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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 infrastructures – Infrastructure including node
elements (except cables)

Requirements for fibre optics network terminal box (FONT)

Recommendation ITU-T L.209

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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Recommendation ITU-T L.209

Requirements for fibre optics network terminal box (FONT)

Summary

Recommendation ITU-T L.209 describes the requirements of a combined housing for a fibre optic network terminal box (FONT) to keep in a single box active elements such as an optical network terminal (ONT), battery and its charge controller (power supply) as well as passive elements such as fibre patch panel, connectors, splitters and fibre splice trays, instead of having multiple boxes for active and passive elements separately. This Recommendation will be especially helpful to service providers for fibre to the x (FTTx) applications in areas where ownership, space, safe custody and availability of power supply source are hurdles to deployment.

The FONT should have two compartments with independent doors. The active elements compartment should have provision for natural ventilation required for active elements in addition to sealing against ingress of dust and liquid which is required for both the compartments. The passive element compartment should have the features of a standard fibre distribution box (FDB).

The FONT is comprised of:

- a mechanical structure (box housing) for mechanical and environmental protection of active and passive elements with provisions for thermal management/ventilation of active elements and sealing of internal systems;
- a simple fibre management system for guiding and managing the fibres and fibre connections inside the box;
- a cable attachment and termination system for attaching and terminating cable ends.

Mechanical and environmental characteristics and evaluation of performance should comply with the provisions of Recommendation ITU-T L.200/L.51 for the passive element compartment and Recommendation ITU-T L.204/L.70 for the active element compartment.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
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Recommendation ITU-T L.209

Requirements for fibre optics network terminal box (FONT)

1 Scope

This Recommendation specifies the optical, mechanical, thermal and environmental performance requirements of a fibre optics network terminal box (FONT) for fibre to the x (FTTx) networks in indoor and outdoor applications. The FONT provides:

- facilities for mounting and protection of stored fibres, connectors, splices, splitters, wavelength division multiplexing (WDM) components, electronics such as an optical network terminal (ONT), customer premises equipment (CPE), HOTSPOT device, local area network (LAN) routers, as well as power supply, batteries and an external network test interface (ENTI) (optional);
- access to the electrical/optical data, cable television (CATV) coaxial cables, antennae, and telephone output cables;
- a protected fibre management system for storing fibres, splitters, connectors, and splices;
- sealing of input, output and optical and electrical cables;
- thermal management and ventilation;
- electrical powering;
- separate access to the active and passive elements.

This Recommendation also:

- gives a checklist for a systematic product characterization.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

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| [ITU-T G.657] | Recommendation ITU-T G.657 (2016), <i>Characteristics of a bending-loss insensitive single-mode optical fibre and cable.</i> |
| [ITU-T G.664] | Recommendation ITU-T G.664 (2012), <i>Optical safety procedures and requirements for optical transmission systems.</i> |
| [ITU-T K.35] | Recommendation ITU-T K.35 (2020), <i>Bonding configurations and earthing at remote electronic sites.</i> |
| [ITU-T K.44] | Recommendation ITU-T K.44 (2019), <i>Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents – Basic Recommendation.</i> |
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- [ISO 4892-3] ISO 4892-3 (2016), *Plastics. Methods of exposure to laboratory light sources. Fluorescent UV lamps.*

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 IP 30 [IEC 60529].

3.1.2 IP 54 [IEC 60529].

3.1.3 active electronics [ITU-T L.204].

3.1.4 temperature-hardened equipment [ITU-T L.204].

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 fibre management system: System to control fibre routing from the incoming to the outgoing fibres, containing one or more splice trays and additional functional elements, and which provides a means for routing, storing and protecting of fibre splices, connectors or other passive optical devices in a predetermined order.

3.2.2 external network test interface (ENTI): Test point which defines the service maintenance boundary of an access network at which external service provision may be assessed and which can be associated with protection devices.

3.2.3 microduct system: System that provides for routing air blown fibres or microduct fibre units, between hollow conduits (microducts), and interconnects the microducts by use of pneumatic connectors, tube welding, crimp connectors or push on connectors.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

CATV	Cable Television
CCU	Charge Controller Unit
CPE	Customer Premises Equipment
CRCA	Cold Rolled Close Annealed
EMC	Electromagnetic Compatibility
ENTI	External Network Test Interface
FDB	Fibre Distribution Box
FMS	Fibre Management System
FONT	Fibre Optic Network Terminal box
FTTx	Fibre To The x
IC	Indoor Controlled environment
IK	Impact (Kinetic) Protection
IN	Indoor un-controlled environment
IP	Ingress Protection (rating)
OA	Outdoor Above ground level (aerial)
OG	Outdoor Ground level
ONT	Optical Network Terminal
RF	Radio Frequency
SPD	Surge Protective Device
WDM	Wavelength Division Multiplexing