Title

How to reach 100 Gb/s per user in access networks using multi-band OFDM and multicore fibres.

Abstract

Despite access networks achieving an accumulated capacity >Tb/s and a per user capacity in the Gb/s range have been reported, forecasts indicate that the traffic is greatly surpassing the capacity growth of single-mode and single-core fibre systems. This is still far more relevant as 5G backhauling, cloud computing or revolutionary Internet of Things applications, where people, data and things are all interconnected, are integrated in a single ecosystem that must be supported by a dynamic fiber network infrastructure. Therefore, new solutions providing a disruptive capacity increase while maintaining all the requirements of next generation flexible networks, as scalability, dynamic reconfiguration and transparency, have to be found. Space division multiplexing using multicore fibres (MCFs) combined with multi-band orthogonal frequency-division multiplexing (MB-OFDM) are a powerful integrated solution for provisioning of a disruptive capacity of 100 Gb/s per user in next generation optical access networks.

In this talk, we first discuss the benefits of MB-OFDM systems and show experimental results of an access network prototype developed in our lab with a capacity of 10 Gb/s per user. We then introduce the concept of space division multiplexing systems based on MCFs and discuss our latest outcomes achieved in the characterization of the intercore-crosstalk in MCFs. Finally, we discuss the integration of these two technologies as a potential solution for next generation optical access networks with a dedicated capacity per user of 100 Gb/s.