ASK GENXXX Development kit
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Development kit content

- 1 reader or coupler of GEN5XX platform (RDR518, CPL508, UCM108, CPL108, CPL118, MTB108, CPL528, PLG548, CPL548)
- 1 Security Application Module (CSAM) with test keys (KVC02)
- 1 Security Application Module (Mifare NXP SAM® AV2) with test keys
- 2 GTML, 2 GTML2 and 2 CD97 with test keys (KVC02)
- 2 Tango UT and 2 Tango EMV
- 2 Mifare Classic® 1K, 2 Mifare Classic® 4K
- 2 Mifare Plus® 2K, 2 Mifare DESFire® 2K
- 20 C.ticket® (5 CTS512B, 5 CTS512A, 5 CTM1536AC, 5 SRT512)
- 1 media (USB key) containing drivers, applications, libraries and documentation
- 1 FDC102 Field Detector Card
Development kit description

- **Drivers, Applications, Libraries & Documentation on media (USB key)**
- **SAMs**
- **C.tickets® samples**
- **Cards samples**
- **FDC102**
- **User manual**
- **RDR518**
GENXXX functionalities

• ISO 14443 A/B/B’, Felica, Mifare®
• High speed RF communication 106 up to 848 kb/s
• Cryptographic security with integrated SAM + Mifare® ASIC
• Calypso compliant
• Serial, TTL or USB2 full speed host interface
• High power RF interface
• Up to 4 programmable LEDs
GENXXX firmware architecture

GEN5XX Firmware

- MIFARE® Library
- Calypso Library
- C.ticket® Library
- Universal Transaction® Library
- EMV® Library
- SAM Interface
- RF Chip Interface
- Host Com. Interface
- RF Interface
**RDR518 hardware architecture**

- **Microcontroller ARM7**
  - USB interface
  - Flash 256KB
  - RAM 32KB

- **24C32 EEPROM**

- **RS232**
  - USB cable (RDR518 U)

- **USB Plug**
  - USB cable (RDR518 S)

- **3,3V regulator**

- **4 x LEDs**

- **Buzzer**

- **ISO 14443 A-B Mifare FELICA NFC chip**
  - 27.120 MHz oscillator

- **RF booster**
  - RF receiver
  - Stacked antenna

- **SAM 1**, **SAM 3**, **SAM 2**, **SAM 4**

- **Unique serial number (optional)**

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PLG548 hardware architecture

3,3V regulator
7 ~ 30V DC/DC
5V
USB
RS232 and power cable (PLG548 SE)
JST 5 pins connector
USB cable (PLG548 SE)

Microcontroller ARM7
USB interface
Flash 256KB
RAM 32KB

SRAM 256KB
Flash 2MB

Buzzer
ISO 14443 A-B
Mifare
FELICA NFC chip
27.120 MHz oscillator
RF booster
RF receiver

24C32 EEPROM
Unique serial number

12C

multi SAM controller IC

SAM 1      SAM 3
SAM 2      SAM 4
Secure Element

Metal fixture compensation switch

ANT548
4 x Leds
Stacked antenna

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RDR518

USB cable

Custom adhesive Cover film

User programmable LEDs
PLG548

User programmable LEDs
CPL528

- Power supply
- I/Os
  - TTL, I2C, SPI
- RS232C
- USB
- Remote antenna
- SAM sockets
- User programmable LED Display
• Copy the USB key root directory to a directory on your hard drive.

• Some application and tools required standard “Setup” (see “RD-MU-07024_XX_Evaluation applications user manual.pdf”)
Drivers installation

- Uses the Windows Operating System standard, through the Device Manager or use the provided installers (see “Drivers” directory)
Media contents

- Documentation
  - User manuals
  - Technical specifications
  - Cards User Manuals (GTML, GTML2, CD97, Mifare®)
  - C.ticket® User Manuals
  - Application Notes

- Software
  - Drivers & demonstration applications
  - API DLL, Tools and documentation
Media architecture

- AppNotes
- ASKCSC_DLL
- CardUserManuals
- CouplerSoftwareInterface
- Demos
- DESFireLibrary

- Drivers
- Firmware
- Monitor
- TechnicalSpecifications
- UserManual
- Utils
Media architecture

- Communication Scenarii
- C.SAM KVC 02 Mapping
- Applicative Security on CTx
- ASK CSC downloading
- ASK MONITOR CSC Sequences Scripting
- Managing field exposure on CTS256B & CTX512B
- Java examples
- GENXXX USB interfaces
- ...
Media architecture

- ASK standard Application Programming Interface (API)
- Distributed as binaries and full source code (Windows, Linux & OS X)
- Low level functions: coupler communication, cards handling, SAM operation, LEDs.
- Calypso high level functions
- Mifare® high level functions (Classic, Ultralight, Ultralight C, Ultralight EV1, Plus & DESFire)
Media architecture

- CD97 external specifications
- GTML external specifications
- GTML2 external specifications
- CTS512B and CTM512B user manuals
- Mifare Classic® (CMC 1K) user manual
- Mifare Ultralight® (CTS512A) functional specifications
Media architecture

- GEN5XX coupler software interface
- Communication protocol description
- Class oriented high level protocol
  - Download class: Flash update and Eeprom configuration
  - System class: card, SAM and UI low level handling
  - Calypso classes: Calypso high level commands
  - Mifare® classes
Media architecture

- Evaluation applications user manual
- Polling: card detection and identification
- Visucard: display a Calypso card mapping
- CTx512B evaluation application
- ASKMifare: Mifare cards read and write
- ASK ePassport Viewer: display ICAO cards contents
- Golden Reader: standard tool for ICAO cards
- Keyring Reader: dual interface card evaluation
- Calypso Demo: transport and ePurse
- ASKPSC: PCSC utility
- ASK Credential Provider: use Tango UT or Tango RSU cards to logon on Windows OS.
- ASK Demo HK: payment EMV + FeliCA (Octopus)
Media architecture

- Desfire high level commands (NXP® source)
- Embedded Desfire crypto algorithm
- Available through PC/SC interface
• USB CDC driver for GEN5XX

Notes:

- The drivers are Microsoft WHQL certified.
- The PC/SC CCID driver for GEN5XX, is provided by Microsoft.
Media architecture

- GEN5XX firmware binary files
- Version history
Media architecture

- ASK Windows utility
- Communication with ASK couplers
- Low level communication handling
- Send and Receive functions
- SAM and cards communication
- High level commands with script capabilities
- Flash Firmware download and EEPROM configuration
Media architecture

- RDR518 & CPL508
- PLG548 & CPL548
- CPL528 coupler
- CPL108 & CPL118 couplers
- UCM 108 universal module
- MTB108 coupler evaluation board
- ASK OEM antennas: integration and tuning procedure
Media architecture

- Readers user manuals
- Software installation manual
Media architecture

- **AskCdcCcid**: allows to switch between CDC and CCID USB mode for GEN5XX Readers
- **SAMAV2InitDevKit**: allows to initialize a virgin SAM AV2, to be used with GENXXX Development Kit examples.