RADAR

Module Radar

Driver:
https://www.silabs.com/documents/public/software/CP210x_Windows_Drivers.zip

Package:

https://dev.ti.com/tirex/explore/node?node=AJoMGA2ID9pCPWEKPi16wg__VLyFKFf__LATEST

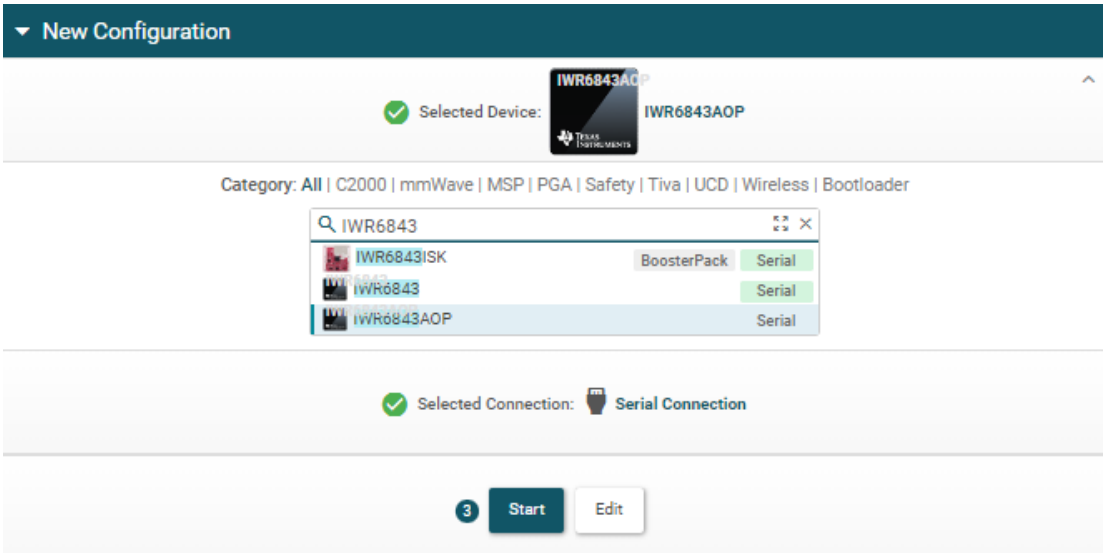
Firmware

Used package: Parking Garage Occupancy Sensor (it returns pos X, pos Y, vel X, vel Y, acc X, acc Y, pos Z, vel Z, acc Z)

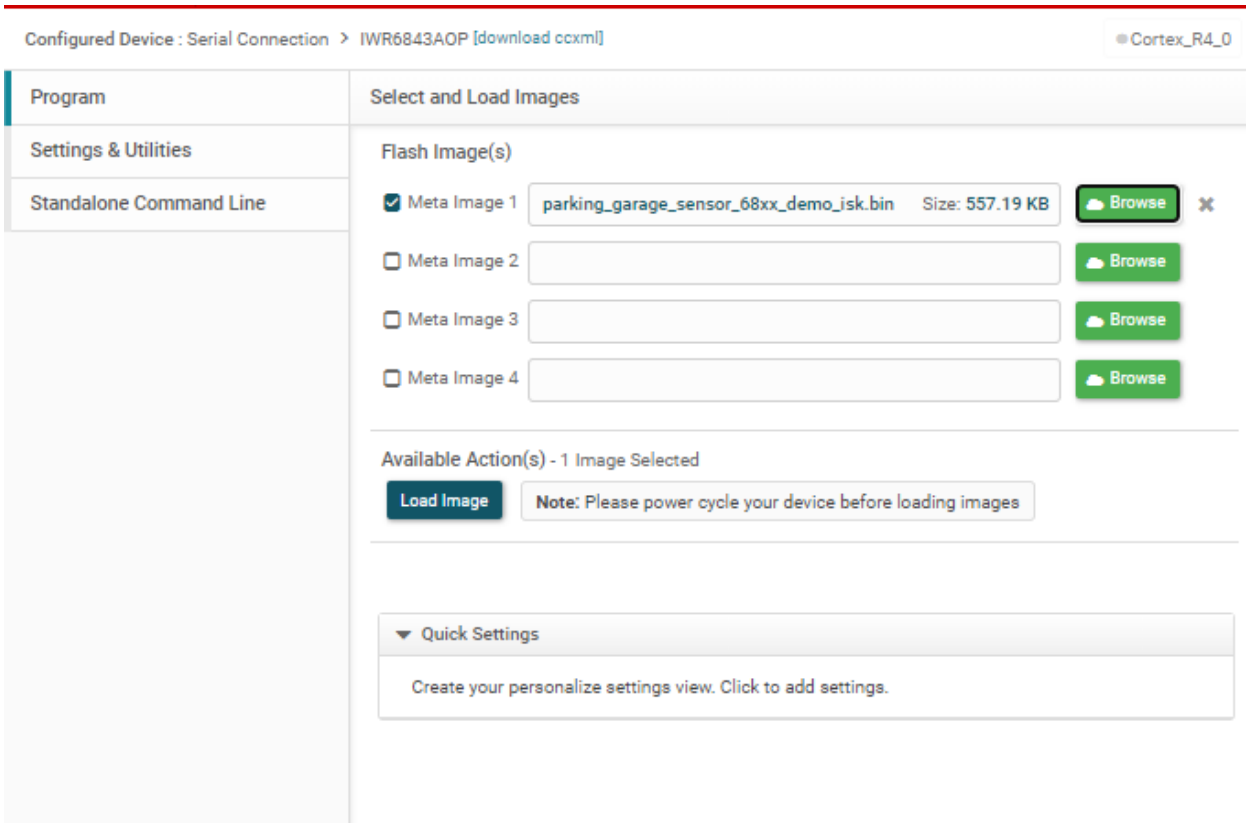
Step-to-step to load Firmware to module (tool: Uniflash, you can download offline or use the cloud version):

In terms of cloud version (https://dev.ti.com/uniflash/#!/):

- Configuration -> START



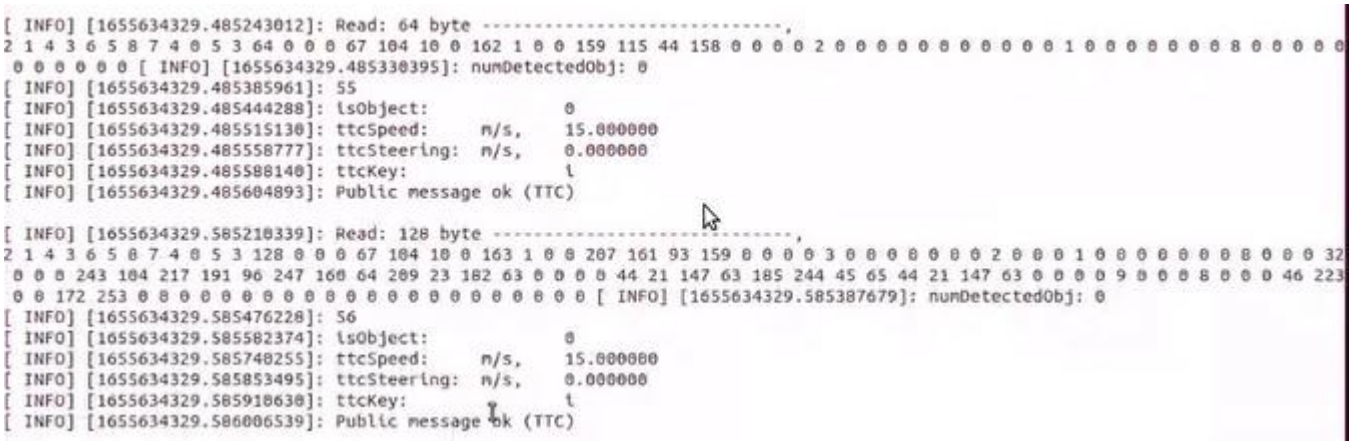
- Choose file .bin in the package -> LOAD -> Load firmware successfully



- **Program to read data and display on GUI** (source on GITHUB)

Run on linux

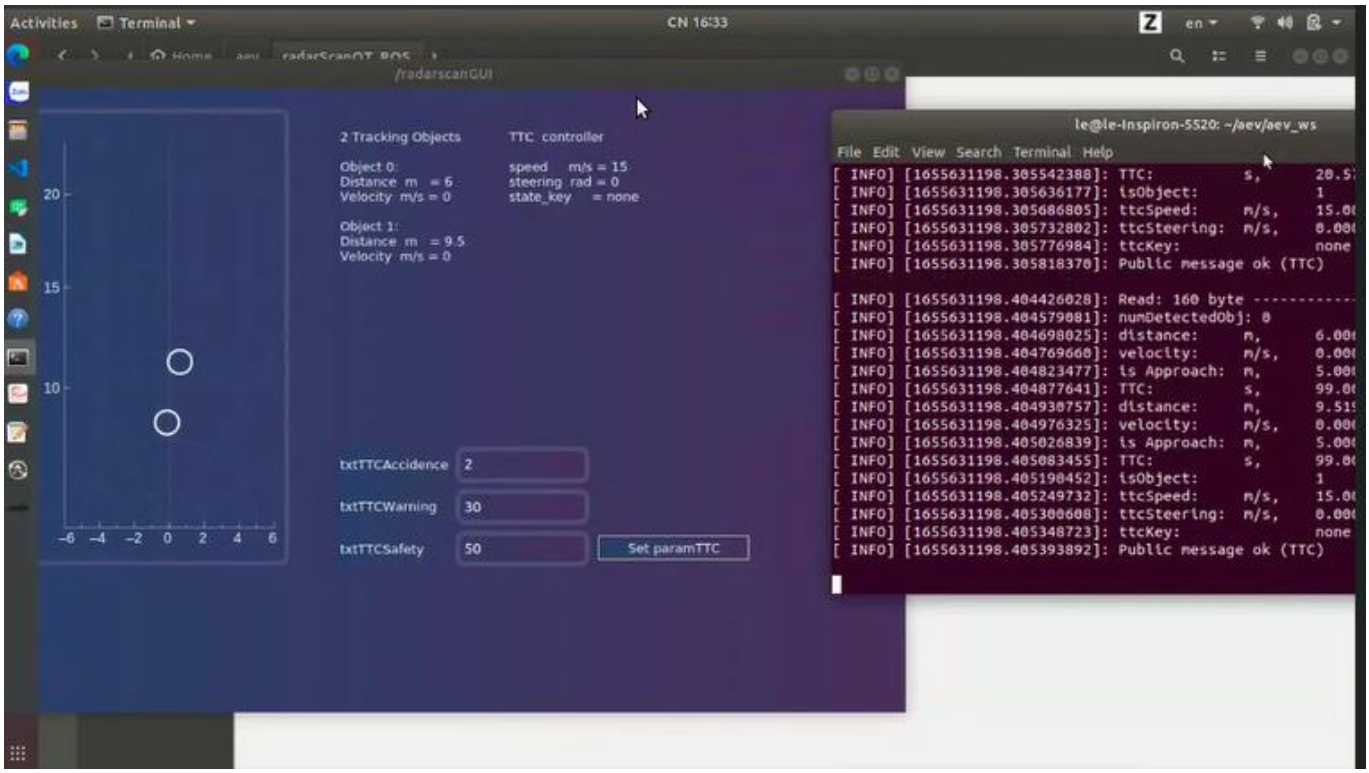
READ DATA NODE (TTC Algorithm): *roscore -> rosrun aev_pkg ttcRadar*



Base on the values returned, TTC Algorithm calculates and processes. Finally, TTC gives 5 information:

- isObject
- ttcSpeed
- ttcSteering
- ttcKey
- Message public OK

Display on GUI: *roscore -> rosrun radarscan_pkg radarscangui*



Tracking objects panel

- There are 2 objects tracked by Radar
- Distance: The distance between object and car
- Velocity: The velocity of object

TTC Controller panel

- Speed: The speed of car
- Steering_rad: The current degree of steering and adjust to MPC to avoid obstacles when radar finds obstacles that are close to car
- State key: **i:** safety, no action; **none:** adjust steering rad

ParamTTC setting panel

- txtTTCAccidence: highly likely to happen collisions
- txtTTCWarning: likely to happen collisions
- txtTTCSafety: no collisions