AmebaZ Image Tool User Guide

This document introduces how to use Image Tool to encrypt, generate and download Images.

Version 1.0

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1. Introduction

This document introduces how to use Image Tool to encrypt, generate and download Images.

As show in the following figure, Image Tool has three tabpages:

- Download: used as image download server to transmit images to AmebaZ through UART
- Generate: concat separate images and generate a final image
- Encrypt: encrypt images which are used for firmware protection

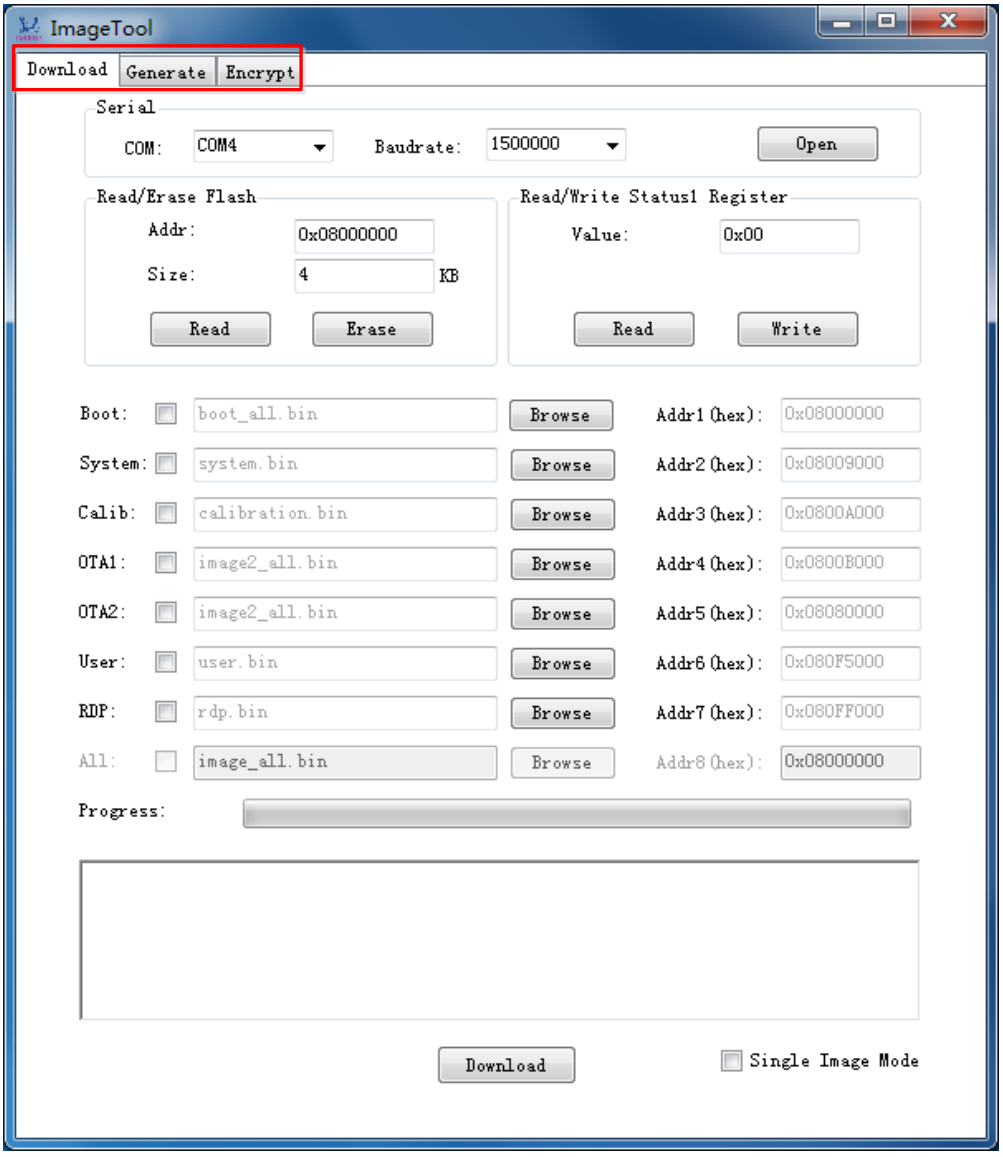


Figure 1- 1 Image Tool UI

2. Environment Setup

2.1. Hardware Setup

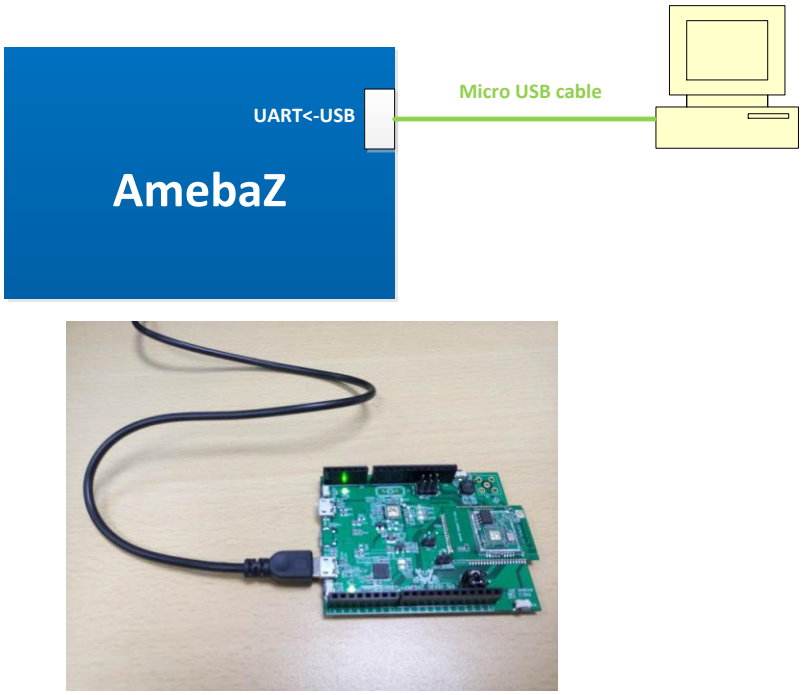
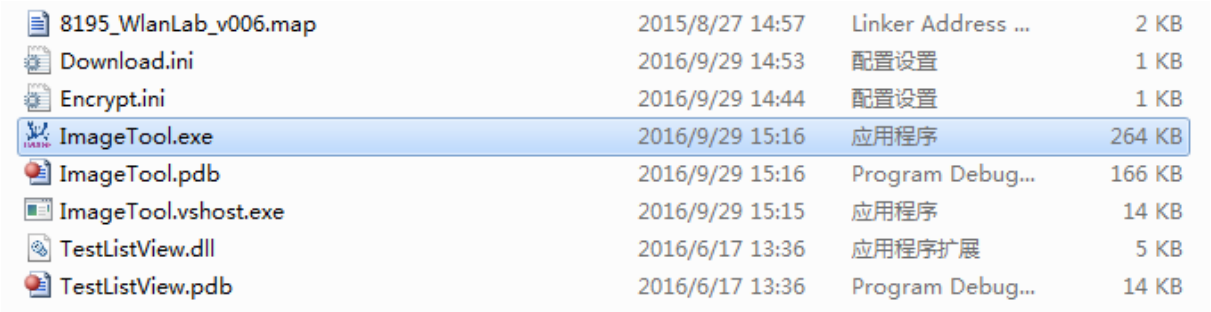


Figure 2- 1 Hardware Setup

2.2. Software Setup

Environment Requirements: EX. WinXP, Win 7 Above **Microsoft .NET Framework 3.5**

ImageTool.exe Location: project\tools\AmebaZ\Image Tool\ImageTool.exe



3. Image Download

3.1. Image Download

Assuming that the Image Tool on PC is Server, which sends images files to AmebaZ(Client) through UART. Client or Server, whichever starts first will be ok.

Steps to start client are as following, which will get AmebaZ into UART_DOWNLOAD mode.

(1) For QFN32, pins marked with "1" on the figure should be connected by jumper cap.
For QFN48 & QFN68, pins marked with "2" should be connected by jumper cap.
(2) Push the Image Download Button and keep it pressed
(3) Power on the board or press the Reset Button. Now AmebaZ get into UART DOWNLOAD mode
(4) Finally Release the Image Download Button. Now the client is ready for receiving data.

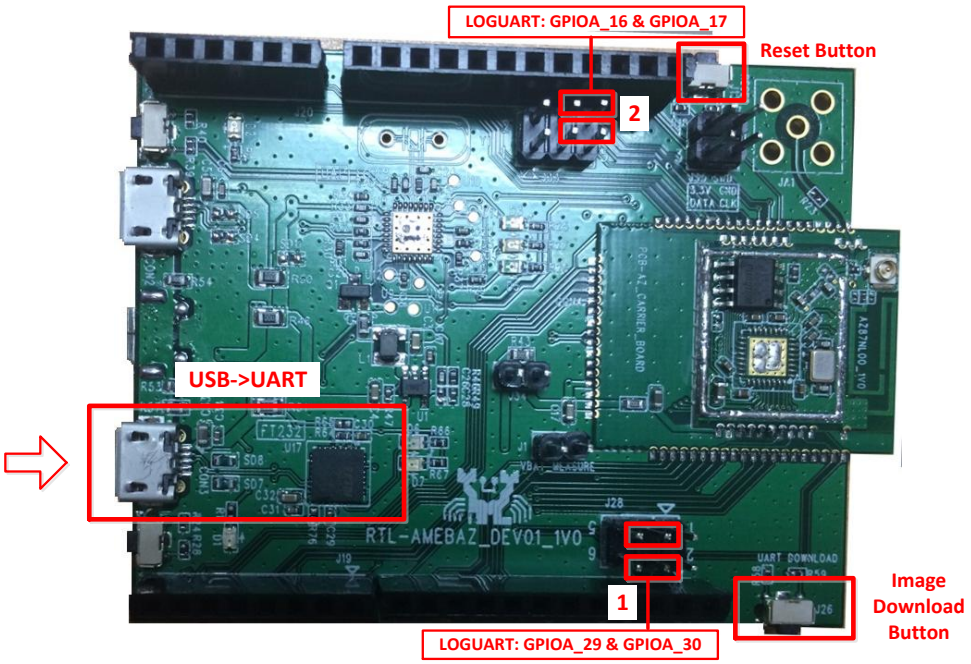


Figure 3- 1 AmebaZ DEV

Steps to start Server are as following:

(1) Select serial port and transmission baudrate. The default baudrate is 1.5Mbps.Then open serial port
(2) Select the images to be transferred and input addresses. The address which starts with 0x08 is for flash, and 0x10 for RAM
(3) Click Download button to start. Now the server is ready to send data.

When the client and server are both ready, data transmission begins.

The progress bar will show the transmit progress of each image. You can also get the message of operation successful or errors occur from log window.

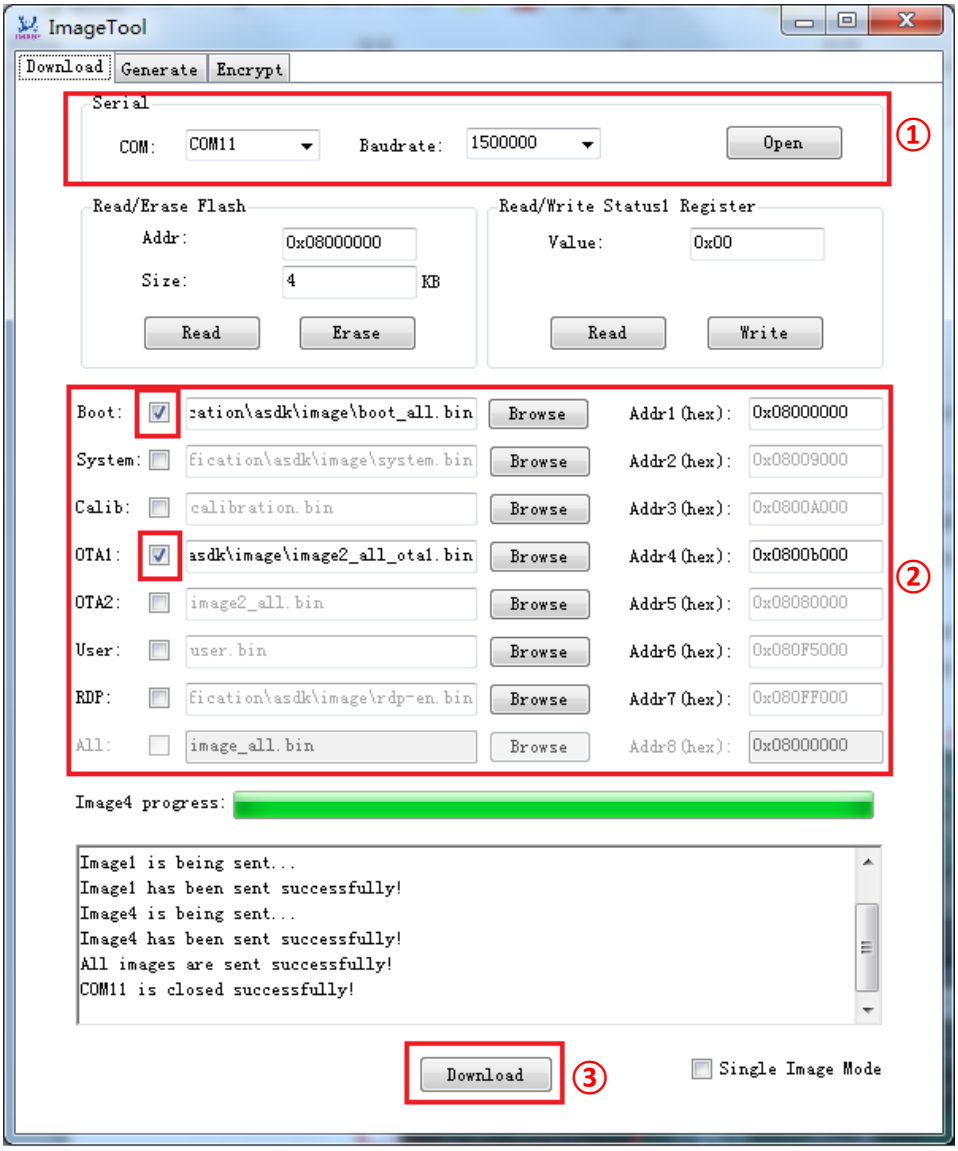


Figure 3- 2 Image Download Tabpage

3.2. Flash Read & Erase

Steps to read and erase flash are as following:

(1) Start client. Steps are already mentioned in 3.1

(2) Select serial port & baudrate, then open it

(3) Input erase or read start address which has to be 4-byte aligned

(4) Input erase or read size which will be cast to a multiple of 4KB

(5) Push Erase/Read button

(6) You will get the message of operation from log window. When read operation is done, the tool will generate a binary file named *ReadFlash.bin* in the tool directory.

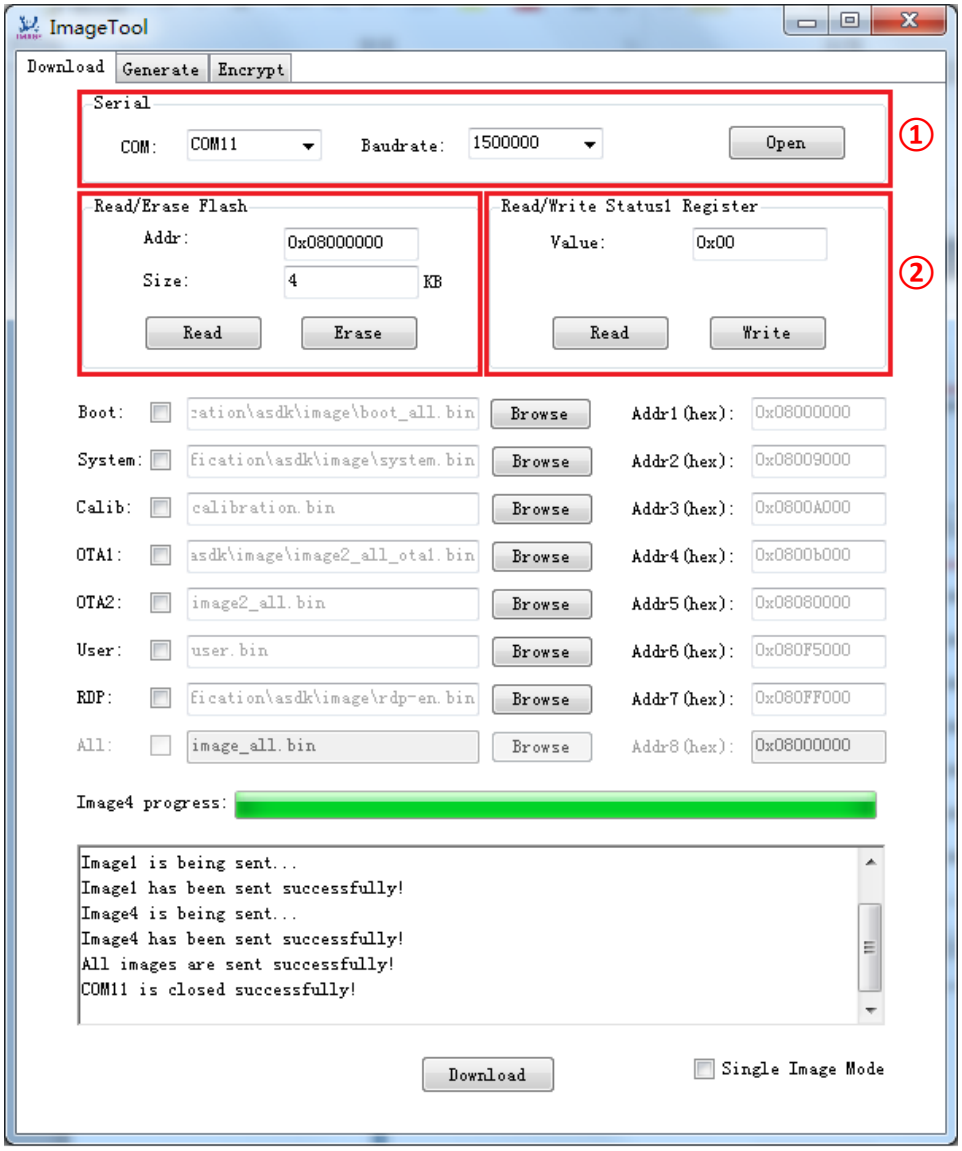


Figure 3- 3 Other Flash Operations

3.3. Flash Status Register Read & Write

Steps to read and erase flash are as following:

(1) Start client. Steps are already mentioned in 3.1

(2) Select serial port & baudrate, then open it

(3) To write status register, you need to input the value in hex . Skip this step if you want to read status register

(4) Push Read/Write button

(5) You will get the message of the operation from log window. The value will update after reading status register.

3.4. Single Image Mode

- Normal Mode

- Default mode
- For development use
- Any one of the images or combination of them can be transferred at a time.

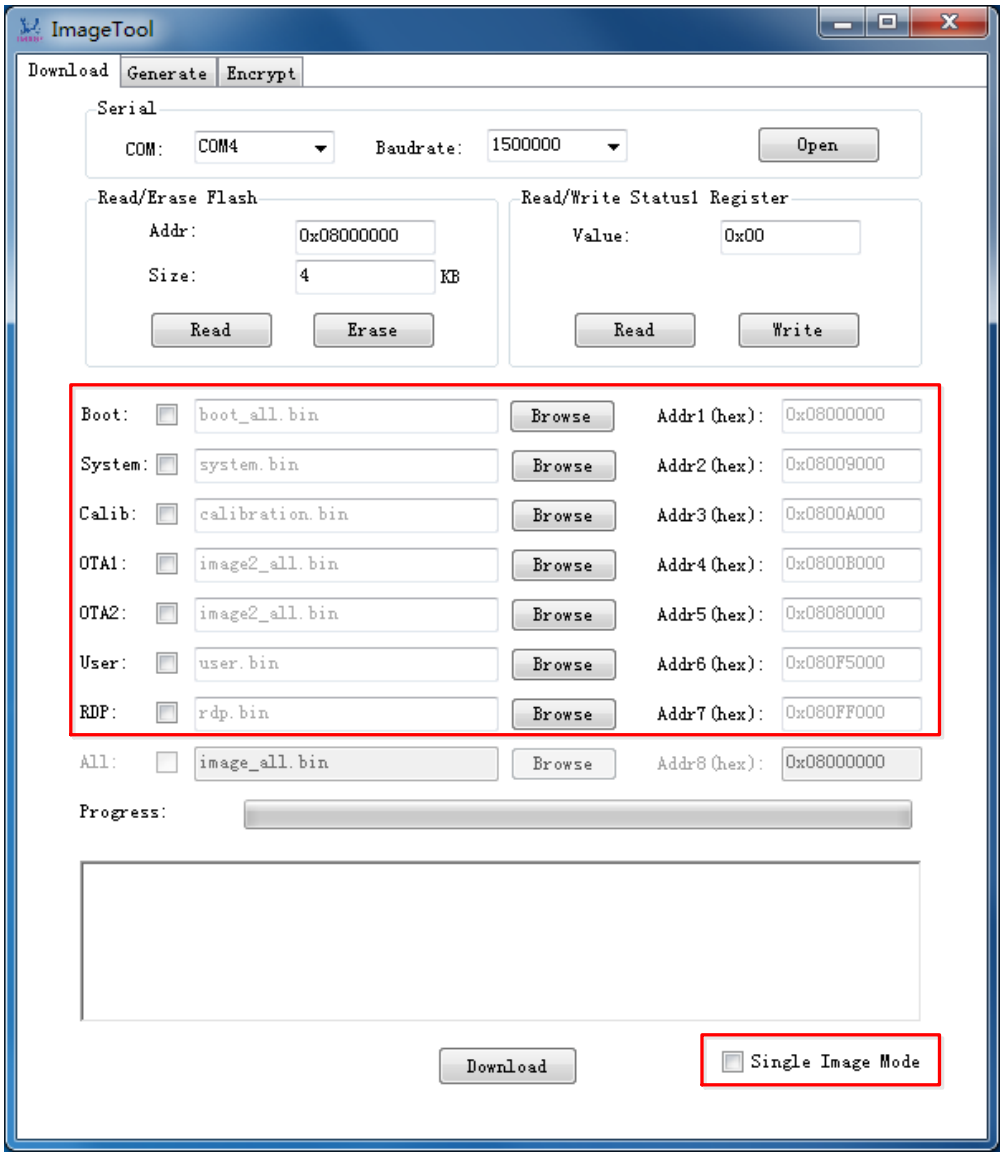


Figure 3- 4 Normal Mode

- Single Image Mode:
  - For factory use
  - Only one image file can be transferred at a time
  - Besides, other image transmission bars are disable

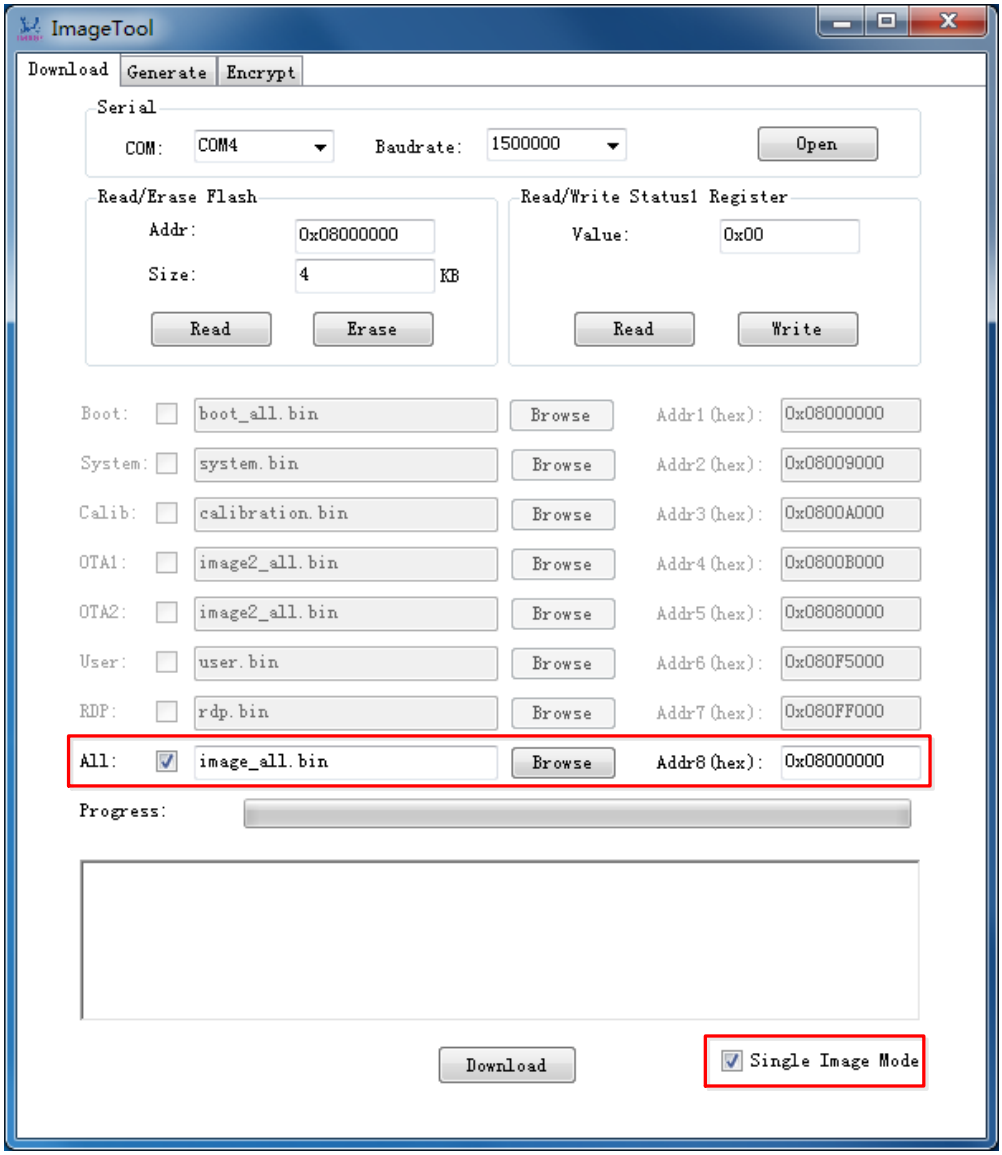


Figure 3- 5 Single Image Mode

4. Image Generation

The Generate tabpage has two functions:

- Concat separate images and generate a final image named Image_All.bin
- Concat OTA1 and OTA2 images and generate a cloud OTA image named OTA_All.bin

4.1. Image All Generation

Steps to generate a final image are as follows:

(1) Select Image_All as Generate Target type, just as marked with a red box in the following figure.

(2) Select images to be concated and input corresponding address. The Memory Layout bar will show the relative positions of the selected images. If the contiguous images overlap, the overlapped area is in red color for warnning.

(3) Configure boot and flash initialization options in System Data. Or you can also load an existing binary file by pushing Browse and Load button.By the way, system data can be saved to system.bin in tool directory after push Save button.

(4) Load an existing calibration file to Image Tool. Or the calibration area will be 0xFF.

(5) Click Generate button.

(6) After the operation is done, the final image named *image_all.bin* is generated in the tool directory by default or in specified directory.

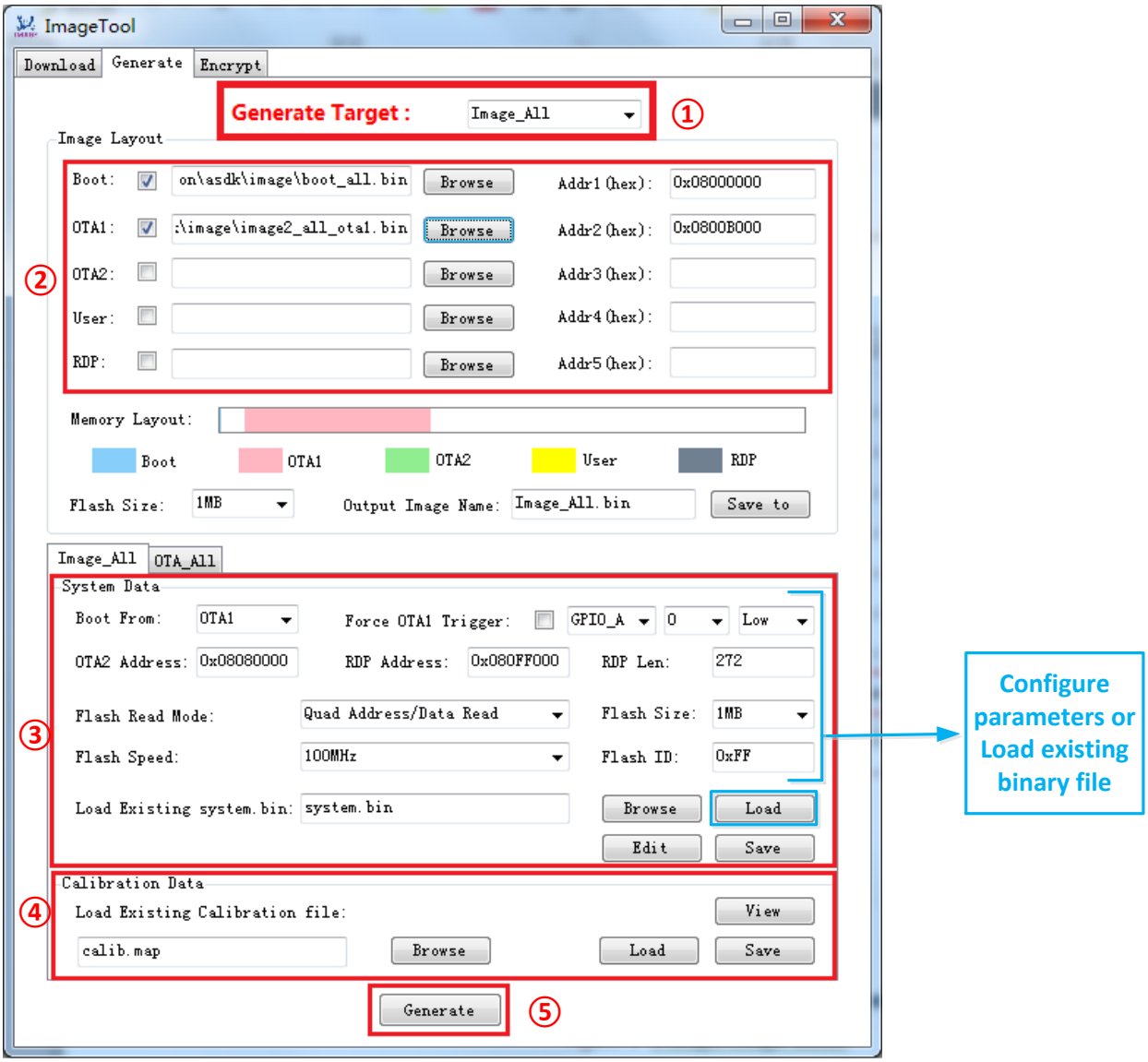


Figure 4- 1 Image All Generation

4.2. Cloud OTA Image Generation

Steps to generate a Cloud OTA image are as follows:

(1) Select OTA_All as Generate Target type, just as marked with a red box in the following figure.

(2) Select OTA1 and OTA2 images and input corresponding address. The address is flash address where the image is located. The Memory Layout bar will show the relative positions of the two images. If they overlap, the overlapped area is in red color for warnning.

(3) Input Image Version.
(4) Click Generate button.
(5) After the operation is done, the cloud image named *OTA_All.bin* is generated in the tool directory by default or in specified directory

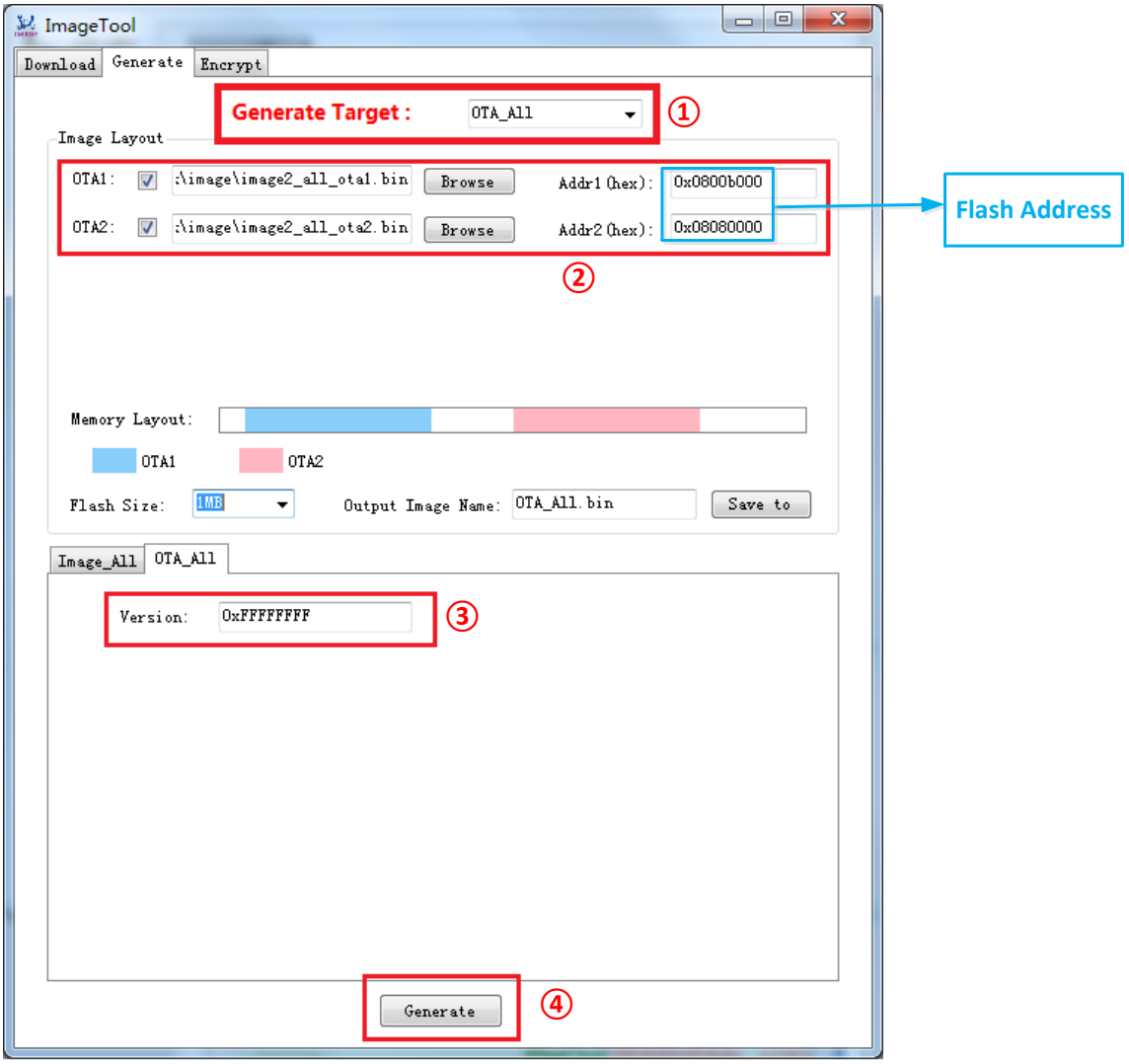


Figure 4- 2 Cloud OTA Image Generation

5. Encryption

The Encrypt tabpage is for encrypting images which is used in firmware protection.
Steps to encrypt images are as follows:
(1) Select Encrypt mode(RDP or OTF)
(2) Input Key
(3) Select Images that need to be encrypted
(4) Push Encrypt button
(5) You will get the message of encryption from log window. The encrypted images are named after the original file with "-en", which located in the same directory.

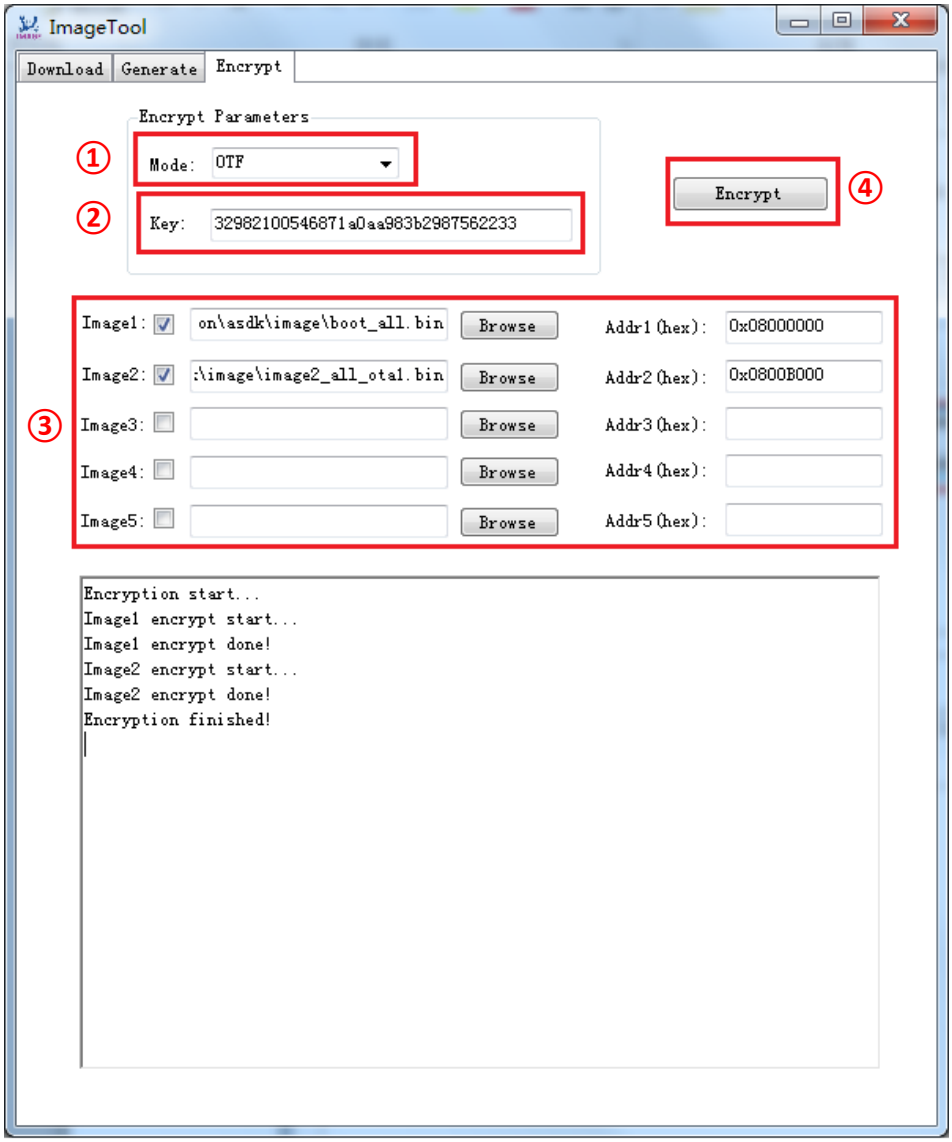


Figure 5- 1 Encrypt Tabpage