# CHARACTERIZATION OF MINIATURE LOW-POWER X-RAY TUBES

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A new miniature x-ray tube has been developed. It was designed for low-power applications such as battery-operated portable instruments. With the integrated high-voltage power supply the source operates at an output power of 3.5 watts (35KV and 100μA) with a maximum input of 8 watts. The tube is a transmission target end-window design, with a thin film anode on the back of the Be exit window. The small size and transmission anode design allows very close coupling of the source and sample, which should provide analytical results comparable to traditional low-power x-ray tubes. A charge-coupled device (CCD) pinhole camera was employed to characterize the tubes' x-ray beam spot. Spectral purity and flux output, as well as output stability under various operational conditions, were measured using both lithium-drifted silicon (Si(Li)) and PIN-diode detectors. Also, results of life testing under various duty cycles will be presented.