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**Numerical study of sound transmission loss using an indirect  
boundary element method**

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The purpose of this study was to simulate transmission loss tests at the acoustic facilities of FG Wilson, Larne, UK. A hemi-anechoic chamber adjoins a reverberation room via a transmission plug where canopy panel sections are mounted for testing. Boundary element methods in LMS Virtual.Lab are used in conjunction with a baffle model to simulate the test facilities for transmission loss. On one side of this wall the reverberation room is modelled as a diffuse field using a series of defined plane waves, and on the other the hemi-anechoic chamber is represented as a free field.

Experiments were carried out on a steel plate and lead sheet following the ISO 15186 standard for measurement of sound insulation using sound intensity. Source room sound pressure levels were recorded with a microphone, and an intensity probe was used to map the sound intensity field on the receiving side. Transmission loss for a frequency range was calculated as stated in the standard and compared with the results for the computational analysis. Comparison of the computational simulation with the experimental yielded a sufficient agreement.