

# CERTIFICATE

## of Product Conformity (QAL1)

Certificate number: 0000001013\_03

**Certified AMS:** CEMS II for CO, NO, NO<sub>2</sub>, N<sub>2</sub>O, SO<sub>2</sub>, HCl, HF, NH<sub>3</sub>, CO<sub>2</sub>, H<sub>2</sub>O and O<sub>2</sub>

**Manufacturer:** Gasmot Technologies Oy  
Pulittie 8 A 1  
00880 Helsinki  
Finland

**Test Institute:** TÜV Rheinland Energy GmbH

This is to certify that the AMS has been tested and certified  
according to the standards

EN 15267-1 (2009), EN 15267-2 (2009), EN 15267-3 (2007)  
and EN 14181 (2004)

Certification is awarded in respect of the conditions stated in this certificate  
(this certificate contains 18 pages).




Suitability Tested  
EN 15267  
QAL1 Certified  
Regular  
Surveillance

www.tuv.com  
ID 0000001013

Publication in the German Federal Gazette  
(BAnz.) of 23 July 2013

German Federal Environment Agency  
Dessau, 22 July 2016



Dr. Marcel Langner  
Head of Section II 4.1

This certificate will expire on:  
28 July 2021

TÜV Rheinland Energy GmbH  
Cologne, 21 July 2016



ppa. Dr. Peter Wilbring

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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

**Certificate:**  
0000001013\_03 / 22 July 2016

**Test report:** 936/21220683/A of 27 March 2013  
**Initial certification:** 29 July 2011  
**Expiry date:** 28 July 2021  
**Certificate:** renewal (previous certificate 0000001013\_02 dated from 20 August 2013 with validity up to the 28 July 2016)  
**Publication:** BAnz AT 23.07.2013 B4, chapter I, No. 3.1

### **Approved application**

The tested AMS is suitable for use at combustion plants according to Directive 2010/75/EU, chapter III (13. BImSchV), at waste incineration plants according to Directive 2010/75/EU, chapter IV (17. BImSchV) and other plants requiring official approval. The measured ranges have been selected considering the wide application range of the AMS.

The suitability of the AMS for this application was assessed on the basis of a laboratory test and a three-month field test at a waste incineration plant.

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 valid at the time of performance testing. As changes in legal regulations are possible, any potential user should ensure that this AMS is suitable for monitoring the limit value relevant to the application.

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

### **Basis of the certification**

This certification is based on:

- test report 936/21220683/A of 27 March 2013 of 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 AT 23.07.2013 B4, chapter I, No. 3.1,  
Announcement by UBA from 03 July 2013:

**AMS designation:**

CEMS II for CO, NO, NO<sub>2</sub>, N<sub>2</sub>O, SO<sub>2</sub>, HCl, HF, NH<sub>3</sub>, CO<sub>2</sub>, H<sub>2</sub>O and O<sub>2</sub>

**Manufacturer:**

Gasmet Technologies Oy, Helsinki, Finland

**Field of application:**

For measurements at plants requiring official approval and plants according to 27<sup>th</sup> BImSchV

**Measuring ranges during the performance test:**

Component	Certification range	Supplementary measurement ranges		Unit
CO	0 - 75	0 - 300	0 - 1500	mg/m <sup>3</sup>
NO	0 - 200	0 - 600	0 - 2000	mg/m <sup>3</sup>
NO <sub>2</sub>	0 - 200	0 - 500	-	mg/m <sup>3</sup>
N <sub>2</sub> O	0 - 100	0 - 500	-	mg/m <sup>3</sup>
SO <sub>2</sub>	0 - 75	0 - 300	0 - 1500	mg/m <sup>3</sup>
HCl	0 - 15	0 - 90	-	mg/m <sup>3</sup>
HF	0 - 3	0 - 10	-	mg/m <sup>3</sup>
NH <sub>3</sub>	0 - 15	0 - 50	-	mg/m <sup>3</sup>
CO <sub>2</sub>	0 - 25	-	-	Vol.-%
H <sub>2</sub> O	0 - 30	0 - 40	-	Vol.-%
O <sub>2</sub>	0 - 25	-	-	Vol.-%

**Software versions:**

Calcmet: 11.101 with evaluation module 4.42.2 and OXITEC Ver. 1.50 np

**Restrictions:**

None

**Notes:**

1. During test with HF, HCl and NH<sub>3</sub> wet test gases shall be used.
2. The maintenance interval of the AMS is four weeks.
3. The sample probe should be cleansed after plant failures.
4. The analyser OXITEC 500E SME 5 from the company ENOTEC GmbH, Marienheide, Germany is employed for O<sub>2</sub> measurements.
5. The performance test was carried out for the following models:

Type	FTIR 1	FTIR 2 (HF)	O <sub>2</sub>
A 1	X		X
A 2	X		
A 3		X	X
A 4		X	
B 1	X		X
B 2	X		
B 3	X	X	X
B 4	X	X	

6. Supplementary testing (approval of instrument configurations CEMS II) for notification of the German Federal Environment Agency (UBA) dated 6 July 2012 (BAnz AT 20.07.2012 B11, chapter I, No. 3.1).

**Test report:**

TÜV Rheinland Energie und Umwelt GmbH, Cologne  
Report No.: 936/21220683/A of 27 March 2013

Publication in the German Federal Gazette: BAnz AT 01.04.2014 B12, chapter VI notification 12,  
Announcement by UBA from 27 February 2014:

**12 Notification on the announcement of the Federal Environment Agency  
of 3 July 2013 (BAnz AT 23.07.2013 B4, Chapter I Number 3.1)**

The current software versions of the CEMS II measuring system by  
Gasmot Technologies Oy are:

Calcmet: 12.141 with evaluation module 4.42.2 and

OXITEC Ver. 1.50np.

Statement of TÜV Rheinland Energie und Umwelt GmbH of 30 September 2013

Publication in the German Federal Gazette: BAnz AT 02.04.2015 B5, chapter IV notification 33,  
Announcement by UBA from 03 July 2013:

**33 Notification as regards Federal Environment Agency (UBA) notices  
of 3 July 2013 (BAnz AT 23.07.2013 B4, chapter I number 3.1) and  
of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter VI notification 12)**

Modifications at the cable routing were made to optimize the CEMS II multicomponent  
measuring systems, manufactured by Gasmot Oy. In the future single cables will be re-  
placed by a cable bundle. Furthermore, the so far used relay type PTF22012, manufac-  
tured by Tyco, is replaced by the relay type LY2F 12VDC, manufactured by OMRON. The  
designation of the revised preamplifier is "IRDet v3.0". The designation of the revised pow-  
er board is "Power Board v5.3".

The current software versions are:

Calcmet: 12.161 with evaluation module 4.42.2 and OXITEC version 1.50np

Statement of TÜV Rheinland Energie und Umwelt GmbH of 1 October 2014

### Certified product

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

The measuring equipment CEMS II consist of the following parts:

#### 1) Sampling system

Sampling probe: SP2000H of the company of M & C, 1 m length, to 180 °C heated, with PTFE filter element: 2 µm

Heated line: 180 °C with 4 mm Teflon tube, 25 m length, (standard 5 to 30 m)

Pump: heated to 180 °C, with Teflon membrane

#### 2) Analysers

FTIR 1: Gaset CX-4000 (for all components except of HF), cell temperature: 180 °C, cell with optical path length: 5 m

FTIR HF: Gaset CX-4001 for HF, cell temperature: 180 °C, optical path length: 10 m

O<sub>2</sub>: ZrO<sub>2</sub> test cell OXITEC 500E SME 5 in the 19"-box to the company ENOTEC with the software OXITEC Ver. 1,50 np

The measuring gas is pressed continuously through maximum three analysers in parallel (FTIR1, FTIR HF and O<sub>2</sub>-measurement (Example Type B3)) by the sample pump. The amount of the gas is controlled.

#### 3) Computer

PC standard with at least 512 MB RAM, 2 serial interfaces, network access and Windows XP.

For the evaluation of the spectrums of the analyser, the spectrums are transferred via a RS232-interface into the computer and processed there. The computer takes over the control of sampling and the gas flows of the analysers.

#### 4) Software

The evaluation software Calcmnet 12.161 for the CEMS II measuring system is Windows-based.

#### 5) Measuring cabinet with

Air-conditioning adjusted to approx. 30 °C,  
Sampling pump, control units, analysers and computer

The CEMS II has two different cabinet versions. The versions differ at first glance through various cabinet designs. Type A is installed in a smaller cabinet and the air conditioner sits on top of the cabinet. The B variant is installed in a larger cabinet and the air conditioner is located in the rear part of the cabinet. Depending on the configuration not all analyzers are used.

### 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 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 can be applied to the product or used in publicity material for the certified product.

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

The relevant version of this certificate and its expiration is also accessible on the internet: [qal1.de](http://qal1.de).

Certification of CEMS II for CO, NO, NO<sub>2</sub>, N<sub>2</sub>O, SO<sub>2</sub>, HCl, HF, NH<sub>3</sub>, CO<sub>2</sub>, H<sub>2</sub>O and O<sub>2</sub> is based on the documents listed below and the regular, continuous monitoring of the Quality Management System of the manufacturer:

### Initial test:

Baseline report 936/21200448/A dated 07 July 2006  
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Cologne

Publication: Federal Gazette (BAnz.) of 14 October 2006, No. 194, p. 6715  
Notification of the Federal Environmental Agency on 12 September 2006

### Supplementary test

Supplementary test report 936/21203240/B dated 03 September 2007  
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Cologne

Publication: Federal Gazette (BAnz.) of 07 March 2008, No. 38, p. 901  
Notification of the Federal Environmental Agency of 14 February 2008  
(Additional component: O<sub>2</sub>)

### Notifications:

Statement of TÜV Rheinland Immissionsschutz und Energiesysteme of 14 December 2006  
Publication: Federal Gazette BAnz. 20 April 2007, No. 75, p. 4139  
Notification of the Federal Environmental Agency of 12 April 2007  
(enclosure variants)

Statement of TÜV Rheinland Energie und Umwelt GmbH of 29 March 2011  
Publication: Federal Gazette BAnz. 29 July 2011, No. 133, p. 2725  
Notification of the Federal Environmental Agency of 15 July 2011  
(changes in software version)

**Initial certification according to EN 15267**

Certificate No. 0000001013: 19 August 2011  
Expiry date of the certificate: 28 July 2016

Test report: 936/21210692/A of 30 March 2011  
TÜV Rheinland Energie und Umwelt GmbH, Cologne  
Publication: BAnz. 29 July 2011, No. 113, p. 2725, chapter I, No. 4.1  
Announcement by UBA from 15 July 2011

**Supplementary testing according to EN 15267**

Certificate No. 0000001013\_01: 20 August 2012  
Expiry date of the certificate: 28 July 2016

Test report: 936/21218384/A of 16 March 2012  
TÜV Rheinland Energie und Umwelt GmbH, Cologne  
Publication: BAnz AT 20.07.2012 B11, chapter 1, No. 3.1  
Announcement by UBA from 06 July 2012

Certificate No. 0000001013\_02: 20 August 2013  
Expiry date of the certificate: 28 July 2016

Test report: 936/21220683/A of 27 March 2013  
TÜV Rheinland Energie und Umwelt GmbH, Cologne  
Publication: BAnz AT 23.07.2013 B4, chapter I, No. 3.1  
Announcement by UBA from 03 July 2013

**Notifications according to EN 15267**

Statement of TÜV Rheinland Energie und Umwelt GmbH of 30 September 2013  
Publication in the German Federal Gazette: BAnz AT 01.04.2014 B12, chapter VI notification 12  
Announcement by UBA from 27 February 2014  
(software changes)

Statement of TÜV Rheinland Energie und Umwelt GmbH of 01 October 2014  
Publication in the German Federal Gazette: BAnz AT 02.04.2015 B5, chapter IV notification 33  
Announcement by UBA from 03 July 2013  
(hardware changes)

**Renewal of the certificate**

Certificate No. 0000001013\_03: 22 July 2016  
Expiry date of the certificate: 28 July 2021

**Calculation of overall uncertainty according to EN 14181 and EN 15267-3**

**Measuring system**

Manufacturer	Gasmet Technologies Oy
Name of measuring system	GASMET CEMS II
Serial number of the candidates	305 / 306
Measuring principle	FTIR

**Test report**

Test laboratory	TÜV Rheinland
Date of report	2013-03-27

**Measured component**

Certification range	CO	0 - 75 mg/m <sup>3</sup>
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**Evaluation of the cross sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	0.32 mg/m <sup>3</sup>
Sum of negative CS at zero point	0.00 mg/m <sup>3</sup>
Sum of positive CS at reference point	1.90 mg/m <sup>3</sup>
Sum of negative CS at reference point	-1.00 mg/m <sup>3</sup>
Maximum sum of cross sensitivities	1.90 mg/m <sup>3</sup>
Uncertainty of cross sensitivity	1.096 mg/m <sup>3</sup>

**Calculation of the combined standard uncertainty**

**Tested parameter**

	u	u <sup>2</sup>
Standard deviation from paired measurements under field conditions *	u <sub>D</sub> 0.478 mg/m <sup>3</sup>	0.228 (mg/m <sup>3</sup> ) <sup>2</sup>
Lack of fit	u <sub>lof</sub> 0.554 mg/m <sup>3</sup>	0.307 (mg/m <sup>3</sup> ) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub> 0.173 mg/m <sup>3</sup>	0.030 (mg/m <sup>3</sup> ) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub> 0.289 mg/m <sup>3</sup>	0.084 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub> 0.208 mg/m <sup>3</sup>	0.043 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub> 0.298 mg/m <sup>3</sup>	0.089 (mg/m <sup>3</sup> ) <sup>2</sup>
Cross sensitivity (interference)	u <sub>i</sub> 1.096 mg/m <sup>3</sup>	1.200 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of sample gas flow	u <sub>p</sub> 0.117 mg/m <sup>3</sup>	0.014 (mg/m <sup>3</sup> ) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub> 0.606 mg/m <sup>3</sup>	0.368 (mg/m <sup>3</sup> ) <sup>2</sup>

\* The larger value is used :

"Repeatability standard deviation at span" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max, j})^2}$	1.54 mg/m <sup>3</sup>
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	3.01 mg/m <sup>3</sup>

**Relative total expanded uncertainty**

**Requirement of 2000/76/EC and 2001/80/EC**

Requirement of EN 15267-3

<b>U in % of the ELV 50 mg/m<sup>3</sup></b>	<b>6.0</b>
<b>U in % of the ELV 50 mg/m<sup>3</sup></b>	<b>10.0</b>
U in % of the ELV 50 mg/m <sup>3</sup>	7.5



**Calculation of overall uncertainty according to EN 14181 and EN 15267-3**

**Measuring system**

Manufacturer	Gasmet Technologies Oy
Name of measuring system	GASMET CEMS II
Serial number of the candidates	305 / 306
Measuring principle	FTIR

**Test report**

Test laboratory	TÜV Rheinland
Date of report	2013-03-27

**Measured component**

Certification range	NO	0 - 200 mg/m <sup>3</sup>
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**Evaluation of the cross sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	1.14 mg/m <sup>3</sup>
Sum of negative CS at zero point	0.00 mg/m <sup>3</sup>
Sum of positive CS at reference point	2.40 mg/m <sup>3</sup>
Sum of negative CS at reference point	-5.70 mg/m <sup>3</sup>
Maximum sum of cross sensitivities	-5.70 mg/m <sup>3</sup>
Uncertainty of cross sensitivity	-3.291 mg/m <sup>3</sup>

**Calculation of the combined standard uncertainty**

**Tested parameter**

	u	u <sup>2</sup>
Repeatability standard deviation at set point *	u <sub>r</sub> 0.859 mg/m <sup>3</sup>	0.738 (mg/m <sup>3</sup> ) <sup>2</sup>
Lack of fit	u <sub>lof</sub> -0.635 mg/m <sup>3</sup>	0.403 (mg/m <sup>3</sup> ) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub> 1.097 mg/m <sup>3</sup>	1.203 (mg/m <sup>3</sup> ) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub> -1.155 mg/m <sup>3</sup>	1.334 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub> 0.874 mg/m <sup>3</sup>	0.764 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub> 0.920 mg/m <sup>3</sup>	0.846 (mg/m <sup>3</sup> ) <sup>2</sup>
Cross sensitivity (interference)	u <sub>i</sub> -3.291 mg/m <sup>3</sup>	10.830 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of sample gas flow	u <sub>p</sub> 0.553 mg/m <sup>3</sup>	0.306 (mg/m <sup>3</sup> ) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub> 1.617 mg/m <sup>3</sup>	2.613 (mg/m <sup>3</sup> ) <sup>2</sup>

\* The larger value is used :

"Repeatability standard deviation at span" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max,j})^2}$	4.36 mg/m <sup>3</sup>
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	8.55 mg/m <sup>3</sup>

**Relative total expanded uncertainty**

**Requirement of 2000/76/EC and 2001/80/EC**

Requirement of EN 15267-3

<b>U in % of the ELV 131 mg/m<sup>3</sup></b>	<b>6.5</b>
<b>U in % of the ELV 131 mg/m<sup>3</sup></b>	<b>20.0</b>
U in % of the ELV 131 mg/m <sup>3</sup>	15.0

**Calculation of overall uncertainty according to EN 14181 and EN 15267-3**

**Measuring system**

Manufacturer	Gasmet Technologies Oy
Name of measuring system	GASMET CEMS II
Serial number of the candidates	305 / 306
Measuring principle	FTIR

**Test report**

Test laboratory	TÜV Rheinland
Date of report	2013-03-27

**Measured component**

Certification range	NO <sub>2</sub> 0 - 200 mg/m <sup>3</sup>
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**Evaluation of the cross sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	1.66 mg/m <sup>3</sup>
Sum of negative CS at zero point	0.00 mg/m <sup>3</sup>
Sum of positive CS at reference point	7.90 mg/m <sup>3</sup>
Sum of negative CS at reference point	-1.60 mg/m <sup>3</sup>
Maximum sum of cross sensitivities	7.90 mg/m <sup>3</sup>
Uncertainty of cross sensitivity	4.561 mg/m <sup>3</sup>

**Calculation of the combined standard uncertainty**

**Tested parameter**

	u	u <sup>2</sup>
Standard deviation from paired measurements under field conditions *	u <sub>D</sub> 1.200 mg/m <sup>3</sup>	1.440 (mg/m <sup>3</sup> ) <sup>2</sup>
Lack of fit	u <sub>lof</sub> -0.520 mg/m <sup>3</sup>	0.270 (mg/m <sup>3</sup> ) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub> 0.404 mg/m <sup>3</sup>	0.163 (mg/m <sup>3</sup> ) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub> 2.887 mg/m <sup>3</sup>	8.335 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub> 0.529 mg/m <sup>3</sup>	0.280 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub> 0.571 mg/m <sup>3</sup>	0.326 (mg/m <sup>3</sup> ) <sup>2</sup>
Cross sensitivity (interference)	u <sub>i</sub> 4.561 mg/m <sup>3</sup>	20.803 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of sample gas flow	u <sub>p</sub> -0.313 mg/m <sup>3</sup>	0.098 (mg/m <sup>3</sup> ) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>m</sub> 1.617 mg/m <sup>3</sup>	2.613 (mg/m <sup>3</sup> ) <sup>2</sup>

\* The larger value is used :

"Repeatability standard deviation at span" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u<sub>c</sub>)

$$u_c = \sqrt{\sum (u_{\max, j})^2} \quad 5.86 \text{ mg/m}^3$$

Total expanded uncertainty

$$U = u_c * k = u_c * 1.96 \quad 11.48 \text{ mg/m}^3$$

**Relative total expanded uncertainty**

**Requirement of 2000/76/EC and 2001/80/EC**

Requirement of EN 15267-3

**U in % of the ELV 200 mg/m<sup>3</sup> 5.7**

**U in % of the ELV 200 mg/m<sup>3</sup> 20.0**

U in % of the ELV 200 mg/m<sup>3</sup> 15.0

**Calculation of overall uncertainty according to EN 14181 and EN 15267-3**

**Measuring system**

Manufacturer	Gaset Technologies Oy
Name of measuring system	GASMET CEMS II
Serial number of the candidates	305 / 306
Measuring principle	FTIR

**Test report**

Test laboratory	TÜV Rheinland
Date of report	2013-03-27

**Measured component**

Certification range	N <sub>2</sub> O	0 - 100 mg/m <sup>3</sup>
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**Evaluation of the cross sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	0.00 mg/m <sup>3</sup>
Sum of negative CS at zero point	0.00 mg/m <sup>3</sup>
Sum of positive CS at reference point	3.20 mg/m <sup>3</sup>
Sum of negative CS at reference point	-0.80 mg/m <sup>3</sup>
Maximum sum of cross sensitivities	3.20 mg/m <sup>3</sup>
Uncertainty of cross sensitivity	1.848 mg/m <sup>3</sup>

**Calculation of the combined standard uncertainty**

**Tested parameter**

	u	u <sup>2</sup>
Standard deviation from paired measurements under field conditions *	u <sub>D</sub> 0.630 mg/m <sup>3</sup>	0.397 (mg/m <sup>3</sup> ) <sup>2</sup>
Lack of fit	u <sub>lof</sub> -0.231 mg/m <sup>3</sup>	0.053 (mg/m <sup>3</sup> ) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub> 0.115 mg/m <sup>3</sup>	0.013 (mg/m <sup>3</sup> ) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub> 0.577 mg/m <sup>3</sup>	0.333 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub> 0.252 mg/m <sup>3</sup>	0.064 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub> 0.314 mg/m <sup>3</sup>	0.099 (mg/m <sup>3</sup> ) <sup>2</sup>
Cross sensitivity (interference)	u <sub>i</sub> 1.848 mg/m <sup>3</sup>	3.413 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of sample gas flow	u <sub>p</sub> -0.120 mg/m <sup>3</sup>	0.014 (mg/m <sup>3</sup> ) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub> 0.808 mg/m <sup>3</sup>	0.653 (mg/m <sup>3</sup> ) <sup>2</sup>

\* The larger value is used :  
"Repeatability standard deviation at span" or  
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max,j})^2}$	2.24 mg/m <sup>3</sup>
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	4.40 mg/m <sup>3</sup>

**Relative total expanded uncertainty**

Requirement of 2000/76/EC and 2001/80/EC	<b>U in % of the range 100 mg/m<sup>3</sup></b>	<b>4.4</b>
Requirement of EN 15267-3	<b>U in % of the range 100 mg/m<sup>3</sup></b>	<b>20.0**</b>
	<b>U in % of the range 100 mg/m<sup>3</sup></b>	<b>15.0</b>

\*\* For this component no requirements in the EC-directives 2001/80/EG und 2000/76/EG are given.  
A value of 20,0 % was used for this.

**Calculation of overall uncertainty according to EN 14181 and EN 15267-3**

**Measuring system**

Manufacturer	Gasmet Technologies Oy
Name of measuring system	GASMET CEMS II
Serial number of the candidates	305 / 306
Measuring principle	FTIR

**Test report**

Test laboratory	TÜV Rheinland
Date of report	2013-03-27

**Measured component**

Certification range	SO <sub>2</sub> 0 - 75 mg/m <sup>3</sup>
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**Evaluation of the cross sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	0.24 mg/m <sup>3</sup>
Sum of negative CS at zero point	0.00 mg/m <sup>3</sup>
Sum of positive CS at reference point	2.30 mg/m <sup>3</sup>
Sum of negative CS at reference point	-2.90 mg/m <sup>3</sup>
Maximum sum of cross sensitivities	-2.90 mg/m <sup>3</sup>
Uncertainty of cross sensitivity	-1.676 mg/m <sup>3</sup>

**Calculation of the combined standard uncertainty**

**Tested parameter**

	u	u <sup>2</sup>
Repeatability standard deviation at set point *	u <sub>r</sub> 0.357 mg/m <sup>3</sup>	0.127 (mg/m <sup>3</sup> ) <sup>2</sup>
Lack of fit	u <sub>lof</sub> -0.316 mg/m <sup>3</sup>	0.100 (mg/m <sup>3</sup> ) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub> 0.346 mg/m <sup>3</sup>	0.120 (mg/m <sup>3</sup> ) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub> -1.039 mg/m <sup>3</sup>	1.080 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub> 0.557 mg/m <sup>3</sup>	0.310 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub> 0.898 mg/m <sup>3</sup>	0.806 (mg/m <sup>3</sup> ) <sup>2</sup>
Cross sensitivity (interference)	u <sub>i</sub> -1.676 mg/m <sup>3</sup>	2.808 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of sample gas flow	u <sub>p</sub> 0.226 mg/m <sup>3</sup>	0.051 (mg/m <sup>3</sup> ) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub> 0.606 mg/m <sup>3</sup>	0.368 (mg/m <sup>3</sup> ) <sup>2</sup>

\* The larger value is used :

"Repeatability standard deviation at span" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max,j})^2}$	2.40 mg/m <sup>3</sup>
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	4.71 mg/m <sup>3</sup>

**Relative total expanded uncertainty**

**Requirement of 2000/76/EC and 2001/80/EC**

Requirement of EN 15267-3

<b>U in % of the ELV 50 mg/m<sup>3</sup></b>	<b>9.4</b>
<b>U in % of the ELV 50 mg/m<sup>3</sup></b>	<b>20.0</b>
U in % of the ELV 50 mg/m <sup>3</sup>	15.0

**Calculation of overall uncertainty according to EN 14181 and EN 15267-3**

**Measuring system**

Manufacturer	Gaset Technologies Oy
Name of measuring system	GASMET CEMS II
Serial number of the candidates	305 / 306
Measuring principle	FTIR

**Test report**

Test laboratory	TÜV Rheinland
Date of report	2013-03-27

**Measured component**

Certification range	NH <sub>3</sub> 0 - 15 mg/m <sup>3</sup>
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**Evaluation of the cross sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	0.06 mg/m <sup>3</sup>
Sum of negative CS at zero point	0.00 mg/m <sup>3</sup>
Sum of positive CS at reference point	0.30 mg/m <sup>3</sup>
Sum of negative CS at reference point	-0.60 mg/m <sup>3</sup>
Maximum sum of cross sensitivities	-0.60 mg/m <sup>3</sup>
Uncertainty of cross sensitivity	-0.346 mg/m <sup>3</sup>

**Calculation of the combined standard uncertainty**

**Tested parameter**

	u	u <sup>2</sup>
Standard deviation from paired measurements under field conditions *	u <sub>D</sub> 0.074 mg/m <sup>3</sup>	0.005 (mg/m <sup>3</sup> ) <sup>2</sup>
Lack of fit	u <sub>lof</sub> -0.139 mg/m <sup>3</sup>	0.019 (mg/m <sup>3</sup> ) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub> 0.058 mg/m <sup>3</sup>	0.003 (mg/m <sup>3</sup> ) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub> 0.231 mg/m <sup>3</sup>	0.053 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub> 0.115 mg/m <sup>3</sup>	0.013 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub> 0.091 mg/m <sup>3</sup>	0.008 (mg/m <sup>3</sup> ) <sup>2</sup>
Cross sensitivity (interference)	u <sub>i</sub> -0.346 mg/m <sup>3</sup>	0.120 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of sample gas flow	u <sub>p</sub> 0.061 mg/m <sup>3</sup>	0.004 (mg/m <sup>3</sup> ) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub> 0.121 mg/m <sup>3</sup>	0.015 (mg/m <sup>3</sup> ) <sup>2</sup>

\* The larger value is used :  
"Repeatability standard deviation at span" or  
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max,i})^2}$	0.49 mg/m <sup>3</sup>
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.96 mg/m <sup>3</sup>

**Relative total expanded uncertainty**

**Requirement of 2000/76/EC and 2001/80/EC**

Requirement of EN 15267-3

<b>U in % of the ELV 10 mg/m<sup>3</sup></b>	<b>9.6</b>
<b>U in % of the ELV 10 mg/m<sup>3</sup></b>	<b>40.0**</b>
U in % of the ELV 10 mg/m <sup>3</sup>	30.0

\*\* For this component no requirements in the EC-directives 2001/80/EG und 2000/76/EG are given.  
A value of 40.0 % was used for this.

**Calculation of overall uncertainty according to EN 14181 and EN 15267-3**

**Measuring system**

Manufacturer	Gasmet Technologies Oy
Name of measuring system	GASMET CEMS II
Serial number of the candidates	305 / 306
Measuring principle	FTIR

**Test report**

Test laboratory	TÜV Rheinland
Date of report	2013-03-27

**Measured component**

Certification range	HCL	0 - 15 mg/m <sup>3</sup>
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**Evaluation of the cross sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	0.00 mg/m <sup>3</sup>
Sum of negative CS at zero point	-0.06 mg/m <sup>3</sup>
Sum of positive CS at reference point	0.60 mg/m <sup>3</sup>
Sum of negative CS at reference point	-0.10 mg/m <sup>3</sup>
Maximum sum of cross sensitivities	0.60 mg/m <sup>3</sup>
Uncertainty of cross sensitivity	0.346 mg/m <sup>3</sup>

**Calculation of the combined standard uncertainty**

**Tested parameter**

	u	u <sup>2</sup>
Standard deviation from paired measurements under field conditions *	u <sub>D</sub> 0.209 mg/m <sup>3</sup>	0.044 (mg/m <sup>3</sup> ) <sup>2</sup>
Lack of fit	u <sub>lof</sub> 0.173 mg/m <sup>3</sup>	0.030 (mg/m <sup>3</sup> ) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub> 0.058 mg/m <sup>3</sup>	0.003 (mg/m <sup>3</sup> ) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub> -0.289 mg/m <sup>3</sup>	0.084 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub> 0.265 mg/m <sup>3</sup>	0.070 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub> 0.091 mg/m <sup>3</sup>	0.008 (mg/m <sup>3</sup> ) <sup>2</sup>
Cross sensitivity (interference)	u <sub>i</sub> 0.346 mg/m <sup>3</sup>	0.120 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of sample gas flow	u <sub>p</sub> -0.045 mg/m <sup>3</sup>	0.002 (mg/m <sup>3</sup> ) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub> 0.121 mg/m <sup>3</sup>	0.015 (mg/m <sup>3</sup> ) <sup>2</sup>

\* The larger value is used :

"Repeatability standard deviation at span" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.61 mg/m <sup>3</sup>
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	1.20 mg/m <sup>3</sup>

**Relative total expanded uncertainty**

**Requirement of 2000/76/EC and 2001/80/EC**

Requirement of EN 15267-3

<b>U in % of the ELV 10 mg/m<sup>3</sup></b>	<b>12.0</b>
<b>U in % of the ELV 10 mg/m<sup>3</sup></b>	<b>40.0</b>
<b>U in % of the ELV 10 mg/m<sup>3</sup></b>	<b>30.0</b>

**Calculation of overall uncertainty according to EN 14181 and EN 15267-3**

**Measuring system**

Manufacturer	Gasmet Technologies Oy
Name of measuring system	GASMET CEMS II
Serial number of the candidates	305 / 306
Measuring principle	FTIR

**Test report**

Test laboratory	TÜV Rheinland
Date of report	2013-03-27

**Measured component**

Certification range	CO <sub>2</sub>	0 - 25 Vol.-%
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**Evaluation of the cross sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	0.00	Vol.-%
Sum of negative CS at zero point	0.00	Vol.-%
Sum of positive CS at reference point	0.10	Vol.-%
Sum of negative CS at reference point	-0.90	Vol.-%
Maximum sum of cross sensitivities	-0.90	Vol.-%
Uncertainty of cross sensitivity	-0.520	Vol.-%

**Calculation of the combined standard uncertainty**

**Tested parameter**

	u		u <sup>2</sup>	
Standard deviation from paired measurements under field conditions *	u <sub>D</sub> 0.100	Vol.-%	0.010	(Vol.-%) <sup>2</sup>
Lack of fit	u <sub>lof</sub> 0.115	Vol.-%	0.013	(Vol.-%) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub> 0.058	Vol.-%	0.003	(Vol.-%) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub> 0.058	Vol.-%	0.003	(Vol.-%) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub> 0.231	Vol.-%	0.053	(Vol.-%) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub> 0.099	Vol.-%	0.010	(Vol.-%) <sup>2</sup>
Cross sensitivity (interference)	u <sub>i</sub> -0.520	Vol.-%	0.270	(Vol.-%) <sup>2</sup>
Influence of sample gas flow	u <sub>p</sub> -0.060	Vol.-%	0.004	(Vol.-%) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub> 0.202	Vol.-%	0.041	(Vol.-%) <sup>2</sup>

\* The larger value is used :  
"Repeatability standard deviation at span" or  
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.64	Vol.-%
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	1.25	Vol.-%

**Relative total expanded uncertainty**

<b>Requirement of 2000/76/EC and 2001/80/EC</b>	<b>U in % of the range 25 Vol.-%</b>	<b>5.0</b>
Requirement of EN 15267-3	U in % of the range 25 Vol.-%	10.0**
	U in % of the range 25 Vol.-%	7.5

\*\* For this component no requirements in the EC-directives 2001/80/EG und 2000/76/EG are given.  
A value of 10.0 % was used for this.

**Calculation of overall uncertainty according to EN 14181 and EN 15267-3**

**Measuring system**

Manufacturer	Gasmet Technologies Oy
Name of measuring system	GASMET CEMS II
Serial number of the candidates	434 / 435
Measuring principle	FTIR

**Test report**

Test laboratory	TÜV Rheinland
Date of report	2013-03-27

**Measured component**

Certification range	HF	0 - 3 mg/m <sup>3</sup>
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**Evaluation of the cross sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	0.02 mg/m <sup>3</sup>
Sum of negative CS at zero point	0.00 mg/m <sup>3</sup>
Sum of positive CS at reference point	0.00 mg/m <sup>3</sup>
Sum of negative CS at reference point	-0.08 mg/m <sup>3</sup>
Maximum sum of cross sensitivities	-0.08 mg/m <sup>3</sup>
Uncertainty of cross sensitivity	-0.046 mg/m <sup>3</sup>

**Calculation of the combined standard uncertainty**

**Tested parameter**

	u	u <sup>2</sup>
Standard deviation from paired measurements under field conditions *	u <sub>D</sub> 0.030 mg/m <sup>3</sup>	0.001 (mg/m <sup>3</sup> ) <sup>2</sup>
Lack of fit	u <sub>lof</sub> 0.029 mg/m <sup>3</sup>	0.001 (mg/m <sup>3</sup> ) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub> 0.000 mg/m <sup>3</sup>	0.000 (mg/m <sup>3</sup> ) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub> 0.052 mg/m <sup>3</sup>	0.003 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub> 0.035 mg/m <sup>3</sup>	0.001 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub> 0.015 mg/m <sup>3</sup>	0.000 (mg/m <sup>3</sup> ) <sup>2</sup>
Cross sensitivity (interference)	u <sub>i</sub> -0.046 mg/m <sup>3</sup>	0.002 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of sample gas flow	u <sub>p</sub> -0.013 mg/m <sup>3</sup>	0.000 (mg/m <sup>3</sup> ) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub> 0.024 mg/m <sup>3</sup>	0.001 (mg/m <sup>3</sup> ) <sup>2</sup>

\* The larger value is used :

"Repeatability standard deviation at span" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max, j})^2}$	0.09 mg/m <sup>3</sup>
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.18 mg/m <sup>3</sup>

**Relative total expanded uncertainty**

**Requirement of 2000/76/EC and 2001/80/EC**

Requirement of EN 15267-3

<b>U in % of the ELV 1 mg/m<sup>3</sup></b>	<b>18.4</b>
<b>U in % of the ELV 1 mg/m<sup>3</sup></b>	<b>40.0</b>
<b>U in % of the ELV 1 mg/m<sup>3</sup></b>	<b>30.0</b>



**Calculation of overall uncertainty according to EN 14181 and EN 15267-3**

**Measuring system**

Manufacturer	Gasmet Technologies Oy
Name of measuring system	GASMET CEMS II
Serial number of the candidates	305 / 306
Measuring principle	FTIR

**Test report**

Test laboratory	TÜV Rheinland
Date of report	2013-03-27

**Measured component**

Certification range	H <sub>2</sub> O	0 - 30 Vol.-%
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**Evaluation of the cross sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	0.00	Vol.-%
Sum of negative CS at zero point	0.00	Vol.-%
Sum of positive CS at reference point	1.10	Vol.-%
Sum of negative CS at reference point	-0.10	Vol.-%
Maximum sum of cross sensitivities	1.10	Vol.-%
Uncertainty of cross sensitivity	0.632	Vol.-%

**Calculation of the combined standard uncertainty**

**Tested parameter**

	u		u <sup>2</sup>	
Standard deviation from paired measurements under field conditions *	u <sub>D</sub> 0.292	Vol.-%	0.085	(Vol.-%) <sup>2</sup>
Lack of fit	u <sub>lof</sub> 0.230	Vol.-%	0.053	(Vol.-%) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub> 0.058	Vol.-%	0.003	(Vol.-%) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub> 0.404	Vol.-%	0.163	(Vol.-%) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub> 0.231	Vol.-%	0.053	(Vol.-%) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub> 0.262	Vol.-%	0.069	(Vol.-%) <sup>2</sup>
Cross sensitivity (interference)	u <sub>i</sub> 0.632	Vol.-%	0.400	(Vol.-%) <sup>2</sup>
Influence of sample gas flow	u <sub>p</sub> 0.112	Vol.-%	0.013	(Vol.-%) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub> 0.242	Vol.-%	0.059	(Vol.-%) <sup>2</sup>

\* The larger value is used :  
"Repeatability standard deviation at span" or  
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.95	Vol.-%
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	1.86	Vol.-%

**Relative total expanded uncertainty**

Requirement of 2000/76/EC and 2001/80/EC	<b>U in % of the range 30 Vol.-%</b>	<b>6.2</b>
Requirement of EN 15267-3	<b>U in % of the range 30 Vol.-%</b>	<b>10.0**</b>
	U in % of the range 30 Vol.-%	7.5

\*\* For this component no requirements in the EC-directives 2001/80/EG und 2000/76/EG are given.  
A value of 10,0 % was used for this.

**Calculation of overall uncertainty according to EN 14181 and EN 15267-3**

**Measuring system**

Manufacturer	Gasmet Technologies Oy
Name of measuring system	GASMET CEMS II
Serial number of the candidates	161104 / 141104
Measuring principle	Zirkondioxid

**Test report**

Test laboratory	TÜV Rheinland
Date of report	2013-03-27

**Measured component**

Certification range	O <sub>2</sub>	0 - 25 Vol.-%
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**Evaluation of the cross sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	0.00	Vol.-%
Sum of negative CS at zero point	0.00	Vol.-%
Sum of positive CS at reference point	0.00	Vol.-%
Sum of negative CS at reference point	0.00	Vol.-%
Maximum sum of cross sensitivities	0.00	Vol.-%
Uncertainty of cross sensitivity	0.000	Vol.-%

**Calculation of the combined standard uncertainty**

**Tested parameter**

	u		u <sup>2</sup>	
Standard deviation from paired measurements under field conditions *	u <sub>D</sub> 0.047	Vol.-%	0.002	(Vol.-%) <sup>2</sup>
Lack of fit	u <sub>lof</sub> -0.104	Vol.-%	0.011	(Vol.-%) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub> 0.029	Vol.-%	0.001	(Vol.-%) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub> 0.110	Vol.-%	0.012	(Vol.-%) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub> 0.165	Vol.-%	0.027	(Vol.-%) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub> 0.015	Vol.-%	0.000	(Vol.-%) <sup>2</sup>
Cross sensitivity (interference)	u <sub>i</sub> 0.000	Vol.-%	0.000	(Vol.-%) <sup>2</sup>
Influence of sample gas flow	u <sub>p</sub> -0.012	Vol.-%	0.000	(Vol.-%) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub> 0.202	Vol.-%	0.041	(Vol.-%) <sup>2</sup>

\* The larger value is used :  
"Repeatability standard deviation at span" or  
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.31	Vol.-%
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.60	Vol.-%

**Relative total expanded uncertainty**

**Requirement of 2000/76/EC and 2001/80/EC**

Requirement of EN 15267-3

<b>U in % of the range 25 Vol.-%</b>	<b>2.4</b>
<b>U in % of the range 25 Vol.-%</b>	<b>10.0**</b>
U in % of the range 25 Vol.-%	7.5

\*\* For this component no requirements in the EC-directives 2001/80/EG und 2000/76/EG are given.  
A value of 10,0 % was used for this.