

SCF-Test of MoonLIGHT/LLRRA21, the Lunar Laser Ranging Retroreflector for the 21st Century

G. Delle Monache¹, S. Dell'Agnello¹, D. Currie², R. Vittori³, C. Cantone¹, A. Boni¹, S. Berardi¹, G. Patrizi¹, C. Lops¹, M. Maiello¹, N. Intaglietta¹, M. Tibuzzi¹, M. Martini¹, T. W. Murphy⁴, G. Bianco⁵, E. Ciocci¹, L. Salvatori¹

¹ INFN-LNF, Italy

² University of Maryland, USA

³ INFN-LNF, ESA, Aeronautica Militare Italiana

⁴ University of California at San Diego, USA

⁵ ASI-CGS, Italy

dellemon@lnf.infn.it

We will describe thermal-optical-vacuum testing of the retroreflector package with the SCF, a unique facility developed at the INFN-LNF expressly for the evaluation of retroreflectors for optical and thermal sensing of the performance under solar simulation. We will also describe next test program, which will include: 1) large optical beam and interferometry measurements in addition to far field diffraction patterns; 2) test (and modeling) of a single-CCR Apollo prototype package that has been built as the first step of laboratory testing of the effect lunar dust (also in collaboration with T. Murphy et al who observed signarutes of lunar dust effects in the LLR data taken with the LLR station during eclipses of the sun illumination of the Moon due to the Earth. Finally, we will present a preliminary thermal modeling of MoonLIGHT/LLRRA21 carried out specifically for the “European Lunar Lander Call for Declaration of Interest” recently issued by ESA.