
**Prostorski brezžični prenos energije na osnovi več magnetnih resonanc - 1. del:
Zahteve (IEC 63245-1:2021)**

Spatial wireless power transfer based on multiple magnetic resonances - Part 1:
Requirements (IEC 63245-1:2021)

Räumliche drahtlose Energieübertragung basierend auf mehrfachen magnetischen
Resonanzen - Teil 1: Anforderungen (IEC 63245-1:2021)

Transfert d'énergie sans fil dans l'espace reposant sur des résonances magnétiques
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ICS:

29.240.99	Druga oprema v zvezi z omrežji za prenos in distribucijo električne energije	Other equipment related to power transmission and distribution networks
35.200	Vmesniška in povezovalna oprema	Interface and interconnection equipment

SIST EN IEC 63245-1:2021**en,fr,de**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN IEC 63245-1

April 2021

ICS 29.240.99; 35.200

English Version

**Spatial wireless power transfer based on multiple magnetic resonances - Part 1: Requirements
(IEC 63245-1:2021)**

Transfert d'énergie sans fil dans l'espace reposant sur des résonances magnétiques multiples - Partie 1: Exigences
(IEC 63245-1:2021)

Räumliche drahtlose Energieübertragung basierend auf mehrfachen magnetischen Resonanzen - Teil 1: Anforderungen
(IEC 63245-1:2021)

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 63245-1:2021 (E)**European foreword**

The text of document 100/3548/FDIS, future edition 1 of IEC 63245-1, prepared by IEC/TC 100 "Audio, video and multimedia systems and equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 63245-1:2021.

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

<u>SIST EN IEC 63245-1:2021</u>		
IEC 62827-3	NOTE	Harmonized as EN 62827-3 <small>https://standards.iteh.ai/catalog/standards/sist/a3c079ed-c47c-43e2-a1fa-1d5e92da7cb2/sist-en-iec-63245-1-2021</small>
IEC 63006:2019	NOTE	Harmonized as EN IEC 63006:2019 (not modified)
IEC 63028:2017	NOTE	Harmonized as EN 63028:2017 (not modified)



IEC 63245-1

Edition 1.0 2021-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Spatial wireless power transfer based on multiple magnetic resonances –
Part 1: Requirements** (standards.iteh.ai)

**Transfert d'énergie sans fil dans l'espace reposant sur des résonances
magnétiques multiples –
Partie 1: Exigences**

INTERNATIONAL
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INTERNATIONALE

ICS 29.240.99; 35.200

ISBN 978-2-8322-9470-3

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SPATIAL WIRELESS POWER TRANSFER BASED ON MULTIPLE MAGNETIC RESONANCES –

Part 1: Requirements

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International Standard IEC 63245-1 has been prepared by technical area 15: Wireless power transfer, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

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

FDIS	Report on voting
100/3548/FDIS	100/3564/RVD

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

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

A list of all parts in the IEC 63245 series, published under the general title *Spatial wireless power transfer based on multiple magnetic resonances*, can be found on the IEC website.

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

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

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INTRODUCTION

The IEC 63245 (Spatial wireless power transfer based on multiple magnetic resonances, SWPT-MMR) series provides requirements and a reference model for implementing a spatial wireless power transfer system. The IEC 63245 series consists of the following parts:

- IEC 63245-1: *Spatial wireless power transfer based on multiple magnetic resonances – Part 1: Requirements*, which describes requirements of SWPTs with multiple magnetic resonances; and
- IEC 63245-2: *Spatial wireless power transfer based on multiple magnetic resonances – Part 2: Reference model*, which describes a reference model for SWPTs with multiple magnetic resonances.

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SPATIAL WIRELESS POWER TRANSFER BASED ON MULTIPLE MAGNETIC RESONANCES –

Part 1: Requirements

1 Scope

This part of IEC 63245 specifies requirements for spatial wireless power transfer based on multiple magnetic resonances (SWPT-MMR), which is a non-radiative wireless power transfer (WPT). This document contains two categories of requirements: general requirements and functional requirements. The general requirements cover charging procedures and charging zones. The functional requirements cover each component of a SWPT-MMR system, such as transmitter coils.

2 Normative references

There are no normative references in this document.

3 Terms, definitions, and abbreviated terms

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/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 Terms and definitions

3.1.1

null point

point or area in the charging zone where the magnetic field cancels out almost entirely or is below a certain specified minimum

3.1.2

quiet zone

magnetic field having an equalized energy density corresponding to each of the magnetic fields formed on the transmitter coils

3.1.3

spatial wireless power transfer

concept of wireless power transfer between multiple sources and multiple receiving devices placed at a certain distance in various positions and postures within a space

Note 1 to entry: "Spatial" means that receiving devices will take various positions and postures, and will lead to variable transfer efficiency including almost zero percent. This situation can occur when receiving devices are placed far apart from the power source and are freely rearranged.

[SOURCE: IEC 62827-3:2016, 3.1.2, modified – In the definition, "receiving devices placed at a certain distance in various positions and postures within a space" replaces "receiving devices which are placed at a distance within a spatial space".]

3.1.4 spatial wireless power transfer system

group implementing spatial wireless power transfer in which the power source can deliver power and data to the power-receiving device

Note 1 to entry: In special cases, a spatial wireless power transfer system can consist of only a single power source and only a single power-receiving device.

Note 2 to entry: Spatial wireless power transfer system includes the case in which a power source has the ability to access a power-receiving device through a relay from other power sources when the power source attempts to deliver data to the receiving device. In this document, "data" means control and management data for wireless power transfer.

[SOURCE: IEC 62827-3:2016, 3.1.3]

3.1.5 transmitter coil

component of a wireless power transmitter that converts electric current to magnetic flux

[SOURCE: IEC 63006:2019, 3.1.48]

3.2 Abbreviated terms

2D	two-dimensional
3D	three-dimensional
SWPT	spatial wireless power transfer
SWPT-MMR	spatial wireless power transfer based on multiple magnetic resonances
WPT	wireless power transfer

4 Overview of spatial wireless power transfer

IEC TR 62869 describes types of WPT physical layer technologies. Among the technologies, electromagnetic induction and magnetic resonance technologies are dominantly used in recent industries. The IEC PAS 63095 and WPC Qi series specifies WPT based on electromagnetic induction technology, whereas IEC 63028 specifies WPT based on magnetic resonance technology.

A spatial wireless power transfer (SWPT) system delivers the electronic power to one or more receivers within a spatial space. Figure 1 shows a conceptual image of SWPT described in IEC 62827-3.