

TUNABLE LASER SOURCE
MG9637A/9638A
 1500 to 1580 nm

NEW



CE GPIB

The larger transmission capacity required by multimedia applications has seen increasing use of wavelength division multiplexing (WDM) using optical fiber amplifiers in every field from R&D to commercial operation. As a consequence, key WDM optical devices such as optical fiber amplifiers, couplers, and isolators require even higher performance and stability.

The MG9637A/9638A design meets these requirements through excellent wavelength repeatability achieved by self calibration, improved reliability using a new external cavity technology.

The MG9637A/9638A utilize an external optical automatic power control (APC) module, the MG9637A has a Lithium Niobate modulator in the APC section to provide excellent output power stability and S/N ratio. The MG9638A uses a semiconductor amplifier giving a high-power output of at least +4 dBm.

Both laser sources are ideal for evaluating the wavelength loss characteristics and polarization mode dispersion (PMD) of optical devices (couplers, filters, etc.), as well as the gain and noise figure of optical fiber amplifiers and PMD used in dense wavelength division multiplexing (DWDM) system.

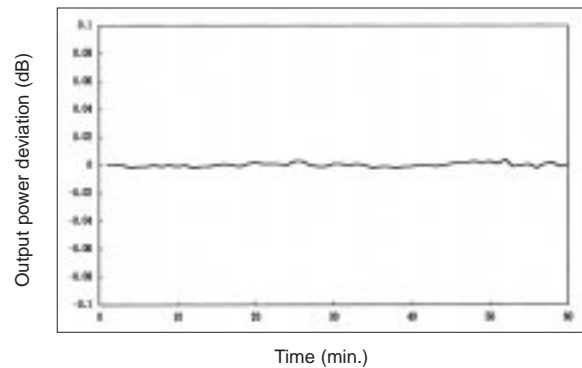
Features

- Single moded emission
- 1 pm wavelength setting resolution
- ±7 pm max. wavelength repeatability
- +4 dBm or more output
- Two output ports

Performance

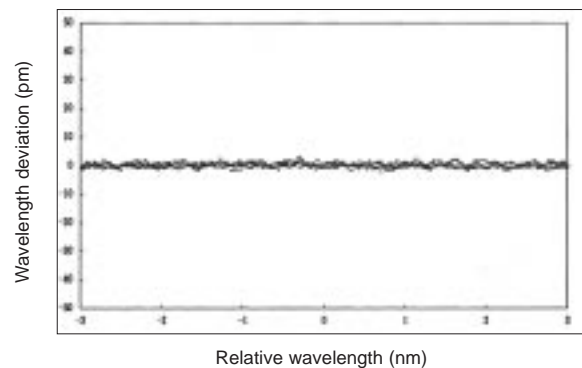
● Stable output power

The power of Output 1 of the MG9637A has been stabilized to ±0.01 dB using the APC function; thus permitting easy and stable wavelength loss measurement of optical devices. In addition, the wavelength flatness is within ±0.1 dB; thereby, enabling high-accuracy measurement of wavelength loss without normalization of the output power of the laser source.



● Wavelength repeatability

The wavelength repeatability is about ±5 pm when the calibration function (applications for patent) is used. Consequently, the full width half maximum (FWHM) and stop-band loss characteristics of narrow band filters can be measured with high accuracy.



● **Polarization maintaining fiber output**

Output 1 uses a polarization-maintaining fiber to guarantee a polarization extinction ratio of more than 18 dB at the output side. This is very useful for measuring the polarization characteristics of optical fiber amplifiers and external modulators as well as for measurement at a constant polarization.

● **Coherence control function**

When measuring the wavelength loss characteristics of optical devices with a narrow linewidth, interference due to reflections from the optical device reduce the level stability and causes ripple over wavelength. The coherence control function broadens the linewidth to about 50 MHz. This eliminates level fluctuations due to interference and permits accurate measurement.

Functions

● **Fast measurement of narrow-band filters**

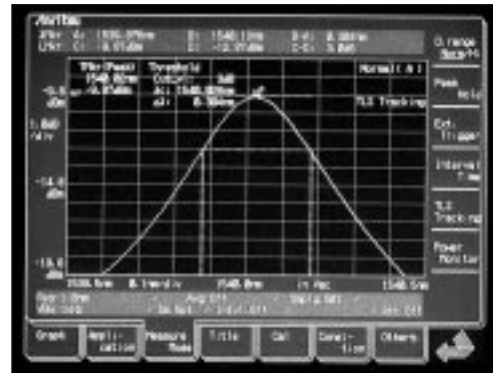
DWDM communications currently being commercialized use wavelength multiplexing at an interval of 0.2 nm to several nm. As a consequence, wavelength bandpass filters for these applications require a narrow bandwidth and large loss in stop-band loss.

The MG9637A/9638A achieve improved wavelength repeatability and high-speed sweeping using self-calibration function (applications for patent). When combined with the MS9710B Optical Spectrum Analyzer or ML9001A Optical Power Meter, wavelength loss characteristics can be measured quickly with high accuracy and a wide dynamic range. For example, high-speed measurement (51 points) is possible in less than 30 seconds.

● **Wide dynamic range measurement with optical spectrum analyzer**

The MG9637A/9638A can be used in combination with the MS9710B Optical Spectrum Analyzer. The two instruments can be linked just by an RS-232C cable with no need for an external controller. Measurement is made simple by using the MS9710B soft keys. Furthermore, measurement results including transmission loss, FWHM and stop-band loss characteristics can be easily analyzed using the MS9710B marker, trace and smoothing functions.

The following screens (A, B) show examples of measurement of a high performance filter with a center wavelength of 1540 nm. Screen A is a FWHM measurement example; since the wavelength repeatability is within ± 7 pm, the FWHM can be measured accurately. Screen B shows a pass-band and stop-band loss characteristics measurement example; wide-dynamic range measurement of better than 70 dB is possible by setting the MS9710B resolution bandwidth to 0.2 nm.



A: FWHM measurement (MS9710B display)



B: Wide dynamic range measurement (MS9710B display)

Specifications

Model	MG9637A	MG9638A
Wavelength range	1500 to 1580 nm	
Wavelength setting resolution	1 pm	
Absolute wavelength accuracy	$< \pm 0.1$ nm	
Wavelength stability	$< \pm 100$ MHz/h*1	
Wavelength repeatability	± 35 pm (80 nm range), Typical: ± 7 pm (at ± 3 nm, after calibration)	
Side mode suppression ratio*2	>45 dB (1520 to 1570 nm) >40 dB (1500 to 1580 nm)	>40 dB (1520 to 1570 nm) >35 dB (1500 to 1580 nm)
Linewidth (typical value)	700 kHz (coherent control: Off), 50 MHz (coherent control: On)	
Wavelength switching time (typical value)	100 ms/1 nm, 150 ms/10 nm, 500 ms/80 nm	
Output 1	Max. output power	> -10 dBm (1520 to 1570 nm) > -13 dBm (1500 to 1580 nm)
	Min. setting output power	< -20 dBm
	Power stability*1	$< \pm 0.01$ dB/h
	Power flatness*3	$< \pm 0.1$ dB
	Polarization extinction ratio	>18 dB
Output 2	Output power: > -10 dBm	
Internal modulation	200 Hz to 20 kHz (square waveform), Duty: 50%	
External modulation*4	1 MHz to 3 GHz	1 to 300 MHz
Interface	GPIO, RS-232C	
Main functions	Wavelength calibration, single-step sweep	
I/O Connector	Frequency control input, external modulation input, sweep signal output, sweep trigger signal output, internal modulation sync signal output	

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Warm-up time	<1 h
Laser safety	FDA21-CFR: Class 1 IEC-825: Class 3A
Ambient temperature	Operation: +10° to +35°C, Storage: -20° to +60°C
Dimensions and mass	319 (W) x 177 (H) x 450 (D) mm, ≤16 kg
Power supply	AC 85 to 132/170 to 250 Vac, <190 VA
EMC	EN55011: 1991, Group 1, Class A EN50082-1: 1992
Safety	EN61010-1: 1993 (installation Category II, Pollution Degree II)

Note: Typical values are not guaranteed.

*1: 1 hour at constant temperature

*2: Ratio of peak levels over the peak wavelength range ± 0.5 to ± 2.5 nm, measured using an optical spectrum analyzer with a wavelength resolution of 0.1 nm.

*3: Room temperature

*4: 10 dB down from the reference point at 10 MHz

Ordering information

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

Model/Order No.	Name
	Main frame
MG9637A	Tunable Laser Source
MG9638A	Tunable Laser Source
	Standard accessories
	Optical connector adaptor*1: 2 pcs
J0017	Power cord, 2.5 m: 1 pc
F0013	Fuse, 5 A: 2 pcs
S0001	Optical output control key: 2 pcs
W1213AE	MG9637A/9638A operation manual: 1 copy
W1214AE	Remote control operation manual: 1 copy
B0329G	Front cover: 1 pc
	Options
MG9637A-27	E2000 connector*2
MG9637A-31	EC (Radial) connector*2
MG9637A-37	FC-PC connector*2
MG9637A-38	ST connector*3
MG9637A-39	DIN connector*3
MG9637A-40	SC connector*3
MG9637A-43	HMS-10/A (Diamond) connector*3
MG9638A-27	E2000 connector*2
MG9638A-31	EC (Radial) connector*2
MG9638A-37	FC-PC connector*2
MG9638A-38	ST connector*3
MG9638A-39	DIN connector*3
MG9638A-40	SC connector*3
MG9638A-43	HMS-10/A (Diamond) connector*3
	Peripheral instruments
MS9710B	Optical Spectrum Analyzer
ML9001A	Optical Power Meter
MA9611A	Optical Sensor (for ML9001A)
MA9714B	Optical Sensor (for ML9001A)
MN9610B	Programmable Optical Attenuator
MN9611B	Programmable Optical Attenuator
MF9630A	Optical Wavelength/Frequency Counter
	Application parts
J0654A	RS-232C cable, 9P-9P
J0655A	RS-232C cable, 9P-25P
J0007	GPIO cable, 1 m
J0617B	Replaceable optical connector (FC)
J0618D	Replaceable optical connector (ST)*4
J0618E	Replaceable optical connector (DIN)
J0618F	Replaceable optical connector (Diamond HMS-10/A)
J0619B	Replaceable optical connector (SC)*4
J0635B	FC*PC-FC*PC-2M-SM (FC*PC optical fiber cord, 2 m, SM)
Z0282	Ferrule cleaner
Z0283	Replacement reel for ferrule cleaner (6 pcs/set, for Z0282)
Z0284	Cleaner for optical adaptor (stick type, 200 pcs/set)
B0335C	Hard carrying case

*1: Any of the listed connector options can be fitted as standards if specified when placing the order. If no connector types is specified in the order, FC-PC connectors (MG9637A/9638A-37) will be fitted.

*2: Factory option

*3: User-replaceable type

*4: The optical output off function is not available when no optical fiber cord is connected to the ST or SC replaceable optical connector.