

American National Standard Guide for the Computation of Errors in Open-Area Test Site Measurements

Accredited Standards Committee on Electromagnetic Compatibility, C63

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Abstract: The basis for the acceptability criterion of ± 4 dB for the site attenuation measurements required in ANSI C63.4-1992 is provided.

Keywords: acceptability criterion, antenna factor, attenuator uncertainty, electromagnetic noise, error analysis, error budget

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Introduction

(This introduction is not part of ANSI C63.6-1996, American National Standard Guide for the Computation of Errors in Open-Area Test Site Measurements.)

ANSI C63.4, American National Standard Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 10 kHz to 1 GHz, has undergone several revisions since the original document, covering methods of measurement, was produced in 1940. While many improvements were made in the standard from time to time, the reproducibility of measurements of radiated interference from one test site to another has not been completely satisfactory.

In 1982 a concerted effort was organized in Subcommittee 1 of American National Standards Committee C63 to determine how the technique could be improved. Evidence showed that the variability was due, in part, to inadequate (1) control of site ground plane conductivity, flatness, site enclosures, effects of surrounding objects, and certain other site construction features; (2) accounting for antenna factors, associated cabling, and balun and device under test characteristics; and (3) consideration of mutual coupling effects between the device under test and the receiving antenna and their images in the ground plane. Accordingly, ANSI C63.4 was revised, and C63.5, C63.6, and C63.7 were prepared to provide additional information. This standard provides guidance information on the calculation of the errors incurred in making tests on an open-area site.

Participants

At the time that the Accredited Standards Committee on Electromagnetic Compatibility, C63, approved this guide, Subcommittee 1 had the following membership:

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