SLOVENSKI STANDARD
SIST EN IEC 60263:2020

01-november-2020

Merila in velikosti za risanje frekvenčnih karakteristik in polarnih diagramov (IEC 60263:2020)

Scales and sizes for plotting frequency characteristics and polar diagrams (IEC 60263:2020)

Skalen und Größenverhältnisse zur Darstellung von Frequenzkurven und Polardiagrammen (IEC 60263:2020)

Echelles et dimensions des graphiques pour le tracé des courbes de réponse en fréquence et des diagrammes polaires (IEC 60263:2020)

Ta slovenski standard je istoveten z: **EN IEC 60263:2020**

ICS:

01.100.25	Risbe s področja elektrotehnike in elektronike	Electrical and electronics engineering drawings
17.140.50	Elektroakustika	Electroacoustics

SIST EN IEC 60263:2020 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60263

August 2020

ICS 17.140.50

English Version

Scales and sizes for plotting frequency characteristics and polar diagrams (IEC 60263:2020)

Échelles et dimensions des graphiques pour le tracé des courbes de réponse en fréquence et des diagrammes polaires
(IEC 60263:2020)

Skalen und Größenverhältnisse zur Darstellung von Frequenzkurven und Polardiagrammen
(IEC 60263:2020)

This European Standard was approved by CENELEC on 2020-07-31. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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 60263:2020 E

European foreword

The text of document 29/1038/CDV, future edition 4 of IEC 60263, prepared by IEC/TC 29 "Electroacoustics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60263:2020.

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) 2021-05-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-07-31

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60263:2020 was approved by CENELEC as a European Standard without any modification.

IEC 60263

Edition 4.0 2020-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Scales and sizes for plotting frequency characteristics and polar diagrams

Échelles et dimensions des graphiques pour le tracé des courbes de réponse en fréquence et des diagrammes polaires

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 17.140.50

ISBN 978-2-8322-8497-1

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

____

SCALES AND SIZES FOR PLOTTING FREQUENCY CHARACTERISTICS AND POLAR DIAGRAMS

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) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60263 has been prepared by IEC technical committee TC 29: Electroacoustics.

This fourth edition cancels and replaces the third edition published in 1982. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) the scope is expanded to include electronic files (e.g., PDF), scientific publications, graphs in other standards, and screen displays in programs and apps;
b) a Terms and Definitions clause has been added;
c) aspect ratios of 20 dB/decade, and 0,5, 1, 1,25, and 2,5 decades/decade have been added;
d) ranges of 60 dB or 30 dB are specified for polar plots of absolute level; a 30 dB range is specified for polar plots of relative level;
e) as most graphs are now computer generated, tolerances and sizes have been removed;
f) all informative figures have been updated with contemporary examples;

g) an informative annex with information about linear y-axis vs. logarithmic frequency has been added.

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

CDV	Report on voting
29/1038/CDV	29/1060/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

- 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

Historically, on analogue level recorders, 1 dB was represented by 1 mm, 2 mm or 5 mm, corresponding to level ranges of 50 dB, 25 dB and 10 dB, respectively. One of these three level ranges was equal in length to 1 decade on the logarithmic frequency scale of the paper used for the plot, limiting the available aspect ratios. With the advent of computer-generated graphics, plots can now be of any size that is legible or enlarged on a display as necessary.

A plot of the data may only represent a graphical summary that is convenient for communicating via a report or other publication where one does not wish to list out the entire data set. This further emphasizes the importance of the visual representation.

Therefore, in order to gain an accurate impression from a graph in which a response is plotted as level (in decibels) or as an amplitude or percentage on a logarithmic y-axis versus frequency on a logarithmic scale, it remains important that the aspect ratio be standardized. Otherwise, a spectrum or response curve can be made to appear unduly flat or unduly steep by compression or expansion of one of the axes.

The subject of interest is usually a frequency response or output spectrum that results from the application of an input spectrum to a device such as a microphone, amplifier, hearing aid, headphone, or loudspeaker, or alternatively, level differences for the response of these devices compared to a reference response. Analogous characteristics may be measured and plotted for the mechanical vibration of structures. Similarly, an insertion gain or transmission loss may be plotted. For cascaded systems, the contribution of each sub-system to the overall result is more readily understood if each characteristic is plotted to a standard aspect ratio.

For displaying frequency spectra and response characteristics, different ranges are often needed. A range of 10 dB may suffice for the response of a standard measurement microphone, but a range of more than 60 dB may be required for a filter or loudspeaker. Although these requirements illustrate the need for different aspect ratios, the number of standard aspect ratios should be kept to a minimum to facilitate comparisons.

Graphs for publication may be reduced or enlarged to fit the printed page. Likewise, graphs may appear on the display of a computer screen or mobile app. Therefore, the use of a standard aspect ratio makes it feasible to compare graphs from different sources or to view the same data displayed on different sized displays.