PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

GT6000 Mobilis

Manufactured by:

Gasmet Technologies Oy

Mestarintie 6
FI-01730 Vantaa
Finland

has been assessed by CSA Group
and for the conditions stated on this certificate complies with:
Environment Agency Guidance
"MCERTS for stack emissions monitoring equipment at industrial installations"
- **Transportable-CEMS (T-CEMS)**
Published 20 October 2020
EN 15267-1:2023, EN 15267-2:2023, EN 15267-4:2023, EN 14793:2017
& QAL 1 as defined in EN 14181: 2014

	Certification range:	Supplementary range:
CO	0 - 75 mg/m^3	0 - 5,000 mg/m^3
NO	0 - 75 mg/m^3	0 - 2,000 mg/m^3
NO_2	0 - 100 mg/m^3	0 - 1,000 mg/m^3
N_2O	0 - 30 mg/m^3	0 - 1,000 mg/m^3
HCl	0 - 9 mg/m^3	0 - 900 mg/m^3
NH_3	0 - 9 mg/m^3	0 - 500 mg/m^3
CH_4	0 - 15 mg/m^3	0 - 500 mg/m^3
H_2CO	0 - 20 mg/m^3	0 - 90 mg/m^3
H_2O	0 - 40 vol. %	
CO_2	0 - 15 vol. %	0 - 30 vol. %
O_2	0 - 25 vol. %	

Project No.:	80195481
Certificate No:	CSA MC240424/01
Initial Certification:	31 July 2024
This Certificate issued:	19 March 2025
Renewal Date:	30 July 2029

Andrew Young
Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

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Form 1335
Issue 12

Certificate Contents

Approved Site Application

Any potential user should make sure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For further information on stack emissions monitoring refer to the Environment Agency's guidance available at www.mcerts.net

Based on the assessment this instrument is considered suitable for use with standard reference methods and for verifying and calibrating installed CEMS, according to the requirements of EN 14181, provided it meets the certified range requirements specified by legislation.

Any potential user should make sure that the monitoring system meets the certified range requirements specified by legislation.

The field testing was conducted at six different locations and is detailed below.

Field Test Reference	Description	Parameters
Field Test 1	Lignite-fired power plant	CO, NO, NO_2, N_2O, HCl, NH_3, CH_4, H_2CO, H_2O, CO_2, O_2
Field Test 2	Municipal waste incinerator plant	CO, NO, NO_2, N_2O, HCl, NH_3, CH_4, H_2CO, H_2O, CO_2, O_2
Field Test 3	Sewage sludge co-incinerator plant (1)	CO, NO, NO_2, N_2O, NH_3, CH_4, H_2CO, H_2O, CO_2, O_2
Field Test 4	Municipal waste incinerator plant	CO, NO, NO_2, N_2O, HCl, NH_3, CH_4, H_2CO, H_2O, CO_2, O_2
Field Test 5	Gas turbine	CO, NO, NO_2, N_2O, HCl, NH_3, CH_4, H_2CO, H_2O, CO_2, O_2
Field Test 6	Sewage sludge co-incinerator plant (2)	HCl only

The field tests for the parameters; CO, NO, NO_2, N_2O, HCl, NH_3, CH_4, H_2CO, H_2O, CO_2, and O_2 commenced in November 2023 and finished in February 2024. Field test 6 was for the HCl component only.

Basis of Certification

This certification is based on the following test report(s) and on CSA Group's assessment and ongoing surveillance of the product and the manufacturing process:

TÜV Rheinland Energy & Environment GmbH, Report no.: EuL/21253514/C, Cologne, 07.05.2024

Product Certified

The 'GT6000 Mobilis' measuring system consists of the following parts:

1. Sample Probe	- M&C TechGroup 'PSP4000-H/C' heated sampling probe, heated to 180°C, 1m sampling tube length, PTFE filter element, 2µm filter size
2. Sample Line	- heated to 180°C with a length of 19m
3. Gas Conditioning	- PSS Plus mobile system with sample gas pump and zirconium oxygen sensor
4. Analyser	- GT6000 Mobilis FTIR analyser

(Optional – portable unit for analogue outputs)

This certificate applies to all instruments fitted with software version 'Calcmet 14.140' and serial number '32295' onwards.

Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient temperature range: +5°C to +40°C
Instrument IP rating: IP42

Results are expressed as error % of certification range, unless otherwise stated.

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
LABORATORY TESTS						
Response time						
CO (0 - 75 mg/m^3)					94 s	≤200 s
CO (0 - 5,000 mg/m^3)					115 s	≤200 s
NO (0 - 75 mg/m^3)					103 s	≤200 s
NO (0 - 2,000 mg/m^3)					110 s	≤200 s
NO_2 (0 - 100 mg/m^3)					129 s	≤200 s
NO_2 (0 - 1,000 mg/m^3)					110 s	≤200 s
N_2O (0 - 30 mg/m^3)					105 s	≤200 s
N_2O (0 - 1,000 mg/m^3)					110 s	≤200 s
HCl (0 - 9 mg/m^3)					157 s	≤200 s
HCl (0 - 900 mg/m^3)					116 s	≤200 s
NH_3 (0 - 9 mg/m^3)					114 s	≤200 s
NH_3 (0 - 500 mg/m^3)					134 s	≤200 s
CH_4 (0 - 15 mg/m^3)					90 s	≤200 s
CH_4 (0 - 500 mg/m^3)					115 s	≤200 s
H_2CO (0 - 20 mg/m^3)					105 s	≤200 s
H_2CO (0 - 90 mg/m^3)					110 s	≤200 s
H_2O (0 - 40 vol. %)					97 s	≤200 s
CO_2 (0 - 15 vol. %)					97 s	≤200 s
CO_2 (0 - 30 vol. %)					110 s	≤200 s
O_2 (0 - 25 vol. %)					44 s	≤200 s

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Repeatability standard deviation at zero point						
CO (0 - 75 mg/m³)	0.0					≤2.0 %
NO (0 - 75 mg/m³)	0.0					≤2.0 %
NO_2 (0 - 100 mg/m³)	0.0					≤2.0 %
N_2O (0 - 30 mg/m³)	0.0					≤2.0 %
HCl (0 - 9 mg/m³)	0.0					≤2.0 %
NH_3 (0 - 9 mg/m³)	0.0					≤2.0 %
CH_4 (0 - 15 mg/m³)	0.0					≤2.0 %
H_2CO (0 - 20 mg/m³)	0.1					≤2.0 %
H_2O (0 - 40 vol. %)	0.0					≤2.0 %
CO_2 (0 - 15 vol. %)	0.0					≤2.0 %
O_2 (0 - 25 vol. %)	0.00					≤0.02 %
Repeatability standard deviation at span point						
CO (0 - 75 mg/m³)	0.0					≤2.0 %
NO (0 - 75 mg/m³)	0.1					≤2.0 %
NO_2 (0 - 100 mg/m³)	0.1					≤2.0 %
N_2O (0 - 30 mg/m³)	0.0					≤2.0 %
HCl (0 - 9 mg/m³)	0.2					≤2.0 %
NH_3 (0 - 9 mg/m³)	0.2					≤2.0 %
CH_4 (0 - 15 mg/m³)	0.1					≤2.0 %
H_2CO (0 - 20 mg/m³)	0.1					≤2.0 %
H_2O (0 - 40 vol. %)	0.0					≤2.0 %
CO_2 (0 - 15 vol. %)	0.0					≤2.0 %
O_2 (0 - 25 vol. %)	0.05					≤0.2 %
Lack of fit						
CO (0 - 75 mg/m³)		0.88				≤2.0 %
CO (0 - 5,000 mg/m³)	-0.16					≤2.0 %
NO (0 - 75 mg/m³)		-0.84				≤2.0 %
NO (0 - 2,000 mg/m³)	0.10					≤2.0 %
NO_2 (0 - 100 mg/m³)		-0.51				≤2.0 %
NO_2 (0 - 1,000 mg/m³)	0.23					≤2.0 %
N_2O (0 - 30 mg/m³)		-0.91				≤2.0 %
N_2O (0 - 1,000 mg/m³)	0.30					≤2.0 %
HCl (0 - 9 mg/m³)		-0.96				≤2.0 %

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
HCl (0 - 900 mg/m³)		0.92				≤2.0 %
NH_3 (0 - 9 mg/m³)			1.49			≤2.0 %
NH_3 (0 - 500 mg/m³)		-0.86				≤2.0 %
CH_4 (0 - 15 mg/m³)		-0.79				≤2.0 %
CH_4 (0 - 500 mg/m³)		-0.50				≤2.0 %
H_2CO (0 - 20 mg/m³)	0.30					≤2.0 %
H_2CO (0 - 90 mg/m³)	0.29					≤2.0 %
H_2O (0 - 40 vol. %)		-0.75				≤2.0 %
CO_2 (0 - 15 vol. %)			-1.67			≤2.0 %
CO_2 (0 - 30 vol. %)			1.13			≤2.0 %
O_2 (0 - 25 vol. %)	-0.11					≤0.3 %
Influence of ambient temperature zero point (+5°C to +40°C)						
CO (0 - 75 mg/m³)	0.3					≤5.0 %
NO (0 - 75 mg/m³)	-0.1					≤5.0 %
NO_2 (0 - 100 mg/m³)	0.1					≤5.0 %
N_2O (0 - 30 mg/m³)	0.0					≤5.0 %
HCl (0 - 9 mg/m³)	0.4					≤5.0 %
NH_3 (0 - 9 mg/m³)	0.2					≤5.0 %
CH_4 (0 - 15 mg/m³)			1.3			≤5.0 %
H_2CO (0 - 20 mg/m³)	0.2					≤5.0 %
H_2O (0 - 40 vol. %)	0.1					≤5.0 %
CO_2 (0 - 15 vol. %)	0.1					≤5.0 %
O_2 (0 - 25 vol. %)	-0.04					≤0.5 %
Influence of ambient temperature span point (+5°C to +40°C)						
CO (0 - 75 mg/m³)				2.9		≤5.0 %
NO (0 - 75 mg/m³)				2.9		≤5.0 %
NO_2 (0 - 100 mg/m³)			1.6			≤5.0 %
N_2O (0 - 30 mg/m³)		0.9				≤5.0 %
HCl (0 - 9 mg/m³)				3.4		≤5.0 %
NH_3 (0 - 9 mg/m³)				2.4		≤5.0 %
CH_4 (0 - 15 mg/m³)				2.8		≤5.0 %
H_2CO (0 - 20 mg/m³)			1.8			≤5.0 %
H_2O (0 - 40 vol. %)		0.9				≤5.0 %

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
CO_2 (0 - 15 vol. %)		-0.5				≤5.0 %
O_2 (0 - 25 vol. %)	0.40					≤0.5 %
Short-term zero drift						
CO (0 - 75 mg/m³)	0.0					≤2.0 %
NO (0 - 75 mg/m³)	-0.1					≤2.0 %
NO_2 (0 - 100 mg/m³)	0.0					≤2.0 %
N_2O (0 - 30 mg/m³)	0.0					≤2.0 %
HCl (0 - 9 mg/m³)	0.0					≤2.0 %
NH_3 (0 - 9 mg/m³)	0.1					≤2.0 %
CH_4 (0 - 15 mg/m³)	0.0					≤2.0 %
H_2CO (0 - 20 mg/m³)	0.0					≤2.0 %
H_2O (0 - 40 vol. %)	0.0					≤2.0 %
CO_2 (0 - 15 vol. %)	0.0					≤2.0 %
O_2 (0 - 25 vol. %)	-0.03					≤0.2 %
Short-term span drift						
CO (0 - 75 mg/m³)		0.6				≤2.0 %
NO (0 - 75 mg/m³)			-1.6			≤2.0 %
NO_2 (0 - 100 mg/m³)			1.1			≤2.0 %
N_2O (0 - 30 mg/m³)	0.2					≤2.0 %
HCl (0 - 9 mg/m³)	0.3					≤2.0 %
NH_3 (0 - 9 mg/m³)		-0.5				≤2.0 %
CH_4 (0 - 15 mg/m³)		0.6				≤2.0 %
H_2CO (0 - 20 mg/m³)	-0.2					≤2.0 %
H_2O (0 - 40 vol. %)	-0.2					≤2.0 %
CO_2 (0 - 15 vol. %)	0.2					≤2.0 %
O_2 (0 - 25 vol. %)	-0.08					≤0.2 %
Influence of sample gas flow for extractive CEMS						
CO (0 - 75 mg/m³)	-0.2					≤2.0 %
NO (0 - 75 mg/m³)		0.6				≤2.0 %
NO_2 (0 - 100 mg/m³)	0.3					≤2.0 %
N_2O (0 - 30 mg/m³)		0.6				≤2.0 %
HCl (0 - 9 mg/m³)	0.3					≤2.0 %
NH_3 (0 - 9 mg/m³)	0.1					≤2.0 %

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
CH_4 (0 - 15 mg/m^3)	0.2					≤2.0 %
H_2CO (0 - 20 mg/m^3)	-0.2					≤2.0 %
H_2O (0 - 40 vol. %)	-0.1					≤2.0 %
CO_2 (0 - 15 vol. %)	0.1					≤2.0 %
O_2 (0 - 25 vol. %)	-0.10					≤0.2 %
Influence of voltage variations (196V to 230V)						
CO (0 - 75 mg/m^3)		0.5				≤2.0 %
NO (0 - 75 mg/m^3)		0.5				≤2.0 %
NO_2 (0 - 100 mg/m^3)		0.8				≤2.0 %
N_2O (0 - 30 mg/m^3)		0.9				≤2.0 %
HCl (0 - 9 mg/m^3)	0.3					≤2.0 %
NH_3 (0 - 9 mg/m^3)		0.9				≤2.0 %
CH_4 (0 - 15 mg/m^3)	0.4					≤2.0 %
H_2CO (0 - 20 mg/m^3)	0.3					≤2.0 %
H_2O (0 - 40 vol. %)	-0.3					≤2.0 %
CO_2 (0 - 15 vol. %)	0.1					≤2.0 %
O_2 (0 - 25 vol. %)	-0.10					≤0.2 %
Influence of vibration (10 to 60Hz (±0.35mm), 60 to 150 Hz at 0.5g)						
CO (0 - 75 mg/m^3)		-0.6				≤2.0 %
NO (0 - 75 mg/m^3)			1.7			≤2.0 %
NO_2 (0 - 100 mg/m^3)			1.2			≤2.0 %
N_2O (0 - 30 mg/m^3)		0.5				≤2.0 %
HCl (0 - 9 mg/m^3)		-0.7				≤2.0 %
NH_3 (0 - 9 mg/m^3)			-1.5			≤2.0 %
CH_4 (0 - 15 mg/m^3)			-1.2			≤2.0 %
H_2CO (0 - 20 mg/m^3)			1.3			≤2.0 %
H_2O (0 - 40 vol. %)		0.7				≤2.0 %
CO_2 (0 - 15 vol. %)	-0.4					≤2.0 %
O_2 (0 - 25 vol. %)	0.04					≤0.2 %

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Cross-sensitivity at zero with interferents: O_2, H_2O, CH_4, CO_2, CO, N_2O, NO, NO_2, NH_3, SO_2, HCl)						
CO (0 - 75 mg/m³)	0.00					≤4.0 %
NO (0 - 75 mg/m³)	0.00					≤4.0 %
NO_2 (0 - 100 mg/m³)	0.00					≤4.0 %
N_2O (0 - 30 mg/m³)	0.00					≤4.0 %
HCl (0 - 9 mg/m³)	0.00					≤4.0 %
NH_3 (0 - 9 mg/m³)	0.44					≤4.0 %
CH_4 (0 - 15 mg/m³)	0.00					≤4.0 %
H_2CO (0 - 20 mg/m³)	0.00					≤4.0 %
H_2O (0 - 40 vol. %)	0.00					≤4.0 %
CO_2 (0 - 15 vol. %)	0.00					≤4.0 %
O_2 (0 - 25 vol. %)	-0.12					≤0.4 %
Cross-sensitivity at span with interferents: O_2, H_2O, CH_4, CO_2, CO, N_2O, NO, NO_2, NH_3, SO_2, HCl)						
CO (0 - 75 mg/m³)				-2.52		≤4.0 %
NO (0 - 75 mg/m³)				3.61		≤4.0 %
NO_2 (0 - 100 mg/m³)			1.85			≤4.0 %
N_2O (0 - 30 mg/m³)			1.83			≤4.0 %
HCl (0 - 9 mg/m³)				3.81		≤4.0 %
NH_3 (0 - 9 mg/m³)			1.54			≤4.0 %
CH_4 (0 - 15 mg/m³)				-3.75		≤4.0 %
H_2CO (0 - 20 mg/m³)				2.85		≤4.0 %
H_2O (0 - 40 vol. %)			-1.98			≤4.0 %
CO_2 (0 - 15 vol. %)			1.80			≤4.0 %
O_2 (0 - 25 vol. %)	0.26					≤0.4 %
Influences related to storage and transportation						
Influences related to storage and transportation	No influences detected (Note 2)					to be described/reported

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
FIELD TESTS						
Calibration function - equivalence with SRM						
Field Test 1						
CO (0 - 75 mg/m^3)					0.9945	≥0.90
NO (0 - 75 mg/m^3)					0.9952	≥0.90
NO_2 (0 - 100 mg/m^3)					0.9966	≥0.90
N_2O (0 - 30 mg/m^3)					0.9978	≥0.90
HCl (0 - 9 mg/m^3)					0.9644	≥0.90
NH_3 (0 - 9 mg/m^3)					0.9944	≥0.90
CH_4 (0 - 15 mg/m^3)					0.9982	≥0.90
H_2CO (0 - 20 mg/m^3)					1.0000	≥0.90
H_2O (0 - 40 vol. %)					0.9134	≥0.90
CO_2 (0 - 15 vol. %)					0.9938	≥0.90
O_2 (0 - 25 vol. %)					0.9998	≥0.90
Field Test 2						
CO (0 - 75 mg/m^3)					0.9967	≥0.90
NO (0 - 75 mg/m^3)					0.9923	≥0.90
NO_2 (0 - 100 mg/m^3)					0.9988	≥0.90
N_2O (0 - 30 mg/m^3)					0.9955	≥0.90
HCl (0 - 9 mg/m^3)					0.9982	≥0.90
NH_3 (0 - 9 mg/m^3)					0.9938	≥0.90
CH_4 (0 - 15 mg/m^3)					0.9351	≥0.90
H_2CO (0 - 20 mg/m^3)					0.9993	≥0.90
H_2O (0 - 40 vol. %)					0.9702	≥0.90
CO_2 (0 - 15 vol. %)					0.9820	≥0.90
O_2 (0 - 25 vol. %)					0.9940	≥0.90
Field Test 3						
CO (0 - 75 mg/m^3)					0.9998	≥0.90
NO (0 - 75 mg/m^3)					0.9940	≥0.90
NO_2 (0 - 100 mg/m^3)					0.9999	≥0.90
N_2O (0 - 30 mg/m^3)					0.9883	≥0.90
NH_3 (0 - 9 mg/m^3)					0.9752	≥0.90

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
CH_4 (0 - 15 mg/m^3)					0.9089	≥0.90
H_2CO (0 - 20 mg/m^3)					0.9939	≥0.90
H_2O (0 - 40 vol. %)					0.9998	≥0.90
CO_2 (0 - 15 vol. %)					0.9629	≥0.90
O_2 (0 - 25 vol. %)					0.9197	≥0.90
Field Test 4						
CO (0 - 75 mg/m^3)					0.9848	≥0.90
NO (0 - 75 mg/m^3)					0.9690	≥0.90
NO_2 (0 - 100 mg/m^3)					0.9999	≥0.90
N_2O (0 - 30 mg/m^3)					0.9700	≥0.90
HCl (0 - 9 mg/m^3)					0.9766	≥0.90
NH_3 (0 - 9 mg/m^3)					0.9947	≥0.90
CH_4 (0 - 15 mg/m^3)					0.9926	≥0.90
H_2CO (0 - 20 mg/m^3)					0.9984	≥0.90
H_2O (0 - 40 vol. %)					0.9537	≥0.90
CO_2 (0 - 15 vol. %)					0.9601	≥0.90
O_2 (0 - 25 vol. %)					0.9982	≥0.90
Field Test 5						
CO (0 - 75 mg/m^3)					0.9997	≥0.90
NO (0 - 75 mg/m^3)					0.9979	≥0.90
NO_2 (0 - 100 mg/m^3)					0.9988	≥0.90
N_2O (0 - 30 mg/m^3)					0.9977	≥0.90
HCl (0 - 9 mg/m^3)					0.9140	≥0.90
NH_3 (0 - 9 mg/m^3)					0.9999	≥0.90
CH_4 (0 - 15 mg/m^3)					0.9796	≥0.90
H_2CO (0 - 20 mg/m^3)					0.9845	≥0.90
H_2O (0 - 40 vol. %)					0.9295	≥0.90
CO_2 (0 - 15 vol. %)					0.9922	≥0.90
O_2 (0 - 25 vol. %)					0.9989	≥0.90
Field Test 6						
HCl (0 - 9 mg/m^3)					0.9752	≥0.90

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
Field Test 1						
CO (0 - 75 mg/m^3)					105 s	≤200 s
NO (0 - 75 mg/m^3)					105 s	≤200 s
NO_2 (0 - 100 mg/m^3)					105 s	≤200 s
N_2O (0 - 30 mg/m^3)					105 s	≤200 s
HCl (0 - 9 mg/m^3)					105 s	≤200 s
NH_3 (0 - 9 mg/m^3)					105 s	≤200 s
CH_4 (0 - 15 mg/m^3)					105 s	≤200 s
H_2CO (0 - 20 mg/m^3)					105 s	≤200 s
H_2O (0 - 40 vol. %)					105 s	≤200 s
CO_2 (0 - 15 vol. %)					105 s	≤200 s
O_2 (0 - 25 vol. %)					45 s	≤200 s
Field Test 2						
CO (0 - 75 mg/m^3)					104 s	≤200 s
NO (0 - 75 mg/m^3)					104 s	≤200 s
NO_2 (0 - 100 mg/m^3)					104 s	≤200 s
N_2O (0 - 30 mg/m^3)					105 s	≤200 s
HCl (0 - 9 mg/m^3)					104 s	≤200 s
NH_3 (0 - 9 mg/m^3)					105 s	≤200 s
CH_4 (0 - 15 mg/m^3)					105 s	≤200 s
H_2CO (0 - 20 mg/m^3)					105 s	≤200 s
H_2O (0 - 40 vol. %)					104 s	≤200 s
CO_2 (0 - 15 vol. %)					104 s	≤200 s
O_2 (0 - 25 vol. %)					46 s	≤200 s
Field Test 3						
CO (0 - 75 mg/m^3)					110 s	≤200 s
NO (0 - 75 mg/m^3)					110 s	≤200 s
NO_2 (0 - 100 mg/m^3)					110 s	≤200 s
N_2O (0 - 30 mg/m^3)					108 s	≤200 s

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
NH_3 (0 - 9 mg/m^3)					110 s	≤200 s
CH_4 (0 - 15 mg/m^3)					108 s	≤200 s
H_2CO (0 - 20 mg/m^3)					108 s	≤200 s
H_2O (0 - 40 vol. %)					110 s	≤200 s
CO_2 (0 - 15 vol. %)					110 s	≤200 s
O_2 (0 - 25 vol. %)					55 s	≤200 s
Field Test 4						
CO (0 - 75 mg/m^3)					110 s	≤200 s
NO (0 - 75 mg/m^3)					110 s	≤200 s
NO_2 (0 - 100 mg/m^3)					110 s	≤200 s
N_2O (0 - 30 mg/m^3)					105 s	≤200 s
HCl (0 - 9 mg/m^3)					105 s	≤200 s
NH_3 (0 - 9 mg/m^3)					105 s	≤200 s
CH_4 (0 - 15 mg/m^3)					105 s	≤200 s
H_2CO (0 - 20 mg/m^3)					105 s	≤200 s
H_2O (0 - 40 vol. %)					110 s	≤200 s
CO_2 (0 - 15 vol. %)					110 s	≤200 s
O_2 (0 - 25 vol. %)					50 s	≤200 s
Field Test 5						
CO (0 - 75 mg/m^3)					105 s	≤200 s
NO (0 - 75 mg/m^3)					105 s	≤200 s
NO_2 (0 - 100 mg/m^3)					105 s	≤200 s
N_2O (0 - 30 mg/m^3)					105 s	≤200 s
HCl (0 - 9 mg/m^3)					105 s	≤200 s
NH_3 (0 - 9 mg/m^3)					105 s	≤200 s
CH_4 (0 - 15 mg/m^3)					105 s	≤200 s
H_2CO (0 - 20 mg/m^3)					105 s	≤200 s
H_2O (0 - 40 vol. %)					105 s	≤200 s
CO_2 (0 - 15 vol. %)					105 s	≤200 s
O_2 (0 - 25 vol. %)					45 s	≤200 s
Field Test 6						
HCl (0 - 9 mg/m^3)					110 s	≤200 s

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Short term zero drift						
Field Test 1						
CO (0 - 75 mg/m^3)	0.00					≤5.0 %
NO (0 - 75 mg/m^3)	0.00					≤5.0 %
NO_2 (0 - 100 mg/m^3)	0.00					≤5.0 %
N_2O (0 - 30 mg/m^3)	0.00					≤5.0 %
HCl (0 - 9 mg/m^3)	-0.10					≤5.0 %
NH_3 (0 - 9 mg/m^3)	0.00					≤5.0 %
CH_4 (0 - 15 mg/m^3)	0.00					≤5.0 %
H_2CO (0 - 20 mg/m^3)	0.00					≤5.0 %
H_2O (0 - 40 vol. %)	0.00					≤5.0 %
CO_2 (0 - 15 vol. %)	0.00					≤5.0 %
O_2 (0 - 25 vol. %)	-0.02					≤0.2 %
Field Test 2						
CO (0 - 75 mg/m^3)	0.00					≤5.0 %
NO (0 - 75 mg/m^3)	0.00					≤5.0 %
NO_2 (0 - 100 mg/m^3)	0.00					≤5.0 %
N_2O (0 - 30 mg/m^3)	0.00					≤5.0 %
HCl (0 - 9 mg/m^3)	0.30					≤5.0 %
NH_3 (0 - 9 mg/m^3)	0.00					≤5.0 %
CH_4 (0 - 15 mg/m^3)	0.00					≤5.0 %
H_2CO (0 - 20 mg/m^3)	0.00					≤5.0 %
H_2O (0 - 40 vol. %)	0.00					≤5.0 %
CO_2 (0 - 15 vol. %)	0.00					≤5.0 %
O_2 (0 - 25 vol. %)	0.07					≤0.2 %
Field Test 3						
CO (0 - 75 mg/m^3)	0.00					≤5.0 %
NO (0 - 75 mg/m^3)	0.00					≤5.0 %
NO_2 (0 - 100 mg/m^3)	0.00					≤5.0 %
N_2O (0 - 30 mg/m^3)	0.00					≤5.0 %
NH_3 (0 - 9 mg/m^3)	0.20					≤5.0 %
CH_4 (0 - 15 mg/m^3)	-0.10					≤5.0 %
H_2CO (0 - 20 mg/m^3)	0.00					≤5.0 %
H_2O (0 - 40 vol. %)	0.00					≤5.0 %

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
CO_2 (0 - 15 vol. %)	0.00					≤5.0 %
O_2 (0 - 25 vol. %)	0.15					≤0.2 %
Field Test 4						
CO (0 - 75 mg/m^3)	0.00					≤5.0 %
NO (0 - 75 mg/m^3)	0.00					≤5.0 %
NO_2 (0 - 100 mg/m^3)	0.00					≤5.0 %
N_2O (0 - 30 mg/m^3)	0.00					≤5.0 %
HCl (0 - 9 mg/m^3)	0.00					≤5.0 %
NH_3 (0 - 9 mg/m^3)	0.00					≤5.0 %
CH_4 (0 - 15 mg/m^3)	0.00					≤5.0 %
H_2CO (0 - 20 mg/m^3)	0.00					≤5.0 %
H_2O (0 - 40 vol. %)	0.00					≤5.0 %
CO_2 (0 - 15 vol. %)	0.00					≤5.0 %
O_2 (0 - 25 vol. %)	0.02					≤0.2 %
Field Test 5						
CO (0 - 75 mg/m^3)	0.00					≤5.0 %
NO (0 - 75 mg/m^3)	0.00					≤5.0 %
NO_2 (0 - 100 mg/m^3)	0.00					≤5.0 %
N_2O (0 - 30 mg/m^3)	0.00					≤5.0 %
HCl (0 - 9 mg/m^3)	0.10					≤5.0 %
NH_3 (0 - 9 mg/m^3)	0.00					≤5.0 %
CH_4 (0 - 15 mg/m^3)	0.00					≤5.0 %
H_2CO (0 - 20 mg/m^3)	0.00					≤5.0 %
H_2O (0 - 40 vol. %)	0.00					≤5.0 %
CO_2 (0 - 15 vol. %)	0.00					≤5.0 %
O_2 (0 - 25 vol. %)	0.01					≤0.2 %
Field Test 6						
HCl (0 - 9 mg/m^3)	0.00					≤5.0 %

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Short term span drift						
Field Test 1						
CO (0 - 75 mg/m^3)		-0.80				≤5.0 %
NO (0 - 75 mg/m^3)				2.10		≤5.0 %
NO_2 (0 - 100 mg/m^3)			1.50			≤5.0 %
N_2O (0 - 30 mg/m^3)			1.00			≤5.0 %
HCl (0 - 9 mg/m^3)				-4.30		≤5.0 %
NH_3 (0 - 9 mg/m^3)			-1.00			≤5.0 %
CH_4 (0 - 15 mg/m^3)			1.30			≤5.0 %
H_2CO (0 - 20 mg/m^3)	0.40					≤5.0 %
H_2O (0 - 40 vol. %)	-0.20					≤5.0 %
CO_2 (0 - 15 vol. %)		-0.50				≤5.0 %
O_2 (0 - 25 vol. %)	0.17					≤0.2 %
Field Test 2						
CO (0 - 75 mg/m^3)	-0.10					≤5.0 %
NO (0 - 75 mg/m^3)			1.10			≤5.0 %
NO_2 (0 - 100 mg/m^3)	0.20					≤5.0 %
N_2O (0 - 30 mg/m^3)	-0.40					≤5.0 %
HCl (0 - 9 mg/m^3)			-1.10			≤5.0 %
NH_3 (0 - 9 mg/m^3)			-1.50			≤5.0 %
CH_4 (0 - 15 mg/m^3)	0.20					≤5.0 %
H_2CO (0 - 20 mg/m^3)		-0.70				≤5.0 %
H_2O (0 - 40 vol. %)	0.00					≤5.0 %
CO_2 (0 - 15 vol. %)	-0.20					≤5.0 %
O_2 (0 - 25 vol. %)	0.12					≤0.2 %
Field Test 3						
CO (0 - 75 mg/m^3)	-0.30					≤5.0 %
NO (0 - 75 mg/m^3)	-0.40					≤5.0 %
NO_2 (0 - 100 mg/m^3)	-0.40					≤5.0 %
N_2O (0 - 30 mg/m^3)	-0.30					≤5.0 %
NH_3 (0 - 9 mg/m^3)			-1.30			≤5.0 %
CH_4 (0 - 15 mg/m^3)			-1.10			≤5.0 %
H_2CO (0 - 20 mg/m^3)		-0.70				≤5.0 %

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
H_2O (0 - 40 vol. %)	-0.10					≤5.0 %
CO_2 (0 - 15 vol. %)	-0.30					≤5.0 %
O_2 (0 - 25 vol. %)	0.13					≤0.2 %
Field Test 4						
CO (0 - 75 mg/m^3)	-0.30					≤5.0 %
NO (0 - 75 mg/m^3)		-0.50				≤5.0 %
NO_2 (0 - 100 mg/m^3)		-0.70				≤5.0 %
N_2O (0 - 30 mg/m^3)	0.20					≤5.0 %
HCl (0 - 9 mg/m^3)			1.10			≤5.0 %
NH_3 (0 - 9 mg/m^3)			-1.40			≤5.0 %
CH_4 (0 - 15 mg/m^3)			1.20			≤5.0 %
H_2CO (0 - 20 mg/m^3)		-0.80				≤5.0 %
H_2O (0 - 40 vol. %)		0.60				≤5.0 %
CO_2 (0 - 15 vol. %)	-0.10					≤5.0 %
O_2 (0 - 25 vol. %)	0.08					≤0.2 %
Field Test 5						
CO (0 - 75 mg/m^3)		-0.90				≤5.0 %
NO (0 - 75 mg/m^3)			-1.00			≤5.0 %
NO_2 (0 - 100 mg/m^3)	0.40					≤5.0 %
N_2O (0 - 30 mg/m^3)	0.30					≤5.0 %
HCl (0 - 9 mg/m^3)			1.20			≤5.0 %
NH_3 (0 - 9 mg/m^3)			-1.10			≤5.0 %
CH_4 (0 - 15 mg/m^3)			1.30			≤5.0 %
H_2CO (0 - 20 mg/m^3)	-0.40					≤5.0 %
H_2O (0 - 40 vol. %)	-0.30					≤5.0 %
CO_2 (0 - 15 vol. %)		-0.60				≤5.0 %
O_2 (0 - 25 vol. %)	0.16					≤0.2 %
Field Test 6						
HCl (0 - 9 mg/m^3)		-0.60				≤5.0 %

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Reproducibility						
CO (0 - 75 mg/m^3)			1.40			≤3.3 %
NO (0 - 75 mg/m^3)			1.80			≤3.3 %
NO_2 (0 - 100 mg/m^3)		0.50				≤3.3 %
N_2O (0 - 30 mg/m^3)		0.90				≤3.3 %
HCl (0 - 9 mg/m^3)				2.10		≤3.3 %
NH_3 (0 - 9 mg/m^3)				2.40		≤3.3 %
CH_4 (0 - 15 mg/m^3)			1.50			≤3.3 %
H_2CO (0 - 20 mg/m^3)	0.20					≤3.3 %
H_2O (0 - 40 vol. %)		0.60				≤3.3 %
CO_2 (0 - 15 vol. %)		0.80				≤3.3 %
O_2 (0 - 25 vol. %)	0.16					≤0.2 %
Field and Laboratory - measurement uncertainty (* note 5)						
Requirements - for either SRM* or EN 15267 (at least 25 % below max permissible value)						
Field Test 1						
CO (0 - 75 mg/m^3)					5.3	≤6 %* (7.5%)
NO (0 - 75 mg/m^3)					8.4	≤10 %* (15%)
NO_2 (0 - 100 mg/m^3)					5.3	≤10 %* (15%)
N_2O (0 - 30 mg/m^3)					2.5	≤10 %*(15%)
HCl (0 - 9 mg/m^3)					11.7	≤30 %* (30%)
NH_3 (0 - 9 mg/m^3)					6.7	≤30 % (40%)
CH_4 (0 - 15 mg/m^3)					4.4	≤22.5 % (30%)
H_2CO (0 - 20 mg/m^3)					2.4	≤22.5 % (30%)
H_2O (0 - 40 vol. %)					2.6	≤20 %* (7.5%)
CO_2 (0 - 15 vol. %)					3.1	≤7.5 % (10%)
O_2 (0 - 25 vol. %)					2.5	≤6 %* (7.5%)
Field Test 2						
CO (0 - 75 mg/m^3)					5.4	≤6 %* (7.5%)
NO (0 - 75 mg/m^3)					4.8	≤10 %* (15%)
NO_2 (0 - 100 mg/m^3)					4.2	≤10 %* (15%)
N_2O (0 - 30 mg/m^3)					2.3	≤10 %*(15%)
HCl (0 - 9 mg/m^3)					9.4	≤30 %* (30%)
NH_3 (0 - 9 mg/m^3)					6.8	≤30 % (40%)
CH_4 (0 - 15 mg/m^3)					4.2	≤22.5 % (30%)

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
H_2CO (0 - 20 mg/m^3)					2.4	≤22.5 % (30%)
H_2O (0 - 40 vol.%)					3.0	≤20 %* (7.5%)
CO_2 (0 - 15 vol. %)					3.0	≤7.5 % (10%)
O_2 (0 - 25 vol. %)					2.5	≤6 %* (7.5%)
Field Test 3						
CO (0 - 75 mg/m^3)					5.9	≤6 %* (7.5%)
NO (0 - 75 mg/m^3)					5.9	≤10 % * (15%)
NO_2 (0 - 100 mg/m^3)					5.5	≤10 %* (15%)
N_2O (0 - 30 mg/m^3)					2.4	≤10 %* (15%)
NH_3 (0 - 9 mg/m^3)					7.7	≤30 %* (40%)
CH_4 (0 - 15 mg/m^3)					5.2	≤22.5 % (30%)
H_2CO (0 - 20 mg/m^3)					2.9	≤22.5 % (30%)
H_2O (0 - 40 vol. %)					3.8	≤20 %* (7.5%)
CO_2 (0 - 15 vol. %)					5.1	≤7.5 % (10%)
O_2 (0 - 25 vol. %)					4.3	≤6 %* (7.5%)
Field Test 4						
CO (0 - 75 mg/m^3)					5.3	≤6 %* (7.5%)
NO (0 - 75 mg/m^3)					5.0	≤10 %* (15%)
NO_2 (0 - 100 mg/m^3)					4.6	≤10 %* (15%)
N_2O (0 - 30 mg/m^3)					2.6	≤10 %*(15%)
HCl (0 - 9 mg/m^3)					15.7	≤30 %* (30%)
NH_3 (0 - 9 mg/m^3)					9.5	≤30 % (40%)
CH_4 (0 - 15 mg/m^3)					5.3	≤22.5 % (30%)
H_2CO (0 - 20 mg/m^3)					3.7	≤22.5 % (30%)
H_2O (0 - 40 vol. %)					3.3	≤20 %* (7.5%)
CO_2 (0 - 15 vol.%)					3.7	≤7.5 % (10%)
O_2 (0 - 25 vol. %)					3.3	≤6 %* (7.5%)

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Field Test 5						
CO (0 - 75 mg/m^3)					5.7	≤6 %* (7.5%)
NO (0 - 75 mg/m^3)					6.1	≤10 %* (15%)
NO_2 (0 - 100 mg/m^3)					5.0	≤10 %* (15%)
N_2O (0 - 30 mg/m^3)					3.6	≤10 %*(15%)
HCl (0 - 9 mg/m^3)					8.6	≤30 %* (30%)
NH_3 (0 - 9 mg/m^3)					15.4	≤30 % (40%)
CH_4 (0 - 15 mg/m^3)					8.3	≤22.5 % (30%)
H_2CO (0 - 20 mg/m^3)					6.2	≤22.5 % (30%)
H_2O (0 - 40 vol. %)					3.8	≤20 %* (7.5%)
CO_2 (0 - 15 vol. %)					4.6	≤7.5 % (10%)
O_2 (0 - 25 vol. %)					4.3	≤6 %* (7.5%)
Field Test 6						
HCl (0 - 9 mg/m^3)					11.7	≤30 %* (30%)

Note 1: If the outside temperature fluctuates by more than 14˚C during the measurement period the measurement uncertainties must be checked on-site to make sure they are still met.

Note 2: The requirements for storage and transportation for maximum permissible temperature and humidity ranges are defined in the manual for the GT60000 Mobilis.

Note 3: Work in the maintenance interval:

- Regular check of the sample gas filter, gas conditioning system, sample gas lines and gas connections before initial operation and after each use.
- Daily verification of zero point by certified test gas.
- The manufacturer's instructions and operating status and maintenance signals, must be taken into account.
- Regular replacement of the particle filter after a flow alarm or visible contamination.
- Regular quality assurance in line with the relevant standard reference guidelines.
- Annual maintenance (including water calibration) according to the manufacturer's instructions.

Note 4: Calibration

- Check on the leak tightness by feeding zero and test gas to the probe before commissioning.
- Perform a zero and span point evaluation and check by dispensing test gases.
- After each measuring day, carry out a zero and span point check by dispensing test gases.
- During a measuring day, the relevant boundary conditions that are important for the calculation of the measurement uncertainty must be considered.
- The temperature curve must be recorded on each measuring day and the temperature profile noted.
- If the temperature fluctuates by more than 14˚C on any given measuring day, it is recommended that a check on the zero and span point drift is carried out to make sure the overall uncertainty is maintained.

Note 5: Measurement uncertainty test data - the stated emission limit value for the parameters are as follows:

CO 50 mg/m^3	NO 50 mg/m^3	NO_2 50 mg/m^3
N_2O 30 mg/m^3	HCl 6 mg/m^3	NH_3 6 mg/m^3
CH_4 15 mg/m^3	H_2CO 20 mg/m^3	H_2O 40 vol. %
CO_2 15 vol. %	O_2 25 vol. %	

Description

GT6000 Mobilis is a portable emissions monitoring system used for periodic measurements of emissions from stationary sources and as an alternative method for the calibration and validation of stationary AMS/CEMS within the framework of QAL2 and AST according to EN 14181 at industrial plants including waste incinerators, combustion plants and cement kilns.

The measuring device works extractively and consists of the FTIR analyzer GT6000 Mobilis as well as the sample conditioning system consisting of a heated sampling probe, heated sample gas line and the portable sampling unit - PSS Base/Plus. The sample gas pump, filtering unit and the oxygen sensor are located in the sampling PSS Base/Plus unit. This heated system allows measuring hot, wet and corrosive gases without drying or dilution. An option for a portable unit with analogue and digital inputs/outputs is also available.
GT6000 Mobilis has certified measuring ranges for eleven gaseous emission parameters. These parameters; CO, NO, NO_2, N_2O, HCl, NH_3, CO_2, H_2O, CH_4 and CH_2O are measured using FTIR with a zirconia sensor to measure O_2. NO_x can be determined by the summation of NO and NO_2.
GT6000 Mobilis includes Modbus TCP/IP interface. Optional converters can be used for other digital communication methods such as Profibus.
A connected PC, laptop or tablet with special software (Calcmet) records, analyses and displays the measured spectra, controls programmable processes and the output of the analog and status signals. Calcmet software has two different operating modes, Easy and Expert. Calcmet Easy is a user interface for field operation, whereas Calcmet Expert allows fine-tuning of settings and simultaneous viewing of all key data.

The measurement system consists of the following components:
- Heated sampling probe; Manufacturer: M&C TechGroup; Type: PSP4000-H/C, heated to 180°C, PTFE filter
- Sampling line, heated to 180°C, length 5m (additional 19m were tested in the laboratory)
- Portable gas sampling system PSS Base/Plus; including heated pump, particulate filtration with PTFE filter and optional oxygen sensor as well as rotameters for flow rates
- Sampling line, heated to 180°C, between PSS Base/Plus and GT6000 Mobilis FTIR analyzer
- Portable FTIR analyzer GT6000 Mobilis
- PC/laptop/tablet for controlling the measuring device with IP42 protection. Connectivity options to analyzer are Bluetooth, Wi-Fi, or cable (USB/Ethernet)
- Optional: portable I/O box with analogue and digital inputs and outputs
- User manual

The sample gas (approximately 3 l/min) is extracted from the exhaust gas flow with a heated sampling probe. The probe is heated to 180°C and equipped with a PTFE filter. The sample gas reaches the PSS Base/Plus portable sampling system via a heated sample gas line (heated to 180°C). In addition to the sample gas pump, filtering unit and the oxygen sensor, the valves for gas connection (nitrogen for background/air as safety gas) and the control units for controlling the heated lines are installed here.
The sample gas then enters the FTIR analyzer via another, short, heated sample gas line.
Interferometer flushing (approximately 0.3 l/min) is carried out with nitrogen connected to the FTIR analyzer.

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 CSA Group Testing UK Ltd Certificates'.

2. The design of the product certified is held and maintained by TÜV Rheinland for certificate CSA MC240424.

3. If a certified product is found not to comply, CSA Group should be notified immediately at the address shown on this certificate.

4. The certification marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of CSA Group Testing UK Ltd Certificates'.
5. This document remains the property of CSA Group and shall be returned when requested by CSA Group.