

International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Series G
Supplement 47
(09/2012)

SERIES G: TRANSMISSION SYSTEMS AND MEDIA,
DIGITAL SYSTEMS AND NETWORKS

General aspects of optical fibres and cables

ITU-T G-series Recommendations – Supplement 47

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Supplement 47 to ITU-T G-series Recommendations

General aspects of optical fibres and cables

Summary

Supplement 47 to ITU-T G-series Recommendations provides information on the general transmission characteristics of single-mode optical fibres and cables specified in the ITU-T G.65x-series of Recommendations related to the practical use condition. It covers the environmental and length-related characteristic of ITU-T G.65x-series optical fibres and cables. The fibre material-related characteristics are also described in Appendix I.

Version 2 of this supplement introduces the general aspect of multi-path interference (MPI) in an optical fibre in order to support newly established test methods for coherent MPI which can be found in Appendix IV of Recommendation ITU-T G.650.1.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T G Suppl. 47	2009-10-09	15
2.0	ITU-T G Suppl. 47	2012-09-21	15

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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Supplement 47 to ITU-T G-series Recommendations

General aspects of optical fibres and cables

1 Scope

The purpose of this supplement is to understand the transmission properties of the cabled single-mode fibres during use, and to promote the proper and effective use of ITU-T G.65x-series Recommendations for single-mode fibres and cables. In particular, when upgrading existing systems to high-speed transmission systems based on the installed transmission line and/or designing a new transmission line for a high-speed and large capacity transmission system, the system operators and designers should be provided with useful information that is not shown in the fibre Recommendations.

This supplement covers the general transmission characteristics of single-mode optical fibres and cables related to the practical use conditions. This supplement contains:

- environmental characteristics of optical fibres and cables,
- length-related characteristics of optical fibres and cables.

In Appendix I, the optical fibre characteristics related to the fibre material such as Rayleigh scattering and material dispersion are described for reference.

This supplement will provide useful guidelines when designing the transmission lines and/or systems. Moreover, it should be updated as and when optical fibre technologies are updated.

2 References

- [ITU-T G.650.1] Recommendation ITU-T G.650.1 (2010), *Definitions and test methods for linear, deterministic attributes of single-mode fibre and cable.*
- [ITU-T G.650.2] Recommendation ITU-T G.650.2 (2007), *Definitions and test methods for statistical and non-linear related attributes of single-mode fibre and cable.*
- [ITU-T G.652] Recommendation ITU-T G.652 (2009), *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 (2010), *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 (2012), *Characteristics of a bending-loss insensitive single-mode optical fibre and cable for the access network.*
- [ITU-T G.663] Recommendation ITU-T G.663 (2011), *Application-related aspects of optical amplifier devices and subsystems.*
- [ITU-T G.691] Recommendation ITU-T G.691 (2006), *Optical interfaces for single channel STM-64 and other SDH systems with optical amplifiers.*
- [ITU-T G.959.1] Recommendation ITU-T G.959.1 (2012), *Optical transport network physical layer interfaces.*