

TV Calibration

Going Green – Energy Saving &
Life Extension from Proper TV
Setup and Calibration



Reference/Results

- California Energy Commission Study Jan 08
 - CRTs are being replaced by less energy efficient and larger LCD and Plasma TVs
 - On average, an ISF calibrated TV provides 183 kWh/yr saving per set and equates to \$153.00 per year in saving per TV.
 - Added benefits – proper setup provides a superior picture and extends the life of the display

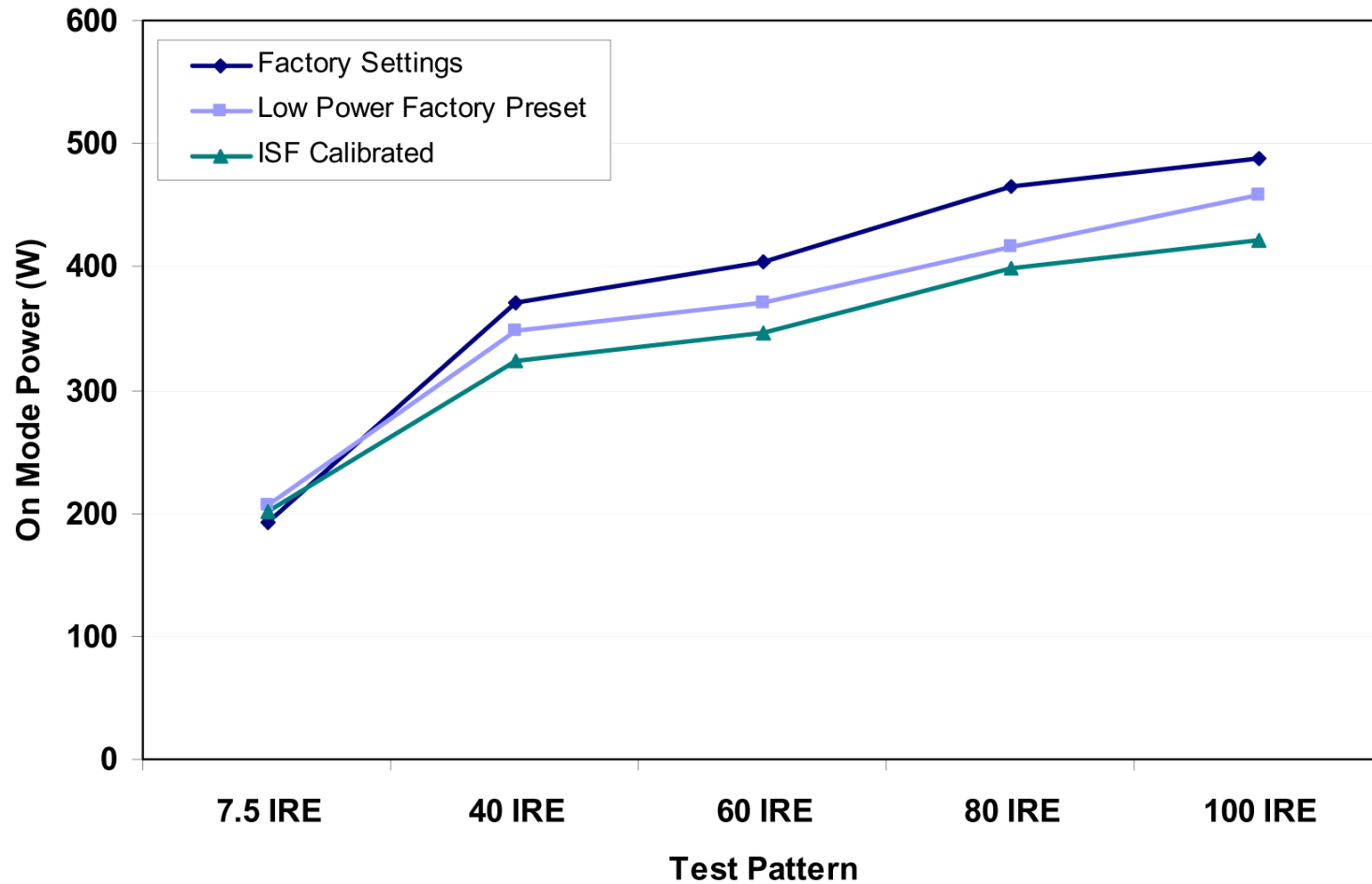


Analysis and Results

- Any TV purchased by a consumer contains within its settings menu a variety of options for adjusting the picture
- Some of these options include Brightness, Contrast, Color, Tint and Sharpness. Many sets also contain factory preset modes such as sports, dynamic, movie, etc.
- Of all of these adjustments two have significant impact on energy consumption: brightness and contrast.
 - Contrast tells the TV how bright the brightest white pixel should look.
 - Brightness – counter-intuitively – tells the TV how bright the darkest black pixel in the display should look.
 - Unlike a light bulb, more light from the display is not necessarily better for the user.
- A complete ISF Calibration provides even more energy savings

Figure 1

Effect of Screen Settings and Picture Brightness
on Active Mode Power: 50" Plasma HDTV



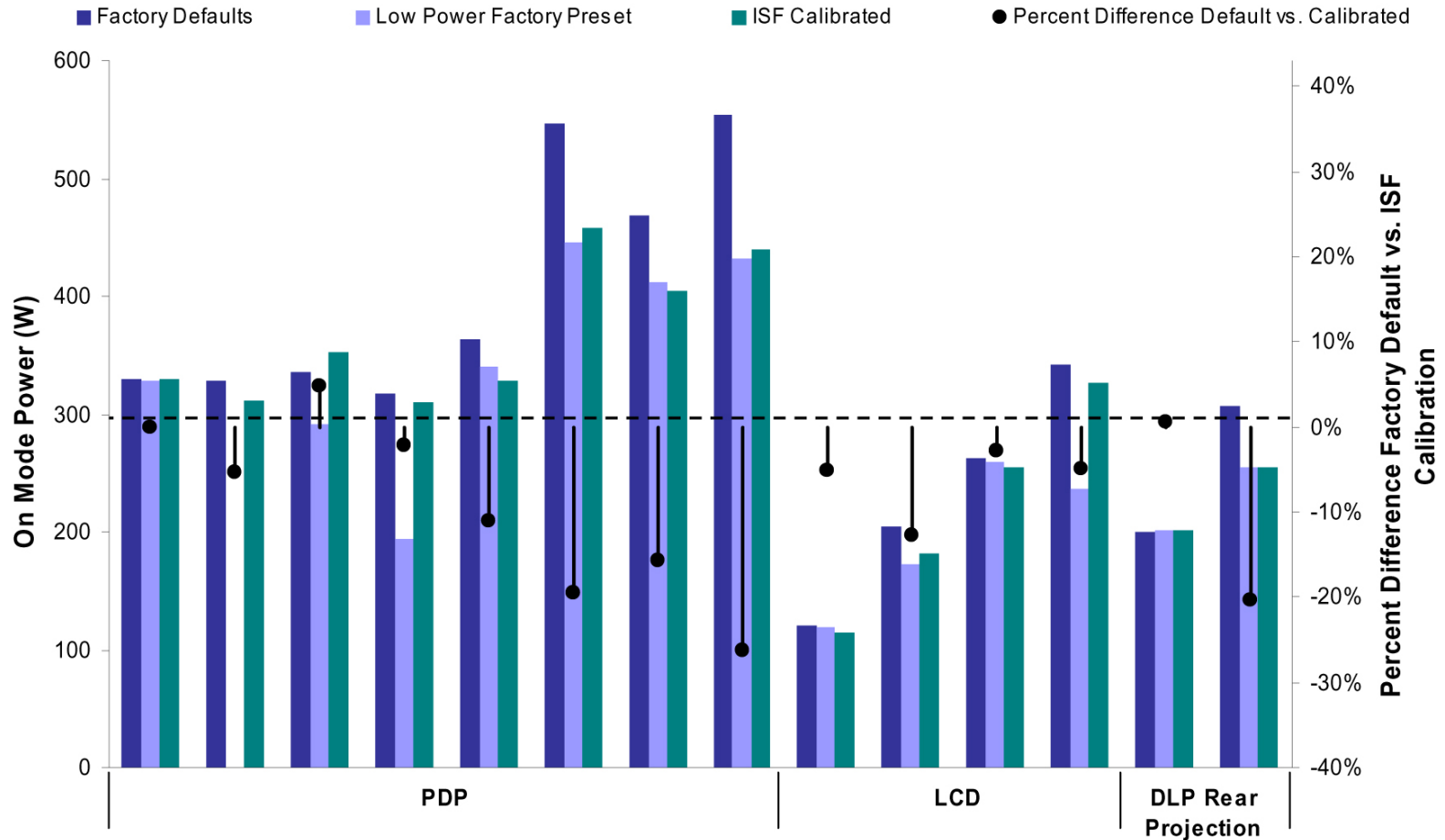
ISF Calibration Reduces Energy Consumption

Figure 1 illustrates the basic phenomena observed in most measurements: a consistent drop in on mode power consumption due to changes in TV screen settings. Here we have used a sample of measurements made on an individual TV (a 50" plasma TV) to illustrate the effect. Each curve in the chart represents a series of power measurements using various IRE test patterns at a given screen setting. The test pattern used is shown on the x axis and the corresponding power consumption of the screen on the y axis. The signal brightness or average picture level of the test pattern increases from 7.5% at far left (effectively a black screen) to 100% at far right (a completely white screen). Note for each set of measurements that as the signal brightness of the test clip increases, so does the power consumption of the TV.

The power consumption (and luminance) of the TV also drops significantly with each screen setting modification. **For the set shown, the low power factory preset yielded an average 9% savings over factory defaults; the ISF calibrated settings yielded a 16% savings.** In the case of the ISF calibration, this also resulted in a 17% reduction in the luminance of the set, meaning that the TV was 17% darker after a proper calibration than when left at its default settings.

Figure 2

On Mode Power Consumption of TVs at Various Screen Settings and 100 IRE 18% Window Test Pattern



Different Technologies Render Different Results, However Energy Savings Occur in all Cases

The effects naturally vary from model to model and from one TV technology to another. The power savings, for example, are more pronounced in plasma TVs than in LCDs.

Figure 2 provides a summary of measurements made on 15 different TVs representing 3 technologies. Each bar represents the average on mode power consumption at a given screen setting using the 100 IRE 18% window test pattern. The black dots indicate how large of a power savings, if any, was generated by modifying the screen settings. We observed power savings as high as 25% in plasma TVs and as high as 12% in LCDs.

Although not expected to be common, one DLP measured was able to cut over 20% of its on mode power use by under-volting its high pressure projection lamp.



Bottom Line

**Proper ISF TV calibration
saves significant energy,
produces superior picture
quality and extends the life
of the TV...and Your
Customers Want it!**

