

Silicon Motion, Inc.

MP Tool User Guide

Revision 1.0.1.5

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Revision History

Version	Date	Designer	Description
1.0.0.0	08/04/2017	Lucy.Zhou	MP Tool user guide draft
1.0.0.1	08/17/2017	Lucy.Zhou	Added remarks and use steps
1.0.0.2	10/20/2017	Lucy.Zhou	Added custom Logo introduction
1.0.0.3	10/27/2017	Lucy.Zhou	Added load firmware remark
1.0.0.4	11/1/2017	Lucy.Zhou	Added update firmware steps
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1.0.0.6	7/19/2018	Tom.Ning	Refine UI and Fixed Custom logo issue
1.0.0.7	8/24/2018	Lucy.Zhou	Added custom HW information
1.0.0.8	9/05/2018	Lucy.Zhou	Added enable ODT
1.0.0.9	12/6/2018	Lucy.Zhou	Added firmware type select and refine document
1.0.1.0	1/16/2019	Tim.Song	Added firmware configure table
1.0.1.1	1/8/2020	Tim.Song	Add Generate firmware for srom Add Read firmware from srom through usb Add Check srom layout through JLink Add Check srom layout through usb Add Read/Write HDMI Register through usb Add Display Hardware ID for Video Wall
1.0.1.2	4/1/2020	Tim.Song	Add change audio name Add read and write srom
1.0.1.3	05/21/2021	Tim.Song	Add Customer Board Type Add Read firmware version through usb Add Logo light mode configuration
1.0.1.4	06/18/2021	Tim.Song	Add Customer Audio Version Setting
1.0.1.5	03/14/2022	Tim.Song	Update the steps of Updating Firmware through usb

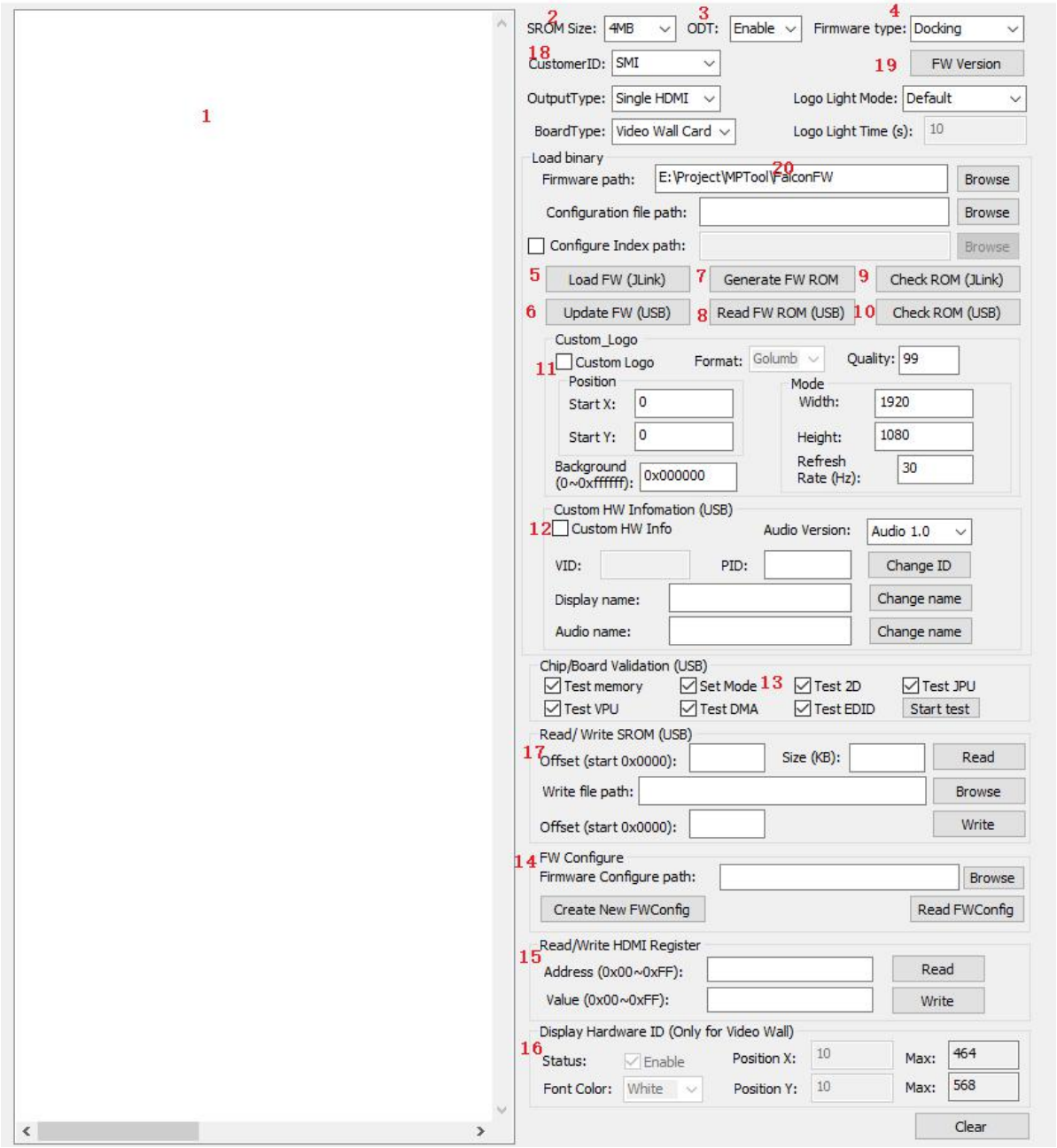
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- # Introduction

This document introduces how to use SMI USB Display MP Tool.

There are 20 parts of this tool:



Picture 1: MP Tool UI

- Message output
- SROM Size
- ODT Level
- Firmware type
- Load Firmware through JLink
- Update Firmware through usb
- Generate firmware for srom
- Read firmware from srom through usb
- Check srom layout through JLink
- Check srom layout through usb
- Custom Logo

- Custom HW information
- Chip/Board validation
- Firmware Configure
- Read/Write HDMI Register through usb
- Display Hardware ID for Video Wall
- Read or write SROM
- Customer Board Type
- Read firmware version through usb
- Logo light mode configuration

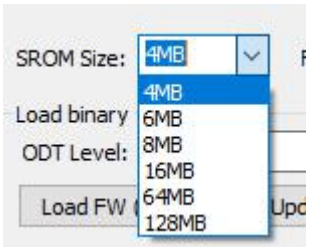
• Function introduction

2.1 Message output

All function's test results are output in this part. You can clear output message by click "Clear" button.

2.2 SROM Size

As shown in the picture 2, we can choose the size of SROM in this part. The default size is 4MB.



Picture 2: Choose SROM size

2.3 ODT Level

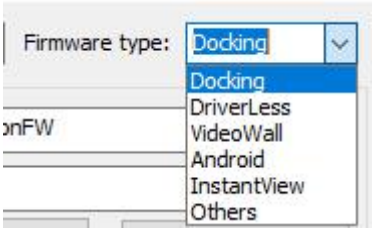


Picture 3: ODT Level

If you want to set ODT level, please use this option.

2.4 Firmware type

As shown in the picture 4, before load firmware, you need to select firmware type. The default type is docking.



Picture 4: Choose Firmware Type

2.5 Load Firmware through JLink

The main function of this part is to load firmware.

Load firmware steps:

- InstallJLinkdriver(Version '**V476d**'). Please use Jlink default install path;
- Plug in Jlink to the computer that already installed JLink driver, and connected to the SMI USB Device;
- Select firmware located folder path;
- Select Configure file path;
- Select Firmware Type;
- Select ODT status;
- Load firmware by click "Load FW (JLink)" button;

Remarks:

- *If you choose the check box of Custom Logo, click "Load FW (JLink)" button will popup a file dialog to remind you select Logo picture (Only support bmp picture). You can configure some information through fourth part to display logo.*
- *When the load is completed, it will show you "`Load binarycompleted!`" in part 1. If load firmware successfully,the part 1 will show you "`Load firmware successful!`".*

2.6 Update Firmware through usb

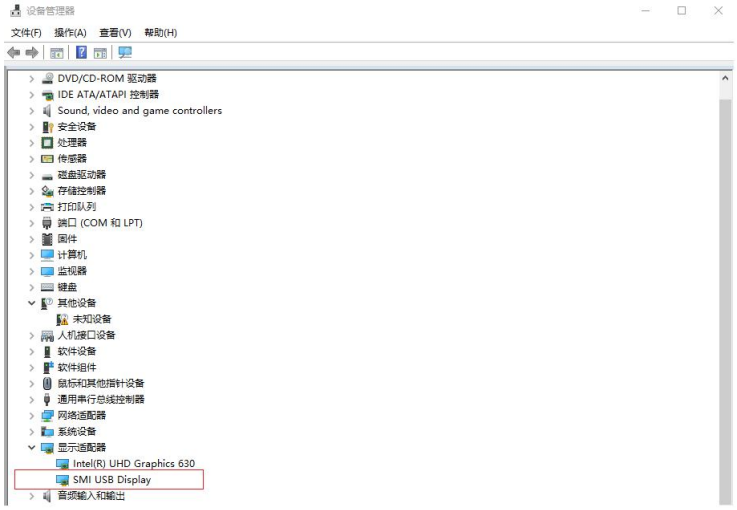
The update firmware is updated by sending commands. So, it must require SMI USB Display already have old firmware and can be recognized by computer.

Update firmware steps:

For InstantView/Docking

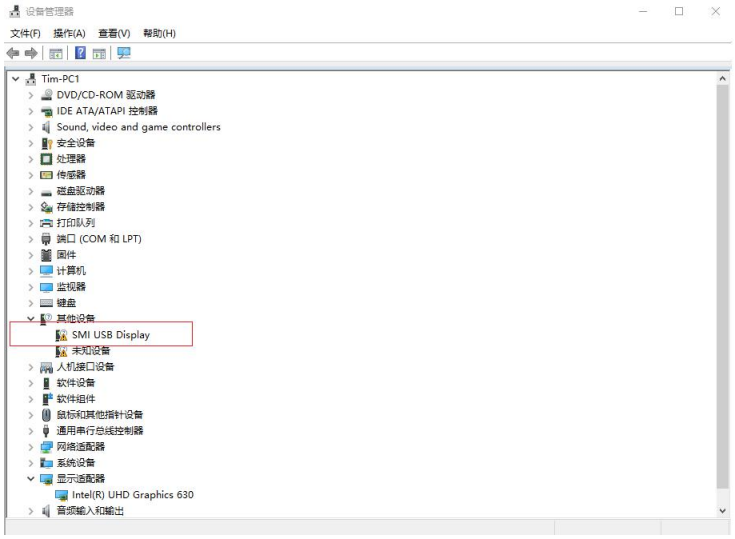
- If your computer already installed SMI USB Display driver, as shown in the

following picture 5.

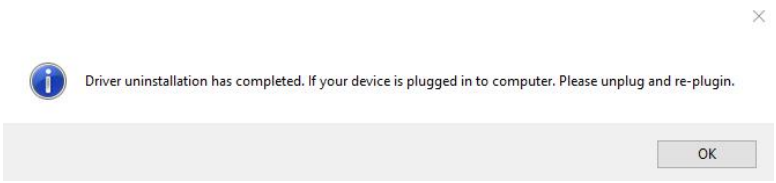


Picture 5: installed SMI USB Display driver

- Firstly, please uninstall the SMI USB Display driver, as shown in the following picture 6. If a dialog box is displayed, please ignore it, as shown in the following picture 7.

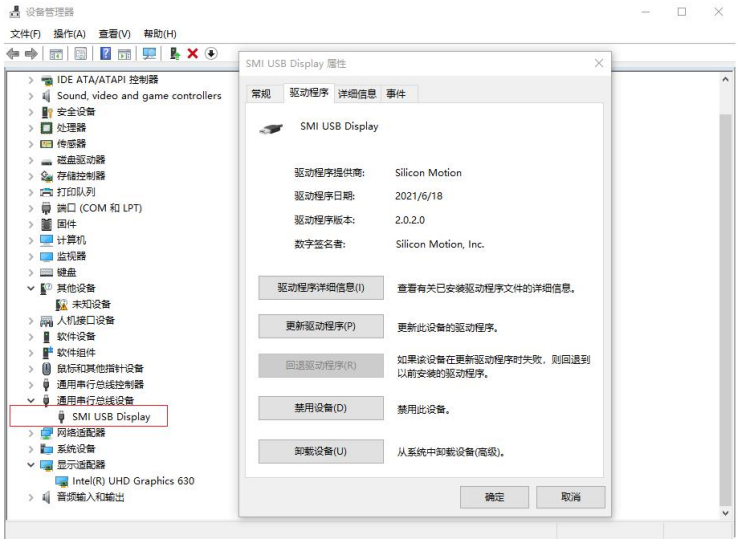


Picture 6: uninstalled SMI USB Display driver



Picture 7: prompt window

- Then manual install WinUSBDriver_2.0.2.0000 driver. As shown in the following picture 8.

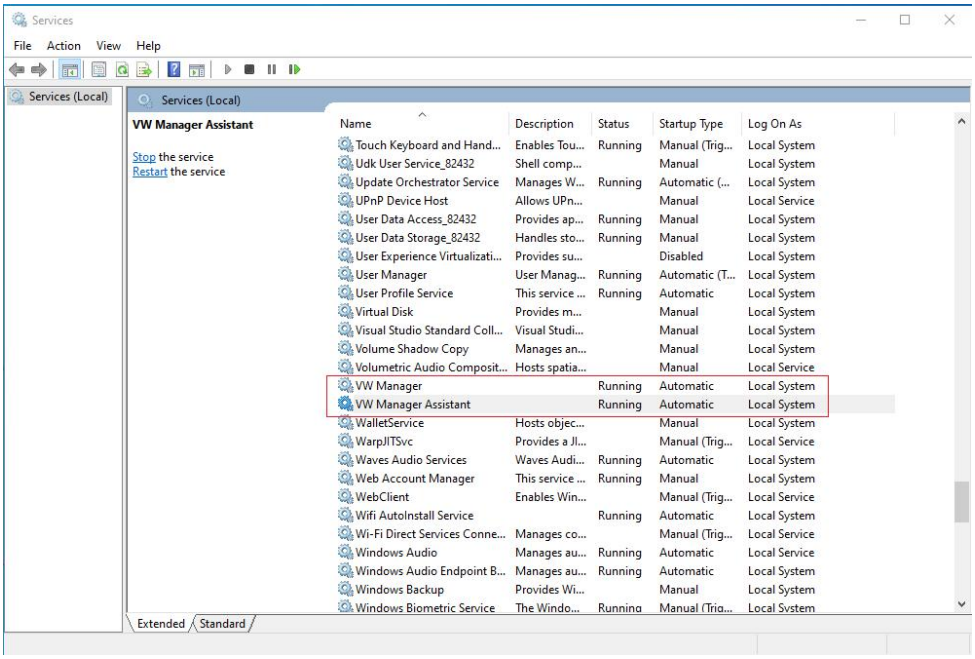


Picture 8: WinUSB Driver

- Then, select the firmware located folder path. And click "Update FW (USB)" button to update firmware. If firmware update successfully, it will show you "`Update firmware successfully!`".
- Finally, uninstall the WinUSBDriver_2.0.2.0000 driver and reset SMI USB Display.

For Video Wall

- If your computer already installed Video Wall driver. Firstly, please stop "VW Manager Assistant" and "VW Manager" background process. As shown in the following picture 9. Then, select the firmware located folder path. And click "Update FW (USB)" button to update firmware. If firmware update successfully, it will show you "`Update firmware successfully!`" . Finally, reset Video Wall board and don't forget to start "VW Manager Assistant" and "VW Manager" background process.



Picture 9: Stop background process

- If your computer doesn't install Video Wall driver. Please manual install WinUSBDriver_2.0.2.0000 driver firstly. Then, select the firmware located folder path. And click "Update FW (USB)" button to update firmware. If firmware update successfully, it will show you "`Update firmware successfully!`" . Finally, reset Video Wall board.

Remarks:

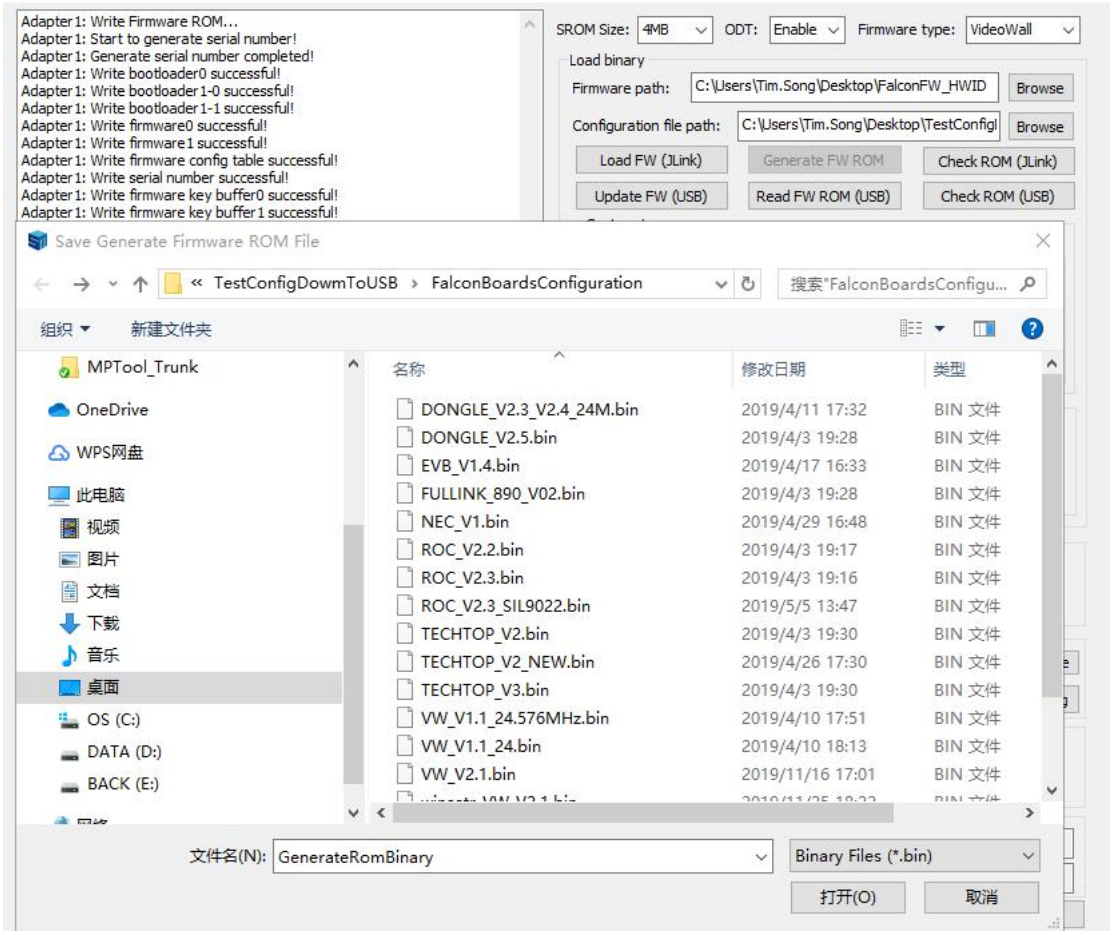
- *If you choose the check box of Custom Logo, click "update FW (Usb)" button will popup a file dialog to remind you select Logo picture (Only support bmp picture). You can configure some information through fourth part to display logo.*
- *If you choose the check box of Custom HW information, click "update FW (Usb)" button will change the ID and displayName. The default values of them are "090C"and"768".*
- *If load firmware successfully,the part 1 will show you "`update firmware successful!`".*

2.7 Generate firmware for srom

The main function of this part is to generate one firmware binary for srom.

Generate firmware steps:

- Select firmware located folder path;
- Select Configure file path;
- Select Firmware Type;
- Select ODT status;
- Generate firmware binary by click "Generate FW ROM" button;
- Save the generate binary as the picture 10;



Picture 10: save the generate firmware binary

2.8 Read firmware from srom through usb

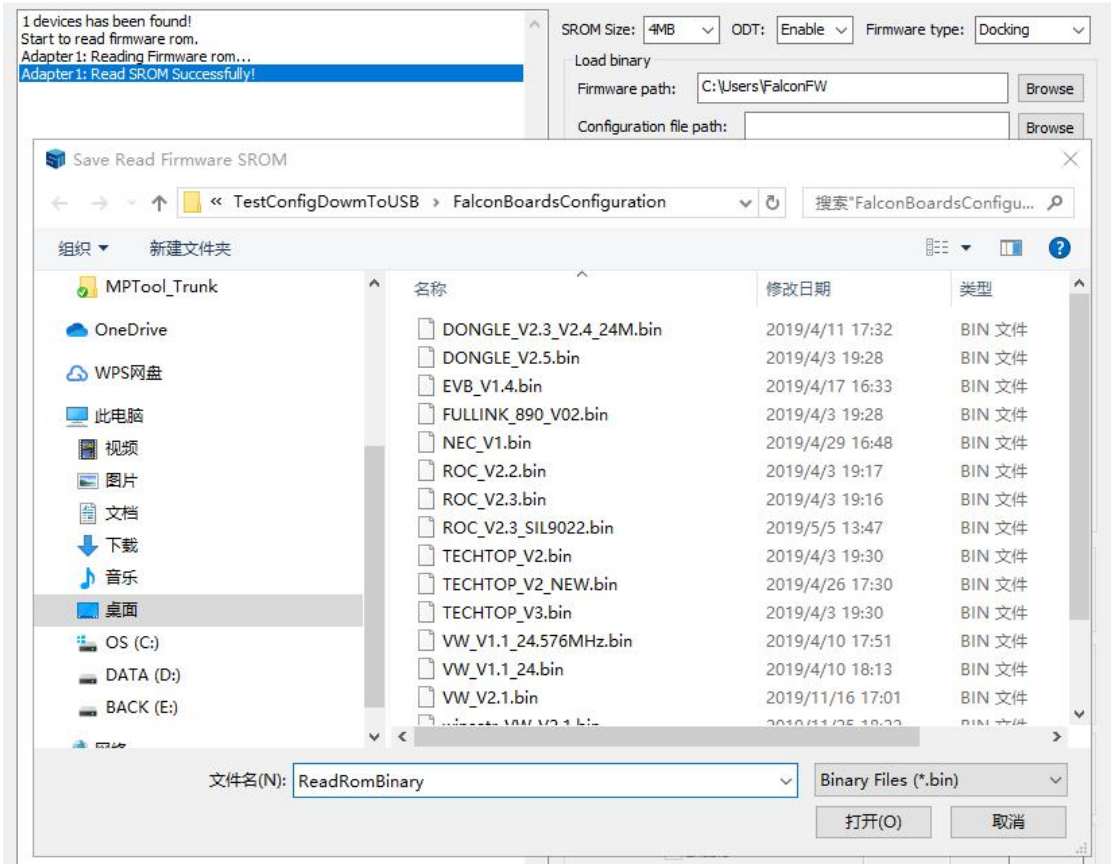
The main function of this part is to Read firmware from srom through usb. So, it must require SMI USB Display already have old firmware and can be recognized by computer.

Read firmware steps:

- If your computer already installed SMI USB Display driver. Firstly, please stop "SMI USB Display Assistant" and "SMI USB Display Service" background process.
- Select SROM Size;
- Read firmware binary by click "Read FW ROM" button;
- Save the read firmware binary as the picture 11;

Remarks:

It will take some time to read the srom binary.



Picture 11: save the read firmware binary

2.9 Check srom layout through JLink

The main function of this part is to Check srom layout through JLink

Check srom layout steps:

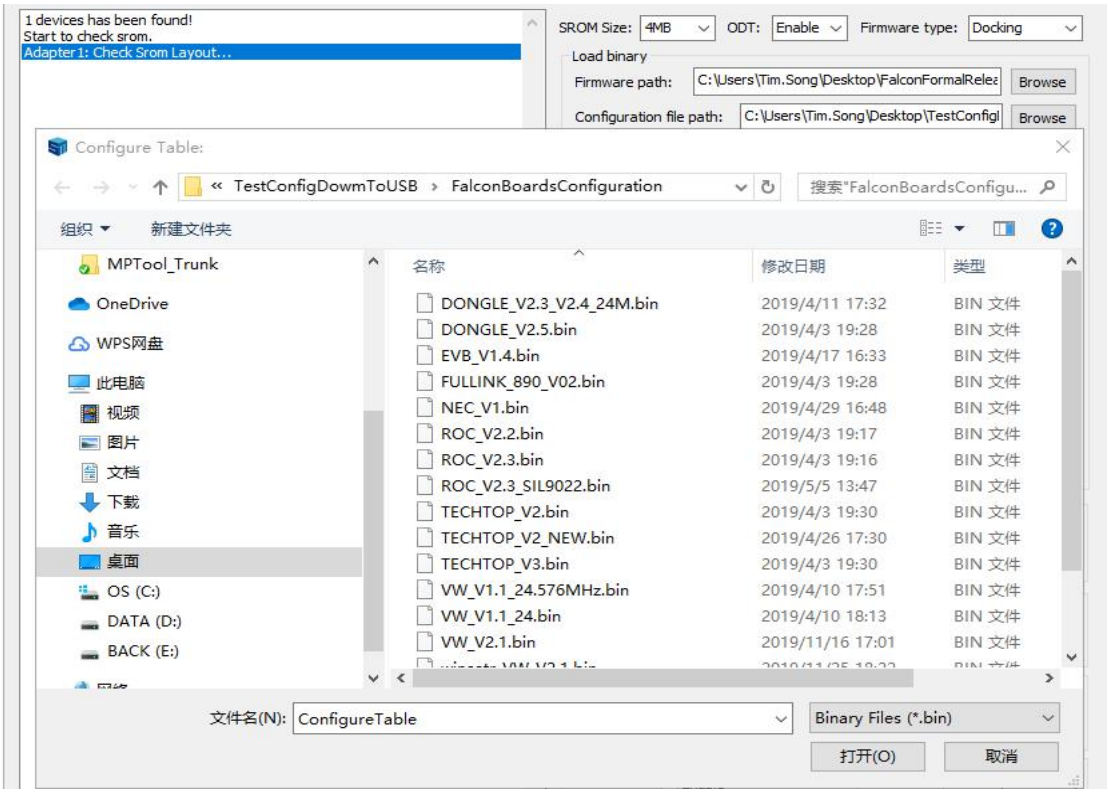
- InstallJLinkdriver(Version '**V476d**'). Please use Jlink default install path;
- Plug in Jlink to the computer that already installed JLink driver, and connected to the SMI USB Device;
- Check the layout by click "Check ROM (JLink)" button;

2.10 Check srom layout through usb

The main function of this part is to Check srom layout through usb

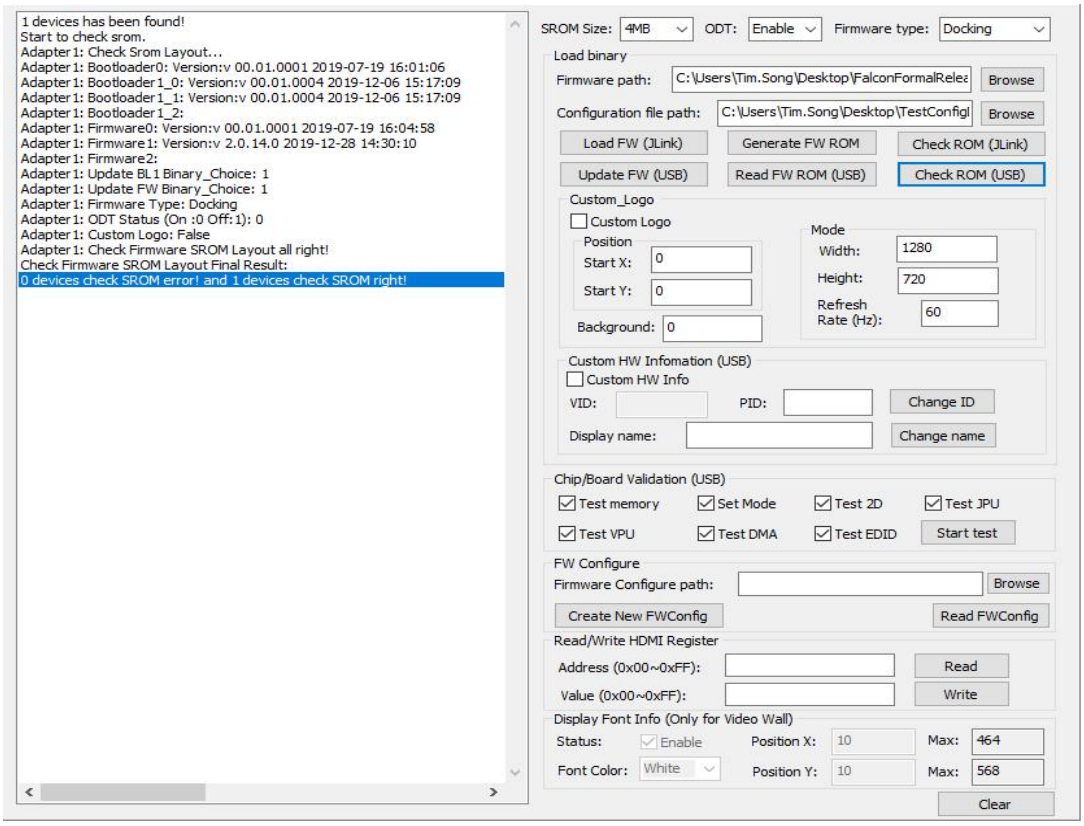
Check srom layout steps:

- If your computer already installed SMI USB Display driver. Firstly, please stop "SMI USB Display Assistant" and "SMI USB Display Service" background process.
- Check the layout by click "Check ROM (USB)" button;
- Save the read binaries as the picture 12 (ConfigureTable; Bootloader0; Bootloader1_0; Bootloader1_0; Firmware0; Firmware1; Firmware2);



Picture 12: save the configure table binary

- Show the SROM information like all binary version, Bootloader1 choice, firmware choice, Firmware type, ODT status, Custom Logo status. As picture 13.



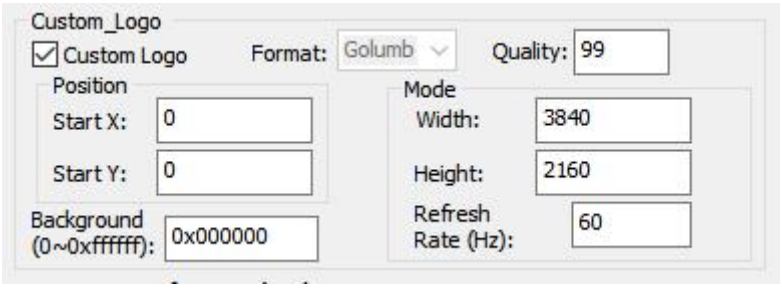
Picture 13: check the srom result (usb)

2.11 Custom Logo

The main function of this part is to set information for logo(bmp).

Do set logo steps:

- Put the logo picture(.bmp) in the same path with MPTool;
- As shown in the picture 14, choose the check box of Custom Logo to enable load logo;



Picture 14: Important step for load logo

- Enter a value in the input box in part 11;
- Start load binary;
- Select the logo image in the pop-up dialog.

Remarks:

- *If the firmware type is Video Wall, it will support that the compressed image format is*

JPEG ,and others are only supported Golumb.

- *The picture'size that you choose for Logo can't be bigger than 3840x2160.*
- *If you have chose a picture that bigger than 3840x2160, it will pop-up a dialog as show in the picture 15,and you can click the button "YES" to choose another picture.*



Picture 15: Choose wrong size picture

2.12 Custom HW information

The main function of this part is to change the VID\PID, display name and audio name.The default value of VID\PID is 090C and 768, and the default name is "SMIUSBDisplay".

Change HW information when "Update FW":

When you update FW through USB, you can choose the check box of "Custom HW Information"(as shown in the picture 16), and edit the values that you want to change, the format of value is hexadecimal data.



Picture 16: Change HW information when Update FW.

Only change HW information:

If you just want to change HW information, you can edit the values, then click the button "Change ID" or " Change name". If change successfully,the part 1 will show you "Change ID(DisplayName, AudioName) successful!".

2.13 Chip/Board validation

The main function of this part is to do chip/board validation. It supports 7 functions test (Test memory/Setmode/Test 2D/Test JPU/Test VPU/Test DMA/Test EDID).

Do validation steps:

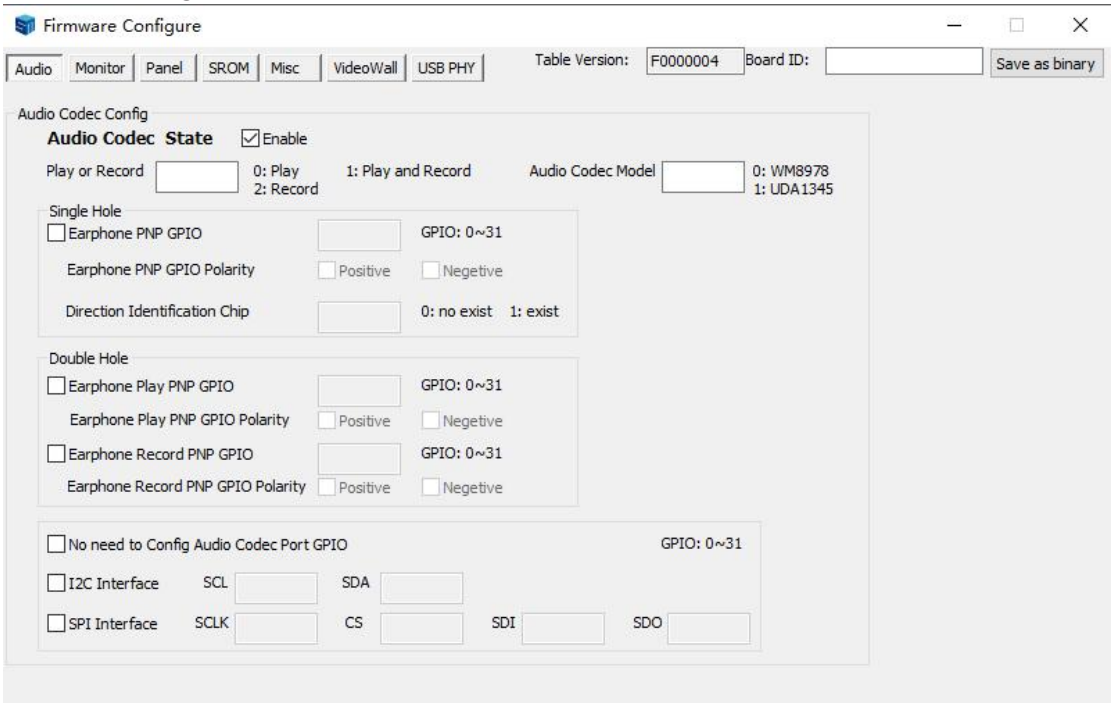
- Please copy test mode firmware to the folder where the MPTool is located, and rename as 'tstfw';
- Load firmware by JLINK;
- Manual install WinUSB driver;
- You can select corresponding check box in part 6 that you want to do test, then click "Start test" button start to test. All test result will output in part 1.

2.14 Firmware Configure Table



Picture 17: Firmware Configure

If you want to create a new firmware configure table, please click the button " Create New FWConfig".



Picture 18: New Configure Table Window

After you have configured a new table, please click the button “Save” to save the new file on the firmware located folder path. (**Note**: the firmware configure table name is “**FirmwareConfigure**”) If you have a firmware configure table, you can click the button “Browse” to choose the firmware configure path, and then click the button “Read FWConfig”.



Picture 19: Read Configured Table Window

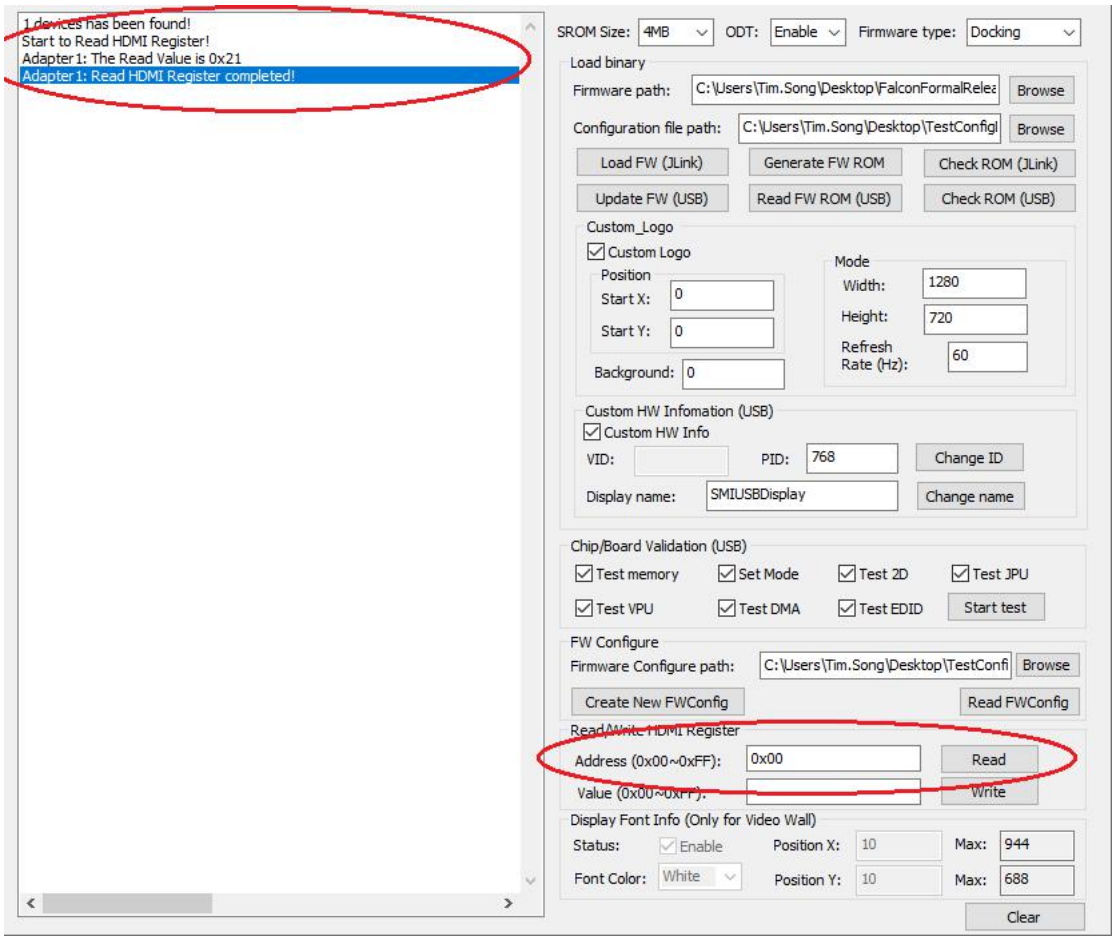
If you had changed some configuration, please click the button “Save” to save the changed.

2.15 Read/Write HDMI Register through usb

The main function of this part is to read and write the HDMI register through usb.

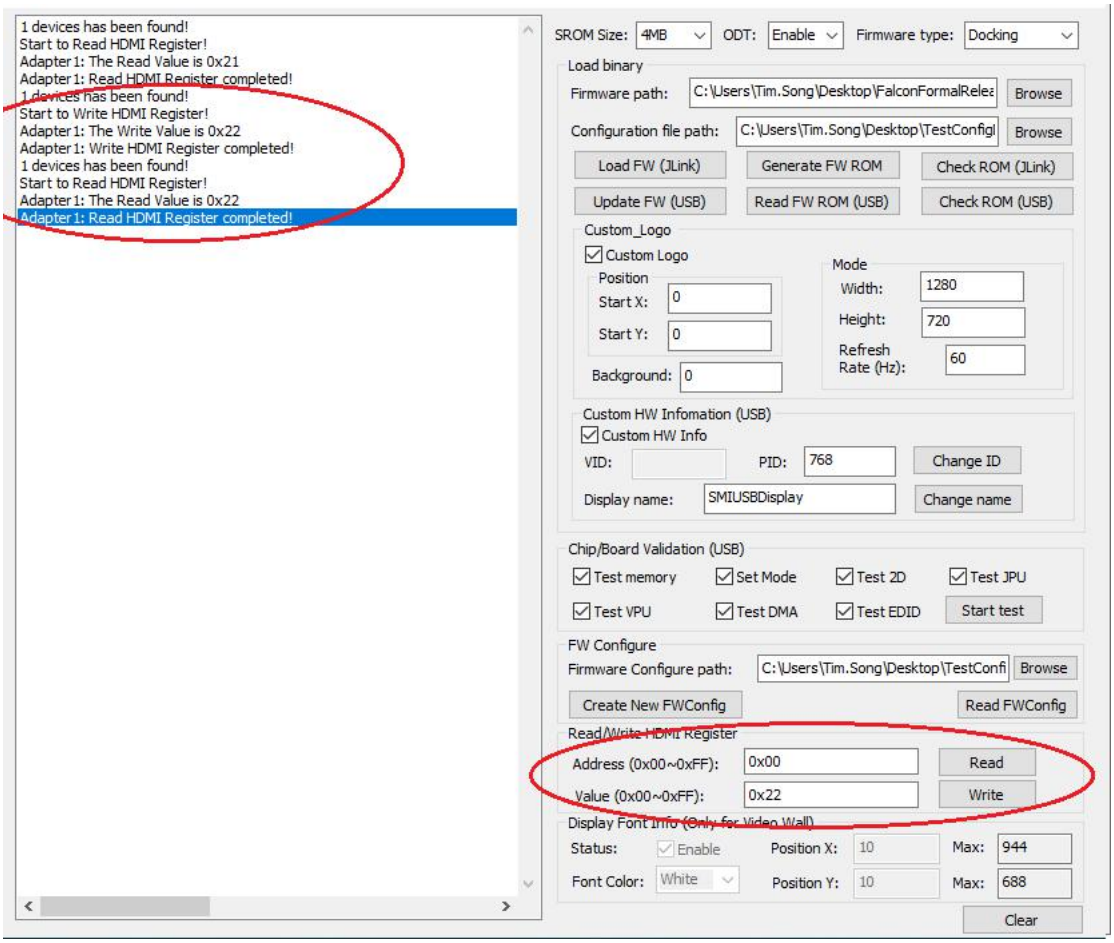
Read / Write HDMI Register steps:

- If your computer already installed SMI USB Display driver. Firstly, please stop “SMI USB Display Assistant” and “SMI USB Display Service” background process.
- Input the offset address and click button ‘Read’, the result as the picture 20.



Picture 20: Read HDMI register

- Input the offset address and the changed value, then click the button 'Write', the result as the picture 21.



Picture 21: Write HDMI register

2.16 Display Hardware ID for Video Wall

The main function of this part is to display Hardware ID for Video Wall.

Set the ID font steps:

- Choose the firmware type : Video Wall (Only support video wall)
- As picture 22, Check the Status enable, choose the font color, and set the font position.
- Load firmware by JLink or Update firmware by USB.



Picture 22: Set the font of video wall Hardware ID

The display effect is shown in Picture 23.



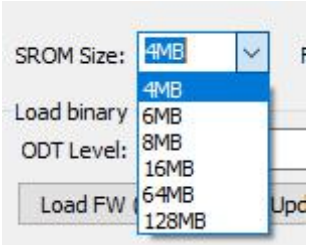
Picture 23: Video Wall Hardware ID in logo display

2.17 Read or Write SROM

The main function of this part is to read or write SROM.

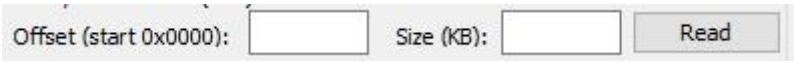
Read or write SROM steps:

- Choose the SROM size of current chip;



Picture 24: Choose SROM size

- (Read function) Input the offset of srom and read size, then click the read button ;



Picture 25: read SROM

Note: Please make sure that the sum of the offset and read size do not exceed the SROM size.

- (Write function) Input the offset and choose the binary file to write, then click the write button ;

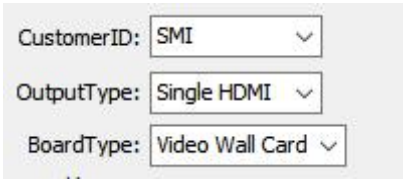


Picture 26: write SROM

Note: Please make sure that the sum of the offset and the binary file size do not exceed the SROM size.

2.18 Customer Board Type

The main function of this part is to customize the private ID, output type and board type for the customer.



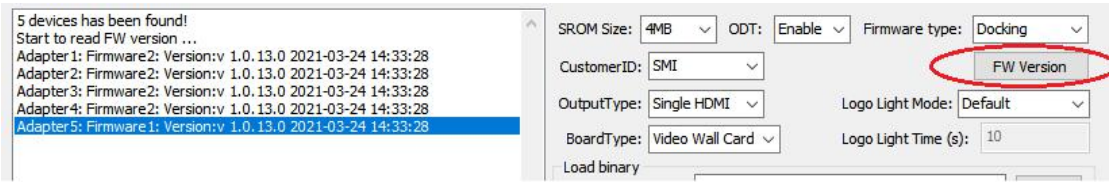
Picture 27: Customer Board Type

2.19 Read firmware version through usb

The main function of this part is to read firmware version through usb.

Read firmware version steps:

- If your computer already installed SMI USB Display driver. Firstly, please stop "SMI USB Display Assistant" and "SMI USB Display Service" background process.
- Read the firmware version by click "FW Version" button;



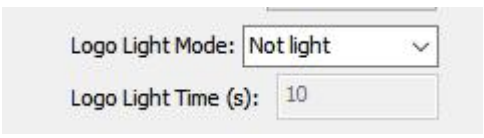
Picture 28: read firmware version

2.20 Logo light mode configuration

The main function of this part is to configure the logo light mode.

Current support these mode;

1) Not light;
2) Light then close;
3) Without close;
4) Default;



Picture 29:configure the logo light mode