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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](http://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](http://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](http://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 be found under [http://www.iso.org/iso/home/standards\\_development/list\\_of\\_iso\\_technical\\_committees/maintenance\\_agencies.htm](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.

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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)

## 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;