

SGSLR Receiver Detector Testing and the Pulse Width Calibration Technique

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The NASA Space Geodesy Satellite Laser Ranging (SGSLR) Receiver subsystem detector combines a proprietary Hexagon US Federal (Sigma Space) event timer chip and an array of SensL detectors. The receiver provides high precision event measurements along with spatial information essential to closed loop tracking and system automation. During the initial characterization testing of the prototype receiver a range dependence on the signal return rate (and inferred pulse intensity) was observed. Using the pulse width determined from the return leading and trailing time tags provided by the receiver, a technique was developed to compensate for range dependence on pulse intensity (2019 Technical Workshop, SGSLR Receiver Detector Pulse Width Calibration Technique, C. Clarke, et al). This poster will provide an update to the referenced poster. It will also describe the technique, compare test results before and after the correction, describe the method to differentiate between single and multiphotoelectron returns, and summarize the results of recent calibration stability testing and multi-cube configuration testing.