OPTICAL METHOD MICRO STRUCTURAL WAVEGUIDE INSERTION LOSS MEASUREMENT SYSTEM

Optical method insertion loss measurement system targeting on micro structural waveguide device such as silicon photonics waveguide module, single-mode waveguide module, near-field optical device, etc.

[Product overview]

This is optical method insertion loss measurement system targeting on micro structural waveguide device using Synos' optical beam irradiation and detection measurement optics **M-Scope type J**. It is possible to execute high speed and efficient insertion loss measurement of micro structural waveguide device such as silicon photonics waveguide device, single-mode waveguide module, near-field optical device and so on.

It does not require the time consuming alignment that is used for conventional optical fiber alignment method because of direct image observation on core edge. Therefore, it measures the insertion loss guickly even with the combination of manual stages.

In addition, if it is used with motorized automatic stages, anyone can easily repeat and reproduce the measurement on insertion loss with the combination of semi-automatic alignment control software. Furthermore, it is possible to built up automatic and high speed insertion loss measurement system for micro structural waveguide device applicable for mass production testing.

This system is best for efficient insertion loss measurement for micro structural waveguide device such as silicon photonics waveguide device, near-field optical device and so on.

[Feature]

* This system equips Synos' optical beam irradiation and detection measurement optics **M-Scope type J/PF**

- M-Scope type J/PF is for beam irradiation/detection optics as well as coaxial observation camera, so that it enables the position adjustment of incident measurement light to observe the objective image directly.
- Polarization-free type optical fiber connect port is adopted and reduced the influence of polarization in measurement.
- Possible to select objective lens. Optical magnification is max 100x. Possible to choose NIR type objective lens, HR (High Resolution) type objective lens, etc.

* Maximum optical magnification for observation is 100x, applicable to observe edge of micro structural waveguide chip such as Si photonics waveguide device, near-field optical device etc.

* It irradiates the core diameter edge onto sample surface with 1:1 magnification and detects the light from sample surface. Any optical fibers with different core diameters can be used as having conjugation conditions with optical fiber alignment.

* It can make optical power measurement by optical fiber as well as wavelength measurement used with optical spectrum analyzer.
* Dedicated image processing and automatic alignment software is prepared. In combination with various high precision motorized stage system, it is possible to built up high speed and high

accuracy automatic loss measurement system, applicable to mass production test.

Svnos

[Main component (example)]

- * Input side / output side
 - Measurement optics M-Scope type J/PF (M-Scope type J)
- Positioning stage system
- About optical beam irradiation & detection measurement optics M-Scope type J in details, please refer to P5.
- Sample holder / sample stage
- * Imaging detector selection (recommendation)
 - For visible 1100nm : Synos' Hi-resolution digital CCD detector ISA011/ISA031
 - For 950nm 1700nm : Synos' InGaAs high sensitivity NIR detector ISA041H2
- About imaging detector in details, please refer to P25-28. * Control system
- Computer for data processing and system control, operation monitor for system operation, control and analysis software, system and stage control unit, etc.
- * Peripherals
 - Vibration isolated table and shield box
 - System shelf for measurement instruments
- Safety equipment etc.

[Application]

* Insertion loss measurement of micro structural waveguide such as Silicon photonics device, near-field optical device, etc.

- * Observation of output beam profile and output edge condition of Silicon photonics device, near-field optical device, etc.
- * Analysis of optical transmission characteristics of Silicon photonics device, near-field optical device, etc.

[Block diagram of "Optical method microstructural waveguide insertion loss measurement system"]

