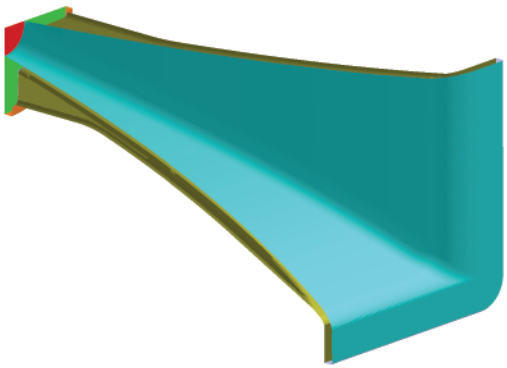
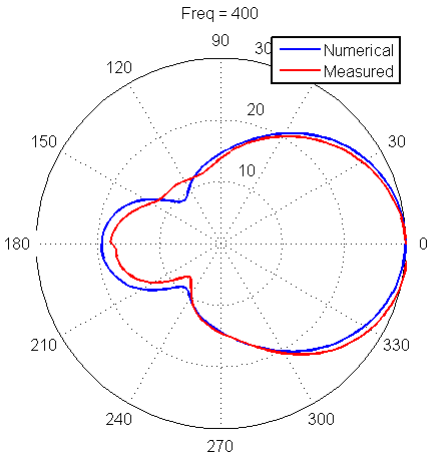
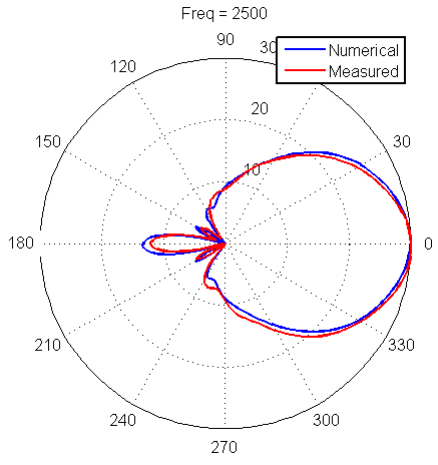
Acoustic Horn Directivity

Model Description

In this case study Coustyx is used to evaluate the performance of an acoustic horn over a wide frequency range. Good directivity pattern across audible frequency range is one of the main design objectives. Accurate numerical predictions in this regard would help designers make necessary modifications early on in the design process. The directivity of an acoustic horn (shown here) is evaluated using Coustyx and is compared with experimental measurements (Courtesy: Daniel Tengelsen, Brigham Young University). Only a quarter of the horn is modeled to take advantage of the symmetry. The vibrating diaphragm is excited to produce monotones for the analysis.



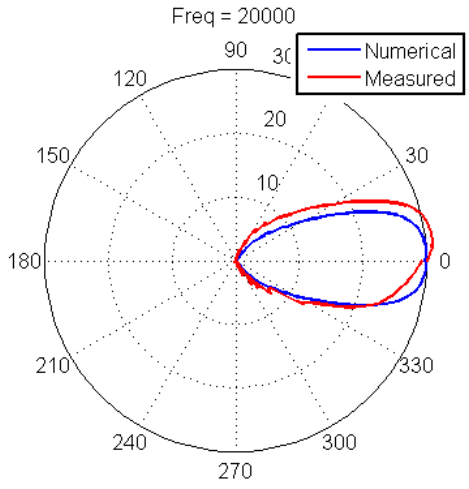




Results

Directivity is measured at a distance of 25 feet away from the horn. Coustyx results match well with measurements over a broad frequency range (400, 2500, & 20000 Hz).

Number of Elements	38441
Number of Nodes	38393
Number of Junctions	19



Courtesy: Daniel Tengelsen, Brigham Young University