
Identification cards — Test methods —

Part 6:

Proximity cards

AMENDMENT 1: Additional PICC classes

Cartes d'identification — Méthodes d'essai —

Partie 6: Cartes de proximité

AMENDEMENT 1: Classes additionnelles de PICC



Reference number
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Foreword

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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.

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Amendment 1 to ISO/IEC 10373-6:2011 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 17, *Cards and personal identification*.

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AMENDMENT 1: Additional PICC classes

Page 2, 3.1

Add the following term and definition, and renumber all subsequent definitions:

3.1.5

loading effect

change in PCD antenna current caused by the presence of PICC(s) in the field due to the mutual coupling modifying the PCD antenna resonance and quality factor

Page 5, 3.2

Add the following symbol between UT_APDU and WUPB(N):

V_{load} DC voltage measured at connector CON3 of the Reference PICC

Page 6, 5.2

Replace 5.2 and its subclauses by the following:

5.2 Calibration coils

This clause defines the size, thickness and characteristics of the calibration coils 1 and 2.

Calibration coil 1 shall be used only in test PCD assembly 1 and calibration coil 2 shall be used only in test PCD assembly 2.

5.2.1 Size of the calibration coil card

The calibration coil card shall consist of an area which has the height and width of an ID-1 type defined in ISO/IEC 7810:2003 containing a single turn coil concentric with the card outline (see Figure 1).

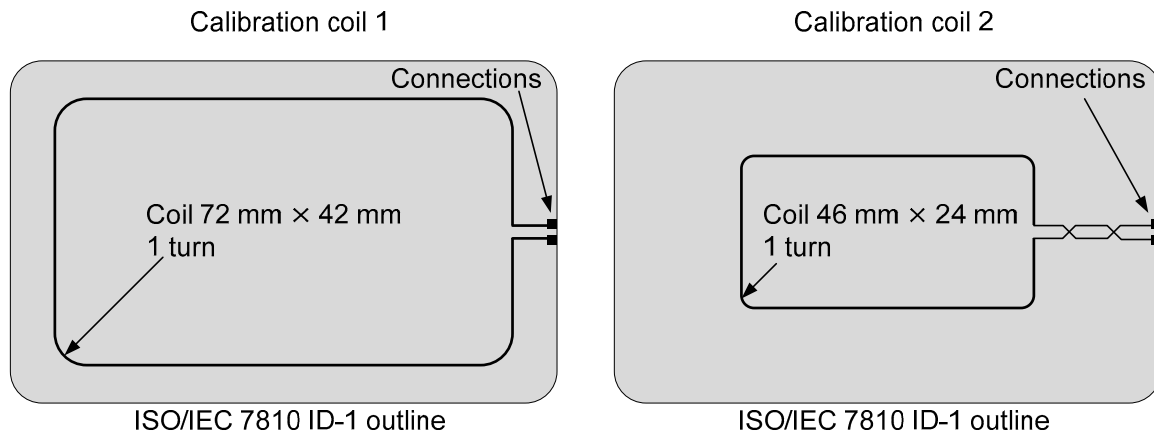


Figure 1 — Calibration coils 1 and 2

5.2.2 Thickness and material of the calibration coil card

The thickness of the calibration coil card shall be less than that of an ID-1 card. It shall be constructed of a suitable insulating material.

5.2.3 Coil characteristics

The coil on the calibration coil card shall have one turn. Relative dimensional tolerance shall be $\pm 2\%$.

The outer size of the calibration coil 1 shall be 72 mm $\times$ 42 mm with corner radius 5 mm.

NOTE 1 The area over which the field is integrated is approximately 3000 mm².

NOTE 2 At 13,56 MHz the approximate inductance is 250 nH and the approximate resistance is 0,4 Ω .

The open circuit calibration factor for the calibration coil 1 is 0,318 V (rms) per A/m (rms) [Equivalent to 900 mV (peak-to-peak) per A/m (rms)].

The outer size of the calibration coil 2 shall be 47 mm $\times$ 24 mm with corner radius 2 mm.

NOTE 3 The area over which the field is integrated is approximately 1100 mm².

NOTE 4 At 13,56 MHz the approximate inductance is 140 nH and the approximate resistance is 0,3 Ω .

The open circuit calibration factor for the calibration coil 2 is 0,118 V (rms) per A/m (rms) [Equivalent to 333 mV (peak-to-peak) per A/m (rms)].

The coil shall be made as a printed coil on printed circuit board (PCB) plated with 35 μ m copper. Track width shall be 500 μ m with a relative tolerance of $\pm 20\%$. The size of the connection pads shall be 1,5 mm $\times$ 1,5 mm.

A high impedance oscilloscope probe with an input admittance equivalent to a parallel capacitance $C_p < 14$ pF and a parallel resistance $R_p > 9$ k Ω at 13,56 MHz shall be used to measure the (open circuit) voltage induced in the coil.

NOTE 5 The high impedance oscilloscope probe ground connection should be as short as possible, less than 20 mm or coaxial connection.

Replace 5.3 and its subclauses by the following:

5.3 Test PCD assembly

Two test PCD assemblies are defined:

- Test PCD assembly 1 for PICCs of classes 1, 2 and 3 and for PICCs which do not claim compliance with a class;
- Test PCD assembly 2 for PICCs of classes 4, 5 and 6.

Each test PCD assembly shall consist of a circular test PCD antenna and two parallel sense coils: sense coil a and sense coil b. The test set-up is shown in Figure 2. The sense coils shall be connected such that the signal from one coil is in opposite phase to the other. The $10\ \Omega$ potentiometer P1 serves to fine adjust the balance point when the sense coils are not loaded by a PICC or any magnetically coupled circuit. The capacitive load of the probe including its parasitic capacitance shall be less than $14\ \text{pF}$.

NOTE 1 The capacitance of the connections and of the oscilloscope probe should be kept to a minimum for reproducibility.

NOTE 2 In order to avoid any unintended misalignment in case of an unsymmetrical set-up the tuning range of the potentiometer P1 is only $10\ \Omega$. If the set-up cannot be compensated by the $10\ \Omega$ potentiometer P1 the overall symmetry of the set-up should be checked.

NOTE 3 The high impedance oscilloscope probe ground connection should be as short as possible, less than 20 mm or coaxial connection.

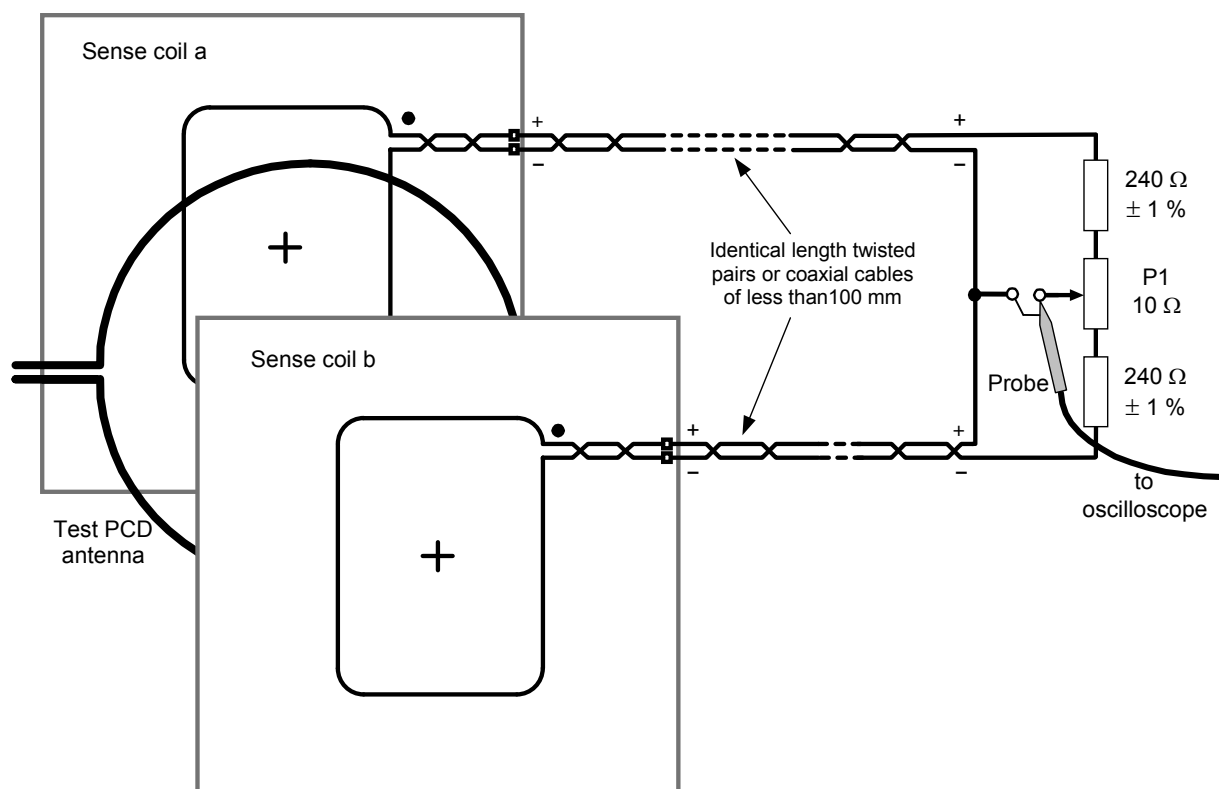


Figure 2 — Test set-up (principle)