



# Directional radio links for Industry 4.0 and 5G

Fast transmission of large amounts of data

The millimeter wave frequency range between 30 and 300 GHz enables the fast transmission of large amounts of data. Our high electron mobility transistors (HEMTs) address the highest frequencies with compact, monolithically integrated circuits. The systems realized with it are suitable e.g. for industrial applications and the extension of communication networks. Depending on frequency band and application, transfer rates of more than 100 Gbit/s can be achieved and distances of more than 30 km can be bridged.

## Features

- Monolithically integrated circuits (MMICs)
- Integration of transmit and receive functions on a chip up to 440 GHz
- Co-integration of CMOS functions on printed circuit boards and on wafer level
- Data rates of more than 100 Gbit/s with real-time signal processing

## Applications

- Transfer of large amounts of data in automated production processes
- Wireless extension of fiber optic networks in rural and urban areas
- Connections with data rates of Tbit/s between data centers and within office buildings

More information:



*Receiver circuit manufactured  
in the 35 nm technology of  
Fraunhofer IAF*  
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