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01-september-2016

Smernica za popravilo poškodovanih vgrajenih optičnih kablov in mikrokanalov

Guideline for the repair of damaged installed optical fibre cables and microducts

Leitfaden für die Instandsetzung von beschädigten Lichtwellenleiterkabeln und Mikrorohren

Guide pour la réparation des câbles à fibre optique endommagés dans les installations de câbles - Principes

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**Guideline for the repair of damaged installed optical fibre cables
and microducts**

Guide pour la réparation des câbles à fibre optique
endommagés dans les installations de câbles - Principes

Leitfaden für die Instandsetzung von beschädigten
Lichtwellenleiterkabeln und Mikrorohren

This Technical Specification was approved by CENELEC on 2016-04-25.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (CLC/TS 50621:2016) has been prepared by CLC/TC 86A "Optical fibres and optical fibre cables".

The following date is fixed:

- latest date by which the existence of (doa) 2016-10-25
this document has to be announced
at national level

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CLC/TS 50621:2016 (E)**Introduction**

This Technical Specification specifies the processes to be employed for the repair of damage to installed optical fibre cabling by reinstatement of the outer sheath or the replacement of an optical fibre cable between existing closures with the objective of restoring its pre-damaged performance and in order to maintain pathway capacity.

Interim repair procedures including temporary and/or partial repairs, including the introduction of additional joints of connections, which deliver the minimum functionality to meet immediate performance requirements, are also described.

In addition, this Technical Specification describes the type and impact of damage leading to the repair processes specified.

The repair processes specified are applicable to all installation environments except optical ground wires (OPGW) or optical phase conductors (OPPC).

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1 Scope

This Technical Specification specifies the processes to be employed for the repair of damage to installed optical fibre cabling by reinstatement of the outer sheath or the replacement of an optical fibre cable between existing closures with the objective of restoring its pre-damaged performance and in order to maintain pathway capacity.

Interim repair procedures, including temporary and/or partial repairs including the introduction of additional joints of connections, which deliver the minimum functionality to meet immediate performance requirements, are also described.

The repair processes specified are applicable to all installation environments except optical ground wires (OPGW) or optical phase conductors (OPPC).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 60794 (all parts), *Optical fibre cables*

3 Terms and definitions and abbreviations

3.1 Terms and definitions (standards.iteh.ai)

For the purposes of this document, the following terms and definitions apply.

3.1.1 cable segment <https://standards.iteh.ai/catalog/standards/sist/81a056cf-271b-4139-a8a1-44a9c7127af9/sist-ts-clc-ts-50621-2016>

length of cable between two existing closures which enable its final repair by its substitution

3.1.2 conduit

cabling cable management system of general circular cross-section used to contain and protect all types of cables and microduct/microduct assemblies

3.1.3 final repair

repair process which restores pre-damaged performance and maintains pathway system capacity

3.1.4 interim repair

re-routing of the service using existing optical fibres in other cables or by the replacement of a length of damaged cable with additional closures and joints (see Note) subject to the capability of the application-specific equipment to support operation of the modified transmission path

Note 1 to entry: Not recommended due to additional splice losses and extra lengths.

3.1.5 microduct

tube, a sub-set of a cable management system, which is directly associated with a particular cabling installation

CLC/TS 50621:2016 (E)**3.1.6****microduct segment**

length of microduct between two existing accessible microduct joints which allow its final repair by its substitution of the modified channel

3.1.7**partial repair**

repair process which restores pre-damaged mechanical performance by a localized repair but potentially degrades the transmission performance and/or reliability of the testable segment

3.1.8**pre-damaged performance**

the mechanical performance of the damaged components and their transmission performance within a testable segment when they were a) as installed or b) as specified or c) last available test results or d) as originally planned

3.1.9**strain-free damage**

damage to an optical fibre cable (including the optical fibre) or microduct which is not associated with elongation or where any elongation is localised at the point of damage

3.1.10**strain-related damage**

permanent alteration of the construction elements of an optical fibre cable (including the optical fibre) or microduct following the application of tensile loads or bending radii that are not in accordance with the limits specified by the manufacturer of the optical fibre cable or microduct

3.1.11**testable segment**

cabling between two adjacent cabling test interfaces, including all interim cables and joints

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3.1.12**transmission path**

passive cabling components between transmission equipment and which may contain multiple testable segments

3.2 Abbreviations

For the purposes of this document, the following abbreviations apply.

OTDR	optical time domain reflectometer
PA	polyacrylate
PE	polyethylene
PMD	polarization mode dispersion
PP	polypropylene
OPGW	optical ground wire
OPPC	optical phase conductor

4 Optical fibre cable network

4.1 General

Within the cabling installations addressed by this Technical Specification, the cables and/or microducts are installed between closures and microduct joints respectively.

Figure 1 is a schematic of the key concepts outlined in this subclause.

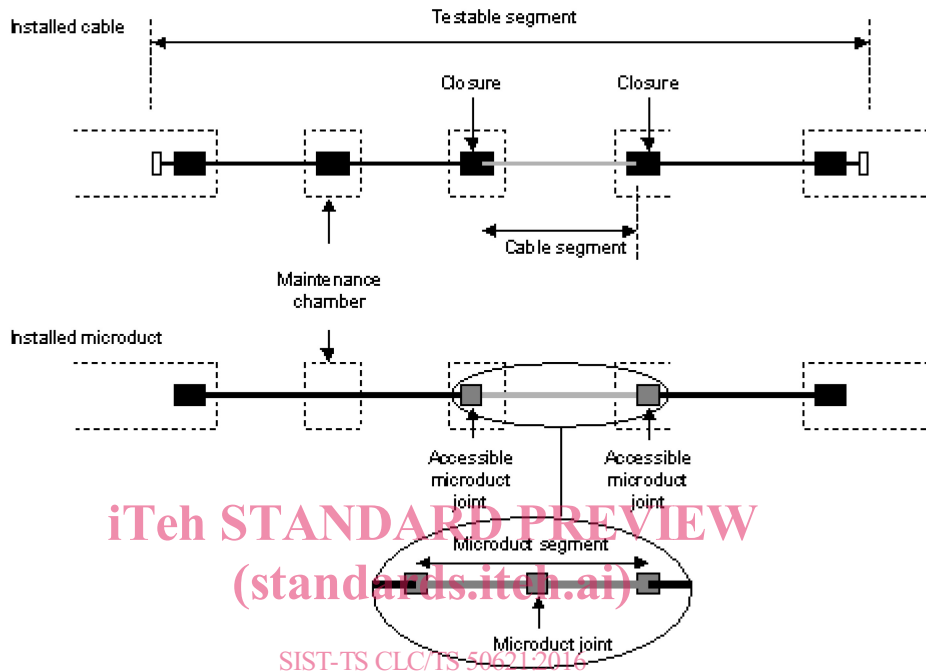


Figure 1 — Schematic of cabling and microduct structures

For installations outside buildings, closures and accessible microduct joints are accommodated in maintenance chambers or other structures (such as street cabinets in access networks). For installations inside buildings, closures and accessible microduct joints are accommodated in boxes, cabinets, frames and racks.

Testable optical interfaces are normally accommodated in cabinets, frames and racks within buildings or other structures (such as street cabinets in access networks).

4.2 Optical fibre cable

4.2.1 General

Cables and microducts in accordance with EN 60794 series standards deliver long-term stability in terms of mechanical and optical transmission properties provided that the installation and operational environments have been correctly assessed during the cable selection process.

Clauses 4.2.2 to 4.2.4 provide explanatory descriptions of various cable and microduct construction concepts.

4.2.2 Loose buffer tube cable

4.2.2.1 General

Central loose tube as well as stranded loose tube optical fibre cables are the mostly installed cable types.