

White paper

# ITU-T G.657

## Bend-optimised Single mode fiber

## CHARACTERISTICS OF ITU-T G.657 BENDING LOSS INSENSITIVE SINGLE MODE OPTICAL FIBRE AND CABLE FOR THE ACCESS NETWORK

Worldwide, technologies for broadband access networks are advancing rapidly. Among these, the technology applying single mode fibre provides for a high-capacity transmission medium which can answer the growing demand for broadband services.

The experience with the installation and operation of single mode fibre and cable based networks is huge, and ITU-T Recommendation G.652 describing its characteristics has been adapted to this experience. Nevertheless, the specific use in an optical access network puts different demands on the fibre and cable which impacts its optimal performance characteristics. Differences with respect to the use in the general transport network are mainly due to the high density network of distribution and drop-cables in the access network. The limited space and the many manipulations ask for operator friendly fibre performance and low bending sensitivity. In addition, the cabling in the crowded telecom offices where space is a limiting factor has to be improved accordingly.

It is the aim of ITU-T Recommendation G.657 to support this optimization by recommending strongly improved bending performance compared with the existing G.652 single mode fibre and cables.

This is done by means of introducing two classes of single mode fibres, one of which, **class A**, is fully compliant with the G.652 single mode fibres and can also be used in other parts of the network. The other class, **class B**, is not necessarily compliant with G.652 but is capable of low values of macrobending losses at very low bend radii and is pre-dominantly intended for in-building use.

**Class A** fibres are suitable to be used in the O, E, S, C and L-band (i.e., throughout the 1260 to 1625 nm range). Fibres and requirements in this category are a subset of G.652.D fibres and have the same transmission and interconnection properties. The main improvements are improved bending loss and tighter dimensional specifications, both for improved connectivity.

**Class B** fibres are suitable for transmission at 1310, 1550 and 1625 nm for restricted distances that are associated with in-building transport of signals. These fibres have different splicing and connection properties than G.652 fibres, but are capable at very low values of bend radius.

*Source: ITU-T Recommendation G.657 (12/2006)*

*(For more information about ITU-T (Telecommunication Standardization sector of International Telecommunication Union) visit: [www.itu.int/ITU-T/index.html](http://www.itu.int/ITU-T/index.html))*

## FEATURES AND BENEFITS

- ▶ Improved network performances
  - Reduced space requirement thanks to the use of smaller, more compact optical distribution frames and boxes, street cabinets, closures, etc.*
- ▶ Enhanced macrobending loss characteristics
  - 10 Turns at 15mm radius, and 1 turn at 10mm radius (Class A)*
- ▶ Extremely forgiving fiber in case of installation errors
  - Reduced necessity for installation engineers, therefore reduced installation expenses.*
- ▶ Fully compatible with all conventional singlemode fiber installation standard
- ▶ High reliability under bending stress
- ▶ Easy splicing and testing with standard parameters to installed base
- ▶ . . . and much more

## FURTHER REFERENCES

- ▶ [www.ofsoptics.com/fiber/](http://www.ofsoptics.com/fiber/) (type: AllWave® FLEX Fiber)
- ▶ [www.corning.com/opticalfiber/products/index.aspx](http://www.corning.com/opticalfiber/products/index.aspx) (type SMF-28e® XB)
- ▶ [www.drakafibre.com/](http://www.drakafibre.com/) (type BendBrightxs)