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UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA
SOUTHERN DIVISION

Koninklijke Philips Electronics N.V.; and Philips Lumileds Lighting Company LLC, Plaintiffs, v. Seoul Semiconductor Company, Ltd.; and Seoul Semiconductor, Inc., Defendants.	Civil Action No. 11-cv-00356 AG (RNBx) **PLAINTIFFS' NOTICE OF MOTION AND MOTION FOR PRELIMINARY INJUNCTION** **MEMORANDUM OF POINTS AND AUTHORITIES IN SUPPORT THEREOF**
Seoul Semiconductor Company, Ltd.; and Seoul Semiconductor, Inc., Counterclaim Plaintiffs, v. Philips Lumileds Lighting Company LLC, Philips Electronics North America Corporation, and Koninklijke Philips Electronics N.V., Counterclaim Defendants.	Judge: Honorable Andrew J. Guilford Location: Court Room 10D, Santa Ana Date: October 31, 2011 Time: 10:00 a.m.

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NOTICE OF MOTION AND MOTION

PLEASE TAKE NOTICE THAT Plaintiffs in this action hereby move this Court for an Order enjoining Defendants ("Seoul") from making, using, selling, offering to sell and/or importing LED devices infringing U.S. Patent Nos. 5,779,924; 6,274,924; 6,547,249; and/or 6,590,235—including but not limited to Seoul's Acriche™ A2, A3 and A4 products—in the United States during the pendency of this action.

The hearing is set for October 31, 2011, at 10 a.m. before the Honorable Andrew J. Guilford, Courtroom 10D, in the United States District Court for the Central District, Southern Division, 411 West Fourth Street, Santa Ana, California 92701-4516, or as soon as the parties may be heard.

Plaintiffs move for an order enjoining Seoul from infringing their patents during the pendency of this case because (i) Plaintiffs will prevail on the merits; (ii) Plaintiffs will suffer irreparable harm during the pendency of this case, if Seoul is permitted to continue its infringing conduct; (ii) the balance of hardships tips in favor of Plaintiffs; and (iv) ordering an injunction will serve the public interest.

This motion is supported by (i) the attached memorandum of points and authorities; (ii) two separate declarations (filed herewith) by Dr. Russell Dupuis; (iii) two separate declarations (filed herewith) by Dr. Michael Pecht; (iv) the declaration of Dr. Marvin Lieberman; (v) the declaration of Michael Holt; (vi) the declaration of Jy Bhardwaj; (vi) the pleadings and papers filed in this action; (vii) other matters of which this Court may take judicial notice; and (viii) any further evidence or argument that may be presented at or before the hearing on this matter.

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Dated: October 3, 2011

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MEMORANDUM OF POINTS AND AUTHORITIES

I. INTRODUCTION

This case is about the reinvention of the light bulb. The world is moving away from Thomas Edison's incandescent bulb, replacing that 19th century technology with a substantially more durable, cost-effective and energy-efficient solution: light-emitting diodes ("LEDs"). Plaintiffs ("Philips" or "Lumileds") commercialized LEDs for the world about 50 years ago, and have remained among the most prominent innovators in LED technologies ever since. That innovation has included, most recently, the high voltage or alternating current LED ("AC LED")—a semiconductor light source that is more durable and energy efficient than incandescent bulbs. Lumileds' patented AC LED technologies are likely to capture substantial portions of the world's general illumination markets. New laws in America and other countries that effectively will ban incandescent bulbs while this case is pending are accelerating a fundamental shift in the lighting business. During the time it will take to bring this case to trial, sales of AC LEDs in the United States will show increasingly rapid growth. And the competitive landscape—including competitors' brands, product offerings, customer relationships, market shares, production costs, and profit margins—will change irrevocably.

Recently, Lumileds introduced its own AC LED products only to find itself competing head-to-head with its own innovations—innovations that have been intentionally infringed by Defendants ("Seoul"). Just as the market for AC LEDs is about to enter a phase of rapid growth, Seoul is unlawfully using Lumileds' patented technology to try to seize the "first mover" advantages that will set the competitive landscape for AC LEDs for years into the future. These first mover advantages rightfully belong to Lumileds and would flow to Lumileds absent Seoul's infringing sales.

At least two sources of first mover advantages are at issue here. First, LED producers are able to manufacture LEDs more cheaply as they gain cumulative production experience through "learning by doing." Each sale Lumileds loses to Seoul deprives Lumileds an opportunity to reduce its AC LED manufacturing cost. The result of Lumileds' lost sales is that Lumileds will have higher AC LED manufacturing costs into the indefinite future, negatively affecting Lumileds' market position.

Seoul's infringing sales also interfere with Lumileds' ability to establish long-lasting customer relationships with AC LED purchasers. High power LEDs, including AC LEDs, are not standardized and are not interchangeable with one another. Customers rarely switch LED suppliers for a product because doing so entails substantial redesign costs. Customers also are more likely to stay with a current supplier when developing a new product because of its experience with a particular LED product and its characteristics. Seoul's infringing sales during this crucial time allow it to forge customer relationships that, absent infringement, would have been forged by Lumileds.

The first mover advantages Seoul has seized from Lumileds will have long-lasting effects on competition between Seoul and Lumileds. The influence of these negative competitive effects on Lumileds will grow if Seoul is permitted to continue making infringing sales during this litigation. This conclusion is only reinforced by the rapid changes that the AC LED marketplace is about to experience. Lumileds should not have to compete with its own patented technology as it works to develop and serve the rapidly growing AC LED marketplace .

Seoul may downplay the competitive nature of this case, as it has in a recently filed motion to stay, but Seoul's counsel recognizes its importance. Seoul's counsel has already posted online that it represents a "Korea-based

manufacturer of LEDs (light emitting diodes)" in a "*significant competitor-to-competitor multi-patent infringement action* in the Central District of California."[1] Lumileds' competitor, Seoul, is turning the competitive environment for AC LEDs to its own favor (to the detriment of Lumileds) through its infringing sales. The permanent and ultimately incalculable harms Seoul's infringing sales inflict on Lumileds are precisely the kinds of harms that a preliminary injunction is intended to address.

This Court has the power to help insure that competition takes place fairly. To that end, Lumileds respectfully requests an order enjoining Seoul from making, selling, offering to sell and/or importing LED devices infringing U.S. Patent Nos. 5,779,924; 6,274,924; 6,547,249; and/or 6,590,235—including but not limited to Seoul's Acriche™ A2, A3 and A4 products—in the United States during the pendency of this action.

II. BACKGROUND

A. Lumileds' Leadership in LED Innovation

In the 1960s, the Hewlett-Packard Company needed an illumination source for the red light on the iconic "HP 35C" calculator. To address that need, the entity that eventually became Lumileds was born. Lumileds technology commercialized the first LED in the 1960s, and has remained at the forefront of LED technology innovations ever since. For example, Lumileds LEDs were the first to be used on a car exterior (1988), the first to be used for a high-power flashlight (2001), the first to be used for a camera flash (2004), and the first to be used for backlighting for TVs (2004). And Lumileds' tradition of innovation in LEDs continues to this day; just this year, Philips Lighting won the prestigious L-Prize from the U.S. Department of Energy based on a Lumileds LED. Holt Decl. ¶ 1.

[1] *See* http://lw.com/Attorneys.aspx?page=AttorneyBio&attno=05009 (web biography for Seoul's counsel) (last visited October 2, 2011).

Lumileds' success is due in large part to its world-class team of scientists and engineers, most of whom reside and work in California. Lumileds employs about 650 employees in California, over 500 of whom work in research and development or manufacturing. *Id.* at ¶¶ 2, 13-15.

B. LED Technology Background

LEDs are semiconductor devices that convert electrical energy directly into light. On its most basic level, the semiconductor device is comprised of two regions: the "p-region" and the "n-region." The p-region contains positive electrical charges while the n-region contains negative electrical charges. When voltage is applied and current begins to flow, the electrons move across the n-region into the p-region. The process of an electron moving through this p-n junction releases energy. The dispersion of this energy produces photons with visible wavelengths. The wavelength's size will then determine the color of emitted light.

Although Lumileds' technology commercialized LEDs for the world 50 years ago—and LEDs have had growing commercial uses ever since—traditionally LEDs have not been used for everyday lighting. Conventional, incandescent bulbs have continued to dominate those markets. Incandescent bulbs are relatively cheap to produce, and emit light that most consider pleasing. But traditional bulbs are energy inefficient; up to 90% of the energy used by an incandescent bulb is released as heat rather than light. Holt Decl. ¶ 7; Lieberman Decl. ¶¶ 10-11.

While LEDs are substantially more energy efficient than incandescent bulbs, they have not been adopted for general lighting purposes for various reasons. Those reasons have included high production costs, lack of brightness, light quality issues, and the need to couple them with bulky and relatively unreliable "driver" circuitry, which converts alternating current (AC) to direct current (DC) for operation of the LED. Holt Decl. ¶¶ 7-10; Bhardwaj Decl. ¶¶ 6-12; Lieberman

Decl. ¶¶ 12-14.

Innovations in LED technologies—at the heart of this action—have ameliorated those conventional limitations on LEDs. These innovations have enabled the high voltage or "AC" LED. AC LEDs likely will show rapidly increasing growth in coming years given their relative advantage over incandescent bulbs in terms of energy efficiency and (*inter alia*) impending government regulations that effectively ban incandescent bulbs for many purposes in this and coming years.

C. The AC LED

Constant direct current is the ubiquitous driver of LEDs. But since electricity in homes and offices is supplied in the form of alternating current (AC), LEDs have typically required a built-in convertor (or driver circuitry) to convert AC into DC. In order to get rid of the AC/DC converter, Lumileds developed novel ways of building LED devices to run directly with rectified AC voltage rather than constant DC current. These devices are known in the industry as "AC LEDs." The high voltage architecture of an AC LED product eliminates the bulky driver circuitry and maximizes space available for additional thermal management, permitting an increase in the thermal limit for even the smallest light bulbs. Bhardwaj Decl. ¶¶13-18; Holt Decl. ¶10.

After years of research and development, in the last year Lumileds released its AC LED product, the LUXEON H (pictured right). The LUXEON H simplifies AC LED design while providing a quality of light superior to its competitors. The LUXEON H has industry leading thermal performance and reliability as well as high quality, warm white light, making it an ideal solution for space-constrained and cost sensitive retrofit bulbs. The

LUXEON H is unlike any other AC LED product on the market: it does not use direct red die, thus enabling it to offer (i) consistent, stable color from the instant the LED is powered and (ii) color maintenance through its lifetime.

D. The Lumileds Patents

The Lumileds patents asserted in this Motion describe novel inventions in the field of LEDs and, in particular, AC LED technology. They are United States Patent Nos. 5,779,924 ("the '9924 Patent"); 6,274,924 ("the '4924 Patent"); 6,547,249 ("the '249 Patent"); and 6,590,235 ("the '235 Patent") (collectively, the "Lumileds Patents").

1. The '9924 Patent

The '9924 Patent—titled "Ordered Interface Texturing for a Light Emitting Device"—issued on July 14, 1998, to assignee Hewlett-Packard Company. Plaintiffs jointly own the '9924 Patent by assignment and maintain all rights to enforce it. The '9924 Patent relates to increasing LED light emission by minimizing the influence of light emitting inhibitors (e.g., large optical refractive index differences amongst the materials that make up an LED, LED macro-geometry, total internal reflection (TIR), and Fresnel loss). The '9924 Patent claims a device with a textured interface with repeated features in at least one direction.

2. The '4924 Patent

The '4924 Patent—titled "Surface Mountable LED Package"—issued on August 14, 2001, to Lumileds Lighting U.S., LLC. Plaintiffs jointly own the '9924 Patent by assignment and maintain all rights to enforce it. The '9924 Patent teaches and claims a LED assembly (*i.e.*, a LED package) having (i) metal leads, (ii) an insulating body with a cavity, (iii) a heat sink positioned relative to the cavity for being thermally coupled to a die, and (iv) a lens positioned relative to the cavity. The '9924 Patent also teaches a LED assembly with a die thermally coupled to the

heat sink, which can be made of a variety of thermally conductive materials such as copper.

3. The ’249 Patent

The ’249 Patent—titled “Monolithic Series/Parallel LED Arrays Formed On Highly Resistive Substrates”—issued on April 15, 2003, to Lumileds Lighting U.S., LLC. Plaintiffs jointly own the ’249 Patent by assignment and maintain all rights to enforce it. The ’249 Patent teaches and claims an array of LED devices formed on a substrate wherein (i) there are at least two LEDs, (ii) each LED is made of an n-type layer, an active region, a p-type layer, an n-contact, and a p-contact; (iii) a trench and ion implant region separates the first LED from the second LED; and (iv) there is a connection between the two LEDs.

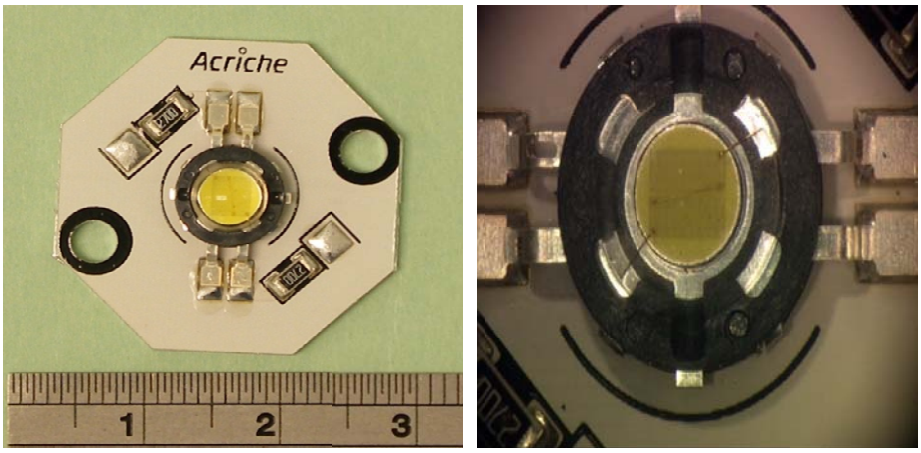
4. The ’235 Patent

The ’235 Patent—titled “High Stability Optical Encapsulation and Packaging for Light-Emitting Diodes in the Green, Blue and Near UV Range”—issued on July 8, 2003, to Lumileds Lighting, U.S., LLC. Plaintiffs jointly own the ’235 Patent by assignment and maintain all rights to enforce it. The ’235 Patent teaches and claims LED packaging and encapsulation with one or more silicone compounds, including a hard outer shell, an interior gel or resilient layer, or both.

E. Seoul’s Infringing AC LEDs

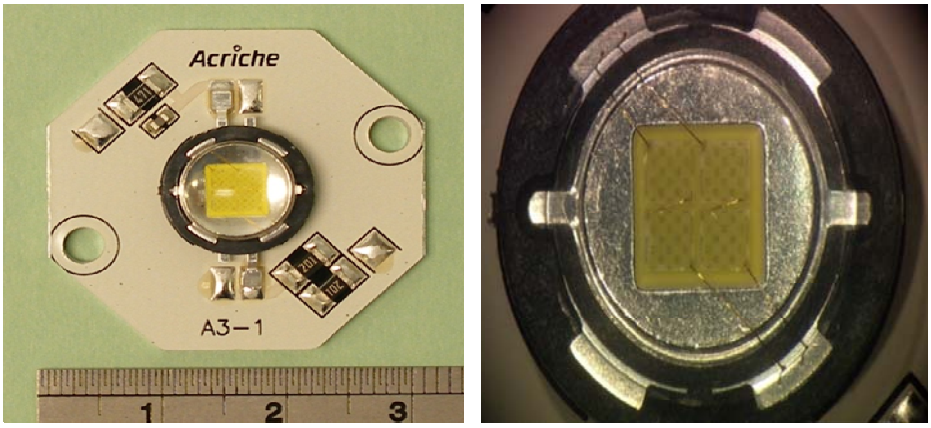
Without a license, Seoul makes, sells, offers to sell and imports certain AC LED products in the United States that infringe one or more claims of the Philips patents. In or around 2007-08, Seoul’s unlawful use of Philips’ patented AC LED technologies enabled it to begin manufacturing and selling AC LED products known as Acriche™ A2, A3, and A4 LEDs (collectively, the “Infringing AC LEDs”). The Infringing AC LEDs are described in detail in the Dupuis and Pecht declarations filed herewith. Exemplary images of the Infringing AC LEDS include:

Acriche™ A2



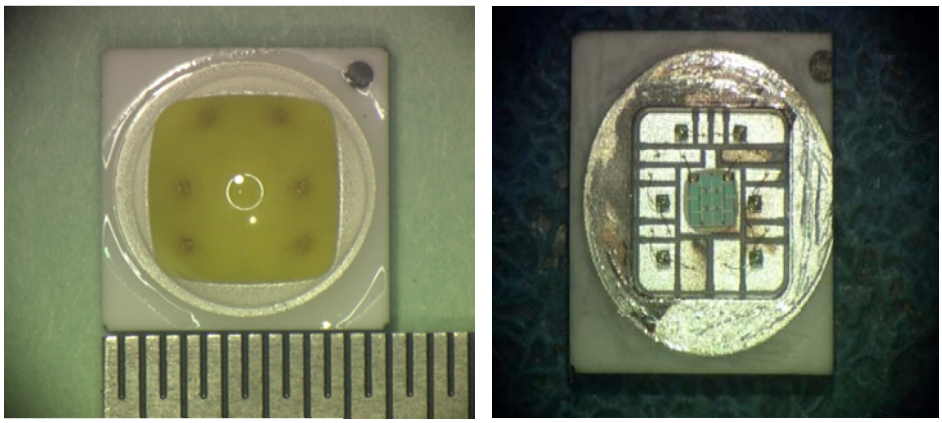
Left: A "packaged" A2 LED is pictured mounted to a white frame. **Right**: A close-up image of the A2 LED is presented with its lens removed.

Acriche™ A3



Left: A "packaged" A3 LED is pictured mounted to a white frame. **Right**: A close-up image of the A3 LED is presented with its lens removed.

Acriche™ A4



Left: A "packaged" A4 LED is pictured mounted to a white frame. **Right**: A close-up image of the A4 LED is presented with its lens removed.

F. Seoul's Infringing AC LED Sales Work Irreparable Harms on Lumileds Just as the AC LED Markets Are Forming

The technology that makes Seoul's Acriche AC LEDs possible is patented, and belongs to Lumileds. Seoul has used that technology without permission to make itself first to market with a commercialized AC LED solution. Seoul's unlawful market entry has harmed Lumileds severely, and but-for a preliminary injunction that harm will continue to grow in irreparable ways. Many of these harms may be characterized as "first mover advantages" that Seoul seized improperly. These advantages will grow more pronounced as this case proceeds, as Seoul uses its infringing sales to fashion the AC LED market place to its advantage. This will lead to lost sales to Lumileds today and in the future, and damages that are impossible to fully calculate. In addition, absent this Court's intervention, Lumileds will suffer long-lasting harm from its lost customer relationships and from persistently higher costs than would be the case without Seoul's infringing sales. These damages are similarly impossible to calculate and are incremental to Lumileds' damages from lost sales.

1. The AC LEDs Markets Are Forming Now

This brief, and the supporting testimony, address the harms that Lumileds will suffer if Seoul is permitted to continue to infringe the Lumileds Patents. But the most important point in understanding these harms is that Lumileds will suffer them—during the pendency of suit—while the markets for AC LEDs products are forming.

The markets for AC LEDs are new, immature, and about to grow at increasingly rapid rates. Sales of AC LEDs for illumination purposes will increase dramatically while this suit is pending due to a number of reasons, including government "energy efficiency" regulations that will soon restrict the sale of standard incandescent bulbs, leaving AC LEDs as the best energy-efficient solution for many bulb sizes for general illumination. Lieberman Decl. ¶¶ 10-18; Holt

Decl. ¶¶ 7-9; Bhardwaj Decl. ¶¶ 6-12.

IMS Research shows that worldwide revenues in the LED lighting sector will grow at over 32%, compounded every year, between 2009 and 2016. Unit sales—the number of LEDs being sold—are forecasted to grow even faster, at *over 59% compounded every year*. And sales of high-power LEDs for lighting applications in particular, such as AC LEDs, are expected to grow between now and 2016 at an annual, compounding rate of 35%. Lieberman Decl. ¶¶ 20-23; Holt Decl. ¶ 10.

If the AC LED market resembles other semiconductor markets, it is predictable that this first period of drastic market growth—the very period in which this case is pending—will set the competitive landscape for the industry going forward. The growth, profitability and even survival of individual firms will likely be determined by what happens in the next few years, as this case proceeds to resolution. *See generally* Lieberman Decl. Unraveling the full extent of how Seoul's unlawful infringement is damaging Lumileds' competitive position during this market formation process—after the fact, with money damages—will not be possible.

2. Seoul's infringing sales will not just deprive Lumileds of AC LED sales, they will artificially increase Philips' production costs and decrease Lumileds' profit margins for all other sales

The production of AC LEDs is characterized by "learning by doing." This means that as Seoul or Lumileds amasses production experience making a particular kind of LED, such as an AC LED, it will become increasingly efficient and its manufacturing costs will fall. Lieberman Decl. ¶¶ 43-59; Bhardwaj Decl. ¶¶ 19-24. Because of this phenomenon, as sales and production levels rise, production costs fall, and not just because of usual economies of scale.

These cost reductions depend on *cumulative* production experience or

cumulative output. Of course, Seoul's infringing sales lead to Lumileds' cumulative production experience being lower indefinitely into the future and Lumileds' costs being higher indefinitely into the future. Lieberman Decl. ¶¶ 43-59; Bhardwaj Decl. ¶¶ 19-24. Going forward, this will mean either that Lumileds will not be able to match low prices offered by Seoul, because Seoul will have reduced its production costs through its infringing sales, or that if Lumileds attempts to match Seoul's prices, Lumileds will suffer a depressed profit margin relative to the profits it would earn absent Seoul's infringing sales.

The impact of learning by doing is competitively important in the LED industry because production methods are proprietary, and at least patented if not protected through trade-secrets. Holt Decl. ¶ 3; Lieberman Decl. ¶ 45, 48, 50; Bhardwaj Decl. ¶ 17. Therefore, learning is likely to remain proprietary absent infringement.

Because of this aspect of the AC LED markets, every sale that Seoul makes during the pendency of this case, using the Lumileds Patents, will not just deprive Lumileds of that particular sale. It will enable Seoul to move further down its learning curve, and slow Lumileds' movement on its learning curve. This harm is not a small one. As Dr. Lieberman has testified, semiconductor manufacturing "learning curves" tend to be steep, showing for example a slope of 70%. With that slope, every doubling of products sold and manufactured translates to a 30% reduction in cost per unit. The cost differential created by Seoul's infringing sales will persist and impose long-term competitive disadvantages on Lumileds. Lieberman Decl. ¶¶ 43-59; Bhardwaj Decl. ¶¶ 19-24. Continued sales by Seoul during the pendency of this suit will only exacerbate that prejudice to Lumileds.

3. At this crucial time in the AC LED markets, Seoul's infringing sales hurt Lumileds' reputation and create uncertainty about Lumileds' product quality

Lumileds, and its predecessors, has been a market leader in LED innovation since the 1960s, and has an impressive list of "first in the world" LED accomplishments. Holt Decl. ¶ 1. Not only is that track record important to Lumileds' employees, it is important to Lumileds' standing in the market with customers. And yet, Seoul's ongoing, infringing sales of Acriche products undermine Lumileds' position and reputation in the market. Lieberman Decl. ¶ 42. Every year that Seoul continues to market and sell the world's "first" AC LED—unlawfully using Lumileds' intellectual property—hurts Lumileds in ways difficult if not impossible to remedy at law.

Especially because the AC LED markets are relatively immature, and will grow at tremendous rates as this case heads for trial in 2013, this reputational harm is significant. Seoul's infringing sales will exacerbate a growing disadvantage for Lumileds in that customers and potential customers—purchasing Seoul products and being under the incorrect impression that Seoul technology has made AC LEDs possible—will have relative uncertainty about Lumileds' product characteristics and quality. Lieberman Decl. ¶ 42.

4. Every time Seoul sells Infringing AC LEDs to a new customer, that creates "adoption" customer switching costs that prejudice Lumileds

No industry standards govern the form, fit and function of AC LEDs. Each manufacturer (for example, Lumileds versus Seoul) may have AC LEDs with (i) differing electrical designs, such as different voltages or different contact-pad layouts; (ii) differing light quality and efficiency; and (iii) differing thermal properties. Bhardwaj Decl. ¶¶ 25-30; Lieberman Decl. ¶¶ 28-42. And because AC LEDs are not standardized, any lighting-product manufacturer seeking to use an AC LED—a potential customer for firms such as Lumileds and Seoul—must

design a lighting product for a *particular* AC LED, to accommodate the specific and non-standard design aspects of the AC LED. Bhardwaj Decl. ¶¶ 25-30; Lieberman Decl. ¶¶ 28-42.

Once any such customer has selected or "adopted" an AC LED to incorporate into a lighting product, such as a bulb, that customer cannot then switch suppliers (for example, from Seoul to Lumileds) without incurring "customer switching costs." The customer already would have qualified Seoul as a supplier, established a working relationship with Seoul, designed and tested lighting products to work with Acriche's technical parameters, and certified the finished lighting product with regulatory authorities. Bhardwaj Decl. ¶¶ 25-30; Lieberman Decl. ¶¶ 28-42. To then *switch* to another supplier, such as Lumileds, would force the customer to incur those costs all over again. This scenario effectively locks the customer into doing ongoing business with the initial supplier (Seoul), even if another supplier (Lumileds) has a superior product. Lieberman Decl. ¶¶ 28-42.

During the pendency of this suit, if Seoul were permitted to continue to sell Acriche products, every single customer relationship that Seoul consummates will accomplish that scenario: Not only will Lumileds lose the sale, Lumileds will lose the relationship, and Lumileds may not re-gain that relationship with products lawfully using proprietary and patented technologies unless it overcomes the artificial "customer switching costs" that Seoul will have created.

Overcoming these switching costs will require Lumileds to cut its price and/or provide a better-quality product by sufficient amounts to make switching worthwhile for the customer. Thus, the harm Seoul causes through its infringing sales is persistent and impossible to calculate because each buyer will assess the price/quality benefits of Lumileds relative to Seoul differently.

5. Every time Seoul sells Infringing AC LEDs to a new customer, that creates "supplier-specific learning by the buyer" customer switching costs that prejudice Lumileds

Each time that Seoul sells an infringing Acriche product to a new customer, during the pendency of this suit, not only will that create the initial "adoption" switching costs described above, it will create another kind of customer switching costs: "supplier-specific learning by the buyer over time." Seoul will not only establish the initial customer relationship, Seoul and the customer (using Lumileds' intellectual property without permission) will deepen their relationship through repeated transactions. The customer (and its engineers) will become increasingly familiar with the Acriche products and with Seoul (and its engineers). The customer will become increasingly reluctant to consider or switch to a new and superior supplier and product, such as Lumileds and the LUXEON H. Lieberman Decl. ¶¶ 28-42. Given the switching costs, the customer's reluctance to switch to a new supplier would be understandable and sensible. The switch to a new supplier would impose economic costs, because supplier-specific knowledge would have to be developed all over again.

6. Every time Seoul sells Infringing AC LEDs to a new customer, not only does that make the customer less likely to consider a Lumileds product, it makes Lumileds less able to design a product for the customer to consider

The same relationship described above—between Seoul as an AC LED supplier and a lighting-product manufacturer as an AC LED customer—not only imposes "learning" switching costs on the customer, it also gives Seoul a growing advantage in the marketplace, and places Lumileds at a growing disadvantage. Every customer relationship that Seoul consummates whiles this suit is pending will permit not just the customer to learn Seoul and Acriche products, it will permit Seoul to learn the customer. In other words, Seoul will learn the detailed customer needs and future plans, and will be able to customize new generations of AC LED

products to suit specific (high volume) customers. Lieberman Decl. ¶ 37. Because it will be deprived of those opportunities, due to Seoul's infringement, Lumileds will be harmed irreparably.

7. If unchecked, Seoul's infringing sales will hinder Lumileds' ability to innovate for future product generations

Not only will Seoul's infringing sales artificially inflate Lumileds' production costs for existing products, they will also hinder Lumileds' ability to innovate and manufacture advanced products in future generations. This is because increased manufacturing experience (which Seoul will continue to amass during this case, absent an injunction) provides a semiconductor manufacturer with the know-how necessary to manufacture the *next generation* of designs. And, in turn, relatively reduced manufacturing experience (which Lumileds will continue to suffer during this case, absent an injunction) means that a manufacturer may have to eschew or scale back certain features of new designs and products because it cannot manufacture them efficiently. Lieberman Decl. ¶ 44. Lumileds will not be able to manufacture those features efficiently because Seoul's infringement (during this case) will have deprived the learning opportunities created by sales volume and corresponding manufacturing volume. The damages resulting from Seoul's infringing sales on Lumileds' manufacturing capability and future design decisions will be virtually impossible to calculate, but nevertheless, threaten Lumileds' future position in the AC LED marketplace.

8. Seoul's infringing sales will deprive Lumileds of the vital market share required to forge customer relationships and reduce its AC LED manufacturing costs

Infringing sales by Seoul will of course have the effect of inflating Seoul's market share, and depressing Lumileds' market share. Because the AC LED markets are at a critical juncture, and for the reasons discussed above and in Dr. Lieberman's declaration, Seoul's unlawful capture of market share based on

infringement of the Lumileds Patents threatens irreversible harms. An AC LED manufacturer with substantial market share will enjoy substantial economies of scale, learning curve effects, reputational benefits and brand power, and will be better able to cover investment costs in R&D and facilities—all of which are required to achieve and maintain cost and technological leadership. Lieberman Decl. ¶ 42. In such an environment, market share is not simply an objective; a large share is necessary to achieve efficient scale, push down the learning curve, and fund continuing investment in R&D and physical plant. *Id.* at ¶¶ 60-62.

III. ARGUMENT

A. Applicable Legal Standard

This Court has the power to enter a preliminary injunction to prevent the violation and irreparable loss of patent rights. Section 283 of the Patent Act provides that courts "may grant injunction in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable." *See* 35 U.S.C. 283; *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 392 n.2 (2006); *Purdue Pharma L.P.* v. *Boehringer Ingelheim GMBH*, 237 F.3d 1359, 1363 (Fed. Cir. 2001) (affirming grant of preliminary injunction); *Hybritech, Inc.* v. *Abbott Labs.*, 849 F.2d 1446, 1449 (Fed. Cir. 1988) (affirming grant of preliminary injunction).

A motion for a preliminary injunction is evaluated according to the traditional four-factor test. The court weighs (1) the moving party's likelihood of success on the merits; (2) irreparable harm to the moving party; (3) the balance of harm between the parties; and (4) the public interest. *Winter v. NRDC*, 555 U.S. 7, 20 (2008); *see also eBay Inc.*, 547 U.S. at 391. Here, all four factors weigh in favor of granting a preliminary injunction to stop Seoul's infringement of Lumileds' patented AC-LED technology.

B. Lumileds Will Succeed on the Merits

To satisfy the first factor, Lumileds must demonstrate that, in light of the presumptions and burdens that will apply at a trial on the merits, Lumileds likely will prove that its patents are valid and infringed by Seoul's AC LED products. *See Sanofi-Synthelabo v. Apotex, Inc.*, 470 F.3d 1368, 1374 (Fed. Cir. 2006) (internal citations omitted); *see also Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1350 (Fed. Cir. 2001).

1. Seoul's Acriche A2, A3 and A4 Products Infringe The Lumileds Patents

Infringement is a two-step process. First, the Court must determine the scope and meaning of the patent claims. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (*en banc*). Second, the claims are compared to the accused products to determine whether they satisfy all limitations of at least one claim of the asserted patents. *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1535 (Fed. Cir. 1991). Although demonstrating infringement of just one claim in just one patent is sufficient to support a preliminary injunction, *Bio-Tech. Gen. Corp. v. Genentech, lnc.*, 80 F.3d 1553, 1562 n.8 (Fed. Cir. 1996), Lumileds will establish that Seoul is infringing ***numerous claims*** of the Lumileds Patents.

In support of this motion, Lumileds submits four declarations by two independent technical experts. Those experts are Drs. Russell Dupuis and Michael Pecht. Dr. Dupuis is currently a Professor and the Steve W. Chaddick Endowed Chair in Electro-Optics at the School of Electrical and Computer Engineering at the Georgia Institute of Technology. Before devoting his career primarily to scholarship, Dr. Dupuis worked in the areas of semiconductor materials and devices at Texas Instruments, Rockwell International and AT&T Bell Laboratories.

Dr. Pecht is an IEEE Fellow and the founder and Director of the CALCLE Electronic and Systems Center at the University of Maryland. He is also the

George Dieter Chair in Mechanical Engineering, and a Professor in Applied Mathematics, at the University of Maryland.

Dr. Dupuis declares that Seoul's Acriche A2, A3 and A4 products contain all limitations of at least claims 1, 4 and 16 of the '9924 Patent, and at least claims 1, 2 and 9 of the '249 Patent. Dr. Pecht declares that Seoul's Acriche A2, A3 and A4 products contain all limitations of at least claims 1, 5 and 9 of the '4924 Patent, and at least claims 1, 2 and 3 of the '235 Patent. *See generally* Dupuis Decls.; Pecht Decls.

In comparing Seoul's Acriche products to the claims of the Lumileds Patents, Drs. Dupuis and Pecht interpreted the claim language using the plain and ordinary meaning that would be understood and applied by a person of ordinary skill in the art ("POSITA") for each patent, at the time of each patent's invention. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc) ("The ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, *i.e.*, as of the effective filing date of the patent application."); *see also Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1369 (Fed. Cir. 2003) (there is a "heavy presumption" that claim terms carry their ordinary and customary meaning) (internal citation and quotation omitted); *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

2. The Lumileds Patents Are Presumed Valid

Every claim of an issued patent is presumed valid under 35 U.S.C. § 282. Seoul can overcome that legal presumption only by clear and convincing evidence. *Titan Tire Corp. v. Case New Holland, Inc.*, 566 F.3d 1372, 1377 (Fed. Cir. 2009) (a "patent enjoys the same presumption of validity during preliminary injunction proceedings as at other states of litigation") (citing *Canon Computer Sys., Inc. v. Nu-Kote Int'l, Inc.*, 134 F.3d 1085, 1088 (Fed. Cir. 1998); *IMPAX Labs., Inc. v.*

Aventis Pharms., Inc., 545 F.3d 1312, 1314 (Fed. Cir. 2008).

Unless Seoul comes forward with evidence that raises a substantial question of validity, this Court should conclude that Lumileds is likely to prevail on the issue of patent validity at trial. *See Titan Tires*, 566 F.3d at 1377 (noting that if "the alleged infringer does not challenge validity, the very existence of the patent with its concomitant presumption of validity satisfies the patentee's burden of showing a likelihood of success on the validity issue") (internal citation omitted).

C. Lumileds Will Be Irreparably Harmed If Seoul Is Not Enjoined From Further Infringement

The irreparable harms to Lumileds from Seoul's ongoing infringement as this case awaits trial in 2013 are summarized above, and set forth in the declarations of Dr. Lieberman, Michael Holt and Jy Bhardwaj. Dr. Lieberman is a Professor at UCLA's Anderson School of Management, and one of the foremost experts on market entry, "first mover" advantages, and competitive strategy. Mr. Holt is the CEO of Lumileds. Mr. Bhardwaj is the Vice President of Technology Research & Development at Lumileds.

This would not be the first case (nor one of just a few) in which a court properly found that when "a company pioneers an invention in the marketplace, *irreparable* harm flows from a competitor's attempts to usurp the pioneering company's market position and goodwill." *800 Adept, Inc. v. Murex Securities, Ltd.*, 505 F. Supp. 2d 1327, 1337 (M.D. Fla. 2007) (emphasis added), *rev'd on other grounds*, 539 F.3d. 1354; *id.* (collecting cases); *see also Emory University v. Nova Biogenetics, Inc.*, No. 1:06-CV-0141-TWT, 2008 WL 2945476, at *4 (N.D. Ga. July 25, 2008) (quoting *800 Adept* with approval).

Without an injunction, Seoul will continue to *steal sales, market share, reputation and customer goodwill in the AC LEDs markets at a critical time*. Lieberman Decl. ¶¶ 7, 24-26, 28-62; Holt Decl. ¶¶ 5-12. Seoul's infringement is

causing harms to Lumileds well recognized by courts around the country as irreparable. *See Visto Corp. v. Sproqit Techs., Inc.*, 413 F. Supp. 2d 1073, 1092 (N.D. Cal. 2006) (finding irreparable harm when patentee and infringer were direct competitors fighting for market share in a rapidly changing market); *TiVo Inc. v. Echostar Commc'n Corp.*, 446 F. Supp. 2d 664, 669-670 (E.D. Tex. 2006) (holding that a "loss of market share in [a] nascent market is a key consideration in finding that [a patentee] suffers irreparable harm," and finding irreparable harm because the patentee was "losing market share at a critical time in the market's development, market share that it [would] not have the same opportunity to capture once the market matures"), *rev'd on other grounds*, 516 F.3d 1290 (Fed. Cir. 2008); *Transocean Offshore Deepwater Drilling, Inc. v. GlobalSantaFe Corp.*, No. H-03-2910, 2006 WL 3813778, at *4 (S.D. Tex. Dec. 27, 2006) (finding irreparable harm because the infringer would steal sales and market share in a "developing market"); *see also Hynix Semiconductor Inc. v. Rambus Inc.*, 609 F. Supp. 2d 951, 980-84 (N.D. Cal. 2009) (finding irreparable harm based on a "loss of potential goodwill caused by [the patentee's] loss of market share" that "unquantifiably impacts [the patentee's] business relationships going forward"); *Power-One, Inc. v. Artesyn Technologies, Inc.*, No. 2:05-CV-463, 2008 WL 1746636, at *1 n.1 (E.D. Tex. Apr. 11, 2008) *aff'd*, 599 F.3d 1343 (Fed. Cir. 2010) (finding irreparable harm where the patentee and infringer were direct competitors, and the relevant market had been "recently created"); *Elantech Devices Corp. v. Synaptics, Inc.*, No. C 06–01839 CRB, 2008 WL 1734748, at *10 (N.D. Cal. Apr. 14, 2008) (finding irreparable harm on basis that loss of market share is difficult to calculate and compensate with money damages); *Commonwealth Scientific & Indus. Research Org. v. Buffalo Tech, Inc.*, 492 F. Supp. 2d 600, 605 (E.D. Tex. 2007) (finding that an award of damages cannot compensate a patentee for the loss of market position, because it is impossible to determine the portions of the market

the patentee would have secured but-for the infringement); *cf. Team Gordon, Inc. v. Specialized Bicycle Components, Inc.*, No. SACV 10-1379 AG (RNBx), 2010 WL 5058624, at *5 (C.D. Cal. Nov. 18, 2010) (finding irreparable harm, in a trademark dispute, because the trademark owner could suffer a loss of "competitive position" due to infringement).

Without an injunction, Seoul will continue to increase its cumulative sales and move further down its "learning curve," thereby reducing its costs. Of course, Seoul's infringing sales reduce Lumileds' cumulative sales and will slow Lumileds' manufacturing cost reductions accordingly. As a result, Lumileds' manufacturing costs will be artificially high (and Lumileds' profits artificially low). Seoul's sales also exclude Lumileds from the opportunities borne out of design and production relationships with customers. Bhardwaj Decl. ¶¶ 19-24; Lieberman Decl. ¶¶ 28-42. As Judge Whyte explained, this qualifies as irreparable harm:

> When Rambus loses a design win to an infringing alternative, its realistic alternative is to license its patents to the users of the infringing standard. While Rambus may collect royalties from such licensing, Rambus is shut out of the "innovation loop." This prevents Rambus from working closely with the users of its technology and hampers Rambus's ability to identify technical problems and direct its research efforts to solve them. . . . Rambus's exclusion from it is precisely the type of harm that money damages cannot remedy. Losing at the design stage harms Rambus's ability to cultivate the goodwill it might have garnered had its design been adopted. This loss of potential goodwill caused by Rambus's loss of market share unquantifiably impacts Rambus's business relationships going forward.

Hynix Semiconductor Inc., 609 F. Supp. 2d at 981-82 (N.D. Cal. 2009).

Without an injunction, Seoul will continue to work irreparable harm on Lumileds by stealing especially "sticky" customer relationships, including by imposing switching costs on AC LED customers. Bhardwaj Decl. ¶¶ 25-30;

Lieberman Decl. ¶¶ 28-42. Courts have long recognized that the loss of customer relationships imposes irreparable harms. As the Federal Circuit explained:

> Competitors change the marketplace. Years after infringement has begun, it may be impossible to restore a patentee's exclusive position by an award of damages and a permanent injunction. *Customers may have established relationships with infringers*. The market is rarely the same when a market of multiple sellers is suddenly converted to one with a single seller by legal fiat.

Polymer Techs. v. Bridwell, 103 F.3d 970, 976 (Fed. Cir. 1996) (emphasis added); *see also Visto Corp.*, 413 F. Supp. 2d at 1092 (finding irreparable harm on the basis that infringing sales could establish long-term customer relationships); *TiVo Inc.*, 446 F. Supp. 2d at 670 (E.D. Tex. 2006) (finding that defendant's infringement harmed patentee irreparably by stealing customer relationships, when those relationships were "sticky," *viz.* customers tended to stay with their initial supplier); *cf. Stuhlbarg Int'l Sales Co., Inc. v. John D. Brush & Co., Inc.*, 240 F.3d 832, 841 (9th Cir. 2001) (holding, in a trademark case, that evidence of threatened loss of prospective customers "certainly" supports a finding of the possibility of irreparable harm).

Without an injunction, Seoul will continue to harm Lumileds by stealing Lumileds' rightful place, reputation and market goodwill as the innovator that has made AC LED technologies possible. Holt Decl. ¶¶ 5-12; Lieberman Decl. ¶¶ 42, 62. That, too, is irreparable. *See, e.g., Commonwealth Scientific*, 492 F. Supp. 2d 600 at 605 (finding that damage to a patentee's brand, due to unlawful infringement, cannot be calculated); *Muniauction v. Thomson Corp.*, 502 F. Supp. 2d 477, 483 (W.D. Pa. 2007) (finding that harm to a patentee's reputation as an "innovator" is "not compensable by damages" and merits equitable relief), *rev'd on other grounds*, 532 F.3d 1318 (Fed. Cir. 2008); *Black & Decker Inc. v. Robert Bosch Tool Corp.*, No. 04 C 7955, 2006 WL 3446144, at *4 (N.D. Ill. Nov. 29,

2006) (granting injunction in part based on finding that continued infringement harmed Black & Decker's reputation as an innovator); *Wald v. Mudhopper Oilfield Servs., Inc.*, No. CIV-04-1693-C, 2006 WL 2128851, at *5-6 (W.D. Okla. Jul. 27, 2006) (granting injunction based on finding that patentee's "reputation for innovation" was irreparably damaged due to infringement).

And, without an injunction, Seoul's infringing sales during the pendency of this case represent a threat to Lumileds' ability to keep its employees and grow its business. Holt Decl. ¶¶ 13-17. That also constitutes irreparable harm. *See Sanofi-Synthelabo*, 470 F.3d at 1381 (citing potential lay-offs as evidence of irreparable harm, absent an injunction); *Bushnell, Inc. v. Brunton Co.*, 673 F. Supp. 2d 1241, 1247 (D. Kan. 2009), *appeal dismissed*, 2010 WL 2330637 (Fed. Cir. June 8, 2010) (finding that a reduction in income stream, related to infringement, could require lay-offs, which impose irreparable harm).

D. The Balance Of Hardships Tips Sharply In Favor Of Granting Lumileds Preliminary Relief

When balancing the hardships in a patent case between two competitors, district courts may properly be influenced by the patentee's showing of a likelihood of success on the merits. *Abbott Laboratories v. Sandoz, Inc.*, 544 F.3d 1341, 1362 (Fed. Cir. 2008) (affirming preliminary injunction, and finding that district court did not err in finding that the balance of hardships favored the patentee "in view of the likelihood that [patentee] will succeed in sustaining the validity and enforceability of its patents"). Because of that, the strength of Lumileds' showing that it is likely to prevail on the merits of its case weighs in Lumileds' favor on this factor.

All other considerations relevant to this factor also weigh in favor of Lumileds. Absent an injunction, Lumileds will suffer irreparable harm as set forth in this memorandum and in the declarations of Jy Bhardwaj, Michael Holt and Dr.

Lieberman. That harm will include reputational damage, loss of market share in new markets poised for explosive growth, loss of long-term customer relationships, loss of potential customer relationships (due to switching costs), foreclosed opportunities at product development and research and development, artificially inflated product costs, artificially deflated profits, and threats to employment of hundreds of valuable engineers. *See generally* Lieberman, Holt and Bhardwaj Decls.

As to Seoul, it chose to build an AC LED business using another's property, unlawfully, and so cannot be heard to complain of any effects of an injunction on it. *Windsurfing Int'l, Inc. v. AMF, Inc.*, 782 F.2d 995, 1003 n.12 (Fed. Cir. 1986) ("One who elects to build a business on a product found to infringe cannot be heard to complain if an injunction against continuing infringement destroys the business so elected.").

E. The Public Interest Would Be Served By A Grant of Preliminary Relief

The public interest weighs in favor of a preliminary injunction. First, entering an injunction protecting Lumileds' intellectual property is consistent with this nation's patent scheme, the Constitution, and the promotion of innovation. *See Patlex Corp. v. Mossinghoff*, 758 F.2d 594, 599 (Fed. Cir. 1985); *see also Pfizer, Inc. v. Teva Pharmaceuticals, USA, Inc.*, 429 F.3d 1364, 1382 (Fed. Cir. 2005) (holding that, by affording a patentee the enforcement of a preliminary injunction when the patentee has demonstrated likely validity and infringement, the court is "further[ing] [the] public policy inherent in the patent laws designed to encourage useful inventions by rewarding the inventor with a period of market exclusivity.").

Second, granting injunctive relief will help preserve jobs in the United States—including here in California—and will increase the chances that further jobs will follow. Holt Decl. ¶¶ 13-17.

IV. CONCLUSION

Philips respectfully requests an order enjoining Seoul from making, selling, offering to sell and/or importing LED devices infringing the ’9924 Patent, the ’4924 Patent, the ’249 Patent and/or the ’235 Patent—including but not limited to the Acriche A2, A3 and A4 products—in the United States during the pendency of this action.

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