

The Reasoning of the German Proposal for Limit Values

The type approval of motor vehicles according to ECE-regulations is intended to enforce a set of uniform standards for all motor vehicles across the ECE member states. These standards are considered minimum requirements for traffic safety and environmental compatibility which must not be compromised in the hard-fought automotive market.

Because of the increasing amount of traffic the sound emitted by motor vehicles more and more becomes a pressing environmental problem particularly in urban agglomerations. The German government believes that a realistic type approval test along with ambitious limit values can be an effective tool to address this problem. Therefore the ongoing revision of ECE-Regulation 51 aims to better bring in line the type approval conditions with the operating conditions of the vehicle in urban traffic such that reductions of the limit values translate directly into reduced emissions in urban settings.

In light of the increasing road traffic noise, the German government believes that the sound limit values should be lowered below the current setting respectively its equivalent according to the new test method. This position is in agreement with the majority opinion of the GRB¹. To make sure that the automotive industry is not faced with a sudden and unforeseeable tightening of the limit values a model with three increasingly stringent stages was designed:

- The first stage is intended to account for the change of the test procedure and the technical progress since the last limit value amendment. The majority of vehicles conforming to the current regulation should fulfill this first stage. The rest will be able to fulfill the requirements with only minor modifications.
- The second stage is intended as an intermediate stage.
- The final stage is intended to reflect technical feasibility as already implemented in the best of class of today's vehicle fleet. By definition only the best of class of today's vehicles fulfill this future stage already. The majority of vehicles must be modified to reduce their sounds emissions according to the final stage.

The 3-stage model ensures that the automotive industry is given a basis to plan future vehicle design in due time.

The German government sets out to abandon exemptions and special classes where possible. For vehicles of class M₁ only two categories of special cars are considered to be necessary, namely sports cars and off road vehicles. Only by keeping these vehicles separate from the rest of the vehicles of class M₁ more stringent limit values for the regular M₁ vehicles can be set. The definition of sports cars and off road vehicles is yet to be agreed upon. It must be ensured that both categories are narrowly defined such that only vehicles with a technical need for a less stringent limit value fall into these categories.

¹ Report of the 40th Session of the GRB: "It was agreed that these new limit values should not only be equivalent, but more stringent than the existing limit values."

Vehicles of class N_1 were split into two groups, those with a gross vehicle mass (GVM) below or equal to 2.5 t and those with a higher GVM. The first group is typically based on a design for an M_1 vehicle and only slightly modified to better suit the commercial sector. Therefore these vehicles are subjected to the limit values for M_1 vehicles. The heavier vehicles of class N_1 form a category of their own with a separate limit value which is less stringent than the one for the lighter N_1 s.

To alleviate possible problems for vehicle types that move from one category in the current scheme to another in the proposed future scheme with more stringent requirements, a special bonus for a transitional period of three years is proposed for these vehicles.

The concrete limit values proposed were derived from the data provided by OICA to the GRB informal group. The following table shows the percentage of vehicles that conform to the various stages of our proposal (see Summary of the presentations of the 11th Informal-GRB). In Table 1 American vehicles are excluded. Table 2 is identical to Table 1 but additionally includes the American vehicles.

	STAGE 1	STAGE 2	STAGE 3
M_1	94 %	76 %	46 %
M_1 sport	88 %	75 %	50 %
M_1 off road	50 %	50 %	20 %
$N_1 \leq 2.5$ t	67 %	44 %	22 %
$N_1 > 2.5$ t	85 %	62 %	38 %

Table 1: Percentage of vehicles (EU/J) conforming to the proposed limit stages.

	STAGE 1	STAGE 2	STAGE 3
M_1	86 %	65 %	39 %
M_1 sport	89 %	78 %	44 %
M_1 off road	31 %	31 %	13 %
$N_1 \leq 2.5$ t	67 %	44 %	22 %
$N_1 > 2.5$ t	73 %	53 %	33 %

Table 2: Percentage of vehicles (EU/J/USA) conforming to the proposed limit stages.

For the major part of the vehicles in the OICA database that do not yet fulfill the proposed stage 3 limit values the test result is dominated by the tyre/road noise contribution. In order to fulfill the stage 3 limit values the manufacturer has to equip quieter tyres. This is in line with the target of further noise reduction in urban agglomerations.

The German government believes that the German Proposal for Limit Values represents a balance between the needs of the population in urban agglomerations which is affected by the noise emitted by motor vehicles and, depending on the specific dates of enforcement, the interests of the automotive industry, which will be enabled to develop future vehicle designs on the basis of these requirements.