

Three Dimensional Analysis of Cubesat Thermal Vacuum Test

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Abstract : Thermal vacuum testing target is to qualify the space system and ensure its operability under harsh space environment. The functionality of the cubesat was checked at extreme orbit conditions. Test was performed for operational and nonoperational modes. Analysis is done to simulate the cubesat thermal cycling inside thermal vacuum chamber. Comsol Multiphysics finite element is used to solve three dimensional problem for the cubesat inside TVAC. Three dimensional CAD model is done using Autodesk Inventor program. The boundary conditions were applied from the actual shroud temperature. The input heat load variation with time is considered to solve the transient three dimensional problem. Results show that the simulated temperature profiles are within an acceptable range from the real testing data.

Keywords : cubesat, thermal vacuum test, testing simulation, finite element analysis

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