

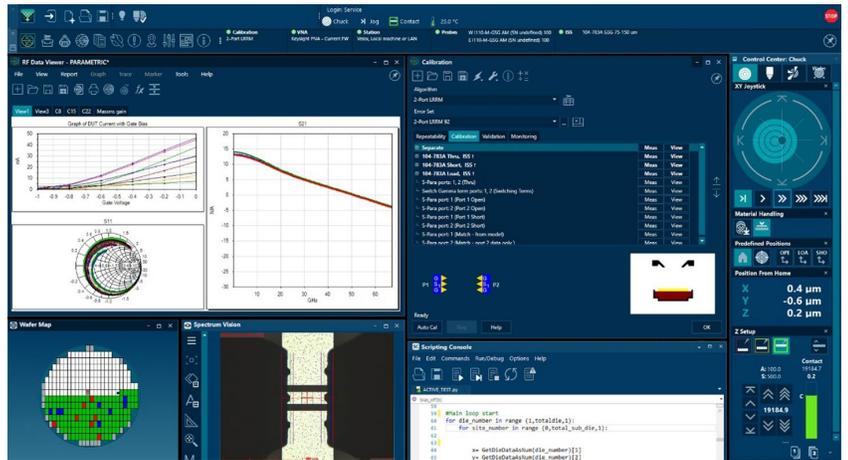
WinCal

High-performance RF Calibration Software

Overview

WinCal 5 software is a comprehensive and intuitive calibration, validation, measurement, and analysis tool to achieve accurate and repeatable on-wafer S-parameters (and other VNA-related) measurements. These measurements are crucial for precision device modeling/characterization and engineering RFIC tests.

The latest version, WinCal 5, introduces a completely new skin and icon concept. The new UI concept and improved workflows make WinCal 5 even better. Integrated multimedia tutorials support the user and guided wizards guide through the workflows.



WinCal 5 can still be used as a standalone version for manual probe stations or fully integrated into FormFactor's Velox Probe Station Control Software for autonomous measurements.

The new WinCal features include exclusive 1-, 2-, 3-, and 4-port calibration algorithms, immediate and live data measurement and viewing, LRRM™, LRM+™, SOLT, SOLR, hybrid LRRM-SOLR and NIST-style multi-line TRL calibrations, as well as an Error Set Management capability for data comparison and augmentation.

NEW: 1-Port Least Squares calibration algorithms

WinCal 5 covers all of FormFactor's probe families - T-Wave™ Probes, Infinity Probes®, ACP™ probes, FPC™ probes and IZI Probes®.

NEW: WinCal 5 automatically downloads the ISS trim map from the FormFactor, Inc. website. This process takes place in the background and reduces manual intervention by the user, making WinCal 5 significantly more efficient than any other RF calibration software available on the market.

➤ Features / Benefits

More than a calibration tool	<ul style="list-style-type: none"> • Calibration • Validation • Measurement • Analysis
No one supports more VNA's	<ul style="list-style-type: none"> • Support of more than 24 of the most common VNA's
Tool for the novice	<ul style="list-style-type: none"> • Guided wizards and multimedia tutorials integrated • Intelligence in setups
Advanced tools	<ul style="list-style-type: none"> • Multi-Port Hybrid Cals • Enhanced Verification and Reports • Post Processing and Sequencing • Work spaces to build custom configurations that include selected combinations of system setup files, calibration setup files, and reports
Full Family of calibration methods	<ul style="list-style-type: none"> • Includes more exotic methods like 16 term SVD which incorporates cross talk • 4 Port Hybrid cals now support more flexible approaches for using GSG iss for cross calibration
Flexible	<ul style="list-style-type: none"> • Standalone for manual probe stations • Fully integrated in Velox Probe station control software
Efficiency	<ul style="list-style-type: none"> • Automatic download of the ISS trim map from the Formfactor, Inc. website

➤ VNA Support

Supported VNAs	Models
Rohde & Schwarz	ZNA (FW 2.31 or later) ZNB (FW 2.6 or later) ZVA ZVB (FW 2.02 or later)
Anritsu	Anritsu VectorStar™ 46xx series 2-port and 4-port, FW 1.2 or later Anritsu ShockLine™ MS46522B 2-port performance VNA Anritsu ShockLine™ MS46524B 4-port performance VNA Anritsu Lightning™ 37xxx-series 2-port, FW 5.03 or later Anritsu Scorpion® MSxxx-series 2-, 3- or 4-port, FW TA2.03
Keysight	PNA-X, FW 9.43 or later PNA, FW 5.0 - 9.3 Keysight 8719 / 8720 / 8722 / 8753 (GPIB only) Keysight ENA E5070/71 needs FOM option for advanced calibrations E5072A A.01.06 or later E5080A uses the PNA current FW driver PXI, FW 3.0 or later 8510C - 7.14, 7.16, 8.10 E5070/71-B FW 6.01 or later E5070/71-C FW 9.3 or later E5061-B FW A.02.06 or later E5063A FW A.01.02, SOLT only
Copper Mountain	All VNA models supported (All FW supported)

ISS Support: T-Wave, Infinity, ACP, FPC Probes

	Pitch (μm)	P/N	Recomm. Upper Freq. (GHz)	Note
THRU	300 to 650 for GSGSG	129-248	67 GHz	General Purpose THRU substrate (Straight, Loop Back, Cross)
	700 to 1250 for GSGSG	129-249	67 GHz	General Purpose THRU substrate (Straight, Loop Back, Cross)
GSGSG	150	126-102	67 GHz	Also supports SGS, SGSG, GSGS configurations
	100 to 125	129-239	67 GHz	Also supports SGS, SGSG, GSGS configurations
	150 to 225	129-240	67 GHz	Also supports SGS, SGSG, GSGS configurations
	250	129-241	67 GHz	Also supports SGS, SGSG, GSGS configurations
GSSG	100 to 150	129-246	67 GHz	Also supports SSG, GSS configurations
	175 to 250	129-247	67 GHz	Also supports SSG, GSS configurations
GSG	100 to 250	101-190	67 GHz	
	75 to 150	104-783	145 GHz*	
	50 to 150	104-909	67 GHz	Mix of GSG & GS/SG
	250 to 1250	106-682	67 GHz	
	150 to 3000	108-010	67 GHz	Recommended > 1250 um pitch
	100 to 500	109-531	67 GHz	Right Angle standards; N-E, N-W, E-W
	100 to 150	114-456	67 GHz < 30 um	For probes with contact widths
	50 to 75	138-356	325 GHz	
	100 to 150	138-357	325 GHz	
	100 to 250	143-033	145 GHz	
	50 to 75	162-641	325 GHz	Verification Lines
	50	185-400	325 GHz	
GS/SG	100 to 250	103-726	67 GHz	
	50 to 150	104-909	67 GHz	Mix of GSG & GS/SG
	250 to 1250	106-683	67 GHz	
	150 to 3000	108-011	67 GHz	Recommended > 1250 um pitch
T-wave TRL	25	165-731	WR-1.0	
	25	172-885	WR-1.0 to WR-5.1	
	50	172-886	WR-2.2 to WR-5.1	
	75 to 100	172-887	WR-3.4 to WR-5.1	

➤ CSR Support : IZI Probes

	Pitch (μm)	P/N	CSR
GSGSG	250	51080	CSR-33
	500	51081	CSR-34
	125	51082	CSR-35
	100	51077	CSR-30
	150	51078	CSR-31
	200	51079	CSR-32
GSSG	100	52379	CSR-40
	125 to 150	51874	CSR-41
	200 to 250	51875	CSR-43
	400 to 600	51876	CSR-44
	250 to 500	41704	CSR-05
GS/SG	50 to 250	56407	CSR-06
	100 to 300	71392	CSR-101, Mix of GSG & GS/SG
	500 to 1250	69061	CSR-16
	1000 to 2500	67074	CSR-18
GSG	250 to 500	41702	CSR-04
	100 to 250	62025	CSR-08
	50 to 150	73319	CSR-09
	500 to 1250	62563	CSR-15
	1000 to 2500	71391	CSR-17
SGS	100	53527	CSR-50
	125 to 150	53528	CSR-51
	200 to 250	53529	CSR-53
	400 to 500	53530	CSR-54

➤ Ordering Information

If you are a new WinCal user, please feel free to test our new WinCal 5. It is available as a 30 Day trial version.

If you are a university, we support you with a specially discounted WinCal 5 University version. This should give you the opportunity to find your way into RF-measurements with few hurdles.

All other users please choose the WinCal 5 Basic license.

Part Number	Description	Note
780-02020	WinCal 5 base version	
780-02021	WinCal 5 base version 30 Day demo	Can only be used once.
780-02022	WinCal 5 upgrade	WinCal 5 Software Update for Base Version, coming from WinCal 4.x or 5.x.
780-02023	WinCal 5 University version	For University's only.

› Compatible System Configurations

- FormFactor's semi- and fully-automated probe stations with Velox 3.3 or later, optional programmable positioners and VNA
- Manual probe stations with VNA
- Virtual mode – simulated VNA, with manual, semi- or fully-automated probe station
- Compatible with a wide variety of probes and calibration standards
- Supports T-Wave, Infinity, ACP, FPC and IZI Probe families
- Supports ISS and CSR calibration standards
- Compatible with most industry standard network analyzers
- Supports Keysight (formerly Agilent), Anritsu, Rohde & Schwarz, Copper Mountain analyzers

› System Requirements

Minimum	5 GB hard disk space available 1024 x 768 display resolution and medium color quality (16-bit) Windows 10 (32 or 64-bit) 1 GHz CPU
Semi-automated probe station control	Velox 3.3 or later
Connected VNA and/or probe station using VISA-based GPIB, LAN or USB	National Instruments hardware: NI-VISA and NI-488.2 version 15.0 or later Keysight hardware: IO Libraries 17.1 or later
Tutorials requirements	Internet Explorer 8.0 or later Windows Media Player 9.0 Sound card and speakers
Recommended requirements for optimal performance	A modern, high-performance CPU 4 GB RAM or more 1280 x 1024 display resolution or better, high color quality (32-bit) Three-button or scroll-wheel mouse to enable panning in RF Data Viewer graphs

© Copyright 2023 FormFactor, Inc. All rights reserved.
FormFactor and the FormFactor logo are trademarks
of FormFactor, Inc. All other trademarks are the property
of their respective owners.

All information is subject to change without notice.

WINCAL-DS-0723

Corporate Headquarters
7005 Southfront Road
Livermore, CA 94551
Phone: 925-290-4000
www.formfactor.com