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ELECTRIC FIELD DETECTOR ON CSES

Abstract

Electric Field Detector (EFD) is one of the main payloads on CSES (China Seismo-Electromagnetic Satellite). The objective of the EFD is to provide continuous detection of the electric field in the space plasma environment above China and the whole world around the satellite orbit, aiming to provide basis data to help with the research on the electromagnetic variety related with seismic activities. To achieve the three axis measurements of the space electric field, EFD applies double probe method making use of 4 non-coplanar spherical probes which are deployed by reel booms at about 4.5m away from the satellite. Measurements are made over a wide range of DC 3.5MHz covering nearly the whole frequency range of electric field coupling with seismic activities in the past research. The dynamic range is ≥ 120 dB in DC 20 kHz. EFD has the data processing function on orbit and switching modes function between the survey mode and burst mode in use of the signal-processing module. A detail description of the instrument and its specifications are presented in this paper. EFD has been produced out and experienced through some tests. The results of the tests are shown in this paper too.