

**2.10** Use CD Module 2.3 to design a  $100\ \Omega$  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  $\lambda$  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

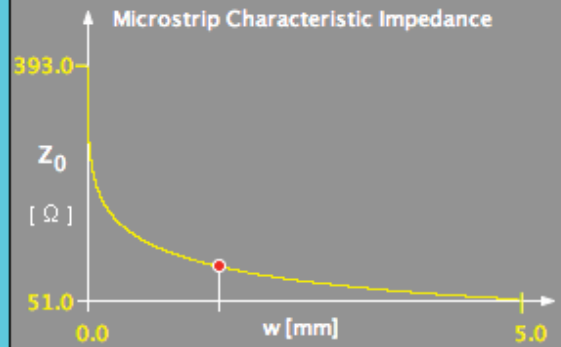
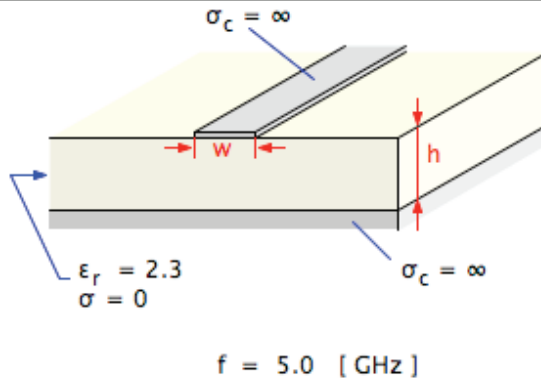
$$w = 0.613\ \text{mm},$$

and the guide wavelength is

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

## Module 2.3 Lossless Microstrip Line

Select: Impedance vs. Strip Width



### Input

Strip width  $w = 1.542$  [mm]

Range

Substrate thickness  $h = 1.8$  [mm]

Range

Frequency  $f = 5E9$  [Hz]

Range

$\epsilon_r$

2.3

Update

### Output

#### Structure Data

$w = 1.542$  [mm]  
 $h = 1.8$  [mm]  $w/h = 0.856$

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

$C' = 44.957$  [pF/m]  
 $L' = 449.568$  [nH/m]  
 $R' = 0$  [Ω/m]  
 $G' = 0$  [S/m]

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