

PMAfob Home Automation Demo

User Guide V1.1

October 20th, 2010



Never stop thinking

PMAfob Home Automation Demo User Guide

■ Overview

- PMAfob Software
- PMAfob Hardware
- Receiver Software
- Receiver Hardware

■ Setup of the PMAfob Home Automation Demo

- Step 1: Installation of the PC-Application
- Step 2: Installation of the PMAfob Software
- Step 3: Configuration of the PMAfob
- Step 4: Connection of the Receiver Board
- Step 5: Handling of the PC-Application

PMAfob Home Automation Demo User Guide

■ Overview

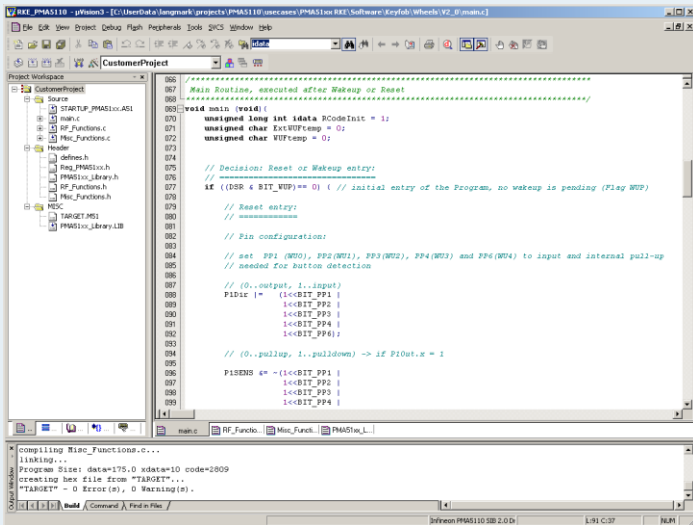
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TX

PMAfob Software Example



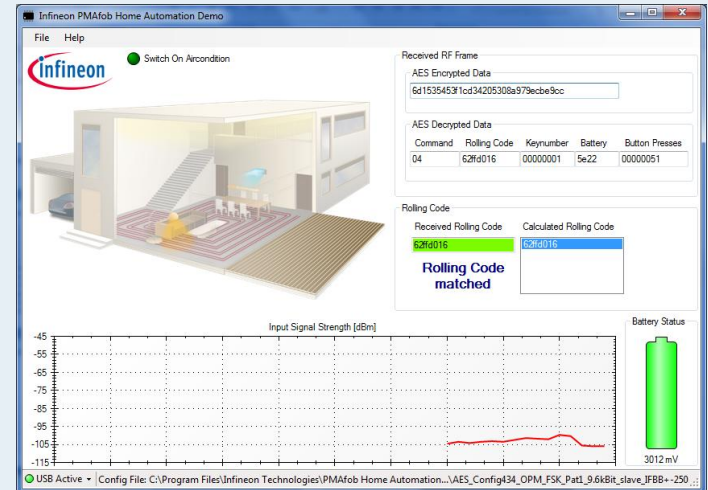
PMAfob (PMA71xx)



RF

RX

Visualization on PC



TDA5230 UWLink Stick

USB

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Overview – PMAfob Software

■ Features






- Five buttons (Handling of five external wake-ups)
- Button stuck detection
- Debounce buttons
- Secure communication
 - Advanced Encryption Standard (AES) or
 - eXtended Tiny Encryption Algorithm (XTEA) encryption
 - Rolling code generation
- Battery voltage measurement
- Energy saving by using Power Down Mode
- Configurable software by long button presses

■ Note: An Application Note describing the PMAfob Software can be found here: <http://www.infineon.com/pma>

- After reset (change of battery) the following configuration is used:
 - **Baudrate:** 9600 bps
 - **RF Framing:** AES
 - **Encryption:** ON
 - **Unique Key Number:** User defined unique id

PMAfob Software Configuration by long button presses

- If buttons are pressed longer then ~ 3 s, the software configuration is changed as shown in the table.
- Note: If the Framing is changed the Receiver has to be reconfigured! The PC Application only accepts encrypted frames!

PMAfob Button	Software Configuration
	Choose AES Framing.
	Choose 4 bytes of PMA unique id.
	Choose XTEA Framing.
	Choose user defined unique id.
	Switch encryption on / off: ON => baudrate: 9600 bps OFF=> baudrate: 4800 bps

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- **PMAfob Hardware**

- Receiver Software

- Receiver Hardware

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Overview – PMAfob Hardware

■ Settings

- 5 buttons enclosure
- 434MHz band
- 9.6kbaud Manchester code
- FSK modulation
- 5dBm output power
- Frequency deviation of approx. 50kHz
- Duty cycle setting of 34%



Keyfob enclosure



Top view



Bottom view

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Overview – Receiver Software

■ Features

- Configure TDA5230
- Read out data from TDA5230
- Decrypt AES or XTEA encrypted RF-Frame
- Calculate rolling code for every PMAfob
- Illustrate the received command
- Illustrate signal strength (measured by TDA5230)

■ NOTE:

- The UWLink is flashed by Infineon with the appropriate firmware.
- The firmware installer
“PMAfob_DEMO_UWLink_Firmware_Vx.y.msi” is included in
“PMAfob_HOME_DEMO_SW_Vx.y.zip” available at
<http://www.infineon.com/pma>

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□ Receiver Hardware

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Overview – Receiver Hardware

■ Features

- SmartLEWIS RX – TDA5230 UWLink Stick used as Receiver Board
- USB communication done with FTDI chip
- Matching Network for 434MHz

■ Note

- More information about the UWLink can be found on <http://www.infineon.com/uwlink>
- More information about TDA523x can be found on <http://www.infineon.com/tda5230>

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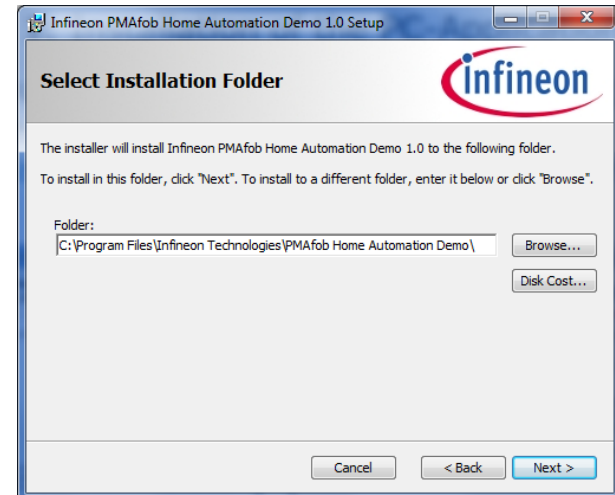
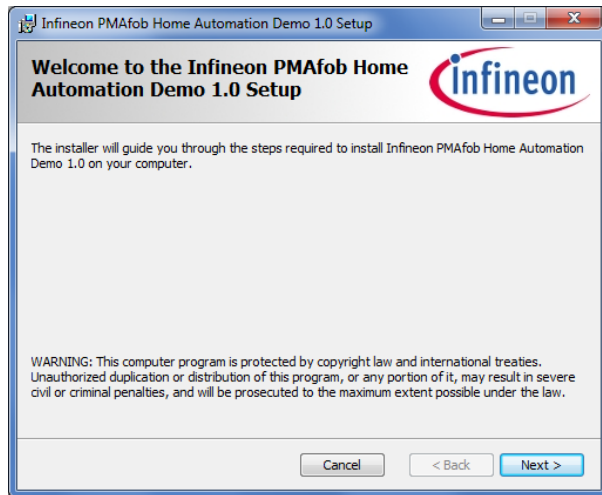
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Setup of the PMAfob Home Automation Demo

■ Step 1: Installation of the PC-Application

- Double click *PMAfob_HOME_DEMO_Rx_Vx.y.msi* and follow the onscreen installation instructions.

This will run the PMAfob Home Automation Demo setup.

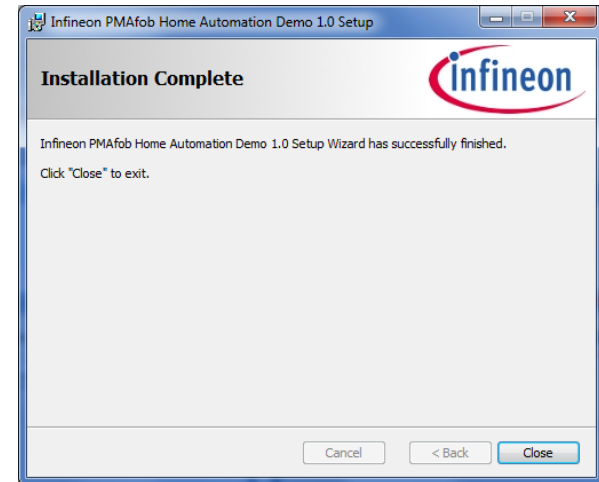
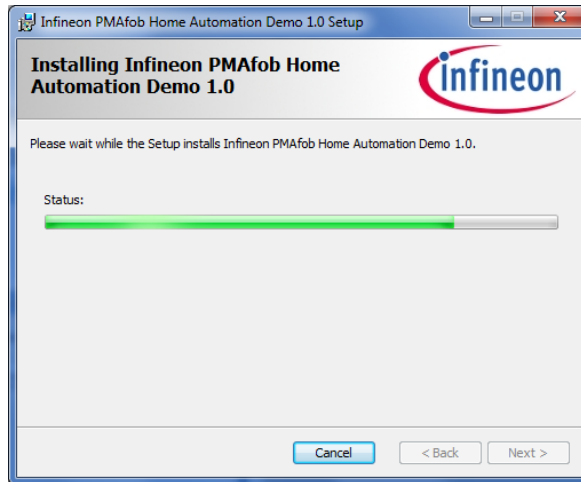
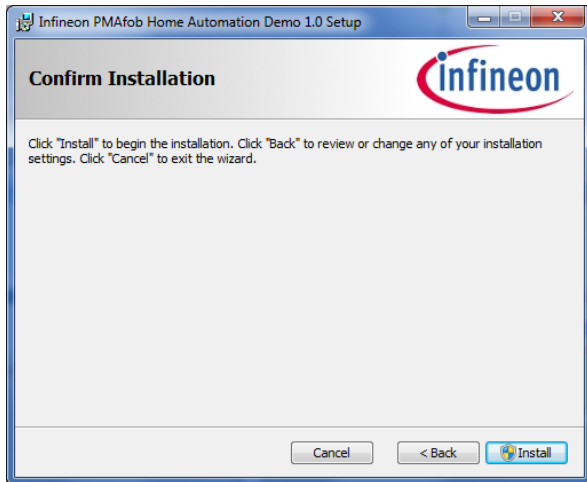


Setup of the PMAfob Home Automation Demo

■ Step 1: Installation of the PC-Application

- Double click *PMAfob_HOME_DEMO_Rx_Vx.y.msi* and follow the onscreen installation instructions.

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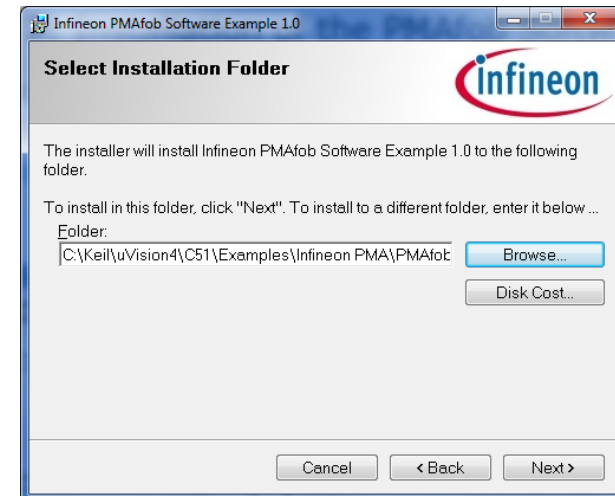
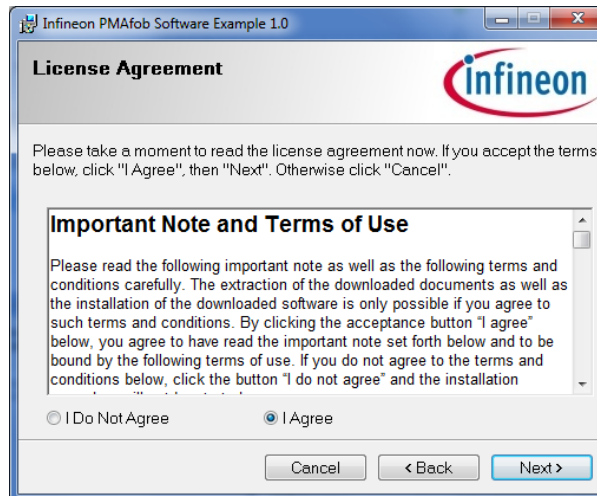
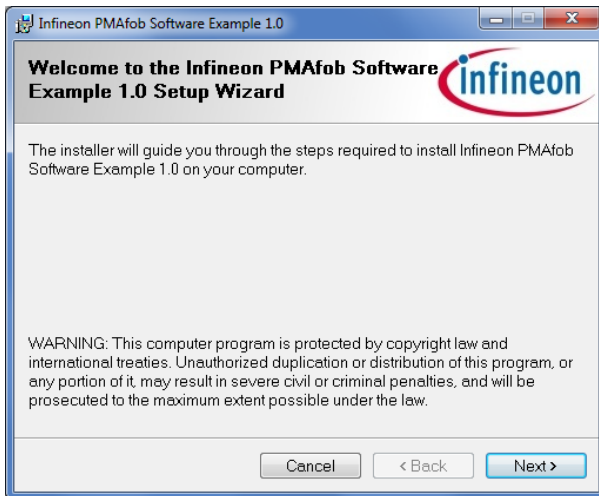
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Setup of the PMAfob Home Automation Demo

■ Step 2: Installation of the PMAfob Software

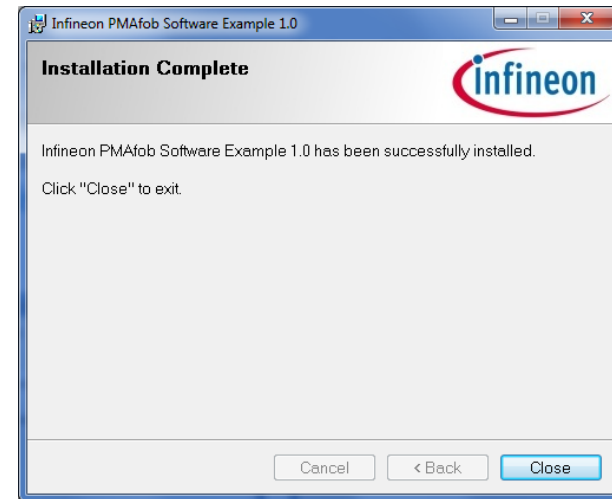
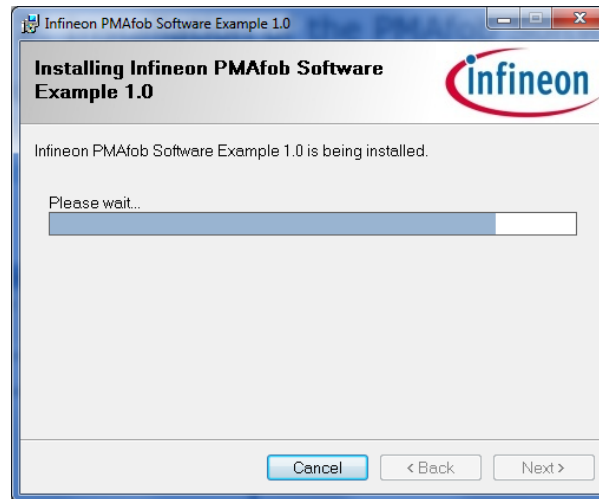
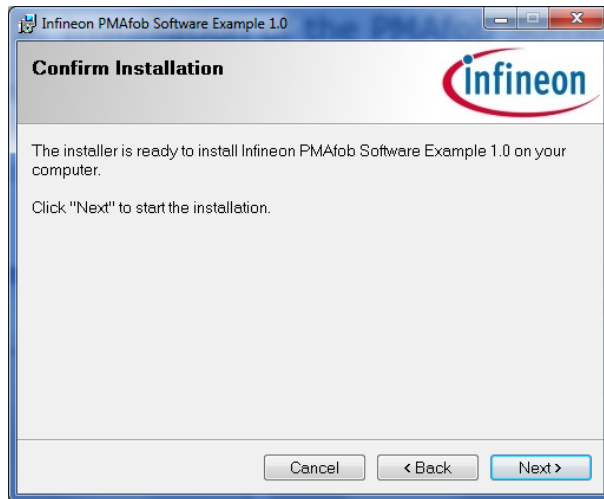
- Double click *PMAfob_DEMO_Tx_Sources_Vx.y.msi* and follow the onscreen installation instructions.
This will run the PMAfob Software Example setup.



Setup of the PMAfob Home Automation Demo

■ Step 2: Installation of the PMAfob Software

- Double click *PMAfob_DEMO_Tx_Sources_Vx.y.msi* and follow the onscreen installation instructions.
This will run the PMAfob Software Example setup.



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Setup of the PMAfob Home Automation Demo

■ Step 3: Configuration of the PMAfob

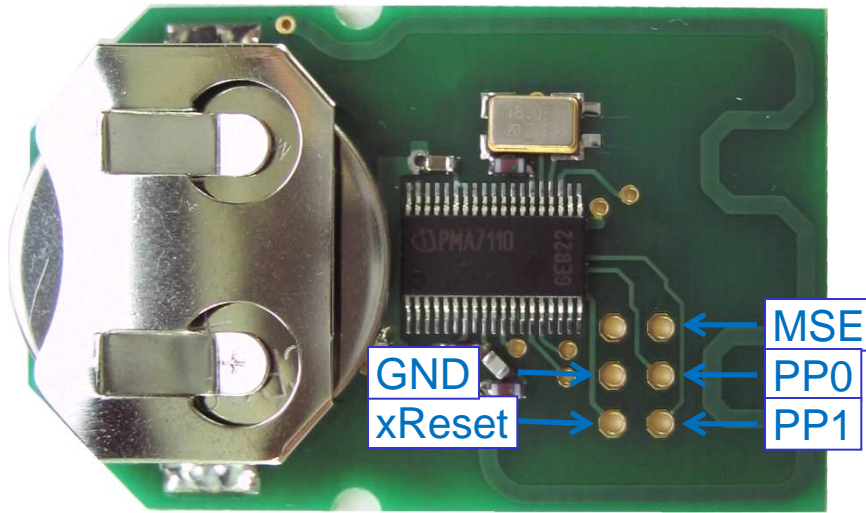
□ Delivery status

- PMAfobs are delivered with PMAfob Software programmed on it.
- AES Framing is the default selection.

□ Programming Connector

□ Note:

- The PMAfobs can be reprogrammed using the PMA Starter Kit or PMA Evaluation Kit.
- The PMAfob needs to be self-powered during programming (e.g.: battery)



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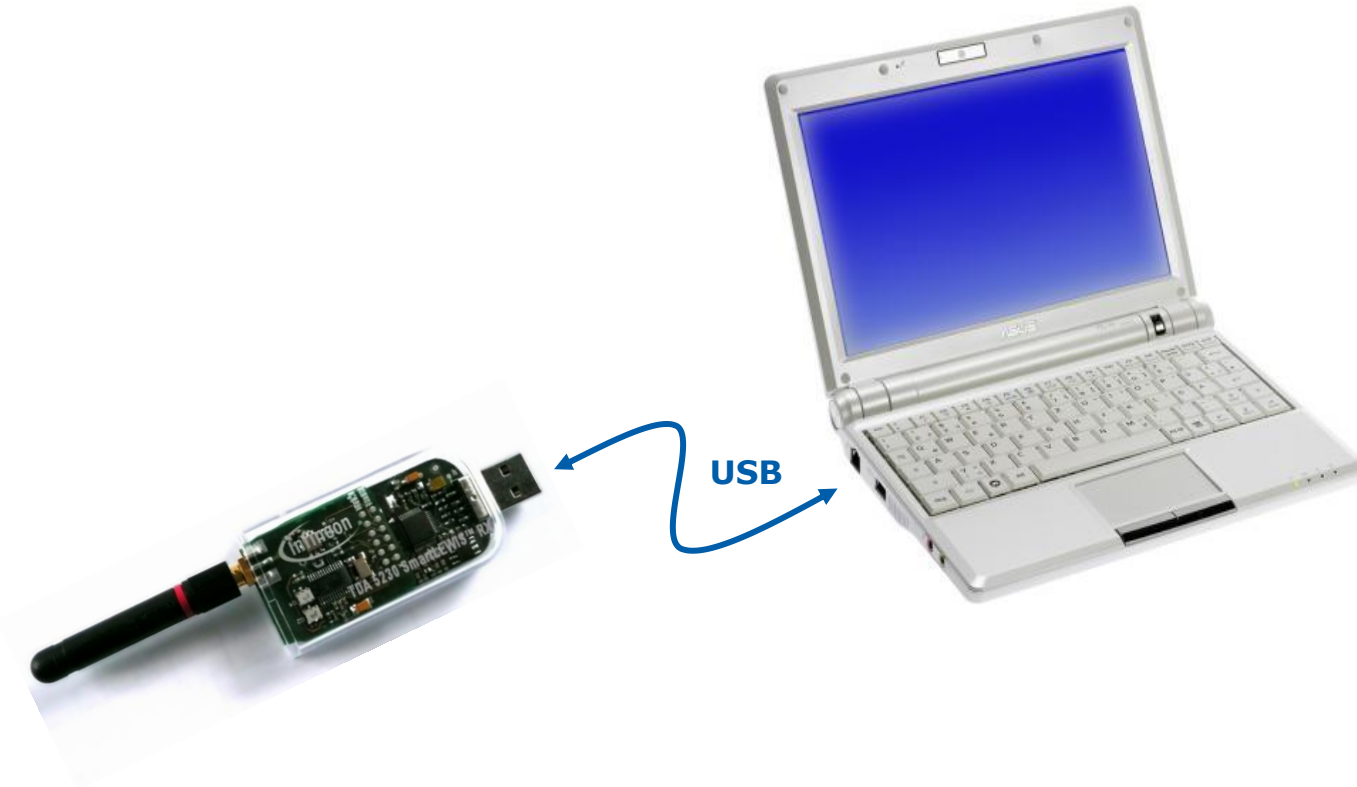
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Setup of the PMAfob Home Automation Demo

- Step 4: Connection of the Receiver Board
 - Connect the Receiver Board via USB



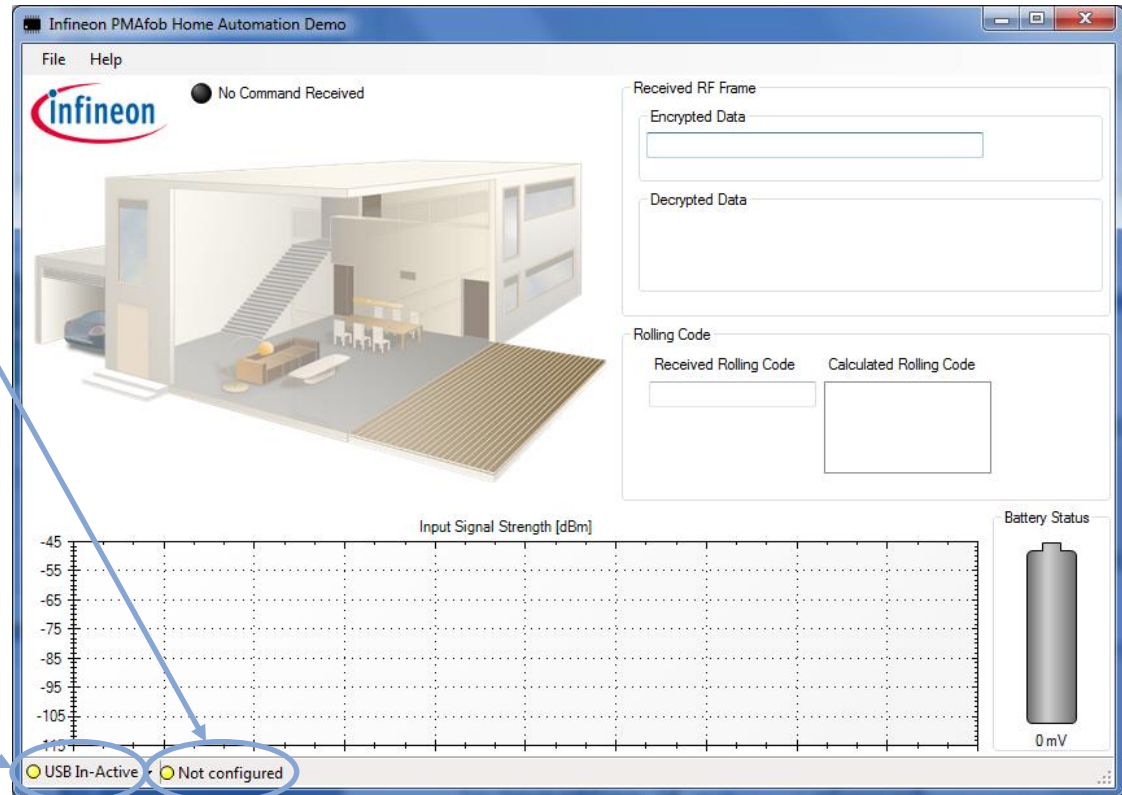
Setup of the PMAfob Home Automation Demo

■ Step 4: Connection of the Receiver Board

□ After startup the PC-Application will look like the figure below

□ Receiver Board is not configured

□ USB connection is inactive if no Receiver Board is connected



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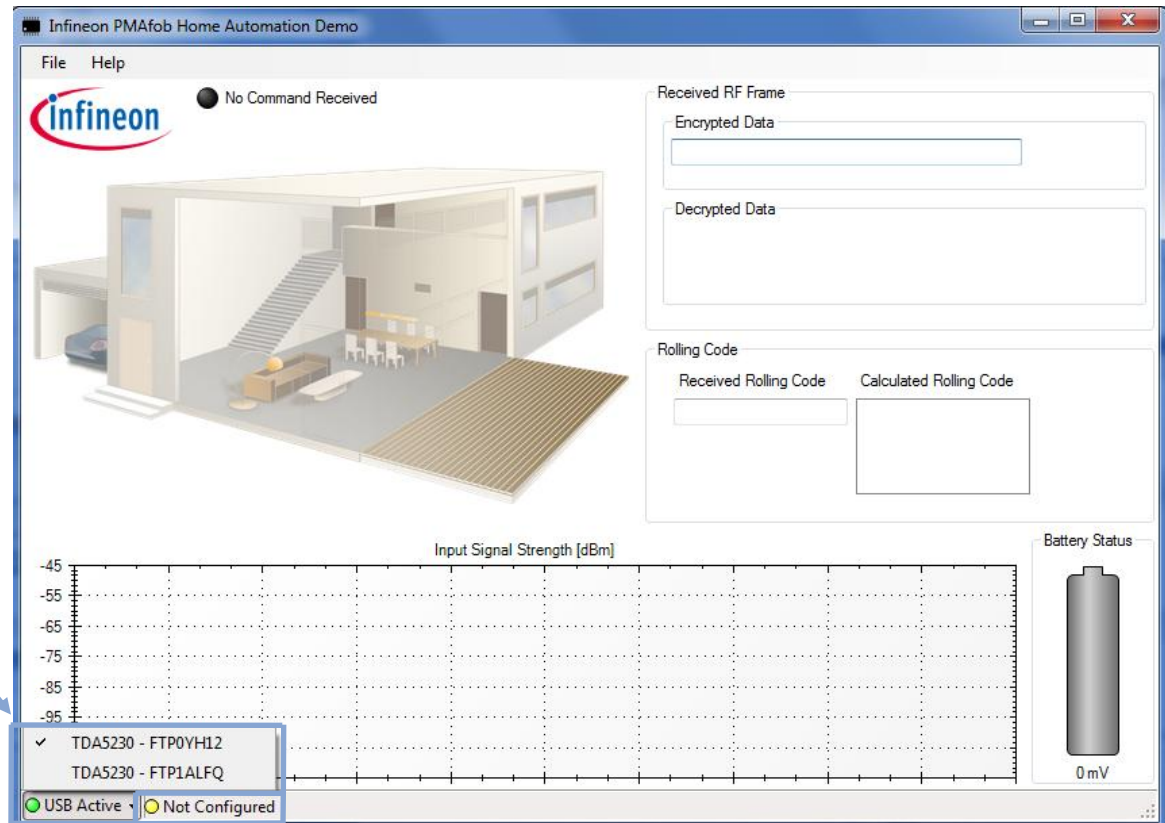
Setup of the PMAfob Home Automation Demo

■ Step 5: Handling of the PC-Application

- After connecting the Receiver Board(s) the PC-Application will look like the figure below

- All connected Receiver Boards are listed. One is selectable

- Receiver Board is not configured



Setup of the PMAfob Home Automation Demo

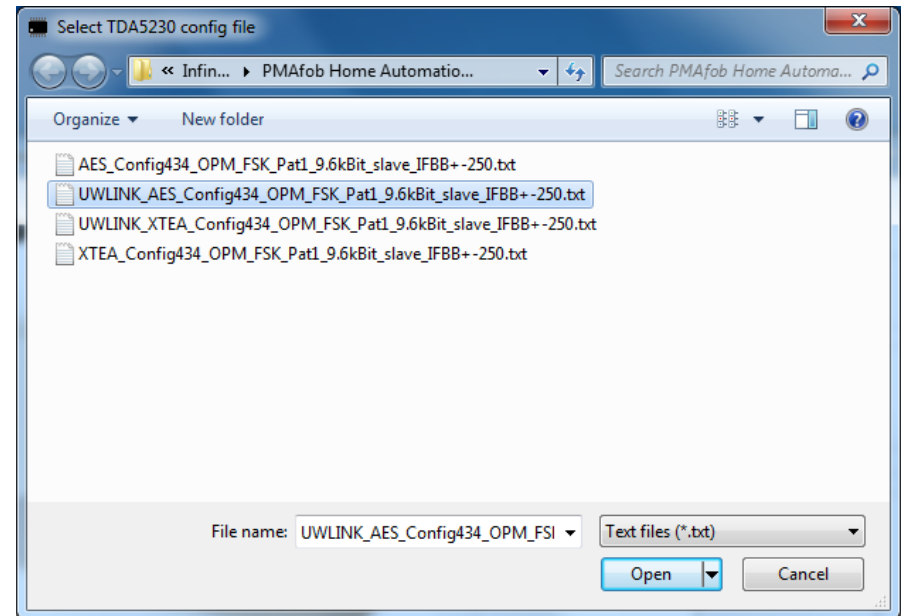
■ Step 5: Handling of the PC-Application

□ Select File -> Configure TDA5230



□ Choose the TDA5230 configuration file for AES or XTEA framing according to the configuration of your PMAfob (Default configuration of PMAfob is AES)

□ For SmartLEWIS RX – TDA5230 UWLink Stick use config files starting with “UWLINK_...”



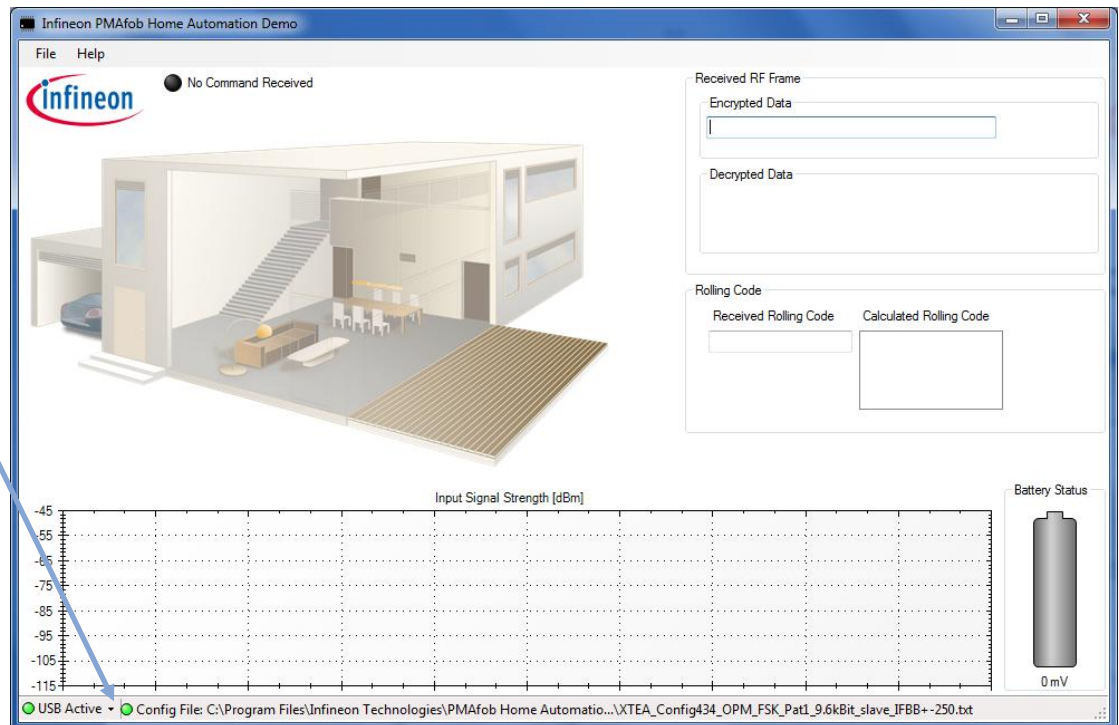
Setup of the PMAfob Home Automation Demo

■ Step 5: Handling of the PC-Application

- After successful configuration of the Receiver Board the PC-Application looks like the figure below

- Configuration LED is green and Config File is shown.

- Note:
If the Receiver Board is unplugged and reconnected again it will be automatically configured with the selected Config File



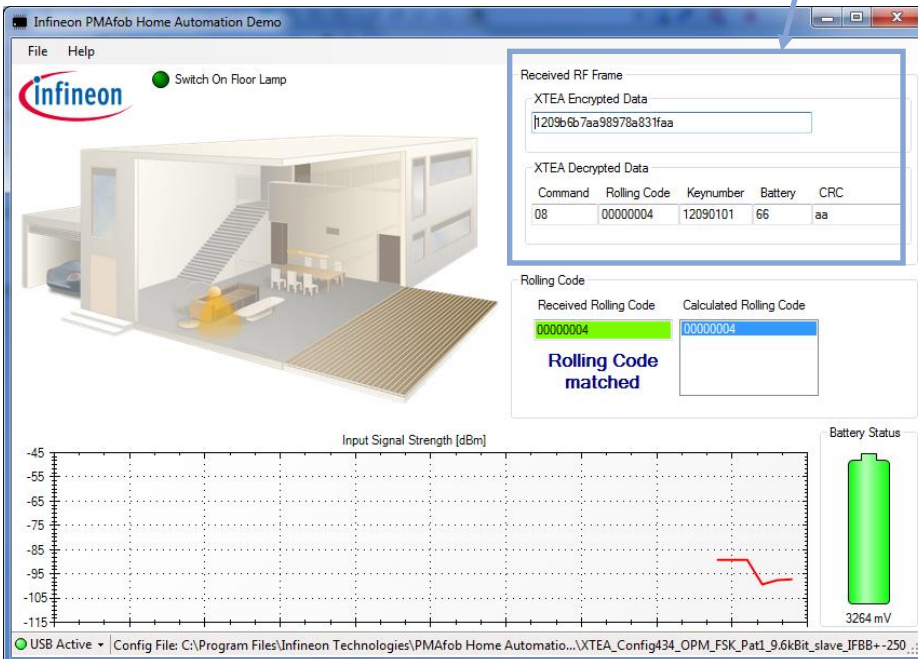
Setup of the PMAfob Home Automation Demo

■ Step 5: Handling of the PC-Application

- After successful configuration of the Receiver Board pressing any button on the PMAfob will show the received data
- Depending on the encryption you use (must be equal for PMAfob and PC-Application) the appropriate RF-Framing is displayed

XTEA-Framing

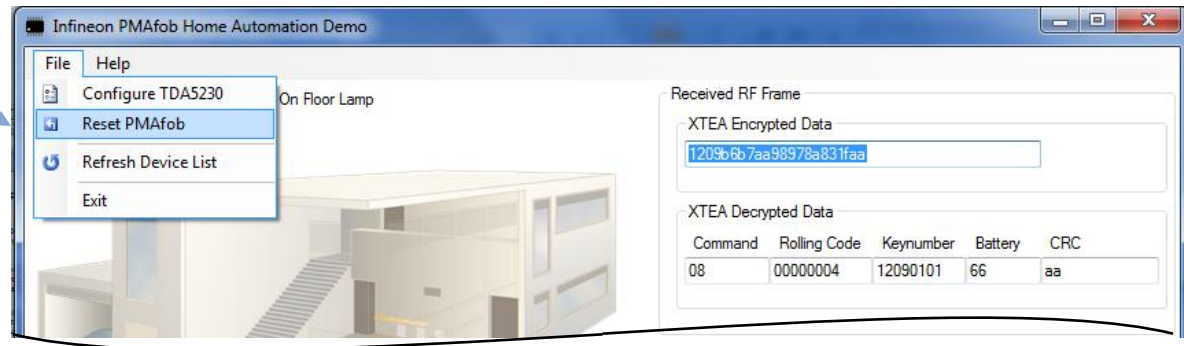
AES-Framing



Setup of the PMAfob Home Automation Demo

■ Step 5: Handling of the PC-Application

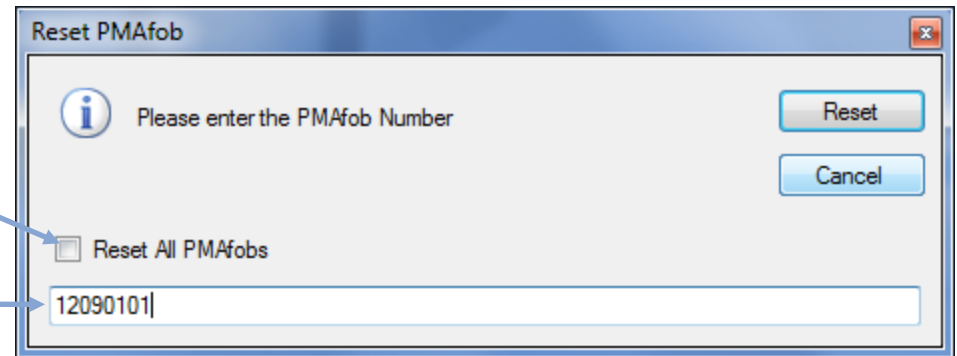
□ Select File -> Reset PMAfob



□ Reset the Rolling Code counter (Reset Button) for

→ all PMAfobs by checking "Reset All PMAfobs" or

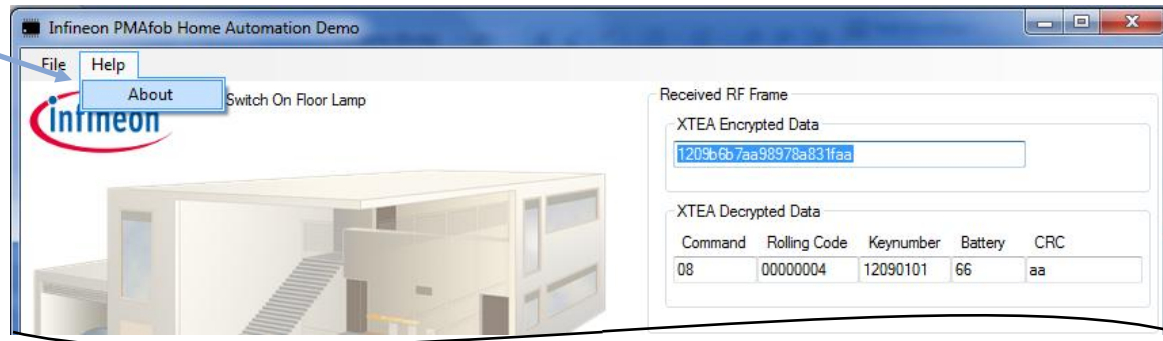
→ a special PMAfob, by entering the *Keynumber*



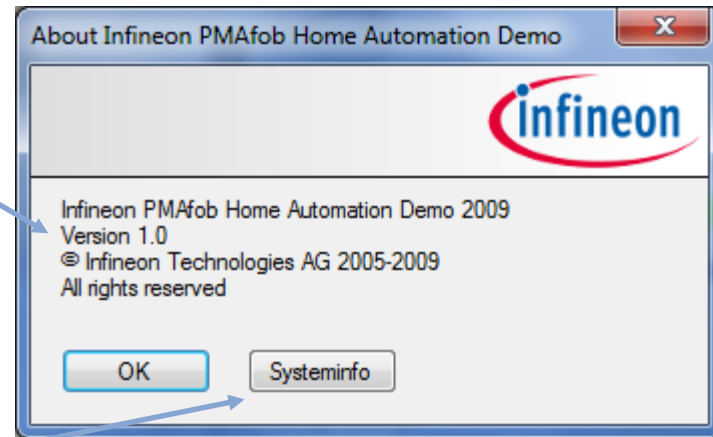
Setup of the PMAfob Home Automation Demo

■ Step 5: Handling of the PC-Application

- Select Help -> About



- This dialog shows the currently used version



- Press *Systeminfo* to get information about your PC system



We commit.
We innovate.
We partner.
We create value.



Never stop thinking