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**Information technology —
Telecommunications and information
exchange between systems — NFC
Security —**

**Part 3:
NFC-SEC cryptography standard using
ECDH-256 and AES-GCM**

*Technologies de l'information — Téléinformatique — Sécurité NFC —
Partie 3: Norme de cryptographie NFC-SEC utilisant ECDH-256 et
AES-GCM*



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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

ISO/IEC 13157-3 was prepared by Ecma International (as ECMA-409) and was adopted, under a special "fast-track procedure", by Joint Technical Committee ISO/IEC JTC 1, Information technology, in parallel with its approval by national bodies of ISO and IEC.

ISO/IEC 13157 consists of the following parts, under the general title *Information technology — Telecommunications and information exchange between systems — NFC Security*:

- *Part 1: NFC-SEC NFCIP-1 security services and protocol*
- *Part 2: NFC-SEC cryptography standard using ECDH and AES*
- *Part 3: NFC-SEC cryptography standard using ECDH-256 and AES-GCM*
- *Part 4: NFC-SEC entity authentication and key agreement using asymmetric cryptography*
- *Part 5: NFC-SEC entity authentication and key agreement using symmetric cryptography.*

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Introduction

The NFC Security series of standards comprise a common services and protocol Standard and NFC-SEC cryptography standards.

This NFC-SEC cryptography Standard specifies cryptographic mechanisms that use the Elliptic Curves Diffie-Hellman (ECDH-256) protocol for key agreement and the AES algorithm in GCM mode to provide data authenticated encryption.

This International Standard addresses secure communication of two NFC devices that do not share any common secret data ("keys") before they start communicating with each other. It is based on ISO/IEC 13157-2 (ECMA-386) with some adaptations to address actual cryptography standards.

This International Standard refers to the latest standards and updates the generation method for StartVar in compliance with ISO/IEC 19772:2009/Cor.1:2014 which also complies with NIST SP 800-38B.