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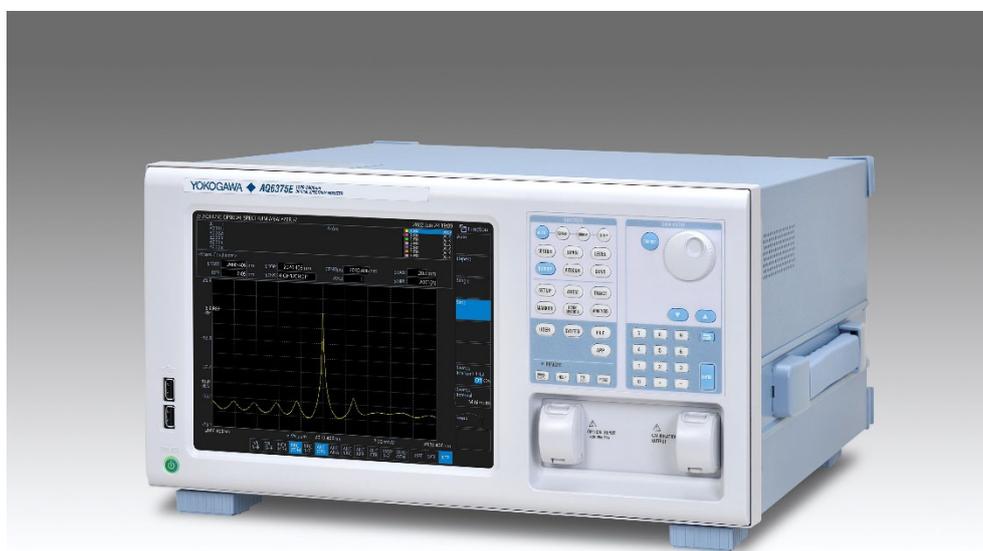
## Yokogawa Test & Measurement Releases AQ6375E and AQ6376E Near/Mid-Infrared Band Optical Spectrum Analyzers

**- High resolution and wide measurement range support the development of lasers for measuring greenhouse gases and blood glucose concentrations -**

Yokogawa Test & Measurement Corporation announces that it has developed the AQ6375E and AQ6376E optical spectrum analyzers and will release them on July 29. These devices offer high-precision measurement of the optical spectrum in the near and mid-infrared bands, as well as greatly improved user-friendliness.

The AQ6375E and AQ6376E are bench-top optical spectrum analyzers that use dispersion spectroscopy\*<sup>1</sup>, an industry first\*<sup>2</sup>. The design of the AQ6375E is optimized for measurements in the near-infrared range of 1.0-2.5 $\mu\text{m}$  (micrometers), while the design of the AQ6376E is optimized for measurements in the mid-infrared range of 1.5-3.4  $\mu\text{m}$ . They can be used to resolve the wavelength components of optical devices such as semiconductor lasers and fiber lasers in order to assess their properties.

These devices can be used to develop and enhance near-infrared and mid-infrared optical devices such as those used in environmental measurement, where the measurement of carbon dioxide and methane concentrations is required, and in the health care and medical treatment fields, where blood glucose and blood cholesterol concentrations must be measured to calculate blood sugar levels.



AQ6375E optical spectrum analyzer

### Development Background

Given the recent heightened concerns about the global environment, initiatives to reduce greenhouse and toxic gas emissions are gathering momentum. In the environmental measurement

field, ever more resources are being invested in the development of laser absorption spectroscopy\*<sup>3</sup> for use in sensors to measure greenhouse gas concentrations.

In the health care and medical treatment fields, advances are being made in the development of health monitoring sensors that use laser technology to perform non-invasive measurements of glucose and cholesterol levels in the blood, and optical coherence tomography (OCT) to perform cross-sectional imaging of bodily tissue structures.

The development of sensors to measure greenhouse gas concentrations and monitor health requires high-performance lasers that match the absorption wavelength of the measurement subject in the 2 $\mu$ m and 3 $\mu$ m bands, and so optical spectrum analyzers that can perform measurements of laser light with high wavelength resolution over a wide dynamic range are required. And for the development of OCT technology, optical spectrum analyzers that are capable of making batch measurements in the 1-2.4 $\mu$ m range are considered necessary.

## New Features

### **1. A three-model lineup to meet a wide range of needs (AQ6375E)**

Three AQ6375E models have been developed: a standard model with wavelength measurement in the 1.2 to 2.4 $\mu$ m range, an expanded wavelength model with wavelength measurement in the 1.0 to 2.5 $\mu$ m range, and a limited model that is suitable for use on production lines. For OCT and other applications, the expanded wavelength model is ideal for optical spectrum measurements performed using 2 $\mu$ m supercontinuum sources.

### **2. Industry-leading dynamic range**

The AQ6375E and AQ6376E have a dynamic range of 80 dB and a close-in dynamic range\*<sup>4</sup> of 55 dB, which are 10,000 times and 300 times greater, respectively, than what is possible with an interferometer-type optical spectrum instrument. No other instruments on offer in the market have this range\*<sup>5</sup> and this is sufficient for the performance of side mode measurements\*<sup>6</sup> with a semiconductor laser.

### **3. Improved user-friendliness**

These optical spectrum analyzers are equipped with a large 10.4 inch multi-touch screen touch panel. This intuitive and easy to use interface functions much like a tablet. Furthermore, a test application is available that navigates the user through operations ranging from the setting of measurement conditions to the output of measurement subject-specific analysis results. With this software, users of optical spectrum analyzers do not have to worry about making detailed settings.

## **Major Target Users**

Universities and research institutes working in the medical treatment and environmental measurement fields, semiconductor device manufacturers, and optical module manufacturers

## **Main Uses**

Emission spectrum measurement using semiconductor, fiber, and other wide-wavelength lasers  
Measurement of wavelength transmission characteristics for optical filters such as a fiber Bragg

grating (FBG)<sup>\*7</sup>

- \*1 A type of spectroscopy in which light of a wide range of wavelengths is dispersed with a diffraction grating and passes through a narrow gap in order to extract a narrow range of wavelengths
- \*2 Based on a July 2022 survey by Yokogawa Test & Measurement
- \*3 The use of a laser to irradiate molecules, which, depending on their type, will absorb light of a particular wavelength. This principle is used to analyze the optical spectrum and quantitatively assess molecules in the gas phase.
- \*4 An indicator of the ability to resolve a weaker signal that is very close (in wavelength) to a stronger signal
- \*5 Based on a July 2022 survey by Yokogawa Test & Measurement. The dynamic range is a reference value (typical value), not a guaranteed value.
- \*6 Measurement of the difference between the targeted output wavelength during semiconductor laser emission and the non-targeted wavelength that is generated
- \*7 A device that utilizes periodic variations in the refractive index to reflect a certain wavelength in an optical fiber

### **About Yokogawa**

Yokogawa provides advanced solutions in the areas of measurement, control, and information to customers across a broad range of industries, including energy, chemicals, materials, pharmaceuticals, and food. Yokogawa addresses customer issues regarding the optimization of production, assets, and the supply chain with the effective application of digital technologies, enabling the transition to autonomous operations. Founded in Tokyo in 1915, Yokogawa continues to work toward a sustainable society through its 17,000+ employees in a global network of 122 companies spanning 61 countries.

For more information, visit [www.yokogawa.com](http://www.yokogawa.com)

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