Telematics Control Unit

Product User Manual

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1. INTRODUCTION

1.1 Purpose

The purpose of this document is to provide the procedure for the user to connect and test the Telematics Control Unit.

1.2 Scope

The document describes the procedure to connect and test the Telematics Control Unit.

1.3 Important symbols used

	Important Notes
	Warnings
	Use ESD protection
	ROHS complaint
	Check the local regulations for disposal of electronic product

1.4 Safety Information

- Before unpacking Telematics Control Unit, carefully read all the manuals that came with the package.
- This Device is ESD sensitive. Handle the product only in accordance with the installation instructions given in the manual.
- Place the product on a stable surface. To avoid short circuits in electronics, keep all conducting material away from the Telematics Control Unit.
- Avoid using board in extreme dust, humidity and temperature conditions. Do not place the device in wet area.
- Before using the Telematics Control Unit, make sure that all cables are correctly connected and the power adapter is correctly selected.

- Make sure that Electrical outlet where you connected the power adapter is not damaged and working fine.

- If the power adapter is broken, do not try to fix it by yourself. To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before displacing the system.

- Before connecting or removing Telematics Control Unit, ensure that power cable is unplugged and ESD antistatic guidelines.

1.5   Unpacking Guidelines

Please follow the below guidelines while unpacking the TCU.

Make sure to follow the below antistatic guidelines before unpacking.

- Wear the antistatic wristband while unpacking and handling the device to prevent electrostatic discharge.

- Remove the Telematics Control Unit from antistatic cover and place it above the ESD free area.

- Use antistatic pad/mat with proper grounding to place the device.

- Don't touch the inside surface of the Telematics Control Unit.

- Avoid using board in extreme dust, humidity and temperature conditions.

- Also, this device is not water proof, keep away from wet surface.

- Make sure that packing box is facing upwards while opening.

- Make sure that the entire packing list items mentioned in package checklist present.

Static electricity can destroy electronics in the development platform. Make sure to follow the ESD precautions to prevent damage to the system and injury to us.

1.6   Development Kit Deliverables and Test Accessories

Figure 1: Development Kit Deliverables
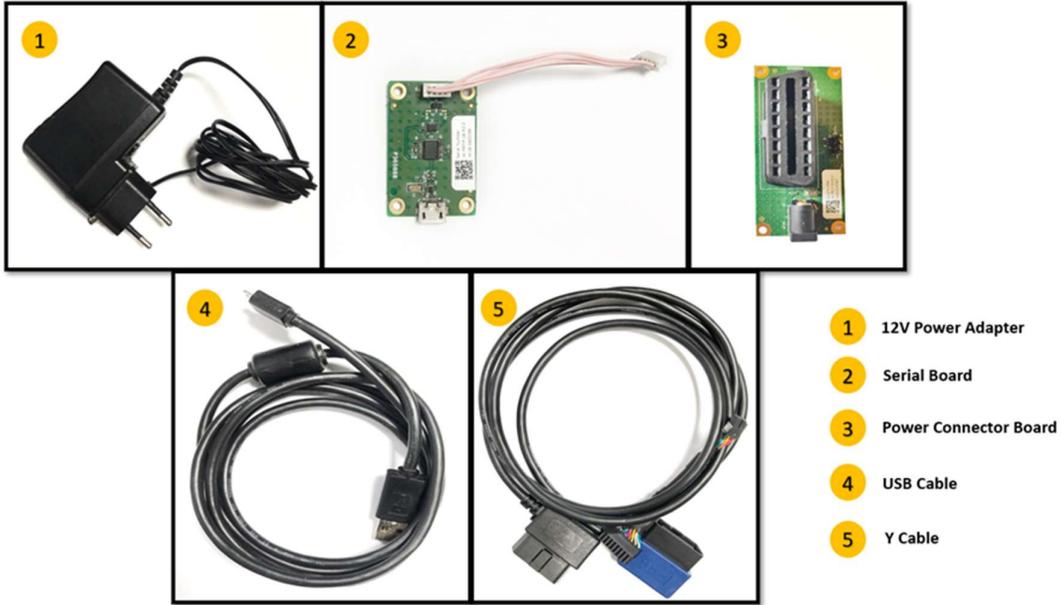
Figure 2 : Test accessories

1.7   List of Acronyms

The following acronyms will be used throughout this document.

Acronyms	Abbreviations
CAN	Controller Area Network
COM	Communication Port
ESD	Electrostatic Discharge
FTP	File Transfer Protocol
HID	High-IntensityDischarge
IP	Internet Protocol
OBD	On-Board Diagnostics
OTG	On-The-Go
RoHS	Restriction of Hazardous Substances
SIM	Subscriber Identification Module
SSH	Secure Shell
SSID	Service Set Identifier
TCU	Telematics Control Unit
TELNET	TELecommunications NETwork
USB	Universal Serial Bus

Table 1: Acronyms & Abbreviations

2. TELEMATICS CONTROL UNIT SET UP PROCEDURE

2.1 Enclosure Removal Procedure

- Remove the enclosure from the area highlighted as shown in the Figure 3

Figure 3 : Procedure to remove the enclosure

2.2 SIM Insertion Procedure

- Unlock the SIM Connector and insert the Micro SIM Card in the SIM connector, which is present on the top side of the board as shown in image (1) and image (2) of Figure 4

- Lock the SIM Connector as shown in image (3) of Figure 4

Figure 4 : SIM insertion procedure in Telematics control unit

2.3 Battery Connection Procedure

- Connect the battery in the slot highlighted as in image (3) of Figure 5
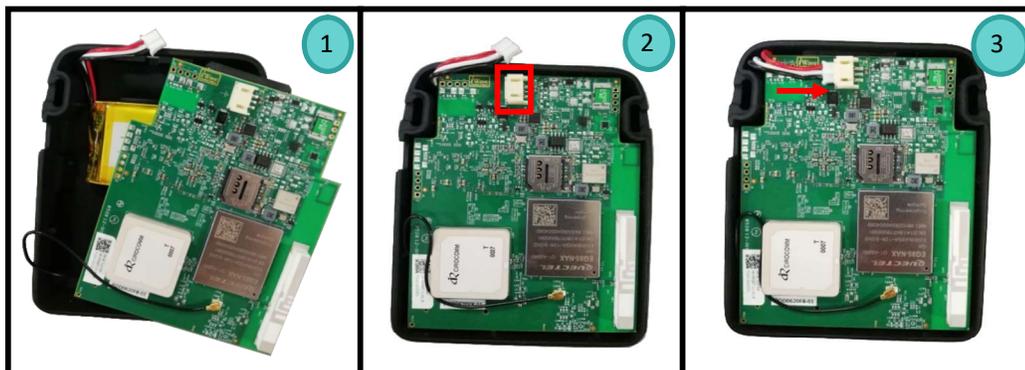
Figure 5 : Procedure to Connect Battery

2.4   Battery Removal Procedure

- Remove the battery from the slot as highlighted in Figure 6
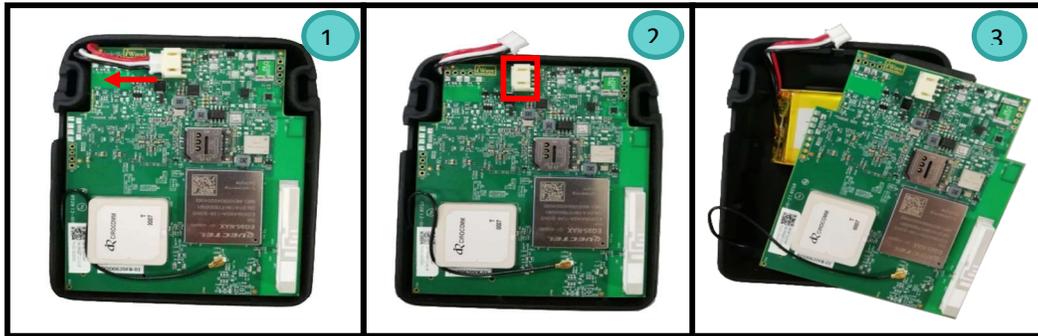
Figure 6 : Procedure to Remove Battery

2.5   Procedure to close the enclosure

- Place the board as shown in the image (1) of Figure 7

- Close the enclosure.

Figure 7: Procedure to close the enclosure

2.6   Powering the device through Y-Cable

- Place the board and Connect the Y cable as shown in image (1) and image (2) of Figure 8

- Connect one end of the Y cable to the Power connector board as shown in the image (3) of Figure 8

  Provide power supply to the power connector board as shown in the image (4) of Figure 8
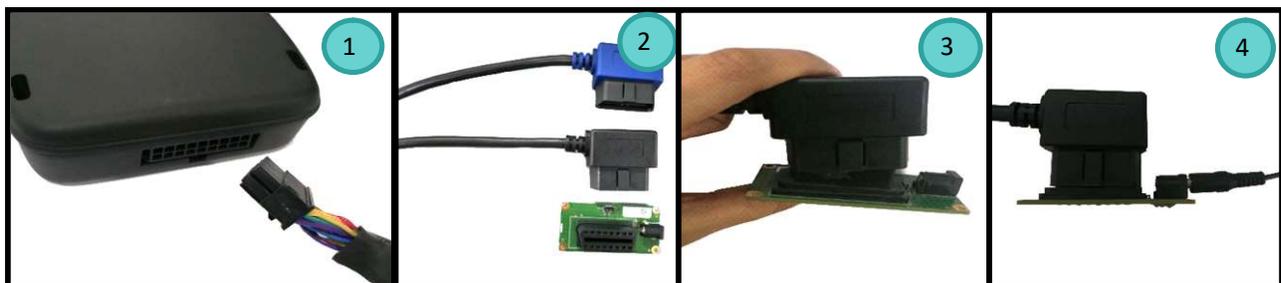
Figure 8: Procedure to power on the device using Y cable

3. TELEMATICS CONTROL UNIT – FLASHING AND DEBUGGING PROCEDURE

3.1 Setting up Telematics control unit for Debug Log Capture

- Connect the Serial Debug Board to the Serial Debug port as shown in image (1) of Figure 9

- Connect the one end of the USB Cable to the Serial Debug Board as shown in image (2) of Figure 9

- Power on the Telematics control unit as described in Figure 9

- Connect the other end of the USB cable to PC to view the Debug prints

Connect the serial board to the debug port
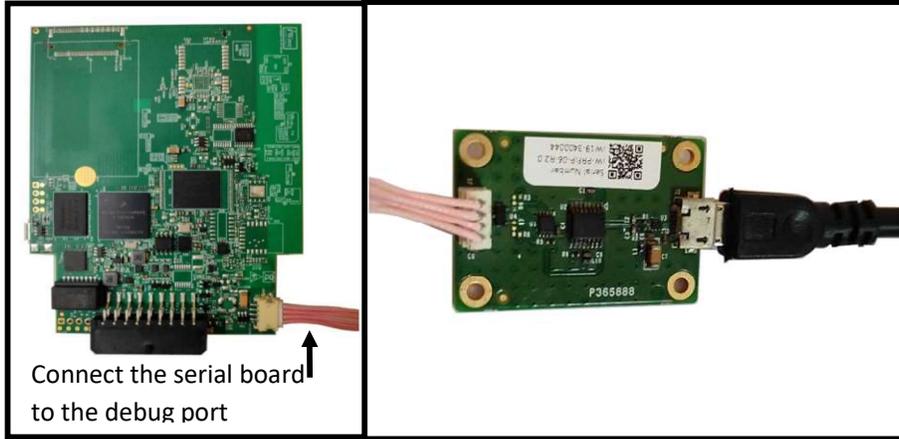
Figure 9: Procedure to connect Serial Debug Device

- Install the Tera Term tool in the Windows Host PC.

- Open the Tera Term Tool available on the host PC and select the appropriate serial COM port
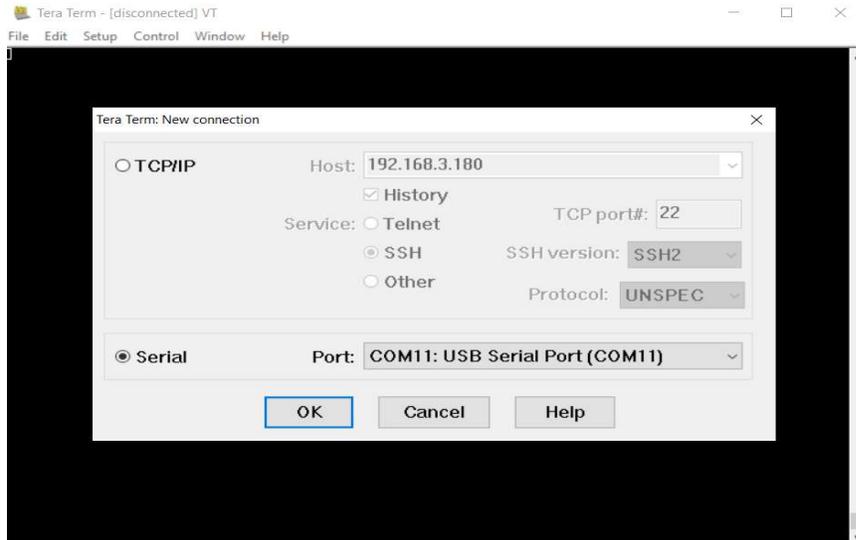
Figure 10: COM Port selection

- Click on "Setup" and select "Serial port" and change the Tera Term settings as mentioned below,
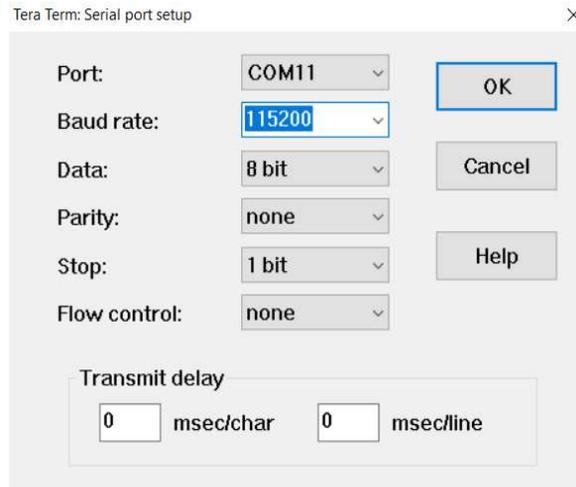
Figure 11: Tera Term setting

- Make sure the Tera Term has below settings and click on OK button.

  Bits per second: 115200 bps

  Data bits: 8

  Parity: none

  Stop bits: 1

  Flow control: none

- Power ON the Telematics control unit and the Debug log will appear as shown in Figure 12
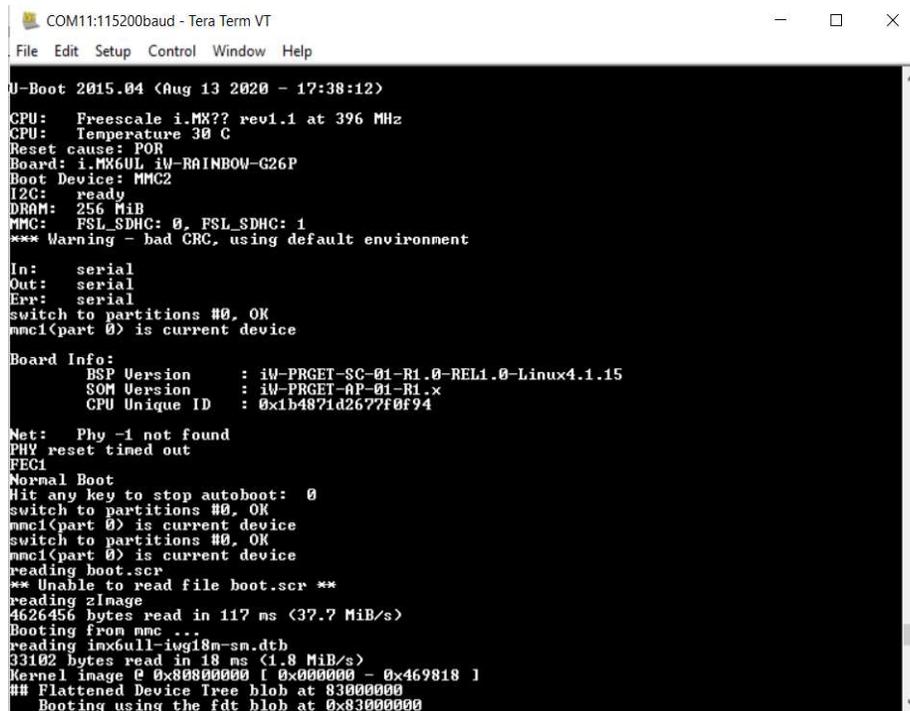
Figure 12: Telematics control unit Boot log

3.2 Setting up Telematics Solution for Flashing

- Insert the jumpers as shown in the image (1) and image (2) of Figure 13

- Power on the Telematics control unit. Follow the procedure as mentioned in Figure 8

- Connect one end of the USB Cable to the USB port of the Telematics control unit.

- Connect other end of the USB cable to the PC.
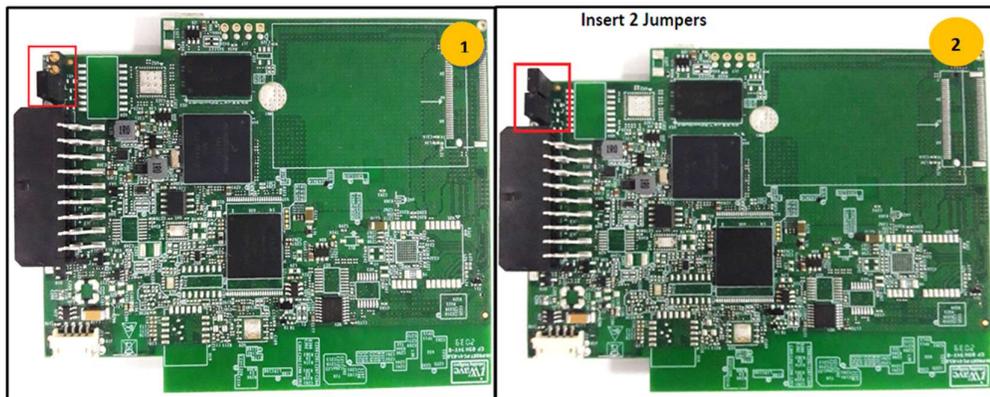
Figure 13: Hardware setup to flash the Telematics control unit

Make sure that the Telematics control unit is powered on before connecting the USB flashing cable.

Remove the USB flashing cable before powering off the device after flashing.

3.3 Binary Programming

- Use USB type A to micro-B cable to connect the Telematics control unit with host PC via USB OTG port.

- Extract the <MFG_Tool>.zip file from MFG_TOOL folder.

- Navigate to "MFG_TOOL/<MFG_Tool>" folder and double click on "MfgTool2.exe" file.

- The MFG Application will open and will display the current operation in status text box.

- If the device is detected, then "HID-compliant vendor-defined device" message will be displayed in the status box.
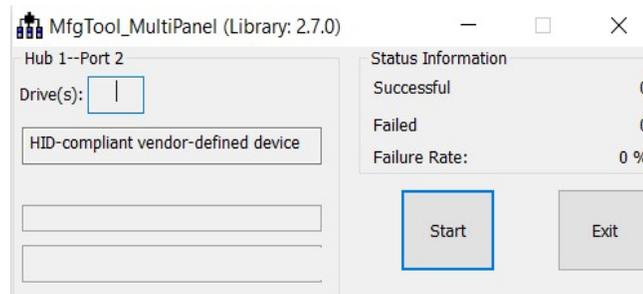
Figure 14: Platform detection

- Click on the Start button, MFG Tool will start programming binaries into boot media.

- After successfully programming the binaries to the boot media, then progress bar will become green colour and status box will be shown as "Done".
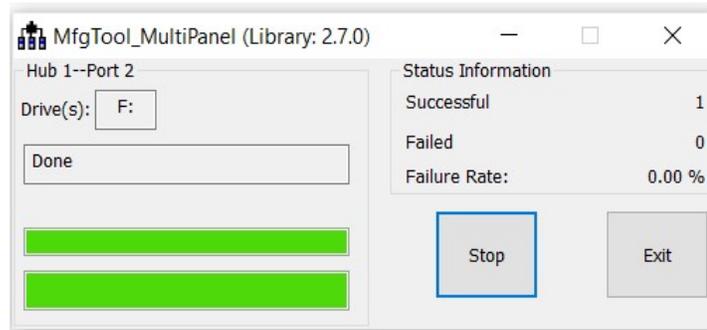
Figure 15: Binary Programming Succeed

- Click "Stop" to finish, and Click "Exit" to terminate the application.
- After powering OFF the platform, change to internal boot mode (Remove the jumper if mounted).

3.3.1 Limitations

- This application does not support USB 3.0 host port.
- If MFG tool v2.0 application is executed on Windows7, when it runs in the "updater" phase, a pop-up message will be shown to ask whether disk should be formatted. Please ignore it, or click the "Cancel" button. It will not affect any function.
- If you stop the application in between of programming binaries and if you re-start, the application will try to continue from the point where you stopped before. But it is not guaranteed that it can continue successfully. It is NOT recommended to do this.

Login Credentials of OBD2 Device

User name: root

Password: iWavesys123

3.4 Login to the Device Console using Serial board

- Connect the Serial Debug Board to the Serial Debug port as shown in image (1) of Figure 9
- Connect the one end of the USB Cable to the Serial Debug Board as shown in image (2) of Figure 9
- Power on the Telematics control unit as described in Figure 8
- Connect the other end of the USB cable to PC to view the Debug prints.
- Open the Tera Term Tool available on the host PC and select the appropriate serial COM port as mentioned in Figure 16
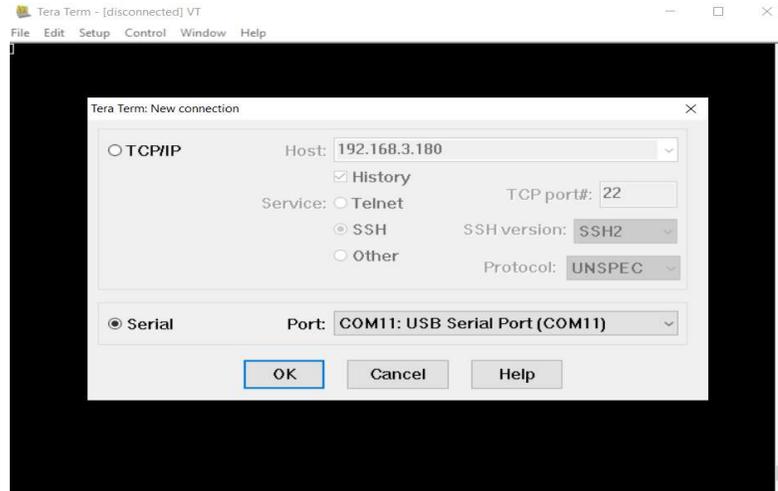
Figure 16: Serial COM Port selection

- Click on "Setup" and select "Serial port" and change the Tera Term settings as mentioned in Figure 17
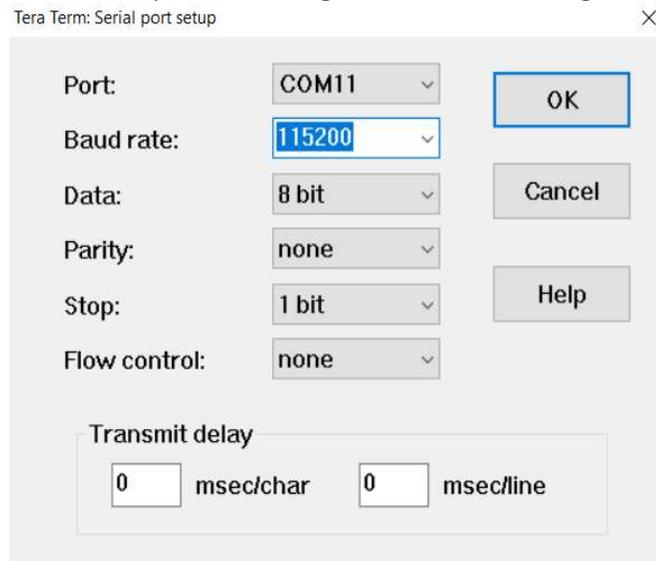
Figure 17: Tera Term Serial port setup and Connection

- Make sure the Tera Term has below settings and click on OK button.

  Bits per second: 115200 bps

  Data bits: 8

  Parity: none

  Stop bits: 1

  Flow control: none

- Power ON the Telematics control unit and the Debug log will appear as shown in Figure 18

Figure 18: Telematics control unit Debug log

3.5 Login to the Device Console using Wi-Fi (Without using Serial board)

- Once the device is powered on wait for 1 min and the OBD device Wi-Fi will come up.

- Turn on Wi-Fi in any Laptop and connect to OBD device Wi-Fi.

  - SSID: OBDDevice003

  - Password: iWavesys123

  - IP Address: 172.24.1.1

- Using SSH, connect to the board with the below login details,

  - Username of OBD2 Device: root

  - Password of OBD2 Device: iWavesys123

3.5.1 Login to device console from Windows PC

- Turn on Wi-Fi in laptop.

- Power on the device and wait for 1 min, OBDDevice003 Wi-Fi will come up as shown in the Figure 19

Figure 19: Connect Wi-Fi

- Connect to the OBD device Wi-Fi with the above credentials.

- Open any SSH terminal like Tera Term, putty, etc.

- Here, Tera Term is used to login to the device.

- Connect to the device with host IP address as shown in the figure.

  - Select service SSH

  - Host address: 172.24.1.1

  - Click OK
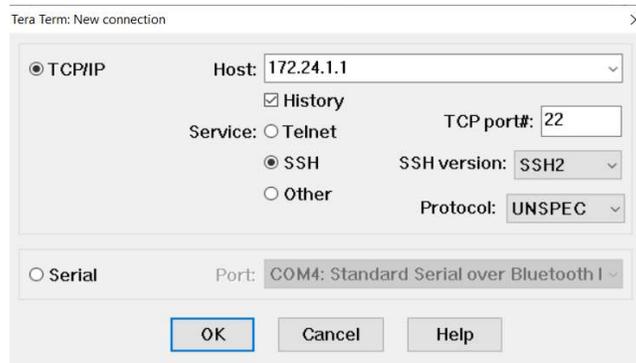
Figure 20: SSH Login

- Enter the Telematics control unit user name and password as shown in the Figure 21

  - User Name: root

  - Password: iWavesys123

  - Click OK
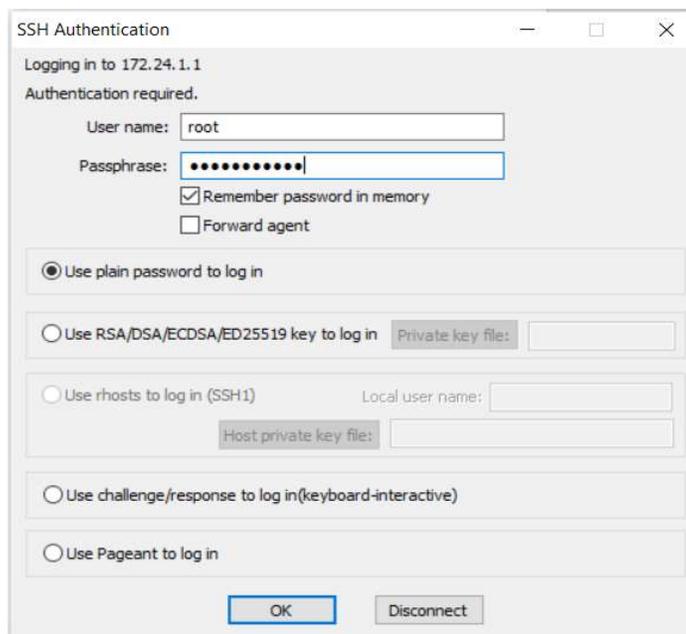
Figure 21: SSH Login Details

- The device console window will be open as shown in the Figure 22,
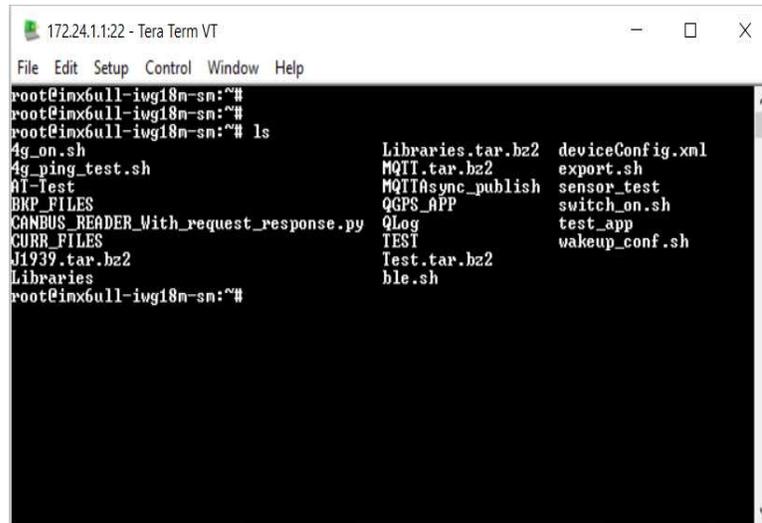
Figure 22: Device Console Window

3.5.2 Login to device console from Android Phone

- Install any SSH terminal application from the Play store,

  Eg: SSH/SFTP/FTP/TELNET Advanced Client Admin Hands

- Turn on Wi-Fi in the phone.

- Power on the device and wait for 1 min, OBDDevice003 Wi-Fi will come up as shown in the figure.
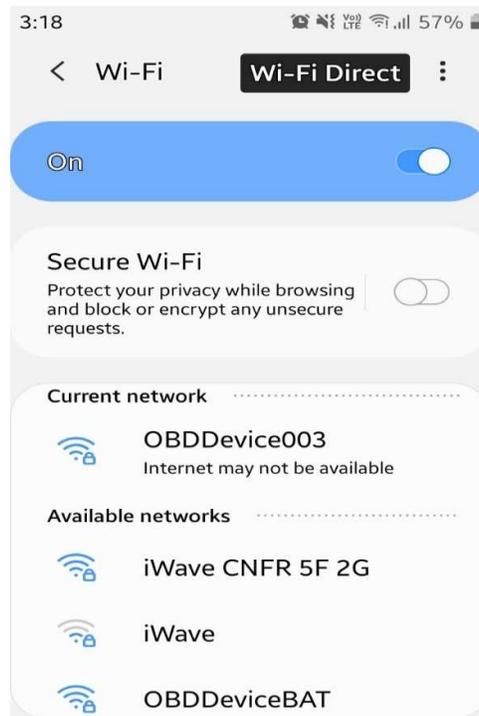
Figure 23: OBDDevice003 Wi-Fi connection

- Open the SSH terminal application in phone.
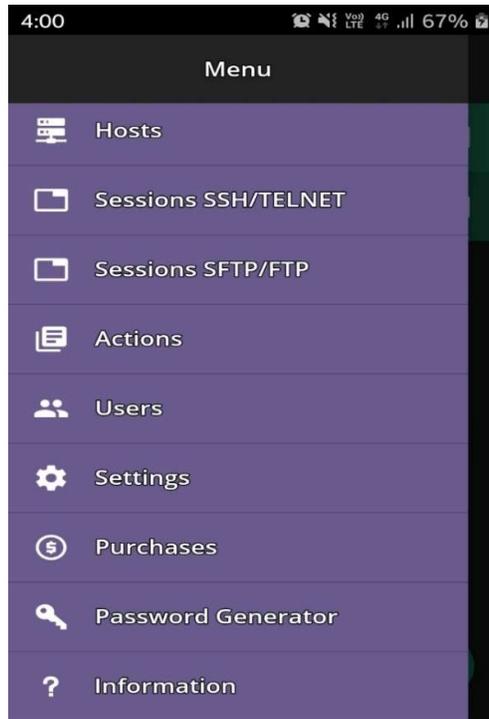
Figure 24: SSH Terminal Application in phone

- Click on the Plus symbol as shown in the figure,
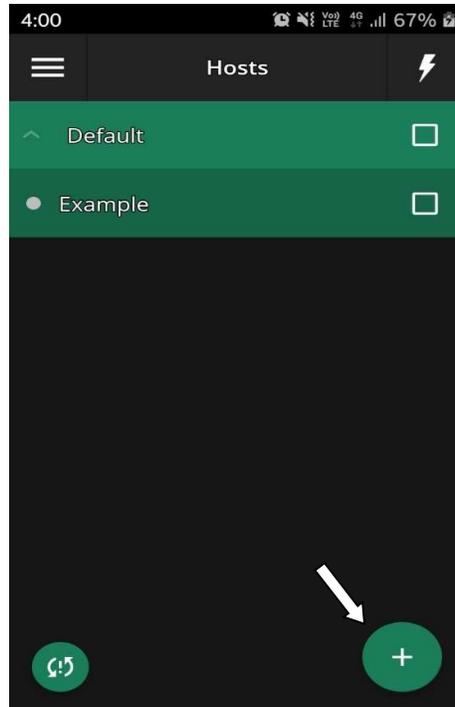
Figure 25: SSH Connection

- Enter the login details and click on the save button as shown in the figure,
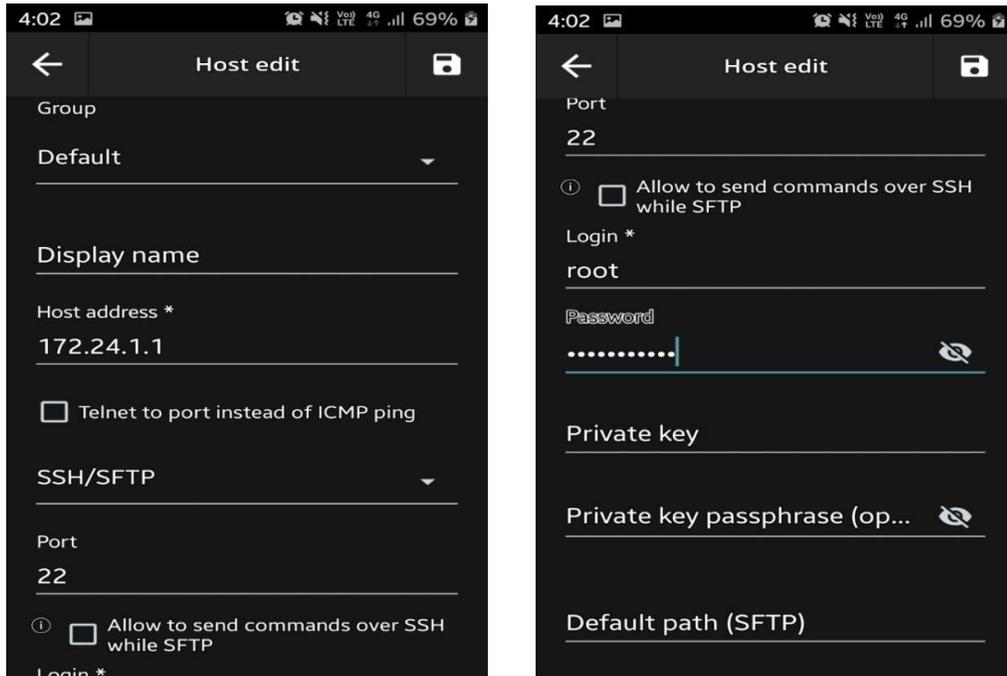
Figure 26: SSH Login Details

- Click on the saved host name as shown in the Figure 26,
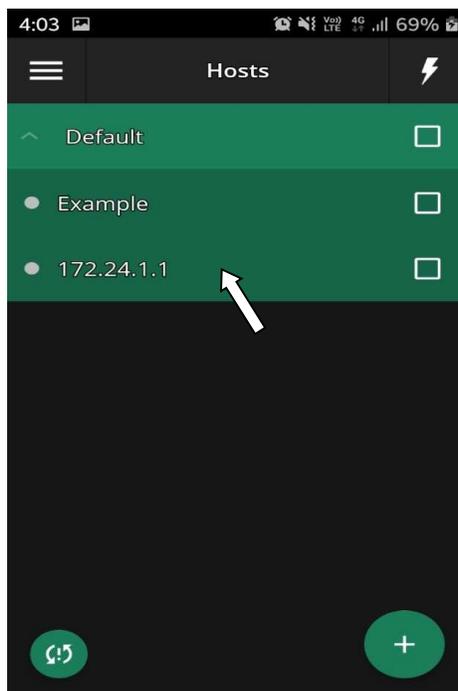
Figure 27: SSH Login

- Select "SSH Terminal" from the list.
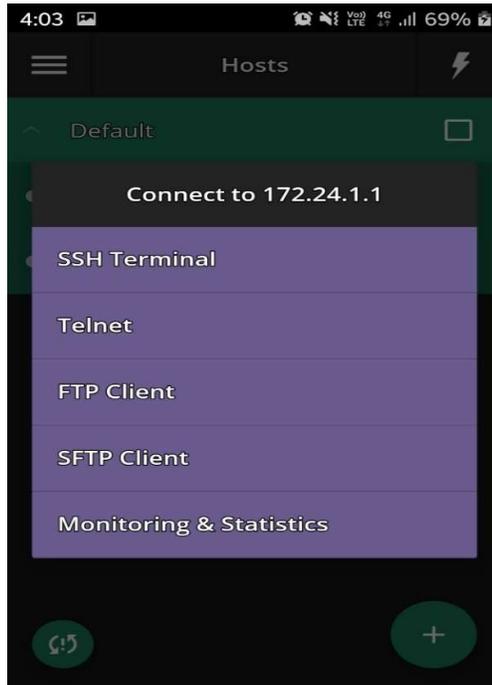
Figure 28: SSH Login

- The debug console will open as shown in the Figure 29.

Figure 29: Device Console Window

Technical Support

iWave Systems technical support team is committed to provide the best possible support for our customers so that our Hardware and Software can be easily migrated and used.

For assistance, contact our Technical Support team at,

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