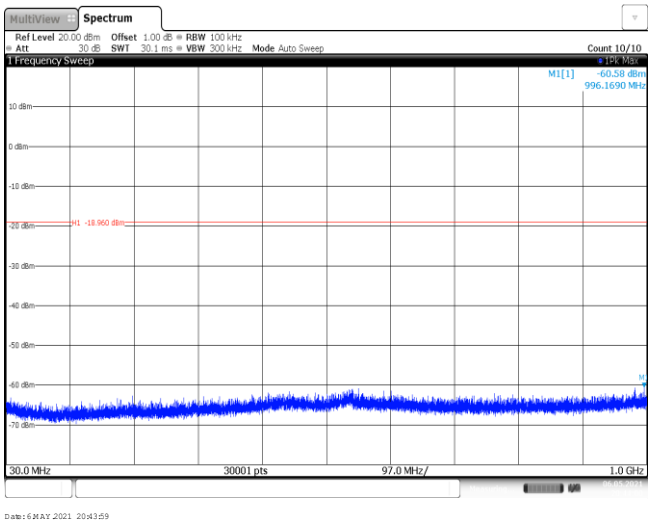
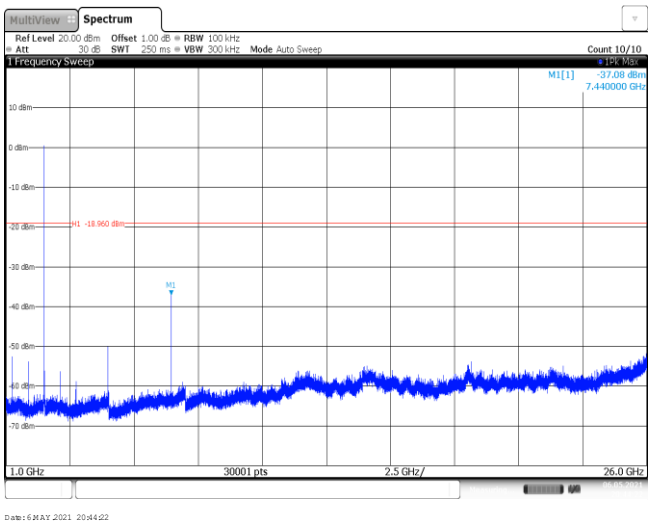
Test Item:	Spurious Emission	Modulation type:	π/4DQPSK
CH00 Reference level			
CH00 30MHz~1000MHz			
CH00 1GHz~26GHz			

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--------