
**Information technology — Automatic
identification and data capture (AIDC)
techniques — Harmonized vocabulary —**

**Part 4:
General terms relating to radio
communications**

iTeh STANDARD PREVIEW

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d'identification et de saisie de données (AIDC) — Vocabulaire
harmonisé —*

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 19762-4 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

ISO/IEC 19762 consists of the following parts, under the general title *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary*:

- *Part 1: General terms relating to AIDC* [ISO/IEC 19762-4:2008](https://standards.iteh.ai/catalog/standards/sist/fbb5e79a-9adb-4465-9665-fcddb6d06f1c2/iso-iec-19762-4-2008)
- *Part 2: Optically readable media (ORM)*
- *Part 3: Radio frequency identification (RFID)*
- *Part 4: General terms relating to radio communications*
- *Part 5: Locating systems*

Introduction

ISO/IEC 19762 is intended to facilitate international communication in information technology, specifically in the area of automatic identification and data capture (AIDC) techniques. It provides a listing of terms and definitions used across multiple AIDC techniques.

Abbreviations used within each part of ISO/IEC 19762 and an index of all definitions used within each part of ISO/IEC 19762 are found at the end of the relevant part.

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Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary —

Part 4: General terms relating to radio communications

1 Scope

This part of ISO/IEC 19762 provides general terms and definitions relating to radio communications in the area of automatic identification and data capture techniques. This glossary of terms enables the communication between non-specialist users and specialists in radio communications through a common understanding of basic and advanced concepts.

2 Classification of entries

The numbering system employed within ISO/IEC 19762 is in the format nn.nn.nnn, in which the first two numbers (**nn**.nn.nnn) represent the “Top Level” reflecting whether the term is related to 01 = common to all AIDC techniques, 02 = common to all optically readable media, 03 = linear bar code symbols, 04 = two-dimensional symbols, 05 = radio frequency identification, 06 = general terms relating to radio, 07 = real time locating systems, and 08 = MIIM. The second two numbers (nn.**nn**.nnn) represent the “Mid Level” reflecting whether the term is related to 01 = basic concepts/data, 02 = technical features, 03 symbology, 04 = hardware, and 05 = applications. The third two or three numbers (nn.nn.**nnn**) represent the “Fine” reflecting a sequence of terms.

The numbering in this part of ISO/IEC 19762 employs “Top Level” numbers (**nn**.nn.nnn) of 06.

3 Terms and definitions

06.01.01

radio frequency

frequency of a periodic radio wave or of the corresponding periodical electrical oscillation

NOTE This term and its abbreviation may qualify an electrical device for generating or collecting radiated waves.

[IEC 60050-713:1998, 713-06-02]

NOTE Radio Frequency (RF) (in RID). Radio frequency between 30 Hz and 3 GHz.

06.01.02

radio frequency data communication

RF/DC

system by which remote devices communicate with a host computer via a radio link

NOTE 1 Hand-held **readers** can send the **information** collected back to a controlling process without the need for fixed wiring for the **data** cables.

NOTE 2 One common use for RF/DC is on forklift trucks.

**06.01.03
electromagnetic field**

field characterizing the electric and magnetic conditions of a material medium or of vacuum, defined by the following set of four vector quantities:

- E: electric field (vector)
- D: electric flux density (vector)
- H: magnetic field (vector)
- B: magnetic flux density (vector)

NOTE Adapted from IEC 50 (705):1995, 705-01-07.

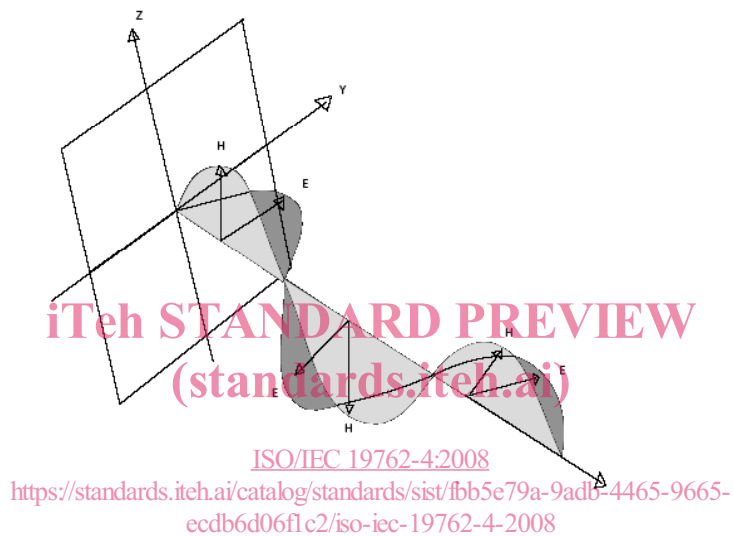


Figure 1 — Electromagnetic field

**06.01.04
air interface**

conductor-free medium, usually air, between a **transmitter** and the **receiver** through which communication, e.g. data and telemetry, is achieved by means of a modulated inductive or propagated **electromagnetic field**

[IEC 60050-702, 702-06-17]

**06.01.05
electromagnetic spectrum**

range or continuum of electromagnetic radiation, characterized in terms of frequency or wavelength

**06.01.06
electromagnetic wave**

wave characterized by the propagation of a time-varying electromagnetic field

NOTE An electromagnetic wave is produced by variations of electric charges or electric currents.

[IEC 50 (705):1995, 705-01-09]

06.01.07
electric field

constituent of an electromagnetic field which is characterized by the electric field strength E together with the electric flux density D

NOTE In French, the term “champ électrique” is also used for the quantity electric field strength.

[IEC 60050-121, 121-11-67]

06.01.08
far field region

region of an electromagnetic field of an antenna wherein the predominant components of the field are those which represent a propagation of energy and wherein the angular field distribution is essentially independent of the distance from the antenna

[IEC 50 (712):1992, 712-02-02]

NOTE 1 In the far field region, field distribution is unaffected by the **antenna** structure and the wave propagates as a plane wave.

cf. **radiating near field**

06.01.09
magnetic field

constituent of an electromagnetic field which is characterized by the magnetic field strength H together with the magnetic flux density B

[221-01-01 MOD]

NOTE In French, the term “champ magnétique” is also used for the quantity magnetic field strength.

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06.01.10
inductive coupling

process of transferring modulated data or energy from one system component to another, reader to **transponder** for example, by means of a varying magnetic field

NOTE An inductive coupled **tag** uses a coil to transfer data or power from the magnetic field output by an **interrogator**.

06.01.11
electromagnetic coupling
 coupling through a **magnetic field**

NOTE Also referred to as inductive **coupling** or an **electric field**.

06.01.12
field strength

transmitter field intensity (deprecated)

magnitude of the electromagnetic field created at a given point by a radio transmitting system operating at a specified characteristic frequency with specified installation and modulation conditions

[IEC 50 (705):1995, 705-08-31]

06.01.13

**equivalent isotropically radiated power
EIRP**

product of the net radiated **RF** power of a **transmitter** and the **gain** of an **antenna** system in one direction relative to an isotropic source

NOTE 1 The maximum power **gain** of a transmitting antenna in any direction multiplied by the net power accepted by the antenna from the connected transmitter.

EXAMPLE 36 dBm EIRP equals 4 W transmitted into an isotropic antenna, or 1 W transmitted into a 6 dB antenna.

NOTE 2 Also referred to as Effective Isotropically Radiated Power, Equivalent Isotropical Radiated Power, and Effective Isotropical Radiated Power.

06.01.14

**effective radiated power
ERP**

amount of power actually radiated by a transmitter and antenna combination (the applied power multiplied by the efficiency of the antenna)

cf. **EIRP**

NOTE To convert between ERP and EIRP, add 2,15 dB, as a dipole antenna has a gain of 2,15 dBi. For example, to convert the European Power output of 2 W ERP (which is +33 dBm) to EIRP, add 2,15 dB to get +35,15 dBm, which is very close to the FCC limit of 4 W EIRP (+36 dBm).

06.01.15

frequency
number of cycles a periodic signal executes in unit time

NOTE Usually expressed in hertz (cycles per second) or appropriate weighted units such as **kilohertz (kHz)**, **megahertz (MHz)** and **gigahertz (GHz)**

06.01.16

frequency band
continuous set of frequencies lying between two specified limiting frequencies

NOTE 1 A frequency band is characterized by two values which define its position in the frequency spectrum, for instance its lower and upper limiting frequencies, as opposed to the bandwidth which is characterized by one value.

NOTE 2 The nomenclature of the frequency and wavelength bands used in RFID are given in Table 1.

NOTE 3 Certain frequency ranges are sometimes designated by letter symbols consisting of capital letters which may be accompanied by a small letter as subscript.

NOTE 4 Adapted from IEC 60050-713.

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Table 1 — Nomenclature of frequency and wavelength bands

BAND NUMBER (NOTE 1)	ABBREVIATION	FREQUENCY RANGE (lower limit exclusive, upper limit exclusive)	METRIC QUALIFIER (NOTE 4)	METRIC ABBREVIATION of the band (NOTE 3)	WAVELENGTH RANGE (lower limit exclusive, upper limit exclusive)
-1	(NOTE 2)	0,03 to 0,3 Hz	gigametric	B.Gm	1 to 1 Gm
0	(NOTE 2)	0,3 to 03 Hz	hectomegametric	B.hMm	100 to 1000 Mm
1	(NOTE 2)	3 to 30 Hz	decamegametric	B.daMm	10 to 100 Mm
2	(NOTE 2)	30 to 300 Hz	megametric	B.Mm	1 to 10 Mm
3	ULF	300 to 3000 Hz	hectokilometric	B.hkm	100 to 1000 km
4	VLF	3 to 30 kHz	myriametric	B.Mam	10 to 100 km
5	LF	30 to 300 kHz	kilometric	B.km	1 to 10 km
6	MF	300 to 3000 kHz	hectometric	B.hmm	100 to 1000 m
7	HF	3 to 30 MHz	decametric	B.dam	10 to 100 m
8	VHF	30 to 300 MHz	metric	B.m	1 to 10 m
9	UHF	300 to 3000 MHz	decimetric	B.dm	100 to 1000 mm
10	SHF	3 to 30 GHz	centimetric	B.cm	10 to 100 mm

NOTE 1 "Band number N" extends from $0,3 \times 10^N$ to 3×10^N Hz

NOTE 2 The abbreviation ELF designates the set of bands -1 to 2.

NOTE 3 In French, abbreviations with letter O ("Ondes") are sometimes used (e.g. O.km "Ondes kilométriques") instead of abbreviations with letter B ("Bande") indicated in the column "metric abbreviation" of the table.

NOTE 4 Metric qualifiers and abbreviations are not names or symbols of unit, and so may use the combination of prefixes in some cases.

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Adapted from IEC 60050-713:2002

06.01.17

kilohertz

kHz

measure of **frequency** equal to one thousand (1,000) cycles per second

06.01.18

megahertz

MHz

measure of **frequency** equal to one million (1,000,000) cycles per second

06.01.19

gigahertz

GHz

measure of **frequency** equal to one billion (1,000,000,000) cycles per second

06.01.20

continuous wave

typically sinusoidal wave at a given frequency, but more generally any interrogator waveform suitable for powering a passive tag without amplitude and/or phase modulation cover-coding method by which an interrogator obscures information that it is transmitting to a tag

NOTE To cover-code data or a password, an interrogator first requests a random number from the tag, then performs a bit-wise EXOR of the data or password with the received random number, and, finally, transmits the cover-coded (also called ciphertext) string to the tag; the tag uncovers the data or password by performing a bit-wise EXOR of the received cover-coded string with the original random number.

**06.01.21
modulation**

process by which at least one characteristic quantity of a **carrier** is varied in accordance with a characteristic quantity of a signal to be transmitted

[ISO/IEC 2382-9:1995, 09.05.10]

NOTE 1 Generic forms of modulation include **amplitude modulation (AM)**, **phase modulation (PM)**, **frequency modulation (FM)**, **pulse position modulation (PPM)**, and **pulse width modulation (PWM)**.

NOTE 2 Digital modulation methods principally feature **amplitude shift keying (ASK)**, **frequency shift keying (FSK)**, **phase shift keying (PSK)** or variants.

NOTE 3 See also amplitude, frequency and phase modulation, amplitude shift keying, frequency shift keying and phase shift keying.

**06.01.22
amplitude modulation**

modulation in which the amplitude of a periodic carrier is a given function, generally linear, of the instantaneous values of the modulating signal

**06.01.23
phase modulation
PM**

modulation in which data is contained in the changes in the phase of the **carrier** and in which the instantaneous phase deviation varies in accordance with a given function, generally linear, of the instantaneous value of the modulating signal

[IEC 60050-702, 702-06-36]

**06.01.24
pulse position modulation
PPM**

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modulation in which data is contained in the position of pulses relative to a reference point

NOTE Pulse time modulation in which the positions in time of the pulses vary from their initial position in accordance with a given function of the value of the modulating signal.

[IEC 60050-702, 702-06-56]

**06.01.25
pulse duration modulation(1)
PDM**

pulse time modulation in which the pulse duration varies in accordance with a given function of the value of the modulating signal

[IEC 60050-702, 702-06-57]

**06.01.26
pulse duration modulation(2)
PDM**

data is contained in the duration of pulses, in which the pulse duration varies in accordance with a given function of the value of the modulating signal

[IEC 60050-702, 702-06-57]

**06.01.27
pulse position modulation
PPM**

data is contained in the position of pulses relative to a reference point