
**Supply chain applications of RFID —
Freight containers**

Applications de chaîne d'approvisionnements de RFID — Récipients de fret



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

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

Published in Switzerland

Contents

Page

Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Conformance and performance specifications.....	1
3 Normative references.....	2
4 Terms and definitions.....	3
5 Concepts.....	5
5.1 Differentiation between a layer and its preceding and following layers.....	5
5.2 Unique item identifier.....	6
5.3 Types of tags.....	6
5.4 Additive to other identification requirements.....	6
6 Differentiation within Layer 4.....	7
6.1 General.....	7
6.2 Containerized cargo supply chain RFID system requirements.....	7
6.3 Business processes relevant to the suite of standards for supply chain applications of RFID.....	7
7 Data content.....	8
7.1 General.....	8
7.2 Mandatory data.....	8
7.3 Optional cargo shipment-specific (CSS) data.....	8
8 Data security.....	9
8.1 General.....	9
8.2 Confidentiality.....	9
8.3 Data integrity.....	10
8.4 Authentication.....	10
8.5 Non-repudiation/Audit trail.....	10
9 Tag location.....	10
10 Tag operation.....	10
10.1 Data protocol.....	10
10.2 Minimum performance requirements.....	10
10.3 Environmental requirements.....	10
10.4 Air interface.....	11
10.5 Memory requirements.....	11
10.6 Indication of impending power source failure.....	11
10.7 Real time clock option.....	11
10.8 External communications.....	11
10.9 Sensor interface, if applicable.....	11
10.10 Safety and regulatory considerations.....	11
10.11 Minimum reliability and accuracy.....	11
10.12 Tag recyclability.....	12
10.13 Tag re-usability.....	12
11 Privacy of cargo shipment-specific (CSS) data.....	12
11.1 Data privacy.....	12
11.2 Personal data privacy.....	12
11.3 Authentication and identification.....	12
12 Interoperability, compatibility and non-interference with other RF systems.....	13
Bibliography.....	14

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member 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 shall not be held responsible for identifying any or all such patent rights.

ISO 17363 was prepared by Technical Committee TC 122, *Packaging*, in collaboration with Technical Committee TC 104, *Freight containers*.

This document is a preview generated by EVS

Introduction

The supply chain is a multi-level concept that covers all aspects of taking a product from raw materials to a final product, to shipping, to a final place of sale. Each of these levels covers many aspects of dealing with products and the business process for each level is both unique and overlapping with other levels.

This International Standard has been created with a vision of compatibility both at the physical and command level and the data level with the four other standards within the suite of standards, *Supply chain applications of RFID*, together with ISO 10374 and ISO 18185. Due to the different data structures in each of these standards, they cannot take the form of interchangeability. However, these standards are designed to be interoperable and non-interfering. They include

- ISO 17363, *Supply chain applications of RFID — Freight containers*,
- ISO 17364, *Supply chain applications of RFID — Returnable transport items (RTIs)*,
- ISO 17365, *Supply chain applications of RFID — Transport units*,
- ISO 17366, *Supply chain applications of RFID — Product packaging*,
- ISO 17367, *Supply chain applications of RFID — Product tagging*, and
- ISO 10374, *Freight containers — Automatic Identification*

These International Standards define the technical aspects and data hierarchy of supply chain management information required in each layer of the supply chain. Air interface and communication protocol standards supported within these standards are the ISO/IEC 18000 series; commands and messages are supported by ISO/IEC 15961 and ISO/IEC 15962. The semantics of these standards are defined in ISO/IEC 15418 and their syntax is defined in ISO/IEC 15434.

Excluded, although embraced, is the work of

- ISO/IEC JTC 1/SC 31 in the area of technical standards related to air interface, data semantic and syntax construction, and conformance standards, and
- ISO/TC 104 in the area of freight container security, including electronic seals (e-seals) (ISO 18185 in multiple parts), and container identification.

This document is a preview generated by EVS

Supply chain applications of RFID — Freight containers

1 Scope

This International Standard defines the usage of read/write radio-frequency identification technology (RFID) cargo shipment-specific tags on freight containers for supply chain management purposes (“shipment tags”). This International Standard, through reference to other standards within ISO/TC 122, ISO/TC 104 and ISO/IEC JTC 1/SC 31, defines the air-interface communications, a common set of required data structures, and a commonly organized set of optional data requirements (through common syntax and semantics).

It contains the following recommendations:

- a) recommendations about a containerized cargo supply chain RFID system, based on shipment tags;

NOTE Such a containerized cargo supply chain RFID system would co-exist with, but be separate from, a container security and identification RFID framework using permanent container lifetime RFID tags (“container tags”), described in ISO 10374, and cargo shipment-specific electronic seals (e-seals) for which a standard in multiple parts (ISO 18185) is being developed. Specifically, readings for container security and identification purposes of the information in the container tags and e-seals are intended to be in separate messages and not through the shipment tag.

- b) specific recommendations about mandatory non-reprogrammable information on the shipment tag;
- c) specific recommendations about optional, reprogrammable information on the shipment tag.

Identified within this International Standard are the air-interface and communication parameters for active radio-frequency identification communications using ISO/IEC 18000-7.

This International Standard is applicable to freight containers as defined in ISO 668 and to freight containers that are not defined by other ISO standards. It complements ISO 10374 for permanent container license-plate tags (see 4.7), hereinafter referred to as “container tags”.

This International Standard fully describes cargo shipment-specific tags (see 4.8), hereinafter referred to as “shipment tags”.

It does not address “smart” container technologies affixed to, or inside, freight containers (e.g. sensors) for supply chain management purposes. These issues will be addressed in future revisions.

2 Conformance and performance specifications

All of the devices and equipment that claim compliance with this International Standard in either performance and/or conformance shall also conform to the appropriate sections and parameters specified in ISO/IEC 18046 for performance and ISO/IEC TR 18047-7 for conformance of active devices operating at 433,92 MHz.

The underlying conformance requirements of this International Standard are to provide the structure necessary to raise the level of interoperability of components and systems built to this standard, while leaving open opportunity for continued technical improvement and differentiation.