

# User Guide - Nitrogen95 SMARC

Documentation

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## Getting Started

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This guide documents how to quickly get up and running with the Ezurio's Nitrogen95 SMARC module and Universal SMARC Carrier.

### In the Box

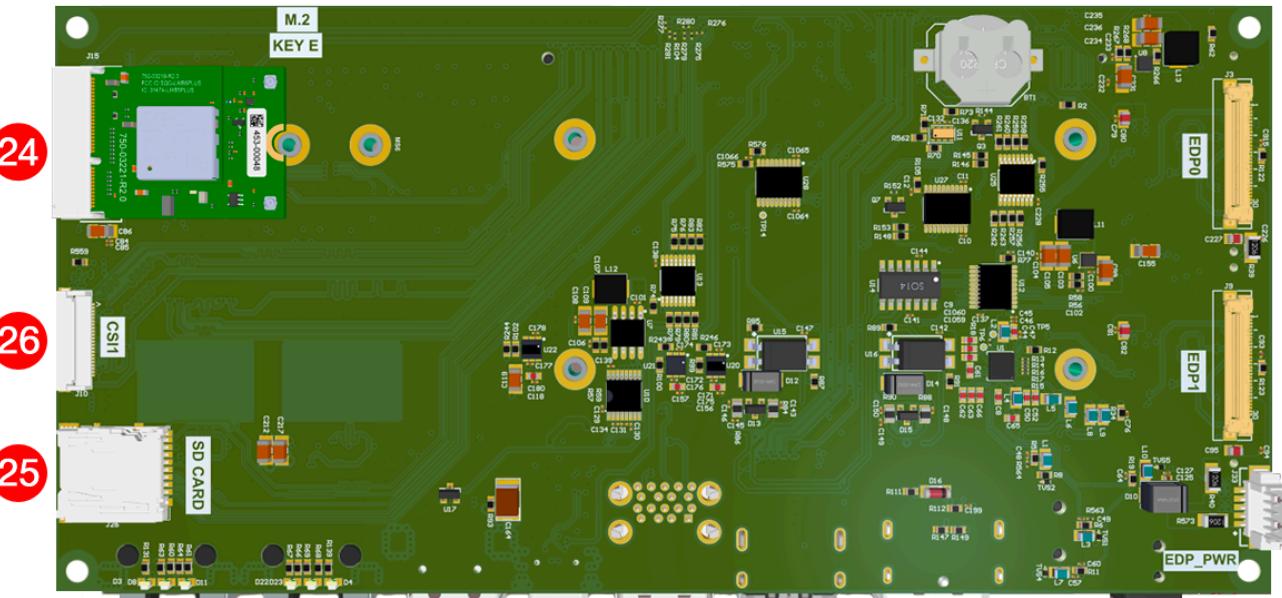
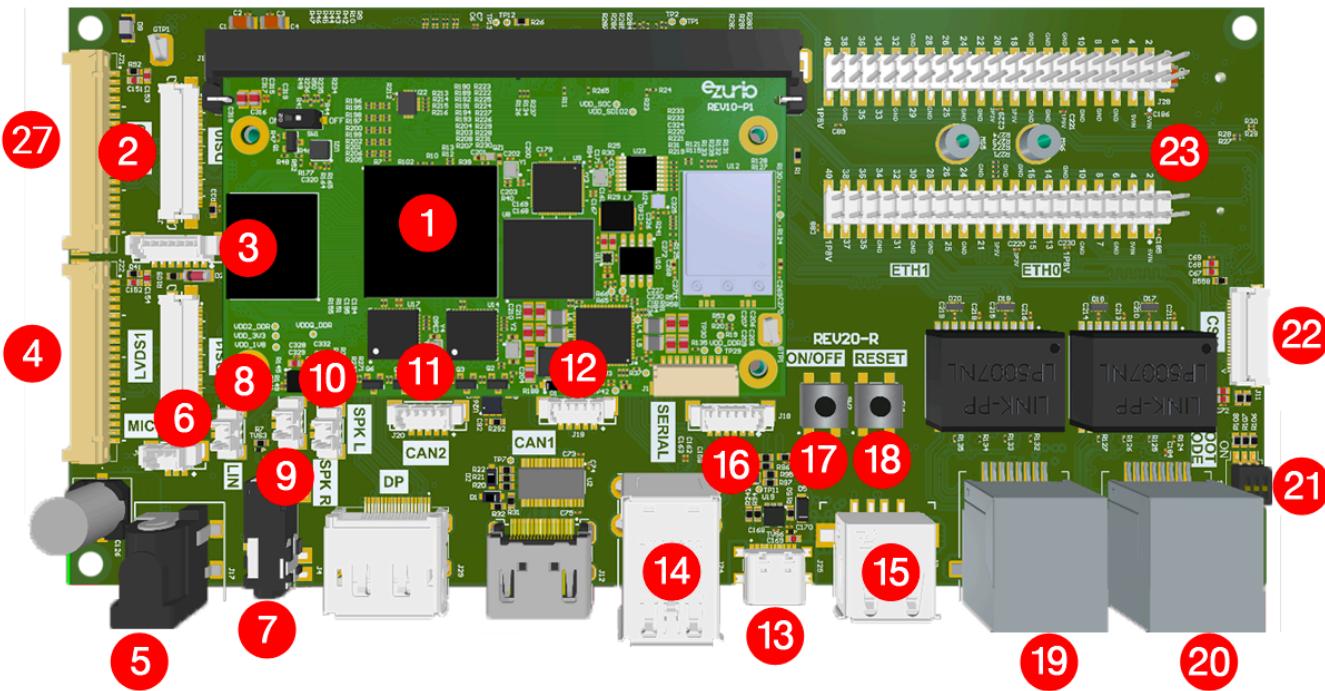
The development kit contains the following items:

- 1x Nitrogen95 SMARC module
- 1x Universal SMARC Carrier
- 2x Mounting Screws
- 1x Power Supply 5V
- 1x Serial Cable

### On the Board

**Note:** The SMARC module pictured below is representative of the Nitrogen91 and Nitrogen93 SMARC, but the Nitrogen95 SMARC features a different layout. The components are the same. An updated image of the Nitrogen95 SMARC will be provided in a future release.

The Nitrogen95 SMARC module and Universal SMARC Carrier contains the following components and interfaces:



1. Nitrogen95 SMARC module
2. DSI 0 Display Connector (J13)
3. LVDS I2C connector - Touch (J23)
4. LVDS1 Display Connector (J22)
5. Barrel Plug Power Adapter (J17)
6. 3 Pin Molex Connector for Mic (J8)
7. 3.5mm Audio Jack (J4)

- 8. 2 Pin Molex Connector for Line In (J6)
- 9. 2 Pin Molex Connector for Speaker Right (J7)
- 10. 2 Pin Molex Connector for Speaker Left (J5)
- 11. 5 Pin Molex Connector for Can 2 (J20)
- 12. 5 Pin Molex Connector for Can 1 (J19)
- 13. High-Speed USB-C OTG Connector (J25)
- 14. 2x USB-A 3.1 Gen1 Port (J24)
- 15. 1x USB-A 2.0 Port (J2)
- 16. 6 Pin Molex Connector for Serial (J18)
- 17. On/Off Switch (SW2)
- 18. Reset Switch (SW1)
- 19. Gigabit Ethernet 1 Connector (J32)
- 20. Gigabit Ethernet 0 Connector (J31)
- 21. Boot Mode Switches (S1)
- 22. CSI 0 Connector (J11)
- 23. 2x Expansion Connectors (J27 and J28)
- 24. M.2 Connector (J15)
- 25. Micro SD Card Slot (J26)

**Note:** BOM options are required for the following connectors to function. Please contact support@ezurio.com or the sales team for more information.

- 26. CSI 1 Connector (BOM Option) (J10)
- 27. LVDS0 Display Connector (BOM Option) (J21)

## Board Assembly

The Nitrogen95 SMARC module and Universal SMARC Carrier arrive disassembled. In order to assemble, you will need to insert the Nitrogen95 SMARC module into the Universal SMARC Carrier and mount it using the screws.

To assemble, complete the following steps:

1. Insert the Nitrogen95 SMARC module into J1 of the Universal SMARC Carrier.
2. Use the mounting screws to mount the Nitrogen95 SMARC module on the Universal SMARC Carrier.

## Serial Console

A console cable is provided with our Nitrogen95 SMARC module and Universal SMARC Carrier.

1. Attach the DB9 connector labeled "CONSOLE" to a serial port or a USB-to-Serial Converter.
2. Connect the other end of the console cable to J18 on the SMARC Carrier.

## Connecting USB-To-Serial Converter to Linux

Verify mounting information by grepping dmesg

Type the following command:

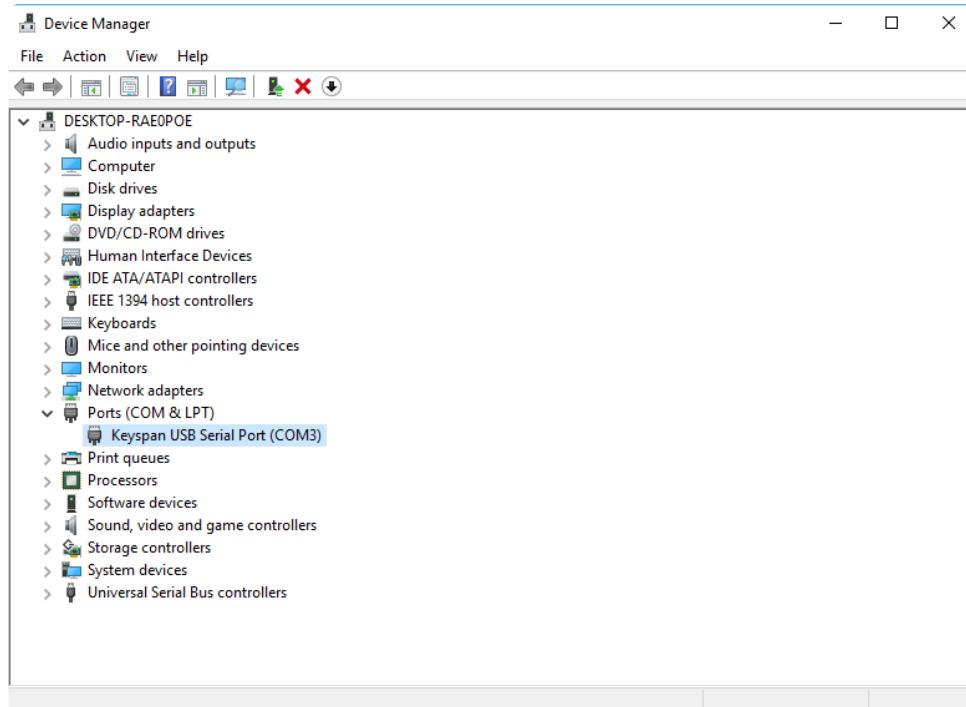
```
dmesg | grep ttyUSB
```

You will notice that it mounts on :

```
/dev/ttyUSB0
```

## Connecting USB-To-Serial Converter to Windows

Verify under Device manager:



## Serial Configuration

- The default serial speed rate is 115200.

## Linux: minicom

Use the following command to set the correct permissions:

```
sudo usermod -a -G dialout $USER
```

The minicom command is simple:

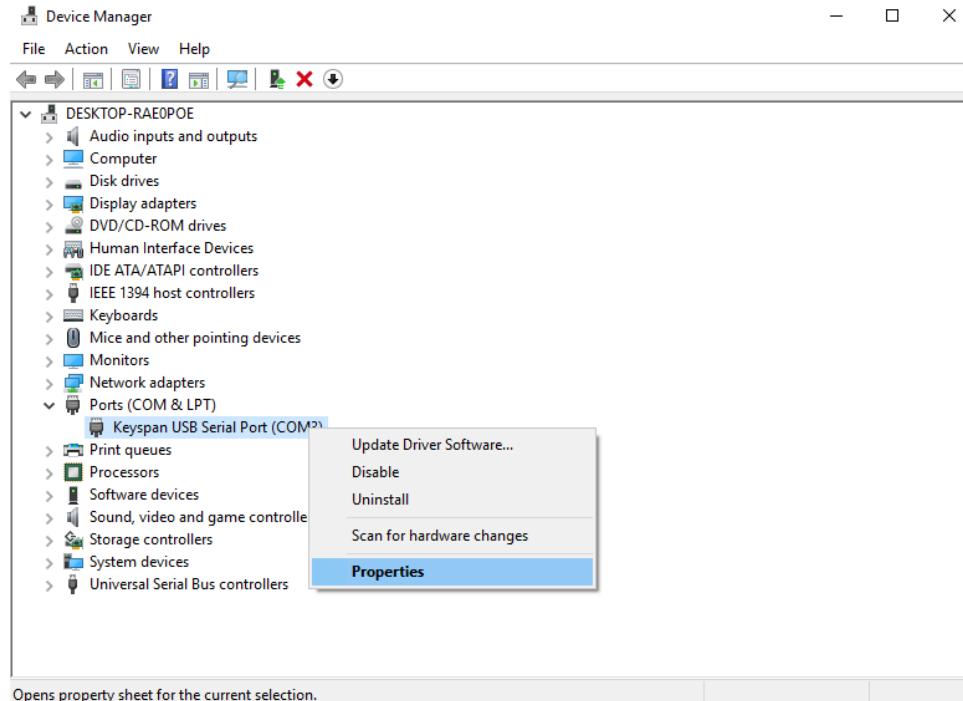
```
minicom -wD /dev/ttyUSBx
```

## Windows: PuTTY

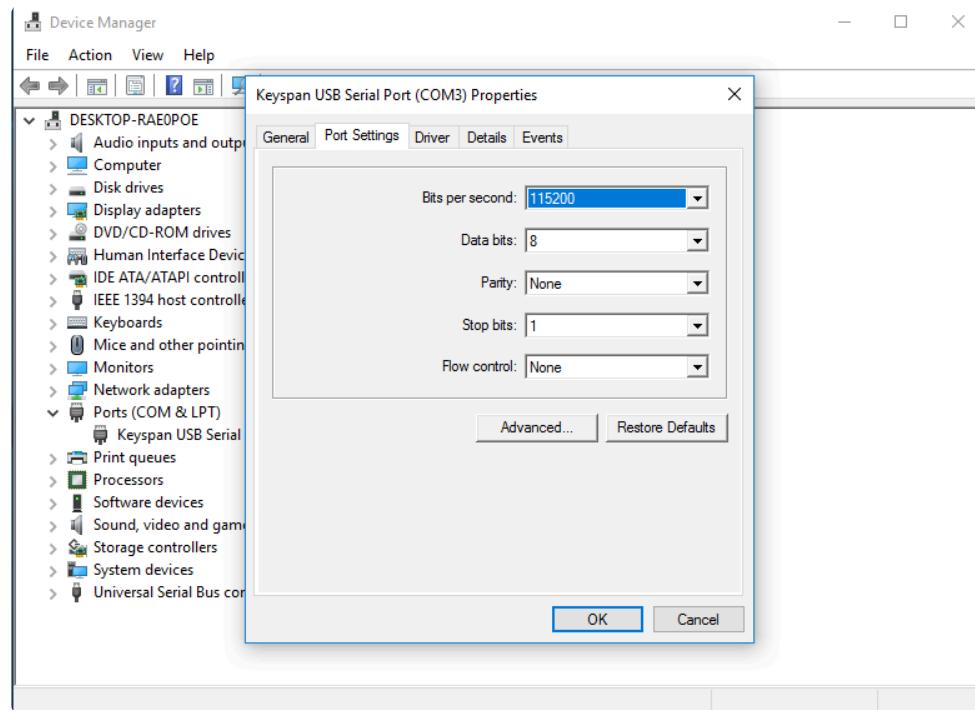
Download PuTTY [Here](#).

For Windows, you will need to configure the serial port under Device Manager. See the following steps:

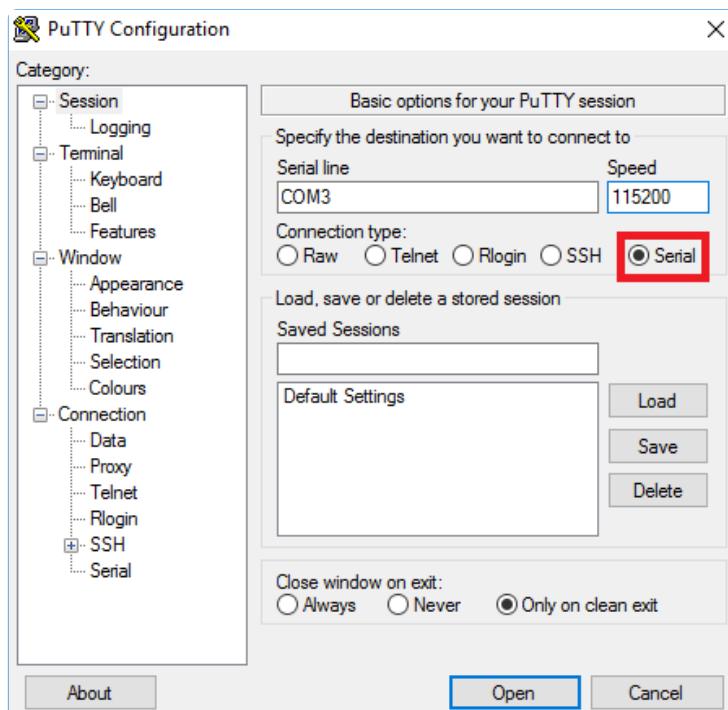
1. Open up the Device Manager.
2. Expand the **Ports (COM & LPT)** tab
3. Right click on **Keyspan USB Serial Port** and select **Properties**



4. Select the **Port Settings** tab and change the Bits per Second to **115200**



5. Open PuTTY and select the serial radio button and enter the COM# shown in Device Manager as well as setting the baud rate to 115200 and open the console.



## Programming eMMC

Click [Here](#) and follow the flashing instructions for the desired associated release.

## Additional Resources

Additional resources can be found [Here](#).

# Flashing Yocto Scarthgap on the Nitrogen95 SMARC

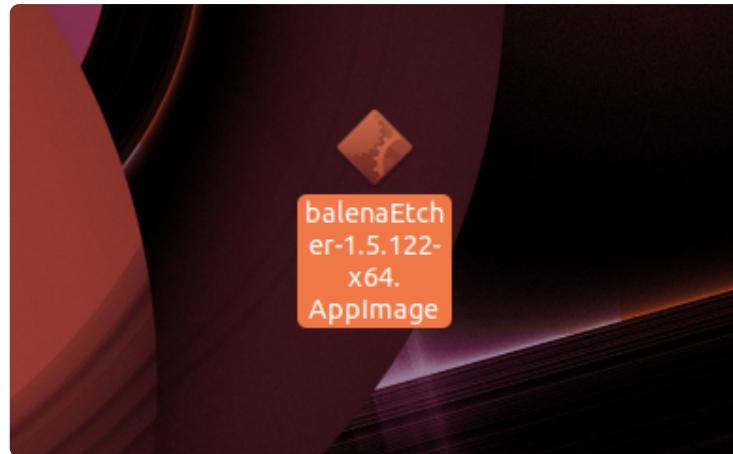
## Yocto Scarthgap

### Overview

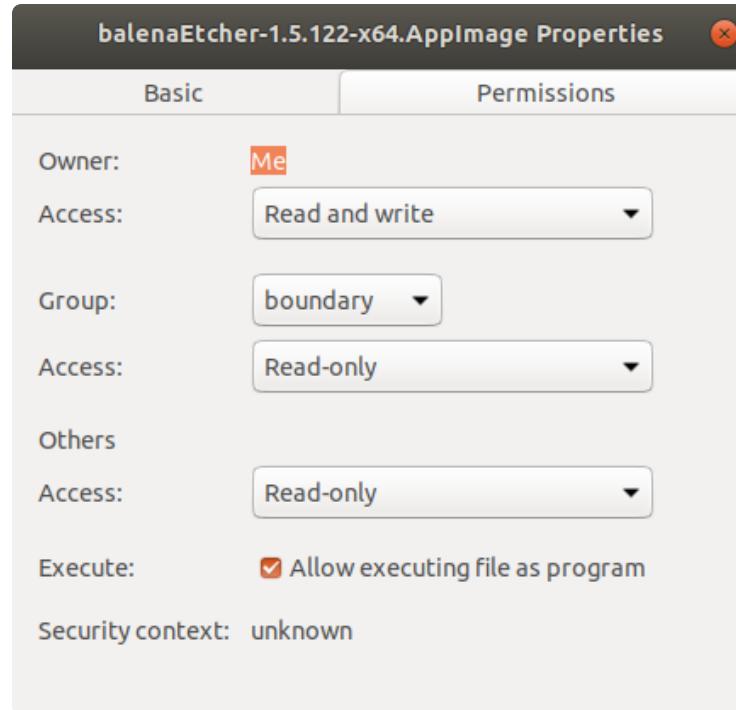
Here you will see an example of how to flash Yocto Scarthgap onto the eMMC of the 95\_SMARC\_SOM. In this example, we will use balenaEtcher as follows.

### Downloading balenaEtcher

1. Download balenaEtcher [Here](#) for Linux.



2. Once downloaded, locate and right click the balenaEtcher icon. Select Properties.

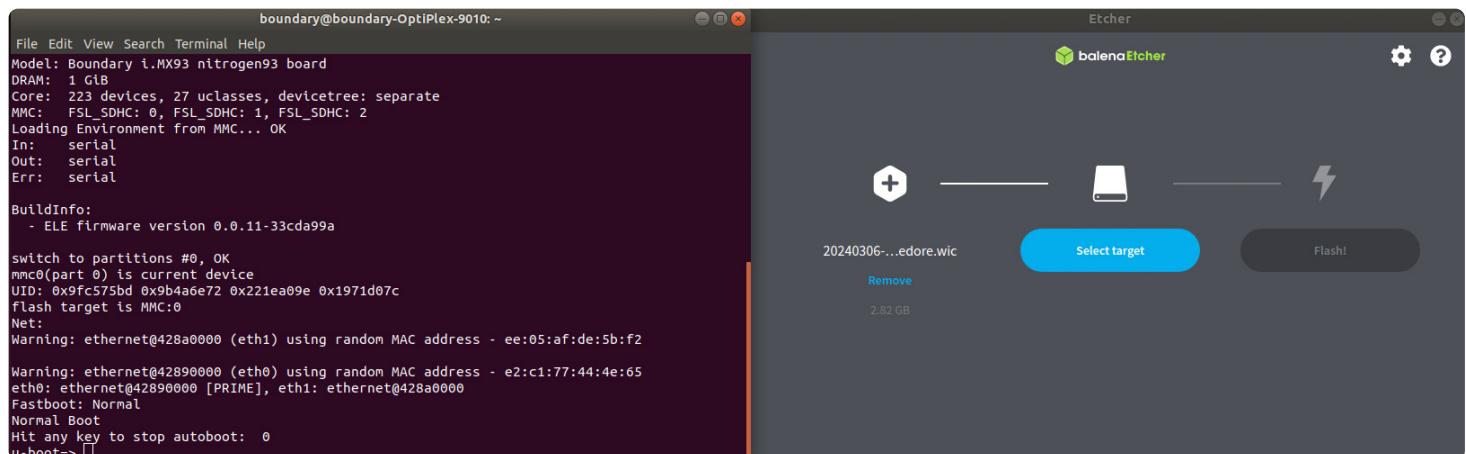


3. Select the **Permissions** tab and check the box in front of **Allow executing file as program**.

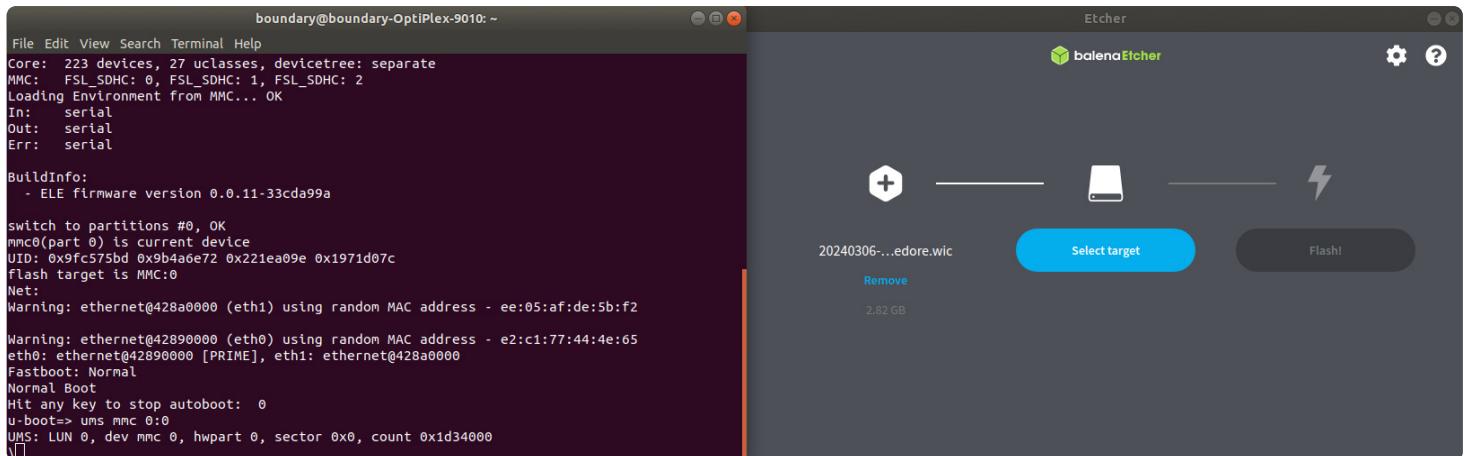
## Flashing eMMC

**Note:** Updated terminal screenshots will be provided in a future release.

1. Download the Yocto Scarthgap Image [here](#).
2. Connect the serial cable to the SMARC Carrier and the serial output (console) to your computer.
3. Connect a USB-C cable from your host machine to the SMARC Carrier.
4. On the host machine, start the terminal software.
5. Set the connection baud rate to 115200 with no hardware flow control.



6. Power up the board and stop auto-boot process to get U-Boot prompt. Enter any character on the terminal software to stop auto-boot. Open up balenaEtcher.



7. Enable the UMS Gadget for the eMMC . (If your emmc is mmc 1, use 1 instead of 0). Type the following command:

```
ums 0 mmc 0:0
```

8. Click **Flash from file** and select the Yocto Scarthgap image. Then click on **Select Target** and select **Linux UMS**. After this, select **Flash**

9. The image will begin to flash and it will verify once flashing is complete.



Once the image have been flashed, reset the board and it will boot into Yocto. See image above for fully booted image.

## Additional Information

Please contact your local sales representative or our support team for further assistance:

Headquarters	Ezurio 50 S. Main St. Suite 1100 Akron, OH 44308 USA
Website	<a href="http://www.ezurio.com">http://www.ezurio.com</a>
Technical Support	<a href="http://www.ezurio.com/support">http://www.ezurio.com/support</a>
Sales Contact	<a href="http://www.ezurio.com/contact">http://www.ezurio.com/contact</a>

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