

OICA Comments to TNO Report VENOLIVA on ECE R51 Monitoring (listed by paragraph)

Page	Paragraph	Topic	TNO result	Comment	Proposal for Change / Action	Backup Material
general		classes	The use of the old categories for HCV and Buses	The use of the old definitions are no longer appropriate for today's and tomorrow's vehicle design 1) New classes and subcategories are necessary	See proposal by ACEA report 1) Re-analyze the results with new classes 2) Discussion of the new results	ACEA report
general		justification		Many assumptions given but not substantiated. Need to provide basis for assumptions	Provide explanation and data for assumptions	
general		justification		Misunderstanding of technical basis and applicability of method B. Leads to incorrect assumptions and conclusions numerous times in report		
general		justification		many unjustified statements and/or assumption are made, will make it difficult for a reader to follow the argumentation.	TNO is asked to deliver more background information for statements and assumptions	
general		data	Vehicles are missing in the data base for HCV	If the correct number of vehicles is not used the result of the analysis can become whatever is wanted, but not correct according to the principals of mathematics	See ACEA report	
general		data	Calculation of all results according to the principal of the average	If enough data is not available, the average gives incorrect answers to the questions according to the principals of mathematics and statistics.	See ACEA report	See Gaussian distribution
general		data	Correlation between method A and method B	There is no correlation between the two methods.	See ACEA report	See WP and CRP from informal GRB group
general		data	Analysis is not conducted based on TNO recommendations for changes to procedures and categories	Conduct analysis to reflect and support TNO proposals for categories and changes to test procedure. Cannot analyze one way and then propose changes in a different direction.	Conduct analysis in integrated and coherent manner for proposed changes	
general		data	Influence of tires is mistakenly stated	Tire influence on L_Urban should reflect engineering data. Tire influence on benefits cannot be double counted with R117	Correct for double counting and engineering data	
general		impact	noise abatement measures	"Low noise road surfaces" as measure for reducing traffic noise are strongly underrepresented in the study. The effect of LNRS can be heard immediately, is effective for all kinds of vehicles (also older ones), can be places at hot-spots (cost-effective), and they are not necessarily more expensive than noise barriers or other measurements (as the example Ingolstadt may prove)	Extend the study to include CBA on "low noise road surfaces"	Experiences of Ingolstadt on low noise road surfaces
general		impact	Strong effect of T/R-noise reductions due to reg. 669/2009	The influence of Regulation (EC) No 661/2009 (GSD) is overestimated, because OEMS already have forced and will force tire manufacturers to supply more quieter tires than acc. To the new regulation		
general		impact	possible alternative "Influencing driving behaviour" (by legal enforcement or by incentives) not mentioned in the study	only mentioned on page 58	analyze possible noise reductions due to changed driving behaviour	
general		data	Use of statistical methods and values	Using the overall average value (mean level) for comparing all M1 vehicles in the two methods mixes several different vehicle types, designed for different customer groups, together as there are: low cost cars, small size cars, full size cars, family cars, vans, luxury cars, high performance cars, sport cars and so on. This strategy gives incorrect results for individual subclasses.		
general		various	Confusing conclusions of TNO	On one hand, the new test procedure is seen to be more representative for real urban driving. On the other hand, the test procedure is seen to be insufficiently representative for the vehicle driving dynamics.	Seems to be the classical conflict between a wish for worst case testing and the need for more representative driving.	
general		justification		sometimes in the study 1 dB was concluded to be significant, sometimes even more than 1 dB was neglected	be consistent	
2	1st	various	The UN-ECE GRB (Groupe Rapporteur Bruit = Working Party on Noise) has published a new test method in 2007	Based on work done by ISO	Add acknowledgement of ISO basis of work and note author's affiliation with relevant ISO committee	ISO 362-1:2007
3	Table 1	classes	No Sports car category	Why is this category not shown?	Add information	Category discussed later in report

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3		data	Enquiries have been made with various bodies	No inquiry took place with industry, except in the very end of the study about some cost statements, which were asked to be delivered on short term		
3	table 1	data	Number of vehicles M1:653	The number of analyzed M1 vehicles is not the same throughout the whole study (e.g. Appendix E: M1:647) in the different paragraphs	Make sure that every analysis is done with the same set of data and explain in detail why data sets have been neglected	
3	Table 1	data	Average differences	Need corresponding statistical information to fully assess basis of subsequent regulatory proposals	provide cumulative distribution, standard deviation and uncertainty bounds	ACEA report
3	last para	data	"correlations"	Unclear what is correlated? Method A to B? Categories to each other?	Clarify	
4	Figure 1	classes	No high powered vehicle category shown	Why is this category not shown?	Add information	Category discussed later in report
4	7.	impact	"Together, these benefits are in the order of 101 billion Euros for option 4 and 120 billion Euros for option 5 over the period 2010-2030. The benefits outweigh the costs for industry by a factor 20,1 for option 4 and a factor 15,7 for option 5. The environmental and social benefits may be reduced by half if traffic growth continues at current rates."	Time horizon exceeds current estimations for traffic volume development	Provide effect on basis of actual estimations	page 64: "Over the past two decades, passenger annual car mileage has increased by 1,6 % per year on average." Chart Fahrleistungen:
4	all	justification		Conclusions stated without reference	Note reference to supporting sections in report	TNO report
5	paragraph 2	justification	Need for Off-Cycle	As new method, as stated by authors, is to change to representative of actual driving method, need supporting information on why non-representative conditions are necessary for assessment and relevant to the environment.	Provide supporting information on scope, vehicle of concern and reliance of ASEP relative to method B	
49	7.4	impact	Illegal modified vehicles are neglected in the study.	important for single events	include them in the study	VENOLIVA Presentation 11th June 2010
49	7.4	impact	study admits, that deliberately wrong driven vehicles do not influence the L_DEN, but only the single events	important for single events	include them in the study	VENOLIVA Presentation 11th June 2010
10	3.1	data	Result is the average of several runs	According to ECE R51 Method A at least two valid runs have to be made. The final result is the highest sound level reached.	Correct: Result is the highest sound level of at least two runs.	
10	3.2	data	Passenger cars have to perform a constant speed test	only for M1 with a PMR>25		
10	3.2	data	For other types of vehicles the test is similar, ...	Current test method for heavy trucks and buses should be elaborated. It is not correct to note the test is "similar". Truck test is based on achieving engine speed targets. Gear selection is very different	Include description of truck/bus test	ISO 362:1998
10	3.2	data	For other types of vehicles the test is similar, ...	Future test method for heavy trucks and buses should be elaborated. Paragraph starts by saying all vehicles have a constant speed and an acceleration test which is not correct for trucks. Facts aren't corrected until later. The truck test is treated as an afterthought. It should be addressed equally and separately from the car test to eliminate confusion and to help clarify the basis for conclusions.	Include full description of truck/bus test	ISO 362-1:2007
10	3.2	data	"Several preparatory runs ..."	This is not part of the test procedure. Test facilities that know what they are doing can determine the set up conditions in 1 run. Once experienced with a certain vehicle model, no further preparatory work is necessary.	Should be removed.	ISO 362:1:2007
10	3.1	various	ISO362	It is understood that here a reference to the former ISO standard is made.	ISO362:1998	
11	last para	various	Description of differences in regulatory treatment of results	1) Should note these are regulatory differences, not coming from the original ISO standards; 2) The relevance of these differences to the analysis results should be discussed and supported; 3) Missing discussion of the 2 run maximum vs. 4 run average	Either add additional analysis and data to show relevance of paragraph or delete.	ECE R51
12	table 1	classes	High performance car class	Need to show all vehicle categories. Were high powered vehicles analyzed together with other M1 vehicles? If yes, this is a serious mistake.	Add M1-S	TNO report
12	table 2	data	670 M1 vehicles over all / 660 data sets /only 653 analyzed	The number of analyzed M1 vehicles is not the same in the different paragraphs	Make sure that every analysis is done with the same set of data and explain in detail why data sets have been neglected	

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12	4.1	data	Data analysis limited to vehicles in CIRCA database	More data offered by ACEA but not included in data analysis from TNO. It was agreed to include GRB data from 2004/2005	Include the mentioned data in analysis	ACEA report
13	4.1	data	extensive data cleaning has to be carried out...	Are examples available? Did the approval authority make a mistake or was it a misunderstanding of TNO?	Provide examples where a need was seen to clean data and how the cleaning was done.	
13	4.1	data	data were retrieved from manufacturers website	Why no direct contact to the manufacturer? Website information may refer to previous type of vehicle and may not be applicable for the specific vehicle type.	Provide examples which data have been taken from the website.	
14	4.3	impact	estimation on costs for industry	The terms of reference given by EC asked for an analysis of the economical impact. This is not limited to the cost of industry.	Economical impact includes OEM and customer costs.	see typical other studies on CO2 or tyres.
14	4.3	impact	Consultation with ACEA	Consultation implies some discussions which did not happen. TNO requested data in a timeframe that was unrealistic to expect a substantive answer.	If consultation is desired, vehicle manufacturers are prepared to meet.	GRB Sept 2010 minutes
14	4.4	data	the results stored in the Circa database were used to determine the balance between power train noise and tyre rolling noise	How is this done?	Reference relevant report section for description	TNO report
15	4.5	data	off cycle provisions	The proposed regulations concerning ASEP are analyzed without practical experience. The preference to the so called method 2 for ASEP is not shared by the GRB working group.		
15	4.4	various	Inquiry with Type Approval agencies	Why are type approval authorities deemed to understand best the practicality and manageability of the test? Type Approval authorities, in many cases never see the test, as it is witnessed by technical services. Need to sort our issues with test vs. technical competence of testing facility.	Provide background information	
16	Table 3	classes	High powered vehicles again missing	Need to show all vehicle categories. Were high powered vehicles analyzed together with other M1 vehicles? If yes, this is a serious mistake.	Add M1-S	TNO report
16	table 3	data	653 M1	The number of analyzed M1 vehicles is not the same in the different paragraphs	Make sure that every analysis is done with the same set of data and explain in detail why data sets have been neglected	
16	5.1.2	data	Mass of vehicles	Actual mass of vehicles should be the same. "Test Mass" may vary due to loading.	Need to be clear on terms used and clarify any effect on subsequent analysis	TNO report
17	table 4	data	652 M1	The number of analyzed M1 vehicles is not the same in the different paragraphs	Make sure that every analysis is done with the same set of data and explain in detail why data sets have been neglected	
18	Table 5	classes	High powered vehicles again missing	Need to show all vehicle categories. Were high powered vehicles analyzed together with other M1 vehicles? If yes, this is a serious mistake.	Add M1-S	TNO report
18	Table 6	classes	High powered vehicles again missing	Need to show all vehicle categories. Were high powered vehicles analyzed together with other M1 vehicles? If yes, this is a serious mistake.	Add M1-S	TNO report
18	table 6	data	Max PMR for M1 in Method A and B is the same value	Question: is this correct? If the PMRs belong to the same vehicle, this would mean that the payload is 75 kg.	Check value?	
18	table 5	data	658 M1 with 4 without data = 654 M1 data sets	The number of analyzed M1 vehicles is not the same in the different paragraphs	Make sure that every analysis is done with the same set of data and explain in detail why data sets have been neglected	
19	Table 7, 8	classes	High powered vehicles again missing	Need to show all vehicle categories. Were high powered vehicles analyzed together with other M1 vehicles? If yes, this is a serious mistake.	Add M1-S	TNO report
19	Table 7, 8	data	method A: 655 M1 / method B: 656 M1	The number of analyzed M1 vehicles is not the same in the different paragraphs	Make sure that every analysis is done with the same set of data and explain in detail why data sets have been neglected	
19	5.2.1	data	General comment to the report: Is method A results always deducted by 1 dBA?	It is not clear in the report if the displayed results of method A tests are the measured results or if they are reduced by 1 dBA.	Give a short explicit explanation.	R51.02
20	figure 2 Table 9	classes	High powered vehicles again missing	Need to show all vehicle categories. Were high powered vehicles analyzed together with other M1 vehicles? If yes, this is a serious mistake.	Add M1-S	TNO report
20	table 9	data	653 M1	The number of analyzed M1 vehicles is not the same in the different paragraphs	Make sure that every analysis is done with the same set of data and explain in detail why data sets have been neglected	

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21	Figure 3 Table 10	classes	High powered vehicles again missing	Need to show all vehicle categories. Were high powered vehicles analyzed together with other M1 vehicles? If yes, this is a serious mistake.	Add M1-S	TNO report
22	Table 11, 12	classes	High powered vehicles again missing	Need to show all vehicle categories. Were high powered vehicles analyzed together with other M1 vehicles? If yes, this is a serious mistake.	Add M1-S	TNO report
22	Table 11, 12	data	method A: 620 M1 / method B: 622 M1	The number of analyzed M1 vehicles is not the same in the different paragraphs	Make sure that every analysis is done with the same set of data and explain in detail why data sets have been neglected	
23	5.3	classes	Eight of these ten vehicles are very high-powered cars ... for [which] ...the high test results of method B might be that ... the adaptation ... is not effective in ... test method B.	Lack of definition: what is very high powered, what is adaptation? Why "might be"? Did TNO carry out any study on this with the type approval data? How many of these vehicles were Automatic Transmissions?	Please provide more information. 75 dB is not unusual as a result in method B and has nothing to do with whatever adaptation. Result >80 dB are agreed to be "strange"	
23	5.4.1	classes	M1-S included in M1	This will provide incorrect analysis results	Analyze M1-S separately	TNO report
23	5.3	limits	"66 exceeds current limit value = 81 measured"	If the analysis shows this result the equivalent must be greater than 81 dB(A), but is not!	Redo the analysis and consider new classes => Limit N3 = 82 min. + new classes	ACEA report
23	5.3	impact	"should not be considered representative members of population"	Why not? The certainly are representative. The whole point of the new test is to estimate actual 90th % on road emission of vehicles produced today. That these vehicles have lower reported levels under the current test is no reason to exclude them.	Include all valid test data	TNO report
23	5.3	data	Interpretation of the result for M3	The results for M3 according to today's three limit values 75, 77 and 80 dB(A) are averaged together. 75 and 77 dB(A) are today a customer demand.	See ACEA report	
24	5.4.2	limits	Diesel vehicles with incorrect limit values	Does this indicate the type approval authority and manufacturer actually thought these vehicles have a 74 dB limit? Any investigations of this question? Would this effect conclusions if it were true?	This is also a valid possibility. The authors note the complexity and confusion created by the current system.	TNO report
24	5.4.3	limits	Diesel allowance of 1 dB characterized as "very important"	Not consistent with characterization on effect of selection of truck tires	Reword	TNO report
62	figure 18 figure 19	impact	Highly annoyed or highly sleep disturbed people due to traffic	GRB presentation GRB52-14 distinguishes between intermittent traffic and free flowing traffic (30% versus 70%). Nothing is mentioned in the draft report.	Is this aspect finally disregarded. Please provide background material	
24	5.4.2	data	Some vehicles were corrected. Some vehicles were not verified.	Verification of data integrity was not part of study? If true, there is little basis for any conclusion.	Verify data integrity	TNO report
24	5.4.2	data	It appeared that the relationship between the mean values of the noise emission and the applicable limit value was not completely logical and unequivocal, neither for test method A nor for method B...The results of this part of the analysis were not included in the report, because they do not constitute useful information for the purpose of this investigation.	Why discuss this issue at all, if this not useful information?	Delete this section	TNO report
25	5.4.5	data	good correlation could be found between noise emission and ... the cylinder capacity	this is known in industry and often said, but mostly ignored	Correlation is mentioned, but no use of that information is made	
25	5.4.5	data	PMR is expected to show a high correlation with the noise emission	PMR was chosen because of the correlation to the acceleration used in real urban traffic. PMR does not specify any size of the vehicle or purpose of use		
25	5.4.5	data	no influence from power and PMR to noise level	The spread of noise levels is significant different in following groups: below 100 kW/t; between 100 and 150 kW/t; more then 150 kW/t	Introduce different subclasses to the M1 class. below 100 kW/t; between 100 and 150 kW/t; more then 150 kW/t with individual noise level limits	
25	5.4.5	data	The correlation between the method B result and three assumed important parameters were poor.	The lack of correlation may be improved by identifying proper subcategories	Use the subcategories in the ACEA report	See ACEA report
25	5.4.4	various	"related to vehicle technology or acoustical mechanisms"	This statement indicates the authors do not understand the two test procedures and the operating characteristics of automatic transmissions. The larger values from the Automatic transmission under method B can clearly be linked to the presence of torque converters which will allow a corresponding AT vehicle to run at higher engine RPM than the equivalent MT vehicle, even when the AT is "locked"	do not dismiss difference and include in analysis	TNO report

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25	5.4.5	method	In both test methods, the most dominant operational parameter for the noise emission is the acceleration	This is not the case for method A. Acceleration is used along with vehicle speed as equal characteristics in Method B	Redo section to reflect relevant engineering factors or delete	ISO 362:1998; ISO 362-1:2007
25	5.4.5	method	It seems remarkable that in particular the PMR does not show a very distinct correlation with the noise emission.	The technical basis of PMR in method B seems to be misunderstood. PMR was chosen because of the correlation to acceleration in real traffic.	Delete this section and all subsequent PMR discussion	ISO 362-1:2007
27	6.3.3	limits	For the N3 vehicle categories the estimation of the equivalent new limit values was made by adding the average difference between the test B and test A results of the respective category to the current limit values.	Coupling the new limits directly to the current limit values, the 1 dB allowance for measurement equipment precision is lost completely. In paragraph 3.2 this 1 dB is mentioned as a striking difference between method A and B	Derive the new limits from the measured noise levels according to the method B procedure (without this 1 dB allowance)	
27	6.3.3	limits	For the N3 vehicle categories the estimation of the equivalent new limit values was made by adding the average difference between the test B and test A results of the respective category to the current limit values.	Deriving the new limits in this way only takes the average of both populations (method A resp. method B measurements) into account. The spread is not taken into account	Derive the new limits from the measured noise levels according to the method b procedure (without this 1 dB allowance)	
27	6.1	data	General approach for the distribution analysis, Cut-off	The cut-off defines how many vehicle of today are excluded from the market: According to ACEA CEL = 5% or TNO CEL = 50% which means in principle already a reduction of the limit value	See ACEA report	See Gaussian distribution
27	6.1	data	Distribution of noise results in method A has a cut off at the legal limit. distribution of noise results in method B is normal	The regulation allows only a homologation with results equal or lower than the limit. If vehicles have noise values over this limit during their development process, then acoustical measures have to be applied to the dominating noise source. These measures causes an effect on resonances or to the overall level of a specific noise source. In this case it works over a wide range of engine speed. The distribution of noise sources is different between the two methods.	Vehicles are not tuned to method A but the final end for development work is to fulfill the noise regulation	
37	6.3.4	limits	Policy option 4 – New method – new limit values with noise reduction potential. The rolling noise emission of tyres is subjected to a separate EU Regulation No. 661/2009 [7]. This regulation implies that from 1 November year 2012 stricter limit values for tyre rolling noise will be in force for new types of tyres and 1 November year 2013 for new types of vehicles. These new requirements will result in an (estimated) average reduction of 3,8 dB(A) of the limit values for car tyres	The assumption is not correct: Calculations of TNO are made on ECE117 limits but not with measured data. Manufacturer measurements show than 40% of tyres are already in compliance with the future limits. For others tyres, levels of tyre noise are already very close to the future limit. Then, estimated effect of rolling noise, -1,3 to -1,7 dB(A) on Lurban is wrong for this reason. Effect is from 0 to 1,5dB in function of the power-train noise (for high noise level cars, the effect of this reduction is zero) How did TNO measure the impact of tyre noise ?	Recalculate the distribution between powertrain noise and tyre/road noise under the correct assumptions.	Renault report
37	6.3.4	dataThe rolling noise emission of tyres is subjected to a separate EU Regulation No. 661/2009 [7]. This regulation implies that from 1 November year 2012 stricter limit values for tyre rolling noise will be in force for new types of tyres and 1 November year 2013 for new types of vehicles. These new requirements will result in an (estimated) average reduction of 3,8 dB(A) of the limit values for car tyres and of approximately 3,0 dB(A) for the limit values for truck tyres. From 1 November 2016 the stricter limit values will apply to all new vehicles and all new tyres. The spread of noise emission values of most tyre classes is approximately 5 to 6 dB(A) below the current limit values.	The reduction on limit values in one regulation cannot be transferred to an assumed reduction in another regulation where the test condition is very different. For M1/N1 the R117 is coast-down at 80 km/h whereas R51 is acceleration at 50 km/h. For Trucks R117 is coastdown at 70 km/h whereas R51 is acceleration at 35 km/h		
37	6.3.4	dataThe rolling noise emission of tyres is subjected to a separate EU Regulation No. 661/2009 [7]. This regulation implies that from 1 November year 2012 stricter limit values for tyre rolling noise will be in force for new types of tyres and 1 November year 2013 for new types of vehicles. These new requirements will result in an (estimated) average reduction of 3,8 dB(A) of the limit values for car tyres and of approximately 3,0 dB(A) for the limit values for truck tyres. From 1 November 2016 the stricter limit values will apply to all new vehicles and all new tyres. The spread of noise emission values of most tyre classes is approximately 5 to 6 dB(A) below the current limit values.	TNO is focusing on reducing noise of future tires (like a bonus). But today there are already on the market tires with these characteristics. Are there vehicles in the database with these tires? If yes, the statistics have been contaminated by these results and this bonus has already been used. In the discussion on new limits, it should be avoided or treat it in it's entirety.		

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37	6.2.1	data	"... ,but no proof that an allowance is necessary"	In the next part of the text a reasonable method for how to motivate allowance is given. Thus this sentence is uncalled for. However, ACEA may be able to give other proofs or motives as backup.	Delete the sentence.	See ACEA report
29	6.2.4	classes	assessment on high powered vehicles is carried out on actual definition of that class.	On page 32 a redefinition of the class is proposed. How would the correlation look like, if the revised definition is used?	Re-analyze the data based on a PMR>150 definition	analysis is available ACEA
29	6.2.3 6.2.6	limits	For N1 – N1G the increase in noise emission according to A resp. B is 1,7 resp. 2,2dB(A), but the number of N1G vehicles in the database is only 3, which is too small to be the basis for any conclusion.	Even only 3 data show more than 2dB difference between off-road and non off-road. 2dB allowance is necessary for off-road vehicles.	Allowance of off-road for M1, N1, N2, N3 should be +2dB.	
29	6.2.6	limits	It is recommended to include off -road sub-categories for all vehicle categories, each with a 1dB(A) higher limit value than the normal vehicles of the category, except for N3 vehicles, which should be assigned a 2 dB(A) higher limit value.	There is no N2G data. There is no evidence for 1 dB(A) allowance for N2G with engine power > 150 kW. Even if N2G vehicles have not been measured during the monitoring period it does not mean they are not existing. These vehicles are today on the market. This is also valid for M2 and M3 vehicles.	The allowance for N2G should be 2dB(A) that is the same allowance value of method A. Introduce the G class for all categories like we have today. The allowance should be +2dB	
29	6.3.5	limits	Policy option 5 : end of § "as the first step...	This option means In 2010 or 2012 : application of equivalent level between A and B method (72/73 dB for M1/N1). 10% of M1 and 20% of N1 won't be in compliance with those limits. The limits are not equivalent because 100% are in compliance with A method. In 2013 : 38% of M1 and 70% of N1 won't be conform - 70/71 dBA In 2015 : 90% des M1 et 95% des N1 won't be conform - 68/69 dBA Vehicle commercialized in 2013 are already under process. How did TNO determinate that industry is able to carry out the decrease of 2 dB the noise level of cars between the vote and the application of the regulation, 6 months after?	True equivalence is 73 dB(A). The duration of development must be taken into account: we ask for 5 years between the vote and the first stage, and 5 more years between first and second stage, because without an official regulation, we can't decide to invest in new technologies. This needs to be discussed because step 1 or 2 of option 5 with the timeframe proposed is impossible without destroying project already under processing. Cost (evaluated in § economic impact) in that case will become much more higher than those expected in the study.	
29	6.3.4 / 6.3.5	data	Tyre road noise contribution of HVC: no information is available	Without this information it is not feasible to draw conclusions on limit value reductions. The stricter limits in ECE R117 will not effect the tyre/road noise contribution in ECE R51 because a lot of 'problem' tyres in the drive-by test will already satisfy the new ECE R117	Tyre/road noise reduction in ECE R117 will not lead to tyre/road noise reduction in ECE R51. Take the content of tyre/road noise into account in the definition of limit value reductions	
29	6.2.3	data	Category G	The TNO report does not take into consideration the need for the Off-Road classes for all vehicle categories and why the criteria for this class have been formulated like they are today	See ACEA report	See ECE R and EU Directive
29	6.2.4	dataThe rolling noise emission of tyres is subjected to a separate EU Regulation No. 661/2009 [7]. This regulation implies that from 1 November year 2012 stricter limit values for tyre rolling noise will be in force for new types of tyres and 1 November year 2013 for new types of vehicles. These new requirements will result in an (estimated) average reduction of 3,8 dB(A) of the limit values for car tyres and of approximately 3,0 dB(A) for the limit values for truck tyres. From 1 November 2016 the stricter limit values will apply to all new vehicles and all new tyres. The spread of noise emission values of most tyre classes is approximately 5 to 6 dB(A) below the current limit values.	TNO is focusing on reducing noise of future tires (like a bonus). But today there are already on the market tires with these characteristics. Are there vehicles in the database with these tires?; if yes the statistics has been contaminated by these results, then this bonus has already been used. In the new limits should be avoided to treat it in its entirety.		
30	6.2.4	classes	Unclear which basis for analysis of M1-S	Is this the Current M1-S definitions or those proposed by TNO? Does it include all valid test results?	Clarify	TNO report
30	6.2.4	justification	Estimate of M1-S difference	Why estimate? Estimate is irrelevant to analysis.	delete	TNO report

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30	6.2.4	data	high powered vehicles show a smaller difference in method B of 0,8 dB	the difference of ALL M1 vehicles including high powered vehicles is 2,1 dB. So the difference is 1,3 dB and would be higher if high powered vehicles are taken out from the ALL vehicle class. On top it is proposed in 8.3 to skip the acceleration limit of 2m/s ² . The influence on the high powered vehicles is not assessed by TNO, but is known to be in average 0,5 dB Analysis is not verified on basis of the redefinition of the class.	re-analyze the data based on a PMR>150 definition.	analysis is available ACEA
30	Figure 4	data	noise emission vs. PMR	Analysis of this type indicates misunderstanding of reason for PMR in method B. Data variation indicates linear regression is inappropriate tool for analysis.	Redo or delete	TNO report
30	6.2.4	various	The choice of the gear is related to the acceleration to be achieved: one has to use the gear or gears that result in an acceleration as close as possible to the prescribed acceleration	This is true not only for high powered vehicles. This is the general demand for the transmission setup. Very clear specification. In 8.2 TNO complains about lack of precision in gear setup definition.	Recognize in ECE R51 Annex 10 in section 3.1.2.1.4: the vehicle is tested in the mode which achieves an acceleration being closest to a_wot_ref This is the most simple requirement	
30	6.2.4	various	For high-powered cars this leads to the use of relatively high gears in comparison to other cars	High powered vehicles have typically more gear ratios than others, 6-speed to 8-speed transmission are used. This leads automatically to higher gear numbers.	Design description should be left or. The new test was designed to be neutral applicable to all technologies. Gear numbers shall have no meaning	
30	6.2.4	various	Consequently, also in method B, the noise emission test of high-powered cars is performed at lower engine speeds than for other cars	Lower engine speeds are in line with the finding of in-use studies. It is not complained by TNO to be acceptable that high powered vehicles have to achieve higher accelerations.	Design description should be left or. The new test was designed to be neutral applicable to all technologies. Engine speed shall have no meaning	
30	6.2.4	various	and with subsequently lower noise emission values	... which would then be in line with the real emission in traffic. However TNO assumes lower sound emission at lower engine speed on the ground of simple physical theory, ignoring the fact, that more powertrain vibrations and resonances in the gas flow systems can occur, which can have a negative impact on the sound emission	The sound emission is representative for the L_90 of the vehicle in traffic.	
31	Figure 5, 6	data	noise emission vs. PMR	Analysis of this type indicates misunderstanding of reason for PMR in method B. Data variation indicates linear regression is inappropriate tool for analysis.	Redo or delete	TNO report
32	6.2.4	classes	Therefore the proposed criterion is very simple: – Power to mass ratio greater than 150 kW/t	No justification is given; No assessment of what happens to the remaining vehicles no longer fulfilling this criteria	Explain why 150 kW/t and what will happen to the vehicles that will no longer fall under that category	
32	6.2.5	classes	Due to the small number of vehicles subject to these combined allowances no reliable analysis for the comparison of these sub-sub-categories could be made. ... This implies that there is no justification for the accumulation of allowances.	Conclusion is drawn on "a not reliable basis of data"; inappropriate argumentation, however industry supports a simplification of the system. Actually 12 combinations are available. TNO suggest a reduction to only 3 categories, which is maybe too small	ACEA suggests 4 categories	ACEA position paper
32	6.2.4	classes	Therefore the proposed criterion is very simple: – Power to mass ratio greater than 150 kW/t	Fig.5 on P.31 shows that 120kW/t border is feasible.	Change 150kW/t to 120kW/t	
32	para 1	classes	PMR criteria of 150	No supporting justification is given for this value	Give justification	TNO report
32	para 2	classes	Reference acceleration of 2.0 m/s ²	a_ref is above 2.0 m/sec ² for this PMR. Since authors later recommend a change in the acceleration limit (different from reference acceleration) this effect needs to be analyzed and discussed here.	Redo the analysis	
32	6.2.6	classes	for the simplification an additional category for M1 is needed	This is no argument! If one is using this kind of evidence one can ask for any class one want to have without any analysis of the data	Reanalyze the data under the circumstances that new vehicle categories are needed	ACEA report
33	6.2.5	classes	It is recommended to consider vehicles with an allowance as a separate sub-category in the future limit value system.	Supported		ACEA position paper
34	6.2.3 6.2.6	classes	For N1 – N1G the increase in noise emission according to A resp. B is 1,7 resp. 2,2dB(A), but the number of N1G vehicles in the database is only 3, which is too small to be the basis for any conclusion.	Even only 3 data show more than 2dB difference between off-road and non off-road. 2dB allowance is necessary for off-road vehicles.	Allowance of off-road for M1, N1, N2, N3 should be +2dB.	
34	6.2.6	classes	N2G does not have allowance for off-road.	There is no reason why only N2G does not increase sound level compared to N2. Even if N2G vehicles have not been measured during the monitoring period it does not mean they are not existing. These vehicles are today on the market. This is also valid for M2 and M3 vehicles	Introduce the G class for all categories like we have today. The allowance should be +2dB	

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34	Table 13	classes	Definition of vehicle categories	The current definition of the sub categories is copied to method B. Only discussion on allowances is included. No statistical analysis based on frequency distribution has been used to derive vehicle sub categories	Included extended statistical analysis based on frequency distributions to derive sub categories. Different sub categories in method B should be possible.	
34	table 13	limits	Analysis for N3 and N3G	Because all available data for these two classes (at least 151 for N3 and 73 for N3G) were not used the results have to be questioned deeply.	Redo the complete analysis for N3 and N3G with all data available even the now missing ones	ACEA report
34	table 13	limits	M3 are classified with a reduction of 2 dB in the first step	M3 are heavy buses which use the same powertrain components as heavy trucks. They cannot be compared with light duty vehicles or passenger cars.	Treat M3 as N3: Reanalyze N3 and N3G (Think about subcategories) Reanalyze M3 and M3G (Think about subcategories)	ACEA report
34	table 13	data	652 M1	The number of analyzed M1 vehicles is not the same in the different paragraphs	Make sure that every analysis is done with the same set of data and explain in detail why data sets have been neglected	
34	6.3.5	limits	M3	How can HCV busses derived from HCV, or busses which are using the same power train as HCV be compared with light vehicles? The first step cannot be achieved within a short time by using new tyres and then the second by reducing the powertrain noise! Already for the first step the powertrain noise has to be reduced because there is no benefit available from the reduction of the limits for rolling noise on the tyres. To introduce new measures on the powertrain the time frame is too short. The second step means again to work on the powertrain only. 4 dB(A) reduction on the powertrain for these classes means a complete new concept which can never be achieved in the timeframe given in the TNO report.	See ACEA report	
35	6.3.3	limits	A percentage of non-compliance between 5 and 15 % was considered acceptable, because from the distributions of the test B and test A results it could be inferred that adaptation to the new test method will result in a cut-off of the higher test results. This will cause a shift of 10 – 15 % of the highest test results of method B to lower values.	M1-10%, M1G-17%, N1-10%, M2-8%, N2-9%, N3 33% are excluded by limit values of option 3. This is not equivalent but tightened limits.	If environment noise is equivalent to current status in case of option 3, there should be no exclusion of current vehicles.	
35	6.3.3	data	equation 1	a linear regression equation cannot be used because there is no correlation between the results of method A and method B	See ACEA report	
35	6.3.3	data	Use of linear regression between method A and B	Linear regression cannot be used on uncorrelated data.	Redo analysis with cumulative distributions	ACEA report
35	6.3.3	data	equivalent = "should easily comply"	max 5 % should be affected (step 1)	1) new classes and subcategories necessary 2) analyze in new classes With all data!	TÜV report
36	6.3.3	classes	A percentage of non-compliance between 5 and 15 % was considered acceptable, because from the distributions of the test B and test A results it could be inferred that adaptation to the new test method will result in a cut-off of the higher test results.	Might be acceptable if applied to every individual subclass.	Add missing subcategories	analysis is available ACEA
36	table 15	limits	average for N3 is 81,2 for old "80"	Average means: a cut of >50% if limit of 81 is used	Redo the analysis and consider new classes => Limit N3 = 82 min. + new classes	ACEA report
36	table 13	data	estimate of equivalent limit values	after the conclusion from page 33 (see above) the table should contain for further assessment the vehicles subcategories proposed by TNO otherwise no appropriate conclusions can be made	add missing subcategories	analysis is available ACEA
36	6.3.3	data	[CEL is] .. at 73 for the high-powered M1 vehicles	based on old definition. If made on new definition the value would be 75 dB and another class would be justified between 120 kW/t and 150 kW/t PMR	review data	analysis is available ACEA
36	6.3.3	data	... it could be inferred that adaptation to the new test method will result in a cut-off of the higher test results. This will cause a shift of 10 – 15 % of the highest test results of method B to lower values	This statement is a guess not based on any facts. Also M1 vehicles changing classes due new class definitions for high powered vehicles are not considered in determination of the equivalent sound level	Provide engineering data	
36	6.3.3	data	... it could be inferred that adaptation to the new test method will result in a cut-off of the higher test results. This will cause a shift of 10 – 15 % of the highest test results of method B to lower values	assumption made without any assessment. Provide examples. In category M1 the 10-15% cut will primarily touch high powered vehicles and off-road vehicles. Wrong approach for Equivalence, if subcategories are not considered separately.	redo analysis	

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36	6.3.3	data	"... , it could be inferred that adaptation to the new test method will result in a cut-off of the higher test results."	According to the ACEA report some N3 vehicles with automatic transmission show a wide spread in results measured with method B. Some of them are well above the "cut-off" results due to that the new test method is severe to this type of powertrain. That means that this type of powertrain need considerable and expensive design changes to meet even the equivalent level of the N3 category. The discussion about optimization to meet the required level is irrelevant.	Reconsider the basis for the discussion of non-compliant vehicles and respect that the 5-10% worst vehicles may mean a challenge in lead time and cost, to adopt to method B and a corresponding equivalent limit.	See ACEA report
37		limits	Therefore it is considered to be feasible to lower the limit values for these vehicle categories with 3 dB(A): approx.1,5 dB(A) to account for the already diminished tyre-road noise and another 1,5 dB(A) to be achieved by the reduction of powertrain noise.	Mathematically wrong: a reduction of 3 dB from CEL for a vehicle with an approx balanced source mix of 50:50, will need -3dB from the tyres and -3 dB from the powertrain. Conclusion of feasibility is not given.	- 3dB on the powertrain need much more lead time. -3 dB from the tyres is not seen, as OEM tyres are already very silent	analysis is available ACEA report
37	6.3.4	limits	M3 are classified with a reduction of 3 dB was considered feasible	M3 are heavy buses which use the same powertrain components as heavy trucks. They cannot be compared with light duty vehicles or passenger cars. Where are the evidences for the comment that a reduction of 3 dB(A) for M3 are feasible?	See ACEA Report	
37	6.3.4	limits	The average noise emission of tyres may then be 3,3 to 3,8 dB lower than the current limit.	The proposed limit of 68 dB(A) as a further limit ignores the contribution of tyre road noise to the overall noise level. The report itself state a contribution of tyres by 50 %, this lead to a tyre noise of 65 dB(A). Many of the tyres today used are in line with the requirements for tyres in the future.		
37	6.3.4	limits	"... , for the categories N2, N3 and N3G a limit value reduction of 2 dBA is proposed in view of the high percentage of the current vehicle types in these categories that would not comply with a 3 dBA lower limit value."	This statement is proven by appendix D, but obviously forgotten when the equivalent limits and the reduction scenarios were developed. Limit value of 82 dBA will exclude 10% of the category N3; 81 dBA - excludes 35%; 80 dBA - excludes 70%; 79 dBA - excludes 95%. The same trend is valid for N2 and M3.	Reconsider the basis for the discussion of non-compliant vehicles and respect that the 5-10% worst vehicles may mean a challenge in lead time and cost, to adopt to method B and a corresponding equivalent level. Reconsider the speed of limit value reduction.	appendix D in the TNO repo
77	7.7.3.3	impact	noise abatement measures	GRB52-14 page 37: inconsistent table compared to draft report Table not shown in report	Provide explanations	Experiences of Ingolstadt on low noise road surfaces
37	6.3.4	impact	Expected improvement in vehicle results due to upcoming changes in tyre noise regulations	Amount of improvement is overstated. Analysis of L_crs data shows vehicles use tires today that comply with future limits	Redo analysis to account for L_crs data	TNO report
37	6.3.4 Para 4	impact	Estimated feasible noise reduction	Amount of noise reduction is not supported in report.	redo analysis	TNO report
37	6.3.4	impact	These new requirements will result in an (estimated) average reduction of 3,8 dB(A) of the limit values for car tyres and of approximately 3,3 dB(A) for the limit values for truck tyres	Impact of tyre regulation on noise reduction is by far overestimated because current tyres are much quieter than required by tyre regulation limits ECE-R117. Current tires already fulfill requirements of proposed limit values for R117 stage 2		
37	6.3.4	impact	Estimated feasible noise reduction	Unjustified estimation, not based on engineering analysis	redo analysis with supporting engineering data	TNO report
37	last break	justification	"was considered feasible"	is there any background material available for justification?	discussion with industry	
37	6.3.4	data	For the heavy vehicles, for which no information about tyre-road noise contributions is available a different approach was followed. For these vehicles the histograms (Figures 3, 4 and 5) and the non-compliance tables in Appendix D were used to assess the feasibility of various levels of limit value reduction.	P21 Figures3, P30 Figures 4 and P31 Figures 5 are not histograms.	Change to the correct Figure number.	
38	6.3.5	limits	"M3 a first step reduction of 2 dB(A) is proposed and another 2 dB(A) for the second step"	M3 are heavy buses which use the same powertrain components as heavy trucks, city buses have been reduced by 3 dB(A) on customers demand in the last 5 years, all measurements in method B with normal tyres	Reanalyze the data, think about subcategories and discuss the outcome with industry. See ACEA proposal	ACEA report + analysis of old data (2005)
38	6.3.5	limits	"a first step of 1 dBA.... , again based on the narrow range of the test values and the high percentage of non-compliant vehicles."	Again it is recognized in the TNO report that HCV may have difficulties in the short time frame to fulfill a too tough noise limit reduction.	Reconsider the basis for the equivalent level.	appendix D in the TNO repo

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38	6.3.5	limits	"Also in option 5 the proposed first reduction step of the vehicle noise limit values aims to build on the reduction of tyre road noise resulting from the introduction of stricter limit values for tyre rolling noise."	First of all, tyre noise contribution of HCV is minor in vehicles speeds below 50 km/h. Secondly, some of the trucks measured during the monitoring period has been tested with common traction tyres that are regarded having low noise contribution and low rolling resistance. The conclusion is that, so called low noise traction tyres that are available on the market including those only fulfilling R117 will not reduce the drive-by noise levels.	Reconsider the assumption that the stricter tyre rolling noise regulation, that will be in force from 1 Nov 2012, will automatically give a noise reduction at drive-by noise test.	OICA presentations in GRB session 51 and 52. TNO report §6.3.5 pg39: "However, a considerable number of tyres that are currently on the market, will be able to fulfill the future limit values for rolling noise."
38	1	time	Time frame for introduction	Proposed timeframe ignores manufacturing lead time and does not comprehend regulation process time.	Redo timeframe proposals to account for regulatory process time and manufacturing lead time Take contact with industry for better understanding of the processes	TNO report
38	6.3.4/6.3.5	justification	The first reduction step can be achieved within a short period of time, because the required reduction of the noise emission can be obtained largely by using new tyres that fulfill the reduced limit values for rolling noise of tyres that will come into force from 1 November 2012	No data provided that show, whether this is given or not. No data provided that ECE R117 and ECE R51 do correlate and what error must be taken in to account	Benefit of tyre regulation is close to zero impact for high powered vehicles, as the reduction of the tyre limits is much lower for wide tyres. Low noise tyres are already widely used.	analysis is available ACEA
38	6.3.5	justification	HCV	Where are the evidences for the comment that the current technology enables the compliance with the future limit values?		
38	last break	justification	"the reduction of rolling noise...."	no effect for CV, tyre noise is affected by torque in combination with no. of axles and tyres	new wording for selection of tyres	MAN study on torque effect
38	6.3.5	various	"For the heavy trucks (M3, M3G)..."	Probably should be: "For the heavy trucks (N3, N3G)..."	Change the text.	
39	6.3.5	time	1 January 2013 – Stage 1 of limit value reduction (values step 1) for Type Approval of new types of vehicles	When tyre rolling noise will be in force for new types of vehicles is 1st November 2013. So that, it is not possible to meet limit value reduction before November 2013.	Redo timeframe	
39	2	time	Time frame for introduction	Proposed timeframe ignores manufacturing lead time and does not comprehend regulation process time.	Redo timeframe proposals to account for regulatory process time and manufacturing lead time Take contact with industry for better understanding of the processes	TNO report
39	last break	time	timing, 1 Jan. 2013	too early for documentation of necessary measures for CV		01-10-13
39	last break	time	timing, 1 Jan. 2015	too early for development, documentation of necessary measures for CV		01-10-18
39	last break	time	timing, 1 Jan. 2017	too early for development, adaption, documentation of necessary measures for CV		01-10-20
39	6.3.5	justification	obligation for OEMs to used tyres type approved under new regulation before the date of mandatory application according GSR	incompatibility to other regulations	minimum date is 1.11.2013; however only for limit values with a proper assessment of the real influence of the tyre regulation	analysis is available ACEA
39	first brake	justification	effect of tyre noise regulation	no effect for CV, tyre noise is affected by torque in combination with no. of axles and tyres	new wording for selection of tyres	MAN study on torque effect
40	figure 7a	data	shows correlation between method A and method B for M1 vehicles	natural dispersion is +/- 3 dB all considerations are only based on average vehicle. So the dispersion is higher than the found trend of 2 dB for M1.	at least three influence parameters must be assessed more in details; dispersion of the vehicle fleet and tyre dispersion with respect to transition to ECE R51 and with respect to values	analysis is available ACEA PAG for sports cars
40	figure 7b	data	shows correlation between method A and method B for M1G	Graph shows that there is no correlation at all between Method A and Method B for M1G vehicles. Graph indicates that the Off-road criteria might need some revision, like for high powered vehicles	Take into consideration the work of GRB from 2005	GRB inf. Grp R51 docs ACEA Study
45	general	impact	economical benefit	Benefit for tyre reduction is included in the study	Costs of tyre industry is disregarded. Benefit of tyres shall be subtracted, because they were already used for justification of GSR. Split effects and costs.	FEHRL Report

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45	general	impact	Health effects, annoyance	Author repeatedly stresses the importance of health effects. Biggest part of the study, while other important topics like consumer expectations, alternative measures or industry cost are nearly neglected	Unbalanced assessment. Add more research to open points.	
45	7.1	impact	... and reduced need for traffic noise abatement	it is important to compare the cost for noise abatement measures against the cost for reduction of vehicle noise emission. If noise abatement measures are more effective they must be considered at higher priority in an action list against noise	include study about cost for noise abatements measures	EU research FEHRL report
45	7.1	impact	... costs to industry	costs of industry is only part of the cost branch of the noise reduction costs. Customer cost have to be considered as well, as it is common practice in other studies	EC asked for the economic impact, which is far more than industry costs	
45	7.1	impact		Impact assessment study is based on a vast amount of estimates and assumptions without justifications. Gives a wide variety of values for different parameters	Base the study on justified values	
45	Section 7 / general	impact	accounting for benefit due to quiet tires	Benefit to society from quiet tires due to R117 has already been accounted for. Cannot double count benefits for R117 and R51	Remove expected tire benefit from calculation	TNO report
46	7.2	various	... ideas to convert the new vehicle noise test method into a GTR have been abandoned	the idea is postponed, not abandoned	rephrase statement	
47	7.2	impact	Given the busy traffic on local roads and junctions, and the frequent stop-and-go driving during peak periods, the contribution from powertrain noise from all types of vehicle <u>may be quite</u> significant.	Again a statement is given, which is not supported by research. Even author uses "may".	The new test method covers these situations. It was designed to cover the sound emission with 90%.	
47	7.2	impact	Also the associated costs and benefits have been put into perspective [15], generally resulting in the conclusion that the benefits of noise reduction at source far outweigh the costs [16][17].	So costs for reduced vehicle noise must be smaller than noise abatement costs. Is there a verification available in this study?	See table 33 and 34. Picture indicates that it is the other way round.	
48	7.2	impact	Subsidiary and proportionality principles	The noise maps clearly indicate that the noise situation in particular depends on the local infrastructure. The noise situation is very different from country to country. So member states do have the possibility to improve their national situation.	Noise reduction shall be seen as a combination of global measures, like on vehicles and tyres AND infrastructure measures. Otherwise a reduction of 25 dB must be asked from the source to cover the worst case situation in agglomerations	
48	7.2	impact	Many other local instruments are also applied to reduce traffic noise, but need to be matched by noise reduction at the source, <u>which is far more effective</u> both technically and economically.	The author has already in the beginning of the assessment concluded the expected outcome.	It is very unlikely that the assessment was made from a neutral point of view.	
48	7.3	impact	... regulation in relation to safety, exhaust emissions, noise and others, resulting in complex and interacting design requirements.	this interaction is not considered at all in the whole study	Add investigations about drawback of noise reduction onto other regulatory fields	
48	7.3	data	Use of wider tyres, resulting in higher noise emission.	Covered in GSR, Class C1E only with limit reduction of 2dB	Take into account for high powered vehicles which typically use these kind of tyres.	
49	7.4	impact	impact on individual car owners	is mentioned here but not considered in the cost calculations	add consumer market cost to the table 33 and 34 to get a complete picture	
49	7.4	impact	LDEN ... strongly depends on the road type, the location and traffic variation	If this is the case, then L_den can best influenced by modification of these parameters, which is commonly referred to as noise abatement	Add impact study on alternative noise abatement measures	
49	7.4	impact	The Lnight is mostly dominated by the higher numbers of cars, as most goods traffic on urban roads runs in the daytime.	But in the morning hours delivery to shops start before 6 a.m. which is also part of the L_night		PIEK noise project
49	7.4	impact	Lnight ... contains a mix of powertrain and tyre noise, but more powertrain noise for intermittent traffic flow.	During night time traffic density is much lower, so that traffic is much less interrupted. Less p/t noise amount.	Wrong argument. Delete	
49	7.4	impact	Single events with high noise levels which do not determine the LDEN or Lnight may be a significant source of annoyance, for example due to faulty or illegal exhausts or aggressive driving	... of which none of them fall under ECE R51	Provide investigations about contribution of vehicle types falling under ECE R51 to the mentioned single events	
49	7.4	impact	Single events causing annoyance are mainly ... for vehicles with higher than average noise levels such as sports, SUV and off-road vehicles	Definitely not true. Author misunderstands the L_90 system of the new type approval method.	Provide investigations about contribution of vehicle types falling under ECE R51 to the mentioned single events	
50	table 17	impact		Table gives the impression, that the proposed noise reduction step would be THAT improvement in the noise area. However it must be clear that the proposed reduction will be a slight improvement but does not solve all noise issues.	Revise or delete table - gives wrong political messages	

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51	7.5.1	impact	The vehicle emission data used as input for noise mapping models is a fleet average over all vehicles and is typically updated infrequently (every 5-10 years), if significant changes occur.	In many cases no update of the calculation models at all has been done in the last 20 years, while significant progress in the exterior noise emission of vehicles has occurred, without pressure by more stringent noise regulation, but on request of customers for better comfort. In most calculation models a certain way of worst case is considered, e.g. highest noise level of a facade is taken as reference for the all household. General speed limits are taken as reference speed, while in many cases during day the average speed is much less	Use ROTRANOMO or TRANECAM or HARMONOISE	
51	7.5.1	impact	Figure 13	Figure 13 illustrates that beyond a 1st gear driving the powertrain is not dominating	provide a definition what is dominated powertrain or dominated tyre/road noise	
52	7.5.1	impact	Figure 14: the importance of intermittent traffic	Figures shows in junction with figure 13 that real traffic is best reflected by new test method and in most cases the sound emission is dominated by tyre road noise	Roads shall be classified in the classical way as it was done in former studies. The definition of intermittent traffic is not acceptable.	
52	7.5.2 table 18	impact	to estimate the number of people effected by powertrain noise in comparison with situation with combined powertrain and tyre noise or predominantly tyre noise	Powertrain is predominant up to speeds of 20km/h maybe 25 km/h, which is approx pull away from a crossing over a distance of 5.. 10m	It is totally unacceptable that the author dedicates general conclusions like predominant powertrain or predominant tyres to a road class over the whole network length	
53	table 19	impact	Classification of roads and estimated exposed inhabitants	When summing up the network length and the exposed people, then the EU has 659 Mio inhabitants. In junction with table 20 (Option 1) NO inhabitant of the EU is exposed the L_den values below 52,3 dB, which is simply wrong.	Correct for right number of EU inhabitants. Correct for better sound exposure figures. As stated on page 51 approx 55% of the inhabitants (67 Mio) of big agglomerations are exposed to levels beyond 55 dB. It is not very likely that the rural situation is worse than the urban situation.	
53	7.5.2	impact	urban motorways (70<v<120) and rural motorways (80<v<120) are included in the study	why?	focus on roads with speeds representative for urban driving	
53	7.5.2	impact	"The vehicle groups selected for this analysis are cars, vans, buses, lorries and HGVs."	Motorcycles are completely neglected (single events!)	include MC in survey	
53	table 19 last row	data	for CV only powertrain is typically predominant in urban areas	This has to be considered in the selection of tyres	normal tyres have to be used	Inf. Doc. No. GRB-51-13 Inf. Doc. No. GRB-51-20 Inf. Doc. No. GRB-52-04
54	7.5.2	impact	Intermittent traffic conditions cause frequent variation in vehicle engine speeds due to gear change and acceleration/deceleration.	Is covered by the L_90 of the new test method. Investigations have shown, that typical pull away situations have their peak sound level at 50 km/h with normal acceleration	Author does only provide general statements to justify his split into powertrain / mix / tyre noise categories. The figures given in the report do not justify that.	
54	7.5.2	justification	A general estimate of the percentage of urban/suburban roads with intermittent traffic made for the purpose of this analysis is one third, 33% of the total urban length of residential and main roads	No background material available.	Provide background material	
54	7.5.2	justification	For an urban road length of 1 km, then at least 200 m has accelerating or decelerating traffic.	too simplistic, gear shift from 1st to 2nd after approx 5m and from 2nd to 3rd after 50m. Already after the first gear shift, powertrain is quickly vanishing	provide analysis material	
54	7.5.2	justification	"The average LDEN and LNight for typical EU roads is estimated from the following parameters:"	Too many results in this study are averages of averages of averages ...	Averages can never reflect the real situation	
54	para 1	justification	Penalty for intermittent traffic	This assumption is not warranted due to the use of L_Urban as measurement metric. Accelerating traffic is already incorporated in L_Urban and this penalty function is incorrectly double counting acceleration. Acceleration in L_Urban cover accelerations used in exhaust emissions and fuel consumption test cycles.	Remove unwarranted 3dB penalty	TNO report
55	7.5.2	justification	For all policy options, the shift in noise emission per group in normal traffic are assumed to be equal to the shifts in limit values per group.	Unjustified assumption. Here would be a good chance to consider the possible tradeoffs to other regulations. Already silent vehicles will concentrate on other regulations. This is the essential part of an impact assessment study and cannot be covered by the assumption of the author. NOT ACCEPTABLE.	Provide a proper study how to generalize from a limit reduction to the general effect on the vehicle population, taking other regulatory issues into account.	
55	7.5.2	data	The actual average noise emission values per group in real traffic are extracted from the UBA report [23].	Various computation models from the EU are available, but were not used. Use of these models would provide increased reliability of conclusions.	Use ROTRANOMO or TRANECAM or HARMONOISE	

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57	§7.7.4	impact	7- Economic Impact (Industry cost)	We disagree with a linear law, we think the cost per dB is exponential : from 20 (minor change) to 200 (major change : powertrain, exhaust...) Euro/vehicle between 2 and 4 dB decrease). We don't think that investment will decrease and become null after 7 years. The investment will decrease the margin of manufacturer, as it is for co2 reduction. addition of soundproofing material and acoustic system will increase gross mass of the vehicle with a negative impact on co2 emission for example : ski-plate for N1/M1 = 3kg.	Needs a serious study to evaluate cost and Needs discussions with stakeholders	ACEA study
57	7.5.2	justification	The average reduction in traffic noise levels is taken at 2,5 dB for option 4 and at 3,1 dB for option 5. These reductions are higher in intermittent traffic, 2,8 dB for option 3 and 4,1 dB for option 5. They take effect only gradually, and only are fully in place after all vehicles are replaced, i.e. 13 years after coming into force of the new limits.	authors forgot to mention that delay in the summary (pages 2 to 5)	include finding in the summary	
58	7.5.2	justification	Although relevant for noise impact, vehicles modified without a type test, wrongly passed in the type test and vehicles with defects are not included here.	No indication, how to split events that might be covered under type approval from others, including other transportation means or neighborhood noise	Provide studies	
58	7.5.2	justification	A direct relation between WOT type test results and the noise level at the façade is assumed.	Author transfers L_max results to L_eq. No studies are provided.	There not a single study that correlates single events with Leq. The know result is that L_eq is not affected by single events. This is even mentioned in this study	
59	7.6	impact	Social and health impacts	all results are commonly agreed among environmentalist, but no common communication form is established between stakeholders.	All studies indicate, but none can really prove the health effects.	See ISING, BABISCH, MASCHKE
59	table 22	justification	noise reduction higher than limit reductions	no ground for such an assumption.	Wrong approach	
63	7.6.3	justification	"The implication is that the impact of reduced noise limits does not benefit urban roads as soon as might be expected."	...interesting...		
65	7.7.1	time	Appraisal period – the start year for the CBA is set at 2010 as development of quieter vehicles may already commence then	Unrealistic, because 2010 is already over		
65	7.7.1	impact	The main economic impacts of policy options 1-5 are the technical economic impact which is mainly borne by the automotive industry, and the social-economic impact which is borne by society	Incorrect view, economic impact on customer is missing. Industry will transfer costs to customer.	As 1 vehicle per household can be counted and all people receive benefit from the transportation of goods, vehicle customer are identical to the society. So industry costs will be transferred to the society.	
66	7.7.2	time	The authors consulted ... the automotive industry (ACEA)	Request forwarded on 22. June 2010 with deadline to 5. July 2010. Request to manufacturers from the attendance list of GRB.	Not a professional request. Very late, conclusions were already drawn. Answer of ACEA was not taken seriously into account	
66	7.7.2	impact	Cost estimation	Wrong costs model, ACEA provided support, which was not acknowledged by TNO Cost estimation does not reflect at all the factor of time for research and development. One dB reduction will have to be considered on total different costs depending on the lead time given	see ACEA study	ACEA study
66	7.7.2	justification	noise reduction of 1-2dB possible with available technology.	Typically it is only a question of choosing extreme small tyres and invest in a lot of encapsulation material and silencer. This would lead to very untypical technologies with uncertain result on other performance areas.	TNO shall provide study on how to improve vehicle sound without degrade other criteria	
67	3	limits	there is 1-2 dB scope for reduction, based on compliance rates	The authors misunderstand the nature of regulatory requirements. For these sort of requirements, industry must target performance under the limit, WITH MARGIN, to assure the final certification result will comply. Due to grouping of vehicles in families, test variation, production variation, etc. It is not possible to design a vehicle exactly on the limit. Therefore it as natural result of risk mitigation that some vehicles will have final results 1-2 dB below legal values. This does not mean there is some "free" dBs available, as these manufacturers would need to redesign, not merely do nothing.	Remove these 1-2 dB as "free", as they are not.	TNO report

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67	7.7.2	time	Short term solutions for noise reduction for up to 3-5 years ahead may include engine tuning and speed control, engine part damping, shielding and enclosure absorption, quieter engine exhaust and inlet.	Many of the stated examples are not a short term solution		
67	Para 1	justification	PIEK noise reductions	the vehicle conditions for PIEK are incompatible for L_Urban, so the statement of expected powertrain reductions is misleading	remove	TNO report
69	7.7.2	impact	The value of additional production costs per dB, C _{pj} is estimated at 20 Euro per unit/dB	20 € per 1 dB is a poor estimation and the linear extension to higher reductions is ignoring the facts. The industry has always stated that the costs will increase with an exponential dynamic from one dB to the next. It should be taken in mind, that the costs are also depending on the timeframe of the introduction of new ambitious limits.		
69	7.7.2	impact	The additional production costs are assumed for short term noise reduction solutions, but reducing to zero after 7 years	Adding particular components, like additional mufflers or encapsulations will always cost money as a part and as costs during assembly.	take cost model of industry	
70	7.7.2 table 28	impact	Development costs	Development costs are far underestimated, and it is not appropriate to consider development sufficient 2 years before the application of new limit values.	take cost model of industry	
72	7.7.3.1	impact	A recommended method to value the benefits of traffic noise reduction is given in the EU position paper on valuation of noise (2003)	Only applicable to households with more than 55 dB Leq exposure, which is according to serious studies approx. given for 35% of the EU population		EEA studies
72	7.7.3.1.	impact	Valuation of noise reduction by hedonic pricing	The method of hedonic pricing is (even though recommended by EU) highly sensible to subjective assessment of the circumstances		The Illusions of Hedonics
74	7.7.3.3	impact	"Quiet road surfaces are a solution for all road types where tyre noise is predominant, although the reduction potential is limited to around 5 dB for motorways and 2,3 dB for urban situations."	Effect of "Low noise road surfaces" strongly underestimated. Open porous asphalts do also reduce powertrain noise	The authors should carefully read the literature they are citing from; various results of EU- and other research projects show, that there is a significantly higher effect of LNRS as mentioned in the study	Experiences of Ingolstadt on low noise road surfaces Müller-BBM Experiences of Ingolstadt on low noise road surfaces
74	7.7.3.3	impact	"Noise barriers are the conventional means of abatement along urban and rural motorways and arterial roads."	Better effect of "Low noise road surfaces" at comparable cost figures. Even among noise abatement measures one has to consider the most cost effective strategy		Experiences of Ingolstadt on low noise road surfaces
74	7.7.3.3	impact	Quiet road surfaces are a solution for all road types where tyre noise is predominant, although the reduction potential is limited to around 5 dB for motorways and 2,3 dB for urban situations	Road building technology is far more advanced in the meantime. Good road building practice was demonstrated to GRB in Feb 2010 by COLAS providing a city surface at -9 dB below a good SMA surface. On top, lack of maintenance degrades good roads which can be considered at 5-7 dB.	Influence of quiet roads between -5 dB and -9 dB Reflect importance on proper road maintenance.	Presentation GRB Feb 2010 - COLAS micro surface
74	7.7.3.3	impact	Other solutions such as traffic restrictions, rerouting and speed restrictions are also possible, but tend to have relatively low costs	Shall we believe that low cost measures are disregarded because they are cheap?		
80	7.8	data	"The vehicle groups selected for this analysis are cars, vans, buses, lorries and HGVs."	Motorcycles are completely neglected (single events!)	include MC in survey	
82	Impact Assessment, last sentence	impact	"Together, these benefits are in the order of 101 billion Euros for option 4 and 120 billion Euros for option 5 over the period 2010-2030. The benefits outweigh the costs for industry by a factor 20,1 for option 4 and a factor 15,7 for option 5. The environmental and social benefits may be reduced by half if traffic growth continues at current rates."	Time horizon exceeds current estimations for traffic volume development	Provide effect on basis of actual estimations	page 64: "Over the past two decades, passenger annual car mileage has increased by 1,6 % per year on average." Chart Fahrleistungen:
83	8.1	justification	Question for type approval authorities	Type approval authorities will not have expertise, other than personal impression, to answer these questions. Unless they have access to in-use driving statistics they cannot answer representative questions. Unless they have direct consultation with manufacturers, they cannot answer workload questions.	Should note the appropriate sources of data to answer each question	TNO report

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83	#2	justification	Vehicles tuned and adapted to current test method	Clear intent and meaning of authors is to equate "adaptations" and "tuned" with some sort of dodgy behavior. Authors misunderstand method B, as it is specifically constructed to be inherently resistant to such behavior, so even asking the question of adaptation under method B shows misunderstanding.	Authors should clearly elaborate how adaptation is possible under method B.	TNO report
84	8.3	justification	In some cases (e.g. light sports cars) the reference acceleration of the vehicle in method B may reach such a value that a gear must be chosen that is not representative for normal driving at the required speed.	TNO does not provide any data to enlighten which gear is representative for real driving. the limit acceleration of $2m/s^2$ is following some statistical background	Review in-use data	Fig Study 1998 ACEA, PAG
84	8.3	justification	Although the test conditions in method B (vehicle speed, choice of gears, acceleration and engine speed) may be considered representative for average urban driving conditions, they only cover a small part of all possible operating conditions of the vehicle.	Method B covers 90% of the driving events. What is left uncovered is less than 10% of which most sound emission can be described the tyre sound emission, as acceleration goes down with higher vehicle speeds.	Provide proper view on the importance of ASEP in correlation to the importance of annex 3.	
84	8.3	justification	The test conditions only cover a small part of all possible operating conditions of the vehicle.	the test in method B covers 95% of real used acceleration in typical urban traffic	the test in method B covers 95% of real used acceleration in typical urban traffic	
84	8.3	justification	Engineered to comply with conditions	This implies some Sort of test beating.	If a risk is seen, provide information to help revise test	ISO 362-1:2007
84	8.2	data	ambiguity is reported about gear choice for automatic transmissions	see page 30 - 6.2.4: one has to use the gear or gears that result in an acceleration as close as possible to the prescribed acceleration	Specification is clear enough. This was widely discussed in GRB. The setup description reflects the huge variety of technologies.	
84	8.4	data	Loading of HCV	The loading is correctly defined in ISO 362-1:2007 but not in ECE R51.02	See ISO 362-1:2007	
84	para 2	data	A specific ambiguity of the test instructions was reported with respect to the choice of gear ratio in the case of automatic transmissions	This was discussed in both ISO WG42 (where lead author is member) and GRB. Equivalent technical options are provided for to account for range and uncertainty of vehicle technologies.	No change to test procedure warranted	ISO 362-1:2007
84	para 4	data	loading is ambiguous	can authors provide examples and proposal for improvement?	Need data to improve text	ISO 362-1:2007
84	8.3	data	representative for average urban driving conditions	L_Urban is the 90th % noise emission, average urban condition would be a_50 and n_50 and L_50	reword to reflect correct use of L_Urban	ISO 362-1:2007
85	8.3	justification	One of the type approval authorities reported an experience with some experiments concerning modifications to a vehicle. In this vehicle the intermediate exhaust damper was omitted, which should lead to an increase of the noise emission. This was confirmed by stationary test results. Nevertheless the pass-by test result with method B was lower than the original test result for homologation measured with method A. This example illustrates that method B in many cases operates at very low engine speeds. Therefore the method is not always representative for noise emission mechanisms, that are only apparent at higher engine speeds, such as exhaust noise.	What is message? It shows that method A and B do not correlate very well. And the theoretical thinking that lower engine speeds SHALL deliver lower noise might not be true. If test method B is considered to better reflect what happens in real traffic, than an optimization of that vehicle would lead to the desired result.	Delete that passage	
85	8.3	justification	proposal to delete the $2m/s^2$ border	no assessment on the consequences took place. Experience is available from the work of GRB Inf GRB on R51	Review consequences of deletion of the $2m/s^2$ criteria before a decision is taken.	
85	8.3	justification	low engine speed	Where is the definition for low engine speed to be used to give this statement?		
85	para 3	justification	deletion of 2.0 m/s ²	No analysis of the effects of this proposal are given. ISO chose 2.0 m/s ² to minimize error in the estimation of L_Urban. ISO work would indicate removing this limit can lead to increased errors of up to 1 dB due to the inclusion of tire/road noise that is not present at accelerations of urban driving.	provide analysis	
86	para 4	justification	unrealistically low engine speed	Indicates authors are not familiar with actual on-road operation of such vehicles. Engine speeds are neither unrealistic or rare, but actual in-use results	eliminate personal statements unsupported by data	ISO 362-1:2007
86	8.5	data	Table 37 N2	N2 vehicles are not tested according to the method used for M1 and N1 vehicles	See ISO 362-1:2007	
86	table 36	data	652 M1 plus 20 kei-cars	The number of analyzed M1 vehicles is not the same in the different paragraphs	Make sure analysis is done with the same set of data and explain in detail why data sets have been neglected	

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87	8.4	classes	In view of these specific characteristics of the Kei car data set there is no evidence that test method B would not be suitable or representative for these subcategories. There is no reason to modify the proposed limit values for these sub-categories.	The category of the limit value of the Kei N1 with truck platform should be made the same group as the N1 (GVW>2t). *The N1 sub-category is divided by GVW<2t and GVW>2t . *The vehicle structure and the vehicle noise level of the Kei N1 with truck platform are similar to the vehicle of GVW>2t, though GVW is 2t or less. *PMR=35 is good boundary between two groups for Kei car and normal N1.	Change GVM 2t to PMR 35 or Delete 8.4 to avoid misunderstanding.	
88	8.5	justification	The power train noise emission during the constant speed test is on average 4 dB(A) lower than the rolling noise emission of the tyres	No justification given for the assumption. The assumption has a big impact on the following calculations and conclusions.	Provide analysis why 4 dB should be correct. A sensitivity analysis should be made with changed values.	analysis available PAG
88	8.5	justification	justification for the need for off-cycle based on 48% tyre contribution	no assessment on the spread available; according to GRB 2005 the vehicles range from 25% to 75% powertrain contribution and in average it is 50%. This means that a limit reduction is best covered when both powertrain and tyres/road noise is reduced by 2 dB	invalid argument as justification for off cycle. Delete statement	GRB 2005
88	8.6	justification	Vehicle manufacturers have learnt to take the test conditions and the type approval requirements into account in the design process of the vehicles. Therefore under the current test procedure there are no vehicles that do not comply with the applicable limit values.	Fulfilling the legal limits is not the experience of the manufacturer but it is strongly needed to do so. This statement is only used to precipitate a negative atmosphere.	Remain with serious statements	
88	first bullet	justification	powertrain noise 4 dB less than tires for L_Crs	no supporting evidence given	give supporting data	
88	second bullet	justification	tire noise equal between L_Crs and L_wot	Definitely not true. Tire noise at L_wot will be higher due to tire torque effect	redo assumptions.	Electric vehicle L_Urban results showing different L_crs and L_wot
88	8.6	data	Vehicles optimized for method A. The histograms for method A cut off sharply at the limit values, while the histograms for method B show a more natural tapering off to higher sound emission levels.	different noise sources in method A and B The contribution of noise sources is optimized for method A. See also comments to page 27		
89	8.7	limits	The report discuss if the choice of tyres for N3 and M3 can lead to "improper" test results.	Yes, it can. The large variety of tyres that may be "representative for the axle" can cause a spread of drive-by noise levels of several dB. I has been shown in different investigations that tyre noise is of minor importance for HCV in speed lower than 50 km/h, that is during the drive-by noise test according to method B.	Propose free choice of tyres, thus allowing tyres that have low influence on the method B noise test and give a small spread of results.	See motivation in the informal documents of OICA and ETRTO from GRB session 51 and 52 and see the proposal from OICA in GRB session 52.
89	8.6	justification	This adaptation or optimization to the test method has not yet taken place for test method B,	Unjustified statement. Provide examples for adaptation with method B. Method B was designed to require performance, while method A simply specified an approach speed and a gear, but left open what shall happen during the pass-by.	New test was designed to be more robust. If TNO see's the risk for unexpected "adaptation" they are asked to provide material. New test is more representative, so when manufacturer start optimization to new test protocol, this has a positive result for the environment. This is exactly what a regulation asks from OEMs	
89	last para	justification	"does not have major influence on test results"	Here, the tire effect on trucks is noted as having an average difference of 0.6 - 1.0 dB, with the largest at 1.7 dB. In contrast, the page 23 description of "Significantly" is attributed to average differences of 0.7 - 2.3 dB. The report is not internally consistent in the message conveyed.	Give the data.	
89	8.7 1. break	justification	non representative tyres	all tyres on the market are representative and are used on demand of the customers	free choice of tyres for R51, regulation of tyres only with R117	
89	8.7 3. break	justification	no major influence on test results	power/torque has a major influence	free choice of tyres for R51, regulation of tyres only with R117, tyre noise is affected by torque in combination with no. of axles and tyres, this complex relation can not be solved with the new regulation and procedure	

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89	8.6	data	The histograms for method A cut off sharply at the limit values, while the histograms for method B show a more natural tapering off to higher sound emission levels.	The histograms do not have relevance, because the variety of technologies within a vehicle category is too big to define a common mean.	define appropriate sub-classes	
89	8.7	data	Use of tyres	The referenced results are only valid for those vehicle tested with a wheel configuration 4x2 The results also heavily depend on the power and weight of the vehicles and cannot be averaged together	See ACEA report	Scania report
89	8.7 4. break	data	one truck manufacturer	see other data from other manufacturers	free choice of tyres for R51, regulation of tyres only with R117	
90	8.7 1. break	justification	difference was 1,7 dB(A)	= no influence??	free choice of tyres for R51, regulation of tyres only with R117	
90	8.7	data	conclusion: choice of the tyre has no influence on the results	If the number of vehicles is truncated to what is presented in the TNO report the conclusions can be drawn in that way. But if one consider all data being sent to COM the conclusions are completely different	See ACEA report	See 51st and 52nd GRB
91	9.1	various	General goals for off-cycle provisions. ASEP used as in-use compliance test.	The ASEP specifications are not applicable for in-use testing; ECE R51.02 provides the stationary test as in-use test	skip this item	
92	9.2	justification	was already noticed that method B will result in a shift from pure powertrain noise emission to a mixture of both powertrain and rolling noise, with perhaps even an emphasis on rolling noise.	Method A is not a pure powertrain test, it includes already a very reasonable amount of tyre road noise - approx. 30%. However the tyre is tested at untypical high acceleration and is therefore wrongly optimized	taking example M1 of table in Appendix E, where tyre is considered to be at 66.6 dB for method B result of 70 dB. Transferring this to 72 dB with methods A would mean a minimum of 30% tyre contribution	reference to Appendix E calculation example
93	9.2	various	"The design and nature of the two methods is completely different. Method 1 is primarily designed to investigate the linearity of the noise curve and not to limit the absolute noise emission. Method 2 is primarily designed to set a noise limit additional to annex 3 (method B)."	Whereas the IG-proposal („ASEP-Method 1“) aims at checking the „linearity“ of the vehicle's noise behaviour to avoid potential „cycle beating“, the „ASEP- Method 2“ clearly aims at limiting the noise emission of a vehicle and so to govern the stringency of a future noise emission regulation. Following that idea, <u>test method B</u> , which represents real urban driving, <u>would be obsolete</u> and could easily be replaced by fulfilling ASEP requirements only. It is highly questionable if that was the intention of GRB when establishing the ASEP IG.	Take ASEP-proposal GRB-IG as the basis for further discussions, clarify the scope of ASEP	"Additional" only means "additional", and "provisions" only means "provisions"
94	9.2	justification	...in general the higher the PMR, the lower the engine speed at the anchor point. This is a fundamental inadequacy of method B.	It seems to be difficult for the author to understand or accept that the new test is based on real driving statistics	Delete statement	
98	9.4	various	Remove the 2 m/s ² boundary in method B.	Without the boundary of 2 m/s ² it is needed to review the monitoring data base.	The definition of new noise limits should take into account, that some vehicles will show an increase of the noise levels in method B with a deletion of the 2 m/s ² border	
100	10.2	classes	Relevance of allowances for vehicles with special characteristics	There is a new definition of subclasses needed	New classes: M1a: passenger cars < 125 kW/t M1b: high performance cars 125 - 150 kW/t M1c: Super Sport cars > 150 kW/t M1d: off road vehicles	ACEA report
101	10.4	data	For light vehicles with lockable automatic gearboxes it is not clear in which condition the measurement is to do - locked or unlocked ?	It is in choice of the manufacturer, which condition is selected. Both options, locked or unlocked, are available. But the choice has to be done to reach the reference acceleration as close as possible	No problem with automatic gearboxes	
101	10.3	method	loading of HCV	The loading is correctly defined in ISO 362-1:2007 but not in ECE R51.02		
102	10.5	justification	off cycle provisions preference to NL approach (method 2)	Method 2 has the best potential to hit cars, which certain are not of concern. The definition of the car of concern is missing.	Define the car of concern	
102	10.4	method	loading of the vehicle	The way how to load the vehicle is prescribed in ISO 362-1:2007 The ongoing revision of the STD will clarify the misunderstandings which can occur	See ISO 362-1:2007	
106	2.1	limits	limiting values	The equivalent value for method B to method A is round about 72 dB(A). The proposed limit of 70 dB(A) for M1 is very ambitious and the time for introduction is to short with this limit. Lowering the limits after 2 years once more by 2 dB(A) is absolute unrealistic. A time delay of 5 to 7 years is needed in every case for normal development work.	ACEA proposal with 72 dB(A) in first stage; this covers 90% of all existing vehicles. Taking into account, that the method B will be changed by skipping the acceleration limit of 2m/s ² the limit of 72 dB(A) is a challenge for more then 10% of all passenger cars.	
106	2.2	method	Interpretation of results	The interpretation of the results shall follow ISO362-1:2007	See ISO 362-1:2007	

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108	References	various		Out of approx 100 references only few are from industry. This indicates that very unbalanced information was collected. One must expect that for technical issues, many industry information were used	Many unjustified statements in the report can be verified using references of industry.	
124	Appendix D	data	647 M1	The number of analyzed M1 vehicles is not the same in the different paragraphs	Make sure that every analysis is done with the same set of data and explain in detail why data sets have been neglected	
125	table 44	limits	limiting values	Percentage non-compliant vehicles (page 125):	ACEA proposal with 72 dB(A) in first stage; this covers 90% of all existing vehicles. Taking into account, that the method B will be changed by skipping the acceleration limit of 2m/s ² the limit of 72 dB(A) is a challenge for more then 10% of all passenger cars.	
125	table 44	limits	limiting values	limit 68 db(A) - 78% of all M1 non compliant	ACEA proposal with 72 dB(A) in first stage; this covers 90% of all existing vehicles. Taking into account, that the method B will be changed by skipping the acceleration limit of 2m/s ² the limit of 72 dB(A) is a challenge for more then 10% of all passenger cars.	
125	table 44	limits	limiting values	limit 69 db(A) - 59% of all M1 non compliant	ACEA proposal with 72 dB(A) in first stage; this covers 90% of all existing vehicles. Taking into account, that the method B will be changed by skipping the acceleration limit of 2m/s ² the limit of 72 dB(A) is a challenge for more then 10% of all passenger cars.	
125	table 44	limits	limiting values	limit 70 db(A) - 37% of all M1 non compliant	ACEA proposal with 72 dB(A) in first stage; this covers 90% of all existing vehicles. Taking into account, that the method B will be changed by skipping the acceleration limit of 2m/s ² the limit of 72 dB(A) is a challenge for more then 10% of all passenger cars.	
125	table 44	limits	limiting values	limit 71 db(A) - 22% of all M1 non compliant	ACEA proposal with 72 dB(A) in first stage; this covers 90% of all existing vehicles. Taking into account, that the method B will be changed by skipping the acceleration limit of 2m/s ² the limit of 72 dB(A) is a challenge for more then 10% of all passenger cars.	
128	App.E, p.1-4	justification	The second assumption is that the rolling noise during the WOT test at 50 km/h is equal to the rolling noise during the constant speed test at 50 km/h:	The second of the assumptions is simply wrong! We spend very much money on isolated cars for T/R-noise-measurements and for discussions with the tire-manufacturers on the additional noise of the tire during acceleration		
128	App.E, p.1-4	justification	With the two assumptions mentioned above both the rolling noise and the power train noise in the WOT test and the constant speed test can be computed. This was done for each vehicle and the results were averaged per vehicle category	Is <u>Avg.</u> over a whole vehicle category adequate?		
128	E.2	justification	The fourth assumption is that these future rolling noise contributions will be reduced with 3,8 dB(A) relative to the current rolling noise contributions: Lroll crs 2013 = Lroll wot 2013 = Lroll wot - 3,8	not agreed: 3,8 dB (A) can not be taken away so brutally, for several reasons: 1) testing methodology of the tires is not correlate to method B 2) we must consider the relative level between the different sources 3) the assumptions of TNO have little support from experimental results		
128	E.2	justification	A third assumption is that the reduction of the rolling noise limit values will lead after a transition period of a couple of years to a downward shift of the noise emission values of the complete tyre population available on the market. Also it is assumed that this downward shift will be equal to the average reduction of the limit values. So, after the transition period the average rolling noise emission value of C1 tyres will be 3,8 dB(A) lower than before the introduction of the lower limit values.	Assumptions are in contradiction with FEHRL report: page 52 It is therefore unlikely that the distribution .. will simply downshift by the change of limit values. It is more likely that the distribution ... will become more narrow.	Revise assumptions	FEHRL Report
129	App.E, p.2	justification	A third assumption is that the reduction of the rolling noise limit values will lead after a transition period of a couple of years to a downward shift of the noise emission values of the complete tyre population available on the market.	How long is this transition period? Is this reflected in the time schedule proposed by TNO for option 4 & option 5		

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129	App.E, p.2	justification	"Also it is assumed that this downward shift will be equal to the average reduction of the limit values. So, after the transition period the average rolling noise emission value of C1 tyres will be 3,8 dB(A) lower than before the introduction of the lower limit values."	We spend very much time on "discussions" with the tire-manufacturers. Tradeoff need to be considered		
129	App.E, p.2	justification	Assumption 5: The fourth assumption is that these future rolling noise contributions will be reduced with 3,8 dB(A) relative to the current rolling noise contributions: Lroll crs 2013 = Lroll wot 2013 = Lroll wot - 3,8	there are completely different categories of vehicles! Averaging is not possible		
129	3.2 / table 46	justification	new regulation lowers the noise of tyres more then 3 dB	This assumption supposes that all tyres will be reduced to lower noise, also tyres which are used today with a noise level below the future limits. This approach is very unrealistic, only wishful thinking.		FEHRL Report
131	Appendix D	data	647 M1	The number of analyzed M1 vehicles is not the same in the different paragraphs	Make sure that every analysis is done with the same set of data and explain in detail why data sets have been neglected	