

TECHNICAL SPECIFICATION

Ultrasonics – Measurements of electroacoustical parameters and acoustic output power of spherically curved transducers using the self-reciprocity method





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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ULTRASONICS – MEASUREMENTS OF ELECTROACOUSTICAL
PARAMETERS AND ACOUSTIC OUTPUT POWER OF SPHERICALLY
CURVED TRANSDUCERS USING THE SELF-RECIPROCALITY METHOD**

FOREWORD

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This second edition cancels and replaces the first edition published in 2018. This edition constitutes a technical revision.

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

- a) Several quantities are recognized as complex-valued quantities in the definitions and in the main text.
- b) Annex I was added to provide typical measurement ranges and to provide example calibration results.

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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.

In this document, the following print types are used:

- terms defined in Clause 3: **in bold type**.

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INTRODUCTION

An ultrasonic transducer is an important acoustic device that can act as a transmitter or a receiver in the applications of medical ultrasound, non-destructive testing, and ultrasonic materials processing. The performance of a transducer is a decisive factor that governs the device's range of applicability, efficiency and quality control in the manufacturing. The mechanisms, transmitting fields, performances, and measurement methods used for these transducers have been studied over the past few decades. However, the electroacoustical characterization and measurement methods applied for spherically curved transducers have not been defined in standard documents for either terms or protocols.

This document defines the relevant electroacoustical parameters for these devices and establishes the self-reciprocity measurement method for spherically curved concave focusing transducers.