Prepared (also subject responsible if other)		No.		
ERAENPE Per-Åke Elisson		1056-TFK 421 32+		
Approved	Checked	Date	Rev	Reference
BURAERGE (Carl Helander)		2016-09-29	D	

RS for Outdoor Shielded DC Power Cable

Abstract
This document specifies the requirements for a shielded power cable used in any 2-wire DC RRU or other application complying with this specification. This cable is intended for outdoor environment.

The specification covers interfaces, functional behavior, environmental requirements, electrical and mechanical performance.

This specification covers cross sections 2x2.5 mm^2, 2 x 6 mm^2, 2 x 10 mm^2 and 2 x 16 mm^2.

Prepared (also subject responsible if other)		No.		
ERAENPE Per-Åke Elisson		1056-TFK 421 32+		
Approved	Checked	Date	Rev	Reference
BURAERGE (Carl Helander)		2016-09-29	D	

Contents

Prepared (also subject responsible if other)		No.		
ERAENPE Per-Åke Elisson		1056-TFK 421 32+		
Approved	Checked	Date	Rev	Reference
BURAERGE (Carl Helander)		2016-09-29	D	

1 CABLE

1.1 Drawing

RS_A_001

1.2 Dimensions

RS_A_002

Product number	Number x area of conductor	Max outer diameter (mm)
TFK 421 322/0	2 x 2.5 mm^2	8
TFK 421 324/0	2 x 6 mm^2	11
TFK 421 325/0	2 x 10 mm^2	13
TFK 421 326/0	2 x 16 mm^2	15

1.3 Materials

RS_A_004

Parameter	Value	Test method
Materials in product	Acc. To 2/00021-FAU 104 04 “Ericsson list of banned and restricted substances”	Material declaration

1.4 Mechanical

RS_A_006

Parameter	Limit	Value	Unit	Test method	Clause
Bending radius	Min 5x outer diameter.	Pass		Repeated bends 15 times.	

1.5 Environmental

	Parameter	Limit	Value	Unit	Environment class/Condition	Clause
RS_A_007	For Outdoor		Pass			
RS_A_008	Operating temperature	Min	-40	ºC	ETSI 300 019-1-3 Class 3.1	
		Max	+85	ºC		
RS_A_009	Storage temperature	Min	-25	ºC	ETSI 300 019-1-1 Class 1.2	
		Max	+55	ºC		
RS_A_010	Storage Relative Humidity		10 – 100%			
RS_A_011	Transportation	Min	-40	ºC	ETSI EN 300-019-1-2	
		Max	+70	ºC		
RS_ A_012	UV resistance		Pass		UL1581 compliant	1200
RS_ D_013	The substances in the “Ericsson list of banned and restricted substances“ are banned. All HW shall be lead-free soldered		Pass		2/00021-FAU 104 04 Uen RoHS directive (2002/95EC)	

Prepared (also subject responsible if other)		No.		
ERAENPE Per-Åke Elisson		1056-TFK 421 32+		
Approved	Checked	Date	Rev	Reference
BURAERGE (Carl Helander)		2016-09-29	D	

1.6 Electrical

	Parameter		Limit	Value	Unit	Test method
				Conductor		
RS_A_014	Voltage		Max	600	VDC	
RS_D_030	Resistance TFK 421 324 (2.5 mm²)	Conductor	Max	8.21	Ohm/km @20°C	
		Braid	Max	8.21		
RS_ A_015	Resistance TFK 421 324 (6 mm²)	Conductor	Max	3.39	Ohm/km @20°C	
		Braid	Max	5.09		
RS_A_016	Resistance TFK 421 325 (10 mm²)	Conductor	Max	1.95	Ohm/km @20°C	
		Braid	Max	5.09		
RS_A_017	Resistance TFK 421 326 (16 mm²)	Conductor	Max	1.24	Ohm/km @20°C	
		Braid	Max	5.09		
RS_A_018	Test voltage		Min	2000	VAC for 1 minute	
RS_A_019	Inductance		Max	0,6	µH	

1.7 Design

	Parameter	Limit	Value	Unit	Test method	Clause
RS_A_020	Cable specification		2 conductors with insulation colors grey and black.			
RS_A_021	Conductor		Stranded, Tin plated Cu		IEC 60228 class 5	
RS_B_022	Shield		Stranded or braided + Al polyester foil			
RS_A_023	Colour of sheath		Black			

1.8 Safety

	Parameter	Limit	Value	Unit	Test method	Clause
RS_B_025	Fire resistance		Pass		IEC 60332-3-24 cat C	

2 MATERIAL DECLARATION

The design responsible shall send out a request for material declaration to the manufacturer of the cable assembly. Material declaration for the cable assembly shall be in the Ericsson material data system, max four weeks after request (EriMate). Note that material declaration report has to be created for every cable length on the same assembly design.

3 MARKING

3.1 Marking on cable sheath

	Parameter	Condition
RS_A_027	Identification	Manufacturer and product identification. (Mandatory)
	Fire Rating	Type of fire rating cable shall comply with. (Optional)
	Gauge	Dimension of conductor in AWG. (Optional)
	Temp	Maximum operation temperature for cable in degrees Celsius. (Optional)
	Length	Sequential length markers once per metre, continuous length marking is allowed. (Optional)
	NRTL-Marking	ETL or equal NRTL. (Optional)

4 PACKING

	Parameter	Condition
RS_A_028	Packing	The cable shall be packaged according to document 1056-CSX 101 58 and 151 91-487 or agreed with CDC or Ericsson approved customer to secure safe transportation.
RS_A_029	CE-marking	CE-mark according to ROHS 2 directive (Mandatory)

5 REQUIREMENT TAGGING

Each requirement in this document is separately tagged and could be referred to without having to copy the whole text.

Example:

RS_ Requirement Specification for cable assembly

A_ Requirement Revision

001 Requirement index number

⇨ RS_A_001

Prepared (also subject responsible if other)		No.		
ERAENPE Per-Åke Elisson		1056-TFK 421 32+		
Approved	Checked	Date	Rev	Reference
BURAERGE (Carl Helander)		2016-09-29	D	

6 REFERENCES

ETS 300 019-1-1	Equipment Engineering - Environmental conditions and environmental tests for telecommunications equipment - Part 1-1: Classification of environmental conditions - Storage
ETS 300 019-1-3	Equipment Engineering - Environmental conditions and environmental tests for telecommunications equipment - Part 1-3: Classification of environmental conditions - Stationary use at weather protected locations
ETSI EN 300-019-1-2	Equipment Engineering - Environmental conditions and environmental tests for telecommunications equipment - Part 1-2: Classification of environmental conditions - Transport
IEC 60228	Conductors of insulated cables
IEC 60332-1	Tests on electric cables under fire conditions
IEC 60754-2	Test on gases evolved during combustion of materials from cables. Part 2: Determination of degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity.
UL1581	Reference standard for electrical wires, cables, and flexible cords
0012-RPM 102+	Numbering rules
02/00021-FAU 104 04	The Ericsson list of banned and restricted Ericsson list of banned & restricted substances
102 01-113	Recommended Marking instruction
1056-CSX 101 58	Packaging instructions
151 91-487	Packing instruction for internal and external cables

7 ABBREVIATIONS

EAB	Ericsson AB
EriMate	Material data base
RoHS	Restriction of the use of certain Hazardeous Substances in electrical and electronic equipment
NRTL	Nationally Recognized Testing Laboratory

8 REVISION RECORD

Revision	Date	Description
A		First revision
B	2015-10-09	Updated RS_A_022 to RS_B_022: removed Tin plated Cu requirement.
PB2	2016-07-05	Removed UL-requirements except UV-resistance which only applies if non-PVC
C	2016-08-30	Approved all changes
D	2016-09-28	Edit of picture in RS_A_001. Clarified RoHS directive in RS_D_013. Added 2x2.5mm2 variant. Deleted chapter 1.3 since not applicable. UL listed requirement RS_A_024 deleted. Heat-resistance requirement in chapter “Safety” deleted – Fire resistance requirement sufficient. Editorial changes.