Improvement of the ear-to-ear path gain at 2.45 GHz using parasitic antenna element

Two antenna configurations are considered for ear-to-ear on-body communications at 2.45 GHz. Both consist of monopole antennas operated on small ground planes that are placed next to the human head. Their performances are compared in terms of maximum path gain (|S21|) and obtainable bandwidth of the antenna structures. It is found that the bandwidth, as well as the ear-to-ear path gain can be improved by the addition of a parasitic monopole antenna element. The parasitic antenna element affects the electric current distribution on the ground plane, which has a favorable impact on the on-body antenna polarization.

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