

Getting Started with the ATA8201/ATA8202 Evaluation Kit

1. Introduction

ATA8201/ATA8202 is a transparent receiver which can be used processing the data for two different applications, which contain different data rate as well as modulation type, Amplitude Shift Keying (ASK) or Frequency Shift Keying (FSK). For handling the different applications ATA8201/ATA8202 can be switched in a very short time between ASK and FSK modulation types and of course between four data rate ranges.

For evaluation purposes of ATA8201/ATA8202, the board ATA5745/ATA5746-EK is designed. With the evaluation board the receiver can be evaluated without any micro-controller since there are 8 switches implemented for the receiver's setting. The board is assembled for an operating voltage of 3V. To operate with power supply of 5V the on board external circuitry of the receiver's power supply must be changed (for this issue please refer to the datasheet) The RF input is matched to 50Ω. This simplifies the verification of the input stage with the standard RF instrument.

[Figure 1-1 on page 2](#) is a photo of an assembled board, [Figure 1-2 on page 2](#) shows the layout of the top layer, and [Figure 1-3 on page 3](#) shows the allocation of the test pins (Jx, where x is an index) on the board. For each test pin there is a ground pin available in order to simplify measurement with an oscilloscope's probe. When measuring the clock signal, the load capacitance of the probe has to be taken to account. [Table 1-1 on page 3](#) shows the information important for measurement purposes. The bill of materials for the board is listed in [Table 1-4 on page 4](#).



ATA8201/ ATA8202 Evaluation Kit

Application Note

9112A-AUTO-12/07



Figure 1-1. Evaluation Board of the ATA5745/ATA5746, which is also used for Evaluating ATA8201/ATA8202

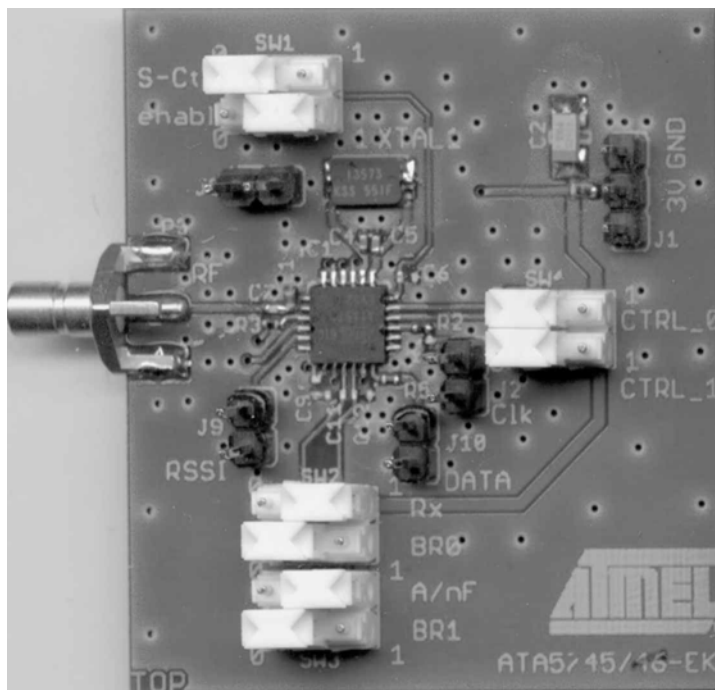


Figure 1-2. Top Layer Layout of the ATA5745/ATA5746-EK (ATA8201/ATA8202-EK)

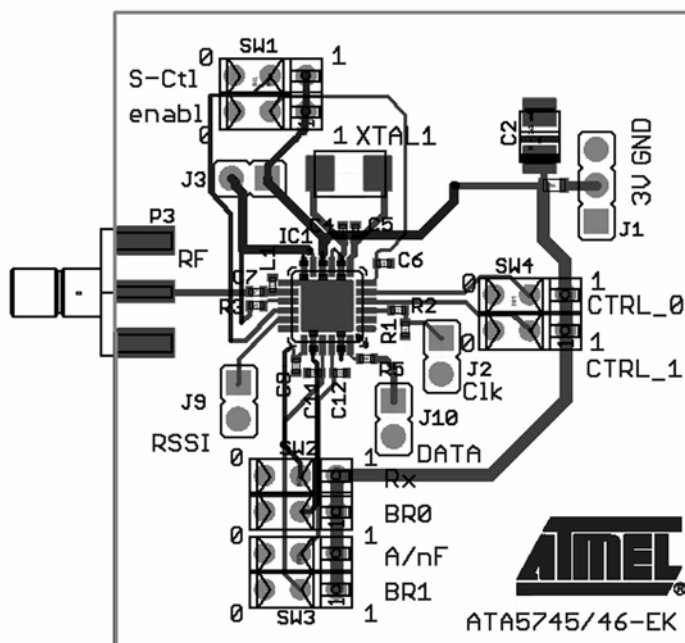
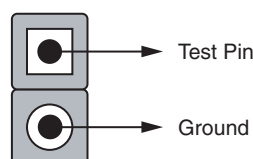


Table 1-1. Mapping of the Board Components and Designators to the Pins of ATA8201/ATA8202

Board Components	Designator and Description	The Corresponding Pin of the ATA8201/ATA8202
SW1	S-Ctl, enabl	SENSE_CTRL, ENABLE
SW2	Rx, BR0	RX, BR0
SW3	A/nF, BR1	ASK_NFSK, BR1
SW4	CTRL_0, CTRL_1	CLK_OUT_CTRL_0, CLK_OUT_CTRL_1
J1	Power supply of the board, $V_S = 3V$	
J2	Test pin to measure the clock signal. Connected to pin CLK_OUT over a 0Ω resistor (R2) (see Figure 1-3)	CLK_OUT
J3	The connector between VS3 and VS5	VS5V, VS3V_AVCC
J9	Test pin to measure the RSSI signal (see Figure 1-3)	RSSI
J10	Test pin to measure the demodulated data. Connected to pin DATA_OUT over a 0Ω resistor (R5) (see Figure 1-3)	DATA_OUT

Note: The switches are double switches. One switch component (SWx) consists of two switches.

Figure 1-3. Allocation of the Row Connectors (Test Pins) for Measurement Assembly



The following steps need to be followed to start working with the evaluation board:

1. Activate the 3V power supply.
2. Set switches *enabl* and *Rx* to “1” in order to start the receiver in receiving mode.
3. Set switches *BR0* and *BR1* according to [Table 1-2](#) for the desired data rate to be processed by the receiver.

Table 1-2. The Receiver’s Bit Rate Depends on the Combination of *BR0* and *BR1*

BR1	BR0	BR_Range	Recommended Bit Rate (Manchester)
0	0	BR_Range0	1 kBit/s to 2.5 kBits/s
0	1	BR_Range1	2 kBits/s to 5 kBits/s
1	0	BR_Range2	4 kBits/s to 10 kBits/s
1	1	BR_Range3	8 kBits/s to 10 kBits/s (ASK) 8 kBits/s to 20 kBits/s (FSK)

4. Set switch *A/nF* as desired to set the modulation type of the receiver: “1” for ASK, or “0” for an FSK-modulated signal.
5. Set switch *S-Ctl* as desired for the sensitivity reduction functionality. Set *S-Ctl* to LOW for normal sensitivity or HIGH for the sensitivity reduction functionality. The resistor on pin SENSE (R3) determines the value of the reduction. For more information, refer to the datasheet.
6. Set *CTRL_0* and *CTRL_1* as shown in Table 1-3 for the frequency of the clock signal to be measured on test pin J2.

Table 1-3. The Functionality of the Pin CLOCK_OUT Depending on the Logic Combination of the Pins CTRL_0 and CTRL_1

CTRL_1	CTRL_0	Function
0	0	Pin CLK_OUT is switched off
0	1	$f_{CLK_OUT} = f_{XTO} / 3$
1	0	$f_{CLK_OUT} = f_{XTO} / 6$
1	1	$f_{CLK_OUT} = f_{XTO} / 12$

Note: f_{XTO} at 433 MHz = 13.57375 MHz, f_{XTO} at 315 MHz = 13.1433 MHz

Table 1-4. Bill of Materials of the ATA8201/ATA8202-EK

Components	Pcs	315 MHz	433 MHz	Value	Tolerance	Material/Series	Housing	Manufacturer/ Distributor
IC1	1	x		ATA8202			QFN24	Atmel®
			x	ATA8201				
R2, R3, R5	4	x	x	0Ω			0402	Murata®
C2	1	x	x	4.7 μF				
C4, C5	2	x	x	18 pF			0402	
C51, C52, C53	3	x	x	10 nF			0402	
C7	1	x	x	2.2 pF		X7R	0402	
C54	1	x	x	15 nF		X7R	0402	
L1	1	x		68 nH	Q = 20	0402CS	0402	Coilcraft®
			x	36 nH	Q = 15	0402CS	0402	Coilcraft
XTAL1	1	x		13.1433 MHz			CX-53G	Kyocera® Kinseki
			x	13.57375 MHz				
SW1, SW2, SW3, SW4	4	x	x			JSK9-1G2-G0		ITW/PANCON - Heilind Electronics
J2, J3, J9, J10	4	x	x	Row connector		800-10-012-10-001	2 pins/ 0.1 in. pitch	CAB
J1	1	x	x	Row connector		800-10-012-10-001	3 pins/ 0.1 in. pitch	CAB
P3				SMB connector		Radiall®		Radiall
R1, C6, C9, C11, C12, C55, FB1	n.m.							



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