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Information technology — Automatic identification and data capture techniques — Radio frequency identification device performance test methods

Technologies de l'information — Techniques d'identification automatique et de capture des données — Méthodes d'essai de performance de dispositif d'identification par radiofréquence

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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 18046 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

This first edition of ISO/IEC 18046 cancels and replaces ISO/IEC TR 18046:2005, which has been technically revised.

Introduction

Radio frequency identification (RFID) technology has broad applicability to the automatic identification and data capture (AIDC) industry in item management. As a wireless communication technique based on RF technology the applications cover multiple levels of the industrial, commercial and retail supply chains. These may include

— freight containers,

— returnable transport items (RTIs),

— transport units,

— product packaging,

— product tagging.

The performance characteristics of devices (tags and interrogation equipment) may vary drastically due to application factors as well as the particular RF air interface (frequency, modulation, protocol, etc.) being supported. Of key concern is the matching of the various performance characteristics to the user application. Additionally, in an open environment users of such technology demand multiple sources for these devices from technology providers. A key challenge is a method of evaluating the differences between various technology providers' products in a consistent and equitable manner.

This International Standard provides a framework for meeting the above noted concern and challenges. To this end, a clear definition of performance as it relates to user application of RFID technology in the supply chain is provided. Based on such application-based definitions, test methods are defined with attention to the test parameters that must be defined and controlled for a consistent evaluation of RFID devices.

It should be noted that the test methods defined in this International Standard form the basic framework for performance evaluation and are not exhaustive. Many applications may require a slightly different set of test conditions to match the use of RFID to the user requirements. The test methods defined herein may be modified to accommodate the specifics of the application as specified by the user.

Of particular significance, these tests are defined for RFID devices having one antenna. It is common practice to have products with both single and multiple antennas to define an RFID transaction zone sufficient for the application. The defined methods can easily be extended from equipment with a single antenna to apply to equipment with multiple antennas, in order to evaluate performance under conditions more closely matching those of a particular application.

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1 Scope

This International Standard defines test methods for performance characteristics of radio frequency identification (RFID) devices (tags and interrogation equipment) for item management, and specifies the general requirements and test requirements for tag and interrogator performance which are applicable to the selection of the devices for an application. It does not apply to testing in relation to regulatory or similar requirements.

2 Normative references

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 18000-1:2004, *Information technology — Radio frequency identification for item management — Part 1: Reference architecture and definition of parameters to be standardized*

ISO/IEC 18000-2:2004, *Information technology — Radio frequency identification for item management — Part 2: Parameters for air interface communications below 135 kHz*

ISO/IEC 18000-3:2004, *Information technology — Radio frequency identification for item management — Part 3: Parameters for air interface communications at 13,56 MHz*

ISO/IEC 18000-4:2004, *Information technology — Radio frequency identification for item management — Part 4: Parameters for air interface communications at 2,45 GHz*

ISO/IEC 18000-6:2004, *Information technology — Radio frequency identification for item management — Part 6: Parameters for air interface communications at 860 MHz to 960 MHz*

ISO/IEC 18000-7:2004, *Information technology — Radio frequency identification for item management — Part 7: Parameters for active air interface communications at 433 MHz*