Optical Measuring Instruments and Optical Device Test Systems

High Resolution of 0.01 nm (at 1.55 μm) and Wavelength Accuracy of ±0.01 nm

Q8347

■ **High Resolution: 0.01 nm (at 1.55 μm)**
0.001 nm (at 0.5 μm)
1 GHz (optical frequency mode)
■ **High Wavelength Accuracy: ± 0.01 nm**
■ **Coherence Analysis Range: ± 165 mm**

Q8347
Optical Spectrum Analyzer

Q8347 exhibits its full capabilities in evaluation of WDM (wavelength division multiplex) transmission systems, ultra high-speed optical transmission systems and narrow-band optical filters, extending applications for the coming information society.
Although higher resolution can be obtained with optical spectrum analyzers using a Fabry-Perot interferometer, they had problems such as narrow measuring spans and low wavelength accuracy. Designed based on improvements on existing spectrum analyzers employing a Fourier spectrum system with a Michelson interferometer, the Q8347 optical spectrum analyzer has attained high wavelength resolution and measurement accuracy.

■ High Resolution of 0.01 nm and High Accuracy of ± 0.01 nm at 1.55 μm Band

The Q8347 can achieved a high resolution of 0.01 nm and high accuracy of ± 0.01 nm (1 GHz resolution and ± 1 GHz accuracy in optical frequency display mode) at 1.55 μm band. Signals of optical wavelength division multiplexing (WDM) transmission can be separated for accurate wavelength measurement. In addition, it is powerful for analyzing chirps from laser diodes and Soliton transmission, and for measuring the output of narrow-band filters.

■ Resolution of 0.001 nm at 500 nm Band

At short wavelengths, higher resolution can be obtained. At the 500 nm band, a resolution of 0.001 nm is achieved and this is suitable for analysis of blue laser diodes.

■ Optical Frequency Display

In addition to wavelength display mode, measured spectrum can be displayed as optical frequency. As the light can directly be read in units of THz, the analyzer is useful for measuring optical WDM and chirps from laser diodes as well as analyzing Soliton transmission system.

■ Coherence Analysis of ± 165 mm

As the Q8347 uses a Michelson interferometer, the system is capable of performing coherence analysis. This function allows easy evaluation of performance of the noise suppression caused by laser diodes for optical disks. Furthermore, the stroke of the interferometer can be greatly increased to allow analysis in a range of ± 165 mm. Thus, more detailed analysis is possible, over and above the conventional secondary maximum peak value (α value).

■ Curve Fitting Function

Provided with curve fitting with $sech^2$ and Gaussian functions, the Q8347 best suits for Soliton transmission spectrum analysis.

■ Trend Monitoring Function

Incoming power and wavelength can be displayed in digital readout as well as a time domain trend chart.

■ List Display

Peak values of spectrum or coherence data can be displayed as numerical data containing up to 200 points. The separation and level of each channel of optical WDM transmission can be observed at a glance.

■ Standard Printer and Floppy Disk Drive

The standard high-speed thermal printer can copy the displayed screen in 8 seconds. Also, the system is equipped with a floppy disk drive with MS-DOS as standard, allowing data storage and analysis.
Measured data can be stored in text format and therefore be analyzed and processed easily by a personal computer. Subsequently stored data can be zoomed.

For Evaluation of WDM (Wavelength Division Multiplex)

Q8347

Specifications

			Normal mode	High-resolution mode
Wavelength	Measurement range		0.35 to 1.75 µm	
	Maximum resolution		Approx. 0.1 nm/1.55 µm Approx. 0.05 nm/0.85 µm	Approx. 0.01 nm/1.55 µm Approx. 0.003 nm/0.85 µm
	Accuracy		±0.1 nm or less	±0.01 nm or less
	Span		0.01 nm/DIV to 140 nm/DIV	
Level	Measurement range (Input sensitivity)		-72 to +10 dBm (1.2 to 1.6 µm) -65 to +10 dBm (0.7 to 1.6 µm) -52 to +10 dBm (0.45 to 1.7 µm) -42 to +10 dBm (0.35 to 1.75 µm) The minimum level is measured over a 50 nm span and averaging 16 times .	
	Accuracy		±1.0 dB (780 nm), ±0.7 dB (1310 nm, 1550nm) and input level -10 dBm	
	Linearity *1		±0.1 dB/-20 dB or less ±0.5 dB/-30 dB or less	
	Dynamic range *2		35 dB or more (Value between peak and average display noise level)	
	Repeatability including Polarization dependence *3		±0.1 dB or less (+23 ± 5°C)	
	Scale		0.2, 0.5, 1.0, 2.0, 5.0, 10.0 dB/DIV and linear	
Processing functions	Measurement time *4		1 second or less	2.5 seconds or less (at long wavelength band: 0.95 to 1.75 µm) *5 3.5 seconds or less (at short wavelength band: 0.35 to 1.05 µm)
	Memory function		16 screens (measured data) with battery backup 10 screens (measurement conditions) with battery backup Floppy disk (MS-DOS format, 720KB/1.2MB)	
	Display		Frequency, Super impose, 3-D, trend monitoring (power and wavelength), Division into 2 parts, cursor function, color display customization, listing	
	Computing/analysis		Spectrum analysis, coherence analysis (analysis range: max. ± 165 mm), spectral-width calculation, automatic peak search, averaging, normalization (LOSS/TRANS), automatic optimum measurement condition setting, curve fitting ($sech^2$ and Gauss), Smoothing, MAX/MIN hold	
Input/output	Input connector		FC connector (internal fiber: PC-rubbed, GI 50/125 µm)	
	Data output		GPIB equipped as standard, direct plotter output, built-in printer (printing speed: 8 sec. or less)	
General specifications	Operating environment		Temperature: +10 to +40°C, Humidity: RH 85% or less (Non-condensing)	
	Storage environment		Temperature: -10 to +50°C, Humidity: RH 90% or less (Non-condensing)	
	Power	(main unit)	AC 100 to 120 V/220 to 240 V, 48 to 66 Hz, 180 VA or less	
		(optical unit)	AC 100 to 120 V/220 to 240 V, 48 to 66 Hz, 80 VA or less	
	Dimensions	(main unit)	Approx. 424 (W) × 221 (H) × 500 (D) mm	
		(optical unit)	Approx. 424 (W) × 132 (H) × 500 (D) mm	
	Mass	(main unit)	16 kg or less	
		(optical unit)	20 kg or less	
Standard accessories	Power cable		A01402 2	
	Fuse		EAWK4A/2A 2 each	
	Interconnection cable		1	
	Printer paper		1	
	Floppy disk		3.5-inch 2DD 1	
	Instruction manual		1	

*1 With input at 0 dBm or less
*2 At 1.55 µm band, SPAN : 20 nm or less, advance averaging 16 times, smoothing at 11 point, spectral width calculation at less than 1nm.
*3 At wavelength of 1.55 to 1.57 µm. In the case of coherent light input, wavelength shift cause the level change of ±0.4 dB or less.
*4 Measurement condition: On SINGLE measurement, one averaging performed. Measuring time is from triggering to SRQ output. At long wavelength band.
*5 Approximately 5 seconds per measurement with advance averaging mode.

Optional Accessories

- **Optical fiber cord with connectors at both ends**
  OCS-F2SPS-2 (SM 10/125 µm, 2 m, with PC connectors)
  OCS-F2SFW-2 (GI 50/125 µm, 2 m, with PC connectors)
- **Optical fiber collimator with lens at edge**
  OPCL-5G-100/FC (GI 50/125 µm, 1 m, with FC connectors)

Rack-mount kit

	Standard	Display Unit		Optical Unit	
		with handles	without handles	with handles	without handles
Rack-mount set	EIA	A02712	A02722	A02708	A02718
	JIS	A02713	A02723	A02709	A02719
Slide rail set		A02615			

Optical Spectrum Analyzer Capable of Coherence Measurement

Q8344A

- **Coherence Measurement**
- **High-Speed Measurement with 1.5 Seconds/Sweep**
- **Wide Wavelength Range from 0.35 to 1.75 μm**
- **Wavelength Measurement Accuracy of 0.1 nm**

Q8344A
Optical Spectrum Analyzer

Q8344A is an optical spectrum analyzer with a wide wavelength range from 0.35 to 1.75 μm.
The usage of a Fourier spectrum system using a Michelson interferometer makes it possible to analyze coherence that cannot be obtained by the dispersing spectrum systems using monochromators. It exhibits its capabilities for evaluation of laser diodes for CDs and video disks.
The built-in He-Ne laser used as the reference wavelength realizes a wavelength accuracy of ± 0.1 nm (1.3 μm), ensuring a long-term measurement stability even without wavelength calibration.
The Q8344A provides a maximum wavelength resolution of 0.05 nm (at 0.85 μm), accommodating measurements of laser diodes with narrow mode intervals. The measurement speed is approx. 1.5 seconds (at 0.4 to 1.05 μm and 0.8 to 1.75 μm) regardless of the analysis span, allowing it to be used as a system component.
With the versatile display, analysis and processing functions, the Q8344A can be used for characteristic measurement applications for diverse components ranging from photoemitting elements such as laser diodes and LEDs to optical components such as optical fibers and filters.

■ Coherence Measurement

Since the Q8344A uses a Michelson interferometer, it can be used for coherence measurement. This ability allows easy evaluation of performance of the noise suppression caused by the returned light of laser diodes for video disks.
The analysis range is approximately ±10 mm, allowing measurement of coherence length of SLDs (super luminescence diodes) used for optical fiber gyros.

■ High-Speed Measurement with 1.5 Seconds/Sweep Well-Suited for Production Use

The Q8344A employs a Fourier spectrum system and therefore can make measurement in 1.5 seconds regardless of the measurement span and sensitivity (provided that the starting wavelength is 0.4 μm or longer and the measurement does not cover both the short and long wavelengths). Therefore, the analyzer is useful for measurements on laser diodes and LEDs at the production lines. Also for evaluation of the transmission and loss characteristics of optical fibers and filters.
When used as a system component, the analyzer requires only 1.5 seconds to perform triggering, measurement and data output; dramatically improving the system throughput.

■ Wavelength Measurement Accuracy of ± 0.1 nm

With the built-in He-Ne laser as the reference light source, measurements can be made with a high wavelength accuracy of ± 0.1 nm (at 1.3 μm wavelength). This makes it possible for accurate wavelength measurement without wavelength calibration.

■ Maximum Wavelength Range of 0.05 nm

The Q8344A provides a maximum resolution of 0.05 nm at short wavelength (0.85 μm), making it possible to measure CD and visible light laser diodes by fully resolving the oscillation mode one by one.

■ Large-Caliber Fiber Input (Option)

A 200 μm large-caliber input can be used as an option. When analyzing a device whose wavelength is larger than the standard fiber caliber (GI 50 μm), this option is needed. For laser diode analysis, the standard 50 μm specifications are recommended and for LED analysis, this optional specification is recommended.

Optical Spectrum Analyzer Capable of Coherence Measurement

Q8344A

Specifications

Wavelength	Measurement range	0.35 to 1.75 µm
	Max. resolution *1	Approx. 0.05 nm (at 0.85 µm) Approx. 0.1 nm (at 1.31 µm)
	Accuracy	±0.1 nm (The wavelength indicated is the value in vacuum.)
	Span	0.1 to 140 nm/DIV
Level	Measurement range (input sensitivity)	-70 to +10 dBm (0.7 to 1.6 µm) -60 to +10 dBm (0.45 to 1.7 µm) -45 to +10 dBm (0.35 to 1.75 µm) (Min. level at a span of 50 nm with 16 averages.)
	Accuracy	±2.0 dB or less (at a wavelength of 0.85 µm or 1.31 µm)
	Linearity *2	±1.0 dB/25 dB or less ±0.5 dB/10 dB or less
	Scale	0.2, 0.5, 1.0, 2.0, 5.0, 10.0 dB/DIV and LINEAR
Processing Functions	Measurement time *3	1.5 seconds or less (SINGLE mode, AVG: 1, Trigger to data output)
	Memory function	32 pages (measured data) 10 pages (measurement conditions) } With battery backup
	Display	Overlay display, split screen (top and bottom), 3-dimensional display, and cursor function
	Calculation/analysis	Coherence analysis (±10.4 mm) Normalization (LOSS/TRANS) Averaging Automatic peak search Half-value width measurement Automatic setting of the optimum measurement conditions
I/O	Input connector	FC type *4 Internal fiber. Standard: GI 50 µm Option 10: SI 200 µm
	Data output	GPIB equipped as standard Direct plotter output *5 Built-in printer (Option 01)

*1 Resolution is the wavelength difference between the Nth data and the (N+1) th data point
*2 With input at 0 dBm or less
*3 The start wavelength is 0.4 µm or less and measurement does not cover the short and long wavelengths.
*4 For the other connectors (SMA (2.5), ST, and DIN), contact ADVANTEST.
*5 Compatible plotters connectable: R9833 and TR9832 (ADVANTEST) 7475A, 7440A and 7470A (Hewlett Packard)

Standard Accessories

Product name	Model	Remarks
Power cable	A01402	1
Printer paper	A09075	5 rolls (included in option 01)

Options

Option 01 Built-in printer (Option 01)
Prints a hard copy of all the data displayed on the CRT
Printing system: Thermal printing line dot system
Printing speed: 8 seconds or less
Specified recording paper: A09075 (5 rolls)
Paper width: 114 mm

Option 10 200 µm fiber input (Specified at the time of ordering.)
Used for fiber with a core diameters of up to 200 µϕ, NA 0.4, e.g., for LED measurements.

Accessories (Optional)

OPCL-5G-100/FC Fiber collimator (GI 50/125µm, 1m FC connector)
OPCL-20H-100/FC Fiber collimator (SI 200/125µm, 1m FC connector)
OCS-F2SFW-2 Optical fiber cable (GI 50/125µm, 2m FC connector)
OCS-F2SPS-2 Optical fiber cable (SM 10/125µm, 2m PC connector)
A02712 Rack mount set (EIA, with handles)
A02713 Rack mount set (JIS, with handles)
A02722 Rack mount set (EIA, without handles)
A02723 Rack mount set (JIS, without handles)

General Specifications

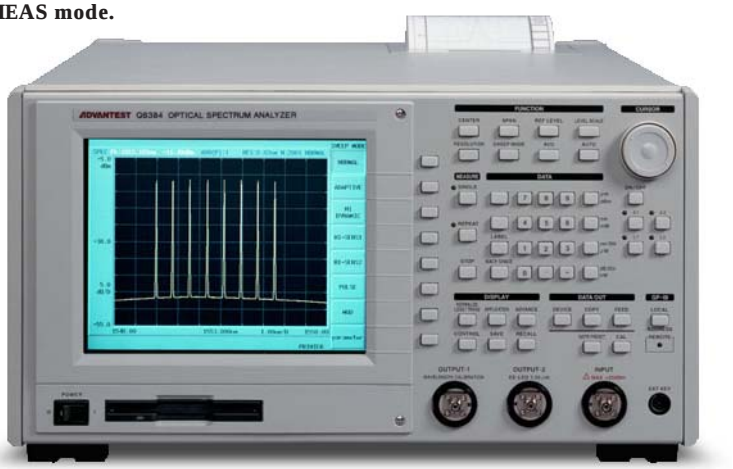
Operating environment
Temperature: +10 to +40˚C, Humidity: 85%RH or less (without condensation)
Storage environment
Temperature: -10 to +50˚C, Humidity: 90%RH or less (without condensation)
Power requirements: 90 to 132 (standard)/198 to 250 VAC (option 40)
48 to 66 Hz, 180 VA or less (Power requirements modifications are specified at time of ordering.)
Dimensions: Approx. 424 (W) × 221 (H) × 500 (D) mm
Mass: 27 kg maximum (including the printer option)

Optical Measuring Instruments and Optical Device Test Systems

High-End Optical Spectrum Analyzer for WDM (Wavelength Division Multiplex)

Q8384

- **Wavelength resolution 10pm**
- **Wavelength accuracy 20pm**
- **Wide dynamic range 50dB(± 100pm), 60dB(± 200pm)**
- **Precision measurement of EDFA NF**
- **High power capability of +23dBm (200mW)**
- **Can be used in circulating loop tests in the GATED MEAS mode.**
- **Versatile WDM analytic functions**



Q8384
Optical Spectrum Analyzer

Q8384 is a high-end optical spectrum analyzer using a new monochromator developed by ADVANTEST and featuring a high dynamic range and a high wavelength resolution. It offers the world's highest level of performance with a 10pm wavelength resolution and a 20pm wavelength accuracy in the 1.55µm band. This enables precise measurement and evaluation of wavelength characteristics.
In DWDM optical communications, higher density multiplexing technology is required. A wide dynamic range in the near field of the optical spectrum analyzer is required to separate optical signals which are wavelength-multiplexed at 50GHz (0.4nm) spacings and to measure NF noise indexes of erbium-doped optical fiber amplifiers (EDFAs). Q8384 has a wide dynamic range of 60dB at 0.2nm from the peak wavelength.
Q8384 also integrates automatic NF measurement and arithmetic functions for optical fiber amplifiers with easy operation.
As options, a built-in wavelength reference light source and EE-LED (edge-emission LED) are available. Calibration using this wavelength reference light source guarantees consistent high performance. By using the wide band light source of the EE-LED, the transmission and loss characteristics of narrow band optical filters can be measured and evaluated easily.

■ High-wavelength resolution of 10pm

Q8384 achieves a wavelength resolution of 10pm by employing a new monochromator developed by ADVANTEST.
This enables measurement and evaluation of sidebands of optical signals that are intensity-modulated at 10Gbps and which could not be measured before.

■ High-wavelength precision of 20pm

Wavelengths can be measured with accuracy of ±20pm at 1530nm to 1570nm and ±40pm in the L band at 1570nm to 1610nm after calibration using a built-in calibration light source (Option 25). This enables high-spec laser diodes and optical filters used in DWDM to be evaluated accurately. The wavelength linearity is ±10pm at 1530nm to 1570nm enabling the spacing of wavelength-multiplexed signals to be measured accurately.

■ Wide dynamic range 50dB (±0.1nm) and 60dB (±0.2nm)

In DWDM, wavelengths are multiplexed at close intervals of 50GHz (0.4nm) or finer.
The near-field dynamic range of the optical spectrum analyzer is a key factor in separating and measuring signals which are multiplexed at a high density. Q8384 features a wide dynamic range of 60dB at 0.2nm from the peak wavelength, which is sufficient to separate signals an interval of 50GHz (0.4nm). Even at 0.1nm, Q8384 provides a wide dynamic range of 50dB making it suitable for future DWDM at higher densities.

■ Direct input of large signals: + 23dBm (200mW)

Large output signals from optical fiber amplifiers, pumping laser diodes and other devices can be measured directly without an attenuator or other device.

■ Measurement of NF noise indices of EDFAs

In addition to high performance in terms of a dynamic range, polarization dependence, level accuracy, linearity, wavelength-resolution setting accuracy and other items, Q8384 provides curve fitting and other functions to enable simple, high-accuracy measurement.
The ASE levels of multiplexed signals at intervals 50GHz (0.4nm) or finer, such as in DWDM, can be sufficiently separated, allowing accurate measurement of noise indexes. Measurement results are displayed in a list.

Optical Measuring Instruments and Optical Device Test Systems

High-End Optical Spectrum Analyzer for WDM (Wavelength Division Multiplex)

Q8384

Specifications

Wavelength	Measurement range	600 to 1700 nm	
	Accuracy	≤ ± 500 pm	
	Accuracy *1	≤ ± 200 pm (after user calibration)	
	Accuracy *1	≤ ± 20 pm (after calibration using built-in light source) (1530 to 1570 nm)	
		≤ ± 40 pm (after calibration using built-in light source) (1570 to 1610 nm)	
	Linearity *1	≤ ± 10 pm (1530 to 1570 nm)	
		≤ ± 20 pm (1570 to 1610 nm)	
	Repeatability *1, *4	≤ ± 3 pm (1530 to 1610 nm)	
Wavelength Resolution	Setting	10 pm, 20 pm, 50 pm, 100 pm, 200 pm, 500 pm	
	Accuracy *1, *6	≤ ± 3 % (Res.50 pm, 1530 to 1610 nm)	
		≤ ± 2 % (Res.100ppm or finer, 1530 to 1610 nm)	
Level	Measurement range *2, *3	-87 to +23 dBm (1250 to 1610 nm)	
		-77 to +23 dBm (950 to 1250, 1610 to 1700 nm)	
		-55 to +23 dBm (600 to 1000 nm)	
	Accuracy *1, *3	≤ ± 0.4 dB (1550 nm)	
	Linearity *1	≤ ± 0.05 dB (-50 to -10 dBm, 1550 nm)	
	Scale	0.1, 0.2, 0.5, 1, 2, 5, 10 dB/DIV and LINEAR	
	Repeatability *1, *3, *4	≤ ± 0.02 dB (1530 to 1610 nm)	
	Flatness *1	≤ ± 0.2 dB (1530 to 1610 nm)	
	Polarization dependence *1, *3	≤ ± 0.05 dB (1250 to 1610 nm)	
	Dynamic range *1, *5	50 dB (at ± 100pm from peak wavelength)	
		60 dB (at ± 200pm from peak wavelength)	
		67 dB (at ± 400pm from peak wavelength, high dynamic range mode)	
Sweep	Span	From 0.2nm to full span and zero	
	Number of samples	101, 201, 501, 1001, 2001, 5001	
	Measuring Time	≤ 500 mS (10nm-span, normal mode, 1550nm, one averaging operation, 501 samples)	
Pulse Light Measurement	Peak hold mode	Waiting time (gate time 1ms to 1s) is set for each point of measurement and peak level within this time is displayed.	
		Minimum optical pulse width: 10nsec (30 μsec or more recommended)	
		Optical pulse repetitive frequency 1Hz or more	
	External synchronization	Measuring timing can be controlled using an external sync signal.	
		Synchronous signal input level: 74 AC (High: 3.5V, Low: 1.5V), pulse width: 10nsec or more	
		Sync Low Mode	Measured at high level of the synchronous signal
			Minimum optical pulse width: 10nsec (30 μsec or more recommended)
		Sync High Mode	Sampling timing (0 to 1000 μs) from rising and falling edges of sync signal can be specified
Functions	Memory functions	Internal RAM Measurement data: 15 screens or more (with 501 samples) (battery backup)	
		Built-in floppy disk drive 3.5-inch 2HD 1.44MB, MS DOS format	
	Display	Dual-screen superimposition display function, vertical dual-screen split function, and cursor display function	
	Calculation/analysis	Automatic peak search, automatic peak center, automatic reference level	
		Spectral width analysis (threshold, envelope, RMS, peak RMS, Xnm level)	
		Notch width analysis (XdB width, Xnm level)	
		Optical-amplifier NF analysis function (maximum 128 signals)	
		WDM signal analysis function (wavelength, level, SNR of up to 128 signals)	
		Normalization with zoom function (LOSS/TRANS mode)	
		Peak power monitoring function (with trend chart)	
	Others	Wavelength calibration function (built-in and external light sources), wavelength/level offset calibration	
		Labeling function	
Optical Input	Optical fiber	9.5/125 μm single-mode (SM) fiber (Master A grade connector recommended)	
	Reflection loss, return-loss	35dB	
	Connector (can be changed by user)	FC (standard), ST, SC (optional accessories)	
Data Input/Output	GP-IB	IEEE488-1978	
	Printer	Built-in thermal printer	
	Printer Interfaces	D-SUB 25 pin ESC/P, ESC/P-R, PCL	
Option	Calibration light source with EE-LED output	Output level *1 ≥ -43 dBm/nm (1550 nm)	
General Specification	Operating environment	Temperature +10 to +40 ˚C, relative humidity 85% or less (without condensation)	
	Storage environment	Temperature -10 to +50 ˚C, relative humidity 90% or less (without condensation)	
	Power supply	100 to 120/220 to 240 VAC, 50/60 Hz, 200 VA or less	
	Dimensions	Approx. 424 × 221 × 500 (W × H × D) mm	
	Mass	29kg maximum	

*1 At 23 ±5 °C
*2 From 10 to 30 °C
*3 With resolution of 100pm or greater
*4 With repetitive sweep of 1min
*5 With wavelength of 1523nm and at resolution of 10pm
*6 Calibrated in effective bandwidth

Accessories (Options)

Product name	Model
Optical Connector adapter	FC connector adapter : A08161 SC connector adapter : A08162 ST connector adapter : A08163

Recommended extras : optical fiber cable for calibration : A01291

Optical Measuring Instruments and Optical Device Test Systems

Even Solves the Problems of Pulse Light Measurements

Q8381A

- **Wide Wavelength Range: 0.35 to 1.75 μm**
- **Low Polarization Dependence: ± 0.1 dB or less**
- **High Input Sensitivity: -85 dB**
- **Unique Pulse Light Measurement Function**
- **Power Monitoring Function**
- **Versatile Memory Function**

Q8381A

Optical Spectrum Analyzer

Q8381A optical spectrum analyzer can analyze a wide wavelength band from 350 to 1750 nm and a wide dynamic range from -85 to +10 dBm (1.1 to 1.6 μm), accommodating measurements on display LEDs and optical devices for communication. In addition, ADVANTEST's unique technology realizes low polarization dependence and a high level measurement accuracy of ± 1.5 dB.
In addition to the automatic optimum measurement condition setting, automatic peak search and half-value width measurement functions, the Q8381A mounts the pulse light measuring function, power monitoring function and luminosity compensation display functions for improvement of operation and analysis capabilities. In conventional pulse light measurement, even if a number of averagings is made and the average power of duty ratio is obtained; low level and data missing may result. The Q8381A has solved all these problems.

■ Wide Wavelength Measurement with High Sensitivity

The Q8381A can measure a wide wavelength range from 1.1 to 1.6 μm at a high sensitivity of -85 dBm. Therefore, level measurement for spontaneous emission light from an erbium doped fiber amplifier (EDFA) and wavelength characteristic measurement in combination with white light source can be performed over a wide dynamic range.

■ Wide Dynamic Range Measurement

By minimizing the ambient light level, the Q8381A achieves a wide dynamic range of 40 dB at 1 nm and 50 dB at 5 nm from the peak wavelength. This level of performance is ideal for measurement on the side-mode suppression ratio of DFB laser diodes.

■ High-Speed Measurement

The Q8381A can achieve high-speed measurement in 0.8 seconds or less (with a span of 200 nm) in the NORMAL mode, allowing spectrum variation to be measured securely. In adjustment of the filters center wavelength, it can make measurement in real-time manner by means of inter-marker sweep.

■ Low Polarization Dependence Ensures High-Accuracy Level Measurements

With ADVANTEST's unique technology, the Q8381A can achieve a level measurement accuracy of ± 1.5 dB, ensured by a polarization dependence as low as ± 0.1 dB over all wavelength bands.
The wavelength sensitivity characteristic is also compensated in all the wavelength bands, enabling more accurate level measurements.

■ Accurate Pulse Light Measurement

To date, the spectrum of a pulse-modulated optical signal was measured after averaging. However, the measured spectrum may be lower than the actual light-emitting level or data missing may occur. To solve this problem, the Q8381A provides two measurement modes: PULSE sweep mode and GATED MEAS mode.

■ Power Monitoring Function

When analyzing beam light using an optical spectrum analyzer, coupling to optical fiber is required. With the conventional method, the beam light is fed to the analyzer while monitoring the coupling condition using an optical power meter. The Q8381A's power monitor function can be used in the same manner as the optical power meter.

Even Solves the Problems of Pulse Light Measurements

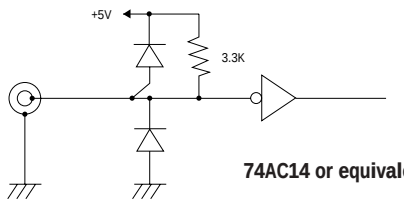
Q8381A

Specifications

Wavelength	Measurement range	0.35 to 1.75 µm	
	Resolution	0.1, 0.2, 0.5, 1.0, 2.0, 5.0 nm	
	Accuracy	±0.5 nm (23 ± 5 °C), 1.0 nm (10 to 40°C)	
	Repeatability	0.1 nm or less (during one-minute repetitive sweep)	
Level	Measurement range (input sensitivity)	-85 to +10 dBm (1.1 to 1.6 µm) -75 to +10 dBm (0.7 to 1.6 µm) -70 to +10 dBm (0.4 to 1.65 µm) -60 to +10 dBm (0.35 to 1.75 µm)	
	Polarization dependence	±0.1 dB or less	
	Accuracy *1	±1.5 dB or less (at wavelength of 0.633, 1.31, and 1.55 µm)	
	Linearity *2	±0.5/20 dB, ±1.0/40 dB	
	Scale	0.2, 0.5, 1.0, 2.0, 5.0, and 10.0 dB/DIV and linear	
	Dynamic range *3	40 dB or more (with ±1 nm level difference from peak wavelength) 50 dB or more (with ± 5 nm level difference from peak wavelength)	
Sweep	Span	0.1 nm to 140 nm/DIV and zero	
	Measurement time *4	0.8 sec or less (with a span of 200 nm or less) 1.5 sec or less (with a span of 500 nm or less)	
Pulse light measurement	Peak hold mode	Incorporates a circuit for measuring the peak level within the specified gate time (1 ms to 10 s). (Recommended optical pulse width: 30 µs or more), Optical pulse repetitive frequency: 0.1 Hz or more	
	Synchronous measurement input (GATED MEAS INPUT)	Can control the measurement timing using an external input signal. BNC-type connector Input level: 74 AC series or equivalent (High: 3.5 V, Low: 1.5 V), positive logic pulse width : 10 ns or more Minimum pulse width: 10 ns or more (Recommended optical pulse width: 30 µs or more), Optical pulse repetitive frequency: DC to 100 MHz	
Processing function	Memory function	Internal RAM	Measurement data: 33, Measurement condition: 10 (Battery backup)
		Built-in floppy disk drive	Conforms to the MS-DOS format (Disk type: 2DD/2HD), Capacity: 720 KB/1.2 MB (Formatted)
	Display	Dual-screen superimposition display function, vertical dual-screen split function and three-dimensional cursor display function	
	Calculation / analysis	• Automatic optimum measurement condition setting, • Automatic peak search, • Normalization (LOSS/TRANS mode) • Power monitoring function (with trend chart), • Half-value width measurement, • Averaging, • Luminosity correction display	
Input/output	Optical input	FC-type connector	
	Data output	General-purpose interface bus (GPIB) (IEEE488-1978), Built-in printer (with a print speed of 8 s or less, standard), Direct plotter output *5	
General specification	Operating environment	Temperature: +10 to +40°C, Relative humidity: 85% or less (without condensation)	
	Storage environment	Temperature: -10 to +50°C, Relative humidity: 90% or less (without condensation)	
	Power supply	90 to 250 VAC, 48 to 66 Hz, 180 VA or less	
	Dimensions	Approx. 424 × 221 × 450 (W × H × D) mm	
	Mass	29 kg maximum	

*1: With an input power of -30 dBm (using SM fiber) and a resolution of 0.2 to 5.0 nm (when CW light is input)
*2 With a reference input power of -10 dBm
*3 With a wavelength of 0.633 µm, 1.152 µm and 1.523 µm (with a resolution of 0.1 nm) using SM fiber
*4 With a center wavelength of 1.3 µm after one averaging in the NORMAL mode (Another wavelength is also identical when no change over of diffraction order exists in the sweep width to be set.)
*5 Connectable plotters
R9833 (ADVANTEST), 7475A, 7440A, and 7470A (Hewlett Packard)

• GATED MEAS input circuit



Standard accessories

Power cable	One A01402
Printer paper	One roll
3.5-inch floppy disk	One (2DD)

Optional accessories

OCS-F2SFW-2 Optical fiber cable (GI 50/125 µm, 2m)
OCS-F2SPS-2 Optical fiber cable (SM 10/125 µm, 2m)
OPCL-20H-100/FC Fiber collimator (SI 200)
OPCL-5G-100/FC Fiber collimator (GI 50)
A09075 Printer paper (5 rolls)