ICS 17.220.20, 29.050 SLOVENSKÁ TECHNICKÁ NORMA Apríl 2026

STN	**Meranie vodivosti tenkých kovových vrstiev pri mikrovlnových a milimetervlnových frekvenciách Metóda symetrického kruhového diskového rezonátora**	**STN EN IEC 63616** 35 3817

Measurement of the conductivity for metal thin films at microwave and millimeter-wave frequencies - Balanced-type circular disk resonator method

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 63616

January 2026

ICS 17.220.20; 29.050

English Version

Measurement of the conductivity for metal thin films at microwave and millimeter-wave frequencies - Balanced-type circular disk resonator method (IEC 63616:2025)

Mesurage de la conductivité des films minces métalliques aux hyperfréquences et aux fréquences à ondes millimétriques - Méthode du résonateur à disque circulaire de type symétrique (IEC 63616:2025)

Messung der Leitfähigkeit von Metalldünnschichten bei Mikrowellen- und Millimeterwellenfrequenzen nach dem symmetrischen Kreisscheibenresonatorverfahren (IEC 63616:2025)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 63616:2026 E

European foreword

The text of document 46F/722/FDIS, future edition 1 of IEC 63616, prepared by SC 46F "RF and microwave passive components" of IEC/TC 46 "Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 63616:2026.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2027-01-31
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2029-01-31

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The text of the International Standard IEC 63616:2025 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 61788-7:2020	NOTE	Approved as EN IEC 61788-7:2020 (not modified)

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INTERNATIONAL STANDARD

Measurement of the conductivity for metal thin films at microwave and millimeter-wave frequencies - Balanced-type circular disk resonator method

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Measurement of the conductivity for metal thin films at microwave and millimeter-wave frequencies - Balanced-type circular disk resonator method

FOREWORD

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IEC 63616 has been prepared by subcommittee 46F: RF and microwave passive components, of IEC technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
46F/722/FDIS	46F/734/RVD

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 International Standard 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.

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,
– withdrawn, or
– revised.

1 Scope

This document relates to a conductivity measurement method of thin metal films at microwave and millimeter-wave frequencies. This method has been developed to evaluate the conductivity of a metal foil used for adhering to a substrate or the interfacial conductivity of a metal layer formed on a dielectric substrate. It uses higher-order modes of a balanced-type circular disk resonator and provides broadband conductivity measurements by using a single resonator.

In comparison with the conventional method described in IEC 61788-7 [1][1], this method has the following characteristics:

– the value of the conductivity σ of a metal foil can be measured accurately and non-destructively;
– the value of the interfacial conductivity σ of a metal layer on a dielectric substrate can be measured accurately and non-destructively;
– this method presents broadband measurements by using higher-order modes by one resonator;
– this method is applicable for the measurements under the following conditions:
  - frequency: 10 GHz $\leq f \leq$ 170 GHz;
  - conductivity: 10^5 S/m $\leq \sigma \leq$ 10^8 S/m.

2 Normative references

There are no normative references in this document.

[1] Numbers in square brackets refer to the Bibliography.