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Information technology — Telecommunications and information exchange between systems — PHY/MAC specifications for short-range wireless low-rate applications in the ISM band

Technologies de l'information — Téléinformatique — Spécifications PHY/MAC pour applications à bas débit sans fil à courte portée dans la bande ISM

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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.

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 document 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).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 6, *Telecommunications and information exchange between systems.*

This second edition cancels and replaces the first edition (ISO/IEC 29157:2010), which has been technically revised.

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Introduction

This International Standard is the revision of ISO/IEC 29157. This International Standard was established to provide a unified platform for services of data rates up to 1 Mbps: control data, voice, audio, and video. The purpose of the revision is to accommodate the advancement of technology for higher-quality services in the mobile applications.

The direction of the revision is three-fold: to enhance throughput, to facilitate co-existence with other technologies such as time-division LTE (long term evolution) and WiMAX II, and to increase data rate. For the higher throughput, the length of the preamble of the payload frames is made variable up to the user's need (see 9.2.2). For the co-existence, the duration of the middle frames is reduced to 4 ms from 16 ms to make align with those of the other technologies (see 8.3). With the shorter middleframes, the International Standard does not only harmonise with other technologies, but also attains advantages of shorter communication delay and less paring time. To increase the data rate, the message part of the payload frames may be modulated with QPSK. The modulation format is indicated by the 'PHY version' of the header (see Clause 7 and 9.3). With the addition of the new option, the data rate can be increased to 2 Mbps. In addition, to protect communications against security challenges due to the loss of protection provided by wires, this International Standard provides the optional security mechanism (See 9.3.2 and Annex A).

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Information technology — Telecommunications and information exchange between systems — PHY/ MAC specifications for short-range wireless low-rate applications in the ISM band

1 Scope

This International Standard specifies the PHY characteristics and MAC procedures used for short-range, low-data-rate, wireless communications with very low latency and point-to-multipoint connection capability.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 9798-3, *Information technology — Security techniques — Entity authentication — Part 3: Mechanisms using digital signature techniques*

3 Terms and definitions

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

3.1
pico-net
small operational range for wireless transmissions within about 10 meters in radius from the user or his/her device

3.2
group
total of devices interoperable within a Pico-net, with their usage of the same group code separating them from other devices in different groups

3.3
master
device transmitting the reference synchronisation signal within a group

3.4
slave
device that is not a master

3.5
scan
process performed by slaves to search for the synchronising signal from the master

3.6
middleframe
basic unit of frame operation, consisting of one control frame and one or more payload frames

Note 1 to entry: Sixteen middleframes constitute a superframe.

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