BS ISO/IEC 7811-6:2014

BSI Standards Publication

Identification cards — Recording technique

Part 6: Magnetic stripe — High coercivity

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National foreword

This British Standard is the UK implementation of ISO/IEC 7811-6:2014. It supersedes BS ISO/IEC 7811-6:2008 which is withdrawn.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.

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Fourth edition
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Identification cards — Recording technique —

Part 6: Magnetic stripe — High coercivity

Cartes d'identification — Technique d'enregistrement —

Partie 6: Bandeau magnétique — Haute coercitivité

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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).

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).

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

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 17, *Cards and personal identification.*

This fourth edition cancels and replaces the third edition (ISO/IEC 7811-6:2008), which has been technically revised. It also incorporates the Technical Corrigendum ISO/IEC 7811-6:2008/Cor.1:2010. Major changes from the previous edition are as follows:

— Wherever possible, the same definitions, criteria, and test methods are used in ISO/IEC 7811-2 and ISO/IEC 7811-6.

— The primary standard cards held by Q-Card are used to calibrate the manufacture of secondary reference cards. Other primary standard cards held by PTB and Card testing International (CTI) are used as backup to replace cards held by Q-Card as they wear out.

— The supplier of secondary reference cards has changed from PTB to Q-Card

— During revision, some figure and table numbers might have changed and might not be the same between the two International Standards.

— Changed the title of Figure 10 to Noise in signal waveform

— Changed 0,08 UR to 0,07 UR in Figure 10 to match text

ISO/IEC 7811 consists of the following parts, under the general title *Identification cards — Recording technique*:

— *Part 1: Embossing*

— *Part 2: Magnetic stripe — Low coercivity*

— *Part 6: Magnetic stripe — High coercivity*

— *Part 7: Magnetic stripe — High coercivity, high density*

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— *Part 8: Magnetic stripe — Coercivity of 51,7 kA/m (650 Oe)*

— *Part 9: Tactile identifier mark*

Notes in this part of ISO/IEC 7811 are only used for giving additional information intended to assist in the understanding or use of the document. They do not contain provisions or requirements to which it is necessary to conform in order to claim compliance to this part of ISO/IEC 7811.

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INTERNATIONAL STANDARD ISO/IEC 7811-6:2014(E)

Identification cards — Recording technique —

Part 6: Magnetic stripe — High coercivity

1 Scope

This International Standard defines the characteristics for identification cards as defined in Clause 4 of this part of ISO/IEC 7811 and the use of such cards for international interchange.

This part of ISO/IEC 7811 specifies requirements for a high coercivity magnetic stripe (including any protective overlay) on an identification card, the encoding technique, and coded character sets. It takes into consideration both human and machine aspects and states minimum requirements.

Coercivity influences many of the quantities specified in this part of ISO/IEC 7811 but is not itself specified. The main characteristic of the high coercivity magnetic stripe is its improved resistance to erasure. This is achieved with minimal probability of damage to other magnetic stripes by contact while retaining read compatibility with magnetic stripes as defined in ISO/IEC 7811-2.

This International Standard provides criteria to which cards are to perform. No consideration is given within this International Standard to the amount of use, if any, experienced by the card prior to test. Failure to conform to specified criteria is negotiated between the involved parties.

ISO/IEC 10373-2 specifies the test procedures used to check cards against the parameters specified in this part of ISO/IEC 7811.

NOTE Numeric values in the SI and/or Imperial measurement system in this part of ISO/IEC 7811 might have been rounded off and are therefore consistent with, but not exactly equal to, each other. Either system can be used, but the two are not to be intermixed or reconverted. The original design was made using the Imperial measurement system.

2 Conformance

A prerequisite for conformance with this part of ISO/IEC 7811 is conformance with ISO/IEC 7810. An identification card is in conformance with this part of ISO/IEC 7811 if it meets all mandatory requirements specified herein. Default values apply if no others are specified.

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 4287, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Terms, definitions, and surface texture parameters*

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

ISO/IEC 10373-1, *Identification cards — Test methods — Part 1: General characteristics*

ISO/IEC 10373-2, *Identification cards — Test methods — Part 2: Cards with magnetic stripes*

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4 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 7810 and the following apply.

4.1
primary standard
set of reference cards established by the Physikalisch-Technische Bundesanstalt (PTB) and maintained by PTB, Q-Card, and WG1 secretariat that represent the values of U_R and I_R designated RM7811-x26

4.2
secondary standard
reference card designated RM7811-6 that is related to the primary standard as stated in the calibration certificate supplied with each card

Note 1 to entry: Secondary standards can be ordered from Q-Card, 301 Reagan Street, Sunbury, PA 17801, USA. The source of secondary standards will be maintained at least until 2018.

4.3
unused un-encoded card
card possessing all the components required for its intended purpose, which has not been subjected to any personalization or testing operation, and which has been stored in a clean environment with no more than 48 h exposure to daylight and at temperatures between 5 °C and 30 °C and humidity between 10 % and 90 % without experiencing thermal shock

4.4
unused encoded card
card according to 4.3 that has only been encoded with all the data required for its intended purpose (e.g. magnetic encoding, embossing, electronic encoding)

4.5
returned card
card according to 4.4 after it has been issued to the card holder and returned for the purpose of testing

4.6
flux transition
location of the greatest rate of change with distance of the magnetisation

4.7
reference current
I_R
minimum recorded current amplitude under the given test conditions that causes, on the reference card, a readback signal amplitude equal to 80 % of the reference signal amplitude, U_R, at a density of 8 flux transitions/mm (200 flux transitions/in) as shown in Figure 6

4.8
reference flux level
F_R
flux level in the test head that corresponds to the reference current, I_R

4.9
test recording currents
two recording currents defined by

— I_{min} = recording current corresponding to 2,8 F_R

— I_{max} = recording current corresponding to 3,5 F_R

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4.10
individual signal amplitude
U_i
base-to-peak amplitude of a single readback voltage signal

4.11
average signal amplitude
U_A
sum of the absolute value of the amplitude of each signal peak (U_i) divided by the number of signal peaks (n) for a given track over the length of the magnetic stripe area

4.12
reference signal amplitude
U_R
maximum value of the average signal amplitude of a reference card corrected to the primary standard

4.13
physical recording density
number of flux transitions per unit length recorded on a track

4.14
bit density
number of data bits stored per unit of length (bits/mm or bpi)

4.15
bit cell
distance between two clocking flux transitions

Note 1 to entry: See Figure 11.

4.16
subinterval
distance that is nominally half of the distance between two clocking flux transitions

Note 1 to entry: See Figure 11.

4.17
demagnetisation current
I_d
D.C. current value that reduces the average signal amplitude to 80 % of the reference signal amplitude (U_R) on a secondary reference card that has been encoded at a density of 20 ft/mm (500 ftpi) at a current of I_{min}

5 Physical characteristics of the identification card

The identification card shall conform to the specification given in ISO/IEC 7810.

WARNING — The attention of card issuers is drawn to the fact that information held on the magnetic stripe may be rendered ineffective through contamination by contact with dirt and certain commonly used chemicals including plasticizers. It should also be noted that any printing or screening placed on top of the magnetic stripe must not impair the function of the magnetic stripe.

5.1 Magnetic stripe area warpage

Application of a 2,2 N (0,5 lbf) load evenly distributed on the front face opposite the magnetic stripe shall bring the entire stripe within 0,08 mm (0,003 in) of the rigid plate.

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