

# SPB104-WiFi 802.11b+g SDIO Evaluation Kit

## APPLICATIONS

### Home Automation

The SPB104 WiFi solution and the AVR32 EVK1104 is a quick start for developers that want to enter the home automation market such as AMR, surveillance, access control or home appliances.

### Industry Sensor Networks

WiFi in combination with AVR32 can easily be installed and used for industry sensors or remote control thanks to the pre-integration of the EVK and the availability of WiFi infrastructure.

### Media Applications

In all media applications the problem of how to access and change the media is easily solved with WiFi and with the high speed and security functions of 802.11, media such as mp3, IP-radio or video are transferred fast and secure.



H&D Wireless AB, official  
Atmel Wi-Fi partner



Photo: SPB104 - WiFi 802.11b+g SDIO Evaluation kit Card

The SPB104 is a complete WLAN card for evaluation and development for the 802.11b/g standard compliant WiFi component HDG104 from H&D Wireless AB. Together with platforms like the Atmel EVK1104 for the AVR32 CPU developers can evaluate and develop their own wireless applications based on the HDG104 and the feature rich AVR32 platform from Atmel.

The HDG104 enables a cost efficient ultra low power, high performance and feature rich WiFi client solution. It provides up to 54 Mbit/s data rate when operating in the OFDM mode and up to 11 Mbit/s data rate when operating in the DSSS/CCK mode. HDG104 integrates RF IC, baseband/MAC IC, EEPROM and RF filters into a highly integrated and optimized SIP (System In Package) solution with high quality and reliability. This minimizes the need of external components, simplifying assembly and test. This highly integrated solution is optimized for customer applications running on a host CPU. The host interface supports SDIO and SPI. Internal RAM comprises both code and data memory eliminating the need for external RAM, Flash or ROM memory interfaces. Baseband firmware, FW, is stored on the host and downloaded at start up. MAC address, trimming values etc are stored in the on board EEPROM.

- Lowest power consumption solution in the market for embedded applications.
- High RF output TX power and RX sensitivity
- Supports both SDIO and SPI as option.
- Delivered fully tested and calibrated
- Support for either external antenna or internal chip antenna by the use of a switching antenna connector.
- Data Rates: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54Mbps
- Modulation: QPSK, 16QAM, 64QAM DBPSK, DQPSK, CCK, OFDM with BPSK
- WEP and AES hardware encryption accelerator up to 128 bit.
- On-chip RF filter for the ISM band 2.4GHz
- An internal 32 kHz oscillator maintains real time in power save mode, allows the high frequency clock to be turned off.
- Extensive DMA hardware support for data flow to reduce CPU load.
- Low cost and low power consumption by use of Ultra Low Power (ULP) technology
- On-board 160 kB SRAM and 1 KB EEPROM eliminates need for external memory for firmware
- Internal Boot-ROM. This allows firmware to be downloaded into SRAM from the host
- Advanced power management for optimum power consumption at varying load.
- External interfaces including SDIO and SPI
- Supply voltage 2.75-3.6 V
- RoHS Compliant



# Pre-Integrated Development Kits

## TECHNICAL SUPPORT

Support for the SW drivers, installation and SW development is provided by Atmel application support at [www.atmel.com/avr32](http://www.atmel.com/avr32).

## Performance of WiFi

The WiFi solution provided with SPB104 and HDG104 are best in class and market leader in terms of solution size, power consumption in all modes, transmit/receive range, data transfer speed and cost.

## TURNKEY SOLUTIONS

The reference designs provided are turnkey solutions that will work first time and can be modified and used for customers own products.

For more information on any of our products or services please visit us on the Web at:

[www.atmel.com/wifi](http://www.atmel.com/wifi) or [www.hd-wireless.se](http://www.hd-wireless.se)



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\* Photo of the SPB104 in one of the SD-card slots on the EVK1104. Ready-made downloadable reference designs can be up and running within minutes and development can start at once.

The SPB104 is fully tested and calibrated and is targeted for a good "out-of-the-box" experience together with the AVR32 platforms such as the EVK1004, see [www.atmel.com/wifi](http://www.atmel.com/wifi)

The SPB104 has full driver support integrated into the AVR32 Software Framework and is fully tested for 802.11b/g compliance on the EVK1104 platform.

Developers can within minutes start to concentrate on the development of their own application for sensor control, IP-radio and other data and media applications. The pre-integrated solution has support for IP-stacks, web-server, ftp, sensor clients and more. The user has access to the H&D Wireless API for the WiFi control and is supplied with well documented reference designs in source code for example web-servers.

## Performance data

$T_{amb}=25^{\circ}\text{C}$ ,  $VCC=VBAT\_P=VBAT\_32K=VPA=3.3\text{ V}$ ,  $DVDD=1.2\text{ V}$

Mode	Output Power	Power consumption	Comments
TX 802.11b	+17 dBm	725 mW	1, 2, 5.5, 11 Mbit/s
TX 802.11g	+14 dBm	590 mW	6, 9, 12, 18, 24, 36, 48, 54 Mbit/s
RX 802.11b	N/A	220 mW	
RX 802.11g	N/A	230 mW	
Power Save	N/A	0.4 mW	Receive only, 2s RX beacons
Sleep	N/A	0.2 mW	No receive, FW loaded, only LFC running
Soft Shutdown	N/A	0.15 mW	No receive, No FW loaded, only LFC running
Shutdown	N/A	0.05 mW	No FW loaded, DVDD OFF,

## SERVICES AVAILABLE

Technical Support  
Software and Setup  
Hardware Support  
Application Support  
Customer application -  
development

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