Place:

Hamburg, Germany

Title:

In-Vehicle ANC Laboratory Testing

Authors:

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Abstract:

Active Noise Cancelling (ANC or RNC, Road Noise Cancelling) describes the reduction of unintentional low frequency noise components in vehicle cabins by generating phase inverted soundwaves. It helps to reduce sound-damping material and weight and increases acoustic comfort for the driver and passengers. The control parameters and input signals are typically derived from the in-vehicle microphones and acceleration sensors converting chassis vibration into audible, acoustic signals. The tuning and fine adjustment of ANC algorithm settings in a vehicle often require iterative drive tests today, including the known disadvantages such as time consumption, reproducibility and efficiency.

A test setup is introduced and discussed, allowing testing and tuning of ANC systems in vehicles under laboratory conditions. The system's trigger signals from the vehicle microphones and acceleration sensors, typically connected via A2B bus, are recorded during test drives and are then applied again in the laboratory environment. Particular attention should be paid to the correct timing and mixing of the recorded signals, to ensure proper and realistic ANC performance in the lab including feedback ANC control.