



財團法人全國認證基金會
Taiwan Accreditation Foundation

Certification Accreditation

(Certificate No : LN2346-221012)

This is to certify that

National Measurement Laboratory, R.O.C.
National Measurement Laboratory, R.O.C.(Chemical)

321, Sec. 2, Kuang Fu Rd., Hsinchu, Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria : ISO/IEC 17025:2017 ; CNS 17025:2018

Accreditation Number : N2346

Originally Accredited : December 29, 2010

Effective Period : December 29, 2020 to December 28, 2025

Accredited Scope : Calibration Field, see described in the Appendix

Specific Accreditation Program : Accreditation Program for National Metrology Institutes



Scan to verify

Ching-Chang Lien

Ching-Chang Lien
President, Taiwan Accreditation Foundation
October 12, 2022

Accreditation Number : N2346

Laboratory Head : LIN, Tzeng-Yow

Chemical

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KI4000 NO, SO ₂ (Cylinder Gas)	Standard gas: NMIs/NO, SO ₂	Instrument Calibration Technique for the Component Concentration of Cylinder Gas (Document No.: 07-3- 91-0035)	50	μmol/mol	2000	μmol/mol	NO/N ₂	0.89	μmol/mol
			50	μmol/mol	2000	μmol/mol	SO ₂ /N ₂	0.82	μmol/mol
Approval Signatory: FENG, Yun; LIU, Hsin-Wang									
KI4000 C ₂ H ₅ OH (Cylinder Gas)	Standard gas: NMIs/C ₂ H ₅ OH	Instrument Calibration Technique for the Component Concentration of Cylinder Gas (Document No.: 07-3- 91-0035)	137	μmol/mol	137	μmol/mol		1.7	μmol/mol
			301	μmol/mol	301	μmol/mol		3.2	μmol/mol
			547	μmol/mol	547	μmol/mol		4.3	μmol/mol
Approval Signatory: FENG, Yun; LIU, Hsin-Wang									



calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KI4000 CO, CO ₂ , CH ₄ , C ₃ H ₈ (Cylinder Gas)	Standard gas: NMIs/CO, CO ₂ , CH ₄ , C ₃ H ₈	Instrument Calibration Technique for the Component Concentration of Cylinder Gas (Document No.: 07-3- 91-0035)	10	μmol/mol	1000	μmol/mol	CO	0.08	μmol/mol
			100	μmol/mol	1000	μmol/mol	CO ₂	1.1	μmol/mol
			100	μmol/mol	1000	μmol/mol	CH ₄	0.9	μmol/mol
			100	μmol/mol	1000	μmol/mol	C ₃ H ₈	1.0	μmol/mol

Approval Signatory: FENG, Yun; LIU, Hsin-Wang

KI4000 CO, CO ₂ , CH ₄ , C ₃ H ₈ , CF ₄ , SF ₆ , NO, SO ₂ , O ₂ (Cylinder Gas)	Standard gas:NMIs/CO, CO ₂ , CH ₄ , C ₃ H ₈ , CF ₄ , SF ₆ , NO, SO ₂ , O ₂	Instrument Certification Technique for Filling Mass Cylinder Gases and Concentration of Gas Mixtures – Gravimetric Method (Document No.: 07-3- A3-0179)	1	μmol/mol	100	μmol/mol	CO/N ₂	1.0	%
			> 0.1	mmol/mol	100	mmol/mol	CO/N ₂	0.2	%
			100	μmol/mol	1000	μmol/mol	CO ₂ /N ₂	0.2	%
			> 1	mmol/mol	160	mmol/mol	CO ₂ /N ₂	0.1	%
			100	μmol/mol	1000	μmol/mol	CH ₄ /N ₂	0.8	%
			> 1	mmol/mol	100	mmol/mol	CH ₄ /N ₂	0.1	%
			0.1	mmol/mol	50	mmol/mol	C ₃ H ₈ /N ₂	0.5	%
			100	μmol/mol	3000	μmol/mol	CF ₄ /N ₂	0.3	%
			10	μmol/mol	1000	μmol/mol	SF ₆ /N ₂	0.5	%
			50	μmol/mol	2000	μmol/mol	NO/N ₂	0.8	%
			50	μmol/mol	2000	μmol/mol	SO ₂ /N ₂	0.5	%
			1	μmol/mol	10	μmol/mol	O ₂ /N ₂	1.5	%
			1	mmol/mol	10	mmol/mol	O ₂ /N ₂	0.5	%
			> 10	mmol/mol	250	mmol/mol	O ₂ /N ₂	0.3	%
1	mmol/mol	20	mmol/mol	CH ₄ /air	0.3	%			

Approval Signatory: FENG, Yun; LIU, Hsin-Wang



calibration items	working standard brand /model	calibration method document name /no.	measurand level or range				measurement conditions /independent variable explanation	smallest uncertainty	
			minimum value	units	maximum value	units		value	units
KI4000 CO, CO ₂ , CH ₄ , C ₃ H ₈ , O ₂ (Cylinder Gas)	Standard gas: NMIs/CO, CO ₂ , CH ₄ , C ₃ H ₈ , O ₂	Instrument Calibration Technique for the Component Concentration of Cylinder Gas (Document No.: 07-3-91-0035)	1000	μmol/mol	10000	μmol/mol	CO	9	μmol/mol
			> 10000	μmol/mol	200000	μmol/mol	CO	90	μmol/mol
			1000	μmol/mol	10000	μmol/mol	CO ₂	12	μmol/mol
			> 10000	μmol/mol	300000	μmol/mol	CO ₂	120	μmol/mol
			1000	μmol/mol	10000	μmol/mol	CH ₄	8	μmol/mol
			> 10000	μmol/mol	100000	μmol/mol	CH ₄	80	μmol/mol
			1000	μmol/mol	10000	μmol/mol	C ₃ H ₈	6	μmol/mol
			> 10000	μmol/mol	50000	μmol/mol	C ₃ H ₈	60	μmol/mol
			1000	μmol/mol	10000	μmol/mol	O ₂	12	μmol/mol
> 10000	μmol/mol	250000	μmol/mol	O ₂	120	μmol/mol			
Approval Signatory: FENG, Yun; LIU, Hsin-Wang									
KI4000 Synthetic Natural Gas (Cylinder Gas)	Standard gas: NMIs/Synthetic Natural Gas	Instrument Calibration Technique for the Component Concentration of Natural Gas (Document No.: 07-3-A1-0028)	0.1	cmol/mol	95	cmol/mol	CH ₄	0.18	cmol/mol
			0.1	cmol/mol	10	cmol/mol	C ₂ H ₆	0.017	cmol/mol
			0.1	cmol/mol	10	cmol/mol	C ₃ H ₈	0.012	cmol/mol
			0.01	cmol/mol	1.0	cmol/mol	iso-C ₄ H ₁₀	0.0012	cmol/mol
			0.01	cmol/mol	1.0	cmol/mol	n-C ₄ H ₁₀	0.0012	cmol/mol
			0.01	cmol/mol	0.2	cmol/mol	neo-C ₅ H ₁₂	0.00013	cmol/mol
			0.01	cmol/mol	0.3	cmol/mol	iso-C ₅ H ₁₂	0.0005	cmol/mol
			0.01	cmol/mol	0.3	cmol/mol	n-C ₅ H ₁₂	0.0006	cmol/mol
			0.01	cmol/mol	0.1	cmol/mol	n-C ₆ H ₁₄	0.00031	cmol/mol
			0.01	cmol/mol	50	cmol/mol	N ₂	0.0038	cmol/mol
			0.01	cmol/mol	20	cmol/mol	CO ₂	0.008	cmol/mol
Approval Signatory: FENG, Yun; LIU, Hsin-Wang									



calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KI6000 Gas Monitor, Gas Alarm, Gas Detector	Standard gas: NMIs/CO, CO ₂ , CH ₄ , C ₃ H ₈	Instrument Calibration Technique for Gas Measurement System – Gas Monitor (Document No.: 07-3-91-0072)	0.0	mol/mol	0.1	mol/mol	CO	2	μmol/mol
			0	mol/mol	1	mol/mol	CO ₂	6	μmol/mol
			0.00 (0)	mol/mol (%LEL)	0.05 (100)	mol/mol (%LEL)	CH ₄	59 (0.1)	μmol/mol (%LEL)
			0.00 (0)	mol/mol (%LEL)	0.02 (100)	mol/mol (%LEL)	C ₃ H ₈	26 (0.1)	μmol/mol (%LEL)
Approval Signatory: FENG, Yun; LIU, Hsin-Wang									
KI6000 Gas Concentration Dilution Device (CO, CO ₂ , CH ₄)	Standard gas: NMIs/CO, CO ₂ , CH ₄	Instrument Calibration Technique for the Concentration Calibration of Gas Dilutor – Gas Chromatography (Document No.:07-3-A3-0185)	0	%	100	%	CO ₂ /N ₂ @ (50 to 500) μmol/mol	0.03	%
			0	%	100	%	CO/N ₂ @ (1 to 100) μmol/mol	0.02	%
			0	%	100	%	CH ₄ /air@ (1000 to 20000) μmol/mol	0.15	%
Approval Signatory: FENG, Yun; LIU, Hsin-Wang									
KI7000 Gas Analyzer	Standard gas: NMIs/CO, CO ₂ , CH ₄ , C ₃ H ₈	Instrument Calibration Technique for Gas Measurement System – Gas Monitor (Document No.: 07-3-91-0072)	0.0	mol/mol	0.1	mol/mol	CO	2	μmol/mol
			0	mol/mol	1	mol/mol	CO ₂	6	μmol/mol
			0.00 (0)	mol/mol (%LEL)	0.05 (100)	mol/mol (%LEL)	CH ₄	59 (0.1)	μmol/mol (%LEL)
			0.00 (0)	mol/mol (%LEL)	0.02 (100)	mol/mol (%LEL)	C ₃ H ₈	26 (0.1)	μmol/mol (%LEL)
Approval Signatory: FENG, Yun; LIU, Hsin-Wang									



calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KI7000 Gas Concentration Dilution Device (CO, CO ₂ , CH ₄)	Standard gas: NMIs/CO, CO ₂ , CH ₄	Instrument Calibration Technique for the Concentration Calibration of Gas Dilutor – Gas Chromatography (Document No.: 07-3-A3-0185)	0	%	100	%	CO ₂ /N ₂ @ (50 to 500) μmol/mol	0.03	%
			0	%	100	%	CO/N ₂ @ (1 to 100) μmol/mol	0.02	%
			0	%	100	%	CH ₄ /air @ (1000 to 20000) μmol/mol	0.15	%
Approval Signatory: FENG, Yun; LIU, Hsin-Wang									

Note: Smallest uncertainty represents an expanded uncertainty using a coverage factor approximately 95 % level of confidence.

(Null Below)

