

Förderverein für Elektrotechnische Normung (FEN) e. V.
Cenelec Electronic Components Committee

CECC



Système Harmonisé d'Assurance de la Qualité
des Composants Electroniques

SPECIFICATION PARTICULIERE:

**CONNECTEURS COAXIAUX
POUR FREQUENCE
RADIOELECTRIQUE
Série SMA**

Harmonized System of Quality Assessment for
Electronic Components

DETAIL SPECIFICATION:

**RADIO FREQUENCY
COAXIAL CONNECTORS
Series SMA**

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

BAUARTSPEZIFIKATION:

**HOCHFREQUENZ-
KOAXIAL-STECKVERBINDER
Serie SMA**

1

Edition
Issue
Ausgabe

CECC 22111-810

1984



Documents

Document Sharing Hub

ERRATUM

Cette page bleue doit être insérée après la page de garde de la CECC 22 111-810 Edition 1 (1984)

This blue sheet shall be inserted after the title page of CECC 22 111-810 Issue 1 (1984)

Dieses blaue Blatt ist nach dem Titelblatt der CECC 22 111-810 Ausgabe 1 (1984) einzufügen

La modification suivante doit être effectuée à la main à l'Edition 1 (1984) de la CECC 22 111-810:

Page 2 [9] ELECTRIQUES, colonne 2

- Tension de tenue à 20 km d'altitude:
Modifier 4.4.5 pour lire 4.6.5

The following amendment to Issue 1 (1984) of CECC 22 111-810 should be made in manuscript:

Page 2 [9] ELECTRICAL, column 2

- Proof voltage at 20 km altitude:
Amend 4.4.5 to read 4.6.5

In Ausgabe 1 (1984) der CECC 22 111-810 ist folgende Änderung handschriftlich vorzunehmen:

Seite 2 [9] ELEKTRISCH, Spalte 2

- Spannungsfestigkeit in 20 km Höhe:
4.4.5 ist durch 4.6.5 zu ersetzen

CECC 22 111-810 Edition 1
Issue 1 ERRATUM
Ausgabe 1



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PREFACE

This detail specification (DS) was prepared by CECC Working Group 22: 'RF Connectors'.

It relates to Series SMA connectors covered by sectional specification CECC 22 110 and by blank detail specification CECC 22 111. These in turn are related to the generic specification CECC 22 000.

The text of this DS was circulated to the CECC for voting in the documents detailed below and was ratified by the President of the CECC for printing as a CECC specification.

<u>Document</u>	<u>Voting date</u>	<u>Report on the voting</u>
CECC(Secretariat)1298	May 1983	CECC(Secretariat)1425

CECC 22 111-810 Issue 1

[1]	Page 1 of 6	[2] CECC 22 111 - 810	
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH GENERIC SPECIFICATION 22 000 SECTIONAL SPECIFICATION 22 110	[3]	[4]	

[5] DETAIL SPECIFICATION for
RADIO FREQUENCY COAXIAL CONNECTOR OF ASSESSED QUALITY :

SERIES

SMA

Style: Right angle plug for flexible cable.....

Special Features + Markings:

Method of cable/wire attachment:

centre conductor - solder/~~crimp~~

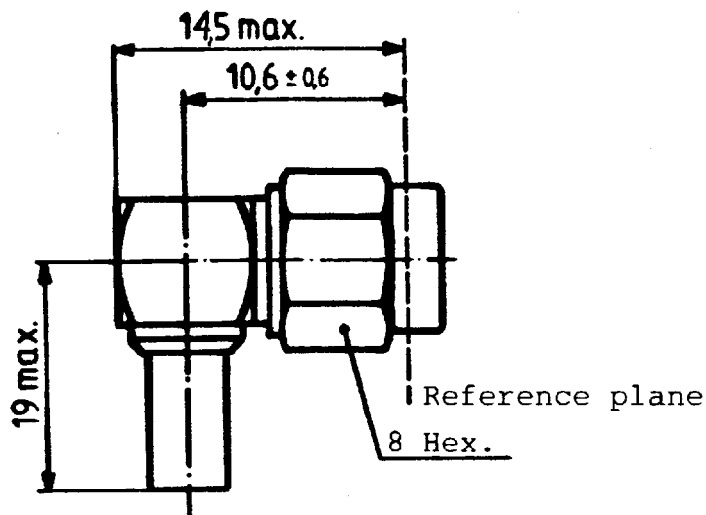
outer conductor - ~~solder/clamp~~/crimp

Mass: ..Var..01+02 = 7 g..... (Max.)
Var. 03+04+05+06 = 8 g

[6] Assessment level .. H .. Characteristic impedance 50 Ω Climatic category: 55 / 155 / 21

[7] Outline and maximum dimensions

Panel piercing and mounting details



Crimp dies and cable stripping dimensions to conform with the instructions supplied by the manufacturer.

For mating interface and position of reference plane see CECC 22 110

Maximum panel thickness: for front mounting ... $\overline{PA}$ mm
for rear mounting ... $\overline{PA}$ mm

The outline dimensions meet the requirements of

[8] Variants

Variant No.	Description of Variant	IEC 96-2	Relevant Cables RG	National Cables (F)
.....-01.....	Connector, Gold.....)	96 IEC 50-2-3	.....	.....
.....-02.....	Connector, Passivated.....)	96 IEC 50-2-2	RG 316/U.....	KX 22A.....
.....-03.....	Stainless Steel.....)	96 IEC 50-2-1	RG 174/U.....	KX 3B.....
.....-04.....	Connector, Gold.....)	96 IEC 50-3-1	RG 58C/U.....	KX 15.....
.....-05.....	Connector, Passivated.....)	96 IEC 50-3-3	.....	.....
.....-06.....	Stainless Steel.....)	96 IEC 50-3-7	.....	.....
.....-07.....	Connector, Gold.....)	.....	RG 400/U.....	KX 23.....
.....-08.....	Connector, Passivated.....)	.....	RG 142B/U.....	.....
.....-09.....	Stainless Steel.....)	.....	.....	.....

Information about manufacturers who have components qualified to this detail specification is available in the current CECC 00 200: Qualified Products List.

[9] PERFORMANCE - (including limiting conditions of use)

RATINGS + CHARACTERISTICS		CECC 22 110 Clause	VALUE	REMARKS
ELECTRICAL				
	Variant No./ Designation			Measurement freq. range
*Reflection factor	-01	4.4.1	VSWR $\leq 1.15 + 0.03 f$	2-12.4 GHz.....
	-02		.....	.....
	-03		.....	.....
	-04		VSWR $\leq 1.15 + 0.02 f$	2-12.4 GHz.....
	-05		.....	.....
	-06		.....	.....
Centre contact resistance	.....	4.4.2	$\leq 3.0 \dots m\Omega$	Initial
Outer conductor continuity	.....	4.4.3	$\leq 8.0 \dots m\Omega$	After conditioning
Insulation resistance	.....	4.4.4	$\leq 2.5 \dots m\Omega$	Initial
	.....		$\leq 7.5 \dots m\Omega$	After conditioning
	.....		$\geq 5 \dots G\Omega$	Initial
	.....		$\geq 200 \dots M\Omega$	After conditioning
+Proof voltage at sea level	-01	4.4.5	0.750...kV	860 to 1060 mbar
	-02		0.750	(86 to 106 kPa)
	-03		1	
	-04		1	
	-05		1	
	-06		1	
+Proof voltage at 20 km altitude	-01	4.6.5	150...V	44 mbar
	-02		150	(4.4 kPa)
	-03		200	
	-04		200	
	-05		200	
	-06		200	
+Working voltage at sea level	-01		350...V	860 to 1060 mbar
	-02		350	(86 to 106 kPa)
	-03		480	
	-04		480	
	-05		480	
	-06		480	
+Working voltage at 20 km altitude	-01		65...V	44 mbar
	-02		65	(4.4 kPa)
	-03		85	
	-04		85	
	-05		85	
	-06		85	
Screening effectiveness	-01	4.4.8	$Z_e \leq 50 \times 10^{-3} \Omega$	Equivalent to 90.. dB
	-02		.....	
	-03		.....	
	-04		.....	
	-05		.....	
	-06		.....	
ADDITIONAL ELECTRICAL CHARACTERISTICS				

* f = Frequency in GHz

+ Voltage values are r.m.s values of a.c. at 50-60 Hz unless otherwise stated.

RATINGS + CHARACTERISTICS		CECC 22 110 Clause	VALUE	REMARKS
MECHANICAL				
Contact captivation		4.5.2	22.....N	CECC 22 000 method (or as specified)
- axial force			...0.028.....Nm	
- torque				
Engagement + separation		4.5.4	...0.25.....Nm max.	(to overcome friction of coupling nut)
- torque				
Effectiveness of clamping device	Variant No./ Designation	4.5.5	90.....N	
against cable pulling	-01	(1)	90.....	
	-02		180.....	
	-03		180.....	
	-04		180.....	
	-05		180.....	
	-06		180.....	
				
				
Effectiveness of clamping device	-01	4.5.5	0.3.....Nm	
against cable torsion	-02	(2)	0.3.....	
	-03		0.4.....	
	-04		0.4.....	
	-05		0.4.....	
	-06		0.4.....	
				
				
Tensile strength of coupling mechanism		4.5.6	180.....N	
Coupling torque			0.8 - 1.1.....Nm	
- normal			1.7.....Nm	
- proof				
Bending moment		4.5.9	na.....Nm	Relative to reference plane
ADDITIONAL MECHANICAL CHARACTERISTICS				
ENVIRONMENTAL				
Bump		4.6.2	...390....m/s ²	(.40.g acceleration)
Vibration		4.6.3	...4000....bumps	(..10.g acceleration)
			...98....m/s ²	
Shock		4.6.4	...10-2000...Hz	(..50.g acceleration)
			...490....m/s ²	
Climatic category		4.6.5	1/2 sine 11 ms	
			55./155/21..	
Sealing (panel + barrier sealed connectors)		4.6.8	na.....	100 to 110 kPa pressure differential (1000 to 1100 mbar)
Sealing (hermetically sealed connectors)		4.6.9	na.....	100 to 110 kPa pressure differential (1000 to 1100 mbar)
ADDITIONAL ENVIRONMENTAL CHARACTERISTICS				
ENDURANCE				
Mechanical		4.7.1	...500...operat.	
High temperature		4.7.2	...1000...h	
			at ...155...°C	
ADDITIONAL ENDURANCE CHARACTERISTICS				

[10] Supplementary Information

- marking of the component : in accordance with 2.4 of CECC 22 000, in the following order or precedence :

i) Component identification	Variant No./ Designation	Identification
	-01	22-111-810-01...
	-02	-02...
	-03	-03...
	-04	-04...
	-05	-05...
	-06	-06...
		
ii) Identity of manufacturer	.....	.....
iii) Manufacturing date code, year/week	.....	.....

- marking and contents of package : in accordance with 2.5 and 2.5.1 of CECC 22 000 as follows :

- i) Information prescribed in 2.4 of CECC 22 0000 detailed above
- ii) Nominal characteristic impedance 50 Ω
- iii) Assessment level code letter H.....
- iv) Any additional marking required

- ordering information : in accordance with 2.6 of CECC 22 000 as follows :

- i) Number of the detail specification CECC 22 111- 810 -xx (No. of variant)
- ii) Assessment level code letter H.....
- iii) Body finish (if more than one listed) see variant numbers in [8]
- iv) Any additional information or special requirements

- related documents :

CECC 22 000	Generic Specification for radio frequency connectors of assessed quality (and related documents, see 2.1 of CECC 22 000)
CECC 22 110	Sectional Specification for r.f. connectors Series SMA

- certified test records (RCE) : In accordance with 3.7 of CECC 22 000 (when applicable) (requirements to be included later)

- structural similarity : In accordance with 3.2 and 3.4 of CECC 22 000.

[11] TEST SCHEDULE AND INSPECTION REQUIREMENTS - SERIES SMA

Details of tests and quality assessment inspection requirements for levels H and U are given in 5.1 of CECC 22 110.

ACCEPTANCE TESTS

GROUP A1

Visual examination

GROUP B1

Outline dimensions

Compatability mechanical

Engagement + separation

Gauge retention force

(resilient contacts)

Sealing (panel + barrier seal)

Sealing (hermetic)

Voltage proof

CECC 22 110 Clause	LEVEL H			
	Test Requir.	I.L.	AQL	Period
4.2	a	S 3	1,5 %	Lot by Lot
4.3.1	a	S 3	4 %	
4.5.7	a	S 3	1,5 %	
4.5.4	a	S 3	1,5 %	
4.5.1	na			
4.6.8	na			
4.6.9	na			
4.4.5	a	S 3	4 %	

PERIODIC TESTS

GROUP C1 (d)

Soldering

Insulation resistance

CECC 22 110 Clause	Test	I.L.	AQL	Period
4.6.1	a			
4.4.4	a	S 3	4 %	1 yearly

GROUP D1 (d)

Mechanical tests on cable
clamping device

Bending moment

Tensile strength of
coupling mechanism

CECC 22 110 Clause	Test Requir.	Specimens (May be from C1)	Permitted Failures † per Group	Period
4.5.5	a	3 mated pairs or sets min.	1	3 yearly
4.5.9	na			
4.5.6	a			

GROUP D2 (d)

Contact resistance

Outer conductor continuity

Bump

Vibration

Shock

Damp heat, steady state

Salt mist

CECC 22 110 Clause	Test Requir.	Specimens (May be from C1)	Permitted Failures † per Group	Period
4.4.2	a	3 mated pairs or sets min.	1	3 yearly
4.4.3	a			
4.6.2	a			
4.6.3	a			
4.6.4	a			
4.6.6	a			
4.6.10	a			

GROUP D3

Dimensions and materials
(piece parts)

Mass

CECC 22 110 Clause	Test Requir.	Specimens (May be from C1)	Permitted Failures † per Group	Period
4.3.2	a	1 set of piece parts each style	1	3 yearly
4.3.1	a			

GROUP D4 (d)

Mechanical endurance

High temperature endurance

CECC 22 110 Clause	Test Requir.	Specimens (May be from C1)	Permitted Failures † per Group	Period
4.7.1	a	3 mated pairs or sets min.	1	3 yearly
4.7.2	a			

GROUP D5 (d)

Reflection factor

Screening effectiveness

CECC 22 110 Clause	Test Requir.	Specimens (May be from C1)	Permitted Failures † per Group	Period
4.4.1	a	3 mated pairs or sets min.	1	3 yearly
4.4.8	a			

GROUP D6 (d)

Contact captivation

Rapid change of temperature

Climatic sequence

CECC 22 110 Clause	Test Requir.	Specimens (May be from C1)	Permitted Failures † per Group	Period
4.5.2	a	3 mated pairs or sets min.	1	3 yearly
4.6.7	a			
4.6.5	a			

PROCEDURES

Quality Conformance Inspection

This shall consist of Test Groups A1 and B1 on a lot-by-lot basis and C1 on a periodic basis.

Qualification Approval and its Maintenance

This shall consist of three consecutive lots passing Test Groups A1 and B1 followed by selection of specimens from lots as appropriate. These specimens shall successfully pass the specified periodic C1 and D tests.

NOTES

I.L. = Inspection Level
AQL = Acceptable Quality Level
a = applicable
† = for Qualification Approval (QA) a total of 2 failures only permitted
(d) = destructive test - specimens shall not be returned to stock
na = not applicable