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PAPER TITLE CHARACTERIZATION OF THE NEW HARSHAW 4500 TLD READER

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ABSTRACT (See instructions overleaf)

The Harshaw Model 4500 Manual TLD Reader is a newly designed instrument that is unique in its ability to read all forms of Harshaw thermoluminescent (TL) material: cards, Chipstrates[™], chips, rods, microcubes, disks, and powder. The unit uses a sliding, dual-tube PMT Assembly to simultaneously read two positions of a TLD card or two Chipstrates, or to read a single unmounted dosimeter. Mounted dosimeters are heated with a hot gas medium to a maximum of 400°C. Unmounted dosimeters are heated by conduction on a planchet heated by electrical resistance to a maximum of 600°C. In both cases, the temperature is held precisely to a linear time-temperature profile by an electronic, closed loop feedback system. This paper reports the complete characterization of the reader in both heating modes, using IEC standards as a guide. Superior results were achieved and are reported in the following categories: detection threshold, reproducibility, ambient light sensitivity, climatic sensitivity, residual signal, system stability, linearity, test light stability, and power leakage.