Talaria TWO™ (INP2045)

Ultra-Low Power Multi-Protocol Wireless Platform SoC

IEEE 802.11 b/g/n, BLE 5.0

Quick Start Guide

Talaria TWO Evaluation Kit

Release: 08-21-2024

Revision History

Version	Date	Comments
1.0	08-21-2024	First release.

Contents

Figures

Tables

Terms & Definitions

AP	Access Point
API	Application Programming Interface
DTLA	Development Tool License Agreement
EVB	Evaluation Board
EVK	Evaluation Kit
MNDA	Mutual Non-Disclosure Agreement
SDK	Software Development Kit
UART	Universal Asynchronous Receiver/Transmitter
WPA	Wi-Fi Protected Access

Introduction

This document walks through the steps to quickly get started with the Talaria TWO evaluation kit (EVK). INP301x Talaria TWO evaluation board is designed as an evaluation platform for the INP101x modules.

INP301x Package Contents

The package contains:

1. INP3010/INP3011/INP3012/INP3013/INP3014/INP3015 Evaluation Board (EVB)
2. Micro USB cable
3. Antenna (INP3011/INP3012/INP3015 boards)
4. Battery box

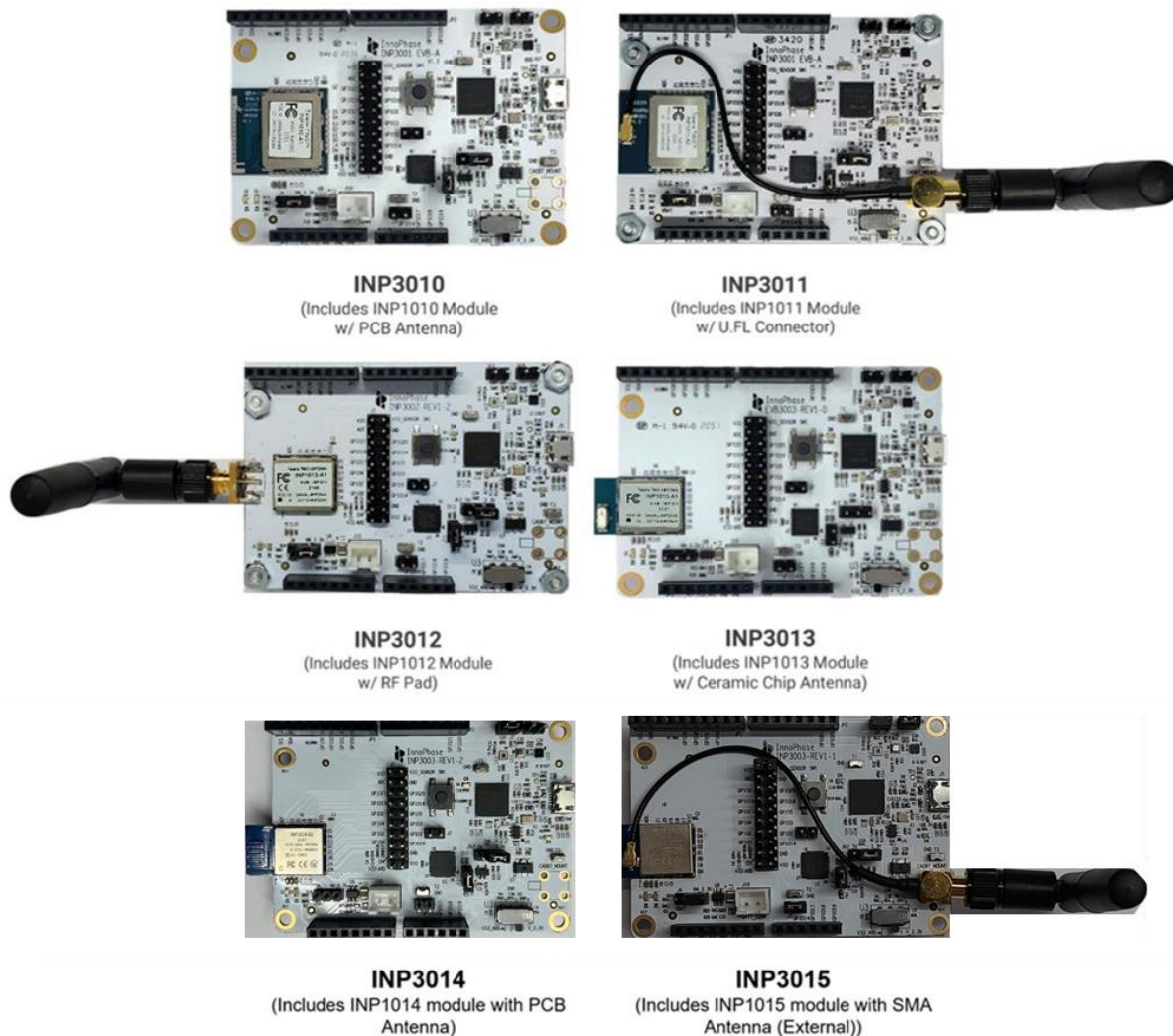*Figure 1: INP301x EVB-A Board with INP101x module board installed*

Getting Started with EVK

Default Jumper Settings and Power Switch

Ensure the default jumper settings and power switch are as follows:

1. Jumper J4 and J9 included and installed on VM_3.3V and 3.3V of the EVB
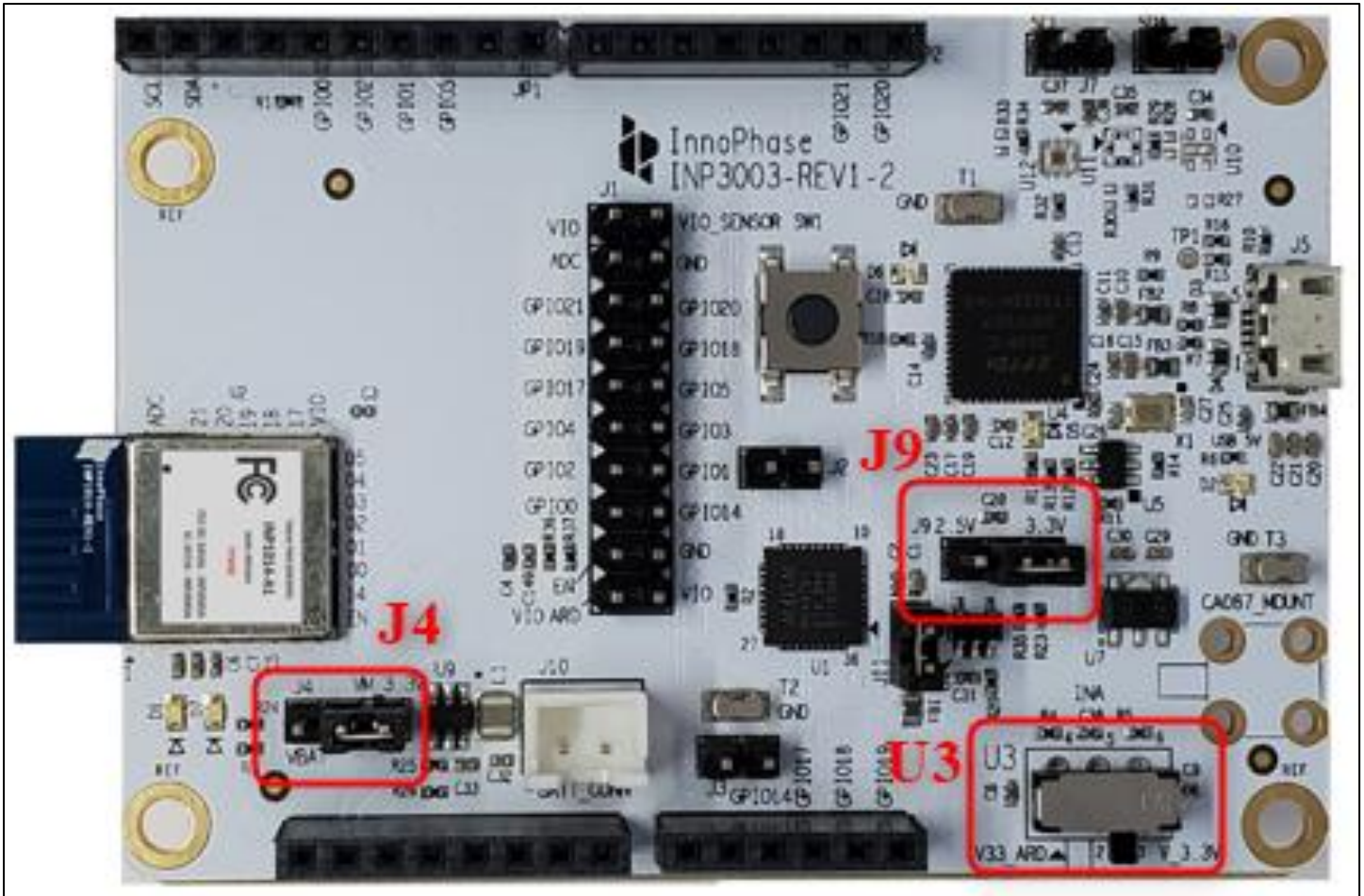2. U3 switch is on V_3.3V of the EVB

Figure 2: INP301x EVB-A control and connectivity points

Connect to the Talaria TWO Serial Port

Connect EVB to PC using the Micro USB Cable and check the USB serial ports from `Device Manager`. Four COM ports will be listed under Ports (COM & LPT) listing. The third COM port is the Host communication port & fourth COM port is the debug console logging port.

In this guide, we will interact with Talaria TWO UART interface using the Host communication port, by sending serial data (AT Commands).

Figure 3: Serial ports on Device Manager
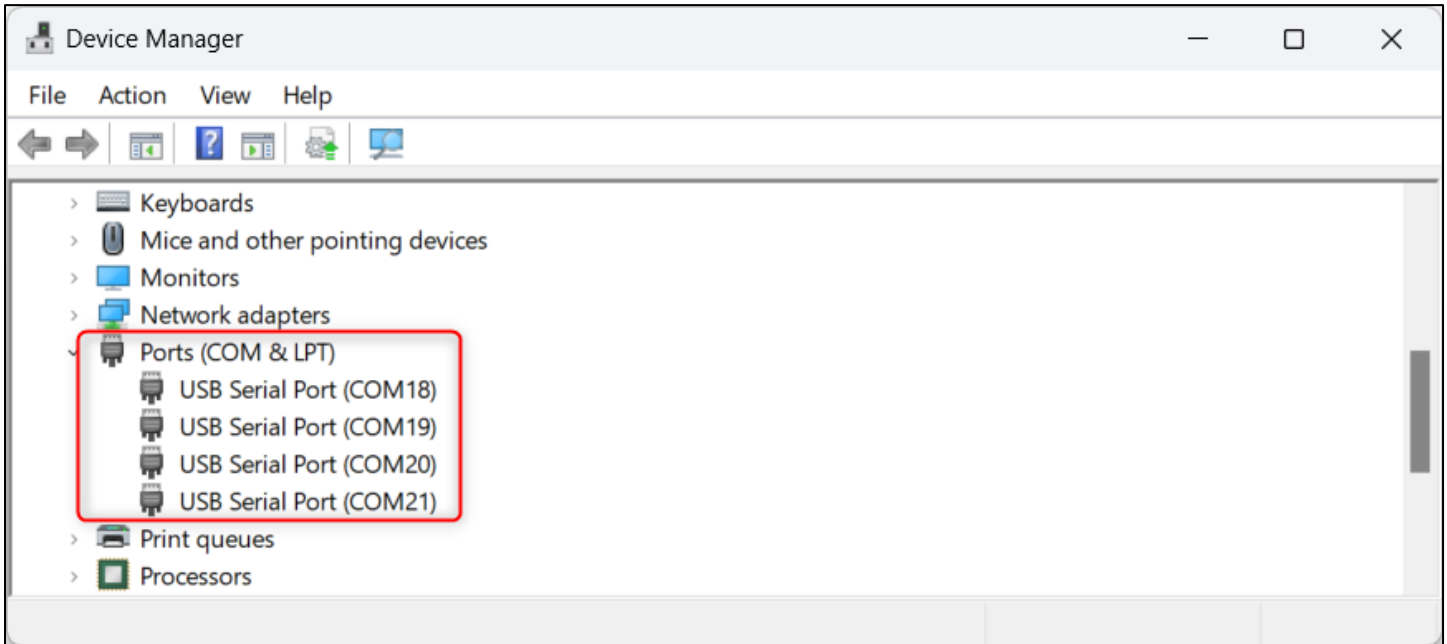
Configure the Serial Port

The default Talaria TWO UART configurations are as follows:

1. Baud Rate: 115200bps
2. Data: 8 bits
3. Parity: None
4. Stop bits: 1 bit
5. Flow Control: None

Using Teraterm serial terminal, select USB COM Port #20 (third COM port) and use the above serial port configurations. Connect to the Talaria TWO UART console.
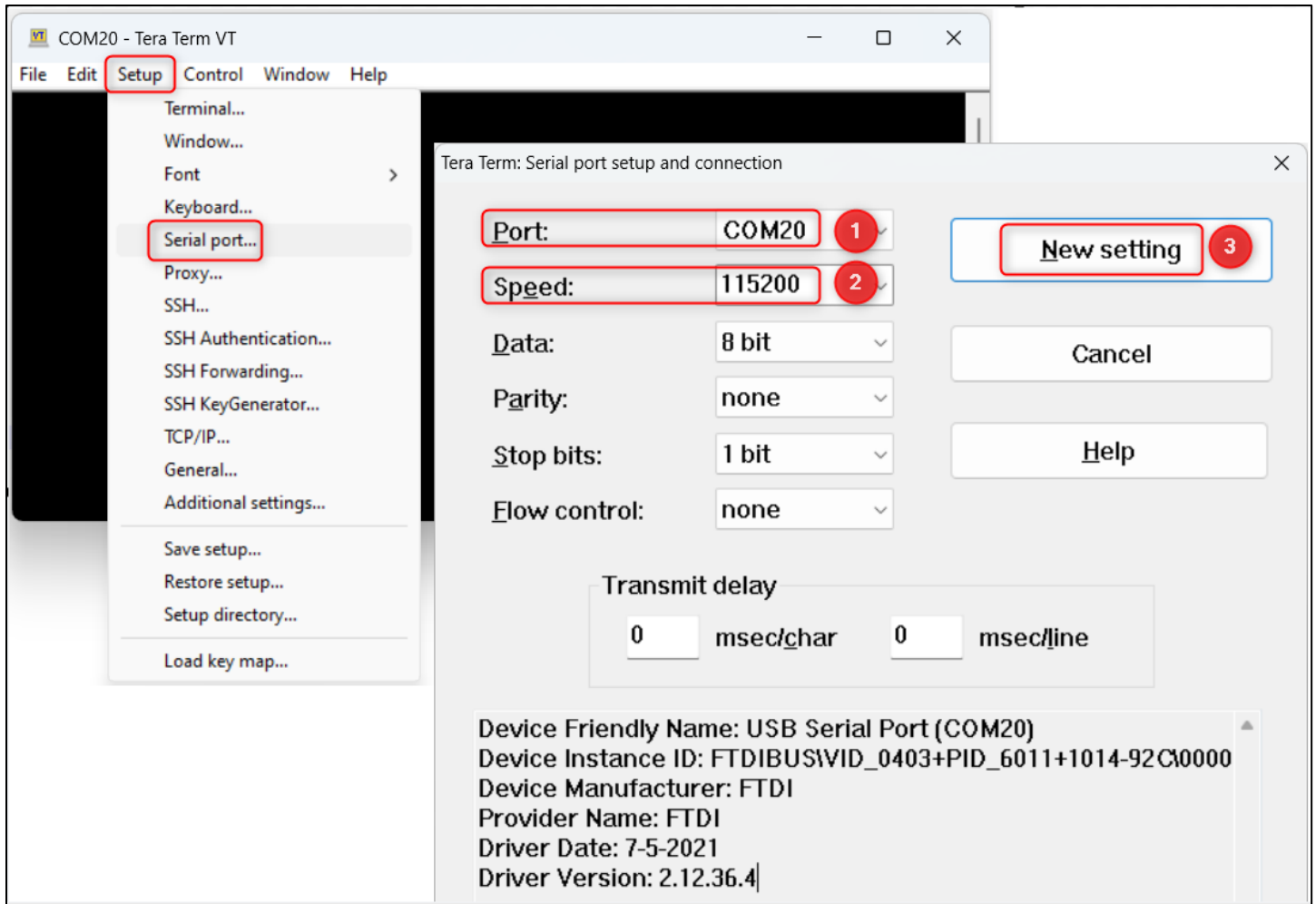

Figure 4: Teraterm serial terminal

Software Evaluation

The evaluation board is pre-loaded with AT commands application firmware. The subsequent sections demonstrate establishing Wi-Fi connection to an Access Point (AP) and Ping test execution using AT commands.

Establishing Wi-Fi Connection to an Access Point

Description

This use case demonstrates station mode configuration and connection to an Access Point configured with WPA/WPA2/WPA3 personal security.

Note: Skip the passphrase if it is an open AP.

Prerequisites

Access Point configured with any Layer2 (WPA/WPA2/WPA3 Personal) security.

AT Command Sequence

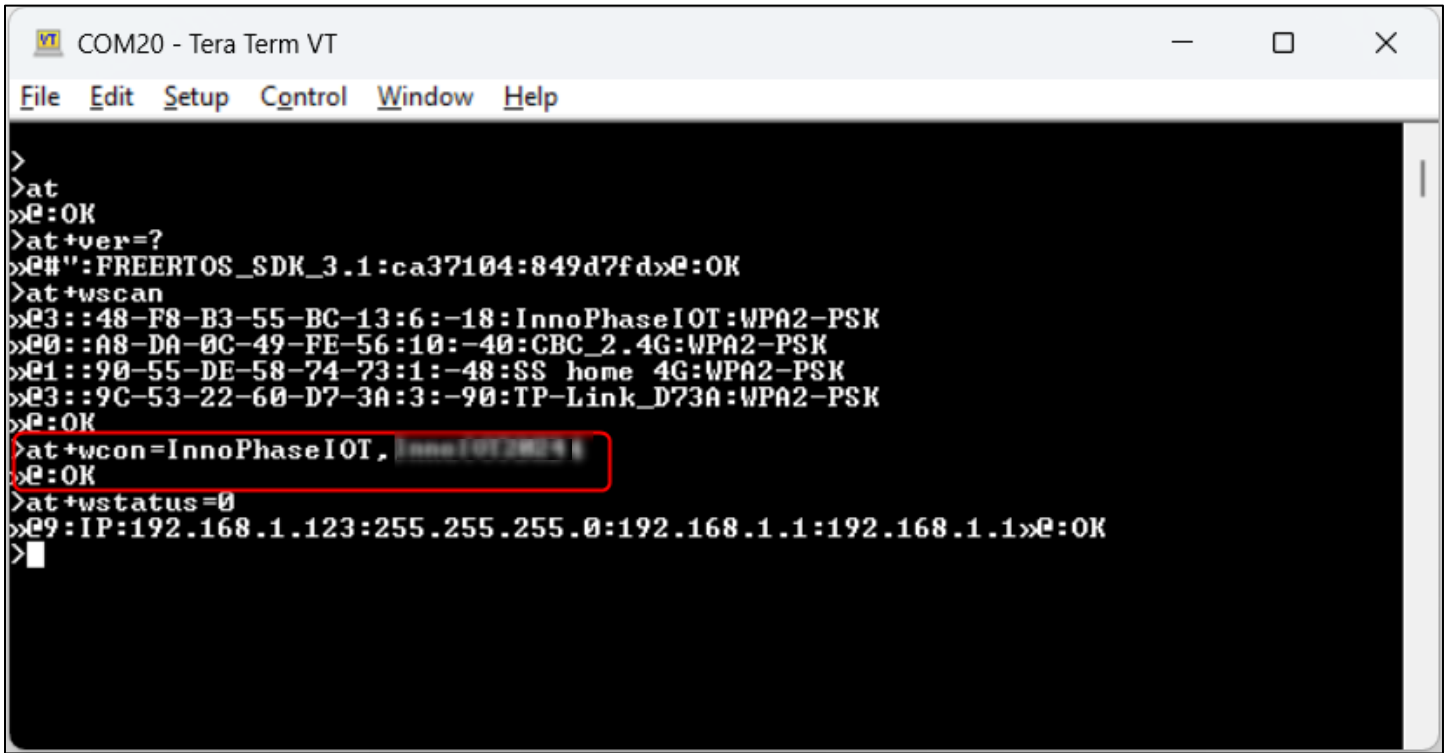| Command	Description
at	Check communication state
at+ver=?	Get current software version
at+wscan	Get list of APs available from the vicinity
at+wcon	Connect to a desired AP from the received scan results.
at+wstatus	Get the IP address of Talaria TWO to verify the connection is successful

Table 1: Wi-Fi connection - AT Commands

Procedure

Issue the following commands to check the AT interface, get current version of the firmware, scan the networks from the vicinity, connect to a desired AP of SSID "InnoPhaseIOT" and Passphrase "InnoIOT2024" in this example.

Check the IP address of the Talaria TWO module to verify whether the connection (Wi-Fi and DHCP) is successful.

Serial Log


```
COM20 - Tera Term VT                                          —    □    ✕

File  Edit  Setup  Control  Window  Help

>
>at
»@:OK
>at+ver=?
»@#":FREERTOS_SDK_3.1:ca37104:849d7fd»@:OK
>at+wscan
»@3::48-F8-B3-55-BC-13:6:-18:InnoPhaseIOT:WPA2-PSK
»@0::A8-DA-0C-49-FE-56:10:-40:CBC_2.4G:WPA2-PSK
»@1::90-55-DE-58-74-73:1:-48:SS home 4G:WPA2-PSK
»@3::9C-53-22-60-D7-3A:3:-90:TP-Link_D73A:WPA2-PSK
»@:OK
>at+wcon=InnoPhaseIOT, Inno(072021)
»@:OK
>at+wstatus=0
»@9:IP:192.168.1.123:255.255.255.0:192.168.1.1:192.168.1.1»@:OK
>█
```

Figure 5: Wi-Fi connection – Serial log

Ping Test using AT commands

Description

This usecase demonstrates a ping operation to check connectivity. It uses `at+nhost` command.

Prerequisites

Access Point configured with any Layer2 (WPA/WPA2/WPA3) security.

AT Command Sequence

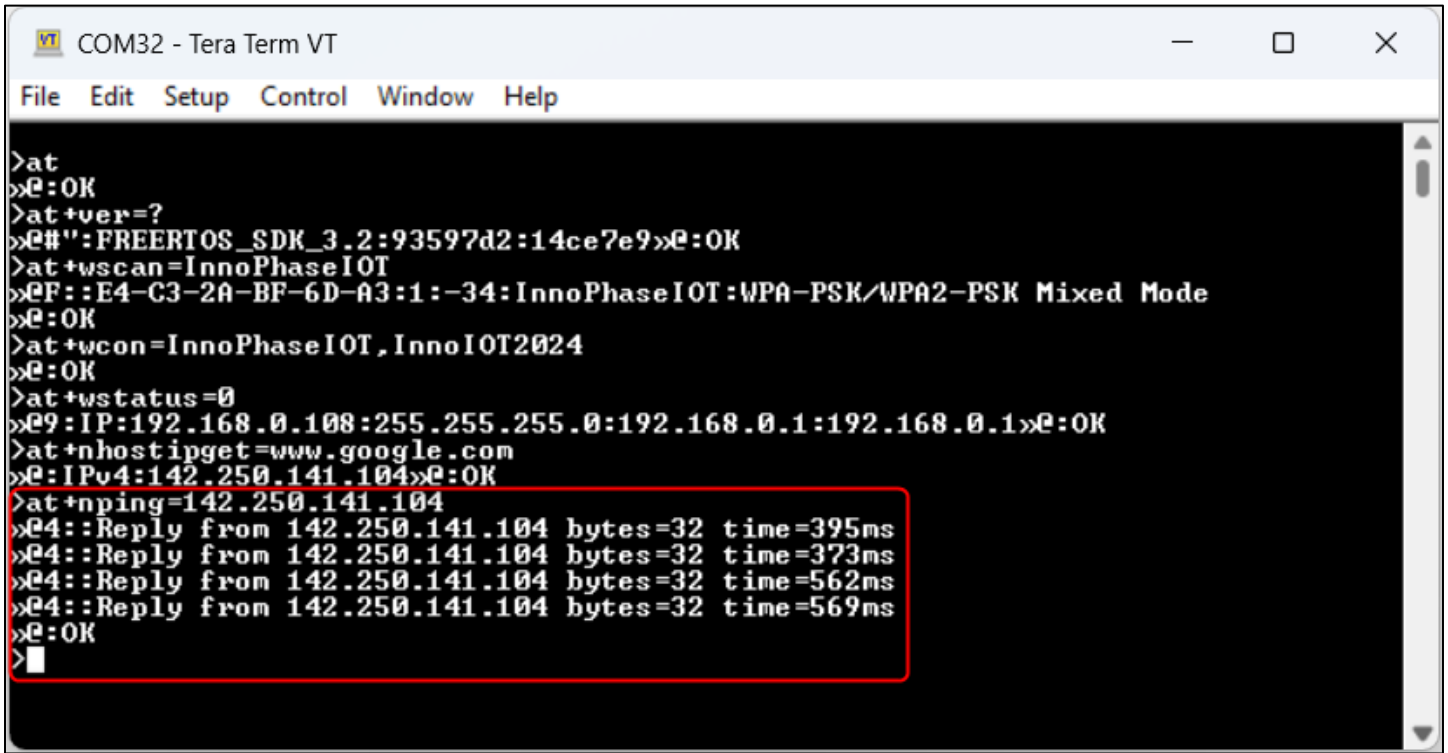| AT Command	Description
at	Check communication state
at+ver	Get software version
at+wscan	Get list of available APs from the vicinity
at+wcon	Connect to a desired AP from the received scan results."
at+wstatus	Get IP address of Talaria TWO to verify the connection(L2+L3) is successful
at+nhostipget	Get Host IP by Name
at+nping	Connect to a desired AP from the received scan results

Table 2: Ping - AT Commands

Procedure

Issue the following commands to check the AT interface is ready, get current version of the firmware, scan the network 'InnoPhaseIOT' (in this example), connect to 'InnoPhaseIOT'. Check the IP address of the Talaria TWO module to verify whether the connection (Wi-Fi, DHCP) is successful.

Issue AT+NHOSTIPGET to get the IP of the www.google.com. Ping www.google.com using the Host IP.

Serial Log

Figure 6: Ping Test - Serial log

Next Steps

InnoPhase IoT Customer Portal Registration

To download any InnoPhase IoT offered software development kits or evaluation kits, register on the customer portal.

1. Go to the InnoPhase website (www.innophaseiot.com/Register) and click on Register.

Figure 7: InnoPhase website

2. Provide the appropriate details to register onto the InnoPhase Customer Portal.
   Note: InnoPhase requires the Mutual Non-Disclosure Agreement (MNDA) and Development Tool License Agreement (DTLA) to be signed prior to granting access to the Customer Portal.

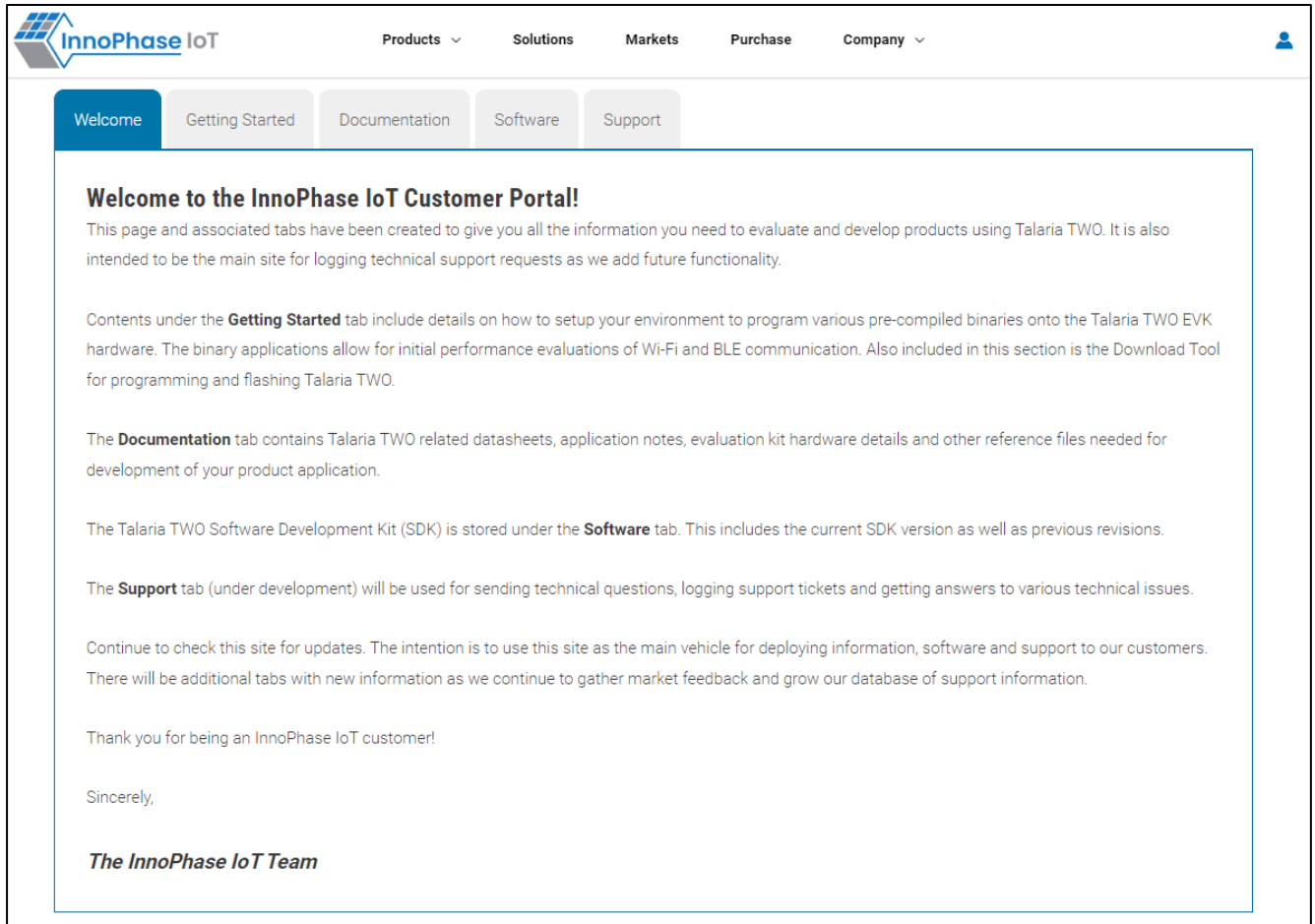3. On successfully registering for Customer Portal, the following screen will appear:
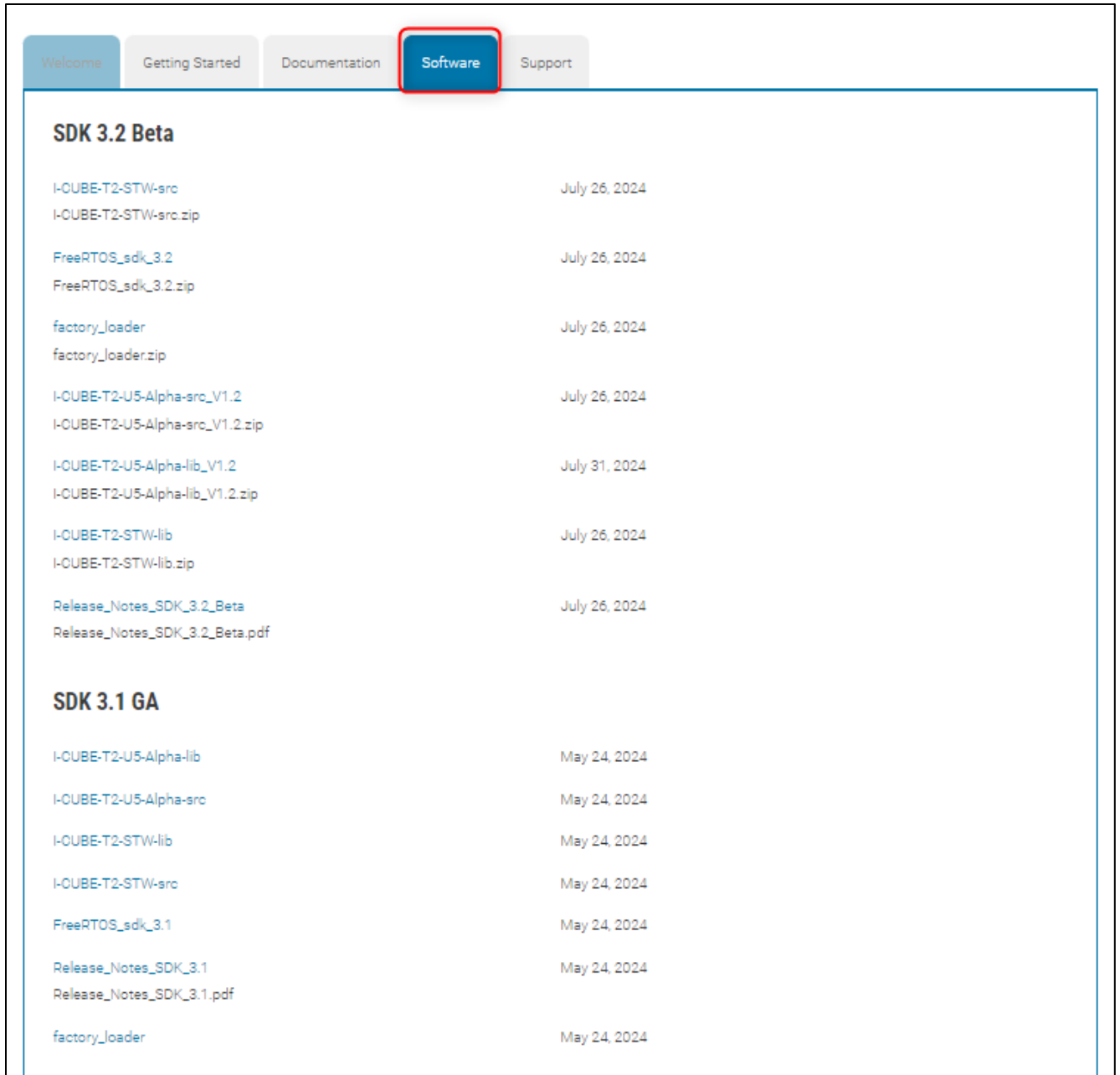
Figure 8: Customer portal registration

4. Navigate to the Software Tab and download the appropriate software package(s):

Figure 9: Software tab

Note: For information on flashing Talaria TWO with the AT command application (`atcmds.elf`) using the PC Tool provided by InnoPhase IoT, Inc. (Download Tool), see section – *Set-up & Usage* of the document – `UseCases_AT_Commands.pdf` (*freertos_sdk_x.y\bin\product\at\doc*).

References

Document	SDK Package Path	Description
SDK_Quick_Reference_Guide	sdk_3.x\	Provides overview of SDK contents, reference apps, solutions available and so on with the SDK Package
UG_Evaluation_Board	\doc\user_guides\ug_evb_a	For Evaluation Board: • Description • Hardware setup • Jumper settings • Component description • Board specifications • Pin outs
UG_AT_Commands	\bin\product\at\doc	Detailed description of every AT command.
Usecases_AT_Commands	\bin\product\at\doc	Sequence of AT commands to achieve a specific task or function
UG_Download_Tool	\pc_tools\Download_Tool\doc	For details on programming the module.
UG_MPD_Demo_Tool_Part_1_Overview UG_MPD_Demo_Tool_Part_2_MPD_Modes UG_MPD_Demo_Tool_Part_3_iPerf3_and_Scan	\doc\user_guides\ug_mpd_too	MPD (Multipurpose Demo) GUI tool that enables quick evaluation of power consumption under various protocol scenarios (such as TCP, UDP, HTTP etc.) and throughput performances of Talaria TWO modules
UG_Matter	\doc\user_guides\ug_matter	InnoPhase IoT's Talaria TWO is a Matter v1.2 certified Wi-Fi module that can be used to build Matter certified smart home products.
T2_Dual-Stack_Solution_Programmers_Guide	solutions\dual_stack\doc	Hosted Wi-Fi solution works with high performance Linux based host processor

Table 3: Reference documents

Support

1. Sales Support: Contact an InnoPhase IoT sales representative via email – sales@innophaseiot.com
2. Technical Support:
    a. Visit: https://innophaseiot.com/contact/
    b. Also Visit: https://innophaseiot.com/talaria-two-modules/
    c. Contact: support@innophaseiot.com

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