

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Semiconductor devices – Semiconductor interface for human body
communication –**

Part 2: Characterization of interfacing performances

**Dispositifs à semiconducteurs – Interface à semiconducteurs pour les
communications via le corps humain –**

Partie 2: Caractérisation des performances d'interfaçage



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SEMICONDUCTOR DEVICES – SEMICONDUCTOR INTERFACE FOR HUMAN BODY COMMUNICATION –

Part 2: Characterization of interfacing performances

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International Standard IEC 62779-2 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
47/2268/FDIS	47/2278/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

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- withdrawn,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

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 62779-3 defines functional type of a semiconductor interface for human body communication, and operational conditions of the interface.

SEMICONDUCTOR DEVICES – SEMICONDUCTOR INTERFACE FOR HUMAN BODY COMMUNICATION –

Part 2: Characterization of interfacing performances

1 Scope

This part of IEC 62779 defines a measurement method on electrical performances of an electrode that composes a semiconductor interface for human body communication (HBC). In the measurement method, a signal transmitter is electrically isolated from a signal receiver, so an isolation condition between the transmitter and receiver is maintained to accurately measure the electrode's performances. This part includes general and functional specifications of the measurement method.

HBC uses the body of a user as a transmission medium using near-field coupling inside the body: a signal transmitter and receiver are coupled with each other through a near field that is formed inside the human body and air. The intensity of the near field is strong especially inside the body due to high dielectric constant of the body, so a data signal is transmitted through the human body by modulating the near field. A signal transmitter and receiver for HBC include an internal ground respectively, and, in most HBC applications, the grounds are separated from each other as maintaining the coupling condition through the air. Quality of a data transmission strongly depends on a coupling degree between the grounds; hence, it is important to maintain the coupling degree between grounds of a signal transmitter and receiver for an accurate measurement of the electrode's performances. This part defines a measurement method to measure electrical performances of an electrode while the coupling degree between grounds of a signal transmitter and receiver is maintained.

NOTE 1 HBC semiconductor interface consists of an electrode and analog front end.

NOTE 2 General analog and digital modulation techniques can be used to modulate a near field used in HBC, and a modulation technique to be used is determined according to required performances for a data transmission and a HBC application.

2 Normative references

The following referenced documents are indispensable for the application 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.

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

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.