Ver. 2.4

CV1K-8 PCB

The CV1K-8 game PCB is fully compatible with the software for the existing CAVE CV1000 PCBs. In order to support multiple games it uses memory modules. There are two types of memory modules:

- CODE - 8 x NAND devices which contain the graphic data, 8 x EPSON devices and 1 NOR FLASH device which contains the program code
- AUDIO - One NOR device which contains the sound data

In order to program these devices you will need a Proman. This device is also known as the TL86_PLUS. It looks like this. From now on the programmer will only be referred to as: Proman

The Proman requires the following software version to work correctly.

- Firmware: 0xd2b5063d
- NAND: NAND063_Beta_D.exe
- NOR: NOR063_Beta_D.exe

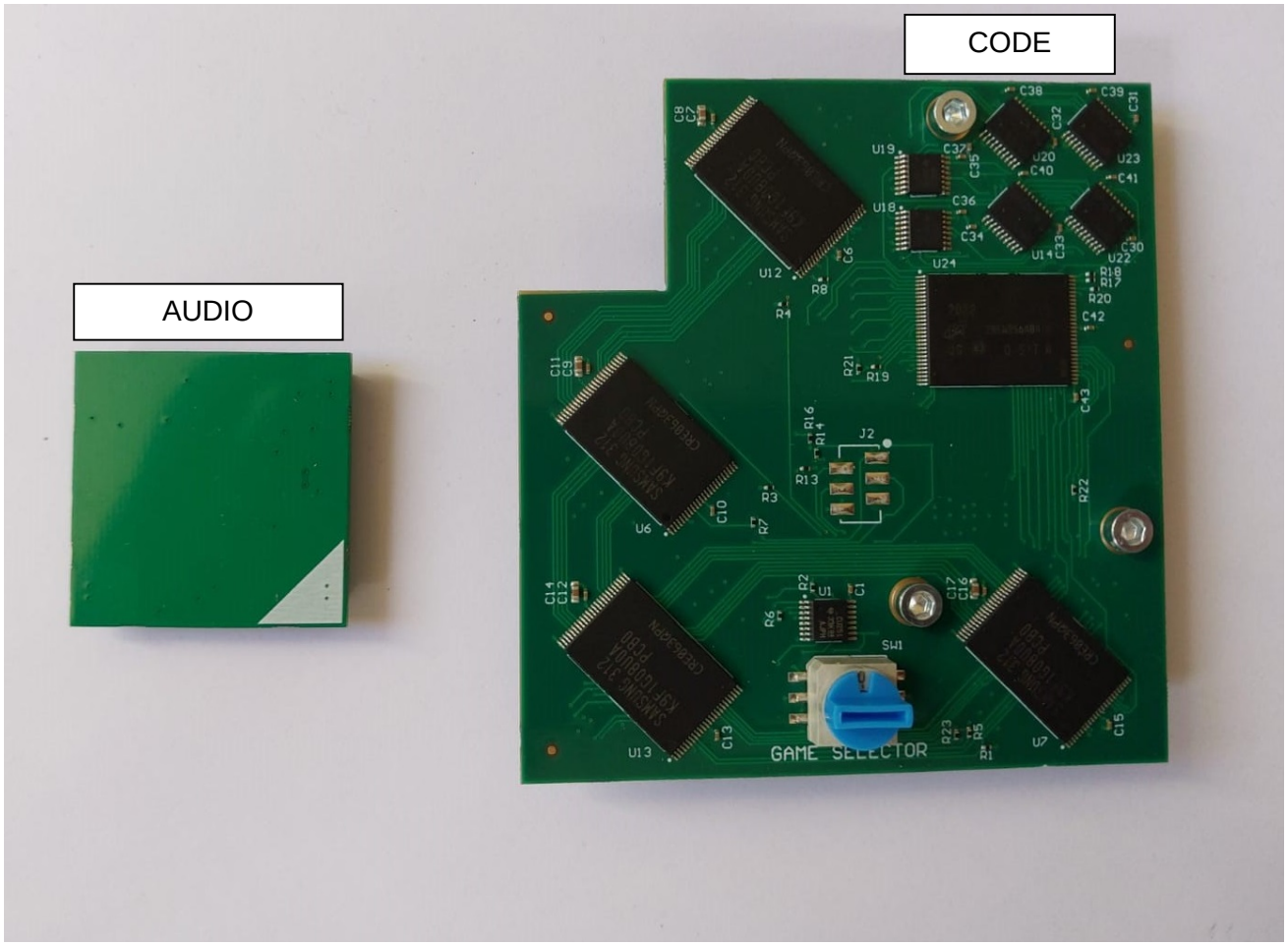
Please make sure that you use this version.

Once the games are programmed they can be selected using the rotary switch. Please select a new game with the power off.

Memory modules

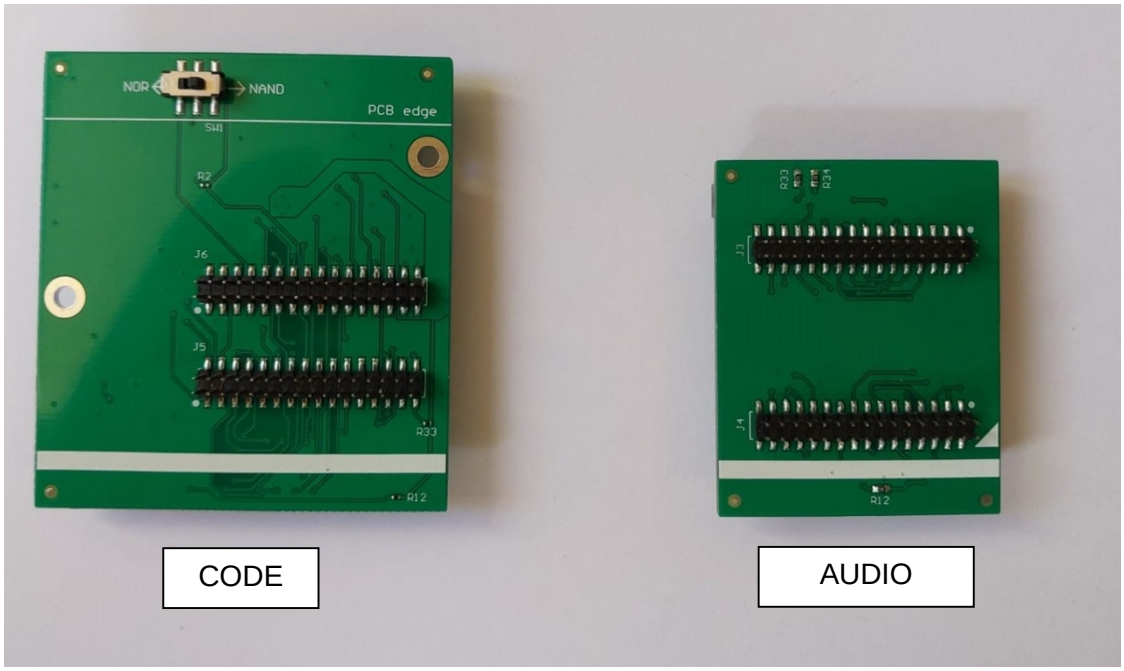
The 2 memory modules have enough capacity to hold up to 8 games. The AUDIO memory module only contains one single NOR FLASH, while the second CODE module has one big NOR FLASH which contains

the main program and additionally 8 NAND modules identical to the ones used in CAVE's CV1000 PCBs. The NAND devices are K9F1G08U0A. The bigger memory module also includes 8 Epson RTC chips, so that the system has the capability for saving configuration and high scores for every game. The CV1K-8 supports CV1000-B games as well as CV1000-D games.



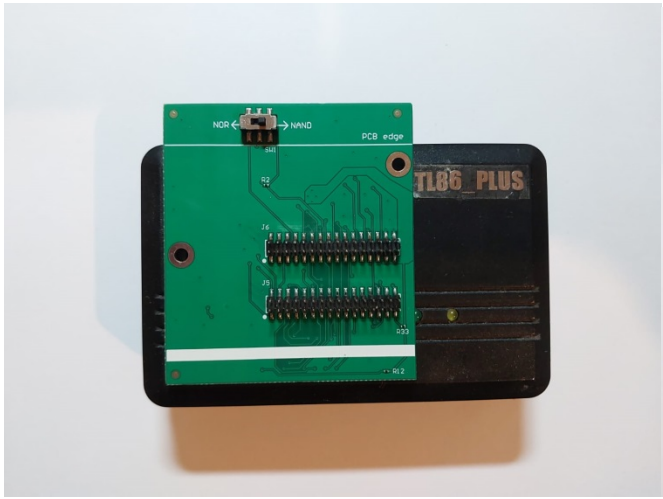
Programming the modules

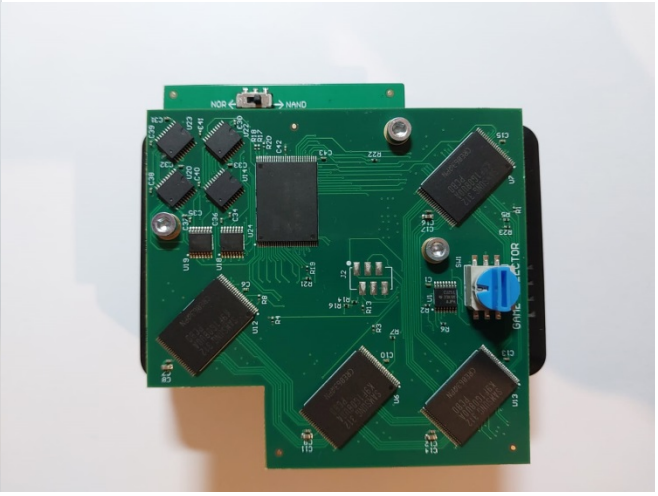
In order to program each of the modules you'll need the appropriate adapter. An adapter is included for each of the two memory modules. You need to remove the memory module from the main PCB and insert it into the appropriate adapter that is shown in the picture below.



Programming the CODE module

The CODE module consists of two sections: NAND and NOR

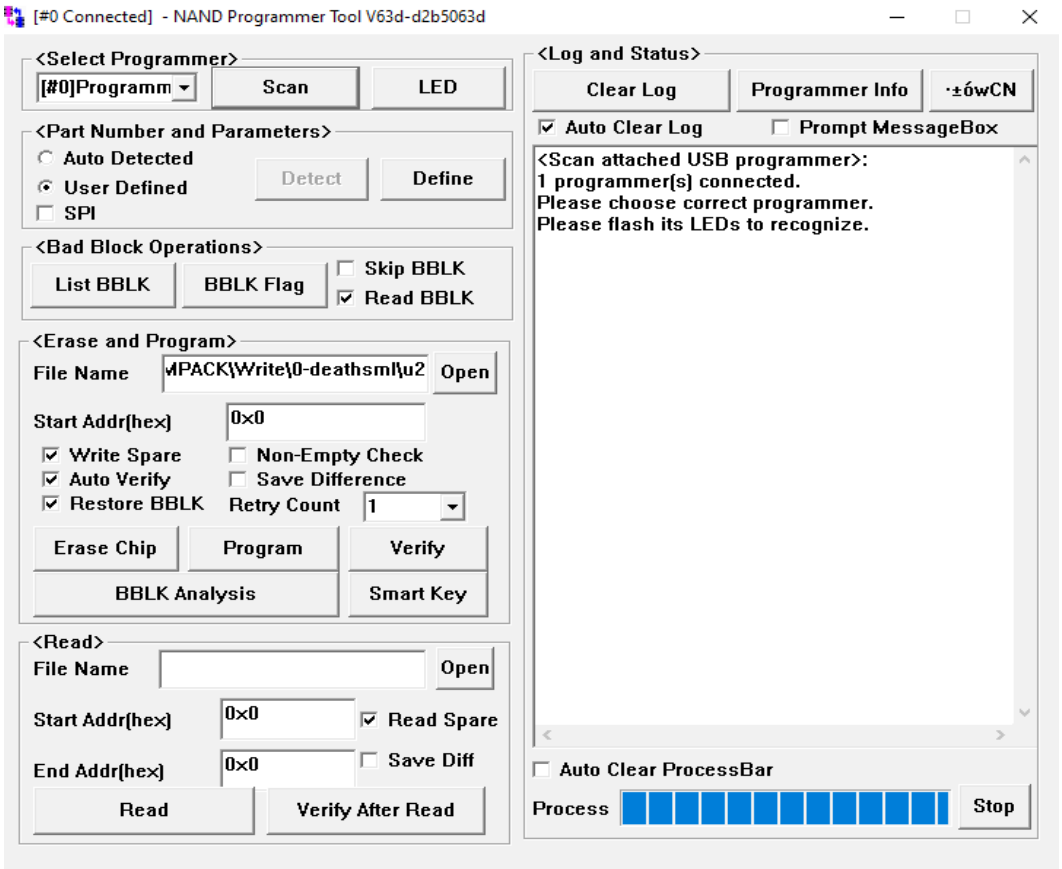




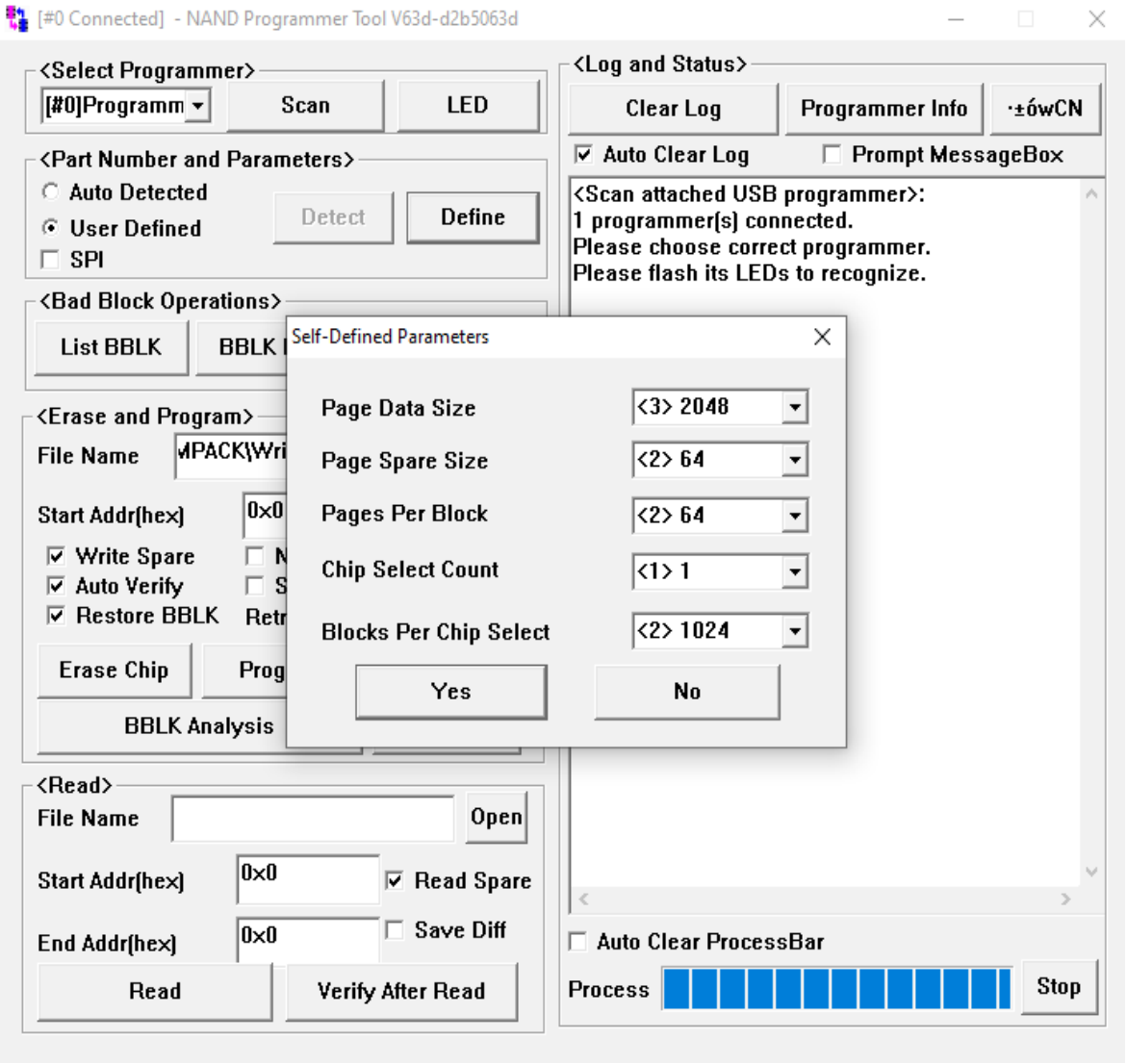
Programming the NAND section

1) Open the **NAND** program: NAND063_Beta_D.exe

2) Set the parameters like below:



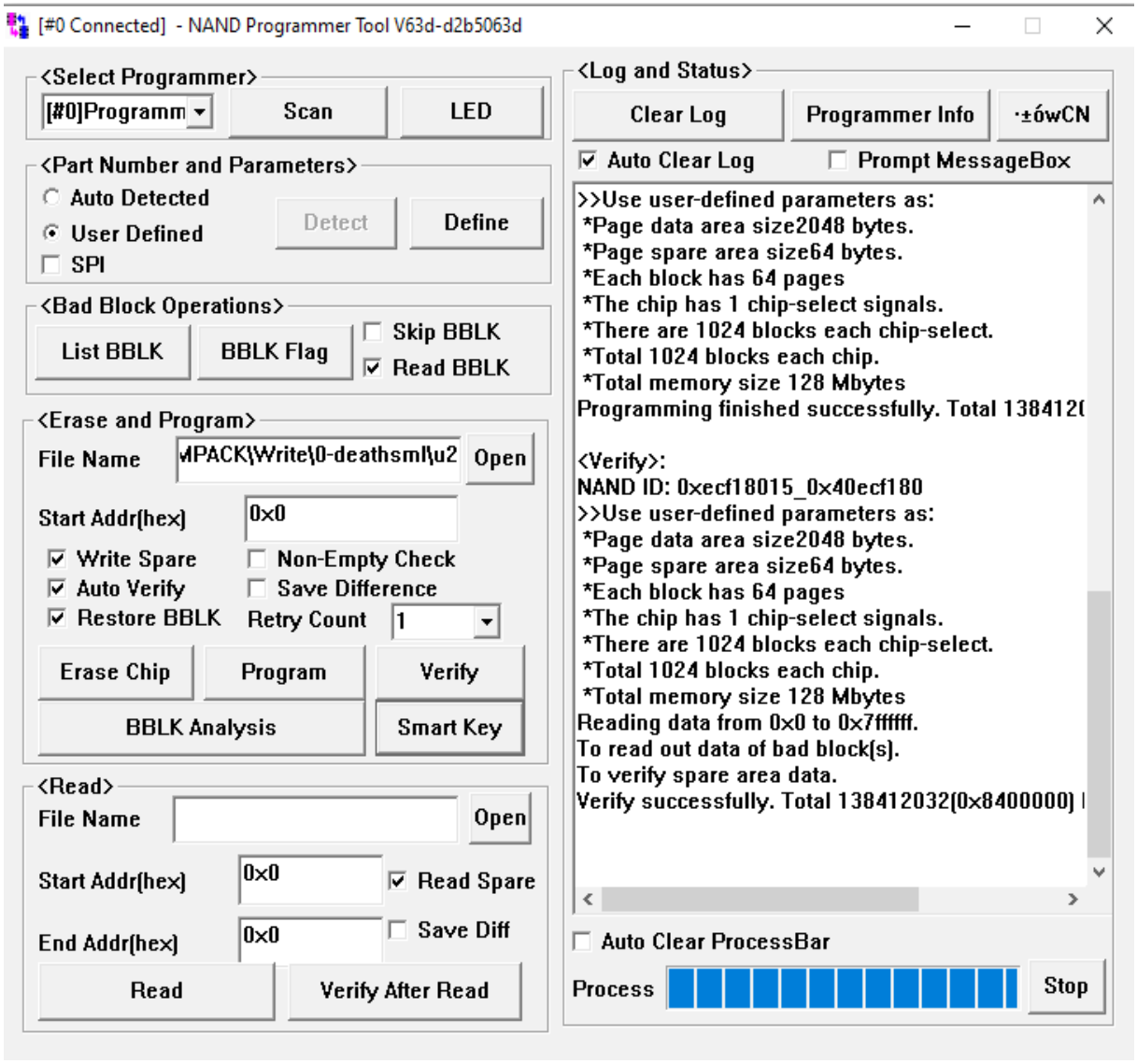
3) Choose "User defined", then choose the "Define" button and use the settings shown below:



4) Make sure that the slide switch on the programming adapter is set to position NAND. Connect the Proman to the USB port and set the rotary switch to the corresponding slot that you want to program. Valid values are from 0 to 7.

5) Now, you can select the U2 file that you want to program into the selected NAND slot. It has to have the correct size (138412032 bytes). Press the Smart Key and wait for erase, programming and verification. If an error shows up during verification, repeat the steps from point 1

After a successful operation, the following message will appear:

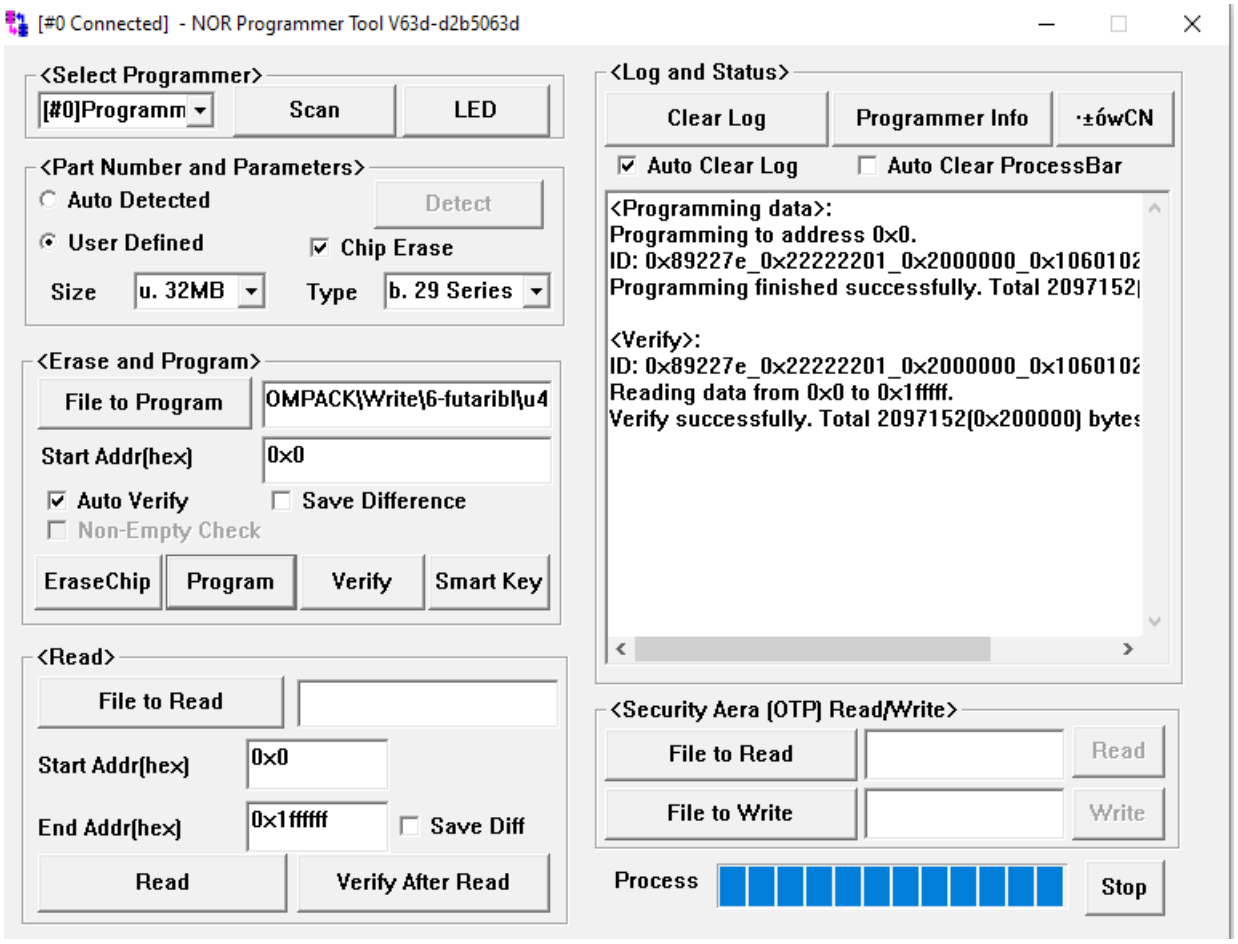


6) After that, you may select another slot on the rotary switch and repeat point 5 as many times as you want, depending on how many of the NANDs you want to program. It is not necessary to reconnect the Proman again. If an error shows up during verification, repeat the steps from point 1

Erasing the NOR section.

1). Open the **NOR** program: NOR063_Beta_D.exe

2). Set the parameters like below:



3) Choose user defined 32MB and select Chip Erase in the <Part Number and Parameters> box.

4) Set the slide switch to the NOR position on the Proman adapter.

5) Connect the Proman to the USB port and click on “EraseChip” (please note that this operation erases all contents of the entire NOR device. The NOR device, contains the data for 8 games, so you only need to do this **once**. The downside of this, is that if you want to change just one game, you can’t just delete a part of the NOR, you will need to erase the whole NOR device again, and reprogram all 8 slots, you cannot reprogram 1 slot only.

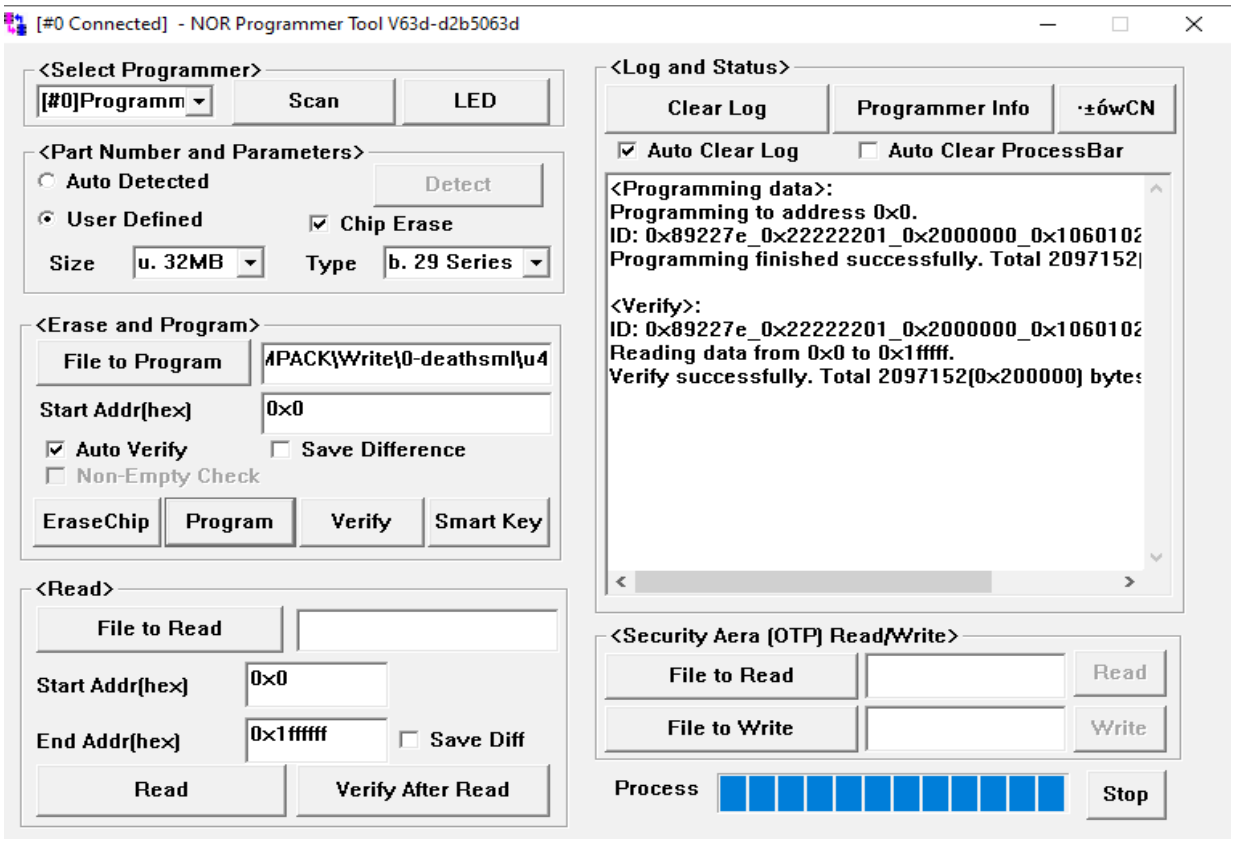
6) Disconnect the Proman from the USB and re-connect (Important).

Programming the NOR section

1) Now you can open the U4 file that you wish to program to any of the 8 slots. You need to select the Auto-Verify option, so that the content is verified after being programmed. After that, adjust the rotary switch so it corresponds to the slot of the flash that you want to program.

Note: Valid settings for NOR Flash are from 8 to F. Make sure that you choose one of these. The Value 8 corresponds to NAND slot 0, 9 corresponds with 1, etc. Take this into consideration when programming the modules. This number is only used when programming, when selecting a game use: 0 to 7.

2) You can now click on the Program button. Once it has finished, you can then do manual verification. DO NOT USE THE SMART KEY BUTTON as it will erase the whole NOR and you will have to start again. After successful operation, the following message will appear:



3) Repeat point 1 as many times as you want to program each slot and remember that you must only ERASE once and program each slot later. It is not necessary to reconnect the Proman.

Note: If any errors occur during verification, erase the entire device and repeat the operation, if error persists, go back to point 2 and make sure that you blank check all the slots.

Programming the SOUND module

1) This module has its own adapter. You must combine all 8 sound files into one file and program it in one go. Insert the FLASH memory module with its adapter into the Proman.

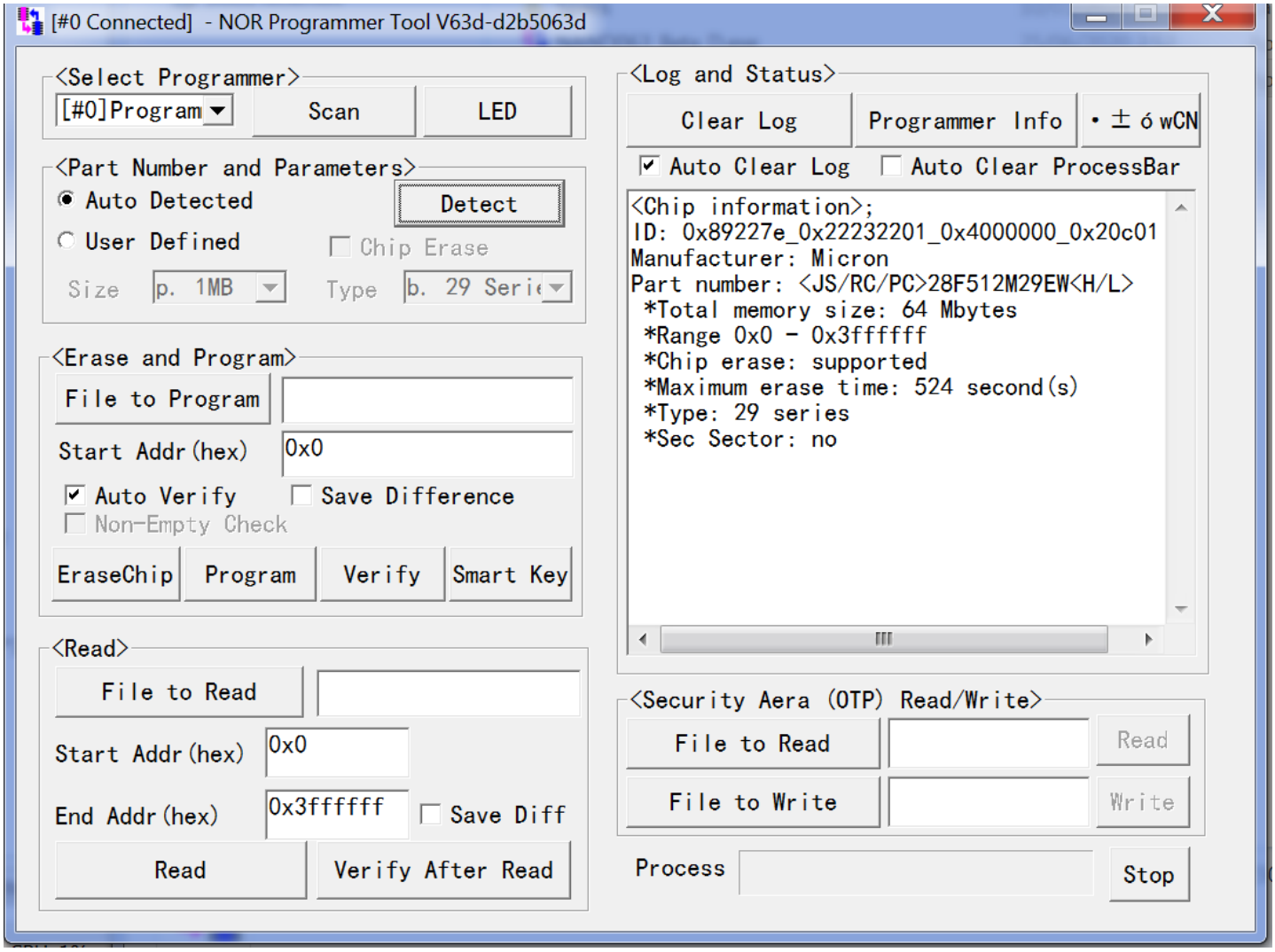
2) In order to build the audio file that contains 8 games, you'll need to concatenate them using your favorite HEX editor or using a cmd window. Notice that each game has 2 audio files, so we need to concatenate both in the right order, first u23, then u24 and then we continue with the next u23 and u24 of a different game. In total you will be concatenating 16 files of exact size 4194304 bytes each. Here is an example cmd file:

```
type nul > audio.bin
copy /b audio.bin + .\mushisam\u23 + .\mushisam\u24 audio.bin
copy /b audio.bin + .\espgal2\u23 + .\espgal2\u24 audio.bin
copy /b audio.bin + .\ibarablk\u23 + .\ibarablk\u24 audio.bin
copy /b audio.bin + .\futari15\u23 + .\futari15\u24 audio.bin
copy /b audio.bin + .\mmpork\u23 + .\mmpork\u24 audio.bin
copy /b audio.bin + .\ddpdfk\u23 + .\ddpdfk\u24 audio.bin
copy /b audio.bin + .\pinkswts\u23 + .\pinkswts\u24 audio.bin
copy /b audio.bin + .\ddpsdoj\u23 + .\ddpsdoj\u24 audio.bin
```

This will create a file that should have an exact size of 67108864 bytes

3) Open the **NOR** program: NOR063_Beta_D.exe

4) Click on the <Detect> button.



5) Select the file which you want to program using the <File to Program> button.

6) Then press <Smart Key> which will erase the chip, program and verify it.

Assembly

Now you can plug the 2 programmed modules onto the main PCB. Don’t forget the 3 screws needed to fasten the CODE module.

Once assembled, it should look like this: