Frequency Response Analysis

MSO-2000E and MDO-2000E allow the FRA function to be installed(*) or FRA software can be downloaded for free from GW Instek website. Note*: latest firmware.

After the installed this function, MDO-2000E, MDO-2000AG, and MSO-2000EA series can obtain DUT's FRA characteristic curve plot by its signal output of AWG (Arbitrary Waveform Generator), and FRA software.

FRA has a very wide application range, including product circuit and component performance verification and analysis such as Feedback of Circuit Design, Filter Design, Amplifier Design, Resonant Circuit Design, Cable Frequency Response, and Signal Transformer Performance.

FRA function in MDO-2000E, MDO-2000AG, and MSO-2000EA series, a customer can simply verify product and analyze the component's characteristics without the expensive instrument.
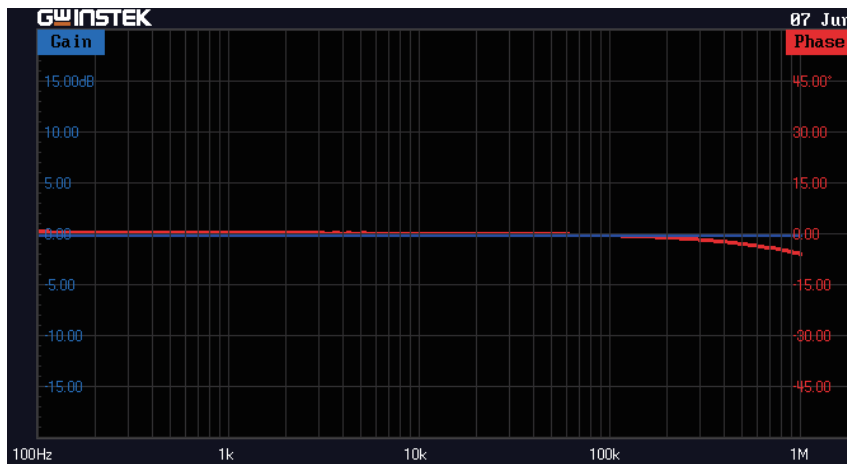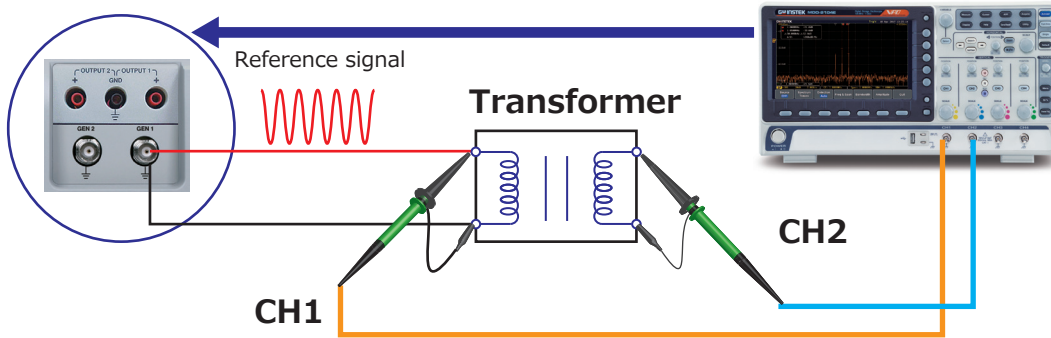
The frequency range: 20Hz to 25MHz

The number of test point: 10 to 90 points per decade, selectable.

The FRA application of MDO and MSO measures the change of the gain and phase of the DUT with frequency
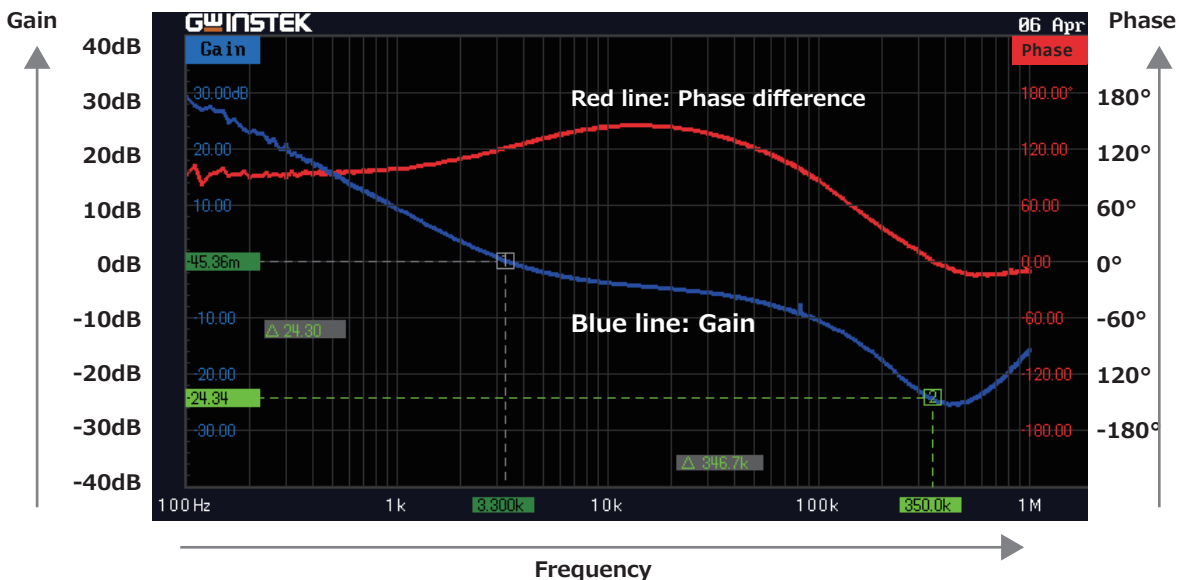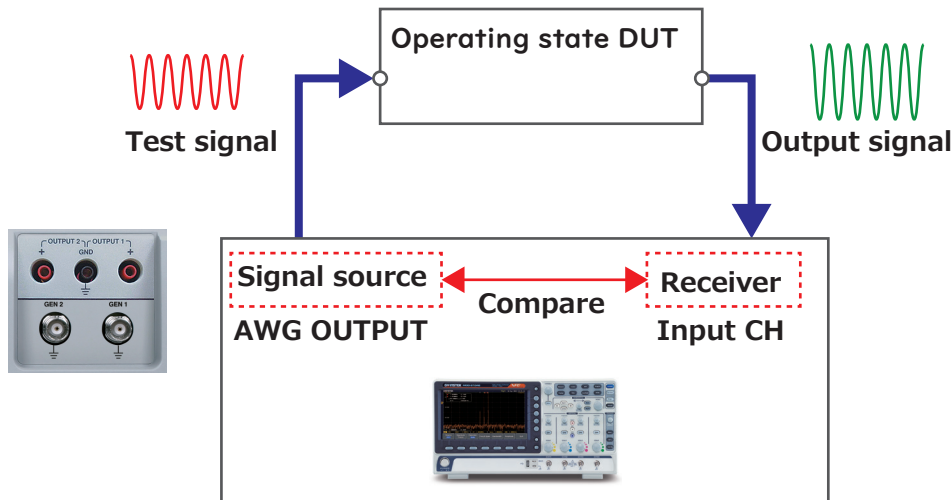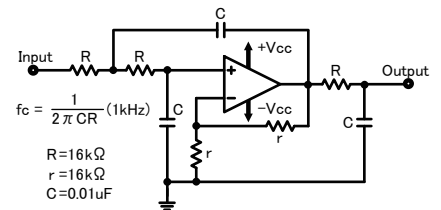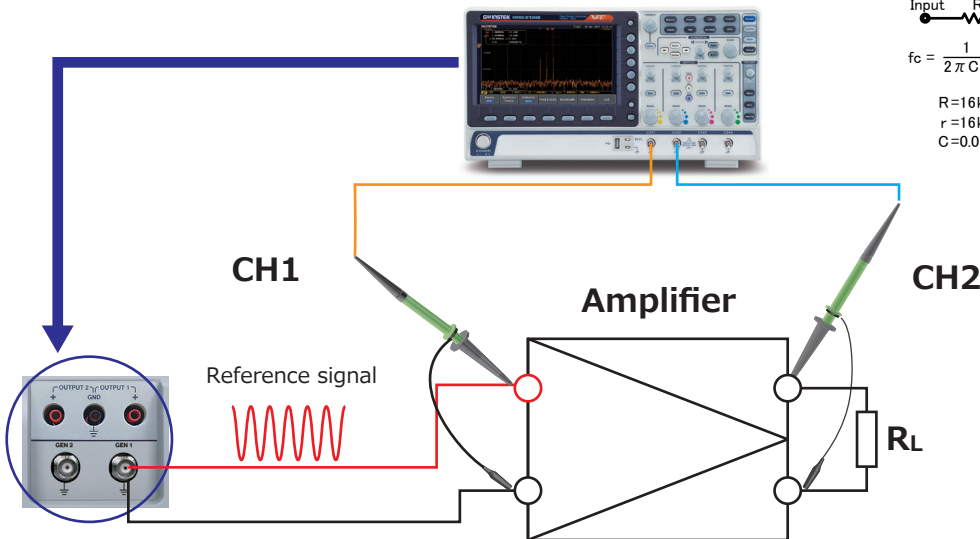
Measure characteristics of transformer

Reference signal

Transformer

CH2

CH1

Amplifier characteristics

Load Resistance R$_L$:Appropriate value

CH1

CH2

Amplifier

Reference signal

R$_L$

Input: R, R

$$fc = \frac{1}{2\pi CR}(1kHz)$$

+Vcc

−Vcc

R: Output

R=16kΩ
r=16kΩ
C=0.01uF

Input the signal from AWG of MDO as a reference signal to the amplifier. Measure the frequency characteristics with the FRA function of MDO with the input signal (CH1, Signal from AWG) and the output signal (CH2) of the amplifier

● Sweep step

Example: for the 20 – 30 kHz decade and 90 points per decade, the frequency sweep step is given by below.

(100-10)/90 = 1 Hz steps, (1000 – 100)/90=10 Hz steps, (10000-1000)/90=100 Hz steps.

Points Range: 10, 15, 30, 45, 90

Note: Please note that the FRA application only allows a DSO record length of 10,000 points