

PO Box 518
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www.wetlabs.com

SLC Testing Certification

Date 9/26/2013

S/N# FLBBCDSL-3318

Low temperature test #1

Chill 2.5 hr at -20 °C

High temperature test #1

Heat 2.5 hr at 50 °C

Low temperature test #2 same protocol as #1

High temperature test #2 same protocol as #1

Pressure test

5 cycles, 0–1250 m with 10-sec. soaks
Held at 1250 m for 2 hrs. on last cycle

Electrical isolation

Resistance between copper faceplate and grounding wire is > 1 mΩ

Calibration verification

Verify calibration and dark counts in bb, chl, and CDOM channels

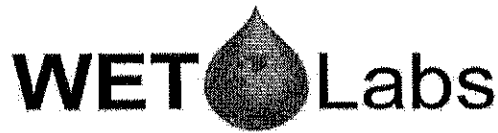
Verify 5% of single point check for chl and bb

Verify 10% of single point check for CDOM

Signature

A handwritten signature in black ink, appearing to read "William Jason Rowe / Ann Gaudin Rowe".

NOTES:



Scattering Meter Calibration Sheet

9/25/2013

Wavelength: 700

S/N FLBBCDSL-3318

Use the following equation to obtain "scaled" output values:

$$\beta(\theta_c) \text{ m}^{-1} \text{ sr}^{-1} = \text{Scale Factor} \times (\text{Output} - \text{Dark Counts})$$

• Scale Factor for 700 nm	=	1.846E-06 (m ⁻¹ sr ⁻¹)/counts
• Output	=	meter reading counts
• Dark Counts	=	55 counts
Instrument Resolution	=	1.1 counts 2.02E-06 (m ⁻¹ sr ⁻¹)

Definitions:

- **Scale Factor:** Calibration scale factor, $\beta(\theta_c)/\text{counts}$. Refer to User's Guide for derivation.
- **Output:** Measured signal output of the scattering meter.
- **Dark Counts:** Signal obtained by covering detector with black tape and submersing sensor in water.

Instrument Resolution: Standard deviation of 1 minute of collected data.

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ECO CDOM Fluorometer Characterization Sheet

Date: 9/25/2013

S/N: FLBBCDSL-3318

CDOM concentration expressed in ppb can be derived using the equation:

$$\text{CDOM (ppb)} = \text{Scale Factor} * (\text{Output} - \text{Dark Counts})$$

Dark Counts	Digital
Scale Factor (SF)	50 counts
Maximum Output	0.0907 ppb/count
Resolution	4130 counts
	1.1 counts
Ambient temperature during characterization	23.1 °C

Dark Counts: Signal output of the meter in clean water with black tape over detector.

SF: Determined using the following equation: $SF = x + (\text{output} - \text{dark counts})$, where x is the concentration of the solution used during instrument characterization. SF is used to derive instrument output concentration from the raw signal output of the fluorometer.

Maximum Output: Maximum signal output the fluorometer is capable of.

Resolution: Standard deviation of 1 minute of collected data.

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ECO Chlorophyll Fluorometer Characterization Sheet

Date: 9/25/2013

S/N: FLBBCDSL-3318

Chlorophyll concentration expressed in $\mu\text{g/l}$ can be derived using the equation:

$$\text{CHL } (\mu\text{g/l}) = \text{Scale Factor} * (\text{Output} - \text{Dark counts})$$

Dark counts	Digital
Scale Factor (SF)	55 counts
Maximum Output	0.0073 $\mu\text{g/l/count}$
Resolution	4130 counts
	1.5 counts
Ambient temperature during characterization	23.1 °C

Dark Counts: Signal output of the meter in clean water with black tape over detector.

SF: Determined using the following equation: $\text{SF} = x \div (\text{output} - \text{dark counts})$, where x is the concentration of the solution used during instrument characterization. SF is used to derive instrument output concentration from the raw signal output of the fluorometer.

Maximum Output: Maximum signal output the fluorometer is capable of.

Resolution: Standard deviation of 1 minute of collected data.

The relationship between fluorescence and chlorophyll-a concentrations in-situ is highly variable. The scale factor listed on this document was determined using a mono-culture of phytoplankton (*Thalassiosira weissflogii*). The population was assumed to be reasonably healthy and the concentration was determined by using the absorption method. To accurately determine chlorophyll concentration using a fluorometer, you must perform secondary measurements on the populations of interest. This is typically done using extraction-based measurement techniques on discrete samples. For additional information on determining chlorophyll concentration see "Standard Methods for the Examination of Water and Wastewater" part 10200 H, published jointly by the American Public Health Association, American Water Works Association, and the Water Environment Federation.