

# A0010A 40GHz RIN Measurement System

## Keysight Technologies and SYCATUS

RIN measurement with the world's widest 40 GHz bandwidth  
Best solution for 40G/100G optical TX laser characterization  
Unique and accurate calibration for uncertainty reduction  
Optional function of optical modulation depth measurement

SYCATUS provides A0010A 40 GHz RIN measurement system. A0010A achieves unprecedented 40 GHz RIN (Relative Intensity Noise) spectrum characterization.

RIN characterization becomes the most critical indicator for laser diodes with the evolution of high-speed, multilevel optical transmission systems. The measurement bandwidth is required to be equal to, or more than, the modulation rate of the systems. The RIN measurement is also needed for laser diodes with high-performance, multi-wavelength and high-integration features.

SYCATUS A0010A RIN measurement system realizes world's widest 40 GHz measurement bandwidth with high-sensitivity, low-noise 40 GHz optical receiver and Keysight high-performance X-series signal analyzer. SYCATUS developed unique calibration method, which achieves high accuracy and repeatability.

SYCATUS A0010A RIN measurement system enables the accurate characterization of laser diodes, which improves the performance and the quality of laser diodes. A0010A also reduces the measurement time and accelerate the development and the manufacturing of customer's products.

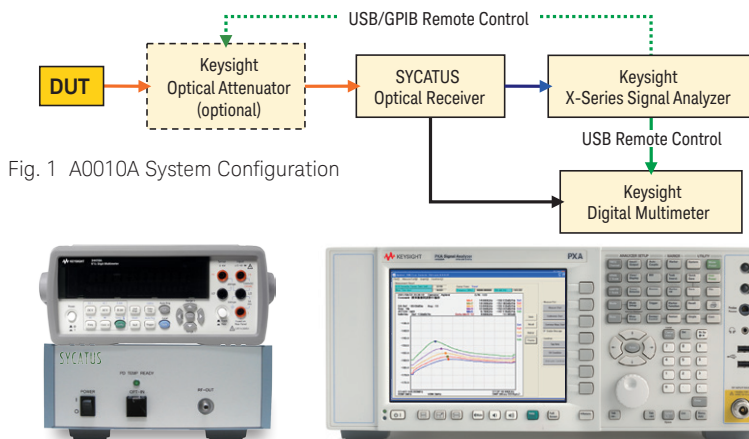


Fig. 1 A0010A System Configuration

### SYCATUS A0010A RIN Measurement System

SYCATUS A0010A RIN measurement system consists of SYCATUS optical receiver, Keysight X-series signal analyzer, Keysight digital multimeter and SYCATUS RIN measurement software. The optical receiver of A0010A RIN measurement system converts the optical signal from DUT to amplified electrical signal. The noise power density in the signal is measured by the Signal Analyzer. The photo current of the optical signal is monitored by the digital multimeter.

SYCATUS applied a unique technique to calibrate the whole system from the input of the optical receiver to the display of the Signal Analyzer, which enables accurate and repeatable RIN measurement.

The system software is installed in the signal analyzer. External PC is not required. Optionally the optical attenuator is attachable to the system to control the optical power into the RIN optical receiver. This stabilization contributes further repeatability and the protection of the RIN optical receiver from excessive optical power.

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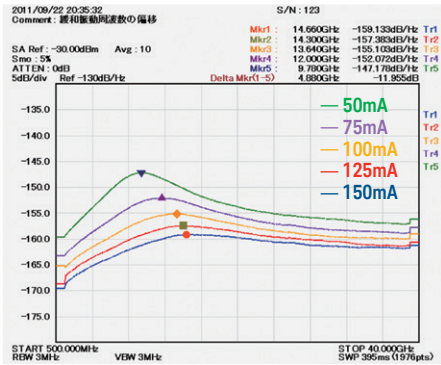


Fig. 2  
40GHz RIN Measurement Example

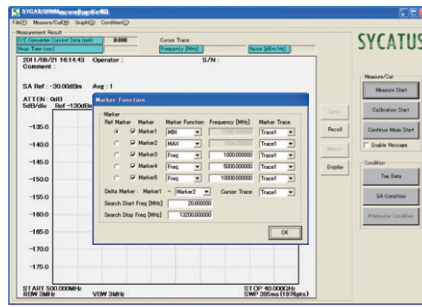


Fig. 3  
RIN Measurement Software User Interface

**SYCATUS**

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 Extending our solutions to meet your needs

## Table 1 System Specifications

Item	Model	Unit	Min.	Typ.	Max.
Optical Wavelength		nm	1260		1625
Measurement Frequency	3 GHz	GHz	0.0001		3
	20 GHz		0.01		20
	26.5 GHz		0.1		26.5
	40 GHz		0.5		40
Optical Input Power	3 GHz	mW			10
	20 GHz				5
	26.5 GHz				
Minimum RIN Measurable Value (1 mW optical input)	3 GHz	dB/Hz	-160		
	20 GHz				
	26.5 GHz				
	40 GHz		-157		
Input Optical Modulation Amplitude Range	OMI (Optional)	mWpp			1
Optical Modulation Index Accuracy (Relative Error, -10 dBm optical input, 10 % OMI)	OMI (Optional)	%		5	15

## Ordering Information

Keysight Technologies

X-Series Signal Analyzer ..... Product No. and option No. below

Model	3 GHz	20 GHz	26.5 GHz	40 GHz
PXA Series	N9030A-503	N9030A-526	N9030A-526	N9030A-544
MXA Series	N9020A-503	N9020A-526	N9020A-526	
EXA Series	N9010A-503	N9010A-526	N9010A-526	N9010A-544

Digital Multimeter ..... 34461A

Optical Attenuator (Optional) ..... 81576A or 81577A, equipped in 8163B

SYCATUS

RIN Measurement System ..... A0010A with option below

Model	3 GHz	20 GHz	26.5 GHz	40 GHz
A0010A	A0010A-003	A0010A-020	A0010A-026	A0010A-040

OMI Measurement (Optional) ..... A0010A-OMI

Other option are available ; contact SYCATUS Sales for more details

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at:

[www.keysight.com/find/contactus](http://www.keysight.com/find/contactus)

