

Model Construction

The model is simply built as a vacuum brick with the inner dimensions of a WR90 rectangular waveguide, because the background material automatically setup by the template (Fig. 6) is PEC. The “Waveguide Couplers & Dividers” project template should be used, with the frequency range and monitors specified in Fig. 7.

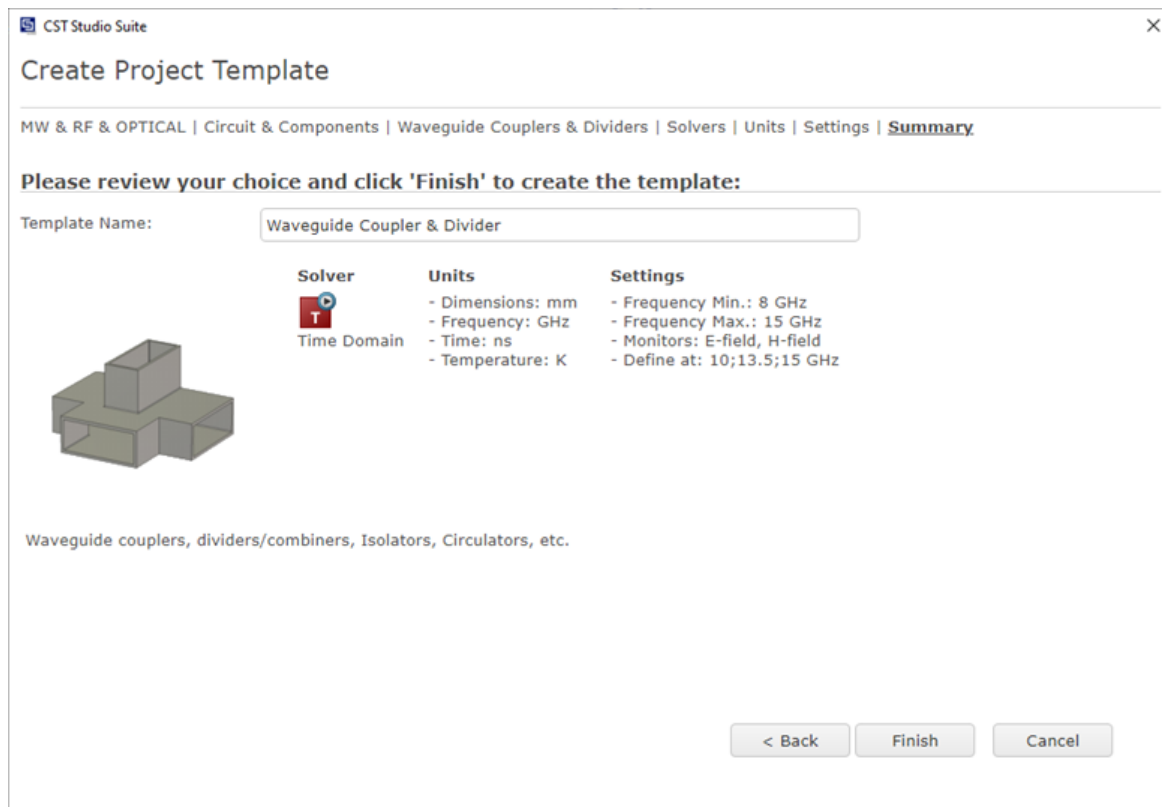


Figure 7: Summary of the project template used in this model

In Table 2 we summarize the parameters to be used in this model.

Parameter	Value	Description
a	22.86 mm	Big edge dimension
b	10.16 mm	Small edge dimension
l	40 mm	Length of the waveguide

Table 2: Parameter list of the quarter-wave transformer

The waveguide is created as a vacuum brick with the dimensions of Table 2 (Fig. 8)

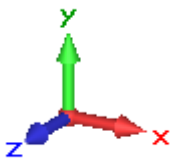
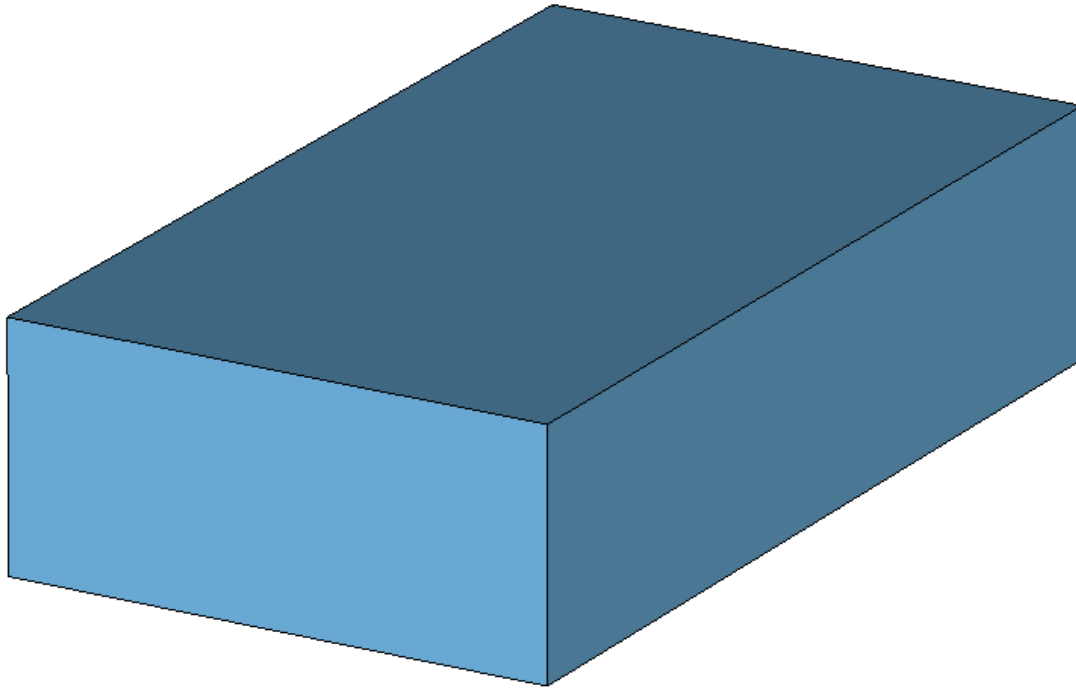


Figure 8: Vacuum brick modeling the inner of the waveguide

Waveguide ports are placed at the both ends of the brick by picking the face and selecting “Waveguide Port” on the Simulation ribbon. When defining the waveguide ports, it’s important that the number of modes is set to “3” (Fig. 9). This means that the port mode solver will take higher-order modes into account. The final model should appear as shown in Fig. 10.

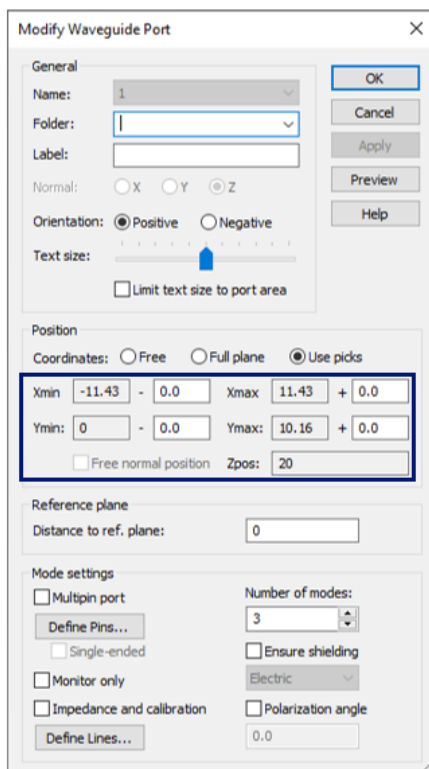


Figure 9: Dialog box for waveguide port set-up.

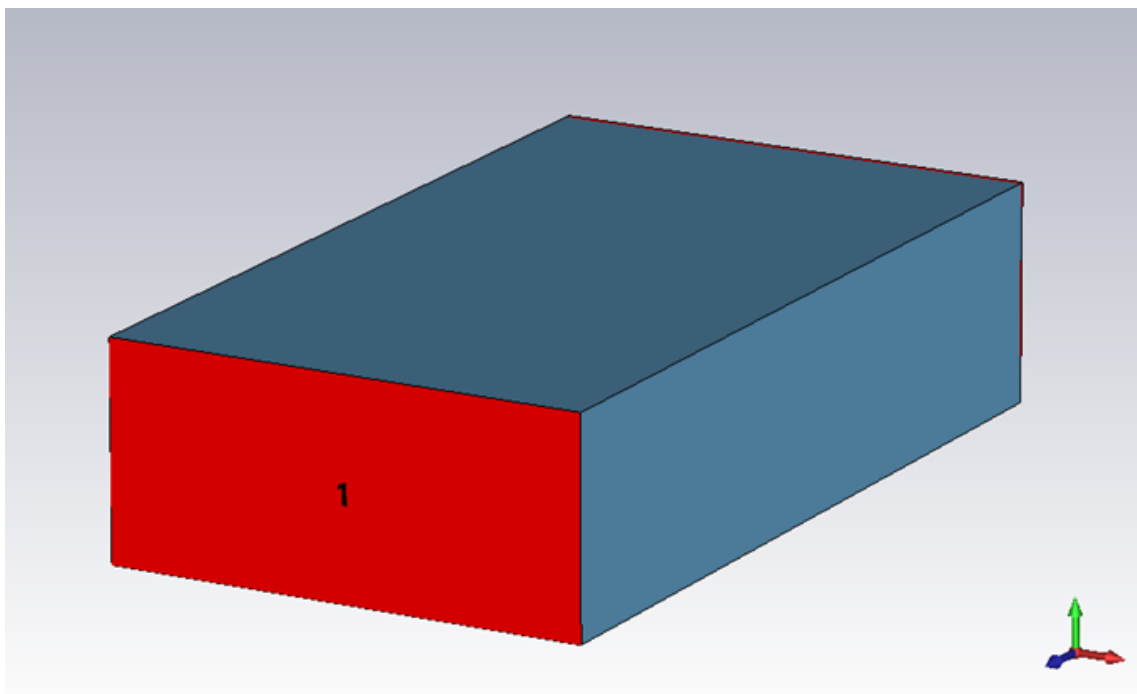


Figure 10: Final model of a WR90 hollow rectangular waveguide