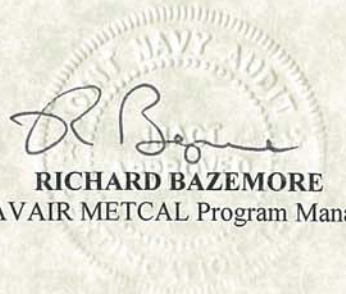
SCOPE OF COMPETENCY

NAVY PRIMARY STANDARDS LABORATORY – Lab NPSL

BLDG 469S
P.O. BOX 357058
SAN DIEGO, CA 92135-7058

MEASUREMENT AREA	MEASUREMENT STANDARD	MEASUREMENT RANGE
ELECTRICAL/ELECTRONIC		
AC Current		
	Alternating Current Measuring System	1 A, 60 and 300 Hz, 1, 3, and 5 kHz 10 A, 60 and 300 Hz, 1, 3, and 5 kHz 20 A, 60 and 300 Hz, 1, 3, and 5 kHz
AC Volts		
	Alternating Voltage Measuring System	2.2 mV to 7 V, 10 Hz to 300 MHz 7 to 70 V, 10 Hz to 1 MHz 70 to 220 V, 10 Hz to 300 kHz 220 to 1000 V, 10 Hz to 100 kHz
Attenuation		
Coaxial		
(7 mm)	PNA Measuring System	0 to 60 dB, 10 MHz to 18 GHz
(N)		0 to 60 dB, 10 MHz to 18 GHz
(3.5 mm)		0 to 60 dB, 50 MHz to 26.5 GHz
Waveguide		
(K Band Variable)	Coaxial/Waveguide 6-Port Measuring System	0 to 50 dB, 18 to 26.5 GHz
(K Band Fixed)		0 to 60 dB, 18 to 26.5 GHz
(R Band Variable)		0 to 50 dB, 26.5 to 40 GHz
(R Band Fixed)		0 to 60 dB, 26.5 to 40 GHz
Capacitance		
	Capacitance Measuring System	0.5 aF to 1 μF; 50 Hz to 20 kHz
DC Volts		
	JJ and Data Proof/Jim Marshall System	1, 1.018, and 10 Vdc
Frequency Standard		
	Time and Frequency Measuring System	1, 5, and 10 MHz
Impedance (VSWR)		
(7 mm)	PNA Measuring System	1.0 to 4.0; 10 MHz to 18 GHz
(N)		1.0 to 4.0; 10 MHz to 18 GHz
(3.5 mm)		1.0 to 4.0; 50 MHz to 26.5 GHz
(2.4 mm)		1.0 to 4.0; 45 MHz to 50 GHz



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RICHARD BAZEMORE
NAVAIR METCAL Program Manager

Expiration Date
26 February 2019

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MEASUREMENT AREA		MEASUREMENT STANDARD	MEASUREMENT RANGE
ELECTRICAL/ELECTRONIC (CONT.)			
Inductance			
		Inductance Measuring System	100 μH to 10 H @ 100 Hz and 1 kHz
Magnetics			
		Low, Mid, and High Gauss Measuring System	1 x 10^{-3} to 18 x 10^{3} gauss
Microwave Noise			
	(N)	Microwave Noise Measuring System	ENR ≤ 25 dB, 30 MHz to 18 GHz
	(3.5 mm)		ENR ≤ 25 dB, 30 MHz to 26.5 GHz
RF Power			
Coaxial			
	(3.5 mm)	Direct Comparison System	0.2 to 1 mW, 50 MHz to 26.5 GHz
	(2.4 mm)		0.2 to 1 mW, 50 MHz to 50 GHz
Waveguide			
	(K Band)	Coaxial/Waveguide 6-Port Measuring System	1 μW to 10 mW, 18 to 26.5 GHz
	(R Band)		1 μW to 10 mW, 26.5 to 40 GHz
	(Q Band)		1 μW to 10 mW, 33 to 50 GHz
RF Power Density			
		Power Density Measuring System	1, 5, and 10 mW/cm^2, 0.2 to 300 MHz
			1, 5, and 10 mW/cm^2, 1.7 GHz
			1, 5, and 10 mW/cm^2, 2.45 GHz
			1, 5, and 10 mW/cm^2, 3.0 GHz
			1, 5, and 10 mW/cm^2, 3.8 GHz
			1, 5, and 10 mW/cm^2, 8.2 GHz
			1, 5, and 10 mW/cm^2, 9.3 GHz
			1, 5, and 10 mW/cm^2, 18 GHz
			1, 5, and 10 mW/cm^2, 26.5 GHz
Resistance			
		LOW to MID 6010B System	1.0 Ω to 10 k Ω
		MID 6000B System	10 k Ω to 10 M Ω
Thermal Voltage Converters			
		Thermal Voltage Converter Measuring System	400 mV to 10 V @ 20 and 100 kHz
			400 mV to 10 V @ 1, 10, and 20 MHz
			400 mV to 10 V @ 30, 50, and 100 MHz

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MEASUREMENT AREA	MEASUREMENT STANDARD	MEASUREMENT RANGE
ELECTRO-OPTICS		
Chromaticity		
	Chromaticity Measuring System	x, y, z CIE coordinates
Color Temperature		
	Color Temperature Measuring System	2,100 to 3,000 K
Fiber Optic Linearity		
	Fiber Optic Power Linearity Measuring System	850, 1300, and 1550 nm
Fiber Optic Power		
	Fiber Optic Power Measuring System	-100 to +10 dBm
Fiber Optic Time Delay		
(Length) (Time)	Fiber Optic Time Delay Measuring System	10 to 10,000 m 49 to 48,950 ns
Fiber Optic Wavelength		
	Fiber Optic Wavelength Measuring System	840 to 1560nm
GE Flat Transmittance		
	IR Germanium Flat Transmittance	0 to 100 % Transmission
Illuminance		
	Photometric Illuminance Measuring System	0 to 1,500 Candela 0 to 4,000 fc
Infrared Blackbody Radiometric Temperature		
	Blackbody Radiometric Temperature Measuring System	10 to 90 °C
Infrared Thermometry		
	572 IR Thermometry Measuring System 4181 IR Calibrator	70 to 930 °F 20 to 500 °C
Luminance		
	455/462 Integrating Sphere	1.7 to 6.9 cd/m^2
Luminous Directional Transmittance		
	Luminous Coefficient Measuring System	0 to 1.0 fL/fc (ratio)

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MEASUREMENT AREA	MEASUREMENT STANDARD	MEASUREMENT RANGE
ELECTRO-OPTICS (CONT.)		
Night Vision		
	Night Vision Detector Measuring System	690, 810, and 820 nm
Optical Density		
	Optical/X-Ray Film Density Measuring System	0.2 to 4.0 ND units
Radiometry		
	Laser Energy Measurement System	3 aJ to 50 pJ @ 1064 nm
Ultraviolet		
	Ultraviolet Irradiance Measuring System	0.1 to 2.5 mW/cm^2 @ 365 nm
PHYSICAL/DIMENSIONAL		
Acceleration		
	UD680 Vibration System and NIST 8B6	≤ 1 g, 5 to 160 Hz ≤ 50 g, 10 Hz to 10 kHz
Air Velocity		
Hot Wire Anemometer	24" X 24" Kenney Open Circuit Wind Tunnel	50 to 300 ft/min
Pitot Static Tubes		300 to 5,000 ft/min
Angle – Optical/Dimensional		
	Angle Gage Blocks	1 sec to 45°
Flow		
Gas	MOBLOC	0.002 to 1000 SLPM
	Sonic Nozzle Gas Flow Calibrator	350 to 6,000 SCFM
Liquid	Cox 311AHT, MT250	0.001 to 250 GPM, 1.1 to 27 cSt
Force		
	Morehouse Model L / MH Load Cell Calibrator	0 to 300,000 lbf
Gage Blocks		
	Mahr Federal 130B24/130B16	0.01 to 20 in, 0.50 to 100.0 mm
Gear Wires		
	5528 Laser	2 to 80 pitch

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MEASUREMENT AREA	MEASUREMENT STANDARD	MEASUREMENT RANGE
PHYSICAL/DIMENSIONAL (CONT.)		
Helium Leak		
	Veeco Leak Detector w/NIST Standard Leak	1 x 10^{-9} to 3 x 10^{-6} cc/sec
Humidity		
	Frost Point/Dew Point TSC-4000	-80 to 20 °C
Mass		
	NIST Class 'S' Weight Set	1 mg to 50 kg, 1/8 oz to 110 lbs
Master Balls and Cylinders		
	5528 Laser	≤ 1 in
Optical Cubes/Prisms		
	Elcomat 2000/Elcomat 3000	0 to 360°
Optical Reference Plane		
	Zygo Verifier XP/D	1 to 12 in
Optical Wedges		
	Elcomat 2000/Elcomat 3000	± 1000 arcsec
Piston Area Determination		
	2451-700, 2465-751, 2470-701	0.2 to 40,000 psi
Pressure		
	Schwien 1025LX110-2 2451-700, 2465-751, 2470-701 PG8601	0 to 110 inHg 0.2 to 40,000 psi 0 to 15 kPa
Rotary Indexing Tables and Polygons		
	Elcomat 2000	0 to 360°, 7 to 12 in
Temperature		
	Platinum Resistance Thermometry	-200 to 650 °C
Thread Wires		
	5528 Laser	4 to 80 pitch
Viscometry		
	Fluid Properties, Density Hydrometers, Densiometer	1 to 30 cSt, 68 to 210 °F

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MEASUREMENT AREA	MEASUREMENT STANDARD	MEASUREMENT RANGE
GAS ANALYSIS		
Specialty Gases		
	D309	1.9 % Hydrogen in Air
	D310	1.0 % Hydrogen in Air
	D311	0.2 % Hydrogen in Air
	D313	30 % Helium in Nitrogen
	D314	15 % Helium in Nitrogen
	D317	2.0 % Methane in Air
	D355	0.8 % Oxygen in Nitrogen
	D356	4.0 % Oxygen in Nitrogen
	D420	50 ppm Carbon Monoxide in Air
	D421	400 ppm Carbon Monoxide in Air
	D440	400 ppm Hexane in Air
	D506	50 % Methane in Nitrogen
		10 % Carbon Dioxide in Nitrogen
		2.0 % CFC-12 in Nitrogen
		2.0 % CFC-13 in Nitrogen
		2.0 % CFC-22 in Nitrogen
		0.2 % CFC-113 in Nitrogen
		0.2 % Acetylene in Nitrogen
		0.8 % Ethylene in Nitrogen
		6.0 % Ethane in Nitrogen
		4.0 % Nitrous Oxide in Nitrogen

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