SHIZUOKA WORKS
500, KITAWAKI
SHIMIZU-KU, SHIZUOKA-SHI
424-8764, JAPAN
TEL NO. 0543-45-2573
FAX NO. 0543-45-3437

KOITO MANUFACTURING CO., LTD.

MAKERS CONTRACTORS

HEAD OFFICE
4-8-3, TAKANAWA
MINATO-KU TOKYO
108-8711, JAPAN
TEL NO. 03-3443-7111
FAX NO. 03-3447-1520

Mr. Steven Cliff - Deputy Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue SE,
Washington, DC 20590-0001

April 8, 2022

Re: Docket No. NHTSA-2022-0013; Fed. Reg. Vol. 87, No.35, February 22, 2022

Koito Manufacturing Co., Ltd. is a designer and manufacturer of exterior automotive lighting products for Japan, U.S. and world market. We appreciate the opportunity to submit our comments to Docket No. NHTSA-2022-0013.

1) Component-Level Laboratory Photometric Testing - Transition Zone of 1-degree

The most popular ADB today has an optical system with shifting and overlapping segments of light, which is cost-effective and provide better visibility by smooth transition between reduced and unreduced intensity areas. However, this system does not comply with the ADB photometric requirement due to 1-degree transition zone. ADB final rule requires the unreduced intensity area to reach full upper beam level within 1-degree transition zone. But the safety benefit for requiring 1-degree transition zone is not identified.

Although most of Koito's ADB systems has transition zone of approx. 4 degrees, they can improve visibility and contribute to safety in Japanese and European markets. (For example, iso-lux curve of Koito's ADB is shown in the attached Figure-1.) High-resolution ADB could comply with the ADB requirement, but it is expensive and very small number of such ADB system is in the market.

Pedestrian fatalities at night have been increasing. To reduce the fatalities urgently, we need to improve visibility and pedestrian detection without causing glare to oncoming and proceeding vehicle. For this purpose, the market penetration of ADB must be quick and significant in U.S., and the restrictive ADB photometric requirement with the 1-degree transition zone should be reconsidered. Therefore, we are considering the following solution;

Solution:
Delete the transition zone, and change ADB photometric requirements to meet the minimum and maximum lower-beam values in reduced-intensity area, and to meet minimum lower-beam values and maximum upper-beam values in the unreduced-intensity area.

This solution is based on the idea of SAE J3069, and SAE submitted similar comment when NPRM was issued in 2018. Although ADB final rule explained NHTSA's reluctance to adopt it, it is practical and reasonable solution, so Koito would like to continue support ADB. And this solution means that the Transition Zone is no longer needed.

2) <u>Vehicle-Level Track Test - Evaluating Glare</u>

The ADB final rule seems to unintentionally make severer glare requirement to the current low-beam headlamp. The maximum glare value of ADB is required in Table XXI of FMVSS 108, and the photometer for evaluating glare is located 1.1m above the ground. On the other hand, the current low-beam is required 500 cd minimum and 2,700 cd maximum at 0.5U 1Rto3R. When performing the right curve testing scenario with rather higher mounted headlamp, there is a possibility that a low-beam with ADB turned off does not comply with the requirement in Table XXI. （For example, this kind of possibility with Koito's ADB is shown in the attached Figure-2.） In order to resolve this inconsistency, we are considering following solution;

<u>Solution</u>:
Add "ADB cannot exceed by more than 25% the intensity levels the ADB vehicle's lower beam.", as an alternative of ADB glare requirement of Table XXI.

This solution is also based on the idea of SAE J3069 (Section 6.5.1.2). As an alternative requirement for Table XXI, we believe it is reasonable solution because there is no affect to the headlamp mounting height.

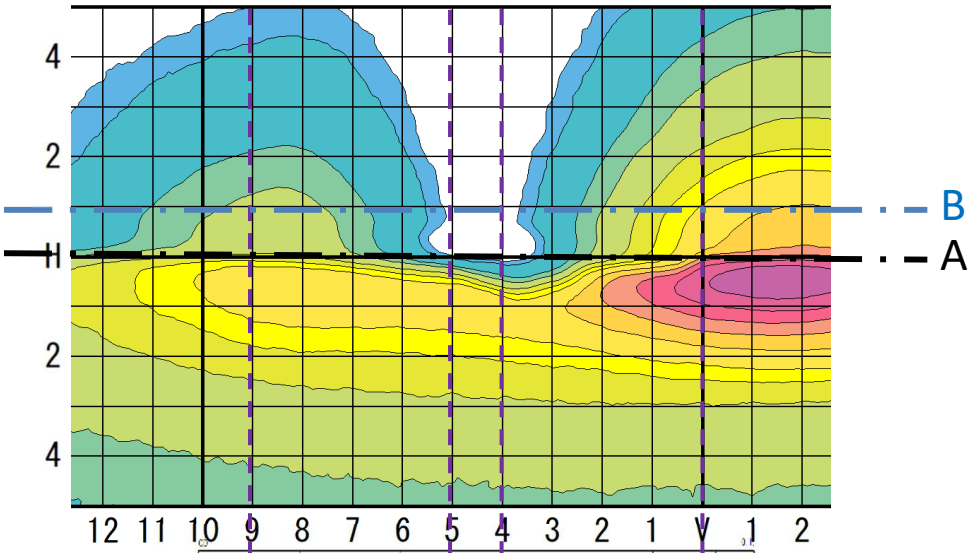
We appreciate the Agency's consideration of these comments.

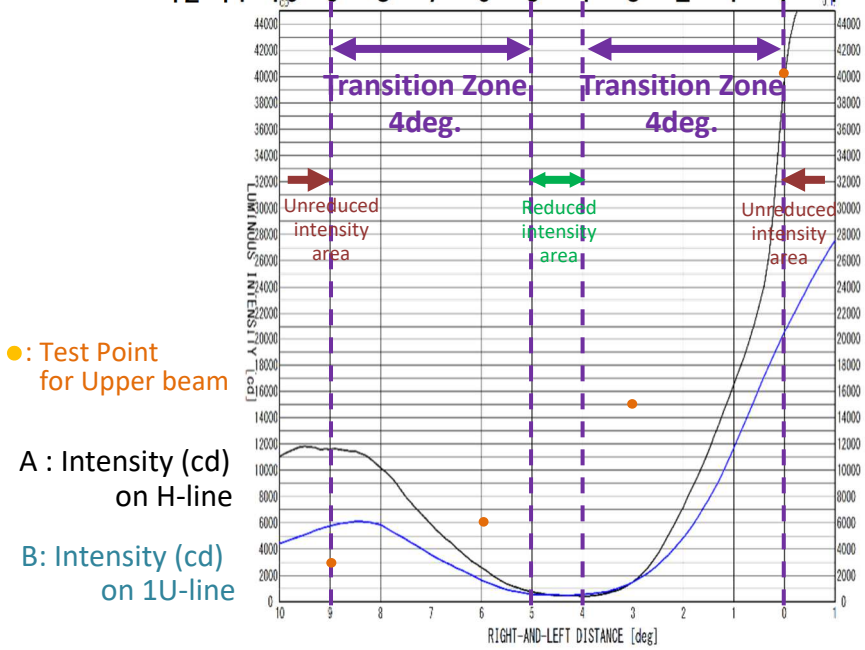
Sincerely,

Takayuki Amma
Deputy General Manager, Technical Administration
KOITO MANUFACTURING CO., LTD.

Attachment

Iso-lux curve on screen (RH lamp)





●: Test Point for Upper beam

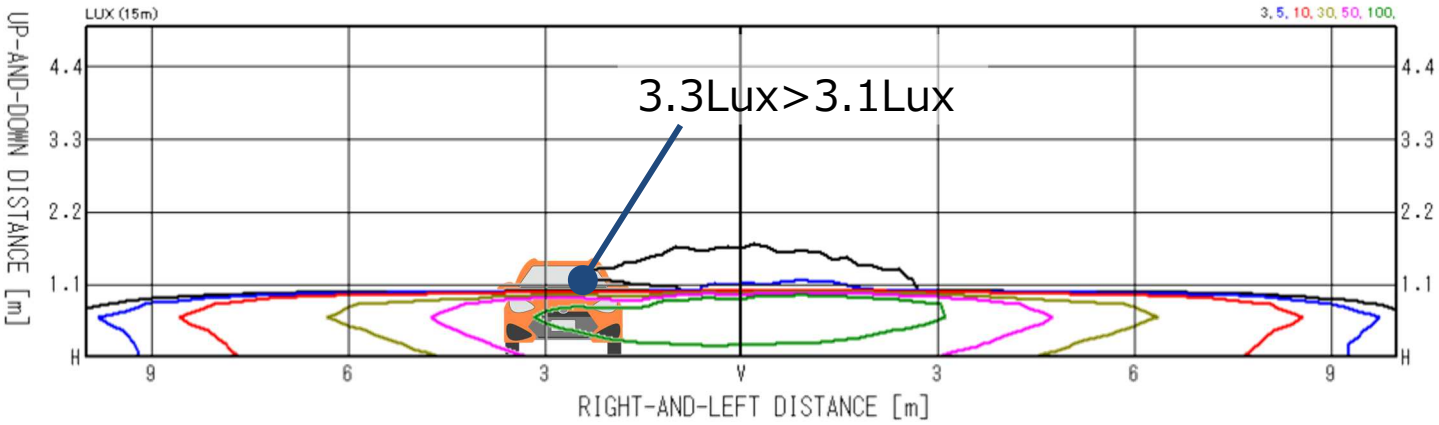
A : Intensity (cd) on H-line

B: Intensity (cd) on 1U-line

Intensity on cross section

This ADB needs 4-degree Transition Zone for complying with the photometric requirement of the unreduced intensity area (40,000 cd min. at HV).

Figure 1. Iso-lux curve of ADB



There is a possibility that a low-beam alone (with ADB turned off) does not comply with the ADB glare requirement in Table XXI.

Figure 2. Iso-lux curve of lower beam on 15 m screen
(Right curve with 210 m radius)