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VIZIO, INC.

UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

WESTERN DIVISION

NICHIA CORPORATION

Plaintiff and Counterclaim-Defendant,

v.

VIZIO, INC.

Defendant and Counterclaim-Plaintiff.

Case No. 8:16-cv-00545-SJO-MRW

VIZIO, INC.'S PRELIMINARY INVALIDITY CONTENTIONS

Author	Title	Publisher	Publication Date
	Cerium Doped Yttrium Aluminum Garnet		
Kaneko	*Liquid Crystal TV Displays*	KTK Scientific Publishers	1987
Auzel	*Materials and Devices Using Double-Pumped Phosphors with Energy Transfer*	Proceedings of the IEEE, Vol. 61, No. 6	1973
Huo	*Novel Technique of Phosphor Deposition to Form Cathode-Ray-Tube Screens*	IEEE	1986

VIZIO's positions with respect to these references are stated on information and belief, and are subject to further investigation and discovery, including information and documents that will be produced by Nichia and third parties.

VIZIO reserves the right to amend these invalidity contentions to assert these references depending on the claim construction and infringement positions Nichia may take as the case proceeds. Moreover, VIZIO reserves the right to use these references in combination with other references to render the claims of the '375 patent obvious in the event Nichia takes the position that certain claim limitations are missing from the references charted in the Exhibits identified in the charts above.

B. Local Patent Rule 3-3(b): Whether Each Item Anticipates or Renders Obvious the Asserted Claims

Nichia asserts claim 4 of the '375 patent against VIZIO in this lawsuit. Claim 4 is invalid because the '375 patent fails to meet one or more of the statutory requirements for patentability. The individual bases of invalidity for anticipation and obvious pursuant to 35 U.S.C. §§ 102 and 103 are provided below and in the claim charts attached as Exhibits 375-1 to 375-6.

1. Anticipation

Asserted claim 4 of the ’375 patent is invalid as anticipated under 35 U.S.C. § 102 in view of each of the prior art references identified above and in the claim charts included in Exhibits 375-1 to 375-6, which identify specific examples of where each limitation of the asserted claim is found in the prior art references. As explained above, the cited portions of prior art references identified in the attached claim charts are exemplary only and representative of the content and teaching of the prior art references, and should be understood in the context of the reference as a whole and as they would be understood by a person of ordinary skill in the art.

2. Obviousness

In accordance with Patent L.R. 3-3(b), prior art references rendering asserted claim 4 of the ’375 patent obvious, alone or in combination with other references, are identified in Exhibits 375-1 to 375-6. Exhibits 375-1 to 375-6 include exemplary claim charts for the ’375 patent showing specific combinations of references, including citations to relevant disclosures in those references. To the extent any limitation is deemed not to be exactly met, either explicitly or inherently, by an item of prior art listed above and in Exhibits 375-1 to 375-6, then any purported differences are such that the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art would, therefore, render the relevant claims invalid for obviousness under 35 U.S.C. § 103(a).

As an overview of obviousness, the technology claimed in the asserted patents is a basic application of the fundamental color mixing concept that blue and yellow make white, applied in the field of LEDs. As early as 1704, Newton published a paper describing how white can be made either by mixing equal parts red, green, and blue or by combining blue and yellow. Over the next 300 years, this fundamental concept has been applied in various lighting fields using various materials. Phosphors are one such material. A phosphor absorbs light of one color and emits light of a different color. Because of this unique property, phosphors have been commonly used since at least the 1930s to mix colors. Broadly speaking, this color mixing is accomplished by placing a phosphor over a light source where the phosphor converts a portion of the light emitted by the light source to a different color and the remainder of light is emitted unaltered. The overall effect is the emission of light of different colors, which will be perceived by the eye as a mixture of these two colors.

In 1996, Yttrium Aluminum Garnet ("YAG") was a well-known phosphor for absorbing blue light emission and converting it to yellow under harsh operating conditions. YAG was discovered in the 1960s by G. Blasse and A. Bril, researchers at Philips Research. Two research papers published in 1967 describe core characteristics of YAG, including that it absorbs blue light at about 460 nm and provides a bright yellow emission. Researchers thereafter combined YAG with blue light sources to make white light. For example, in 1969, researchers at Bell Labs applied YAG phosphors to blue-light-emitting lasers, as reflected in the Pinnow patent. In Pinnow, the YAG phosphor absorbed a portion of the blue laser light to create yellow light, which then mixed with the remaining blue light to create white light. A 1971 publication by the Pinnow inventors explained that by "coating a viewing screen with existing organic and inorganic phosphors, it is possible to efficiently convert monochromatic blue or ultraviolet laser light into virtually any visible color including white."

In the late 1970s, GE applied YAG to another commercial blue light source – high pressure mercury vapor lamps. Mercury vapor lamps emit light in the blue color region, with some lamps emitting too much blue. A 1977 article by Mary Hoffman at GE taught improved color rendition using YAG to convert a portion of the blue light emitted from mercury vapor lamps into yellow light. Hoffman specifically taught that YAG work efficiently at the high temperatures of high pressure mercury vapor lamps.

A 1986 Philips patent disclosed the use of YAG in low pressure mercury vapor lamps, known as compact florescent light bulbs. Philips taught the use of YAG Phosphors with blue mercury vapor lamps to emit white light at a given color temperature. Thus, prior to 1996, YAG had been used by two of largest lighting companies in the world, Philips and GE, and one of the leading research laboratories in the U.S., Bell Labs, to partially down-convert blue light emission into yellow light in order to make white light.

By 1996, it was also known to use Indium Gallium Nitride LED semiconductor chips as a blue-light-emitting source to combine with materials like YAG in order to produce white light. The first visible light LED, developed in 1962, emitted red light. By the early 1970s, green LEDs had also been developed. Thus, researchers focused on developing a blue LED. Those in the industry recognized the commercial importance of making a blue LED to make a highly efficient source of white light. However, the blue LED proved incredibly hard to make, and for over 20 years, the industry struggled to develop one. In the early 1990s, Shuji Nakamura, then at Nichia, along with other researchers finally succeeded in developing a commercially viable blue LED. A March 1994 article by Nakamura announced that "candela-class high-brightness InGaN/AlGaN DH blue LEDS with the luminous intensity of 1 cd were fabricated for the first time." In recognition of their achievements in developing the blue LED, Nakamura and two others were awarded the 2014 Nobel Prize in Physics. The Nobel Committee recognized the industry's struggle to make a blue LED, "which took three more decades to achieve." The Nobel Committee also recognized "[t]he invention of efficient blue LEDs has led to white light sources for illumination."

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