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**PERFORMANCE OF NEXT GENERATION TEMPERATURE
CONTROLLED PRECISION RADIOMETERS AND PHOTOMETERS**

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Major improvements in detector based optical radiation transfer standards have led the lowering of overall uncertainty of the definition of the physical temperature scale, candela, luminance, illuminance, spectral responsivity and other optical radiation parameters. A new generation of precision trans-impedance amplifier and temperature control for semiconductor detector based optical radiation transfer standards has been developed. Building on the experience gained in the previous design, features to reduce overall cost of laboratory implementation, noise reduction in the amplifier system that achieves femto-ampere sensitivity levels and local micro processor interface of analog to digital conversion have been added to a currently available design. A detailed look at the previous designs performance parameters and comparison to the current design performance characteristics is presented, including temperature stability of both amplifier electronics and detector and spectral selection filters, linearity of both amplifier and detector/amplifier.