

P1720

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Type of Project: Revision to IEEE Standard 1720-2012

PAR Request Date: 23-Apr-2019

PAR Approval Date: 13-Jun-2019

PAR Expiration Date: 31-Dec-2023

Status: PAR for a Revision to an existing IEEE Standard

Root Project: 1720-2012

1.1 Project Number: P1720

1.2 Type of Document: Recommended Practice

1.3 Life Cycle: Full Use

2.1 Title: Recommended practice for near field antenna measurements **Changes in title:** ~~IEEE Recommended Practice~~ practice for Near-Field ~~near Antenna~~ field Measurements ~~antenna measurements~~

3.1 Working Group: Near-Field Antenna Measurements (APS/SC/1720)

Contact Information for Working Group Chair

Name: Lars Foged

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Contact Information for Working Group Vice-Chair

None

3.2 Sponsoring Society and Committee: IEEE Antennas and Propagation Society/Antennas and Propagation Standards Committee (APS/SC)

Contact Information for Sponsor Chair

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Contact Information for Standards Representative

None

4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 12/2021

4.3 Projected Completion Date for Submittal to RevCom

Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.: 10/2022

5.1 Approximate number of people expected to be actively involved in the development of this project: 30

5.2 Scope: This document describes near-field test practices for the measurement of antenna properties. It is written for the person responsible or otherwise involved in operating the test system. It recommends procedures for testing and documenting the quality of the near field system, for calibration of the system, for carrying out the antenna measurements, and for delivering the measurement data in a useful format to the end user. The document defines useful antenna metrics, describes different types of test ranges with a brief introduction to the theory and equipment used. It reviews methods of characterising and operating antenna measurement ranges. Issues related to uncertainty analysis, anechoic chamber layout, probe calibration, full probe compensation, echo reduction techniques and use of non-orthogonal expansion functions in the Near-Field to Far-Field transformation are also discussed.

Changes in scope: This document describes near-field test practices for the measurement of antenna properties. It ~~provides~~ ~~is~~ ~~information~~ ~~written~~ ~~on~~ ~~for~~ ~~development~~ ~~the~~ ~~person~~ ~~responsible~~ ~~or~~ ~~otherwise~~ ~~involved~~ ~~in~~ ~~near~~ ~~field~~ ~~operating~~ ~~measurements~~ ~~the~~ ~~test~~ ~~has~~ ~~system~~. ~~occurred~~ ~~It~~ ~~since~~ ~~recommends~~ ~~procedures~~ ~~for~~ ~~testing~~ ~~and~~ ~~documenting~~ ~~the~~ ~~writing~~ ~~quality~~ ~~of~~ ~~IEEE~~ ~~the~~ ~~Std~~ ~~near~~ ~~149~~ ~~1979~~ ~~field~~ ~~(IEEE~~ ~~system~~ ~~, Standard~~ ~~for~~ ~~Test~~ ~~calibration~~ ~~Procedures~~ ~~of~~ ~~the~~ ~~system~~ ~~, for~~ ~~Antennas~~ ~~).~~ ~~carrying~~ ~~This~~ ~~out~~ ~~document~~ ~~the~~ ~~recommends~~ ~~antenna~~ ~~near~~ ~~field~~ ~~measurements~~ ~~, and~~ ~~for~~ ~~delivering~~ ~~the~~ ~~measurement~~ ~~practices~~ ~~data~~ ~~for~~ ~~in~~ ~~a~~ ~~useful~~ ~~format~~ ~~to~~ ~~the~~ ~~three~~ ~~end~~ ~~principal~~ ~~user~~. ~~geometries:~~ ~~The~~ ~~cylindrical~~ ~~, document~~ ~~planar~~ ~~defines~~ ~~useful~~ ~~antenna~~ ~~metrics~~ ~~, describes~~ ~~different~~ ~~types~~ ~~of~~ ~~test~~ ~~ranges~~ ~~with~~ ~~a~~ ~~brief~~ ~~introduction~~ ~~to~~ ~~the~~ ~~theory~~ ~~and~~ ~~spherical~~ ~~, equipment~~ ~~used~~. ~~It~~ ~~reviews~~ ~~methods~~ ~~of~~ ~~characterising~~ ~~and~~ ~~also~~ ~~operating~~ ~~recommends~~ ~~antenna~~ ~~measurement~~ ~~practices~~ ~~ranges~~. ~~for~~ ~~Issues~~ ~~the~~ ~~related~~ ~~to~~ ~~uncertainty~~ ~~analysis~~ ~~, anechoic~~ ~~chamber~~ ~~layout~~ ~~, probe~~ ~~calibration~~ ~~, of~~ ~~full~~ ~~probes~~ ~~probe~~ ~~used~~ ~~compensation~~ ~~, a~~ ~~echo~~ ~~reference~~ ~~reduction~~ ~~antenna~~ ~~techniques~~ ~~and~~ ~~use~~ ~~of~~ ~~non-orthogonal~~ ~~expansion~~ ~~functions~~ ~~in~~ ~~near~~ ~~the~~ ~~Near~~ ~~field~~ ~~Field~~ ~~measurements~~ ~~to~~ ~~Far-Field~~ ~~transformation~~ ~~are~~

also discussed.

5.3 Is the completion of this standard dependent upon the completion of another standard?: No

5.4 Purpose: Most near field antenna measurement ranges are built for a specific measurement purpose and they generally fall within three typical near field scanning geometries: planar, cylindrical and spherical. The methods for characterising a near field antenna measurement range and for performing the measurements are therefore tailored for a specific range. This recommended practice is intended to establish guidelines for operators and other users of such ranges to ensure that the measurement results are acceptable for the large community of users.

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5.5 Need for the Project: The existing standard will expire in 2022

5.6 Stakeholders for the Standard: The stakeholders include manufacturers of near-field antenna measurement systems, users of near-field antenna measurement systems (especially in the telecommunications, aerospace and defense industries, and government and academic laboratories).

Intellectual Property

6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No

6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No

7.1 Are there other standards or projects with a similar scope?: No

7.2 Joint Development

Is it the intent to develop this document jointly with another organization?: No

8.1 Additional Explanatory Notes: