



November 18, 2019

Docket Management Facility  
U.S. Department of Transportation  
1200 New Jersey Avenue SE  
West Building Ground Floor, Room W12-140  
Washington, DC 20590

Submitted electronically via [www.regulations.gov](http://www.regulations.gov)

**RE: Audi of America; Receipt of Petition for Temporary Exemption From FMVSS 111; Docket Number NHTSA–2019-0103**

The Center for Auto Safety (Center) appreciates the opportunity to comment on the National Highway Traffic Safety Administration's (NHTSA) request for comment on Audi's petition for temporary exemption from Federal Motor Vehicle Safety Standard No. 111 (FMVSS 111). The Center, founded in 1970 and headquartered in Washington, D.C., is an independent membership-driven non-profit consumer advocacy organization dedicated to improving vehicle safety, quality, and fuel economy.

The Center has long supported the mandatory adoption of innovative technology proven to be capable of reducing crashes, deaths, and injuries on the nation's roads. Audi's Camera Monitoring System (CMS) may hold such promise and allow for the removal of an existing safety feature, mirrors, from passenger vehicles. Regretfully, however, the Audi petition for temporary exemption does not provide sufficient documentation to provide either the public or NHTSA the information necessary to make a determination regarding system safety.

Although Audi takes pains to point out that the petition only applies to FMVSS 111's mirror requirements, there remain unanswered questions regarding compliance of the Audi CMS with the standard's field-of-view (FoV) requirements. FMVSS 111's FOV requirements when developed were entirely based on driver interaction with mirrors, which is distinctly different than driver interaction with a static visual display.

Furthermore, the safety benefits gained by the grant of an exemption are speculative. Audi has failed to fully explain potential safety gains due to the technology, and it is unclear from the petition's brief description whether information gained from the deployment of vehicles with CMS would yield any useful data for supporting the development of this technology.

Additionally, Audi has asserted that a grant of an exemption would preempt state laws requiring mirrors. We disagree strongly with the assertion that a temporary exemption from a federal standard has any effect on state law in any circumstance. Further, to attempt to undertake such an unprecedented and ill-conceived preemption in this case would render law enforcement and state inspectors powerless to ensure that state safety standards are enforced.

### **Safety Benefits are Unclear**

No compelling safety advantage to the use of CMS over rearview mirrors is documented or anticipated. Without such information, NHTSA cannot make a determination that would qualify Audi for an exemption under 49 CFR 555(b). Absent evidence to the contrary, the “innovational nature” of the technology must be related to its safety features. If the rationale for the proposed exemption is based solely on marketing an “innovative” product, and not safety enhancement, NHTSA should deny the petition.

### **FMVSS 111 Requirements**

Audi’s petition specifically requests an exemption from the portions of FMVSS 111 requiring mirrors.<sup>1</sup> However, there remain questions as to whether Audi’s CMS comports with the safety standard’s FoV requirements, despite Audi’s assertion that it does.

FMVSS 111 defines FoV based on enablement of implicit capabilities of human use of mirrors, such as depth perception from binocular vision and parallax from head/body motion. These implicit capabilities are undocumented in the standard. Absent Audi providing evidence that the implicit capabilities not made explicit in the standard can be met without mirrors, it is not clear how NHTSA can be expected to appropriately review this request. NHTSA should not exempt CMS based on a narrow interpretation of the standard’s FoV requirements.

In Audi’s petition, the difference between the viewing area provided by visual displays versus the use of FMVSS 111 compliant conventional mirrors and head/body motion is not discussed. Additionally, the loss of depth perception that occurs when using video displays rather than mirrors remains uncompensated by the Audi camera and visual display system. To provide equivalent safety, the petition must show at least equivalent image resolution throughout the field of regard (FoR) enabled by the combination of static mirror FoV specified by the FMVSS and the FoR enabled by driver head and body motion. The petition does not.

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<sup>1</sup> See Audi Petition for Temporary Exemption, p.3, “Let us first be clear what Audi is not requesting an exemption from: we are not asking for an exemption from the required FoV/view portions of the standard. We are requesting an exemption from the requirements to:

- install external side mirrors
- provide the required Fo V /view with mirrors
- meet the mirror-mounting specifications

The potential deleterious impact of lens flare/blooming obscuration of vehicles and road objects on safety is not discussed in the petition. In fact, the test-driving environment documented in the Audi petition was benign weather, and therefore provides little assurance that CMS can perform satisfactorily in adverse conditions. This would be a particular problem in wet or dusty weather when road conditions are more challenging than during the tests Audi used as their basis for safety evaluation. More information is needed to determine how Audi's CMS responds to these conditions.

#### **Data Generated by a Potential Exemption**

Audi states that driver survey materials will be collected, but the petition does not specify what other data are being generated by this exemption. Audi's petition states, "A temporary exemption would facilitate Audi's field evaluation of the CMS. Most importantly, the annual 2500 car USA CMS fleet is needed to obtain data on customer acceptance/reaction and to evaluate the performance of the CMS in specific real-world, in-use situations unique to the US market."

Consumer acceptance surveys alone do not justify the introduction of non-compliant, unproven technology, particularly when there is not a clear safety benefit to be gained, and the risks are unknown.

#### **Preemption of State Law on Mirrors**

Audi concludes its petition with a brief note, "Should NHTSA grant the requested exemption to permit CMS in lieu of mirrors, NHTSA should make clear in its Federal Register notice granting the exemption that the exemption will preempt any State laws requiring mirrors. Under 49 USC §30103, NHTSA has authority to supersede such State requirements."

We respectfully disagree with Audi's assertion that NHTSA has the authority to preempt state mirror laws by exercise of a temporary exemption. Furthermore, the effect of such an exercise would diminish enforcement of state laws critical to safe motor vehicle operation. Every single state has mirror requirements for passenger motor vehicles. A missing or damaged external mirror is an indication for law enforcement of potentially dangerous operation of a motor vehicle. At a time when pedestrian, cyclist, and other vulnerable road user deaths and injuries increase significantly every year, ensuring the safe operation of a motor vehicle, including rear visibility, by state and local authorities has never been more critical. Yet Audi casually notes that an exemption to support development of technology for which no safety benefit has even been identified or demonstrated should preempt state safety law requiring side rearview mirrors.

If this exemption is granted, law enforcement will have no ability to externally detect an incapacitated CMS, a key benefit of having visible external mirrors. Interestingly, Audi did not seem to have room for a footnote explaining how law enforcement could determine when the CMS was incapacitated. Instead, Audi is requesting that NHTSA make a determination that state safety laws should not apply to their vehicles.

Further, Audi fails to provide a plan by which it will coordinate with and educate all 50 states, and all local law enforcement, with respect to how to undertake safety inspections

of CMS. This blatant disregard for the role of local authorities in vehicle safety inspection aside, we have a recommendation: If Audi wishes to preempt such all state laws requiring mirrors without providing an external means for law enforcement to determine when the CMS is inoperable, Audi should be required to make the entire vehicle inoperable when such a condition is present.

### **Other Concerns**

There are additional issues that should be addressed prior to a determination on Audi's petition. One is that the petition fails to discuss the reduced reliability of electronic imaging vs. mirrors with respect to the fact that cameras can fail in more ways than a mirror.

Similarly, CMS offers a reduced image quality compared to retinal imaging from mirrors. Prior to approving such an exemption, it would be prudent to determine if this reduction in resolution has a deleterious safety impact.

Finally, according to the petition, the results of an in-depth study regarding CMS at the Virginia Tech Transportation Institute, undertaken with Audi, four other manufacturers, and two tier one suppliers is not expected to be available until at least December 2019. This Naturalistic Driving Study may provide useful information relating to user acceptance and performance of CMS systems relative to conventional mirror systems. The results of this study should be made public to be reviewed by NHTSA, and all relevant stakeholders, prior to agency disposition on this issue. As December 2019 is only weeks away, there would seem to be little inconvenience in awaiting the final report's completion, and subsequent peer review, before undertaking any consideration of the petition.

### **Conclusion**

The Center is pleased to see manufacturers, such as Audi, look to find ways to employ technology to improve the safety of drivers, passengers, and other road users who interact with motor vehicles. With close to 40,000 deaths associated with motor vehicles annually, on and off public roads, technology that can assist with providing greater visibility of dangers is a public good. Cameras, and their resultant monitors, can surely play a role in increasing visibility for users of motor vehicles – as they have with backup cameras, which should continue to minimize the horrors of back-up deaths and injuries that occur every year. The pending Advanced Notice of Proposed Rulemaking, which seeks public comment by December 9, 2019 on making changes to FMVSS 111 by permitting camera-based rear visibility systems as an alternative to inside and outside mirrors should serve as a good mechanism for gathering the necessary data to determine if cameras can enhance or equal the safety currently provided by mirrors.<sup>2</sup>

A high bar should be set for any request to replace proven safety equipment with advanced technology on vehicles sold to the public. Unfortunately, based on the information presented by Audi in this exemption request there is not enough evidence to justify removing mirrors, which work in almost all cases, with cameras which may not

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<sup>2</sup> See Docket No. NHTSA-2019-0021

provide equivalent safety. The Center recommends NHTSA rejects this petition until sufficient information is provided by Audi to draw more data-based conclusions, or until a final rule is promulgated detailing the necessary elements for such a change in longstanding practice.

Sincerely,

A handwritten signature in black ink, appearing to read "Jason Levine". The signature is fluid and cursive, with a large initial "J" and "L".

Jason Levine  
Executive Director