INTERNATIONAL STANDARD

ISO 18382

First edition
2013-06-01

Space data and information transfer systems — Spacecraft onboard interface services — RFID-based inventory management systems

Systèmes de transfert des informations et données spatiales — Services d'interfaces à bord des véhicules spatiaux — Systèmes de gestion des stocks basés sur la radiofréquence (RFID)

Sample Document
get full document from standards.iteh.ai

Reference number
ISO 18382:2013(E)

© ISO 2013

ISO 18382:2013 • https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a55d64c/iso-18382-2013

Sample Document

get full document from standards.iteh.ai



COPYRIGHT PROTECTED DOCUMENT

© ISO 2013

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested 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

© ISO 2013 – All rights reserved

ISO 18382:2013 • https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a55d64c/iso-18382-2013

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.

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 ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. www.iso.org/patents

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

Sample Document

ISO 18382 was prepared by the Consultative Committee for Space Data Systems (CCSDS) (as CCSDS 881.0-M-1, May 2012) and was adopted (without modifications except those stated in Clause 2 of this International Standard) by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 13, *Space data and information transfer systems*.

get full document from standards.iteh.ai

© ISO 2013 – All rights reserved

ISO 18382:2013 • https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a55d64c/iso-18382-2013

Sample Document

get full document from standards.iteh.ai

Space data and information transfer systems — Spacecraft onboard interface services — RFID-based inventory management systems

1 Scope

This International Standard provides recommended practices for the utilization of Radio Frequency Identification (RFID) protocol and communication standards in support of inventory management activities associated with space missions.

The recommended practices contained in this International Standard enable member agencies to select the best option(s) available for interoperable RFID-based communications in the support of inventory management applications. The specification of a Recommended Practice facilitates interoperable communications and forms the foundation for cross-support of communication systems between separate member space agencies.

This International Standard is targeted towards passive (unpowered) RFID tags transmitting in the 860 MHz – 960 MHz Ultra High Frequency (UHF) radio band. The recommended practices are applicable to both terrestrial (ground-based) and space-based automated inventory management systems utilizing only passive RFID tags.

Active RFID systems and utilization of RFID tags for precision asset localization are not covered in this International Standard.

The scope and field of application are furthermore detailed in subclause 1.3 of the enclosed CCSDS publication.

2 Requirements

Requirements are the technical recommendations made in the following publication (reproduced on the following pages), which is adopted as an International Standard:

CCSDS 881.0-M-1, May 2012, Spacecraft onboard interface services — RFID-based inventory management systems.

For the purposes of international standardization, the modifications outlined below shall apply to the specific clauses and paragraphs of publication CCSDS 881.0-M-1.

3 Revision of publication CCSDS 881.0-M-1

It has been agreed with the Consultative Committee for Space Data Systems that Subcommittee ISO/TC 20/SC 13 will be consulted in the event of any revision or amendment of publication CCSDS 881.0-M-1. To this end, NASA will act as a liaison body between CCSDS and ISO.

© ISO 2013 – All rights reserved

ISO 18382:2013 • https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a55d64c/iso-18382-2013

(Blank page)

Sample Document

get full document from standards.iteh.ai

© ISO 2013 – All rights reserved

ISO 18382:2013 • https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a55d64c/iso-18382-2013

The Consultative Committee for Space Data Systems

Recommendation for Space Data System Practices

SPACECRAFT ONBOARD INTERFACE SERVICES—RFID-BASED INVENTORY MANAGEMENT SYSTEMS

Sample Document
get full document from standards.iteh.ai

RECOMMENDED PRACTICE

CCSDS 881.0-M-1

MAGENTA BOOK
May 2012

© ISO 2013 – All rights reserved
ISO 18382:2013
https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a55d64c/iso-18382-2013

(Blank page)

Sample Document

get full document from standards.iteh.ai

ISO 18382:2013 • https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a5...
© ISO 2013 – All rights reserved

AUTHORITY

Issue:	Recommended Practice, Issue 1
Date:	May 2012
Location:	Washington, DC, USA

This document has been approved for publication by the Management Council of the Consultative Committee for Space Data Systems (CCSDS) and represents the consensus technical agreement of the participating CCSDS Member Agencies. The procedure for review and authorization of CCSDS documents is detailed in *Organization and Processes for the Consultative Committee for Space Data Systems* (CCSDS A02.1-Y-3), and the record of Agency participation in the authorization of this document can be obtained from the CCSDS Secretariat at the address below.

This document is published and maintained by:

Sample Document
Get full document from standards.iteh.ai

CCSDS Secretariat
Space Communications and Navigation Office, 7L70
Space Operations Mission Directorate
NASA Headquarters
Washington, DC 20546-0001, USA

© ISO 2013 – All rights reserved
ISO 18382:2013
https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a55d64c/iso-18382-2013

STATEMENT OF INTENT

The Consultative Committee for Space Data Systems (CCSDS) is an organization officially established by the management of its members. The Committee meets periodically to address data systems problems that are common to all participants, and to formulate sound technical solutions to these problems. Inasmuch as participation in the CCSDS is completely voluntary, the results of Committee actions are termed **Recommendations** and are not in themselves considered binding on any Agency.

CCSDS Recommendations take two forms: **Recommended Standards** that are prescriptive and are the formal vehicles by which CCSDS Agencies create the standards that specify how elements of their space mission support infrastructure shall operate and interoperate with others; and **Recommended Practices** that are more descriptive in nature and are intended to provide general guidance about how to approach a particular problem associated with space mission support. This **Recommended Practice** is issued by, and represents the consensus of, the CCSDS members. Endorsement of this **Recommended Practice** is entirely voluntary and does not imply a commitment by any Agency or organization to implement its recommendations in a prescriptive sense.

No later than five years from its date of issuance, this **Recommended Practice** will be reviewed by the CCSDS to determine whether it should: (1) remain in effect without change; (2) be changed to reflect the impact of new technologies, new requirements, or new directions; or (3) be retired or canceled.

In those instances when a new version of a **Recommended Practice** is issued, existing CCSDS-related member Practices and implementations are not negated or deemed to be non-CCSDS compatible. It is the responsibility of each member to determine when such Practices or implementations are to be modified. Each member is, however, strongly encouraged to direct planning for its new Practices and implementations towards the later version of the Recommended Practice.

Sample Document
Beneficial document from standards.iteh.ai

ISO 18382:2013 • https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a5...
© ISO 2013 – All rights reserved

FOREWORD

This document is, as of the date of publication, the consensus result of the best practices for inventory management systems utilizing wireless communications in support of space missions.

Through the process of normal evolution, it is expected that expansion, deletion, or modification of this document may occur. This Recommended Practice is therefore subject to CCSDS document management and change control procedures, which are defined in the *Organization and Processes for the Consultative Committee for Space Data Systems* (CCSDS A02.1-Y-3). Current versions of CCSDS documents are maintained at the CCSDS Web site:

http://www.ccsds.org/

Questions relating to the contents or status of this document should be addressed to the CCSDS Secretariat at the address indicated on page i.

Sample Document
get full document from standards.iteh.ai

© ISO 2013 – All rights reserved
ISO 18382:2013
https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a55d64c/iso-18382-2013

At time of publication, the active Member and Observer Agencies of the CCSDS were:

Member Agencies

- Agenzia Spaziale Italiana (ASI)/Italy.
- Canadian Space Agency (CSA)/Canada.
- Centre National d'Etudes Spatiales (CNES)/France.
- China National Space Administration (CNSA)/People's Republic of China.
- Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR)/Germany.
- European Space Agency (ESA)/Europe.
- Federal Space Agency (FSA)/Russian Federation.
- Instituto Nacional de Pesquisas Espaciais (INPE)/Brazil.
- Japan Aerospace Exploration Agency (JAXA)/Japan.
- National Aeronautics and Space Administration (NASA)/USA.
- UK Space Agency/United Kingdom.

Observer Agencies

- Austrian Space Agency (ASA)/Austria.
- Belgian Federal Science Policy Office (BFSPO)/Belgium.
- Central Research Institute of Machine Building (TsNIIMash)/Russian Federation.
- China Satellite Launch and Tracking Control General, Beijing Institute of Tracking and Telecommunications Technology (CLTC/BITTT)/China.
- Chinese Academy of Sciences (CAS)/China.
- Chinese Academy of Space Technology (CAST)/China.
- Commonwealth Scientific and Industrial Research Organization (CSIRO)/Australia.
- CSIR Satellite Applications Centre (CSIR)/Republic of South Africa.
- Danish National Space Center (DNSC)/Denmark.
- Departamento de Ciência e Tecnologia Aeroespacial (DCTA)/Brazil.
- European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)/Europe.
- European Telecommunications Satellite Organization (EUTELSAT)/Europe.
- Geo-Informatics and Space Technology Development Agency (GISTDA)/Thailand.
- Hellenic National Space Committee (HNSC)/Greece.
- Indian Space Research Organization (ISRO)/India.
- Institute of Space Research (IKI)/Russian Federation.
- KFKI Research Institute for Particle & Nuclear Physics (KFKI)/Hungary.
- Korea Aerospace Research Institute (KARI)/Korea.
- Ministry of Communications (MOC)/Israel.
- National Institute of Information and Communications Technology (NICT)/Japan.
- National Oceanic and Atmospheric Administration (NOAA)/USA.
- National Space Agency of the Republic of Kazakhstan (NSARK)/Kazakhstan.
- National Space Organization (NSPO)/Chinese Taipei.
- Naval Center for Space Technology (NCST)/USA.
- Scientific and Technological Research Council of Turkey (TUBITAK)/Turkey.
- Space and Upper Atmosphere Research Commission (SUPARCO)/Pakistan.
- Swedish Space Corporation (SSC)/Sweden.

Sample Document
Full document available on standards.iteh.ai

ISO 18382:2013 • https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a5...
© ISO 2013 – All rights reserved

– United States Geological Survey (USGS)/USA.

Sample Document
get full document from standards.iteh.ai

© ISO 2013 – All rights reserved
ISO 18382:2013 https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a55d64c/iso-18382-2013

DOCUMENT CONTROL

Document	Title	Date	Status
CCSDS 881.0-M-1	Spacecraft Onboard Interface Services—RFID-Based Inventory Management Systems, Recommended Practice, Issue 1	May 2012	Current issue

Sample Document
get full document from standards.iteh.ai

ISO 18382:2013 • https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a5...
© ISO 2013 – All rights reserved

CONTENTS

Section Page

1 INTRODUCTION 1-1

1.1 PURPOSE 1-1
1.2 SCOPE 1-1
1.3 APPLICABILITY 1-1
1.4 RATIONALE 1-1
1.5 DOCUMENT STRUCTURE 1-2
1.6 CONVENTIONS 1-2
1.7 REFERENCES 1-3

2 OVERVIEW 2-1

2.1 GENERAL 2-1
2.2 RATIONALE AND BENEFITS 2-1
2.3 RFID NOMENCLATURE AND DEFINITIONS 2-2
2.4 RF TRANSMISSION CHARACTERISTICS 2-2
2.5 RFID STANDARDS 2-4
2.6 EVOLUTION OF THE BOOK 2-6

3 RFID-BASED INVENTORY MANAGEMENT RECOMMENDED PRACTICE . 3-1

3.1 OVERVIEW 3-1
3.2 RECOMMENDED PRACTICE 3-1

ANNEX A SECURITY CONSIDERATIONS (INFORMATIVE) A-1
ANNEX B CONFORMANCE AND INTEROPERABILITY (INFORMATIVE) B-1
ANNEX C RFID INVENTORY MANAGEMENT (INFORMATIVE) C-1
ANNEX D INFORMATIVE REFERENCES (INFORMATIVE) D-1
ANNEX E GLOSSARY AND ABBREVIATIONS (INFORMATIVE) E-1
ANNEX F ITU INDUSTRIAL, SCIENTIFIC, AND MEDICAL (ISM) BANDS (INFORMATIVE) F-1
ANNEX G UHF REGIONAL SPECTRUM UTILIZATION (INFORMATIVE) G-1

Figure

C-1 RFID Enclosure C-9

Sample Document
get full document from standards.iteh.ai

© ISO 2013 – All rights reserved
ISO 18382:2013
https://standards.iteh.ai/catalog/standards/iso/b90055b6-f907-4aa1-bf2e-a7823a55d64c/iso-18382-2013