NXP® MIFARE Plus® EV1

Latest features on highest security level scalable – flexible – future proof

The next evolution of MIFARE Plus, the field-proven "MIFARE Classic® AES-128 security upgrade product", includes an expanded feature set that enables over-the-air services and selective upgrades of security-relevant applications.

KEY FEATURES

- Sector-wise security-level switching
- AES secure end-2-end channel
- AES secure channel authentication in SL1
- Transaction MAC
- ISO 7816-4 wrapping
- 2K or 4K EEPROM
- 128-bit AES security
- 7B UID and 4B NUID
- 70 pF versions for small form factors
- Common criteria EAL 5+ (targeted)
- ECC originality signature
- Fully ISO-compliant proximity check
- Fixed memory structure
- Security-level concept
- Backwards compatible to MIFARE Classic and MIFARE Plus EV0
- Direct commit personalization from SL0 to SL1 or SL3
- Communications speed up to 848 kbit/s
- Number of single write operations: 200,000 typical

TARGET APPLICATIONS

- Public transport
- Access management
- Payment
- Loyalty
- University cards
- Electronic toll collection
- Car parking

KEY BENEFITS

- Backwards compatible to MIFARE Classic and MIFARE Plus
- Upgrade your choice of applications to 128-bit AES security
- Secure end-to-end communication channel for over-the-air services

MIFARE Plus is the proven product family compatible with MIFARE Classic in its backward compatible security level. It enables issuance of cards prior to making security upgrades in the infrastructure. After switching to Security Level 3, MIFARE Plus uses Advanced Encryption Standard (AES) for authentication, data integrity protection and data encryption.

MIFARE Plus EV1 enables system operators to upgrade the security of a single application to certified, 128-bit AES- based security, by upgrading only relevant memory, at the same time operating non-security-relevant applications on existing Crypto1 infrastructure to minimize overall system cost.

Growing system application and memory needs are also covered by the support of EEPROM sizes of up to 4K. This support empowers system operators to add future applications as needed while relying on an established product standard.

The secure end-to-end channel communication capabilities of MIFARE Plus EV1 allow system operators to design new revenue streams by introducing services like over-the-air top-ups even for Crypto1 applications. These service offerings are based on secure end-to-end channel communication using AES for data encryption and integrity protection.

In systems where multiple service providers are using the same wallet and clearing service, the Transaction MAC feature proves to the clearing house that transactions between service providers and customers are genuine to the clearing house. This authentication enables trusted multiple vendor relationships and ensures maximum card value to end customers.

For easy integration with mobile devices and to ensure interoperability across industries, MIFARE Plus EV1 also supports the ISO/IEC 7816-4 standard in your choice of native or APDU commands.

FEATURE COMPARISON: MIFARE Plus X AND MIFARE Plus EV1

Feature	MIFARE Plus X	MIFARE Plus EV1
Available memory size (kB)	2 kB, 4 kB	2 kB, 4 kB
Input capacitance (pF)	17 pF	17 pF or 70 pF
Virtual Card architecture for privacy protection	Yes	Yes
Maximum transfer data buffer size in ISO/IEC 14443-4	64 Byte	256 Byte
Identifier according to ISO/IEC 14443-3	7 B UID or 4 B ONUID	7 B UID or 4 B ONUID
Proximity check against relay attacks	Yes	Yes
Encryption in SL3	128-bit AES	128-bit AES
Sector-by-sector security level upgrades	-	Yes
SL1SL3 mix mode for secure backend connection into SL1 sectors	-	Yes
Common Criteria certifications (HW & SW)	EAL 4+	EAL 5+ (targeted)
Transaction MAC on data and value blocks	-	Yes
NXP ECC Originality Signature	-	Yes
NXP AES Originality Authentication	Yes	Yes
Delivery formats	Wafer (120 µm), MOA4, MOA8	Wafer (120 µm), Wafer (75 µm), MOA4, MOB6

ORDERING INFORMATION MIFARE Plus EV1

Product	Input Capacitance	Memory	Identifier	Package
(MF1P)	17 pF ()	2K (2)	7B UID (101)	75 µm (DUF)
	70 pF (H)	4K (4)	4B NUID (131)	120 µm (DUD)
				MOA4 (DA4)
				MOB6 (DA6)

Examples:

MIFARE Plus EV1, 17 pF, 2K, 7B UID, MOA4 MF1P2101DA4

MIFARE Plus EV1, 70 pF, 4K, 4B NUID, MOB6 MF1PH4131DA6

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