IEC 60966-2-4

Edition 4.0 2016-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Radio frequency and coaxial cable assemblies – Part 2-4: Detail specification for cable assemblies for radio and TV receivers – Frequency range 0 MHz to 3 000 MHz, IEC 61169-2 connectors

Cordons coaxiaux et cordons pour fréquences radioélectriques – Partie 2-4: Spécification particulière relative aux cordons pour récepteurs de télévision ou radio – Plage de fréquences de 0 MHz à 3 000 MHz, connecteurs IEC 61169-2

IEC 60966-2-4:2016-05(en-fr)

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International Standard IEC 60966-2-4 has been prepared by IEC technical committee 46: Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories.

This fourth edition cancels and replaces the third edition published in 2009 and constitutes a technical revision.

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

a) The return loss requirements and insertion loss requirements are matched to the relevant cables.
b) Screening effectiveness shall be measured according to IEC 62153-4-7, triaxial method.
c) Screening class B was cancelled.

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

FDIS	Report on voting
46/599/FDIS	46/600/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 part of IEC 60966 is to be read in conjunction with IEC 60966-1:1999, IEC 60966-2-1:2008 and IEC 60966-2-2:2003.

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

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

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- withdrawn,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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INTRODUCTION

This part of IEC 60966 is a detail specification which applies to flexible coaxial cables described in the IEC 61196 series. It relates to cable assemblies for radio and TV receivers, and in particular to the cable assemblies subfamily 9,52 (IEC 61169-2). These cable assemblies are used as described in IEC 60728-4.

This part of IEC 60966 gives subfamily requirements and severities which shall be applied.

Under qualification approval, the qualification will be conducted in accordance with 12.2 of IEC 60966-2-1:2008 taking into account the specified variants. Only the tests whose results might depend on the variants will be repeated.

Under capability approval, the qualification will be conducted on the related capability qualifying components (CQCs) as defined in 12.3 of IEC 60966-2-1:2008 and described in the capability manual (CM). Unless otherwise specified in the CM, only lot-by-lot tests from groups Ba and Eb will be conducted on delivered products, all other tests will be performed on CQCs as defined in 12.3 of IEC 60966-2-1:2008 and described in the CM.

Reference documents

IEC 60728-4, *Cable networks for television signals, sound signals and interactive services – Part 4: Passive wideband equipment for coaxial cable networks*

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

IEC 60966-2-1:2008, *Radio frequency and coaxial cable assemblies – Part 2-1: Sectional specification for flexible coaxial cable assemblies*

IEC 60966-2-2:2003, *Radio frequency and coaxial cable assemblies – Part 2-2: Blank detail specification for flexible coaxial cable assemblies*

IEC 61169-2, *Radio-frequency connectors – Part 2: Sectional specification – Radio frequency coaxial connectors of type 9,52*

IEC 61196-6, *Coaxial communication cables – Sectional specification for CATV drop cables*

IEC 62153-4-7, *Metallic communication cable test methods – Part 4-7: Electromagnetic compatibility (EMC) – Test method for measuring the transfer impedance and the screening or the coupling attenuation – Tube in tube method*

RADIO FREQUENCY AND COAXIAL CABLE ASSEMBLIES –

Part 2-4: Detail specification for cable assemblies for radio and TV receivers – Frequency range 0 MHz to 3 000 MHz, IEC 61169-2 connectors

[1] Prepared by: IEC TC 46		**[2]** Document No.: 60966-2-4 Issue: Fourth issue Date:
[3] Available from: IEC 3 rue de Varembé Genève Suisse	**[4]** Generic specification: IEC 60966-1 Sectional specification: IEC 60966-2-1 Blank detail specification: IEC 60966-2-2	

[5] Additional references:

Detail specification for coaxial cable assemblies for radio and TV receivers

NOTE Example diagram, manufacturer to insert actual diagram.

[6] Maximum diameter of connectors: < 16,6 mm

[7] Characteristic impedance: 75 Ω	**[8]** Frequency range: 0 MHz to 3 000 MHz
[9] Weight: 40 g/m + 50 g (typically)	**[10]** Maximum mandrel radius: for static bending: 25 mm for dynamic bending: 75 mm Maximum length: 10 m
[11] Climatic category: 40/70/21	**[12]** Applicable test group: Ba, Eb, Eh, Ee, Mn

	A	B	C	D
[13] Connector type	IEC 61169-2 (9,52) Straight plug	IEC 61169-2 (9,52) Straight socket	IEC 61169-2 (9,52) Right angled plug	IEC 61169-2 (9,52) Right angled socket
Cable type [1]	IEC 61196-6, IEC-75-yy or equivalent	IEC 61196-6, IEC-75-yy or equivalent	IEC 61196-6, IEC-75-yy or equivalent	IEC 61196-6, IEC-75-yy or equivalent
Marking	Marking of the assembly shall be applied to the sheath or jacket of the cable. The marking shall consist at least of the IEC assembly type and the screening class. Example: << IEC 60966-2-4 – Screening class A – 2014 >>			
Taper sleeves:	On both ends (colour optional)			

[14] Variants 1: A-A, 2: A-B, 3: A-C, 4: A-D	**[15]** Page 1 of 3 pages

1 Flexible cables according to the IEC 61196 series.

[16] Inspection values, ratings or characteristics	[17] IEC 60966-1 subclause	[18] Value	[19] Remarks
Electrical			
Reflection properties (return loss)	8.1	> 20 dB > 18 dB > 16 dB	5 MHz to 1 000 MHz > 1 000 MHz to 2 000 MHz > 2 000 MHz to 3 000 MHz
Insertion loss	8.3	< 2×(0,000 1 × *f*) + 0,6 dB/m (*f* in MHz)	up to 3 000 MHz
Screening effectiveness:			
Transfer impedance Class A	IEC 62153-4-7	< 5 mΩ/m	5 MHz to 30 MHz
Screening attenuation Class A	IEC 62153-4-7	> 85 dB > 75 dB > 65 dB	30 MHz to 1 000 MHz > 1 000 MHz to 2 000 MHz > 2 000 MHz to 3 000 MHz
Voltage proof	8.10	1,0 kV min.	50 Hz to 65 Hz peak value
Insulation resistance	8.11	> 10^3 MΩ	Test voltage 500 V
Inner conductor continuity	IEC 61196-1-110	OK	Low voltage DC
Outer conductor continuity	IEC 61196-1-110	OK	After tensile test 9.1
Mechanical			
Tensile	9.1	> 45 N	Interface OK Duration 1 min Test 8.12
Flexure	9.2	50 cycles min.	Force 5 N Screening effectiveness, IEC 62153-4-7
Flexing endurance	9.3	20 cycles min.	Test 8.12 and screening effectiveness, IEC 62153-4-7
Cable assembly crushing	9.4	700 N min.	Test 8.3

Recommended grouping of tests			Recommended severity					
[20] Group	[21] IEC 60966-1 subclause	Test	[22] Periodicity	[23] IL	[24] AQL	[25] *n*	[26] *c*	[27] Length of specimen
Ba	7.2	Visual inspection	lot by lot	S3	4.0			
	7.3	Dimensional inspection	lot by lot	S3	4.0			
Eh	8.1	Reflection properties (return loss)	lot by lot	II	1.0			
	8.3	Insertion loss	lot by lot	II	1.0			
Eb	8.10	Voltage proof	lot by lot	II	1.0			
	8.11	Insulation resistance	lot by lot	II	1.0			
	8.12	Inner and outer conductor continuity	lot by lot	III	1.0			
Ee	8.9	Screening effectiveness	1 year	I		1	0	
		Transfer impedance						
Mn	9.1	Tensile	3 years			3	0	On a CQC variant 1
	9.2	Flexure	3 years					*l* = 300 mm
	9.3	Flexing endurance	3 years					
	9.4	Cable assembly crushing	3 years					