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ECO Chlorophyll Fluorometer Characterization Sheet

Date: 6/27/2005 Customer: WHOI

Job #: 506023 S/N#: FLRTD-297

Chlorophyll concentration expressed in µg/l can be derived using the equation:

CHL (µg/l) = Scale Factor * (Output - Dark Counts)

	Analog Range 1	Analog Range 2 (default)	Analog Range 4		Digital
Dark Counts = Vblank	0.107	0.059	0.033	V	81 counts
Chl. Equivalent Concentration (CEC)	4.0	2.0	1.0	V	3285 counts
Scale Factor (SF)	6	13	26	µg/l/V	0.0078 µg/l/count
Maximum Output	4.94	4.94	4.94	V	16338 counts
Resolution	1.8	1.8	1.8	mV	1.1 counts
Ambient temperature during characterization					0.0 °C

Analog Range: 1 (most sensitive, 0–4,000 counts), 2 (midrange, 0–8,000 counts), 4 (entire range, 0–16,000 counts).

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

CEC Signal output of the fluorometer when using a fluorescent proxy that has been determined to be approximately equivalent to 25 µg/l of a *Thalassiosira weissflogii* phytoplankton culture.

SF: Used to derive chlorophyll concentration from the signal output of the fluorometer. The scale factor is determined using the following equation: SF = 25 ÷ (CEC - dark counts). For example: 25 ÷ (2865 - 43.5) = 0.00886.

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.