



CALIBRATION CERTIFICATE

NAME	: Chlorophyll-Turbidity sensor set for VMP250
MODEL	: CLTU-VMP250
SERIAL No.	: 0030
Parameter	: Medium Turbidity Chlorophyll



JFE Advantech Co., Ltd.

Medium Turbidity Calibration Certificate

Model : CLTU-VMP250
 Serial No. : 0030
 Date : December 13, 2018
 Location : Production Section
 Method : Calibration equation is determined from third order regression of samples of the reference turbidity against A/D values. Samples are taken at approximately 0, 20, 40, 60, 80, 100, 200, 400, 600, 800, and 1000 FTU. 1 FTU standard solution used for the calibration is made by diluting 5 ml of the Formazine standard solution 400 FTU.

1. Equation
 Instrument turbidity[FTU] = $A+B \times N+C \times N^2+D \times N^3$ N: A/D value

2. Coefficients

A = -1.987766e+01
 B = +1.429401e-02
 C = +8.755395e-08
 D = -1.038453e-13

3. Calibration results

Acceptance: ± 0.3 FTU or $\pm 2\%$ of reference value

Reference turbidity [FTU]	A/D value	Instrument turbidity [FTU]	Residual error [FTU]	Acceptance [FTU]	OK/NG
0.00	1379	0.00	0.00	± 0.30	OK
20.75	2801	20.84	0.09	± 0.42	OK
41.96	4212	41.87	-0.09	± 0.84	OK
62.38	5575	62.51	0.13	± 1.25	OK
82.79	6921	83.21	0.42	± 1.66	OK
101.88	8121	101.92	0.04	± 2.04	OK
197.09	13993	197.00	-0.09	± 3.94	OK
390.73	25003	390.63	-0.10	± 7.81	OK
603.82	36002	603.37	-0.45	± 12.08	OK
803.83	45617	804.51	0.68	± 16.08	OK
992.52	54057	992.26	-0.26	± 19.85	OK

4. Verification

Criteria of judgement : Residual error of the instrument turbidity at arbitrary point is within the acceptance value.

Acceptance: ± 0.3 FTU or $\pm 2\%$ of reference value

Reference turbidity [FTU]	Instrument turbidity [FTU]	Residual error [FTU]	Acceptance [FTU]	Judgement
156.82	155.45	-1.37	± 3.14	Passed

Examined

R. Kishida

Approved

A. Fukuo Ka

JFE Advantech Co., Ltd.

Chlorophyll Calibration Certificate

Model : CLTU-VMP250
Serial No. : 0030
Date : December 10, 2018
Location : Production Section
Method : Calibration equation is determined from linear regression of samples of the reference concentration against A/D values. Samples are taken at approximately 0, 25, 50, and 100 ppb. Fluorescence intensity is expressed in terms of the uranine concentration.

1. Equation Instrument uranine concentration[ppb] = $A+B \times N$ N: A/D value

2. Coefficients A = $-1.175960e+01$ B = $+8.212014e-03$

3. Calibration results

Acceptance: $\pm 1\%$ of full scale

Reference concentration [ppb]	A/D value	Instrument concentration [ppb]	Residual error [ppb]	Acceptance [ppb]	OK/NG
0.00	1432	0.00	0.00	± 4.00	OK
25.89	4617	26.16	0.27	± 4.00	OK
51.18	7739	51.79	0.61	± 4.00	OK
101.08	13694	100.70	-0.38	± 4.00	OK

4. Verification

Criteria of judgement : Residual error of the instrument concentration at arbitrary point is within the acceptance value.

Acceptance: $\pm 1\%$ of full scale

Reference concentration [ppb]	Instrument concentration [ppb]	Residual error [ppb]	Acceptance [ppb]	Judgement
75.77	76.38	0.61	± 4.00	Passed

Examined

R. Koshida

Approved

a. Fukuoka

JFE Advantech Co., Ltd.