

## IPC-2141A Errata Information

(These corrections should be made in user's hard copies in accordance with the company's documented control program)

Sections are in **red**, instructional text in **green**, and corrections in black.

### 4.2.2 Surface Microstrip

Replace equation [4-4] with:

$$Z_{0,surf} = \frac{\eta_0}{2\pi\sqrt{2}\sqrt{\epsilon_{r,eff}+1}} \ln \left\{ 1 + 4 \frac{h}{w'} \left[ 4 \frac{h}{w'} \left( \frac{14\epsilon_{r,eff}+8}{11\epsilon_{r,eff}} \right) + \sqrt{16 \left( \frac{h}{w'} \right)^2 \left( \frac{14\epsilon_{r,eff}+8}{11\epsilon_{r,eff}} \right)^2 + \frac{\epsilon_{r,eff}+1}{2\epsilon_{r,eff}} \pi^2} \right] \right\}$$

Remove text:

“The accuracy of these equations is better than +/- 2% (1,2)”

### 4.2.3 Embedded Microstrip

Replace equation [4-7] with:

$$Z_{0,embedded} = Z_{0,surf} \frac{1}{\sqrt{e^{\frac{2b}{h_1}} + \frac{\epsilon_r}{\epsilon_{r,eff}} \left( 1 - e^{\frac{2b}{h_1}} \right)}}$$

#### 4.2.4.1 Symmetric Stripline Formula Set 1

Remove text:

“According to (2), the errors for this set of formulas is less than 1.5%”

#### 4.2.4.2 Symmetric Stripline Formula Set 2

Remove text:

“The stated error in equations [4-12] and [4-16] is less than 1.3% and worst case error is w/b = 0.35 (5).”

#### 4.2.5 Asymmetric Stripline

Replace equation [4-17] and its “where” list with:

$$Z_{0,AS} = \frac{1}{\sqrt{\epsilon_r}} \left\{ Z_{0,SS} \left[ \epsilon_r = 1, w', h = \frac{1}{2}(h_1 + h_2) \right] - \Delta Z_{0,air} \right\}$$

where  $Z_{0,SS} \left( \epsilon_r = 1, w', h = \frac{1}{2}[h_1 + h_2] \right)$  is given by  $Z_{0,SS}$ , see equation [4-9], evaluated at  $\epsilon_r = 1$ ,  $w'$ , and  $h = \frac{1}{2}(h_1 + h_2)$ ; and  $\Delta Z_{0,air}$  is:

Do not change equation [4-18] and its “where” list.

Replace equation [4-19] and its “where” list with:

$$Z_{0,air} = 2 \left\{ \frac{Z_{0,SS} [\epsilon_r = 1, w', h = h_1] Z_{0,SS} [\epsilon_r = 1, w', h = h_2]}{Z_{0,SS} [\epsilon_r = 1, w', h = h_1] + Z_{0,SS} [\epsilon_r = 1, w', h = h_2]} \right\}$$

where  $Z_{0,SS} (\epsilon_r = 1, w', h = h_i)$  is given by  $Z_{0,SS}$ , see equation [4-9], evaluated at  $\epsilon_r = 1$ ,  $w'$ , and  $h = h_i$ , for  $i = 1$  or  $2$ .

#### 4.2.7 Wire Microstrip

Replace equation [4-20] with the following:

$$Z_0 = \frac{\eta}{2\pi\sqrt{\epsilon_{r,eff}}} \cosh^{-1} \left( \frac{2h+d}{d} \right)$$

Remove text:

“The equation is accurate to within 1% for  $d \leq h/2$  (4)”