

Road noise prediction results compared to real measurements in Gdansk surroundings

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1. INTRODUCTION

The comparison of noise levels obtained by model and measurement results is presented in this paper. The HARMONOISE road noise source prediction model and propagation method used for simulation are mentioned. The model implementation outcome is compared to measurement results. An inaccuracies, which are defined as a differences between the results calculated by the model and the actual measurements under the same atmospheric conditions, are discussed. An attempt to analyze the error reasons is made. Consideration of possibility of employing road noise prediction model to dynamic noise mapping is also included.

2. TEST ENVIRONMENT

This section presents a general overview of the test site including measurements and employed model description.



Figure 1. Tested point location.

The model input uses following measured values: number and velocity of vehicles (in 3 categories), air temperature, terrain cross-section parameters.

3. RESULTS

This section describes the results of performed experiments with the model embedded in the real measured conditions. Figure 2 presents an example error distribution of L_{DEN} in given ranges.

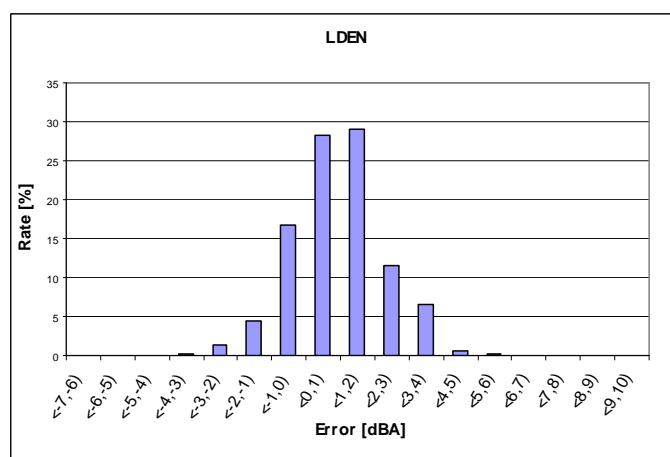


Figure 2. Error distribution of L_{DEN} .

Analyze of errors indicates that the model provides output values generally lower than real measurements. There are incidental very large errors (e.g. more than ± 4 dB) which take less than 4% of all compared data.

4. CONCLUSIONS

A series of experiments has been made in order to check the model accuracy in local Polish road scenery. The positive evaluation can make a basis for using the model to calculate the dynamic noise maps. Achieved results can also be used for more precise model tuning.