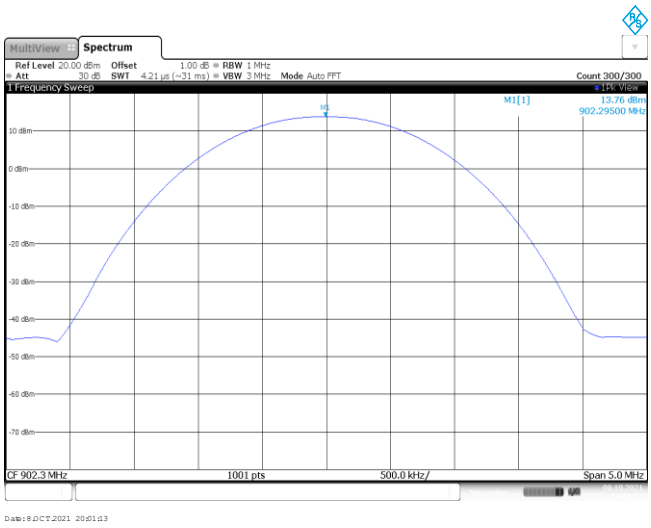
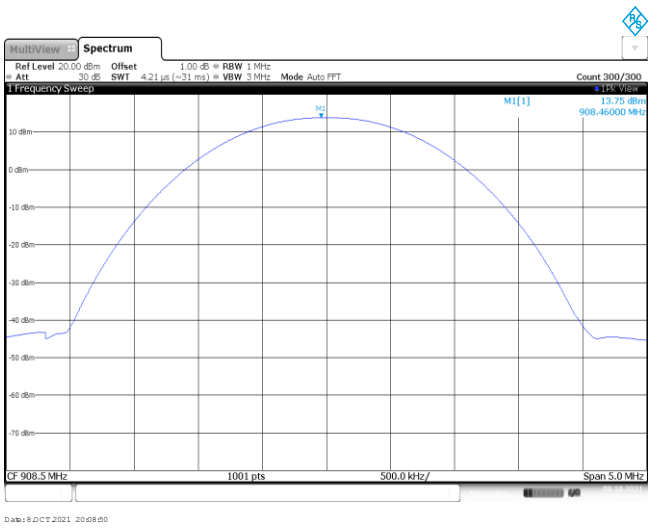
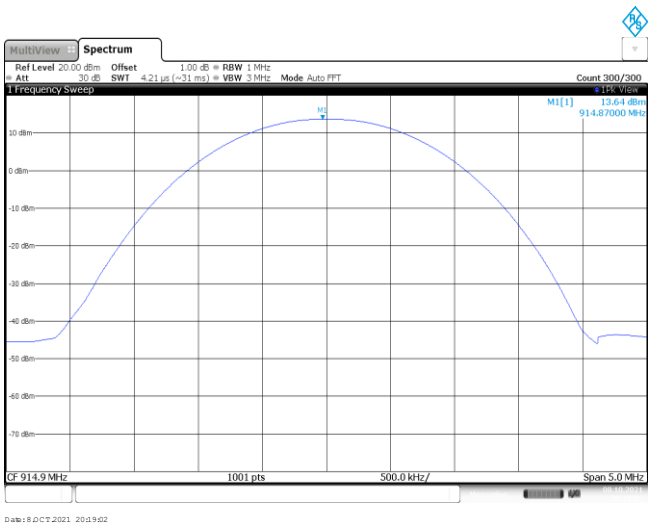
APPENDIX REPORT

Project No.	SHT2106076404EW	Radio Specification	LORA
Test sample No.	YPHT2106076406	Model No.	FMLR-61-P-MA62X
Start test date	2021-10-08	Finish date	2021-10-09
Temperature	26.6℃	Humidity	33%
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

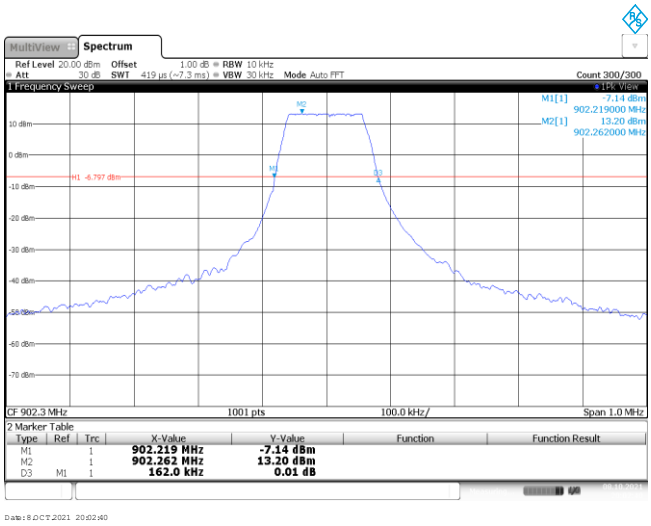
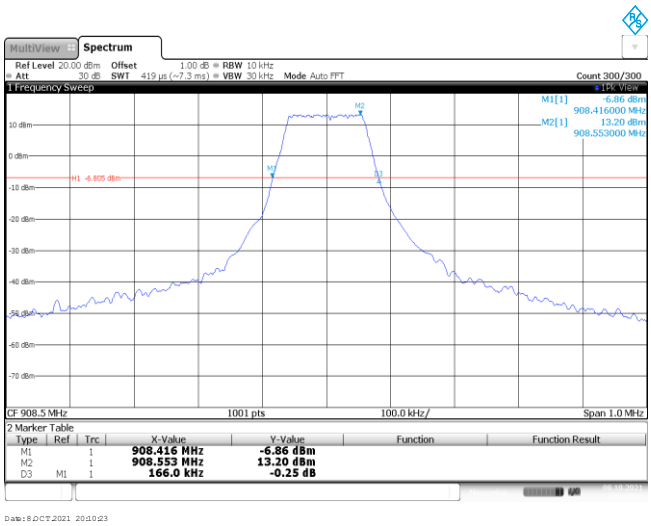
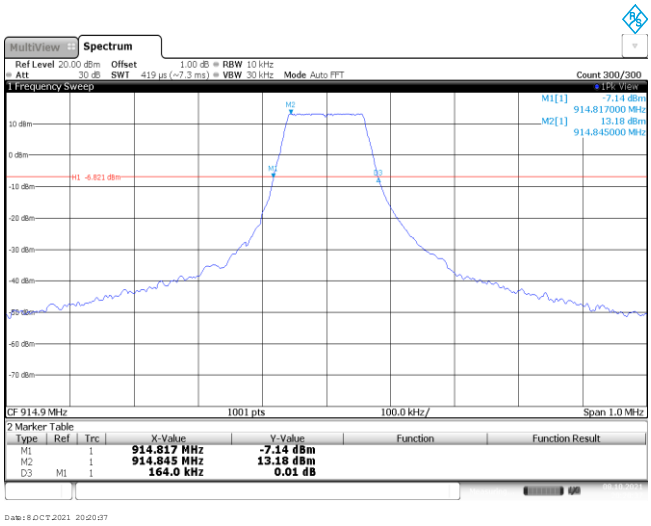
Appendix A：Peak Output Power

Modulation type	Channel	Peak Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
CSS	CH-L	13.76	13.55	≤ 30.00	Pass
	CH-M	13.75	13.50		
	CH-H	13.64	13.45		

Modulation Type:	**CSS**
CH-L	
CH-M	
CH-H	

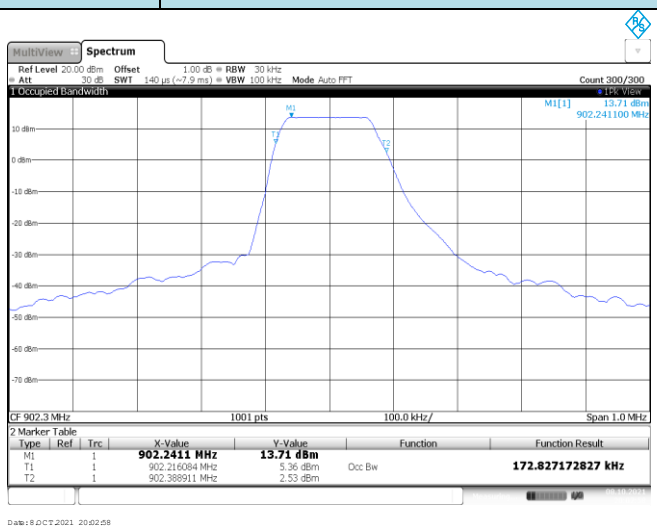
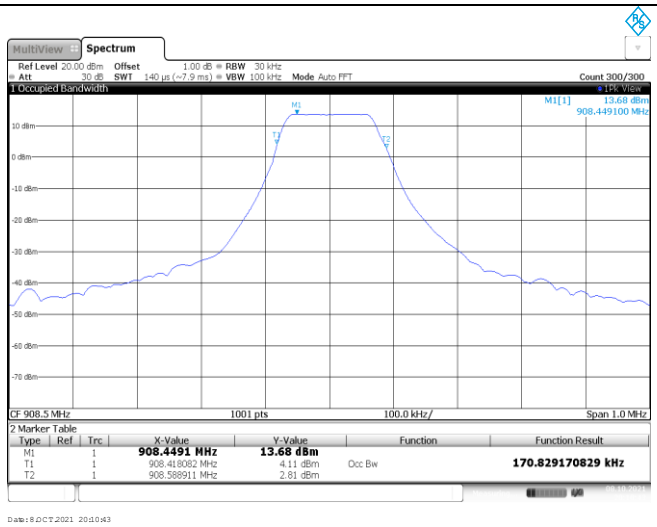
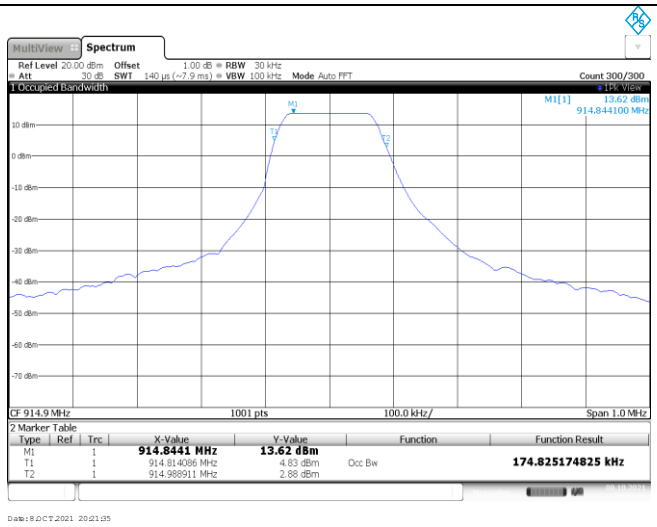
Appendix B : 20 dB Bandwidth

Modulation type	Channel	20 dB Bandwidth (kHz)	Limit (kHz)	Result
CSS	CH-L	162.00	500	Pass
	CH-M	166.00		
	CH-H	164.00		

Modulation Type:	CSS
CH-L	
CH-M	
CH-H	

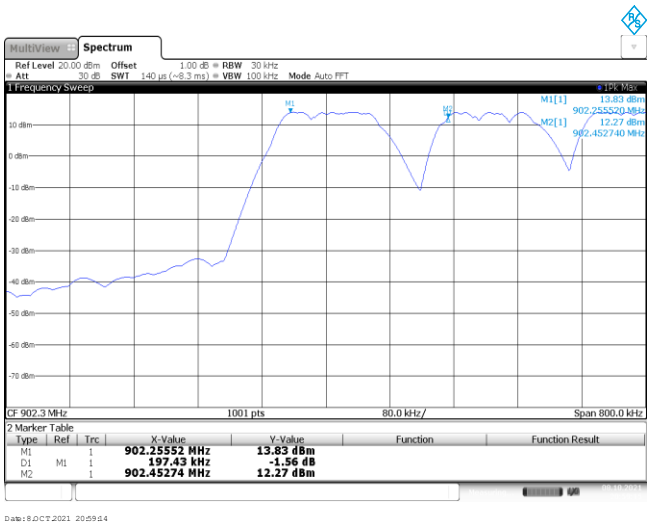
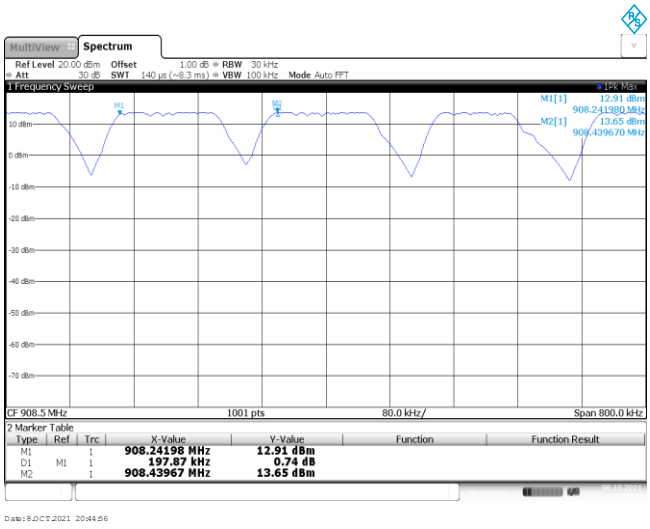
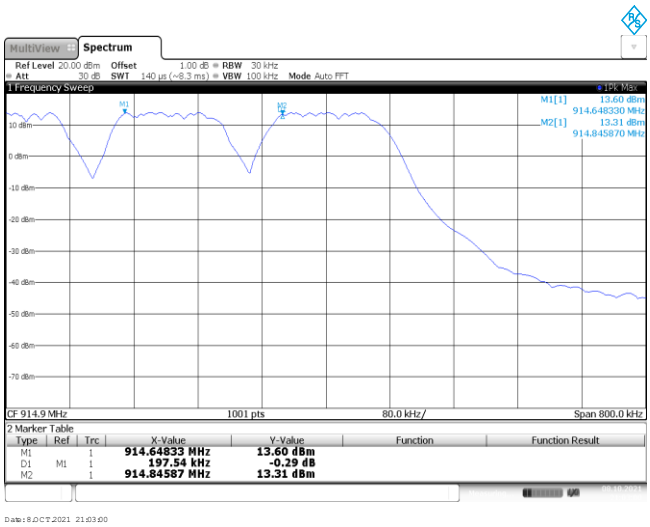
Appendix C：99% Occupied Bandwidth

Modulation type	Channel	99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
CSS	CH-L	0.17	-	Pass
	CH-M	0.17		
	CH-H	0.17		

Modulation Type:	CSS
CH-L	
CH-M	
CH-H	

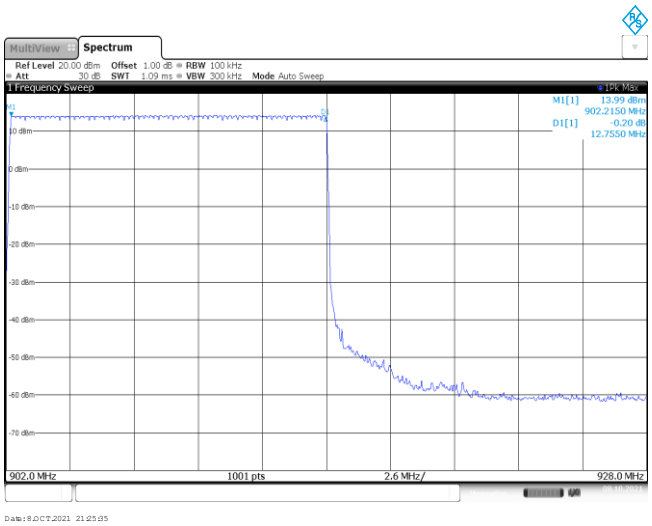
Appendix D：Carrier Frequencies Separation

Modulation type	Channel	Carrier Frequencies Separation (MHz)	Limit (kHz)	Result
CSS	CH-L	0.2	≥162.00	Pass
	CH-M	0.2	≥166.00	Pass
	CH-H	0.2	≥164.00	Pass

CH-L	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 30 kHz Att 30 dB SWT 140 µs (~8.3 ms) VBW 100 kHz Mode Auto FFT 1 Frequency Sweep 1Pk Max M1[1] 13.83 dBm 902.255520 MHz M2[1] 12.27 dBm 902.452740 MHz CF 902.3 MHz 1001 pts 80.0 kHz/ Span 800.0 kHz 2 Marker Table Type Ref Trc X-Value Y-Value Function Function Result M1 1 902.25552 MHz 13.83 dBm D1 M1 1 197.43 kHz -1.56 dB M2 1 902.45274 MHz 12.27 dBm Date: 8.OCT.2021 20:59:14
CH-M	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 30 kHz Att 30 dB SWT 140 µs (~8.3 ms) VBW 100 kHz Mode Auto FFT 1 Frequency Sweep 1Pk Max M1[1] 12.91 dBm 908.241980 MHz M2[1] 13.65 dBm 908.439670 MHz CF 908.5 MHz 1001 pts 80.0 kHz/ Span 800.0 kHz 2 Marker Table Type Ref Trc X-Value Y-Value Function Function Result M1 1 908.24198 MHz 12.91 dBm D1 M1 1 197.87 kHz 0.74 dB M2 1 908.43967 MHz 13.65 dBm Date: 8.OCT.2021 20:44:56
CH-H	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 30 kHz Att 30 dB SWT 140 µs (~8.3 ms) VBW 100 kHz Mode Auto FFT 1 Frequency Sweep 1Pk Max M1[1] 13.60 dBm 914.648330 MHz M2[1] 13.31 dBm 914.845870 MHz CF 914.9 MHz 1001 pts 80.0 kHz/ Span 800.0 kHz 2 Marker Table Type Ref Trc X-Value Y-Value Function Function Result M1 1 914.64833 MHz 13.60 dBm D1 M1 1 197.54 kHz -0.29 dB M2 1 914.84587 MHz 13.31 dBm Date: 8.OCT.2021 21:03:00

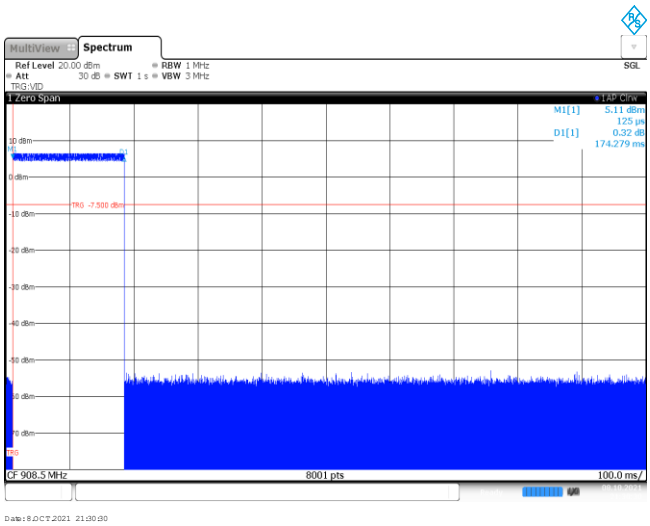
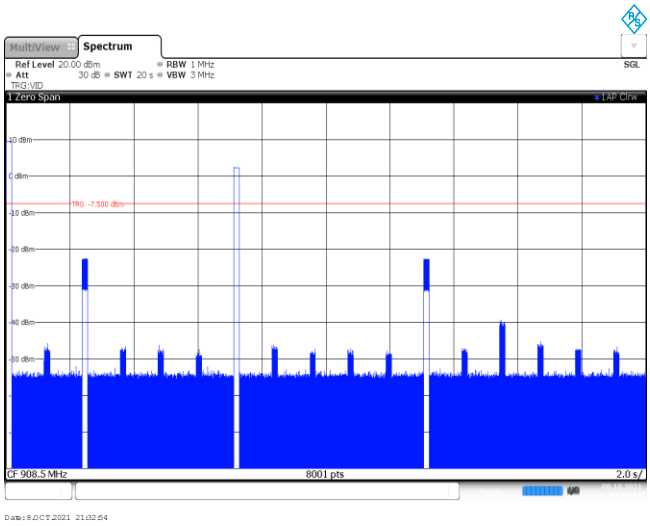
Appendix E：Hopping Channel Number

Modulation type	Channel number	Limit	Result
CSS	64	≥50	Pass

CSS	

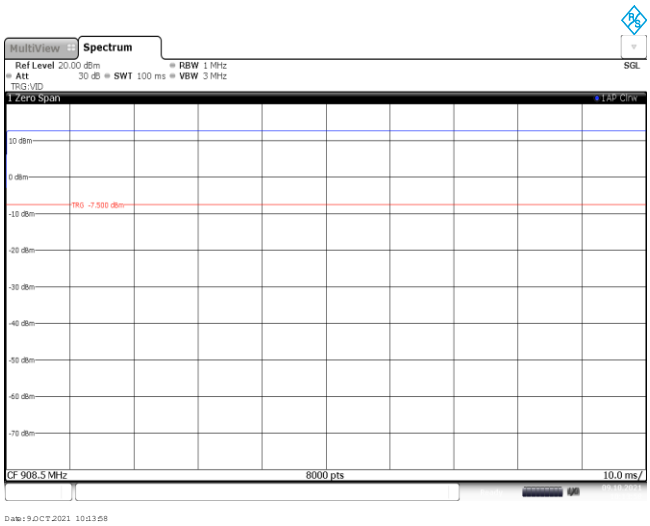
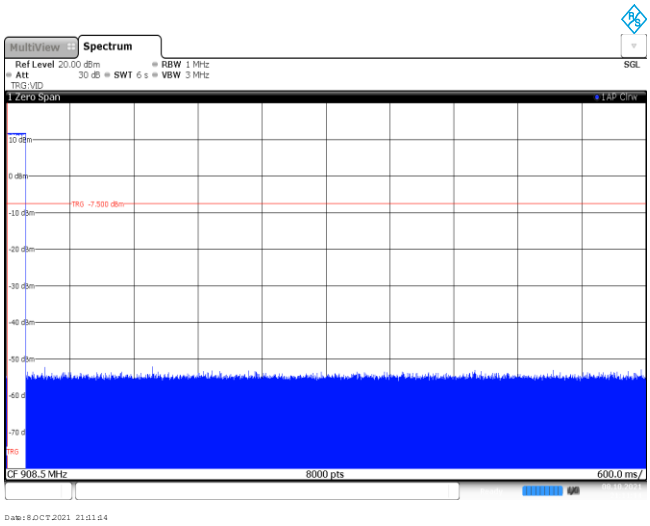
Appendix F：Dwell Time

Modulation type	Packet	Burst Width [ms]	Total Hops[hop*ch]	Dwell time (Second)	Limit (Second)	Result
CSS	CH-M	174.28	2	0.35	≤ 0.40	Pass

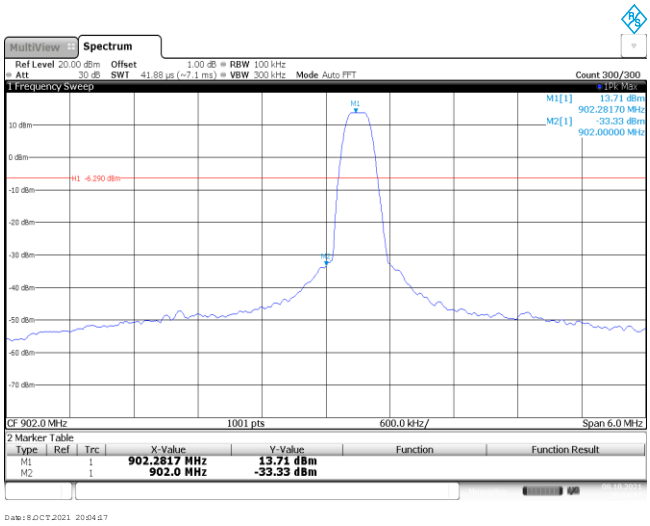
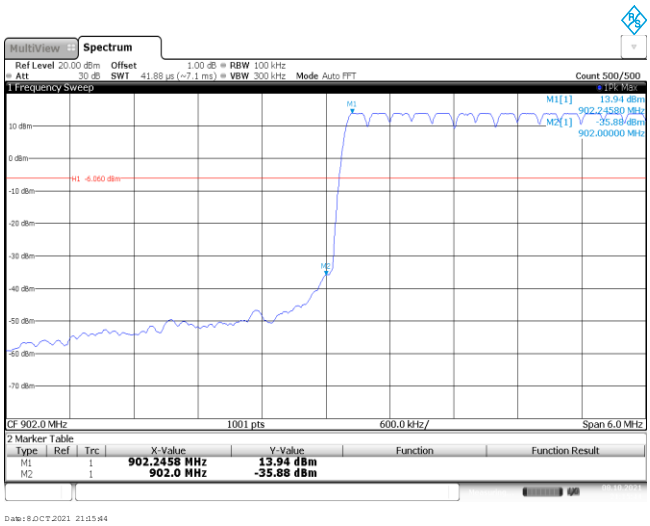
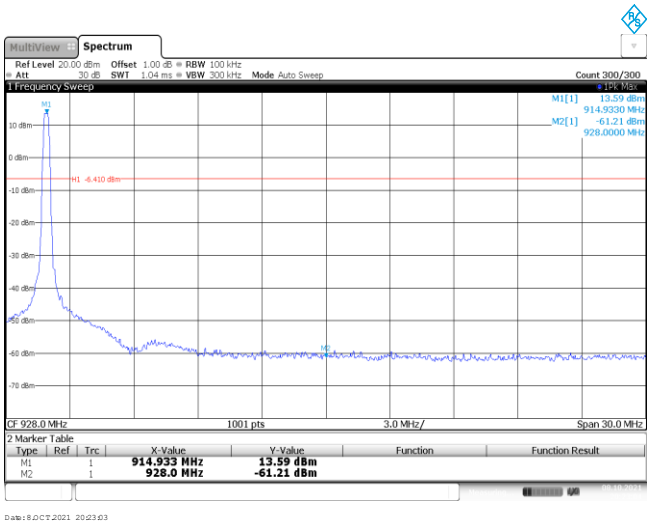
Modulation Type:	**CSS**
CH-M Burst width	
CH-M Burst number	

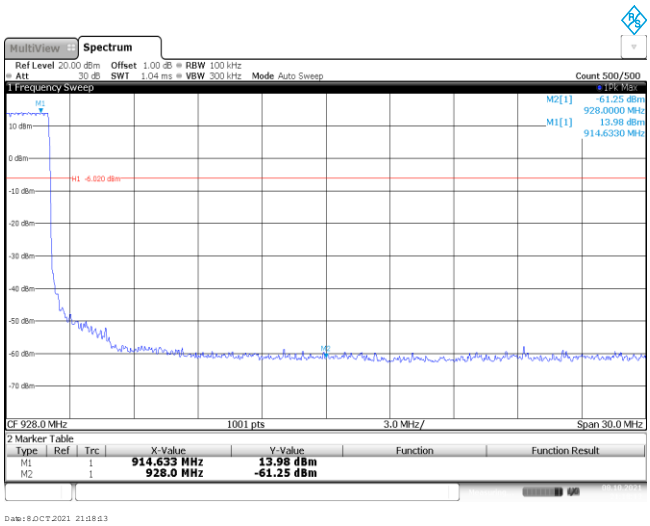
Appendix G：Duty Cycle Correction Factor (DCCF)

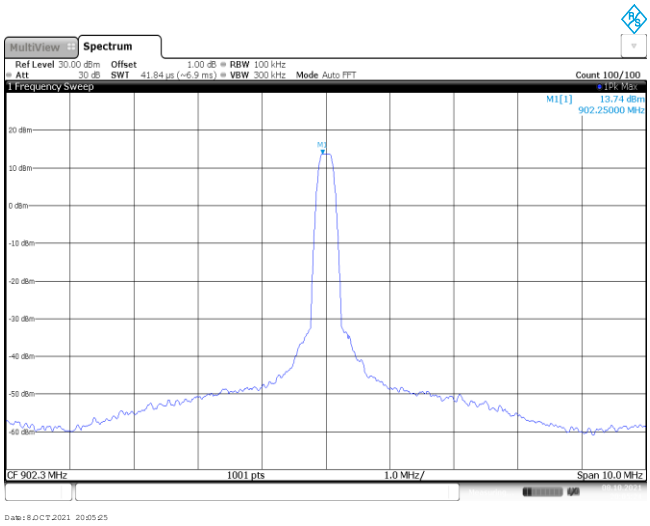
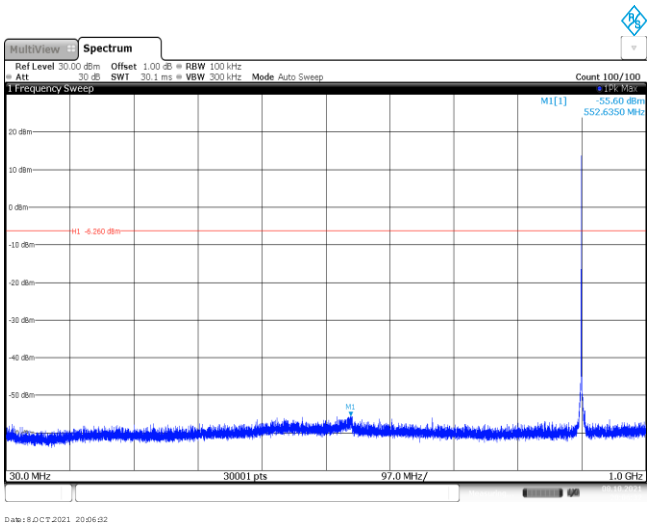
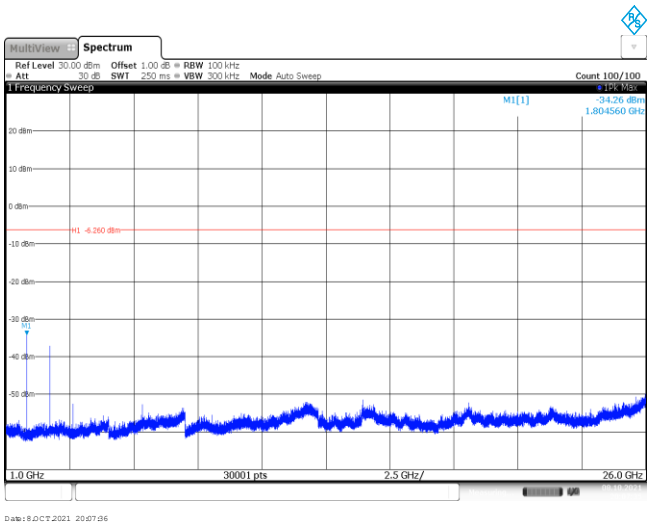
DCCF Calculate Formula					
DCCF=20 * Log(duty cycle) = 20 * Log($T_{on\ time}$ / T_{period})					
Modulation type	Test Frequency（MHz）	$T_{on\ time}$ for single burst [ms]	T_{period} [ms]	Burst Quantity	DCCF [dB]
CSS	908.5	1.00	100	1	-40.00

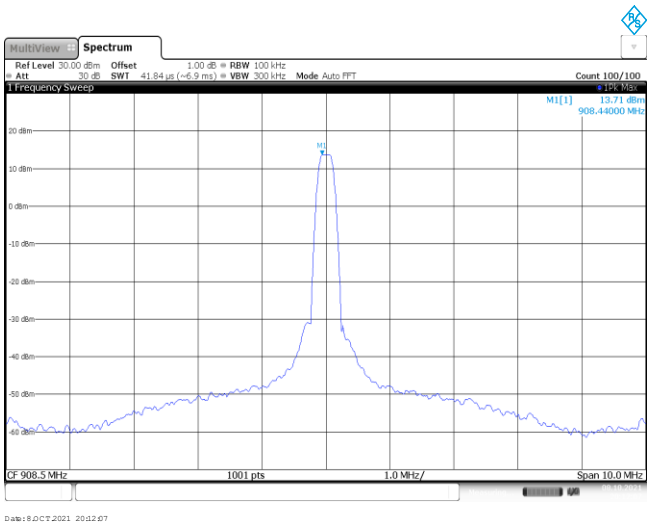
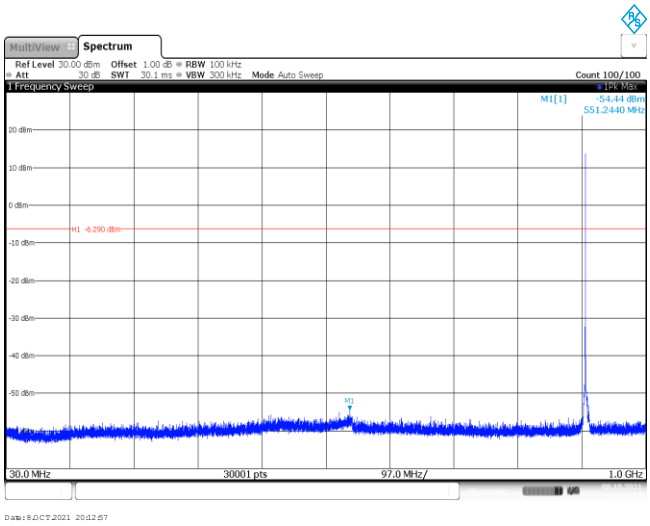
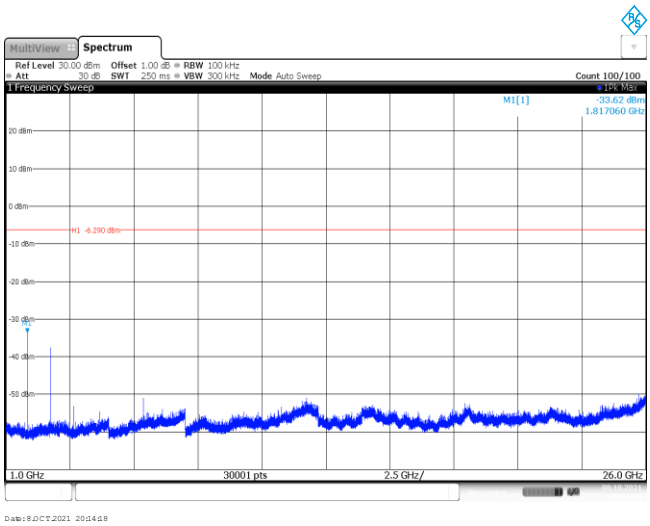
Burst Quantity	
$T_{on\ time}$ for single burst	

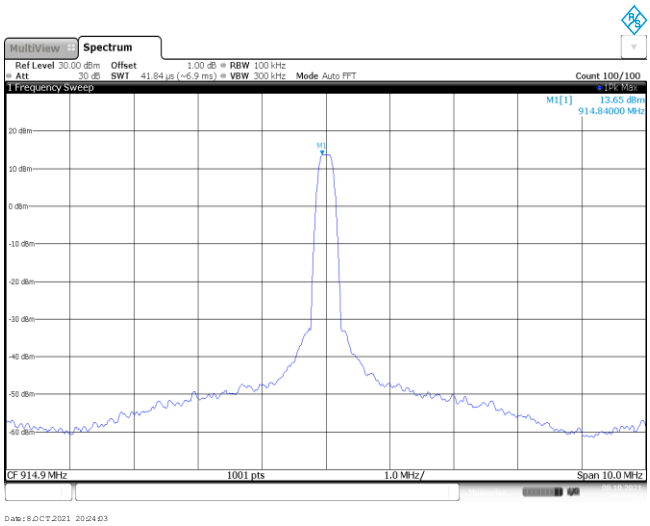
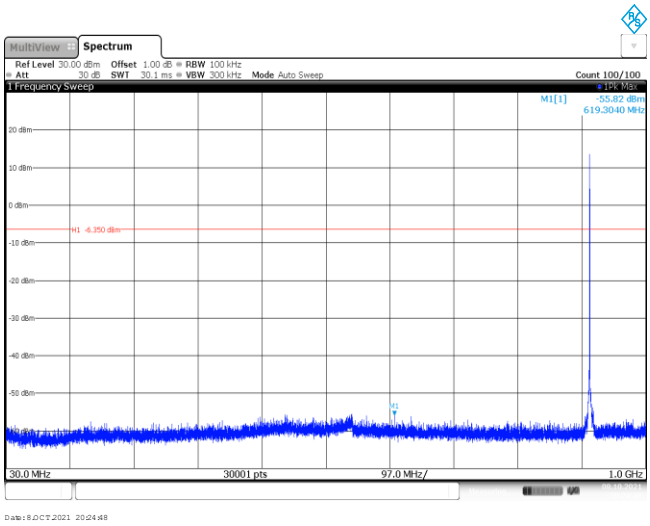
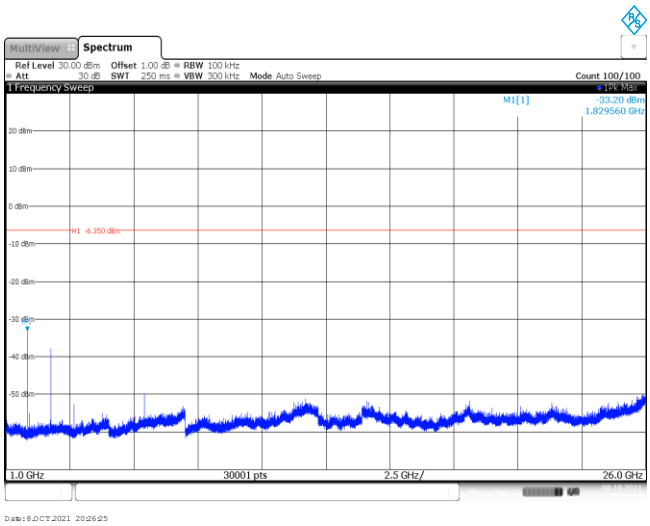
Appendix H：Band edge and Spurious Emissions (conducted)

Test Item:	Band edge	Modulation type:	CSS
CH-L No hopping mode			
CH-L Hopping mode			
CH-H No hopping mode			

CH-H Hopping mode	

Test Item:	Spurious Emission	Modulation type:	CSS
CH-L Reference level	
CH-L 30MHz~1000MHz	
CH-L 1GHz~26GHz	

CH-M Reference level	
CH-M 30MHz~1000MHz	
CH-M 1GHz~26GHz	

CH-H Reference level	
CH-H 30MHz~1000MHz	
CH-H 1GHz~26GHz	

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