



# Getting Started Guide

## mmWave LAB Medium Range Radar

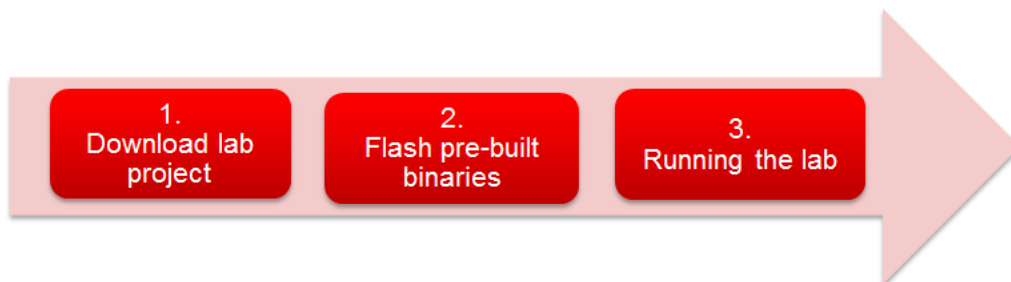
### Overview

- This lab exercise demonstrates the ability of AWR-1843 TI-mmWave sensor to estimate and track the position (in the azimuthal and elevation plane) and the velocity of objects in its field of view upto 150 m.
- The mmWave sensor AWR1843BOOST evaluation module (EVM) is used for lab demonstration
- Multi-mode capability is implemented in the current MRR Lab .


### Required Hardware

- AWR1843BOOST EVM RevB (**Note: For EVM RevA** See Appendix – ECO Required for AWR1843BOOST RevA)
- Micro USB cable (included in the EVM package)
- 5V/2.5A Power Supply
  - [Purchase from Digikey](#)
  - <https://www.digikey.com/product-detail/en/cuiinc/SMI36-5-V-P5/102-3589-ND/5415060>

### Getting Started



## Step 1: Download the Lab Project

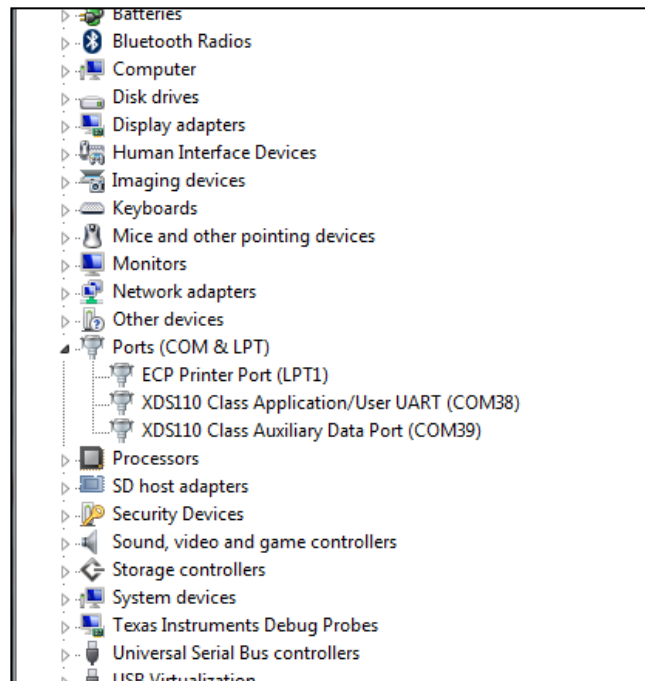
- The mmWave Lab projects are available as part of the TI CLOUD TOOLS under **Resource Explorer**
- Open the following page: <https://dev.ti.com/> and select **Resource Explorer**
- In the Resource Explorer Window, select **Software ► mmWave Sensors ► Automotive Toolbox**
- Click the Download button  in the window that opens on the right side
- Download and install the Automotive Toolbox zip file
- The pre-built binaries are located in the folder:
  - \labs\ lab0007-driver-Medium-range-radar\ prebuilt\_binaries\xwr18xx\_mrr\_demo.bin

## Step 2: Flash Lab Binaries

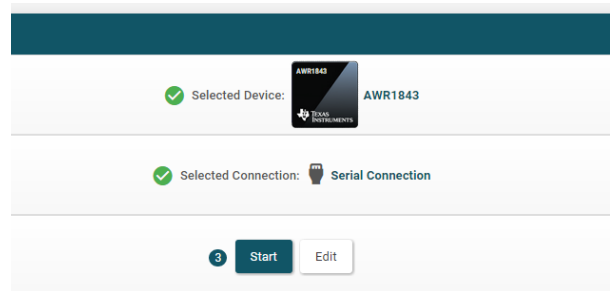
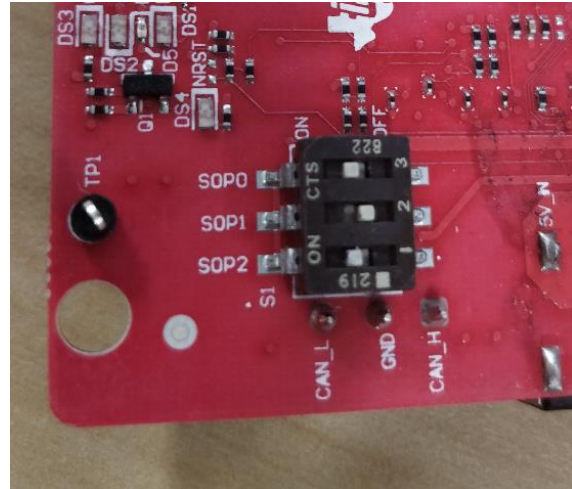
- Power on the EVM using a 5V/2.5A power supply.
- Connect the EVM to your PC and check the COM ports in Windows Device Manager
- The EVM exports two virtual COM ports as shown below:
- XDS110 Class Application/User UART (COM<sub>UART</sub>):
- Used for passing configuration data and firmware to the EVM
- XDS110 Class Auxiliary Data Port (COM<sub>AUX</sub>)
- Used to send processed radar data output
- Note the COM<sub>UART</sub> and COM<sub>AUX</sub> port numbers, as they will be used later for flashing and running the Lab.

**COM<sub>UART</sub>:** COM38    **COM<sub>AUX</sub>:** COM39

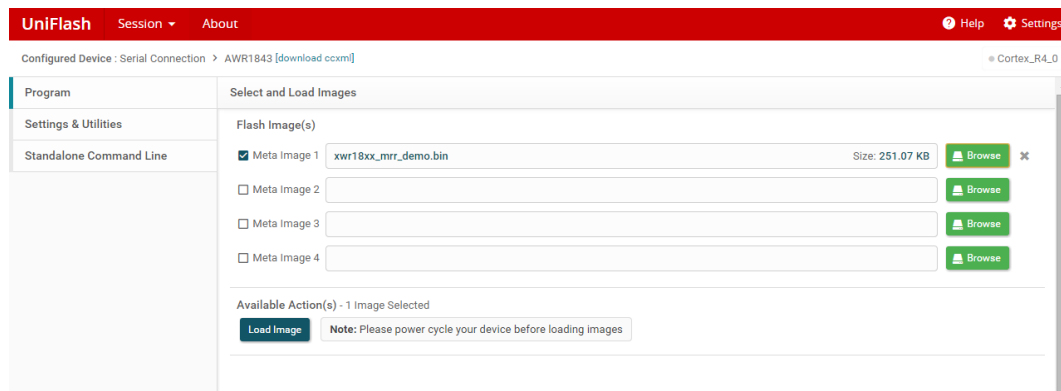
- The actual port numbers on your machine may be different



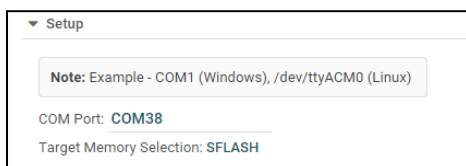
- Set the Dip Switch SOP0=ON; SOP1=OFF; SOP2=ON as shown in the image.
- Open the **UniFlash** tool
- Download from [Ti.com/tool/uniflash](http://ti.com/tool/uniflash)
- In the **New Configuration** section, locate and select the appropriate device AWR1843BOOST
- Click **Start** to proceed



- In the **Program** tab, browse and locate demo binary file shown in Step 1



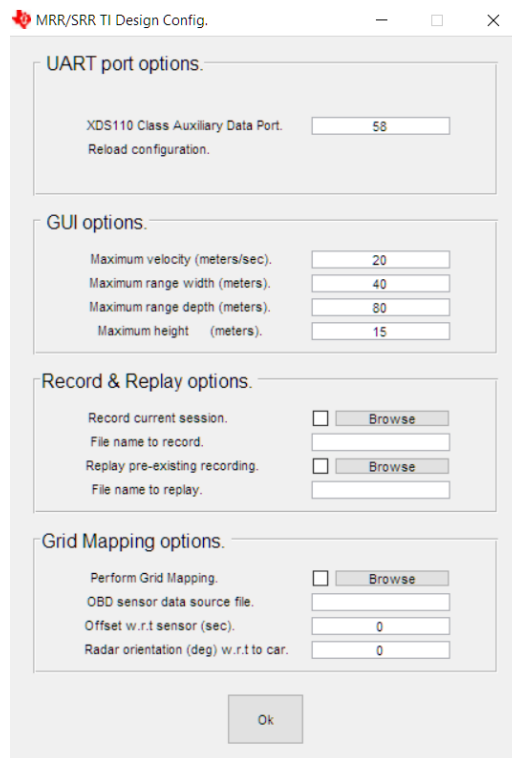
- In the **Settings & Utilities** tab, fill the **COM Port** text box with the Application/User UART COM port number (**COM<sub>UART</sub>**) noted earlier



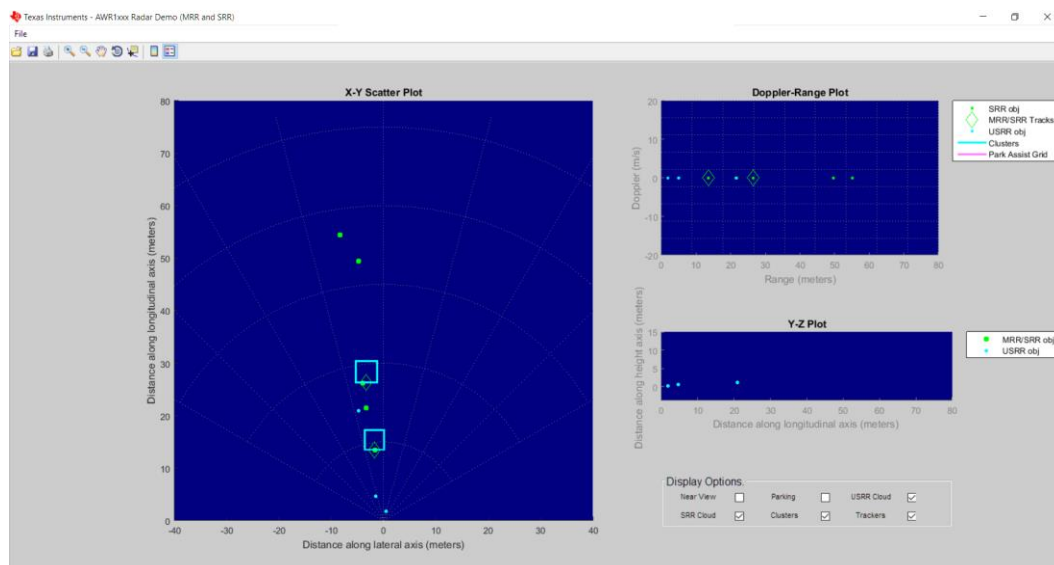
- Return to the **Program** tab, power cycle the device and click on **Load Images**
- When the flash procedure completes, UniFlash's console should indicate: [SUCCESS] Program Load completed successfully
- Power off the board and set the Dip Switch SOP2=OFF (this puts the board back in functional mode).

### Step 3: Run the Lab

- Install [XDS Emulation Package](http://processors.wiki.ti.com/index.php/XDS_Emulation_Software_Package) on the PC host if needed from the following
  - [http://processors.wiki.ti.com/index.php/XDS\\_Emulation\\_Software\\_Package](http://processors.wiki.ti.com/index.php/XDS_Emulation_Software_Package).
- If CCS is installed on the PC host, the XDS Emulation package has already been installed during the CCS installation process.
- Execute the Demo GUI located in:
  - `\labs\lab0007-driver-Medium-range-radar\gui\MRRvisualization\MRR_visualization.exe`
  - [As such, the GUI requires a specific MATLAB runtime engine v9.2 \(2017a\) to properly install.](#)
  - [The executable provided only works in a Windows operating system](#)



- In the GUI, select “UART port options”. Provide the **COM Port** with the Auxiliary Data COM port number (**COM<sub>AUX</sub>**) noted earlier.
- Check that EVM is powered on and the USB cable connected to the PC host running the GUI. In the GUI, select “Ok”.
- A snapshot of the PC-GUI showing the measured MRR visualization is shown below. **Note:** The GUI would appear blank on startup. Please select appropriate display options to visualize data.



MRR TIREX Lab enables the Tx beamforming by enabling all the 3 Tx simultaneously and this would require to use the 1V supply.

On the AWR1843BOOST EVM RevA the 1V supply does not by default go to the VOUT PA pin, there is a zero ohms resistor (R137) that needs to be mounted. The resistor is on the bottom of the board, just below the AWR device, near the VOUT PA pin.

[illegible]