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Perceived Listening Effort for In-car Communication systems

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The in-car listening situation is often impacted by a low signal-to-noise ratio (SNR), which leads to reduced speech intelligibility and higher listening effort, respectively. This applies in particular to the communication between driver and passengers. Several in-car communication (ICC) systems have been recently introduced in the market, with the target to improve this situation as well as to decrease driver distraction.

For the qualification of ICC systems, ITU-T Study Group 12 recently introduced a new work item P.ICC. As a result, an upcoming measurement specification for performance evaluation is planned for release, which should also address aspects of intelligibility and/or listening effort. In several studies (e.g., [1, 2]), perceived listening effort was found to be a more suitable measure than intelligibility. However, so far no instrumental methods for the prediction of listening effort are available.

In order to investigate the application of perceived listening effort for ICC systems, the present document presents a comprehensive auditory experiment based on binaural recordings containing realistic background noise scenarios and reinforcement speech.