

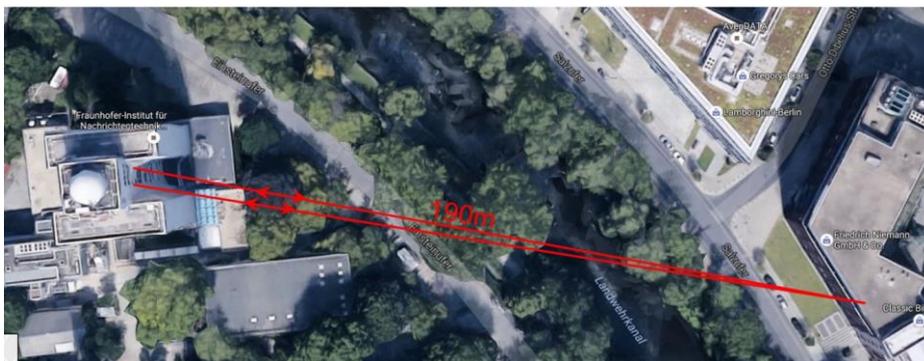
# PRESS RELEASE

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## 2x1.7-Terabit/s eye-safe optical link demonstrated over 380 meters at Fraunhofer HHI

**A bidirectional 1.7-Tbit/s free-space optical communications link has been set up between two buildings of the Fraunhofer Heinrich Hertz Institute HHI in Berlin. Eye-safe operation through 380-m air was successfully demonstrated at a total antenna output power of less than 10 mW. The signals in both directions consisted of 40 wavelength channels of 43 Gbit/s.**

The measured bit-error rate of the channels fluctuated between  $1E-8$  and 0 without forward error correction. The two bidirectional terminals were placed in the same building whereas a relay mirror was placed in the other building to increase the link distance. Fine and coarse tracking systems stabilized the coupling into the single-mode fibers at both terminals. This result was achieved with the support of Huawei Technologies. To increase the link distance to several kilometers, additional techniques, on which the Fraunhofer HHI is currently working, will be integrated to the terminals to mitigate optical turbulence effects. Applications of interest are high-speed free-space Internet connects in converged city and access networks.



A bidirectional 1.7-Tbit/s free-space optical communications link has been set up between two buildings of the Fraunhofer HHI in Berlin © Google Streetview

The fiber-based system that generates and demodulates the 1.7-Tbit/s signal was also successfully deployed over a free-space unidirectional 10-km link with the high-power free-space transmission system of the German Aerospace Center

**FRAUNHOFER HEINRICH HERTZ INSTITUTE**

(Deutsches Zentrum für Luft- und Raumfahrt; DLR):  
[http://www.dlr.de/dlr/en/desktopdefault.aspx/tabid-10261/371\\_read-19914/#/gallery/24871](http://www.dlr.de/dlr/en/desktopdefault.aspx/tabid-10261/371_read-19914/#/gallery/24871)

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The measured bit-error rate of the channels fluctuated between  $1E-8$  and 0 without forward error correction @ Fraunhofer HHI

Innovations for the digital society of the future are the focus of research and development work at the **Fraunhofer Heinrich Hertz Institute HHI**. In this area, Fraunhofer HHI is a world leader in the development for mobile and optical communication networks and systems as well as processing and coding of video signals. Together with international partners from research and industry, Fraunhofer HHI works in the whole spectrum of digital infrastructure – from fundamental research to the development of prototypes and solutions. [www.hhi.fraunhofer.de](http://www.hhi.fraunhofer.de)

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