Hello All,

I have some question about the weak form of the wave equation. In comsol, the wave equation is defined as:

$$\nabla \times \mu_r^{-1}(\nabla \times \vec{E}) - k_0^2 \left(\varepsilon_r - \frac{j\sigma}{\omega \varepsilon_0}\right) \vec{E} = 0 \qquad (1)$$

Weak form is:

-mu0_const(-emw.dHdtx*emw.curltestdepEx-emw.dHdty*emw.curltestdepEy-emw.dHdtz*emw.curltestdepEz+emw.iomega*(emw.Jx*emw.testdepEx+emw.Jy*emw.testdepEy+emw.Jz*emw.testdepEz))*

However, when I write the weak form of Eq. (1) directly, I think it reads

$$\int \hat{n} \times \nabla \times \vec{E} \cdot \tilde{E} dA - \int \omega_0^2 \varepsilon \mu \vec{E} \cdot \tilde{E} + \mu (\frac{\partial \vec{H}}{\partial t} \cdot (\nabla \times \tilde{E}) - i\omega \vec{J} \cdot \tilde{E}) dV$$

Where $\tilde{E}$ is the test function. Compared with the weak form in Comsol, there are two more terms, one is the boundary condition (i.e., the first term), and the other is the first term in the volume fraction(i.e., $\int \omega_0^2 \varepsilon \mu \vec{E} \cdot \tilde{E} dV$). I would like to ask how the missing two items are set in Comsol, and in particular how the boundary conditions should be set.