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**Information technology — Automatic  
identification and data capture  
techniques — Real time locating systems  
(RTLS) device conformance test  
methods —**

**Part 5:**

**Test methods for chirp spread spectrum  
(CSS) at 2,4 GHz air interface**

*Technologies de l'information — Techniques d'identification  
automatique et de capture de données — Systèmes de localisation en  
temps réel (RTLS) méthodologie des tests de conformité —*

*Partie 5: Méthodologie de test de l'interface d'air à 2,4 GHz avec  
étalement de spectre par compression d'impulsions (CSS)*

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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 24769-5 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

This corrected version of ISO/IEC 24769-5:2012 incorporates the following corrections:

— All references to ISO/IEC 24703-5 have been changed to ISO/IEC 24730-5.

ISO/IEC 24769 consists of the following parts, under the general title *Information technology, Automatic identification and data capture techniques — Real time locating systems (RTLS) device conformance test methods*:

— *Part 2: Test methods for air interface communication at 2,4 GHz*

— *Part 5: Test methods for chirp spread spectrum (CSS) at 2,4 GHz air interface*

## Introduction

ISO/IEC 24730 defines air interface protocols and an Application Program Interface (API) for Real Time Locating Systems (RTLS).

ISO/IEC 24730-5 defines an air interface which utilizes Chirp Spread Spectrum (CSS) at frequencies from 2.4-2.483 GHz. Chirp pulses, which are pulses with a fast increasing or decreasing instantaneous frequency, have originally used for radar applications. Lately, chirp pulses have been also used for communication applications.

ISO/IEC 24730-5 includes ranging and bidirectional communication between tags and infrastructures. Bidirectional communication enables the infrastructure to control the behaviour of tags.

The purpose of ISO/IEC TR 24769-5 is to provide tests conditions and methods for conformance to ISO/IEC 24730-5.

ISO/IEC TR 24769-5 contains all measurements required to be made on a product in order to establish whether it conforms to ISO/IEC 24730-5.



# Information technology — Automatic identification and data capture techniques — Real time locating systems (RTLS) device conformance test methods —

## Part 5: Test methods for chirp spread spectrum (CSS) at 2,4 GHz air interface

### 1 Scope

This part of ISO/IEC 24769 defines the test methods for determining the conformance of real time locating systems (RTLS) tags and readers with the specifications given in the corresponding parts of ISO/IEC 24730-5.

This part of ISO/IEC 24769 does not include the testing of conformity with regulatory requirements.

The test methods require only that the mandatory functions, and any optional functions which are implemented, be verified

The conformance parameters described in this part of ISO/IEC 24769 include the radio frequency air interface and packet exchange required to perform the locating of the RTLS tag. It includes the mandatory 2-ary orthogonal chirp spread spectrum (CSS) modulation and the optional differential quadrature phase shift keying (DQPSK) CSS. This part of ISO/IEC 24769 also includes the ranging packet exchanges, the commands and the reports defined in ISO/IEC 24730-5.

Unless otherwise specified, the tests in this part of ISO/IEC 24769 shall be applied exclusively to RTLS tags and readers defined in ISO/IEC 24730-5.

### 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 19762-1: *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary — Part 1: General terms relating to AIDC*

ISO/IEC 19762-3: *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary — Part 3: Radio-Frequency Identification (RFID)*

ISO/IEC 19762-4: *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary — Part 4: General terms relating to radio communications*

ISO/IEC 19762-5: *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary — Part 5: Locating systems*

ISO/IEC 24730-5: *Information technology — Real Time Locating Systems (RTLS) — Part 5: Chirp Spread Spectrum (CSS) at 2.4 GHz air interface*