
Information technology — Radio frequency identification for item management —

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

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

*Partie 6: Paramètres de communications d'une interface radio entre
860 MHz et 960 MHz, Général*

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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 18000-6 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

This third edition, together with ISO/IEC 18000-61, ISO/IEC 18000-62, ISO/IEC 18000-63 and ISO/IEC 18000-64 replaces the second edition (ISO/IEC 18000-6:2010) by splitting it into parts ISO/IEC 18000-6, ISO/IEC 18000-61, ISO/IEC 18000-62, ISO/IEC 18000-63 and ISO/IEC 18000-64.

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 General*
- *Part 61: Parameters for air interface communications at 860 MHz to 960 MHz Type A*
- *Part 62: Parameters for air interface communications at 860 MHz to 960 MHz Type B*
- *Part 63: Parameters for air interface communications at 860 MHz to 960 MHz Type C*
- *Part 64: Parameters for air interface communications at 860 MHz to 960 MHz Type D*
- *Part 7: Parameters for active air interface communications at 433 MHz*

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Introduction

This part of ISO/IEC 18000 describes a passive backscatter radio frequency identification (RFID) system that supports the following system capabilities:

- identification and communication with multiple tags in the field;
- selection of a subgroup of tags for identification or with which to communicate;
- reading from and writing to or rewriting data many times to individual tags;
- user-controlled permanently lockable memory;
- data integrity protection;
- Interrogator-to-tag communications link with error detection;
- tag-to-Interrogator communications link with error detection;
- support for both passive back-scatter tags with or without batteries.

This part of ISO/IEC 18000 provides the overview for a passive-backscatter, RFID system operating in the 860 MHz to 960 MHz frequency range. The system comprises Interrogators, also known as readers, and tags, also known as labels. The general overview describes four Types called Type A, Type B, Type C and Type D. Details for each part are defined in the following documents:

- Type A ISO/IEC 18000-61
- Type B ISO/IEC 18000-62
- Type C ISO/IEC 18000-63
- Type D ISO/IEC 18000-64

This part of ISO/IEC 18000 together with ISO/IEC 18000-61, ISO/IEC 18000-62, ISO/IEC 18000-63 and ISO/IEC 18000-64 specify the physical and logical requirements for a passive-backscatter, RFID system operating in the 860 MHz to 960 MHz frequency range. The system comprises Interrogators, also known as readers, and tags, also known as labels.

An Interrogator transmits information to a tag by modulating an RF signal in the 860 MHz to 960 MHz frequency range. The tag receives both information and operating energy from this RF signal. Passive tags are those which receive all of their operating energy from the Interrogator's RF waveform. If tags maintain a battery then they may operate using some passive principles; however, they do not necessarily get all their operating energy from the Interrogator's RF waveform.

An Interrogator receives information from a tag by transmitting a continuous-wave (CW) RF signal to the tag; the tag responds by modulating the reflection coefficient of its antenna, thereby backscattering an information signal to the Interrogator. The system is Interrogator-Talks-First (ITF) for Types A, B and C, meaning that a tag modulates its antenna reflection coefficient with an information signal only after being directed to do so by an Interrogator.

Interrogators and tags are not required to talk simultaneously; rather, communications are half-duplex, meaning that Interrogators talk and tags listen, or vice versa.

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This part of ISO/IEC 18000 further contains an optional "tag only talks after listening" Type D, an enhanced Tag Talks Only (TTO) technique. Type D uses Pulse-Position Encoding (PPE) or Miller encoding in the return link and does not define a dedicated forward link. In fact, tags may implement one of the types defined in this part of ISO/IEC 18000 (A, B, or C) besides Type D in order to allow enhanced tag access techniques.