

## **Evaluation of lightning current and ground reflection factor using measured electromagnetic field**

### **ABSTRACT**

In this paper, an inverse procedure algorithm is proposed to evaluate lightning return stroke current wave shapes at different heights along a lightning channel, as well as the ground reflection factor using measured electromagnetic fields at an observation point while the current model can be set for different models based on the general form of the engineering current models. In order to validate the proposed method, a set of measured electromagnetic fields are used as the input parameters for the proposed algorithm. Likewise, the evaluated channel base current is compared to the corresponding measured current and also the simulated fields at another observation point (based on the evaluated current) are compared to the corresponding measured fields and the results are discussed accordingly. The results show that the evaluated current and fields based on the proposed method are in good agreement with respect to the corresponding measured values.

**Keyword:** Electromagnetic fields; Ground reflection factor; Lightning; Return stroke current