PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

Aeris AE9810 & AE2010 Ozone Analyser

Manufactured by:

We Care 4 Air Ltd

Thremhall Park,
Start Hill,
Bishops Stortford,
Hertfordshire
CM22 7WE

has been assessed by Sira Certification Service
and for the conditions stated on this certificate complies with:

MCERTS Performance Standards for Continuous Ambient Air Quality Monitoring Systems, Version 10 dated June 2016

Certification Range :

O_3 0 to 500 µg/m^3 (0 – 250 nmol/mol)

Project No.	:	70037981
Certificate No	:	Sira MC170297/00
Initial Certification	:	28 April 2017
This Certificate issued	:	28 April 2017
Renewal Date	:	27 April 2022

Joe Prince MSc, MInst MC
Deputy Certification Manager

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
Tel: +44 (0)1244 670 900

Form 1335
Issue 2

Certificate Contents

Approved Site Application

Any potential user should ensure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For general guidance on monitoring techniques refer to the Environment Agency Monitoring Technical Guidance Notes available at www.mcerts.net

All tests have been conducted in accordance with BS EN 14625. On the basis of these tests this certificate is valid when the instrument is used for rural or urban air quality monitoring and similar applications; and in dilution systems where the sample concentration delivered to the analyser is within the certification range.

Basis of Certification

This certification is based on the following Test Report(s) and on Sira's assessment and ongoing surveillance of the product and the manufacturing process:

UMEG Karlsruhe	Report No. Nr 33-2/94 dated August 1994
US EPA	dated August 1992
Sira	Report Number 16A24048 dated 06/01/2010
Sira	Report number 70037981 dated March 2017

Product Certified

The measuring system consists of the following parts:

- Aeris AE9810 & AE2010 Ozone Analyser

This certificate applies to all instruments described by part numbers 98107000-1, 98107000-2, 98101000-100 and 98111000-100 manufactured from 01 January 2006 onwards (serial number M2306-000 onwards and software versions B1.32.2 and 3.19 onwards).

All CM2010 instruments described by part numbers 201XXXC, 201XXXC (where 'XXX' are model options) manufactured from 01 December 2010 onwards (serial number 4701925 onwards and software version 1.723 onwards).

All CM2010 instruments described by part numbers 201XXXC, 201XXXC (where 'XXX' are model options) manufactured from 01 April 2017 onwards (serial number AE17170100 onwards and software version 1.723 onwards).

Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: +5°C to +40°C

Unless otherwise stated the evaluation was carried out on the certification range 0 to 500 ppb.

Test	Results expressed as % of measured value				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Repeatability at zero					0.93 nmol/mol	<1 nmol/mol
Repeatability at hourly limit value					1.96 nmol/mol	<3 nmol/mol
Residual lack of fit at zero					0.3 nmol/mol	<5 nmol/mol
Lack of fit (largest residual from the linear regression line)			1.4			<4%
Sensitivity coefficient to sample gas pressure					0.15 nmol/mol/kPa	<2 nmol/mol/kPa
Sensitivity coefficient to sample gas temperature					Zero: 0.0015 nmol/mol/K Span: 0.006 nmol/mol/K	<1 nmol/mol/K <1 nmol/mol/K
Sensitivity coefficient to surrounding air temperature					Zero: 0.117 nmol/mol/K Span: 0.153 nmol/mol/K	<1 nmol/mol/K <1 nmol/mol/K
Sensitivity coefficient to electrical supply voltage					0.009 nmol/mol/V	<0.3 nmol/mol/V
Interference by H_2O (at concentration of 19 nmol/mol)					1.26 nmol/mol	<10 nmol/mol
Interference by m-xylene (concentration of 0.5 μmol/mol)					4.5 nmol/mol	<5 nmol/mol

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Test	Results expressed as % of measured value				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Interference by benzene (at concentration of 0.5μmol/mol)					0.79 nmol/mol	<0.5 nmol/mol
Averaging effect				3.33		<7%
Short term zero drift (over 12h)					0.013 nmol/mol	<2 nmol/mol
Short term span drift (over 12h)					0.0045 nmol/mol	<6 nmol/mol
Response time (rise)					68.9 s	180 s
Response time (fall)					69.8 s	180 s
Difference between rise and fall time					0.89 s	<10 s
Residence time in the analyser					0.69 s	<3 s
Reproducibility under field conditions Note 1				3.63		<5% averaged over three month period
Long term zero drift (over 3 months) Note 1					0.40 nmol/mol	<5 nmol/mol
Long term span drift (over 3 months) Note 1	0.17					<5% of the max of certification range
Period of unattended operation Note 1					28 days	3 months or less if indicated by manufacturer
Availability (data capture) Note 1					99%	>90%
Total expanded uncertainty					12.61%	<15%

Note 1: The field test was performed on an urban site for 3 months.

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Description

The 9810 & 2010 Ozone analyser operates on the principle of ultraviolet light absorption. A UV lamp is used to expose the air sample in the Quartz reaction cell to Ultraviolet light. As Ozone passes through the cell UV is absorbed and the reduced intensity is detected by a UV detector. A single, low volume switching valve is used to continuously switch between the sample and a reference gas, allowing fast continuous calculation of the sample concentration using the Beer-Lambert relationship. A microprocessor is used for controlling the various temperature zones and control loops and in addition compensates for temperature and pressure fluctuations. The microprocessor also stores more than a years worth of data at 15 minute time and status stamped data for Ozone and provides the facility of online remote diagnostics allowing all analyser functions to be controlled from a PC device such as a PDA or desk top PC. The 9810 & 2010 analyser employs a 'KALMAN' adaptive time averaging filter that gives the analyser fast response capability without creating inaccuracies due to fixed averaging.

General Notes

1. This certificate is based upon the equipment tested. The Manufacturer is responsible for ensuring that on-going production complies with the standard(s) and performance criteria defined in this Certificate. 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 system shall be subject to regular surveillance according to 'Regulations Applicable to the Holders of Sira Certificates'. The design of the product certified is defined in the Sira Design Schedule V00 for certificate No. Sira MC170297/00

2. If certified product is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.

3. The Certification Marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of Sira Certificates'.

4. This document remains the property of Sira and shall be returned when requested by the company.