

EXHIBIT A

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

APPLE INC., a California corporation,

Plaintiff,

v.

SAMSUNG ELECTRONICS CO., LTD., A
Korean business entity; SAMSUNG
ELECTRONICS AMERICA, INC., a New York
corporation; SAMSUNG
TELECOMMUNICATIONS AMERICA, LLC, a
Delaware limited liability company,

Defendants.

Case No. 11-cv-01846-LHK

**EXPERT REPORT OF KARAN
SINGH, PH.D. REGARDING
INFRINGEMENT OF U.S.
PATENTS NOS. 7,864,163,
7,844,915 AND 7,853,891**

****CONFIDENTIAL – CONTAINS MATERIAL DESIGNATED AS HIGHLY
CONFIDENTIAL – ATTORNEYS’ EYES ONLY PURSUANT
TO A PROTECTIVE ORDER****

1 **I. INTRODUCTION**

2 1. I, Dr. Karan Singh, have been asked by counsel for Apple Inc. (“Apple”) to
3 provide an opinion in the above-captioned case. I understand that Apple has alleged that
4 Defendants Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., and Samsung
5 Telecommunications America, LLC (collectively “Samsung”) have infringed various patents
6 assigned to Apple. I have been asked to provide opinions as to whether Samsung has infringed
7 United States Patents Nos. 7,864,163 (the “’163 patent), 7,844,915 (the “’915 patent) and
8 7,853,891 (the “’891 patent”). My opinions are set forth below in this Report and in the
9 accompanying exhibits.

10 2. I submit this expert Report in compliance with Federal Rule of Civil Procedure
11 26(a)(2). I reserve the right to supplement or amend this Report pursuant to Rule 26(e) and as
12 otherwise provided if additional data or other information that affects my opinions becomes
13 available. I expect to testify at trial regarding the matters expressed in this Report and any
14 supplemental Reports that I may prepare for this litigation. I also may prepare and rely on
15 audiovisual aids to demonstrate various aspects of my testimony at trial. I also expect to testify
16 with respect to any matters addressed by any expert testifying on behalf of Samsung, if asked to
17 do so.

18 3. I am being compensated for my work in connection with this matter at my current
19 standard consulting rate of \$450 per hour. I am separately being reimbursed for any out-of-
20 pocket expenses. My compensation is not based in any way on the outcome of the litigation or
21 the nature of the opinions that I express.

22 **II. QUALIFICATIONS**

23 4. Here, I provide a brief summary of my qualifications. I received my Bachelor of
24 Technology degree in Computer Science from the Indian Institute of Technology in 1991. I was
25 awarded a Master of Science degree in 1992, and a Ph.D. in 1995, both in Computer and
26 Information Science, from Ohio State University. I can read and program fluently in object-
27 oriented programming languages, such as C++ and Java. My qualifications and experience are
28 stated more fully in my curriculum vitae, which includes a list of all my honours, patents,

1 presentations, grants, and publications from the last five years, and is attached to this Report as
2 Exhibit 1.

3 5. In 1994, I was invited to conduct research at the Advanced Telecommunications
4 Research laboratory in Kyoto, Japan. During this time I researched virtual reality technology,
5 specifically designing graphical environments in which human characters could interact with
6 computing systems.

7 6. My Ph.D. dissertation, which I presented in 1995, was on creating representations
8 of humans which could interact in graphical environments.

9 7. In 1995, I joined Alias Wavefront in Toronto, Canada. While there I designed
10 character animation and facial modeling tools for the first release of Maya, which is a software
11 system for computer graphical modeling, animation, and rendering which won a technical Oscar
12 in 2003, one of only 38 such awards since 1930. This software, which I worked on for more than
13 two years, is still the premiere software package today for these functions. I worked at Alias
14 Wavefront until 1999.

15 8. I have worked with Chris Landreth, a director of animated films, since I started
16 with Alias Wavefront in 1995. Chris and I worked together on the design of Maya, and have
17 subsequently worked on a number of film projects. Notable among these projects is the short film
18 "Ryan," which won an Oscar for Best Animated Short in 2005.

19 9. Later in 1999, I joined a start-up company in California called Paraform Inc.
20 While there I worked to develop a system which transformed data from real objects which had
21 been scanned using lasers into useable digital models for downstream applications.

22 10. For several months in 1999 I was a Visiting Professor of Computer Science at the
23 University of Otago in New Zealand. During that time I taught and conducted research in
24 computer graphics.

25 11. Since 2002, I have been an Associate Professor of Computer Science at the
26 University of Toronto where I co-direct a graphics and human computer interaction laboratory
27 dgp (dynamic graphics project). I have conducted research and taught classes in graphics and in
28 human computer interaction. During this period, I have also undertaken consulting projects with

1 various companies in the computer graphics and design industries. Since 2002, I have also been
2 the Chief Scientist at Geometry Systems, which is a company which designs software for the
3 reverse engineering of physical objects into usable digital models. I also co-founded Arcestra,
4 Inc. in 2006, which is a software service for conceptualizing and visualizing architectural
5 interiors.

6 12. My current research focus is on interaction techniques for pen and touch based
7 devices inspired by a sketching metaphor.

8 13. I have previously testified by deposition as an expert in proceedings before the
9 International Trade Commission in the ITC Investigation In re Certain Electronic Digital Media
10 Devices and Components Thereof, Inv. No. 337-TA-796 on behalf of complainant Apple.

11 **III. MATERIALS CONSIDERED**

12 14. In forming my opinions and views expressed in this Report, I reviewed the '163
13 patent and its file history, the '915 patent and its file history, and the '891 patent and its file
14 history.

15 15. I have also examined all of the following Samsung products, which are sometimes
16 referred to in this Report as the "Samsung Accused Products": Acclaim, Captivate, Continuum,
17 Droid Charge, Epic 4G, Exhibit 4G, Fascinate, Galaxy Ace, Galaxy Prevail, Galaxy S (i9000),
18 Galaxy S 4G, Galaxy S II (including the i9100, T-Mobile, AT&T, Epic 4G Touch and Skyrocket
19 variants), Galaxy S Showcase (i500), Galaxy Tab 7.0, Galaxy Tab 10.1,¹ Gem, Gravity Smart,
20 Indulge, Infuse 4G, Intercept, Mesmerize, Nexus S, Nexus S 4G, Replenish, Sidekick, Transform,
21 and Vibrant.

22 16. In addition, I have reviewed portions of Samsung's website regarding most of
23 these products. I have also reviewed portions of the user manuals for these products. Attached as
24 Exhibit 2 is a chart that lists the Bates numbers where true and correct copies of printouts from
25 www.samsung.com of user guides and technical specifications for various Samsung Accused
26 Products have been produced.

27 ¹ Galaxy Tab 10.1 refers to both the WiFi and LTE versions.
28

1 17. I have also reviewed portions of the publicly available Android source code and
2 related documentation available at the Android developers website located at the following URL:
3 <http://developer.android.com/index.html>, as well as portions of the Samsung proprietary source
4 code that were produced by Samsung in this litigation prior to the close of fact discovery on
5 March 8, 2012. I have been informed that although Apple requested a production of all of the
6 Samsung source code for all of the Samsung Accused Products and that Samsung was ordered by
7 the Court to produce it by December 31, 2011, that Samsung produced source code only for a
8 subset of those products. Moreover, I understand that for those Accused Products for which
9 Samsung has produced source code, it produced only one version per Accused Product, even if
10 that product ran different versions of Samsung’s code over time. It is my further understanding
11 that Samsung has produced representative examples of the different versions of its source code
12 that were based upon Android releases 2.1, 2.2, 2.3 and 3.1, and that Samsung has represented,
13 subject to certain conditions, that the source code for any other version of each Accused Product
14 that was not produced does not differ in any material way for purposes of this litigation with
15 respect to the three patents I am addressing, from the source code that it has produced.²

17 ² For all three patents discussed in this Report, I understand that Samsung has represented
18 that the source code it produced on December 31, 2011 (on which my Report is based) is
19 representative of all versions, through February 14, 2012, of software on the following Accused
20 Products: Captivate, Continuum, Epic 4G, Exhibit 4G, Fascinate, Galaxy Ace Showcase, Galaxy
S 4G, Gravity Smart, Indulge, Intercept, Mesmerize, Nexus, Nexus S, Nexus S 4G, Replenish,
Showcase Galaxy S, Sidekick, Transform, Vibrant, and the Galaxy Tab.

21 I understand that Samsung has further represented that, as to source code accused of
22 infringing the ’915 patent, the code it produced on December 31, 2011 (on which my Report is
based) is representative of all versions of software on all of the Accused Products.

23 As to source code accused of infringing the ’163 and ’891 patents, I understand that
24 Samsung has recently represented that the code it produced on December 31, 2011 (on which my
Report is based) is representative of all versions of software on Accused Products released before
25 December 23, 2011. I understand that, in an email dated March 10, 2012, counsel for Samsung
provided notice that Samsung would be disclosing new versions of source code. I also
26 understand that counsel for Samsung described the code as “design-arounds” for the ’891 and
’163 patents. I have not reviewed this late-produced code, which I understand was produced on
27 or around March 12, 2012, as of the date of this Report and therefore cannot offer any opinion at
this time on whether it in fact reflects a “design-around” that avoids infringement of either the
’891 or the ’163 patent.

1 18. In forming the opinions in this Report, I have reviewed all of the material cited in
2 this Report, as well as the documents, things and materials listed in Exhibit 3. I also had
3 discussions with Bas Ording and Scott Herz, Apple employees listed as inventors on the ’891
4 and ’915 patents, respectively.

5 19. If called to testify or to give additional opinions regarding this matter, I reserve the
6 right to rely upon additional materials that may be provided to me or that are relied upon by any
7 of Samsung’s experts or witnesses.

8 **IV. LEGAL PRINCIPLES**

9 20. I have not been asked to offer an opinion on the law; however, as an expert
10 assisting the Court in determining infringement, I understand that I am obliged to follow existing
11 law. I have therefore been asked to apply the following legal principles to my analysis of
12 infringement:

13 21. I understand that to determine whether there is infringement of a patent: (1) the
14 claims of the patent must be construed; and (2) the properly construed claims must then be
15 compared with the accused products.

16 22. I understand that the parties have proposed differing constructions of certain terms
17 in the ’915 and ’891 patents, and that the parties may have differing constructions of terms that
18 were not part of the claim construction hearing, but that no claim construction Order has been
19 issued. Because no claim construction has been issued by the Court, I have interpreted the claims
20 as one of ordinary skill in the art would have at the time the relevant patent was filed in light of its
21 claim language, specification, and prosecution history.

22 23. I further understand that the claims should be construed from the standpoint of a
23 hypothetical person of ordinary skill in the art as of the invention date of the asserted patent. I
24 understand that claim construction is a matter of law and will be determined by the Court. I
25 reserve the right to modify my opinions if needed following the Court’s issuance of a claim
26 construction Order.

27 24. As the second step in the infringement analysis, I understand that the properly
28 construed claim must be compared to the accused products. I understand that an accused product

1 implementing user interfaces. I have interpreted the ’163 patent claims according to how I
2 believe such a person of ordinary skill would have understood the claims in 2006.

3 **B. Apple’s Practice Of The ’163 Patent**

4 33. I have examined a number of Apple products, including the iPhone 4S, iPhone 4,
5 iPhone 3GS, iPhone 3G, iPhone, iPad 2, and iPad. It is my opinion that each of these products
6 practices the claims of the ’163 patent. For example, with Apple’s iPhone 4, a user can open the
7 Safari application and load a web page, such as the *New York Times* home page
8 (www.nytimes.com). The iPhone 4 displays the *New York Times* home page which is a
9 structured electronic document that includes several boxes of content on its touch screen display.
10 The iPhone 4 detects a user’s double tap gesture (two taps on the touch screen in quick
11 succession) on a box of content, and it responds to that gesture by determining which box was
12 tapped and then enlarging and substantially centering that box on the screen. If the user proceeds
13 to double tap on a second box of content on the web page, the iPhone 4 responds by substantially
14 centering that second box on the screen. If the user then double taps again on the second box
15 which is already enlarged and centered from the user’s previous actions the iPhone 4 responds
16 by zooming out, reducing the size of the web page to its pre-enlargement scale.

17 34. Based on my examination of the aforementioned Apple products, I conclude that
18 they practice the asserted apparatus and system claims of the ’163 patent, and their ordinary and
19 intended use practices the asserted method claims of the ’163 patent. I have confirmed the
20 behavior I saw on the iPhone 4 and other Apple products by examining portions of the source
21 code for Apple’s iOS operating [REDACTED]
22 [REDACTED] as well as the Event Handling Guide for iOS
23 (available at [http://developer.apple.com/library/ios/#documentation/EventHandling/](http://developer.apple.com/library/ios/#documentation/EventHandling/Conceptual/EventHandlingiPhoneOS/Introduction/Introduction.html#//apple_ref/doc/uid/TP40009541)
24 [Conceptual/EventHandlingiPhoneOS/Introduction/Introduction.html#//apple_ref/doc/uid/TP4000](http://developer.apple.com/library/ios/#documentation/EventHandling/Conceptual/EventHandlingiPhoneOS/Introduction/Introduction.html#//apple_ref/doc/uid/TP40009541)
25 [9541](http://developer.apple.com/library/ios/#documentation/EventHandling/Conceptual/EventHandlingiPhoneOS/Introduction/Introduction.html#//apple_ref/doc/uid/TP40009541)).

26 35. My examination was further confirmed by my review of the testimony of Scott
27 Forstall, one of the inventors of the ’163 patent. Mr. Forstall testified that at least the iPhone,
28 iPad, and iPod Touch practice the ’163 patent (Forstall Dep. Tr. at 24:8–24:16). He then walked

1 through a demonstration of some double-tap zooming elements of claim 2 of the ’163 patent,
2 confirming that the iPhone demonstrated in his deposition exhibited behavior meeting certain
3 elements of that claim (Forstall Dep. Tr. at 24:17 27:10).

4 **C. Priority Date of the ’163 Patent**

5 36. I intend to rely upon the documentary evidence and testimony of one or more of
6 the named co-inventors of the ’163 patent or other witnesses to testify regarding facts relevant to
7 the conception and reduction to practice of the claimed invention prior to the filing date of the
8 patent.

9 37. I have reviewed the documentary evidence regarding the design and
10 implementation work done on the inventions claimed in the ’163 patent, including the deposition
11 transcripts of Scott Forstall, Chris Blumenberg, and Richard Williamson, emails regarding
12 technology demonstrations and planned and completed development tasks, as well as code check-
13 in logs. From that evidence, it appears that the claims of the ’163 patent that I analyze below
14 were conceived of by Andre Boule, Scott Forstall, Greg Christie, Stephen O. Lemay, Imran
15 Chaudhri, Richard Williamson, Chris Blumenberg, and Marcel van Os in or before March 2006,
16 and reduced to practice in March/April 2006. [REDACTED]

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