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**Electrically propelled road vehicles —  
Magnetic field wireless power  
transfer — Safety and interoperability  
requirements**

*Véhicules routiers électriques — Transmission d'énergie sans fil par  
champ magnétique — Exigences de sécurité et d'interopérabilité*



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# Contents

Page

<b>Foreword</b>	<b>v</b>
<b>Introduction</b>	<b>vi</b>
<b>1 Scope</b>	<b>1</b>
<b>2 Normative references</b>	<b>1</b>
<b>3 Terms and definitions</b>	<b>2</b>
<b>4 Environmental conditions</b>	<b>6</b>
<b>5 System description</b>	<b>6</b>
<b>6 MF-WPT interoperability</b>	<b>7</b>
6.1 General	7
6.2 Classification of EV power circuits	7
6.2.1 General	7
6.2.2 MF-WPT classes	7
6.2.3 Z classes	7
6.3 Performance requirements	8
6.3.1 General	8
6.3.2 Alignment tolerance requirements	8
6.3.3 Power transfer requirements	8
6.3.4 System efficiency requirements	9
6.4 Frequency	9
6.5 Reference EV devices	9
6.6 Test procedure	9
<b>7 Functions</b>	<b>11</b>
7.1 Communication setup	11
7.2 Service selection	11
7.2.1 General	11
7.2.2 Parameters to be exchanged for interoperability	12
7.3 Fine positioning	12
7.4 Pairing	12
7.5 Final compatibility check	12
7.6 Initial alignment check	12
7.7 Start power transfer	13
7.8 Power saver mode	13
7.8.1 Start power saver mode	13
7.8.2 Terminate power saver mode	13
7.9 Perform power transfer	13
7.10 Stop power transfer	13
7.11 User initiated stop power transfer	14
7.12 Safety monitoring and diagnostics	14
7.12.1 General	14
7.12.2 Alignment monitoring	14
7.12.3 Power transfer monitoring	14
7.12.4 Communication link monitoring	14
7.13 Terminate communication	14
7.14 Terminate safety monitoring and diagnostics	14
7.15 Wake up after power outage	14
7.16 Test procedure	14
<b>8 Sequence and communication</b>	<b>14</b>
8.1 General	14
8.2 Sequence of functions	15
8.2.1 Protocol flow stages and associated messages	15
8.2.2 Basic definitions for error handling	15

8.3	Communication .....	15
<b>9</b>	<b>EMC requirements .....</b>	<b>15</b>
<b>10</b>	<b>Safety requirements .....</b>	<b>15</b>
10.1	Protection in case of unintended power transfer .....	15
10.2	Protection against electrical shock .....	16
10.3	Protection against overcurrent .....	16
10.3.1	Overload protection .....	16
10.3.2	Short-circuit protection .....	16
10.4	Protection of humans against electromagnetic effects .....	16
10.4.1	General .....	16
10.4.2	Protection areas .....	16
10.4.3	Requirements for protection against exposure to hazardous electromagnetic fields .....	17
10.4.4	Requirements to protect functionality of active implantable medical devices (AIMDs) .....	18
10.4.5	Test procedures .....	18
10.5	Temperature rise and protection against thermal incidents .....	20
10.5.1	General .....	20
10.5.2	Protection against burns from heating of foreign objects .....	20
<b>11</b>	<b>Owner's manual and marking .....</b>	<b>20</b>
11.1	Owner's manual .....	20
11.2	Marking .....	20
<b>Annex A</b> (informative)	<b>Circular reference EV device proposals for MF-WPT1 .....</b>	<b>21</b>
<b>Annex B</b> (informative)	<b>DD reference EV device proposals for MF-WPT1 .....</b>	<b>26</b>
<b>Annex C</b> (informative)	<b>Circular reference EV device proposals for MF-WPT2 .....</b>	<b>33</b>
<b>Annex D</b> (informative)	<b>DD reference EV device proposals for MF-WPT2 .....</b>	<b>40</b>
<b>Annex E</b> (informative)	<b>Corresponding reference supply devices proposals .....</b>	<b>50</b>
<b>Annex F</b> (informative)	<b>Coil position in parking spot .....</b>	<b>58</b>
<b>Bibliography</b> .....		<b>59</b>

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 ISO documents 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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO 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](http://www.iso.org/patents)).

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

For an explanation on 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 the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

ISO PAS 19363:2017 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, SC 37, *Electrically propelled vehicles*, in collaboration with IEC/TC 69 *Electric road vehicles and electric industrial trucks*, in accordance with ISO/IEC mode of cooperation 4.

## Introduction

This document is an intermediate specification, published prior to the development of a full International Standard. This document prescribes the usage of the wireless power transfer technology to charge electrically propelled road vehicles. Even if the technology itself is well known, the implementation in a vehicle is new and demands to meet the very specific requirements of the automotive industry. The main purpose of this document is to respond to the upcoming market needs starting with determination of basic safety requirements and documentation for the first findings for vehicle usage.

This document will be transformed into an International Standard as soon as consolidated technical experiences are available. When transferring this document into an IS, technical changes are possible to adopt the document to the latest level of knowledge.

# Electrically propelled road vehicles — Magnetic field wireless power transfer — Safety and interoperability requirements

## 1 Scope

This document defines the requirements and operation of the on-board vehicle equipment that enables magnetic field wireless power transfer (MF-WPT) for traction battery charging of electric vehicles. It is intended to be used for passenger cars and light duty vehicles.

This document addresses the following aspects for an EV device:

- transferred power;
- ground clearance;
- interoperability requirements among differently classified EV devices and associated off-vehicle systems;
- performance requirements under various conditions, including among different manufacturers and classifications;
- safety requirements;
- test procedures.

EV devices according to this document are intended to operate with off-board systems currently under development in the IEC 61980 series.

NOTE 1 This edition covers stationary applications.

NOTE 2 Bidirectional power transfer is not considered in this edition.

## 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 6469-3, *Electrically propelled road vehicles — Safety specifications — Part 3: Protection of persons against electric shock*

ISO 14117, *Active implantable medical devices — Electromagnetic compatibility — EMC test protocols for implantable cardiac pacemakers, implantable cardioverter defibrillators and cardiac resynchronization devices*

ISO 15118-8, *Road vehicles — Vehicle to grid communication interface — Part 8: Physical layer and data link layer requirements for wireless communication*

ISO 16750-3, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 3: Mechanical loads*

ISO 16750-4, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 4: Climatic loads*

ISO 16750-5, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 5: Chemical loads*

IEC 61786-1, *Measurement of DC magnetic, AC magnetic and AC electric fields from 1 Hz to 100 kHz with regard to exposure of human beings - Part 1: Requirements for measuring instruments*

ICNIRP 2010, *Guidelines for limiting exposure to time varying electric and magnetic fields (1 HZ – 100 kHz)*

ICNIRP 1998, *Guidelines for limiting exposure to time varying electric and magnetic fields (up to 300 kHz)*

### 3 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/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 3.1 alignment

relative position of primary to *secondary device* (3.27)

#### 3.2 alignment check

confirmation that the primary and *secondary devices* (3.27) are properly positioned relative to each other

Note 1 to entry: Proper positioning is done to assure sufficient system functionality [e.g. *system efficiency* (3.35), EMF/EMC limits, safety requirements, etc.].

#### 3.3 basic insulation

insulation of hazardous-live-parts which provides basic protection

#### 3.4 battery system

(battery) energy storage device that includes cells or cell assemblies or battery pack(s), as well as electrical circuits and electronics

EXAMPLE BCU, contactors.

#### 3.5 double insulation

insulation comprising both *basic insulation* (3.3) and *supplementary insulation* (3.30)

#### 3.6 electric shock

physiological effect resulting from an electric current through a human body

#### 3.7 electric vehicle/electric road vehicle EV

any vehicle propelled by an electric motor drawing current from a *battery system* (3.4) intended primarily for use on public roads