Intelligent headlights cause more glare, not less Prof Peter Veto

https://www.youtube.com/watch?v=j34yHar1sPo

Dr. Nisa Khan, Ph.D - comments:

It is a very good video. Right now, we need all reasonable objections against LED headlights of all kinds and our Section 10108 is the best effort we now have to invalidate any LED headlights in the USA.

However, despite the risk of losing most if not all of you, I am obliged to caution you of the following:

1. Current LED headlights, high or low beam, are violating already established NHTSA rules; the same in Europe with CIE rules. This is not caught because of the lack of understanding in how LED illumination works; and because no one out there is able to measure peak luminance from LED headlights accurately.

2. Blaming the glare issue on high beam is intentional, strategic, as well as ignorance. The low beams and even the daytime running accent LED front lights also have glare; although nowhere near as bad as the low beam headlights. The ABC news clip talks about this already.

3. Glare is directly related to luminance squared. So, when peak luminance is enormous, you will be blinded by peak glare when your eyes' field of view overlaps substantially with the LED's directional beam. This is a very common occurrence when we drive on the road with other cars. More cars will make the situation extremely unbearable. I think most of you experienced this first-hand.

4. Spectral distribution requirements as referred to as too much blue wavelength content being problematic will not work because it is the absolute spectral power distribution that matters. This too is strongly non-uniform for LED headlights in particular. IES or other lighting orgs don't seem to know the difference between relative and absolute SPD. When it comes to LED SPD with regards to this differentiation, they are even more clueless.

5. If yellowish LED headlights are used, most of you may think it is a bit of relief. But it is still very much damaging for your eyes because while glare will be lower due to lower peak luminance, peak radiance is still too high. Peak radiance is not a concern for the lighting world because our eyes see lumen power and not radiant power. Power is power. When it is too high at any frequency - visible or not, it is very bad for you. This is why we are supposed to limit our exposure to the sun, which has infrared and ultraviolet light - too much of such radiant power is still going to harm you. Balance is key and LEDs and lasers offer no balance when it comes to illumination or RADIATION!!!

6. No adaptive technologies can fix LED's tremendous glare or luminance along the center optic axis. Once it is generated, we are doomed. We cannot make electronics work faster than the speed of light. I don't care how much money BMW has. They don't have the capability to make anything work faster than the speed of light.

7. None of what IES, CIE, NHTSA or others use to evaluate/characterize LED lighting including those who make LED photometric and colorimetric measurement instruments are doing the right things to properly evaluate LED lighting or illumination. One must use the absolute/extreme near-field measurements to find LED's peak luminance. This is very hard to do - but can be done and has been done in 2D. Any other retinal image reconstruction or algorithm will not work either. Near-field optics, photometry and radiometry all needs to be redefined as they are all erroneous research that exists out there because all such studies are done by researchers that unfortunately never understood what flat light produces in near field, whether it is in 2D or 3D space.

Please archive what I have written here. Whether anybody fully understands all I am saying is not my business anymore. It just seems to be too hard to bring everyone up to speed with what is really behind advanced calculus and analytic geometry. But this material presented here could be of some use to somebody someday.

Thanks and regards,
Dr. M. Nisa Khan President IEM LED Lighting Technologies