IEC 60966-4-1

Edition 3.0 2024-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Radio frequency and coaxial cable assemblies –
Part 4-1: Blank detail specification for semi-rigid coaxial cable assemblies

Cordons coaxiaux et cordons pour fréquences radioélectriques –
Partie 4-1 : Spécification particulière-cadre pour cordons coaxiaux semi-rigides

IEC 60966-4-1:2024-03(en-fr)

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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RADIO FREQUENCY AND COAXIAL CABLE ASSEMBLIES –

Part 4-1: Blank detail specification for semi-rigid coaxial cable assemblies

FOREWORD

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IEC 60966-4-1 has been prepared by IEC technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories. It is an International Standard.

This third edition cancels and replaces the second edition published in 2003. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) added Clause 1 "Scope";
b) added Clause 2 "Normative reference";
c) rewrote Clause 4 "Instructions";

d) added "[6] Outline for semi-rigid cable assemblies", "[7] The relative position dimensions of the interface", "[8] Maximum diameter of semi-flexible cable";

e) added "Corona extinction voltage";

f) modified "[19] Value", "[20] Remark".

The text of this International Standard is based on the following documents:

Draft	Report on voting
46/965/FDIS	46/995/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 60966, published under the general title *Radio frequency and coaxial cable assemblies*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn, or
- revised.

RADIO FREQUENCY AND COAXIAL CABLE ASSEMBLIES –

Part 4-1: Blank detail specification for semi-rigid coaxial cable assemblies

1 Scope

This part of IEC 60966 is a blank detail specification that relates to semi-rigid coaxial cable assemblies operating in the transverse electromagnetic mode (TEM).

The creation of a uniform layout and style of detail specifications is determined by the use of a blank detail specification pro forma. The detail specification may be prepared by a national organization, a manufacturer, or a user.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60068 (all parts), *Environmental testing*

IEC 60966-1:2019, *Radio frequency and coaxial cable assemblies – Part 1: Generic specification – General requirements and test methods*

IEC 60966-4:2024, *Radio frequency and coaxial cable assemblies – Part 4: Sectional specification for semi-rigid coaxial cable assemblies*

IEC 61196-1-126, *Coaxial communication cables – Part 1-126: Electrical test methods – Corona extinction voltage*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

4 Instructions

Instructions to complete a blank detail specification detail specifications shall, as far as possible, be written in accordance with the pro forma which has:

a) a front page with a general description and a drawing or isometric sketch of the cable assembly and its possible variants;

b) ratings, characteristics and inspection requirements (those which are not required or specified shall be omitted).

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

[1] Name and address of the organization that has prepared the document.

[2] IEC document number, issue number and date of issue.

[3] Address of the organization from which the document is available.

[4] Related documents.

[5] Any other reference to the cable assembly, national reference, trade name, etc.

[6] A drawing of the cable assembly giving the outline and dimensions in millimeters.

[7] The relative position dimensions of the interface.

[8] Maximum diameter of semi-rigid cable.

[9] Minimum bending inside diameter.

[10] Nominal characteristic impedance of the cable assembly.

[11] Frequency range of use of the cable assembly.

[12] Weight, function of the length of the cable assembly.

[13] Climatic category of the cable assembly related to IEC 60068.

[14] Description, if applicable, of the components used for the manufacture of the cable assembly.

[15] Variants of the cable assembly may be listed in one detail specification. The variants may differ by colour, connector material, connector sex or type. (Inspection for quality conformance will be the same for all variants whereas the ratings and characteristics can change).

[16] Inspection values, ratings or characteristics of the cable assembly. The properties not specified shall be omitted.

[17] Reference to the appropriate subclause in the generic specifications.

[18] The requirements in the sectional specifications.

[19] The value either guaranteed or used for the defined test.

[20] All information required by the sectional specification and any remarks considered as important for understanding the test.

5 Detail specification

RADIO FREQUENCY AND COAXIAL CABLE ASSEMBLIES –

Part 4-1: Blank detail specification for semi-rigid coaxial cable assemblies

[1] Prepared by:		**[2] Document no.:** **Issue:** **Date:**
[3] Available from **IEC**	**[4] Generic specification:** **IEC 60966-1** **Sectional specification:** **IEC 60966-4** **Blank detail specification:** **IEC 60966-4-1**	
[5] Additional references:		
[6] Outline for semi-rigid cable assemblies		
[7] The relative position dimensions of the interface A B One end connector Other end connector NOTE A ——The dimension of the inner conductor relative to the outer conductor B ——The dimension of the dielectric relative to the outer conductor.		
[8] Maximum diameter of semi-rigid cable:	**[9] Minimum bending inside radius** For static bending: For dynamic bending:	
[10] Characteristic impedance: ……Ω	**[11] Frequency range:** ……to……GHz	
[12] Weight: …… g+……g/m	**[13] Climatic category:** ... /.. . /.. .	
[14] Description a) Connector Reference number of the connectors: Type (series), style, sex of the connectors: b) Cable Reference number, type of the cable: c) Marking method: d) Marking text:		
[15] Variants:		

[16]	[17]	[18]	[19]	[20]
Inspection values, ratings or characteristics	**Test method IEC 60966-1:2019**	**Requirement IEC 60966-4:2024**	**Value**	**Remarks**
Electrical				
Reflection properties (Return loss)	8.1	No.1 in Table 3		
Uniformity of impedance	8.2	No.2 in Table 3	50 Ω ± 2 Ω	Rise time of pulse <..... ps
Insertion loss	8.3	No.3 in Table 3	≤.....dB	..... to .....GHz
Propagation time [a]	8.5	No.4 in Table 3	.... .ns±....ns	Frequency or rise time
Phase difference [a]	8.7	No.5 in Table 3	...±....°	Frequency....GHz
Phase variation with temperature [a]	8.8	No.6 in Table 3	...../GHz	..... to ..... K ..... to ..... GHz
Screening effectiveness	8.9	No.7 in Table 3	≤..... dB	..... to ..... MHz
Voltage proof	8.10	No.8 in Table 3	≥..... V	
Insulation resistance	8.11	No.9 in Table 3	≥.....MΩ	Test voltage V
Inner and outer conductor continuity	8.12	No.10 in Table 3	Inner conductor and outer conductor shall be continuous	Test voltage ≤ 36 V DC
Power rating [a]	8.13	No.11 in Table 3	≥. ... .W	Frequency
Intermodulation level measurement [a]	8.14	No.12 in Table 3	≤ dBc	Test power: Test frequency:
Corona extinction voltage [a]	IEC 61196-1-126	No.13 in Table 3	≥.... V	
Mechanical				
Visual inspection	7.2	No.1 in Table 4	Shall meet the requirements of IEC 60966-1:2019, Clause 5 and 7.2	
The relative position dimensions of the interface	7.3.1	No.2 in Table 4	Shall meet the requirement of [7] of the specification	
Outline of the cable assembly	7.3.2	No.3 in Table 4	Shall meet the requirement of [6] of the specification	
Tensile	9.1	No.4 in Table 4	a) No visual damage or loosening of the assembly. b) The relative position dimensions of the interface shall still meet the requirement. c) Return loss ≥.....dB.	Force ..... N Duration ..... s