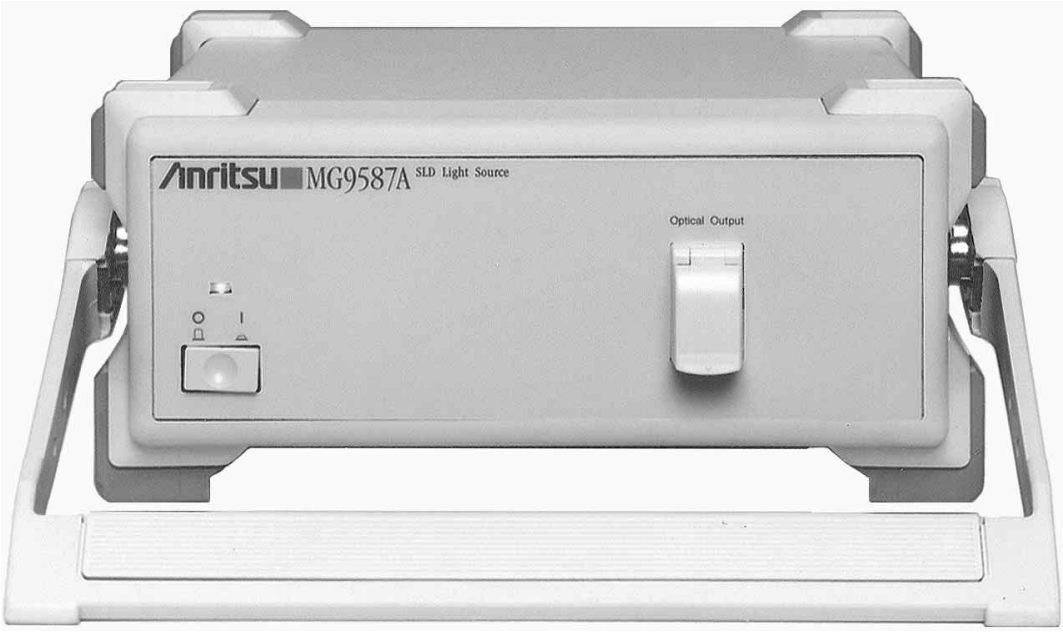
MG9587A

SLD Light Source

1450 to 1650 nm



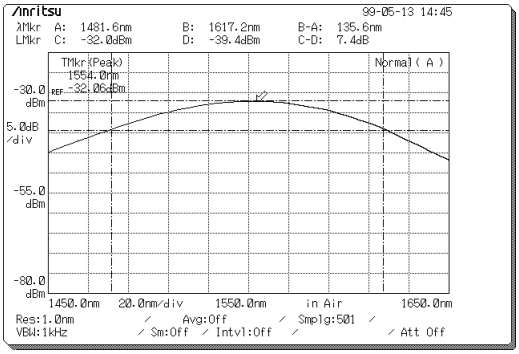
For measurement of wavelength transmission characteristics and PMD

The MG9587A provides a stable source of light over a wide wavelength range of more than 200 nm. It incorporates highly accurate control of the Super Luminescence Diode source (SLD; Anritsu manufactured), realizing a high output level and stability.It has applications in the measurement of wavelength transmission characteristics, where a white light source might have insufficient output to provide adequate dynamic range. By combining the MG9587A with the MS9710B/C Optical Spectrum Analyzer (OSA), high-dynamic-range transmission measurements become possible.
In addition, using the MG9587A combined with an Anritsu optical spectrum analyzer, it is possible to measure polarization mode dispersion (PMD) in optical fibre and other optical components. The method used is the Fixed Analyzer (FA) Method, allowing fast and easy PMD measurement. The MS9710B/C Optical Spectrum Analyzer comes with application software for PMD measurement as standard. The MG9587A can also be installed into the MS9710B/C (option 13/14 for the MS9710B/C).

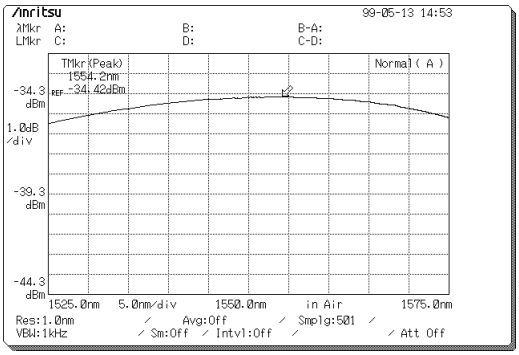
Basic features

Figure 1 shows the typical output spectrum of the MG9587A. While its peak level is –40 dBm/nm or more, it outputs more than –60 dBm/nm over a total bandwidth of 200 nm. Combined with the MS9710B/C, the transmission measurement dynamic range is greater than 30 dB at the spectrum edges, and more than 50 dB at the peak wavelength.
Figure 2 shows the spectrum of the WDM band. It features a flat characteristic of approximately 1 dB level deviation in a wavelength range of 50 nm around 1550nm.

Note: The measured level of the MG9587A depends upon the Resolution Bandwidth (RBW) setting of the OSA. If the RBW is set to 0.5 nm on the OSA, then the measured level becomes 3 dB lower than when the RBW is set to 1 nm. It is for this reason that the SLD spectrum is always specified in power per unit nm (i.e., the power measured in an equivalent bandwidth of 1 nm).



[Fig-1] Center wavelength: 1550 nm, Span width: 200 nm, RBW: 1 nm

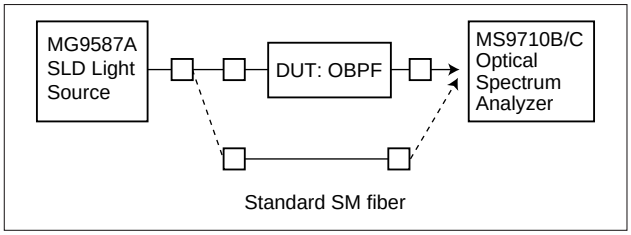


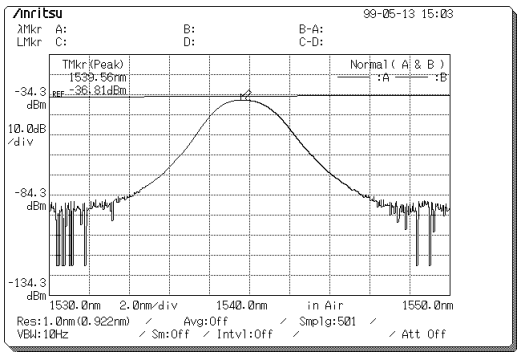
[Fig-2] Center wavelength: 1550 nm, Span width: 50 nm, RBW: 1 nm

Application

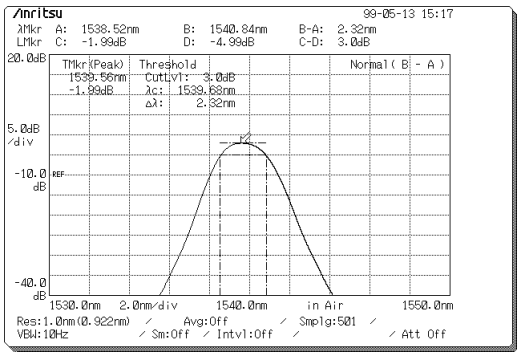
- **Measurement examples of wavelength transmission characteristics**

The following shows an example of Optical Band Pass Filter (OBPF) measurement.
Using the A trace of the optical spectrum analyzer, the spectrum is measured after being transmitted through a standard SM fiber patch cord. The measured value is assumed to be the reference level. Then the device under test (DUT) is connected, and the spectrum is measured and displayed on the B trace. By calculating the difference between these two spectra, the transmission characteristics of the DUT can be displayed. Anritsu optical spectrum analyzers feature a (B-A) function, that is able to normalize spectra so that the actual transmission characteristics of DUTs can be easily measured with high reproducibility.
Figure 3 shows both trace A and trace B. Figure 4 shows the spectrum (B – A) trace after subtraction. The peak search feature of the optical spectrum analyzer reveals that the insertion loss of the OBPF is 1.99 dB. The analysis feature of the optical spectrum analyzer finds that the half bandwidth (FWHM) is 2.32 nm.





[Fig-3] A&B trace



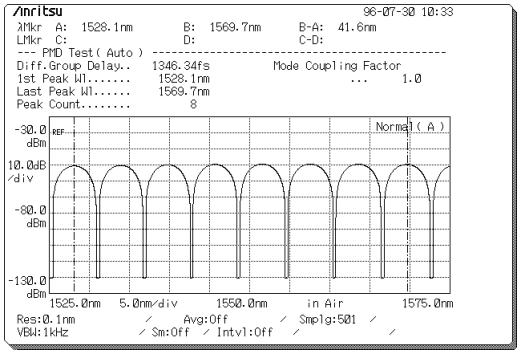
[Fig-4] Loss characteristics (B – A) trace

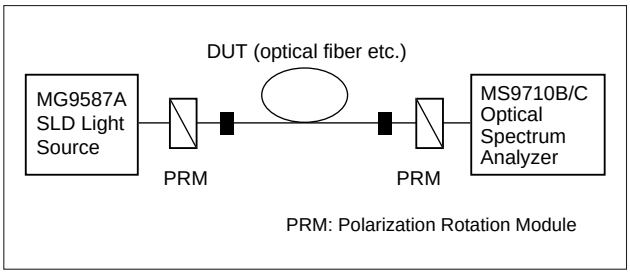
• Measuring polarization mode dispersion

Polarization mode dispersion is one of the most important factors in determining the upper limit of an optical fiber system's transmission bit rate. There are many methods for measuring PMD, but all fall into 2 categories:- time domain and frequency domain methods. The MS9710B/C is equipped with the Fixed Analyzer (FA) method, an automated frequency domain method employing wavelength scanning and extreme counting. The measured waveform is immediately processed to indicate the PMD value. Assuming that the 1st peak wavelength is λ_1, the nth peak wavelength is λ_2, and the difference between these two is $\Delta\lambda$ ($\lambda_2 - \lambda_1$), the MS9710B/C can automatically read each value and calculate the PMD by using the formula below:

$$\text{PMD} = \text{RMS DGD (Differential Group Delay)} = K \frac{N-1}{C} \times \frac{\lambda_1 \bullet \lambda_2}{\Delta\lambda}$$

K: Mode coupling factor, C: velocity of light (m/s),
N: number of counted peaks





PMD measurement example

Specifications

Wavelength range	1450 to 1650 nm
Output level	>–40 dBm/nm (1550 nm ±10 nm) >–60 dBm/nm (1450 to 1650 nm)
Output level stability*1	±0.04 dB (MS9710B/C setting resolution: 1 nm, no polarization change, constant temperature, measured for 20 minutes at 1550 nm)
Spectrum half width	>70 nm (90 nm typical)
Optical connector	User replaceable type (FC, SC, ST, DIN, HMS-10/A)
Environmental condition	Operating temperature: 0˚ to +40˚C, Storage temperature: –20˚ to +60˚C, Relative humidity: <90%
Power	AC 85 to 132/170 to 250 V, 47.5 to 63 Hz, ≤35 VA
Dimension and mass	213 (W) x 88 (H) x 250 (D) mm, ≤3.5 kg [Excluding projections]

*1: Measured after one hour warm-up

Ordering Information

Please specify model/order number, name, and quantity when ordering.

Model/Order No.	Name	
	Main frame	
MG9587A	SLD Light Source	
	Standard accessories	
	Optical connector adapter*1:	1 pc
	Power cord, 2.5 m:	1 pc
F0011	Fuse, 2.0 A:	2 pcs
B0329L	Front cover:	1 pc
W1768AE	MG9587A operation manual:	1 copy
	Options	
MG9587A-37	FC connector	
MG9587A-38	ST connector	
MG9587A-39	DIN connector	
MG9587A-40	SC connector	
MG9587A-43	HMS-10/A (DIAMOND) connector	
	Application parts	
J0617B	Replaceable optical connector (FC)	
J0618D	Replaceable optical connector (ST)	
J0618E	Replaceable optical connector (DIN)	
J0618F	Replaceable optical connector (HMS-10/A)	
J0619B	Replaceable optical connector (SC)	
J0575	Optical fiber patch-cord (FC•PC-FC•PC-2M-SM), 2 m	
Z0282	Ferrule cleaner (A-type)	
Z0283	Ferrule cleaner tape (for Z0282, 6 pcs/set)	
Z0284	Adapter cleaner (stick-type, 200 pcs/set)	
G0084	Polarization rotation module	

*1: Please specify the connector to be supplied as the standard connector when ordering the above options. If the connector is not specified, an FC connector (MG9587A-37) will be supplied as standard.

Anritsu

Specifications are subject to change without notice.

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