User Manual

DA16200 and DA16600 Multi-Downloader Tool

UM-WI-039

Abstract

This User Manual explains how to setup and use the Multi-Downloader for DA16200 and DA16600.

Contents

Figures

1 Terms and Definitions

SDK	Software Development Kit
EVB	Evaluation Board
UART	Universal Asynchronous Receiver Transmitter
USB	Universal Serial Bus

2 References

[1] DA16200, Datasheet, Dialog Semiconductor
[2] DA16200, SDK Programmer Guide, User Manual, Dialog Semiconductor
[3] DA16200, EVK User Manual, Dialog Semiconductor
[4] DA16200, AT Command User Manual, Dialog Semiconductor
[5] DA16600MOD Series, Datasheet, Dialog Semiconductor
[6] DA16600, Example Application Manual, Dialog Semiconductor

3 Introduction

The Multi-Downloader is used to write the DA16200/600 images to the flash IC through the UART interface of the RS232 port between the DA16200/600 and PC. And it can download the images to multiple devices at the same time.

4 UART Connection at DA16200 and DA16600 EVB

The DA16200 and DA16600 EVB has a USB port for a USB-to-UART interface. Figure 1 shows the interface in the DA16200 EVB and Figure 2 shows the interface in the DA16200 EVB. In case of a standalone device, the UART GPIOs must be connected to the RS232 port of PC directly or through UART-to-USB interface.

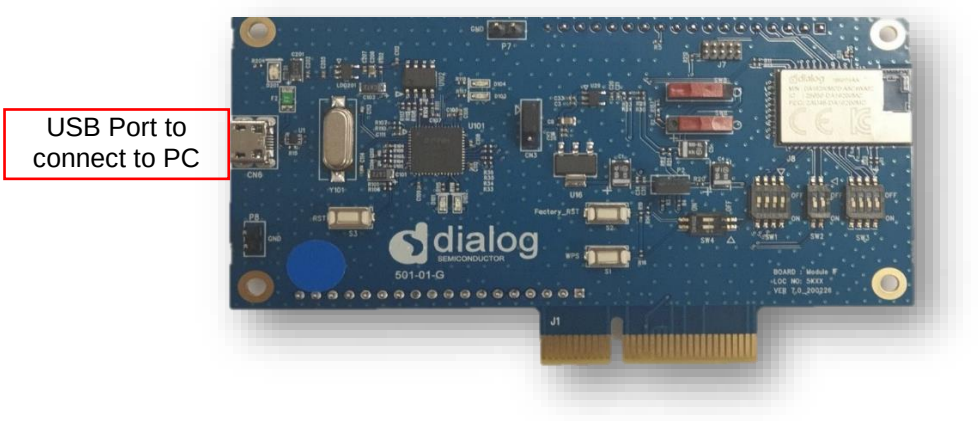

Figure 1: UART Connection with PC via USB Port at DA16200 EVB

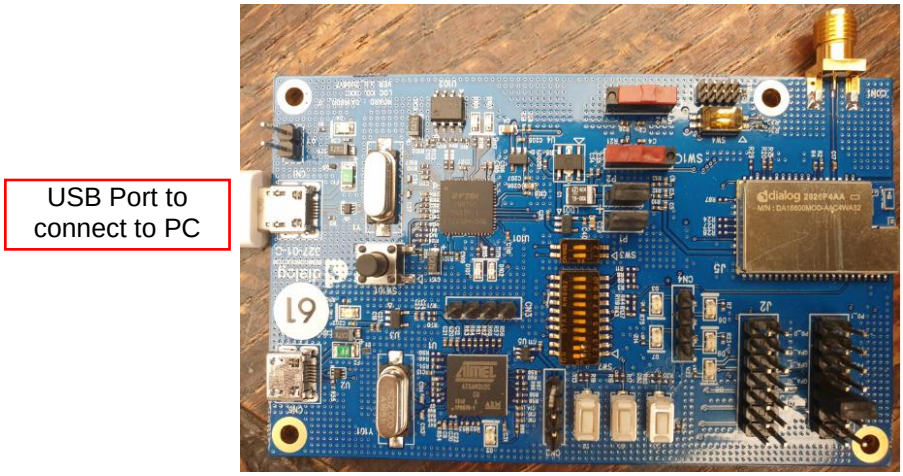

Figure 2: UART Connection with PC via USB Port at DA16600 EVB

5 Multi-Downloader

5.1 Requirements

The following PC environment is recommended for proper operation of the Multi-Downloader:

- Operating system: Windows 7, Windows 10
- Minimum RAM: 8 GB
- Minimum processor: Intel Core i5

5.2 Main Screen

Figure 3 shows the main screen of Multi-Downloader. It has the following menus and options:

- **Setting**: This selects the module type, images, start address, and size
- **Read Version**: This shows SDK version after all images are downloaded
- **NVRAM Init**: This initializes NVRAM if needed
- **Terminal Number**: This value activates the terminal box to the number. The maximum value is 16
- **DownLoad**: This initiates the download for downloading the images to the device
- **Console**: This open a console with basic functions
- **Elapse Time**: This shows the running time from start to end during downloading
- **Count**: This shows a count of the download operation
- **Terminal Box**: This is activated according to the value of the terminal number. The check box and port must be selected for download. The state and progress is shown during downloading

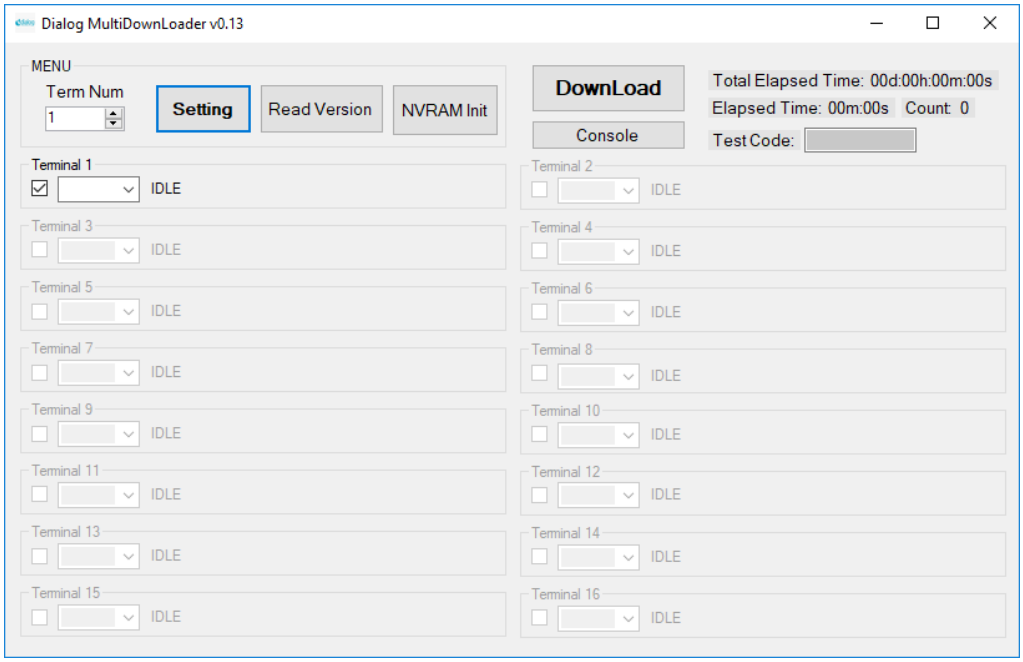

Figure 3: The Main Screen

The images can be downloaded by drag-and-drop to the main screen. The string "BOOT", "RTOS", "SLIB", "DATA1" and "DATA2" of file name would identify the image type automatically at drag-and-drop operation which does not support RTOS2 and SLIB2 image type.

5.3 Setting

Figure 4 shows the setting of the Multi-Downloader. It has image selection and operation with the setting file.

5.3.1 Image Selection

The images can be selected by double clicking the box of each image path or drag-and-drop. The string "BOOT", "RTOS", "SLIB", "DATA1" and "DATA2" of file name would identify the image type automatically at drag-and-drop operation which does not support RTOS2 and SLIB2 image type.

- **Module**: This selects module type. The address and size are changed automatically according to this selection. But all values can be changed manually. The predefined bootloader image is used in case of DA16600. The default is non-module type.
- **Flash type**: This selects the actual flash size used in the image. This changes the address and size automatically according to the selection. But it can be changed manually also.
- **SFLASH_#0 image**: This selects images files and checkbox for downloading to boot index 0.
  - **BOOT**: This selects the bootloader image has the flash memory type info SFDP. This image must be loaded before successfully downloading the other images. The name is like DA16200_BOOT_GEN01-01-XXXX-000000_ W25Q32JW.img.
  - **RTOS1**: This select the main image. The name is like DA16200_RTOS_GEN01-XX-YYYY-ZZZZZZ.img.
  - **SLIB1**: This selects system library image. The name is like DA16200_SLIB_GEN01-XX-YYYY-ZZZZZZ.img.
- **SFLASH_#1 image**: This selects images files and checkbox for downloading to boot index 1. It may not be needed necessarily if normal operation with #0 image is enough. RTOS2 and SLIB2 images can be selected.
- **BLE image**: This selects BLE image for DA14531 in DA16600 module. The name is like da14531_multi_part_proxr.img
- **DATA image**: This selects any data image with any address and size.

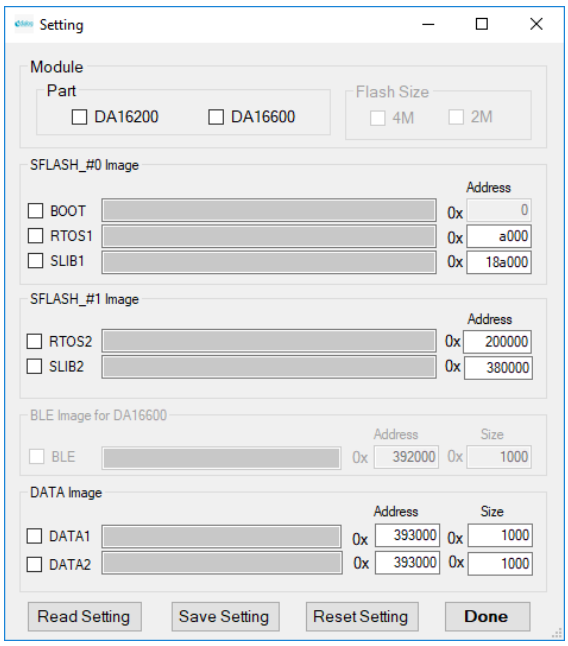

Figure 4: Setting

5.3.2 Setting File

Predefined setting values can be read and saved. Figure 5 shows an example file. Each content is separated with '|'. The setting file (settings.txt) must be located on the same folder of multi-downloader executable file. The setting values in the file are

- Port setting: The port name of main screen is selected automatically if the defined name in the setting file exists in the device manager of Windows. The name of 16 ports can be defined.
- Module type: NONE, DA16200, or DA16600 can be set.
- Flash Size: 4M or 2M can be set.
- Each Image path, start address, and size: The information of the images can be set.

```
|COM5|COM54|COM56|||||||||||||||
|DA16600| //Module : NONE, DA16200, DA16600
|4M| //Flash Size : NONE, 4M, 2M
||0| // |PATH|START ADDR| for SFLASH_#0_BOOT
|D:\image\DA16200_RTOS-GEN01-01-12627-000000.img|a000| // |PATH|START ADDR| for SFLASH_#0_RTOS
|D:\image\DA16200_SLIB-GEN01-01-12283-000000.img|18a000| // |PATH|START ADDR| for SFLASH_#0_SLIB
|D:\image\DA16200_RTOS-GEN01-01-12627-000000.img|200000| // |PATH|START ADDR| for SFLASH_#1_RTOS
|D:\image\DA16200_SLIB-GEN01-01-12283-000000.img|380000| // |PATH|START ADDR| for SFLASH_#1_SLIB
|D:\image\da14531_multi_part_proxr.img|392000|1000| // |PATH|START ADDR|SIZE| forBLE
||393000|1000| // |PATH|START ADDR|SIZE| for DATA1
||393000|1000| // |PATH|START ADDR|SIZE| for DATA2
```

Figure 5: Setting File

5.3.3 Menu Selection

- Read Setting: This read values from setting file and fill the values to the forms.
- Save Setting: This saves all values of the forms to the setting file.
- Reset Setting: This resets all values to default values.
- DONE: All information is kept and used for download.

5.4 Run Multi-Downloader

5.4.1 Select Port Number

The number of devices connected must be selected. Figure 6 shows three ports selected, and three terminal boxes activated.

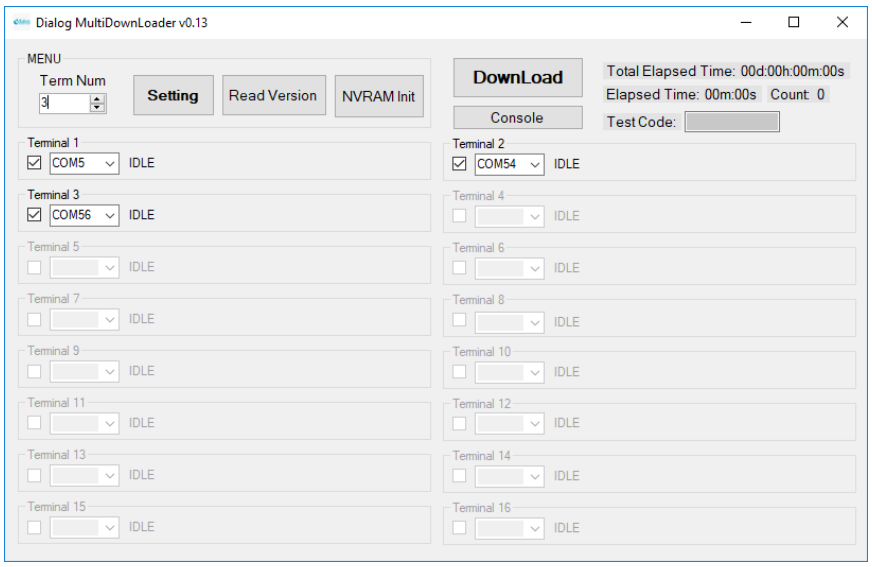

Figure 6: Port Selection

5.4.2 Select Images, Address and Size

The images, address and size are selected in “Setting”. Figure 7, Figure 8, and Figure 9 shows examples of image selection of DA16600, DA16200 and a non-module type. These values are set by reading the information from the “Setting” file.

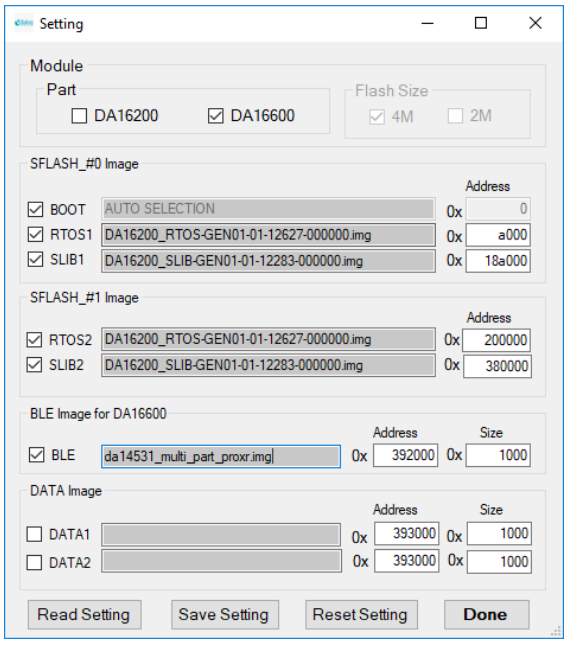

Figure 7: Setting for DA16600 Module

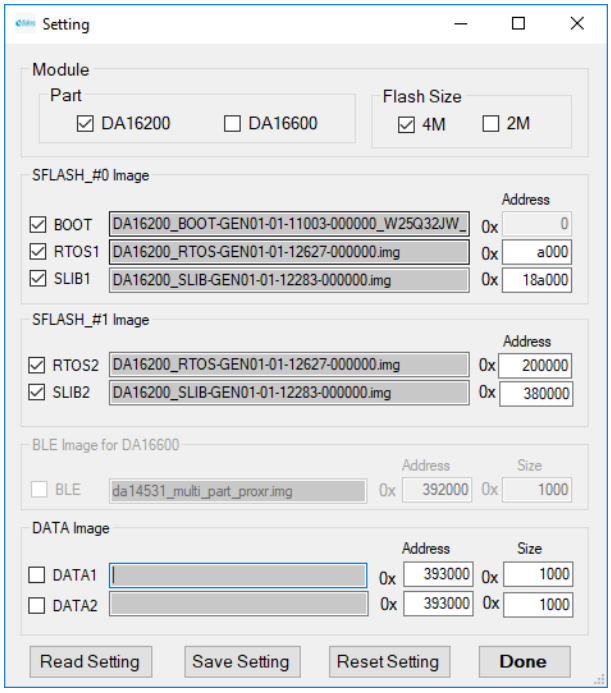

Figure 8: Setting for DA16200 Module

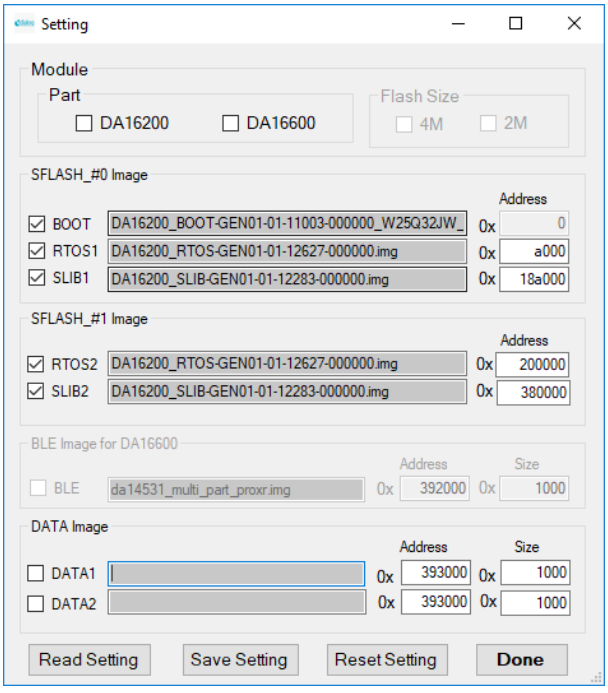

Figure 9: Setting for Non-module Type

5.4.3 Download

The download button initiates download. The state and progress of each terminal for downloading is shown in Figure 10. Figure 11 shows a successful download without any error. If there is any error, the failure number is shown as in Figure 12. The state of the device or connection should be checked in case of failure.

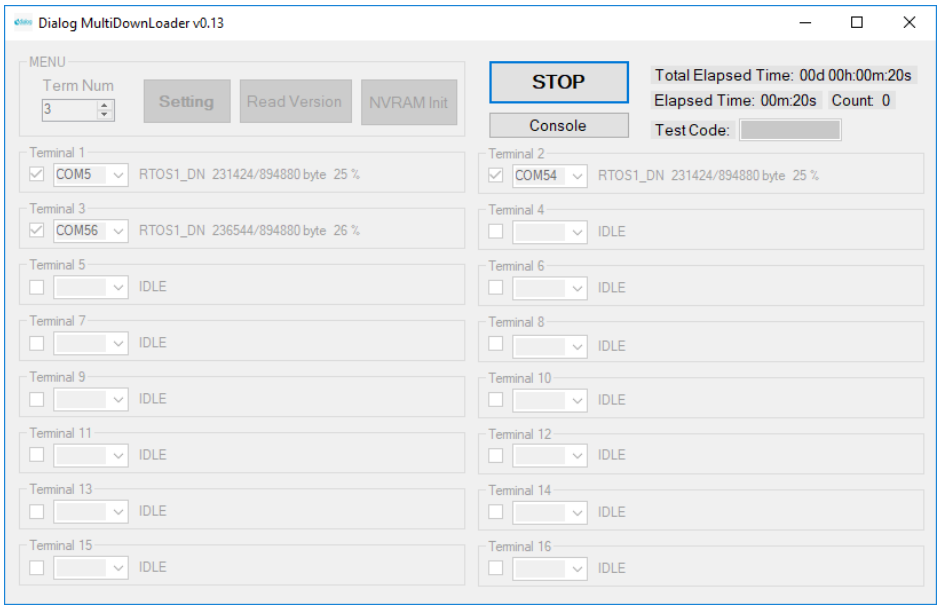

Figure 10: State and Progress During Downloading

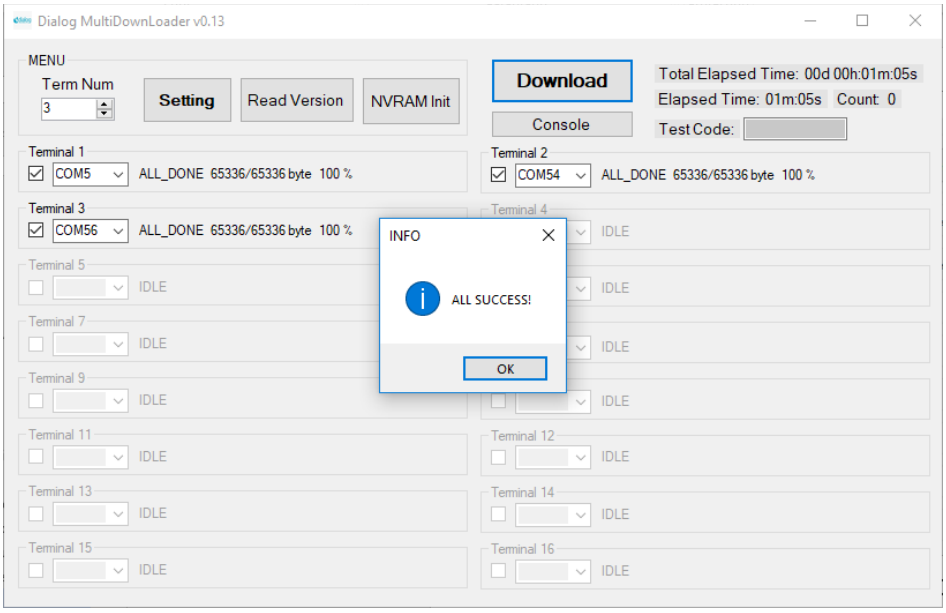

Figure 11: Completed Screen, No Error

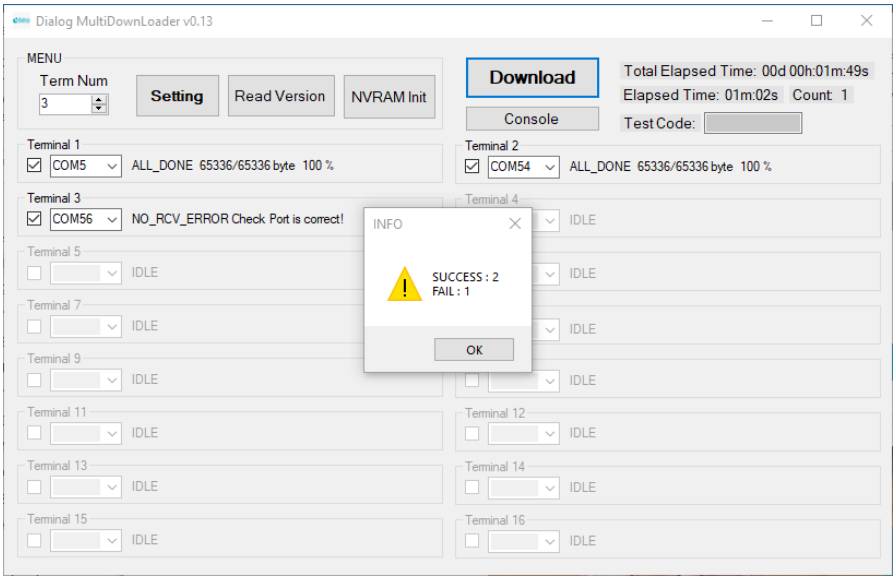

Figure 12: Completed Screen Showing One Failure

5.4.4 Read SDK Version

The device will boot automatically after download is done. Read Version will show the SDK version of the running image through AT command communication. Figure 13 is a success case and Figure 14 is a failure case. The state of the device or connection should be checked in case of failure.

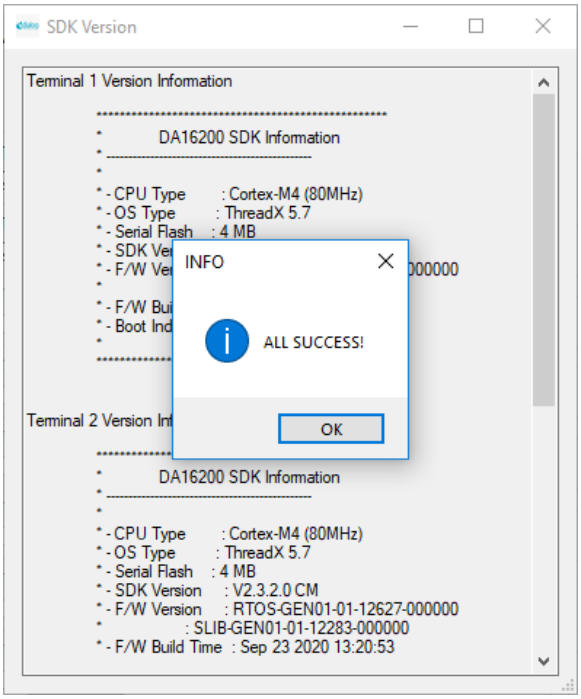

Figure 13: Read Version with Success

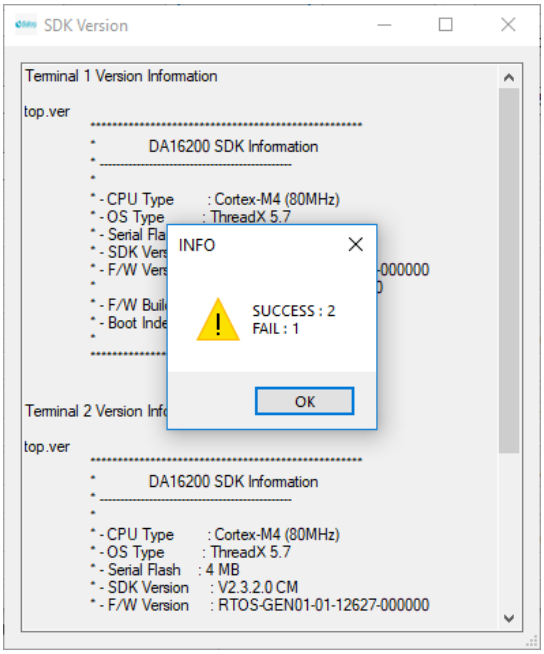

Figure 14: Read Version with Failure

5.4.5 Initialize NVRAM

NVRAM Init will initialize NVRAM through AT command communication. Figure 15 is a success case and Figure 16 is a failure case. The state of the device or connection should be checked in case of failure.

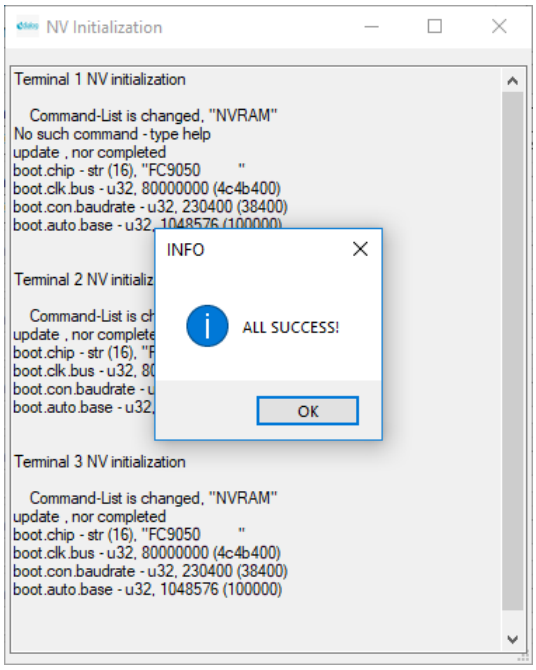

Figure 15: NVRAM Initialization with Success

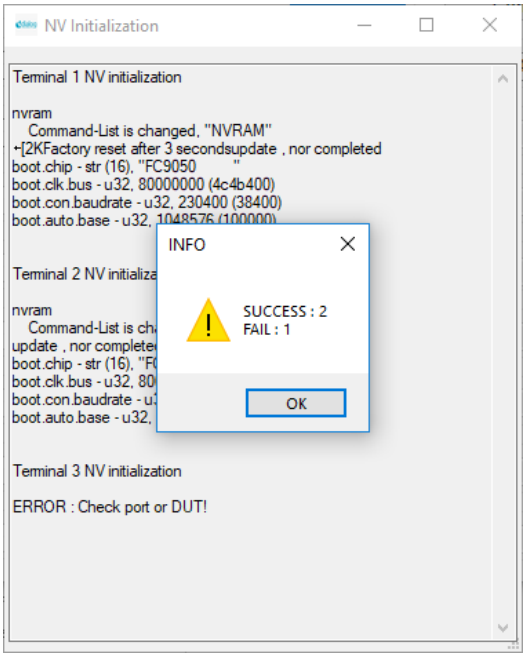

Figure 16: NVRAM Initialization with Failure

Appendix A Log Option

If there is any problem with this tool, log could help fix it. The log is activated with input "logon" to the text box of version information as shown in Figure 17. A log file for each terminal is generated in the same folder of the multi-downloader executable file. The file name is MD_Log_<terminal number>.txt. The log is deactivated with input "logoff". The character 'L' to the right of the text box means the log is enabled (see Figure 17).

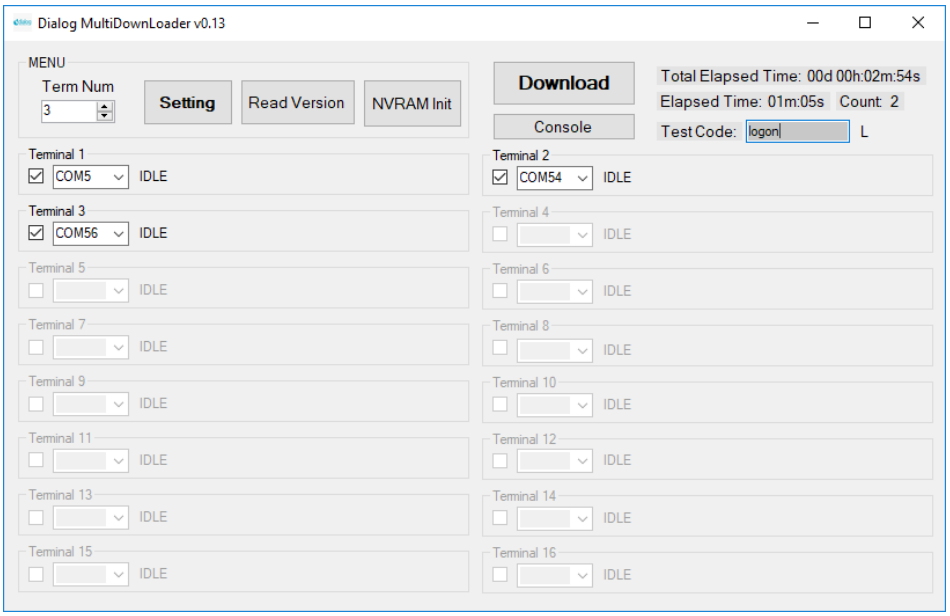

Figure 17: Log Activation

Appendix B Console Functionality

There is a console function in the multi-downloader. The “Console” screen can be shown to maximum 16 independent windows. Figure 18 is an activated console window. The port must be selected and opened. Then command can be input and any message from the connected device is shown. Figure 19 is the screen with messages from the device. The text box to the right of the window is a command history. The function of each button for the command history is as follows:

- **Add**: Add command of input box to the command history.
- **Delete**: Delete the selected command in the command history.
- **Delete all**: Delete all commands in the command history.
- **Copy all**: Copy all commands to Windows clipboard.
- **Load**: Load the commands from the file which have predefined commands.
- **Save**: Save the command history to a file.

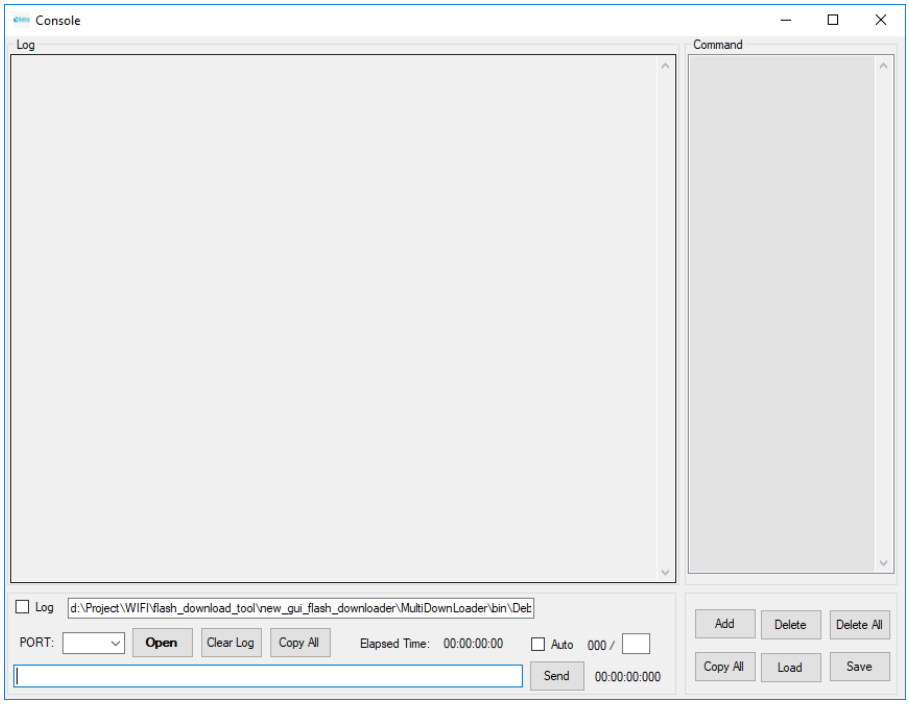

Figure 18: Console Screen

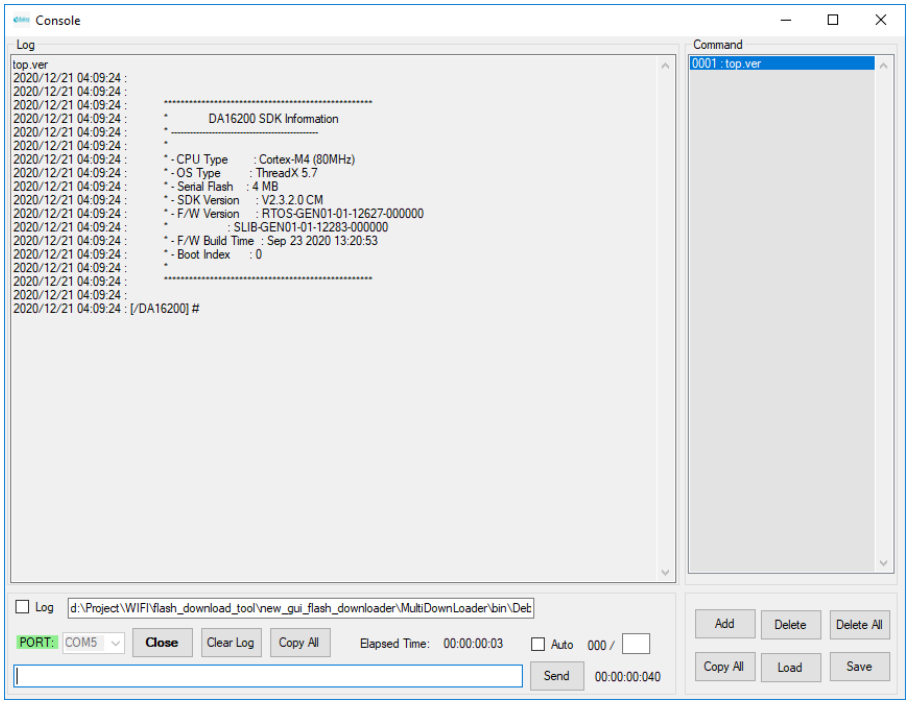

Figure 19: Screen with Messages

Revision History

Revision	Date	Description
1.0	05-Jan-2020	First Release

Status Definitions

Status	Definition
DRAFT	The content of this document is under review and subject to formal approval, which may result in modifications or additions.
APPROVED or unmarked	The content of this document has been approved for publication.

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