Umwelt Bundesamt

TÜVRheinland®
Precisely Right.

# CERTIFICATE

## of Product Conformity (QAL1)

**Certificate No.: 0000037055_01**

| | |
|---|---|
| **AMS designation:** | BAM-1020 with $PM_{10}$-pre-separator |
| **Manufacturer:** | Met One Instruments, Inc.<br>1600 Washington Blvd.<br>Grants Pass<br>Oregon 97526<br>USA |
| **Test Laboratory:** | TÜV Rheinland Energy GmbH |

**This is to certify that the AMS has been tested and certified according to the standards VDI 4202-1 (2002), VDI 4203-3 (2004), EN 12341 (1998), Guide to the Demonstration of Equivalence of Ambient Air Monitoring Methods (2010) EN 15267-1 (2009) and DIN EN 15267-2 (2009).**

Certification is awarded in respect of the conditions stated in this certificate (this certificate contains 14 pages).

TÜVRheinland® CERTIFIED

Suitability Tested
Complying with
2008/50/EC
EN 15267
Regular
Surveillance

www.tuv.com
ID 0000037055

Publication in the German Federal Gazette (BAnz) of 05 March 2013

This certificate will expire on:
04 March 2023

German Federal Environment Agency
Dessau, 05 March 2018

Dr. Marcel Langner
Head of Section II 4.1

TÜV Rheinland Energy GmbH
Cologne, 04 March 2018

ppa. Dr. Peter Wilbring


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TÜV Rheinland Energy GmbH
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51105 Köln


Test institute accredited to EN ISO/IEC 17025:2005 by DAkkS (German Accreditation Body).
This accreditation is limited to the accreditation scope defined in the enclosure to the certificate D-PL-11120-02-00.



10/221 2.03

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| **Test Report:** | 936/21205333/A dated 06 December 2006<br>Addendum 936/21220762/A dated 04 October 2012 |
| **Initial certification:** | 05 March 2013 |
| **Expiry date:** | 04 March 2023 |
| **Certificate:** | Renewal (of previous certificate 0000037055 dated 22 March 2013 valid until 04 March 2018) |
| **Publication:** | BAnz AT 05.03.2013 B10, chapter V notification 2 |

**Approved application**
The certified AMS is suitable for continuous ambient air monitoring of suspended particulate matter, $PM_{10}$ (stationary operation).

The suitability of the AMS for this application was assessed on the basis of a laboratory test and field tests at three different locations and/or periods as well as equivalence assessments taking into account seven different locations/periods.

The AMS is approved for an ambient temperature range of +5 °C to +40 °C.

The notification of suitability of the AMS, performance testing and the uncertainty calculation have been effected on the basis of the regulations applicable at the time of testing. As changes in legal provisions are possible, any potential user should ensure, in consultation with the manufacturer, that this AMS is suitable for monitoring the limit values relevant to the application.

Any potential user should ensure, in consultation with the manufacturer, that this AMS is suitable for ambient air applications at which it will be installed.

**Basis of the certification**
This certification is based on:

- Test report 936/21205333/A dated 06 December 2006 TÜV Rheinland Immissionsschutz und Energiesysteme GmbH and addendum 936/21220762/A dated 04 October 2012 issued by TÜV Rheinland Energie und Umwelt GmbH
- Suitability announced by the German Federal Environment Agency (UBA) as the relevant body
- The ongoing surveillance of the product and the manufacturing process

Publication in the German Federal Gazette: BAnz 20 April 2007, No. 75, p. 4139, chapter III number 1.2,
UBA announcement dated 12 April 2007:

**AMS designation:**
BAM-1020 with $PM_{10}$-pre-separator

**Manufacturer:**
Met One Instruments, Inc., Grants Pass, USA

**Field of application:**
For continuous ambient air monitoring of suspended particulate matter, $PM_{10}$ (stationary operation)

**Measuring range during performance testing:**
Suspended particulate matter $PM_{10}$: 0–1.000 mg/m$^3$ = 0–1000 µg/m$^3$

**Software version:**
3236-02 3.2.1b

**Notes:**

1. For monitoring $PM_{10}$, the instrument must be fitted with the following options: Sample heater (BX-830), sampling inlet (BX-802), ambient temperature sensor (BX-592) and ambient pressure sensor (BX-594).
2. The heater may only be used in the manner it was used during performance testing.
3. Flow control must be related to operational flow considering ambient conditions (operating mode: ACTUAL).
4. During the entire performance test, the measuring system was operated with the BX-830 sample heater.
5. During the performance test, the cycle time was 1 h, i.e. the filter was automatically changed once an hour. Every filter spot was sampled only once.
6. The measuring system must be operated inside a lockable measurement container.
7. The measuring system must be calibrated on site at regular intervals by using the gravimetric $PM_{10}$ reference method according to EN 12341.

**Test Laboratory:**
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Cologne, TÜV Rheinland Group
Report no.: 936/21205333/A dated 6 December 2006

Publication in the German Federal Gazette: BAnz 25 August 2009 no. 125, p. 2929, chapter III notification 6,
UBA announcement dated 03 August 2009:

**6 Notification as regards Federal Environment Agency notice of 12 April 2007 (BAnz p. 4139)**

The current software version of the BAM-1020 measuring system manufactured by Met One Instruments, Inc. is:

Version 3236-02 5.0.2

Note 1 correctly read as follows:

1. For monitoring $PM_{10}$, the instrument must be fitted with the following options at least:

Sample heater (BX-830), sampling inlet (BX-802) and ambient temperature sensor (BX-592).

Statement issued by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH dated 30 March 2009

Publication in the German Federal Gazette: BAnz 12 February 2010, no. 24, p. 552, chapter IV notification 10,
UBA announcement dated 25 January 2010:

**10 Notification as regards Federal Environment Agency (UBA) notices of 12 April 2007 (BAnz p. 4139) and of 3 August 2009 (BAnz p. 2935)**

The current software version of the BAM-1020 measuring system manufactured by Met One Instruments, Inc. is:

Version 3236-07 V5.0.5

Note 1 is replaced:

1. For monitoring $PM_{10}$, the instrument must be fitted with the following options at least:

   Sample heater (BX-830), sampling inlet (BX-802) and ambient temperature sensor (BX-592) or combined pressure and temperature sensor (BX-596).

Statement issued by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH dated 9 October 2009

Publication in the German Federal Gazette: BAnz 12 February 2010, no. 24, p. 552, chapter IV notification 11,
UBA announcement dated 25 January 2010:

**11 Notification as regards Federal Environment Agency notices of 12 April 2007 (BAnz p. 4139) and of 3 August 2009 (BAnz p. 2935)**

The BAM-1020 measuring system manufactured by Met One Instruments (TÜV test report 936/21205333/A dated 06 December 2006) is also distributed by Horiba Europe GmbH, 61440 Oberursel, as APDA-371 which is identical in design.

The current software version of the APDA-371 air quality monitor is:

Version 3236-07 V5.0.5.

Statement issued by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH dated 9 October 2009

Publication in the German Federal Gazette: BAnz 28 July 2010 no. 111, p. 2597, chapter III notification 2,
UBA announcement dated 12 July 2010:

**2 Notification as regards Federal Environment Agency (UBA) notices of 12 April 2007 (BAnz p. 4139) and of 25 January 2010 (BAnz p. 555)**

The current software version of the BAM-1020 measuring system with $PM_{10}$-pre-separator manufactured by Met One Instruments is:

Version 3236-07 V5.0.10

Statement issued by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH dated 16 March 2010

Publication in the German Federal Gazette: BAnz 29 July 2011 no. 113, p. 2725, chapter III notification 12,
UBA announcement dated 15 July 2011:

**12 Notification as regards Federal Environment Agency (UBA) notices of 12 April 2007 (BAnz p. 4139, chapter III number 1.2) and of 12 July 2010 (BAnz p. 2597, chapter III, 2nd notification)**

The BAM-1020 measuring system with $PM_{10}$-pre-separator for suspended particulate matter $PM_{10}$ manufactured by Met One Instruments, Inc. may alternatively be operated with pump BX-125.

The measuring system may alternatively be equipped with a touch screen display (option BX-970). The current software version is:

3236-77 V5.1.0

The software version for the instrument version without option BX-970 touch screen display remains 3236-07 5.0.10.

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 24 March 2011

Publication in the German Federal Gazette: BAnz AT 20.07.2012 B11, chapter IV notification 6
UBA announcement dated 6 July 2012:

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| **6** | **Notification as regards Federal Environment Agency (UBA) notices of 12 April 2007 (BAnz p. 4139, chapter III number 1.2) and of 15 July 2011 (BAnz p. 2725, chapter III, 12th notification)**<br>The BAM-1020 measuring system with $PM_{10}$-pre-separator for suspended particulate matter $PM_{10}$ manufactured by Met One Instruments, Inc. was equipped with a re-designed back plate to make room for additional interfaces for the optional BX-965 reporting process.<br>The current software version of the measuring system is:<br>3236-07 5.0.15<br>The current software version of the AMS with touch screen display (option BX-970) is:<br>3236-77 V5.1.2<br>Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 21 March 2012 |

Publication in the German Federal Gazette: BAnz AT 05.03.2013 B10, chapter V notification 2,
UBA announcement dated 12 February 2013:

| | |
|---|---|
| **2** | **Notification as regards Federal Environment Agency (UBA) notices of 12 April 2007 (BAnz p. 4139, chapter III number 1.2) and of 6 July 2012 (BAnz AT 20.07.2012 B11, chapter IV 6th notification)**<br>The BAM-1020 measuring system with $PM_{10}$-pre-separator manufactured by Met One Instruments, Inc. for suspended particulate matter $PM_{10}$ meets the requirements defined in standard EN 12341 (March 1998) and defined in guideline “Demonstration of Equivalence of Ambient Air Monitoring Methods” (January 2010 version). Furthermore, the manufacturing process and the quality management for the BAM-1020 measuring system with $PM_{10}$-pre-separator meets the requirements of EN 15267.<br>The test report on performance testing, report no. 936/21205333/A, and addendum to the test report, no. 936/21220762/A are available on the internet at www.qal1.de.<br>Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 4 October 2012 |

Publication in the German Federal Gazette: BAnz AT 23.07.2013 B4, chapter V notification 5,
UBA announcement dated 03 July 2013:

**5 Notification as regards Federal Environment Agency notices of 12 January 2007 (BAnz p. 4139, chapter III number 1.2) and of 12 February 2013 (BAnz AT 05.03.2013 B10 chapter V 2nd notification)**

The current software version of the BAM-1020 measuring system with $PM_{10}$-pre-separator manufactured by Met One Instruments, Inc. for monitoring suspended particulate matter $PM_{10}$ is:

3236-07 5.1.1

The current software version of the AMS with touch screen display (option BX-970) is:

3236-77 V5.2.0

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 18 March 2013

Publication in the German Federal Gazette: BAnz AT 02.04.2015 B5, chapter IV notification 11,
UBA announcement dated 25 February 2015:

**11 Notification as regards Federal Environment Agency (UBA) notices of 12 April 2007 (BAnz p. 4139, chapter III number 1.2) and of 3 July 2013 (BAnz AT 23.07.2013 B4, chapter V 5th notification)**

The 970603 pressure sensor (MICROSWITCH #185PC15AT) of the BAM-1020 measuring system with $PM_{10}$-pre-separator manufactured by Met One Instruments, Inc., is no longer produced and has been replaced by the 970595 pressure sensor (HONEYWELL SSCDANN015PAAA5).

Opinion stated by TÜV Rheinland Energie und Umwelt GmbH dated 20 September 2014

**Certified product**

This certification applies to automated measurement systems conforming to the following description:

The BAM-1020 measuring system with $PM_{10}$-pre-separator consists of the $PM_{10}$-sampling inlet BX-802, the sampling tube, the sample heater BX-830, the ambient temperature sensor BX-592 (incl. radiation protection shield) or the combined pressure and temperature sensor BX-596, the vacuum pump BX-127 or optionally the BX-125, the measuring instrument BAM-1020 (incl. glass-fibre filter tape), the respective connecting tubes and lines as well as adapters, the roof flange as well as the manual in English / German language.

The BAM-1020 measuring system uses beta-attenuation as a measurement principle.

The particle sample passes the $PM_{10}$-sampling inlet at a flow rate of 1 m³/h and reaches the BAM-1020 analyser via the sampling tube.

During performance testing, the measuring system was operated with the BX-830 sample heater.

Particles arrive at the measuring instrument and will be separated by the glass fiber filter tape.

During the performance test, cycle time was set to 60 min., radiometric measurement taking 4 min.

Thus, the cycle time consists of 2 x 4 min for the radiometric measurement ($I_0$ & $I_3$) as well as approximately 1-2 min for filter tape movements. Consequently, the effective sampling time is around 50 min.

Furthermore, the measuring system allows an extension of the measuring time to 6 or 8 min in order to increase the precision of the radiometric measurement. Effective sampling time in that case decreases to 46 or 42 min.

The radiometric determination of mass is calibrated in the factory and is checked hourly during operation as part of internal quality assurance at the zero point (clean filter spot) and at the span point (built-in reference foil). Measured values at zero and span points are easily derived from the data generated. These can then be compared to stability criteria (drift) or target values for span (factory settings).

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|---|---|
| The current software version is: | 3236-07 5.1.1<br>3236-77 V5.2.0 (BX-970 option) |
| The current manual version is: | BAM 1020-9800 Rev T |

**General remarks**

This certificate is based upon the equipment tested. The manufacturer is responsible for ensuring that on-going production complies with the requirements of the EN 15267. The manufacturer is required to maintain an approved quality management system controlling the manufacturing process for the certified product. Both the product and the quality management systems shall be subject to regular surveillance.

If a product of the current production does not conform to the certified product, TÜV Rheinland Energy GmbH must be notified at the address given on page 1.

A certification mark with an ID-Number that is specific to the certified product is presented on page 1 of this certificate.

This document as well as the certification mark remains property of TÜV Rheinland Energy GmbH. Upon revocation of the publication the certificate loses its validity. After the expiration of the certificate and on request of TÜV Rheinland Energy GmbH this document shall be returned and the certificate mark must no longer be used.

The relevant version of this certificate and its expiration date are also accessible on the internet at **qal1.de**.

Certification of the BAM-1020 with $PM_{10}$-pre-separator measuring system is based on the documents listed below and the regular, continuous surveillance of the manufacturer's quality management system:

**Basic testing**

Test report: 936/21205333/A dated 06 December 2006
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Cologne
Publication: BAnz. 20 April 2007, No. 75, p. 4139, chapter III notification 1.2
UBA announcement dated 12 April 2007

**Notifications**

Statement issued by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH dated 30 March 2009
Publication: BAnz. 25 August 2009 no. 125, p. 2929, chapter III notification 6
UBA announcement dated 03 August 2009
(New software version and change of note 1)

Statement issued by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH dated 9 October 2009
Publication: BAnz. 12 February 2010 no. 24, p. 552, chapter IV notifications 10 and 11
UBA announcement dated 25 January 2010
(New software version, replacement of note 1, distribution by Horiba Europe GmbH)

Statement issued by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH dated 16 March 2010
Publication: BAnz. 28 July 2010 no. 111, p. 2597, chapter III notification 2
UBA announcement dated 12 July 2010
(New software version)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 24 March 2011
Publication: BAnz. 29 July 2011 no. 113, p. 2725, chapter III notification 12
UBA announcement dated 15 July 2011
(Touch screen option, new software version)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 21 March 2012
Publication: BAnz AT 20.07.2012 B11, chapter IV notification 6
UBA announcement dated 06 July 2012
(New back plate, new software version)

**Initial certification according to EN 15267**

Certificate no. 0000037055: 22 March 2013
Expiry date of the certificate: 04 March 2018

Test report: 936/21205333/A dated 06 December 2006
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Cologne
Addendum: 936/21220762/A dated 04 October 2012
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 04 October 2012
Publication: BAnz AT 05.03.2013 B10, chapter V notification 2
UBA announcement dated 12 February 2013

**Notifications in accordance with EN 15267**

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 18 March 2013
Publication: BAnz AT 23.07.2013 B4, chapter V notification 5
UBA announcement dated 03 July 2013
(New software version)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 20 September 2014
Publication: BAnz AT 02.04.2015 B5, chapter IV notification 11
UBA announcement dated 25 February 2015
(Replacement of discontinued pressure sensor)

**Renewal of the certificate**

Certificate no. 0000037055_01: 05 March 2018
Expiry date of the certificate: 04 March 2023

| $PM_{10}$ Smart BAM 1020 | 35.3% > 28 µg m-3 | Orthogonal Regression | | | | Between Instrument Uncertainties | |
|---|---|---|---|---|---|---|---|
| | $W_{CM}$ / % | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | Reference | Candidate |
| All Paired Data | 16.0 | 320 | 0.982 | 1.034 +/- 0.008 | 0.843 +/- 0.290 | 0.67 | 1.22 |
| < 30 µg m-3 | 24.7 | 215 | 0.826 | 1.119 +/- 0.032 | -0.446 +/- 0.557 | 0.53 | 1.09 |
| > 30 µg m-3 | 17.7 | 105 | 0.971 | 1.042 +/- 0.017 | 0.141 +/- 1.031 | 0.91 | 1.49 |

| 4294 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Cologne, Parking Lot | 29 | 0.960 | 0.948 +/- 0.036 | 2.202 +/- 0.950 | 10.13 | 34.5 |
| | Titz - Rödingen | 37 | 0.962 | 1.058 +/- 0.035 | 0.376 +/- 0.782 | 14.75 | 18.9 |
| | Cologne, Frankfurter Str. | 28 | 0.963 | 1.025 +/- 0.039 | -1.293 +/- 1.083 | 8.07 | 42.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 68 | 0.814 | 1.040 +/- 0.055 | 0.162 +/- 0.981 | 12.58 | 4.4 |
| | > 30 µg $m^{-3}$ | 26 | 0.897 | 0.964 +/- 0.063 | 1.810 +/- 2.438 | 9.75 | 100.0 |
| | All Data | 94 | 0.953 | 0.987 +/- 0.022 | 1.048 +/- 0.563 | 9.16 | 35.3 |

| 4295 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Cologne, Parking Lot | 29 | 0.970 | 0.990 +/- 0.033 | 2.681 +/- 0.862 | 12.53 | 34.5 |
| | Titz - Rödingen | 37 | 0.961 | 1.056 +/- 0.035 | 1.260 +/- 0.785 | 17.52 | 18.9 |
| | Cologne, Frankfurter Str. | 28 | 0.969 | 1.021 +/- 0.035 | -0.154 +/- 0.994 | 8.10 | 42.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 68 | 0.830 | 1.056 +/- 0.053 | 0.935 +/- 0.952 | 17.24 | 4.4 |
| | > 30 µg $m^{-3}$ | 26 | 0.929 | 1.025 +/- 0.056 | 0.713 +/- 2.151 | 11.49 | 100.0 |
| | All Data | 94 | 0.960 | 1.004 +/- 0.021 | 1.735 +/- 0.528 | 11.41 | 30.9 |

| Austria1 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Graz | 45 | 0.969 | 1.025 +/- 0.027 | -0.202 +/- 1.848 | 20.89 | 82.2 |
| | Steyregg | 45 | 0.824 | 1.049 +/- 0.067 | -1.750 +/- 1.392 | 9.31 | 8.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 50 | 0.644 | 1.339 +/- 0.109 | -6.789 +/- 2.135 | 42.75 | 2.0 |
| | > 30 µg $m^{-3}$ | 40 | 0.960 | 1.057 +/- 0.034 | -2.826 +/- 2.431 | 19.58 | 100.0 |
| | All Data | 90 | 0.983 | 1.039 +/- 0.015 | -1.294 +/- 0.729 | 15.95 | 45.6 |

| Austria2 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Graz | 45 | 0.966 | 1.033 +/- 0.029 | 1.948 +/- 1.962 | 26.05 | 82.2 |
| | Steyregg | 45 | 0.793 | 1.035 +/- 0.072 | -1.668 +/- 1.489 | 9.56 | 8.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 50 | 0.557 | 1.492 +/- 0.130 | -9.462 +/- 2.545 | 62.86 | 2.0 |
| | > 30 µg $m^{-3}$ | 40 | 0.956 | 1.084 +/- 0.037 | -2.296 +/- 2.635 | 22.65 | 100.0 |
| | All Data | 90 | 0.980 | 1.079 +/- 0.016 | -1.702 +/- 0.818 | 19.84 | 45.6 |

| J7860 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 59 | 0.906 | 1.172 +/- 0.047 | 1.204 +/- 0.839 | 40.46 | 6.8 |
| | > 30 µg $m^{-3}$ | 38 | 0.974 | 1.002 +/- 0.027 | 3.154 +/- 1.548 | 17.67 | 100.0 |
| | All Data (Tusimice) | 97 | 0.984 | 0.999 +/- 0.013 | 3.739 +/- 0.492 | 18.45 | 43.3 |

| J7863 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 58 | 0.913 | 1.158 +/- 0.045 | 0.159 +/- 0.812 | 33.73 | 6.9 |
| | > 30 µg $m^{-3}$ | 38 | 0.978 | 1.032 +/- 0.025 | 1.948 +/- 1.450 | 17.98 | 100.0 |
| | All Data (Tusimice) | 96 | 0.987 | 1.035 +/- 0.012 | 2.035 +/- 0.461 | 18.18 | 43.8 |

| 17011 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 39 | 0.960 | 1.039 +/- 0.034 | 0.632 +/- 0.458 | 11.13 | 0.0 |
| | > 30 µg $m^{-3}$ | 1 | | +/- | +/- | | 100.0 |
| | All Data (Teddington) | 40 | 0.949 | 1.162 +/- 0.042 | -0.766 +/- 0.602 | 29.99 | 2.5 |

| 17022 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 39 | 0.958 | 1.051 +/- 0.035 | 0.603 +/- 0.477 | 13.45 | 0.0 |
| | > 30 µg $m^{-3}$ | 1 | | +/- | +/- | | 100.0 |
| | All Data (Teddington) | 40 | 0.963 | 1.110 +/- 0.034 | -0.050 +/- 0.488 | 22.28 | 2.5 |

Umwelt Bundesamt

**Certificate:**
0000037055_01 / 05 March 2018

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| $PM_{10}$ Smart BAM 1020 Intercept Corrected | 35.3% > 28 µg m-3 | Orthogonal Regression | | | | Between Instrument Uncertainties | |
|---|---|---|---|---|---|---|---|
| | $W_{CM}$ / % | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | Reference | Candidate |
| All Paired Data | 14.2 | 320 | 0.982 | 1.034 +/- 0.008 | 0.000 +/- 0.290 | 0.67 | 1.22 |
| < 30 µg m-3 | 21.7 | 215 | 0.826 | 1.119 +/- 0.032 | -1.288 +/- 0.557 | 0.53 | 1.09 |
| > 30 µg m-3 | 16.3 | 105 | 0.971 | 1.042 +/- 0.017 | -0.701 +/- 1.031 | 0.91 | 1.49 |

| 4294 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Cologne, Parking Lot | 29 | 0.960 | 0.948 +/- 0.036 | 1.359 +/- 0.950 | 11.22 | 34.5 |
| | Titz - Rödingen | 37 | 0.962 | 1.058 +/- 0.035 | -0.466 +/- 0.782 | 11.91 | 18.9 |
| | Cologne, Frankfurter Str. | 28 | 0.963 | 1.025 +/- 0.039 | -2.136 +/- 1.083 | 8.92 | 42.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 68 | 0.814 | 1.040 +/- 0.055 | -0.680 +/- 0.981 | 10.58 | 4.4 |
| | > 30 µg $m^{-3}$ | 26 | 0.897 | 0.964 +/- 0.063 | 0.967 +/- 2.438 | 10.38 | 100.0 |
| | All Data | 94 | 0.953 | 0.987 +/- 0.022 | 0.206 +/- 0.563 | 9.30 | 35.3 |

| 4295 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Cologne, Parking Lot | 29 | 0.970 | 0.990 +/- 0.033 | 1.839 +/- 0.862 | 10.54 | 34.5 |
| | Titz - Rödingen | 37 | 0.961 | 1.056 +/- 0.035 | 0.417 +/- 0.785 | 14.52 | 18.9 |
| | Cologne, Frankfurter Str. | 28 | 0.969 | 1.021 +/- 0.035 | -0.996 +/- 0.994 | 7.32 | 42.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 68 | 0.830 | 1.056 +/- 0.053 | 0.092 +/- 0.952 | 14.49 | 4.4 |
| | > 30 µg $m^{-3}$ | 26 | 0.929 | 1.025 +/- 0.056 | -0.129 +/- 2.151 | 9.57 | 100.0 |
| | All Data | 94 | 0.960 | 1.004 +/- 0.021 | 0.892 +/- 0.528 | 9.53 | 30.9 |

| Austria1 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Graz | 45 | 0.969 | 1.025 +/- 0.027 | -1.045 +/- 1.848 | 20.50 | 82.2 |
| | Steyregg | 45 | 0.824 | 1.049 +/- 0.067 | -2.593 +/- 1.392 | 8.95 | 8.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 50 | 0.644 | 1.339 +/- 0.109 | -7.631 +/- 2.135 | 39.58 | 2.0 |
| | > 30 µg $m^{-3}$ | 40 | 0.960 | 1.057 +/- 0.034 | -3.668 +/- 2.431 | 19.88 | 100.0 |
| | All Data | 90 | 0.983 | 1.039 +/- 0.015 | -2.137 +/- 0.729 | 15.78 | 45.6 |

| Austria2 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Graz | 45 | 0.966 | 1.033 +/- 0.029 | 1.106 +/- 1.962 | 24.39 | 82.2 |
| | Steyregg | 45 | 0.793 | 1.035 +/- 0.072 | -2.511 +/- 1.489 | 10.09 | 8.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 50 | 0.557 | 1.492 +/- 0.130 | -10.304 +/- 2.545 | 59.63 | 2.0 |
| | > 30 µg $m^{-3}$ | 40 | 0.956 | 1.084 +/- 0.037 | -3.138 +/- 2.635 | 21.77 | 100.0 |
| | All Data | 90 | 0.980 | 1.079 +/- 0.016 | -2.544 +/- 0.818 | 18.61 | 45.6 |

| J7860 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 59 | 0.906 | 1.172 +/- 0.047 | 0.361 +/- 0.839 | 37.23 | 6.8 |
| | > 30 µg $m^{-3}$ | 38 | 0.974 | 1.002 +/- 0.027 | 2.311 +/- 1.548 | 15.38 | 100.0 |
| | All Data (Tusimice) | 97 | 0.984 | 0.999 +/- 0.013 | 2.896 +/- 0.492 | 15.92 | 43.3 |

| J7863 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 58 | 0.913 | 1.158 +/- 0.045 | -0.684 +/- 0.812 | 30.54 | 6.9 |
| | > 30 µg $m^{-3}$ | 38 | 0.978 | 1.032 +/- 0.025 | 1.105 +/- 1.450 | 15.50 | 100.0 |
| | All Data (Tusimice) | 96 | 0.987 | 1.035 +/- 0.012 | 1.193 +/- 0.461 | 15.54 | 43.8 |

| 17011 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 39 | 0.960 | 1.039 +/- 0.034 | -0.210 +/- 0.458 | 8.21 | 0.0 |
| | > 30 µg $m^{-3}$ | 1 | | +/- | +/- | | 100.0 |
| | All Data (Teddington) | 40 | 0.949 | 1.162 +/- 0.042 | -1.608 +/- 0.602 | 26.73 | 2.5 |

| 17022 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 39 | 0.958 | 1.051 +/- 0.035 | -0.240 +/- 0.477 | 10.40 | 0.0 |
| | > 30 µg $m^{-3}$ | 1 | | +/- | +/- | | 100.0 |
| | All Data (Teddington) | 40 | 0.963 | 1.110 +/- 0.034 | -0.893 +/- 0.488 | 19.05 | 2.5 |

Umwelt Bundesamt

**Certificate:**
0000037055_01 / 05 March 2018

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| $PM_{10}$ Smart BAM 1020 Slope Corrected | 35.3% > 28 µg m-3 | Orthogonal Regression | | | | Between Instrument Uncertainties | |
|---|---|---|---|---|---|---|---|
| | $W_{CM}$ / % | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | Reference | Candidate |
| All Paired Data | 12.5 | 320 | 0.982 | 1.000 +/- 0.008 | 0.824 +/- 0.280 | 0.67 | 1.18 |
| < 30 µg m-3 | 17.9 | 215 | 0.826 | 1.079 +/- 0.031 | -0.372 +/- 0.538 | 0.53 | 1.06 |
| > 30 µg m-3 | 14.9 | 105 | 0.971 | 1.007 +/- 0.017 | 0.164 +/- 0.997 | 0.91 | 1.44 |

| 4294 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Cologne, Parking Lot | 29 | 0.960 | 0.917 +/- 0.035 | 2.144 +/- 0.919 | 12.72 | 34.5 |
| | Titz - Rödingen | 37 | 0.962 | 1.023 +/- 0.034 | 0.378 +/- 0.756 | 9.03 | 18.9 |
| | Cologne, Frankfurter Str. | 28 | 0.963 | 0.990 +/- 0.037 | -1.235 +/- 1.048 | 10.44 | 42.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 68 | 0.814 | 1.003 +/- 0.053 | 0.219 +/- 0.949 | 8.97 | 4.4 |
| | > 30 µg $m^{-3}$ | 26 | 0.897 | 0.931 +/- 0.061 | 1.815 +/- 2.358 | 11.57 | 100.0 |
| | All Data | 94 | 0.953 | 0.954 +/- 0.022 | 1.032 +/- 0.545 | 10.23 | 35.3 |

| 4295 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Cologne, Parking Lot | 29 | 0.970 | 0.957 +/- 0.032 | 2.605 +/- 0.834 | 9.04 | 34.5 |
| | Titz - Rödingen | 37 | 0.961 | 1.021 +/- 0.034 | 1.233 +/- 0.760 | 11.24 | 18.9 |
| | Cologne, Frankfurter Str. | 28 | 0.969 | 0.988 +/- 0.034 | -0.135 +/- 0.962 | 7.70 | 42.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 68 | 0.830 | 1.018 +/- 0.052 | 0.961 +/- 0.921 | 11.33 | 4.4 |
| | > 30 µg $m^{-3}$ | 26 | 0.929 | 0.990 +/- 0.054 | 0.737 +/- 2.080 | 8.24 | 100.0 |
| | All Data | 94 | 0.960 | 0.971 +/- 0.020 | 1.693 +/- 0.510 | 8.28 | 30.9 |

| Austria1 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Graz | 45 | 0.969 | 0.991 +/- 0.027 | -0.164 +/- 1.787 | 19.96 | 82.2 |
| | Steyregg | 45 | 0.824 | 1.012 +/- 0.065 | -1.624 +/- 1.347 | 9.63 | 8.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 50 | 0.644 | 1.285 +/- 0.105 | -6.378 +/- 2.065 | 34.09 | 2.0 |
| | > 30 µg $m^{-3}$ | 40 | 0.960 | 1.022 +/- 0.033 | -2.687 +/- 2.351 | 20.01 | 100.0 |
| | All Data | 90 | 0.983 | 1.005 +/- 0.014 | -1.240 +/- 0.705 | 15.78 | 45.6 |

| Austria2 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Graz | 45 | 0.966 | 0.998 +/- 0.028 | 1.920 +/- 1.898 | 22.33 | 82.2 |
| | Steyregg | 45 | 0.793 | 0.997 +/- 0.069 | -1.531 +/- 1.441 | 11.48 | 8.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 50 | 0.557 | 1.429 +/- 0.126 | -8.879 +/- 2.462 | 52.84 | 2.0 |
| | > 30 µg $m^{-3}$ | 40 | 0.956 | 1.048 +/- 0.036 | -2.167 +/- 2.549 | 20.66 | 100.0 |
| | All Data | 90 | 0.980 | 1.043 +/- 0.016 | -1.631 +/- 0.791 | 17.32 | 45.6 |

| J7860 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 59 | 0.906 | 1.131 +/- 0.046 | 1.195 +/- 0.812 | 32.66 | 6.8 |
| | > 30 µg $m^{-3}$ | 38 | 0.974 | 0.969 +/- 0.026 | 3.074 +/- 1.498 | 13.09 | 100.0 |
| | All Data (Tusimice) | 97 | 0.984 | 0.966 +/- 0.012 | 3.625 +/- 0.476 | 13.28 | 43.3 |

| J7863 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 58 | 0.913 | 1.119 +/- 0.044 | 0.182 +/- 0.786 | 26.26 | 6.9 |
| | > 30 µg $m^{-3}$ | 38 | 0.978 | 0.998 +/- 0.025 | 1.904 +/- 1.403 | 12.97 | 100.0 |
| | All Data (Tusimice) | 96 | 0.987 | 1.001 +/- 0.012 | 1.975 +/- 0.446 | 12.77 | 43.8 |

| 17011 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 39 | 0.960 | 1.004 +/- 0.033 | 0.620 +/- 0.443 | 5.53 | 0.0 |
| | > 30 µg $m^{-3}$ | 1 | | +/- | +/- | | 100.0 |
| | All Data (Teddington) | 40 | 0.949 | 1.123 +/- 0.041 | -0.728 +/- 0.583 | 22.58 | 2.5 |

| 17022 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 39 | 0.958 | 1.016 +/- 0.034 | 0.592 +/- 0.461 | 7.27 | 0.0 |
| | > 30 µg $m^{-3}$ | 1 | | +/- | +/- | | 100.0 |
| | All Data (Teddington) | 40 | 0.963 | 1.073 +/- 0.033 | -0.040 +/- 0.473 | 15.26 | 2.5 |

Umwelt Bundesamt

**Certificate:**
0000037055_01 / 05 March 2018

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| $PM_{10}$ Smart BAM 1020 Slope and Intercept Corrected | 35.3% > 28 µg m-3 | Orthogonal Regression | | | | Between Instrument Uncertainties | |
|---|---|---|---|---|---|---|---|
| | $W_{CM}$ / % | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | Reference | Candidate |
| All Paired Data | 12.1 | 320 | 0.982 | 1.000 +/- 0.008 | 0.009 +/- 0.280 | 0.67 | 1.18 |
| < 30 µg m-3 | 15.5 | 215 | 0.826 | 1.079 +/- 0.031 | -1.187 +/- 0.538 | 0.53 | 1.06 |
| > 30 µg m-3 | 14.9 | 105 | 0.971 | 1.007 +/- 0.017 | -0.651 +/- 0.997 | 0.91 | 1.44 |

| 4294 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Cologne, Parking Lot | 29 | 0.960 | 0.917 +/- 0.035 | 1.329 +/- 0.919 | 15.05 | 34.5 |
| | Titz - Rödingen | 37 | 0.962 | 1.023 +/- 0.034 | -0.437 +/- 0.756 | 7.33 | 18.9 |
| | Cologne, Frankfurter Str. | 28 | 0.963 | 0.990 +/- 0.037 | -2.050 +/- 1.048 | 12.87 | 42.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 68 | 0.814 | 1.003 +/- 0.053 | -0.596 +/- 0.949 | 9.11 | 4.4 |
| | > 30 µg $m^{-3}$ | 26 | 0.897 | 0.931 +/- 0.061 | 1.000 +/- 2.358 | 13.74 | 100.0 |
| | All Data | 94 | 0.953 | 0.954 +/- 0.022 | 0.217 +/- 0.545 | 12.26 | 35.3 |

| 4295 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Cologne, Parking Lot | 29 | 0.970 | 0.957 +/- 0.032 | 1.790 +/- 0.834 | 9.04 | 34.5 |
| | Titz - Rödingen | 37 | 0.961 | 1.021 +/- 0.034 | 0.418 +/- 0.760 | 8.91 | 18.9 |
| | Cologne, Frankfurter Str. | 28 | 0.969 | 0.988 +/- 0.034 | -0.950 +/- 0.962 | 9.54 | 42.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 68 | 0.830 | 1.018 +/- 0.052 | 0.146 +/- 0.921 | 9.59 | 4.4 |
| | > 30 µg $m^{-3}$ | 26 | 0.929 | 0.990 +/- 0.054 | -0.078 +/- 2.080 | 8.55 | 100.0 |
| | All Data | 94 | 0.960 | 0.971 +/- 0.020 | 0.878 +/- 0.510 | 8.65 | 30.9 |

| Austria1 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Graz | 45 | 0.969 | 0.991 +/- 0.027 | -0.979 +/- 1.787 | 20.64 | 82.2 |
| | Steyregg | 45 | 0.824 | 1.012 +/- 0.065 | -2.439 +/- 1.347 | 11.48 | 8.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 50 | 0.644 | 1.285 +/- 0.105 | -7.193 +/- 2.065 | 31.13 | 2.0 |
| | > 30 µg $m^{-3}$ | 40 | 0.960 | 1.022 +/- 0.033 | -3.502 +/- 2.351 | 21.30 | 100.0 |
| | All Data | 90 | 0.983 | 1.005 +/- 0.014 | -2.055 +/- 0.705 | 16.94 | 45.6 |

| Austria2 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Individual Datasets | Graz | 45 | 0.966 | 0.998 +/- 0.028 | 1.105 +/- 1.898 | 21.51 | 82.2 |
| | Steyregg | 45 | 0.793 | 0.997 +/- 0.069 | -2.346 +/- 1.441 | 13.69 | 8.9 |
| Combined Datasets | < 30 µg $m^{-3}$ | 50 | 0.557 | 1.429 +/- 0.126 | -9.694 +/- 2.462 | 49.76 | 2.0 |
| | > 30 µg $m^{-3}$ | 40 | 0.956 | 1.048 +/- 0.036 | -2.982 +/- 2.549 | 20.80 | 100.0 |
| | All Data | 90 | 0.980 | 1.043 +/- 0.016 | -2.446 +/- 0.791 | 17.28 | 45.6 |

| J7860 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 59 | 0.906 | 1.131 +/- 0.046 | 0.380 +/- 0.812 | 29.59 | 6.8 |
| | > 30 µg $m^{-3}$ | 38 | 0.974 | 0.969 +/- 0.026 | 2.259 +/- 1.498 | 11.97 | 100.0 |
| | All Data (Tusimice) | 97 | 0.984 | 0.966 +/- 0.012 | 2.810 +/- 0.476 | 11.73 | 43.3 |

| J7863 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 58 | 0.913 | 1.119 +/- 0.044 | -0.633 +/- 0.786 | 23.28 | 6.9 |
| | > 30 µg $m^{-3}$ | 38 | 0.978 | 0.998 +/- 0.025 | 1.089 +/- 1.403 | 11.54 | 100.0 |
| | All Data (Tusimice) | 96 | 0.987 | 1.001 +/- 0.012 | 1.160 +/- 0.446 | 11.08 | 43.8 |

| 17011 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 39 | 0.960 | 1.004 +/- 0.033 | -0.195 +/- 0.443 | 4.58 | 0.0 |
| | > 30 µg $m^{-3}$ | 1 | | +/- | +/- | | 100.0 |
| | All Data (Teddington) | 40 | 0.949 | 1.123 +/- 0.041 | -1.543 +/- 0.583 | 19.51 | 2.5 |

| 17022 | Dataset | Orthogonal Regression | | | | Limit Value of 50 µg $m^{-3}$ | |
|---|---|---|---|---|---|---|---|
| | | $n_{c-s}$ | $r^2$ | Slope (b) +/- $u_b$ | Intercept (a) +/- $u_a$ | $W_{CM}$ / % | % > 28 µg $m^{-3}$ |
| Combined Datasets | < 30 µg $m^{-3}$ | 39 | 0.958 | 1.016 +/- 0.034 | -0.223 +/- 0.461 | 5.30 | 0.0 |
| | > 30 µg $m^{-3}$ | 1 | | +/- | +/- | | 100.0 |
| | All Data (Teddington) | 40 | 0.963 | 1.073 +/- 0.033 | -0.855 +/- 0.473 | 12.29 | 2.5 |