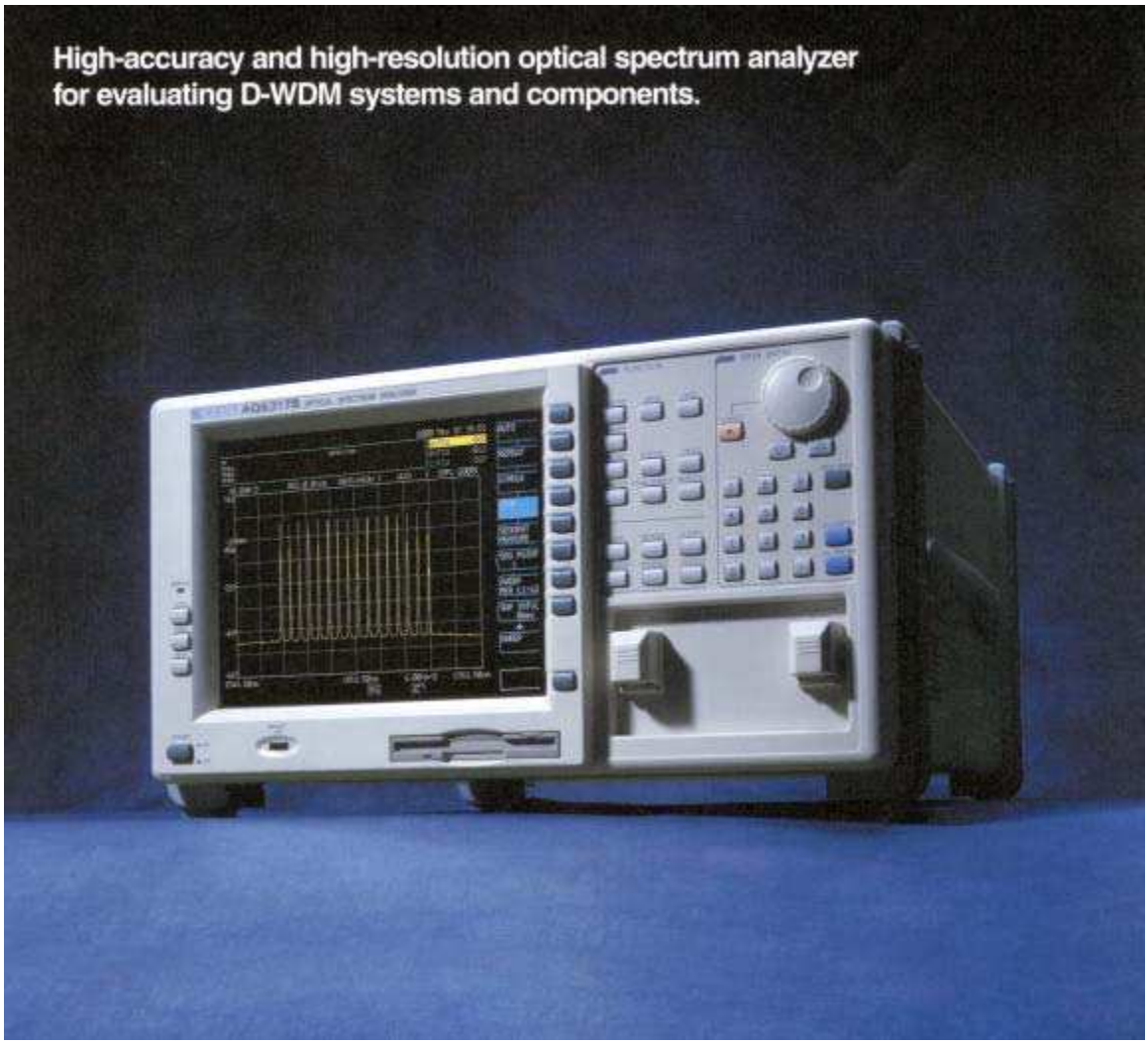
Optical Spectrum Analyzer
6317B



High-accuracy and high-resolution optical spectrum analyzer for evaluating DWDM systems and components

The AQ6317B 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 C-band and L-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 AQ6317B contains the latest Ando technology for optical spectrum analyzers. A reference equipment for the next generation.

In comparison with the former model, the wavelength accuracy of the AQ6317B has been improved to ±20 pm, and it is specified as for the L-band as well WDM analysis function and notch width analysis function are improved, and multi-channel N F analysis function and optical filter analysis function are newly added. Lt has become much easier to use with other improvements, such as sweep speed-up.

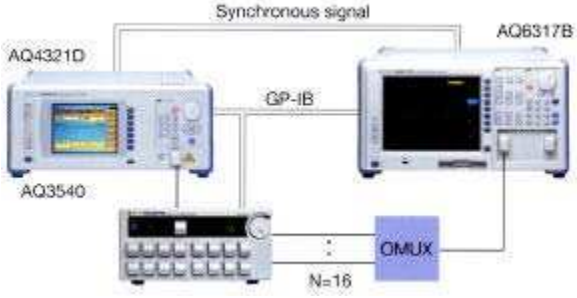
Features

- **Wide dynamic range for 50 GHz WDM-Signals** The dynamic range is 70 dB at peak ±0.4 nm, and 60 dB at peak ±0.2 nm. High-resolution measurement achieves wide dynamic range with 50 GHz spacing WDM system.
- **High wavelength accuracy** Provides ±0.02 nm wavelength accuracy at 1520to 1580 nm, and ±0.04 nm at 1580to1620 nm, with ±0.01 nm wavelength linearity, making it especially useful for high-precision loss wavelength characteristics and other evaluation of WDM devices. The wavelength scale indicates both in air and in vacuum.
- **High wavelength resolution** Achieves wavelength resolution of 0.015 nm.
- **Versatile analysis** functions Analysis functions for WDM and other optical devices (LD, LED, FBG, etc).
- **Synchronous sweep** In conjunction with an AQ4321 Tunable Laser Source, much higher wavelength resolution/wide dynamic range can be achieved by high-speed synchronous sweep.
- **High sensitivity** High sensitivity allows measurement of light at down to -90 dBm, covering from 1200to1650 nm.
- **Low polarization dependency** Measurements such as gain of optical amplifier can be preceded accurately because polarization dependency is suppressed as low as ±0.05 dB.
- **High-level accuracy** Accurate within ±0.3 dB.
- **High power measurement: Man +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**

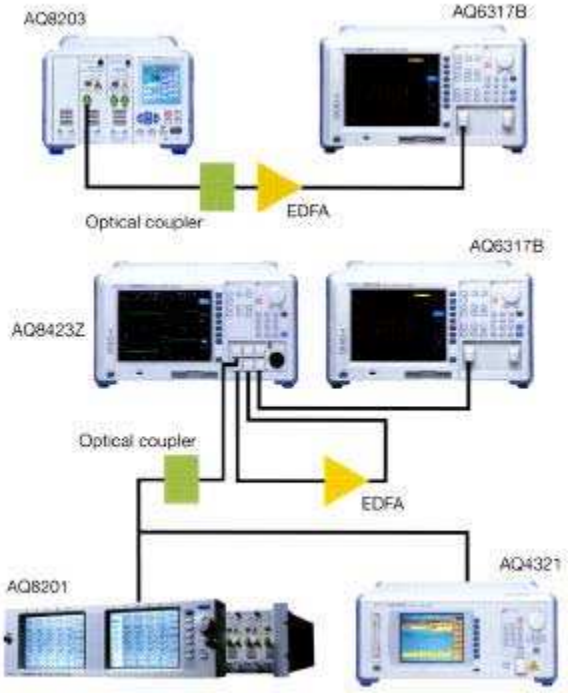
Applications

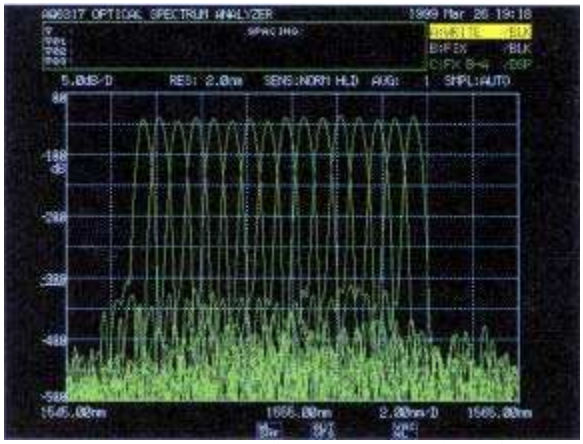
• **Optical Multiplexer evaluation** In conjunction with the AQ4321 Tunable Laser Source, the AQ6317B can achieve high wavelength resolution/wide dynamic range with high-speed synchronous sweep function, and result insertion loss, passed central wavelength and linearity as evaluation parameter of optical M UX/DEMUX.

Configuration example for measurement with synchronous sweep function

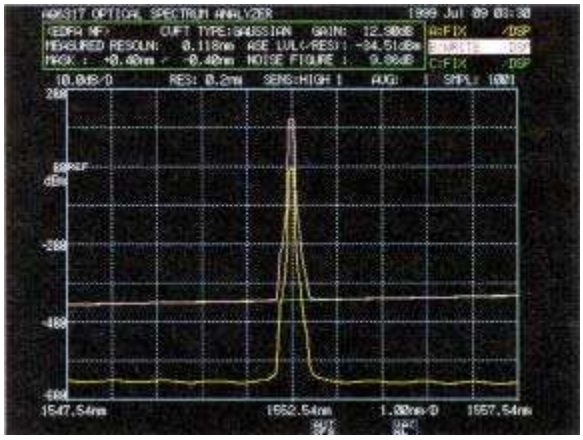


• **Optical fiber amplifier (EDFA) evaluation** The ASE interpolation method is used to measure gain and NF, key parameters for optical fiber amplifier evaluation. In conjunction with the AQ8423Z optical amplifier analyzer, the system can accurately measure gain and NF with the pulse method, which is optimum for evaluation of WDM optical fiber amplifiers.

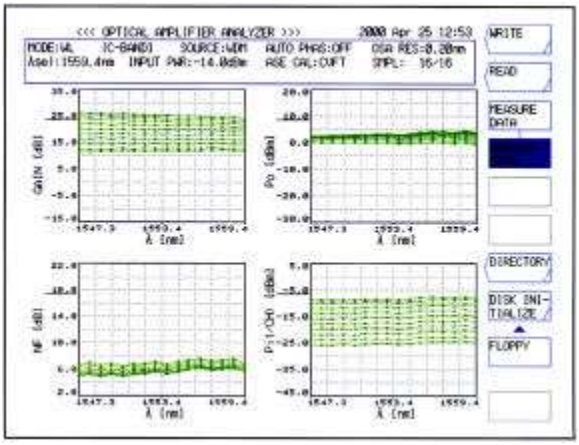




Measures transmission characteristics of 16-channel AWG and displays results on AQ6317B's screen.



Measurement example using EDFA analysis function (Measurement results on AQ6317B's screen)



Measurement example of wavelength dependency of gain/NF of EDFA (Measurement results on AQ8423Z's screen)

Specifications

Applicable fibers		SMF GI (50/125 Nm)
Measurement wavelength range ❶		600 to 1750 nm
Wavelength accuracy ❶,❷		±0.02nm (1520 to 1580nm , after calibration with build-in reference light source) ±0.04 nm 91580 to 1620nm , after calibration with build-in reference light source) ±0.5 nm (600 to 1750nm)
Wavelength linearity ❶,❸		±0.01nm (1520 to 1580nm) ±0.02nm (1580 to 1620nm)
Wavelength repeatability ❶,❸		±0.005 nm (1 min)
Wavelength resolution ❶,❸		Max. resolution: 0.015nm or better 91520 to 1620nm, resolution setting: 0.01nm) Resolution setting: 0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1.0, 2.0nm
Resolution accuracy ❷,❸		±5 %: (1300 to 1650nm, resolution: 0.05nm or more, resolution correction: ON)
Measurement level range ❷,❸		-90 to +20dBm (1200 to 1650nm, sensitivity: HIGH3) -80 to +20 dBm (1000 to 1200nm, sensitivity: HIGH3) -60 to +20 dBm (600 to 1000nm, sensitivity: HIGH3)
Level accuracy ❷,❸		±0.3 dB (1310/1550nm, input: -30dBm, sensitivity: HIGH 1-3)
Level linearity ❷,❸		±0.05 dB (input: +10 to –50 dBm, sensitivity: HIGH1-3
Level flatness ❷,❸		±0.1 dB (1520 to 1580 nm), ±0.2 dB (1580 to 1620nm)
Polarization dependency ❷,❸		±0.05 dB (1550/1600nm), ±0.05 dB typ. (1310nm)
Dynamic range ❸		60 dB (1523nm, peak ±0.2nm, resolution: 0.01nm) 70 dB (1523nm, peak ±0.4nm, resolution: 0.01nm) 45 dB (1523nm, peak ±0.2nm, resolution: 0.1nm)
Sweep time		Approx. 500 ms (Span: 100nm or less, sensitivity: NORM, HOLD, ave.: 1, 501 samples, resolution correction: OFF Approx. 0.5 min (Span: 100nm or less, sensitivity: HIGH2, ave.: 1, 501 samples, NO signal)
Function	Automatic measurement	Program function 920 program, 200 steps), Long term measurement function
	Setting of measurement conditions	Span setting; 0 to 1200nm Measuring sensitivity setting: NORMAL HOLD/AUTO, MID, HIGH 1/2/3 Number of averaging setting: 1 to 1000 times Sample number setting: 11 to 20001, AUTO Automatic setting function of measurement conditions 0nm sweep function Pulse light measurement function TLS synchronized measurement function

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 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 amplifier analysis (GAIN/NF, Single/Multi channel), PMD analysis, Optical filter analysis, DFB-LD analysis, FP-LD analysis, SMSR analysis, Peak search, spectral width search, notch width search Delta marker (max. 200), line marker (analysis range specification) Graph display of long-term measurement result
	Others	Self-wavelength calibration function 9using built-in reference light source Wavelength/Level compensation function, label function, help function
Memory	Build-in FDD	3.5-inch 2HD
	Internal memory	32 traces, 20 programs
	File format	Trace file, program file, measuring condition file, Text file (trace, analysis data, etc.), Graphics file (BMP, TIFF)
Data output	Printer	Built0in 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 5 V) Video output (VGA)
Display		9.4-inch color LCD (Resolution: 640×480 dots)
Optical connector		FC (Standard)
Power requirements		AC 100 to 120/200 to 240 V, 50/60 Hz
Environmental conditions		Operating temperatures: 5 to 40℃ Storage temperature: -10 to +50℃ Humidity: 80%RH or less (No condensation)
Dimensions and mass		Approx, 425 (W) × 222 (H) × 450 (D) mm, approx. 30 kg

Notes:

❶ *Horizontal scale: wavelength display mode*

❷ *Vertical scale: absolute power display mode, resolution: 0.05nm or more, resolution correction: OFF*

❸ *At 15 to 30℃, with 10/125 μm single mode fiber, after 2 hours of warm-up, after optical alignment*

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