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STN	**Mierky a pomery veľkostí pre zobrazovanie frekvenčných charakteristík a polárnych diagramov**	**STN EN IEC 60263** 34 0887

Scales and sizes for plotting frequency characteristics and polar diagrams

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

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 12/20

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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)

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• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2023-07-31

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Endorsement notice

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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

IEC 60263:2020-06(en-fr)

IEC 60263

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INTERNATIONAL STANDARD

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Scales and sizes for plotting frequency characteristics and polar diagrams

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CONTENTS

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SCALES AND SIZES FOR PLOTTING FREQUENCY CHARACTERISTICS AND POLAR DIAGRAMS

FOREWORD

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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.

SCALES AND SIZES FOR PLOTTING FREQUENCY CHARACTERISTICS AND POLAR DIAGRAMS

1 Scope

This document specifies standard aspect ratios for logarithmic or level characteristics expressed in decibels versus a logarithmic frequency axis and ranges for the radius of polar diagrams of level. Applications include hard copy printouts, electronic files (e.g., PDF files), scientific publications, screen displays in computer programs and apps, as well as graphs in standards.

Informative examples of graphs that conform to the requirements in this document are found in Annex A.

Although outside the scope of this document, graphs with a linear y-axis versus logarithmic frequency (e.g., phase, group delay, etc.) often accompany the standard aspect ratio graphs of level described in the normative part of this document. These are described in informative Annex B.

2 Normative references

There are no normative references in this document.