AN11057

PR533 Product Support Package Description

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Application note
COMPANY PUBLIC

Document information

Info	Content
Keywords	PR533, Product Support Package, CCID
Abstract	This document lists and describes all the elements of the Product Support Package of the PR533: Documentation, Software and Hardware

Revision history

Rev	Date	Description
1.3	20171031	Security status changed into COMPANY PUBLIC, no content change
1.2	20121129	Document list updated
1.1	20120801	Section License updated
1.0	20120503	First release

Contact information

For additional information, please visit: http://www.nxp.com

1. Introduction

PR533 is a contactless reader device with USB interface, compatible with the CCID protocol.

For easier understand and faster design-ins, it is delivered with a dedicated Product Support Package (PSP), including documentations, Software source code examples, Software tools, and Hardware evaluation boards.

This document lists and describes all these deliverables.

2. PSP Release note

This PSP is the first official release.

It is delivered with PR533/C360

3. PSP List

The PR533 PSP is composed of two parts:

- A Zip file containing the electronic deliverables (documentation and software)
- The material (Demo boards)

Table 1. PSP List

Item	Type	Description
AN11057	Doc	PSP description
PR533_DataSheet3_3	Doc	PR533 Data Sheet
AN11056	Doc	PR533 generic application note describing the Hardware integration and specific ways of use
UM10463	Doc	User Manual of the embedded PR533 Firmware
AN1445 / AN1444	Doc	Antenna design guide And Antenna matching calculations
AN1425 / AN1665	Doc	RF Amplifier and Antenna matching calculations
UM10464	Doc	User Manual of the PR533 PcscTool
UM10467	Doc	User Manual of the Background application
AN11193	Doc	Description of the PR533 evaluation board.
AN11064	Doc	Description of the PR533 USB stick.
Test report 1-4667_12-01-02.pdf	Doc	ICAO RF protocol and application test standard for e-Passport - part 4, v1.01
C12RAP04-03-2_PR533.pdf	Doc	EMV Contactless Terminal Level 1 Testing – Debugging Test report
USB Certification report NXP PR533.pdf	Doc	USB 2.0 certification report
PR533 Pcsc Tool	Software	PR533 Evaluation tool
PR533 Background application	Software	PR533 customization tool example
PR533 HSU Test	Software	PR533 source code example for HSU interface
SCardDemo	Software	Windows SCard API source code example
EMVco_Loopback	Software	Implementation of the EMVCo loopback to pass EMV certification with PR533
PR533 Demoboard	Hardware	PR533 evaluation board
PR533 USB Stick	Hardware	PR533 evaluation board in USB stick format

4. PSP Description

4.1 Software

All provided software are delivered in source code and are provided as examples code, without any warranty.

The goal of these software examples is simply to show exactly how to implement the different way of communication with the PR533, and to facilitate the understanding of the described functionalities.

4.1.1 PR533 PcscTool

For this tool, the deliveries are:

- The application binaries (PcscTool.exe, working with the dll PcscLib.dll) in the Application folder (PR533_ProductSupportPackage\SW\ PR533_PCSCTool\Application)
- The source code in C#, for the application (PR533_ProductSupportPackage \SW\PR533_PCSCTool\SourceCode\NxpPcscApp), and the dll library (PR533_ProductSupportPackage \SW\PR533_PCSCTool\SourceCode\ PCSC_lib)

This tool is used to demonstrate and evaluate the PR533 with the Hardware evaluation board. It can also be used with any Hardware developed with PR533, providing that the Windows driver is compliant with PC/SC. This driver can be either the Microsoft native CCID driver or any proprietary driver PC/SC compliant.

To use this evaluation software application, refer to its dedicated User Manual, UM10464, located in the Software UM folder (PR533_ProductSupportPackage \SW\PR533_PCSCTool\UserManual)

The source code of the application is also provided. It is delivered as a Microsoft Visual C# solution, embedding both projects: PcscTool application, and PcscLib dll.

The PcscTool solution source code offers an example to drive a PCSC aware smart card reader in C#.

4.1.2 PR533 Background application

This project is also provided in two formats:

- An application binary provided with its installer for Windows OS (PR533_ProductSupportPackage \SW\PR533_BGAppSW\Installer)
- The C# source code of the application

The goal of this software is to provide an example of background application used to customize the PR533 use for the end user.

The reason of such an application is that the PR533 firmware is ROMed and cannot be customized, or optimized for specific usages.

For example, the maximum bitrate used by the PR533 is fixed and cannot be modified unless the user application sends a specific proprietary command to the reader. This modification can be useful in the case of noisy environment, or small antennas that cannot allow a clean high speed communication. Then the PR533 offers the possibility to reduce the maximum allowed bitrate, for a better communication quality.

But the PC/SC applications are generally standard applications that cannot be adapted to a specific PC/SC device.

In the case where a PR533 customization is mandatory, the PR533_BgApp can be installed on all computers where the device will be plugged. This application runs in background, without any interaction with the user, and detects when a PR533 is plugged. As soon as the device is detected, the application gets connected to the PR533, and sends the defined customization commands, which will be used until the PR533 is unplugged.

This application is provided with an installer developed with InnoSetup and its installer source code.

The goal of the installer is to realize the following operations:

- Enable the Escape commands for the Windows Smart Card API
- Register the background application to be started when the OS starts
- Start the background application immediately (then no reboot is needed)

For more details about the use of this background application, refer to its User Manual UM10467.

The full C# source code of this application is provided, in order to add or modify any required customization command to the tool.

4.1.3 PR533 HSU Test

PR533_HSUTest is a Microsoft Visual solution application written in C code. Its goal is to explain and show concretely how to use the PR533 in this mode.

The use of the application is to get connected to a PR533 with serial interface, through a Windows COM port, and to send a few commands.

The software embeds a function building the full serial frame as expected by the PR533.

4.1.4 SCardDemo

The SCardDemo software is a very simple Microsoft Visual solution application written in C code, delivered to give a simple example of access to the PR533 in USB-CCID mode, through the Windows WinSCard APIs.

This software gives data exchange examples for the following types of cards:

- Standard ISO14443 type A or type B cards
- MIFARE Classic cards
- Innovision Jewel cards

The software also gives examples of direct communication with the PR533, using the PC/SC escape commands (SCardControl).

The command examples used in the SW are:

- Get Firmware version
- Stop Automatic Tag Discovery
- Check antenna connection with Antenna Self Test
- Start Automatic Tag Discovery

4.1.5 EMVCo_Loopback

EMVCo_Loopback is a Microsoft Visual solution application written in C code that implements the Loopback for EMVCo certification procedure.

This application can start the EMVCo polling loop, and perform the loopback data exchanges.

4.2 Hardware

Two Demo Boards are available to test and evaluate the PR533.

4.2.1 PR533 Evaluation Board

Fig 1. PR533 Evaluation board

Will be available in week 1118

4.2.2 PR533 USB Stick

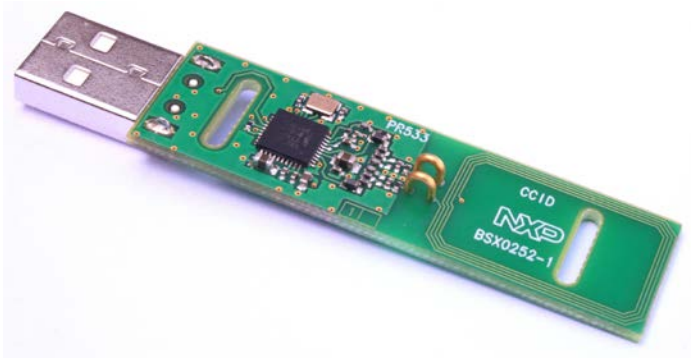

Fig 2. PR533 USB Stick

This evaluation board shows the simplest and smallest implementation of PR533 as USB reader. It is described in application note AN11064

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RATP/Innovatron Technology

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6. List of figures

7. Contents

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