

**IN UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD**

SAMSUNG ELECTRONICS CO., LTD. AND
SAMSUNG ELECTRONICS AMERICA, INC.

Petitioners,

v.

MAXELL, LTD.,
Patent Owner

Case: IPR2024-00828

U.S. Patent No. 8,982,086

**PATENT OWNER RESPONSE
TO PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,982,086**

Mail Stop **Patent Board**
Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	BACKGROUND AND SCOPE OF THE PROCEEDING	1
A.	U.S. Patent No. 8,982,086.....	1
B.	The '086 Patent Family Prosecution History	4
C.	Person Of Ordinary Skill In The Art.....	8
D.	Cited References.....	8
E.	Instituted Grounds	9
III.	CLAIM CONSTRUCTION	9
A.	“first information necessary for identification of the user” and “second information relating to the identification of the user”	9
B.	“first registering mode for inputting input information by a pad of the finger” and “second registering mode for inputting input information by an end of the finger”	10
1.	The Intrinsic Record Supports Patent Owner’s Construction	11
2.	Extrinsic Evidence Supports Patent Owner’s Construction	16
3.	Patent Owner’s Construction Is Necessary In Light of Petitioners’ Inconsistent Interpretation Of The Claims	16
IV.	GROUND 1: PETITIONERS HAVE FAILED TO ESTABLISH THAT CLAIMS 1, 2, AND 4-7 ARE RENDERED OBVIOUS BY THE COMBINATION OF ROGERS AND ROSENBERG	21
A.	The Combination Of Rogers And Rosenberg Fails To Disclose Limitation [1e].....	21
1.	A Processor Is Not A Controller.....	24
2.	The Petition Fails To Reconcile Rogers’ Processor With The Claimed Second Controller	29
3.	Modifications To Rogers Are Untenable.....	30
B.	The Combination Of Rogers And Rosenberg Fails To Disclose Limitation [1f]	31

1.	Rogers In View Of Rosenberg Does Not Disclose Multiple Registration Modes Under A Plain Reading Of The Claims	32
2.	Rogers In View Of Rosenberg Does Not Disclose Multiple Registration Modes Under Patent Owner’s Proposed Claim Construction	35
3.	Rosenberg Cannot Rehabilitate The Shortcomings Of Rogers	45
C.	The Combination of Rogers and Rosenberg Fails to Disclose [1d]	48
D.	The Combination of Rogers and Rosenberg Fails to Disclose Claim 5	49
II.	GROUND 2: PETITIONERS HAVE FAILED TO ESTABLISH THAT CLAIMS 9-14 ARE RENDERED OBVIOUS BY THE COMBINATION OF ROGERS, ROSENBERG, AND MIYAZAWA	51
III.	GROUND 3: PETITIONERS HAVE FAILED TO ESTABLISH THAT CLAIMS 1, 2, AND 4-7 ARE RENDERED OBVIOUS BY THE COMBINATION OF ROGERS AND REKIMOTO	51
A.	The Combination Of Rogers And Rekimoto Fails To Disclose Limitation [1e].....	51
B.	The Combination Of Rogers And Rekimoto Fails To Disclose Limitation [1f]	52
C.	The Combination Of Rogers And Rekimoto Fails To Disclose Claim 5	55
IV.	GROUND 4: PETITIONERS HAVE FAILED TO ESTABLISH THAT CLAIMS 9-14 ARE RENDERED OBVIOUS BY THE COMBINATION OF ROGERS, REKIMOTO, AND MIYAZAWA	57
V.	CONCLUSION.....	57

PATENT OWNER’S EXHIBIT LIST

Description	Exhibit #
Declaration of Jacob O. Wobbrock, Ph.D.	2005
Handbook of Fingerprint Recognition (2nd ed.)	2006
Claim Construction Order	2007
Valdes-Perez, F.E. and Pallas-Areny, R. (2009) <i>Microcontrollers: Fundamentals and Applications with PIC</i> . Boca Raton, FL: CRC Press	2008
Deposition Transcript of Seth James Nielson, Ph.D. (January 15, 2025)	2009
Excerpts from Human-Computer Interaction, 3rd Ed., Dix et al. (2004)	2010
Definition of “mode” from PCMag (https://www.pcmag.com/encyclopedia/term/mode)	2011
McGraw-Hill Dictionary of Scientific and Technical Terms, 6th ed. (2003)	2012
Excerpts from the Deposition Transcript of Seth James Nielson, Ph.D. (December 20, 2024)	2013

I. INTRODUCTION

Patent Owner Maxell, Ltd. (“Patent Owner”) respectfully requests that the Board confirm the patentability of claims 1, 2, 4-7, and 9-14 (“challenged claims”) of U.S. Patent No. 8,982,086 (“the ’086 Patent”) (Ex. 1001). Petitioner has failed to show by a preponderance of the evidence that the challenged claims are unpatentable. The ’086 Patent has been examined not once but twice by the Patent Office. During the reexamination, Claims 1-4 were confirmed in the face of the same or similar art. Petitioner’s grounds are simply a repackaging of the same or similar flawed arguments presented during reexamination. Consistent with the prosecution history and previous findings of the Patent Office, Petitioners cannot demonstrate that any claim is obvious in view of the asserted prior art. Patentability of the challenged claims in the battle-tested ’086 Patent should be confirmed.

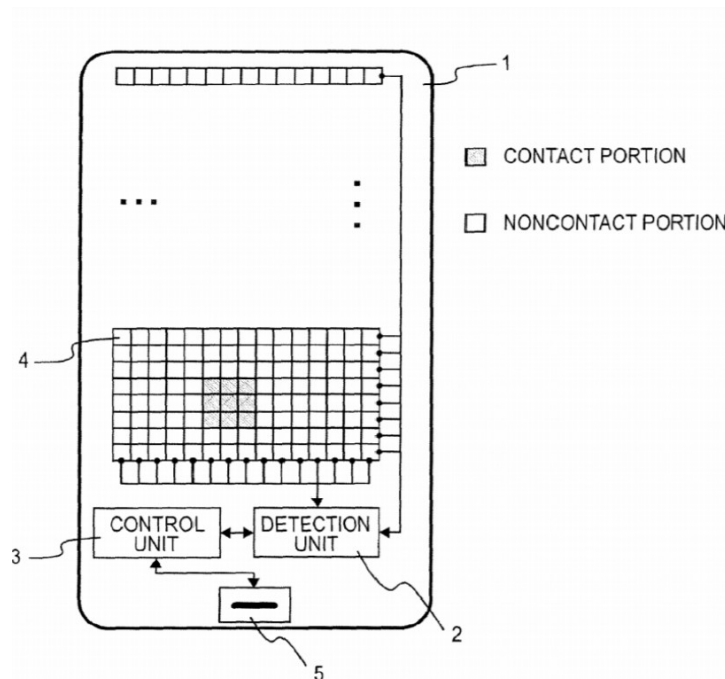
II. BACKGROUND AND SCOPE OF THE PROCEEDING

A. U.S. Patent No. 8,982,086

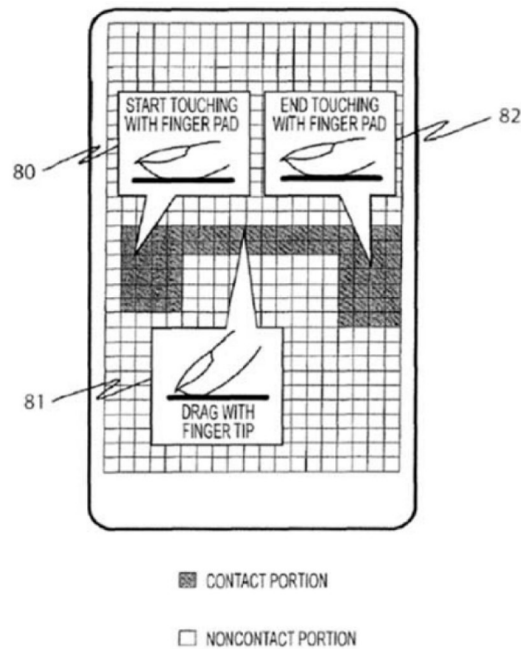
The ’086 Patent is entitled “Information Processing Apparatus.” It was filed on January 14, 2014 and issued on March 17, 2015 to inventor Masaaki Yamada. The patent claims priority to U.S. Patent Application No. 13/366,983 and Japanese patent application JP 2011- 025576, filed February 9, 2011. EX2005, ¶54.

The ’086 Patent discloses a “portable terminal” to enable various operations including tapping, dragging, flicking, pinching, and unlocking based on different

types of input provided to the touch interface of the portable terminal. EX1001, 3:39-49; EX2005, ¶56. For example, as shown in Figure 2, the touch panel in the portable terminal “includes a group of sensors or a sensor” and “when the user’s finger contacts with the touch panel, capacitance of the sensor 4 changes and the sensor 4 outputs a signal according to the change.” EX1001, 3:17-20; EX2005, ¶56.



EX1001 at FIG. 2. Embodiments of the '086 Patent describe both the location and type of touch input being used by the portable terminal to allow for enhanced security and an improved user experience. EX2005, ¶57. As shown below in Figure 8 of the '086 Patent, the device is able to distinguish inputs entered by different regions of the finger (*e.g.*, end or pad):



EX1001 at FIG. 8.

The portable terminal distinguishes between input methods provided by different regions of the finger. EX2005, ¶58. For example, a fingertip input has “an area of contact ... between the finger of the user and the touch panel 1 [that] is small,” whereas finger pad input “is characterized in that the contact range of the finger and the touch panel 1 is wider than that of the finger tip input.” EX1001, 3:3-12; EX2005, ¶58. Further, a plurality of operations can be assigned to sequences of finger input methods:

DIGIT		1	2	3	4	OPERATION
PASSWORD		0	5	2	8	—
INPUT METHOD	1	FINGER TIP	FINGER PAD	FINGER PAD	FINGER PAD	WAITING SCREEN
	2	FINGER TIP	FINGER TIP	FINGER TIP	FINGER TIP	MAIL CREATING SCREEN
	3	FINGER PAD	FINGER TIP	FINGER PAD	FINGER TIP	APPLICATION STARTING

EX1001, FIG. 12B.

“For example, in the case shown in FIG. 12B, three types of input methods are registered for one password and a specific operation is assigned for each of them: input method 1 is for displaying a normal standby screen, input method 2 is for displaying a mail creating screen, and input method 3 is for starting an application.” EX1001, 7:42-44; EX2005, ¶59. Using a group of capacitive sensors to distinguish between types of input entered by a user’s finger enables the portable terminal to execute a variety of operations that are associated with different types of inputs. EX1001, 7:42-44; EX2005, ¶59.

An example of such inputs includes an “enhanced security function that incorporates a four-digit password and a difference in the contact range” with respect to the capacitive sensors in the portable terminal being touched by different portions of the user’s finger. EX1001, 6:16-35; EX2005, ¶59. The portable terminals “can thus handle user’s highly confidential information” and the “burden[] on the user for memorization can thus be alleviated.” EX1001, 7:50-60; EX2005, ¶59.

B. The ’086 Patent Family Prosecution History

U.S. Application No. 14/154,993 was filed on January 14, 2014 and issued as the ’086 Patent on March 17, 2015. The ’086 Patent claims priority to Japanese Patent Application No. 2011-025576, filed on February 9, 2011. The ’086 Patent is a continuation of U.S. Patent No. 8,654,093 (“’093 Patent”). EX2005, ¶54.

The '086 Patent was thoroughly reexamined by the PTO as Reexamination Request No. 90/014,638, which resulted in a Reexamination Certificate issued on September 28, 2021. EX1004 at 3-4. All original claims were confirmed and claims 5-15 were added during reexamination.

The '093 Patent was subject to reissue proceedings. *See* EX1005. Contrary to Petitioners' characterization of those proceedings, there is adequate written support for information relating to a fingerprint. *See* EX2005, ¶¶66-75.

At the time of the invention, there were two primary technologies used in fingerprint detection: optical sensors and solid state silicon-based sensors, the most common of which were capacitive sensors. EX2005, ¶67. A capacitive sensing grid is one technology employed by capacitive sensing methods. Such grids are indeed disclosed in the '086 Patent's specification. For example, Figures 2, 5A, 5B, 6A, 6B, and 8 all disclose such grids such that "[w]hen the user's finger contacts with the touch panel, capacitance of the sensor 4 changes and the sensor 4 outputs a signal according to the change." EX1001, 3:17-20; EX2005, ¶67.

A capacitive sensing grid is capable of detecting fingerprint information, including but not limited to the presence of a fingerprint. EX2005, ¶68. When the ridges of a user's fingerprint come into contact with capacitive sensors, they change the capacitance of those sensors as a result. By contrast, a fingerprint's valleys between ridges do not contact the capacitive sensors, leaving the capacitance in those

areas unchanged or changed less. EX2005, ¶68. This is the key principle behind the operation of a capacitive fingerprint sensor. *Id.* Consistent with this principle, the '086 Patent specifically discloses a capacitive sensor that “outputs a signal” according to the detection of a change in capacitance based on contact by a user’s finger. EX1001, 3:17-20, 3:30-35, 5:4-6. For example, the *Handbook of Fingerprint Recognition (2nd ed.)* (hereinafter, “the Handbook”) (EX2006) makes it clear that a POSITA at the time of the invention would understand that capacitive sensors of the kind disclosed in the '086 Patent would be capable of detecting a fingerprint. EX2005, ¶69. The Handbook describes capacitive sensors for detecting fingerprints:

needed. Four main technologies have been proposed to convert the fingerprint pattern into electrical signals: capacitive, thermal, electric field, and piezoelectric.

- *Capacitive*: this is the most common method used today within the silicon-based sensor arena (Tsikos (1982); Edwards (1984); Knapp (1994); Inglis et al. (1998); Setlak (1999); Lee et al. (1999); Dickinson et al. (2000); Morimura, Shigematsu, and Machida (2000); Hashido et al. (2003)). A capacitive sensor is a two-dimensional array of micro-capacitor plates embedded in a chip (see Figure 2.10).

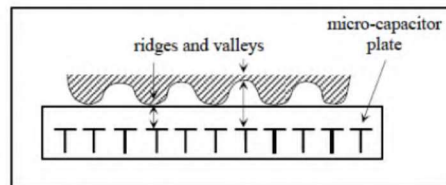


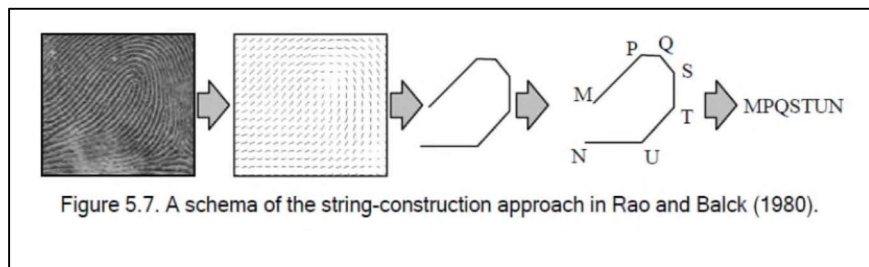
Figure 2.10. Capacitive sensing.

The other plate of each micro-capacitor is the finger skin itself. Small electrical charges are created between the surface of the finger and each of the silicon plates when a finger is placed on the chip. The magnitude of these electrical charges depends on the distance between the fingerprint surface and the capacitance plates (Tartagni and Guerrieri, 1998). Thus fingerprint ridges and valleys result in different capacitance patterns across the plates. An accurate capacitance measurement is quite

EX2006 at 67; EX2005, ¶69.

The '086 specification includes over a **hundred** references to a user's finger and of identifying an input from the finger using "a group of sensors or a sensor whose capacitance varies upon contact with the user's finger." *See, e.g.*, EX1001, 3:30-32, FIGs. 3, 4A, 4B, 8, 10A, 10B, 11A. The specification does not state anywhere that this finger is used without fingerprints, or that the disclosed examples of identification information of "letters, figures, and symbols" cannot include fingerprints. *See* EX2005, ¶¶70-73.

Identification information from a fingerprint can be and has been, in fact, encoded in letters, figures, or symbols. When fingerprint information is extracted from a capacitive sensing grid, such as that shown in Figure 2 of the '086 Patent, it is encoded in symbolic form. For example, the Handbook offers this example of a "syntactic approach" to fingerprint representation, saying, "A syntactic method describes patterns by means of *terminal symbols*..." (EX2006, p. 244, emphasis added.) A diagram is offered that clearly shows "letters, figures, and symbols" as fingerprint information:



EX2006 at 245; EX2005, ¶71. Thus, reading the specification of the '086 Patent, a

POSITA would not limit the disclosed “letters, figures, and symbols” (EX1001, Abstract, 1:44-48, 7:66-67) corresponding to “identification information” (EX1001, Abstract, 1:44-62) to information not including fingerprint information. EX2005, ¶73. In fact, within the context of the specification, a POSITA would understand fingerprint information to be an example of such letters, figures, and symbols as reflected by the examples above.

Indeed, the specification discloses using capacitive sensors to detect touch, and there is no disclosure in the specification that these capacitive sensors are detecting the user’s touch **without** detecting “information about a user’s fingerprint.” See EX2005, ¶¶67-69. Thus, the inventors of the ’086 Patent clearly disclosed capacitive sensors that a POSITA would understand as sufficient structure for detecting fingerprints. *Id.* ¶75.

C. Person Of Ordinary Skill In The Art

A POSITA would have at least a Bachelor’s degree in Electrical Engineering, Computer science, or a related field, with at least one year of experience in the field of computing devices with touch interfaces. EX2005, ¶¶76-77.

D. Cited References

The Petition raises four grounds of alleged obviousness based on the following four references:

1. U.S. Patent No. 8,683,582 (“Rogers”) (Ex. 1006),

2. U.S. Patent Publication No. 2007/0097096 (“Rosenberg”) (Ex. 1007),
3. U.S. Patent No. 8,477,115 (“Rekimoto”) (Ex. 1010), and
4. U.S. Patent No. 8,633,909 (“Miyazawa”) (Ex. 1008).

E. Instituted Grounds

The Board instituted Review on four grounds:

Ground	’086 Patent Claim(s)	Type of Challenge	Primary Reference	Secondary Reference(s)
1	1, 2, 4-7	§ 103	Rogers	Rosenberg
2	9-14	§ 103	Rogers	(1) Rosenberg (2) Miyazawa
3	1, 2, 4-7	§ 103	Rogers	Rekimoto
4	9-14	§ 103	Rogers	(1) Rekimoto (2) Miyazawa

III. CLAIM CONSTRUCTION

A. “first information necessary for identification of the user” and “second information relating to the identification of the user”

In the Petition, Petitioners proposed that two terms—“first information necessary for identification of the user” and “second information relating to the identification of the user”—should both exclude “information about a user’s fingerprint.” Pet. at 7-8. Petitioners’ arguments were based on an assertion that prosecution disclaimer applied. *Id.* However, in the related District Court Litigation, the court there found that disclaimer did not apply, and that the terms should be given

their plain and ordinary meanings. *See* EX2007 at 26-27 (“Ultimately, Samsung has not shown authority for the proposition that disclaimer applies to limit the plain and ordinary meaning of the claim language.”). Accordingly, for consistency with the concurrent litigation, and in light of Section II.B above, Patent Owner submits that the first and second information terms should be given their plain and ordinary meaning. EX2005, ¶81.

B. “first registering mode for inputting input information by a pad of the finger” and “second registering mode for inputting input information by an end of the finger”

In light of the Petitioners’ inconsistent and incorrect understanding of certain claim terms (as detailed below), Patent Owner submits that the term “first registering mode for inputting input information by a pad of the finger” as appearing in the claims would be understood by a POSITA as “a first operational state for registering in which information is input by a pad of the finger.” EX2005, ¶82. Likewise, the term “second registering mode for inputting input information by an end of the finger” as appearing in the claims would be understood by a POSITA as “a second operational state for registering in which information is input by an end of the finger, the first registering mode and the second registering mode being different operational states.” *Id.*

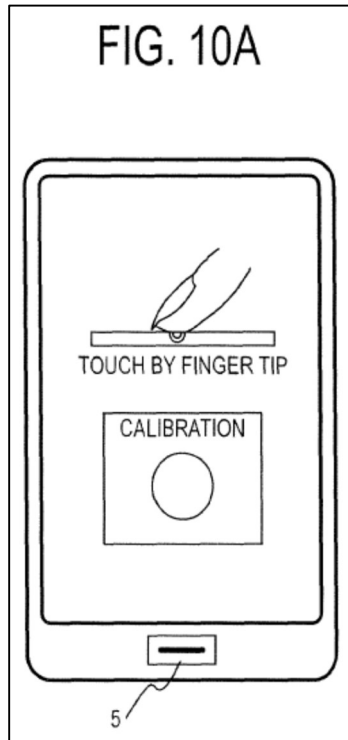
This consistent application of what a mode is applies to the terms “identification mode” (element [1c]), “registering mode” (element [1c]), “first

registering mode” (element [1f]), and “second registering mode” (element [1f]), as well as Claims 5 and 7. EX2005, ¶83. The claims of the ’086 Patent explicitly refer to identification mode and registering mode as “**two operating modes.**” EX1001, 8:43-46 (claim 1); EX2005, ¶83. Therefore, where the claims describe that the first and second registering modes “are provided” “in said registering mode” (EX1001, 8:54 (claim 1)), the first and second registering modes are also operating modes of the system. EX2005, ¶83.

1. The Intrinsic Record Supports Patent Owner’s Construction

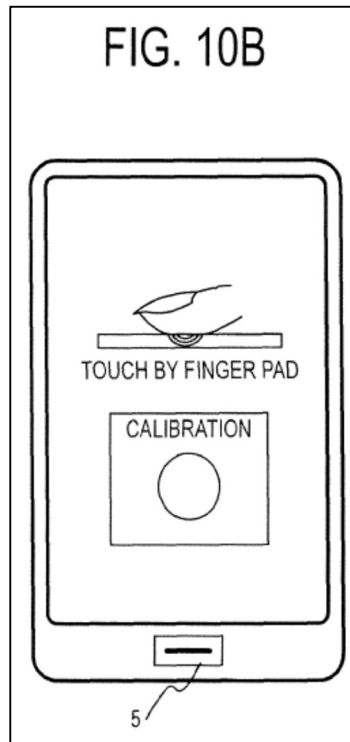
The specification of the ’086 Patent supports a construction of a “first registering mode for inputting input information by a pad of the finger” as “a first operational state for registering in which information is input by a pad of the finger” and a “second registering mode for inputting input information by a pad of the finger” as “a second operational state for registering in which information is input by a pad of the finger.” In describing the “process for password registration,” *i.e.*, the claimed “registering mode,” the specification also describes steps in the registering process. *See* EX1001, 6:28-36; EX2005, ¶84. For example, referring to Figures 10A and 10B, the specification discloses that in the registering mode, an image “is displayed to prompt the user to make a finger tip contact” and “control unit 3 records the contact range of the finger tip input.” EX1001, 6:31-33; FIG. 10A; EX2005, ¶84. This disclosure is an example of the claimed second registering mode

or “a second operational state for registering in which information is input by an end of the finger.” EX2005, ¶84.



EX1001, FIG. 10A.

As an example of the claimed first registering mode, in the registering mode, an image is “displayed to prompt the user to make a finger pad contact” and “control unit 3 records the contact range of the finger pad input.” *Id.*, 6:34-36; FIG. 10B; EX2005, ¶85. The separate step during the registering process underscores that the first and second registering modes are different operational states of the system. *Id.*



EX1004, FIG. 10B. Accordingly, as described in the specification, the first and second registering modes are first and second operational states for registering. EX2005, ¶85.

Such a construction would also be consistent with the file history of the '086 Patent, specifically the reexamination of the '086 Patent. EX2005, ¶86. For example, during the reexamination of the '086 Patent, for element [1c], the examiner issued a rejection based on the reference (U.S. Patent No. 8,941,466 (“Bayram”)) disclosing an “authentication phase” corresponding to the claimed identification mode and a “registration phase” corresponding to the claimed registering mode. *See* EX1004 at 86; EX2005, ¶86. For element [1f], the examiner pointed to a “signature” that may include “finger touch information that includes an area of the finger touch, a shape

of the finger touch, an orientation of the finger touch, [and] characteristics of the finger touch.” *Id.* at 88. As with Petitioners’ admission with respect to Rogers here, the examiner admitted that Bayram did not explicitly disclose that “fingertips and finger pads produce different sizes, shapes, and orientations” and thus relied on the disclosures in Rosenberg. EX1004 at 89.

An interview was conducted with the examiner, during which it was agreed that “the combination did not have 2 registration modes, one for the finger tip and one for the finger pad.” EX1004 at 8. Further, as described by the applicant:

During the interview, Patent Owner’s representatives explained the differences between the cited art and the limitations of claim 1, in particular the “first registering mode for inputting information by a pad of the finger, and a second registering mode for inputting input information by an end of the finger.” Specifically, Patent Owner’s representatives explained that neither Bayram nor Rosenberg (nor the two in combination) taught these features of claim 1, as outlined in more detail herein. Patent Owner’s representatives also responded to the examiners’ questions regarding the now-settled litigation involving the ’086 Patent, as well as support in the specification for the limitations discussed.

EX1004 at 75.

More particularly, neither Bayram nor Rosenberg nor Chin (nor the combination of these references) teach “a first registering mode for inputting input information by a pad of the finger, and a second registering mode for inputting input information by an end of the finger” (emphasis added). Instead, as discussed during the interview in this proceeding, Bayram at best describes real-time input and signature recognition but does not describe separate registering modes.

EX1004 at 75. In response to the examiner interview and the excerpted arguments above, the reexamination certificate was issued. *See* EX1004 at 8; EX2005, ¶87.

To reiterate, the understanding applied by the examiner to the claimed modes was based on the same understanding put forth by the Patent Owner during the reexamination and as stated above. EX2005, ¶88. Indeed, in describing a “mode” as used in the claims, applicant offered the following explanation:

A POSITA would understand that the concept of a mode is a setting S such that the same action A has different results or effects based on the current value of S . Put differently, when S equals mode $M1$, then action A leads to result $B1$. But when S equals mode $M2$, then same action A leads to result $B2$. For example, with caps lock “off”, the action of hitting the “W” key is to produce a lower-case “w”. But with caps lock “on”, the same action of hitting the “W” key is to produce an upper-case “W”. The same action A produces different results ($B1, B2$) because of the current mode setting S .

In the '086 Patent, touching the screen, the action A , registers values for a fingertip (Figure 10A) in one registering mode $M1$. The same action A , touching the screen, registers values for a finger pad (Figure 10B) in another registering mode $M2$. So, in Figures 10A and 10B, the two registering modes have the same action resulting in different outcomes, namely the values registered for finger tips and pads, respectively.

EX1004 at 29 (Decl. of Jacob Wobbrock, ¶¶ 68-69); *see also* EX2005, ¶88.

Petitioners and their expert largely ignore the intrinsic record and now seek to impose their own twist to the term mode. *See* Pet. at 5 (acknowledging the reexamination in a single paragraph); EX1003 at ¶ 52 (same); As Dr. Nielson testified on cross-examination with respect to the reexamination, “there was nothing in there that caught my eye.” EX2009, 38:21-39:5.

2. Extrinsic Evidence Supports Patent Owner’s Construction

Extrinsic evidence further demonstrates that a POSITA would understand that the first and second registering modes are operational states of the system or device. EX2005, ¶91. For example, PCMag describes “mode” as an “**operational state** that a system has been switched to.” EX2011 at 1. Similarly, another dictionary provides a computer science definition for mode: “One of several **alternative conditions** or methods of operation of a device.” EX2012 at 3. As another example, “different contexts that change the interpretation of commands are called *modes*.” EX2010 at 5. Therefore, these examples demonstrate that construction expressed above for a first registering mode and a second registering mode is consistent with the understanding of a POSITA. EX2005, ¶91.

3. Patent Owner’s Construction Is Necessary In Light of Petitioners’ Inconsistent Interpretation Of The Claims

Furthermore, the proposed construction is necessary in light of Petitioners inconsistent reading of the claim terms. EX2005, ¶¶127-128. For example, regarding claim element [1c], Petitioners vaguely identify “[t]he *process* disclosed by Rogers’

FIG. 4 [as] the claimed ‘registration mode.’” Pet. at 23 (citing EX1003, ¶103); EX2009 at 48:21-49:7 (“the claimed registration mode is satisfied by the *process* disclosed in Rogers Figure 4”). Similarly, Petitioners refer to “[t]he *process* disclosed by Rogers’ FIG. 5 ... [as] the claimed ‘identification mode.’” Pet. at 21; EX2009 at 48:13-20 (“I identify the identification mode as the *process* disclosed in Rogers”). Thus, for element [1c], Petitioners interpret both of the claimed modes as “process.” Petitioners’ expert, Dr. Seth Nielson, confirmed this interpretation during cross-examination. EX2009 at 49:8-16 (“the word ‘mode’ gets used a couple of different ways”); 53:3-8 (“So mode can refer to having a setting and you see that with registration mode versus the identification mode. And it can also be a detection of **input modes** in which it’s based on detecting the parameters to determine what **mode of input** is being used.”) (emphasis added).

In comparison, when referring to the “first registering mode” and “second registering mode” in limitation [1f], Petitioners and Dr. Nielson pivot and rely on Rogers’ disclosure of “distinguish[ing] between inputting two different types of user input.” Pet. at 31; EX1003, ¶¶116-124. Specifically, Petitioners rely on (without citation to Rogers) “separate registration *modes for entering* different pieces of user information based on the size measured from the contact area of the user’s touch.” Pet. at 33; EX1003, ¶121. In other words, as explained by Dr. Nielson, Petitioners interpret “first registering mode” and “second registering mode” as different *input*

methods that can be detected. *See* EX2009 at 53:3-8 (“So mode can refer to having a setting and you see that with registration mode versus the identification mode. And it can also be **a detection of input modes** in which it’s based on detecting the parameters to determine what mode of input is being used.”) (emphasis added); 62:19-63:3 (“the area that’s recorded is going to ... represent a registering mode where there **was** a finger pad and a registering mode where there **was** a fingertip...”); 69:4-7 (“Within registering mode the patent discusses different ways of registering, **different inputs** that can go into **registering as different registration modes**.”); 86:2-4 (“Q: What were the two registering modes? A: The finger pad **input** and the finger and/or fingertip **input**). Accordingly, because Petitioners rely on a shifting interpretation of consistently used claim terms, an explicit construction of these terms is necessary. EX2005, ¶¶89, 127-128.

Accordingly, for this reason alone, the Petition falls short. The Federal Circuit has made clear that a “word or phrase used consistently throughout a claim should be interpreted consistently.” *Phonometrics, Inc. v. N. Telecom Inc.*, 133 F.3d 1459, 1465 (Fed. Cir. 1998); *see also Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1345 (Fed. Cir. 1998) (“whatever interpretation we assign should encompass both uses because **the same word appearing in the same claim should be interpreted consistently**”). As shown below in its entirety, claim 1 of the ’086 Patent consistently uses the terms “mode,” “registering mode,” and “identification

mode”:

1. An information processing apparatus comprising:

a touch panel configured to detect a contact of a finger of a user;

a detector configured to detect first information necessary for an identification of the user when the contact is detected between the touch panel and the finger of the user;

a first controller configured to control the information processing apparatus to operate into **two operating modes**: at least an **identification mode** and a **registering mode**, as the operating mode thereof;

memory that is configured to store second information relating to the identification of the user, which is stored in advance; and

a second controller configured to execute a specified process when said first information and said second information are coincident within said **identification mode**, wherein:

in said **registering mode**, there are provided a **first registering mode** for inputting input information by a pad of the finger, and a **second registering mode** for inputting input information by an end of the finger, and said second information relating to the identification of the user is produced upon basis of the input information, which is inputted at least in the **first or second mode**.

EX1001, claim 1.

In direct violation of this principle, Dr. Nielson explains that “there’s two splits here. There’s a split between the registering mode and the identifying mode

and there's a split between a first registering mode and a second registering mode. In my report I have identified both of these splits." EX2009 at 54:16-21; *see also id.* at 51:12-13 ("Mode' is also a word used not just before a setting but also at a detection level."); 52:20-53:2 ("So inputting by a pad or inputting by a tip are two differing modes of inputting information"); 53:3-8 ("So **mode can refer to having a setting** and you can see that with registration mode versus the identification mode. And **it can also be a detection of input modes...**"); 58:3-6 ("There were two different registering modes used, the pad and the tip..."); 64:22-65:4 ([POSITA would readily recognize that what is already in Rogers could be identified as modes for use in recording this graphical passcode"); 68:20-3 ("...part of the complication here is the way **the claim language is awkwardly using mode for two different concepts**"). Thus, the improper reading of the claim limitations provides sufficient basis to uphold the patentability of the claim. *Digital Biometrics*, 149 F.3d at 1345.

Patent Owner's proposed construction is also consistent with the testimony provided by Dr. Nielson in the District Court where he takes a narrower position than in the instant proceeding. EX2005, ¶90. For example, in the District Court Litigation, Dr. Nielson asserted that "I think the way that a [POSITA] sees a mode could be interpreted **as a state. A state of the system is -- is a mode of the system.**" EX2013 at 3 (emphasis added). Similarly, Dr. Nielson apparently agrees that registering mode and identification mode are separate: "I mean, it seems kind of self-

apparent to me that they're different modes.” EX2009, 55:12-13; EX2013 at 2 (“Well, clearly the modes are different or the first registering mode is different from the second registering mode. So in order to have a first mode and a second mode, **there would have to be a distinction between them** so the pad is different from tip in order for there to be -- or end, just to follow the claim language -- in order to have **two separate modes.**”) (emphases added).

Thus, expressly construing the term “mode” as proposed by Patent Owner in this proceeding is consistent with the terms usage in the claims of the '086 Patent and specification, as well as opinions expressed by Patent Owner, Petitioners, Dr. Wobbrock, and Dr. Nielson in the related District Court Litigation. EX2005, ¶¶92.

IV. GROUND 1: PETITIONERS HAVE FAILED TO ESTABLISH THAT CLAIMS 1, 2, AND 4-7 ARE RENDERED OBVIOUS BY THE COMBINATION OF ROGERS AND ROSENBERG

Petitioners have failed to show by a preponderance of evidence that Rogers in view of Rosenberg teaches each and every element of claims 1, 2, and 4-7. EX2005, ¶¶98, 120, 150, 156. Specifically, Rogers in combination with Rosenberg does not teach elements [1e], [1f], and [1d] of Claim 1 as well as Claims 2, and 4-7.

A. The Combination Of Rogers And Rosenberg Fails To Disclose Limitation [1e]

Petitioners fail to show that Rogers in view of Rosenberg disclose or render obvious claim element [1e], which recites “a second controller configured to execute a specified process when said first information and said second information are

coincident within said identification mode.” EX2005, ¶¶98-119. Petitioners claim that a “POSITA would have understood and continue to understand that Rogers discloses that functions of processor 71 could be split into multiple components including multiple processing elements, software modules, or a combination of software modules combined with hardware processors and circuits.” Pet. at 28 (citing Ex. 1003, ¶¶109-110). In so doing, Petitioners argue that Rogers discloses that hardware such as processor 71 can be “processing elements” (plural) and cites to a boilerplate statement in Rogers as support. Pet. at 27, citing Ex. 1006 at 13:21-27. But this excerpt from Rogers fails to disclose a second controller, let alone a second controller as claimed. *See* EX2005, ¶101. Rogers is referring to “embodiments” (plural here), so in those multiple embodiments (plural), there are “processing elements” (plural). *Id.* As a plain matter of English grammar, the word “elements” (plural) used in this way does not mean that Rogers discloses a second controller in any one embodiment. *Id.*

Similarly, Petitioners cite additional boilerplate language from Rogers describing that the embodiments “may be implemented as electronic hardware, computer software, or combinations of both” as support for a second controller. Pet. at 28 (citing EX1006, 14:41-55). However, neither this generic passage nor 14:56-15:4 demonstrates that a POSITA would understand Rogers to include a second controller as claimed. EX2005, ¶102.

In fact, Rogers discloses a single processor 71 and a single memory 72 and a specific way of connecting all the components in its architecture:

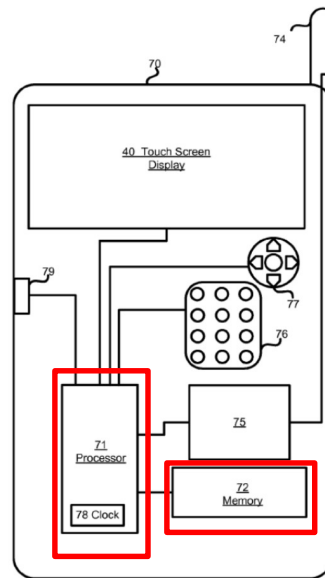


Fig. 1

EX1006, Fig. 1; *see also* EX2005, ¶104; EX2009 at 47:13-16; 80:20-2 (“I only see one reference to a processor and I don’t believe there is reference to something else that is providing processing”). This is in stark contrast to the ’086 Patent’s disclosure of a second controller—the determination unit. EX2005, ¶ 99. In the ’086 Patent, the determination unit is the matcher, *i.e.*, it determines whether the first information and second information match one another. EX2005, ¶99; EX1001, 1:53-62. Thus, the determination unit provides an example of a controller that controls the matching process. *Id.* The determination unit in the ’086 Patent compares first and second information, telling the control unit when there is a match. EX2005, ¶99. The control unit then can do other things with that information. *Id.* But it is the determination

unit that does the matching, and one of its specified processes is to, for example, tell the control unit a match occurred. *Id.* A POSITA would similarly view the control unit and determination unit as separate units, *i.e.*, the first and second controllers, respectively. EX2005, ¶100.

Consistent with the disclosure of the '086 Patent, the same examiner that considered the claims of the '086 Patent during original prosecution and during the reexamination of the '086 Patent found that the control unit and determination unit are distinctive components in evaluating and allowing the claims with those limitations. *See* EX1004 at 87-88. A POSITA would understand the control unit and the determination unit as separate units, *i.e.*, the first controller and second controller, respectively. EX2005, ¶100. As demonstrated above, Rogers does not disclose a distinct, separate second controller by structure or function. EX2005, ¶¶120-134.

1. A Processor Is Not A Controller

Petitioners fail to explain how the “processor” or “processing element” of Rogers corresponds to the claimed “first controller” and “second controller.” *See* EX2005, ¶ 111. Specifically, Petitioners and their expert provide a conclusory analysis equating the processor 71 of Rogers to the claimed “first controller” (Pet. at 20) and “second controller.” Pet. at 28; EX1003 at ¶¶ 108-113. But a POSITA would not equate any type of processor to a controller. In particular, “controller” is

a well understood structure in electrical and computer engineering that, at minimum, has processing, input/output/ (I/O), and memory, as further described below. *See* EX2008 at 18; EX2005, ¶¶106.

A POSITA would understand that the claimed “first controller” and “second controller” can perform particular tasks by using a processor (*e.g.*, CPU) typically included in the known structures of a controller with different configurations or executing different instructions. *Id.* For example, a POSITA would recognize that one example of a known structure corresponding to the claimed “controller” would be a microcontroller. *See* EX2008 at 18 (Valdes-Perez, F.E. and Pallas-Areny, R. (2009) *Microcontrollers: Fundamentals and Applications with PIC*. Boca Raton, FL: CRC Press); EX2005, ¶106.

This textbook describes the basic architecture of the known structure of a microcontroller explaining that “[m]icrocontrollers combine the fundamental resources available in a microcomputer such as the CPU, memory, and I/O resources in a single chip.” EX2008 at 18; EX2005, ¶107. In particular, the textbook explains that “the CPU is the brain of the microcontroller . . . [that] fetches the program instructions from their locations in memory one by one, interprets or decodes them, and executes them. The CPU also includes the ALU circuits for binary arithmetic and logic operations.” *Id.*; EX2005, ¶107. Furthermore, this textbook provides the following exemplary block diagram of a known structure of a microcontroller:

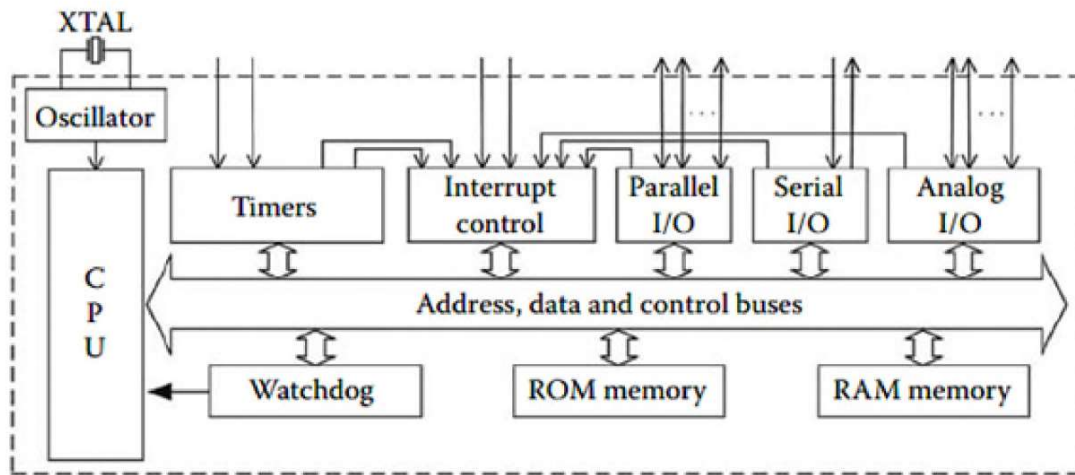


FIGURE 1.2
Basic block diagram of a microcontroller.

EX2008 at 19.

A POSITA would recognize that the control unit disclosed in the '086 Patent corresponds to, for example, a microcontroller as disclosed in this book. EX2005, ¶108. The description of a microcontroller is consistent with the structure of “control unit 3,” disclosed in the '086 Patent. *Id.* Specifically, the '086 Patent discloses that “[t]he control unit 3 includes an arithmetic section, a counter, a determination unit which determines condition in accordance with input information into the control unit 3, and a storage unit which stores various types of data.” EX1001, 3:26-30; EX2005, ¶108. Similar to the textbook description, the '086 Patent is describing an example of a known structure, *i.e.*, a microcontroller (control unit 3) that includes a CPU (*e.g.*, one or more of arithmetic section, counter, and/or determination unit) for performing “arithmetic and logic operations,” as explicitly described in the textbook.

Compare EX1001, 3:26-30 with EX2008 at 18; EX2005, ¶108.

In addition, just like the textbook discloses that the known structure of a microcontroller includes a “program counter (PC) [that] is the CPU register where addresses of instructions are stored,” the ’086 Patent discloses that control unit 3 includes a “counter.” *Compare* EX1001, 3:26-28 with EX2008 at 19 (“program counter”); EX2005, ¶109. Furthermore, just like the textbook discloses the microcontroller including memory, the ’086 Patent also describes that control unit 3 includes a “storage unit.” *Compare* EX1001, 3:29-30 with EX2008 at 19-20 (“ROM Memory” and “RAM Memory”); EX2005, ¶109. Moreover, just like the textbook discloses that the known structure of a microcontroller includes a “CPU [that] fetches the program instructions from their locations in memory . . . and executes them,” the ’086 Patent discloses that the control unit 3 “performs particular processing when the determination unit determines that the identification information detected by the detection unit matches the reference identification information.” *Compare* EX1001, 1:58-59 with EX2008 at 18; EX2005, ¶109.

Having this knowledge, a POSITA would recognize that control unit 3 disclosed in the ’086 Patent with a determination unit would include, for example, a processor (CPU), memory (ROM and RAM), and input/output capabilities (I/O), and a program counter. EX2005, ¶ 110. These structures disclosed in the Microcontroller textbook are the same types of structures described in the ’086 Patent. EX1001, 3:24-

30; EX2005, ¶110. The determination unit disclosed in the '086 Patent that is disclosed as within the control unit provides support for a separate controller even if it is within control unit 3. This is the case because, even if it runs on the same CPU, the memory it draws from and the code it executes are different than the first controller. EX2005, ¶110. Also, the input it receives—the first information—to perform matching with the second information stored in its memory is different. *Id.* The determination unit relies on reference information from the storage unit and input information from the user (EX1001, 3:27-28), and performs the matching algorithm (EX1001, 1:53-64). EX2005, ¶110. Thus, the '086 Patent discloses two separate controller structures, a control unit 3, and a determination unit, and both are implemented in both hardware and software, utilizing the microcontroller's CPU, memory, I/O, and program code for their respective and distinct purposes. EX2005, ¶110. And just like the textbook discloses, the component would “fetch” instructions and execute different processes to provide separate structures. *See* EX2008 at 18; EX2005, ¶110.

Based on this understanding, controllers *have* processors but are not *only* processors (CPUs), as they include additional components (*e.g.*, memory, I/O, and often other components). *See* EX2005, ¶¶107-111.

2. The Petition Fails To Reconcile Rogers' Processor With The Claimed Second Controller

However, the Petition provides no explanation or reconciliation regarding the differences between a “processor” (as recited by Rogers) and “controller” as required by the claims. *See* EX2005, ¶112. For example, Dr. Nielson testified that “it is my opinion that the module is a controller that could be either software or hardware or a combination of both.” EX2009, 79:13-15. However, this naked assertion (and any similar explanation offered in Dr. Nielson’s declaration) fail to identify or explain a separate controller, let alone the first and second controller in claim 1. EX2005, ¶112. Nor do “separate functions” alone demonstrate that Rogers is describing a separate controller, at least because “separate functions” do not include, at a minimum, processing, I/O, and memory. *See* EX2009, 82:16-22; EX2008 at 18; EX2005, ¶112. As such, Petitioners have not shown that the “processor” of Rogers corresponds to both the claimed “first controller” and the “second controller.” EX2005, ¶112.

Petitioners essentially concede that Rogers fails to disclose a second controller when it argues that “a POSITA would have found it obvious to modify Rogers to have a second controller configured to execute the specified process of limitation [1e]....” Pet. at 29. But this is pure hindsight. EX2005, ¶113. Petitioners attempt to duplicate the processor 71 to create another processor, and modify the copy of

processor 71 to include “a second controller configured to execute the specified process of this limitation....” Pet. at 29. A second controller is not present in Rogers, and a POSITA would not be motivated to modify Rogers’ single processor system to a dual controller system. *See* EX2005, ¶¶113-115.

3. Modifications To Rogers Are Untenable

A POSITA would recognize expanding Rogers to add an additional controller/processor would require at least (1) adding an additional powered hardware component; (2) rewriting source code routines such that some source code is executed on one controller and other source code is executed on another controller; (3) additional memory controllers/interfaces to allow both processors access to memory 72; (4) adding a means of communication between the extant processor 71 and the new controller; and (5) numerous additional changes to the hardware and software of the device. EX2005, ¶105.

Making the change to Rogers proposed by Petitioners would result in an increase in costs of the device and would require additional power and circuitry to support a two processor structure versus a single processor structure. EX2005, ¶105. And there is no clear motivation a POSITA would have to make all of these modifications, since Rogers’s functionality is already adequately supported by Rogers’s own single processor 71. *Id.*

Petitioners claim that the conjured second controller—“a processing element of processor 71”—unlocks the device based on a matching of graphical passwords, and that this is the specified process; further, that this “a processing element of processor 71” “can be a different processing element than the processing element that performs the functions of limitation 1[c]” (*i.e.*, the first controller). Pet. at 28-29. It is notable that Petitioners do not provide any support for such a conclusion other than that a POSITA would understand Rogers to disclose such a result, but this does not demonstrate that Rogers discloses the second controller as claimed, for at least the reasons set forth above. EX2005, ¶114.

Petitioners do not rely on Rosenberg to address the deficiencies in Rogers as to element [1e]. *See* Pet. at 27-30; EX1003, ¶¶ 108-114; EX2009 at 97:4-6 (“I don’t explicitly reference [Rosenberg] here.”); 97:16-19; *see also* EX2005, ¶116.

As such, Petitioners have not shown by a preponderance of the evidence that Rogers in view of Rosenberg renders obvious element [1e] of the ’086 Patent. Because Petitioners rely on this analysis of [1e] for all Grounds, Grounds 2-4 similarly fail.

B. The Combination Of Rogers And Rosenberg Fails To Disclose Limitation [1f]

Petitioners contend that Rogers or the Rogers-Rosenberg (Ground 1) combination renders element [1f] obvious. Claim element [1f] recites a registering

mode where “in said registering mode, there are provided a first registering mode for inputting input information by a pad of the finger, and a second registering mode for inputting input information by an end of the finger, and said second information relating to the identification of the user is produced upon basis of the input information, which is inputted at least in the first or second mode.” But Rogers or the Rogers-Rosenberg combination does not disclose first and second registering modes. *See* EX2005, ¶¶120-149. While Rogers for example, discusses “large fingertip” and a small stylus tip to provide input during the “registration process,” these inputs are not treated as nor do they disclose or render obvious two separate registering modes as claim element [1f] requires. EX2005, ¶122. Rogers discloses at most a single “registering process,” not multiple modes or multiple training sessions. *See* EX1006, 8:42-67; EX2009, 89:10-22 (“We have just one registration mode that is either going to have an identification that there’s finger pad or an identification that there’s fingertip and it’s one or the other and that’s it.”); EX2005, ¶122. In contrast, claim element [1f] requires multiple registering modes.

1. Rogers In View Of Rosenberg Does Not Disclose Multiple Registration Modes Under A Plain Reading Of The Claims

Rogers’ ability to “distinguish between inputting two different types of user input” does not disclose the claimed first and second modes. *See* Pet. at 31 (citing EX1003, ¶¶116-124); EX2005, ¶127. During the registration process disclosed in

Rogers, a user may present a graphical passcode, such as a series of touches, swipes, and/or taps on a touch screen with varying, pressure, speed, and position. *See* EX1006, 3:32-36. The system described by Rogers records the graphical passcode, including the characteristics and parameters of the input such as pressure, speed, position, and width. *See, id.*, 8:59-67.

However, Petitioners are incorrect that an ability described in Rogers to “discriminate between smaller and larger contacts areas” discloses “separate registering modes for entering different pieces of user information based on the size measured from the contact area of the user’s touch.” Pet. at 33; EX2005, ¶126. Any capability to “discriminate” does not correspond to the claimed “first registering mode for inputting information by a pad of a finger, and a second registering mode for inputting information by an end of the finger.” Petitioners inconsistently apply the meaning of “first/second registering *mode*” in claim element [1f] in comparison with the understanding applied to “registering *mode*” in claim element [1c]. EX2005, ¶¶127-128.

For example, regarding claim element [1c], Petitioners vaguely identify “[t]he *process* disclosed by Rogers’ FIG. 4 [as] the claimed ‘registration mode.’” Pet. at 23 (citing EX1003, ¶103); EX2009 at 48:21-49:7 (“the claimed registration mode is satisfied by the *process* disclosed in Rogers Figure 4”). Similarly, Petitioners refer to “[t]he *process* disclosed by Roger’s FIG. 5 ... [as] the claimed ‘identification

mode.” Pet. at 21; EX2009 at 48:13-20 (“I identify the identification mode as the *process* disclosed in Rogers”). Thus, for element [1c], Petitioners interpret both of the claimed modes as “process.” Petitioners’ expert, Dr. Seth Nielson, confirmed this interpretation during cross-examination. EX2009 at 49:8-16 (“the word ‘mode’ gets used a couple of different ways”); 53:3-8 (“So mode can refer to having a setting and you see that with registration mode versus the identification mode. And it can also be a detection of **input modes** in which it’s based on detecting the parameters to determine what **mode of input** is being used.”) (emphasis added).

In comparison, when referring to the “first registering mode” and “second registering mode” in limitation [1f], Petitioners and Dr. Nielson pivot and rely on Rogers’ disclosure of “distinguish[ing] between inputting two different types of user input.” Pet. at 31. Specifically, Petitioners rely on (without citation to Rogers) “separate registration *modes for entering* different pieces of user information based on the size measured from the contact area of the user’s touch.” Pet. at 33. In other words, as explained by Dr. Nielson, Petitioners interpret “first registering mode” and “second registering mode” as different *input methods* that can be detected. See EX1003, ¶116 (“Rogers discloses two registering modes that distinguish between inputting two different types of user input.”), ¶121 (“Rogers discloses that the registration of a graphical passcode that can discriminates [sic] between smaller and larger contact areas of the user’s finger...Rogers’ disclosure of registering a

graphical passcode that distinguishes between small and large contact areas corresponds to the first and second registration modes.”), ¶123 (“Rogers discloses that finger touches are some of the types of user input information, among others, that the disclosed graphical template can distinguish between.”); EX2009, 52:20-53:2 (“So inputting by a pad or inputting by a tip are two different modes of inputting information...”); 53:16-17 (“You now compare the mode of input.”), 68:20-69:3 (“...part of the complication here is the way the claim language is awkwardly using mode for two different concepts”); 70:21-71:3 (“[Rogers] has an acceptable envelope of values that is uses to identify these modes that have been inputted.”); 86:12-87:4 (“There’s two swipes, but one of those could be a finger pad and one could be a fingertip.”); 87:5-87:12 (Q: “... if one [swipe] was done clearly with a finger pad and one was done clearly with a fingertip ... that would be an example of the first registering mode and the second registering mode?” A: “Yes.”).

Thus, under a plain reading of the claim terms, Rogers fails to disclose a first registering mode **and** a second registering mode, as claimed, because Rogers only discloses a single registering mode. EX2005, ¶133.

2. Rogers In View Of Rosenberg Does Not Disclose Multiple Registration Modes Under Patent Owner’s Proposed Claim Construction

The gap between Rogers and the claims of the '086 Patent is more apparent under the proposed constructions. EX2005, ¶134. It is clear that Rogers does not

disclose “a first operational state for registering in which information is input by a pad of the finger” and “a second operational state for registering in which information is input by an end of the finger, the first registering mode and the second registering mode being different operational states.” *Id.* Petitioners’ reliance on Rogers distinguishing between “smaller and larger contact area of the user’s finger and different positions on the touch screen” (Pet. at 33) does not disclose two differing operational states of an apparatus. *Id.* As analyzed above, the different *input methods* described in Rogers are not operational states and thus, cannot be understood as different operational states of the apparatus. *Id.* Accordingly, applying the claim constructions offered herein, Rogers does not disclose element [1f].

Moreover, when correctly applying a consistent understanding to the registering modes, it is clear that Rogers does not disclose the first and second registering modes. A POSITA would understand that a mode is a system state such that the same action has different results or effects based on the current value of the system state. EX2005, ¶130. Petitioner was on notice of Patent Owner’s claim interpretation when they filed the Petition because Patent Owner took a consistent position before the Office during the reexamination proceedings. EX1004 at 29. Dr. Nielson acknowledged this during cross examination: “[Dr. Wobbrock in the Reexamination] defines a mode where it’s a setting, and depending on a setting the same action leads to a different outcome in some way or another. And then the

settings represents the mode.” EX2009 at 50:10-13; Yet, in forming his opinions, Dr. Nielson testified “there was nothing in [the reexamination proceedings] that caught my eye that I had misunderstood or missed from my previous times looking at it.” *Id.* at 38:21-39:5.

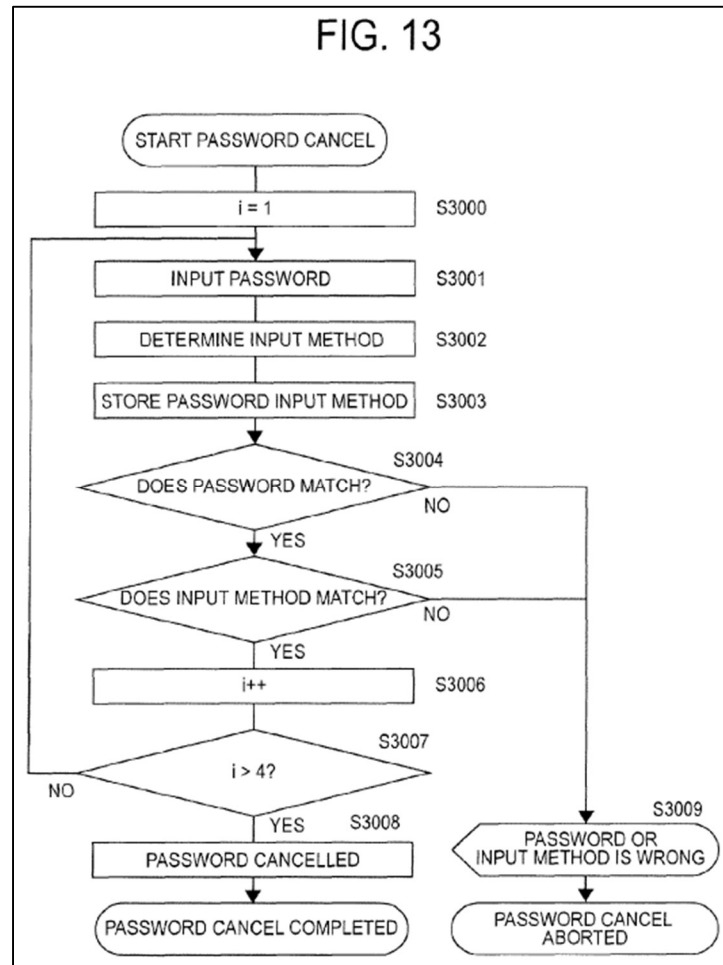
For example, as described in Rogers a graphical passcode is input on a touchscreen. When the state of the device in Rogers is the registration process, then the outcome is that a template for the graphical passcode is stored in memory. *See* EX1006, 8:55-59; EX2005, ¶132. In comparison, when the state of the device in Rogers is in the identification process and *the same* graphical passcode is input on the touchscreen, then access to the device is granted. *See* EX1006, 9:60-63. The distinction between a registering mode and identification mode in Rogers is identifiable by the systems response to the graphical passcode being input.

When this principle is applied to claim element [1f], Rogers does not disclose the first and second registering mode because Rogers only discloses a single registering mode. EX2005, ¶¶122, 132. As the claim language makes clear, “in said **registering mode**, there are provided a **first registering mode** for inputting input information by a pad of the finger, and a **second registering mode** for inputting input information by an end of the finger.” EX1001, 8:54-60 (claim 1). Accordingly, applying the appropriate construction for “first registering mode” and “second registering mode” it cannot be disputed Rogers only discloses a single initializing

mode or registration process. *See* EX1006, 8:42-67; FIG. 4; EX2005, ¶134.

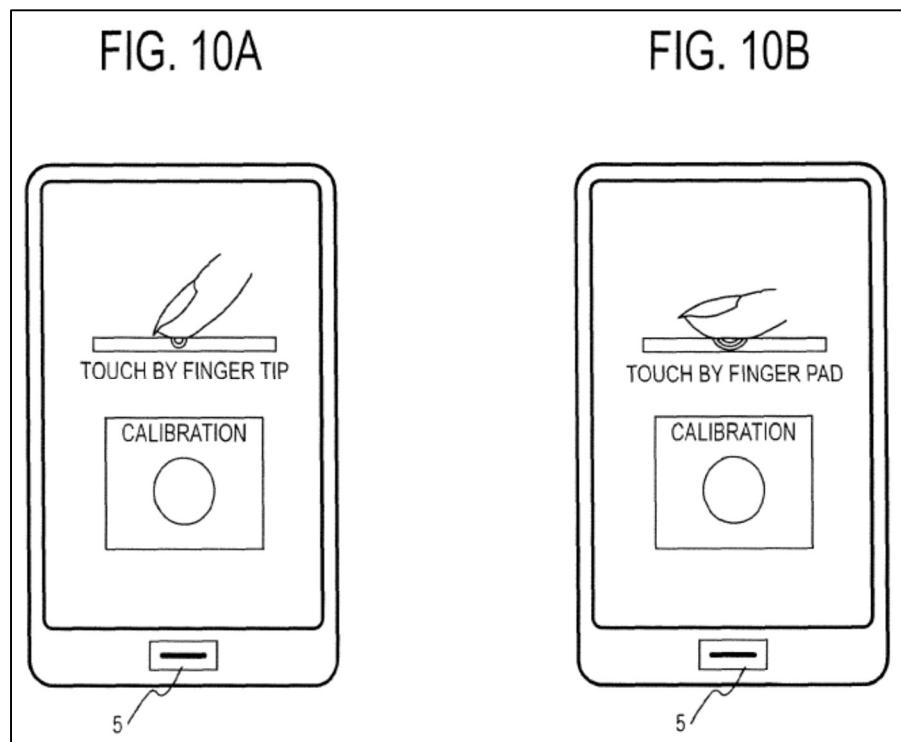
Abiding with the plain requirements of the claims, the various parameters and characteristics of a graphical passcode discussed in the Petition (and any discrimination between said parameters and characteristics) cannot be considered multiple registering modes. EX2005, ¶122. Rogers only discloses a single registering mode—with the graphical passcode as the input, and the creation and storage of a template as the response. *Id.*, ¶¶122, 129.

In the '086 Patent, the matching process can involve matching finger pads and finger ends (tips), among other information. EX2005, ¶124. This further supports the existence and operation of two registering modes in the '086 Patent. *Id.* But in Rogers, no such algorithmic treatment of these modes is provided, so Petitioners' silence on this point is unsurprising. *Id.* In Rogers, matching occurs simply by way of comparing scalar values within tolerance envelopes. *Id.* By contrast, in the '086 Patent, for example, Figure 13 considers input from the two modes in step S3005:



Ex. 1001, FIG. 13, 7:13-37. Rogers neither depicts algorithms that illustrate two registering modes nor contains any explanation regarding the two registering modes claimed in the '086 Patent. EX2005, ¶124. Because Rogers does not provide separate registering modes for a finger pad and finger tip, during its identification process, Rogers cannot categorize the received input as a finger pad versus a finger tip at runtime, but merely compares the size and other parameters of the received input with stored template. *Id.*

Additionally, in the '086 Patent, there are separate user interfaces for registering touches regarding different portions of the finger. *See* FIGS. 10A, 10B (displaying different UIs during registering); EX2005, ¶125. Figures 10A and 10B indicate that there are separate user interfaces for registering touches with different portions of a finger. *Id.* As an example of the claimed second registering mode, Figure 10A “prompt[s] the user to make a finger tip contact” and “control unit 3 records the contact range of the finger tip input.” EX1001, 6:31-33; FIG. 10A; EX2005, ¶84. As an example of the claimed first registering mode, Figure 10B “prompt[s] the user to make a finger pad contact” and “control unit 3 records the contact range of the finger pad input.” *Id.*, 6:34-36; FIG. 10B EX2005, ¶85.



EX1001, FIGs. 10A, 10B. No registration user interfaces with different UIs exist in

Rogers where different portions of the finger are registered. EX2005, ¶125.

Petitioners contend that that Rogers discloses allowing the touch surface to “discriminate between a large fingertip and a small stylus tip.” Pet. at 31 (citing Ex. 1006, 7:56-62). Petitioners further contend that “Rogers further discloses two registration modes because the ‘training session’ for developing the thresholds, ranges or envelopes, for the measured parameters such as line thickness, involves repeated entry of the passcode to create thresholds for distinguishing between the different measured parameters, such as line thickness or contact area, for the touch inputs that make up the desired passcodes.” Pet. at 33 (citing Ex. 1006, 8:42-67). Petitioners’ characterization of Rogers is off the mark.

That Rogers is capable of receiving input from objects of varying widths has nothing to do with Rogers receiving input *in* separate registering modes (*i.e.*, states), let alone modes providing for registering finger pads and finger ends. EX2005, ¶126. For example, Rogers never once uses the term “threshold.” *Id.* Rather, Rogers is primarily focused on parameter envelopes, which are acceptable value ranges for touch parameters. *See* EX1006, 8:49-54; EX2005, ¶126; EX2009 at 68:8-14 (“So the training session is trying to do multiple takes of the same registration mode in order to have ... [a] more flexible password entry process, but that’s different from the two registration modes where you have a thick and a thin.”). These value ranges are also not the two claimed registering modes, but are scalar quantities that provide

a range around a central (i.e., mean, median, etc.) scalar quantity. EX2005, ¶126.

Furthermore, Petitioners' interpretation of the claims clashes with the prosecution history. During the reexamination of the '086 Patent, for element [1c], the examiner issued a rejection based on the reference (U.S. Patent No. 8,941,466 ("Bayram")) disclosing an "authentication phase" corresponding to the claimed identification mode and a "registration phase" corresponding to the claimed registering mode. *See* EX1004 at 86. For element [1f], the examiner pointed to a "signature" that may include "finger touch information that includes an area of the finger touch, a shape of the finger touch, an orientation of the finger touch, [and] characteristics of the finger touch." *Id.* at 88.¹

An interview was conducted with the examiner, during which it was agreed that "the combination did not have 2 registration modes, one for the finger tip and one for the finger pad." EX1004 at 8; EX2005, ¶87. Further, as described by the applicant:

¹ As in the Petition, the examiner admitted that Bayram did not explicitly disclose that "fingertips and finger pads produce different sizes, shapes, and orientations" and thus relied on the disclosures in Rosenberg. EX1004 at 89.

During the interview, Patent Owner's representatives explained the differences between the cited art and the limitations of claim 1, in particular the "first registering mode for inputting information by a pad of the finger, and a second registering mode for inputting input information by an end of the finger." Specifically, Patent Owner's representatives explained that neither Bayram nor Rosenberg (nor the two in combination) taught these features of claim 1, as outlined in more detail herein. Patent Owner's representatives also responded to the examiners' questions regarding the now-settled litigation involving the '086 Patent, as well as support in the specification for the limitations discussed.

EX1004 at 75.

More particularly, neither Bayram nor Rosenberg nor Chin (nor the combination of these references) teach "a first registering mode for inputting input information by a pad of the finger, and a second registering mode for inputting input information by an end of the finger" (emphasis added). Instead, as discussed during the interview in this proceeding, Bayram at best describes real-time input and signature recognition but does not describe separate registering modes.

Id. In response to the examiner interview and the excerpted arguments above, the reexamination certificate was issued. *See id.*; EX2005, ¶87.

To reiterate, the understanding applied by the examiner to the claimed modes, was based on the same understanding put forth by the Patent Owner during the reexamination, and as stated above in Section III.B. EX2005, ¶88. Indeed, in describing a "mode," applicant offered the following explanation:

A POSITA would understand that the concept of a mode is a setting S such that the same action A has different results or effects based on the current value of S . Put differently, when S equals mode $M1$, then action A leads to result $B1$. But when S equals mode $M2$, then same action

A leads to result *B2*. For example, with caps lock “off”, the action of hitting the “W” key is to produce a lower-case “w”. But with caps lock “on”, the same action of hitting the “W” key is to produce an upper-case “W”. The same action *A* produces different results (*B1*, *B2*) because of the current mode setting *S*.

In the '086 Patent, touching the screen, the action *A*, registers values for a fingertip (Figure 10A) in one registering mode *M1*. The same action *A*, touching the screen, registers values for a finger pad (Figure 10B) in another registering mode *M2*. So, in Figures 10A and 10B, the two registering modes have the same action resulting in different outcomes, namely the values registered for finger tips and pads, respectively.

EX1004 at 29 (Decl. of Jacob Wobbrock, ¶¶ 68-69); *see also* EX2005, ¶88. Petitioners and their expert largely ignore the intrinsic record and now seek to impose their own twist to the term mode. *See* Pet. at 5 (acknowledging the reexamination in a single paragraph); EX1003 at ¶ 52 (same). Notwithstanding the intrinsic evidence regarding mode from the reexamination proceedings, Dr. Nielson testified that “there was nothing in there that caught my eye.” EX2009 at 38:21-5.

Thus, just like where in the reexamination Bayram did not disclose two registering modes, neither does Rogers here. Rather, in Rogers, there is only one

mode in which the user touches the screen to calibrate (the “initializing/training’ mode”) where at least one area is recorded. See EX1006, 8:42-67; EX2005, ¶132. The user might touch repeatedly to create an envelope, or range, of touch area values. But there are not two registering modes. *See, e.g.*, Ex. 1006, 7:7-16, 7:65-67; EX2005, ¶132; EX2009 at 88:7-8 (“I’ve got both a pad [input method] and a tip [input method] **in the same registration** [process]”); 88:16-18 (“There could be a recording of the first registering mode and the second registering mode during the **overall registering mode**”).

3. Rosenberg Cannot Rehabilitate The Shortcomings Of Rogers

Petitioners attempt to obfuscate what is truly missing in Rogers—no two registering modes—with some misdirection, focusing on the lack of an explicit mention of a finger pad and finger tip and utilizing Rosenberg, but Rosenberg and cannot make up for (nor do Petitioners argue) that Rogers fails to disclose the two registering modes. Pet. at 36 (“To the extent PO argues that Rogers does not fully disclose limitation [1f] because Rogers does not explicitly recite the use of ‘finger pad’ and ‘finger tip’ inputs, Rogers in view of Rosenberg renders this limitation obvious.”); Pet. at 68 (“To the extent PO argues that Rogers does not fully disclose limitation [1f] because Rogers does not explicitly recite the use of ‘finger pad’ and ‘finger tip’ inputs, Rogers in view of Rekimoto renders this limitation obvious.”);

EX2009 at 64:18-22 (“Rosenberg describes finger pad and fingertip as two separate modes.”).

In the Institution Decision, the Board *sua sponte* cited to support for the two registering modes in Rosenberg. *See* ID at 31-32. Petitioners do not rely on Rosenberg as disclosing a first and second registering mode in the Petition. Pet. at 30-35. Instead, the Board determined that “Rosenberg teaches two modes—a first fingertip interaction mode and a second finger pad interaction mode” based on an erroneous reading of Patent Owner’s Preliminary Response. ID at 32. However, a “fingertip interaction mode” and a “finger pad interaction mode” are not the claimed first and second registering modes. The claim language describes the registering mode and identification mode as “**operating modes.**” EX1001, claim 1; EX2005, ¶136. Accordingly, under a plain reading of the claims, an interaction mode cannot satisfy the claimed operating modes, including the first and second registering modes. *Id.* This distinction is made even clearer by the proper construction of the first and second registering modes that explicitly identify the first and second registering modes as operational states.

Furthermore, where Rosenberg discloses a first targeting mode and a second targeting mode, both modes refer to different *responses* or outcomes after distinguishing different input methods. *See* EX1007, Abstract; EX2009 at 99:17-19 (“So basically using the finger pad or fingertip, it will determine a direct-targeting

mode or an offset-targeting mode as one possibility.”). Here, the “targeting modes” of Rosenberg align with Petitioners’ inaccurate reading of the claims (discussed above) that the first and second registering modes refer to the type (or mode) of input. *See* EX2005, ¶137. However, putting aside the Petition never makes this connection, labeling a user interaction as a “mode” is far from demonstrating the operation state of the apparatus, as the claims require. *See, e.g.*, EX1007 at ¶ [0027]; *see also* EX2005, ¶137. Instead, Rosenberg discloses a system that will respond differently to different inputs. EX2005, ¶¶144-145.

Furthermore, the different targeting modes in Rosenberg are not “a first **registering** mode” and “a second **registering** mode.” EX2005, ¶¶138-142. For example, detecting differences between “finger-tip interactions and finger-pad interactions” does not mean that Rosenberg offers two registering modes, one for finger pads and one for fingertips, as element [1f] requires. EX2005, ¶138. Touch area is a characteristic or parameter (*i.e.*, a scalar quantity) captured as part of an input, and Rosenberg merely associates distinguishable touch areas (and other touch properties) to different functions. EX2005, ¶¶138, 142. Accordingly, the system of Rosenberg merely describes different outputs in response to different inputs discernable based on parameters of the inputs, and Rosenberg does not describe different outcomes based on the *same* inputs. EX2005, ¶¶142-145.

As such, Petitioners have not shown by a preponderance of the evidence that Rogers and Rosenberg render obvious the two registering modes of element [1f] of the '086 Patent.

C. The Combination of Rogers and Rosenberg Fails to Disclose [1d]

Petitioners fail to show that Rogers or the Rogers-Rosenberg combination discloses or renders obvious claim element [1d], which recites “memory that is configured to store second information relating to the identification of the user, which is stored in advance.”

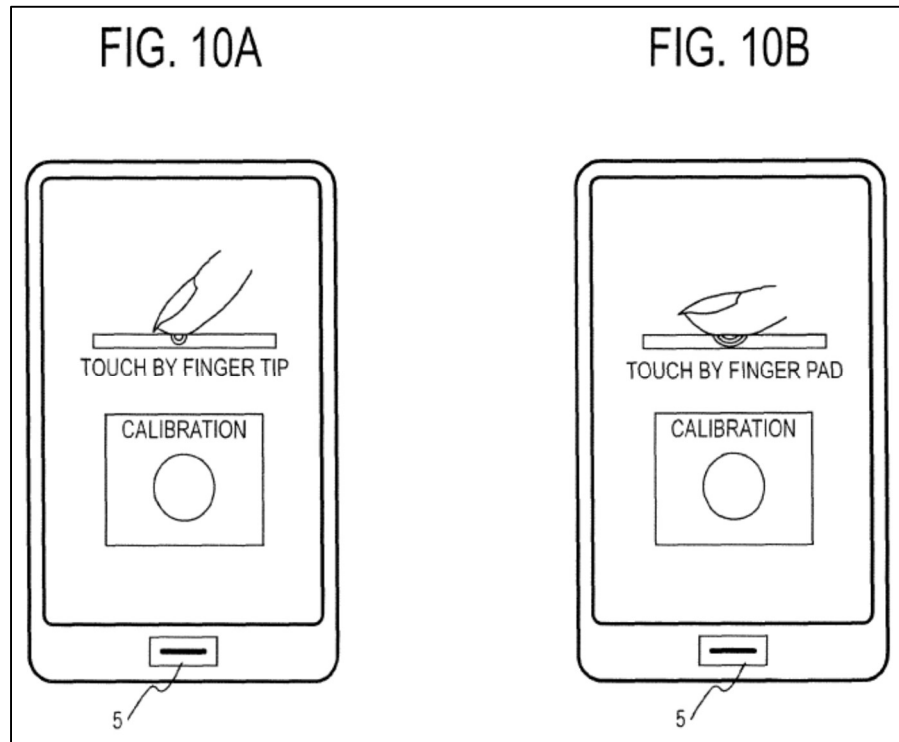
As explained above, Rogers in view of Rosenberg does not disclose the first and second registering modes in element [1f]. EX2005, ¶¶120-149. As a consequence, Rogers in view of Rosenberg also fails to provide the claimed second information. *Id.*, ¶152. Even though Rogers discusses some information being stored, Rogers fails to disclose that *the* information being stored is “produced upon basis of the input information, which is inputted at least in the first or second mode,” as claimed. *Id.*

Therefore, for at least the same reasons that Rogers in view of Rosenberg does not disclose element [1f], Rogers in view of Rosenberg does not disclose the claimed second information in element [1d].

D. The Combination of Rogers And Rosenberg Fails to Disclose Claim 5

Neither Rogers nor Rosenberg (or the combination) discloses “a first image and first descriptive text associated with the first registering mode and a second image and second descriptive text associated with the second registering mode.” Indeed, Petitioners rely on the physical components from Rogers and Rosenberg but import the knowledge of POSITA to describe the images and descriptions required by claim 5.

While Rogers includes some examples of a graphical password, Rogers offers no discussion of any particular graphical user interface implemented to register the graphical password. EX2005, ¶158. In comparison, the '086 Patent provides a clear description and depiction of the claimed images and displayed text. For example, Figure 10A “**prompt[s] the user** to make a finger tip contact” and Figure 10B “**prompt[s] the user** to make a finger pad contact.” EX1001, 6:34-36; FIG. 10B.



EX1001, FIGS. 10A, 10B. No comparable discussion or figure is present in Rogers or Rosenberg where different portions of the finger are registered. EX2005, ¶158.

Moreover, based on Petitioners' unsuitable interpretation of the first and second registering modes (*i.e.*, as input methods), their arguments for claim 5 are at odds with the arguments presented for claim [1f]. For example, for claim 5 Petitioners argue that "it would have been obvious to try as one of a few design choices (use of text and symbol guidance versus no guidance) for **both forms of input.**" Pet. at 43 (emphasis added). Absent from the Petition is an articulated reason for why different forms of input would require different images and text *during a registration process*. EX2005, ¶159. Therefore, where Petitioners miss the mark in identifying a first and second registering mode, Petitioners cannot provide a

sufficient explanation for finding it obvious to display an image and corresponding text for each registering mode.

II. GROUND 2: PETITIONERS HAVE FAILED TO ESTABLISH THAT CLAIMS 9-14 ARE RENDERED OBVIOUS BY THE COMBINATION OF ROGERS, ROSENBERG, AND MIYAZAWA

Ground 2 challenges claims 9-14, which depend from claim 1. Petitioners do not rely on Miyazawa to cure any of the deficiencies of the Roger-Rosenberg combination with respect to claim 1. As such, due to at least the reasons set forth above with respect to Ground 1, Petitioners have similarly failed to establish that claims 9-14 are rendered obvious by the combination of Rogers, Rosenberg, and Miyazawa. EX2005, ¶161.

III. GROUND 3: PETITIONERS HAVE FAILED TO ESTABLISH THAT CLAIMS 1, 2, AND 4-7 ARE RENDERED OBVIOUS BY THE COMBINATION OF ROGERS AND REKIMOTO

Ground 3 relies on the same faulty arguments grounded in Rogers alone for claim limitations [1e] and [1f] distinguished above in Sections IV(A) and IV(B). A combination of Rogers and Rekimoto does not change the result. Thus, Ground 3 fails for at least the same reasons. EX2005, ¶162.

A. The Combination Of Rogers And Rekimoto Fails To Disclose Limitation [1e]

In Ground 3, Petitions do not advance any new arguments that Rogers or the Rogers-Rekimoto discloses the claimed “second controller.” Indeed, Dr. Nielson confirmed that Petitioners do not allege that Rekimoto discloses a “second

controller.” *See* EX2009 at 103:14-16 at 104:4-6 (“Q: And you don’t rely on Rekimoto as disclosing a second processor, do you? A: No.”). As such, Rogers and the Rogers-Rekimoto combination do not disclose limitation [1e] for the same reasons set forth above in Section IV(A). EX2005, ¶¶163-164.

B. The Combination Of Rogers And Rekimoto Fails To Disclose Limitation [1f]

Petitioners reliance on Rogers in view of Rekimoto for limitation [1f] is deficient. For the same reasons set forth above in Section IV(B), Rogers does not disclose limitation [1f]. Adding Rekimoto to Rogers does not change the result. Rekimoto is a distraction from the fact that Rogers does not disclose a first and second registering mode. Petitioners offer no argument or analysis reliant on Rekimoto to cure the deficiency in Rogers with respect to providing a first registering mode and a second registering mode “in said registering mode.” *See* Pet. at 67 (“Petitioners submit that Rogers alone renders obvious [element [1f]]”); EX2009 at 103:10-13 (“Rekimoto discloses the finger pad and fingertip registration modes that are required in limitation 1[f], which interface with the overall registration process that is discussed in Rogers.”). Accordingly, Rogers and the Rogers-Rekimoto combination do not disclose limitation [1f]. EX2005, ¶168.

Petitioners admit they’re not relying on Rekimoto as disclosing a first and second registering modes. Pet. at 67-68; EX2009 at 14-16 (“Q: And you don’t rely

on Rekimoto as disclosing a second processor, do you? A: No.”). Rekimoto’s description of finger pad and finger tips are not, as characterized by the ID, “two input modes.” ID at 40. Such a reading is not consistent with the understanding of “mode” for all claim terms, and is not relied on for that proposition in the Petition. Here, the “two input modes” of Rekimoto align with Petitioners inaccurate reading of the claims (discussed above) where the first and second registering modes refer to the manner (or mode) of input. EX2005, ¶¶167-169. However, these inputs are not a state of the system such that the *same* input results in *different* response. Rather, in Rekimoto the system responds differently to different inputs. *See, e.g.*, EX1010 at 5:31-37; *see also* EX2005, ¶169. Furthermore, the different input modes in Rekimoto are not “a first **registering** mode” and “a second **registering** mode.” *Id.*

As argued by Petitioners, “Rekimoto discloses inputting input information by a pad of the finger (“finger pad”) and inputting input information by an end of the finger (“fingertip”).” Pet. at 68 (citing EX1007, ¶ 178-181). However, just because Rekimoto can detect fingertip touches and finger pad touches does not mean that Rekimoto provides two registering modes for finger pads and fingertips, as element [1f] requires. EX2005, ¶168. Touch area is a scalar quantity (as explained with respect to Rogers *supra*), and Rekimoto simply maps different contact areas of different touch inputs to different functions. *Id.*

Indeed, Petitioners agree with this assessment:

During the input operation, the contact area of the contact sensor section 2 occupied by the fingertip equals a small area S1... The contact area of the contact sensor section 2 touched by the finger pad equals a large area S2... That is, compared with the area S1, which is an area of the contact sensor section 2 surface touched by the fingertip, the area S2 touched by the finger pad is larger (wider). These areas S1, S2 can be clearly distinguished by using a threshold St of a specified area as a boundary.

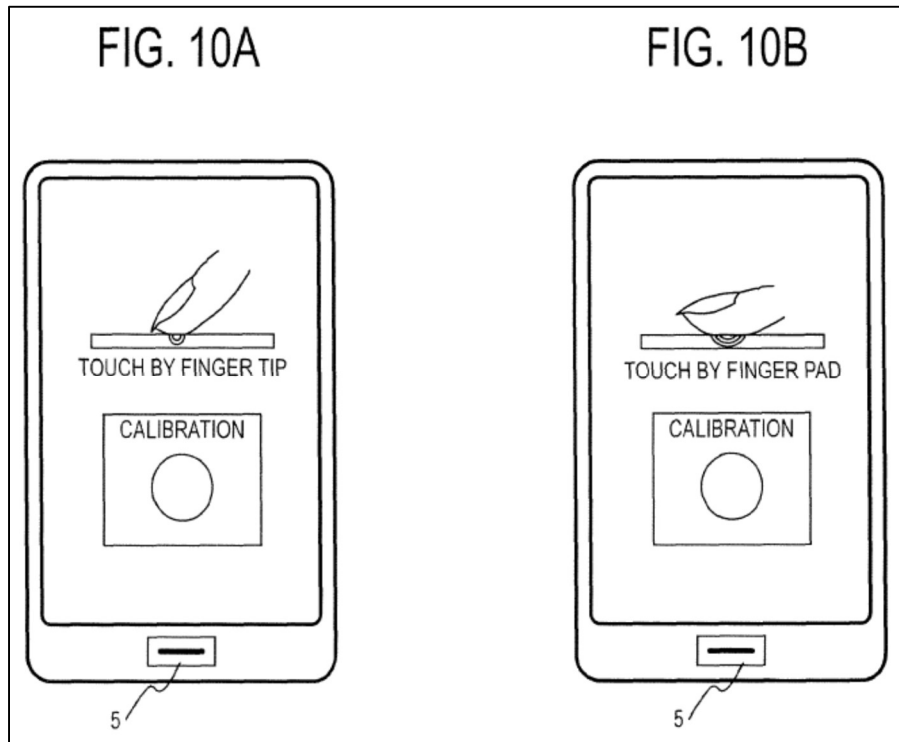
Pet. at 70 (citing EX1010, 5:18-31). Petitioners further rely on Rekimoto disclosing “that fingertip and finger pad touches can be used for different processing (zoom operations in the illustrated example).” Pet. at 71; *see also* EX1010, 5:31-37. However, there are not two registering modes, one for fingertips and one for finger pads in Rekimoto merely because finger pads and tips produce different-sized contact areas any more than there were two registering modes in Rogers (and two registering modes were not in Rogers). EX2005, ¶169.

As such, Petitioners have not shown by a preponderance of the evidence that Rogers and Rekimoto render obvious the two registering modes of element [1f] of the '086 Patent.

C. The Combination Of Rogers And Rekimoto Fails To Disclose Claim 5

Neither Rogers nor Rekimoto, or the combination thereof, discloses “a first image and first descriptive text associated with the first registering mode and a second image and second descriptive text associated with the second registering mode. EX2005, ¶180. Indeed, Petitioners rely on the knowledge of POSITA alone as describing the images and descriptions required by claim 5.

Where Rogers includes many examples of the graphical password, Rogers offers no discussion of any particular graphical user interface implemented to register the graphical password. *Id.* ¶181. In comparison, the '086 Patent provides a clear description and depiction of the claimed images and displayed text. For example, Figure 10A “**prompt[s] the user** to make a finger tip contact” and Figure 10B “**prompt[s] the user** to make a finger pad contact.” EX1001, 6:34-36; FIG. 10B.



EX1001, FIGs. 10A, 10B. No comparable discussion or figure is present in Rogers. EX2005, ¶181.

Moreover, based on their unsuitable interpretation of the first and second registering modes (*i.e.*, as input methods), Petitioners' arguments for claim 5 are at odds with the arguments presented for claim [1f]. For example, for claim 5 Petitioners argue that "it would have been obvious to try as one of a few design choices (use of text and symbol guidance versus no guidance) for **both forms of input.**" Pet. at 74-75 (emphasis added). Absent from the Petition is an articulated reason for why different forms of input would require different images and text *during a registration process*. EX2005, ¶182. Therefore, where Petitioners miss the mark in identifying a first and second registering mode, Petitioners cannot provide

a sufficient explanation for finding it obvious to display an image and corresponding text for each registering mode.

Neither Rogers nor Rekimoto, or the combination thereof, renders Claim 5 obvious.

IV. GROUND 4: PETITIONERS HAVE FAILED TO ESTABLISH THAT CLAIMS 9-14 ARE RENDERED OBVIOUS BY THE COMBINATION OF ROGERS, REKIMOTO, AND MIYAZAWA

Ground 4 challenges claims 9-14, which depend from claim 1. Petitioners do not rely on Miyazawa to cure any of the deficiencies of the Roger-Rekimoto combination with respect to claim 1. As such, due to at least the reasons set forth above with respect to Ground 3, Petitioners have similarly failed to establish that claims 9-14 are rendered obvious by the combination of Rogers, Rekimoto, and Miyazawa. EX2004, ¶184.

V. CONCLUSION

For at least the foregoing reasons, the Board should confirm the patentability of Claims 1, 2, 4-7, and 9-14.

Dated: January 23, 2025

Respectfully submitted,

/Robert G. Pluta Reg. No. 50,970 /
Robert G. Pluta (Reg. No. 50,970)
MAYER BROWN LLP
71 S. Wacker Drive
Chicago, IL 60606
Telephone: (312) 701-8641

Patent No. 8,982,086
Patent Owner Response

Fax: (312) 706-8144
rpluta@mayerbrown.com

Saqib J. Siddiqui (Reg. No. 68,626)
Seth W. Bruneel (Reg. No. 78,973)
MAYER BROWN LLP
1999 K Street NW
Washington, D.C., 20006
ssiddiqui@mayerbrown.com

Counsel for Maxell, Ltd.

CERTIFICATE OF SERVICE

I hereby certify that on this 23rd day of January, 2025, a copy of the attached
PATENT OWNER RESPONSE TO PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 8,982,086, together with all exhibits was served by electronic
mail to the attorneys of record, at the following addresses:

James Heintz
Jim.Heintz@us.dlapiper.com

Gianni Minutoli
Gianni.Minutoli@us.dlapiper.com

With a courtesy copy by electronic mail to:

dla-samsung-maxell@us.dlapiper.com

Respectfully submitted,

Date: January 23, 2025

By: /Robert G Pluta Reg No 50970/
Robert G. Pluta (Reg. No. 50,970)

Counsel for Maxell, Ltd.

CERTIFICATION PURSUANT TO 37 C.F.R. § 42.24(d)

Pursuant 37 CFR 42.24(d), the undersigned certifies that this Preliminary Response and complies with the type-volume limitation of 37 CFR §42.24(a). The word count application of the word processing program used to prepare this Preliminary Response indicates that the Preliminary Response contains 11,297 words, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a).

Respectfully submitted,

/Robert G Pluta Reg No 50970/

Robert G. Pluta (Reg. No. 50,970)