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Nanomanufacturing - Key control characteristics -
Part 11-1: Electromagnetic compatibility - Shielding effectiveness of nanomaterials: near-field probe method

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Nanomanufacturing - Key control characteristics - Part 11-1: Electromagnetic compatibility - Shielding effectiveness of nanomaterials: near-field probe method

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IEC TS 62607-11-1 has been prepared by IEC technical committee 113: Nanotechnology for electrotechnical products and systems. It is a Technical Specification.

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

Draft	Report on voting
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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 Specification 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. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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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 in the data related to the specific document. At this date, the document will be

– reconfirmed,

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– revised.

INTRODUCTION

Due to the characteristic electrical conductivity of nanomaterials such as carbon nanotubes (CNTs) or graphene, development of new electromagnetic shielding materials using them has drawn much interest in electronic and electric industries. However, the existing standard method is not suitable for being applied to nanomaterials because of the requirement of sample size and limited frequency range from 30 MHz to 1,5 GHz. Furthermore, it is essential to elucidate shielding effectiveness (SE) as a function of distance between the probe and a sample by emergence of new technologies such as wearable electronics and development of high-integrity devices with multilayered structure.

This document specifies SE measurement of nanomaterials under the near-field condition.

1 Scope

This part of IEC 62607 provides a standardized method for measuring shielding effectiveness on nanomaterials including carbon nanotubes (CNTs) in the near-field region. This document provides

– recommendations for sample preparation,
– outlines of the experimental procedures to measure shielding effectiveness of CNTs in thin films,
– methods of interpretation of results and discussion of data analysis, and
– case studies.

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 TS 61967-3, *Integrated circuits - Measurement of electromagnetic emissions - Part 3: Measurement of radiated emissions - Surface scan method*

IEC 61967-6, *Integrated circuits - Measurement of electromagnetic emissions, 150 kHz to 1 GHz - Part 6: Measurement of conducted emissions - Magnetic probe method*