

# LPC – WLAN ADK Application User Guide

## Version 1.6

**Adya Systems & Software Pvt. Ltd.**

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## 1. Introduction

Thank you for purchasing the Adya Systems Wireless LAN Application Development Kit.

This document is a user guide that describes to quick start WLAN Application Development Kit, to get up and running quickly and start using the board from day one. The document also describes the accompanying firmware with the ADK kit.

## 2. Kit Contents

Please check your kit has following:

- WLAN Application Development Kit Module
- CD – ROM: Containing Firmware and Documents

## 3. Before you begin

Make sure that you already have the following items, which are necessary for running the WLAN Application Development Kit module.

- A DC power supply matching the local mains, which should supply DC 6 V with current rating as 1 Amp.
- A standard computer (desktop/laptop) having serial COM port and Ethernet or Wireless LAN connection.
- An 802.11b/g AP (Access Point) with known SSID, Gateway IP address, WEP Settings, DHCP server status.
- A DB9M – DB9F uncrossed serial cable to connect from PC to Wireless Application Development Kit module.
- A twisted pair Ethernet cable to connect from Ethernet of PC to Access Point.  
**Note:** Not required in case the PC having a Wireless LAN interface

Once you have access to all the above items, you can move ahead towards setting up the quick start environment.

# **WARNING!**

**POWER SUPPLY RANGE MUST ADHERE TO FOLLOWING  
VALUES.**

## **DC SUPPLY**

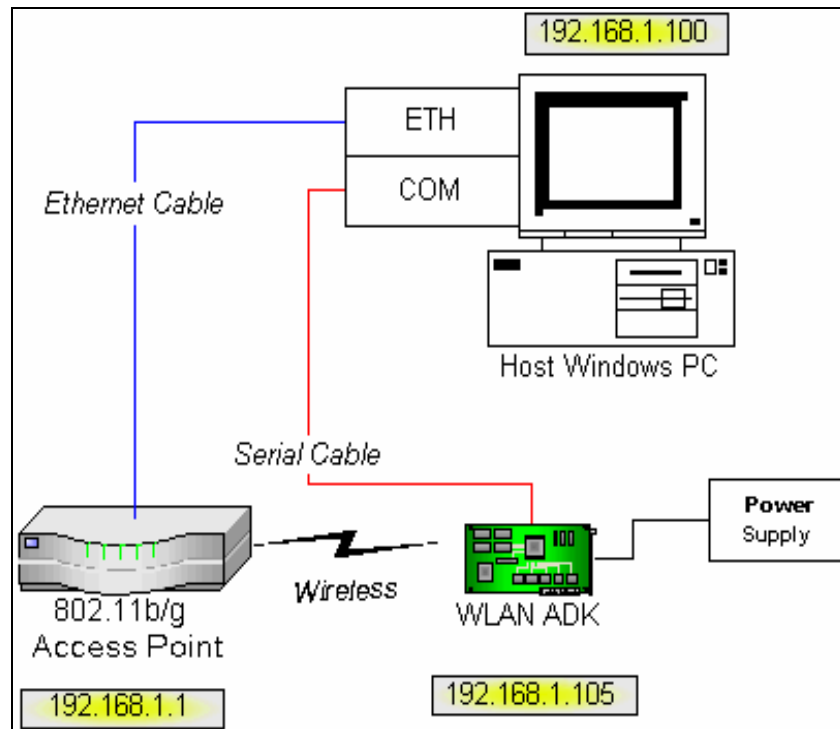
**MINIMUM: +6.0 V**

**MAXIMUM: +9.0 V**

**CURRENT: 1 Ampere**

## 4. Hardware Setup

The hardware set up for quick start is shown in Figure 1. Make the connections as shown in figure below.



**Figure 1: Hardware Setup for all test configurations**

1. Connect a *Serial Cable* DB9M-DB9F (uncrossed) from the PC to the Wireless LAN Application Development Kit.
2. If the Host Windows PC does not have a Wireless LAN adapter, connect a twisted pair *Ethernet Cable* from PC to the Access Point.
3. Connect appropriate *Power Supply* to the development kit.

**Note:**

The Power Supply shown in Figure 1 should be a DC power supply. The range of voltage supply can be min 6.0V DC to max 9.0V DC. The input circuit in the development board is a full bridge rectifier, so that the polarity of the input voltage does not really matter.

## 5. Default Settings for Devices

The AP and host Windows PC must have following configuration settings for the Development Kit to work in default settings.

### 5.1 Access Point Settings

SSID:	adyawlan_kit
DHCP:	Enable
Security:	Disable
IP Address:	192.168.1.1
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.1.1

### 5.2 Host PC Settings

IP Address:	192.168.1.xxx
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.1.1

### 5.3 LPC2138 Wireless LAN ADK Default Settings

SSID:	adyawlan_kit
IP Address:	192.168.1.100
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.1.1
DHCP Client:	Disable
Security:	Disable

**If the default settings are not selected for all the devices then it is needed to configure the kit using the AT Command before using it. Please go to section 7.**

## 6. Getting Started

### Pre-loaded Firmware

The WLAN Application Development Kit comes pre-loaded with firmware. This firmware can be used to verify that the board operates correctly. The firmware contains the TCP/IP stack. Therefore, it is possible to PING the board from any remote device. The firmware also contains the WLAN Serial demo application.

### Ping the Kit

Go to command prompt in Host Windows PC and Ping the Kit. Assuming the default settings are kept for the kit, the command to ping is:

**ping 192.168.1.100**

The ping operation should pass successfully. If ping does not work, the firmware might have been corrupted. Contact Adya Systems at [support@adyasystems.com](mailto:support@adyasystems.com) to get a copy of the firmware. On successful ping, you can run the WLAN Serial Demo Application.

## 7. Configuring Settings for Devices

### 7.1 Configuring the Kit Settings through Serial Port

The WLAN Application Development Kit comes pre-loaded with firmware. The firmware supports configuring the kit through serial interface.

#### a. Configuring HyperTerminal for Serial Interface

1. Launch HyperTerminal on the PC by navigating from the **Start** menu to **Programs** → **Accessories** → **HyperTerminal** or **Accessories** → **Communications** → **HyperTerminal** depending upon your version of OS.
2. In the resulting Connection Description window, enter a name for the connection. Click **OK**.



**Figure 2: Connection Description Window**



3. Create a new connection by selecting appropriate COM port in the **Connect Using:** field of the **Connect To** dialog. Click **OK** to apply the selection.



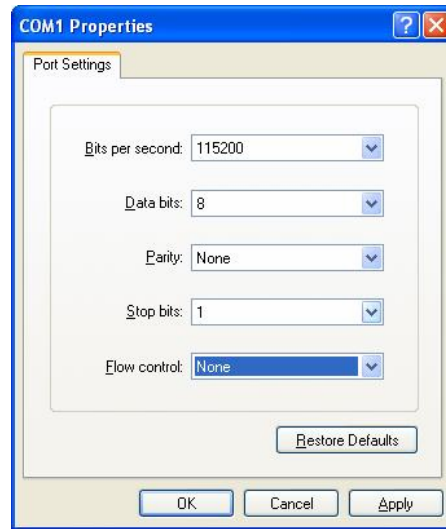
**Figure 3: Connect To Dialog**

4. The COM port properties dialog box will appear. Verify that the settings match with as shown in Figure 4.

Port settings are

Bits per second → 115200, Data bits → 8, Parity → None, Stop bits → 1

Flow Control → None



**Figure 4: HyperTerminal Settings for Serial Connection to WLAN ADK**

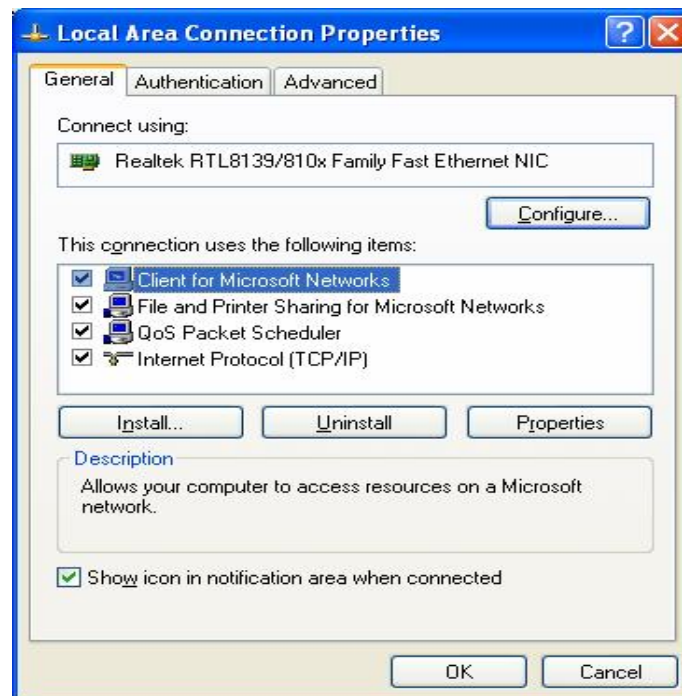
## b. Configure the Kit

The kit can be configured by AT commands. For a list of all supported AT commands, allowed values and response codes refer to AT command reference guide available with the documents section.

## 7.2 Configuring TCP/IP in Windows PC

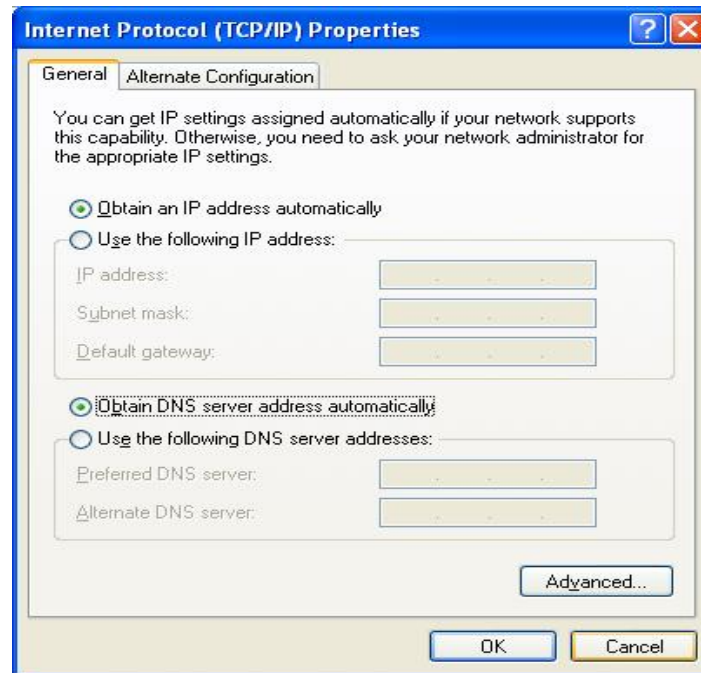
The host Windows PC should be connected to access point by Ethernet interface or wireless interface. Configure the Windows PC to obtain IP address automatically from the access point. Follow the below mentioned steps to configure TCP/IP in Windows PC.

1. Click on **Control Panel** to go to control panel window. Click on **Network Connections** to display the LAN connections for the system.
2. If more than one connection is displayed, select the one required for your network interface, to connect to AP. Right click on selected Local Area Connection/Wireless Network Connection. Select **Properties** from the pop-up menu to display the Local Area Connection properties window.



**Figure 5: Local Area Connection Properties Window**

3. Select **Internet Protocol (TCP/IP)** and click **Properties** to display the Internet Protocol (TCP/IP) properties window.



**Figure 6: Internet Protocol (TCP/IP) Properties Window**

4. Select the radio buttons **Obtain an IP address automatically** and **Obtain DNS server address automatically**.
5. Click **OK** to close the TCP/IP properties window.
6. Click **OK** to close the Local Area Connection Properties window.
7. Make sure DHCP is enabled in the Access Point so that it assigns IP address to the computer.

The host windows PC can also be assigned static IP address, in which case the settings should be

IP Address:	192.168.1.150
Subnet Mask:	255.255.255.0
Gateway:	192.168.1.1

To ensure that your computer is connected to AP, ping the AP gateway IP address from the computer.

## 8. Configuring the Kit Settings from HTTP Web Browser

The pre-loaded firmware for WLAN Application Development Kit also contains the Web Server. The web server implements the HTTP on top of the TCP/IP stack. The web pages are stored in EEPROM connected on the module. Currently the web server is used to configure kit settings. Follow these steps to configure the kit from HTTP Web Browser.

1. Launch any web browser on the Windows PC. (The web server is tested on Internet Explorer 6.0)
2. Disable the proxy server if one is enabled. To disable this feature, go to **Tools** menu in web browser, open the **Internet Options** dialog box, go to the **Connections** tab and click the **LAN Settings** button. The LAN Settings dialog box will open.

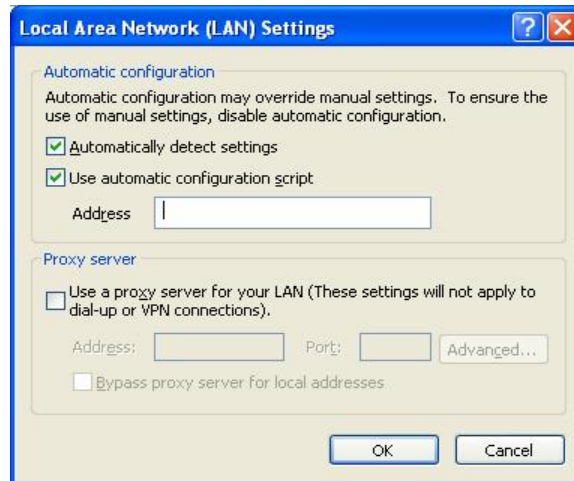
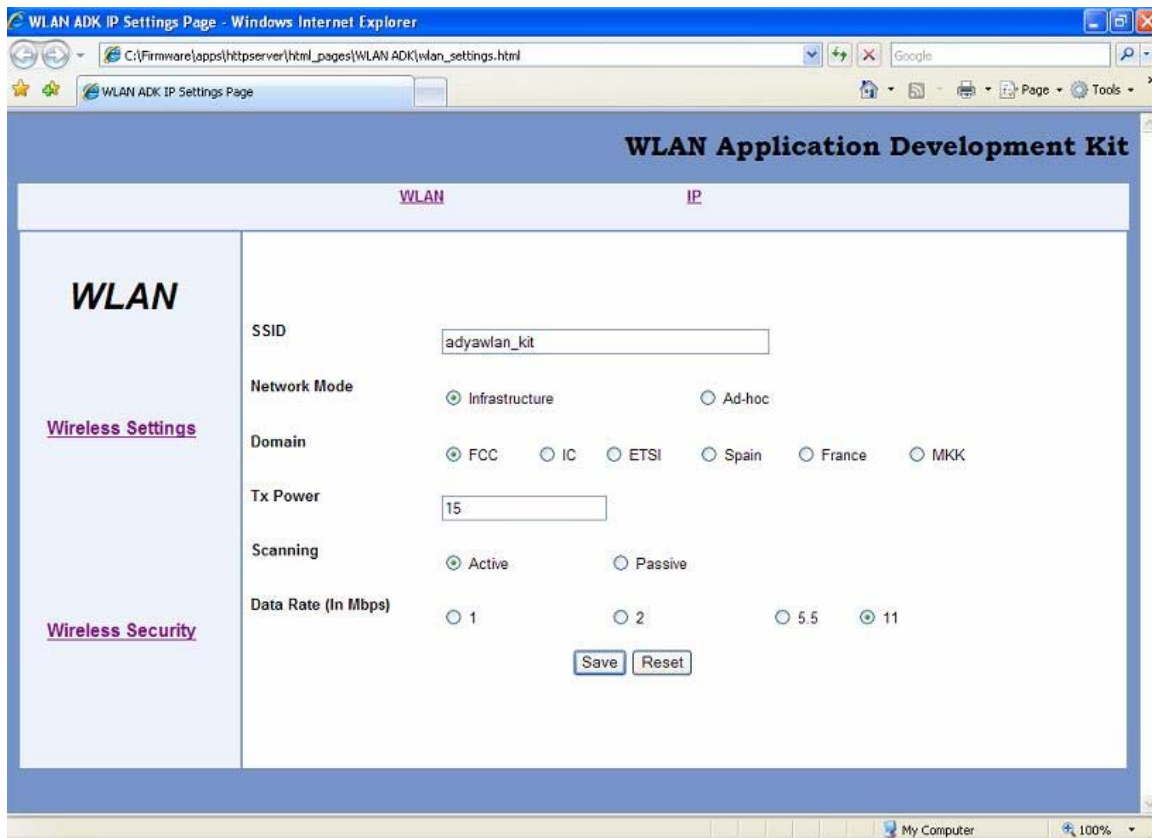


Figure 7: LAN Settings Dialog Box

3. Make sure the check box is unchecked for **Use a Proxy Server for your LAN**.
4. Connect to the address of the WLAN ADK Kit. That is in the address bar of the browser type in the IP address (i.e. 192.168.1.100 for default setting selection) of the kit. The home page of the WLAN ADK Web Server will appear as shown in Figure 8.



**Figure 8: Home page for WLAN ADK Kit**

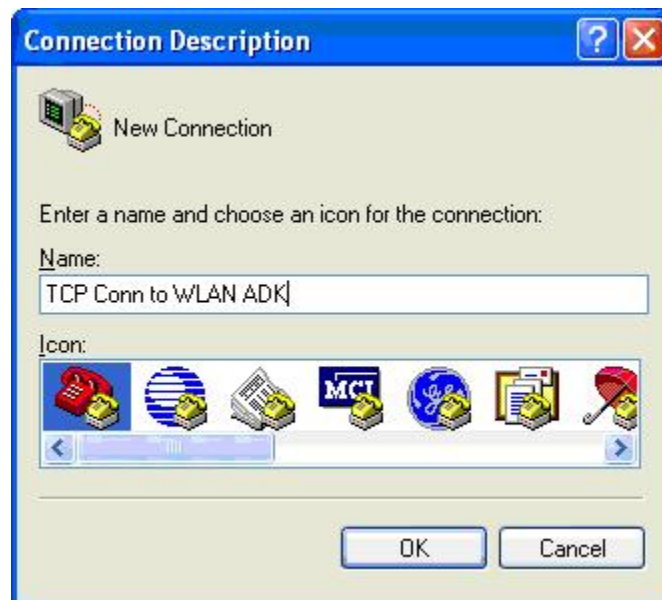
5. The home page displays configuration settings of the WLAN ADK Kit.
6. To configure the kit, make changes on the web page for the corresponding fields and click on **Save** button.
7. Clicking on the Save button will write the new settings to EEPROM.
8. If some error occurs like page is not found, then error page is opened.

## 9. Steps to Run WLAN Serial Demo Application

1. It is assumed here that you have successfully configured the HyperTerminal for serial interface to kit and you have successfully Ping the device.
2. Keep the HyperTerminal connection for serial interface to kit in a connected state.
3. Open a Listen port on WLAN ADK Kit by AT Command.

AT#TCPLISTEN=5000 {The AT Module Responds with OK to indicate success}

4. Open another HyperTerminal connection for TCP/IP. Launch HyperTerminal on the PC by navigating from the **Start** menu to **Programs** → **Accessories** → **HyperTerminal** or **Accessories** → **Communications** → **HyperTerminal** depending upon your version of OS.
5. In the resulting Connection Description window, enter a name for the connection. Click **OK**.

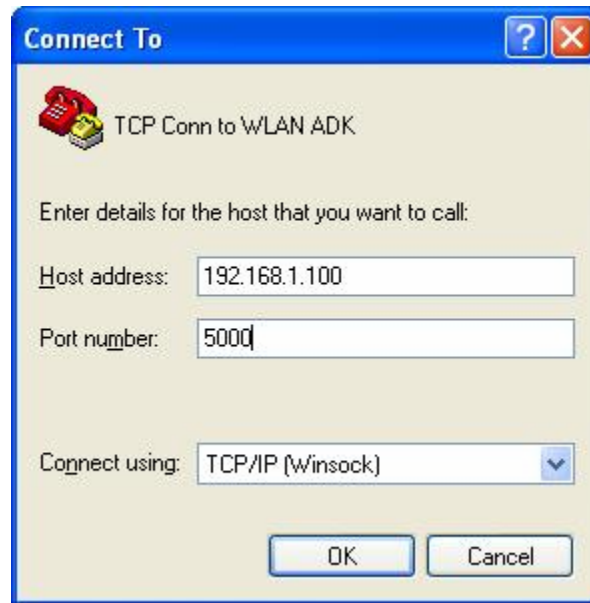


**Figure 9: Connection Description Window**

6. In the resulting Connect To dialog for **Connect Using:** option, select **TCP/IP (Winsock)**.
7. The HyperTerminal will ask for **Details for the host that you want to call**. Enter the IP Address and Port number to connect to WLAN ADK.

Default settings are  
Host address: **192.168.1.100**

Port number: **5000** {As configured above by AT command}



**Figure 10: HyperTerminal Settings for TCP/IP Connection to WLAN ADK**

8. Click **OK** to Connect to WLAN ADK.
9. Ensure that the connection is in **Connected** state by observing the HyperTerminal status bar.
10. Type some character in HyperTerminal window for Serial connection to WLAN ADK. The device will receive the character through Serial port and will transmit the character through WLAN. The character thus transmitted will be seen in HyperTerminal window for TCP/IP connection to the WLAN ADK.
11. Now type some character in the HyperTerminal window for TCP/IP connection. The character will be transmitted and will be received by the Wireless LAN interface of the development kit and will be displayed in the HyperTerminal window for Serial connection to device.