

# Regbin Tool User Guideline

# 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

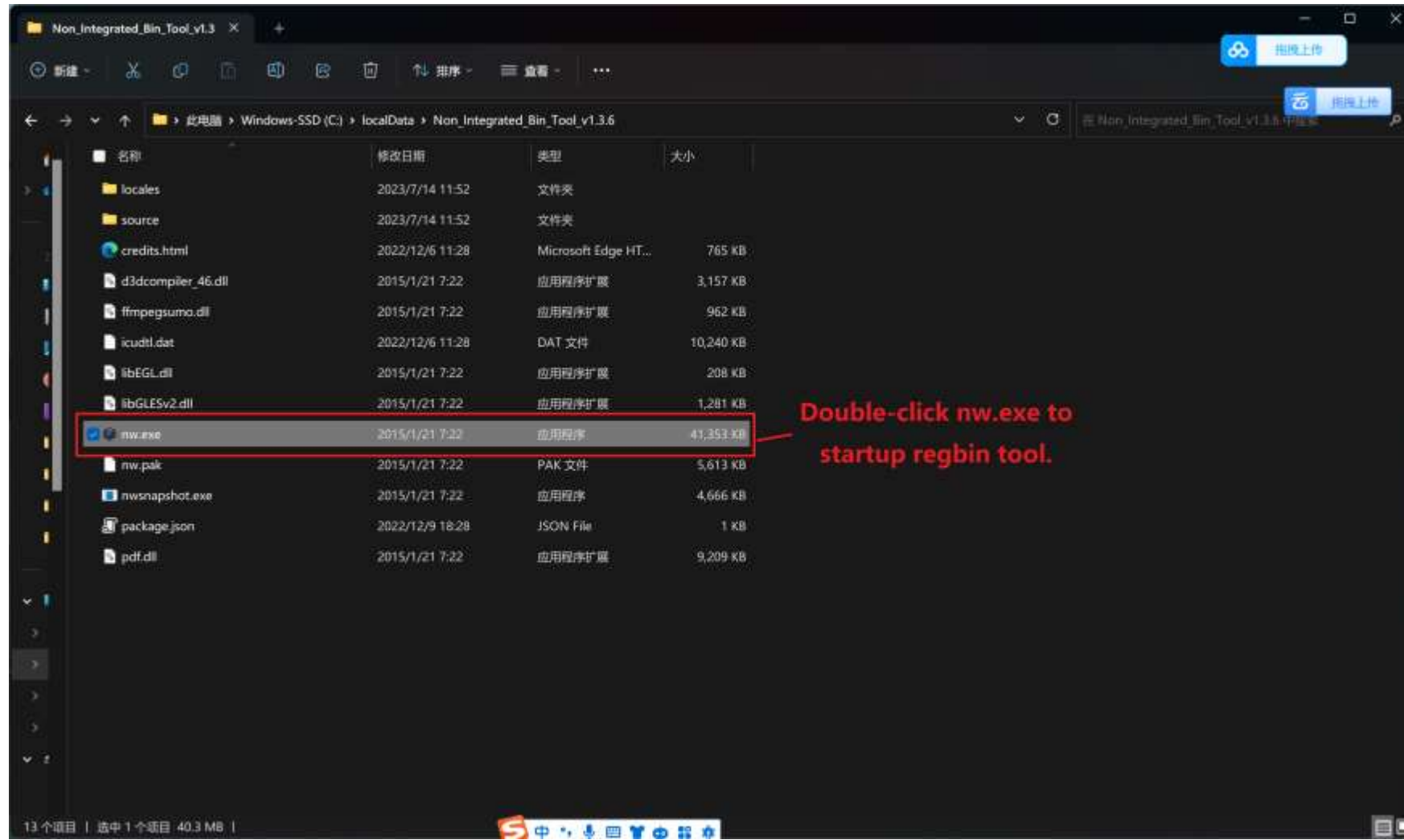
# Regbin file

- 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.

# 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.

# Bin File Making I | Startup Regbin tool



# Bin File Making II | Select Device Type

Integrated/Non Integrated Device - Bin File Generator (v1.3.6)

### Hardware Setup of End System

Device Type

Select Number Of Devices

Non Integrated

Integrated

Non Integrated

Select "Non Integrated" as the Device Type

Next

# Bin File Making III | Select Platform

Integrated/Non Integrated Device - Bin File Generator (v1.3.6)

## Hardware Setup of End System

Device Type: Non Integrated

Select Platform:   
QCom  
MTK  
LSI

Select Number Of Devices:

Next

Anyone of the three is fine, due to code did not parse this part.



# Bin File Making IV | Select Number of Devices

Integrated/Non Integrated Device - Bin File Generator (v1.3.6)

### Hardware Setup of End System

Device Type: Non Integrated

Select Platform: MTK

Select Number Of Devices:

- 1 Device
- 2 Devices
- 3 Device
- 4 Devices
- 5 Device
- 6 Devices
- 7 Devices
- 8 Devices

Next

Select the number of devices needed

# Bin File Making V | Select Device type

Integrated/Non Integrated Device - Bin File Generator (v1.3.0)

### Hardware Setup of End System

Device Type

Non Integrated

Select Platform

MTK

Select Number Of Devices

1 Device

Device 1

TA82558

Next

Select any of them, code do not parse this part

Integrated/Non Integrated Device - Bin File Generator (v1.3.0)

### Hardware Setup of End System

Device Type

Non Integrated

Select Platform

Qcom

Select Number Of Devices

8 Devices

Device 1

TA82562

Device 2

TA82562

Device 3

TA82558

Device 4

TA82560

Device 5

TA82564

Device 6

TA82562

Device 7

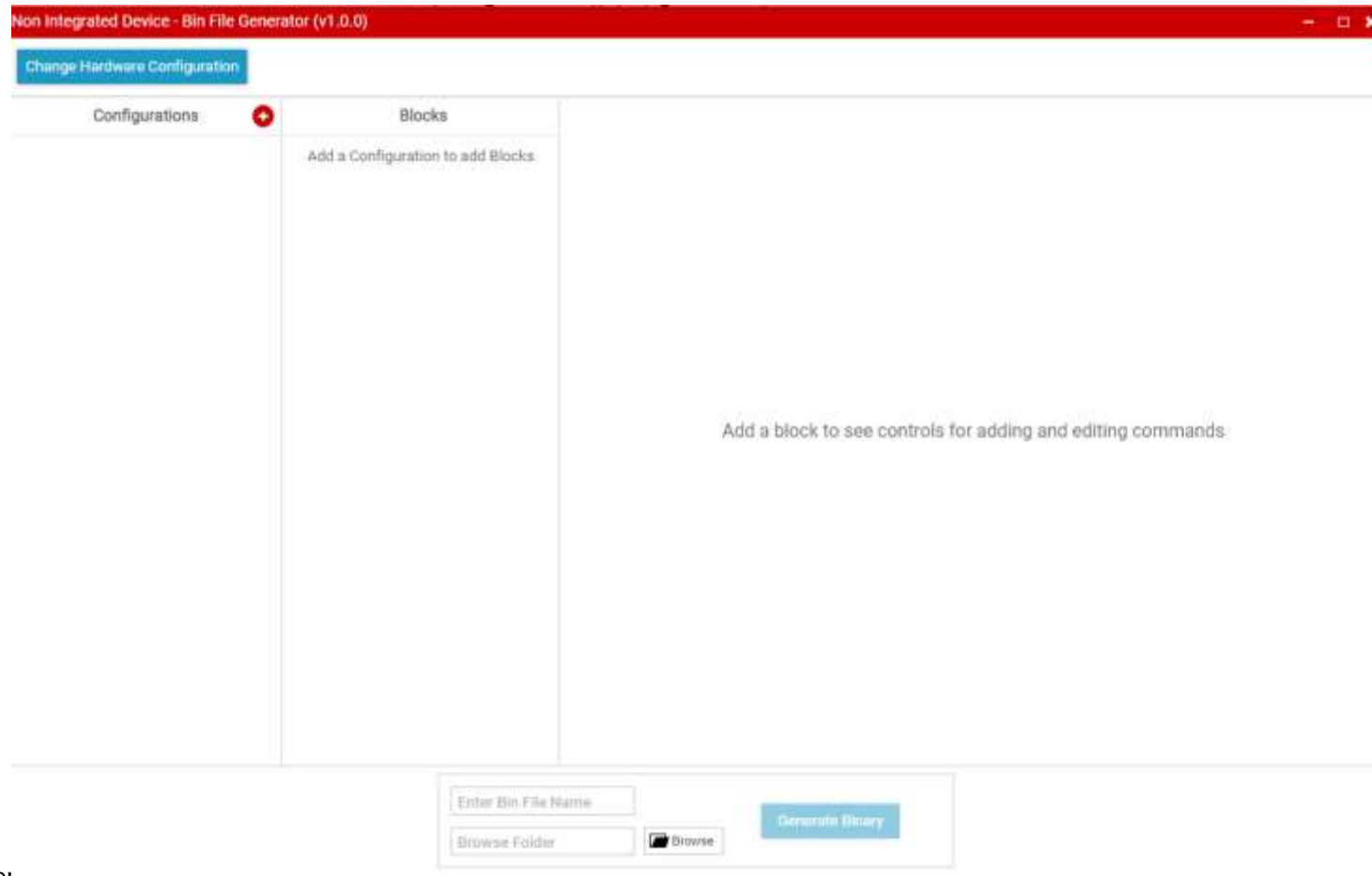
TA82562

Device 8

TA82564

Next

# Bin File Making VI | Configuration Page



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

# Bin File Making VII | Add Configuration

Non Integrated Device - Bin File Generator (v1.0.0)

Change Hardware Configuration

Configurations	Blocks
Configuration 1	
Configuration 2	
Configuration 3	

Add a block to see controls for adding and editing commands

Enter Bin File Name:

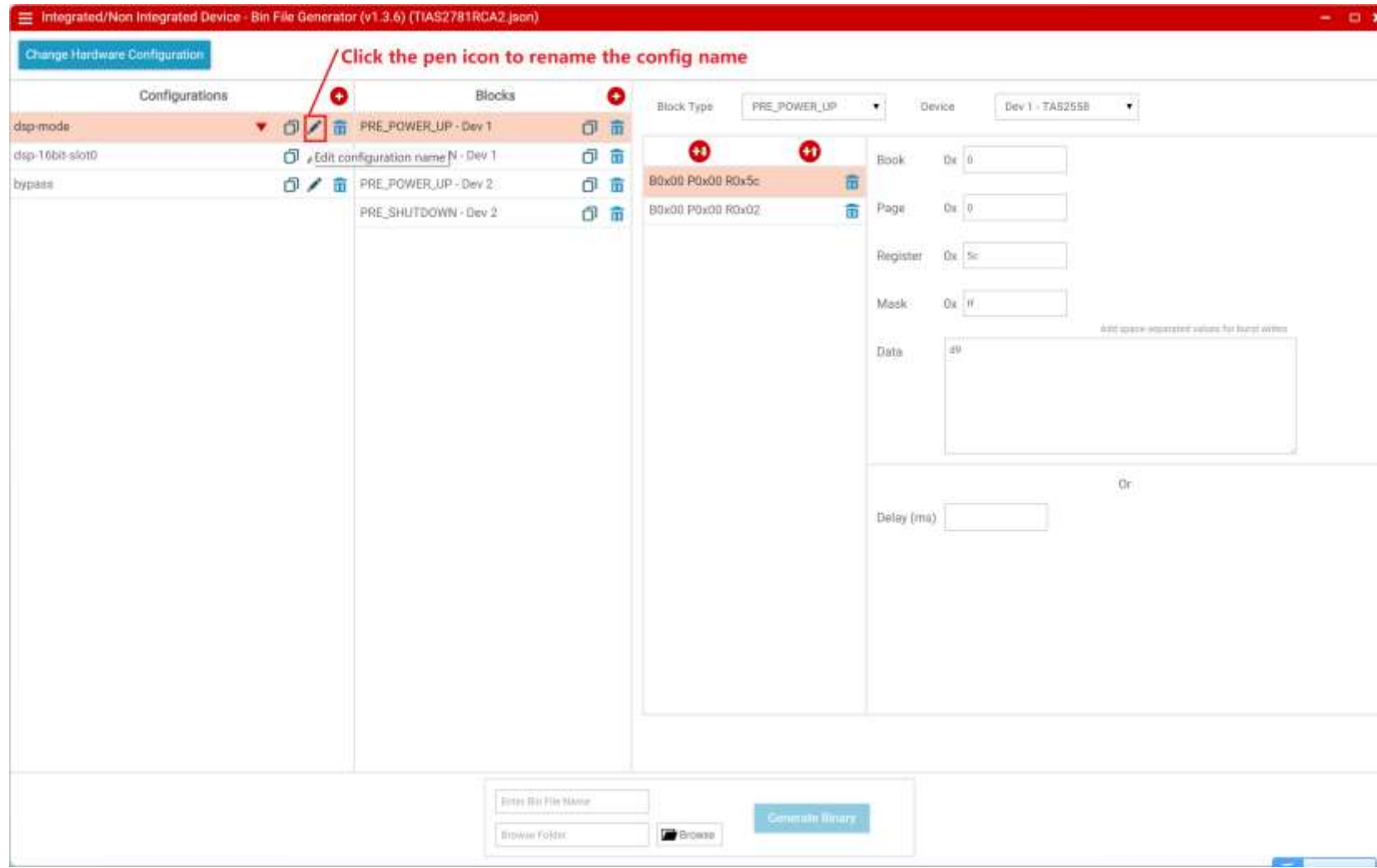
Browse Folder

Browse

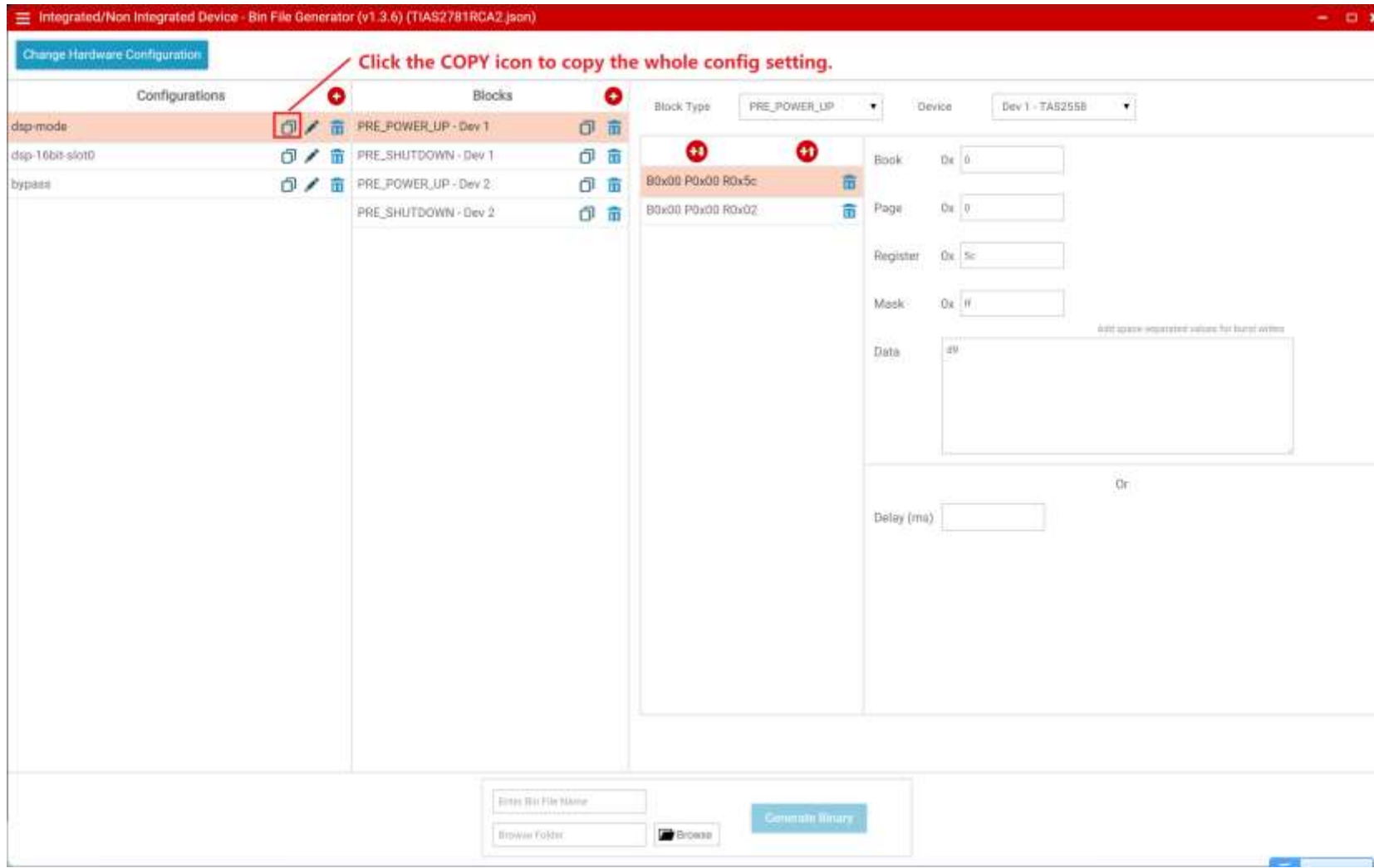
Generate Binary

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

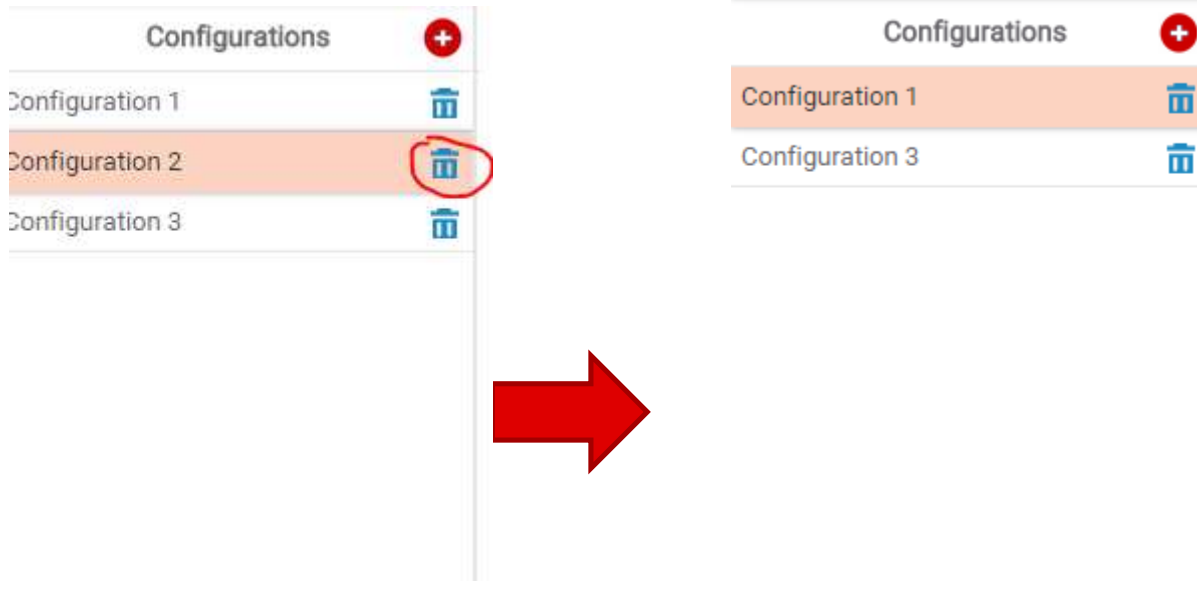
# Bin File Making VIII | Rename Configuration name



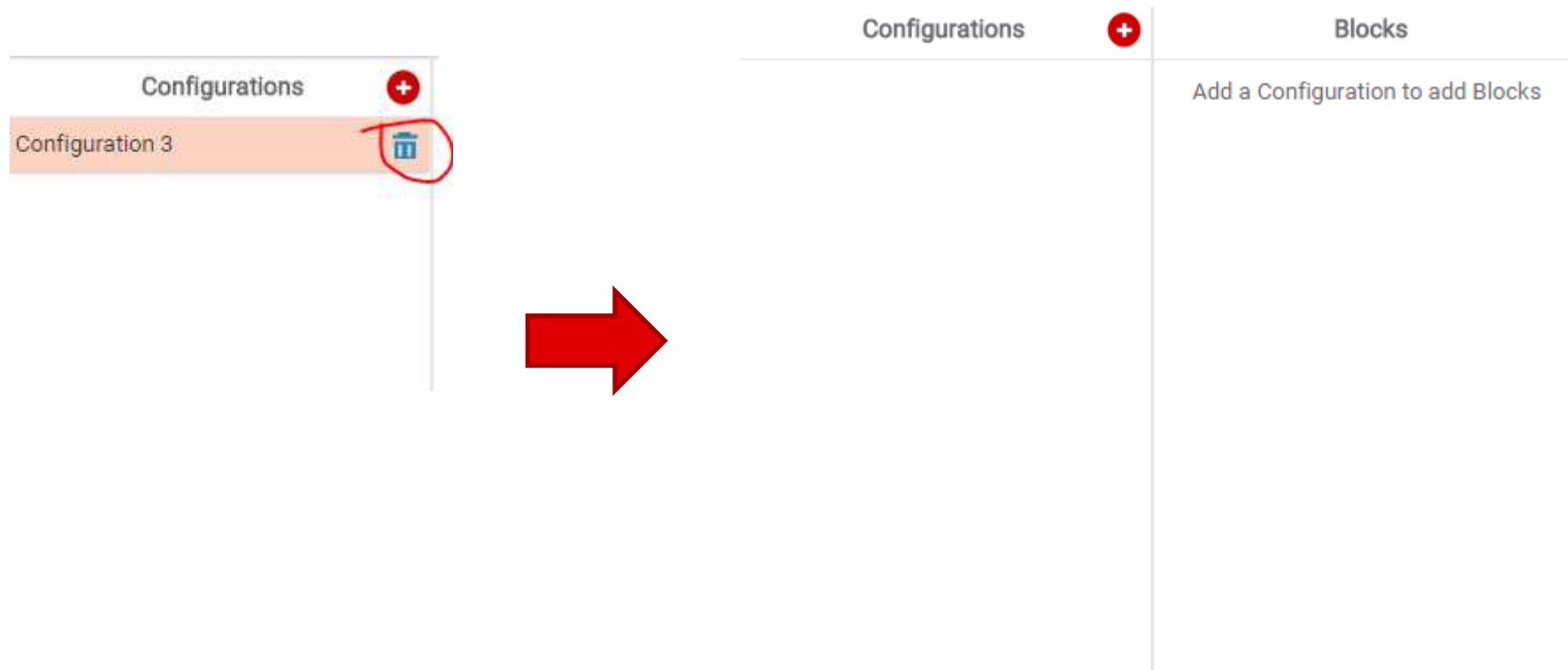
# Bin File Making IX | Copy Configuration



# Bin File Making X | Delete Configuration



# Bin File Making XI | Delete Last Configuration





# Bin File Making XII | Add Blocks

Non Integrated Device - Bin File Generator (v1.0.0)

Change Hardware Configuration

Configurations		Blocks		Block Type	Device
Configuration 1		Block 1			
Configuration 2		Block 2			
Configuration 3					

+ Add First Command

Enter Bin File Name

Browse Folder

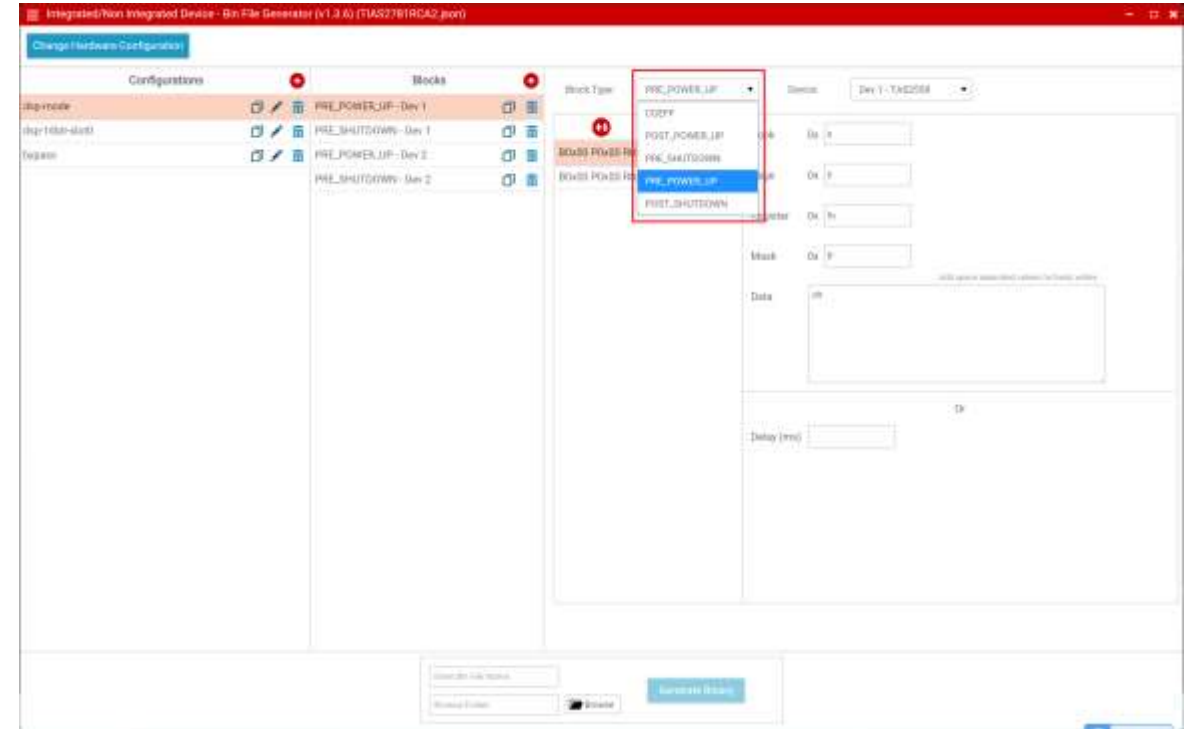
Browse

Generate Binary

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

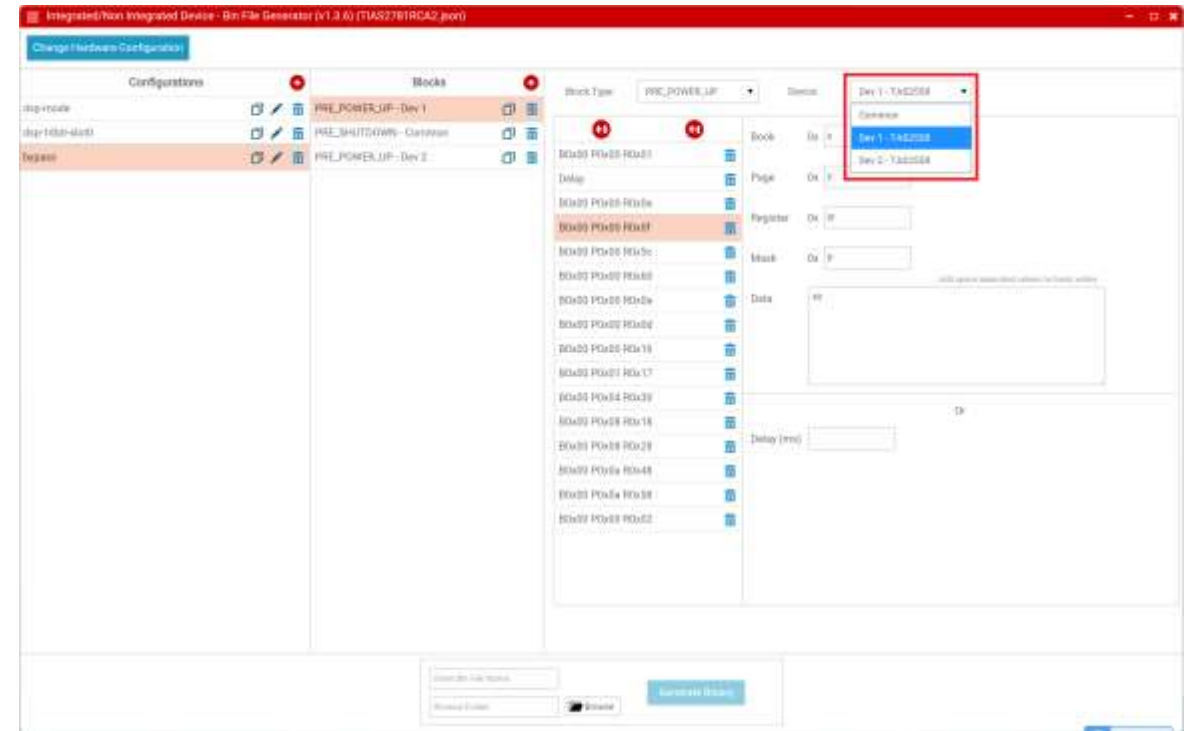
# Bin File Making XIII | Select Block Type

- The driver only support PRE\_POWER\_UP for chip power up, and PRE\_SHUTDOWN for chip shutdown.

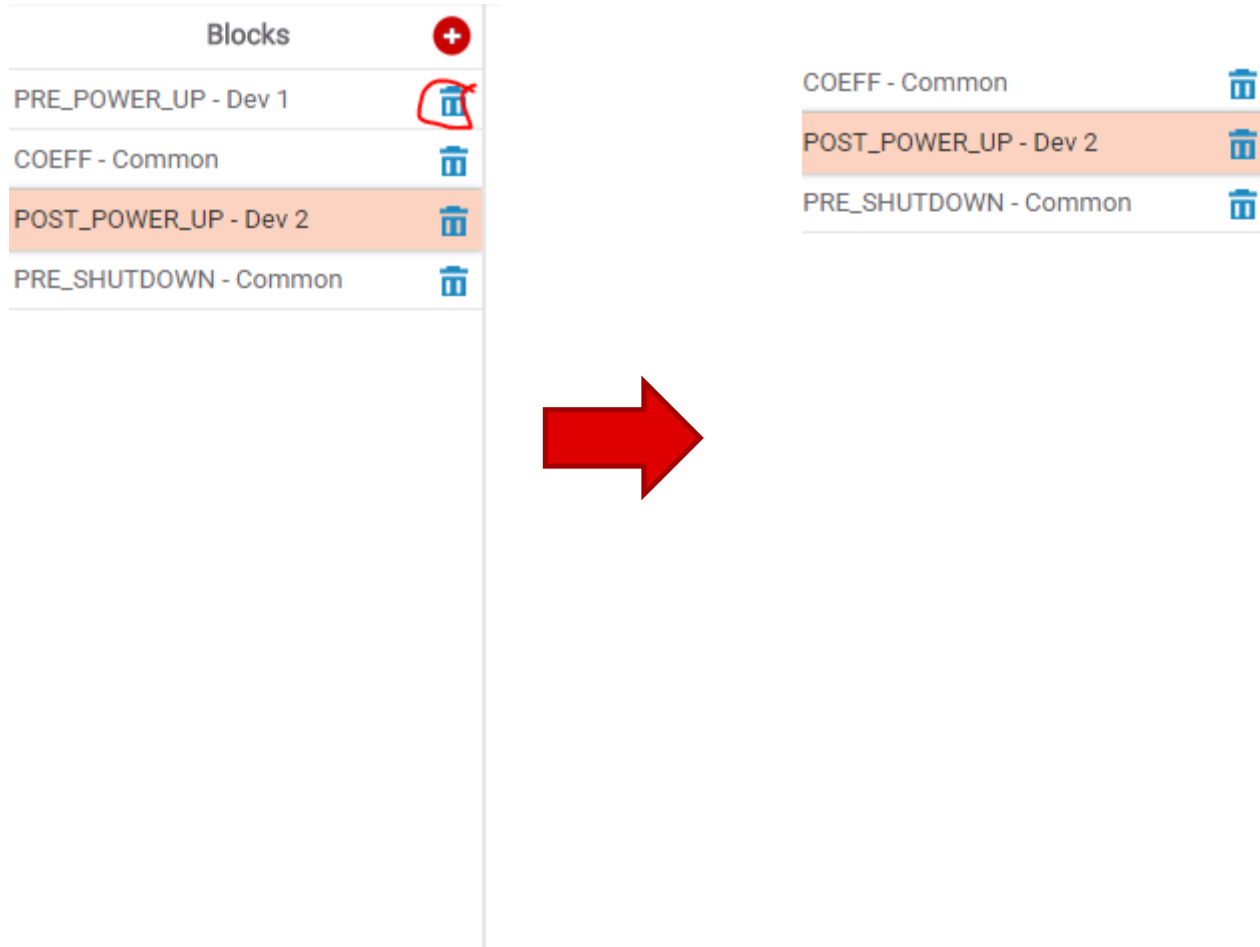


# Bin File Making XIV | Select Device for one specific Block

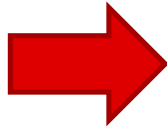
- “Common” means all the devices defined in the regbin file, for the right picture, the common means both dev 1 and dev 2.



# Bin File Making XV | Delete Block

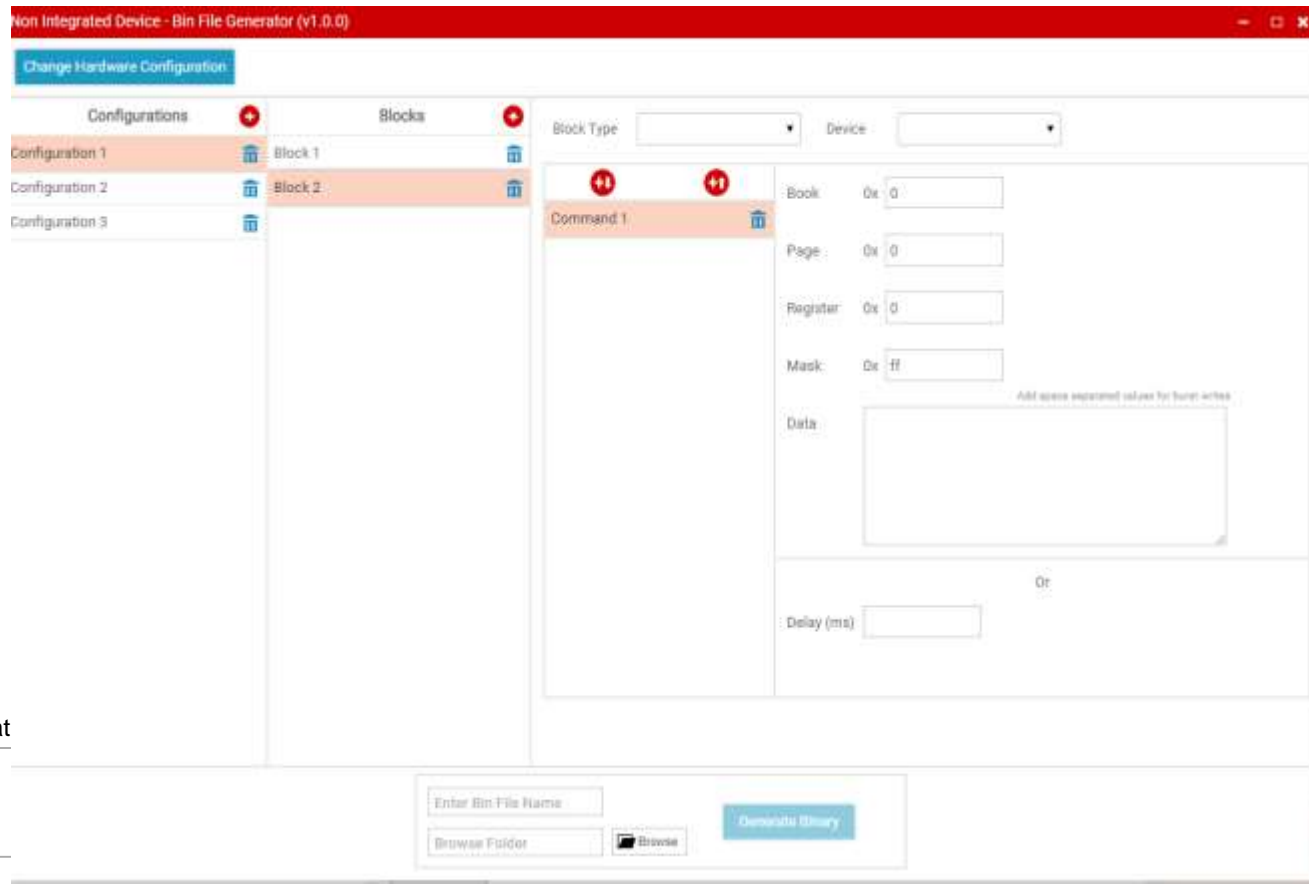
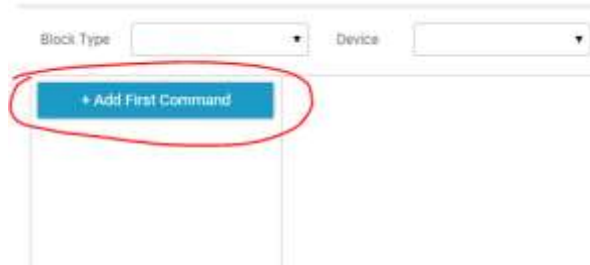


# Bin File Making XVI | Delete Last Block in Configuration



Add a block to see controls for adding and editing commands

# 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.

Integrated/Non Integrated Device - Bin File Generator (v1.3.7) (tao2781-4amp-reg.jar)

Change Hardware Configuration

Configurations

Blocks

Block Type: PRE\_POWER\_UP

Device: Dev 5 - TA02598

Block: 04

Page: 04

Register: 04

Mask: ff

Data: 00 00 00 00

Delay (ms): 0

Comments:

Mask item must be filled with 0xff.




















The numbers of Data must be multiple of 4.

Generate Binary

# Bin File Making XVII | Add Below Selected Command

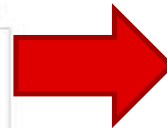
**Add a piece of register setting after one certain piece of register setting**

Block Type: PRE\_POWER\_UP Device: Dev 1 - TAS2558




















		Book	0x 0
B0x00 P0x00 R0x00		Page	0x 08
B0x00 P0x00 R0x01		Register	0x 28
Delay		Mask	0x ff
B0x00 P0x00 R0x0e		Data	40 00 00 00
B0x00 P0x00 R0x0f			
B0x00 P0x00 R0x5c			
B0x00 P0x00 R0x60			
B0x00 P0x00 R0x0a			
B0x00 P0x00 R0x0d			
B0x00 P0x00 R0x16			
B0x00 P0x01 R0x17			
B0x00 P0x04 R0x30			
B0x00 P0x08 R0x18			
B0x00 P0x08 R0x28			
B0x00 P0x0a R0x48			
B0x00 P0x0a R0x58			
B0x00 P0x00 R0x02			

Or

Delay (ms)



Block Type: PRE\_POWER\_UP Device: Dev 1 - TAS2558

		Book	0x 0
B0x00 P0x00 R0x01		Page	0x 0
Delay		Register	0x 0
B0x00 P0x00 R0x0e		Mask	0x ff
B0x00 P0x00 R0x0f		Data	
B0x00 P0x00 R0x5c			
B0x00 P0x00 R0x60			
B0x00 P0x00 R0x0a			
B0x00 P0x00 R0x0d			
B0x00 P0x00 R0x16			
B0x00 P0x01 R0x17			
B0x00 P0x04 R0x30			
B0x00 P0x08 R0x18			
B0x00 P0x08 R0x28			
B0x00 P0x00 R0x00			
B0x00 P0x0a R0x48			
B0x00 P0x0a R0x58			
B0x00 P0x00 R0x02			

Or



Delay (ms)



# Bin File Making XIX | Add above Selected Command



**Add a piece of register setting  
before a certain register setting**

Block Type: PRE\_POWER\_UP Device: Dev 1 - TAS2558

	B0x00 P0x00 R0x01	Book	0x 0
	Delay	Page	0x 0
	B0x00 P0x00 R0x0e	Register	0x 1
	B0x00 P0x00 R0x0f	Mask	0x ff
	B0x00 P0x00 R0x5c		
	B0x00 P0x00 R0x60		
	B0x00 P0x00 R0x0a		
	B0x00 P0x00 R0x0d		
	B0x00 P0x00 R0x16		
	B0x00 P0x01 R0x17		
	B0x00 P0x04 R0x30		
	B0x00 P0x08 R0x18		
	B0x00 P0x08 R0x28		
	B0x00 P0x0a R0x48		
	B0x00 P0x0a R0x58		
	B0x00 P0x00 R0x02		

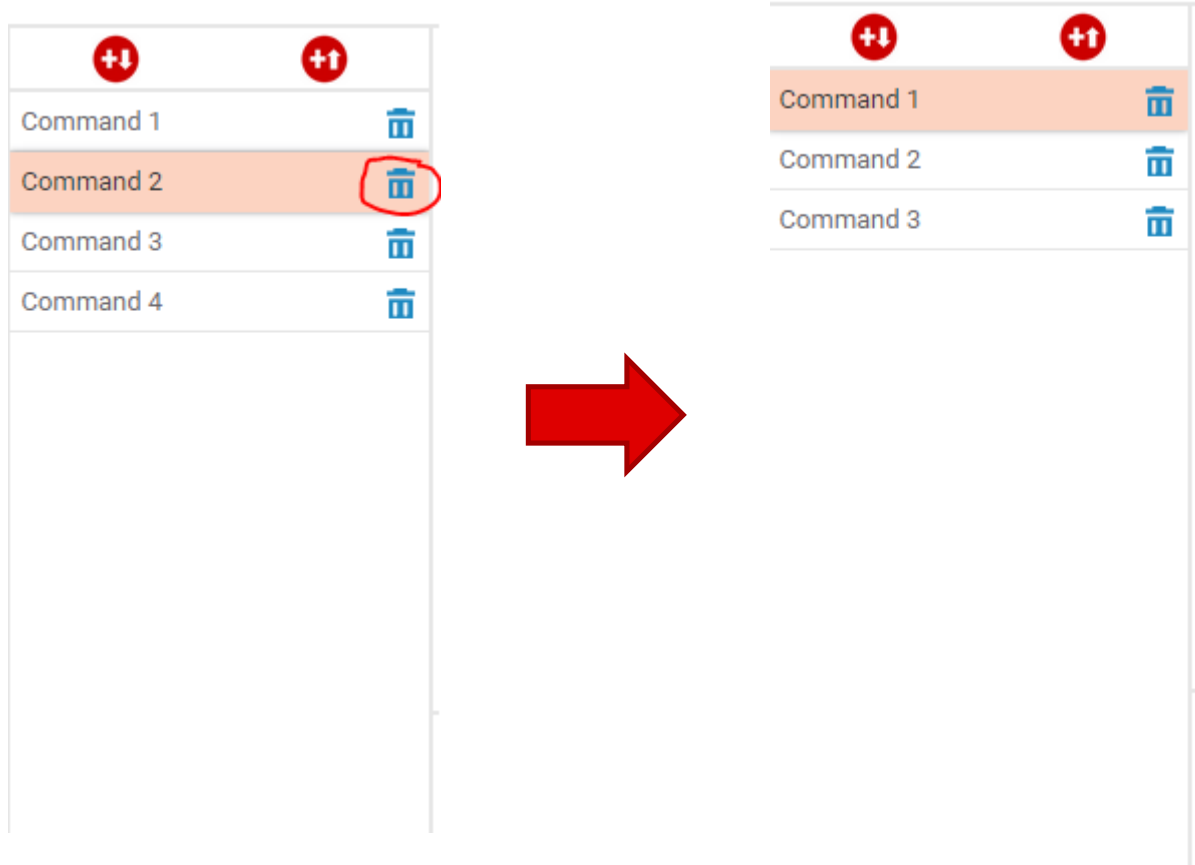
Delay (ms)

Block Type: PRE\_POWER\_UP Device: Dev 1 - TAS2558

		B0x00 P0x00 R0x00	Book	0x 0
		B0x00 P0x00 R0x01	Page	0x 0
		Delay	Register	0x 0
		B0x00 P0x00 R0x0e	Mask	0x ff
		B0x00 P0x00 R0x0f		
		B0x00 P0x00 R0x5c		
		B0x00 P0x00 R0x60		
		B0x00 P0x00 R0x0a		
		B0x00 P0x00 R0x0d		
		B0x00 P0x00 R0x16		
		B0x00 P0x01 R0x17		
		B0x00 P0x04 R0x30		
		B0x00 P0x08 R0x18		
		B0x00 P0x08 R0x28		
		B0x00 P0x0a R0x48		
		B0x00 P0x0a R0x58		
		B0x00 P0x00 R0x02		

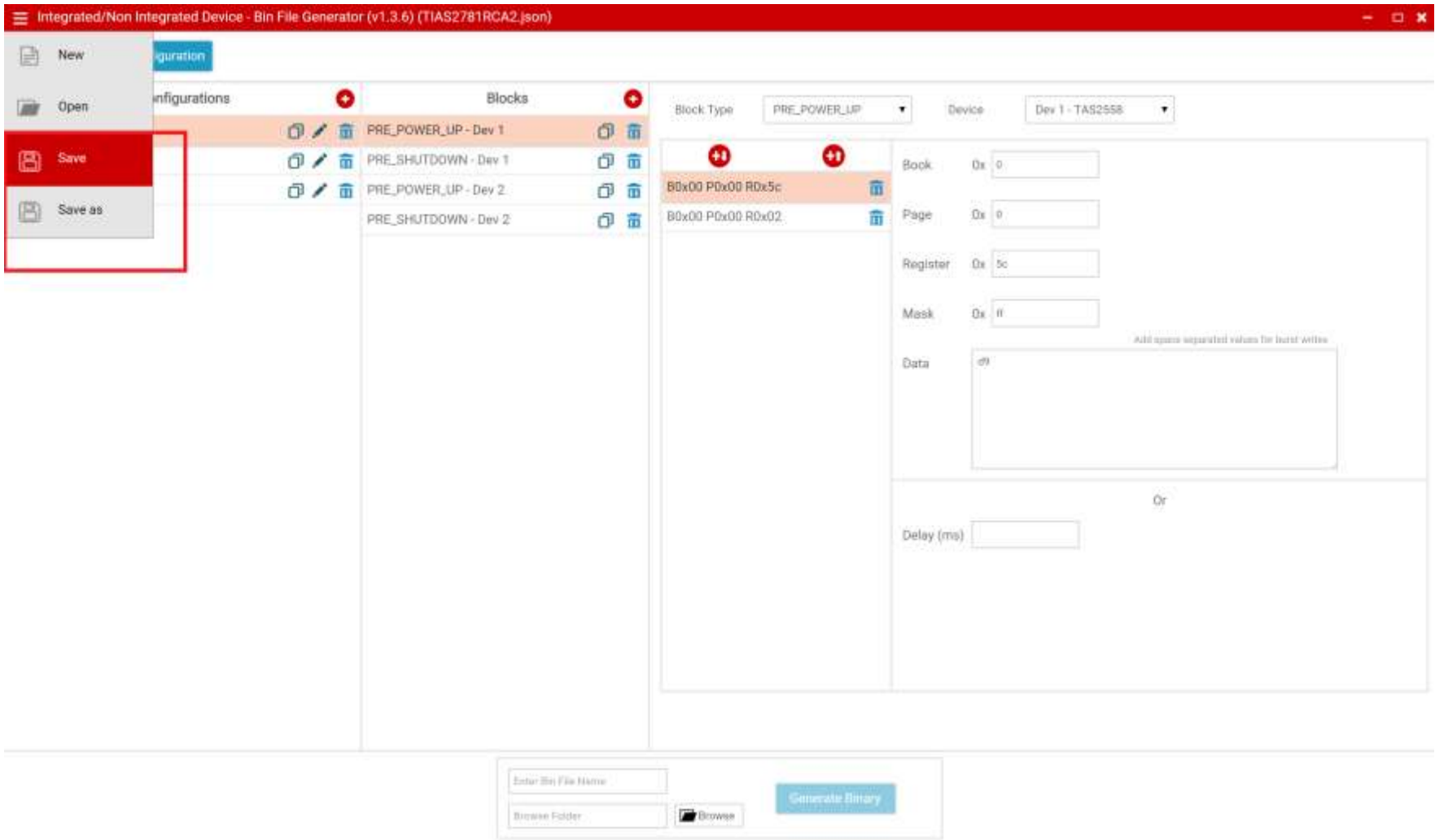
Delay (ms)

# Bin File Making XX | Delete Command



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

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



# Bin File Creation XXII | Export the regbin binary file I

Integrated/Non Integrated Device - Bin File Generator (v1.3.6) (TIAS2781RCA2.json)

Change Hardware Configuration

Configurations	Blocks
dsp-mode	PRE_POWER_UP - Dev 1
dsp-16bit-slot0	PRE_SHUTDOWN - Dev 1
bypass	PRE_POWER_UP - Dev 2
	PRE_SHUTDOWN - Dev 2

Block Type: PRE\_POWER\_UP Device: Dev 1 - TAS2558

Block: 0x 0

Page: 0x 0

Register: 0x 5c

Mask: 0x ff

Data:

Delay (ms):

Generate Binary

Select the folder to save in.

Browse

# Bin File Creation XXII | Export the regbin binary file II

Integrated/Non Integrated Device - Bin File Generator (v1.3.6) (TIAS2781RCA2.json)

Change Hardware Configuration

Configurations

dsp-mode

dsp-16bit-slot0

bypass

Blocks

PRE\_POWER\_UP - Dev 1

PRE\_SHUTDOWN - Dev 1

PRE\_POWER\_UP - Dev 2

PRE\_SHUTDOWN - Dev 2

Block Type

PRE\_POWER\_UP

Device

Dev 1 - TAS2558

B0x00 P0x00 R0x5c

B0x00 P0x00 R0x02

Block

0x 0

Page

0x 0

Register

0x 5c

Mask

0x ff

Data

09

Or

Delay (ms)

Set bin file name.


pcmdevice

Desktop

Browse

Generate Binary

TI Information – Selective Disclosure



# Bin File Creation XXIII | Data Validation Before Exporting Binary I

Try creating binary without providing block type for a block

Non Integrated Device - Bin File Generator (v1.0.0)

Change Hardware Configuration

Configurations

Configuration 1

Blocks

POST\_POWER\_UP - Common

Block 2

PRE\_SHUTDOWN - Dev 2

Block Type

Device: Dev 1 - TA52558

Block: 0x 0

Page: 0x 0

Register: 0x 0

Mask: 0x ff

Data

Delay (ms)

Generate Binary

Configuration 1 -> Block 2 -> Block type not selected

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

Non Integrated Device - Bin File Generator (v1.0.0)

Change Hardware Configuration

Configurations

Configuration 1

Blocks

POST\_POWER\_UP - Common

POST\_POWER\_UP - Dev 1

PRE\_SHUTDOWN - Dev 2

Block Type: PRE\_SHUTDOWN

Device: Dev 2 - TAS3562

Block: 0x 0

Page: 0x 0

Register: 0x 0

Mask: 0x ff

Data: Add space separated values for burst writes

Delay (ms)

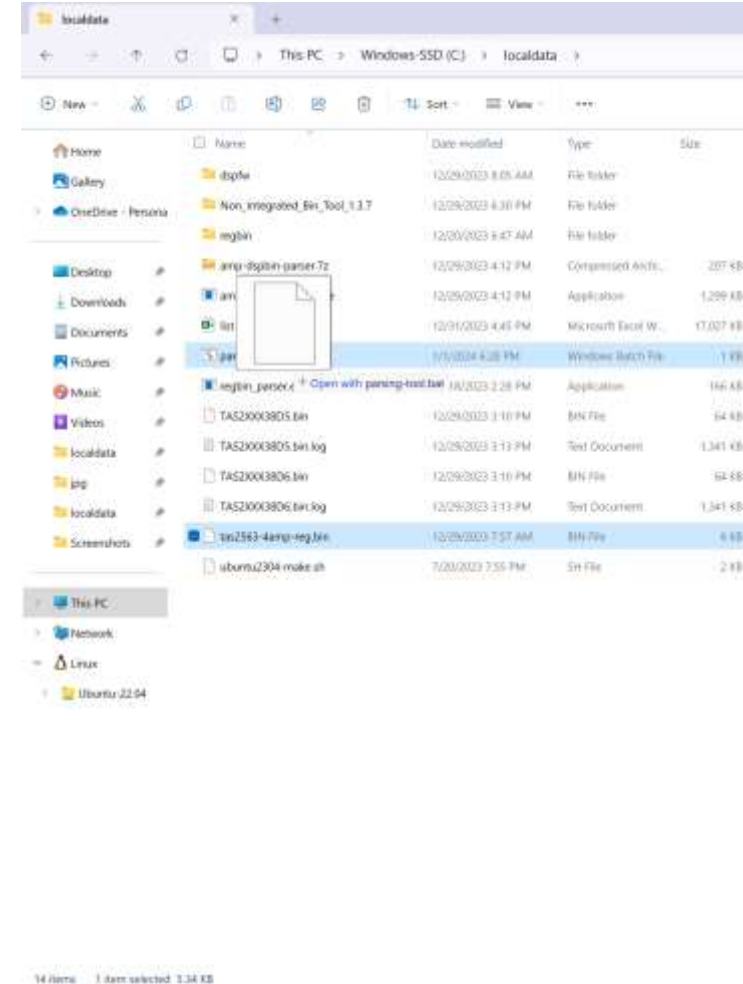
Generate Binary

Configuration 1 -> PRE\_SHUTDOWN - Dev 2 -> Command 1 -> Value of Data is invalid

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

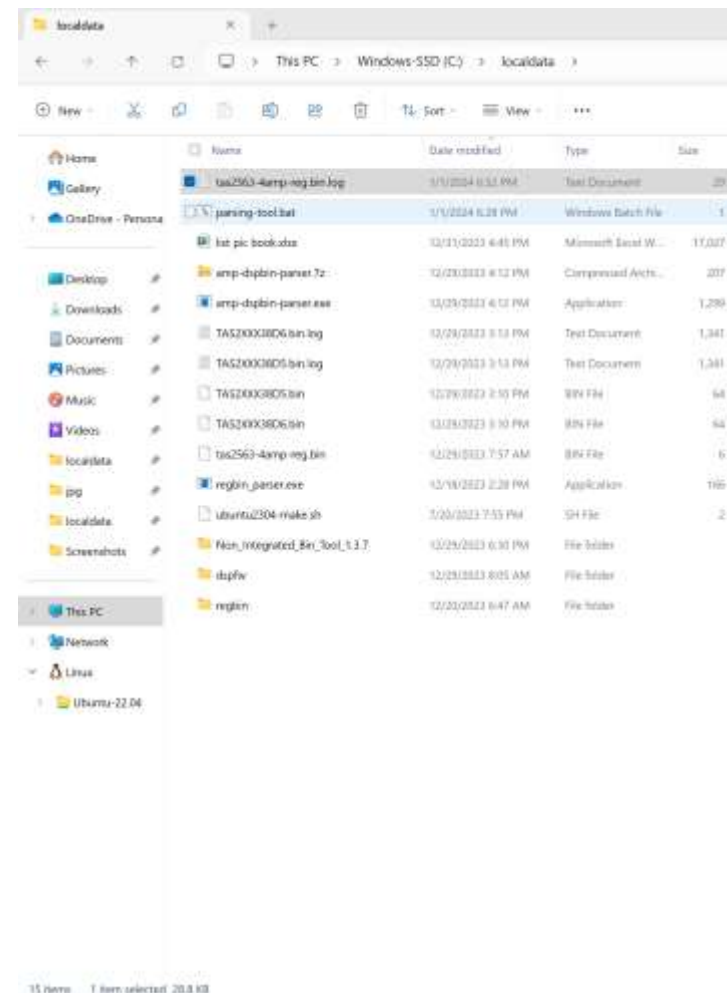
- Toolset for regbin parsing.
- Operations:
  1. Drag the regbin file onto the parsing-tool.bat, then release, see the right picture, tas2563-4amp-reg.bin is dragged onto the parsing-tool.bat.
  2. It will popup a command-line screen, pls check the output, the left picture next page shows a successfully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

```
C:\Windows\system32\cmd.exe
Pls look into C:\localdata\tas2563-4amp-reg.bin.log for details
Press any key to continue . . .
```



# 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.

# 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

# 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

# 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

# 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
```

# 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.

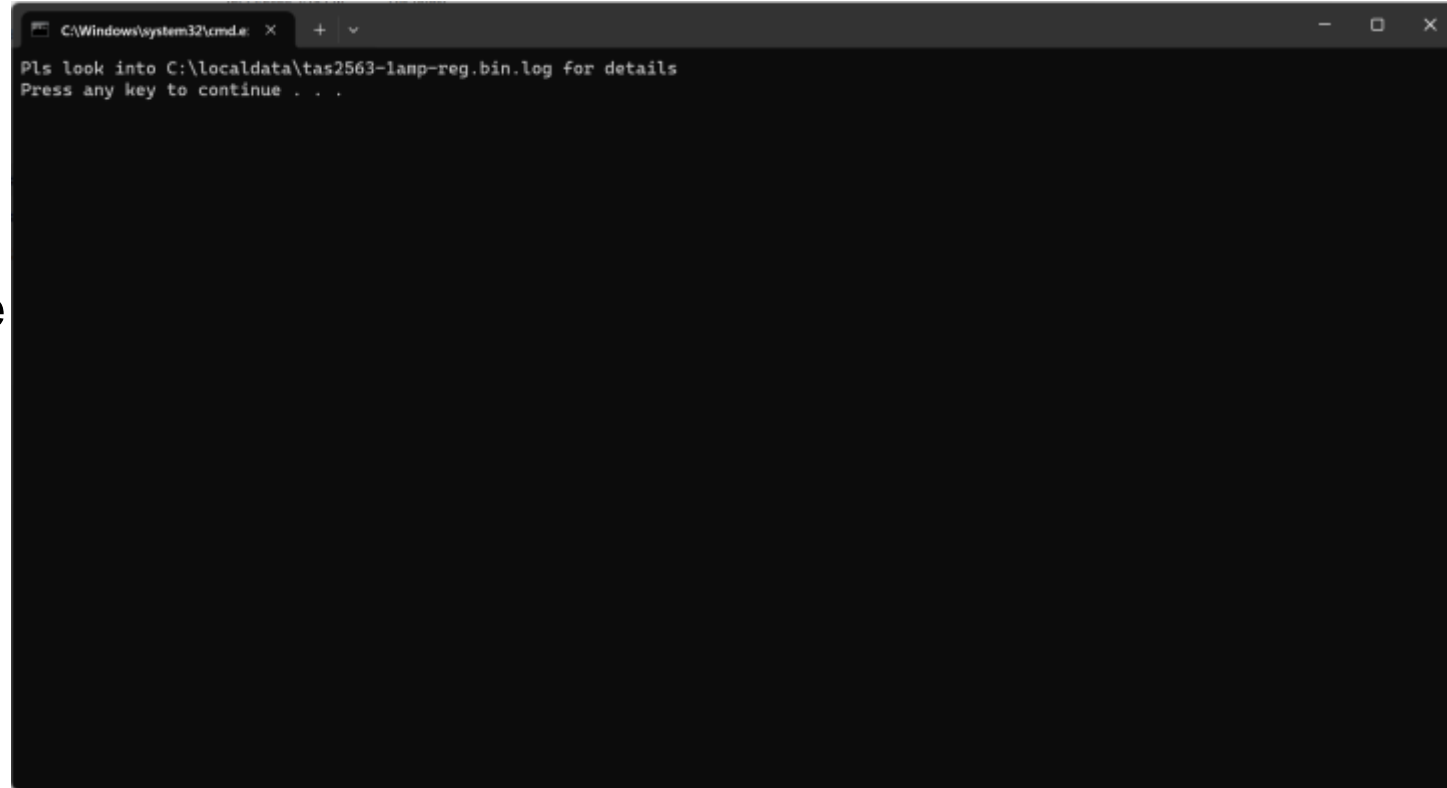
# To be Improved II – Bin Tool

- 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.



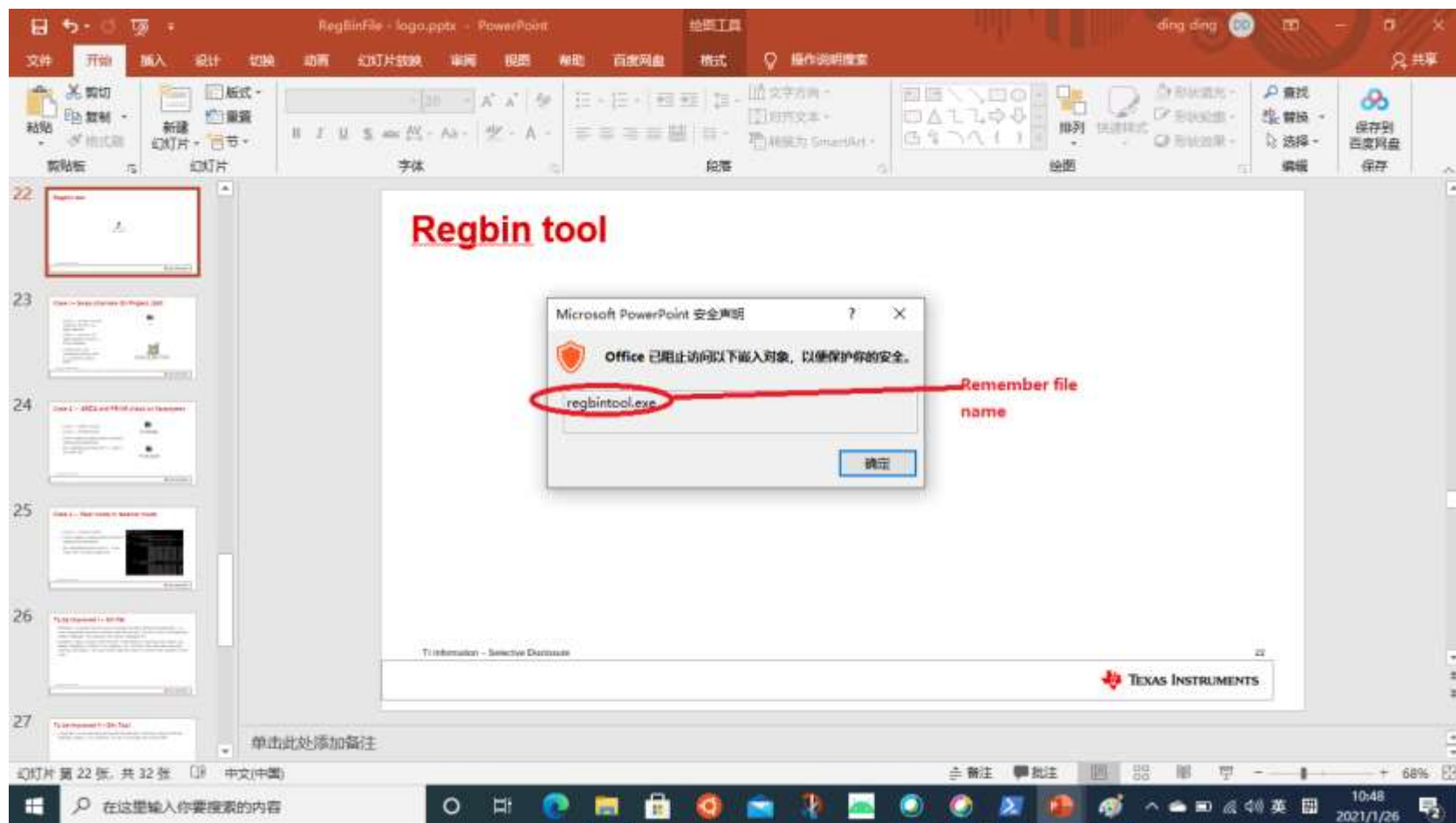
# How to parse the regbin binary file?

- 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.

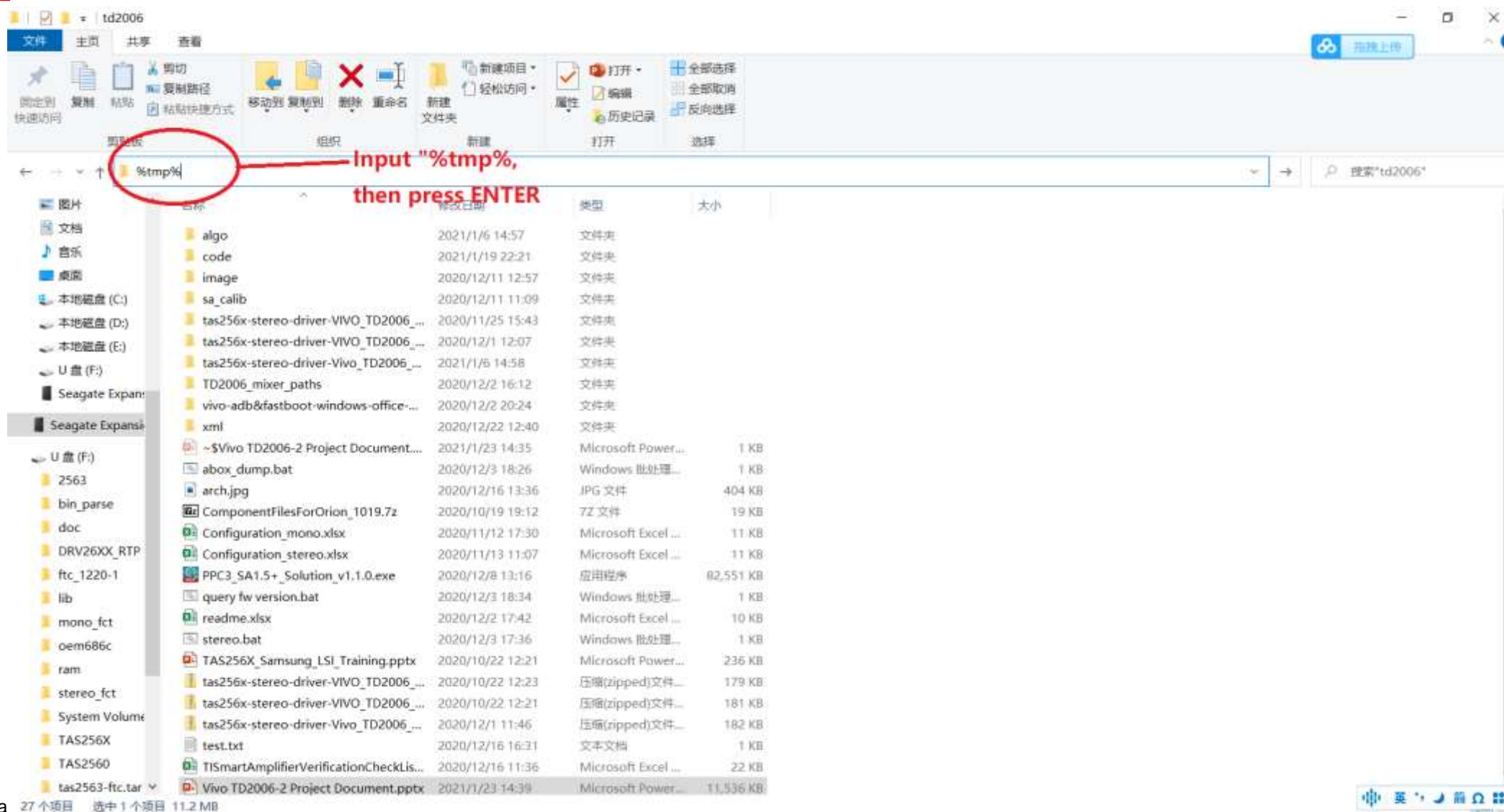


# Appendix I

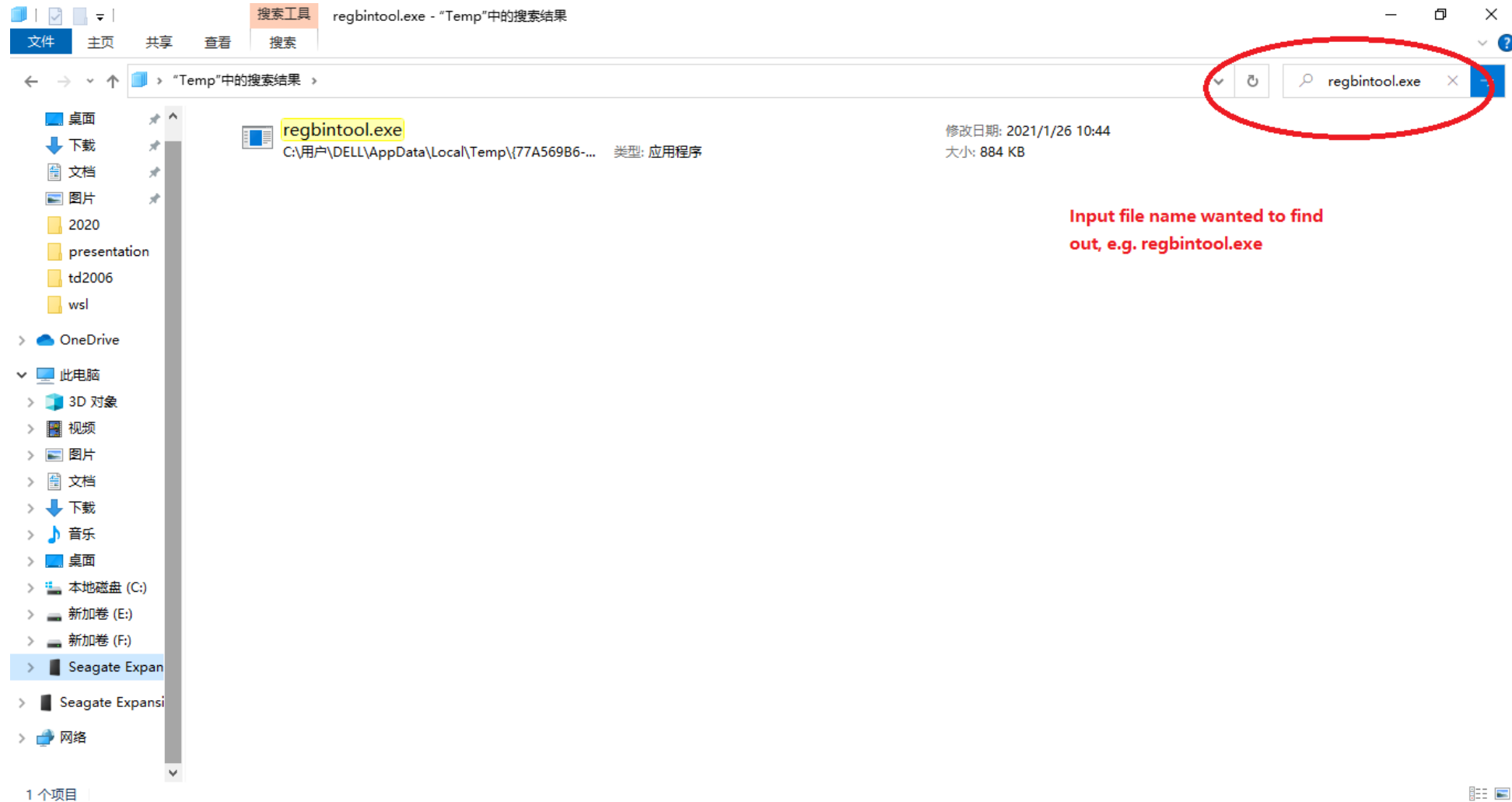
If the file object can't be opened, pls search the file into %tmp%, see the following picture.



# Appendix II



# Appendix III



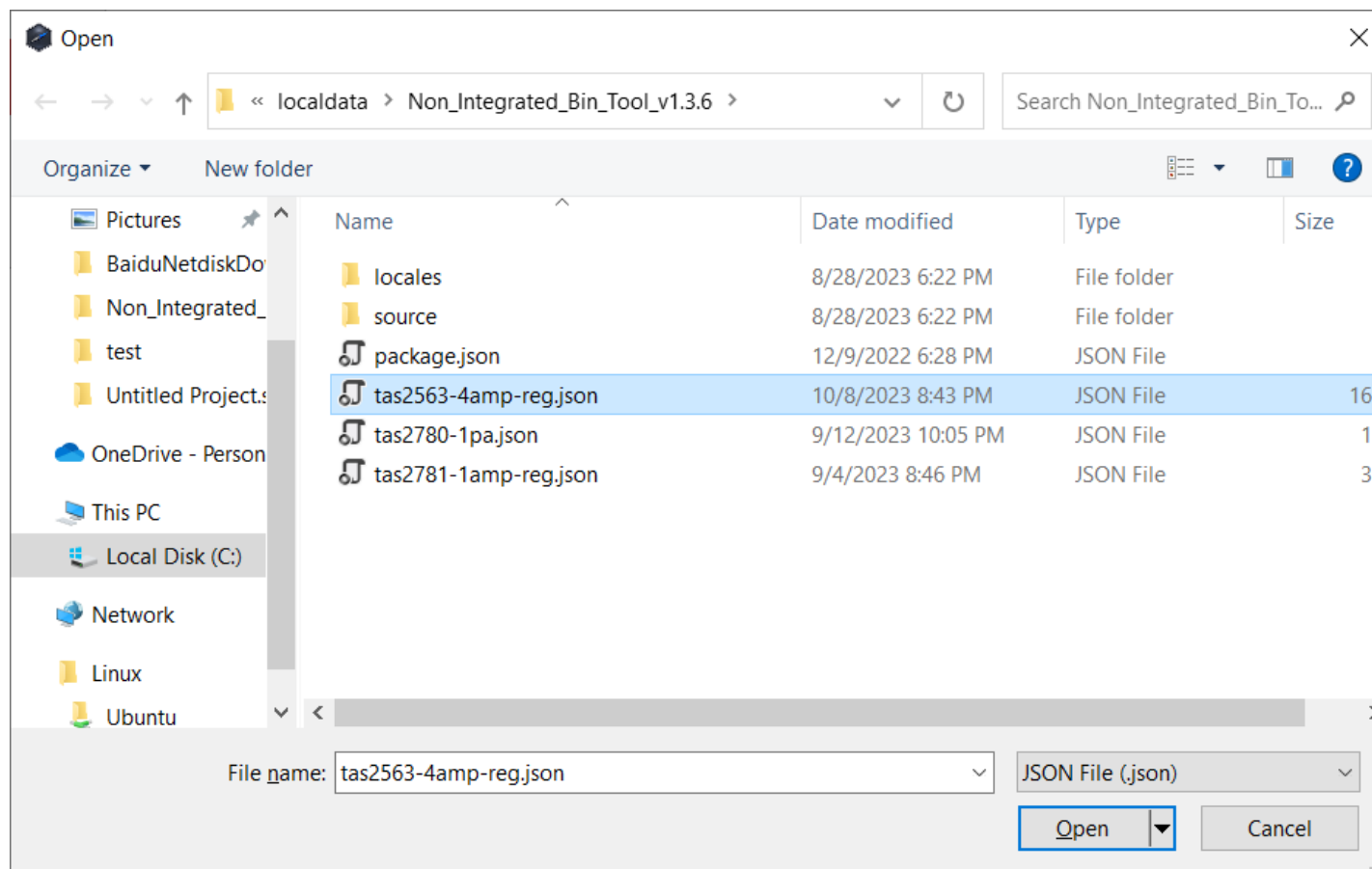
# Appendix IV | How to generate bin file from Jason file I

- 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.



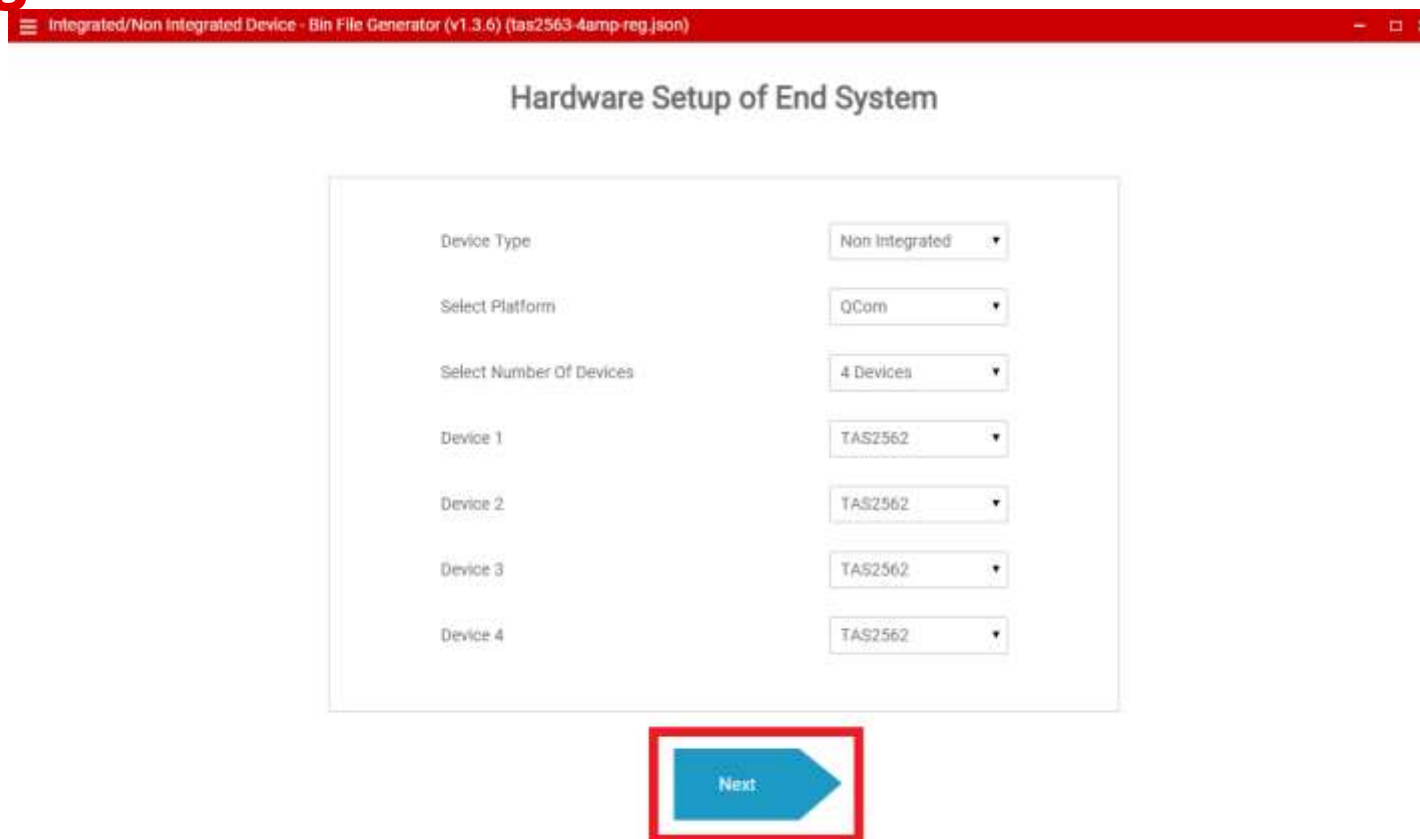
# Appendix V | How to generate bin file from Jason file II

- 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.



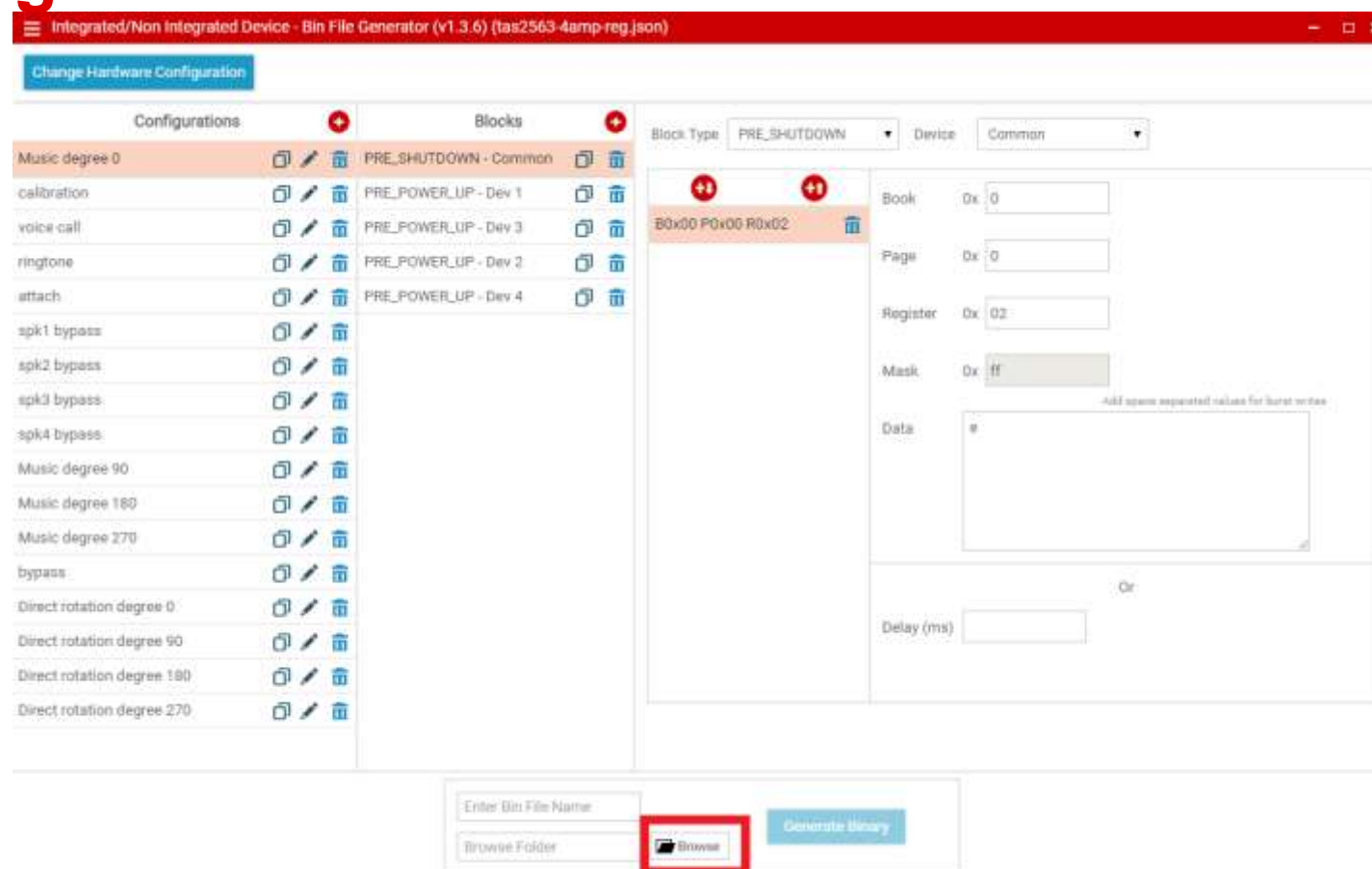
The screenshot shows a web-based configuration tool titled "Integrated/Non Integrated Device - Bin File Generator (v1.3.6) (tas2563-4amp-reg.json)". The main heading is "Hardware Setup of End System". Below this, there are several dropdown menus for configuration:

Configuration Item	Selected Value
Device Type	Non Integrated
Select Platform	QCom
Select Number Of Devices	4 Devices
Device 1	TAS2562
Device 2	TAS2562
Device 3	TAS2562
Device 4	TAS2562

At the bottom of the configuration area, there is a blue arrow button labeled "Next", which is highlighted with a red rectangular border.

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

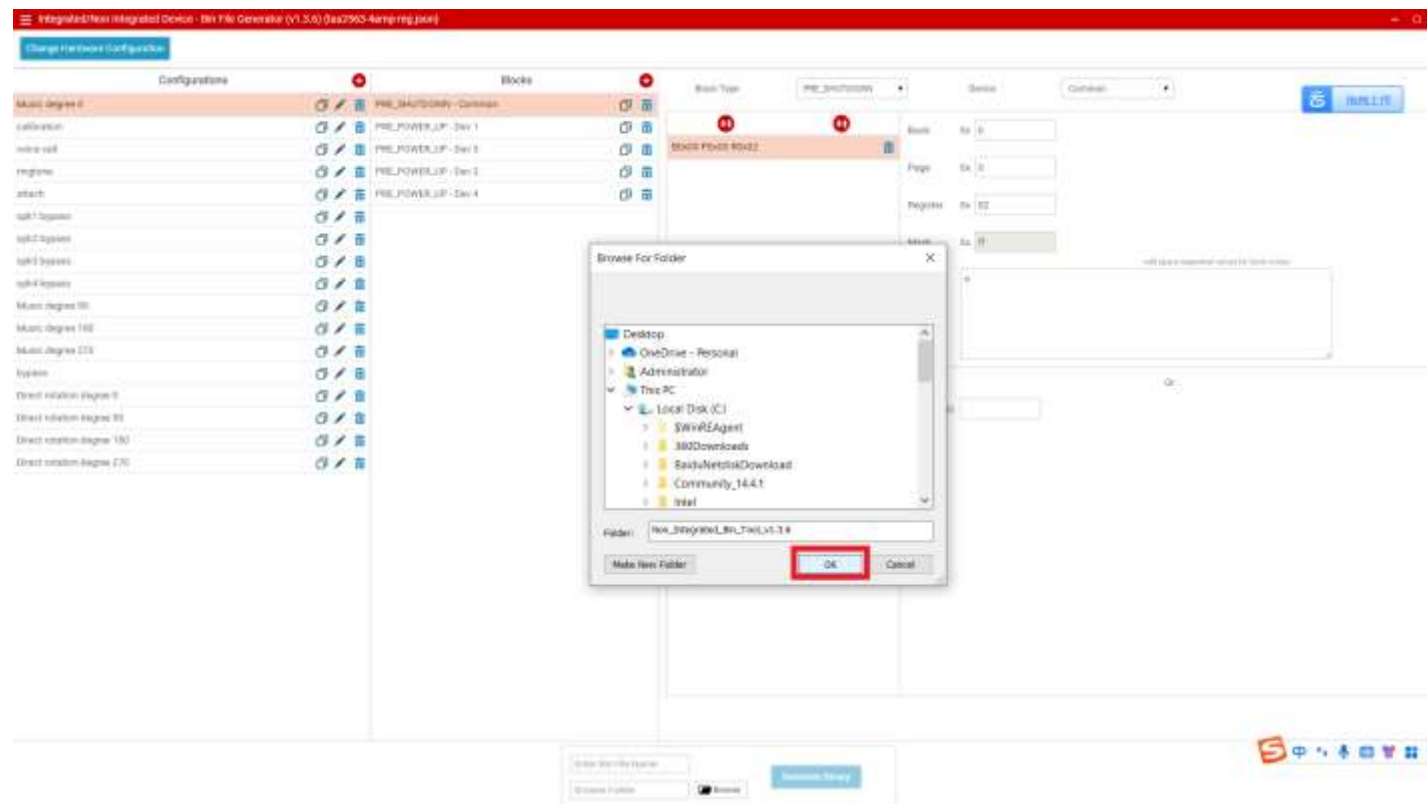
- STEP IV: Click the “Browse” button to select a folder to save bin file. See the right pic.





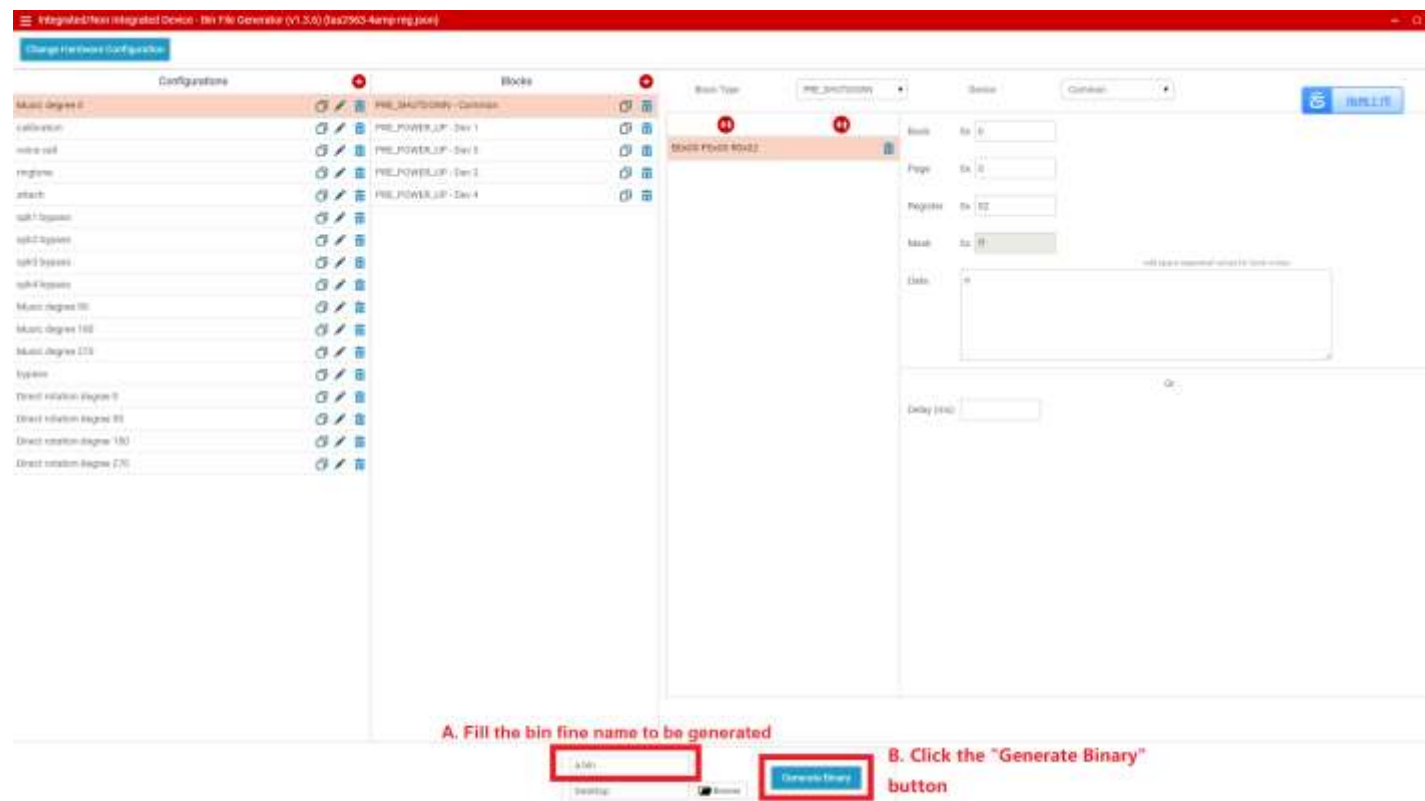
# Appendix VIII | How to generate bin file from Jason file V

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



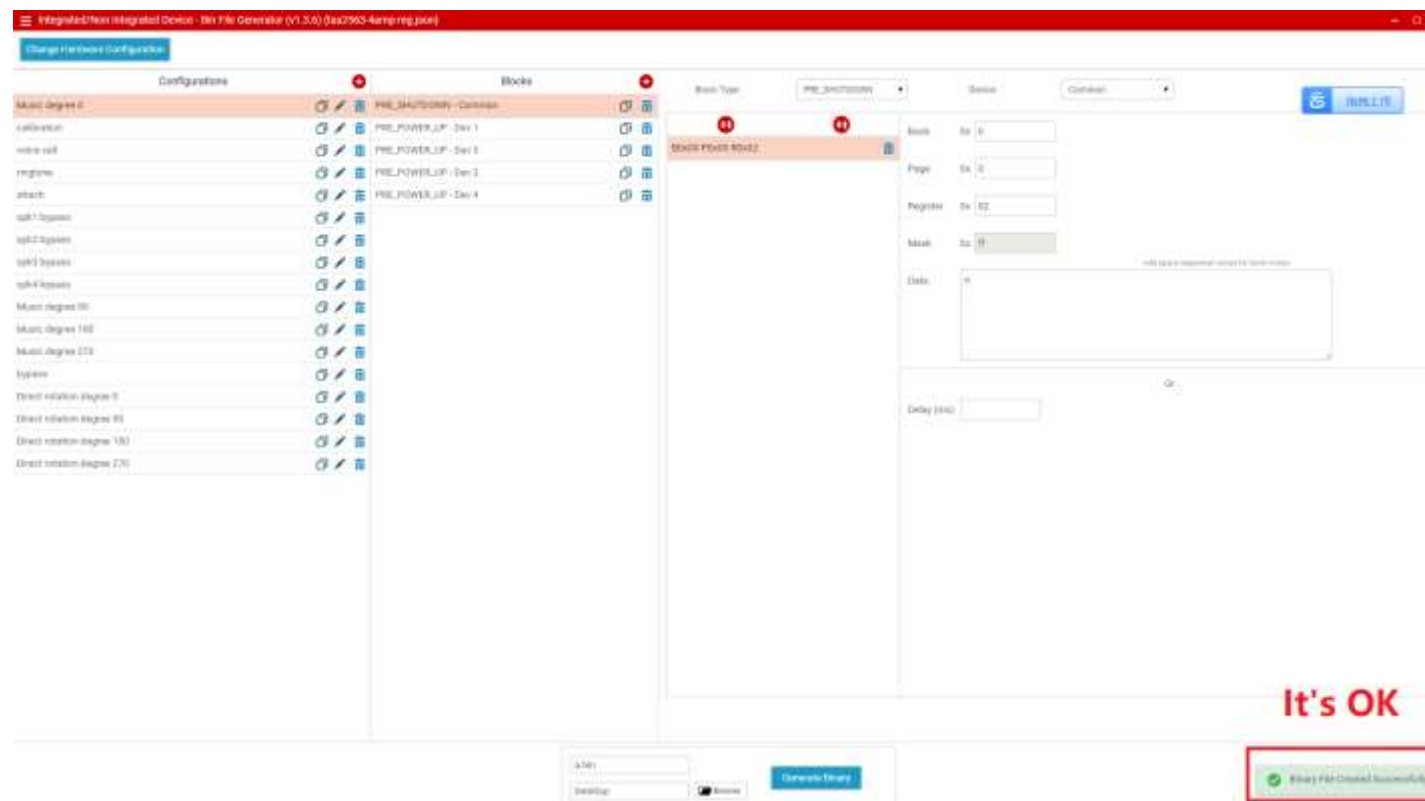
# Appendix IX | How to generate bin file from Jason file VI

- 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!*