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Design of Microstrip Patch Antenna on Rubber Substrate with DGS for WBAN Applications

(Conference Paper)

Sakib, N. , Ibrahim, S.N. , Ibn Ibrahimy, M. , Islam, M.S. , Mahfuz, M.M.H.

International Islamic University Malaysia, Dept. of Electrical and Computer Engineering, Kuala Lumpur, Malaysia

Abstract

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The physical flexibility has a significant impact on microstrip antenna design for wireless body area network (WBAN) application and designing such an antenna on a flexible substrate has many challenges. This paper presents an inset-fed microstrip patch antenna designed on a rubber substrate with defected ground structure (DGS). DGS is used to further enhance the antenna performances. The designed antenna is expected to operate at 2.45 GHz within the ISM band range and the return loss is -37.33dB with wide -10dB bandwidth of 101MHz. In addition, the VSWR value is 1.03 at the resonant frequency with an increase of 7.5% in the realized gain compares to the antenna without DGS. The accumulated surface current is 174 A/m on the radiating patch with a maximum realized gain of 3.42 dB and the maximum radiation efficiency of more than 60%. The antenna design, simulation, and performance analysis have been conducted using Computer Simulation Technology (CST) software. This paper focuses on the improvement in the return loss and antenna operating bandwidth of the flexible antenna to make it suitable for WBAN application. © 2020 IEEE.

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Antenna performance Computer simulation technology (CST) Flexible substrate
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