

November 19, 2021

To:

Paul Stone, President and Chief Executive Officer  
Hertz  
8501 Williams Road  
Estero, FL 33928  
pstone@hertz.com

Re: Spatially Anisotropic Visible Radiation

Dear Paul Stone,

The National Highway Transportation Safety Administration publishes FMVSS-108 which regulates vehicle headlights. FMVSS-108 was originally written in 1967 and is applicable to *spatially isotropic radiation in the human-visible portion of the electromagnetic spectrum*. FMVSS-108 is not applicable to spatially anisotropic, directed energy sources such as LEDs and lasers and is not applicable to non-visible radiation such as microwaves and x-rays.

LED headlights and daytime running lights are illegal in the USA because they emit spatially anisotropic radiation that is not compliant with NHTSA FMVSS-108. Auto makers have been using a self-certification process to certify LED headlights to be compliant with FMVSS-108, even though they are not. This situation is a liability issue for Hertz because Hertz rents vehicles with these unsafe and illegal LED headlights which are sending people to the hospital, causing eye damage, psychological trauma, road rage, loss of work, pain, sickness, loss of civil rights, vehicle crashes, and thoughts of suicide.

Figure 1 is a diagram showing the categorization of radiation. As we can see in the chart, candles, incandescent light bulbs, and High-Pressure Sodium lamps are all spatially isotropic radiation sources. LEDs, on the other hand, emit spatially anisotropic radiation.

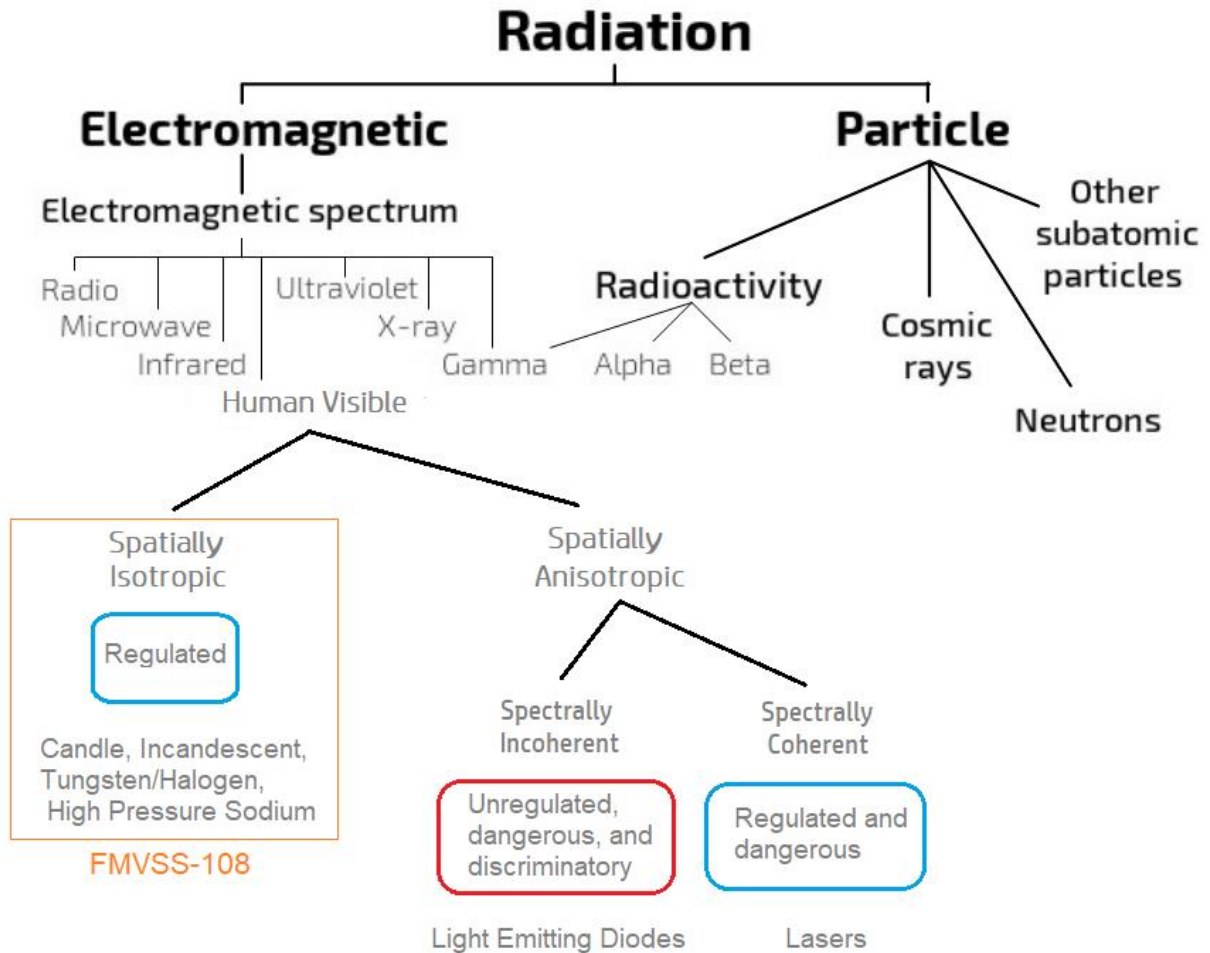


Figure 1 - Radiation Types

To our knowledge, there are no ocular exposure standards for LEDs. In his 2009 presentation, Senior Engineer Michael Shulman of Underwriters Laboratories wrote, "Currently, neither the U.S. nor Canada have mandatory standards or regulations for ocular exposure to LEDs emitting incoherent visible light."<sup>1</sup> In the research article, titled Light Emitting Diode Induced Retinal Damage<sup>2</sup> the authors state, "Excessive LED light exposure presents a potential hazard to retinal function." In other research, those in Risk Group 3 (those with epilepsy, autism, migraines, photophobia, etc.) are often purposely ignored during the research, invalidating results that might have shown that LEDs are safe.

Figure 2 is a photo taken in October, 2021 of a vehicle with LED headlights. This vehicle is not necessarily a Hertz rental but is representative of the glare and danger presented by illegal directed energy LED headlights. Both OEM and aftermarket LED headlights are illegal.

<sup>1</sup> [http://www.softlights.org/wp-content/uploads/2021/10/MichaelShulman\\_LEDFireElectricalSafety.pdf](http://www.softlights.org/wp-content/uploads/2021/10/MichaelShulman_LEDFireElectricalSafety.pdf)

<sup>2</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5313540/>



*Figure 2 - LED Headlights*

LEDs are not “energy efficient” as claimed by the LED lighting industry. To be energy efficient, a technology must provide the same quality of service and perform the same task as the previous technology. The task in this situation is to provide uniform illumination without harm. Since LED radiation does not provide uniform illumination, and since the LED radiation is sending people to the hospital, causing eye damage, and violating civil rights, LED radiation is not energy efficient and therefore should not be used for the purpose of illumination. The claim of “energy efficiency” by the LED lighting industry is fraudulent.

The federal Americans with Disabilities Act prohibits discrimination. Since LED radiation interferes with major life functions such as seeing, thinking, and concentrating for people with light sensitivity disabilities, such as those with epilepsy, autism, PTSD, migraines, bipolar disorder and others, LED radiation is discriminatory. A company cannot claim that LEDs comply with the ADA just because the US Access Board has not yet developed guidelines for spatially anisotropic radiation from LEDs. Since LED radiation prevents safe access to public services such as roads and sidewalks, LED radiation is discriminatory.

As an example of how dangerous LED radiation is, consider this warning shown in Figure 3 from the company Gear Light. Also consider that human comfort level for luminance is around 300 nits, while LED chips are already exceeding 100,000,000 nits of peak luminance.

**WARNING:** To avoid eye injury, do not stare directly into the light beam or shine the beam directly into anyone's eyes. This product is not designed, intended, or recommended for children or hazardous environments.



Figure 3 - LED Flashlight

The fact that LEDs are unregulated and lack standards, cause sickness and eye damage, interfere with the human nervous system, discriminate against people with light sensitivity disabilities, endanger public safety, and are illegal, makes Hertz liable for the accidents, harm and discrimination caused by the vehicles they rent that emit LED radiation.

To protect human health, comply with federal regulations and reduce liability, Hertz must only rent vehicles with headlights and daytime running lights that comply with federal regulation FMVSS-108.

Sincerely,

*Mark Baker*

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President

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