

Transmitted by CLEPA

Informal document **GRE-76-21**
(76th GRE, 25-28 October 2016,
agenda item 7(f))



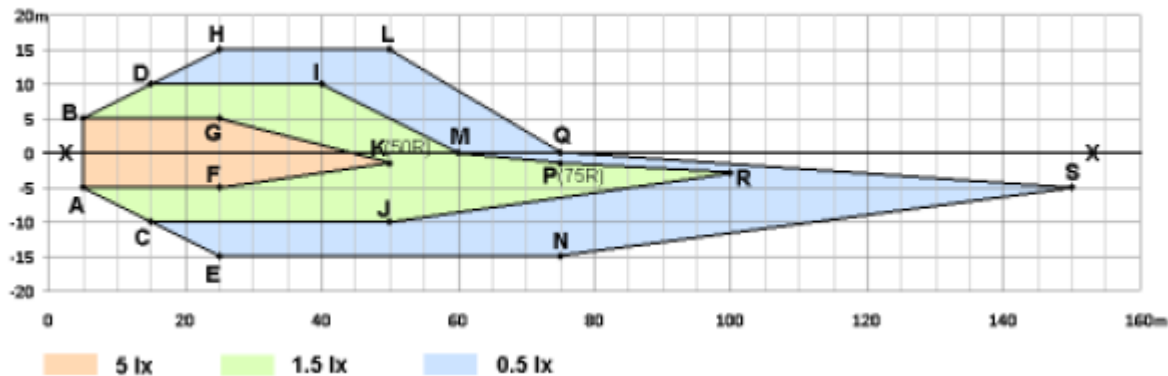
C L E P A
*European Association of
Automotive Suppliers*

Analysis of the Polish proposal. GRE2016/18



Polish Proposal

- Isolux on the road:



Co-ordinates of points limiting requirements for areas.

Point	Side position (m)	Beyond headlamp (m)	Height (m)
Headlamp centre	0	0	0.75
A	-5	5	0
B	5	5	0
C	-10	15	0
D	10	15	0
E	-15	25	0
F	-5	25	0
G	5	25	0
H	15	25	0
I	10	40	0
J	-10	50	0
K(50R)	-1.5	50	0
L	15	50	0
M	0	60	0
N	-15	75	0
P(75R)	-1.5	75	0
Q	0	75	0
R	-3	100	0
S	-5	150	0

CLEPA proposal:

To replace the points on the road by the corresponding angular directions in the forward field and to define the luminous intensity in the corresponding directions.

Table Angle/Luminous intensity



I (Cd)

A	45,00	-8,53	253
B	-45,00	-8,53	253
C	33,69	-2,86	488
D	-33,69	-2,86	488
E	30,96	-1,72	425
F	11,31	-1,72	3253
G	-11,31	-1,72	3253
H	-30,96	-1,72	425
I	-14,04	-1,07	2551
J	11,31	-0,86	3901
K(50R)	1,72	-0,86	12514
L	-16,70	-0,86	1363
M	0,00	-0,72	5401
N	11,31	-0,57	2925
P(75R)	1,15	-0,57	8442
Q	0,00	-0,57	2813
R	1,72	-0,43	15014
S	1,91	-0,29	11263

Current R112 I> 10,100 cd

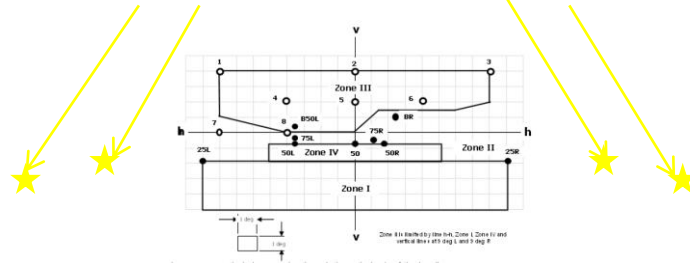
Current R112 I> 10,100 cd

Requirement in the angular forward field.



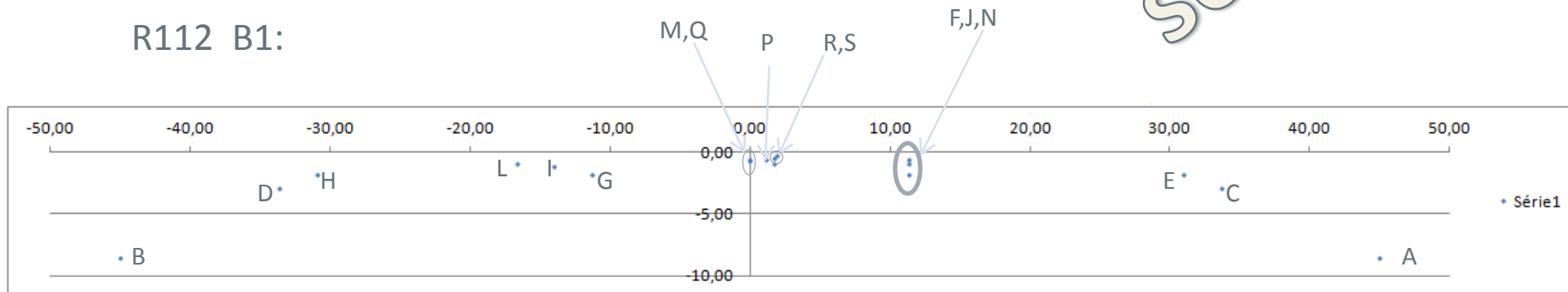
Assessment of the width of the beam pattern:
Measurement points for Xenon HL (R98)

Current R112:



Same
scale!

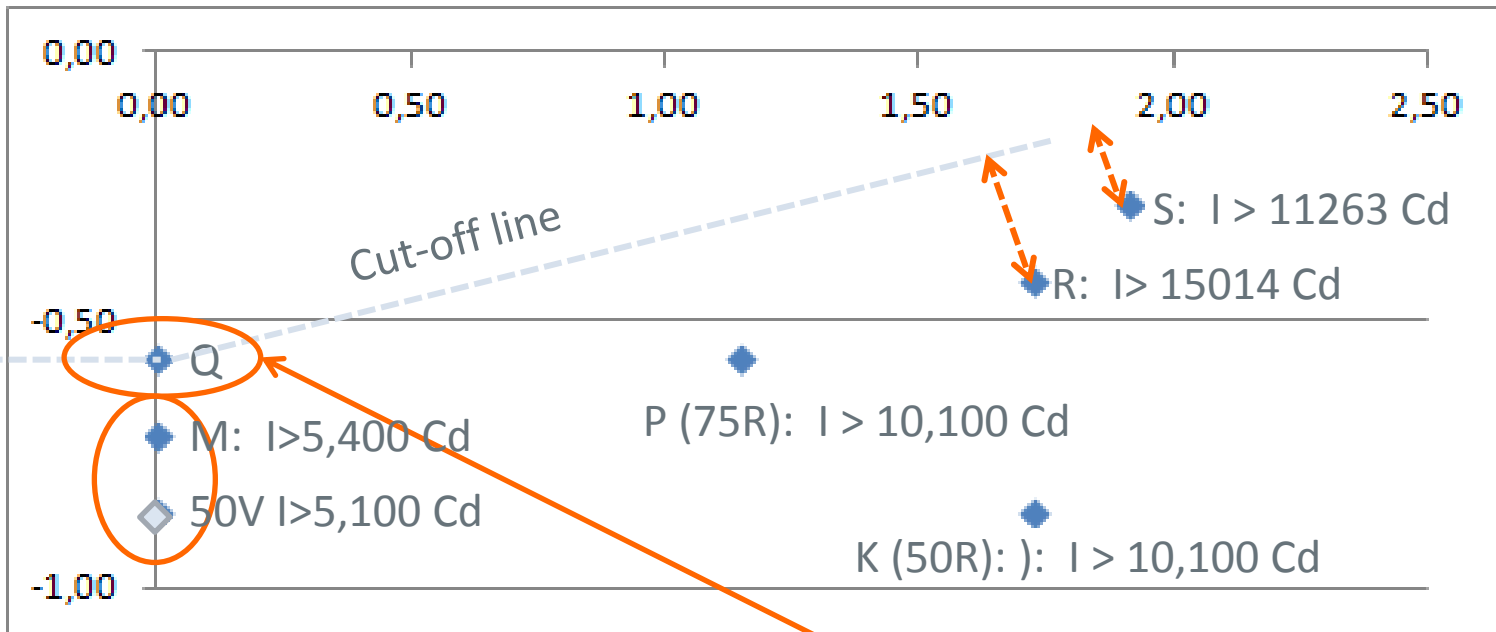
R112 B1:



Comments:

- A, B, C, D, E, H : Too wide.
- Relevance of 3 points F, J, and N which are very close each other.
- G and F very close to 25L and 25R respectively: to be removed.

Zoom on the hot spot area



« Q » on the Kink point

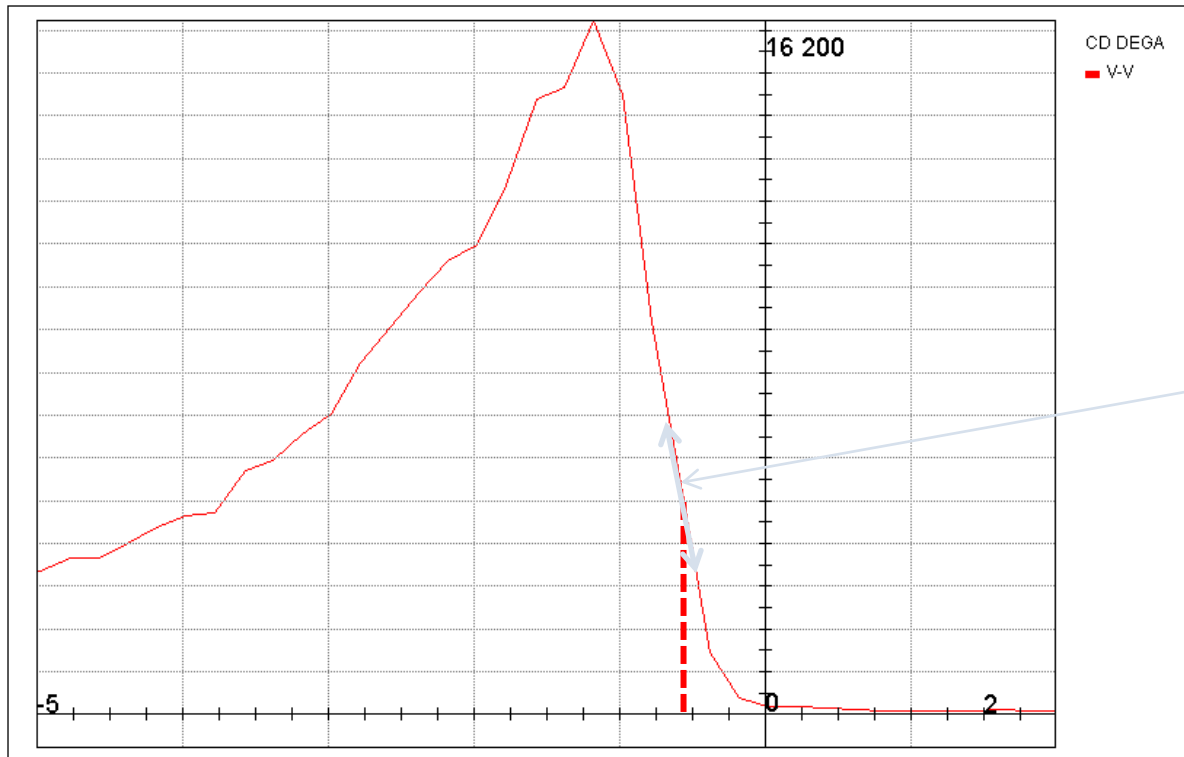
Comments:

- **Q** is exactly on the kink point of the cut-off:
 - Repeatable measurements are impossible.
- **M** is very close to V50 in R112 ($d = 0.14^\circ$). Redundancy .
- **R & S** are very close each other, close to the cut-off line.
The requirement seems to be difficult to achieve.
Assessment of current HL to be done before a conclusion on these points.

Measurement of luminous intensity on point Q.



- The variation of the luminous intensity in the Neighborhood of « Q » along VV line, is high: 2000cd/0.1°



Variation of the intensity along VV 2000Cd / 0.1° for an average value of 5,000 Cd.

Variation of 40%!

Q

Adjustment tolerances.



Before measurements cut-off shall be aimed according p. 6.2.2. with exclusion of p. 6.2.2.3.



6.2.2.3. Where a headlamp so aimed does not meet the requirements set out in paragraphs 6.2.5. to 6.2.7. and 6.3., its alignment may be changed, provided that the axis of the beam is not displaced:

Horizontally from line A by more than:

- (a) 0.5° to the left or 0.75° to the right, for right hand traffic; or
- (b) 0.5° to the right or 0.75° to the left, for left hand traffic; and

vertically not more than 0.25° up or down from line B.

- Justification?
- This requirement is too binding.



Questions:

- “At any point and area, the value of 50 lux shall not be exceeded.”
 - Justification?
- “the random procedure may be used for reducing the number of measurements”.
 - What is “random procedure”?
- “Any visible inhomogeneity on the vertical screen illuminated by headlamp should be additionally verified by measurements of the darkest and the brightest visible points and areas as well as for any other doubts”.
 - Homogeneity is not a safety criterion.
 - How to define what is acceptable or not?

Synthesis



- Width of the beam pattern.
 - B1 HL as proposed, has a requirement for the width which is
 - **4.5 X** the one required by current R112,
 - **2.25 X** the one required by current R98 for **xenon headlamps**.
 - Not relevant.
- Range of the beam pattern:
 - Points M, R & S are redundant with the already existing requirement.
 - Point Q (on the kink point of the cut-off line) is not measurable.
 - The current requirements on 75R, V50 and 50R are relevant to assess the visibility distance of the low beam pattern.
- Aiming tolerances:
 - To keep the current existing tolerance as defined in R112 §6.2.2.3 .
- Several pending questions.



Conclusion



- There are still several pending technical questions.
- Evaluation of the impact of the proposal upon the design of the headlamp must be done before.
- The proposal should not be included into the current R112 regulation.
- This topic has to be taken into account in the Simplification process phase 2.