

# EXTWIFI + EVK Quick Start Guide

## 1 Introduction

This guide will help you compile program and configure the EXTWIFI for first time use. It describes how to connect and configure the EVK1100, EVK1104 or the EVK1105 for use with the WiFi SDIO module, SPB104. The EVK1101 does not have a display and has to be run via a consol interface.

**This getting started guide as well as all development tools and documentation is updated frequently. Please visit [www.atmel.com/AVR32](http://www.atmel.com/AVR32) and look for an up to date version of this guide and associated software and development tools before you begin installing this kit.**

## 2 Requirements

- EXTWIFI SPB104 802.11b+g module
- EVK1100, EVK1104 or EVK1105 Evaluation kit
- AVR32 Studio or the standalone AVR32 Toolchain version 2.2 or later
- AVR32 Debugger (JTAGICE mkII, AVR ONE! or similar)

## 3 Getting started with EXTWIFI + EVK1000, EVK1104 or EVK1105



- Power down the evaluation kit.
- Insert the SPB104 SDIO Wi-Fi card into SDIO slot B (EVK1104, see fig.), or the only slot on EVK100/EVK1105.
- Connect a miniUSB cable between the PC and the EVK1104/1105 (miniUSB connector labeled USB VPC).
- Connect a cable between the serial port and the PC for EVK1100.
- Connect a debugger (eg. JTAGICE mkII or AVR ONE!) to the EVK1104/1105. Refer to the EVK1104/1105 documentation for more information.
- Start a serial port terminal ( e.g. Windows HyperTerminal, TeraTerm or similar). Serial port settings: 57600-8-N-1. Refer to the evaluation kit user guide for more information.

## 4 Compiling the HTTP demo application

The HTTP demo application is provided as an example for the HD WIFI component in the AVR32 software framework version 1.5 or later.

AVR32 studio or a stand-alone Toolchain can be used to compile and program the demo. See the *AVR32 software framework user guide* [AVR7732], the *Getting Started with GCC for AVR32* document [AVR32006] and

the *AVR32 studio getting started document* [AVR32086] for general information about installing and using the development environment.

## 4.1 Downloading EXTWIFI FW to EVK1104 Flash

The following is for EVK1104 only. For EVK1100 or EVK1105 please skip this step:

First, the SPB104 firmware image must be stored in the EVK1104 external flash. This is accomplished by programming a small application into the EVK1104 which will write the firmware image into the EVK1104 external flash. The firmware programming application is available in COMPONENTS/WIFI/HD/EXAMPLE/SPBFW\_DOWNLOAD of the AVR32 software framework.

If the toolchain is used from the command line, the following commands can be used to compile, program and run the firmware programming application:

```
> cd COMPONENTS/WIFI/HD/EXAMPLE/SPBFW_DOWNLOAD/AT32UC3A3256_EVK1104/GCC
> make program reset run
```

The application will run for a few seconds to store the firmware image in the EVK1104 flash. A message will be printed on the serial port when complete. After this process the firmware image will stay in flash until it is explicitly overwritten and therefore this process is usually only performed once.

## 4.2 Building and downloading the HTTP demo application

The second step is to program the actual demo application into the evaluation kit. The HTTP demo application is available in COMPONENTS/WIFI/HD/EXAMPLE/HD\_SPB104/AT32UC3Axxxx of the AVR32 software framework.

For EVK1100:

```
> cd COMPONENTS/WIFI/HD/EXAMPLE/HD_SPB104/AT32UC3A0512_EVK1100/GCC
> make program reset run
```

For EVK1104:

```
> cd COMPONENTS/WIFI/HD/EXAMPLE/HD_SPB104/AT32UC3A3256_EVK1104/GCC
> make program reset run
```

Or, for EVK1105:

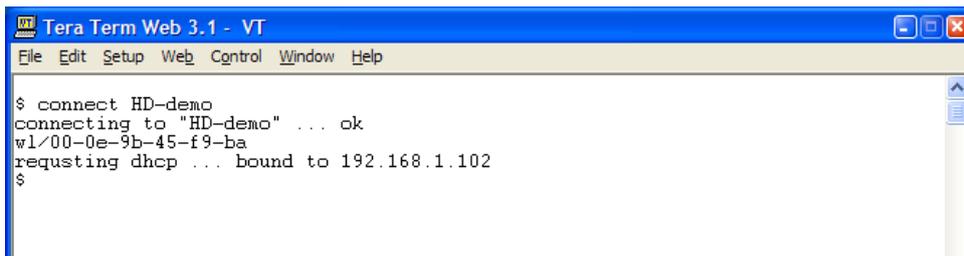
```
> cd COMPONENTS/WIFI/HD/EXAMPLE/HD_SPB104/AT32UC3A0512_EVK1105/GCC
> make program reset run
```

## 5 Running the HTTP demo application via console

When the installation and compilation/programming is complete the HTTP demo application will start as soon as the evaluation kit is powered on.

A command line interface to the application is provided through the EVK1104/1105 serial port.

- Use the command **"scan"** to find available access points in the area.
- If WEP encryption is used in the access point, use the command **"setkey"** to set the appropriate key.
- If WPA/WPA2/RSN Pre-shared key security is used in the access point, use the command **"wpass"** to set the pass phrase.
- Use the command **"connect [access point]"** to make a connection to an access point (see figure below).
- If the key is wrong the application will continue to try to connect until the right key is set.

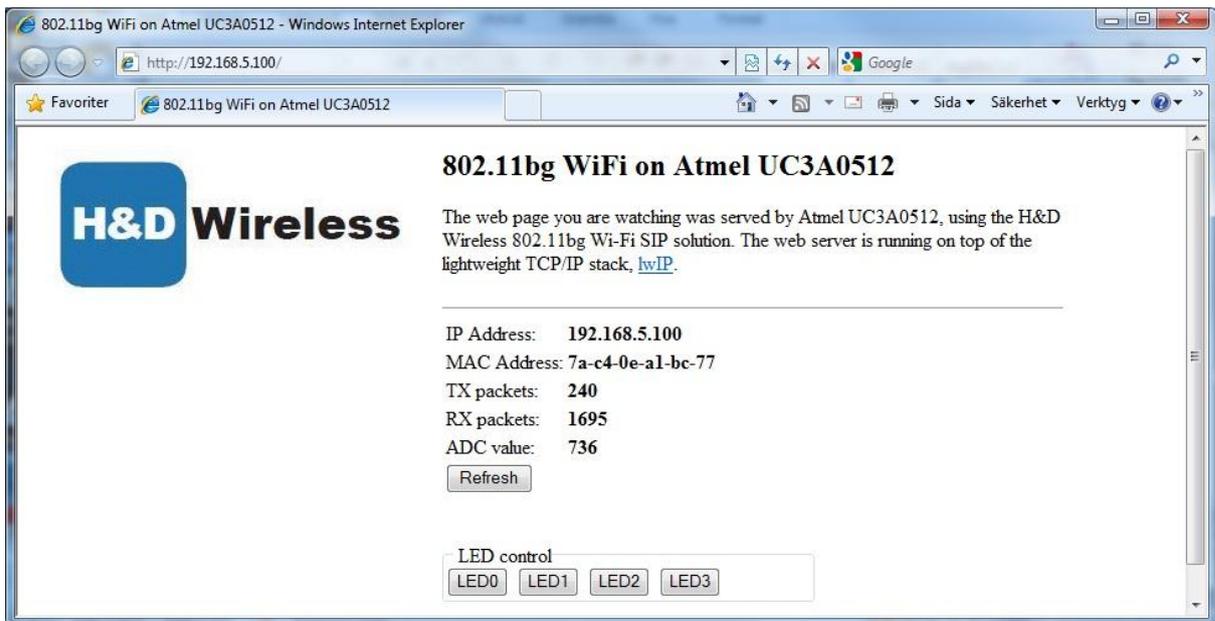


```

Tera Term Web 3.1 - VT
File Edit Setup Web Control Window Help
$ connect HD-demo
connecting to "HD-demo" ... ok
wl/00-0e-9b-45-f9-ba
requesting dhcp ... bound to 192.168.1.102
$

```

The EVK1104/1105 assigned IP address will be printed during the connection procedure (see the figure above). It should now be possible to connect to the web server using a browser on a PC that is connected to the same network.



It is possible to control and supervise the EVK1104/1105 through the web interface:

- The value of the EVK1104 light sensor is shown on the web page. Use the "refresh" function in the web browser to refresh the light sensor reading value. For EVK100 and EVK1105 no light sensor is available, so that line only prints the ADC value of a floating input.
- Four buttons, LED0-3, are shown on the web page. When clicking a button, the corresponding LED on the EVK1104/1105 will toggle from disabled-state to enabled-state or vice versa, on EVK1100 LED1 through LED4 will toggle.

See the HTTP demo application user guide [1543-DRF100 HTTP-demo Users Manual] for more information on how to use the HTTP demo application.

## 6 Running the HTTP demo application via the GUI

On EVK1100/1104/1105 the HTTP demo can be run stand alone using the on board display and GUI. The Web interface works the same way as when the application is controlled by console see 5.

### 6.1 On EVK1100

The HTTP demo application is controlled by the joy stick on the EVK1100. Scan networks by pushing the joy stick to the left, connect by pushing the joy stick to the right. If a key need to be entered "enter" is accomplished by pressing the joystick down.

## 6.2 On EVK1104

The HTTP demo application is controlled by the touch sensors below the display on the EVK1104. The function of each touch sensor is shown in the lower part of the display. Enter is at the top of the touch circle below.

## 6.3 On EVK1105

The HTTP demo application is controlled by the touch sensors on the EVK1105. In scan mode "Scan" is performed by the left arrow , "Connect" with the right arrow and scrolling up and down the list with the up and down arrows respectively. When connected the assigned IP address is displayed in the upper part of the display.

If an access key is asked for it is entered by moving the cursor around on the on-display keyboard with the arrows to select a letter, digit or symbol and entering it with the center key ( ▶ / || ).

## 7 Further development and information

For information about how to develop custom WiFi applications using the H&D wireless interface, see the API documentation provided in the AVR32 Software Framework.

The WiFi API library and header file(s) is available in COMPONENTS/WIFI/HD in the software framework. The lwIP driver source code is available in SERVICES/LWIP/lwip\_port/HD/if.

Full and detailed user guide is available on [www.atmel.com/AVR32](http://www.atmel.com/AVR32).