

MN4765A

O/E Calibration Module

Lightning™ VNA

Introduction

The MN4765A is a characterized, unamplified photodiode module. It is used as an optical receiver with the Anritsu 37200C/37300C series VNAs to perform highly accurate and stable optoelectronic measurements of both modulators (E/O) and photoreceivers (O/E) to 65 GHz. The MN4765A consists of an InGaAs photodiode that converts modulated optical signals to electrical signals, and includes additional circuitry for temperature and bias stability. The photodiode has exceptional bandwidth response to 65 GHz and a typical responsivity of 0.7A/W. The MN4765A is characterized for 1550 nm in both magnitude and phase using a NIST derived calibration standard.

Features

- **Fast and accurate optoelectronic measurements**—The 37200C/37300C series VNAs, when calibrated using the MN4765A module, enable error-corrected Transfer Function, Group Delay, and Return Loss measurements of E/O and O/E components and subsystems.
- **National Institute of Standards and Technology derived characterization to 65 GHz**—Magnitude and phase characterization is obtained using a primary standard characterized by NIST and held in the Anritsu Calibration Lab. The magnitude and phase data is provided on a diskette with the module.
- **Temperature Stable**—The MN4765A is thermally stabilized to eliminate drift in photodiode performance over temperature.
- **Internal Biasing**—Accurate bias voltage to the photodiode is maintained internally. An external, multi-country, AC adapter is included for easy operation.
- **High Linearity**—Linear operating range to +6 dBm for transfer function measurement uncertainties of <0.5 dB at 50 GHz and <1 dB at 65 GHz
- **High Responsivity**—0.7 A/W (typical)



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Typical Specifications

	Value	Unit	
Frequency Range ^①	0.04 to 65	GHz	
Characterized Wavelength	1550 ±20	nm	
Linear Optical Input Power ^②	<6	dBm	
Max Optical Input Power	10	dBm	
Electrical Return Loss	<50 GHz <65 GHz	<-8 <-5	dB
Operating Wavelength Range	1480 to 1620	nm	
DC Responsivity	>0.55	A/W	
Optical Return Loss	<-24	dB	

① Frequency range over which the MN4765A is calibrated by Anritsu Calibration Lab.

② Linear operating range over which |S21| uncertainty is <0.25 dB.

General

Optical IN: FC/APC

RF OUT: V male

AC Adapter: 100 to 240V (50 to 60 Hz) input, +12VDC output

Power LED: On when the AC adapter is plugged in and the internal photodiode is properly biased.

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

Dimensions: 33 H x 51 W x 127 D mm
(1.3 H x 2.0 W x 5.0 D in.)

Environmental

Operating Temperature: 18 to 28°C^③

Storage Temperature: -20 to 70°C

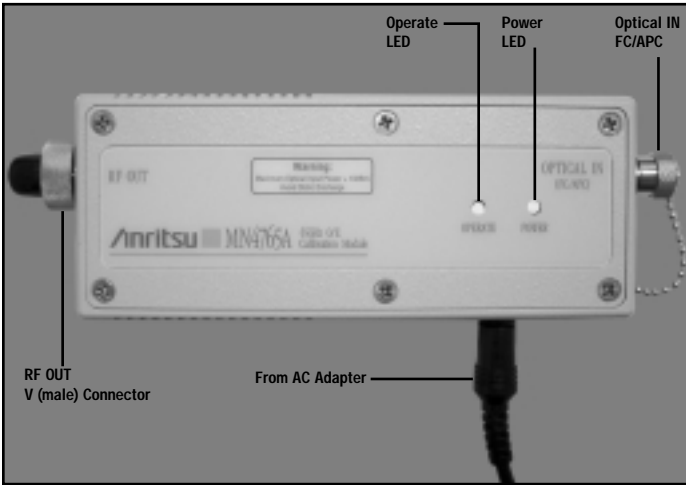
Relative Humidity: 5% to 95%

EMC: Conforms to the EMC Directive, 89/336/EEC per EN61326-1:1998

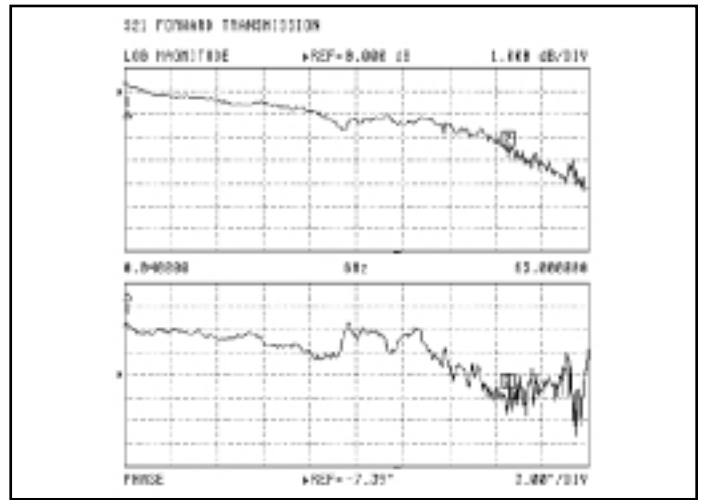
Emissions - Class A, Group 1

Immunity - EN61000-4-2/3/4/5/6/11

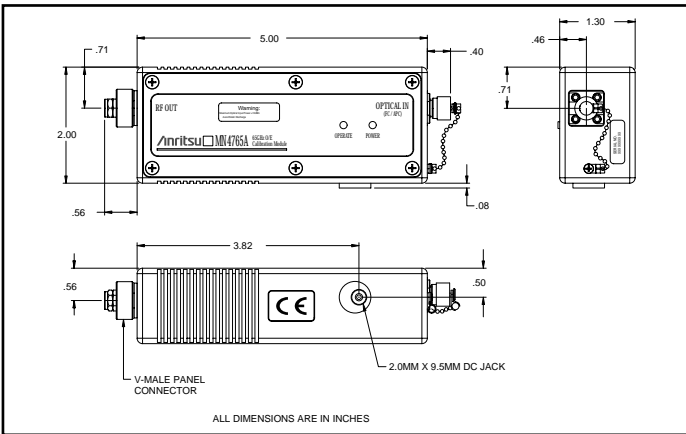
③ Calibrated temperature is 23°C ± 3°C



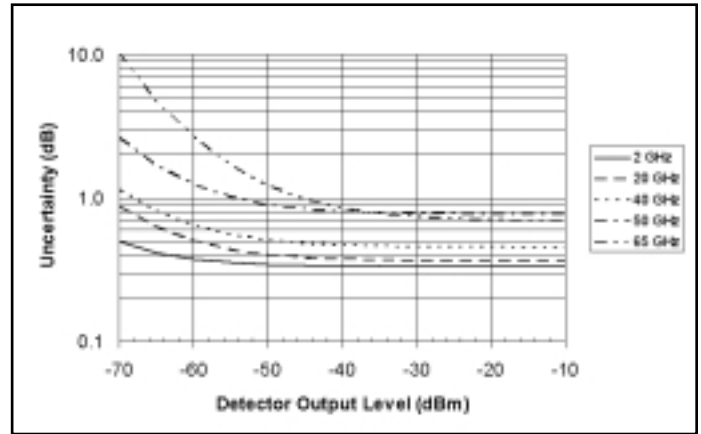
MN4765A Interfaces



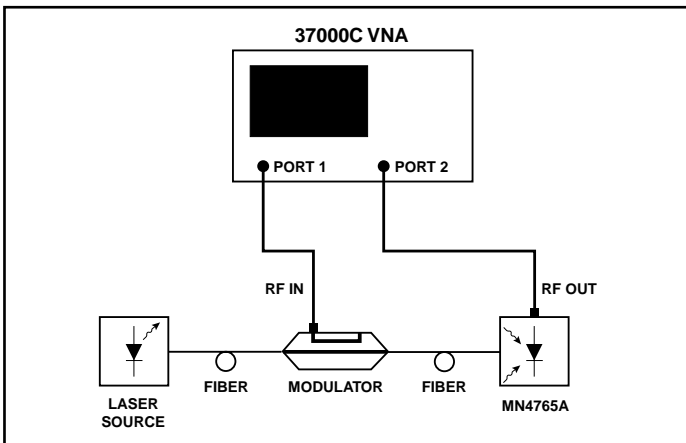
Frequency Response of the MN4765A



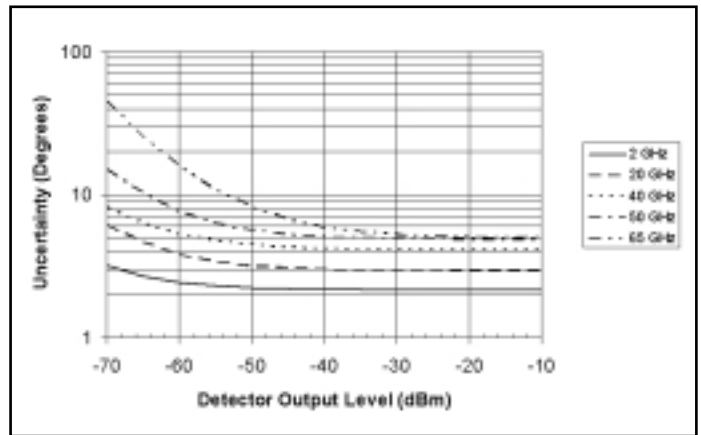
MN4765A Outline Dimensions



O/E Characterization Uncertainty (Magnitude)



General E/O or O/E Measurement Setup®



O/E Characterization Uncertainty (Phase)

④ Refer to "E/O and O/E Measurements with the 37300C Series VNA" Application Note (pn: 11410-00311)

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