



LIGHTNING
Semiconductor

LN882H Keil ARMCC开发环境搭建指导

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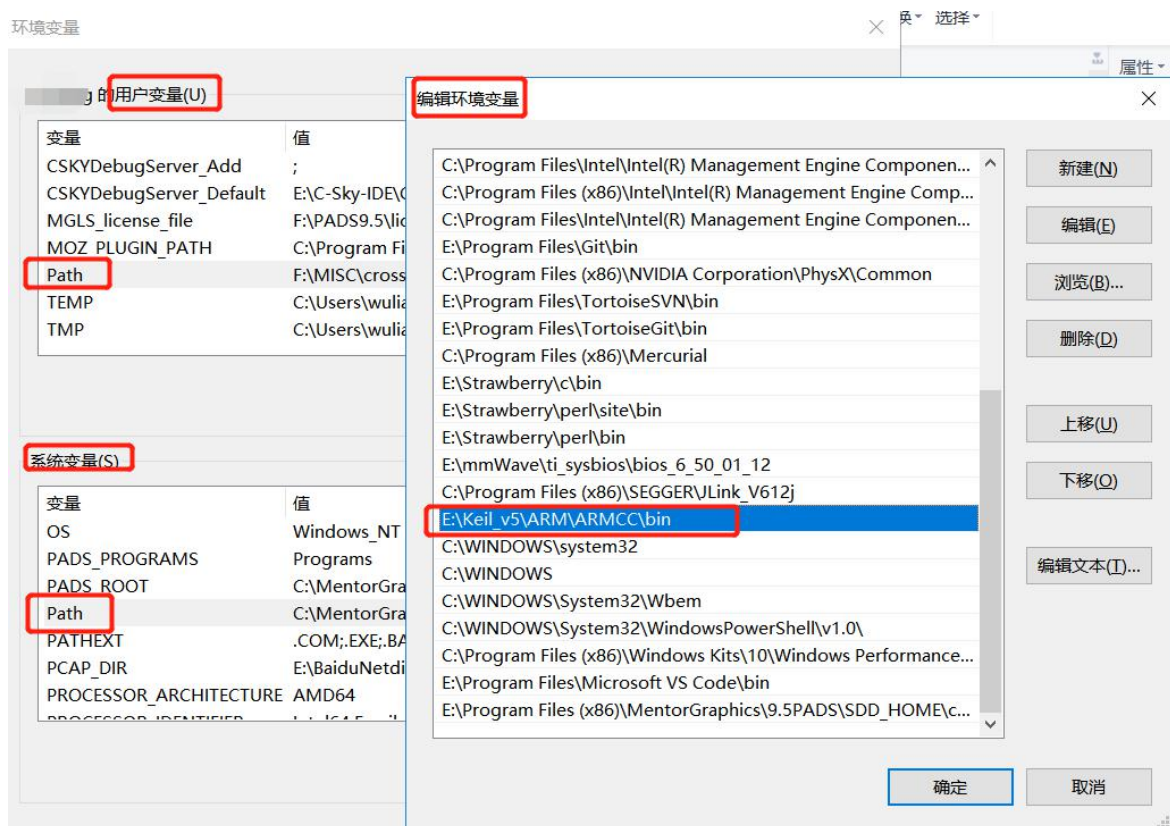
一、软件工具安装

1. 获取 Keil MDK 安装包，

正常安装即可，推荐使用keil-MDK 5.18版本，与原厂SDK的开发环境保持一致，以避免IDE环境带来的额外问题。

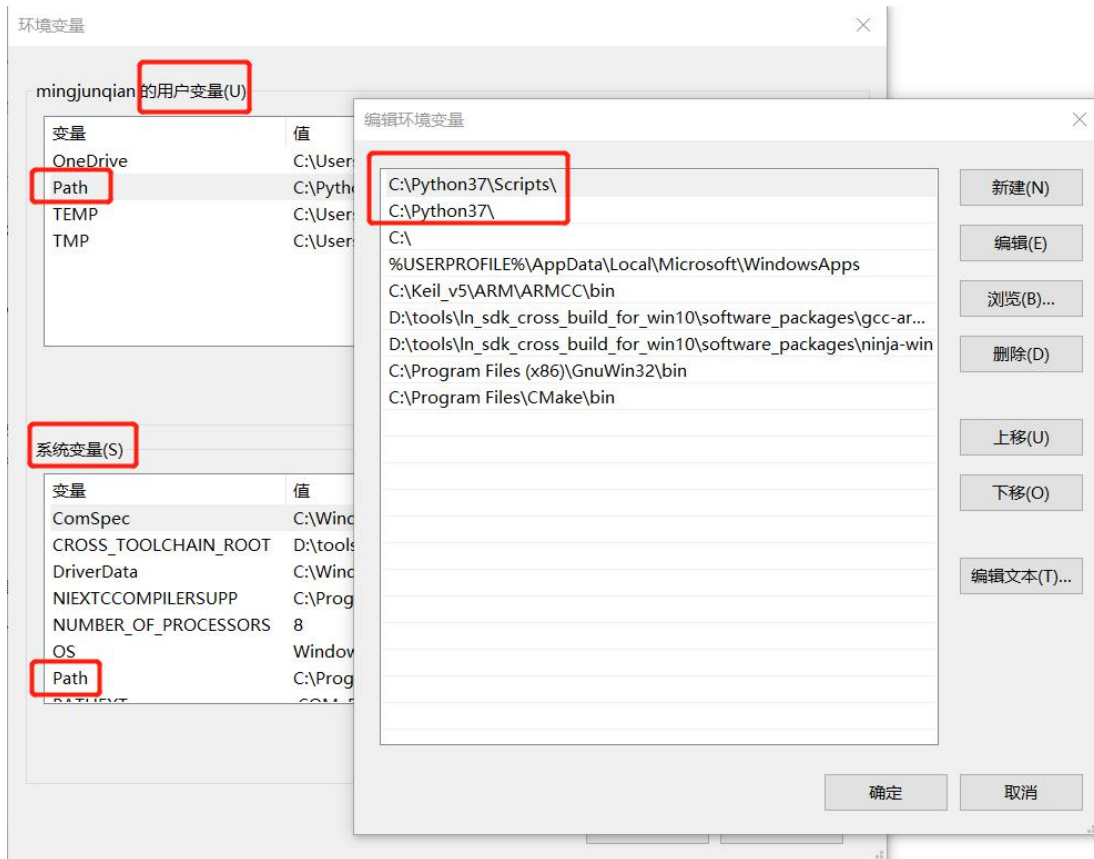
2. 配置Keil的ARMCC环境变量

将Keil安装目录下的编译执行文件路径 E:\Keil_v5\ARM\ARMCC\bin 加入系统环境变量path和用户环境变量path中，如下图：



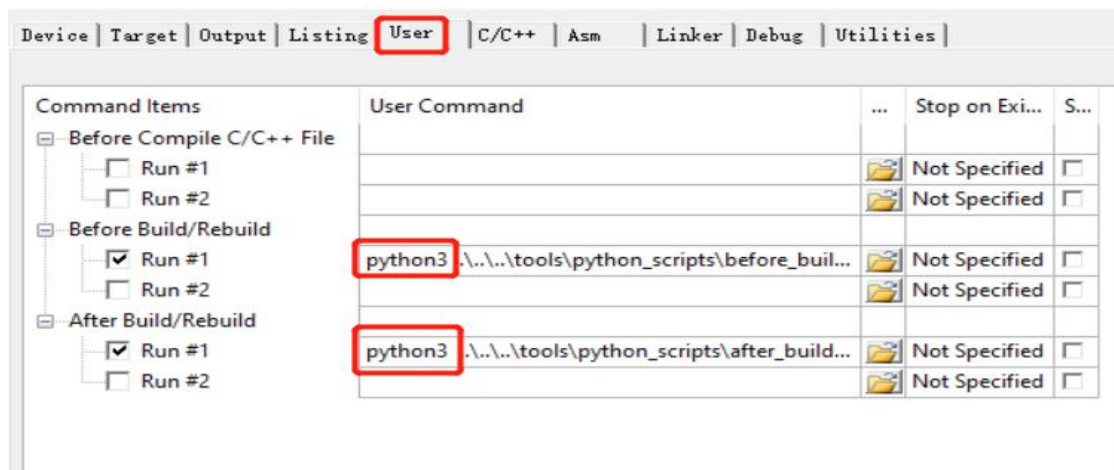
3. 安装 python3

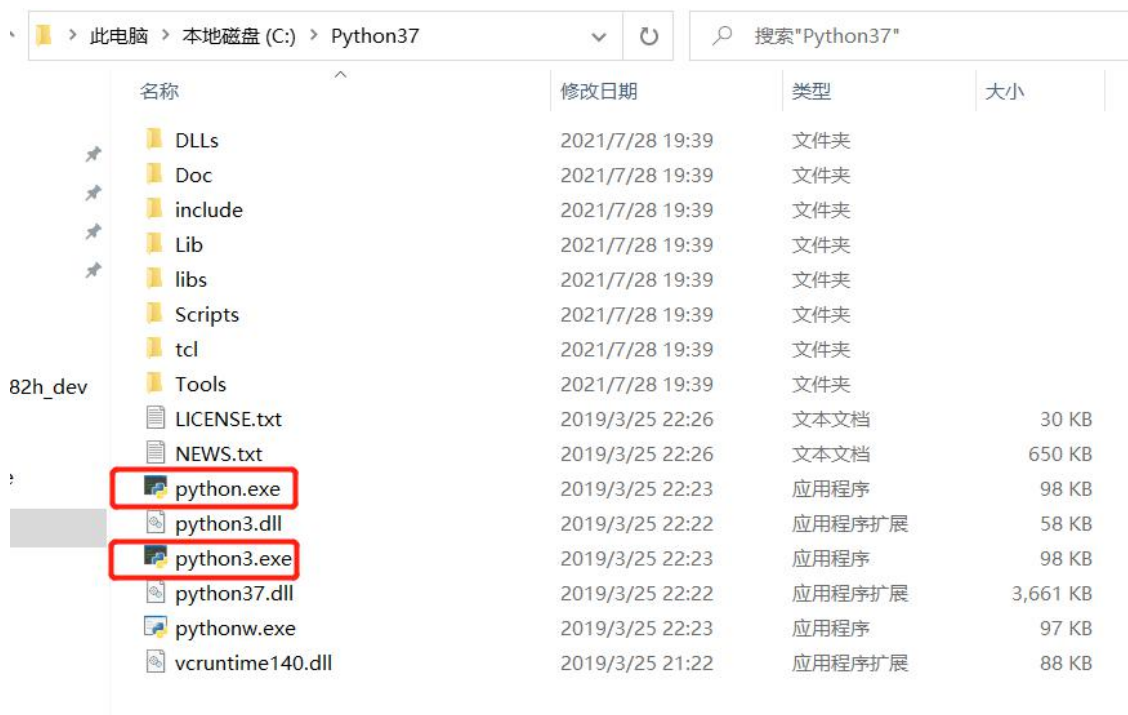
从官网下载并最新版本，安装完成后将python3安装路径添加在系统环境变量path以及用户环境变量path中，如下图：



备注说明:

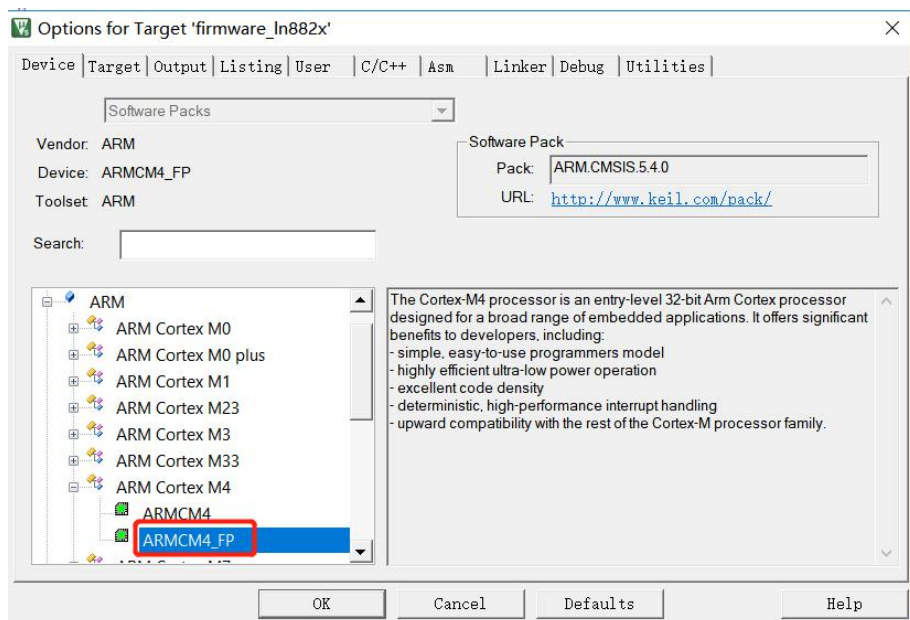
由于工程内部执行python脚本，运行的可执行文件名是python3，所以需要按照好的python3安装目录下的可执行文件python.exe新拷贝一份并重命名为python3.exe即可，如下图。



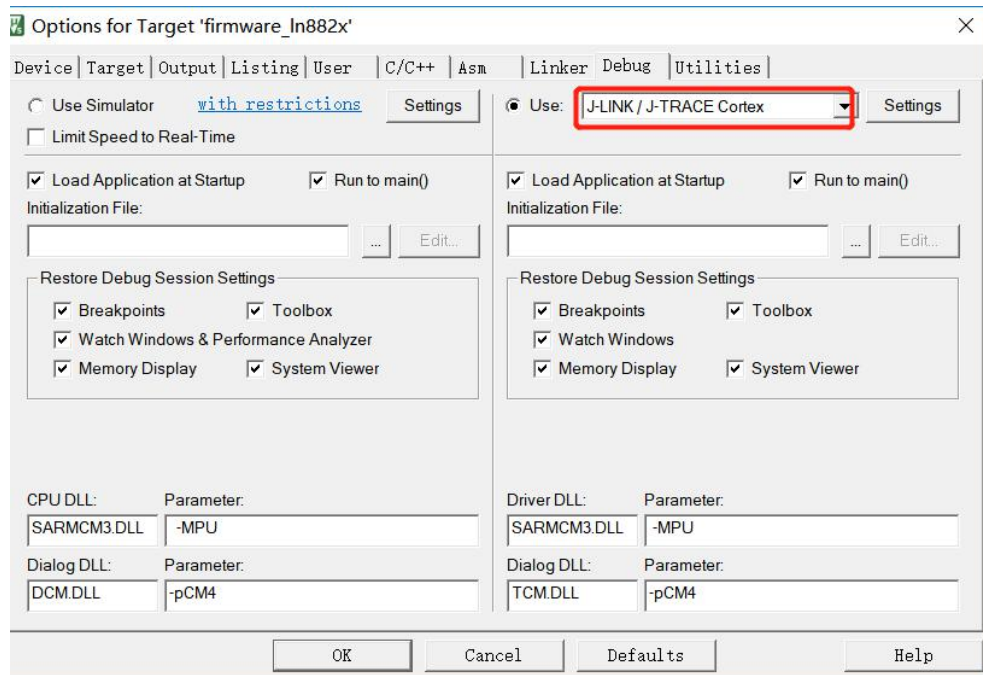


二、Keil project配置说明

1. Device选择ARMCM4_FP(Cortex-M4F)

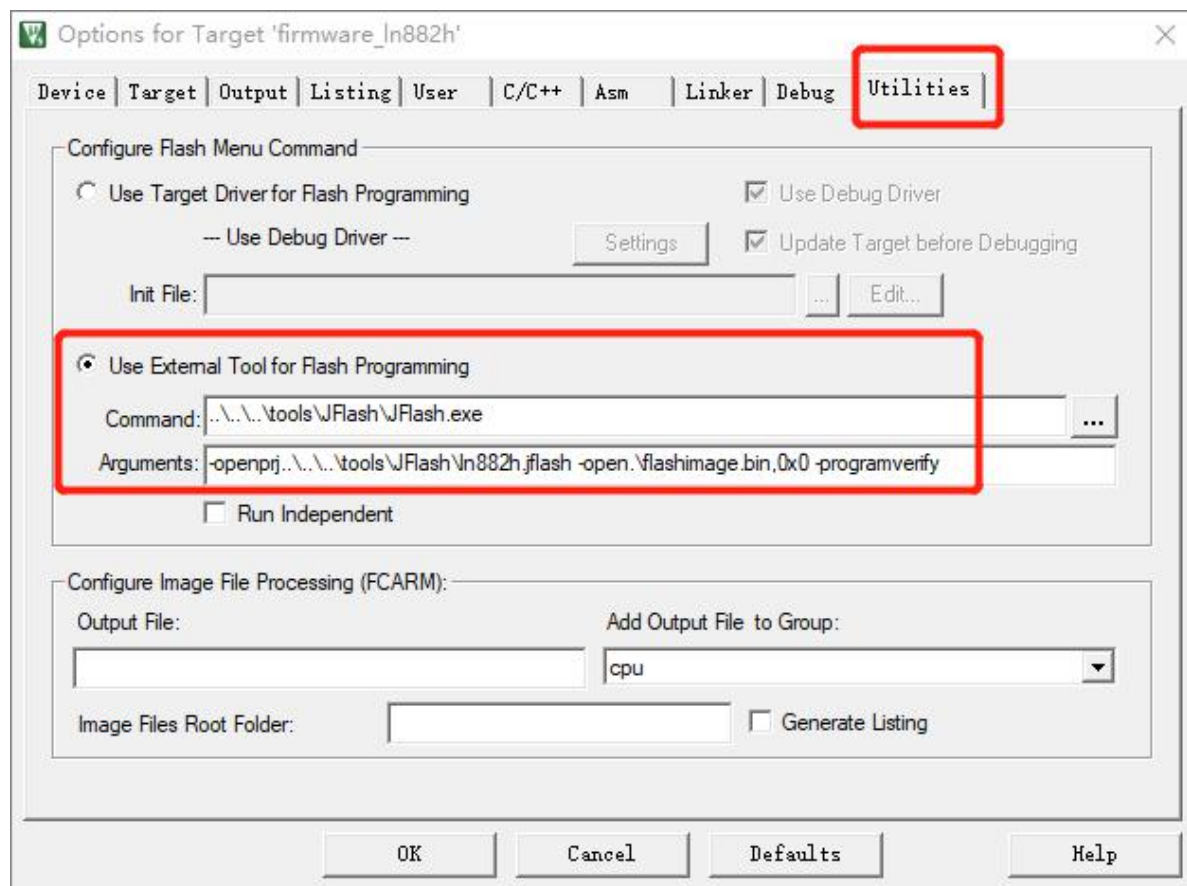


2. Debug配置J-Link调试器



3. Utilities配置烧录工具

使用JFlash.exe作烧录工具



Command:

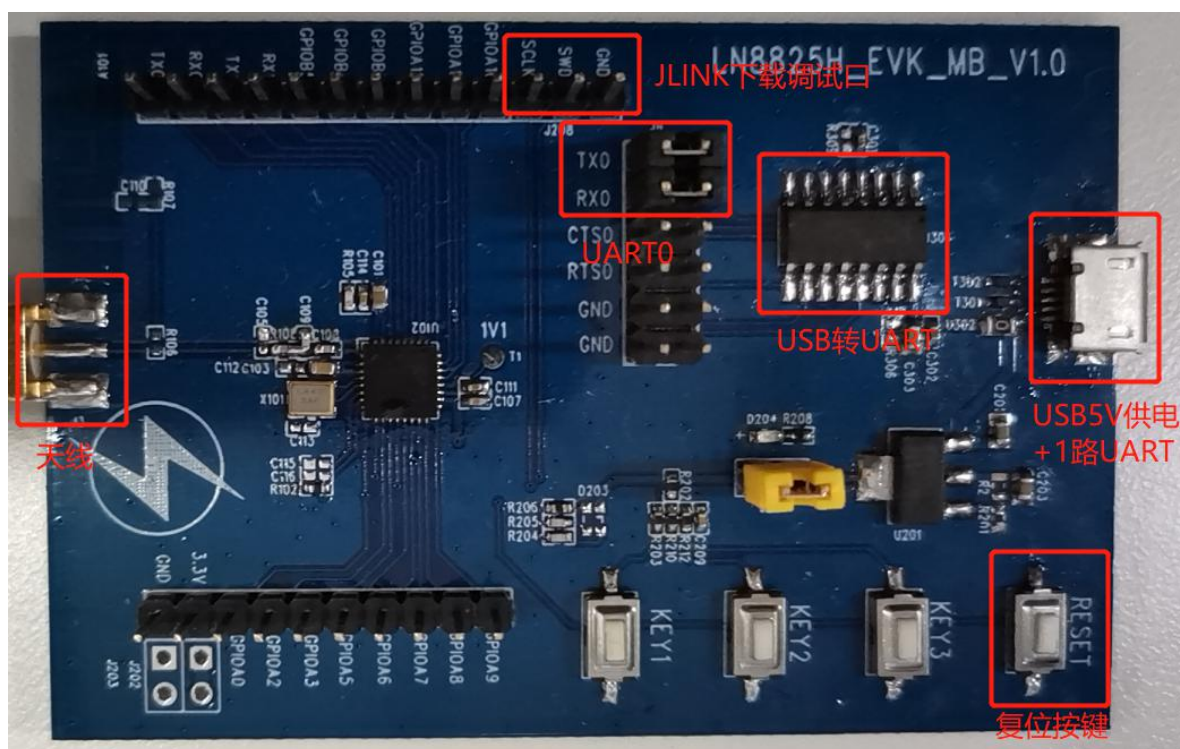
```
..\..\tools\JFlash\JFlash.exe
```

Arguments:

```
-openprj..\..\tools\JFlash\LN8825h.jflash -open.\flashimage.bin, 0x0 -programverify
```

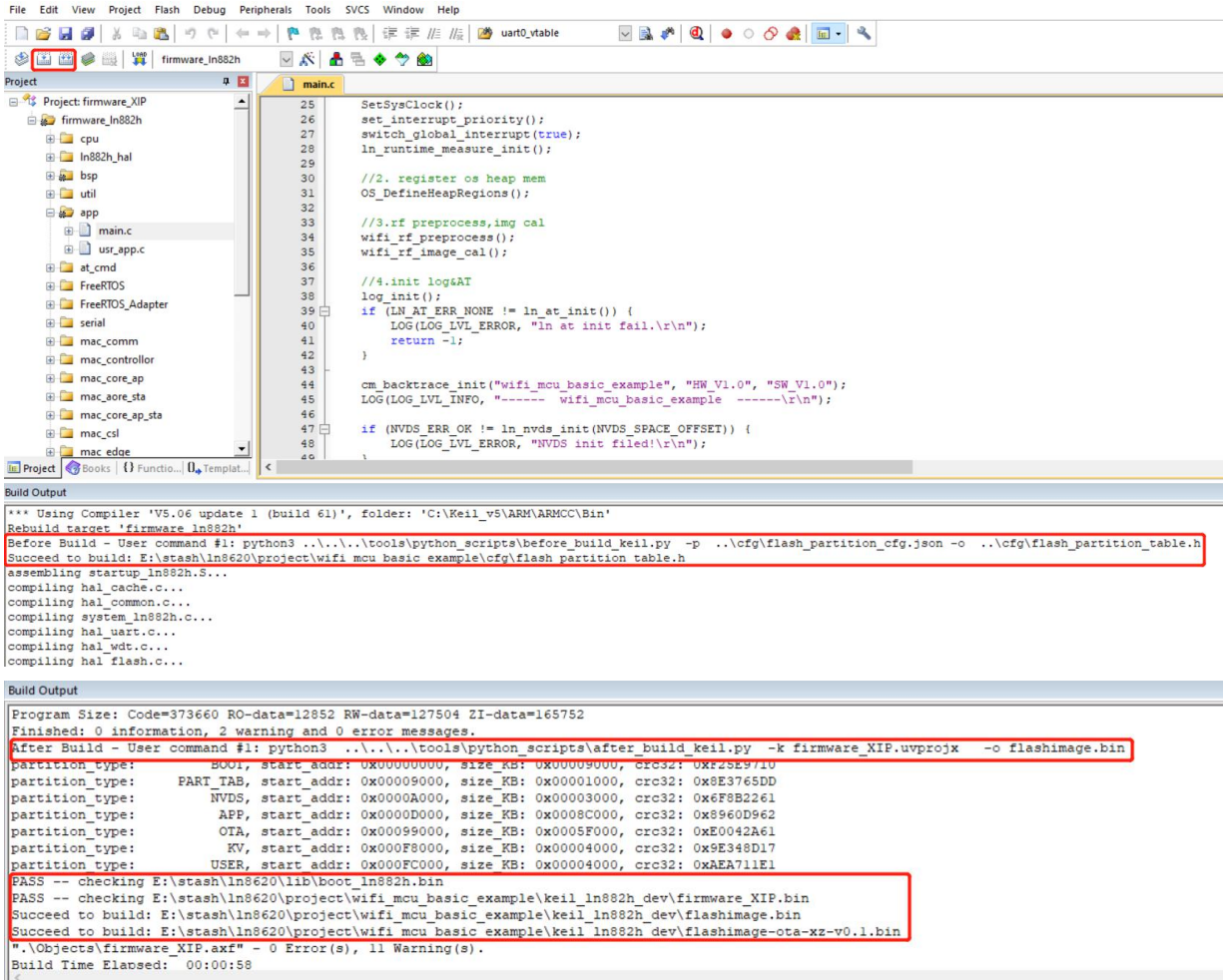
三、EVK硬件接线图

EVK板需要一根USB线连接电脑进行供电（同时作为USB串口转接口），另外连接Jlink调试口即可进行镜像文件的烧写和Jlink调试。



四、编译

编译输出如下图，表示编译成功。



```

File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
uart0_vtable
Project: firmware_XIP
Project: firmware_XIP
  firmware_ln882h
    cpu
    ln882h_hal
    bsp
    util
    app
    main.c
    usr_app.c
    at_cmd
    FreeRTOS
    FreeRTOS_Adapter
    serial
    mac_comm
    mac_controller
    mac_core_ap
    mac_core_sta
    mac_core_ap_sta
    mac_csl
    mac_edg
  Project
  Books
  Functions
  Templates

main.c
25 SetSysClock();
26 set_interrupt_priority();
27 switch_global_interrupt(true);
28 ln_runtime_measure_init();
29
30 //2. register os heap mem
31 OS_DefineHeapRegions();
32
33 //3.rf preprocess,img cal
34 wifi_rf_preprocess();
35 wifi_rf_image_cal();
36
37 //4.init log&AT
38 log_init();
39 if (LN_AT_ERR_NONE != ln_at_init()) {
40     LOG(LOG_LVL_ERROR, "ln at init fail.\r\n");
41     return -1;
42 }
43
44 cm_backtrace_init("wifi_mcu_basic_example", "HW V1.0", "SW V1.0");
45 LOG(LOG_LVL_INFO, "----- wifi_mcu_basic_example ----- \r\n");
46
47 if (NVDS_ERR_OK != ln_nvds_init(NVDS_SPACE_OFFSET)) {
48     LOG(LOG_LVL_ERROR, "NVDS init failed!\r\n");
49 }
50

Build Output
*** Using Compiler 'V5.06 update 1 (build 61)', folder: 'C:\Keil_v5\ARM\ARMCC\Bin'
Rebuild target 'firmware_ln882h'
Before Build - User command #1: python3 ..\..\..\tools\python_scripts\before_build_keil.py -p ..\cfg\flash_partition_cfg.json -o ..\cfg\flash_partition_table.h
Succeed to build: E:\stash\ln8620\project\wifi_mcu_basic_example\cfg\flash_partition_table.h
assembling startup_ln882h.S...
compiling hal_cache.c...
compiling hal_common.c...
compiling system_ln882h.c...
compiling hal_uart.c...
compiling hal_wdt.c...
compiling hal_flash.c...

Build Output
Program Size: Code=373660 RO-data=12852 RW-data=127504 ZI-data=165752
Finished: 0 information, 2 warning and 0 error messages.
After Build - User command #1: python3 ..\..\..\tools\python_scripts\after_build_keil.py -k firmware_XIP.uvprojx -o flashimage.bin
partition_type: BOOT, start_addr: 0x00000000, size_KB: 0x00000900, crc32: 0x22E9710
partition_type: PART_TAB, start_addr: 0x00009000, size_KB: 0x00001000, crc32: 0x8E3765DD
partition_type: NVDS, start_addr: 0x0000A000, size_KB: 0x00003000, crc32: 0x6F8B2261
partition_type: APP, start_addr: 0x0000D000, size_KB: 0x00008C00, crc32: 0x8960D962
partition_type: OTA, start_addr: 0x00009000, size_KB: 0x00005F00, crc32: 0xE0042A61
partition_type: KV, start_addr: 0x000F8000, size_KB: 0x00004000, crc32: 0x9E348D17
partition_type: USER, start_addr: 0x000FC000, size_KB: 0x00004000, crc32: 0xAEA711E1
PASS -- checking E:\stash\ln8620\lib\boot_ln882h.bin
PASS -- checking E:\stash\ln8620\project\wifi_mcu_basic_example\keil_ln882h_dev\firmware_XIP.bin
Succeed to build: E:\stash\ln8620\project\wifi_mcu_basic_example\keil_ln882h_dev\flashimage.bin
Succeed to build: E:\stash\ln8620\project\wifi_mcu_basic_example\keil_ln882h_dev\flashimage-ota-xz-v0.1.bin
".\Objects\firmware_XIP.axf" - 0 Error(s), 11 Warning(s).
Build Time Elapsed: 00:00:58

```

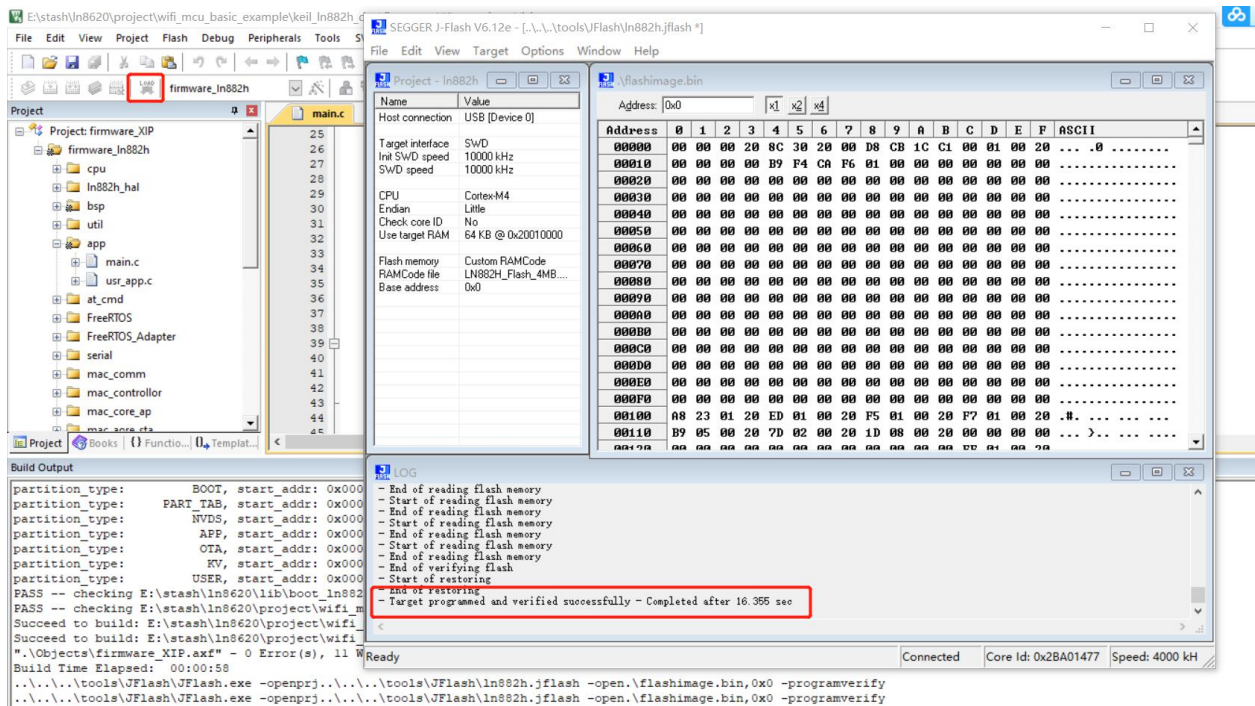
编译前keil会调用一个脚本用来生成分区表头文件flash_partition_table.h,
(python3 ..\..\..\tools\python_scripts\before_build_keil.py -
p ..\cfg\flash_partition_cfg.json -o ..\cfg\flash_partition_table.h)

编译后keil会调用另一个脚本，after-build脚本用来先处理编译后生成的.axf文件生成.bin、.asm文件，然后将boot.bin与生成的.bin进行拼接合并，image header格式填充等，最终生成flashimage.bin

五、烧录

点击load按钮，keil会自动调用JFlash进行烧录。

如下图，即表示烧录成功。注意：每次jlink烧录前确保芯片进行过复位，可按EVK的复位键进行彻底复位。

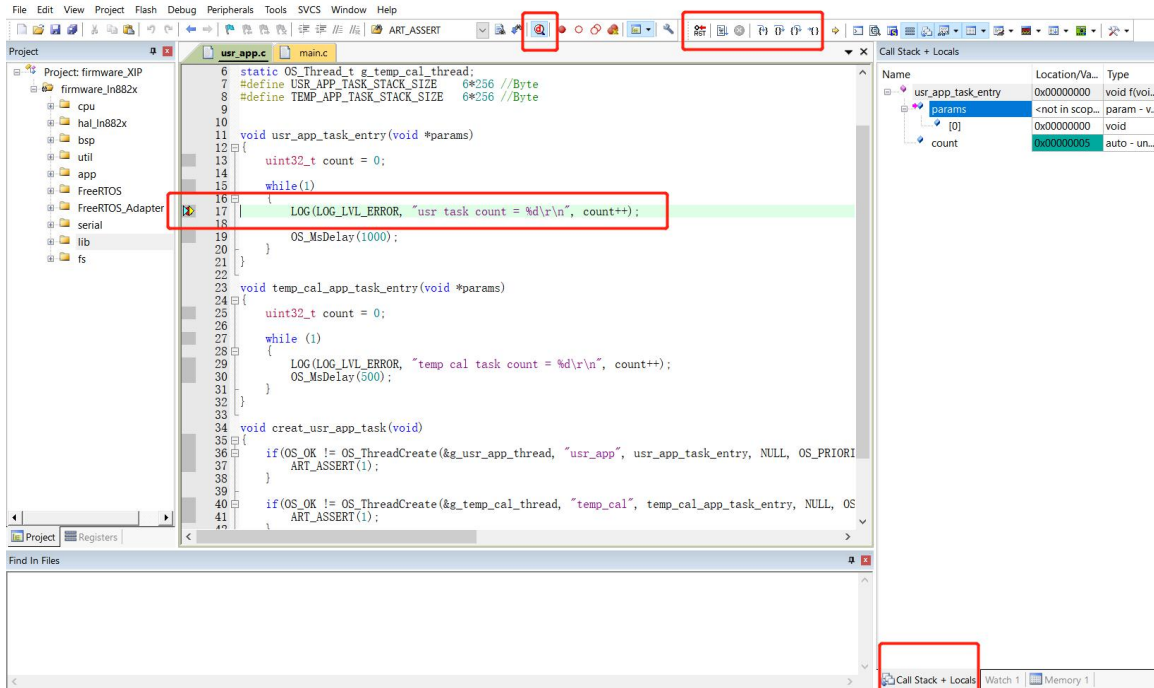


烧录默认只擦除烧录bin文件大小区域，如希望在烧录前进行整片flash的擦除可在keil配置的**Utilities->Arguments**中加入**-erasechip**参数，如下：

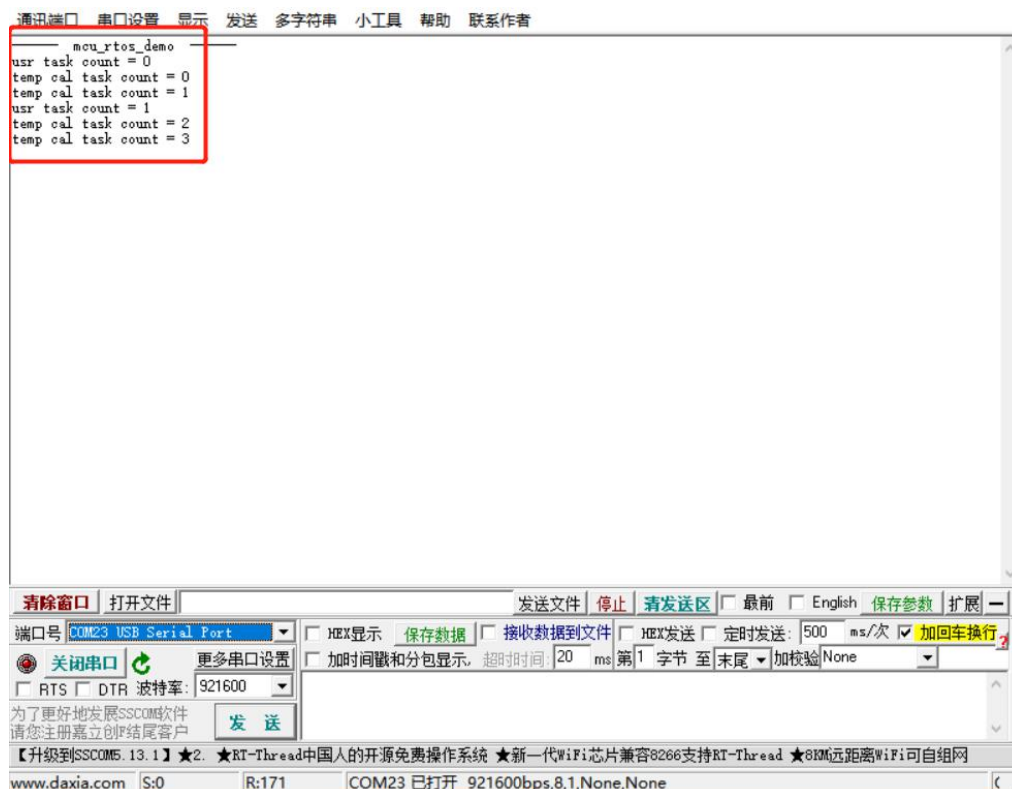
```
-openprj.\..\..\tools\JFlash\In882h.jflash -open.\flashimage.bin,0x0 -programverify
```

六、调试

烧录完毕后关闭Jflash烧录窗口，并点击debug按钮即可进行Jlink断点、单步运行调试，直接在Keil MDK 中操作。如下图：



通过串口工具观察，可观察到打印输出：



七、文档修订历史

1.0	1. Initial version	Wuliang	10/11 th , 2021