

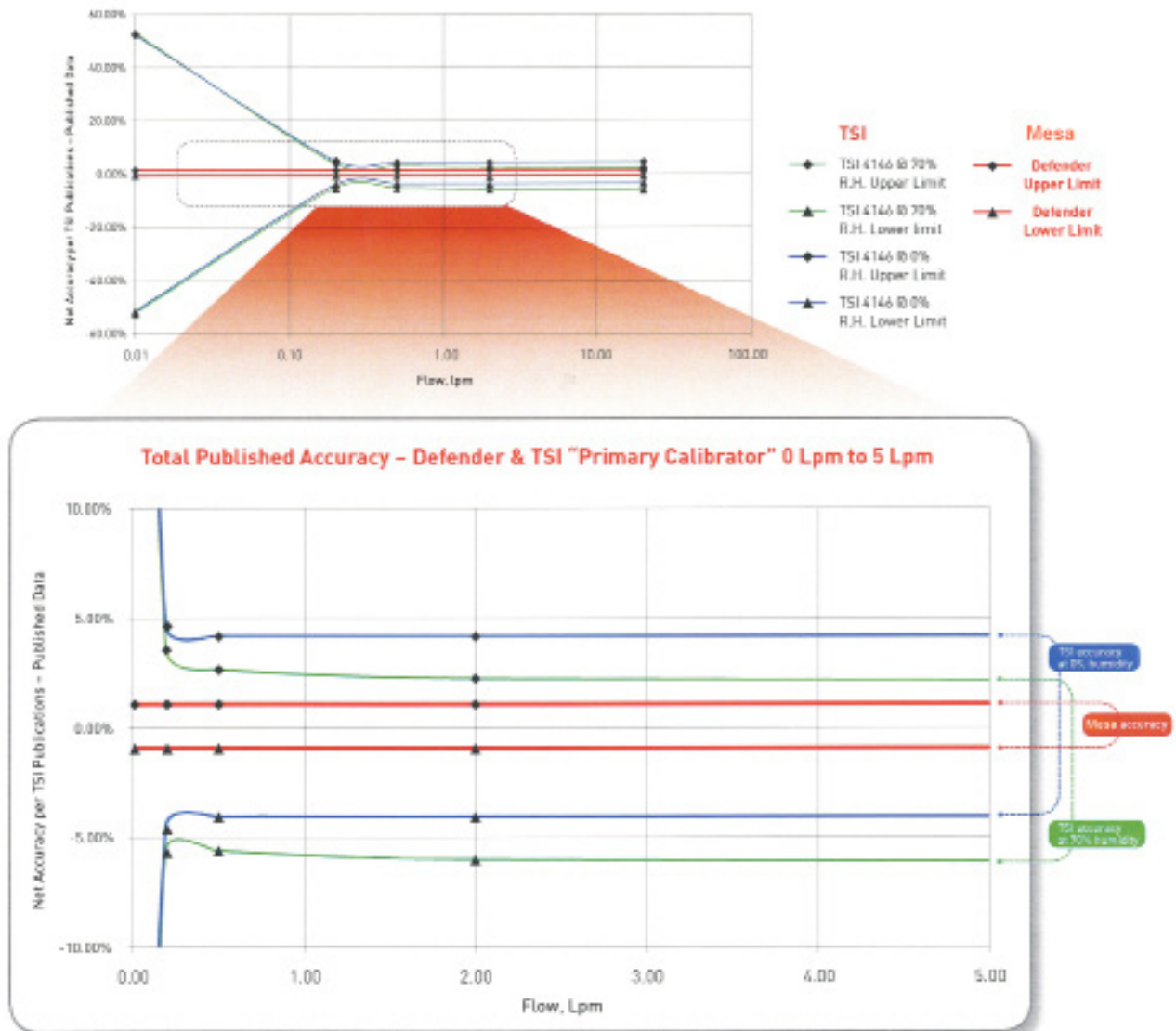
Defender and TSI 'Primary Calibrator'

Independent Accuracy Study:

DryCal Defender and TSI "Primary Calibrator"

Accuracy counts. When it comes to producing high accuracy measurements at high levels of confidence, accurate gas flow measurements are paramount.

That's why we asked **Dr. George Mattingly**, the respected and world-renowned expert in fluid flow measurement, to perform a tabulation of manufacturer's stated specifications to see how well the Defender stacks up against the competition in delivering the accuracy needed to meet the demands of industrial hygiene and environmental professionals. We were pleased to see the tabulation validates what our customers already know: When it comes to accuracy, count on Proven DryCal technology.



When it comes to consistent accuracy across flow rates, temperature, humidity and all relevant factors, the Defender delivers more-- accuracy, reliability and value.

TSI 4146 "Primary Calibrator" Consolidated Specification

Uncertainty Item	Flow Rate Range in Liters per Min (Lpm)					TSI Reference Document
	0.01	0.2	0.5	2	20	
TSI Mass flow accuracy, % reading	2%	2%	2%	2%	2%	1980512/C, 13 Rev C. p. 13
TSI Mass flow accuracy, sccm	0.005	0.005	0.005	0.005	0.005	1980512/C, 13 Rev C. p. 13
TSI Mass flow accuracy, % of reading (converted)	50.0%	2.5%	1.0%	0.3%	0.0%	1980512/C, 13 Rev C. p. 13
TSI Greater of above	50.0%	2.5%	2%	2%	2%	1980512/C, 13 Rev C. p. 13
TSI Additional for air temperature and pressure	0.25%	0.25%	0.25%	0.25%	0.25%	1980512/C, 13 Note 5
TSI Total with dry air, 21.1 °C, 101.3 kPa	50.25%	2.75%	2.25%	2.25%	2.25%	1980512/C, 13 Note 1, 2, 5
TSI Additional for temperature, 0-50 °C	1.88%	1.88%	1.88%	1.88%	1.88%	1980430, Rev F. p. 25, Note 1
TSI Correction for humidity, 70%	-0.60%	-1.07%	-1.54%	-1.95%	-2.40%	FLOW-Humidity Effects, Aug. 18, 2006 Rev. A, p. 7
TSI Correction for humidity, 0%						FLOW-Humidity Effects, Aug. 18, 2006 Rev. A, p. 7
Defender upper accuracy	1.0%	1.0%	1.0%	1.0%	1.0%	
Defender lower accuracy	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	

About Dr. George E. Mattingly:

After earning his PhD at Princeton University, Dr. Mattingly remained at Princeton, taught, and conducted research in fluid mechanics and hydraulics. In 1975, he joined the U.S. National Bureau of Standards (later named the National Institute of Standards and Technology -- NIST). For 20+ years he was the leader of NIST's Fluid Flow Group and was responsible for maintaining and disseminating the U.S. National Standards for Fluid Flow, Air Speed, Liquid Density and Volume, as well as for conducting research programs to advance flow measurement.

From 1999 to his NIST retirement in 2004, he served as the Chairman of the International Committee on Weights and Measures (CIPM) Working Group for Fluid Flow to start the world's best flow measurement round robin tests to quantify the equivalence of the world's National Metrology Institutes flow measurement standards. He has authored or co-authored more than 100 papers, reports, book chapters and publications on flow topics.



The Butler, N.J. manufacturing facility (pictured above) is Mesa Labs NVLAP accredited ISO 17025 laboratory.