

Inter Partes Review of U.S. Patent No. 9,843,215
Declaration of Gary Woods

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC., and GOOGLE LLC
Petitioner

v.

SCRAMOGE TECHNOLOGY LTD.
Patent Owner

Patent No. 9,843,215

DECLARATION OF DR. GARY WOODS

I, Gary Woods, hereby declare as follows.

I. INTRODUCTION

1. I have been retained as an expert witness on behalf of Google LLC, Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc. (“Petitioner”) for the above-captioned *inter partes* review (IPR). I understand that Petitioner challenges the validity of Claims 1, 4, 5, 8-13, and 17-22 of U.S. Patent No. 9,843,215.

2. I am over the age of eighteen (18) and otherwise competent to make this declaration. I am being compensated for my time in connection with this IPR at my standard consulting rate.

3. I understand that the petition for *inter partes* review involves U.S. Patent No. 9,843,215 (the “’215 Patent”), Ex-1001¹, which resulted from U.S. Application No. 14/636,347 (the “’347 Application”). The ’347 Application was filed on March 3, 2015 and claims priority to Korean Patent Application No. 10-2014-0025290, filed on March 4, 2014, and names Jai Hoon Yeom, Sang Won Lee, Seok Bae, So Yeon Kim, Jin Mi Noh, Ji Yeon Song, and Hee Jung Lee as the inventors. *See* Ex-1001 at Cover. The ’215 Patent issued on December 12, 2017,

¹ All exhibit citations refer to the exhibits attached to the Petition for *Inter Partes* Review of U.S. Patent No. 9,843,215, filed concurrently herewith.

from the '347 application. I further understand that, according to USPTO records, the '215 Patent is currently assigned to Scramoge Technology Limited (“Patent Owner” or “Scramoge”).

4. I have been asked to assume that the earliest date to which the '215 Patent is entitled to priority is March 4, 2014.

5. In preparing this Declaration, I have reviewed the '215 Patent and considered each of the documents cited herein, in light of general knowledge in the art. In formulating my opinions, I have relied upon my experience in the relevant art and have also considered the viewpoint of a person of ordinary skill in the art.

6. I am familiar with the technology at issue as of March 4, 2014, the earliest claimed priority date of the '215 Patent. I am also familiar with a person of ordinary skill in the art with respect to the technology at issue as of the March 4, 2014 earliest claimed priority date of the '215 Patent.

II. MY BACKGROUND AND QUALIFICATIONS

7. Since 2008, I have been employed as a Professor in the Practice in the Department of Electrical and Computer Engineering at Rice University in Houston, Texas. Since 2020, my title has been Distinguished Professor in the Practice. Before that, I worked as a postdoctoral fellow at the University of California, Santa Barbara (1996-1998); at Intel Corporation (1998-2000); at Spectralane Inc. (2000-2002); at Optonics (later Credence Systems Corp.) (2003-2006); and as an

independent consultant (2006-present). In the summers of 1988 and 1989 I worked at Texas Instruments.

8. My educational background includes undergraduate degrees in Physics and Electrical Engineering from Rice University in 1988 and an MS (1991) and Ph.D. (1997) in Applied Physics from Stanford University.

9. I am familiar with patents both as an inventor and as chief technology officer in charge of the patent portfolio of a company I co-founded, Spectralane. I am an inventor on 16 issued and one pending US utility patents. These patents deal with opto-electronics, integrated circuits, signal processing, and telecommunications.

10. With regard to wireless charging and wireless communication specifically, I have worked on a number of design projects at Rice in this field. Many of them were year-long capstone design projects, where I was the technical mentor on the project. Before the priority date, I have worked on projects involving wireless power delivery such as transcutaneous charging of biomedical implants, wirelessly powering a CO2 sensor for the International Space Station, using RFID to track bikers in a relay race, and treating cancer with microwave-absorbing implants. Projects with a significant charging but not wireless aspect include charging cellphones with supercapacitors and with human-powered generators, and harvesting energy from a shock absorber. I have supervised numerous projects

involving significant wireless networking aspects, including antenna design, covering protocols including Bluetooth, WiFi, ZigBee, and Bluetooth Low Energy.

11. After the priority date I have continued working in the wireless space. I have supervised a number of capstone projects involving significant wireless aspects, including wirelessly powering a multi-element pacemaker; an 11 GHz real-time 4x4 imaging radar array; sending video over cellphone links for ambulance telemedicine; ultra-low power wireless EEG transmission; several off-grid internet-of-things (IOT) systems; and several wirelessly transmitting medical devices.

12. Outside of capstone projects, I have been involved in research activities related to this case including developing an experimental setup with the highest magnetic field in Texas, developing a solar-powered, IOT flood-sensor network for Houston, and developing a terahertz generation and detection system.

13. In my educational activities, I regularly teach a laboratory course that includes a final project of building and testing a near-field communication system. I have also developed educational demonstrations for classroom use involving original “crystal” AM radios based on homemade cuprous-oxide rectifiers.

14. In formulating my opinions, I have relied upon my training, knowledge, and experience in the relevant art. A copy of my current *curriculum*

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