

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

Radio-frequency connectors –
Part 39: Sectional specification for CQM series quick lock RF connectors

WithNorm.com. Click to view the full PDF of IEC PAS 61169-39:2008



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2008 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland
Email: inmail@iec.ch
Web: www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

- Catalogue of IEC publications: www.iec.ch/searchpub

The IEC on-line Catalogue enables you to search by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, withdrawn and replaced publications.

- IEC Just Published: www.iec.ch/online_news/justpub

Stay up to date on all new IEC publications. Just Published details twice a month all new publications released. Available on-line and also by email.

- Electropedia: www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 20 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary online.

- Customer Service Centre: www.iec.ch/webstore/custserv

If you wish to give us your feedback on this publication or need further assistance, please visit the Customer Service Centre FAQ or contact us:

Email: csc@iec.ch
Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

**Radio-frequency connectors –
Part 39: Sectional specification for CQM series quick lock RF connectors**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE

T

CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative reference	6
3 Mating interface and gauge information	6
3.1 Dimensions – General connectors – Grade 2.....	7
3.1.1 Connector with pin – centre contact.....	7
3.1.2 Connectors with socket-centre contact	8
3.2 Gauges	9
3.2.1 Connectors with socket-centre contact	9
3.3 Dimensions – standard test connectors – Grade 0.....	10
3.3.1 Connector with pin-centre contact.....	10
3.3.2 Connector with socket-centre contact	11
4 Quality assessment procedure.....	12
4.1 General.....	12
4.2 Rating and characteristics (see Clause 6 of IEC 61169-1/QC220000).....	12
4.3 Test schedule and inspection requirements.....	14
4.3.1 Acceptance tests	14
4.3.2 Periodic tests	15
4.4 Procedures.....	16
4.4.1 Quality conformance inspection	16
4.4.2 Qualification approval and its maintenance.....	16
5 Instructions for preparation of detail specifications	16
5.1 General.....	16
5.2 Identification of the detail specification	16
5.3 Identification of the component.....	17
5.4 Performance.....	17
5.5 Marking, ordering information and related matters.....	17
5.6 Selection of tests, test conditions and severities.....	17
5.7 Blank detail specification pro-forma for type CQM connector	18
Bibliography.....	23
Figure 1 – Connector with pin-centre contact (for dimensions, see Table 1).....	7
Figure 2 – Connector with socket-centre contact (for dimensions, see Table 2)	8
Figure 3 – Gauge for outer contact of socket connector (for dimensions, see Table 3).....	9
Figure 4 – Gauge pin for socket contact (for dimensions, see Table 4)	9
Figure 5 – Connector of pin-centre contact (for dimensions, see Table 5)	10
Figure 6 – Standard test connector with socket-centre contact (for dimensions, see Table 6)	11

Table 1 – Dimensions of connector with pin-centre contact	7
Table 2 – Dimensions of connector with socket-centre contact	8
Table 3 – Dimensions of gauge for outer contact of socket connector	9
Table 4 – Dimensions of gauge pin for socket contact	10
Table 5 – Dimensions of connector with pin-centre contact	11
Table 6 – Dimensions of standard test connector with socket-centre contact	12
Table 7 – Ratings and characteristics	13
Table 8 – Acceptance tests	14
Table 9 – Periodic tests	15

IECNORM.COM . Click to view the full PDF of IEC PAS 61169-39:2008

Without2M

INTERNATIONAL ELECTROTECHNICAL COMMISSION

RADIO-FREQUENCY CONNECTORS –**Part 39: Sectional specification for CQM series
quick lock RF connectors**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

A PAS is a technical specification not fulfilling the requirements for a standard, but made available to the public.

IEC-PAS 62269-39 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/80/ PAS	46F/85/ RVD

Following publication of this PAS, which is a pre-standard publication, the technical committee or subcommittee concerned will transform it into an International Standard.

This PAS shall remain valid for an initial maximum period of 3 years starting from the publication date. The validity may be extended for a single 3-year period, following which it shall be revised to become another type of normative document, or shall be withdrawn.

Withdrawn
IECNORM.COM Click to view the full PDF of IEC PAS 61169-39:2008

RADIO-FREQUENCY CONNECTORS –

Part 39: Sectional specification for CQM series quick lock RF connectors

1 Scope

CQM Series quick lock connectors with characteristic impedance 50 Ω are used for high power microwave applications, connecting with RF cables or microstrips. The operating frequency limit is at least 4 GHz.

This PAS is a sectional specification providing information and rules for the preparation of detail specifications for CQM series quick lock RF connectors together with the pro forma blank detail specification.

It also prescribes mating interface dimensions for general purpose connectors, dimensional details of standard test connectors grade 0, gauging information and tests selected from QC 220000 (IEC 61169-1), applicable to all detail specifications relating to CQM series connectors.

This specification indicates the 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 interface and gauge information

All undimensioned pictorial configurations are for reference purposes only.

¹⁾ A consolidated edition 1.2 (1998) exists, that comprises IEC 61169-1 (1992), Amendment 1 and Amendment 2.

3.1 Dimensions – General connectors – Grade 2

3.1.1 Connector with pin – centre contact

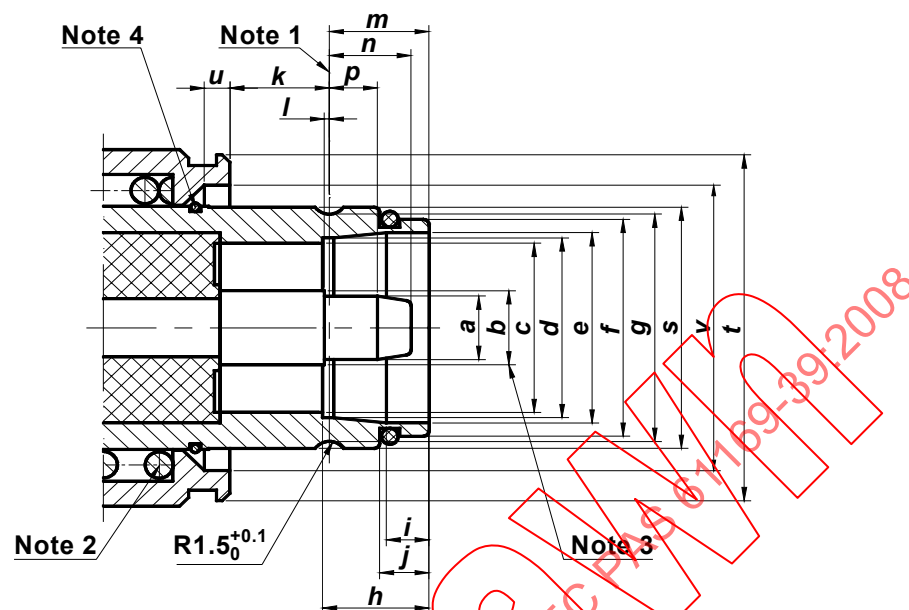


Figure 1 – Connector with pin-centre contact
(for dimensions, see Table 1)

Table 1 – Dimensions of connector with pin-centre contact

Ref.	mm		Notes
a	5,96	6,04	Diameter
b	7 (nominal)		Diameter
c	15,85	16,25	Diameter
d	16,90	17,10	Diameter
e	18,00	18,20	Diameter
f	21,00	21,20	Diameter
g	21,90	22,10	Diameter
h	8,90	9,20	
i	3,70	3,90	
j	4,30	4,50	
k	–	9,80	
l	0,30	0,50	
m	8,80	9,00	
n	7,20	7,40	
s	23,20	23,30	Diameter
t	35,00	35,20	Diameter
p	4,20	4,40	
u	2,10	2,30	
v	26,9	27,2	Diameter

NOTE 1 Mechanical reference plane.
 NOTE 2 The spring force is 50 N to 60 N max.
 NOTE 3 Tolerances of dimensions are to meet the requirements of characteristic impedances.
 NOTE 4 Ring.

3.1.2 Connectors with socket-centre contact

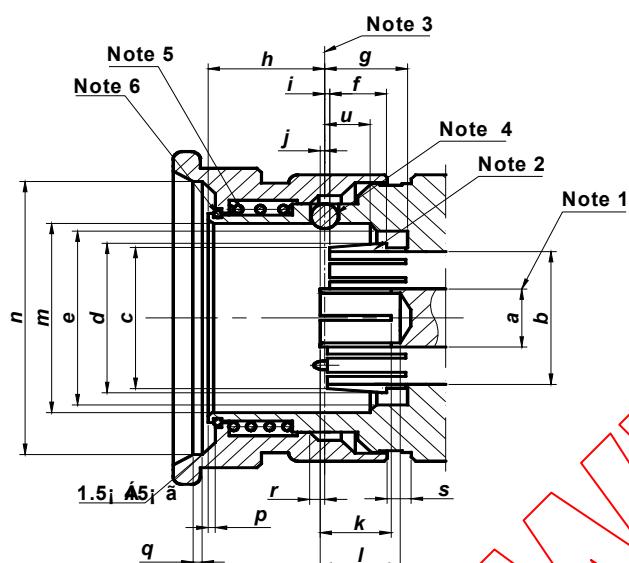


Figure 2 – Connector with socket-centre contact
(for dimensions, see Table 2)

Table 2 – Dimensions of connector with socket-centre contact

Ref.	mm		Notes
	min	max	
a	7 (nominal)		1
b	15,85	16,25	
c	16,70	16,90	
d	17,80	18,00	
e	22,10	22,30	
f	6,30	6,50	
g	9,10	9,30	
h	12,75	12,85	
i	0,20	0,40	
j	–	0,20	
k	7,00	7,50	
l	8,50	9,00	
m	23,60	23,80	
n	35,20	35,40	
p	0,80	1,00	
q	1,10	1,30	
r	1,60	–	
s	2,60	–	
u	4,90	5,20	

NOTE 1 Design for slotting optional, closed contacts should meet electrical and mechanical requirements.

NOTE 2 Design for slotting optional, flared contacts $\varnothing c$ should be flared to $\varnothing 18,4 \sim \varnothing 18,5$.

NOTE 3 Mechanical reference plane.

NOTE 4 Three steel balls, $\varnothing 3$;

NOTE 5 The spring force is 2 N to 6 N, treval is 1,60 mm min.

NOTE 6 Ring.

3.2 Gauges

3.2.1 Connectors with socket-centre contact

3.2.1.1 Gauge for outer contact of socket connector

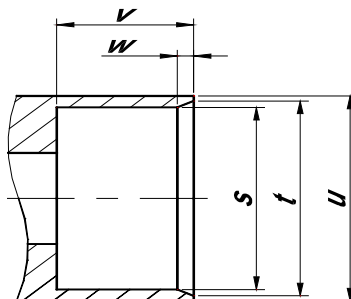


Figure 3 – Gauge for outer contact of socket connector
(for dimensions, see Table 3)

Table 3 – Dimensions of gauge for outer contact of socket connector

Gauge A (for sizing purposes)			Gauge B (for measurement of gauge retention force for outer conductor) Mass (weight) of gauge: 200 g ± 5 g		Notes
Ref.	mm		mm		
	min	max	min	max	
s	18,05	18,10	18,15	18,18	
t	18,70	18,80	18,70	18,80	
u	20,00	20,80	20,00	20,80	
v	9,50	9,60	9,40	9,50	
w	1,30	1,50	1,30	1,50	

NOTE Material: steel, polished, surface roughness: Ra ≤ 0,4 μm.

3.2.1.2 Test sequence

Gauge A shall be placed over the outer contact of the connector once. This is a sizing operation. After this, gauge B shall be placed over the outer contact in a vertical position. The gauge shall be retained. This test can also be carried out on connector.

3.2.1.3 Gauge pin for socket-centre contact

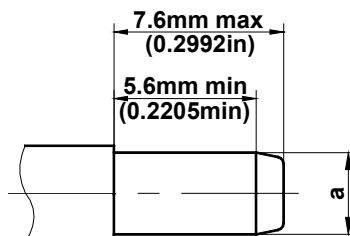


Figure 4 – Gauge pin for socket contact
(for dimensions, see Table 4)

Table 4 – Dimensions of gauge pin for socket contact

Gauge C (for sizing purposes)			Gauge D (for measurement of gauge retention force for centre contact) Mass (weight) of gauge: 600 g ± 5 g	
Ref.	mm		mm	
	min	max	min	max
a	6,05	6,10	5,95	6,00

NOTE Material: steel, polished, surface roughness: $Ra \leq 0,4 \mu m$.

3.2.1.4 Test sequence

Test pin gauge C shall be inserted into the centre contact three times with a minimum depth of 5,6 mm. This is a sizing operation and should only be carried out when the socket centre contact is removed from the connector.

After this, gauge D shall be inserted and held in the vertical position. The gauge shall be retained. This test can also be carried out on connector when the socket centre contact is not removed.

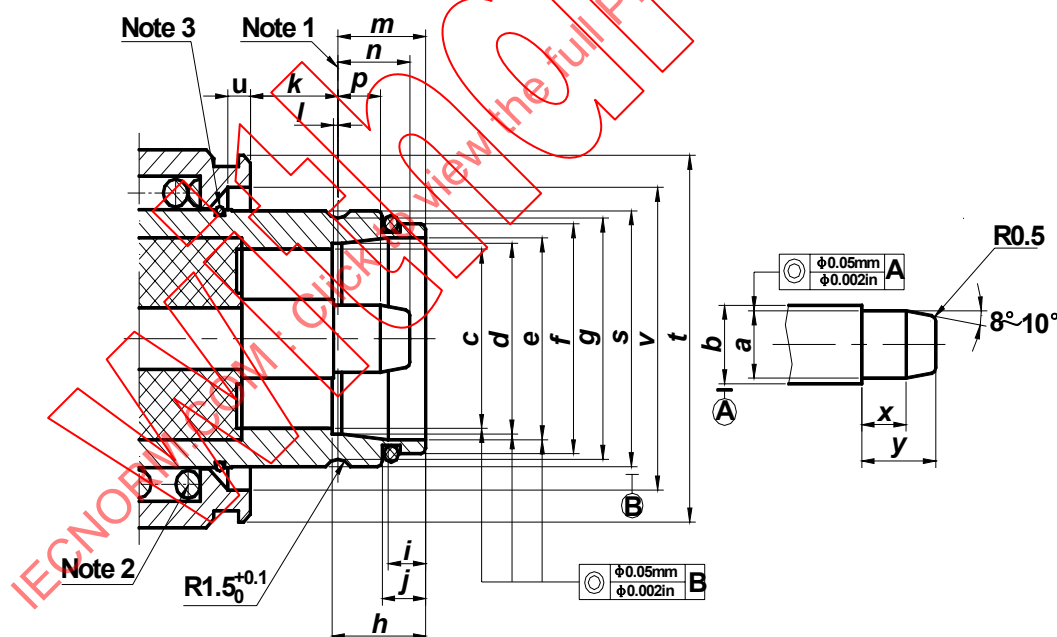
3.3 Dimensions – standard test connectors – Grade 0**3.3.1 Connector with pin-centre contact**

Figure 5 – Connector of pin-centre contact
(for dimensions, see Table 5)

Table 5 – Dimensions of connector with pin-centre contact

Ref.	mm		Notes
	min	max	
<i>a</i>	5,99	6,00	Diameter
<i>b</i>	6,97	6,98	Diameter
<i>c</i>	16,05	16,07	Diameter
<i>d</i>	16,96	17,04	Diameter
<i>e</i>	18,05	18,15	Diameter
<i>f</i>	21,05	21,15	Diameter
<i>g</i>	21,95	22,05	Diameter
<i>h</i>	9,02	9,08	
<i>i</i>	3,77	3,83	
<i>j</i>	4,35	4,45	
<i>k</i>	9,70	9,80	
<i>l</i>	0,30	0,50	
<i>m</i>	8,86	8,94	
<i>n</i>	7,27	7,33	
<i>s</i>	22,20	22,25	Diameter
<i>t</i>	23,04	23,10	Diameter
<i>u</i>	2,15	2,25	
<i>v</i>	27,00	27,10	Diameter
<i>x</i>	4,20	4,40	
<i>y</i>	7,20	7,40	

NOTE 1 Mechanical reference plane.
 NOTE 2 The spring force is 50 N to 60 N.
 NOTE 3 Ring.

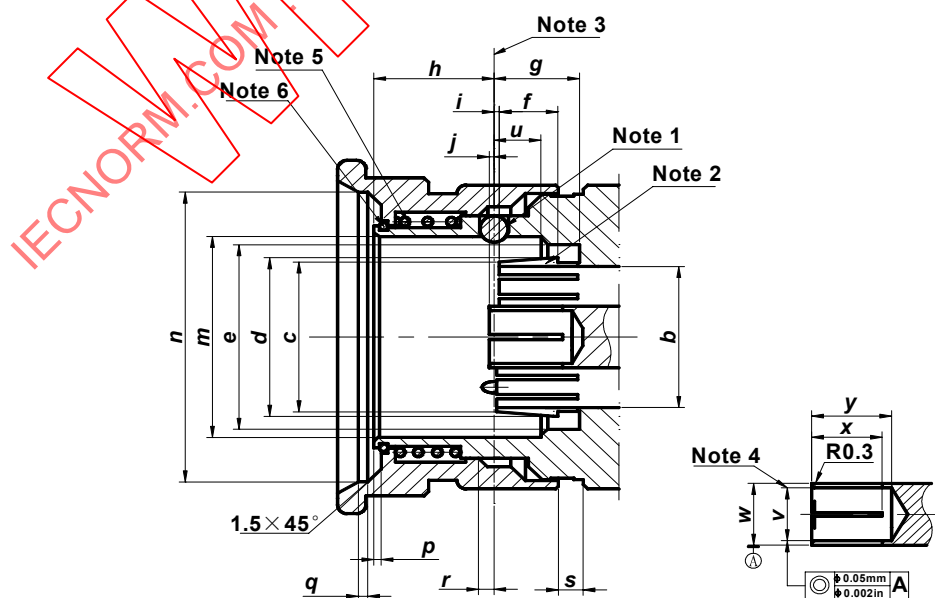
3.3.2 Connector with socket-centre contact**Figure 6 – Standard test connector with socket-centre contact**
(for dimensions, see Table 6)

Table 6 – Dimensions of standard test connector with socket-centre contact

Ref.	mm		Notes
	min	max	
<i>b</i>	16,05	16,07	
<i>c</i>	16,92	16,96	
<i>d</i>	18,01	18,05	
<i>e</i>	22,18	22,25	
<i>f</i>	6,35	6,42	
<i>g</i>	9,18	9,25	
<i>h</i>	12,78	12,81	
<i>i</i>	0,28	0,32	
<i>j</i>	–	0,20	
<i>m</i>	23,68	23,75	
<i>n</i>	35,25	35,35	
<i>p</i>	0,88	0,96	
<i>q</i>	1,06	1,14	
<i>r</i>	1,60	–	
<i>s</i>	2,60	–	
<i>u</i>	4,95	5,05	
<i>w</i>	6,97	7,00	
<i>x</i>	7,00	7,20	
<i>y</i>	8,50	9,00	
NOTE 1 Three steel balls, Ø3.			
NOTE 2 Design for slotting optional, flared contacts Ø <i>c</i> should be flared to Ø 18,40~Ø 18,50.			
NOTE 3 Mechanical reference plane			
NOTE 4 When a gauge pin with diameter of 5,99 mm min 6 mm max is inserted into a depth of 5,00 mm min dimension, <i>v</i> should meet the requirements of dimension <i>w</i> .			
NOTE 5 The spring force is 2 N to 6 N, treval is 1,60 mm min.			
NOTE 6 Ring.			

4 Quality assessment procedure

4.1 General

The following clauses provide recommended rating, performance and test conditions to be considered when writing a detail specification. They also provide an appropriate schedule of tests with minimum levels of conformance inspection sampling, together with the pro forma blank detail specification (BDS) and instructions for the preparation of a detail specification.

4.2 Rating and characteristics (see Clause 6 of IEC 61169-1/QC220000)

The values indicated below (see Table 7) are recommended for CQM series quick lock connectors and are given for the writer of the detail specification. They are applicable for the condition when the connectors are fully mated.

Certain tests are listed without any recommended values being given. These tests will usually not be required. When these tests are required, appropriate values shall be entered in the detail specification at the discretion of the specification writer.

Table 7 – Ratings and characteristics

Ratings and characteristics	IEC 61169-1 Subclause	Value	Remarks including any deviations from standard test methods
<i>Electrical</i>			
Nominal impedance		50 Ω	
Frequency range – Grade 2 connectors		Up to 4 GHz	Or upper frequency limit of the cable
Reflection factor	9.2.1		
– straight styles ¹⁾		$\leq 0,1$	
– right angle styles		As specified in the DS	
– component mounting styles		As specified in the DS	
– solder bucket and PCB mounting styles		As specified in the DS	
Centre contact resistance	9.2.3		
– initial		$\leq 3 \text{ m}\Omega$	
– after conditioning		$\leq 5 \text{ m}\Omega$	
Outer conductor continuity ¹⁾	9.2.3		
– initial		$\leq 3 \text{ m}\Omega$	
– after conditioning		$\leq 5 \text{ m}\Omega$	
Insulation resistance ¹⁾	9.2.5		
– initial		$\geq 5 \text{ G}\Omega$	
– after conditioning		$\geq 500 \text{ M}\Omega$	
Proof voltage at sea level ^{2) 3)}	9.2.6	2 700 V	(86~106 kPa)
Proof voltage at 4,4 kPa ^{2) 3)}	9.2.6	350 V	4,4 kPa approximately equivalent to 20 km
Environmental test voltage at sea level ^{3) 4)}	9.4.6	2 000 V	(86~106 kPa)
Screening effectiveness ⁷⁾	9.2.8	90 dB to 1 GHz	$Z_t \leq 0,02 \text{ m}\Omega$ applied torque 25 Nm
Discharge test (Corona) – at sea level (cable 60096 IEC 50-3)	9.2.9	$\geq 1\,000 \text{ V}$	Extinction voltage
<i>Mechanical</i>			
Centre contact captivation	9.3.5		Maximum displacement 0,25 mm each direction
– axial force		15 N, 1 min	
– torque		N/A ⁶⁾	
Engagement and separation force	9.3.6		
– engagement force		$\leq 150 \text{ N}$	
– separation force		$< 150 \text{ Nm}$	
Gauge retention force (resilient contacts)	9.3.4		s
– centre		$> 6 \text{ N}$	
– outer		$> 2 \text{ N}$	
Mechanical tests on cable fixing	9.3.7		
Cable pulling		See DS	
cable rotation (nutation)		See DS	
Cable bending	9.3.9	See DS	
Cable torsion	9.3.10	See DS	
Tensile strength of coupling mechanism	9.3.11	150 N	
Bending moment (and sharing force)	9.3.12	N/A	
Vibration	9.3.3	100 m/s^2 10 Hz – 500 Hz	10 g_n acceleration
Bump	9.3.13	–	
Shock	9.3.14	750 m/s^2 $\frac{1}{2} \sin 6 \text{ ms}$	75 g_n acceleration

Ratings and characteristics	IEC 61169-1 Subclause	Value	Remarks including any deviations from standard test methods
<i>Environmental</i>			
Climatic category ⁵⁾		55/155/56	
Sealing – non-hermetic	9.4.5.1	1 cm ³ /h max. 100 kPa – 110 kPa differential	
Salt mist	9.4.6	Duration of spraying: 48 h	
<i>Endurance</i>			
Mechanical	9.5	5 000 operations	
High temperature ⁵⁾	9.6	1 000 h at 155 °C	
¹⁾ These values apply to basic connectors. They depend on the cable used. Relevant values are given in the DS. ²⁾ Value for a single pair of mated connector. ³⁾ Voltage values are r.m.s. values at 40 Hz -60 Hz, unless otherwise specified. ⁴⁾ Cables used with these connectors may have values of lower performance than those given in this table. ⁵⁾ For certain connectors the upper temperature limit is restricted by the cable characteristics. Reference should be made to the relevant cable specification. ⁶⁾ N/A= Not applicable. ⁷⁾ When interfaces are fully mated.			

4.3 Test schedule and inspection requirements

4.3.1 Acceptance tests

Acceptance tests are given in Table 8.

Table 8 – Acceptance tests

	Test method IEC 61169-1 Subclause	Assessment level M (higher)				Assessment level H (lower)			
		Test required	IL	AQL %	Period	Test required	IL	AQL %	Period
<i>Group A1</i>									
Visual examination	9.1.2	a	II	1,0		a	S3	1,5	
<i>Group B1</i>									
Outline dimensions	9.1.3.1	a	S4	0,4		a	S3	4,0	
Mechanical compatibility	9.1.3.3	a	II	1,0		a	S3	1,5	
Engagement and separation	9.3.6	a	S4	0,40	Lot	a	S3	1,5	Lot
Gauge retention (resilient contact)	9.3.4	ia	II	1,0		ia	S3	1,5	
Sealing, non-hermetic	9.4.5.1	ia	II	0,65	by	ia	S3	1,0	by
Sealing, hermetic	9.4.5.2	ia	II	0,015		ia	S3	0,025	
Voltage proof	9.2.6	a	S4	0,40	lot	a	II	4,0	lot
Solderability piece parts	9.3.2.1.1	ia	S4	0,40		ia	S3	4,0	
Insulation resistance	9.2.5	a	S4	0,40		a	S3	4,0	

4.3.2 Periodic tests

Periodic tests are given in Table 9. There are no group C tests for levels H and M.

Table 9 – Periodic tests

	Test method IEC 61169-1 subclause	Assessment level M (higher)				Assessment level H (lower)			
		Test required	Number of specimens	Permitted failures per group#	Period	Test required	Number of specimens	Permitted failures per group#	Period
<i>Group D1 (d)</i>			6	1	3 years		3	1	3 years
Solderability connector assemblies	9.3.2.1.1	ia				ia			
Resistance to soldering heat	9.3.2.1.2	ia				ia			
Mechanical tests on cable fixing									
- cable rotation (nutation)	9.3.7.2	na				na			
- cable pulling	9.3.8	ia				ia			
- cable bending	9.3.9	ia				ia			
- cable torsion	9.3.10	ia				ia			
<i>Group D2 (d)</i>			6	1	3 years		3	1	3 years
Contact resistance, outer conductor and screen continuity centre conductor continuity	9.2.3	a				a			
Vibration	9.3.3	a							
Damp heat, steady state	9.4.3	a				a			
<i>Group D3 (d)</i>			1*	1	3 years		1*	1	3 years
Dimensions piece-parts and materials	9.1.3.2	a				a			
<i>Group D4 (d)</i>			6	1	3 years		3	1	3 years
Mechanical endurance	9.5	a				a			
High temperature endurance	9.6	a				a			
Sulphur dioxide	9.4.8	na				na			
<i>Group D5 (d)</i>			6	1	3 years		3	1	3 years
Reflection factor	9.2.1	a				a			
Screening effectiveness	9.2.8	a				a			
Water immersion	9.2.7	ia				ia			
<i>Group D6 (d)</i>			6	1	3 years		3	1	3 years
Contact captivation	9.3.5	a				a			
Rapid change of temperature	9.4.4	na				na			
Climatic sequence	9.4.2	a				a			

	Test method IEC 61169-1 subclause	Assessment level M (higher)				Assessment level H (lower)			
		Test required	Number of specimens	Permitted failures per group#	Period	Test required	Number of specimens	Permitted failures per group#	Period
<i>Group D7 (d)</i> Resistance to solvents and contaminating fluids	9.7	ia	1§		3 years	ia	1§		3 years

Details of symbols, abbreviations and procedures:

a = suggested as applicable

ia = test suggested (if technically applicable)

na = not applicable

IL = inspection level

AQL = acceptable quality level

* = one set of piece-parts each style and variant, unless using common piece parts

= for qualification approval (QA), a total of two failures only permitted for level H, and 1 failure only for level M from groups D1 to D7

§ = Group D7 – number of pairs for each solvent

(d) = destructive tests – specimens shall not be returned to stock

4.4 Procedures

4.4.1 Quality conformance inspection

This shall consist of test groups A1 and B1 on a lot-by-lot basis.

4.4.2 Qualification approval and its maintenance

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

5 Instructions for preparation of detail specifications

5.1 General

Detail specifications (DS) writers shall use the appropriate BDS pro-forma. The following pages comprise the pro-forma BDS dedicated for use with type CQM connectors. As such, it will already have entered on it information relating to

- the basic specification number applicable to all the detail specifications covering connector styles of the type covered by the sectional specification;
- the connector series designation.

The specification writer should enter the details relating to the connector style/variant(s) to be covered as indicated. The numbers in brackets on the BDS pro-forma correspond to the following indications which shall be given.

5.2 Identification of the detail specification

- (1) The name of the national standards organization (NSO) under whose authority the DS is published and, if applicable, the organization from whom the DS is available.

- (2) The relevant mark of conformity and the number allotted to the DS by the relevant national or international organization authorizing the DS.
- (3) The number and issue number of the IEC/IECQ generic or sectional specification as relevant; also national reference if different.
- (4) If different from the IEC/IECQ number, any national number of the DS, date of issue and any further information required by the national system, together with any amendment numbers.

5.3 Identification of the component

- (5) Enter the following details:

Style: The style designation of the connector including type of fixing and sealing, if applicable.

Attachment: By deletion of the inapplicable options of cable/wire: given for centre and outer conductors.

Special features and markings: As applicable.

- (6) Enter details of assessment level and the climatic category.

- (7) A reproduction of the outline drawing and details of the panel piercing, if applicable. It shall provide the maximum envelope dimensions, also the position of the reference plane and, in the case of a fixed connector, the position of the mounting plane(s) relative to the front face of the connector.

Any maximum panel thickness limitations for fixed connectors shall be stated.

- (8) Particulars of all variants covered by the DS. As appropriate, the information shall include:

- cable types (or sizes) applicable to each variant;
- alternative plated or protective finishes;
- details of alternative mounting flanges having either tapped or plain mounting holes;
- details of alternative solder spills or solder buckets including, when applicable, those for use with microwave integrated circuit (MIC) components.

5.4 Performance

- (9) Performance data listing the most important characteristics of the connector taking into account the recommended values of 7.2 in this specification. Deviations from the minimum requirements shall be clearly indicated. Non-applicable parameters shall be marked 'na'.

5.5 Marking, ordering information and related matters

- (10) Insert marking and ordering information as appropriate, together with details of related documents and any invoked structural similarity.

5.6 Selection of tests, test conditions and severities

- (11) 'na' shall be used to indicate non-applicable tests. All tests marked 'a' by the detail specification writer shall be mandatory.

When using the normal procedure with a dedicated BDS, the letter 'a' – for applicable – shall be entered in the 'Test required' column against each of the tests indicated as being mandatory in the test schedule as in 7.3 of this specification. Any additional tests required at the discretion of the specification writer shall also be indicated by an 'a'.

The specification writer shall also indicate, when necessary, details of deviations from the standard test methods and test conditions, including any relevant deviations given in the test schedule of the sectional specification.

The qualification approval and conformance inspection shall be such that the national supervising inspectorate (NSI) shall be satisfied that they are appropriate and in line with those for other connectors within the system providing a reasonably comparable service.

5.7 Blank detail specification pro-forma for type CQM connector

The following pages contain the complete BDS pro-forma.

(1)	Page 1 of		
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH GENERIC SPECIFICATION QC 220000 SECTIONAL SPECIFICATION QC 222XXX NATIONAL REFERENCE		(4) ISSUE	
(5) Detail specification for Radio frequency coaxial connector of assessed quality		type CQM	
Style:.....		Special features and markings	
Method of cable/wire+ attachment		centre conductor – solder/crimp+ outer conductor – solder/clamp/crimp + + delete as appropriate	
(6) Assessment level.....	Characteristic impedance 50 Ω	Climatic category.../.../.../	
(7) Outline and maximum dimensions		Panel piercing and mounting details	
(8) Variants			
Variant No.	Description of variant	60096 IEC	
01.....			
.....			
.....			
.....			
.....			
.....			
.....			
.....			
.....			
Information about manufacturers who have components qualified to this detail specification is available in the current QC 001005 qualified product list.			

(9) Performance (including limiting conditions of use)

Ratings and characteristics	IEC 61169-1 (QC 220000) Subclause	Value	Remarks including any deviations from standard test methods
<i>Electrical</i>			
Nominal impedance		 Ω	
Frequency range		...4 GHz	Measurement frequency range
Reflection factor	9.2.1		
Variant No. Designation 01.....			
Centre contact resistance	9.2.3	$\leq$m Ω $\leq$m Ω	Initial After conditioning
Centre conductor continuity	9.2.3	m Ωm Ωm Ωm Ω	Resistance change due to conditioning
Outer contact continuity	9.2.3	$\leq$m Ω $\leq$m Ω	Initial After conditioning
Insulation resistance	9.2.5	$\geq$G Ω $\geq$G Ω	Initial After conditioning
+ Proof voltage at sea level	9.2.6	kVkVkVkV	86-106 kPa
+ Proof voltage at 4,4 kPa	9.2.6	VVVV	kPa (if not 4,4 kPa)
Environmental test voltage at sea level	9.4.6	V	(86~106 kPa)
Screening effectiveness	9.2.8	dB at....GHz	$Z_1 \leq$ m Ω
Discharge test (corona) at sea level	9.2.9	$\geq$ V $\geq$ V $\geq$ V $\geq$ V	Extinction voltage
ADDITIONAL ELECTRICAL CHARACTERISTICS			
+ Voltage values are r.m.s. values at 50 Hz - 60 Hz, unless otherwise specified.			

Ratings and characteristics	IEC 61169-1 (QC 220000) Subclause	Value	Remarks including any deviations from standard test methods
<i>Mechanical</i>			
Soldering - bit size	9.3.2.1.1		
Gauge retention resilient contacts - inner contact - outer contact	9.3.4.3	NN	For gauging details, see Figure 4 and Table 4, Figure 3 and Table 3 of QC 222100
Centre contact captivation - axial force - permitted displacement each direction - torque	9.3.5	NmmNm	
Engagement and separation - engagement force - separation force	9.3.6	NN	
Strength of coupling mechanism	9.3.11	N	
Effectiveness of cable fixing against			
- cable rotation 01.....	9.3.7	Rotations	Bend radius and number of revolutions
- cable pulling 01.....	9.3.8	N	Point of application and duration
- cable bending 01.....	9.3.9	Cycles	Length of cable mass
- cable torsion 01.....	9.3.10	Nm	Duration of applied torque
Bending moment	9.3.12	Nm	Relative to reference plane
Bumps total	9.3.13	m/s ²to..... Hz	(.....g _n acceleration)
Vibration	9.3.3	m/s ²to..... Hz	(.....g _n acceleration)
Shock	9.3.14	m/s ²Shapems	(.....g _n acceleration)
ADDITIONAL MECHANICAL CHARACTERISTICS			