

# 36584 Series AutoCal<sup>®</sup>

VNMS 4-Port Automatic Calibrators



*Fast, Accurate and Repeatable Vector Network  
Measurement System Calibrations*

# FOUR-PORT AUTOCAL® PERFORMANCE HIGHLIGHTS

- Ideal for the Manufacturing Environment
- Eliminates Unreliable Measurements due to Inaccurate Manual Calibrations
- Decrease Downtime with Fast 2, 3 or 4-Port Calibrations
- Scorpion® VNMS Directly Controls AutoCal Module
- Accuracy that Exceeds OSLT Calibration, with Broadband Loads
- Characterized Modules Traceable to NIST
- Frequency Range of 10 MHz to 9 GHz
- Two-Port Configuration is also Available

## Overview

The 36584 series AutoCal® modules are automatic calibrators that provide fast, repeatable and high-quality coaxial calibration for 2, 3 and 4-port S-parameter requirements. These modules contain precisely characterized calibration standards that aid in the removal of normal systematic errors of Vector Network Analyzers.



## Models

The four-port AutoCal® modules are available with N or K connections as shown in the following table.

Part Number	Description
36584KF	4-Port AutoCal, K(f) type, 10 MHz to 9 GHz
36584NF	4-Port AutoCal, N(f) type, 10 MHz to 9 GHz

## Characterization Data

The AutoCal module is guaranteed to perform within specification for six months without re-characterization. This characterization data is supplied with the module for use during the calibration process.

After six months, the module can be conveniently re-characterized using Scorpion or by returning the module to your local service center. The process to re-characterize the module involves using a high-quality calibration to measure the AutoCal module. The resulting measurements are then saved as characterization data for use during subsequent calibrations.

## Characterization Flexibility

AutoCal includes module characterization disk, power supply and serial cable to support both K and N-type connector calibrations. For measuring devices with other than these connectors, Scorpion enables characterizing the AutoCal module with the desired adapters for subsequent use during auto-calibrations.



# EASY-TO-USE WITHOUT COMPROMISING ACCURACY

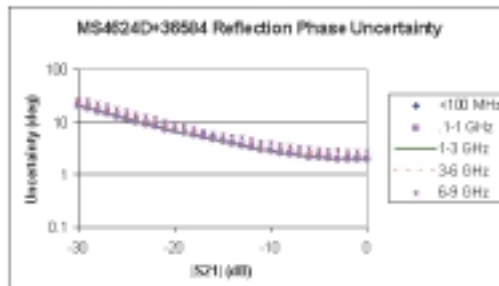
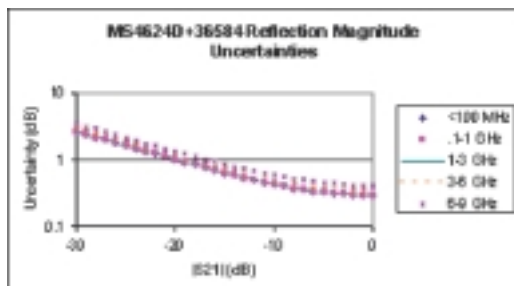
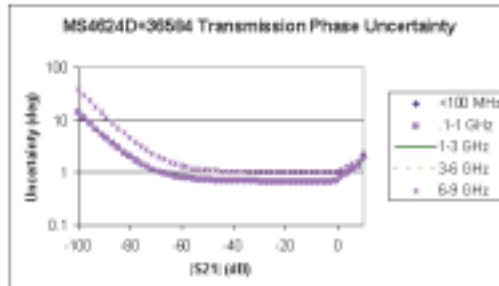
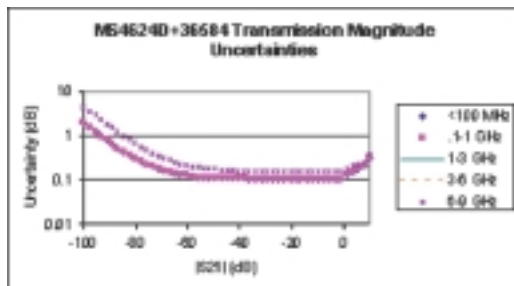
## Easy-to-Use

Compared to the time-consuming manual OSLT calibrations, this auto-calibration approach can dramatically increase DUT throughput by simply reducing the time it takes for calibration. The following photo shows how to use AutoCal instead of the 15-18 component connections typically required for a 4-port calibration. Once connected, Scorpion quickly orchestrates full 2, 3 or 4-port calibrations depending upon the measurement requirements.



## Uncertainties

Repeatable, accurate and stable measurements are expected when characterizing devices in both R&D and manufacturing environments. The following typical uncertainties, as a function of device transmission and match, show how the 36584 AutoCal® module can be used to satisfy the most demanding requirements for accuracy. These calculations are based on a common error model, the specifications for Scorpion and the specifications for the 36584 AutoCal module.



## Do You Want to Know More?

Contact Anritsu for these AutoCal related publications:

2-Port AutoCal Brochure (p/n: 11410-00189)

2-Port AutoCal Automatic Calibrator Application Note (p/n: 11410-00258)

4-Port AutoCal Automatic Calibrator Application Note (p/n: 11410-00298)

Measurement Accuracy Application Note (p/n: 11410-00270)

# SPECIFICATIONS

All specifications are guaranteed over the ambient temperature range of 23 ±3°C.

Directivity:	AutoCal Module
0.01 to 1 GHz	42 dB
1 to 3 GHz	40 dB
3 to 6 GHz	36 dB
6 to 9 GHz	34 dB

Source Match:	
0.01 to 1 GHz	42 dB
1 to 3 GHz	39 dB
3 to 6 GHz	35 dB
6 to 9 GHz	33 dB

## GENERAL

**Serial Input Connector:** 9 pin D-sub allowing PC or VNA control. (Serial Cable supplied)

**Power Supply Input Connector:** +5V, ±15V for the electronic modules, and +5V, +24V for the electromechanical module. The modules are keyed against plugging the wrong supply. The appropriate DC supply is supplied with each AutoCal® module. These universal supplies will operate at either 110V or 220V input voltages.

**Power LED:** On when the DC supply is plugged in.

**Operate LED:** On when the module's internal temperature has stabilized at an optimum temperature for accurate calibrations.

**Dimensions:** 55 H x 170 W x 120 D mm (without connectors)  
(2.25 H x 6.5 W x 4.625 D in.)

## ENVIRONMENTAL

**Operating Temperature:** 18 to 28°C

**Storage Temperature:** -20 to 70°C

**Relative Humidity:** 5% to 95% at 40°C

**EMC:** Conforms to the EMC Directive, 89/336/EEC per EN61326

EN55011:1991  
EN61000-3-2:1995  
EN61000-3-3:1995

Immunity-

EN61000-4-2:1995  
EN61000-4-3:1995  
EN61000-4-4:1995  
EN61000-4-5:1995  
EN61000-4-6:1995  
EN61000-4-11:1995

## ORDERING INFORMATION

**AutoCal Modules:**

36584KF 4-Port AutoCal, K(f) type, 10 MHz to 9 GHz  
36584NF 4-Port AutoCal, N(f) type, 10 MHz to 9 GHz

**Test Port Converter Sets:**

36583S SMA type  
36583L 3.5 mm type  
36583K K type

**Service:**

AutoCal may be sent to the nearest service center for re-characterization or a service engineer may perform the task at the customer's site. To minimize down-time, the customer can re-characterize his own AutoCal module with a Scorpion family VNA and a traditional cal kit.

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**Sales Centers:**

US (800) ANRITSU  
Canada (800) ANRITSU  
South America 55 (21) 286-9141

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Discover What's Possible™

Microwave Measurements Division • 490 Jarvis Drive • Morgan Hill, CA 95037-2809  
<http://www.us.anritsu.com> • FAX (408) 778-0239

**Sales Centers:**

Europe 44 (0) 1582-433433  
Japan 81 (03) 3446-1111  
Canada 65-2822400