U.S. Department
of Transportation
**Volpe National
Transportation
Systems Center**

Aircraft Noise Certification
DGPS Validation/Audit
Data Submittal Instructions

The applicant should provide the following data:

1. **General information**:
   a. Formal name of applicant organization
   b. Applicant address
   c. Technical Point-Of-Contact (POC) name
   d. POC Title
   e. POC Organization
   f. POC email
   g. POC phone
   h. Source of validation dataset
   i. DGPS Software Version ID

The applicant should prepare and submit documentation which includes:

2. **Documentation**
   a. System description. This should include information on the following topics:
      i. Selection of processing method (real-time vs. post-test)
      ii. Selection of solution method (carrier vs. code)
      iii. Use of geodetic or waypoint coordinates
      iv. Selection of GPS receiver and antenna
      v. Selection of data link equipment (if real-time system)
   b. Hardware description. Model and version number of all system components, including DGPS receivers, antennas, transceivers and computer.
   c. Software description. Software functionality and capabilities, data file formats, hardware required and operating system.
   d. System setup and operation protocols. Ground and aircraft installation of the system including antennas, operating procedures, site survey procedures, power requirements and system limitations.
   e. Daily system "validity check" protocol. This is a new requirement for use and approval of DGPS systems in aircraft noise certification in the US. A method often used is to taxi the aircraft at a known, surveyed location and to read its position from the DGPS system. The installation can be verified from a comparison of the DGPS and surveyed positions. As a minimum this process should be performed at the start and end of each measurement program and preferably at the beginning of each measurement day.

3. **Accuracy verification test**
   a. The applicant should perform a one-time verification of the system accuracy, based on a minimum of six aircraft flight-test runs which encompass the conditions (i.e. speed, altitude, range and maneuvers) for which the system will be later used as a reference.
   b. The accuracy verification test should involve a comparison of the DGPS-based TSPI system's position data with those from an accepted reference, such as another approved DGPS system.
   c. This test should be performed on the complete DGPS-based TSPI system developed by the applicant. It is not adequate for an applicant to simply cite prior approval of another applicant's system designed around the same GPS receiver.

4. **Software verification (ID and Version control)**
   a. Prior to using the system during a noise measurement program, any applicant-developed software for data logging and processing used to obtain TSPI data should be submitted to the FAA for approval. The approved software should include ID & version control.
   b. Coordinate transformation code used to convert GPS coordinates to local, site-specific TXYZ data must now also include ID and Version control, and applicants must include a statement in any test plans that they will use the validated code;

Note: Microsoft-Windows-compatible **ASCII text file versions of all data sets are required**. *Please provide as* **comma-separated value (.csv)** *format files, or alternatively as Microsoft* **Excel worksheet files***.*

Please direct any questions to:

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