



**SLOVENSKI STANDARD
SIST EN 122110:1999**

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Sectional Specification: Radio frequency coaxial connectors - Series SMA

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Rahmenspezifikation: Hochfrequenz-Koaxial-Steckverbinder - Serie SMA

Spécification intermédiaire: Connecteurs coaxiaux pour fréquence radioélectrique - Série SMA

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 122110

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Supersedes CECC 22110 Issue 1 : 1982

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Sectional specification: Radio frequency coaxial connectors. Series SMA

Spécification intermédiaire:
Connecteurs coaxiaux pour fréquence
radioélectrique.
Série SMA

Rahmenspezifikation:
Hochfrequenz-Koaxial-Steckverbinder.
Serie SMA

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This European Standard was approved by the CENELEC Electronic Components Committee (CECC) on 7 May 1993. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the General Secretariat of the CECC or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CECC General Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom. The membership of the CECC is identical, with the exception of the national electrotechnical committees of Greece, Iceland and Luxembourg.

CECC

CENELEC Electronic Components Committee
Comité des Composants Electroniques du CENELEC
CENELEC-Komitee für Bauelemente der Elektronik

General Secretariat: Gartenstr. 179, W-6000 Frankfurt/Main 70

Foreword

The CENELEC Electronic Components Committee (CECC) is composed of those member countries of the European Committee for Electrotechnical Standardization (CENELEC) who wish to take part in a harmonized System for electronic components of assessed quality.

The object of the System is to facilitate international trade by the harmonization of the specifications and quality assessment procedures for electronic components, and by the grant of an internationally recognized Mark, or Certificate, of Conformity. The components produced under the System are thereby acceptable in all member countries without further testing.

This European Standard was prepared by CECC WG 22, 'RF Connectors'.

The text of the draft based on document CECC 22110 Issue 1 : 1982 (with A1 to A3) was submitted to the formal vote for conversion to a European Standard; together with the voting report, circulated as document CECC(Secretariat)3338 it was approved by CECC as EN 122110 on 7 May 1993.

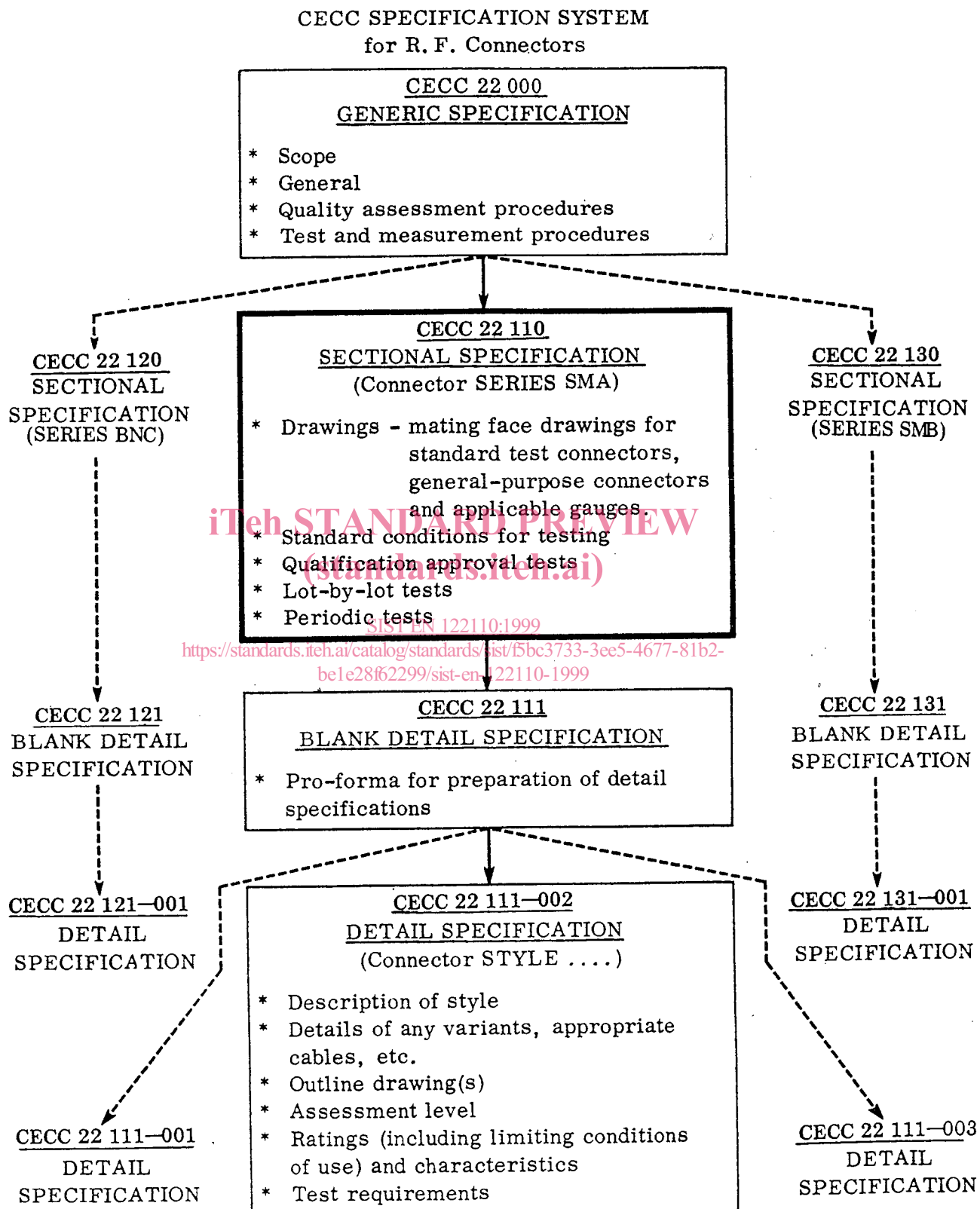
The following dates were fixed:

- latest date of announcement of the EN at national level (doa) 1993-09-03
- latest date of publication of an identical national standard* (dop) 1994-03-03
- latest date of withdrawal of conflicting national standards* (dow) 1995-03-03

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* National standard (excluding national implementation of IECQ specifications)



NOTE: A detail specification is a 'completed' blank detail specification

SECTION 1 - SCOPE

This sectional specification applies to miniature screw-coupled coaxial connectors, Series SMA. It prescribes mating-face dimensions for general purpose connectors and standard test connectors, Grade O, together with gauging information. It also indicates recommended performance characteristics to be considered when writing detail specifications, and covers the test schedules and inspection requirements for Assessment Level M, H and U.

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SECTION 2 – MATING FACE AND GAUGE INFORMATION

2.1. Dimensions – General purpose connectors

Inch dimensions are original dimensions. All undimensioned pictorial configurations are for reference purposes only.

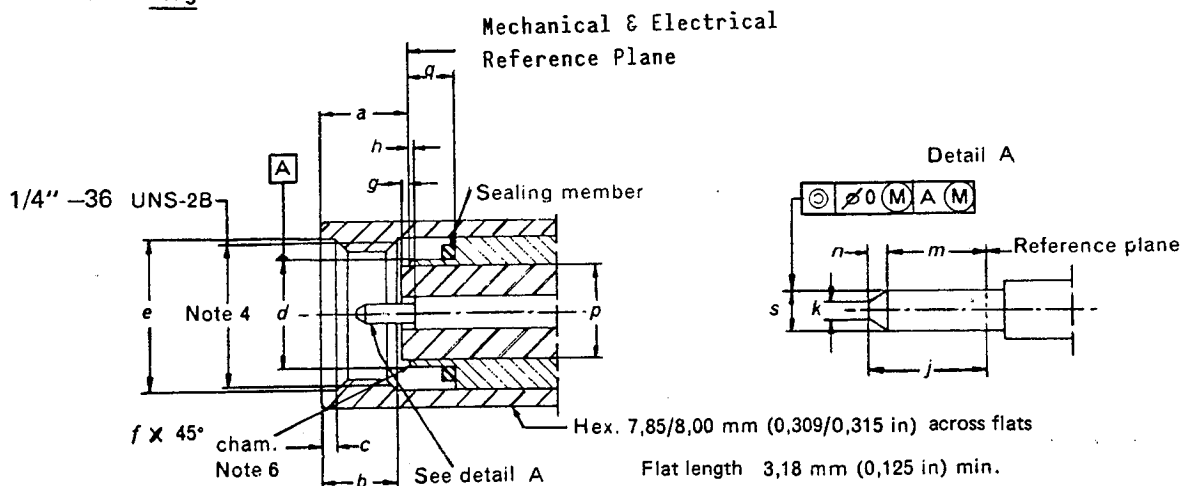
2.1.1. Plug

FIG. 1. – Plug (for dimensions, see table).

Ref.	mm		in		Note
	Min.	Max.	Min.	Max.	
a	—	3,43	—	0,135	3
b	2,54	—	0,100	—	
c	0,38	1,14	0,015	0,045	
d	—	4,59	—	0,1808	diam. 4
e	6,35	—	0,250	—	diam. 4
f	—	0,08	—	0,003	6
g	—	—	—	—	5
h	0,00	—	0,000	—	
j	—	2,54	—	0,100	
k	—	0,38	—	0,015	diam.
m	1,27	—	0,050	—	
n	0,38	—	0,015	—	
p	—	4,178	—	0,1645	diam. 2
q	—	—	—	—	
s	0,902	0,940	0,0355	0,0370	7 diam.

Notes:

- When centre conductor of semi-rigid cable is used to form centre contact, the conductor shall be trimmed to simulate the details shown in Fig 1, Detail A.
- Choose diameter to meet electrical requirements.
Dimension p refers to diameter of the dielectric in the vicinity of the reference plane and may deviate from the value given. When the centre conductor of the cable is used as the contact pin, the inner diameter of the outer conductor becomes dimension p.
- Coupling nut in forward position.
- Diameters d and e and screw thread when at MMC shall be on a common axis.
- When the dielectric is PTFE the maximum projection of the dielectric beyond the reference plane shall be 0,05mm (0,002 in).
- 0,08mm (0,003 in) max. radius optional.
- Dimension q shall be such that the reference planes coincide and the connectors meet the required environmental performance.

2.1.2. Socket

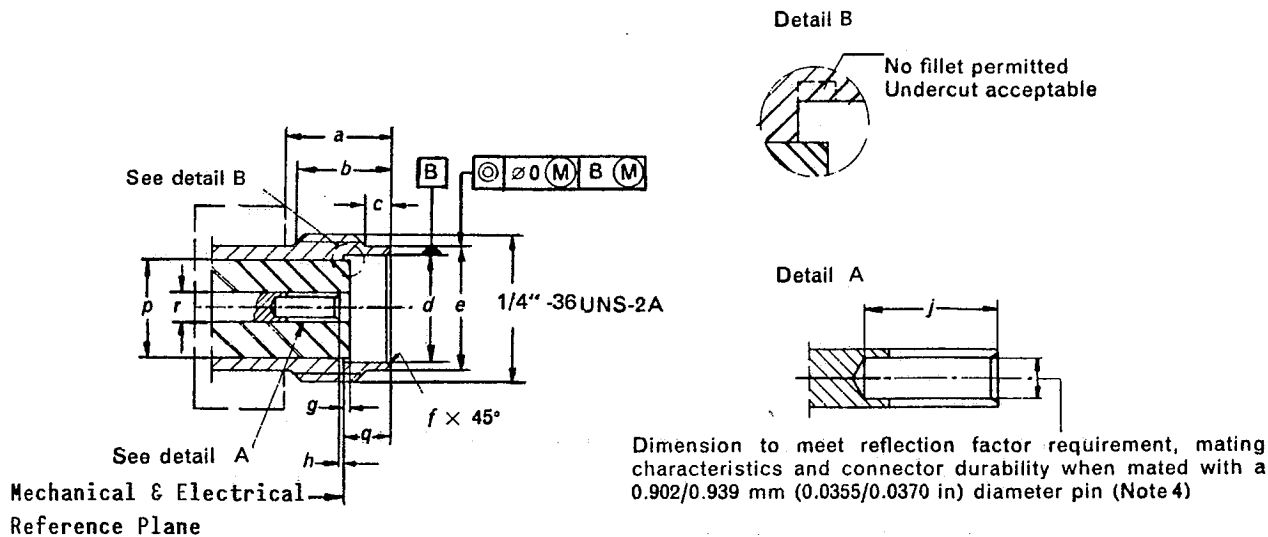


FIG. 2. – Socket (for dimensions, see table).

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Ref.	mm		SIST EN 122110:1999 in		Note
	Min.	Max.	Min.	Max.	
a	5,54	—	0,218	—	1
b	4,32	—	0,170	—	3
c	0,38	1,14	0,015	0,045	
d	4,60	4,67	0,1810	0,184	diam.
e	5,28	5,49	0,208	0,216	diam.
f	0	0,13	0	0,005	
g	—	—	—	—	5
h	0,00	0,41	0,000	0,016	
j	2,92	—	0,115	—	
p	—	4,178	—	0,1645	diam.
q	1,88	1,98	0,074	0,078	
r	1,245	1,295	0,049	0,051	diam. 2

Notes:

1. Minimum dimension to give clearance to coupling nut when fully mated.
2. Choose diameter to meet electrical requirements.
3. Minimum full thread.
4. Bore of centre contact shall be on or capable of taking up a common axis with datum and diameter B when both are at MMC.
5. When the dielectric is PTFE the maximum projection of the dielectric beyond the reference plane shall be 0,05mm (0,002 in).

2.2 Gauges

Inch dimensions are original dimensions. All undimensioned pictorial configurations are for reference purposes only.

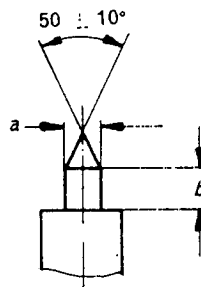
2.2.1 Gauge for female centre contact

FIG. 3. — Gauge pins for centre contact of socket connector.

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Ref.	mm		inch		mm		inch	
	min.	max.	min.	max.	min.	max.	min.	max.
	a	0,9398	0,9449	0,0370	0,0372	0,8992	0,9017	0,0354
b	0,76	1,14	0,0299	0,0449	1,27	1,90	0,0500	0,0748

Gauge A—maximum material, for sizing purposes.

Gauge B—minimum material, for measurement of gauge retention force.
Mass (weight) of gauge: 28 g min.

Material: Steel, polished
surface roughness Ra = 0,4 μm (16 μin) max.

Test procedure (see also 4.5.1. of CECC 22 000)

Gauge A shall be inserted three times into the female centre contact.

This is a sizing operation.

After this Gauge B shall be inserted into the female centre contact.

The contact shall support the mass of the gauge in a vertical downward position.

Note (for information only)

The minimum diameter of Gauge A corresponds to the maximum diameter of a male contact.

2.3. Dimensions — standard test connectors (Grade 0)

(See 4.4.1 of CECC 22 000)

Inch dimensions are original dimensions. All undimensioned pictorial configurations are for reference purposes only.

2.3.1 Test Plug

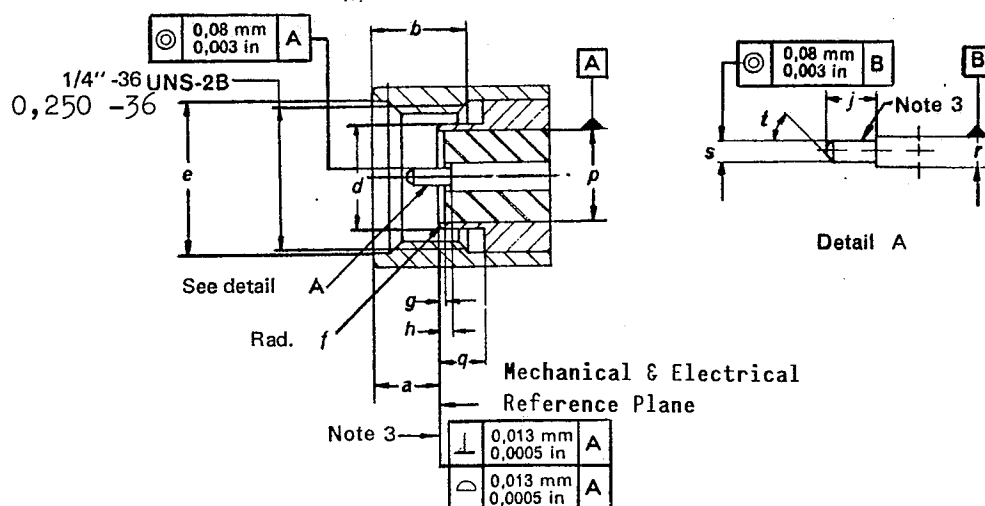


FIGURE 4
Dimensions not included in this table, see 2.1.1
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Ref.	mm		in		Note
	Min.	Max.	Min.	Max.	
a	2,59	3,35	0,102	0,132	2
b	2,54	4,32	0,100	0,170	
d	4,521	4,592	0,1780	0,1808	diam.
e	6,48	6,73	0,255	0,265	diam.
f	—	0,08	—	0,003	4
g	0,00	0,05	0,000	0,002	
h	0,000	0,076	0,000	0,003	
j	2,03	2,29	0,080	0,090	
p	4,10	4,13	0,1615	0,1625	diam.
q	2,03	—	0,080	—	
r		1,27		0,050	diam. nom. 1
s	0,902	0,927	0,0355	0,0365	diam.
t	48°	42°	48°	42°	

Notes:

- Choose to give the required performance $50 \pm 0,5\Omega$. The given nominal diameter in the table is on the assumption of the use of PTFE dielectric having a dielectric constant of 2,02.
- Coupling nut in forward position.
- Surface roughness $1,26 \mu\text{m}$ ($32 \mu\text{in}$).
- $0,08 \text{ mm}$ ($0,003 \text{ in}$) $\times 45^\circ$ chamfer optional.

2.3.2. Test Socket

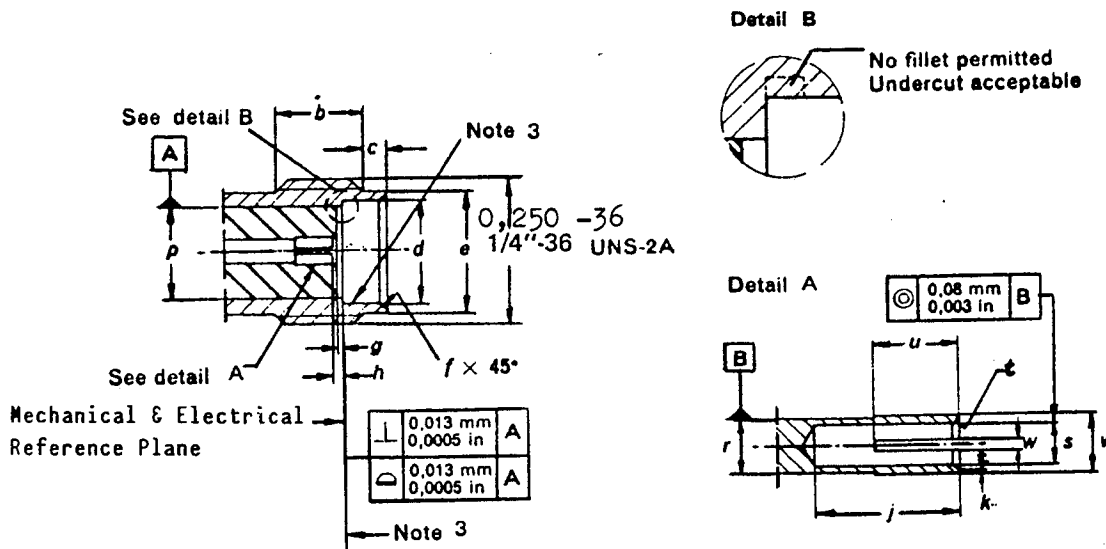


FIGURE 5

Dimensions not included in this table, see 2.1.1

Ref.	mm		in		Note
	Min.	Max.	Min.	Max.	
b	3,81	4,13	0,150	0,1627	diam. diam.
c	0,38	1,14	0,015	0,050	
d	4,597	4,666	0,1810	0,1837	
e	5,283	5,49	0,208	0,216	
f	—	0,25	—	0,010	
g	0,00	0,05	0,000	0,002	
h	0,00	0,076	0,000	0,003	
i	3,05	3,30	0,120	0,130	
j	0,08	—	0,003	—	
k	—	—	—	—	
p	—	4,13	—	0,1627	diam. nom. 1
r	—	1,27	—	0,050	diam. nom. 1
s	0,965	0,99	0,038	0,039	diam.
t	48°	42°	48°	42°	two slots
u	1,65	1,80	0,065	0,071	two slots
v	1,285	1,300	0,0506	0,0512	diam. 2
w	0,20	0,23	0,008	0,009	two slots

Notes:

1. Choose to give the required performance $50 \pm 0,5\Omega$.
The given nominal diameter in the table is on the assumption of the use of PTFE dielectric having a dielectric constant of 2,02.
2. Insert a $0,914 \pm 0,0025$ mm ($0,0360 \pm 0,0001$ in) diameter pin into diameter s in order to check diameter v.
3. Surface roughness $1,26 \mu\text{m}$ (32 μin).

SECTION 3 - PROPERTIES

3.1 Ratings and Characteristics (see 2.3 of CECC 22 000)
(including limiting conditions of use)

The blank detail specification(s) relating to Series SMA connectors shall list the following properties and the specific values shall be entered by the specification writer.

Properties not applicable to a particular connector style shall be marked 'na'. The values indicated below give the recommended requirements and properties.

RATINGS AND CHARACTERISTICS	CECC 22 110 CLAUSE	VALUE	REMARKS
ELECTRICAL			
Frequency range		Up to 12,4 GHz	Grade 2 connectors
- flexible cable		Up to 12,4 GHz	
- semi-rigid cable		Up to 12,4 GHz	
- straight styles		Up to 12,4 GHz	
- right angle styles		Up to 12,4 GHz	
Reflection factor*	4.4.1		
- flexible cable			
- straight styles		$\leq 0,090+0,01f$	
- right angle styles		$\leq 0,090+0,01f$	
- semi-rigid cable			
- straight styles		$\leq 0,034+0,004f$	
- right angle styles		$\leq 0,048+0,004f$	
- component mounting styles		See DS	
- solder bucket + PCB mounting styles		na	
Centre contact resistance	4.4.2		Initial
		$\leq 3,0 \text{ m}\Omega$	After conditioning
		$\leq 8,0 \text{ m}\Omega$	
Outer conductor continuity	4.4.3		Initial
		$\leq 2,5 \text{ m}\Omega$	After conditioning
		$\leq 7,5 \text{ m}\Omega$	
Outer conductor continuity (stainless steel connectors only)	4.4.3		Initial
		12 $\text{m}\Omega$ max.	After conditioning
		17 $\text{m}\Omega$ max.	

For notes see page 12.