

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Coaxial communication cables –
Part 9-1: Flexible RF coaxial cables – Blank detail specification
(standards.iteh.ai)

Câbles coaxiaux de communication –
Partie 9-1: Câbles coaxiaux RF souples – Spécification particulière cadre

IEC 61196-9-1:2015
<https://standards.iteh.ai/catalog/standards/siv/7bac7466-cbc-4acd-8072-f1505f6f6ce/iec-61196-9-1-2015>



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COAXIAL COMMUNICATION CABLES –

Part 9-1: Flexible RF coaxial cables – Blank detail specification

FOREWORD

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International Standard IEC 61196-9-1 has been prepared by subcommittee 46A: Coaxial cables, of IEC technical committee 46: Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories.

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

FDIS	Report on voting
46A/1271/FDIS	46A/1284/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.

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

A list of all parts of the IEC 61196 series, under the general title: *Coaxial communication cables*, can be found on the IEC website.

This International Standard is to be used in conjunction with IEC 61196-1:2005 and IEC 61196-9:2014.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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COAXIAL COMMUNICATION CABLES –

Part 9-1: Flexible RF coaxial cables – Blank detail specification

1 Scope

This part of IEC 61196, which is a blank detail specification, applies to RF flexible coaxial communication cables described in IEC 61196-9.

This blank detail specification is to be read in conjunction with IEC 61196-1 and IEC 61196-9. It determines the layout and style for detail specification.

Detail specifications, based on this blank detail specification, may be prepared by a national organization, a manufacturer or a user.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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IEC 60068-2-20:2008, *Environmental testing – Part 2-20: Tests – Test T: Test methods for solderability and resistance to soldering heat of devices with leads*

<https://standards.iteh.ai/catalog/standards/sist/7bac7488-c5c-4acd-8672-61825878/iec-60068-2-20-2008>

IEC 61196-1:2005, *Coaxial communication cables – Part 1: Generic specification – General, definitions and requirements*

IEC 61196-1-314:2006, *Coaxial communication cables – Part 1-314: Mechanical test methods – Test for bending*

IEC 61196-9:2014, *Coaxial communication cables – Part 9: Sectional specification for RF flexible cables*

IEC 62037-1:2012, *Passive RF and microwave devices, intermodulation level measurement – Part 1: General requirements and measuring methods*

NOTE Documents which are needed to achieve the tests according to Clause 4, item [9] or item [10], respectively, are listed in IEC 61196-9.

3 Guidance for the preparation of detail specifications

The detail specification shall be written in accordance with the layout of the blank detail specification, which forms part of this standard.

When a characteristic does not apply, then na (for not applicable) should be entered in the appropriate space.

When a characteristic applies but a specific value is not considered necessary, then ns (for not specified) should be entered in the appropriate space.

The numbers shown in brackets in this and the following pages correspond to the following items of required information, which should be entered in the space provided.

- [1] Name and address of the organization that has prepared the document
- [2] IEC document number and date of issue
- [3] Address of the organization from which the document is available
- [4] Related documents
- [5] Any other references to the cable, national reference, trade name, etc.
- [6] Description of the cable
- [7] Details of the cable construction
- [8] Engineering information of the cable, provided by the manufacturer
- [9] List of the finished cable characteristics. They are separated into electrical, environmental and mechanical characteristics
- [10] Reference to the relevant subclause of the sectional specification IEC 61196-9
- [11] Minimum requirements, the values entered shall meet as a minimum the requirements of sectional specification IEC 61196-9
- [12] Relevant requirements

4 Blank detail specification

<p style="color: red; font-weight: bold; font-size: 1.2em;">iTeh STANDARD PREVIEW (standards.iteh.ai)</p>					
<p>[1] Prepared by:</p>	<p style="text-align: right;">[2] Document No.: Issue: Date:</p>				
<p style="color: red; font-size: 0.8em;">IEC 61196-9-1:2015 https://standards.iteh.ai/catalog/standards/sist/7bac7488-cf5c-4acd-8672-f15058ffce/iec-61196-9-1-2015</p>					
<p>[3] Available from:</p>	<p>[4] IEC 61196-9-1:2015</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Generic specification</td> <td style="text-align: right;">IEC 61196-1</td> </tr> <tr> <td>Sectional specification</td> <td style="text-align: right;">IEC 61196-9</td> </tr> </table>	Generic specification	IEC 61196-1	Sectional specification	IEC 61196-9
Generic specification	IEC 61196-1				
Sectional specification	IEC 61196-9				
<p>[5] Additional references: IEC 62037-4, IEC 62230</p>					
<p>[6] Cable description:</p> <ul style="list-style-type: none"> a) Cable variant b) Inner conductor c) Dielectric d) Outer conductor e) Sheath 					

<p>[7] Cable construction</p> <p>a) Inner conductor</p> <p>Material</p> <p>Diameter (mm) nominal</p> <p>Tolerance (mm): ± ...</p> <p>b) Dielectric</p> <p>Material</p> <p>Diameter (mm) nominal</p> <p>Tolerance (mm): ± ...</p> <p>c) Outer conductor</p> <p>Material</p> <p>Diameter (mm) nominal</p> <p>Tolerance (mm): ± ...</p> <p>Minimum coverage factor of braiding</p> <p>d) Sheath</p> <p>Material</p> <p>Minimum thickness (mm)</p> <p>Diameter (mm)</p> <p>Tolerance (mm): ± ...</p>
<p>[8] Engineering information (reference only)</p> <p>a) Operational temperature range</p> <p>b) Maximum operating frequency</p> <p>c) Installation temperature range</p> <p>d) Storage temperature range</p> <p>e) Nominal characteristic impedance</p> <p>f) Maximum continue working voltage</p> <p>g) Minimum bending radius (static state)</p> <p>h) Minimum bending radius (dynamic state)</p> <p>i) Nominal weight</p> <p>j) Power rating</p>

[9] Parameter	[10] IEC 61196-9:2014 Subclause	[11] Value	[12] Requirements
Electrical characteristics	7.1		
Continuity	7.1.1.1	pass	
Conductor resistance – inner	7.1.1.2	≤ ... Ω/m at 20 °C	
Conductor resistance – outer	7.1.1.3	≤ ... Ω/m at 20 °C	
Insulation resistance	7.1.1.4	≥ ... MΩ·km	≥ 1 000 MΩ·km, according to IEC 61196-9
Withstand voltage of dielectric	7.1.1.5	... kV rms	40 Hz ~ 60 Hz
Withstand voltage of sheath ^a	7.1.1.6	... kV rms	40 Hz ~ 60 Hz
Spark test (in-process inspection) ^a	7.1.1.7	... kV rms	40 Hz ~ 60 Hz
Capacitance	7.1.1.8	≤ ... pF/m	
Inductance	7.1.1.9	≤ ... mH/m	

[9] Parameter	[10] IEC 61196-9:2014 Subclause	[11] Value	[12] Requirements
Mean characteristic impedance	7.1.2.1	... $\Omega \pm \dots \Omega$	200 MHz
Relative propagation velocity (velocity ratio)	7.1.2.2	... % to ... %	200 MHz
Return loss	7.1.2.3	at ... MHz $\geq \dots$ dB	Length of specimen: m If necessary, refer to a table or graph at the end of the detail specification
Attenuation	7.1.2.4	at ... MHz \leq dB/100m at 20 °C	If necessary, refer to a table or graph at the end of the detail specification
Regularity of impedance	7.1.2.5	Test procedure: Regularity ≥ 40 dB Resp $\leq 1\%$	
PIM	7.1.2.6	$\leq \dots$ dBm	$f_1 = \dots$ MHz ^b $f_2 = \dots$ MHz ^b Input power: ... W Only applicable to 50 Ω cable variants
RF power rating	7.1.2.7	W	
Phase variation with temperature	7.1.2.8	Frequency: Phase variation $\leq \dots$ PPM	
Phase stability with mechanic	7.1.2.9	$\leq \dots$ °	according to the detail spec.
Transfer impedance	7.1.2.10	... MHz to ... MHz $\leq \dots$ m Ω /m	
Screening attenuation	7.1.2.11	... MHz to ... MHz $\geq \dots$ dB	
Environmental characteristics	7.2		
Cold bend performance	7.2.1	Test method: Diameter: ... mm Temperature: .. °C Return loss: $\geq \dots$ dB	
Water penetration	7.2.2		When required, in accordance with the relevant detail specification
Climatic sequence	7.2.3	$T_a = \dots$ °C $T_b = \dots$ °C $t_1 = \dots$ h Insulation resistance $\geq \dots$ M $\Omega \cdot$ km	
Environmental stress	7.2.4		Jacket shall show no evidence of cracking
Thermal ageing	7.2.5		Transmission characteristics shall remain within the specified limits

[9] Parameter	[10] IEC 61196-9:2014 Subclause	[11] Value	[12] Requirements
Thermal cycling	7.2.6		Transmission characteristics shall remain within the specified limits
UV stability	7.2.7		
Mechanical characteristics	7.3		
Visual examination	7.3.1	No observable defects	See IEC 61196-9
Dimensional examination	7.3.2		Dimensions according to the detail specification.
Ovality of the dielectric	7.3.3	$\leq \dots\%$	
Ovality of the sheath	7.3.4	$\leq \dots\%$	
Eccentricity of dielectric	7.3.5	$\leq \dots\%$	
Eccentricity of the sheath	7.3.6	$\leq \dots\%$	
Carbon black content	7.3.7		
Adhesion testing	7.3.8	Minimum ... N Maximum ...N Length: (... ± ...) mm	Length = (... ± ...) mm ^c
Bending	7.3.9	Maximum allowable attenuation increase < ... %	IEC 61196-1-314:2006, Clause 5 Bending radius: ... mm; Number of cycles: ...; Mass of the weight: ... kg IEC 61196-1-314:2006, Clause 5 a) Diameter of pulleys A and B: ... mm; b) Number of cycles: ...; c) Mass of the weight: ... kg. Transmission parameters shall be met after test
Tensile strength of cable (longitudinal pull)	7.3.10	$\geq \dots$ N	
Crush resistance of cable	7.3.11	Load= The maximum impedance irregularity: $\leq \dots$ %	The maximum impedance irregularity ≤ 1 % according to IEC 61196-9.
Abrasion resistance	7.3.12	The number of complete cycles >	$L = \dots$ mm Room temperature Mass: (... ± ...) g
Solderability	7.3.13	Dimensional shrinkage $\leq \dots$ mm	IEC 60068-2-20 Test Tb $T = (260 \pm 3) ^\circ\text{C}$, $L = \dots$ mm $t = \dots$ s, $l = \dots$ mm