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Radiofrequency identification of animals —

Part 1: Evaluation of conformance of RFID transponders with ISO 11784 and ISO 11785 (including granting and use of a manufacturer code)

Identification des animaux par radiofréquence —

Partie 1: Évaluation de la conformité des transpondeurs RFID à l'ISO 11784 et à l'ISO 11785 (y compris l'attribution et l'utilisation d'un code de fabricant)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 ISO documents 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 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 voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 19, *Agricultural electronics*.

This second edition cancels and replaces the first edition (ISO 24631-1:2009), which has been technically revised.

The main changes compared to the previous edition are as follows:

— a figure has been included to explain the positioning of transponders in the test coils (see 7.2);

— additional requirements for using ISO 11784 coding have been added (see Annex B);

— additional requirements have been included for manufacturers applying for a manufacturer code (see Annex D).

A list of all parts in the ISO 24631 series can be found on the ISO website.

Introduction

ISO has appointed a registration authority (RA) competent to register manufacturer codes used in the radiofrequency identification (RFID) of animals in accordance with ISO 11784 and ISO 11785.

The registration authority for ISO 11784 and ISO 11785 can found under http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/maintenance_agencies.htm.

This document deals with the conformance of RFID transponders, of which the main types used for animal identification are

— injectable transponders,

— electronic ear tag transponders,

— electronic ruminal bolus transponders,

— leg tag transponders, and

— tag attachments.

Radiofrequency identification of animals —

Part 1: Evaluation of conformance of RFID transponders with ISO 11784 and ISO 11785 (including granting and use of a manufacturer code)

1 Scope

This document provides the means of evaluating the conformance with ISO 11784 and ISO 11785 of radiofrequency identification (RFID) transponders used in the individual identification of animals. It sets forth the conditions for the granting and use of the manufacturer code related to a transponder and the associated rights and obligations of the parties involved in the issuance of the code.

The test procedures specified in this document are recognized by the Federation of European Companion Animals Veterinary Association (FECAVA) and World Small Animal Veterinarian Association (WSAVA) and, as such, can be applied also to companion animals.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 11784, *Radio frequency identification of animals — Code structure*

ISO 11785:1996, *Radio frequency identification of animals — Technical concept*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
accreditation
third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks

[SOURCE: ISO/IEC 17000:2004, 5.6]

3.2
activation field
electromagnetic field with a frequency of 134,2 kHz

3.3
competent authority
ministry responsible for animal identification schemes or organizations that have been mandated by such ministry to take responsibility for animal identification schemes

3.4
country code
three-digit numeric code representing a country in accordance with ISO 3166-1

3.5
identification code
code used to identify the animal individually, at the national and, in combination with a *country code* (3.4), international levels

Note 1 to entry: It is a national responsibility to ensure the uniqueness of national ID codes.

3.6
laboratory reference transceiver
transceiver used to test the transponders generating the *activation field* (3.2), able to read FDX-B and HDX transponders

3.7
manufacturer
company that submits an application for conformance testing or for the granting and use of a *manufacturer code* (3.8) for transponders in conformance with ISO 11784 and ISO 11785 while accepting the conditions set forth in Annexes B, C and E

3.8
manufacturer code
MFC
three-digit number granted by the *RA* (3.15) to a *manufacturer* (3.7) under the conditions set forth in Annex E, whose range and placement within the code structure are in accordance with ISO 11784

Note 1 to entry: Only one manufacturer code is granted to the same manufacturer.

3.9
primary transponder packaging
primary protective layer of transponder components

3.10
product code
six-digit number granted (and registered) by the *registration authority* (3.15) to a *manufacturer* (3.7) for a certain type of transponder, formatted such that its first part is the *manufacturer code* (3.8) and its second part is a three-digit serial number

3.11
purchaser
person, organization or company that receives legal ownership of equipment by a transaction involving that equipment

3.12
RA-recognized test centre
accredited test centre meeting the criteria of the *registration authority* (3.15)

3.13
RA-registered transponder
transponder registered by the *registration authority* (3.15)

3.14
RA-registered manufacturer
manufacturer (3.7) with one or more *RA-registered transponders* (3.13)

3.15
registration authority
RA
entity that approves test laboratories and issues and registers *manufacturer* (3.7) and *product codes* (3.10)

3.16
retagging
process that assigns to a new transponder the same identification number as a *transponder* (3.21) that has been lost or that is no longer readable

3.17
retagging counter
three-bit field for counting the number of *retagging* (3.16)

3.18
shared manufacturer code
three-digit number granted by the *registration authority* (3.15) to a *manufacturer* (3.7) according to Annex E

Note 1 to entry: A shared manufacturer code can be granted to more than one manufacturer.

3.19
secondary transponder packaging
additional layers to *primary transponder packaging* (3.9)

3.20
transceiver
device used to communicate with the *transponder* (3.21)

3.21
transponder
radiofrequency identification (RFID) device that transmits its stored information when activated by a *transceiver* (3.20) and that may be able to store new information

Note 1 to entry: A transponder can be characterized according to its components (chip, coil, capacitor, etc.), communication protocol, size, shape and packaging, or any additional characteristics that could change its properties. The main types are defined in 3.21.1 to 3.21.5.

3.21.1
injectable transponder
small *transponder* (3.21) able to be injected into an animal's body and encapsulated in a biocompatible material with porosity equivalent to that of glass

3.21.2
electronic ear tag transponder
plastic-covered *transponder* (3.21) able to be fixed to the ear of the animal using a locking mechanism or to be attached to an ear tag such that it cannot be removed from the tag without damaging it

3.21.3
electronic ruminal bolus transponder
transponder (3.21) placed into a high specific gravity container able to be orally administered to a ruminant, which remains permanently in its fore stomach

3.21.4
tag attachment
transponder components covered by a primary protection layer and meant for producing one or more of the three other main transponder types or other types of animal transponder

3.21.5
leg tag transponder
plastic-covered *transponder* (3.21) able to be fixed to the leg of the animal using a locking mechanism

3.22
user information field
five-bit field for additional user information, used only in conjunction with the *country code* (3.4)

4 Conformance

Test centres recognized by the registration authority (RA) shall perform transponder testing using the procedures specified in Clause 7 and shall report the test results to the RA. These tests are in accordance with the technical requirements of ISO 11784 and ISO 11785. The manufacturer shall apply for transponder testing by completing and submitting to the RA the application form provided in Annex A, while agreeing to abide by the code of conduct set forth in Annex B. Registration depends on the transponder product passing the tests in Clause 7. A product code consisting of a manufacturer code and serial number is issued to a transponder that is registered by the RA. The conditions attached to use of this registration by the manufacturer are laid down in Annex C.

Transponders for which conformance with ISO 11784 is claimed shall carry a numeric-3 code in accordance with ISO 3166-1, where numbers up to 900 refer to countries and numbers from 900 to 998 indicate individual manufacturers.

Use of a manufacturer code is only permitted to the manufacturer who has been issued that code by the RA. The application form for obtaining the manufacturer code is presented in Annex D, while the rules for its granting and use are set forth in Annex E.

If the RA receives unmistakable evidence of conditions mentioned in Annex B, C or E being disrespected, the RA shall apply the steps in Annex F.

5 Abbreviated terms

CRC cyclic redundancy check

FDX-B full duplex communication protocol (conforming to ISO 11785, excluding protocols mentioned in ISO 11785:1996, Annex A)

HDX half duplex communication protocol

MFC manufacturer code

RA registration authority

RFID radiofrequency identification

6 Application

6.1 The manufacturer may apply for either a full or limited test or for a listing update.

a) **Full test — Category A**

Applicable when:

1) a manufacturer is not yet registered by the RA (no tested product and no MFC);

2) an RA-registered manufacturer uses new silicon (integrated circuit) or new technology (HDX or FDX-B) in the transponder;

3) an RA-registered manufacturer changes his coil technology (ferrite vs. air coils).

b) **Limited test — Category B**

Applicable when:

1) an RA-registered manufacturer inserts previously RA-registered transponder hardware (silicon plus coil) into a different primary transponder packaging material;

2) an RA-registered manufacturer uses the silicon of an RA-registered transponder with different coil dimensions;

3) an RA-registered manufacturer inserts an RA-registered transponder with its original primary packaging in a different secondary packaging (e.g. glass transponder in a bolus or in an ear tag).

c) **Listing update — Category C**

Applicable when an RA-registered manufacturer intends to use an RA-registered transponder without modification.

The applicant shall deliver a copy of the original test report and a written confirmation from the RA-registered manufacturer who originally submitted the transponder in question for registration.

6.2 The application submitted to the RA shall consist of a covering letter, the application form presented in Annex A and the signed code of conduct set forth in Annex B. The RA shall confirm receipt of the application to the manufacturer within 2 weeks. By signing the application form and the code of conduct, the manufacturer agrees to fulfil the provisions of this document.

6.3 Test centres that are ISO/IEC 17025-accredited for the measurements defined in this document can be recognized by the RA.

6.4 The RA maintains a list of recognized test centres, from which the manufacturer may choose the centre that will test his transponder product.

6.5 The manufacturer shall provide the RA-recognized test centre with 50 transponders of the same type and model for a full test, or 10 transponders of the same type and model for a limited test or listing update. The transponders shall carry the country code “999” (indicating a test transponder) or the manufacturer’s code if existent. The manufacturer may freely choose the identification codes, but duplicated numbers are not allowed. The manufacturer shall provide a list of the transponder codes in decimal representation.

6.6 The RA-recognized test centre shall verify the transponders using the test procedures specified in Clause 7. All tested transponders shall be activated by the activation field (according to ERC Recommendation[4]) of the laboratory reference transceiver and be readable by the laboratory reference transceiver. The codes read shall match the codes provided by the manufacturer.

6.7 The RA-recognized test centre shall prepare a confidential report of the results and shall send two copies (or an electronic version) of the report to the chairman of the RA.

6.8 The RA chairman shall inform the manufacturer of the test results in a letter together with a copy of the report.

6.9 The RA shall issue a product code for each conformant transponder type and model.

6.10 The tested transponders shall be kept by the RA-recognized test centre, under the ownership of the RA.

6.11 The RA shall make publicly available a list of conformant transponder models in any of the three application categories [see 6.1, a), b) and c)]. A photograph of the registered transponder shall be included in the list.

6.12 The RA shall do everything within its power to protect the integrity of this procedure with regard to ISO 11784 and ISO 11785.

