

Short-Range Wireless Communications for Next Generation Networks: UWB, 60 GHz Millimeter-Wave WPAN, and ZigBee

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Abstract:

This article presents standardization, regulation, and development issues associated with shortrange wireless technologies for next-generation personal area networks (PAN). Ultra-wideband (UWB) and 60 GHz millimeter-wave communication technologies promise unprecedented shortrange broadband wireless communication and are the harbingers of multigigabit wireless networks. Despite the huge potential for PAN, standardization and global spectrum regulations challenge the success of UWB. On the other hand, ZigBee™ is expected to be a crucial short-range technology for low throughput and ultra low-power consumption networks. The current status and direction of future development of UWB, emerging 60 GHz millimeter-wave PAN, and low data rate ZigBee are described. This article also addresses wireless MAC protocol issues of 60 GHz multigigabit PAN.