

# Quick Start RF Transceiver Evaluation Kit

## 1. Introduction

The RF Transceiver Evaluation Kit exists to provide familiarity with the functionality of Atmel®'s UHF ASK/FSK transceivers. For this purpose, software is included which enables the user to configure the registers easily and conveniently.

## 2. Kit Contents

The transceiver kit consists of a transceiver base station board, an SPI2LPT interface board, a DC supply cable, a parallel port cable, and a CD-ROM with the appropriate software, as depicted in Figure 2-1. The transceiver board and the SPI2LPT interface board have to be ordered separately.

Figure 2-1. Kit Contents



## Quick Start RF Transceiver Evaluation Kit

## Application Note



## 2.1 Transceiver Board

- Transceiver base station board
- Whip antenna
- BNC to SMB adapter

## 2.2 SPI2LPT Interface Board ATAB-SPI-LPT

- Interface board
- DC supply cable
- Parallel port cable
- CD-ROM *Transceiver S2L*
- CD-ROM *Products*

## 3. Hardware

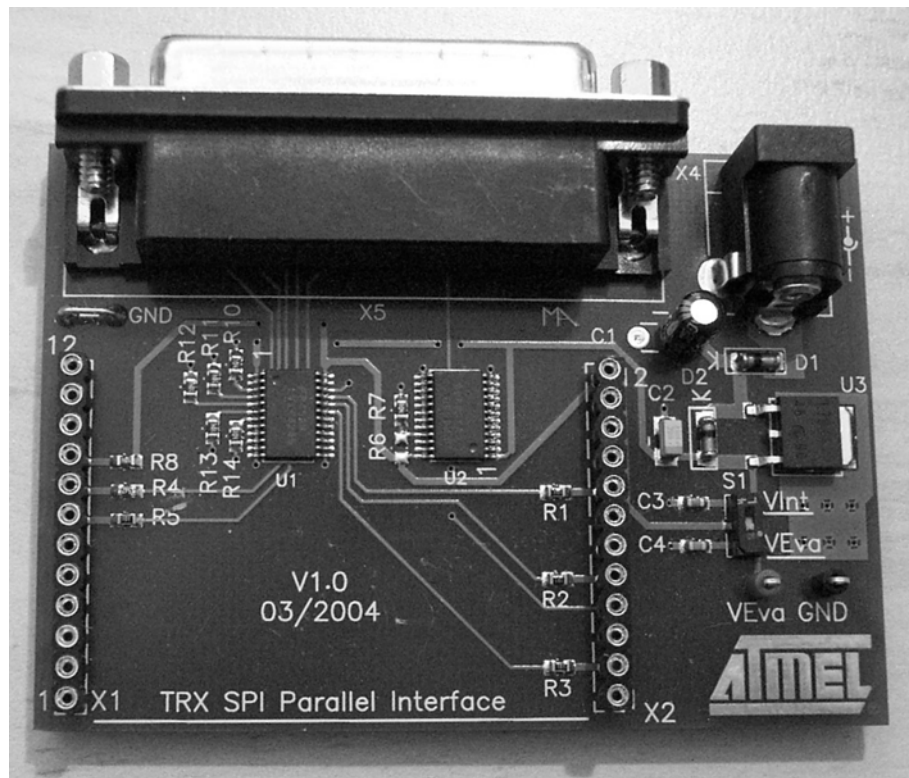
### 3.1 Transceiver Board

The transceiver base station board is available for different frequency ranges in high power mode, that is, with an RF output power of approximately 10 dBm at 50Ω. The different kit versions, transceiver board ordering codes, and SPI2LPT interface board ordering codes are in the selection guide, which can be found on the Atmel web site (**Products -> Automotive & Industrial -> Automotive Control -> Tools & Software**). Note that the transceiver board and the interface board have to be ordered separately.

### 3.2 Interface Board

The SPI2LPT interface board forms the connectivity between a parallel port of the PC and the SPI interface of the transceiver. Furthermore, a stable 5V supply voltage is generated by means of an on-board voltage regulator. [Figure 3-1](#) shows the interface board and its building blocks.

**Figure 3-1.** Building Blocks of Interface Board



### 3.3 Connecting the Transceiver Kit

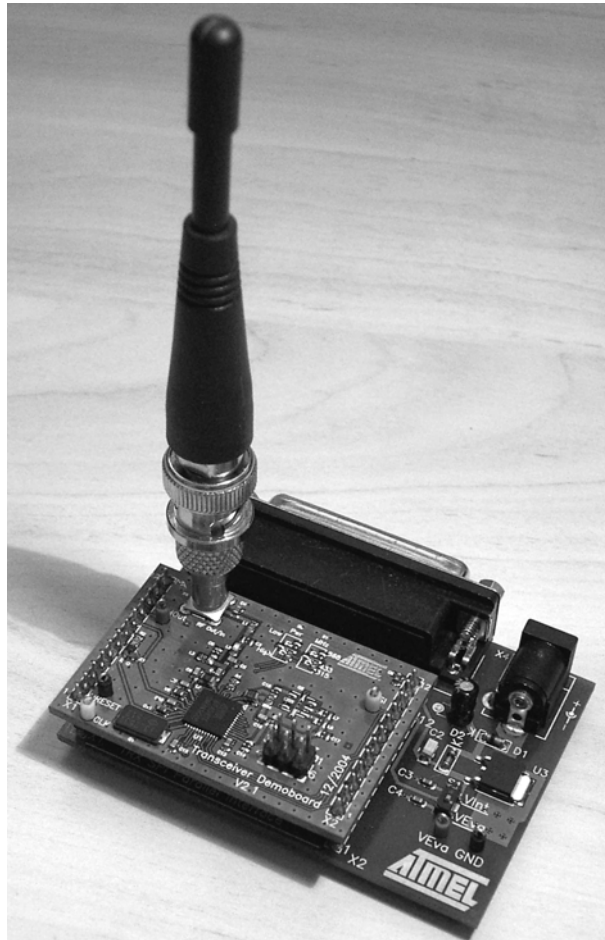
To ensure proper operation, the following steps should be carried out before starting the transceiver software:

1. Assemble the transceiver kit as shown in [Figure 3-2](#).
2. Connect the parallel cable to an unused port of the PC.
3. Set switch *S1* to *VInt*.
4. Connect the DC power cable to a 12V power supply unit.
5. Switch on the 12V DC power supply.
6. Switch on the PC and boot into the operating system.

To measure the current of the transceiver itself, the procedure is as follows:

1. Assemble the transceiver kit as shown in [Figure 3-2](#).
2. Connect the parallel cable to an unused port of the PC.
3. Set switch *S1* to *VEva*.
4. Connect 5V to pin *VEva* and the corresponding ground level to pin *GND*.
5. Connect the DC power cable to a 12V power supply unit.
6. Switch on the 12V DC power supply.
7. Switch on the PC and boot into the operating system.

**Figure 3-2.** Assembly of the Kit



## 4. Software

### 4.1 Installation

On the CD-ROM there are different versions *setup.exe* for the different supported evaluation boards. Go to the appropriate directory on the CD-ROM (for example, ATAB5811\_12) for the evaluation board in use and run that *setup.exe* to install the transceiver software. To use the parallel port, the driver *pport.exe* must be installed.

### 4.2 Getting Started

1. Start the transceiver software.
2. Under **Options** -> **XTAL Frequencies**, select the appropriate crystal frequency according to [Table 4-1](#).

**Table 4-1.** Crystal Frequencies

RF Frequency [MHz]	Crystal Frequency [MHz]
315	12.7319
433.92	13.2531
868.3	13.4119
915	14.1332

3. Choose **Setup** -> **Transfer Rate** and set the fastest supported value.
4. Select the connected port under **Setup** -> **Parallel Port**.
5. Under **File** -> **Load Settings**, four sample settings are predefined. For example, if **433.92MHZ\_RX-MODE\_FSK\_2.4KBIT/S** is selected, a configuration for receiving polling mode with FSK modulation and a data rate of 2.4 kBits/s is loaded. If **433.92MHZ\_TX-MODE\_FSK\_2.4KBIT/S** is selected, the appropriate configuration for transmit mode with FSK modulation and a data rate of 2.4 kBits/s is loaded. **LIM\_MIN** sets the **TX\_BAUDRATE**. Clicking **WRITE ALL** starts the PLL running, but the PA remains off.

In receiving polling mode, the integrated logic searches periodically for a valid transmitter signal. In the presence of a valid signal, the transceiver switches to permanent receiving mode and the data is received.

Depending on the configuration of the transceiver, the data stream is stored in the integrated TX/RX data buffer or is available on pin SDO\_TMDO.

If the status register is read in buffered mode, the number of received bytes is shown as the counter value in the TX/RX buffer window. Clicking **READ** displays the received data stream in the TX/RX buffer window.

In transmit mode, the data can be sent using the TX/RX data buffer, or the data stream can be applied on pin SDI\_TMDI.

To use the TX/RX data buffer, the following steps have to be carried out:

- Set the data stream bit-by-bit including a preburst and a start bit.
- Press **WRITE** to send the data. After the data is sent, a continuous carrier is emitted.
- Set the transceiver back to the desired mode using the control register **CREG1**.

Further details on the different settings, operation modes, flowcharts, etc. are described in the datasheet.



## Atmel Corporation

2325 Orchard Parkway  
San Jose, CA 95131, USA  
Tel: 1(408) 441-0311  
Fax: 1(408) 487-2600

## Regional Headquarters

### Europe

Atmel Sarl  
Route des Arsenalux 41  
Case Postale 80  
CH-1705 Fribourg  
Switzerland  
Tel: (41) 26-426-5555  
Fax: (41) 26-426-5500

### Asia

Room 1219  
Chinachem Golden Plaza  
77 Mody Road Tsimshatsui  
East Kowloon  
Hong Kong  
Tel: (852) 2721-9778  
Fax: (852) 2722-1369

### Japan

9F, Tonetsu Shinkawa Bldg.  
1-24-8 Shinkawa  
Chuo-ku, Tokyo 104-0033  
Japan  
Tel: (81) 3-3523-3551  
Fax: (81) 3-3523-7581

## Atmel Operations

### Memory

2325 Orchard Parkway  
San Jose, CA 95131, USA  
Tel: 1(408) 441-0311  
Fax: 1(408) 436-4314

### Microcontrollers

2325 Orchard Parkway  
San Jose, CA 95131, USA  
Tel: 1(408) 441-0311  
Fax: 1(408) 436-4314

La Chantrerie  
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44306 Nantes Cedex 3, France  
Tel: (33) 2-40-18-18-18  
Fax: (33) 2-40-18-19-60

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Fax: (33) 4-42-53-60-01

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Colorado Springs, CO 80906, USA  
Tel: 1(719) 576-3300  
Fax: 1(719) 540-1759

Scottish Enterprise Technology Park  
Maxwell Building  
East Kilbride G75 0QR, Scotland  
Tel: (44) 1355-803-000  
Fax: (44) 1355-242-743

### RF/Automotive

Theresienstrasse 2  
Postfach 3535  
74025 Heilbronn, Germany  
Tel: (49) 71-31-67-0  
Fax: (49) 71-31-67-2340

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Colorado Springs, CO 80906, USA  
Tel: 1(719) 576-3300  
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38521 Saint-Egreve Cedex, France  
Tel: (33) 4-76-58-30-00  
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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

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