bits, the ZP-OFDM performance is maintained at 29 Gbps, whereas the CP-OFDM performance is degraded down to 14 Gbps with a modulation level of 8-QAM.

If the guard interval duration is increased changing the FFT size from 64 to 128 and 256 points, the achievable link length without IBI can be increased from 600 m to 1.2 km and 2.4 km, respectively. When 8 bits quantization is employed on these links, ZP-OFDM can work with 32-QAM modulation level reaching a bit throughput of 25 Gbps. On the other hand, CP-OFDM performance is degraded in both cases to a bit rate of 10 Gbps because only QPSK can be used.

The advantages of ZP-OFDM come at the cost of a higher implementation complexity at the receiver. The channel equalization is done in time domain and can be combined with the FFT by means of a matrix product. For example, a system with a 64-points FFT and a guard interval of 16 samples would need 4960 real products per OFDM symbol if ZP-OFDM is employed, or 892 real products per OFDM symbol if CP-OFDM is used.

Although this is a higher computational cost, it should be taken into account that in an OFDM receiver there are other parts with high computational cost, as the FEC decoding stage that is required to convert a 1×10^{-3} error rate to an error-free operation.

In previous studies [9], CP-OFDM has been combined with adaptive loading (receiving the name of AMO-OFDM) to set the number of bits transmitted in each subcarrier (or even to suppress transmission in some subcarriers) according to channel conditions. This adaptation requires a negotiation between transmitter and receiver after characterizing the channel frequency response. On the other hand, ZP-OFDM transmits with the same modulation level in all the available subcarriers; its good performance comes from the different equalization process at the cost of a higher computational cost at the receiver, but does not depend on a negotiation between transmitter and receiver. So, the use of ZP-OFDM can be a good solution either when negotiation between transmitter and receiver is not possible, or to avoid negotiation to simplify the link design.

Furthermore, this scheme could be applicable to point-to-multipoint optical links, such as Fiber to the x (FFTX) networks, or domestic deployments of Radio over Fiber (RoF), wherein the AMO-OFDM scheme cannot be implemented because channel response is different for each user and/or a return channel is not possible or at least it would increase considerably the costs of deployment.

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