

June 27, 2021

Dear Ann Carlson, Chief Counsel, NHTSA,

Congratulations on your appointment to NHTSA. I feel a sense of pride knowing that you graduated from UCSB, as I earned my bachelor's degree in Electrical Engineering from UCSB in 1987. I am also very hopeful that you will be able to apply your strong environmental credentials to move NHTSA into the carbon-free age.

Our advocacy group, Soft Lights (www.softlights.org) has been attempting for over four years, without success, to convince NHTSA that the peak luminance, absolute spectral power distribution and flicker of LED headlights need to be regulated. Unfortunately, we have been so far unsuccessful. Below is a photo I took showing the issue caused by this lack of regulation.



In our research of the problem, we notice that The Federal Motor Vehicle Safety Standard that NHTSA uses (FMVSS-108) has no regulations for peak luminance, absolute spectral power distribution or flicker. It is our belief that FMVSS-108, which was written long before LED headlights, only applies to spherical emitters such as tungsten-filament and gas-discharge and is not applicable to non-uniform luminance flat-source emitters such as LED chips.

As we understand it, the peak luminance of LED chips used in today's vehicle headlights exceed 1,000,000 nits, whereas the maximum safe human tolerance is around 300 nits. In addition, the LED chips, at approximately 6500 Kelvin Correlated Color Temperature, have a large spike of high energy blue wavelength light that causes photochemical damage to the eye. We also have received numerous reports that people with light sensitivities are seeing the flicker of the LED headlights. This issue of non-uniform luminance is also the reason for the exceedingly intense flashing lights we see on police vehicles and utility trucks.

The purpose of this letter is to request legal clarification regarding FMVSS-108. Is it indeed NHTSA's position that FMVSS-108 is only applicable to uniform luminance emitters which can be

regulated by setting maximums for luminous intensity without the need of setting peak luminance maximums?

On the other hand, if NHTSA's position is that FMVSS-108 also applies to non-uniform luminance LED chips, then FMVSS-108 is deficient because regulation of peak luminance, absolute spectral power distribution and flicker is a necessary requirement for eye safety, mental safety, and visual performance. If this is the case, what is NHTSA's position on addressing these deficiencies?

Sincerely,

A handwritten signature in black ink that reads "Mark Baker". The signature is written in a cursive style.

Mark Baker, B.S.E.E.

Soft Lights

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