

## **Change of the Emittance of a Flat Plate Calibrator after Three Years of Usage**

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For the calibration of some infrared cameras and radiation thermometers with large fields of view, it is useful to have radiators that have emitting areas with diameters larger than those of the typical apertures of blackbody cavities. Because Flat plate calibrators have such large areas, they are used in many calibration laboratories. It is a normal procedure to calibrate them radiometrically in a given spectral range (typically the 8 to 14 micrometer wavelength range) because their radiant surfaces do not have the emissivity of a blackbody, nor of a gray-body. This procedure makes it possible to use them to calibrate radiation thermometers working in that wavelength range without needing to know the actual spectral emittance of the calibrator. If a flat plate calibrator is to be used to calibrate radiation thermometers that work in different wavelength ranges, then it is necessary to know its spectral emittance to make the appropriate corrections to the measurement results. For this purpose, an emittance measurement facility based on a Fourier Transform Infrared Spectrometer was developed at Centro Nacional de Metrología (CENAM, Mexico). In 2011, the spectral emittance of a brand new flat plate calibrator was measured, and it was re-measured after three years of usage. It was found that there was a change in the spectral emittance of the calibrator: 0.8% in the 8 to 14 micrometer wavelength range, and more than 3 % in the 5 to 8 and 14 to 25 micrometer wavelength ranges. In this work, the measurement results are presented.