

# Reliability of Optical Communication Systems. On Transmission Quality Evaluation

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## Abstract

Based on a detailed analysis of optical fiber communications systems reliability evaluation, the authors demonstrate that due to the quantum noise and the detection processes at optical frequencies, it is necessary to introduce new reliability indices with a higher degree of complexity; these indices take into account the quantum aspects of optical communication parameters, as well as the noise sources influences. In this paper an unified model for transmission quality analysis, which take into account the different optical fiber communications systems parameters, as well as the noise sources influences is introduced. This model will be developed based on the relationship between the error probability ( $P_e$ ) and the different noise sources.

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