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Industrial communication networks – Wireless communication networks – Part 1: Wireless communication requirements and spectrum considerations

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CONTENTS

FOREWORD 4
INTRODUCTION 6
1 Scope 7
2 Normative references 7
3 Terms, definitions abbreviated terms and acronyms 8
3.1 Terms and definitions 8
3.2 Abbreviated terms and acronyms 10
4 Wireless communication requirements of industrial automation – considerations for regulators 12
4.1 Worldwide harmonized frequency use 12
4.2 Coexistence management process (see IEC 62657-2) 12
4.3 Concepts for using spectrum in wireless industrial applications 13
4.3.1 General 13
4.3.2 Suitable available spectrum for wireless industrial applications 14
4.3.3 Dedicated spectrum 15
4.3.4 Other concepts 16
4.4 Market relevance and requirements 17
4.4.1 General 17
4.4.2 Enabling position of industry equipment 18
4.4.3 Cost-benefit aspects and benefits in the application 19
4.5 Social, health and environmental aspects 20
4.5.1 General 20
4.5.2 Social, health and environmental considerations 20
4.5.3 Health concerns 23
4.5.4 Other concerns 23
5 Wireless communication requirements of industrial automation – considerations for automation experts 24
5.1 Use of wireless communication networks in industrial automation 24
5.1.1 General 24
5.1.2 Essential differences between wireless and wired communication networks 25
5.1.3 Communication networks in industrial automation 27
5.1.4 Application fields 29
5.2 Industrial automation application requirements (use cases) 30
5.2.1 General 30
5.2.2 Use case 1 – Safety of workers around transporting machines 30
5.2.3 Use case 2 – Level monitoring and alarming in a tank farm 31
5.2.4 Use case 3 – Field worker support with mobile wireless equipment 32
5.2.5 Use case 4 – Vibration monitoring and analysis of rotating machines 33
5.2.6 Use case 5 – Oil wellhead monitoring and control 33
5.2.7 Use case 6 – Some applications for factory automation, with a large number of nodes 34
5.3 Wireless communication network requirements 34
5.3.1 Timing and real-time 34
5.3.2 Bandwidth and bit rate 38
5.3.3 Radio propagation conditions, geographic coverage and scale of the network 39

5.3.4 Power consumption 41
5.3.5 EMC 42
5.3.6 Functional safety 42
5.3.7 Security 43
5.3.8 Availability, reliability 44
Bibliography 47

Figure 1 – End producer revenue 18
Figure 2 – Typical risk reduction methods found in process plants 21
Figure 3 – Wireless communication system interrelated with the automation pyramid 28
Figure 4 – Example of graphical representation of consistent indicators 36

Table 1 – Application communication requirements 18
Table 2 – Structure of the communication networks used in the application fields 25
Table 3 – Benefits of using wireless systems 26
Table 4 – Examples of application grace time 45

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INDUSTRIAL COMMUNICATION NETWORKS – WIRELESS COMMUNICATION NETWORKS –

Part 1: Wireless communication requirements and spectrum considerations

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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC/TS 62657-1, which is a technical specification, has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
65C/741A/DTS	65C/749/RVC

Full information on the voting for the approval of this technical specification 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 in the IEC 62657 series, published under the general title *Industrial communication networks – Wireless communication networks*, can be found 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

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The IEC 62657 series has two parts:

Part 1: Wireless communication requirements and spectrum considerations

Part 2: Coexistence management

This part of IEC 62657 provides general requirements of industrial automation and spectrum considerations that are the basis for industrial communication solutions. This Part 1 is intended to facilitate harmonization of future adjustments to international, national, regional and local regulations.

IEC 62657-2 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.

INDUSTRIAL COMMUNICATION NETWORKS – WIRELESS COMMUNICATION NETWORKS –

Part 1: Wireless communication requirements and spectrum considerations

1 Scope

This Technical Specification provides the wireless communication requirements dictated by the applications of wireless communication systems in industrial automation, and requirements of related context. The requirements are specified in a way that is independent of the wireless technology employed. The requirements are described in detail and in such a way as to be understood by a large audience, including readers who are not familiar with the industry applications.

Social aspects, environmental aspects, health aspects and market requirements for wireless communication systems in industrial automation are described to justify the wireless communication requirements.

This document also provides a rationale to successfully articulate the proposed short-term and long-term solutions. Coexistence management according to IEC 62657-2 is already applied in the short-term solutions.

This Technical Specification describes requirements of the industrial automation applications that can be used to ask for additional dedicated, worldwide unique spectrum. This additional spectrum is intended to be used for additional wireless applications while continuing using the current ISM bands.

This document provides useful information for the automation field professionals who are not familiar with the spectrum and wireless technologies.

Building automation is excluded from the scope because of the different usage constraints (for most non-industrial buildings it is normally difficult for the owner/operator to impose control over the presence and operation of radio equipment).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61508 (all parts), *Functional safety of electrical/electronic/programmable electronic safety-related systems*

IEC 61784-2, *Industrial communication networks – Profiles – Part 2: Additional fieldbus profiles for real-time networks based on ISO/IEC 8802-3*

IEC 61784-3, *Industrial communication networks – Profiles – Part 3: Functional safety fieldbuses – General rules and profile definitions*

IEC 62443 (all parts), *Industrial communication networks – Network and system security*

IEC 62657-2:2013, *Industrial communication networks – Wireless communication network – Part 2: Coexistence management*

ETSI/TR 102 889-2:2011, *Electromagnetic compatibility and Radio spectrum Matters (ERM); System Reference Document; Short Range Devices (SRD); Part 2: Technical characteristics for SRD equipment for wireless industrial applications using technologies different from Ultra-Wide Band (UWB)*