

UNITED STATES PATENT AND TRADEMARK OFFICE  
WASHINGTON, D.C.

**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

---

WAVES AUDIO, LTD.  
Petitioner

v.

ANDREA ELECTRONICS CORPORATION  
Patent Owner

---

**Case: IPR2016-00461**

**Patent 6,049,607**

---

**DECLARATION OF BERTRAND M. HOCHWALD IN SUPPORT OF  
PETITION FOR INTER PARTIES REVIEW OF US PATENT 6,049,607**

## **I. INTRODUCTION**

1. I, Bertrand M. Hochwald, declare the following to be true and correct to the best of my knowledge. Except where otherwise indicated, I have personal knowledge of the facts below and, if called to do so, would and could testify regarding the matters stated in this report. I make this Declaration in support of inter partes review of US Patents 6,049,607.

2. I have been retained by Denko Lauff LLP on behalf of Waves Audio, Ltd.

3. I have been asked to provide my technical review, analysis, insights, and opinions on the materials I have reviewed in this case related to the '607 patent, including the references that form the basis of the grounds of rejection.

## **II. QUALIFICATIONS**

### **A. Educational Background**

4. In 1995 I received a Ph.D. in Electrical Engineering, and in 1993 an M.A. in Statistics from Yale University. My primary area of study was Statistical Signal Processing. I received an M.S. in Electrical Engineering from Duke University in 1986, and a B.S. in Engineering from Swarthmore College in 1984.

## **B. Career History**

5. I have twenty years of combined industry and academic experience in the research and design of systems for signal processing, and wireless and wireline communications.

6. My most recent appointment, starting in 2011, is with the University of Notre Dame, where I am currently a Freimann Chaired Professor of Electrical Engineering. I teach both graduate and undergraduate classes in Communication Systems and in Signals and Systems, where the emphasis is on the processing of analog and digital signals. My primary areas of research include communication systems, radiofrequency circuits, and signal design and processing. I advise graduate students who are attaining Ph.D. degrees through research and coursework.

7. Prior to Notre Dame, I worked from 2005-2010 at Beceem Communications, a cellular wireless communication chipset start-up company in Santa Clara, California, where I was Chief Scientist and Vice President of Systems Engineering. I was an integral part of the chipset development team. Beceem was bought by Broadcom Corporation in 2010 and no longer exists as a separate company.

8. Prior to Beceem, I worked from 1996-2005 at Lucent Bell Laboratories in New Jersey, where I was as a Distinguished Member of the Technical Staff doing research into communications systems and multiple-antenna systems. This resulted

in many patents and publications across a variety of areas in communication theory, information theory, and circuit design.

9. Prior to Bell Laboratories, I was a Visiting Assistant Professor at the University of Illinois in Urbana-Champaign during the 1995-1996 academic year, where I worked on a broad range of research topics related to signal processing and communications.

10. Prior to completing my Ph.D., during 1986-1989 I worked at the Department of Defense as a system engineer for signal processing and wireless communication systems.

### **C. Publications**

11. As indicated in detail in my CV (attached and incorporated as Exhibit 1), I have published approximately 95 articles in scholarly journals, many of them within the journals of the Institute of Electrical and Electronic Engineers (IEEE), one of the premier societies for electrical engineers. I have 37 granted patents in a variety of areas related to communication and signal processing systems. I have been an invited and plenary speaker at several international conferences throughout the world and have received awards and recognition for my research and publications.

#### **D. Other relevant qualifications**

12. In addition to my academic and practical experience, I have worked as an expert in the areas of communication and signal processing systems, as detailed in Exhibit 1. I have had experience drafting and successfully prosecuting my own patents, and have worked with other experts in signal processing systems as co-authors and co-inventors.

13. I am being compensated for my time at the rate of \$500 per hour for my work in connection with this matter. This compensation is not dependent in any way on the contents of this Declaration, the substance of any further opinions or testimony that I may provide or the ultimate outcome of this matter.

#### **III. MATERIALS REVIEWED**

14. In formulating my opinions, I have relied on my knowledge and experience in the field of signal and audio processing, and on the documents and information described below. I have reviewed the following materials:

- U.S. Patent No. 6,049,607 (the '607 patent) and its file history;
- Sources listed in Exhibit 2.

#### **IV. LEGAL PRINCIPLES**

15. I will not offer opinions of law because I am not an attorney. However, I have been informed of several principles of patent law, which I used in formulating my opinions.

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.