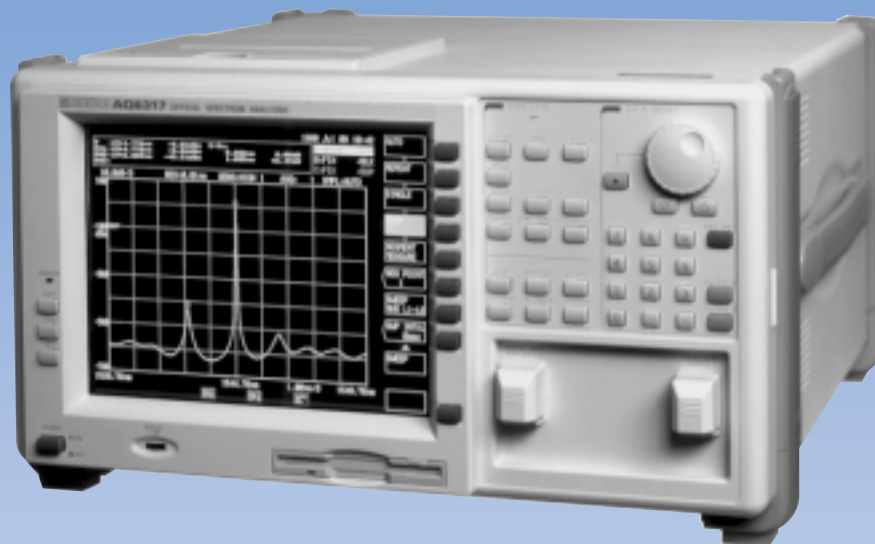


# Optical Spectrum Analyzer AQ6317

*High-resolution optical spectrum analyzer for evaluating D-WDM systems and components.*



# High-resolution optical spectrum analyzer and D-WDM systems and components.

## General

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The AQ6317 is an advanced optical spectrum analyzer for a wide range of applications, including light source evaluation, measurement of loss wavelength characteristics in optical devices, and waveform analysis of WDM (Wavelength Division Multiplexing) systems.

Especially at 1550 nm band, the unit achieves high wavelength accuracy and wavelength linearity, and can evaluate optical devices for WDM. Analysis functions make operation and expandability simple.

The AQ6317 contains the latest of Ando's technology for optical spectrum analyzers. A reference equipment for the next generation.

## Features

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### ● 50 GHz WDM-Signals

High-resolution measurement in a wide 50 GHz spectrum dynamic range.

### ● Versatile analysis functions

Analysis functions for WDM and other optical devices (LD, LED, FBG, etc.)

### ● High wavelength accuracy

Provides  $\pm 0.05$  nm wavelength accuracy in the 1550 nm band, with  $\pm 0.01$  nm wavelength linearity, making it especially useful for high-precision loss wavelength characteristic and other evaluation of WDM devices. The wavelength scale indicates both in air and in vacuum.

### ● Synchronous sweep

In conjunction with a AQ4320 Tunable Laser Source, much higher wavelength resolution/wide dynamic range can be achieved by high-speed synchronous sweep.

### ● High wavelength resolution

Achieves wavelength resolution of 0.015 nm

### ● High sensitivity over a wide band

Covers from 600 nm to 1750 nm and high sensitivity allow measurement of light at down to -90 dBm.

### ● Low polarization dependency

Measurements such as gain of optical amplifier can be proceeded accurately because polarization dependency is suppressed as low as  $\pm 0.05$  dB.

### ● High-level accuracy

Accurate within a  $\pm 0.3$  dB.

### ● High power measurement: Max. +20 dBm (100 mW)

Even high-power output from an optical amplifier can be measured directly without an optical attenuator.

### ● 9.4-inch color LCD

### ● Pulsed light can be measured

### ● Three individual trace memories



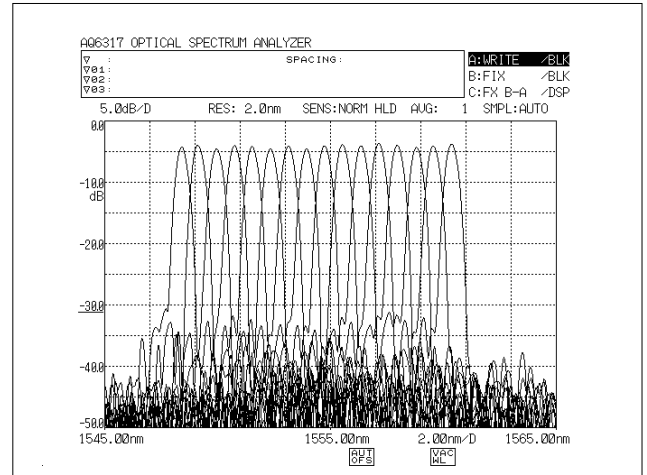
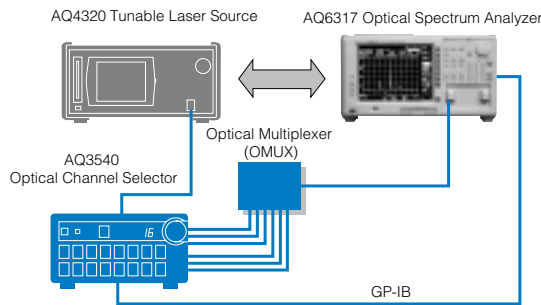
# Analyzer for evaluating

## Applications

### ● Optical Multiplexer evaluation

In conjunction with the AQ4320 Tunable Laser Source, the AQ6317 can achieve high wavelength resolution/wide dynamic range with high-speed synchronous sweep function, and result insertion loss, passed central wavelength and linearity as evaluation parameter of optical MUX/DEMUX.

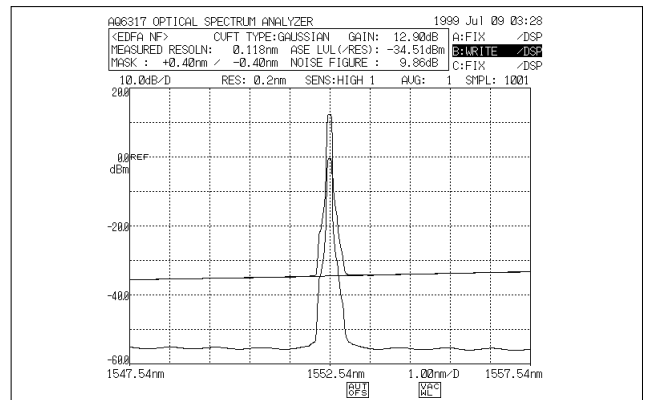
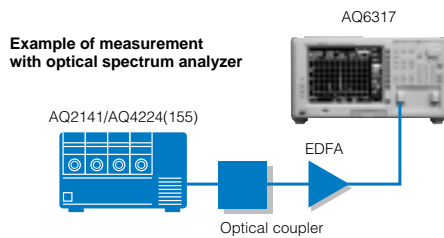
#### Configuration example for measurement with synchronous sweep function



Measures transmission characteristics of 16-channel AWG and displays results on AQ6317's screen.

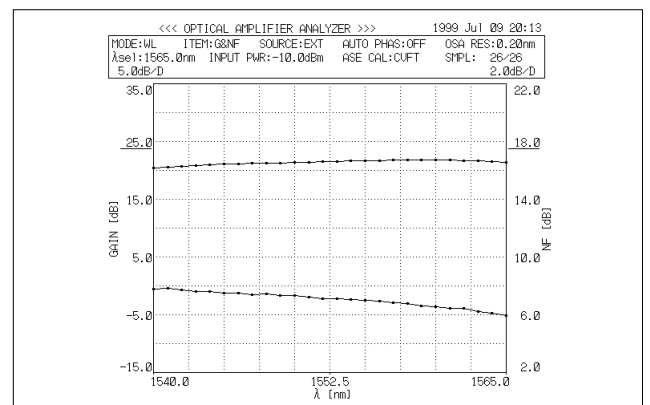
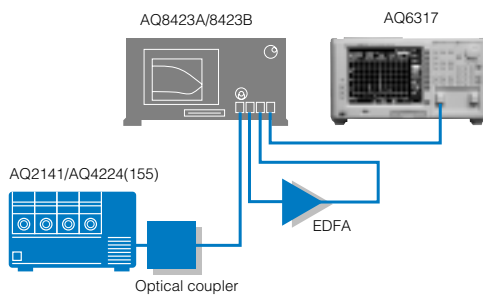
### ● Optical fiber amplifier (EDFA) evaluation

The ASE interpolation method is used to measure gain and NF, key parameters for optical fiber evaluation. In conjunction with the AQ8423A/8423B optical amplifier analyzer, the system can accurately measure gain and NF with the pulse method, which is optimum for evaluation of WDM optical fiber amplifiers.



Measurement example using EDFA analysis function (Measurement result on AQ6317's screen)

#### Example of measurement in combination with optical amplifier analyzer



Measurement example of wavelength dependency of gain and NF of EDFA (Measurement result on AQ8423B's screen)

## Specifications

Applicable fibers		SM, GI (50/125 μm)
Measurement wavelength range <sup>1)</sup>		600 to 1750 nm
Wavelength accuracy <sup>1,3)</sup>		±0.05 nm (1510 to 1580 nm, after calibration with built-in reference light source) ±0.5 nm (600 to 1750 nm)
Wavelength linearity <sup>1,3)</sup>		±0.01 nm (1510 to 1580 nm, resolution setting: 0.01 nm)
Wavelength repeatability <sup>1,3)</sup>		±0.005 nm (1 min.)
Wavelength resolution <sup>1,3)</sup>		Max. resolution: 0.015 nm or better (1510 to 1580 nm, resolution setting: 0.01 nm) Resolution setting: 0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1.0, 2.0 nm
Resolution accuracy <sup>1,3)</sup>		±5 %: (1300 to 1650 nm, resolution: 0.05 nm or more, resolution correction: ON)
Measurement level range <sup>2,3)</sup>		-90 to +20 dBm (1200 to 1650 nm, sensitivity: HIGH3) -80 to +20 dBm (600 to 1200 nm, sensitivity: HIGH3) -60 to +20 dBm (600 to 1750 nm, sensitivity: HIGH3)
Level accuracy <sup>2,3)</sup>		±0.3 dB (1310/1550 nm, input: -30 dBm, sensitivity: HIGH 1-3)
Level linearity <sup>2,3)</sup>		±0.05 dB (Input: +10 to -50 dBm, sensitivity: HIGH 1-3)
Level flatness <sup>2,3)</sup>		±0.1 dB (1510 to 1580 nm)
Polarization dependency <sup>2,3)</sup>		±0.05 dB (1550 nm), ±0.05 dB typ.(1310 nm)
Dynamic range <sup>3)</sup>		60 dB (1523 nm, peak: ±0.2 nm, resolution: 0.01 nm) 70 dB (1523 nm, peak: ±0.4 nm, resolution: 0.01 nm)
Sweep time		Approx. 500msec. (Span: 100 nm or less, sensitivity: NORMAL HOLD, ave.: 1, 501 samples, resolution correction: OFF)
Function	Automatic measurement Setting of measuring conditions	Program function (20 programs, 200 steps), Long-term measurement function Span setting: 0 to 1200 nm Measuring sensitivity setting: NORMAL HOLD/AUTO, HIGH 1/2/3 Number of averaging setting: 1 to 1000 times Sample number setting: 11 to 20001, AUTO Automatic setting function of measuring conditions Sweep-between-marker function Onm sweep function Pulse light measurement function Air/vacuum wavelength measurement function TLS synchronized measurement function
	Trace display	Level scale setting: 0.1 to 10 dB/div, linear Simultaneous display of 3 independent traces Max./Min. hold display Roll averaging display Calculation-between-traces display Normalized display

Function	Trace display	Curve-fit display 3D display Split display Power density display, % display, dB/km display Frequency display of horizontal axis scale
	Data analysis	WDM waveform analysis (Wavelength/Level/SNR list display) Optical fiber amplifiers analysis (GAIN/NF), PMD analysis DFB-LD analysis, FP-LD analysis, LED analysis, SMSR analysis Peak search, bottom search, spectral width search, notch width search Delta marker (max. 100), line marker (analysis range specification) Graph display of long-term measurement results
Memory	Others	Self-wavelength calibration function (using built-in reference light source) Wavelength/Level compensation function, label function, help function
	Built-in FDD	3.5-inch 2HD
	File format	Trace file, program file, measuring conditions file Text file (trace, analysis data, etc.) Graphics file (BMP, TIFF)
Data output	Internal memory	32 traces, 20 programs
	Printer	Built-in high speed printer
Interface	Remote control	GP-IB (2 ports) TLS control interfaces (TTL)
	Others	Sweep trigger input (TTL) Sample enable input (TTL) Sample trigger input (TTL) Analog output (0 to 5V) Video output (VGA)
Display		9.4-inch color LCD (Resolution: 640 x 480 dots)
Optical connector		FC (Standard)
Power requirements		AC 100 to 120/200 to 240 V, 50/60 Hz, approx. 200 VA
Environmental conditions		Operating temperature: 5 to +40 °C Storage temperature: -10 to +50 °C Humidity: 80 %RH or less (No condensation)
Dimensions and mass		Approx. 425(W) x 222(H) x 450(D) mm Approx. 30 kg

### Notes

- 1) Horizontal scale: wavelength display mode
- 2) Vertical scale: absolute power display mode, resolution: 0.05 nm or more, resolution correction: OFF
- 3) At 23±3 °C, with 10/125 μm single mode fiber, after 2 hours of warm-up.

Specifications are subject to change without notice.

### ANDO ELECTRIC CO., LTD.

19-7, Kamata 4-chome, Ota-ku, Tokyo, 144-0052 Japan Phone: +81(0)3 3733 1151 Fax: +81(0)3 3739 7310

### ANDO CORPORATION

HEADQUARTERS: 2021 N. Capitol Avenue, San Jose, CA 95132, U.S.A. Phone: +1 408 941 0100 Fax: +1 408 941 0103

EAST OFFICE: 7617 Standish Place, Rockville, MD 20855, U.S.A. Phone: +1 301 294 3365 Fax: +1 301 294 3359

### ANDO EUROPE B.V.

HEADQUARTERS: "Vijverdam", Dalsteindreef 57, 1112XC Diemen, The Netherlands Phone: +31(0)20 698 1441 Fax: +31(0)20 699 8938

NIEDERLASSUNG DEUTSCHLAND: Nymphenburger Straße 119 B, D-80636 München, Germany Phone: +49(0)89 143 8150 Fax: +49(0)89 143 81555

### ANDO ELECTRIC SINGAPORE PTE. LTD.

19 Kim Keat Road #05-03, Jumbo Industrial Building, Singapore 328804 Phone: +65 251 1391 Fax: +65 251 1987

### ANDO ELECTRIC INC.

7F-1, No. 346 Pei-Ta Road, Hsin Chu, Taiwan Phone: +886 35 28 4168 Fax: +886 35 28 4110

Please visit our website for more information: [www.ando.com](http://www.ando.com)