

INTERNATIONAL STANDARD

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**Semiconductor devices – Semiconductor interface for human body
communication –
Part 1: General requirements**

**Dispositifs à semiconducteurs – Interface à semiconducteurs pour les
communications via le corps humain –
Partie 1: Exigences générales**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SEMICONDUCTOR DEVICES –
SEMICONDUCTOR INTERFACE FOR HUMAN BODY COMMUNICATION –**

Part 1: General requirements

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International Standard IEC 62779-1 has been prepared by IEC technical committee 47:Semiconductor devices.

The text of this standard is based on the following documents:

FDIS	Report on voting
47/2267/FDIS	47/2277/RVD

Full information on the voting for the approval of this standard 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 62779 series, published under the general title *Semiconductor devices – Semiconductor interface for human body communication*, 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

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INTRODUCTION

The IEC 62779 series is composed of three parts as follow:

- IEC 62779-1 defines general requirements of a semiconductor interface for human body communication. It includes general and functional specifications of the interface.
- IEC 62779-2 defines a measurement method on electrical performances of an electrode that constructs a semiconductor interface for human body communication.
- IEC 62779-3¹ defines functional type of a semiconductor interface for human body communication, and operational conditions of the interface.

IEC 60748-4 gives requirements on interface integrated circuits for semiconductor devices. Especially, Chapter III, Section 7 in this standard is applied to interface circuits for a communication network using a general channel, such as wire or wireless. However, a channel for HBC is the human body whose channel properties, such as signal loss and delay profile, are different from the general channel, so Chapter III, Section 7 can't be applied to an interface for HBC. Furthermore, a standard on a communication protocol for body area network (BAN) – IEEE 802.15.6, which includes a communication protocol for HBC was published in 2012. A common interface for HBC should be defined to secure communication compatibility between various devices that are implemented on/inside the human body or embedded in peripheral equipments.

¹ To be published.

SEMICONDUCTOR DEVICES – SEMICONDUCTOR INTERFACE FOR HUMAN BODY COMMUNICATION –

Part 1: General requirements

1 Scope

This part of IEC 62779 defines general requirements for a semiconductor interface used in human body communication (HBC). It includes general and functional specifications of the interface, as well as limiting values and its operating conditions.

NOTE Additional information on HBC is provided in Annex A.

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.

None.

3 Terms, definitions and letter symbols

For the purposes of this document, the following terms and definitions apply.

3.1 General terms

3.1.1

HBC semiconductor interface

semiconductor interface to process an electrical signal that is transmitted to the human body or received from the human body while located between the human body and HBC modem; implemented on/inside the human body and embedded in peripheral equipment

Note 1 to entry: HBC semiconductor interface consists of an electrode and analog front end. The HBC modem converts data into an electrical signal and sends it to the electrode, or receives an electrical signal from the analog front end and converts it into data.

Note 2 to entry: This note applies to the French language only.

3.1.2

electrode

physical structure to transmit an electrical signal between an analog front end and the human body while attached to or located near the human body

Note 1 to entry: An electrode transfers an electrical signal to be transmitted to a non-metallic transmission channel, the human body. It also transfers an electrical signal received from the human body to the analog front end.

3.1.3

analog front end

semiconductor integrated circuit to recover original data from a receiving signal transmitted through the human body

Note 1 to entry: Analog front end includes a powerline noise reduction filter, a signal amplifier, a high-pass filter, a comparator and a clock and data recovery (CDR) circuit to recover original data transmitted through a non-