

ACOUSTICS2008/422
**The Calibration and Validation of a Binaural Room Scanning
System Used for Subjective Evaluation of Automotive Audio
Systems**

Sean Olive and Todd Welti

Harman International Industries, Inc., R&D Group, 8500 Balboa Blvd, Northridge, CA 91329, USA

Binaural room scanning (BRS) is a method of capturing the acoustical response of audio systems in rooms and automotive cabins as a set of binaural impulse responses that are stored and later reproduced through head-tracking headphones. All BRS systems have errors that without careful calibration limit their usefulness for subjective measurements of sound quality. This paper discusses a method for calibrating and testing a proprietary BRS system based on how well it reproduces listeners' preference ratings of different automotive audio systems made in situ. A group of trained listeners gave preference ratings for 5 different equalizations of a high quality automotive audio system made both in situ and through the BRS capture/playback system. The tests were repeated in mono and stereo using 6 individualized listener calibrations. The results can be summarized as follows: there were no significant differences in preferences between the in situ and BRS-based evaluations for either the mono or stereo tests. A significant interaction was found between the different equalizations and individualized calibrations that were largely confined to 1 particular listener calibration. The results suggest that a generalized BRS calibration may provide sufficiently accurate preference measurements of audio system sound quality.