

# *2AYVR-TRB200 User Manual*

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***Treadly Inc., Proprietary***

*530 Secaucus Rd,  
Secaucus, NJ 07094*

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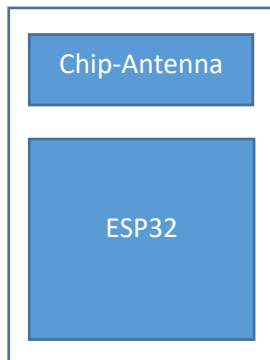
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## 1. About this User Manual

This document is intended to assist users setting up the software development environment using module 2AYVR-TRB200. As 2AYVR-TRB200 is based on ESP chipset, the user manual is based on Espressif ESP development environment and its tools.

## 2. Introduction

2AYVR-TRB200 is a generic compact WiFi, Bluetooth, and Bluetooth Low Energy (BLE) SoC module for large variety of IoT applications such as music streaming. 2AYVR-TRB200 is based on the Espressif ESP32 chipset. All of the radio circuitry and the radio signal management are being handled by ESP32 (please refer to ESP32 family datasheet ([https://www.espressif.com/sites/default/files/documentation/esp32-pico-d4\\_datasheet\\_en.pdf](https://www.espressif.com/sites/default/files/documentation/esp32-pico-d4_datasheet_en.pdf)) for details)



## 2.2 ESP IoT Development Framework (IDF)

ESP32 is based on Espressif IoT Development Framework (IDF) is for developing applications based on the ESP32. Users can develop embedded application in Linux.

Here is a list of requirements:

- Linux (Ubuntu 64-bit)
- Toolchain for building ESP32 application
- Install ESP IDF
- ESP tools with USB cable connecting Linux machine and the module (via UART)

### 3. Environment setup

1. Install Linux packages (Ubuntu):

```
sudo apt-get install git wget make libncurses-dev flex bison gperf python python-serial
```

2. Download ESP32 toolchain on 64-bit Linux:

```
https://dl.espressif.com/dl/xtensa-esp32-elf-linux64-1.22.0-61-gab8375a-5.2.0.tar.gz
```

3. Extract ESP32 toolchain in ~/esp directory using `tar -xzf`

4. Update your PATH environment variable to include ~/esp/xtensa-esp32-elf/bin

5. Download ESP-IDF in ~/esp directory from git:

```
git clone --recursive https://github.com/espressif/esp-idf.git
```

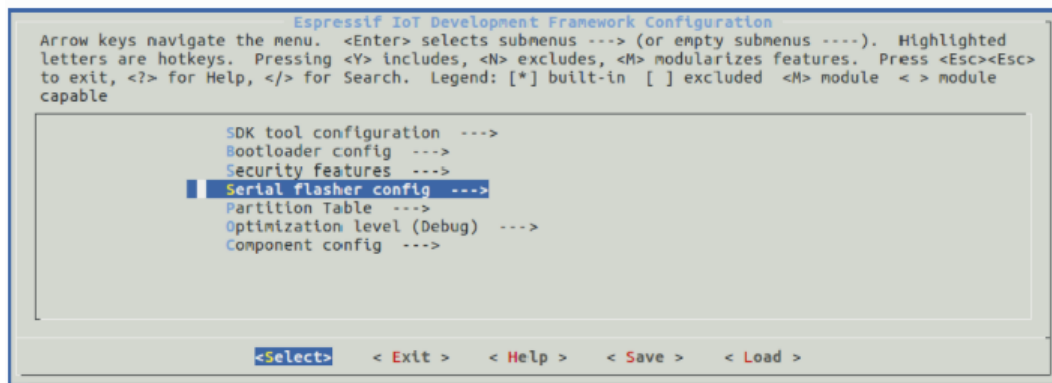
## 4. Sample Application

This manual will be using a provided sample application, `hello_world` (part of the ESP-IDF package) for demonstrating the overall setup process.

```
$IDF_PATH/examples/get-started/hello_world
```

### 4.1 Configure ESP Tool

1. `cd ~/esp/hello_world`
2. `make menuconfig`
3. The following window will be displayed.
4. Serial flasher config > Default serial port to configure the serial port, where connects to the module from Linux machine
5. Save
6. Exit

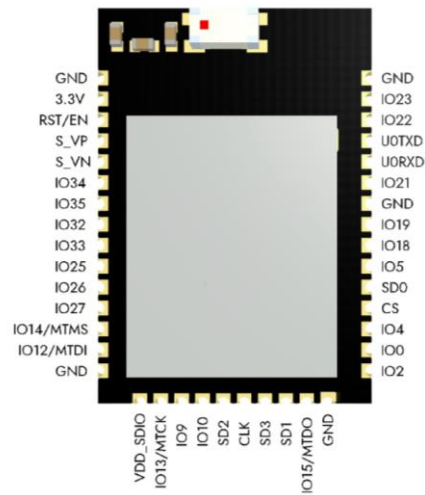


### 4.2 Build and Flash

1. `make flash`
2. This will compile and load the sample application to the module.

## 5. Module Integration Instructions

With the following pinout of the module, module schematic and the ESP32 chipset datasheet ([https://www.espressif.com/sites/default/files/documentation/esp32-pico-d4\\_datasheet\\_en.pdf](https://www.espressif.com/sites/default/files/documentation/esp32-pico-d4_datasheet_en.pdf)), the module integrator can design the host device with this module.





## 6. FCC Information

- FCC Label: The FCC ID is on the front of the device. The device FCC ID is 2AYVR-TRB200.
- A label with the following statements must be attached to the end product: This device contains FCC ID: 2AYVR-TRB200.
- The manual provides guidance to the host manufacturer will be included in the documentation that will be provided to the OEM.
- The module is limited to installation in mobile or fixed applications.
- The separate approval is required for all other operating configurations, including portable configurations and different antenna configurations.
- The OEM integrators are responsible for ensuring that the end-user has no manual or instructions to remove or install module.
- The module is limited to OEM installation ONLY.
- Module grantee (the party responsible for the module grant) shall provide guidance to the host manufacturer for ensuring compliance with the Part 15 Subpart B requirements.
- The host manufacturer is responsible for additional testing to verify compliance as a composite system. When testing the host device for compliance with the Part 15 Subpart B requirements, the host manufacturer is required to show compliance with the Part 15 Subpart B while the transmitter module(s) are installed and operating. The modules should be transmitting and the evaluation should confirm that the module's intentional emissions are compliant (i.e. fundamental and out of band emissions) with the Radio essential requirements. The host manufacturer must verify that there are no additional unintentional emissions other than what is permitted in the Part 15 Subpart B or emissions are complaint with the Radio aspects.
- **CAUTION:** Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

### 6.1 FCC RF Exposure Requirements

This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter and must be installed to provide a separation distance of at least 20cm from all persons.

### 6.2 FCC Regulations

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation. This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.