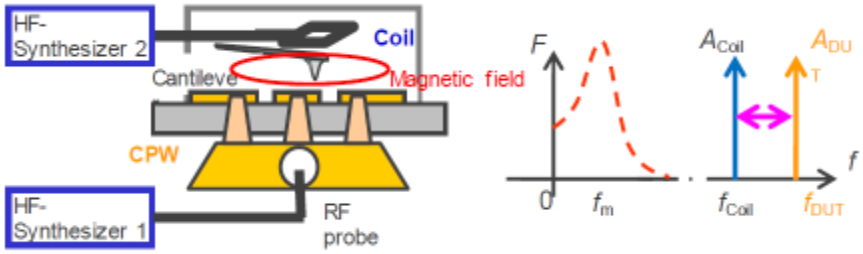
Tohoku Univ. Technology

High-frequency magnetic field measurement-device

High-frequency magnetic field measurement-method with sub-micron spatial resolution



Overview

The problem of electromagnetic noise entering to analog circuit from digital circuit in RFICs (Radio Frequency ICs) for portable terminals (smartphone, tablet, etc.) which are capable of ultra high speed GHz class communication, is becoming a serious subject.

In order to measure high frequency magnetic field on IC chip, methods with "high spatial resolution" and "GHz measurement frequency" are necessary, but none of the existing high-frequency magnetic field measurement-methods (shielded loop coil type magnetic field probe, magneto-optical probe, giant magnetic resistive sensor, etc.) satisfy these requirements.

This invention is about a high-frequency magnetic field measurement-device using a magnetic force microscope (MFM) probe, and the beating field method which uses the field undulation. Specifically, a configuration that enables the separation (removal) of electric field that interferes with magnetic field measurement, and a configuration that modifies the cantilever drive and detection component are added in this invention.

[Method] Generate beating field between two high frequency magnetic fields

(1) Magnetic field created by current flowing through wiring (unknown)

(2) Magnetic field generated by a high frequency excitation coil (known)

Condition: “frequency difference between 2 magnetic fields = resonance frequency of the cantilever”

⇒ Detection of high frequency magnetic field components by MFM probe in response to the beating field

[Feature] Direct detection of magnetic field components without using wave modulation signal

Product Application

- RFIC inspection equipment, etc.

IP Data

IP No.	:	JP5958895, JP6327614
Inventor	:	ENDO Yasushi, YAMAGUCHI Masahiro, SHIMADA Yutaka, MUROGA Sho
Admin No.	:	T11-125, T12-162

Contact

Tohoku Techno Arch Co., Ltd.
Please visit CONTACT here