

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

**ULTRAVISION TECHNOLOGIES, LLC**

**Plaintiff,**

**v.**

**LAMAR ADVERTISING COMPANY, LAMAR  
MEDIA CORPORATION, THE LAMAR  
COMPANY, L.L.C., LAMAR TEXAS LIMITED  
PARTNERSHIP, LIGHTING TECHNOLOGIES,  
INC., AND IRVIN INTERNATIONAL, INC.**

**Defendants.**

**Civil Action No. 2:17-cv-75**

**JURY TRIAL REQUESTED**

**FIRST AMENDED COMPLAINT**

Plaintiff Ultravision Technologies, LLC (“Ultravision”) files this Complaint for patent infringement against Defendants Lamar Advertising Company, Lamar Media Corp., The Lamar Company, L.L.C., Lamar Texas Limited Partnership (collectively, “Lamar”), American Lighting Technologies, Inc. d/b/a Lighting Technologies, Inc. (“Lighting Technologies”), and Irvin International, Inc. (“Irvin”) (collectively, “Defendants”) for infringement of U.S. Patent No. 9,514,663 (“the ’663 Patent”), entitled “Method of uniformly illuminating a billboard;” U.S. Patent No. 9,524,661 (“the ’661 Patent”), entitled “Outdoor billboard with lighting assemblies,” and U.S. Patent No. 9,542,870 (“the ’870 Patent”), entitled “Billboard and Lighting Assembly with Heat Sink and Three-Part Lens,” and U.S. Patent No. 9,589,488, entitled “LED Light Assembly with Three-Part Lens,” (collectively, “the Patents-in-Suit”), pursuant to 35 U.S.C. § 271 (copies of the Patents-in-Suit are attached as Exhibits A, B, C, and D respectively).

**I. PARTIES**

1. Plaintiff Ultravision is a corporation incorporated and existing under laws of the State of Delaware and is registered to do business in Texas. Ultravision has its principal place of business at 4542 McEwen Road, Dallas, Texas 75244.

2. Defendant Lamar Advertising Company is a publicly traded corporation incorporated and existing under laws of the State of Delaware, and has its principal place of business at 5321 Corporate Boulevard, Baton Rouge, Louisiana 70808. Lamar Advertising Company may be served through its registered agent, Capitol Services, Inc., at 1675 S. State Street, Suite B, Dover, Delaware 19901.

3. Defendant Lamar Media Corp. is a corporation incorporated and existing under laws of the State of Delaware, and has its principal place of business at 5321 Corporate Boulevard, Baton Rouge, Louisiana 70808. Lamar Media Corp. may be served through its registered agent, Capitol Services, Inc., at 1675 S. State Street, Suite B, Dover, Delaware 19901.

4. Defendant The Lamar Company, L.L.C. is a corporation incorporated and existing under laws of the State of Louisiana, and has its principal place of business at 5321 Corporate Boulevard, Baton Rouge, Louisiana 70808. The Lamar Company, L.L.C. may be served through its Texas registered agent, Capitol Corporate Services, Inc., 206 E. 9<sup>th</sup> Street, Suite 1300, Austin, Texas 78701-4411.

5. Defendant Lamar Texas Limited Partnership is a limited partnership organized and existing in Texas with its principal place of business at 811 Dallas Avenue, Houston, Texas 77002. The Lamar Company, L.L.C. is its general partner. Lamar Texas Limited Partnership may be served through its registered agent, Capital Corporate Services, Inc., 206 E. 9<sup>th</sup> Street, Suite 1300, Austin, Texas 78701-4411.

6. Defendant Lighting Technologies has represented itself as a corporation doing business at 1810 Barrancas Avenue, Pensacola, Florida 32502. Lighting Technologies has also referred to itself as American Lighting Technologies when accepting delivery of imported LED lighting materials at 1810 Barrancas Avenue, Pensacola, Florida 32502. Upon information and belief, Lighting Technologies may be served at 1810 Barrancas Avenue, Pensacola, Florida 32502. Based on information and belief, Lighting Technologies may also be served by and through its principal, Michael Eugene McGehee, at 3819 Salem Church Road, Jarrettsville, Maryland 21084.

7. Defendant Irvin is a corporation incorporated and existing under the laws of Florida, and has its principal place of business at 8105 Krauss Boulevard, Suite 102, Tampa, Florida 33619. Defendant Irvin may be served through its registered agent, Delia Irvin, at 8105 Krauss Boulevard, Suite 102, Tampa, Florida 33619.

## **II. JURISDICTION AND VENUE**

8. This is an action for patent infringement under the patent laws of the United States, 35 U.S.C. § 271.

9. This Court has personal jurisdiction over each Defendant. Upon information and belief, each Defendant has conducted and does conduct business within the State of Texas, directly and/or indirectly through intermediaries (including distributors, retailers, and other individuals or entities). Upon information and belief, each Defendant makes, uses, imports, ships, distributes, offers for sale, sells, installs, and/or advertises its products and/or services in the United States, the State of Texas, and the Eastern District of Texas.

10. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391 and 1400(b).

11. Ultravision has its headquarters in the Dallas-Ft. Worth Metroplex in Texas and operates a modular assembly, repair, testing, and storage facility in Allen, Texas. Much of the design and developmental activity was conducted in and around the Dallas-Ft. Worth Metroplex. Ultravision's employees have handled and continue to handle the design, development, testing, modular assembly, repair, distribution, marketing, and sale of its products out of its headquarters and related facilities in and around Dallas, Texas. Ultravision's employees physically reside in the Dallas-Ft. Worth Metroplex, including William Hall, Ultravision's Chief Executive Officer and an inventor, and David Auyeung, an inventor. David Auyeung resides in the Eastern District of Texas.

12. Lamar installs, maintains, services, and/or operates billboards all over the United States, including hundreds of billboards in towns, communities and on major thoroughfares in Texas and in the Eastern District of Texas. As one of the major players in outdoor advertising, upon information and belief, Lamar purchases and makes or has made, uses, offers for sale or lease, sells and leases lighting fixtures, billboards, and other products charged with infringement throughout the United States, including Texas.

13. Upon information and belief, Lamar's investment in billboards located in the Eastern District of Texas is significant. The Eastern District of Texas has extensive land area and is geographically located between significant population centers and, therefore, serves as a major crossroad with multiple major thoroughfares and interstate highways traversing East Texas.

14. Upon information and belief, Lamar installs or arranges to have installed the lighting fixtures that are charged with infringement on billboards that it owns, leases, and/or operates in Texas and throughout the United States. According to its website,

<http://www.lamar.com>, Lamar has employees and hires local contractors to service and maintain billboards in Texas, including contractors (e.g., electrical contractors) who install the lighting fixtures and other products that are charged with infringement herein.

15. Lamar operates a website, <http://www.lamar.com>, that is viewable in the Eastern District of Texas and elsewhere that, among other things, allows customers (and potential customers) to review Lamar's "Products," which include billboards of various sizes. Lamar's website provides a "Browse Inventory" function, which allows users to peruse its inventory throughout the United States. The "Browse Inventory" function on Lamar's website identifies thousands of billboards offered by Lamar that are available for advertising, along with "specifications," "pricing," "contacts," and potential "package" information that group multiple billboards together into a single purchase. Lamar's website also includes photographs of the billboards owned or operated by Lamar that are available for use or purchase for advertising. For example, according to its website, Lamar owns or operates several dozen billboards in and around Marshall, Texas alone. Lamar also owns or operates hundreds more billboards along major thoroughfares, such as Interstate Highway-20 or Interstate Highway-30, and even more billboards in other communities in the Eastern District of Texas.

16. Lamar also provides sales contacts located in the Eastern District of Texas and has offices at 4520 W. Cardinal Dr., Beaumont, TX 77705, and 2301 E. Erwin, Tyler, TX 75702.

17. Lighting Technologies operates <http://www.lightingtechnologies.com>, a website that is viewable in the Eastern District of Texas and elsewhere. Lighting Technologies offers to sell its products through its website and its distributors. These products include the products charged with infringement herein, hereinafter referred to as "Lighting Technologies' Accused Products". Its distributor Irvin states on its website, <http://www.marqueeled.com>, that Lighting

Technologies is the supplier of the products sold under the name Marquee LED that are charged with infringement herein, and that it is the exclusive distributor of such products. Thus, upon information and belief, Lighting Technologies' endeavors to serve the market for LED billboard lighting in the Eastern District of Texas directly or through its distributor(s).

18. Upon information and belief, Irvin offers for sale and distributes its products, including the Marquee LED products supplied by Lighting Technologies, all over the United States, including the State of Texas and the Eastern District of Texas. Irvin's website, <http://www.marqueeled.com>, has an (800) contact number, and an online form that prospective customers can fill out to obtain more information or a quote for the infringing Marquee LED (and other products), or to "refer a friend."

19. Irvin's interactive features are not restricted by geography. In fact, the website specifically targets customers in Texas by providing a link to a brochure for the Marquee LED that touts the annual savings that can be achieved from purchasing and installing Marquee LED products on various sizes of billboards in different regions throughout the United States. The brochure includes specific annual savings calculations for the "West South Central" region, which includes Texas. Upon information and belief, Irvin also designs and installs billboards for its customers, such as Lamar. Upon information and belief, those billboards include Irvin's Marquee LED products and/or Lighting Technologies' Accused Products. Therefore, Lighting Technologies, together with Irvin as the distributor of its LED billboard lighting products, have offered to sell, have sold, and have intentionally and voluntarily placed infringing products into the stream of commerce with the expectation and understanding that those products will be sold, purchased, and/or used by its customers, such as Lamar and other billboard owners and operators, in the State of Texas and the Eastern District of Texas.

20. Upon information and belief, Lamar has met with Irvin about purchasing Marquee LED products to install on its billboards that it owns or operates.

21. Lamar prominently features other billboards on the home page of its website, <http://www.lamar.com>. Based upon these photographs and upon information and belief, as shown and explained below, Lamar has installed the Marquee LED products and/or Lighting Technologies' Accused Products to illuminate these billboards as well.



22. Upon information and belief, Lamar is in the process of installing the Marquee LED products and/or Lighting Technologies' Accused Products on other billboards that it owns or operates throughout the Eastern District of Texas.

23. As a result, each Defendant has committed the tort of patent infringement throughout the United States, within the State of Texas and, particularly, within the Eastern District of Texas.

### **III. FACTUAL BACKGROUND**

#### **A. Ultravision Invested Substantial Money and Time to Design, Develop, and Test a New LED Billboard Light.**

24. The Chief Executive Officer of Ultravision, William Hall, has a long-standing career in the commercial lighting and video billboard industry. Mr. Hall formed Ultravision's predecessor, Ultravision Holdings, LLC ("Ultravision Holdings"), in 2010 to focus on LED displays and lights for the billboard industry. Ultravision was formed in 2014 to formalize a joint venture arrangement with Active Media Services, Inc., doing business as Active International ("Active"), Active is one of the world's largest purchasers of media advertising. Pursuant to the joint venture transaction, Ultravision Holdings contributed substantially all of its assets, including all of its intellectual property (e.g., patents and trade secrets) and contract rights, to Ultravision. The Patents-in-Suit have been assigned to Ultravision, and Ultravision owns the rights and interests pertaining thereto. Ultravision has become a leading innovator, designer, manufacturer, and distributor of high-efficiency digital video displays, LED lighting, and electronic scoreboards.

25. Ultravision's management and design team has extensive experience in the LED lighting and LED digital advertising industry. Its displays have been installed throughout the world, including at New York's Times Square and London's Piccadilly Circus. Most recently, one of Ultravision's projects for a customer won an award for Europe's best LED display and the Best Original Digital Billboard by the Daily Digital Out of Home ("DOOH") on-line publication in London in December 2015.

26. In 2011, Lamar approached Ultravision about designing an LED lighting assembly that could replace existing billboard lighting with advanced LED technology. Advanced LED fixtures offer substantial savings in electricity and in longevity, but LED lighting



fixtures available to Lamar at the time did not light the billboard in a satisfactory manner. Lamar wanted Ultravision to develop something new that would meet Lamar's needs and the needs of other industry participants. Lamar asked Ultravision to design and develop an improved LED lighting fixture that would surpass existing LED technology.

27. Ultravision dedicated significant technical effort and money to invent, design, develop, manufacture, assemble, test, and calibrate a number of improved LED lighting fixtures that surpassed existing LED technology. As discussed below in paragraphs 60–65, Ultravision filed patent applications to protect some aspects of these improved LED light fixtures, associated processes, and related billboards. Those filings have resulted in multiple issued patents.

28. Ultravision's improved LED designs represented a departure from prior approaches, as Ultravision used optical elements to refract the light emitted from the LED in a desired manner, as opposed to using reflective mirrors or other ways of directing light. Through this and other improvements, Ultravision's designs addressed and overcame a number of challenges that previous technology had not solved. For example, Ultravision's improved LED designs distribute light onto the flat surface of a billboard in a controlled manner to reduce the effects of "hot spots" or "dark spots," which are areas of a billboard that are brighter or darker, respectively, than other areas of the same billboard. Both "hot spots" and "dark spots" limit visibility. Ultravision's improved LED designs also reduce light spillage beyond edges of the billboard, which not only conserves energy but also limits environmentally harmful light pollution. In addition, Ultravision's improved designs addressed and overcame the problem of dissipating the substantial heat generated by LEDs. Ultravision's improved designs have other benefits as well, such as decreased need for maintenance and replacement.

**B. Lamar Improperly Used and Disclosed Ultravision's Confidential Information.**

29. On October 19, 2012, the Lamar representative with whom Ultravision had met and to whom it disclosed its confidential information and shared confidential prototypes filed Articles of Organization for a Limited Liability Company named 1810 Barrancas, LLC in the state of Florida, listing himself as the registered agent and the manager of 1810 Barrancas, LLC. According to official records, 1810 Barrancas LLC is located at P.O. Box 1313, Pensacola Florida 32591. 1810 Barrancas LLC owns the property and pays the taxes at 1810 Barrancas Ave, Pensacola, Florida 32502. Upon information and belief, the Lamar representative and/or 1810 Barrancas, LLC purchased that property in October 2012. Thus, upon information and belief, 1810 Barrancas, LLC is an entity that is related to Lamar through its representative.

30. Upon information and belief, Lighting Technologies moved its operations from Atlanta, Georgia to 1810 Barrancas Avenue, Pensacola, Florida 32502, about the same time that the Lamar representative formed 1810 Barrancas, LLC. As shown below, 1810 Barrancas Avenue, Pensacola, Florida 32502 is the address currently listed on its website, <http://www.lightingtechnologies.com>. In addition, Lighting Technologies also showed a photograph of a building above its 1810 Barrancas address, on its website, <http://www.lightingtechnologies.com>.



**Lighting Technologies, Inc.**  
1810 Barrancas Avenue  
Pensacola, FL 32502  
850-462-1790 phone  
850-462-1794 fax

Lighting Technologies actually resides at the 1810 Barrancas address, but the photograph on the website does not accurately depict the building that presently exists on the property. The building that actually is located at 1810 Barrancas Avenue, with the “Lighting Technologies” sign and logo, is shown below.



31. As shown and discussed above in paragraphs 12–23 and also as shown and discussed below in paragraphs 35–38, Lamar has purchased and continues to purchase products,

directly or indirectly, from Lighting Technologies. Upon information and belief, Lamar representative(s), directly or through 1810 Barrancas, LLC, and/or Lamar receives financial benefit from Lighting Technologies. Specifically, upon information and belief, Lamar representative(s) and/or Lamar receives financial benefit derived from Lighting Technologies' sale of the products at issue, including the sale of such products to distributors like Irvin.

**C. Lighting Technologies, Irvin, and Lamar Make, Use, Sell, Offer for Sale, or Import LED Light Fixtures for Billboards.**

32. Upon information and belief, Lighting Technologies has arranged to have LED products manufactured in Taiwan by Hergy Lighting Technology Corporation, having its address as 9F-1, No. 13, Sec. 2, Beitou Road, Beitou District, Taipei 112, Taiwan, and to have the products imported into the United States. Upon information and belief, numerous container(s), pallet(s), crate(s) and thousands of pounds of LED products have been imported from Kaohsiung Port to Miami, Florida, for delivery to Lighting Technologies at 1810 Barrancas Avenue, Pensacola, Florida 32502.

33. In fact, Lighting Technologies' products include an optical element positioned over each LED that is very similar to Ultravision's confidential designs that were shared with Lamar and, as described below in detail, are intended to operate in a similar fashion. Upon information and belief, Lighting Technologies started selling its competing LED lighting assembly for billboards after Ultravision developed and shared its multiple prototypes and confidential information with Lamar. Also, upon information and belief, Lighting Technologies developed its competing LED lighting assembly for billboards only after Lamar improperly disclosed Ultravision's proprietary information to Lighting Technologies and its representatives.

34. Lighting Technologies' Accused Products include, but are not limited to, products having the following part numbers: LTBB-7022-NRA-1-3, LTBB-7044-NRA-1-1,

LTBB-7044-NRA-1-2, LTBB-7044-NRA-1-3, LTBB-7022-NRB-1-3, LTBB-7044-NRB-1-1, LTBB-7066-NRB-1-4, LTBB-7022-NRA-1-1, and LTBB-7022-NRA-1-4.

35. Irvin sells a line of Lighting Technologies' products under the name "MarQueue LED." Based on representations made by Irvin on its website, MarQueue LED is a marketing name for Lighting Technologies' Accused Products. Irvin represents on its website that it and Lighting Technologies have signed an "exclusive agreement that makes Irvin the exclusive distributor [of Lighting Technologies' products] to the outdoor advertising industry." Irvin's website states that its MarQueue LED is "manufactured by Lighting Technologies, Inc." And, under the caption "Lighting Technologies," Irvin states that:

The team at Lighting Technologies (LTI) is comprised of experts with decades of experience specifically in LED. That's an important fact because LED is nothing like traditional lighting. Moreover, designing an LED that meets the unique challenges of billboard lighting is no easy task. But with input from one of the industry's largest and most respected billboard companies, LTI's team has put its knowledge and skills to work. The result: MarQueue LED.

36. Irvin's website also shows the same name and logo that appears on the sign on the building located at 1810 Barrancas, Pensacola, Florida, 32502, which is owned by Lamar representative's company, 1810 Barrancas, LLC.

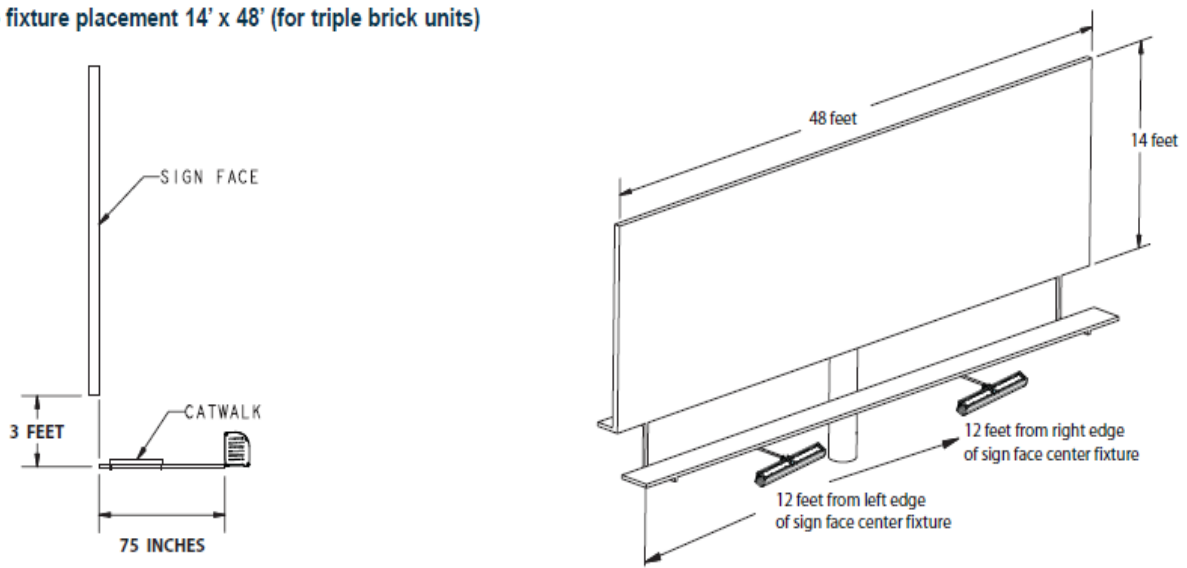
37. Irvin touts that the MarQueue LED was "developed with input from one of the largest and most respected billboard companies in the U.S." Upon information and belief, that billboard company was Lamar. Irvin further claims that the MarQueue LED was "built . . . for billboards, with the help of some of the most respected names in Outdoor" that resulted in a "one-of-a-kind billboard light for the industry." Again, upon information and belief, those "most respected names" includes Lamar and its representatives. Lamar has repeatedly endorsed the

MarQueue LED, and a Lamar representative is actually quoted on Irvin’s website touting its purchase and use of the MarQueue LED and/or Lighting Technologies’ Accused Products.

38. Upon information and belief, Lamar has purchased MarQueue LED and/or Lighting Technologies’ Accused Products from Irvin and/or from Lighting Technologies and installed it on billboards that Lamar owns and/or operates. Upon information and belief, Lamar has purchased the bulk of the MarQueue LED products and/or Lighting Technologies’ Accused Products sold by Irvin and/or by Lighting Technologies to date. In fact, Irvin states on its MarQueue LED website that it has “OVER 50,000 BILLBOARD LED LIGHTS IN THE FIELD.”

39. Like Ultravision’s LED designs, the MarQueue LED and/or Lighting Technologies’ Accused Products is installed on billboards to illuminate the billboard display, such as the Lamar Billboards. As shown below, the installation guide for MarQueue LED instructs purchasers how to install MarQueue LED on billboards:

Two fixture placement 14' x 48' (for triple brick units)



First fixture is 12' centered from left edge of sign face. Second is 12' from right edge centered. 24' center to center.

[http://www.marqueeled.com/pdf/Irvin\\_MarQueueLED\\_Install\\_Guide.pdf](http://www.marqueeled.com/pdf/Irvin_MarQueueLED_Install_Guide.pdf)

40. The installation guide for the MarQueue LED further instructs purchasers how to install MarQueue LED on billboards of various sizes as follows:

**MarQueue Board Sizes and Corresponding MarQueue Options**

Size of Board	Skirted	MarQueue Style	Total Watts*	Quantity	Total Lumens*	DLC Compliant #
12' x 24'	No	Single Brick	48W	1	4,650 lm	LTBB-7022-NRA-1-3-SLU
12' x 24'	No	Double Brick	98W	1	8,200 lm	LTBB-7044-NRA-1-1-SLU
12' x 24'	Yes	Single Brick	48W	1	4,650 lm	LTBB-7022-NRB-1-3-SLU
12' x 24'	Yes	Double Brick	98W	1	8,200 lm	LTBB-7044-NRB-1-1-SLU
10' x 32"/40", 10'6" x 36'	Yes	Single Brick	96W	2	9,300 lm	LTBB-7022-NRB-1-3-SLU
	Yes	Double Brick	196W	2	16,400 lm	LTBB-7044-NRB-1-1-SLU
14' x 48'	Yes	Double Brick	300W	3	32,800 lm	LTBB-7044-NRB-1-1-SLU
14' x 48'	Yes	Triple Brick	300W	2	26,000 lm	LTBB-7066-NRB-1-4-SLU

[http://www.marqueeled.com/pdf/Irvin\\_MarQueueLED\\_Install\\_Guide.pdf](http://www.marqueeled.com/pdf/Irvin_MarQueueLED_Install_Guide.pdf)

41. According to the specification sheets taken from the MarQueue LED website, MarQueue LED products have multiple rows or groupings of LEDs. These LEDs have been designed such that, when installed on the billboard, they are directed toward the display surface of the billboard, as in the Lamar billboards.



[http://www.marqueeled.com/pdf/Irvin\\_MarQueue\\_LED\\_Spec\\_Sheet.pdf](http://www.marqueeled.com/pdf/Irvin_MarQueue_LED_Spec_Sheet.pdf)

42. Also, as shown above in paragraph 41 and described below, the MarQueue LED has optical elements that are also positioned into two rows. And each optical element is positioned over each LED in order to cover each LED. As stated on Irvin’s website, these optical elements, described by Irvin as a “Total Internal Reflectance” optic and the “Tiny, Mighty TIR Optic,” direct the light toward the billboard surface. Further, as repeatedly explained on Irvin’s website, the optic was designed “with the sole purpose of ensuring that EACH individual LED’s light covers an extremely large portion of the billboard face (in some instance, the ENTIRE face),” such that there are “no hot spots,” “no dark spots,” “just seamless, even coverage—side to side, top to bottom,” as in the Lamar billboards.

43. The following excerpts and images are all taken from Irvin’s website, <http://www.marqueeled.com>:

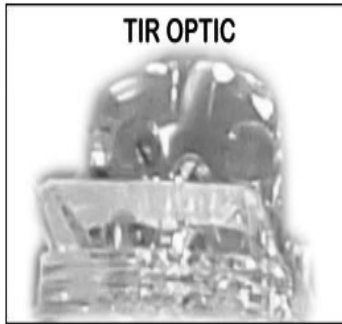


**Without reflectors, how does MarQueue LED direct light to the billboard face?**

The workhorse of the MarQueue LED is a highly engineered, acorn sized lens cover that fits over each LED. Known as a TIR (Total Internal Reflectance) optic, this patented/patent-pending feature was precision crafted with the sole purpose of ensuring that EACH individual LED's light covers an extremely large portion of the billboard face (in some instance, the ENTIRE face). It is the only lens of its kind in the industry.

[http://www.marqueeled.com/MarQueue\\_LED\\_FAQ.html](http://www.marqueeled.com/MarQueue_LED_FAQ.html)

## The MarQueue LED Difference



### The Tiny, Mighty TIR Optic

The jewel of MarQueue LED is in a small prismatic lens no bigger than an acorn. This highly engineered, patented and patent-pending element is comprised of hundreds of angles and covers each of the MarQueue LED's individual LEDs. These Total Internal Reflectance (TIR) Optics (patented optics and other patents pending) were designed with the sole purpose of ensuring that EACH LED covers an extremely large portion of the billboard face (in some instance, the ENTIRE face).

Our novel approach to LED billboard lighting is counter to our competitors, who standardly utilize a combination of reflectors and LEDs with jobs specific to a small portion of the board. With such designs, should an LED go out, a portion of the billboard would go noticeably dark. Our approach ensures that should an LED go out, that outage would be unrecognizable to the naked eye because the remaining LEDs are covering the same area.

[http://www.marqueeled.com/MarQueue\\_LED\\_Difference.html#Providing](http://www.marqueeled.com/MarQueue_LED_Difference.html#Providing)

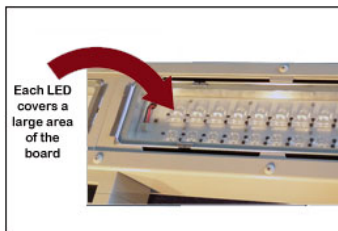


### No Reflectors – by Design

MarQueue LED has no reflectors. Why? With 20 years of experience working with LEDs, the manufacturer learned first-hand that reflectors can offer challenges when utilized in conjunction with LEDs. The tremendous heat generated by LEDs can melt reflectors and/or corrode the reflective material. So to be clear, if reflective material starts to bake and chip off and the reflector has been relied upon to do part of the work, a unit's performance can be diminished over time.

MarQueue LED strictly utilizes Total Internal Reflectance (TIR) Optics to direct light onto the billboard. These highly engineered, patent pending lenses are comprised of hundreds of angles and cover each of the MarQueue LED's individual LEDs. They were designed with the sole purpose of ensuring that EACH LED covers an extremely large portion of the billboard face (in some instance, the ENTIRE face). No reflectors needed here.

[http://www.marqueeled.com/MarQueue\\_LED\\_Difference.html#Providing](http://www.marqueeled.com/MarQueue_LED_Difference.html#Providing)



### No Hot Spots or Dark Spots. Ever.

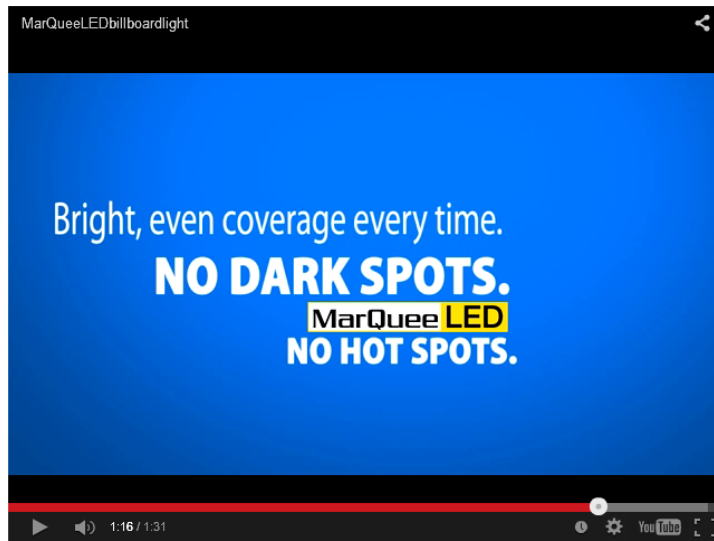
The dreaded hot spots and dark spots can be seen on billboards when light is so specifically placed that it renders one portion of the board with too much light and other portions wanting for more. With MarQueue LED's novel approach to LED billboard lighting, hot spots and dark spots vanish. Other lighting options have specific LEDs lighting smaller, specific portions of the billboard. Not MarQueue LED.

Highly engineered, patent-pending lenses (known as TIR or Total Internal Reflectance Optics) are comprised of hundreds of angles and cover each of the MarQueue LED's individual LEDs. They were designed with the sole purpose of ensuring that EACH LED covers an extremely large portion of the billboard face (in some instance, the ENTIRE face). No hot spots. No dark spots. Just seamless, even coverage – side to side, top to bottom.

[http://www.marqueeled.com/MarQueue\\_LED\\_Difference.html#Providing](http://www.marqueeled.com/MarQueue_LED_Difference.html#Providing)



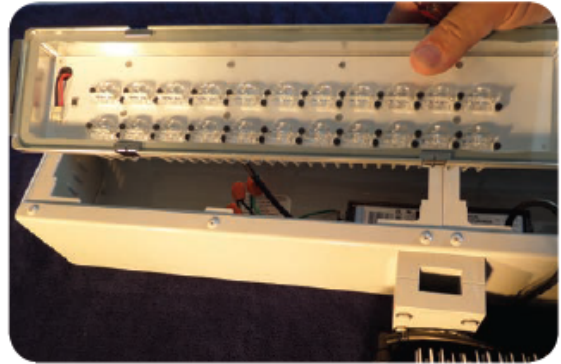
<http://www.marqueeled.com/index.html>



[http://www.marqueeled.com/MarQueue\\_LED\\_Videos.html](http://www.marqueeled.com/MarQueue_LED_Videos.html)

### The Tiny, Mighty TIR Optic

The jewel of MarQueue LED is in a small prismatic lens no bigger than an acorn. This highly engineered, patent-pending element is comprised of hundreds of angles and covers each of the MarQueue LED's individual LEDs. These Total Internal Reflectance (TIR) Optics (patented optics and other patents pending) were designed with the sole purpose of ensuring that EACH LED covers an extremely large portion of the billboard face (in some instance, the ENTIRE face).



<http://www.marqueeled.com/pdf/MarQueueLEDBrochureLowres.pdf>

### No Reflectors – by Design

MarQueue LED has no reflectors. Why? With 20 years of experience working with LEDs, the manufacturer learned first-hand that reflectors can offer challenges when utilized in conjunction with LEDs. The tremendous heat generated by LEDs can melt reflectors and/or corrode the reflective material. So to be clear, if reflective material starts to bake and chip off and the reflector has been relied upon to do part of the work, a unit's performance can be diminished over time.

### No Hot Spots or Dark Spots. Ever.

The dreaded hot spots and dark spots can be seen on billboards when light is so specifically placed that it renders one portion of the board with too much light and other portions wanting for more. With MarQueue LED's novel approach to LED billboard lighting, hot spots and dark spots vanish. Other lighting options have specific LEDs lighting smaller, specific portions of the billboard. Not MarQueue LED. Highly engineered, patented lenses (known as TIR or Total Internal Reflectance Optics) are comprised of hundreds of angles and cover each of the MarQueue LED's individual LEDs. They were designed with the sole purpose of ensuring that EACH LED covers an extremely large portion of the billboard face (in some instance, the ENTIRE face). No hot spots. No dark spots. Just seamless, even coverage – side to side, top to bottom.

<http://www.marqueeled.com/pdf/MarQueueLEDBrochureLowres.pdf>

44. Actual examples of “Total Internal Reflectance Optics” found in the Marquee LED and/or Lighting Technologies’ Accused Products are shown below.



45. Irvin states on its website and in the technical specification for the Marquee LED, shown below, that Marquee LED is designed such that areas beyond edges of the display surface receive substantially no illumination from each of the LEDs, so there is “virtually no light spillage.”

- Dark Skies design, virtually no light spillage

[http://www.marqueeled.com/pdf/Irvin\\_MarQuee\\_LED\\_Spec\\_Sheet.pdf](http://www.marqueeled.com/pdf/Irvin_MarQuee_LED_Spec_Sheet.pdf)

- Dark Skies design, virtually no light spillage

[http://www.marqueeled.com/pdf/Irvin\\_MarQueeLED\\_Solar\\_Promo.pdf](http://www.marqueeled.com/pdf/Irvin_MarQueeLED_Solar_Promo.pdf)

46. The accused products include heat sinks, as shown below.

**What is a heat sink and why is it important?**

The heat sink helps to circulate and dissipate the large amount of heat created by LEDs. Most solidly performing units opt for “passive” heat sinks, meaning there no moving parts so no chance of the cooling mechanism failing. However, most heat sinks lay flat at the bottom of the unit, under the LED mechanism. In such positioning, gravity takes hold and the air moves up first, directly into the backside of the LED mechanism. It will eventually disperse, but not without needlessly heating the LED first. MarQuee LED is different, because the LED and heat sink are perpendicular to the bottom of the unit, air moves more freely and the LED mechanism remains cooler.

[http://www.marqueeled.com/MarQuee\\_LED\\_FAQ.html](http://www.marqueeled.com/MarQuee_LED_FAQ.html)

The secret to such LED longevity is a solidly performing heat sink to disperse heat. Most units opt for "passive" heat sinks, meaning there are no moving parts so no chance of the cooling mechanism failing. But where many units have issue is in the direction the air is allowed to flow. Heat sinks are typically positioned under the LED mechanism, and most LED mechanisms sit on the bottom of a unit's housing. When air wants to move and gravity takes hold, the first place the air moves is up, directly into the backside of the LED mechanism. It will eventually disperse the heat throughout the housing but not without needlessly heating the LED first. Remember: As temperature goes up, LED life goes down.

MarQueue LED is different. Rather than lying horizontally, our LED mechanism (and thereby heat sink) is perpendicular to the bottom of the unit. When the unit creates heat and gravity pulls it up, the heat move throughout the housing and not first onto the backside of the LED mechanism. The LED remains as cool as possible while the heat circulates and dissipates within the housing and then out.

[http://www.marqueeled.com/MarQueue\\_LED\\_Difference.html#Providing](http://www.marqueeled.com/MarQueue_LED_Difference.html#Providing)



[http://www.marqueeled.com/MarQueue\\_LED\\_Gallery.html](http://www.marqueeled.com/MarQueue_LED_Gallery.html)

47. As described above, Irvin has made a number of claims about its products that describe the same technology, know-how and benefits of prototypes that Ultravision developed

and shared with Lamar. Irvin's marketing and physical products therefore reflect design details contained in confidential information Ultravision shared with Lamar.

48. Irvin repeatedly states on its website that its MarQueue LED products are "patented" and that it has "patents pending." For instance, as shown above in paragraph 43, Irvin references "patented optics and other patents pending" in relation to and under the caption "The Tiny, Mighty TIR Optic" and "Total Internal Reflectance (TIR) Optics." In addition, Irvin refers to the "[h]ighly engineered, patent-pending lenses (known as TIR or Total Internal Reflectance Optics)." Upon information and belief, the MarQueue LED products contain no marks or other notices identifying any United States patents that pertain or relate to the MarQueue LED products. No patent numbers relating to the MarQueue LED products are found on the MarQueue LED product website. And, upon information and belief, there are no such patents or any issued patents pertaining to the optics.

49. Irvin states on its website that the MarQueue LED products, which it purchases from Lighting Technologies, are "Made in America."

50. Lighting Technologies' Accused products, including the MarQueue LED, are collectively called the "LED Accused Products" herein. Upon information and belief, Lamar has purchased LED Accused Products and installed them on billboards that it owns or operates. Billboards that have LED Accused Products installed on them are hereinafter called the "Accused Billboards."

**D. Industry Standards Incorporate Ultravision's Technology and Procedures.**

51. Industry groups, such as the Outdoor Advertising Association of America ("OAAA"), have made recommendations about the illumination used for billboards.

52. The OAAA, of which Lamar is a member, states it represents the "Nation's Out of Home Advertising Industry." Upon information and belief, Lamar representatives and

employees actively participate in the OAAA as well on the committee that prepared, reviewed, adopted and offered LED Lighting Guidance for Outdoor Advertising Owners and Operators in 2013 (hereafter referred to as “OAAA Guidelines”). Upon information and belief, Lamar has followed these OAAA Guidelines in the testing, selection, purchase, installation, and use of the LED Accused Products from Lighting Technologies and Irvin.

53. Consistent with the advantages of Ultravision’s technology, the OAAA Guidelines emphasize the value of “Uniformity of Illumination” and the need for “a smooth, even plane of lighting across the face of the display, sufficient to satisfactorily illuminate the display under normal conditions, and with no hot spots, shadows, flares, striations, banding or gradients visible to the naked eye at typical viewing distances during typical viewing interval.” Also, consistent with Ultravision’s technology and multiple claims of the Patents-in-Suit, the OAAA Guidelines also emphasize the importance of the optical design, stating:

Superior optical design drives every aspect of fixture design. A superior optic, satisfying the criteria outlined in the Basic Lighting Guidance, has several functions:

- Provides a uniform plane of illumination, free of shadows, hot spots, flares or other errors.
- Limits stray light. This is crucial in mitigating future Dark Skies initiatives.
- Directs the output of every LED onto the target, so that every possible watt is used for illumination.
- Reduces the number of LEDs, requiring less wattage compared to less sophisticated designs.
- Reduced wattage and fewer LED’s require a smaller heat sink capacity thus allowing a smaller form factor.

54. The OAAA Guidelines go on to state as follows:

The optical design shall be such, that in the event of LED failure, only the overall illumination level of the display is reduced, not specific areas within the display. Each optic should direct the output of each individual LED onto the entire display (holistic approach), rather than individual LEDs being aimed or directed at

individual sections of the display (zoned approach). Failure of up to 15% of the LEDs in a fixture shall not result in a readily apparent reduction in display illumination.

LED failures in zoned designs without sufficient coverage overlap will result in corresponding areas of reduced illumination within the display, which will be apparent to the public and to the advertiser. In a zoned rather than holistic optical design scenario, the photometric evaluation shall, in addition to showing the buyer the full-power performance of the fixture, also show projections of billboard target illumination in various partial LED failure modes, so that full lighting coverage can be demonstrated even in the event of partial failure.

The nature of the custom optic shall be such that extensions (cutouts) are fully illuminated, with no apparent visible color difference between the extension and the main body of the display. Additionally, sufficient light shall be directed onto the skirt (apron) of the display such that the display is appropriately framed, and the operators' brand is visible and identifiable. Downlight and glare to oncoming traffic shall be minimized to the extent possible.

It cannot be stressed strongly enough that advanced optical design is an absolutely critical element in choosing a lighting fixture. Not only is this a technical and practical necessity upon which the overall fixture design is dependent, but the ability to understand the requirement and produce the optic demonstrates both technical expertise on the part of the vendor, and the willingness of the vendor to make the quite significant commitments necessary to satisfy the requirements specific to our industry. This commitment is a necessary factor as we choose long-term suppliers to our industry.

55. Regarding the need for a heat sink, the OAAA Guidelines emphasize the need for a heat sink to dissipate heat, stating:

Although LEDs generate very little heat compared to other light sources, heat produced at the semiconductor level must be dissipated for the LED to reach its design lifespan. Thus, thermal management is a critical element in fixture design, and an inferior or underperforming heat sink design will dramatically shorten the life of the light engine.



The circuit board containing the LEDs shall be thermally coupled to the heat sink either by means of heat-conductive compound or adhesive (acceptable) or by precise machining of the heat sink in the circuit board mounting area such that there are no voids between the heat sink and the circuit board (preferred).

56. The OAAA Guidelines also state that a photometric chart and actual readings from an actual billboard should be provided. And the OAAA Guidelines further recommend that:

Prior to viewing the fixture on the street, a white board test should be performed to identify any banding, striations, shadows, hot spots, etc. These inaccuracies will be much more apparent on a full-size white board than on a street location with copy. If at all possible, this test should be done in a controlled warehouse environment so that any competing light sources can be eliminated.

57. The OAAA Guidelines also recommend that “once all due diligence is complete, commence actual field tests. Nothing beats the trained eye.”

58. The OAAA Guidelines further state in summary:

Industry-specific LED lighting has the ability to dramatically improve the viewing experience for advertisers and consumers, and to also manifest advantages to operators. Conformance with basic guidelines will guarantee that owners and operators in the outdoor industry receive full value for the considerable investment involved.

To recap the primary considerations when researching and evaluating LED lighting, the following are musts:

- Conformance with the Basic Lighting Guideline
- Superior optical design
- Minimum number of fixtures per structure

59. Upon information and belief, the LED Accused Products comply with the OAAA Guidelines. Further, in view of the foregoing, upon information and belief, Lighting Technologies and/or Irvin provided information that showed the LED Accused Products

conformed with the OAAA Guidelines to Lamar representatives who were involved in the adoption of those Guidelines, such as “photometric charts or white board tests that identify ‘any banding, striations, shadows, hot spots, etc.’” Upon information and belief, Lamar has followed the OAAA Guidelines, particularly, but not limited to, in the selection, testing and evaluation of LED Accused Products for installation and use on the Accused Billboards.

**E. Ultravision Filed Patent Applications for the Novel LED Billboard Lighting Assemblies and the Patent Office Has Issued Multiple Patents.**

60. Ultravision filed patent applications that have resulted in the issuance of the Patents-in-Suit.

61. On December 6, 2016, the United States Patent and Trademark Office issued U.S. Patent No. 9,514,663 (“the ’663 Patent”), entitled “Method of Uniformly Illuminating a Billboard,” after full and fair examination. Ultravision is the assignee of all rights, title, and interest in and to the ’663 Patent and possesses all rights of recovery under the ’663 Patent, including the right to recover damages for present, past, and future infringement. A true and correct copy of the ’663 Patent is attached as Exhibit A. The ’663 Patent is valid and enforceable.

62. On December 20, 2016, the United States Patent and Trademark Office issued U.S. Patent No. 9,524,661 (“the ’661 Patent”), entitled “Outdoor Billboard with Lighting Assemblies,” after full and fair examination. Ultravision is the assignee of all rights, title, and interest in and to the ’661 Patent and possesses all rights of recovery under the ’661 Patent, including the right to recover damages for present, past, and future infringement. A true and correct copy of the ’661 Patent is attached as Exhibit B. The ’661 Patent is valid and enforceable.

63. On January 10, 2017, the United States Patent and Trademark Office issued U.S. Patent No. 9,542,870 (“the ’870 Patent”), entitled “Billboard and Lighting Assembly with Heat Sink and Three-Part Lens.” Ultravision is the assignee of all rights, title, and interest in and to the ’870 Patent and possesses all rights or recovery under the ’870 Patent, including the right to recover damages for present, past, and future infringement. A true and correct copy of the ’870 Patent is attached as Exhibit C. The ’870 Patent is valid and enforceable.

64. On March 7, 2017, the United States Patent and Trademark Office issued U.S. Patent No. 9,589,488 (“the ’488 Patent”), entitled “LED Light Assembly with Three-Part Lens.” Ultravision is the assignee of all rights, title, and interest in and to the ’488 Patent and possesses all rights or recovery under the ’488 Patent, including the right to recover damages for present, past, and future infringement. A true and correct copy of the ’488 Patent is attached as Exhibit D. The ’488 Patent is valid and enforceable.

65. The Patents-in-Suit can be viewed at the website for the United States Patent and Trademark Office. In addition, Ultravision has issued one or more press releases pertaining to the Patent-in-Suit. Ultravision also lists its patents on its website, <http://www.ultravisioninternational.com>, and also references its patents and its website in the product packaging for its products.

**COUNT I: PATENT INFRINGEMENT OF THE ’663 PATENT**

66. Paragraphs 1– 65 are incorporated by reference as if fully stated herein.

67. Lamar, Lighting Technologies, and Irvin, individually and collectively, have been and are now directly infringing and/or indirectly infringing the ’663 Patent by way of inducement and/or contributory infringement, literally and/or under the Doctrine of Equivalents, in violation of 35 U.S.C. § 271, including by making, using, selling, and/or offering for sale

Accused Billboards in the United States. As explained in paragraphs 69–99 below, these Accused Billboards are covered by at least one claim of the '663 Patent, including, but not limited to, Claims 1–7 and 9–28. The LED Accused Products have been designed, are intended to, have been marketed and have been sold to illuminate Accused Billboards and have no substantial non-infringing use.

68. Upon information and belief, each of the Defendants derive revenue from the activities relating to the making, using, selling, and/or offering for sale the Accused Billboards or LED Accused Products for use and installation on Accused Billboards.

69. As shown above in paragraphs 21, Lamar owns or operates billboards, including the Accused Billboards. As shown above in paragraphs 32–41, Lighting Technologies makes, imports, offers for sale, and sells LED Accused Products that are intended to be installed and operated on billboards, such as the Accused Billboards owned or operated by Lamar. Irvin makes, offers for sale, and/or sells LED Accused Products for use and installation on billboards, including the Accused Billboards owned or operated by Lamar. Lamar has, directly or indirectly, purchased LED Accused Products from Lighting Technologies or Irvin and has installed them and used them on its Accused Billboards.

70. As shown above in paragraphs 21 and 32–41, in view of Lighting Technologies and Irvin's representations, in certain configurations the LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate visual media content on a billboard display surface using a lighting assembly that comprises a first lighting unit and a second lighting unit that each include a circuit board, a plurality of LEDs arranged on the circuit board, and a plurality of optical elements. As shown above in paragraph 43, Irvin has represented that a separate optical element "covers each of the MarQueue LED's individual

LEDS.” As shown above in paragraph 43, each optical element overlies a respective one of the LEDs and wherein each optical element is configured to redirect light from the respective one of the LEDs. As shown above in paragraphs 20–23 and 39–42, the LED Accused Products direct light from the first lighting unit toward a portion of the billboard display surface such that the light from the first lighting unit illuminates the visual media content on the portion of the billboard display surface with an illumination level and a uniformity, wherein the portion of the billboard display surface is substantially rectangular and wherein the light is directed so that areas beyond edges of the portion of the billboard display surface receive minimum illumination. As shown above in paragraph 43, Irvin has also stated “[o]ur approach ensures that should an LED go out, that outage would be unrecognizable to the naked eye because the remaining LEDS are covering the same area.” At the same time as directing the light from the first lighting unit, the LED Accused Products direct light from the second lighting unit toward the portion of the billboard display surface such that the light from the second lighting unit illuminates the visual media content on the portion of the billboard display surface. As shown above in paragraph 43, the optical elements are configured so that failure of one or more LEDs of the lighting assembly will cause the illumination level of light impinging the portion of the billboard display surface to decrease while the uniformity of light impinging the portion of the billboard display surface remains substantially the same. As shown above in paragraph 43, if one or more LEDs of the plurality of LEDs of the second lighting unit fails, remaining LEDs of the plurality of LEDs of the second lighting unit still illuminate the portion of the billboard so that the visual media content on the portion of the billboard display surface is visible.

71. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the portion of the billboard

display surface extends from a left edge of the billboard display surface to a right edge of the billboard display surface.

72. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the portion of the billboard display surface extends from a left edge of the billboard display surface to a right edge of the billboard display surface so that the billboard display surface is illuminated by only the first and second lighting units without any additional lighting unit.

73. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the lighting assembly is a first lighting assembly and the method further comprises illuminating the billboard display surface using second lighting assembly that includes a third lighting unit and a fourth lighting unit that each include a circuit board, a plurality of LEDs arranged on the circuit board, and a plurality of optical elements, each optical element of the plurality of optical elements of the third and fourth lighting units overlying a respective one of the LEDs of the third and fourth lighting units. As shown above in paragraph 43, each optical element is configured to redirect light from the respective one of the LEDs. As shown above in paragraph 43, at the same time as directing the light from the first and second lighting units, the LED Accused Products direct light from the third lighting unit toward a second portion of the billboard display surface such that the light from the third lighting unit illuminates the visual media content on the second portion of the billboard display surface. At the same time, the LED Accused Products direct light from the fourth lighting unit toward the second portion of the billboard display surface such that the light from the fourth lighting unit illuminates the visual media content on the second portion of the

billboard display surface. As shown above in paragraphs 20–23 and 39–42, the visual media content on the second portion of the display surface is visible without any additional light.

74. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the portion of the billboard display surface and the second portion of the billboard display surface extend from a left edge of the billboard display surface to a right edge of the billboard display surface so that the billboard display surface is illuminated using only light from the first, second, third and fourth lighting units.

75. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the method further comprises the steps of illuminating the billboard display surface using a third lighting unit, a fourth lighting unit, a fifth lighting unit, and a sixth lighting unit, each of the third, fourth, fifth and sixth lighting units including a circuit board, a plurality of LEDs arranged on the circuit board of the third, fourth, fifth and sixth lighting units, and a plurality of optical elements, each optical element of the plurality of optical elements of the third, fourth, fifth and sixth lighting units overlying a respective one of the LEDs of the third, fourth, fifth and sixth lighting units. As shown above in paragraph 43, each optical element is configured to redirect light from the respective one of the LEDs. At the same time as directing the light from the first and second lighting units, the LED Accused Products direct light from the third lighting unit toward the billboard display surface. At the same time, the LED Accused Products direct light from the fourth lighting unit toward the billboard display surface. At the same time, the LED Accused Products direct light from the fifth lighting unit toward the billboard display surface. At the

same time, the LED Accused Products direct light from the sixth lighting unit toward the billboard display surface.

76. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the lighting assembly further comprises a third lighting unit that includes a circuit board, a plurality of LEDs arranged on the circuit board, and a plurality of optical elements; wherein each optical element of the third lighting unit overlies a respective one of the LEDs of the third lighting unit. As shown above in paragraph 43, each optical element is configured to redirect light from the respective one of the LEDs. At the same time as directing the light from the first and second lighting units, the LED Accused Products direct light from the third lighting unit toward the portion of the billboard display surface.

77. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the lighting assembly is a first lighting assembly and the method further comprises illuminating the billboard display surface using second lighting assembly that includes a fourth lighting unit, a fifth lighting unit, and a sixth lighting unit that each include a circuit board, a plurality of LEDs arranged on the circuit board, and a plurality of optical elements, wherein each optical element of the fourth, fifth, and sixth lighting units overlie a respective one of the LEDs of the fourth, fifth, and sixth lighting units, and wherein each optical element is configured to redirect light from the respective one of the LEDs. At the same time as directing the light from the first, second and third lighting units, the LED Accused Products direct light from the fourth lighting unit toward a second portion of the billboard display surface such that the light from the fourth lighting unit is directed across the second portion of the billboard display surface. At the same time, the LED Accused Products



direct light from the fifth lighting unit toward the second portion of the billboard display surface such that the light from the fifth lighting unit is directed across the second portion of the billboard display surface. At the same time, the LED Accused Products direct light from the sixth lighting unit toward the second portion of the billboard display surface such that the light from the sixth lighting unit is directed across the second portion of the billboard display surface.

78. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the portion of the billboard display surface and the second portion of the billboard display surface are illuminated with only the first, second, third, fourth, fifth, and sixth lighting units.

79. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the portion of the billboard display surface and the second portion of the billboard display surface extend from a left edge of the billboard display surface to a right edge of the billboard display surface and from a top edge to a bottom edge of the billboard display surface so that all of the billboard display surface is illuminated.

80. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations a distance along the top edge of the billboard display surface from the left edge to the right edge is 48 feet and wherein a distance along the right edge of the billboard display surface from the top edge to the bottom edge is 14 feet.

81. As shown above in paragraphs 43–44, in view of Lighting Technologies and Irvin’s representations, optical elements of the plurality of optical elements each comprise: a first outer boundary, a second outer boundary opposite the first outer boundary, a third outer

boundary connecting the first outer boundary and the second outer boundary, a fourth outer boundary opposite the third outer boundary, and a central region halfway between the first outer boundary and the second outer boundary. As shown above in paragraph 44, the LED Accused Products comprise a first element with a convex outer surface extending from the first outer boundary toward the central region and having a peak located between the central region and the first outer boundary, the peak being spaced from the central region. As shown above in paragraph 44, the LED Accused Products comprise a second element with a convex outer surface extending from the second outer boundary toward the central region and having a peak located between the central region and the second outer boundary, the peak being spaced from the central region. As shown above in paragraph 44, the LED Accused Products comprise a third element disposed between the third outer boundary and a region halfway between the third outer boundary and the fourth outer boundary.

82. As shown above in paragraphs 43–44, in view of Lighting Technologies and Irvin’s representations, each of the plurality of optical elements of the first lighting unit and of the second lighting unit are substantially the same.

83. As shown above in paragraphs 43–44, in view of Lighting Technologies and Irvin’s representations, optical elements of the plurality of optical elements each comprise: a first outer boundary, a second outer boundary opposite the first outer boundary, a third outer boundary connecting the first outer boundary and the second outer boundary, a fourth outer boundary opposite the third outer boundary, and a central region halfway between the first outer boundary and the second outer boundary. As shown above in paragraph 44, the LED Accused Products comprise a first element with a convex outer surface extending from the first outer boundary toward the central region and having a peak located between the central region and the

first outer boundary, the peak being spaced from the central region. As shown above in paragraph 44, the LED Accused Products comprise a second element with a convex outer surface extending from the second outer boundary toward the central region and having a peak located between the central region and the second outer boundary, the peak being spaced from the central region. As shown above in paragraph 44, the LED Accused Products comprise a third element disposed between the third outer boundary and a region halfway between the third outer boundary and the fourth outer boundary. As shown above in paragraph 44, the LED Accused Products comprise a fourth element disposed between the respective circuit board and the first, second and third elements, wherein the first, second and third elements join the fourth element at an interface, wherein the fourth element has a curved surface above the LED.

84. As shown above in paragraph 43, the circuit board in the LED Accused Products comprise is planar and the LEDs are arranged in a plurality of rows on the circuit board.

85. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate a billboard display surface using a first lighting assembly and a second lighting assembly that each include a plurality of LEDs and a plurality of optical elements, each optical element overlying a respective one of the LEDs, the billboard display surface being rectangular in shape and being divided into only a first portion and a non-overlapping second portion. As shown above in paragraphs 39–43, the LED Accused Products direct light from the first lighting assembly toward the first portion of the billboard display surface such that the light from the first lighting assembly is directed across the first portion of the billboard display surface. As shown above in paragraphs 39–43, at the same time, the LED Accused Products direct light from the second lighting assembly toward the

second portion of the billboard display surface such that the light from the second lighting assembly is directed across the second portion of the billboard display surface. As shown above in paragraphs 39–43, the light from the first lighting assembly and from the second lighting assembly is directed so that areas beyond edges of the billboard display surface receive minimum illumination. As shown above in paragraphs 39–43, when all LEDs of the first lighting assembly are operating, the entire first portion of the billboard display surface is illuminated with an illumination level and a uniformity, and wherein failure of one or more LEDs of the first lighting assembly will cause the illumination level of light impinging the first portion of the billboard display surface to decrease while the uniformity of light impinging the first portion of the billboard display surface remains substantially the same. As shown above in paragraphs 39–43, when all LEDs of the second lighting assembly are operating, the entire second portion of the billboard display surface is illuminated with an illumination level and a uniformity, and wherein failure of one or more LEDs of the second lighting assembly will cause the illumination level of light impinging the second portion of the billboard display surface to decrease while the uniformity of light impinging the second portion of the billboard display surface remains substantially the same.

86. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations all of the billboard display surface is illuminated by only the first lighting assembly and the second lighting assembly without any additional lighting assemblies.

87. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the billboard display surface has a dimension of 14 feet by 48 feet.

88. As shown above in paragraphs 20–23 and 39–43, in view of Lighting Technologies and Irvin’s representations, in certain configurations the first lighting assembly comprises a first lighting unit and a second lighting unit, and wherein the second lighting assembly comprises a third lighting unit and a fourth lighting unit. As shown above in paragraphs 39–43, the first lighting unit comprises a first group of the plurality of LEDs arranged on a first circuit board, the second lighting unit comprises a second group of the plurality of LEDs arranged on a second circuit board, the third lighting unit comprises a third group of the plurality of LEDs arranged on a third circuit board, and the fourth lighting unit comprises a fourth group of the plurality of LEDs arranged on a fourth circuit board.

89. As shown above in paragraphs 20–23 and 39–43, in view of Lighting Technologies and Irvin’s representations, in certain configurations the first lighting assembly comprises a first lighting unit, a second lighting unit, and a third lighting unit and the second lighting assembly comprises a fourth lighting unit, a fifth lighting unit and a sixth lighting unit. As shown above in paragraphs 39–43, the first lighting unit comprises a first group of the plurality of LEDs arranged in rows on a first substantially planar circuit board, the second lighting unit comprises a second group of the plurality of LEDs arranged in rows on a second substantially planar circuit board, the third lighting unit comprises a third group of the plurality of LEDs arranged in rows on a third substantially planar circuit board, the fourth lighting unit comprises a fourth group of the plurality of LEDs arranged in rows on a fourth substantially planar circuit board, the fifth lighting unit comprises a fifth group of the plurality of LEDs arranged in rows on a fifth substantially planar circuit board, and the sixth lighting unit comprises a sixth group of the plurality of LEDs arranged in rows on a sixth substantially planar circuit board.

90. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate visual media content on a billboard display surface using a first lighting assembly that comprises a first lighting unit, a second lighting unit and a third lighting unit and a second lighting assembly that includes a fourth lighting unit, a fifth lighting unit, and a sixth lighting unit. As shown above in paragraphs 39–43, the lighting unit of the first and second lighting assembly includes a circuit board, a plurality of LEDs arranged on the circuit board, and a plurality of optical elements. As shown above in paragraph 43, each optical element overlies a respective one of the LEDs and wherein each optical element is configured to redirect light from the respective one of the LEDs. As shown above in paragraphs 39–43, the LED Accused Products direct light from the first lighting unit toward a first portion of the billboard display surface such that the light from the first lighting unit illuminates the visual media content on the first portion of the billboard display surface with an illumination level and a uniformity. As shown above in paragraphs 39–43, at the same time as directing the light from the first lighting unit, the LED Accused Products direct light from the second lighting unit toward the first portion of the billboard display surface such that the light from the second lighting unit illuminates the visual media content on the first portion of the billboard display surface. At the same time as directing the light from the first and second lighting units, the LED Accused Products direct light from the third lighting unit toward the first portion of the billboard display surface such that the light from the third lighting unit illuminates the visual media content on the first portion of the billboard display surface. At the same time as directing the light from the first, second and third lighting units, the LED Accused Products direct light from the fourth lighting unit toward a second portion of the billboard

display surface such that the light from the fourth lighting unit is directed across the second portion of the billboard display surface. At the same time, the LED Accused Products direct light from the fifth lighting unit toward the second portion of the billboard display surface such that the light from the fifth lighting unit is directed across the second portion of the billboard display surface. At the same time, the LED Accused Products direct light from the sixth lighting unit toward the second portion of the billboard display surface such that the light from the sixth lighting unit is directed across the second portion of the billboard display surface. The first portion of the billboard display surface and the second portion of the billboard display surface extend from a left edge of the billboard display surface to a right edge of the billboard display surface and from a top edge to a bottom edge of the billboard display surface so that all of the visual media content on the billboard display surface is illuminated. As shown above in paragraphs 39–43, a distance along the top edge of the billboard display surface from the left edge to the right edge is 48 feet and wherein a distance along the right edge of the billboard display surface from the top edge to the bottom edge is 14 feet. As shown above in paragraphs 39–43, the optical elements are configured so that failure of one or more LEDs of the first lighting assembly will cause the illumination level of light impinging the first portion of the billboard display surface to decrease while the uniformity of light impinging the first portion of the billboard display surface remains substantially the same.

91. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the portion of the billboard display surface extends from a left edge of the billboard display surface to a right edge of the billboard display surface so that the billboard display surface is illuminated by only the first and second lighting assemblies without any additional lighting assembly.

92. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the light is directed from the first and second light assemblies so that areas beyond the top, bottom, left and right edges of the billboard display surface receive minimum illumination.

93. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate a billboard display surface using a first lighting assembly and a second lighting assembly that each include a plurality of LEDs and a plurality of optical elements, each optical element overlying a respective one of the LEDs, the billboard display surface having a dimension of 14 feet by 48 feet and being divided into only a first portion and a non-overlapping second portion. As shown above in paragraphs 39–43, the LED Accused Products direct light from the first lighting assembly toward the first portion of the billboard display surface such that the light from the first lighting assembly is directed across the first portion of the billboard display surface. As shown above in paragraphs 39–43, at the same time, the LED Accused Products direct light from the second lighting assembly toward the second portion of the billboard display surface such that the light from the second lighting assembly is directed across the second portion of the billboard display surface. As shown above in paragraphs 39–43, when all LEDs of the first lighting assembly are operating, the entire first portion of the billboard display surface is illuminated with an illumination level and a uniformity, and wherein failure of one or more LEDs of the first lighting assembly will cause the illumination level of light impinging the first portion of the billboard display surface to decrease while the uniformity of light impinging the first portion of the billboard display surface remains substantially the same. As shown above in paragraphs 39–43,



when all LEDs of the second lighting assembly are operating, the entire second portion of the billboard display surface is illuminated with an illumination level and a uniformity, and wherein failure of one or more LEDs of the second lighting assembly will cause the illumination level of light impinging the second portion of the billboard display surface to decrease while the uniformity of light impinging the second portion of the billboard display surface remains substantially the same.

94. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations all of the billboard display surface is illuminated by only the first lighting assembly and the second lighting assembly without any additional lighting assemblies.

95. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the first lighting assembly comprises a first lighting unit and a second lighting unit, and wherein the second lighting assembly comprises a third lighting unit and a fourth lighting unit. As shown above in paragraphs 39–43, the first lighting unit comprises a first group of the plurality of LEDs arranged on a first circuit board, the second lighting unit comprises a second group of the plurality of LEDs arranged on a second circuit board, the third lighting unit comprises a third group of the plurality of LEDs arranged on a third circuit board, and the fourth lighting unit comprises a fourth group of the plurality of LEDs arranged on a fourth circuit board.

96. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the first lighting assembly comprises a first lighting unit, a second lighting unit, and a third lighting unit and wherein the second lighting assembly comprises a fourth lighting unit, a fifth lighting unit and a sixth lighting

unit. As shown above in paragraphs 39–43, the first lighting unit comprises a first group of the plurality of LEDs arranged in rows on a first substantially planar circuit board, the second lighting unit comprises a second group of the plurality of LEDs arranged in rows on a second substantially planar circuit board, the third lighting unit comprises a third group of the plurality of LEDs arranged in rows on a third substantially planar circuit board, the fourth lighting unit comprises a fourth group of the plurality of LEDs arranged in rows on a fourth substantially planar circuit board, the fifth lighting unit comprises a fifth group of the plurality of LEDs arranged in rows on a fifth substantially planar circuit board, and the sixth lighting unit comprises a sixth group of the plurality of LEDs arranged in rows on a sixth substantially planar circuit board.

97. Upon information and belief, Defendants have had actual knowledge of the '663 Patent and actual knowledge that their activities constitute either direct or indirect infringement of the '663 Patent, yet they have not ceased their infringing activities. Defendants' infringement of the '663 Patent has been and continues to be willful and deliberate. Defendants also have knowledge of the '663 Patent by way of this complaint and, to the extent they do not cease their infringing activities, their infringement is and continues to be willful and deliberate.

98. Ultravision has no adequate remedy at law against Defendants' individual and collective acts of infringement, and, unless Defendants are enjoined from their infringement of the '663 Patent, Ultravision will suffer irreparable harm.

99. Defendants, by way of their infringing activities, have caused and continue to cause Ultravision to suffer damages, the exact amount to be determined at trial.

**COUNT II: PATENT INFRINGEMENT OF THE '661 PATENT**

100. Paragraphs 1–99 are incorporated by reference as if fully stated herein.

101. Lamar, Lighting Technologies, and Irvin, individually and collectively, have been and are now directly infringing and/or indirectly infringing the '661 Patent by way of inducement and/or contributory infringement, literally and/or under the Doctrine of Equivalents, in violation of 35 U.S.C. § 271, including by making, using, selling, and/or offering for sale Accused Billboards in the United States. As explained in paragraphs 103–141 below, these Accused Billboards are covered by at least one claim of the '661 Patent, including, but not limited to, Claims 1–3 and 5–28. The LED Accused Products have been designed, are intended to, have been marketed and have been sold to illuminate Accused Billboards and have no substantial non-infringing use.

102. Upon information and belief, each of the Defendants derive revenue from the activities relating to the making, using, selling, and/or offering for sale the Accused Billboards or LED Accused Products for use and installation on Accused Billboards.

103. As shown above in paragraphs 20–23, Lamar owns or operates billboards, including the Accused Billboards. As shown above in paragraphs 39–42, Lighting Technologies makes, imports, offers for sale, and sells LED Accused Products that are intended to be installed and operated on billboards, such as the Accused Billboards owned or operated by Lamar. Irvin makes, offers for sale, and/or sells LED Accused Products for use and installation on billboards, including the Accused Billboards owned or operated by Lamar. Lamar has, directly or indirectly, purchased LED Accused Products from Lighting Technologies or Irvin and has installed them and used them on its Accused Billboards.

104. As shown above in paragraphs 20–23 and 39–42, the Accused Billboards have a support structure and a display surface mounted on the support structure, the display surface having visual media content displayed thereon, the visual media content comprising a picture

and/or text. As shown above, in paragraph 39, in certain configurations the display surface may have a width of forty-eight feet along an upper edge and a lower edge of the display surface and a height of fourteen feet along a left side edge and a right side edge of the display surface. The display surface has a first portion that extends from the lower edge to the upper edge adjacent the left side edge and a second portion that extends from the lower edge to the upper edge adjacent the right side edge. The first and second portions together extend from the left side edge to the right side edge.

105. As shown above in paragraphs 20–23 and 39–42, in certain configurations the Accused Billboards have a first lighting assembly that includes a plurality of circuit boards arranged in a common orientation and mounted in a single assembly, each circuit board of the first lighting assembly being planar and having a first plurality of light emitting diodes (LEDs) and a first plurality of optical elements attached thereto, the first plurality of LEDs being thermally coupled to a first heat sink. As shown above in paragraphs 39–43, the LEDs of the first plurality of LEDs are arranged in a plurality of rows on each circuit board, each row including a plurality of LEDs mounted so that all of the LEDs of the first lighting assembly are arranged in a common orientation, and wherein each optical element of the first plurality of optical elements is disposed over only one associated LED, the optical elements of each of the plurality of circuit boards of the first lighting assembly being designed to simultaneously direct the light across the first portion of the display surface so that the light from the first lighting assembly illuminates the visual media content on the first portion of the billboard display surface with a first illumination level and a first uniformity, wherein the optical elements are configured so that failure of one or more LEDs of the first lighting assembly will cause the illumination level of the light directed across the first portion of the billboard display surface to decrease

while the uniformity of the light directed across the first portion of the billboard display surface remains substantially the same.

106. As shown above in paragraphs 20–23 and 39–42, in certain configurations the Accused Billboards have a second lighting assembly that includes a plurality of circuit boards arranged in a common orientation and mounted in a single assembly, each circuit board of the second lighting assembly being planar and having a second plurality of LEDs and a second plurality of optical elements attached thereto, the second plurality of LEDs being thermally coupled to a second heat sink. As shown above in paragraphs 39–43, the LEDs of the second plurality of LEDs are arranged in a plurality of rows on each circuit board, each row including a plurality of LEDs mounted so that all of the LEDs of the second lighting assembly are arranged in a common orientation, and wherein each optical element of the second plurality of optical elements is disposed over only one associated LED, the optical elements of each of the plurality of circuit boards of the first lighting assembly being designed to simultaneously direct the light across the second portion of the display surface so that the light from the second lighting assembly illuminates the visual media content on the second portion of the billboard display surface with a second illumination level and a second uniformity, wherein the optical elements are configured so that failure of one or more LEDs of the second lighting assembly will cause the illumination level of the light directed across the second portion of the billboard display surface to decrease while the uniformity of the light directed across the second portion of the billboard display surface remains substantially the same, and wherein the display surface can be illuminated using only the first lighting assembly and the second lighting assembly so that the visual media content can be viewed without additional light.

107. As shown above in paragraphs 39–43, each circuit board of the first lighting assembly includes only two rows of LEDs and optical elements, and each circuit board of the second lighting assembly includes only two rows of LEDs and optical elements.

108. As shown above in paragraphs 39–43, the first lighting assembly includes two circuit boards arranged in a first row that extends in a direction parallel to the lower edge of the display surface, and the second lighting assembly includes two circuit boards arranged in a second row that extends in the direction parallel to the lower edge of the display surface.

109. As shown above in paragraphs 39–43, the first lighting assembly includes three circuit boards arranged in a first row that extends in a direction parallel to the lower edge of the display surface, and the second lighting assembly includes three circuit boards arranged in a second row that extends in the direction parallel to the lower edge of the display surface.

110. As shown above in paragraph 44, each optical element of the plurality of optical elements of the first and the second lighting assemblies comprises a first portion, a second portion and a third portion, a first side, a second side opposite the first side, and a third side perpendicular to the first side and the second side. The first portion comprises a first element comprising a first convex-shaped surface disposed at the first side; the second portion comprises a second element comprising a second convex-shaped surface disposed at the second side, the second convex-shaped surface intersects with the first convex-shaped surface at an acute angle in a region between the first element and the second element, wherein light from an associated LED exits the optical element through the first and the second convex-shaped surfaces. The third portion comprises a third element disposed at the third side, wherein the third element extends beyond the first element and the second element in a direction away from the associated LED.

111. As shown above in paragraph 44, each optical element of the plurality of optical elements of the first and the second lighting assemblies comprises a first portion, a second portion and a third portion, a first side, a second side opposite the first side, and a third side perpendicular to the first side and the second side. The first portion of the optical element comprises a first element disposed at the first side; the second portion of the optical element comprises a second element disposed at the second side; the third portion of the optical element comprises a third element disposed at the third side; and the third element extends beyond the first element and the second element in a direction away from an associated LED.

112. As shown above in paragraph 44, the first element includes a first outer surface and a first inner surface facing the associated LED, and the second element includes a second outer surface and a second inner surface facing the associated LED. The first inner surface is located at a first nearest distance from the associated LED and the second inner surface is located at a second nearest distance from the associated LED. A region between the first inner surface and the second inner surface is at a third nearest distance from the associated LED, wherein the third nearest distance is shorter than either the first nearest distance or the second nearest distance.

113. As shown above in paragraphs 20–23 and 39–42, in certain configurations the Accused Billboards have a walkway attached to the support structure adjacent the lower edge of the display surface, wherein an uppermost surface of the walkway is vertically spaced at a distance lower than the lower edge of the display surface, wherein the first lighting assembly is attached to the walkway, and wherein the second lighting assembly is attached to the walkway at a location laterally spaced from the first lighting assembly.

114. As shown above in paragraph 46, the rows of LEDs on each circuit board extend along a longitudinal axis of the circuit board and the first heat sink of each circuit board of the first lighting assembly comprises a first section substantially parallel to the circuit board and a plurality of fins extending away from the first section and substantially perpendicular thereto, a longitudinal axis of each fin being substantially perpendicular to the longitudinal axis of the circuit board.

115. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate the first portion of the display surface using the first lighting assembly, and at the same time, illuminate the second portion of the display surface using the second lighting assembly.

116. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate the first portion of the display surface by emitting light from the first plurality of LEDs and redirecting the light across the first portion using the first plurality of optical elements so that the visual media content of the first portion of the display surface is visible without any additional light. The LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate the second portion of the display surface comprises illuminating the second portion of the display surface by emitting light from the second plurality of LEDs and redirecting the light across the second portion using the second plurality of optical elements so that the visual media content of the second portion of the display surface is visible without any additional light.



117. As shown above in paragraphs 20–23 and 39–42, the Accused Billboards have a support structure and a display surface mounted on the support structure, the display surface having visual media content displayed thereon, the visual media content comprising a picture and/or text. As shown above, in paragraph 39, in certain configurations the display surface may have a width of forty-eight feet along an upper edge and a lower edge of the display surface and a height of fourteen feet along a left side edge and a right side edge of the display surface. The display surface has a first portion that extends from the lower edge to the upper edge adjacent the left side edge and a second portion that extends from the lower edge to the upper edge adjacent the right side edge. The first and second portions together extend from the left side edge to the right side edge.

118. As shown above in paragraphs 20–23 and 39–42, in certain configurations the Accused Billboards have a first lighting assembly directed toward the display surface. As shown above in paragraphs 39–43, the first lighting assembly comprises: a first carrier; a first lighting unit secured to the first carrier, the first lighting unit comprising a single planar circuit board, a plurality of light emitting diodes (LEDs) attached to the single planar circuit board, and a plurality of optical elements, wherein each optical element is disposed over only one associated LED, wherein the first lighting unit is configured to direct light across the first portion of the display surface. A second lighting unit is secured to the first carrier, the second lighting unit comprising only a single planar circuit board, a plurality of LEDs attached to the single planar circuit board, and a plurality of optical elements, wherein each optical element is disposed over only one associated LED, wherein the second lighting unit is configured to direct light across the first portion of the display surface.

119. As shown above in paragraphs 20–23 and 39–42, in certain configurations the Accused Billboards have a second lighting assembly directed toward the display surface. As shown above in paragraphs 39–43, the second lighting assembly comprises: a second carrier; a third lighting unit secured to the second carrier, the third lighting unit comprising only a single planar circuit board, a plurality of LEDs attached to the single planar circuit board, and a plurality of optical elements, wherein each optical element is disposed over only one associated LED, wherein the third lighting unit is configured to direct light across the second portion of the display surface. A fourth lighting unit is secured to the second carrier, the fourth lighting unit comprising only a single planar circuit board, a plurality of LEDs attached to the single planar circuit board, and a plurality of optical elements, wherein each optical element is disposed over only one associated LED, wherein the fourth lighting unit is configured to direct light across the second portion of the display surface; wherein the display surface can be illuminated using only the first lighting assembly and the second lighting assembly so that the visual media content can be viewed without any light other than light from the first lighting assembly and the second lighting assembly.

120. As shown above in paragraph 46, the first lighting unit further comprises a heat sink thermally coupled to the circuit board so that the circuit board is between each LED and the heat sink, the LEDs being arranged in rows that extend along a longitudinal axis of the circuit board, wherein the heat sink comprises a first section substantially parallel to the circuit board and a plurality of fins extending away from the first section and substantially perpendicular thereto, a longitudinal axis of each fin being substantially perpendicular to the longitudinal axis of the circuit board. As shown above in paragraph 46, the second lighting unit further comprises a heat sink thermally coupled to the circuit board so that the circuit board is between each LED

and the heat sink, the LEDs being arranged in rows that extend along a longitudinal axis of the circuit board, wherein the heat sink comprises a first section substantially parallel to the circuit board and a plurality of fins extending away from the first section and substantially perpendicular thereto, a longitudinal axis of each fin being substantially perpendicular to the longitudinal axis of the circuit board. As shown above in paragraph 46, the third lighting unit further comprises a heat sink thermally coupled to the circuit board so that the circuit board is between each LED and the heat sink, the LEDs being arranged in rows that extend along a longitudinal axis of the circuit board, wherein the heat sink comprises a first section substantially parallel to the circuit board and a plurality of fins extending away from the first section and substantially perpendicular thereto, a longitudinal axis of each fin being substantially perpendicular to the longitudinal axis of the circuit board. As shown above in paragraph 46, the fourth lighting unit further comprises a heat sink thermally coupled to the circuit board so that the circuit board is between each LED and the heat sink, the LEDs being arranged in rows that extend along a longitudinal axis of the circuit board, wherein the heat sink comprises a first section substantially parallel to the circuit board and a plurality of fins extending away from the first section and substantially perpendicular thereto, a longitudinal axis of each fin being substantially perpendicular to the longitudinal axis of the circuit board.

121. As shown above in paragraphs 20–23 and 39–42, the first lighting assembly is configured to uniformly illuminate the first portion of the display surface, and the second lighting assembly is configured to uniformly illuminate the second portion of the display surface.

122. As shown above in paragraphs 39–43, each and every LED of the first lighting assembly is configured to uniformly illuminate the first portion of the display surface, and each

and every LED of the second lighting assembly is configured to uniformly illuminate the second portion of the display surface.

123. As shown above in paragraph 44, the optical elements of the first lighting assembly each include a first portion, a second portion and a third portion arranged to direct the light across the first portion of the display surface; and the optical elements of the second lighting assembly each include a first portion, a second portion and a third portion arranged to direct the light across the second portion of the display surface.

124. As shown above in paragraph 44, each optical element of the plurality of optical elements of the first and the second lighting assemblies comprises: a first side, a second side opposite the first side, and a third side perpendicular to the first side and the second side; a first element comprising a first convex-shaped surface disposed at the first side; a second element comprising a second convex-shaped surface disposed at the second side, wherein the second convex-shaped surface intersects with the first convex-shaped surface at an acute angle in a region between the first element and the second element, wherein the light from the associated LED exits the optical element through the first and the second convex-shaped surfaces. A third element is disposed at the third side, wherein the third element extends beyond the first element and the second element in a direction away from the associated LED.

125. As shown above in paragraph 44, each optical element of the plurality of optical elements of the first and the second lighting assemblies comprises: a first side, a second side opposite the first side, and a third side perpendicular to the first side and the second side; a first element disposed at the first side; a second element disposed at the second side; a third element disposed at the third side; wherein the third element extends beyond the first element and the second element in a direction away from the associated LED. The first element includes a first

outer surface and a first inner surface facing the associated LED, and the second element includes a second outer surface and a second inner surface facing the associated LED; wherein the first inner surface is located at a first nearest distance from the associated LED and the second inner surface is located at a second nearest distance from the associated LED; and wherein the first inner surface and the second inner surface connect at a connection region that is at a third nearest distance from the associated LED, wherein the third nearest distance is shorter than either the first nearest distance or the second nearest distance.

126. As shown above in paragraph 46, the first carrier is formed from a thermally conductive material, wherein a plurality of fins extend away from the first, the second and the third lighting units.

127. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate the first portion of the display surface using the first lighting assembly, and at the same time, illuminate the second portion of the display surface using the second lighting assembly.

128. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate the first portion of the display surface by emitting light from the first plurality of LEDs and redirecting the light across the first portion using the first plurality of optical elements so that the visual media content of the first portion of the display surface is visible without any additional light. The LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate the second portion of the display surface comprises illuminating the second portion of

the display surface by emitting light from the second plurality of LEDs and redirecting the light across the second portion using the second plurality of optical elements so that the visual media content of the second portion of the display surface is visible without any additional light.

129. As shown above in paragraphs 20–23 and 39–42, in certain configurations the Accused Billboards have a support structure and a display surface mounted on the support structure, the display surface having visual media content displayed thereon, the visual media content comprising a picture and/or text. As shown above, in paragraph 39, in certain configurations the display surface may have a width of forty-eight feet along an upper edge and a lower edge of the display surface and a height of fourteen feet along a left side edge and a right side edge of the display surface. The display surface has a first portion that extends from the lower edge to the upper edge adjacent the left side edge and a second portion that extends from the lower edge to the upper edge adjacent the right side edge. The first and second portions together extend from the left side edge to the right side edge.

130. As shown above in paragraphs 20–23 and 39–42, in certain configurations the Accused Billboards have a first lighting assembly that includes a plurality of circuit boards arranged in a common orientation, each circuit board of the first lighting assembly being planar and having a first plurality of light emitting diodes (LEDs) arranged in a first row and a second row attached thereto, the first lighting assembly also including a first plurality of optical elements arranged in the first row and the second row over the plurality of LEDs such that each optical element overlies only one associated LED, the optical elements arranged to direct light from the first plurality of LEDs across the first portion of the display surface.

131. As shown above in paragraphs 20–23 and 39–42, in certain configurations the Accused Billboards have a second lighting assembly that includes a plurality of circuit boards

arranged in a common orientation, each circuit board of the second lighting assembly being planar and having a second plurality of LEDs arranged in a first row and a second row attached thereto, the second lighting assembly also including a second plurality of optical elements arranged in the first row and the second row over the second plurality of LEDs such that each optical element overlies only one associated LED, the optical elements arranged to direct light from the second plurality of LEDs across the second portion of the display surface.

132. As shown above in paragraphs 20–23 and 39–42, in certain configurations the first lighting assembly is mounted at a first location, and wherein the second lighting assembly is mounted at a second location, wherein the first location is laterally spaced from the second location along the width of the display surface; and wherein the display surface of the billboard can be illuminated using only the first lighting assembly and the second lighting assembly so that visual media content on the display surface can be viewed without additional lighting. As shown above in paragraphs 39–43, the first lighting assembly is configured so that when all LEDs of the first lighting assembly are operating, the first portion of the billboard display surface is illuminated with an illumination level and a uniformity, and wherein failure of one or more LEDs of the first lighting assembly will cause the illumination level of light impinging the first portion of the billboard display surface to decrease while the uniformity of light impinging the first portion of the billboard display surface remains substantially the same. As shown above in paragraphs 39–43, the second lighting assembly is configured so that when all LEDs of the second lighting assembly are operating, the second portion of the billboard display surface is illuminated with an illumination level and a uniformity, and wherein failure of one or more LEDs of the second lighting assembly will cause the illumination level of light impinging the

second portion of the billboard display surface to decrease while the uniformity of light impinging the second portion of the billboard display surface remains substantially the same.

133. As shown above in paragraph 45, the optical elements of the first and the second lighting assemblies are arranged so that areas beyond edges of the display surface receive minimum illumination.

134. As shown above in paragraph 44, each optical element of the first and the second lighting assemblies comprises: a first side, a second side opposite the first side, and a third side perpendicular to the first side and the second side; a first element comprising a first convex-shaped surface disposed at the first side; a second element comprising a second convex-shaped surface disposed at the second side, wherein the second convex-shaped surface intersects with the first convex-shaped surface at an acute angle in a region between the first element and the second element, wherein the light from the associated LED exits the optical element through the first and the second convex-shaped surfaces; and a third element disposed at the third side, wherein the third element extends beyond the first element and the second element in a direction away from the associated LED.

135. As shown above in paragraph 44, each optical element of the first and the second lighting assemblies comprises: a first side, a second side opposite the first side, and a third side perpendicular to the first side and the second side; a first element disposed at the first side; a second element disposed at the second side; a third element disposed at the third side; wherein the third element extends beyond the first element and the second element in a direction away from the associated LED. The first element includes a first outer surface and a first inner surface facing the associated LED, and the second element includes a second outer surface and a second inner surface facing the associated LED; wherein the first inner surface is located at a first



nearest distance from the associated LED and the second inner surface is located at a second nearest distance from the associated LED; and wherein the first inner surface and the second inner surface connect at a connection region that is at a third nearest distance from the associated LED, wherein the third nearest distance is shorter than either the first nearest distance or the second nearest distance.

136. As shown above in paragraph 46, the first lighting assembly further comprises a plurality of heat sinks, each heat sink thermally coupled to an associated one of the circuit boards, each circuit board having a longitudinal axis along which the first and second rows of LEDs extend, wherein each heat sink comprises a first section substantially parallel to the associated circuit board and a plurality of fins extending away from the first section and substantially perpendicular thereto, a longitudinal axis of each fin being substantially perpendicular to the longitudinal axis of the circuit board. As shown above in paragraph 46, the second lighting assembly further comprises a plurality of heat sinks, each heat sink thermally coupled to an associated one of the circuit boards, each circuit board having a longitudinal axis along which the first and second rows of LEDs extend, wherein each heat sink comprises a first section substantially parallel to the associated circuit board and a plurality of fins extending away from the first section and substantially perpendicular thereto, a longitudinal axis of each fin being substantially perpendicular to the longitudinal axis of the circuit board.

137. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate the first portion of the display surface using the first lighting assembly, and at the same time, illuminate the second portion of the display surface using the second lighting assembly.

138. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate the first portion of the display surface by emitting light from the first plurality of LEDs and redirecting the light across the first portion using the first plurality of optical elements so that the visual media content of the first portion of the display surface is visible without any additional light. The LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate the second portion of the display surface comprises illuminating the second portion of the display surface by emitting light from the second plurality of LEDs and redirecting the light across the second portion using the second plurality of optical elements so that the visual media content of the second portion of the display surface is visible without any additional light.

139. Upon information and belief, Defendants have had actual knowledge of the ’661 Patent and actual knowledge that their activities constitute either direct or indirect infringement of the ’661 Patent, yet they have not ceased their infringing activities. Defendants’ infringement of the ’661 Patent has been and continues to be willful and deliberate. Defendants also have knowledge of the ’661 Patent by way of this complaint and, to the extent they do not cease their infringing activities, their infringement is and continues to be willful and deliberate.

140. Ultravision has no adequate remedy at law against Defendants’ individual and collective acts of infringement, and, unless Defendants are enjoined from their infringement of the ’661 Patent, Ultravision will suffer irreparable harm.

141. Defendants, by way of their infringing activities, have caused and continue to cause Ultravision to suffer damages, the exact amount to be determined at trial.

**COUNT III: PATENT INFRINGEMENT OF THE '870 PATENT**

142. Paragraphs 1–141 are incorporated by reference as if fully stated herein.

143. Lamar, Lighting Technologies, and Irvin, individually and collectively, have been and are now directly infringing and/or indirectly infringing the '870 Patent by way of inducement and/or contributory infringement, literally and/or under the Doctrine of Equivalents, in violation of 35 U.S.C. § 271, including by making, using, selling, and/or offering for sale Accused Billboards in the United States. As explained in paragraphs 145–172 below, these Accused Billboards are covered by at least one claim of the '870 Patent, including, but not limited to, Claims 1–3, 5–16, and 18–25. The LED Accused Products have been designed, are intended to, have been marketed and have been sold to illuminate Accused Billboards and have no substantial non-infringing use.

144. Upon information and belief, each of the Defendants derive revenue from the activities relating to the making, using, selling, and/or offering for sale the Accused Billboards or LED Accused Products for use and installation on Accused Billboards.

145. As shown above in paragraphs 20–23, Lamar owns or operates billboards, including the Accused Billboards. As shown above in paragraphs 39–42, Lighting Technologies makes, imports, offers for sale, and sells LED Accused Products that are intended to be installed and operated on billboards, such as the Accused Billboards owned or operated by Lamar. Irvin makes, offers for sale, and/or sells LED Accused Products for use and installation on billboards, including the Accused Billboards owned or operated by Lamar. Lamar has, directly or indirectly, purchased LED Accused Products from Lighting Technologies or Irvin and has installed them and used them on its Accused Billboards.

146. As shown above in paragraphs 20–23 and 39–42, in view of Lighting Technologies and Irvin’s representations, in certain configurations the LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards) illuminate an area using a lighting assembly that comprises a substantially planar substrate; a plurality of light emitting diodes (LEDs), a plurality of optical elements, and a heat sink.

147. As shown above in paragraph 41, the plurality of light emitting diodes (LEDs) are arranged in a plurality of rows on a first surface of the substrate, the rows extending along a longitudinal axis in a plane of the first surface of the substrate;

148. As shown above in paragraph 41–43, each optical element of the plurality of optical elements is proximate an associated LED of the plurality of LEDs such that each optical element overlies a single LED and each LED underlies a single optical element. Each optical element comprises a first part, a second part and a third part. The first part comprises a first curved surface. The second part comprises a second curved surface that intersects with the first curved surface at a region between the first part and the second part. The first part and the second part each have a peak relative to the substrate. The peak is spaced from the region between the first part and the second part. The third part extends beyond the region between the first part and the second part in a direction away from the associated LED.

149. As shown above in paragraphs 41–43 the substantially planar substrate comprises a single substrate.

150. As shown above in paragraphs 41–43, each optical element of the plurality of optical elements is separate from other optical elements of the plurality of optical elements.

151. As shown above in paragraph 46, the heat sink comprises an aluminum heat sink. The fins on the heat sink are substantially flat.

152. As shown above in paragraph 42, the LEDs are arranged in only two rows.

153. As shown above in paragraph 46, in view of Lighting Technologies and Irvin's representations, the LED Accused Products comprise a power supply that is separated from the substrate.

154. As shown above in paragraphs 39 and 46, in the LED Accused Product, when installed on the Accused Billboards, comprise a billboard comprising an area, wherein the LED Accused Product is located adjacent the billboard to illuminate the area, the fins extend in a direction away from the billboard.

155. As shown above in paragraph 39–43, a billboard comprising the area, wherein the optical elements are configured so that failure of one or more LEDs of the lighting assembly will cause an illumination level of light impinging the area to decrease while a uniformity of the light impinging the area remains substantially the same as compared to when all LEDs are operational.

156. As shown above in paragraphs 39–43, the apparatus comprises a lighting assembly for illumination of an area, the lighting assembly comprising a substantially planar substrate; a plurality of light emitting diodes (LED), a plurality of optical elements, a heat sink, and a power supply.

157. More specifically, as shown above in paragraphs 41–42, a plurality of light emitting diodes (LEDs) are arranged in a plurality of rows on a first surface of the substrate. The LEDs are arranged in only two rows. The rows extending along a longitudinal axis in a plane of the first surface of the substrate.

158. As shown in paragraphs 41–42, a plurality of optical elements is attached to the substrate by threaded fasteners. Each optical element of the plurality of optical elements is

separate from other optical elements of the plurality of optical elements. Each optical element of the plurality of optical elements is proximate an associated LED of the plurality of LEDs such that each optical element overlies a single LED and each LED underlies a single optical element. Each optical element includes a first part, a second part and a third part. The first part comprises a first curved surface. The second part comprises a second curved surface that intersects with the first curved surface at a region between the first part and the second part. The first part and the second part each have a peak relative to the substrate. The peak is spaced from the region between the first part and the second part. The third part extends beyond the region between the first part and the second part in a direction away from the associated LED.

159. As shown in paragraphs 46, the heat sink is thermally coupled to a second surface of the substrate. The second surface is opposite the second surface opposite the first surface. The heat sink comprises a first section substantially parallel to the substrate so that each and every LED is separated from the heat sink by the substrate. The heat sink further comprises a plurality of fins extending away from the first section and substantially perpendicular thereto, each fin extending along an axis in the plane of the first surface of the substrate, the axis for each fin being substantially perpendicular to the longitudinal axis of the first surface of the substrate, and wherein the first section of the heat sink includes a portion that extends past the substrate in a direction away from the fins.

160. As shown in paragraphs 46, the rows of LEDs extend along a longitudinal axis in a plane of the first surface of the substrate, and wherein each fin extends along an axis in the plane of the first surface of the substrate, the axis for each fin being substantially perpendicular to the longitudinal axis of the first surface of the substrate.

161. As shown above in paragraphs 41–43, the optical elements are configured so that failure of one or more LEDs of the lighting assembly will cause an illumination level of light impinging the portion of the display surface to decrease while uniformity of the light impinging the portion of the display surface remains substantially the same as compared to when all LEDs are operational.

162. As shown above in paragraph 41-43, the lighting assembly further comprises a second planar substrate with LEDs arranged thereon, the second substrate arranged in a common orientation with the substrate so that all of the LEDs of the substrate and the second substrate are arranged in a common orientation, wherein all of the substrate and the second substrate are mounted in a single assembly.

163. As shown above in paragraph 41-43, the billboard further comprises a second lighting assembly located adjacent the lighting assembly and located so as to be able to illuminate a second portion of the display surface during operation. The second lighting assembly comprises: a second substantially planar substrate; a second plurality of light emitting diodes, a second plurality of optical elements; and a second heat sink.

164. As shown above in paragraphs 41–43, the second plurality of light emitting diodes (LEDs) is arranged in a plurality of rows on a first surface of the second substrate, wherein the rows of the second plurality of LEDs extend along a longitudinal axis in a plane of the first surface of the second substrate. Similarly, in the second plurality of optical elements, each optical element of the second plurality of optical elements is proximate an associated LED of the second plurality of LEDs such that each optical element of the second plurality overlies a single LED and each LED of the second plurality underlies a single optical element. The second heat sink is thermally coupled to a second surface of the second substrate. The second surface is

opposite the first surface. The second heat sink comprises a first section substantially parallel to the second substrate so that each and every LED of the second plurality of LEDs is separated from the second heat sink by the second substrate. The second heat sink further comprises a second plurality of fins extending away from the first section of the second heat sink and substantially perpendicular thereto. The first section of the second heat sink includes a portion that extends past the second substrate in a direction away from the second plurality of fins. Each fin extends along an axis in the plane of the first surface of the second substrate. The axis for each fin is substantially perpendicular to the longitudinal axis of the first surface of the second substrate.

165. As shown above in paragraph 39, the billboard of claim 18, wherein the display surface has visual media content displayed thereon, the visual media content comprising a picture and/or text;

wherein the display surface has a width of forty-eight feet along each of an upper edge and a lower edge of the display surface and a height of fourteen feet along each of a left side edge and a right side edge of the display surface;

wherein the portion of the display surface extends from the lower edge to the upper edge adjacent the left side edge and the second portion extends from the lower edge to the upper edge adjacent the right side edge, the portion and the second portion together extending from the left side edge to the right side edge;

wherein the lighting assembly is configured to illuminate the portion of the display surface; and

wherein the second lighting assembly is configured to illuminate the second portion of the display surface.

166. As shown above in paragraph 39, wherein the display surface can be illuminated using only the lighting assembly and the second lighting assembly so that the visual media content can be viewed without additional light.



167. As shown above in paragraphs 39-46, upon information and belief, Lamar, Lighting Technologies, and Irvin use a method of illuminating visual media content on a billboard display surface using a lighting assembly that comprises a power supply and a lighting unit that includes a substrate, a plurality of light emitting diodes (LEDs) arranged on the substrate, a plurality of optical elements, and a heat sink. The method comprises:

directing light from the LEDs toward a portion of the billboard display surface such that the light from the lighting unit illuminates the visual media content on the portion of the billboard display surface with an illumination level and a uniformity; and

directing heat generated by the LEDs away from the optical elements using the heat sink;

wherein the plurality of LEDs are arranged in a plurality of rows on a first surface of the substrate, the rows extending along a longitudinal axis in a plane of the first surface of the substrate;

wherein each optical element of the plurality of optical elements is proximate an associated LED of the plurality of LEDs such that each optical element overlies a single LED and each LED underlies a single optical element;

wherein each optical element of the plurality of optical elements is separate from other optical elements of the plurality of optical elements;

wherein each optical element includes a first part, a second part and a third part;

wherein the first part comprises a first curved surface;

wherein the second part comprises a second curved surface that intersects with the first curved surface at a region between the first part and the second part, wherein the first part and the second part each have a peak relative to the substrate, the peak being spaced from the region between the first part and the second part;

wherein the third part extends beyond the region between the first part and the second part in a direction away from the associated LED;

wherein the heat sink is thermally coupled to a second surface of the substrate, the second surface opposite the first surface;

wherein each and every LED of the plurality of LEDs is separated from the heat sink by the substrate;

wherein the heat sink comprises a first section substantially parallel to the substrate and a plurality of fins extending away from the first section and substantially perpendicular thereto; and

wherein each fin extends along an axis in the plane of the first surface of the substrate, the axis for each fin being substantially perpendicular to the longitudinal axis of the first surface of the substrate.

168. As shown above in paragraph 46, wherein directing light from the LEDs comprises providing power to the LEDs from the power supply, the power supply is separated from the substrate so that the heat sink does not dissipate heat from the power supply to the same extent as if the power supply was mounted directly to the substrate.

169. As shown above in paragraphs 39–46, the method further comprises directing light from a second lighting unit toward the portion of the billboard display surface at the same time as directing light from the LEDs toward the portion of the billboard display surface.

170. As shown above in paragraphs 39–46, the method further comprises directing light from a second lighting unit toward a second portion of the billboard display surface at the same time as directing light from the LEDs toward the portion of the billboard display surface, wherein the visual media content can be viewed using only the light directed from the lighting unit and the second lighting unit.

171. As shown above in paragraphs 39–46, wherein directing light from the LEDs comprises illuminating the visual media content on the portion of the billboard display surface with the illumination level and the uniformity, the optical elements are configured so that failure of one or more LEDs of the lighting unit will cause the illumination level of the light impinging the portion of the billboard display surface to decrease while the uniformity of the light impinging the portion of the billboard display surface remains substantially the same.

172. Upon information and belief, Defendants have had actual knowledge of the '870 Patent and actual knowledge that their activities constitute either direct or indirect infringement of the '870 Patent, yet they have not ceased their infringing activities. Defendants' infringement of the '870 Patent has been and continues to be willful and deliberate. Defendants also have knowledge of the '870 Patent by way of this complaint and, to the extent they do not cease their infringing activities, their infringement is and continues to be willful and deliberate.

173. Ultravision has no adequate remedy at law against Defendants' individual and collective acts of infringement, and, unless Defendants are enjoined from their infringement of the '870 Patent, Ultravision will suffer irreparable harm.

174. Defendants, by way of their infringing activities, have caused and continue to cause Ultravision to suffer damages, the exact amount to be determined at trial.

**COUNT IV: PATENT INFRINGEMENT OF THE '488 PATENT**

175. Paragraphs 1– 174 are incorporated by reference as if fully stated herein.

176. Lamar, Lighting Technologies, and Irvin, individually and collectively, have been and are now directly infringing and/or indirectly infringing the '488 Patent by way of inducement and/or contributory infringement, literally and/or under the Doctrine of Equivalents, in violation of 35 U.S.C. § 271, including by making, using, selling, and/or offering for sale Accused Billboards in the United States. As explained in paragraphs 178–188 below, these Accused Billboards are covered by at least one claim of the '488 Patent, including, but not limited to, Claims 1–9, 11-19, 21-28, and 30. The LED Accused Products have been designed, are intended to, have been marketed and have been sold to illuminate Accused Billboards and have no substantial non-infringing use.

177. Upon information and belief, each of the Defendants derive revenue from the activities relating to the making, using, selling, and/or offering for sale the Accused Billboards or LED Accused Products for use and installation on Accused Billboards.

178. As shown above in paragraph 21, Lamar owns or operates billboards, including the Accused Billboards that have an area. As shown above in paragraphs 32–41, Lighting Technologies makes, imports, offers for sale, and sells LED Accused Products that are intended to be installed and operated on billboards, such as the Accused Billboards owned or operated by Lamar and Irvin makes, offers for sale, and/or sells LED Accused Products for use and installation on billboards, including the Accused Billboards owned or operated by Lamar. Lamar has, directly or indirectly, purchased LED Accused Products from Lighting Technologies or Irvin and has installed them and used them on its Accused Billboards.

179. Further, as shown above in paragraph 21 and in view of Lighting Technologies’ and Irvin’s representations, in certain configurations the LED Accused Products (and, when used on the Accused Billboards, the Accused Billboards), Lamar uses an apparatus that comprises a light assembly that includes a plurality of light emitting diodes (LEDs) and a plurality of optical elements. As shown above in paragraphs 43-46, each optical element is associated with one of the plurality of LEDs and each LED is associated with one of the optical elements. As shown above in paragraph 43, Irvin has represented that a separate optical element “covers each of the MarQueue LED’s individual LEDs.”

180. Lamar, with Lighting Technologies’ and Irvin’s assistance, operates the LED Accused Products on its Accused Billboards such that it directs light from the plurality of LEDs toward the area, wherein directing the light comprises directing the light from each LED of the plurality of LEDs through the associated optical element such that light exiting from each optical

element of the plurality of optical elements is directed across all of the area. As shown above in paragraph 44, each optical element of the plurality of optical elements includes a first element comprising a first convex-shaped surface, a second element comprising a second convex-shaped surface that intersects with the first convex-shaped surface at an acute angle in a region between the first element and the second element, wherein the light from the associated LED exits the associated optical element through the first and the second convex-shaped surfaces, and a third element extending beyond the first convex-shaped element and the second convex-shaped element in a direction away from the associated LED.

181. And, as shown above in paragraphs 21 and 43, Lamar operates the LED Accused Products in conjunction with the Accused Billboards, with Irvin's and Lighting Technologies' assistance, in such a way that directs the light from the plurality of LEDs and further comprises providing a substantially uniform light intensity from each optical element of the plurality of optical elements across all of the area. Further, the Accused Billboards directs the light from the plurality of LEDs such that if some of the plurality of LEDs fail to operate and light is directed from remaining ones of the plurality of LEDs toward the area such that the light from each remaining LED is directed across all of the area.

182. As shown above in paragraphs 41-46, the plurality LEDs of the LED Accused Products are arranged in a plurality of rows within a plane, the rows extending along a longitudinal axis of the plane; wherein the plurality of LEDs are thermally coupled to a heat sink that comprises a first section substantially parallel to the plane in which the LEDs are located and a plurality of fins extending away from the first section and substantially perpendicular thereto, a longitudinal axis of each fin being substantially perpendicular to the longitudinal axis of the

plane; and wherein the method further comprises extracting heat generated while directing the light towards the area, the heat being extracted from the plurality LEDs using the heat sink.

183. As shown above in paragraph 43, in view of Lighting Technologies' and Irvin's representations, the optical elements are configured so that failure of one or more LEDs of the lighting assembly will cause the illumination level of light impinging the area to decrease while the uniformity of light impinging the area remains substantially the same.

184. As shown above in paragraph 21, the Accused Billboards further comprise a billboard comprising a billboard display surface that includes the area, wherein directing the light from the plurality of LEDs comprises illuminating the billboard display surface. The Accused Billboards also direct the light from the plurality of LEDs to illuminate the billboard display surface between outer edges of the billboard display surface. The area comprises substantially all of the billboard display surface between the outer edges. Some of the Accused Billboards have a display surface that is 48 feet wide between outer edges of the billboard display surface. The LED Accused products, when activated on the Accused Billboards, further comprise a second light assembly, wherein directing the light from the plurality of LEDs comprises illuminating a first portion of the billboard display surface. In these Accused Billboards, when activated, light is directed from the second light assembly to illuminate a second portion of the billboard surface. The area comprises substantially all of the billboard display surface, so that the light assembly and the second light assembly illuminate substantially all of the billboard display surface between the outer edges of the billboard display surface.

185. As shown above in paragraphs 21 and 43-46, the Accused Billboards also direct light from the plurality of LEDs toward the area further comprises spacing each LED of the plurality of LEDs from adjacent LEDs of the plurality of LEDs so that overlapping light from the

adjacent LEDs does not create interference patterns or result in dead spots on the area of a display surface being illuminated. Further, the areas beyond edges of the display surface receive a minimal amount of illumination from the plurality of LEDs.

186. As shown above in paragraph 21, the Accused Billboards, when activated, also direct light towards the area of the display surface area using an LED Accused Products. As shown above in paragraphs 43-46, the LED Accused Products comprise a light assembly that includes a plurality of light emitting diodes (LEDs) and a plurality of optical elements. Each optical element associated with one of the plurality of LEDs and each LED is associated with one of the optical elements, wherein directing the light comprises directing the light from each LED of the plurality of LEDs through the associated optical element such that light exiting from each optical element of the plurality of optical elements is directed across all of the area. As shown in paragraph 44, each optical element of the plurality of optical elements comprises a first side, a second side opposite the first side, and a third side perpendicular to the first side and the second side, a first element disposed at the first side, a second element disposed at the second side, and a third element disposed at the third side, wherein the third element extends beyond the first element and the second element in a direction away from the associated LED of the plurality of LEDs, wherein, in the direction away from the associated LED, the first element includes a first convex outer surface and the second element includes a second convex outer surface different than the first outer convex surface, and wherein the first convex outer surface has a first peak at a first distance from a point on the associated LED and the second convex outer surface has a second peak spaced from the first peak, the second peak being at a second distance from the point on the associated LED; and wherein the first convex outer surface and the second convex outer surface connect at a connection region that is at a third distance from the point on

the associated LED, wherein the third distance is shorter than the first distance as well as the second distance.

187. As shown in paragraph 21, the Accused Billboards, when activated, also direct the light from the plurality of LEDs to illuminate the billboard display surface between outer edges of the billboard display surface, the area comprising substantially all of the billboard display surface between the outer edges. And, as shown above in paragraphs 21 and 43-46 and explained by Lighting Technologies and Irvin, the light is directed from the plurality of LEDs further comprises providing a substantially uniform light intensity from each optical element of the plurality of optical elements across all of the area.

188. As shown above in paragraph 21 and 43, wherein after directing the light from the plurality of LEDs some of the plurality of LEDs fail to operate, when activated, the Accused Billboards and LED Accused Products direct light from remaining ones of the plurality of LEDs toward the area such that the light from each remaining LED is directed across all of the area. The optical elements in the LED Accused products and the Accused Billboards are configured so that failure of one or more LEDs of the lighting assembly will cause the illumination level of light impinging the area of the display surface to decrease while the uniformity of light impinging the area of the display surface remains substantially the same.

189. As shown above in paragraphs 21 and 46, the LED Accused Products and Accused Billboards direct light towards the display surface of a billboard using an apparatus that comprises a light assembly that includes a substantially planar circuit board, a heat sink, a plurality of light emitting diodes (LEDs), and a plurality of optical elements. As shown in paragraph 43-46, each optical element associated with one of the plurality of LEDs and each LED is associated with one of the optical elements and each LED overlying the heat sink and



separated therefrom by the circuit board; and extracting heat generated while directing the light towards the display surface, the heat being extracted from the plurality LEDs using the heat sink. When activated, light is directed from the light assembly such that light exiting from the light assembly is directed across an area of the display surface. As shown in paragraphs 41-43, the plurality of LEDs are arranged in a plurality of rows on a first surface of the circuit board, the rows extending along a longitudinal axis of the circuit board. As shown in paragraph 46, the heat sink is thermally coupled to a second surface of the circuit board, the second surface opposite the first surface and comprises a first section substantially parallel to second surface of the circuit board and a plurality of fins extending away from the first section and substantially perpendicular thereto, a longitudinal axis of each fin being substantially perpendicular to the longitudinal axis of the circuit board. As shown in paragraph 44, each optical element of the plurality of optical elements comprises a first side, a second side opposite the first side, and a third side perpendicular to the first side and the second side, a first element disposed at the first side, a second element disposed at the second side, and a third element disposed at the third side, wherein the third element extends beyond the first element and the second element in a direction away from the associated LED of the plurality of LEDs, wherein, in the direction away from the associated LED, the first element includes a first convex outer surface and the second element includes a second convex outer surface different than the first outer convex surface, and wherein the first convex outer surface has a first peak at a first distance from a point on the associated LED and the second convex outer surface has a second peak spaced from the first peak, the second peak being at a second distance from the point on the associated LED; and wherein the first convex outer surface and the second convex outer surface connect at a connection region

that is at a third distance from the point on the associated LED, wherein the third distance is shorter than the first distance as well as the second distance.

190. As shown in paragraph 21, some of the Accused Billboards have a display surface that is 48 feet wide between outer edges of the billboard display surface; the apparatus further comprises a second light assembly, wherein directing the light from the plurality of LEDs comprises illuminating a first portion of the billboard display surface. Light may also be directed from the second light assembly to illuminate a second portion of the billboard surface; and the area comprises substantially all of the billboard display surface, so that the light assembly and the second light assembly illuminate substantially all of the billboard display surface between the outer edges of the billboard display surface.

191. Upon information and belief, Defendants have had actual knowledge of the '488 Patent and actual knowledge that their activities constitute either direct or indirect infringement of the '488 Patent, yet they have not ceased their infringing activities. Defendants' infringement of the '488 Patent has been and continues to be willful and deliberate. Defendants also have knowledge of the '488 Patent by way of this complaint and, to the extent they do not cease their infringing activities, their infringement is and continues to be willful and deliberate.

192. Ultravision has no adequate remedy at law against Defendants' individual and collective acts of infringement, and, unless Defendants are enjoined from their infringement of the '488 Patent, Ultravision will suffer irreparable harm.

193. Defendants, by way of their infringing activities, have caused and continue to cause Ultravision to suffer damages, the exact amount to be determined at trial.

**PRAYER FOR RELIEF**

WHEREFORE, Plaintiff prays for the following relief:

194. A judgment in favor of Plaintiff that Defendants, jointly and severally, have infringed, directly and indirectly, by way of inducement and/or contributory infringement, literally and/or under the doctrine of equivalents, the Patents-in-Suit;

195. A preliminary and permanent injunction, enjoining Defendants and their officers, directors, agents, servants, employees, affiliates, divisions, branches, subsidiaries, parents, and all others acting in concert or privity with any of them from infringing, inducing the infringement of, or contributing to the infringement of the Patents-in-Suit;

196. An award of damages to which Plaintiff is entitled under 35 U.S.C. § 284 for Defendants' past infringement and any continuing or infringement post-trial up until the date Defendants are finally and permanently enjoined from further infringement and a final judgment is entered, including both compensatory damages and treble damages for willful infringement;

197. A preliminary and permanent injunction prohibiting further use by Defendants of the accused LED light fixtures presently used by them;

198. A judgment that Defendants' infringement has been willful;

199. Pre- and post-judgment interest as allowed by law on any damages awarded to Plaintiff;

200. A judgment and order requiring Defendants to pay the costs of this action (including all disbursements), as well as attorneys' fees as provided by 35 U.S.C. § 285;

201. A judgment and order requiring that, in the event a permanent injunction preventing future infringement is not granted, the Defendants pay to Plaintiff compulsory ongoing licensing fees, as determined by the Court in equity; and

202. Such other and further relief in law or in equity to which Plaintiff may be justly entitled.

**DEMAND FOR JURY TRIAL**

Plaintiff demands a trial by jury of any and all issues triable of right before a jury, except for future patent infringement, which is an issue in equity to be determined by the Court.

Dated: April 6, 2017.

**McKool Smith, P.C.**

/s/ Samuel F. Baxter

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