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SERIES L: ENVIRONMENT AND ICTS, CLIMATE CHANGE, E-WASTE, ENERGY EFFICIENCY; CONSTRUCTION, INSTALLATION AND PROTECTION OF CABLES AND OTHER ELEMENTS OF OUTSIDE PLANT

Optical fibre cable Recommendations and standardization guideline

ITU-T L-series Recommendations – Supplement 39

International Telecommunication Union

ITU-T L-SERIES RECOMMENDATIONS

ENVIRONMENT AND ICTS, CLIMATE CHANGE, E-WASTE, ENERGY EFFICIENCY; CONSTRUCTION, INSTALLATION AND PROTECTION OF CABLES AND OTHER ELEMENTS OF OUTSIDE PLANT

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Supplement 39 to ITU-T L-series Recommendations

Optical fibre cable Recommendations and standardization guideline

Summary

Supplement 39 to ITU-T L-series Recommendations provides information on the guideline used in the development of optical fibre cable Recommendations. The guideline also helps readers to understand the organization of the ITU-T L.100-series cable Recommendations.

History

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FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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Introduction

With the arrival of the age in which optical communication is connected to various things, the applications of connecting optical fibre cables are expanding, and the cable product characteristics would be intended to be specified or segmented for each. This Supplement is prepared with the aim of effectively advancing the standardization of ITU-T L.100-series cable Recommendations, which is closely related to other standards bodies, without overlapping with their standards.

Supplement 39 to ITU-T L-series Recommendations

Optical fibre cable Recommendations and standardization guideline

1 Scope

This Supplement provides guidelines for establishing ITU-T L.100-series Recommendations on optical fibre cable. The Supplement covers roles and approaches on developing optical fibre cable Recommendations in ITU-T Study Group 15 under cooperation and harmonization with related standards development organizations (SDOs).

2 References

[ITU-T G.652] Recommendation ITU-T G.652 (2016), *Characteristics of a single-mode optical fibre and cable*.

[ITU-T G.653] Recommendation ITU-T G.653 (2010), *Characteristics of a dispersion-shifted, single-mode optical fibre and cable*.

[ITU-T G.654] Recommendation ITU-T G.654 (2020), *Characteristics of a cut-off shifted single-mode optical fibre and cable*.

[ITU-T G.655] Recommendation ITU-T G.655 (2009), *Characteristics of a non-zero dispersion-shifted single-mode optical fibre and cable*.

[ITU-T G.656] Recommendation ITU-T G.656 (2010), *Characteristics of a fibre and cable with non-zero dispersion for wideband optical transport*.

[ITU-T G.657] Recommendation ITU-T G.657 (2016), *Characteristics of a bending-loss insensitive single-mode optical fibre and cable*.

[ITU-T L.100] Recommendation ITU-T L.100/L.10 (2015), *Optical fibre cables for duct and tunnel application.*

[ITU-T L.101] Recommendation ITU-T L.101/L.43 (2015), *Optical fibre cables for buried application.*

[ITU-T L.102] Recommendation ITU-T L.102/L.26 (2015), *Optical fibre cables for aerial application.*

[ITU-T L.103] Recommendation ITU-T L.103 (2016), *Optical fibre cables for indoor applications.*

[ITU-T L.105] Recommendation ITU-T L.105/L.87 (2010), *Optical fibre cables for drop applications.*

[ITU-T L.107] Recommendation ITU-T L.107/L.78 (2008), *Optical fibre cable construction for sewer duct applications.*

[ITU-T L.108] Recommendation ITU-T L.108 (2018), *Optical fibre cable elements for microduct blowing-installation application.*

[ITU-T L.110] Recommendation ITU-T L.110 (2017), *Optical fibre cables for direct surface application.*

[ITU-T L.159] Recommendation ITU-T L.159/L.77 (2008), *Installation of optical fibre cables inside sewer ducts.*

[ITU-T L.162] Recommendation ITU-T L.162 (2016), *Microduct technology and its applications.*

[ITU-T L.163] Recommendation ITU-T L.163 (2018), *Criteria for optical cable installation with minimal existing infrastructure.*

[IEC 60794-1-2x] IEC 60794-1-2x-series, *Generic Specification – Basic Optical Cable Test Procedures.*

[IEC 60794-2-10] IEC 60794-2-10:2011, *Optical fibre cables – Part 2-10: Indoor optical fibre cables – Family specification for simplex and duplex cables.*

[IEC 60794-2-20] IEC 60794-2-20:2013, *Optical fibre cables – Part 2-20: Indoor cables – Family specification for multi-fibre optical cables.*

[IEC 60794-2-30] IEC 60794-2-30:2019, *Optical fibre cables – Part 2-30: Indoor cables – Family specification for optical fibre ribbon cables for use in terminated cable assemblies.*

[IEC 60794-2-50] IEC 60794-2-50:2020, *Optical fibre cables – Part 2-50: Indoor cables – Family specification for simplex and duplex cables for use in terminated cable assemblies.*

[IEC 60794-3-10] IEC 60794-3-10:2015, *Optical fibre cables – Part 3-10: Outdoor cables – Family specification for duct, directly buried and lashed aerial optical telecommunication cables.*

[IEC 60794-3-20] IEC 60794-3-20:2016, *Optical fibre cables – Part 3-20: Outdoor cables – Family specification for self-supporting aerial telecommunication cables.*

[IEC 60794-3-40] IEC 60794-3-40:2008, *Optical fibre cables – Part 3-40: Outdoor cables – Family specification for sewer cables and conduits for installation by blowing and/or pulling in non-man accessible storm and sanitary sewers.*

[IEC 60794-3-70] IEC 60794-3-70:2016, *Optical fibre cables – Part 3-70: Outdoor cables – family specification for outdoor optical fibre cables for rapid/multiple deployment.*

[IEC 60794-5-10] IEC 60794-5-10:2014, *Optical fibre cables – Part 5-10: Family specification – Outdoor microduct optical fibre cables, microducts and protected microducts for installation by blowing.*

[IEC 60794-5-20] IEC 60794-5-20:2014, *Optical fibre cables – Part 5-20: Family specification – Outdoor microduct fibre units, microducts and protected microducts for installation by blowing.*

[IEC TR 62901] IEC TR 62901:2016, *Guide for the Selection of Drop Cables.*

3 Definitions

3.1 Terms defined elsewhere

None.

3.2 Terms defined in this Supplement

None.

4 Abbreviations and acronyms

This Supplement uses the following abbreviations and acronyms:

AP Access Point

MDU Multi-Dwelling Unit

SDO Standards Development Organizations

SG15 ITU-T Study Group 15

WPn Working Party n

5 Conventions

None.

6 Harmonization with international standardization organizations on optical fibre cable

ITU-T SG15/WP2, in terms of standardization of optical fibre cable, cooperates with several SDOs with the aim of encouraging implementation of cable Recommendations.

IEC TC86/SC86A/WG3 prepares international standards of optical fibre cables embracing all types of communication applications. They cover cable types and test methods for defining product specifications. The main approach of the cable standards process in the IEC is to define products using appropriate quality assessment procedures between manufacturers and end users.

ISO/IEC JTC1 SC25/WG3 prepares international standards of characteristics of cabling systems for customer premises including test procedures, planning and installation guides. They focus on the implementation of cabling systems for interconnection of information technology equipment used in customer premises.

ITU-T SG15/WP2 prepares cable Recommendations on cable structure and characteristics, complemental test methods and installation guides intended for use in the field of telecommunication networks. The main approach of cable Recommendations in ITU-T is defining application, which depends on cable deployment strategies to ensure network integrity, interoperability, regularity, environmental and infrastructure conditions, or installations. For this reason, various types of cable products are possible to be included in one application.

Continued strong cooperation taking the above-mentioned roles between SDOs into consideration is foreseen.

7 Criteria for making new Recommendations on optical fibre cable

A Recommendation on cable construction usually entitled by "optical fibre cable for XXX application" may cover a group of cable products, which are almost the same requirements for an application defined by the following criteria:

1) Installation environment and space

2) Installation method.

Establishing an ITU-T L.100-series Recommendation should clearly define the new application. The new application is defined by the new "installation environment and space" and/or the new "installation method." A combination of existing applications is not defined as a new application. The Recommendation may include different fibre types, different cable elements and different configurations, unless the Recommendation deals with the application having definitive cable product.

The Recommendation may refer to ITU-T Recommendations [ITU-T G.652], [ITU-T G.653], [ITU-T G.654], [ITU-T G.655], [ITU-T G.656] and [ITU-T G.657] to define transmission characteristics.

The Recommendation may include mechanical and environmental characteristics, which are main requirements for defining the application. The values of these characteristics should be general/broad enough to encompass all of the cable products within the Recommendation.

The test methods for defining cable constructions, elements, mechanical and environmental characteristics included in ITU-T Recommendation may be referred from IEC standards in [IEC 60794-1-2x] in most cases, unless not specified in IEC, or different conditions or pass/fail criteria from IEC standards are required.

Further cable Recommendations typically based on emerging applications, may be created for providing distinguished implementations that support different cable deployment strategies. It is noted that this criterium does not limit the future possibility to re-arrange the organization of several cable Recommendations.

Appendix I

Applications defined in ITU-T L.100-series Recommendations

This appendix contains existing applications defined in ITU-T L.100-series Recommendations, and lists IEC product specifications that correspond to each application.

Table I.1 – Application defined in ITU-T L.100-series Recommendations

Application	Primary installation environment and space	Primary installation method	Corresponding IEC product specification
Duct and tunnel [ITU-T L.100]	Outdoor, underground with civil structures	Pulling with large tensile stress	[IEC 60794-3-10]
Buried [ITU-T L.101]	Outdoor, underground without civil structures	Direct laying	
Aerial [ITU-T L.102]	Outdoor, aerial	Lashing	
		Pulling	[IEC 60794-3-20]
Indoor [ITU-T L.103]	Indoor, buildings, houses and MDUs	Pulling, pushing, fixing to the wall	[IEC 60794-2-10] [IEC 60794-2-20] [IEC 60794-2-30] [IEC 60794-2-50]
In-home (Note 1)	Indoor, houses with special need for minimum visibility	Fixing to the wall	–
Drop [ITU-T L.105]	Outdoor/indoor, from access point (AP)s to buildings, houses or MDUs	Pulling	(Note 2)
Sewer duct [ITU-T L.107]	Outdoor, underground with sewer ducts and drainpipes	Pulling [ITU-T L.159]	[IEC 60794-3-40]
Microduct blowing [ITU-T L.108]	Outdoor/indoor, underground, aerial and buildings with microducts	Blowing [ITU-T L.162]	[IEC 60794-5-10] [IEC 60794-5-20]
Direct surface [ITU-T L.110]	Outdoor ground surface with special need for minimal infrastructures	Direct laying [ITU-T L.163]	[IEC 60794-3-70]
NOTE 1 – Now under developing. NOTE 2 – [IEC TR 62901] for guidance.			

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