

## App Note 1: LED Lighting — Hiding Hotspots

Hotspots are becoming more of a problem as LED brightness increases. In under the cabinet lighting, hotspots show up on the counter top. In wall wash lighting, the hotspots show up as irregularities in the pattern of the light. Designers with efficiency in mind want to eliminate the hotspots without losing any significant amount of the light.

Luminit Light Shaping Diffusers<sup>®</sup> (LSD<sup>®</sup>s) will solve this problem, provided that the diffuser is placed a sufficient distance from the LEDs. A rule of thumb is

that the diffuser must be at least as far away from the LEDs as the LEDs are spaced apart.

Some designs do not allow sufficient distance between the LEDs and the diffuser. In this case, a high angle LSD diffuser could be helpful if the shiny side of the diffuser is facing the LEDs. Typically, the diffuser side of a surface diffuser is faced toward the light source for maximum transmission. An elliptical diffuser may also be better at hiding hotspots in some designs.

*The following two photos show the homogenization of a laser beam without a diffuser and with a 5° LSD<sup>®</sup> diffuser:*



*Without diffuser*



*With 5° diffuser*

*Following are two examples of the utilization of an 80° Light Shaping Diffuser<sup>®</sup> to eliminate hotspots in LED arrays and strips.*

