

**TIER parking system validation:
Using the SMLL testbed to ensure effective e-scooter deployment in cities**

Client Need

TIER Mobility deploy e-scooters, e-bikes and e-mopeds for public use in many cities around the world. To do this effectively, a high accuracy positioning system is required to locate and track vehicles, and ensure that they are parked by users in a way which is compliant with city regulations and best practice. TIER needs assurance that their vehicles are correctly parked in designated bays at all times, without causing obstruction or nuisance to pedestrians or other roads users. Conventional GPS is limited in its ability to deliver the desired accuracy of positioning at all times within urban environments. To address this challenge, TIER implemented a bespoke camera positioning system (CPS). TIER needed to test and demonstrate the accuracy of this system within a real-world environment to a) ensure the technology operates as intended and b) provide confidence to city authorities that the technology offers a solution for addressing issues associated with non-compliant vehicle parking.

Our Solution

Applying our expertise in micromobility equipment testing and real-world validation of supporting technologies, SMLL designed and conducted a robust test plan. This comprised a series of 225 tests that measured the reliability and accuracy of the camera positioning system when used in the SMLL real-world testbed. This enabled TIER to independently verify their system within a live environment and provide credible assurance to their customers.

SMLL used a standard TIER e-scooter along with the commercial TIER app for the purposes of the tests. SMLL’s analysts collected the data and performed independent analysis of the test results to determine the accuracy of the system for TIER, and to identify any potential limitations that the system might encounter during commercial deployment.



Impact & Results

SMLL confirmed that the CPS returned a typical localisation accuracy considerably better than the typical accuracy achieved by a smart phone GPS in a congested RF urban environment.

SMLL also identified some limitations with respect to the impact of the surrounding environment on the accuracy of the TIER CPS, and in particular the potential for user error when using the TIER app to park vehicles. This enabled TIER to consider future improvements to their app and how to optimise locations of parking bays in cities — allowing for more effective deployment with fewer obstructions to footways for pedestrians.

Client Response

“SMLL’s independent testing and analysis was pivotal for TIER to verify some of our proprietary technology; a critical component of how we run a compliant and customer-centric service.

The work has been key to supporting internal and external efforts to improve our offering for cities across multiple regions.” - Ben Terry, Head of Product Operations