

# A Flexible Fiber Access Network using Superchannel Coherent Optical Orthogonal Frequency Division Multiplex

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**Abstract**— We report the feasibility of 100 Gbps per channel QPSK signal transmission to employ the concept of flexible network on fiber access network by using polarization division multiplexed coherent optical orthogonal frequency division multiplexing (PDM-CO-OFDM) based superchannel signal, self-coherent detection and incorporated with wavelength selective switch (WSS), which is replaced the passive optical splitter in an installed FTTx network in order to respond the various demand from different optical network units (ONUs). The computer simulation results of transmission over c-band demonstrate the achievable bit rate and over the maximum performance of switching characteristic at 16 symbol and 15 ps under BER  $10^{-4}$ , consecutively.

**Keyword**— optical fiber transmission, coherent optical orthogonal frequency division multiplexing (CO-OFDM), flexible network, superchannel, optical coherent detection, polarization division multiplexing (PDM), digital signal processing (DSP), fiber access network.



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