

Identification cards — Test methods —

Part 7: Vicinity cards

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National foreword

This British Standard is the UK implementation of ISO/IEC 10373-7:2008. It supersedes BS ISO/IEC 10373-7:2001 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee IST/17, Cards and personal identification.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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Part 7:
Vicinity cards

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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.

ISO/IEC 10373-7 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 17, *Cards and personal identification*.

This second edition cancels and replaces the first edition (ISO/IEC 10373-7:2001), Clause 5 and subclause 6.3.5 of which have been technically revised.

ISO/IEC 10373 consists of the following parts, under the general title *Identification cards — Test methods*:

- *Part 1: General characteristics*
- *Part 2: Cards with magnetic stripes*
- *Part 3: Integrated circuit(s) cards with contacts and related interface devices*
- *Part 5: Optical memory cards*
- *Part 6: Proximity cards*
- *Part 7: Vicinity cards*

Identification cards — Test methods —

Part 7: Vicinity cards

1 Scope

ISO/IEC 10373 defines test methods for characteristics of identification cards according to the definition given in ISO/IEC 7810. Each test method is cross-referenced to one or more base standards, which may be ISO/IEC 7810 or one or more of the supplementary standards that define the information storage technologies employed in identification card applications.

NOTE 1 Criteria for acceptability do not form part of ISO/IEC 10373, but will be found in the International Standards mentioned above.

NOTE 2 Test methods defined in ISO/IEC 10373 are intended to be performed separately. A given card is not required to pass through all the tests sequentially.

This part of ISO/IEC 10373 deals with test methods, which are specific to contactless integrated circuit card (vicinity card) technology. ISO/IEC 10373-1 deals with test methods which are common to one or more ICC technologies and other parts deal with other technology-specific tests.

Unless otherwise specified, the tests in this part of ISO/IEC 10373 apply exclusively to vicinity cards defined in ISO/IEC 15693-1 and ISO/IEC 15693-2.

2 Normative reference(s)

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.

ISO/IEC 7810, *Identification cards — Physical characteristics*

ISO/IEC 15693-1, *Identification cards — Contactless integrated circuit(s) cards — Vicinity cards — Part 1: Physical characteristics*

ISO/IEC 15693-2:2006, *Identification cards — Contactless integrated circuit cards — Vicinity cards — Part 2: Air interface and initialization*

ISO/IEC 15693-3, *Identification cards — Contactless integrated circuit(s) cards — Vicinity cards — Part 3: Anticollision and transmission protocol*

IEC 61000-4-2, *Electromagnetic compatibility (EMC) — Part 4-2: Testing and measurement techniques — Electrostatic discharge immunity test*

ISBN 92-67-10188-9, *Guide to the Expression of Uncertainty in Measurement*, ISO, 1993

3 Terms, definitions, symbols and abbreviated terms

3.1 Terms and definitions

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

3.1.1

base standard

standard which the test method is used to verify conformance to

3.1.2

operate as intended

surviving the action of some potentially destructive influence to the extent that any integrated circuit present in the card continues to operate and show a response¹⁾ as defined in ISO/IEC 15693-3 which conforms to the base standard

NOTE If other technologies exist on the same card, they will operate as intended in accordance with their respective standard.

3.1.3

test method

method for testing characteristics of identification cards for the purpose of confirming their compliance with International Standards

3.2 Symbols and abbreviated terms

DUT device under test

ESD electrostatic discharge

f_c frequency of the operating field

f_{s1} , f_{s2} frequencies of the subcarriers

$H_{\max}$ maximum field strength of the VCD antenna field

$H_{\min}$ minimum field strength of the VCD antenna field

VCD vicinity coupling device

VICC vicinity card

4 Default items applicable to the test methods

4.1 Test environment

Unless otherwise specified, testing shall take place in an environment of temperature $23^{\circ}\text{C} \pm 3^{\circ}\text{C}$ ($73^{\circ}\text{F} \pm 5^{\circ}\text{F}$) and of relative humidity 40% to 60%.

1) This International Standard does not define any test to establish the complete functioning of integrated circuit(s) cards. The test methods require only that a minimum functionality be verified. This may, in appropriate circumstances, be supplemented by further, application specific functionality criteria which are not available in the general case.

4.2 Pre-conditioning

Where pre-conditioning is required by the test method, the identification cards to be tested shall be conditioned to the test environment for a period of 24 h before testing.

4.3 Default tolerance

Unless otherwise specified, a default tolerance of $\pm 5\%$ shall be applied to the quantity values given to specify the characteristics of the test equipment (e.g. linear dimensions) and the test method procedures (e.g. test equipment adjustments).

4.4 Spurious inductance

Resistors and capacitors should have negligible inductance.

4.5 Total measurement uncertainty

The total measurement uncertainty for each quantity determined by these test methods shall be stated in the test report.

Basic information is given in the "Guide to the Expression of Uncertainty in Measurement", ISBN 92-67-10188-9, ISO, 1993.

5 Static electricity test

The purpose of this test is to check the behaviour of the VICC in relation to electrostatic discharge (ESD) exposure of the test sample. The VICC under test is exposed to a simulated electrostatic discharge (ESD, human body model) and its basic operation checked following the exposure.

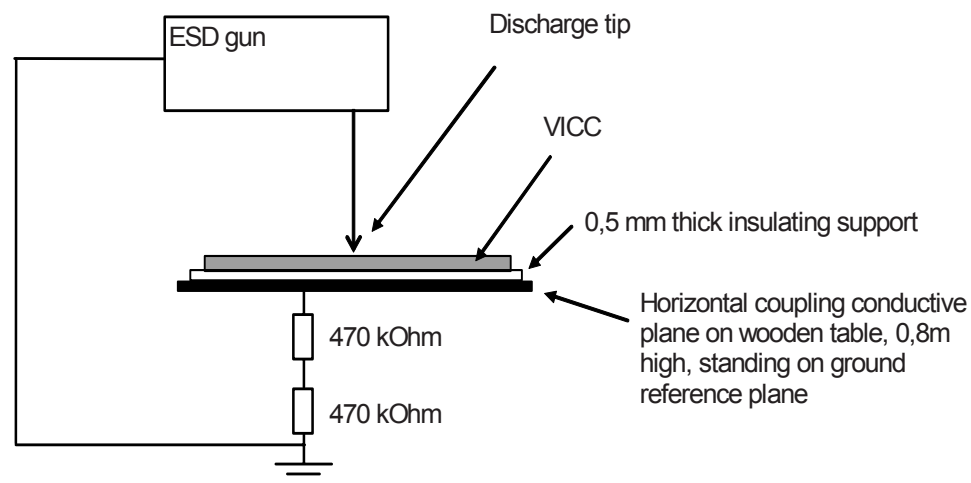


Figure 1 — ESD test circuit

5.1 Apparatus

Refer to IEC 61000-4-2.

a) Main specifications of the ESD generator:

- energy storage capacitance: $150 \text{ pF} \pm 10\%$
- discharge resistance: $330 \text{ Ohm} \pm 10\%$
- charging resistance: between 50 MOhm and 100 MOhm
- rise time: $0,7$ to 1 ns

b) Selected specifications from the optional items:

- type of equipment: table top equipment
- discharge method: direct application of air discharge to the equipment under test
- discharge electrodes of the ESD generator: round tip probe of 8 mm diameter

5.2 Procedure

Connect the test apparatus as specified in IEC 61000-4-2.

Apply the discharge successively in normal polarity to each of the 20 test zones shown in Figure 2. Then repeat the same procedure with reversed polarity. Allow a cool-down period between successive pulses of at least 10 s .

WARNING — If the VICC includes contacts, the contacts shall be face up and the zone which includes contacts shall not be exposed to this discharge.

Check that the VICC operates as intended at the end of the test.

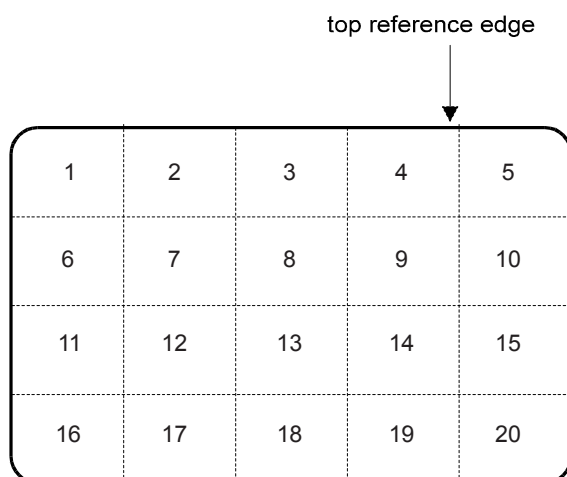


Figure 2 — Test zones on VICC for ESD test

5.3 Test report

The test report shall state whether or not the VICC operates as intended.