

**Title:** IEEE 802.15.3c WPAN standard using millimeter optical soliton pulse generated by a panda ring resonator

**Author/Authors:** I. S. Amiri, S. E. Alavi, Sevia M. Idrus, A. Nikoukar, J. Ali

**Abstract:** A system of microring resonators (MRRs) connected to an optical modified add/ drop filter system known as a Panda ring resonator is presented. The optical soliton pulse of 60 GHz frequency band can be generated and used for Wireless Personal Area Network (WPAN) applications such as IEEE 802.15.3c. The system uses chaotic signals generated by a Gaussian laser pulse propagating within a nonlinear MRRs system. The chaotic signals can be generated via a series of microring resonators, where the filtering process is performed via the Panda ring resonator system wherein ultrashort single and multiple optical soliton pulses of 60 GHz are generated and seen at the through and drop ports, respectively. The IEEE 802.15.3c standard operates at the 60 GHz frequency band, and it is applicable for a short distance optical communication such as indoor systems, where the higher transmission data rate can be performed using a high frequency band of the output optical soliton pulses. The single and multi-soliton pulses could be generated and converted to logic codes, where the bandwidths of these pulses are 5 and 20 MHz, respectively. Thus, these types of signals can be used in optical indoor systems and transmission link using appropriate components such as transmitter, fiber optics, amplifier, and receiver.