Lumped Element Multimode Modeling of Balanced-armature Receiver with COMSOL Multiphysics® Software

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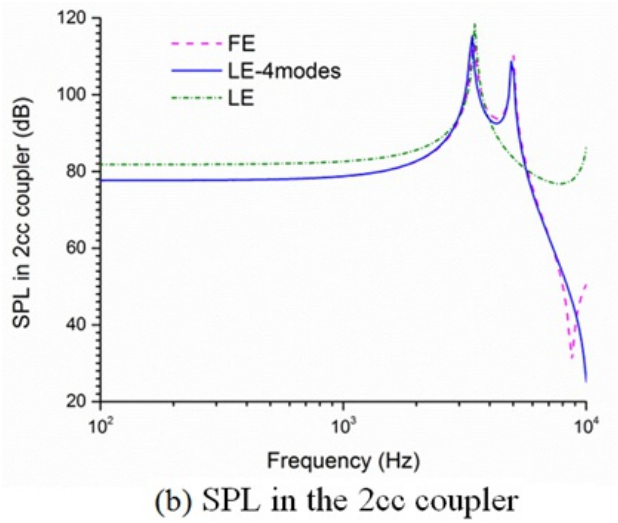
Abstract

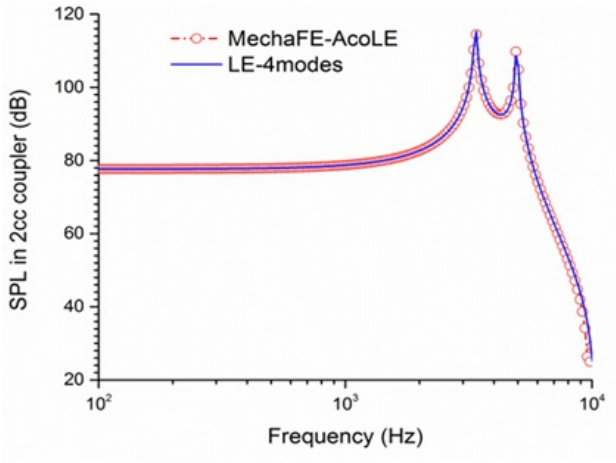
For the lack of higher order modes, lumped element (LE) models currently used may be insufficient to predict the system of balanced-armature receiver (BAR). We develop a LE multimode model for BAR in the frequency domain based on the techniques of mode decomposition, truncation, and selection via COMSOL Multiphysics® software. The validation is made by comparing with both the corresponding combined FE-LE model and the full FE model. Numerical results prove the developed model is not only as effective as the combined FE-LE model, but also much more efficient.

Figures used in the abstract



(b) SPL in the 2cc coupler

Figure 1: Comparison of SPL responses between FE, LE-4modes, and LE models



(b) SPL in the 2cc coupler

Figure 2: Comparison of SPL responses between the LE-4modes and the combined FE-LE model