

**Modification to Teledyne T640 and T640x PM Federal Equivalent Methods (FEMs)
Notes from call with Monitoring Agencies operating Teledyne T640 and T640x PM FEMs**

Summary:

- Teledyne API has announced they have received approval from EPA-Office of Research and Development's (ORD's) Reference and Equivalency Program on modifications to their T640 and T640x PM Federal Equivalent Methods (FEMs).
- The modifications of their FEMs are intended to address an approximate ~20% positive bias relative to State, Local, and Tribal (SLT)-operated PM_{2.5} Federal Reference Methods (FRMs). This same modification approach is also being used on the PM₁₀ measurements.
- While the modification is expected to result in PM_{2.5} methods meeting the goal for acceptable measurement uncertainty for bias at almost all routinely operated sites, sites subject to high woodsmoke impacts while expected to have improved (lower) bias, may still have an unacceptably high bias.
- Monitoring agencies are able to implement the modifications to both the T640 (PM_{2.5}) and T640x (PM₁₀, PM_{2.5}, and PM_{10-2.5}) FEMs through updated firmware available from Teledyne API. Teledyne is requesting monitoring organizations contact their Teledyne rep for the update.
- To perform the update on existing T640 or T640x FEMs, multiple steps are needed:
 - Update firmware on each monitor
 - Enable "Network Data Alignment" option in each monitor
 - Update method codes for reporting to EPA databases. See codes below.
 - Tell AQS in >Maintain > Monitor >Methods the:
 - "End Date" from the last day with the original method.
 - "Begin Date" for the new method
 - Coordinate/inform plans for update with Regional EPA Office

Q&A:

- **Are monitoring agencies "required" to perform the update to the T640 and/or T640x FEMs they operate?**

No, however, we do recommend updating the methods as soon as practicable as the revised methods are intended to be better aligned with network FRM data produced by routine monitoring agencies.
- **Can we test the revised FEMs prior to committing to using them as our primary methods intended to be compared to the NAAQS?**

Yes, monitoring agencies may test the revised methods under the provisions of Special Purpose monitoring in §58.20; however, a valid FRM (or other FEM) meeting the sample frequency requirement needs to be operating as the primary monitor. Testing may be for a short period of time (e.g., days to weeks) or multiple seasons. Please do notify your EPA Regional office if there is any change to the "Primary" monitor at a site.
- **With the revision to the methods approved, what does this mean for data reported with the older firmware?**

Data collected with the older firmware are still valid as the method included use of that firmware in the approved method designation. Also, moving forward the older firmware (i.e., firmware without the “Network Data Alignment” enabled whether older or newer), will still be an approved method, although its use should be very limited if even used at all.

- **Can we or EPA “correct” already collected data previously reported to AQS?**

EPA’s position is that we (EPA or monitoring agencies) are not correcting data in AQS. Such data are valid and have already been used in several assessments. However, in the recent PM NAAQS reconsideration we took comment on how to treat data collected after a method update has been approved but not yet implemented due to a lag of when firmware is updated in the field. Monitoring agencies were very clear in their comments on the PM NAAQS reconsideration that any data used for design values to compare to the NAAQS should include the updated equations so that the resulting data would better meet measurement quality objectives (MQOs). To that end, EPA intends to address this issue in designations guidance anticipated at the time of an expected final rule for the reconsideration of the PM NAAQS.

- **Is there anything we (monitoring agencies) can do to help expedite ensuring design values are made with data that meets the measurement quality objectives?**

Yes. In addition to recommending that the T640 and T640x FEMs be updated as soon as practicable, we also recommend that monitoring agencies submit valid ambient temperature data to AQS for any site operating a T640 or T640x FEM that may be used in a design value calculation for the design value years of interest (minimally starting in 2021 as the earliest of any three-year design value period of interest) as ambient temperature factors into the network data alignment. Note: there is valid on-site ambient temperature data from the T640 and T640x; however, other valid on-site ambient temperature data may also be used.

Existing and new Method codes for reporting to EPA databases (i.e., AQS and AIRNow) (new codes in green font)

Method	Designation No.	Method Code (As available in AQS)
Teledyne T640 PM _{2.5} Mass Monitor	EQPM-0516-236	236
Teledyne T640 PM _{2.5} Mass Monitor with Network Data Alignment enabled		636
Teledyne T640x PM _{2.5} Mass Monitor	EQPM-0516-238	238
Teledyne T640x PM _{2.5} Mass Monitor with Network Data Alignment enabled		638
Teledyne T640x PM ₁₀ Mass Monitor	EQPM-0516-239	239
Teledyne T640x PM ₁₀ Mass Monitor with Network Data Alignment enabled		639
Teledyne T640x PM _{10-2.5} Mass Monitor	EQPM-0516-240	240
Teledyne T640x PM _{10-2.5} Mass Monitor with Network Data Alignment enabled		640

Ambient Temperature data from a T640 or T640x PM FEM may be reported to AQS using parameter code 62101 “Outdoor Temperature” and method code 201 – Sample Collection description is “Instrumental”; Sampling Analysis Description is “Shielded Thermistor”.