



## Transportation Safety Equipment Institute

April 8, 2021

Dr. Steven Cliff, PhD  
Deputy Administrator  
National Highway Traffic Safety Administration  
1200 New Jersey Avenue, SE  
Washington, DC 20590

Re: Final Rule; Adaptive Driving Beam Headlamps; Docket No.  
NHTSA-2022-0013; Fed. Reg. Vol. 87, № 35, February 22, 2022

Dear Deputy Administrator Cliff:

This petition for reconsideration is submitted on behalf of the Transportation Safety Equipment Institute (TSEI), a trade association representing manufacturers of vehicular safety equipment, including lighting, reflective, audio, and vision technology devices. TSEI welcomes the opportunity to provide this petition with respect to the above-referenced Adaptive Driving Beam (ADB) final rule, under which the Agency has provided a long-awaited framework for the certification of ADB headlamps under FMVSS 108. However, TSEI requests that NHTSA reconsider certain aspects of the final rule to address issues related to technical feasibility, cost effectiveness, and clarity.

TSEI largely concurs with the comments by the SAE Lighting Systems Group and specifically, the SAE J3069 ADB and Regulatory Cooperation Task Forces, which explain issues with the 1-degree transition zone and the incompatibility with the ADB glare levels with existing lower beam photometry requirements. Additionally, there is a lack of clarity regarding laboratory testing procedures. We address each of these concerns below.

### 1. 1° transition zone

S9.4.1.6.4.5 allows “A transition zone not to exceed 1.0 degree in either the horizontal or vertical ... between an area of reduced intensity and an area of unreduced intensity”.

As explained in detail by SAE, the 1-degree transition zone will require all but the most technically advanced and costly high resolution ADB systems to increase the size of the reduced intensity areas to avoid being below the required minimum intensity for upper beam test points near a reduced intensity area or being above the required maximum intensity for lower beam test points/lines/zones near an unreduced intensity area. It is the view of TSEI that the most effective solution would be to eliminate the 1-degree size limit of the transition zone and instead specify

that the intensity in the transition zone shall be greater than the minimum values specified for the relevant lower beam test points per Table XIX and less than the maximum value specified at HV for upper beam per Table XVIII. This solution would better align with the definition of an ADB system as a semi-automatic headlamp beam switching device per S9.4.1.6 (Option 2) and would give manufacturers the freedom to provide drivers with the best performing ADB systems that are achievable across a broad spectrum of cost and technology while still ensuring that, in terms of both safety and performance, the system is as good as or better than a standard headlamp beam switching device per S9.4.1.5 (Option 1). Additionally, this solution would more closely align the requirements of FMVSS 108 with SAE J3069 as directed by Congress in Section 24212 of the Infrastructure Investment and Jobs Act (H.R. 3684). Alternatively, if NHTSA is intent on explicitly defining the size of the transition zone, TSEI agrees with the SAE recommendation to increase the size to 4 degrees.

## 2. Incompatibility of ADB Vehicle Level Glare and the Lower Beam Photometry Requirements for Right Curve Scenarios

The ADB final rule specifies the allowable glare limits for the eyes/mirrors of drivers/riders of opposing and preceding vehicles in Table XXI. SAE has provided a detailed explanation of how these can conflict with the minimum values required at various lower beam test points/lines per Table XIX for right curve scenarios. The conflicting requirements between Tables XXI and XIX result in a very narrow margin of acceptable intensity at those test points/lines when an ADB equipped vehicle is in a right curve. As currently written, these requirements may require the lower beam portion of an ADB system to be dynamically re-aimed downward or to be dimmed, during right curve scenarios. Alternatively, the ADB system could be deactivated, leaving only lower beams activated, during right curve scenarios. All of these solutions would result in lower performing and/or higher cost ADB systems being available to drivers. As with the 1° transition zone, this conflict between the glare levels and test table values deviates from the definition of ADB systems as an evolution of headlamp beam switching devices where specific zones of the upper beam are dimmed, leaving the intensity of the dimmed zone at a level equivalent to the lower beam. TSEI concurs with the SAE recommendation to allow the intensity in reduced intensity zones to be up to the greater of the values per Table XXI or 125% of the lower beam values per Table XIX. Once again, this change would more closely align the requirements of FMVSS 108 with SAE J3069 as intended per H.R. 3684.

## 3. Lack of Clarity in Laboratory Testing

S9.4.1.6.4.3 and S9.4.1.6.4.4 specify that the ADB system must meet the photometric requirements of Tables XIX and XVIII in areas of reduced and unreduced intensity respectively, however, no clear guidance is provided as to how laboratory testing should be completed to show compliance with those requirements. TSEI recognizes that no reasonable laboratory test method will fully simulate all of the potential distance and curve scenarios for the various possible implementations of ADB systems spanning a wide range of resolutions, mounting heights, etc., but TSEI believes that it would be beneficial for the purposes of standardized testing to adopt a specific set of test points/lines/zones corresponding to the test scenarios of Table XXII and glare levels of XXI. For

example, the ADB requirements per UN R149 contain such test requirements in Table 15 of said regulation. For FMVSS 108, the required test values could be incorporated into Table XXII, or if so desired by NHTSA, could be captured in an additional table with different values for various mounting heights. A defined set of laboratory test scenarios and values would ensure consistent testing across the industry.

TSEI appreciates the opportunity to comment on the ADB final rule and respectfully requests that NHTSA reconsider and revise the rule to address the foregoing concerns. Please contact me if you have questions or would like to discuss these issues further.

Sincerely,

A handwritten signature in black ink that reads "Paul Menig". The signature is written in a cursive style with a large initial "P" and a long, sweeping underline.

Paul Menig  
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