ST25R95 and CR95HF near field communication transceivers software expansion for STM32Cube

Application	Applications	
Middleware	RFAL Lib	NDEF Lib
Hardware Abstraction	STM32Cube hardware abstraction layer (HAL)	

Hardware	STM32 Nucleo expansion boards X-NUCLEO-NFC03A1 (Connect)
	STM32 Nucleo development board

Features

- Complete middleware to build applications using the ST25R95 and CR95HF near field communication transceivers
- Easy portability across different MCU families, by using STM32Cube™
- Sample application to detect several NFC tag types
- Free, user-friendly license terms
- Sample implementation available on the X-NUCLEO-NFC03A1 expansion board, plugged onto a NUCLEO-L476RG, NUCLEO-F401RE or NUCLEO-F103RB board
- Complete RF/NFC abstraction (RFAL) for all major technologies including data exchange protocols.

Description

The X-CUBE-NFC3 software includes the drivers for ST25R95 and CR95HF, running on STM32 microcontrollers. It is built on top of STM32Cube™ software technology, easing portability across different STM32 MCUs.

The software comes with examples of implementation of such drivers, running on the X-NUCLEO-NFC03A1 board plugged on top of NUCLEO-L476RG, NUCLEO-F401RE or NUCLEO-F103RB boards.

Product status link
X-CUBE-NFC3

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For further information contact your local STMicroelectronics sales office.

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1 What is STM32Cube?

STM32Cube is an STMicroelectronics original initiative to significantly improve designer's productivity by reducing development effort, time and cost. STM32Cube covers the whole STM32 portfolio.

STM32Cube includes:

- A set of user-friendly software development tools to cover project development from the conception to the realization, among which:
  - STM32CubeMX, a graphical software configuration tool that allows the automatic generation of C initialization code using graphical wizards
  - STM32CubeIDE, an all-in-one development tool with peripheral configuration, code generation, code compilation, and debug features
  - STM32CubeProgrammer (STM32CubeProg), a programming tool available in graphical and command-line versions
  - STM32CubeMonitor-Power (STM32CubeMonPwr), a monitoring tool to measure and help in the optimization of the power consumption of the MCU
- STM32Cube MCU & MPU Packages, comprehensive embedded-software platforms specific to each microcontroller and microprocessor series (such as STM32CubeG4 for the STM32G4 Series), which include:
  - STM32Cube hardware abstraction layer (HAL), ensuring maximized portability across the STM32 portfolio
  - STM32Cube low-layer APIs, ensuring the best performance and footprints with a high degree of user control over the HW
  - A consistent set of middleware components such as FAT file system, RTOS, USB Device, and USB Power Delivery
  - All embedded software utilities with full sets of peripheral and applicative examples
- STM32Cube Expansion Packages, which contain embedded software components that complement the functionalities of the STM32Cube MCU & MPU Packages with:
  - Middleware extensions and applicative layers
  - Examples running on some specific STMicroelectronics development boards

2   How does this software complement STM32Cube?

The proposed software is based on the STM32CubeHAL, the hardware abstraction layer for STM32 microcontrollers. The package extends STM32Cube by providing a Board Support Package (BSP) for the X-NUCLEO-NFC03A1 expansion board for STM32 Nucleo and some middleware components for HF reader and NFC application drivers (RFAL).

The drivers abstract low-level details of the hardware, and allows the middleware components and applications to access NFC tags and NFC enabled mobile phones in a hardware independent fashion.

The package also includes two sample applications that developers can use to start experimenting with the code. One sample application has been developed to detect NFC tags of different types and NFC enabled mobile phones. The other application shows how to read and write URI and text records to tags using the NDEF library.

Note: *The Expansion Package runs on STM32 microcontrollers based on Arm® cores. Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.*

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Revision history

Table 1. **Document revision history**

Date	Version	Changes
03-Nov-2016	1	Initial release.
15-Jan-2019	2	Added ST25R95, hence updated document title and image on cover page. Updated *Features*, *Description*, *Section 1: What is STM32Cube?* and *Section 2: How does this software complement STM32Cube?*.
20-Jan-2020	3	Added product status link table and updated cover-page image. Updated: • Features • Description • Section 1 What is STM32Cube? • Section 2 How does this software complement STM32Cube?

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