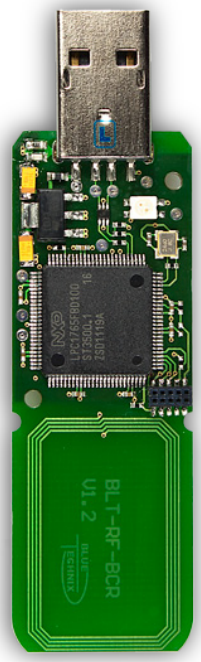
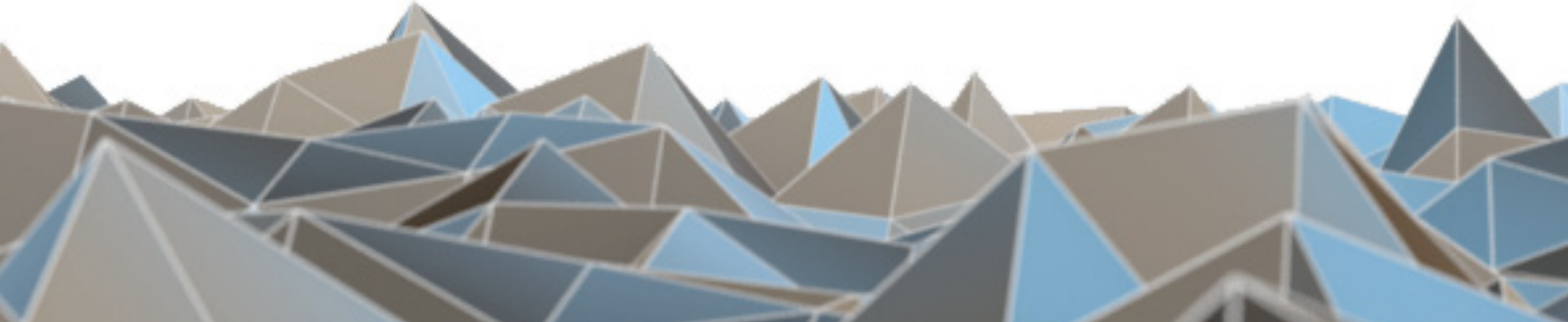
BLUETECHNIX
Embedding Ideas

LPC Demo Project (MSD)

Getting Started

Version 1.2





Contact

Bluetechnix Mechatronische Systeme GmbH

Waidhausenstraße 3/19

A-1140 Vienna

AUSTRIA

office@bluetechnix.com

http://www.bluetechnix.com

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Warning

Due to technical requirements components may contain dangerous substances.

1 Introduction

The *LPCDemoproject* is intended as a guideline on how to read data from a NFC Tag.

Once the stick is connected to a PC, the stick will register as a Mass Storage Device (named “RFID2USB”) in Windows Explorer. Once a NFC Tag is brought into the RF field of the NFC Adapter - Programmable, the data from the NFC Tag (Mifare 1k or Mifare Ultra Light card) is being read. This data is then (in its raw form) presented as a file on the Mass Storage Device. The file will be named "carddata.bin". Upon receiving new data from a tag, this file will be overwritten. There is also a status LED on the NFC Adapter - Programmable. It flashes green in the case of a successful card reading and red if there is an error.

2 Requirements

1. **NFC Adapter - Programmable** from Bluetechnix (Order No. *909-2131-1*)
    i. http://www.bluetechnix.com/goto/rfid2usb
2. **Micro JTAG Adapter** (included)
3. **LPCDemoProject(MSD)** (included)
    a. LPCDemoProject(MSD) only supports
        i. Microsoft®Windows XP
        ii. Microsoft® Windows Vista
        iii. Microsoft® Windows 7
4. **IAR Embedded Workbench for ARM** (tested on Version 6.21 and 6.30)
    i. http://www.iar.com/en/Products/IAR-Embedded-Workbench/ARM/
5. **Segger J-Link** or other compatible JTAG
    i. http://www.segger.com/jlink.html
6. **PN51x, Basic function library (v.4.2)** downloadable for free at
    http://www.nxp.com/documents/software/109141.zip

3 Installation

1. Download LPCDemoProject(MSD) from Bluetechnix homepage.
2. Unzip the project files into your working directory (e.g. C:\workspace\LPCDemoProject)
3. Download the *PN51x, Basic function library (v.4.2)* and extract the zip file.
4. Start the NFC-Tools-Setup-V4_1.exe and install the PN51x tools to the default location.
5. Go to the installation directory of the PN51x tools (e.g. C:\Program Files\Philips Semiconductors\NFC PN51x Tools V4.1.0\Bfl) and copy the contents of the Bfl folder into the src\Drivers\mifare folder of the LPCDemoProject(MSD) (e.g. C:\workspace\LPCDemoproject(MSD)\src\Drivers\mifare).

4 Execution

1. Start IAR Embedded Workbench for ARM (V6.21)
2. Open workspace of the LPCDemoproject(MSD)
    - "File / Open / Workspace", then select LPCDemoProject(MSD)_Workspace.eww
3. Choose "Project / Rebuild All" to compile and build the whole LPCDemoproject(MSD)
4. Before you can run the software on the NFC Adapter - Programmable you have to connect J-Link, JTAG adapter, NFC Adapter - Programmable and PC as shown in the following diagram.

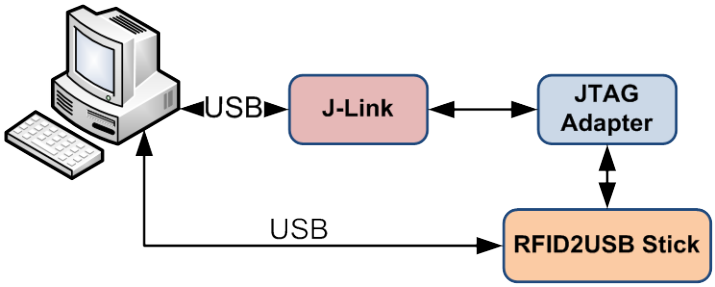

Figure 4.1 - Connection scheme

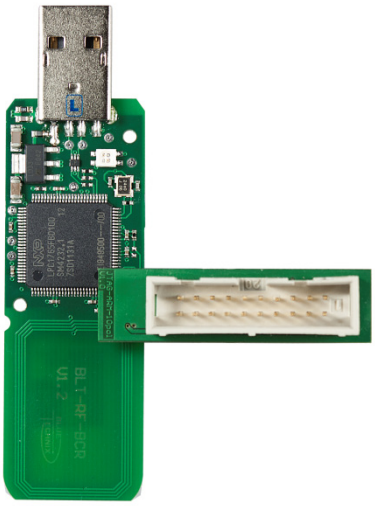

Figure 4.2 - Correct JTAG adapter connection

- Select "Project / Download and Debug" to start downloading the software onto the NFC Adapter - Programmable.
- Select "Debug / Go" to start running the software.

5 Using Semihosting

Using "Semihosting", it is possible to write debug outputs to the Terminal I/O window of IAR Embedded Studio. Therefore, in "Semihosting" mode the application can run using a JTAG only and will not start standalone. Activate Semihosting during debugging and disable it upon delivery.

5.1 Activation of Semihosting

- Define SEMIHOSTING in BCRUtils.h
- Go to "Project / Options / General Options / Library Configuration"
    - Set "Library implementation" to “Semihosted”
    - Set "stdout/stderr" to "Via semihosting"

5.2 Deactivation of Semihosting

- Undefine SEMIHOSTING in BCRUtils.h
- Go to "Project / Options / General Options / Library Configuration"
    - Set "Library implementation" to “none”.

6 Software History

6.1 Version Information

6.1.1 LPCDemoProject(MSD)

Version	Release Date	Changes
1.0.0	2012 01 03	No changes.

Table 6.1: Overview of LPCDemoProject

6.2 Anomalies

Version	Date	Description
V1.0	2012 08 28	No anomalies reported yet.

Table 6.2 – Version anomalies

7 Document Revision History

Version	Date	Document Revision
1	2012 01 03	First release V1.0 of the Document
2	2012 08 28	Formatted according to new CI.

Table 7.1: Revision history

8 List of Abbreviations

Abbreviation	Description
ADI	Analog Devices Inc.
AI	Analog Input
AMS	Asynchronous Memory Select
AO	Analog Output
CM	Core Module
DC	Direct Current
DSP	Digital Signal Processor
eCM	Enhanced Core Module
EBI	External Bus Interface
ESD	Electrostatic Discharge
GPIO	General Purpose Input Output
I	Input
I²C	Inter-Integrated Circuit
I/O	Input/Output
ISM	Image Sensor Module
LDO	Low Drop-Out regulator
MTBF	Mean Time Between Failure
NC	Not Connected
NFC	NAND Flash Controller
O	Output
OS	Operating System
PPI	Parallel Peripheral Interface
PWR	Power
RTOS	Real-Time Operating System
SADA	Stand Alone Debug Agent
SD	Secure Digital
SoC	System on Chip
SPI	Serial Peripheral Interface
SPM	Speech Processing Module
SPORT	Serial Port
TFT	Thin-Film Transistor
TISM	Tiny Image Sensor Module
TSC	Touch Screen Controller
UART	Universal Asynchronous Receiver Transmitter
USB	Universal Serial Bus
USBOTG	USB On The Go
ZIF	Zero Insertion Force

Table 8.1: List of abbreviations

A List of Figures and Tables

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