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IEEE Standard for Digitizing Waveform Recorders

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Waveform Generation, Testing, and Measurement Committee

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3 Park Avenue
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USA

IEEE Std 1057™-2017
(Revision of IEEE Std 1057-2007)

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Abstract: Terminology and test methods for describing the performance of waveform recorders are presented in this standard.

Keywords: effective number of bits, frequency response, noise, IEEE 1057™, sine fitting, step pulse response, total harmonic distortion, transitions levels, waveform recorders

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Introduction

This introduction is not part of IEEE Std 1057-2017, IEEE Standard for Digitizing Waveform Recorders.

This standard is a revision and modernization of the previous standard, IEEE Std 1057-2007. It presents methods for the test and evaluations of digitizing waveform recorders approved by the balloting committee.

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IEEE Standard for Digitizing Waveform Recorders

1. Overview

1.1 Scope

This standard defines specifications and describes test methods for measuring the performance of electronic digitizing waveform recorders, waveform analyzers, and digitizing oscilloscopes with digital outputs. The standard is directed toward, but not restricted to, general-purpose waveform recorders and analyzers.

Special applications can require additional manufacturer information and verification tests not covered in this standard.

IEEE Std 1057™ has many similarities to IEEE Std 1241™-2010 [B24], which applies to analog-to-digital converters (ADCs).[1] However, IEEE Std 1057 shall be used for waveform recorders, and IEEE Std 1241-2010 shall be used for ADCs.

1.2 Waveform recorder background

A waveform recorder is a device for capturing an amplitude versus time portion of a possibly time-varying signal, such as a voltage, by digitizing it and storing the results in an internal memory. The data capture is normally done in real time and in the time domain. Non-real time sampling recorders and frequency domain data recorders do also exist but are not specifically covered in this standard.

A generic waveform recorder is shown in Figure 1.

[1]The numbers in brackets correspond to those of the bibliography in Annex H.