

# Experimental Characterization of photovoltaic modules

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*Abstract—Photovoltaic solar energy is one of the most used renewable energies, using a solar cell we can convert the solar radiation into electricity, Research is being done to boost their output. It is impossible to understand innovations in science without the aid of characterizations and measures. Measurements are necessary for R&D, production and thus for the functioning of the physical principles of the PV cell up to the PV module in operation. Indeed, characterizations of cells and panels in the laboratory under so-called standard test conditions (STC or NOCT) are important for comparing cells or modules with one another but do not reflect their functioning under other real conditions. The objective of this study is to characterize the PV module ET-M53685 in real conditions of use, and to see the most influential external factors, on the behavior of the PV module. The first part is to measure the characteristics  $I(V)$ ,  $P(V)$  of two modules, and the characterization of the site. The second part consists of determining these factors such as the voltage, current, power and efficiency as a function of temperature. To determine the tolerance and reproducibility factor of the characteristics compared to those of the manufacturer while trying to simulate the same measurement conditions as during manufacture (STC, NOCT), and the factor of degradation of the modules as a function of time.*

*Keywords— Photovoltaic, Renewable Energy, Solar Cell, Characterization*