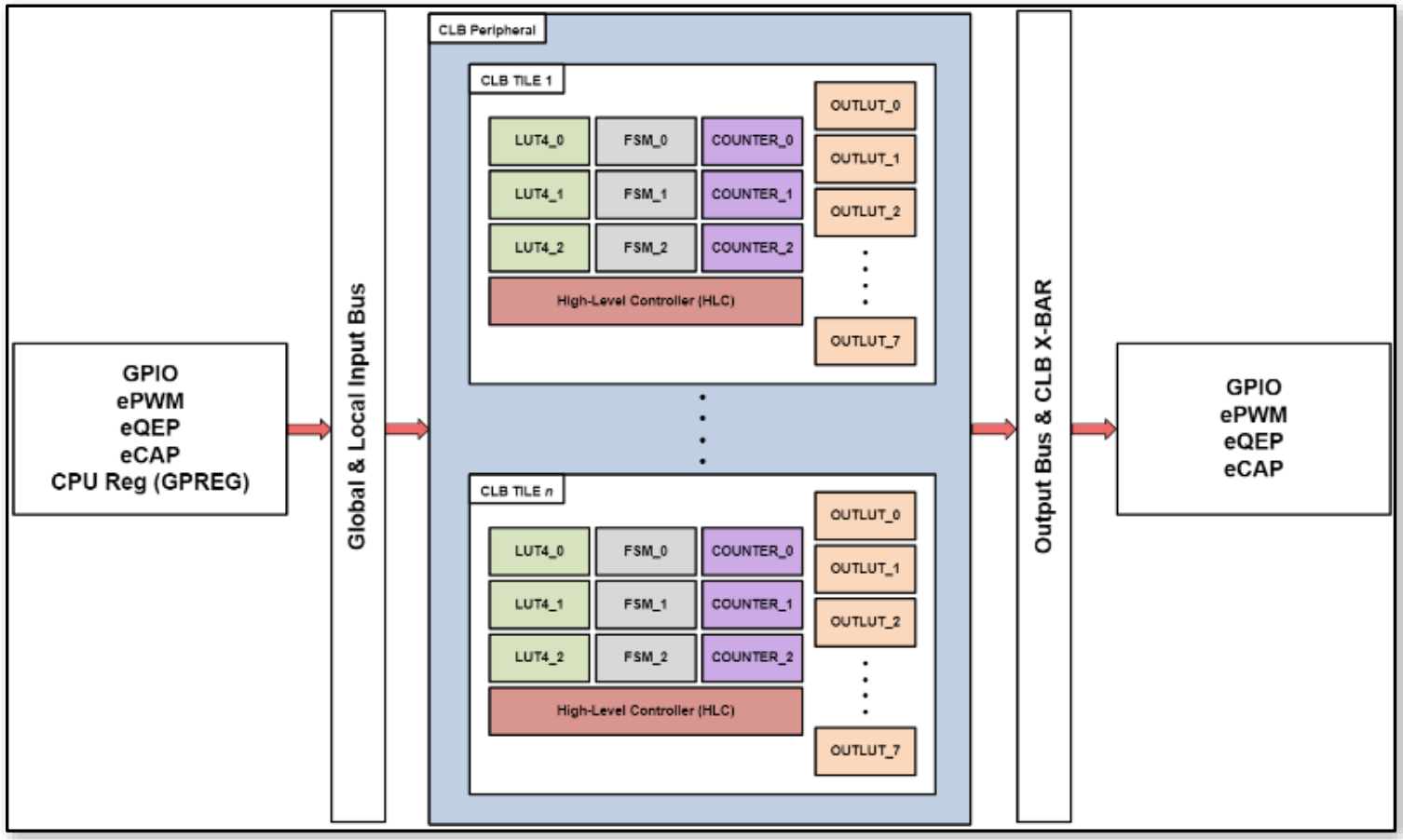
F28P55x编程实例Labs_CLB

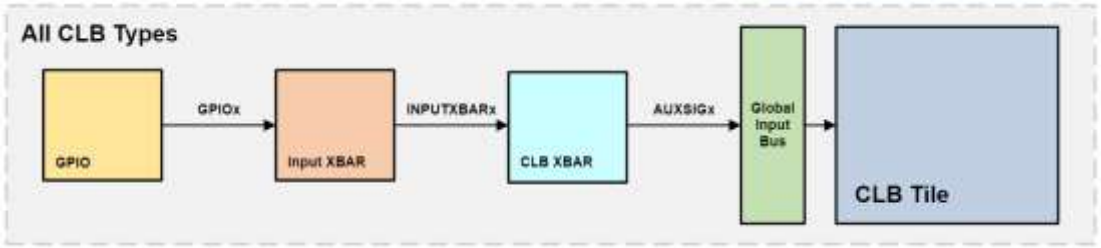
- Code Composer Studio
- C2000Ware
- LaunchXL-F28P55x

CLB

Configurable Logic Block，可配置逻辑块

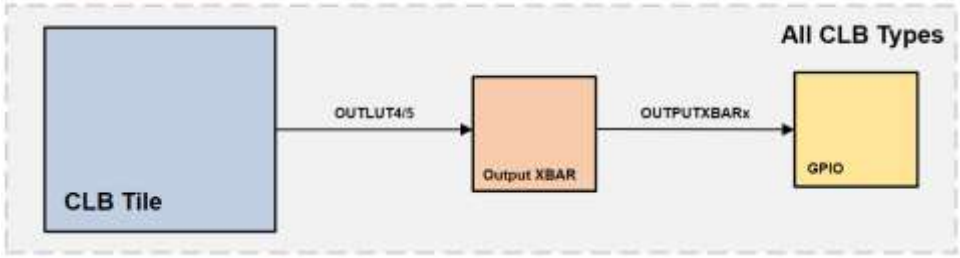
- 一组模块的集合
- 模块通过软件进行互联
- 自定义数字逻辑功能
- 增强片上外设





输入

输出

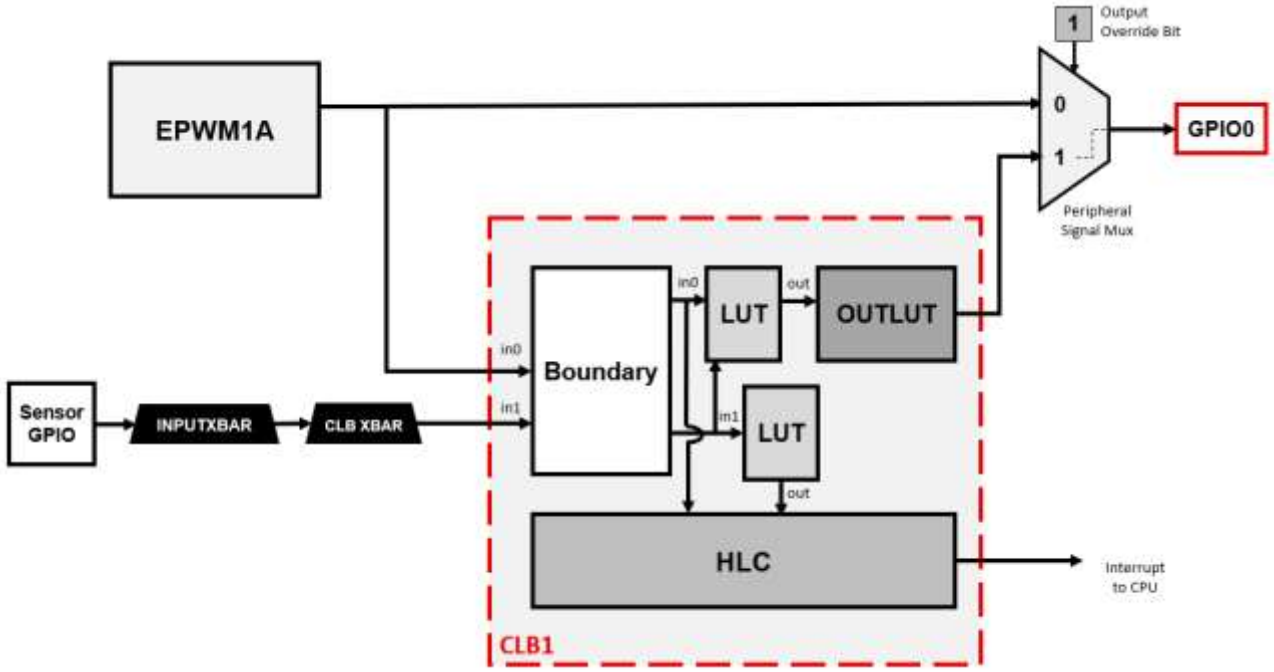


CLB

功能实现

EPWM系统正常运行时，GPIO0输出方波。用GPIO来模拟一个传感器，

- 当传感器输出低电平时，EPWM系统正常运行，输出方波；
- 当传感器输出高电平时，EPWM系统停止运行，输出低电平；



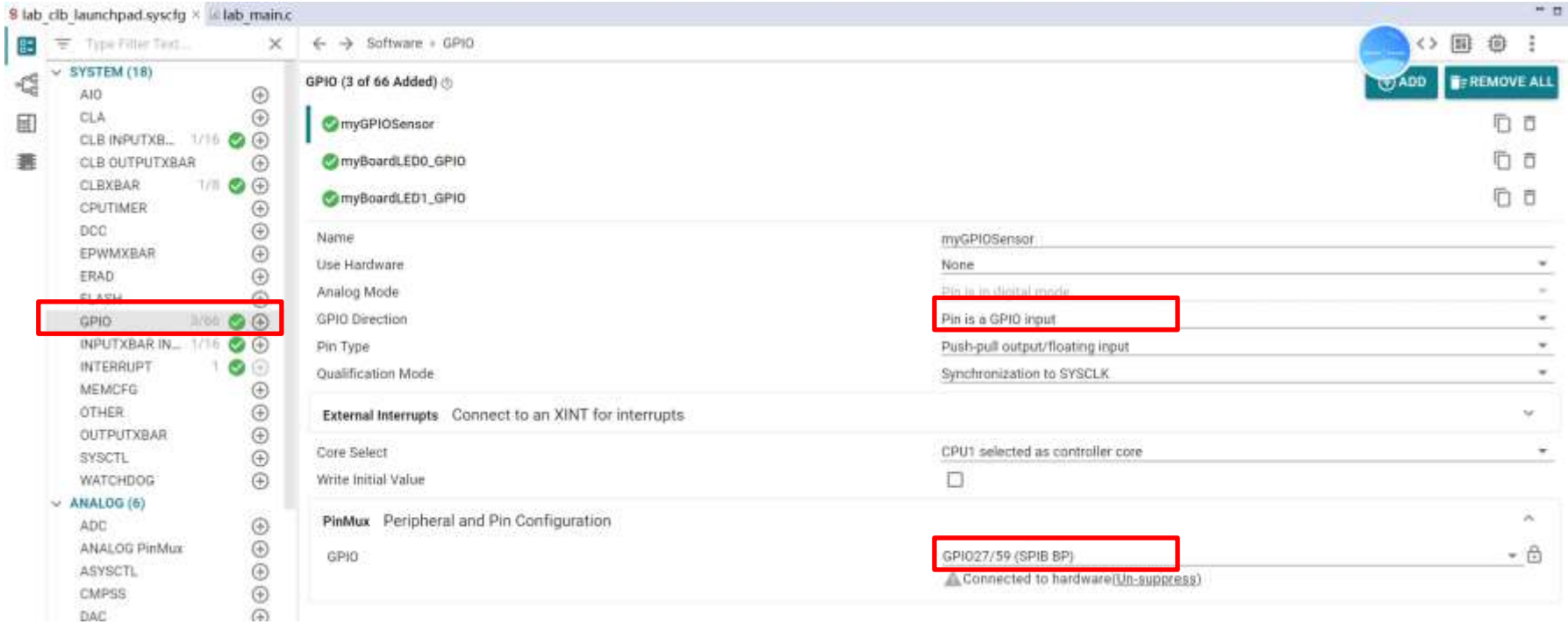
实现步骤

- 复制空白工程
- Sysconfig配置GPIO
- Sysconfig配置EPWM
- Sysconfig配置CLB
- 编写应用代码
- 模拟传感器故障，查看系统运行状态

CLB

GPIO	用途
myGPIOSensor	模拟传感器输入
LED_EPWM_GPIO	指示正常运行模式
LED_SENSOR_GPIO	指示故障运行模式

配置GPIO



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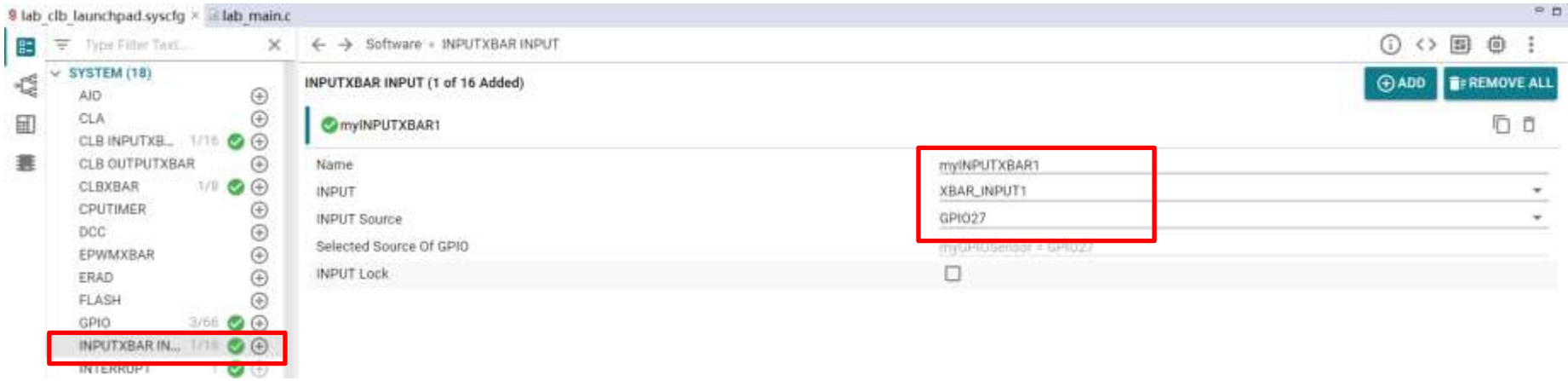

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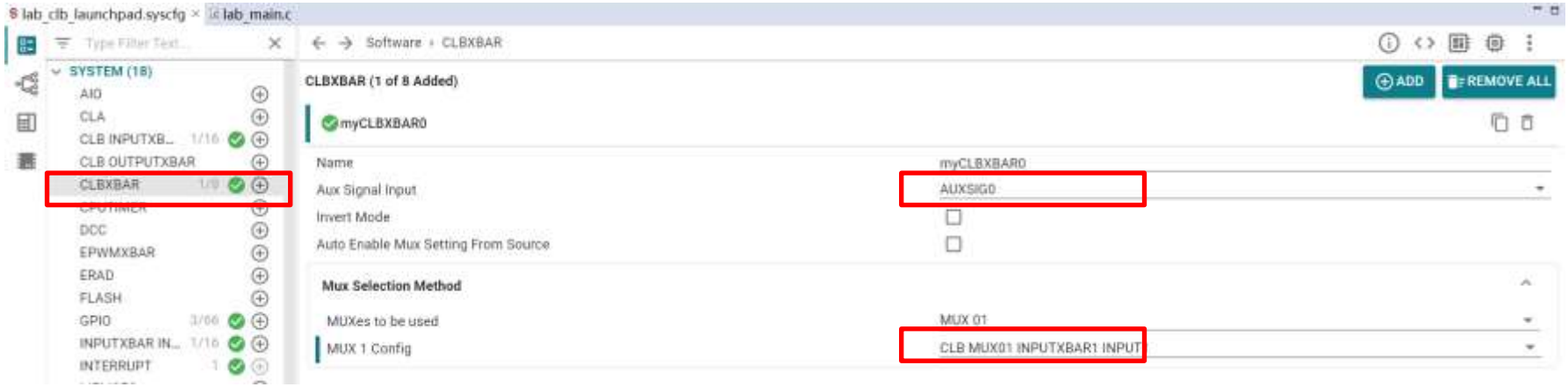

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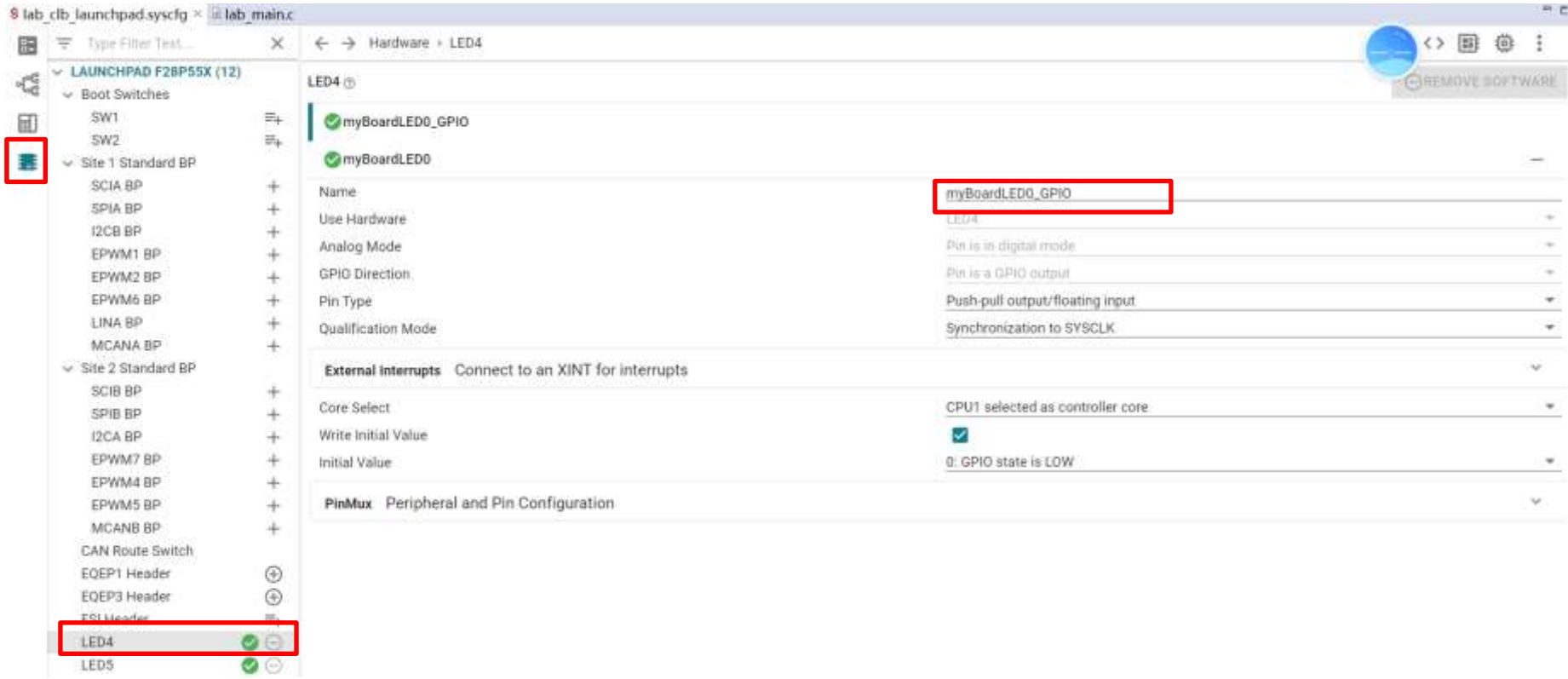

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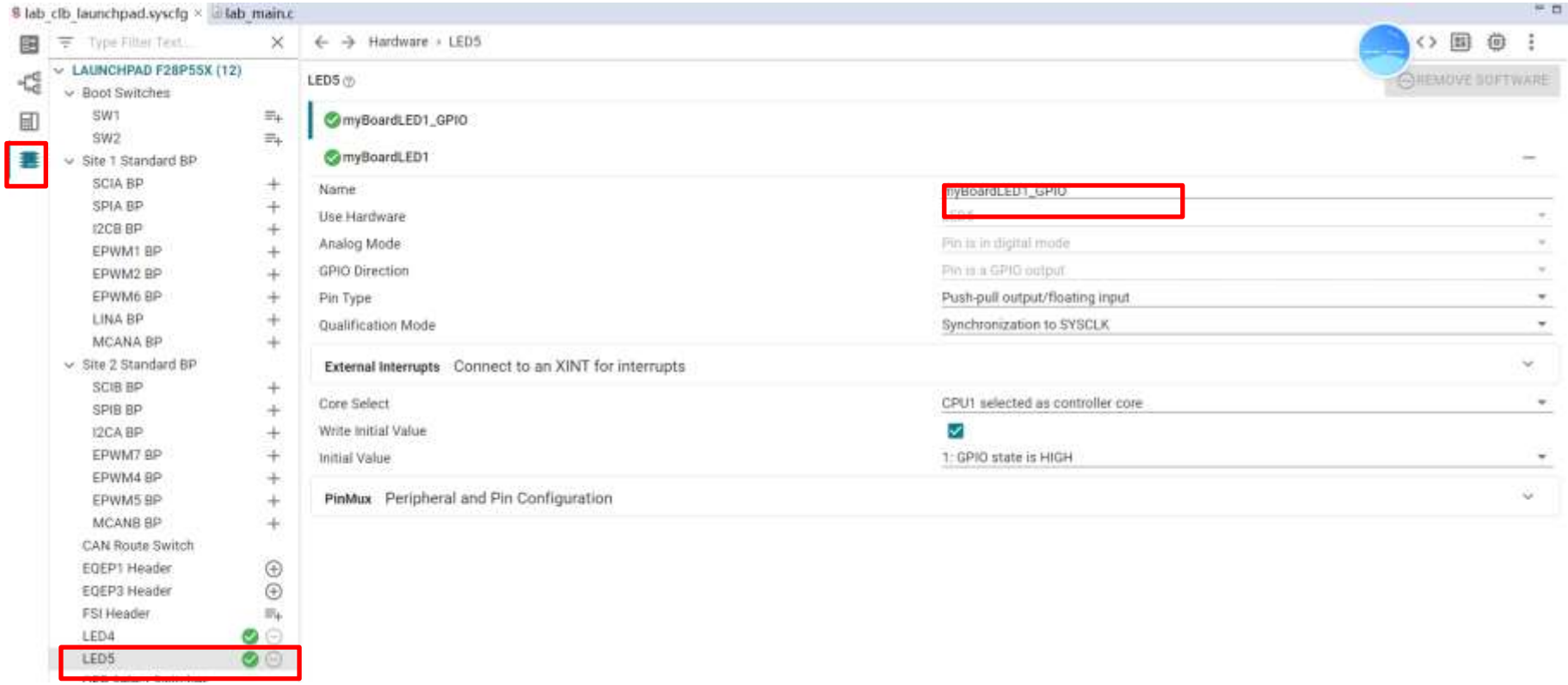
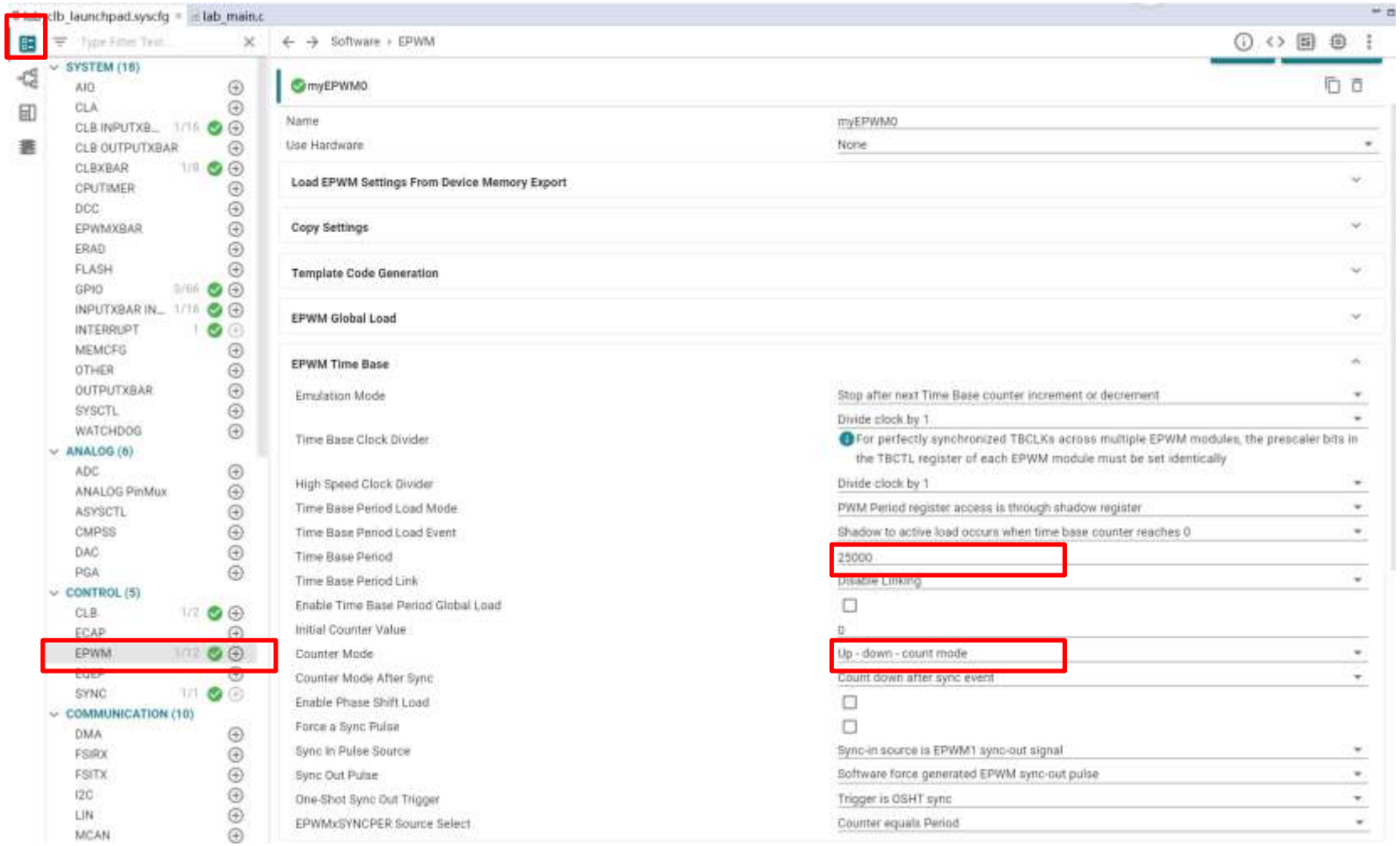


CLB

$$\text{Time Base Period} = \frac{f_{tbclk}}{2f_{pwm}} = \frac{100*10^6}{2*2000} = 25000.$$

配置EPWM



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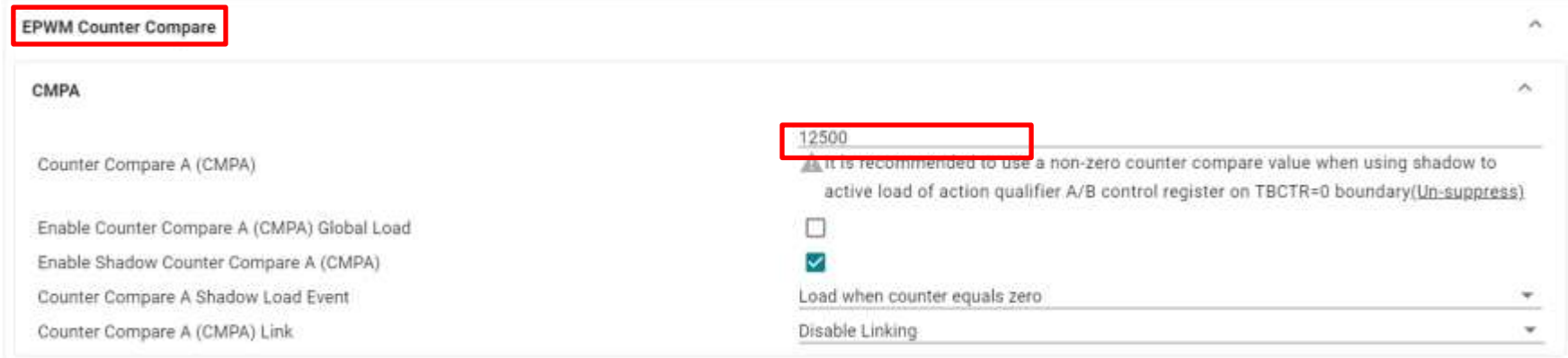
配置EPWM

$$\text{Counter Compare Value} = (1 - \frac{duty}{100}) * tbprd = (1 - \frac{50}{100}) * 25000 = 12500$$



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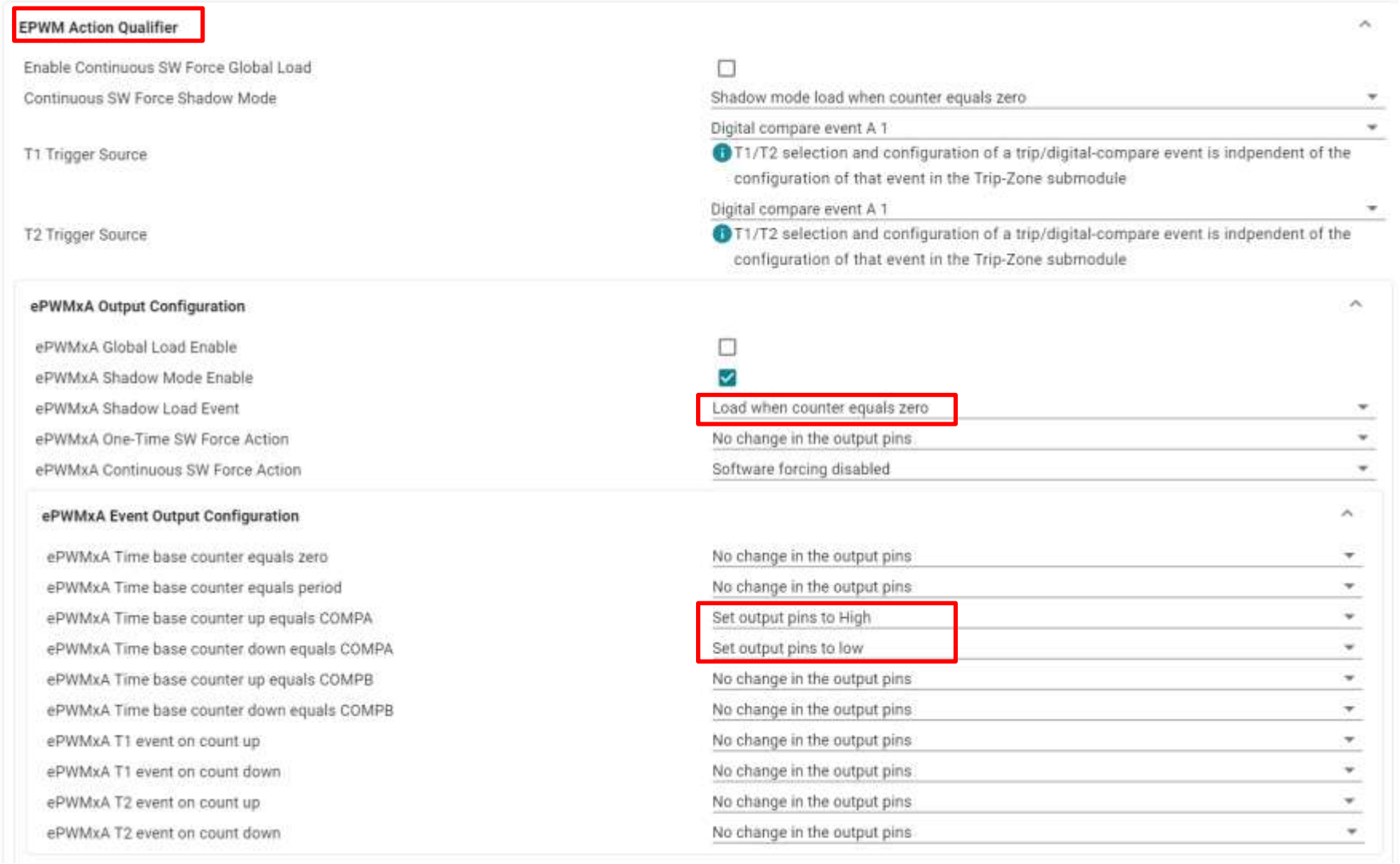
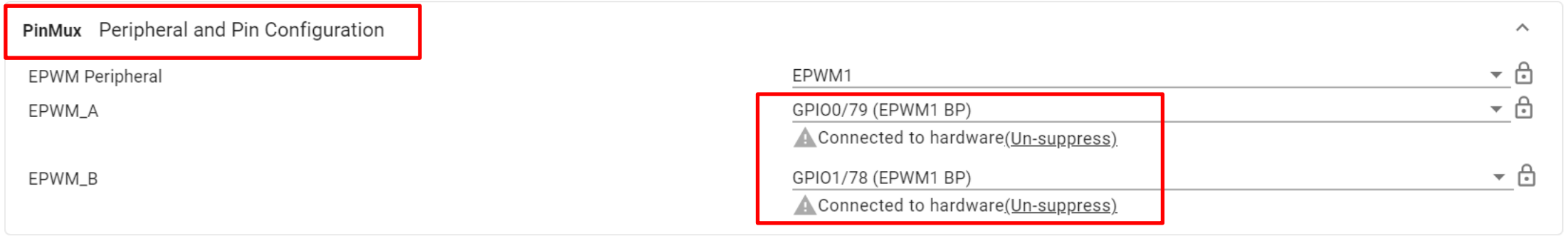
配置EPWM



CLB

配置EPWM



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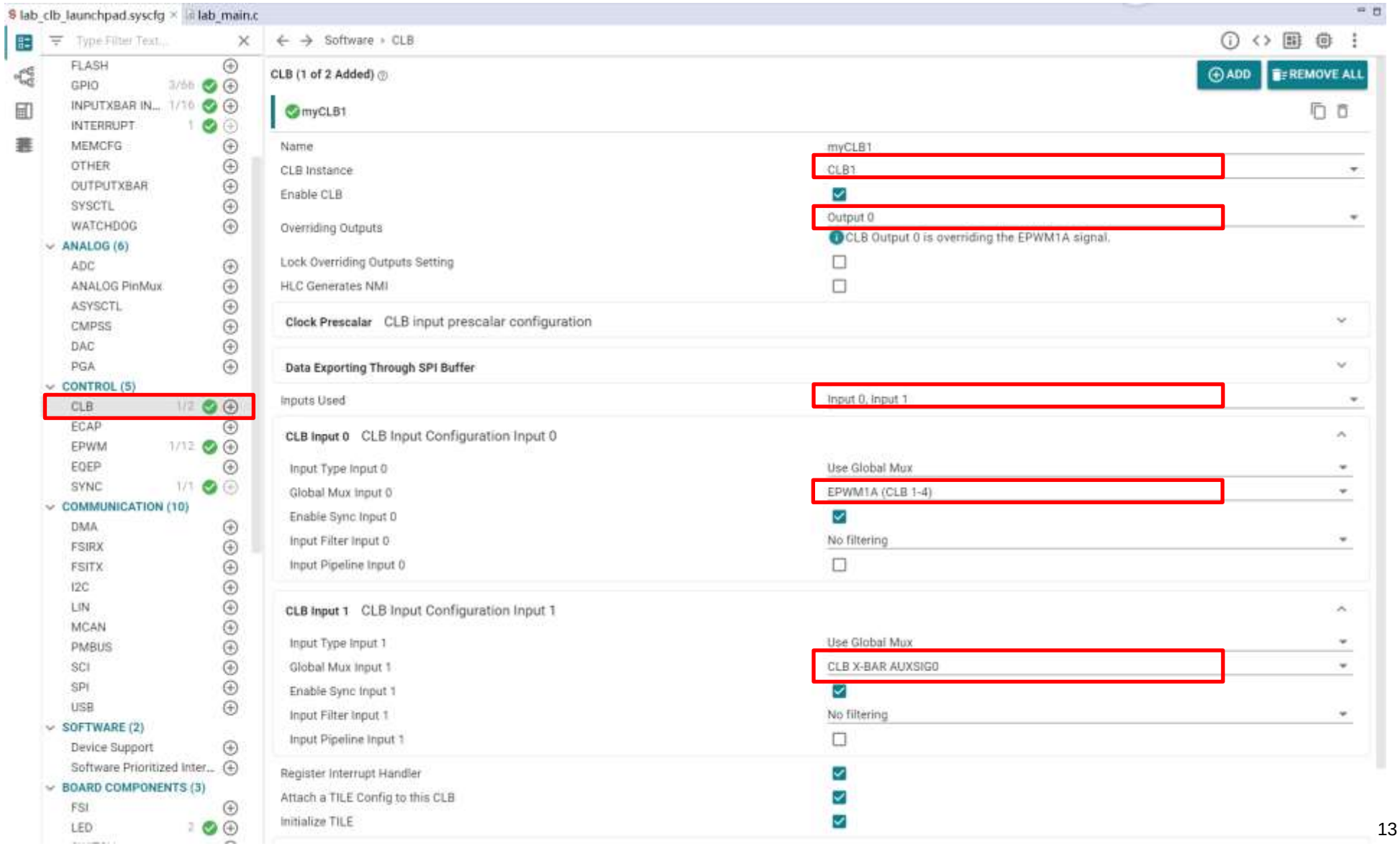
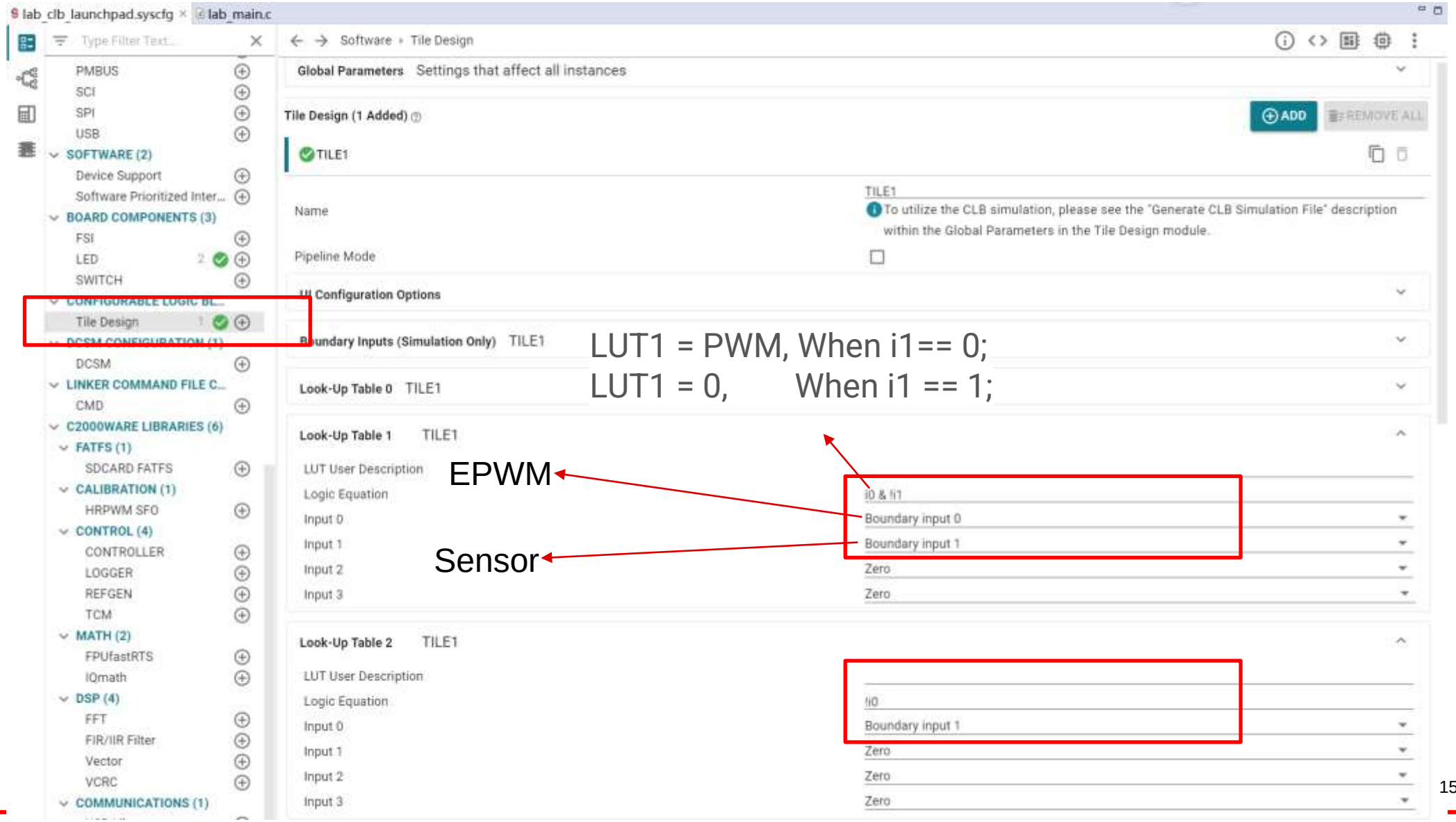


CLB

配置CLB

CLB

配置CLB-LUT(Look-Up Table)

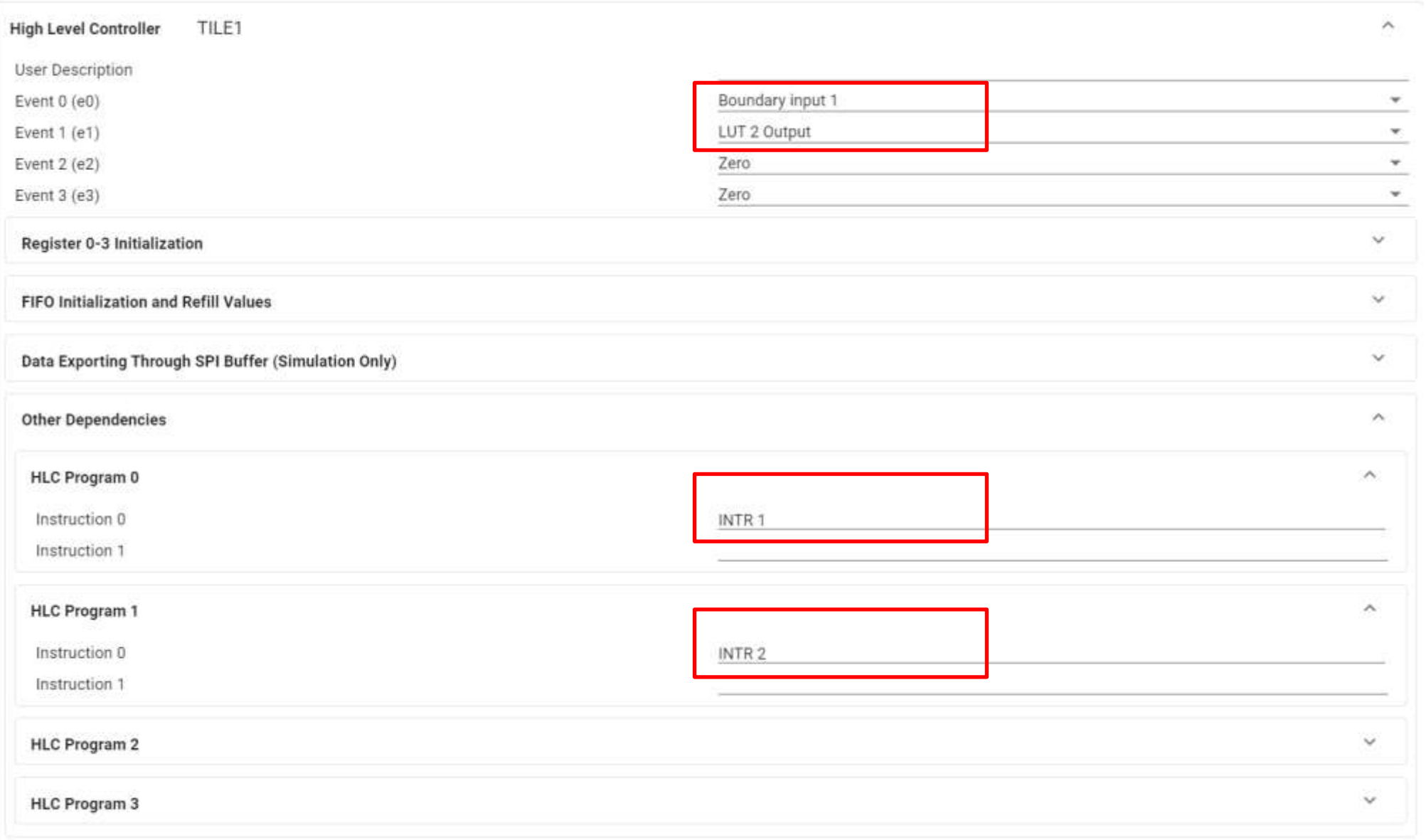


配置CLB-OUTLUT0(Output Look-Up Table 0)

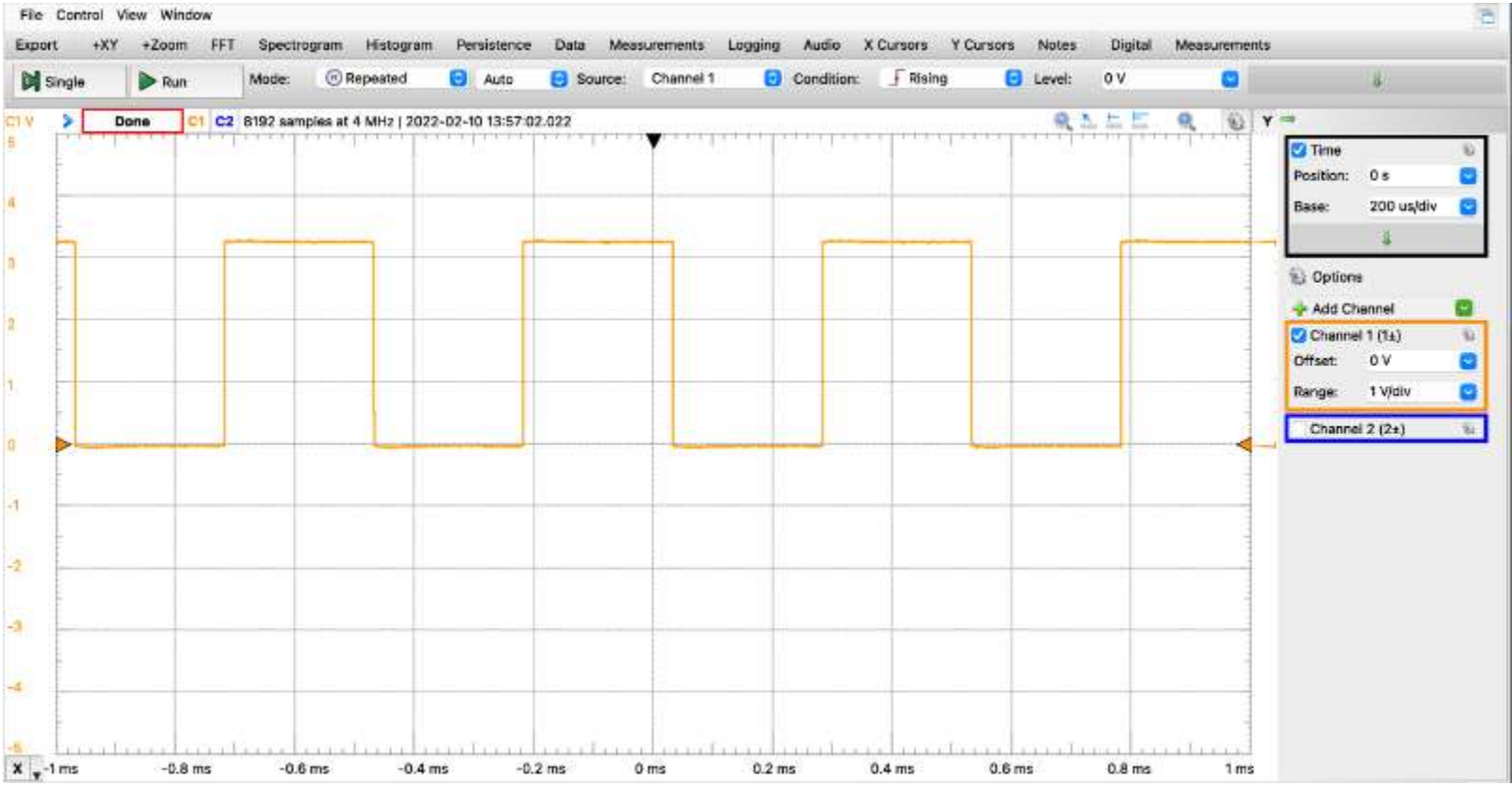
Output Look-Up Table 0 TILE1

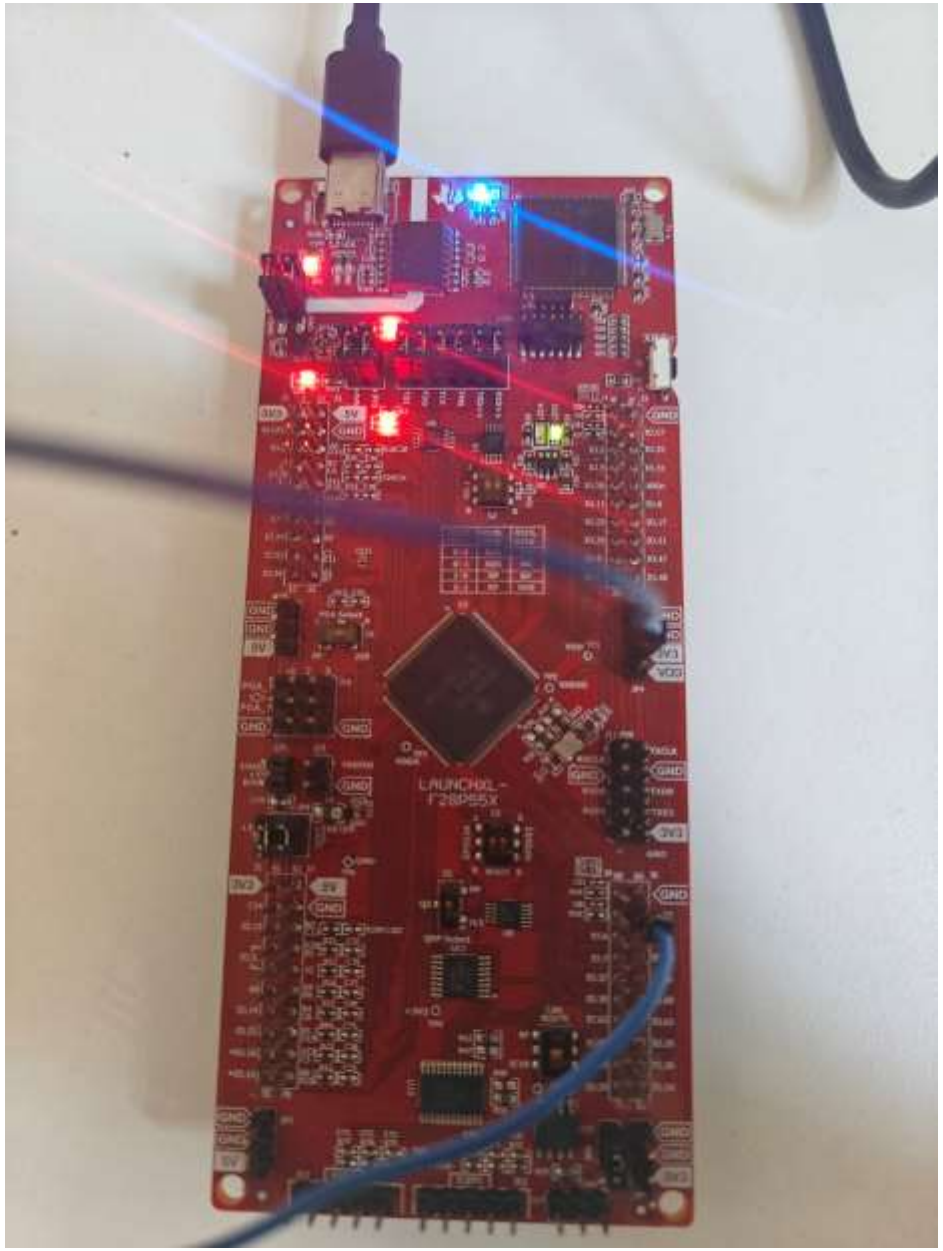
User Description	
Output Logic Equation	i0
Input 0	LUT 1 Output
Input 1	Zero
Input 2	Zero

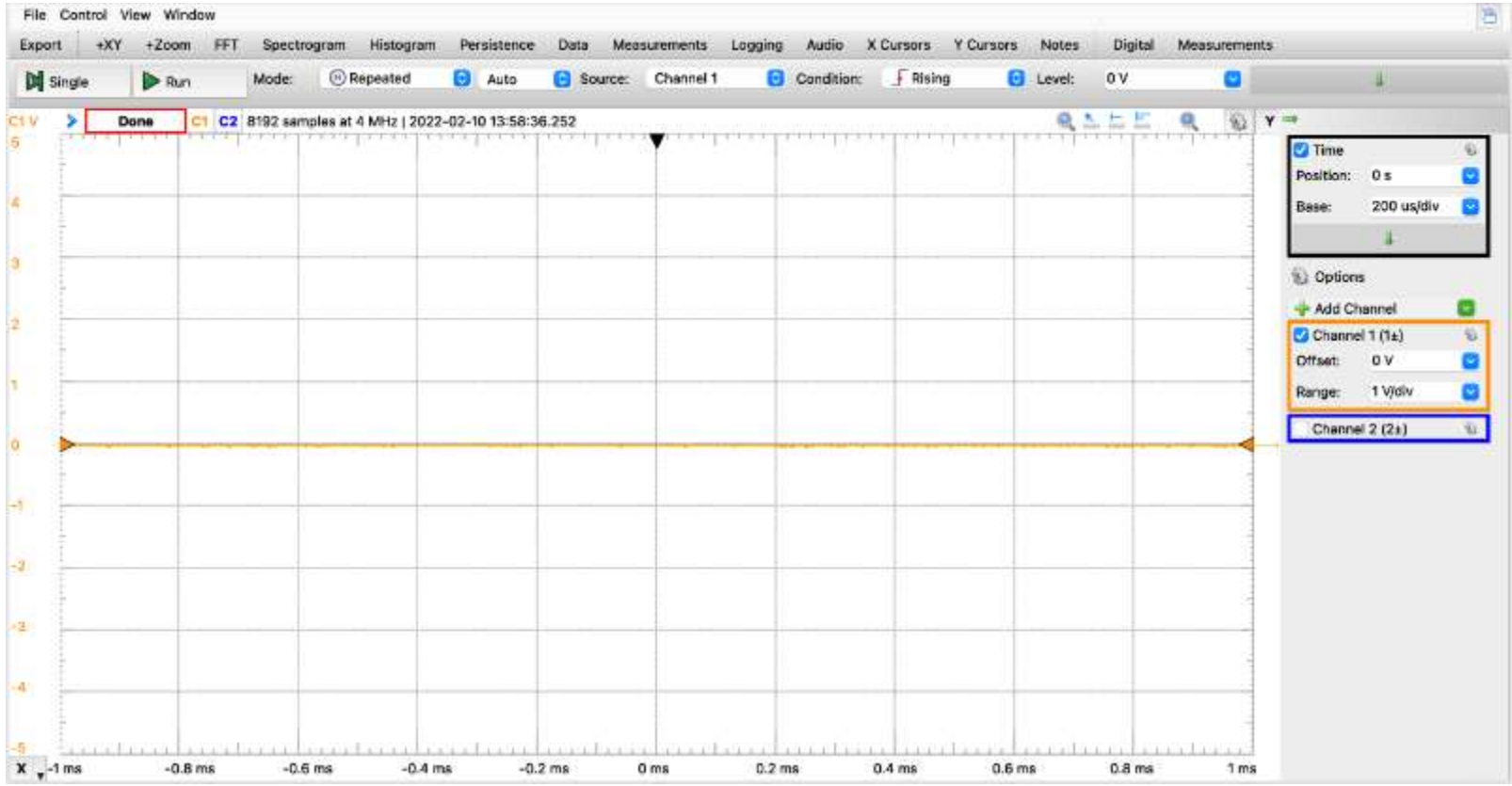
配置CLB-HLC (High Level Controller)



CLB






File Control View Window
Export +XY +Zoom FFT Spectrogram Histogram Persistence Data Measurements Logging Audio X Cursors Y Cursors Notes Digital Measurements
Single Run Mode: Repeated Auto Source: Channel 1 Condition: Rising Level: 0 V
Done C1 C2 8192 samples at 4 MHz | 2022-02-10 13:58:36.252
Time
Position: 0 s
Base: 200 us/div
Options
Add Channel
Channel 1 (1±)
Offset: 0 V
Range: 1 V/div
Channel 2 (2±)
-1 ms -0.8 ms -0.6 ms -0.4 ms -0.2 ms 0 ms 0.2 ms 0.4 ms 0.6 ms 0.8 ms 1 ms