



# The Setup of the Free Space Optic Link for Dissemination of Optical Frequencies over Atmosphere

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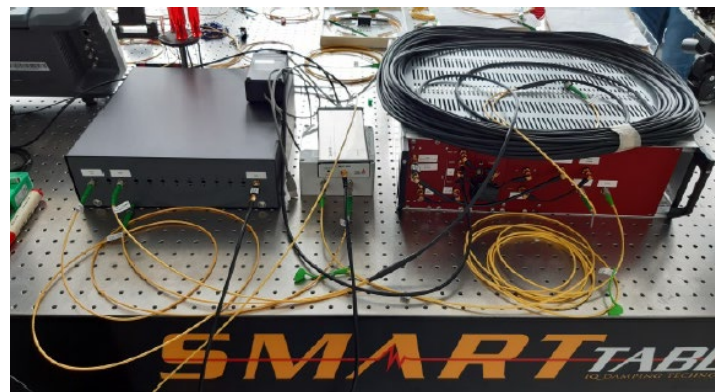
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**Abstract** – The subject of the functional sample is creating the setup to verify the point-to-point optical wireless connection (OWC) concept, which transmits a highly coherent optical frequency through free space. The source is radiation from the laser standard 1540 nm (Er: doped fiber laser locked in an ultrastable optical cavity, line width approx. 3 Hz level). The setup consists of the OWC system (the OWC unit shown on the left in Fig. 1) and the fiber stabilization and evaluation unit (Fig. 1 on the right). The OWC unit directly converts the optical wave from the fiber to the atmosphere and back. It is equipped with active stabilization of the received optical wave using a MEMS mirror. The fiber branch contains active stabilization of Doppler shifts by an optical fiber interferometer (including an acousto-optic modulator) and control electronics.

The device finds application in the field of atmospheric and space communications. The currently developed national photonic network for accurate frequency and time transmissions provides excellent potential for the application of OWC.



Obr. 1: The OWC unit (left) and the fiber stabilization and evaluation unit (right) for the transmission of optical frequency.