Abstract
Metal Oxide Surge Arrester (MOSA) have been used for telecommunication and power lines transient protection. MOSA has dynamic characteristics that are significant for overvoltages coordination studies regarding fast front surges. Several models with acceptable accuracy have been proposed to study the frequency-dependent behaviour of MOSA. These models differ in calculation and adjustment of the model parameters, some models needs iterative procedure and other models the necessary data are not reported in the manufacturers' data sheets. A simplified model by Pinceti has been used to study protection of overhead transmission line against direct lightning strike. In this paper, simulations have been performed using the Alternative Transients Program version of Electromagnetic Transient Program (ATP-EMTP) and the results were compared with the ones of manufacturer's data sheet and found to be satisfactory. Pinceti model has a small relative error of 2.26% for fast transient surge (1/2μs) and of 1.05% for slow transient lightning surge (8/20μs) respectively when compared our results with the results from manufacturers' data sheet. The simulations were performed for a 3kV TRANQUELL MOSA and its effective protection when applied to the end of 1km line and lightning strike of 0.11/20μs a typical subsequent return stroke current was injected at the middle of the line. It has been observed that, the significant dynamic characteristics of MOSA are that the peak of the voltage wave occurs before the peak of the current wave and that the residual voltage across the MOSA increases as the time to crest of the MOSA discharge current decreases.