$$H_{x0} = -\sqrt{2/\pi}(\epsilon_0/\mu_0)^{1/4}\frac{W}{aVJ_1(U)}\sqrt{n_2 P}\begin{cases} J_0(U\frac{r}{a}) & : r \le a \\ \frac{J_0(U)}{K_0(W)}K_0(W\frac{r}{a}) & : r \ge a \end{cases}$$