

# INTERNATIONAL STANDARD



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**Semiconductor devices –  
Part 18-2: Semiconductor bio sensors – Evaluation process of lens-free  
CMOS photonic array sensor package modules**



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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## SEMICONDUCTOR DEVICES –

**Part 18-2: Semiconductor bio sensors – Evaluation process of lens-free CMOS photonic array sensor package modules**

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FDIS	Report on voting
47E/689/FDIS	47E/694/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.

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## INTRODUCTION

The IEC 60747-18 series on semiconductor bio sensors is composed of the following parts:

- IEC 60747-18-1 defines the test method and data analysis for calibration of lens-free CMOS photonic array sensors
- IEC 60747-18-2 defines the evaluation process of lens-free CMOS photonic array sensor package modules
- IEC 60747-18-3 defines the fluid flow characteristics of lens-free CMOS photonic array sensor package modules with fluidic system

The IEC 60747-18 series includes subjects such as noise analysis, long-term reliability tests, test methods for lens-free CMOS photonic array sensor package modules under patchable environments, test methods under implantable environments, etc.

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents given in several subclauses as indicated in the table below. These patents are held by their respective inventors under license to SOL Inc.:

KR1020150187389	[SOL]	The method of calibration of packaged photonic sensor pixel array by evaluating its characteristic	Subclause 5.2.1, 5.2.2
PCT/KR2016/006109	[SOL]	METHOD FOR CORRECTING OPTICAL SENSOR ARRAY MODULE THROUGH CHARACTERISTIC EVALUATION	Subclause 5.2.3, 5.2.4, 5.2.5
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## SEMICONDUCTOR DEVICES –

### Part 18-2: Semiconductor bio sensors – Evaluation process of lens-free CMOS photonic array sensor package modules

#### 1 Scope

This part of IEC 60747 specifies the evaluation process of lens-free CMOS photonic array sensor package modules. This document includes the measurement environment of each process, statistical analysis of test data, middle layer effect under various user light, evaluation of calibrated lens-free CMOS photonic array sensor package modules, and test report.

#### 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.

IEC 60747-18-1:2019, *Semiconductor devices – Part 18-1: Semiconductor bio sensors – Test method and data analysis for calibration of lens-free CMOS photonic array sensors*

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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

##### **lens-free CMOS photonic array sensor package modules**

device composed of a lens-free CMOS photonic array sensor, middle layer, user light (first light source, second light source) and its own dark box

SEE: Figure 1.

Note 1 to entry: Lens-free CMOS photonic array sensors are extensively utilized in bio-diagnostic devices, healthcare devices, lens-free microscopes, and patchable/implantable medical devices.

Note 2 to entry: The sensing environments of such a lens-free CMOS photonic array sensors are typically different from those of general-purpose image sensors which are normally mounted with an external lens in module housings.