A compact, lightweight, portable optical spectrum analyzer for DWDM system installation and maintenance.
The AQ6331 is a new portable optical spectrum analyzer (OSA) offering the advanced performance required for 50 GHz DWDM network testing, in both C-band and L-band.

The compact body of the AQ6331 houses all the features required for DWDM system evaluation.

Further, the AQ6331 presents excellent wavelength resolution, with accuracy and dynamic range equal to conventional bench-top OSAs for research and development applications.

The AQ6331 is an optical spectrum analyzer that can be used not only for installation and maintenance of DWDM systems, but also in research and development applications.
Optical Spectrum Analyzer

Features

- **Compact and lightweight**  
  Approx. 315 (W) x 200 (H) x 225 (D) mm and only 10 kg., yet offers a light source for wavelength calibration and printer as standard.

- **High wavelength accuracy**  
  Provides ±0.02 nm wavelength accuracy at 1520 to 1580 nm, and ±0.05 nm at 1580 to 1620 nm, assuring wavelength accuracy of C-/L-band with an internal light source for wavelength calibration.

- **Internal wavelength calibration function**  
  Wavelength calibration is carried out without using an external light source due to a built-in reference light source. Optical fiber connection for calibration is unnecessary because connection to the reference light source occurs automatically, through an internal optical switch.

- **High dynamic range and high wavelength resolution**  
  Dynamic range is 55 dB or more (peak ±0.4 nm) and wavelength resolution is 0.05 nm (min.), enabling measurement of DWDM systems of 50 GHz spacing.

- **High power measurement**  
  Optical amplifier output and high output laser diodes in DWDM systems can be measured directly because the range of measurement level is +20 dBm.

- **Low polarization dependency**  
  Can accurately measure optical amplifier gain, etc., because polarization dependency is as low as ±0.05 dB.

- **Long-term analysis function**  
  Can monitor changes to each DWDM channel peak over time.

- **Convenient programming function**  
  Shortens measurement time because measurement conditions and processes, etc., can be input to memory prior to measurement.

- **Individual trace of three waveforms**  
  Displays individual traces of three waveforms. Can also compare two waveforms — a reference waveform and a measurement result — to determine the difference between the two waveforms.

- **Internal high-speed printer**

- **8.4-inch large display**
Applications

● DWDM analysis function
The AQ6331 can simultaneously measure up to 100 channels of DWDM signals.
• Peak wavelength (WAVELENGTH) of each channel, peak power level (LEVEL)
• Offset wavelength to the reference channel peak (OFFSET WL), level difference (OFST LVL)
• Noise level (NOISE) of each channel, difference between peak level and noise level (SNR)

● Long-term function
Sweeps at selected intervals and stores the results of DWDM analysis (peak wavelength, peak level and SNR of each channel). This function enables long-term monitoring for changes within each WDM channel.

Measurement process of optical spectrum analyzer in DWDM systems
● Optical fiber amplifier (EDFA) evaluation
The ASE interpolation method is used to facilitate the measurement of gain, NF (Noise Factor) and key parameters for optical fiber amplifier.

● Characteristic evaluation of optical passive devices
In conjunction with the ASE light source, wideband light source, etc., users can establish a very powerful system for the evaluation of passive devices.

Example of measurement result. (Gain,NF)
Measurement example of notch width in FBG transmission spectrum
Measurement example of transmission spectrum in FBG reflection spectrum
Applications

- Various parameter evaluations of LED, FP-LD and DFB-LD
  SMSR (Side-Mode Suppression Ratio) of LED, FP-LD and DFB-LD. Parameter evaluations such as Side-Mode Suppression Ratio, etc., can be obtained easily.

- Power measurement function
  Determines power within selected wavelength boundaries. Measurement range can be freely set.

- Programming function
  Fully programmable operation enables the setting of measurement conditions such as wavelength sweep width, resolution, various analysis functions, print output and data storage to floppy disk. This built-in function helps eliminate complicated installation and maintenance procedures, enhancing work efficiency.
**Operation panel**

1. **8.4-inch color LCD**
   Displays all information such as measurement waveforms, measurement conditions and measured data.

2. **Soft keys to select displayed menu items**
   Press a key to select the desired function.

3. **Common function keys**
   To execute common functions.

4. **3.5-inch floppy-disc drive**
   To store text or graphics files (BMP, TIFF).

5. **Copy key**
   To print out data with the built-in printer or an external printer.

6. **Help key**
   To display the actions of various function keys.

7. **Optical input connectors**
   Compatibility with a variety of connector types is achieved through the exchange method.

8. **Interfaces**
   RS-232C, GP-IB, keyboard, mouse, video, printer, and PCMCIA ports are provided.

9. **Built-in printer**
   To quickly output screen hard copies.

10. **Power switch**
### Specifications

<table>
<thead>
<tr>
<th>Applicable fiber</th>
<th>Single mode fiber (10/125 µm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength range</td>
<td>1200 to 1700 nm</td>
</tr>
<tr>
<td>Wavelength accuracy</td>
<td>±0.02 nm (1520 to 1580 nm), ±0.05 nm (1580 to 1620 nm), ±0.3 nm (1200 to 1700 nm)</td>
</tr>
<tr>
<td>Wavelength linearity</td>
<td>±0.01 nm (1520 to 1580 nm), ±0.02 nm (1580 to 1620 nm)</td>
</tr>
<tr>
<td>Wavelength reproducibility</td>
<td>±0.005 nm (1 min.)</td>
</tr>
<tr>
<td>Wavelength resolution</td>
<td>0.05 nm or less (Resolution setting: 0.05 nm, 1520 to 1620 nm)</td>
</tr>
<tr>
<td></td>
<td>0.1 nm or less (Resolution setting: 0.1 nm, 1520 to 1620 nm)</td>
</tr>
<tr>
<td></td>
<td>Resolution setting: 0.2, 0.5, 0.10 nm</td>
</tr>
<tr>
<td></td>
<td>Resolution accuracy: ±5 % (Resolution setting: ±0.2 nm)</td>
</tr>
<tr>
<td>Measurement level range</td>
<td>-90 to +20 dBm (1200 to 1600 nm, sensitivity: HIGH 3)</td>
</tr>
<tr>
<td></td>
<td>-80 to +20 dBm (1600 to 1700 nm, sensitivity: HIGH 3)</td>
</tr>
<tr>
<td>Level accuracy</td>
<td>±0.3 dB typ. (1550 nm, 1600 nm)</td>
</tr>
<tr>
<td>Polarization dependency</td>
<td>±0.05 dB (1550 nm, 1600 nm)</td>
</tr>
<tr>
<td>Level linearity</td>
<td>±0.05 dB (input level: 0 to -50 dBm, sensitivity: HIGH 1 to 3)</td>
</tr>
<tr>
<td>Level flatness</td>
<td>±0.1 dB (1520 to 1580 nm)</td>
</tr>
<tr>
<td></td>
<td>±0.2 dB (1520 to 1620 nm)</td>
</tr>
<tr>
<td>Level reproducibility</td>
<td>±0.02 dB (1550 nm, 1600 nm)</td>
</tr>
<tr>
<td>Dynamic range</td>
<td>55 dB or more (1523 nm, peak: ±0.4 nm, resolution: 0.05 nm)</td>
</tr>
<tr>
<td></td>
<td>40 dB or more (1523 nm, peak: ±0.2 nm, resolution: 0.05 nm)</td>
</tr>
<tr>
<td>Return loss</td>
<td>30 dB typ. (1550 nm, 1600 nm)</td>
</tr>
<tr>
<td>Sweep time</td>
<td>Approx. 0.5 sec.</td>
</tr>
<tr>
<td>(Span: 50 nm, sensitivity: NORMAL HOLD, number of sampling: AUTO, average: 1)</td>
<td></td>
</tr>
<tr>
<td>Functions</td>
<td>Auto-configuration by auto-sweep sensitivity (NORMAL HOLD/AUTO, HIGH 1/2/3), averaging, number of sampling, (11 to 20001, AUTO), sweep between markers, 0-nm sweep, pulse light measurement</td>
</tr>
<tr>
<td>Trace display</td>
<td>3 individual traces (Max/Min, rolling average, data calculation), frequency/wavelength axis</td>
</tr>
<tr>
<td>Data analysis</td>
<td>WDM, EDFA, PDM, SMSR, search (Peak, Bottom), spectral width, notch-width, delta-marker, line marker</td>
</tr>
<tr>
<td>Others</td>
<td>Program, long-term measurement, wavelength self-calibration</td>
</tr>
</tbody>
</table>

#### Notes

1) SMF 10/125 µm, after 2-hour warm up, 10 to 35 °C
2) Input level: -30 dBm, sensitivity: HIGH 1 to 3
3) Resolution: 0.1 nm or more
4) 1523 nm, resolution 0.05 nm, sensitivity: HIGH 1 to 3

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### Accessory

**Product name:** AQ6331 Optical Spectrum Analyzer  
**Model:** 810804300-

### Print paper (Roll Type)

**Parts Number:** 955-892900215(model name : TP-312C)

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**NOTICE**

Remarks : Export condition is subject to Japanese governmental approval. Specifications are subject to change without notice.

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