YOKOGAWA

AQ6319

Optical Spectrum Analyzer

Optical Spectrum Analyzer Offering Superb Optical Performance and Functionality

The AQ6319 is an optical spectrum analyzer capable of analyzing ultra-high-density wavelength multiplexed optical signals at a high accuracy.

With a wavelength resolution of 10 pm, wavelength accuracy of ±10 pm, and close-in dynamic range of 60 dB at peak ±100 pm, the AQ6319 offers the world's highest level of performance.

In addition, the greatly reduced measurement time (one fifth of the previous model), use of a new user interface, and support for various external interfaces provide a better test environment for a wide variety of applications ranging from R&D to evaluation and manufacturing lines.

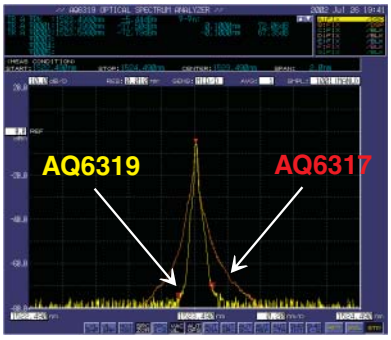
QUALITY ■ INNOVATION ■ FORESIGHT

Bulletin AQ6319-01E

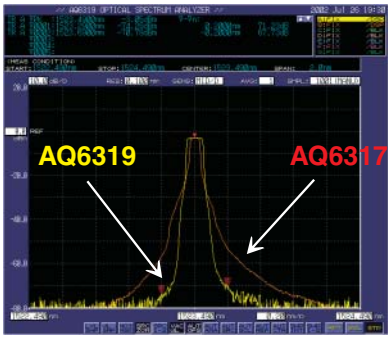
Features

Best optical performance

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



Close-in dynamic range at 0.01 nm resolution
60 dB at peak ±100 pm
70 dB at peak ±200 pm



Close-in dynamic range at 0.1 nm resolution
60 dB at peak ±200 pm

Fast sweep and quick response

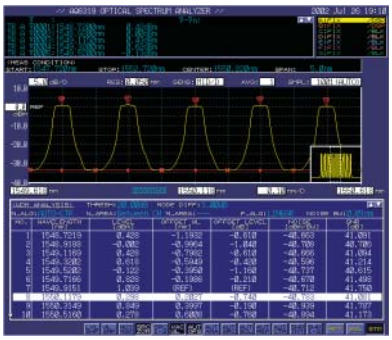
- Measurement time is as low as 1/5 compared to the conventional models (AQ6317 Series)*
- Faster auto-ranging in all sensitivities
- Quicker key response as measurement conditions change

*Depends on measurement settings and input light condition.

User-friendly GUI and powerful functions

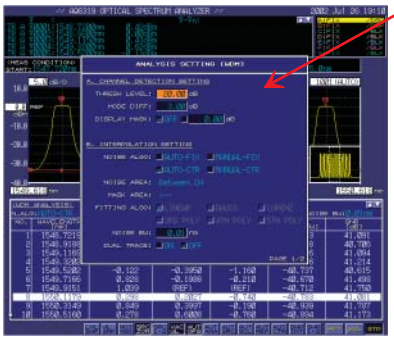
- Easy operation with mouse/keyboard
- Compatible with multiple interfaces (GP-IB, LAN, etc.)
- Large data storage area and fast data transfer (FTP)
- Enhanced built-in applications

Powerful functions



- Waveform zooming and display overview window
- Automatic interpolation setting function
- Selectable display mode (Trace & Table/Trace/Table)

Parameter dialog box

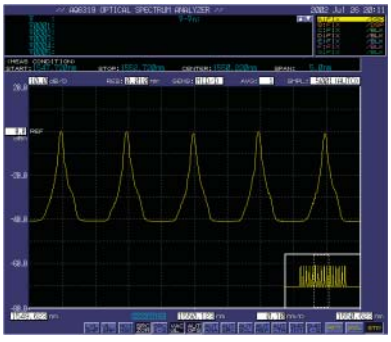


- OSNR/Gain/NF measurement function
- Parameter dialog display simplifies setting

Measurement examples

25 GHz spacing DWDM signals

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



Wavelength resolution at 0.01 nm

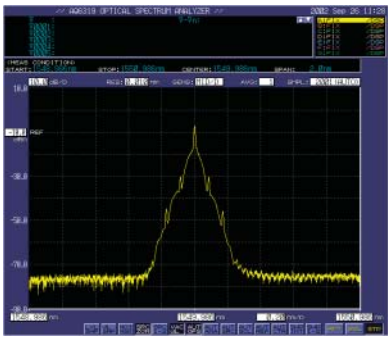
Wavelength resolution at 0.05 nm

Note: OSNR 40 dB (@Noise BW=0.01 nm)

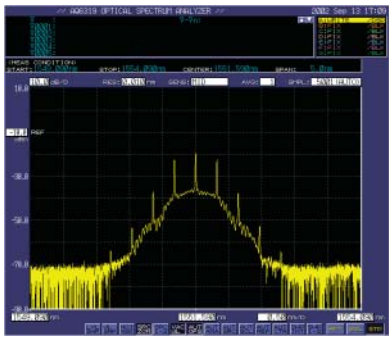
Measurement examples

Modulated signal measurement

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



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



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

Options (Sold separately)

Optical connector adapters

For optical input port

AQ9447 connector adapter
(FC, SC, ST)

For calibration output port

AQ9441 universal adapter
(FC, SC, ST)

Ordering Information

Model Number and Suffix Codes

Number	Suffix Code	Description
810804600		AQ6319 Optical Spectrum Analyzer*
Power voltage	-1	100 to 120 VAC
	-5	200 to 240 VAC
Power cable	-M	UL3P (with 3P/2P converter)
	-D	UL3P
	-F	CEE-C7
	-G	SAA-3P
	-Q	BS3P rectangular
	-H	BS3P round
Factory installed options	/CE	CE marking

* An AQ9441 universal adapter and AQ9447 connector adapter are required separately.
When placing an order, specify the connector type FC, SC, or ST.

Accessories (Optional)

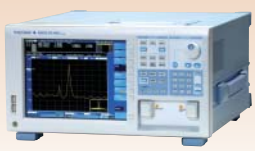
Name	Model	Suffix Code	Description
AQ9447 connector adapter	810804602		For optical input port
Connector type		-FCC	FC type
		-SCC	SC type
		-STC	ST type
AQ9441 universal adapter	813917321		For calibration output port
Connector type		-FCC	FC type
		-SCC	SC type
		-STC	ST type
Printer roll paper (TF50KS-E2)	955-990000320		10 rolls per unit

Related Products

Optical Spectrum Analyzer
AQ6370

High performance

Optical Spectrum Analyzer
AQ6375



Long wavelength (1200 to 2400 nm)

White Light Source
AQ4305

Broadband light source

Tunable Laser Source/
DFB-LD Source
AQ2200 Series

Multi-application test system

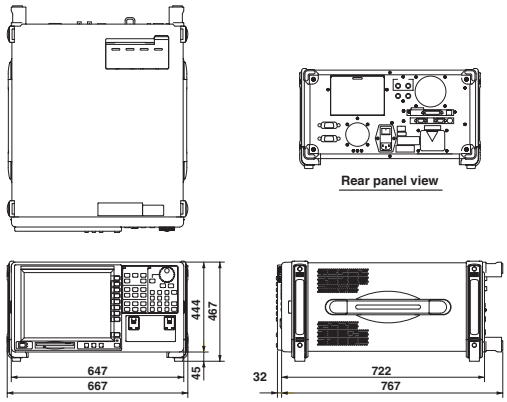
Optical Spectrum Analyzer AQ6319

Specifications

Applicable fiber	SM (9.5/125 μm), GI (50/125 μm)
Measurement wavelength range	600 to 1700 nm
Span[4]	0.1 nm to full range and zero span
Wavelength accuracy[1), 2), 3), 4), 6)]	±10 pm (1520 to 1580 nm) ±20 pm (1450 to 1520 nm) ±20 pm (1580 to 1620 nm) ±50 pm (Full range)
Wavelength linearity[1), 2), 3), 4), 6)]	±10 pm (1520 to 1580 nm) ±20 pm (1450 to 1520 nm) ±20 pm (1580 to 1620 nm)
Wavelength repeatability[1), 2), 3), 4), 6)]	±2 pm (≤1 min., 1450 to 1620 nm)
Measurement data point	101 to 50001
Resolution bandwidth	0.01, 0.02, 0.05, 0.1, 0.2, 0.5 and 1 nm
Resolution accuracy[1), 3), 4), 5)]	±2% (RES.: ≥0.1 nm, 1450 to 1620 nm) ±2.5% (RES.: 0.05 nm, 1450 to 1620 nm) ±6% (RES.: 0.02 nm, 1450 to 1620 nm)
Level sensitivity setting	NORM_HOLD, NORM_AUTO, MID, HIGH 1, HIGH 2 and HIGH 3
High dynamic range mode	SWITCH (Level sensitivity: MID, HIGH1, HIGH2, HIGH3) CHOP (Level sensitivity: HIGH1, HIGH2, HIGH3)
Level sensitivity[1), 3), 5), 7), 12)]	-90 dBm (1250 to 1620 nm) -80 dBm (1000 to 1250 nm) -60 dBm (800 to 1000 nm, 1620 to 1680 nm)
Level accuracy[1), 5), 7), 8)]	±0.3 dB (1550/1600 nm, 0/-20 dBm, RES.: ≥0.02 nm) ±0.3 dB (1310 nm,0/-20 dBm, RES.: ≥0.05 nm)
Level linearity[1), 3), 5), 7)]	±0.05 dB (-50 to +10 dBm, RES.: ≥0.02 nm, SENS.: HIGH 1 to 3)
Level flatness[1), 5), 7), 8)]	±0.1 dB (1520 to 1620 nm, -20 dBm, RES.: ≥0.02 nm)
Level stability[1), 5), 7), 8)]	±0.01 dB at 1 min.,±0.02 dB at 15 min. (1550/1600 nm, -20 dBm, RES.: ≥0.05 nm)
Maximum input power[1)]	+23 dBm (Per channel, Full span, Attenuation on)
Safe max. input power[1)]	+27 dBm (Total safe power, Attenuation on)
Close-in dynamic range[1), 5), 7), 9)]	40 dB (peak±50 pm, 1523 nm, RES.: 0.01 nm) 60 dB (peak±100 pm, 1523 nm, RES.: 0.01 nm) 70 dB (peak±200 pm, 1523 nm, RES.: 0.01 nm) 60 dB (peak±200 pm, 1523 nm, RES.: 0.1 nm)
Polarization dependency[1), 5), 7)]	±0.05 dB (1520 to 1620 nm, RES.: ≥0.02 nm) ±0.07 dB (1450 to 1520 nm, RES.: ≥0.02 nm) ±0.07 dB (typ.) (1310 nm, RES.: ≥0.05 nm)
Sweep time[13)]	0.5 sec. (SENS.: NORM_HOLD)[10)] 1 sec. (SENS.: MID)[10)] 3 sec. (SENS.: HIGH 1)[10)] 15 sec. (SENS.: HIGH 3)[11)] 120 sec.(SENS.: HIGH 3 with chop mode on)[11)]

Dimensions

(Unit: mm)



⚠CAUTION

● Carefully read the operating manual to ensure correct and safe use of the product. If the product is likely to be used for a system that requires safety measures to prevent accidents involving personal injuries, consult with our sales department.

Function	Automatic measurement	Program function (64 programs, 200 steps)
	Setting of measuring conditions	Span setting: 0 to 1100 nm, Number of averaging setting: 1 to 999 times, Automatic measuring condition setting function, Sweep between line markers function, 0 nm sweep function, External trigger measurement function, Air/Vacuum wavelength measurement function
	Display	Level scale setting: 0.1 to 10 dB/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, 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	LED, FP-LD, DFB-LD, WDM, EDFA, Optical filter, WDM filter, Spectral width, Notch width, SMSR, PMD, Power, Go/NoGO judgment, Auto analysis, Analysis between line markers, Analysis in the area
	Ethernet	TCP/IP Protocol, FTP function
	Others[14)]	Self wavelength calibration Optical alignment with built-in reference light source
Storage	FDD (3.5-inch 2HD)	MS/DOS format
	Internal storage	User area: 3.5 GB or more
	File format	Binary/CSV (Text), BMP/TIFF
Interface	Remote control	GP-IB, RS-232, Ethernet (TCP/IP) AQ6317 series compliant commands (IEE488.1) and IEEE488.2
	Category	GP-IB × 2 (for standard and external control), RS-232, Ethernet, SGVA output, PS/2 × 2 (for keyboard and mouse), TLS SYNC OUT port, SMPL TRG IN port, SMPL ENBL IN port, SWP TRG IN port
	Optical connector	AQ9447 (*) connector adapter (option) is required for the optical input. AQ9441 (*) universal adapter (option) is required for the calibration output unit. (*): Connecter type: FC/SC/ST
Printer		Built-in high-speed thermal printer
Display		10.4-inch color LCD (Resolution: 800 × 600 dots)
Power requirement		100 to 240 (±10%) V, 50/60 Hz, approx. 400 VA
Environmental conditions		Operating temperature: +5 to +40℃ Storage temperature: -10 to +50℃ Humidity: 80%RH or less (no condensation)
Dimensions and mass[15)]		Approx. 425 (W) × 222 (H) × 500 (D) mm, Approx. 33 kg

Notes:

1) With 9.5/125 μm SMF, after 1 hour warm-up, after optical alignment
2) At 15 to 30℃
3) At chop mode off
4) Horizontal scale: wavelength display mode
5) At 23 ± 3℃
6) After wavelength calibration with the internal calibration source.
7) With applied input fiber Type B1.1 9.5/125 μm SMF defined on IEC60793-2 (Model field diameter: 9.5 μm, NA: 0.104 to 0.107, PC polished), attenuation off, vertical scale: absolute power display mode
8) Sensitivity setting: MID, HIGH1 to 3 and chop mode off
9) Sensitivity setting: HIGH3 and chop mode on
10) Wavelength resolution ≤0.2 nm
11) Wavelength resolution ≤0.5 nm
12) Resolution setting: 0.05 nm or more, measurement sensitivity: HIGH3
13) Arbitrary 100 nm, number of samples: 1001
14) AQ9441 universal adapter (optional) is required for the calibration output port (specify FC, SC or ST for connector type).
15) Except protector

Standard Accessories

Name	Quantity
Power cord	1
User manual	1
Printer roll paper (TF50KS-E2)	1

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