



R.M. Young Company
2801 Aero Park Drive
Traverse City, Michigan 49686 USA

CALIBRATION REPORT **Wind Speed**

Customer: **NOAA**

Test Number: 2322-02W
Test Date: 14 April 2022

Customer PO: (M Peperato)
Sales Order: 9441

Instrument Under Test

Anemometer: 05106 Wind Monitor-MA
Serial Number: WM183594

Propeller/Cup: 08234
Serial Number: 12264

Report of calibration comparison with National Institute of Standards and Technology calibrated anemometer in the R.M. Young Company 50 x 75 cm rectangular test section open return wind tunnel. The following data describe the relationship between test section wind speed, as determined by the NIST calibrated standard anemometer, and test anemometer rpm, as determined by its output. Indicated wind speed is calculated using anemometer's published formula.

Wind Speed According to Standard Anemometer		Wind Speed According to Instrument Under Test			
Model: 05103 / 08234		Anem: 05106		Prop/Cup: 08234	
Serial #: 00005		Serial #: WM183594		Serial #: 12264	
Nominal Speed m/s	Actual Speed m/s (1)	100 Second Pulse Count	Output Frequency	Propeller RPM (2)	Indicated Speed m/s (3)
30.0	30.0	30462	304.6	6092	29.9
25.0	25.0	25382	253.8	5076	24.9
20.0	20.0	20266	202.7	4053	19.9
16.0	16.0	16192	161.9	3238	15.9
14.0	14.0	14164	141.6	2833	13.9
12.0	12.0	12144	121.4	2429	11.9
10.0	10.0	10122	101.2	2024	9.9
8.0	8.0	8081	80.8	1616	7.9
6.0	6.1	6064	60.6	1213	5.9
5.0	5.1	5048	50.5	1010	4.9
4.0	4.1	4052	40.5	810	4.0
3.0	3.1	3070	30.7	614	3.0
2.0	2.1	2057	20.6	411	2.0
1.0	1.1	1013	10.1	203	1.0

National Institute of Standards and Technology Reference

Calibrated Standard Anemometer (4)

Test #: TN251034
Date: 9 Nov 1992
Model: 08234 Serial #: 00005

Environmental Conditions

Barometric Pressure (hPa): 1000
Temperature (C): 25.4
Relative Humidity (%): 20.5

(1) Actual wind speed determined by relationship between tunnel fan rpm and NIST calibrated standard propeller rpm.

(2) Instrument Under Test output: $Rpm = Hz / 3 \text{ pulse(s) per revolution} \times 60 \text{ seconds.}$

(3) Published calibration: $Wind \text{ speed (m/s)} = 0.00490 \times \text{propeller rpm} + 0.0 \text{ m/s.}$

(4) NIST Calibration accuracy is within 1%.

Tested By D. Ochs

M E T E O R O L O G I C A L I N S T R U M E N T S

Tel: 231-946-3980 Fax: 231-946-4772 Email: met.sales@youngusa.com Website: youngusa.com
ISO 9001:2015 CERTIFIED



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CALIBRATION REPORT

Wind Speed (page 2)

Test Number: 2322-02W

Linear Regression

A linear regression is performed on the calibration data to determine the best fit straight line representing the relationship between propeller rpm and actual wind speed as determined by the NIST calibrated standard anemometer.

Slope: 0.00491 meters per second per RPM
Intercept: 0.09 meters per second
Pitch: 29.48 centimeters per revolution
Correlation Coefficient: 1.00000

Wind Speed =	Slope	x RPM +	Intercept	Slope	x Hz +	Intercept
m/s	= 0.00491	x RPM +	0.09	0.09828	x Hz +	0.09
mph	= 0.01099	x RPM +	0.20	0.21984	x Hz +	0.20
knots	= 0.00955	x RPM +	0.17	0.19090	x Hz +	0.17
km/hr	= 0.01769	x RPM +	0.32	0.35380	x Hz +	0.32

Threshold Measurements

	New Instrument	As Found	As Left
Start:	n/a	0.5 m/s	0.5 m/s
Stop:		0.3 m/s	0.3 m/s

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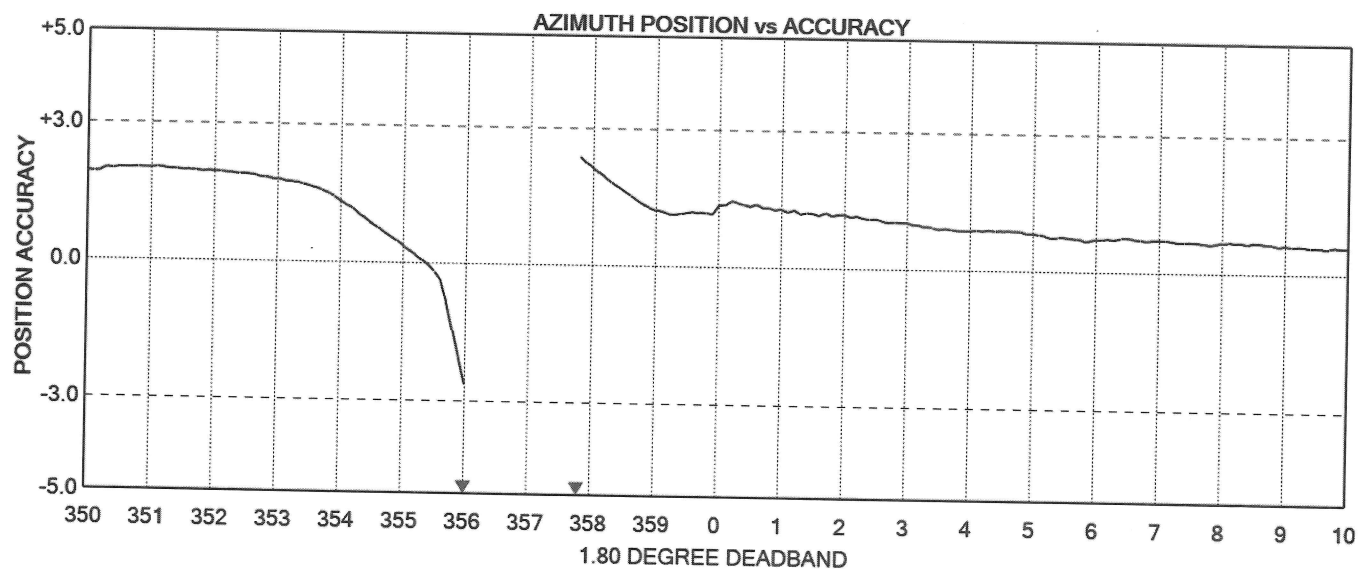
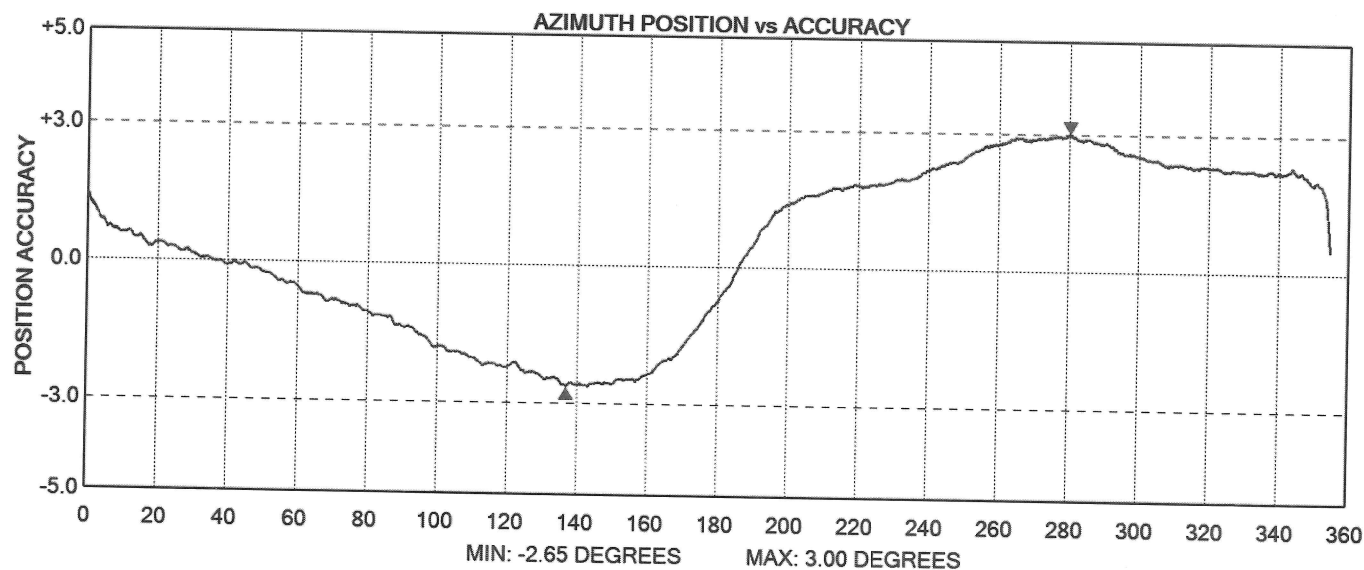


R. M. YOUNG COMPANY WIND SENSOR CALIBRATION CERTIFICATE

SENSOR: 05106 WIND MONITOR MA
SENSOR SERIAL NUMBER: WM183594
BEARINGS: SEALED/ WATERPROOF GREASE LUBE
DATE: APRIL 14, 2022

WIND SPEED THRESHOLD: PASS
LOW WIND SPEED AMPLITUDE/FREQUENCY TEST: PASS
HIGH WIND SPEED AMPLITUDE/FREQUENCY TEST: PASS
VANE TORQUE TEST: PASS
SPECIAL NOTES:

Inspected By: DO



NOTE: Azimuth Position vs Accuracy graphs are accurate to within 0.5 degrees. The accuracy shown in the potentiometer deadband region between 355 and 0 degrees is the result of no resistance change while position changes. The gap represents the actual deadband (open circuit).

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