

Annex F4

Calibration Certificates for Effluent Quality Monitoring Equipment



REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR IVAN LEUNG	WORK ORDER:	HK2142558
CLIENT:	ALS TECHNICHEM (HK) PTY LTD		
ADDRESS:	11/F., CHUNG SHUN KNITTING CENTRE, 1-3 WING YIP STREET, KWAI CHUNG, N.T.	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	20-Oct-2021
		DATE OF ISSUE:	27-Oct-2021

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client. The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.

The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.

The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	Multifunctional Meter
Service Nature:	Performance Check
Scope:	Conductivity, Dissolved Oxygen, pH Value, Redox Potential and Temperature
Brand Name/ Model No.:	[LUTRON]/ [WA-2017SD]
Serial No./ Equipment No.:	[T.016811]/ [HK2009]
Date of Calibration:	26-October-2021

GENERAL COMMENTS

This is the Final Report and supersedes any preliminary report with this batch number.

Mr Chan Siu Ming, Vico
Manager - Inorganic

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2142558
 SUB-BATCH: 0
 DATE OF ISSUE: 27-Oct-2021
 CLIENT: ALS TECHNICHEM (HK) PTY LTD

Equipment Type: Multifunctional Meter
 Brand Name/ Model No.: [LUTRON]/ [WA-2017SD]
 Serial No./ Equipment No.: [T.016811]/ [HK2009]
 Date of Calibration: 26-October-2021 Date of Next Calibration: 26-January-2022

PARAMETERS:

Conductivity Method Ref: APHA (21st edition), 2510B

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)
146.9	142.6	-2.9
6667	6430	-3.6
12890	12940	+0.4
58670	57000	-2.8
	Tolerance Limit (%)	±10.0

Dissolved Oxygen Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.83	4.0	+0.17
5.24	5.1	-0.14
7.88	8.0	+0.12
	Tolerance Limit (mg/L)	±0.20

pH Value Method Ref: APHA (21st edition), 4500H: B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	4.08	+0.08
7.0	6.98	-0.02
10.0	9.94	-0.06
	Tolerance Limit (pH unit)	±0.20

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Siu Ming, Vico
 Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2142558
 SUB-BATCH: 0
 DATE OF ISSUE: 27-Oct-2021
 CLIENT: ALS TECHNICHEM (HK) PTY LTD

Equipment Type: Multifunctional Meter
 Brand Name/ Model No.: [LUTRON]/ [WA-2017SD]
 Serial No./ Equipment No.: [T.016811]/ [HK2009]
 Date of Calibration: 26-October-2021 Date of Next Calibration: 26-January-2022

PARAMETERS:

Redox Potential Method Ref: APHA (21st edition), 2580B
 Method Ref: Orion Research Instruction Manual and the Laboratory Manual
 the Environmental of Water, Wastewater and Soil (2nd edition), Rump & Krist (1992)

Expected Reading (mV)	Displayed Reading (mV)	Difference of A and B (mV)
Solution A (~234mV)	232	
Solution B (~300mV)	303	+71.0
	Tolerance Limit (mV)	>66

Temperature Method Ref: Section 6 of International Accreditation New Zealand Technical
 Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
11.0	10.8	-0.2
22.0	21.3	-0.7
40.5	39.2	-1.3
	Tolerance Limit (°C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Siu Ming, Vico
 Manager - Inorganic



REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR IVAN LEUNG	WORK ORDER:	HK2201232
CLIENT:	ALS TECHNICHEM (HK) PTY LTD		
ADDRESS:	11/F., CHUNG SHUN KNITTING CENTRE, 1-3 WING YIP STREET, KWAI CHUNG, N.T.	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	10-Jan-2022
		DATE OF ISSUE:	13-Jan-2022

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client. The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.

The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.

The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	Multifunctional Meter
Service Nature:	Performance Check
Scope:	Conductivity, Dissolved Oxygen, pH Value, Redox Potential and Temperature
Brand Name/ Model No.:	[LUTRON]/ [WA-2017SD]
Serial No./ Equipment No.:	[T.016811]/ [HK2009]
Date of Calibration:	11-January-2022

GENERAL COMMENTS

This is the Final Report and supersedes any previous report(s) with this reference.

Mr Chan Siu Ming, Vico
Manager - Inorganics

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2201232
 SUB-BATCH: 0
 DATE OF ISSUE: 13-Jan-2022
 CLIENT: ALS TECHNICHEM (HK) PTY LTD

Equipment Type: Multifunctional Meter
 Brand Name/ Model No.: [LUTRON]/ [WA-2017SD]
 Serial No./ Equipment No.: [T.016811]/ [HK2009]
 Date of Calibration: 11-January-2022 Date of Next Calibration: 11-April-2022

PARAMETERS:

Conductivity Method Ref: APHA (21st edition), 2510B

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)
146.9	143.5	-2.3
6667	6290	-5.7
12890	12720	-1.3
58670	55400	-5.6
	Tolerance Limit (%)	±10.0

Dissolved Oxygen Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.10	3.1	+0.00
5.66	5.5	-0.16
8.91	8.8	-0.11
	Tolerance Limit (mg/L)	±0.20

pH Value Method Ref: APHA (21st edition), 4500H: B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	3.92	-0.08
7.0	7.04	+0.04
10.0	10.06	+0.06
	Tolerance Limit (pH unit)	±0.20

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

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 Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2201232
 SUB-BATCH: 0
 DATE OF ISSUE: 13-Jan-2022
 CLIENT: ALS TECHNICHEM (HK) PTY LTD

Equipment Type: Multifunctional Meter
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 Serial No./ Equipment No.: [T.016811]/ [HK2009]
 Date of Calibration: 11-January-2022 Date of Next Calibration: 11-April-2022

PARAMETERS:

Redox Potential Method Ref: APHA (21st edition), 2580B
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Expected Reading (mV)	Displayed Reading (mV)	Difference of A and B (mV)
Solution A (~234mV)	231	
Solution B (~300mV)	304	+73.0
	Tolerance Limit (mV)	>66

Temperature Method Ref: Section 6 of International Accreditation New Zealand Technical
 Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10.5	9.7	-0.8
22.6	21.6	-1.0
39.5	38.2	-1.3
	Tolerance Limit (°C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Siu Ming, Vico
 Manager - Inorganics