

Wireless Connectivity Troubleshooting Guide



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1. Introduction

Wireless connectivity is an important component of any Internet of Things (hereon referred to as IoT) product. Configuring and debugging wireless connectivity issues, especially during the initial set up, can be a little challenging. This document can be used as a troubleshooting reference to debug the wireless connectivity issues faced by the Original Equipment Manufacturers (hereon referred to as OEMs) and their customers

1.1 About this Document

This document is designed to assist Ayla Network OEMs and their customers (end users) to troubleshoot possible wireless connectivity issues encountered during the installation of their IoT devices.

1.2 Intended Audience

The OEM Support personnel can use the information available in this document to assist their customers in troubleshooting wireless connectivity issues. The OEMs are free to share the information/content in this document with their customers. Before distributing this content, the OEMs should customize it appropriately to reflect their specific product and branding.

1.3 Document Conventions

Ayla user documentation follows these conventions:

- Text that you type (such as commands) and the contents of downloaded files are shown as:

```
cd wmsdk_bundle-3.1.16.1
tar xzf ada-wmsdk-src-1.0.tgz
```

- File names, scripts, names of commands, properties in a file, code, and the like are also in *Courier New* font, for example:
Use the `psm-dump` command to ...
- Words or phrases that are specifically defined and could potentially be misunderstood are initially in “quotes” the first time they appear in the document.
- Names of buttons, keys on the keyboard, links on a website, and the like are written as is; for example, press the Reset button.
- The route to navigate network and file paths are separated by the back slash, “\.”
- Menu options on the user interface (UI) are shown in *Courier New* font and each point that you have to click to navigate to the next is separated by the vertical bar, “|.”
- Ancillary information that is important to emphasize is shown as:

NOTE The commands provided in the example assume your evaluation board is `mw300_rd` and your chip is `mw300`. If otherwise, make the appropriate substitutions.

- Information describing hazards that could damage a product, including data loss, is shown as:



Make sure that the appropriate data buffering is accounted for in deployed devices, especially where the loss of data is critical to the core functionality or the services provided by the systems.

2. Troubleshooting Your Wireless Connectivity

This section provides an overview of some common issues and recommended debugging/resolution paths for troubleshooting your wireless connectivity. If you are having issues with the initial Device Setup, please refer to Section 2.2.

2.1 Restart the Wi-Fi Access Point and Router

Before performing the initial Device Setup, we recommend that you restart your Wi-Fi Access Point and Router. This step may correct unknown issues.

If your Router and Wi-Fi Access Point are two separate devices, reset the Router first, and wait for the reset to be completed by observing the LED Status indicators before proceeding with the Wi-Fi Access Point.

NOTE Every Router and Wi-Fi Access Point is different; you may need to review the user manual for the correct restarting instructions if you are not familiar with how to restart your device.

You can restart your Router or Wi-Fi Access Point as follows:

1. Power off the device by pressing the power switch (if available) or unplugging the power cord.
2. Wait for 30 seconds, then power on the device.
3. The device usually takes a few minutes to complete its reboot process and return to normal operational status. You can typically monitor the process by looking at the power and connection lights; a solid light usually means the reboot has been completed.

2.2 Troubleshoot the Initial Device Setup

A number of things can go wrong when you initially set up your Device. Follow the below steps to troubleshoot your initial Device Setup.

- To avoid unforeseen environmental issues, setup your device physically within ten (10) feet (in the same room if possible) of your Wi-Fi Access Point during the initial setup.
- Do not place the device next to, or within one foot of, the Wi-Fi Access Point. Doing so may result in over saturation of the Wi-Fi receivers.
- Once this initial setup is completed, you can move the IoT device to your desired location.
- Once the device is installed at its final location, make sure that the device is able to connect with the Wi-Fi Access point from this location.

2.3 Check the SSID and Wireless Network Name

Depending on the environment, there might be multiple Wi-Fi access points available. It is important to ensure that the correct one is being used.

Ensure the Wi-Fi Access Point is enabled for 2.4 GHz (802.11 B/G/N) communication and the phone or tablet is connected to the same SSID (Service Set Identifier).

If there are duplicate SSIDs, confirm that the MAC address associated with the SSID corresponds to the Wi-Fi Access Point. The instructions for finding the MAC address will be in the 'Administration' section of the Wi-Fi Access Point user manual.

2.4 Check the Wireless Security

Wi-Fi Access Point Security Keys are often case sensitive. To check the wireless security, try retyping the Wireless Security Key or retyping with visibility turned on (if this feature is available).

Depending on Wi-Fi module, the following Wi-Fi security is supported:

- Open
- WEP
- WPA (PSK)
- WPA2_Personal (PSK)
- WPS

NOTE WPS is not available for AP-Mode Registration.

2.5 Pre-Check the Installation Location and Signal Quality

A weak Wi-Fi signal can be a problem. Pre-checking the Wi-Fi signal level and quality at the location you plan to install the IoT device beforehand can help reduce wireless connectivity issues.

Follow these steps to check the Wi-Fi quality at the location where you plan to install your IoT device:

1. Turn on the cellular phone or tablet Wi-Fi that is connected to correct SSID and place it where the device will be installed.
2. Check that the Wi-Fi signal and the data-rate are acceptable.

The Wi-Fi signal strength reported by your cellular phone or tablet may not be identical to strength experienced by the IoT device but should serve as a reasonable baseline for the installation location.

NOTE A Wi-Fi analyzing App can be used to obtain a visualization of the signal level. There are numerous apps available on Android and iOS App store.

A bandwidth or speed-test App can be used to give a more accurate measurement of your internet connection quality. The performance of the speed test depends on your internet service plan.

2.6 Check for Interference

There are many consumer devices that use 2.4 GHz frequency and they can interfere with the Wi-Fi signal. Turn off those devices if you encounter connection issues.

Here are some products that may use 2.4 GHz frequencies:

- Bluetooth devices
- Baby monitors
- Cordless phones
- Walkie Talkies
- Remote control toys
- Wireless video and audio equipment
- Microwaves
- Wireless keyboard and mice

A neighbor's Wi-Fi Access Point can also be a source of interference. A Wi-Fi analyzer App can identify interference. If Wi-Fi interference is identified, change the Wi-Fi channel.

NOTE To change the channel of a Wi-Fi Access Point, refer to the Wi-Fi Access Point user manual.

2.7 Check Router Network Settings

A router firewall may have high security or parental controls configured, and these settings may block some required network ports for the device.

The following network ports should be opened/whitelisted on your router:

- 80
- 443
- 53
- 55055
- 55056

NOTE Check the user manual for your router to verify the instructions on configuring firewalls.

2.8 Reset the Device to the Factory Setting

If the device is configured with incorrect parameters or encounters issues, reset the device to the factory settings.

NOTE Factory reset instructions are available in the device manufacturer user manual.



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