These are the instructions to compile the secAES-STmega8515 and load it onto the ATXMEGA128D4 target board. I am assuming that you are using the virtual machine provided by ChipWhisperer that is available under the releases tab of their GitHub repo and that is already set up with their directions (located at https://chipwhisperer.readthedocs.io/en/latest/installing.html).

1. On the virtual machine, navigate to the firmware directory:

   ```
   cd ~/work/projects/chipwhisperer/hardware/victims/firmware
   ```

2. Create a new directory and copy the contents of simpleserial-aes into it

   ```
   mkdir test1 && cp -r simpleserial-aes/* test1/
   ```

3. Navigate to the secAES repo and download it.

   ```
   cd crypto
   git submodule update --init secAES-ATmega8515
   ```

4. Edit **Makefile.maskedaes** with a text editor. Change the line :

   ```
   else ifeq ($(HAL), avr)
   ```

   to

   ```
   else ifeq ($(HAL), $(filter $(HAL), avr xmega))
   ```

   Be careful not put any superfluous tabs or spaces in. Make is very sensitive to spaces and tabs.

5. Navigate back to the directory created earlier and build the firmware.

   ```
   cd ~/work/projects/chipwhisperer/hardware/victims/firmware/test1

   make PLATFORM=CWLITEXMEGA CRYPTO_TARGET=MASKEDAES CRYPTO_OPTIONS=ANSSI+VERSION1
   ```

6. Now, to use this in Jupyter Notebooks, prepend this to whatever tests you are running to load the firmware on the board:

   ```
   PLATFORM = 'CWLITEXMEGA'

   %%bash -s "$PLATFORM"

   cd ../../../hardware/victims/firmware/test1

   %run "../../Setup_Scripts/Setup_Generic.ipynb"
   ```

```
fw_path = '../../../hardware/victims/firmware/test1/simpleserial-aes-{}.hex'.format(PLATFORM)

cw.program_target(scope, prog, fw_path)

project = cw.create_project("test1.cwp", overwrite=True)
```

The firmware will now be loaded on the board.