Regbin Tool User Guideline

TI Information – Selective Disclosure

Revision history

Ver	Date	Author	Description
1.0	2020/07/18		Initial
1.1	2021/3/8		Review revision
1.2	2023/7/25		Support 1.3.6
1.3	2023/10/9		Add how to convert Jason file to bin file
1.4	2024/1/1		Add regbin_parser.exe & parsing-tool.bat

Content

- Regbin file Introduction
- Bin file making
- How to use
- Applied cases
- To be Improved

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Regbin file

- Register setting can be provided via a single file
  - No Software change for register setting change
  - Holds the entire set of application register setting for some special cases
  - Control multiple devices freely
  - applied in the chip pre-poweron, post-poweron, pre-poweroff and post-poweroff
  - For read-only use in an embedded system
    - The bin file is read only once during system bootup
  - Information in header for customer application description, such as platform vendor, chip type, chip quantity, etc.

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Motivation

- There is a single file to share
  - between phone and development + debug environment
  - between peers and customers
- Helps to improve reproducibly
  - Version can be embedded in the file
  - Benefit for issue debug
- A step to reduce dependency on code build
  - Limit SW build dependency in the loop for AE debugging
- eg: In 4-slot TDM bring-up, it can save much time in building if reg-bin solution is ready at that time.

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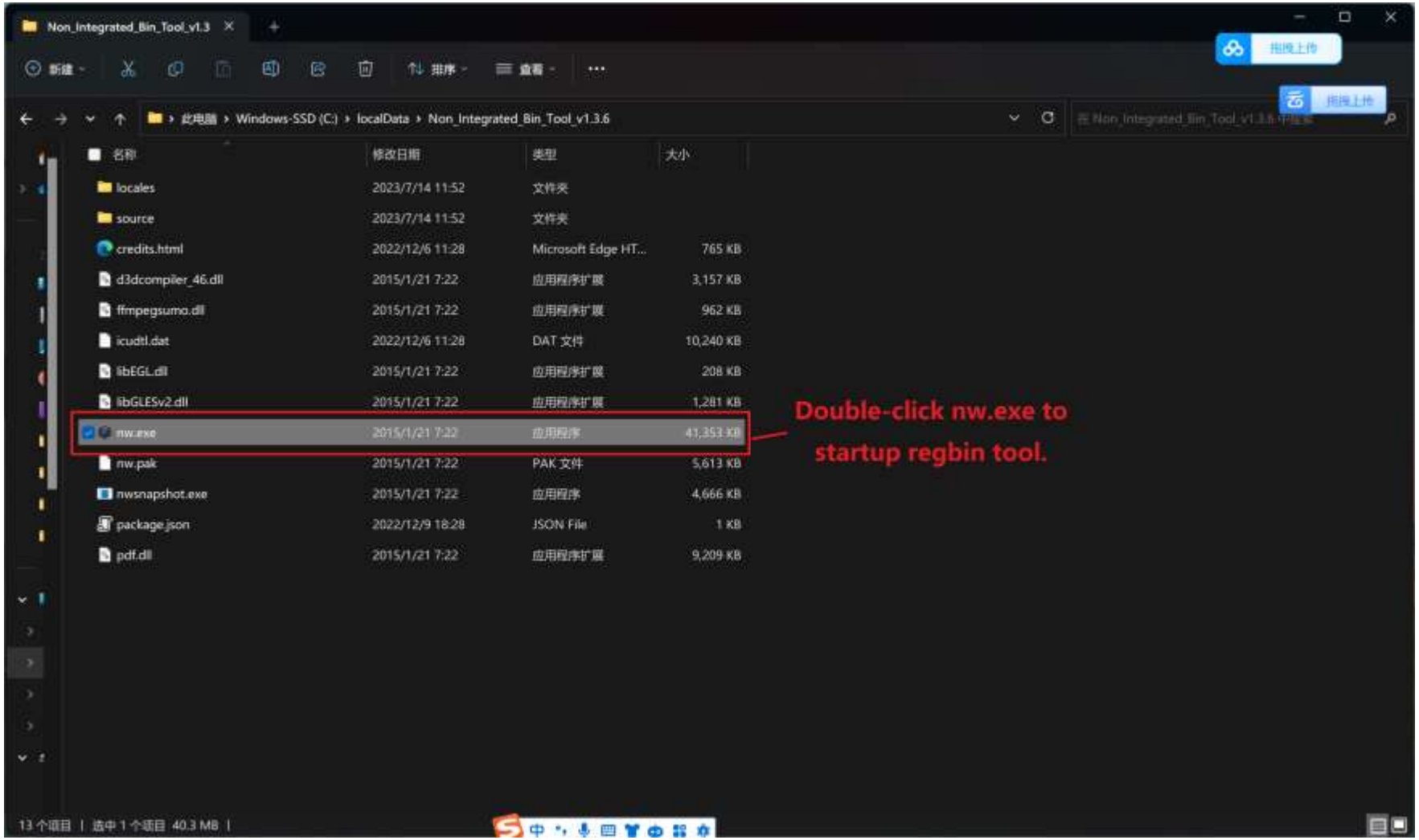
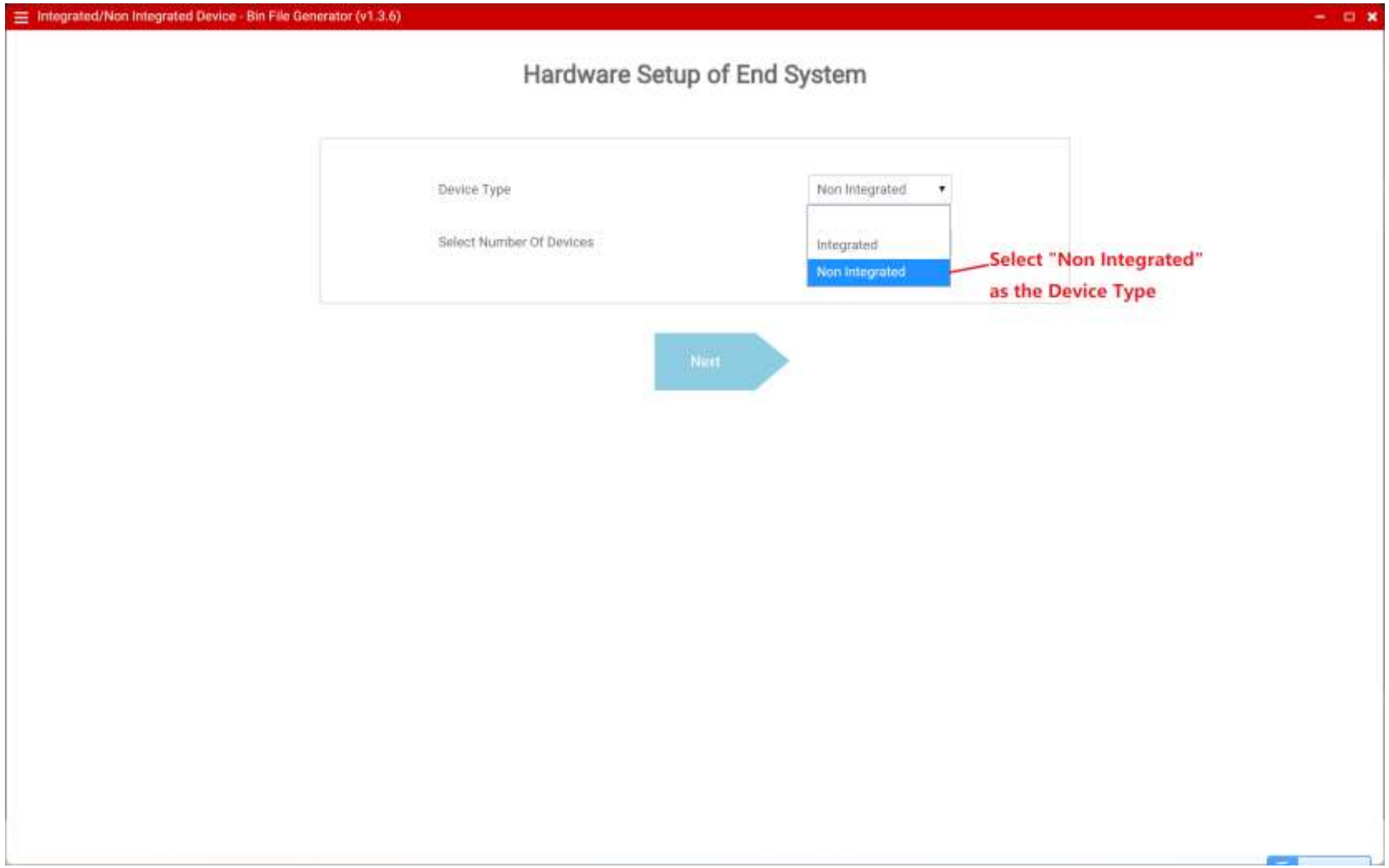
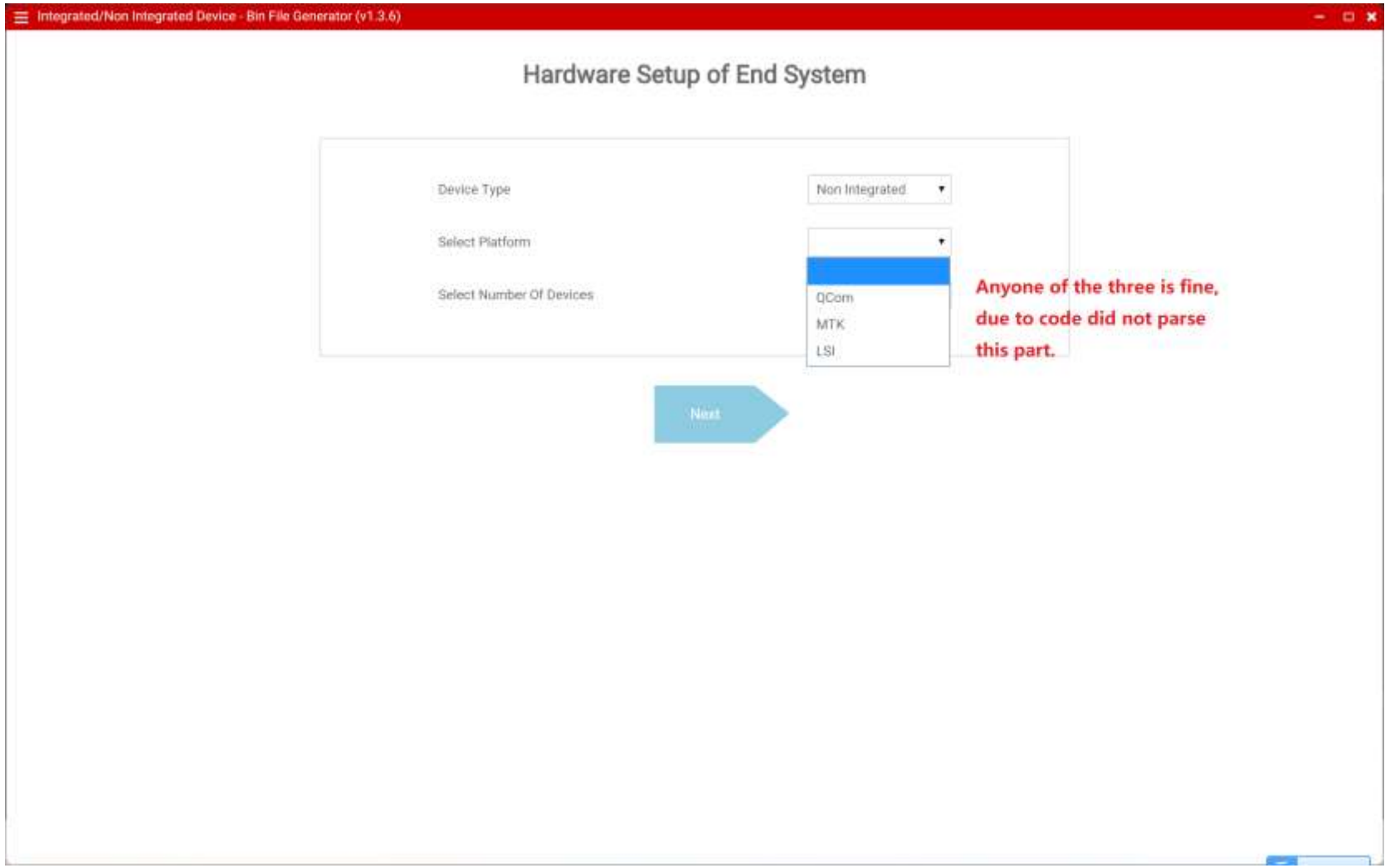
Bin File Making I | Startup Regbin tool



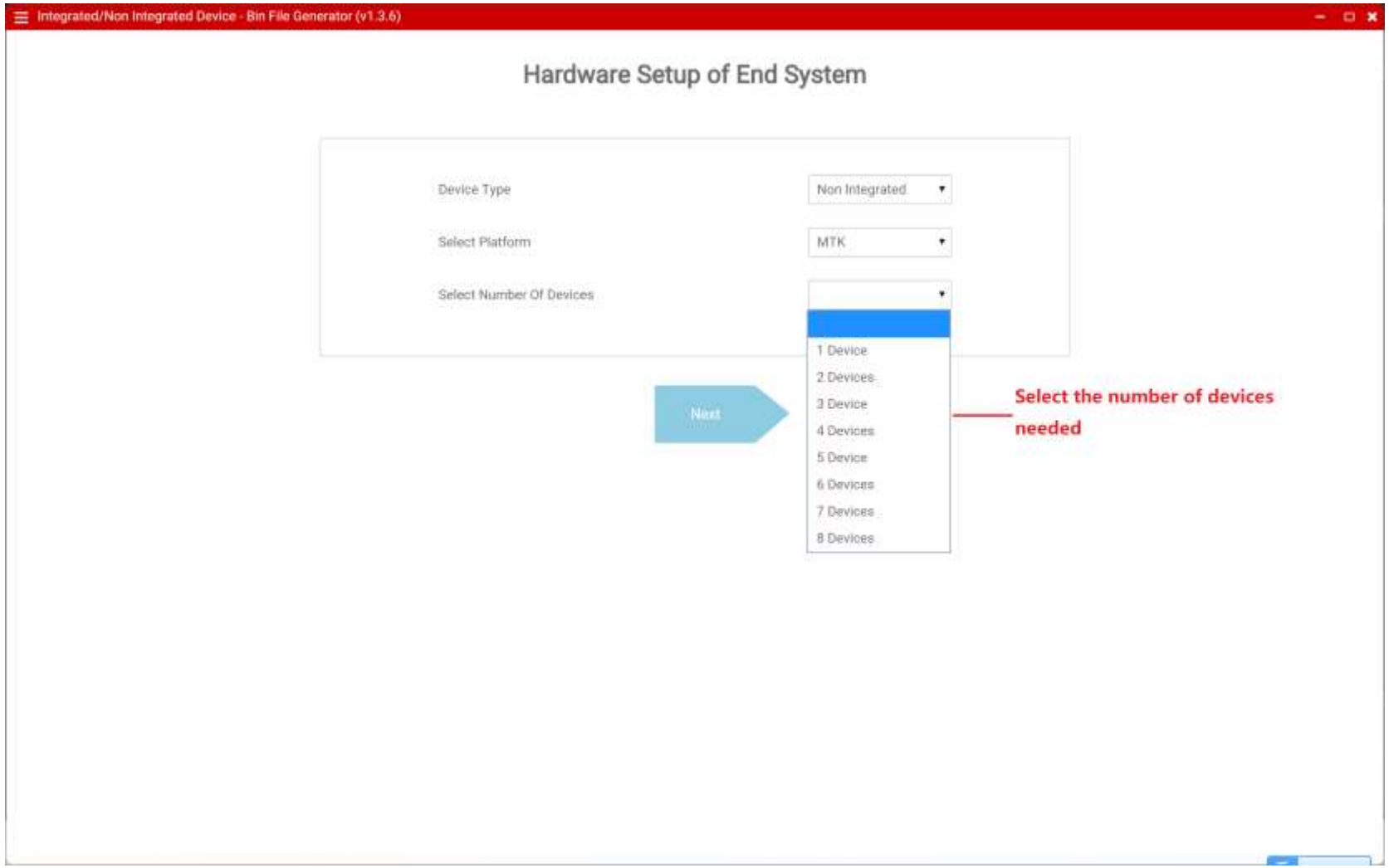
Bin File Making II | Select Device Type



Bin File Making III | Select Platform



Bin File Making IV | Select Number of Devices



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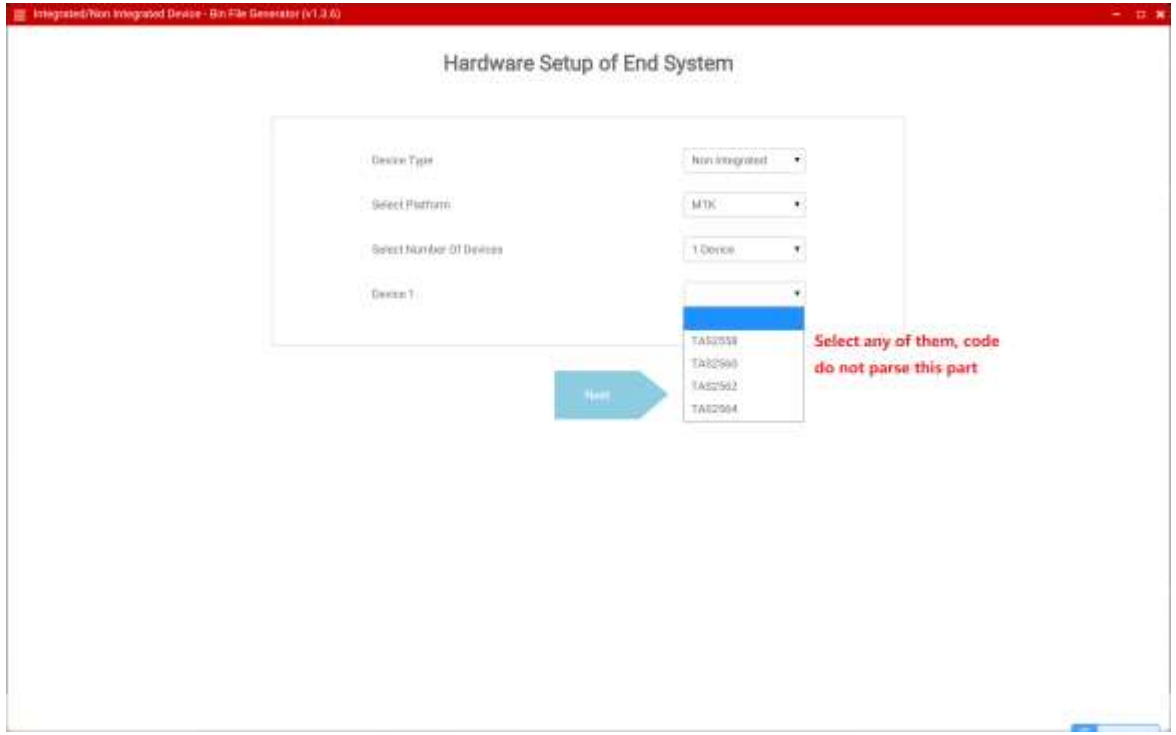
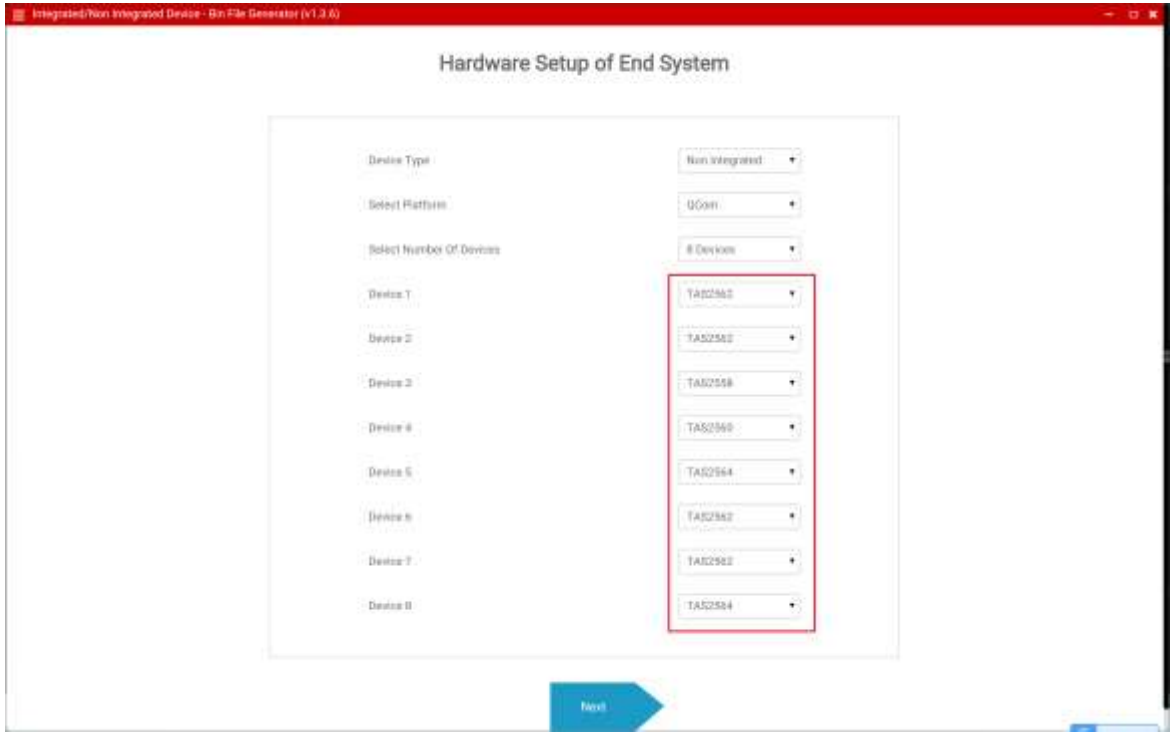
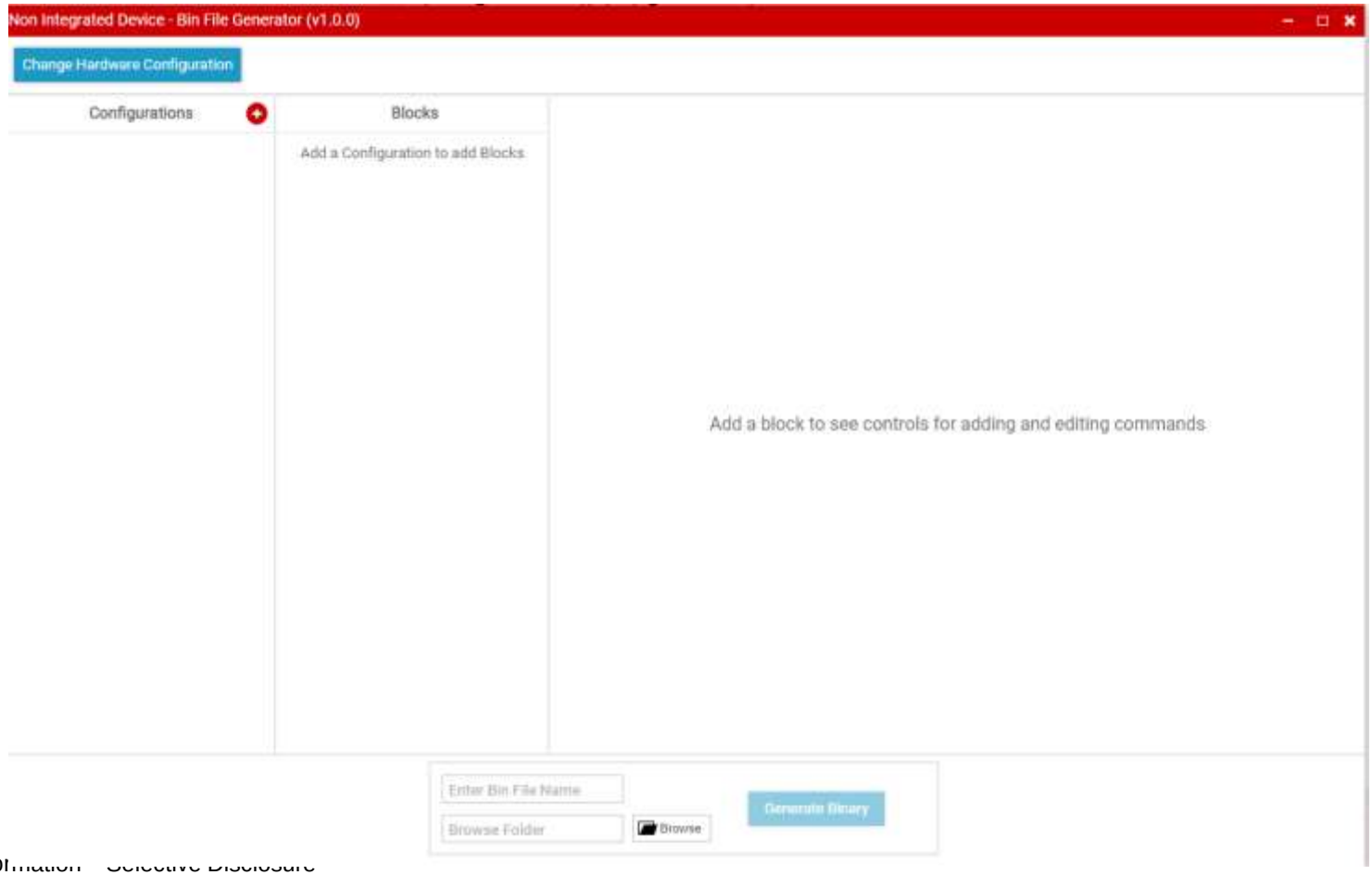
Bin File Making V | Select Device type





Bin File Making VI | Configuration Page



Config Page is displayed successfully on clicking Next in hardware setup page

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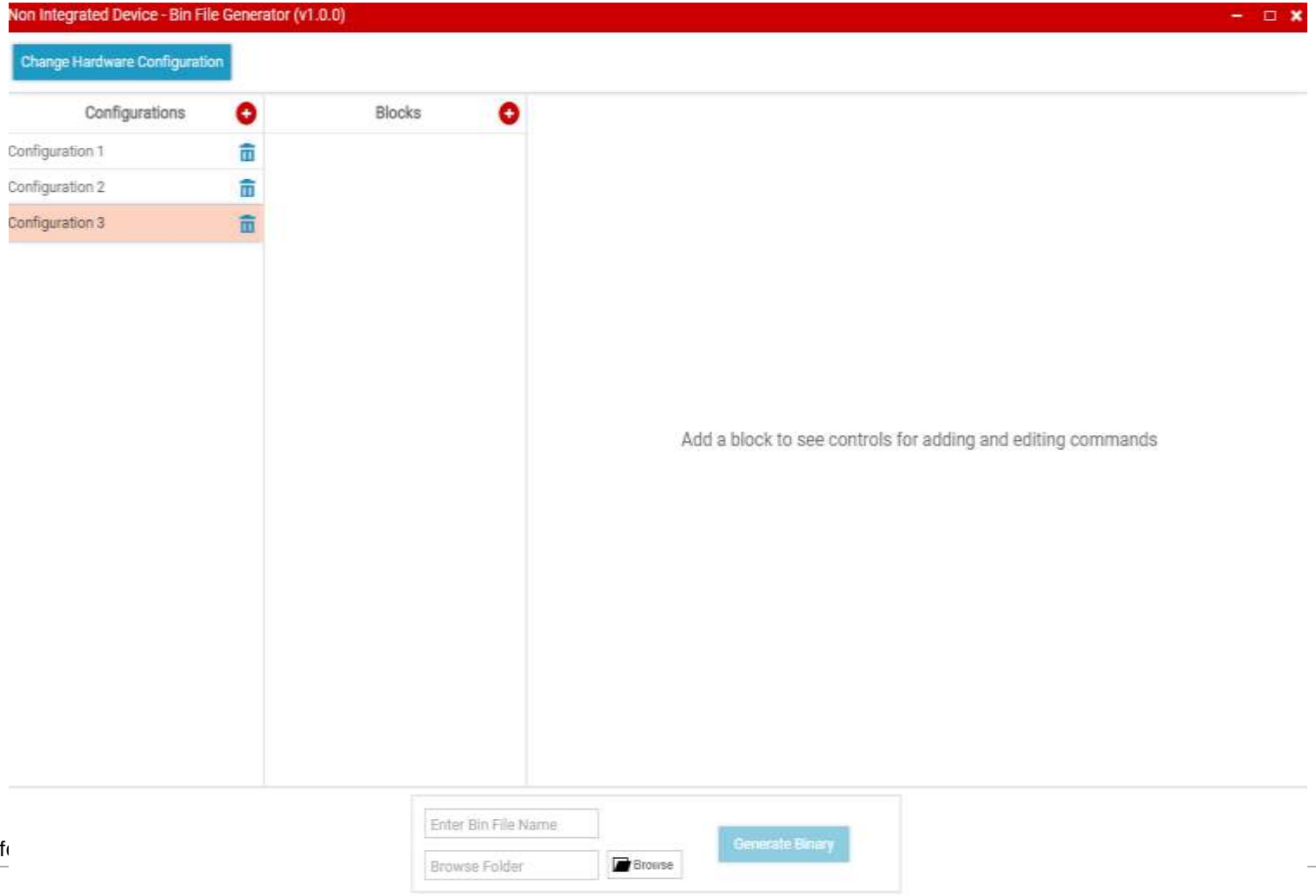
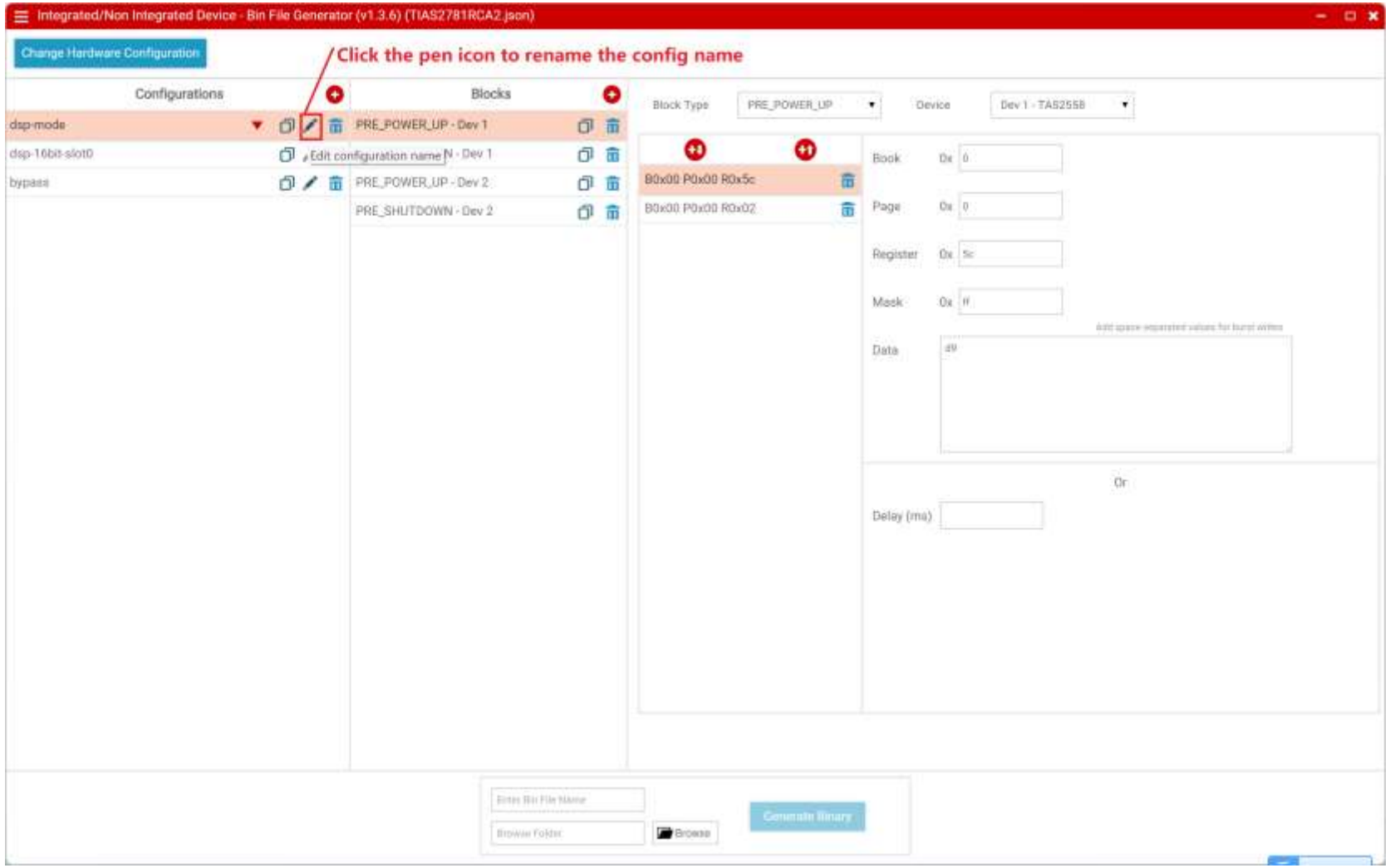
Bin File Making VII | Add Configuration



Configurations can be added successfully on clicking the “+” icon in the configurations box

Bin File Making VIII | Rename Configuration name



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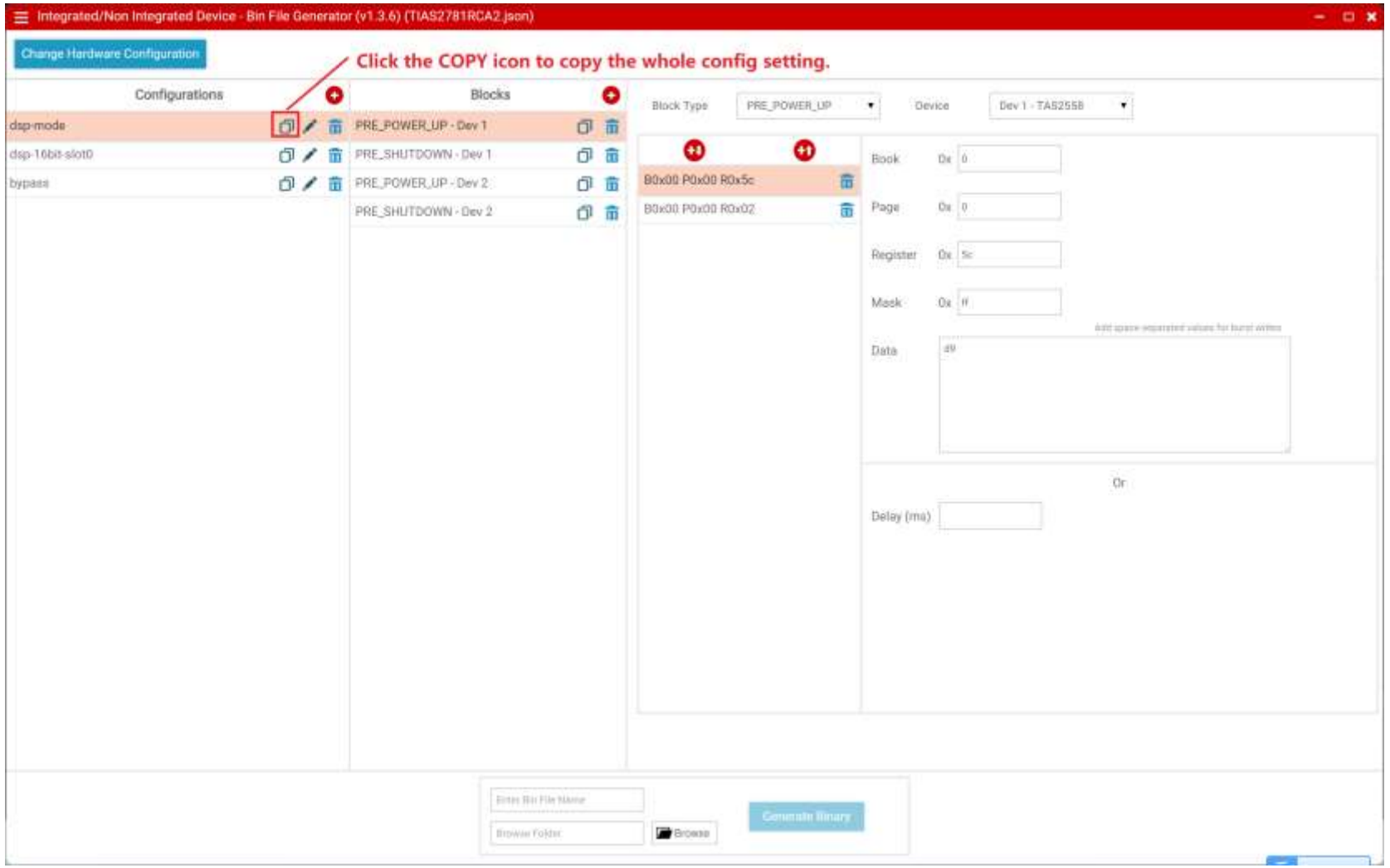
Bin File Making IX | Copy Configuration



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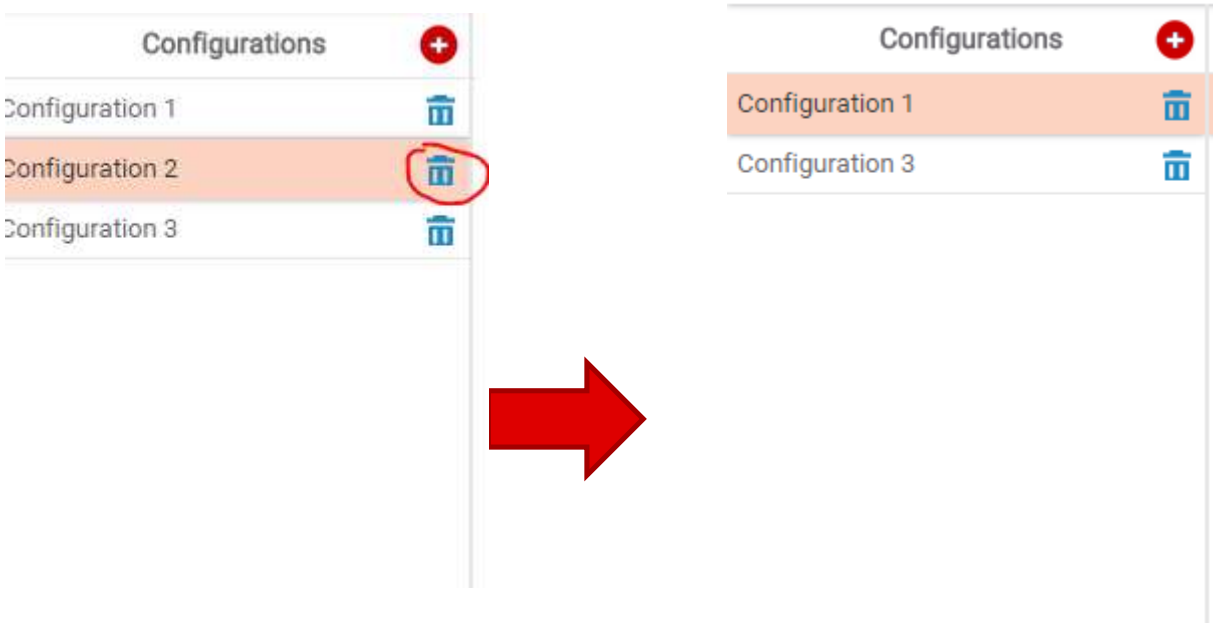
Bin File Making X | Delete Configuration



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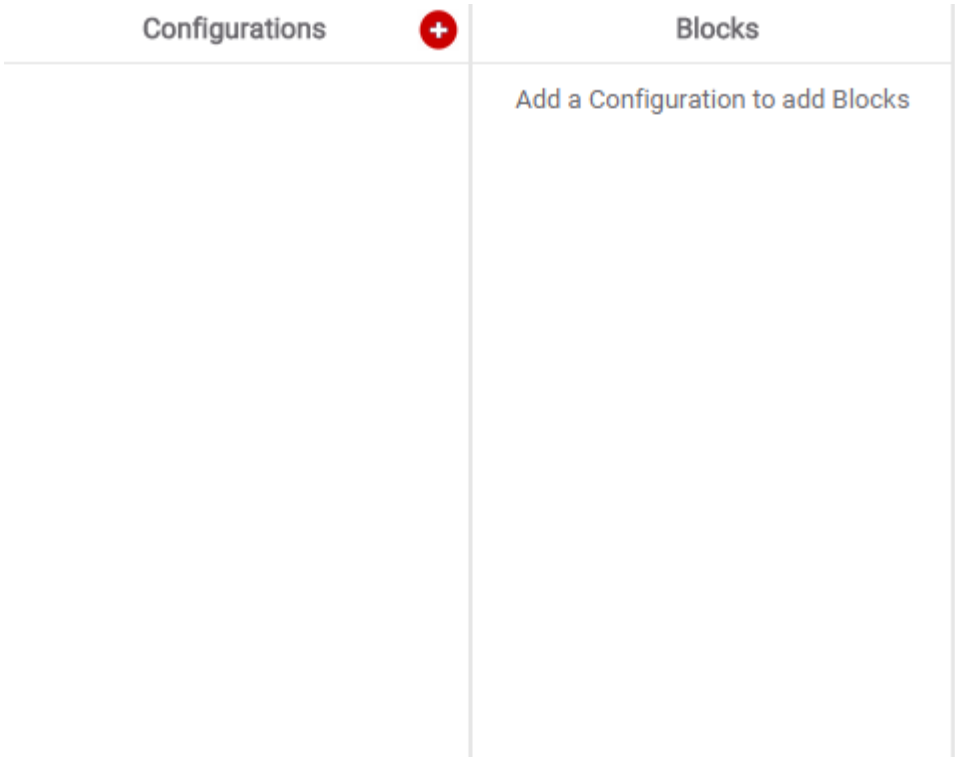
Bin File Making XI | Delete Last Configuration



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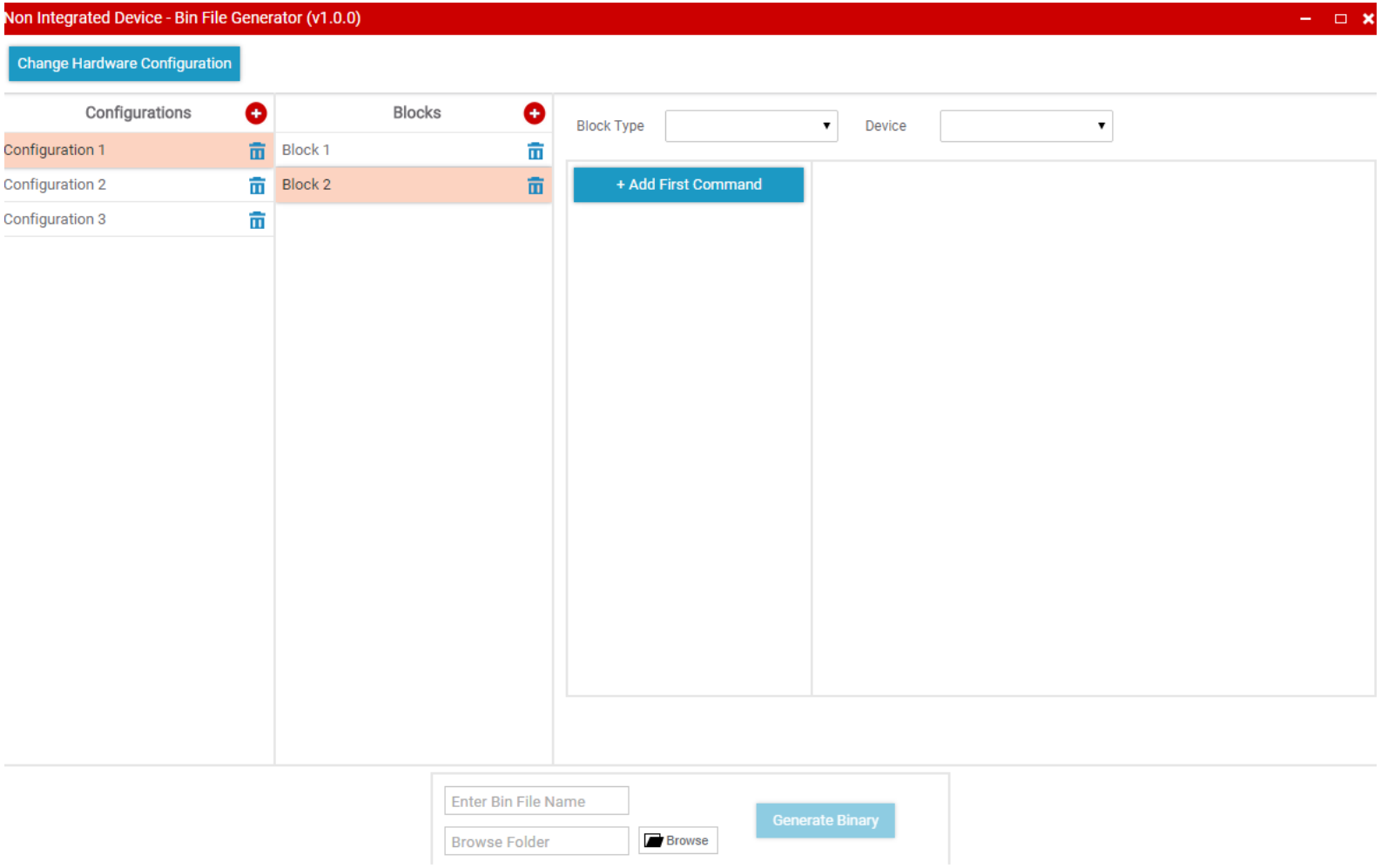
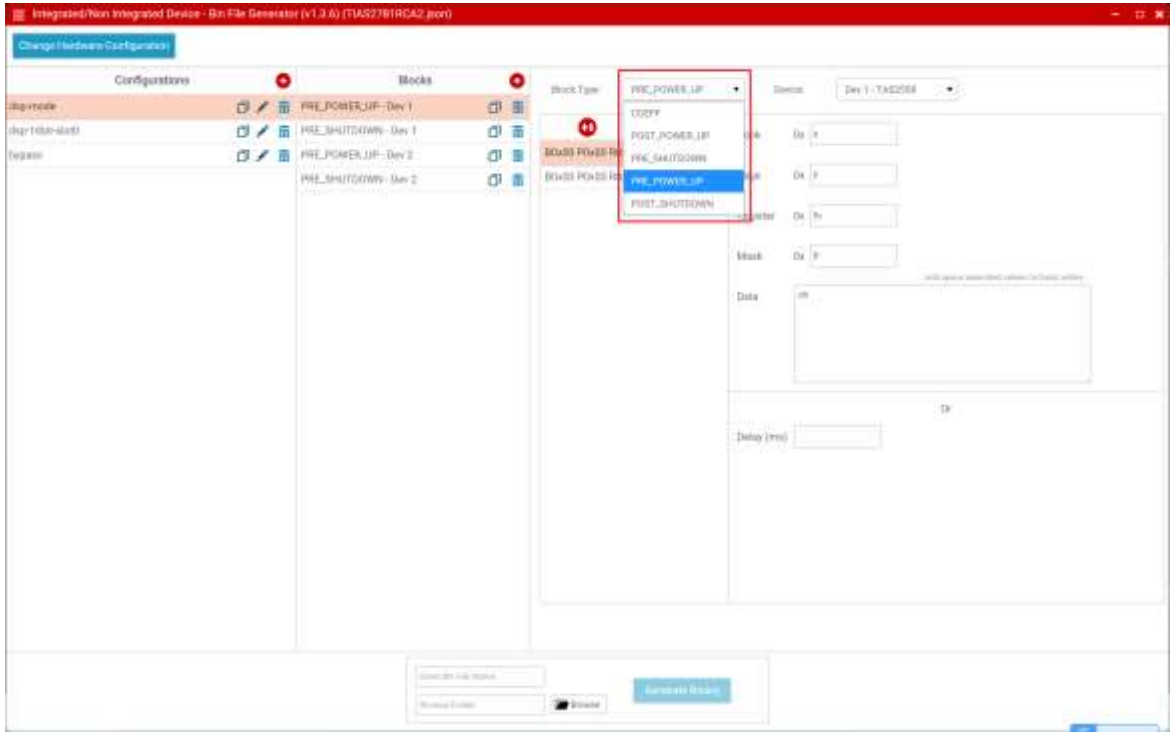
Bin File Making XII | Add Blocks



Blocks can be added successfully on clicking the “+” icon in the Blocks box

Bin File Making XIII | Select Block Type

- The driver only support PRE_POWER_UP for chip power up, and PRE_SHUTDOWN for chip shutdown.



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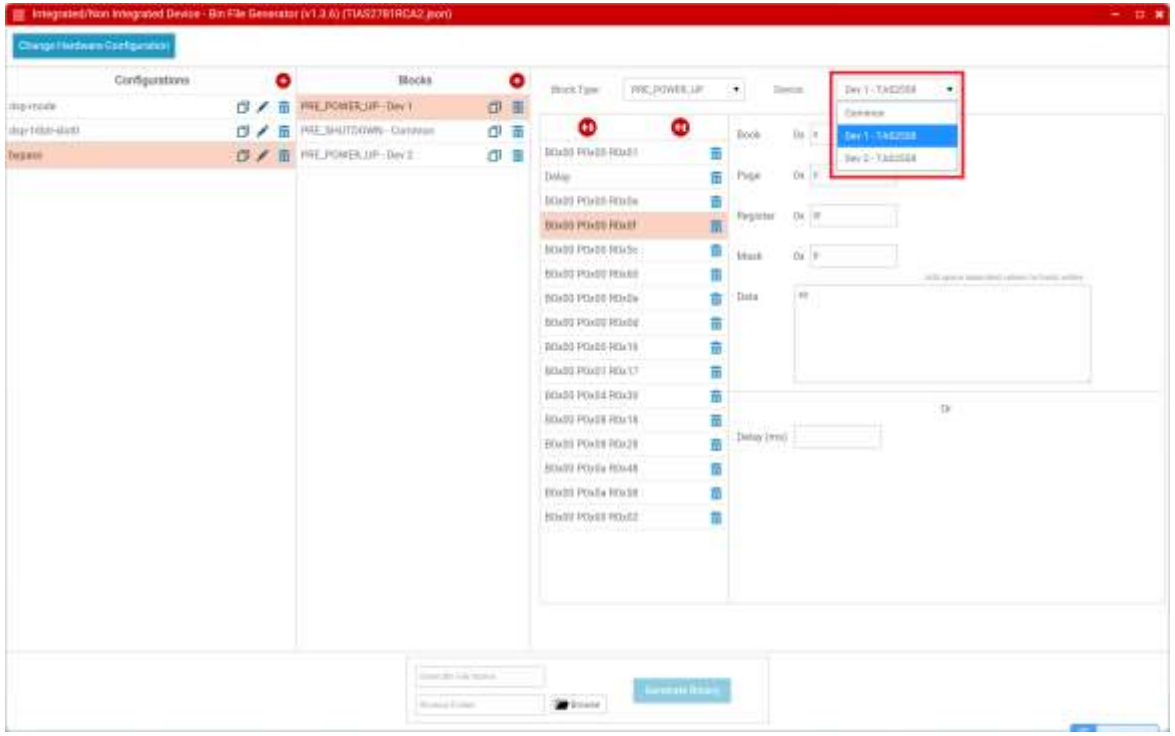
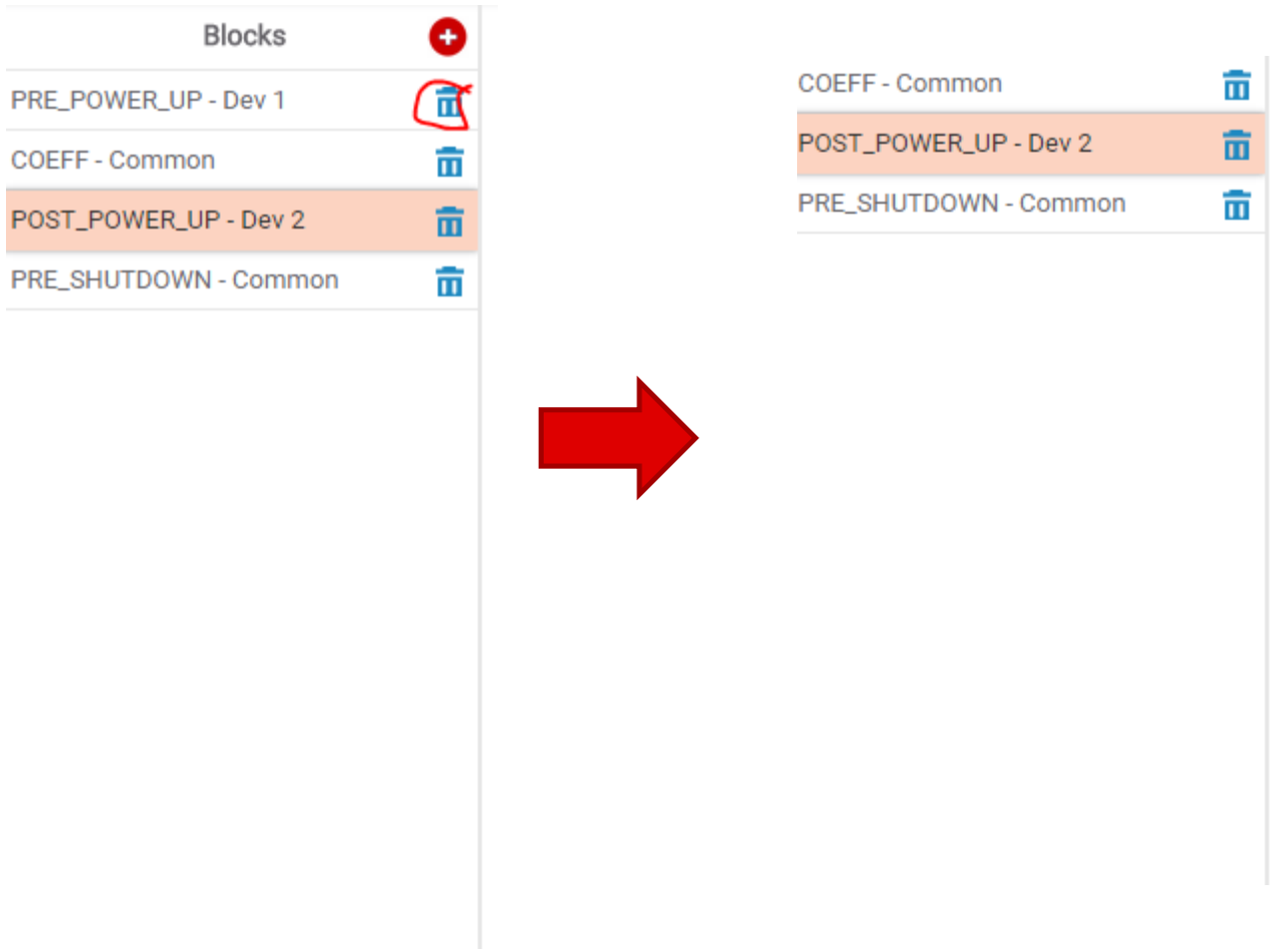
Bin File Making XIV | Select Device for one specific Block

- “Common” means all the devices defined in the regbin file, for the right picture, the common means both dev 1 and dev 2.



Bin File Making XV | Delete Block



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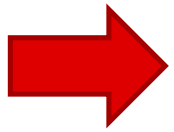
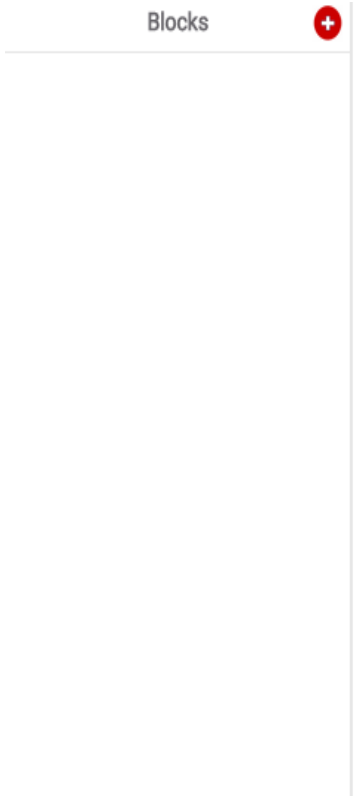
Bin File Making XVI | Delete Last Block in Configuration





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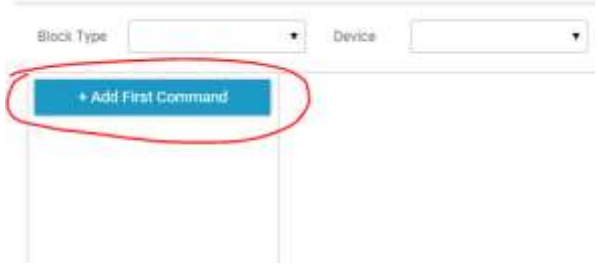
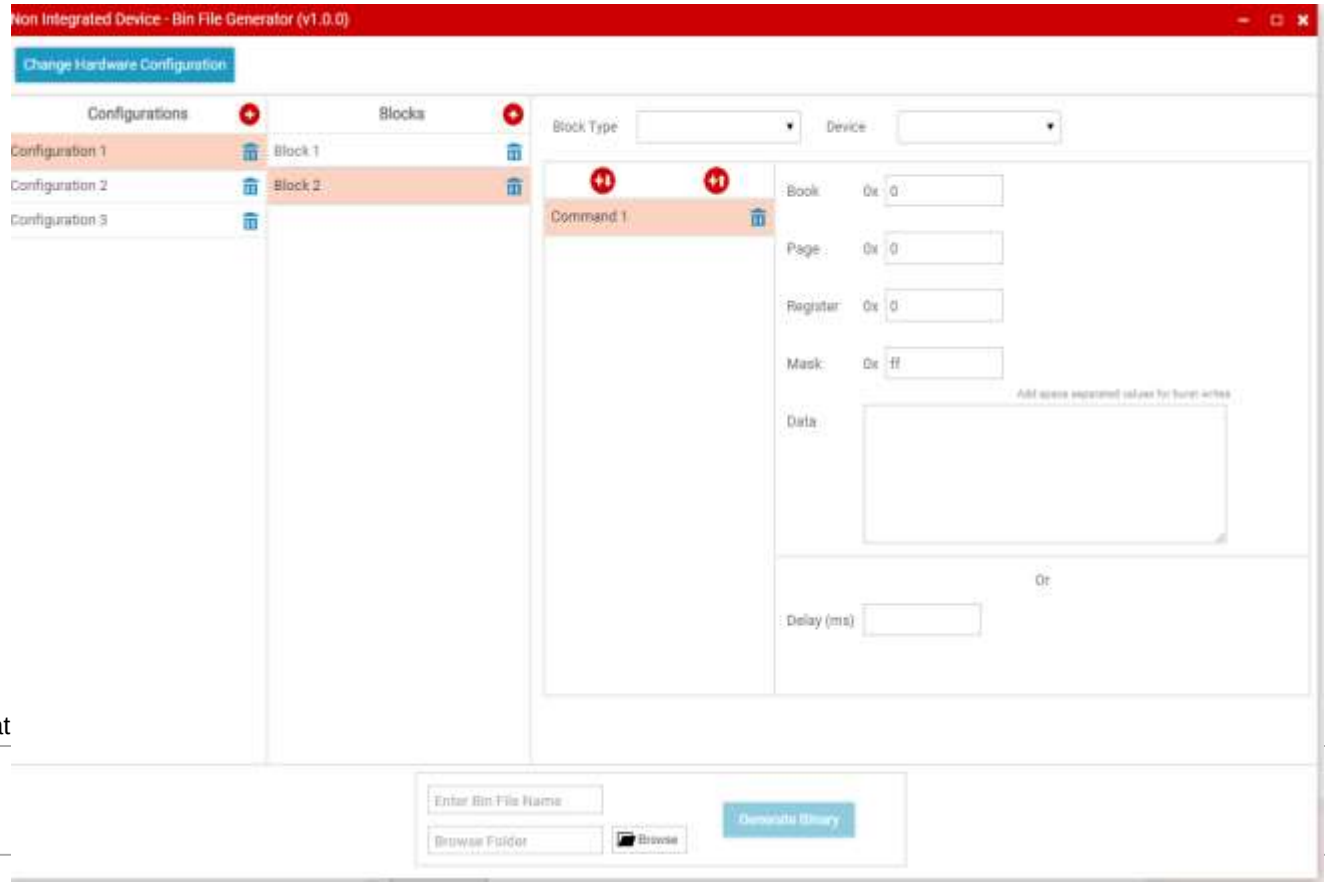
Bin File Making XVI | Add First Command

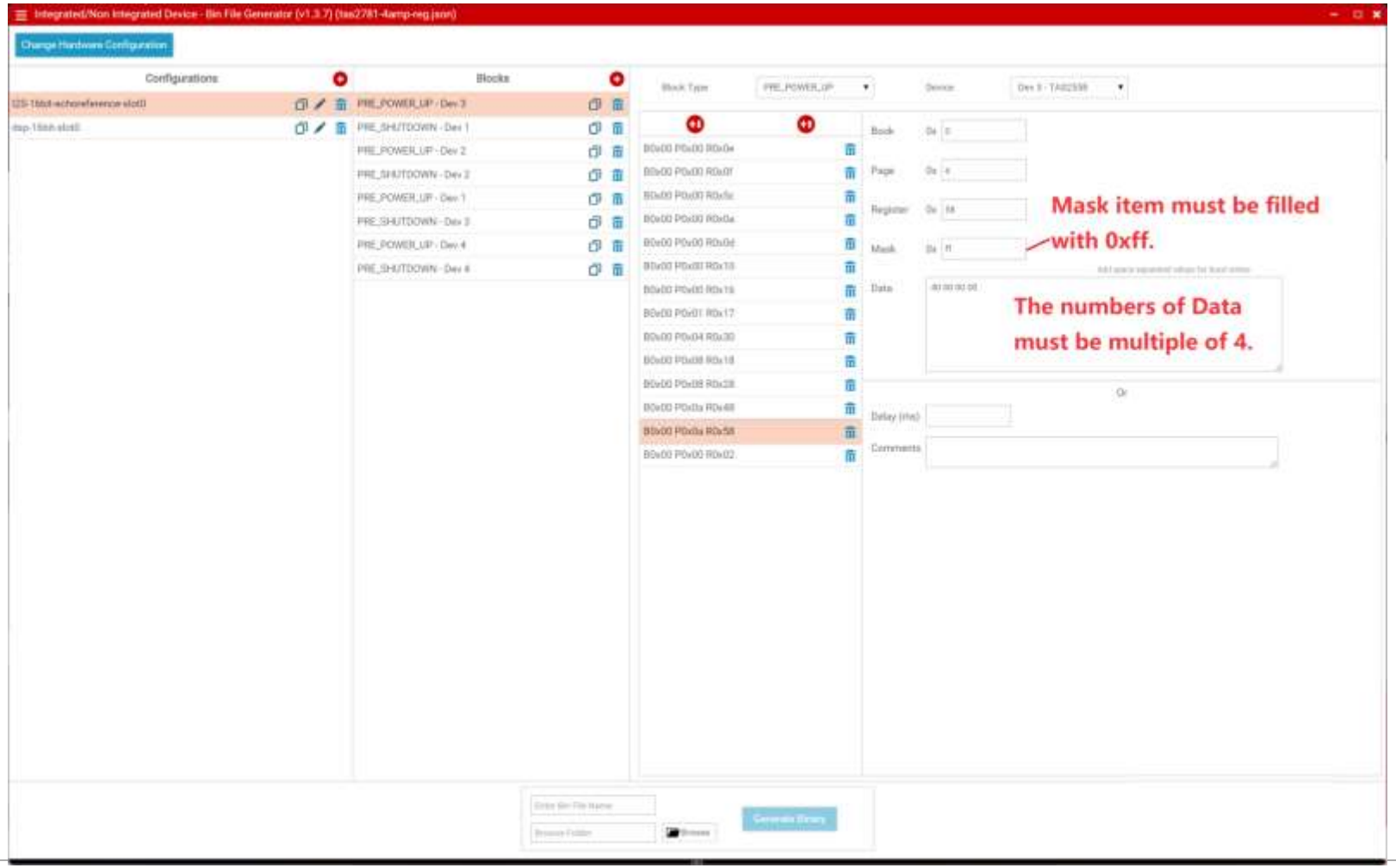




First command can be added successfully on clicking the “Add First Command” button

Bin File Making XVII | Bulk write/Burst commands

- If writing BOOK0x00, PAGE0x02, REG0x64 ~ REG0x67, pls use following way.



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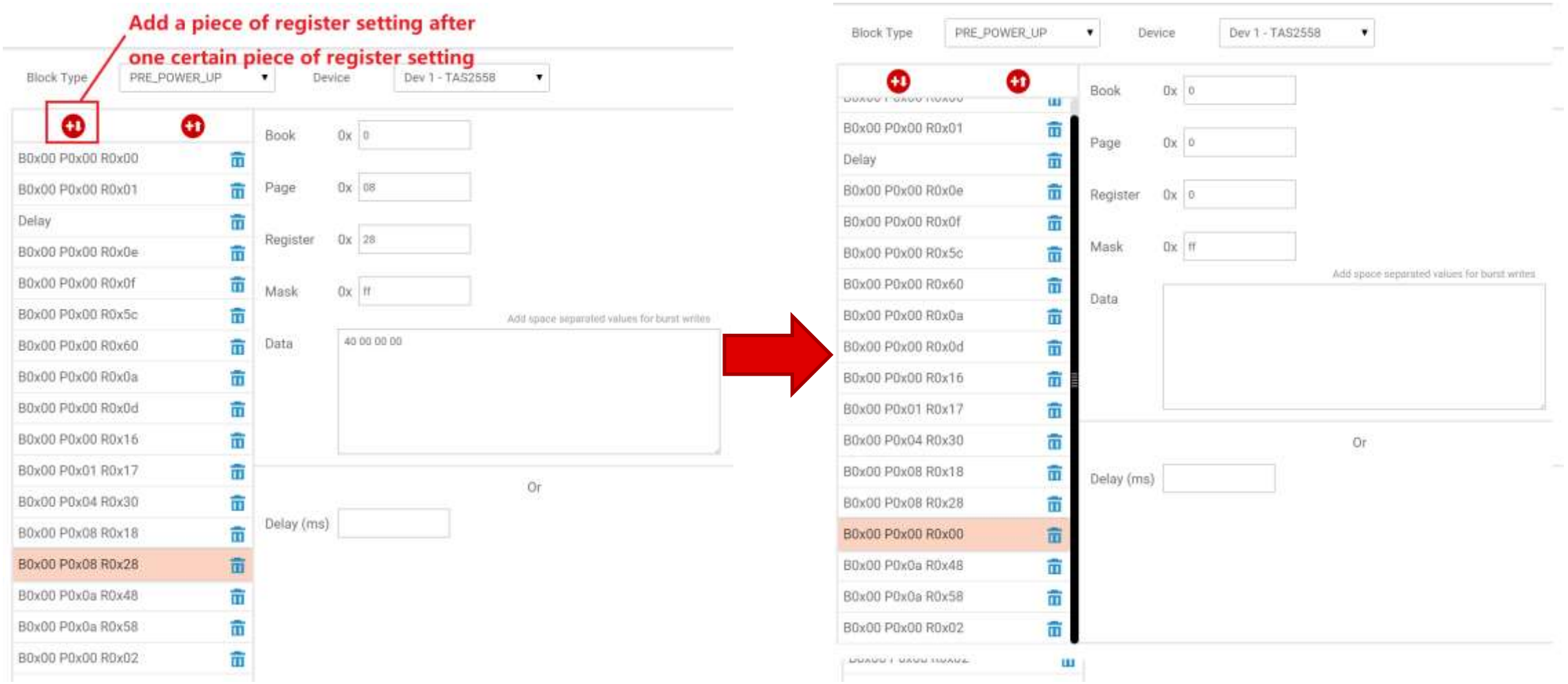
Bin File Making XVIII | Add Below Selected Command



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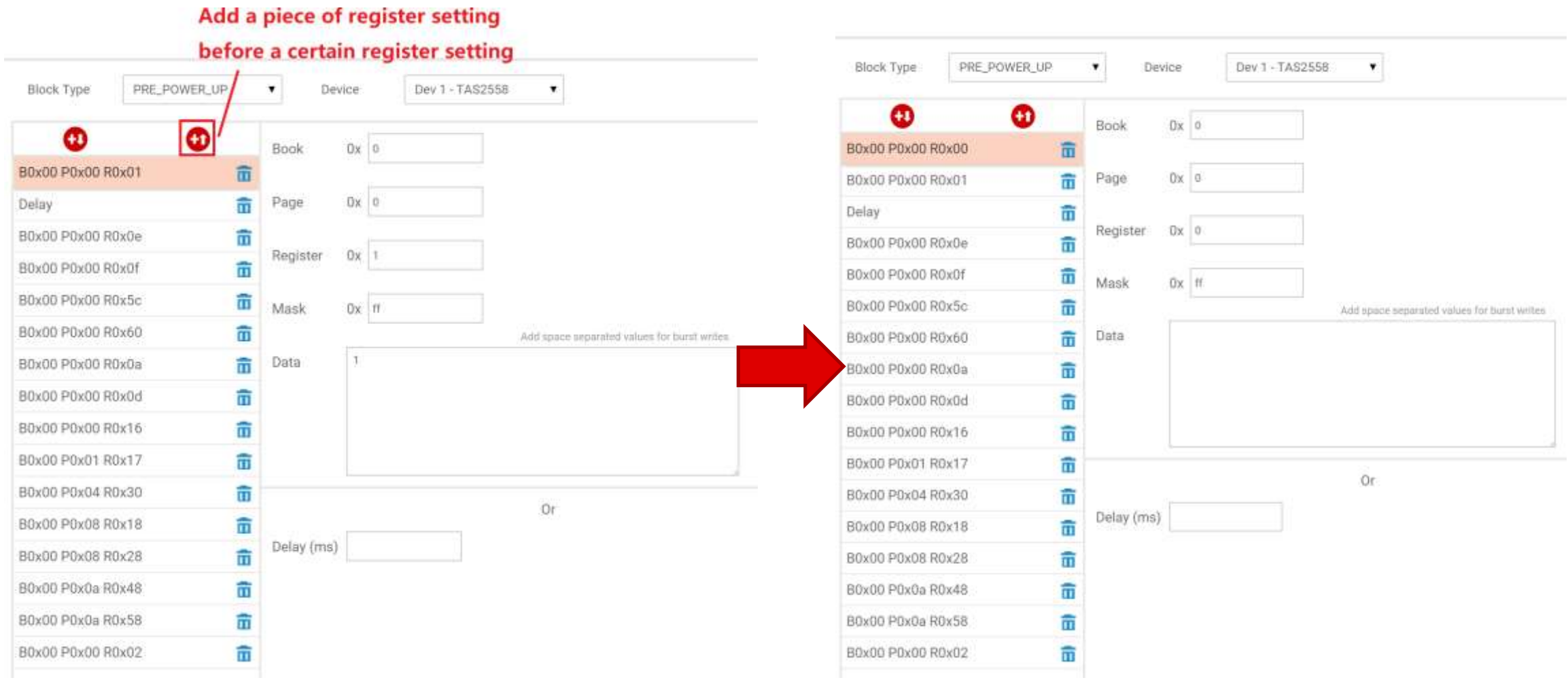
Bin File Making XIX | Add above Selected Command



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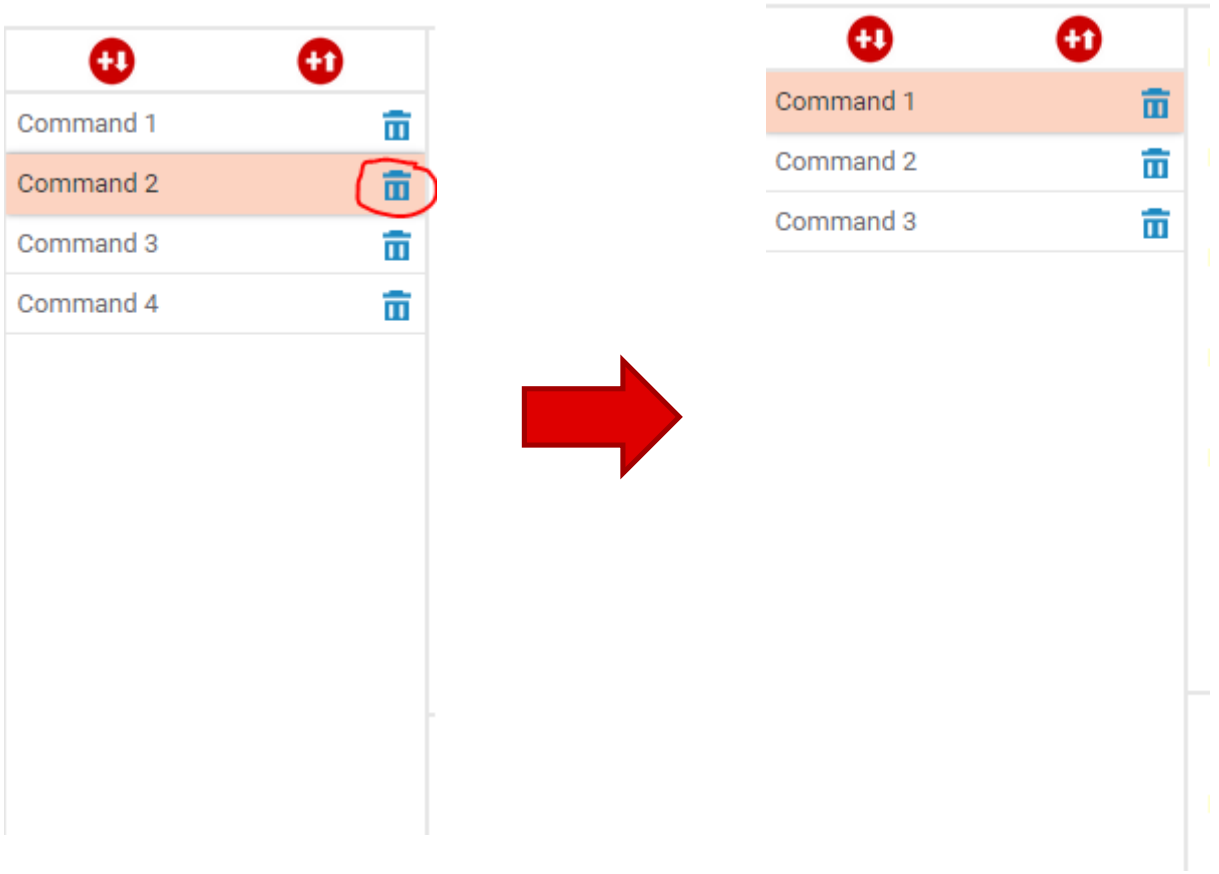
Bin File Making XX | Delete Command



Command 2 is deleted and command 3 is moved up as command 2

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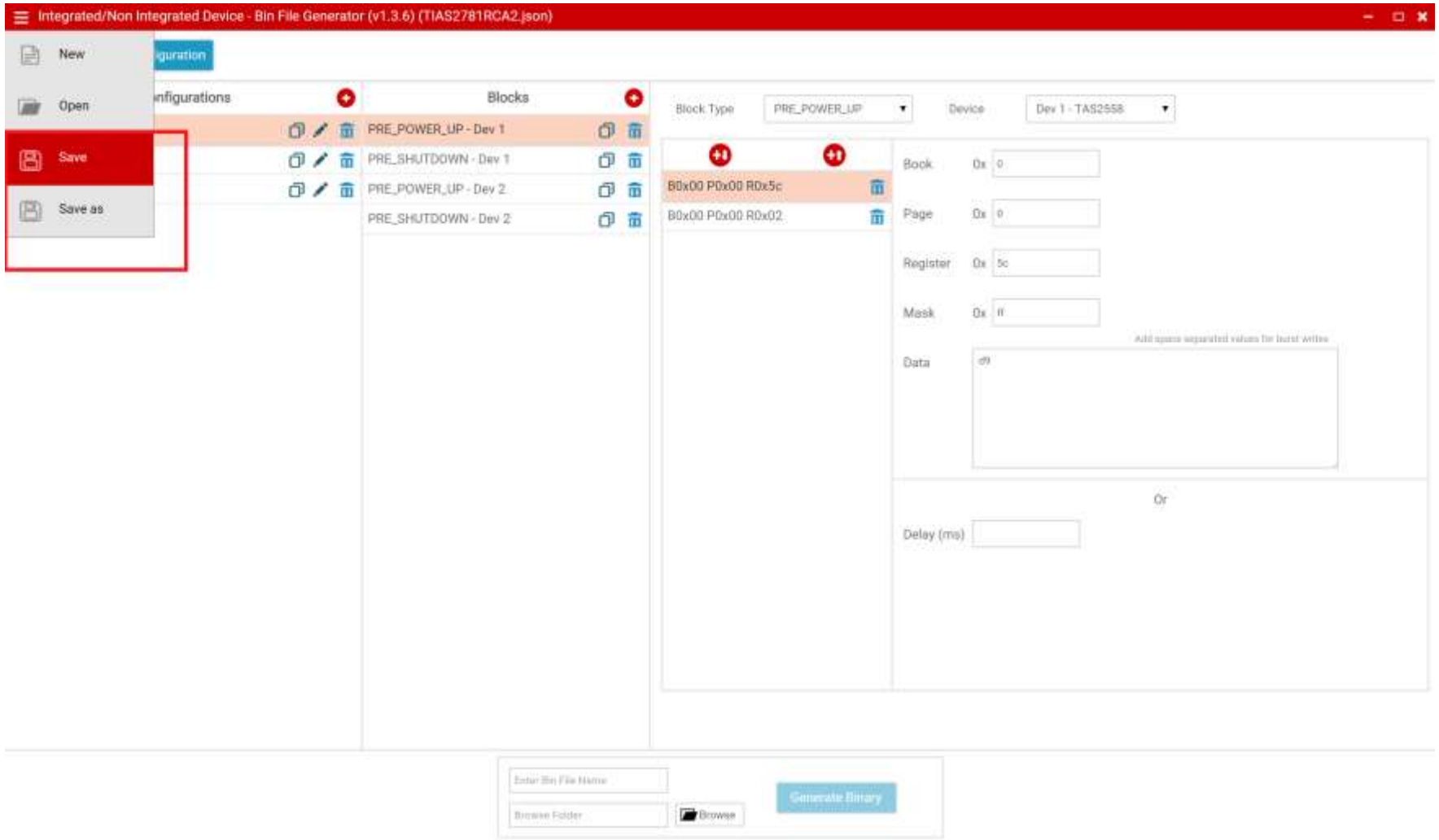
Bin File Creation XXI | Save/Save as the Regbin project file ---- jason file



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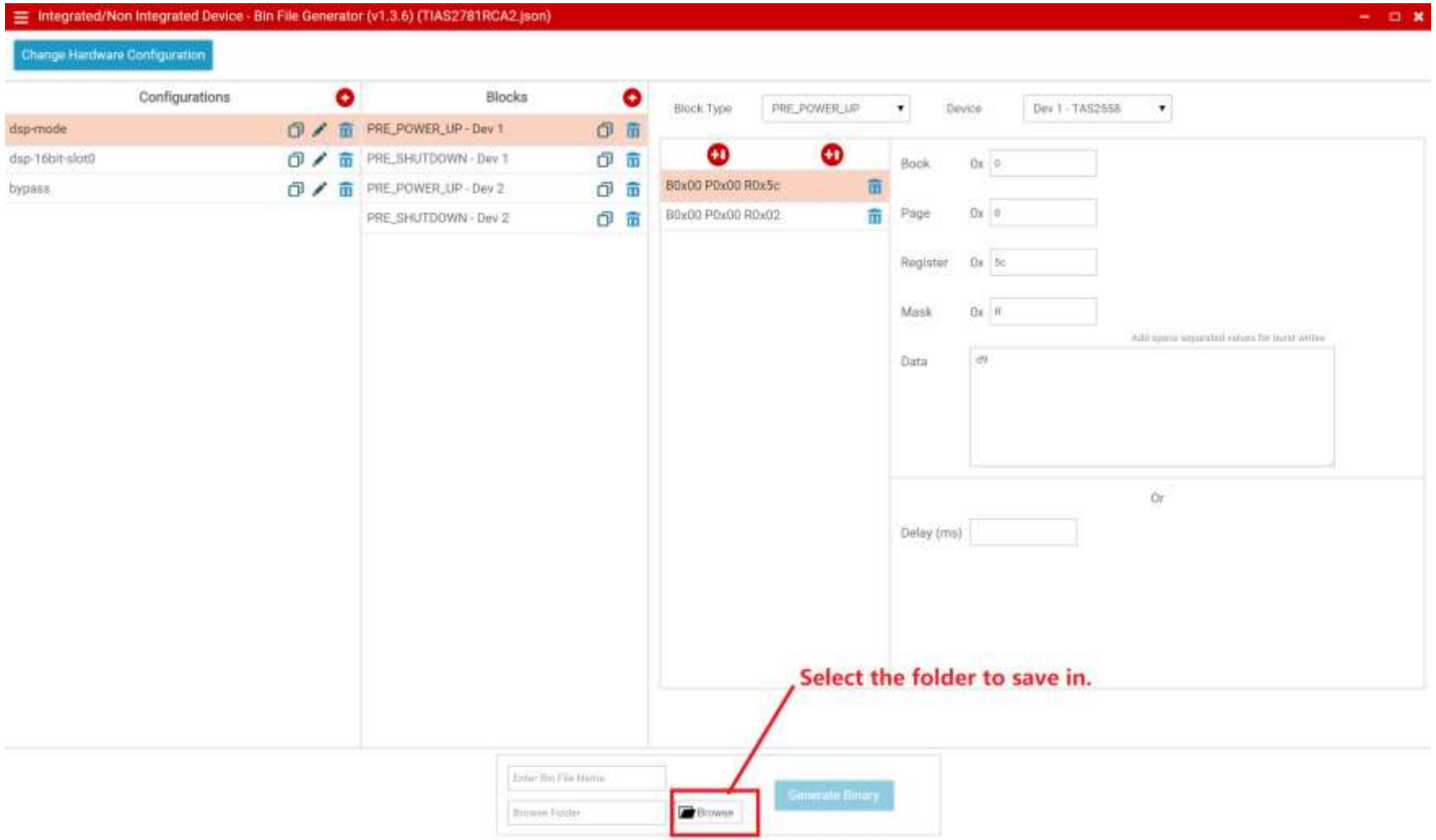
Bin File Creation XXII | Export the regbin binary file I



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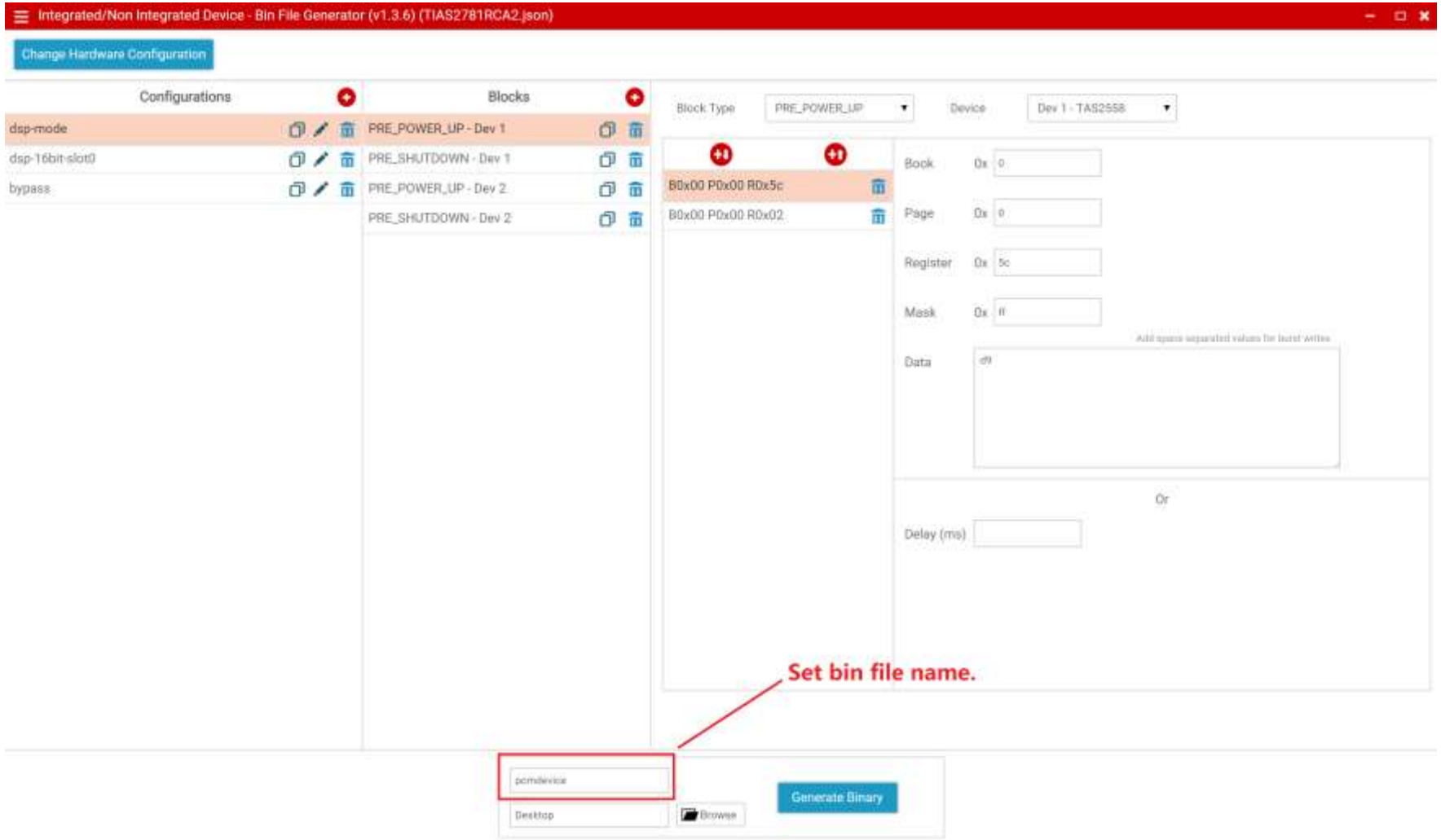
Bin File Creation XXII | Export the regbin binary file II



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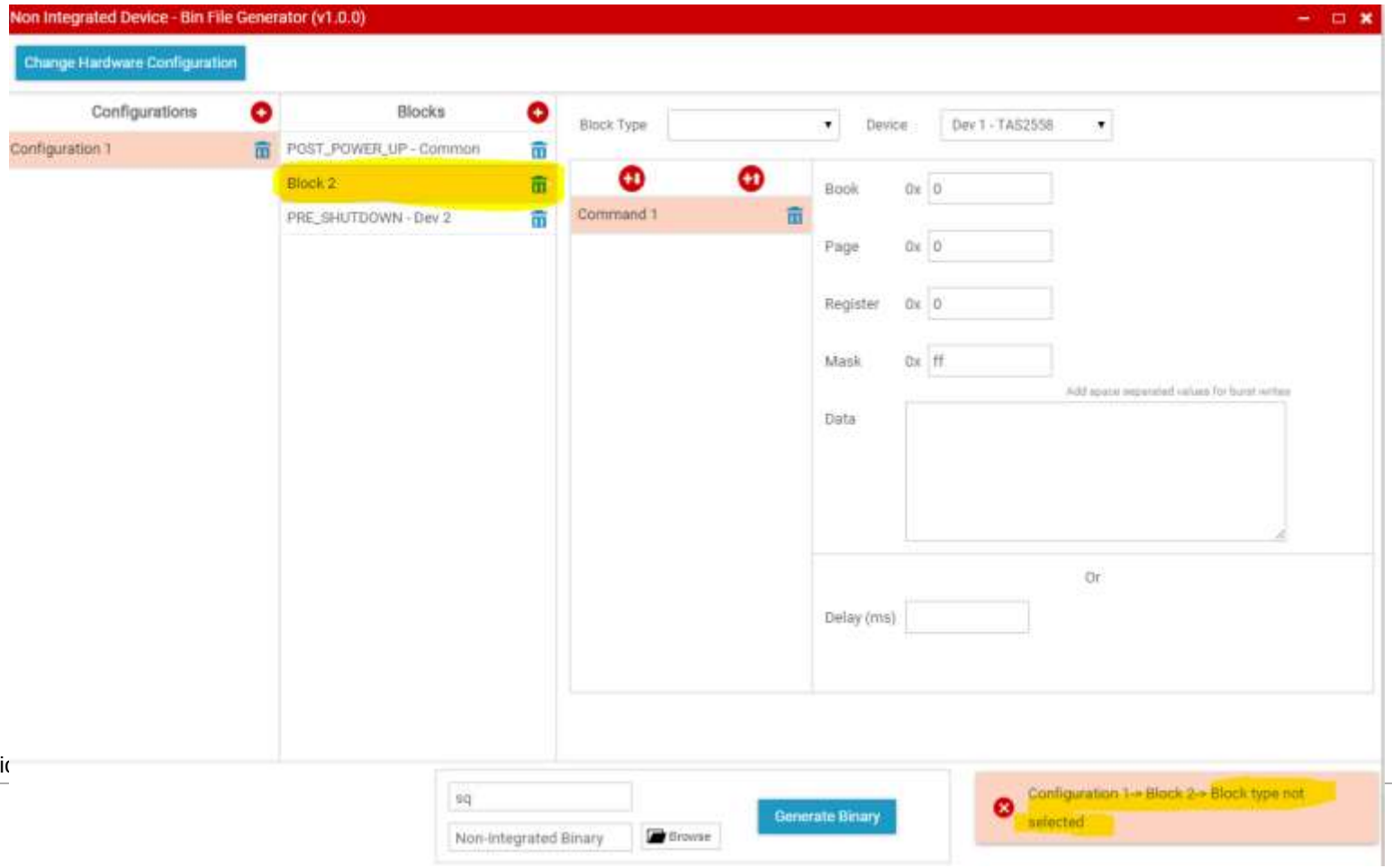
Bin File Creation XXIII | Data Validation Before Exporting Binary I

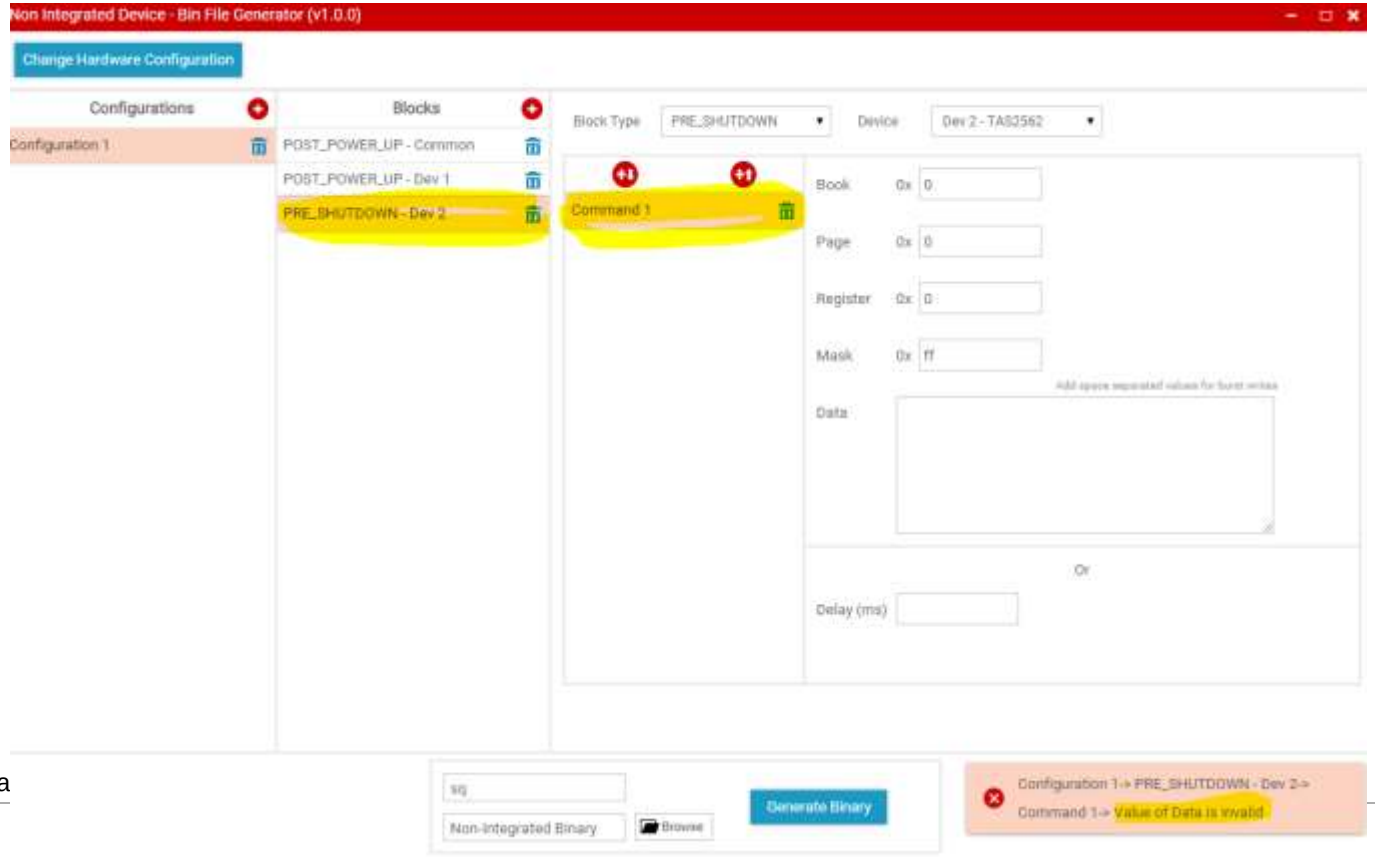
Try creating binary without providing block type for a block



1. The Block with Invalid data is selected
2. Error message shown with appropriate error

Bin File Making XXIII -- Data Validation Before Exporting Binary II

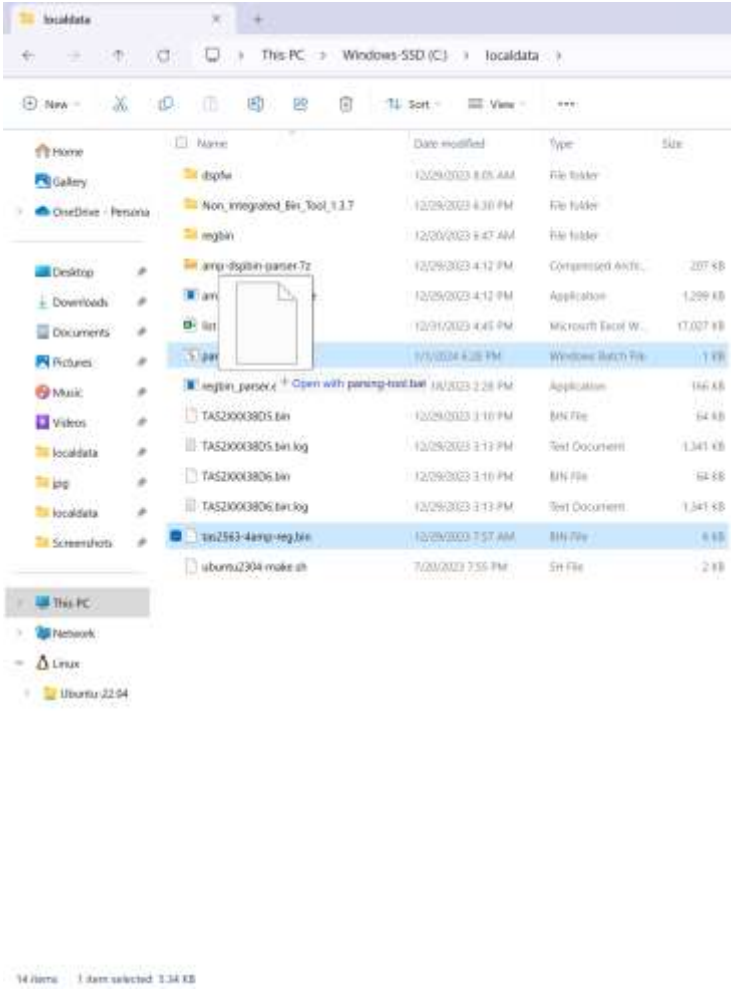
Try creating binary without providing data or delay



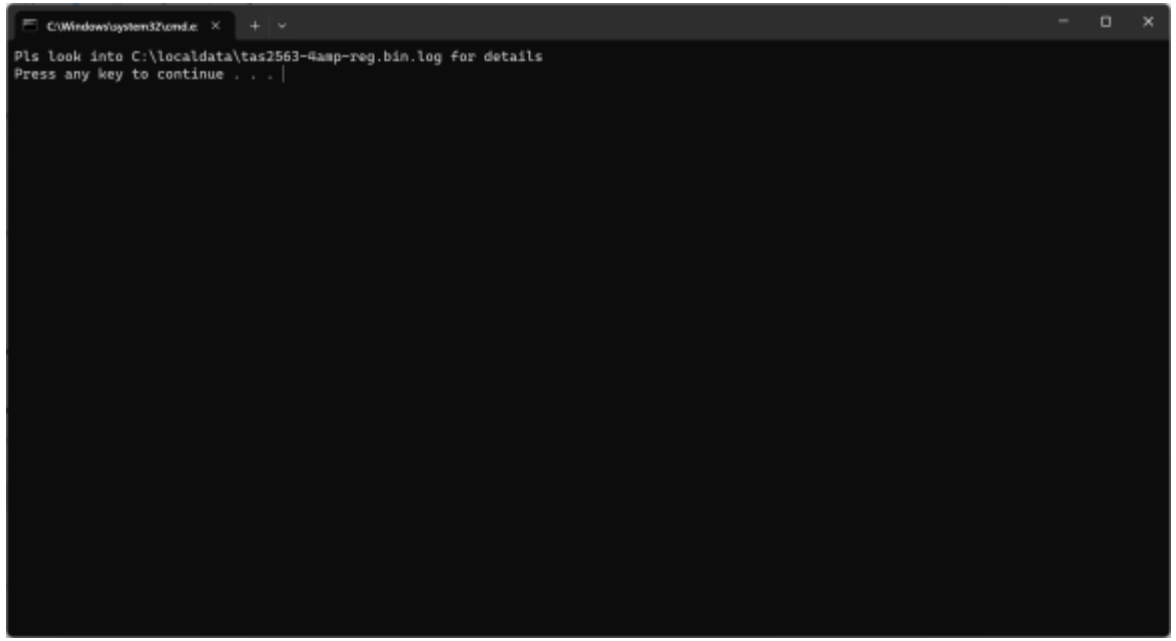
1. The Block with Invalid data is selected
2. The Command with Invalid data is selected
3. Error message shown with appropriate error

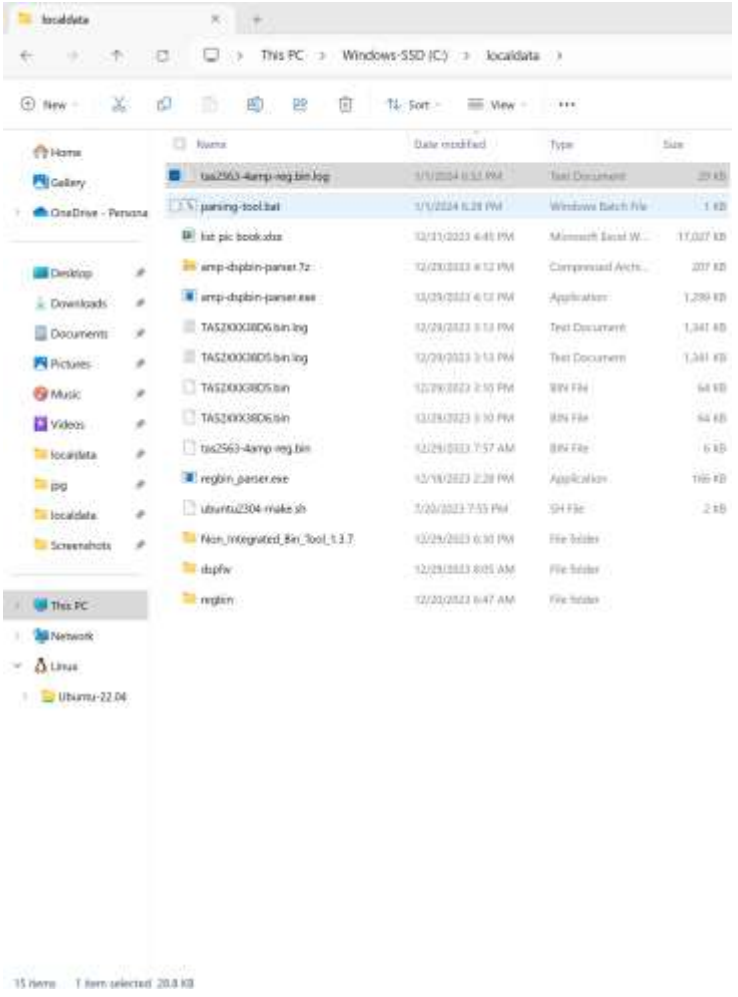
regbin_parser.exe & parsing-tool.bat I

- Toolset for regbin parsing.
- Operations:
  1. Drag the regbin file onto the parsing-tool.bat, then release, see the right picture, tas2563-4amp-reg.bin is dragged onto the parsing-tool.bat.
  2. It will popup a command-line screen, pls check the output, the left picture next page shows a successfully parsing
  3. The log of regbin file will be generated, see the right pic next page, tas2563-4amp-reg.bin.log has already been generated.



regbin_parser.exe & parsing-tool.bat II





Attentions

- The range of input for “TASDEVICE Profile id” depends on the sum of configs in Regbin file. It begins with 0.
- Don’t forget to restore the related registers after shutdown
- Kcontrol -- “TASDEVICE Profile id” is dynamically created if valid bin file is in the system; If no regbin file in the system, kcontrol – “TASDEVICE Profile id” won’t be created;
- No side-effect to the device and code if there still exists “TASDEVICE Profile id” in mixer_paths.xml.

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How to use reg-bin file?

- Put the regbin file into /vendor/firmware, /vendor/etc or /lib/firmware, which location is up to the platform setting
- Three ways to config
  1. tinymix or mixer command
     tinymix “TASDEVICE Profile id” 0 ---- bypass regbin
     tinymix “TASDEVICE Profile id” 1 ---- select config 1 setting
     tinymix “TASDEVICE Profile id” 2 ---- select config 2 setting
  2. mixer_path.xml
     e.g.
     <ctl name=“TASDEVICE Profile id” value=”0”/> ---- bypass regbin
     <ctl name=“TASDEVICE Profile id” value=“1”/> ---- select config 1 setting
  3. Mixer API: mixer_get_ctl_by_name and mixer_ctl_set_value

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Case I – Swap channels On Project J20C

- Conf 1 – device 1 is left channel, device 2 is right channel
- Conf 2 – device 1 is right channel, device 2 is left channel
- In this case, the switching among conf 0, 1 and 2 by mixer path.

J20C

control_list.PNG

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Case 2 -- GREG and PRAM check on factorytest

- Conf 1 – GREG check
- Conf 2 – PRAM check
- some register setting will be restored during post-shutdown
- the switching among conf 0, 1 and 2 by mixer API.

test_screening

tas256x_reg.bin

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Case 3 -- floor noise in receiver mode

- Conf 2 – receiver mode
- some register setting will be restored during post-shutdown
- the switching among conf 0 ~ 2 by mixer API or mixer_path.xml.

```
Firmware init complete
main Bin loading requested: 0
conf 1
        block type:PRE_POWER_UP  device idx = 0x01
                SINGLE BYTE:
                        BOOK0x00 PAGE0x00 REG0x30 VALUE = 0x1d
conf 2
        block type:PRE_POWER_UP  device idx = 0x01
                SINGLE BYTE:
                        BOOK0x00 PAGE0x00 REG0x30 VALUE = 0x1d
                        BOOK0x00 PAGE0xfd REG0x0d VALUE = 0x0d
                        BOOK0x00 PAGE0xfd REG0x12 VALUE = 0xc0
                        BOOK0x00 PAGE0xfd REG0x46 VALUE = 0x1f
                        BOOK0x00 PAGE0xfd REG0x32 VALUE = 0x08
                        BOOK0x00 PAGE0x00 REG0x3e VALUE = 0x00
                        BOOK0x00 PAGE0x00 REG0x04 VALUE = 0xca
                        BOOK0x00 PAGE0x01 REG0x21 VALUE = 0x08
        block type:POST_SHUTDOWN         device idx = 0x01
                SINGLE BYTE:
                        BOOK0x00 PAGE0xfd REG0x0d VALUE = 0x0d
                        BOOK0x00 PAGE0xfd REG0x12 VALUE = 0x00
                        BOOK0x00 PAGE0xfd REG0x46 VALUE = 0x1f
                        BOOK0x00 PAGE0xfd REG0x32 VALUE = 0x28
                        BOOK0x00 PAGE0x00 REG0x3e VALUE = 0x10
                        BOOK0x00 PAGE0x00 REG0x04 VALUE = 0xcf
```

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To be Improved I -- bin file

- Problem: So far the bin file uses id number to index different conf/profile. If a new conf/profile has been inserted into the bin file. The id of some confs/profiles will be changed. The related code will be changed too.
- Solution: Add a 16-byte field for each conf/profile to store the conf name, eg, Music, Ringtone, Factory Test, Bypass, etc. And the code can index specific conf by conf name. The code won’t care the order of confs or the number of the conf.

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To be Improved II – Bin Tool

- If only Bin Tool would load the reg bin file directly. Currently, using JSON file load the setting. If no JSON file, we have to remake the bin file first.

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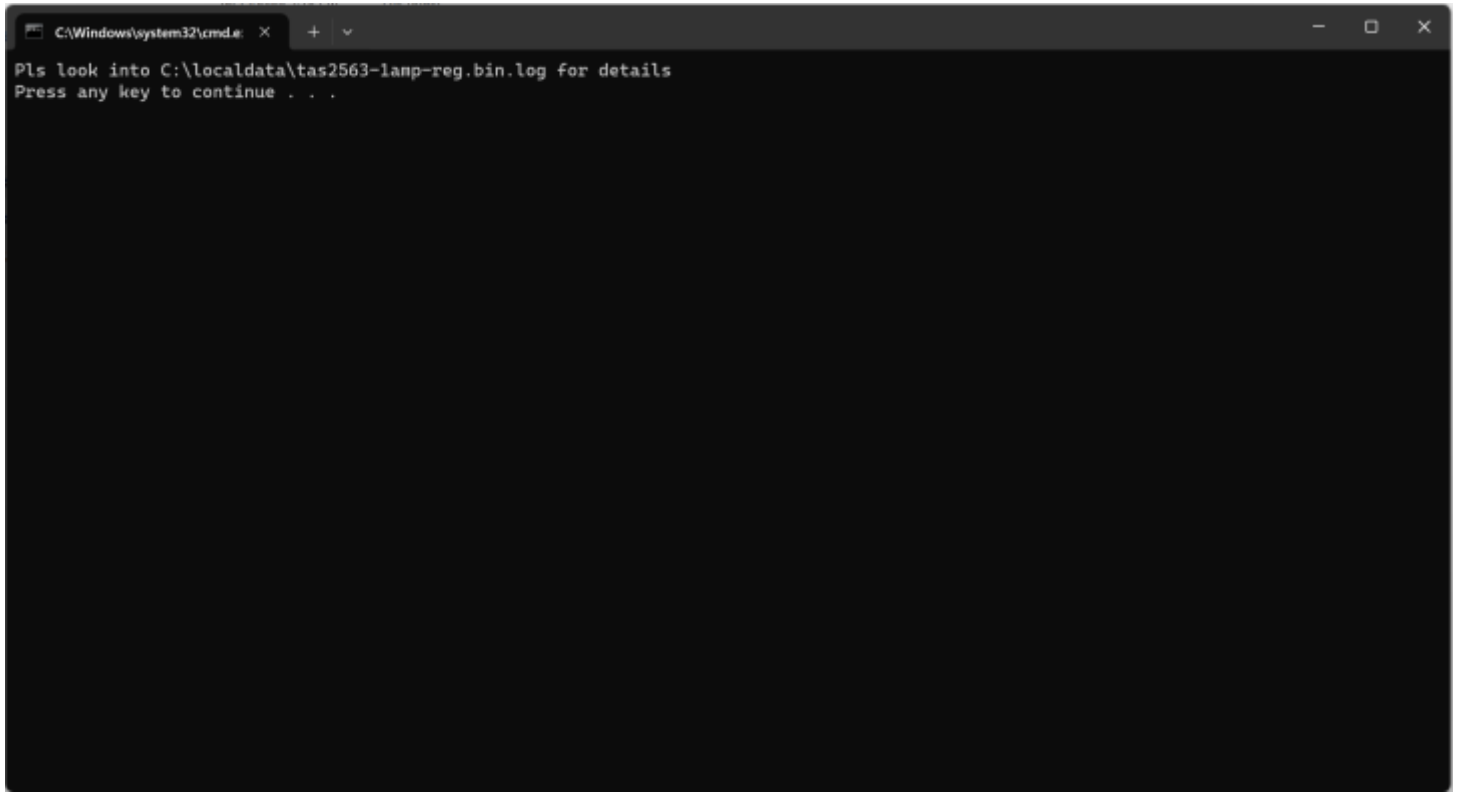
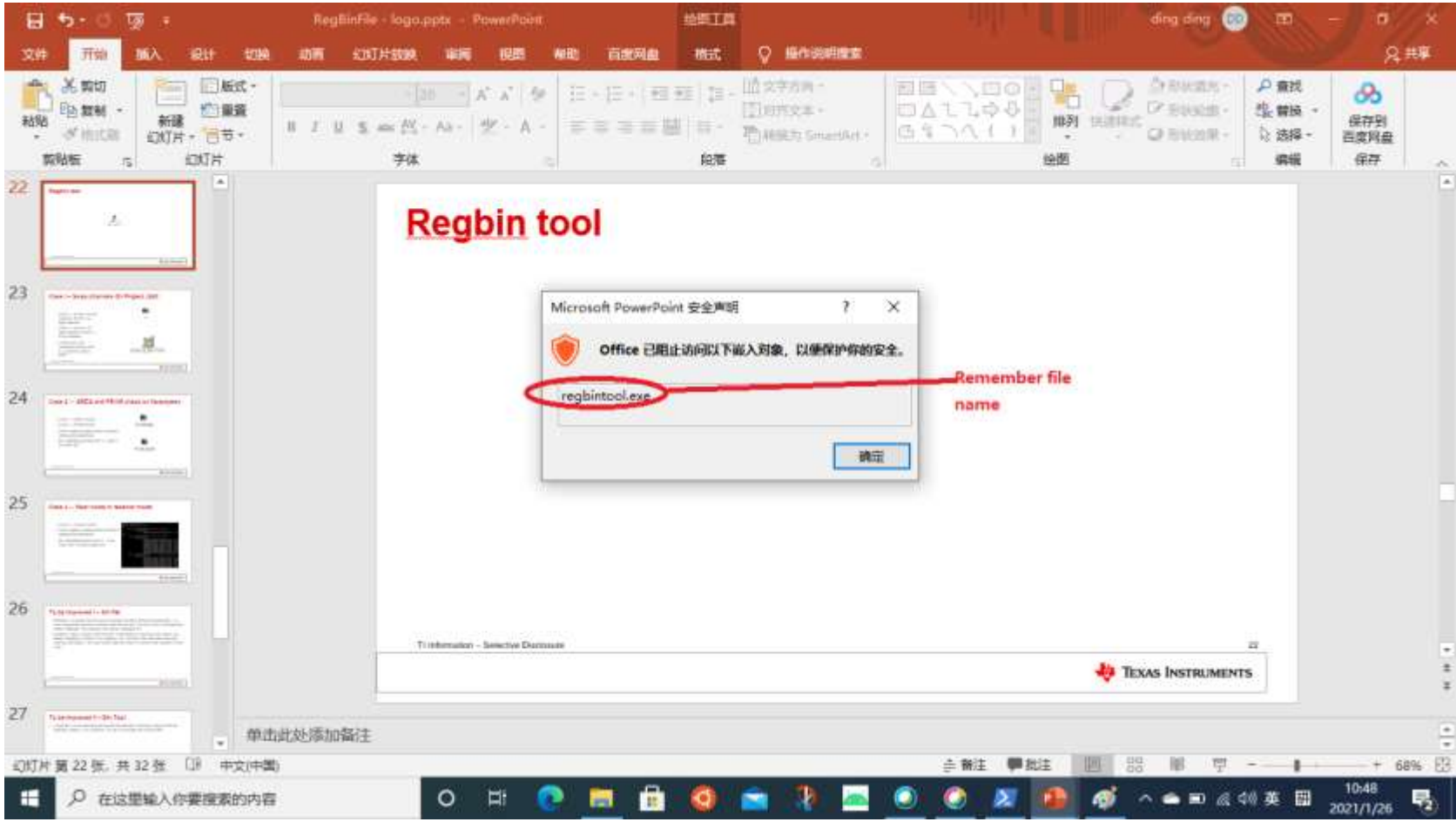
How to parse the regbin binary file?

- Tool: parsing-tool.bat & regbin_parser.exe
- Operation Step:
  1. Confirm parsing-tool.bat & regbin_parser.exe are in the same folder
  2. Drag the regbin binary file on the parsing-tool.bat, then release
  3. The log of regbin binary file will be generated. See pic in the left.

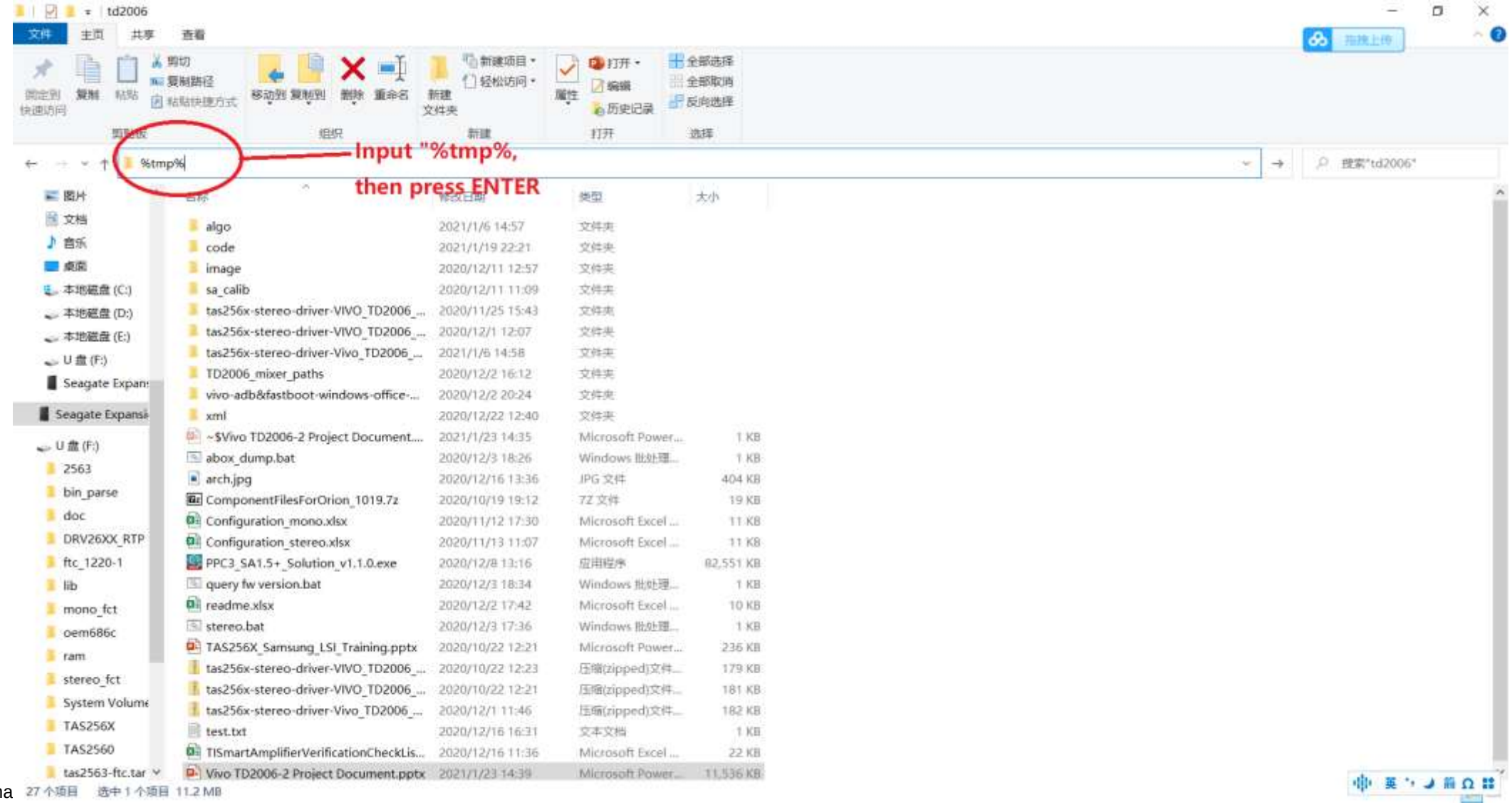


Appendix I

If the file object can’t be opened, pls search the file into %tmp%，see the following picture.



Appendix II



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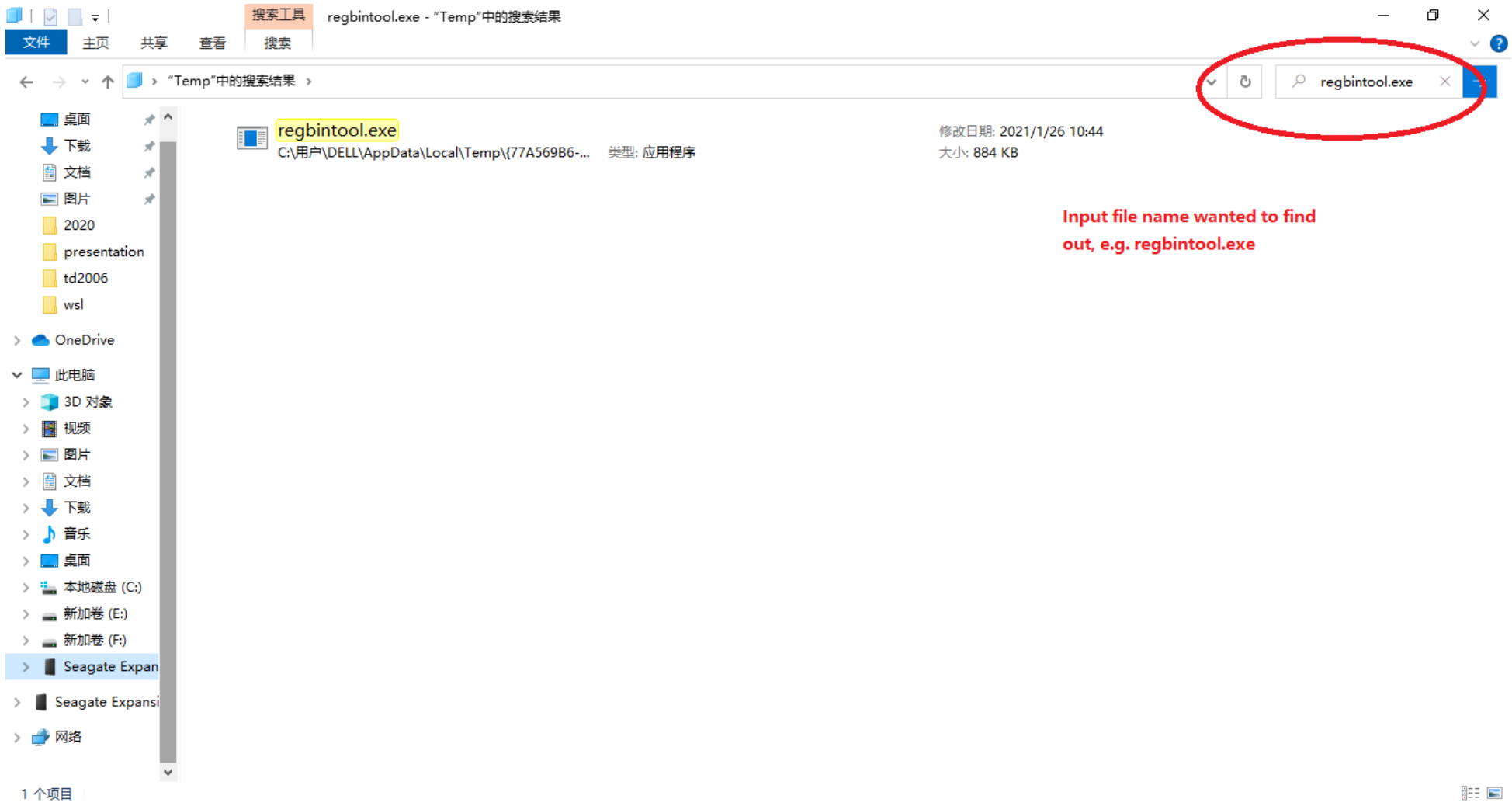
Appendix III

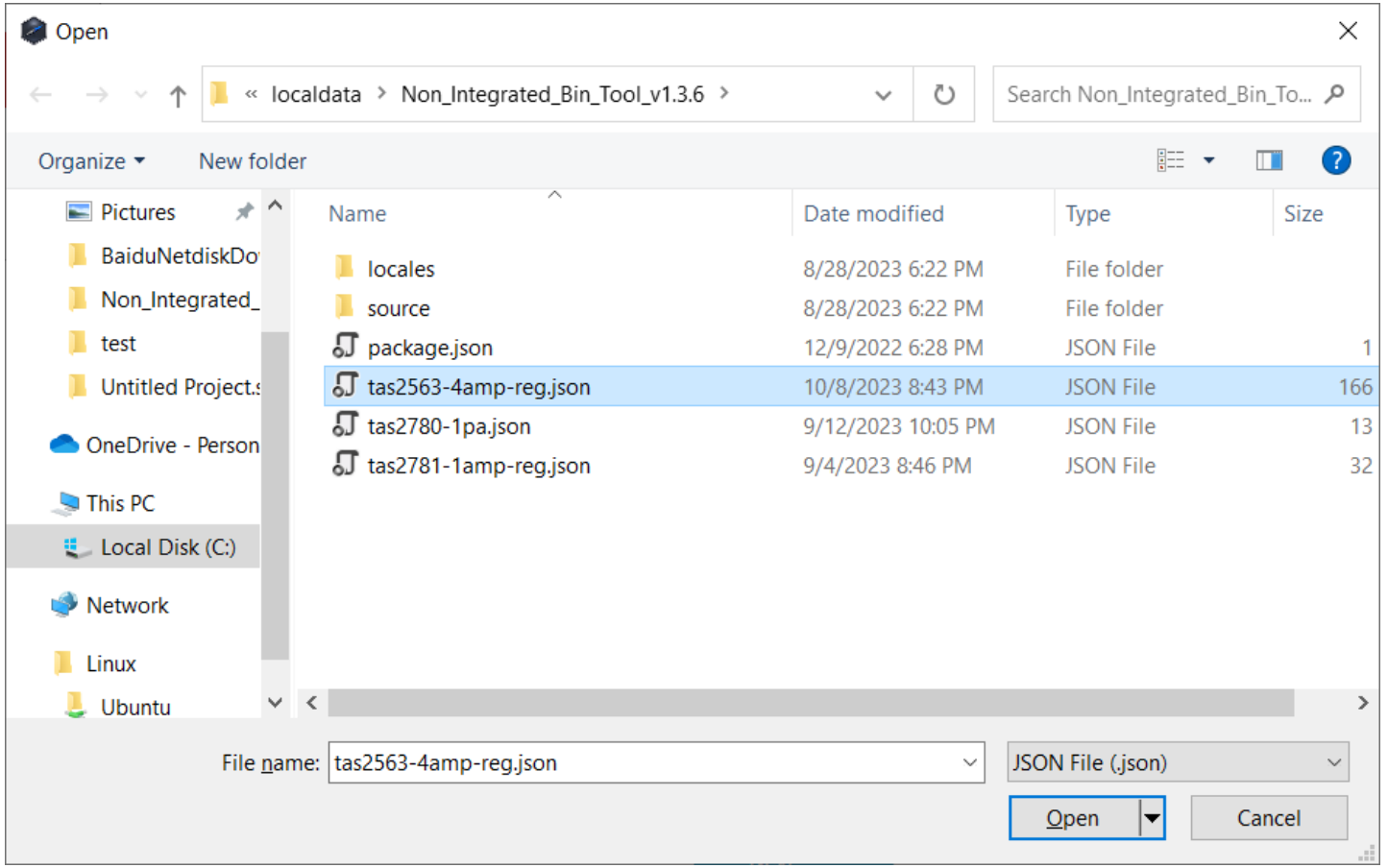


Appendix IV | How to generate bin file from Jason file I

- Sometime Jason file is offered with the code, so conversion from Jason file to bin file is the mandatory job.
- STEP I: see the right pic.

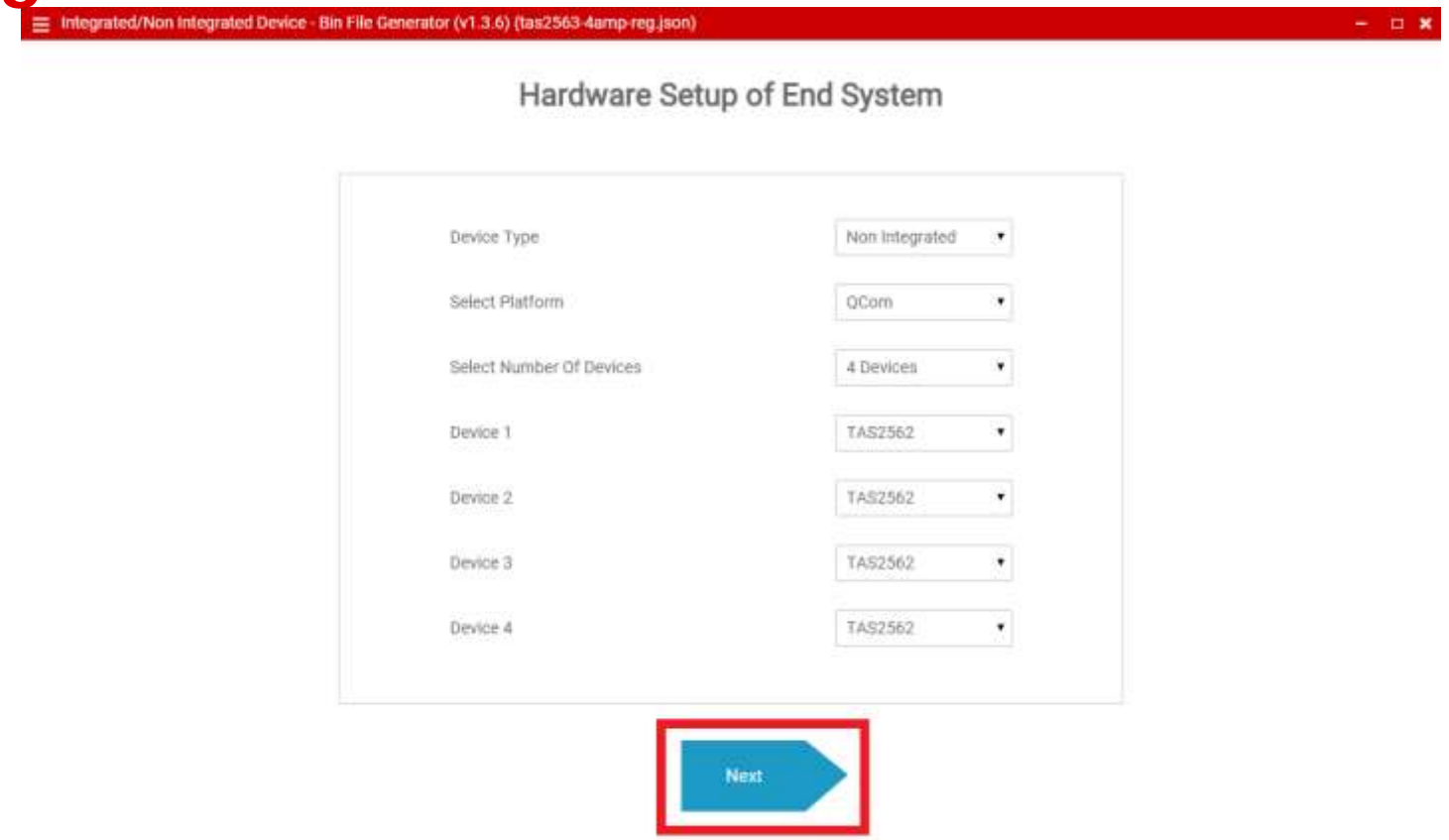
Appendix V | How to generate bin file from Jason file II

- STEP II: Select Jason file to be imported. See the right pic.



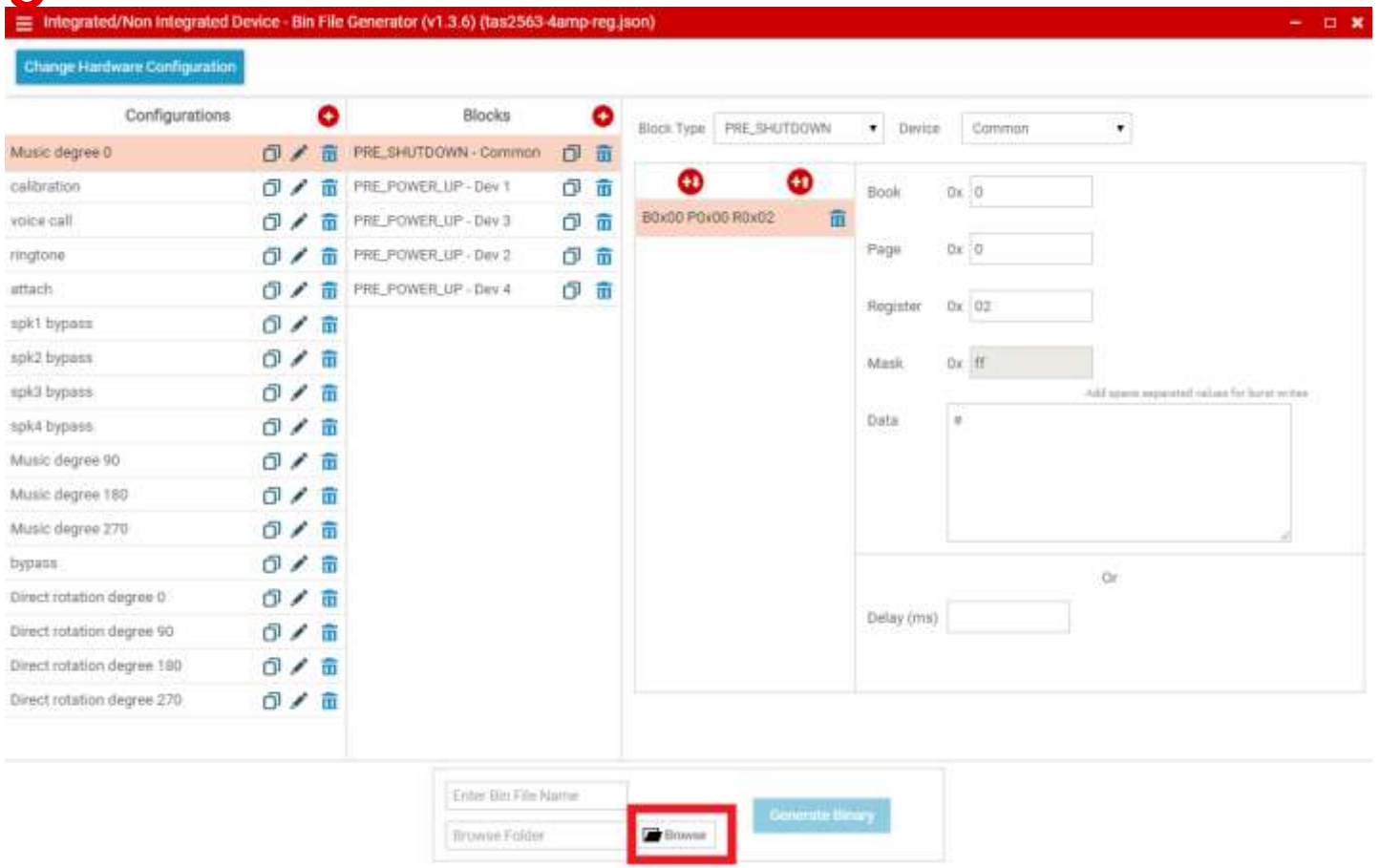
Appendix VI | How to generate bin file from Jason file III

- STEP III: Click the “Next” button. See the right pic.



Appendix VII | How to generate bin file from Jason file IV

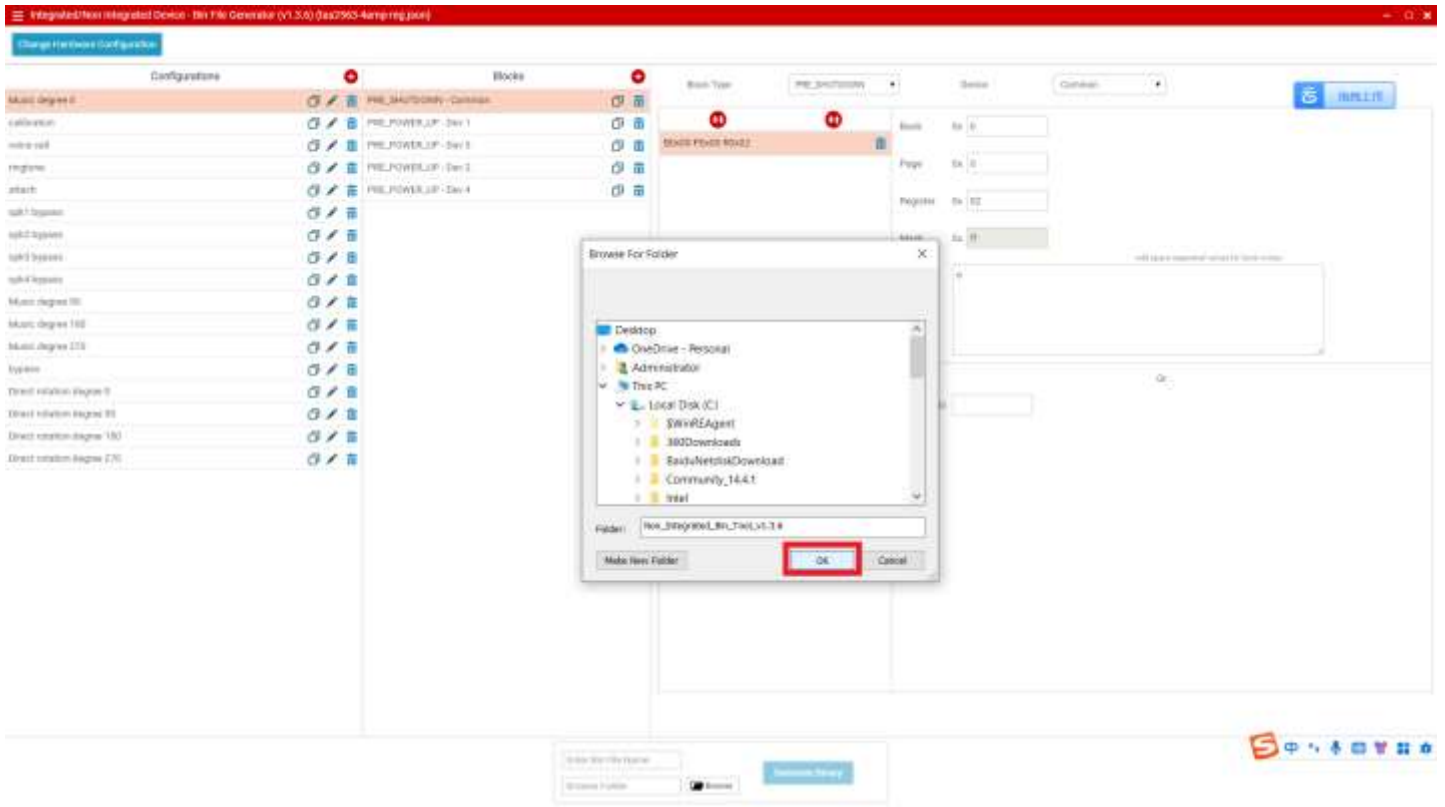
- STEP IV: Click the “Browse” button to select a folder to save bin file. See the right pic.



Texas Instruments

Appendix VIII | How to generate bin file from Jason file V

- STEP V: Click the “OK” button, after the folder to save bin file is selected. See the right pic.



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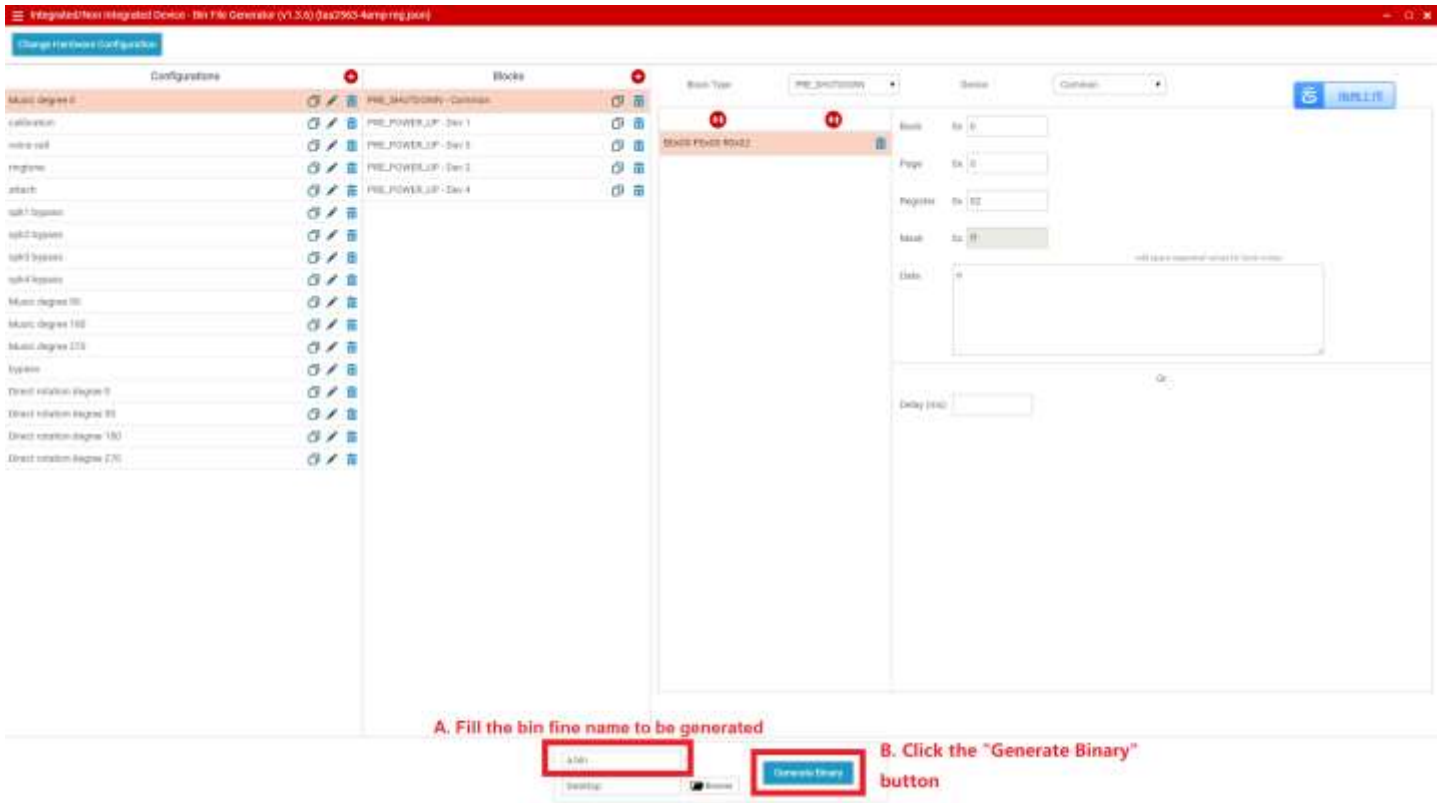
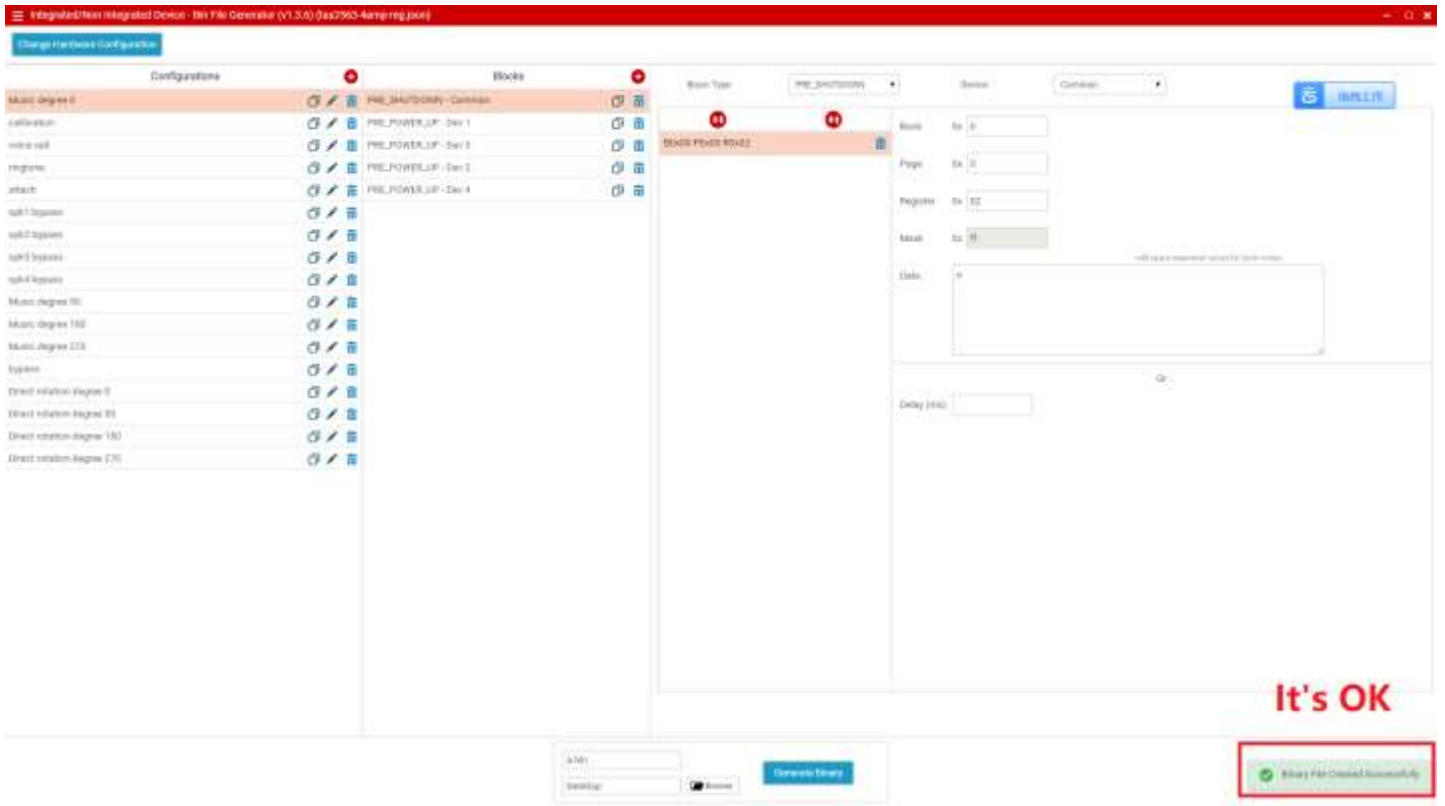
Appendix IX | How to generate bin file from Jason file VI

- STEP VI:
  A. Fill the bin file name to be generated
  B. Click the "Generate Binary" button.



Appendix X | How to generate bin file from Jason file VII

- STEP VII: if pop-up balloon occurs like the right pic, the bin file can be found in the selected folder.



Q&A

TI Information – Selective Disclosure

Thank you!

TI Information – Selective Disclosure