

A0010A RIN Measurement System

SYCATUS Corporation

RIN measurement with the world's widest 50 GHz bandwidth
Noise characterization of lasers for optical TX up to 1.6 Tb/s
Unique and accurate calibration for uncertainty reduction
RIN OMA measurements in accordance with IEEE standards

SYCATUS provides A0010A RIN measurement system, which achieves unprecedented 50 GHz RIN (Relative Intensity Noise) spectrum measurement. RIN becomes one of the most critical indicator for laser diode performance 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 multi-wavelength and high-integration features.

SYCATUS A0010A RIN measurement system realizes world's widest 50 GHz measurement bandwidth with high-sensitivity, low-noise 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 optical TX. A0010A also reduces the measurement time and accelerate the development and the manufacturing of customer's products.

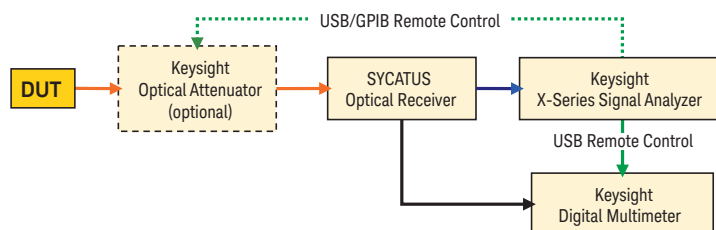


Fig. 1 A0010A System Configuration

SYCATUS A0010A RIN Measurement System

SYCATUS A0010A RIN measurement system consists of SYCATUS optical receiver, RIN measurement software, Keysight X-series signal analyzer and digital multimeter.

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.

RIN measurement 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.

RIN measurement software supports RIN-OMA test for IEEE 802.3 standards.

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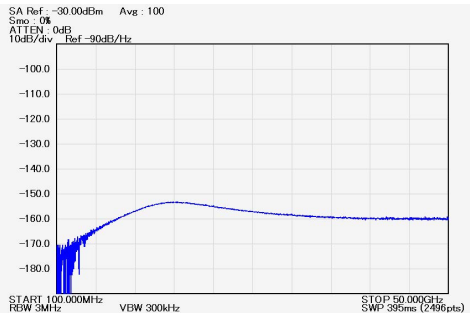


Fig. 2 50 GHz RIN Measurement Example

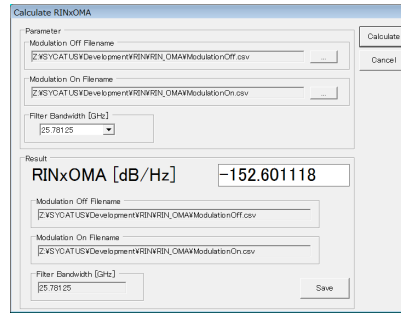


Fig. 3 RIN-OMA Measurement Software User Interface

SYCATUS

SYCATUS Corporation

9-1, Takakuramachi, Hachioji,
Tokyo 192-0033, Japan

TEL : +81-42-660-0881
FAX : +81-42-660-0882
Email : inquiry@sycatus.com
URL : www.sycatus.com/en

Specifications

	Model	Unit	Min.	Typ.	Max.
Optical Wavelength	SM*1	nm	1260		1625
	MM*2		780		1625
Measurement Frequency	3 GHz	Hz	10 k		3 G
	20 GHz		10 M		20 G
	26.5 GHz		100 M		26.5 G
	40 GHz		100 M		40 G
	50 GHz		10 M		50 G
Optical Input Power	3 GHz	mW			10
	20 GHz				
	26.5 GHz				
	40 GHz				5
	50 GHz				
Minimum Measurable RIN Value (1 mW optical input)	3 GHz	dB/Hz	-160		
	20 GHz				
	26.5 GHz				
	40 GHz		-157*3		
	50 GHz				
Input Optical Modulation Amplitude Range	OMI (optional)	mWpp			0.7
Optical Modulation Index Accuracy (Relative Error, -10 dBm optical input, 10 % OMI)	OMI (optional)	%		5	15

Order Information

SYCATUS

RIN Measurement System.....	A0010A with option below					
	Model	3 GHz	20 GHz	26.5 GHz	40 GHz	50 GHz
	A0010A	SM*1 A0010A-003	A0010A-020	A0010A-026	A0010A-040	A0010A-050
		MM*2 A0010A-M03	A0010A-M20	A0010A-M26	A0010A-M40	
OMI Measurement (optional)	A0010A-OMI					

Keysight Technologies

X-Series Signal Analyzer.....	Product No. and option No. below					
	Model	3 GHz	20 GHz	26.5 GHz	40 GHz	50 GHz
	PXA Series	N9030B-503	N9030B-526	N9030B-526	N9030B-544	N9030B-550
	MXA Series	N9020B-503	N9020B-526	N9020B-526	N9020B-544	N9020B-550
	EXA Series	N9010B-503	N9010B-526	N9010B-526	N9010B-544	

Digital Multimeter.....34461A
Optical Attenuator (Optional)..... 81576A or 81577A, equipped in 8163B

*1 for 9 μm single mode fiber interface
*2 for 62.5 μm multimode and 9 μm single mode fiber interfaces
*3 -154 dB/Hz (M40, >30 GHz; 050, >40 GHz)





绿测科技有限公司

广州总部：广州市番禺区陈边村金欧大道83号江潮创意园A栋208室

深圳分公司：深圳市龙华区龙华街道 油松社区东环一路1号耀丰通工业园1-2栋2栋607

南宁分公司：广西自由贸易试验区南宁片区五象大道401号五象航洋城1号楼3519号

广州分公司：广州市南沙区凤凰大道89号中国铁建·凤凰广场B栋1201房

电话：020-2204 2442

传真：020-8067 2851

邮箱：Sales@greentest.com.cn

官网：www.greentest.com.cn



微信视频号



绿测科技订阅号



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