

**INTERNATIONAL
STANDARD**

**ISO/IEC
18047-3**

First edition
2022-03

**Information technology — Radio
frequency identification device
conformance test methods —**

**Part 3:
Test methods for air interface
communications at 13,56 MHz**



Reference number
ISO/IEC 18047-3:2022(E)

© ISO/IEC 2022



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, 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
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms, definitions, symbols and abbreviated terms.....	1
3.1 Terms and definitions.....	1
3.2 Symbols and abbreviated terms.....	2
4 Conformance tests for ISO/IEC 18000-3 — 13,56 MHz.....	3
4.1 General.....	3
4.2 Default conditions applicable to the test methods.....	3
4.2.1 Test environment.....	3
4.2.2 Pre-conditioning.....	3
4.2.3 Default tolerance.....	3
4.2.4 Spurious inductance.....	3
4.2.5 Total measurement uncertainty.....	3
4.3 Conformance tests for ISO/IEC 18000-3 Mode 1.....	3
4.3.1 General.....	3
4.3.2 Test apparatus and test circuits.....	4
4.3.3 Functional test — Tag.....	8
4.3.4 Functional test — Interrogator.....	9
4.4 Conformance tests for ISO/IEC 18000-3 Mode 2.....	10
4.4.1 General.....	10
4.4.2 Test apparatus and test circuits.....	10
4.4.3 Functional test — Tag.....	12
4.4.4 Functional test — Interrogator.....	13
4.5 Conformance tests for ISO/IEC 18000-3 Mode 3 (mandatory ASK part).....	14
4.5.1 General.....	14
4.5.2 Test apparatus and test circuits.....	14
4.5.3 Functional test — tag.....	18
4.5.4 Functional test — interrogator.....	19
Annex A (normative) Test setup parameters and dimensions for tags smaller than or equal to an ISO/IEC 7810 ID-1 outline.....	21
Annex B (normative) Guideline for RFID tags larger than ISO/IEC 7810 ID-1 size.....	23
Annex C (normative) Test interrogator antenna.....	27
Annex D (informative) Test interrogator antenna tuning.....	30
Annex E (normative) Sense coil.....	33
Annex F (normative) Reference tag for interrogator power test.....	35
Annex G (informative) Reference tag for load modulation test.....	37
Annex H (informative) Program for evaluation of the spectrum.....	39
Bibliography.....	43

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.

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 or www.iec.ch/members_experts/refdocs).

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. 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 (see www.iso.org/patents) or the IEC list of patent declarations received (see patents.iec.ch).

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

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Technical Committee ISO/IEC JTC1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

A list of all parts in the ISO/IEC ISO/IEC 18047 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

Introduction

ISO/IEC 18000 defines the air interfaces for radio frequency identification (RFID) devices used in item management applications. ISO/IEC 18000-3 defines the air interface for these devices operating in the 13,56 MHz industrial, scientific, and medical (ISM) band and used in these applications.

Each part of ISO/IEC 18047 contains all measurements required to be made on a product in order to establish whether it conforms to the corresponding part of ISO/IEC 18000. For ISO/IEC 18047-3, each product should be assessed following either the procedure defined for ISO/IEC 18000-3 Mode 1, for Mode 2 or for Mode 3.

[This is a preview - click here to buy the full publication](#)

Information technology — Radio frequency identification device conformance test methods —

Part 3: Test methods for air interface communications at 13,56 MHz

1 Scope

This document defines test methods for determining the conformance of radio frequency identification devices (tags and interrogators) for item management with the specifications given in ISO/IEC 18000-3. It does not apply to the testing of conformity with regulatory or similar requirements.

The test methods intend to verify the mandatory functions, and any optional functions which are implemented. This can, in appropriate circumstances, be supplemented by further, application-specific functionality criteria that are not available in the general case.

This document includes the following interrogator and tag conformance parameters:

- mode-specific conformance parameters including nominal values and tolerances;
- parameters that apply directly affecting system functionality and inter-operability.

This document does not include the following:

- parameters that are already included in regulatory test requirements;
- high-level data encoding conformance test parameters (these are specified in ISO/IEC 15962).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 18000-3, *Information technology — Radio frequency identification for item management — Part 3: Parameters for air interface communications at 13,56 MHz*

ISO/IEC 19762, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary*