UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

LIMESTONE MEMORY SYSTEMS LLC,
Patent Owner.

Case IPR2016-01561
U.S. Patent No. 6,233,181

DECLARATION OF DR. PINAKI MAZUMDER IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW

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1. Sukegawa and Fujishima disclose and render obvious every limitation of dependent Claim 3 65

2. Motivation to combine the teachings of Sukegawa and Fujishima 83

B. Claim 5 is Obvious under § 103(a) over Sukegawa in view of Fujishima and Walck 87

1. Sukegawa, Fujishima, and Walck disclose and render obvious every limitation of dependent Claim 5 87

2. A person of ordinary skill in the art would have been motivated to combine the teachings of Sukegawa, Fujishima, and Walck, thereby rendering Claim 5 obvious 92

C. Claim Chart Showing Obviousness of Claims 3 and 5 95

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EXHIBITS

Exhibit #	Exhibit Description
1001	Declaration of Dr. Pinaki Mazumder
1002	Curriculum Vitae of Dr. Pinaki Mazumder
1003	U.S. Patent No. 6,233,181
1004	File History for U.S. Patent No. 6,233,181
1005	U.S. Patent No. 5,487,040 to Sukegawa
1006	U.S. Patent No. 5,267,214 to Fujishima
1007	U.S. Patent No. 4,967,397 to Walck
1008	U.S. Patent No. 5,956,285 to Watanabe
1009	Masashi Horiguchi et al., *A Flexible Redundancy Technique for High-Density DRAM's*, IEEE JOURNAL OF SOLID-STATE CIRCUITS, VOL. 26, NO. 1, Jan. 1991, at 12-17
1010	Kazutami Arimoto et al., *A 60-ns 3.3-V-Only 16 Mbit DRAM with Multipurpose Register*, IEEE JOURNAL OF SOLID-STATE CIRCUITS, VOL. 24, NO. 5, Oct. 1989, at 1184-90
1011	U.S. Patent No. 5,687,123 to Hidaka
1012	U.S. Patent No. 5,726,946 to Yamagata
1013	U.S. Patent No. 6,003,148 to Yamauchi
1014	U.S. Patent No. 6,075,743 to Barth
1015	*Inter Partes* Review No. IPR2016-00096, Decision Granting Institution filed April 21, 2016
1016	*Inter Partes* Review No. IPR2016-00096, Judgment Granting Request for Adverse Judgment filed August 3, 2016

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I, Pinaki Mazumder, hereby declare:

I. INTRODUCTION

1. I have been retained by Apple Inc. (hereinafter "Apple") to serve as a technical expert and provide expert opinions relating to U.S. Patent No. 6,233,181 (hereinafter "'181 Patent") (Ex. 1003), including opinions on the validity of the '181 Patent in support of Apple's petition for *inter partes* review.

2. I am being compensated for my time at a rate of $350 per hour. My compensation is in no way dependent on the substance of the opinions I have offered below, or upon the outcome of Apple's petition for *inter partes* review (or the outcome of the *inter partes* review, if trial is instituted).

II. BACKGROUND AND QUALIFICATIONS

3. I received my PhD in Electrical and Computer Engineering from the University of Illinois at Urbana-Champaign in 1988. Prior to that, I received my MS degree in Computer Science from University of Alberta in Canada, BS degree in Electrical Engineering from Indian Institute of Science at Bangalore, and BSc Physics Honors degree from Guwahati University in India.

4. Currently, I am a Professor of Electrical Engineering and Computer Science at the University of Michigan where I have been teaching for the past 25 years. I spent 3 years at National Science Foundation serving as the lead Program Director of Emerging Models and Technologies Program in the CISE Directorate

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