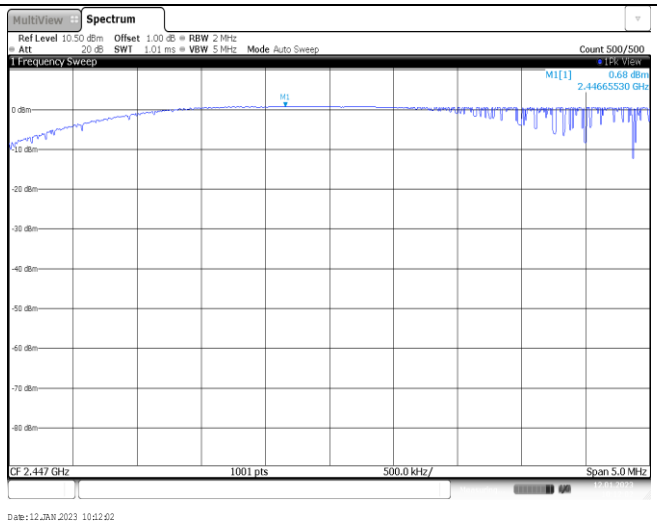
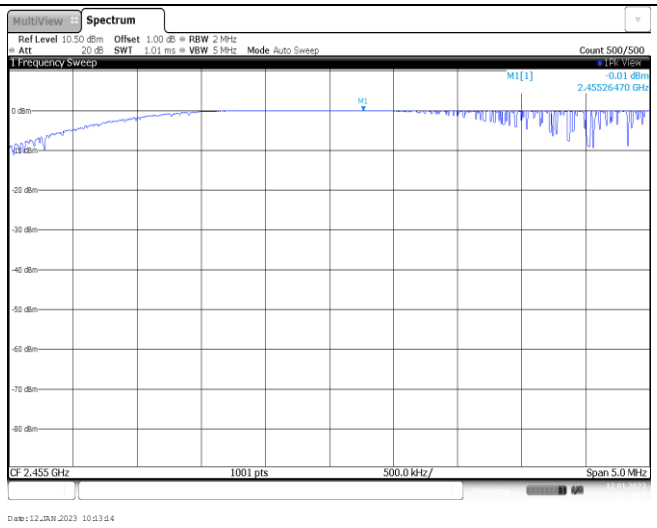
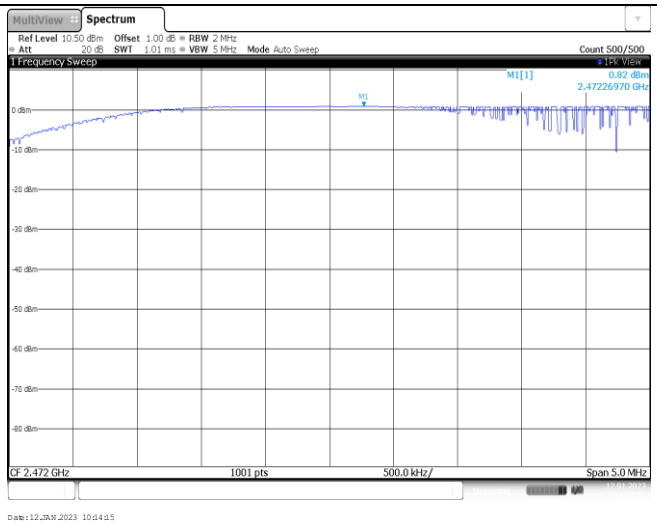
APPENDIX REPORT

Project No.	SHT2211080301EW	Radio Specification	GFSK
Test sample No.	YPHT22110803002	Model No.	HD-19A
Start test date	2023-01-12	Finish date	2023-01-30
Temperature	24.1℃	Humidity	64%
Test Engineer	Xiaoxiao Li	Auditor	Xiaodong Zhao

Appendix clause	Test item	Result
A	Peak Output Power	PASS
B	Power Spectral Density	PASS
C	6 dB Bandwidth	PASS
D	99% Occupied Bandwidth	PASS
E	Duty cycle	PASS
F	Band edge and Spurious Emissions (conducted)	PASS

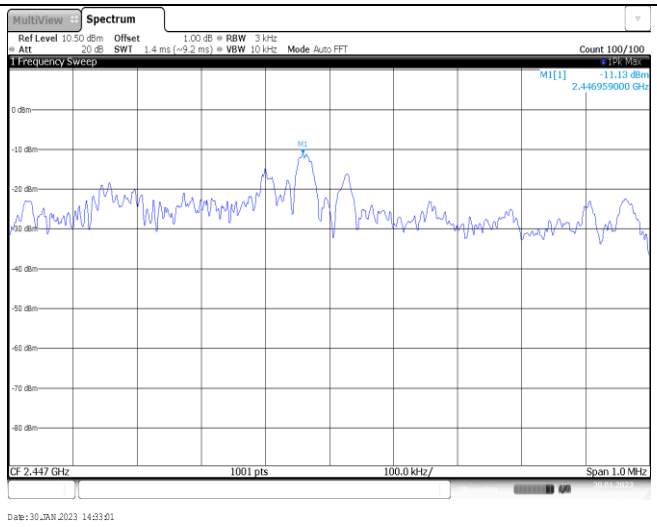
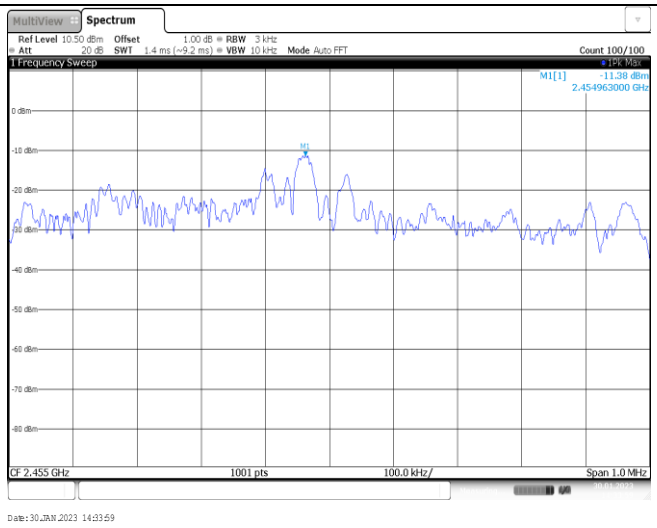
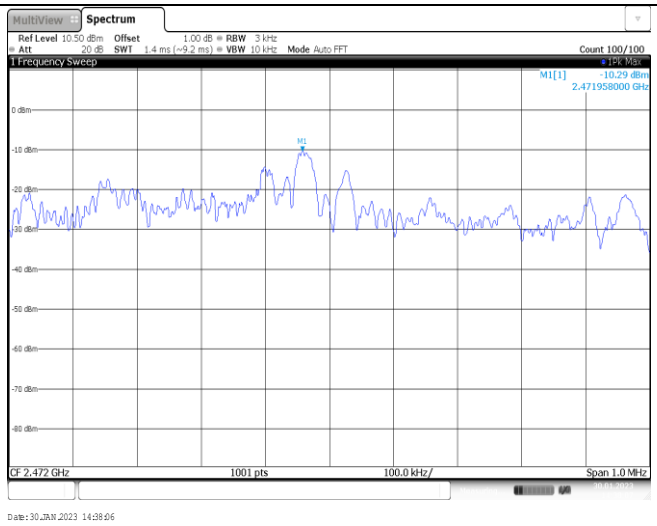
Appendix A：Peak Output Power

Channel	Peak Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
CH_L	0.68	0.67	≤ 30.00	Pass
CH_M	-0.01	-0.04		
CH_H	0.82	0.80		

CH_L	 MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 2 MHz Att 20 dB SWT 1.01 ms VBW 5 MHz Mode Auto Sweep Count 500/500 1 Frequency Sweep 1Pk View M1[1] 0.68 dBm 2.44665530 GHz M1 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm CF 2.447 GHz 1001 pts 500.0 kHz/ Span 5.0 MHz Date: 12.JAN.2023 10:12:02
CH_M	 MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 2 MHz Att 20 dB SWT 1.01 ms VBW 5 MHz Mode Auto Sweep Count 500/500 1 Frequency Sweep 1Pk View M1[1] -0.01 dBm 2.45526470 GHz M1 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm CF 2.455 GHz 1001 pts 500.0 kHz/ Span 5.0 MHz Date: 12.JAN.2023 10:13:14
CH_H	 MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 2 MHz Att 20 dB SWT 1.01 ms VBW 5 MHz Mode Auto Sweep Count 500/500 1 Frequency Sweep 1Pk View M1[1] 0.82 dBm 2.47226970 GHz M1 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm CF 2.472 GHz 1001 pts 500.0 kHz/ Span 5.0 MHz Date: 12.JAN.2023 10:14:15

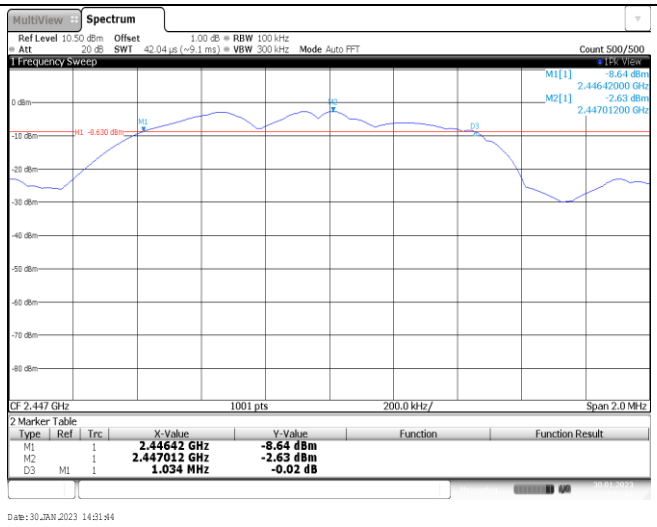
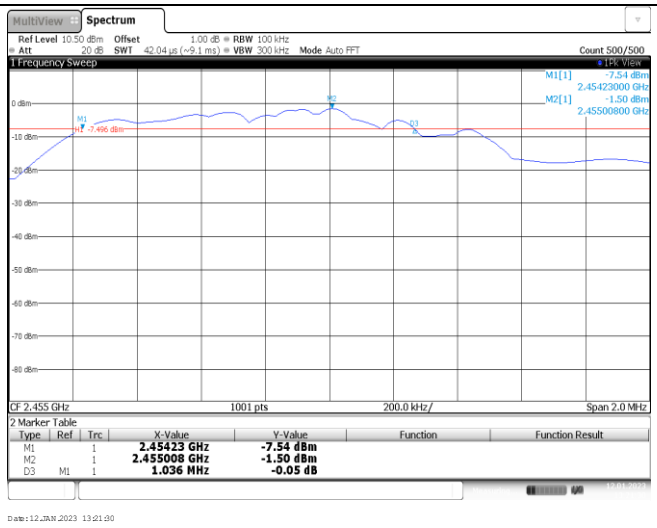
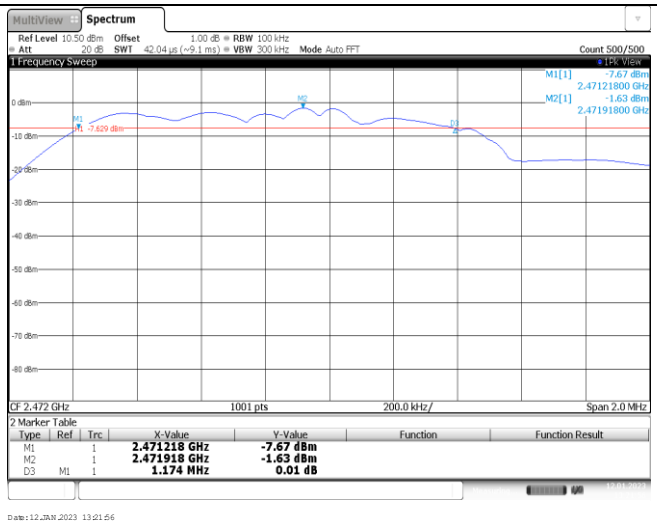
Appendix B：Power Spectral Density

Channel	Power Spectral Density(dBm/3KHz)	Limit (dBm/3KHz)	Result
CH_L	-11.13	≤8.00	Pass
CH_M	-11.38		
CH_H	-10.29		

CH_L	 MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 3 kHz Att 20 dB SWT 1.4 ms (~9.2 ms) VBW 10 kHz Mode Auto FFT Count 100/100 1 Frequency Sweep 1Pk Max M1[1] -11.13 dBm 2.446959000 GHz M1 CF 2.447 GHz 1001 pts 100.0 kHz/ Span 1.0 MHz Date: 30.JAN.2023 14:33:01
CH_M	 MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 3 kHz Att 20 dB SWT 1.4 ms (~9.2 ms) VBW 10 kHz Mode Auto FFT Count 100/100 1 Frequency Sweep 1Pk Max M1[1] -11.38 dBm 2.454963000 GHz M1 CF 2.455 GHz 1001 pts 100.0 kHz/ Span 1.0 MHz Date: 30.JAN.2023 14:33:59
CH_H	 MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 3 kHz Att 20 dB SWT 1.4 ms (~9.2 ms) VBW 10 kHz Mode Auto FFT Count 100/100 1 Frequency Sweep 1Pk Max M1[1] -10.29 dBm 2.471958000 GHz M1 CF 2.472 GHz 1001 pts 100.0 kHz/ Span 1.0 MHz Date: 30.JAN.2023 14:38:06

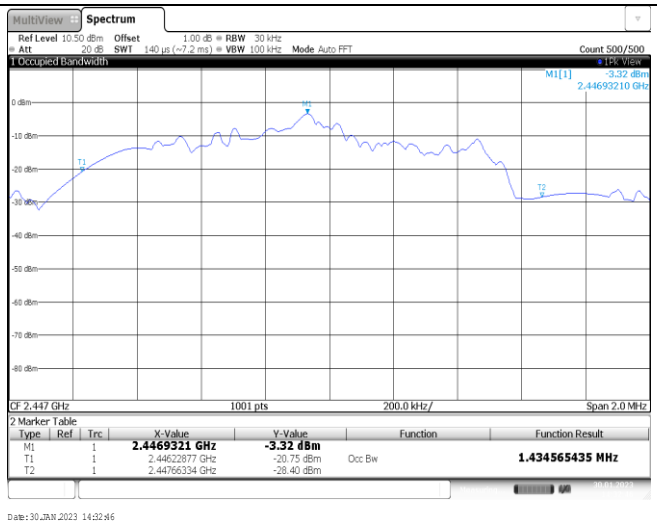
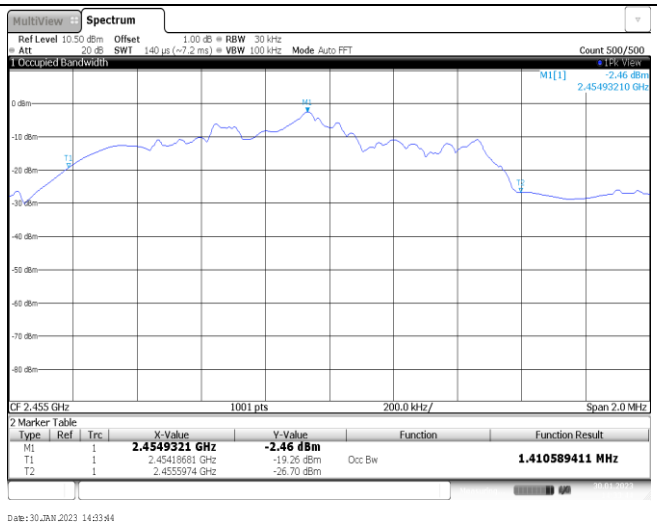
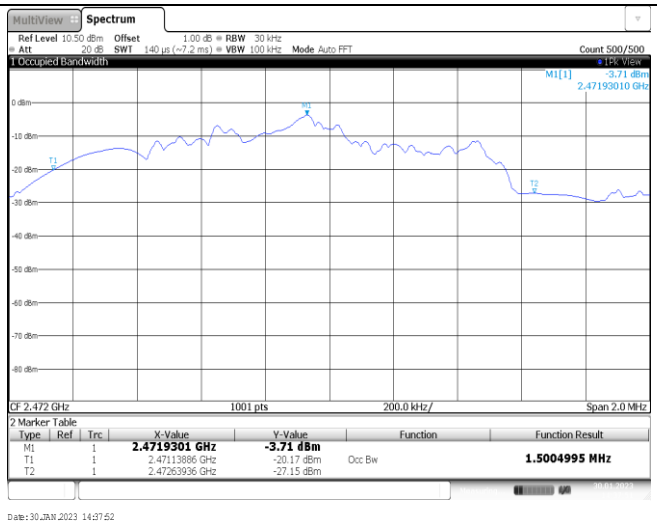
Appendix C：6dB bandwidth

Channel	6dB Bandwidth(kHz)	Limit (kHz)	Result
CH_L	1034.00	≥500	Pass
CH_M	1036.00		
CH_H	1174.00		

CH_L	 MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 100 kHz Att 20 dB SWT 42.04 µs (~9.1 ms) VBW 300 kHz Mode Auto FFT Count 500/500 1 Frequency Sweep 1Pk View M1[1] -8.64 dBm 2.44642000 GHz M2[1] -2.63 dBm 2.44701200 GHz CF 2.447 GHz 1001 pts 200.0 kHz/ Span 2.0 MHz 2 Marker Table Type Ref Trc X-Value Y-Value Function Function Result M1 1 2.44642 GHz -8.64 dBm M2 1 2.447012 GHz -2.63 dBm D3 M1 1 1.034 MHz -0.02 dB Date: 30.JAN.2023 14:31:44
CH_M	 MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 100 kHz Att 20 dB SWT 42.04 µs (~9.1 ms) VBW 300 kHz Mode Auto FFT Count 500/500 1 Frequency Sweep 1Pk View M1[1] -7.54 dBm 2.45423000 GHz M2[1] -1.50 dBm 2.45500800 GHz CF 2.455 GHz 1001 pts 200.0 kHz/ Span 2.0 MHz 2 Marker Table Type Ref Trc X-Value Y-Value Function Function Result M1 1 2.45423 GHz -7.54 dBm M2 1 2.455008 GHz -1.50 dBm D3 M1 1 1.036 MHz -0.05 dB Date: 12.JAN.2023 13:21:30
CH_H	 MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 100 kHz Att 20 dB SWT 42.04 µs (~9.1 ms) VBW 300 kHz Mode Auto FFT Count 500/500 1 Frequency Sweep 1Pk View M1[1] -7.67 dBm 2.47121800 GHz M2[1] -1.63 dBm 2.47191800 GHz CF 2.472 GHz 1001 pts 200.0 kHz/ Span 2.0 MHz 2 Marker Table Type Ref Trc X-Value Y-Value Function Function Result M1 1 2.471218 GHz -7.67 dBm M2 1 2.471918 GHz -1.63 dBm D3 M1 1 1.174 MHz 0.01 dB Date: 12.JAN.2023 13:21:56

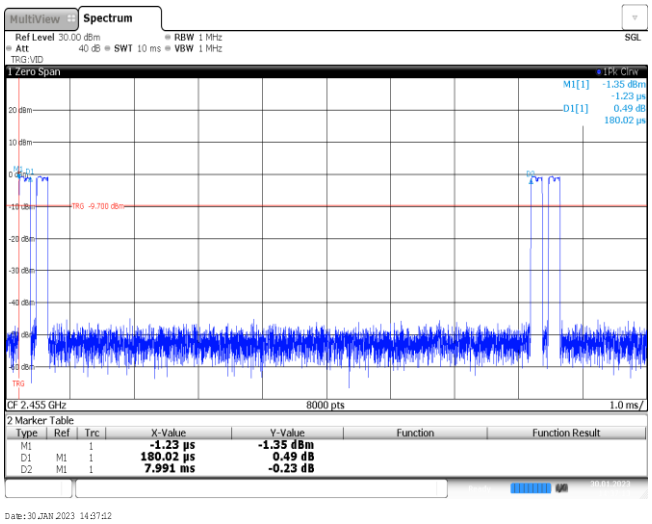
Appendix D：99% Occupied Bandwidth

Channel	99% Occupied Bandwidth(MHz)	Limit (kHz)	Result
CH_L	1.44	-	Pass
CH_M	1.41		
CH_H	1.50		

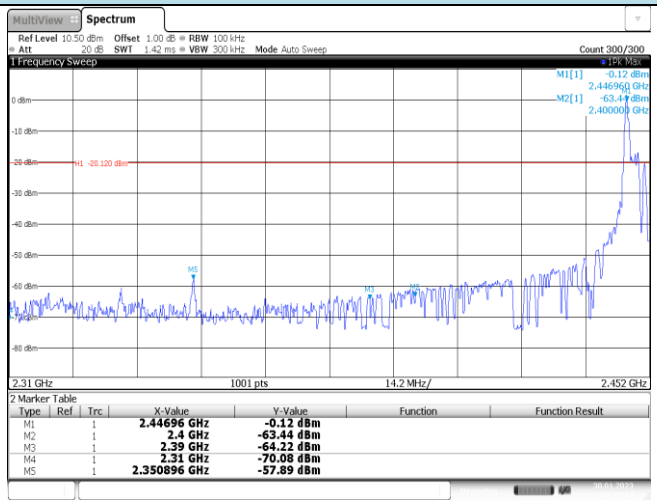
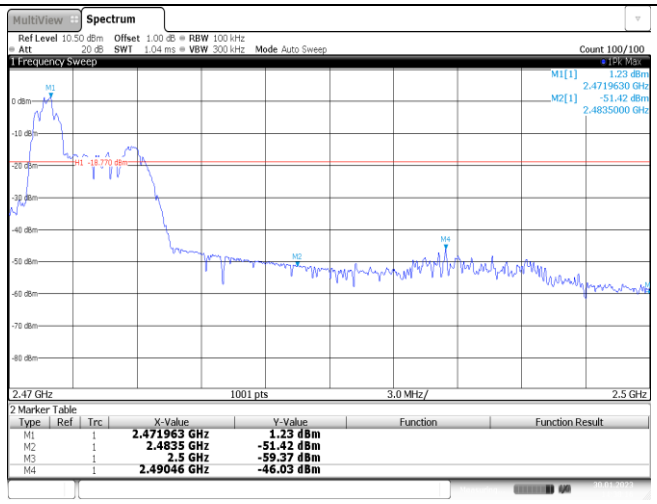
CH_L	 MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 30 kHz Att 20 dB SWT 140 µs (~7.2 ms) VBW 100 kHz Mode Auto FFT Count 500/500 1 Occupied Bandwidth 1Pk View M1[1] -3.32 dBm 2.44693210 GHz CF 2.447 GHz 1001 pts 200.0 kHz/ Span 2.0 MHz 2 Marker Table Type Ref Trc X-Value Y-Value Function Function Result M1 1 2.4469321 GHz -3.32 dBm T1 1 2.4462877 GHz -20.75 dBm Occ Bw 1.434565435 MHz T2 1 2.44766334 GHz -28.40 dBm Date: 30.JAN.2023 14:32:46
CH_M	 MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 30 kHz Att 20 dB SWT 140 µs (~7.2 ms) VBW 100 kHz Mode Auto FFT Count 500/500 1 Occupied Bandwidth 1Pk View M1[1] -2.46 dBm 2.45493210 GHz CF 2.455 GHz 1001 pts 200.0 kHz/ Span 2.0 MHz 2 Marker Table Type Ref Trc X-Value Y-Value Function Function Result M1 1 2.4549321 GHz -2.46 dBm T1 1 2.45418681 GHz -19.26 dBm Occ Bw 1.410589411 MHz T2 1 2.4555974 GHz -26.70 dBm Date: 30.JAN.2023 14:33:14
CH_H	 MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 30 kHz Att 20 dB SWT 140 µs (~7.2 ms) VBW 100 kHz Mode Auto FFT Count 500/500 1 Occupied Bandwidth 1Pk View M1[1] -3.71 dBm 2.47193010 GHz CF 2.472 GHz 1001 pts 200.0 kHz/ Span 2.0 MHz 2 Marker Table Type Ref Trc X-Value Y-Value Function Function Result M1 1 2.4719301 GHz -3.71 dBm T1 1 2.4713886 GHz -20.17 dBm Occ Bw 1.5004995 MHz T2 1 2.4726396 GHz -27.15 dBm Date: 30.JAN.2023 14:37:52

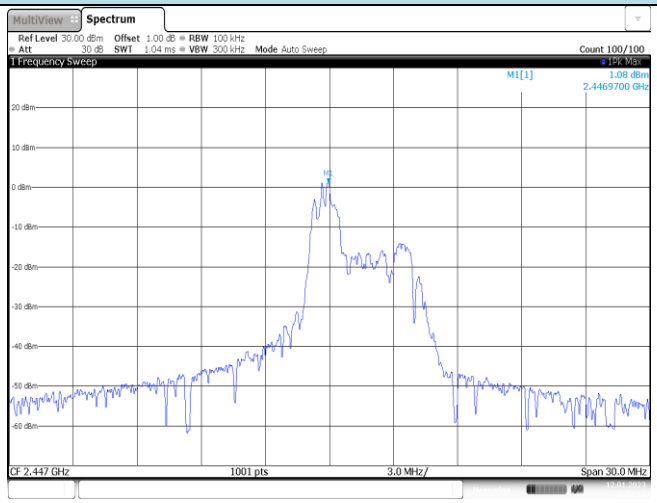
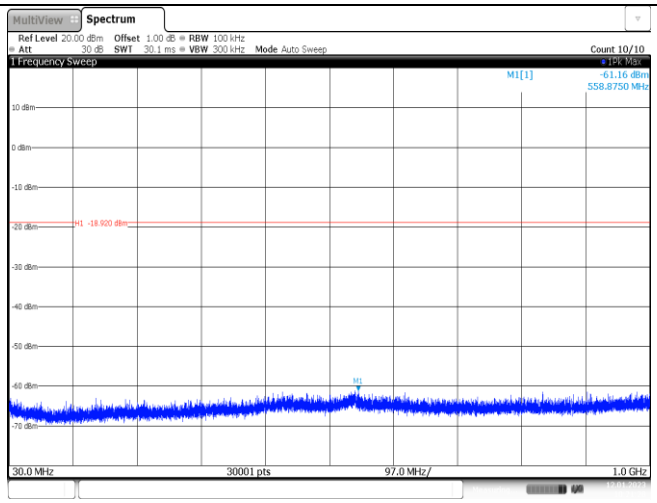
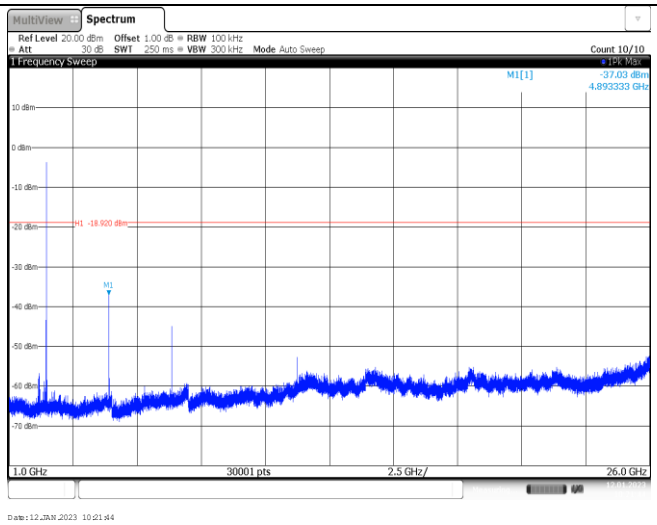
Appendix E：Duty cycle

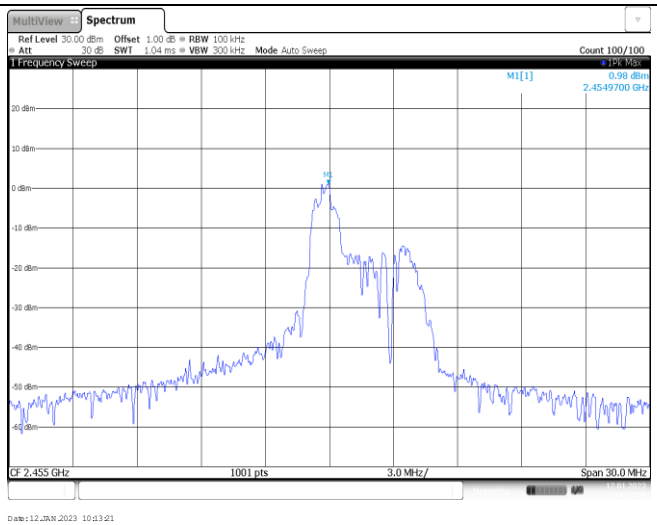
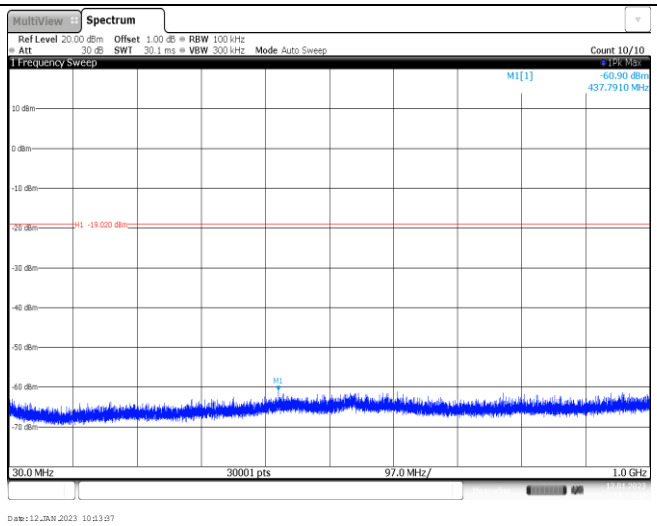
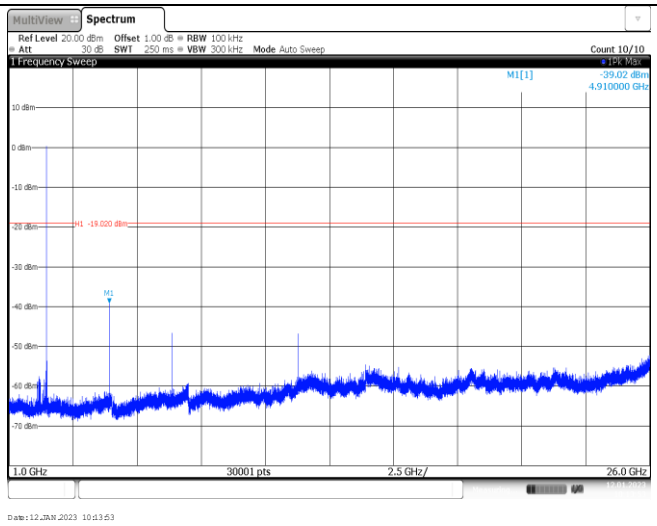
Test Frequency （MHz）	$T_{on\ time}$ for single burst (ms)	T_{period} (ms)	Duty cycle	$1/T_{on\ time}$ (kHz)
2455	0.36	7.99	4.5%	2.78

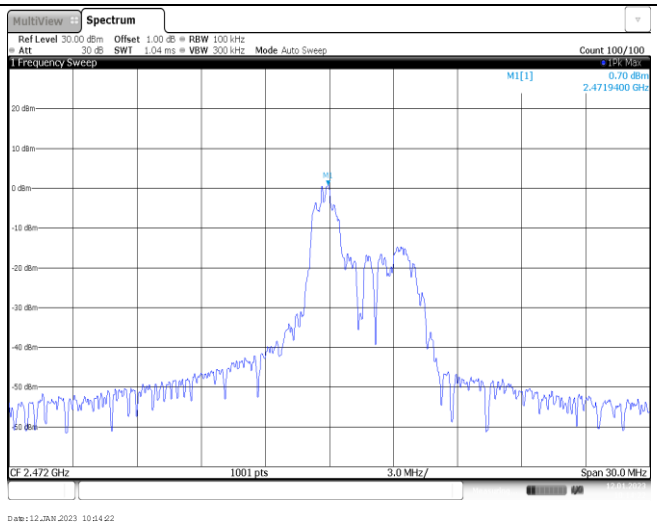
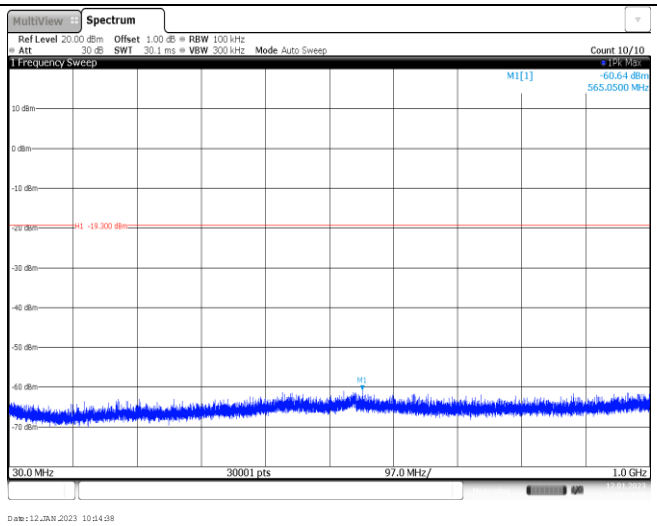
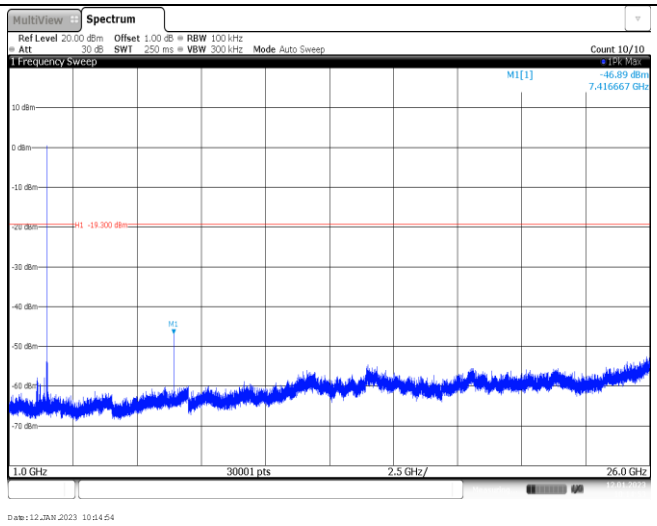


Appendix F：Band edge and Spurious Emissions (conducted)

Test Item:	Band edge
CH_L	
CH_H	

Test Item:	SE
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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