Licensing Program for LED-Based Signage

Philips Lighting Intellectual Property Organisation
November 15, 2017
Agenda

• Introduction

• Program outline

• Contact info

• Core Technology Examples

This presentation is for information purposes only. It is not intended to be a contract and shall not be legally binding in any respect on any party. There shall be no contract until a final written contract is signed by authorized representatives of both companies.
Business Drivers

• For Licensee
  – Preferred and more economic solutions
  – More flexibility in component sourcing
  – More freedom for optimal solution

• For Licensee and Philips Lighting
  – Accelerate growth of LED Signage markets
LED Signage Systems – What’s Involved

Diagram showing the process from electrons to photons, including layers for Optical Extraction, Mixing & Diffusion, LEDs, Drivers, Control & Sensing, Power Management & Conversion, Thermal, and Heat.
Philips Lighting Licensing Program Outline

• Product scope:
  – Light Engine & Driver (“Signage Kit”)

  or

  – Lightbox

• Field of use
  – LED- Based Signage

• Scope of Licensed patents;
  • Basic LED control and system level technologies
  • Covers IP from Philips and former Color Kinetics and TIR
Licensed Patent Portfolio

- Patents relevant to LED-Based Signage from the open Enabled SSL Licensing Program as well as Signage specific:
  - More than 260 patent families
  - More than 1961 issued patents
  - More than 138 patents pending
  - Worldwide (e.g. US, Europe, China, Japan, Korea, Canada, Australia, Taiwan, Hong Kong)
Expected Relevance

• Creation of LED signage that is homogeneously illuminated
• Light distribution management by creating a Lightbox with LED module(s) within that illuminate at least one wall almost exclusively
• Light distribution management using edge-coupled sheet technologies
• Light distribution in channel letters
• Light distribution in acrylic letters
• Creation of specific color temperature using a combination of phosphor conversion and colored LEDs
• Combination of red, green and blue LEDs to create and tune colored light output
• Sensing and control of LEDs, LED and driver protection, dimming (phase cut, 1-10V), EMI reduction
• Simplified mounting of optics in housing
Royalties for Lightbox & Signage Kit

• **Royalties based on Net Revenues**
  – 3% single color (Lightbox)
  – 4% Tunable white (Lightbox)
  – 5% Color changing (Lightbox)
  or  
  – 9%-kit (Light engine + AC-DC driver)

(Charged only for manufacturing or sales in countries where Philips Lighting has at least one issued patent covering a feature of the licensed product)

• Net Revenue is the price invoiced by a Signage manufacturer or Signage-kit supplier to licensee, excluding freight, insurances, and taxes
Key steps to Agreement

1. Meet with Philips Lighting IP Licensing representative
   • One of our licensing specialists will be assigned to your company so you have a personal contact with Philips Lighting. This contact person will explain the Program in detail and answer any questions you may have.

2. Portfolio Analysis
   • We work with you to determine which of your products are relevant and require a license (Lightbox- Kit, LED Based Signage)

3. Choose between the Flat Rate and Itemized approach for the payment of royalties (the fees for use of Philips patented technologies) and conclude the agreement
   • In order to protect the confidential information that are exchanged between the parties prior to concluding the license agreement, a mutual, two-sided Non-Disclosure Agreement (NDA) will be signed.
FAQ

• Does this program also include Philips Lighting’s designs?
  No, the program only relates to patents directed to technology and not to other IP directed to the aesthetic appearance of the products

• I’m interested in applications outside the markets addressed by your program. Can I get a license?
  We are willing to further explore your request, but willingness, list of patents and terms can deviate from the program.
Contact info

info.SSLlicensing@Philips.com

www.ip.philips.com/licensing/program/112
Examples of what could be involved
Core Technologies for LED Signage Systems

Application: Homogeneous illumination of LED Signage Posterboxes

Advantage: Eliminates zoning within a signage display thus improving sign readability and impact

Example Patents/Applications:
- North America: US7841733
- NL1030161; NL2000273;
- Asia: CN101300616; JP5390858
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Optical Extraction

**Application:** Efficient homogeneous illumination of LED Signage displays

**Advantage:** Provides high light yield for a comparatively low energy consumption

**Example Patents/Applications:**
Europe: EP1379742
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Optical Extraction

Application: LED at least partly embedded in a translucent layer of a thermoplastic material

Advantage: Increased heat conductivity and reduced bright spots.

Example Patents/Applications:
- Europe: BE,
- US: US8748922
- Asia: CN101795860
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**Optical Extraction**

*Application*: apparatus for forming an asymmetric illumination beam pattern.

*Advantage*: Increased homogeneity of illumination of a surface in close proximity to the light sources

*Example Patents/Applications:*

US: US7652300;
CA2557447
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Thermal Management

**Application:** Thermal management of LED Strings

**Advantage:** Efficient heat-sinking with simple manufacturing

**Example Patents/Applications:**

Europe: EP1537354,
Asia: JP4865227
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**Application:** Efficient homogeneous illumination of LED Signage displays

**Advantage:** Provides a thin illumination device using an array of LEDs

**Example Patents/Applications:**
- **Europe:** EP2082160,
- **Asia:** CN101523109

**Light Mixing & Diffusion**
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**Application**: Efficient homogeneous illumination of LED Signage displays

**Advantage**: Provides a thin illumination device using side emitting LEDs

**Example Patents/Applications**:
- North America: US7943940
- Europe: EP2147349,
- Asia: JP4955101
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Application: Efficient control of Embedded LEDs

Advantage: Provides a selective control of individual light sources.

Example Patents/Applications:
- North America US8207541
- Asia: CN101657672; JP5871357
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Application: LED fixtures with optics

Advantage: Simplifies mounting of optics relative to LED

Example Patents/Applications:
- North America: US6561690
- Europe: EP1182396
- Asia: JP4749623, CN01135741
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Control / Protection when changes in LED’s occur

Application: Safe conventional light source replacement

Advantage: Allows accurate control and protection of driver circuitry in case of changes in the LED’s at the output, such as over voltage, short circuits or malfunctioning of an individual LED in a string

Example Patents/Applications:
- North America: US6094014; US6147458; US6577512; US7262559; US7511436
- Europe: EP0929992; EP1034690; EP1623604
- Asia: JP4260226; JP4657579; JP4959325; JP5426807; CN10038108, CN100531486; CN100558203; CN1139307; CN1287637
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Application: White color temperature control

Advantage: Produce high quality tunable white light

Example Patents/Applications:
- North America: US7014336; 6636003; 6513949; 6234645
- Europe: EP1016062; 1234140; 1118252; 1047904
- Asia: JP02525836; 01542388; CN1289397; 1327707
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**Application:** Intelligent RGB color control

**Advantage:** Allows creating simple to sophisticated illumination effects

**Example Patents/Applications:**
- North America: US6016038; 6788011; 6806659; 6234645
- Europe: EP1016062; 1047904
- Asia: HK1025416; JP02525836; CN1289397
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Application: Using two or more different LEDs to generate light (for single color or white, tunable white and color-changing)

Advantage: Achieve desired color of light or color temperature of white light, for both static and dynamic (e.g., color-changing) applications

Example Patents/Applications:
North America: US6692136; 6234648; 6234645; 6513949
Europe: EP1046196
Asia: JP4366016; JP4376464; IN210549; CN99802435.X; CN99802434; KR10-0702273; KR10-0776837; TW167039
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Apparatus and method for providing a linear effect

Application: Linear effect apparatus for lighting display

Advantage: Allows creating simple to sophisticated linear illumination effects

Example Patents/Applications:
- North America: US7118248; 6676284
- Europe: EP1110198; 1391650