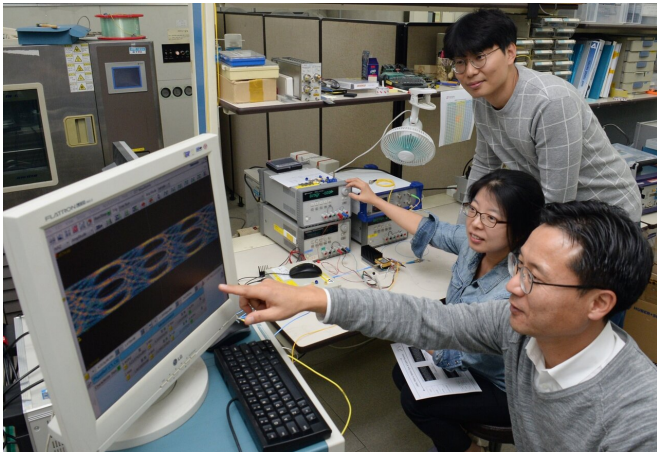


Team develops optical communications technology to double data transfer speed

24 February 2020



ETRI researchers are discussing the characteristics of 200Gbps the QSFP-DD transceiver. Credit: Electronics and Telecommunications Research Institute (ETRI)

Researchers in South Korea have developed a new optical communications technology that can transfer data at lightning speed. The new technology sends and receives twice as much data as conventional methods. It is expected to contribute to solving data traffic congestion in 5G networks.

The Electronics and Telecommunications Research Institute (ETRI) in South Korea has succeeded in developing a compact 200Gbps optical transceiver in the QSFP-DD (Quad Small Form-factor Pluggable Double Density) form factor. It would take about four seconds to transfer an ultra-high-definition 4K film which is about 100 gigabytes.

The new technology significantly improved data transfer speed by adopting a four-stage high-order [modulation](#) method, which is PAM-4 modulation with direct detection. While previous two-stage modulation technology sends one bit a time, the

new technology sends two bits. Moreover, it allows efficient data transfer between telecom nodes to other local networks as far away as 80 kilometers.

The new technology, 200Gbps QSFP-DD transceiver, provides a cost effective alternative to the other coherent modulation for the metro-access [network](#) (such as an inter-data center network or mobile back-haul network).

The merit of the new technology is the minor sensitivity to changes in wavelength and temperature and its simple manufacturing process. Hence the [power consumption](#) is 1.5 times lower and the density is 4 times higher, thereby reducing the communications equipment investment cost.

ETRI has designed and developed a unique PAM-4 DSP algorithm. The new technology combined with the PAM-4 DSP algorithm has been proven with a real-time demonstration which is a world-best record. The research outcome was published in the journal, *Optics Express*, a renowned journal in optical communications research sector.



The 200Gbps QSFP-DD transceiver developed by ETRI researchers. Credit: Electronics and Telecommunications Research Institute (ETRI)

More information: Sang-Rok Moon et al, Realization of real-time DSP for C-band PAM-4 transmission in inter-datacenter network, *Optics Express* (2019). [DOI: 10.1364/OE.382194](https://doi.org/10.1364/OE.382194)

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