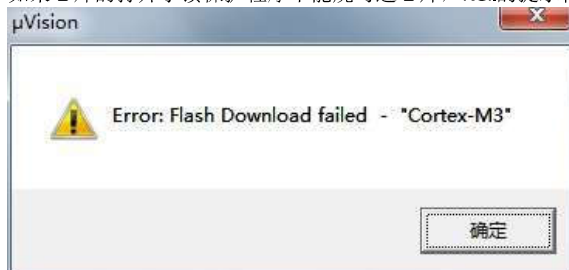


如果芯片的打开了读保护程序不能烧写进芯片，keil的提示信息如下：

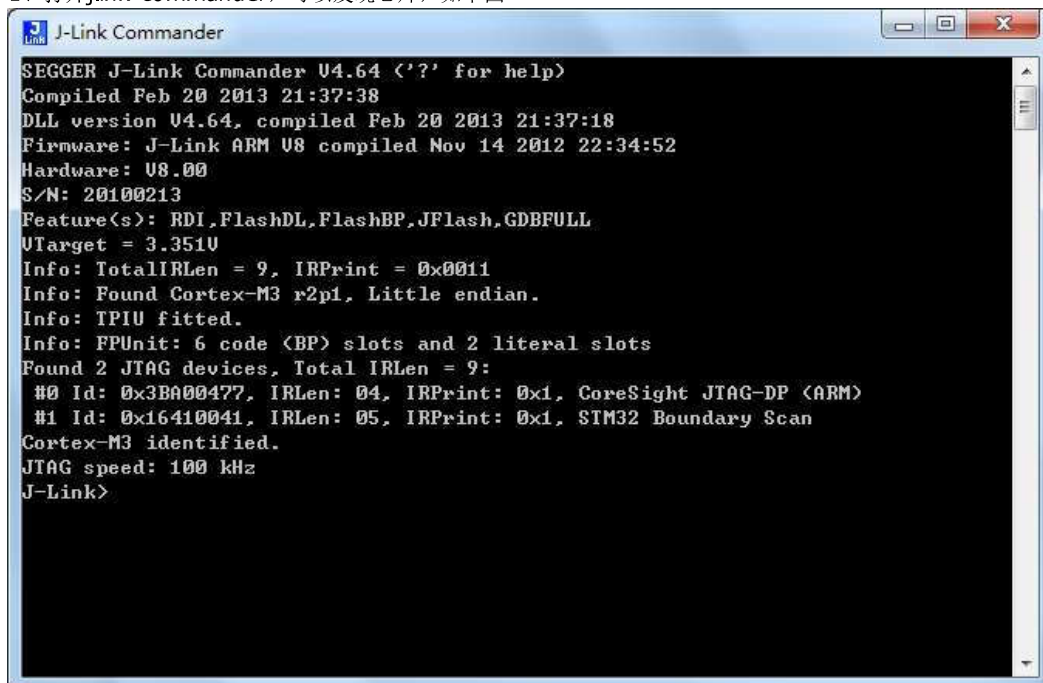


```
Build Output
Target info:
-----
Device: STM32F103RB
VTarget = 3.351V
State of Pins:
TCK: 1, TDI: 0, TDO: 1, TMS: 0, TRES: 1, TRST: 1
Hardware-Breakpoints: 6
Software-Breakpoints: 8192
Watchpoints: 4
JTAG speed: 2000 kHz

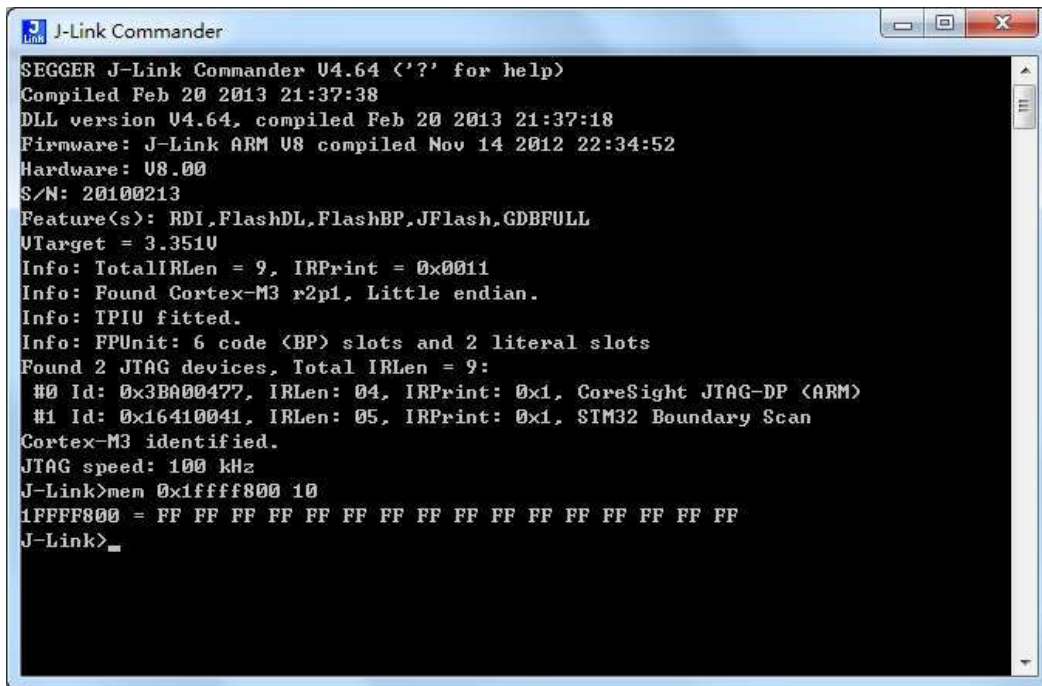
Erase Done.
Programming Failed!
```

解决办法如下：

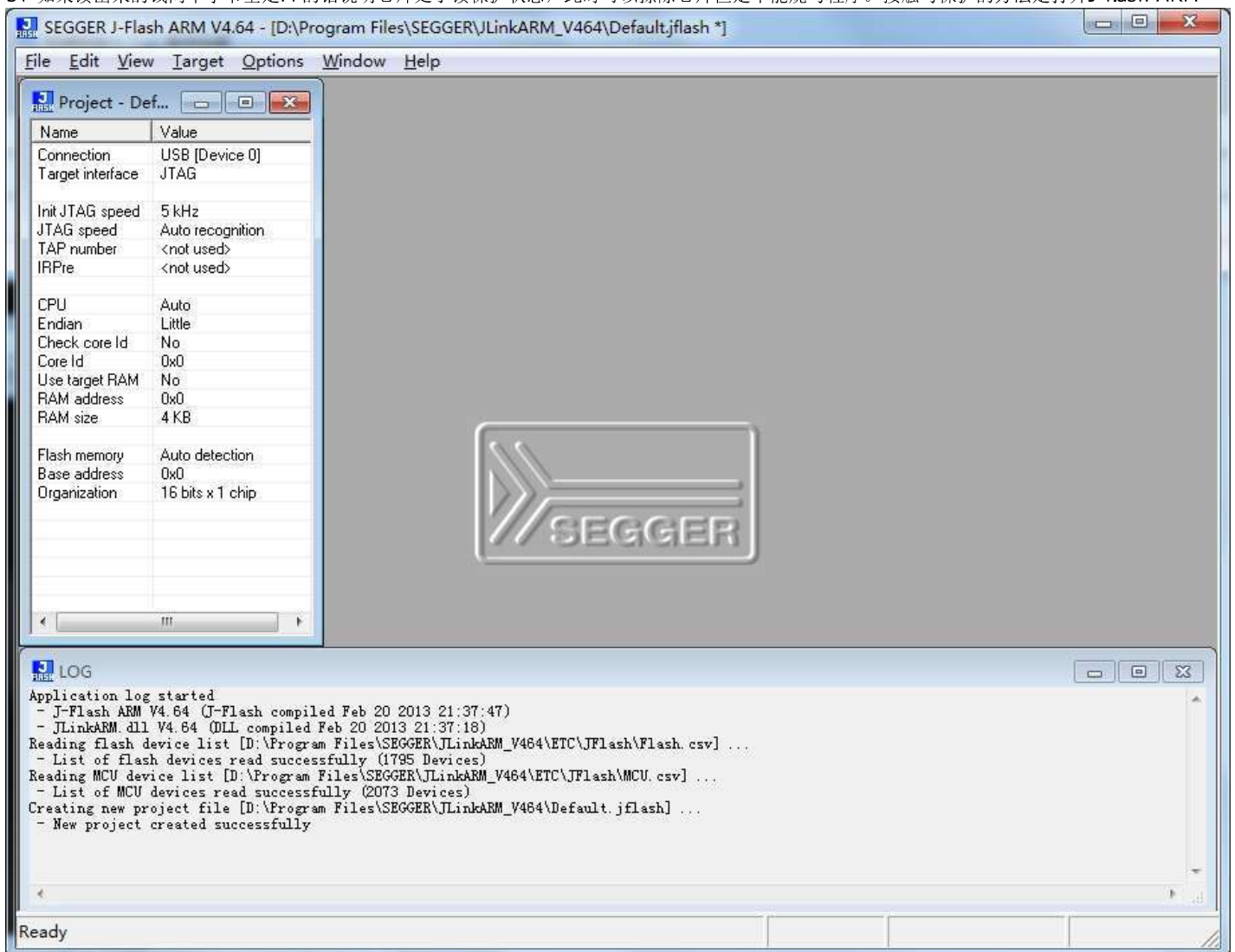
1、打开jlink-commander，可以发现芯片，如下图



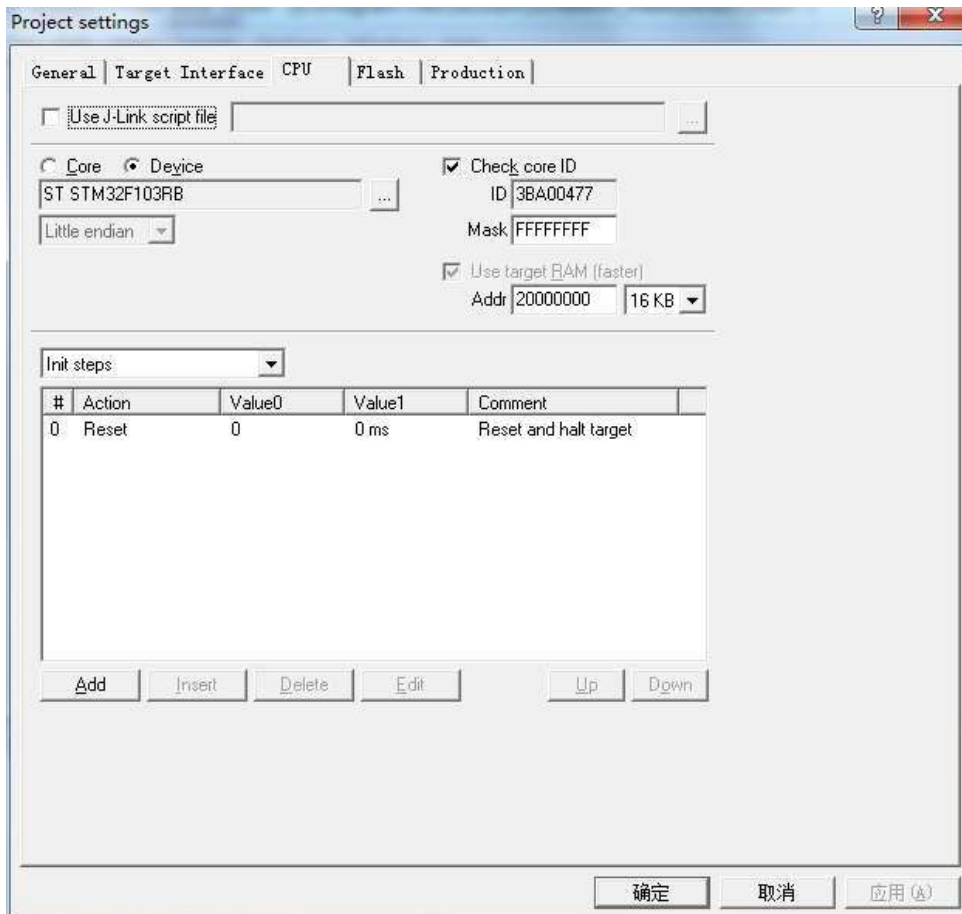
2、输入“mem 0x1ffff800 10”，从0x1FFFF800地址读取10个字节



3、如果读出来的钱两个字节全是FF的话说明芯片处于读保护状态，此时可以擦除芯片但是不能烧写程序。接触写保护的方法是打开J-flash ARM



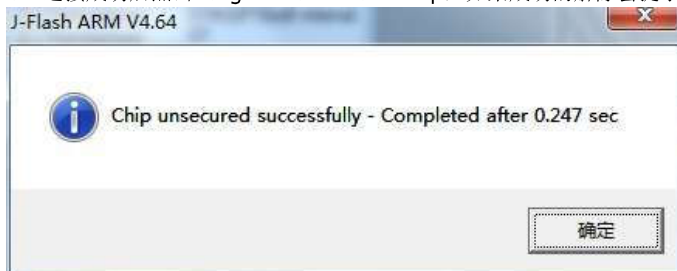
4、点击Option->Project seting，在CPU选项卡的Device里选择ST STM32F103RB，然后确定。



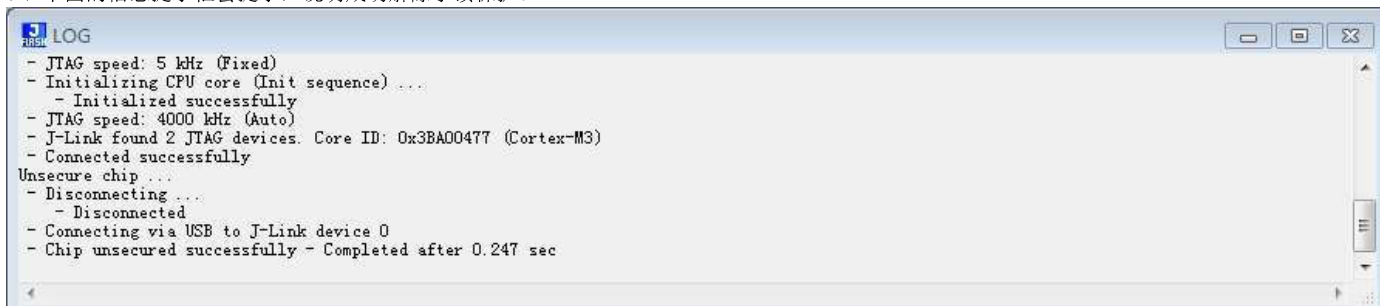
5、然后选择Target->Connect，下面显示连接成功。(如果没有配置CPU的话连接会不成功的，下面的信息提示框里上面的部分就是没连接成功的提示信息)



6、连接成功后点击Target->Unsecure chip，如果成功的解除会提示如下信息，



7、下面的信息提示框会提示，说明成功解除了读保护。



8、此时回到jlink-commander，再次输入"mem 0xffff800 10"读取0xFFFF800地址开始的10个字节

```
J-Link Commander
SEGGER J-Link Commander V4.64 ('?' for help)
Compiled Feb 20 2013 21:37:38
DLL version V4.64, compiled Feb 20 2013 21:37:18
Firmware: J-Link ARM V8 compiled Nov 14 2012 22:34:52
Hardware: V8.00
S/N: 20100213
Feature(s): RDI,FlashDL,FlashBP,JFlash,GDBFULL
VTarget = 3.351V
Info: TotalIRLen = 9, IRPrint = 0x0011
Info: Found Cortex-M3 r2p1, Little endian.
Info: TPIU fitted.
Info: FPUUnit: 6 code <BP> slots and 2 literal slots
Found 2 JTAG devices, Total IRLen = 9:
  #0 Id: 0x3BA00477, IRLen: 04, IRPrint: 0x1, CoreSight JTAG-DP (ARM)
  #1 Id: 0x16410041, IRLen: 05, IRPrint: 0x1, STM32 Boundary Scan
Cortex-M3 identified.
JTAG speed: 100 kHz
J-Link>mem 0xffff800 10
1FFFF800 = FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
J-Link>mem 0xffff800 10
1FFFF800 = A5 5A FF FF FF FF FF FF FF FF FF FF FF FF FF
J-Link>
```

提示前两个字节为A5 5A，说明芯片以及成功的解除了读保护，此时就可以正常的下载程序了。

keil的提示信息如下。

```
VTarget = 3.351V
State of Pins:
TCK: 1, TDI: 0, TDO: 1, TMS: 0, TRES: 1, TRST: 1
Hardware-Breakpoints: 6
Software-Breakpoints: 8192
Watchpoints: 4
JTAG speed: 2000 kHz

Erase Done.
Programming Done.
Verify OK.
```