



Test & Analysis of the Acoustic Performance & Dynamic Reponse of a Commerical Speaker

Case Study

OVERVIEW

Structural rigidity is a key component of successful speaker design. Sonos approached ATA to evaluate different materials for use in a new speaker system and to assess the acoustic characteristics. ATA performed an integrated test/analysis project to predict the dynamic response of the speaker system. Finite element modeling ultimately provided a means to rapidly and cost-effectively evaluate design alternatives and their impact on the acoustic performance and dynamic response of the speaker.

TASKS PERFORMED & KEY OUTCOMES

- > Correlated material properties and damping correlated using free-free tap tests
- > Demonstrated sensitivity of internal hardware to boundary conditions
- Correlated relationships between electrical signal input, acoustic output, and enclosure dynamic response
- > Derived relationship between transducer excitation and dynamic response
- > Identified resonance frequencies for early design guidance



Sonos speaker with test instrumentation

Denver

Huntsville

SONOS

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