# AbstractID: 7558 Title: Exposure Index calibration for a portable DR detector – A Practical Guide for the Clinical Medical Physicist

**Purpose:**
Establish a method for calibrating and utilizing the exposure indices (EXP, REX) of a Canon portable DR imaging system.

**Method and Materials:**
The Canon model CXDI-50 was investigated in order to understand the nature of the reported EI's, to establish a calibration procedure, and to verify the EI adequacy as an indicator of the detector exposure for clinical procedures. Canon reports two EI's: "REX", which changes with image processing settings and "EXP" which is independent of image processing changes. However, there was very little documentation of the EXP parameter and no associated calibration procedure.

The effect of an undocumented adjustment parameter ("Constant for Exposure Index") was investigated and ultimately served to calibrate the EXP value for a standard RQA6 beam (80kVp, 27 mmAl). Using an ionization chamber the exposure at the input to the detector was measured as a function of the reported values of EXP and REX for the RQA6 beam, for 70 kVp, 0.5 mmCu+2 mmAl (TG116), and for several combinations of kVp and acrylic attenuator.

**Results:**
Both REX and EXP linearly increase with exposure (different slope). REX is associated with the density on a printed film and thus changes with window and level settings. This makes REX a poor indicator of exposure adequacy. The "constant for exposure index" has no affect on REX. To achieve the same EXP value as obtained with RQA6, the detector dose must be increased by 20% for 80kVp, 8" acrylic, 31% for 120kVp, 6" acrylic, and 43% for 60kVp, 6" acrylic.

**Conclusion:**
The information presented will be particularly useful to a medical physicist desiring to establish the calibration of EXP, to determine the appropriate target EXP for a particular body part and view, and to calibrate a phototimer to be utilized with the Canon DR system.

**Conflict of Interest:**