Design and Measurement of a 2.45 Ghz On-Body Antenna Optimized for Hearing Instrument Applications - DTU Orbit (23/12/2018)

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A balanced PIFA-inspired antenna design is presented for use with the 2.45 GHz ear-to-ear radio channel. The antenna is designed such that the radiated electric fields are primarily polarized normal to the surface of the head, in order to obtain a high on-body path gain ($S_{21}$). The antenna structure can be made conformal to the outer surface of a hearing instrument, such that the bandwidth of the antenna is optimized given the available volume. The radiation patterns, ear-to-ear path gain and available bandwidth is measured and compared to the simulated results. It is found that the antenna obtains a relatively high ear-to-ear on-body path gain, as well as a bandwidth that is large enough to cover the entire 2.45 GHz ISM band.

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