

“FAILURE MODE EFFECT AND CRITICALITY ANALYSIS PERFORMANCE TEST ON DC BRUSH MOTORS USED IN SPACECRAFT APPLICATIONS”

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ABSTRACT

Spacecraft components are expected to withstand intensive launch loads and withstand adverse environmental conditions that are encountered during the space mission. These components are tested rigorously and performance test procedures are used to evaluate the components for qualification and acceptance decisions. The work reported in this paper demonstrates the development of FMECA analysis for the stringent performance standards that is expected of the DC brush motors, which are used to power the deployment mechanism of the unfurlable antenna in a spacecraft. The DC Brush motors are one of the critical components in the space module.

The rigorous testing of the DC brush motors yield a large number of failures occurring during the test. This paper highlights the analysis of failure events observed in DC brush motors using the FMECA Technique. This work adds value to the decision making process in the organisation by analysing the performance failures using the FMECA methodology. The corrective measures suggested through the analysis, helps the decision makers in qualifying the Components based on the performance tests.

KEYWORDS: DC Brush Motor, Unfurlable Antenna, FMECA, Performance Test