

LEARN ALL ABOUT NFC

SESSION 4: PRODUCT SUPPORT PACKAGE FOR NFC READERS & NFC CONNECTED TAGS

JORDI JOFRE
NFC EVERYWHERE
APRIL 2017



PUBLIC



SECURE CONNECTIONS
FOR A SMARTER WORLD



Learn all about NFC

Session I, 15th March

NFC applications and use cases

<https://attendee.gotowebinar.com/rt/1059402932312036099>

Session II, 22th March

NFC essentials

<https://attendee.gotowebinar.com/rt/6461366231742998273>

Session III, 28th March

NFC product portfolio

<https://attendee.gotowebinar.com/rt/8452313508808186113>

Session IV, 12th April

**Product support package for NFC Readers
& NFC-Connected Tags**

<https://attendee.gotowebinar.com/rt/3965453945970616321>





Agenda

- NFC portfolio and our support package.
- Support package for NTAG I²C *plus*.
- Support package for CLRC663 *plus*, PN5180 and PN7462.
- Support package for PN7150.
- More support material.

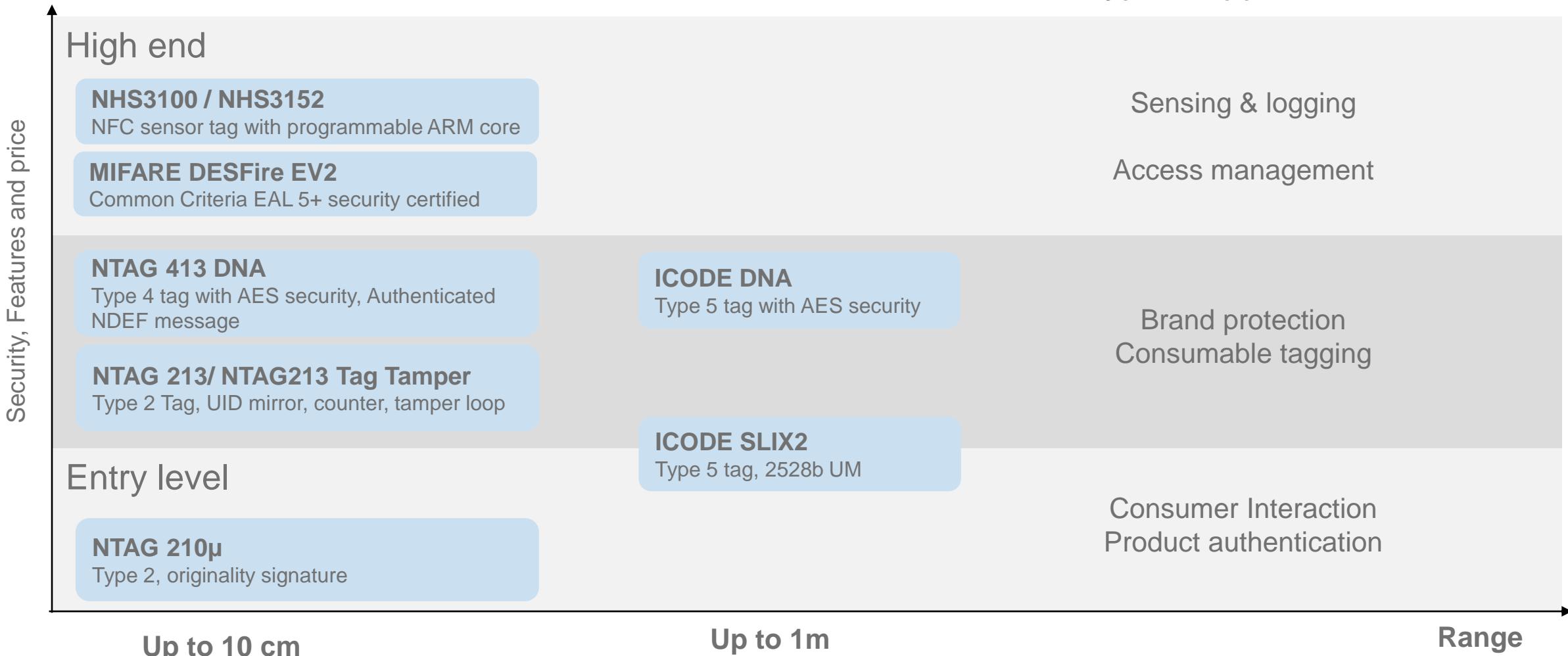
NFC portfolio and our support package



NFC focus products for each application need

ICs for tags, labels and cards

Typical application



NFC focus products for each application need

Readers/connected tags: for embedded electronics



NXP offers highest level of support on the market

We reduce complexity, streamline tasks and add flexibility
at every point in development



We know each step in the NFC implementation process
Our support package simplifies the process and reduces time to market



We have the right material for each design step
Full range of development kits, design files, sample code, app notes, online training, tutorials



We find direct answers to your questions
Through our technical NFC community and NXP approved engineering consultants (AECs)

A unique combination of PCB boards, software tools, software examples,
training material, documentation, tutorials and support community

NXP support tools for NFC

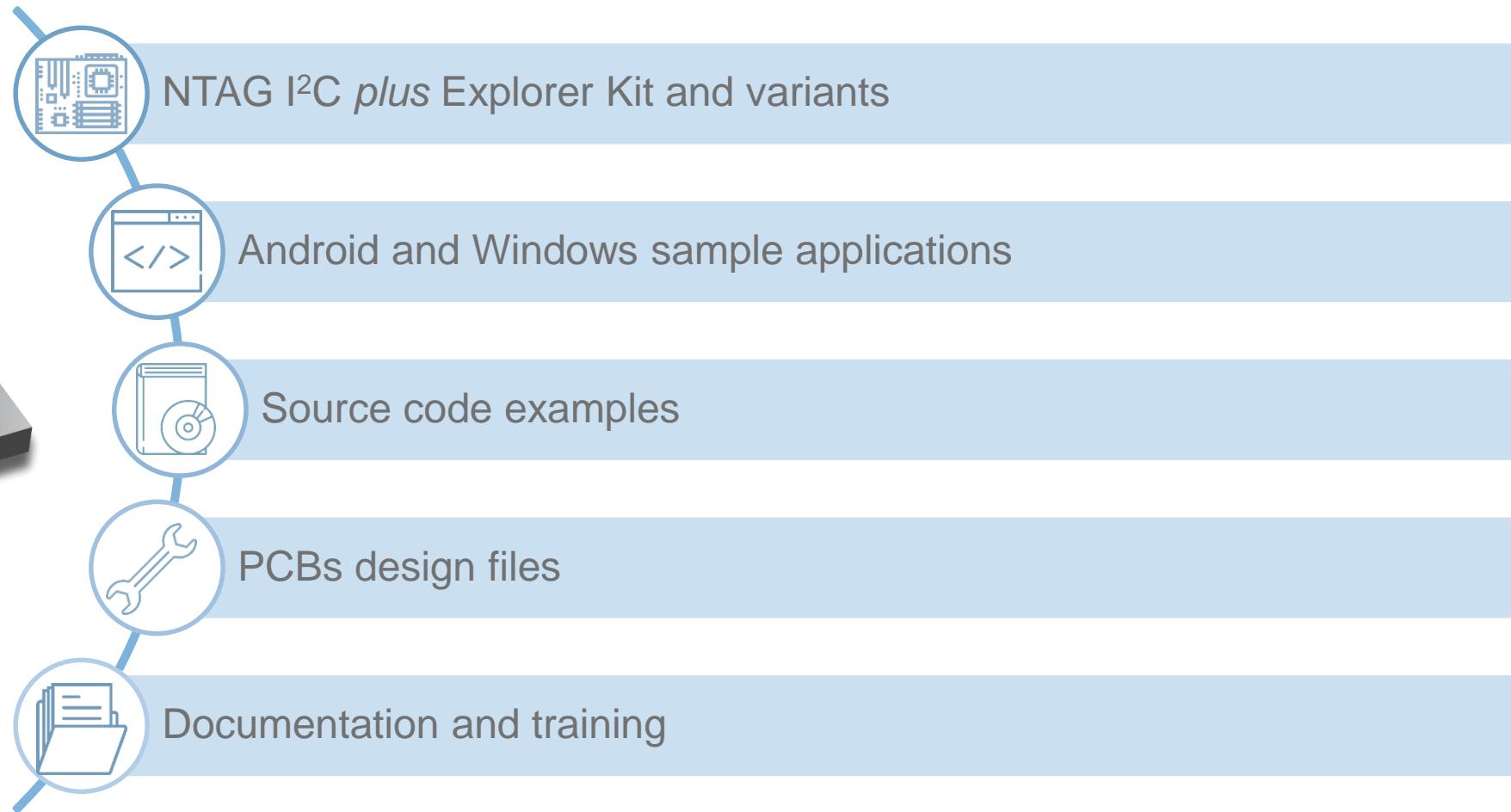
NFC Support						
Decide the functionality	 Online selection tools, including selection app, parametric search, and product details on nxp.com	 NFC Everywhere brochure	 NFC use case and product webinars	 Compatibility with common MCU boards and single-board computers	 NFC product support package and antenna design webinars	NXP approved engineering consultants https://nxp.surl.ms/NFC_AEC
Select IC				 Design files for development kits	 Online trainings on software integration and antenna design	 MobileKnowledge
Evaluate Features	 Full range of development kits for every NFC Product			 Design files for development kits	 Online trainings on software integration and antenna design	 IMST
Prototype	 NFC Cockpit			 Design files for development kits	 Online trainings on software integration and antenna design	 INGENUTEC
Test & Debug	 NFC Library	 App notes	 Design files for development kits	 Online trainings on software integration and antenna design		Technical NFC Community https://community.nxp.com/community/nfc
Get Certified	 Sample code	 Tutorials	 Design files for development kits	 Online trainings on software integration and antenna design		 Kronegger We enable NFC
	 NFC Cockpit	 Design files for development kits	 Online trainings on software integration and antenna design		 Design files for development kits	 ipTronix
	 DPC, strong RF power generation, RF wave shaping, and HW-based EMD error handling	 Design files for development kits	 Online trainings on software integration and antenna design		 Design files for development kits	 ONE O NXP Enabling

Links to the support tools on nxp.com/nfc.

Support package for NTAG I²C *plus*



Support package for NTAG I²C plus



NTAG I²C *plus* Explorer Kit and variants



OM5569-NT322E: NTAG I²C *plus* Explorer Kit

- NFC Explorer board with Class 4 antenna
- Field detector board
- NTAG I²C *plus* mounted on a Class 6 flex-board with built in I²C interface connectors
- 10 NTAG I²C *plus* package SO8 samples for prototyping



OM5569-NT322ER: NTAG I²C *plus* Explorer Kit with NFC Reader

- NFC Explorer board with Class 4 antenna
- Field detector board
- NTAG I²C *plus* mounted on a Class 6 flex-board with built in I²C interface connectors
- 10 NTAG I²C *plus* package SO8 samples for prototyping
- Identiv CLOUD 3700F reader



OM5569-NT322F: NTAG I²C *plus* Flex Kit containing additional flex antennas

- Class 4 flex antenna
- Class 5 flex antenna
- Class 6 flex antenna
- 10 NTAG I²C *plus* package SO8 samples for prototyping



OM23221ARD: NTAG I²C *plus* kit for Arduino pinout

- NTAG I²C *plus* mounted on an antenna board PCB
- Adapter board for connectivity to any device with Arduino pinout (e.g., Kinetis, i.MX, LPC)
- Bluetooth pairing example based on NXP KW41Z
- Library for NTAG I²C *plus* available through MCUXpresso for FRDM-KW41Z

Printed circuit board design files

SW3638 - NTAG I²C plus Explorer Kit



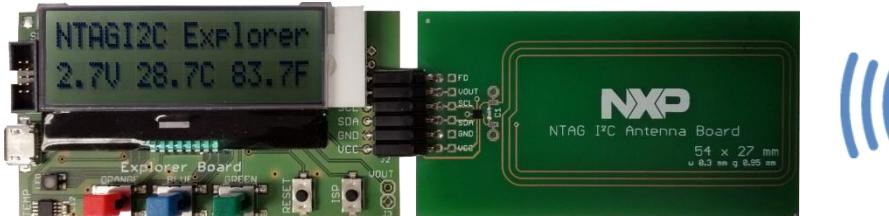
SW3641 - NTAG I²C plus flex antenna Class 6

SW3639 - NTAG I²C plus Class 4
AN11276 – NTAG Antenna design guide

SW3640 – Field Detector board

NTAG I²C Demo App for Android

Get it for free from:



Explore the NTAG I²C *plus* features:

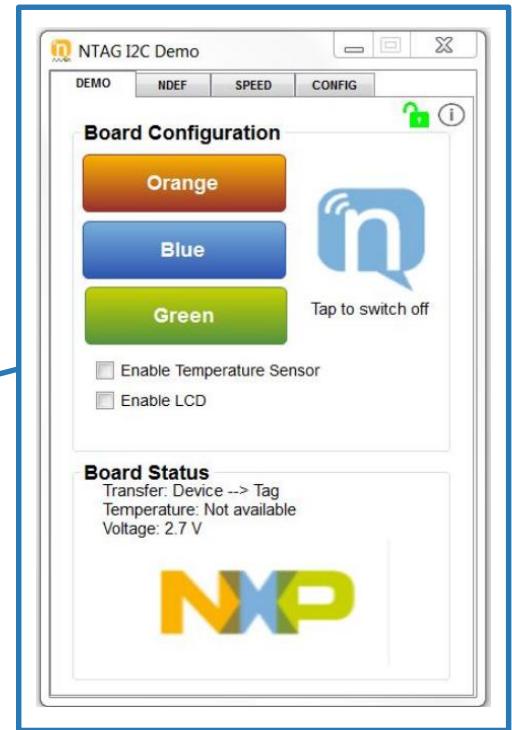
- Energy harvesting.
- Bidirectional data exchange & data throughput.
- Read / write NDEF messages.
- Read / write access to configuration pages.

UM10989 - NTAG I²C Android Demo App developer start-up guide.

UM10966 - NTAG I²C *plus* Explorer Kit Android Demo.

SW3648 - NTAG I²C Android Demo App source code .

NTAG I²C Demo for Windows PC



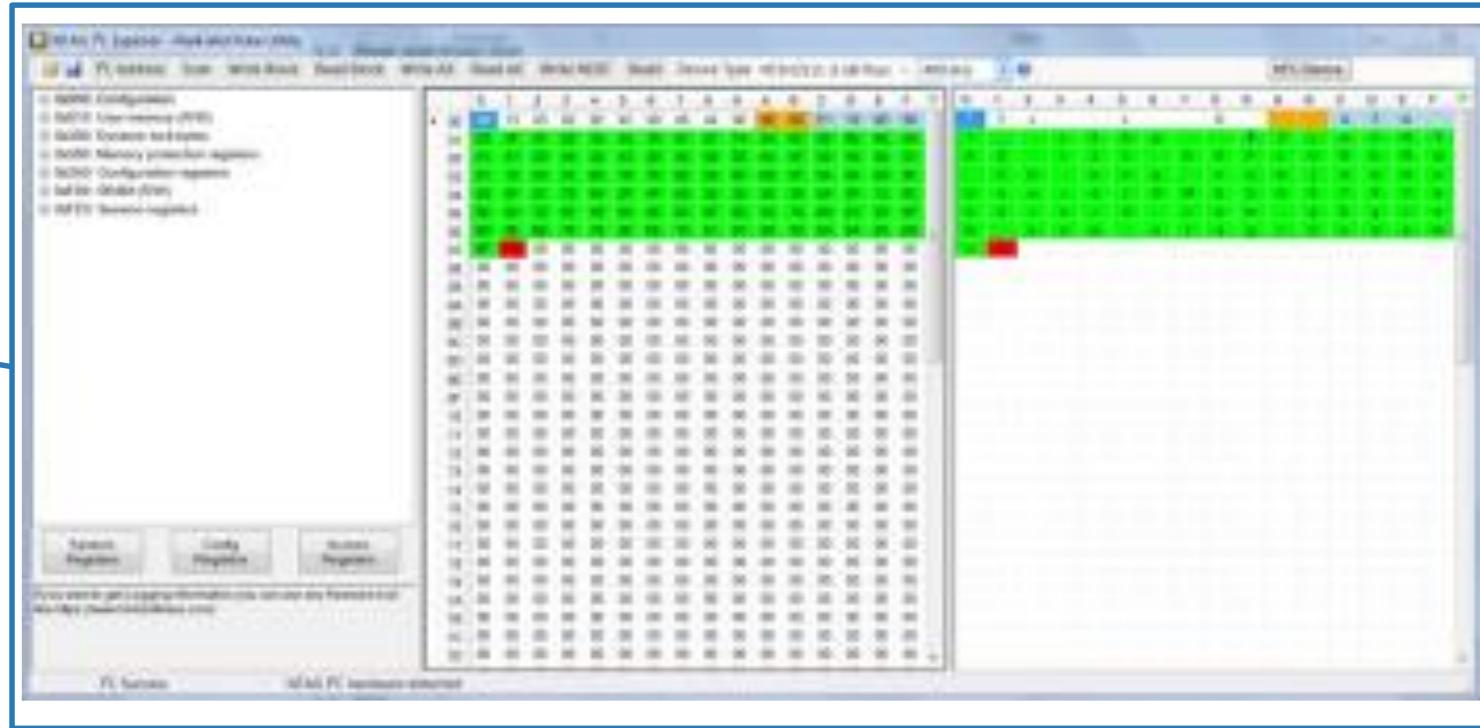
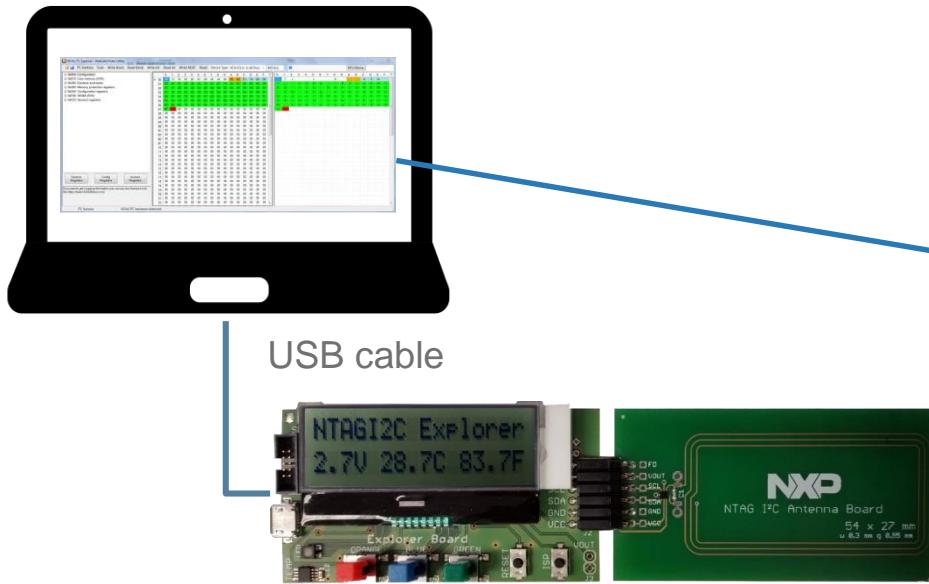
If you do not have an NFC phone, you can use the NTAG I²C demo for Windows PC in combination with the NFC Reader included in the Explorer Kit

Same functionalities as the
NTAG I²C Demo App for Android

SW3651 - NTAG I²C Demo for Windows PC

More information: www.nxp.com/products/NT3H2111_2211

NTAG I²C *plus* Explorer Kit Peek and Poke



The Peek and Poke GUI is a Windows application that can be used to examine the detailed memory contents of the NTAG I²C *plus* EEPROM via I²C interface

UM10967 - NTAG I²C Explorer kit Peek and Poke

SW3652 – Peek and Poke Windows installer

SW3649 – Peek and Poke source code VS2010

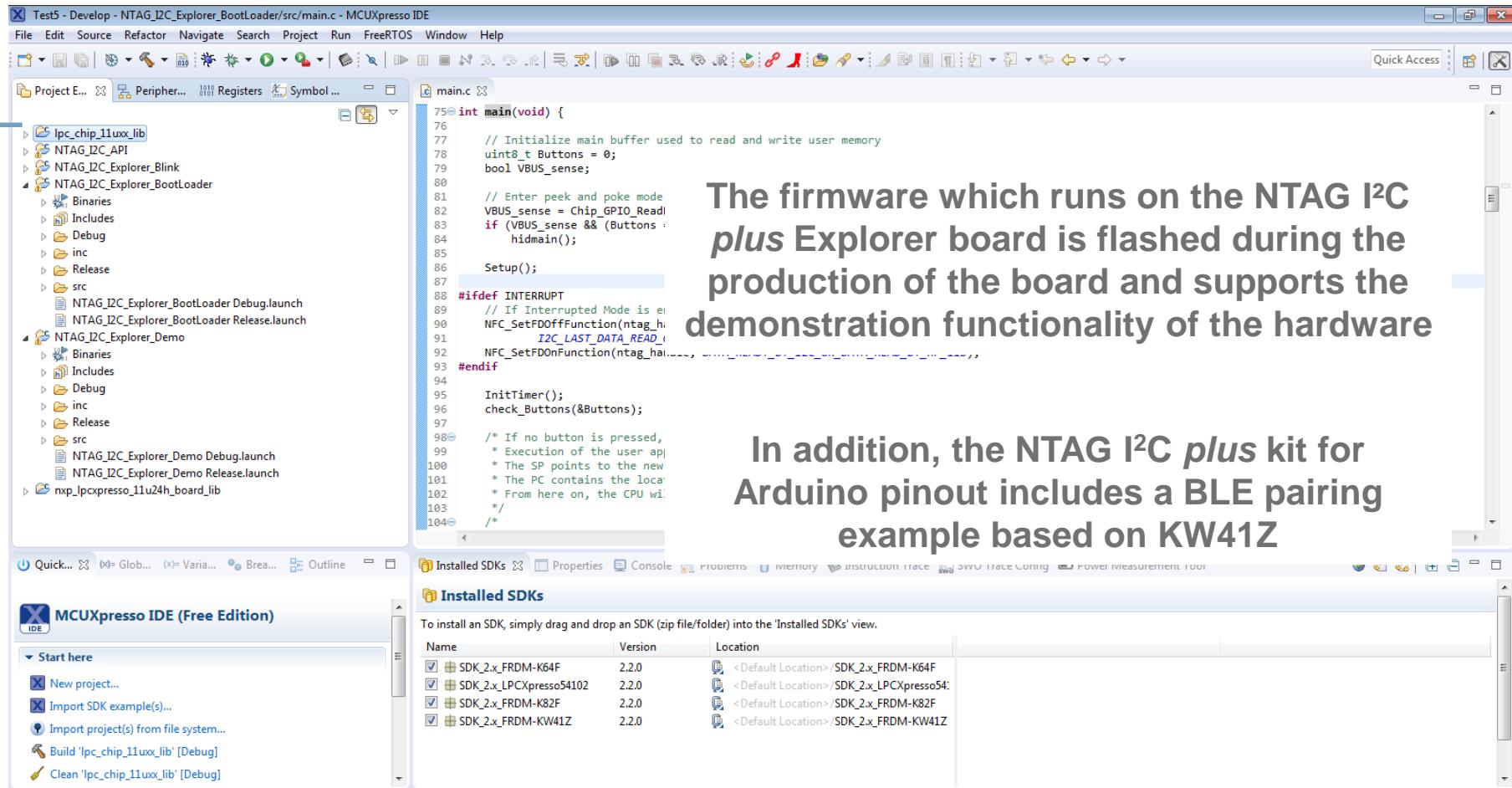
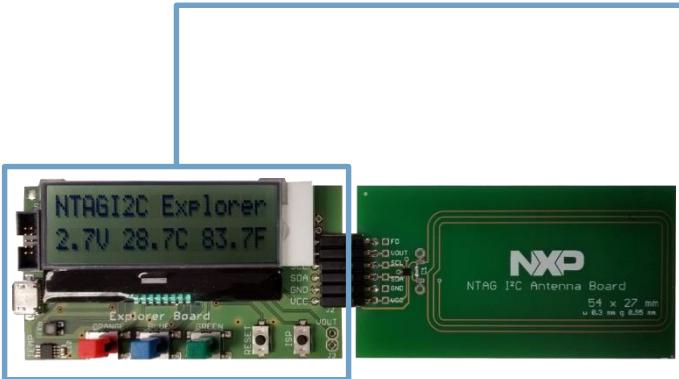
RFIDDiscover Lite 4.1.6



The RFIDDiscover Lite is a GUI for Windows that allows us access and configuration of the NTAG I²C plus memory from the RF interface.

SW214441 – RFIDDiscover Lite v4.1

NTAG I²C *plus* Explorer board firmware



The MCUXpresso IDE interface is shown, displaying the project structure and source code for the NTAG I2C plus Explorer board. The project structure includes files for the NXP chip library, the NTAG I2C API, and various application examples like Blink, Bootloader, and Demo. The code editor shows the main.c file, which contains the main function and logic for initializing the board, reading user memory, and handling interrupt requests for NFC pairing. The 'Installed SDKs' view shows four SDKs installed: SDK_2_x_FRDML-K64F, SDK_2_x_LPCXpresso54102, SDK_2_x_FRDML-K82F, and SDK_2_x_FRDML-KW41Z.

The firmware which runs on the NTAG I²C *plus* Explorer board is flashed during the production of the board and supports the demonstration functionality of the hardware

In addition, the NTAG I²C *plus* kit for Arduino pinout includes a BLE pairing example based on KW41Z

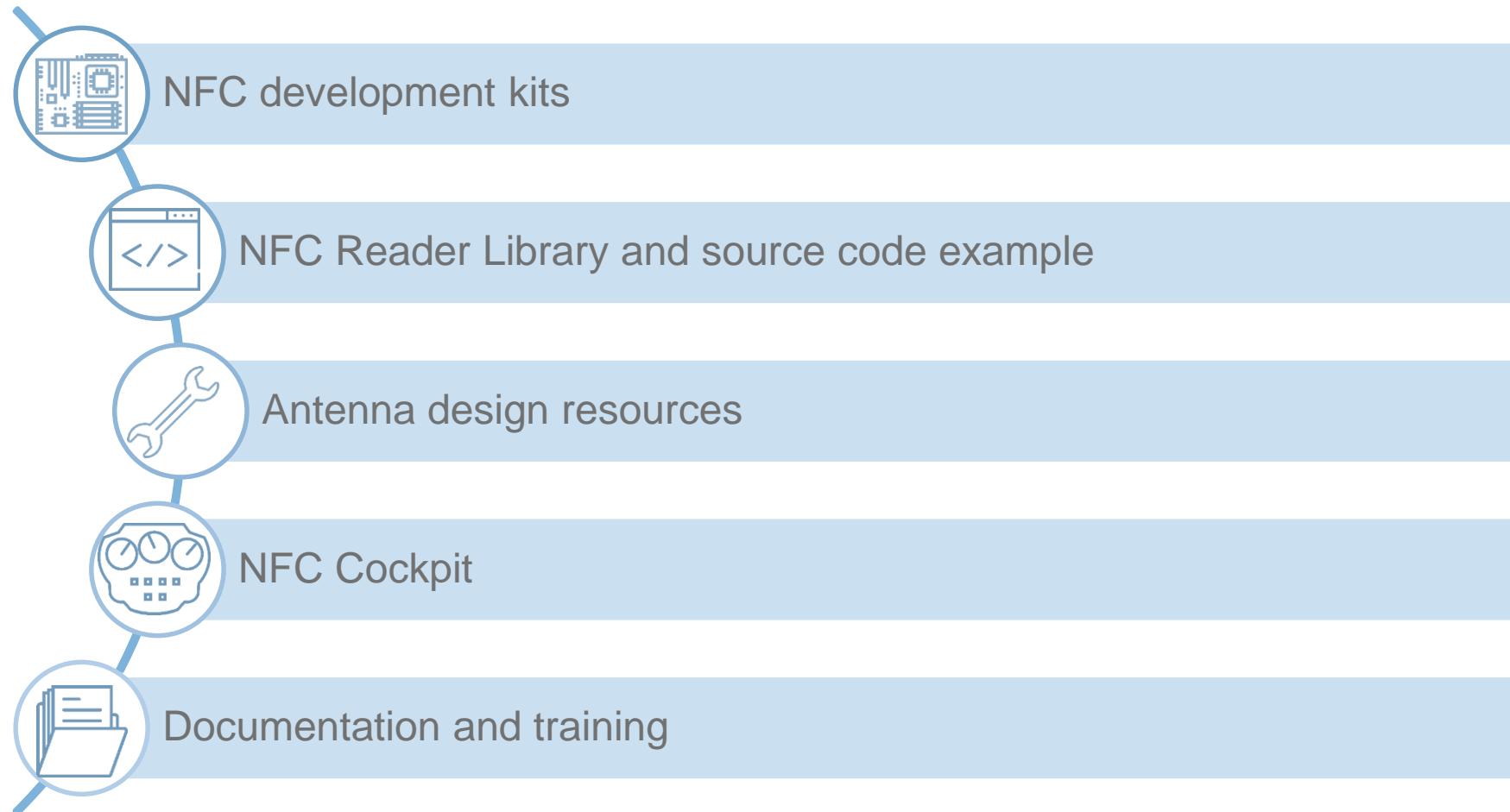
SW3647 - NTAG I²C *plus* Explorer board firmware source files

SW4223 – BLE pairing with NFC on Kw41 and NTAG I²C *plus*

Support package for CLRC663 *plus*, PN5180 and PN7462



Support package for CLRC663 *plus*, PN5180 and PN7462



CLRC663 *plus*, PN5180 and PN7462 development kits



OM26630FDK: CLRC663 *plus* NFC frontend development kit

- CLEV6630B board with 65x65mm antenna optimized for EMVCo applications
- 30 mm x 50 mm antenna with matching components optimized for NFC applications
- Three small antenna matching PCBs for custom antenna matching
- NFC sample card (NTAG216) and MIFARE DESFire EV2
- 10 CLRC663 plus IC samples (HVQFN package)

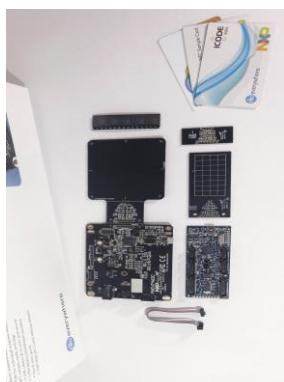
AN11022 – CLRC663 plus evaluation board quick start guide



OM25180FDK: PN5180 NFC frontend development kit

- PNEV5180B board with 65x65mm antenna optimized for EMVCo applications
- 30 mm x 50 mm antenna with matching components optimized for NFC applications
- Three small antenna matching PCBs for custom antenna matching
- NFC sample card (NTAG216)
- 10 PN5180 IC samples (HVQFN package)

AN11744 – PN5180 Evaluation board quick start guide

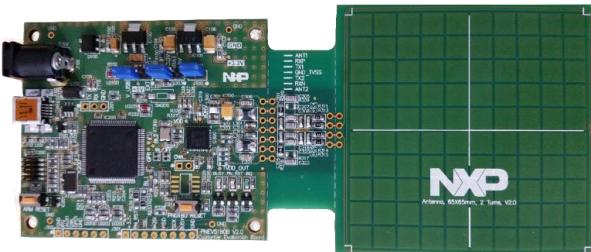
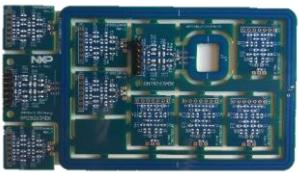


OM27462CDKP: PN7462 NFC controller development kit

- PNEV7462C board with 65x65mm antenna optimized for EMVCo applications
- 30 mm x 50 mm antenna with matching components optimized for NFC applications
- Three small antenna matching PCBs for custom antenna matching
- NFC sample card (NTAG216)
- 7.5V DC power supply and two USB cables
- LPC-Link2 debug adapter (OM13054)
- 5 PN7462 IC samples (HVQFN package)

UM10833 – PN7462 Quick Start Guide.

NFC antenna design resources



CLRC663 *plus* antenna design resources

- AN11019 – CLRC663, MFRC630, MFRC631, SLRC610 antenna design guide
- AN11783 – CLRC663 plus Low Power Card Detection
- AN11535 – Measurement and tuning of a NFC and reader IC antenna with MiniVNA
- AN11246 – Antenna matching calculation
- **OM29263ADK – NFC antenna development kit**

UM11098 – OM29263ADK Quick start guide antenna kit

PN5180 antenna design resources

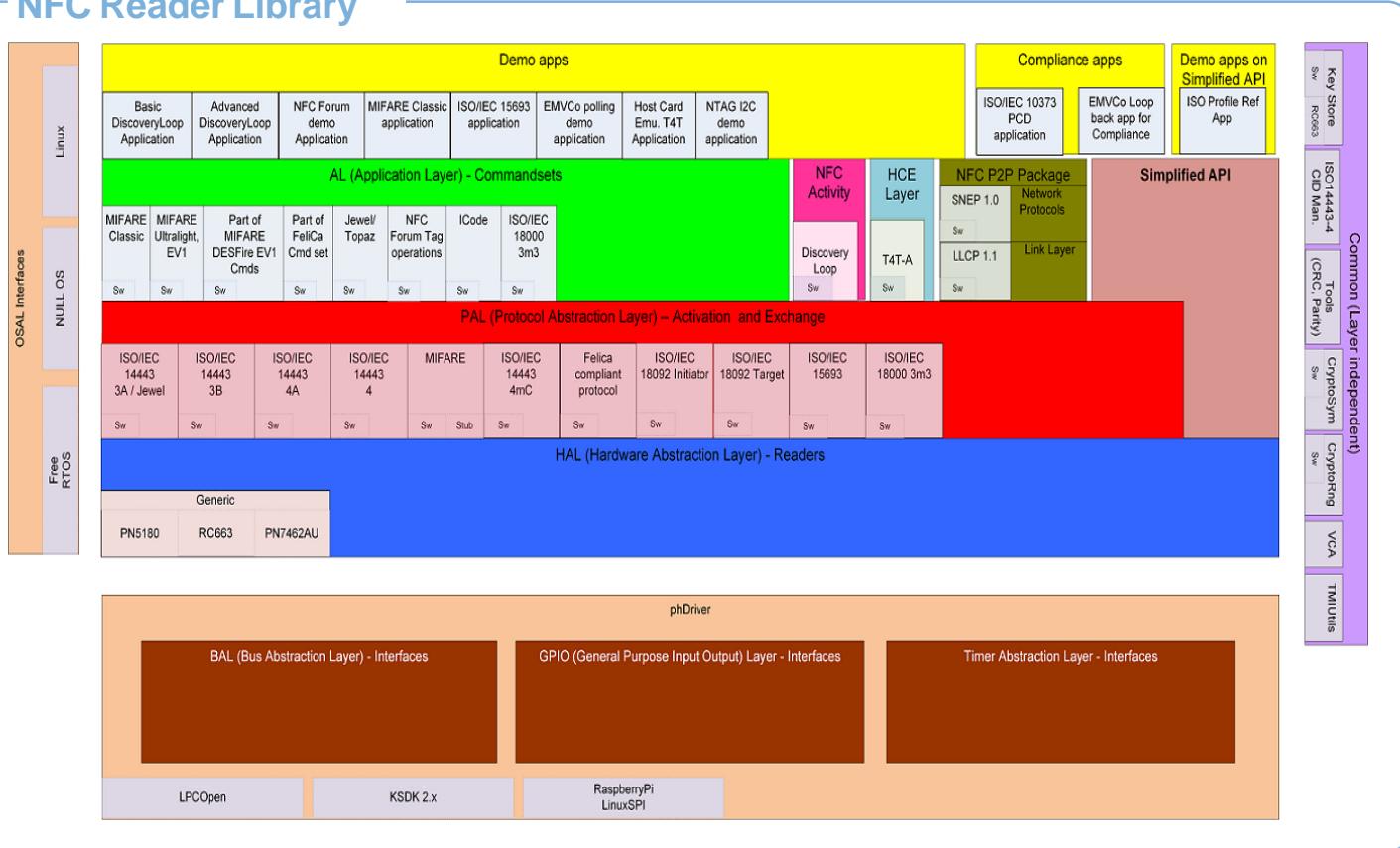
- AN11740 – PN5180 Antenna design guide
- AN11741 – How to design an antenna with DPC
- SW3545 – PN5180 Antenna design tools
- AN11742 – Dynamic Power Control
- AN11849 – PN5180 Rx Matrix Test

PN7462 antenna design resources

- AN11706 – PN7462AU Antenna design guide
- AN11742 – Dynamic Power Control
- AN11785 – PN7462AU LPDC and standby mode

NFC Reader Library support for multiple products and platforms

NFC Reader Library



Info and more information: www.nxp.com/pages/.NFC-READER-LIBRARY

* NFC Reader Library v5.02.00

Supported products:*

- CLRC663 *plus* family
- PN5180
- PN7462 family

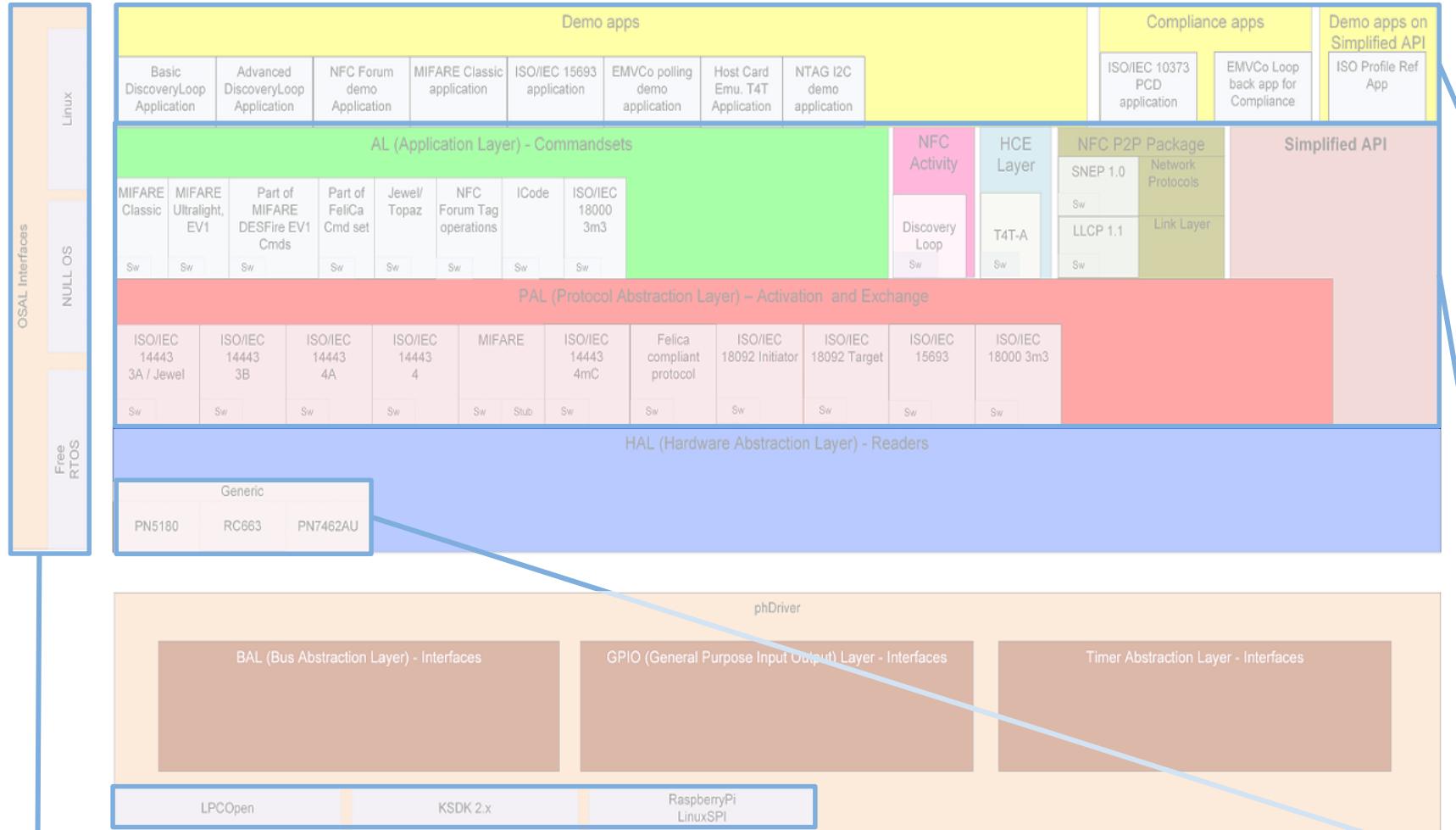
Supported dev boards:*

- CLEV6630A
- CLEV6630B
- PNEV5180B
- PNEV7462B

Supported platforms:*

- LPC1769
- FRDM-K82F
- Raspberry Pi Model 3
- ... portable to other MCUs and platforms.

NFC Reader Library architecture



The software examples can be imported and run the supported platforms without any adaptation.

Support for other platforms requires adaptations in OSAL and DAL.

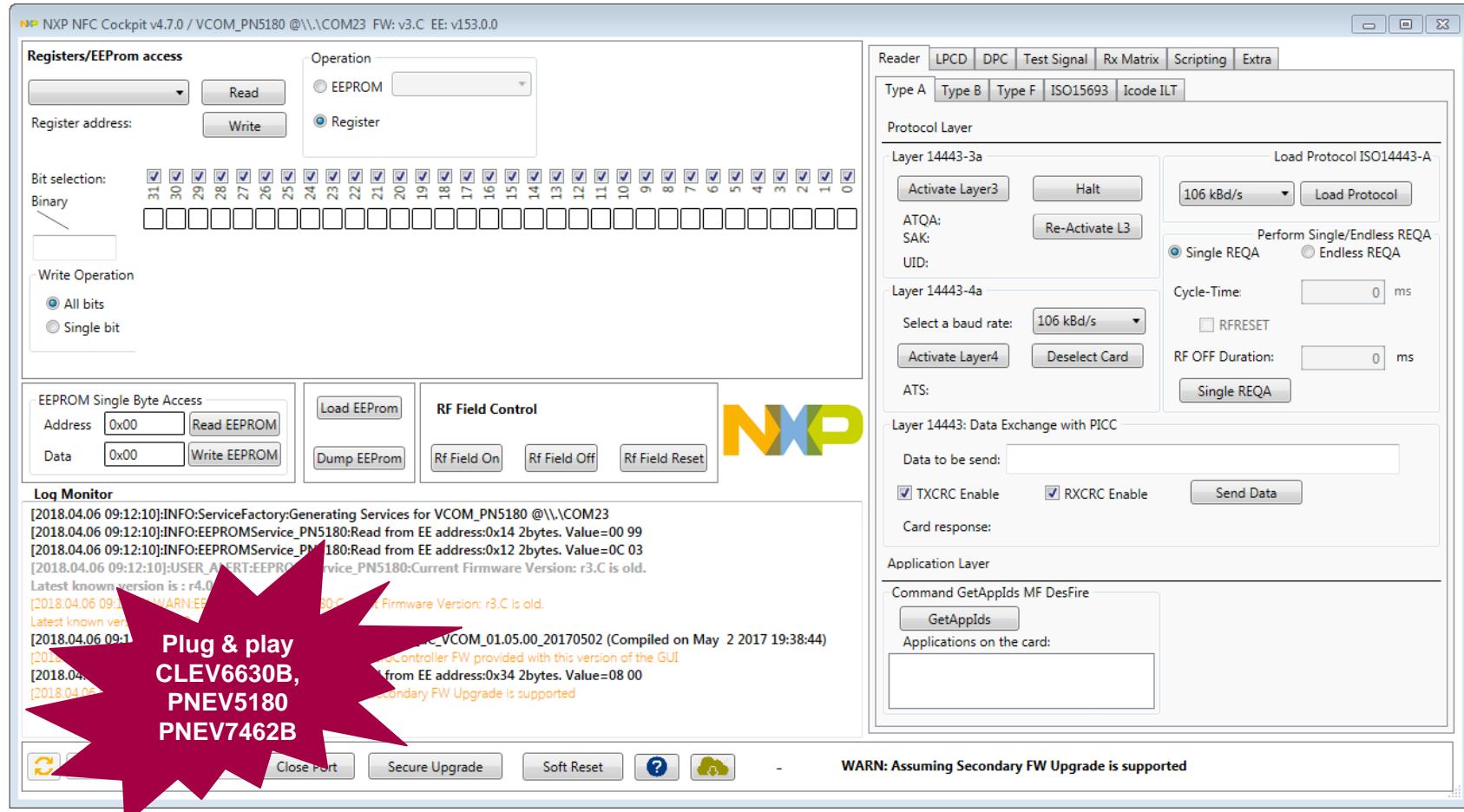
11 software examples available to be tested and re-used.

- Nfcrdlib_SimplifiedAPI_EMVCo
- Nfcrdlib_SimplifiedAPI_EMVCo_Analog
- Nfcrdlib_SimplifiedAPI_ISO
- NfcrdlibEx1_BasicDiscoveryLoop
- NfcrdlibEx2_AdvancedDiscoveryLoop
- NfcrdlibEx4_MIFAREClassic
- NfcrdlibEx5_ISO15693
- NfcrdlibEx7_EMVCo_Polling
- NfcrdlibEx9_NTAGI2C
- NfcrdlibEx11_ISO10373_PCD
- NfcrdlibTst12_RC633LPCD

AL and PAL layers are **hardware and platform independent**, so they can be used on top of any supported NFC IC and MCU since they have no adaptation

HAL is **platform independent**, so NXP NFC readers can be used on top of any MCU since they have no adaptation

NFC Cockpit configuration tool for NFC ICs



- NFC Cockpit features

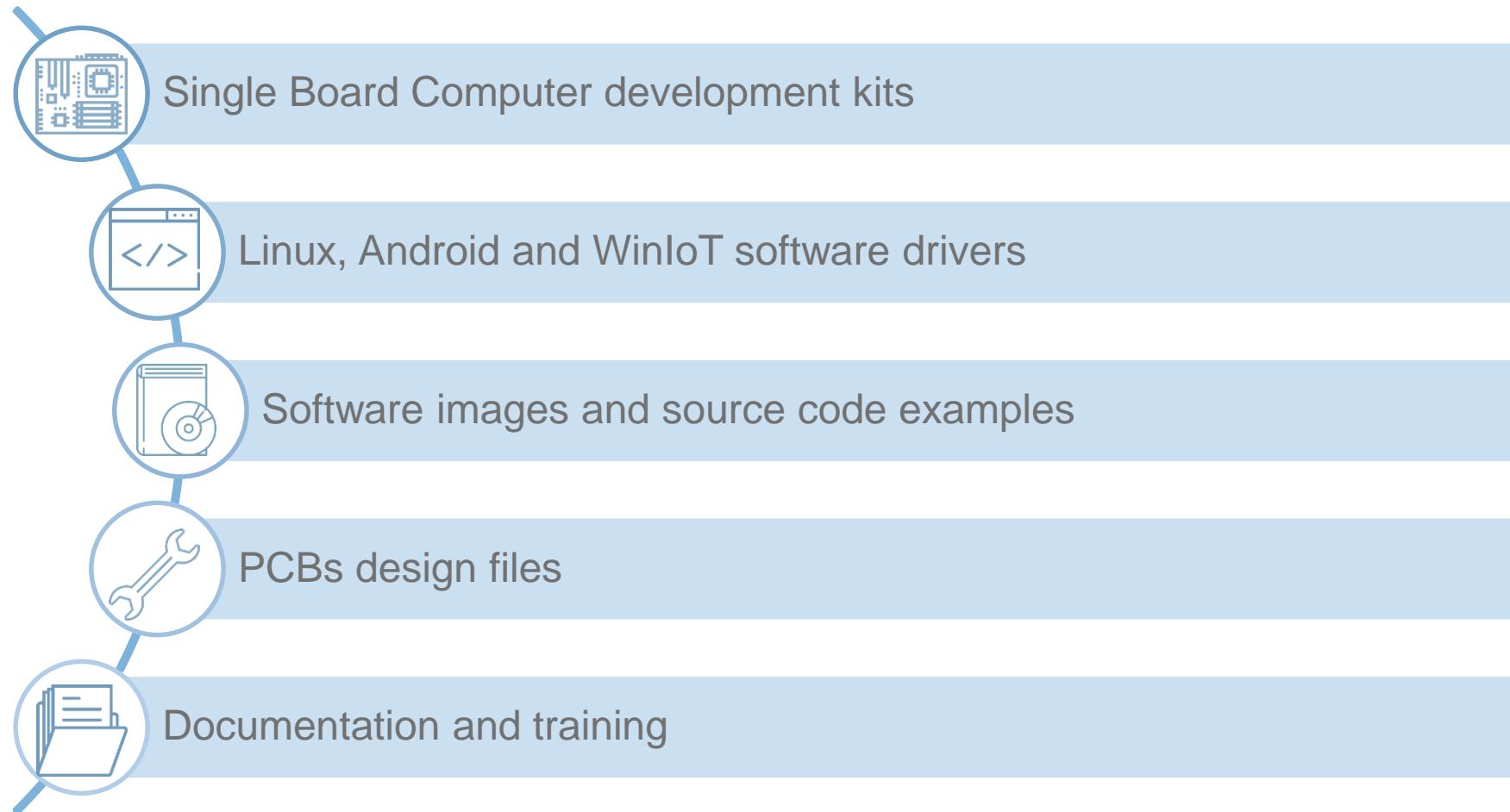
- ▶ Direct access to registers and EEPROM memory.
- ▶ Reader for card activation and card communication.
- ▶ Low Power Card Detection (LPCD) calibration and configuration.
- ▶ Test signal unlocking and routing.
- ▶ RX matrix test for receiver settings optimization.

- Helps to speed up the design, allows quick and easy configuration of registers (USB interface connection to PC) using the development board .
- Get familiar with the IC (on line information of register bits), a fast antenna tuning, a quick DPC parameter setting and perform some tests with NFC devices (cards or mobile phones).

Support package for PN7150



Support package for PN7150



PN7150 NFC controller single board computer (SBC) kits



OM5578/PN7150ARD: PN7150 SBC kit for Arduino

- PN7150 NFC controller board
- Arduino interface board
- NFC Forum Type 2 Tag

AN11841 – PN7150 Arduino SBC kit quick start guide



OM5578/PN7150RPi: PN7150 SBC kit for Raspberry Pi

- PN7150 NFC controller board
- Raspberry Pi Interface board
- NFC Forum Type 2 Tag

AN11758 – PN7150 Raspberry Pi SBC kit quick start guide

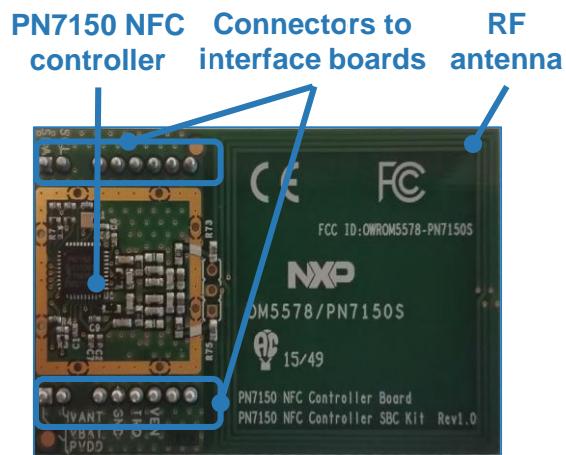


OM5578/PN7150BBB: PN7150 SBC kit for BeagleBone Black

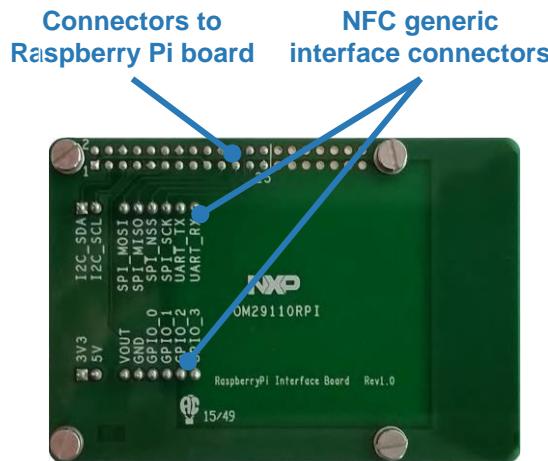
- PN7150 NFC controller board
- Beagle Bone Black interface board
- NFC Forum Type 2 Tag

AN11842 – PN7150 Beagle Bone Black SBC kit quick start guide

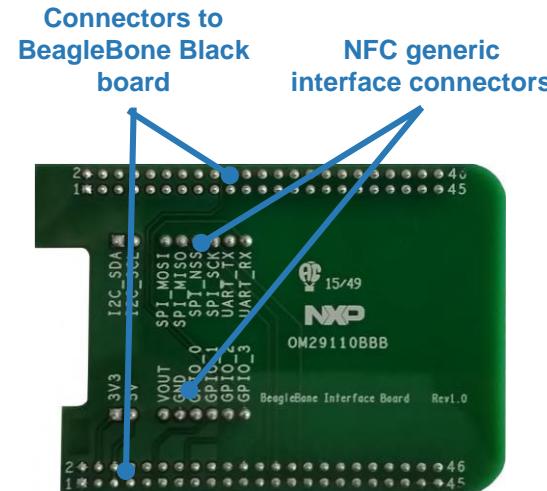
PN7150 printed circuit boards design files



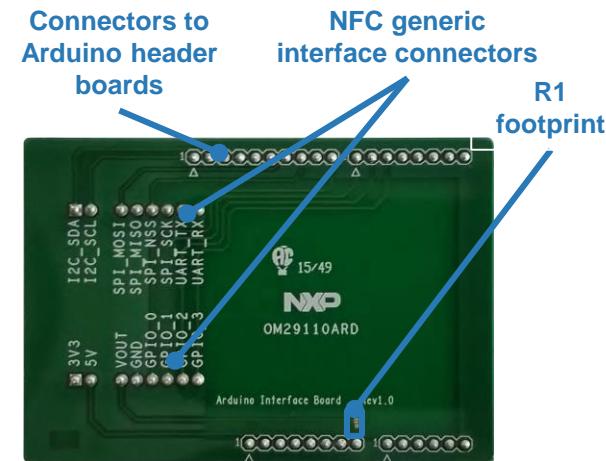
OM5578//PN7150S NFC controller board



OM29110 Raspberry Pi interface board



OM29110 Beagle Bone interface board



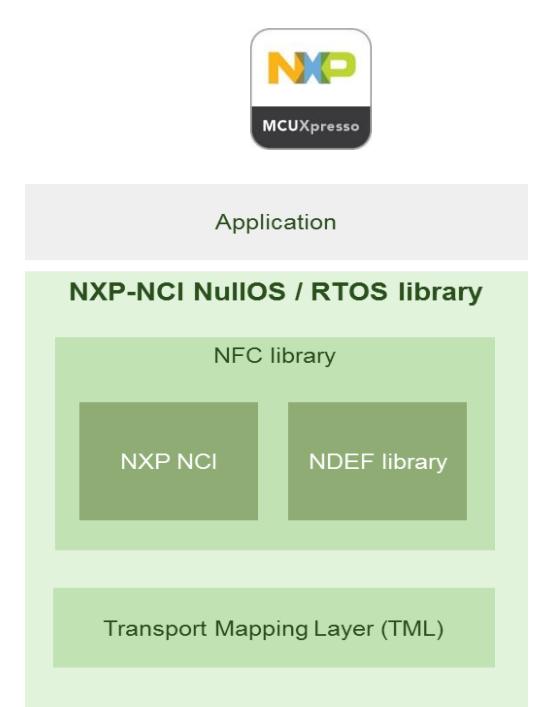
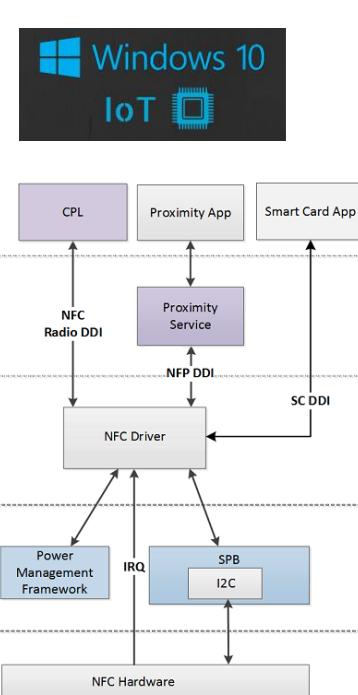
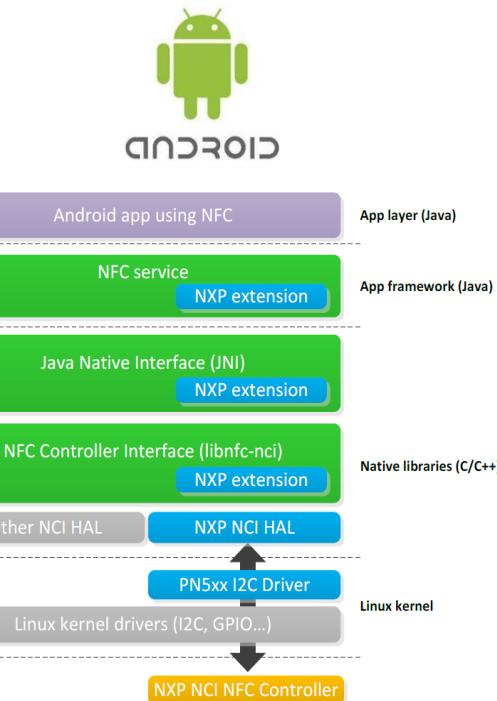
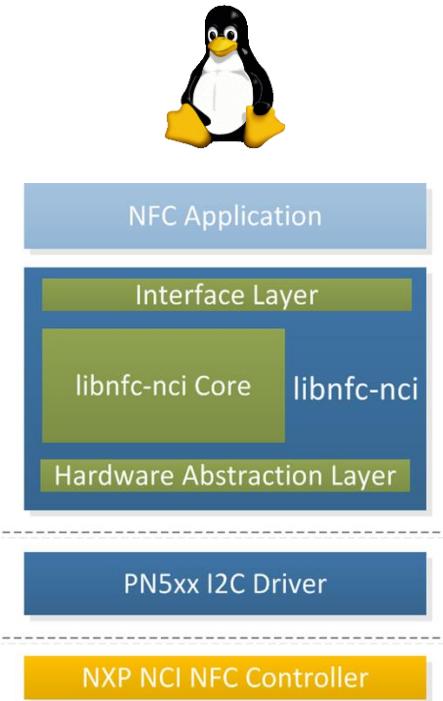
OM29110 Arduino interface board

OM5578 kits can be reused in another system by building your own interface board

HW3560 – Hardware design files OM5578_PN7150S
HW3561 – Hardware design files OM29110

UM10935 – PN7150 NFC Controller SBC Kit user manual
UM10956 – OM29110 NFC SBC Interface Boards user manual

PN7150 software drivers for SW integration into any platform



PN7150 software images and source code examples



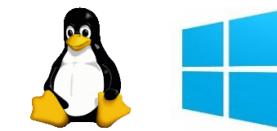
OM5578/PN7150ARD: Software images

- OM5578/PN7150ARD UDOO Neo Linux demo image
- OM5578/PN7150ARD UDOO Neo Android Lollipop demo image
- OM5578/PN7150ARD NXP-NCI MCUXpresso example project



OM5578/PN7150RPi: Software images

- OM5578/PN7150RPi Linux demo image
- OM5578/PN7150RPi WinIoT SW image



OM5578/PN7150BBB: Software images

- OM5578/PN7150BBB Linux demo image
- OM5578/PN7150BBB Android SW image



More support



Use our technical community for your questions

Become a registered member
and get expert advice from the
developer community
<https://community.nxp.com/community/nfc>

How to get there

- NFC and Reader Ics → NFC Technology hub
→ NFC support → NFC community
- URL: <https://community.nxp.com/community/nfc>

WELCOME TO NFC

NFC

Ask your question

Look for answers

CATEGORIES	Count
Contact Smart Card Reader ICs	24
HITAG Reader ICs	16
Connected Tag Solutions	28
MIFARE SAMs for Reader Systems	20
NFC Frontend Solutions	52
NFC Controller Solutions	48
NFC Reader Library	30

RECENT CONTENT	Count	
NFC USB PN533 integration with Android Platform	1 day ago	by vinothraj m
Which SAM ICs are supported by PN532?	1 day ago	by Masahiro Matsuzawa
PN5180 bricked issue without warning	1 day ago	by vinothraj m

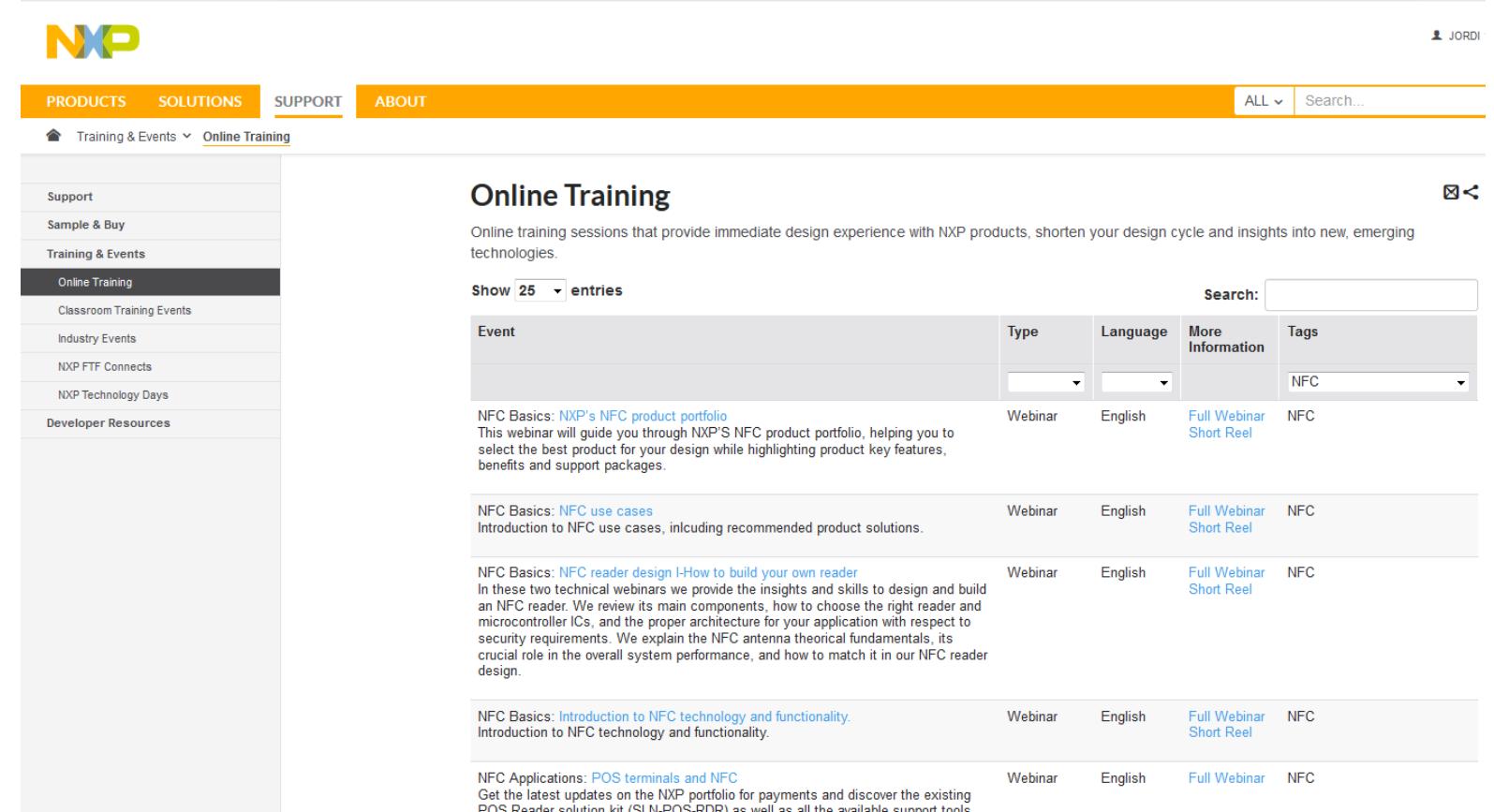
Watch on-demand any recorded session

Tap into our free on-demand training library.

Hundreds of hours of webinars and presentations on NXP products, applications, software, and tools.

Find recorded sessions, among others, for:

- NFC essentials
- NFC use cases
- NFC standards
- NFC reader antenna design (6 sessions)
- NFC reader portfolio
- NFC in smart home, gaming, payments,
- ...



The screenshot shows the NXP website's 'Online Training' section. The top navigation bar includes 'PRODUCTS', 'SOLUTIONS', 'SUPPORT' (which is active), and 'ABOUT'. A search bar and a user profile for 'JORDI' are also present. The left sidebar has a 'Training & Events' dropdown, with 'Online Training' selected. Other options in the dropdown include 'Support', 'Sample & Buy', 'Training & Events' (which is also selected), 'Classroom Training Events', 'Industry Events', 'NXP FTF Connects', 'NXP Technology Days', and 'Developer Resources'. The main content area is titled 'Online Training' and describes it as providing immediate design experience with NXP products. It shows a table with 25 entries, with the first five listed:

Event	Type	Language	More Information	Tags
NFC Basics: NXP's NFC product portfolio	Webinar	English	Full Webinar Short Reel	NFC
NFC Basics: NFC use cases	Webinar	English	Full Webinar Short Reel	NFC
NFC Basics: NFC reader design I-How to build your own reader	Webinar	English	Full Webinar Short Reel	NFC
NFC Basics: Introduction to NFC technology and functionality.	Webinar	English	Full Webinar Short Reel	NFC

How to get there

- NFC and Reader ICs → NFC Technology hub → NFC support → NFC webinars
- URL: <http://www.nxp.com/support/online-academy/nfc-webinars:NFC-WEBINARS>

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NXP

PRODUCTS SOLUTIONS SUPPORT ABOUT

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NXP Approved Engineering Consultants are trusted design contractors, software service providers, and training centers that offer experienced consulting or design services to implement NXP technology solutions.

- Find trusted resources – Valuable engineering resources with proven NXP technology experience
- Simplify your design cycle – Consult with experts, hire the resources you need or get training to complement your team's expertise to get to market faster
- Easily find the resources you need – Local partners experienced with NXP technology implementation

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Engineering Consultant

Services Offered

All

Devices Supported

All

Operating Systems

<https://www.nxp.com/support/support/nxp-approved-engineering-consultants:APPROVED-ENGINEERING-CONSULTANT>



More information about NFC

Visit **NFC developer resources** for a quick start



NFC DEVELOPER RESOURCES

Many great NFC and IoT application solutions have been developed and deployed since NFC was introduced, and the ecosystem sees continuous growth and new applications.

Featured Mobile Platforms

NFC and Android

TapLinx is a One-Stop-Shop for creating Android apps, community exchange, support and purchasing NFC products.

[Learn More >](#)

NFC and iOS11

Apple's iOS11 and NFC compatible mobile devices now support NFC tag reading. That's a game changer, since all iPhone 7s and newer models will now be able to read NFC tags just like Android devices.

[Learn More >](#)

Software Resources

Software for Android

TapLinx – open API for NFC App development
TagWriter
NHS3100 Temperature Logger
NXP Therapy config

Software for iOS

NFC TagInfo by NXP
NHS Temperature Logger

Software for PC

TagXplorer (Windows, MacOS, Linux)
NFC Reader Library
RFIDDiscover
NFC cockpit
NHS3100 Software Development Kit

The screenshot shows the NXP blog homepage with a search bar at the top. The main banner features the text "How do you experience NFC? Tell us for a chance to win an NFC ring". Below the banner, there are several article cards arranged in a grid. Each card includes a thumbnail image, the author's name, the publication date, and a "READ ON" button. The articles cover topics such as NFC Everywhere, IoT at home, NFC in living rooms, NFC innovators, NFC pairing, NFC in media, NFC innovators, and NFC rings.

Date	Author	Title	Thumbnail
JULY 19, 2016	PIERRE GOARIN	The IoT at home: NFC makes it easier to create smart environments	
JUNE 6, 2016	FABRICE PUNCH	5 reasons why your living room wants NFC	
MAY 24, 2016	VANESSA LOWE	Meet an NFC Innovator: Traces	
APRIL 4, 2016	FABRICE PUNCH	NFC pairing: More time to relax, entertain, and connect at home	
MARCH 31, 2016	MIRIAM FABEROVA	Print media just got smarter, thanks to NFC	
MARCH 1, 2016	VANESSA LOWE	Meet an NFC Innovator: OriginTag	
FEBRUARY 23, 2016	JOHN MCLEAR	NFC Ring: One smart ring, unlimited possibilities	
FEBRUARY 9, 2016	MONICA DAVIS		
JANUARY 12, 2016	GILES SUTHERLAND		
DECEMBER 21, 2015	HILARY CAIN		
NOVEMBER 18, 2015	CRISTINA ARDILA		



Product support package for NFC Readers & NFC Connected Tags

Thank you for your kind attention!

Please remember to fill out our **evaluation survey** (pop-up)

Check your email for **material download** and on-demand **video** addresses

Please check NXP and MobileKnowledge websites for **upcoming webinars** and **training sessions**

<http://www.nxp.com/support/classroom-training-events:CLASSROOM-TRAINING-EVENTS>

www.themobileknowledge.com/content/knowledge-catalog-0





MobileKnowledge

MobileKnowledge is a team of HW, SW and system engineers, experts in **smart, connected and secure** technologies for the IoT world. We are your ideal **engineering consultant** for any specific support in connection with your **IoT** and **NFC** developments. We design and develop secure HW systems, embedded FW, mobile phone and secure cloud applications.

Our services include:

- **Secure hardware design**
- **Embedded software development**
- **NFC antenna design and evaluation**
- **NFC Wearable**
- **EMV L1 pre-certification support**
- **Mobile and cloud application development**
- **Secure e2e system design**

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the secure IoT revolution

