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**Information technology —  
Telecommunications and information  
exchange between systems — NFCIP-2  
test methods**

*Technologies de l'information — Téléinformatique — Méthodes  
d'essai NFCIP-2*

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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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 19369 was prepared by Ecma International (as ECMA-403) 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.

## Introduction

This International Standard specifies test methods for ISO/IEC 21481 in addition to those specified in the referenced standards.

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# Information technology — Telecommunications and information exchange between systems — NFCIP-2 test methods

## 1 Scope

This International Standard specifies requirements to verify NFCIP-2 mode selection and initial communication in the selected modes. The Test Management Service Data Units and the interface over which they are exchanged are out of scope.

## 2 Conformance

Conforming implementations pass the tests in [Clause 6](#) using the test environment and apparatus as specified in [Clause 5](#).

## 3 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 9646, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework*

ISO/IEC 10373-6, *Identification cards — Test methods — Part 6: Proximity cards*

ISO/IEC 10373-7, *Identification cards — Test methods — Part 7: Vicinity cards*

ISO/IEC 14443-3, *Identification cards — Contactless integrated circuit cards — Proximity cards — Part 3: Initialization and anticollision*

ISO/IEC 18092:2013, *Information technology — Telecommunications and information exchange between systems — Near Field Communication — Interface and Protocol (NFCIP-1)* (also published by Ecma as Standard ECMA-340)

ISO/IEC 21481:2012, *Information technology — Telecommunications and information exchange between systems — Near Field Communication Interface and Protocol -2 (NFCIP-2)* (also published by Ecma as Standard ECMA-352)

ISO/IEC 22536:2013, *Information technology — Telecommunications and information exchange between systems — Near Field Communication Interface and Protocol (NFCIP-1) — RF interface test methods* (also published by Ecma as Standard ECMA-356)

ISO/IEC 23917:2005, *Information technology — Telecommunications and information exchange between systems — NFCIP-1 — Protocol Test Methods* (also published by Ecma as Standard ECMA-362)

### 4 Acronyms

- IUT Implementation Under Test
- LT Lower Tester
- TB-PDU Transmission Block – Protocol Data Unit
- TM-SDU Test Management – Service Data Unit
- UT Upper Tester

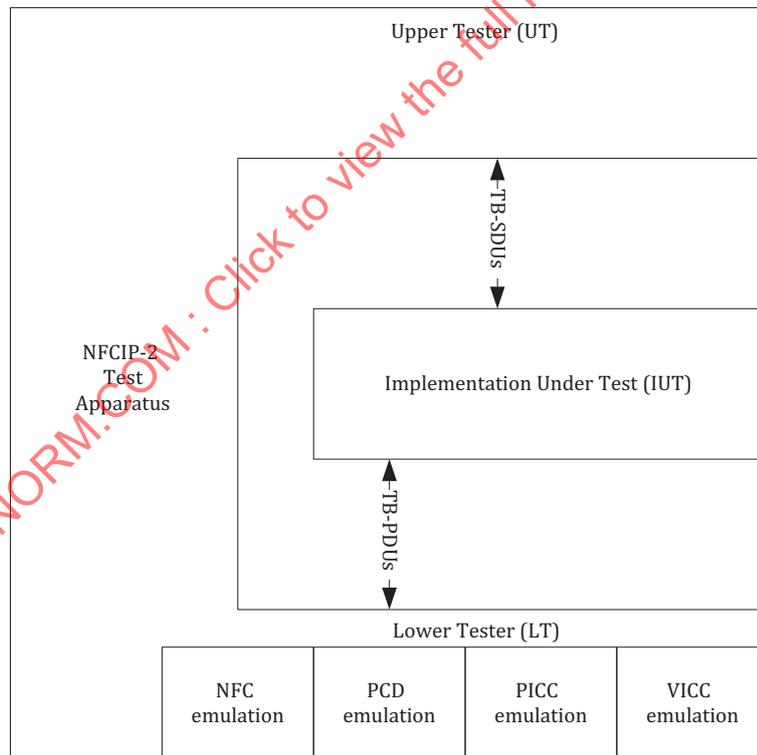
### 5 Test environment and apparatus

The concepts and abstract model of ISO/IEC 9646 are used to verify the operation of an IUT compliant to ISO/IEC 21481.

NFCIP-2 test apparatus consists of an Upper Tester (UT) and a Lower Tester (LT) as illustrated in [Figure 1](#).

To communicate with the IUT, e.g. to select modes on the IUT, the UT and IUT exchange TM-SDUs. The SDU definition and the interface between UT and IUT are out of scope of this International Standard.

The NFCIP-2 test apparatus implements the specified modes at its LT interface according to the requirements of the test scenarios specified in [Clause 6](#).



**Figure 1 — Test configuration**