

SLS Booster Radiation Environment

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1 Executive Summary

2 Reproducing DSNE 200 km Tables using CREME96

The 200 km LET (Linear Energy Transfer) and particle flux environments SLS-SPEC-159 Cross-Program Design Specification for Natural Environments (DSNE) were obtained using the Cosmic Ray Effects on Microelectronics 96 (CREME96¹). In this section, DSNE Tables 3.2.13-1 – 3 are reproduced using the technical notes provided in the DSNE.

For the LET and flux, the GTRN routine is ran using the following options:

- 200 km circular orbit
- 51.6 degrees orbit inclination
- Effective L-shell range: $2.4 \leq L \leq 2.55$
- Stormy magnetic weather conditions

2.1 Linear Energy Transfer (LET)

2.2 Differential Flux

2.3 Integral Flux

3 Updated 50 km Environment

3.1 Assumptions

3.2 Linear Energy Transfer (LET)

3.3 Differential Flux

3.4 Integral Flux

4 Comparison of 50 km and 200 km Environments

5 Results

¹<https://creme.isde.vanderbilt.edu/>

References