

## Troubleshooting backlight bleeding and light leakage

### Can I reduce or eliminate backlight bleeding?

#### What is Backlight Bleeding?

Backlight bleeding occurs when areas of light appear along the edges or corners of a display when viewing dark screens in low light conditions. This light leakage should only be visible when viewing dark screens in a dark room. You should not notice this effect during normal use in a room with some ambient light. Backlight bleeding is not exclusive to Acer products and does not indicate a defect or quality issue with your display.



#### How can I troubleshoot backlight bleeding?

Backlight bleeding cannot be completely eliminated. You can use the suggestions below to help reduce the noticeability of the light leakage.

1. Adjust the brightness of your display.
2. Increase the light level in the room you are using the display in.
3. Use light colored backgrounds and application themes.

If you have tried the steps above and feel like there is a hardware issue with your product, please [contact Acer support](#).

#### What causes backlight bleeding?

Backlight bleeding is caused by the unique Liquid Crystal (L/C) alignment that is used in IPS panels. IPS monitors consist of multiple layers that are meticulously superimposed at different angles. Slight deviations in the layering can cause pressure inside the display that can slightly displace the liquid crystals. As a result, more light can penetrate in some places than in others. The resulting light areas are what is referred to as backlight bleeding.

Acer is committed to high quality standards in the production of products, and develops technologies that minimize these impacts on users. Unfortunately at this time, it is not technically possible to exclude bleeding one hundred percent.

**Additional Technical Information:**

IPS bleeding (aka IPS glow, back light bleeding or AHVA glow) is different from backlight light leakage and is a natural effect of an IPS panel's liquid crystal (LC) structure and makes the colors at the corner of screen distort when viewing dark images.

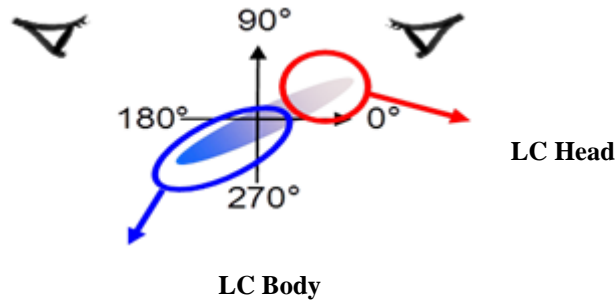
It occurs during the production of IPS panels when its unique manufacturing process causes an LC *pre-tilt angle*, so when you see it from a different angle, you'll see a different part of the LC with different color distortion caused by different RGB (Red, Green, Blue) transmittance.

Although it is not currently technically possible to completely eliminate backlight bleeding, the high standard of production of Acer monitors help minimize its effects.



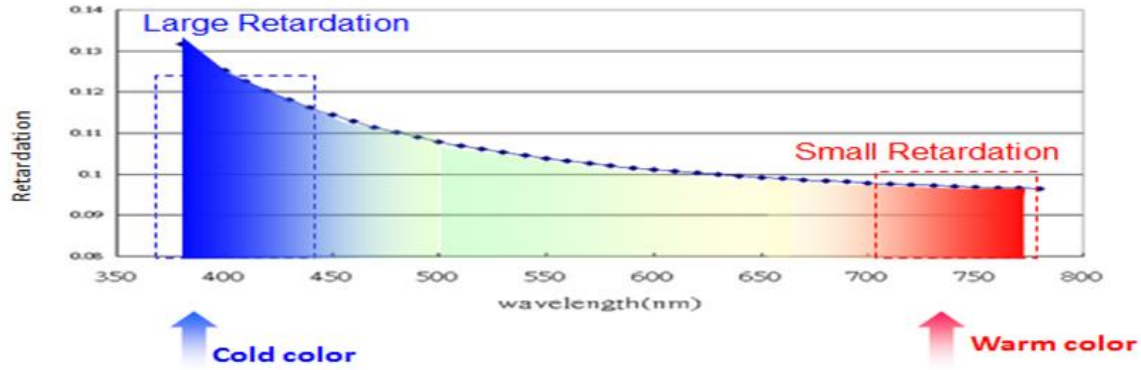
**Large Retardation**

**Small Retardation**



At 45° & 315°, the head of the LC, which has smaller retardation, makes RGB become brighter as Reds will be larger than Green and Blue, to make a warmer color.

At 135° & 225°, on the left of the body of the LC, there is larger retardation. All RGB colors look darker, but because Blue is brighter than Green and Red, the image look colder.



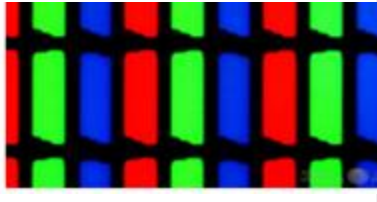


### Overview of LCD panel technologies

There are three different types of LCD panel technologies currently in use: In-Plane Switching (IPS), Vertical Alignment (VA) and Twisted-Nematic (TN). Each type of panel has its own benefits and limitations. IPS panels offer the widest angle of view at 178 ° and are therefore easy to read from almost any angle, but can have irregular illumination in dark scenes. The viewing angle of the VA panel is smaller than IPS but provides a higher contrast ratio. TN panels have the fastest response time but a narrower viewing angle and lower contrast ratio.

### Comparison of the three LCD panel technologies:

L/C Type	In Plane Switching (IPS)	Multi-domain Vertical Alignment (VA)	Twisted nematic (TN)
Common Electrode	Off(Black)      On(White)	Off(Black)      On(White)	Off(Black)      On(White)
Structure			
Pixel Electrode	Pixel Electrode	Pixel Electrode	Pixel Electrode

<b>Pixel</b>			
<b>Response Time</b>	12 ms ~ 20 ms (G to G)	On/OFF : 12 ms	On/OFF : 5 ms
<b>Contrast Ratio</b>	1,000:1	3,000:1	1,000:1
<b>View Angle</b>	H/V : 178°	H/V : 178°	H/V : 170°
<b>Positive</b>	Widest View Angle	High Contrast Ratio	Fast Response Time
<b>Negative</b>	Lowest Response Time	Viewing Angles not as wide as IPS	Narrow View Angle
	IPS Bleeding	Slower Response Time	TN Gray Scale Inversion