Formule generali

Grandezza	Caso generale $\frac{\sigma}{\omega\varepsilon} \approx 1$	Mezzo dielettrico $\frac{\sigma}{\omega\varepsilon} \ll 1$	Mezzo conduttore $\frac{\sigma}{\omega\varepsilon} \gg 1$
Impedenza z	$Z\infty = \sqrt{\frac{L}{C}}$ $Z\infty = \sqrt{\frac{\mu}{\tilde{\varepsilon}}}$ $Z_\infty = \frac{k}{\omega L}$	$Z_\infty = \frac{Z_0}{\sqrt{\varepsilon_r}}\left(1 + j\frac{\sigma}{2\omega\varepsilon}\right)$	$Z_\infty = R_s(1+j)$ $R_s = \sqrt{\frac{\omega\mu}{2\sigma}}$ $R_s = \frac{1}{\sigma}\sqrt{\frac{1}{\delta}}$ $R_s = \frac{\omega\mu}{2}\sqrt{\delta}$
Velocità di fase v_f	$v_f = \frac{1}{\lvert\sqrt{\mu\tilde{\varepsilon}}\rvert}$ $v_f = \frac{\omega}{\lvert k\rvert}$ $v_f = \frac{1}{\lvert\sqrt{L\cdot C}\rvert}$ $v_f = f\cdot\lambda$		$v_f = \frac{\omega}{\beta}$
Costante di propag. k	$k = \omega\sqrt{\mu\tilde{\varepsilon}}$ $k = \beta - j\alpha$ $k = \frac{2\pi}{\lambda}$ $\lvert k\rvert = \frac{2\pi f}{v_f}$ $k = \omega\sqrt{LC}$ $\beta_0 \rightarrow$ rad/m $\alpha_0 \rightarrow$ Np/m	$k = k_0\sqrt{\varepsilon_r}\left(1 - j\frac{\sigma}{2\omega\varepsilon}\right)$	$k = \frac{1}{\delta}(1-j)$
Pulsazione ω	$\omega = \frac{2\pi}{T}$ $\omega = 2\pi f$	/	/
Cost. dielettrica $\tilde{\varepsilon}$	$\tilde{\varepsilon} = \varepsilon' - j\varepsilon''$ $\tilde{\varepsilon} = \varepsilon_o\varepsilon_r - j\frac{\sigma}{\omega}$	/	/
frequenza	$f = \frac{1}{T}$	/	/
Profondità di penetrazione per effetto pelle	$\delta = \sqrt{\frac{2}{\omega\mu\sigma}}$	/	/

$\mu_0 = 4\pi\cdot 10^{-7}\frac{H}{m}$ $\varepsilon_0 = 8,85\cdot 10^{-12}\ \frac{F}{m}$ $c = 3\cdot 10^8$ m/s $Z_0 = 120\pi \approx 377\ \Omega$