

19" Stationary Dust Monitor EDM 180



APPROVED by U.S. EPA

As a Class III Equivalent Method Designation
for the measurement of PM 2.5

Automated Equivalent Method: **EQPM-0311-195**
Federal Register: Vol. 76, page 15974, 03/22/2011



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Optical Technology
Giving You Both
Multiple PM Values
Simultaneously



Principle of Operation

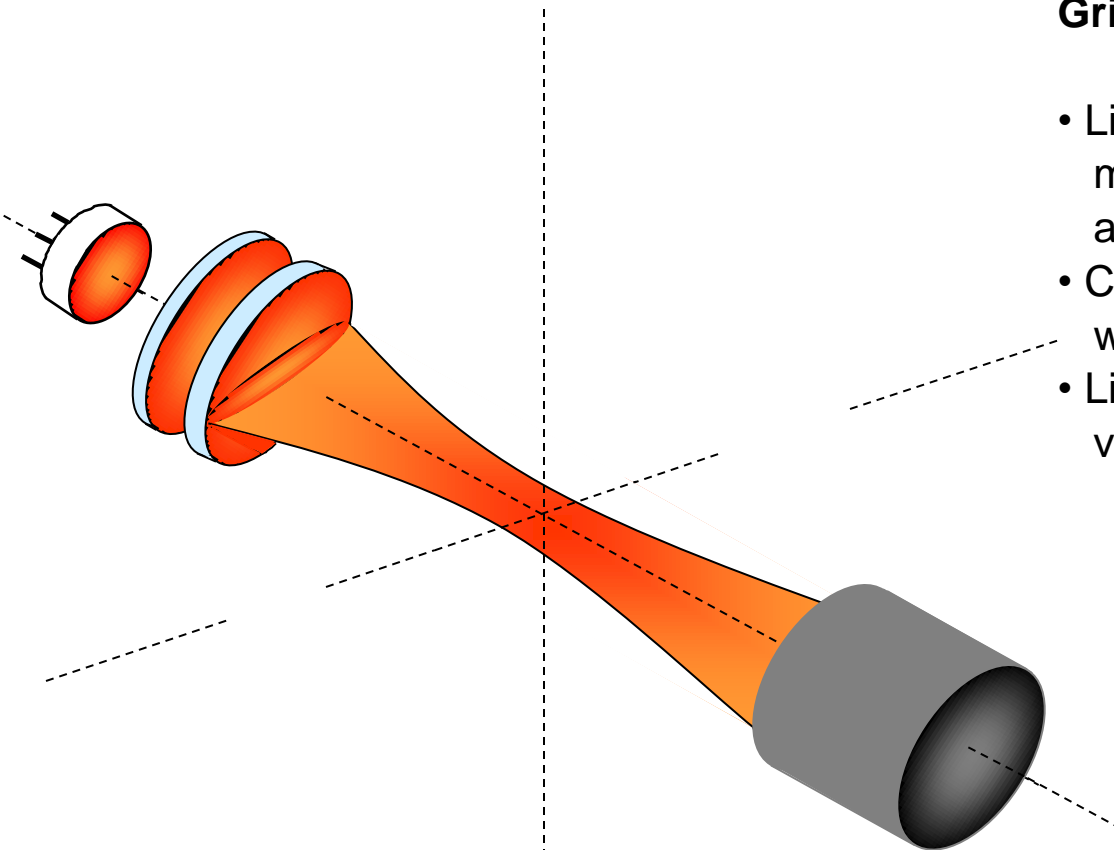


Grimm Laser Aerosol Spectrometer

functional principle, light source with laser diode

Grimm optical cell like in 180

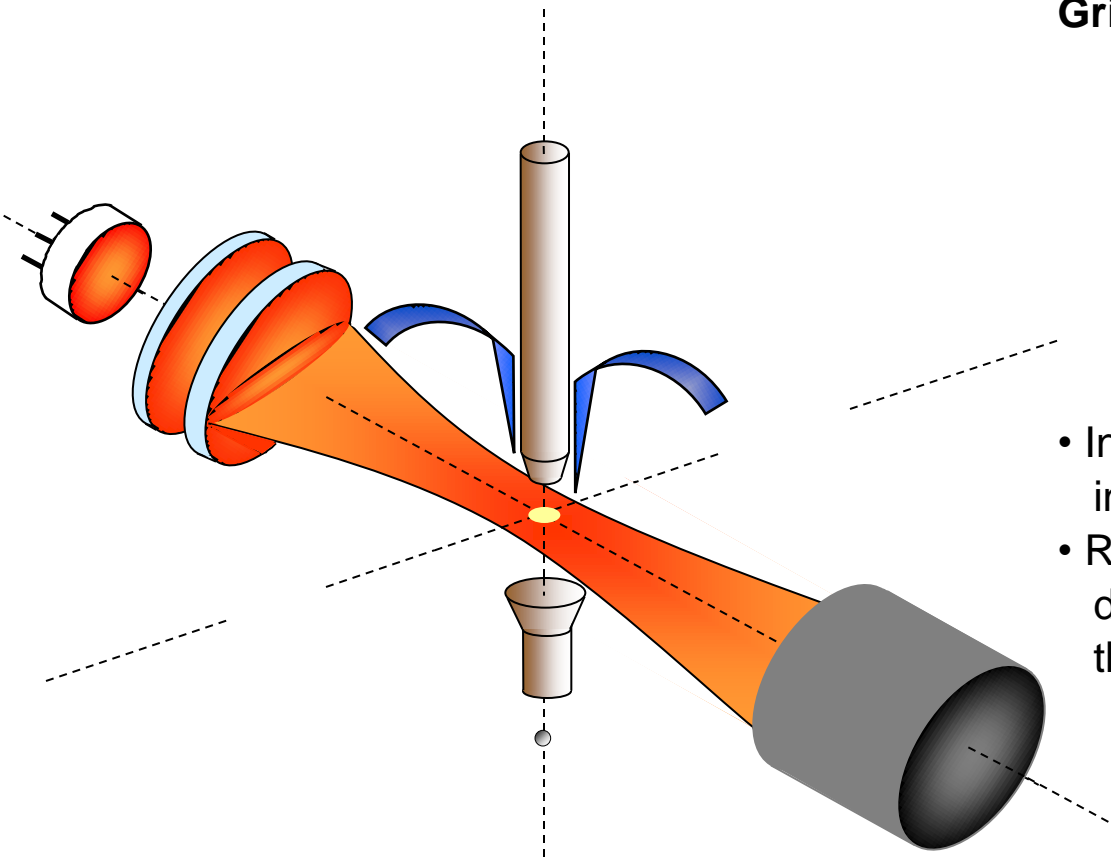
- Light source by compact laser diode with multiplex mode, low power consumption and good temperature stability
- Collimator generates laser curtain with homogeneous optical field
- Light trap assures low noise due to very low indirect scattering light



Grimm Laser Aerosol Spectrometer

functional principle, aerodynamic aerosol focusing

Grimm optical cell like in 180



- Inlet focus particles aerodynamically into optical field, no border zone error
- Rinsing air circuit and outlet nozzle design assure straight pass through the laser, no vagabonding particles



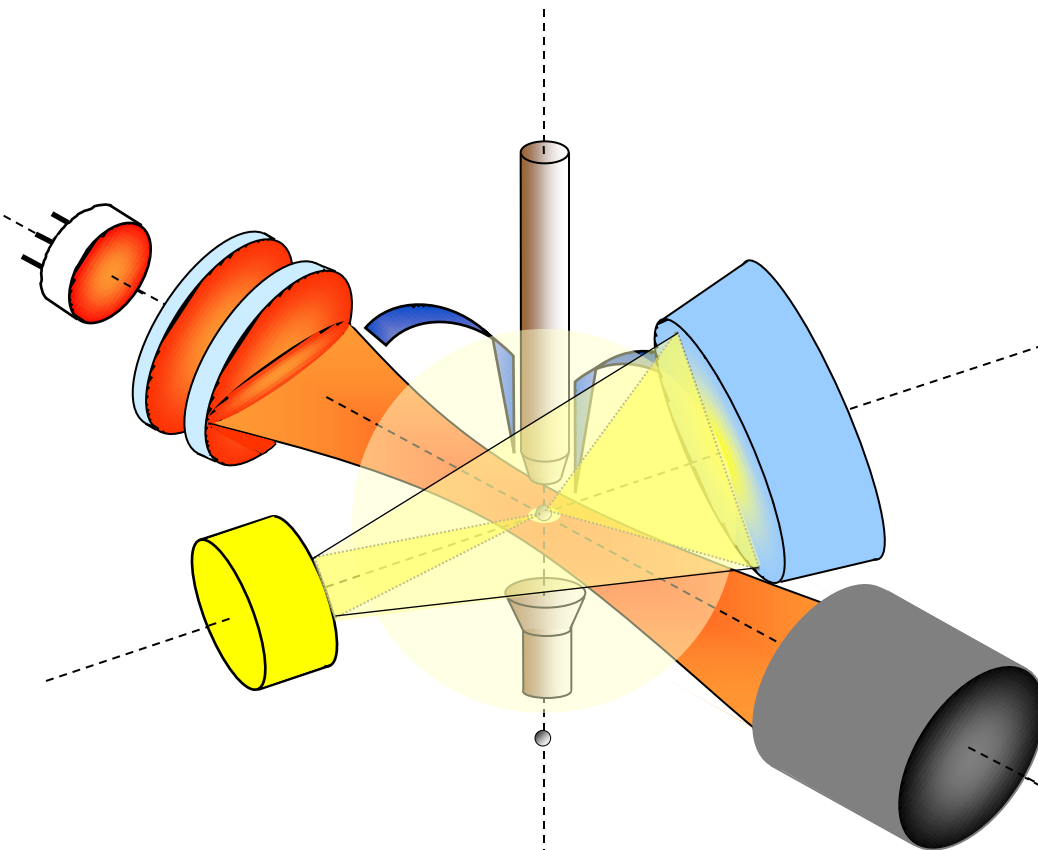
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Grimm Laser Aerosol Spectrometer

functional principle, PIN diode and wide field reflector

Grimm optical cell like in 180



- Fast and robust photo diode detector for 90° scattering light detection
- Special wide field reflector improves detection limit for small particles and reduces sizing effects by refractive index



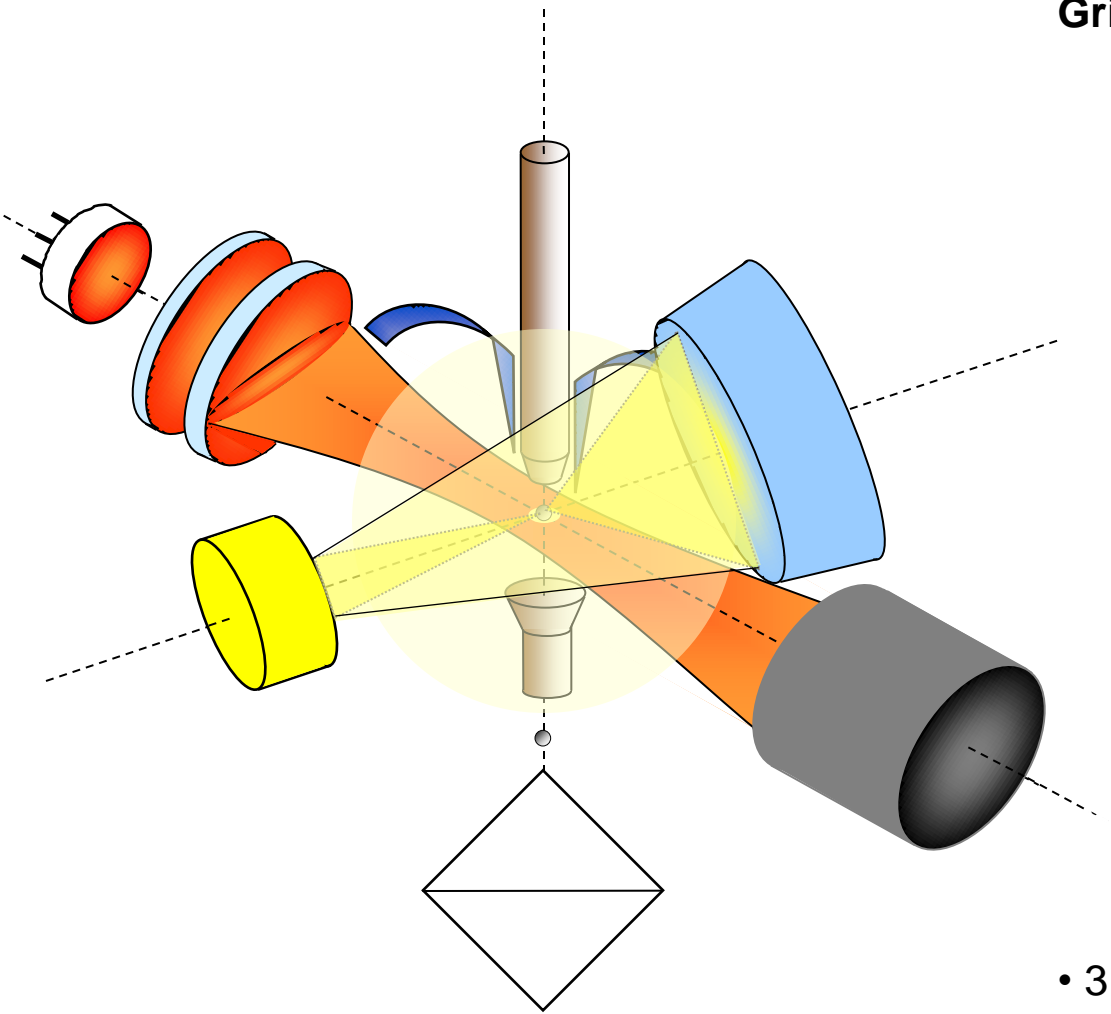
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Grimm Laser Aerosol Spectrometer

functional principle, output data and gravimetric filter

Grimm optical cell like in 180



- 31 size channels, 6 sec. time resolution, PM10, 2.5,1 or TSP or PMc
- Built in 47mm PTFE filter for gravimetric mass validation



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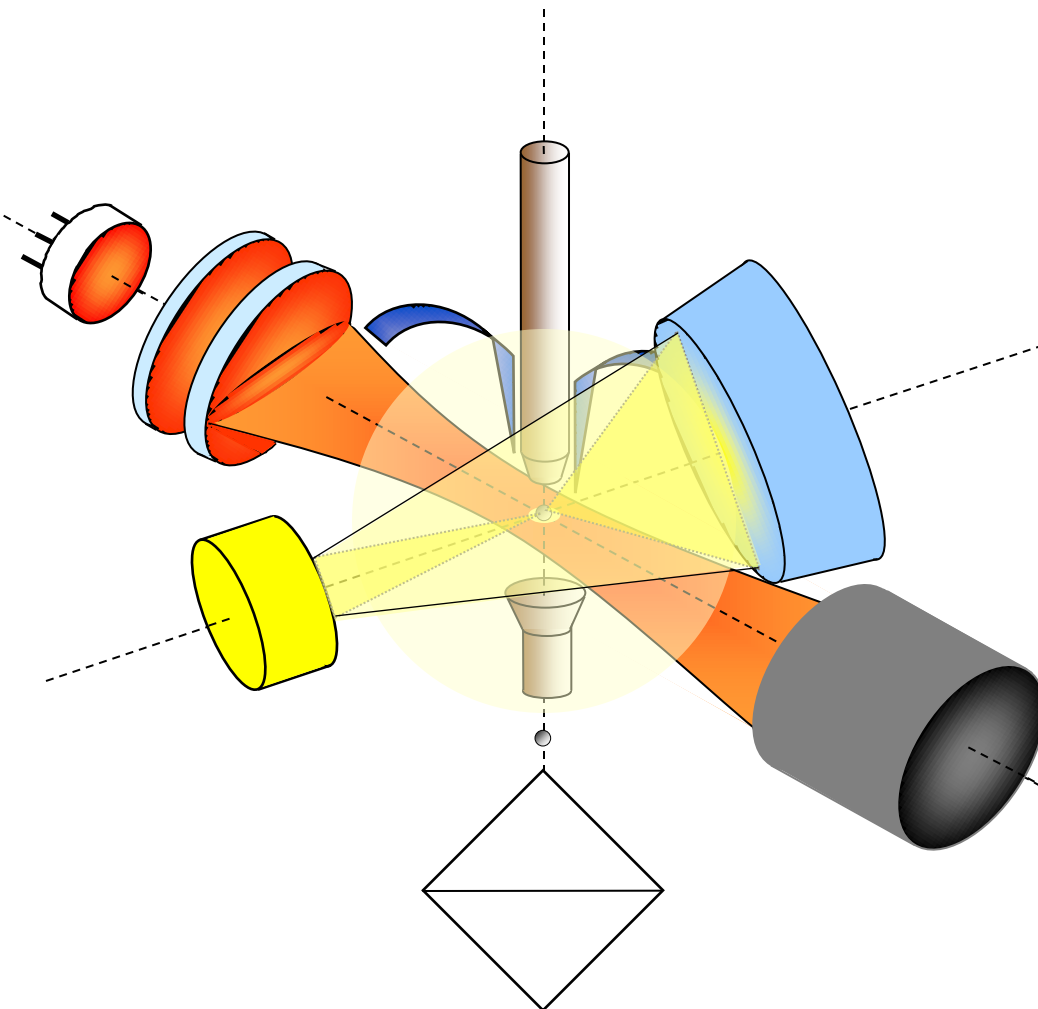
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Grimm Laser Aerosol Spectrometer

functional principle

Grimm optical cell like in 180

- Light source by compact laser diode with multiplex mode, low power consumption and good temperature stability
- Collimator generates laser curtain with homogeneous optical field
- Light trap assures low noise due to very low indirect scattering light
- Inlet focus particles aerodynamically into optical field, no border zone error
- Rinsing air circuit and outlet nozzle design assure straight pass through the laser, no vagabonding particles
- Fast and robust photo diode detector for 90° scattering light detection



Technology Benefits

- Measure Both PM₁₀ and PM_{2.5}**
- Real-Time Measurement (6 sec)**
- No Consumable**
- No Zero Drift**
- Minimal Maintenance**
- Quick & Easy Audit**



19" Stationary Dust Monitor EDM 180

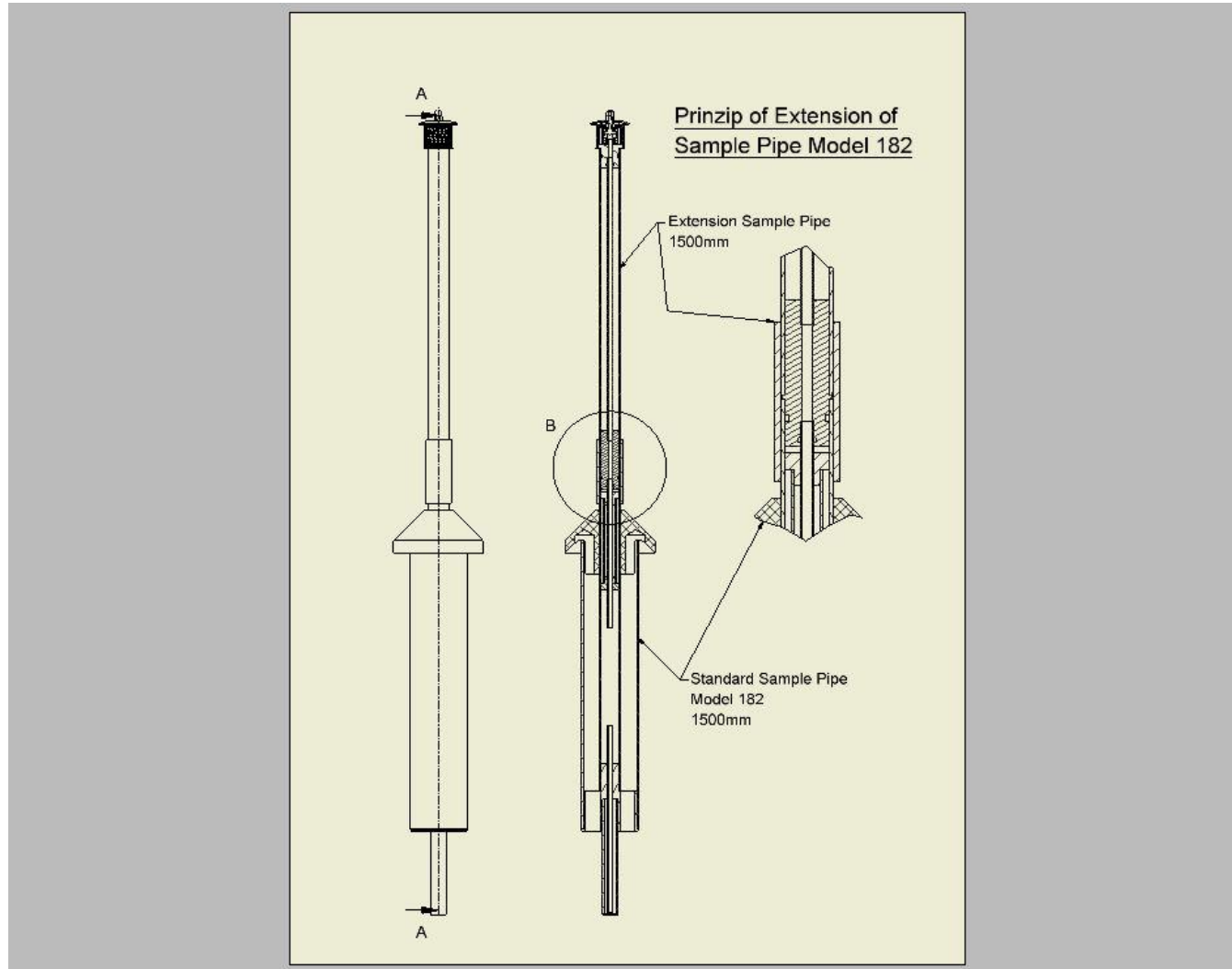
Easy Rack Mount Installation



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19" Stationary Dust Monitor EDM 180



1.5 m
Extension
for
Total length
of
3.0 m
(2 m above roof)



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19" Stationary Dust Monitor EDM 180

Nafion Dryer Under Vacuum



19" Stationary Dust Monitor EDM 180

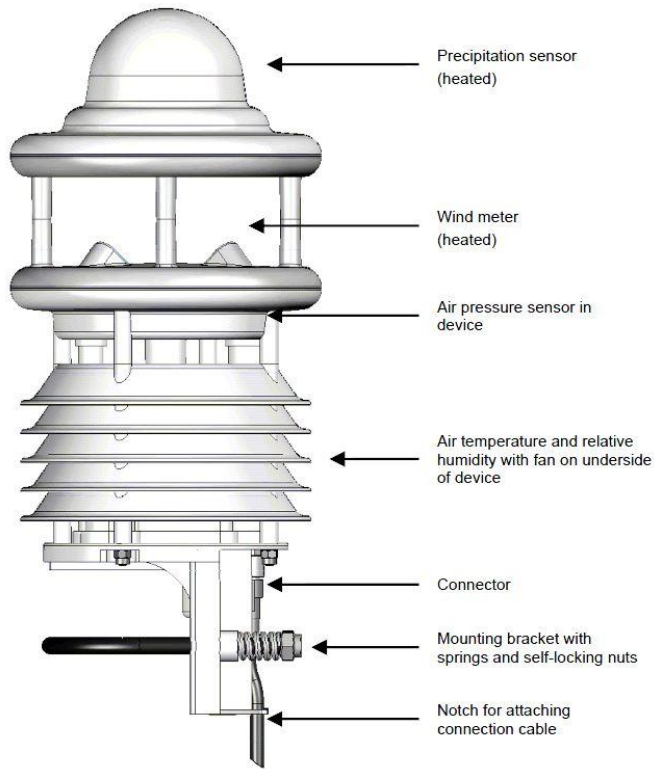
Looking inside the 180



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Optional Met Sensors for EDM 180



157L
Temperature
Relative Humidity
Pressure



158L
Temperature
Relative Humidity
Pressure
Wind Direction
Wind Speed



159L
Temperature
Relative Humidity
Pressure
Wind Direction
Wind Speed
Precipitation



- New Ultrasonic Wind Sensor with no moving parts.
- New doppler rain sensor.
- Both sensors are heated.



Maintenance & Calibration

19" Stationary Dust Monitor EDM 180

Field Test Adapter for the 180

**FLOW TEST
and
ZERO TEST**



CALIBRATION TOWER



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US EPA PM 2.5 Class III FEM Approval

Test Sites Class III Continuous Monitors

A: Bakersfield, CA

B: Denver, CO

C: St-Louis, MI

D. New Haven, CT

A: Winter & Summer

B & C: Winter Only

D: Summer Only



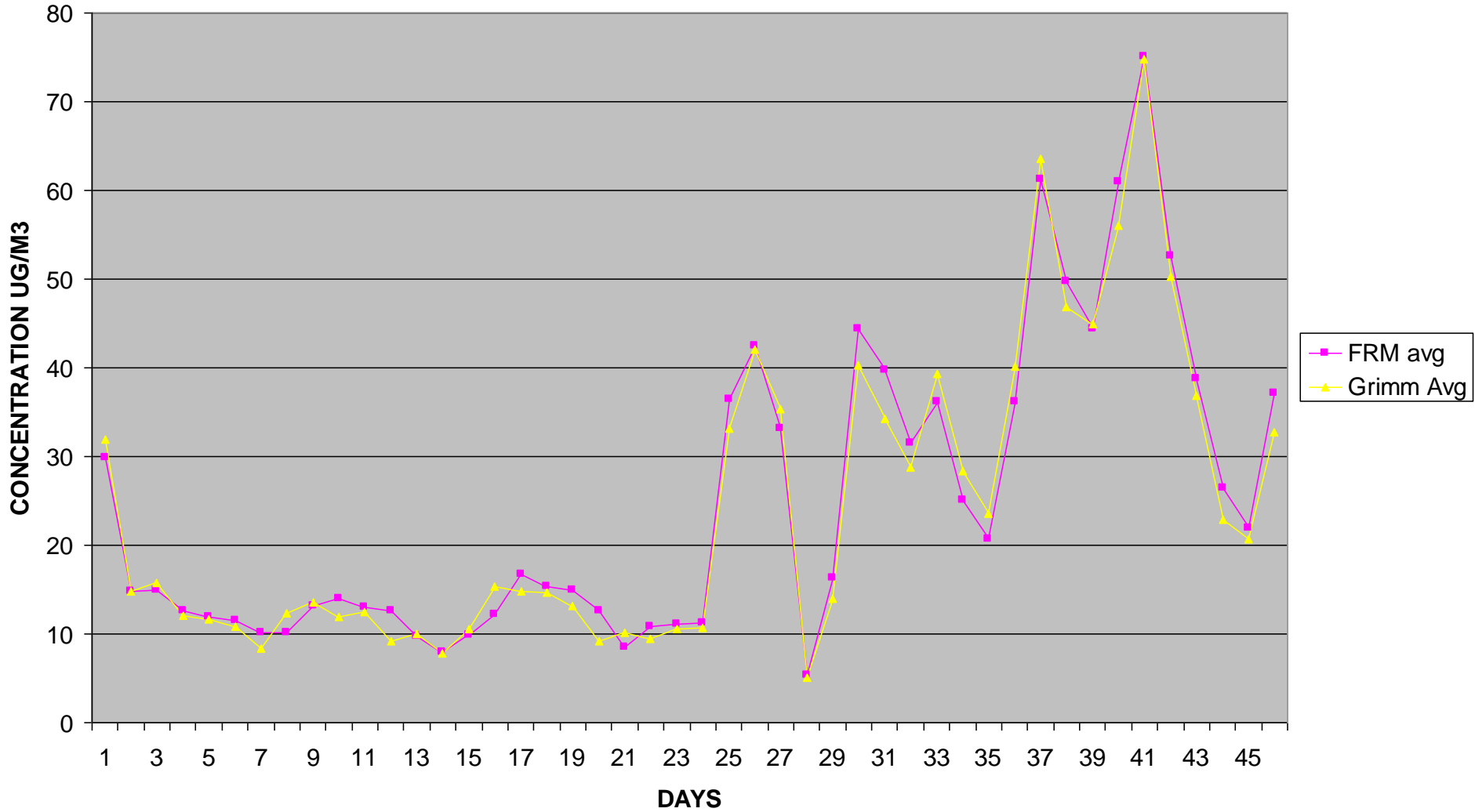


US EPA PM 2.5 Class III FEM Approval



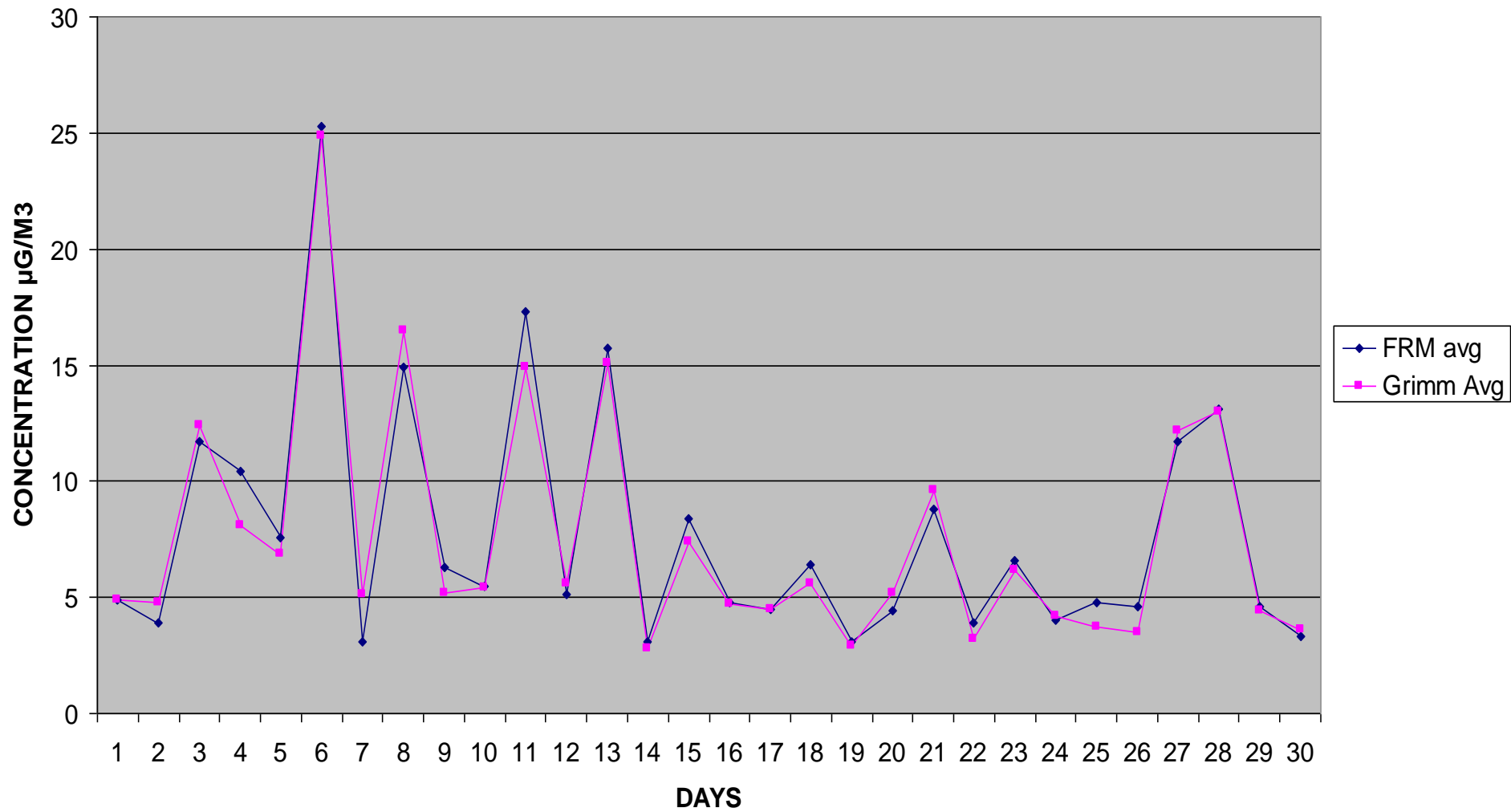
FRM vs GRIMM

BAKERSFIELD



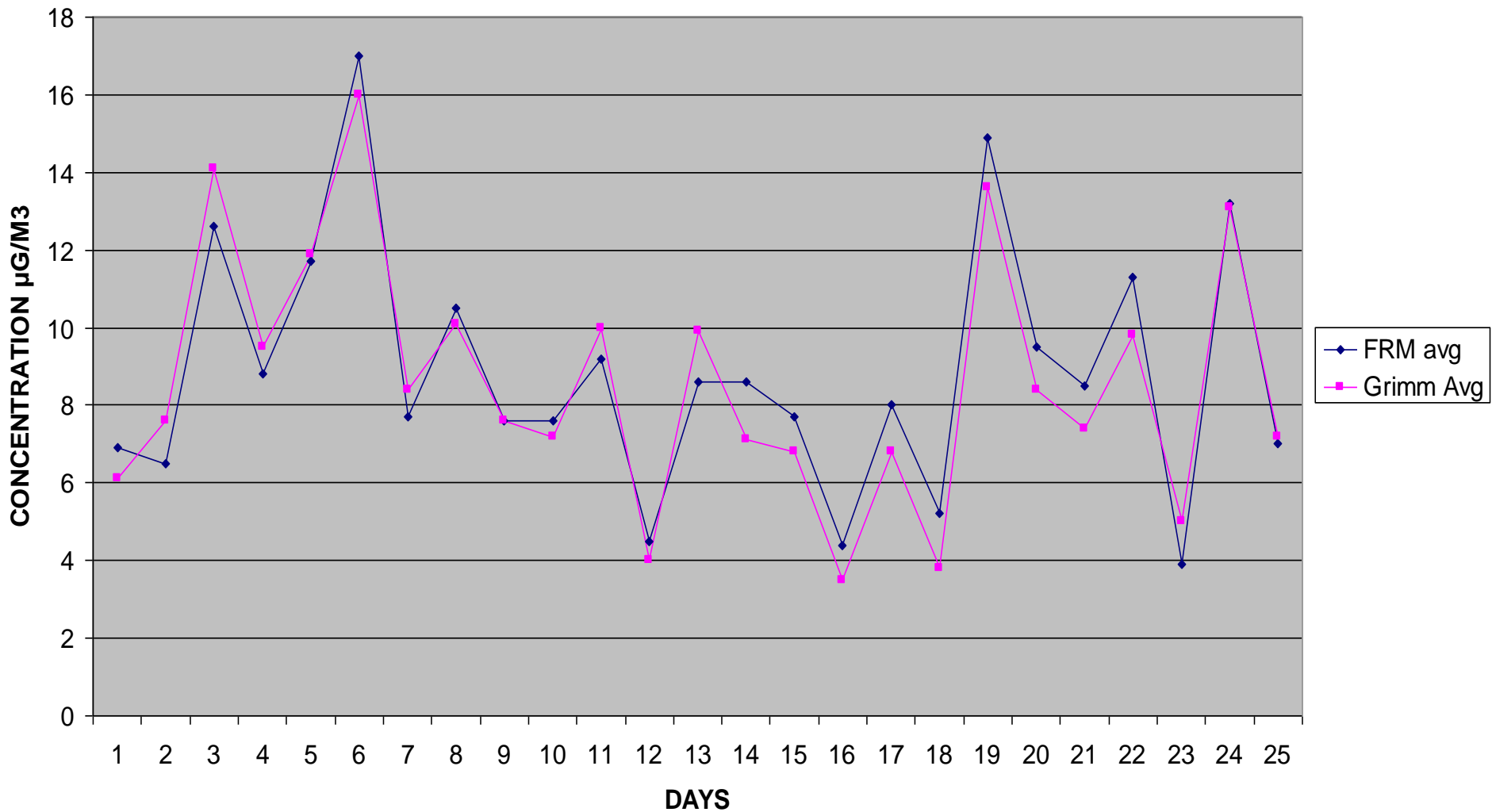
FRM vs GRIMM

DENVER

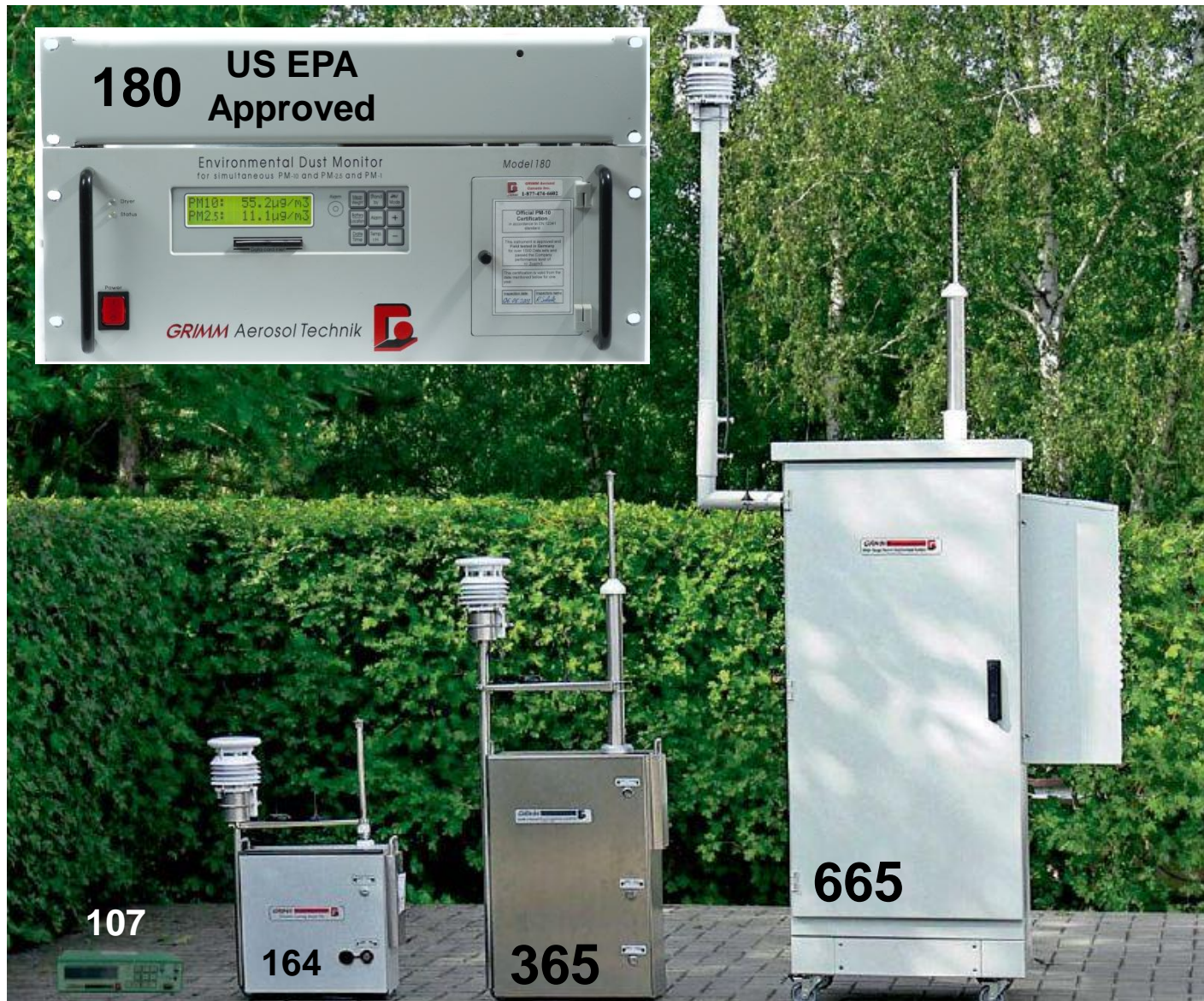


FRM vs GRIMM

NEW HAVEN



Family of Products



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CONCLUSION

Grimm offer:

Simultaneous measurement of PM_{10} & $PM_{2.5}$

Low Maintenance

Fast Response (6 sec)

Real-Time Monitoring

Insensitivity to vibration (mobile)

Lowest Ownership Cost

