

Annex F1

Calibration Certificates for  
Surface Water Quality  
Monitoring Equipment



## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

|          |                                                                                                   |                |             |
|----------|---------------------------------------------------------------------------------------------------|----------------|-------------|
| CONTACT: | MR BEN TAM                                                                                        | WORK ORDER:    | HK1860886   |
| CLIENT:  | ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING                                                 |                |             |
| ADDRESS: | RM A 20/F., GOLD KING IND BLDG,<br>NO. 35-41 TAI LIN PAI ROAD,<br>Kwai Chung,<br>N.T., HONG KONG. | SUB-BATCH:     | 0           |
|          |                                                                                                   | LABORATORY:    | HONG KONG   |
|          |                                                                                                   | DATE RECEIVED: | 21-Nov-2018 |
|          |                                                                                                   | DATE OF ISSUE: | 27-Dec-2018 |

### COMMENTS

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 ALS Hong Kong laboratory or quoted from relevant international standards.**

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

|                      |                                                                               |
|----------------------|-------------------------------------------------------------------------------|
| Scope of Test:       | Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature |
| Equipment Type:      | Multifunctional Meter                                                         |
| Brand Name:          | YSI                                                                           |
| Model No.:           | Professional DSS                                                              |
| Serial No.:          | 15H102620/ 15H103928                                                          |
| Equipment No.:       | EQW018                                                                        |
| Date of Calibration: | 28 November, 2018                                                             |

### NOTES

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

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Mr Chan Siu Ming, Vico  
Manager - Inorganic

*This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.*

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK1860886  
 SUB-BATCH: 0  
 DATE OF ISSUE: 27-Dec-2018  
 CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter  
 Brand Name: YSI  
 Model No.: Professional DSS  
 Serial No.: 15H102620/ 15H103928  
 Equipment No.: EQW018  
 Date of Calibration: 28 November, 2018      Date of Next Calibration: 28 February, 2019

**PARAMETERS:**

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

| Expected Reading ( $\mu\text{S}/\text{cm}$ ) | Displayed Reading ( $\mu\text{S}/\text{cm}$ ) | Tolerance (%) |
|----------------------------------------------|-----------------------------------------------|---------------|
| 146.9                                        | 159.8                                         | +8.8          |
| 6667                                         | 6492                                          | -2.6          |
| 12890                                        | 12526                                         | -2.8          |
| 58670                                        | 55801                                         | -4.9          |
|                                              | Tolerance Limit (%)                           | $\pm 10.0$    |

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

| Expected Reading (mg/L) | Displayed Reading (mg/L) | Tolerance (mg/L) |
|-------------------------|--------------------------|------------------|
| 3.17                    | 3.05                     | -0.12            |
| 5.95                    | 5.92                     | -0.03            |
| 8.19                    | 8.29                     | +0.10            |
|                         | Tolerance Limit (mg/L)   | $\pm 0.20$       |

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

| Expected Reading (pH unit) | Displayed Reading (pH unit) | Tolerance (pH unit) |
|----------------------------|-----------------------------|---------------------|
| 4.0                        | 4.10                        | +0.10               |
| 7.0                        | 7.13                        | +0.13               |
| 10.0                       | 9.99                        | -0.01               |
|                            | Tolerance Limit (pH unit)   | $\pm 0.20$          |

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: HK1860886  
 SUB-BATCH: 0  
 DATE OF ISSUE: 27-Dec-2018  
 CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter  
 Brand Name: YSI  
 Model No.: Professional DSS  
 Serial No.: 15H102620/ 15H103928  
 Equipment No.: EQW018  
 Date of Calibration: 28 November, 2018      Date of Next Calibration: 28 February, 2019

**PARAMETERS:**

Salinity      Method Ref: APHA (21st edition), 2520B

| Expected Reading (ppt) | Displayed Reading (ppt) | Tolerance (%) |
|------------------------|-------------------------|---------------|
| 0                      | 0.01                    | --            |
| 10                     | 10.23                   | +2.3          |
| 20                     | 21.02                   | +5.1          |
| 30                     | 29.83                   | -0.6          |
|                        | Tolerance Limit (%)     | ±10.0         |

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) |
|-----------------------|------------------------|----------------|
| 10.0                  | 11.2                   | +1.2           |
| 22.0                  | 21.7                   | -0.3           |
| 41.0                  | 40.8                   | -0.2           |
|                       | 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



WORK ORDER: HK1860886  
SUB-BATCH: 0  
DATE OF ISSUE: 27-Dec-2018  
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter  
Brand Name: YSI  
Model No.: Professional DSS  
Serial No.: 15H102620/ 15H103928  
Equipment No.: EQW018  
Date of Calibration: 05 December, 2018      Date of Next Calibration: 05 March, 2019

PARAMETERS:

Turbidity      Method Ref: APHA (21st edition), 2130B

| Expected Reading (NTU) | Displayed Reading (NTU) | Tolerance (%) |
|------------------------|-------------------------|---------------|
| 0                      | 0.14                    | --            |
| 4                      | 3.60                    | -10.0         |
| 40                     | 41.49                   | +3.7          |
| 80                     | 74.42                   | -7.0          |
| 400                    | 426.8                   | +6.7          |
| 800                    | 803.89                  | +0.5          |
|                        | Tolerance Limit (%)     | ±10.0         |

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