

Equivalence between end-shortened quarterwave transmission line resonator and parallel LC resonator

Resonant frequency Characteristic impedance

$f_T := 1000\text{MHz}$ $Z_0 := 70\Omega$

$\underline{\underline{C}} := \frac{1}{8 \cdot Z_0 \cdot f_T}$ $C = 1.786\text{pF}$

$\underline{\underline{L}} := \frac{2 \cdot Z_0}{\pi^2 \cdot f_T}$ $L = 14.185\text{nH}$

$B_{LC}(f) := 2 \cdot \pi \cdot f \cdot C - \frac{1}{2 \cdot \pi \cdot f \cdot L}$ $B_{TL}(f) := \frac{1}{-Z_0 \cdot \tan\left(\frac{\pi}{2} \cdot \frac{f}{f_T}\right)}$

$f := 500\text{MHz}, 501\text{MHz} \dots 1500\text{MHz}$

