SPB105-WiFi 802.11b+g SPI Evaluation kit Card

Home Automation

The SPB105 WiFi solution and the AVR32 EVK1105 is a quick start for developers that want to enter the home automation market such as AMR, surveillance, entrance control or general home appliances.

Industry Sensor Networks

WiFi in combination with AVR32 can easily be installed and used for Industry sensors or remote control because of 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 due to 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: SPB105 – WiFi 802.11b+g SPI Evaluation kit Card

- Lowest power consumption solution in the market for embedded applications.

- High RF output TX power and RX sensitivity

- Supports SPI serial interface. Is delivered fully tested and calibrated

- Support for both external antenna or internal chip antenna by the use of a switching antenna connector.

The SPB105 is a complete WLAN card for evaluation and development on platforms like the Atmel EVK1105 using the AVR32 CPU. The SPB105 includes the WiFi component HDG104 from H&D Wireless AB and enables developers to evaluate and develop their own wireless applications based on the 802.11bg standard compliant 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 SPI serial interface. 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.

- 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 FLASH, RAM and EEPROM 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 SPI and UART
- Supply voltage 2.75-3.6 V
- RoHS Compliant

Pre-Integrated Development Kit

The SPB105 is fully tested and calibrated and is targeted for a good 'out-of-the-box" experience together with the AVR32 platforms such as the EVK1104.

The SPB105 has full driver support integrated into the AVR32 Software Framework and is fully tested for 802.11bg compliance on the EVK1105 platform, see www.atmel.com/avr32.

Developers within minutes start to concentrate on the development of their application with the rich support from the SPB105 and EVK1105 kit 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 such as web-servers.

* Photo of the SPB105 connected with of the SPI-card interface on the EVK1105. Ready-made downloadable reference designs can be started within minutes and development can start at once.

Performance data

T_{amb}=25°C, VCC=VBAT_P=VBAT_32K=VPA=3.3 V, DVDD =1.2 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,

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