

IEEE Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields From AC Power Lines

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Abstract: Uniform procedures for the measurement of power frequency electric and magnetic fields from alternating current (ac) overhead power lines and for the calibration of the meters used in these measurements are established. The procedures apply to the measurement of electric and magnetic fields close to ground level. The procedures can also be tentatively applied (with limitations, as specified in the standard) to electric fields near an energized conductor or structure.

Keywords: ac power lines, electric field, magnetic field, measurement

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Introduction

(This introduction is not part of IEEE Std 644-1994, IEEE Standard Procedures for This Measurement of Power Frequency Electric and Magnetic Fields From AC Power Lines.)

This standard is a revision of IEEE Std 644-1987 (a revision of IEEE Std 644-1979), which establishes uniform procedures for measuring power frequency electric and magnetic fields in the vicinity of ac power lines. The following revisions have been made and are intended to improve the usefulness of the document:

- a) Text has been introduced that permits the measurement of the resultant magnetic field using three-axis (or single-axis) magnetic field meters. This change required revisions in the calibration procedure clauses and an explanation of the difference between maximum field value and resultant field value.
- b) Text (with appropriate bibliographical references) has been added to note that magnetic field calibration coil systems other than the one described in the standard may be used for calibration purposes, provided that the fields produced have comparable uniformity.
- c) Corrections in the text and improved figures.
- d) Clarification of text related to calibration uncertainty in the calibration clauses.

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1. Overview

The purpose of this standard is to establish uniform procedures for the measurement of power frequency electric and magnetic fields from alternating current (ac) overhead power lines and for the calibration of the meters used in these measurements. A uniform procedure is a prerequisite to comparisons of electric and magnetic fields of various ac overhead power lines. These procedures apply to the measurement of electric and magnetic fields close to ground level. They can also be tentatively applied to electric field measurements near an energized conductor or structure with the limitations outlined in 4.5.

2. References

This standard shall be used in conjunction with the following publication.

IEEE Std 100-1992 , The New IEEE Standard Dictionary of Electrical and Electronics Terms (ANSI).¹

3. Definitions

For additional definitions, see IEEE Std 100-1992 .²

3.1 crosstalk: The noise or extraneous signal caused by ac or pulse-type signals in adjacent circuits (measurement of power frequency magnetic fields).

¹IEEE publications are available from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, USA.

²Information on references can be found in clause 2.