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USING SUPERPOSITION INTERFERENCE TO REDUCE/BLOCK HARMFUL BLUE LIGHT

HP INC

Using Superposition Interference to Reduce/Block Harmful Blue Light

Abstract: An external lighting accessory for a display generates a narrow range of blue light and aims it at the display to subtract the blue waves emanating from the display itself, improving eye health.

This disclosure relates to the field of displays.

A technique is disclosed that uses wave cancellation to eliminate the harmful wavelengths in the backlight of a display.

Blue light (in the range of 430nm) is widely presumed harmful to human eyes. Such blue light is generated by many types of computer displays, and particularly by the backlighting of certain display types. To date, most methods of blocking blue light at a specific harmful frequency have involved filtering and/or shifting the wavelength of the blue in the backlight above the harmful frequency.

According to the present disclosure, electromagnetic wave cancellation based on superposition is employed to eliminate the harmful wavelengths from backlighting. This technique can be considered analogous to how an anechoic chamber operates.

By generating a narrow range of blue light and aiming it at the display, an ambient light is formed that subtracts the blue waves emanating from the display.

The scalar calculates the average intensity of light at these wavelengths and provides that information to software through nonstandard EDID codes. The information is then used to power an external accessory that creates an opposing effect in real time. As a result, the harmful blue light would largely cancel itself out.

As one example, the accessory could be a simple LED light bar attached to the back of a keyboard. The LED is controlled to avoid generating excess ambient light that could reflect back to the user. Anti-glare monitors can further avoid any reflections.

The disclosed technique advantageously improves eye wellness by subtracting harmful blue light from display backlight. It is simple, and adaptable to existing displays. There is no permanent color shift. The blue light can be reduced at night and allowed in the morning, as per circadian rhythms.

Disclosed by Paul J. Broyles III and Syed S Azam, HP Inc.