

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

Wireless power transfer (WPT) – Glossary of terms

Transfert d'énergie sans fil (WPT) – Glossaire des termes

[IEC 63006:2019](#)

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## WIRELESS POWER TRANSFER (WPT) – GLOSSARY OF TERMS

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

FDIS	Report on voting
100/3259/FDIS	100/3312/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.

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

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## INTRODUCTION

IEC TC 100 published a technical report, IEC TR 62869, *Activities and considerations related to wireless power transfer (WPT) for audio, video and multimedia systems and equipment*, at which point it was determined that the international community is lacking globally harmonized usage of terminology related to wireless power transfer technology.

This document provides common terminology to be used in wireless power transfer technology technical reports and standards.

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# WIRELESS POWER TRANSFER (WPT) – GLOSSARY OF TERMS

## 1 Scope

This document specifies terminology and definitions related to wireless power transfer (WPT) technologies below 30 MHz to promote global harmonization of wireless power transfer terminology.

This document does not address terminology of wireless power transfer outside the scope of IEC TC 100 (Audio, video and multimedia systems and equipment), such as human exposure or safety.

## 2 Normative references

There are no normative references in this document.

## 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

#### **accessory receiver**

#### **back cover**

receiver that physically mates to the exterior of a device for the purpose of powering or charging that device, but is physically separable

Note 1 to entry: The device does not otherwise have the ability to be powered or charged wirelessly without the use of the accessory receiver.

[SOURCE: ANSI/CTA-2042.1-B]

### 3.2

#### **alignment aid**

method of positioning a receiver relative to a transmitter that provides the user with feedback to properly align the active area of the receiver to the active area of the transmitter

[SOURCE: ANSI/CTA-2042.1-B]

### 3.3

#### **authentication**

tamper-resistant process of a receiver verifying the identity of a transmitter, and/or a transmitter verifying the identity of a receiver

[SOURCE: ANSI/CTA-2042.1-B]



### 3.4 battery management system BMS

system of circuits (which may be integrated with a battery into a battery pack) to monitor key operational parameters of a battery during charging and discharging

Note 1 to entry: Examples of such key parameters are voltages, currents, internal temperature of the battery, ambient temperature.

Note 2 to entry: The monitoring circuits may provide inputs to protection devices, which would generate alarms or disconnect the battery from the load or charger should any of the parameters become out of limits.

Note 3 to entry: This note applies to the French language only.

[SOURCE: ANSI/CTA-2042.1-B]

### 3.5 capacitive coupling electric field coupling

coupling between electric circuit elements, by which a voltage between the terminals of one of them gives rise to an electric charge in another element

[SOURCE: IEC 60050-131:2002, 131-12-31]

### 3.6 charging region active area charge area

area from where power is made available to receivers

Note 1 to entry: A charging pad is one example of a charging region.  
[SOURCE: ANSI/CTA-2042.1-B] <https://standards.iteh.ai/catalog/standards/sist/045c02a5-d293-4c5f-8829-c8f426453fb2/iec-63006-2019>

### 3.7 conductive wireless power system

wireless power system that provides a conductive surface to which receivers are connected through direct electrical contacts

Note 1 to entry: Such systems allow wire-free power delivery.

[SOURCE: ANSI/CTA-2042.1-B]

### 3.8 control capability

capability of either modulating or demodulating a control signal via an impedance network (i.e. in-band communication) or by an out-of-band communication channel to achieve the appropriate power transfer, including identifying valid devices and fault conditions.

[SOURCE: ANSI/CTA-2042.1-B]

### 3.9 coupling coefficient

$k$

measure of the magnetic linkage between the transmitter and the receiver coils, and defined as

$$k = \frac{M}{\sqrt{L_1 \times L_2}}$$

- where  $M$  is the mutual inductance, and

- $L_1$  and  $L_2$  are the inductance of transmitter and receiver coil, respectively

### 3.10

#### **device detection**

process by which a transmitter identifies that a receiver is within proximity of the transmitter

[SOURCE: ANSI/CTA-2042.1-B]

### 3.11

#### **electromagnetic**, adj

pertaining to electromagnetism

[SOURCE: IEC 60050-151:2001, 151-11-09]

### 3.12

#### **electromagnetic induction**

phenomenon in which an induced voltage or an induced current is produced

[SOURCE: IEC 60050-121:2008, 121-11-30]

### 3.13

#### **electrostatic induction**

phenomenon in which electrical charge is redistributed through the use or presence of external charges

Note 1 to entry: The uncharged object becomes charged through the placement of a strong electrically charged object, attracting the opposite electrical charges within the uncharged object and polarizing the uncharged object.

[SOURCE: ANSI/CTA-2042.1-B]

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### 3.14

#### **embedded receiver**

receiver incorporated within a device for the purpose of powering or charging that device, which is designed not to be consumer replaceable

[SOURCE: ANSI/CTA-2042.1-B]

### 3.15

#### **far field**

distance greater than two wavelengths from transmitter to receiver

[SOURCE: ANSI/CTA-2042.1-B]

### 3.16

#### **field transition zone**

range between one and two wavelengths from the transmitter to the receiver

Note 1 to entry: The zone is located between the near field and the far field.

[SOURCE: ANSI/CTA-2042.1-B]

### 3.17

#### **free positioning**

placing of a receiver in the charging region without using an alignment aid in any position and orientation relative to the transmitter

[SOURCE: ANSI/CTA-2042.1-B]

**3.18****highly resonant wireless power transfer**

wireless transfer of power through magnetic induction between a transmitter coil and receiver coil(s) where the coupling coefficient ( $k$ ) can be much less than 0,1, though values up to 1 may also be supported, and where the system requires magnetic resonance

[SOURCE: ANSI/CTA-2042.1-B]

**3.19****inductive power transfer system**

system that relies on magnetic induction for energy transfer

Note 1 to entry: Such a system uses at least one primary coil and at least one secondary coil. A system may have several secondary coils, and they may provide alternating current voltages that are higher, lower, or the same as that applied to the primary coil. Magnetic induction power transfer systems are optimized to operate in the electromagnetic near-field.

[SOURCE: ANSI/CTA-2042.1-B]

**3.20****intentional use of RF**

use of RF that is designed for the primary purpose of charging by coupling RF power to a receiver

Note 1 to entry: The coupled RF may or may not be modulated to carry information.

[SOURCE: ANSI/CTA-2042.1-B]

**3.21****load change sensing**

recognition of a variation in load impedance

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[SOURCE: ANSI/CTA-2042.1-B]

**3.22****load management**

situation where the device being charged switches the amount of power that it draws from the wireless power transfer device between two discrete levels using load modulation techniques

[SOURCE: ANSI/CTA-2042.1-B]

**3.23****magnetic resonance****highly resonant magnetic induction****loosely coupled magnetic resonance****magnetic resonant coupling**

subset of electromagnetic induction methods utilizing non-radiative, near-field or mid-field resonance coupling between two electromagnetic resonators where the coupling coefficient between primary or source coil and secondary or receiving coil is low ( $k$  much less than 1)

[SOURCE: IEC TR 62869:2013, 3.1.3, modified – Note 1 to entry has been deleted.]

**3.24****mutual inductance**

two or more coils magnetically linked together by a common magnetic flux

**3.25****near field**

distance less than one wavelength from the transmitter to the receiver

[SOURCE: ANSI/CTA-2042.1-B]

### 3.26

#### **no-load power**

power consumed by the transmitter when no receiver is present

[SOURCE: ANSI/CTA-2042.1-B]

### 3.27

#### **operating frequency**

oscillation frequency of the power signal

[SOURCE: ANSI/CTA-2042.1-B]

### 3.28

#### **optical power transfer**

energy transfer that uses energy from the ultraviolet, visible or infrared (IR) bands of the electromagnetic spectrum

Note 1 to entry: The source of the energy can be from a light source or transmitter or from the ambient environment. The energy is collected or harvested by a receiver.

[SOURCE: ANSI/CTA-2042.1-B]

### 3.29

#### **power factor**

under periodic conditions, ratio of the absolute value of the active power  $P$  to the apparent power  $S$ :

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$$\lambda = \frac{P}{S}$$

Note 1 to entry: Under sinusoidal conditions, the power factor is the absolute value of the active factor.

[SOURCE: IEC 60050-131:2002, 131-11-46]

### 3.30

#### **power range**

lowest to highest power level that a transmitter and receiver support

[SOURCE: ANSI/CTA-2042.1-B]

### 3.31

#### **power regulation**

method for controlling the output voltage or current from the receiver to appropriate value

Note 1 to entry: This may be performed by the transmitter, receiver, or a combination of both.

[SOURCE: ANSI/CTA-2042.1-B]

### 3.32

#### **power-save mode**

state a transmitter could be in with fully charged devices present (i.e. devices that require/draw no power)

[SOURCE: ANSI/CTA-2042.1-B]