

Prototype Design and Testing of Electrically Short Rhombus Antenna for Lightning Detection

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Abstract:

Lightning is a sudden and violent electrical discharge of short duration that occurs in atmosphere of a planet. It produces optical signals, ELF and VLF electromagnetic waves and acoustic waves. On Earth, Lightning primarily gets produced into two categories viz. cloud-to-ground discharge and intra-cloud discharge. On the Venus, Clouds appears from around 45 km to 70 km. Pioneer Venus orbiter detector had detected plasma waves propagating in whistler mode on the night side of the Venus. The detector responded with radio frequency of 100 Hz, 730 Hz, 5.4 kHz and 30 kHz. This paper presents the design of electrically short Rhombus antenna for detection of lightning at Extremely and Very Low Frequencies. For the coverage of wider frequency band, the varying size of rhombuses in two separate arms of dipole has been kept. A prototype has been fabricated and tested for signal reception under standard laboratory conditions.

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