

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LOWE'S COMPANIES, INC. LOWE'S HOME CENTERS, LLC and
L G SOURCING, INC.,
Petitioners

v.

NICHIA CORPORATION,
Patent Owner

Case IPR2018-00066
Patent 7,915,631 B2

Before BRIAN J. McNAMARA, STACEY G. WHITE, and
NABEEL U. KHAN, *Administrative Patent Judges*.

KHAN, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

A. Background

Lowe's Companies, Inc., Lowe's Home Centers, LLC and L G Sourcing, Inc. ("Petitioners") filed a Petition (Paper 1, "Pet.") to institute an *inter partes* review of claims 1, 2, and 6–11 (the "challenged claims") of U.S. Patent No. 7,915,631 B2 (Exhibit 1001, the "'631 Patent"). Nichia Corporation ("Patent Owner") timely filed a Preliminary Response. Paper 6 ("Prelim. Resp."). We have authority under 37 C.F.R. § 42.4(a) and 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted unless the information presented in the Petition "shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Having considered the arguments and the associated evidence presented in the Petition and the Preliminary Response, for the reasons described below, we institute *inter partes* review of claims 1, 2, and 6–11, which constitute all challenged claims.

B. Related Proceedings

The '631 Patent is asserted in *Nichia Corp. v. Lowe's Companies, Inc. et al.*, No. 5:16-cv-142 (W.D.N.C.), *Nichia Corp. v. TCL Multimedia Tech. Holdings, Ltd.*, No. 16-cv-00681 (D. Del.) and *Nichia Corp. v. VIZIO, Inc.*, No. 16-cv-00545 (C.D. Cal.). Pet 67.

The '631 Patent has been the subject of two previous petitions ("the previous '631 Petitions"), IPR2017-00551 filed by Vizio, Inc., in which the Board denied institution and IPR2017-02000 filed by TCL Multimedia Technology Holding Limited, which was terminated pursuant to settlement before a decision on institution had issued. In addition, several IPRs have

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been filed on related patents, including IPR2017-00552, IPR2017-00556, IPR2017-00558, IPR2017-01998, IPR2017-01999, IPR2017-02001 (collectively “the Related IPRs”).

C. The '631 Patent

The '631 Patent generally relates to light emitting diodes used in devices such as LED displays, back light sources, traffic signals, illuminating switches and indicators. More particularly, the '631 Patent relates to light emitting diodes for emitting white light. *See* Ex. 1001, Abstract; 1:25–31. The LED contains a light emitting component and a phosphor, where the phosphor absorbs part of the light emitted from the light emitting component at one wavelength and emits light at a different wavelength. *Id.*

According to the '631 Patent, there were problems in creating white light in the conventional way of mixing red, green, and blue light due to the use of separate light emitting components required to emit the three primary colors. *Id.* at 1:48–62. Some light emitting diodes, therefore, use only one kind of light emitting component of one color (such as blue light), and add a fluorescent material that absorbs some of this light and emits light of a different color (such as yellow). When the light emitted by the light emitting component is mixed with the light emitted by the fluorescent material, the result is white light. *Id.* at 2:23–29. The '631 Patent specification notes that a fluorescent material that absorbs light of a short wavelength and emits light of a long wavelength has higher efficiency than a fluorescent material that absorbs light of a long wavelength and emits light of a short wavelength. *Id.* at 6:23–49.

However, several drawbacks can occur with the use of fluorescent material in an LED. For example, exposure to high intensity light and high temperatures can deteriorate the fluorescent material, leading to color tone deviation, darkening of the fluorescent material, and increasing absorption of light. *Id.* at 2:30–59. Additionally, exposure to moisture from the outside or introduced during the production process can accelerate the deterioration of the fluorescent material. *Id.* at 2:60–64.

To address the concerns described above, embodiments of the '631 Patent use a light emitting component that can emit light with high luminance at the appropriate wavelength range, and a fluorescent material with excellent resistance to high intensity light that can absorb part of the light emitted by the light emitting component and emit light at a longer wavelength. One embodiment of the light emitting diode of the '631 Patent is illustrated in Figure 1, reproduced below with annotations indicating the elements corresponding to some of the features discussed herein.



Figure 1, with annotations showing a lead type light emitting diode according to one embodiment of the '631 Patent.

The embodiment depicted in Figure 1 employs an LED chip mounted in a cup of the light emitting diode. *Id.* at 5:39–41. The LED chip is capable of emitting blue light of short wavelength. *Id.* at 9:35–39. The cup is filled with a transparent coating material, which is then covered by a molding material. *Id.* at 5:41–46. The coating material and molding material may be different materials, or they may be made of the same material. *Id.* at 17:4–12. The fluorescent material may be contained in the coating material or molding material or both. *Id.* at 15:15–20; 16:64–17:4. To provide resistance to high light intensity and heat this fluorescent material comprises a garnet phosphor activated with cerium. *Id.* at 3:38–44; 10:8–26. Further, to address concerns about exposure to moisture, the concentration of the phosphor can be varied so that the concentration

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