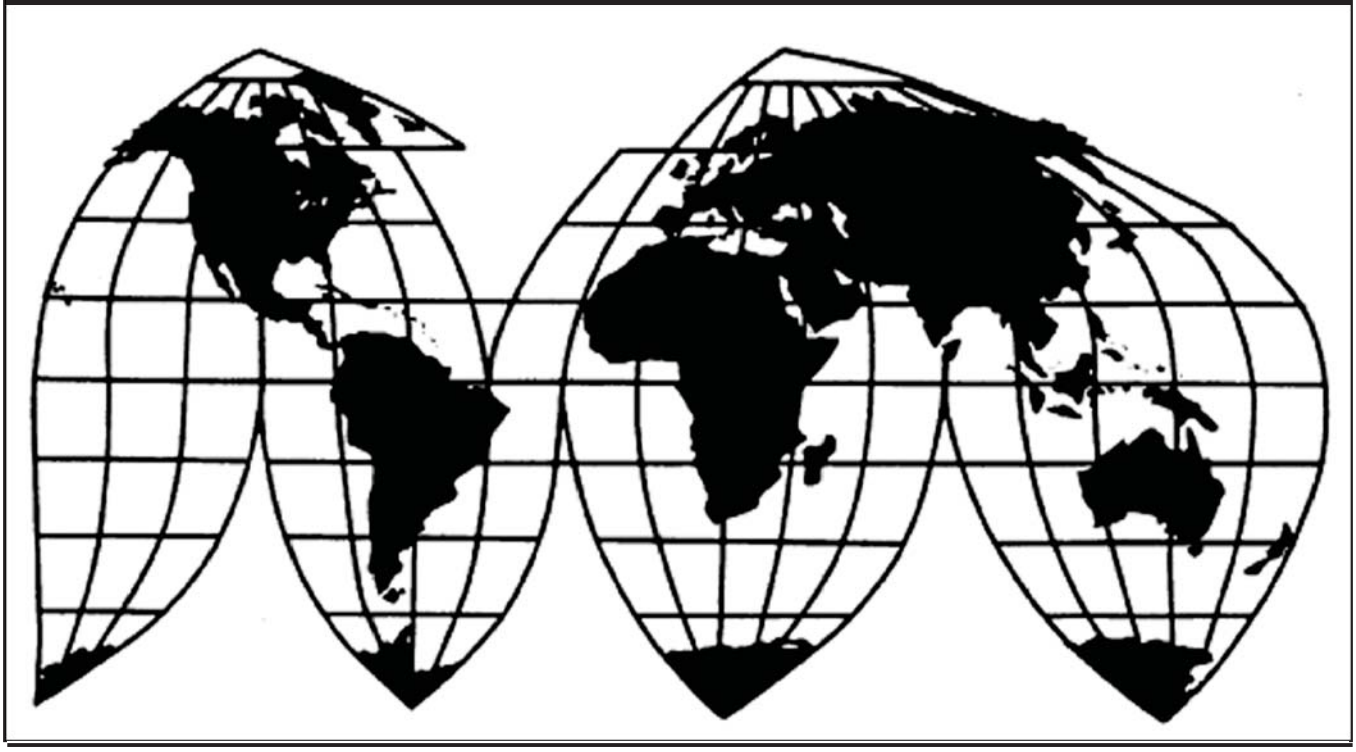
In the Matter of

Certain Mobile Devices, and Related Software Thereof

Investigation No. 337-TA-750

Publication 4385 **March 2013**

U.S. International Trade Commission



Washington, DC 20436

U.S. International Trade Commission

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN MOBILE DEVICES, AND RELATED SOFTWARE THEREOF**	**Inv. No. 337-TA-750**

NOTICE OF COMMISSION DECISION TO REVIEW IN PART AND ON REVIEW TO AFFIRM A FINAL DETERMINATION FINDING NO VIOLATION OF SECTION 337; TERMINATION OF INVESTIGATION

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to review in part the presiding administrative law judge's ("ALJ") final initial determination ("ID") issued on January 13, 2012, finding no violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337 in the above-captioned investigation, and on review, to affirm the ID's finding of no violation. The investigation is hereby terminated.

FOR FURTHER INFORMATION CONTACT: Megan M. Valentine, Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 708-2301. Copies of non-confidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-2000. General information concerning the Commission may also be obtained by accessing its Internet server at *http://www.usitc.gov*. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at *http://edis.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on (202) 205-1810.

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on November 30, 2010, based on a complaint filed by Apple Inc., f/k/a Apple Computer, Inc., of Cupertino, California. 75 *Fed. Reg.* 74081-82. The complaint alleges violations of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain mobile devices and related software by reason of infringement of certain claims of U.S. Patent Nos. 7,812,828 ("the '828 Patent"); 7,663,607 ("the '607 Patent"); and 5,379,430 ("the '430 Patent"). The Commission's notice of investigation named Motorola, Inc. n/k/a Motorola Solutions of Schaumburg, Illinois ("Motorola Solutions") and Motorola Mobility, Inc. ("Motorola") of

Libertyville, Illinois as respondents. The Office of Unfair Import Investigation was named as a participating party. The Commission subsequently terminated Motorola Solutions as a respondent based on withdrawal of allegations pursuant to Commission Rule 210.21(a)(1) (19 C.F.R. § 210.21(a)(1)). Notice (Aug. 31, 2011).

On January 13, 2012, the ALJ issued his final ID, finding no violation of Section 337. Specifically, the ALJ determined that accused products do not infringe the asserted claims of the '828 Patent either literally or under the doctrine of equivalents ("DOE"). The ALJ also found that the asserted claims of the '828 Patent are not invalid. The ALJ further found that the accused products literally infringe the asserted claims of the '430 and '607 patents, but do not infringe under DOE. The ALJ also found that the asserted claims of the '430 Patent are invalid under 35 U.S.C. § 102 for anticipation, and that the asserted claims of the '607 Patent are invalid under 35 U.S.C. § 102 for anticipation and under 35 U.S.C. § 103 for obviousness. The ALJ further found that Apple has standing to assert the '430 Patent, and that Motorola is not licensed to practice the '430 Patent. The ID also includes the ALJ's recommended determination on remedy and bonding in the event that the Commission reversed his finding of no violation of Section 337.

On January 30, 2012, Apple filed a petition for review of certain aspects of the ID's findings concerning claim construction infringement, and validity. Also on January 30, 2012, Motorola filed a contingent petition for review of certain aspects of the ID's findings concerning claim construction infringement, validity, domestic industry, standing, and licensing. On February 7, 2012, Motorola filed a response to Apple's petition for review. Also on February 7, 2012, Apple filed a response to Motorola's contingent petition for review. Further on February 7, 2012, the Commission investigative attorney filed a joint response to both Apple's and Motorola's petitions.

On February 22, 2012, non-party Google Inc. filed a public interest statement in response to the post-RD Commission Notice issued on January 25, 2012. *See* Corrected Notice of Request for Statements on the Public Interest (Jan. 25, 2012). On February 23, Apple filed a post-RD statement on the public interest pursuant to section 201.50(a)(4) of the Commission's Rules of Practice and Procedure (19 C.F.R. § 201.50(a)(4)), along with a motion for leave to file the statement out of time.

Having examined the record of this investigation, including the ALJ's final ID, the petitions for review, and the responses thereto, the Commission has determined to review the final ID in part.

Specifically, the Commission determines to review the ID for the limited purpose of clarifying that the ALJ also found claims 24-26, and 29 of the '828 Patent not infringed, and on review, to affirm this finding. We note that the ID does not explicitly address the issue of infringement of claims 24-26 and 29 of the '828 Patent, but finds no violation of Section 337 by reason of infringement of claims 1, 2, 10, 11, 24-26, and 29 of the '828 Patent. *See* ID at 205. We find, however, that the ALJ's analysis of the claim limitations "mathematically fitting an ellipse" and "mathematically fit an ellipse" with respect to claims 1 and 10, respectively, of the '828 Patent reflects the arguments and evidence adduced by Apple with respect to infringement of

claims 24-26 and 29. Apple presented no argument or evidence concerning infringement of the limitation "means for fitting an ellipse to at least one of the pixel groups" in claim 24 and, by dependency, claims 25-26 and 29 of the '828 Patent separate from its infringement arguments concerning claims 1 and 10. Accordingly, Apple has failed to meet its burden to demonstrate infringement of claims 25-26 and 29 of the '828 Patent.

The Commission also determines to review the ID's finding that the asserted claims of the '607 Patent are obvious under 35 U.S.C. § 103 in view of the reference "SmartSkin: An Infrastructure for Freehand Manipulation on Interactive Surfaces" by Jun Rekimoto either alone or in combination with Japan Unexamined Patent Application Publication No. 2002-342033A to Jun Rekimoto, and on review, modify the ID but affirm the finding that Motorola has demonstrated by clear and convincing evidence that the asserted claims of the '607 Patent are invalid under 35 U.S.C. § 103. The Commission's reasoning will be set forth in an opinion to be issued shortly.

The Commission also determines to review the ID's finding that the accused products infringe claims 1, 3 and 5 of the '430 Patent, and on review, affirm the ID's finding of direct infringement, but find that the analysis of infringement is incomplete in the ID because the ID's analysis does not address the Commission's decision in *Certain Electronic Devices with Image Processing Systems, Components Thereof, And Associated Software*, 337-TA-724, Comm. Op. at 10-20 (Dec. 21, 2011).

The Commission has determined not to review the remaining issues decided in the ID. Apple's motion for leave to file its public interest comments out of time is denied as moot.

The authority for the Commission's determination is contained in section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and in sections 210.42-46 and 210.50 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.42-46 and 210.50).

By order of the Commission.

James R. Holbein
Secretary to the Commission

Issued: March 16, 2012

PUBLIC CERTIFICATE OF SERVICE

I, James R. Holbein, hereby certify that the attached **NOTICE** has been served by hand upon the Commission Investigative Attorney, Lisa M. Kattan, Esq., and the following parties as indicated on **March 19, 2012.**

James R. Holbein, Secretary
U.S. International Trade Commission
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On Behalf of Complainant Apple Inc.:

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PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	
CERTAIN MOBILE DEVICES, AND RELATED SOFTWARE THEREOF	**Inv. No. 337-TA-750**

COMMISSION OPINION

I. BACKGROUND

A. Procedural History[1]

The Commission instituted this investigation on November 30, 2010, based on a complaint filed by Apple Inc., f/k/a Apple Computer, Inc., of Cupertino, California ("Apple"). 75 *Fed. Reg.* 74081-82. The complaint alleges violations of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337 ("Section 337"), in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain mobile devices and related software by reason of infringement of certain claims of U.S. Patent Nos. 7,812,828; 7,663,607 ("the '607 Patent"); and 5,379,430 . The Commission's notice of investigation named Motorola, Inc. n/k/a Motorola Solutions of Schaumburg, Illinois ("Motorola, Inc.") and Motorola Mobility, Inc. of Libertyville, Illinois ("Motorola") as respondents. The Office of Unfair Import Investigation ("IA") was named as a participating party. On August 16, 2011, the presiding administrative law judge ("ALJ") issued an initial determination ("ID") granting a joint

[1] The procedural history of the investigation prior to the issuance of the final ID is fully set forth in that document. *See* Final ID at 1-2.

unopposed motion to terminate the investigation as to Motorola, Inc. *See* Order No. 10 (Aug. 16, 2011). The Commission determined not to review Order No. 10. *See* Notice (Aug. 31, 2011).

On January 13, 2012, the ALJ issued his final ID ("Final ID"), finding no violation of Section 337. In particular, as is relevant to this opinion, the ALJ found that the asserted claims of the '607 Patent are invalid for anticipation under 35 U.S.C. § 102 and invalid for obviousness under 35 U.S.C. § 103. On January 30, 2012, Apple filed a petition for review of certain aspects of the final ID. In particular, Apple requested that the Commission review the ID's findings that the asserted claims of the '607 Patent are invalid.[2] On February 7, 2012, Motorola and the IA filed responses to Apple's petition for review.[3]

On March 16, 2012, the Commission determined to review the final ID in part, and on review, to affirm the ID's finding of no violation of Section 337 and to terminate the investigation. *See* Notice of Commission Decision to Review In Part And On Review To Affirm a Final Determination Finding No Violation of Section 337; Termination of Investigation (March 16, 2012). In particular, the Commission determined to review the ID's finding that the asserted claims of the '607 Patent are obvious under 35 U.S.C. § 103 in view of the reference "SmartSkin: An Infrastructure for Freehand Manipulation on Interactive Surfaces" by Jun Rekimoto ("SmartSkin"), either alone or in combination with Japan Unexamined Patent Application Publication No. 2002-342033A to Jun Rekimoto ("Rekimoto '033"). As discussed below, on review, the Commission affirms the ID's finding of obviousness in view of the SmartSkin

[2] Also on January 30, 2012, Motorola filed a contingent petition for review of certain aspects of the final ID.

[3] The IA's February 7, 2012, filing included her response to Motorola's contingent petition. Apple also filed a response to Motorola's contingent petition on February 7, 2012.

reference in combination with Rekimoto '033 and finds that Motorola has demonstrated by clear and convincing evidence that the asserted claims of the '607 Patent are invalid under 35 U.S.C. § 103 based on modified reasoning.

B. Patent at Issue

The '607 Patent is entitled "Multipoint Touchscreen" and is directed to a touch panel that has a transparent capacitive sensing medium configured to detect multiple touches or near touches that occur simultaneously and at different locations on the touch panel. In response to the multiple touches, the sensing medium produces distinct signals representative of the location of the touches. The inventors of the '607 Patent are Steve Hotelling, Joshua A. Strickon, and Brian Q. Huppi. The patent is assigned to Apple. The '607 Patent has 11 claims, of which claims 1-7 and 10 were asserted against Motorola.

Asserted claim 1 of the '607 Patent and its dependent asserted claims 2-7 are directed generally to a touch panel having a transparent capacitive sensing medium configured to detect multiple, co-occurring touches at different locations on the touch panel and to produce signals representative of the location of the touches. The touch panel comprises two layers of transparent electrically-isolated conductive lines where the two layers are spatially separated from each other and where the conductive lines in one layer are positioned transverse to the conductive lines in the other layer, creating an array of intersection points. Capacitive monitoring circuitry is configured to detect changes in the capacitance between the two layers of conductive lines, indicating the location of the multiple touches on the touch panel. Asserted claim 10 of the '607 Patent is directed generally to a display arrangement comprising a display for a graphical user interface and a transparent touch panel, which has a multipoint sensing arrangement configured

to recognize multiple, co-occurring touches at different locations on the touch panel by sensing a resulting change in capacitive coupling associated with the touches and is capable of outputting this information to a host device to form a pixilated image. The touch panel has three glass plates separating two transparent conductive layers. Each conductive layer contains a plurality of spaced parallel lines having the same pitch and linewidths, where the lines in one of the layers are perpendicular to the lines in the other layer.

II. STANDARD OF REVIEW

Once the Commission determines to review an initial determination, its review is conducted *de novo*. *Certain Polyethylene Terephthalate Yarn and Prods. Containing Same*, Inv. No. 337-TA-457, Comm'n Op. at 9 (June 18, 2002). Upon review, the "Commission has 'all the powers which it would have in making the initial determination,' except where the issues are limited on notice or by rule." *Certain Flash Memory Circuits and Prods. Containing Same,* Inv. No. 337-TA-382, USITC Pub. 3046, Comm'n Op. at 9-10 (July 1997) (quoting *Certain Acid-Washed Denim Garments and Accessories,* Inv. No. 337-TA-324, Comm'n Op. at 5 (Nov. 1992)). Commission practice in this regard is consistent with the Administrative Procedure Act. *Certain EPROM, EEPROM, Flash Memory, and Flash Microcontroller Semiconductor Devices and Prods. Containing Same,* Inv. No. 337-TA-395, Comm'n Op. at 6 (Dec. 11, 2000) ("*EPROM*"); *see also* 5 U.S.C. § 557(b).

Upon review, "the Commission may affirm, reverse, modify, set aside or remand for further proceedings, in whole or in part, the initial determination of the administrative law judge." 19 C.F.R. § 210.45(c). "The Commission also may make any findings or conclusions that in its judgment are proper based on the record in the proceeding." *Id.* This rule reflects the

fact that the Commission is not an appellate court, but is the body responsible for making the final agency decision. On appeal, only the Commission's final decision is at issue. *See EPROM* at 6 (citing *Fischer & Porter Co. v. U.S. Int'l Trade Comm'n*, 831 F.2d 1574, 1576-77 (Fed. Cir. 1987)).

III. OBVIOUSNESS OF THE '607 PATENT

Under 35 U.S.C. § 103(a), a patent is valid unless "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a). The ultimate question of obviousness is a question of law, but "it is well understood that there are factual issues underlying the ultimate obviousness decision." *Richardson-Vicks Inc. v. Upjohn Co.*, 122 F.3d 1476, 1479 (Fed. Cir. 1997).

Once claims have been properly construed, "[t]he second step in an obviousness inquiry is to determine whether the claimed invention would have been obvious as a legal matter, based on underlying factual inquiries including: (1) the scope and content of the prior art, (2) the level of ordinary skill in the art, (3) the differences between the claimed invention and the prior art; and (4) secondary considerations of non-obviousness." *Smiths Indus. Med. Sys., Inc. v. Vital Signs, Inc.*, 183 F.3d 1347, 1354 (Fed. Cir. 1999) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966)). The Federal Circuit previously required that, in order to prove obviousness, the patent challenger must demonstrate, by clear and convincing evidence, that there is a "teaching, suggestion, or motivation to combine." The Supreme Court, however, rejected this "rigid approach" in *KSR Int'l Co. v. Teleflex Inc.*:

> The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.

550 U.S. 398, 419 (2007).

In determining that the SmartSkin reference (RX-367) does not anticipate the asserted claims of the '607 Patent, the ALJ concluded that the only limitation SmartSkin does not disclose is "the use of transparent conductive lines using [indium tin oxide] ITO." Final ID at 148. Specifically, the ALJ found that the inclusion of the discussion concerning transparent ITO electrodes in the section entitled "Conclusion and Directions for Future Work" "indicates that it likely was not contemplated for that specific reference." *Id.*; *see* RX-367 (SmartSkin) at 7.

Motorola argued before the ALJ that SmartSkin in combination with Rekimoto '033 renders the claim limitations concerning the use of transparent electrodes, separate layers, and the use of glass members recited in the '607 Patent obvious, while the IA additionally argued that SmartSkin alone "would make it obvious to try to use transparent electrodes." *Id.* at 172. Apple argued that SmartSkin does not disclose the transparent electrode limitations for the same reasons that the ALJ found SmartSkin does not anticipate the asserted claims of the '607 Patent. *See id.* Apple also argued that the combination of SmartSkin and Rekimoto '033 does not disclose the layer and glass limitations. *Id.* Specifically, Apple asserted that, because, Rekimoto '033 and SmartSkin disclose different sensors, there is no motivation to combine the references

without "improper hindsight bias." *Id.* Apple further argued that "Rekimoto '033 discloses only a single glass substrate and not the second and third glass member" recited in the asserted claims of the '607 Patent. *Id.*

The ID finds that "SmartSkin alone would render the use of transparent electrodes obvious." *Id.* In particular, the ALJ concluded that "[SmartSkin] *itself* discloses using transparent electrodes[,]" and, therefore, SmartSkin provides the motivation to do so. *Id.* at 172-173. The ALJ also found that "ITO was well known at the time." *Id.* The ALJ, therefore, found that "SmartSkin would motivate one of ordinary skill in the art to use transparent electrodes and that the use of materials, such as ITO, in creating the transparent electrodes was well known at the time [of the invention of the '607 Patent]" and as such "would have been obvious to one of ordinary skill in the art." *Id.*[4] The ID also finds that "SmartSkin, in combination with Rekimoto '033, renders the asserted claims of the '607 Patent obvious." *Id.* Noting Apple's arguments concerning why SmartSkin does not anticipate the '607 Patent, the ALJ found that SmartSkin discloses the "glass member" limitations and that SmartSkin in combination with Rekimoto '033, which was published within months of the publication of the SmartSkin reference, disclose the "glass member" and "layer" limitations. *Id.* at 176 (citing JX-367 (SmartSkin) at 4 and Fig. 9; RX-1888 (Rekimoto '033) at Fig. 9).[5]

The Commission concurs with the ALJ's conclusion that SmartSkin provides the reason

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[4] The ID finds that, with respect to the '607 Patent, one of ordinary skill in the art "would have a bachelor's degree in electrical engineering, physics, computer engineering, or a related field and [two to three] years of work experience with input devices." ID at 17.

[5] The ID construes the claim limitation "glass member" to mean "a glass or plastic element." ID at 53. The parties do not contest this construction.

to combine the use of transparent electrodes made of materials such as ITO with the mutual-capacitance sensor for detecting multiple touches on the sensor surface disclosed in SmartSkin. *See* RX-1885C (Wolfe Direct Witness Statement) at Q. 321. We also agree with the ALJ that SmartSkin in combination with Rekimoto '033 discloses the transparent electrode limitations, the layer limitations, and the glass member limitations recited in the asserted claims of the '607 Patent, with Rekimoto '033 disclosing the layer and glass member limitations.[6] The Commission, however, finds that SmartSkin provides "one of ordinary skill . . . [with] a reasonable expectation of success" that the combination of transparent ITO electrodes with the mutual-capacitance touch screen disclosed in SmartSkin would be operable for different reasons than those articulated in the final ID. *See Velander v. Garner*, 348 F.3d 1359, 1363 (Fed. Cir. 2003).[7]

The claim limitations in dispute, which are referred to as the "transparent limitations," are highlighted below:

> 1. A touch panel comprising a **transparent capacitive sensing medium** configured to detect multiple touches or near touches that occur at a same time and at distinct locations in a plane of the touch panel and to produce distinct signals representative of a location of the touches on the plane of the touch panel for each of the multiple touches, wherein the **transparent capacitive sensing medium** comprises:
>
> a **first layer** having a plurality of **transparent first conductive lines** that are electrically isolated from one another;

---

[6] We disagree with the ALJ's conclusion that Rekimoto '033 teaches the use of transparent electrodes. *See id.* at 174.

[7] We do not review, and therefore do not address, the ID's findings concerning secondary considerations. ID at 176-177.

> a **second layer** spatially separated from the **first layer** and having a plurality of **transparent second conductive lines** that are electrically isolated from one another, the second conductive lines being positioned transverse to the first conductive lines, the intersection of transverse lines being positioned at different locations in the plane of the touch panel, each of the second conductive lines being operatively coupled to capacitive monitoring circuitry;
>
> wherein the capacitive monitoring circuitry is configured to detect changes in charge coupling between the first conductive lines and the second conductive lines.
>
> 4. The touch panel as recited in claim 1 wherein the **transparent first conductive lines** of the first layer are disposed on a first glass member, and wherein the **transparent second conductive lines** of the second layer are disposed on a second glass member, the first glass member being disposed over the second glass member.
>
> 6. The touch panel as recited in claim 1 wherein the conductive lines are formed from **indium tin oxide (ITO)**.

'607 Patent at 21:35-22:13.

Apple contends that SmartSkin discloses the use of only opaque, rather than transparent, sensors and that SmartSkin's purported disclosure of transparent ITO represents only speculative, future possibilities. The ID finds, and Apple does not dispute, that the use of ITO in creating transparent conductive lines or electrodes was well known at the time of the invention of the '607 Patent. *See* Final ID at 173. The evidence supports this conclusion. In particular, the SmartSkin reference, which is prior art to the '607 Patent, states that "most of today's flat panel displays rely on active-matrix and transparent electrodes[.]" JX-367 (SmartSkin) at 7. Motorola's expert, Dr. Wolfe, likewise testified that "two-layer sensors with rows and columns of ITO [are] standard products" (Wolfe, Tr. at 1391:11-22) and that "the use of transparent

electrodes . . . has been known in the art for twenty years" (RX-1885C (Wolfe Direct Witness Statement) at Q. 326).

In *KSR*, the Supreme Court stressed that, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co.*, 550 U.S. at 416. Here, the use of transparent ITO in combination with the mesh grid touch sensor of SmartSkin is just the type of "combination of familiar elements" that *KSR* discusses. *See* JX-367 at 7 and Fig. 2. Motorola's expert, Dr. Wolfe, who has over twenty years of experience making capacitive touch overlay sensors using ITO, testified at the hearing precisely on this point as follows:

> Q. Figure 2 [of SmartSkin] doesn't show a transparent sensor, does it?
>
> A. It is the same kind of drawing that's in the '607 [Patent]. To a person who understands the technology, it doesn't matter whether that sensor is transparent or opaque.
>
> Q. But there is nothing in figure 2 that is a transparent sensor. In fact, if you read the whole thing, you know that the sensor that they are talking about in figure 2 is a non-transparent sensor, opaque, right?
>
> A. No, you know that they describe how to build a sensor with rows and columns of conductors, and then they talk about a particular first embodiment they made that was opaque, and then how you could build a transparent one as well.

Wolfe, Tr. 1309:14-1310:5; *see also id.* at 1391:11-22 ("[t]wo-layer sensors with rows and columns of ITO were standard products, and I think that a person of ordinary skill, who we agree is a touchscreen engineer . . . would just read this to say this is an ordinary row and column ITO touch overlay that's being used in a unique way in the SmartSkin product."); *id.* 1392:20-1393:8 (stating that he has been making ITO touch screen products since 1983).

Apple's expert, Dr. Subramanian, disputed this conclusion, testifying that SmartSkin

"provide[s] no instructions for how to 'obtain' a transparent sensor using ITO and . . . even the researchers working on the [SmartSkin] system who authored the article believed that such a transparent sensor was merely a future possibility[.]" CX-569C (Subramanian Rebuttal Witness Statement) at Q. 117. But the evidence supports the conclusion that using transparent ITO for the "transparent conductive lines" claimed in the '607 Patent and discussed in SmartSkin would have been within the ability of one of ordinary skill in the art. In particular, Dr. Wolfe testified as follows:

> The '607 patent does not disclose any special characteristics of the ITO that make it suitable for use in the '607 patent; not its resistivity, capacitance, uniformity, thickness, or thermal characteristics. In any case, none of these need be disclosed since normal, commercially available and well known ITO materials are suitable for both SmartSkin and the '607 Patent.

RX-1885C at Q. 326; *see also* Wolfe, Tr. at 1390:19-1397:16 (discussing that one of ordinary skill in the art would know how to implement the SmartSkin sensor using transparent ITO electrodes).

Apple further contends that SmartSkin does not enable the use of a transparent ITO sensor with the multi-touch mutual-capacitance system disclosed in that reference because substituting transparent ITO conductive lines for the opaque copper lines used with one embodiment of the voltage-based sensing system of SmartSkin would require a complete redesign. *See* Subramanian, Tr. at 1533-34, 1536-39, 1574-84, 1585-97.[8] Specifically, Apple's

[8] Motorola argued that Apple waived any argument concerning the different types of sensors used in the SmartSkin system and the system disclosed in the '607 Patent because Dr. Subramanian did not mention the issue in his witness statements and because Apple failed to raise the issue in its pre-hearing statement. During the hearing, Motorola belatedly objected to Dr. Subramanian's testimony during his re-direct examination, but the ALJ ruled that the

expert, Dr. Subramanian, testified under cross-examination that, because the voltage-sensor used in the SmartSkin system receives very low strength signals, it is very sensitive to the resistance of the material used to conduct the current from the signal source to the receiver, hence the use of low resistance copper conductors in the SmartSkin system. Subramanian, Tr. at 1537:17-1538:17. Dr. Subramanian further explained that transparent ITO has such a high resistance and thus a lower conductivity – approximately 100 times less than copper – that ITO cannot be used successfully in a voltage-sensing system. *Id.*; *see also* JX-367 (SmartSkin) at Fig. 2; '607 Patent at Figs. 12, 13, 17:12-61. Dr. Subramanian compared the system disclosed in SmartSkin to the multi-touch system disclosed in the '607 Patent, which he explained uses a detector that counts charge in lieu of sensing voltage to account for the low conductivity of transparent ITO. Subramanian, Tr. 1582:11-1584:7. Apple contends that, because of the different types of sensors used to implement the SmartSkin system and the system disclosed in the '607 Patent, it would not have been obvious to combine the two systems. *Id.* (citing Subramanian, Tr. at 1537:2-1539:10).

It is axiomatic that, in evaluating an assertion of obviousness, the correct comparison is between the prior art and the claims. *See Procter & Gamble Co. v. Teva Pharm. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009) ("A party seeking to invalidate a patent based on obviousness must prove by clear and convincing evidence 'that a skilled artisan would have been motivated to combine the teachings of the prior art references *to achieve the claimed invention*, and that the skilled artisan would have had a reasonable expectation of success in doing so.'") (emphasis

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testimony was admissible. Tr. 1584:20-1585:7. We do not disturb the ALJ's decision.

added). Apple's arguments concerning the different types of sensing systems used in SmartSkin and the '607 Patent ignore this basic principle.

The claim language of the '607 Patent recites "wherein the capacitive monitoring circuitry is configured to detect changes in charge coupling between the first conductive lines and the second conductive lines" (claim 1) and "a multipoint sensing arrangement configured to simultaneously detect and monitor the touch events and a change in capacitive coupling associated with those touch events at distinct points across the touch panel" (claim 10). '607 Patent at 21:53-55, 22:31-35. As such, Apple's arguments concerning the difficulty of implementing a transparent ITO sensor with a voltage-sensing system are irrelevant since the claimed invention is not drawn to a particular sensing arrangement. *See* '607 Patent at 17:12-35.[9] In fact, Dr. Subramanian testified that counting charge "is not the only function that has to exist within the [claimed] capacitive monitoring circuitry." Subramanian, Tr. at 824:5-15.

Moreover, in discussing whether U.S. Patent No. 7,372,455 to Perski, et al. ("Perski '455") anticipates the asserted claims of the '607 Patent, Apple's expert, Dr. Subramanian, testified that Perski '455 discloses "a straight voltage amplifier, similar to that of [the SmartSkin

[9] Although Motorola argued that the claim limitation "capacitive monitoring circuitry" of claim 1 required construction, the ALJ found that the term did not require construction because none of the issues surrounding the limitation (*i.e.*, whether the circuitry of the Accused '607 Products or the domestic industry products satisfy this limitation) were dependent on the construction of this limitation. *See* Final ID at 49, n. 6. Furthermore, the ALJ noted that the parties' proposed constructions of the limitation were similar such that there was no real distinction between them. *Id.* Specifically, Motorola and the IA proposed that "capacitive monitoring circuitry" means "circuitry that senses changes in capacitance," while Apple proposed that the limitation has its plain and ordinary meaning. *See* Respondent Motorola's Post-Hearing Brief at 19 (Oct. 19, 2011). Notably, none of the proposed constructions limited "capacitive monitoring circuitry" to a specific type of sensor.

reference]." Subramanian, Tr. at 1605:25-1606:2. Perski '455, by way of U.S. Patent Provisional Application No. 60/406,662 ("Morag '662) (filed in August 2002), which Perski '455 incorporates by reference, explicitly discloses the use of a voltage amplifier in a voltage-sensing system with high-resistance transparent electrodes. Specifically, Morag '662 explains as follows:

> The resistance of the conductive lines is relatively high and it might exceed 100 KOhm for a line. Higher resistance of transparent conductors results in a higher transparency of the material. Therefore, it is a general object of the present invention to enable working with high resistance of the sensor grid.

RX-703 at 5 ¶ 2 (Morag '662). As this reference makes clear, the concept of using a voltage-sensing system with high-resistance transparent electrodes was known in the art at the time of the '607 Patent.

IV. CONCLUSION

For the reasons discussed above, the Commission finds that the asserted claims of the '607 Patent are obvious in view of SmartSkin in combination with Rekimoto '033.

By order of the Commission.

James R. Holbein
Secretary to the Commission

Issued: April 10, 2012

PUBLIC CERTIFICATE OF SERVICE

I, James R. Holbein, hereby certify that the attached **NOTICE** has been served by hand upon the Commission Investigative Attorney, Lisa M. Kattan, Esq., and the following parties as indicated on **April 10, 2012.**

James R. Holbein, Secretary
U.S. International Trade Commission
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PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN MOBILE DEVICES AND RELATED SOFTWARE**	**Inv. No. 337-TA-750**

INITIAL DETERMINATION ON VIOLATION OF SECTION 337 AND RECOMMENDED DETERMINATION ON REMEDY AND BOND

Administrative Law Judge Theodore R. Essex

(January 13, 2012)

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For the Commission Investigative Staff:
Lynn I. Levine, Esq., Director; Anne M. Goalwin, Esq., Supervising Attorney; Lisa M. Kattan, Esq., Investigative Attorney of the Office of Unfair Import Investigations, U.S. International Trade Commission, of Washington, D.C.

Pursuant to the Notice of Investigation, 75 Fed. Reg. 74081 (November 30, 2010), this is the Initial Determination of the in the matter of *Certain Mobile Devices and Related Software*, United States International Trade Commission Investigation No. 337-TA-750. *See* 19 C.F.R. § 210.42(a).

It is held that no violation of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, has occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain mobile devices and related software by reason of infringement of one or more of Claims 1, 2, 10, 11, 24-26, and 29 U.S. Patent No. 7,812,828 ("the '828 Patent"), claims 1-7 and 10 of U.S. Patent No. 7,663,607 ("the '607 Patent"), and claims 1, 3, and 5 of the U.S. Patent No. 5,379,430 ("the '430 Patent").

TABLE OF CONTENTS

The following abbreviations may be used in this Initial Determination:

CDX	Complainant's demonstrative exhibit
CIB	Complainant's initial post-hearing brief
CPX	Complainant's physical exhibit
CRB	Complainant's reply post-hearing brief
CX	Complainant's exhibit
Dep.	Deposition
JX	Joint Exhibit
RDX	Respondent's demonstrative exhibit
RIB	Respondent's initial post-hearing brief
RPX	Respondent's physical exhibit
RRB	Respondent's reply post-hearing brief
RRX	Respondent's rebuttal exhibit
RX	Respondent's exhibit
SIB	Staff's initial post-hearing brief
SRB	Staff's reply post-hearing brief
Tr.	Transcript

I. BACKGROUND

A. Institution and Procedural History of This Investigation

By publication of a notice in the *Federal Register* on November 30, 2010, pursuant to subsection (b) of section 337 of the Tariff Act of 1930, as amended, the Commission instituted Investigation No. 337-TA-750 with respect to U.S. Patent Nos. 7,812,828 ("the '828 Patent"), 7,663,607 ("the '607 Patent"), 5,379,430 ("the '430 Patent") to determine:

> [W]hether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain mobile devices and related software that infringe one or more of claims 1, 2, 10, 11, 24-26 and 29 of the '828 patent; claims 1-7 and 10 of the '607 patent; claims 1, 3, and 5 of the '430 patent, and whether an industry in the United States exists as required by subsection (a)(2) of section 337.

75 Fed. Reg. 74081 (November 30, 2010).

The complainant is Apple Inc., f/k/a Apple Computer, Inc. ("Apple") of Cupertino, California. The respondents were Motorola, Inc. of Schaumberg, Illinois and Motorola Mobility, Inc. of Libertyville, Illinois. The Commission Investigative Staff of the Office of Unfair Import Investigations is also a party in this investigation. (*Id.*)

The parties filed a joint unopposed motion to terminate Motorola Inc. on July 28, 2011, which was granted on August 16, 2011. (*See* Order No. 10.) The Commission determined not to review the Initial Determination Terminating the Investigation as to Motorola, Inc. n/k/a Motorola Solutions, Inc. on August 31, 2011. (*See* Notice of a Commission Determination Not to Review an Initial Determination Terminating the Investigation as to Motorola, Inc. n/k/a Motorola Solutions, Inc.) (August 31, 2011).

Apple filed a Motion for Summary Determination that it has Satisfied the Economic Prong of the Domestic Industry Requirement on August 28, 20011, which was granted on

September 15, 2011. (*See* Order No. 14.) The Commission determined not to review the Initial Determination granting the motion on October 14, 2011. (*See* Notice of a Commission Determination Not to Review an Initial Determination Granting Complainant's Motion for Summary Determination on the Economic Prong of the Domestic Industry Requirement) (October 14, 2011).

The evidentiary hearing took place from September 26-30, 2011.

B. The Parties

Apple is a California corporation with its headquarters located in Cupertino, California. Apple is in the business of, *inter alia*, developing, manufacturing, and selling innovative electronic devices and software. (JX-491 at 2.)

Motorola Mobility, Inc. ("Motorola") is a Delaware corporation formed in January 2011 as a spinoff of Motorola, Inc. and is located in Libertyville, Illinois. Motorola is in the business of, *inter alia*, developing, manufacturing, and selling innovative mobile electronic devices. (RX-1887C at Q10.)

C. The Patents at Issue and Overview of the Technology

1. The '828 Patent

U.S. Patent No. 7,812,828 ("the '828 Patent"), entitled "Ellipse Fitting for Multi-Touch Surfaces," was filed on February 22, 2007, and issued on October 12, 2010. (*See* JX-3). Wayne Westerman and John G. Elias are the named inventors of the '828 Patent, and complainant Apple, Inc. is the named assignee. (*Id.* & CX-365.) The '828 Patent claims priority back to two patent applications. The first of which was filed January 25, 1999. (JX-3.) The patent also claims priority to a provisional patent application filed January 26, 1998. (JX-3.)

The asserted claims of the '828 Patent are claims 1, 2, 10, 11, 24-26, and 29. These claims read as follows (with the disputed claim terms in **bold**):

> 1. A method of processing input from a touch-sensitive surface, the method comprising: receiving at least one proximity image representing a scan of a plurality of electrodes of the touch-sensitive surface; segmenting each proximity image into one or more pixel groups that indicate significant proximity, each pixel group representing proximity of a distinguishable hand part or other touch object on or near the touch-sensitive surface; and **mathematically fitting an ellipse to at least one of the pixel groups**.
>
> 2. The method of claim 1 further comprising transmitting one or more ellipse parameters as a control signal to an electronic or electromechanical device.
>
> 10. A touch-sensing device comprising: a substrate; a plurality of touch-sensing electrodes arranged on the substrate; electronic scanning hardware adapted to read the plurality of touch-sensing electrodes; a calibration module operatively coupled to the electronic scanning hardware and adapted to construct a proximity image having a plurality of pixels corresponding to the touch-sensing electrodes; and a contact tracking and identification module adapted to: segment the proximity image into one or more pixel groups, each pixel group representing proximity of a distinguishable hand part or other touch object on or near the touch-sensitive surface; and **mathematically fit an ellipse to at least one of the one or more pixel groups**.
>
> 11. The touch-sensing device of claim 10 further comprising a host communication interface adapted to transmit one or more ellipse parameters as a control signal to an electronic or electromechanical device.
>
> 24. A touch-sensing device comprising: means for producing a proximity image representing a scan of a plurality of electrodes of a touch-sensitive surface, the proximity image having a plurality of pixels corresponding to the touch-sensing electrodes; and means for segmenting the proximity image into one or more pixel groups, each pixel group representing a touch object on or near the touch-sensitive surface; and **means for fitting an ellipse to at least one of the pixel groups**.
>
> 25. The touch-sensing device of claim 24 wherein the touch object comprises at least a portion of a hand.
>
> 26. The touch-sensing device of claim 24 wherein the touch object comprises at least a portion of one or more fingers.

> 29. The touch-sensing device of claim 24 further comprising means for transmitting one or more ellipse parameters as a control signal to an electronic or electromechanical device.

The '828 Patent generally discloses and claims an apparatus and method for simultaneously tracking multiple finger and palm contacts as hands approach, touch, and slide across a proximity-sensing, multi-touch surface. (*Id.* at Abstract.)

2. The '607 Patent

U.S. Patent No. 7,663,607 ("the '607 Patent"), entitled "Multipoint Touchscreen," was filed on May 6, 2004, and issued on February 16, 2010. (*See* JX-2 (the '607 Patent)). Steve Hotelling, Joshua A. Strickon, and Brian Q. Huppi are the named inventors of the '607 Patent and complainant Apple is the assignee. (*Id.*)

The asserted claims of the '607 Patent are claims 1-7 and 10. These claims read as follows (with the disputed claim terms in **bold**):

> 1. A touch panel comprising a transparent capacitive sensing medium configured to detect multiple touches or near touches that occur at a same time and at distinct locations in a plane of the touch panel and to produce distinct signals representative of a location of the touches on the plane of the touch panel for each of the multiple touches, wherein the transparent capacitive sensing medium comprises: a first layer having a plurality of transparent first conductive lines that are **electrically isolated** from one another; and a second layer spatially separated from the first layer and having a plurality of transparent second conductive lines that are electrically isolated from one another, the second conductive lines being positioned transverse to the first conductive lines, the intersection of transverse lines being positioned at different locations in the plane of the touch panel, each of the second conductive lines being **operatively coupled** to capacitive monitoring circuitry; wherein the capacitive monitoring circuitry is configured to detect changes in charge coupling between the first conductive lines and the second conductive lines.
>
> 2. The touch panel as recited in claim 1 wherein the conductive lines on each of the layers are substantially parallel to one another.
>
> 3. The touch panel as recited in claim 2 wherein the conductive lines on different layers are substantially perpendicular to one another.

4. The touch panel as recited in claim 1 wherein the transparent first conductive lines of the first layer are disposed on a first **glass member**, and wherein the transparent second conductive lines of the second layer are disposed on a second **glass member**, the first glass member being disposed over the second glass member.

5. The touch panel as recited in claim 4 further including a third **glass member** disposed over the first glass member, the first and second glass members being attached to one another via an adhesive layer, the third glass member being attached to the first glass member via another adhesive layer.

6. The touch panel as recited in claim 1 wherein the conductive lines are formed from indium tin oxide (ITO).

7. The touch panel as recited in claim 1, wherein the capacitive sensing medium is a mutual capacitance sensing medium.

10. A display arrangement comprising: a display having a screen for displaying a graphical user interface; and a transparent touch panel allowing the screen to be viewed therethrough and capable of recognizing multiple touch events that occur at different locations on the touch panel at a same time and to output this information to a host device to form a pixilated image; wherein the touch panel includes a multipoint sensing arrangement configured to simultaneously detect and monitor the touch events and a change in capacitive coupling associated with those touch events at distinct points across the touch panel; and wherein the touch panel comprises: a first **glass member** disposed over the screen of the display; a first transparent conductive layer disposed over the first glass member, the first transparent conductive layer comprising a plurality of spaced apart parallel lines having the same pitch and linewidths; a second **glass member** disposed over the first transparent conductive layer; a second transparent conductive layer disposed over the second glass member, the second transparent conductive layer comprising a plurality of spaced apart parallel lines having the same pitch and linewidths, the parallel lines of the second transparent conductive layer being substantially perpendicular to the parallel lines of the first transparent conductive layer; a third **glass member** disposed over the second transparent conductive layer; and one or more sensor integrated circuits **operatively coupled** to the lines.

The '607 Patent generally discloses and claims an apparatus for a touch panel having a transparent capacitive sensing medium configured to detect multiple touches or near touches that occur at the same time and at distinct locations in the plane of the touch panel and to produce distinct signals representative of the location of the touches on the plane of the touch panel for each of the multiple touches is disclosed. (*Id.* at Abstract.)

3. The '430 Patent

U.S. Patent No. 5,379,430 ("the '430 Patent"), entitled "Object-Oriented System Locator ," was filed on August 4, 1993, and issued on January 3, 1995. (*See* JX-1 (the '430 Patent)). Frank T. Nguyen is the named inventor of the '430 Patent. The patent was originally assigned to Taligent, Inc. and Apple alleges that it is the current owner. (*Id.* and JX-489)

The asserted claims of the '430 Patent are claims 1, 3 and 5. These claims read as follows:

> 1. A computer implemented method for **dynamically adding support for hardware or software components** with one or more **properties** to an operating system active on a computer with a memory, comprising the steps of:
>
> (a) specifying a target **hardware or software component** search criteria including one or more **properties**;
>
> (b) **querying the operating system** to identify one or more hardware or software components that meet the target hardware or software component search criteria;
>
> (c) **returning hardware or software components meeting the target hardware or software component search criteria**; and
>
> (d) **adding support for the hardware and software components to the operating system** without rebooting the operating system.
>
> 3. A method as recited in claim 1, wherein the hardware or software components include system components.
>
> 5. A method as recited in claim 1, wherein the software components include application components.

The '430 Patent generally discloses and claims a method and system for adding system components (documents, tools, fonts, libraries, etc.) to a computer system without running an installation program. (*Id.* at Abstract.)

D. The Products At Issue

The accused products are, broadly, mobile devices and tablet computers with touchscreens. (CIB at 1-2.) Apple has accused slightly different groups of products of infringing the three Asserted Patents and those groups of accused products are set forth below.

1. '828 Patent

Apple accuses Motorola's multi-touch devices of infringing the '828 Patent. These include the: Motorola Atrix, Bravo, Charm, Citrus, Cliq 2, Cliq XT/Quench, Defy, Droid, Droid 2, Droid 2 Global, Droid Bionic, Droid Pro, Droid X, Droid X2, Droid 3, Flipout, Flipside, i1, Titanium, Xoom, and XPRT (collectively, the "Accused '828 Products").[1]

2. '607 Patent

Apple accuses Motorola mobile devices that include multi-point touchscreens of infringing the '607 Patent. These include the following: Motorola Atrix, Bravo, Charm, Citrus, Cliq 2, Defy, Droid, Droid 2, Droid 2 Global, Droid Bionic, Droid Pro, Droid X, Droid X2, Droid 3, Flipout, Flipside, Titanium, and XPRT (collectively "the '607 Accused Products").

3. '430 Patent

Apple accuses all Motorola mobile devices that run the Android operating system of infringing the '430 Patent. These include Motorola mobile devices that run Android 1.5-3.1: Motorola Atrix, Bravo, Charm, Citrus, Cliq, Cliq/Dext, Cliq 2, Cliq XT/Quench, Defy, Devour, Droid, Droid 2, Droid 2 Global, Droid Bionic, Droid Pro, Droid X, Droid X2, Droid 3, Flipout, Flipside, i1, Titanium, Xoom (4G/LTE), Xoom (Everest), Xoom (UMTS), Xoom (Wi-Fi), and XPRT (collectively, the "Accused '430 Products").

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[1] There seems to be some inconsistency between the parties as to whether the i1 is still accused of infringing the '828 Patent. (*Compare* CIB at 14 *with* RIB at 10 n.2.)

II. IMPORTATION OR SALE

Section 337 of the Tariff Act prohibits the importation into the United States, the sale for importation, or the sale within the United States after importation by the owner, importer, or consignees of articles that infringe a valid and enforceable United States patent. *See* 19 U.S.C. § 1337(a)(1)(B). A complainant "need only prove importation of a single accused product to satisfy the importation element." *Certain Purple Protective Gloves*, 337-TA-500, Order No. 17 (September 23, 2004). The importation requirement can be established through a summary determination motion and irrespective of any finding of infringement of the patents in issue. *See Certain Wireless Communications Equipment, Articles Therein, and Products Containing Same*, 337-TA-577, Order No. 18 (February 22, 2007); *Certain Automated Mechanical Transmission Systems for Medium-Duty and Heavy Duty Trucks and Components Thereof*, 337-TA-503, Order No. 38 (August 12, 2004); *Certain Audio Digital-To-Analog Converters and Products Containing Same*, 337-TA-499, Order No. 15 (June 29, 2004), Notice of Commission Not To Review (July 28, 2004).

On September 16, 2011, Apple and Motorola stipulated that Motorola has imported, sold for importation, or sold after importation in the United States at least one unit of each Accused Product and that there is no dispute that the importation requirement has been satisfied. (Joint Stipulation Regarding Respondent Motorola Mobility, Inc.'s Importation of Accused Products and Motorola Mobility, Inc.'s IBM License Rights (September 19, 2011); *see also* CIB at 15; RIB at 11.) Accordingly, the ALJ finds that Apple has established the importation requirement.

III. JURISDICTION

A. Personal and Subject Matter Jurisdiction

In order to have the power to decide a case, a court or agency must have both subject matter jurisdiction and jurisdiction over either the parties or the property involved. *See Certain Steel Rod Treating Apparatus and Components Thereof*, Inv. No. 337-TA-97, Commission Memorandum Opinion, 215 U.S.P.Q. 229, 231 (1981). For the reasons discussed below, the ALJ finds the Commission has jurisdiction over this investigation.

Section 337 declares unlawful the importation, the sale for importation, or the sale after importation into the United States of articles that infringe a valid and enforceable United States patent by the owner, importer, or consignee of the articles, if an industry relating to the articles protected by the patent exists or is in the process of being established in the United States. *See* 19 U.S.C. §§ 1337(a)(1)(B)(I) and (a)(2). Pursuant to Section 337, the Commission shall investigate alleged violations of the Section and hear and decide actions involving those alleged violations.

As set forth *supra* in Section II, Apple has met the importation requirement. Furthermore, the parties do not dispute that the Commission has *in personam* and *in rem* jurisdiction.[2] (CIB at 15; RIB at 11.) Motorola has fully participated in the investigation, including participating in discovery, participating in the hearing, and filing pre-hearing and post-hearing briefs. Accordingly, the ALJ finds that Motorola has submitted to the jurisdiction of the Commission. *See Certain Miniature Hacksaws*, Inv. No. 337-TA-237, Pub. No. 1948, Initial Determination at 4, 1986 WL 379287 (U.S.I.T.C., October 15, 1986) (unreviewed by Commission in relevant part).

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[2] Motorola asserts that Apple does not have standing to bring suit under the '430 Patent. That is addressed *infra* at SectionVI.H.1.

IV. CLAIM CONSTRUCTION

A. Applicable Law

Pursuant to the Commission's Notice of Investigation, this investigation is a patent-based investigation. *See* 75 Fed. Reg. 74081 (November 30, 2010). Accordingly, all of the unfair acts alleged by Apple to have occurred are instances of alleged infringement of the '828, '607 and '430 Patents. A finding of infringement or non-infringement requires a two-step analytical approach. First, the asserted patent claims must be construed as a matter of law to determine their proper scope.[3] Claim interpretation is a question of law. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996); *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1455 (Fed. Cir. 1998). Second, a factual determination must be made as to whether the properly construed claims read on the accused devices. (*Id.* at 976).

In construing claims, the ALJ should first look to intrinsic evidence, which consists of the language of the claims, the patent's specification, and the prosecution history, as such evidence "is the most significant source of the legally operative meaning of disputed claim language." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996); *see also Bell Atl. Network Servs., Inc. v. Covad Comm'n. Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The words of the claims "define the scope of the patented invention." *Id.* And, the claims themselves "provide substantial guidance as to the meaning of particular claim terms." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005), *cert. denied*, 546 U.S. 1170 (2006). It is essential to consider a claim as a whole when construing each term, because the context in which a term is used in a claim "can be highly instructive." *Id.* Claim terms are presumed to be used consistently throughout the patent, such that the usage of the term in one claim can often

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[3] Only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vanderlande Indus. Nederland BV v. Int'l Trade Comm'n.*, 366 F.3d 1311, 1323 (Fed. Cir. 2004); *Vivid Tech., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

illuminate the meaning of the same term in other claims. *Research Plastics, Inc. v. Federal Pkg. Corp.*, 421 F.3d 1290, 1295 (Fed. Cir. 2005). In addition:

> . . . in clarifying the meaning of claim terms, courts are free to use words that do not appear in the claim so long as the resulting claim interpretation . . . accord[s] with the words chosen by the patentee to stake out the boundary of the claimed property.

Pause Tech., Inc. v. TIVO, Inc., 419 F.3d 1326, 1333 (Fed. Cir. 2005).

Some claim terms do not have particular meaning in a field of art, in which case claim construction involves little more than applying the widely accepted meaning of commonly understood words. *Phillips*, 415 F.3d at 1314. Under such circumstances, a general purpose dictionary may be of use.[4] The presumption of ordinary meaning, however, will be "rebutted if the inventor has disavowed or disclaimed scope of coverage, by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1091 (Fed. Cir. 2003).

Sometimes a claim term will have a specialized meaning in a field of art, in which case it is necessary to determine what a person of ordinary skill in that field of art would understand the disputed claim language to mean, viewing the claim terms in the context of the entire patent. *Phillips*, 415 F.3d at 1312-14; *Vitronics*, 90 F.3d at 1582. Under such circumstances, the ALJ must conduct an analysis of the words of the claims themselves, the patent specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, as well as the meaning of technical terms and the state of the art. *Id.*

A patentee may deviate from the conventional meaning of claim term by making his or her intended meaning clear (1) in the specification and/or (2) during the patent's prosecution

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[4] Use of a dictionary, however, may extend patent protection beyond that to which a patent should properly be afforded. There is also no guarantee that a term is used the same way in a treatise as it would be by a patentee. *Id.* at 1322.

history. *Lear Siegler, Inc. v. Aeroquip Corp.*, 733 F.2d 881, 889 (Fed. Cir. 1984). If a claim term is defined contrary to the meaning given to it by those of ordinary skill in the art, the specification must communicate a deliberate and clear preference for the alternate definition. *Kumar v. Ovonic Battery Co.*, 351 F.3d 1364, 1368 (Fed. Cir. 2003). In other words, the intrinsic evidence must "clearly set forth" or "clearly redefine" a claim term so as to put one reasonably skilled in the art on notice that the patentee intended to so redefine the claim term. *Bell Atl.*, 262 F.3d at 1268.

When the meaning of a claim term is uncertain, the specification is usually the first and best place to look, aside from the claim itself, in order to find that meaning. *Phillips*, 415 F.3d at 1315. The specification of a patent "acts as a dictionary" both "when it expressly defines terms used in the claims" and "when it defines terms by implication." *Vitronics*, 90 F.3d at 1582. For example, the specification "may define claim terms by implication such that the meaning may be found in or ascertained by a reading of the patent documents." *Phillips*, 415 F.3d at 1323. "The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Id.* at 1316. However, as a general rule, particular examples or embodiments discussed in the specification are not to be read into the claims as limitations. *Markman*, 52 F.3d at 979.

The prosecution history "provides evidence of how the inventor and the PTO understood the patent." *Phillips*, 415 F.3d at 1317. For example, the prosecution history may inform the meaning of the claim language by demonstrating how an inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it otherwise would be. *Vitronics*, 90 F.3d at 1582-83; *see also Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005) (stating, "The purpose of consulting the

prosecution history in construing a claim is to exclude any interpretation that was disclaimed during prosecution."); *Microsoft Corp. v. Multi-tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) (stating, "We have held that a statement made by the patentee during prosecution history of a patent in the same family as the patent-in-suit can operate as a disclaimer."). The prosecution history includes the prior art cited, *Phillips*, 415 F.3d at 1317, as well as any reexamination of the patent. *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.* 849 F.2d 1430, 1440 (Fed. Cir. 1988) ("Statements made during reissue are relevant prosecution history when interpreting claims.") (internal citations omitted).

Differences between claims may be helpful in understanding the meaning of claim terms. *Phillips*, 415 F.3d at 1314. A claim construction that gives meaning to all the terms of a claim is preferred over one that does not do so. *Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir.), *cert. denied*, 546 U.S. 972 (2005); *Alza Corp. v. Mylan Labs. Inc.*, 391 F.3d 1365, 1370 (Fed. Cir. 2004). In addition, the presence of a specific limitation in a dependent claim raises a presumption that the limitation is not present in the independent claim. *Phillips*, 415 F.3d at 1315. This presumption of claim differentiation is especially strong when the only difference between the independent and dependent claim is the limitation in dispute. *SunRace Roots Enter. Co., v. SRAM Corp.*, 336 F.3d 1298, 1303 (Fed. Cir. 2003). "[C]laim differentiation takes on relevance in the context of a claim construction that would render additional, or different, language in another independent claim superfluous." *AllVoice Computing PLC v. Nuance Comm'ns, Inc.*, 504 F.3d 1236, 1247 (Fed. Cir. 2007).

The preamble of a claim may also be significant in interpreting that claim. The preamble is generally not construed to be a limitation on a claim. *Bell Commc'ns Research, Inc. v.*

Vitalink Commc'ns Corp., 55 F.3d 615, 620 (Fed. Cir. 1995). However, the Federal Circuit has stated that:

> [A] claim preamble has the import that the claim as a whole suggests for it. In other words, when the claim drafter chooses to use both the preamble and the body to define the subject matter of the claimed invention, the invention so defined, and not some other, is the one the patent protects.

Eaton Corp. v. Rockwell Int'l Corp., 323 F.3d 1332, 1339 (Fed. Cir. 2003). If said preamble, when read in the context of an entire claim, recites limitations of the claim, or if the claim preamble is "necessary to give life, meaning, and vitality" to the claim, then the claim preamble should be construed as if in the balance of the claim. *Kropa v. Robie*, 187 F.2d 150, 152 (CCPA 1951); *see also Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997); *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989). In addition:

> [W]hen discussing the "claim" in such a circumstance, there is no meaningful distinction to be drawn between the claim preamble and the rest of the claim, for only together do they comprise the "claim." If, however, the body of the claim fully and intrinsically sets forth the complete invention, including all of its limitations, and the preamble offers no distinct definition of any of the claimed invention's limitations, but rather merely states the purpose or intended use of the invention, then the preamble may have no significance to claim construction because it cannot be said to constitute or explain a claim limitation.

Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1305 (Fed. Cir. 1999). In *Pitney Bowes*, the claim preamble stated that the patent claimed a method of, or apparatus for, "producing on a photoreceptor an image of generated shapes made up of spots." *Id.* at 1306. The Federal Circuit found that this was not merely a statement describing the invention's intended field of use, but rather that said statement was intimately meshed with the ensuing language in the claim. *Id.* For example, both of the patent's independent claims concluded with the clause, "whereby the appearance of smoothed edges are given to the generated shapes." *Id.* Because this was the first appearance in the claim body of the term "generated shapes," the Court

found that it could only be understood in the context of the preamble statement "producing on a photoreceptor an image of generated shapes made up of spots." *Id.* The Court concluded that it was essential that the preamble and the remainder of the claim be construed as one unified and internally consistent recitation of the claimed invention. *Id.*

Finally, when the intrinsic evidence does not establish the meaning of a claim, the ALJ may consider extrinsic evidence, *i.e.*, all evidence external to the patent and the prosecution history, including inventor testimony, expert testimony and learned treatises. *Phillips*, 415 F.3d at 1317. Extrinsic evidence may be helpful in explaining scientific principles, the meaning of technical terms, and terms of art. *Vitronics*, 90 F.3d at 1583; *Markman*, 52 F.3d at 980. However, the Federal Circuit has generally viewed extrinsic evidence as less reliable than the patent itself and its prosecution history in determining how to define claim terms. *Phillips*, 415 F.3d at 1318. With respect to expert witnesses, any testimony that is clearly at odds with the claim construction mandated by the claims themselves, the patent specification, and the prosecution history should be discounted. *Id.* at 1318.

If the meaning of a claim term remains ambiguous after a review of the intrinsic and extrinsic evidence, then the patent claims should be construed so as to maintain their validity. *Id.* at 1327. However, if the only reasonable interpretation renders a claim invalid, then the claim should be found invalid. *See Rhine v. Casio, Inc.*, 183 F.3d 1342, 1345 (Fed. Cir. 1999).

Section 112, paragraph 6 of the Patent Act states that:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112, ¶ 6 (2009).

"Section 112, paragraph 6 was intended to allow the use of means expressions in patent claims without requiring the patentee to recite in the claims all possible structures that could be used as means in the claimed apparatus." *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1211 (Fed. Cir. 2003). The process of construing a means-plus-function term differs from the process of construing other claim language. "The first step in the construction of a means-plus-function claim element is to identify the particular claimed function. The second step in the analysis is to look to the specification and identify the corresponding structure for that function." *Id.* at 1210 (citations omitted).

The construction of a means-plus-function term is thus limited by the disclosure of the corresponding structure in the specification. As explained by the Federal Circuit, "[t]he literal scope of a properly construed means-plus-function limitation does not extend to all means for performing a certain function. Rather, the scope of such claim language is sharply limited to the structure disclosed in the specification and its equivalents." *J & M Corp. v. Harley-Davidson, Inc.*, 269 F.3d 1360, 1367 (Fed. Cir. 2001). Section 112, paragraph 6 has been described as representing "a *quid pro quo* by permitting inventors to use a generic means expression for a claim limitation *provided that* the specification indicates what structure(s) constitute(s) the means." *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1381 (Fed. Cir. 1999).

B. Level of Ordinary Skill in the Art

1. '828 Patent

With respect to the '828 Patent, the parties largely agree on definition of person of ordinary skill at the time of the invention. Apple contends that a person of ordinary skill in the art related to the '828 Patent would have a bachelor's degree in computer science, electrical engineering, or mathematics and several years of experience working in the area of signal

processing, human-computer interaction, or the design, use, or evaluation of touch-sensitive input devices. (CX-201C at Q/A 337.) Motorola contends that that a person of ordinary skill in the art related to the '828 Patent would have a bachelor's degree in computer science, electrical engineering, or a related field and three to five years of experience with input device, including some experience with image processing, human-computer interaction, or touch-sensing methods, or devices on January 25, 1999. (RX-1885C at Q/A 368.) The Staff agrees with Apple's definition, but notes that the differences between the parties' definitions do not appear to affect the outcome of any issues in this case. (SIB at 8.)

The ALJ finds that the level of ordinary skill in the art related to the '828 Patent at the time of the invention would have a bachelor's degree in computer science, electrical engineering, or a related field, including mathematics, and three to five years of experience working in the area of signal processing, human-computer interaction, or the design, use, or evaluation of touch-sensitive input devices.

2. '607 Patent

With respect to the '607 Patent, the parties largely agree on definition of person of ordinary skill at the time of the invention. Apple contends that a person of ordinary skill in the art related to the '607 Patent would have a bachelor's degree in electrical engineering, physics, computer engineering, or a related field and 2-3 years of work experience with input devices. (CX-202C at Q/A 34.) Motorola contends that that a person of ordinary skill in the art related to the '607 Patent would have a bachelor's degree in computer science, electrical engineering, or a related field and three years of experience with touch input devices. (RX-1885C at Q/A 76.) The Staff notes that the parties have offered similar definitions as to the level of ordinary skill in the art and that there does not seem to be a dispute on this issue. (SIB at 48.)

The ALJ finds that the level of ordinary skill in the art related to the '607 Patent at the time of the invention would have a bachelor's degree in electrical engineering or a related field and three years of experience working in the area of touch input devices.

3. '430 Patent

With respect to the '430 Patent, the parties largely agree on definition of person of ordinary skill at the time of the invention. Apple contends that a person of ordinary skill in the art related to the '430 Patent would have a bachelor's degree in computer science, or equivalent industry experience, and several years of experience working in the area of computer programming and or operating systems. (CIB at 156 n.38; CX-201C at Q/A 34.) Motorola contends that that a person of ordinary skill in the art related to the '430 Patent would have a bachelor's degree in computer science or a related field and three years of experience in designing and developing software. (RX-1874C at Q/A 38.) The Staff notes that the parties have offered similar definitions as to the level of ordinary skill in the art and that there does not seem to be a dispute on this issue. (SIB at 98.)

The ALJ finds that the level of ordinary skill in the art related to the '430 Patent at the time of the invention would have a bachelor's degree in computer science, or equivalent industry experience, and three years of experience working in the area of computer programming and/or operating systems.

C. The '828 Patent

1. "mathematically fit(ting) an ellipse"

Claim Term	Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
"mathematically fitting an ellipse"	comput(ing) numerical parameters	applying a unitary transformation of the group covariance matrix of second moments of	

Claim Term	Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
(claim 1) "mathematically fit an ellipse" (claim 10)	that mathematically define an ellipse	proximity data to fit an ellipse	
"mathematically fitting an ellipse to at least one of the pixel groups" (claim 1) "mathematically fit an ellipse to at least one of the one or more pixel groups" (claim 10)	comput(ing) numerical parameters that mathematically define an ellipse which approximates the shape of at least one of the pixel groups	for at least one of the pixel groups, applying a unitary transformation of the group covariance matrix of second moments of proximity data for all pixels in that pixel group to fit an ellipse	

The key dispute for the '828 Patent is whether "mathematically fitting an ellipse" is limited to the methodology defined in the patent. All of the claims contain a similar limitation, including the means plus function claims that will be discussed later. Apple proposes a construction that would have this term mean "comput(ing) numerical parameters that mathematically define an ellipse which approximates the shape of at least one of the pixel groups." Motorola and Staff propose identical constructions that construe these terms as "apply[ing] a unitary transformation of the group covariance matrix of second moments of proximity data for all pixels in a pixel group to fit an ellipse."

Motorola and Staff argue that the specification unambiguously states that "the ellipse-fitting procedure *requires* a unitary transformation of the group covariance matrix G_{eov} of second moments Q_{xx}, Q_{yy}, G_{zz}." (JX-3 at 26:18-21 (emphasis added).) Motorola argues that the use of the word "requires" indicates that this particular technique (the group covariance matrix) must be used. (RIB at 80-82; SIB at 11-14.)

Moreover, Motorola argues that the prosecution history requires this result as well. When filed, claims 1 and 10 contained the limitation "fit[ting] an ellipse to at least one of the [one or more] pixel groups." (RIB at 82 (citing JX-6 at 150-151).) The PTO rejected all of the asserted claims based on U.S. Patent No. 5,825,352 to Bisset et al. ("Bisset"). (JX-6 at 1407-25.) In response to this rejection, the applicants argued that Bisset simply disclosed "a series of capacitance values measured when a finger contacts a touchpad, discloses the feature of 'fitting an ellipse to . . . '" (JX-6 at 1468.) The applicants disagreed with the examiner's contention that "merely obtaining measured data is the same as fitting an ellipse to the data, so long as the measured data happens to be measured from an object that 'is in general ellipse-like" was the same as mathematically fitting an ellipse. (JX-6 at 1468-69 (quotation marks and emphasis omitted).) Indeed, the applicants contended that "the Office Action's interpretation is particularly unreasonable when the claim language is viewed in light of the specification, as it must be viewed." (JX-6 at 1469.) Applicants further urged that "the Office Action fails to consider the disclosure of the specification when interpreting at least the feature of 'fitting an ellipse to at least one of the pixel groups.'" (JX-6 at 1469.) Nevertheless, applicants amended the claim to recite "mathematically fitting an ellipse to one or more pixel groups" because the examiner indicated that limitation would traverse the rejection. (JX-6 at 1469.)

Motorola also argues that Apple's proposed construction is incorrect because it focuses on what parameters are computed and not on how parameters are computed. (RIB at 85.) Indeed, Motorola argues that the same five parameters could be could define both an ellipse and a rectangle, but that the claims require fitting an ellipse to the data. (RIB at 85.)

Apple argues that its construction is consistent with plain and ordinary meaning of the claim term – namely, "'mathematically fit(ting) an ellipse' is a process of computing numerical

parameters that mathematically define an ellipse." (CIB at 26.) Apple contends that "both experts explained during their tutorials that the results of an ellipse fitting process are numerical parameters that describe an ellipse, for example centroid, major axis, minor axis, and orientation." (CIB at 27.)

Apple further contends that both experts also agree that there are a variety of methods of mathematically fitting an ellipse and that fitting is a well-known concept. (CIB at 27.) Apple argues that the specification is consistent with this plain meaning. Specifically, Apple points to statements in the specification that mention "parameters" or "parameterization." (CIB at 27-28 (quoting JX-3 at 19:8-12 ("electrode group data structures which are parameterized by fitting an ellipse to the position and proximity measurements of the electrodes within each group"); JX-3 at 25:54-56 ("shape, size, and position parameters").) Apple also relies on what it terms the "second embodiment" that it describes as where "the 'total group proximity G_z' is used to indicate contact size and finger pressure and default mathematical values are for certain ellipse parameters rather than applying a unitary transformation of the group covariance matrix." (CIB at 28; CIB at 30 (citing JX-3 at 27:1-8).) Apple claims that a person of ordinary skill would understand this "second embodiment" to be another form of ellipse fitting, and, thus, Motorola and Staff's construction excludes this preferred embodiment and improperly reads limitations into the claims. (CIB at 30, 32-33.)

Apple argues that its proposed construction "follows directly from the ordinary meaning of ellipse fitting and is the only construction that does not exclude embodiments of the '828 Patent." (CIB at 28.) Apple argues that Motorola's and Staff's constructions "fail to capture the most important element of ellipse fitting – the setting of ellipse parameters – and instead focus on a single sentence describing one step of one embodiment of the '828 Patent." (CIB at 28.)

Apple argues that the statement Motorola and the Staff rely on does not meet the Federal Circuit's requirements to be a definition, but that, even if it was, Motorola and Staff deviate from that statement by requiring the use of all pixels in the pixel group. (CIB at 29, 34-35.)

Apple also asserts that Motorola's construction runs afoul of the doctrine of claim differentiation because dependent claims 5 and 15 refer to calculating eigenvalues and eigenvectors of a covariance matrix. Apple argues that Motorola's and Staff construction would make the independent claims have the same scope as the dependent claims. (CIB at 31.) Apple also argues that the dependent claims also "support Apple's proposed construction by describing the results of ellipse fitting as a broad list of parameters that is consistent with reading the 'low resolution' embodiment as one method for 'mathematically fit(ting) an ellipse.'" (CIB at 31 (citing claims 2, 3, 11, and 12).)

Apple also relies heavily on the testimony of the named inventor Dr. Wayne Westerman as establishing that the "second embodiment" is indeed a type of ellipse fitting. (CIB at 32.) Apple further notes that Dr. Westerman explained that while fitting all of the pixels in a pixel group would be preferred, it is not required. (CIB at 34-35.)

As for the prosecution history, Apple asserts that the statements were not intended to limit the scope of the claims (CIB at 35), and that the prosecution history was not distinguishing between different ways of fitting an ellipse, but was distinguishing the claims from a reference (Bisset) that does not disclose any type of ellipse fitting. (CIB at 35.)

Instead, Apple argues that the comments in the prosecution history "only distinguishes the ellipse fitting step from the data acquisition steps that precede ellipse fitting." (CIB at 36), and that "[t]here was no comparison made between Bisset's computation of parameters and the ellipse fitting computations claimed in the '828 Patent, and, further, there can be no comparison

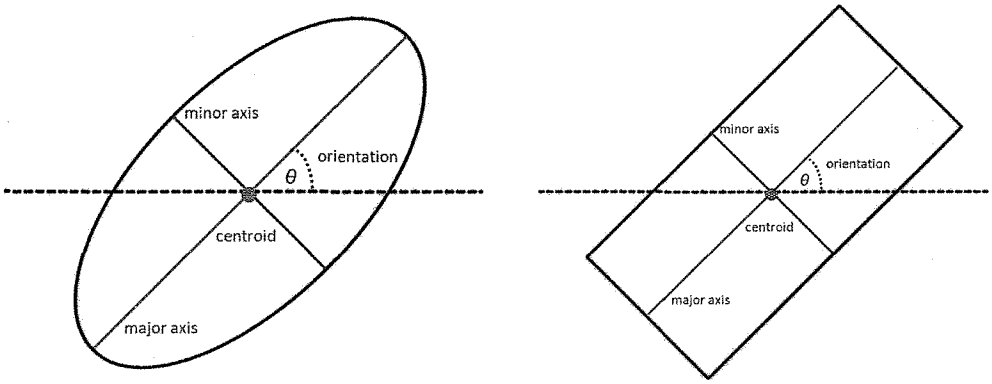
because Bisset '352 only computed the center of the perceived touches and did not use these as part of an ellipse model, such as by assigning values to a major or minor axis." (CIB at 36.) Apple argues that "[t]he distinction in the file history between Bisset '352 and the '828 Patent is consistent with Apple's construction, and Motorola cannot point to any statements in the file history that refer to the 'unitary transformation of the group covariance matrix' in its construction." (CIB at 36.) Apple contends that the law requires a clear and unambiguous disclaimer, and that the statements that Motorola relies on are "ambiguous at best" and do not "support Motorola's restrictive construction." (CIB at 36-37.)

The ALJ finds that neither Motorola's and Staff's nor Apple's proposed construction is particularly appealing. While the ALJ certainly agrees with Motorola and Staff that the plain meaning of "mathematically fit(ting) and ellipse" is substantially narrower than Apple's proposed construction, the ALJ does not agree that it is limited to only the method using the group covariance matrix disclosed in the specification. Apple's construction is inconsistent with the claim language in that it would read out the requirement that an "ellipse" must be "fitted" "mathematically" to the pixel groups. Moreover, the specification and prosecution history also do not support Apple's arguments as will be discussed below.

Beginning with the claim language, the claim term itself requires that an "ellipse" be "mathematically fit(ted)" to the "pixel group." Apple's construction would eliminate nearly all of those limitations. Moreover, Apple's argument that its construction is the plain meaning of the term because the "*results* of an ellipse fitting process are numerical parameters that describe an ellipse. . ." highlights the key problem with Apple's construction. Apple's construction, in effect, is that the ends define the means. But, the independent claims do not discuss parameters at all – they merely discuss this process of fitting an ellipse. Thus, the claims focus on a

particular way in which parameters could be calculated – mathematically fitting – not just on the end parameters as Apple's construction would.

A second major problem with Apple's construction is the tenuous connection between the ellipse and the parameters. Motorola illustrated the ambiguity that results in Apple's construction when you focus on the parameters and not on "fitting" as the claims require. As Motorola demonstrated the parameters that could define an ellipse can also define a rectangle or other shape:



(RDX-9.36 and 9.37.) Merely calculating the parameters that could define an ellipse does not mean that the figure "fitted" to the data is an ellipse since these same parameters can define many different geometric figures. Thus, the claim language requires greater precision than merely calculating ellipse parameters; the claim language requires actually fitting an ellipse to the data.

As for Motorola's and Staff's construction, the claim language by itself neither supports nor refutes their construction. The use of the group covariance matrix is certainly one way that ellipse fitting can be performed. The parties do not dispute, however, that it is not the only way. Thus, Motorola's and Staff's construction would narrow the plain language of the claims.

The specification supports a narrower construction than Apple's and provides some support for Motorola's and Staff's construction. The specification does not equate

parameterization with ellipse fitting as Apple contends, but clearly explains that parameters (such as centroid, major and minor axis) are determined by ellipse fitting. (*See* JX-3 at 19:8-12 ("The image segmentation process 241 outputs a set of electrode group data structures 242 which ***are parameterized by fitting an ellipse*** to the positions and proximity measurements of the electrodes within each group.") (emphasis added).) As for Apple's argument that there are two embodiments for ellipse fitting, the specification demonstrates that this "second embodiment" is not ellipse fitting, but an alternative to ellipse fitting. (*See* JX-3 at 27:1-8 ("On low resolution electrode arrays, the total group proximity G_z is a more reliable indicator of contact size as well as finger pressure ***than the fitted ellipse parameters***. Therefore, if proximity images have low resolution, the orientation and eccentricity of small contacts are set to default values rather than their measured values, and total group proximity G_z is used as the primary measure ***instead of major and minor axis lengths***." (emphasis added)).) Thus, it is clear from the specification that the "second embodiment" is not a method of mathematically fitting an ellipse – it is a completely alternative method to analyze proximity data.

As for Motorola's and Staff's construction, it relies heavily on the following passage from the specification:

> **Since most groups are convex, their shape is well approximated by ellipse parameters. The ellipse fitting procedure requires a unitary transformation of the group covariance matrix G_{cov} of second moments Q_{xx}, Q_{xy}, G_{yy}:**

$$G_{cov} = \begin{bmatrix} G_{xx} & G_{xy} \\ G_{yx} & G_{yy} \end{bmatrix} \quad (15)$$

$$G_{xx} = \sum_{c \in G_E} e_z (G_x - e_x)^2 \quad (16)$$

$$G_{yx} = G_{xy} = \sum_{c \in G_E} e_z (G_x - e_x)(G_y - e_y) \quad (17)$$

$$G_{yy} = \sum_{c \in G_E} e_z (G_y - e_y)^2 \quad (18)$$

The eigenvalues λ_0 and λ_1 of the covariance matrix G_{cov} determine the ellipse axis lengths and orientation G_θ:

$$G_{major} = \sqrt{\lambda_0} \quad (19)$$

$$G_{minor} = \sqrt{\lambda_1} \quad (20)$$

$$G_\theta = \arctan\left(\frac{\lambda_0 - G_{xx}}{G_{xy}}\right) \quad (21)$$

where G_θ is uniquely wrapped into the range (0,180°).

For convenience while distinguishing fingertips from palms at higher system levels, the major and minor axis lengths are converted via their ratio into an eccentricity $G_\in$:

$$G_\varepsilon = \frac{G_{major}}{G_{minor}} \quad (22)$$

(JX-3 at 26:18-55.) This passage does provide strong support for a construction that is narrower than Apple's. It clearly indicates that "fit(ting) an ellipse" to the pixel group means what the claim language says: it requires actually fitting an ellipse to the data before the parameters are calculated, not merely calculating "parameters" that could represent an ellipse as Apple contends. The ALJ, however, disagrees with Motorola and Staff that this passage limits the claim term only to the group covariance methodology described in this passage. Motorola and Staff rely on the use of the "requires" in the description above , *i.e.*, "the ellipse fitting procedure requires."

In support of their argument, Motorola and Staff rely on an unpublished Federal Circuit opinion, *ImageCUBE LLC v. Boeing Co.*, No. 2010-1265, 2011 WL 2438634 (Fed. Cir. June 20, 2011). The ALJ finds that this case does not support Motorola's and Staff's construction. As Apple points out, the Federal Circuit did not hold that the word "requires" by itself supports reading a limitation into the claims from the specification in *ImageCUBE*. Indeed, limiting claims to particular embodiments is heady stuff not to be taken lightly. As the Federal Circuit in another case has explained:

> There is a fine line between construing the claims in light of the specification and improperly importing a limitation from the specification into the claims.

> In reviewing the intrinsic record to construe the claims, we strive to capture the scope of the actual invention, rather than strictly limit the scope of claims to disclosed embodiments or allow the claim language to become divorced from what the specification conveys is the invention

Retractable Tech., Inc. v. Becton, Dickinson & Co., 653 F.3d 1293, 1305 (Fed. Cir. 2011).

In *Retractable Technologies*, the Federal Circuit found the claims limited to a particular embodiment in the specification where the evidence far more overwhelming than here. It included repeated emphasis that "invention" included a particular limitation. *See id.*

In sum, while these cases do not support reading the specific methodology described in the specification into the claims, the ALJ does note that, consistent with the holding in *ImageCUBE*, the specification and claims in this case clearly indicate that a mathematical fitting procedure that fits an ellipse to the pixel group must be used here. Moreover, the plain language of the claims make clear that merely calculating ellipse parameters without using a fitting technique is insufficient.

As for the final piece of evidence relied on by Motorola and Staff, the prosecution history, the ALJ finds this does not limit the claims as narrowly as Motorola and Staff suggest. But the ALJ finds that the prosecution history supports a much narrower construction than Apple proposes. As discussed above, when filed, claims 1 and 10 contained the limitation "fit[ting] an ellipse to at least one of the [one or more] pixel groups." (*See* JX-6.0150-0151.) In an office action dated December 24, 2009, the PTO rejected all the asserted claims based on Bisset(JX-196). (*See* JX-6.1407-25.) The applicants disagreed with the PTO (*id.* at 1454) in amendments to claims 1 and 10 (*id.*) at 1456-57; and in written remarks. (*Id.* at 1468-72.) According to the applicants, the PTO's interpretation was that "merely *obtaining* measured data is the same as *fitting an ellipse to* the data, so long as the measured data happens to be measured from an object that 'is in general ellipse-like.'" *Id.* The applicants disagreed, explaining:

> [U]nder the plain meaning of the language of the claims, without more, one skilled in the art would not interpret "fitting an ellipse to at least one of the pixel groups in such a manner." *Furthermore, the Office Action's interpretation is particularly unreasonable when the claim language is viewed in light of the specification, as it must be viewed. In this regard, Applicants submit that the Office Action fails to consider the disclosure of the specification when interpreting at least the feature of "fitting an ellipse to at least one of the pixel groups."* . . .
>
> Nevertheless, claim 1 has been amended to recite *mathematically* fitting an ellipse to at least one of the pixel groups. . . . Claim 10 has been similarly amended.

(JX-6 at 1468-69 (emphasis added).) While this confirms (as the specification does) that claim language does require actually fitting an ellipse to the pixel group data, it does not limit the method of fitting to only the method disclosed in the specification. Accordingly, the ALJ finds that while the prosecution history provides further support to reject Apple's extremely broad construction, the prosecution history does not limit the claims as narrowly as Motorola and Staff suggest.

Apple argues that its construction is not so broad as to encompass any computation of numerical parameters for fitting any shape. (CRB at 14.) Apple argues that there are two requirements of its construction: (1) the accused process must compute numerical parameters and (2) those parameters must mathematically define an ellipse. (CRB at 14.) This explanation further highlights the disjointedness of Apple's construction. The first requirement of Apple's construction is a non-limitation, because nearly any computer process will involve computation of numerical parameters. The second requirement turns the claim language on its head. Instead of "mathematically fitting" an ellipse ***to*** the pixel groups, as a person of ordinary skill would understand that term, Apple's construction would reverse the process. A parameter, generated in any way possible that could be used *ex post* to generate an ellipse that could be fitted over the pixel groups would meet its construction. The claim language demands a different process,

whereby a fitting procedure (such as the group covariance matrix method described in the specification) could be used to fit an ellipse to the pixel group from which ellipse parameters could be derived.

Apple also relies on the hearing testimony of Dr. Westerman in an effort to suggest that the methodology at the top of column 27 is a method of "mathematically fit(ting) an ellipse." (CIB at 32.) The ALJ agrees with Staff and Motorola that testimony by the inventor that seeks to broaden the scope of the patent in litigation should be approached with great caution. *See N. Am. Vaccine, Inc. v. Am. Cyanamid Co.*, 7 F.3d 1571, 1577 (Fed. Cir. 1993) ("Where meaning of a claim term is clear from the specification and prosecution history, the inventor's self-serving post-hoc opinion testimony on the legal question whether it should have a different meaning was of little if any significance."). This caution seems especially true in this case because Dr. Westerman at times testified (consistent with the specification) that the methodology disclosed at the top of column 27 was an alternative to—not an example of—ellipse fitting. (Tr. 339:25-340:8.) Nevertheless, the named inventors did offer some helpful definitions at their depositions. (*See* RX-1895C at Q/A 447.) Specifically, when asked about what the term meant, Mr. John Elias, one of the two named inventors, testified:

> Well, from a mathematical point of view or a [*sic.*] electrical engineering point of view, to fit an ellipse, as an example, to a collection of data points means that you want to find the parameters that describe that ellipse, such that it minimizes the differences between the ellipse, the model, and the data.

(RX-1895C at Q/A 447 (quoting Elias Dep. Tr. At 186-87).) This definition is most consistent with the common mathematical meaning of the term "fitting" used in a variety of similar contexts (most commonly in statistics). *See, e.g.*, Merriam Webster Dictionary (http://www.merriam-webster.com/dictionary/curve fitting) (defining "curve fitting" as "the empirical determination of a curve or function that approximates a set of data") (last visited Dec.

30, 2011); *ATA Airlines, Inc. v. Fed. Express Corp.*, --- F.3d ----, 2011 WL 6762865, at *8 (7th Cir. Dec. 30, 2011) (Posner, J.) (line fitting using "lease squares") ("[A] linear regression is an equation for the straight line that provides the best fit for the data being analyzed. The 'best fit' is the line that minimizes the sum of the squares of the vertical distance between each data point and the line."); *Burlington N., Inc. v. United States*, 676 F.2d 566, 578 n.37 (Ct. Cl. 1982) (curve fitting using "least squares") (noting the expert "used the mathematical 'least squares' method of analysis. More accurately this method is described as the least sum of the squared differences. It is a mathematical measure of the differences between the hypothesized line (the curve being fit) and the observed data for the purpose of determining how closely the hypothesized line describes the data."). The ALJ does not consider any of these sources of extrinsic evidence to be controlling (although the ALJ does find Mr. Elias's testimony informative), but most importantly they are not inconsistent with the understanding expressed in the specification and prosecution history discussed above.

In sum, the ALJ finds that neither the specification nor prosecution history limits the claims to only the group covariance method described in the specification. However, the ALJ does find that the plain meaning of the claims supported by the specification and prosecution history requires that an ellipse actually be fitted to the pixel groups. Thus, Apple's construction that requires only that ellipse parameters be calculated without fitting an ellipse to the data cannot be correct. Accordingly, the ALJ construes the term "mathematically fit(ting) an ellipse to one or more pixel groups" to mean performing a mathematical process where by an ellipse is actually fitted to the data consisting of one or more pixel groups and from that ellipse various parameters can be calculated.

2. "ellipse parameters" (claims 2, 11, 29)

Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
Plain and ordinary meaning, or: parameters that describe an ellipse	geometric parameters obtained from mathematically fitting an ellipse	Parameters that describe an ellipse, *e.g.* position, shape, size, orientation, eccentricity, major radius, minor radius.

Apple argues that this term should be given its plain and ordinary meaning or in the alternative, it should be defined as "parameters that describe an ellipse." Motorola offered, in its pre-hearing brief, an alternative construction that effectively seeks to incorporate the "mathematically fitting" limitation that is the parties' primary dispute. Motorola offered no arguments for its construction in its post-hearing brief, so those arguments are waived. The Staff argues that its definition is based on the common understanding of the parameters that define an ellipse as recognized by both parties and described in the '828 Patent. (SIB at 14-15.) The Staff's primary concern is that Apple seeks to include terms beyond the "classical parameters of an ellipse in order to encompass parameters derived by the Accused Products...." (SIB at 15.)

The ALJ agrees with Staff's construction that the term should be given its plain and ordinary meaning, which is parameters that describe an ellipse, *e.g.*, position, shape, size, orientation, eccentricity, major radius, minor radius.

3. "means for fitting an ellipse to at least one of the pixel groups" (claim 24)

Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
§ 112 ¶ 6 function: computing numerical parameters that mathematically define an ellipse which approximates the shape of at least one of the pixel groups (as construed above) § 112 ¶ 6 structure: a module that computes numerical parameters that mathematically define an ellipse which approximates the shape of at least one of the pixel groups using	This element is subject to 35 U.S.C. § 112 ¶ 6. Function: "fitting an ellipse to at least one of the pixel groups" Structure: Using a programmed host computer as described in 14:6-8, parameterizing the grouped pixel data in at least one of the pixel groups by (1) computing a	Function: fitting an ellipse to at least one of the pixel groups Structure: a computer that computes numerical parameters that mathematically define an ellipse which approximates the shape of at least one of the pixel groups using equations 12-21 or equivalents thereof.

Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
one or more of equations 12-23 or equivalents. (25:62-26:65)	proximity-weighted centroid from positions and proximities of each pixel in a pixel group using equations 12-14 in the specification; (2) computing a group covariance matrix of x-y second moments using equations 15-18 of the specification; (3) after calculating the eigenvalues of the covariance matrix in equation 15, using these eigenvalues to determine axis lengths and orientation of an ellipse using equations 19-21 of the specification; and equivalents thereof.	

As the Staff explains, "[t]he main dispute regarding this term is the proper construction of the phrase "fitting an ellipse" as discussed previously . . . regarding the 'mathematically fitting an ellipse' limitation." (SIB at 24.) Apple agrees. (CIB at 38-39.) Motorola offered no separate arguments regarding this term apart from its arguments regarding "mathematically fitting an ellipse." (*See* RIB at 79-87.)

"When a claim uses the term 'means' to describe a limitation, a presumption inheres that the inventor used the term to invoke § 112, ¶ 6." *Biomedino, LLC v. Waters Tech. Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007) (citing *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1375 (Fed. Cir. 2003). "This presumption can be rebutted when the claim, in addition to the functional language, recites structure sufficient to perform the claimed function in its entirety." *Id.* (quotation marks omitted). The parties agree and the ALJ finds that § 112 ¶ 6 applies to this claim term.

"Once a court concludes that a claim limitation is a means-plus-function limitation, two steps of claim construction remain: 1) the court must first identify the function of the limitation; and 2) the court must then look to the specification and identify the corresponding structure for

that function." *Id.* Apple defines the function as "computing numerical parameters that mathematically define an ellipse which approximates the shape of at least one of the pixel groups." The Staff contends that the function is simply "fitting an ellipse to one or more pixel groups." The ALJ is mindful that "[w]hen construing the functional statement in a means-plus-function limitation, we must take great care not to impermissibly limit the function by adopting a function different from that explicitly recited in the claim," *Generation II Orthotics, Inc. v. Med. Tech., Inc.*, 263 F.3d 1356, 1364-65 (Fed. Cir. 2001), and that we must "stay[] true to the claim language and the limitations expressly recited by the claim[,]" *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1321 (Fed. Cir. 2003). The ALJ sees no reason to indulge in re-writing the claims when the function is clear from the claim language itself. The identified function does not impermissibly narrow the claims, but neither does it impermissibly broaden the claims. Apple's function would substantially broaden the claim by eliminating the "fitting" requirement recited in all of the claims. As set forth *supra*, this requirement was essential for obtaining allowance of the patent. (*See* Section IV.C.1.) Accordingly, the ALJ finds that the function is "fitting an ellipse to at least one of the pixel groups."

As for the corresponding structure, Apple proposes a structure of "a module that computes numerical parameters that mathematically define an ellipse which approximates the shape of at least one of the pixel groups using one or more of equations 12-23 or equivalents." (CIB at 37-38.) The Staff defines the structure as "a computer that computes numerical parameters that mathematically define an ellipse which approximates the shape of at least one of the pixel groups using equations 12-21 or equivalents thereof." (SIB at 23-25.) The ALJ perceives two main disputes. The first is whether the program is running on a "module," a

"computer," or a "host computer." Second, whether equations 22-23 should be included in the structure.

Regardless of what a "module" is precisely, the ALJ sees no distinction (at least of any importance to this case) between defining the structure as a "computer" versus a "module."

As for the equations that should included in the structure, the ALJ agrees with Staff that equations 22-23 should not be included. There is simply no link between those equations and "fitting an ellipse." As discussed above, those equations represent an alternative to fitting an ellipse. (*See supra* at IV.C.1.) Accordingly, the ALJ finds the structure limited as the Staff suggests.

4. "proximity" and "electrode" terms

Claim Term	Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
"proximity" (claims 1, 10)	the distance or pressure between an object (such as a finger) and a touch-sensitive surface	the distance or pressure between a touch object and the touch-sensitive surface	distance or pressure between the touch device such as a finger and a surface
"proximity image representing a scan of a plurality of electrodes" (claims 1, 24)	a proximity image where the data corresponds to signals from a plurality of electrodes	a two-dimensional pixilated image corresponding to a two-dimensional array of pixilated electrodes wherein each pixel represents self-capacitance measured at a single electrode during a particular scan cycle	a proximity image where the data corresponds to signals from a plurality of electrodes
"proximity image" (claims 1, 10, 24)	an array of proximity data	see "proximity image representing a scan of a plurality of electrodes"	an array of proximity data
"a plurality of touch-sensing electrodes arranged on the substrate" (claim 10)	multiple electrically conductive elements arranged on the substrate that can sense the distance or pressure between the conductive elements and objects on or near the conductive elements	an array of pixilated self-capacitance sensing electrodes arranged on a surface	multiple electrodes arranged on the substrate that can sense the distance or pressure between the conductive elements and touch objects on or near the conductive elements

These terms have been grouped together by Apple and they all raise related issues regarding the electrodes of the touch surface, so the ALJ will consider them together. The parties have proposed slightly different constructions for "proximity" in the '828 Patent. The term "proximity" is explicitly defined in the '828 Patent specification, and all of the parties' proposed constructions are based on this explicit definition:

> The term "proximity" will only be used in reference to the distance or pressure between a touch device such as a finger and the surface 2, not in reference to the distance between adjacent fingers.

(JX-3 at 14:22-25.) The '828 Patent describes "surface 2" as "the multi-touch surface 2." (JX-3 at 12:67-13:1.) The Staff argues that its construction is correct because the claimed "proximity" is not between any object and the surface; rather, it is between a touch object (that is, a conducting touch object) and the touch-sensitive surface. (SIB at 28.) The ALJ finds that there are no significant differences between the three proposed constructions. The ALJ finds that Staff's definition best harmonizes the explicit definition in the specification with the requirement that the distance be between the touch object and the touch-sensitive surface. Accordingly, the ALJ adopts the Staff's basic construction (with some slight tweaks for greater clarity) and defines the term "proximity" as "the distance or pressure between the touch device (such as a finger) and the touch-sensitive surface."

The second term of this group is "proximity image." Apple and Staff argue that this should be construed as "an array of proximity data." Motorola argued previously that this term should mean "a two-dimensional pixilated image corresponding to a two-dimensional array of pixilated electrodes wherein each pixel represents self-capacitance measured at a single electrode during a particular scan cycle." The primary dispute between the parties is Motorola's effort to read in the "self-capacitance" limitation from its "electrode" construction (hence why these terms

are grouped together). Motorola offered no arguments on this particular term although it continues to argue for the self-capacitance limitation in the "a plurality of touch-sensing electrodes arranged on the substrate" limitation of claim 10. The claim language and specification in no way limits the term "proximity image" to only self-capacitance measurements. (*See* JX-3 at 6:22-49.) Thus, the ALJ finds that Motorola is improperly trying to limit "proximity image" by incorporating a limitation that simply doesn't belong there. Accordingly, the ALJ finds that "proximity image" means an array of proximity data.

The third term "proximity image representing a scan of a plurality of electrodes" involves the same dispute as "proximity image." As with that claim term, the ALJ rejects Motorola's efforts to read self-capacitance into the claim term. Accordingly, the ALJ adopts Apple's and Staff's construction for this term, namely a proximity image where the data corresponds to signals from a plurality of electrodes.

The final term is "a plurality of touch-sensing electrodes arranged on the substrate." Apple and Staff argue that this term should be construed as "multiple electrodes arranged on the substrate that can sense the distance or pressure between the conductive elements and touch objects on or near the conductive elements." (CIB at47-48; SIB at 16-17.) Motorola proposes a construction of "an array of pixelated self-capacitance sensing electrodes arranged on a surface." (RIB at 87-89.)

Apple argues that "Motorola [*sic.*] proposed construction[] . . . ignore[s] the plain language of the disputed terms" and that "Motorola's proposed construction would restrict this claim to the pixilated self-capacitance electrodes described in the specification and would exclude so-called 'row and column' electrodes." (CIB at 40.) According to Apple, "[t]his is not consistent with the use of the general terms 'electrode' in the claims, however, which is used

throughout the patent to refer to different types of electrodes that existed in the prior art, including row and column electrodes." (CIB at 40.) Similarly, Staff argues that Motorola is "attempting to read a self-capacitance requirement into the limitation" and that "the '828 Patent's specification recognizes that electrodes may have either self or mutual capacitance, and specifically notes when an electrodes is limited to one or the other." (SIB at 17.)

Motorola responds by pointing to the "Background" section in the specification that describes the problems confronting the inventors. Motorola argues that the specification distinguishes "mutual capacitance devices from "the present invention" noting that in the prior art there are devices which "measure the mutual capacitance between row and column electrodes by driving one set of electrodes at one frequency and sensing how much of that frequency is coupled onto a second electrode set." (RIB at 88 (quoting JX-3 at 5:1-5).) Motorola argues that the specification then asserts that "there exists a need in the art for a capacitance-sensing apparatus which does not suffer from poor signal-to-noise ratio and the multiple finger indistinguishability problems of touchpads with long row and column electrodes." (RIB at 88 (quoting JX-3 at 5:40-43.) Motorola argues that the "Summary of Invention" section then provides the named inventors' solution:

> ***To achieve the objects and in accordance with the purpose of the invention***, as embodied and broadly described herein, ***the invention comprises*** a sensing device that is sensitive to changes in ***self-capacitance*** brought about by changes in proximity of a touch device to the sensing device, the sensing device comprising: two electrical switching means connected together in series having a common node, an input node, and an output node; a dielectric-covered sensing electrode connected to the common node between the two switching means; a power supply providing an approximately constant voltage connected to the input node of the series-connected switching means; an integrating capacitor to accumulate charge transferred during multiple consecutive switchings of the series connected switching means; another switching means connected in parallel across the integrating capacitor to deplete its residual charge; and a voltage-to-voltage translation device connected to the output node of the series-connected switching means which produces a voltage

> representing the magnitude of the self-capacitance of the sensing device. Alternatively, the sensing device comprises: two electrical switching means connected together in series having a common node, an input node, and an output node; a dielectric-covered sensing electrode connected to the common node between the two switching means; a power supply providing an approximately constant voltage connected to the input node of the series-connected switching means; and an integrating current-to-voltage translation device connected to the output node of the series connected switching means, the current-to-voltage translation device producing a voltage representing the magnitude of the ***self-capacitance*** of the sensing device.

(JX-3 at 7:54-8:17 (emphasis added).) Motorola argues that "[b]y stating that '*the invention comprises* a sensing device that is sensitive to changes in self-capacitance' in the 'Summary of Invention' section, the specification of the '828 Patent indicates that 'a sensing device that is sensitive to changes in self-capacitance' is not simply a potential embodiment, but a limitation of the 'touch-sensing device' of claim 10." (RIB at 89.) Motorola argues there is a line of cases that hold when the specification describes features as the "present invention" or the "invention," then it limits the claims. (*See* RIB at 89 (citing *Cook Biotech Inc. v. Acell, Inc.*, 460 F.3d 1365, 1374 (Fed. Cir. 2006) (by using "the present invention comprises," the "specification indicate[d] [that] the composition was defined" in a particular way); *TiVo, Inc. v. Echostar Commc'ns Corp.*, 516 F.3d 1290. 1300 (Fed. Cir. 2008) ("[W]hen a patent thus describes the features of the 'present invention' as a whole, this limits the scope of the invention."); *SciMed Life Sys., Inc. v. Advanced Cardiovascular*, 242 F.3d 1337, 1342-43 (Fed. Cir. 2001) ("[T]he written description supports the district court's conclusion that the claims should not be read so broadly as to encompass the distinguished prior art structure . . . . [T]he characterization of the coaxial configuration as part of the 'present invention' [in the 'Summary of the Invention'] is strong evidence that the claims should not be read to encompass the opposite structure.")).)

This dispute requires the ALJ to determine the effect of the use of the language "this

invention" (or the "the present invention") in the specification on the scope of the claims. The parties do not dispute that the term "plurality of . . . electrodes . . ." by itself is not limited to self-capacitance, but dispute whether, read in light of the specification, this term should be so limited. The recent case of *Retractable Technologies, Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1293 (Fed. Cir. 2011) is instructive. In that case, the claims involved claims directed to retractable syringes. The disputed limitation was the term "body," which the parties agreed could include a multi-piece body or single piece body, but the defendant argued that, in light of the specification, the term was limited to only single piece bodies. The district court disagreed and interpreted the term "body" broadly to encompass both possibilities. The Federal Circuit reversed this claim construction finding that, in light of the specification, the claims were limited to a single piece body. Specifically, the Federal Circuit noted that:

> The specifications indicate that the claimed "body" refers to a one-piece body. In distinguishing prior art syringes comprised of multiple pieces, the specifications state that the prior art had failed to recognize a retractable syringe that "can be molded as one piece outer body." . . . Consistent with this characterization of the prior art, the Summary of the Invention states that "[t]he invention is a retractable tamperproof syringe," and that this syringe "features a one piece hollow body."
>
> Similarly, the specifications, in describing the invention, expressly state that each syringe embodiment contains a one-piece body. . . . In addition, each figure that depicts a syringe body shows a one-piece body. In contrast, the specifications do not disclose a body that consists of multiple pieces or indicate that the body is anything other than a one-piece body.

Retractable Tech., 653 F.3d at 1305.

The ALJ finds that this is a close call in this investigation. The specification does repeatedly describe the "invention" as using "self-capacitance" electrodes. However, the ALJ finds that the evidence in this case is simply not as strong as that in *Retractable Technologies* to limit the plain language of the claims to only self-capacitance. In particular, the ALJ notes that the discussion of prior art discusses both self and mutual capacitance embodiments and there

does not appear to be any distinction drawn between self-capacitance and any other technology in the prior art that would lead a person of ordinary skill to believe that the invention was limited only to "self-capacitance" embodiments. (*See* JX-3 at 5:1-57.) Accordingly, the ALJ rejects Motorola's construction. The ALJ finds that "a plurality of touch-sensing electrodes arranged on the substrate" means multiple electrical elements arranged on the substrate that can sense the distance or pressure between the electrical elements and objects on or near the electrical elements.

5. "a calibration module operatively coupled to the electronic scanning hardware and adapted to construct a proximity image having a plurality of pixels corresponding to the touch-sensing electrodes" (claim 10)

Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
a module that receives data from the electronic scanning hardware, which corrects for background noise and constructs a proximity image having multiple pixels with proximity data that corresponds to signals from the touch-sensing electrodes	hardware module electrically connected to scanning circuitry for creating a proximity image having a plurality of pixels corresponding to the touch-sensing electrodes	Module, which is indirectly or directly electrically connected to scanning circuitry, that constructs a proximity image having multiple pixels from a scan of the touch-sensing electrodes and that subtracts off any background noise

Apple and Staff offer very similar constructions. The principal dispute between them is whether the claim term is limited to a particular method of correcting for background noise or not. (CIB at 47; SIB at 18-19.) The Staff points to the specification as support where it teaches the use of only subtracting the background noise as the method for removing background noise. (*See* JX-3 at 13:10-13 ("calibration module 8 constructs a raw proximity image from a complete scan of the sensor array and subtracts off any background sensor offsets"); *id.* at 14:40-44 ("[i]t is desirable to remove this non-zero background signal before converting the sensor output 58 to

a digital code. This is done by using a differential amplifier 64 to subtract a stored record of the background signal 68 from the sensor output 58.").) Apple makes no arguments regarding this point.

The ALJ finds that Staff's construction is correct. The specification consistently describes the calibration module as a module that "subtracts off any background sensor offsets." (JX-3 at 14:40-44.) Apple points to no specification support for its construction. Accordingly, the ALJ finds that "a calibration module operatively coupled to the electronic scanning hardware and adapted to construct a proximity image having a plurality of pixels corresponding to the touch-sensing electrodes" means a module, which is indirectly or directly electrically connected to scanning circuitry, that constructs a proximity image having multiple pixels from a scan of the touch-sensing electrodes and that subtracts off any background noise.

6. "each pixel group representing proximity of a distinguishable hand part or other touch object" (claim 1, 10)

Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
each pixel group representing the distance or pressure between the touch-sensitive surface and a different part of a hand or other touch object	each pixel group representing proximity of a specific hand part such as a thumb, fingertip, or palm that can be assigned a specific hand and finger identity so that hand configurations and motions can be distinguished	Each pixel group representing the distance or pressure between the touch-sensitive surface and a distinguishable part of a hand or other touch object

Apple and Staff agree that the term "each pixel group representing proximity of a distinguishable hand part or other touch object" of independent claims 1 and 10 means "each pixel group representing the distance or pressure between the touch-sensitive surface and a different part of a hand or other touch object." Motorola argued in its pre-hearing brief that this

term should be construed to mean "each pixel group representing proximity of a specific hand part such as a thumb, fingertip, or palm that can be assigned a specific hand and finger identity so that hand configurations and motions can be distinguished." Apple and Staff argue that their construction is correct because it comports with the description of this limitation in the specification (*See* CIB at 45; SIB at 10 (citing JX-3 at 8:53-63, 17:21-29, 23:8-25:2).) Motorola offered no arguments regarding this term in its post-hearing brief. (*See* RIB at 79-89.) Staff argues that "distinguishing different hand parts as Motorola proposes is specifically claimed in dependent claims 4 and 14, which depend from Claim 1." (SIB at 10 (citing JX-003 at 60:23-25; 61:13-15; 19:2-5; 23:15-19).) Apple agrees with this argument. (CIB at 45.)

The ALJ finds that Apple's and Staff's construction of this term most comports with the plain and ordinary meaning of this term. It is consistent with the specification and the the claim language, and the dependent claims. Accordingly, the term "each pixel group representing proximity of a distinguishable hand part or other touch object" of independent claims 1 and 10 means each pixel group representing the distance or pressure between the touch-sensitive surface and a different part of a hand or other touch object.

7. "contact tracking and identification module" (claim 10)

Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
a module that can identify and track data that represents an object (such as a finger)	software or circuitry that uniquely identifies each individual hand part as it moves through successive images by mathematically fitting one or more ellipses and using the geometric parameters of these ellipses to specifically identify individual fingers, thumbs, and other distinguishable portions of a hand	a module that can identify and track data that represents an object (such as a finger)

Apple and Staff agree on the construction of this term as "a module that can identify and track data that represents an object (such as a finger)." Motorola sought a more complicated definition that sought to read in limitations from other parts of the claim into this claim term. Motorola did not present any arguments in support of its construction in its post-hearing brief.

As Apple and the Staff point out, the '828 Patent specification explicitly describes "contact tracking and identification module 10, which segments the image into distinguishable hand-surface contacts, tracks and identifies them as they move through successive images." (CIB at 48; SIB at 19-20 (both citing JX-3 at 13:15-19).) Thus, the ALJ finds that Apple and Staff's construction is consistent with the specification and adopts it.

8. "means for producing a proximity image representing a scan of a plurality of electrodes of a touch-sensitive surface, the proximity image having a plurality of pixels corresponding to the touch-sensing electrodes" (claim 24)

Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
§ 112 ¶ 6 function: producing an array of proximity data representing a scan of multiple electrical elements of a surface that can sense the distance or pressure between the surface and objects on or near the surface § 112 ¶ 6 structure: circuitry that scans an array of proximity sensors 47 and converts the proximity sensor output 58 to a digital code appropriate for digital processing or an equivalent. (16:4-53)	This element is subject to 35 U.S.C. § 112 ¶ 6. Function: "producing a proximity image representing a scan of a plurality of electrodes of a touch-sensitive surface, the proximity image having a plurality of pixels corresponding to the touch-sensing electrodes" Structure: Circuitry that constructs and outputs a proximity image including: (1) a proximity sensing device that measures self-	Function: producing a proximity image representing a scan of a plurality of electrodes of a touch-sensitive surface Structure: circuitry that scans an array of proximity sensors 47 and converts the proximity sensor output 58 to a code appropriate for digital processing as in Figures 7A and 7B or equivalents thereof

Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
	capacitance of one or more pixilated sensing electrodes, as in figs. 2-6; and (2) circuitry that converts each signal from the proximity sensing device to a digital code appropriate for processing by computer by using digital-to-analog converter to convert a digital stored background signal value to a voltage, using a differential amplifier to subtract that background signal from the proximity sensing device signal, and then converting this difference signal to digital code using an analog to digital converter, as in figs. 7A and 7B; and equivalents thereof.	

The parties agree that this term is subject to 35 U.S.C. § 112 ¶ 6. Apple and Staff largely agree on the function. The only difference between them appears to be that Apple replaced a number of terms in the Staff's function (e.g., "proximity image" and "plurality of electrodes of a touch-sensitive surface") with the claim construction for that term. Motorola's construction of the claimed function in its pre-hearing brief includes a sub-clause from the claim "the proximity image having a plurality of pixels corresponding to the touch-sensing electrodes." Motorola included no argument in its post-hearing brief regarding this claim element. (*See* RIB at 79-90.)

The ALJ finds that the Staff's description of the function of this element is the correct one. Apple's proposed function simply inserts the definitions for the claim terms and such an exercise is unnecessary because those terms have been separately defined. Therefore, the function is producing a proximity image representing a scan of a plurality of electrodes of a

touch-sensitive surface.

The main dispute between the parties regarding the structure is whether the array must be limited to a self-capacitance array. As discussed above (and for the exact same reasons), the ALJ declined to incorporate such a limitation. (*See* Section IV.C.4.) The parties largely agree on the remainder of the structure as set forth in Figures 5-7 and the corresponding text, see 16:4-53, and equivalents thereof.

9. "segment(ing)" terms

Claim Term	Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
"segmenting each proximity image into one or more pixel groups that indicate significant proximity" (claim 1)	collecting pixels in each proximity image into one or more pixel groups that are identified by their proximity values	plain and ordinary meaning	Collecting pixels in each proximity image into one or more pixel groups that are identified by their proximity values
"segment the proximity image into one or more pixel groups" (claim 10)	collect pixels in each proximity image into one or more pixel groups	plain and ordinary meaning	Collecting pixels in each proximity image into one or more pixel groups

Apple and Staff agree on the definition of these terms. Motorola contended in its pre-hearing brief that the construction should be the plain and ordinary meaning, but offered no arguments in its post-hearing brief. (*See* RIB at 79-90.)

The ALJ discerns no real difference or significance between these constructions. However, the ALJ finds that Apple's and Staff's construction does represent the plain and ordinary meaning and are consistent with the specification. The ALJ, therefore, adopts their constructions for these two terms. Accordingly, "segmenting each proximity image into one or more pixel groups that indicate significant proximity" means collecting pixels in each proximity

image into one or more pixel groups that are identified by their proximity values and "segment the proximity image into one or more pixel groups" means collecting pixels in each proximity image into one or more pixel groups.

10. "means for segmenting the proximity image into one or more pixel groups, each pixel group representing a touch object on or near the touch-sensitive surface" (claim 24)

Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
§ 112 ¶ 6 function: collecting pixels in each proximity image into one or more pixel groups (as construed above) § 112 ¶ 6 structure: a module that collects pixels in the proximity image into pixel groups using process 268 or an equivalent. (23:8-40)	This element is subject to 35 U.S.C. § 112 ¶ 6. Function: "segmenting the proximity image into one or more pixel groups, each pixel group representing a touch object on or near the touch-sensitive surface" Structure: A host computer programmed to perform the steps diagrammed in figure 18 and equivalents thereof.	Function: segmenting the proximity image into one or more pixel groups Structure: a computer programmed to perform the steps diagrammed in Fig. 18 and equivalents thereof

The parties agree that this term is subject to 35 U.S.C. § 112 ¶ 6. The parties also agree that the function is "segmenting," but Apple seeks to define the function further by inserting the definition for the "segmenting" term into the function. The ALJ finds that there is no need to insert the definition for "segmenting" into the function because the claim language is clear. The ALJ finds that the function for this term is "segmenting the proximity image into one or more pixel groups."

As for the corresponding structure, Staff and Motorola contend that the corresponding structure is "a computer programmed to perform the steps diagrammed in Figure 18 and

equivalents thereof."[5] Apple argues that Figure 18 is overinclusive because some of the steps (such as the smoothing step) are not part of segmenting. (CIB at 46.) The ALJ finds that the appropriate structure is Figure 18 and equivalents thereof. The specification clearly links Figure 18 to the segmenting means stating: "FIG. 18 represents the data flow within the proximity image segmentation process 241." (JX-3 at 23:8-9.) As the specification explains, "[t]he image segmentation process 241 takes the most recently scanned proximity image data 240 and segments it into groups of electrodes 242 corresponding to the distinguishable hand parts of FIG. 13." (JX-3 at 19:2-5.) Thus, "Image Segmentation" is linked to the claimed "segmenting" function and Figure 18 outlines the steps the computer must be programmed to perform that function. Accordingly, the ALJ finds that the appropriate structure is Figure 18 and equivalents thereof.

11. "transmitting one or more ellipse parameters as a control signal to an electronic or electromechanical device" (claim 2)/"transmit one or more ellipse parameters as a control signal to an electronic or electromechanical device" (claim 11)

Claim Term	Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
"transmitting one or more ellipse parameters as a control signal to an electronic or electromechanical device" (claim 2) "transmit one or more ellipse parameters as a control signal to an electronic or	Plain and ordinary meaning, or: transmit(ting) one or more ellipse parameters as a signal that can be used to control some aspect of an electronic or electromechanical device	*plain and ordinary meaning*, subject to Motorola's proposed construction for "ellipse parameters"	Transmitting one or more ellipse parameters as a signal that can be used to control some aspect of an electronic or electromechanical device

[5] Motorola sought to further limit the term to "host computer." Motorola never raised this in its post-hearing briefs. However, even if this argument was considered, it is improper to limit computer to a "host computer" as discussed above. (*See* Section IV.C.3.)

Claim Term	Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
electromechanical device" (claim 11)			

The parties do not appear to dispute this term. Motorola has offered a construction that is "subject to" its proposed construction for "ellipse parameters." The Staff offers a slightly reworded version of the claim language. The ALJ finds this language plain on its face and that there is no significant difference between the Staff's proposed construction and the actual claim language. Accordingly, the ALJ finds there is no construction necessary of this term and adopts the plain and ordinary meaning of this claim term as the construction.

12. "means for transmitting one or more ellipse parameters as a control signal to an electronic or electromechanical device" (claim 29)

Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
§ 112 ¶ 6 function: transmitting one or more ellipse parameters as a signal that can be used to control some aspect of an electronic or electromechanical device (as construed above) § 112 ¶ 6 structure: host communication interface 20 or an equivalent (13:63-14:15)	This element is subject to 35 U.S.C. § 112 ¶ 6. Function: "transmitting one or more ellipse parameters as a control signal to an electronic or electromechanical device" Structure: Indefinite. There is no structure that performs the claimed function."	Function: transmitting one or more ellipse parameters as a control signal to an electronic or electromechanical device Structure: host communication interface 20 or equivalents thereof

The parties agree that this term is subject to 35 U.S.C. § 112 ¶ 6. Motorola and Staff agree on the function. Apple offers a slightly re-worded version of the claim language. There is no apparent significance to the different functions offered. Accordingly, the ALJ finds that the claim language is clear and construes the function as "transmitting one or more ellipse parameters as a control signal to an electronic or electromechanical device." As for the

associated structure, Apple and Staff agree that the corresponding structure is the "host communication interface 20 or equivalents thereof." Thus, the ALJ finds that the corresponding structure is the host communication interface 20 (JX-3 at 13:63-14:15) or equivalents thereof.

13. "Adapted to"

Claim Term	Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
"adapted to" (claim 11)	Plain and ordinary meaning, or: configured to	made suitable for	Made suitable for, configured to

As the Staff explained, the parties appear to be offering constructions of the term "adapted to" that differ in wording, but not in substance. (SIB at 29.) The Staff argues that its construction should be adopted because it comports with the plain meaning of the term, and incorporates the definitions offered by both the private parties. The ALJ agrees. Accordingly, the ALJ adopts the Staff's construction of "adapted to" meaning "made suitable for, configured to."

D. The '607 Patent[6]

1. "electrically isolated" (claims 1-7)

Apple	Motorola	Staff
Separated to prevent any significant current flow between the lines	Physically separated, electrically and mechanically	Separated to prevent any significant current flow between the lines

Apple and Staff argue that "electrically isolated" should be construed to mean "separated to prevent any significant current flow between the lines." (CIB at 99; SIB at 50-51.) Motorola

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[6] Respondents argue that "capacitive monitoring circuitry" requires construction (RIB at 19-20) while Apple and Staff argue that the term does not need construction as no issue of infringement, validity or domestic industry turns on this issue. (CIB at 107; SIB at 52-53.) The ALJ agrees that this claim term need not be construed. *See Vanderlande*, 366 F.3d at 1323. Indeed, the parties' claim constructions are quite similar. In addition, throughout Respondents' brief, it is clear that issues surrounding this claim term are whether the circuitry identified by Apple in the '607 Accused Products and in the domestic industry product actually satisfy this limitation (under either construction) and are not dependent on the actual construction of this claim term.

argues that it should be construed to mean "physically separated, electrically and mechanically." (RIB at 14-16.) Motorola argues that its construction is supported by the specification and is consistent with the IEEE Standard Dictionary of Electrical and Electronics Terms from 1996. (RIB at 15.) Motorola further argues that Apple's and Staff's construction introduces uncertainty and, further, it is unclear what "significant" means. (RIB at 15-16.)

The ALJ finds that "electrically isolated" means separated to prevent any significant current flow between the lines. The specification repeatedly describes instances where the lines are separated enough to prevent significant current flow between the lines. (*See* ''607 Patent at 9:22-10:21; 13:7-14:59; 15:7-15; 16:50-17:47.) Similarly, Figures 6, 7, 8, 10, 11, 18 and 19 show that "electrical isolation" in the '607 Patent does not require physical, electrical and mechanical separation. ('607 Patent, Figs. 6, 7, 8, 10, 11, 18 and 19 and accompanying text.) Furthermore, the evidence shows that one of ordinary skill in the art would understand that complete isolation is not required and, further, would not be feasible in the real world as there will always be some degree of coupling between lines. (CX-202C at Q&A 91.)

The ALJ finds nothing in the '607 Patent specification that supports complete isolation as required by Motorola. Indeed, the portions of the specification cited by Motorola simply show that the conductive lines should be separated (indeed separated enough to prevent significant current flow), but fail to show the complete isolation proposed by Motorola.

Therefore, the ALJ finds that "electrically isolated" means separated to prevent any significant current flow between the lines.

2. "operatively coupled"

Apple	Motorola	Staff
Directly or indirectly electrically connected	Electrically connected	Directly or indirectly electrically connected

Apple and Staff argue that "operatively coupled" should mean "directly or indirectly electrically connected." (CIB at 106; SIB at 52.) Motorola argues that it means "electrically connected." (RIB at 18.) Motorola argues that its claim construction is supported by the prosecution history and the understanding of one of ordinary skill in the art. (RIB at 16-18.) Motorola further argues that Apple's and Staff's proposed construction removes any distinction between drive lines and sense lines and is unsupported by the intrinsic evidence and general understanding of "operatively coupled." (RIB at 18.)

The ALJ finds that "operatively coupled" means directly or indirectly electrically connected. The specification repeatedly uses "operatively coupled" or "coupled" to describe direct and indirect electrical connections. For example, in describing Figure 5, the '607 Patent uses "operatively coupled" to describe direct and indirect connections:

> In most cases, the processor 56 together with an operating system operates to execute computer code and produce and use data. The computer code and data may reside within a program storage block 58 that is operatively coupled to the processor 56.
>
> * * *
>
> The computer system 50 also includes a touch screen 70 that is operatively coupled to the processor 56.

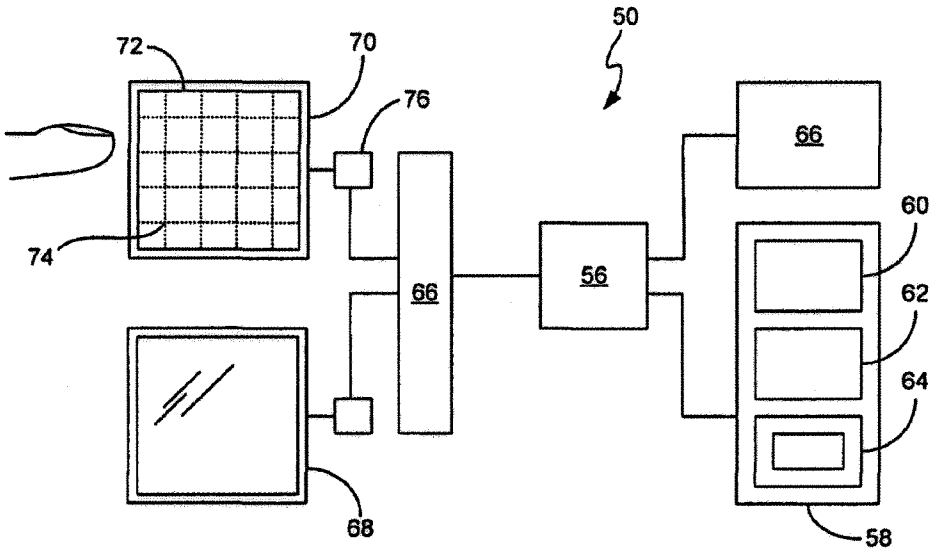


FIG. 5

('607 Patent at 7:9-14, 53-54, Figure 5; *see also* 2:50-67; 6:26-39; 9:22-65; 10:47-58; 13:7-14:11; 17:12-35; 14:48-61; 18:11-39 and 29:32-47; Figures 14, 18 and 19 and accompanying text.) While Motorola's construction could include indirect electrical connections, the ALJ finds that Apple's and Staff's construction more accurately reflects the meaning of "operatively connected" as used in the '607 Patent.

Therefore, the ALJ finds that "operatively connected" means directly or indirectly electrically connected.

3. "Glass member"

Apple	Motorola	Staff
Glass or plastic element	A member made of glass	Glass or plastic element

Apple and Staff argue that "glass member" should be construed to mean a "glass or plastic element." (CIB at 113; SIB at 54-55.) Motorola argues that it means "a member made of glass." (RIB at 34.) Motorola argues that throughout the '607 Patent, the use of "glass member"

is limited to "glass" except for one instance, but that this instance is insufficient to redefine "glass member" to mean anything but a member made of glass.

The ALJ finds that "glass member" means glass or plastic element. The specification specifically states

> Furthermore, each of the layers may be formed with various materials. By way fo example, each particular type of layer may be formed from the same or different material. **For example, any suitable glass or plastic material may be used for the glass members.**

('607 Patent at 16:43-47) (emphasis added). Motorola argues that this is insufficient "to completely redefine a term as simple and non-technical as 'glass member' to a person of ordinary skill in the art." (RIB at 35.) The ALJ finds Motorola's argument unpersuasive as it fails to cite any evidence or legal precedence to support its argument. The specification explicitly states that the glass member may be composed of glass or plastic material. Therefore, the ALJ finds that "glass member" means a glass or plastic element.

E. The '430 Patent

1. "dynamically adding support for hardware or software components with one or more properties" (Claim 1)

Claim Term	Apple's Proposed Construction	Motorola's Proposed Construction	Staff's Proposed Construction
"dynamically adding support for hardware or software components with one or more properties"	The preamble is not limiting.	adding hardware or software components with one or more properties without running an installation program	adding support for hardware or software components to a computer system without running an installation program

Apple argues that the preamble of Claim 1 should not be limiting. Apple further argues that even if the preamble is limiting, Motorola's construction is incorrect because "dynamically" does not require that the adding support occur "without running an installation program." (CIB at 157-159.) Motorola and Staff argue that the preamble is limiting. Motorola and Staff offer

slightly different, but essentially similar, definitions for the preamble. (RIB at 128-134; SIB at 98-101.)

Apple argues that "[t]he preamble of claim 1 is a classic example of a set-up to the actual limitations, setting the stage for the claim without adding a separate meaningful limitation." (CIB at 157; CRB at 57.) And that "[w]here the preamble describes the purpose or use of the invention, there is a presumption that this description is not an independent claim limitation." (CIB at 157.) It argues that "[t]he phrase 'dynamically adding support' in the preamble summarizes the four-step method of the claim rather than proving a whole new limitation." Apple further argues that "[t]he four steps of the claim set for the actual limitations of what it means to add support 'dynamically'—the operating system is queried for properties, and the result is the addition of support for the components 'without rebooting the operating system.'" (CIB at 157.) Apple further argues that Motorola's arguments fail as a matter of law because (1) "Federal Circuit law is clear that amendment to the preamble may be limiting only in the narrow circumstances where there was reliance on the preamble to overcome prior art" and (2) "the Federal Circuit has directed only where there is 'dependence on ***a particular disputed preamble phrase for antecedent basis*** may the preamble limit claim scope." (CIB at 158-59 (emphasis in the original).)

"Whether to treat a preamble term as a claim limitation is 'determined on the facts of each case in light of the claim as a whole and the invention described in the patent.'" *Am. Med. Sys., Inc. v. Biolitec, Inc.*, 618 F.3d 1354, 1358 (Fed. Cir. 2010) (quoting *Storage Tech. Corp. v. Cisco Sys., Inc.*, 329 F.3d 823, 831 (Fed. Cir. 2003)). "[T]here is no simple test for determining when a preamble limits claim scope[.]" *Id.* "Generally, the preamble does not limit the claims." *Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002). "Nonetheless,

the preamble may be construed as limiting 'if it recites essential structure or steps, or if it is necessary to give life, meaning, and vitality to the claim.'" *Am. Med. Sys.*, 618 F.3d at 1358 (quoting *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (internal quotation marks omitted)).

The ALJ finds that the preamble is not limiting in this case. There are several factors that contribute to this finding. First, the ALJ finds that the preamble merely provides a "set up" for the invention, as Apple suggests. It does not give context, meaning, and structure to the remainder of the claim. *See Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 189 F.3d 1298, 1306 (Fed. Cir. 1997). Apple is correct that it is irrelevant that some of the terms in the preamble provide antecedent basis for other terms in the claim body because they are not terms at issue.

The ALJ finds that the word "dynamically" does not limit claim 1, because "dynamically adding support" merely summarizes the other steps of the claim. Indeed, Motorola's and Staff's construction largely repeats element (d) of the claims. Neither Motorola nor Staff is able provide a convincing argument how their construction really differs from element (d), which further undermines a finding that the preamble is limiting. *Marrin v. Griffin*, 599 F.3d 1290, 1294-95 (Fed. Cir. 2010).

As for the prosecution history, the ALJ finds that it is clear enough to overcome the other evidence that the preamble is limiting. The preamble of Claim 1 originally read: "A method for processing system components on a computer with a memory and an operating system resident in the memory." (JX-4 at 25.) The examiner rejected this claim finding that "processing system components" in the preamble was "vague and indefinite." (JX-4 at 933.) The examiner went on to say that: "It is not clear what is meant by system components (are these hardware and/or software components?) or how they are processed." (JX-4 at 933.)

The applicant responded to these rejections by the amending claim 1. The applicant responded directly to the examiner's question by replacing "system components" with "hardware and software components." (JX-4 at 963.) The applicant commented that in response to the indefiniteness rejection that "[a]pplicant has made appropriate amendments to particularly point out and distinctly claim the invention in clear and definite terms." (JX-4 at 967.) Indeed, the applicant specifically stated that "the hardware and software components are discussed on page 9 with reference to Figure 2. The hardware components, as shown in Figure 4, could be a printer, machine, or a place. The software components could be a device driver, shared library as shown in Figure 3, or a tool or stationary as shown in Figure 5." (JX-4 at 967.) However, this was still insufficient to obtain allowance of the claims.

The examiner again rejected the claims as being indefinite for "failing to point out and distinctly claim the subject matter which applicant regards as the invention." (JX-4 at 972.) Specifically, the examiner noted that in the preamble, "processing hardware and software components is vague and indefinite." (JX-4 at 972 (quotation marks omitted).) The examiner explained that "[i]t is not clear how these components are processed or what is meant by 'processing[]" and "[i]t is not seen that there is any processing being done." (JX-4 at 972.) The examiner summed up that "[t]his appears to be a method and apparatus for searching for hardware and software components of a computer system." (JX-4 at 972.) The examiner again repeated that "[i]n claims 1 and 22 the preamble indicates processing hardware and software components; however, the body of the claim speaks of hardware or software components. It is not clear if a search criteria can be directed to hardware only or software only, or if there can be a search for a combination of hardware and software components." (JX-4 at 973.)

In response to this rejection, the applicant again amended the preamble. The applicant replaced the problematic "processing" limitation with the phrase "dynamically adding support for" and changed the "and" between "hardware and software" to an "or." Finally, the applicant also reworded and added to the last clause of the preamble. This clause originally read "on a computer with a memory and an operating system resident in the memory...." The amendment reordered it and added a requirement that the components have properties. The clause now read "with one or more properties to an operating system active on a computer with a memory. . . ." (JX-4 at 983.) The applicant explained that "[t]he Examiner's § 112 objection in paragraph 3 [of the prior office action] is addressed in the claims that have been crafted to present the patentable subject matter in a clear, concise manner and particularly point out and distinctly claim the invention." (JX-3 at 985.) The applicant went on to state that "[t]he changes were made to expressly claim the steps summarized in the SUMMARY OF THE INVENTION, 'add system components (documents, tools, fonts, libraries, etc.) to a computer system without running an installation program." (JX-4 at 985.) In addition, the application explained that "[t]he 'properties' of the components are also emphasized in the independent claims." (JX-4 at 985.) Finally, the applicant pointed the examiner to where in the specification the "processing" of the invention was described: "An example in accordance with the claimed invention is presented on page 15 at the bottom of the page and the C++ code used to implement a preferred embodiment is presented to ***clarify the processing*** and assist a developer to make and use the invention." (JX-4 at 985 (emphasis added).) Of course, "processing" in the claims had been replaced with "dynamically adding support for." (JX-4 at 984.)

The prosecution history makes this a close case, but the ALJ is not persuaded the language in the preamble was what was added to necessarily obtain allowance. Indeed, the

applicant also amended element (d) during this time to add the limitations of "adding support . . . without rebooting the operating system." As the ALJ discussed above, the ALJ finds that preamble merely recapitulates that limitation. The remainder of the claim sets forth a complete invention. Accordingly, the ALJ finds that the prosecution history is at best ambiguous as to whether the preamble should be limiting. Where the remainder of the claim sets out a complete invention and there is no clear reliance on the preamble during the prosecution history to obtain allowance, the preamble is not limiting. Accordingly, the ALJ finds that Motorola has not overcome the presumption that the preamble is not a limitation. *Catalina Mktg. Int'l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808-09 (Fed. Cir. 2002).

2. component" terms

Term	Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
"component(s)" Claims 1, 3, 5	item(s) or resource(s)	indefinite Alternate construction should ALJ Essex determine that this term is not indefinite: documents, fonts, tools, shared libraries, or other such resources	Item or resource
"hardware . . . component(s)" Claims 1, 3	hardware item(s), or resource(s) used by hardware	indefinite Alternate construction should ALJ Essex determine that this term is not indefinite: machines, printers, or persons/places	Hardware resources, such as a machine, printer, or persons/places
"software component(s)" Claims 1, 3	software item(s), or resource(s) used by software	indefinite Alternate construction should ALJ Essex determine that this term is not indefinite: device driver shared libraries, tools, or stationeries	Software resources, such as device drivers, shared libraries, and files

Term	Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
"hardware or software components"	Plain and ordinary meaning, or: hardware or software item(s), or resource(s) used by hardware or software	indefinite Alternate construction should ALJ Essex determine that this term is not indefinite: system components, network components, or application components	Hardware or software resources
"system components" Claim 3	Plain and ordinary meaning, or: system items, or resources used by the system	documents, fonts, tools, shared libraries, or other system resources	Plain and ordinary meaning
"application components" Claim 5	Plain and ordinary meaning, or: application items, or resources used by an application	application resources such as tools, stationeries, or preferences	Plain and ordinary meaning

Apple and Staff agree that the term "component(s)" is used broadly in the patent and means "items or resources." In its pre-hearing statement, Motorola argued that the term was indefinite, but if the ALJ believed that it was capable of construction, that it should be construed as "documents, fonts, tools, shared libraries, or other such resources." Motorola presented no arguments regarding its indefiniteness argument for this term or its alternative construction. Accordingly, the ALJ will deem those arguments waived.

The ALJ finds that the term "component" should be construed to mean "an item or a resource." The intrinsic evidence supports this construction. For example, the patent states that "in the framework an item to be added/removed from the system is called a component." (JX-1 at 5:62-64; *see also* JX-1 at 8:67-68 ("Classes which require locating a specified item within a

specified scope. . . ."); *id.* at 1:62-66 ("The method and system include capability for . . . querying the system to identify resources that match the specified system search criteria."). The breadth of the definition does not mean that it is indefinite.

As for the remaining "component" terms, the ALJ finds that they are merely different types of "components" and no separate construction is necessary. The ALJ notes that several of the constructions offered include examples of the resource in question. The ALJ does not find those additional examples to be necessarily helpful to clarifying the meaning of these terms and declines to include them.

3. specifying a target hardware or software component search criteria including one or more properties" (claim 1)

Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
specifying desired attributes that are potentially shared by one or more hardware or software components	Plain and ordinary meaning	Plain and ordinary meaning

Motorola and Staff argue that this term should be given its plain and ordinary meaning. Apple suggests a construction of "specifying desired attributes that are potentially shared by one or more hardware or software components." The key dispute between the parties regards the claim term "properties." In reality, Apple's proposed construction hides an additional layer of meaning that Apple seeks to apply to the term. In its brief, Apple clarifies that the term "properties" means "desired attributes that are attached to components rather than being intrinsic parts of the components before use in the framework." (CIB at 165.) This statement, not Apple's construction, draws out the main distinction that Apple seeks to make between what Apple calls "intrinsic" or "inherent" parts of a component and "non-intrinsic" or "non-inherent" parts. Apple gives examples such as file names and files sizes, which Apple claims are

"intrinsic" parts of a component and cannot be a "property." (CIB at 165-166.)

Apple's argument begins with the language of the claims by arguing that Motorola's construction seeks to render "properties" meaningless. (CIB at 163.) Apple notes that the preamble specifies that the components must have one or more properties and that properties are a narrower subset of the search criteria, but Motorola's construction does not distinguish between components with properties and those without properties. (CIB at 164.) Apple argues that this difference is captured by the claims using different terms for "search criteria" and "properties." (CIB at 164.)

Motorola and Staff respond to this argument by asserting that "[t]he term 'search criteria is much broader than 'properties' and a user can specify search criteria that are not properties of the target hardware or software components." (RRB at 63.) For example, the search criteria can include Boolean operators or location limitations. (RRB at 63-64.)

The ALJ finds that under Motorola and Staff's construction "properties" is not rendered superfluous. "Search criteria" is certainly broader than "properties" and can include non-property entities such as Boolean operators. Indeed, Motorola's argument that "search criteria" is broader than "properties" is supported by the specification. (*See* JX-1 at 9:30-40 ("The search scope can be a volume, a machine, or anything depending of the implementation provided by the sub-class.").) As such, the claim language does not preclude Motorola and Staff's construction. As for Apple's construction, there is nothing in the claim language that would support Apple's construction. The claims do not distinguish between "intrinsic characteristics" and properties, so the claim language is at best neutral to Apple's construction.

As for the specification, Apple argues that the '430 Patent "institutes a second layer of searchability for components by 'attaching' or 'associating' properties with every component in

the system, and it is a 'set' of properties that makes a component findable." (CIB at 165.) Apple relies on portions of the specification that state "[a] component can have properties associated with it. Every component has some set of properties which identify it." (CIB at 165 (quoting JX-1 at 5:66-68).) Pointing to the part of the specification that describes the preferred embodiments shown in Figures 9-11, Apple argues that "[t]he patent further describes requests being made to locate components with 'desired attributes,' which are 'system-defined attributes' attached to components by the system." (CIB at 165 (citing JX-1 at 13:2-7, 13:11-15, 13:21-24).) Apple argues that "[t]he method described in the preferred embodiment distinguishes between a FindALL command, that would locate all components that share a set of properties, and a FindOne command that would be run after the broader search, and return only the single 'named' component that had been located based on 'properties.'" (CIB at 165 (citing JX-1 at 9:25-46).) Apple argues that "[e]very description in the patent, and every example, treat properties as 'desired attributes' that are 'attached' to components, rather than as intrinsic characteristics that are not attached, like names and file sizes." (CIB at 165.)

However, the ALJ finds that the specification does not support Apple's construction. As Motorola notes, "the words 'inherent' and 'non-inherent' (as well as 'intrinsic' and 'non-intrinsic') do not appear anywhere in the '430 patent." The ALJ agrees that specification uses properties broadly. For example, the Abstract describes the invention as "[a] location framework is employed to locate system components whose properties match those specified in a search criteria." (JX-1 at 1:54-56.) Additionally, the specification defines properties broadly and without limitation when it states that "[e]very component has some set of properties which ***identify*** it." (JX-1 at 5:67-68 (emphasis added).) Thus, this quote uses "properties" very broadly.

The ALJ further notes that Apple's efforts to cobble together the three preferred

embodiments in columns 12 and 13 support its construction are not persuasive. Apple claims that this section describes "designed attributes, which are system defined attributes." (CIB at 165.) However, a review of this section reveals that it describes three separate embodiments – a "smart folder," a "place," and a "Parts Bin." The description of the "smart folder" states that "[t]he smart folder then invokes the locator and requests particular documents containing the desired attributes to be collected in the folder." (JX-1 at 13:2-4.) And that "[a]dditionally, the smart folder can instruct the locator to notify it when new documents containing the desired attributes are added or removed from the system." (JX-1 at 13:4-7.) At no time does this embodiment suggest that "desired attributes" or properties are limited only to "non-intrinsic" properties or attributes as Apple suggests.

Indeed, this is in sharp contrast to the other two embodiments – the "place" and the "Parts Bin," in both of those preferred embodiments, the system attaches "system-defined attributes" to the files or devices to be placed in the place or "Parts Bin." (JX-1 at 13:8-30.) Thus, Apple is incorrect that all three embodiments discuss "system defined attributes" as being "desired attributes." Thus, it appears from the specification that the embodiment of Figure 9 is not expressly limited as Apple claims and does not support Apple's inherent/non-inherent distinction.

As for Apple's last argument regarding the specification that the specification draws a distinction between searching on "properties" and searching on intrinsic properties such as name in column 9, lines 25-45 of the '430 Patent, the ALJ finds that the '430 Patent (and this example) does not appear to contain such a distinction. (RIB at 136.) As such, it does not support the limitation that Apple seeks to read into the claims.

The final piece of intrinsic evidence that Apple seeks to rely on is its assertion that "the Patent Office's decision to treat the property search of the claims differently from the known

searches for intrinsic characteristics, like names and file sizes, in the prior art, is supported by the specification's consistent treatment of 'properties' as desired attributes that are attached to components rather than being intrinsic parts of the components before use in the framework." (CIB at 165.) But, there are no statements or actions in the prosecution history to which Apple can point. Apple is relying on the examiner's failure to reject the claims as evidence that the examiner read the claims as Apple now seeks to do so. This is not a proper basis on which to interpret claims. *See, e.g.*, *Prima Tek II, L.L.C. v. Polypap, S.A.R.L.*, 318 F.3d 1143, 1150 (Fed. Cir. 2003) ("We note that drawing inferences of the meaning of claim terms from an examiner's silence is not a proper basis on which to construe a patent claim."). Accordingly, the ALJ rejects this argument.

Apple also relies on extrinsic evidence, the testimony of the named inventor, to support its construction. (CIB at 164-165 (citing JX-469C at 21:9-21; *see also id.* at 57:6-59:19 ("The find command asks the user to manually specify a pattern that resembles the file name. But file name is an intrinsic characteristic of a file, inseparable from the file. It's not additional property that a system or user define and attach to the file.").) However, the ALJ does not find this testimony persuasive in light of the complete lack of support for Apple's construction in the intrinsic evidence. *See N. Am. Vaccine*, 7 F.3d at 1577 ("[W]here the meaning of a claim term is clear from the specification and prosecution history, the inventor's self-serving post-hoc opinion testimony on the legal question whether it should a different meaning was of little if any significance." (citation and quotation marks omitted)).

Finally, Apple and Motorola both resort to the claim construction canon that claims should interpreted to preserve their validity. Apple argues that Motorola is impermissibly attempting to broaden the claims to invalidate them (CIB at 165) and Motorola argues that

Apple's construction would leave the claims vague and indefinite (RIB at 137-138). Motorola also argues that Apple's argument should be rejected because the claim term is not ambiguous. (RRB at 65.) The ALJ sees no need to resort to this canon of claim construction. The claim language is broad but clear. Moreover, the specification and prosecution history do not support Apple's construction. This is not an instance to resort to the canon that claims should be interpreted to preserve their validity. *See AK Steel Corp. v. Sollac & Ugine*, 344 F.3d 1234, 1243 (Fed. Cir. 2003) ("That axiom [(construing claims to preserve validity)] is a qualified one, dependent upon the likelihood that a validity-preserving interpretation would be a permissible one."); *Generation II Orthotics Inc. v. Med. Tech. Inc.*, 263 F.3d 1356, 1365 (Fed. Cir. 2001) ("[C]laims can only be construed to preserve their validity where the proposed claim construction is 'practicable,' is based on sound claim construction principles, and does not revise or ignore the explicit language of the claims.").

Accordingly, the ALJ rejects Apple's proposed construction and adopts Motorola's and Staff's proposed construction that this term should be accorded its plain and ordinary meaning.

4. "querying the operating system" (claim 1)

Apple's Proposed Constructions	Motorola's Proposed Constructions	Staff's Proposed Constructions
attempting to locate components via an operating system protocol or framework	making a system call	Plain and ordinary meaning

The parties do not appear to genuinely dispute this limitation. Motorola offers no argument in its brief and Apple concedes "there should be no real dispute over this claim limitation." (CIB at 166.) Staff argues that this term should be given its plain and ordinary meaning in this art. (SIB at 107.) Staff argues that the '430 Patent does not give a special

definition to this term, nor does it disclaim anything that would otherwise be considered "querying the operating system." (SIB at 107.) Staff argues that Motorola's construction is one type of query, but the literal claim language is not limited to making a system call. Staff also contends that the language Apple proposes reads limitations into the claim. (SIB at 107.) Apple argues that, at times, Motorola has attempted to construe its construction to require querying the "kernel" of the operating system. (CIB at 166.) But the parties now seem to agree that the term is not so limited. (Tr. 1163:2-6; 1164:23-1165:5). As for the rest of the definition, Apple offers no argument or evidence at all in its brief for the additional "framework" limitation that it includes in its definition. (*See* CIB at 166-167.) Thus, the ALJ agrees with Staff. Both Apple's and Motorola's constructions seek to improperly limit the claims without any justification and are rejected. Accordingly, the ALJ accords this term its plain and ordinary meaning.

5. "returning hardware or software components meeting the target hardware or software component search criteria" (Claim 1)

Claim Term	Apple's Proposed Construction	Motorola's Proposed Construction	Staff's Proposed Construction
"meet the target hardware or software component search criteria"	match the desired attributes in the search	Plain and ordinary meaning	Plain and ordinary meaning

The parties' real dispute (at this point) regarding the construction of "returning hardware or software components meeting the target hardware or software component search criteria" appears to center around what is being returned. Both Motorola and the Staff believe that this term should therefore be given its plain and ordinary meaning, which they assert requires "hardware or software components" to be returned. (RIB at 138.) Additionally, it is Motorola's position that when the "returning" limitation also requires that the hardware or software

components are returned to the initiating class or entity. (RIB at 138.) Apple proposes the construction "providing information identifying the hardware or software components." Apple argues that Motorola's construction, which requires additional limitations, is not the plain and ordinary meaning. (CRB at 62.)

Motorola argues that throughout the specification, the terms "return" and "returning" are used in conjunction with returning components, not with returning information identifying components. (RIB at 138-139 (citing JX-1 at 1:66-67; JX-1 at 6:31-36).) Motorola argues that in Figures 6, 7 and 8, "entities" are returned to the initiating class, not information identifying entities. (RIB at 139 (citing JX-1 at 8-10).) Specifically, Motorola notes that the portion of the specification describing Figure 6 reads, "[n]ext, at function block 640, the search is performed to locate appropriate system entities, which are returned via function block 650 to the initiating class, and processing is terminated at terminal 600." (JX-1 at 8:13-16.) Motorola notes that the specification provides similar descriptions for Figures 7 and 8. (JX-1 at 8:25-29, 8:38-42.)

Apple argues that Motorola is simply incorrect that the "ordinary meaning" supports returning entire components during a search. The result of a search in the computer arts, Apple contends, is more often information (for example, a set of links, pointers, or other references) that allows a user to obtain the actual documents or other desired components after the search. (CX-568C at Q/A 45.)

Beginning with the language of the claims, the claims require that "hardware or software components" be returned. The claims cannot be clearer as to what is returned – it does not say "information about" hardware or software components. For the ALJ to adopt Apple's construction, the ALJ would have to rewrite the claim. The ALJ further finds that there is no support in the claim language for Motorola's second limitation that the "hardware or software

components" be returned to the initiating class or entity. The claim language is entirely silent as to where the component is returned to.

Apple seeks support from claim 10, which depends on claim 1. Claim 10 requires the additional step of "creating a list of component pointers which provide direct access to the components." (JX-1 at 14:19-20.) Apple argues that "[t]hat type of list is consistent with how ordinary searches are done[, and] Motorola's overly narrow reading of the patent would exclude the types of pointers specifically claimed in the dependent claims." However, the ALJ finds that claim 10 does little to clarify the meaning of the "returning" limitation because Claim 10 does not limit the "returning" element directly, so it does not provide direct differentiation. Moreover, the ALJ finds that there is nothing in Motorola and Staff's construction that is inconsistent with claim 10. Their construction does not, as Apple alleges, preclude the creation of a list of pointers. The returning limitation deals only with what is returned and does not say where it is returned or what else can be done with what is returned. Claim 10 provides the additional step of creating a list of pointers to directly access the hardware or software component. The ALJ finds that this is perfectly consistent with Motorola's and Staff's construction because even after the component is returned, there could still be an additional unrelated step of creating a list of pointers.

The specification provides no help to Apple's construction. As Motorola demonstrated, the specification repeatedly provides that it is the hardware or software components that are returned. (JX-1 at Figures 6-7; 8:13-16; 8:25-29, 8:38-42.) Apple points to no specific support in the specification for its construction. As for Motorola's second limitation (that the returning must be to the initiating requester), while there is some support in the specification for that limitation, Motorola points to nothing the specification that would actually require reading that limitation into the claim.

Finally, Apple argues, based on Dr. Balakrishnan's testimony, that "[t]he result of a search, in the computer arts, is more often information (for example, a set of links, pointers, or other references) that allows a user to obtain the actual documents or other desired components after the search." Apple then goes on to provide an example:

> [W]hen a user searches on Google.com for a target web page, a Google web search returns a series of links to web sites or other information; it does not instantiate every web page that potentially matches the search. The user must click through the link to get to the actual target web page. What is "returned" are links, pointers, or other information. The patent discusses returning components in these terms. For example, when the user seeks a hardware component, the system does not somehow return the physical hardware as a result of the search—even in Motorola's example, what is returned is an "object," a piece of software that somehow identifies the physical hardware.

This extrinsic evidence, which untethered to the intrinsic evidence or any specific contemporaneous source, is not very persuasive.[7] This is especially true when the extrinsic evidence is used to support a construction that is inconsistent with claim language.

6. "adding support for the hardware and software components to the operating system" (Claim 1)

Claim Term	Apple's Proposed Construction	Motorola's Proposed Construction	Staff's Proposed Construction
"adding support for the hardware and software components to the operating system"	facilitating access to the hardware or software components	Indefinite	Plain and ordinary meaning

The parties dispute the term "adding support for the hardware and software components to the operating system." Apple contends that the term should be construed as "facilitating

[7] The ALJ notes that Apple's example is particularly inapt because Google did not even exist until several years after the patent was filed. (*See* http://www.google.com/about/corporate/company/history.html (the predecessor to Google did not begin until 1996 and "Google" was not launched until 1997) (last visited January 12, 2012).)

access to the hardware or software components." Motorola contends that the term is indefinite. Staff argues that the term should be given its plain and ordinary meaning.

Claims must ". . . particularly point[ ] out and distinctly claim[ ] the subject matter which the applicant regards as his invention." 35 U.S.C. § 112, ¶ 2; *Miles Laboratories, Inc. v. Shandon Inc.*, 997 F.2d 870, 874-75 (Fed. Cir. 1994). The purpose of this definiteness requirement is to ensure that the claims delineate the scope of the invention using language that adequately notifies the public of the patentee's right to exclude. *Young v. Lumenis, Inc.*, 492 F.3d 1336, 1346 (Fed. Cir. 2007). If a claim read in light of the specification reasonably apprises one of ordinary skill in the art of its meaning, that claim satisfies § 112, ¶2. *Id.* In contrast, if a claim limitation is "insolubly ambiguous" or "not amenable to construction," then the claim containing that limitation is invalid for indefiniteness. *See, e.g., Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347-1356 (Fed. Cir. 2005) (affirming summary judgment of invalidity due to indefiniteness); *Honeywell Int'l, Inc. v. United States Int'l Trade Comm.*, 341 F.3d 1332, 1338-1339 (Fed. Cir. 2003).

The ALJ finds that the term should be given its plain and ordinary meaning. The ALJ further finds that Apple's proposed construction fails. The claims as originally filed included a limitation of "to enable access to the one or more system components." The examiner objected to this limitation saying "it is not clear what 'enable access' to a system component means." (JX-4 at 935.) In response, the applicant deleted the entire phrase "enable access to the one or more system components." (JX-4 at 963.) The ALJ can discern no difference (and Apple provides none) between Apple's proposed construction and the claim language that the examiner rejected as indefinite. (Tr. 464:24-465:6, 475:7-12; *see also* RX-1796.) The ALJ finds that adopting Apple's construction would in effect re-write the claim to include the language that the

examiner objected to and that was deleted from the claim. Moreover, Apple's construction would eliminate the requirement that support be added "to the operating system." This is contrary to the plain language of the claim, which further suggests that Apple's construction is incorrect.

As for Motorola's contention that the claim is indefinite, there is certainly some merit to that argument. Apple's own expert claimed that none of the embodiments in the patent disclosed adding support as described in the claims. (Tr. 1664:7-1666:2.) Indeed, Dr. Balakrishnan's testimony at the hearing was not confidence inspiring as to the definiteness of the claims:

> Q. And how is someone acting in good faith who doesn't want to infringe this patent going to be able to determine under your construction how many degrees is safe, if it is a question of degree? They are not going to be able to, are they?
> A. If you are saying is there something drawn in the sand, a line drawn in the sand per se, yes, ***it is a little bit flexible, let's put it that way.***
> Q. ***It is flexible. Is that what you said?***
> A. ***Yes.***
> ...
> Q. And it is your contention to His Honor that this phrase "facilitating access," that a person of ordinary skill would know when they were facilitating access and when they weren't?
> A. In terms of adding support, which is element D of the claim --
> Q. In terms of your construction, facilitating access.
> A. For that element D, yes.
> Q. Okay. ***And where would they draw the bright line boundary there?***
> A. Well, ***I don't think there is a hard boundary per se, no.***

(Tr. 467:13-25; 475:13-25 (emphasis added).)

However, the ALJ finds that Dr. Balakrishnan's earlier testimony regarding "support" to be informative on the issue of indefiniteness:

QUESTION 100: **How does the patent specification discuss "adding support" for components?**

ANSWER: There are at least three distinct situations in the patent where support is added for components. The first is for new components that are added to the system, such as new hardware devices that would ordinarily require new driver code. **CDX-001.034** shows column 5, lines 7 to 14, where the patent discusses adding support for new multimedia devices by using the properties of the device to locate and load existing driver code. The second is the technique used for applications, whether or not they are brand new to the system, where existing "puzzle pieces" can be fit together on the fly. This is shown at **CDX-001.035**, which shows column 5, lines 29 to 65. The third is for components that are on the system but must be collected and tracked, for example in smart folders. Beyond the typical smart foldering functionality, these components are supported throughout the system, for example by permitting the system to provide notifications that components have been added, removed, or changed. That is shown in **CDX-001.036** at column 1, lines 44-47.

(CX-201C at Q/A 100; *see also* Tr. 1726:25-1727:21.) The ALJ finds that this testimony shows that there are some guideposts for the person of ordinary skill in the art as to the scope of the claims.

Taking all this evidence together, the ALJ finds that although the disclosure is very sparse, it is sufficient to give the claim term definition. Accordingly, in light of all of the evidence, the ALJ finds that the claim term is not indefinite.

As for the proper construction, the ALJ finds that the claim language provides the best guidance. It is clear that "support" is used in the patent very broadly as Apple suggests. However, the ALJ finds that "adding support for hardware or software components to the operating system" is slightly narrower because it requires "support" be added to the operating system and is contained in the plain language of the claims. Accordingly, the ALJ finds that

"adding support for hardware or software components to the operating system" has its plain and ordinary meaning.

V. INFRINGEMENT DETERMINATION

A. Applicable Law

In a Section 337 investigation, the complainant bears the burden of proving infringement of the asserted patent claims by a preponderance of the evidence. *Certain Flooring Products*, Inv. No. 337-TA-443, Commission Notice of Final Determination of No Violation of Section 337, 2002 WL 448690 at 59, (March 22, 2002); *Enercon GmbH v. Int'l Trade Comm'n,* 151 F.3d 1376 (Fed. Cir. 1998).

Each patent claim element or limitation is considered material and essential. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991). Literal infringement of a claim occurs when every limitation recited in the claim appears in the accused device, *i.e.,* when the properly construed claim reads on the accused device exactly. *Amhil Enters., Ltd. v. Wawa, Inc.*, 81 F.3d 1554, 1562 (Fed. Cir. 1996); *Southwall Tech. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed Cir. 1995).

If the accused product does not literally infringe the patent claim, infringement might be found under the doctrine of equivalents. The Supreme Court has described the essential inquiry of the doctrine of equivalents analysis in terms of whether the accused product or process contains elements identical or equivalent to each claimed element of the patented invention. *Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 40 (1997).

Under the doctrine of equivalents, infringement may be found if the accused product or process performs substantially the same function in substantially the same way to obtain substantially the same result. *Valmont Indus., Inc. v. Reinke Mfg. Co.,* 983 F.2d 1039, 1043 (Fed.

Cir. 1993). The doctrine of equivalents does not allow claim limitations to be ignored. Evidence must be presented on a limitation-by-limitation basis, and not for the invention as a whole. *Warner-Jenkinson*, 520 U.S. at 29; *Hughes Aircraft Co. v. U.S.*, 86 F.3d 1566 (Fed. Cir. 1996). Thus, if an element is missing or not satisfied, infringement cannot be found under the doctrine of equivalents as a matter of law. *See, e.g., Wright Medical*, 122 F.3d 1440, 1444 (Fed. Cir. 1997); *Dolly, Inc. v. Spalding & Evenflo Cos., Inc.*, 16 F.3d 394, 398 (Fed. Cir. 1994); *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538-39 (Fed. Cir. 1991); *Becton Dickinson and Co. v. C.R. Bard, Inc.*, 922 F.2d 792, 798 (Fed. Cir. 1990).

The concept of equivalency cannot embrace a structure that is specifically excluded from the scope of the claims. *Athletic Alternatives v. Prince Mfg., Inc.*, 73 F.3d 1573, 1581 (Fed. Cir. 1996). In applying the doctrine of equivalents, the Commission must be informed by the fundamental principle that a patent's claims define the limits of its protection. *See Charles Greiner & Co. v. Mari-Med. Mfg., Inc.*, 92 F.2d 1031, 1036 (Fed. Cir. 1992). As the Supreme Court has affirmed:

> Each element contained in a patent claim is deemed material to defining the scope of the patented invention, and thus the doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole. It is important to ensure that the application of the doctrine, even as to an individual element, is not allowed such broad play as to effectively eliminate that element in its entirety.

Warner-Jenkinson, 520 U.S. at 29.

Prosecution history estoppel may bar the patentee from asserting equivalents if the scope of the claims has been narrowed by amendment during prosecution. A narrowing amendment may occur when either a preexisting claim limitation is narrowed by amendment, or a new claim limitation is added by amendment. These decisions make no distinction between the narrowing of a preexisting limitation and the addition of a new limitation. Either amendment will give rise

to a presumptive estoppel if made for a reason related to patentability. *Honeywell Int'l Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1139-41 (Fed. Cir. 2004), *cert. denied*, 545 U.S. 1127 (2005)(citing *Warner-Jenkinson*, 520 U.S. at 22, 33-34; and *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.,* 535 U.S. 722, 733-34, 741 (2002)). The presumption of estoppel may be rebutted if the patentee can demonstrate that: (1) the alleged equivalent would have been unforeseeable at the time the narrowing amendment was made; (2) the rationale underlying the narrowing amendment bore no more than a tangential relation to the equivalent at issue; or (3) there was some other reason suggesting that the patentee could not reasonably have been expected to have described the alleged equivalent. *Honeywell*, 370 F.3d at 1140 (citing, *inter alia*, *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.,* 344 F.3d 1359 (Fed. Cir. 2003)(*en banc*)). "Generalized testimony as to the overall similarity between the claims and the accused infringer's product or process will not suffice [to prove infringement under the doctrine of equivalents]." *Tex. Instruments, Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1567 (Fed. Cir. 1996).

Section 271(b) of the Patent Act prohibits inducement: "[w]hoever actively induces infringement of a patent shall be liable as an infringer." 35 U.S.C. § 271(b) (2008). As the Federal Circuit stated:

> To establish liability under section 271(b), a patent holder must prove that once the defendants knew of the patent, they "actively and knowingly aid[ed] and abett[ed] another's direct infringement." However, "knowledge of the acts alleged to constitute infringement" is not enough. The "mere knowledge of possible infringement by others does not amount to inducement; specific intent and action to induce infringement must be proven."

DSU Med. Corp. v. JMS Co., 471 F.3d 1293, 1305 (Fed. Cir. 2006) (*en banc*) (citations omitted); *See also Cross Medical Products, Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1312

(Fed. Cir. 2005) ("In order to succeed on a claim inducement, the patentee must show, first that there has been direct infringement, and second, that the alleged infringer knowingly induced infringement and possessed specific intent to encourage another's infringement."). Mere knowledge of possible infringement by others does not amount to inducement. Specific intent and action to induce infringement must be proven. *Warner-Lambert Co. v. Apotex Corp.,* 316 F.3d 1348, 1363 (Fed. Cir. 2003). In *DSU*, the Federal Circuit clarified the intent requirement necessary to prove inducement. As the court recently explained:

> In *DSU Med. Corp. v. JMS Co.,* this court clarified en banc that the specific intent necessary to induce infringement "requires more than just intent to cause the acts that produce direct infringement. Beyond that threshold knowledge, the inducer must have an affirmative intent to cause direct infringement."

Kyocera Wireless Corp. v. Int'l Trade Comm'n, 545 F.3d 1340, 1354, (Fed. Cir. 2008) (citation omitted). "Proof of inducing infringement requires the establishment of a high level of specific intent." *Lucent Techs. Inc. v. Gateway, Inc.*, 2007 WL 925510, at *2-3 (S.D. Cal. 2007)

Under 35 U.S.C. § 271(c), "[w]hoever offers to sell or sells within the United States or imports into the Unites States a component of a patented machine, manufacture, combination, or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be specifically made to or specially adapted for use in the infringement of the patent, and not a staple article or commodity suitable for substantial non-infringing use, shall be liable as a contributory infringer."

A seller of a component of an infringing product can also be held liable for contributory infringement if: (1) there is an act of direct infringement by another person; (2) the accused contributory infringer knows its component is included in a combination that is both patented and infringing; and (3) there are no substantial non-infringing uses for the accused component,

i.e., the component is not a staple article of commerce. *Carborundum Co. v. Molten Equip. Innovations, Inc.*, 72 F.3d 872, 876 (Fed. Cir. 1995).

To prove direct infringement, Apple must prove by a preponderance of the evidence that the accused products either literally infringe or infringe under the doctrine of equivalents the method of asserted claims of the '828, the'607 and the '430 Patents. *Advanced Cardiovascular Sys., Inc. v. Scimed Life Sys., Inc.*, 261 F.3d 1329, 1336 (Fed. Cir. 2001). Notably, method claims are only infringed when the claimed process is performed. *Ormco Corp. v. Align Technology, Inc.*, 463 F.3d 1299, 1311 (Fed. Cir. 2006).

In order to determine whether an accused structure literally meets a 35 U.S.C. §112, ¶ 6 means-plus-function limitation, the accused structure must either be the same as the disclosed structure or be a 35 U.S.C. §112, ¶ 6 "equivalent," *i.e.*, (1) perform the identical function and (2) be insubstantially different with respect to structure. Two structures may be "equivalent" for purposes of 35 U.S.C. §112, ¶ 6 if they perform the identical function, in substantially the same way, with substantially the same result. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 1364 (Fed. Cir. 2000) (internal citations omitted). In other words, once identity of function has been established, the test for infringement is whether the structure of the accused product performs in substantially the same way to achieve substantially the same result as the structure disclosed in the specification. *Minks v. Polaris Industries, Inc.*, 546 F.3d 1364, 1379 (Fed. Cir. 2008

However, if an accused structure is not a 35 U.S.C. §112, ¶ 6 equivalent of the disclosed structure because it does not perform the identical function of that disclosed structure, it may still be an "equivalent" under the doctrine of equivalents. Applying the traditional function-way-result test, the accused structure must perform substantially the same function, in substantially

the same way, to achieve substantially the same result, as the disclosed structure. A key feature that distinguishes "equivalents" under 35 U.S.C. §112, ¶ 6 and "equivalents" under the doctrine of equivalents is that equivalents under 35 U.S.C. §112, ¶ 6 must perform the identical function of the disclosed structure, while equivalents under the doctrine of equivalents need only perform a substantially similar function. *Kemco Sales*, 208 F.3d at 1364 (internal citations omitted). Furthermore, a structure failing to meet either the "way" and/or "result" prong under the 35 U.S.C. §112, ¶ 6 test must fail the doctrine of equivalents test for the same reason(s). *Id.*

B. The '828 Patent

Apple asserts that the Motorola Atrix, Backflip, Bravo, Charm, Citrus, Cliq 2, Cliq XT/Quench, Defy, Droid, Droid 2, Droid 2 Global, Droid Bionic, Droid Pro, Droid X, Droid X2, Droid 3, Flipout, Flipside, i1, Titanium, Xoom, and XPRT (the "Accused '828 Products") infringe claims 1, 2, 10, 11, 24, 25, 26, and 29 of the '828 Patent. (CIB at 51-52.) Each of these products contains an integrated circuit supplied by Atmel Corporation for processing touch data. (CIB at 52; RIB at 90.) The parties largely agree about how the products work. (RIB at 90; CIB at 52-53.) The primary dispute between the parties regarding the '828 Patent centers on whether the Accused '828 Products meet the "mathematically fit(ting) an ellipse" limitation found in all of the asserted claims. (RIB at 90-118; SIB at 31-41; CIB at 52-72.)

1. Mathematically Fit(ting) An Ellipse

Apple argues that all of the Accused '828 Products meet this limitation. (CIB at 76.) There is no dispute that the Atmel touch sensor ICs read electrical signals from the touchscreen and run firmware for processing the touch data. (CIB at 52; RIB at 90; RX-1895C at Q/A 72-74; CX-201C at Q/A 510-511.) As Motorola explained (and Apple agrees), the Atmel chip [redacted]

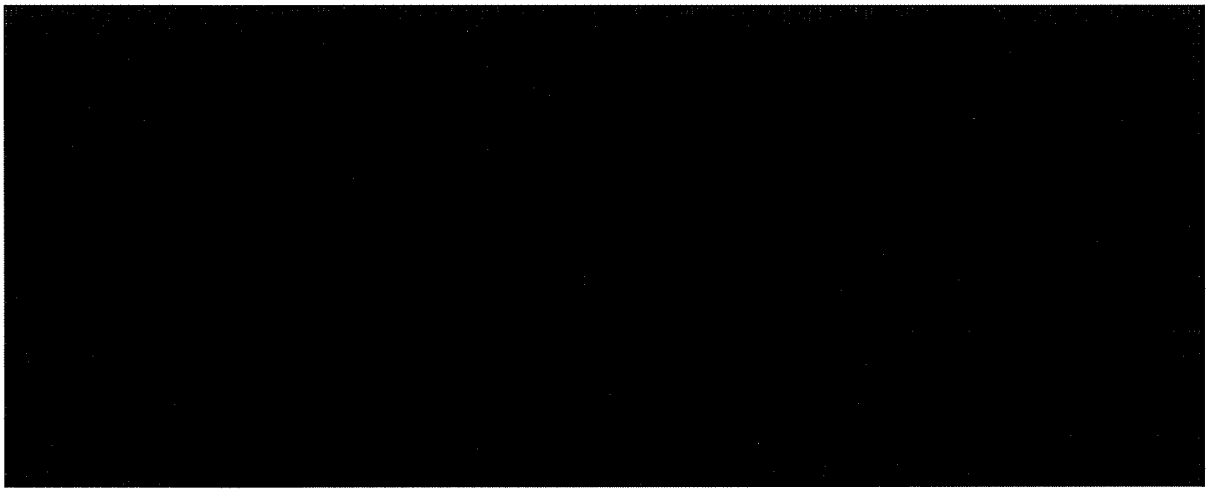
[redacted]. (RIB at 90 (citing RX-1895C at Q/A 75-76); CIB at 53 (citing CX-201C at Q/A 518-519; JX-661C at 8 [redacted] The Accused '828 Products [redacted] and, under the ALJ's construction, the claims are not limited to self-capacitance.

Motorola explains that [redacted], as shown in the example below:

(RIB at 90 & RX-1895C at Q/A 76 at Fig. WB9). In the example shown above, the numbers represent values proportional to [redacted] (RIB at 90.)

The parties agree that after assembling an array of data such as that shown in the example above, the Atmel chip filters out noise and looks for one or more touches using what are called "search algorithms [redacted]. (RIB

at 90 (citing RX-1895C at Q/A 76); CIB at 54-55 (citing JX-661C at 1; CX-201C at Q/A 518-519; RX-1895C at Q/A 76).) The result of this process is the identification of a touch or touches, such as in the examples shown below:



(RDX-11.32C (orange and green touches); RDX-11.33C (purple and blue touches).)

The parties agree that once the Atmel chip has identified a touch or touches, the Atmel chip performs further processing to generate what is called [redacted] (RIB at 91 (citing RX-1895C at Q/A 75); CIB at 56 (citing CX-201C at Q/A 527-528; RX-1895C at Q/A 77-92; RX-1879C at Q/A 12-19; JX-662C at 39-42) (Motorola Xoom); CIB at 63 (citing RDX-12.3; RDX-12.4) (Motorola Xoom test build); CIB at 64 (citing RDX-12.5; RDX-12.6) (Motorola handsets); CIB at 65 (citing RDX-12.7; RDX-12.8) (Motorola Droid X test build); CIB at 68-69.) This [redacted]—which in the Accused '828 Products comprises the values [redacted] and (for non-test build Motorola Xoom) [redacted]—provides specific information about each touch to [redacted]. (RIB at 91; CIB at 56, 64, 65, 68-69.) In the Accused '828 Products, [redacted] so that the device can perform functions in response to input from the touchscreen. (RIB at 91 (citing RX-1895C at Q/A 93-115); CIB at 56-57).

The parties also do not dispute what the [redacted] values represent. (RIB at 93-96; CIB at 56.) The first two values, [redacted], represent [redacted] respectively. (RIB at 93 (citing RX-1895C, Wolfe Q/A 80; Tr. 598:23-599:12); CIB at 56 [redacted] (citing JX-662C at 39-42 & CX-201C at Q/A 528).) The third value, [redacted] (RIB at 94 (citing RX-1895C at Q/A 77; Tr. 599:13-600:7); CIB at 56 (". . . [redacted] . . .).) The fourth value, [redacted] (RIB at 95 (citing RDX-1895C at Q/A 78-79; Tr. 602:13-24); CIB at 56 (. . . [redacted] . . . .").)

As Motorola explained, in one Accused '828 Product—the non-test build of the Motorola Xoom—[redacted]. (RIB at 96; CIB at 56 (". . . [redacted] Motorola explains (and Apple does not dispute) that [redacted] (RIB at 96-97 (citing RX-1895C at Q/A 91; Tr. 621:21-623:10); CIB at 56). Motorola illustrates this in the figure below.

(RX-1895C, Wolfe Q/A 76 Fig. WB10.) To calculate [redacted]. (RIB at 97.) In this example, this [redacted] (*See* RX-1885C, Wolfe Q/A 76.) In the figure above, the [redacted]. (*Id.*)

[redacted] (*See* RDX-1895C, Wolfe Q/A 78-79; Balakrishnan, Tr. 602:13-24.) The orange and green touches [redacted] (RIB at 95.) As Motorola explained (and Apple does not dispute), the orange touch has [redacted]. (RIB at 95.) The Atmel chip then [redacted]

[redacted] respectively. [redacted] for the orange touch is therefore [redacted]. (RIB at 95.) The [redacted] of the green touch is therefore [redacted]—the [redacted]. (RIB at 95.)

[redacted]

(RDX-11.32C.)

a) Motorola Xoom (Non-Test Build)

As noted above, Apple agrees with this basic explanation of what the Atmel chip does, but goes on to argue that, for example, in the Motorola Xoom (non-test build), the Atmel chip computes a set of numerical parameters that are transmitted to the Android Honeycomb operating system,[8] and "these parameters are used to define values for several Android commands known as 'methods' which in turn are used to mathematically fit an ellipse to approximate touches to the touch screen." (CIB at 56.) Apple argues that "[t]he parameters are then used to define a set of values that are provided to applications and users through methods in the Android MotionEvent class, such as getX(), getY(), getTouchMajor(), getTouchMinor(), and getOrientation()." (CIB at 56 (citing Tr. 650:23-655:11; RDX-12.1-.2). Apple argues that in the Google documentation, "these are further described: getX() returns the X coordinate of a touch

[8] "Honeycomb" is a particular version of the Android operating system. (CIB at 56.)

event, getY() returns the Y coordinate, getTouchMajor() returns the length of the major axis of an ellipse that describes a contact, getTouchMinor() returns the length of the major axis of an ellipse that describes a contact, and getOrientation() returns the orientation of a contact." (CIB at 56-57 (citing CX-181.010; Tr. 1038:11-1039:25).)

Apple argues that under its construction for "mathematically fit(ting) an ellipse" that "[t]here is no dispute that the numerical parameters in the Motorola Xoom are computed using mathematical processes." (CIB at 57.) Apple argues that "[t]he parties dispute whether the [Accused '828 Products] meet the second part of Apple's proposed construction, which requires that the computed parameters 'mathematically define an ellipse which approximates the shape of a pixel group.'" (CIB at 57.) Apple argues that (for the Motorola Xoom (non-test build) "[t]he evidence presented at the hearing shows that the computed parameters mathematically define an ellipse in the Motorola Xoom because they are used to define values for the five classical parameters of an ellipse that are described in the '828 Patent: getX(), getY(), getTouchMajor(), getTouchMinor(), and getOrientation() provide values for X position, Y position, major axis, minor axis, and orientation." (CIB at 57 (citing CX-181 at 10; JX-3 at 25:54-27:8).)

Apple argues that [redacted] for the Accused '828 Products show that [redacted] in the Xoom do define an ellipse, and the final result of the processing in the Xoom is a set of values that defines the five classical parameters of an ellipse that are described in the '828 Patent: X position, Y position, major axis, minor axis, and orientation." (CIB at 59.) Apple argues that [redacted] show that the Xoom was designed to fit an ellipse, and by computing these ellipse parameters, it does mathematically fit an ellipse under Apple's construction." (CIB at 59.)

Apple heavily relies on the flowcharts (shown in RDX-12C) illustrating what happens in the Android code. (CIB at 58 (citing RDX-12C).) Apple argues that "[t]he top of RDX-12.1 shows five variables . . . that correspond to the parameters computed in the [redacted] used in the Motorola Xoom: [redacted] (CIB at 58.) Apple argues that these parameters are transmitted to the [redacted] in the Motorola Xoom as multitouch variables with input codes: [redacted]. (CIB at 58 (citing Tr. 652:9-24).)

Apple argues that the values of the five variables (getX(), getY(), getTouchMajor(), getTouchMinor(), and getOrientation()) are used to derive several parameters that are provided to applications in the Motorola Xoom. (CIB at RDX-12.2C; Tr. 653:22-654:18.) Apple argues that there are nine methods in the MotionEvent.java box at the bottom of RDX-12.2, and that "[f]ive of these methods return values that mathematically define the five classical parameters of an ellipse: getX(), getY(), getTouchMajor(), getTouchMinor(), and getOrientation()." (CIB at 58 (citing Tr. 654:11-655:9).)

Apple explains that [redacted] are read into the Motorola Xoom touch driver through [redacted] (CIB at 60 (citing RDX-12.1)), and that "these are associated with comments that describe [redacted] (CIB at 60 (citing JX-462 at 1.) Apple argues that Dr. Balakrishnan explained that [redacted] are used as part of a process that mathematically defines an ellipse and therefore infringes this element

under Apple's construction. (CIB at 60 (citing Tr. 652:5-24).) Apple argues that "[a]lthough there is processing that occurs between each of these steps, the same information is passed from [redacted] to the [redacted] through variables in the Google source code, and output by the MotionEvent methods." (CRB at 16.) Apple argues that "[t]here is nothing in the '828 Patent that requires distinguishing between an ellipse and other shapes." (CRB at 17.) Apple argues that "[t]he parameters computed in the '828 Patent are X centroid position, Y centroid position, major axis, minor axis, and orientation[,]" and "[t]hese same parameters are computed in the Motorola Xoom." (CRB at 17.) Apple argues that "[t]here is no additional requirement for a method that distinguishes between ellipses and other shapes; it is clear from the disclosure in the '828 Patent that the computed parameters mathematically define an ellipse, and it is similarly clear from the source code and documentation in the Motorola Xoom that the [redacted] mathematically define an ellipse." (CRB at 17.)

Apple argues that the intent of Motorola and Atmel's engineers not to fit an ellipse to the pixel group data is irrelevant. (CRB at 18 (citing *Fla. Prepaid Postsecondary Educ. Expense Bd. v. Coll. Sav. Bank*, 527 U.S. 627, 645 (1999)). Apple further argues that their testimony is contradicted by the numerous references to ellipses throughout [redacted] (CRB at 18.) Apple argues that "the use of an ellipse model makes sense because fingers on a touchscreen are generally elliptical in shape." (CRB at 18.) And that "[r]egardless of the stated intent of the designers, the Xoom computes numerical parameters that mathematically define an ellipse and therefore meets this limitation." (CRB at 18.)

Apple argues that "[a]n example of how the Motorola Xoom [(non-test build)] mathematically defines an ellipse is the process of deriving an eccentricity value from [redacted] (CIB at 61.) Apple

argues that in the [redacted] document there is a section corresponding to the [redacted] that states:

[redacted]

(JX-539C at 17-18.)

Apple notes that [redacted] which is consistent with the usage of eccentricity in the context of ellipses and the '828 Patent and in the Google source code. (CIB at 61 (citing JX-539C at 18).) Apple notes that eccentricity is described explicitly in the '828 Patent as an ellipse parameter that is the ratio of major axis length to minor axis length. (CIB at 61.) Apple argues that this is depicted on the right side of RDX-12.2, where [redacted] returned by getTouchMinor(). (CIB at 61.) Apple argues that the Motorola Xoom thus uses eccentricity consistent with the '828 Patent as a scaling factor between major and minor axis lengths. Apple also argues that other ellipse parameters are derived in similar ways using formulas described in Google documentation and depicted on RDX-12.2.

Apple argues that the Motorola Xoom defines values that can be provided to applications through the MotionEvent class depicted on the bottom of RDX-12.2, which include getX(), getY(), getTouchMajor(), getTouchMinor(), and getOrientation(). (CIB at 62.) Apple argues that "[t]hese five methods correspond directly to the five classical parameters of an ellipse described in the '828 Patent. . . ." (CIB at 62.) Apple further argues that "Android documentation explicitly describes the getTouchMajor() and getTouchMinor() values as 'the

length of the major axis of an ellipse that describes the touch area' and 'the length of the minor axis of an ellipse that describes the touch area,' respectively." (CIB at 62 (citing CX-181 at 11; Tr. 1037:18-1038:1039:2).) Apple argues that a Google witness admitted with these five parameters, he could construct or draw an ellipse. (CIB at 62 (citing Tr. 1025:2-1026:4).) Apple's infringement argument is essentially "[t]he evidence thus shows that the Motorola Xoom computes numerical parameters that mathematically define an ellipse because those parameters are used to define the five classical parameters of an ellipse that are described in the '828 Patent." (CIB at 62.)

In other words, Apple argues that "[t]his requirement that the computed parameters mathematically define an ellipse is not substantively different from the requirement for an 'ellipse model'" that Motorola argues. (CRB at 17.) Apple argues that "[t]he absence of an ellipse model is a key reason why prior art references like Bisset '352 do not anticipate the '828 Patent," and "the presence of an ellipse model is a key reason why the '828 Accused Products infringe the asserted claims of the '828 Patent." (CRB at 17.)

In particular, Apple argues that in the Atmel source code that runs on the Motorola Xoom, "there is an explicit comment referring to [redacted] (CIB at 59 (citing JX-460C at ATMEL-ITC-SC000031).) Apple argues that an Atmel engineer admitted "that this referred to a contact on the touchscreen, and that the general shape of a finger as it touches is most often some form of an ellipse." (CIB at 59 (citing Tr. 1002:16-1003:20).) Apple further argues that this reference is "consistent with Dr. Westerman's explanation for why he used ellipse fitting for the '828 Patent, since fingers touching a surface generally have a shape similar to an ellipse." (CIB at 59.)

In addition to [redacted] Apple relies on [redacted]

[redacted]. Apple argues that [redacted] that further demonstrates that the parameters computed by the Atmel touch sensor ICs mathematically define an ellipse." (CIB at 60 (citing CX-73C).) [redacted] (CIB at 60.)

Apple argues that its infringement theory is not inconsistent with what its expert said in his direct witness statement. (CRB at 19.) Apple argues that Dr. Balakrishnan stated that "the processing performed in the Atmel sensor ICs includes a step of mathematically fitting an ellipse to at least one of the pixel groups, " (CX-201C at Q/A 526), and that "these parameters are used in the Motorola Xoom to provide values that mathematically define an ellipse using the same parameters described in the '828 Patent." (CRB at 19.)

Motorola, on the other hand, argues that [redacted] provides any information regarding the size, shape, or orientation of a touch." (RIB at 93.) Motorola further argues that [redacted] provides no information about the shape or orientation of a touch. (RIB at 94.) Motorola further argues that [redacted], does not provide two-dimensional information at *all*. (RIB at 95.) Motorola argues that, as illustrated above, [redacted] does not provide information about the shape, size, or orientation of a touch. Motorola further argues none of values [redacted] are calculated by mathematically fitting an ellipse or correspond to an ellipse model. (RIB at 95 (citing RX-1895C at Q/A 91; Tr. 78:4-17; RX-1879C at Q/A 16-22; *id.* at 17 ("The components of [redacted] *id.* at 19 [redacted]

[redacted]

Motorola also argues that there is no dispute that the Atmel chip is [redacted]. (RIB at 100 (citing Tr. 580:2-21, 581:16-20).) Motorola argues that because information regarding some aspect of a touch such as height, width, shape, or orientation [redacted]. (RIB at 100 (citing Tr. 701:16-702:6; Tr. 1054:5-19).)

Motorola argues that the third value, [redacted] (RIB at 94 (citing RX-1895C at Q/A 77; Tr. 599:13-600:7).)

Motorola argues that "[t]he asserted claims of the '828 patent require mathematically fitting an ellipse to a *pixel group*." (RIB at 92 (emphasis in the original).) Motorola argues that consistent with the language of the claims that requires fitting the ellipse to the pixel group and the operation of the Atmel chip, that Dr. Balakrishnan in direct witness statement only identified [redacted] in connection with his assertions that the '828 Accused Products mathematically fit an ellipse to at least one pixel group:

QUESTION 526:	**Does the method for processing input from the touchscreen of the Accused Products include a step of mathematically fitting an ellipse to at least one of the pixel groups?**
ANSWER:	Yes, the processing performed in the [redacted] includes a step of mathematically fitting an ellipse to at least one of the pixel groups.
QUESTION 527:	**What evidence did you consider in forming your opinion?**
ANSWER:	The [redacted] describe numerical parameters that are computed for each multitouch object corresponding to a pixel group. As shown on CDX-01.549, these parameters are listed in the message data for [redacted] which are parameters that mathematically define an ellipse.

(CX-201C at Q/A 526 & 527.) Motorola argues that Apple's new infringement theory that now includes the Android operating system, which has no access to the underlying pixel data, is an attempt to confuse the issues. (RIB at 92.)

Motorola argues that the fourth value, [redacted] "does not provide two-dimensional information at *all*." (RIB at 95.) Motorola argues that "Dr. Balakrishnan conceded that there is no literal infringement by *any* of the '828 Accused Products of *any* of the asserted claims under Motorola's and the Staff's proposed construction for 'mathematically fitting an ellipse to at least one of the pixel groups.'" (RIB at 95 (citing CX-201C at Q/A 534 ("The Accused Products [redacted] so there is no literal infringement under Motorola's construction."); *id.* at 560-61 (same for claim 10); *id.* at 577 (same for claim 24)).) Motorola argues that [redacted] (RIB at 98 (citing RX-1895C at Q/A 295; RX-1879C at Q/A 20-22; Tr. 1045:22-1046:10).)

Motorola argues that even where five parameters (including [redacted] are computed there is no infringement because the five numerical parameters (size, position, orientation, major and minor axes) "falling into these categories do not, [redacted] (RIB at 101.) Motorola argues that even "Apple's proposed construction still requires

[redacted] (RIB at 102 (citing Tr. 545:2-18; 556:3-8).) Motorola argues that "Atmel and Google witnesses testified that neither the Atmel firmware nor the Android input protocol [redacted] in any of the [Accused '828 Products], including the non-test build of the Motorola Xoom." (RIB at 102.) Motorola argues that Apple's expert never identified [redacted] and his testimony focused on ancillary documentation, code comments and other documents that do not deal with how the Accused '828 Products actually process touch data. (RIB at 103.)

As for the Atmel [redacted] Motorola argues that Dr. Balakrishnan admitted on cross-examination, however, that [redacted] was "not in the Motorola products," and agreed that a computer did not [redacted] in order for the computer to draw an ellipse. (RIB at 104 (citing Tr. 625:5-626:10).)

Motorola argues that Dr. Balakrishnan never opined in his direct testimony that any '828 Accused Product "computes numerical parameters that mathematically define an ellipse [redacted] (RIB at 104-05 (citing CX-201C at Q/A 507-86).) Motorola argues that "Apple ignores that portion of its own construction, because as explained in the previous section, its expert admits that [redacted] (RIB at 105.)

Motorola argues that Dr. Balakrishnan's opinions regarding the Android layer are new. (RIB at 105.) But as with Dr. Balakrishnan's original opinions, Motorola argues that Dr. Balakrishnan's new opinions were missing one critically important concept: [redacted] Dr. Balakrishnan did not (and could not) testify that the Android framework actually mathematically fits an ellipse to a pixel group in any Accused '828 Product. (RIB at 105.) Motorola argues that in Dr. Balakrishnan's testimony regarding the Android

Honeycomb touch driver in the non-test build of the Motorola Xoom, he: "(1) identified the same [redacted] that he agreed were not computed by mathematically fitting an ellipse, *see* . . . Tr. 652:15-18; (2) stated, with no additional explanation, that 'they do some transformations there in the code to turn it into these other five variables shown in yellow,' *id.* at 652:19-24; (3) stated, with no additional explanation, that 'a bunch of further calculations happen in the big box before the blue boxes there, the big rectangle above, various different things are done to that code—sorry, those variables,' *id.* at 653:25-654:4; and (4) opined, without any additional explanation, that this 'provid[es] a bunch of different ellipse variables,' *id.* at 654:14-15." (RIB at 106.)

Having carefully reviewed the evidence and the parties' arguments, the ALJ agrees with Motorola that the non-test build Xoom does not literally meet the "mathematically fit(ting) an ellipse to one more pixel groups" limitation of the asserted claims. It is undisputed how the devices operate. Apple appears to concede that the Atmel chip itself [redacted] under any construction (although Apple shifted backwards slightly in its reply brief and appears to contend that the Atmel chip by itself meets this limitation). As set forth *supra*, the evidence shows that the Atmel chip [redacted] In any event, Dr. Balakrishnan did not explain in his testimony how the measurements performed in the Atmel chip (even the derivation of the [redacted]

Apple's new contention is that once the information derived from these measurements reach the Android layer of the operating system of the Accused '828 Products mathematical fitting is performed by the Android layer or some combination of the Android Layer and Atmel chip. The ALJ finds that simply does not amount to "mathematically fit(ting) an ellipse" either. As Motorola explained, the Android layer [redacted]. It

has no information regarding [redacted] even from the limited data it receives from [redacted]

However, there are other problems with this theory. First, Dr. Balakrishnan's testimony is severely undercut because this theory regarding the Android layer was not presented (besides some passing citations to the Android source code) in his direct witness statement and this new theory appears to contradict his direct witness statement. Second, some of the evidence cited by Apple, such as [redacted] is irrelevant. The [redacted] has almost nothing to do with the accused products. While [redacted] can receive data from the Atmel chip [redacted] it is undisputed that with sufficient position information that an ellipse could be drawn with little problem. Any discussion of extraneous software that is in no way implemented in the Accused '828 Products is irrelevant. As for [redacted] Dr. Balakrishnan fails to line up [redacted] to show ellipse fitting through a mathematical process. Rather the evidence shows that [redacted] (Tr. 603:24-604:14, 607:24-608:4; 654:21-22.)

The evidence shows that the Android operating system "do[esn't] do anything at all resembling" mathematically fitting an ellipse, (Tr. 1045:22-1046:11), and Android does not provide applications with information regarding [redacted] of touch events because "we don't have any information about [redacted] available." (*Id.* at 1054:5-14.) The evidence further shows that given the information that Android receives from the Xoom firmware, Android is unable to calculate information regarding [redacted]. (Tr. 1054:5-19.)

Accordingly, the ALJ finds that the Motorola Xoom does not literally infringe the claims of the '828 Patent because it does not "mathematically fit an ellipse" to the pixel groups.

b) Motorola Xoom (Test Build) and the Remaining Accused '828 Products

Motorola has modified the source code for the Motorola Xoom in a "test build" where the [redacted] and several variables have been renamed. (CIB at 63; RIB at 96.) The parties agree that the operation of the Xoom Test Build is described on RDX-12.3 and RDX-12.4. (CIB at 63.) In the Xoom Test Build, the only values reported to the Android operating system are [redacted] (CIB at 63; RIB at 93.) As shown on RDX-12.4, [redacted] is used to provide a value for getPressure(), [redacted] is used to provide a value for getSize(), [redacted] provide values for getX() and getY(), and values for the other MotionEvent methods [redacted] (CIB at 63; RIB at 93-94.) In addition, Motorola has modified the source code for an additional product, the Droid X, in another "test build." The operation of the Droid X Test Build is almost identical to the Xoom Test Build, and it is described on RDX-12.7 and RDX-12.8. (CIB at 65 (citing Tr. 662:16-665:4).)

Apple argues that "[t]he Motorola Xoom Test Build literally infringes the 'mathematically fitting an ellipse' limitation under Apple's construction because it computes numerical parameters that mathematically define an ellipse in conjunction with default values for other ellipse parameters, which is similar to the second embodiment described in column 27 of the '828 Patent specification." (CIB at 63 (citing CX-201C at Q/A 533).) Apple argues that [redacted] is nearly identical to using total group proximity as an indicator of size in the second embodiment." (CIB at 63 (citing JX-3 at 27:1-3).) Apple argues that [redacted] (CIB at 63.) Apple argues that the Droid X (test build) literally infringes the "mathematically fitting an ellipse" limitation under Apple's

construction for the same reasons as the Xoom (test build). (CIB at 65 (citing CX-201C at Q/A 533).)

In the '828 Accused Products (other than the Motorola Xoom),[9] the [redacted] is not used, so the ellipse fitting in these products is similar to the Xoom Test Build. The operation of these products is described on RDX-12.5 and RDX-12.6. (CIB at 64; RIB at 93.) The values for getX(), getY(), and getSize() are similar to that in the Xoom Test Build, but instead of [redacted] these parameters are computed by [redacted]. (CIB at 64 (citing RDX-12.6).)

Apple argues that "[t]his is even more similar to the second embodiment described in column 27 of the '828 Patent specification, because the product of amplitude and area is analogous to the 'total group proximity' of a pixel group, and since the getTouchMajor() and getTouchMinor() values are computed [redacted] (CIB at 64.) Apple argues that "[t]hese products thus literally infringe the 'mathematically fitting an ellipse' limitation under Apple's construction." (CIB at 65 (citing CX-201C at Q/A 533.) Apple argues that even though the getTouchMajor() and getTouchMinor() values [redacted] in the test build products, they [redacted] and "this is similar to the use of a generic size parameter described in the second embodiment of ellipse fitting in the '828 Patent." (CRB at 21.) Apple argues that "Dr. Westerman and Dr. Balakrishnan both characterized the second embodiment, where only a centroid and size parameter are computed, as defining a circle, which is a special case of an ellipse." (CRB at 21 (citing Tr. 336:6-9; CX-201C at Q/A 445).) Apple argues that Motorola's

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[9] Including the Motorola Atrix, Bravo, Charm, Citrus, Cliq 2, Cliq XT/Quench, Defy, Droid, Droid 2, Droid 2 Global, Droid Bionic, Droid Pro, Droid X, Droid X2, Droid 3, Flipout, Flipside, i1, Titanium, and XPRT (CIB at 64.)

"test build" products similarly define a circle using the getSize() method. (CRB at 21 (citing Tr. 659:6-660:5).)

Motorola argues that Dr. Balakrishnan conceded at the hearing that the there is no literal infringement under *any* party's proposed construction with respect to the '828 Accused Products [redacted]. (RIB at 99 (citing Tr. 597:17-23; 711:23-712:12).) Motorola argues that Dr. Balakrishnan and the named inventors of the '828 Patent conceded at the hearing that five distinct parameters are required to fully describe an ellipse. (RIB at 99 (citing Tr. 547:15-25; Tr. 315:1-15; JX-705C at 58:12-22).) Motorola argues that "[t]here is no dispute that for every '828 Accused Product except the non-test build of the Motorola Xoom, [redacted] (RIB at 99 (citing RX-1895C at Q/A 301; Tr. 605:14-609:7).)

Motorola argues that "[n]o matter what happens elsewhere in the [Accused '828 Products], and no matter how information is relabeled by Motorola, by Android, or by any applications, the [redacted] for all the [Accused '828 Products] except the non-test build of the Motorola Xoom is [redacted] and *none* of these values provide any information regarding shape or orientation." (RIB at 101 (citing RX-1895C at Q/A 301; Tr. 608:8-15).) Motorola argues that all products (other than the non-test build Motorola Xoom) that do not compute [redacted] "does not literally meet Apple's proposed construction for 'mathematically fitting an ellipse to at least one of the pixel groups' because [redacted] (RIB at 101 (emphasis in the original).)

Motorola argues that "Dr. Balakrishnan agreed that no mathematical ellipse-fitting occurs [redacted]." (RIB at 105 (citing Tr. 618:6-25; 623:24-624:12)) But Motorola argues that this is the [redacted] (RIB at 105 (citing Tr. 579:20-580:20), and this was [redacted] that Dr. Balakrishnan actually identified in his witness statement as allegedly "mathematically fitting an ellipse to at least one of the pixel groups," CX-201C, Balakrishnan Q/A 526; 560-61; 575-76. Motorola argues that "[t]he fact that Dr. Balakrishnan agreed that [redacted] (for the one [Accused '828 Product] that [redacted] requires a finding of non-infringement, because the calculation of these values [redacted] in the Accused '828 Products] that Dr. Balakrishnan accused of 'mathematically fitting an ellipse to at least one of the pixel groups' in his witness statement in this investigation." (RIB at 105.)

Motorola characterizes Apple's new infringement theory as "the mere fact that Android provides measured position, size, and peak pressure information to applications constitutes *mathematically fitting an ellipse to a pixel group* because position and size information *could* be used to describe a circle." (RIB at 107-108 (emphasis in the original).) Motorola argues that "Dr. Balakrishnan did not identify any portion of the Android code that [redacted] in his entire testimony about the Xoom test build. . . ." (RIB at 108.)

Motorola argues that for the test build products [redacted] so there cannot possibly be infringement. (RIB at 109.) Motorola argues that setting getTouchMajor and getTouchMinor, "the major/minor axes" of an ellipse model in the Android framework, [redacted]

[redacted] (RIB at 109.) Indeed, Motorola points out that Dr. Westerman testified that "regardless of what the equations originally put out, we don't let the numbers [for major/minor radius] go below 5 or 6 millimeters . . . and then those get transmitted as like a 5 or 6 millimeter circle throughout the system." (RIB at 109 (quoting Tr. 342:9-18).)

The ALJ agrees with Motorola that there can be no literal infringement by the test build products of any of the asserted claims because they do not "mathematically fit an ellipse." The evidence shows that [redacted] (RX-1895C at Q&A 75, 88.) As discussed above, these values are simply measurements made by [redacted]. There is simply no ellipse mathematically fit to determine these values. (RX-1895C, Wolfe Q/A 295; RX-1879C, Simmons Q/A 20-22; Brown, Tr. 1045:22-1046:10.) Even when these values are coupled with the getTouchMajor and getTouchMinor in the Android code, there is no ellipse fitted, even under Dr. Balakrishnan's "ellipse model" theory because even taking all of these values together [redacted] there is nothing elliptical about the result [redacted] (RX-1895C Q/A 301, Tr. 608:8-15.) An ellipse cannot have both [redacted]. It is not an ellipse; it is not a circle. It is undisputed that the other values – [redacted] and no fitting occurs to determine them. (RX-1895C at Q/A 78-79.) Moreover, [redacted] bears no relation to any elliptical parameter and does not suggest any fitting of an ellipse. Accordingly, the ALJ finds for that the test build products do not literally infringe any of the asserted claims of the '828 Patent.

The ALJ also agrees that there is no literal infringement of the Motorola Handset

products.[10] Apple has failed to show that any part of the code mathematically fits an ellipse to the pixel group. Neither Dr. Balakrishnan nor Apple ever identified the actions of the Android code layer as meeting this element in their pre-hearing testimony or statements. Such a dramatic change in theory (as discussed above) seriously undermines the credibility of the theory and testimony supporting it.

However, even considering Apple's new infringement theory regarding the operations performed by the Android code, the Motorola Handset products still do nothing that even resembles "mathematically fit(ting) an ellipse" to one or more pixel groups. The values for getTouchMajor and getTouchMinor are calculated [redacted] The ALJ agrees with Motorola that the resulting numerical parameters share only a superficial relationship to an ellipse and regardless, Apple presented insufficient evidence that the resulting values actually define an ellipse [redacted]. The [redacted] are simply measured from the sensors. At no time, is any ellipse fitted to the underlying pixel data in the Motorola handsets to calculate any values. Moreover, the [redacted] are not ellipse parameters and provide no information of [redacted]. Apple presented no evidence that any kind of [redacted] as required by the ALJ's construction.

Furthermore, even if the "second embodiment" was considered to be ellipse fitting, the ALJ agrees with Motorola that [redacted] is a very different value than what the '828 Patent calls "total group proximity." (*See* RX-1895C at Q/A 79.) The ALJ agrees that according to the '828 Patent, "total group proximity" is the sum of proximity values for an entire contact.

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[10] The Motorola Handset products are: Motorola Atrix, Bravo, Charm, Citrus, Cliq 2, Cliq XT/Quench, Defy, Droid, Droid 2, Droid 2 Global, Droid Bionic, Droid Pro, Droid X, Droid X2, Droid 3, Flipout, Flipside, i1, Titanium, and XPRT.

(*See* JX-3 at 26:12-13 ("total group proximity G_z integrates proximity over each pixel in the group").) Thus, the [redacted] would not infringe even if that was included.

Accordingly, the Motorola Handset products do not literally infringe any of the asserted claims of the '828 Patent.

c) Doctrine of Equivalents

Apple admits that the Motorola Xoom would not infringe under Motorola's and Staff's construction but meets this limitation under the Doctrine of Equivalents. (CIB at 62.) Apple argues that the Motorola Xoom computes numerical parameters that mathematically define an ellipse, and these parameters define an ellipse using the same classical ellipse parameters described in the '828 Patent. (CIB at 62.) Apple argues that "[t]he computation of these parameters performs the same function of characterizing the position, shape, and size of a contact, characterized as an ellipse, in the same way by using mathematical computations, with the same result of numerical values that provide the X position, Y position, major axis, minor axis, and orientation of an ellipse." (CIB at 62 (citing CX-201C at Q/A 535).) Apple concludes, therefore, that "[t]he formulas used to define these parameters in the Motorola Xoom are insubstantially different from those described in the '828 Patent." (CIB at 62.)

Apple argues that "[t]he second embodiment in the '828 Patent explicitly describes this type of process as equivalent to ellipse fitting." (CIB at 64 (citing JX-3 at 27:1-8).) Apple further argues that [redacted] performs the same function of characterizing the position, shape, and size of a contact, in the same way by using mathematical computations, with the same result of numerical parameters that mathematically define an ellipse." (CIB at 64 (citing CX-201C at Q/A 535).) Apple argues that all of the Accused '828 Products infringe the

asserted claims of the '828 Patent under the Doctrine of Equivalents under any construction. (CIB at 64.)

Apple argues that its claims under the Doctrine of Equivalents are not barred by prosecution history estoppel as Motorola and Staff argue because Motorola and Staff's arguments are "based on an incorrect reading of the prosecution history and a misinterpretation of what is disclosed in Bisset '352." (CRB at 21-22.) Apple argues that any amendments were merely "tangential" and therefore did not limit the scope of equivalents in this case. (CRB at 22.) Apple argues that "[t]he amendment at issue here, where the applicants added the word "mathematically" to claims 1 and 10, rebuts any prosecution history estoppel because the rationale underlying this amendment is tangential to the equivalent ellipse fitting processes in the '828 Accused Products."

Apple argues that "the applicant did not distinguish "mathematically fit(ting) an ellipse" from other methods of fitting an ellipse." (CRB at 22 (citing CX-568C at Q/A 468).) Apple argues that the "applicant explained that 'merely *obtaining* measured data is [not] the same as *fitting an ellipse to* the data. . .,'" and that the amendment does not describe obtaining measured data as a process for computing parameters but refers to the "measured data" in Bisset '352 as "simply a series of capacitance values." (CRB at 22-23.) Apple argues that "this only distinguishes the ellipse fitting step from the data acquisition steps that precede ellipse fitting." (CRB at 23.) Based on this characterization, Apple argues that "[t]his distinction is tangential to the equivalents accused by Apple, where [redacted] that mathematically define an ellipse." (CRB at 23.)

Apple argues that Dr. Wolfe's testimony comparing various processes in Bisset '352 with the computation of parameters in the '828 Accused Products is irrelevant because "the prosecution history contains no reference to these computations and identifies a different reason for amending the claims." (CRB at 23.) Apple argues that the same arguments apply to Motorola's argument estoppel assertion and means-plus function arguments. (CRB at 23.)

Motorola argues that as explained by Dr. Wolfe in his witness statement, the accused functionalities of the Accused '828 Products do not perform substantially the same function, in substantially the same way, to achieve substantially the same result, as the literal recitation of this element under Motorola's and the Staff's proposed construction. (RX-1895C at Q/A 298.) Motorola argues that no Accused '828 Product [redacted]. (RIB at 115.) Motorola argues that as explained by Dr. Wolfe and by Martin Simmons of Atmel, the accused functionalities of the Accused '828 Products—[redacted]—have nothing whatsoever to do with [redacted]. (RIB at 115 (citing RX-1895C at Q/A 298; RX-1879C at Q/A 27).) Motorola further argues that [redacted]. (RIB at 115 (citing RX-1895C at Q/A 298; RX-1879C at Q/A 20-21).) Moreover, Motorola argues that the Android framework [redacted] Tr. 579:20-580:20, and it does not [redacted] in the Accused '828 Products, as explained by Jeff Brown of Google. (Tr. 1045:22-1046:10.)

The ALJ finds that with respect to the test builds for the Motorola Xoom and the Droid X and the Motorola Handset products, Apple has failed to show that these products infringe under

the Doctrine of Equivalents. The evidence shows that these products, [redacted] simply do not in any way fit an ellipse to pixel data. (RX-1895C at Q/A 302.) They merely [redacted] (*Id.*) Apple has made no showing that this is equivalent to "mathematically fit(ting) an ellipse." As discussed above, even giving full credit to Dr. Balakrishnan's arguments, it is not even possible to construct an ellipse based on the information provided – it is impossible to construct an ellipse with [redacted] Thus, the information provided from the measurements bear no resemblance to [redacted] The test build products do not function in the same way or obtain the same result. Accordingly, they cannot infringe under the doctrine of equivalents.

As for the Motorola Handset products, the values for the major and minor axes [redacted] But, as discussed above, the values for the major and minor axes bear no relation to the underlying pixel group, so there is simply [redacted]. This not only poses a problem for literal infringement, but also for infringement under the Doctrine of Equivalents, namely the Motorola Handset products simply do not function in the same way as required by the claims. There is still [redacted] even if Dr. Balakrishnan's testimony was accepted on this point. There is simply no link between the way the device is to function under the asserted claims– mathematically fitting an ellipse – and the calculations that are performed in the Motorola Handset products. Accordingly, they do not infringe under the Doctrine of Equivalents.

The final product to consider is the Motorola Xoom that includes the [redacted]. For this product, the [redacted] However, as discussed above, even with the

[redacted] these devices still do not mathematically fit and ellipse to the pixel group. The ALJ finds that while it is a much closer case, the evidence presented by Apple of infringement under the Doctrine of Equivalents is insufficient. Accordingly, the Motorola Xoom products do not infringe under the Doctrine of Equivalents.

It is Apple's burden to establish infringement through the doctrine of equivalents, and Dr. Balakrishnan's entire testimony on this issue comprises *one sentence* in his witness statement (repeated for each claim) in which he asserts:

> [F]or the products that do not have the [redacted] parameters, if they are not found to infringe literally under Apple's . . . proposed construction for "mathematically fitting an ellipse," it is my opinion that they infringe under the doctrine of equivalents because [redacted] is performing the same function of characterizing the position, shape, and size of a contact, in the same way by using mathematical computations, with the same result of numerical parameters that mathematically define an ellipse.

(CX-201C at Q/A 535.) Dr. Balakrishnan's equivalents analysis is inadequate. The ALJ agrees with Motorola's argument that his analysis simply fails to demonstrate that the equivalent [redacted]. In the absence of any meaningful testimony on this point, Apple cannot carry its burden.

d) Prosecution History Estoppel

But even if Apple had presented sufficient evidence for infringement under the Doctrine of Equivalents, the ALJ finds that any equivalents for the claim element of "mathematically fit(ting) and ellipse" would be barred by prosecution history estoppel. Motorola argues that Apple is estopped from asserting the doctrine of equivalents with respect to the limitations "mathematically fit[ting] an ellipse to at least one of the [one or more] pixel groups" in claims 1 and 10 and the limitation "means for fitting an ellipse to at least one of the pixel groups" in claim 24. (RIB at 110 (citing RX-1895C at Q/A 271-81; JX-6 at 1454-72).) Motorola argues that the

limiting amendments to claims 1 and 10 created a presumption of prosecution history estoppel with respect to the ellipse-fitting limitations of these claims, and Apple has not rebutted this presumption. (RIB at 110.) Motorola further argues that remarks to the PTO regarding the scope of the ellipse-fitting limitations of claims 1, 10, and 24 created argument estoppel for these limitations. (RIB at 110.) Motorola argues that this argument estoppel bars Dr. Balakrishnan's theory of equivalency with respect to the ellipse-fitting limitations of the '828 patent, because Dr. Balakrishnan's theory of equivalency seeks to recapture the precise subject matter distinguished by the applicants in their remarks to the PTO. (RIB at 110.)

Motorola argues that the amendment adding the limitation "*mathematically*" would be understood by a person of ordinary skill in the art to narrow the subject matter of claims 1 and 10. (RIB at 110.) Motorola argues that this created a presumption of prosecution history estoppel and the presumptive surrender of *all* equivalents with respect to the narrowed limitations. (RIB at 110 (citing *Honeywell*, 370 F.3d at 1141-44).)

The ALJ agrees with Motorola. Apple could rebut this presumption of prosecution history estoppel and complete surrender of equivalents by showing one of three things—either:

> [1] that the alleged equivalent would have been unforeseeable at the time of the narrowing amendment,
>
> [2] that the rationale underlying the narrowing amendment bore no more than a tangential relation to the equivalent in question, or
>
> [3] that there was some other reason suggesting that the patentee could not reasonably have been expected to have described the alleged equivalent.

Honeywell, 370 F.3d at 1144.

It is the patentee's burden to rebut a presumptive surrender of equivalents. *See Honeywell*, 370 F.3d at 1144. Motorola argues that its expert has testified that one of ordinary skill in the art would understand the amendments to the ellipse-fitting limitations of claims 1 and

10 to narrow the scope of the claimed subject matter. (RX-1895C at Q/A 279; 297; & 302.) But Apple has not provided any testimony to rebut this presumption.

Motorola argues that even if Apple did offer evidence that Apple could have not rebutted this presumption had it attempted to do so. (RX-1895C at Q/A 297 & 302.) Motorola's expert, Dr. Wolfe, explained in his witness statement:

> none of the three [*Honeywell*] factors is present with respect to the December 24, 2009 Office Action rejecting each asserted claim of the '828 Patent based on Bisset '352, or the February 24, 2010 Amendments and Remarks responsive to this Office Action. In particular, Bisset '352 not only bears more than a "tangential" relationship to the equivalent sought to be claimed by Apple—[redacted]—Bisset '352 actually discloses calculating near-identical values.

(*Id.*) Motorola argues that Dr. Wolfe's witness statement explained in detail exactly where and how Bisset disclosed calculations that bore a close relationship to each of the Atmel values that comprise Dr. Balakrishnan's equivalence theories of infringement. (*See id.*)

Apple's argument relies heavily on its assertion that any amendment was merely tangential to the equivalents in question. (CRB at 22.) Apple argues that the prior art references simply fail to disclose any ellipse model, so there was no surrender of equivalents. However, no one reading the prosecution history would reach that conclusion. The examiner rejected the claims in light of Bisset because the prior art taught fitting an ellipse to one or more pixel groups. While the applicants disagreed that Bisset disclosed this limitation, they amended the claims to recite that the "fitting" was done mathematically. The ALJ finds that the equivalents at issue here go to the heart of this amendment – the way in which the fitting is performed – and therefore the presumption of surrender under *Festo* applies. Because Apple has failed to rebut the presumption of surrender, the ALJ finds that the products do not infringe under the Doctrine of Equivalents.

C. The '607 Patent

Apple argues that the '607 Accused Products either literally infringe or infringe under the doctrine of equivalents claims 1-7 and 10. (CIB at 92.) Motorola argues that none of its accused products infringe any of the asserted claims. (RIB at 20.) Staff argues that the Accused Products infringe claims 1, 2, 3, 6, 7 and 10 but do not infringe claims 4 and 5. (SIB at 60-79.)

1. Claim 1

Apple argues that the '607 Accused Products meet each and every limitation of claim 1 either literally or under the doctrine of equivalents. Apple performs an element by element analysis in its post-hearing brief setting forth its infringement arguments. (CIB at 93-110.) Staff agrees. (SIB at 61-70.)

Motorola argues that its '607 Accused Products do not infringe claim 1 because they do not (1) [redacted] either literally or any equivalents; (2) the Accused [redacted] Product and Accused [redacted][11] do not have [redacted] and (3) the Accused [redacted] fail to meet the [redacted] limitation. (RIB at 23-32.)

For the reasons set forth below, the ALJ finds that Apple has shown by a preponderance of the evidence that the '607 Accused Products infringe claim 1.

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[11] [redacted]

a) Preamble – "A touch panel comprising a transparent capacitive sensing medium configured to detect multiple touches or near touches that occur at a same time and at distinct locations in a plane of the touch panel and to produce distinct signals representative of a location of the touches on the plane of the touch panel for each of the multiple touches, wherein the transparent capacitive sensing medium"

Apple argues that the '607 Accused Products meet this limitation as they all contain transparent panels that are capable of accurately recognizing multiple, simultaneous or near touches. (CIB at 94.) Staff agrees. (SIB at 61-70.) Motorola does not dispute that the Accused Products meet this limitation. (*See* RIB at 20-39.)

The ALJ finds that Apple has shown by a preponderance of the evidence that the Accused Products meet the preamble. The evidence shows that in each of the '607 Accused Products, the touch panel is connected to a chip, namely a sensor integrated circuit (or "sensor IC"). The physical structure of the touch panels in the '607 Accused Products depicted in the "lens sensor assembly diagrams". (CX-113; CDX-002.111.) The touch panel contains capacitive sensing elements including transparent, separated lines made of [redacted] (CX-202C at Q&A 256.) The touch panel is connected to a sensor IC manufactured by [redacted] (CX-113C; CX-202C at Q&A 256.) Together, the sensor IC and the touch panel form a transparent capacitive sensing medium that meets the limitations of the preamble.

The evidence shows that the touch panel and Sensor IC in each of the '607 Accused Products detect capacitive changes at the intersections between the two sets of conductive lines in the touch panel. (CX-202C at Q.257; CDX-002.131; *see, e.g.*, JX-652C.001, .012; *see also* JX-018C at 84:17-86:14, 179:2-183:25, 189:17-23.) The sensor ICs detect these capacitive changes by scanning one or more rows of intersections at a time and are able to measure all of the intersections in less than one one- thousandth of a second. (JX-652C.009 ("The [sensor IC] uses a unique charge-transfer acquisition engine . . . This allows the measurement of up to 224

mutual capacitance nodes in under 1 ms"), JX-652C.012 ("The channels are scanned by measuring capacitive changes at the intersections formed between the first X line and all the Y lines. Then the intersections between the next X line and all the Y lines are scanned, and so on, until all X and Y combinations have been measured."); CX-202C at Q.208-213, 241-246; Tr. at 976:4-977:23 (confirming that the Atmel chips are designed to accurately report and distinguish between multiple finger touches).) The evidence also shows that Atmel sensor IC and the touch panel in the '607 Accused Products also support multiple touch gestures like the "pinch to zoom" functionality and the "two-touch gestures" described in the Atmel documentation. (CX-202C at Q.258; CDX-002.132; *see, e.g.*, JX-506.007; JX-652C.021, .038; *see also* JX-018C at 199:8-203:20.)

Therefore, the ALJ finds that the '607 Accused Products meet the preamble.

b) "first layer having a plurality of transparent first conductive lines that are electrically isolated from one another" and "second layer spatially separated from the first layer and having a plurality of transparent second conductive lines that are electrically isolated from one another"

Apple argues that the ''607 Accused Products meet these limitations as they all contain sense electrodes and drive electrodes that are separated enough to prevent any significant current flow between the lines and can perform the functions required by the claims. (CIB at 99-105.) Staff agrees. (SIB at 63-69.) Motorola argues that the Accused [redacted] fail to meet this limitation because the drive electrode layer [redacted] (RIB at 29-31.)

The ALJ finds that Apple has shown by a preponderance of the evidence that the '607 Accused Products, including [redacted], meet these limitations.

With regard to the [redacted] and [redacted] products, the evidence shows that these products meet these limitations – [redacted] sense electrodes and drive electrodes as well as [redacted] drive electrodes and sense electrodes with the horizontal elements meet the "lines" requirement. (CX-202C at Q&A 226-231, 247-248, 264-284; RX-1895C at Q.61; Tr. 1295:7-1296:11; 1301:24-1302:22.)[12] The evidence further shows that the drive and sense electrodes of the [redacted] products are "electrically isolated" under the ALJ's adopted construction, namely they are separated to prevent any significant current flow between the lines. (CX-202C at Q & A 231-236, 248, 513-515.) Motorola does not dispute this. (RIB at 29-31.)

Regarding the [redacted] the evidence shows that, under the ALJ's construction, the sense electrodes and the drive electrodes are separated to prevent any significant current flow between the lines. (CX-202C at Q &A 247-248, 264-284.)[13]

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[12] [redacted]

The evidence further shows that the addition [redacted] does not alter the fact that the drive electrodes remain "electrically isolated" from one another. (CX-202C at Q&A 248.) Specifically, the evidence shows that Motorola's own quality assurance tests require [redacted] (JX-667C.008-009 at MOTO-APPLE-0005578653_01574131-132; CX-202C at Q &A 235-236.) This test is even repeated a second time at the phone assembly level. (JX-667C.013, 015 at MOTO-APPLE-0005578653_01574136-138.) Motorola's quality assurance personnel check for [redacted] (JX-650C.002 (using a scanning electron microscope to confirm that the drive lines are still electrically isolated from one another); CX-202C.059-060 at Q&A 247-248.)

Therefore, the ALJ finds that Apple has shown by a preponderance of the evidence that the '607 Accused Products meet this limitation.

c) "second conductive lines being positioned transverse to the first conductive lines, the intersection of transverse lines being positioned at different locations in the plane of the touch panel"

The evidence shows that the '607 Accused Products have a plurality of horizontal [redacted] rows/X lines that are positioned transverse or crosswise to a plurality of vertical [redacted] column/Ylines. (CX-202C at Q&A 285-298, 548-566.) Motorola does not dispute this. (*See* RIB at 19-31.)

d) "each of the second conductive lines being operatively coupled to capacitive monitoring circuitry"

Apple argues that the '607 Accused Products meet this limitation because they all contain an [redacted] that monitors, senses and responds to changes in capacitance and is connected to both the drive and sense [redacted] lines. (CIB at 106-109.) Staff agrees. (SIB at 61-70.) Motorola argues that Apple has failed to show that each of the second conductive lines (whether the sense or drive electrodes) is operatively connected to a capacitive monitoring circuitry and that Apple has only shown that the identified "second conductive line" is operatively connected to an [redacted] (RIB at 24-25.) Motorola further argues that

> Having conceded that applying a voltage and sensing charge coupling are "necessarily different," simply alleging that two sets of electrodes are connected to one or another of these "necessarily different" circuits could not establish that each of these electrodes is "operatively coupled" to circuitry that is "configured to detect changes in charge coupling." A voltage drive circuit is not "configured to detect" anything—this circuit just applies a stimulus. In order to establish his infringement theory for claim 1, Dr. Subramanian needed to prove that "both sets of [redacted] lines" are operatively coupled to capacitive monitoring circuitry, which he did not do. Instead, Dr. Subramanian conceded that "[t]he [redacted] lines are always drive lines,"—exactly what he testified were "necessarily different in the way they operate" from lines on which "charge is counted." As Dr. Subramanian agreed, the [redacted] drive electrode(s) "never turn around and become sense lines."

(RIB at 25-26.)

The ALJ finds that Apple has shown by a preponderance of the evidence that the '607 Accused Products meet this limitation. The evidence shows that [redacted] sends current through one set of [redacted] lines (commonly referred to as the "drive lines") and then uses the other set of [redacted] lines to sense and respond to changes in capacitance (commonly referred to as the "sense lines"). The driving and sensing of these lines is coordinated in order to accurately and quickly detect touches across the entire touch panel. (CX-202C at Q.239-242, 301, 516-519, 570.) In order to drive one set of lines and sense the other set of lines in the '607 Accused Products, the [redacted] is necessarily directly or indirectly electrically connected to both

sets of lines—the horizontal [redacted] drive row lines and the vertical [redacted] sense column lines. (CX-202C at Q.239-242, 301, 516-519, 570.) In fact, the evidence shows direct electrical connections between the sensor IC and the [redacted] row and column lines. (RX-1895C at Q &A 49, 61, 72-73; CX-202C at Q&A 204-242, 299-306, 516-519, 567-576; JX-580C.008-.009 [redacted] CX-96 [UBM Teardown Report]; *see also* JX-018C [Cranfill Dep. Tr.] at 84:17-86:14, 179:2-183:25, 189:17-23, 221:25-222:23, 225:24-226:16; JX-652C [redacted] The evidence shows that the [redacted] used in the '607 Accused Products meet the capacitive monitoring circuitry limitation—the [redacted] detect touches or near touches by monitoring, sensing, and responding to the touch-induced changes in capacitance between the spatially separated drive and sense [redacted] lines. (CX-202C at Q.239-242, 301, 516-519, 570.)

While Motorola's arguments are facially directed at both the sense and the drive lines in the '607 Accused Products, the substance of their argument focuses on the drive lines and whether they are "operatively coupled" to a "capacitive monitoring circuitry." (*See supra.*) Thus, the ALJ finds that Motorola does not actually dispute that the sense lines are operatively coupled to a capacitive monitoring circuitry. Motorola's arguments relating to the drive lines and whether they are "operatively coupled" to a capacitive monitoring circuit" are more appropriately discussed with regard to claims 4 and 5. Claim 1 only requires one set of the two sets of conductive lines be operatively coupled to a capacitive monitoring circuit, which the ALJ has found the '607 Accused Products. (*See* '607 Patent at claim 1.) Furthermore, as set forth above, the ALJ finds that the evidence supports a finding that the '607 Accused Products meet this limitation.

Therefore, the ALJ finds that Apple has shown by a preponderance of the evidence that the '607 Accused Products meet this limitation.

e) "wherein the capacitive monitoring circuitry is configured to detect changes in charge coupling between the first conductive lines and the second conductive lines"

Apple argues that the '607 Accused Products meet this limitation because they all contain an Atmel sensor IC that monitors, senses and responds to changes in capacitance. (CIB at 109-110.) Staff agrees. (SIB at 61-70.) Motorola argues that the [redacted] products and [redacted] products do not meet this limitation because Apple failed to take into account [redacted] in its infringement analysis. (RIB at 27-28.) Specifically, Motorola argues that Apple failed "to prove that the '607 Accused Products had capacitive monitoring circuitry 'configured to detect changes in charge coupling between [redacted] (RIB at 27-28.)

The '607 Accused Products satisfy this limitation of claim 1 because they all contain an [redacted] that monitors, senses and responds to changes in capacitance (that is, charge coupling) between the [redacted] drive and sense lines. (CX-202C at Q &A 307-313, 577-585.) As Atmel's datasheets explain, the [redacted] used by the '607 Accused Products detect touches or near touches "by measuring capacitive changes at the intersections" between the two sets of conductive [redacted] lines. (JX-652C.012; *see also* JX-018C at 84:17-86:14, 179:2-183:25, 189:17-23.) Therefore, the [redacted] are capacitive monitoring circuitry (that is, circuitry which is responsive to capacitance). (CX-202C at Q&A 307-313.) The [redacted] used by the '607 Accused Products all function similarly for purposes of the

'607 Patent. (CX-202C at Q&A 307-313; CX-113; JX-578C; JX-; and JX-; *see also* JX-018C at 221:25-222:23.)

The ALJ finds Motorola's argument to be unpersuasive. In essence, Motorola's argument is based on an extremely limited and narrow interpretation and application of "line," *i.e.*, the vertical sense lines in the [redacted] and [redacted] products must be limited to [redacted] However, Motorola cites no support for its reading. Furthermore, the evidence shows that even with the added features, [redacted] still detects touches by monitoring changes in capacitance between the drive and sense lines. (CX-202C at Q &A 247-248; 307-313, 577-585; JX 652C.012; CX-202C at Q.247-248.)

f) Doctrine of equivalents

Apple argues that if the '607 Accused Products fail to meet the limitations of claim 1 literally, then they meet the limitations under the doctrine of equivalents. (CIB at 99-110.) However, Apple simply states (for each disputed claim and element) that "[t]o the extent that this limitation is not found to be met literally under any of the proposed constructions by any of the '607 Accused Products, this limitation is also met under the Doctrine of Equivalents." (CIB at 93-110.)

The ALJ finds that, by simply making a conclusory statement, Apple has failed to meet its burden of proving infringement under the doctrine of equivalents. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 40 (1997) (holding that "[t]he determination of equivalence should be applied as an objective inquiry on an element-by-element basis").

2. Claims 2 and 3

Apple argues that '607 Accused Products meet all of the limitations of claims 2 and 4. (CIB at 111.) Staff agrees arguing that the '607 Accused Products contain horizontal X row lines that are perpendicular or nearly perpendicular to the vertical Y column lines. (SIB at 70-71.) Motorola does not specifically dispute that the '607 Accused Products do not meet claims 2 and 3 (*see* RIB at 20-39; RRB at 10-18), however its arguments relating to claim 10 of the '607 Patent can certainly be applied substantively to claims 2 and 3. (RIB at 38-39.) As set forth *infra*, the ALJ finds that the '607 Accused Products meet all of the limitations of claim 10. To the extent that Motorola's arguments related to claim 10's "plurality of spaced apart parallel lines having the same pitch and linewidths" and "substantially perpendicular to the parallel lines of the first transparent conductive layer" can be applied to these claims, the ALJ's reasoning for those limitations applies to claims 2 and 3 as well. (*See infra* Section V.C.6.)

The ALJ finds that the '607 Accused Products meet the limitations of claims 2 and 3. As set forth *supra*, the ALJ found that the '607 Accused Products met all of the limitations of claim 1. (*See* Section V.C.1.) The evidence shows that '607 Accused Products all contain one set of parallel lines that are oriented in the horizontal/"X" direction and another set of parallel lines oriented in the vertical/ "Y" direction. (CX-202C at Q&A 314-324.) The evidence further shows that the '607 Accused Products all have one set of lines oriented in the horizontal/ "X" direction and one set of lines oriented in the vertical/ "Y" direction such that horizontal/ "X" lines are perpendicular or nearly perpendicular to the vertical/ "Y" lines. (CX-202C at Q&A 325-334.) Therefore, the ALJ finds that the '607 Accused Products meet the limitations of claims 2 and 3.

Apple also argues that if the '607 Accused Products fail to meet the limitations of claims 2 and 3 literally, then they meet the limitations under the doctrine of equivalents. (CIB at 111.)

However, Apple simply states (for each disputed claim and element) that "[t]o To the extent that these limitations are not found literally in the '607 Accused Products [...], they are met under the Doctrine of Equivalents." (CIB at 111.)

The ALJ finds that, by simply making a conclusory statement, Apple has failed to meet its burden of proving infringement under the doctrine of equivalents. *Warner-Jenkinson Co.*, 520 U.S. at 40 (holding that "[t]he determination of equivalence should be applied as an objective inquiry on an element-by-element basis").

3. Claims 4 and 5

Apple argues the '607 Accused Products meet the limitations of claims 4 and 5 as they all contain [redacted] (CIB at 112, 118.)

Motorola argues that the '607 Accused Products do not infringe claims 4 and 5 because they do not include the claimed lower layer of second conductive lines, each of which is operatively coupled to capacitive monitoring circuitry; or the claimed first glass member disposed over a second glass member. (RIB at 32-35.) Specifically, Motorola argues that Apple has failed to show that the drive electrodes are operatively coupled to a capacitive monitoring circuit. (RIB at 32-33.) Motorola further argues that [redacted] fails to meet the "glass member" limitation. (33-35.)

Staff argues that, while the '607 Accused Products meet the "glass member" limitation with its layers made of [redacted], Apple has failed to show that the '607 Accused Products meet the "disposed over" limitation. (SIB at 71-73.) Specifically, Staff argues that "[i]n order for the '607 Accused Products to infringe Claim 4, the second conductive lines on the second glass member – *i.e.*, the bottom glass member – must be operatively coupled to capacitive monitoring circuit, but they are not." (SIB at 72.)

The ALJ finds that Apple has shown by a preponderance of the evidence that the '607 Accused Products meet each and every limitation of claims 4 and 5. The evidence shows that '607 Accused Products have the "glass member" as construed by the ALJ – the [redacted] meets the claim limitation "glass member" as construed by the ALJ. (CX-202C at Q&A 344-45, 352-53, 360-61; *see also supra* at Section IV.D.3 (construing "glass member").) The evidence shows that the '607 Accused Products contain a top [redacted] layer that contains a [redacted] layer. (CX-202C at Q &A at 335-345.) The '607 Accused Products also contain a bottom [redacted] layer that contains [redacted]. (*Id.* at Q.346-353.) The [redacted] is located over/placed on top of the [redacted] layer in all of the '607 Accused Products (that is, closer to the surface of the device that normally faces the user in operation and further from the display). (*Id.* at Q.354-361.) Motorola considers the layers of the touch sensor closer to the display screen to be at the "bottom" of the touch sensor build stack and the layers of the touch sensor closer to the touch panel surface (that is, the surface that normally faces the user during operation) to be the "top" of the build stack. (*Id.* at Q.356.)

The evidence further shows that the '607 Accused Products all contain a Cover Panel layer made of [redacted] that is placed at the top of the touch sensor build stack (that is, as the layer closest to the surface that faces the user during normal operation). (CX-202C at Q &A 366-373.) This Cover Panel layer is located above [redacted] (CX-202C at Q &A 366-373.) That is, it is located closer to the surface of the device that normally faces the user in operation and further from the display. The '607 Accused Products also contain [redacted]. (CX-202C at Q &A 374-387.)

As for Motorola and Staff's arguments, the ALJ finds that the dividing the sensor IC into different circuitry is improper and unsupported by the record. Specifically, the evidence shows that subdividing the sensor IC into different circuitry does not reflect the way that the chips are built and function:

[redacted]

(JX-17C at 38:7-18) (emphasis added). This is also consistent with how [redacted] actually functions—the chip monitors changes in capacitance between [redacted] Measuring and monitoring that capacitive charge coupling requires

knowing and coordinating which lines are being driven, how those lines are being driven, and what the capacitive effect is on the sense lines—connections to the sense lines alone, without also being connected or coupled to the drive lines, would be insufficient for these circuits to function. (CX-202C at Q&A 238-242, 299-306, 516-519, 570.) As a result, each one of the drive lines and each one of the sense lines are directly connected (and thus, "operatively coupled" under all proposed constructions) to the [redacted]. (CX-202C at Q.238-242, 299-306, 516-519, 570.)

Therefore, the ALJ finds that Apple has shown by a preponderance of the evidence that the '607 Accused Products infringe claims 4 and 5.

Apple also argues that if the '607 Accused Products fail to meet the limitations of claims 4 and 5 literally, then they meet the limitations under the doctrine of equivalents. (CIB at 116, 117.) However, Apple simply makes conclusory statements (for each disputed claim and element) that that the '607 Accused Products meet the limitations under the doctrine of equivalents, *e.g.*, "[t]o the extent that the limitations of claim 4 are not found to be met literally under any of the proposed constructions by any of the '607 Accused Products, these limitations are also met by the '607 Accused Products under the Doctrine of Equivalents." (CIB at 116.)

The ALJ finds that, by simply making a conclusory statement, Apple has failed to meet its burden of proving infringement under the doctrine of equivalents. *Warner-Jenkinson Co.*, 520 U.S. at 40 (holding that "[t]he determination of equivalence should be applied as an objective inquiry on an element-by-element basis").

4. Claim 6

The evidence shows that the conductive lines in all of the '607 Accused Products are made from [redacted] (CX-202C at Q&A 388-394, 658-666.) Motorola does not dispute that the '607 Accused Products meet this limitation. (*See* RIB at 11-48; RRB at 8-26.)

5. Claim 7

The evidence shows that all of of the '607 Accused Products include mutual capacitance touch panels and sensor ICs that recognize touches by sensing or detecting and responding to changes in charge coupling (that is, capacitance) between the two sets of spatially separated conductive lines. (CX-202C at Q &A 395-405, 667-676.) Motorola does not dispute that the '607 Accused Products meet this limitation. (*See* RIB at 11-48; RRB at 8-26.)

6. Claim 10

Apple argues that the '607 Accused Products meet all of the limitations of claim 10 and argues that most of the limitations of claim 10 are satisfied based on the same functionalities and arguments described with respect to claims 1-7. (CIB at 120.) Apple argues that only two limitations need be addressed that were not addressed previously, namely "a transparent touch panel allowing the screen to be viewed therethrough and capable of recognizing multiple touch events that occur at different locations on the touch panel at a same time and to output this information to a host device to from a pixilated image" and "a first glass member disposed over the screen of the display…a second glass member disposed over the first transparent conductive layer…a third glad member disposed over the second transparent conductive layer." (CIB at 120-125.) Apple argues that the '607 Accused Products all contain lens sensor assemblies and sensor ICs that recognize multiple touch events and the information taken from these touch events that is sent to the device takes the form of an array of picture element values representing

the touch panel. (CIB at 122.) Apple further argues that the '607 Accused Products include [redacted] (CIB at 124.) Staff agrees that the '607 Accused Products practice each and every limitation of claim 10. (SIB at 74-79.)

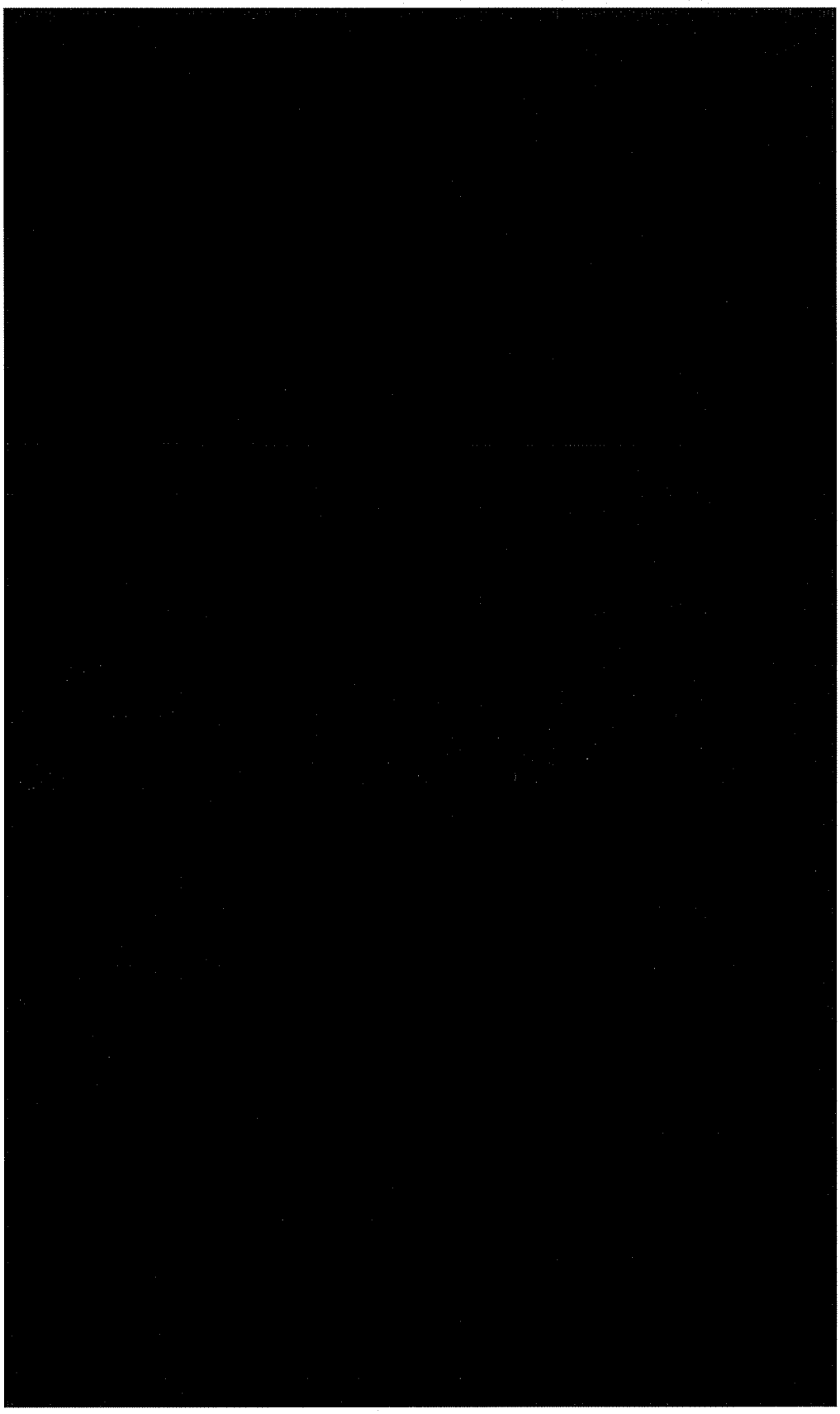
Motorola argues that the '607 Accused Products do not meet the "first glass member" and "second glass member" limitations; [redacted] do not meet the "first transparent conductive layer comprising a plurality of spaced apart parallel lines having the same pitch and linewidths"; and [redacted] do not meet "a second transparent conductive layer comprising a plurality of spaced apart parallel lines having the same pitch and linewidths" that are "substantially perpendicular to the parallel lines of the first transparent conductive layer." (RIB at 36-39.)

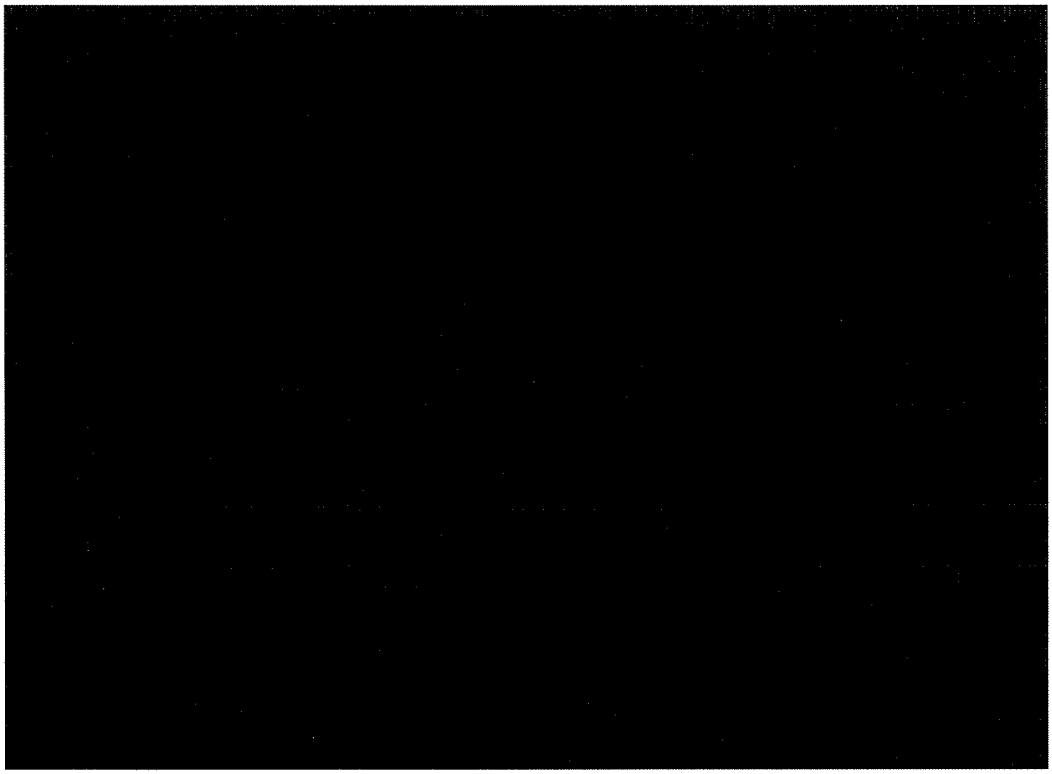
Motorola further argues that Apple failed to separately address claim limitations in claim 10 that are not present in claim 1 and that such limitations "present distinct non-infringement positions for the '607 Accused Products." (RRB at 17-18.) By way of example, Motorola cites the "plurality of spaced apart parallel lines having the same pitch and linewidths." (RIB at 18.) However, as set forth *supra*, Apple addressed Motorola's non-infringement arguments with respect to this limitation in addressing claims 2 and 3. (*See* Section V.C.2.) Thus, Motorola's arguments are inapposite as Apple has addressed many of the limitations in claim 10 in addressing infringement of claims 1 through 7, *i.e.,* Apple's argument relies on its analysis for claims 1 through 7 and not just claim 1 as asserted by Motorola.

The ALJ finds that the evidence shows that the '607 Accused Products meet each and every limitation of claim 10. (CX-202C at Q&A 406-499.) Indeed, many of the limitations in claim 10, while not exactly the same in specific wording, are similar (in substance) to the limitations set forth in claims 1 through 7. As for those limitations not specifically addressed in claims 1 through 7, the evidence shows that '607 Accused Products meet these limitations, namely the "parallel lines having the same pitch and linewidths," "substantially perpendicular to the parallel lines," "pixilated image" and "glass member" limitations.

a) "a plurality of spaced apart parallel lines having the same pitch and linewidths"/ "a plurality of spaced apart parallel lines having the same pitch and linewidths, the parallel lines of the second conductive layer being substantially perpendicular to the parallel lines of the first transparent conductive layer"

The evidence shows that comparing the overall sense or drive [redacted] line to any other line in the same layer shows that the lines are parallel within the layer and perpendicular to the lines in the other layer. (CX-202C at Q&A 231-233, 247 248, 314-334; *see also supra* Section V.C.2 (discussing claims 2 and 3).) Furthermore, the claims specifically state that the lines be "substantially parallel" (claim 2) and "substantially perpendicular" (claims 3 and 10). (JX-2 at Claims 2, 3, 10.) The evidence shows that the '607 Accused Products have sense and drive ITO lines that are "substantially parallel" to other lines in the same plane:





(RDX-1 [Motorola Tutorial], Slide 23-b (depicting the [redacted] 24-a (depicting [redacted] and 25-a (depicting [redacted] The evidence also shows that the sense and drive [redacted] lines are "substantially perpendicular" to lines in the other plane. (JX-626C; JX-675C; JX-612C.) Even with the horizontal appendages in the [redacted] and [redacted] the central core line of the sense electrodes in the [redacted] products are parallel to each other and perpendicular to the drive lines in the drive line layer. (CX-202C at Q&A 231-233, 247-248, 314-334; *see also* JX-675C; JX-612C.) Therefore, the ALJ finds that the '607 Accused Products meet these limitations.

b) "to output this information to a host device to form a pixilated image"

The evidence shows that the '607 Accused Products meet the "pixilated image" limitation. The evidence shows that the '607 Accused Products all contain a transparent touch panel and a

sensor that recognizes multiple touches or near touches across the plane of the touch panel and outputs that information to the phone that uses and responds to the input from the touch panel. (CX-202C at Q&A 243-244, 412-428, 683-695.) When the lens sensor assemblies and sensor ICs in the '607 Accused Products recognize multiple touches or near touches, information about those multiple touch events is sent to the computing device by the touch panel so that the device can respond to the touch input from the user. In the '607 Accused Products, the information about the multiple touch events that is sent to the device takes the form of an array of picture element values representing the touch data from the touch panel. (CX-202C at Q&A 243-244, 412-428; *see, e.g.*, JX-661C.034 [redacted] *see also* JX-655C; JX-662C.) Although the output from the [redacted] in the '607 Accused Products is a [redacted], those [redacted] can still represent the touch location information for each node or intersection of the touch screen (*i.e.*, the full extent of the touchscreen active region). (CX-202C at Q&A 243-244, 412-428, *See* JX-661C.034.) The evidence further shows that the information about [redacted] is sufficient for the phone's host processor to create an image of the touch panel that plots the coordinates of these touch centroids, creating an array of pixel element values each representing touch contacts at particular nodes across the touch screen. (CX-202C at Q.243-244, 412-428; *see* JX-661C.034; Tr. at 1030:17-1031:6.) Therefore, the ALJ finds that the '607 Accused Products meet this limitation.

c) "a first glass member disposed over the screen of the display. . .a second glass member disposed over the first transparent conductive

layer. . .a third glass member disposed over the second transparent conductive layer"

The evidence shows that the '607 Accused Products meet the "glass member" limitations set forth *supra*. Motorola's arguments are inapposite because the ALJ found that "glass member" included glass or plastic element. (*See* Section IV.D.3.) The evidence shows that the '607 Accused Products include: [redacted] (CX-202C at Q&A 214-225, 439-448, 464-474, 491-497.)

Therefore, the ALJ finds that Apple has shown by a preponderance of the evidence that the '607 Accused Products meet each and every limitation of claim 10.

d) Doctrine of equivalents

Apple also argues that if the '607 Accused Products fail to meet the limitations of claim 10 literally, then they meet the limitations under the doctrine of equivalents. (CIB at 125.) However, Apple simply makes a conclusory statement (for each disputed claim and element) that the '607 Accused Products meet the limitations under the doctrine of equivalents, *e.g.*, "[t]o the extent that these limitations are not found to be met literally by any of the '607 Accused Products [. . .], they are met by the '607 Accused Products [. . .]under the Doctrine of Equivalents." (CIB at 125.)

The ALJ finds that, by simply making a conclusory statement, Apple has failed to meet its burden of proving infringement under the doctrine of equivalents. *Warner-Jenkinson Co.*,

520 U.S. at 40 (holding that "[t]he determination of equivalence should be applied as an objective inquiry on an element-by-element basis").

D. The '430 Patent

Apple accuses the following products of infringing the '430 Patent: Motorola Atrix, Backflip, Bravo, Charm, Citrus, Cliq/Dext, Cliq 2, Cliq XT/Quench, Defy, Devour, Droid, Droid 2, Droid 2 Global, Droid Bionic, Droid Pro, Droid X, Droid X2, Droid 3, Flipout, Flipside, i1, Titanium, Xoom, and XPRT (collectively, "the Accused '430 Products"). (*See* CX201C at Q/A 107 (*citing* CDX-001.040 (table listing accused products)).) Apple alleges that the Accused '430 Products all infringe the '430 Patent because they all run the Android operating system. (*See id.* at Q/A 106, 147-49.)

The ALJ finds that the Accused '430 Products literally infringe claims 1, 3 and 5 of the '430 Patent. There is no factual dispute over how the Android phones perform the four steps of the claimed method. As set forth below, the ALJ finds that the testimony of Motorola's witnesses, combined with the experts' analysis and the documents in evidence, show that the Accused '430 Products literally infringe claims 1,3 and 5 of the '430 Patent.

The ALJ has already found that the Preamble is not a limitation and so does not consider it.

1. specifying a target hardware or software component search criteria including one or more properties

Motorola offered two witness statements at the hearing concerning the operation of the Android "implicit intent" resolution functionality, David Boldt (a Motorola engineer), and Dianne Hackborn (a Google engineer). The ALJ finds that the testimony of both witnesses,

which were nearly identical, explain how Android's implicit intent resolution meets the steps of this claim limitation.

First, Android is built on the idea that applications are not structured as complete programs, but are conceptualized as a series of components that are added to the operating system one by one, on the fly, during operation. Ms. Hackborn described how applications are broken up into these separate pieces, distinguishing Android from old-style applications on desktop systems. (RX-1869C at Q/A 6-7.) These pieces are described by Google itself as the "components" of the applications, exactly the term that is used in the claims. (JX-692C.003.) These application components include Activities and Services. (RX-1869C at Q/A 7.) Structuring these applications as components that are brought into the operating system on the fly allowed the seamless stringing together of Activities. (*Id.* at Q/A 17.)

Second, the mechanism in Android that allows components to be located on the fly is the "Intent" mechanism. Intents allow Android to interact with applications, for applications to find and interact with other applications, and to launch application components. (RX-1869C at Q/A 27-30.) The intent is a bundle of information that specifies information about the Activity or Service that must be found by the Android framework. (RX-1869C at Q/A 40-44; 47.) When Android needs to start an Activity (and add it to the Activity Stack in the operating system), an intent is used to specify the target Activity.

Android uses "explicit intents" that explicitly name a target Activity. (RX-1869C at Q/A 44; RX-1860C at Q/A 57.) Explicitly naming the target component a prior art technique that is different from the property-search approach of the '430 Patent. Android mainly uses "implicit intents," which do not identify a target component by name. (RX-1869C at Q/A 47.) An implicit intent specifies a target component by the properties of the desired component—its

ability to perform an "action," its "category," and its ability to handle a certain "data" type. (RX-1869C at Q/A 41, 47, 54, 69.) There is no dispute that implicit intents in Android specify "properties," as the ALJ construed this term, of a target component. (RIB at 153-154 (only disputing limitation under Apple's proposed construction).) Motorola's expert admitted that this functionality meets element (a). (Tr. At 1187:17-1189:4.) Accordingly, the ALJ finds that Accused '430 Products meet the limitation.

2. querying the operating system to identify one or more hardware or software components that meet the target hardware or software component search criteria

The Android intent resolution process requires querying the operating system. (CX-201C at Q/A 171-183.) In this case, the "query" is within the application framework of Android, and involves the Activity Manager and Package Manager services. As Ms. Hackborn confirmed, the Activity Manager is a system service in the Android Application Framework. (RX-1869C at Q/A 57.) The Package Manager is also a system service in the framework. (*Id.* at Q/A 61.

The ALJ finds that, as the named inventor explained, the patent uses the term "operating system" extremely broadly, and thus, the Android Application framework is part of the operating system for the purposes of this analysis. (JX-469C at 13:24-14:13 ("In the context of the patent, 'operating system' means everything from the desktop to the application layer to the kernel. It's the same context for the Windows OS or Tal OS.").) The Package Manager tracks information about the applications that are installed on the phone. (RX-1869C at Q/A 62.) After the Activity Manager specifies the target component by properties, passing the implicit intent to the Package Manager using the resolveIntent() method (RX-1869C at Q/A 59), the Package Manager looks at its list of IntentFilters to find a match for the target

component's properties. (RX-1869C at Q/A 64, 66.) The ALJ finds that this is a query—in fact, the Android system uses a method called ***query***IntentActivities() to locate the right component. (RX-1860C at Q/A 74-79.) Motorola's expert admits that this query meets Apple's and the Staff's proposed constructions for element (b). (Tr. 1189:5-14.) Accordingly, the Accused '430 Products meet the limitation.

3. returning hardware or software components meeting the target hardware or software component search criteria

Apple and Staff argue that the '430 Accused Products return software components meeting the target software component search criteria. The ALJ agrees that the evidence shows that the Package Manager implements a method to locate one or more components that meet the target search criteria. (*See* CX-201C at Q/A 113-138.)

A component or components that are found to be matches for an implicit intent by the Package Manager are added to a list of matching components that may be returned. (*See* JX-557C at MOTO-APPLE-0000335057; JX-015C at 68:11-23.) If there is only one component on the list, the Package Manager can return that component. (*See* JX-557C at MOTO-APPLE-0000335050, 56-57; JX-693C at MOTO-APPLE-003157441-44; JX-557C at MOTO-APPLE-0000335057; MOTO-APPLE-000369220 ("If more than one activity can handle the action and data, the system displays an activity chooser for the user to choose from"); *see also* JX-572C, Android Training, at MOTO-APPLE-0003519462; JX-567C at MOTO-APPLE-0002502601, -12; JX-24C at 69:12-71:15, 80:14-81:2, 83:5-84:17, 122:23-123:8, 126:14-128:10; JX-015C at 72:22-73:13, 81:7-14, 82:11-16 ("Q. So, if you have multiple home screen applications available on the device when you press the home key, your understanding is that it sends an implicit intent that is resolved into a chooser interface? A. Yes"); *id.* at 179:8-22; JX-557C at MOTO-APPLE-0000335056.)

As for Motorola's noninfringement argument that the process does not return components under the ALJ's construction, Dr. Locke testified that as part of the intent-resolution process, within the Android operating system, the "Activity Manager" queries the "Package Manager" for Activities (which are components of applications) that match the intent. (Tr. 1195:7-21, 1196:1-12.) Accordingly, the Accused '430 Products meet the limitation

4. adding support for the hardware and software components to the operating system without rebooting the operating system

There are two ways in which support is added to the operating system at the conclusion of the intent resolution process. (CX-201C at Q/A 196-207.) Motorola's witnesses confirmed that Android adds support for Activities and Services. Activities are managed through the Activity Stack. The Activity Stack is a data structure in the application framework. (JX-015C at 74:11-75:6.) The Stack is updated when a new Activity is started. (*Id.* at 75:7-19.) The Stack is updated by ***adding*** an Activity to the stack. (*Id.*) The Activity Stack is used to manage Activities, and to track which Activity is currently running. (RX-1860C at Q/A 177-178.) Because the Activity has been added to this operating system data structure (as Dr. Balakrishnan has interpreted that term), users can navigate to the Activity without restarting the application. (RX-1860C at Q/A 182.) Dr. Locke admitted that there are pointers and connections that are added to the Activity Stack in the Android operating system during the intent process. (Tr. 1197:13-1198:3.) That is the support that is "added" to the operating system—pointers and connections in the form of data in operating system (as Dr. Balakrishnan and the patent interprets it) data structures, that allow the system to use the components.

Support is also added to the operating system (as Dr. Balakrishnan and the patent interprets it) when Services are bound. Activities use the bindService() method to connect to Services. (RX-1860C at Q/A 164.) When Services are bound using this method, a connection is made to an Activity that allows the Activity to perform calls on the service. (RX-1860C at Q/A 166.) The bindService() method creates a binder object. (JX-015C at 95:8-20, 91:15-20.) That object allows for inter-process communication. (*Id.* at 95:8-20.) Dr. Balakrishnan also testified that addition of the binder object adds support to the operating system (as he has interpreted it for infringement purposes) for the Service. (CX-201C at Q/A 198.)

Motorola's arguments that an installation program is run to perform the claim, and that Activities and Services are somehow fully supported without being launched, and added to the Activity Stack or bound, are without support because there is no dispute that an installation program is not run during the four-step process of the claims (Tr. 1189:21-1190:6) and there is no dispute that the "pointers and connections" that support the system's use of the Activity and are ***not*** added at the time of installation. (Tr. 1197:20-1198:3.) Accordingly, the ALJ finds the Accused '430 Products meets this limitation.

There are no separate disputes over dependent claims 3 ("system component") and 5 ("application component"). Activity and Service components, which are described as application components by Google and Motorola, meet claims 3 and 5. (CX-201C at Q/A 208-224.)

Accordingly, Motorola's Accused '430 Products infringe the asserted claims of the '430 Patent.

Having made the foregoing findings on whether the accused products infringe the asserted patents, the ALJ finds that the disposition of this material issue, *i.e.*, infringement,

satisfies Commission Rule 210.42(d).[14] The ALJ's failure to discuss any matter raised by the parties, or any portion of the record, does not indicate that it has not been considered. Rather, any such matter(s) or portion(s) of the record has/have been deemed immaterial.

VI. VALIDITY

A. Background

One cannot be held liable for practicing an invalid patent claim. *See Pandrol USA, LP v. AirBoss Railway Prods., Inc.*, 320 F.3d 1354, 1365 (Fed. Cir. 2003). However, the claims of a patent are presumed to be valid. 35 U.S.C. § 282; *DMI Inc. v. Deere & Co.*, 802 F.2d 421 (Fed. Cir. 1986). Although a complainant has the burden of proving a violation of section 337, it can rely on this presumption of validity.

Respondents have the burden of proving invalidity of the patent. This "burden is constant and never changes and is to convince the court of invalidity by clear evidence." *I4i v. Microsoft Corp*, 131 S. Ct. 2338, 2243 (2010) (citing Judge Rich in *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F. 2d 1350, 1360 (CA Fed. 1984)). Respondents' burden of persuasion *never shifts*. *Id.* The risk of "decisional uncertainty" remains on the respondent. *Technology Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1327 (Fed. Cir. 2008); *see also PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1303, 1305 (Fed. Cir. 2008); *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1360 (Fed. Cir. 2007). Thus, it is respondent's burden to prove

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[14] Commission Rule 210.42(d) states:

> (d) Contents. The initial determination shall include: an opinion stating findings (with specific page references to principal supporting items of evidence in the record) and conclusions and the reasons or bases therefor necessary for **the disposition of all material issues of fact, law, or discretion presented in the record**; and a statement that, pursuant to §210.42(h), the initial determination shall become the determination of the Commission unless a party files a petition for review of the initial determination pursuant to §210.43(a) or the Commission, pursuant to §210.44, orders on its own motion a review of the initial determination or certain issues therein.

(emphasis added).

by clear and convincing evidence that any of the alleged prior art references anticipate or render obvious the asserted claims of the patents in suit. Failure to do so means that respondents loses on this point. *Id.* (stating, "[I]f the fact trier of the issue is left uncertain, the party with the burden [of persuasion] loses.").

Respondents also bears the burden of going forward with evidence, *i.e.*, the burden of production. *Id.* This is "a shifting burden the allocation of which depends on where in the process of a trial the issue arises." *Id.* However, this burden does not shift until a respondent presents "evidence that might lead to a conclusion of invalidity." *Pfizer*, 480 F.3d at 1360. Once a respondent "has presented a prima facie case of invalidity, the patentee has the burden of going forward with rebuttal evidence." *Id.*

B. Anticipation

A patent may be found invalid as anticipated under 35 U.S.C. § 102(a) if "the invention was known or used by others in this country, or patented or described in a printed publication in this country, or patented or described in a printed publication in a foreign country, before the invention thereof by the applicant for patent." 35 U.S.C. § 102(a). A patent may be found invalid as anticipated under 35 U.S.C. § 102(b) if "the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States." 35 U.S.C. § 102(b). Under 35 U.S.C. § 102(e), a patent is invalid as anticipated if "the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent." 35 U.S.C. § 102(e). Anticipation is a question of fact. *Texas Instruments, Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1177 (Fed. Cir. 1993) ("*Texas Instruments II*"). Anticipation is a two-step inquiry: first, the claims of the

asserted patent must be properly construed, and then the construed claims must be compared to the alleged prior art reference. *See, e.g., Medichem, S.A. v. Rolabo, S.L.*, 353 F.3d 928, 933 (Fed. Cir. 2003). It is axiomatic that claims are construed the same way for both invalidity and infringement. *W.L. Gore v. Garlock, Inc.,* 842 F.2d 1275, 1279 (Fed. Cir. 2008.)

"Claimed subject matter is 'anticipated' when it is not new; that is, when it was previously known. Invalidation on this ground requires that *every element and limitation* of the claim was *previously described in a single prior art reference*, either *expressly or inherently*, so as to place a person of ordinary skill in possession of the invention." *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1082 (Fed. Cir. 2008) (emphasis added) (citing *Schering Corp. v. Geneva Pharms., Inc.*, 339 F.3d 1373, 1379 (Fed. Cir. 2003) and *Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1267-69 (Fed. Cir. 1991)).

To anticipate, a single prior art reference must be enabling and it must describe the claimed invention, *i.e.*, a person of ordinary skill in the field of the invention must be able to practice the subject matter of the patent based on the prior art reference without undue experimentation. *Sanofi*, 550 F.3d at 1082. The presence in said reference of *both* a specific description and enablement of the subject matter at issue are required. *Id.* at 1083.

To anticipate, a prior art reference also must disclose all elements of the claim within the four corners of said reference. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) ("*NMI*"); *see also Abbott Labs. v. Sandoz, Inc.*, 544 F.3d 1341, 1345 (Fed. Cir. 2007) (stating, "Anticipation is established by documentary evidence, and requires that every claim element and limitation is set forth in a single prior art reference, in the same form and order as in the claim."). Further, "[b]ecause the hallmark of anticipation is prior invention, the prior art reference--in order to anticipate under 35 U.S.C. § 102--must not only disclose all elements of

the claim within the four corners of the document, but must also disclose those elements 'arranged as in the claim.'" *Id.* (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)). The Federal Circuit explained this requirement as follows:

> The meaning of the expression 'arranged as in the claim' is readily understood in relation to claims drawn to things such as ingredients mixed in some claimed order. In such instances, a reference that discloses all of the claimed ingredients, but not in the order claimed, would not anticipate, because the reference would be missing any disclosure of the limitations of the claimed invention 'arranged as in the claim.' But the 'arranged as in the claim' requirement is not limited to such a narrow set of 'order of limitations' claims. Rather, *our precedent informs that the 'arranged as in the claim' requirement applies to all claims and refers to the need for an anticipatory reference to show all of the limitations of the claims arranged or combined in the same way as recited in the claims, not merely in a particular order*. The test is thus more accurately understood to mean 'arranged or combined in the same way as in the claim.'

Id. at 1370 (emphasis added). Therefore, it is not enough for anticipation that a prior art reference simply contains all of the separate elements of the claimed invention. *Id.* at 1370-71 (stating that "*it is not enough [for anticipation] that the prior art reference discloses part of the claimed invention, which an ordinary artisan might supplement to make the whole*, or that it includes multiple, distinct teachings that the artisan might somehow combine to achieve the claimed invention." (emphasis added)). Those elements must be arranged or combined in said reference in the same way as they are in the patent claim.

If a prior art reference does not expressly set forth a particular claim element, it still may anticipate the claim if the missing element is inherently disclosed by said reference. *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1295 (Fed. Cir. 2002); *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999). Inherent anticipation occurs when "the missing descriptive material is 'necessarily present,' not merely probably or possibly present, in the prior art." *(Id.)*; *see also Rhino Assocs. v. Berg Mfg. & Sales Corp.*, 482 F. Supp.2d 537, 551 (M.D. Pa. 2007). In

other words, inherency may not be established by probabilities or possibilities. *See Continental Can*, 948 F.2d at 1268. Thus, "[t]he mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Id.*

The critical question for inherent anticipation here is whether, as a matter of fact, practicing an alleged prior art reference necessarily features or results in each and every limitation of the asserted claim at issue. *See, e.g., Toro Co. v. Deere & Co.*, 355 F.3d 1313, 1320 (Fed. Cir. 2004). Such is the case even if one of ordinary skill in the art would not have recognized said inherent anticipation at the time of the invention of the '829 Patent. *Id.* at 1320-21.

If there are "slight differences" between separate elements disclosed in a prior art reference and the claimed invention, those differences "invoke the question of obviousness, not anticipation." *NMI*, 545 F.3d at 1071; *see also Trintec*, 295 F.3d at 1296 (finding no anticipation and stating that "the difference between a printer and a photocopier may be minimal and obvious to those of skill in this art. Nevertheless, obviousness is not inherent anticipation."). Statements such as "one of ordinary skill may, in reliance on the prior art, complete the work required for the invention," and that "it is sufficient for an anticipation if the general aspects are the same and the differences in minor matters is only such as would suggest itself to one of ordinary skill in the art," *actually relate to obviousness*, not anticipation. *Connell*, 722 F.2d at 1548; *see infra.*

1. The '828 Patent

a) U.S. Patent No. 5,825,352 – Bisset

Motorola argues that claims 1 and 10 are anticipated by U.S. Patent No. 5,825,352 to Bisset ("Bisset '352 Patent"). (RIB at 120.) Motorola argues that the Bisset '352 Patent anticipates claims 1 and 10 under Apple's proposed constructions as they have been interpreted by Dr. Balakrishnan and applied to the Accused '828 Products. (RIB at 120.)

However, the ALJ has rejected Dr. Balakrishnan's construction of mathematically fit(ting) an ellipse. Motorola offers no evidence that Bisset meets this limitation under any other construction. Accordingly, the ALJ finds that Motorola has failed to prove by clear and convincing evidence that Bisset anticipates claims 1 and 10 of the '828 Patent.

b) Desai Thesis

Motorola next argues that the '828 Patent is anticipated by a Master's Thesis by Apurva Mahendra Desai at Simon Frasier University in Canada that was published in 1994 and entitled *Interpretation of Tactile Data from an FSR Pressure Pad Transducer Using Image Processing Techniques* (the "Desai Thesis"). (RX-351C.) Staff argues that the Desai Thesis does not anticipate the '828 Patent for two reasons: (1) it does not disclose the "segmenting" limitation of any asserted claim and (2) the Desai Thesis does not disclose the contact tracking identification module limitation of claim 10. (SIB at 43-44.)

The ALJ agrees that the Desai Thesis does not disclose the segmenting limitation of all of the asserted claims. The segmenting limitations describe segmenting the proximity data "into one or more pixel groups" representing "distinguishable" hand parts or other touch objects. (CX-568C, Balakrishan RWS, at Q/A 484-87.) This necessarily means that if one or more object is present, the claimed device or method will be able to identify each as a separate object on the touch sensitive surface. (*Id.*) However, the Desai Thesis states that its processing technique "assumes that only one object is placed on the array at a time" and that "[t]he techniques will have to be redeveloped for more than one object" and that "[t]his could be quite a difficult thing if the objects are placed close to each other." (RX-351 at 117.) Thus, the ALJ finds that the Desai Thesis does not disclose segmenting a proximity image into one more pixel groups.

Accordingly, the ALJ finds that Motorola has failed to prove by clear and convincing evidence that the Desai Thesis anticipates the '828 Patent.

2. The '607 Patent

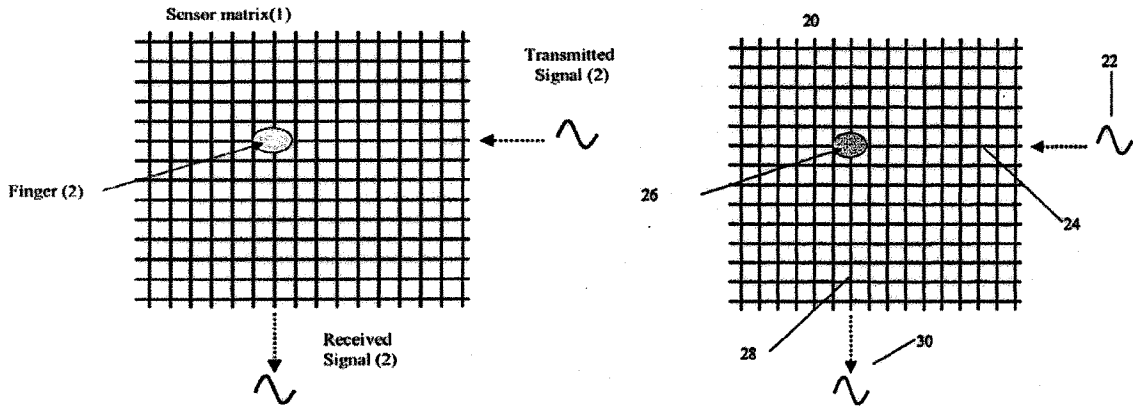
a) Perski '455

(1) *Perski '455 is prior art to the '607 Patent*

Motorola argues that U.S. Patent No. 7,372,455 to Perski, et al. ("Perski '455") entitled "Touch Detection for a Digitizer" was filed on January 15, 2004 and is prior art under 35 U.S.C. § 102(e). (RIB at 48.) Motorola further argues that Perski '455 is entitled to claim priority to U.S. Provisional Patent Application No. 60/446,808 ("the Perski '808 provisional"), which was filed on February 10, 2003. (RIB at 48.) Staff agrees. (SIB at 80-81.)

Apple argues that is entitled to an earlier date of invention – namely that the invention was conceived between September 2003 and November 2003, reduced to practice by December 2003 and was diligently worked on from September 2003 through May 24. (CIB at 127.) Apple further argues that Perski '455 is not entitled to claim priority back to the Perski '808 provisional because Motorola has failed to put forward any specific analysis of matching which portions of Perski '455 are supported by which portions of the Perski '808 provisional. (CIB at 133.)

The ALJ finds that Perski '455 is entitled to claim priority back to the Perski '808 provisional. The evidence shows that Perski '455 finds support in the Perski '808 provisional. (RX-1885C at Q&A 267-69, 305, 317-19 and Appx. A1.) For example, the Perski '808 provisional discloses "utiliz[ing] a patterned transparent conductive foil system . . . in order to enable multiple and simultaneous finger inputs directly on the display" and contains the same figure showing a grid of transparent conductive lines used to detect multiple touches using mutual capacitance as in Perski '455. (RX-303 at 1 ¶ 1; *compare* RX-303 at fig. 2 *with* RX-708 at fig. 2.)



(RX-303 (Perski '808 provisional) fig. 2 and RX-708 (Perski '455 patent) fig. 2.) Another example shows that the Perski '808 provisional discloses a finger detection method in which horizontal lines are driven and vertical lines sensed, while in Perski '455, fingers are detected using a change in mutual capacitance between the drive lines and the sense lines. (*Compare* RX-303 at 3 ¶ 5 *with* RX-708 at 13:30-43.) Finally, as in Perski '455, the Perski '808 provisional describes algorithms for use with the transparent mutual capacitance touch sensor to detect multiple, simultaneous finger touches. (*Compare* RX-303 at 4 ¶ 1-3 *with* RX-708 at 14:15-59.)

As for Apple's arguments, the ALJ finds that Apple cites no authority to support its contention that a portion by portion analysis need be performed in order for a patent to claim priority back to a provisional application. Indeed, Apple itself fails to cite to any portion of Perski '455 that is not supported by the Perski '808 provisional.

Therefore, regardless of whether the '607 Patent was conceived between September 2003 and November 2003, Perski '455 would still be prior art under 35 U.S.C. § 102(e). As such, the ALJ declines to make any findings on Apple's date of invention arguments as it would be immaterial given the priority date for Perski '455.

(2) *Perski '455 anticipates the asserted claims of the '607 Patent*

Motorola argues that Perski '455 discloses each and every limitation of the asserted claims of the '607 Patent. (RIB at 50-60.) Staff agrees. (SIB at 80-84.) Motorola notes that the only limitation that Apple argues is not disclosed by Perski '455 are the multitouch limitations, namely "the detection of multiple touches or near touches that occur at the same time and at distinct locations or the production of distinct signals representative of the location" of claim 1 and "the recognition of multiple touch events that occur at different locations on the touch panel at a same time at distinct points across the touch panel, the outputting of that information to a host device to form a pixilated image, or the detection and monitoring of a change in capacitive coupling associated with multiple touch events at distinct points across the touch panel" of claim 10. (RIB at 51.)

Indeed, Apple argues that Perski '455 does not disclose, enable or render obvious the multitouch limitations. (CIB at 135.) Specifically, Apple argues that Perski '455 fails to "disclose, enable or render obvious (1) the detection of 'multiple touches' or (2) 'multiple touch events' 'at a same time' that occur at distinct or different locations." (CIB at 135-136.) Apple argues that Perski '455 fails because (1) the disclosed method in Perski '455 is "too slow to detect multiple touches that occur 'at the same time'"; (2) the method has the same problems as other prior art in recognizing and distinguishing the number of touches; and (3) Perski '455 actually teaches away from the detection of multiply touches that occur at the same time. (CIB at 135-137.)

The ALJ finds that Motorola has shown by clear and convincing evidence that Perski '455 discloses detecting multiple finger touches at the same time. The evidence shows that Perski '455 expressly discloses a finger detection algorithm that is able to detect multiple finger touches at the same time:

> The goal of the finger detection algorithm, in this method, is to recognize all of the sensor matrix junctions that transfer signals due to external finger touch. It should be noted that this algorithm is preferably able to detect more than one finger touch at the same time.
>
> * * *
>
> However, this method enables the detection of multiple finger touches.

(RX-708 at 14:15-19; 14:37-38.) This algorithm or method disclosed in Perski '455 for detecting multiple touches is virtually identical to the disclosure in the '607 Patent. (RX-1885C, Wolfe Q&A 317; *compare* RX-708 at 14:20-43 to JX-002 at 13:58-61 (claim 1) ; RX-708 at 13:35-43, 14:15-19 to JX-002 at 17:22-35 and RX-708 at 10:6-15 and 10:23-49 to JX-002 at 18:11-16 and 18:24-39 (claim 10).)

Specifically, the evidence shows that Perski '455 discloses a transparent mutual capacitance sensor that is indisputably similar to that of the '607 Patent. (RX-1885C at Q&A 305; RX-708 at Fig. 2, 9:52-60; JX-002 at Fig. 9, 13:13-20.) Both Perski '455 and the '607 Patent detect multiple finger touches on this sensor using essentially the same method: providing a signal to each drive line, one line at a time, and measuring the signals that travel through the mutual capacitance onto orthogonal sense lines and when an output signal is detected at one or more of the intersections, touches are detected. (RX-708 at 14:20-43; JX-2 at 5:46-6:2.) Perski '455 discloses a method of driving each conductive line one at a time to "enable[] the detection of multiple finger touches":

> The most simple and direct approach is to provide a signal to each one of the matrix lines in one of the matrix axes, one line at a time, and to read the signal in turn at each one of the matrix lines on the orthogonal axis … If a significant output signal is detected, it means that there is a finger touching a junction. The junction that is being touched is the one connecting the conductor that is currently being energized with an input signal and the conductor at which the output signal is detected. The disadvantage of such a direct detection method is that it requires an order of n*m steps, where n stands for the number of vertical lines and m for the number of horizontal lines. In fact, because it is typically necessary to repeat the procedure for the second axis so the number of steps is more typically 2*n*m

> steps. However, this method enables the detection of multiple finger touches. When an output signal is detected on more than one conductor that means more than one finger touch is present. The junctions that are being touched are the ones connecting the conductor that is currently being energized and the conductors which exhibit an output signal.

(RX-708 at 14:20-43; *see also* RX-303 at 4 ¶ 2; RX-1885C, Wolfe Appx. A1 at 78, 94, and 99.)

Similarly, the '607 Patent describes the ability to detect multiple touches:

> In mutual capacitance, the transparent conductive medium is patterned into a group of spatially separated lines formed on two different layers.... The driving lines are connected to a voltage source and the sensing lines are connected to capacitive sensing circuit. During operation, a current is driven through one driving line at a time, and because of capacitive coupling, the current is carried through to the sensing lines at each of the nodes (e.g., intersection points). Furthermore, the sensing circuit monitors changes in capacitance that occurs at each of the nodes. The positions where changes occur and the magnitude of those changes are used to help recognize the multiple touch events.

(JX-2 at 5:46-6:2.) Claim 1 of the '607 Patent requires the "produc[tion] [of] distinct signals representative of a location of the touches on the plane of the touch panel for each of the multiple touches" and a transparent capacitive sensor medium "configured to detect multiple touches or near touches that occur at a same time." This is similarly disclosed in Perski '455: "[t]he goal of the finger detection algorithm, in this method, is to recognize all of the sensor matrix junctions that transfer signals due to external finger touch. It should be noted that this algorithm is preferably able to detect more than one finger touch at the same time" (JX-2 at 21:35-41; RX-708 at 14:15-19; RX-1885C, Wolfe Q/A 317 and Appx. A1.)

As for Apple's arguments, the ALJ finds them unpersuasive. First, as to the argument that Perski '455 teaches away from multiple touches at the same time, the ALJ finds that Perski '455 does not do so. A reading of the entire sentence relied upon by Apple in context shows that Perski '455 is actually disclosing a method of detecting more than one finger touch at a time:

> The goal of the finger detection algorithm, in this method, is to recognize all of the sensor matrix junctions that transfer signals due to external finger touch. It

> should be noted that this algorithm is preferably able to detect more than one finger touch at the same time.

(RX-708 at 14:15-19.) Apple's argument that Perski '455 suffers from the same prior art problems described in the '607 Patent also fails. Specifically, as noted by Motorola, Apple concedes that Perski '455 does, in fact, disclose multitouch detection. (Tr. at 1567:15-1568:2.)

Finally, with regard to Apple's last argument that the disclosed method in Perski '455 is "too slow to detect multiple touches that occur 'at the same time'," the ALJ finds that this argument fails. First, Apple points to nothing in the '607 Patent that discusses the speed at which the drive lines are driven and sense lines sensed. Thus, the speed at which multiple touches are detected are irrelevant. Second, even assuming that speed does matter, the disclosure of a "faster" method in Perski '455 does not necessarily mean that the "simple and direct approach" disclosed by Perski '455 is "slow" as asserted by Apple. Rather, Perski '455 simply states that (1) there is a "faster" method; and (2) an "optimal approach is to combine the above methods, starting with the faster method and switching to the direct approach upon detection of a possible ambiguity." (RX-708 at 14:57-59.) There is nothing in Perski '455 to indicate that the method disclosed therein would not be able to detect touches "at the same time" as viewed by a user. Moreover, the way an anticipatory reference characterizes a disclosure is irrelevant so long as a limitation is, in fact, disclosed. *See Celeritas Techs., Ltd. v. Rockwell Int'l Corp.,* 150 F.3d 1354, 1361 (Fed. Cir. 1998). Indeed, "[a] reference is no less anticipatory if, after disclosing the invention, the reference then disparages it." *Id.*

Therefore, the ALJ finds that Perski '455 anticipates the asserted claims of the '607 Patent.

b) SmartSkin

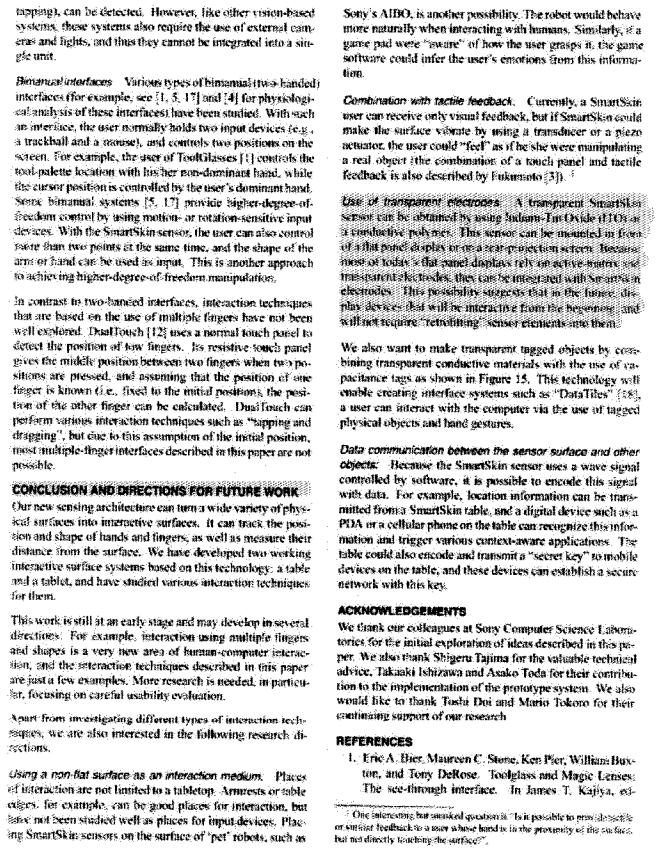
SmartSkin was considered by the examiner during prosecution so Motorola must meet a heightened burden of proving that SmartSkin anticipate the '607 Patent, which the ALJ finds they have failed to do. *See McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1353 (Fed. Cir. 2001) ("When no prior art other than that which was considered by the PTO examiner is relied on by the attacker, he has the added burden of overcoming the deference that is due to a qualified government agency presumed to have properly done its job, which includes one or more examiners who are assumed to have some expertise in interpreting the references and to be familiar from their work with the level of skill in the art and whose duty it is to issue only valid patents.") (citing *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1359, (Fed. Cir. 1984)); *Hewlett-Packard Co. v. Bausch & Lomb, Inc.*, 909 F. 2d 1464, 1467 (Fed. Cir. 1990) (particularly heavy burden in establishing invalidity on the same prior art that was examined in the PTO).

Motorola argues that the article *SmartSkin: An Infrastructure for Freehand Manipulation on Interactive Surfaces* ("SmartSkin") written by Junichi Rekimoto and published in April 2002 is prior art that invalidates the '607 Patent. (RIB at 60-61.) Motorola argues that SmartSkin discloses each and every limitation of the asserted claims. (RIB at 61-74.) Staff agrees. (SIB at 85-93.)

Apple argues that SmartSkin fails to disclose the transparent limitations, the layer limitation, and the "glass member" limitation. (CIB at 128-133.)

The ALJ finds that Motorola has failed to meet its heavy burden of showing by clear and convincing evidence that SmartSkin discloses each and every limitation of the asserted claims. While an extremely close call, the ALJ finds that the disclosure of using ITO in SmartSkin is insufficient to meet the additional heavy burden of showing by clear and convincing evidence

that SmartSkin discloses the use of transparent conductive lines using ITO. Motorola cites the following in SmartSkin in support of its argument that the reference discloses the use of transparent electrodes:



tapping), can be detected. However, like other vision-based systems, these systems also require the use of external cameras and lights, and thus they cannot be integrated into a single unit.

Bimanual interfaces Various types of bimanual (two-handed) interfaces (for example, see [1, 5, 17] and [4] for physiological analysis of these interfaces) have been studied. With such an interface, the user normally holds two input devices (e.g., a trackball and a mouse), and controls two positions on the screen. For example, the user of ToolGlasses [1] controls the tool-palette location with his/her non-dominant hand, while the cursor position is controlled by the user's dominant hand. Some bimanual systems [5, 17] provide higher-degree-of-freedom control by using motion- or rotation-sensitive input devices. With the SmartSkin sensor, the user can also control more than two points at the same time, and the shape of the arm or hand can be used as input. This is another approach to achieving higher-degree-of-freedom manipulation.

In contrast to two-handed interfaces, interaction techniques that are based on the use of multiple fingers have not been well explored. DualTouch [12] uses a normal touch panel to detect the position of tow fingers. Its resistive touch panel gives the middle position between two fingers when two positions are pressed, and assuming that the position of one finger is known (i.e., fixed to the initial position), the position of the other finger can be calculated. DualTouch can perform various interaction techniques such as "tapping and dragging", but due to this assumption of the initial position, most multiple-finger interfaces described in this paper are not possible.

CONCLUSION AND DIRECTIONS FOR FUTURE WORK

Our new sensing architecture can turn a wide variety of physical surfaces into interactive surfaces. It can track the position and shape of hands and fingers, as well as measure their distance from the surface. We have developed two working interactive surface systems based on this technology: a table and a tablet, and have studied various interaction techniques for them.

This work is still at an early stage and may develop in several directions. For example, interaction using multiple fingers and shapes is a very new area of human-computer interaction, and the interaction techniques described in this paper are just a few examples. More research is needed, in particular, focusing on careful usability evaluation.

Apart from investigating different types of interaction techniques, we are also interested in the following research directions.

Using a non-flat surface as an interaction medium. Places of interaction are not limited to a tabletop. Armrests or table edges, for example, can be good places for interaction, but have not been studied well as places for input devices. Placing SmartSkin sensors on the surface of "pet" robots, such as Sony's AIBO, is another possibility. The robot would behave more naturally when interacting with humans. Similarly, if a game pad were "aware" of how the user grasps it, the game software could infer the user's emotions from this information.

Combination with tactile feedback. Currently, a SmartSkin user can receive only visual feedback, but if SmartSkin could make the surface vibrate by using a transducer or a piezo actuator, the user could "feel" as if he/she were manipulating a real object (the combination of a touch panel and tactile feedback is also described by Fukumoto [3]). [1]

Use of transparent electrodes. A transparent SmartSkin sensor can be obtained by using Indium-Tin Oxide (ITO) or a conductive polymer. This sensor can be mounted in front of a flat panel display or on a rear-projection screen. Because most of today's flat panel displays rely on active matrix of transparent electrodes, they can be integrated with SmartSkin electrodes. This possibility suggests that in the future, display devices that will be interactive from the beginning and will not require "retrofitting" sensor elements into them.

We also want to make transparent tagged objects by combining transparent conductive materials with the use of capacitance tags as shown in Figure 15. This technology will enable creating interface systems such as "DataTiles" [18], a user can interact with the computer via the use of tagged physical objects and hand gestures.

Data communication between the sensor surface and other objects: Because the SmartSkin sensor uses a wave signal controlled by software, it is possible to encode this signal with data. For example, location information can be transmitted from a SmartSkin table, and a digital device such as a PDA or a cellular phone on the table can recognize this information and trigger various context-aware applications. The table could also encode and transmit a "secret key" to mobile devices on the table, and these devices can establish a secure network with this key.

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REFERENCES

1. Eric A. Bier, Maureen C. Stone, Ken Pier, William Buxton, and Tony DeRose. Toolglass and Magic Lenses: The see-through interface. In James T. Kajiya, ed-

[1] One interesting but unasked question is "Is it possible to provide tactile or similar feedback to a user whose hand is in the proximity of the surface, but not directly touching the surface?".

JX-367.007

(RX-367.007.) To the extent the reference itself describes that the use of ITO would be possible for "future work," such a statement indicates that it likely was not contemplated for that specific reference. In other words, if the simple disclosure of the use of ITO was sufficient, it would seem more likely that this would be entitled "alternatives" or "other embodiments" or some similar language. The description of ITO in the "Directions for Future Work" section appears to

indicate that it could be used[15] with the SmartSkin products, but that such use would require additional work. The uncertainty surrounding this disclosure fails to rise to the higher clear and convincing burden faced by Motorola.

Consequently, to the extent that Motorola's arguments relating to the layer limitation are based on SmartSkin's disclosure of using ITO for transparent conductive lines, the ALJ finds that SmartSkin also fails to disclose this limitation. (*See* RIB at 73.)

Therefore, based on the foregoing, the ALJ finds that Motorola has failed to show by the higher clear and convincing evidence burden that SmartSkin discloses the use of transparent conductive lines using ITO and discloses conductive lines on spatially separated layers.

3. The '430 Patent

(a) U.S. Patent No. 5,900,870 – The Malone Patent

U.S. Patent No. 5,900,870 to Malone et al. (the "Malone patent") is entitled "Object-Oriented Computer User Interface." (RX-289.) The Malone patent claims priority to an application filed on June 30, 1989, making it prior art to the '430 Patent under 35 U.S.C. § 102(e). (RX-289.) Apple does not dispute the prior art status of the Malone patent. (Tr. 1628:19-1629:4.) The Malone patent was not before the examiner during the prosecution of the '430 Patent. (Tr. 1629:13-17.)

Motorola argues that the Malone patent discloses each and every limitation of the asserted claims of the '430 Patent. (RIB at 165-174.) Staff agrees. (SIB at 122-125.)

The Malone patent describes Object Lens, which is a software system that lets a user view and work with objects of any type. (RX-289 at 4:49-64.) As the specification of the Malone patent explains:

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[15] As will be discussed *infra,* this disclosure in SmartSkin supports a finding that using ITO would have been obvious to one of ordinary skill in the art. (*See* Section VI.C.2.)

> Users of the Object Lens system can create, modify, retrieve, and display objects that represent many physically or conceptually familiar things such as messages, people, meetings, tasks, manufactured parts, and software bugs. The system provides an interface to an object-oriented database in the sense that (1) each object includes a collection of fields and field values, (2) each object type has a set of actions that can be performed upon it, and (3) the objects are arranged in a hierarchy of increasingly specialized types with each object type "inheriting" fields, actions, and other properties from its "parents."

(*Id.* at 5:35-45.) One of the important features of Object Lens is that a user can create "agents," which have rules that describe different properties of objects and can act on objects that match those properties, without the user needing to explicitly act on each object himself. (*Id.* at 6:57-7:7:6; *see also* Tr. 1631:24-1632:11.)

Motorola argues that in his direct witness statement, Dr. Locke demonstrated that the Malone patent discloses each limitation of claims 1, 3 and 5 of the '430 Patent and, therefore, Dr. the Malone patent anticipates all of the asserted claims of the '430 Patent. (RIB at 165 (citing RX-1874C at Q/A 160-175 & Appendix 13; *see also* Tr. 1215:22-1217:9.) Motorola argues that Dr. Balakrishnan and Apple did not dispute that the Malone patent discloses limitations (a), (b), and (c) of claim 1, as well as the additional limitations of dependent claims 3 and 5. (RIB at 165 (citing CX-568C at Q/A 91-107; CDX-8.017; Tr. 1634:8-13, 1636:10-24, 1637:20-1638:4; 1682:24-1684:9).) Motorola argues that the only limitation that Dr. Balakrishnan alleges is not disclosed by the Malone patent is "adding support for hardware and software components to the operating system" of limitation (d) of Claim 1. (CX-568C at Q/A 91-107; CDX-8.017; Tr. 1638:13-18.)

Indeed, Apple argues that the Malone patent does not disclose, enable or render obvious the "adding support for hardware and software components to the operating system" limitation. (CIB at 186-187; CRB at 74-76.) Specifically, Apple argues that "Malone did not disclose or enable the 'adding support' step (d)." (CIB at 186.) Apple argues that the Malone patent fails

because "Malone discloses an application-level program that runs on top of an operating system (not an operating system itself, as required by the claims) that folders objects by properties, but does not add support, or anything else, to an operating system." (CIB at 186.)

The ALJ finds that Motorola has shown by clear and convincing evidence that the Malone patent discloses "adding support for hardware and software components to the operating system." The evidence shows that the Malone patent expressly discloses the Object Lens system that is part of the operating system to which support can be added for hardware and software components:

(i) The Malone Patent Discloses Adding Support To The Operating System

As discussed above in relation to indefiniteness, Dr. Balakrishnan identified the smart folder concept as one instance in the '430 Patent demonstrating the addition of support. As he explained, "[t]here are at least three distinct situations in the patent where support is added for components. . . . The third is for components that are on the system but must be collected and tracked, for example in smart folders. Beyond the typical ***smart foldering functionality***, these components are supported throughout the system, for example by ***permitting the system to provide notifications that components have been added, removed, or changed***." (CX-201C at Q/A 100 (emphasis added).) Indeed, the smart folder concept is identified by the specification as a preferred embodiment. (JX-1 at 2:26-27; 12: 67-13:7; Fig. 9; *see also* CX-568C at Q/A 50.)

Dr. Balakrishnan also explained that "the locator framework facilitates access to components that have been updated through a notification system that also uses the system to unify knowledge about components and access to components." (CX-568C at Q/A 52.) In fact, "[p]ublishing is a ***primary way*** this [adding support] is accomplished, under either [Apple's or

the Staff's] construction." (*Id.* at Q/A 53 (emphasis added).) Indeed, in discussing the "Smart Folder" disclosure in the '430 Patent, Dr. Balakrishnan stated that:

> "[S]mart folder can utilize the fact that support has been added to the operating system to enable notification throughout the system for changes in components at the system level." As the patent describes, the smart folder requests the locator to notify it of changes. The support that is added is in the locator framework, and this is described in more detail in the code provided in columns 9 through 12, where the locator framework is invoked to both perform property queries and to keep track of updates to components at a system level so that it can provide notifications when clients create an "interest" in components.

(CX-568C at Q/A 50.)

The Malone patent discloses the same notification and publishing functionalities, including the smart folder concept identified by Dr. Balakrishnan as examples of "adding support." (Tr. 1217:10-1219:22.) The Object Lens system disclosed in the Malone patent utilizes "agents" to collect objects[16] to put into a folder:

> Folders also have a type of object that they prefer to contain; the user is asked to identify this type when a new folder is created. Finally, ***folders can also have a selection rule which can be used as a kind of 'agent on special assignment' to collect objects to put into the folder.***

(RX-289 at 23:29-35 (emphasis added).) The "agents" employed in the Object Lens systems can perform a variety of tasks, including retrieving, classifying and deleting objects automatically:

> Users of the Object Lens system can create rule-based "agents" that provide specifications for processing information automatically on behalf of their users. . . . ***When an agent is triggered it applies a set of rules to a specified collection of objects. If an object satisfies the criteria specified in a rule, the rule performs some specified action. These actions can be general actions such as retrieving, classifying, mailing, and deleting objects or object-specific actions such as loading files or adding events to a calendar.***
>
> The agents in Object Lens are "autonomous" in the sense that once they have been created, they can take actions without the explicit attention of a human user.

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[16] Dr. Balakrishnan admitted that the objects described in the Malone patent are software components. (Tr. 1652:16-18; 1656:11-16; 1683:25-1684:3.)

(RX-289 at 6:57-7:9 (emphasis added).) Thus, through the use of agents employing automatic selection rules, the Malone patent teaches automatically collecting objects in a folder based on a particular search criterion. Indeed, Dr. Balakrishnan admitted that the Malone patent teaches the "same sort of notification" as the smart folder example of the '430 Patent. (Tr. 1682:1-8; *see also id.* at 1644:1-9; 1684:4-9.)

The ALJ finds that the Malone patent provides numerous examples of how these automatic selection agents are employed by the Object Lens system. First, the Malone patent describes the collection of overdue tasks into an "Overdue Tasks" folder every night at midnight:

> The Object Lens system uses rule-based agents to perform these automatic actions. For example, FIG. 20 shows an agent that maintains a folder of "Overdue Tasks." Every night at midnight, this agent is automatically triggered and searches the "*All Tasks" folder, ***a system-maintained folder*** that contains all task objects in the local workstation. When the agent finds tasks whose due date has passed, it moves them into the Overdue Tasks folder.

(RX-289 at 18:24-31 (emphasis added).) Similarly, the Malone patent discloses an example in which a notification is provided whenever objects that support a position entered by the user are added to a folder:

> The last step in our example is to add intelligent agents to help search and modify the network of nodes. For instance, FIG. 16 shows an agent like one you might use to ***notify*** you whenever people add arguments that support positions you have entered. ***This agent is triggered automatically when new objects are added to the folder containing the discussion of interest.*** FIG. 17 shows the rule this agent uses to select the arguments that support a specific person's positions. This rule illustrates how embedded descriptions can be used to specify structural queries that depend on the link structure in the network as well as on the contents of individual nodes.

(RX-289 at 17:47-61 (emphasis added); *see also* Tr. 1217:19-1218:16.) The ALJ finds these examples to be indistinguishable from the examples that Dr. Balakrishnan set forth as "adding support." (*See* CX-201C at Q/A 100; CX-568C at Q/A 50, 52; Tr. 1211:9-1212:22.) Like the smart folder preferred embodiment of the '430 Patent, both examples from the Malone patent use

specific search criteria to identify objects having desired attributes or characteristics and then provide automatic notifications whenever objects satisfying those criteria are added to the system. (*Compare* JX-1 at 12:67-13:7 *with* RX-289 at 18:24-31; 17:47-61.)

In addition to the specific smart folder embodiments, the Malone patent also includes an example of creating links to various objects as a means of providing system level notification. (Tr. 1646:12-1647:8; 1656:17-1657:20.) In this example, links between new mail objects and the New Mail folder are created whenever mail is retrieved:

> In some cases, agents can take actions automatically on behalf of their users. For instance, FIG. 4 shows an example of a simple agent designed to help a user process incoming mail. When an agent is triggered, it applies a set of rules to a collection of objects in a folder. The agent in FIG. 4 is applied to objects in the New Mail folder and is triggered by the arrival of new mail. That is, when mail is retrieved to the workstation, ***the mail program automatically inserts links to the new messages into the user's New Mail folder and these New Links trigger the agen***t. In the current version of Object Lens, two other kinds of automatic triggers are available: Daily at Midnight, and On the Hour.

(RX-289 at 11:6-17 (emphasis added).) The ALJ finds that the creation of "links" between different objects is the same functionality that Dr. Balakrishnan pointed to in the Accused '430 Products as satisfying the "adding support" limitation of element (d) of the '430 Patent. (Tr. 481:16-482:6, 485:4-11.)

Apple argues that "Dr. Locke agreed in his witness statement, and again at the hearing, that smart foldering systems like Malone did not disclose or enable the 'adding support' step (d) of the claims. Dr. Locke specifically agreed that '***smart foldering does not even relate to, much less enable***' step (d) of claim 1 of the '430 Patent." (Tr. 1210:19-24.) However, Dr. Locke explained that the opinion Apple relies on was in relation to Dr. Locke's opinion that the "adding support" was indefinite. (Tr. 1211:9-1212:16.) Dr. Locke further explained that his invalidity opinion was premised on Dr. Balakrishnan's infringement opinion – the one the ALJ has adopted in this investigation – to determine whether the Malone patent anticipated the claims. (*Id.*)

There is nothing improper with such an approach. Apple's argument is, therefore, without merit.

Accordingly, the ALJ finds that Motorola has shown by clear and convincing evidence that the Malone patent discloses the addition of support as claimed in the '430 Patent and in light of Apple's infringement allegations. The remaining question is whether this support is added to the operating system as the claims require.

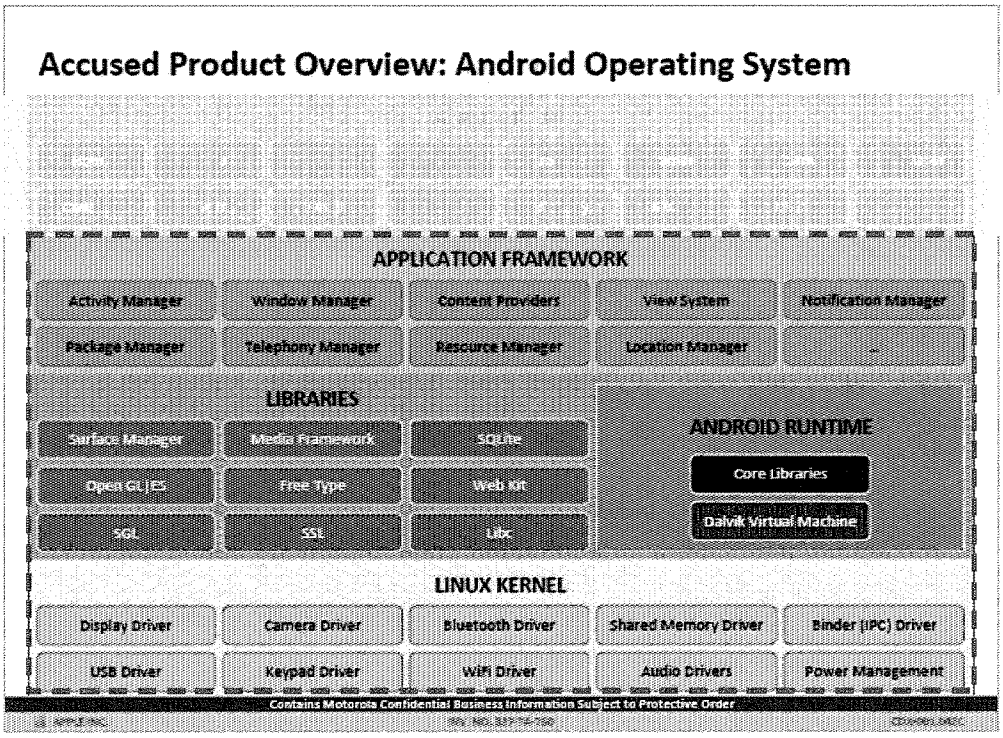
(ii) The Object Lens System Described In The Malone Patent Is Part Of The Operating System

Apple's other attempt to distinguish the to distinguish the '430 Patent from the Malone patent is the argument that the Object Lens system described by the Malone patent does not add support ***to the operating system***. According to Dr. Balakrishnan, "[i]n the Malone reference, it is a separate system that doesn't involve the operating system directly[,]" (Tr. 1661:20-1663:4) and Object Lens is a self-contained program that "sits on top" of an operating system but "has nothing to do with the operating system per se." (Tr. 1673:20-1674:13.) Apple contends that according to the Malone patent, it is a program not an operating system: "Object Lens is an object oriented, event-driven program." (RX-289 at 18:32-35.) Apple asserts that the Malone patent simply describes a way for an application to filter objects like email or contacts into different folders. (CX-568C.033 at Q/A 97.)

Apple contends that the Malone patent does describe a computer "system," and it describes components that are a part of its "system," but that system (including the automatic agents that folder email) is simply a program that must run on top of an "operating system" without adding to it. Apple states that Dr. Balakrishnan explained that the mail functionality in the Malone patent is not itself a part of the operating system, but that it could make a call to the operating system. (Tr. 1646:9-1647:7.) Apple concludes that even under Motorola's theory, the

Malone Object Lens system is separate from the operating system and must make calls on the operating system. (CRB at 76.)

Motorola refocuses the attention on Dr. Balakrishnan's infringement allegations. Motorola notes that for infringement Dr. Balakrishnan testified that, in the context of the '430 Patent, the operating system includes all software layers with the exception of applications. (CX-201C at Q/A 114; Tr. 1670:6-1671:3.) Mr. Nguyen, the named inventor offered similar testimony that "[i]n the context of the ['430] patent, 'operating system' means everything from the desktop to the application layer to the kernel." (JX-469C at 14:2-4; *see also id.* at 16:7-25.) Dr. Balakrishnan's demonstratives illustrate that for the operating system of the Accused '430 Products includes the Linux-based kernel, libraries and the application framework, including the Activity Manager and the Package Manager:



(CDX-1.042C; *see also* CX-201C at Q/A 114; Tr. 1670:6-1671:3; 1674:14-20.)

The ALJ agrees with Motorola that the descriptions in the Malone patent demonstrate that Apple's argument is merely one of semantics. Based on Apple's infringement argument, the "operating system" extends up to the level where the object lens operates and far beyond the low level operations that Apple seems to contend it does for validity purposes. The ALJ finds that the evidence clearly demonstrates that the Object Lens system should be characterized as being part of the operating system. (*See* CX-201C at Q/A 114; Tr. 1670:6-1671:3.)

This is clearly supported by the disclosure in the Malone patent. The Malone patent begins by stating that "[t]he present invention relates to ***computer systems*** generally, and specifically to the portions of ***computer systems*** designed to display and to make available to the users the information stored therein." (RX-289 at 2:50-53 (emphasis added).) The Malone patent teaches that the capabilities described in the patent can be implemented through the use of a "general framework" and that the Object Lens system creates "a common, connected user environment [that] permits users to share information and coordinate activities more fully than with prior art systems." (RX-289 at 16:20-21; 14:27-31; *see also* Tr. 1248:21-1249:7.)

Moreover, in the "System Architecture" section, the Malone patent explains that "the heart of Object Lens is the Object Manager" and describes the functions performed by the Object Manager:

> ***[T]he Object Manager is responsible for keeping track of all classes and class-instances and their links to each other. It also keeps track of the current state of each object and helps the objects handle messages which they receive by providing support functions for their methods.*** The Object Manager provides the Forms Manager with the information it needs to present a form. The Object Manger also handles saving and loading objects from permanent storage in the database. In the future, the Object Manager will work with a shared database to do object locking and version control.

(RX-289 at 18:66-19:9.) The System Architecture section also describes the Object Lens system's "Agent Manager," which "knows about each agent's automatic triggers. It includes

processes that watch for time-based triggers and receives messages from the Object Manager about New Links and Object Updates. It also receives messages from the Object Manager about agents which have been manually triggered." (RX-289 at 19:38-43.) The Object Manager and Agent Manager described in the Malone patent perform many of the same functionalities as the Activity Manager and Package Manger that Dr. Balakrishnan identified as being part of the operating system in the Accused '430 Products. (Tr. 1672:16-23; 1674:21-1675:2.) Like the Activity Manager and Package Manger, the Object Manager and Agent Manager handle and perform queries for components and manage the links between various components on the system. (*Compare* RX-289 at 18:66-19:9; 19:38-43 (describing Object Lens functionality) *with* CX-201C at Q/A 126, 134 & 201 (describing functionality of Activity Manager and Package Manger).)

Moreover, the Malone patent distinguishes the Object Lens system from the "traditional model of a user environment" in which "[a]n application is launched from within an operating environment, which runs on top of the Operating System, which controls the hardware." (RX-289 at 14:17-20.) The Object Lens system is a "new model" for computer user environments that "permits users to share information and coordinate activities more fully than with prior art systems." (*Id.* at 14:28-31.) Object Lens achieves these added benefits by "creating a common, connected user environment" that is disclosed in figure 21C of Malone. (*Id.* at 14:27-29.) Thus, the ALJ finds the evidence shows that the type of architecture disclosed in the Malone patent is consistent with the claim language as construed by Apple and, further, with the architecture Apple now accuses of infringement.

Moreover, the ALJ notes that the specific smart folder examples contained in the Malone patent contradict Dr. Balakrishnan's opinion that the Object Lens system is separate from the

operating system described in the '430 Patent. The "Overdue Tasks" example states that the "'*All Tasks' folder [is] a ***system-maintained*** folder" that is then modified by Object Lens. (RX-289 at 18:27-28 (emphasis added).)

The ALJ notes that Dr. Balakrishnan's opinion regarding whether the Object Lens is part of the operating system is inconsistent because he did not contest limitation (b) requires "querying ***the operating system*** to identify one or more hardware components that meet the target hardware or software component search criteria." (JX-1 at 13:47-50 (emphasis added); Tr. 1634:8-13, 1636:18-1637:22.) It is also difficult to reconcile Dr. Balakrishnan's testimony at the hearing that smart folders have "nothing to do with the operating system" (Tr. 1644:1-9), with his earlier testimony regarding how the smart folder examples in the specification support the disclosure of "adding support" (*See* CX-201C at Q/A 100; CX-568C at Q/A 50, 52). This leads the ALJ to give less weight to his testimony because it appears to offer one opinion to defeat indefiniteness and another to fend off anticipation. This conflict undermines Dr. Balakrishnan's credibility because, unlike Dr. Locke, the ALJ has adopted his earlier claim construction and did not reject it. Having won one battle in this litigation using a particular position, Dr. Balakrishnan cannot abandon that position to win another without in some way damaging his credibility – that is, unfortunately for him, the burden of success.

Weighing all of this evidence, the ALJ finds that the Malone patent does disclose adding support to the operating system. The ALJ finds that all of the evidence clearly shows that the Object Lens in the Malone patent is properly considered part of the operating system.

The Malone patent discloses all of the limitations of claims 1, 3 and 5 of the '430 patent, including adding support to the operating system. Accordingly, all of the asserted claims are anticipated by the Malone patent.

(b) UNIX *find*

UNIX *find* is a command found on the UNIX operating system that allows users to search for files based on their names and/or contents, and includes functionality for performing operations on the results of the search. (RX-1874C at Q/A 131.) Motorola argues that among the functionalities included in the UNIX *find* command is the ability to print, load and execute files returned by the *find* command without rebooting the operating system. (*Id.*) The *UNIX Primer Plus* ("Waite") is a book by Mitchell Waite et al. that describes the UNIX *find* command. (RX-735.) Waite was published in the United States in 1990, making it prior art to the '430 Patent under 35 U.S.C. §§ 102(a) and (b). (*Id.*) Dr. Balakrishnan conceded that the UNIX operating system and the UNIX *find* command is prior art. (Tr. 1685:12-23.)

Motorola argues that UNIX *find* discloses each and every limitation of the asserted claims of the '430 Patent. (RIB at 174-178.) Staff agrees. (SIB at 121-122.)

Motorola argues that Dr. Locke explained why the UNIX *find* command anticipates all of the asserted claims of the '430 Patent. (RX-1874C at Q/A 131-159 & Appendix 6; *see also* Tr. 1223:7-1224:11.) In his rebuttal witness statement, Dr. Balakrishnan disputed that the UNIX *find* command discloses any of the limitations of claim 1.[17] (CX-568C at Q/A 60-90; CDX-8.014.) Motorola argues that Dr. Balakrishnan's opinions in his witness statement directly contradict his deposition testimony. (RX-1874C at Q/A 36 (*citing* Balakrishnan Dep. Tr. at 156:21-157:11); Locke RDX-16.) Specifically, in his rebuttal witness statement, Dr. Balakrishnan took the position that the UNIX *find* command not only does not disclose "properties" but also does not disclose "returning components" under limitation (c) or "adding support" under the preamble and limitation (d). (CX-568C at Q/A 60-90; CDX-8.014.)

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[17] Motorola argues that Dr. Balakrishnan did not dispute that the UNIX *find* command discloses the additional limitations found in dependent claims 3 and 5. (CX-568C at Q/A 60-90.)

The ALJ finds that UNIX *find* fails to anticipate the asserted claims of the '430 Patent because Motorola has failed to show by clear and convincing evidence that UNIX *find* discloses "adding support for hardware or software components to the operating system."

Apple argues that the find command can perform a number of rudimentary actions on files, none of which remotely "add support" to the operating system. (CIB at 184.) Motorola argues that Dr. Locke explained in his direct witness statement that he "do[es] not indicate that merely execut[ing] a file adds support to an operating system. Waite discloses that the UNIX find command allows the user to apply any command to the file. . . . ***This allows literally any operating system command to have access to the identified components***." (RIB at 177 (quoting RX-1874C at Q/A 155 (emphasis added); *see also* Tr. 1222:7-1225:13.) Motorola argues that Dr. Locke explained during the hearing that the operating system commands enabled by the –*exec* option include copying or moving the files returned as a result of a search, as well as executing any returned file that is executable. (RIB at 177 (quoting Tr. 1223:7-1224:11).) Motorola argues that when UNIX *find* causes a file or an application to execute, the UNIX system must generate pointers and other references to the executed component on the operating system. (RIB at 177 (citing Tr. 1223:24-1224:7).) Motorola argues that the UNIX *find* command also has the ability to place the files returned as a result of a search into a folder and to be incorporated into a shell script that would enable the system to periodically check for and add or remove components that meet the search criteria. (RIB at 177 (citing Tr. 1223:7-1225:13).) Apple argues that while UNIX could use the –exec command to "execute" a program, as Dr. Balakrishnan explained, merely executing an application in this conventional sense does not "add support" for the application to the operating system because it executes the application in

memory without adding anything to the operating system that enables access to the application by other parts of the system. (CX-568C at Q/A 76.)

While the ALJ is not entirely convinced by Dr. Balakrishnan's testimony, the ALJ finds that the evidence presented by Motorola is not quite sufficient to meet the clear and convincing standard of proof. Dr. Locke's testimony by itself cannot carry the day in this case. Moreover, while the Waite reference was not itself before the examiner, UNIX is mentioned in the '430 Patent and the ALJ believes that this is an additional reason why the evidence presented here is not persuasive enough to meet the clear and convincing standard in this case. The evidence that Motorola presented does not rise to that level. Accordingly, the ALJ finds that UNIX *find* does not anticipate the asserted claims of the '430 Patent.

(c) The Bondy Patent

U.S. Patent No. 5,491,813 to Bondy et al. (the "Bondy patent") is entitled "Display Subsystem Architecture for Binding Device Independent Drivers Together Into a Bound Driver for Controlling a Particular Display Device." (RX-601.) The Bondy patent claims priority to an application filed on February 12, 1990. (*Id.*) The Bondy patent is therefore prior art to the '430 Patent under 35 U.S.C. § 102(e), which Apple does not dispute. The Bondy patent was not considered by the examiner during the prosecution of the '430 Patent. (JX-1.002.)

The Bondy patent describes a system to locate and dynamically bind device drivers based upon the particular graphics model being used. (RX-601 at Abstract; RX-1874C at Q/A 249.) The Bondy patent provides for a multi-step process to search for, retrieve and bind particular device drivers based upon the desired graphics model:

> The programming interface of the present invention is able to reconfigure itself by dynamically binding the desired graphics package with the required RMS features and device specific model instance driver for the display adapter being used. ***This process of dynamic binding uses a database or equivalent tabular***

> ***representation to: (1) locate the specific graphics model desired; (2) retrieve this model; and (3) bind the model to the (a) device driver code for the specific display adapter being utilized, and (b) the RMS function required by the particular graphics model.***

(RX-601 at 3:35-44 (emphasis added).) The searches for the desired graphics models in the system disclosed by the Bondy patent are performed based on the adapter and model IDs that are separate from the file system path:

> When the API desires access to the device drivers, a general GAI RMS call is invoked, to which is provided the ID of the display adapter 1, 2, 3, or 4. The ID and other parameters from the call are used to access a look up table or configuration file and find a file system path to the required resource object file. The object file of the resource is then loaded and the entry point code is executed.

(RX-601 at 6:7-13.)

Motorola argues that the Bondy patent discloses each and every limitation of the asserted claims of the '430 Patent. (RIB at 178-182.)

Motorola argues that Dr. Locke demonstrated that the Bondy patent discloses each limitation of claims 1, 3 and 5 of the '430 Patent and, therefore, the Bondy patent anticipates all of the asserted claims of the '430 Patent. (RIB at 178 (citing RX-1874C at Q/A 249-268 & Appendix 12).) Motorola argues that Dr. Balakrishnan opined that the Bondy patent does not disclose the limitations of claim 1 except for limitation (d), "adding support."[18] (CX-568C at Q/A 187-206; CDX-8.026.) However, Motorola argues that Dr. Balakrishnan's opinions that the Bondy patent does not disclose the other limitations of claim 1 are based entirely on the argument that the adapter and model IDs, by which the system in the Bondy patent searches for drivers, are intrinsic characteristics and therefore not "properties" in the context of the '430 Patent. (CX-568C at Q/A 202 (preamble); 193-194 (limitation (a)); 195-196 (limitation (b));

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[18] Motorola argues that Dr. Balakrishnan also did not dispute that the Bondy patent discloses the additional limitations found in dependent claims 3 and 5. (CX-568C at Q/A 187-206.)

197-198 (limitation (c)). Motorola argues that the adapter and model IDs assigned to the device drivers in the Bondy patent are not intrinsic to these drivers and, therefore, are "properties" even under Dr. Balakrishnan's definition of that term.

Indeed, Apple argues that the Bondy patent is another straightforward example of a system that relies on uniquely-identifying names rather than flexible, attached properties to match components. (CIB at 186-187; CRB at 74-76.) Specifically, Apple argues that the Bondy patent does not disclose "properties," "querying," or "returning." (CRB at 78-79.) However, a review of the testimony of Dr. Balakrishnan that Apple relies on for its assertion that the Bondy patent does not meet all of these element reveals that Dr. Balakrishnan's opinion is entirely based on the Bondy patent's alleged failure to disclose "properties." For example, Dr. Balakrishnan testifies that the Bondy patent does not meet the "querying" limitation because:

> Bondy '813 discloses the 'typical look up table' in Figure 4, which maps 'the location and name in the file system' for each driver to associate the right piece of code with the correct adapter and model. The conventional method of indexing resources is not remotely the same as the search method disclosed in the '430 where a framework that can assign properties to every component is employed. (CX-568C at Q/A 197.)

The ALJ finds that Apple's entire argument (despite its protestations) turns entirely on whether the Bondy patent discloses "properties." Because this claim element ripples through the other claim elements, all of these elements rise or fall together on the interpretation of "properties." (*See* CIB at 186 (noting the failure to disclose properties affects "querying" and "returning").)

The ALJ finds that Motorola has shown by clear and convincing evidence that Bondy discloses "properties." The evidence shows that the Bondy patent expressly discloses a locator system that uses properties to search for, query, and return software or hardware components:

(i) The Bondy Patent Discloses "properties"

The ALJ finds that, as Dr. Locke explained in his direct witness statement, the adapter and model IDs disclosed in the Bondy patent are system assigned numbers. (RX-601 at 8:42-46, Fig. 4.) In the Bondy patent, each display adapter and graphic model is stored in resource management services ("RMS") device driver library. (RX-601 at 3:19-23.) The RMS library utilizes a lookup table or a database to "find the path to the required model resource object file." (RX-601 at 3:39-40, 6:25-26.) Figure 4 shows a typical lookup table:

adapter	model	object file name
1	0	/usr/lpp/gai/adapter1/rms.o
1	1	/usr/lpp/gai/adapter1/2d.o
1	2	/usr/lpp/gai/adapter1/3dm1.o
1	3	/usr/lpp/gai/adapter1/3dm2.o
2	0	/usr/lpp/gai/adapter2/rms.o
2	1	/usr/lpp/gai/adapter2/2d.o

(RX-601 at Fig. 4, 8:35-37.) As can be seen in Figure 4, the adapter and model IDs are simply numbers that are assigned by the system to a particular device driver as they are added to the lookup table. They are separate from the file path and name, which is also stored in the lookup table.

The ALJ finds that under the ALJ's construction, which is plain and ordinary meaning, the adapter and model IDs are characteristics of the particular device driver that allow it to be identified and retrieved.

Dr. Balakrishnan argued that the adapter and model IDs are not "properties" because "[t]he properties claimed in the '430 patent are attributes that are attached to a component, ***and describe the capabilities and contexts of the component.***" (CX-568C at Q/A 194 (emphasis

added).) However, as was discussed in relation to the claim construction, there is nothing in either the '430 Patent or Apple's proposed construction that requires "properties" to describe the capabilities and context of the component. (*See supra* Section IV.E.3.)

Apple's argument boils down to the following: the Bondy patent is a "type of conventional system is very different from using a framework that can assign properties to every component and then search for items based on those properties." (CIB at 178.) Unfortunately, the claims of the '430 Patent do not mention or require the use of a "framework" or the assignment of properties. They were written extremely broadly and none of the claims, specification, or prosecution history contain any support for reading in the limitations that Apple seeks. Apple based its entire argument on post-hoc inventor testimony. Accordingly, because the ALJ finds that the Bondy patent discloses "properties" within the plain meaning of that term, the ALJ finds that Motorola has demonstrated by clear and convincing evidence that the Bondy patent anticipates the asserted claims of the '430 Patent.

C. Obviousness

Included within the presumption of validity is a presumption of non-obviousness. *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 714 (Fed. Cir. 1984). Obviousness is grounded in 35 U.S.C. § 103, which provide, *inter alia*, that:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negative by the manner in which the invention was made.

35 U.S.C. § 103(a). Under 35 U.S.C. § 103(a), a patent is valid unless "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary

skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a). The ultimate question of obviousness is a question of law, but "it is well understood that there are factual issues underlying the ultimate obviousness decision." *Richardson-Vicks Inc.*, 122 F.3d at 1479; *Wang Lab., Inc. v. Toshiba Corp.*, 993 F.2d 858, 863 (Fed. Cir. 1993).

Once claims have been properly construed, "[t]he second step in an obviousness inquiry is to determine whether the claimed invention would have been obvious as a legal matter, based on underlying factual inquiries including: (1) the scope and content of the prior art, (2) the level of ordinary skill in the art, (3) the differences between the claimed invention and the prior art; and (4) secondary considerations of non-obviousness" (also known as "objective evidence"). *Smiths Indus. Med. Sys., Inc. v. Vital Signs, Inc.*, 183 F.3d 1347, 1354 (Fed. Cir. 1999), citing *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). The ultimate determination of whether an invention would have been obvious is a legal conclusion based on underlying findings of fact. *In re Dembiczak*, 175 F.3d 994, 998 (Fed. Cir. 1999).

Obviousness may be based on any of the alleged prior art references or a combination of the same, and what a person of ordinary skill in the art would understand based on his knowledge and said references. If all of the elements of an invention are found, then:

> a proper analysis under § 103 requires, inter alia, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making or carrying out, those of ordinary skill would have a reasonable expectation of success. *Both the suggestion and the reasonable expectation of success must be founded in the prior art, not in the applicant's disclosure.*

Velander v. Garner, 348 F.3d 1359, 1363 (Fed. Cir. 2003) (emphasis added) (internal citations omitted).

The critical inquiry in determining the differences between the claimed invention and the prior art is whether there is a reason to combine the prior art references. *See C.R. Bard v. M3 Sys.*, 157 F.3d 1340, 1352 (Fed. Cir. 1998). For example:

> *[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.* Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, *it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered,* and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

KSR Int'l Co. v. Teleflex, Inc., 550 U.S. 398, 418-19 (2007) (emphasis added). The Federal Circuit case law previously required that, in order to prove obviousness, the patent challenger must demonstrate, by clear and convincing evidence, that there is a "teaching, suggestion, or motivation to combine. The Supreme Court has rejected this "rigid approach" employed by the Federal Circuit in *KSR Int'l Co. v. Teleflex Inc.*, 500 U.S. 398 (2007), 127 S.Ct. 1727, 1739. The Supreme Court stated:

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. Sakraida and Anderson's-Black Rock are illustrative–a court must ask whether the improvement is more than the predictable use of prior art elements according to their established function.
>
> Following these principles may be more difficult in other cases than it is here because the claimed subject matter may involve more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement. Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands

> known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicitly. See *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusions of obviousness"). As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.
>
> [. . .]
>
> The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection to advance that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.

KSR, 550 U.S. at 417-419; 127 S.Ct. at 1740-41. The Federal Circuit has harmonized the KSR opinion with many prior circuit court opinions by holding that when a patent challenger contends that a patent is invalid for obviousness based on a combination of prior art references, "the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, or carry out the claimed process, and would have had a reasonable expectation of success in doing so." *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007)(citing *Medichem S.A. v. Rolabo S.L.*, 437 F.3d 1175, 1164 (Fed. Cir. 2006)); *Noelle v. Lederman*, 355 F.3d 1343, 1351-52 (Fed. Cir. 2004); *Brown & Williamson Tobacco Corp. v. Philip Morris, Inc.*, 229 F.3d 1120, 1121 (Fed .Cir. 2000) and *KSR*, 127 S.Ct. at 1740 ("a

combination of elements 'must do more than yield a predictable result'; combining elements that work together 'in an unexpected and fruitful manner' would not have been obvious"). Further, a suggestion to combine need not be express and may come from the prior art, as filtered through the knowledge of one skilled in the art. *See Certain Lens-Fitted Film Pkgs.*, Inv. No. 337-TA-406, Order No. 141 at 6 (May 24, 2005).

"Secondary considerations," also referred to as "objective evidence of non-obviousness," must be considered in evaluating the obviousness of a claimed invention, but the existence of such evidence does not control the obviousness determination. *Graham*, 383 U.S. at 17-18. A court must consider all of the evidence under the *Graham* factors before reaching a decision on obviousness. *Richardson-Vicks Inc.*, 122 F.3d at 1483-84. Objective evidence of non-obviousness may include evidence of the commercial success of the invention, long felt but unsolved needs, failure of others, copying by others, teaching away, and professional acclaim. *See Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 894 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 857 (1984); *Avia Group Int'l, Inc. v. L.A. Gear California*, 853 F.2d 1557, 1564 (Fed. Cir. 1988); *In re Hedges*, 783 F.2d 1038, 1041 (Fed. Cir. 1986); *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565 (Fed. Cir. 1986), *cert. denied*, 479 U.S. 1034 (1987). The burden of showing secondary considerations is on the patentee and, in order to accord objective evidence substantial weight, a patentee must establish a nexus between the evidence and the merits of the claimed invention; a *prima facie* case is generally set forth "when the patentee shows both that there is commercial success, and that the thing (product or method) that is commercially successful is the invention disclosed and claimed in the patent." *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995); *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988), cert. denied, 488 U.S. 956 (1988); *Certain Crystalline*

Cefadroxil Monohydrate, Inv. No. 337-TA-293, Comm'n Op. (March 15, 1990). Once a patentee establishes nexus, the burden shifts back to the challenger to show that, *e.g.*, commercial success was caused by "extraneous factors other than the patented invention, such as advertising, superior workmanship, etc." *(Id.)* at 1393.

Generally, a prior art reference that teaches away from the claimed invention does not create *prima facie* case of obviousness. *In re Gurley*, 27 551, 553 (Fed. Cir. 1994); *see also Andersen Corp. v. Pella Corp.*, No. 2007-1536, 2008 U.S. App. LEXIS 24087, *13-18 (Fed. Cir. Nov. 19, 2008); *Certain Rubber Antidegradants*, Inv. No. 337-TA-533 (Remand), Final ID (Dec. 3, 2008) (stating, "*KSR* reaffirms that obviousness is negated when the prior art teaches away from the invention.")). However, the nature of the teaching is highly relevant. *Id.* "A reference may be said to *teach away when* a person of ordinary skill, upon reading the reference, would be *discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant*." *Id.* (emphasis added). For example, "a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant." *Id.*

1. The '828 Patent

Motorola argues that even if the Desai Thesis or the Bisset '352 Patent are found not to anticipate the asserted claims, the claims are rendered obvious in light of the combination of Bisset and Desai. Motorola's discussion of obviousness is extremely cursory and it provides an insufficient explanation of why a person of ordinary skill in the art would be motivated to combine the Desai Thesis with Bisset. The ALJ finds that Motorola's argument appears to rest entirely on the fact that the two references are in the same field of art. (RRB at 58.) This is

simply insufficient to show by clear and convincing evidence that a skilled artisan would be motivated to combine these two references to render the asserted claims obvious.

Therefore, the ALJ finds that Motorola has failed to show by clear and convincing evidence that the '828 Patent is obvious.

2. The '607 Patent

Motorola argues that SmartSkin combined with Japanese Unexamined Patent Application Publication No. 2002-342033A ("Rekimoto '033") renders the '607 Patent obvious. (RIB at 74-77.) Staff agrees. (SIB at 93-95.) Staff further argues that SmartSkin itself would make it obvious to try to use transparent electrodes. (SIB at 89.)

Apple argues that the combination of SmartSkin and Rekimoto '033 does not render the asserted claims of the '607 Patent obvious because Motorola only cites to Figure 9 of Rekimoto '033 and this combination is contrary to Motorola's own expert's opinion. Apple further argues that the transparent limitations are not disclosed by the combination for the same reasons set forth *supra* in Section VI.B.2 (anticipation). As for the layer and glass limitation, Apple argues that the combination fails to disclose these limitations because (1) the sensor in Rekimoto '033 is not the same as the sensor in SmartSkin; (2) the motivation to combine is improper hindsight bias; and (3) Rekimoto '033 discloses only a single glass substrate and not the second and third glass member. (CIB at 144-146.)

As an initial matter, the ALJ finds that SmartSkin alone would render the use of transparent electrodes obvious. Specifically, while the ALJ found that SmartSkin did not sufficiently disclose using transparent electrodes to render the asserted claims of the '607 Patent invalid under anticipation, the ALJ finds that SmartSkin does meet the standard for obviousness for the use of transparent electrodes. The prior art reference *itself* discloses using transparent

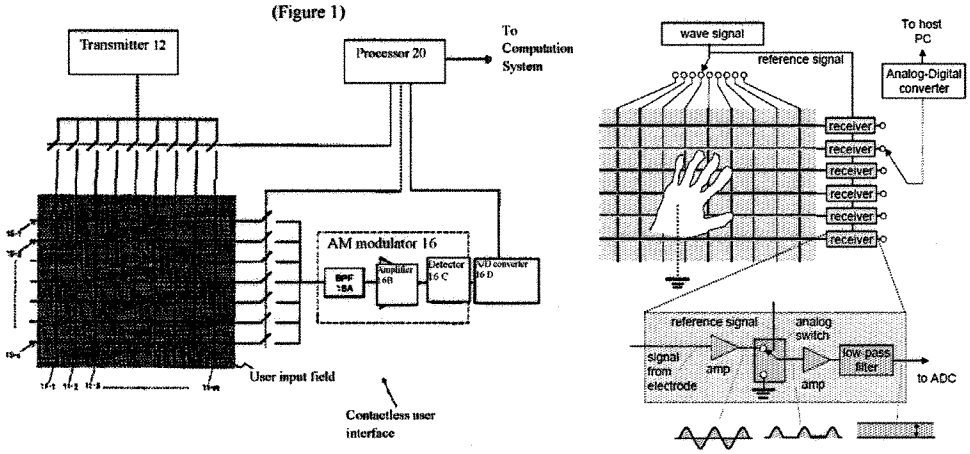
electrodes – thus, any motivation to use transparent electrodes is found within the reference itself. (*See supra* Section VI.B.2.) *SIBIA Neurosciences, Inc. v. Cadus Pharm. Corp.*, 225 F.3d 1349, 1356 (Fed. Cir. 2000) ("In appropriate circumstances, a single prior art reference can render a claim obvious. However, there must be a showing of a suggestion or motivation to modify the teachings of that reference to the claimed invention in order to support the obviousness conclusion. This suggestion or motivation may be derived from the prior art reference itself, from the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved.") (citations omitted). [redacted] The evidence shows that using ITO was well known at the time. (JX-367.007; CX-205C at Q&A 30.) Thus, the evidence shows that SmartSkin would motivate one of ordinary skill in the art to use transparent electrodes and that the use of materials, such as ITO, in creating the transparent electrodes was well known at the time. Therefore, the use of transparent electrodes would have been obvious to one of ordinary skill in the art.

The ALJ further finds that SmartSkin, in combination with Rekimoto '033, renders the asserted claims of the '607 Patent obvious. As noted *supra* in Section VI.B.2, Apple argued that SmartSkin failed to disclose the use of transparent electrodes, the layer limitations and the glass member limitation. As will be set forth *infra*, the ALJ finds that SmartSkin, in combination with Rekimoto '033, discloses these remaining, disputed limitations.

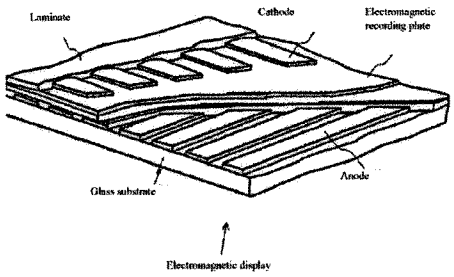
Rekimoto '033 is a Japanese patent application from inventor Junichi Rekimoto, who authored the SmartSkin publication. (RX-1888 at 2; JX-367.001.) Rekimoto '033 and SmartSkin also stem from the same institution namely Sony Corporation, and in particular Sony Computer Science Laboratories, Inc.. (RX-1888 at 2; JX-367.001.) Rekimoto '033 was filed May 21, 2001 and published November 29, 2002—within months of the publication of the SmartSkin reference. (RX-1888 at 2; JX-367.001.)

The evidence shows that a person of ordinary skill in the art would be able and motivated to combine the teaching of Rekimoto '033 regarding layers, glass, and transparent electrodes placed over an LCD display with SmartSkin for at least the reasons discussed above. Among other similarities, SmartSkin and Rekimoto '033 describe a multitouch, mutual capacitance, row and column sensor from the same inventor, made for the same employer, published in the same year, using the same detection circuitry. (RX-1885C, Q&A 321; 326; 337; Tr. 1521:17-1523:1.)

Rekimoto '033 discloses a method of recognizing multiple touching or approaching objects, such as fingers, and the shape of these objects using a mutual capacitance sensor comprising drive lines and sense lines on separate layers, which is the same subject matter disclosed in the SmartSkin publication. (RX-1888 at ¶ 74; JX-367.001; s*ee generally* RX-1885C, Wolfe Q/A 321; 326; 337.) The touch-sensing devices illustrated in Rekimoto '033 and SmartSkin are virtually identical:



(RX-1888 at Fig. 1; JX-367 at Fig. 2; RX-1885C at Q&A 321; 326; 337; Tr. at 1311:3-1324:23; 1522:14-1523:1.) Rekimoto '033 further explains that "a contactless user interface can be constituted with a liquid crystal display, electromagnetic LED, etc., in this invention." (RX-1888 at ¶ 24.) The touch sensor in Rekimoto '033 could "be applied in combination with other devices. For example, a user input device with a built-in display could be made by combining a flat-screen display such as a liquid crystal display or organic EL with the non-contact user input device 1." (RX-1888 at ¶ 62.) Furthermore, Figure 9 of Rekimoto '033 shows how the touch sensor can be formed from row and column conductors on separate layers, separated by an insulator,[19] placed on a glass substrate, over an electromagnetic display.



[19] Figure 9 of Motorola's certified translation of Rekimoto '033 appears to contain a mistranslation: "electronic recording plate" should be "insulating layer." The body of Rekimoto '033 describes Figure 9 as follows: In the example shown in the diagram, *the anode electrode layer and cathode electrode layer made of conductive polymer are laminated across an insulating layer* made of organic material. (RX-1888 at ¶ 64.)

(RX-1888 at Figure 9.) Thus, SmartSkin, in combination with Rekimoto '033, makes the layer limitations obvious. (RX-1888.)

As for the "glass member" limitation, the evidence shows that SmartSkin alone, and in combination with Rekimoto'033, disclose layers that are made of glass or plastic. SmartSkin describes printed circuit board electrodes on plastic, with a separate plastic cover sheet. (JX-367.004 and Fig. 9.) Rekimoto '033 discloses the use of glass substrates for the layers. (RX-1888 at Figure 9.)

Therefore, the ALJ finds that the evidence clearly and convincingly shows that the '607 Patent is obvious in light of SmartSkin in combination with Rekimoto '033.

a) Objective Indicia of Nonobviousness

As indicated above, one of the *Graham* factors that must be considered in an obviousness analysis, is "objective evidence of nonobviousness," also called "secondary considerations." *See Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1536 (Fed. Cir. 1983) ("Thus evidence arising out of the so-called 'secondary considerations' must always when present be considered en route to a determination of obviousness."). However, secondary considerations, such as commercial success, will not always dislodge a determination of obviousness based on analysis of the prior art. *See KSR Int'l*, 127 S.Ct. at 1745 (commercial success did not alter conclusion of obviousness).

Apple argues that the commercial success of the iPhone 4 and previous generations of iPhone devices, the iPad and iPod touch in the face of industry skepticism; the significant praise of the iPhone and its multi-touch touchscreen; and attempts to copy the iPhone4 rebuts any allegations of obviousness. (CIB at 147-152.) However, the ALJ finds that, even with the iPhone 4's commercial success, these secondary considerations cannot overcome the strong

showing of obviousness in this instance. *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1333 (Fed. Cir. 2009) ("Moreover, as we have often held, evidence of secondary considerations does not always overcome a strong prima facie showing of obviousness.); *Sundance, Inc. v. Demonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008) ("Secondary considerations of nonobviousness--considered here by the district court--simply cannot overcome this strong prima facie case of obviousness.") (citing *Agrizap, Inc. v. Woodstream Corp.*, 520 F.3d 1337, 1344 (Fed. Cir. 2008)); *see also Dystar Textilfarben GMBH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1371 (Fed. Cir. 2006) ("The presence of certain secondary considerations of nonobviousness are insufficient as a matter of law to overcome our conclusion that the evidence only supports a legal conclusion that claim 1 would have been obvious."). As set forth *supra*, the claimed invention of the '607 Patent would have been obvious to one of ordinary skill in the art, especially in light of the disclosures in SmartSkin and the related Japanese Application Rekimoto '033. [redacted]

Furthermore, the evidence shows that the iPhone's success stems from other product characteristics such as its slim profile, light weight, good battery life, attractive design, easy to use software, and availability of numerous popular applications, songs and videos. (RX-1885C at Q&A 343-347.) Thus, the required nexus between the commercial success of the iPhone 4 and the specific features covered by the '607 Patent does not exist.

Therefore, the ALJ finds that Apple has failed to overcome the strong showing of obviousness.

3. The '430 Patent

Motorola offers only conclusory assertions that the Malone patent, UNIX *find* and the Bondy patent render the asserted claims obvious. This is insufficient to meet its burden of showing obviousness by clear and convincing evidence. Accordingly, the ALJ finds that Motorola has not shown that the asserted claims are obvious.

D. Written Description

The first paragraph of 35 U.S.C. § 112 requires:

> The specification ***shall contain a written description of the invention***, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art … to make and use the same …

(emphasis added.)

The Federal Circuit has interpreted 35 U.S.C. § 112, ¶ 1, to require the patent specification to "describe the claimed invention so that one skilled in the art can recognize what is claimed." *Enzo Biochem, Inc. v. Gen-Probe Inc.,* 323 F.3d 956, 968 (Fed. Cir. 2002). In evaluating whether a patentee has fulfilled this requirement, the standard is that the patent's "disclosure must allow one skilled in the art 'to visualize or recognize the identity of' the subject matter purportedly described." *Id.* (quoting *Regents of Univ. of Cal. v. Eli Lilly & Co.,* 119 F.3d 1559, 1573 (Fed. Cir. 1997)); *see also Cordis Corp. v. Medtronic Ave, Inc.,* 339 F.3d 1352, 1364 (Fed. Cir. 2003).

Terms need not be used *in haec verba. Eiselstein v. Frank,* 52 F.3d 1035, 1038 (Fed. Cir. 1995). The written description requirement can be satisfied by "words, structures, *figures, diagrams,* formulas, etc." *Lockwood v. Am. Airlines, Inc.,* 107 F.3d 1565, 1572 (Fed. Cir. 1997) (emphasis added).

Motorola argues that under Apple's proposed construction of properties that the asserted claims of the '430 Patent are invalid for failure to provide an adequate written description. However, the ALJ rejected Apple's construction. Accordingly, the argument is moot.

E. Enablement

Section 112, ¶ 1 of Title 35 requires that the specification describe the manner and process of making and using the invention "in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same."

The issue of whether a disclosure is enabling is a matter of law. *Applied Materials, Inc. v. Advanced Semiconductor Materials America, Inc.*, 98 F.3d 1563, 1575 (Fed. Cir. 1996). "To be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *Genentech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997). "Patent protection is granted in return for an enabling disclosure of an invention, not for vague, intimations of general ideas that may or may not be workable." *Id.* at 1366. Although a specification need not disclose minor details that are well known in the art, "[i]t is the specification, not the knowledge of one skilled in the art, that must supply the novel aspects of an invention in order to constitute adequate enablement," and in so doing the specification cannot merely provide "only a starting point, a direction for further research." *Id.* On the other hand, "[i]t is not fatal if some experimentation is needed, for the patent document is not intended to be a production specification." *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 941 (Fed. Cir. 1990). "Undue experimentation" is "a matter of degree" and "not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable

amount of guidance with respect to the direction in which the experimentation should proceed ...." *PPG Industries, Inc. v. Guardian Industries Corp.*, 75 F.3d 1558, 1564 (Fed. Cir. 1996).

It is well-settled that in order to be enabling under Section 112, "the patent must contain a description sufficient to enable one skilled in the art to make and use the full scope of the claimed invention." *United States v. Teletronics, Inc.*, 857 F.2d 778, 785 (Fed. Cir. 1988); *see also Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 927 F.2d 1200, 1213 (Fed. Cir. 1991) (inventor's disclosure must be "sufficient to enable one skilled in the art to carry out the invention commensurate with the scope of his claims"). Section 112 requires that the scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification to such persons. *Application of Fischer*, 427 F.2d 833, 839 (C.C.P.A. 1970).

Motorola argues that under Apple's proposed construction of properties that the asserted claims of the '430 Patent are invalid for failure to provide an adequate enabling disclosure. However, the ALJ rejected Apple's construction. Accordingly, the argument is moot.

F. Best Mode[20]

Section 112, ¶ 1 of Title 35 of the United States Code sets out the best mode requirement, stating in relevant part that "[t]he specification shall contain . . . and shall set forth the best mode contemplated by the inventor of carrying out the invention." 35 U.S.C. § 112 ¶ 1. The Court of Appeals for the Federal Circuit has held that "[t]he purpose of the best mode requirement is to ensure that the public, in exchange for the rights given the inventor under the patent laws, obtains

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[20] The ALJ notes that the Leahy-Smith American Invents Act, which was enacted on September 16, 2011, removes best mode as an affirmative defense to patent infringement. However, this provision only applies to proceedings commenced on or after its enactment, thus best mode is still available an affirmative defense in this investigation. See Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 15(a)(3)(A) (2011) (explaining that the failure to disclose the best mode "shall not be a basis on which any claim of a patent may be canceled or held invalid or otherwise unenforceable").

from the inventor a full disclosure of the preferred embodiment of the invention." *Dana Corp. v. IPC Ltd. Partnership*, 860 F.2d 415, 418 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1067 (1989). The determination of whether the best mode requirement is satisfied is a question of fact, which must be proven by clear and convincing evidence. *Transco Products Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 559-60 (Fed. Cir. 1994).

In determining compliance with the best mode requirement, two inquires are undertaken. The first inquiry is whether, at the time of filing the patent application, the inventor possessed a best mode of practicing the invention. *Eli Lilly and Co. v. Barr Laboratories, Inc.*, 251 F.3d 955, 963 (Fed. Cir. 2001); s*ee also Liquid Dynamics Corp. v. Vaughan Co., Inc.*, 449 F.3d 1209, 1223 (Fed.Cir. 2006); *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1535 (Fed. Cir. 1987) (The specificity of disclosure necessary to meet the best mode requirement is determined "by the knowledge of facts within the possession of the inventor at the time of filing of the application."). This first inquiry is subjective and focuses on the inventor's state of mind at the time the patent application was filed. *Eli Lilly*, 251 F.3d at 963. The second inquiry is, if the inventor did possess the best mode, whether the inventor's disclosure is adequate to enable one of ordinary skill in the art to practice the best mode of the invention. *Id.* This second inquiry is objective and depends on the scope of the claimed invention and the level of skill in the relevant art. *Id.*

The "contours of the best mode requirement are defined by the scope of the "claimed invention" and thus, the first task in any best mode analysis is to define the invention. *Northern Telecom Ltd. v. Samsung Electronics Co., Ltd.*, 215 F.3d 1281, 1286-87 (Fed. Cir. 2000). "The definition of the invention, like the interpretation of the patent claims, is a legal exercise, wherein the ordinary principles of claim construction apply." *Id.* Once the invention is defined, the best mode inquiry moves to determining whether a best mode of carrying out that invention was held

by the inventor. If so, that best mode must be disclosed. In *Pfizer, Inc. v. Teva Pharmaceuticals USA, Inc.*, 518 F.3d 1353 (Fed. Cir. 2008), the Federal Circuit summarized its best mode jurisprudence as follows:

> We held that the best mode requirement does demand disclosure of an inventor's preferred embodiment of the claimed invention. However, it is not limited to that. We have recognized that best mode requires inventors to disclose aspects of making or using the claimed invention [when] the undisclosed matter materially affects the properties of the claimed invention.
>
> *Pfizer*, 518 F.3d at 1364 (internal quotations and citations omitted).

[redacted]

[redacted] Apple argues that regardless, the '430 Patent's disclosure is sufficient to practice the invention. (CIB at 188 (citing JX-1 at 6:25-47, 8:45-12:13).) Apple further argues that the '430 Patent incorporates by reference Application No. 08/071,812, which issued as U.S. Patent No. 5,544,302. (CIB at 188.) Apple argues that patent, titled "Object-Oriented Framework for Creating and Using Container Objects with Built-In Properties," describes in detail the state of the Taligent desktop system. (CIB at 188.)

The Staff largely concurs with Apple's assessment of the record and argues that, under any claim construction, Motorola has not shown by clear and convincing evidence that Mr. Nguyen failed to disclose his best mode of practicing the invention under 35 U.S.C. § 112, ¶1 by failing to disclose the Taligent operating system. (SIB at 126-127.)

The ALJ finds that Motorola has failed to prove by clear and convincing evidence that the '430 Patent is invalid for failure to disclose the best mode. Motorola has failed to identify any evidence or testimony that establishes clearly and convincingly that Mr. Nguyen subjectively believed his invention was "best" practiced on an undisclosed Taligent system. This failure is fatal to its best mode defense. *Eli Lilly*, 251 F.3d at 963. Therefore, the ALJ finds that Motorola has failed to show by clear and convincing evidence that the '430 Patent is invalid for failure to disclose best mode.

G. Indefiniteness

As set forth *supra* in Section IV.E.6, the ALJ found that the claim term "adding support for the hardware and software components to the operating system without rebooting the operating system" was not indefinite. (*See supra* Section IV.E.6.)

VII. Standing and Licensing

A. Standing

Motorola argues that Apple lacks standing to assert the patents at issue because Apple is not the owner of the '430 Patent and does not have exclusive rights to that patent. (RIB at 184.) Taligent, the original assignee of the '430 Patent, was a joint venture formed by Apple and IBM in 1991. (RIB at 185.) Taligent (according to Motorola) allegedly assigned its patents, including the '430 Patent, to Object Technology Licensing Corporation ("OTLC"). (RIB at 185.) An assignment between Taligent and OTLC was executed on April 3, 1996 and recorded in the U.S.P.T.O. on April 11, 1996. (RIB at 185.) [redacted] Motorola argues that Apple has failed to demonstrate that it owns the patents in suit by failing to present any evidence that the assignments were properly approved by a supermajority vote of Taligent's board of directors as required by

Taligent's Amended and Restated Certificate of Incorporation. (RIB at 185.) Staff agrees with Apple that Motorola has failed to present sufficient evidence to show that the assignments are invalid.

Standing to sue is a threshold requirement in every federal action. *Sicom Systems, Ltd. v. Agilent Technologies, Inc.*, 427 F.3d 971, 975-76 (Fed. Cir. 2005). The party bringing the action bears the burden of establishing that it has standing. *(Id.)*; *see also Ortho Pharm. Corp. v. Genetics Instit., Inc.*, 52 F.3d 1026, 1033 (Fed. Cir. 1995) (quoting *Whitmore v. Arkansas*, 495 U.S. 149, 154 (1990)) ("It is well established ... that before a federal court can consider the merits of a legal claim, the person seeking to invoke the jurisdiction of the court must establish the requisite standing to sue."). Thus, as complainant, Apple bears the burden of proof that it has standing to pursue its infringement action against Motorola in this investigation. While the burden of persuasion remains at all times with Apple, once Apple has satisfied its initial burden of production showing that it is the owner of the asserted patents, the burden of production shifts to Motorola to rebut such a showing.

There is a presumption in patent law that an inventor owns his invention. *Israel Bio-Eng'g Project v. Amgen, Inc.*, 475 F.3d 1256, 1263 (Fed. Cir. 2007). Consistent with that presumption, the "[p]atent issuance creates a presumption that the named inventors are the true and only inventors." *Id.* (quoting *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1460 (Fed. Cir. 1998)). The named inventor of the '430 Patent is Frank T. Nguyen, and as such, it is presumed that Nguyen is the true and only inventor of the '430 Patent. (*See* JX-1.) According to the undisputed record evidence, Nguyen assigned his rights in the '430 Patent to Taligent. (JX-489 at 5.) On April 11, 1996, an assignment dated April 3, 1996, purporting to assign the '430 Patent (among others) was recorded with the U.S.P.T.O (Reel 7886 Frame 500). (JX-8.) The

recordation of an assignment, such as the April 3, 1996 assignment, "creates a presumption of validity as to the assignment and places the burden to rebut such a showing on one challenging the assignment." *SiRF Tech., Inc. v. Int'l Trade Comm'n*, 601 F.3d 1319, 1328 (Fed. Cir. 2010). On December 10, 2009, OTLC executed an assignment, which was recorded with the U.S.P.T.O (Reel 23810 Frame 315) assigning the '430 Patent (among others) to Apple.

The ALJ finds that Apple has sufficiently established through a chain of recorded assignments that it is the presumptive owner of the '430 Patent. *See SiRF Tech.*, 601 F.3d at 1328. The ALJ also finds that the evidence Motorola offers to rebut that presumption is insufficient. The mere fact that directors cannot remember specific votes on minor issues from 15 years ago or that 15 year old records of defunct corporation cannot be located are insufficient to rebut the presumption in this case. Accordingly, the ALJ finds that at the very least, based on the April 3, 1996 assignment, Apple has standing to sue.

B. Licensing

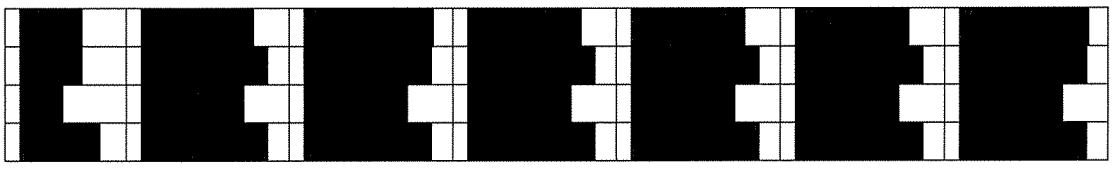
A license under a patent, whether express or implied, is generally a complete defense to a charge of infringement, as long as the patent or invention is used in accordance with the license agreement." *Certain Flash Memory Controllers, Drivers, Memory Cards, and Media Players and Products Containing Same*, Inv. No. 337-TA-619, Initial Determination at 37 (April 10, 2009) (unreviewed in relevant part) (citing *Glass Equip. Dev., Inc. v. Besten, Inc.*, 174 F.3d 1337 (Fed. Cir. 1999)). Although a defendant has the burden to prove the affirmative license defense, it must only establish such a defense by a preponderance of the evidence. *Certain Lens-Fitted Film Packages*, Inv. No. 337-TA-406, Comm'n Op. at 4 (June 1999) (citing *Technical Develop Corp. v. United States*, 597 F.2d 733, 746 (Ct. Cl. 1979)).

1. [redacted] License

On [redacted] entered into a patent cross-license agreement ("the [redacted] Cross-License"). (RX-994C.) In this agreement, [redacted] granted to [redacted], on behalf of itself and its subsidiaries, the right to practice the [redacted] (RX-994C at MOTO-APPLE-005632061_00008.) The [redacted] Cross-License defines Licensed Patents as "all patents . . . issued or issuing on patent applications entitled to an effective filing date prior to [redacted], under which patents or the applications therefor [redacted] or any of its Subsidiaries now has, or hereafter obtains, the right to grant licenses to [redacted] . . . ." (*Id.* at MOTO-APPLE-005632061_00003.) The [redacted] Cross-License defines [redacted] (*Id.* at MOTO-APPLE-005632061_00007-8.)

2. History of Taligent Ownership

Taligent was a joint venture formed by IBM and Apple in 1991 for the purpose of developing an object-oriented operating system. (JX-545C.) [redacted]



[redacted]

[redacted]

3. The Assignment Of Taligent's Patents To OTLC

On April 3, 1996, Taligent purported to assign its patent portfolio to OTLC. That assignment expressly provided that it was "subject to all licenses previously granted by Assignor." (JX-489.022-23.) On April 11, 1996, the April 3, 1996 assignment was recorded in the Patent Office. (*Id.* at 1.) When that assignment was recorded, OTLC's attorney represented to the Patent Office that the assignment from Taligent to OTLC was executed on April 3, 1996, that the document intended to accomplish an assignment and that "to the best of [his] knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document." (JX-489.006-7.)

4. Arguments

[redacted]

[redacted]

[redacted]

The parties do not discuss what law should apply to determine whether the transfer took place on [redacted] or on April 3, 1996. Apple appears to suggest California law applies. (CRB at 84-85.) As this investigation is governed by federal law, federal choice of law rules apply. *Wordtech Sys., Inc. v. Integrated Networks Solutions, Inc.*, 609 F.3d 1308, 1318 n.4 (Fed. Cir. 2010); *see also TianRui Group Co. v. U.S. Int'l Trade Comm'n*, 661 F.3d 1322, 1326-27 (Fed. Cir. 2011) (applying single federal standard for trade secret violations in Section 337 violations). Under federal choice of law provisions, the determination of which particular state's law should apply "requires the exercise of an informed judgment in the balancing of all the interests of the states with the most significant contacts in order best to accommodate the equities among the parties to the policies of those states." *Vanston Bondholders Protective Committee v. Green*, 329 U.S. 156, 162 (1946). While the assignment is between two Delaware corporations,

the ALJ finds that the state with the greatest interest is California. California was site of the contract, the place where Taligent was based, and where the work that led to the intellectual property was performed. As such, the ALJ finds California law should apply.

[redacted]

"When a contract is reduced to writing, the intention of the parties is to be ascertained from the writing alone, if possible...." Cal. Civ. Code § 1639. "In the construction of a statute or instrument, the office of the Judge is simply to ascertain and declare what is in terms or in substance contained therein, not to insert what has been omitted, or to omit what has been inserted...." Cal. Code Civ. Proc., § 1858. However, "[a] contract must be interpreted so as to give effect to the mutual intention of the parties, and the whole of a contract is to be taken together, so as to give effect to every part, if reasonably practicable, each clause helping to interpret the other." *El Dora Oil Co. v. Gibson*, 256 P. 550 (Cal. 1927). Under California law:

> The test of admissibility of extrinsic evidence to explain the meaning of a written instrument is not whether it appears to the court to be plain and unambiguous on its face, but whether the offered evidence is relevant to prove a meaning to which the language of the instrument is reasonably susceptible. To determine whether offered evidence is relevant to prove such a meaning the court must consider all credible evidence offered to prove the intention of the parties. If the court decides, after considering this evidence, that the language of a contract, in the light of all the circumstances, is fairly susceptible of either one of the two interpretations contended for . . ., extrinsic evidence to prove either of such meanings is admissible.

Delta Dynamics, Inc. v. Arioto, 446 P.2d 785, 787 (Cal. 1968) (Traynor, C.J.) (citations and quotation marks omitted). Also, under California law, "[w]here there is an inconsistency

between two agreements both of which are executed by all of the parties, the later contract supersedes the former." *Frangipani v. Boecker*, 75 Cal. Rptr. 2d 407, 409 (Cal. App. 4th Dist. 1998).

This is a closer case than it should be, but the ALJ finds that Motorola has failed to prove that it is licensed under the [redacted].

[redacted]

Setting this evidence aside because of its infirmities, the ALJ finds firmer ground in the overall structure of the agreements and the testimony of Apple's corporate representative persuasive on this point. [redacted] The ALJ finds that his evidence is relevant and that it is consistent with a reasonable interpretation of the agreements at issue in this case. *See Delta Dynamics*, 446 P.2d at 787. Accordingly, the ALJ interprets the assignments as transferring of the patents [redacted] before Taligent became a subsidiary of IBM. Therefore, Motorola's licensing defense fails.

VIII. DOMESTIC INDUSTRY

A. Applicable Law

As stated in the notice of investigation, a determination must be made as to whether an industry in the United States exists as required by subsection (a)(2) of section 337. Section 337 declares unlawful the importation, the sale for importation or the sale in the United States after importation of articles that infringe a valid and enforceable U.S. patent only if an industry in the United States, relating to articles protected by the patent . . . concerned, exists or is in the process of being established. There is no requirement that the domestic industry be based on the same claim or claims alleged to be infringed. 19 U.S.C. § 1337(a)(2).

The domestic industry requirement consists of both an economic prong (*i.e.,* there must be an industry in the United States) and a technical prong (*i.e.*, that industry must relate to articles protected by the patent at issue). *See Certain Ammonium Octamolybdate Isomers,* Inv. No. 337-TA-477, Comm'n Op. at 55, USITC Pub. 3668 (January 2004). The complainant bears the burden of proving the existence of a domestic industry. *Certain Methods of Making Carbonated Candy Products,* Inv. No. 337-TA-292, Comm'n Op. at 34-35, USITC Pub. 2390 (June 1991).

Thus, in this investigation Apple must show that it satisfies both the technical and economic prongs of the domestic industry requirement with respect to the '828, the '607 and the '430 Patents. As noted, and as explained below, it is found that these domestic industry requirements have been satisfied for all three patents.

A complainant in a patent-based Section 337 investigation must demonstrate that it is practicing or exploiting the patents at issue. *See* 19 U.S.C. § 1337(a)(2) and (3); *also see Certain Microsphere Adhesives, Process for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm'n Op. at 8 (U.S.I.T.C., January 16, 1996) ("*Certain Microsphere Adhesives*"), *aff'd sub nom. Minn. Mining & Mfg. Co. v. U.S. Int'l Trade Comm'n*, 91 F.3d 171 (Fed. Cir. 1996) (Table); *Certain Encapsulated Circuits*, Comm'n Op. at 16. The complainant, however, is not required to show that it practices any of the claims asserted to be infringed, as long as it can establish that it practices at least one claim of the asserted patent. *Certain Point of Sale Terminals and Components Thereof*, Inv. No. 337-TA-524, Order No. 40 (April 11, 2005). Fulfillment of this so-called "technical prong" of the domestic industry requirement is not determined by a rigid formula, but rather by the articles of commerce and the realities of the marketplace. *Certain Diltiazem Hydrochloride and Diltiazem*

Preparations, Inv. No. 337-TA-349, U.S.I.T.C. Pub. No. 2902, Initial Determination at 138, (U.S.I.T.C., February 1, 1995) (unreviewed in relevant part) ("*Certain Diltiazem*"); *Certain Double-Sided Floppy Disk Drives and Components Thereof*, Inv. No. 337-TA-215, 227 U.S.P.Q. 982, 989 (Comm'n Op. 1985) ("*Certain Floppy Disk Drives*").

The test for claim coverage for the purposes of the technical prong of the domestic industry requirement is the same as that for infringement. *Certain Doxorubicin and Preparations Containing Same*, Inv. No. 337-TA-300, Initial Determination at 109 (U.S.I.T.C., May 21, 1990) ("*Certain Doxorubicin*"), *aff'd*, Views of the Commission at 22 (October 31, 1990). "First, the claims of the patent are construed. Second, the complainant's article or process is examined to determine whether it falls within the scope of the claims." *(Id.)* As with infringement, the first step of claim construction is a question of law, whereas the second step of comparing the article to the claims is a factual determination. *Markman,* 52 F.3d at 976. The technical prong of the domestic industry can be satisfied either literally or under the doctrine of equivalents. *Certain Excimer Laser Systems for Vision Correction Surgery and Components Thereof and Methods for Performing Such Surgery*, Inv. No. 337-TA-419, Order No. 43 (July 30, 1999). The patentee must establish by a preponderance of the evidence that the domestic product practices one or more claims of the patent. *See Bayer,* 212 F.3d at 1247.

The economic prong of the domestic industry requirement is defined in subsection 337(a)(3) as follows:

> (3) For purposes of paragraph (2), an industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent, copyright, trademark or mask work concerned –
>
> (A) Significant investment in plant and equipment;
>
> (B) Significant employment of labor or capital; or
>
> (C) Substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a)(3).

The economic prong of the domestic industry requirement is satisfied by meeting the criteria of any one of the three factors listed above.

Section 337(a)(3)(C) provides for domestic industry based on "substantial investment" in the enumerated activities, including licensing of a patent. *See Certain Digital Processors and Digital Processing Systems, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-559, Initial Determination at 88 (May 11, 2007) ("*Certain Digital Processors*"). Mere ownership of the patent is insufficient to satisfy the domestic industry requirement. *Certain Digital Processors* at 93. (citing the Senate and House Reports on the Omnibus Trade and Competitiveness Act of 1988, S.Rep. No. 71). However, entities that are actively engaged in licensing their patents in the United States can meet the domestic industry requirement. *Certain Digital Processors* at 93. In establishing a domestic industry under Section 337(a)(3)(C), the complainant does not need to show that it or one of its licensees is practicing a patent-in-suit. *See Certain Semiconductor Chips with Minimized Chip Package Size and Products Containing Same*, Inv. No. 337-TA-432, Order No. 13, at 11, (January 24, 2001) ("*Certain Semiconductor Chips*"). The complainant must, however, receive revenue, *e.g.* royalty payments, from its licensing activities. *Certain Digital Processors,* at 93-95 ("Commission decisions also reflect the fact that a complainant's receipt of royalties is an important factor in determining whether the domestic industry requirement is satisfied . . . [t]here is no Commission precedent for the establishment of a domestic industry based on licensing in which a complainant did not receive any revenue from alleged licensing activities. In fact, in previous investigations in which a complainant successfully relied solely on licensing activities to satisfy section 337(a)(3), the complainant had licenses yielding royalty payments.") (citations omitted). *See also Certain*

Video Graphics Display Controllers and Products Containing Same, Inv. No. 337-TA-412, Initial Determination at 13 (May 14, 1999) (*"Certain Video Graphics Display Controllers"*); *Certain Integrated Circuit Telecommunication Chips and Products Containing Same Including Dialing Apparatus*, Inv. No. 337-TA-337, U.S.I.T.C. Pub. No. 2670, Initial Determination at 98 (March 3, 1993) (*"Certain Integrated Circuit Telecommunication Chips"*); *Certain Zero-Mercury-Added Alkaline Batteries, Parts Thereof and Products Containing Same*, Inv. No. 337-TA-493, Initial Determination at 142 (June 2, 2004) (*"Certain Zero-Mercury-Added Alkaline Batteries"*); *Certain Semiconductor Chips*, Order No. 13 at 6 (January 24, 2001); *Certain Digital Satellite System DSS Receivers and Components Thereof*, Inv. No. 337-TA-392, Initial and Recommended Determinations at 11 (December 4, 1997) ("*Certain Digital Satellite System DSS Receivers"*).

B. Technical Prong

Apple has met to meet the technical prong of the domestic industry requirement. Apple relies on the iPhone and Mac OS X to establish the technical prong of domestic industry. (CIB at 78).

1. The '828 Patent

Apple argues that the iPhone 4 meets all of the limitations of claim 10 of the '828 Patent. (CIB at 74-76.) [redacted]

[redacted]

Therefore, the ALJ finds that Apple has shown by a preponderance of the evidence that the iPhone 4 practices claim 10 of the '828 Patent.

2. The '607 Patent

Apple argues that it iPhone 4 meets all the limitations claims 1-7 and 10 either literally or under the doctrine of equivalents. To the extent that Apple need only show that the iPhone4 practices one claim of the '607 Patent, the ALJ finds that Apple has shown by a preponderance of the evidence that the iPhone 4 practices claim 1. (*See Bayer,* 212 F.3d at 1247 (the patentee must establish by a preponderance of the evidence that the domestic product practices one or more claims of the patent).) The ALJ's decision not to address the other claim limitations set forth by Apple does not indicate that it has not been considered. Rather, in light of the foregoing, such analyses have been deemed superfluous and immaterial.

Staff argues that Apple has shown by a preponderance of the evidence that the iPhone 4 practices claim 1 of the '607 Patent. (SIB at 79-80.)

[redacted]

[redacted]

a) Preamble – "A touch panel comprising a transparent capacitive sensing medium configured to detect multiple touches or near touches that occur at a same time and at distinct locations in a plane of the touch panel and to produce distinct signals representative of a location of the touches on the plane of the touch panel for each of the multiple touches, wherein the transparent capacitive sensing medium"

Apple argues that the iPhone 4 satisfied the preamble because it contains a transparent touch panel that is capable of accurately recognizing multiple, simultaneous touches or near touches. (CIB at 94.) Staff agrees. (SIB at 79-80.) Motorola does not dispute that the iPhone 4 meets this limitation. (RIB at 39-47; RRB at 18-26.)

[redacted]

Therefore, the ALJ finds that the iPhone 4 meets this limitation.

b) "first layer having a plurality of transparent first conductive lines that are electrically isolated from one another" and "second layer spatially separated from the first layer and having a plurality of transparent second conductive lines that are electrically isolated from one another"

[redacted]

[redacted]

Therefore, the ALJ finds that the iPhone 4 meets this limitation.

c) "second conductive lines being positioned transverse to the first conductive lines, the intersection of transverse lines being positioned at different locations in the plane of the touch panel"

[redacted] Motorola does not dispute that the iPhone 4 meets this limitation. (RIB at 39-47; RRB at 18-26.)

d) "each of the second conductive lines being operatively coupled to capacitive monitoring circuitry"

[redacted]

[redacted]

Therefore, the ALJ finds that the iPhone 4 meets this claim limitation.

e) "wherein the capacitive monitoring circuitry is configured to detect changes in charge coupling between the first conductive lines and the second conductive lines"

[redacted]

Therefore, the ALJ finds that the iPhone 4 meets this claim limitation.

Based on the foregoing, the ALJ finds that Apple has shown by a preponderance of the evidence that the iPhone 4 practices claim 1 of the '607 Patent.

3. The '430 Patent

Apple argues that its Mac OS X, through the I/O Kit, practices the '430 Patent. (CIB at 177-181.) Staff agrees that Apple meets the technical prong of the domestic industry requirement. Motorola only disputes whether Mac OS X meets Apple's construction of "properties." (RIB at 162-165.) As set forth *supra*, the ALJ rejected Apple's construction. Apple performed an element by element analysis of the iPhone 4 in its initial post hearing brief. (CIB at 177-181.) Given that there is no longer any genuine dispute regarding the iPhone 4 and having reviewed the evidence cited in Apple's initial post-hearing brief, the ALJ finds that Apple has met the technical prong of the domestic industry requirement for the '430 Patent. (*See* CX-206C; CX-201C at Q&A 235-314.)

C. Economic Prong

On September 15, 2011, the ALJ issued an Initial Determination finding that Apple had satisfied the economic prong of domestic industry requirement. *See* Order No. 14 (September 15, 2011). On October 14, 2011, the Commission determined not to review the order. *See Notice of Commission Decision Not To Review an Initial Determination Granting Complainant's Motion for Summary Determination on the Economic Prong of the Domestic Industry Requirement* (October 14, 2011).

Having made the foregoing findings on whether the domestic industry requirement has been met, the ALJ finds that the disposition of this material issue satisfies Commission Rule 210.42(d). The ALJ's failure to discuss any matter raised by the parties, or any portion of the record, does not indicate that it has not been considered. Rather, any such matter(s) or portion(s) of the record has/have been deemed immaterial.

IX. CONCLUSIONS OF LAW

1. The Commission has personal jurisdiction over the parties, and subject-matter jurisdiction over the accused products.
2. The importation or sale requirement of section 337 is satisfied.
3. The accused products literally infringe the asserted claims of the '430 Patent and the '607 Patent.
4. The accused products do not literally infringe the asserted claims of the '828 Patent.
5. The accused products do not infringe the asserted claims of any of the asserted patents under the doctrine of equivalents
6. The asserted claims of the '430 Patent and the '607 Patent are invalid under 35 U.S.C. § 102 for anticipation.
7. The asserted claims of the '607 Patent are invalid under 35 U.S.C. § 103 for obviousness.
8. The asserted claims of the '430 Patent are not invalid for failing to meet the written description, enablement, indefiniteness or best mode requirement.
9. Apple has standing to assert the '430 Patent.
10. Motorola is not licensed to practice the '430 Patent.
11. The technical prong of the domestic industry requirement for all of the asserted patents has been satisfied.
12. It has not been established that a violation exists of section 337.

X. INITIAL DETERMINATION AND ORDER

Based on the foregoing, it is the INITIAL DETERMINATION ("ID") of this ALJ that no violation of section 337 of the Tariff Act of 1930, as amended, has occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain mobile devices and related software that infringe one or more of claims 1, 2, 10, 11, 24-26, and 29 U.S. Patent No. 7,812,828; claims 1-7 and 10 of U.S. Patent No. 7,663,607; and claims 1, 3, and 5 of the U.S. Patent No. 5,379,430.

Further, this Initial Determination, together with the record of the hearing in this investigation consisting of:

(1) the transcript of the hearing, with appropriate corrections as may hereafter be ordered, and

(2) the exhibits received into evidence in this investigation, as listed in the attached exhibit lists in Appendix A,

are CERTIFIED to the Commission. In accordance with 19 C.F.R. § 210.39(c), all material found to be confidential by the undersigned under 19 C.F.R. § 210.5 is to be given *in camera* treatment.

The Secretary shall serve a public version of this ID upon all parties of record and the confidential version upon counsel who are signatories to the Protective Order (Order No. 1.) issued in this investigation, and upon the Commission investigative attorney.

RECOMMENDED DETERMINATION ON REMEDY AND BOND

I. Remedy and Bonding

The Commission's Rules provide that subsequent to an initial determination on the question of violation of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, the administrative law judge shall issue a recommended determination containing findings of fact and recommendations concerning: (1) the appropriate remedy in the event that the Commission finds a violation of section 337, and (2) the amount of bond to be posted by respondents during Presidential review of Commission action under section 337(j). *See* 19 C.F.R. § 210.42(a)(1)(ii).

A. Limited Exclusion Order

Under Section 337(d), the Commission may issue either a limited or a general exclusion order. A limited exclusion order directed to respondents' infringing products is among the remedies that the Commission may impose, as is a general exclusion order that would apply to all infringing products, regardless of their manufacturer. *See* 19 U.S.C. § 1337(d).

Apple requests that a limited exclusion order be issued that prohibits the importation of all infringing products. (CIB at 193.) Motorola requests that any limited exclusion order be "narrowly-tailored to the smallest Motorola component part or parts that include only the element found by the Commission to infringe valid claims of the Asserted Patents." (RIB at 195.) Motorola argues that such an order would "provide Apple with sufficient relief and avoid improperly restricting legitimate commerce harming United States consumers." (RIB at 195.) Motorola further argues that the limited exclusion order should "except from its scope all activities related to and component parts utilized in the 'service and repair' of previously-sold accused products." (RIB at 195.) Motorola also argues that the limited exclusion order should

except from its scope "any merchandise delivered pursuant to preexisting contracts," because otherwise consumers will be adversely affected. (RIB at 195-96.) Finally, Motorola argues that any limited exclusion order should "include a certification provision such that Motorola can certify to United States Customs that its products do not infringe the asserted claims of the Asserted Patents." Motorola argues that such a certification provision would "assist Customs if Motorola later enters into a license agreement with Apple because it will enable Customs to determine which Motorola products are no longer subject to exclusion." (RIB at 196.)

Staff agrees that a limited exclusion order is appropriate. (SIB at 134-35.) It does not agree with most of Motorola's limitations with the exception of the certification provision. (CIB at 135.) Staff argues that this Investigation is not directed solely to components of the accused devices. (SIB at 135.) The Staff argues that the "narrowly-tailored" exclusion order the Motorola seeks "would not give Apple the relief it seeks. . . ." Therefore, Staff argues that any limited exclusion order should be directed toward all the accused devices that are found to infringe. (SIB at 135.) However, Staff does agree with Motorola that a certification provision, as Motorola proposes, is routinely included in exclusion order and would be appropriate in this investigation.

Apple responds that Motorola's arguments are primarily premised on the so-called "public interest factors" and are not properly considered by the ALJ. (CRB at 87.) As for Motorola's argument that the exclusion order should be limited to the smallest possible component, Apple argues that the complaint in the investigation is directed at the entire mobile handset – not some component of one. (CRB at 87-88.) As for Motorola's proposed service exemption, Apple argues that Motorola fails to show how such an exemption would serve the

public interest and fails to point to supporting evidence in the record. (CRB at 89.) Apple also argues that such an exception would render the exclusion order meaningless. (CRB at 89.)

The ALJ finds that the appropriate remedy is a limited exclusion order directed at the Accused Products that have been found to infringe the Asserted Claims of the Asserted Patents with a certification provision where Motorola can certify to the United States Customs that its products do not infringe the asserted claims of the asserted patents. The ALJ agrees with Apple and Staff that the limited exclusion order should not be limited to the smallest component as Motorola contends because this Investigation is directed at the entire mobile device and not its components. Furthermore, such a narrow exclusion order would not give Apple any effective relief.

As for Motorola's service and repair and existing contracts exceptions, they appear to be premised on public interest considerations that are more appropriately directed to the Commission. *See* 19 C.F.R. § 210.50(b)(1) ("[A]n administrative law judge shall not address the issue of the public interest. . . ."). The ALJ agrees with Motorola and Staff that a certification provision where Motorola can certify to the United States Customs that its products do not infringe the asserted claims of the asserted patents is appropriate.

B. Cease and Desist Order

Section 337 provides that in addition to, or in lieu of, the issuance of an exclusion order, the Commission may issue a cease and desist order as a remedy for violation of section 337. *See* 19 U.S.C. § 1337(f)(1). The Commission generally issues a cease and desist order directed to a domestic respondent when there is a "commercially significant" amount of infringing, imported product in the United States that could be sold so as to undercut the remedy provided by an exclusion order. *See Certain Crystalline Cefadroxil Monohydrate*, Inv. No. 337-TA-293, USITC

Pub. 2391, Comm'n Op. on Remedy, the Public Interest and Bonding at 37-42 (June 1991); *Certain Condensers, Parts Thereof and Products Containing Same, Including Air Conditioners for Automobiles*, Inv. No. 337-TA-334, Comm'n Op. at 26-28 (Aug. 27, 1997).

Apple argues that there is evidence of commercially significant inventories of infringing articles. (CIB at 194.) Motorola argues that is not entitled to a cease and desist order because Apple has failed to introduce evidence of current inventories. (RIB at 196-97.) The Staff agrees with Apple and argues that the evidence Apple offered shows that there are commercially significant inventories.

The ALJ finds the evidence shows that Motorola maintains a commercially significant inventory of accused products. (CX-203C at Q107-09; CX-32C at 38-40.) Therefore, the ALJ recommends that the Commission issue a cease and desist order against Motorola because of its commercially significant inventories of accused products.

C. Bond During Presidential Review Period

The Administrative Law Judge and the Commission must determine the amount of bond to be required of a respondent, pursuant to section 337(j)(3), during the 60-day Presidential review period following the issuance of permanent relief, in the event that the Commission determines to issue a remedy. The purpose of the bond is to protect the complainant from any injury. 19 C.F.R. § 210.42(a)(1)(ii), § 210.50(a)(3).

When reliable price information is available, the Commission has often set the bond by eliminating the differential between the domestic product and the imported, infringing product. *See Certain Microsphere Adhesives, Processes for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm'n Op. a 24 (1995). In other cases, the Commission has turned to alternative approaches, especially when the level of a

reasonable royalty rate could be ascertained. *See, e.g., Certain Integrated Circuit Telecommunication Chips and Products Containing Same, Including Dialing Apparatus*, Inv. No. 337-TA-337, Comm'n Op. at 41 (1995). A 100 percent bond has been required when no effective alternative existed. *See, e.g., Certain Flash Memory Circuits and Products Containing Same*, Inv. No. 337-TA-382, USITC Pub. No. 3046, Comm'n Op. at 26-27 (July 1997) (a 100% bond imposed when price comparison was not practical because the parties sold products at different levels of commerce, and the proposed royalty rate appeared to be *de minimis* and without adequate support in the record).

Apple argues for a 100% bond on all of the products or in the alternative several different bonds depending on the particular combination of patents that is infringed. In its alternative scenario, if all three patents or if just the '430 Patent are infringed, Apple argues that a 100% bond is appropriate. However, if infringement is limited to either the '828 or '607 Patents, or both, then a price differential bond of approximately [redacted] is appropriate. (CIB at 194-97.)

Motorola argues that Apple has failed to meet its burden of proof as to the amount of the bond, and therefore, no bond should be required. In the alternative, Motorola argues that a 100% bond is inappropriate Respondents argue that the royalty rate should be between [redacted] and [redacted] (RIB at 197-200.) Staff argues that for simplicity the bond should be set at 100%.

The ALJ finds that a price differential bond of no more than [redacted] for the '828 and '607 Patent would more than adequately protect Apple during the Presidential bond period. (RX-1876C at Q&A 124.) Accordingly, for the '828 and '607 Patents, the ALJ recommends that the Commission set the bond at no more than [redacted] per entered product.

As for the '430 Patent, it is undisputed that Motorola does not compete directly with Apple's Mac OS X operating system and computers running it. (CIB at 194-97.) It is also

undisputed that [redacted] represents the average royalty in the industry. (RIB at 199.) The ALJ finds that such a royalty would provide adequate compensation to Apple for this patent. Accordingly, with The ALJ recommends that the Commission set a bond of no more than [redacted] for the '430 Patent.

II. Conclusion

In accordance with the discussion of the issues contained herein, it is the RECOMMENDED DETERMINATION ("RD") of the ALJ should the Commission find a violation, then it should issue a limited exclusion order directed at Motorola's products found to infringe the '828 Patent, the '607 Patent, and the '430 Patent that includes a certification provision under which Motorola can certify to Customs and Border Protection that its products do not infringe the asserted claims of the Asserted Patents. The Commission should also issue a cease and desist order directed toward Motorola that prohibits the sale of any commercially significant quantities of the Accused Products. Furthermore, Motorola should be required to post a bond set at no more than [redacted] of the entered value of the accused products for the '430 Patent and of no more than [redacted] for the '828 and '607 Patents during the Presidential review period.

Within seven days of the date of this document, each party shall submit to the office of the Administrative Law Judge a statement as to whether or not it seeks to have any portion of this document deleted from the public version. The parties' submissions must be made by hard copy by the aforementioned date.

Any party seeking to have any portion of this document deleted from the public version thereof must submit to this office (1) a copy of this document with red brackets indicating any portion asserted to contain confidential business information by the aforementioned date and (2)

a list specifying where said redactions are located. The parties' submission concerning the public version of this document need not be filed with the Commission Secretary.

SO ORDERED.

Theodore R. Essex
Administrative Law Judge

IN THE MATTER OF CERTAIN MOBILE DEVICES, AND RELATED SOFTWARE THEREOF **Inv. No. 337-TA-750**

PUBLIC CERTIFICATE OF SERVICE

I, James R. Holbein, hereby certify that the attached **INITIAL DETERMINATION** has been served by hand upon, the Commission Investigative Attorney, **Lisa A. Kattan, Esq**. and the following parties as indicated on **January 25, 2012.**

.

James R. Holbein, Secretary
U.S. International Trade Commission
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Washington, D.C. 20436

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