PI5008K Download & Merge Tool

System Group

PIXELPLUS

Revision History

VERSION	DATE(Y.M.D)	HISTORY	WRITER
0.0.1	2018.04.23	Initial version	Eunhye Jeong
0.0.2	2018.05.17	Change how to use Flash.ini	Eunhye Jeong
0.0.3	2018.05.25	Add Flash memory type - NOR / NAND / NAND_FTL	Eunhye Jeong
0.0.4	2018.07.26	Update Images & P10	Eunhye Jeong

Contents

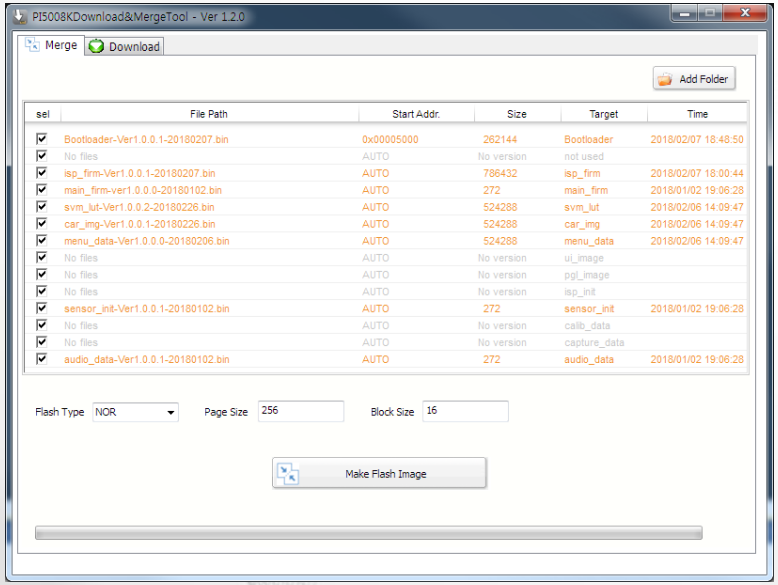
1. Overview

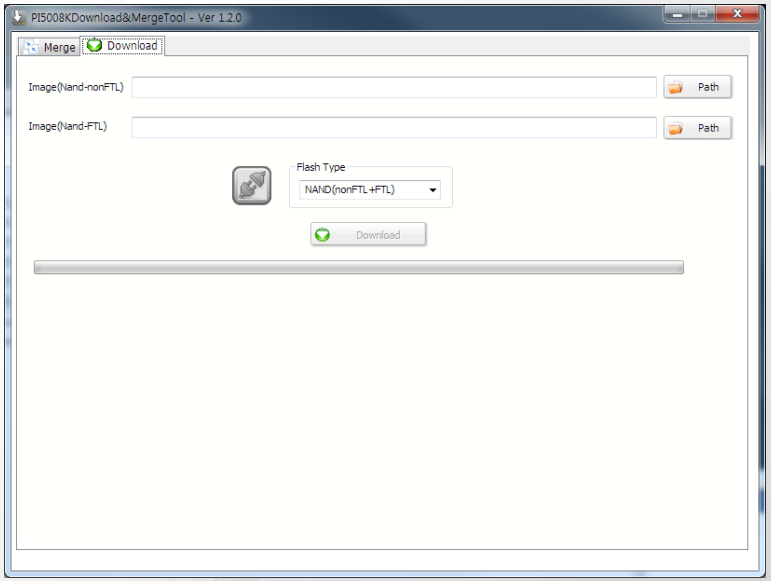
PI5008K Download&MergeTool(hereafter, called 5008 D&MTool)

- 5008 D&M Tool merges various binary files into one binary file and download it to flash memory.

  It has two main functions as below.

  - Main : Select target files and merge them into one binary files.
  - Download : Download the merged file to flash memory.

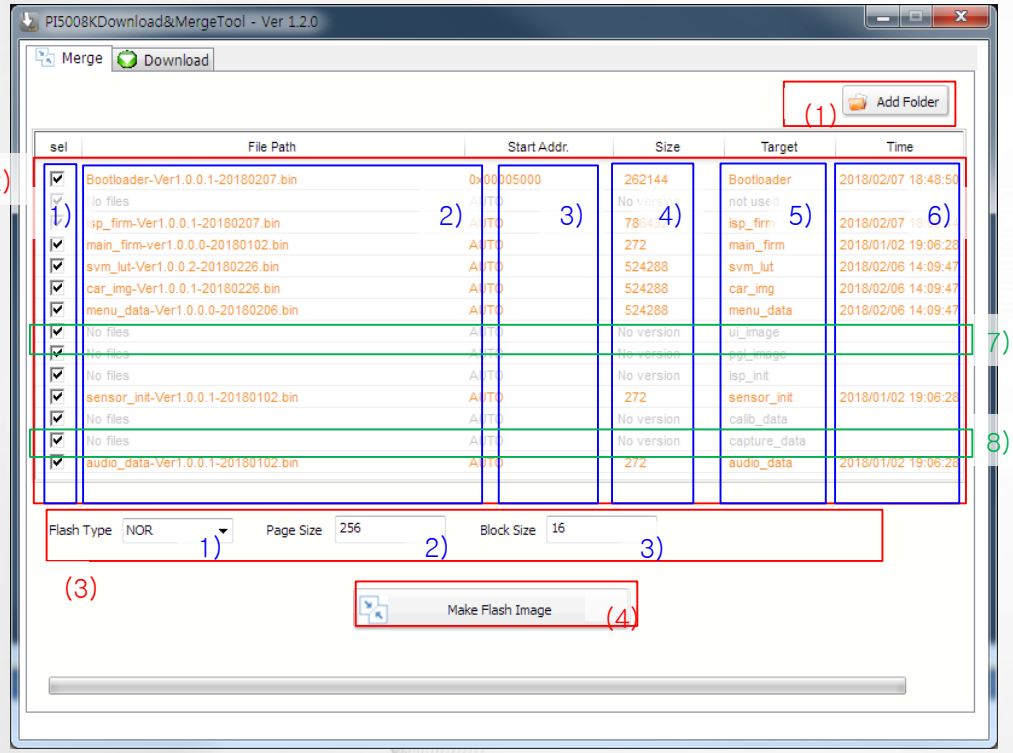




2. Merging binary files

➢ D&M tool merges various binary files for PI5008K into one binary file to download it to flash memory.

2.1. Screen layout



(1) Add Folder
Select target folder where binary image files exist.

(2) Information of binary files

1)	Sel	Select whether to include target file into a merged file. If a file in the target folder is defined in, it will be selected automatically. This function is mainly used to remove the file from the merged file.
2)	File Path	File path
3)	StartAddr	Start address of target binary file in merged file
4)	Size	File size
5)	Target	Name of binary file (Please refer to 2.3 for header information)
6)	Time	Creation time of file

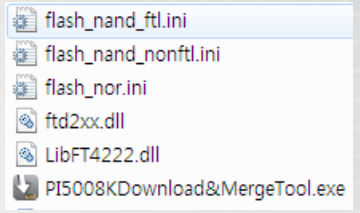
Notes> Files in amber color means files in flash.ini is loaded successfully.
Gray color means target file is not found in the selected folder.

(3) Configure Flash memory

1)	Flash Type	NOR / NAND / NAND_FTL
2)	Page Size	
3)	Block Size	

(4) Make Flash Image
Merge target binary files into one file./

2.2. Merging binary files.



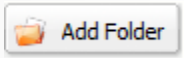
Flash memory layout file and execution file in same folder ▲

(1) Make Flash memory layout file(flash_xxx.ini) to includes all target files.

- Flash memory layout file has to be located at same folder with execution file.
- Notes) Refer to 2.3 for more details.

(2) Run D&MTool.

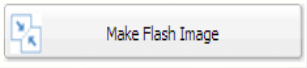
- Target files will be selected automatically according to flash_xxx.ini. D&Mtool will check the last used folder to find target files..
- If D&MTool runs for the first time or there is not last used folder, it will check the folder where execution file is located. (중복.)

(3) Select target folder by clicking 

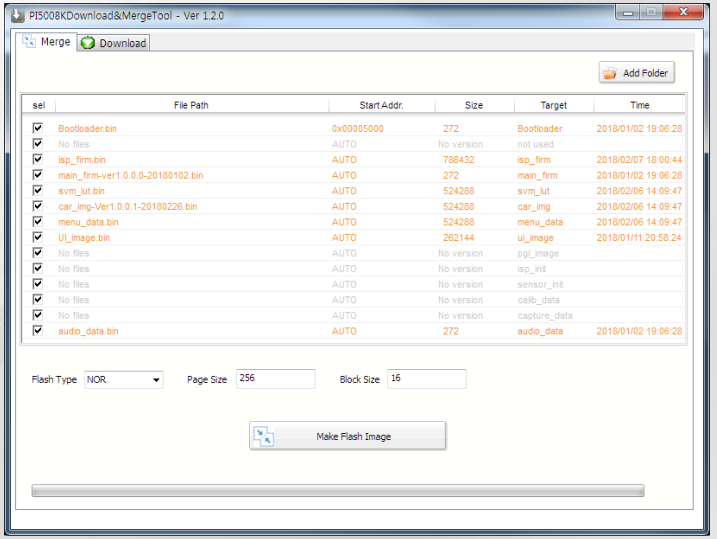
- Choose folder where target binaries exist
- If the first part of name of a file is same with the section name of flash memory layout, it will be added automatically.
- If there are files which first part of file name are same, only one file which has the last one in alphanumeric order will be selected

(4) You can include or remove a specific file by checking 'SEL' check box.

(5) Set flash memory feature.

(6) Target files will be merged into one binary file by clicking 

Notes> Files will be merged according to the order in the list.



▲ Adding in the Program

2.3. Flash memory layout file

(1)
```
[INFORMATION]
MAX=16
```

(2)
```
[SEC0]
NAME=Bootloader
ADDR=0x5000
LOAD_ADDR=0x10000
[SEC1]
NAME=Bootloader2
LOAD_ADDR=0x23000000
[SEC2]
NAME=isp_firm
LOAD_ADDR=0x20000000
[SEC3]
NAME=isp_firm_bk
LOAD_ADDR=0x20000000
```

(3)
```
ADDR = +0x20000
[SEC4]
NAME=main_firm
LOAD_ADDR=0x20100000
ADDR = +0x20000
[SEC5]
NAME=main_firm_bk
LOAD_ADDR=0x20100000
ADDR = +0x100000
[SEC6]
NAME=svm_lut_nor
ADDR = +0x100000
[SEC7]
NAME=car_image
[SEC8]
NAME= menu_data
[SEC9]
NAME=ui_image
[SEC10]
NAME=pgl_image
LOAD_ADDR=0x20080000
[SEC11]
NAME=isp_init
LOAD_ADDR=0x2002c000
[SEC12]
NAME=sensor_init
LOAD_ADDR=0x20030000
[SEC13]
NAME=SVMConfig
[SEC14]
NAME=capture_data
[SEC15]
NAME=not used
```

▲ Example of flash memory layout file

PI5008 needs various binary images; execution images, LUT, PGL etc. Flash memory layout file is used to specify the name of binary images and where to be stored in flash memory. This information is also used to make header information of flash memory so that PI5008 can know where each binary image is located.

2.3.1. Layout files for flash memory type

(1) There are different layout file according to flash memory type.

(2) Same writing rule will be applied regardless of flash memory type.

(3) Layout file name for each type is as follows.

Flash Type	Flash Memory	Note
NOR	flash_nor.ini	default
NAND_nonFTL	flash_nand_nonftl.ini	
NAND_FTL	flash_nand_ftl.ini	

2.3.2. Flash memory layout file structure

(1) Information area : Specify maximum number of target binary files.

[INFORMATION]
MAX=16
Notes> This number also means entry number of D&MTool Merge main screen

(2) Code area
This area includes execution files.
Bootloader and main_firm area are essential sections.
LOAD_ADDR has to be defined for code area.

(3) User defined area : This area is for additional binaries.
isp_init section and sensor_init section has to have LOAD_ADDR if they exist.

2.3. Flash memory layout file (flash_xxx.ini - flash_nor.ini / flash_nand_nonftl.ini / flash_nand_ftl.ini)

2.3.3. How to make a section

- Section example

```
[SEC0]                      ; Identifier of each section
NAME=isp_firm               ; Name of target for PI5008PicassoD&Mtool
LOAD_ADDR=0x20000000        ; DRAM address where binary file will be loaded
                            ; LOAD_ADDR is used for bootloader, bootloader 2, isp firmware, main firmware
```

2.3.4. Notes on using flash_xxx.ini

(1) Sequence of Sections = Sequence of header of flash memory = Sequence of target of D&MTool

(2) Location of flash memory layout file : Same with execution file

(3) Flash. Ini will be loaded when D&Mtool is started.

(4) Header of merged binary file will be made according to the sequence of sections.

(5) D&Mtool will merge binary files according to the sequence of sections.

(6) To run D&Mtool, there is at least one flash memory layout file..

2.4. Naming binary files

➢ Name of target binary file has to be made according to the section name of flash_xxx.ini.

<Naming rule>

(1) Structure

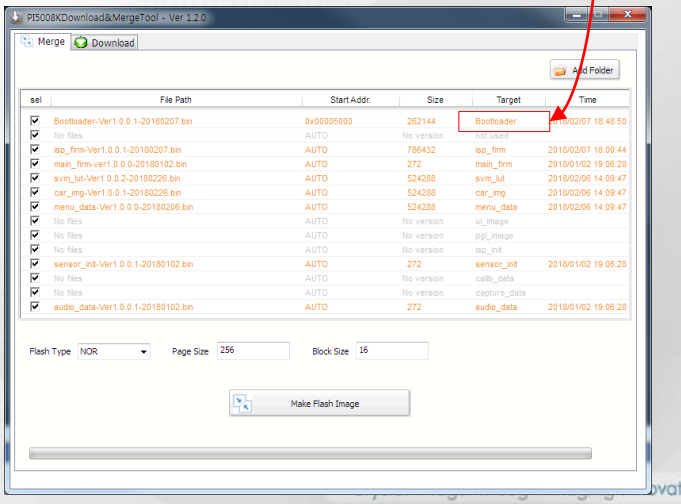
1) Essential part : Target Name, Version information
    1) TargetName : Section name defined in flash.ini
    2) Version : V 0.0.0.1~V255.255.255.254
2) User defined part : can be added after version information

<bin file naming example>

(2) Essential and user defined part will be separated by _(underscore)

(3) If a file complies with naming rule and its name is included in flash.ini, it will be loaded automatically.

(4) A file will not be listed if its name is not included in flash.ini.



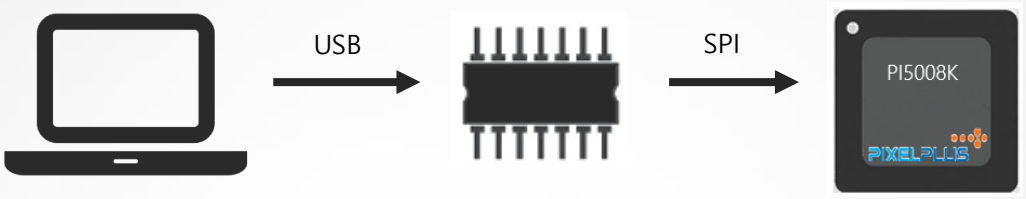
<Notes>

(1) The order to be merged is same with the order of section in flash.ini.

(2) Maximum number of files to be merged is 250.

3. Download Binary File to Flash Memory

3.1 Connecting PI5008K board to PC



PC
(5008 D&MTool)

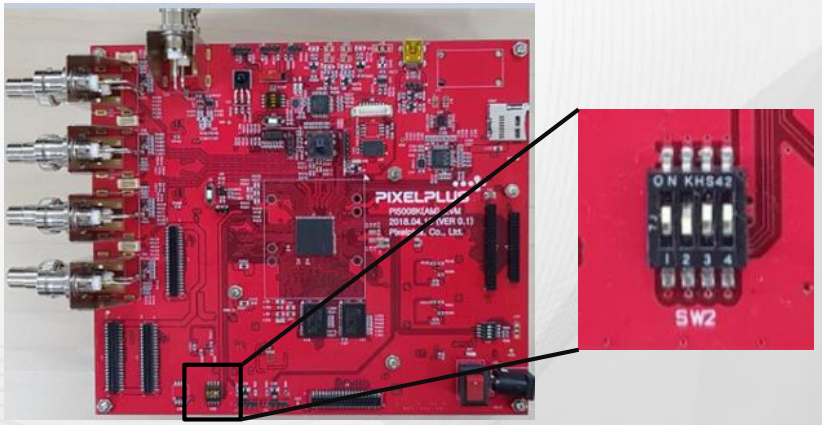
USB to SPI Bridge
Board

PI5008K

3.2 How to connect SPI Bridge board to evaluation board

3.2.1 CASE - PI5008K AM EVM

1) Set SPI Boot mode by locating switch 2 of SW2 at off position as below.



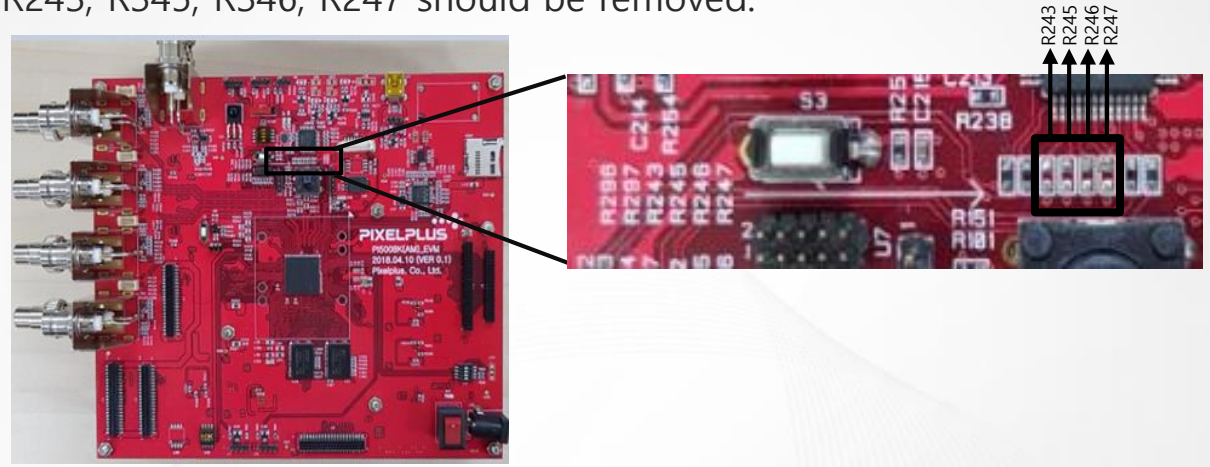
PI5008K AM EVM

3. Download Binary File to Flash Memory

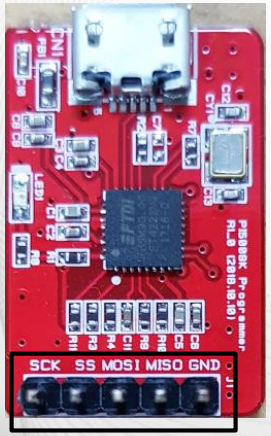
3.2 How to connect SPI Bridge board to evaluation board

3.2.1 CASE - PI5008K AM EVM

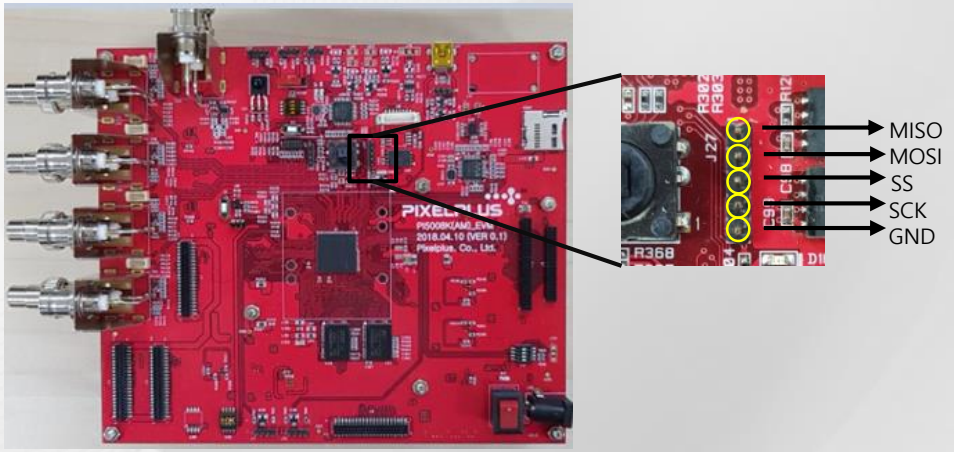
2) Resistor R243, R345, R346, R247 should be removed.



3) connect SPI Bridge board to evaluation board.



USB to SPI Bridge Board



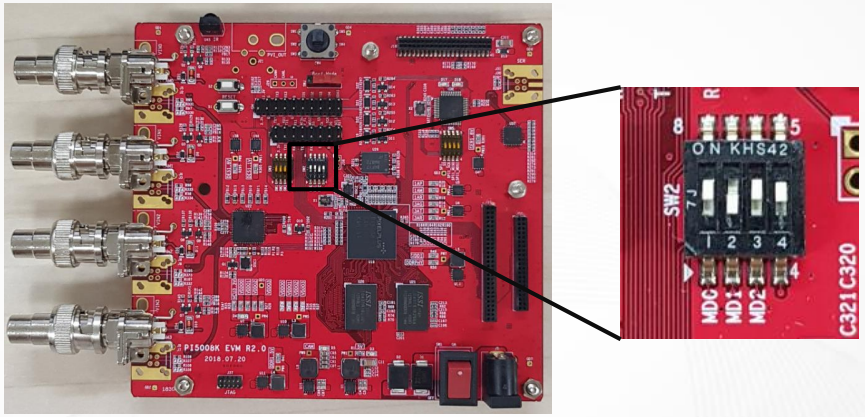
PI5008K AM EVM

3. Download Binary File to Flash Memory

3.2 How to connect SPI Bridge board to evaluation board

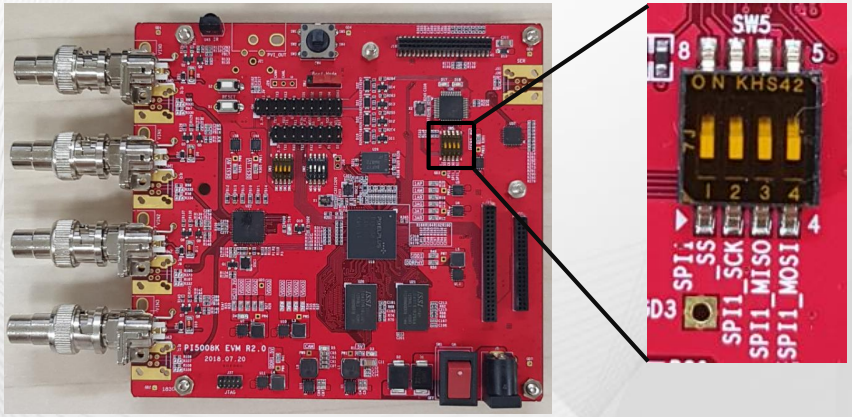
3.2.1 CASE - PI5008K EVM R2.0

1) Set SPI Boot mode by locating switch 2 of SW2 at off position as below.



PI5008K EVM R2.0

2) Set SPI mode by setting SW5.



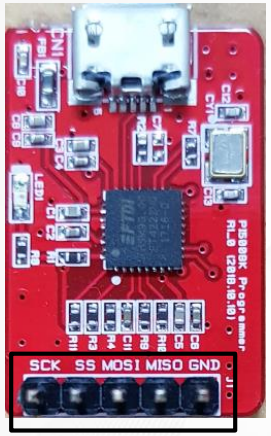
PI5008K EVM R2.0

3. Download Binary File to Flash Memory

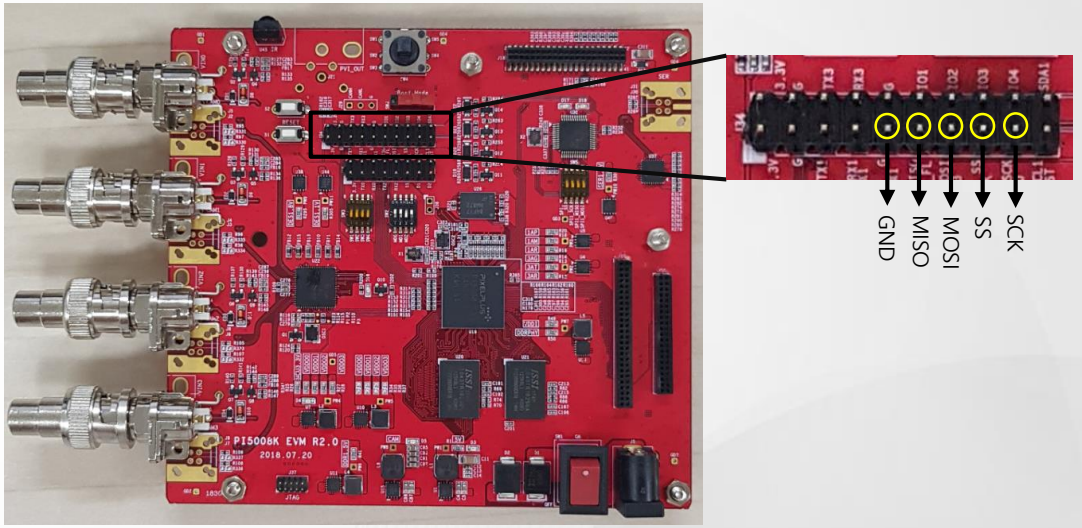
3.2 How to connect SPI Bridge board to evaluation board

3.2.1 CASE - PI5008K EVM R2.0

3) connect SPI Bridge board to evaluation board.



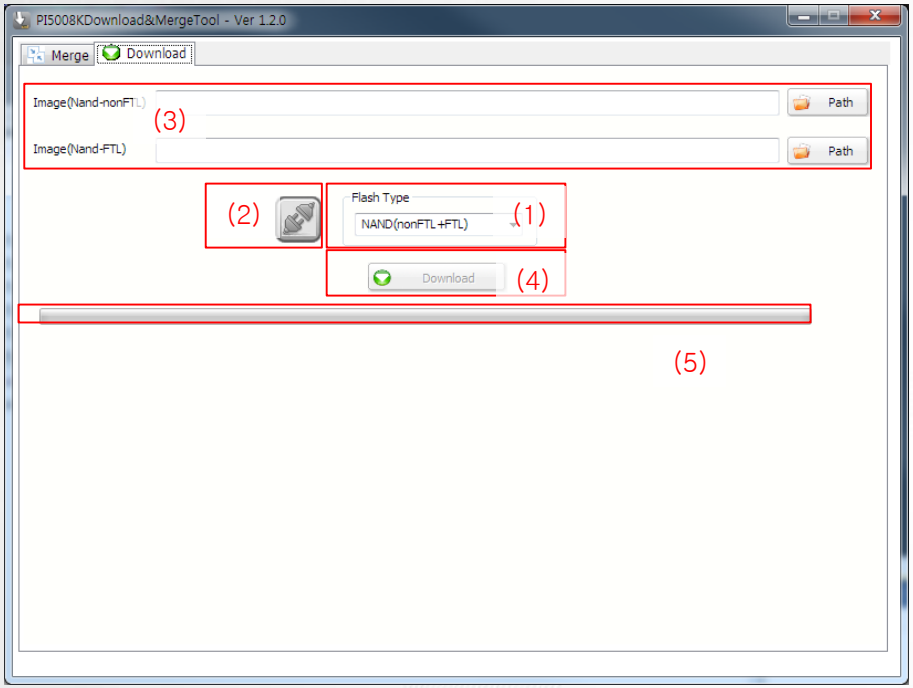
USB to SPI Bridge Board



PI5008K EVM R2.0

3. Download Binary File to Flash Memory

3.3 Download file



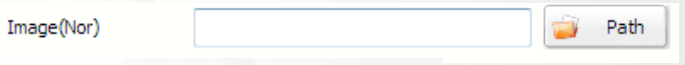
(1) Flash Type
- a) NOR
- b) NAND_nonFTL
- c) NAND_FTL
- d) NAND(nonFTL + FTL)

(2) Connection Status :
It will show PI5008K Connecting status.

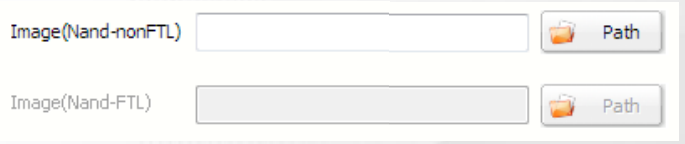
 connected  disconnected

(3) Flash Image : Select merged binary image which will be downloaded to flash memory

a) NOR

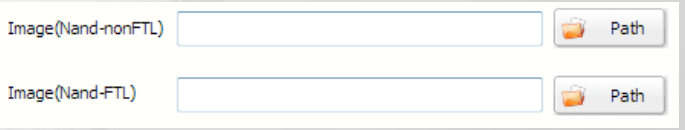


b) NAND_nonFTL



c) NAND_FTL

d) NAND(nonFTL + FTL)



(5) Download : Start download

(6) Progressbar : Show downloading status

3. Download Binary File to Flash Memory

3.4 Comparing flash burning speed with JTAG

Flash Type	JTAG	SPI
NOR	791 Kbps	883 Kbps
NAND	4609 Kbps	7386 Kbps