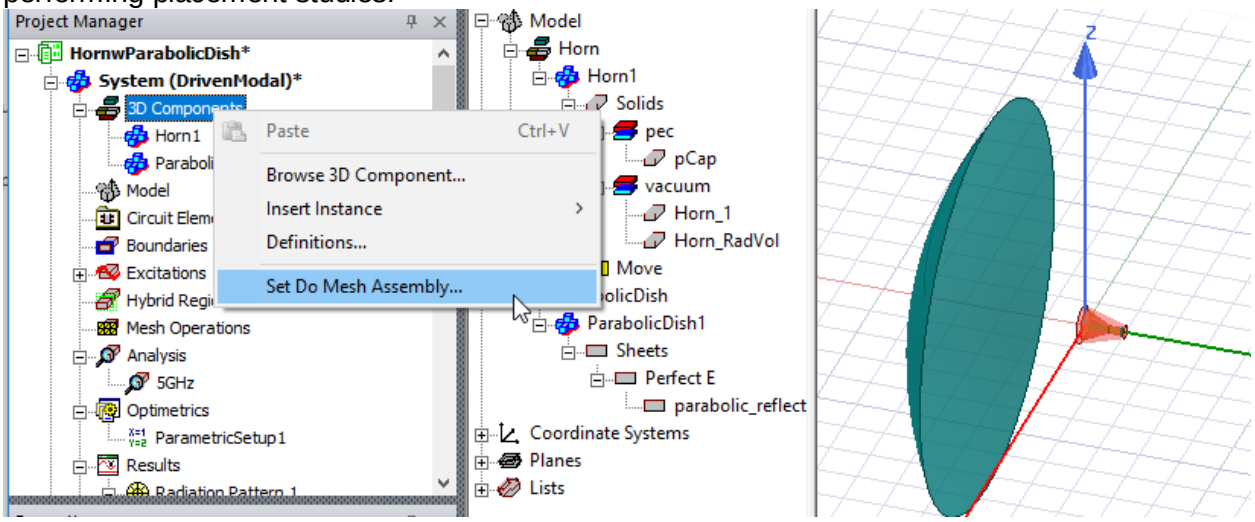
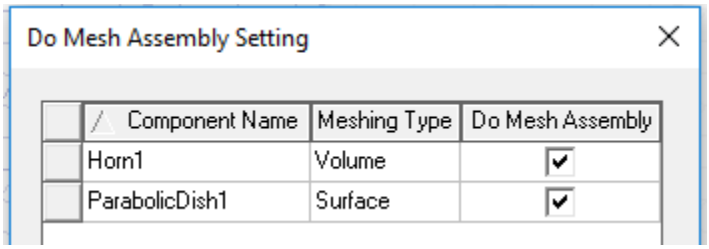
Horn Antenna with Parabolic Dish for Parametric Placement and Mesh Assembly

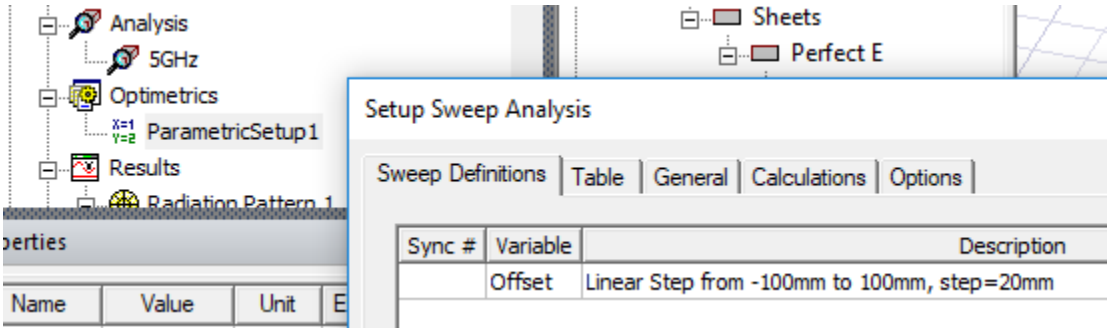
Description: This example shows an electrically large problem for the placement study of a horn antenna illuminating a dish, when the antenna is moved along the y-axis. Both are modeled as 3D components and assigned as IE Region and FE-BI region to permit Mesh Assembly. For such designs, meshing the horn and the dish separately makes the simulation faster since only the currents on the dish and on the radiation boundary of the horn need to be modeled. Meshing the volume of the region between the horn and the dish to model coupling occurring due to the currents on the dish and the radiation volume bounding the horn is not required. With mesh assembly, you can reuse the meshes of the individual components for performing placement studies.



Model: The Parabolic Dish is defined as a 3D component with an IE Hybrid Region assigned. The Horn is defined as a 3D Component with a FE-BI Region assigned. Both have the Component Meshing property for Mesh Assembly enabled.

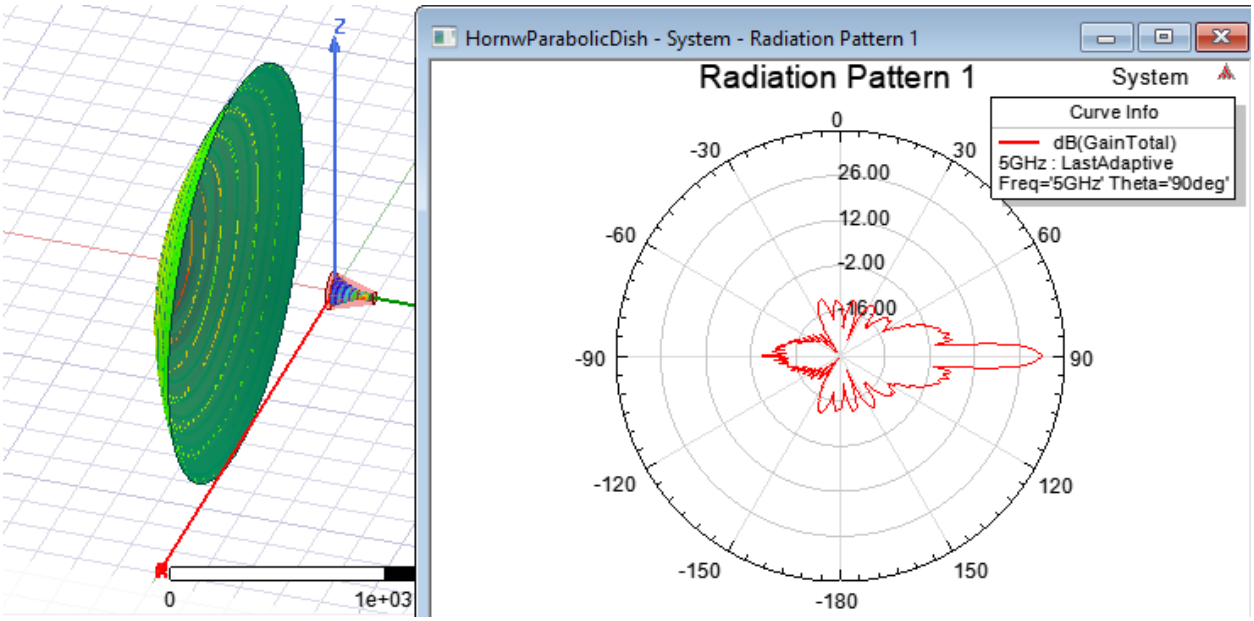


The diameter of the reflector is 2000 mm.



Setup: The adapt frequency for the Solution Setup is defined to be 5 GHz. A design variable offset is defined to vary the placement of the horn along the y axis for the Parametric Sweep setup.

Results: The example model includes several plots, such as Radiation Pattern for dB (Gain Total), J Fields on the Dish and E Fields on the Horn.



After solving a Parametric Sweep, you can use the Parametric Animation feature. Select the **View** tab of the Ribbon, and click the **Animate** icon. Then in the dialog Select Horn_1 and then setup the animation on Offset.