Improvement of high power received using new receiver technique in free space optical communication ⊘

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Improvement of High Power Received Using New Receiver Technique in Free Space Optical Communication

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Abstract. Weather conditions such as precipitation, snowfall, scintillation, haze, and others can have a significant impact on the efficiency of a free-space optical communication device. The quality of the received signal must be maximized while the noise level is minimized, making the construction of a suitable receiver of paramount importance. In this paper, a novel receiver design based on the double transmission balance receiver is suggested (DTBR). It will evaluate its capabilities by contrasting them with those of a standard amplitude-shift-keying (ASK) transceiver operating in an on-off-keying mode. The analysis of the measured data in terms of received power and bit error rate is anticipated to lead to enhancements in signal power transmission quality (BER). From the results, we can conclude that conventional ASK-OOK can be improved upon by about 3dBm in terms of minimal power. DTBR with the ability to handle higher attenuation up to 16 dB/km can improve received power by 7%.
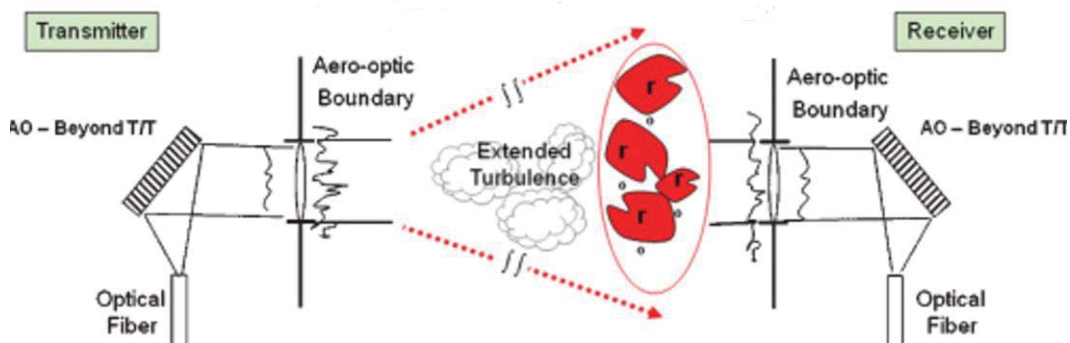
INTRODUCTION

Figure 1. Fundamental Free Space Optical transmission which consists of transmitter, channel and receiver

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