

Enhanced ultrawideband (UWB) micro-strip on-body wearable antenna

Abstract

This paper presents an ultra-wideband micro-strip patch On-Body wearable antenna for medical applications using WiMAX. The antenna uses thick indigo blue jeans as substrate. The antenna is designed at the resonant frequency of 3.5 GHz. The dimensions of the antenna and the slit have been modified to achieve wide bandwidth. By doing so, not only the bandwidth of 15 GHz has been achieved but the antenna size is reduced by 13.4% as well. The proposed antenna simulation results including gain, directivity and radiation pattern are reported. The results show that the antenna not only provides satisfactory results for the WiMAX applications but also provides extremely good results including the VSWR of 1.12, the gain of 5.8 dB and the directivity of 6.8 dB at 20 GHz. The proposed antenna achieves a remarkable bandwidth as well as a significant size reduction. Hence, the proposed antenna can be used for medical applications using WiMAX as well as the applications operating up to at 20 GHz.

Keyword: Bandwidth enhancement; Directivity; Gain; Micro-strip patch on-body wearable antenna; Radiation pattern; Return loss; Ultra-wideband; WiMAX