Human EM Exposure Study for Some Big Scenarios

V. Jeladze

V. Tabatadze [a], I. Petoev [a], M. Prishvin [a], L. Bibilashvili [a], M. Tsverava [a], R. Zaridze [a]

Email: veriko.jeladze@ens.tsu.edu.ge

[a] Laboratory of Applied Electrodynamics, Tbilisi State University, Chavchavadze Ave. #3

The motivation of this paper is to study the influence of the background EM field (at wireless connection frequencies) on the human body. We have investigated the EM field's distribution in the closed, semi-open and open geometries with the presence of the human model. We studied the EM wave field's nature for some big scenarios considering interaction with an object like a human body. Besides, we have an interest in dependence of the radiated pattern on the user's position, mobile position and window location for the studied geometry. We consider several cases with different positions of the EM source, and different transparency coefficients for the surfaces of the semi-closed geometries. A special attention in the paper is paid to the modeling methodology of surface transparency variations. An algorithm based on MAS method applied to the semi-open geometries. Because of resonance phenomena on some frequency and surface transparency the strength of the standing EM field becomes extremely high and this is the cause of the high SAR values. Results of calculations are presented in the paper mainly for different wireless connections frequencies.