Geoscientific Instrumentation Methods and Data Systems Discussions

Geosci. Instrum. Method. Data Syst. Discuss., author comment AC2
https://doi.org/10.5194/gi-2022-5-AC2, 2022

Reply on RC2

Mark B. Moldwin et al.

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-AC2, 2022

Thanks for the careful reading and review.

1) The authors note that single event functional interrupts (SEFIs) were observed but rare. Could you quantify how frequently these occur?

Only very limited SEFI (single-event functional interrupt) testing was done by operating the part in a continuous measurement mode and counting fluence-to-failure, where failure would be a sudden offset in reading, a frozen axis, change of scale, or lack of communications. This test visit did not have the time and the events were not recorded to investigate the small number of events or their cause (likely upset bits in control registers), but the number observed were very small.

2) The authors note, quite reasonably, that the magnetic readings inside the cyclotron facility are inherently noise and unlikely to be meaningful. Was any attempt made to assess if there was any residual damage from the SEFI events from the testing? For example, did the two tested units perform within manufacturer specifications after testing?

No performance testing was done on the chips after their decapsulation, only functional testing prior, during and after the beam SEE testing.