



Talaria TWO™ (INP2045)

Ultra-Low Power Multi-Protocol Wireless Platform SoC

IEEE 802.11 b/g/n, BLE 5.0

AWS IoT Core on Talaria TWO™ Platform

Getting Started Guide

Release: 02-17-2021

Revision History

Version	Date	Comments
1.0	02-17-2021	First Release

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Naming Convention

Talaria TWO™	Family of devices using the InnoPhase ultra-low power wireless technology, including the Talaria TWO™ SoC and Talaria TWO™ Modules
Talaria TWO™ SoC	InnoPhase custom wireless platform (INP2045)
Talaria TWO™ Modules	Modules integrating the Talaria TWO™ SoC (INP1010, INP1011, INP1012, INP1013)
Talaria TWO™ EVB-A	Evaluation boards containing the Talaria TWO™ Modules (INP3010, INP3011, INP3012, INP3013)

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Terms & Definitions

- API Application Programming Interface
- AWS Amazon Web Services
- ELF Executable and Linkable Format
- EVB Evaluation Board
- GPIO General Purpose Input/Output
- HTTP Hypertext Transfer Protocol
- IoT Internet of Things
- MQTT Message Queuing Telemetry Transport
- SDK Software Development Kit

Overview

The INP3010/3011/3012/3013 EVB-A's are available for evaluating the performance and capability of the Talaria TWOTM INP1010/1011/1012/1013 modules.

The kits use InnoPhase's award-winning Talaria TWOTM Multi-Protocol Platform with ultra-low power Wi-Fi + BLE5 for wireless data transfer, an embedded Arm Cortex-M3 for system control and user applications plus advanced security elements for device safeguards.

The kits include an Arduino UNO format baseboard with a Talaria TWOTM module attached and a different antenna option per kit.

The EVB-A can be used in stand-alone mode or attached to an Arduino UNO compatible host or shield board. The baseboard has all module GPIOs accessible through either an internal 20-pin header or the Arduino connectors. Power is supplied from USB, host Arduino board or battery connector.

Also mounted on the baseboard are environmental sensors for capturing temperature, humidity, pressure and light. It is ideal platform for developing exciting new battery-based, cloud connected products such as smart locks, smart sensors, or security and health monitoring devices.

Product brief can be found in the following link: <https://innophaseiot.com/wp-content/uploads/modules/INP301x-EVB-A-Product-Brief.pdf>.

For more details, visit: <https://innophaseiot.com/talaria-two-modules/>.

Hardware Description

Datasheet

Datasheet for the modules used in the kit can be downloaded from the following link:
<https://innophaseiot.com/wp-content/uploads/modules/Talaria-TWO-Module+SoC-Datasheet.pdf>.

Standard Kit Contents

Contents of the INP3010/INP3011 EVB-A Kit are as follows:

INP3010/INP3011 EVB-A Kit Contents		
Product	INP3010	INP3011
Baseboard	EVB-A Baseboard, Arduino UNO Compatible (75.0mm x 53.3mm x 10mm)	
Talaria TWO Module Included (Mounted on Baseboard)	INP1010 (w/ PCB Antenna)	INP1011 (w/U.FL Antenna Connector)
Environmental Sensors (Mounted on Baseboard)	Temperature & Humidity (Sensirion SHTC3) Pressure (Bosch BMP388) Light (TI OPT3002)	
USB Interface	USB2.0	
USB Cable	Male USB A to Male USB Micro-B	
Antenna	Not Included	Stub Antenna with Cable & U.FL Connector
Battery Holder	Dual "AA" Battery Holder with Wired Connector	
Accessories	4x Stand-Offs and 4x Screw Nuts (Attached)	

Figure 1: EVB-A Kit Contents

More details of the kit can be found from the following link: <https://innophaseiot.com/wp-content/uploads/modules/User-Guide-for-Talaria-TWO-EVB-A-Evaluation-Board.pdf>.

Additional Hardware References

Schematics of the kit can be downloaded from the following link: <https://innophaseiot.com/wp-content/uploads/modules/INP301x-EVB-A-Schematics.pdf>.

Additional documentation is available on the Talaria TWO modules webpage: <https://innophaseiot.com/talaria-two-modules/#documentation-software>.

Set up your Development Environment

Tools Installation (IDEs, Toolchains, SDKs)

Talaria TWO Software Development Kit is used for developing applications on Talaria TWO Platform.

A comprehensive User Guide: `UG_Environment_Setup_for_Linux.pdf` is available covering how to setup the development environment for using Talaria TWO SDK on an Ubuntu VirtualBox based environment with a Windows 10 host.

This document details installing the toolchain and necessary software packages required for the development, CLI commands for building target executables, programming the target and debugging of the application.

Alternatively, Talaria TWO SDK also supports the development using an Eclipse based IDE in Windows OS based PC. The details of setting up the development environment in Windows OS using the IDE is provided in User Guide: `UG_Eclipse_Setup_Windows.pdf`.

Talaria TWO SDK comes with above mentioned User Guides, an SDK API reference manual: `T2- RM001- Talaria TWOTM SDK API Reference Guide.pdf`, various example applications, application notes and many reference applications with documents for the user to start the development targeting different use-cases.

Talaria TWO SDK is available through InnoPhase Customer Portal Access and is available after portal registration, Mutual Non-Disclosure Agreement (MNDA) and Development Tools License Agreement (DTLA).

For detailed information on registering the getting the SDK access, please use the following link: <https://innophaseiot.com/portal/portal-hub/>.

Additional Software Required for Development and Debug

Talaria TWO Download Tool is used for programming the EVB-A and using Debug Console. This tool is available for Windows and Linux platforms.

User Guide for this tool can be found in the following link: <https://innophaseiot.com/wp-content/uploads/modules/Talaria-TWO-Download-Tool-User-Guide.pdf>.

This tool can be downloaded from the following link: <https://innophaseiot.com/talaria-two-modules/#documentation-software>.

The Download Tool is found in the following folder in the Evaluation Software download from the above link: `I-CUBE-T2-STW.zip\STM32CubeExpansion_T2-HostAPI-lib_V1.0\Utilities\PC_Software\TalariaTwo_DownloadTool\Tool_GUI`.

Set-up the Hardware

A User Guide for setting up Talaria TWO EVB-A can be found here: <https://innophaseiot.com/wp-content/uploads/modules/User-Guide-for-Talaria-TWO-EVB-A-Evaluation-Board.pdf>

This has all the details needed for a successful setup, including description of components, power supply requirements, details of jumpers and the driver needed etc.

AWS Account and Permissions Set-up

Refer to the instructions at [Set up your AWS Account](#). Follow the steps outlined in these sections to create your account and a user and get started:

1. Sign up for an AWS account and
2. Create a user and grant permissions
3. Open the AWS IoT console

Pay special attention to the **Notes**.

Create Resources in AWS IoT

Refer to the instructions at [Create AWS IoT Resources](#). Follow the steps outlined in these sections to provision resources for your device:

1. Create an AWS IoT Policy
2. Create a thing object

Pay special attention to the **Notes**.

Provisioning the Device, Running the Demo & Debugging

Step by step detailed instructions on how to provision the device, and how to flash run and debug the demo AWS IoT Core related applications using Talaria TWO Download Tool, are provided in the application note document: Using AWS IoT Device SDK with Talaria TWO.

This can be downloaded from the following link: <https://innophaseiot.com/wp-content/uploads/modules/Using-AWS-IoT-Device-SDK-with-Talaria-TWO.pdf>.

There are three sample applications provided with this application note and available with the Talaria TWO SDK:

1. Sample Application 1: `sample_pub_sub`
Provides details on how to publish/subscribe to MQTT topics and send/receive messages.
2. Sample Application 2: `shadow_sample`
Provides details on how to use the AWS IoT Device Shadow service, to update the shadow of a device.
3. Sample Application 3: `jobs_sample`
Provides details on how to create a job in AWS IoT Core and have the device execute it.

This document also details about how the user should verify if the demo works successfully, using device debug console and AWS IoT Core console.

Screenshots of Talaria TWO EVB-A debug console and AWS IoT Core console for all the 3 sample applications are also provided in this document, confirming the success, for example, if the messages are being received by AWS IoT Core MQTT topic or Device Shadow as expected.

Troubleshooting

This is covered in detailed documents available with Talaria TWO SDK access.

Support

1. Sales Support: Contact an InnoPhase 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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