



EDC 4 (5309) P3
IEC 62642-5-3: 2010

DRAFT TANZANIA STANDARD

(Draft for comments only)

Alarm systems - Intrusion and hold-up systems –

Part 5-3: Interconnections - Requirements for equipment using radio frequency techniques

TANZANIA BUREAU OF STANDARDS

0 National Foreword

This draft Tanzania Standard is being prepared by the Alarm and Electronic Security Systems Technical Committee of the Tanzania Bureau of Standards (TBS), under the supervision of the Electrotechnical Divisional Standards Committee (EDC)

This draft Tanzania Standard is an adoption of the International Standard IEC 62642-5-3:2010 *Alarm systems - Intrusion and hold-up systems - Part 5-3: Interconnections - Requirements for equipment using radio frequency techniques*, which has been prepared by the International Electrotechnical Commission (IEC).

Terminology and conventions

Some terminologies and certain conventions are not identical with those used in Tanzania Standards; Attention is drawn especially to the following:

- 1) The comma has been used as a decimal marker for metric dimensions. In Tanzania Standards, it is current practice to use “full point” on the baseline as the decimal marker.
- 2) Where the words “International Standard(s)” appear, referring to this standard they should read “Tanzania Standard(s)”.

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Alarm systems – Intrusion and hold-up systems –
Part 5-3: Interconnections – Requirements for equipment using radio frequency
techniques**

**Systèmes d'alarme – Systèmes d'alarme contre l'intrusion et les hold-up –
Partie 5-3: Interconnexions – Exigences pour les équipements utilisant des
techniques radio fréquence**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE **U**
CODE PRIX

CONTENTS

FOREWORD.....		4
INTRODUCTION.....		6
1 Scope.....		7
2 Normative references		7
3 Terms, definitions and abbreviations		7
3.1 Terms and definitions		7
3.2 Abbreviations		9
4 General requirements		9
4.1 Immunity to attenuation.....		9
4.2 Immunity to collision		9
4.2.1 Requirement for collision rate		9
4.2.2 Requirement for throughput ratio		10
4.3 Immunity to unintentional and intentional component and message substitution.....		10
4.3.1 Immunity to unintentional and intentional components substitution		11
4.3.2 Immunity to intentional message substitution		11
4.4 Immunity to interference		11
4.4.1 Interference outside of the assigned band for grades 1 and 2 equipment		11
4.4.2 Interference within the assigned band for grades 1 and 2 equipment		12
4.4.3 Interference for grades 3 and 4.....		12
4.5 Requirement for RF links monitoring.....		12
4.5.1 Requirement for the detection of a failure of periodic communication.....		12
4.5.2 Requirement for the detection of interference		13
4.6 Requirements for antennas		14
5 Tests		15
5.1 RF disturbance tests		15
5.1.1 Reference level determination		15
5.1.2 Test for immunity to attenuation.....		15
5.1.3 Verification of immunity to collision		16
5.1.4 Test for throughput ratio		16
5.1.5 Test for immunity to unintentional and intentional component and message substitution		16
5.1.6 Tests for immunity to interference.....		17
5.1.7 Tests for RF link monitoring		18
5.2 Tests for antennas on grades 1 and 2 equipment		19
5.3 Environmental tests		20
Annex A (normative) Generic test arrangement for receiver		21
Annex B (normative) Test arrangement for interference tests		22
Annex C (informative) Signal levels diagram		23
Annex D (normative) Test arrangement for transmitter		25
Annex E (normative) Calculation for immunity to message substitution		26
Annex F (normative) Interference timing diagrams		28
Annex G (normative) Test arrangement for detection of interference.....		29
Bibliography.....		30

Figure A.1 – Generic test arrangement for receiver.....	21
Figure B.1 – Test arrangement for interference tests	22
Figure C.1 – Signal levels diagram.....	24
Figure D.1 – Test arrangement for transmitter.....	25
Figure F.1 – Interference timing diagrams.....	28
Figure G.1 – Test arrangement for detection of interference	29
Table 1 – Immunity to attenuation	9
Table 2 – Equipment occupation of the medium	10
Table 3 – Throughput ratio.....	10
Table 4 – Identification codes.....	10
Table 5 – Message substitution	11
Table 6 – Interference outside of the assigned band for grades 1 and 2	11
Table 7 – Interference within the assigned band for grades 1 and 2	12
Table 8 – Interference for grades 3 and 4	12
Table 9 – Periodic communication.....	13
Table 10 – Periodic communication before setting	13
Table 11 – Detection of interference	13
Table 12 – Detection of interference for equipment.....	14
Table 13 – Level of interference signal	14
Table 14 – Requirements for antennas.....	14
Table 15 – Duration of interference signals.....	19

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ALARM SYSTEMS –
INTRUSION AND HOLD-UP SYSTEMS –

Part 5-3: Interconnections –
Requirements for equipment using radio frequency techniques

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62642-5-3 has been prepared by IEC technical committee 79:
Alarm and electronic security systems.

This standard is based on EN 50131-5-3 (2005).

The text of this standard is based on the following documents:

	FDIS	Report on voting
79/309/FDIS		79/320/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 62642 series can be found, under the general title *Alarm systems – Intrusion and hold-up systems*, on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

This part 5-3 of the IEC 62642 series of standards gives requirements for interconnections equipment using radio frequency techniques used in intrusion and hold-up alarm systems. The other parts of this series of standards are as follows:

- Part 1 System requirements
- Part 2-2 Intrusion detectors – Passive infrared detectors
- Part 2-3 Intrusion detectors – Microwave detectors
- Part 2-4 Intrusion detectors – Combined passive infrared / microwave detectors
- Part 2-5 Intrusion detectors – Combined passive infrared / ultrasonic detectors
- Part 2-6 Intrusion detectors – Opening contacts (magnetic)
- Part 2-71 Intrusion detectors – Glass break detectors – Acoustic
- Part 2-72 Intrusion detectors – Glass break detectors – Acoustic
- Part 2-73 Intrusion detectors – Glass break detectors – Passive
- Part 2-74 Intrusion detectors – Glass break detectors – Active
- Part 3 Control and indicating equipment
- Part 4 Warning devices
- Part 5-3 Interconnections – Requirements for equipment using radio frequency techniques
- Part 6 Power supplies
- Part 7 Application guidelines
- Part 8 Security fog devices/systems

ALARM SYSTEMS – INTRUSION AND HOLD-UP SYSTEMS –

Part 5-3: Interconnections – Requirements for equipment using radio frequency techniques

1 Scope

This part of the IEC 62642 applies to intrusion alarm equipment using radio frequency (RF) links and located on protected premises. It does not cover long range radio transmissions.

This standard defines the terms used in the field of intrusion alarm equipment using radio frequency links as well as the requirements relevant to the equipment.

It is used in conjunction with the other parts of the IEC 62642 series that define the functional requirements of the equipment regardless of the type of interconnections used.

2 Normative references

None.

NOTE Reference to IEC 62642-1 appears only in a Note, as such the reference is indicated in a bibliography at the last page of the present document.

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

3.1.1

alarm message

message conveying information regarding intruder, tamper or fault alarms

3.1.2

assigned band

frequency band within which the equipment is authorized to operate

3.1.3

attenuation

degradation of the RF signal due to a change in the passive environment of the system after its installation (e.g. creation, relocation or reflection or absorption materials)

3.1.4

collision

simultaneous transmission from two or more RF communication devices belonging to the same system, of sufficient signal strength to cause corruption or obliteration of the RF signals

3.1.5

collision rate

probability of two or more messages having part or all of their information coincident on the RF link leading to a collision