

**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

U.S. Patent No. 9,490,411

**DECLARATION OF DR. STANLEY R. SHANFIELD
IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF
UNITED STATES PATENT NO. 9,490,411**

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I, Dr. Stanley Shanfield, hereby declare under penalty of perjury under the laws of the United States of America:

I. INTRODUCTION

1. I have been retained to provide assistance regarding U.S. Patent No. 9,490,411 (“the ’411 patent”). Specifically, I have been asked to consider the validity of claims 1-3, 5-8, 10, 13, and 15-20 of the ’411 patent (the “Challenged Claims”). I have personal knowledge of the facts and opinions set forth in this declaration, and believe them to be true. If called upon to do so, I would testify competently thereto. I have been warned that willful false statements and the like are punishable by fine or imprisonment, or both.

2. I am being compensated for my time at my standard consulting rate of \$385 per hour. I am also being reimbursed for expenses that I incur during the course of this work. My compensation is not contingent upon the results of my study, the substance of my opinions, or the outcome of any proceeding involving the challenged claims. I have no financial interest in the outcome of this matter or on the pending litigation between Petitioner and Patent Owner.

3. A table of contents and a list of exhibits referenced herein are included above.

II. BACKGROUND AND QUALIFICATIONS

4. I offer statements and opinions on behalf of Petitioners Lowe's Companies, Inc., Lowe's Home Centers, LLC and L G Sourcing, Inc (collectively, "Lowe's" or "Petitioners"), generally regarding the validity, novelty, prior art, anticipation and obviousness considerations, and understanding of a person of ordinary skill in the art ("POSITA") as it relates to U.S. Patent No. 9,490,411 ("the '411 patent"). Attached hereto as Appendix A, is a true and correct copy of my Curriculum Vitae describing my background and experience.

5. As set forth in my curriculum vitae, I received a B.S. degree in Physics from the University of California, Irvine in 1977, and was a member of the Phi Beta Kappa Society. In 1975, I received the University of California Regents Award for Outstanding Research on experimental and theoretical work on rotating relativistic electron beams. Under full Energy Research and Development Administration scholarship, I received a Ph.D. in Physics from the Massachusetts Institute of Technology in 1981.

6. Starting in 1985 at Raytheon Research Division, most of my work focused on the development, packaging, and testing of semiconductor devices, including devices made using GaAs, AlGaAs, InGaAs, GaN, and SiC. During the late 1980s and most of the 1990s, I was directly involved in the epitaxial growth and packaging of electronic devices and integrated circuits, specialized light

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