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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 47122.3-2026

**Printed electronics - Inkjet printing equipment - Part 3:
Imaging-based measurement of drop direction**

印刷电子 喷墨印刷设备 第3部分：基于成像的液滴方向测量

(English Translation)

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A.1 Imaging-based measurement of jet droplet orientation

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 3 of GB/T 47122 "Printing Electronic Inkjet Printing Equipment". GB/T 47122 has published the following...

part.

---Part 1: Imaging-based measurement of droplet ejection velocity;

---Part 2: Imaging-based Droplet Volume Measurement;

---Part 3: Imaging-based measurement of droplet orientation.

This document is equivalent to IEC 62899-302-3:2021 "Printed electronics - Part 302-3.Devices for inkjet imaging-based droplet printing".

Direction measurement.

The following minimal editorial changes have been made to this document.

---To align with existing standards, the standard title has been changed to "Printing Electro-Inkjet Printing Equipment Part 3: Imaging-Based Droplets" Direction measurement.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Printing Machinery (SAC/TC192).

Introduction

Determining the direction of ejected droplets under specific ink and inkjet printhead operating conditions is crucial for precise control during the manufacturing of printed electronic products.

Droplet positioning is of great importance. Manufacturers integrating such printheads into their equipment should understand the angular distribution of ink droplet orientation, because this...

This can affect the achievable spatial resolution of the printed material, particularly whether adjacent conductive paths might be connected by splattered material, thus impacting the printing process.

Performance of printed electronic products. This document specifies the flight imaging measurement of droplet ejection direction for inkjet printheads used in printed electronic devices.

Method. GB/T 47122 "Printing Electronic Inkjet Printing Equipment" aims to provide a standard inkjet measurement method, which is proposed to consist of five parts.

constitute.

---Part 1: Imaging-based measurement of droplet ejection velocity. The aim is to establish a method applicable to measuring droplet ejection velocity using droplet analysis systems.

A method for determining inkjet droplet velocity by visualizing droplet images.

---Part 2: Imaging-based Droplet Volume Measurement. The aim is to establish visualizations applicable to droplet analysis systems.

A method for determining inkjet droplet volume using droplet images.

---Part 3: Imaging-based measurement of droplet orientation. The aim is to establish visualizations applicable to droplet analysis systems.

A method for determining the orientation of inkjet droplets using droplet images.

---Part 4: Media for Inkjet Printing Dot Position Evaluation. The aim is to establish a suitable medium for measuring inkjet dots in printed electronics applications.

The media measurement methods and specifications for actual placement effects.

---Part 5: Key Characteristics of Inkjet Printing. The aim is to establish key characteristics applicable to inkjet printing for printed electronics.

Features, parameters, and system properties are required.

Printing electronic inkjet printing equipment Part 3: Imaging-based measurement of droplet orientation

1 Scope

This document specifies an imaging method for measuring the flight direction of droplets ejected from an inkjet printhead using a droplet observation instrument.

This document is not applicable to holographic or other interferometric techniques, nor to any evaluation method for deposited droplets. This document is only applicable to methods based on...

Inkjet printheads are required (for printing electronic equipment).

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

IEC 62899-302-1 Printed electronics - Part 302-1.Measurement of droplet ejection velocity based on imaging in inkjet printing equipment Note. GB/T 47122.1-2026 Printing electronic inkjet printing equipment - Part 1: Imaging-based measurement of droplet ejection velocity (IEC 62899-302-1:2017, IDT)

3 Terms and Definitions

The following terms and definitions apply to this document.

Nozzle face inkjetnozzleplane the droplet exit surface of the nozzle plate of an inkjet

printhead.

Note: The definition of nozzle face applies to on-demand multi-nozzle printheads, or as specified by the printhead manufacturer or inkjet equipment integrator, and is included in the measurement results.

illustrate.

Nozzle row direction the straight line passing through the center of a row of nozzle outlets in the nozzle face.

Note: Usually along the length of the nozzle face, or as otherwise specified by the printhead manufacturer or inkjet equipment integrator, and stated in the measurement results.

Reference direction

The direction perpendicular to the nozzle plate (90°).

Note: Or as otherwise specified by the printhead manufacturer or inkjet equipment integrator, and indicated in the measurement results.

measurement region

The three-dimensional space closest to the nozzle surface used to capture images of ejected droplets.