

# IEEE Recommended Practice for Near-Field Antenna Measurements

IEEE Antennas and Propagation Society

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**Antenna Standards Committee**  
of the  
**IEEE Antennas and Propagation Society**

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**IEEE-SA Standards Board**

**Abstract:** Near-field test practices for the measurement of antenna properties are described in this document and near-field measurement practices for the three principal geometries: cylindrical, planar, and spherical are recommended. Measurement practices for the calibration of probes used as reference antennas in near-field measurements are also recommended.

**Keywords:** antenna measurements, antenna near-field measurements, cylindrical near-field measurements, IEEE 1720, near-field measurements, planar near-field measurements, probe calibrations, spherical near-field measurements

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## Introduction

This introduction is not part of IEEE Std 1720<sup>TM</sup>-2012, IEEE Recommended Practice for Near-Field Antenna Measurements.

When IEEE Std 149<sup>TM</sup>-1979 (IEEE Standard Test Procedures for Antennas) was first developed, near-field antenna measurement was in its infancy. In the mid-1980s, the use of near-field methods for measuring antennas started becoming more widespread, especially for testing communication satellite antennas. Today, more than 200 facilities worldwide employ near-field methods for measuring antenna parameters. Many believe the time had come to develop a set of recommended practices for these measurements.

This document lays out recommended practices for near-field measurements for the three principal geometries: cylindrical, planar, and spherical. It also indicates recommended measurement practices for the calibration of probes used as reference antennas in near-field measurements.

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## 1. Overview

### 1.1 Scope

This document describes near-field test practices for the measurement of antenna properties. It provides information on developments in near-field measurements that have occurred since the writing of IEEE Std 149™-1979 (IEEE Standard Test Procedures for Antennas). This document recommends near-field measurement practices for the three principal geometries: cylindrical, planar, and spherical, and also recommends measurement practices for the calibration of probes used as reference antennas in near-field measurements.

### 1.2 Purpose

The purpose of this recommended practice document is to provide practical guidance to those who are planning to do near-field measurements. This document also specifies capabilities required of a near-field measurement system.