16. A lossless speaker cable 200m long, $\epsilon_r = 10$, $Z_o = 16\Omega$, is connected to a 16Ω speaker. At a frequency of 32khz, are transmission line issues absolutely not a problem, possibly a problem, or absolutely a problem?

@ 32 khz, $T = \frac{1}{f} = 31.25\,\mu s$ [1]

$v_p = \frac{c}{\sqrt{\epsilon_r}} = \frac{3\times10^8\,m/s}{\sqrt{10}} = 9.487\times10^7\,m/s$ [1]

$t_d = \frac{200m}{9.487\times10^7\,m/s} = 2.108\,\mu s$

$\frac{t_d}{T} = \frac{2.108}{31.25} = 0.06$ [1]

distributed if: $\frac{t_d}{T} > 0.1$

lumped if: $\frac{t_d}{T} < 0.01$ [1]

$.01 < .06 < 0.1$

lumped ? dist

Possibly a problem