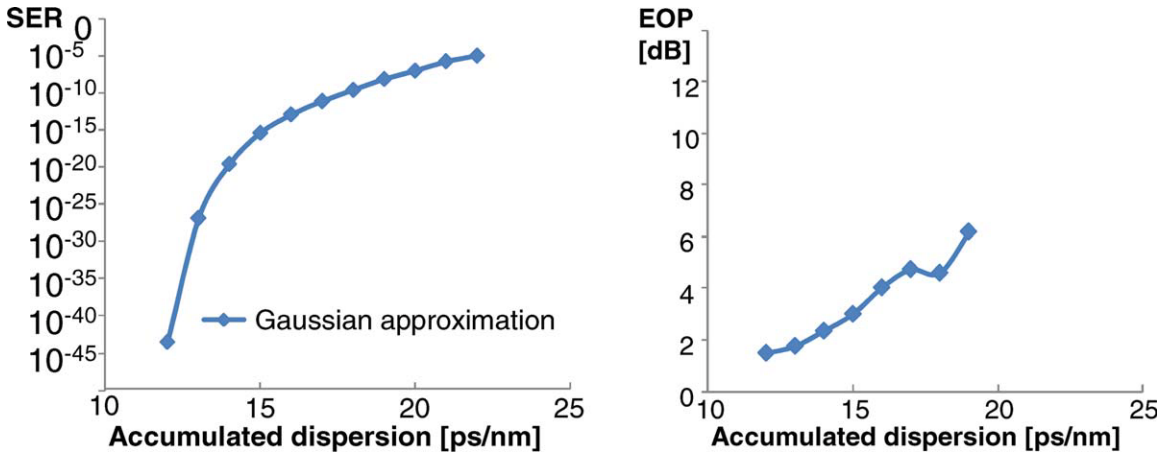

Figure 8 16-QAM 100 Gbit/s signal quality estimation in the presence of chromatic dispersion. [Color figure can be viewed in the online issue, which is available at wileyonlinelibrary.com]

equipments namely the sampling oscilloscopes with the EOP calculation software, when compared to the extremely expensive BER testers or the real time oscilloscopes, are required. The sampling oscilloscopes from the leading suppliers are based on the computer platforms with more than sufficient computational power to conduct the required calculations and have already implemented functions like the histogram calculations. By observing the EO of the *n*-QAM signals, the parameters like the DC-bias, the RF swing, and so forth can be adjusted to achieve the optimal performance of, for example, the *n*-QAM transmitters.

5. CONCLUSIONS

In this article, a novel method to evaluate quality of high speed *n*-QAM signals in optical communications is proposed. The proposed method is based on the EOP calculations and provides fast and accurate signal quality estimations. The procedure and formula to calculate the EOP for *n*-QAM signals was presented, verified, and compared with the well-established methods. The proposed method is based on analysis of the real signal features, which favors it over to the Gaussian approximation; moreover, it does not require extremely long bit streams like the Monte-Carlo simulations. It was verified that the proposed method perfectly reflected the signal quality changes related to dispersion and optical noise. The limitation of the proposed method is that it can be only used for the relative signal quality estimations. The proposed method can be implemented in the optical communication system simulation software as well as can be perfectly used to adjust performance of the *n*-QAM transmitters and the receivers in the laboratory and production environment. Summarizing, the presented results indicate excellent operation of the proposed method to estimate the *n*-QAM signal quality, and therefore, the great potential for applications in the *n*-QAM transmission system simulations and the laboratory and production environment.

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DESIGN OF A WIDEBAND 377 Ω E-SHAPED PATCH ANTENNA FOR RF ENERGY HARVESTING

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ABSTRACT: *The design of a 377 Ω E-shaped patch antenna with partial ground plane is presented and discussed in this article. Two parallel slots are introduced into the conventional patch antenna, and it was investigated by the currents through the patch to enhance its bandwidth. The antenna is designed, fabricated, and measured for downlink frequency band of GSM 900, which shows an impedance bandwidth of 29.03% (277 MHz) at 954 MHz.* © 2012 Wiley Periodicals, Inc. Microwave Opt Technol Lett 54:569–573, 2012; View this article online at wileyonlinelibrary.com. DOI 10.1002/mop.26607

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