400-GHz wireless transmission of 60-Gb/s nyquist-QPSK signals using UTC-PD and heterodyne mixer - DTU Orbit (13/01/2019)

400-GHz wireless transmission of 60-Gb/s nyquist-QPSK signals using UTC-PD and heterodyne mixer

We experimentally demonstrate an optical network compatible high-speed optoelectronics THz wireless transmission system operating at 400-GHz band. In the experiment, optical Nyquist quadrature phase-shift keying signals in a 12.5-GHz ultradense wavelength-division multiplexing grid is converted to the THz wireless radiation by photomixing in an antenna integrated unitravelling photodiode. The photomixing is transparent to optical modulation formats. We also demonstrate in the experiment the scalability of our system by applying single to four channels, as well as mixed three channels. Wireless transmission of a capacity of 60 Gb/s for four channels (15 Gb/s per channel) at 400-GHz band is successfully achieved, which pushes the data rates enabled by optoelectronics approach beyond the envelope in the frequency range above 300 GHz. Besides those, this study also validates the potential of bridging next generation 100 Gigabit Ethernet wired data stream for very high data rate indoor applications.

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Contributors: Yu, X., Asif, R., Piels, M., Zibar, D., Galili, M., Morioka, T., Jepsen, P. U., Oxenløwe, L. K.
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