Abstracts

Polarization and human body effects on the microwave absorption in a human head exposed to radiation from handheld devices

M.E. Iskander, Zhengqing Yun and R. Quintero-Illera. "Polarization and human body effects on the microwave absorption in a human head exposed to radiation from handheld devices." 2000 Transactions on Microwave Theory and Techniques 48.11 (Nov. 2000, Part II [T-MTT] (Special Issue on Medical Application and Biological Effects of RF/Microwaves)): 1979-1987.

A multigrid finite-difference time-domain code was used to calculate specific absorption rate (SAR) distribution in a human head exposed to microwave radiation from handheld antennas. The effect of the human body was taken into account and different antennas and polarization conditions were considered, The distance between the antenna and human head were varied to examine the effect of the human body on the SAR distribution, From the numerical results, it is shown that the human body plays a significant role on the SAR value and its distribution in the head [as high as 53% monopole, 41% planar inverted F antenna (PIFA)]. It is also shown that the effect of the body is more dominant at lower frequencies (monopole 900 MHz versus 1.9 GHz). For the monopole case, effect of body is particularly important at larger separation distances from the head, e.g., at d=4 cm versus d=0.5 cm. Effect of body is particularly important for the vertical orientation cases for both the monopole and PIFA.

❑ Return to main document.