AbstractID: 10664 Title: Evaluation of physical characteristics of a prototype portable dosimeter system in CT: Comparison between portable and mobile MOSFET dosimeter systems.

Purpose: The purpose of this study was to evaluate the physical characteristics of a prototype portable MOSFET dosimeter system (TN-RD-91, Best Medical Canada, Ottawa, Canada) and compare its performance with the mobile MOSFET dosimeter system (TN-RD-70-W) at clinical diagnostic settings.**Method and Materials:** Two dosimeters (TN-1002RD) of each system were placed side by side accompanied by an ion chamber (model 10x5-6) and Radiation Monitor (model 9015, Radcal, Monrovia, CA) on top of a tissue equivalent phantom 150mmx150mmx200mm (CIRS, Norfolk, Virginia). They were exposed to a beam quality of HVL 7.24 mm Al for the GE CT scanners (GE Healthcare, Milwaukee, WI). **Results:** We evaluated and compared the portable and mobile MOSFET dosimeter system (with high sensitivity reader bias) for sensitivity, linearity, and reproducibility at two CT beam energies: 120 kVp and 80 kVp. The average sensitivity at 120 kVp was 28.8$\pm$1.01 mV/cGy for portable dosimeter and 31.61$\pm$0.84 mV/cGy for mobile MOSFET, and 32.3$\pm$1.3 mV/cGy and 31.62$\pm$0.25 accordingly at 80 kVp. The linearity of dosimeters was tested from 0.3 mGy to 14.0 mGy; the goodness of fit at 120 kVp for the portable dosimeter was 0.9982 and for the mobile MOSFET: 0.9973. The goodness of fit at 80 kVp was 0.9992 and 0.9997 accordingly. The reproducibility for both dosimeters was evaluated at 120 kVp and 80 kVp from 1 mGy to 17 mG and showed comparable results at each of dose points. **Conclusion:** We conclude that the portable dosimeter and mobile MOSFET performance characteristics are basically equivalent and the portable dosimeter offers an alternative to regular mobile MOSFET system. **Conflict of Interest:** Best Medical Canada provided the prototype portable dosimeter system for the study