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Second edition
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Information technology — Radio frequency identification for item management —

Part 3: Parameters for air interface communications at 13,56 MHz

Technologies de l'information — Identification par radiofréquence (RFID) pour la gestion d'objets —

Partie 3: Paramètres de communications d'une interface d'air à 13,56 MHz

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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.

ISO/IEC 18000-3 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

This second edition cancels and replaces the first edition (ISO/IEC 18000-3:2004), which has been technically revised.

ISO/IEC 18000 consists of the following parts, under the general title *Information technology — Radio frequency identification for item management*:

— *Part 1: Reference architecture and definition of parameters to be standardized*

— *Part 2: Parameters for air interface communications below 135 kHz*

— *Part 3: Parameters for air interface communications at 13,56 MHz*

— *Part 4: Parameters for air interface communications at 2,45 GHz*

— *Part 6: Parameters for air interface communications at 860 MHz to 960 MHz*

— *Part 7: Parameters for active air interface communications at 433 MHz*

Introduction

ISO/IEC 18000 has been developed by ISO/IEC JTC 1, SC 31, WG 4, *Radio frequency identification for item management*, in order to provide a framework to define common communications protocols for Internationally useable frequencies for Radio Frequency Identification (RFID), and, where possible, to determine the use of the same protocols for ALL frequencies such that the problems of migrating from one to another are diminished; to minimise software and implementation costs; and to enable system management and control and information exchange to be common as far as is possible.

This part of ISO/IEC 18000 has been prepared in accordance with the requirements determined in ISO/IEC 18000-1.

ISO/IEC 18000-1 provides explanation of the concepts behind this part of ISO/IEC 18000.

This part of ISO/IEC 18000 has 2 MODES of operation, intended to address different applications. Clause 8 of this part of ISO/IEC 18000 summarises the differences between MODE characteristics. The detailed technical differences between the modes are shown in the parameter tables.

This part of ISO/IEC 18000 relates solely to systems operating at 13,56 MHz.

The International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) draw attention to the fact that it is claimed that compliance with this document may involve the use of patents.

The ISO and IEC take no position concerning the evidence, validity and scope of these patent rights.

The holders of these patent rights have assured the ISO and IEC that they are willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statements of the holders of these patent rights are registered with the ISO and IEC. Information may be obtained from the following companies.

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Information technology — Radio frequency identification for item management —

Part 3: Parameters for air interface communications at 13,56 MHz

1 Scope

This part of ISO/IEC 18000 provides physical layer, collision management system and protocol values for RFID systems for Item Identification operating at 13,56 MHz in accordance with the requirements of ISO/IEC 18000-1.

This part of ISO/IEC 18000 provides definitions for systems for each MODE determined in Clause 6 below.

This part of ISO/IEC 18000 defines two non-interfering MODES.

— The MODES are NOT interoperable.

— The MODES, whilst not interoperable, are non-interfering.

2 Conformance

2.1 Claiming conformance

In order to claim conformance with this part of ISO/IEC 18000, it is necessary to comply with all of the relevant clauses of this part of ISO/IEC 18000 except those marked 'optional'. It is also necessary to operate within the local national radio regulations (which may require further restrictions).

Relevant conformance test methods are defined in ISO/IEC TR 18047-3.

3 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 7816-6, *Identification cards — Integrated circuit cards — Part 6: Interindustry data elements for interchange*

ISO/IEC 15693 (all parts), *Identification cards — Contactless integrated circuit cards — Vicinity cards*

ISO/IEC 15961*, Information technology — Radio frequency identification (RFID) for item management — Data protocol: application interface*

ISO/IEC 15962*, Information technology — Radio frequency identification (RFID) for item management — Data protocol: data encoding rules and logical memory functions*

ISO/IEC 15963, *Information technology — Radio frequency identification for item management — Unique identification for RF tags*

ISO/IEC 18000-1, *Information technology — Radio frequency identification for item management — Reference architecture and definition of parameters to be standardized*

ISO/IEC TR 18046, *Information technology — Automatic identification and data capture techniques — Radio frequency identification device performance test methods*

ISO/IEC TR 18047-3, *Information technology — Radio frequency identification device conformance test methods — Part 3: Test methods for air interface communications at 13,56 MHz*

ISO/IEC 19762 (all parts), *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary*

4 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19762 (all parts) and the following apply.

4.1
Phase Jitter Modulation
PJM
modulation technique that transmits data as very small phase changes in the powering field

5 Symbols and abbreviated terms

For the purposes of this document, the symbols and abbreviated terms given in ISO/IEC 18000-1, ISO/IEC 19762 and the following apply.

≈ MODE 1 - the value is a rounded value (e.g. ≈ 75,52 µs)

6 Requirements: Physical layer, collision management system and protocol values for 13,56 MHz systems

6.0 General and applicable to both Modes of this part of ISO/IEC 18000

6.0.1 Presentation as determined in ISO/IEC 18000-1

The context, form and presentation of this part, which provides physical layer, collision management system and protocol value definitions for RFID systems for item identification operating at 13,56 MHz are in accordance with the requirements of ISO/IEC 18000-1.

6.0.2 ISO/IEC 18000-3 Interoperability

This part of ISO/IEC 18000 specifies two MODES of operation at 13,56 MHz
These MODES are not interoperable, but they are expected to operate without causing any significant interference with each other. Any known causes of interference are listed in Annex B.

NOTE It is recommended that users select one MODE for any specific application.

NOTE Local national regulations may further limit either power, frequency or bandwidth allocations and such limitations may reduce the capability of a system within that country. Users shall have the responsibility to ensure that they use only systems that comply with these regulations. This implies a user responsibility to obtain proofs from manufacturers, and where appropriate have adequate tests carried out to assure that systems are in compliance.

Informative Comment: At the time of preparation of this part of ISO/IEC 18000, the interrogator to tag link and tag to interrogator link physical layer emissions may be subject to type approval or certification. It is therefore necessary to make

