

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Radio-frequency connectors –  
Part 2: Sectional specification – Radio frequency coaxial connectors of type 9,52**  
(standards.iteh.ai)

**Connecteurs pour fréquences radioélectriques –  
Partie 2: Spécification intermédiaire – Connecteurs coaxiaux pour fréquences  
radioélectriques de type 9,52**





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Part 2: Sectional specification – Radio frequency coaxial connectors of type  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RADIO-FREQUENCY CONNECTORS –****Part 2: Sectional specification –  
Radio frequency coaxial connectors of type 9,52**

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International Standard IEC 61169-2 has been prepared by subcommittee 46F: R.F. and microwave passive components, of IEC technical committee 46: Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories.

This second edition cancels and replaces the first edition published in 2001. It constitutes a technical revision.

The main change introduced in this edition is that the maximum frequency is now 3 GHz.

This bilingual version (2014-01) corresponds to the monolingual English version, published in 2007-02.

The text of this standard is based on the following documents:

FDIS	Report on voting
46F/56/FDIS	46F/66/RVD

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

The French version of this standard has not been voted upon.

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

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

The QC number that appears on the front cover of this publication is the specification number in the IEC Quality Assessment System for Electronic Components (IECQ).

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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## RADIO-FREQUENCY CONNECTORS –

### Part 2: Sectional specification – Radio frequency coaxial connectors of type 9,52

#### 1 Scope

This part of IEC 61169, which is a sectional specification (SS), provides information and rules for the preparation of detail specifications (DS) for RF coaxial connectors of type 9,52.

It describes the interface dimensions for general purpose grade 2 connectors, dimensional details for standard test connectors, grade 0, together with gauging information and the mandatory tests selected from IEC 61169-1, applicable to all DS relating to type 9,52 connectors.

This specification indicates the recommended performance characteristics to be considered when writing a DS and covers test schedules and inspection requirements.

#### 2 Normative references

The following referenced documents are indispensable for the application 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 61169-2:2007](#)

IEC 61169-1:1992, [Radio-frequency connectors – Part 1: Generic specification – General requirements and measuring methods](#)

#### 3 Interface dimensions

##### 3.1 Interface

##### 3.1.1 General

All dimensions are in millimetres.

All undimensioned pictorial configurations are for reference purposes only.

##### 3.1.2 Dimensions

Figures 1, 2 and 3 provide dimensions for sliding connectors, screw coupling connectors and standard test connectors respectively.





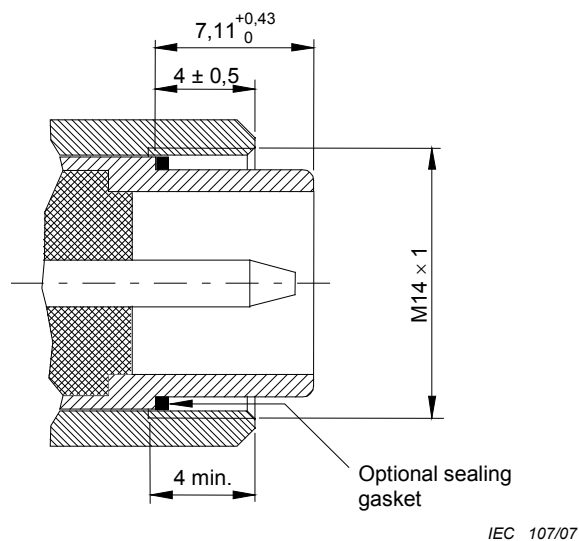


Figure 2a – Screw coupling male connector

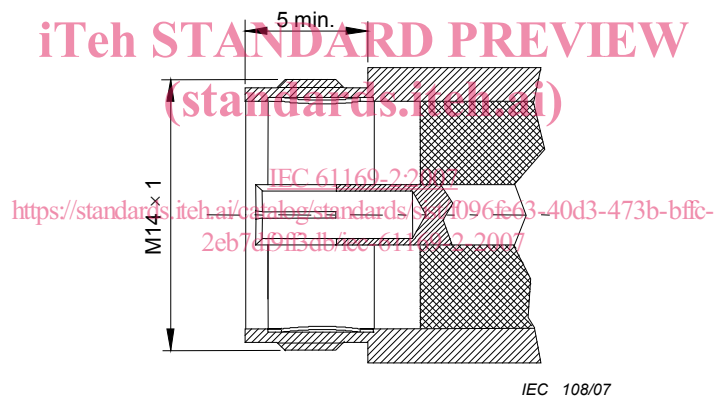
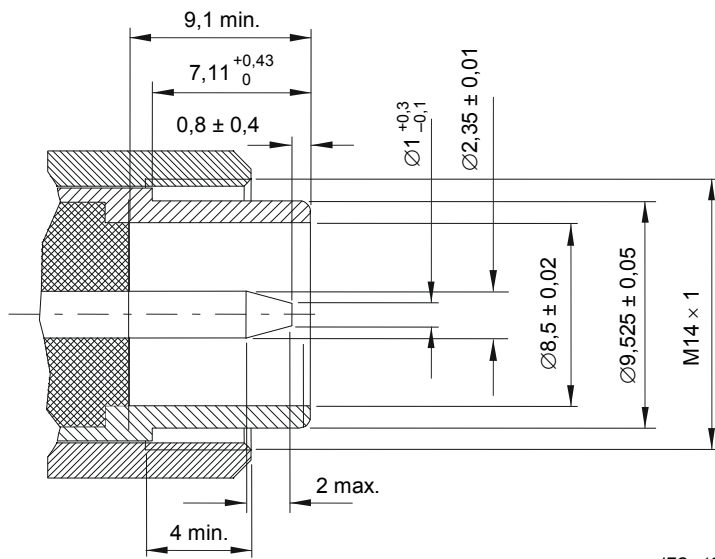


Figure 2b – Screw coupling female connector

Figure 2 – Screw coupling connector

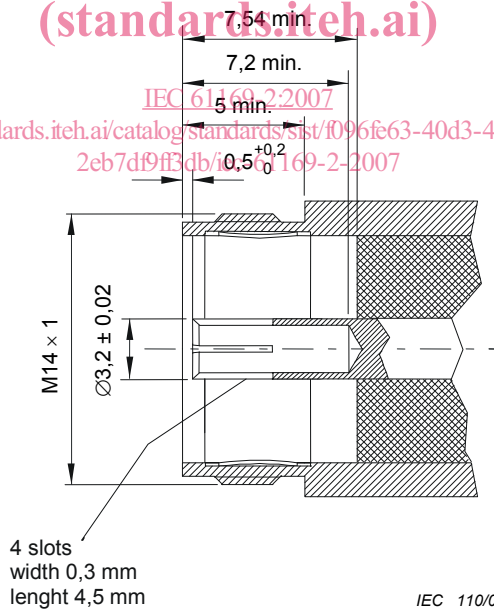


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Figure 3a – Standard test male connector

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IEC 110/07

Figure 3b – Standard test female connector

Figure 3 – Standard test connectors

### 3.2 Mechanical gauges

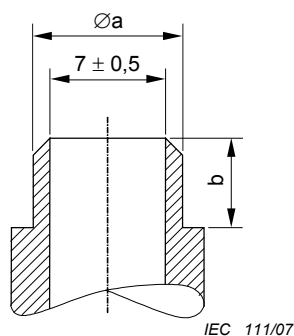
#### 3.2.1 General

All dimensions are in millimetres.

All undimensioned pictorial configurations are for reference purposes only.

#### 3.2.2 Socket connectors – Gauges for the resilient outer contact

Figure 4 illustrates gauge pins for outer contacts of socket connectors.



Surface finish:  $R_a \leq 0,5$

Weight: 5 N

Reference	Gauge A mm		Gauge B mm	
	Min.	Max.	Min.	Max.
$\varnothing a$	9,575	9,585	9,465	9,475
b	5,0	5,2	7,0	7,2

#### Test sequence

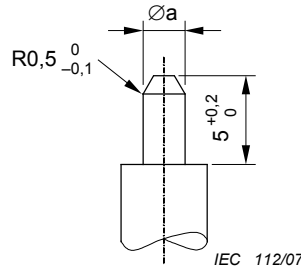
- Steel test pin (A) (Figure 4) shall be inserted at least three times into the outer contact.
- A second steel test pin (B) (Figure 4) shall be inserted into the outer contact.

This gauge, when in a vertical downward attitude, shall be retained by the contact.

**Figure 4 – Gauge pins for outer contact of socket connector**

**3.2.3 Socket connectors – Gauges for the resilient centre contact**

Figure 4 illustrates gauge pins for outer contacts of socket connectors.



Surface finish: Ra <=0,5

Reference	Gauge C		Gauge D	
	mm		mm	
	Min.	Max.	Min.	Max.
Ø a	2,38	2,39	2,29	2,30

Test sequence

- a) Steel test pin (C) (Figure 5) shall be inserted at least three times into the centre contact.
- b) A second steel test pin (D) (Figure 5) shall be inserted into the centre contact.

This gauge, when in a vertical downward attitude, shall be retained by the contact.

This gauge will have a mass (weight) of 0,25 N.

**Figure 5 – Gauge pins for centre contact of socket connector**

**4 Quality assessment procedures**

**4.1 General**

The following subclauses provide recommended ratings, performance and test conditions to be considered when writing a detail specification (DS). They also provide an appropriate schedule of tests with minimum levels of conformance inspection.

**4.2 Ratings and characteristics**

The RF connectors defined in this standard are designed for use with a variety of flexible and semi-rigid coaxial cables and in microwave integrated circuits and similar uncabled applications. Table 1 lists the ratings and characteristics involved.

Table 1 – Ratings and characteristics

Ratings and characteristics	IEC 61169-1 subclause	Value	Remarks including any deviations from standard test methods
<i>Electrical</i>			
Nominal impedance			Shall meet the requirements of 9.2.1.1 of IEC 61169-1 when terminating a $Z_c = 75 \Omega$ cable
Frequency range		0-3 GHz	See DS
Reflection factor	9.2.1		
– straight styles <sup>a</sup>		7% up to 2 GHz 10% up to 3 GHz	
– right angle styles			See DS
– solder bucket and PCB mounting style			Under consideration
Centre contact resistance	9.2.3		
– initial		$\leq 5 \text{ m}\Omega$	
– after conditioning		$\leq 10 \text{ m}\Omega$	
Outer conductor continuity			
– initial		$\leq 2,0 \text{ m}\Omega$	
– after conditioning		$\leq 2,5 \text{ m}\Omega$	
Insulation resistance	9.2.5		
– initial		$> 1 \text{ G}\Omega$	
– after conditioning		$> 1 \text{ M}\Omega$	
Proof voltage at sea level <sup>b c</sup>	9.2.6	750 V	86 kPa - 106 kPa
Screening effectiveness	9.2.8	$a_s \geq 90 \text{ dB}$	$Z_t$
Discharge test (Corona)	9.2.9	na	
<i>Mechanical</i>			
Gauge retention force (resilient contacts)	9.3.4		See 3.2 of IEC 61169-1
Contact captivation	9.3.5		
– axial force		30 N	Captivated contacts only
– torque		na	
Engagement and separation	9.3.6		Screw coupling connectors
Coupling torque			To overcome friction of a coupling nut
– friction		0,066 Nm max.	
– coupling		0,46 Nm to 0,69 Nm	
– proof		1,7 Nm	
Mechanical tests on cable			
– cable pulling	9.3.8	120 N	
– cable torsion	9.3.10	0,1 Nm	
Tensile strength of coupling mechanism	9.3.11	300 N	
Bending moment	9.3.12	2 Nm	Relative to reference plane
<i>Environmental</i>			
Vibration	9.3.3	98 m/s <sup>2</sup> 10 Hz to 500 Hz	10 g acceleration
Climatic sequence	9.4.2	40/70/21	
Sealing	9.4.5	1 cm <sup>3</sup> /h max	100 kPa - 110 kPa pressure
Salt mist	9.4.6	48 h	
<i>Endurance</i>			
Mechanical	9.5	1 000 cycles	
High temperature	9.6	1 000 h	
<sup>a</sup> These values apply to basic connectors. They depend on the cable used. Relevant values are given in the DS.			
<sup>b</sup> Voltage values are r.m.s. values at 50 Hz – 60 Hz, unless otherwise specified.			
<sup>c</sup> Cables used with these connectors may have values of lower performance than those given in this table.			