



# TECHNICAL REPORT

---

## Form factor of smart mobile devices – Part 1: Impact on multimedia services

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

---

ICS 33.160.60

ISBN 978-2-8322-7878-9

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

|   |    |
|---|----|
| FOREWORD.....   | 3  |
| INTRODUCTION.....   | 5  |
| 1 Scope.....  | 6  |
| 2 Normative references .....  | 6  |
| 3 Terms, definitions and abbreviated terms .....                                      | 6  |
| 3.1 Terms and definitions.....  | 6  |
| 3.2 Abbreviated terms.....  | 7  |
| 4 Overview .....  | 7  |
| 4.1 General.....  | 7  |
| 4.2 SMD history .....   | 7  |
| 4.3 Usage trends of SMD.....  | 8  |
| 4.4 Multimedia services .....   | 9  |
| 5 Impact of SMD form factors on multimedia services.....                              | 10 |
| 5.1 Camera.....   | 10 |
| 5.2 Display .....   | 11 |
| 5.2.1 Display size changes .....  | 11 |
| 5.2.2 Various screen form factors .....   | 12 |
| 5.2.3 Deformable screen .....   | 13 |
| 5.3 Touchscreen .....   | 14 |
| 5.4 Waterproofness .....  | 15 |
| 6 Potential new work items for IEC TC 100.....  | 16 |
| Bibliography.....   | 17 |
| <br>  |    |
| Figure 1 – Percentage of average SMD usage time per media in the USA .....            | 8  |
| Figure 2 – Percentage of average time spent with media in the world (smartphone)..... | 9  |
| Figure 3 – Cameras in SMD .....   | 10 |
| Figure 4 – Example of camera lens structure to reduce the prominent shape .....       | 10 |
| Figure 5 – Example of changeable front camera structure.....                          | 11 |
| Figure 6 – SMD display trend.....   | 12 |
| Figure 7 – Notch display .....  | 12 |
| Figure 8 – Pin hole and teardrop display .....  | 12 |
| Figure 9 – Dual punch hole display .....  | 13 |
| Figure 10 – Various SMD folding types .....   | 14 |
| Figure 11 – Usage example of rollable SMD .....                                       | 14 |
| Figure 12 – Example of finger touch and pen touch.....                                | 15 |
| <br>  |    |
| Table 1 – Classification of touch pen .....   | 15 |

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FORM FACTOR OF SMART MOBILE DEVICES –****Part 1: Impact on multimedia services**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC TR 63447-1 has been prepared by subcommittee Technical Area 1: Terminal for audio, video and data services and content, of IEC technical committee 100: Audio, video and multimedia systems and equipment. It is a Technical Report.

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

|              |                  |
|--------------|------------------|
| Draft        | Report on voting |
| 100/4033/DTR | 100/4067/RVDTR   |

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Report is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

A list of all parts in the IEC 63447 series, published under the general title *Form factor of smart mobile devices*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

## INTRODUCTION

Smart mobile devices (SMD) initially utilized communication services as a key element and are designed to interact both with users and other devices connected to the network. Along with advances in communication technology, various multimedia services other than communication are available on SMDs because of the developments in SMD hardware performance.

SMDs have changed and have become more compact to make it easier for users to use multimedia. For this purpose, hardware technology is developing.

This Technical Report introduces the main SMD form factors for multimedia services, explains how to design an effective SMD, and finally summarizes new work items to manage in TC 100 in the near future.

# FORM FACTOR OF SMART MOBILE DEVICES –

## Part 1: Impact on multimedia services

### 1 Scope

This document introduces various form factors of smart mobile devices and their impact on multimedia services.

It does not deal with:

- a) SMD performance to process multimedia services;
- b) hardware performance and technology for each part, such as the battery, the antenna, the display, the main processor, various sensors;
- c) the characteristics of the SMD's operating system (Android<sup>1</sup>, iPhone OS<sup>2</sup> etc.);
- d) the generation characteristics of telecommunication and radio frequency (including wireless);
- e) wearable devices, like smart watch, AR (augmented reality), VR (virtual reality) and so on.

### 2 Normative references

There are no normative references in this document.

---

<sup>1</sup> Android is a trademark of a consortium of developers known as the Open Handset Alliance and commercially sponsored by Google LLC. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results

<sup>2</sup> iOS (formerly iPhone OS) is a trademark of Apple Inc. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.