

NFC – M24LRxx – CR95HF - etc

Apr. 2013

NFC Market Segmentation

**NFC devices for
Consumer / Computer /
Peripheral**

**NFC devices for
Mobile / Tablet**



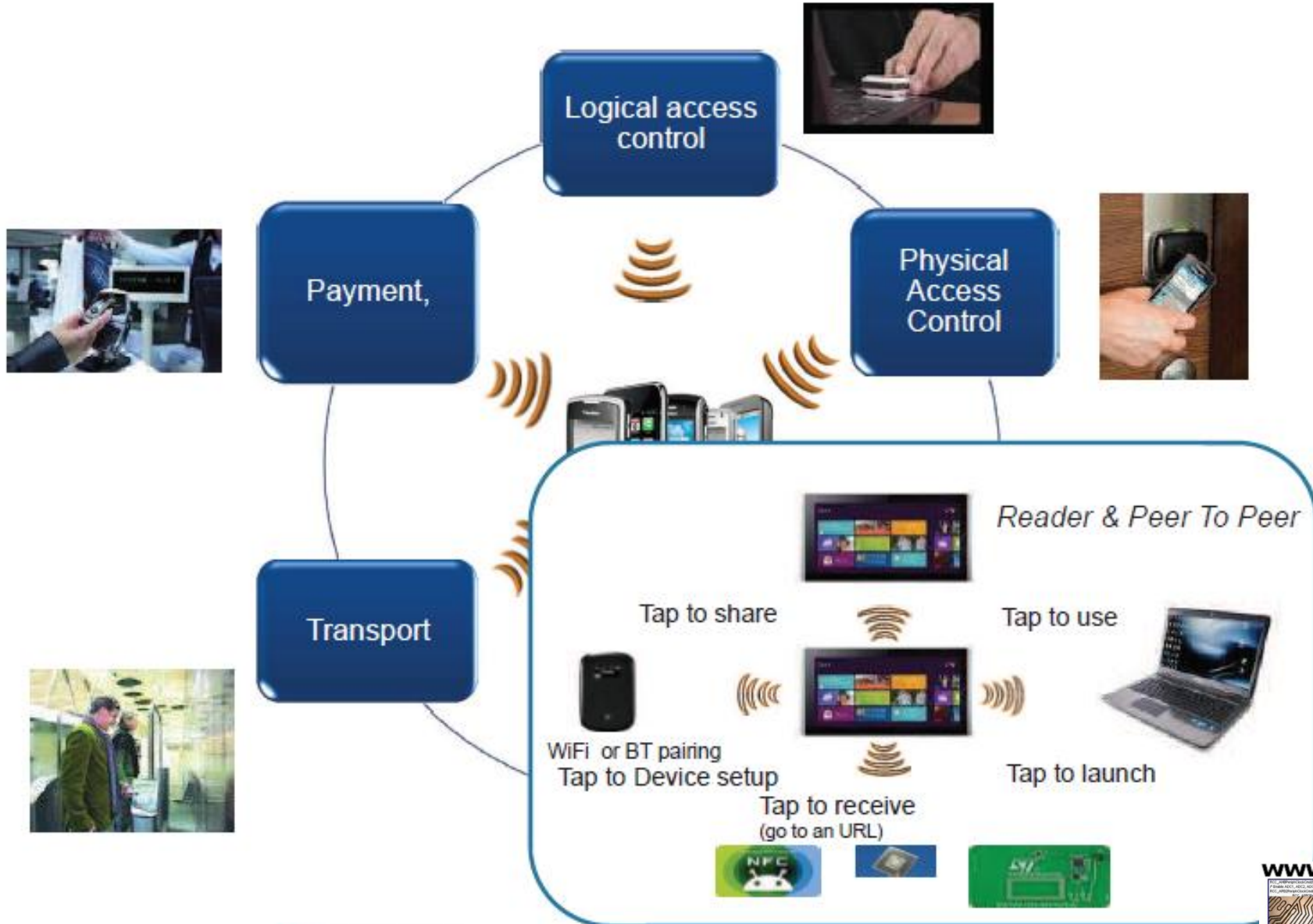
**Reader & P2P
& CE Modes**

**Reader & P2P &
CE Modes with
Secure Element**

**NFC devices
for Peripheral /
Accessories / Cards**

Tags & Cards

NFC Use cases



NFC Portfolio for Computer & Consumer



NFC Tag / Cards

- **SRi2K / LRi2K** : Tag 2Kb
- **ST23ZR08** : Tag NFC Type 4A / 4B



M24LR16E / M24SR16 Dual Interface EEPROM

- NFC tag with RF interface (type V / type 4)
- I2C Interface
- 2-KByte EEPROM



CR95HF NFC Reader

- Reader / Writer IC
- SPI/UART interface
- Low power modes



STRFNFC NFC Transceiver

- Reader/Writer, Card emulation & P2P NFC compliant
- Low power modes / Field & Tag detector
- Mifare 1K / 4K reader management (with ST secure microcontroller)



ST21NFC / ST21NFCB NFC Controller

- Reader/Writer, Card emulation & P2P NFC compliant
- Android "Ice Cream Sandwich" & WIN8 compatible
- HCI-NCI Embedded, Multi-Host management (3 SWP)

NFC & SE Portfolio for Mobile Devices



Secure NFC SIM

- **ST33** Product range, in mass production phase
- Selected by all card vendors industry



Secure NFC μSD

- **ST33** Product range, in mass production phase
- Selected by major players



Embedded Secure Element

- **ST33** Product range, in mass production phase
- Secure Java OS through partnership with Card vendors



NFC Controller

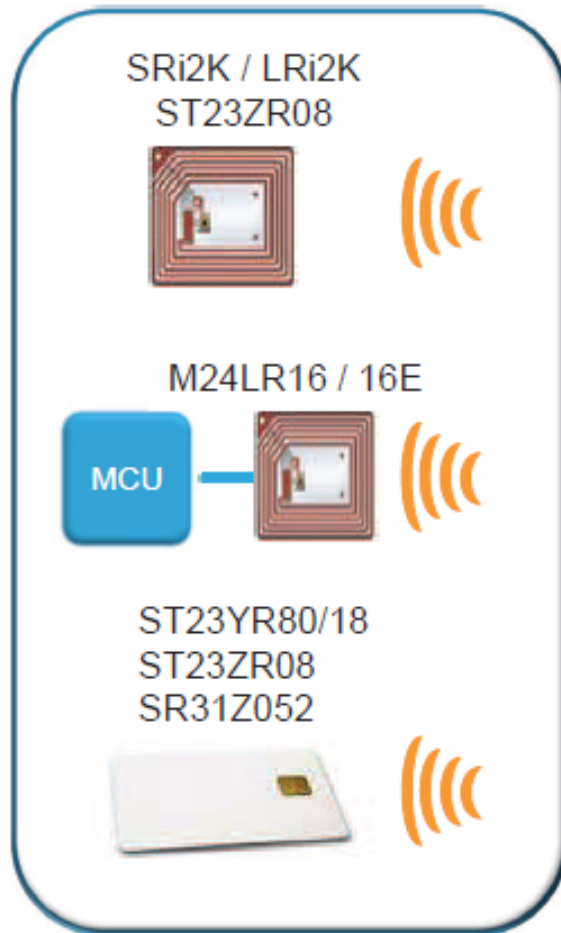
- **ST21NFCA**, Fully qualified
- Android "Ice Cream Sandwich" & WIN8 compatible



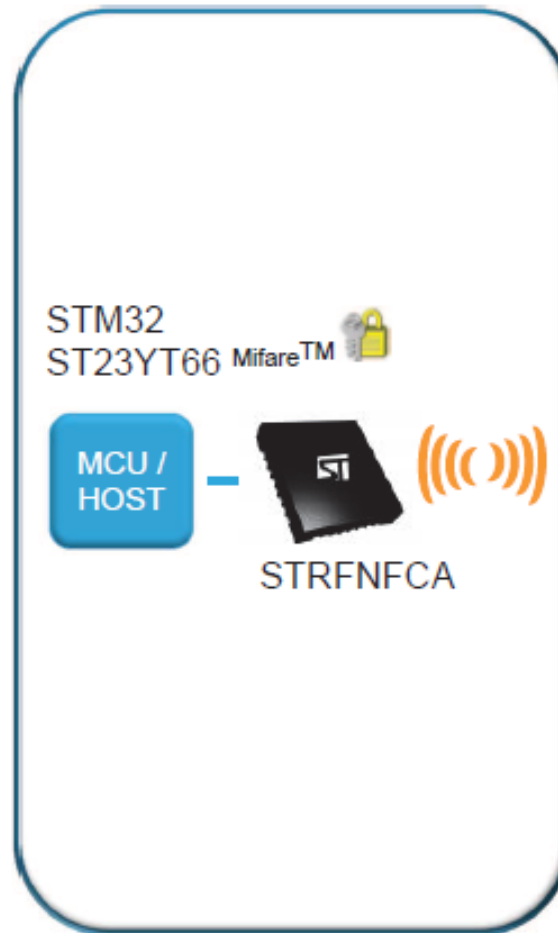
NFC Controller + Secure Element SiP

- **ST21NFCA + ST33** + Secure Java OS
- Android & WIN8 compatible

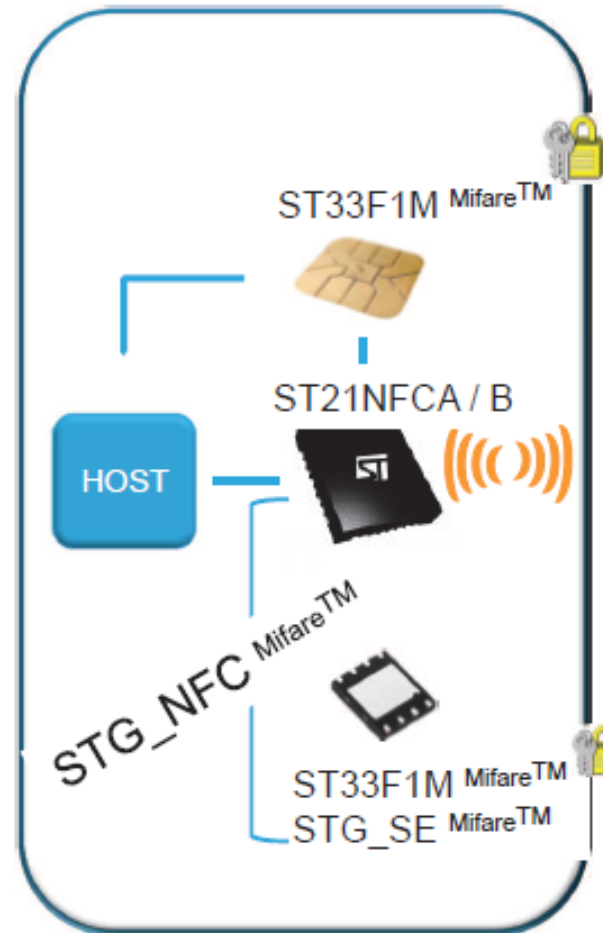
NFC Devices - ST Product Portfolio



Tags / Cards



NFC Transceiver

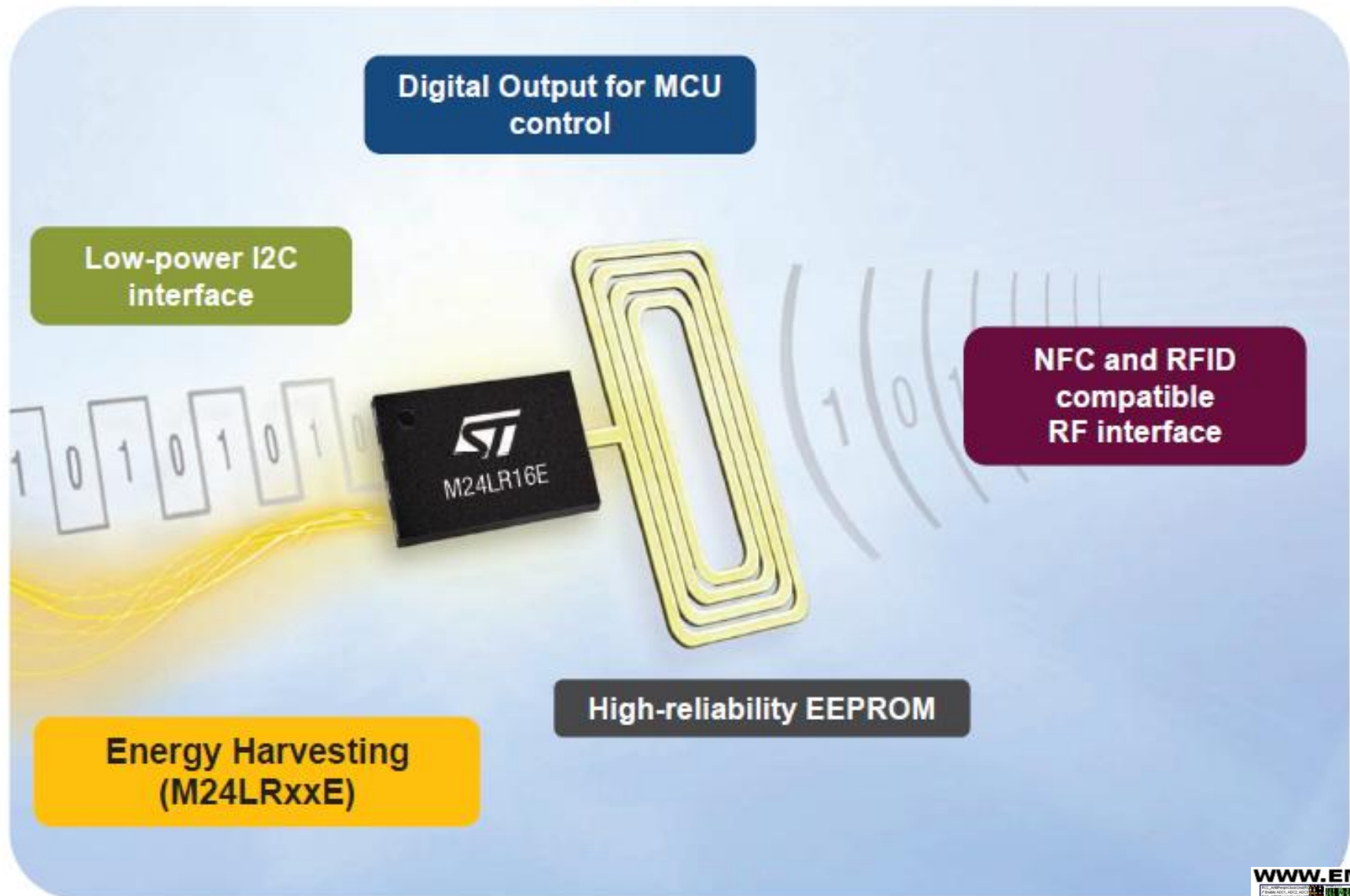


**NFC Controller &
secure elements**

NFC Portfolio presentation

- **NFC Tag with serial interface**
- **NFC Reader-Writer**
- **NFC Transceiver**
- **NFC Controller & Secure Element**
- **NFC Summary**

NFC tag with serial interface



A complete portfolio of Dual Interface EEPROMs



A wide range of evaluation kits and reference antennas



DEMOKIT-M24LR-A
DEVKIT-M24LR-A
ANTx-M24LR-A
DEMO-CR95HF-A
DATALOG-M24LR-A

NFC Portfolio presentation

- NFC Tag with serial interface
- **NFC Reader-Writer**
- NFC Transceiver
- NFC Controller & Secure Element
- NFC Summary

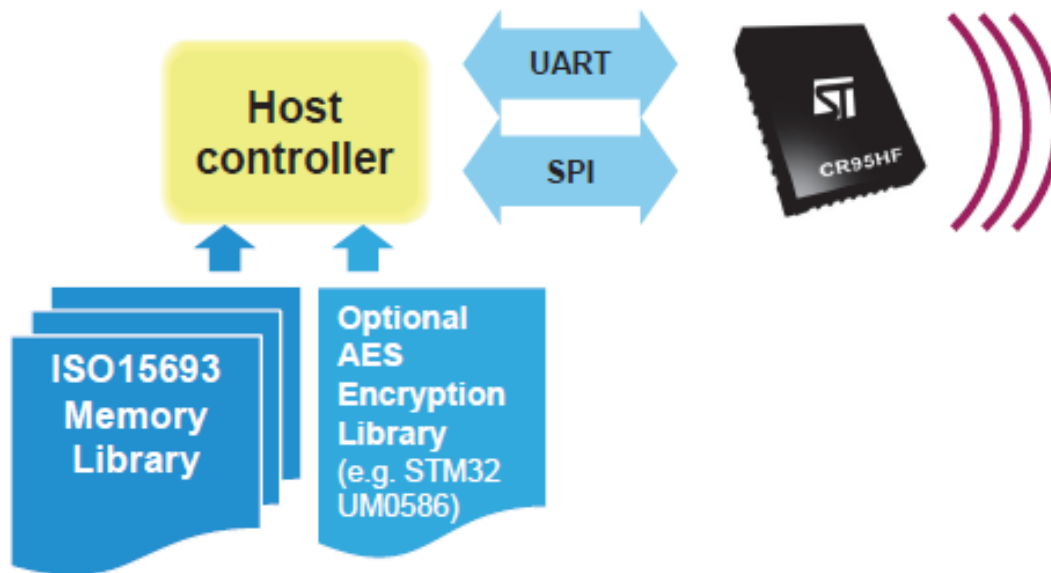
NFC Reader-Writer CR95HF

- 13.56MHz Multi-protocol Contactless Reader-Writer IC for a wide range of embedded RF applications
- Enables RF communications with Dual Interface EEPROM, RF Memory devices and RFID tags in a wide range of applications:
 - Medical equipment, portable healthcare devices
 - Industrial equipment, home appliance
 - Computers and peripherals
 - Consumer electronics
- Suitable for RF reader/writer designs of portable and stationary systems



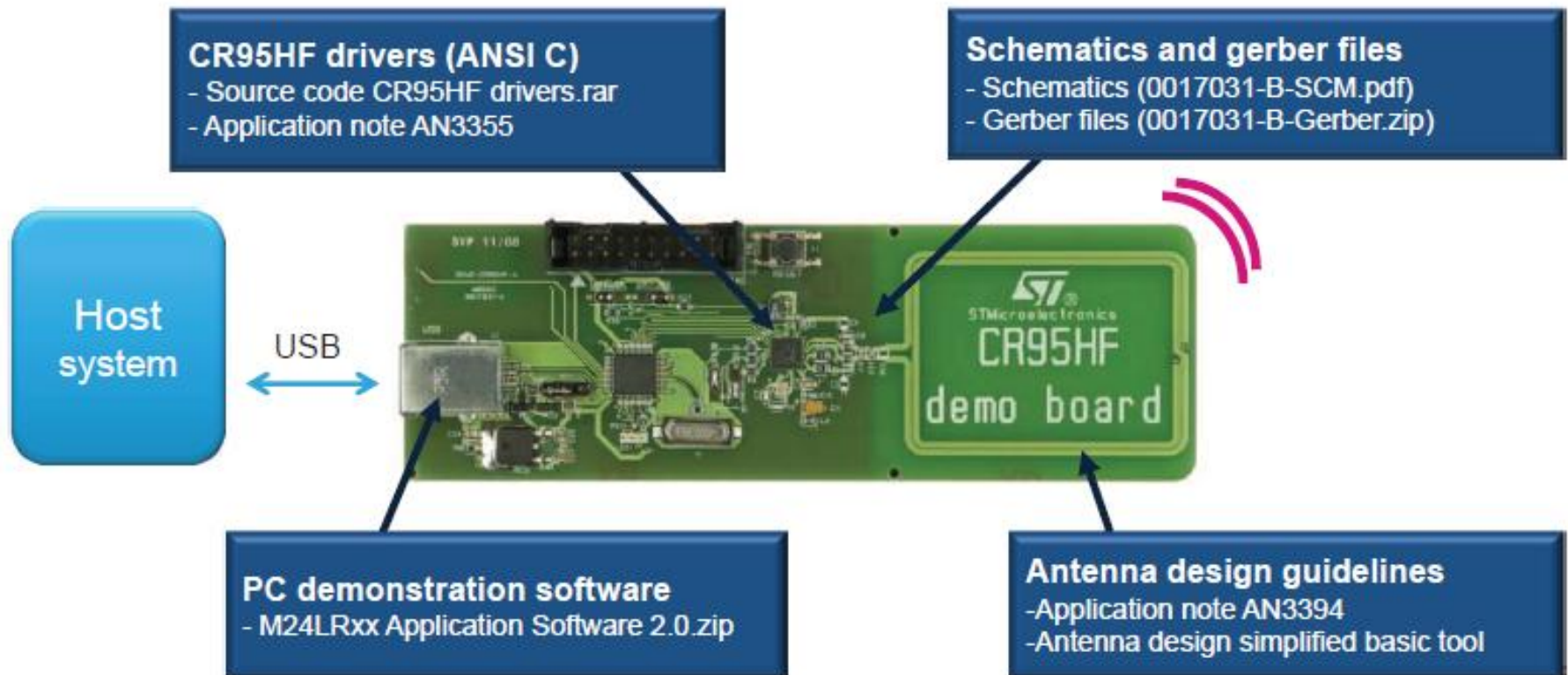
NFC Reader-Writer CR95HF

- NFC ISO18092, ISO14443 A-B and ISO15693 compliant analog front-end
- Standard QFN32 package, 5x5mm
- UART and SPI interface
- 3V / 5V operation



CR95HF Evaluation kit

- Ideal for demonstrations and performance assessment
- Directly plugs on your computer (USB), comes with PC software



NFC Portfolio presentation

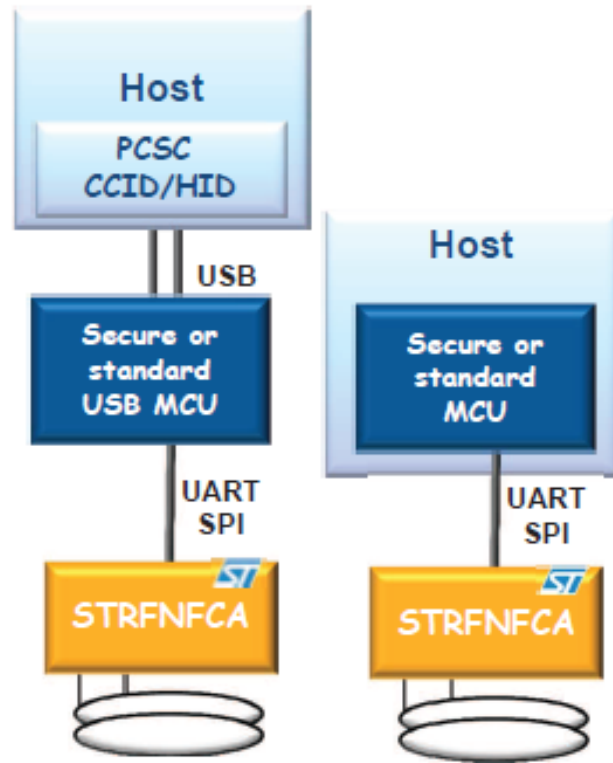
- NFC Tag with serial interface
- NFC Reader-Writer
- **NFC Transceiver**
- NFC Controller & Secure Element
- NFC Summary

NFC Transceiver STRFNFCA

- NFC ISO18092, ISO14443 A-B and ISO15693 transceiver for reader mode
- NFC ISO18092, ISO14443 A-B transceiver for card-emulation, peer to peer modes
- Mifare Classic Framing capability on reader mode
- Standard QFN32 package, 5x5mm
- UART and SPI interface
- 3V / 5V operation



NFC Transceiver STRFNFC



PC link reader (USB dongle)
PC accessories

Standalone reader
(set top box)

Secure or Standard USB MCU = **ST23YT66 / STM32**

Secure or
Standard
USB MCU

ST23YT66 USB secure chip EAL5+ in TSSOP20
Firmware (ISO14443A,B, ISO18092 in reader & Card Emulation, SPI, STRFNFC cdes , PCSC 2.0)
Mifare Classic Lib in reader mode

STM32 standard MCU based ARM core
Firmware (ISO14443A,B, ISO18092 in reader & Card emulation, SPI, STRFNFC cdes, UART,)

Any **OTHERS HOST** with SPI/UART link possible

NFC Transceiver = **STRFNFC**

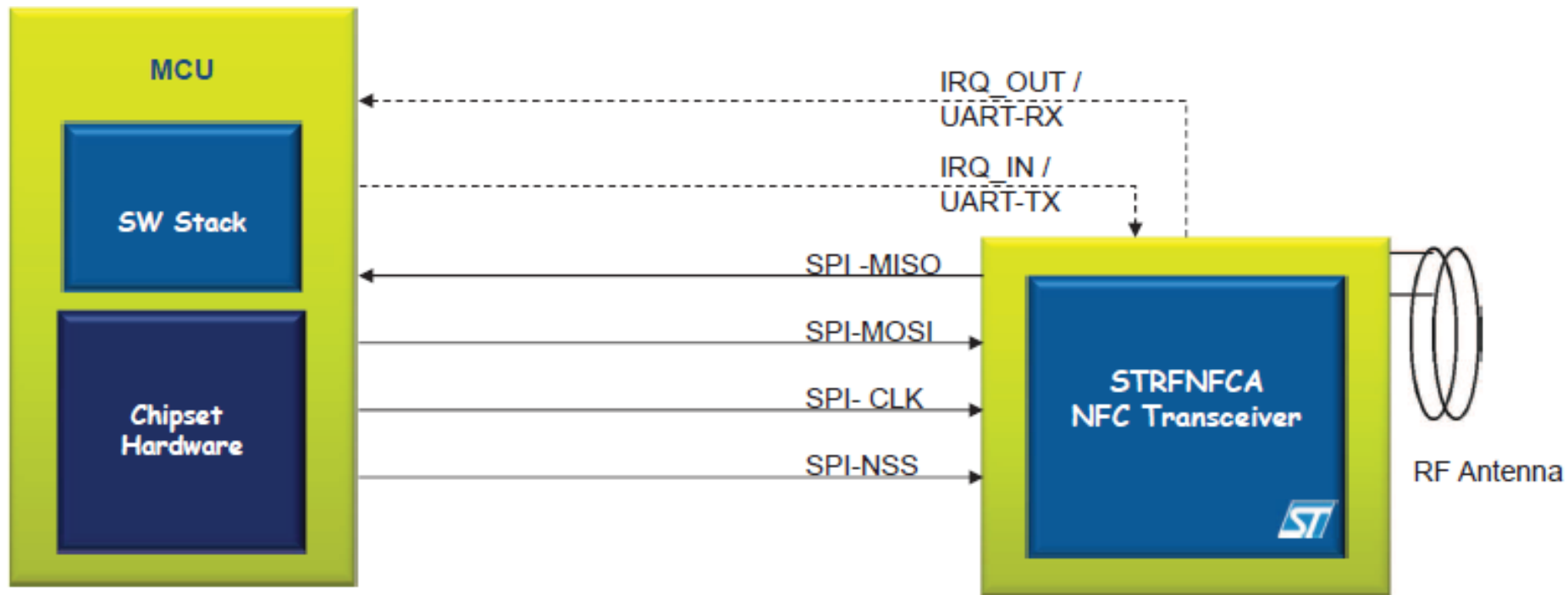
STRFNFC

QFN32 5x5x0.9 / Wafer
SPI 2Mbps, UART 2Mbps
ISO14443-A, B ,ISO18092 , ISO15693 **reader**
ISO14443-A, B, ISO18092 **card emulation**

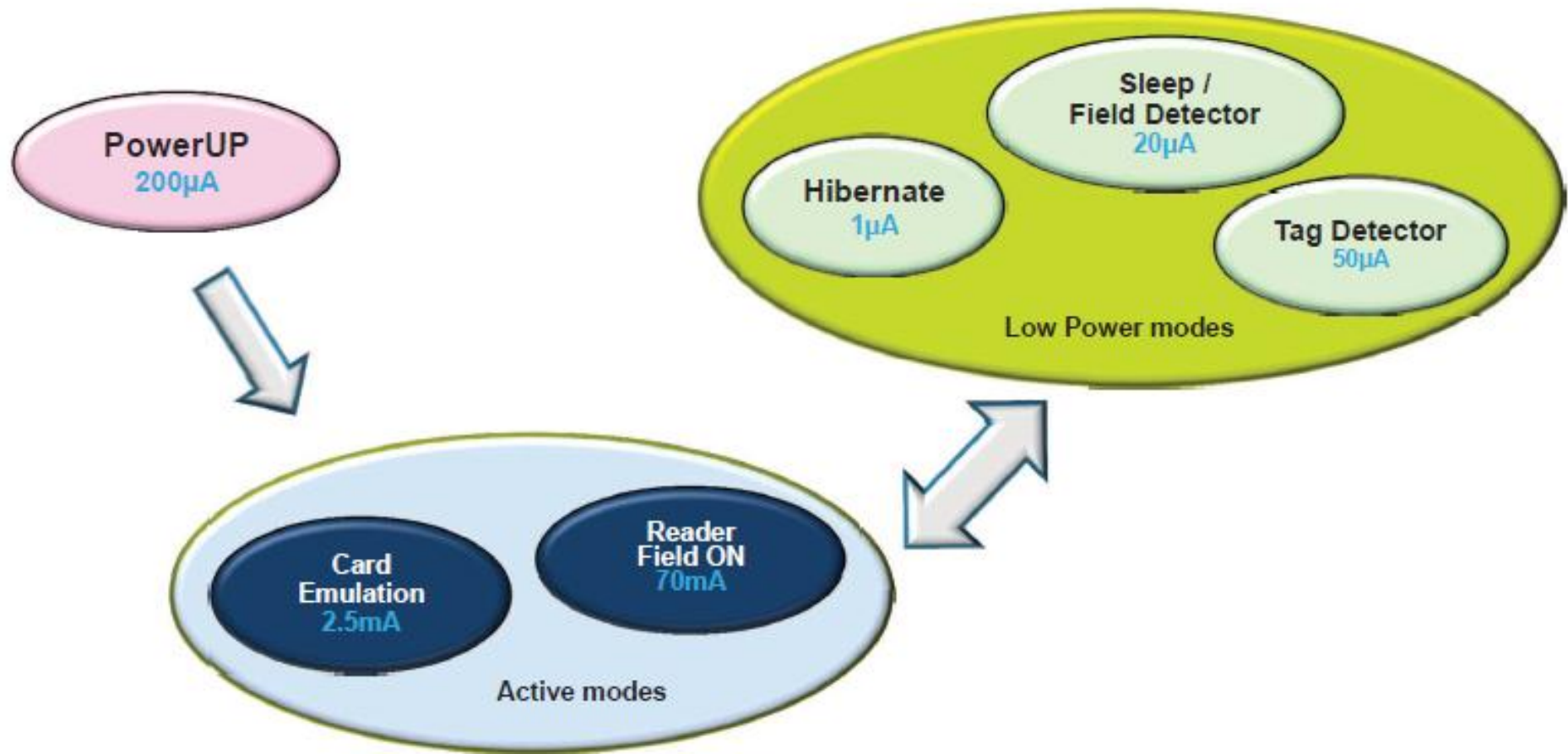
Peer to Peer

Dedicated internal frame controller
Low Power Modes, Tag & Field detectors
Mifare 1K, 4K Reader frame management
Antenna & reference design, evaluation kit

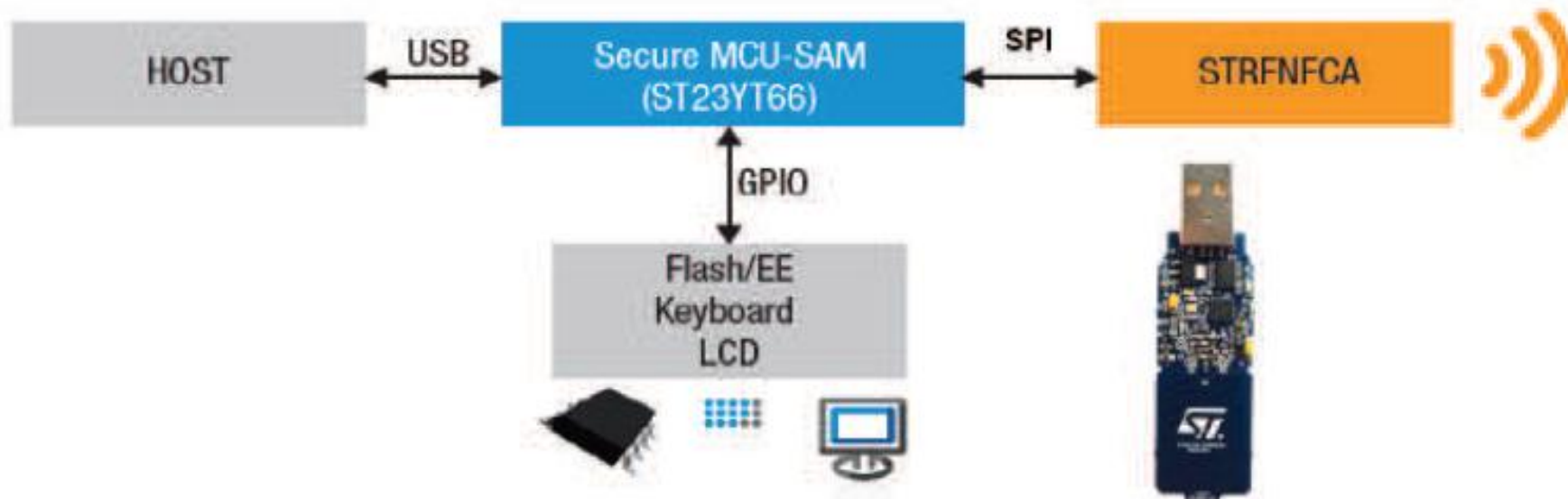
STRFNFCA Hardware Interconnect



STRFNFCA Power consumption



NFC USB Secure Reader STRFNFCA + ST23YT66



IC for USB token and NFC solution on non-mobile devices

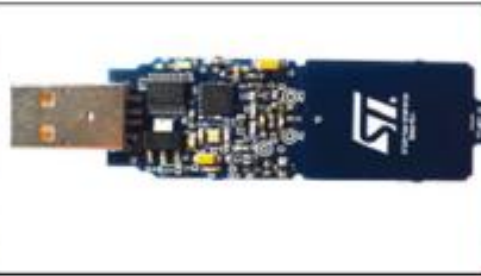
Application	Part number	EEPROM (Kbytes)	ROM (Kbytes)	RAM (Kbytes)	Cryptography	Interface
USB	ST23YT34	34	110	5+2	EDES, PKI	USB 2.0 12 Mbit/s, ISO 7816-3, SPI, GPIO
	ST23YT66	66	210	6+2	EDES, PKI	USB 2.0 12 Mbit/s, ISO 7816-3, SPI, GPIO
NFC	STRFNFCA	-	-	-	-	ISO 14443-A/B reader, card emulation and P2P ISO 18092 reader, card emulation ISO 15693 reader SPI 2 Mbit/s, UART 2 Mbit/s

STRFNFCA Devices

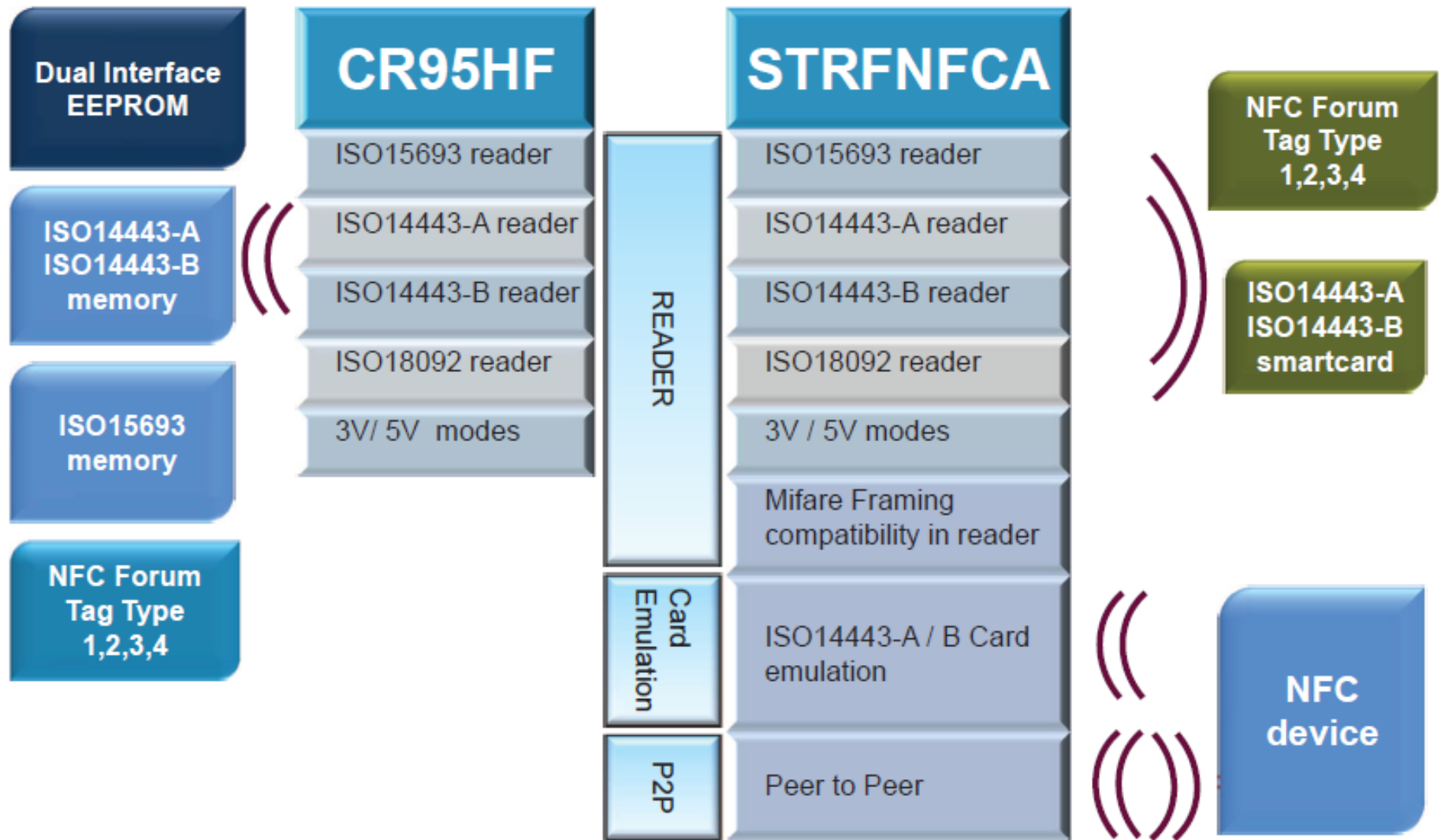


STRFNFCA Evaluation Kit

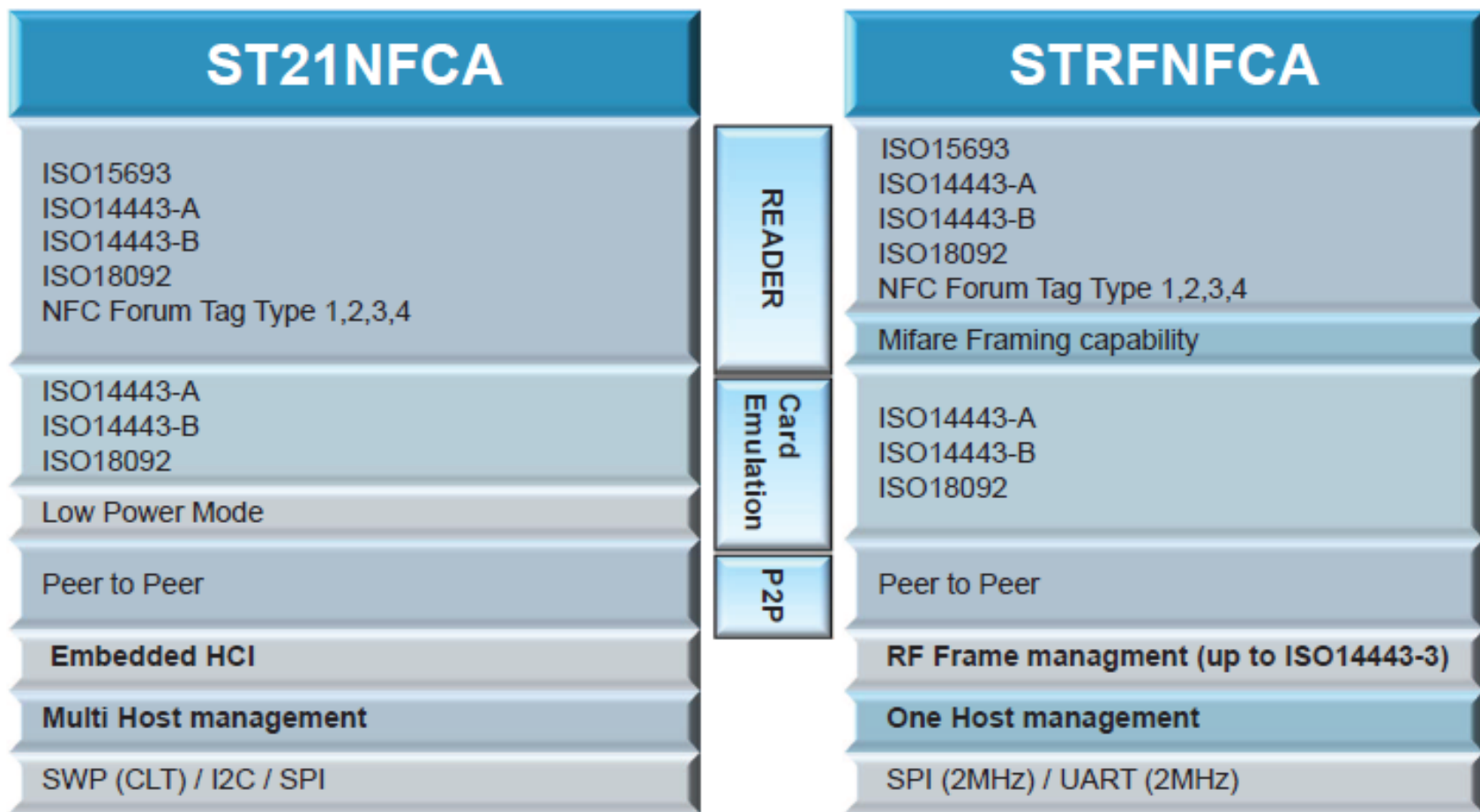
Versions	STRFNFCA	STRFNFCA + YT66	STRFNFCA+STM32
	Now	Now	Now
Evaluation Kit	• SCT-STRF-DB2	• SCT-USBNFC-DB1	• SDK-STM32-NFC-01
features	• NFC reader & Card emulation • Drivers to adapt with the main CPU	• PCSC2.0 • NFC reader • NFC card emulation (June 2012)	• NFC reader • NFC Card emulation (May 2012)



CR95HF versus STRFNFCA



ST21NFCA versus STRFNFCA



**MAINLY DESIGNED FOR MOBILE
PHONES HAVING AN NFC STACK**

**MAINLY DESIGNED FOR NFC
DEVICE WITH ONE EMBEDDED
HOST CONNECTION**

NFC Portfolio summary

- NFC Tag with serial interface **M24LRxx/M24SRxx**
- Basic NFC Reader/Writer **CR95HF** without Mifare support, no Card Emulation and Peer to Peer modes
- NFC Transceiver **STRNFCA** for Reader, Card Emulation and Peer to Peer modes support with Mifare classic capability in Reader mode
- NFC Controller **ST21NFCA** with Multi-host management over SWP and embedded HCI
- Development kit includes:
 - Datasheets
 - Reference schematics
 - Antenna design guidelines
 - Application notes



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