IEC 62657-2

Edition 4.0 2025-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Industrial networks – Coexistence of wireless systems – Part 2: Coexistence management

Réseaux industriels – Coexistence des systèmes sans fil – Partie 2: Gestion de coexistence

iTeh Standards
(https://standards.iteh.ai)
Document Preview
IEC 62657-2:2025
https://standards.iteh.ai/catalog/standards/iec/ce1621df-7bfd-47d3-a113-f24359b4219a/iec-62657-2-2025

IEC 62657-2:2025-02(en-fr)

THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2025 IEC, Geneva, Switzerland

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 IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

iTeh Standards
(https://standards.iteh.ai)
Document Preview
IEC 62657-2:2025
https://standards.iteh.ai/catalog/standards/iec/ce1621df-7bfd-47d3-a113-f24359b4219a/iec-62657-2-2025

A propos de l'IEC
La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC
Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC - webstore.iec.ch/advsearchform
La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, …). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished
Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc
Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications, symboles graphiques et le glossaire. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org
Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 500 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 25 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

IEC 62657-2

Edition 4.0 2025-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Industrial networks – Coexistence of wireless systems – Part 2: Coexistence management

Réseaux industriels – Coexistence des systèmes sans fil – Partie 2: Gestion de coexistence

iTeh Standards
(https://standards.iteh.ai)
Document Preview
IEC 62657-2:2025
https://standards.iteh.ai/catalog/standards/iec/ce1621df-7bfd-47d3-a113-f24359b4219a/iec-62657-2-2025

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 25.040.40, 33.040, 35.100

ISBN 978-2-8327-0193-5

Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

® Registered trademark of the International Electrotechnical Commission
Marque déposée de la Commission Electrotechnique Internationale

CONTENTS

FOREWORD 7
INTRODUCTION 9
1 Scope 11
2 Normative references 11
3 Terms, definitions, abbreviated terms and conventions 12
3.1 Terms and definitions 12
3.2 Abbreviated terms 27
3.3 Conventions 28
4 Coexistence concept in industrial automation 28
4.1 Overview 28
4.2 Objective 30
4.3 Necessity to implement a coexistence management 32
4.4 Interference potential 33
4.5 Ancillary conditions 35
4.6 Requirements to wireless devices for support of coexistence management 36
4.7 Concepts 36
4.7.1 Manual coexistence management 36
4.7.2 Automated non-collaborative coexistence management 37
4.7.3 Automated collaborative coexistence management 37
4.8 Best practices to achieve coexistence 38
4.9 Coexistence conceptual model 40
4.10 Coexistence management and selection of a wireless solution 42
4.11 Coexistence management system 44
5 Coexistence management parameters 44
5.1 General 44
5.1.1 Definition and usage of parameters 44
5.1.2 Physical link 44
5.2 Adjacent channel selectivity 45
5.3 Antenna gain 45
5.4 Antenna radiation pattern 45
5.5 Antenna type 45
5.6 Communication availability 46
5.7 Communication reliability 46
5.8 Bit rate of physical link 46
5.9 Blocked frequency list 46
5.10 Centre frequency 46
5.11 Area of operation 47
5.12 Communication load 47
5.13 Cut-off frequency 49
5.14 Data throughput 50
5.15 Distance between wireless devices 50
5.16 Duty cycle 51
5.17 Dwell time 53
5.18 Equivalent isotropic radiated power 54
5.19 Equivalent radiated power 54
5.20 Frequency band 54

iTeh Standards (https://Standards.iteh.ai) Document Preview
IEC 62657-2:2025
https://standards.iteh.ai/catalog/standards/iec/ce162fdf-bfd-47d3-a113-f24359b4219a/iec-62657-2-2025

5.21 Frequency bandwidth 54
5.22 Frequency channel 55
5.23 Frequency hopping sequence 55
5.24 Future expansion plan 56
5.25 Geographical dimension of the plant 56
5.26 Infrastructure device 56
5.27 Initiation of data transmission 56
5.28 Interference type 56
5.29 Intervisibility 57
5.30 ISM application 57
5.31 Length of user data per transfer interval 57
5.32 Limitation from neighbours of the plant 57
5.33 Maximum number of retransmissions 57
5.34 Mechanism for adaptivity 58
5.35 Medium access control mechanism 58
5.36 Medium utilization factor 58
5.37 Message 59
5.38 Modulation 59
5.39 Natural environmental condition 59
5.40 Network topology 59
5.41 Number of consecutive lost messages 60
5.42 Object movement 60
5.43 Operating time between failures 60
5.44 Message loss ratio 60
5.45 Position of wireless devices 61
5.46 Power spectral density 61
5.47 Purpose of the automation application 62
5.48 Receiver blocking 62
5.49 Receiver maximum input level 62
5.50 Receiver sensitivity 62
5.51 Regional radio regulations 62
5.52 Relative movement 63
5.53 Response time 63
5.54 Security level 63
5.55 Spatial coverage of the wireless communication system 64
5.56 Spatial extent of the application 64
5.57 Spurious response 64
5.58 Survival time 64
5.59 Total radiated power 64
5.60 Transfer interval 64
5.61 Transmission gap 65
5.62 Transmission time 66
5.63 Transmitter output power 69
5.64 Transmitter sequence 69
5.65 Transmitter spectral mask 71
5.66 Update time 71
5.67 Wireless device density 72
5.68 Wireless device type information 72
5.69 Wireless communication solution density 73

iTeh Standards
(https://standards.iteh.ai)
Document Preview
IEC 62657-2:2025
https://standards.iteh.ai/catalog/standards/sist/...-iec-62657-2-2025

5.70 Wireless technology or standard ... 73
6 Coexistence management information structures ... 73
6.1 General ... 73
6.2 General plant characteristic ... 75
6.2.1 General ... 75
6.2.2 General plant characteristic ... 75
6.2.3 Passive environmental influences ... 76
6.2.4 Active environmental influences ... 76
6.3 Application communication requirements ... 77
6.3.1 Overview ... 77
6.3.2 Requirements influencing the characteristic of wireless solutions ... 78
6.3.3 Performance requirements ... 79
6.4 Wireless system type and wireless device type ... 79
6.4.1 Overview ... 79
6.4.2 Wireless system type ... 80
6.4.3 Wireless device type ... 80
6.5 Wireless solution ... 83
6.5.1 Overview ... 83
6.5.2 Wireless system solution ... 83
6.5.3 Wireless device solution ... 84
6.6 Application related characteristic parameters ... 85
6.7 Radio environment related performance parameters ... 86
6.8 Wireless communication solution related performance parameters ... 87
7 Coexistence management process ... 88
7.1 General ... 88
7.1.1 Overview ... 88
7.1.2 Documentation ... 89
7.1.3 Suitable documentation method ... 90
7.1.4 Application of tools ... 91
7.2 Establishment of a coexistence management system ... 91
7.2.1 Nomination of a coexistence manager ... 91
7.2.2 Responsibility of a coexistence manager ... 92
7.2.3 Support by wireless experts ... 92
7.2.4 Training ... 92
7.3 Maintaining coexistence management system ... 93
7.4 Phases of a coexistence management process ... 93
7.4.1 Investigation phase ... 93
7.4.2 Planning phase ... 96
7.4.3 Implementation phase ... 98
7.4.4 Operation phase ... 99
8 Coexistence parameter templates ... 101
Annex A (normative) Parameter usage in the IEC 62657 series ... 108
A.1 General ... 108
A.2 Outline of the IEC 62657 series ... 108
A.3 Parameter usage in coexistence management process in IEC 62657-2 ... 108
A.4 Parameters usage among the IEC 62657 series ... 111
Bibliography ... 113

iTeh Standards
(https://standards.iteh.ai)
Document Preview
IEC 62657-2:2025
https://standards.iteh.ai/catalog/standards/iec/ac4621df-7bfd-47d3-a113-f24359b4219a/iec-62657-2-2025

Figure 1 – Issues of consideration 31
Figure 2 – Applications using frequency spectrum 31
Figure 3 – Progression of expense to achieve coexistence corresponding to the application classes 36
Figure 4 – Separation of wireless systems according to frequency and time 39
Figure 5 – Coexistence conceptual model 41
Figure 6 – Flow chart of the coexistence conceptual model 42
Figure 7 – Selection of a wireless system in the coexistence management process 43
Figure 8 – Communication load in case of two wireless devices 48
Figure 9 – Communication load in the case of several wireless devices 49
Figure 10 – Cut-off frequencies derived from maximum power level 50
Figure 11 – Distance of the wireless devices 51
Figure 12 – Duty cycle 52
Figure 13 – Maximum dwell time 53
Figure 14 – Power spectral density of an IEEE Std.802.15.4 system 61
Figure 15 – Communication cycle, application event interval and machine cycle 65
Figure 16 – Transmission gap 66
Figure 17 – Example of the density functions of transmission time 67
Figure 18 – Example of the distribution functions of transmission time 68
Figure 19 – Transmitter sequence 70
Figure 20 – Transmitter spectral mask of an IEEE Std.802.15.4 system 71
Figure 21 – Example of distribution functions of the update time 72
Figure 22 – Principle for use of coexistence parameters 75
Figure 23 – Parameters to describe the general plant characteristic 75
Figure 24 – Parameters to describe application communication requirements 78
Figure 25 – Parameters to describe wireless system type and device type 79
Figure 26 – Example of power spectral density and transmitter spectral mask 81
Figure 27 – Example of medium utilization in time and frequency 82
Figure 28 – Parameters to describe a wireless communication solution 83
Figure 29 – Planning of a wireless system in the coexistence management process 97
Figure 30 – Implementation and operation of a wireless system in the coexistence management process 100
Figure A.1 – Usage of parameters in IEC 62657-2 109
Figure A.2 – Parameter usage among the IEC 62657 series 111

Table 1 – Example of a classification of application communication requirements 30
Table 2 – Application profile dependent observation time values 52
Table 3 – Parameter options for frequency channel 55
Table 4 – Hierarchy of the characteristic parameters 74
Table 5 – List of parameters used to describe the general plant characteristic 76
Table 6 – List of parameters used to describe the passive environmental influences 76
Table 7 – List of parameters used to describe the active environmental influences 76
Table 8 – List of parameters used to describe the interference type 77

iTeh Standards
(https://standards.iteh.ai)
Document Preview
IEC 62657-2:2025

Table 9 – List of parameters used to describe the requirements influencing the characteristic of wireless solutions 78
Table 10 – List of characteristic parameters 79
Table 11 – List of parameters used to describe the wireless system type 80
Table 12 – List of parameters used to describe the transmitter of a wireless device type 82
Table 13 – List of parameters used to describe the receiver of a wireless device type 83
Table 14 – List of parameters used to describe a wireless solution 84
Table 15 – List of general parameters used to describe the wireless device solution 84
Table 16 – List of parameters used to describe the transmitter of a wireless device solution 85
Table 17 – List of parameters used to describe the receiver of a wireless device solution 85
Table 18 – List of relevant characteristic parameters of wireless solutions 86
Table 19 – List of relevant statistical values of characteristic parameters 86
Table 20 – List of radio environment related performance parameters 87
Table 21 – List of wireless communication solution related performance parameters 88
Table 22 – Template used to describe the general plant characteristic 102
Table 23 – Template used to describe the application communication requirements 103
Table 24 – Template used to describe the wireless system type 104
Table 25 – Template used to describe a wireless device type 104
Table 26 – Template used to describe the wireless system solution 105
Table 27 – Template used to describe a wireless device solution 106
Table 28 – Template used to describe the relevant characteristic parameters of wireless solutions 106
Table 29 – Template used to describe the relevant statistical values of characteristic parameters 107
Table 30 – Template used to describe an interference type 107
Table A.1 – Example for parameters usage in coexistence management process 110

iTeh Standards
(https://standards.iteh.ai)
Document Preview
IEC 62657-2:2025
https://standards.iteh.ai/catalog/standards/iec/ce1b21d1-7b1d-47d3-a113-124359b4219a/iec-62657-2-2025

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

INDUSTRIAL NETWORKS – COEXISTENCE OF WIRELESS SYSTEMS –

Part 2: Coexistence management

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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

Document Preview
IEC 62657-2:2025
https://standards.iteh.ai/catalog/standards/iec/ce16dd7-2b6d-47d5-a113-f34259b4210a/iec-62657-2-2025

IEC 62657-2 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2022. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) alignment of some definitions and specifications of coexistence parameters in order to facilitate their future inclusion in the IEC Common Data Dictionary (IEC CDD) maintained by the IEC;

b) alignment of some definitions and specifications to be consistent with the new IEC 62657-3 and IEC 62657-4;

c) edition 3 of this document was published in June 2022. Some comments were made in the last development stages of this document asking for explanations on how the parts of the IEC 62657 series were structured and how they were related to each other. Resolution of these comments was deferred until a next edition, which means this edition.

The text of this International Standard is based on the following documents:

Draft	Report on voting
65C/1329/FDIS	65C/1337/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all the parts of the IEC 62657 series, under the general title *Industrial networks – Coexistence of wireless systems,* can be found on the IEC website.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

IEC 62657-2:2025
https://standards.iteh.ai/catalog/standards/iec/ce1621df-7bfd-47d3-a113-f24359b4219a/iec-62657-2-2025

INTRODUCTION

The overall market for wireless communication solutions spans a range of diverse applications, with differing performance and functional requirements. Within this overall market, the industrial automation domain could include:

- process automation, covering for example the following industry branches:
  - oil and gas, refining,
  - chemical,
  - pharmaceutical,
  - mining,
  - pulp and paper,
  - water and wastewater,
  - steel,
- electric power such as:
  - power generation (for example wind turbine),
  - power transmission and distribution (grid),
- factory automation, covering for example the following industry branches:
  - food and beverage,
  - automotive,
  - machinery,
  - semiconductor.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

Industrial automation requirements for wireless communication systems are different from those of, for example, the telecommunications, commercial and consumer markets. These industrial automation requirements are identified and provided in IEC 62657-1.

IEC 62657-2:2025
https://standards.iteh.ai/catalog/standards/sist/...-iec-62657-2-2025

Industrial premises can contain a variety of wireless communication technologies and other sources of radio emissions.

This document is intended for designers and persons responsible for production and process plants, system integrators and mechanical engineers having to integrate and start up wireless systems in machines and plants, and producers of industrial wireless solutions. In particular, it is intended to motivate the exchange of information between automation and radio engineers.

Many wireless industrial automation applications are also located in physical environments over which the operator/owner can exert control, that is, within a physical facility where the presence and operation of all radio emitting devices are under the control of a single entity. This allows wireless management strategies to be employed which are not feasible for equipment installed in public or other unmanaged areas.

In industrial automation, many different wireless communication systems can operate in the same premises. Examples of these communication systems are IEC 62591 [1][1] (WirelessHART®[2]), IEC 62601 [2] (WIA-PA) and IEC 62734 [3] (ISA100.11a). All these communication systems use IEEE 802.15.4 [4] for the process automation applications. Other examples of wireless communication systems are specified in the IEC 61784-1 series [5] and IEC 61784-2 series [6] CP that use IEEE 802.11 [7] and IEEE 802.15.1 [8] for factory automation applications. Different to wired fieldbuses, the wireless communication devices can interfere with others on the same premises or environment, disturbing each other. Other sources of radio energy in these bands, often at high energy levels, include radiated process heating, plastic welding, plasma lamps, and microwave irradiation devices.

Clearly, without a means to manage the coexistence of these varied emitters, it would be problematic to ensure that wireless systems meet the time-criticality and other performance requirements of industrial automation.

This document describes the management of independent radio sources that use the same transmission medium. The management within a wireless communication system is not the subject of this document. It is assumed that the standard of a wireless system regulates it, for example by a medium access control mechanism.

The IEC 62657 series has four parts:

- Part 1: Wireless communication requirements and spectrum considerations,
- Part 2: Coexistence management,
- Part 3: Formal description of the automated coexistence management and application guidance,
- Part 4: Coexistence management with central coordination of wireless applications.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

IEC 62657-1 provides general requirements for industrial automation and spectrum considerations that are the basis for industrial communication solutions. This document specifies the coexistence management of wireless devices to ensure predicable performance. It is intended to facilitate harmonization of future adjustments to international, national, and local regulations.

IEC 62657-2:2025
https://standards.iteh.ai/catalog/standards/iec/ce1621df-7bfd-47d3-a113-f24359b4219a/iec-62657-2-2025

This document provides the coexistence management concept and process. Based on the coexistence management process, a predictable assuredness of coexistence can be achieved for a given spectrum with certain application requirements. This document describes principles to manage the potential mutual interference that could occur due to the operation of multiple wireless devices in a plant.

This document provides guidance to the users of wireless systems on selection and proper use of wireless systems. To provide suitable wireless devices to the market, it also serves vendors in describing the behaviours of wireless devices to build wireless systems matching the application requirements.

This document is based on analyses of a number of International Standards, which focus on specific technologies. The intention of this document is not to invent new parameters but to use already defined ones and to be technology independent.

---

1 Numbers in square brackets refer to the Bibliography.

2 WirelessHART® is the registered trade name of the FieldComm Group, see www.fieldcommgroup.org. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

INDUSTRIAL NETWORKS – COEXISTENCE OF WIRELESS SYSTEMS –

Part 2: Coexistence management

1 Scope

This part of IEC 62657

- specifies the fundamental assumptions, concepts, parameters, and procedures for wireless communication coexistence;
- specifies coexistence parameters and how they are used in an application requiring wireless coexistence;
- provides guidelines, requirements, and best practices for wireless communication's availability and performance in an industrial automation plant; it covers the life-cycle of wireless communication coexistence;
- helps the work of all persons involved with the relevant responsibilities to cope with the critical aspects at each phase of life-cycle of the wireless communication coexistence management in an industrial automation plant. Life-cycle aspects include: planning, design, installation, implementation, operation, maintenance, administration and training;
- provides a common point of reference for wireless communication coexistence for industrial automation sites as a homogeneous guideline to help the users assess and gauge their plant efforts;
- deals with the operational aspects of wireless communication coexistence regarding both the static human/tool-organization and the dynamic network self-organization.

This document provides a major contribution to national and regional regulations by supporting to fulfil the requirements using coexistence management.

iTeh Standards (https://standards.iteh.ai) Document Preview IEC 62657-2:2025 https://standards.iteh.ai/catalog/standards/iec/ee1021d7-7bfd-47d3-a113-f24359b4219a/iec-62657-2-2025

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.

IEC 62443 (all parts), *Security for industrial automation and control systems*

IEC 62657-1:2017, *Industrial communication networks – Wireless communication networks – Wireless communication requirements and spectrum considerations*

IEC 62657-3:2022, *Industrial networks – Coexistence of wireless systems – Part 3: Formal description of the automated coexistence management and application guidance*

IEC 62657-4:—, *Industrial networks – Coexistence of wireless systems – Part 4: Coexistence management with central coordination of wireless applications*[3]

[3] Under preparation. Stage at the time of publication: IEC/FDIS 62657-4:2024.

3 Terms, definitions, abbreviated terms and conventions

3.1 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/ [9]
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
active environmental influence
influence on the signal propagation through interfering of the wireless communication application or wireless application

3.1.2
adjacent channel interference
interference that occurs from wireless devices using adjacent frequency channels

3.1.3
adjacent channel selectivity
ability of a radio receiver to respond to the desired signal and to reject signals in adjacent frequency channels

iTeh Standards
(https://standards.iteh.ai)
Document Preview

3.1.4
antenna gain
measure of the effectiveness of an antenna that expresses the ratio between the power required at the input of a reference antenna and the power delivered at the input of the given antenna to achieve the same field strength at the same distance of a given direction

IEC 62657-2:2025
https://standards.iteh.ai/catalog/standards/iec/ce1621df-7bfd-47d3-a113-f24359b4219a/iec-62657-2-2025

3.1.5
antenna radiation pattern
variation of the field intensity of an antenna as an angular function with respect to the axis

3.1.6
antenna type
kind of part of a radio transmitting or receiving system which is designed to provide the required coupling between a transmitter or a receiver and the medium in which the radio wave propagates

Note 1 to entry: In practice, the terminals of the antenna or the points to be considered as the interface between the antenna and the transmitter or receiver should be specified.

Note 2 to entry: If a transmitter or receiver is connected to its antenna by a feed line, the antenna may be considered to be a transducer between the guided waves of the feed line and the radiated waves in space.

[SOURCE: IEC 60050-712:1992, 712-01-01, modified – "Addition of "type" after the term, addition of "kind of" at front.] [10]

3.1.7
application communication requirements
quantitative requirements specifying the required conditions and the required characteristics of wireless communication solutions at the communication interface that is met in order to achieve the purpose of the automation application