

Maury Calibration Services

DATA SHEET / 2Z-070



Maury Calibration Services

What is Calibration?

Calibration is the process in which a set of operations establish the relationship between values indicated by a measuring system and the known values of the corresponding standard. Since measurement accuracy and traceability depends on this relationship, any measuring equipment or measurement standards used in conjunction with measuring equipment needs to be calibrated to validate the known performance of the standards over time.

How Frequently Should I Calibrate?

Mechanical VNA calibration standards are handled one-by-one in a repetitive manner over days, weeks and months. This results in a lot of wear and tear on precision calibration standards. Any improper use of the standards also result in degradation of performance and hence deviation from the known specifications. It is critical for the standards to be within its known performance specifications to guarantee accurate VNA calibrations. A calibration cycle of 12 months is recommended.

Commercial Calibration

Maury Microwave verifies that all standards meet critical visual, mechanical and/or electrical specifications, as listed in this document. A Certificate of Conformance that guarantees the standards have been validated per internal processes, which comply with ANSI Z540-1, is provided.

ANSI Calibration

Maury Microwave verifies that all standards meet critical visual, mechanical and/or electrical specifications, as listed in this document. A complete set of records that describe the mechanical and/or electrical performance of the standards along with a Calibration Certificate is provided. The Calibration Certificate indicates that standards have been calibrated to our published specifications with NIST traceability and ANSI Z540-1 compliance.

Coaxial Metrology Interface Calibration

Cal Kits Available

1.85mm, 2.4mm, 2.92mm, 3.5mm, 7mm, Type N

Calibration Kit Component	Parameters	Commercial Calibration		ANSI Calibration	
		Service Performed	Calibration Documentation	Service Performed	Calibration Documentation
Shorts	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A
	Pin Depth	Pin depth measured	N/A	Pin depth measured	Pin depth recorded
	Electrical Performance	S11 phase measured over frequency	N/A	S11 phase measured over frequency	S11 phase plotted over frequency
Opens	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A
	Pin Depth	Pin depth measured	N/A	Pin depth measured	Pin depth recorded
	Electrical Performance	S11 phase measured over frequency	N/A	S11 phase measured over frequency	S11 phase plotted over frequency
Fixed Loads	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A
	Pin Depth	Pin depth measured	N/A	Pin depth measured	Pin depth recorded
	Electrical Performance	VSWR measured over frequency	N/A	VSWR measured over frequency	VSWR plotted over frequency
Sliding Loads	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A
	Pin Depth	Pin depth measured	N/A	Pin depth measured	Pin depth recorded
	Electrical Performance	Element VSWR measured over frequency at six positions	N/A	Element VSWR measured over frequency at six positions	Element VSWR plotted over frequency (average)
		Electrical verification (effective return loss) measured over frequency	N/A	Electrical verification (effective return loss) measured over frequency	Electrical verification plotted over frequency (worst case)
	Stability (difference in VSWR between positions) measured over frequency	N/A	Stability (difference in VSWR between positions) measured over frequency	Stability plotted over frequency (worst case)	

Airlines	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A
	Pin Depth	Pin depth measured	N/A	Pin depth measured	Pin depth recorded
	Mechanical Dimensions	Center conductor and outer conductor diameters measured	N/A	Center conductor and outer conductor diameters measured	Center conductor and outer conductor diameters recorded
Adapters	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A
	Pin Depth	Pin depth measured	N/A	Pin depth measured	Pin depth recorded
	Electrical Performance	VSWR measured over frequency	N/A	VSWR measured over frequency	VSWR plotted over frequency
Gages	Visual Inspection	Inspection of damage on mating surfaces and dial indicator	N/A	Inspection of damage on mating surfaces and dial indicator	N/A
	Mechanical Dimensions	Flatness and depth of master measured	N/A	Flatness and depth of master measured	Flatness and depth of master recorded
		Gage accuracy and repeatability tested	N/A	Gage accuracy and repeatability tested	Gage accuracy and repeatability recorded
Torque Wrench	Visual Inspection	Inspection of damage on opening of wrench	N/A	Inspection of damage on opening of wrench	N/A
	Torque Value	Torque value verified	N/A	Torque value verified	Torque value recorded
Documentation	Document Provided	Commercial Calibration Certificate		Certificate of Calibration and Traceability	

Coaxial Dielectric Interface Calibration

Cal Kits Available

BNC, TNC.

Calibration Kit Component	Parameters	Commercial Calibration		ANSI Calibration *	
		Service Performed	Calibration Documentation	Service Performed	Calibration Documentation
Shorts	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A
	Pin Depth	Pin depth measured	N/A	Pin depth measured	Pin depth recorded
	Electrical Performance	S11 phase measured over frequency	N/A	S11 phase measured over frequency	S11 phase plotted over frequency
Opens	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A
	Pin Depth	Pin depth measured	N/A	Pin depth measured	Pin depth recorded
	Electrical Performance	S11 phase measured over frequency	N/A	S11 phase measured over frequency	S11 phase plotted over frequency
Fixed Loads	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A
	Pin Depth	Pin depth measured	N/A	Pin depth measured	Pin depth recorded
	Electrical Performance	VSWR measured over frequency	N/A	VSWR measured over frequency	VSWR plotted over frequency
Sliding Loads	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A
	Pin Depth	Pin depth measured	N/A	Pin depth measured	Pin depth recorded
	Electrical Performance	Element VSWR measured over frequency at six positions	N/A	Element VSWR measured over frequency at six positions	Element VSWR plotted over frequency (average)
		Electrical verification (effective return loss) measured over frequency	N/A	Electrical verification (effective return loss) measured over frequency	Electrical verification plotted over frequency (worst case)
		Stability (difference in VSWR between positions) measured over frequency	N/A	Stability (difference in VSWR between positions) measured over frequency	Stability plotted over frequency (worst case)

Adapters	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A
	Pin Depth	Pin depth measured	N/A	Pin depth measured	Pin depth recorded
	Electrical Performance	VSWR measured over frequency	N/A	VSWR measured over frequency	VSWR plotted over frequency
Gages	Visual Inspection	Inspection of damage on mating surfaces and dial indicator	N/A	Inspection of damage on mating surfaces and dial indicator	N/A
	Mechanical Dimensions	Flatness and depth of master measured	N/A	Flatness and depth of master measured	Flatness and depth of master recorded
		Gage accuracy and repeatability tested	N/A	Gage accuracy and repeatability tested	Gage accuracy and repeatability recorded
Torque Wrench	Visual Inspection	Inspection of damage on opening of wrench	N/A	Inspection of damage on opening of wrench	N/A
	Torque Value	Torque value verified	N/A	Torque value verified	Torque value recorded
Documentation	Document Provided	Commercial Calibration Certificate		Certificate of Calibration and Traceability	

** ANSI compliance based on standards traceable to MMC measurement methodologies*

Waveguide Interface Calibration

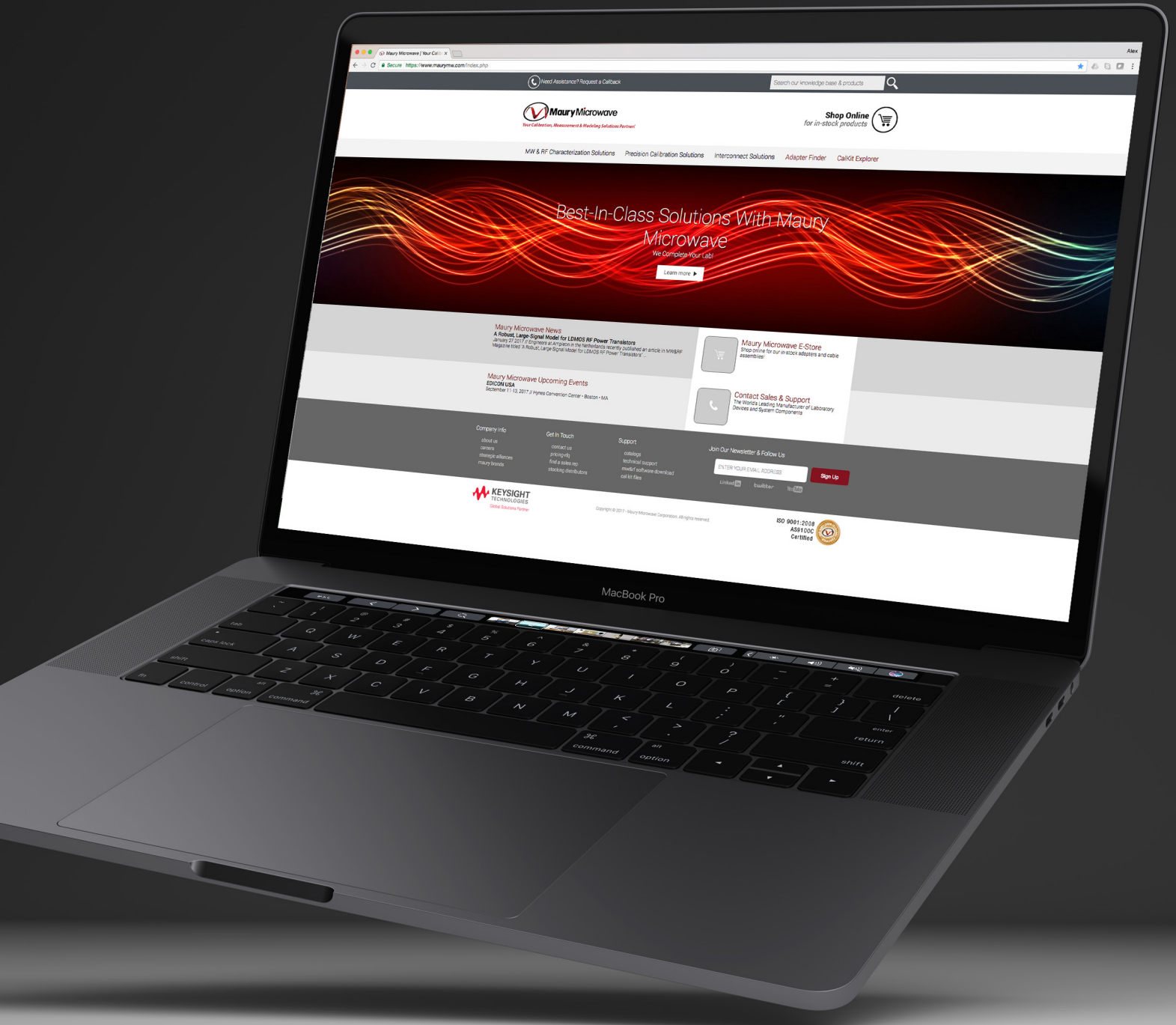
Cal Kits Available

WR284, WR229, WR187, WR159, WR137, WR112, WR90.
WR75, WR62, WR51, WR42, WR34, WR28, WR22.

Calibration Kit Component	Parameters	Commercial Calibration		ANSI Calibration	
		Service Performed	Calibration Documentation	Service Performed	Calibration Documentation
Fixed Flush Shorts	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A
	Mechanical Dimensions	Flatness measured	N/A	Flatness measured	Flatness recorded
Fixed Offset Shorts	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A
	Mechanical Dimensions	Depth measured	N/A	Depth measured	Depth recorded
Fixed Loads	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A
	Electrical Performance	VSWR measured over frequency	N/A	VSWR measured over frequency	VSWR plotted over frequency
Sliding Loads	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A
	Electrical Performance	Element VSWR measured over frequency at six positions	N/A	Element VSWR measured over frequency at six positions	Element VSWR plotted over frequency (worst case)
	Mechanical Dimensions	Waveguide opening dimensions measured	N/A	Waveguide opening dimensions measured	Waveguide opening dimensions recorded
		Indexing pin positions and diameter measured	N/A	Indexing pin positions and diameter measured	Indexing pin positions and diameter recorded
Shims	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A
	Mechanical Dimensions	Waveguide opening dimensions measured	N/A	Waveguide opening dimensions measured	Waveguide opening dimensions recorded
		Indexing pin positions and diameter measured	N/A	Indexing pin positions and diameter measured	Indexing pin positions and diameter recorded
Thickness measured		N/A	Thickness measured	Thickness recorded	

Straight Sections	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; standard evaluated for any other visible mechanical damage	N/A
	Electrical Performance	VSWR measured over frequency	N/A	VSWR measured over frequency	VSWR plotted over frequency
Adapters (Coaxial-to-Waveguide)	Visual Inspection	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A	Mating surfaces inspected for high spots, plating wear & damage; concentricity inspected; standard evaluated for any other visible mechanical damage	N/A
	Pin Depth	Pin depth measured	N/A	Pin depth measured	Pin depth recorded
	Electrical Performance	VSWR measured over frequency	N/A	VSWR measured over frequency	VSWR plotted over frequency
Documentation	Document Provided	Commercial Calibration Certificate		Certificate of Calibration and Traceability	

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