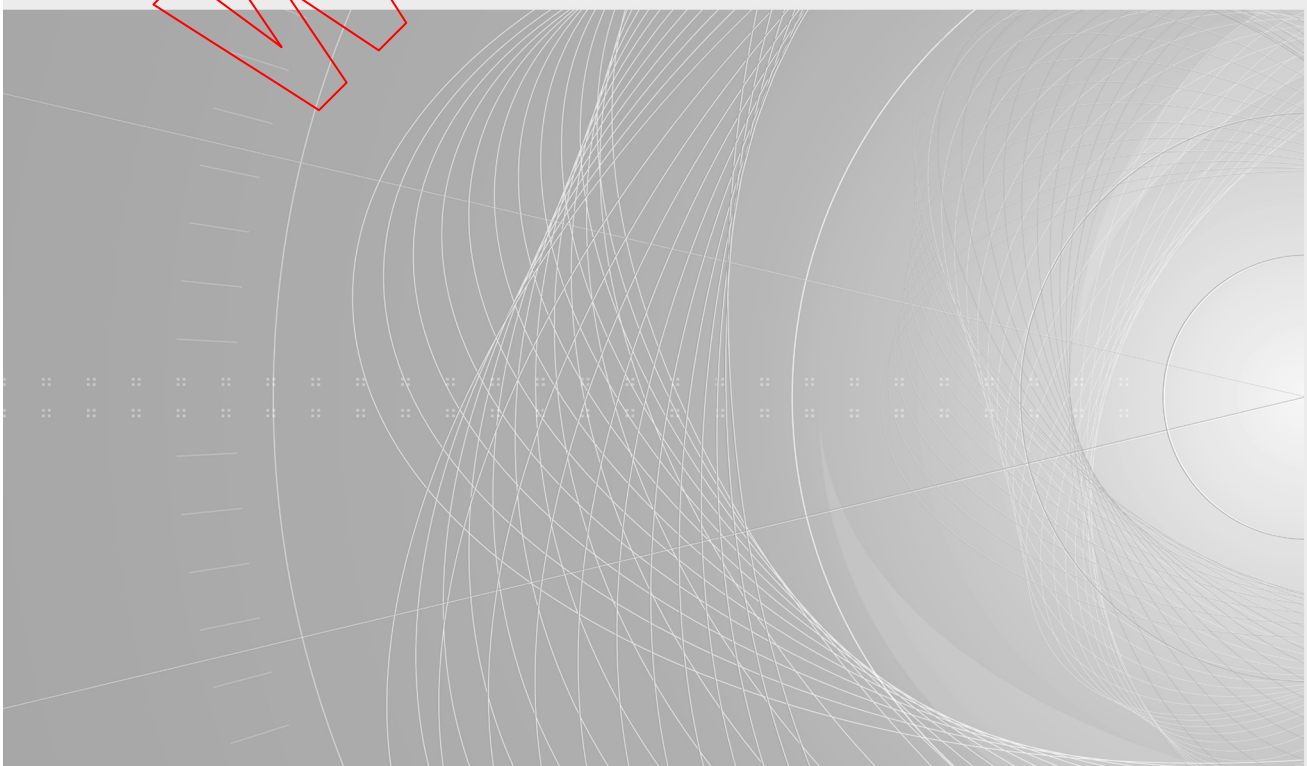
IEC/PAS 61169-18

Edition 1.0 2009-03

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

Radio-frequency connectors –
Part 18: Sectional specification – Radio frequency coaxial connectors of type SSMA



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RADIO-FREQUENCY CONNECTORS –

Part 18: Sectional specification – Radio frequency coaxial connectors of type SSMA

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IEC-PAS 61169-18 has been processed by subcommittee 46F: RF and microwave passive components, of IEC technical committee 46: Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories.

The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document
Draft PAS	**Report on voting**
46F/94/PAS	46F/109/RVD

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RADIO-FREQUENCY CONNECTORS –

Part 18: Sectional specification – Radio frequency coaxial connectors of type SSMA

1 Scope

This PAS is a sectional specification providing information and rules for preparation of detail specification of SSMA series R.F connectors together with the pro forma blank detail specification.

SSMA series connectors with characteristic impedance 50 Ω are used for millimeter wave applications, connecting with RF cables or micro strips. The operating frequency limit is up to 35 GHz. The coupling thread is 10-36 UNS thread.

It also prescribes mating face dimensions for grade 1 high performance connectors, dimensional detail of grade 0 standard test connectors, gauging information and tests selected from IEC 61169-1 applicable to all detail specifications relating to SSMA series RF connectors.

This specification indicates recommended performance characteristics to be considered when writing a detail specification and it covers test schedules and inspection requirements for assessment levels M and H.

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

Amendment 1(1996)
Amendment 2 (1997)

3 Mating face and gauge information

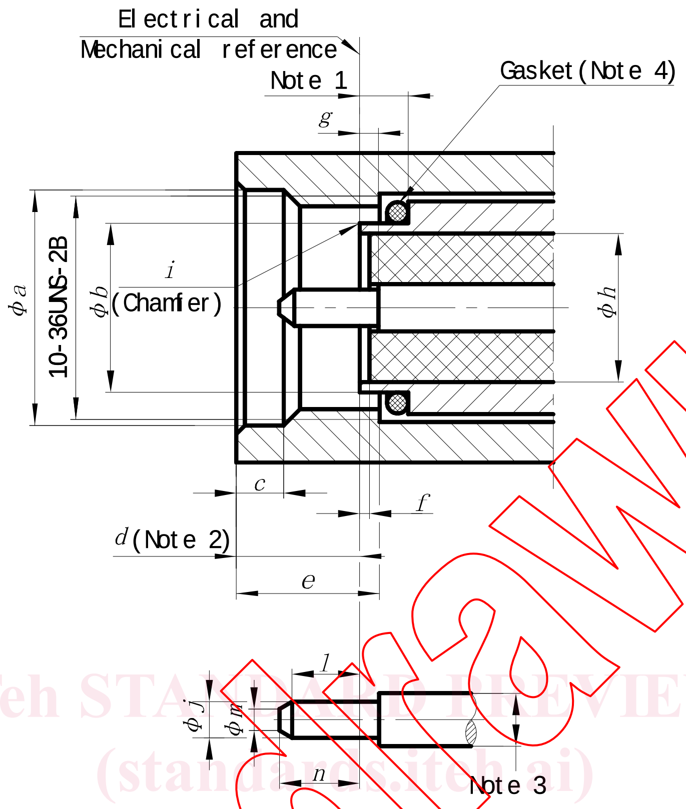
3.1 Dimensions – High performance connectors – Grade1

Inch dimensions are original dimensions.

All undimensioned pictorial configurations are for reference purpose only.

1) There exists a consolidated edition 1.2 (1998) that comprises IEC 61169-1, its Amendment 1 and its Amendment 2.

3.1.1 Connector with pin-centre contact



NOTE For dimensions and notes, see Table 1.

Figure 1 – Connector with pin- centre contact

Table 1 – Dimensions of connector with pin-centre contact

Ref.	mm		in	
	Min.	Max.	Min.	Max.
a	4,98	-	0,196	-
b	3,15	3,22	0,124	0,126 8
c	0,38	1,14	0,015	0,045
d	-	3,43	-	0,135
e	2,54	-	0,100	-
f	0,00	0,18	0,000	0,007
g	0,00	0,25	0,000	0,010
h	2,79 nominal		0,110 nominal	
i	0,08 max × 45° or R0.08 max		0,003 max × 45° or R0.003 max	
j	0,495	0,528	0,019 5	0,020 8
l	1,00	-	0,039	-
m	-	0,25	-	0,010
n	-	1,65	-	0,065

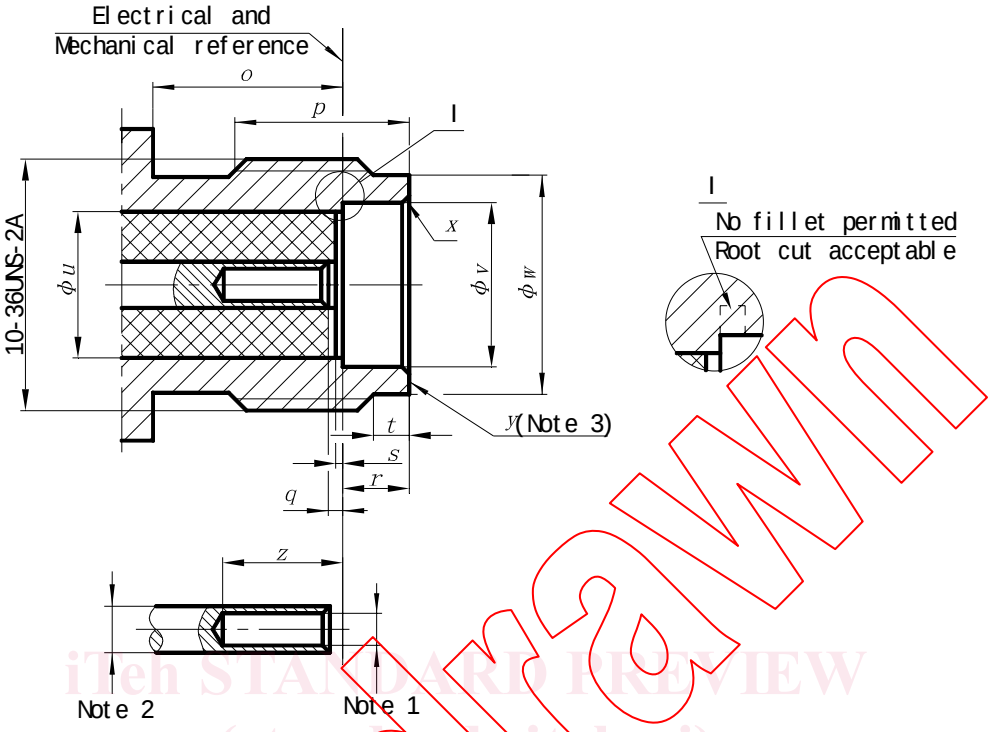
NOTE 1 Dimensions are such that the reference planes coincide and the connectors meet the required environmental performance.

NOTE 2 Dimension for coupling nut to screw forward.

NOTE 3 The diameters are chosen upon the assumption that the PTFE dielectric has a dielectric constant of 2,02 to give an impedance of 50 Ω.

NOTE 4 Gasket should be chosen in grade 1 connector, the design of the gasket is optional.

3.1.2 Connector with socket-centre contact



NOTE For dimensions and notes, see Table 2.

Figure 2 – Connector with socket-centre contact

Table 2 – Dimensions of connector with socket-centre contact

Ref.	mm		in	
	Min.	Max.	Min.	Max.
o	3,91	-	0,154	-
p	4,32	-	0,170	-
q	0,00	0,25	0,000	0,016 0
r	1,88	1,98	0,074	0,078
s	0,00	0,18	0,000	0,007
t	0,38	1,14	0,015	0,045
u	2,79 nominal		0,110 nominal	
v	3,231	3,300	0,127 2	0,130 0
w	3,89	4,06	0,153	0,160
x	45°		45°	
y	0,25	-	0,010	-
z	2,92	-	0,115	-

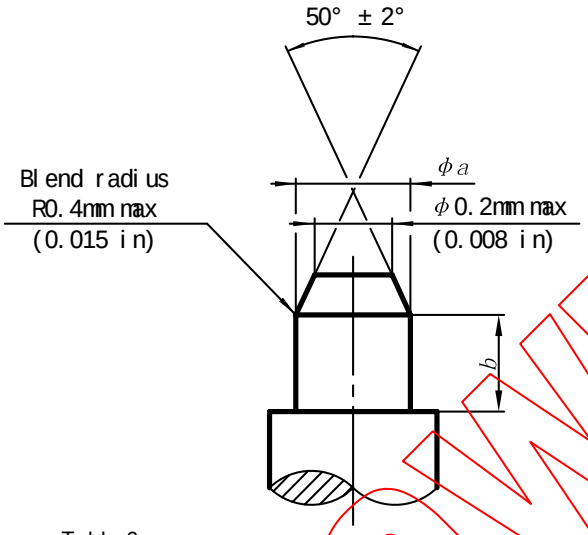
NOTE 1 Resilient contact may be closed or open entry, method of resilience is optional.

NOTE 2 The diameters are chosen upon the assumption that the PTFE dielectric has a dielectric constant of 2,02 to give an impedance of 50 Ω.

NOTE 3 *y* refers to the width of the end surface platform.

3.2 Gauges

3.2.1 Gauge pins for socket-centre contact



NOTE For dimensions and notes, see Table 3.

Figure 3 – Gauge pins for socket-centre contact

Table 3 – Dimensions of gauge pins for socket-centre contact

Ref.	Gauge A Maximum material for sizing purposes				Gauge B Minimum material for measurement of retention force Mass of gauge: 26 g ± 1 g			
	mm		in		mm		in	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
a	0,528	0,533	0,0208	0,0210	0,492	0,495	0,0194	0,0195
b	1,25	1,35	0,0492	0,0531	1,25	1,35	0,0492	0,0531
Material: steel, polished, surface roughness: Ra=0,4 µm (16 µin) maximum.								

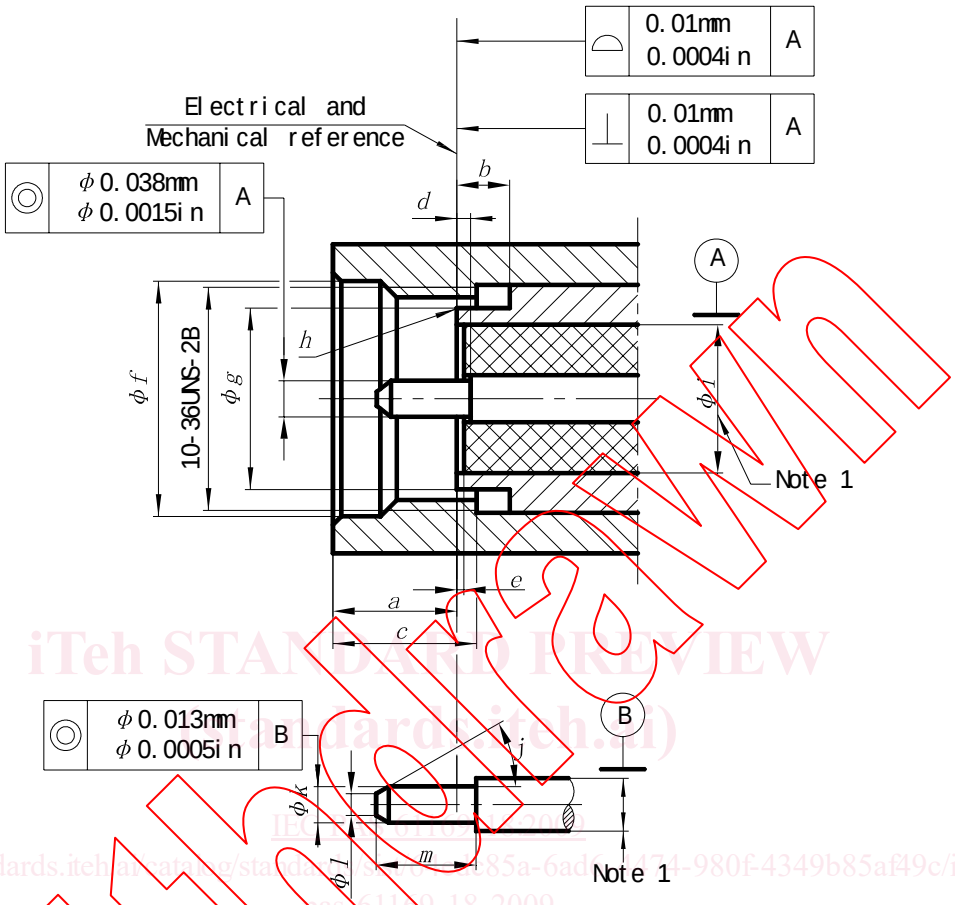
3.2.2 Test procedure

The gauge A shall be inserted into the socket-centre contact three times with a minimum depth of 1,25 mm (0,049 in). This is a sizing operation and should only be carried out when the socket-centre contact is removed from the connector.

After this, the gauge B shall have a withdrawal force of 0,25 N minimum after inserted into socket-centre contact. The contact shall retain the mass of the gauge in a vertical downward position. This test also shall be carried out on connector when the socket-centre contact is not removed.

3.3 Dimensions – Standard test connectors – Grade 0

3.3.1 Connector with pin-centre contact



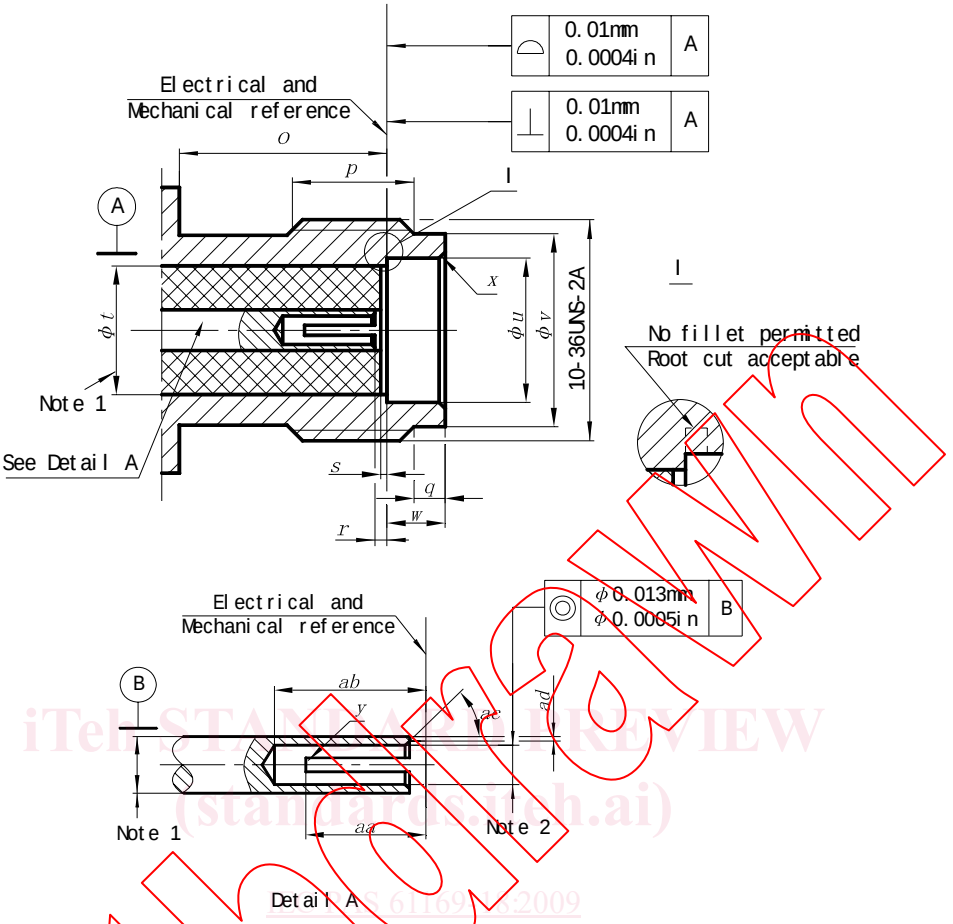
NOTE For dimensions and notes, see Table 4.

Figure 4 – Connector with pin-centre contact

Table 4 – Dimensions of connector with pin-centre contact

Ref.	mm		in	
	Min.	Max.	Min.	Max.
a	2,54	3,40	0,100	0,134
b	2,03	-	0,080	-
c	2,54	4,32	0,100	0,170
d	0,000	0,076	0,000 0	0,003 0
e	0,000	0,050	0,000 0	0,002 0
f	4,98	5,21	0,196	0,205
g	3,17	3,22	0,125	0,127
h	0,08max × 45°or R0.08 max		0,003 max × 45°or 0,003 max	
i	2,79 nominal		0,110 nominal	
j	35°	48°	35°	48°
k	0,495	0,528	0,0195	0,020 8
l	-	0,25	-	0,010
m	1,40	1,65	0,055	0,065
NOTE 1 The diameters are chosen upon the assumption that the PTFE dielectric has a dielectric constant of 2,02 to give an impedance of 50 Ω ± 0,5 Ω.				

3.3.2 Connector with socket-centre contact



NOTE For dimensions and notes, see Table 5.

Figure 5 – Connector with socket-centre contact

Table 5 – Dimensions of connector with socket-centre contact

Ref.	mm		in	
	Min.	Max.	Min.	Max.
o	3,89	-	0,153	-
p	3,81	-	0,150	-
q	0,38	1,14	0,015	0,045
r	0,000	0,076	0,000 0	0,003 0
s	0,000	0,050	0,000 0	0,002 0
t	2,79 nominal		0,110 nominal	
u	3,23	3,28	0,127	0,129
v	3,89	4,04	0,153	0,159
w	1,88	1,98	0,074	0,078
x	0,13 max × 45°		0,005 max × 45°	
y	2 slots - 0,13/0,15 wide		2 slots – 0,005/0,006 wide	
aa	1,52	1,80	0,060	0,071
ab	2,92	3,30	0,115	0,130
ac	42°	48°	42°	48°
ad	0,05	-	0,002	-

NOTE 1 The diameters are chosen upon the assumption that the PTFE dielectric has a dielectric constant of 2,02 to give an impedance of 50 Ω ± 0,5 Ω.

NOTE 2 Design for slotting is optional, and should meet electrical and mechanical requirements, when mating with Ø 0,495 mm to Ø 0,528 mm (Ø 0,0195 in to Ø 0,0208 in) pin.