Submitted by Poland **SLR-35-17**

**Polish replay to the**

“Response to the Questions from Poland” (SLR 33-13)

Text marked on yellow or pink is Part of GTB response

Text in blue are the Polish comments and/or position

1. **Introduction**

This document attempts to provide a response as requested by Dr Targosinski, the representative of Poland. There have been numerous responses and subsequent replies

Intention of Poland was to obtain concise, clear and sufficiently detailed data in one place (document) clarifying important doubts in regard to IWG-SLR RID Phase 2 proposal (in fact GTB proposal) expressed in GRE-81-22 which will be base to study and decision of Poland in regard to GTB proposal.

but this document will concentrate on a compilation of questions taken from GRE-81-22 and the email to SLR from Dr Targosinski -dated 18 September 2019.

GTB is concerned about the impasse at GRE and in the SLR group that this dispute is creating. It is hoped that the explanations provided will satisfy Poland that the correct steps are being taken by GTB and the SLR group.

GTB would like to stress that it shares the fundamental objective of Poland, to produce “true performance-based requirements based upon a definition of the minimum requirements concerning glare and visibility. However, this will only be achieved as part of a new comprehensive research project and in the context of new adaptive technologies that will allow the current glare and visibility balance to be superseded.

Poland **do not agree with above** because many existing research results and analysis are sufficient to significant improvement of regulation requirements in direction to reduce the nigh-time light dependent traffic accidents, particularly with pedestrians and animals. It was presented e.g. during GTB Forum in Geneva, October 2018 and in many GRE documents including GTB documents. New research are always welcome. But there was not presented any defined substance, range, time frame, costs and expected results of such research.

This is the motivation for the GTB proposal in the conclusions of GRE-31-11. (Should be SLR-31-11)

The basic approach, followed by GTB, to develop the proposal to update the photometric performance of the UN R149 is explained in GRE-33-11. (Should be SLR-33-11)

Poland expect clear and detailed answer to GRE-81-22 in one place. Because we have difficulties to find it in SLR-33-11 we kindly ask to copy it, if needed or describe if not present in SLR-33-11.

1. **The GTB approach and proposal**

Current UN Regulations are based upon a standardisation approach and each have objective test requirements. They are developed for type approval purposes where each device is type approved individually according to the Series 3 of the UN 1958 Agreement. This means:

• Some devices are mandatory; others are optional but all require type approval

“Optional” does not mean “alternative”.

Please explain **where is the logic and sense** to have more than one but different set of requirements (in fact **alternative)** of “performance based” and “technology neutral” requirements which:

* are intended to the same purpose and **the same conditions of use** (illuminate any public road beyond vehicle) where:
* for **first one** is required to meet prescribed quantities of values and
* for **second one** is required to meet the same values but more quantity or more values (points, segments etc.) than for first one and covering all values of first one**.** And no any additional conditions are required for the use of the vehicle of the second one.

Existing examples of such things is the passing beam according Reg. 112, Reg 113, Reg. 98 etc. There is no reason to continue this kind of regulatory and test burden which is against **simplification** spirit.

GTB RID proposal generates different “levels” **alternative but not optional** (basically passing beam) requirements for the same kind of requirements but without need because manufacturer is always free to do things better than minimum required. It is against common sense and logic of type approval which require minimum values for safety and discriminates anything between two different levels of the same functionality (e.g. symmetrical and asymmetrical).

It **has sense “optional”** solutions e.g. in relation to fog lamp which replace passing beam during clearly defined **fog conditions**. Therefore different light distribution is justified (lower illumination distance but wider width in closer distance because of lower speed and higher glare zone illumination allowing for better visibility through fog to other road users). But this **optional** possibility is supplemented by **obligatory** passing beam for “no fog” conditions.

Therefore “**optional**” possibility should be used properly only for solutions really dedicated to specific, unusual and adequately justified purposes.

• A vehicle can be type approved with a combination of devices, each with their type approval to the pertinent UN regulation

• Devices may be sold individually on the aftermarket if they are listed in the installation regulations and they all require type approval to the pertinent regulation. This means device specific performance requirements

• Test requirements are derived from “on road” performance requirements

This derivation should effectively guarantee the minimum for all needed “on road” performance requirements without need to relate to any past, existing or possible future design or testing methods.

 that define the minimum illumination and the maximum glare requirements. However, these “on road” performance requirements need to be translated into objective test requirements that can be carried out in the photometric laboratory on individual devices.

The “translation” process should be done outside regulation or should be detail defined for absolute necessary situation only. Today the wide use cheap and high performance computers and another technology and devices (like photogoniometrs, cameras etc.) allow to define requirements much more “close to the reality” than 60 years ago.

E.g. the today price of high resolution matrix luminaries (design solution) or lack of imagination that will be interest of such design are not proper arguments to allow for “black holes” in road illumination.

• The GTB proposal follows the above-mentioned principles but for Stage 2 simplification it delivers an improved minimum performance requirement.

We expect clear evidence for “improved” performance in measurable values representative for safety like road illumination distance, width (not only small segments but in whole area without black holes), speed, illuminance in whole area of glare exposed eyes, expected changes in headlight dependent accidents risk, etc.

We can demonstrate the improvements in the justification of the proposal.

Please copy statements with evidence for above.

• The amendments to UN R149 shall be suitable for all technologies

 \*\*\*) \*\*\*) I*nconsistency in regard to technology. (please compare with*  *“some existing headlamp design will not be capable” later in this documemnt).*

This is fundamental inconsistency in understanding and forcing under name of “technology neutrality” in fact “technology dependence”.

“Technology neutral” we understand as “no relation in requirements (direct or indirect) to any technology”. This mean that some technologies (e.g. parabolic) might not meet requirements prepared as proper minimum for safety.

But if it should be “suitable for all technologies” it means that for “candle” technology as well.

and consequently it has to maintain the visibility / glare balance that exists today as a minimum legal requirement.

“Visibility / glare balance” is ambiguous term not defined in any place of existing regulations and it is not possible to measure or regulate or objectively verify. This is in fact historical design based residuum. Presently are:

1. Minimum road illumination requirements (very selectively described for vertical screen)
2. Glare restriction requirements (very selectively described for vertical screen)

 It is necessary to define the minimum performance requirements of each of the devices.

Each but absolutely necessary only.

The Polish proposal does not provide a solution to the above-mentioned requirements. It only proposes “on road” performance requirements without taking account of technological limitations.

(we expect detailed list of above technological limitations – and how it relate to “technology neutral”)

Consequently, the Polish assumptions on what can be achieved are unrealistic,

(evidence expected instead of froth)

 taking account of the limitations of the technology.

The “on road” performance requirements proposed by Poland are only based upon opinion and assumptions derived from results of assessment of current products.

(Current products [“any technology”] are always in the background of GTB proposal. Poland only flexible relate in proposed solution to real possibilities of existing technologies. But Polish proposal can be easily and automatically adjusted to any future possibilities. Polish proposal offer free declaration by the manufacturer the range and the width of road illumination – in fact without any technological relation or restriction. The maximal shape of proposed area and values may be exceeded giving appropriate test result or easily adjusted according needs – can follow present type approved technology implementations or can be adjusted to future possibilities or to real road illumination for safety needs)

 They are insufficient to define minimum regulatory requirements that are suitable for all technologies and protect the necessary glare and visibility balance.

\*\*\*) I*nconsistency in regard to technology.*

Above paragraph we understand only **as kind of trial to play with emotions of reader to discredit Poland** as not competent. Document GRE-81-22 is response to IWG-SLR asking GRE for guidance during work on RID proposal. It has nothing to do with comparing or discussing “Polish proposal” regarding photometric requirements for RID. However “Polish proposal” of RID photometry requirements is matured and reflect real driver and safety needs. It is feasible and flexible to further modification according driver and safety needs and technical progress. Polish proposal is the evidence that Poland seriously treat 2-nd Phase of ”simplification” offering real alternative in place of doubtful GTB proposal. But **“Polish proposal” is neither the matter of GRE-81-22 nor this document**. While GTB proposal is.

As GTB has already proposed in SLR-31-11, the way to deliver the Polish requirement for improved forward visibility is to produce a dedicated set of technical requirements for adaptive lighting systems (including ADB). This would provide true performance based technical requirements with objective testing by combining device and installation requirements and would concentrate on minimum visibility requirements with maximum glare limits. There would not be a requirement to define a cutoff and in reality, this approach will only work with ADB technologies.

The matter of this SLR Phase 2 stage (GTB and Poland) is the improvement **of static** (basically **passing**) headlight beam in regard to present situation.

The adaptive beams (AFS and ADB) are proposed to left unchanged not because there are proper requirements but there is no proposal prepared till now. The way of present ADB regulation is delicately seeing “far from perfect” and very subjectively tested especially in regard to dynamic behaviour in glare area. However **ABD idea** is real improvement in regard to static passing beam in today shape and should be further developed but also properly regulated. Idea of “Polish proposal” in regard to road illumination and glare can be easily adapted to ADB as well.

The Stage 2 simplification shall remain valid for all technologies \*\*\*) and the rationale for the GTB proposal is available as SLR-33-11.

1. **The questions from Poland and the responses from GTB**

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| Questions from Poland | Response from GTB |
| Does "Class C" passing beam and the basic driving beam guarantee safe night driving with any allowed speed or not? | It is very unlikely that regulators would agree to associate a specification for a beam pattern with a guarantee for safe night driving.If above is true it suggests that GTB completely differently than Poland understand the purpose of type approval and ways of achieving goals (political instead technical and merit). It need clarification.In our understanding type approval should require minimum values which guarantee safe driving in normal legal situation. Of course driver is responsible to adjust driving strategy (basically speed) to road conditions (traffic, weather etc.). But he/she believes that in typical drawing condition (dry, straight road) type approved and PTI checked passing beam headlamps are sufficient to illuminate the road for any legal speed.The alternative acceptable from the safety point of view is that type approval do not guarantee the minimum for safety but typical driver should have knowledge and tools to effectively assess (by eyes ?) the area and the distance illuminated by headlamps\*). In such case only **the glare requirements** should be regulated because there is no sense to regulate part of beam responsible for road illumination while any regulated values will be insufficient. Than it should be left to manufacturer-customer trade relationship.*\*)Common sense and known research (also done by Poland) show that drivers are unaware of real quality of their headlamps and improperly assess illuminated range, safe speed etc. The headlight dependent night-time accidents are* ***from 5 to 12 time more risky*** *than daytime. This cannot be ignored by creating/modifying regulatory requirements.*Safe night driving is subject to many variables including* atmospheric conditions
* road geometry
* Influences of other traffic
* human factors
* vehicle condition
* system installation tolerances
* There is no reliable link between lighting performance and accident rates

Poland do not agree with above statement. There is only difficult to check and prove it with high accuracy. But is not sufficient to say that “there is not”. |

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| If yes then any additional requirements for any beam pattern is not needed and only complicated regulations and tests. Because of technology neutrality it should be possible to manufacture any better than basic beam pattern according manufacturer discretion without additional requirements. | The answer is NO. This answer is very meaningful but should be placed above. Poland do not see justification to create arbitral modification of existing requirements which will not result in measurable decrease of night-time headlight dependent accident risk. But we see strong need to forward such message to the drivers to make them aware that any (?) speed at night on road outside built up area is not safe in regard to illuminating possibilities of type approved (and PTI tested) headlamps.All of these questions are based upon a misunderstanding of the basis of the 1958 agreement and the meaning of “performance based”(this will be explained later)Direct reference to this explanation is expectedThe traditional approach to lighting regulation is to define minimum requirements (Visibility and Glare) that, ideally, are based upon research findingsThere is enough research results today which can be used as the base for minimum (static) requirements for realistic speed / stopping distance. but currently based upon real-world experience. The requirements are a “best attempt “to assure an acceptable level of safety. There are very general and unclear words. Poland expect the technical details possible to measure and compare “best attempt” and “acceptable level of safety”.This knowledge has been established over, at the last 67 years and in many countries around the world.Manufacturers are producing devices and systems that certainly exceed the legal minimum requirementsThe minimum type approval values are insufficient for safety. Are “exceeded values” sufficient? In situation when any static passing beam is insufficient for safe driving such “exceeded” but real values clearly expressed in road/glare co-ordinate system should be starting point do define minimum type approval values with reference to safety measures. We believe that such values referred to road reality should be transparent and expressed in terms understand to any driver not to the industry lighting expert only.and, in the future, NCAP will be the most effective way of encouraging higher performance.As mentioned above if the type approval requirements are not possible to be defined in clearly understand measures the type approval process (in this area) is useless. Regulation should not impose increased severity without clear evidence of the safety benefit.Such benefit should be clearly defined and measurable in relation to present situation. To recognise “safety benefit” the measure of safety’ “before” and “ after” should be presented.  |

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| If not, it should be clear reference in regulation to safe speed value (or another measurable safety value – not ambiguous "design" reference like motorcycles or tractors) for any passing or driving beam pattern (class).The same concern “low speed”. The value of speed (or another measurable safety value) should be clearly expressed. Because of above the motorway (averse weather, etc) class should be treated the same way.If given class is needed because of safety reasons then should be obligatory for any vehicle driven on motorway (or during special conditions). If not, we do not see justification to regulate it. | This is not feasible because it is not possible to verify a correlation between speed and photometric performance.Road illumination distance and stopping distance (in relation to speed) in regard to illuminated road width are known, used and useful estimations. Assumptions can be made to calculate stopping distance, according to speed, and determine a distance and illuminance to give a theoretical chance of detecting an obstacle (legs of a pedestrian) and avoid a collision. This is detailed in SAE J2829-2011 “Pedestrian Visibility - Low Beam Optimization to Reduce Night-time Fatalities”Theoretical minimum performance based upon assumptions of speed and stopping distance can be used as a basis for performance assessment and rating schemes such as NCAP, but these are used as comparators and not to determine legally applicable minimum safety levels This approach does not follow the logic of the UN regulations.What is the logic of UN Regulations according GTB? In our understanding it is the minimum (clearly defined) safety guarantee.Some devices and functions are listed as mandatory in the installation regulations, to provide a minimum performance.GTB definition and details of “minimum performance” are expected.Other devices and functions are optional and may be installed to offer additional performance.“Optional” - as explained above - should not be treated as replacement of “obligatory” device but as offering special features but not needed for safe driving (e.g. front fog lamp, cornering lamp, courtesy lamp etc.) It could be accepted alternatives as optional possibility if special conditions will be defined e.g.:Class “X” (X1) max. safe speed X km/h (min. X1 m road illumination distance) Class “Y” (Y1) max. safe speed Y km/h (Y1 m road illumination distance)The AFS features are optional and give the manufacturer the choice to offer enhanced performance.As special example of “optional” for AFS can be treated adverse weather (the difference in regard to fog should be defined) or town. It is appropriate for “optional”. But basic and motorway is doubtful in regard to road illumination Reg 112 class B. |

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| If the only possible change in beam pattern in regard to motorway driving refer to different glare conditions then only this (glare conditions) should be added as optional (for any legal beam pattern) during driving on motorway | The answer is based upon a misunderstanding of the basis of the 1958 agreement and the meaning of “performance based”(this has been explained in the introduction to this paper)Direct reference is expected. |

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| Convincing detailed justification for any proposed values and quantities should be submitted including detailed analysis and/or appropriate research results.  | Throughout the long glare and visibility debate, “detailed analysis and/or appropriate research results” have been provided but Poland consistently argues that they are not “convincing”.Long debates is not sufficient argue and do not guarantee that the values are proper. Poland expect this in clear brief written form for each proposed value. E.g.:* 25V road illuminance 4lx on road (intensity 2500 cd)

– *why 25 m (not 15m or 20m or 30 m), why V, why 4lx** Segment 25 1.7 lx (1700 cd )

*– why 25m… why from 0 to …m left , why 1.7 lx*etc. Expected for each proposed value and quantity.This argument relating to the need to satisfy the Polish “definition of the term convincing” is blocking progress on this important work in the SLR group and in GRE.It looks like repeatable trials to discredit Poland as “troublemaker” and to avoid unambiguous answer for important questions concerning technical matter of proposal.  |

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| Because many details included in GTB proposal (tables, numbers, lines, points, segments, distances, photometric values, etc.) are not self-explanatory for many GRE experts we expect clear justification for choice of each value and quantity based on measurable performance factors possible to independent verification. | This is an interesting statement from the expert of Poland because he is head delegate of the GTB Polish delegation, and he participates in the GTB Front Lighting working group. He has had every opportunity to follow and understand the details. It looks like continuation of political method to discredit Poland instead the answer for important questions. Proposal should be clear not only for Poland but for any person who will decide to have it in Regulation. But in fact it is not clear for Poland. And if Poland properly understand it is not possible to be accepted. Moreover the clear detailed justification is needed also for future reference for test houses and interpretation for future “exotic” designs which today are unpredictable.The problem is that the Polish expert’s arguments are not supported through the democratic decision-making of the experts of the other 18 member delegations.GTB President is publicly disclosing very selected parts of internal affairs of GTB. It will be good balance if he will inform also about another his personal actions. Above kind of arguing is embarrassing and suggest that GTB (President ?) has not sufficient merit arguments. Nevertheless Poland in GTB and Poland in GRE there are the separate issues but connected by efforts to have requirements really good for safety.Of course GTB is only one voice in the IWG-SLR and it does not intend to monopolise the work.Are any other minds beside Poland? However there is little indication that other CP’s and NGO’s can support the Polish position.Continuing the use of political pressure in place of merit technical arguments will not influence Polish position.GTB has provided the requested justifications to support its submission for the proposed amendments to R149. This is available as SLR-33-11.It will be subject of independent study when ready and submitted to GRE. Poland tried to help the GTB prepare adequate proposal and justification. But use this help is on the other side. |

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| Clear justification needed why it is still needed 16 beam patterns?* Basic (passing beam) – what does „Basic” mean? What is max. speed for basic?
* Low speed - which speed? Why?
* Motorway – is Basic sufficient for motorway or not?

Should be Basic be forbidden for motorway driving?* Adverse weather passing beam – is the Basic passing beam sufficient during adverse weather?

If yes – anything more than Basic is not needed (up to manufacturer – no need to regulate). If not - will be Adverse weather mandatory for performance based RID?  | Points are answered in previous sentences and in SLR-33-11Study of above and SLR-33-11 did not answer the questions. Clear reference to text or copy of relevant paragraphs is expected if it really answer them. |

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| * Is Fog lamp = Adverse weather?

If not who and how will decide regarding use of Adverse weather? | The fog lamp is intended for use in adverse weather. It is an optional device that may be installed on the vehicle if it is type approved to the pertinent requirements in the RID regulation. The question was if the Fog lamp **is equivalent to** Adverse weather or there are different features and conditions of use?It is the driver that will decide how it is used according to national legislation.Even driver will decide he/she need clear information when an how to use it. This information should be delivered basically by regulators, who are responsible for technical performance and minimum requirements.  |

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| Basic Driving beamWhat is the difference for safety between Basic passing beam and Driving beam? (Is Basic passing beam sufficient for safety? If not the other performance based solution is needed)Is the need to regulate driving beam?(Cancel glare restriction only ?)  | The basic passing beam is intended for use in the presence of other vehicles when there is a likelihood of causing discomfort to the other driver.Intention of Polish question is: 1) If passing beam **is sufficient** to illuminate the road from safety point of view, then only requirement for driving beam in relation to passing is to cancel any glare restriction but minimum requirements for road illumination should remain unchanged. Manufacturer should have freedom to put enhanced light everywhere and as much as prefer and can.But 2) if passing beam **is insufficient** for safe driving and another requirements (driving beam) are needed for safety then clear and detail message regarding difference should be forwarded to drivers. The driving beam is intended to provide enhanced visibility to the driver when there is little risk of causing discomfort glare to other drivers.As explained several times earlier, under the 1958 agreement each function / device is type approved separately so a full photometric specification is required.The question concern why passing and driving beam have more photometric differences than glare zone only and how it relate to safety.In the GTB proposal there is a specification for the performance and application of an auxiliary driving beam.It does not answer the question.In the case of ADB there are special provisions to allow part of the driving beam to be obscured to avoid glare.As mentioned above we don’t ask regarding ADB which is not yet proposed to be changed in Phase 2  |

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| Low speed Driving beam – is Basic or Low speed passing beam insufficient? | This depends upon the operating conditions of the vehicle and the question is addressed in the GTB justification SLR-33-11Clear justification as above expected or text (reference to) answering the question. |

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| ADB - if Basic passing beam is sufficient than is no need to define ADB – it can be industry standard and have to meet Basic passing beam only.  If not the new attempt to safety/performance headlighting needed | It is universally acknowledged that ADB offers significant improvements in forward visibility for the driver without increasing discomfort to other drivers.Under the 1958 agreement ADB is a device/function that shall only be installed if type approved.ADB is an optional function and it is not sufficient to simply move the performance requirements into an “industry standard”. Where industry standards do exist, they need to be incorporated into national or international legislation to allow the functions/devices to be operated on the public roads. A good example of this is SAEJ3069 that is an industry standard but it is subject to an amendment to FMVSS108 before it can be operated on US roads.GTB has already suggested the requirement for a future GRE activity to develop a new global technical regulation for truly performance–based adaptive systems. If GRE decides to follow this suggestion it will take time to define the minimum performance criteria Above looks to be the one more confirmation that GTB is aware that any existing or proposed by GTB static passing beam is insufficient. Therefore proposed requirements will not significantly change safety situation. and, as this is not part of the GRE SLR terms of reference it will require a new informal group with a global contribution at a high scientific level. |

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| AS, BS for mopeds? - Why low speed Passing is insufficient? | Please refer to SLR-33-11 to understand the justification.We did not find answer to the questions in SLR-33-11. Direct answer to the questions expected or clear reference to the text. |
| * Secondary driving beams (>< 11 kW /125 cm3) – What is the purpose?

Is the Basic passing beam (or Basic driving beam???) insufficient?* Auxiliary driving beam – as above.
* Cornering beam - OK
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| * We don’t see the need to generate design based special beams for two-wheelers, tractors, machinery, etc.
* The performance oriented is visibility distance and width directly connected with speed and stopping distance + effective protection against glare
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| Poland advice RIDThere are needed:1. Basic beam 1A. Low (which?) speed – preferred max. speed assigned to Basic type approval 2. Adverse weather or fog ?? – if Basic is not sufficient.3. Cornering as supporting comfortThe rest RID should meet Basic or Low speed. If not, sufficient more safety details needed | Please refer to SLR-33-11 to understand the justification.Direct explanation why more beam patterns is necessary or clear reference to the text if it refer to this. |

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| GRE advice needed Is it OK to continue having the headlamp provisions expressed on the basis of luminous intensities equivalent to illuminance measured on screen at a distance of 25m? Is it incorrectly stated question (OK or NOT OK)?Provisions should be adequate to performance for road illumination and glare exposed eyes area – not for the screen.For testing it is possible to use equivalent co-ordinate system – e.g. goniometer angular and intensities. There is no problem to recalculate. | YES, the question is clearAs explained above and in the GTB justification, SLR-33-11, the illuminance and glare performance is specified as luminous intensities, measured by a photometer located at 25m from the lamp at spherical angularly located test points. The minima and maxima are derived from expert experience and are NOT truly performance based Apart from lack of GTB definition for “truly performance” based the “expert experience” is really ambiguous term and results can strongly depend of “set of experts” used. Good example was TC4-45 work when from meeting to meeting the change of the experts were permanently observed and the new experts presented different opinions regarding the issues discussed and decided before. If are not “truly performance based” why we have to trust them and follow them? By the way: Is in any place of proposal defined or required uncertainty of measurements?because there are no research findings that clearly define performance requirements to assure safety!If above is true the proposal is useless because real safety depend on such manufacturer who manufacture headlamps much beyond requirement and drivers who is clever and experienced enough to adjust strategy of driving to really insufficient and unpredictable headlighting.Everyone in the lighting community understands how to calculate test points, luminous intensities and spherical coordinates from illuminance requirements on the road surface.Therefore requirements obviously **should be defined for road and glare surface** because there is no problem to recalculate it for goniometric system for anyone from lighting community. These questions have been answered, as shown below, by GRE at its 81st session as reported in ECE/TRANS/WP.29/GRE/81, Section V8. The expert from the Informal Working Group "Simplification of the Lighting and Light-Signalling Regulations" (IWG SLR) reported on their progress and requested guidance from GRE (GRE-81-19). The expert from Poland commented on the IWG SLR request (GRE-81-22). GRE agreed that:• The headlamp provisions should continue to be expressed in terms of the luminous intensities equivalent to the illuminance [*on the road and]* This change the meaning of the Report. Poland do not agree with artificial design based way of provision expressions (study reservation)measured on a screen at a distance of 25 m.It is possible to translate simply defined illuminance on the road distribution for goniometric system however for properly defined requirements id should be also big tables very difficult for reading by human being. But it is of secondary meaning.• All technologies should be allowed for all SLR functions.\*\*\*) Requirements should be common for all technologies; test requirements could be technology specific.Agree. Common requirements should be described for road and glare surfaces. If any technology allow for simplified tests it should be allowed. Any recalculations needed for measurements should be done appropriately outside regulation requirements which should be “technology neutral”. • Combination of different light source technologies should be possible for all SLR functions. \*\*\*) |

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| Poland questions to SLR (or GTB?) idea for RID (expressed in SLR 28-02)Clear and detailed justification to each proposed value is expected* + Regarding performance, what does 1.7 lx mean and why it differs from 1.9 lx or 2.0 lx or 1.0 lx or 0.5 lx or 4.0 lx etc?
	+ Doubt about the distances and widths chosen e.g. why only outside for 40 m etc.
	+ Why is the required value in point 75R is increased by 20%?

What does this mean for performance (increase distance or other values in relation to safety)? | All of these questions, and many more, are answered by GTB in SLR-33-11Clear reference to the text needed or (preferably) answers to questions in one document. |

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| Poland questions to SLR (or GTB?) idea for RID Doubt regarding holes in illumination requirements. Are holes in light distribution allowed? | This question is clearly addressed in SLR-33-11 but it is obvious when the whole photometric test requirement of test points and segments is carefully studied.In theory, with a very expensive high definition LED matrix beam having individually addressable pixels, black holes are possible but they cannot occur accidentally and it is impossible to imagine the motivation to deliberately add them. The angular separations between the test points and segments are too small to allow black holes to occur with foreseeable lighting technologies. Above do not answer question. If “darker holes” are not allowed it should be **clearly stated** in any form. Otherwise it will be legal.As mentioned above (*Requirements should be common for all technologies; test requirements could be technology specific*) the requirements should be unambiguous. The test might be adjusted to performance of given technology but outside regulation.History of last years show that “impossible to imagine” (e.g headlamp different than parabolic) become imaginable and regulatory solution allow for (or force) the results far from optimal. E.g. obligation to have cut-off line restrict possibility to better road illumination by the same glare level at driver eyes.  |

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| Poland questions to SLR idea of RID* Should the true performance requirements with higher expectations than today be met by all present technologies?
* Does the proposal restrict any existing headlamp design which are today legal ?
 | The GTB proposal introduces a more stringent requirement that will mean that some existing headlamp design will not be capable of being type approved.\*\*\*) *Does it concern (“suitable for any existing technology”)*According above theoretically also “most” of existing technologies could be practically excluded if do no guarantee minimum safety.The most important question arises: Are regulation prepared for* technology (existing? some? any?)?

or* for safety on the base of existing (may be only some?) technologies?

The GTB proposal also removes the requirement for the 100-lumen (Should be 1000 lm) minimum requirement for the LED module so it is now truly performance based and technology neutral.In conjunction with point and line-like requirements is real danger to have insufficient illumination. Poland will not support removing 1000 lm in conjunction with “black holes” requirements. However looking at above explanations the insufficient road illumination looks to be agreed assumption of GTB proposal. |

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| Poland advice to SLR idea of RID* New attempt for glare suggested. Allow to vertical non-uniform intensity instead of fixed value for glare zone.

Intensity may decrease with increasing vertical angle (higher above cut-off than today) | This would be part of the activity of the new GRE Informal group proposed by GTBIt is really interesting idea to create new informal group for something what should be obvious for lighting experts and lighting community because is simple, easy to understand and will allow to immediate improvement of situation. |

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| No reasons for preserving screen points and segments philosophy directly taken from the historical requirements based on parabolic design. | The GTB experts strongly disagree for all of the reasons explained throughout this document.It is interesting to present “strong” general position instead detail and professional answers to the questions asked.The GTB experts also strongly disagree with the statement that historical requirements are based on parabolic design. This is important point possible to independent historical, scientific and research verification.This is an irrelevant argument that dismissed the good work done under the WP29 umbrella since 1952.In 1952 there were used many simplifications on parabolic design base (predictable light distribution, fixed luminous flux of the incandescent light source, size and position of filament, focal length etc.) which were useful at that historical level of technology and measurements. Unfortunately from many years they are not longer valid because of technology progress. |