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Consideration of directivity of antennas for high frequency wireless body area networks during human movements

Abstract—As increased requirements for much high speed and capacity in wireless communications, frequency bands become higher, such as millimeter wave or terahertz wave. In these high frequency bands, beamforming is employed to gain stable connec- tivity. On-body body area network is one of fascinate application of these high capacity frequency bands. However, directions of on- body antennas largely varies and shadowing frequently occurs due to human movements. In this paper, variation of antenna directions and shadowing of on-body propagation during human walk movement is investigated. As a result, range of antenna rotation and shadowing rate, which can be used future system design of high frequency body area networks, is clarified.

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