

STM32F411CEU6 Boad, Blackpill

512KB Flash

SAVE THE EXISTING PROGRAM using **USB Mode**, **no ST_LINK**

Change to Boot Mode:

Press BOOT0 (Hold)

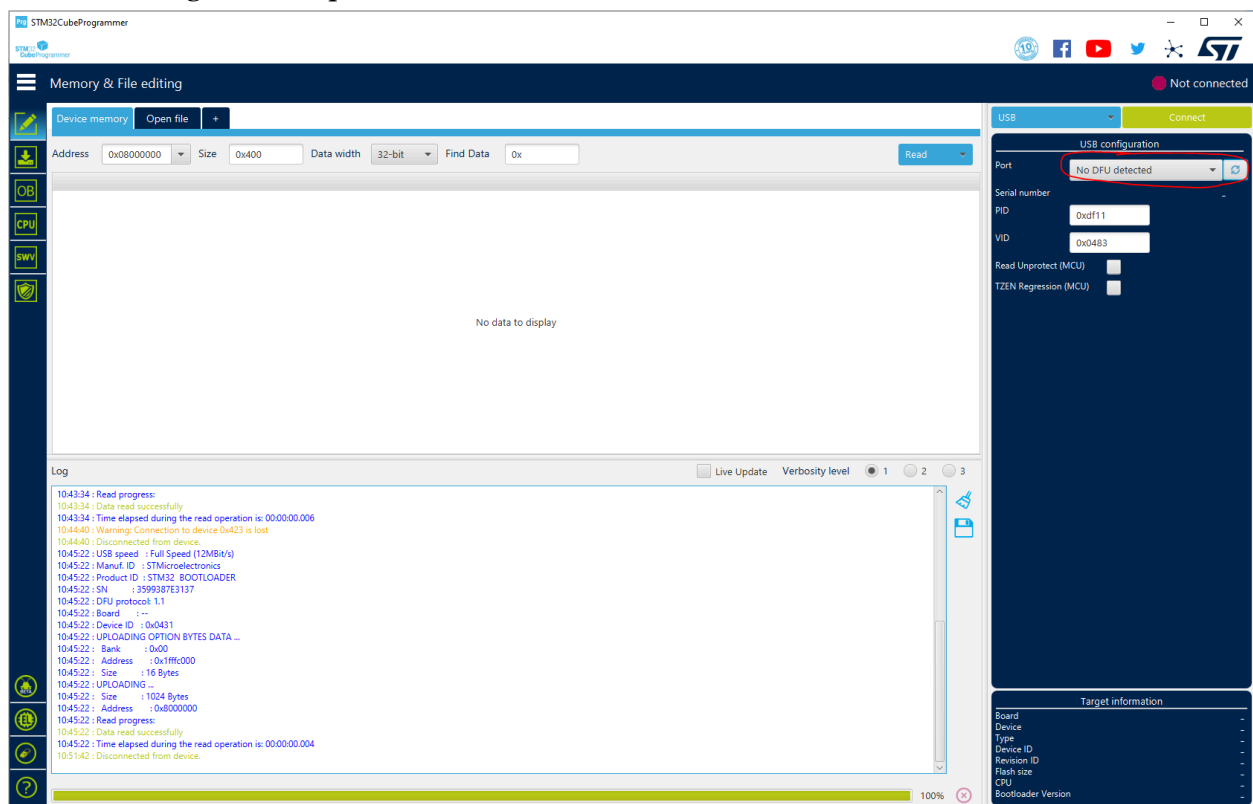
Press NRST and release

Release BOOT0

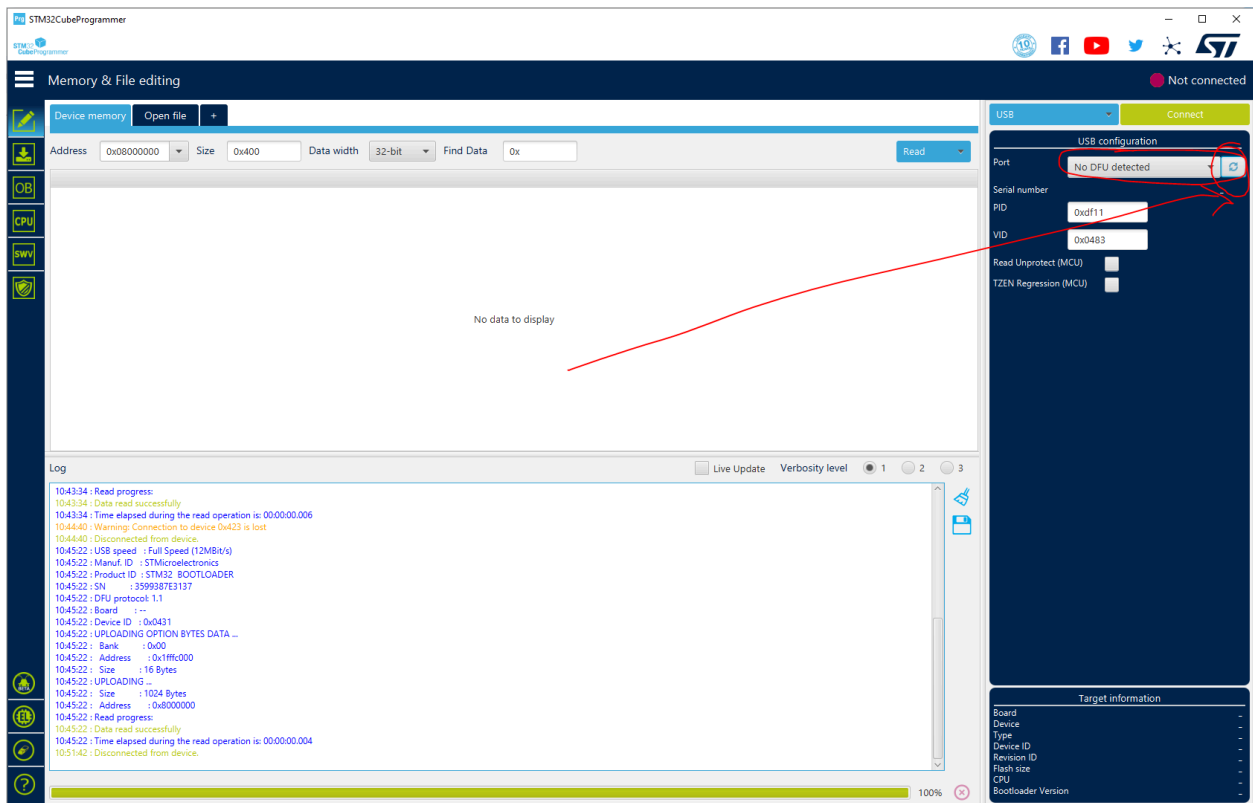
Save the existing program:

Now Open STM CubeProgrammer;

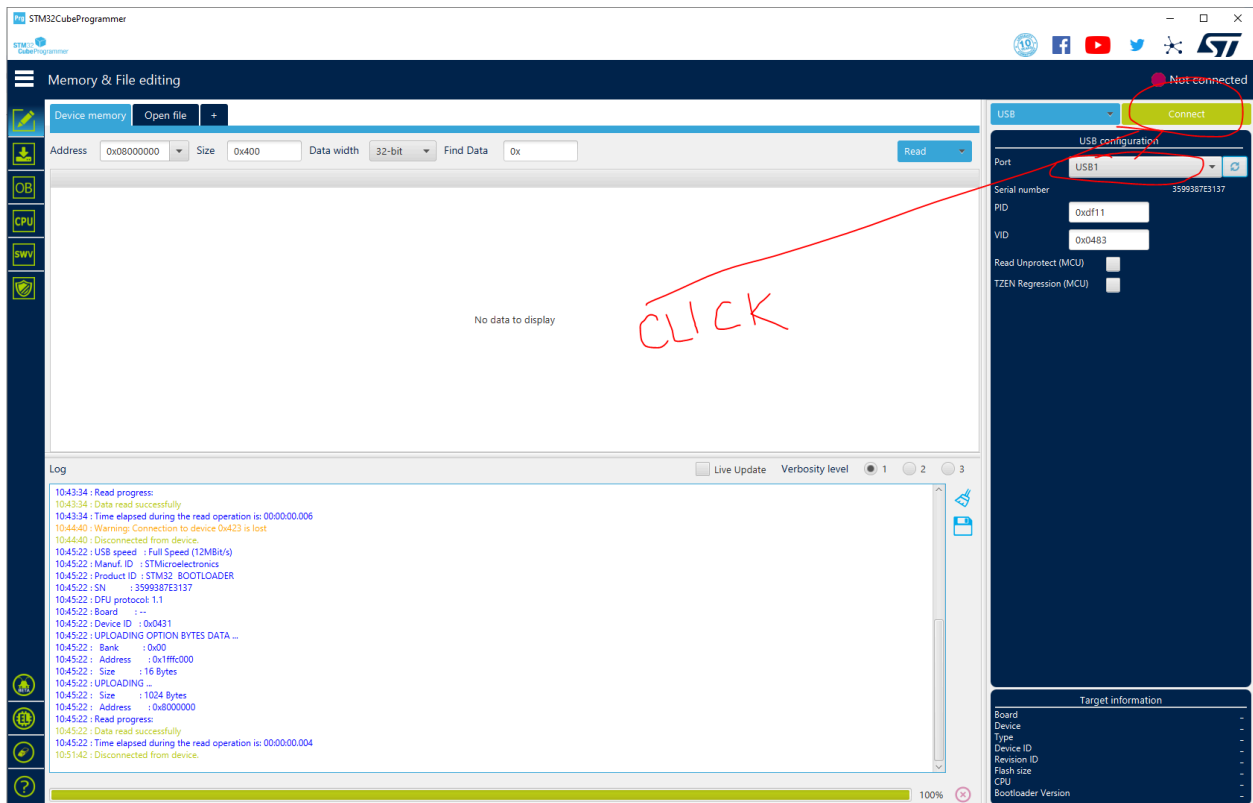
Before Sending the Blackpill to Boot mode:



After Sending the Blackpill to Boot mode: Click the refresh icon.



Now you should see the connect button and USB1 selected: Click on the Connect Button



See the MCU Details: (512KB Flash)

The screenshot shows the STM32CubeProgrammer interface. The 'Memory & File editing' tab is active, displaying a memory map table. A red circle highlights the 'Device memory' section, and a red arrow points to the 'MCU' label in the 'Target information' panel on the right.

Address	Size	Data width	Find Data	Read
0x08000000	20020000	08004F1D	08004F60	08004F60
0x08000010	08004F60	08004F60	08004F60	00000000
0x08000020	00000000	00000000	00000000	08004F60
0x08000030	08004F60	00000000	08004F60	08004513
0x08000040	08004F60	08004F60	08004F60	08004F60
0x08000050	08004F60	08004F60	08004D41	08004D47
0x08000060	08004D40	08004D53	08004D59	08004F60
0x08000070	08004F60	08004F60	08004F60	08004F60
0x08000080	08004F60	08004F60	08004F60	00000000
0x08000090	00000000	00000000	00000000	08004D5F
0x080000A0	08000DA9	08000D21	08000D8D	08000D45
0x080000B0	08000D59	08000D60	08000D81	08000B35
0x080000C0	08000B41	08000B40	08000B59	08004F60
0x080000D0	08004F60	08004C61	08004C79	00000000
0x080000E0	08004D75	08004F60	08006381	00000000

Log:

```

1045:22 : Size : 1024 Bytes
1045:22 : Address : 0x08000000
1045:22 : Read progress
1045:22 : Data read successfully
1045:22 : Time elapsed during the read operation is: 00:00:00.004
1051:42 : Disconnected from device
1057:38 : USB speed : Full Speed (12MB/s)
1057:38 : Product ID : STM32 BOOTLOADER
1057:38 : SN : 3999387E3137
1057:38 : CPU protocol 1.1
1057:38 : Board :
1057:38 : Device ID : 0x0431
1057:38 : UPLOADING OPTION BYTES DATA ...
1057:38 : Bank : 0x00
1057:38 : Address : 0x1FF6000
1057:38 : Size : 16 Bytes
1057:38 : UPLOADING
1057:38 : Size : 1024 Bytes
1057:38 : Address : 0x08000000
1057:38 : Read progress
1057:38 : Data read successfully
1057:38 : Time elapsed during the read operation is: 00:00:00.005
  
```

Target information:

- Board: STM32F411xG/E
- Type: MCU
- Device ID: 0x431
- Revision ID: --
- Flash size: 512 KB - Default
- CPU: Cortex-M4
- Bootloader Version: --

Now, the program inside MCU is also visible. Let's save the same.

$512 \times 1024 = 524288$.

524288 = 0x80000 in Hexadecimal

The screenshot shows the STM32CubeProgrammer interface. The 'Memory & File editing' tab is active, displaying a memory map table. A red circle highlights the 'Device memory' section, and a red arrow points to the 'MCU' label in the 'Target information' panel on the right.

Address	Size	Data width	Find Data	Read
0x08000000	20020000	08004F1D	08004F60	08004F60
0x08000010	08004F60	08004F60	08004F60	00000000
0x08000020	00000000	00000000	00000000	08004F60
0x08000030	08004F60	00000000	08004F60	08004513
0x08000040	08004F60	08004F60	08004F60	08004F60
0x08000050	08004F60	08004F60	08004D41	08004D47
0x08000060	08004D40	08004D53	08004D59	08004F60
0x08000070	08004F60	08004F60	08004F60	08004F60
0x08000080	08004F60	08004F60	08004F60	00000000
0x08000090	00000000	00000000	00000000	08004D5F
0x080000A0	08000DA9	08000D21	08000D8D	08000D45
0x080000B0	08000D59	08000D60	08000D81	08000B35
0x080000C0	08000B41	08000B40	08000B59	08004F60
0x080000D0	08004F60	08004C61	08004C79	00000000
0x080000E0	08004D75	08004F60	08006381	00000000

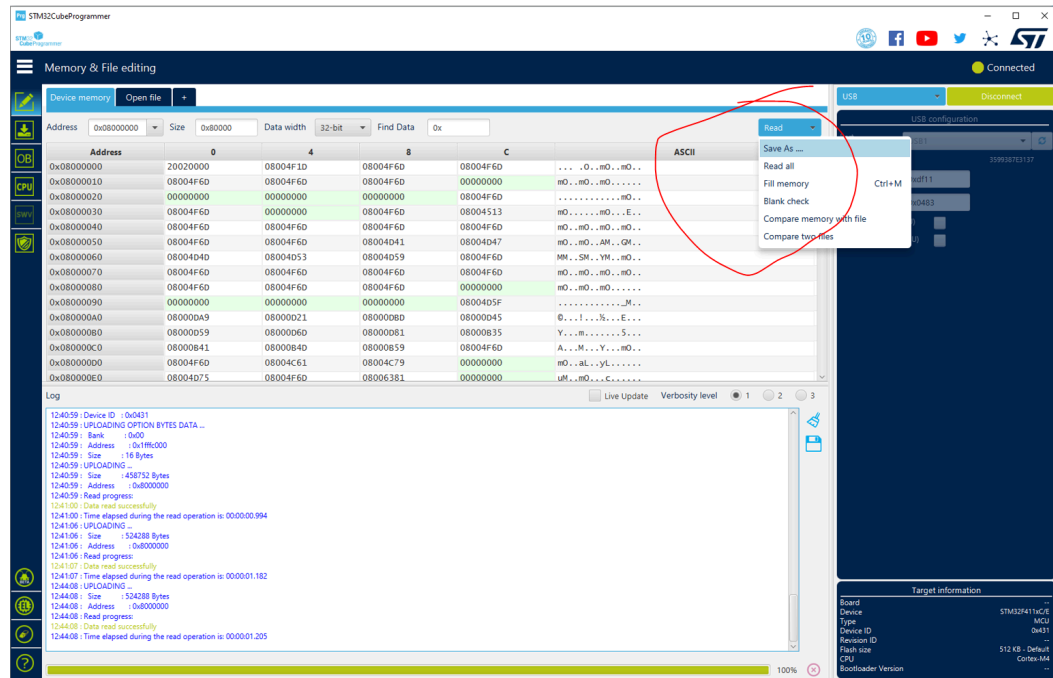
Log:

```

1240:59 : USB speed : Full Speed (12MB/s)
1240:59 : Product ID : STM32 BOOTLOADER
1240:59 : SN : 3999387E3137
1240:59 : CPU protocol 1.1
1240:59 : Board :
1240:59 : Device ID : 0x0431
1240:59 : UPLOADING OPTION BYTES DATA ...
1240:59 : Bank : 0x00
1240:59 : Address : 0x1FF6000
1240:59 : Size : 16 Bytes
1240:59 : UPLOADING
1240:59 : Size : 458752 Bytes
1240:59 : Address : 0x08000000
1240:59 : Read progress
1241:00 : Data read successfully
1241:00 : Time elapsed during the read operation is: 00:00:00.994
1241:06 : UPLOADING
1241:06 : Size : 524288 Bytes
1241:06 : Address : 0x08000000
1241:06 : Read progress
1241:07 : Data read successfully
1241:07 : Time elapsed during the read operation is: 00:00:01.182
  
```

Target information:

- Board: STM32F411xG/E
- Type: MCU
- Device ID: 0x431
- Revision ID: --
- Flash size: 512 KB - Default
- CPU: Cortex-M4
- Bootloader Version: --

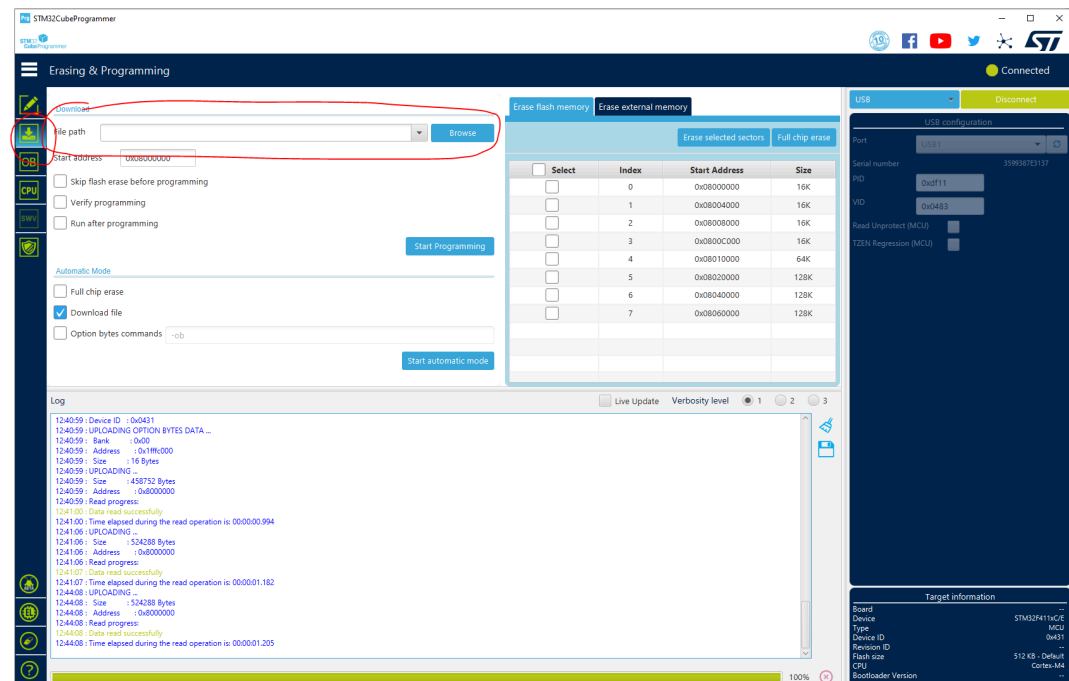


Use the name as: STM32F411CEU6_Backup.bin

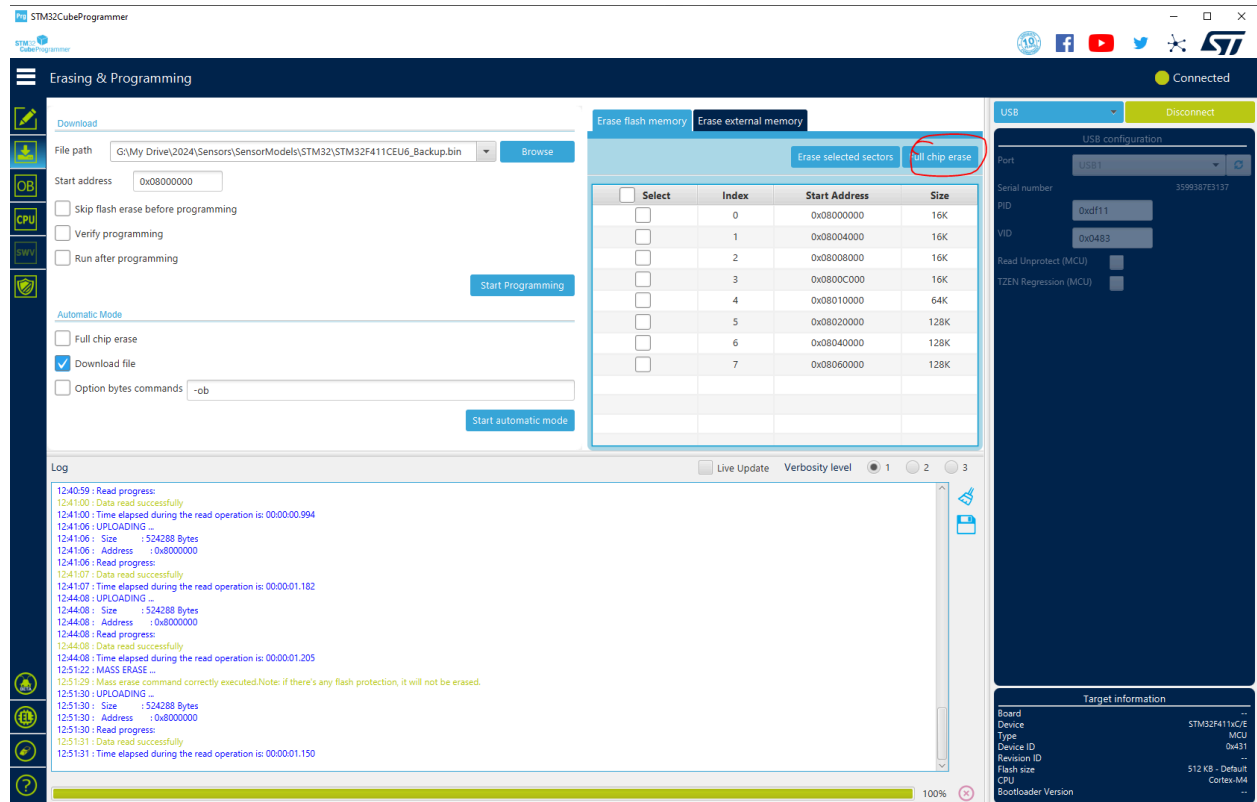
You may see the size of flash as 512kB.

Name	Date modified	Type	Size
STM32F411CEU6_Backup.bin	08-04-2024 12:44	BIN File	512 KB

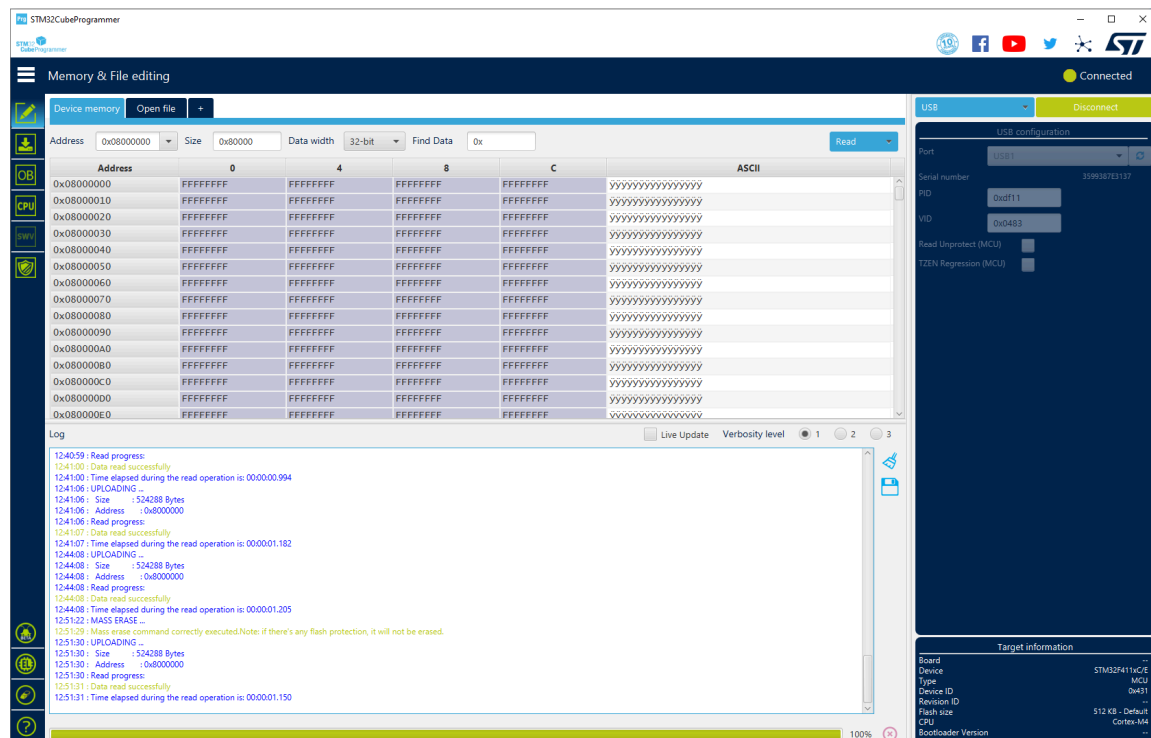
Restore using: Use the saved file to restore.



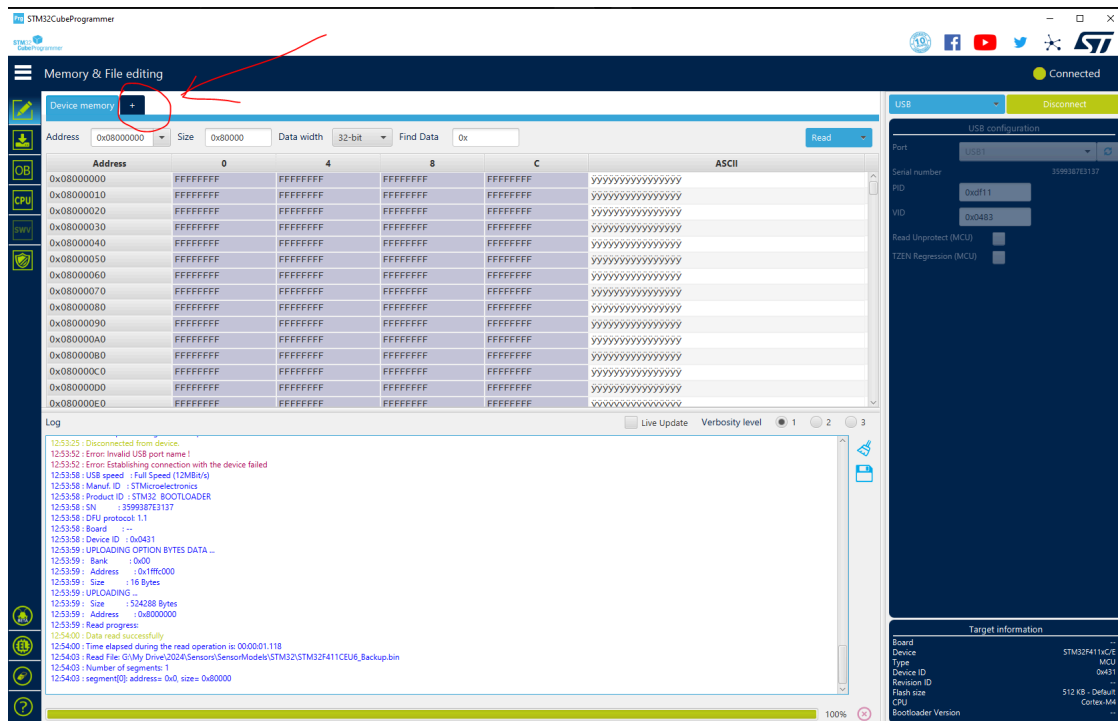
Now it should look like the following:
Full Chip Erase:



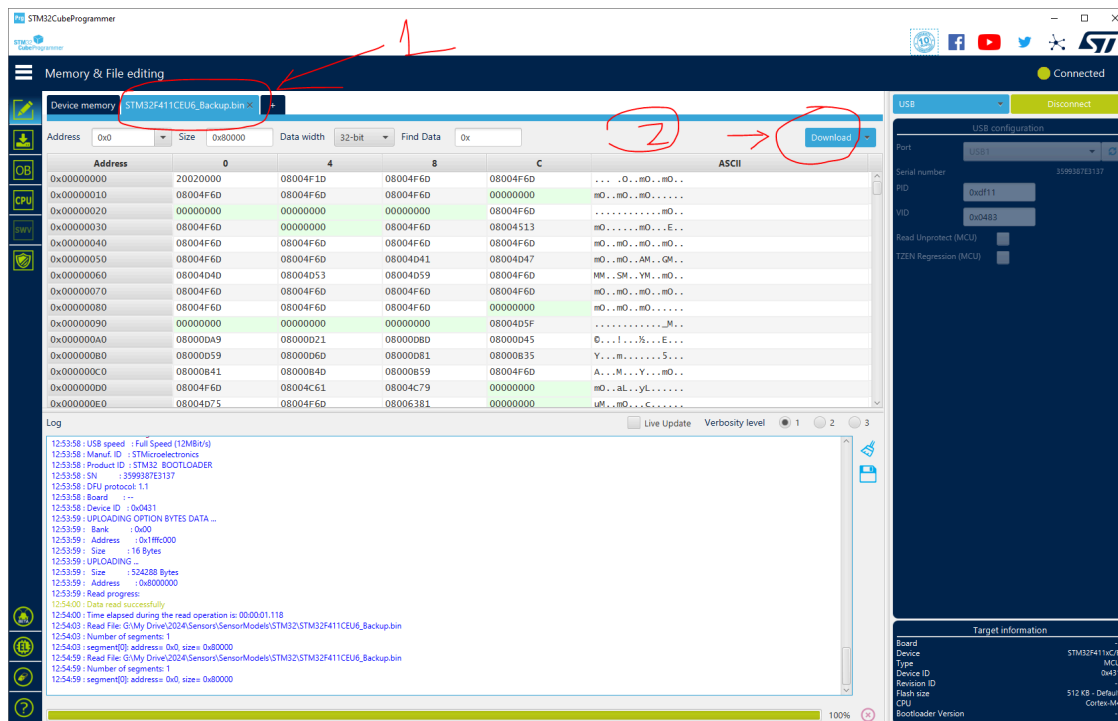
Its free now:



Now let's load the saved .bin file: (Insert the saved file)



Open and click download



It's flashed now:

The screenshot displays the STM32CubeProgrammer application. The main window is titled "Memory & File editing" and shows a table of memory addresses and their corresponding data. The table has columns for Address, Size, Data width, Find Data, and ASCII. The data is organized into segments, with the first segment starting at address 0x00000000 and ending at 0x0000000F. The data width is set to 32-bit, and the Find Data field is empty. The ASCII column shows the corresponding characters for each address.

Below the memory table is a "Log" window showing the progress of the flashing operation. The log entries include:

- 12:54:03 : Number of segments: 1
- 12:54:03 : segment[0]: address= 0x0, size= 0x80000
- 12:54:59 : Read File: G:\My Drive\2024\Sensors\SensorModels\STM32\STM32F411CEU6_Backup.bin
- 12:54:59 : Number of segments: 1
- 12:54:59 : segment[0]: address= 0x0, size= 0x80000
- 12:55:14 : Memory Programming ...
- 12:55:14 : Opening and parsing file: STM32F411CEU6_Backup.bin
- 12:55:14 : File : STM32F411CEU6_Backup.bin
- 12:55:14 : Size : 512.00 KB
- 12:55:14 : Address : 0x00000000
- 12:55:14 : Erasing memory corresponding to segment 0.
- 12:55:14 : Erasing internal memory sectors [0-7]
- 12:55:14 : erasing sector 0000 @: 0x00000000 done
- 12:55:14 : erasing sector 0001 @: 0x00004000 done
- 12:55:15 : erasing sector 0002 @: 0x00008000 done
- 12:55:15 : erasing sector 0003 @: 0x0000C000 done
- 12:55:16 : erasing sector 0004 @: 0x00010000 done
- 12:55:18 : erasing sector 0005 @: 0x00020000 done
- 12:55:20 : erasing sector 0006 @: 0x00040000 done
- 12:55:22 : erasing sector 0007 @: 0x00060000 done
- 12:55:22 : Download in Progress
- 12:55:28 : File download complete
- 12:55:28 : Time elapsed during download operation: 00:00:13.865

The log window also shows a progress bar at the bottom, indicating that the download is 100% complete.

On the right side of the interface, there is a "USB configuration" panel showing the connected device's details, including the port (USB1), serial number (3399387E3137), PID (0x0F11), and VID (0x04B3). Below this is a "Target information" panel showing the board (STM32F411xG/E), device (MCU), device ID (0x431), revision ID, flash size (512 KB - Default), CPU (Cortex-M4), and bootloader version.

DONE!