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ISO/IEC JTC1/SC6 Secretariat Ms. Jooran Lee, KSA (on behalf of KATS)

Korea Technology Center #701-7 Yeoksam-dong, Gangnam-gu, Seoul, 135-513, Republic of Korea ;

Telephone: +82 2 6009 4808 ; Facsimile: +82 2 6009 4819 ; Email : jooran@kisi.or.kr

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NFCIP-2 Test Methods

Standard

Rue du Rhône 114 CH-1204 Geneva T: +41 22 849 6000 F: +41 22 849 6001

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Introduction

Text text text

This Ecma Standard has been adopted by the General Assembly of <month> <year>.

NFCIP-2 Test Methods

1 Scope

메모 [OnEl1]: the scope should include the full conformance to the modes

This 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 referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ECMA-356 *NFCIP-1 - RF Interface Test Methods (ISO/IEC 22536)*

ECMA-362 *NFCIP-1 - Protocol Test Methods (ISO/IEC 23917)*

메모 [OnEl2]: be consistent in referencing.

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*

서식 있음: 강조

ISO/IEC 10373-7 *Identification cards – Test methods – Part 6: Vicinity cards*

4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4.1
IUT
Implementation Under Test

4.2
TB-PDU
Transmission Block – Protocol Data Unit

4.3
TM-SDU
Test Management – Service Data Unit

4.4
UT
Upper Tester

4.5
LT
Lower Tester

5 Test environment and apparatus

The test environment shall use the concepts and abstract model of ISO/IEC 9646 to verifying 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 standard.

The NFCIP2 test apparatus shall implement the specified modes at its LT interface according to the requirements of the test scenarios specified in Clause 6.

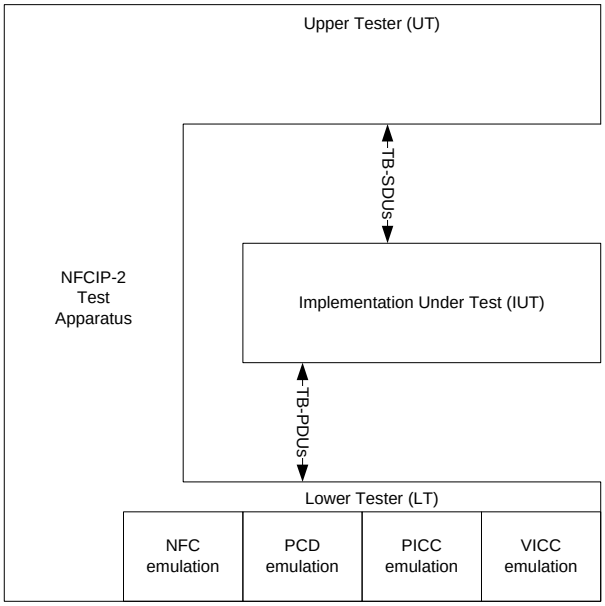

Figure 1: test configuration

6 Tests

6.1 Test External RF Field detection

To verify that the IUT does not switch on its RF field, configure the LT as test circuit and perform the test in 8.1 of ISO/IEC 22536 while using the term NFCIP-2 device instead of NFCIP-1 device.

6.2 Test Mode selection and switching

6.2.1 Test PICC mode

1. Select PICC mode on the IUT and place it into the operating volume of the LT

2. Select PCD mode on the LT, and have it LT send REQ(A),

2.1 If the IUT answers with ATQ(A) within 1ms, it passes the test, otherwise

2.2 LT sends REQ(B): if the IUT answers with ATQ(B) within 1ms, it passes the test otherwise it fails.

메모 **[OnEI3]:** replace this by a refence to the PICC mode of ISO/IEC 10373-6

6.2.2 Test NFC mode, Target and Initiator

1. Select NFC, VCD or PCD mode on the IUT and place it in the operating volume of the LT, have the LT switch its RF field off for at least 5,1ms, and select Initiator for Active communication mode, on either *fc*/128, fc/64 or fc/32 on the LT, let the LT send ATR_REQ (see 8.5.1 of ISO/IEC 23917).

2. To test step 3 of Clause 7 of ISO/IEC 21481, verify that the IUT responds with ATR_RES.

메모 **[OnEI4]:** ensure completeness of the tests

3. The LT shall switch off its RF field and select NFC mode, Passive communication mode, as a Target on the LT

4. Select NFC mode on the IUT and verify that the IUT executes one of the Initiator protocols for fc/128, fc/64 or fc/32 (9 of ISO/IEC 23917) as selected.

6.2.3 Test PCD mode

Use ISO/IEC 10373-6 to verify that the IUT operates in PCD mode with the LT as PICC mode emulator.

6.2.4 Test VCD mode

Use ISO/IEC 10373-7 to verify that the IUT operates in VCD mode with the LT as VICC mode emulator.