Applicant	
- Company Name	Shandong Hongfeng Electric Group Co., Ltd.
- Company Address	No. 28, Anju Road, Jiaming Economic Development Zone, Liaocheng City, Shandong Province, China
Manufacturer	
- Company Name	Shandong Hongfeng Electric Group Co., Ltd.
- Company Address	No. 28, Anju Road, Jiaming Economic Development Zone, Liaocheng City, Shandong Province, China
Machinery	
- Product Name	Cable Ladder
- Representative Model	HF-S6-T-01A-30020-E8, HF-S6-T-01A-600100-E8
- Serial No.	N/A
- Rating	See below
- Serial Model(s)	See below
Verifying specification	
- standard(s):	IEC 61537:2023
- verification method	Visual Inspection and testing and Measurement and Calculation and Engineer assessment
Possible verdicts	
- does not apply to the EUT	N/A (Not Applicable)
- does meet the requirement	P (Pass)
- does not meet the requirement	F (Fail)
- does not requiring a verdict	"—"
Date and Place of Verifying	
- Verification body	SGS- CSTC Industry Service- Product Certification
- Result of Verification	Compliance with the requirements of above standards.
- Verifying date	25 June, 2024 ~ 02 August, 2024
Reporting	
- Report No.	QDPL2406001066TF-4
- Verified by (+signature)	Clare Lin
- Approved by (+signature)	Stephen Sun
- Date of issue	02 August, 2024
General remarks: The results only respond to the sample, and are invalided as separately used.	

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Test item particulars ..... :	
6.1 According to material ..... :	metallic
6.2 According to resistance to flame propagation ..... :	non-flame propagation
6.3 According to electrical continuity ..... :	electrical continuity
6.4 According to electrical conductivity ..... :	conductive
6.5 According to resistance against corrosion ..... :	stainless steel
6.6 According to temperature. ..... :	
• Minimum temperature for the system component (Tab. 3) ..... :	-5 °C
• Maximum temperature for the system component (Tab. 4) ..... :	+40 °C
6.7 According to perforation in the base area (Tab. 5) :	N/A
6.8 According to the free base area (Tab. 6) ..... :	Y
6.9 According to impact resistance ..... :	N/A
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing ..... :	
Date of receipt of test item ..... :	2024-06-24
Date (s) of performance of tests ..... :	2024-06-25-2024-08-02

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General remarks:

All the tests were performed on sample model HF-S6-T-01A-30020-E8 and HF-S6-T-01A-600100-E8, other serial models have the same material and technology except for length and dimension. Detail information see below table.

Cable ladder (stainless steel) serial model No.:

Model No.	Length (mm)	Width (mm)	Height (mm)	Thickness (mm)	SWL (N/m)
HF-S6-T-01A-5025-E8	3000	50	25	1	78
HF-S6-T-01A-6025-E8	3000	60	25	1	92
HF-S6-T-01A-6040-E8	3000	60	40	1	368
HF-S6-T-01A-6050-E8	3000	60	50	1	708
HF-S6-T-01A-8040-E8	3000	80	40	1	491
HF-S6-T-01A-8050-E8	3000	80	50	1	946
HF-S6-T-01A-8060-E8	3000	80	60	1	1280
HF-S6-T-01A-10050-E8	3000	100	50	1.2	1100
HF-S6-T-01A-10060-E8	3000	100	60	1.2	1350
HF-S6-T-01A-10080-E8	3000	100	80	1.2	1450
HF-S6-T-01A-100100-E8	3000	100	100	1.2	1710
HF-S6-T-01A-15050-E8	3000	150	50	1.5	1180
HF-S6-T-01A-15060-E8	3000	150	60	1.5	1410
HF-S6-T-01A-15080-E8	3000	150	80	1.5	1570
HF-S6-T-01A-150100-E8	3000	150	100	1.5	1820
HF-S6-T-01A-20050-E8	3000	200	50	1.5	1230
HF-S6-T-01A-20060-E8	3000	200	60	1.5	1480
HF-S6-T-01A-20080-E8	3000	200	80	1.5	1680
HF-S6-T-01A-200100-E8	3000	200	100	1.5	1960
HF-S6-T-01A-200150-E8	3000	200	150	1.5	2150
HF-S6-T-01A-25050-E8	3000	250	50	1.5	1290
HF-S6-T-01A-25060-E8	3000	250	60	1.5	1560
HF-S6-T-01A-25080-E8	3000	250	80	1.5	1820
HF-S6-T-01A-250100-E8	3000	250	100	1.5	2090
HF-S6-T-01A-250150-E8	3000	250	150	1.5	2350
HF-S6-T-01A-30050-E8	3000	300	50	1.5	1310
HF-S6-T-01A-30060-E8	3000	300	60	1.5	1650
HF-S6-T-01A-30080-E8	3000	300	80	1.5	1980
HF-S6-T-01A-300100-E8	3000	300	100	1.5	2150
HF-S6-T-01A-300150-E8	3000	300	150	1.5	2460
HF-S6-T-01A-30020-E8	3000	300	200	1.5	2680
HF-S6-T-01A-40050-E8	3000	400	50	2	1380
HF-S6-T-01A-40060-E8	3000	400	60	2	1700
HF-S6-T-01A-40080-E8	3000	400	80	2	2050
HF-S6-T-01A-400100-E8	3000	400	100	2	2260
HF-S6-T-01A-400150-E8	3000	400	150	2	2590
HF-S6-T-01A-400200-E8	3000	400	200	2	2760
HF-S6-T-01A-50060-E8	3000	500	60	2	1810
HF-S6-T-01A-50080-E8	3000	500	80	2	2150
HF-S6-T-01A-500100-E8	3000	500	100	2	2310
HF-S6-T-01A-500150-E8	3000	500	150	2	2650
HF-S6-T-01A-500200-E8	3000	500	200	2	2890
HF-S6-T-01A-60080-E8	3000	600	80	2	2250
HF-S6-T-01A-600100-E8	3000	600	100	2	2680
HF-S6-T-01A-600150-E8	3000	600	150	2	2890
HF-S6-T-01A-600200-E8	3000	600	200	2	3010
HF-S6-T-01A-800100-E8	3000	800	100	2.5	2790
HF-S6-T-01A-800150-E8	3000	800	150	2.5	3080
HF-S6-T-01A-800200-E8	3000	800	200	2.5	3350

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Clause	Requirement + Test	Result - Remark	Verdict
7	**MARKING AND DOCUMENTATION**		**P**
7.1	Marking		P
7.1.1	General		P
	Each system component shall be legibly marked with:		P
	- manufacturer's or responsible vendor's name or trademark or identification mark .....:	Shandong Hongfeng Electric Group Co., Ltd.	P
	- product identification mark .....:		P
	- flame propagating system components shall be marked with a flame propagating symbol		N/A
	- if an earth terminal is supplied, then it shall be marked with the symbol		P
7.1.2	Durability of marking		P
7.1.2.1	General		P
	All markings shall be durable.		P
	Each type of label shall be tested for durability on each type of material. Laser marking directly on the product and marking made by moulding, pressing or engraving are not subjected to this test.		P
7.1.2.2	Test for durability of marking		P
	The sample shall be rubbed by applying a compression force of (5 ± 1) N at a rate of one cycle per second for 15 s by means of the test piston shown in Figure 2.		P
	Rubbing shall commence immediately after soaking the piece of cotton with water.		P
	The sample surface shall then be dried and the test repeated on the same sample using new cotton soaked in n-hexane 95 % solvent.		P
	After the test, the marking shall be legible.		P
7.1.2.3	Test for durability of label adhesion		P
	Under consideration.		P
7.2	Documentation		P
7.2.1	Declared temperatures according to Tab. 2 and 3		P
	Alternative temperature limits .....:		P
7.2.2	All information provided in literature: a), b), c), d), e), f), g), h), i), j), k), l), m), n), o), p), q), r), s)		P

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IEC 61537			
Clause	Requirement + Test	Result - Remark	Verdict
7.3	For PE marking and documentation see Annex C.		P
8	**DIMENSIONS**		**P**
	Information provided by manufacturer:		P
	▪ Overall envelope of the cross-section	See above	P
	▪ Base width	See above	P
	▪ Height	See above	P
	▪ Minimum internal radius of fittings	See above	P
	▪ Dimensions of the perforations and their arrangements	See above	P
	▪ Dimensions of rungs including perforations, if any, and the centre line spacing of the rungs	See above	P
9	**CONSTRUCTION**		**P**
9.1	The same sample may be used for all the tests in this Clause 9.		P
9.2	Surfaces: do not cause damage to the cables		P
9.3	Safe handling ensured when gloves are not prescribed by manufacturer		P
9.4	Connections		P
9.4.1	Screwed connections and other internal fixing devices designed to withstand mechanical stressed		P
	They do not cause damage to the cable		P
	a) ISO metric threads		P
	b) Thread forming type		N/A
	c) Thread cutting type		N/A
	d) Threads other than a) to c)		N/A
9.4.2	Re-usable screwed connections:		P
	▪ 10 times for metal screwed connections in engagement with a thread of non-metallic material and for screwed connections of non-metallic material		N/A
	▪ 5 times in all other cases		P
	Diameter of screw (mm) .....:	8	—
	Torque applied (Nm) .....:	17	—
9.4.3	Reusable mechanical connections other than screwed connections: tightened and removed 10 times		N/A
9.4.4	Non-reusable connections: inspection and manual		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	test, if necessary		
9.5	Any apparatus mounting device met the requirement of the appropriate standard		P
9.6	Cable tray lengths, when perforated: regular perforation pattern over the base area		P
9.7	Cable ladder lengths exhibit a regular rung pattern over the base area		P
10	**MECHANICAL PROPERTIES**		P
10.1	Mechanical strength		P
	SWL declared to be tested:		P
	▪ in N/m for each type of cable tray length or cable ladder length at specified distances, between the support device		P
	▪ in N/m for each type of fitting which is not directly supported		P
	▪ in N or N/m for each type of support device		P
10.2	SWL test procedure		P
	Tests carried out at:		P
	▪ Preferred minimum temperature test		N/A
	▪ Preferred maximum temperature test		N/A
	▪ Alternative test for minimum or maximum temperature		N/A
	▪ or alternative test conditions		P
	Loads uniformly distributed as shown in annex D		P
10.3	Test for SWL in the horizontal plane running horizontally on multiple spans		N/A
	Fixing method to rigid support (if declared):		N/A
	Number fixing-points .....:		—
	torque (Nm) .....:		—
10.3.1	General		N/A
	The practical longitudinal deflection of each span at the SWL shall not exceed 1/100th of the span.		N/A
	The transverse deflection of each span at the SWL shall not exceed 1/20th of the width of the sample.		N/A
	The sample still ensure reliable support to any cable.		N/A
10.3.2	Test type I	See appended table	N/A
	Test type I shall be used when the manufacturer or responsible vendor does not declare any end span		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	length limitations or joint position limitations.		
	The test arrangement shall be as shown in Figure 5.		N/A
10.3.3	Test type II	See appended table	N/A
	Test type II shall be used when the manufacturer or responsible vendor declares that on all installations there shall be no joints in the end span.		N/A
	The test arrangement shall be as shown in Figure 6.		
10.3.4	Test type III	See appended table	N/A
	Test type III shall be used when the standard cable tray length or cable ladder length is equal to the intermediate span or multiples of the intermediate span and the manufacturer or responsible vendor declares the joint position, relative to the support, to be used on all installations.		N/A
	Test type III can also be used when the standard cable tray length or cable ladder length is 1,5 times the span and the position of the joint is at 25 % of the span from the support position a.		N/A
	The test arrangement is shown in Figure 7.		N/A
10.3.5	Test type IV	See appended table	N/A
	Test type IV shall be used for products with localized weakness, see Table 7 for an explanation of when test type IV is required. In this case, the localized weakness is positioned over support "b" as shown in Figure 8.		N/A
10.4	Test for SWL in the horizontal plane running horizontally on a single span installation		P
	Fixing method to rigid support (if declared):		P
	Number fixing-points .....:	2	—
	torque (Nm) .....:		—
	Samples placed as shown in figure 9		P
	The practical longitudinal deflection of each span at the SWL shall not exceed 1/100th of the span.	See appended table	P
	The transverse deflection of each span at the SWL shall not exceed 1/20th of the width of the sample.	See appended table	P
	The sample still ensure reliable support to any cable.	See appended table	P
10.5	Test for SWL in the vertical plane running horizontally		N/A
10.5.1	Multiple span test		N/A
	The test is carried out with samples of cable tray lengths (see Figure 10) or cable ladder lengths (see Figure 11) consisting of two full spans and a		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	cantilever.		
10.5.2	Single span test		N/A
	The test is carried out with samples of cable tray lengths (see Figure 12) or cable ladder lengths (see Figure 13) consisting of a single span.		N/A
10.6	Test for SWL in the vertical plane running vertically		N/A
	The sample is fixed to a rigid construction as shown in Figure 17 a) and Figure 17 b).		N/A
10.7	Test for SWL of fittings mounted in the horizontal plane running horizontally		N/A
10.7.1	General		N/A
	The test is carried out on the largest unsupported 90° bends, equal tees, and equal crosses of each product type to verify the declared SWL when mounted in the horizontal plane running horizontally. Other fittings are not considered.		N/A
10.7.2	Test for SWL of 90° bend		N/A
	Test load Q (N) .....:	See appended table	N/A
	The practical longitudinal deflection at the test load shall not exceed 1/100th of the curved span between supports a and b as indicated in Figure 18.	See appended table	N/A
	The transverse deflection at the test load shall not exceed 1/20th of the width of the samples.	See appended table	N/A
	Samples still ensure reliable support to any cables	See appended table	N/A
10.7.3	Test for SWL of equal tee and equal cross		
	Test load Q (N) .....:	See appended table	N/A
	The practical longitudinal deflection at the test load shall not exceed 1/100th of the span between supports a and b as shown in Figure 19 and Figure 20.	See appended table	N/A
	The transverse deflection at the test load shall not exceed 1/20th of the distance between measuring points r and t as shown in Figure 19 and Figure 20.	See appended table	N/A
	Samples still ensure reliable support to any cables		N/A
10.8	Test for SWL of support devices		N/A
10.8.1	General		N/A
	Where a point load is applied directly to support devices, for example cantilevers, brackets or trapeze systems, then the load shall be applied in accordance with Annex M, Figure M.1.		N/A
10.8.2	Test for SWL of cantilever brackets		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.8.2.1	Test for the SWL of cantilever brackets when used to support cable tray lengths and cable ladder lengths mounted in the horizontal plane		N/A
10.8.2.1.1	General		N/A
	Cantilever brackets declared for use with unspecified systems are tested according to 10.8.2.1.2, 10.8.2.1.3 and 10.8.2.1.4.		N/A
	Cantilever brackets declared for use with specified systems are tested according to 10.8.2.1.5 and 10.8.2.1.6.		N/A
10.8.2.1.2	Cantilever brackets declared for use with unspecified cable tray systems only		N/A
10.8.2.1.2.1	Cable tray width of at least 80 % and not exceeding 100 % of the useable length of the cantilever bracket		N/A
	The load shall be applied directly to the cantilever bracket and distributed over its full length according to Table D.1 and Figure D.1 of Annex D where dimension W is replaced by the length L of the bracket, as shown in Figure 22.		N/A
10.8.2.1.2.2	Cable tray width less than 80 % of the useable length of the cantilever bracket.		N/A
	A single point load shall be directly applied not more than 20 mm from the free end of the cantilever bracket as shown in Figure 23.		N/A
	An alternative for positioning the load on both sides of the cantilever bracket is shown in Figure 30.		N/A
10.8.2.1.3	Cantilever brackets declared for use with unspecified cable ladder systems only		N/A
10.8.2.1.3.1	Cable ladder with an external width of at least 80 % and not exceeding 100 % of the useable length of the cantilever bracket		N/A
	Two point loads shall be directly applied to the cantilever bracket as shown in Figure 24 with one of the load points being not more than 20 mm from the free end of the cantilever bracket.		N/A
10.8.2.1.3.2	Cable ladder with an external width less than 80 % of the useable length of the cantilever bracket		N/A
	A single point load shall be directly applied not more than 20 mm from the free end of the cantilever bracket as shown in Figure 23.		N/A
	An alternative for positioning the load on both sides of the cantilever bracket is shown in Figure 30.		N/A
10.8.2.1.4	Cantilever brackets declared for use with both unspecified cable tray and unspecified cable ladder systems		N/A
	Cantilever brackets declared for use with both unspecified cable tray systems and unspecified cable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	ladder systems shall be tested in accordance with 10.8.2.1.3.		
10.8.2.1.5	Cantilever brackets declared for use with specified cable tray systems		N/A
	Cantilever brackets intended for use with specified cable tray systems are tested as shown in Figure 25.		N/A
10.8.2.1.6	Cantilever brackets declared for use with specified cable ladder systems		N/A
	Cantilever brackets intended for use with specified cable ladder systems are tested as shown in Figure 27.		N/A
10.8.2.2	Test for the SWL of cantilever brackets when used to support cable tray lengths and cable ladder lengths mounted vertically running vertically		N/A
10.8.2.2.1	General		N/A
	Cantilever brackets declared for use with unspecified systems are tested according to 10.8.2.2.2, 10.8.2.2.3 and 10.8.2.2.4 and those declared for use with specified systems are tested according to 10.8.2.2.5 and 10.8.2.2.6.		N/A
10.8.2.2.2	Cantilever brackets declared for use with unspecified cable tray systems only		N/A
	cantilever brackets declared for use with unspecified cable tray systems utilising a cable tray width of at least 80 % and not exceeding 100 % of the useable length of the cantilever bracket.		N/A
	cantilever brackets declared for use with unspecified cable tray systems utilising a cable tray width less than 80 % of the useable length of the cantilever bracket.		N/A
10.8.2.2.3	Cantilever brackets declared for use with unspecified cable ladder systems only		N/A
	Cantilever brackets declared for use with unspecified cable ladder systems utilising a cable ladder with an external width of at least 80 % and not exceeding 100 % of the useable length of the cantilever bracket.		N/A
	Cantilever brackets declared for use with unspecified cable ladder systems utilising a cable ladder width less than 80 % of the useable length of the cantilever bracket.		N/A
10.8.2.2.4	Cantilever brackets declared for use with both unspecified cable tray systems and unspecified cable ladder systems		N/A
	Cantilever brackets declared for use with both unspecified cable tray systems and unspecified cable ladder systems shall be tested in accordance with 10.8.2.2.3		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.8.2.2.5	Cantilever brackets declared for use with specified cable tray systems		N/A
	Cantilever brackets intended for use with specified cable tray systems are tested as shown in Figure 34.		N/A
10.8.2.2.6	Cantilever brackets declared for use with specified cable ladder systems		N/A
	Cantilever brackets intended for use with specified cable ladder systems are tested as shown in Figure 35.		N/A
10.8.3	Test for SWL of pendants, ceiling mounted		N/A
10.8.3.1	Pendants for cantilever brackets		N/A
10.8.3.1.1	General		N/A
	The test set-up for pendants is shown in Figure 36.		N/A
	The maximum deflection at the SWL shall not exceed 1/20th of the length L of the pendant.		N/A
10.8.3.1.2	Test for bending moment of the pendant at the ceiling plate		N/A
	Test set-up as shown in figure 36 a)		N/A
	SWL declared as a bending moment M_1 (Nm)	See appended table	N/A
	Force F = M_1 / L (N)	See appended table	N/A
	Maximum deflection at the SWL does not exceed 1/20th of the length L of the pendant	See appended table	N/A
10.8.3.1.3	Test for pendant tensile strength		N/A
	Test set-up as shown in figure 36 b)		N/A
	SWL declared as a force F (N)	See appended table	N/A
	Maximum deflection at the SWL does not exceed 1/20th of the length L of the pendant	See appended table	N/A
10.8.3.1.4	Test for the bending moment of the pendant at the cantilever bracket		N/A
	Test set-up as shown in figure 36 c)		N/A
	SWL declared as a bending moment M_2 (Nm)	See appended table	N/A
	Force F = 2 M_2 / (A1 + A2) (N)	See appended table	N/A
	Maximum deflection at the SWL does not exceed 1/20th of the length L of the pendant	See appended table	N/A
10.8.3.2	Test for SWL of the centrally supported bracket		N/A
10.8.3.2.1	General		N/A
	Centrally supported brackets which are intended for use with specified systems which are: – unevenly loaded are detailed in 10.8.3.2.2,		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	– evenly loaded are detailed in 10.8.3.2.3.		
	Centrally supported brackets which are intended for use with unspecified systems which are: – unevenly loaded are detailed in 10.8.3.2.4, – evenly loaded are detailed in 10.8.3.2.5.		N/A
10.8.3.2.2	Test for the centrally supported bracket intended for use with a specified cable tray or cable ladder system, with uneven loading		N/A
	Centrally supported brackets intended for use with specified cable ladder systems are tested as shown in Figure 37.		N/A
	Centrally supported brackets intended for use with specified cable tray systems are tested as shown in Figure 38.		N/A
10.8.3.2.3	Test for the centrally supported bracket intended for use with a specified cable tray or cable ladder system, with even loading		N/A
	Centrally supported brackets intended for use with specified cable ladder systems are tested as shown in Figure 37.		N/A
	Centrally supported brackets intended for use with specified cable tray systems are tested as shown in Figure 38.		N/A
10.8.3.2.4	Test for the centrally supported bracket intended for use with unspecified cable tray or cable ladder system, with uneven loading		N/A
	Centrally supported brackets intended for use with unspecified cable ladder systems or for both cable tray and cable ladder systems are tested as shown in Figure 42 a).		N/A
	Centrally supported brackets intended for unspecified cable tray systems only are tested as shown in Figure 42 b).		N/A
10.8.3.2.5	Test for the centrally supported bracket intended for use with unspecified cable tray or cable ladder system, with even loading		N/A
	Centrally supported brackets intended for use with unspecified cable ladder systems or both cable ladder and cable tray systems are tested as shown in Figure 44 a) but the load shall be applied not more than 20 mm from the free end of the bracket.		N/A
	Centrally supported brackets intended for use with unspecified cable tray systems only are tested as shown in Figure 44 b).		N/A
10.8.3.3	Test for SWL of C shape ceiling supports		N/A
	The test set-up for C shape ceiling supports is shown in Figure 45.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.8.3.4	Test for SWL of the trapeze system or trapeze support only		N/A
10.8.3.4.1	General		N/A
	Each product type shall be capable of withstanding the loads as declared by the manufacturer.		N/A
10.8.3.4.2	Test for supporting cable ladder only		N/A
	A trapeze system is fixed to a rigid structure in accordance with the manufacturer's instructions. The SWL is checked by applying a UDL as shown in Figure 47.		N/A
10.8.3.4.3	Test for supporting cable tray or both cable tray and cable ladder		N/A
	A trapeze system is fixed to a rigid structure in accordance with the manufacturer's instructions. The SWL is checked by applying a UDL as shown in Figure 47.		N/A
10.8.3.4.4	Alternative test for supporting cable tray and/or cable ladder		N/A
	This test is an alternative to the tests of 1 0.8.3.4.2 and 10.8.3.4.3 because it represents the worst-case condition.		N/A
	A trapeze system is fixed to a rigid structure in accordance with the manufacturer's instructions. The SWL is checked by applying a single point load as shown in Figure 48.		N/A
10.9	Test for impact resistance		N/A
	The test is carried out on non-metallic or composite lengths of cable tray or lengths of cable ladder only. Metallic systems are not considered for this test.		N/A
	Impact test according to IEC 60068-2-75 (sample length 250 mm ± 5 mm): impacts given in table 9 applied as shown in figure 49.		N/A
	Non-metallic and composite components aged at 60 °C ± 2 C° for 168 h		N/A
	Samples placed for 2 h at the declared temperature ± 2 C° .....:		N/A
	Impact resistance (J) .....:		N/A
	Mass of hammer (kg) .....:		N/A
	Fall height (mm) .....:		N/A
	After the test: no signs of disintegration and/or deformation that impairs safety		N/A
11	**ELECTRICAL PROPERTIES**		P
11.1	Electrical continuity		P
11.1.1	General		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Cable tray systems and cable ladder systems declared according to 6.3.2 or 6.3.3 shall have adequate electrical continuity		P
11.1.2	Electrical impedance tests		P
11.1.2.1	General		P
	Test current equal to 25 A ± 1 A having a frequency of 50 to 60 Hz		P
11.1.2.2	Impedance of the length of cable tray, cable ladder or mesh cable tray		P
	The impedance per metre shall not exceed 50mΩ.	12mΩ	P
11.1.2.3	Impedance of the width of cable tray, cable ladder or mesh cable tray		P
	The impedance shall not exceed 50mΩ.	10mΩ	P
11.1.2.4	Impedance of a joint		P
	The impedance shall not exceed 50mΩ.	12mΩ	P
11.1.2.5	Impedance of the connection of the earthing terminal or termination		P
	The impedance shall not exceed 50mΩ.	11mΩ	P
11.1.2.6	Impedance of the connection between a cover and a cable tray length or cable ladder length		P
	The impedance shall not exceed 50mΩ.	15mΩ	P
11.1.2.7	Impedance of the connection between a fitting and a cable tray length or cable ladder length		N/A
	Under consideration.		N/A
11.2	Electrical non-conductivity		N/A
11.2.1	General		N/A
	Cable tray system components and cable ladder system components declared according to 6.4.2 shall be deemed electrically non-conductive if they have surface resistivity values of 100MΩ or greater.		N/A
11.2.2	Preparation of samples		N/A
	For cable tray systems, prepare plate samples having a width of (25 ± 0,5) mm and a length of (50 ± 2) mm.		N/A
	For cable ladder systems, prepare plate samples from the side rail having a width of (25 ± 0,5) mm and a length of (50 ± 2) mm.		N/A
11.2.3	Preparation of electrodes		N/A
	The two electrodes made of a suitable conductive material not subjected to corrosion and have dimensions 10 x 10 x 50 mm		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
11.2.4	Humidity treatment of samples		N/A
	Humidity between 91% and 95% at a temperature of between 20 °C and 30 °C ± 1 °C for 24 h.		N/A
11.2.5	Mounting of electrodes on samples		N/A
	Electrodes mounted on the samples scording to fig.13 and spaced (25 ± 2) mm.		N/A
11.2.6	Measurement of surface resistance		N/A
	Samples subjected to a d.c. voltage (500 ± 10) V for 1 min		N/A
11.2.7	Calculation of surface resistivity ($\sigma = R_x \times p/g = 2 \times R_x$)		N/A
	Surface resistivity (MΩ) .....:		N/A
12	**THERMAL PROPERTIES**		N/A
	Blank.		—
13	**FIRE HAZARDS**		N/A
13.1	Reaction to fire		N/A
13.1.1	Initiation of fire		N/A
	(Not relevant for cable tray systems and cable ladder systems)		—
13.1.2	Contribution to fire		N/A
	Systems components declared according to 6.1.2 and 6.1.3 have limited ignitability		N/A
	Test according to IEC 60695-2-11 with a glow-wire temperature of 650°C for 30 s		N/A
	No visible flame and no substantial glowing		N/A
	Flames and glowing extinguish within 30 s .....:		N/A
	No ignition of the tissue paper		N/A
13.1.3	Spread of fire		N/A
	Non-flame propagating systems components are either not ignite or, if ignited, have a limited spread of fire		N/A
	Systems components of non-metallic or composite material:		N/A
	Test according to IEC 60695-2-11 with a glow-wire temperature of 650°C for 30 s		N/A
	No visible flame and no substantial glowing, or		N/A
	Flames and glowing extinguish within 30 s .....:		N/A
	No ignition of the tissue paper		N/A
	Cable tray lengths or cable ladder lengths of non-metallic or composite material:		N/A
	Flame test using the burner specified in IEC 60695-11-2 (exposure of the flame for 60 s ± 2 s)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	▪ Sample does not ignite, or		N/A
	▪ In case of ignition:		N/A
	a) Flame extinguishes within 30 s .....:		N/A
	b) No ignition of the tissue paper		N/A
	c) No evidence of burning or charring above 50 mm below the lower extremity of the upper clamp		N/A
14	**EXTERNAL INFLUENCES**		P
14.1	Resistance against environmental forces		P
	Snow, wind loading, and other environmental forces are not considered to be the responsibility of the manufacturer or responsible vendor.		—
14.2	Resistance against corrosion		P
14.2.1	General		P
	All system components and internal fixing devices shall have adequate resistance against corrosion in accordance with Table 10.		P
14.2.2	Non-metallic system components		N/A
	System components classified according to 6.5.2 are considered to be inherently resistant to corrosion and do not require testing.		—
14.2.3	System components made of mild steel with metallic coating or stainless steel		P
14.2.3.1	General		P
	System components shall have a class according to Table 1, Table 2 or Table 11.		P
14.2.3.2	System components made of mild steel with zinc coating referenced in Table 1		N/A
	System components declared according to 6.5.3.2.1 made of mild steel with zinc coating referenced in Table 1 shall conform to the declared class in Table 1		N/A
	Compliance for classes 1 to 11 is checked by either: – measurement according to the material specification in Table 1 or – declaration.		N/A
14.2.3.3	System components made of mild steel not referenced in Table 1 but with a method of zinc coating designation detailed in Table 1		N/A
	System components declared according to 6.5.3.2.2 made of mild steel with a method of zinc coating designation detailed in Table 1 shall conform to the declared class as specified in Table 1.		N/A
14.2.3.4	System components made of mild steel not referenced in Table 1		N/A
	System components declared according to 6.5.3.2.3 made of mild steel with a coating not referenced in		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Table 1 shall conform to the declared class and corresponding test duration as specified in Table 11.		
14.2.3.5	System components made of stainless steel		P
	System components declared according to 6.5.3.3 made of stainless steel shall conform to the declared class in Table 2.		P
14.2.4	Salt spray test		P
	A neutral salt spray (NSS) test according to ISO 9227 shall be carried out over the time period as declared by the manufacturer and specified in Table 11.		N/A
	Class (Table 1) .....:		—
	Time period (Table 11) (h) .....:		—
	Corrosion of the surface does not exceed 5 % of red corrosion, indicated by an R(p) value of 4, as specified in ISO 10289		N/A
	Zones that trap saltwater during the test are not considered for the test result.		N/A
	Exposed edges which result from cutting a sample, are not taken into account in the results of the test.		N/A
14.2.5	System components made from aluminium alloys		N/A
	Under consideration.		N/A
14.2.6	System components made of steel with organic coating		N/A
14.2.6.1	General		N/A
	The tests detailed in 14.2.6.2 and 14.2.6.3, are carried out on a test sample that is representative of the product type. In the case of cable tray lengths and cable ladder lengths the sample shall have a minimum length of 70 mm of the narrowest width.		N/A
	After the tests are carried out visual inspection of the samples is performed under normal view or corrected vision without magnification. Exposed edges which result from cutting a sample, are not taken into account in the results of the test.		N/A
14.2.6.2	Adhesion		N/A
	Organic coating on systems components shall have adequate adhesion to prevent delamination of the coating.		N/A
	Compliance is checked in accordance with the test detailed in ISO 2409; the pattern of the score marks shall be, when possible, at least 20 mm from the edges of the sample including the edges of holes.		N/A
	The sample shall have passed the test if the results of the test are in accordance with classification 1 of		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	ISO 2409.		
14.2.6.3	Corrosion testing		N/A
14.2.6.3.1	System components classified in accordance with Table 1 or Table 2 and with an additional organic coating which is not intended to provide additional protection against corrosion do not require a test. The classification of such system components shall be the same as detailed in Table 1 or Table 2.		N/A
14.2.6.3.2	System components which have been tested according to 1 4.2.4 and then have an additional organic coating which is not intended to provide additional protection against corrosion do not require an additional test. The classification of such system components shall be as determined from Table 1.		N/A
14.2.6.3.3	For all other cases where organic coating is used the classification of such system components shall be as determined from Table 11.		N/A
15	**ELECTROMAGNETIC COMPATIBILITY (EMC)**		N/A
	Products covered by this document do not emit electromagnetic fields and are not adversely affected by them when used for their intended purpose.		—

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Clause	Requirement – Test	Result – Remark	Verdict
10.4	**TABLE: test for SWL of lengths mounted in the horizontal plane running horizontally on a single span installation**		P
	Test temperature (°C) .....:	25	—

Cable ladder width	Cable ladder length	Span (L)	SWL	Practical mid-span deflection at SWL		Transverse deflection at SWL		Samples still ensure reliable support to any cable	Load increased at 1,7 times SWL	Samples sustain the increased loading without collapsing
				Maximum measured	Maximum allowable deflection (≤ 1/100 of span)	Maximum measured	Maximum allowable deflection (≤ 1/20 of width)			
(mm)	(mm)	(mm)	(N/m)	(mm)	(mm)	(mm)	(mm)	-	(N/m)	-
300	3000	1200	2680	3.663	12	1.015	15	Pass	4556	Pass
600	3000	1200	2680	3.054	12	1.692	30	Pass	4556	Pass

Supplementary information:
Dimensions of cable ladder (stainless steel) representative model as below:
HF-S6-T-01A-30020-E8: 3000mm×300mm×200mm (L×W×H), HF-S6-T-01A-600100-E8: 3000mm×600mm×100mm (L×W×H).

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