MX25R Extend in FSP

Rev. 1.1.0, 2023-04-24

Contents

Introduction

Macronix MX25R series nor Flash has 3 power modes: HighPerformance Mode, LowPower Mode and DeepPowerDown Mode. However, if you want to control MX25R flash in Renesas FSP platform, you can not easily change the powermode. The MX25R Extend module based on QSPI module can provide some specific functions as follows:

- MX25R_HighPerformanceMode()
- MX25R_LowPowerMode()
- MX25R_Enter_DeepPower()
- MX25R_Exit_DeepPower()
- MX25R_Device_Reset()
- RDID()
- RDSR()
- RDSCUR()
- RDCR()

1 Hardware and Software Requirements

The RWWEE is developed and tested on Renesas RA6M3 board. User can select the same platform for quick start. The onboard NOR flash is MX25L series flash. It is recommended to add a new MX25R flash with QSPI's anther CS channel (RA6M3 QSPI controller has two CS channel and can access two devices).

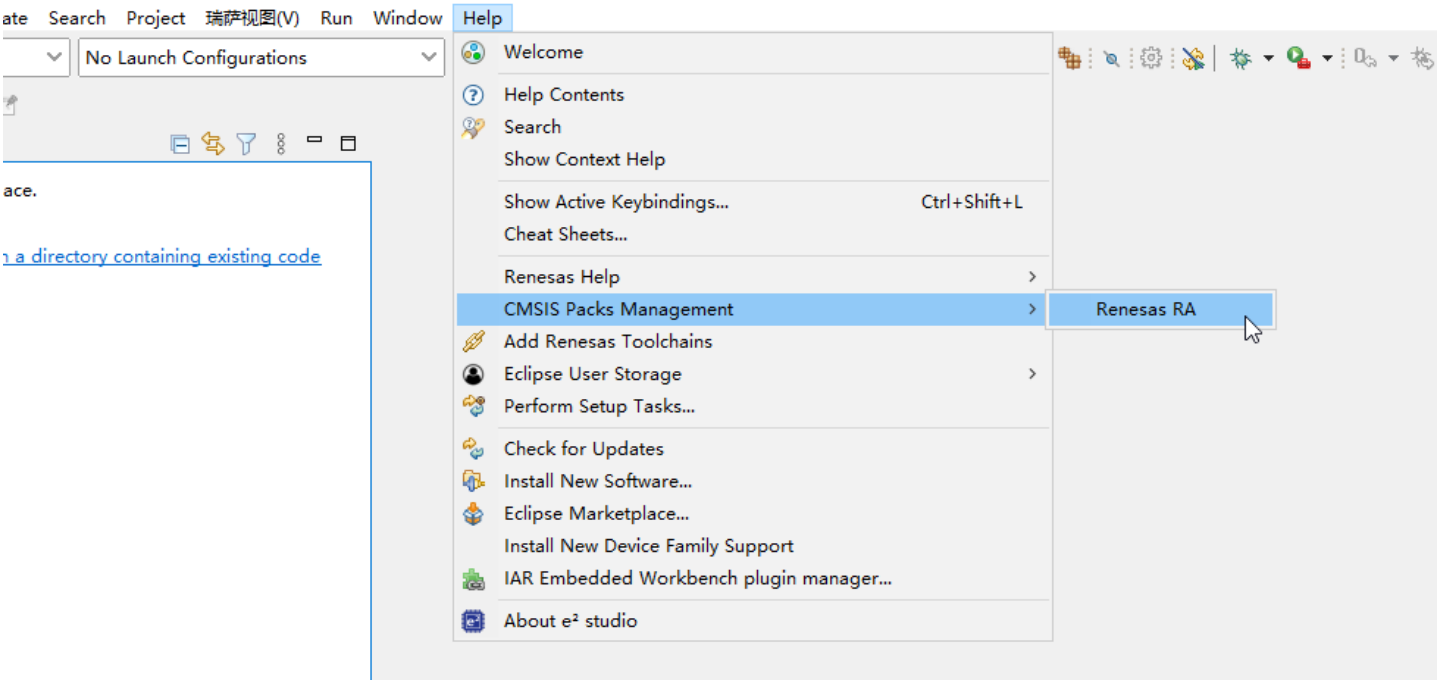
Please check if your environment can satisfy the following requirements:

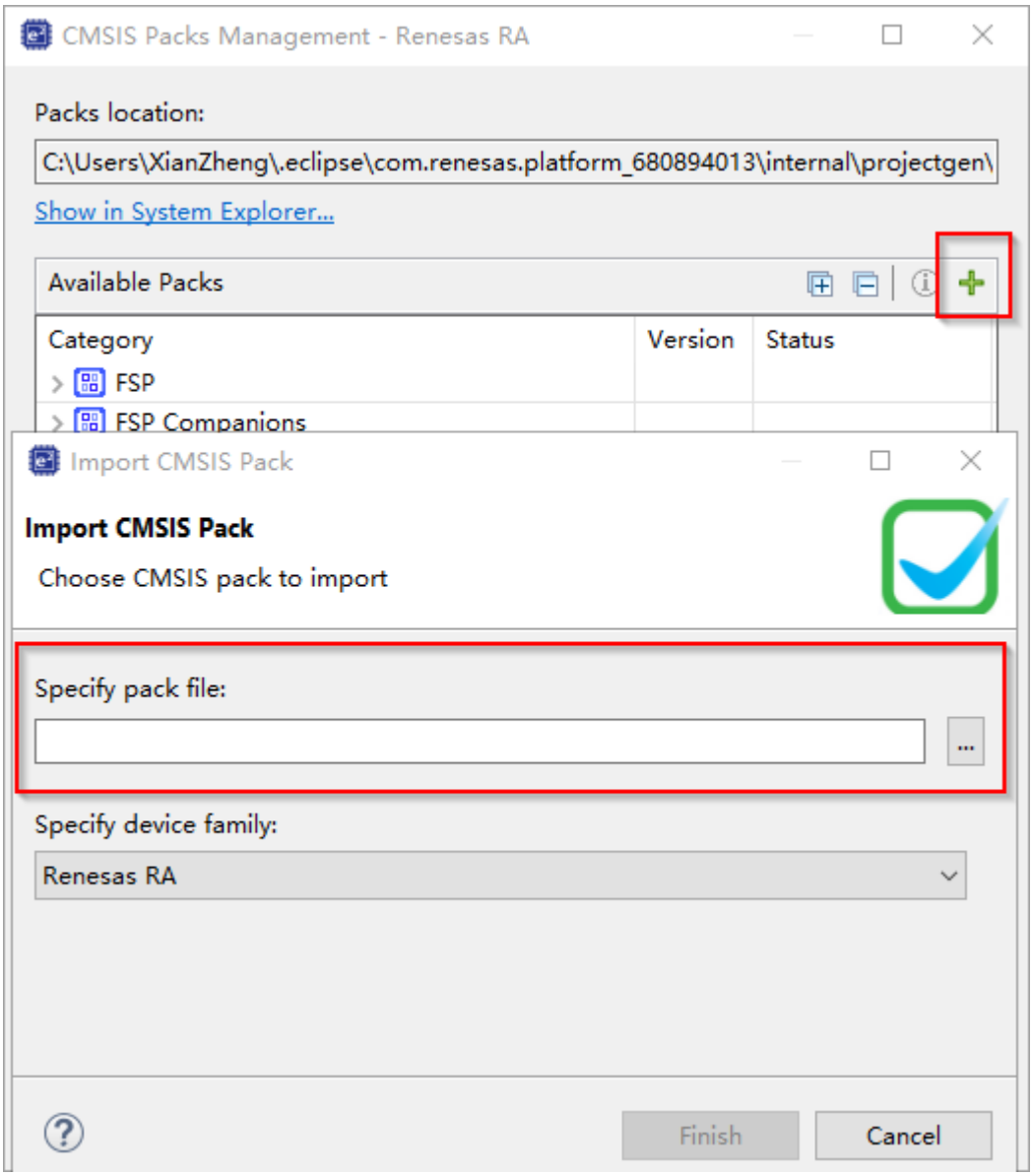
- **Renesas RA6M3 Board (with MX25R flash)**
- **Renesas Flexible Software Package (FSP)**
- **J-Link RTT Viewer**
- **MX25R Extend Modulepack: MXIC.MX25R_Extend.1.0.0+fsp.4.0.0.pack**
- **MX25R_Extend_Sample_Project**

2 Work Flow

3.1 Preparation

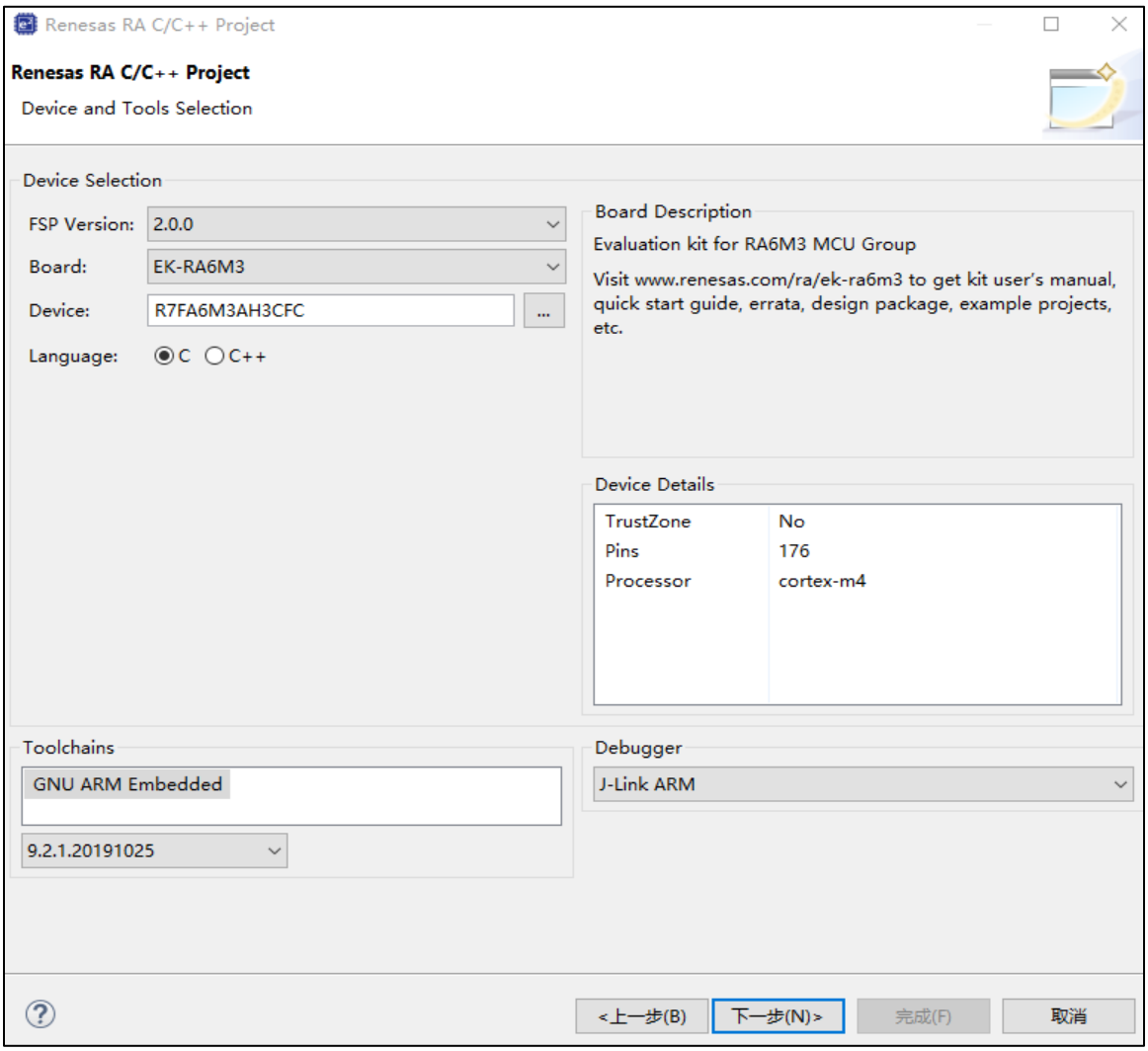
We assume that FSP is installed successfully, so you should import the pack as follows.



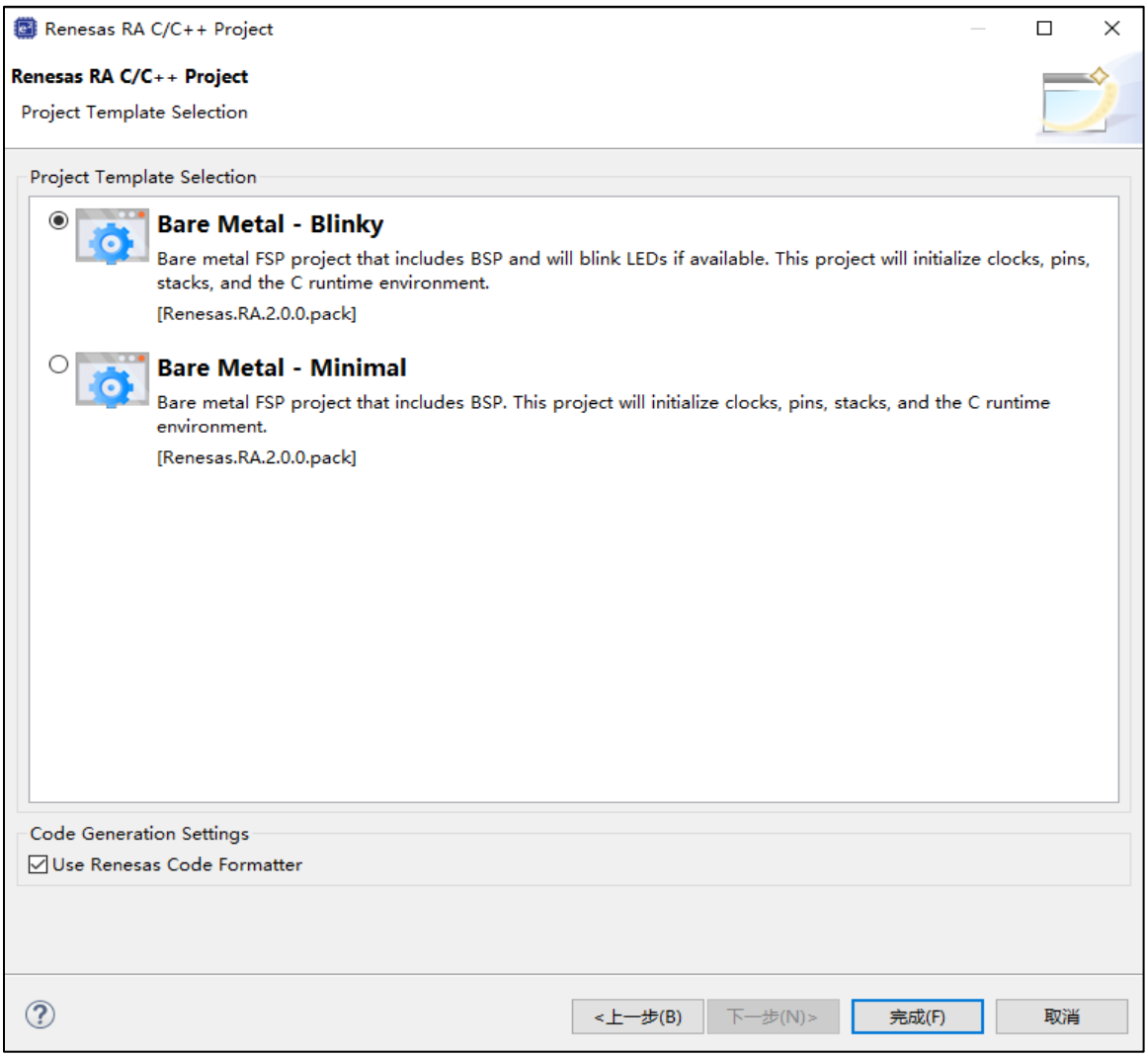


3.2 Build Project

Open e2studio and build a new project, here we choose **Renesas RA C/C++ Project** and device select **EK-RA6M3**:

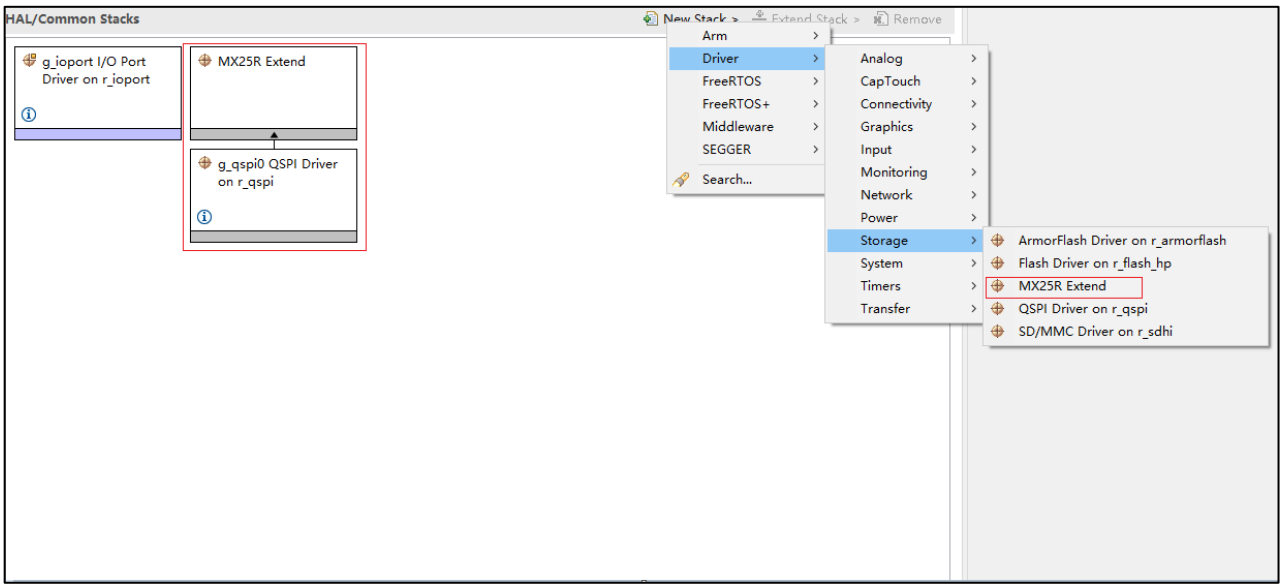


Then we can select **Bare Metal – Blinky** as a template:

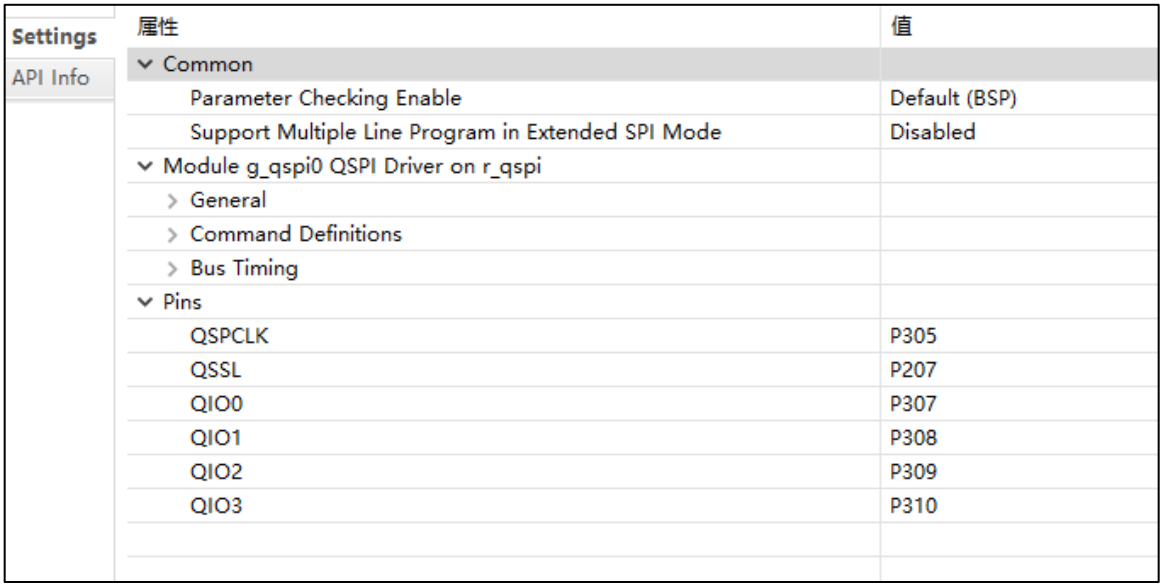


3.3 Add Modules and set Parameters

After build project, you should add MX25 Extend module as the follow picture: **New Stack->Driver->Storage->MX25R Extend.**



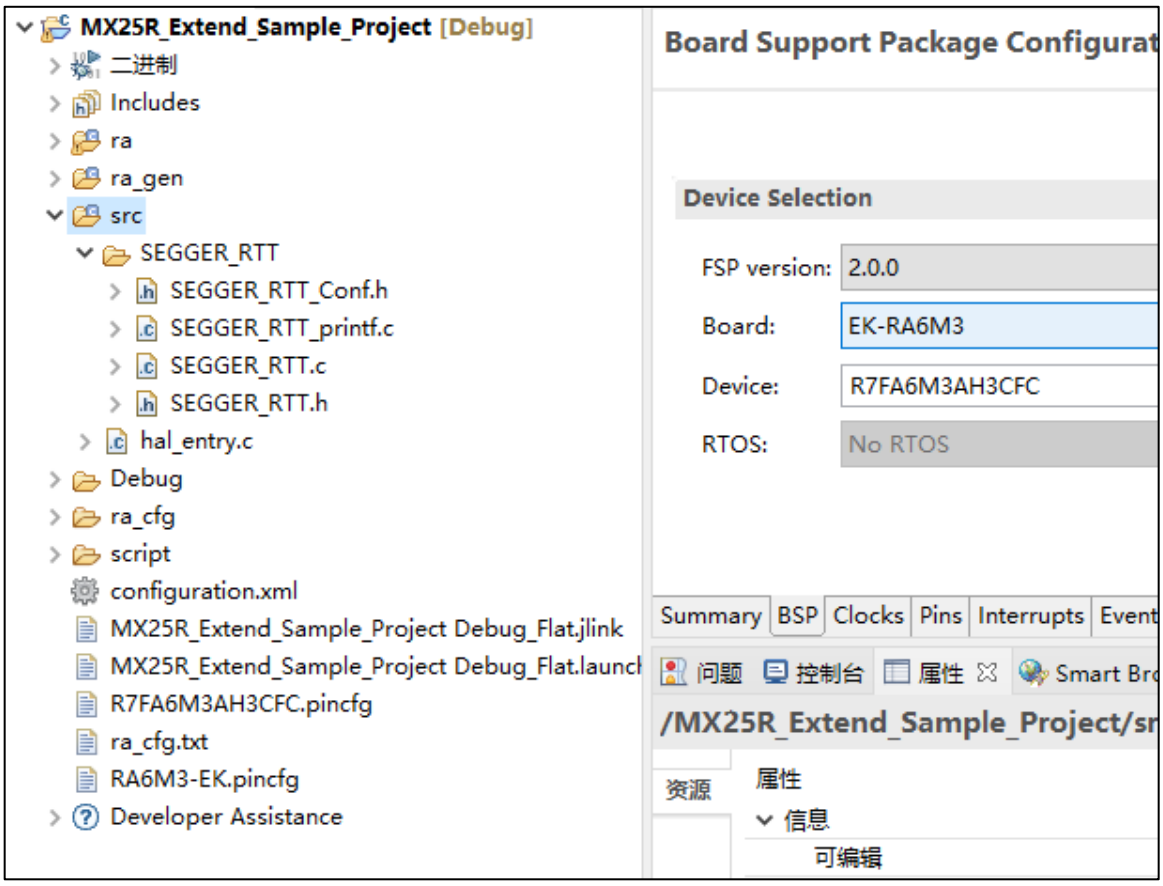
After add MX25R Module, you should set correct pins according to actual connection.



Finally, you should set **Heap size** in **BSP->Properties**(To generate random data for testbench), then save the changes and click **Generate Project Content** button to generate code.

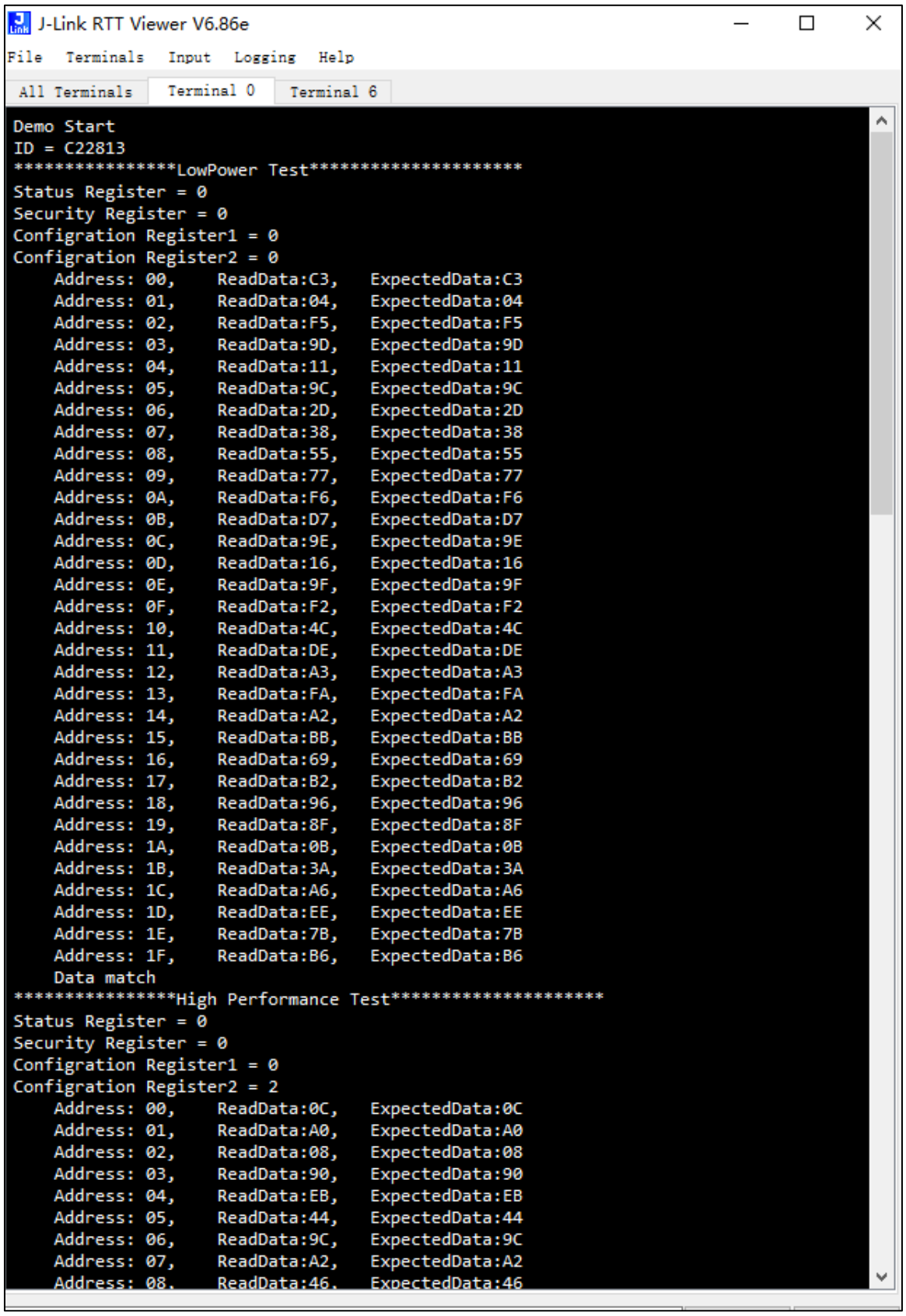
3.4 Add Testbench

You can copy **SEGGER_RTT** folder and **hal_entry.c** from **MX25R_Extend_Sample_Project** and paste to **src** folder. Then, you should click the hammer button to build the project.



3 Run Demo

Download the code to develop board, and then connect to J-Link RTT Viewer.


J-Link RTT Viewer V6.86e
File Terminals Input Logging Help
All Terminals
Terminal 0
Terminal 6
Demo Start
ID = C22813
**********LowPower Test**********
Status Register = 0
Security Register = 0
Configration Register1 = 0
Configration Register2 = 0
Address: 00, ReadData:C3, ExpectedData:C3
Address: 01, ReadData:04, ExpectedData:04
Address: 02, ReadData:F5, ExpectedData:F5
Address: 03, ReadData:9D, ExpectedData:9D
Address: 04, ReadData:11, ExpectedData:11
Address: 05, ReadData:9C, ExpectedData:9C
Address: 06, ReadData:2D, ExpectedData:2D
Address: 07, ReadData:38, ExpectedData:38
Address: 08, ReadData:55, ExpectedData:55
Address: 09, ReadData:77, ExpectedData:77
Address: 0A, ReadData:F6, ExpectedData:F6
Address: 0B, ReadData:D7, ExpectedData:D7
Address: 0C, ReadData:9E, ExpectedData:9E
Address: 0D, ReadData:16, ExpectedData:16
Address: 0E, ReadData:9F, ExpectedData:9F
Address: 0F, ReadData:F2, ExpectedData:F2
Address: 10, ReadData:4C, ExpectedData:4C
Address: 11, ReadData:DE, ExpectedData:DE
Address: 12, ReadData:A3, ExpectedData:A3
Address: 13, ReadData:FA, ExpectedData:FA
Address: 14, ReadData:A2, ExpectedData:A2
Address: 15, ReadData:BB, ExpectedData:BB
Address: 16, ReadData:69, ExpectedData:69
Address: 17, ReadData:B2, ExpectedData:B2
Address: 18, ReadData:96, ExpectedData:96
Address: 19, ReadData:8F, ExpectedData:8F
Address: 1A, ReadData:0B, ExpectedData:0B
Address: 1B, ReadData:3A, ExpectedData:3A
Address: 1C, ReadData:A6, ExpectedData:A6
Address: 1D, ReadData:EE, ExpectedData:EE
Address: 1E, ReadData:7B, ExpectedData:7B
Address: 1F, ReadData:B6, ExpectedData:B6
Data match
**********High Performance Test**********
Status Register = 0
Security Register = 0
Configration Register1 = 0
Configration Register2 = 2
Address: 00, ReadData:0C, ExpectedData:0C
Address: 01, ReadData:A0, ExpectedData:A0
Address: 02, ReadData:08, ExpectedData:08
Address: 03, ReadData:90, ExpectedData:90
Address: 04, ReadData:EB, ExpectedData:EB
Address: 05, ReadData:44, ExpectedData:44
Address: 06, ReadData:9C, ExpectedData:9C
Address: 07, ReadData:A2, ExpectedData:A2
Address: 08, ReadData:46, ExpectedData:46

4 Revision History

Table 8-1: Revision History

Revision No.	Description	Page	Date
Rev. 1.0.0	Initial Release	ALL	April 13, 2021
Rev. 1.1.0	Update	4	April 24, 2023

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