## 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

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Revision History

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


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# 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 |


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# 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

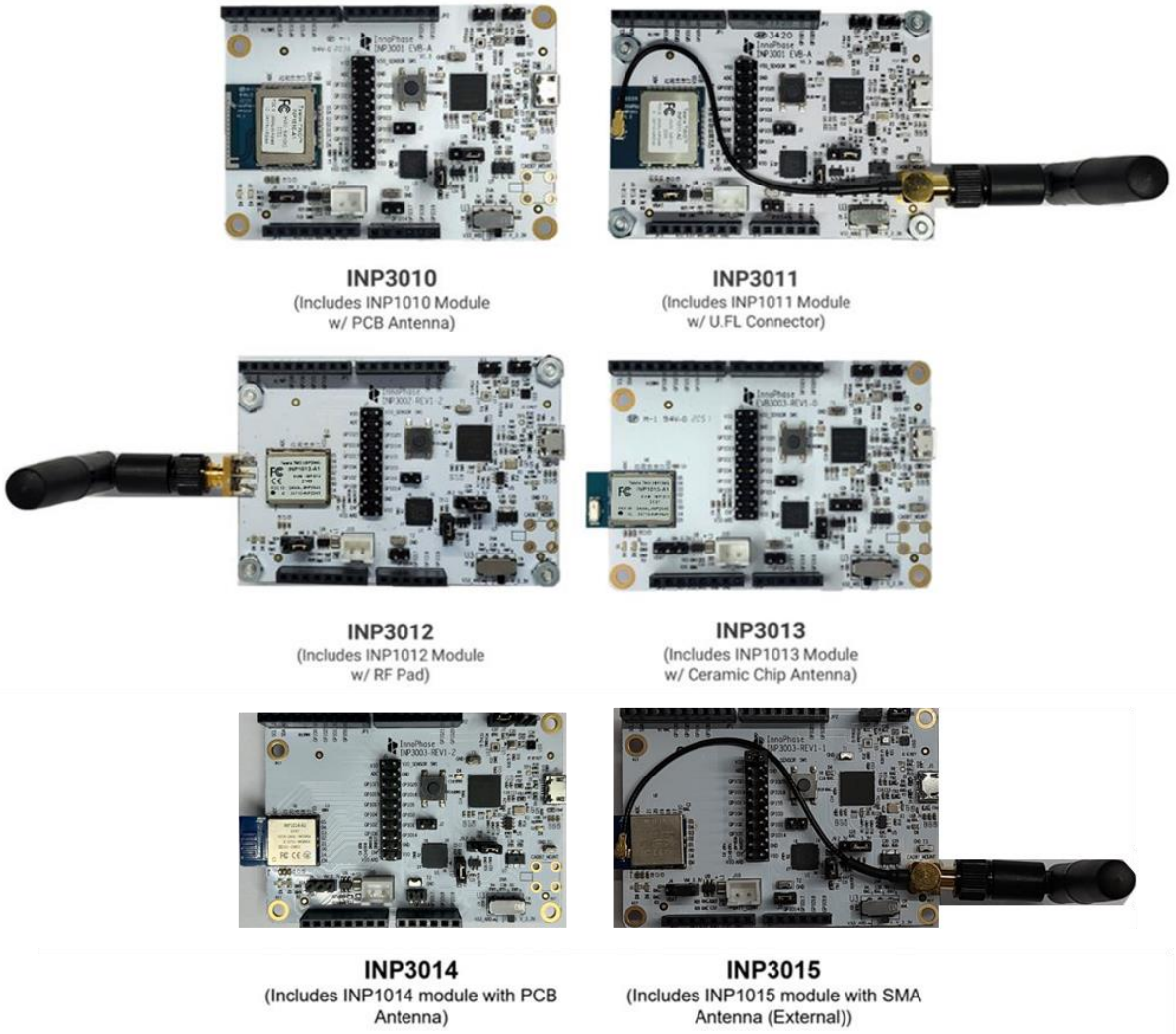


*Figure 1: INP301x EVB-A Board with INP101x module board installed*


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# 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

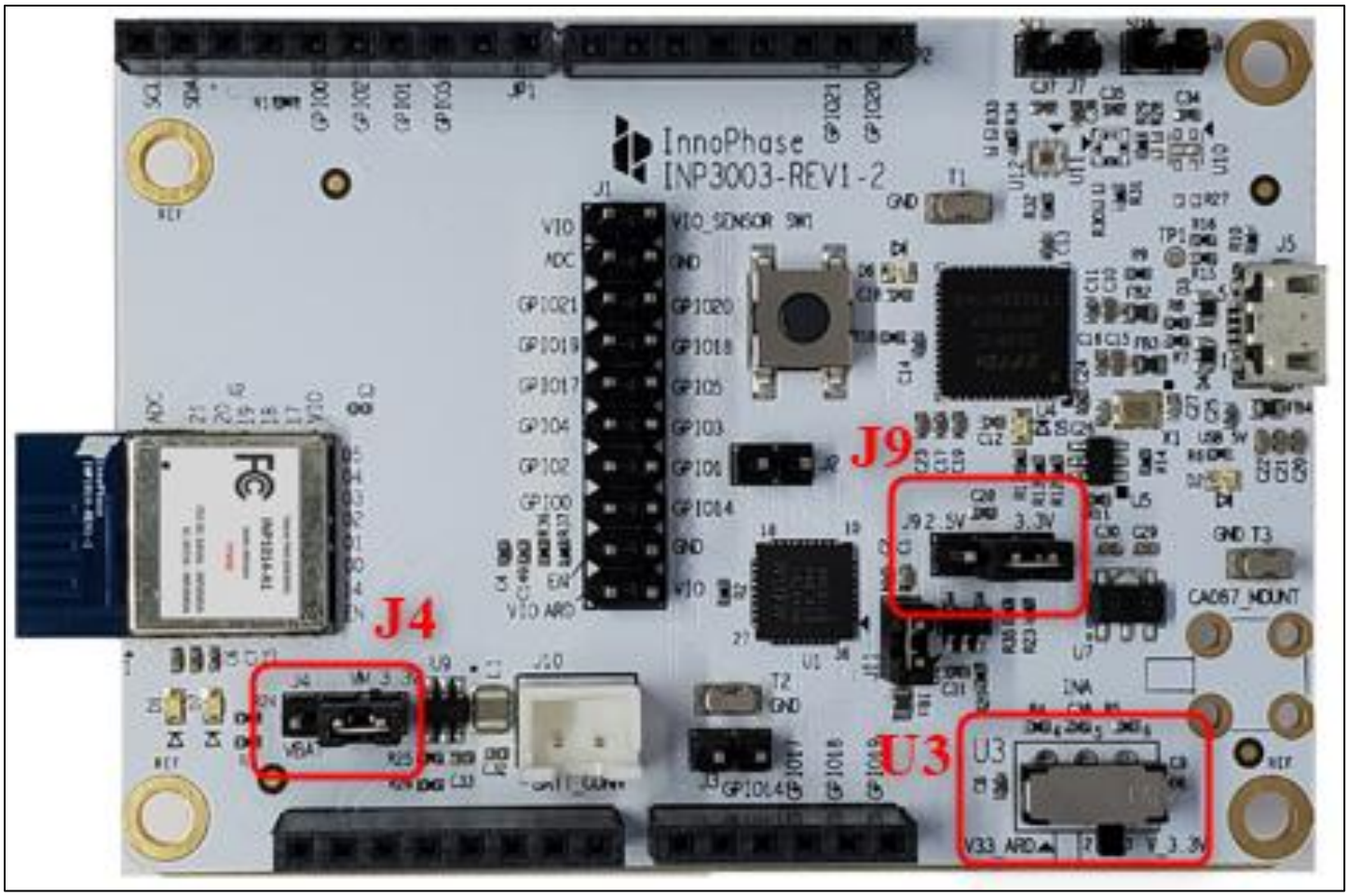


*Figure 2: INP301x EVB-A control and connectivity points*


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## 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).

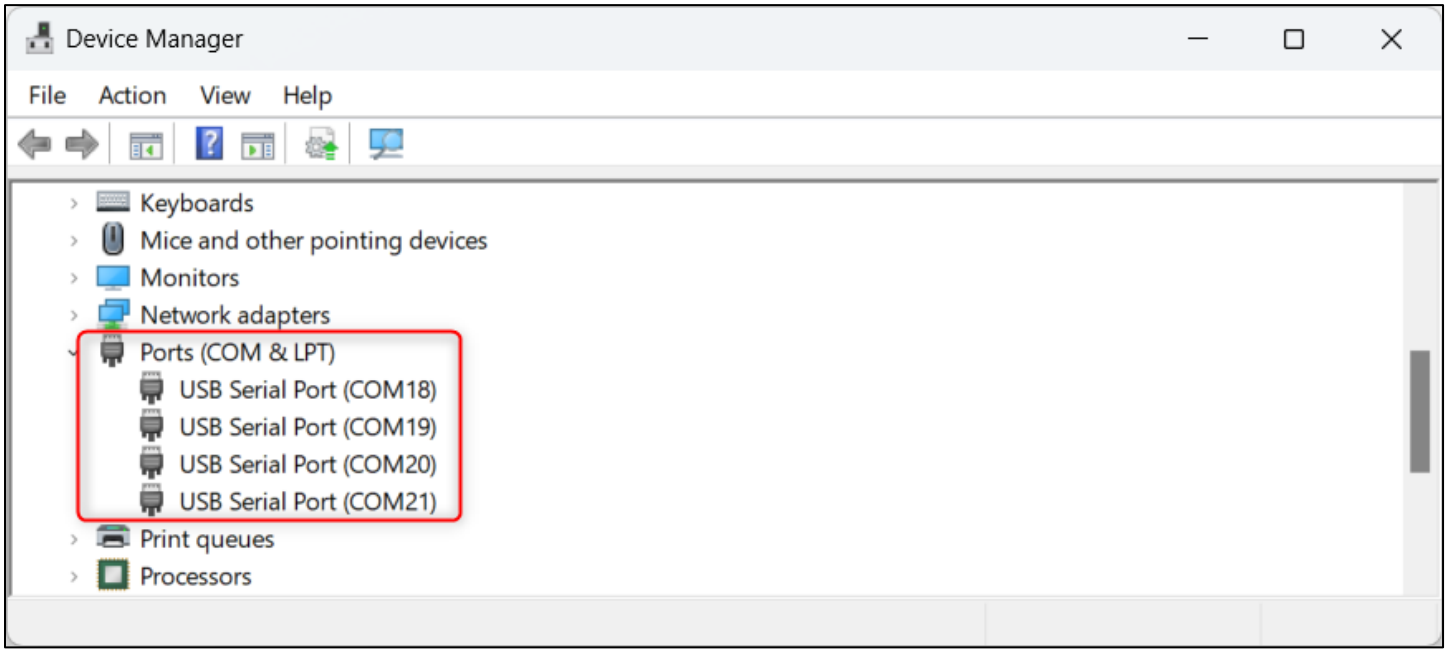


*Figure 3: Serial ports on Device Manager*

### 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


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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.

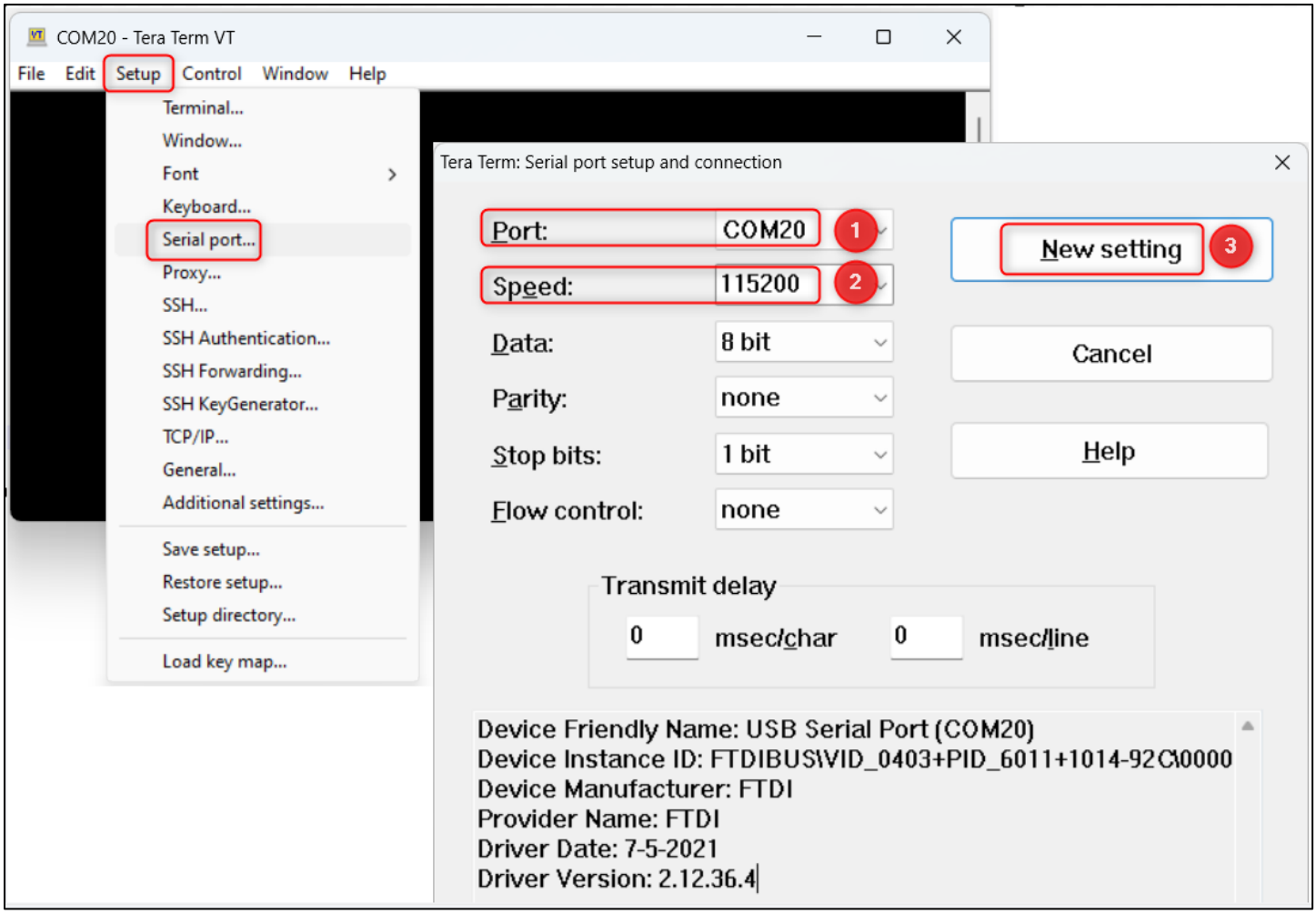


*Figure 4: Teraterm serial terminal*


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# 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.


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## Serial Log

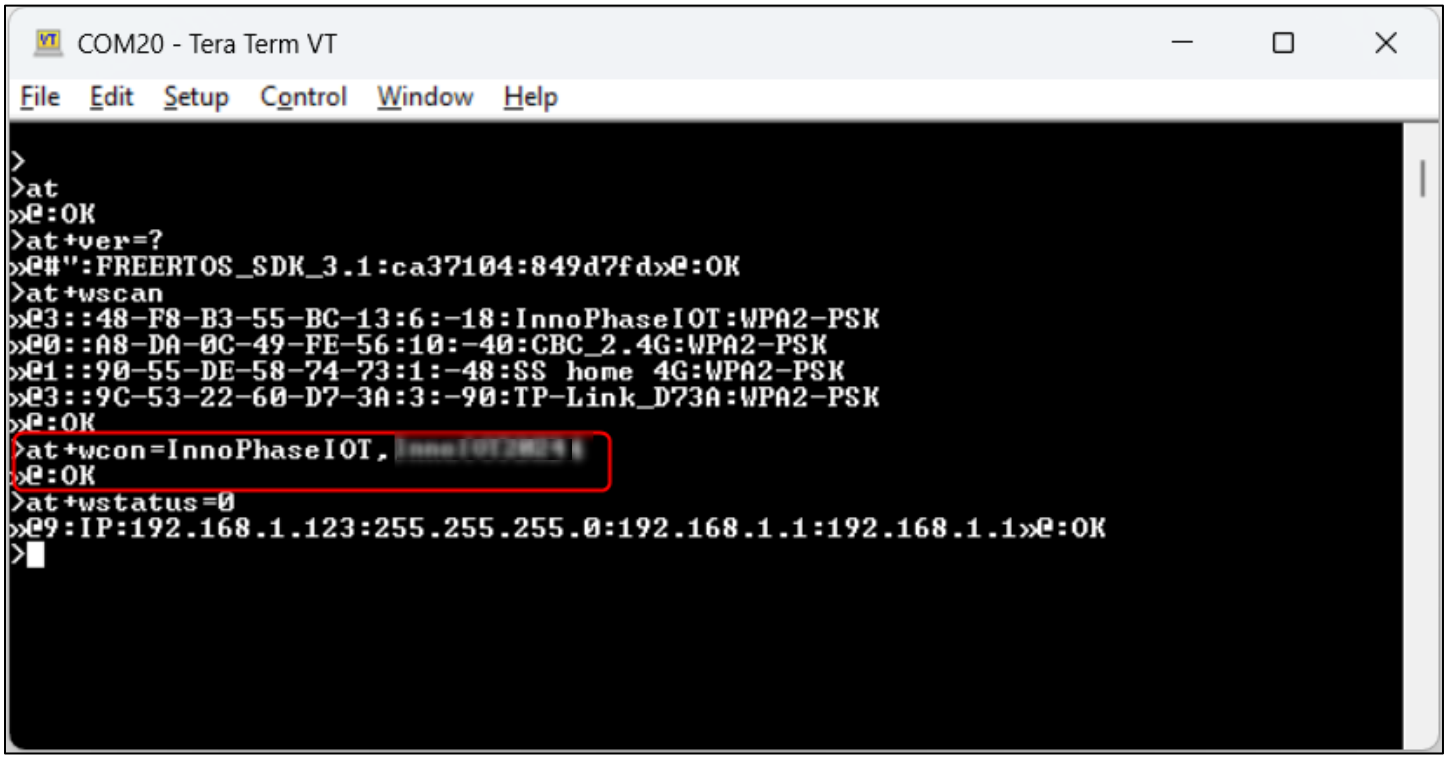


*Figure 5: Wi-Fi connection – Serial log*


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## 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.


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## Serial Log

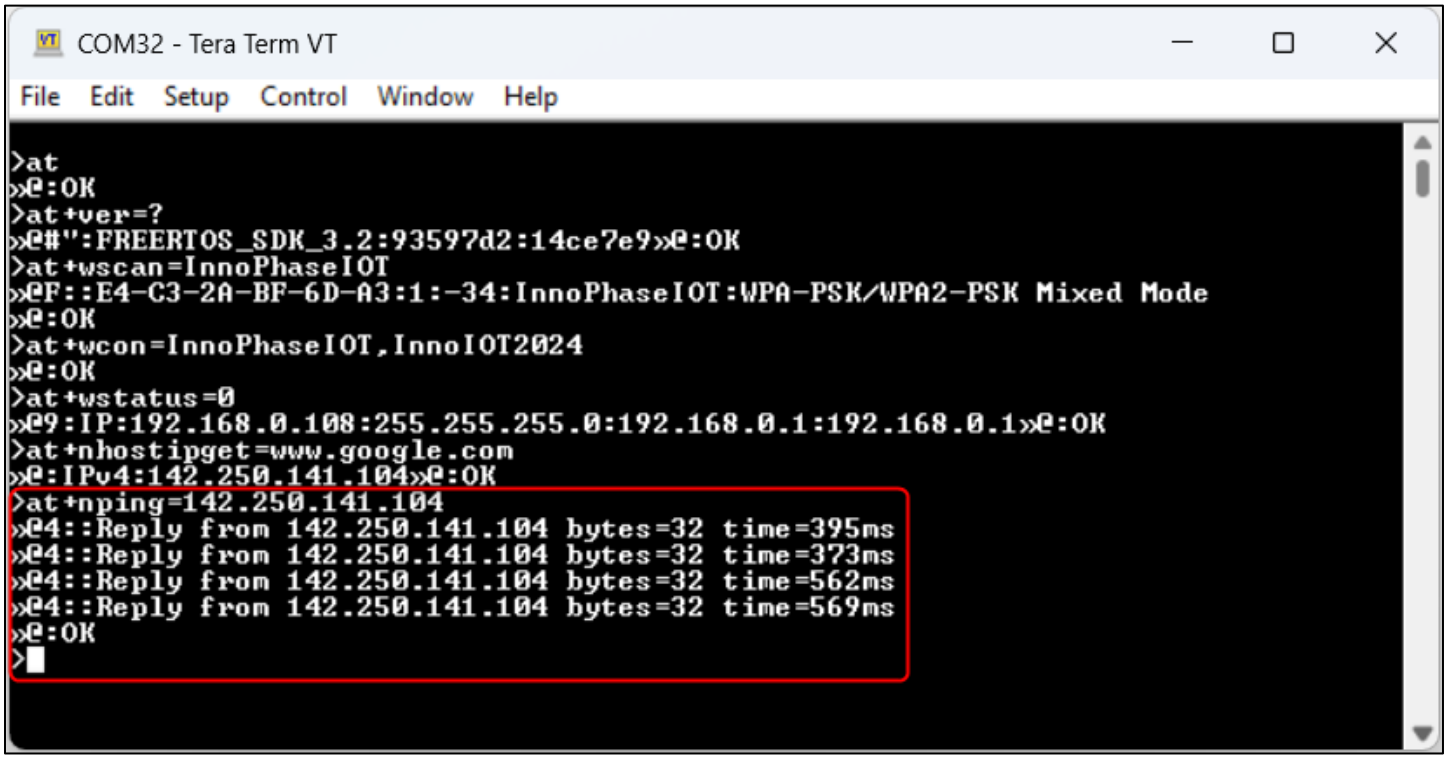


*Figure 6: Ping Test - Serial log*


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# 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.

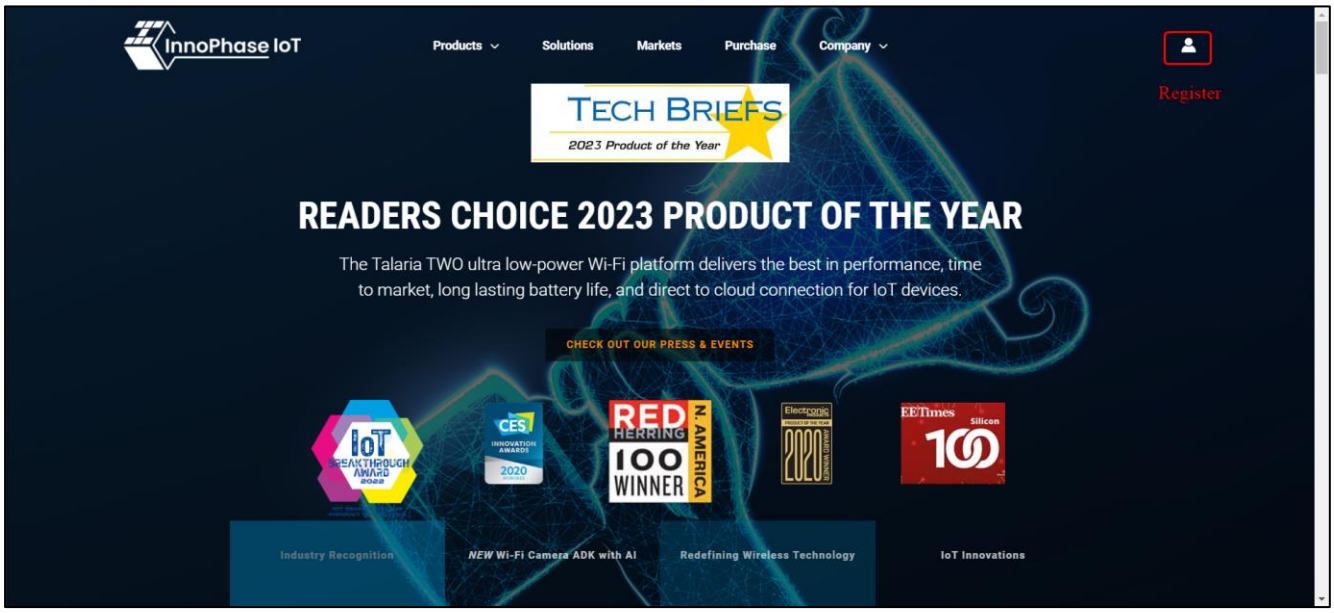


*Figure 7: InnoPhase website*

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.


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3. On successfully registering for Customer Portal, the following screen will appear:

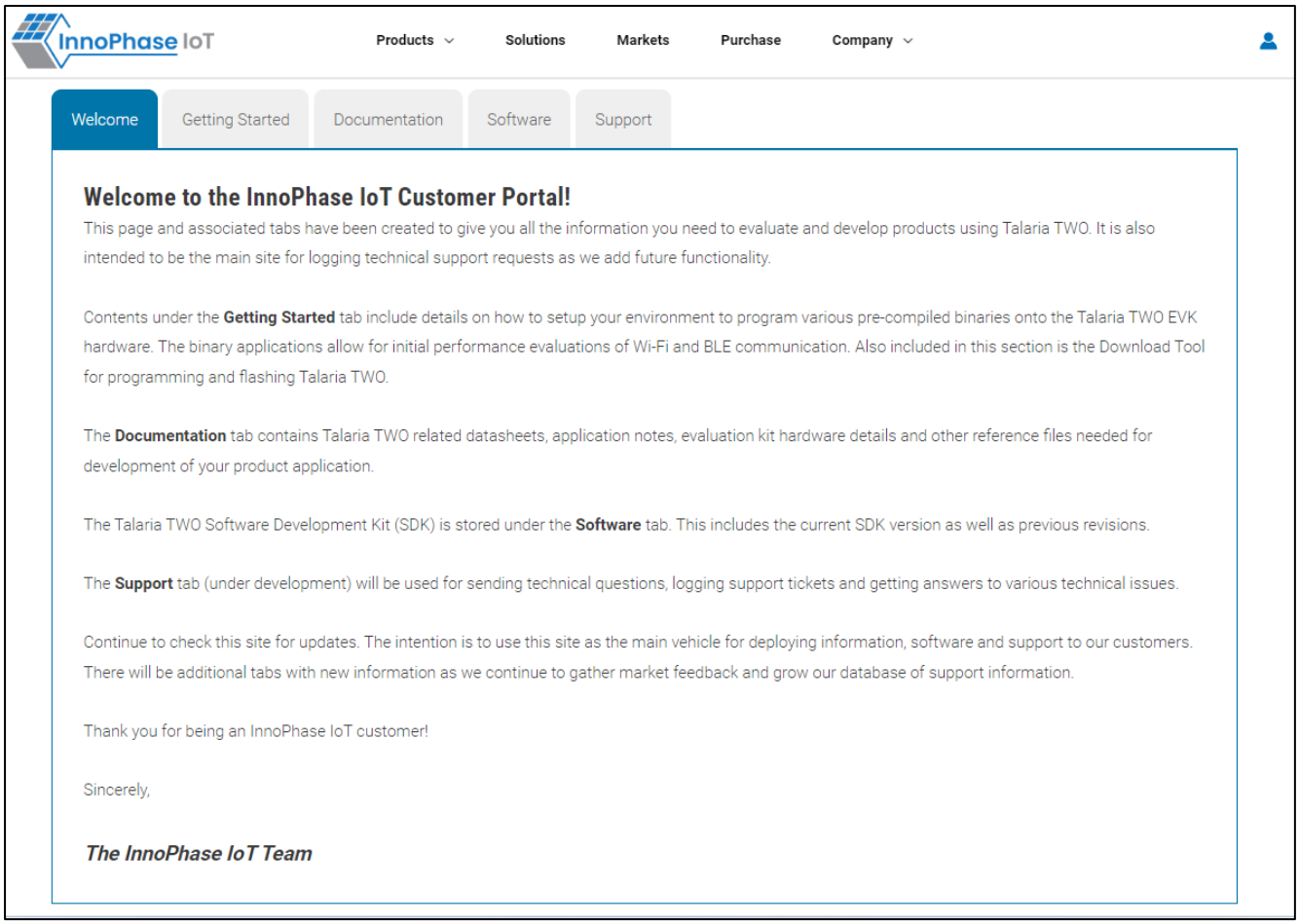


*Figure 8: Customer portal registration*


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

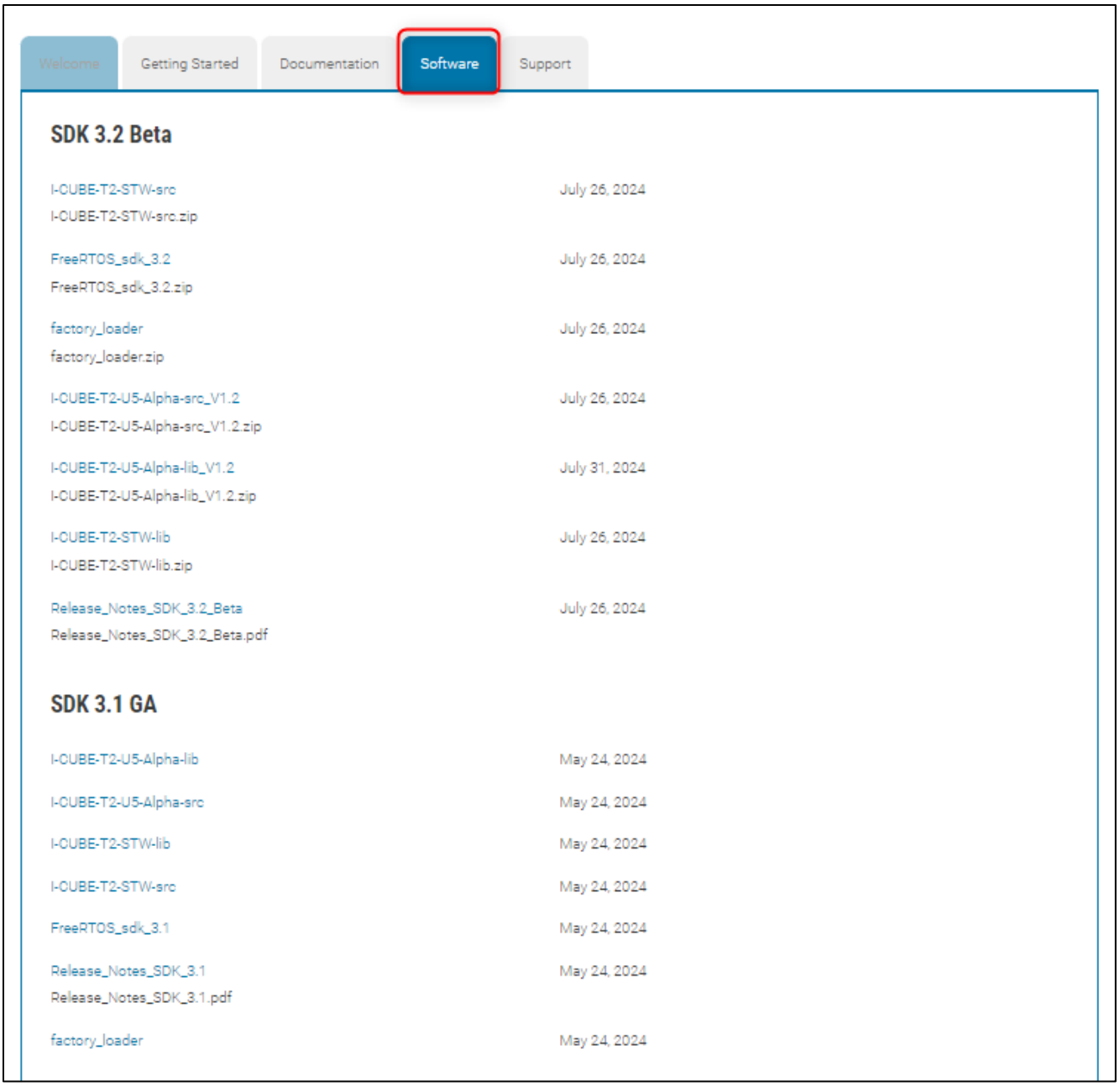


*Figure 9: Software tab*

**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*).


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# 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:<br>• Description<br>• Hardware setup<br>• Jumper settings<br>• Component description<br>• Board specifications<br>• 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<br>UG_MPD_Demo_Tool_Part_2_MPD_Modes<br>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*


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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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