

Problem 2.10 Use CD Module 2.3 to design a 100- Ω microstrip transmission line. The substrate thickness is 1.8 mm and its $\epsilon_r = 2.3$. Select the strip width w , and determine the guide wavelength λ at $f = 5$ GHz. Include a printout of the screen display.

Solution: According to the solution provided by CD Module 2.3, the required strip width is

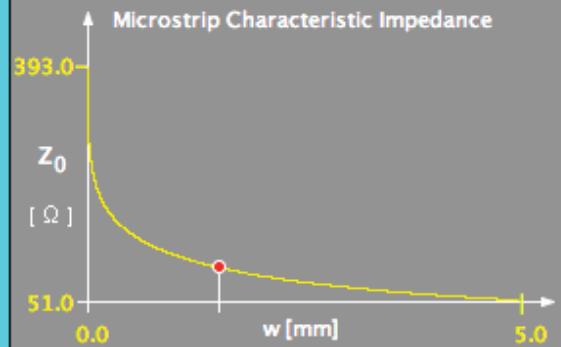
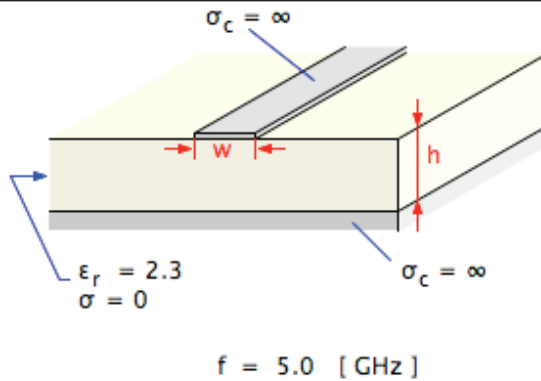
$$w = 0.613 \text{ mm},$$

and the guide wavelength is

$$\lambda = 0.044 \text{ m}.$$

Module 2.3 Lossless Microstrip Line

Select: Impedance vs. Strip Width



Input

Strip width $w = 1.542 \text{ [mm]}$

Range

Substrate thickness $h = 1.8 \text{ [mm]}$

Range

Frequency $f = 5E9 \text{ [Hz]}$

Range

ϵ_r

2.3

Update

Output

Structure Data

$w = 1.542 \text{ [mm]}$
 $h = 1.8 \text{ [mm]}$ $w/h = 0.856$

$Z_0 = 100 \text{ [}\Omega\text{]}$
 $\epsilon_{\text{eff}} = 1.819$
 $u_p = 2.224 \text{ [} 10^8 \text{ m/s]}$
 $\lambda = 0.044 \text{ [m]}$

$C' = 44.957 \text{ [pF/m]}$
 $L' = 449.568 \text{ [nH/m]}$
 $R' = 0 \text{ [}\Omega \text{ /m]}$
 $G' = 0 \text{ [S/m]}$

$\alpha = 0 \text{ [Np/m]}$
 $\beta = 141.236 \text{ [rad/m]}$