

Filed on behalf of TQ Delta, LLC

By: Peter J. McAndrews
Thomas J. Wimbiscus
Scott P. McBride
Christopher M. Scharff
Andrew B. Karp
McAndrews, Held & Malloy, Ltd.
500 W. Madison St., 34th Floor
Chicago, IL 60661
Tel: 312-775-8000
Fax: 312-775-8100
E-mail: pmcandrews@mcandrews-ip.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC. and DISH NETWORK, LLC
Petitioners

v.

TQ DELTA, LLC
Patent Owner

Case No. IPR2016-01021
Patent No. 8,718,158

DECLARATION OF ROBERT SHORT, Ph.D.

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I, Robert Short, do hereby declare as follows:

I. INTRODUCTION AND SUMMARY OF OPINIONS

1. I have been retained by TQ Delta, LLC (“Patent Owner” or “TQ Delta”) as an expert witness and have been asked to analyze U.S. Patent No. 8,718,158 (“’158 patent”).

2. I understand that Cisco Systems, Inc. (“Cisco” or “Petitioner”) filed a petition for *inter partes* review of the ’158 patent based on certain prior art references. I understand that the *inter partes* review proceeding has been docketed as IPR2016-01021.

3. I understand that the Patent Trial and Appeal Board (“PTAB” or “Board”) has initiated review of claims 1–30 of the ’158 patent based on the following references: (1) U.S. Patent No. 6,144,696 (“Shively”); (2) U.S. Patent No. 6,625,219 (“Stopler”); (3) U.S. Patent No. 6,424,646 (“Gerszberg”); (4) U.S. Patent No. 4,924,516 (“Bremer”); and (5) U.S. Patent No. 5,515,369 (“Flammer”).

II. PROFESSIONAL BACKGROUND AND QUALIFICATIONS

4. I am an expert in the field of digital communications, with a strong emphasis on the physical layer of communications systems.

5. I am a practicing electrical engineer with over 35 years of experience. I have attached as Exhibit A to this declaration a current copy of my *curriculum vitae*.

6. I received a Bachelor of Science degree in electrical engineering in 1975, graduating with honors. I worked for Motorola until late 1981, designing circuits, radar, and communication systems. I was employed by the Colorado Networks Operation of Hewlett-Packard from 1981 until 1984 designing computer networks, and for Sperry Corporation until 1989 designing military wireless networks.

7. I was awarded a Ph.D. in electrical engineering from the University of Utah in 1988 with a GPA of 3.95 out of a possible 4.00. My thesis involved physical layer techniques for sharing wireless channels in a wireless network environment using CDMA. I was invited, out a pool of over 800 applicants, to join the faculty of the University of Utah in 1989, where I taught courses at both the undergraduate and the graduate level, performed research into advanced wireless networks, and supervised a number of graduate students.

8. I left the University in 1995 to co-found a company. I have since been involved in a number of startup companies, all involving the design and development of communication systems and networks, including designing radios based various standards and assisting in the design of a wireline communications system. I was also employed with Alereon in Austin, Texas in 2003 and 2004, as Chief Engineer of a startup company focused on building integrated circuits for the multicarrier ultra-wideband personal area network environment. I have designed

or assisted in the design of a number of multicarrier systems, including several UWB systems, and a frequency hopping OFDM system based on the WiMAX standard. I have also designed or assisted in the design of various spread-spectrum and CDMA systems.

9. I am thoroughly conversant with communications standards and protocols and wrote a chapter in *WiMedia UWB* by Ghobad Heidari describing the ultra-wideband (UWB) physical layer. I am currently working with ViaSat in Carlsbad, California designing random-access communication systems for satellite networks using CDMA on the return link. I have published a number of seminal papers in refereed journals, have a number of patents, and am currently in high demand as a consultant.

III. COMPENSATION AND MATERIALS CONSIDERED

10. I am being compensated for my time at a rate of \$340/hr. In addition, I am being reimbursed for my reasonable expenses incurred in connection with my work on this matter. My compensation is not dependent on the opinions that I offer or on the outcome of this *inter partes* review proceeding or any other proceeding.

11. I am not an employee of TQ Delta, or any of its affiliates, parents, or subsidiaries.

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