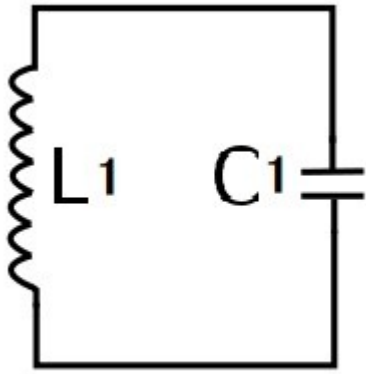


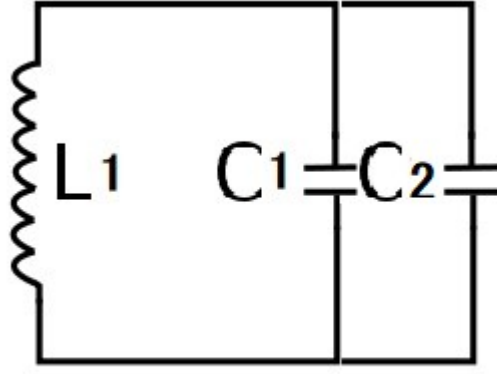
1. Calibration



The basic LC circuit

f1

$$f1 = \frac{1}{2\pi\sqrt{L1 \cdot C1}}$$



When calibration, the standard capacitor added.

f2

$$f2 = \frac{1}{2\pi\sqrt{L1 \cdot (C1 + C2)}}$$

C2: Standard capacitor (Precise), f1, f2: Measurement value To derive C1 & L1

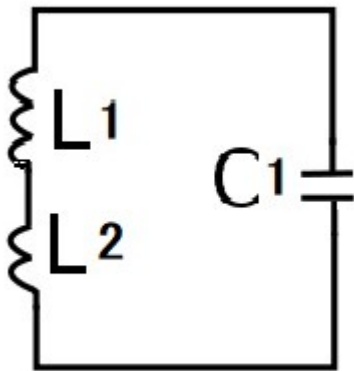
We got two formulas from above calibration. To solve the simultaneous equations, we get C1 and L1 from C2, f1 and f2.

$$C1 = \frac{f2^{**2}}{(f1^{**2} - f2^{**2})} C2$$

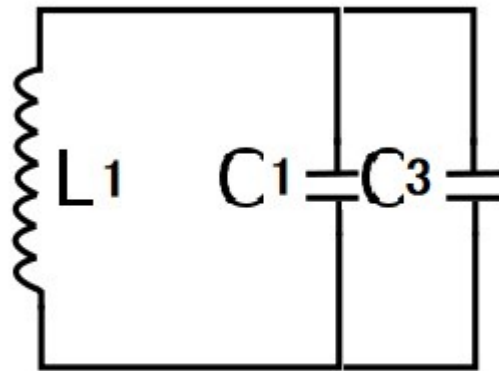
$$L1 = \frac{1}{(2\pi f1)^{**2} \cdot C1}$$

After then we will use C1 and L1. They are involved stray capacitance and inductance.

2. Measurement



$$f31 = \frac{1}{2\pi\sqrt{(L1 + L2) \cdot C1}}$$



$$f32 = \frac{1}{2\pi\sqrt{L1 \cdot (C1 + C3)}}$$

The known L1 and C1 and measured f31 and f32 will lead tested L2 and C3 value.

$$L2 = \left(\frac{f1^{**2}}{f31^{**2}} - 1 \right) \cdot L1$$

$$C3 = \left(\frac{f1^{**2}}{f32^{**2}} - 1 \right) \cdot C1$$