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RFicient®
ULTRA-LOW POWER WAKE-UP RECEIVER

APPLICATION NOTE AP005

WakeUp Eval-Mainboard

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1. Introduction

This document describes the electrical properties, structure and functions of the RFicient® WakeUp Eval-Mainboard. The board is a test platform that allows users to perform different tests with different RFicient® WakeUp receivers. The mainboard provides the test device with the supply voltage, clock frequency and control signals. All signals are available as measurement points and can be driven by external signals if required.

2. Mainboard Structure

RFicient® WakeUp Eval-Mainboard shown in Figure 1. The board contains a microcontroller, several LEDs, a USB-Interface, two pin headers with measuring points and two connectors for attaching the test board. The board is powered and controlled by the USB interface.

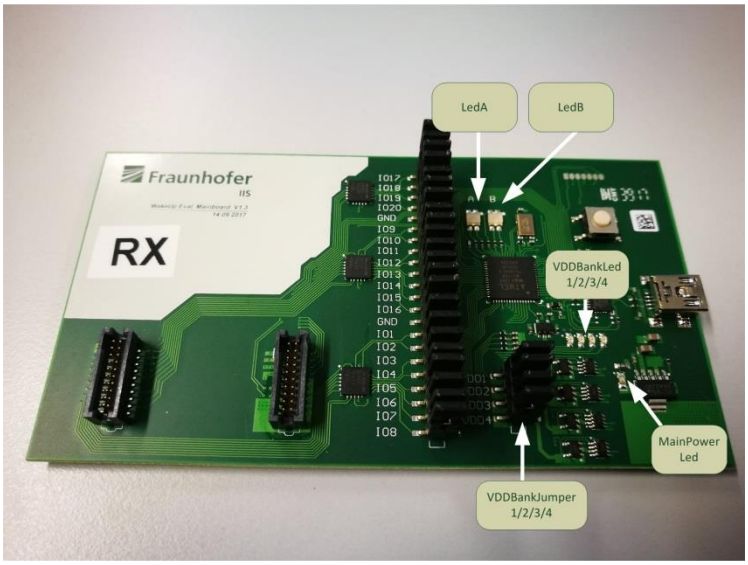

Figure 1: Eval-Mainboard

2.1 Supply Voltage

The motherboard provides four independently adjustable voltage sources. These can be turned on or off as needed. Operating status of the respective voltage source is indicated by the LEDs VDDBankLed1/2/3/4. The voltage sources are designated as VDD1/2/3/4. These are led out as measuring points on the pin header VDDBankJumper1/2/3/4. By removing the jumper on the pin header VDDBankJumper, the voltage rail to test board is interrupted.

2.2 Digital I/O Interface

The mainboard provides 20 I/O-Interfaces for controlling the test board. The function of the respective interface is determined by the microcontroller firmware. The microcontroller and test board are separated by level shifter. The voltage domain between MCU and level shifter is 3.3 V. The voltage domain between level shifter and test board is defined by the set voltage at the VDD1 bank. The voltage thresholds for external signal feed are Low = 1/3 * 3.3V, High = 2/3 * 3.3V

To control the test board externally, the jumper at the corresponding I/O must be removed. The signal is fed in exclusively on the side of the I/O label. Control on the side of the microcontroller leads to damage of the mainboard.

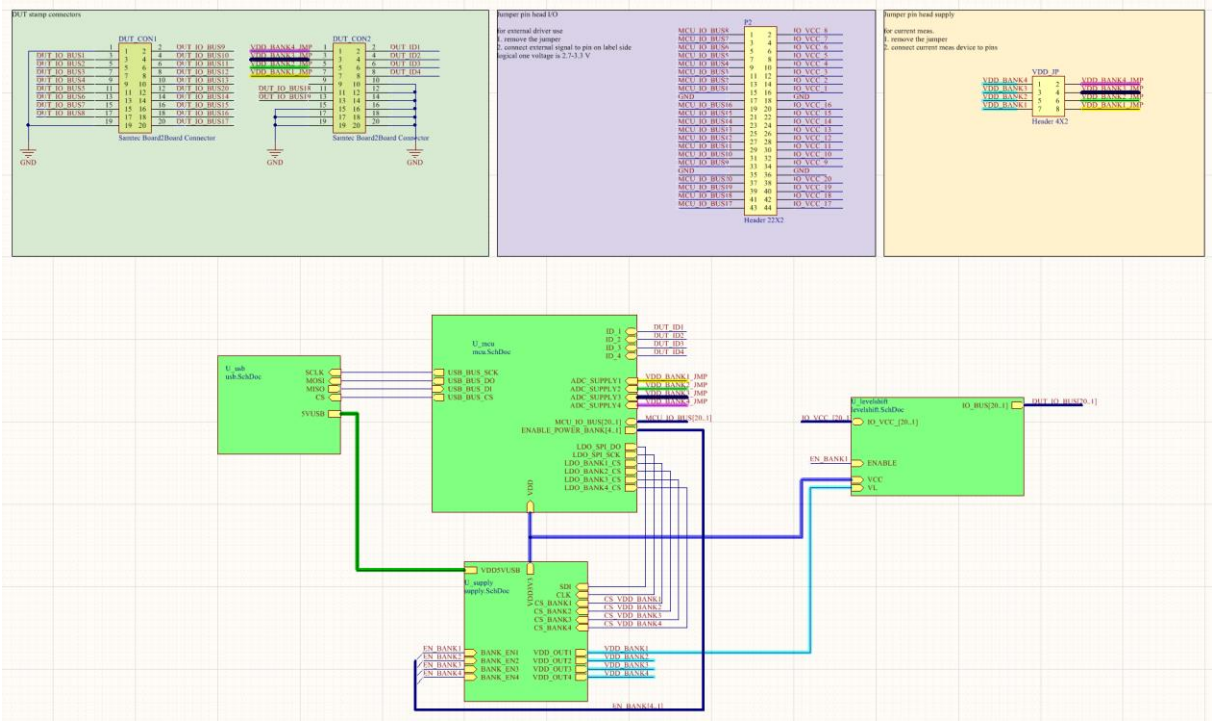

Figure 2: Eval-Mainboard Schematic