

Abstract

Recently there have been a growing concern over the lightning caused damages, and disturbances on the consumer operated equipment utilizing a telephone line. This concern has been attributed by the fact that most of today's consumers' equipment comprise of electronic devices or microprocessor controls that operate at low voltages, which can be superseded by even distant lightning strike. Lightning strike can be either direct or indirect, which causes induced voltage along the telephone lines when it strikes on to the line or at a distance from the line. In this paper the induced voltages on a conductor of 7m height above the ground are calculated as a function of distance from the strike point using Finite Difference Time Domain (FDTD) method, as it could be a necessary data for deciding the possible future protection scheme. It has been shown that finitely conducting ground (lossy case) has pronounced effects for lightning surge propagation and induced amplitude overvoltages along the telephone line above the ground and cannot be neglected in the calculations of the induced overvoltages along the line due to lightning strike compared to an infinitely conducting ground (lossless case).