Antenna Polarization Mismatch in BAN Communications

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Abstract:

In any wireless communications, antennas and propagation are key concerns. Their importance becomes more significant for in/on-body wireless applications. Body Area Communication (BAN) links lead to propagation problems considerably different from free space wireless communications due to presents of body tissues and body movements. The use of body area network devices is not without many significant challenges, particularly, the increasing of propagation losses in biological tissue and enormous figure of body poses. Therefore, to ensure the efficient performance of body area wireless communication the electromagnetic wave propagation need to be characterized and modeled for reliable communication system with respect to environment, antenna, body postures , and body movements. The complexity of the human tissues structure, body shape, and different possible postures of body, makes it difficult to drive a simple path loss model for BAN scenarios. This paper discusses on polarization mismatch due to body movements between on-body transmitting antenna and off-body receiving antenna.