Examples of Measurement and Analysis

Measurement objects		Sweep parameters				Measurement parameters	Analysis and calculation
		Frequency	DC bias	AC amplitude	Time		
Piezoelectric material		○	—	—	○	Admittance (|Y| [S]), phase (θ [deg]), Conductance (G [S]), susceptance (B [S])	Characteristic frequency, piezoelectric parameter
Dielectric material		○	○	—	○	Parallel capacitance (Cp [F]), parallel resistance (Rp [Ω])	Dielectric permittivity (εs、εs′、εs″), dissipation factor (tanδ)
Magnetic material		○	○	—	○	Series self-inductance (Ls [H]), series resistance (Rs [Ω])	Magnetic permittivity (μs、μs′、μs″), dissipation factor (tanδ)
Inductor		○	○	○	○	Series self-inductance (Ls [H]), parallel self-inductance (Ls [H]), series resistance (Rs [Ω]), parallel resistance (Rs [Ω]), phase (θ [deg]), quality factor (Q)	Equivalent circuit estimation, equivalent circuit estimation
Capacitor		○	○	○	○	Series capacitance (Cs [F]), parallel capacitance (Cp [F]), series resistance (RS [Ω]), parallel resistance (RS [Ω]), phase (θ [deg]), dissipation factor (D), quality factor (Q)	Equivalent circuit estimation, equivalent circuit estimation
Resistor		○	○	○	○	impedance (Z [Ω]), phase (θ [deg]), resistance (R[Ω]), reactance (X [Ω]),	Equivalent circuit estimation, equivalent circuit estimation
Transformer	Leakage inductance	○	—	—	○	Lleak [H]	—
	Mutual inductance	○	—	—	—	Inductance ([H])	Mutual inductance (M[H])
	Coupling coefficient	○	—	—	—	Inductance ([H])	Coupling coefficient (k)
	Turn ratio	○	—	—	○	Turn ratio (Nr)	—
Diode		○	○	—	○	Parallel capacitance (Cp [F]), quality factor (Q)	Tuning characteristic simulation (resonance frequency [Hz])
Servo	Loop gain characteristic	○	—	—	—	Gain, phase [deg], real part of gain, imaginary part of gain	Phase margin [deg], gain margin [dB], loop bandwidth [Hz]
	Closed loop gain characteristic	○	—	—	—	Gain, phase [deg]	Phase margin [deg], gain margin [dB], loop bandwidth [Hz], closed to open loop conversion, circuit model identification and simulation
	Open loop gain characteristic	○	—	—	—	Gain, phase [deg]	Phase margin [deg], gain margin [dB], loop bandwidth [Hz], open to closed loop conversion, circuit model identification and simulation
Amplifier circuit	Gain-phase characteristics	○	—	—	○	Gain, phase [deg], group delay [s]	Transfer function identification and simulation
	CMRR characteristics	○	—	—	—	Gain, phase [deg]	CMRR characteristics diagram
	PSRR characteristics	○	—	—	—	PSRR	—
	Differential gain / differential phase characteristics	—	○	—	—	Gain, phase [deg]	—
	Saturation characteristics	—	—	○	—	Gain (deviation from max. gain)	1dB compression level ([Vpk] / [dB])
Filter circuit		○	—	—	—	Gain, phase [deg], group delay [s]	Low-pass cutoff frequency [Hz], high-pass cutoff frequency [Hz], pass band gain.max. attenuation, pass-band ripple, BEF attenuation, BPF bandwidth [Hz], transfer function identification and simulation