

Paper No. \_\_\_\_

Filed on behalf of: Gemological Institute of America, Inc.

By: Christopher W. Kennerly (chriskennerly@paulhastings.com)  
Naveen Modi (naveenmodi@paulhastings.com)  
Timothy P. Cremen (timothycremen@paulhastings.com)  
Paul Hastings LLP

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GEMOLOGICAL INSTITUTE OF AMERICA INC.  
Petitioner

v.

DIAMOND GRADING TECHNOLOGIES LLC  
Patent Owner

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U.S. Patent No. RE44,963

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**DECLARATION OF ANDREW S. GLASSNER**

## **I. INTRODUCTION**

1. I have been retained by Gemological Institute of America, Inc. as an independent expert consultant to provide expert testimony in support of Petitioner's Petition for *Inter Partes* Review (the "Petition") of Claims 1, 14, 16, 17, 32, 34, 35, 53, 55, 76, 79, 80, 82, 83, 85, 88, 94, 98, 114, and 120 ("Challenged Claims") of U.S. Patent No. RE44,963 ("the 'RE963 Patent;" Ex. 1001).

2. I have reviewed and am familiar with the 'RE963 Patent and its file history, which have been provided to me as Exhibits 1001 and 1013. I understand these to be exhibits to the Petition.

3. I have also been provided, reviewed, and am familiar with 1002-1012, 1014 which I understand to be the remaining exhibits to the Petition.

4. I have been asked to consider, among other things, whether certain references make obvious Claims 1, 14, 16, 17, 32, 34, 35, 53, 55, 76, 79, 80, 82, 83, 85, 88, 94, 98, 114, and 120 of the 'RE963 Patent. My opinions as to these issues are set forth below.

5. I am being compensated at my normal consulting rate for the time I spend on this matter. No part of my compensation is dependent on the outcome of this proceeding or any other proceeding involving the 'RE963 Patent. I have no other interest in this proceeding.

## II. QUALIFICATIONS

6. I have over 30 years of experience in computer graphics and optical system technologies.

7. I have worked as a publishing research scientist in computer graphics since the 1980s.

8. I have a Bachelor's Degree in Computer Engineering from Case Western Reserve University.

9. I have a M.S. and a Ph.D. in Computer Science from the University of North Carolina at Chapel Hill.

10. I have been principally employed as a researcher at the Xerox Palo Alto Research Center (PARC), and then at Microsoft Research in Redmond, WA, and now at my own company, The Imaginary Institute in Seattle, WA.

11. From the 1980s to the present, I have written hundreds of thousands of lines of computer programs in many different languages and for many different systems.

12. I have published many original technical articles, written or edited over a dozen books, and have been issued eight patents involving computer graphics.

13. I have served in many important technical positions in my field, including Chairman of the Special Interest Group on Graphics and Interactive

Techniques (“SIGGRAPH”) 1994 Papers Committee, Editor-in-Chief of ACM Transactions on Graphics, and Founding Editor of the Journal of Graphics Tools. I have served as a technical reviewer and committee member for many international journals and graphics conferences.

14. I created the popular Graphics Gems book series, and served as series editor for all five volumes. I published a regular bi-monthly technical column in IEEE Computer Graphics & Applications for almost 10 years. My two-volume textbook, “Principles of Digital Image Synthesis,” has been widely used as a university-level class text in computer graphics.

15. Through my online course “2D Animation and Interaction,” I have taught computer graphics to independent students all over the world.

16. I invented and published one of the first algorithms for ray tracing that allowed it to be a practical tool. I also invented and published an algorithm that made ray tracing practical for creating animation.

17. I chaired and taught several courses devoted to ray tracing at annual meetings of ACM SIGGRAPH.

18. I created, edited, and wrote several chapters for the book, “An Introduction to Ray Tracing,” which helped popularize the technique and has been used as a text in universities.

19. My Spectrum architecture was a test bed for state-of-the-art research in ray tracing and other rendering techniques. I led a group that demonstrated how to use ray tracing to produce images customized to the limited display ranges of different devices.

20. I have given invited talks, guest lectures, and colloquia for institutions and companies from Toronto to New Zealand and the United States. I have consulted for a broad range of companies as a computer graphics expert, from Electronic Arts and IBM to Tableau and Microsoft Research.

21. A copy of my curriculum vitae is Exhibit 1006.

### **III. SUMMARY OF OPINIONS AND LEGAL BASES THEREFORE**

22. My opinions expressed herein are based on: (i) my education, experience, and background in the fields discussed above, along with my professional judgment; (ii) the contents of the documents I cite and discuss herein, including Exhibits 1001-1013, each of which I have reviewed and am familiar with; and (iii) my understanding of the legal bases for finding a patent claim anticipated and obvious, which I explain below.

#### **A. Legal Basis for Obviousness**

23. It has been explained to me that under 35 U.S.C. § 103, a claim may be found to be obvious, and therefore invalid, when the differences between the claim and the prior art reference or references would have been obvious at the time

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