

Abstract —Output from a reference solar cell mounted on a one-axis tracking surface is investigated using 350 nm to 1650 nm spectral irradiance measurements on selected days throughout the year. Comparisons are made to a Class-A pyranometer also mounted on the tracking surface. The ratio of the reference cell's measurements to reference pyranometer measurements exhibit systematic biases over the day and year. Most of this bias is linked to spectral, temperature, and angle-of-incident effects that differ for the reference cell and the pyranometer. The comparison is done for selected clear and totally cloudy days to determine the magnitude of the effects and to characterize they influence the measurements made with reference cells. Index Terms —Reference solar cells, spectral measurements, one-axis tracker, pyranometer, resource assessment