SmarTek Systems® Inc.

295 Waycross Way
Arnold, MD 21012
Sales 410-315-9727
Fax 410-384-9264

From: SmarTek Systems, Inc.
To Whom It May Concern

Subject: Preferred Sensor Calibration Verification Method

1. In order to reduce sensor calibration verification costs and improve calibration accuracy, it is recommended that probe vehicles are used rather than stand alone radar gun comparisons for a number of reasons. This verification usually precedes final system acceptance testing for traffic monitoring system installation projects, and applies not only to the SmarTek Systems' SAS-1 Passive Acoustic Detector, but to other non-embedded sensor systems as well. This method increases the number of vehicles sampled in a given time period, more accurately determines lane to lane speed differences and mitigates the speed errors associated with attempted to take radar gun surveys from the side of the road across a multilane highway.
2. One of the major issues associated with using a radar gun or any overt road side detection method is its affect on the movement of individual vehicles as they approach the site and its measurement of speeds in the same place as the side fire detector being tested. It is nearly impossible to conduct a radar "study" covertly such that there is not a continuous, significant change in vehicle speeds around the test site. Other factors, such the limited ability of an operator to pick individual vehicle speeds out of a passing platoon of multiple vehicles, and the time necessary to get a large enough sample size to verify accuracy make using a radar gun for calibration impractical highways of more than two lanes.
3. Using a pilot vehicle moving with the flow at "normal" highway speeds for the particular lane increases the sample size of vehicles for the calibration detection in a shorter period, i.e., the validation of a 100 vehicle test count is rapped up in a few minutes rather than over a 1 hour period of recording individual passing vehicles statistics. Several passes, one or more times in each lane, with a probe vehicle with a calibrated speedometer and reference clock can be quickly verified against the output of the detector, either connected directly to a PC or the target traffic controller. Speed calibration verification can be held in conjunction with the count verification in most cases, further saving time and money.
4. These recommendations have been successfully tested and used in several projects to date. For more questions, contact Greg Pieper, SmarTek Systems, Inc. at 410-315-9727.