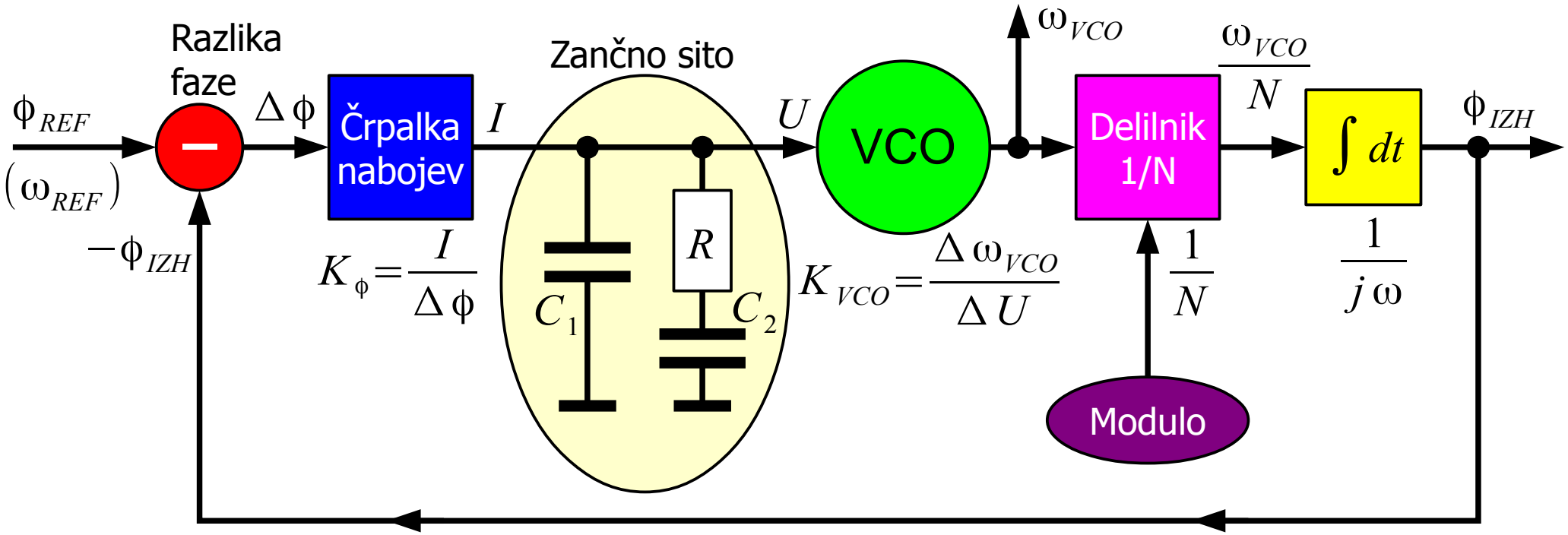


$$H(\omega) = \frac{\phi_{IZH}}{\Delta\phi} = K_\phi \cdot \frac{1}{j\omega C_1 + \frac{1}{R + \frac{1}{j\omega C_2}}} \cdot K_{VCO} \cdot \frac{1}{N} \cdot \frac{1}{j\omega}$$

Harmonska motnja:

$$\phi_{REF} = C \cdot e^{j\omega t} \qquad \omega \ll \omega_{REF} \approx \frac{\omega_{VCO}}{N}$$

Ničla: $\tau_2 = R C_2$

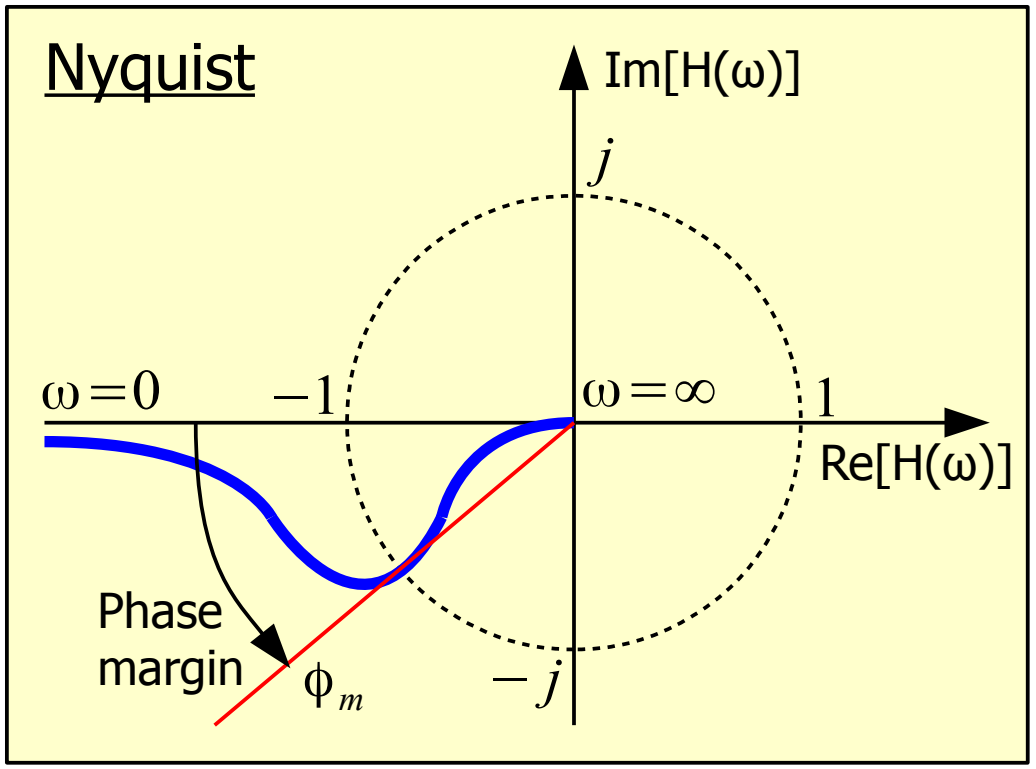
$$H(\omega) = -\frac{K_\phi K_{VCO}}{\omega^2 N (C_1 + C_2)} \cdot \frac{1 + j\omega\tau_2}{1 + j\omega\tau_1}$$

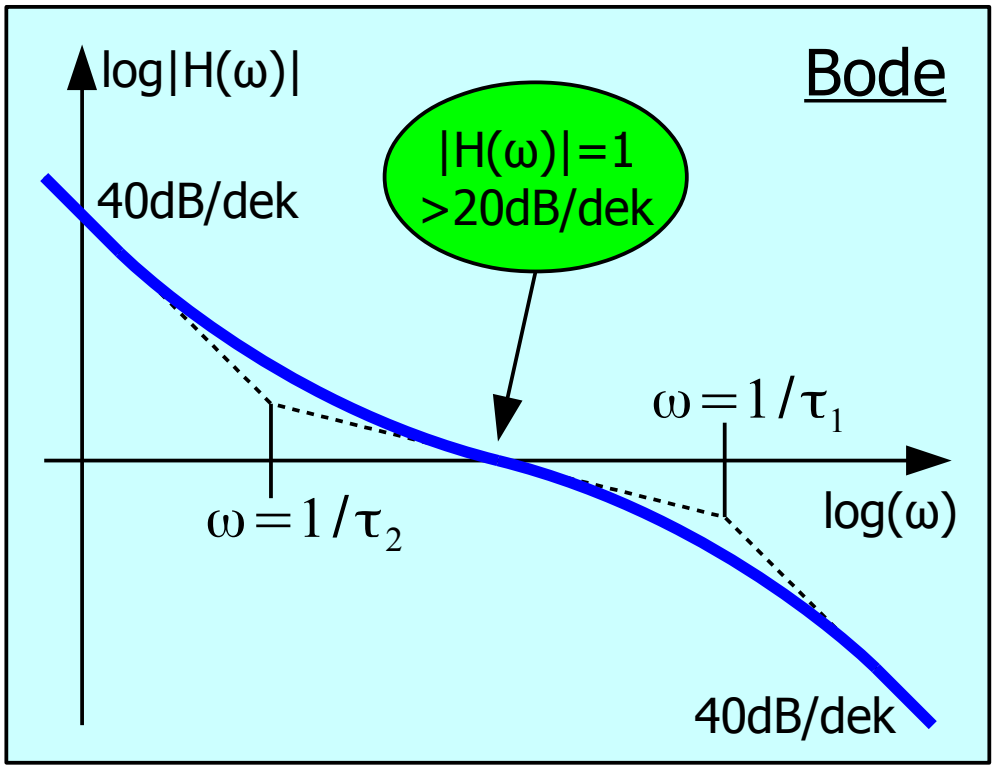
$$\Delta\phi = \frac{\phi_{REF}}{1 + H(\omega)}$$

Pol: $\tau_1 = R \cdot \frac{C_1 C_2}{C_1 + C_2}$

$$\phi_{IZH} = \phi_{REF} \cdot \frac{H(\omega)}{1 + H(\omega)}$$

Enačba fazno-sklenjene zanke

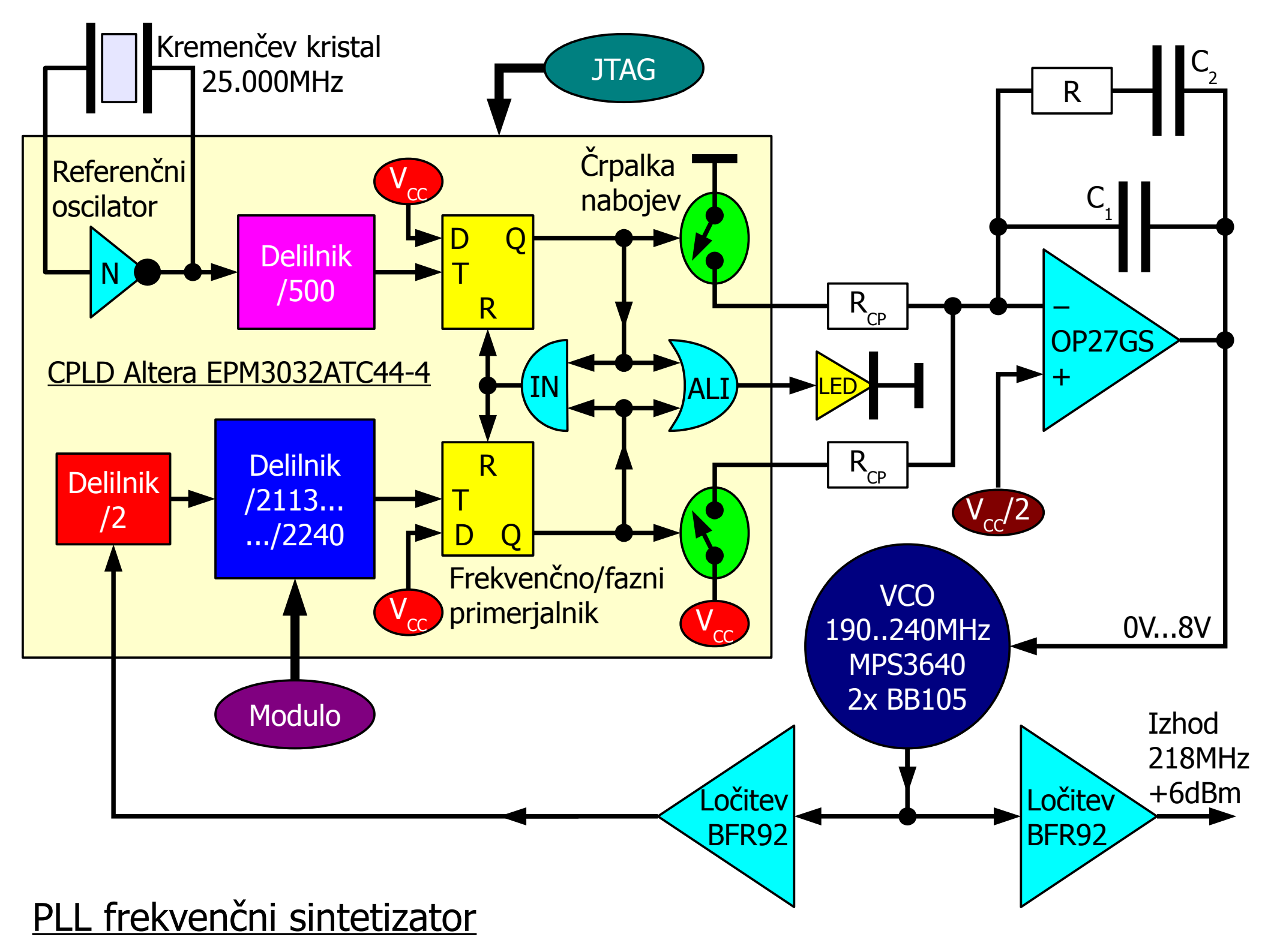




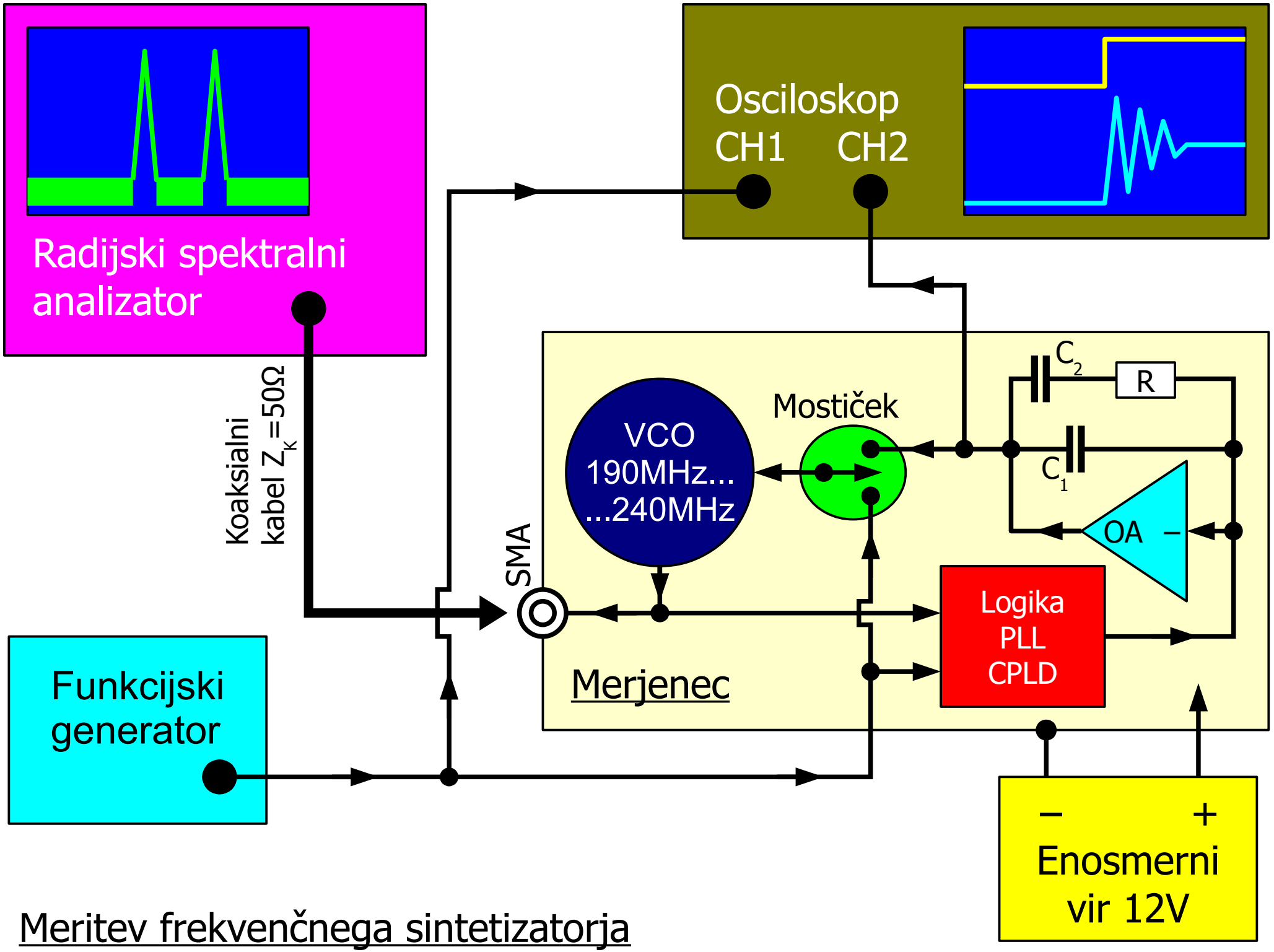
$$\phi_m = atan \frac{\omega(\tau_2 - \tau_1)}{1 + \omega^2 \tau_1 \tau_2} \qquad \frac{d\phi_m}{d\omega} = 0 \qquad \omega_m = \frac{1}{\sqrt{\tau_1 \tau_2}}$$

$$\phi_m = atan \frac{m-1}{2\sqrt{m}}$$

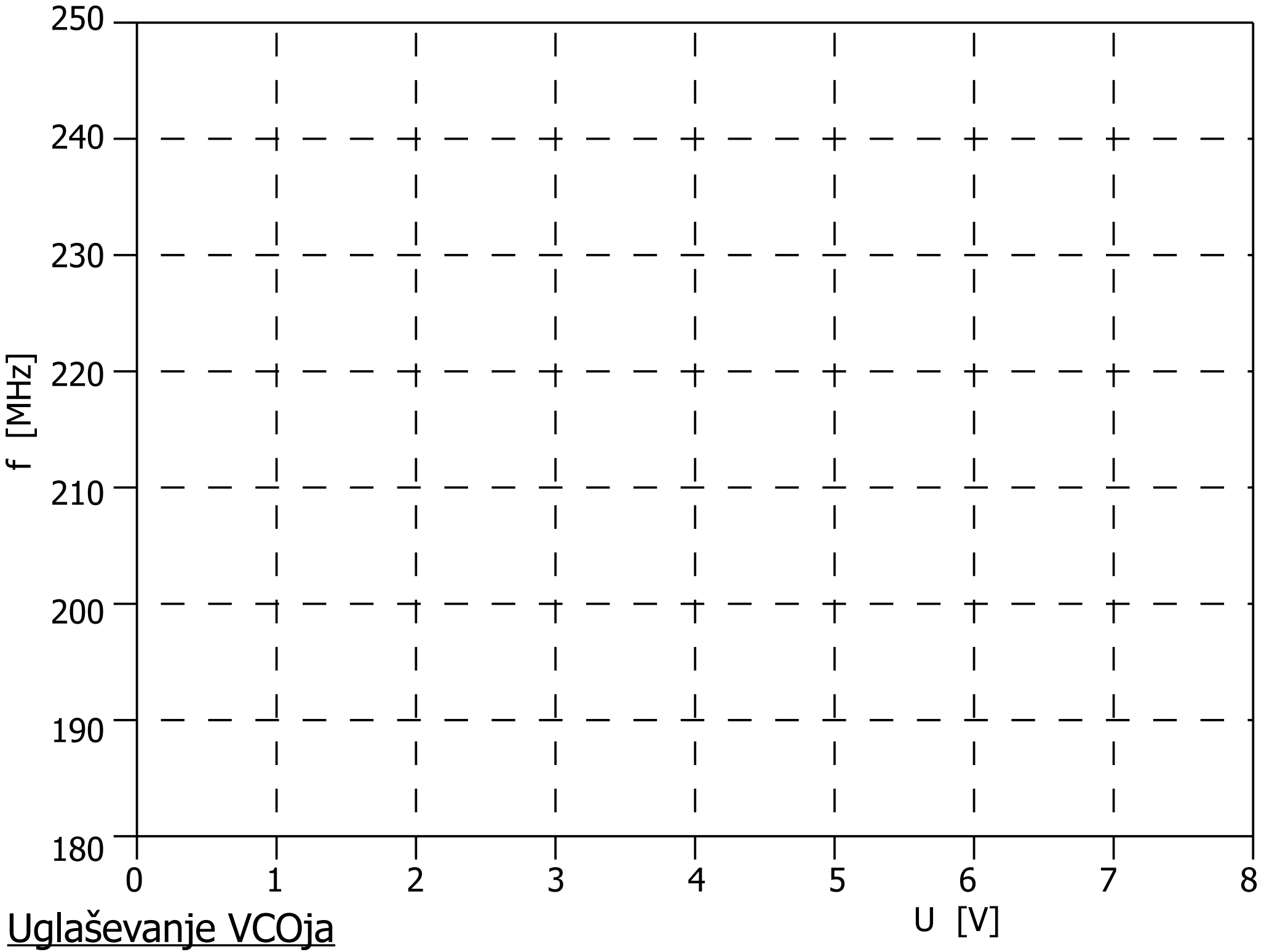
Izračun povratne vezave



PLL frekvenčni sintetizator



Meritev frekvenčnega sintetizatorja



Uglaševanje VCOja