

FUNCTIONAL RESISTANCE IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION FIRES-JR-068-17-NURE

**Cable supporting system BAKS with power and communication cables of
Tele-Fonika Kable S.A.**

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FUNCTIONAL RESISTANCE IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION IN ACCORDANCE WITH DIN 4102-12: 1998-11

FIRES-JR-068-17-NURE

Name of the product: Cable supporting system BAKS with power and communication cables of Tele-Fonika Kable S.A.

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1. INTRODUCTION

This expert judgement report with classification defines the functional resistance in fire classification assigned to element Cable supporting system BAKS with power and communication cables of Tele-Fonika Kable S.A. in accordance with the classes given in DIN 4102-12: 1998-11.

Test was carried out according to standard STN 92 0205 and meets requirements of DIN 4102-12: 1998-11. Basic deviation in process and carrying out of test between these standards is in measuring and in control of temperature in the test furnace. According to STN 92 0205, plate thermometers according to EN 1363-1 are used. According to DIN 4102-12: 1998-11, common thermocouples of construction which was used for this measurement till issue of EN 1363-1 are used. Measurement by plate thermometers acc. to EN 1363-1 can be considered as stricter method of temperature control in test furnace in compare with thermocouples used till issue of EN 1363-1. Therefore, it is possible to use results of test according to STN 92 0205 for classification of tested cables according to DIN 4102-12: 1998-11, but not conversely. Identified deviation results in stricter course of test and it can lead to reduced classification of tested cables what is accepted as enhanced security in practice.

This expert judgement report defines field of application which is outside the field of direct application according test standard or outside the field of extended application according to relevant extended application standard. This expert judgement expresses the opinion of the FIRES and is based on the experience or internal rules of FIRES.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element, Cable supporting system BAKS with power and communication cables of Tele-Fonika Kable S.A., is defined as a cable supporting system with cables with circuit integrity maintenance classes.

2.2 PRODUCT DESCRIPTION

Product comprise of cable supporting system of company BAKS – cable trays, mesh trays, ladders and accessories (consoles, brackets, supports, hangers, etc.) and power and communication halogen free cables of company Tele-Fonika Kable S.A..

Cable supporting system:

Cable tray KCP/KCOP

Cable tray is made of steel sheet thickness 1,5 mm. Height of side wall is 60 mm and maximum tested width of cable tray is 400 mm. Trays are fixed together by two connectors (LPP/LPOPH60, steel sheet thickness 1,5 mm) with nut bolts (SGKM6x12) on sides and by joint plate (BL/BLO, steel sheet thickness 1,0 mm) with nut bolts (SGKM6x12) on the bottom. Maximum tested loading is 20kg.m⁻¹. Tested tray is KCP/KCOP400H60.

Cable tray KGJ/KGOJ

Cable tray is made of steel sheet thickness 1,0 mm. Height of side wall is 60 mm and maximum tested width of cable tray is 400 mm. Trays are fixed together by nut bolts (SGKM6x12). Maximum tested loading is 20kg.m⁻¹. Tested tray is KGJ/KGOJ400H60.

Cable tray KFJ

Cable tray is made of steel sheet thickness 1,0 mm. Height of side wall is 60 mm and maximum tested width of cable tray is 400 mm. Trays are fixed together by integrated push-in coupling and nut bolts (SGKM6x12, 2 pcs) on the bottom side. Maximum tested loading is 20kg.m⁻¹. Tested tray is KFJ400H60.

Cable tray KBJ

Cable tray is made of steel sheet thickness 1,0 mm without perforation. Height of side wall is 60 mm and maximum tested width of cable tray is 400 mm. Trays are fixed together by nut bolts (SGKM6x12). Maximum tested loading is 20kg.m⁻¹. Tested tray is KBJ400H60.

**Cable mesh tray KDSZ**

Cable mesh tray is made of steel wire \varnothing 4,5 mm. Height of side wall is 60 mm and maximum tested width of cable mesh tray is 400 mm. Mesh trays are fixed together by integrated push-in coupling. Maximum tested loading is 20kg.m^{-1} . Tested mesh tray is KDSZ400H60.

Cable mesh tray KDS/KDSO

Cable mesh tray is made of steel wire either \varnothing 4,0 mm or \varnothing 4,5 mm. Height of side wall is 60 mm and maximum tested width of cable mesh tray is 400 mm. Mesh trays are fixed together by connectors (USSN/USSO). Maximum tested loading is 20kg.m^{-1} . Tested mesh trays are KDS/KDSO400H60.

Cable ladder DUP/DUOP

Cable ladder is made of steel sheet thickness 1,5 mm and spacing of transoms is 300 mm. Height of side wall is 60 mm and maximum tested width of cable ladder is 400 mm. Cable ladders are fixed together by two connectors (LDC/LDOCH60, steel sheet thickness 2,0 mm) with nut bolts (SGKM8x14) on sides. Maximum tested loading is 20kg.m^{-1} . Tested ladder is DUP/DUOP400H60.

Cable ladder DUD

Cable ladder is made of steel sheet thickness 1,2 mm and spacing of transoms is 300 mm. Height of side wall is 60 mm and maximum tested width of cable ladder is 400 mm. Cable ladders are fixed together by two connectors (LDC/LDOCH60, steel sheet thickness 2,0 mm) with nut bolts (SGKM8x14) on sides. Maximum tested loading is 20kg.m^{-1} . Tested ladder is DUD400H60.

Support

Support CWP/CWOP40H40 with dimensions (40 x 40) mm is made of bent steel sheet thickness 1,5 mm. Support CWP40H22 with dimensions (40 x 22) mm is made of bent steel sheet thickness 1,5 mm. Support is used for installation of trays or ladders.

Brackets

Bracket WWS is made of bent steel sheet thickness 2,0 mm. Tested bracket is WWS500.

Consoles WPCW/WPCO

Consoles consist of base plate with dimensions (150 x 80 x 5) mm and support with dimensions (40 x 40 x 2) mm. Consoles are used for gripping of brackets to ceiling or floor.

Spacer BR

Spacer BR40 with dimensions (35 x 15 x 100) mm is made of bent steel sheet 1,5 mm thick. Spacer is used as reinforcement of console in place of fixing of bracket.

Cable clamp

Cable clamp KSA is made of two pieces bent steel sheet 1,2 mm thick fixed together by screws. Clamps are used for fixing of cables to ceiling or wall.

Individual parts of supporting systems are made of galvanized steel, according to Sendzimir method PN-EN 10-346 and PN-EN ISO 1461. Detailed information about used materials are specified in table of clause 4.2.

Cables

Halogen-free cables are used for applications in public buildings, where fire would present a significant hazard to human life as a result of emission of toxic gasses and dense smoke hampering the evacuation or when the losses caused by the corrosive acid gasses would be higher than other damage caused by fire.

Cables used by test:Power cables:

Flame-X 950 (N)HXH FE180/E90 0,6/1kV

Flame-X 950 (N)HXCH FE180/E90 0,6/1kV

Flame-X 950 NHXH FE180/E90 0,6/1kV



Communication cables:

Flame-X 950 JE-H(St)H Bd FE180/E90

Flame-X 950 HDGs 300/500V

The length of cables was 5,2 m and 4,0 m from that was exposed to fire.

More detailed information about product construction is shown in test report [1].

3. TEST REPORTS AND EXTENDED APPLICATION REPORTS IN SUPPORT OF CLASSIFICATION

3.1 TEST REPORTS AND EXTENDED APPLICATION REPORTS

No.	Name of laboratory	Name of sponsor	Test report No.	Date of the test	Test method
[1]	FIRES, s.r.o., Batizovce, SR	BAKS Kazimierz Sielski, Karczew, PL	FIRES-FR-100-17-AUNE	25. 05. 2017	STN 92 0205: 2014

[1] Test specimens were conditioned according to EN 1363-1 before the fire resistance test

3.2 TEST RESULTS

No./ Test method	Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
[1] STN 92 0205: 2014	1	2 cables Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV	12	90 minutes no failure / interruption
	2	2 cables Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV		90 minutes no failure / interruption
	3	2 cables Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV	11	90 minutes no failure / interruption
	4	2 cables Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV		90 minutes no failure / interruption
	5	2 cables Flame-X 950 NHXH-O FE180/E90 4x50RM 0,6/1kV	10.2	90 minutes no failure / interruption
	6	2 cables Flame-X 950 NHXH-O FE180/E90 4x1,5RE 0,6/1kV		65 minutes
	7	2 cables Flame-X 950 NHXH-O FE180/E90 4x50RM 0,6/1kV	9.2	90 minutes no failure / interruption
	8	2 cables Flame-X 950 NHXH-O FE180/E90 4x1,5RE 0,6/1kV		81 minutes
	9	2 cables Flame-X 950 NHXH-O FE180/E90 4x50RM 0,6/1kV	8.2	90 minutes no failure / interruption
	10	2 cables Flame-X 950 NHXH-O FE180/E90 4x1,5RE 0,6/1kV		90 minutes no failure / interruption
	11	2 cables Flame-X 950 NHXH-O FE180/E90 4x50RM 0,6/1kV	7.2	90 minutes no failure / interruption
	12	2 cables Flame-X 950 NHXH-O FE180/E90 4x1,5RE 0,6/1kV		90 minutes no failure / interruption
	13	2 cables Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV	10.1	90 minutes no failure / interruption
	14	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV		47 minutes
	15	2 cables Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV	9.1	90 minutes no failure / interruption
	16	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV		90 minutes no failure / interruption
	17	2 cables Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV	8.1	90 minutes no failure / interruption
	18	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV		90 minutes no failure / interruption
	19	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV	7.1	90 minutes no failure / interruption
	20	2 cables Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV		90 minutes no failure / interruption
	21	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV	6	79 minutes
	22	2 cables Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV		86 minutes
	23	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV	5	90 minutes no failure / interruption
	24	2 cables Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV		90 minutes no failure / interruption
	25	2 cables Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV	4	90 minutes no failure / interruption
	26	2 cables Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV		90 minutes no failure / interruption



No./ Test method	Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor	
[1] STN 92 0205: 2014	27	2 cables Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV	3	63 minutes	
	28	2 cables Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV		90 minutes no failure / interruption	
	29	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV	2	90 minutes no failure / interruption	
	30	2 cables Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV		90 minutes no failure / interruption	
	31	2 cables Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV	1	90 minutes no failure / interruption	
	32	2 cables Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV		90 minutes no failure / interruption	
	33	3 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV	13	90 minutes no failure / interruption	
	34	3 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV		90 minutes no failure / interruption	
	35	3 cables Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV		90 minutes no failure / interruption	
	36	3 cables Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV		90 minutes no failure / interruption	
	37	3 cables Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV		90 minutes no failure / interruption	
	38	3 cables Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV		90 minutes no failure / interruption	
	39	3 cables Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV		90 minutes no failure / interruption	
	40	3 cables Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV		90 minutes no failure / interruption	
	52	2 cables Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90		12	90 minutes no failure / interruption
	53	2 cables Flame-X 950 HDGs 2x1 mm ² 300/500V			90 minutes no failure / interruption
	54	2 cables Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90	11	90 minutes no failure / interruption	
	55	2 cables Flame-X 950 HDGs 2x1 mm ² 300/500V		90 minutes no failure / interruption	
	56	2 cables Flame-X 950 HDGs 2x1 mm ² 300/500V	10.2	46 minutes	
	57	2 cables Flame-X 950 HDGs 2x1 mm ² 300/500V	9.2	90 minutes no failure / interruption	
	58	2 cables Flame-X 950 HDGs 2x1 mm ² 300/500V	8.2	90 minutes no failure / interruption	
	59	2 cables Flame-X 950 HDGs 2x1 mm ² 300/500V	7.2	90 minutes no failure / interruption	
	60	2 cables Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90	10.1	33 minutes	
	61	2 cables Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90	9.1	90 minutes no failure / interruption	
	62	2 cables Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90	8.1	90 minutes no failure / interruption	
	63	2 cables Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90	7.1	65 minutes	
	64	10 cables Flame-X 950 HDGs 2x1 mm ² 300/500V	14	90 minutes no failure / interruption	
	65	10 cables Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90		90 minutes no failure / interruption	
	66	2 cables Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90	6	90 minutes no failure / interruption	
	67	2 cables Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90	5	90 minutes no failure / interruption	
	68	2 cables Flame-X 950 HDGs 2x1 mm ² 300/500V	4	90 minutes no failure / interruption	
69	2 cables Flame-X 950 HDGs 2x1 mm ² 300/500V	3	46 minutes		
70	2 cables Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90	2	74 minutes		
71	2 cables Flame-X 950 HDGs 2x1 mm ² 300/500V	1	90 minutes no failure / interruption		

[1] The test was discontinued in 94th minute at the request of test sponsor

Specimens S1 – S40 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Specimens S52 – S71 were tested by one-phase voltage supply 1 x 110V with LED diodes 3V / 0,03W.

Circuit breakers with rating 3 A were used.



4. CLASSIFICATION AND FIELD OF APPLICATION

4.1 REFERENCE OF CLASSIFICATION

This classification has been carried out in accordance with clause 3.2 of DIN 4102-12: 1998-11.

4.2 CLASSIFICATION

The element, **Cable supporting system BAKS with power and communication cables of Tele-Fonika Kable S.A.**, is classified according to the following combinations of performance parameters and classes as appropriate.

Cable	Type of tested cable, single cross-sections and number of conductors	Arrangement	Classification for type of tested cable (by cross-sections and number of conductors)	Classification for cable	
Flame-X 950 (N)HXH FE180/E90 0,6/1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV	Cable tray KFJ400H60. Consoles combined of support CWP40H22 and two threaded rods PGM10 are fixed to ceiling by anchors TRSOM10. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Tracks No. 1 and 2.	E 90	n x ≥ 1,5 mm ² n ≥ 2	
	Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV		E 90	E 90	
Flame-X 950 (N)HXCH FE180/E90 0,6/1kV	Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV		E 90	n x ≥ 1,5 mm ² n ≥ 2	
	Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV		E 90	E 90	
Flame-X 950 HDGs 300/500V	Flame-X 950 HDGs 2x1 mm ² 300/500V		E 90	n x ≥ 1,0 mm ² n ≥ 2	
Flame-X 950 Je-H(St)H FE180/E90	Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90		E 60	n x 2 x ≥ 0,8 mm n ≥ 1	
Flame-X 950 (N)HXH FE180/E90 0,6/1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV		Cable mesh tray KDSZ400H60. Consoles combined of support CWP40H22 and two threaded rods PGM10 are fixed to ceiling by anchors TRSOM10. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Tracks No. 3 and 6.	E 60	n x ≥ 1,5 mm ² n ≥ 2
	Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV			E 60	E 60
Flame-X 950 (N)HXCH FE180/E90 0,6/1kV	Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV			E 60	n x ≥ 1,5 mm ² n ≥ 2
	Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV			E 90	E 60
Flame-X 950 HDGs 300/500V	Flame-X 950 HDGs 2x1 mm ² 300/500V	E 30		n x ≥ 1,0 mm ² n ≥ 2	
Flame-X 950 Je-H(St)H FE180/E90	Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90	E 90		n x 2 x ≥ 0,8 mm n ≥ 1	
Flame-X 950 (N)HXH FE180/E90 0,6/1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV	Cable ladder DUP/DUOP400H60. Consoles combined of support CWP40H22 and two threaded rods PGM10 are fixed to ceiling by anchors TRSOM10. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Tracks No. 4 and 5.		E 90	n x ≥ 1,5 mm ² n ≥ 2
	Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV			E 90	E 90
Flame-X 950 (N)HXCH FE180/E90 0,6/1kV	Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV			E 90	n x ≥ 1,5 mm ² n ≥ 2
	Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV			E 90	E 90
Flame-X 950 HDGs 300/500V	Flame-X 950 HDGs 2x1 mm ² 300/500V		E 90	n x ≥ 1,0 mm ² n ≥ 2	
Flame-X 950 Je-H(St)H FE180/E90	Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90		E 90	n x 2 x ≥ 0,8 mm n ≥ 1	



Cable	Type of tested cable, single cross-sections and number of conductors	Arrangement	Classification for type of tested cable (by cross-sections and number of conductors)	Classification for cable	
Flame-X 950 (N)HXH FE180/E90 0,6/1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV	Cable tray KGJ/KGOJ400H60. Consoles WPCW/WPCO1500 fixed to floor by anchors PSROM10x90, brackets WWS500, spacers BR40. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Tracks No. 7.1 and 7.2.	E 90	n x ≥ 1,5 mm ² n ≥ 2	
	Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV		E 90	E 90	
Flame-X 950 NHXH FE180/E90 0,6/1kV	Flame-X 950 NHXH-O FE180/E90 4x1,5RE 0,6/1kV		E 90	n x ≥ 1,5 mm ² n ≥ 2	
	Flame-X 950 NHXH-O FE180/E90 4x50RM 0,6/1kV		E 90	E 90	
Flame-X 950 HDGs 300/500V	Flame-X 950 HDGs 2x1 mm ² 300/500V		E 90	n x ≥ 1,0 mm ² n ≥ 2	
Flame-X 950 Je-H(St)H FE180/E90	Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90		E 60	n x 2 x ≥ 0,8 mm n ≥ 1	
Flame-X 950 (N)HXH FE180/E90 0,6/1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV		Cable ladder DUD400H60. Consoles WPCW/WPCO1500 fixed to floor by anchors PSROM10x90, brackets WWS500, spacers BR40. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Tracks No. 8.1 and 8.2.	E 90	n x ≥ 1,5 mm ² n ≥ 2
	Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV			E 90	E 90
Flame-X 950 NHXH FE180/E90 0,6/1kV	Flame-X 950 NHXH-O FE180/E90 4x1,5RE 0,6/1kV			E 90	n x ≥ 1,5 mm ² n ≥ 2
	Flame-X 950 NHXH-O FE180/E90 4x50RM 0,6/1kV			E 90	E 90
Flame-X 950 HDGs 300/500V	Flame-X 950 HDGs 2x1 mm ² 300/500V	E 90		n x ≥ 1,0 mm ² n ≥ 2	
Flame-X 950 Je-H(St)H FE180/E90	Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90	E 90		n x 2 x ≥ 0,8 mm n ≥ 1	
Flame-X 950 (N)HXH FE180/E90 0,6/1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV	Cable mesh tray KDS/KDSO400H60. Consoles WPCW/WPCO1500 fixed to floor by anchors PSROM10x90, brackets WWS500, spacers BR40. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Tracks No. 9.1 and 9.2.		E 90	n x ≥ 1,5 mm ² n ≥ 2
	Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV			E 90	E 90
Flame-X 950 NHXH FE180/E90 0,6/1kV	Flame-X 950 NHXH-O FE180/E90 4x1,5RE 0,6/1kV			E 60	n x ≥ 1,5 mm ² n ≥ 2
	Flame-X 950 NHXH-O FE180/E90 4x50RM 0,6/1kV			E 90	E 60
Flame-X 950 HDGs 300/500V	Flame-X 950 HDGs 2x1 mm ² 300/500V		E 90	n x ≥ 1,0 mm ² n ≥ 2	
Flame-X 950 Je-H(St)H FE180/E90	Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90		E 90	n x 2 x ≥ 0,8 mm n ≥ 1	
Flame-X 950 (N)HXH FE180/E90 0,6/1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV		Cable tray KBJ400H60. Consoles WPCW/WPCO1500 fixed to floor by anchors PSROM10x90, brackets WWS500, spacers BR40. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Tracks No. 10.1 and 10.2.	E 30	n x ≥ 1,5 mm ² n ≥ 2
	Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV			E 90	E 30
Flame-X 950 NHXH FE180/E90 0,6/1kV	Flame-X 950 NHXH-O FE180/E90 4x1,5RE 0,6/1kV			E 60	n x ≥ 1,5 mm ² n ≥ 2
	Flame-X 950 NHXH-O FE180/E90 4x50RM 0,6/1kV			E 90	E 60
Flame-X 950 HDGs 300/500V	Flame-X 950 HDGs 2x1 mm ² 300/500V	E 30		n x ≥ 1,0 mm ² n ≥ 2	
Flame-X 950 Je-H(St)H FE180/E90	Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90	E 30		n x 2 x ≥ 0,8 mm n ≥ 1	



Cable	Type of tested cable, single cross-sections and number of conductors	Arrangement	Classification for type of tested cable (by cross-sections and number of conductors)	Classification for cable
Flame-X 950 (N)HXCH FE180/E90 0,6/1kV	Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV	Cable tray KCP/KCOP400H60. Consoles combined of support CWP/CWOP40H40 and two threaded rods PGM10 are fixed to ceiling by anchors TRSOM10. Loading 20kg.m ⁻¹ . Consoles in spacing of 1700 mm. Track No. 11.	E 90	n x ≥ 1,5 mm ² n ≥ 2 E 90
	Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV		E 90	
Flame-X 950 HDGs 300/500V	Flame-X 950 HDGs 2x1 mm ² 300/500V		E 90	n x ≥ 1,0 mm ² n ≥ 2 E 90
Flame-X 950 Je-H(St)H FE180/E90	Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90		E 90	n x 2 x ≥ 0,8 mm n ≥ 1 E 90
Flame-X 950 (N)HXCH FE180/E90 0,6/1kV	Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV	Cable ladder DUP/DUOP400H60. Consoles combined of support CWP/CWOP40H40 and two threaded rods PGM10 are fixed to ceiling by anchors TRSOM10. Loading 20kg.m ⁻¹ . Consoles in spacing of 1700 mm. Track No. 12.	E 90	n x ≥ 1,5 mm ² n ≥ 2 E 90
	Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV		E 90	
Flame-X 950 HDGs 300/500V	Flame-X 950 HDGs 2x1 mm ² 300/500V		E 90	n x ≥ 1,0 mm ² n ≥ 2 E 90
Flame-X 950 Je-H(St)H FE180/E90	Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90		E 90	n x 2 x ≥ 0,8 mm n ≥ 1 E 90
Flame-X 950 (N)HXH FE180/E90 0,6/1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 0,6/1kV	Cable clamps KSA fixed to ceiling by threaded rods PGM6/8 (maximum length 100 mm) and anchors TRSOM6/8 in spacing of 600 mm. Three cables in single clamp. Track no. 13.	E 90	n x ≥ 1,5 mm ² n ≥ 2 E 90
	Flame-X 950(N)HXH-J FE180/E90 4x50RM 0,6/1kV		E 90	
Flame-X 950 (N)HXCH FE180/E90 0,6/1kV	Flame-X 950 (N)HXCH FE180/E90 4x1,5RE/1,5 0,6/1kV		E 90	n x ≥ 1,5 mm ² n ≥ 2 E 90
	Flame-X 950 (N)HXCH FE180/E90 4x50RM/25 0,6/1kV		E 90	
Flame-X 950 HDGs 300/500V	Flame-X 950 HDGs 2x1 mm ² 300/500V	Cable clamps KSA fixed to ceiling by threaded rods PGM6 (maximum length 100 mm) and anchors TRSOM6 in spacing of 600 mm. Five cables in single clamp. Track no. 14.	E 90	n x ≥ 1,0 mm ² n ≥ 2 E 90
Flame-X 950 Je-H(St)H FE180/E90	Flame-X 950 JE-H(St)H 1x2x0,8 Bd FE180/E90		E 90	n x 2 x ≥ 0,8 mm n ≥ 1 E 90

The element, Cable supporting system BAKS with power and communication cables of Tele-Fonika Kable S.A. with circuit integrity maintenance classes are classified to classes according to achieved test results of tested cables at tracks. Other classification is not allowed.



4.3 FIELD OF APPLICATION

This classification is valid for the following end use applications:

- throughout the period during which circuit integrity is to be maintained, neighbouring building components shall not have a negative effect on circuit integrity;
- although testing is only carried out on cables arranged horizontally, test results also apply to cables arranged either diagonally or vertically (e.g. risers), as long as the cable system is supported in transitional areas (i.e. where it switches from a horizontal to a vertical arrangement) in such a manner that the cables will not slip or kink at corners;
- if the standard support construction specified here is used for testing, test results also apply to other types of tested support construction;
- where risers are used, circuit integrity classification only applies if the cable is effectively supported (i.e. with a spacing of supports of 3500 mm or less). Cables may also be stabilized by a seal at penetrations in floors, provided that the sealant material is of a suitable material class, or using clips of proven suitability. The suitability of any design other than that shown in DIN 4102-12, figure 5 may only be assessed by an accredited test laboratory;
- for vertical systems, the test results obtained for cables mounted singly on the ceiling using single clips apply. In practice, brackets of proven suitability may also be used, as long as their spacing is equal to that of the single clips tested;
- results of testing single cables on the ceiling apply also to cables mounted horizontally on walls;
- results of testing bunched cables on a ladder or tray also apply to support construction attached to a wall as shown in DIN 4102-12, figure 6. However, such constructions require proof of suitability by means of a test certificate or other document issued by an accredited testing laboratory.

5. LIMITATIONS

This classification document does not represent type approval or certification of the product.

The classification is valid until 05. 06. 2022 provided that the product, field of application and standards and regulations are not changed.

Approved:

Signed:

Ing. Štefan Rástocký
leader of the testing laboratory



Dávid Šubert
technician of the testing laboratory