ON-OFF body ultra-wideband (UWB) antenna for wireless body area networks (WBAN): a review

ABSTRACT

Ultra-wideband (UWB) technology can offer broad capacity, short-range communications at a relatively low level of energy usage, which is very desirable for wireless body area networks (WBANs). The involvement of the human body in such a device poses immense difficulties for both the architecture of the wearable antenna and the broadcast model. Initially, the bonding between the wearable antenna and the human body should also be acknowledged in the early stages of the design, so that both the potentially degrading output of the antenna as a consequence of the body and the possibility of exposure for the body may be handled. Next, the transmission path in WBAN is affected by the constant activity of the human body, leading to the time-varying dispersion of electromagnetic waves. Few researchers were interested in this field, and some substantial progress has recently been considered. On the other hand, this paper covered both wearable and Non-wearable UWB antenna designs and applications with respect to their substrate characteristics. Finally, this review prospectively exposes the upgraded developments of (ON-OFF) body antennas in the area of wearable and Non-wearable UWB and their implementations in the WBAN device and aims to evaluate the latest design features that inspire the performance of the antennas.

Keyword: Ultra wideband antennas; Wireless communication; Body area networks; Substrates; Bandwidth