CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000040206

Certified AMS:	Spirant BAM 1000 with PM_{10}-pre-separator for particulate matter
Manufacturer:	Ecotech Pty Ltd. 1492 Ferntree Gully Road Knoxfield, VIC, 3180 Australia
Test Institute:	TÜV Rheinland Energie und Umwelt GmbH

This is to certify that the AMS has been tested and found to comply with:

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 EN 15267-2: 2009

Certification is awarded in respect of the conditions stated in this certificate
(see also the following pages).

△ TÜVRheinland®
CERTIFIED

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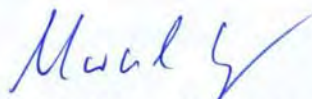EN 15267
Regular
Surveillance

www.tuv.com
ID 0000040206

Publication in the German Federal Gazette
(BAnz.) of 01 April 2014

This certificate will expire on:
31 March 2019

German Federal Environment Agency
Dessau, 29 April 2014

TÜV Rheinland Energie und Umwelt GmbH
Cologne, 28 April 2014

i. A. Dr. Marcel Langner

ppa. Dr. Peter Wilbring

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Accreditation according to EN ISO/IEC 17025 and certified according to ISO 9001:2008.	

qal1.de   info@qal1.de   page 1 of 9

Test report:	936/21222754/B of 01 October 2013
Initial certification:	01 April 2014
Date of expiry:	31 March 2019
Publication:	BAnz AT 01 April 2014 B12, chapter IV, No. 7.1

Approved application

The certified AMS is suitable for permanent monitoring of suspended particulate matter PM_{10} in ambient air (stationary operation).

The suitability of the AMS for this application was assessed on the basis of a laboratory test and a field test (type approval) performed at three different test sites on three different periods as well as an equivalence testing carried out at seven different test sites on seven different periods.

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

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 936/21222754/B of 01 October 2013 of TÜV Rheinland Energie und Umwelt GmbH
- suitability announced by the German Federal Environment Agency (UBA) as the relevant body
- the on-going surveillance of the product and the manufacturing process
- publication in the German Federal Gazette (BAnz AT 01 April 2014 B12, chapter IV, No. 7.1) Announcement by UBA from 27 February 2014

AMS designation:

Spirant BAM 1000 with PM_{10}-pre-separator

Manufacturer:

Ecotech Pty Ltd., Knoxfield, Australia

Field of application:

For permanent monitoring of suspended particulate matter PM_{10} in ambient air (stationary operation)

Measuring range during the performance test:

Component	Certification range	Unit
PM_{10}	0 - 1.000	µg/m³

Software version:

Version 81236-02 V1.0.0

Restrictions:

None

Notes:

1. The system must be fitted with the following options as a minimum for the measurement of PM_{10}:
   sample heating (BX-830), sample head (BX-802) and surrounding temperature sensor (BX-592)
2. The heating may only be used in the operation mode used during the performance test.
3. Volume flow regulation must be performed at operating volume in accordance with the ambient conditions (ACTUAL operating type).
4. The cycle time during the performance test was 1 h, i.e. automatic filter change was performed every hour. Each filter spot was sampled only once.
5. The measuring system must be operated in a lockable measuring container.
6. The measuring system must be regularly calibrated in-situ using the gravimetric PM_{10} reference procedure according to DIN EN 12341.
7. The measuring system can optionally be operated with the BX-125 pump.
8. The measuring system fulfils the requirements of EN 12341 and of the "Demonstration of Equivalence of Ambient Air Monitoring Methods" guideline of January 2010.
9. The performance test report can be viewed on the internet at www.qal1.de.

Test report:

TÜV Rheinland Energie und Umwelt GmbH, Cologne

Report No.: 936/21222754/B of 1 October 2013

Certified product

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

The Spirant BAM 1000 AMS with PM_{10}-pre-separator is, with the exception of a modified front design and minor adjustments to the device software, absolutely identical to the BAM-1020 measuring system and was developed by MetOne Instruments, Inc. and completely manufactured by MetOne Instruments, Inc.

The Spirant BAM 1000 particulate monitoring system with PM_{10}-pre-separator consists of the PM_{10} sampling head BX-802 the sampling tube, the sample heater BX-830, the surrounding temperature sensor BX-592 (incl. radiation warning sign), the vacuum pump BX-127 or BX-125, the Spirant BAM 1000 measuring system (incl. fiberglass filter belt), the corresponding connection tubes and cables and adaptors, the roof duct incl flange, and the manual in German.

The measuring system works according to the principle of beta reduction.

The particle sample passes through the PM_{10} sampling head at a flow rate of 1 m³/h and travels to the actual Spirant BAM 1000 AMS via the sample tube.

During the performance test the measuring system was operated with the BX-830 sample heating device.

The particles reach the measuring system and are separated from the radiometric measurement on the fiberglass filter belt.

A cycle time of 60 min with a time requirement of 4 min for radiometric measurement was set during the performance test.

The cycle time is therefore composed of 2 x 4 min for radiometric measurement (I_0 & I_3) and approx. 1-2 min for filter belt movements. The effective sampling time is thus 50 min.

Furthermore, the measuring system allows an extension of the measuring time to 6 or 8 minutes to increase the precision of radiometric measurement. The effective sampling time does however then drop to 46 or 42 min.

Radiometric mass determination is calibrated in the factory and tested hourly during operation at the zero point (vacant filter patch) and span point (installed span foil). The measuring values at zero and span can be easily deduced from the data generated. These values can be compared with the stability requirements (drift) and the nominal value for span (factory settings).

General notes

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 manufacture of 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 Energie und Umwelt 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 can be applied to the product or used in publicity material for the certified product is presented on page 1 of this certificate.

This document as well as the certification mark remains property of TÜV Rheinland Energie und Umwelt GmbH. With revocation of the publication the certificate loses its validity. After the expiration of the certificate and on requests of the TÜV Rheinland Energie und Umwelt GmbH this document shall be returned and the certificate mark must not be employed anymore.

The relevant version of this certificate and the validity is also accessible on the internet: **qal1.de**.

Certification of Spirant BAM 1000 AMS with PM_{10} pre-separator for particulate matter $PM_{2,5}$ is based on the documents listed below and the regular, continuous monitoring of the Quality Management System of the manufacturer:

Initial certification according to EN 15267

Certificate No. 0000040206:   29 April 2014

Validity of the certificate: 31 March 2019

Test report: 936/21222754/B of 01 October 2013
TÜV Rheinland Energie und Umwelt GmbH, Cologne

Publication: BAnz AT 01 April 2014 B12, chapter IV, No. 7.1
Announcement by UBA from 27 February 2014

Calculation of overall uncertainty

PM₁₀ Spirant BAM 1000*	35.3% > 28 µg m-3	Orthogonal Regression			Between Instrument Uncertainties	
W_{CM} / %		$n_{c\text{-}s}$ / 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 m³	
		$n_{c\text{-}s}$ r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
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 m³	68 0.814	1.040 +/- 0.055	0.162 +/- 0.981	12.58	4.4
	> 30 µg m³	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 m³	
		$n_{c\text{-}s}$ r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
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 m³	68 0.830	1.056 +/- 0.053	0.935 +/- 0.952	17.24	4.4
	> 30 µg m³	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 m³	
		$n_{c\text{-}s}$ r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
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 m³	50 0.644	1.339 +/- 0.109	-6.789 +/- 2.135	42.75	2.0
	> 30 µg m³	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 m³	
		$n_{c\text{-}s}$ r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
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 m³	50 0.557	1.492 +/- 0.130	-9.462 +/- 2.545	62.86	2.0
	> 30 µg m³	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 m³	
		$n_{c\text{-}s}$ r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	59 0.906	1.172 +/- 0.047	1.204 +/- 0.839	40.46	6.8
	> 30 µg m³	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 m³	
		$n_{c\text{-}s}$ r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	58 0.913	1.158 +/- 0.045	0.159 +/- 0.812	33.73	6.9
	> 30 µg m³	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 m³	
		$n_{c\text{-}s}$ r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	39 0.960	1.039 +/- 0.034	0.632 +/- 0.458	11.13	0.0
	> 30 µg m³	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 m³	
		$n_{c\text{-}s}$ r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	39 0.958	1.051 +/- 0.035	0.603 +/- 0.477	13.45	0.0
	> 30 µg m³	1	+/-	+/-		100.0
	All Data (Teddington)	40 0.963	1.110 +/- 0.034	-0.050 +/- 0.488	22.28	2.5

* The equivalence testing has been performed in the basis test with the identical measuring devices BAM-1020 of the company Met One Instruments, Inc.

Calculation of overall uncertainty

PM$_{10}$ Spirant BAM 1000* Intercept Corrected	35.3% > 28 µg m-3	Orthogonal Regression			Between Instrument Uncertainties	
	W$_{CM}$ / %	n$_{c-s}$ r²	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 m³	
		n$_{c-s}$ r²	Slope (b) +/- u$_b$	Intercept (a) +/- u$_a$	W$_{CM}$ / %	% > 28 µg m³
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 m³	68 0.814	1.040 +/- 0.055	-0.680 +/- 0.981	10.58	4.4
	> 30 µg m³	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 m³	
		n$_{c-s}$ r²	Slope (b) +/- u$_b$	Intercept (a) +/- u$_a$	W$_{CM}$ / %	% > 28 µg m³
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 m³	68 0.830	1.056 +/- 0.053	0.092 +/- 0.952	14.49	4.4
	> 30 µg m³	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 m³	
		n$_{c-s}$ r²	Slope (b) +/- u$_b$	Intercept (a) +/- u$_a$	W$_{CM}$ / %	% > 28 µg m³
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 m³	50 0.644	1.339 +/- 0.109	-7.631 +/- 2.135	39.58	2.0
	> 30 µg m³	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 m³	
		n$_{c-s}$ r²	Slope (b) +/- u$_b$	Intercept (a) +/- u$_a$	W$_{CM}$ / %	% > 28 µg m³
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 m³	50 0.557	1.492 +/- 0.130	-10.304 +/- 2.545	59.63	2.0
	> 30 µg m³	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 m³	
		n$_{c-s}$ r²	Slope (b) +/- u$_b$	Intercept (a) +/- u$_a$	W$_{CM}$ / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	59 0.906	1.172 +/- 0.047	0.361 +/- 0.839	37.23	6.8
	> 30 µg m³	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 m³	
		n$_{c-s}$ r²	Slope (b) +/- u$_b$	Intercept (a) +/- u$_a$	W$_{CM}$ / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	58 0.913	1.158 +/- 0.045	-0.684 +/- 0.812	30.54	6.9
	> 30 µg m³	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 m³	
		n$_{c-s}$ r²	Slope (b) +/- u$_b$	Intercept (a) +/- u$_a$	W$_{CM}$ / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	39 0.960	1.039 +/- 0.034	-0.210 +/- 0.458	8.21	0.0
	> 30 µg m³	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 m³	
		n$_{c-s}$ r²	Slope (b) +/- u$_b$	Intercept (a) +/- u$_a$	W$_{CM}$ / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	39 0.958	1.051 +/- 0.035	-0.240 +/- 0.477	10.40	0.0
	> 30 µg m³	1	+/-	+/-		100.0
	All Data (Teddington)	40 0.963	1.110 +/- 0.034	-0.893 +/- 0.488	19.05	2.5

* The equivalence testing has been performed in the basis test with the identical measuring devices BAM-1020 of the company Met One Instruments, Inc.

Calculation of overall uncertainty

PM₁₀ Spirant BAM 1000* 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 m³	
		n_{c-s}	r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
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 m³	68	0.814	1.003 +/- 0.053	0.219 +/- 0.949	8.97	4.4
	> 30 µg m³	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 m³	
		n_{c-s}	r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
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 m³	68	0.830	1.018 +/- 0.052	0.961 +/- 0.921	11.33	4.4
	> 30 µg m³	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 m³	
		n_{c-s}	r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
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 m³	50	0.644	1.285 +/- 0.105	-6.378 +/- 2.065	34.09	2.0
	> 30 µg m³	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 m³	
		n_{c-s}	r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
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 m³	50	0.557	1.429 +/- 0.126	-8.879 +/- 2.462	52.84	2.0
	> 30 µg m³	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 m³	
		n_{c-s}	r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	59	0.906	1.131 +/- 0.046	1.195 +/- 0.812	32.66	6.8
	> 30 µg m³	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 m³	
		n_{c-s}	r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	58	0.913	1.119 +/- 0.044	0.182 +/- 0.786	26.26	6.9
	> 30 µg m³	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 m³	
		n_{c-s}	r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	39	0.960	1.004 +/- 0.033	0.620 +/- 0.443	5.53	0.0
	> 30 µg m³	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 m³	
		n_{c-s}	r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	39	0.958	1.016 +/- 0.034	0.592 +/- 0.461	7.27	0.0
	> 30 µg m³	1		+/-	+/-		100.0
	All Data (Teddington)	40	0.963	1.073 +/- 0.033	-0.040 +/- 0.473	15.26	2.5

* The equivalence testing has been performed in the basis test with the identical measuring devices BAM-1020 of the company Met One Instruments, Inc.

Calculation of overall uncertainty

PM₁₀ Spirant BAM 1000* 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 m³	
		n_{c-s} r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
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 m³	68 0.814	1.003 +/- 0.053	-0.596 +/- 0.949	9.11	4.4
	> 30 µg m³	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 m³	
		n_{c-s} r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
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 m³	68 0.830	1.018 +/- 0.052	0.146 +/- 0.921	9.59	4.4
	> 30 µg m³	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 m³	
		n_{c-s} r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
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 m³	50 0.644	1.285 +/- 0.105	-7.193 +/- 2.065	31.13	2.0
	> 30 µg m³	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 m³	
		n_{c-s} r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
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 m³	50 0.557	1.429 +/- 0.126	-9.694 +/- 2.462	49.76	2.0
	> 30 µg m³	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 m³	
		n_{c-s} r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	59 0.906	1.131 +/- 0.046	0.380 +/- 0.812	29.59	6.8
	> 30 µg m³	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 m³	
		n_{c-s} r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	58 0.913	1.119 +/- 0.044	-0.633 +/- 0.786	23.28	6.9
	> 30 µg m³	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 m³	
		n_{c-s} r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	39 0.960	1.004 +/- 0.033	-0.195 +/- 0.443	4.58	0.0
	> 30 µg m³	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 m³	
		n_{c-s} r^2	Slope (b) +/- u_b	Intercept (a) +/- u_a	W_{CM} / %	% > 28 µg m³
Combined Datasets	< 30 µg m³	39 0.958	1.016 +/- 0.034	-0.223 +/- 0.461	5.30	0.0
	> 30 µg m³	1	+/-	+/-		100.0
	All Data (Teddington)	40 0.963	1.073 +/- 0.033	-0.855 +/- 0.473	12.29	2.5

* The equivalence testing has been performed in the basis test with the identical measuring devices BAM-1020 of the company Met One Instruments, Inc.

CONFIRMATION

Notification: 0000040206_00_01_rev1
on changes according to EN 15267 regarding certificate 0000040206 dated 29 April 2014

Measuring system: Spirant BAM 1000 with PM_{10}–pre-separator for particulate matter

Manufacturer: Ecotech PTY Ltd.
1492 Ferntree Gully Road
Knoxfield, VIC, 3180
Australia

German Federal Environmental Agency (UBA)

**Announcement about the uniform practice in
monitoring emissions and ambient air.
25 February 2015
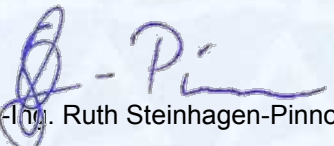Federal Gazette BAnz AT 02 April 2015 B5**

IV. **Notifications to the uniform practice for the continuous monitoring of emission and ambient air:**

2 **Notification as regards Federal Environment Agency (UBA) notice of 27 February 2014 (Federal Gazette (BAnz) AT 1 April 2014 B12, chapter IV number 7.1)**

The 970603 pressure sensor (MICROSWITCH #185PC15AT) of the Spirant BAM 1000 measuring system with PM_{10} pre-separator, manufactured by Ecotech Pty Ltd., has been discontinued and was replaced by the 970595 pressure sensor (HONEYWELL SSCDANN015PAAA5).

Statement of TÜV Rheinland Energie und Umwelt GmbH of 20 September 2014

TÜV Rheinland Energie und Umwelt GmbH
Cologne, 30. April 2015

i. A. Dipl.-Ing. Ruth Steinhagen-Pinnow   i. A. Dipl. Ing. Carsten Röllig

www.umwelt-tuv.de teu@umwelt-tuv.de Tel. +49 221 806-5200	TÜV Rheinland Energie und Umwelt GmbH Am Grauen Stein 51105 Cologne

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.