

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LG DISPLAY CO., LTD.
Petitioner

v.

SURPASS TECH INNOVATION LLC
Patent Owner

Case: IPR2015-00885

Patent 7,202,843

DECLARATION OF RICHARD ZECH, PH.D.

Declaration of Richard Zech, Ph.D.

I. INTRODUCTION

1. My name is Dr. Richard G. Zech, and I have been retained by the law firm of Mayer Brown LLP on behalf of LG Display Co. Ltd. and LG Display America, Inc. as an expert in the relevant art.

2. I have been asked to provide my opinions and views on the materials I have reviewed in this case related to Ex. 1001, U.S. Patent No. 7,202,843 (“the ’843 Patent”) (“the patent-at-issue”), and the scientific and technical knowledge regarding the same subject matter before and for a period following the date of the first application for the patent-at-issue was filed.

3. I am compensated at a rate of \$250 per hour for my work, plus reimbursement for expenses. My compensation does not depend on the outcome of this proceeding, nor has it influenced any of my opinions in this matter.

4. My opinions and underlying reasoning for this opinion are set forth below.

A. Background And Qualifications

5. A detailed record of my professional qualifications is set forth in the attached Appendix A (my curriculum vitae), including a list of publications, awards, research grants, and professional activities. A list of my previous testimony by deposition and at trial is included in my curriculum vitae (CV).

6. I graduated from Lawrence Institute of Technology (now Lawrence University)

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in 1965 with a B.S. in Electrical Engineering, being a Founder's Scholar each year of my undergraduate studies. I then graduated from University of Michigan in December 1966 with an MSEE degree and in May 1974 with a Ph.D. in Electrical Engineering with Computer Science and Photonics minors. While at the University of Michigan, I studied under leading modern optical science information processing pioneers, including Prof. Dr. E. N. Leith, Dr. A. Kozma, Dr. A. Vander Lugt, and Prof. Dr. Dennis Gabor (1971 Nobel laureate in physics).

7. I am currently President and Managing Principal of the ADVENT Group, which provides forensic consumer electronics test and evaluation, market research, product development, R&D, engineering, and technology assessment services in the areas of optical and computer storage, flat panel displays, digital cameras, nanotechnology, microelectromechanical systems (MEMS), and photonics. ADVENT Group's main areas of expertise include consumer electronic technologies, such as digital cameras and imaging, displays (monitors and TVs), scanners, small computer systems and components, and optical drive and media technologies. I have held VP positions in Engineering, Marketing and Sales, and Strategic Planning. In 1990 I was President and COO of the New Interfile Corporation. I therefore have both a knowledge of and perspective on the industries in which I have expertise, including flat panel displays.

8. At the University of Michigan I began a lifetime of research and development

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in the highly specialized areas of optical data and image storage, processing, computing, and communications, as well as image capture and display. While completing my Masters and Doctorate education at the University of Michigan, I performed research in the areas of holography, optical data processing and storage, light-sensitive materials, lasers, displays, and grating ruling engines. I also worked on research and development of pioneering recording and processing systems for optical storage and image correction and enhancement.

9. I have extensive experience with displays of various types. In the 1960s and 1970s, I worked with liquid crystal displays for numerous applications. The primary ones being as page composers (input devices) for prototype 3D holographic memories for NASA and large (up to 4x5 foot) monochrome and color displays for data fusion analysis (classified USAF contract; an early part of the 30-minute war scenario project). By today's standards, this was all very crude. I also worked on head-up displays for USAF fighter aircraft and holographic optical elements (HOE) for FLIR (forward looking infrared) sensors. In the 1980s my interests turned to plasma displays, which were well developed, for example, by IBM. In 1995 at the National Association of Broadcasters (NAB) Show I saw the future thanks to a demonstration at the Toshiba booth: real high-definition TV shown on a large (1920x1080) liquid crystal display (LCD). From that time to the present, LCDs have been an important part of my consulting practice.

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10. I have nearly 50 years of electrical and computer engineering experience in research and development, product development, systems engineering, and program management, including being principal investigator role. My work experience relates to advanced technologies for capturing, processing, and storing large data sets, such as LandSAT satellite data for NASA and the Department of Defense. I have been involved with pioneering work in the fields of holography, 3D holographic memories, optical data storage on disc, tape, and card, flat panel displays, lasers, materials science, and input/output devices. Since my graduation from the University of Michigan, I have taken numerous courses and seminars to increase my technical knowledge, and I have published nearly 200 papers and reports.

11. In the 1980s, as part of my modernization plan while Director of Communications systems (later, VP/Chief Technology Officer) at McGraw-Hill, I introduced personal computers (PCs), local area networks (LANs), document image management systems with an emphasis on displays for electronic information products. Starting in the 1990s, I have been researching ways to improve the performance, reliability, and lower the cost of high-performance of LCD and other types of displays.

12. I also have considerable experience with light emitting diodes (LEDs) and CCD and CMOS (complementary metal oxide semiconductor) image sensors through my work in 3D holographic memories (in which the image sensor is the output

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