

## **GRE IWG-SLR – Stage 2**

# **GTB Approach to Glare and Visibility Issues**

This document reflects the outcome of the  
125<sup>th</sup> CE session in Kyoto (25 May 2018)

# Glare and Visibility Issues

1. Glare and Visibility concerns are not new
2. A passing beam will always be a matter of a **pragmatic compromise** between
  - the need to “see” and
  - the need to avoid unacceptable levels of glare to other road users.

This **pragmatic compromise** has to take into account manufacturing tolerances, aiming tolerances, varying road geometry and ambient conditions

3. The current UN Regulations define the **pragmatic compromise** that was established by the introduction of UN Regulation No. 8 (headlamps equipped with Halogen light sources) on 15 November 1967. This is based upon satisfying the requirements for :
  - a minimum luminous intensity at the point 75R and,
  - maximum luminous intensities in the Zone III and at B50L
4. There are no safety data that invalidate this **pragmatic compromise**
5. Research generally suggests that priority should be given to visibility
6. All governments receive complaints about glare and choose to prioritise glare avoidance over visibility
7. Governments need to be able to react to glare complaints by demonstrating that action is being taken to overcome the problem
8. GTB needs to take a proactive stance

# Background Information

1. The UN Regulations define the minimum requirements for safety
2. The current UN Regulations are based upon the **pragmatic compromise** (see page 2)
3. For type approval purposes the **pragmatic compromise** shall be satisfied when the cutoff is aimed between specified limits.
4. The cutoff is not a “hard line” but is a visual threshold in the intensity gradient.
5. The initial aim of the passing beam is important
6. There are manufacturing tolerances associated with the initial aiming that cannot be reduced
7. A correctly designed and manufactured passing beam satisfying the type approval requirements will normally produce a performance in excess of the minimum requirements but there is a risk that in some cases more visibility will result in more glare complaints.
8. The need for measures to maintain the correct initial aim (Levelling systems to compensate for loading variations, etc.) is a separate issue, but should not be considered in isolation
9. The need to compensate for variations in road geometry is a separate issue, but should not be considered in isolation

# Glare and Visibility Issues

## CONCLUSION

1. With conventional technologies the **pragmatic compromise** (see page 2) between glare and visibility remains valid
2. Less glare means less forward visibility
3. More visibility means more glare
4. Glare and visibility CANNOT be managed in isolation

*See the following examples extracted from document SAE PedVisTF-0046  
( Visibility and Glare Assessment US and ECE Low Beams)*

Presented to the SAE J2829 Pedestrian Visibility Task Force  
by Geoff Draper – Chair man

**10<sup>th</sup> Meeting**

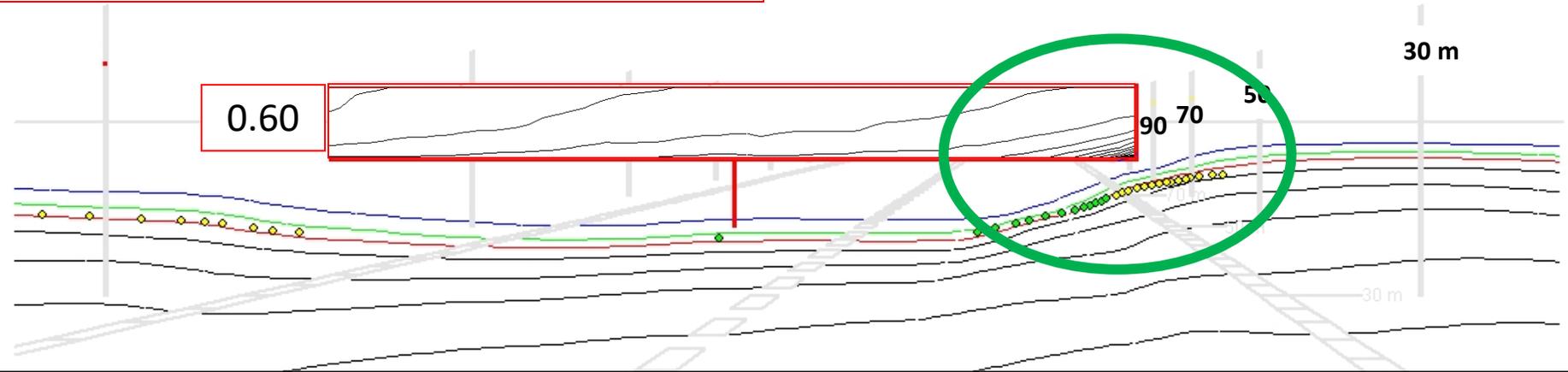
Monday 8 September 2007

10:40 – 11:00 hrs

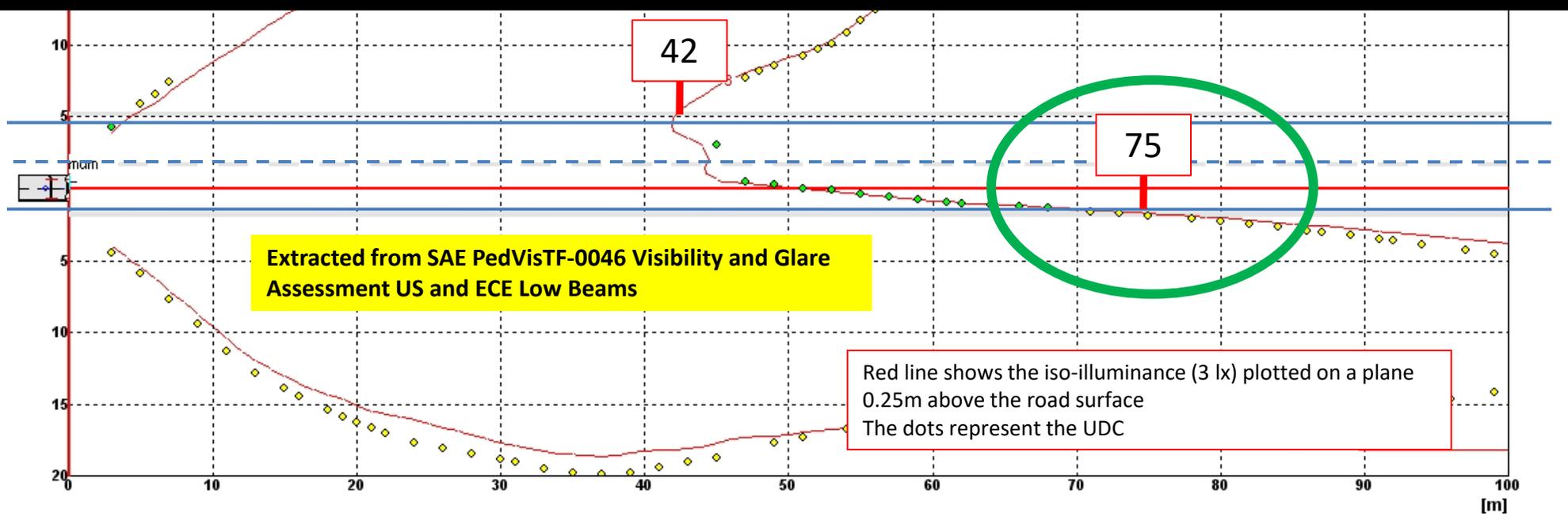
Lord Elgin Hotel, Ottawa, Canada

Glare intensities plotted on screen located at 50m from Car  
 Abs.: 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 cd

Perspective view with 1,2,3,5,10,20,50 100lx lines plotted on the road surface



Sample Number	Ratings		Halogen		HID		Vehicle Data			
	Visibility	Glare	REF	PROJ	REF	PROJ	Initial Aim	Voltage	Height mm	Separation mm
ECE 3	42L / 75R					X	1%	13.2	665	1240



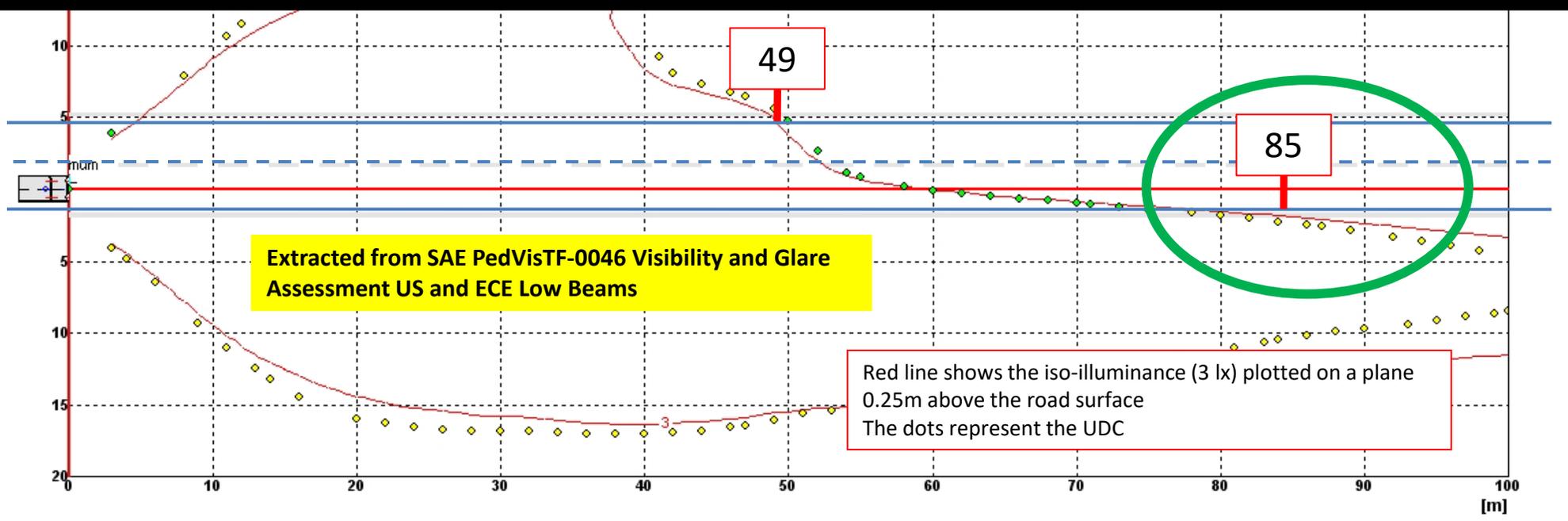
Red line shows the iso-illuminance (3 lx) plotted on a plane 0.25m above the road surface  
 The dots represent the UDC

Glare intensities plotted on screen located at 50m from Car  
 Abs.: 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 cd

Perspective view with 1,2,3,5,10,20,50 100lx lines plotted on the road surface

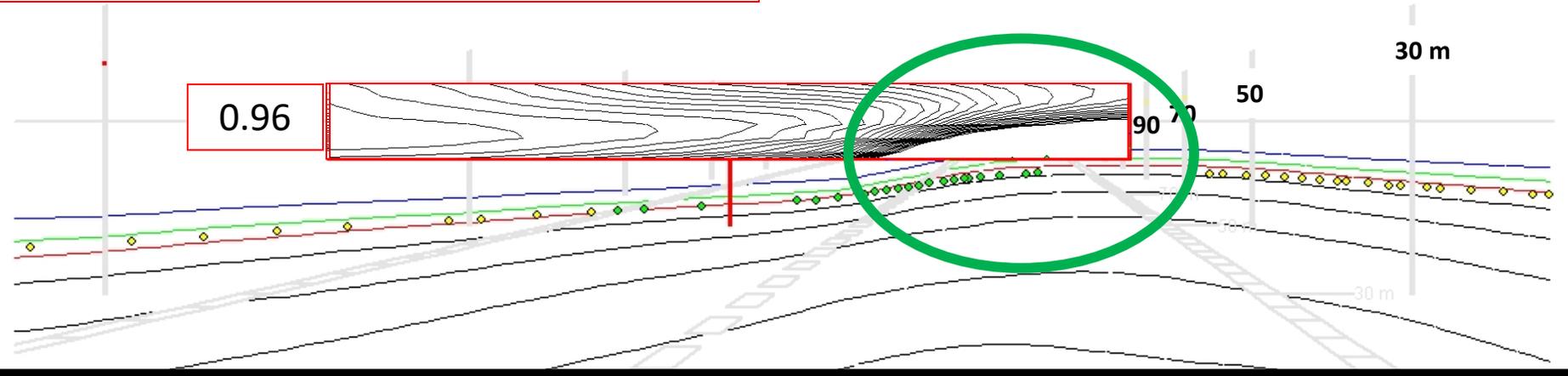


Sample Number	Ratings		Halogen		HID		Vehicle Data			
	Visibility	Glare	REF	PROJ	REF	PROJ	Initial Aim	Voltage	Height mm	Separation mm
ECE 12	49L / 85R					X	1%	13.7	695	1215

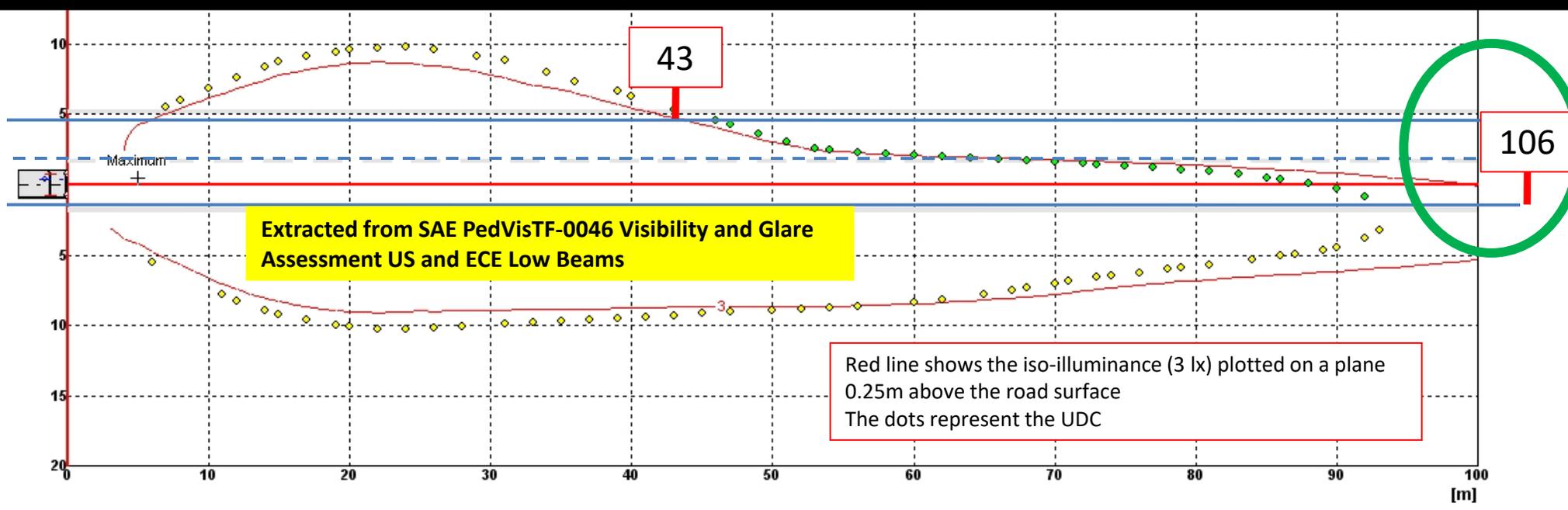


Glare intensities plotted on screen located at 50m from Car  
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Perspective view with 1,2,3,5,10,20,50 100lx lines plotted on the road surface



Sample Number	Ratings		Halogen		HID		Vehicle Data			
	Visibility	Glare	REF	PROJ	REF	PROJ	Initial Aim	Voltage	Height mm	Separation mm
USA 1	43L / 106R			X			0.4 Deg D	13.2	644	1537



Extracted from SAE PedVisTF-0046 Visibility and Glare Assessment US and ECE Low Beams

Red line shows the iso-illuminance (3 lx) plotted on a plane 0.25m above the road surface  
 The dots represent the UDC

# GTB Agreed Approach

1. Accept that the current approach to the type approval requirements for the passing beam remains valid.

## Rationale:

- Manufacturers are producing good performing passing beams that are not being criticised for lack of visibility
  - We know that there are complaints about glare but there is no clear indication of the basis for these complaints
  - The state of technology to produce a “traditional” passing beam having a cutoff is mature and there are limitations that cannot be overcome, e.g. manufacturing tolerances, maintenance of initial aim, road geometry, etc.
2. For the purposes of Stage 2, Step 1 simplification we shall
    - a) maintain the current approach in the new RID regulation (not try to invent a better compromise between glare and visibility), and
    - b) improve visibility while maintaining the current assessment at 75R, Zone III and B50L in the new RID regulation, and
    - c) introduce the alternative to the 1000 lumen minimum requirement under development by WG-FL

## GTB Agreed Next Steps

1. Propose this approach to the SLR 24<sup>th</sup> session 30 May 2018 (Brussels)
2. Support this approach with the GTB Glare forum on Monday 22 October 2018 (Before GRE-80)