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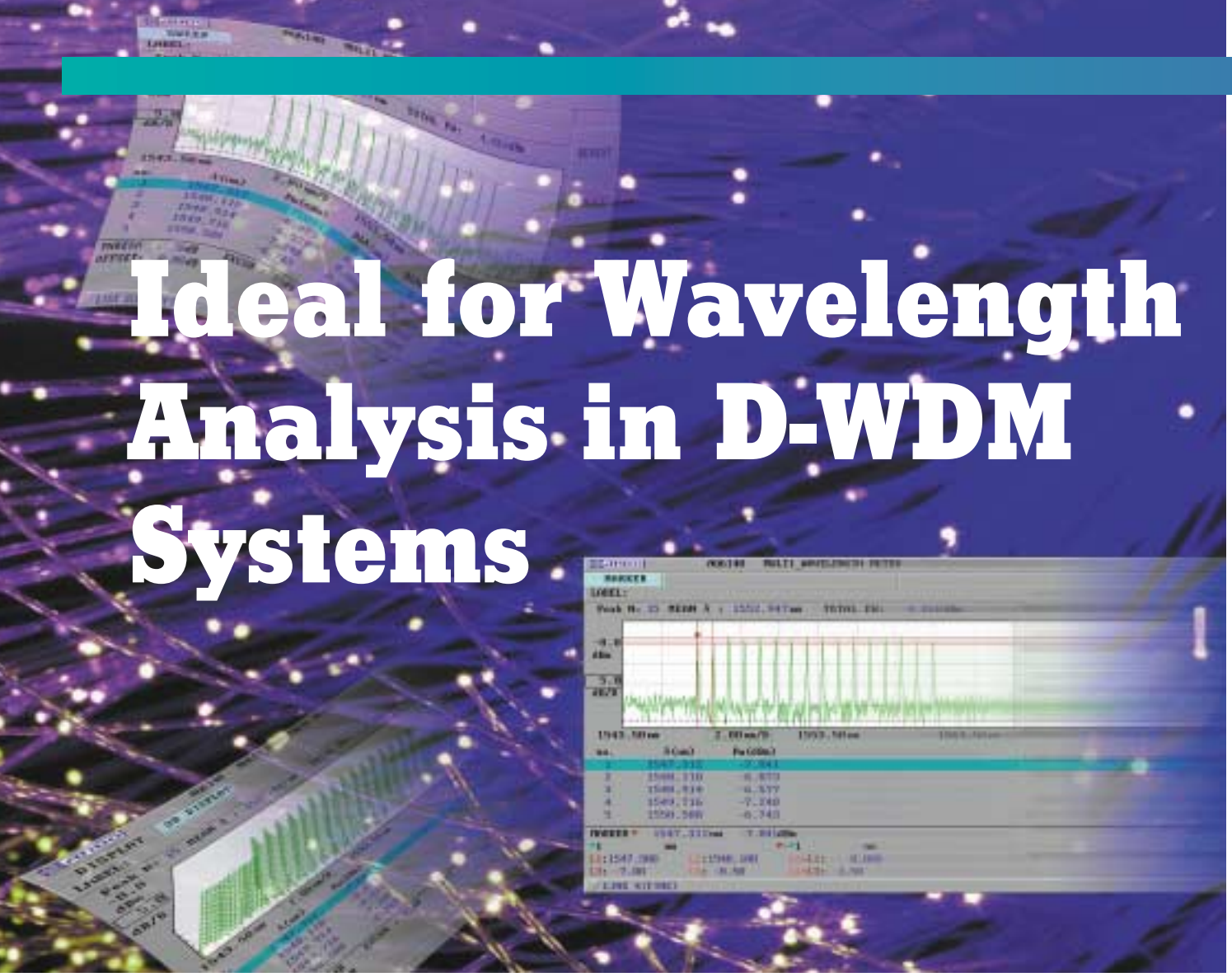
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Find the *Yokogawa / Ando AQ6140* at our website: *Click HERE*

Multi-Wavelength Meter
AQ6140



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Ideal for Wavelength Analysis in D-WDM Systems

General

Practical application in recent years of Wavelength Division Multiplexing (WDM) transmission technology for high-volume optical communication has led to the current situation in which we're on the verge of producing 50 GHz-wavelength systems.
Accordingly, demand for a higher-specification wavelength parameter tester is increasing. Such a tester can go a long way toward improving evaluation of transmission systems and optical devices.
The AQ6140 Multi-Wavelength Meter, providing excellent wavelength accuracy and resolvable separation in measurement, surpasses this demand, making it ideal for all applications from D-WDM system development to manufacturing.

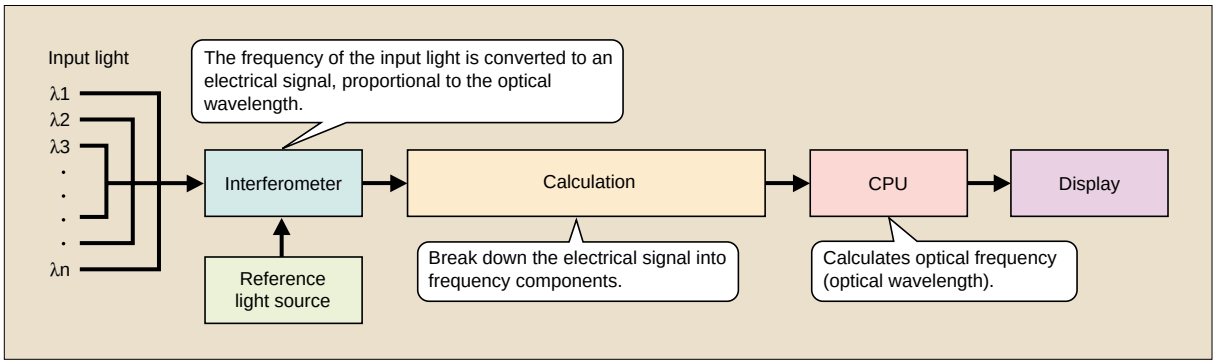
Features

● **Highly accurate wavelength measurement**
Realizes high accuracy measurement of ±0.003 nm. (at 1310 nm, 1550 nm)
● **High resolvable separation**
Minimum resolvable separation: 10 GHz or less (1550 nm: 80 pm)
● **Capable of measurement for up to 256 channels**
Wavelength and power measurement for up to 256 channels
● **Simple operation**
Three-step (maximum) operation saves you from complicated operation.
● **Enlarge display of peak list**
Can display enlarged data of one channel in the area normally displaying data of 5 channels.
● **Drift measurement**
Refers to measuring the time-passage changes wavelength and power. (up to 256 channels)
● **Grid monitoring function**
Useful function for checking wavelength shift of each grid
● **Complete functions for monitoring WDM light source**
Complete functions for stability analysis of light source such as 3D display of variable rate, time displacement display, variable rate trap function, etc.
● **Complete memory functions**
Can record measurement data and measurement conditions in floppy disk and internal memory.
● **Large-size (6.5-inch) color display**
Can check waveform data and peak wavelength at a time by displaying waveforms and measurement data simultaneously.

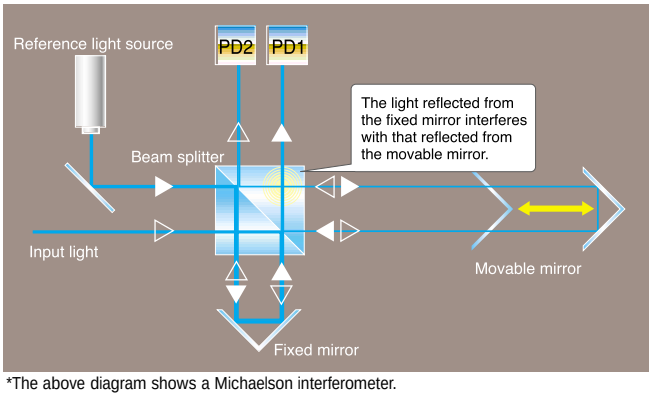
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Principle of Measurement

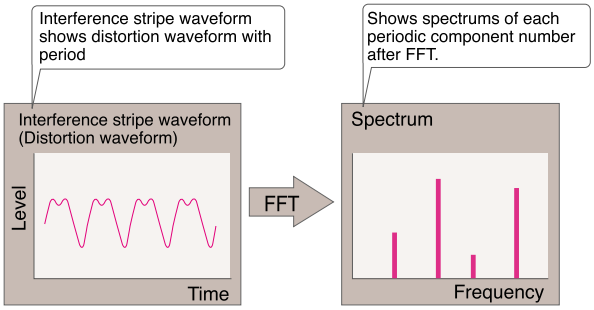
Basic Configuration



Interferometer



*The above diagram shows a Michaelson interferometer.



FFT: Fast Fourier Transform

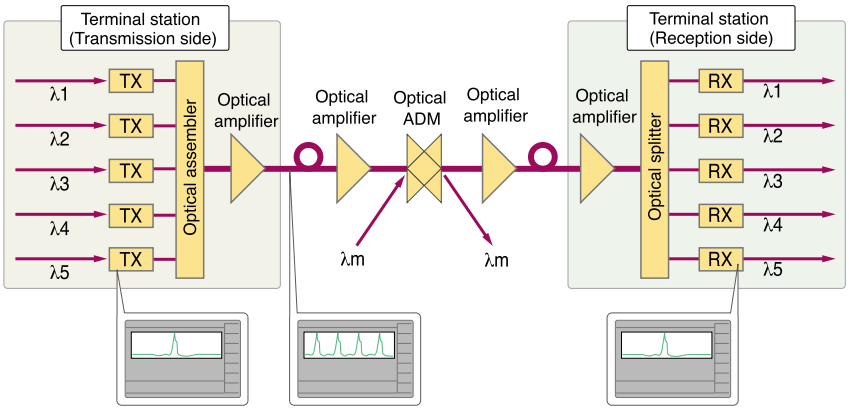
Conversion to Optical Frequency (wavelength)

$$Flot\text{-}in = \frac{Fint\text{-}in}{Fint\text{-}ref} \times \text{optical } Flot\text{-}ref$$

$$\lambda opt\text{-}in = \frac{c}{Flot\text{-}in}$$

- Flot-in: optical frequency of input light
- Fint-in: frequency of input light interference wave
- Fint-ref: frequency of reference light interference wave
- Optical Flot-ref: frequency of reference light
- λopt-in: optical wavelength of input light
- c: speed of light

WDM Transmission Concept

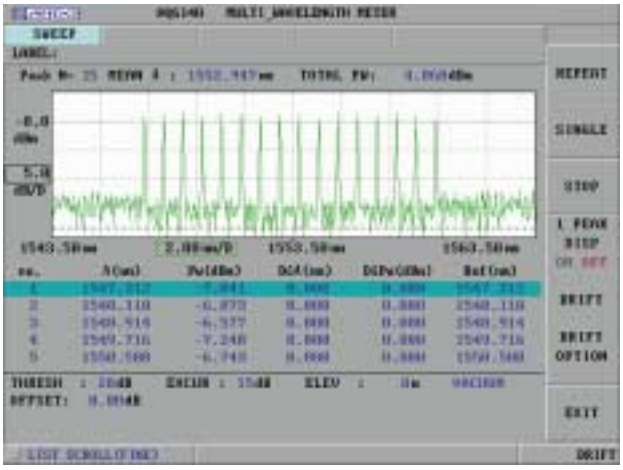


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Applications

Characteristic evaluation of light source for WDM

Measures both wavelength and power up to 256 channels, and displays waveform and measurement result at a time.
Capable of checking if it's matched to advice of ITU-T and severe monitoring of grid.
Also capable of displaying the list of peak wavelength and power.





Long-term function

Displays changes of peak wavelength and power of one channel.
Below waveforms, displays not only current measurement result but also maximum rate, minimum rate or balance of maximum rate and minimum rate.



Grid monitoring function

Analyzes peak wavelength of set grid.
Searches peak wavelength, or analyzes wavelength gap and changes of power within the grid.

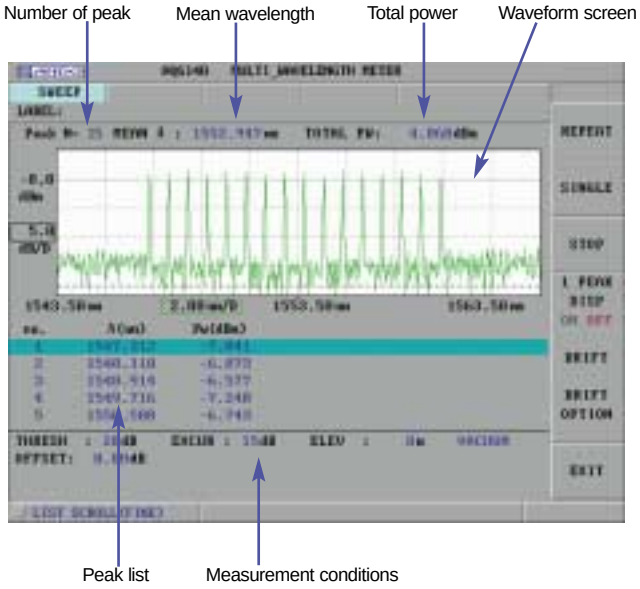


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Screen examples

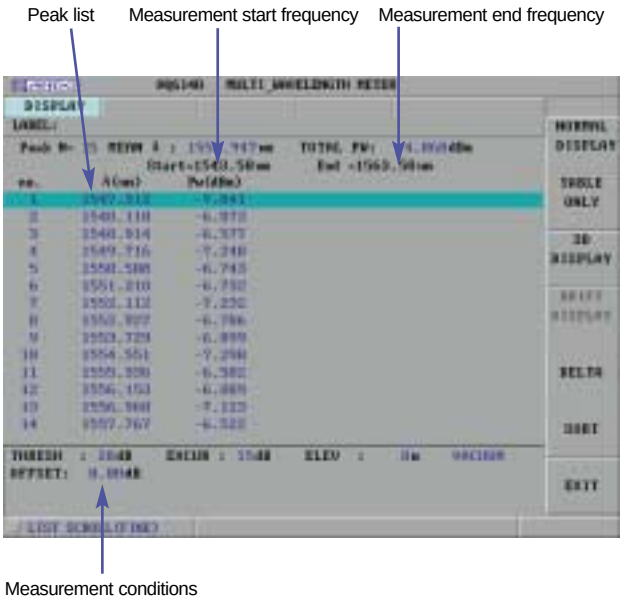
Standard screen

The waveform and the peaks are display simultaneously on this standard screen.
It is used to monitor WDM system temperature characteristics and evaluate laser oscillators.



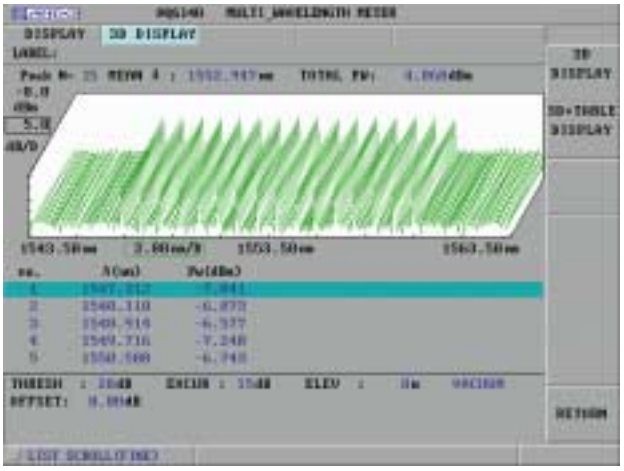
List screen

This mode displays a list of the peak wavelengths, up to 14 at a time.



3D display screen

Displays 3D waveforms and peak lists at a time. It helps to check the change of measurement result by time.



Marker screen

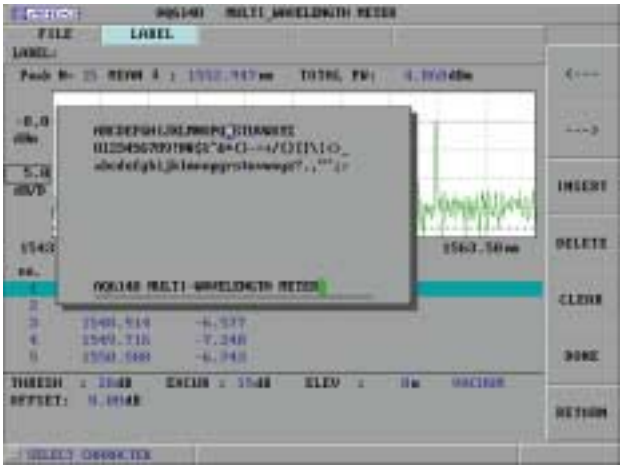
The marker function simplifies tasks such as analysis of wavelength and power level difference.



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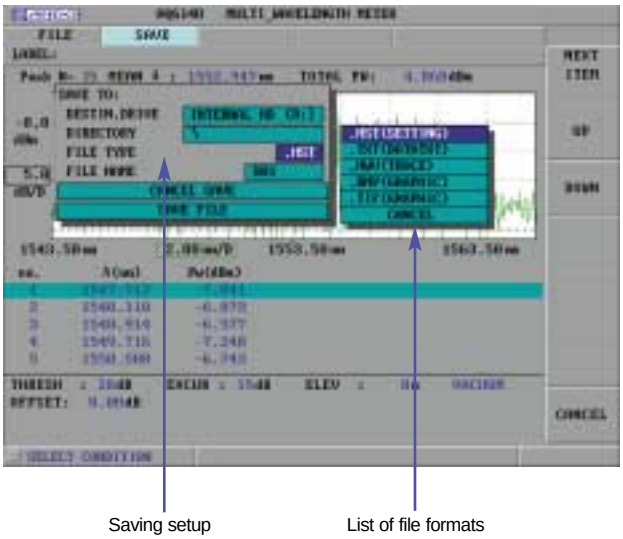
Label input screen

Label can be input up to 36 characters, so that file management can be easy.

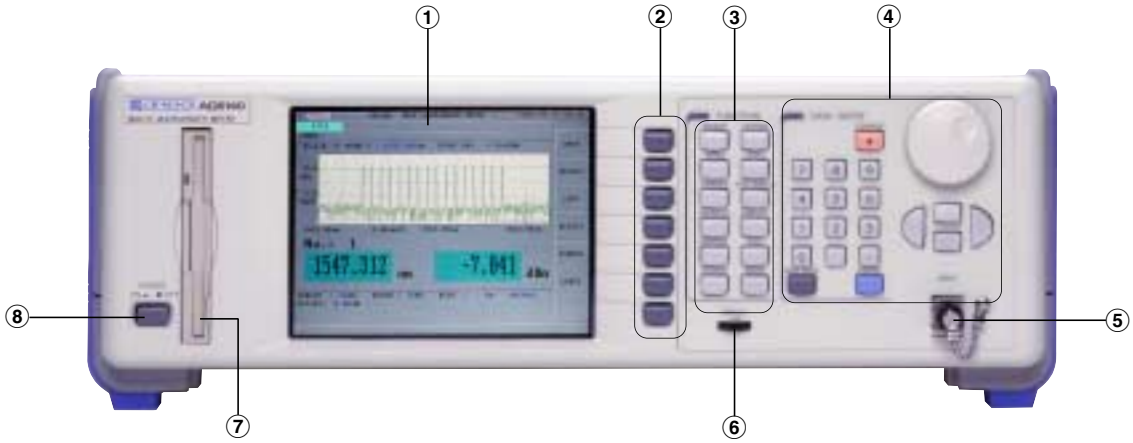


File screen

Measured waveform data can be saved in a variety of file formats.
The file recall function makes it possible to make new measurement with the same measurement conditions as saved data, which is ideal for WDM system maintenance.



Operation panel



① 6.5-inch color LCD
Displays measured waveforms, measurement conditions, measurement results, etc.

② Soft key
For selecting and proceeding functions corresponding to Function keys

③ Function key (Switch for selecting main function)
Selects from 12 functions

④ Data entry key
For inputting data through ten-key, rotary encoder, cursor key, etc.

⑤ Optical input connector
Connector for connecting measured optical fiber cable

⑥ Brightness adjustment
Adjust the brightness of LCD

⑦ 3.5-inch floppy disk drive

⑧ Power switch

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Specifications

Applicable fiber			SM
Wavelength range			1270 to 1650 nm (182 to 236 THz)
Wavelength accuracy [1]			±2 ppm (1550 nm, 1310 nm: ±0.003 nm)
Minimum resolvable separation [2]			10 GHz or less (1550 nm: 80 pm, equal power line input)
Power accuracy			±0.5 dB (1310/1550±30 nm, typ.)
Level linearity			1270 to 1600 nm: ±0.3 dB (input: -30 dBm or more)
Polarization depending loss [2]			1270 to 1600 nm: ±0.5 dB 1600 to 1650 nm: 1.0 dB
Maximum number of line input			256
Minimum input level			1270 to 1600 nm: -40 dBm (1 line input) 1600 to 1650 nm: -30 dBm (1 line input)
Maximum input level			+10 dBm (total of all lines)
Safe max. input level			+18 dBm (total of all lines)
Return loss			35 dB (PC)
SN ratio			35 dB (typ.) (noise band width: 0.1 nm, input: -25 dBm or more, spacing ≧ 100 GHz)
Measurement time [3]			≦ 1.5 sec
Display			6.5-inch color LCD (640 x 480 dots)
Memory	Internal		Can memorize 10 measurement results and conditions
	Floppy disk (3.5-inch 2HD)		Can memorize measurement results and conditions
	Internal hard disk drive		9MB: can memorize measurement results and conditions
Interfaces		GP-IB	GP-IB (IEEE. 488.2)
		RS-232C	9-pin D-sub
		Printer port	25-pin D-sub (centronics)
		VGA monitor	15-pin D-sub
Optical connector [4]			AQ9441 (FC) Universal Adapter
Power requirements			AC 100 to 120/200 to 240 V, 50/60 Hz (47 to 63 Hz), 100 VA
Environmental conditions			Operation temperature: 5 to 40 °C, storage temperature: -20 to +60 °C, humidity: 80 % RH or less (at 40 °C, no condensation)
Dimensions and mass			Approx. 425 (W) x 132.5 (H) x 450 (D) mm, approx. 14 kg
Accessories			Power cord: 1, Instruction manual: 1

Notes:
1) After 30 minutes warming up, line spacing: 30 GHz or more, multiple-line input
2) Characteristics data may be varied depending on equipment.
3) In REPEAT measurement
4) FC: standard. Also compatible with SC, ST, DIN and DIA.

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Specifications are subject to change without notice.

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