

American National Standard Guide for Construction of Open-Area Test Sites for Performing Radiated Emission Measurements

Accredited Standards Committee on Electromagnetic Compatibility, C63

accredited by the

American National Standards Institute

Secretariat

Institute of Electrical and Electronic Engineers, Inc.

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Abstract: Information that is useful in constructing an open-area test site (OATS) used to perform radiated emission measurements in the frequency range of 30-1000 MHz is provided. Final validity of the test site can only be made by performing site attenuation measurements as described in ANSI C63.4-1992.

Keywords: emission measurement, open-area test sites, radiated emission measurement

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Introduction

(This introduction is not a part of ANSI C63.7-1992, American National Standard Guide for Construction of Open-Area Test Sites for Performing Radiated Emission Measurements.)

ANSI C63.4, 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 had not been completely satisfactory.

In 1982 a concerted effort was organized in Subcommittee One of the Accredited Standards Committee C63, to determine how the technique could be improved. Evidence showed that the variability was due, in part, to inadequate a) control of site ground plane conductivity, flatness, site enclosures, effects of surrounding objects, and certain other site construction features, b) accounting for antenna factors, associated cabling, and balun and device under test characteristics, and c) 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 ANSI C63.5, Standard Calibration of Antennas Used for Radiated Emission Measurements in Electromagnetic Interference (EMI) Control, and C63.6, Guide for the Computation of Errors in Open Area Test Site Measurement, were published respectively in 1989 and 1988 to provide additional information. The first version of C63.7 on test-site construction was also published in 1988. The present version contains improvements in the text resulting from experience gained in its application.

At the time this document was approved, members of Task Group on Open-Area Test Sites were as follows:

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1. Scope

This guide provides information that is useful in constructing an open-area test site (OATS) used to perform radiated emission measurements in the frequency range of 30–1000 MHz. Final validity of the test site can only be made by performing site attenuation measurements described in ANSI C63.4-1992,¹ 5.4.6.

2. Definitions

For definitions, see ANSI C63.14-1992

3. References

The following standards should be consulted when validating OATS:

ANSI C63.4-1992, American National Standard Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.²

ANSI C63.5-1988, American National Standard for Calibration of Antennas Used for Radiated Emission Measurements in Electromagnetic Interference (EMI) Control.

¹Information on references can be found in clause 3. The numbers in brackets preceded by the letter B correspond to those of the bibliography in clause 9.

²ANSI C63 publications are available from the Institute of Electrical and Electronics Engineers, Service Center, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, USA or from the Sales Department, American National Standards Institute, 11 West 42nd Street, New York, NY 10036, USA.