



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
NATIONAL VEHICLE AND FUEL EMISSIONS LABORATORY  
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OFFICE OF  
AIR AND RADIATION

August 7, 2017

CD-17-14 (HDE)

**SUBJECT: Notice of Alternate System Approval**

Dear Manufacturer:

The purpose of this letter is to approve Sensors, Inc. request for alternate system approval. The provisions of 40 CFR Part 1065 (§1065.12) allow manufacturers to request approval from the Agency to use alternate procedures for demonstrating compliance with emission standards. To qualify for use of an alternate procedure, the petitioner must demonstrate that the alternate procedure is consistently and reliably at least as accurate and repeatable as the specified procedure. This request can be made by anyone, including manufacturers of engines or manufacturers of test equipment. The purpose of this letter is to provide notification that EPA has approved an alternate system at the request of Sensors, Inc., consistent with §1065.12(b).

Sensors approached the Agency on June 14, 2017 seeking alternate system approval for their mobile particulate matter sampling system. This equipment is sold under the trade name "SEMTECH PM2" particulate analyzer and consists of the following key elements: a real-time PM transducer which is based on diffusion charging the particles and then measuring the current caused by the charged particles leaving the sensor, exhaust sampling/conditioning and gravimetric filter system (47mm standard cassette x 3). This unit would normally be used with commercially available gaseous portable emission measurement systems (PEMS) (i.e., Sensors' Ecostar plus or LDV gaseous PEMS) and uses proven technology (ion mobility) for real time particulate mass determination. The intent of this equipment is to facilitate in-situ measurement of PM and is meant to be an alternative to the specified method, which is the inertial balance described in §1065.295 for field-testing analysis.

Sensors submitted a package of supporting data as part of their request for alternate system approval. This package included the theoretical basis for the measurement technique, practical operation of the device, and results from studies used to validate this equipment. As part of this validation, results from the SEMTECH PM2 particulate analyzer were compared to a full-flow constant-volume sampling (CVS) system and showed an acceptable level of correlation.

Based on the information supplied in the application package, EPA has determined that the requirements of §1065.12 have been met. Therefore, EPA has granted alternate system approval for the Sensors SEMTECH PM2 particulate analyzer. This approval is subject to the following conditions:

1. This equipment is approved for field-testing as specified in 40 CFR part 1065, subpart J, and may not be used as laboratory testing equipment as referenced in 40 CR part 1065, subpart C or D.
2. A protocol, consistent with filter handling procedures of 40 CFR 1065, that addresses appropriate PM filter handling to prevent loss of sample prior to weighing shall be provided to each customer/user of the unit. The Gravimetric filters are incorporated in this device for in-situ calibration.
3. The system software shall not allow data to be generated without appropriate labels relative to compliance with NTE (i.e. the “Report Events” option shall permanently label any data reporting that is not consistent with the NTE).
4. The principle of operation of the SEMTECH PM2 particulate analyzer may not be changed with respect to how it was designed and validated at The West Virginia University Center for Alternative Fuels and Emissions (CAFEE).

If you have questions about this approval, or of the conditions associated with it, please contact Dr. Fakhri Hamady of my staff at [hamady.fakhri@epa.gov](mailto:hamady.fakhri@epa.gov).

Sincerely,



Byron Bunker, Director  
Compliance Division  
Office of Transportation and Air Quality