IEC 61169-1-4

Edition 1.0 2020-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Radio-frequency connectors – Part 1-4: Electrical test methods – Voltage standing wave ratio, return loss and reflection coefficient

Connecteurs pour fréquences radioélectriques – Partie -4: Méthodes d'essai électriques – Rapport d'ondes stationnaires en tension, affaiblissement de réflexion et coefficient de réflexion

IEC 61169-1-4:2020-07(en-fr)

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CONTENTS

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RADIO-FREQUENCY CONNECTORS –

Part 1-4: Electrical test methods – Voltage standing wave ratio, return loss and reflection coefficient

FOREWORD

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International Standard IEC 61169-1-4 has been prepared by subcommittee 46F: RF and microwave passive components, of IEC technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
46F/505/FDIS	46F/510/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61169 series, under the general title: *Radio-frequency connectors*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

RADIO-FREQUENCY CONNECTORS –

Part 1-4: Electrical test methods – Voltage standing wave ratio, return loss and reflection coefficient

1 Scope

This part of IEC 61169 provides test methods for the voltage standing wave ratio, return loss and reflection coefficient of RF connectors, including frequency domain method, time domain method, and gating.

This document is applicable to cable RF connectors, microstrip RF connectors and RF adapters. It is also suitable to RF channels in multi-RF channel connectors and hybrid connectors.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61169-1, *Radio frequency connectors – Part 1: Generic specification – General requirements and measuring methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61169-1 and the following definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
reflection coefficient
ratio of the normalized complex wave amplitude of the reflected wave to that of the incident wave at a port or transverse cross-section of a transmission line, expressed as the following:

$$\Gamma = \frac{V_r}{V_i} = \frac{Z_L - Z_0}{Z_L + Z_0} \tag{1}$$

where

Γ is the reflection coefficient in complex number;

V_i is the incident voltage in complex number;

V_r is the reflection voltage in complex number;

Z_0 is the characteristic impedance of a transmission line;

Z_L is the impedance of the termination in complex number.