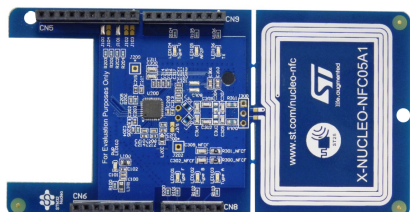


NFC card reader expansion board based on ST25R3911B for STM32 and STM8 Nucleos



Features

- On-board NFC card reader IC: ST25R3911B
- 47 mm x 34 mm, four turns, 13.56 MHz inductive antenna etched on PCB and associated tuning circuit
- Six general purpose LEDs
- ISO 18092 (NFCIP-1) active P2P
- ISO 14443A and ISO14443B
- ISO 15693
- FeliCa™
- VHBR
 - 6.8 Mbit/s AFE and PCD to PICC framing
 - 3.4 Mbit/s PICC to PCD framing
- Up to 1.4 W output power with differential antenna
- Possibility of driving two antennas in single ended configuration
- Inductive and capacitive wake-up
- Automatic antenna tuning system
- Transparent and Stream modes to implement MIFARE™ Classic compliant or other custom protocols
- Equipped with Arduino™ UNO R3 connector
- Free comprehensive development firmware library compatible with STM32Cube and samples for ST25R3911B
- Scalable solution for multiple board cascade
- FCC certified
- RoHS compliant

Product summary	
NFC card reader expansion board based on ST25R3911B for STM32 Nucleo	X-NUCLEO-NFC05A1
NFC / HF RFID Reader IC	ST25R3911B
High performance HF reader/NFC initiator IC software expansion for STM32Cube	X-CUBE-NFC05

Description

The X-NUCLEO-NFC05A1 is not recommended for new designs. Please evaluate the [X-NUCLEO-NFC08A1](#).

The X-NUCLEO-NFC05A1 is an NFC card reader expansion board based on the ST25R3911B.

The expansion board is configured to support ISO14443A/B, ISO15693, FeliCa™ and AP2P communication.

By default, a VHBR compatible matching is populated to achieve bit rates up to 3.4 Mbps.

The ST25R3911B manages frame coding and decoding in reader mode for standard applications, such as NFC, proximity and vicinity HF RFID standards.

The ST25R3911B supports ISO/IEC 14443 Type A and B, ISO/IEC 15693 (single Subcarrier only) and ISO/IEC 18092 communication protocols. It also supports the detection, reading and writing of NFC Forum Type 1, 2, 3, 4 and 5 tags. It contains a low power capacitive sensor that can be used for ultra-low power wake-up without switching the reader field on.

Traditional inductive wake-up to select amplitude or phase measurement can be used as well.

Furthermore, the automatic antenna tuning (AAT) technology enables operations close to metallic parts and/or in changing environments.

1 Schematic diagrams

Figure 1. Functional block diagram

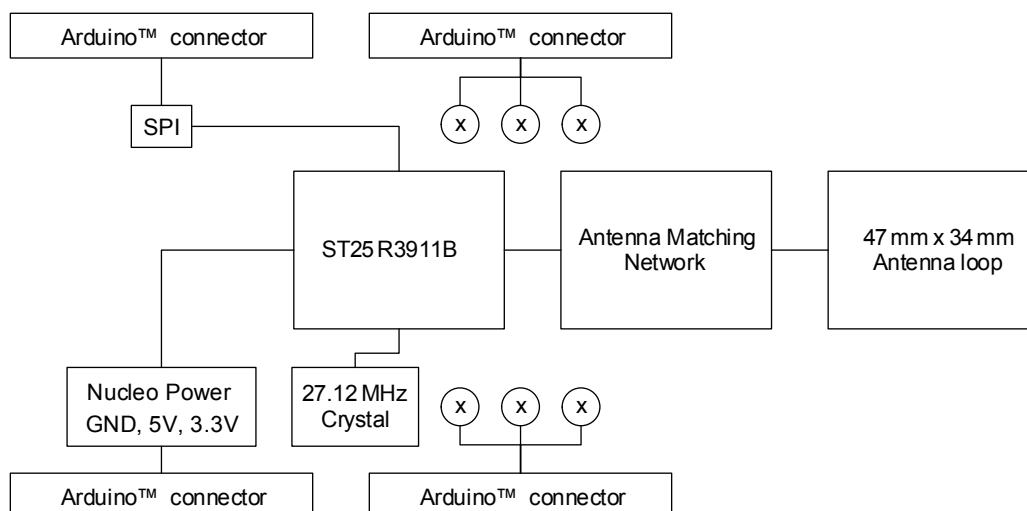


Figure 2. X-NUCLEO-NFC05A1 evaluation board circuit schematic (1 of 3)

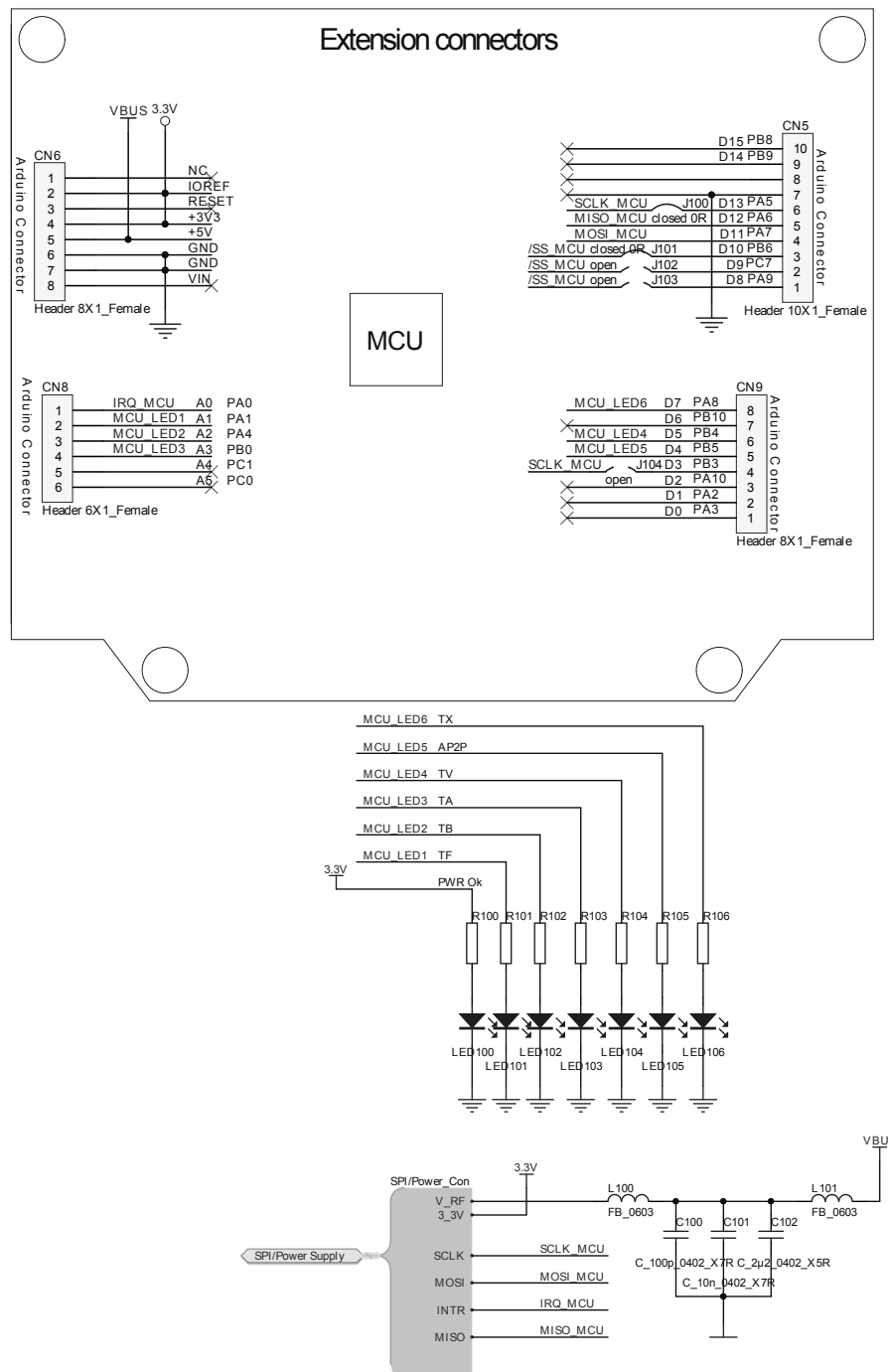
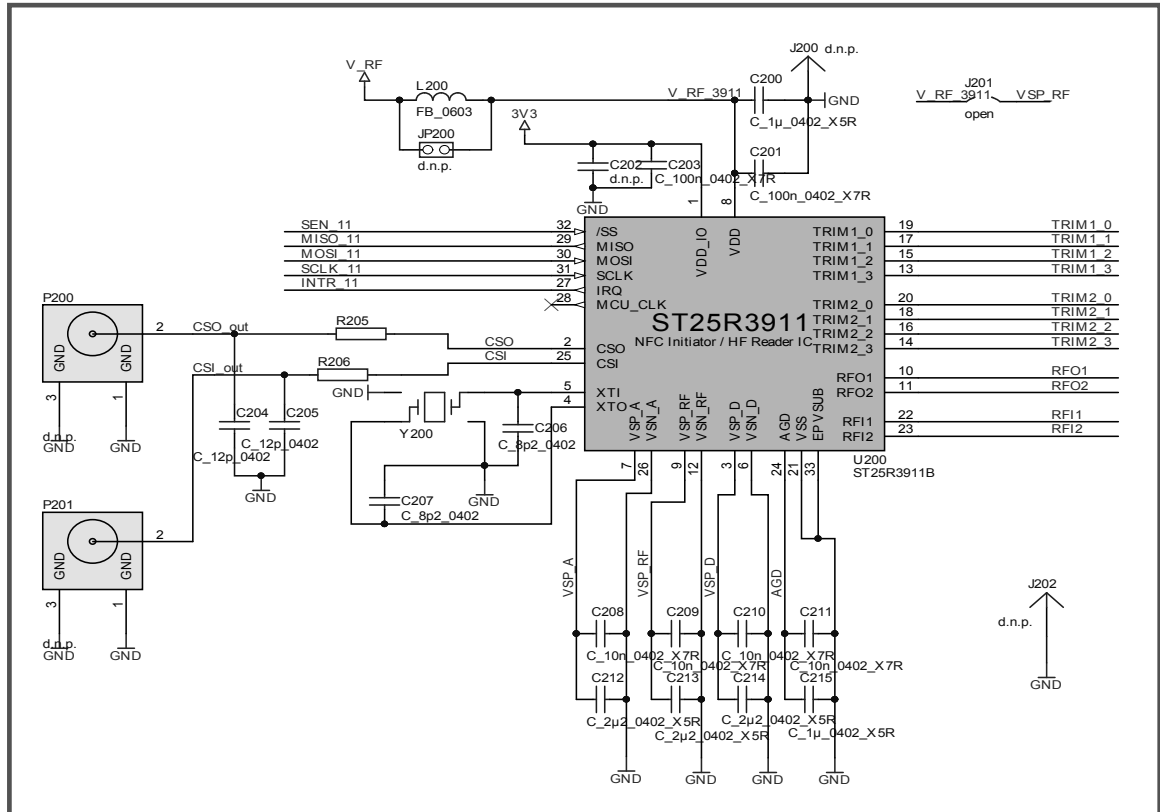
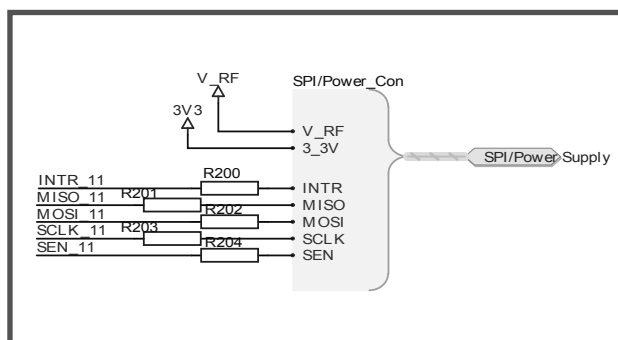


Figure 3. X-NUCLEO-NFC05A1 evaluation board circuit schematic (2 of 3)

ST25R3911 NFC Initiator/HF Reader



Controller interface



Antenna connection

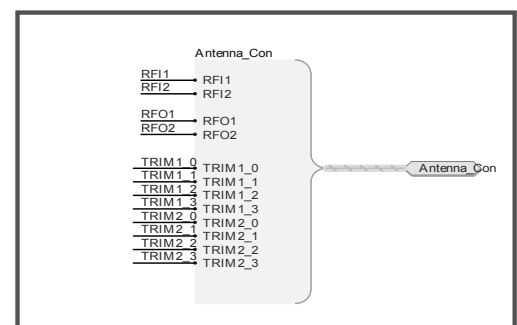
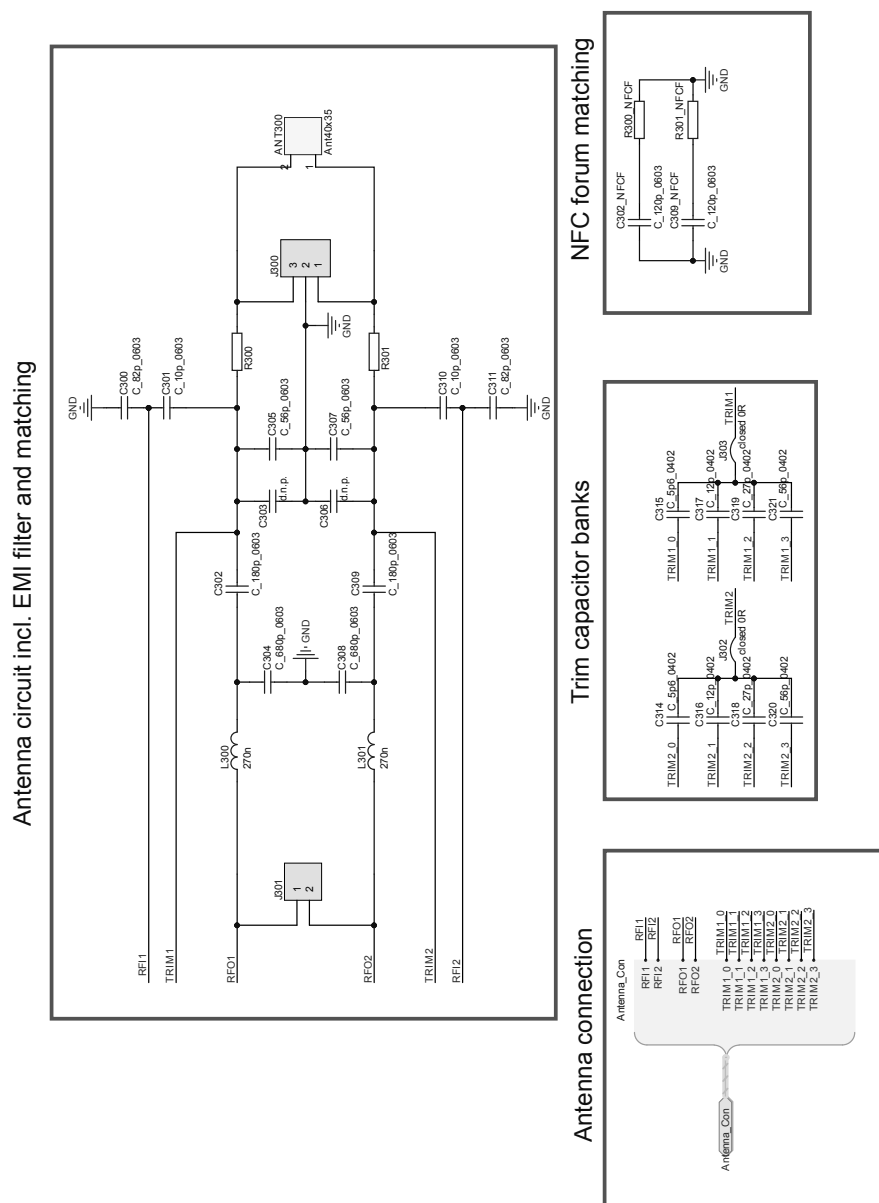


Figure 4. X-NUCLEO-NFC05A1 evaluation board circuit schematic (3 of 3)



Revision history

Table 1. Document revision history

Date	Version	Changes
14-Jul-2017	1	Initial release.
04-Dec-2018	2	Updated short description.
26-Feb-2019	3	Fixed link in product summary table.
13-Nov-2024	4	Updated description. Added reference to X-NUCLEO-NFC08A1.

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