Appendix E. Calibration Certificates

Manufacturer Calibration Certificate

The following instrument has been tested and calibrated to the manufacturer specifications.
The calibration is traceable in accordance with ISO/IEC 17025 covering all instrument functions.

- Device Type: XL2 Audio and Acoustic Analyzer
- Serial Number: A2A-14829-E0

- Certificate Issued: 28 August 2018
- Certificate Number: 43340-A2A-14829-E0

- Results: PASSED
  (for detailed report see next page)

Tested by: M. Frick

Signature:

Stamp:

Calibration of: XL2 Audio and Acoustic Analyzer
Serial Number: A2A-14829-E0
Date: 28 August 2018

- Detailed Calibration Test Results:

		reference	actual	unit	actual error	XL2 tolerance	calibration uncertainty[2]
RMS Level @ 1kHz, XLR Input		0.1	**0.100**	V	≤0.1%	±0.5%	±0.10%
		1	**1.000**	V	≤0.1%	±0.5%	±0.09%
		10	**9.988**	V	-0.1%	±0.5%	±0.09%
Flatness, XLR Input[1]	20 Hz	1	**0.996**	V	-0.4%	±1.1%	±0.09%
	20 kHz	1	**1.005**	V	0.5%	±1.1%	±0.09%
Frequency		1000	**999.99**	Hz		±0.003%	±0.01%
Residual Noise	XLR		**< 2 uV**			<2 uV	±0.50%
THD+N @ 0 dBu, 1 kHz, XLR Input			**-98.5**	dB		typ. -100 dB	±0.50%

- Test Conditions:

Temperature:	**25.7**	°C
Relative Humidity:	**55.2**	%

- Calibration Equipment Used:

- Agilent Multimeter, Typ 34401A, Serial No. MY 5300 4607
  Last calibration: 15.08.2018, Next calibration: 15.08.2019
  Calibrated by ELCAL to the national standards maintained
  at Swiss Federal Office of Metrology. SCS 0002

- FX100 Audio Analyzer, Serial No. 10408
  Last Calibration: 27.04.2018, Next Calibration: 27.04.2019
  Manufacturer calibration based on Agilent 34410, Serial No. MY47014254,
  Last Calibration: 11.05.2018, Next Calibration: 11.05.2019
  which is calibrated by ELCAL to national standards maintained
  at Swiss Federal Office of Metrology. SCS 002

[1] The specified tolerance +/-0.1 dB @ 1V = +/- 1.1%

[2] The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with the regulations of the GUM.

專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
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CALIBRATION REPORT

Test Report No. : AH110159
Date of Issue : 04 December 2018

PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Flat 2207, Yu Fun House,
Yu Chui Court, Shatin,
New Territories, Hong Kong
Attn: Mr. Thomas Wong

PART B – SAMPLE INFORMATION

Description of Samples	:	Titrette® bottle-top burette, 50mL
Brand Name	:	BRAND
Model Number	:	6761161
Serial Number	:	10N60623
Date of Received	:	Nov 28, 2018
Date of Calibration	:	Nov 28, 2018
Date of Next Calibration[a]	:	Feb 28, 2019

PART C – CALIBRATION REQUESTED

Parameter	Reference Method
Accuracy Test	In-house Method (Gravimetric Method)

~ Continued On Next Page ~

Remark(s): -
[a] *The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.*

APPROVED SIGNATORY: _____
LAM Ho-yee, Emma
Assistant Laboratory Manager

專業化驗有限公司
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CALIBRATION REPORT

Test Report No. : AH110159
Date of Issue : 04 December 2018

PART D – RESULT[b],[c]

Water temperature: 25.2 °C
Relative humidity: 63%
z-Factor: 1.0039

Trial	Nominal volume (mL) at interval				
	3	3	3	3	3
	Range: (1-4)	Range: (16-19)	Range: (23-26)	Range: (34-37)	Range: (42-45)
1	2.9754	2.9751	2.9755	2.9754	2.9749
2	2.9788	2.9770	2.9666	2.9750	2.9786
3	2.9781	2.9772	2.9775	2.9771	2.9735
4	2.9740	2.9734	2.9751	2.9826	2.9737
5	2.9750	2.9764	2.9757	2.9777	2.9784
6	2.9756	2.9781	2.9818	2.9789	2.9718
7	2.9781	2.9774	2.9772	2.9761	2.9781
8	2.9756	2.9775	2.9791	2.9779	2.9795
9	2.9719	2.9810	2.9845	2.9831	2.9790
10	2.9797	2.9794	2.9835	2.9806	2.9801
Average (g)	2.9762	2.9773	2.9777	2.9784	2.9768
Standard deviation	0.0024	0.0021	0.0051	0.0028	0.0030
Calculated volume (mL)	2.9878	2.9889	2.9893	2.9901	2.9884
Error (%)	-0.4058	-0.3713	-0.3579	-0.3315	-0.3877
RSD (%)	0.0807	0.0703	0.1719	0.0953	0.0995

Acceptance Criteria [d]

Accuracy (%Error)	< ±1%	< ±1%	< ±1%	< ±1%	< ±1%
Precision (%RSD)	< 1%	< 1%	< 1%	< 1%	< 1%

~ END OF REPORT ~

Remark(s): -
[b] *The results relate only to the tested sample as received*
[c] *The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.*
[d] *The "acceptance criteria" is applicable for similar equipment used by QPT or quoted from relevant international standards.*