

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HTC Corporation,
HTC America, Inc.,
LG Electronics, Inc.,
Samsung Electronics Co., Ltd., and
Samsung Electronics America, Inc.
Petitioners

v.

Parthenon Unified Memory Architecture LLC
Patent Owner

INTER PARTES REVIEW OF U.S. PATENT NO. 7,777,753
Case IPR No.: *To Be Assigned*

DECLARATION OF HAROLD S. STONE, PH.D., REGARDING
U.S. PATENT NO. 7,777,753

TABLE OF CONTENTS

I.	INTRODUCTION	1
A.	Engagement	1
B.	Background and Qualifications	1
C.	Compensation and Prior Testimony	3
D.	Information Considered.....	5
II.	LEGAL STANDARDS FOR PATENTABILITY	6
A.	Anticipation	7
B.	Obviousness.....	8
III.	TECHNOLOGY BACKGROUND.....	12
A.	Basics of Computer Architecture & Video Encoding/Decoding.....	12
1.	Tom Shanley and Don Anderson, “PCI System Architecture,” Third Edition, Addison-Wesley Publishing Company, Feb. 1995 (“ <i>Shanley</i> ”) (Ex. 1019).....	12
2.	International Organization for Standardization, “ISO/IEC 11172-2:1993: Information technology—Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s—Part 2: Video,” 1st ed., August 1, 1993 (“ <i>MPEG Standard</i> ”) (Ex. 1004).....	17
B.	The Consolidation of MPEG and Other Multimedia Device’s Memory	22
1.	Intel Corporation “Acceleration Graphics Port Interface Specification,” Revision 1.0 (“ <i>AGP</i> ”) (Ex. 1024)	22
2.	Video Electronics Standards Association published the “VESA Unified Memory Architecture Hardware Specifications Proposal,” Version 1.0p (“ <i>VUMA</i> ”) (Ex. 1025)	23
3.	U.S. Patent No. 5,774,676 to Stearns (“ <i>Stearns</i> ”) (Ex. 1007)	24
4.	U.S. Patent No. 5,797,028 to Gulick (“ <i>Gulick 028</i> ”) (Ex. 1023)	26
IV.	SUMMARY OF THE ’753 PATENT	29
A.	Effective Filing Date of the ’753 Patent	29
B.	Overview of the ’753 Patent.....	29
C.	The Prosecution History of the ’753 Patent	32
D.	Claim Construction	32
V.	LEVEL OF ORDINARY SKILL IN THE ART	32
VI.	OVERVIEW OF THE PRIOR ART REFERENCES	33
A.	U. S. Patent No. 5,546,547 (“ <i>Bowes</i> ”) (Ex. 1003).....	33

B.	<i>MPEG Standard</i> (Ex. 1004).....	34
C.	<i>Shanley</i> (Ex. 1019).....	34
D.	<i>Stearns</i> (Ex. 1007).....	34
E.	U.S. Patent No. 5,748,983 to Gulick (“ <i>Gulick 983</i> ”) (Ex. 1017).....	35
F.	R.J. Gove, “The MVP: A Highly-Integrated Video Compression Chip,” Proceedings of the IEEE Data Compression Conference (DCC ‘94), pp. 215-224 (March 29-31, 1994) (“ <i>Gove</i> ”) (Ex. 1006).....	36
G.	PCT International Publication No. WO 96/11440 A1 (“ <i>What</i> ”) (Ex. 1018).....	37
VII.	COMPARISON OF THE PRIOR ART TO THE ’753 PATENT	38
A.	Ground A: <i>Gulick 983</i> , in view of <i>MPEG Standard</i> and <i>PCI Architecture</i> , renders obvious, under 35 U.S.C. § 103, claims 1-4 and 7-10.....	38
1.	<i>Gulick 983</i> in view of <i>MPEG Standard</i> and <i>Shanley</i> , renders claim 1 obvious	38
2.	<i>Gulick 983</i> in view of <i>MPEG Standard</i> and <i>Shanley</i> , renders claim 2 obvious	53
3.	<i>Gulick 983</i> in view of <i>MPEG Standard</i> and <i>Shanley</i> , renders claim 3 obvious	55
4.	<i>Gulick 983</i> in view of <i>MPEG Standard</i> and <i>Shanley</i> , renders claim 4 obvious	57
5.	<i>Gulick 983</i> in view of <i>MPEG Standard</i> and <i>Shanley</i> , renders claim 7 obvious	59
6.	<i>Gulick 983</i> in view of <i>MPEG Standard</i> and <i>Shanley</i> , renders claim 8 obvious	64
7.	<i>Gulick 983</i> in view of <i>MPEG Standard</i> and <i>Shanley</i> , renders claim 9 obvious	66
8.	<i>Gulick 983</i> in view of <i>MPEG Standard</i> and <i>Shanley</i> , renders claim 10 obvious	66
B.	Ground B: <i>Gulick 983</i> in view of <i>MPEG Standard</i> , <i>Shanley</i> , and <i>Gove</i> , renders obvious, under 35 U.S.C. § 103, claim 12	69
1.	<i>Gulick 983</i> in view of <i>MPEG Standard</i> , <i>Shanley</i> , and <i>Gove</i> , renders claim 12 obvious.....	69
C.	Ground C: <i>Bowes</i> , in view of <i>MPEG Standard</i> , renders obvious, under 35 U.S.C. § 103, claims 1 and 2.....	70
1.	<i>Bowes</i> , in view of <i>MPEG Standard</i> , renders claim 1 obvious.....	70
2.	<i>Bowes</i> , in view of <i>MPEG Standard</i> , renders claim 2 obvious	82

D.	Ground D: <i>Bowes</i> , in view of <i>MPEG Standard</i> and <i>Stearns</i> , renders obvious, under 35 U.S.C. § 103, claim 3	84
1.	<i>Bowes</i> , in view of <i>MPEG Standard</i> and <i>Stearns</i> , renders claim 3 obvious	84
E.	Ground E: <i>Bowes</i> , in view of <i>MPEG Standard</i> and <i>Shanley</i> , renders obvious, under 35 U.S.C. § 103, claim 4	87
1.	<i>Bowes</i> , in view of <i>MPEG Standard</i> and <i>Shanley</i> , renders claim 4 obvious	87
F.	Ground F: <i>Bowes</i> , in view of <i>MPEG Standard</i> and <i>Whai</i> , renders obvious, under 35 U.S.C. § 103, claims 7-8.....	88
1.	<i>Bowes</i> , in view of <i>MPEG Standard</i> and <i>Whai</i> , renders claim 7 obvious	88
2.	<i>Bowes</i> , in view of <i>MPEG Standard</i> and <i>Whai</i> , renders claim 8 obvious	93
G.	Ground G: <i>Bowes</i> , in view of <i>MPEG Standard</i> , <i>Whai</i> , and <i>Shanley</i> , renders obvious, under 35 U.S.C. § 103, claims 9 and 10	94
1.	<i>Bowes</i> , in view of <i>MPEG Standard</i> , <i>Whai</i> , and <i>Shanley</i> , renders claim 9 obvious	94
2.	<i>Bowes</i> , in view of <i>MPEG Standard</i> , <i>Whai</i> , and <i>Shanley</i> , renders claim 10 obvious	95
H.	Ground H: <i>Bowes</i> , in view of <i>MPEG Standard</i> , <i>Whai</i> , and <i>Gove</i> , renders obvious, under 35 U.S.C. § 103, claim 12	96
1.	<i>Bowes</i> , in view of <i>MPEG Standard</i> , <i>Whai</i> , and <i>Gove</i> , renders claim 12 obvious	96
VIII.	APPENDIX A.....	1

I, Harold S. Stone, Ph.D., declare as follows:

I. INTRODUCTION

A. Engagement

1. I have been retained by counsel for the Petitioners to submit this declaration in connection with Petitioners' Petition for *Inter Partes* Review of claims 1-4, 7-10, and 12 of U.S. Patent No. 7,777,753 ("753 Patent") (Ex. 1001).

B. Background and Qualifications

2. I was awarded a Ph.D. and Master's Degree in Electrical Engineering from the University of California-Berkeley in 1963 and 1961, respectively. I received a Bachelor of Science degree in Electrical Engineering from Princeton University in 1960.

3. After my graduation from Berkeley in 1963, I served as a Research Engineer at Boeing and SRI International. I then held faculty positions at Stanford University and at the University of Massachusetts, where I served as a professor of computer science and electrical engineering.

4. In 1984, I started working for IBM as a Manager of Advanced Architecture Studies. In 1990, I became a Research Staff Member at IBM. During my time at IBM, I managed and conducted research in the area of memory systems and optical interconnections. I worked at IBM until 1994, when I became a Fellow at the NEC Research Institute, the highest technical position in the company. At NEC, I conducted research in image processing. I am an inventor of a patent to

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.