DB202 System Software Burn-in Guide

V1.0

CONTENTS

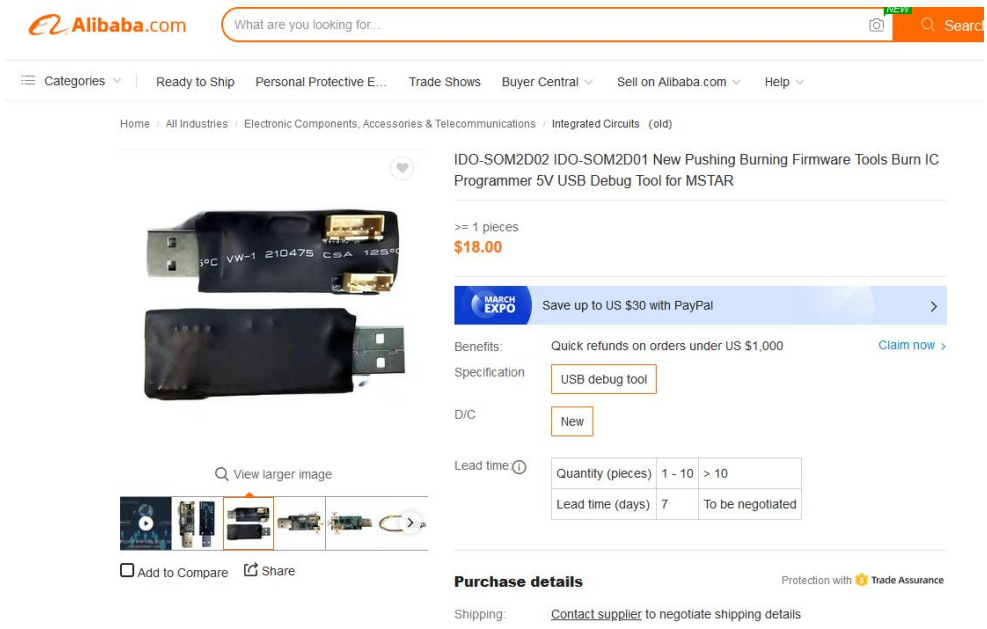
Revision History

Date	Modification Type	Version	Description	Author
2023/3/29	Important basic functions	1.0	Initial Version	

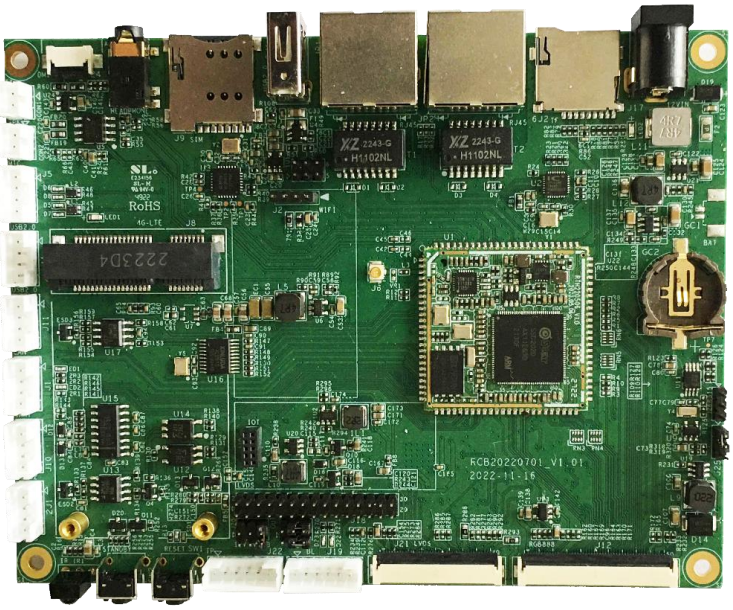
1. Hardware Device

- Debug Tool

If you need to use SSD platform tools for debugging, burning, reading and writing register operations (such as Flash_Tool), you need to purchase a special Debug Tool, Debug Tool purchase address: https://www.alibaba.com/product-detail/IDO-SOM2D02-IDO-SOM2D01-New-Pushing_1600788577396.html?spm=a2700.galleryofferlist.normal_offer.3.62a048c3cFhYxe



- Windows PC
- DB202 PCBA



- 12V power supply

2. Software Download

2.1 Flash_Tool

Software download address:
https://mega.nz/file/ITd3QIzT#PiNMB-bgawqAy8ZZ3REF-hqxMUCXZdE_CBnOF3Yie88

2.2 Tftp32

Software download address:
https://mega.nz/file/5SExiQYZ#OZ0zDym5aC4Za0jJCewYG0-ef3QsOzEUGa6gQmsd09A

2.3 Factory firmware

Download address:
https://mega.nz/file/UGU1wRqa#-KUe32_uY5Jre3Pu5KVutg37Eb5kZUUyyl52E2AMU0Y

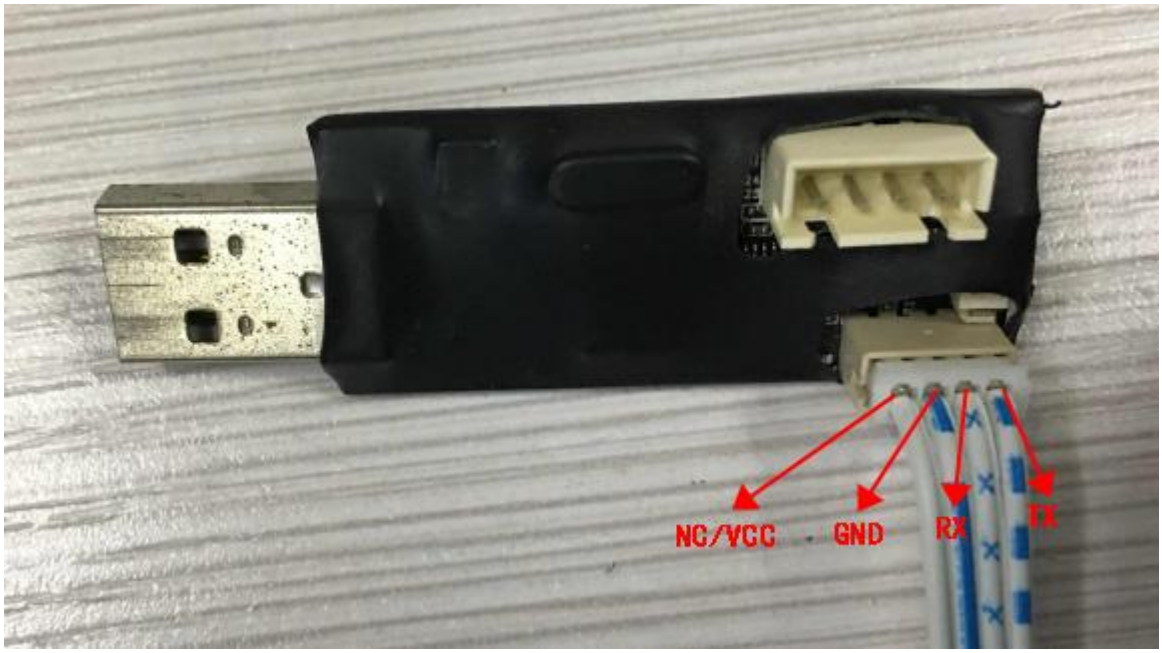
2.4 SPINANDINFO file

Spinandinfo latest file download address:
https://mega.nz/file/RbVlAZDK#zEcrSE9A0Y22pZmvftTHTg5CbNorvyiq_dnmoNUq-Zs

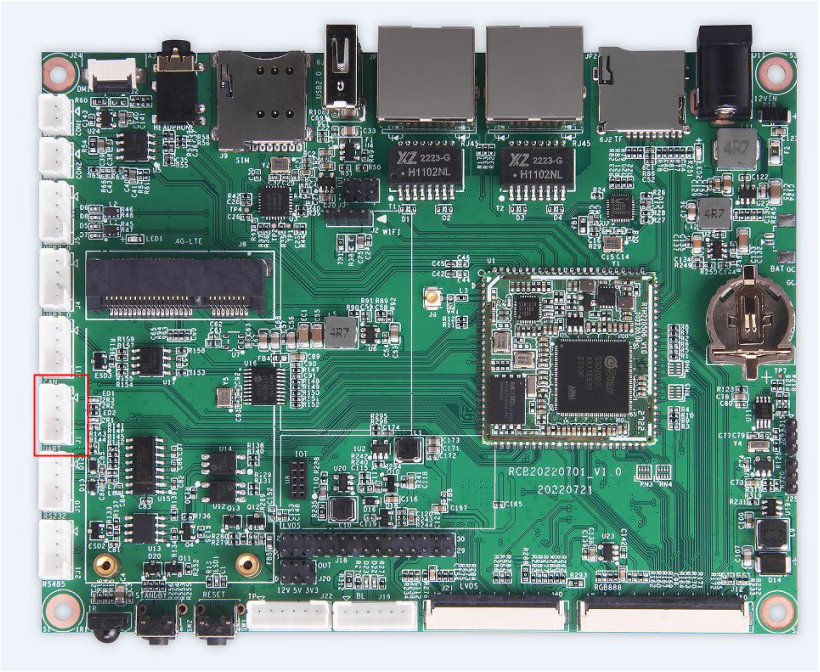
3. Hardware connection method

3.1 Debug tool and board connection

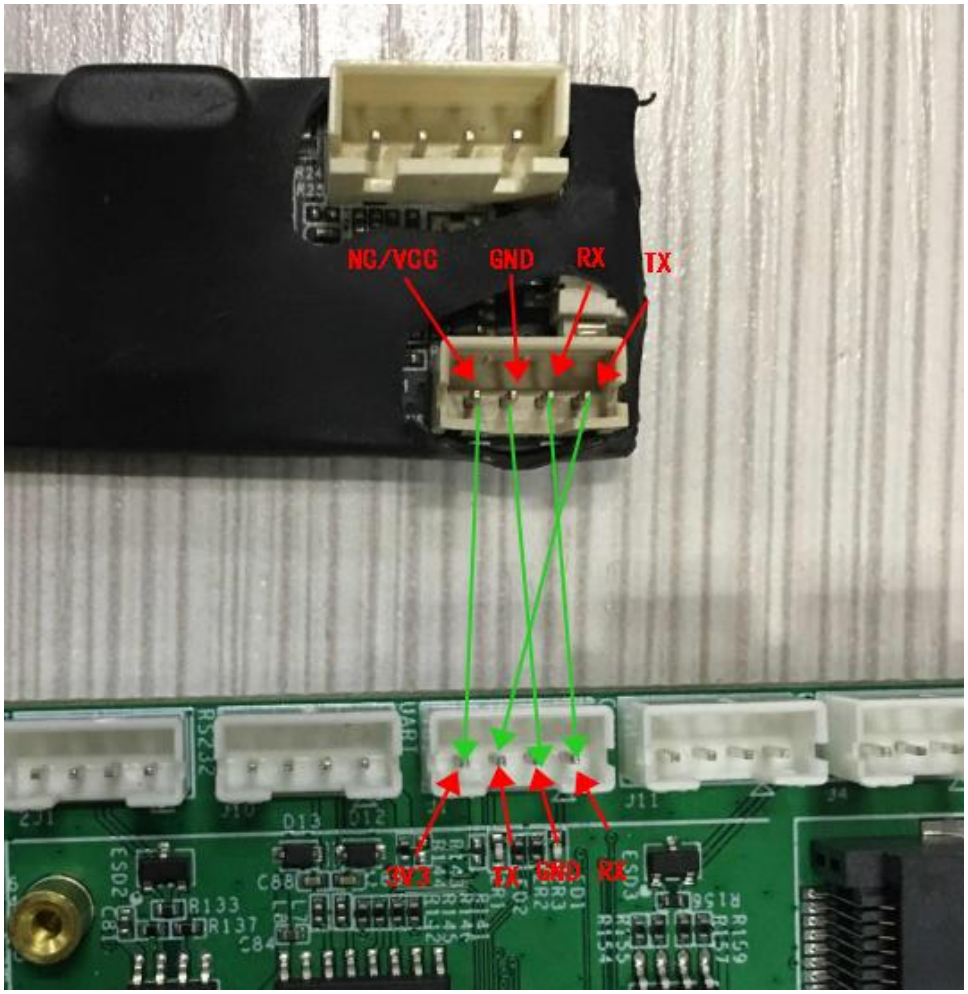
3.1.1 The pin definition of debug tools is shown in the following figure



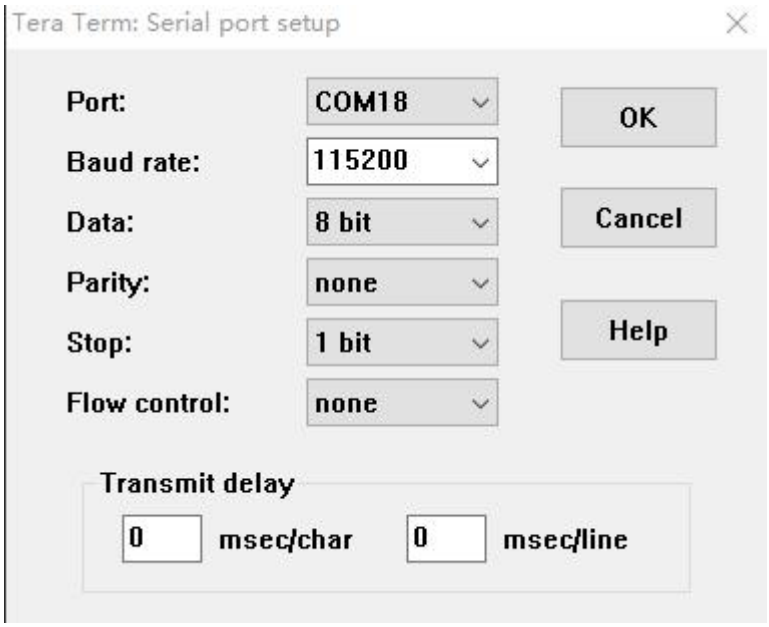
3.1.2 The four pins of the debug tools need to be connected to the four pins of the onboard debug serial port (J1).



3.1.3 Details of the connection are as follows



3.1.4 The parameters for the serial port settings are shown in the following figure (Cosole default baud rate 115200):

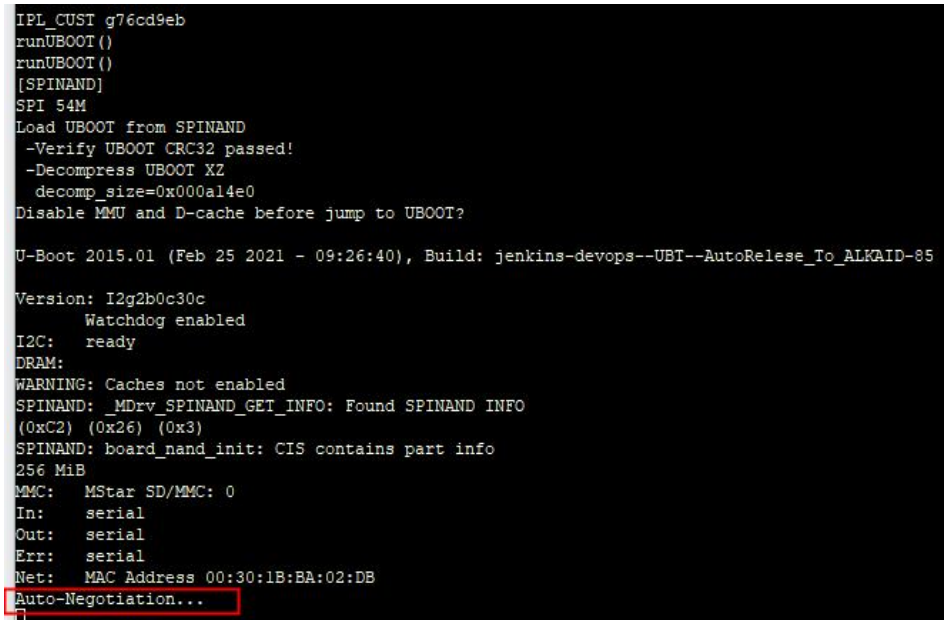


3.2 Flash_Tool(ISP_Tool) burn-in

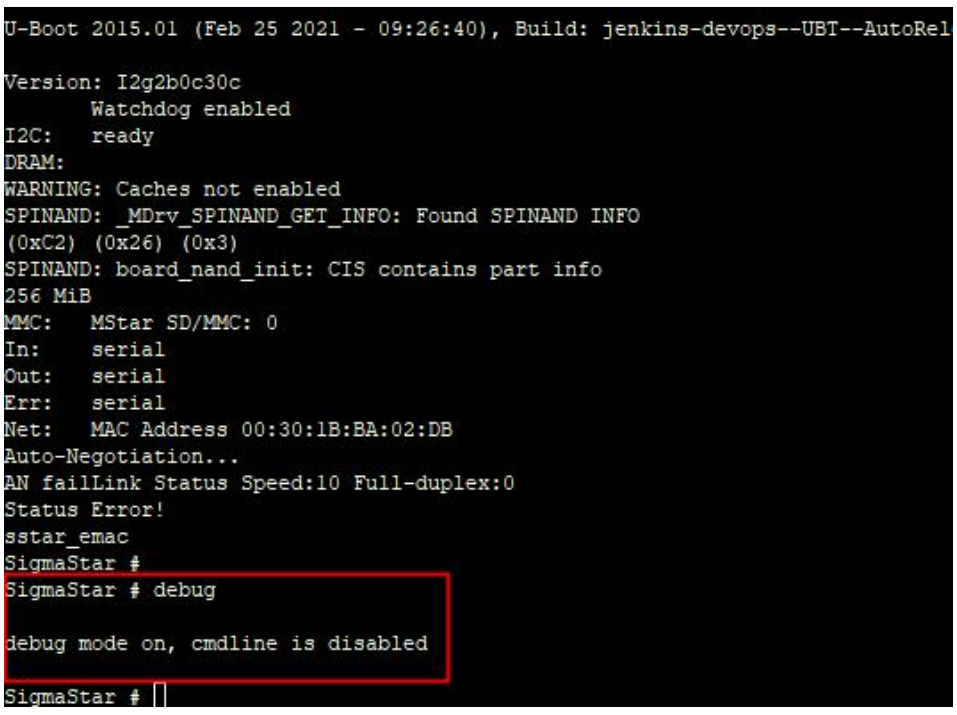
This method is used when the board is burned empty or when the board cannot access the Uboot console and is burned in other ways.

3.2.1 Enter Uboot Debug mode

Open the serial debug software, power on the board, and enter the Uboot console by pressing the Enter key when the LOG message is shown below to enter Debug mode.



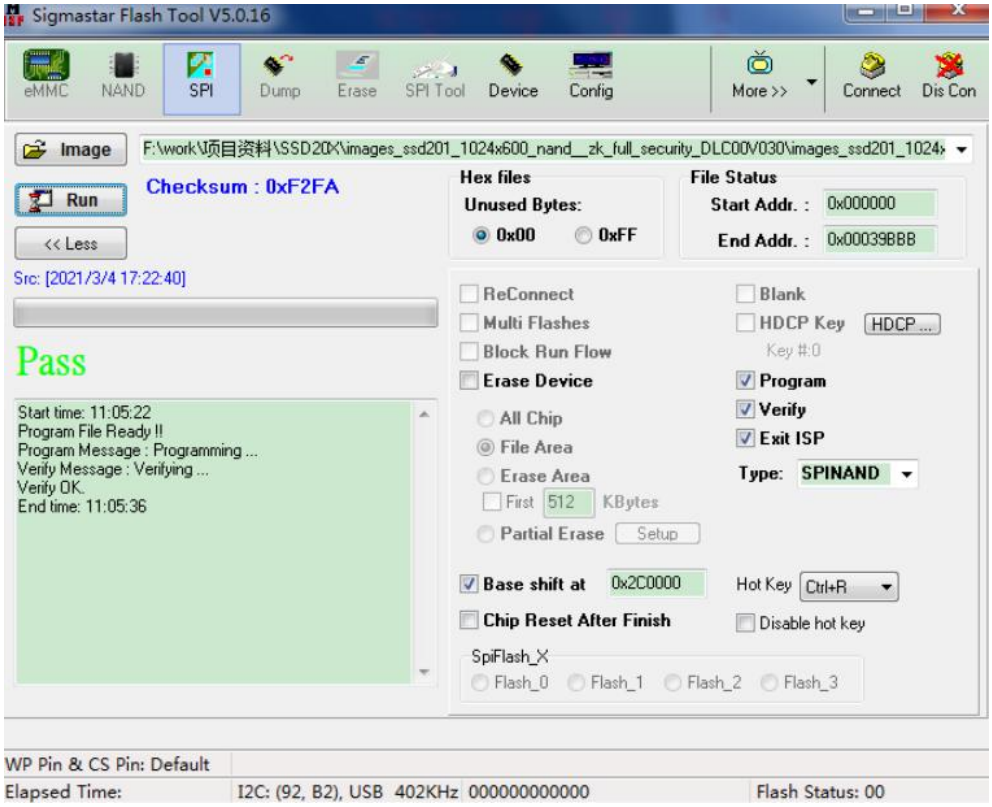
3.2.2 Type debug (if you can access it normally), then the uboot serial port is disabled



3.2.3 Close the serial debugging tool

4. Flash_Tool software use

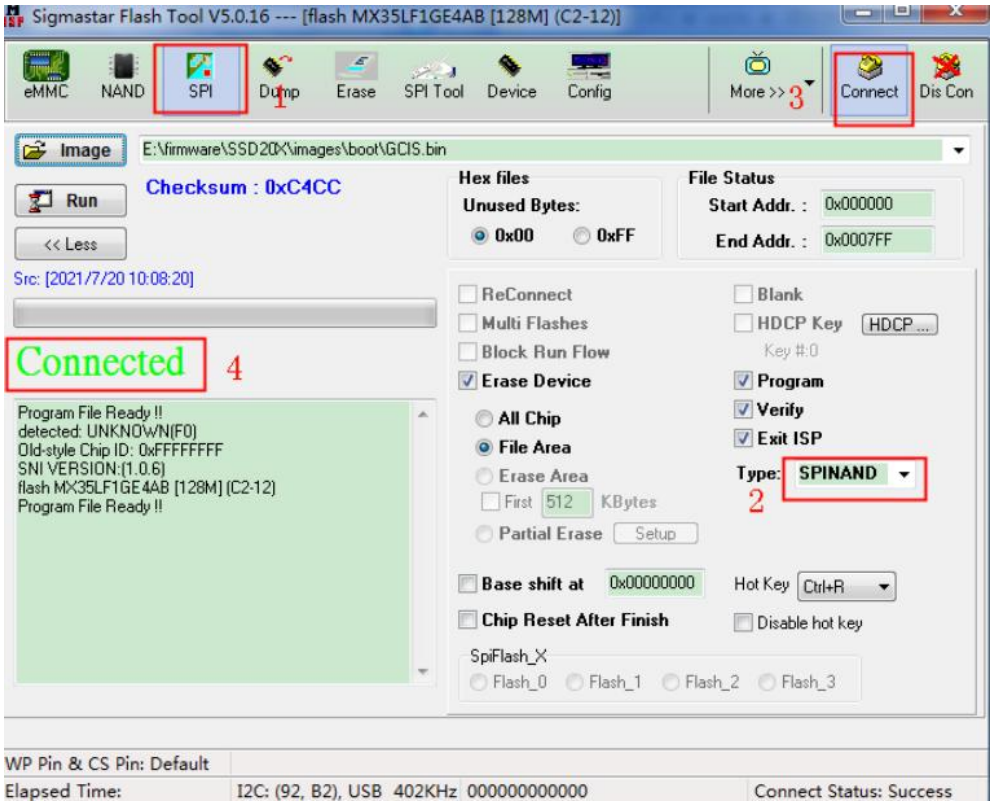
The software uses ISP_5.16_Release and the interface is shown below:



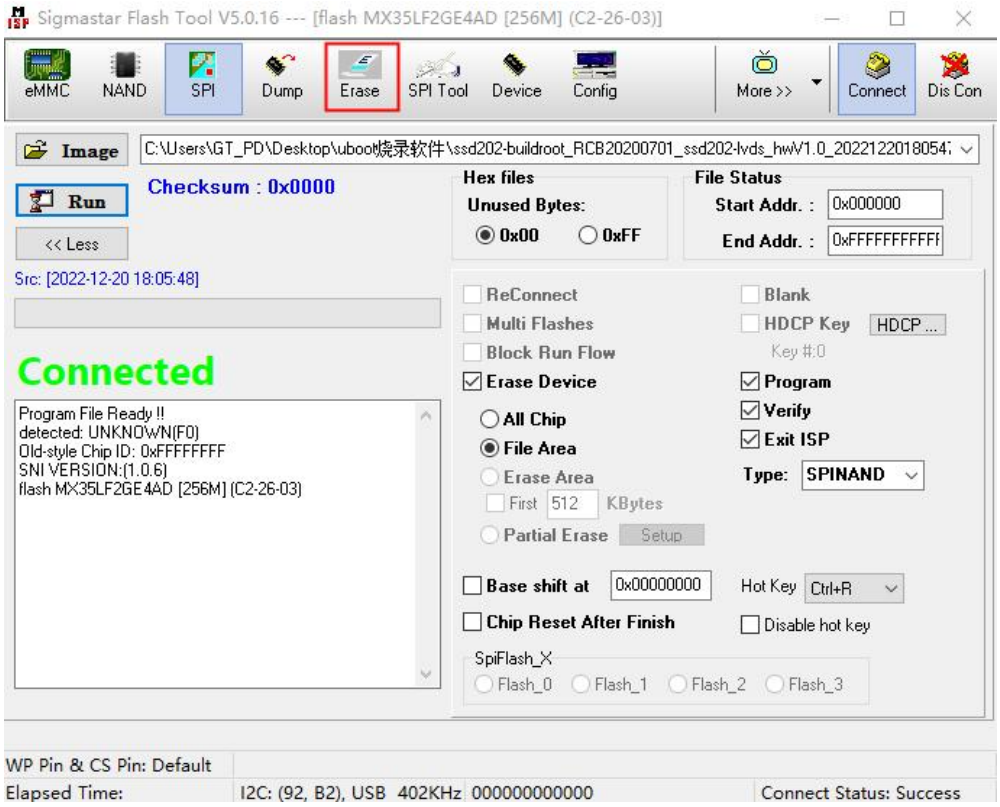
4.1System burn-in

4.1.1 Connecting Devices

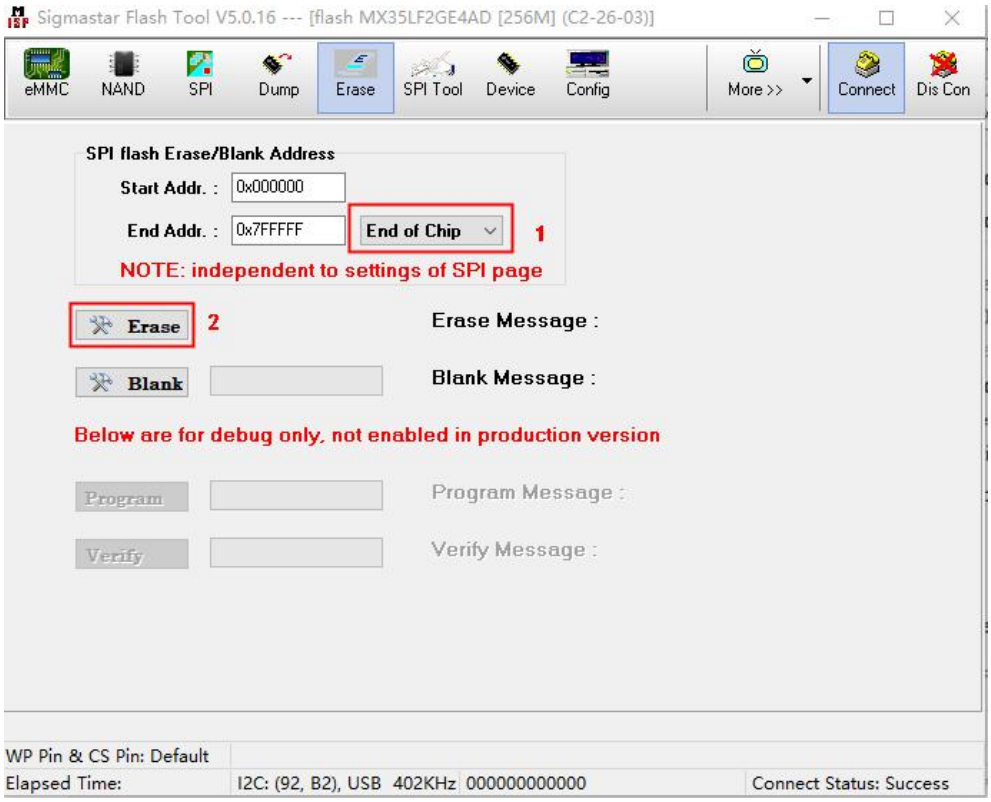
As shown in the figure below, first select SPI, then select SPINAND, and finally click connect, if the left side shows Connected, it means there is no abnormal hardware connection.



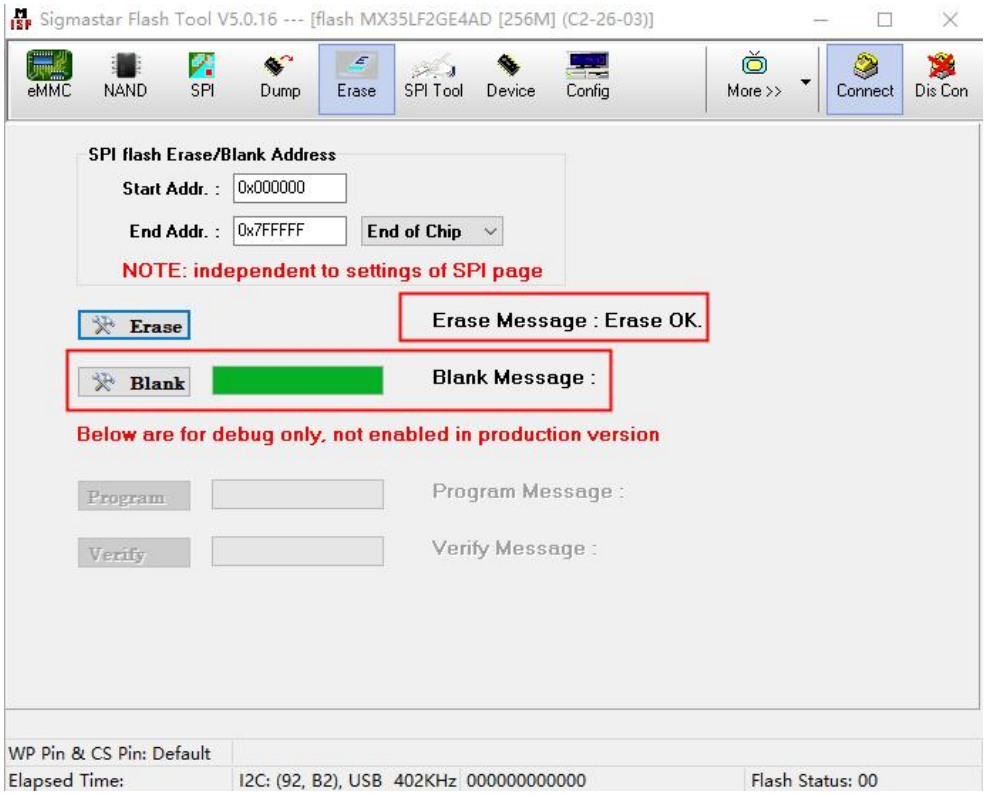
4.1.2 Erase Falsh content



4.1.3 The operation steps are as follows:

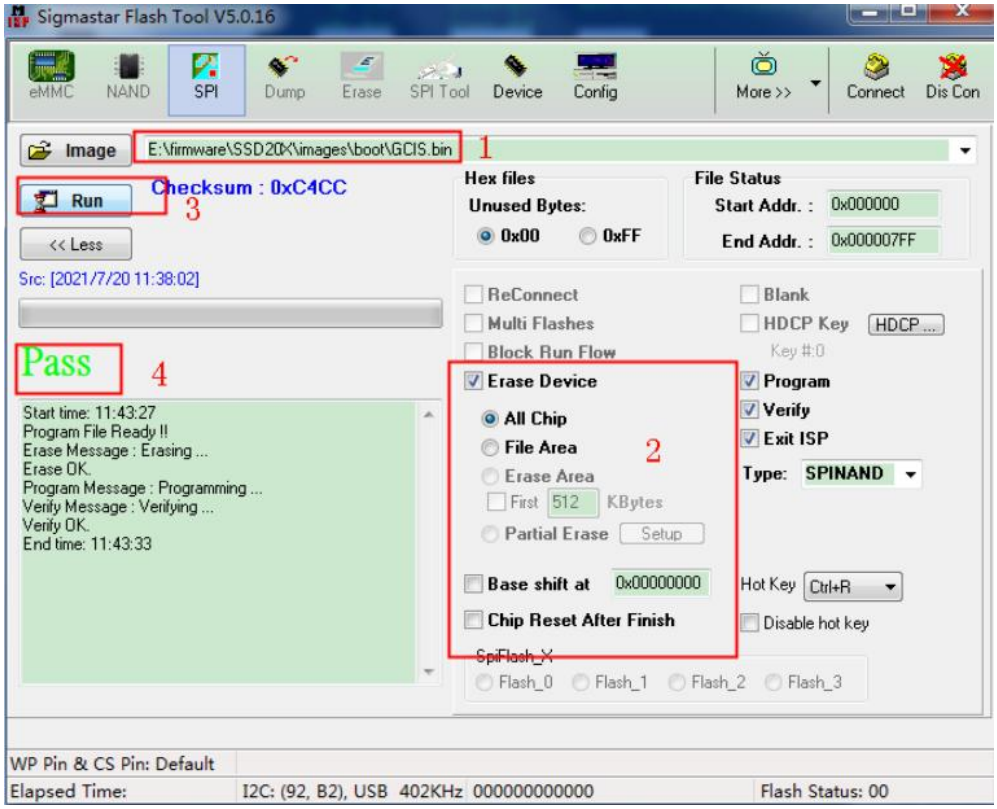


4.1.4 When the erase is complete, Erase OK is displayed.



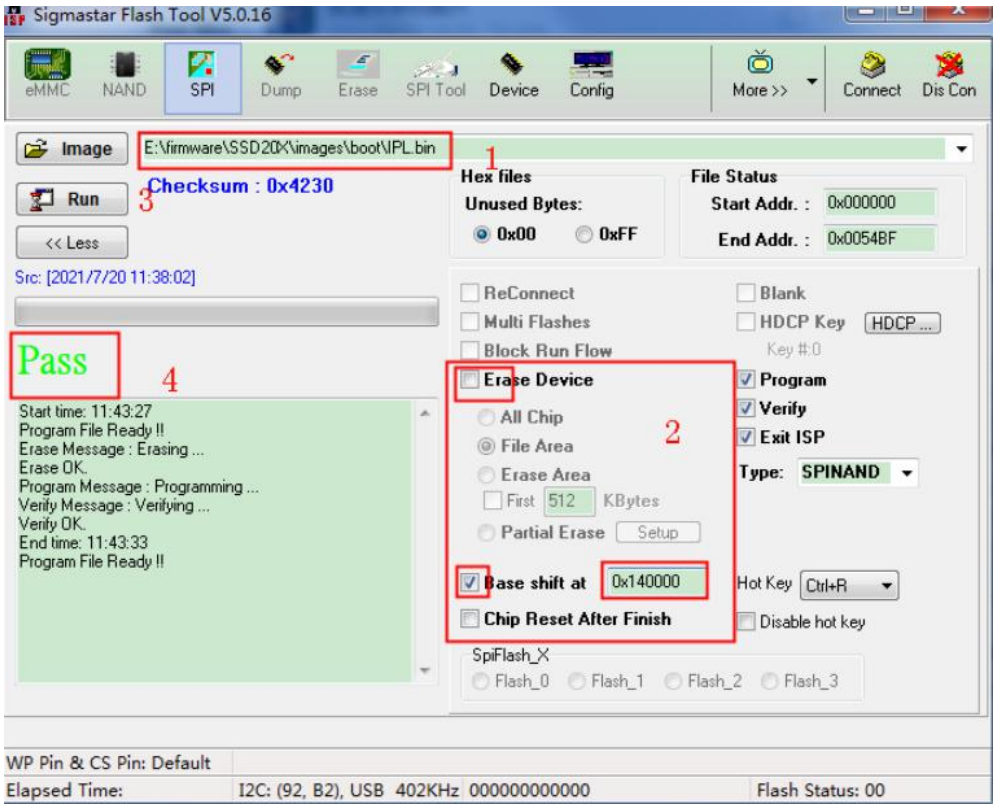
4.1.5 Burn GCIS.bin

The file path images\boot\GCIS.bin, follow the steps below, it will show Pass and burn successfully



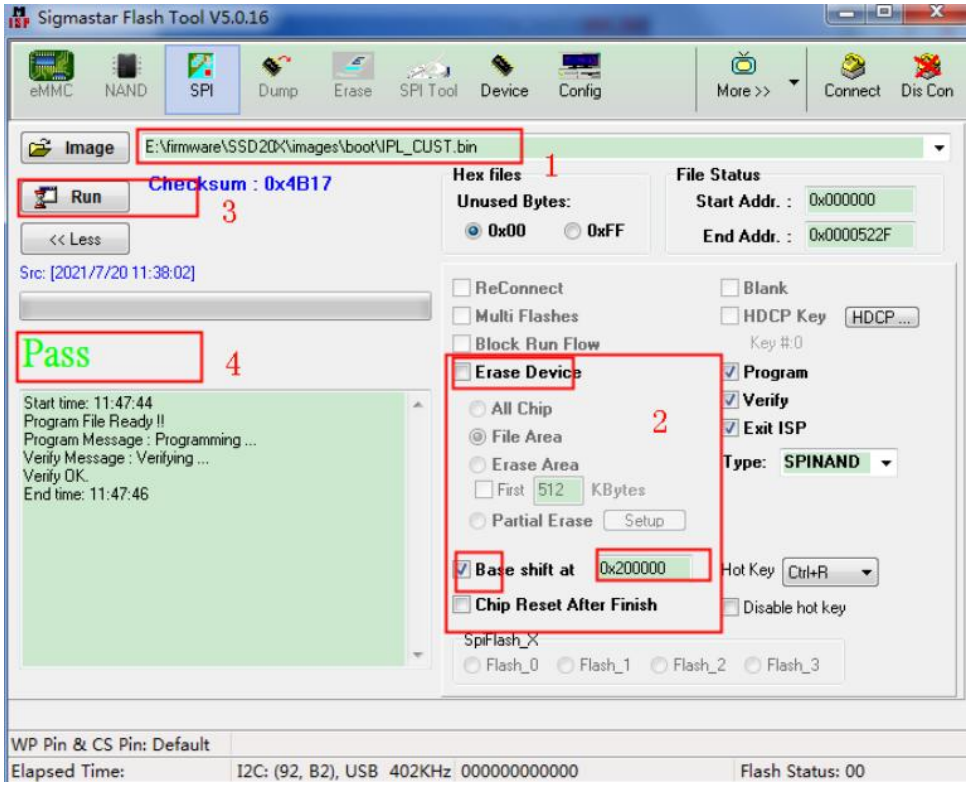
4.1.6 Burn IPL.bin

The file path images\boot\IPL.bin, follow the steps below, it will show Pass and burn successfully



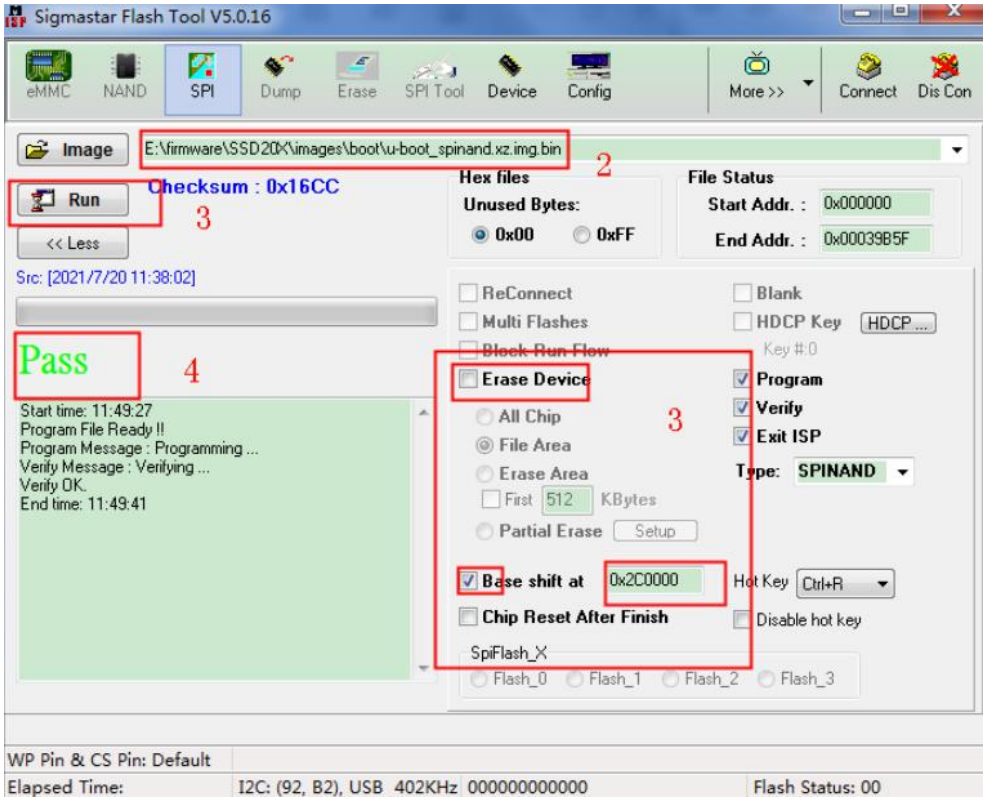
4.1.7 Burn IPL.bin

The file path images\boot\IPL_CUST.bin, follow the steps below, it will show Pass and burn successfully



4.1.8 Burning u-boot

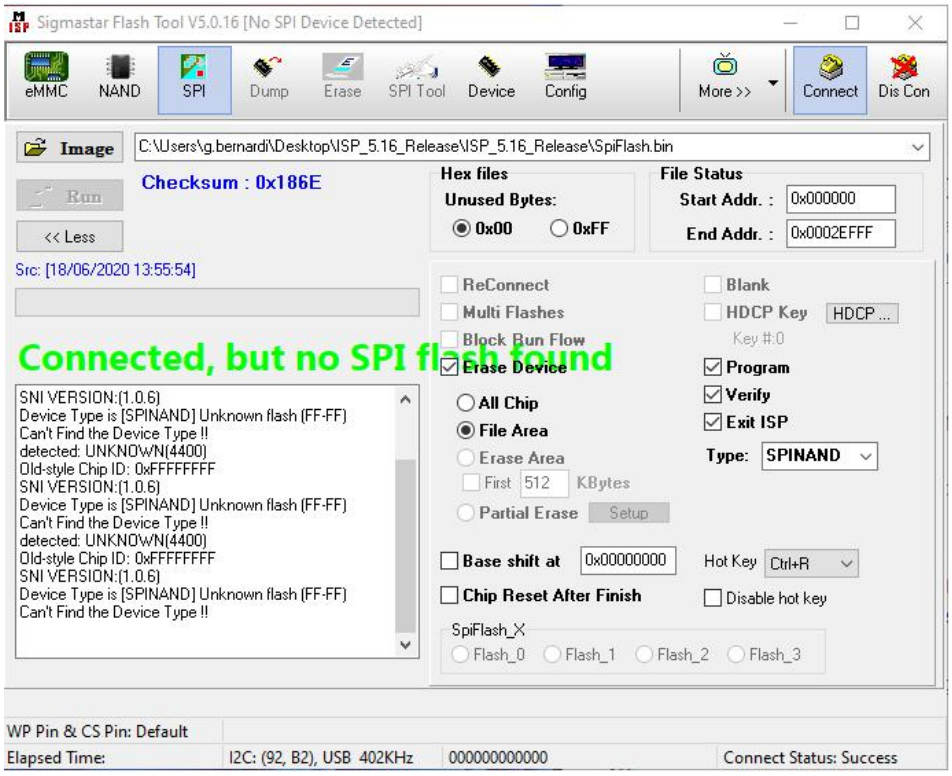
The file path images\boot\u-boot_spinand.xz.img.bin, follow the steps below, it will show Pass and burn successfully



4.1.9 So far uboot has been burned into the development board, the process of burning uboot is only needed when the board is empty for the first time, with uboot we can use TFTP to update firmware, no need to use debug tools to burn

4.2 Burn-in uboot FAQ

4.2.1 When you click Connect, if it shows "Connected,but no SPI flash found", it means the connection to Flash failed.



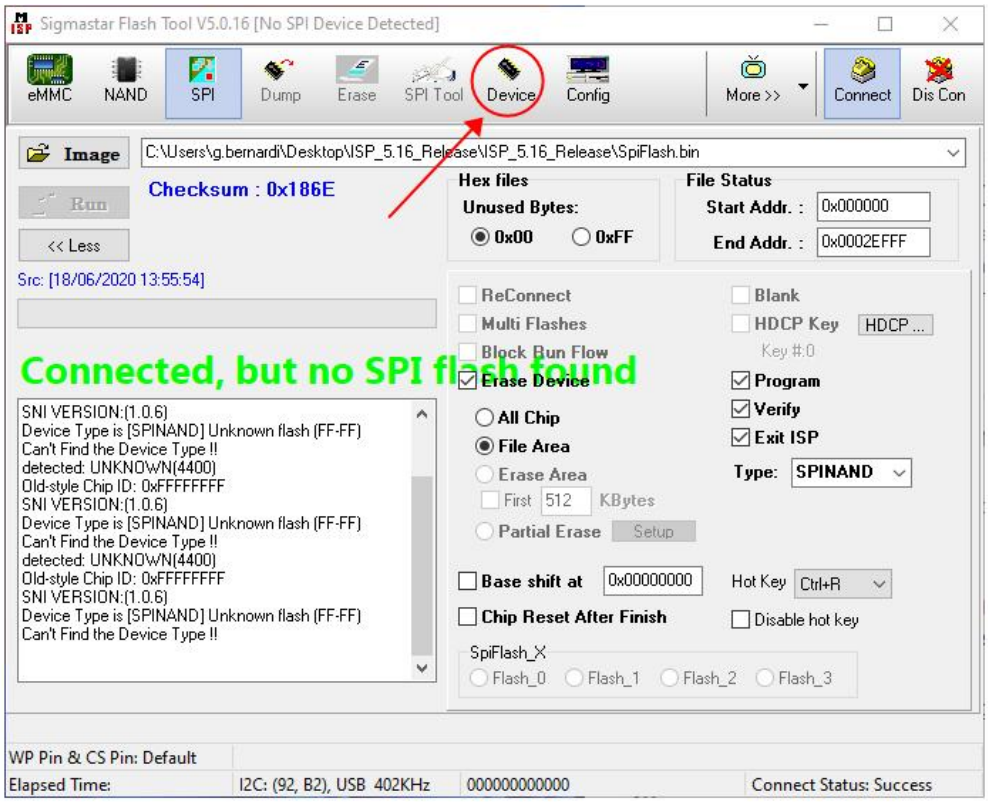
4.2.2 The following tests are required:

1) Whether to use a dedicated Debug Tool tool

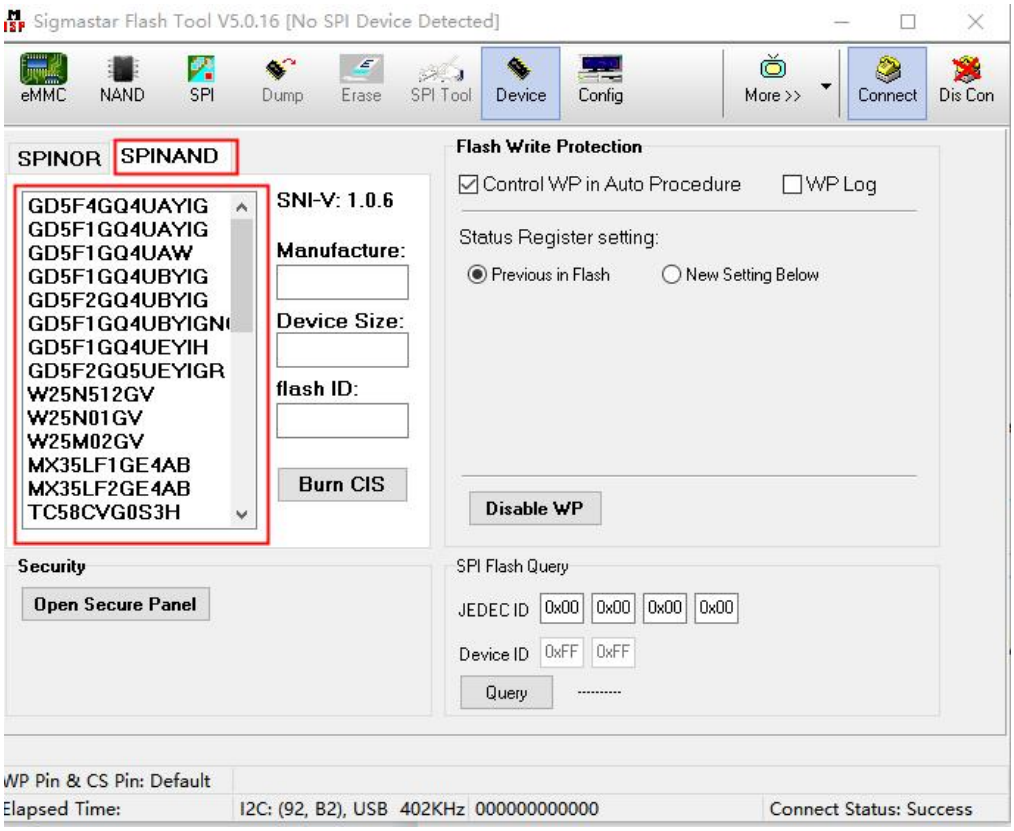
2) If the RX/TX line is connected correctly, if there is a system in the flash, you can open the serial software and see if there is LOG information output to judge, if LOG information output is normal, it means the RX/TX is connected correctly.

3) Not in Debug mode (see Entering Uboot Debug Mode)

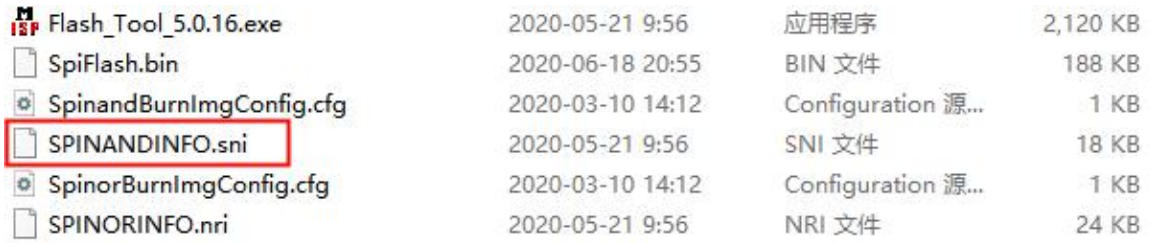
4) In the Flash_Tool software, click Device



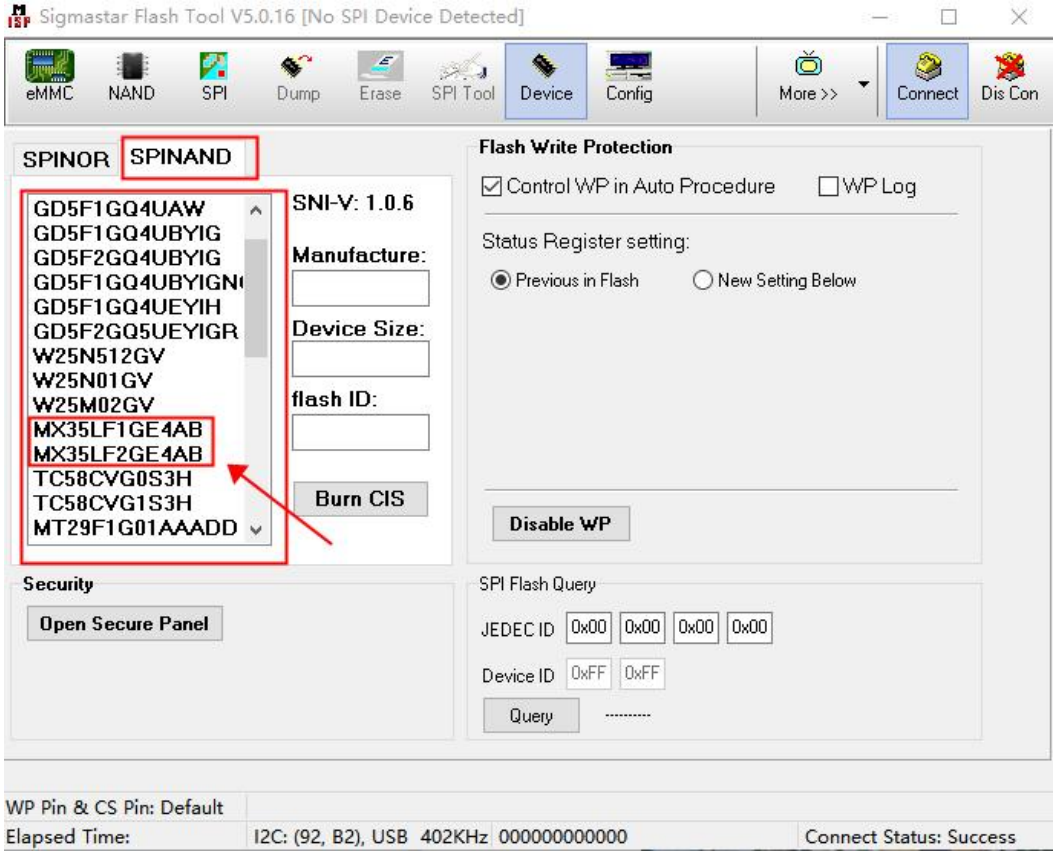
5) In SPINAND, check if the Flash model in the following list includes the Flash model on the hardware core board. If no corresponding model is found, the corresponding Flash model is not added in Flash_Tool.

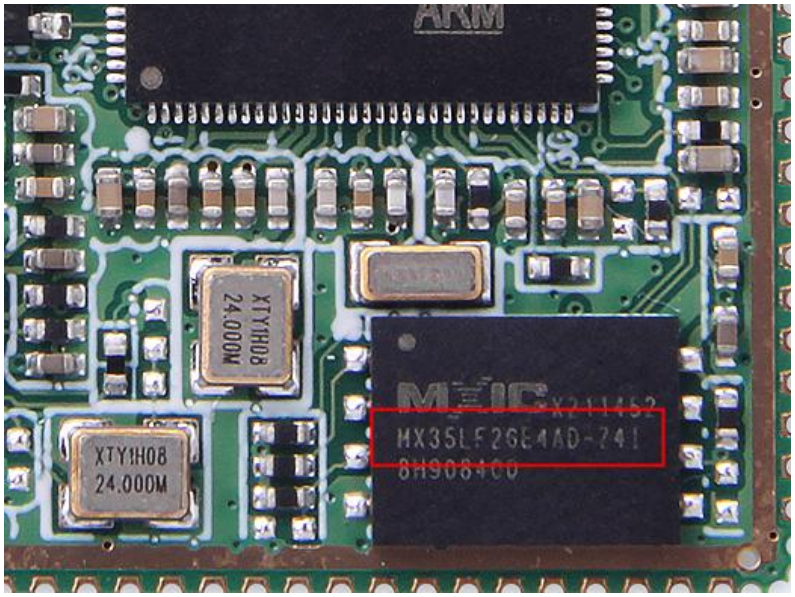


6) At this time, you need to update the SPINANDINFO.sni file, after updating this file, close the Flash_Tool software and open the software again to connect normally.



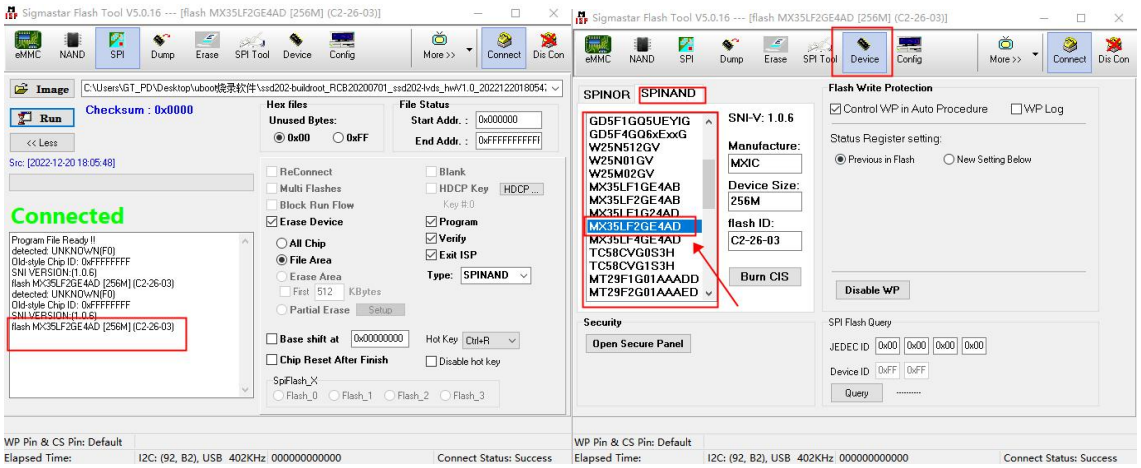
7) For example, the model number on the core board is MX35LF2GE4AD, but there is only MX35LF2GE4AB in the software, so the software does not support this Flash chip, you need to update the SPINANDINFO.sni file.

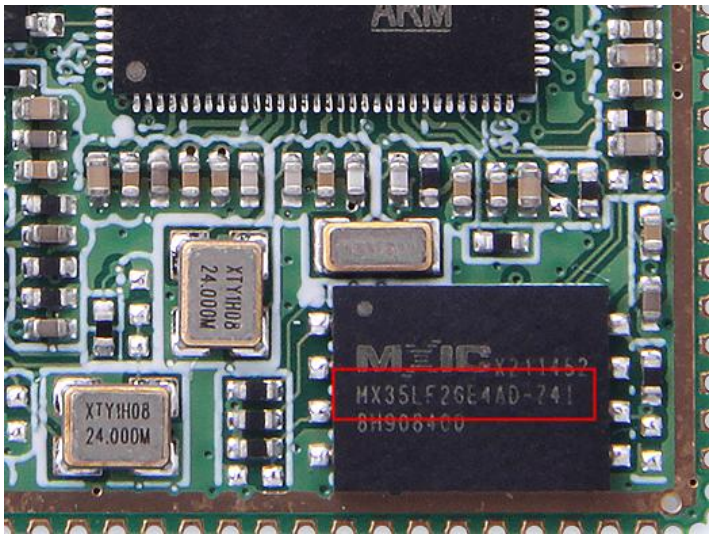




Note: SPINANDINFO.sni file is the list file of Flash chips supported by Flash_Tool, you need to update this file at the same time if the Flash chips are updated.

8) The following figure is an example of a properly connected update to the SPINANDINFO.sni file:

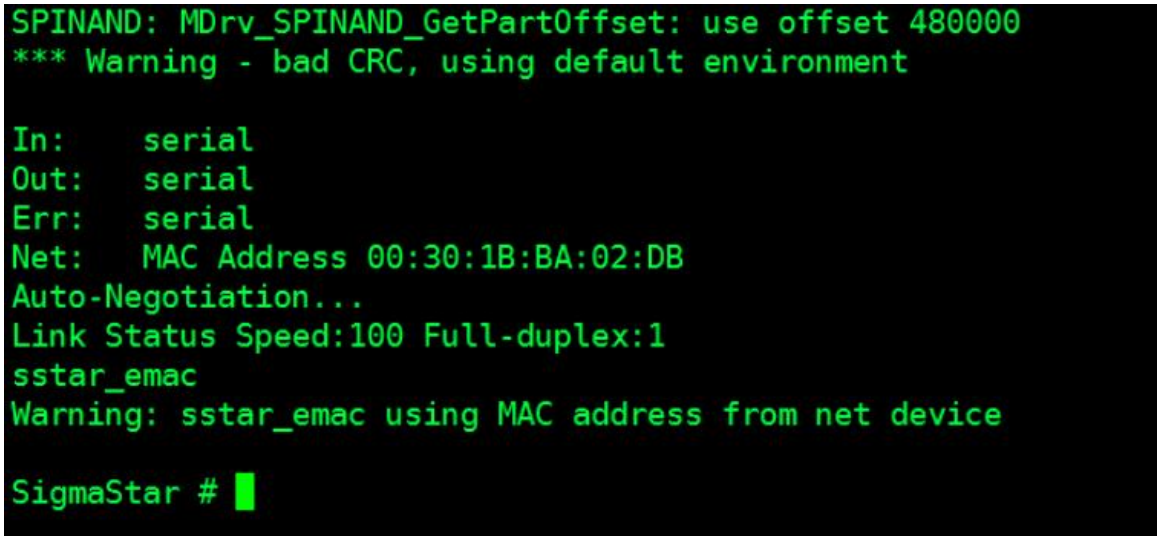




5.Burning kernel

5.1 Enter uboot

5.1.1 After burning the uboot, connect the debug serial port baud rate of 115200, you can see the following print message



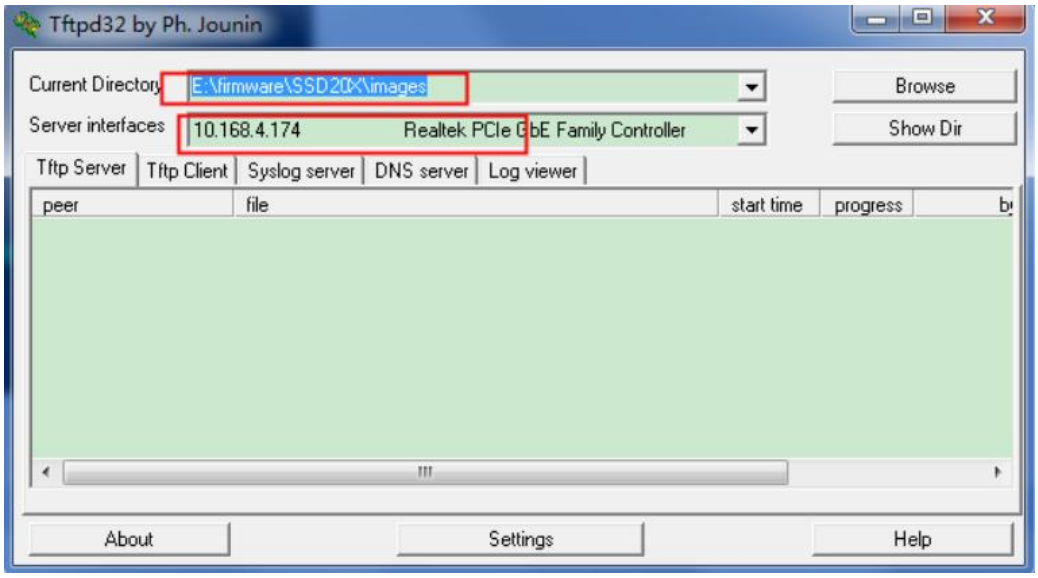
5.1.2 Connecting the network cable

```
Connect one end of the cable to the USB2.0 port on the development board, and the other end to a network that is connected to the computer and on the same network segment.
```

5.1.3 Set up the FTP server in the following way

```
Set up the FTP server in the following way
```

5.1.4 The burn file points to the images folder.



5.1.5 Configure board parameters

Configure the board parameters as follows, where ipaddr is the board's IP, please make sure that the IP is not used by other devices before setting;

```
   Configure the board parameters as follows, where ipaddr is the board's IP,
please make sure that the IP is not used by other devices before setting;
serverip is the FTP SERVER IP
SigmaStar # setenv gatewayip 10.168.4.1
SigmaStar # setenv ipaddr 10.168.4.88
SigmaStar # setenv netmask 255.255.255.0
SigmaStar # setenv serverip 10.168.4.174
SigmaStar # saveenv
Saving Environment to NAND...
SPINAND: MDrv_SPINAND_GetPartOffset: UBOOT_PBA==0 and no PNI: 0 0 0
SPINAND: MDrv_SPINAND_GetPartOffset: use offset 440000
SPINAND: MDrv_SPINAND_GetPartOffset: UBOOT_PBA==0 and no PNI: 0 0 0
SPINAND: MDrv_SPINAND_GetPartOffset: use offset 480000
Erasing redundant NAND...
Erasing at 0x480000 -- 100% complete.
Writing to redundant NAND... OK
SigmaStar #
```

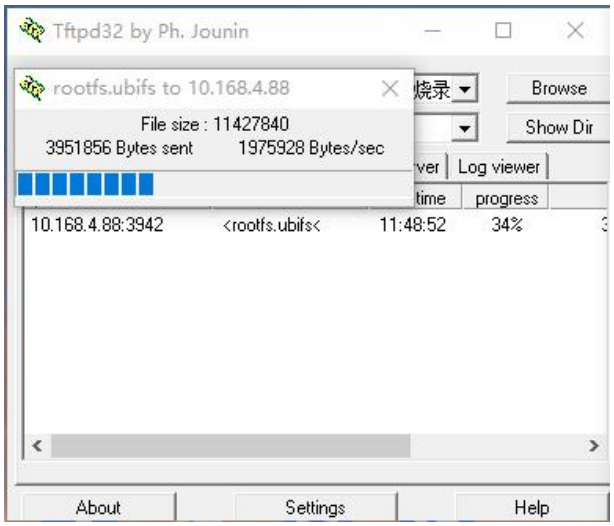
5.1.6 Automatic burning

```
After executing the command estar, the board will automatically downloadtheimage
and upgrade;
SigmaStar # estar
```

5.1.7 At this point, the printed LOG message on the serial port indicates that the system is being burned.

```
COM18:115200baud - Tera Term VT
File  Edit  Setup  Control  Window  Help
         #################################################################
         #################################################################
         1.6 MiB/s
done
Bytes transferred = 11427840 (ae6000 hex)

>> ubi write 0x21000000 rootfs ${filesize}
11427840 bytes written to volume rootfs

>>  estar scripts/[[miservice.es
Using sstar_emac device
TFTP from server 10.168.4.148; our IP address is 10.168.4.88
Filename 'scripts/[[miservice.es'.
Load address: 0x23acaca0
Loading: #
         2 KiB/s
done
Bytes transferred = 185 (b9 hex)

>> ubi part UBI
UBI: detaching mtd2 from ubi0
UBI: mtd2 is detached from ubi0
UBI: parsing mtd_dev string 'mtd=12'
UBI: attaching mtd2 to ubi0
UBI: scanning is finished
UBI: attached mtd2 (name "mtd=12", size 240 MiB) to ubi0
UBI: PEB size: 131072 bytes (128 KiB), LEB size: 126976 bytes
UBI: min./max. I/O unit sizes: 2048/2048, sub-page size 2048
UBI: VID header offset: 2048 (aligned 2048), data offset: 4096
UBI: good PEBs: 1926, bad PEBs: 0, corrupted PEBs: 0
UBI: user volume: 4, internal volumes: 1, max. volumes count: 128
UBI: max/mean erase counter: 2/1, WL threshold: 4096, image sequence number: 0
UBI: available PEBs: 228, total reserved PEBs: 1698, PEBs reserved for bad PEB handling: 40

>> tftp 0x21000000 miservice.ubifs
Using sstar_emac device
TFTP from server 10.168.4.148; our IP address is 10.168.4.88
Filename 'miservice.ubifs'.
Load address: 0x21000000
Loading: #################################################################
         #################################################################
         #################################################################
         ################################
```

5.1.8 The software progress is also displayed on Tftp32.



5.2 Burn-in kernelt FAQ

5.2.1 If the following LOG message appears when burning kernel after inputting estar, it means the kernel is not burned successfully.

```
SigmaStar # estar
Using sstar_emac device
TFTP from server 10.168.4.148; our IP address is 10.168.4.88
Filename 'auto_update.txt'.
Load address: 0x23ac87e8
Loading: #
         6.8 KiB/s
done
Bytes transferred = 449 (1c1 hex)

>> estar scripts/[[cis.es
Using sstar_emac device
TFTP from server 10.168.4.148; our IP address is 10.168.4.88
Filename 'scripts/[[cis.es'.
Load address: 0x23acacd0
Loading: #
         1000 Bytes/s
done
Bytes transferred = 208 (d0 hex)

>> tftp 0x21000000 boot/SPINANDINFO.sni
Using sstar_emac device
TFTP from server 10.168.4.148; our IP address is 10.168.4.88
Filename 'boot/SPINANDINFO.sni'.
Load address: 0x21000000
Loading: ##
         162.1 KiB/s
done
Bytes transferred = 18432 (4800 hex)

>> tftp 0x21800000 boot/PARTINFO.pni
Using sstar_emac device
TFTP from server 10.168.4.148; our IP address is 10.168.4.88
Filename 'boot/PARTINFO.pni'.
Load address: 0x21800000
Loading: #
         3.9 KiB/s
done
Bytes transferred = 512 (200 hex)

>> writecis 0x21000000 0x21800000 10 0 0 5
SPINAND: _MDrv_SPINAND_GET_INFO: Found SPINAND INFO
(0xC2) (0x26) (0x3)
SPINAND: MDrv_SPINAND_SearchCIS_in_DRAM: Search CIS in DRAM
SPINAND: MDrv_SPINAND_SearchCIS_in_DRAM: SNI v:1.0.6
SPINAND: MDrv_SPINAND_SearchCIS_in_DRAM: No available SNI match with current SPINAND flash
SPINAND: writeSpinandCIS: SearchCIS_in_DRAM fail
writecis - Search CIS in dram then write to spinand.

Usage:
writecis 0xSNI_ADDR 0xPNI_ADDR [BL0_PBA [BL1_PBA [UBOOT_PBA [COPIES]]]]
estar - script via network

Usage:
estar
estar - script via network

Usage:
estar
SigmaStar #
```

5.2.2 At this point you need to copy the latest SPINANDINFO.sni to the images\boot directory and replace the SPINANDINFO.sni file.

5.3Not the first burn-in

Non-first time burn refers to the board that has already burned uboot and can boot to Uboot normally, only need to burn kernel, no need to repeat burn uboot, refer to burn Kernel steps.