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Near-Infrared Optical Transmitting Module for Service Channel of Atmospheric Quantum Communication Line

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Abstract. This work presents an optical transmitting module operating in the near-infrared wavelength range for the organization of a wireless service channel in an atmospheric optical quantum communication channel. The main characteristics were measured to demonstrate the functionality of the module and to assess the quality of the transmitted signal, such as the values of the error vector magnitude and the eye diagram opening level. It was determined that the transmitting module can operate at symbol rates up to 5 GBaud. In addition, the optimal signal modulation parameters were found and the possible bit rate of data transmission in the atmospheric optical communication channel was estimated: a QPSK-modulated signal with a carrier frequency of 80 MHz and a symbol rate of 50 MBaud allowed to get a bit rate of 100 Mbit/s with an EVM value of 14%.

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