

## Elevation and Pseudo-Brewster Angle Formation of Ground-mounted Vertical Antennas

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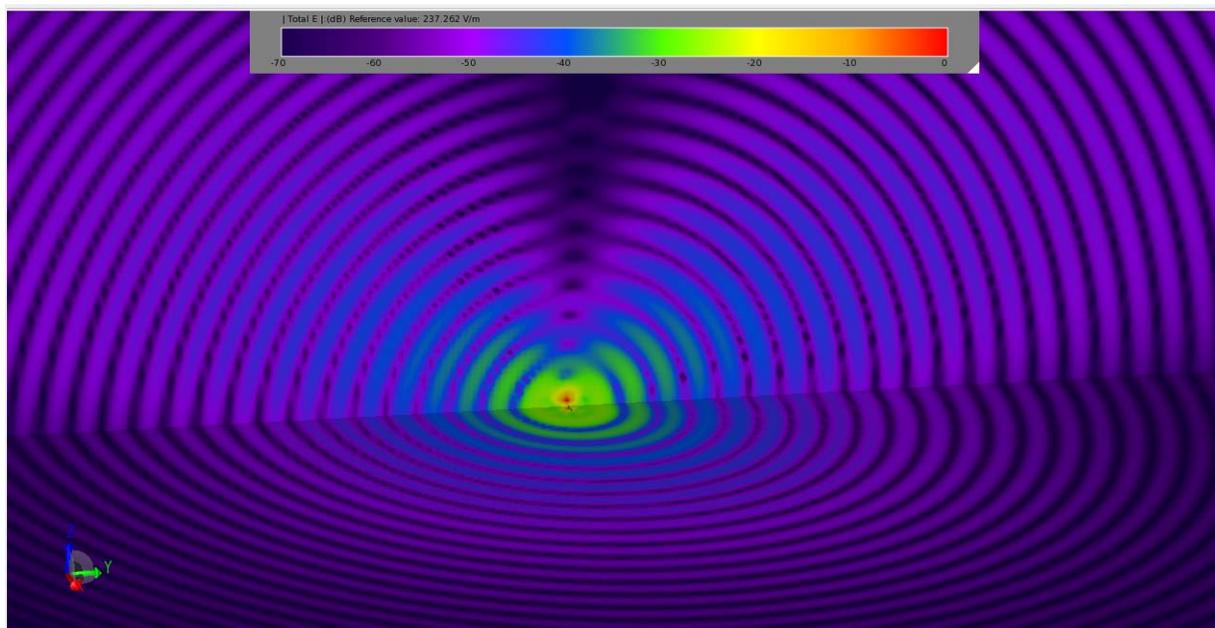


Figure 6 — *EMPro* image of both the surface and elevation angle radiated E-fields of a quarter-wave vertical antenna on average soil.

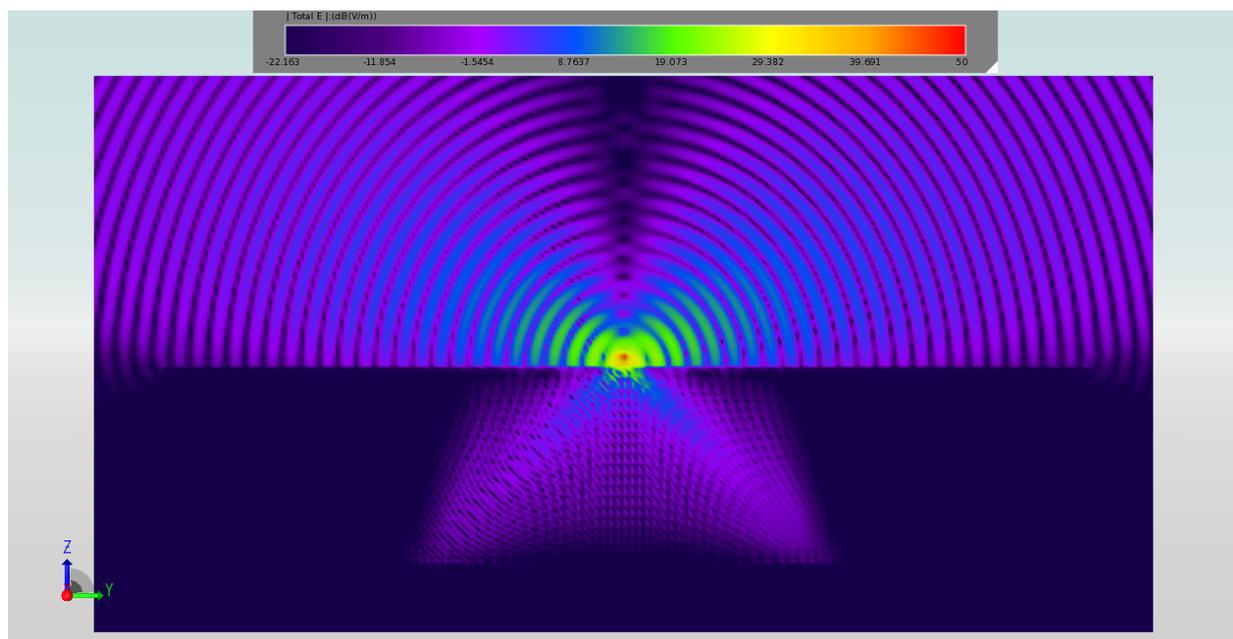


Figure 7 — Elevation plot of a base-fed  $\frac{1}{4} \lambda$  monopole, on  $24 \lambda$  diameter real ground ( $0.005 \text{ S/m}$ ,  $\epsilon=14$ ). Soil thickness is  $5 \lambda$ . The antenna ground system is a solid  $\frac{1}{2} \lambda$  in diameter disc of a perfect conductor, to simulate a perfect antenna ground or an infinite number of  $\frac{1}{4} \lambda$  radials.

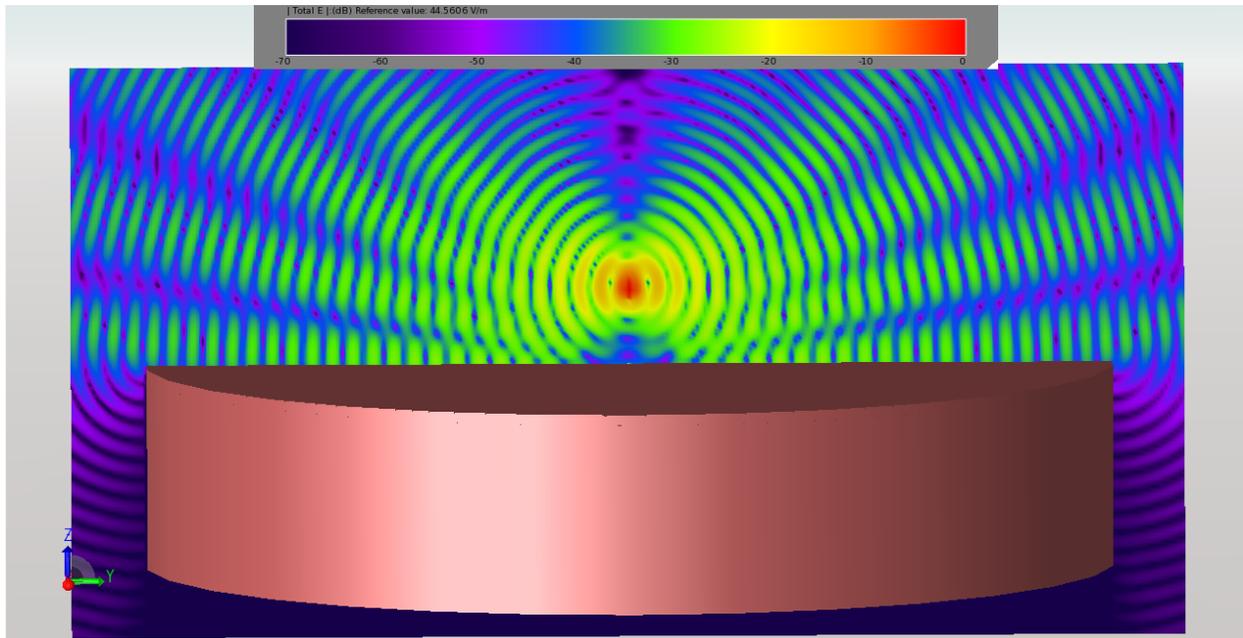


Figure 8 — The electric fields of an elevated half-wave vertical dipole, with feed point 2 wavelengths above a large slab of average ground.

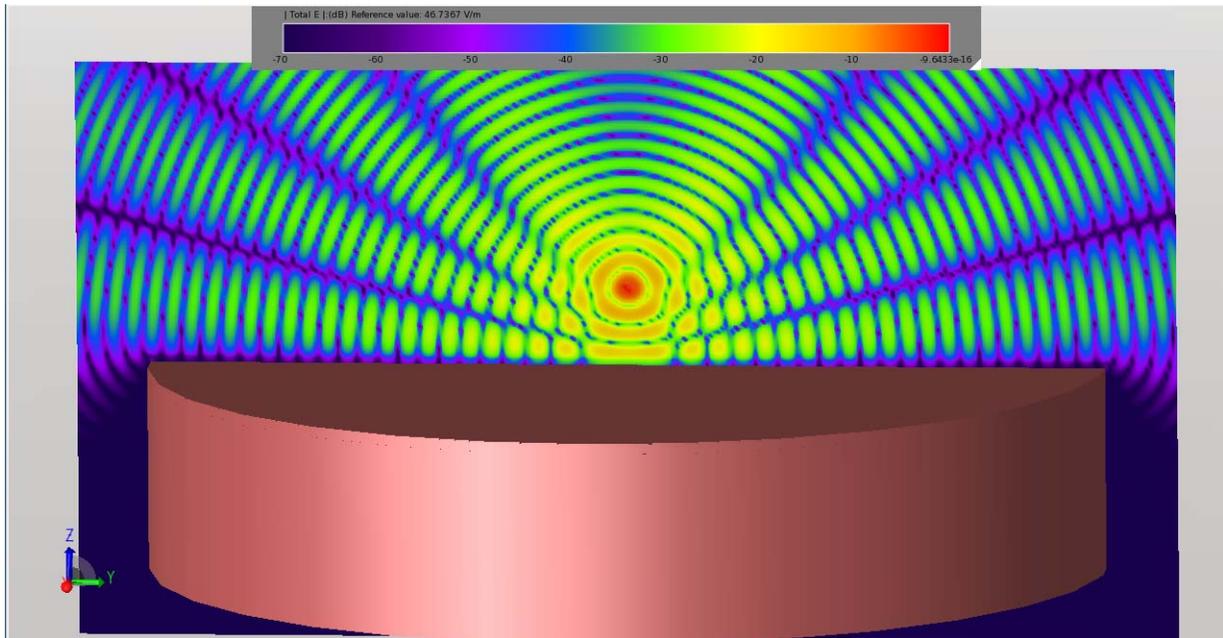


Figure 9 — The electric fields of half-wave horizontal dipole 2 wavelengths above the same average ground as in Figure 8.