



SOH Wind Engineering LLC

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CERTIFICATE FOR CALIBRATION OF CUP ANEMOMETER

Certificate number: 20.US2.05275

Date of issue: September 23, 2020

Type: C5C-1263-2-SP

Serial number: 25154

Manufacturer: Arklay S. Richards Co., Inc., 72 Winchester Street, Newton Highlands, MA 02461, USA

Client: Arklay S. Richards Co., Inc., 72 Winchester Street, Newton Highlands, MA 02461, USA

Anemometer received: September 23, 2020

Anemometer calibrated: September 23, 2020

Calibrated by: MEJ

Procedure: MEASNET, IEC 61400-12-1:2017 Annex F
Modified for 4-26m/s

Certificate prepared by: EJF

Approved by: Calibration engineer, EJF

Calibration equation obtained: v [m/s] = 0.32187 · f [Hz] + 0.67873

Standard uncertainty, slope: 0.00444

Standard uncertainty, offset: 0.10259

Covariance: -0.0000905 (m/s)²/Hz

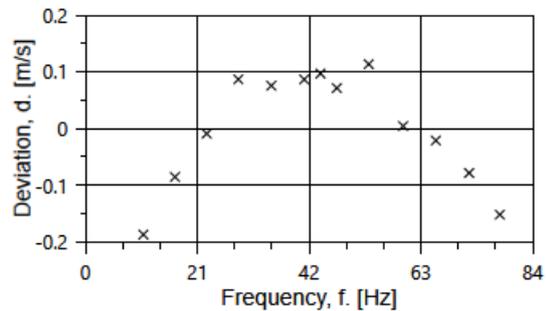
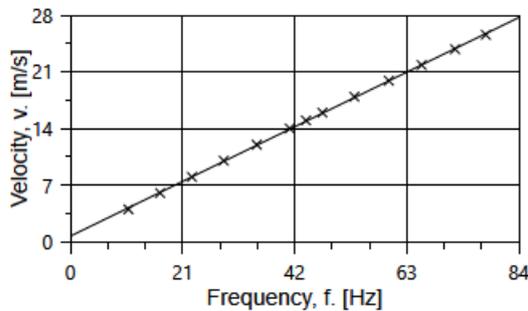
Coefficient of correlation: ρ = 0.999891

Absolute maximum deviation: -0.188 m/s at 3.995 m/s

Barometric pressure: 995.7 hPa

Relative humidity: 28.4%

Succession	Velocity pressure, q, [Pa]	Temperature in wind tunnel [°C]	Temperature in d.p. box [°C]	Wind velocity, v, [m/s]	Frequency, f, [Hz]	Deviation, d, [m/s]	Uncertainty u _c (k=2) [m/s]
2	9.26	25.0	32.5	3.995	10.8850	-0.188	0.047
13-last	20.88	25.7	32.6	6.006	16.8164	-0.086	0.051
3	37.13	24.9	32.5	8.000	22.7739	-0.009	0.056
12	57.95	25.8	32.6	10.009	28.7186	0.087	0.061
4	83.42	24.8	32.5	11.990	34.9075	0.075	0.066
11	113.10	25.9	32.6	13.988	41.0821	0.087	0.071
1-first	130.15	25.0	32.5	14.983	44.1416	0.097	0.073
5	147.47	24.9	32.5	15.946	47.2105	0.071	0.075
10	185.37	26.1	32.5	17.915	53.1975	0.114	0.081
6	229.13	25.1	32.5	19.886	59.6627	0.004	0.090
9	275.26	26.1	32.5	21.836	65.8004	-0.021	0.098
7	327.50	25.4	32.5	23.795	72.0625	-0.079	0.107
8	377.62	25.9	32.5	25.573	77.8169	-0.152	0.114



EQUIPMENT USED

Serial Number	Description
Njord2	Wind tunnel, blockage factor = 1.0017
13924	Control cup anemometer
-	Mounting tube, D = 12.7 mm
TT002	Summit Electronics, 1XPT100, 0-10V Output, wind tunnel temp.
TT001	Summit Electronics, 1XPT100, 0-10V Output, differential pressure box temp.
DP012	Setra Model 239, 0-15inWC, differential pressure transducer
HY004	Dwyer RHP-2D20, 0-10V Output, humidity transmitter
BP002	Setra M278, 0-5VDC Output, barometer
PL3	Pitot tube
XB001	Computer Board. 16 bit A/D data acquisition board
Njord2-PC	PC dedicated to data acquisition

The accuracies of all measurements were traceable to the SI through NIST or CIPM recognized NMI's. A real-time analysis module within the data acquisition software detects pulse frequency.

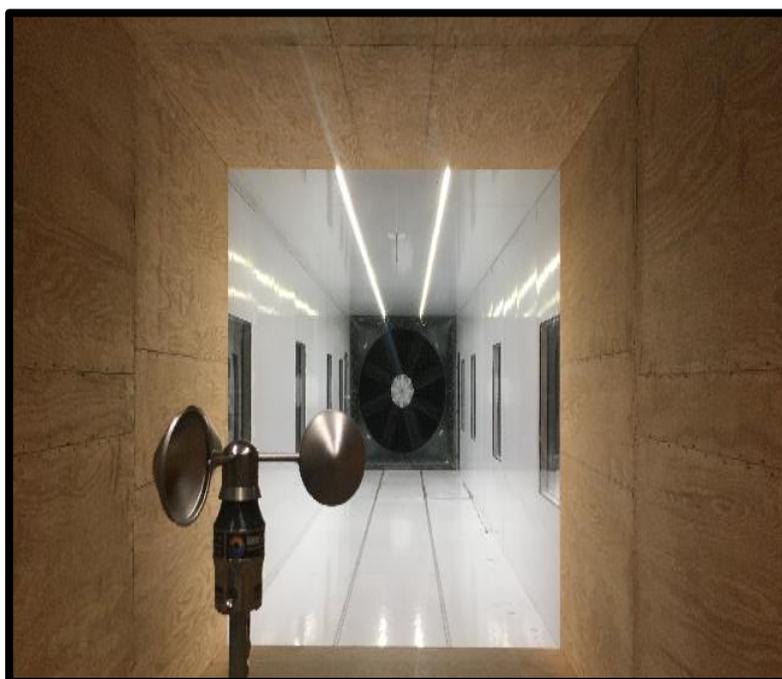


Photo of the wind tunnel setup. The cross-sectional area is 2.5m x 2.5m.

UNCERTAINTIES

The documented uncertainty is the total combined uncertainty at 95% confidence level ($k=2$) in accordance with EA-4/02. The uncertainty at 10 m/s comply with the requirements in the IEC 61400-12-1:2005 procedure. See Document US.12.01.004 for further details.

COMMENTS

(none)

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The results on this certificate relate only to the serial number listed.

All calibrations are done in the "As Found" condition unless otherwise noted.

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