



BSI Standards Publication

Device embedded substrate

Part 2-4: Guidelines — Test element groups (TEG)

National foreword

This Published Document is the UK implementation of IEC/TS 62878-2-4:2015.

The UK participation in its preparation was entrusted to Technical Committee EPL/501, Electronic Assembly Technology.

A list of organizations represented on this committee can be obtained on request to its secretary.

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© The British Standards Institution 2015.
Published by BSI Standards Limited 2015

ISBN 978 0 580 82121 9
ICS 31.180; 31.190

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This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 April 2015.

Amendments/corrigenda issued since publication

| Date | Text affected |
|-------------|----------------------|
|-------------|----------------------|



TECHNICAL SPECIFICATION

SPECIFICATION TECHNIQUE



**Device embedded substrate –
Part 2-4: Guidelines – Test element groups (TEG)**

**Substrat avec appareil(s) intégré(s) –
Partie 2-4: Directives – Groupes d'éléments d'essai (TEG)**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 31.180; 31.190

ISBN 978-2-8322-2435-9

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

DEVICE EMBEDDED SUBSTRATE –

Part 2-4: Guidelines – Test element groups (TEG)

FOREWORD

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Technical Specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 62878-2-4, which is a Technical Specification, has been prepared by IEC technical committee 91: Electronics assembly technology

The text of this Technical Specification is based on the following documents:

| | |
|---------------|------------------|
| Enquiry draft | Report on voting |
| 91/1144/DTS | 91/1165A/RVC |

Full information on the voting for the approval of this Technical Specification 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 62878 series, published under the general title *Device embedded substrate*, 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 website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This part of IEC 62878 provides guidance with respect to device embedded substrate, fabricated by embedding discrete active and passive electronic devices into one or multiple inner layers of a substrate with electric connections by means of vias, conductor plating, conductive paste, and printing. Within the IEC 62878 series,

- IEC 62878-1-1 specifies the test methods,
- IEC TS 62878-2-1 gives a general description of the technology,
- IEC TS 62878-2-3 provides guidance on design, and
- IEC TS 62878-2-4 specifies the test element groups.

The device embedded substrate may be used as a substrate to mount SMDs to form electronic circuits, as conductor and insulator layers may be formed after embedding electronic devices.

The purpose of the IEC 62878 series is to achieve a common understanding with respect to structures, test methods, design and fabrication processes and the use of the device embedded substrate in industry.

DEVICE EMBEDDED SUBSTRATE

Part 2-4: Guidelines – Test element groups (TEG)

1 Scope

This part of IEC 62878 describes the test element group devices useful when measuring basic properties of device embedded substrates.

This part of IEC 62878 is applicable to device embedded substrates fabricated by use of organic base material, which include for example active or passive devices, discrete components formed in the fabrication process of electronic wiring board, and sheet formed components.

The IEC 62878 series neither applies to the re-distribution layer (RDL) nor to the electronic modules defined as an M-type business model in IEC 62421.

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.

IEC 60194, *Printed board design, manufacture and assembly – Terms and definitions*

IEC 62878-1-1, *Device embedded substrate – Part 1-1: Generic specification – Test methods*¹

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60194 apply.

3.2 Abbreviations

| | |
|-------|-------------------------------------|
| AABUS | as agreed between user and supplier |
| AV | audiovisual |
| L/S | line and space |
| SMD | surface mount device |

4 Test conditions and sample preparation

4.1 General

Clause 4 describes the test conditions for device embedded boards to be used in electronics equipment and reliability, and Clause 5 describes the test element group (hereafter referred to as TEG) to be used as dummy test chips, as well as test patterns used in TEGs.

4.2 Test conditions

4.2.1 Classification of tests and evaluation

Subclause 4.2.1 describes the classification of test levels in various applications. The environment in which products are used is divided into

¹ To be published.