

Geosci. Instrum. Method. Data Syst. Discuss., author comment AC1  
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## Reply on RC1

Mark B. Moldwin et al.

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Author comment on "Single-event effect testing of the PNI RM3100 magnetometer for space applications" by Mark B. Moldwin et al., Geosci. Instrum. Method. Data Syst. Discuss., <https://doi.org/10.5194/gi-2022-5-AC1>, 2022

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Referee Question: "Going forward is there a middle ground for such testing of the PNI RM3100, that is not destructive, but could still be beneficial in increasing the space-worthiness/reliability of this device?"

The standard practice and guidance is that "Microcircuits under test must be delidded [decapsulated]." This is to ensure knowledge of the LET through the circuitry as the cover of the IC could degrade the energy of the beam before reaching the circuitry.

JEDEC, "Test procedure for the management of single-event effects in semiconductor devices from heavy ion irradiation," JESD57A, Nov 2017

<https://ieeexplore.ieee.org/document/4638609>

"The experimenter should know within reasonable accuracy the LET through the device sensitive volume. The test facility typically reports the initial LET and surface LET as the ion exits the source. However, the experimenter should take care to understand beam degradation through air and other mediums before the sensitive volume. Overburden layers can be significant in some high-density modern ICs. Also, some device types have deep structures that require a long ion range to penetrate the sensitive volume, in order to trigger some destructive effects. So, it is always beneficial to have information on the device dimensions, or be conservative in the beam energy and ion range."