

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent of Kikinis	§	
	§	
U.S. Patent No. 5,632,545	§	Petition for <i>Inter Partes</i> Review
	§	
Issued: May 27, 1997	§	
	§	Attorney Docket No.: 42299.41
Title: ENHANCED VIDEO	§	Customer No.: 27683
PROJECTION SYSTEM	§	Real Party in Interest: Xilinx, Inc.
	§	

Declaration of A. Bruce Buckman, Ph.D.

Under 37 C.F.R. § 1.68

Directed to the Proposed Substitute Claims

I, Dr. A. Bruce Buckman, do hereby declare:

1. I am making this declaration at the request of Xilinx, Inc. in the matter of the *Inter Partes* Review of U.S. Patent No 5,632,545 (“the ’545 Patent”) to Kikinis.
2. I am being compensated for my work in this matter. My compensation in no way depends upon the outcome of this proceeding.
3. In the preparation of this declaration, I have studied:
 - (1) The ’545 Patent, XLNX-1001;
 - (2) The file history of the ’545 Patent, XLNX-1008;

- (3) U.S. Patent No. 5,108,172 (“Flasck”), XLNX-1002;
- (4) U.S. Patent No. 5,287,131 (“Lee”), XLNX-1004;
- (5) U.S. Patent No. 5,692,821 (“Rodriguez”), XLNX-1009;
- (6) U.S. Patent No. 5,313,234 (“Edmonson”), XLNX-1010; and
- (7) U.S. Patent No. 5,136,397 (“Miyashita”), XLNX-1011.

4. In forming the opinions expressed below, I have considered:

- (1) The documents listed above,
- (2) The relevant legal standards, including the standard for obviousness provided in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), and any additional authoritative documents as cited in the body of this declaration, and
- (3) My knowledge and experience based upon my work in this area as described below.

Qualifications and Professional Experience

1. My qualifications are set forth in my curriculum vitae, a copy of which is provided as Exhibit XLNX-1007. As set forth in my curriculum vitae, I have over 44 years of experience in Electrical Engineering, including optical engineering.

2. My 44 years of experience in optical engineering includes over 15

years of teaching a graduate course in fiber and guided-wave optics at the University of Texas at Austin, where I held the ranks of associate professor and professor from 1974 until my retirement in 2009. Course topics included many of the components that appear in the '545 Patent, such as filters, prisms and lenses for redirecting light rays, and dichroic elements for combining or splitting light of different wavelengths or colors. I authored a textbook, *Guided-Wave Photonics* as an aid in teaching the course. I concurrently conducted research in optical systems that resulted in dozens of peer-reviewed publications, including one on a 6-Degree of freedom non-contact optical position sensor that won the Best Paper Award at an international conference in 1994. I am a coinventor on a US Patent for that device, and an inventor on three other patents covering various optical systems. I have consulted for several companies on optical technology. I have also served as an expert witness in several litigations involving optical systems by preparing declarations and expert reports as well as providing deposition, Markman hearing, and trial testimony.

3. As I will discuss below, some of the subject matter of the Substitute Claims proposed by the Patent Owner involve the heat shielding and power control of high intensity lamps such as those typically used in projection systems. I also have gained practical experience in those areas. In my optics experiments at the University of Nebraska and later at the University of Texas, I routinely used high

intensity lamps for a light source for my optical measuring instruments which incorporated heat filter glass to shield downstream components from the excessive heat from the lamp. The heat filter glass took the form of a glass coated with a number of thin films so as to make it pass light in the visible and reflect light in the infrared. I researched thin film optics for several years, and am familiar with how film thickness and refractive index is used to make a wavelength-selective coating such as a heat shield. Such a filter glass is commonly called a “hot mirror.” As for using fans to move the air next to hot electronic equipment, any electrical engineer learns early about its necessity.

4. Control of high intensity lamps may include a feedback loop using a temperature sensor to determine the temperature of the lamp environment and incorporating a power adjustment of the lamp if the temperature goes too high. This could be as simple as shutting down the lamp under those conditions. Control of high intensity lamps may also include a feedback loop incorporating a light intensity sensor to control light output from the lamp. I taught feedback control systems for nearly 10 years at the University of Texas, and developed software for computer-aided design (CAD) that my students used in the conduct of my control systems course.

5. I am familiar with the knowledge and capabilities one of ordinary skill in the optical design arts in the period around 1996. Specifically, my work (1) with

students, undergraduates as well as masters and Ph.D. candidates, (2) with colleagues in academia, and (3) with engineers practicing in industry allowed me to become personally familiar with the level of skill of individuals and the general state of the art. Unless otherwise stated, my testimony below refers to the knowledge of one of ordinary skill in the optical design arts during the 1995-1997 time period, including the priority date of the '545 Patent.

6. In my opinion, the level of ordinary skill in the art for the '545 Patent is a bachelor's degree in electrical engineering or physics combined with: i) coursework including at least two semesters with a specialization in optics and/or optical systems, and ii) two years of experience designing video based optical systems including by designing optical systems with off the shelf parts..

Relevant Legal Standards

7. I have been asked to provide my opinions regarding whether the claims of the '545 Patent are anticipated or would have been obvious to a person having ordinary skill in the art at the time of the alleged invention, in light of the prior art. It is my understanding that, to anticipate a claim under 35 U.S.C. § 102, a reference must teach every element of the claim. Further, it is my understanding that a claimed invention is unpatentable under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having

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