

Optical Waveguide Magnetic Field Sensor (Optical H-field Sensor)

Applications

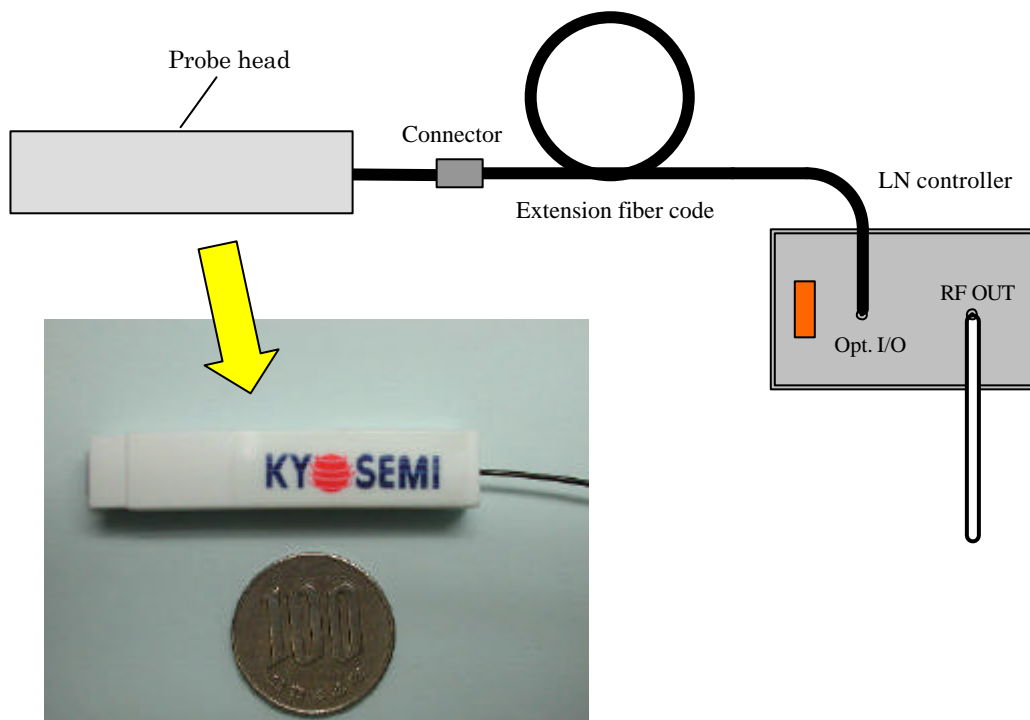
- Measurement of magnetic field distribution over the printed circuit board
- Measurement of current distribution on the case of cellular phone
- No-contacting current signal probing
- Measurement of Specific Absorption Ratio (SAR) as an index of the biological effects of electromagnetic radiation

Features

Optical waveguide magnetic field probe, which is assembled on LiNbO_3 wafer by the integrated optical wave-guide technology is connected to a loop antenna element as an electro-optic modulator. This modulator is suitably used for precise near-field probe of H-field emission because it doesn't disturb the surrounding electromagnetic field as compared with the conventional probe.

This probe has the following features for precise near field measurement of H-field emission.

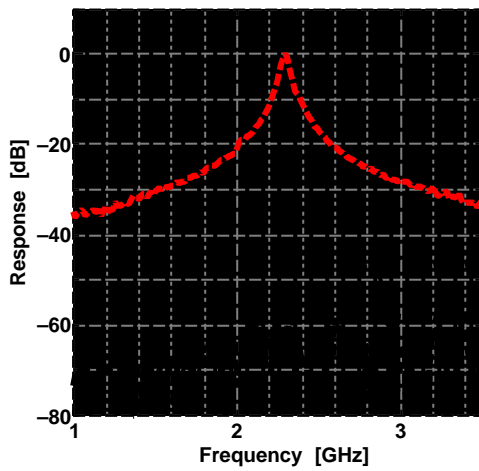
- low invasiveness
 - There is no metallic part (excluding antenna element & minute modulator electrodes).
 - The probe head is electrically insulated by optical fiber.
- high space resolution
 - The probe has a small Loop antenna element integrated on the modulator.
- High frequency response
 - The bandwidth of the electro-optic modulator is up to 10GHz.
- Probe head size
 - L = 50 mm, W = 10 mm, t = 8 mm (the head without package is available, 12?6?1.5 mm)



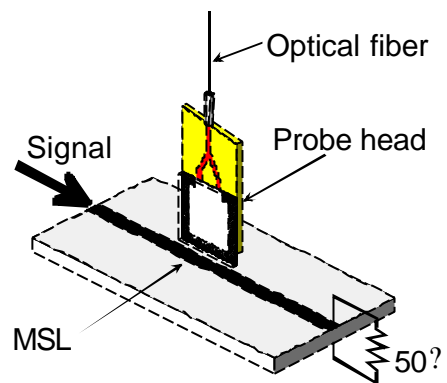
Configuration of the Optical Waveguide Magnetic Field Probe

Performances and Dimensions

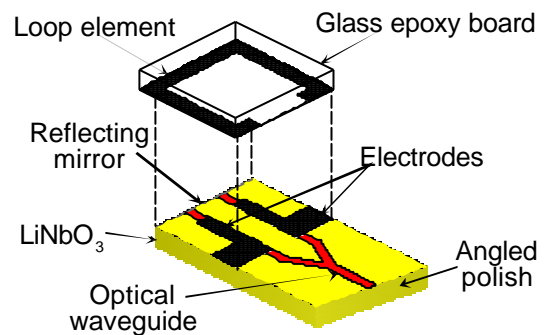
Item		Characteristics
Probe Head	Sensitivity	1 A/m ? 1 mA/m
	Frequency Range	1 ? 3.5 GHz
	Operating Temperature	Room Temp.
	Package Size	50 ? 10 ? 8 mm
	Fiber Pigtail	(min.) 1 m, with SC type connector
Extension Fiber Cable		Polarization maintaining fiber cable of ? 3 mm in diameter with SC type connectors
LN Controller	Optical Power	(min.) 1 mW
	Wavelength	1.55 ? m
	Output Voltage	(Typ.) 125 Vpp
	Output impedance	50 ?
	Power Supply	AC 100 V



Response of the probe



Measurement setup



Structure of the probe head