Optical Spectrum Analyzer AQ6319

A new-generation Optical Spectrum Analyzer for high-precision ultra-DWDM signal analysis

A new-generation OSA for peerless optical performance

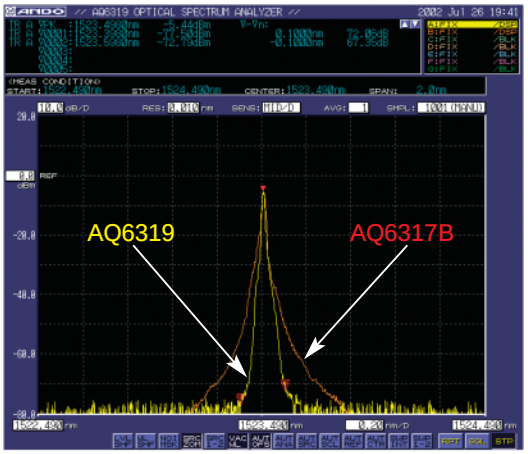
In the last few years, the evolution of DWDM systems has led to breathtaking advances in communication systems. Yet, the research toward next-generation optical communication systems such as larger-capacity systems and high-performance photonic networks still progresses. This requires the optical spectrum analyzers to have more advanced performance which is essential to evaluations of such high-performance optical devices and transmission systems.

To meet the demand, Ando applied its experience and technology to develop the AQ6319 — a next-generation optical spectrum analyzer featuring state-of-the-art optical performance — wavelength resolution of 10pm, wavelength accuracy of ±10pm and close-in dynamic range of 60dB at peak ±100pm. The measurement time has been drastically reduced to as low as 1/5 compared to conventional models. With such user-friendly features as a new user interface and compatibility with various external interfaces, this OSA offers the best testing conditions with a wide range of applications from R&D through evaluation and production lines.

Features

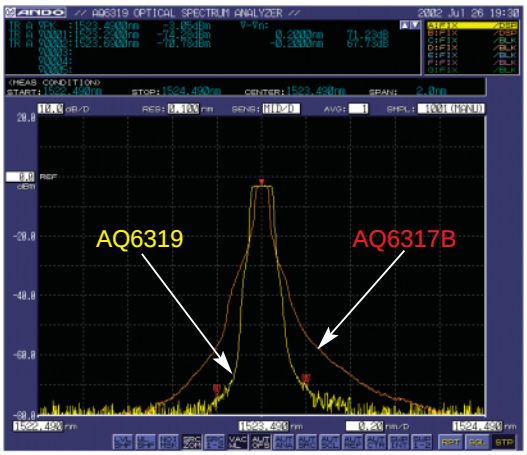
●Best optical performance

- •High wavelength accuracy: ±10pm
- •High wavelength resolution: 10pm
- •High wavelength resolution accuracy: ±2%
- •Wide close-in dynamic range



Wavelength resolution at 0.01nm

Close-in dynamic range:
60dB at peak ±100pm
70dB at peak ±200pm



Wavelength resolution at 0.1nm

Close-in dynamic range:
60dB at peak ±200pm

●Fast sweep and quick response

- •Measurement time is as low as 1/5 compared to the conventional models (AQ6317 Series)*
- •Faster auto-ranging in all sensitivities
- •Quicker key response as measurement conditions change

*Depends on measurement settings and input light condition.

●User-friendly GUI and powerful functions

- •Easy operation with mouse/keyboard
- •Compatible with multiple interfaces (GP-IB, LAN, printer, etc.)
- •Large data storage area and fast data transfer (FTP)
- •Enhanced built-in applications

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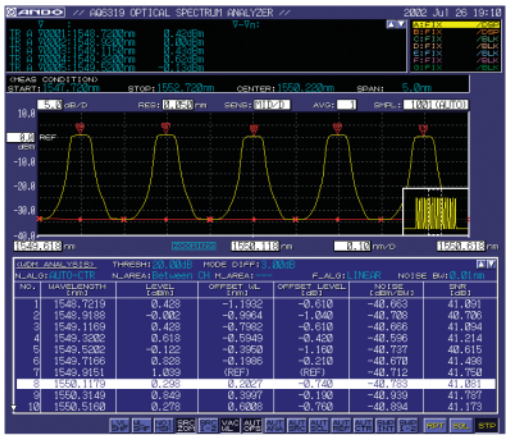
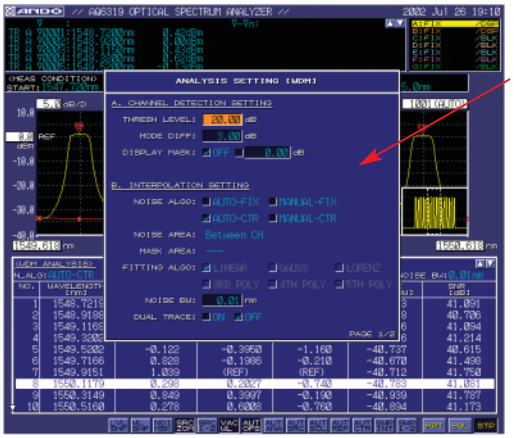
●Powerful functions



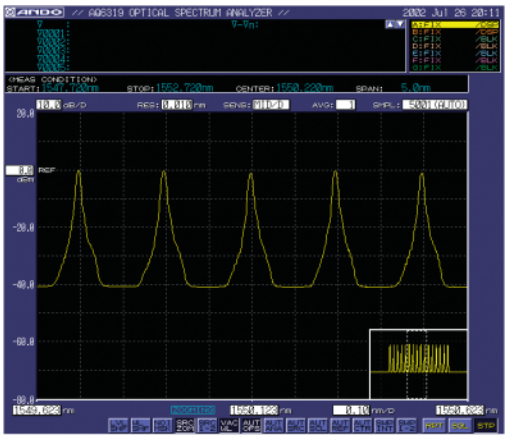


- Waveform zooming and display overview window
- Automatic interpolation setting function
- Selectable display mode (Trace and Table/Table/Trace)
- OSNR/Gain/NF measurement function
- Parameter dialog display simplifies setting

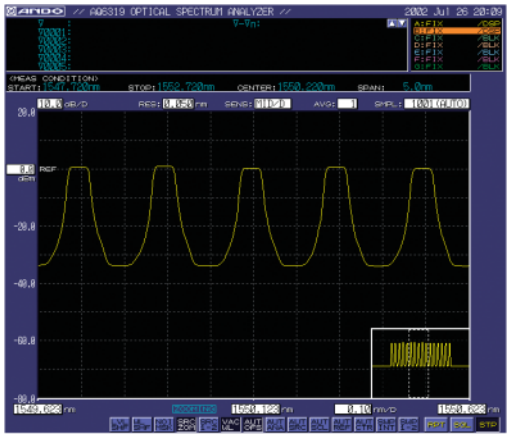
Measurement examples

●25GHz spacing DWDM signals

OSNR 40dB (@Noise BW=0.01nm)



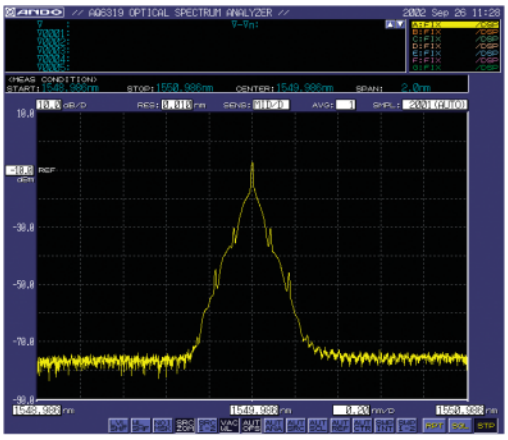
Wavelength resolution at 0.01nm



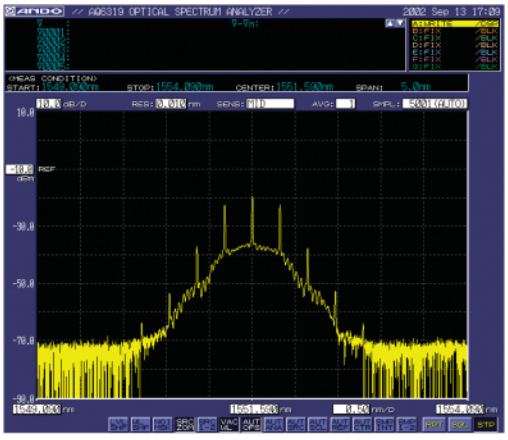
Wavelength resolution at 0.05nm

The wide close-in dynamic range makes it possible to accurately measure OSNR of DWDM signals with 25GHz (or narrower) spacing. Even at 0.05nm resolution setting, ASE noise between channels can be measured flatly.

●Modulated signal measurement



10Gbps, NRZ, PRBS 2^31, wavelength resolution at 0.01nm



40Gbps, RZ, PRBS 2^7, wavelength resolution at 0.01nm

With its high resolution and wide close-in dynamic range, a side-band at 10Gbps or 40Gbps modulated signal can be observed clearly.

Specifications

Applicable fiber		SM (9.5/125µm), GI (50/125µm)
Measurement wavelength range		600 to 1700nm
Span		0.1nm to full range and zero span
Wavelength accuracy[1), 2), 3), 4)]		±10pm (1520 to 1580nm, after calibration with built-in source) ±20pm (1450 to 1520nm, after calibration with built-in source) ±20pm (1580 to 1620nm, after calibration with built-in source) ±50pm (Full range, after calibration with built-in source)
Wavelength linearity[1), 2), 3), 4)]		±10pm (1520 to 1580nm, after calibration with built-in source) ±20pm (1450 to 1520nm, after calibration with built-in source) ±20pm (1580 to 1620nm, after calibration with built-in source)
Wavelength repeatability[1), 2), 3), 4)]		±2pm (1min. or less, 1450 to 1620nm)
Number of samplings		101 to 50001
Resolution bandwidth		0.01, 0.02, 0.05, 0.1, 0.2, 0.5 and 1nm
Resolution accuracy[1), 3), 4), 5)]		±2% (RES.: 0.1nm or wider, 1450 to 1620nm) ±2.5% (RES.: 0.05nm, 1450 to 1620nm) ±6% (RES.: 0.02nm, 1450 to 1620nm)
Level sensitivity setting[6)]		NORM_HOLD, NORM_AUTO, MID, HIGH 1, HIGH 2 and HIGH 3
Level sensitivity[1), 3), 5), 7)]		-90dBm (1250 to 1620nm, RES.: 0.05nm or wider, SENS.: HIGH 3) -80dBm (1000 to 1250nm, RES.: 0.05nm or wider, SENS.: HIGH 3) -60dBm (800 to 1000nm, 1620 to 1680nm, RES.: 0.05nm or wider, SENS.: HIGH 3)
Level accuracy[1), 5), 7), 8)]		±0.3dB (1550/1600nm, 0/-20dBm, RES.: 0.02nm or wider) ±0.3dB (1310nm, 0/-20dBm, RES.: 0.05nm or wider)
Level linearity[1), 3), 5), 7)]		±0.05dB (-50 to +10dBm, RES.: 0.02nm or wider, SENS.: HIGH 1 to 3)
Level flatness[1), 5), 7), 8)]		±0.1dB (1520 to 1620nm, -20dBm, RES.: 0.02nm or wider)
Level stability[1), 5), 7), 8)]		±0.01dB at 1min., ±0.02dB at 15min. (1550/1600nm, -20dBm, RES.: 0.05nm or wider)
Maximum input power[1)]		+23dBm (Per channel, Full span, Attenuation on)
Safe max. input power[1)]		+27dBm (Total safe power, Attenuation on)
Close-in dynamic range[1), 5), 7), 9)]		40dB (±50pm from peak at 1523nm, RES.: 0.01nm) 60dB (±100pm from peak at 1523nm, RES.: 0.01nm) 70dB (±200pm from peak at 1523nm, RES.: 0.01nm) 60dB (±200pm from peak at 1523nm, RES.: 0.1nm)
Polarization dependency[1), 5), 7)]		±0.05dB (1520 to 1620nm, RES.: 0.02nm or wider) ±0.07dB (1450 to 1520nm, RES.: 0.02nm or wider) ±0.07dB (typ.) (1310nm, RES.: 0.05nm or wider)
Sweep time		0.5 sec. (any 100nm, SMPL.: 1001, SENS.: NORM_HOLD)[10)] 1 sec. (any 100nm, SMPL.: 1001, SENS.: MID)[10)] 3 sec. (any 100nm, SMPL.: 1001, SENS.: HIGH 1)[10)] 15 sec. (any 100nm, SMPL.: 1001, SENS.: HIGH 3)[11)] 120 sec. (any 100nm, SMPL.: 1001, SENS.: HIGH 3 with chop mode on)[11)]
Function	Automatic measurement	Program function (64 programs, 200 steps)
	Setting of measuring conditions	Span setting: 0 to 1100nm, Number of averaging setting: 1 to 999 times, Automatic measuring condition setting function, Sweep between line markers function, 0nm sweep function, External trigger measurement function, Air/Vacuum wavelength measurement function

Function	Display	Level scale setting: 0.1 to 10dB/div., Vertical division number setting: 8, 10 or 12, Ref. level position setting function, Linear scale display, Simultaneous display of 7 independent traces, Data table display, Label display, Split display, Normalized display, Curve-fit display,
Function	Display	Power density display, % display, dB/nm display, dB/km display, Template display, Horizontal scale zoom in/out display, Frequency display of horizontal axis scale
	Trace	7 independent traces, Max./Min. hold, Calculate between traces, Roll average, Normalize, Curve-fit
	Marker/Search	Delta marker (Max. 1024), Line marker, Peak search, Next peak search, Bottom search, Next bottom search, Auto search, Peak/Bottom search between line markers, Search in the zooming area
	Analysis	WDM analysis, EDFA analysis, Optical filter analysis, WDM filter analysis, Spectral width, Notch width, SMSR analysis, PMD analysis, LED/FP-LD/DFB-LD analysis, Power analysis, Go/NoGo judgment, Auto analysis, Analysis between line markers, Analysis in the area
	Ethernet	TCP/IP Protocol, FTP function
	External printer[12)]	ESC/P
	Others[13)]	Self wavelength calibration with built-in reference light source Optical alignment with built-in reference light source
Memory	Build-in FDD (3.5-inch 2HD)	MS/DOS format
	Internal memory	32 traces, 20 programs
	File format	Binary/CSV(Text), BMP/TIFF
Printer		Built-in high-speed thermal printer
Interface	Remote control	AQ6317 Series compliant commands (IEEE488.1), IEEE488.2 full support
	Others	GPIB x 2, RS232C, Printer port, External SVGA, PS/2 x 2, LAN
Display		10.4-inch color LCD (Resolution: 800 x 600 dots)
Optical connector[14)]		AQ9447 (*) connector adapter: optional
Power requirement		100 to 240 (±10%) V, 50/60Hz, approx. 400VA
Environmental conditions		Operating temperature: +5 to +40°C Storage temperature : -10 to +50°C Humidity: 80%RH or less (no condensation)
Dimensions and mass[15)]		Approx. 425 (W) x 222 (H) x 500 (D) mm, 33kg
Accessories		Power cord: 1, printer paper: 1, instruction manual: 1

Notes:

1) With 9.5/125µm SMF, after 1 hour warm-up, after optical alignment
2) At 15 to 30 °C
3) At chop mode off
4) Horizontal scale: wavelength display mode
5) At 23 ± 3 °C
6) Internal chop mode available at HIGH1 to 3 sensitivity settings
7) With applied input fiber Type B1.1 9.5/125µm SMF defined on IEC60793-2 (Mode field diameter: 9.5µm, NA: 0.104 to 0.107, PC polished), attenuation off, vertical scale: absolute power display mode
8) Sensitivity setting is MID, HIGH1 to 3 and chop mode off
9) Sensitivity setting is HIGH3 and chop mode on
10) For wavelength resolution ≦0.2nm
11) For wavelength resolution ≦0.5nm
12) Please ask local agent for printer type.
13) AQ9441 universal adapter (optional) is required for the output port of the reference light source (specify FC, SC or ST for connector type).
14) *: Connector type. Specify FC, SC or ST connector.
15) Except protector

www.ando.com

Specifications are subject to change without notice.

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