FFC61 QMK Port

What's working:

- Fully functional QMK port
- Custom keymapping and layer creation
- Customizable RGB Lighting using OpenRGB

What's not working/In progress:

- Bluetooth (wireless support is currently under development according to the QMK developers)
- Custom RGB effects have to be reapplied every time the keyboard is turned off
- Graphical user interface for keymapping (as of now, changes are done by editing the source code directly)

Tutorial

The tutorial will consist of two main parts. If you do not need to make any changes to the default keymap, skip ahead to **Part B**, which discusses how to flash the compiled firmware to the keyboard. If you do need to make changes to the default keymap, **Part A** discusses how to set up the QMK environment and compile your own firmware file.

Part A - Compiling the firmware:

1. Download the following:
    - QMK MSYS
    - Notepad++ (for source code editing)

2. Open QMK MSYS and run the following commands:

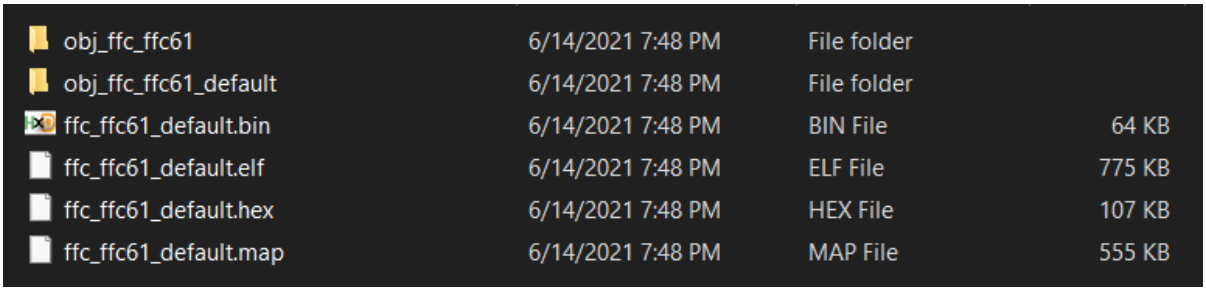
```
qmk setup SonixQMK/qmk_firmware
cd qmk_firmware
git checkout sn32_openrgb_new
git submodule update --init --recursive
```

3. Make your changes in the keymap by going to qmk_firmware/keyboards/ffc/ffc61/keymaps/default and opening keymap.c in a text editor such as Notepad++. More details about QMK keymapping and the full list of keycodes can be found here.

4. Once you're done editing the keymap, the firmware file can now be compiled. This can be done by opening the QMK MSYS terminal and running the following command:

```
qmk compile -kb ffc/ffc61 -km default
```

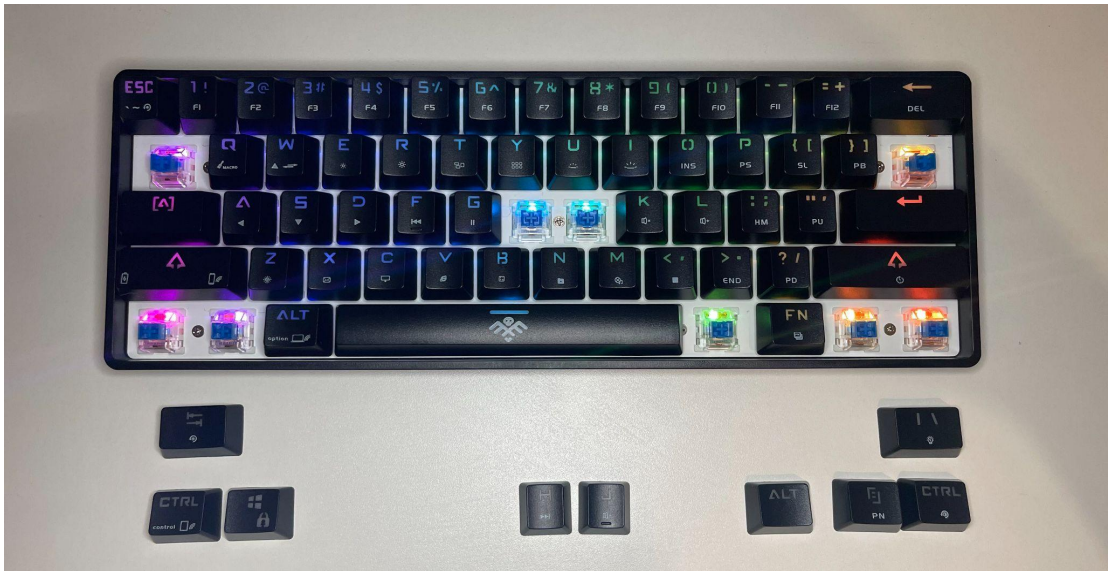
5. A file called *ffc_ffc61_default.bin* should now appear in the qmk_firmware/.build folder.



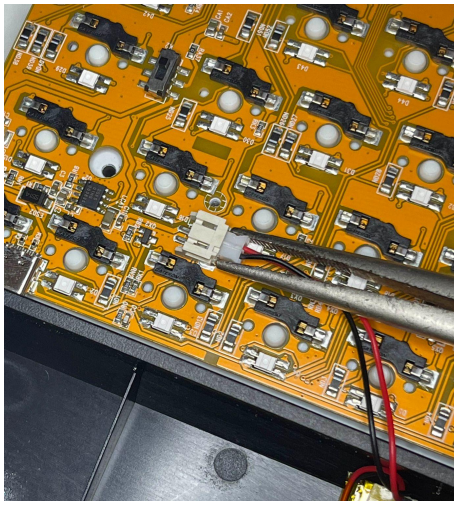
Part B - Flashing the firmware:

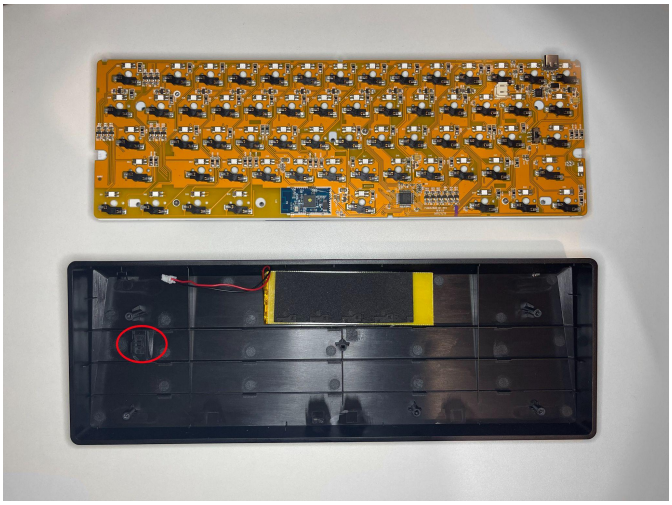
1. Download the following:
    - Pre-compiled FFC61 Firmware (for those who skipped Part A)
    - SONiX USB MCU ISP Tool

2. Remove the following keycaps on the keyboard to access the screws.



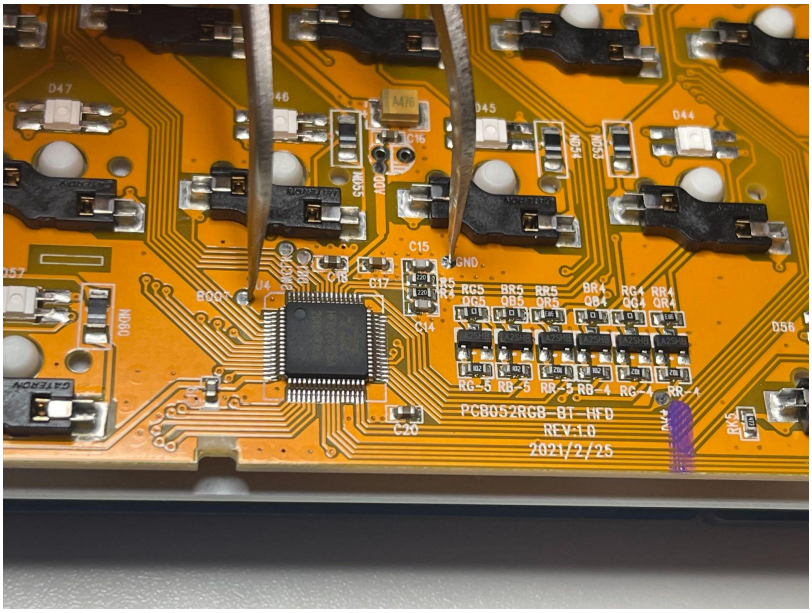
3. Unscrew the six screws under the keycaps, remove the PCB from the case, and disconnect the battery from the PCB by using tweezers or needle nose pliers. Make sure that the power switch is in the off position and take care not to misplace the power switch cover (encircled below).



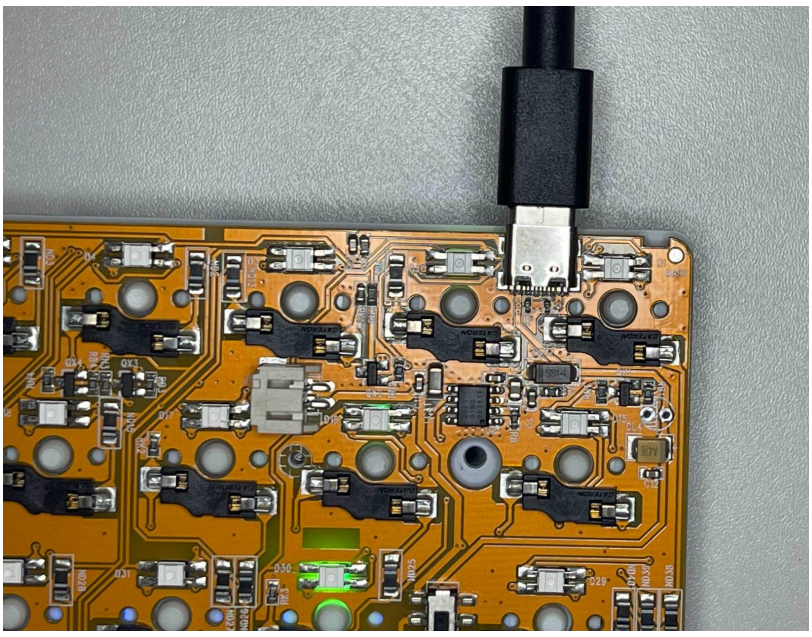


----- The next part is a little difficult and you might need a helping hand -----

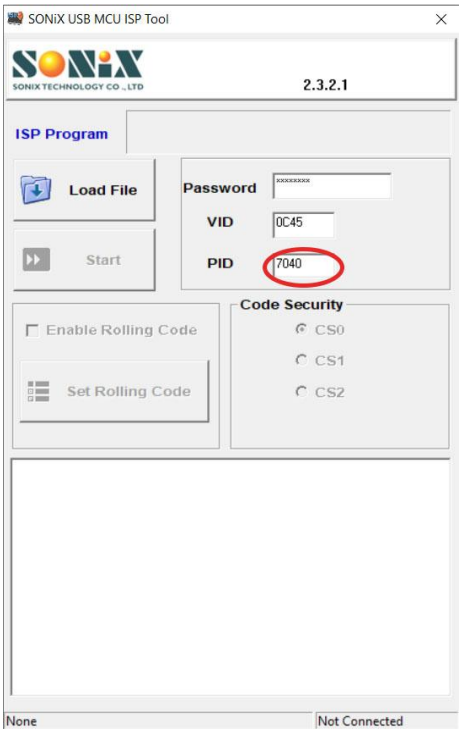
4. Locate the BOOT and GND pads located on the lower-middle side of the pcb. Connect these together using any conductive material such as tweezers or a piece of wire.



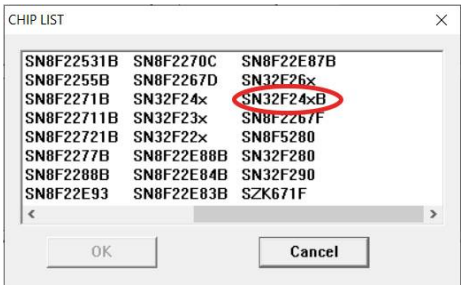
5. While the two pads are bridged, connect the keyboard to the computer using the USB cable. The computer should recognize it as "*USB Input Device"* and keypresses should not be detected. If it still functions as a normal keyboard, disconnect the cable and repeat steps 4 and 5.

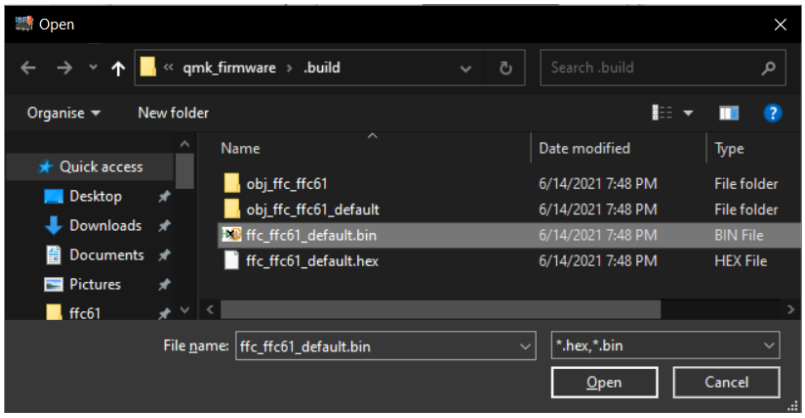


6. Open the SONiX USB MCU ISP Tool and set the PID to 7040.

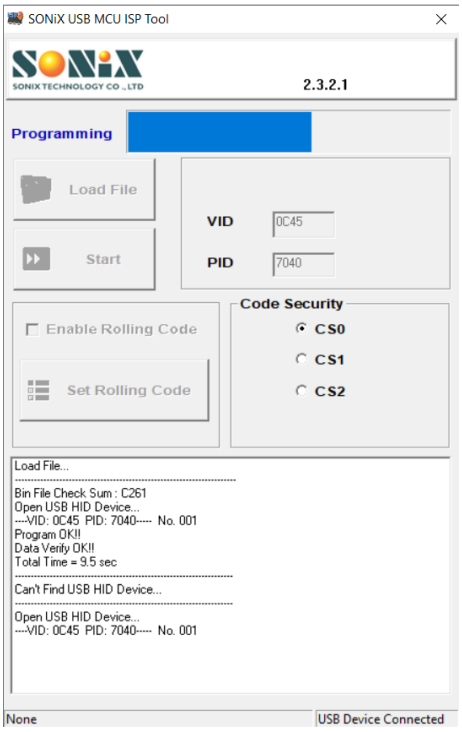


7. Press Load and scroll to the right to select SN32F24xB. This should open a file selection window. Select the *ffc_ffc61_default.bin* file and press open.





8. Press start to flash the firmware to the keyboard.



9. Verify that all keys are working with a [keyboard tester].

10. Once you have verified that all keys are working, you can now reassemble the keyboard by reversing the previous steps. Congratulations! QMK is now installed on your FFC61. Please check the Post-Install section for further information.

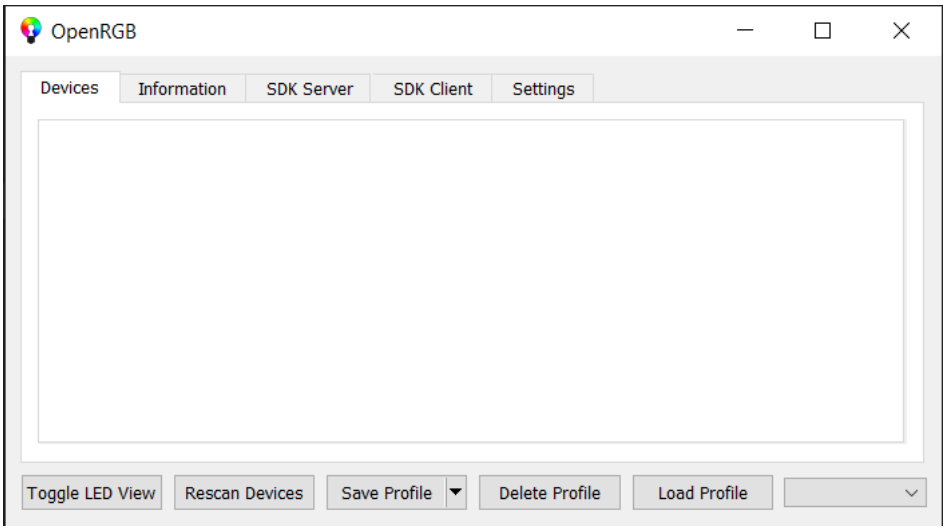
Post-Install

- Now that you have QMK installed, you can access bootloader mode anytime by pressing Fn + Tab. This means that you don't have to open the keyboard and bridge the BOOT and GND pins every time you have to flash a new firmware.

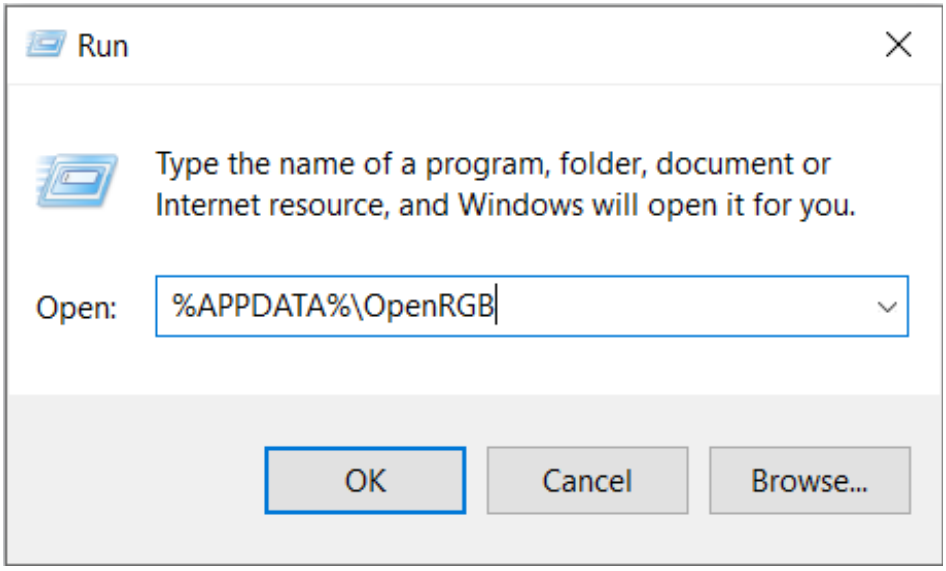
- If you want to revert back to the stock firmware, open the SONiX USB MCU Tool and flash the following .bin file: FFC61 Stock Firmware

Setting up OpenRGB

1. Download OpenRGB 0.6 and run the program once.



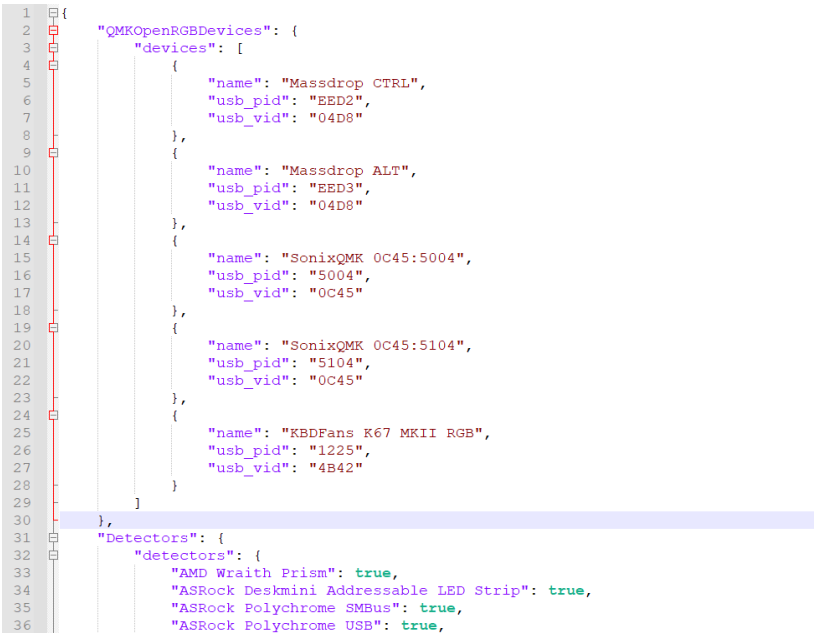
2. Press Win + R, type *%APPDATA%\OpenRGB*, and press OK.



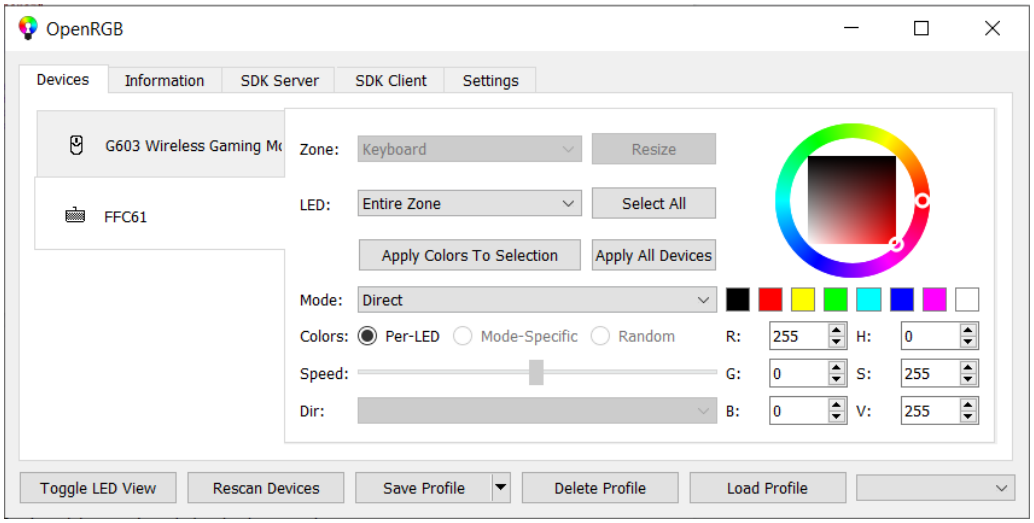
3. Open *OpenRGB.json* in Notepad++ and add the following lines of code before the *"Detectors"* section in the file.

```
"QMKOpenRGBDevices": {
     "devices": [
          {
               "name": "Massdrop CTRL",
               "usb_pid": "EED2",
               "usb_vid": "04D8"
          },
          {
               "name": "Massdrop ALT",
               "usb_pid": "EED3",
               "usb_vid": "04D8"
          },
          {
               "name": "SonixQMK 0C45:5004",
               "usb_pid": "5004",
               "usb_vid": "0C45"
          },
          {
               "name": "SonixQMK 0C45:5104",
               "usb_pid": "5104",
               "usb_vid": "0C45"
          },
          {
               "name": "KBDFans K67 MKII RGB",
               "usb_pid": "1225",
               "usb_vid": "4B42"
          }
     ]
 },
```

It should look like the following:



4. Restart OpenRGB and the FFC61 should now be detected as a device.



5. You should now be able to play with the different effects and features of OpenRGB to control the lighting of your FFC61. Check the [OpenRGB GitLab] for more information on how to use the program.