

# CERTIFICATION OF CALIBRATION



Date Of Calibration: 02-Feb-2021

Certificate Number: G502417\_2/27401

Issued by: QED Environmental Systems Ltd.

**Customer:** L K Consult Limited  
Unit 29 Eton Business Park Eton Hill Road Radcliffe  
Manchester M26 2ZS UNITED KINGDOM

**Description:** Gas Analyser

**Model:** GA5000

**Serial Number:** G502417

## UKAS Accredited results:

Results after adjustment :

| Methane (CH <sub>4</sub> ) |                        |                 |
|----------------------------|------------------------|-----------------|
| Certified Gas (%)          | Instrument Reading (%) | Uncertainty (%) |
| 5.0                        | 4.9                    | 0.072           |
| 15.0                       | 15.0                   | 0.13            |
| 60.0                       | 59.6                   | 0.42            |

| Carbon Dioxide (CO <sub>2</sub> ) |                        |                 |
|-----------------------------------|------------------------|-----------------|
| Certified Gas (%)                 | Instrument Reading (%) | Uncertainty (%) |
| 5.0                               | 4.9                    | 0.074           |
| 15.0                              | 14.9                   | 0.13            |
| 40.0                              | 40.0                   | 0.29            |

| Oxygen (O <sub>2</sub> ) |                        |                 |
|--------------------------|------------------------|-----------------|
| Certified Gas (%)        | Instrument Reading (%) | Uncertainty (%) |
| 21.4                     | 21.5                   | 0.25            |

The inwards assessment was carried out 27-Jan-2021.

The maximum adjustment is larger than the specification limit.

Inwards assessment data is available if requested.

All concentrations are molar.

CH<sub>4</sub>, CO<sub>2</sub> readings recorded at : 31.5 °C ± 2.5 °C

O<sub>2</sub> readings recorded at : 22.8 °C ± 2.5 °C

Barometric Pressure : 0982 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.

The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:111 IGC Instance:111

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QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

# CERTIFICATION OF CALIBRATION



Date Of Calibration: 02-Feb-2021

Certificate Number: G502417\_2/27401

Issued by: QED Environmental Systems Ltd.

*The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.*

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

## Non-UKAS accredited results after adjustment:

| Barometer (mbar) |                    |
|------------------|--------------------|
| Reference        | Instrument Reading |
| 982              | 982                |

| Additional Gas Cells |                     |                          |
|----------------------|---------------------|--------------------------|
| Gas                  | Certified Gas (ppm) | Instrument Reading (ppm) |
| CO                   | 486                 | 486                      |
| H <sub>2</sub> S     | 250                 | 250                      |

| Internal Flow  |                           |
|----------------|---------------------------|
| Applied (l/hr) | Instrument Reading (l/hr) |
| 5              | 5.3                       |
| 10             | 10.3                      |

Date of Issue : 04-Feb-2021

Approved by Signatory

Laura McBride

Laboratory Inspection

End of Certificate

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# CERTIFICATION OF CALIBRATION



Date Of Calibration: 16-Jul-2021

Certificate Number: G502417\_1/28472

Issued by: QED Environmental Systems Ltd.

**Customer:** L K Consult Limited  
Unit 29 Eton Business Park Eton Hill Road Radcliffe  
Manchester M26 2ZS UNITED KINGDOM

**Description:** Gas Analyser

**Model:** GA5000

**Serial Number:** G502417

## UKAS Accredited results:

Results after adjustment :

| Methane (CH <sub>4</sub> ) |                        |                 |
|----------------------------|------------------------|-----------------|
| Certified Gas (%)          | Instrument Reading (%) | Uncertainty (%) |
| 5.0                        | 5.0                    | 0.072           |
| 14.9                       | 14.9                   | 0.13            |
| 60.0                       | 59.8                   | 0.42            |

| Carbon Dioxide (CO <sub>2</sub> ) |                        |                 |
|-----------------------------------|------------------------|-----------------|
| Certified Gas (%)                 | Instrument Reading (%) | Uncertainty (%) |
| 5.0                               | 4.9                    | 0.074           |
| 15.1                              | 15.0                   | 0.13            |
| 40.0                              | 40.1                   | 0.29            |

| Oxygen (O <sub>2</sub> ) |                        |                 |
|--------------------------|------------------------|-----------------|
| Certified Gas (%)        | Instrument Reading (%) | Uncertainty (%) |
| 21.1                     | 21.2                   | 0.25            |

The inwards assessment was carried out 05-Jul-2021.

The maximum adjustment is larger than the specification limit.

Inwards assessment data is available if requested.

All concentrations are molar.

CH<sub>4</sub>, CO<sub>2</sub> readings recorded at : 32.2 °C ± 2.5 °C

O<sub>2</sub> readings recorded at : 22.5 °C ± 2.5 °C

Barometric Pressure : 1016 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.

The results relate only to the item calibrated

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# CERTIFICATION OF CALIBRATION



Date Of Calibration: 16-Jul-2021

Certificate Number: G502417\_1/28472

Issued by: QED Environmental Systems Ltd.

*The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.*

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

## Non-UKAS accredited results after adjustment:

| Barometer (mbar) |                    |
|------------------|--------------------|
| Reference        | Instrument Reading |
| 1016             | 1016               |

| Additional Gas Cells |                     |                          |
|----------------------|---------------------|--------------------------|
| Gas                  | Certified Gas (ppm) | Instrument Reading (ppm) |
| CO                   | 509                 | 509                      |
| H <sub>2</sub> S     | 250                 | 250                      |

| Internal Flow  |                           |
|----------------|---------------------------|
| Applied (l/hr) | Instrument Reading (l/hr) |
| 5.00           | 5.20                      |
| 10.00          | 10.30                     |

Date of Issue : 19-Jul-2021

Approved by Signatory

Dawn Hemings

Laboratory Inspection

End of Certificate

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