



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

COF

CALIBRATION REPORT
Wind Speed

Customer: **NOAA/OMAO-MO-E**

Test Number: 9820-02W
 Test Date: 20 Aug 2019

Customer PO: GM-19-054
 Sales Order: 116577

Instrument Under Test

Anemometer: 05103 Wind Monitor
 Serial Number: WM171362

Propeller/Cup: 08234
 Serial Number: 98334

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 Serial #: 00005		Anem: 05103 Serial #: WM171362		Prop/Cup: 08234 Serial #: 98334	
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	30.1	30554	305.5	6111	29.9
25.0	25.0	25456	254.6	5091	24.9
20.0	20.0	20338	203.4	4068	19.9
16.0	16.0	16264	162.6	3253	15.9
14.0	14.0	14238	142.4	2848	14.0
12.0	12.1	12214	122.1	2443	12.0
10.0	10.1	10194	101.9	2039	10.0
8.0	8.1	8143	81.4	1629	8.0
6.0	6.1	6121	61.2	1224	6.0
5.0	5.1	5099	51.0	1020	5.0
4.0	4.1	4098	41.0	820	4.0
3.0	3.1	3100	31.0	620	3.0
2.0	2.1	2068	20.7	414	2.0
1.0	1.1	1026	10.3	205	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): 1019
 Temperature (C): 26.1
 Relative Humidity (%): 38.3

- (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. Graves

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

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 ISO 9001:2015 CERTIFIED



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CALIBRATION REPORT

Wind Speed (page 2)

Test Number: 9820-02W

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: 0.00490 meters per second per RPM
Intercept: 0.10 meters per second
Pitch: 29.40 centimeters per revolution
Correlation Coefficient: 1.00000

Wind Speed =	Slope	x RPM +	Intercept	Slope	x Hz +	Intercept
m/s	= 0.00490	x RPM +	0.10	0.09801	x Hz +	0.10
mph	= 0.01096	x RPM +	0.21	0.21924	x Hz +	0.21
knots	= 0.00952	x RPM +	0.19	0.19038	x Hz +	0.19
km/hr	= 0.01764	x RPM +	0.35	0.35283	x Hz +	0.35

Threshold Measurements

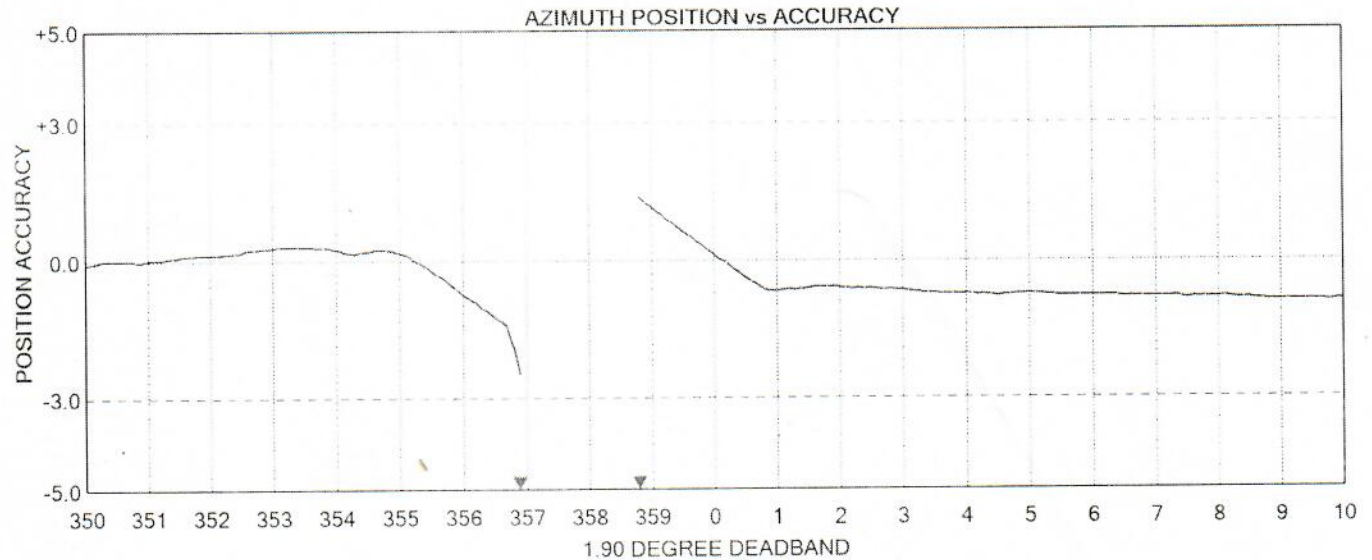
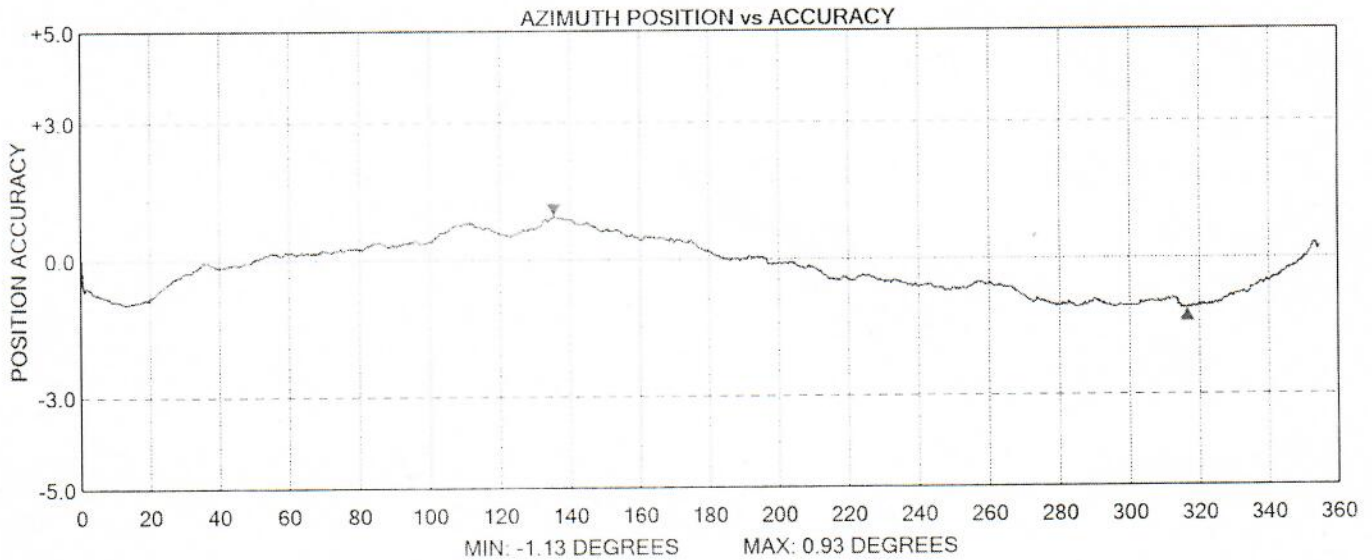
	New Instrument	As Found	As Left
Start:	0.5 m/s	n/a	n/a
Stop:	0.4 m/s		



R. M. YOUNG COMPANY WIND SENSOR CALIBRATION CERTIFICATE

SENSOR: 05103 WIND MONITOR
 SENSOR SERIAL NUMBER: WM171362
 BEARINGS: SEALED/GREASE LUBE
 DATE: AUGUST 14, 2019
 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: TH



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).