

I. INTRODUCTION

1. I submit this expert report on behalf of Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Telecommunications America, LLC (“Samsung”) on claim construction issues relating to U.S. Patent Nos. 5,659,891 (the “’891 patent”) and 5,809,428 (the “’428 patent”).

2. This expert report discloses my opinions regarding the indefiniteness of claims 1, 2, 3, 4, and 5 of the ’891 patent and claims 1, 2, 4, and 6 of the ’428 patent.

3. I reserve the right to supplement or modify the opinions expressed herein, as well as the bases for my opinions, depending on any information subsequently provided by plaintiff Mobile Telecommunications Technologies, LLC (“MTel” or “Plaintiff”) or discovered by Samsung.

A. Background and Qualifications

4. My qualifications are stated more fully in my curriculum vitae, which is attached to this expert declaration as **Exhibit 1**.

5. I received a B.S. degree in Electrical Engineering in 1982, an M.S. degree in Electrical Engineering in 1984, and a Ph.D. degree in Electrical Engineering in 1987 from the University of Michigan in Ann Arbor. While I was at the University of Michigan in Ann Arbor, I received several academic honors, including my B.S. degree with honors, a best graduate student award, and a best teaching assistant award during my graduate study.

6. After receiving my Ph.D., I worked at Bellcore (now Telcordia Technologies, which is part of Ericsson) in New Jersey from August 1987 until August 1990. At Bellcore, I was a leading system engineer for architecting migration plans for voice-centric telephone networks to data-centric, multi-service networks for the Regional Bell Operating Companies.

7. In September 1990, I joined the faculty at Washington University in St. Louis. I was an Assistant Professor of Electrical Engineering until June 1996. In July 1996, I was promoted to an Associate Professor of Electrical Engineering with tenure.

8. In May 1997, I took a leave from my full-time duties at Washington University and founded MinMax Technologies, Inc., a fabless semiconductor company that developed switch fabric integrated circuit chips for the Internet. In March 1999, I founded Erlang Technology, Inc., a fabless semiconductor company that focused on the design and development of integrated circuit chips and software for the Internet.

9. From May 1997 to August 2008, I served as the president for MinMax Technologies, Inc. and Erlang Technology. As the president of these companies, I managed the development of business plans, raised startup funding from private investors and corporations and follow-on investment from institutional investors, managed finances, recruited key technology and business employees, developed intellectual property, and led the marketing and sales of products. I managed MinMax and Erlang in various stages, starting from just a few employees to over 70, and raised over US \$30 million in investment.

10. The products and solutions that I worked on at MinMax and Erlang include integrated circuit chips, application and component software programs, compact consumer electronics with the highest level of pricing sensitivity, enterprise equipment with extensive feature requirements, and highly reliable network equipment for the carriers. One of Erlang's products received a best product of the year award in 2004 from a major trade journal for the electronics industry.

11. In August 2008, I resumed my full-time duties at Washington University. Currently, I am a Senior Professor of Electrical and Systems Engineering. During 2011-2014, served as the Chair of the Undergraduate Curriculum for the Department of Electrical and

Systems Engineering. During 2000-2002, I served as the Chair of the Graduate Curriculum for the Department of Electrical and Systems Engineering.

12. Over my professional career, I have conducted extensive research in communication, computing, and related electronic hardware and software. My research group has pioneered a new paradigm for designing electronic circuits that can alleviate the speed and performance mismatch against optical technology. I received several grants from U.S. Federal Agencies, including the National Science Foundation and the Defense Advanced Research Project Agency, and numerous contracts from the companies and organizations around the world.

13. As a faculty member at Washington University, I have taught a number of courses in electronics, communication, and computing at both the undergraduate and graduate levels. Relating to the technology at issue in this report, I have taught ESE 471 Communication Theory, ESE 571 Transmission and Multiplexing, and ESE 572 Signaling and Control in Communication Networks for a number of years. These courses cover various topics related to communication and computing.

14. At Washington University, I have supervised more than 50 graduate students, twelve of whom received a doctoral degree under my guidance. Many of my former students are now leading professionals in their respective fields.

15. I have also served in various technology and business advisor roles for other companies and organizations around the world. I was the main technical author for one of two winning proposals to the Korean government for CDMA wireless service licenses (1996). I have also been involved in a semiconductor company that specializes in semiconductor memories such as flash memories as a board member and as a technical advisor (2007 – 2011).

16. I am a named inventor on nine U.S. patents. I have extensively published technical memoranda, reports, and technical papers in international conferences and journals, and have given a number of seminars and invited talks. I have organized several international conferences and served as an international journal editor.

17. I have received several professional awards, such as the Best Paper Award at Mobility 2011 Conference in Barcelona, Spain (2011), the faculty advisor to the Most Active Student Branch in the Region 5 of the Institute of Electrical and Electronics Engineers (the “IEEE”) (2009), the Wall Street Journal Businessman of Year for Missouri (2003), the Outstanding Achievement Award by Bellcore (1990), the Best Paper Award at the 18th ISATA Conference in Florence Italy (1988), Rockwell Fellowship by Rockwell International (1985 and 1986), Outstanding Graduate Student Award by the University of Michigan (1985), and Outstanding Teaching Assistant Award by the University of Michigan (1984 and 1986).

18. I am a member of and have been actively involved in a number of professional organizations. For example, I served as the Chair of the Saint Louis Section of the Institute of Electrical and Electronics Engineers (“IEEE”) in 2014. I am currently a member of the Executive Committee of the Saint Louis Section of the IEEE, and a member of the Eta Kappa Nu Honor Society for electrical engineers. I have also served as an Ambassador of the McDonnell International Scholars Academy (2007-2013).

B. Testimony

19. I have testified as an expert both at depositions and at trial. Details are listed in my curriculum vitae, which is attached to this expert report as **Exhibit 1**.

C. Compensation

20. My compensation for this case is \$500 per hour, plus expenses. My compensation does not depend in any way on the outcome of this case.

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