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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

OAKLAND DIVISION

ATMEL CORPORATION, a Delaware corporation; ATMEL SWITZERLAND, a corporation; ATMEL FRANCE, a corporation; and ATMEL SARL, a corporation,

Plaintiffs,

v.

AUTHENTEC, INC., a Delaware corporation,

Defendant.

Case No. 06 CV 2138 CW (EDL)
Case No. 07 CV 03331 (CW)

DEFENDANT AUTHENTEC, INC.'S OPENING MARKMAN BRIEF, OPPOSITION TO MOTION FOR PARTIAL SUMMARY JUDGMENT, AND MOTION FOR SUMMARY JUDGMENT OF NONINFRINGEMENT AND FOR AN EXCEPTIONAL CASE FINDING

Date: May 1, 2008
Time: 2:00 p.m.
Location: Courtroom 2, 4th Floor
Judge: Hon. Claudia Wilken

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NOTICE OF MOTION

NOTICE IS HEREBY GIVEN that on May 1, 2008 at 2:00 p.m., or as soon as the matter may be heard in Courtroom 2 of the above-titled Court, Defendant AuthenTec, Inc. ("AuthenTec") will and hereby does move the Court for an order granting summary judgment of noninfringement of U.S. Patent Nos. 6,289,114 and 6,459,804 on the grounds set forth herein. This motion is based upon this Notice of Motion and Motion, the accompanying Memorandum of Points and Authorities, the concurrently-filed Declarations of Peter Sherlock, Dale Setlak, Eric Kraemer, Roger McWilliams, and Denise De Mory, the papers and pleadings of record in this case, and upon such other matters as may be presented to the Court at the time of hearing on this motion.

I. INTRODUCTION

This is an exceptional case in which AuthenTec finds itself in a unique and quite remarkable position: *even if this Court were to adopt Atmel's proposed (albeit erroneous) claim constructions as to every disputed claim term, AuthenTec does not infringe any claim of either asserted patent.* This case is even more exceptional because Atmel has long known, even before it filed suit, that AuthenTec does not infringe the patents-in-suit. Far from legitimately trying to protect its patent rights, Atmel Corporation filed this case as a misguided effort to salvage its unsuccessful biometric business unit (acquired from Thomson-CSF in 2000) by improperly impeding a small competitor with different and better technology, but far fewer resources. As such, AuthenTec is entitled to summary judgment and a finding that this case is exceptional pursuant to 35 U.S.C. § 285.

To resolve this case, the Court need look no further than the claimed sensor technology. Each asserted claim is limited to a sensor having specific and narrowly drafted structural limitations: the sensor must be comprised of a "sensing surface coupled to a matrix of contact sensitive elements."[1] Atmel's proposed construction of "contact sensitive elements" is "two or more component parts that ***are responsive to finger contact between a finger and the sensing surface*** of the sensor wherein the sensor is integrated onto a semiconductor substrate and is not an optical sensor." Even applying Atmel's contrived construction, which strays well beyond the intrinsic evidence, AuthenTec's sensors do not meet this limitation. Although Atmel moves for summary judgment, it does not point to any evidence in support of its claim that the AuthenTec products contain "contact sensitive elements" as it defines that term. Rather, Atmel generally and vaguely relies on a data sheet that offers no support for Atmel's claims.[2]

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[1] Claim 1 of U.S. Patent No. 6,289,114 (the "'114 patent") contains the structural limitation "contact sensitive elements." Other claims of the '114 patent and U.S. Patent No. 6,459,804 (the "'804 patent") use the phrases "sensing elements" and "sensitive elements." The parties agree that "contact sensitive elements," "sensing elements," and "sensitive elements" correspond to the same structural limitation and should all be given the same construction. (Dkt. No. 398 at 5:18-22 & n.20.) From this point forward, the phrase "contact sensitive elements" will be used.

[2] The same is true of Atmel's summary judgment on other elements. Notwithstanding two years of litigation and extremely expensive discovery motions, Atmel has failed to come forward with any evidence of a single apparatus capable of infringing the claims; much less an instance of someone practicing the method.

Atmel cannot point to any evidence of "contact sensitive elements" because there is none. The "contact sensitive elements" of the patents-in-suit are temperature or pressure sensitive elements, which respond to contact between the finger and the sensing surface, *i.e.*, pressing on the element causes the element to respond. The AuthenTec products do not use pressure or temperature sensitive elements. In fact, AuthenTec does not use any type of "contact sensitive" element. Instead, the AuthenTec devices have an array of pixels that operate as an array of radio frequency antennas, where each antenna receives the electric field radiated by the skin's live layer below the surface of the skin. To create the electric field, the AuthenTec products inject radio frequency waves into the finger, which results in a wave-form that is transmitted by the live layer of skin (below the skin's surface) that is then received by the pixel antennas. The AuthenTec antennas are not "contact sensitive" and do not respond to finger contact with the sensing surface. Atmel has long known this. In a 2002 White Paper, Atmel acknowledged that what it now proffers as the "contact sensitive elements" are in fact "an array of suitably tuned pixel antennas," *i.e.*, not "contact sensitive" elements.

The lack of "contact sensitive elements" in the accused products is dispositive but it is not the only reason that the Court should grant summary judgment in AuthenTec's favor. However, resolution of this issue obviates the need to resolve any other issues. Thus, the complete set of undisputed facts is discussed first followed by AuthenTec's motion for summary judgment on the "contact sensitive elements" issue. The "contact sensitive elements" motion is followed by dispositive motions on other issues that should be decided in AuthenTec's favor. Finally, although the Court need not reach them, AuthenTec's claim construction arguments are set forth last. For the reasons set forth below, the Court should grant summary judgment in AuthenTec's favor and deem this case exceptional pursuant to 35 U.S.C. § 285.

II. UNDISPUTED FACTS

A. The Patents-In-Suit Are Limited To Sensors Comprised Of "Contact Sensitive Elements"

Fingerprint sensors in which the image is captured by sliding the finger relative to the sensor are known as "slide" or "swipe sensors." Atmel has claimed in marketing material that "Atmel

invented the concept of silicon swipe sensors...." (Ex. 1[3] at AML032291.) While this statement could be written off as mere marketing hyperbole, it appears that this entire case is premised on a false description of the importance and scope of the patents-in-suit, which simply do not cover the type of swipe sensor sold by AuthenTec. For instance, in its opening brief, Atmel claims that

> until Atmel's invention enabled the reading of a fingerprint through a series of slices collected as the finger is swept across the sensor..., fingerprint sensors were too big, expensive and impractical for small electronic devices. After this invention, the old-style sensors, literally as large as a fingertip, were out.

(Dkt. No. 398 at 2:5-8.) Atmel is simply wrong, and it knows it. Indeed, after the patent issued, the inventor, Mr. Mainguet, stated that

4

(Ex. 2 (emphasis added).) Although Atmel's brief is notably silent as to the details of the patent, the file history, and the prior art, all intrinsic evidence confirms that Mr. Mainguet did not invent silicon swipe sensors, but rather obtained a narrow patent limited to use of a senor with specific structural limitations.

1. Genesis of the Alleged Invention

Jean-Francois Mainguet, the named inventor of the patents-in-suit,

. (Ex. 3 at 303:22-24; 31:21-32:6; 33:1-34:2.)

. (*Id.* at 24:18-21.)

(*Id.* at 221:15-21.)[5]

---

[3] All exhibits are attached to Declaration of Denise M. De Mory In Support Of Defendant AuthenTec's Opening Markman Brief, Opposition to Motion for Partial Summary Judgment and Motion for Summary Judgment of Noninfringement and Motion for Exceptional Case Finding.

[4] Atmel went to great lengths to prevent this admission from being used in this litigation. Although the document containing this admission was produced in discovery, Atmel suddenly claimed the night before Mr. Mainguet's deposition that the portion of the document containing this admission was privileged. Over Atmel's objection, Judge Laporte recently granted AuthenTec's motion to compel production of the portion of the document containing this admission. (Dkt. No. 421.)

[5] Notably, Atmel only claims the French filing date as the priority date for the claims at issue not the alleged 1995 conception date. (Ex. 6 at 4.)

(*Id.* at 86:16-23; 352:18-22.) In June 1997, the application for the '114 patent was filed. (Ex. 4.) The '804 patent is a continuation that was filed while the '114 patent was still pending. (Ex 5.) The '114 patent and the '804 patent share a common specification, and as to the critical elements of the claims for purposes of this motion, the parties agree that the claims should be interpreted in the same manner. (*See, e.g.*, Dkt. No. 398 at 5:16-21 & n.20.)

2. The Patents-In-Suit

The '114 and '804 patents are entitled "Fingerprint-Reading System." The '114 patent includes only apparatus claims, while the '804 patent claims only a method of using an apparatus claimed in the '114 patent. In order to obtain the patents, the applicant added specific structural limitations to the claimed fingerprint sensor, which the Abstract describes as "having an active surface sensitive to the pressure and temperature of the finger." (Ex. 4 at Abstract.) For reference and context, exemplary claims -- claim 17 of the '114 patent and claim 10 of the '804 patent -- are set forth below with significant terms highlighted:

17. A fingerprint reading system comprising:

> means for reading a fingerprint including ***a sensor having a sensing surface coupled to a matrix of several lines of sensing elements*** for generating a series of overlapping successive partial images of a finger placed in contact with said sensing surface from relative sliding contact between said sensing surface and said finger, said sensing surface having a surface area smaller than a surface area of said fingerprint to be read; and
>
> ***means for reconstituting a total image of the fingerprint from said overlapping partial images***.

10. process for reading a fingerprint, comprising:

> obtaining a series of partial images of the fingerprint during a sliding relative motion between a finger and a sensor, ***said sensor having several lines of sensing elements and having a sensing surface area*** capable of encompassing not more than a small portion of the fingerprint to be read, each partial image formed on said sensing surface during said sliding movement corresponding to a different part of the finger partially overlapping a previous part; and
>
> ***reconstructing a global image of said fingerprint to be read by correlation of overlapping partial images***.

The specific details of claimed sensor (50) are described below, but for reference, the overall system structure and image reconstruction techniques are depicted and described briefly below:

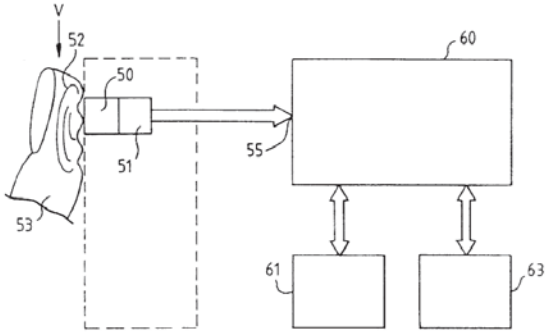


FIG.4

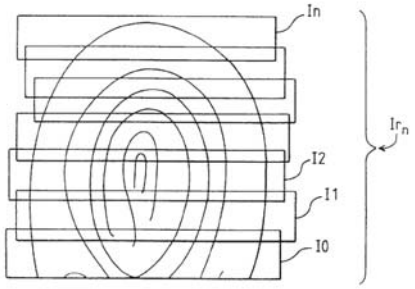


FIG.12

Figure 4 depicts a finger (53) sliding over a sensor (50) that is comprised of a sensing surface coupled to a matrix of contact sensitive elements. (Ex. 4 at 7:36-41; 51-53.) An analog to digital converter (51) is integrated into the same substrate as the sensor (50). (*Id.* at 7:37-38.) The A/D converter (51) converts data from the sensor (50) and sends it to microprocessor (60) and memories (61 & 63), which are programmed with a reconstruction algorithm as specified in the patent. (*Id.* at 7:41-47.) Partial images I_0 to I_n are collected and reconstituted as depicted in Figure 12 by superimposing the partial images I_0 to I_n using algorithms disclosed in the patents to create "total" or "global" image. (*See id.* at 8:5-67.)[6]

The "Background of the Invention" section describes the problems that the inventor was attempting to overcome. Atmel correctly notes in its brief that the inventor mentions limitations of optical fingerprint reading systems, but omits mention of much more significant prior art discussed in the specification. Specifically, Atmel omits the inventor's discussion of two prior art semiconductor-based sensing technologies. When describing these prior art semiconductor-based sensing technologies, the inventor specifically uses language that appears in the claims. The inventor describes these prior art sensors as having "a matrix of ***sensitive elements*** organized in rows and columns, giving an electric signal that differs depending on ***whether a ridge of the fingerprint line touches or does not touch a sensitive element of the sensor***." (*Id*. at 1:50-54 (emphasis added).) The inventor goes on to describe that patents have been filed on such "***means for reading***," including U.S. Patent No. 4,353,056 ("the '056 patent"), which describes reading based on the capacitance of the "***sensitive***

[6] While this section is focused on contact sensitive elements, it is significant to note that the accused AuthenTec products lack not only "contact sensitive elements" but also do not include a microprocessor or global or total image reconstruction as claimed in the patent.

elements of the sensor," and U.S. Patent No. 4,395,773 ("the '773 patent"), which "comprise sensors having ***components sensitive to pressure, temperature, or else to pressure and temperature*** . . . ." (*Id.* at 1:56-67 (emphases added).) The inventor then frames his invention in terms of the limitations of "[t]hese types of sensors" that he seeks to overcome. (*Id.* at 2:11.)

One limitation of these "types of sensors" that the inventor seeks to overcome is a surface area limitation. (*Id.* at 2:14.) Although Atmel ignores it in its brief, the applicant also indicates that electrical signal in such sensors are "fleeting and a specific system is necessary to maintain it in time for the electric charges are induced by variations of the physical effects (***temperature, pressure, etc.***) on the sensor." (*Id.* at 2:24-30 (emphasis added).)[7] The inventor describes, but rejects, two systems to overcome the fleeting signal problem. The first system the inventor rejected is a system "with excitation external to the sensor" because external excitation[8] complicates the system and increases its cost and volume. (*Id.* at 2:41-44.) The second system rejected by the inventor is a system that overcomes the effect of disappearance by means of an electronic memory because memory on the sensor complicates the design of the sensor and increases its cost. (*Id.* at 2:45-50.) The inventor contends his invention overcomes all of the foregoing limitations of the prior art. The first advantage of the invention described in the specification is the ability to stabilize the image, thereby eliminating the fading problem, by moving the finger with regard to the sensor. (*Id.* at 2:65-3:3.) The inventor secondarily notes that the size of the sensor also can be reduced. (*Id.* at 3:27-34.)

A significant portion of the specification is dedicated to describing the structure of the claimed sensor. The sensor is consistently described as a matrix of contact sensitive elements. (*Id.* at 4:4-19; 6:32-41; 63-67.) Indeed, Figure 3 is described as an exemplary integrated circuit "***constituting the fingerprint sensor.***" (*Id.* at 6:29-31 (emphasis added).) Similar to the devices described and claimed in the '773 patent identified in the Background section of the patent, Figure 3 depicts "an array of

---

[7] Dr. Jain, Atmel's expert, ignored the inventor's stated motivation regarding overcoming the fleeting signal problem in his report, instead opting to substitute his own view based on his understanding of art, thereby contradicting the intrinsic evidence. (Ex. 7 at 115:2-116:23.)

[8] (*Id.* at 169:2-10.) Dr. Jain, for his part, professed a lack of knowledge as to whether or not systems with external excitation solved the fleeting signal/image fading problem. (Ex. 7 at 135:9-13.)

piezoelectric elements each formed by lower electrode (28), the portion of piezoelectric layer (30) located just above it and the portion of upper electrode (32) that covers it." (*Id.* at 6:60-63.) The specification indicates that "electric charges generated by pressure exerted locally on [the piezoelectric] element are read by the corresponding read circuit. . ." (*Id.* at 6:29-31; 55-63.) An upper protection layer (34) "must be both rigid enough and flexible enough *to transmit, vertically and without modification, the pattern of pressures that is exerted on it* (the finger being pressed directly on this layer)." (*Id.* at 7:3-5 (emphasis added).)

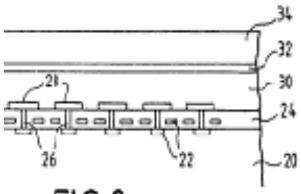


FIG.3

The patents also reference a sensor with capacitive sensing elements as described in the '056 prior art patent. (*See id.* at 1:58-60.) Figure 3, the sensor described and claimed in the '056 patent also requires that the elements respond to direct contact between the finger and a flexible electrode forming the upper plate of a capacitor array as in Figure 9 of the '056 patent. The finger presses on the upper flexible electrode 40 via its flexible cover 48, thereby forming the finger's pattern on the surface. (Ex. 8 at 5:14-16.) Notably, all claimed capacitive elements must be contact sensitive elements because capacitive elements are only claimed in a dependent claim. (Ex. 4 at 10:15-19.)

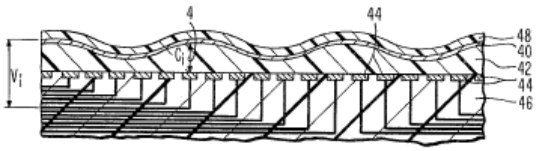


FIG. 9

Notably, the specification ***only and consistently*** describes elements sensitive to contact between the finger and the sensing surface; more particularly, it only describes the elements as elements that measure temperature or pressure resulting from the finger pressing on the surface, as set forth in this non-exhaustive list:

- "an active surface sensitive to the pressure and temperature of a finger" (*Id.* at Abstract).
- "this integrated electronic circuit . . . can transmit electric signals, all of which represent an image of a pattern of pressure exerted on the active layer" (*Id.* at 4:11-14.)
- "Figure 2 shows the finger (11) when it is pressed on the active surface . . . on the sensor (10)." (*Id.* at 4:36-38.)
- "A pressure pattern is generated in the pyroelectric and piezoelectric layer and this pattern is detected by the matrix array." (*Id.* at 4:38-40.)
- "The electric signals given by the sensor correspond to an image of patterns of pressure and temperature applied to the active surface of the sensor at a given instant. Signals are generated "representing a part of the *imprint of the finger pressing on the sensor* at a

given point in time during its relative shift on the sensor." (*Id.* at 4:44-51(emphasis added).)

- "electric charges generated by pressure exerted locally on [the piezoelectric] element are read by the corresponding read circuit. . ." (*Id.* at 6:63-65.)
- "This protection layer must be both rigid enough and flexible enough *to transmit, vertically and without modification, the pattern of pressures that is exerted on it* (the finger being pressed directly on this layer)." (*Id.* at 7:3-6 (emphasis added).)

3. Structural Limitations Were Added To Overcome Repeated Prior Art Rejections

The '114 patent application was filed on June 5, 1997, but did not issue until September 11, 2001. The file history is highly relevant given that the claims repeatedly were rejected and amended during the course of the four-year prosecution of the patent because the inventor had a difficult time overcoming the prior art. Atmel and its hired expert, Dr. Jain, ignore the file history.[9]

As the inventor conceded in the Background section, the claimed sensor technology was in the prior art (*i.e.*, sensors comprised of an array of contact sensitive elements coupled). As described in cited references discussed below, collecting fingerprints by sliding or rolling a finger over a sensor, including a linear sensor, was well known. The cited references also show that the concept of reconstructing a total image from partial images was well known. Accordingly, the examiner forced the inventor to limit his claims to a narrow improvement over the prior art, a combination of known elements. Ultimately, the claims issued with structural limitations that are dispositive here.

The patent was first rejected as anticipated by Giles, an optical system. (Ex. 9 at AML00102.) Giles described a fingerprint scanner in which the finger was rolled over a linear array as depicted in Figure 5 of the patent. (Ex. 10 at AML002586.)[10] The patent was also rejected as obvious based on Giles in view of Edwards, a reference that discloses

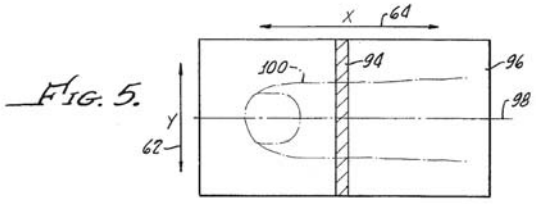


FIG. 5.

[9] Atmel discusses only one Office Action in its brief that does not pertain to contact sensitive elements. Dr. Jain has neither been provided with nor reviewed the file histories. (Ex. 7 at 34:6-14.)

[10] It cannot go without mention that based on the recent evolution of the law of obviousness, it is highly unlikely that the claims at issue here would even have survived to issuance if current law was applied.

temperature and pressure sensitive sensors. (Ex. 9 at AML000103-104.) In response, the inventor cancelled his claims, and added new claim 17 (which ultimately became claim 1). (*Id.* at AML000112-113.)

On October 25, 1999, the examiner rejected the claims again, this time as anticipated by Fujimoto, and rendered obvious by Fujimoto in view of Edwards. (*Id.* at AML000136-142.) The examiner focused on the following the Fujimoto embodiment depicted below in which 1621 is described as a "close-contact sensor" on which the surface of a finger slides on the close contact sensor as depicted in Figure 32 and the reconstruction techniques disclosed in Figure 28. (*Id.* at AML000138-40; AML000148.)

Fig. 32

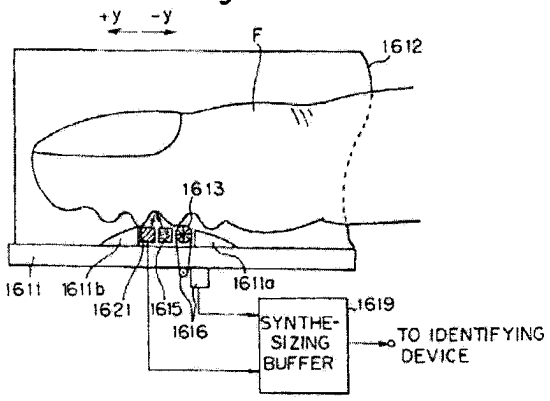
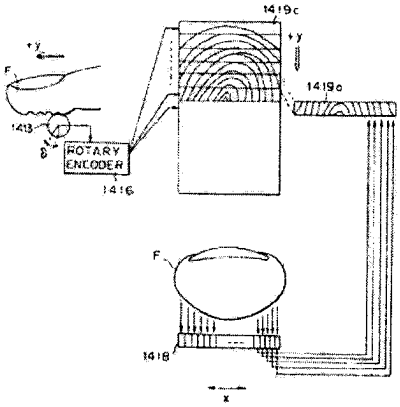


Fig. 28



(Exhibit 11 (emphasis added).)[11]

The inventor modified his claims in an attempt to overcome the rejection by changing "for providing a series of partial images of a finger during relative sliding contact" to "for providing a series of partial images obtained directly from relative sliding contact." (Ex. 9 at AML000146.) In addition, the inventor made the following argument:

> Clearly, the fingerprint image [of Fujimoto] is not obtained directly from contact between the sensor 1621 and the finger F. The fingerprint image is obtained by light[12] reflected from the

---

[11] To appreciate how narrow the invention of the patents-in-suit is, one can simply compare Figures 4 & 12 of the patents-in-suit depicted on page 4 above with Figures 32 & 28 of Fujimoto.

[12] Structure 1615 is a light source. The inventor, Mr. Mainguet, testified that . (*See* Ex. 3 at 165:24-166:11; 170:13-24.)

> fingerprint surface which is picked up by ***the light-sensitive sensor*** 1621.[13] Contact between the finger and sensor 1621 does not produce any image. The ***image is obtained indirectly by reflecting light off the finger F, receiving the light by 1621,*** and then synthesizing the fingerprint image. Thus, Fujimoto et al clearly do not disclose or suggest the apparatus as recited in claim 17 having a means for providing a series of partial images of a finger ***obtained directly from sliding contact between the sensor and the finger***.
> (*Id.* at AML000148 (emphasis added).)

With regard to the combination of Fujimoto and Edwards, the inventor argued that "***there is no motivation in Fujimoto et al to replace optical detection by pressure or temperature detection***." (*Id.* at AML000150 (emphasis added).)

The examiner still rejected the claims in a Final Office Action, citing Fishbine, yet another reference that teaches rolling a finger, obtaining a series of partial images and reconstructing the total image of the fingerprint. (*See id.* at AML000153-161.) An interview was conducted after the Final Office Action, as follows: "[t]he applicant argued that the prior art does not teach a sensor for providing a series of partial images of a finger obtained directly from relative sliding contact . . .' (*Id.* "*[T]he applicant will further limit 'sensor'* and 'contact' in the upcoming response *in order to overcome the rejection.*" (*Id*. at AML000162 (emphasis added).)

To overcome the Final Rejection, the sensor was further limited to require a "sensing surface coupled to ***a matrix of <u>contact sensitive</u> elements***." (*Id*. at AML000164 (emphasis added).) Moreover "for providing a series of partial images" was changed to the more active phrase "for generating a series of partial images." (*Id.*) Consistent with these amendments, although Atmel's proposed construction is overbroad as discussed below, even Atmel agrees that all asserted claims of both patents require "contact sensitive elements." (*See* Dkt. No. 398 at 5:18-22.)

B. For Over 10 Years Atmel's Thermal Sensor Business Has Not Succeeded

Thomson-CSF, began actively marketing the thermal sensors that Atmel claims practice the patents-in-suit in May 1997 as its FingerChip line of products. In 2000, Thomson-CSF sold the FingerChip business to Atmel.[14] The FingerChip business has not succeeded under Atmel's oversight.

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[13] This is an important distinction. The applicant concedes that sensors that respond to stimuli other than physical contact are not within the scope of the claims.

[14] Atmel Corporation is based in San Jose, California and had $1.6 billion dollars in net revenue in 2006. (Ex. 12 at AML045916.)

Atmel's lack of success is not because AuthenTec entered the slide sensor market. Shortly before this case was filed, in internal documents, Atmel admitted that

(Ex. 14 at AML032068.) A month before this case was filed,

. (*Id.* at AML032059.) Moreover,

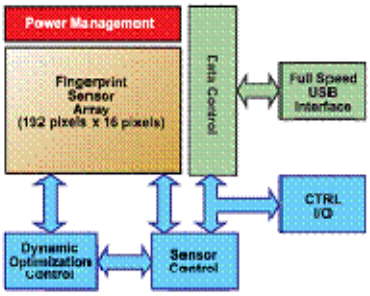
. (Ex. 15 at AML026540.)

C. AuthenTec's Radio Frequency Sensing Technology Is Different Than The Claimed Sensing Technology

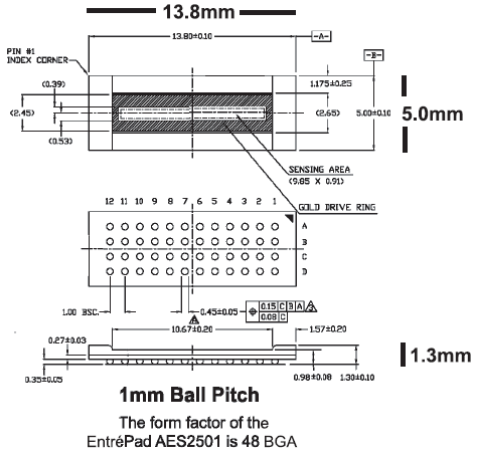
Dale Setlak, the Chief Technology Officer of AuthenTec, began developing the technology that underlies the products at issue in this litigation in 1996. AuthenTec's initial radio frequency products were released in 1999. (Ex. 16.) By July of 2003, AuthenTec had shipped one million non-swipe sensors. (Ex. 17.) AuthenTec's technology continued to be more widely accepted than Atmel's and, less than a year later, AuthenTec had sold two million sensors. (Ex. 18.) AuthenTec has now grown to over 100 employees, gone public, and shipped over 25 million sensors. (Ex. 19.)[15]

[15] AuthenTec is based in Melbourne, Florida and had $33 million in revenue in 2006. (Ex. 35 at AML0003424).

The products at issue here were first sold in late-2003 (Ex. 20) and all use the same basic AuthenTec RF sensing technology, which is quite different than the claimed sensing technology. (Declaration of Dave ("Setlak Decl."), ¶2). Before discussing the details of how the technology works, it is important to first understand the component parts. Most significantly, the portion of the AuthenTec products to which Atmel points as the alleged "matrix of contact sensitive elements" is the detection matrix (*i.e.*, the antenna array described earlier), depicted as the Fingerprint Sensor Array in a figure of the AES2501 datasheet. (*See* McKenzie Decl., Dkt. No. 398 at 23, UMFH. ["The sensor surface in the AES PRODUCTS is coupled to a matrix of several lines of sensing elements in a detection matrix."].)



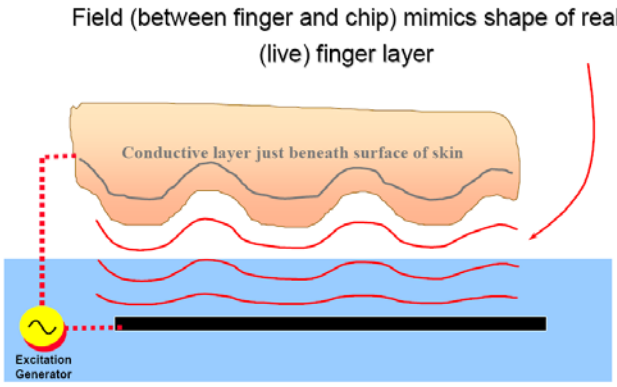
As depicted in the datasheet, circuits integrated into the same substrate as the detection matrix perform non-sensing functions. (McKenzie Decl., Dkt. No. 399, Ex. I at I-3; *see also* Ex. 21 at 259:4-18.) This device is then packaged as shown in a 48 pin BGA (ball grid array), a picture of which is shown on the right from same AES2501 data sheet on which Atmel relies. The drive ring is then added to the package as depicted.[16] What is conversationally called a "sensor" from a customer perspective is an entire packaged device that is comprised of much more than the "sensing" portion of the AuthenTec products. (Ex. 21 at 194:12-22; 196:19-197:11.)



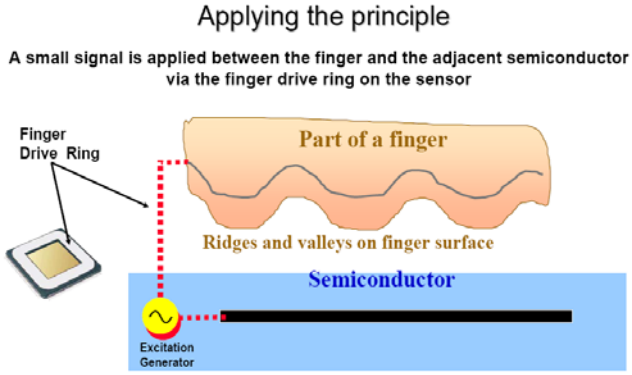
The accused detection matrix or sensor antenna in the AuthenTec products is not temperature or pressure sensitive. (Sherlock Decl., ¶ 2.) In fact, the sensitive elements themselves do not respond to contact in any way. (*Id.* ¶16; Setlak Decl., ¶¶2-4.) Rather, the purpose of the detection matrix is "***to***

[16] The drive ring for the accused products is manufactured at a separate facility after wafer processing is complete by either depositing a layer of metal on the surface of the completed wafer or attaching a metal bezel to the packaging for the otherwise completed device. (Declaration of Peter Sherlock. ("Sherlock Decl."), ¶ 11.)

sense the strength of the electric field established by the boundary condition of the ridge valley pattern inside the finger itself and the actual metal layers inside the . . . overall package . . .” (McKenzie Decl., Dkt. No. 399, Ex. K at 230:10-16.)



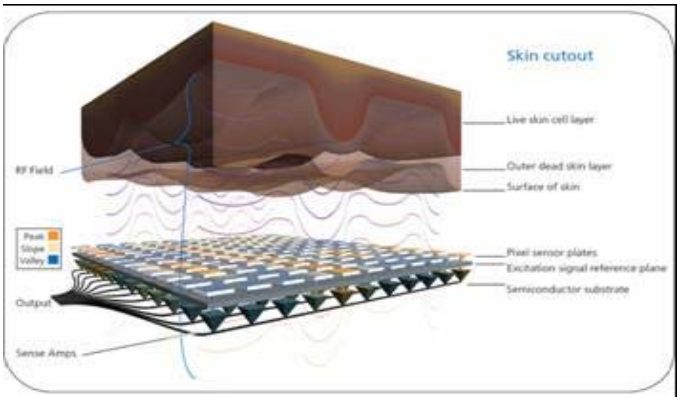
The AuthenTec sensors do not read the surface of the skin but instead detect fingerprint patterns from the live, highly-conductive layer of skin that lies just beneath the skin’s dry outer surface layer. (Sherlock Decl., ¶ 3; *see also* Ex. 22.)[17] This live, inside layer is where the shape of the fingerprint pattern originates. (*Id.*) It is separated from the dead skin by an electrically conductive layer. (*Id.*) Like the optical sensor, the antenna array in the AuthenTec products does not respond to contact. (Sherlock Decl., ¶¶2-16; Setlak Decl., ¶¶2-4).



To read the live layer below the surface of the skin, the products at issue “inject” a small radio-frequency signal into the finger using a transmitter connected to a drive ring or electrode. (*Id.* at ¶ 5; Exs. A & B.) The drive ring is separate from the portion of the sensor that senses the electric field as described below. (*Id.* at ¶ 6.) The drive ring must be contacted (physically or electrically) to drive the signal into the finger. (*Id.* at ¶ 7.) The drive ring, however, is not a part of the detection matrix or pixel array, is not coupled to the detection matrix, and does not detect finger contact. (*Id.* at ¶16). Pressing on the detection matrix with a finger not energized by the drive ring will yield no result. (*Id.*; Setlak Decl., ¶¶2-4.)

[17] It is significant to note that none of these figures were created for this litigation, but rather are figures from AuthenTec documents used to explain the technology that were produced in discovery long ago and that have been publicly displayed since early in AuthenTec’s history.

The operation of the array of pixel antenna plates (i.e., the detection matrix in AuthenTec's datasheets) is also depicted in the figure below. (*Id.* at ¶ 8.) The array of pixel antenna plates read the strength of the electric field that is formed between the ridge valley structure inside the finger and sensor itself. (*Id.* at ¶ 9.) AuthenTec calls this RF technology its TruePrint™ technology. (*Id.* at ¶ 10*; see also* Ex. 22.)



D. Atmel's Understanding Of AuthenTec's Products

Atmel has long recognized that AuthenTec's products are not comprised of contact sensitive elements, and that they do not fall into the category of temperature and/or pressure sensitive sensors. In a paper co-authored by the inventor, and published well before this lawsuit was filed (Ex. 23), the inventor describes all other sensors on the market as "thermal," "capacitive," and "pressure." Notably, however, he does not describe the AuthenTec products, including a product at issue in this litigation, the AES2500, as thermal, capacitive, or pressure. Instead, he describes the AuthenTec products as falling into a unique category that Mr. Mainguet labels as "modulation," recognizing that AuthenTec sensors are not temperature or pressure sensitive sensors, but rather use RF modulation.

Table 1. List of fingerprint sensors / sensing area

Company	Part number	Type	Res. dpi	x pixels	y pixels	x mm	y mm
Atmel	AT77C101B	thermal	508	280	8	14.0	0.4
STM	TCS1AD	capacitive	508	256	360	12.8	18.0
	TCS2AF	capacitive	508	208	288	10.4	14.4
	TCS3A	capacitive	508	256	4	12.8	0.2
Authentec	AF-S2	modulation	250	128	128	13.0	13.0
	AES4000	modulation	250	96	96	9.8	9.8
	AES3500	modulation	500	128	128	6.5	6.5
	AES2500	modulation	500	192	16	9.8	0.8
Infineon	FTF 1100	capacitive	513	224	288	11.1	14.3
Fujitsu	MBF110	capacitive	500	300	300	15.0	15.0
	MBF200	capacitive	500	256	300	12.8	15.0
	MBF300	capacitive	500	256	32	12.8	1.7
Sony	CXA3271AGE	capacitive	317	128	192	10.3	15.4
	FIU900	capacitive	317	128	128	10.2	10.2
Fingerprint Cards	FPC1010	capacitive	363	152	200	10.6	14.0
	FPC1030	capacitive	363	152	32	10.6	2.2
Ethentica	T-FPM	polymer	403	306	225	14.2	19.3
NTT [2]		capacitive	311	124	166	10.1	13.5
BMF	BLP-100	pressure	406	256	384	16.0	23.4
Fidelica	FIS-3001	pressure	508	256	256	12.8	12.8
KAIST		capacitive	508	210	190	10.5	5.0
Seoul university[3]		capacitive	600	256	64	10.8	2.7

Moreover, Atmel understands the components and manner in which an RF modulation sensor must operate – in particular, that there is no matrix of contact sensitive elements. In a White Paper published in 2002, Atmel described RF sensors as follows:



ATMEL WHITE PAPER

Radio

If a fingertip is energized with a low-intensity radio wave, it acts as a transmitter, and the distance variation between ridges and valleys can be detected by an array of suitably tuned antenna pixels. It requires the fingertip to be in contact with the emitting region of the sensor (generally around the periphery). Because it relies on the physiological properties of the skin, it is difficult to deceive a radio sensor with an artificial fingertip. The weak point of this technique is the quality of the contact between the finger and the transmitting ring, which can also become uncomfortably hot.

(Ex. 24 at AML001151.) Thus, Atmel fully understands AuthenTec's unique RF modulation sensors. Most significantly, Atmel understands that the AuthenTec products received radio waves using an array of "suitably tuned antenna pixels" and are not "contact sensitive." Atmel has long known that the only similarity between the claimed inventions and the products at issue is the manner in which they are used: sliding the finger relative to the sensor, or in other words, that the accused sensors are so-called "slide or swipe sensors." The similarities between the claimed inventions and AuthenTec's products end here, however, as the abject lack of evidence in Atmel's summary judgment motion clearly demonstrates.

III. ARGUMENT

A. Legal Standard On Summary Judgment

Summary judgment is appropriate "if the pleadings, depositions, answers to interrogatories, and, admissions on file, together with the affidavits, if any, show that there is no genuine issue of material fact and that the moving party is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(c). Thus, the Court may grant summary judgment when "no reasonable jury could return a verdict for the nonmoving party." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986); *Enzo Biochem v. Gen-Probe, Inc.*, 424 F. 3d 1276, 1280-81 (Fed. Cir. 2005).

B. AuthenTec Is Entitled To Summary Judgment Of Noninfringement Because The AuthenTec Products Do Not Have Contact Sensitive Elements Or A Sensing Surface.

Because each asserted claim of both patents in suit require "contact sensitive elements" and because the accused AuthenTec sensors do not include "contact sensitive elements" within the definition proposed by Atmel, the Court must not only deny Atmel's motion for summary judgment, but grant AuthenTec summary judgment of non-infringement.[18] Atmel contends that contact sensitive elements are: "two or more component parts[19] that are responsive to contact between a finger and the sensing surface of the sensor wherein the sensor is integrated onto a semiconductor substrate and is not an optical sensor." (Dkt. No. 398 at 5:19-22.) Atmel contends that the sensing surface, included within Atmel's definition of "contact sensitive elements" is "a surface of the sensor that detects finger contact wherein the sensor is integrated onto a semiconductor substrate that is not an optical sensor." (Dkt. No. 398 at 5:17-18.) The AuthenTec products lack both elements.

AuthenTec does not infringe because the pixel antenna plates of the accused detection matrix do not respond to contact with the sensing surface, and the surface of the sensor that corresponds to the detection matrix does not detect finger contact. (Sherlock Decl. ¶16; Setlak Decl. ¶¶2-4). Thus, the pixel antenna are not "contact sensitive elements" within the meaning of the claim construction advanced by Atmel. When you press on the detection matrix, only it does not respond. (*Id.*) Thus, it is not contact sensitive. (*Id.*) Atmel has come forward with no evidence to the contrary, nor can it. As Atmel has long known, the products at issue do not infringe under Atmel's claim construction because the accused content "sensitive elements" in the AuthenTec products are in reality passive antenna that measure the strength of an electric field. (*See id.*; *see also* Ex. 24.)

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[18] Under AuthenTec's claim construction, the AuthenTec sensors cannot infringe because they do not respond to pressure or temperature; they do not directly read the fingerprint; and they do not have a sensing surface that transmits patterns of pressure and temperature. (Ex. 21 at 209:21-210:19; 222:20-24; Sherlock Declaration at ¶¶ 2, 3 & 7.)

[19] Although not central to resolution of the issues, it is significant to note the obvious error of including the phrase "two or more component parts." Each of the independent claims requires either a "matrix of" contact sensitive elements or "several lines" of contact sensitive elements. Thus, including "two or more" makes the claims ambiguous as they already require either a matrix or several lines of sensing elements."

Furthermore, the indisputable fact that contact plays no role in capturing image data is readily corroborated by experimentation. Dr. Roger McWilliams, a world-leading experimental physicist at the University of California, Irvine, conducted such experiments. Through careful, controlled experimentation, Dr. McWilliams verified that the AuthenTec sensors can capture fingerprint data without any contact between the finger and even the outer protective cover of the sensors. In his experiments, Dr. McWilliams tested samples of the accused AES16xx and AES25xx products. Dr. McWilliams then used precise, calibrated measuring instruments, including laser beams, to measure and maintain an air gap between the finger and the sensor cover. With air gaps as large as 38 microns above the protective layer, the sensors still captured usable data from fingers that the accompanying software used for proper fingerprint matching. (McWilliams Decl., ¶¶2-10.) To further demonstrate that the AuthenTec products do not include "contact sensitive elements," Dr. McWilliams made a remote connection between the finger and a RF signal generator, thereby bypassing the drive ring. (*Id.* at ¶¶ 13 & 14.) In this configuration the tested finger again had no direct contact with the drive ring or the upper surface of the protective cover. (*Id.*) The pixel sensor plates, however, still detected fingerprints via the external RF signal emitted from the finger.[20] (*Id.*)

Telling, by two years into this litigation after tremendous amounts of money have been spent on discovery, Atmel can provide no evidence or experimental data of "contact sensitive elements" or a "sensing surface" in the products it accuses. Instead, the best that Atmel musters, without any attendant explanation, is a citation to a datasheet. This datasheet merely says that the products have, among many other components, a "detection matrix." (*See* Dkt. No. 398 at 22; McKenzie Decl., Dkt. No. 399, Ex. I ("Ex. I").) The datasheets say nothing about the "matrix" being responsive to contact between a finger and the sensing surface, or the components of the array, or how it operates. (*See* Ex. I.) In other words, the data sheet does nothing to assist Atmel in proving infringement.

What is worse than Atmel's failure to come forward with any evidence is the evidence that Atmel blatantly ignores. As discussed above, the AuthenTec documents and deposition testimony

[20] This is obviously not the normal method of using the AuthenTec devices, but demonstrates that the pixel antenna array is not contact sensitive.

clearly and consistently describe the operation of the AuthenTec products. In all cases, the evidence is clear that the detection matrix is an antenna array, and does not include contact sensitive elements, exactly what Atmel acknowledged in its White Paper long before this case was filed. Atmel's claims are objectively baseless, and Atmel has not even shifted the burden to AuthenTec to respond, much less established that it is entitled to summary judgment. On this basis alone, Atmel's motion should be denied. *See Exigent Tech. v. Atrana Solutions, Inc.*, 442 F.3d 1301, 1308-09 (Fed. Cir. 2006) (affirming summary judgment of noninfringement for lack of evidence).

Given their complete lack of "contact sensitive elements," and "sensing surface," the accused AuthenTec sensors do not meet at least one or more limitations of '114 patent claims 1 and 17, as well a '804 patent claims 1, 10 and 11, and thus do not literally infringe the asserted claims. *See Zelinski v. Brunswick Corp.*, 185 F.3d 1311, 1316-1317 (Fed. Cir. 1999).[21]

Finally, there is no argument for infringement under the doctrine of equivalents. Atmel added the "contact sensitive elements" and "sensing elements" limitations during prosecution to overcome the patent examiner's rejections based on prior art. (*See supra* Section II.C.) In other words, these limitations were added by amendment for reasons of patentability. This fact alone dictates that the Atmel patent claims are not entitled to any range of equivalents for the "contact sensitive elements" and "sensing elements" limitations that would reach AuthenTec's non-contact sensitive detection matrix. *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 739-741 (2002). The AuthenTec sensors, cannot therefore infringe under the doctrine of equivalents.[22]

C. AuthenTec is Entitled To an Award of Its Attorneys Fees Based On a Finding That This Case Is Exceptional.

In patent actions, "[t]he court in exceptional cases may award reasonable attorney fees to the prevailing party." 35 U.S.C. § 285. Here, assuming that the Court grants AuthenTec's summary

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[21] As these are the only independent claims in the Atmel patents, the accused AuthenTec sensors do not literally infringe any claim of the patents-in-suit. *See General Atomics v. Axis-Shield ASA*, 440 F. Supp. 2d 1083, 1088 (N.D. Cal. 2006)

[22] Atmel has waived the right to assert equivalents in any event. *See* Ex. 6 at 4. (sensing elements and sensing surface were not amongst the elements for which Atmel claims doctrine of equivalents).

judgment motion, AuthenTec will be the prevailing party. *See Brooks Furniture Mfg., Inc. v. Dutailier Int'l, Inc.*, 393 F.3d 1378, 1381 (Fed. Cir. 2005) ("[W]hen Brooks established its non-infringement of the Dutailier patent, it prevailed in the litigation."). And given the basis for prevailing, this case should be deemed exceptional and AuthenTec should be awarded its attorneys fees. A finding of exceptional case should be based upon clear and convincing evidence in light of the totality of the circumstances. *Eltech Sys. Corp. v. PPG Indus., Inc.*, 903 F.2d 805, 811 (Fed. Cir. 1990).

1. This objectively baseless case was brought in bad faith and is exceptional.

"Absent misconduct in conduct of the litigation or in securing the patent, sanctions may be imposed against the patentee if both (1) the litigation is brought in subjective bad faith, and (2) the litigation is objectively baseless." *Brooks*, 393 F.3d at 1381. While the first prong of the test looks to the state of mind of the plaintiff at the time that the action was commenced, the second prong requires an objective assessment of the merits of the case. *Id.* at 1382.

Taking the second prong first, there is no question that this case is objectively baseless. As explained above, even under Atmel's own construction of the "contact sensitive elements" limitation of the claims, AuthenTec's sensors do not infringe — no person of ordinary skill in the art, or even a lay person, could reasonably contend that the radio frequency antennas of the AuthenTec sensors are contact sensitive. It is hard to imagine a clearer instance of an "objectively baseless" case. On this basis alone, the Court could infer subjective bad faith. *See Eltech*, 903 F.2d at 811 ("Where, as here, the patentee is manifestly unreasonable in assessing infringement, while continuing to assert infringement in court, an inference is proper of bad faith, whether grounded in or denominated wrongful intent, recklessness, or gross negligence.").

There is, however, also clear and convincing evidence that Atmel knew this case was frivolous well before it filed suit. Atmel knew that it did not invent "slide sensors." Indeed, long before this case was filed, in a document that Atmel tried to prevent from seeing the light of day, Mr. Mainguet conceded:

This same document evidences that

. Ex. 2 at AML034351 (emphasis added)

Moreover, Atmel concedes that optical sensors are outside the scope of the patents. (Dkt. No. 398 at 5.) As is obvious from the file history, optical sensors are outside the scope not simply because their name, but because of their characteristics; namely because they ***indirectly*** read the fingerprint and are only sensitive to light – not contact. It is obvious, based on Atmel's own description of the AuthenTec products that they do not infringe for the same reason. They indirectly read the fingerprint via a passive antennae pixel array that receives radio frequency waves. There can be no doubt that Atmel understood this as Mr. Mainguet readily acknowledged the indisputable fact that

. (Ex. 3 at 170:13 – 171:14.)

In the end, Atmel actually knew that sensors like AuthenTec's RF sensor did not infringe the patent, because they only indirectly read the fingerprint; they do not measure any physical characteristics obtained through contact with the finger, as required by the claim term "contact sensitive elements." And, even applying Atmel's claim construction, they do not respond to contact. Notwithstanding this knowledge that AuthenTec's sensor did not infringe, Atmel brought and has maintained this vexatious lawsuit, causing AuthenTec to suffer massive unnecessary litigation costs. Given Atmel's subjective bad faith and the objective baselessness of this suit, this case should be deemed exceptional, and AuthenTec should be awarded its attorneys fees.

2. Atmel's litigation misconduct also makes this case exceptional.

In addition to Atmel knowing this case is baseless, this case should also be deemed exceptional because of Atmel's extraordinary, sustained and well-documented misconduct during this litigation. In May 2007, in opposition to AuthenTec's motion to dismiss, Atmel represented to this Court that Atmel Corporation was the sole and exclusive licensee of the patents-in-suit when it filed this case. *See* Dkt. No. 67 at 2 ("At all relevant times for this lawsuit, Atmel Corporation has solely and exclusively practiced (and still practices) the rights under the patents-in-suit throughout the United States…."). However, Atmel knew this representation was false, and has since gone to extraordinary lengths to cover up its false statement, including violating several Court orders.

Subsequent to the denial of the motion to dismiss, AuthenTec pressed for discovery of the licensing history of the patents-in-suit. AuthenTec's Interrogatory No. 7 requested that Atmel provide information about licenses to the patents-in-suit. AuthenTec's Document Request No. 109 sought "[a]ll licenses or agreements involving rights to intellectual property to which Atmel is a party." AuthenTec also propounded numerous requests for admission which requested Atmel to admit various facts to demonstrate that there were other licensees to the patents-in-suit. Unfortunately, Atmel never provided substantive answers to any of these discovery requests, and AuthenTec was forced — twice — to obtain orders from the Court to respond to this discovery. (*See* Dkt. Nos. 162 & 415.) Atmel violated both Court Orders:

- Atmel was ordered to certify that it had produced all non-privileged documents responsive to AuthenTec's requests including document Request No. 109. (Dkt. No. 162, ¶ 3). Despite this Court Order, Atmel's first two certifications contained language limiting its production "subject to objections." On October 26, 2007, the Court ordered Atmel to remove this language from the certification. (Ex. 36 at 24:8-25:13.) Atmel then provided a knowingly false certification that it had produced all responsive documents when Atmel knew that the licenses had not been produced. However, it was not until ***last week*** — faced with an impending motion for terminating sanctions – that Atmel finally produced licenses responsive to Request No. 109.

- Judge Laporte also ordered Atmel to provide a full and complete response to Interrogatory No. 7. (*Id.*) Atmel never provided a full and complete response to Interrogatory No. 7, in violation of this Court Order. To resolve this issue and the issue surrounding the requests for admission, the Court ordered Atmel to admit or deny two simple factual requests for admission regarding whether or not there are licenses to the patents-in-suit by February 15, 2008 and to produce all license agreements. Once again, Atmel ignored the Court Order, objected to the requests and did not provide any substantive response to either request.

Atmel's misconduct was not limited to written discovery. Atmel also failed to provide answers to the question when asked in deposition. On December 17, 2007, AuthenTec sought information about licenses from Atmel's in-house attorney Cynthia Bright. However, Atmel's attorney obstructed that effort with clearly improper instruction not to answer. (Ex. 37 at 35:1-37:19; 39:24-43:14.) On December 20, 2007, AuthenTec continued to seek information about licenses from Atmel's former in-house attorney and Atmel's Rule 30(b)(6) designee on licenses, Julie Mar-Spinola. Ms. Mar-Spinola testified that — testimony that she, Atmel and Atmel's attorneys knew was false. (Ex. 38 at 81:23-25.)

Indeed, Atmel has finally produced numerous license agreements, including several cross licenses that license the patents-in-suit. The license agreements clearly show that Atmel's representations to the Court, its deposition testimony, its certifications to the Court were all knowingly false. Judge Laporte has set a briefing schedule for AuthenTec's motion for terminating sanctions.

This background provides sufficient independent grounds for finding this case to be exceptional. *Semiconductor Corp. v. Marvell Semicondctor, Inc.*, No. C-04-4265MMC, 2005 U.S. Dist. LEXIS 39332, *21-22 (N.D. Cal. Nov. 21, 2005) (failure to comply with discovery obligations and prolongation of discovery on crucial issues to the case constitute sufficient discovery abuses for finding a case exceptional due to misconduct).

D. AuthenTec Should Be Granted Summary Judgment Of Non-Infringement On Many Other Grounds As Well.

While the lack of "contact sensitive elements" in the accused AuthenTec products is sufficient for this Court to deny Atmel's motion for summary judgment of infringement, grant AuthenTec summary judgment of noninfringement, and issue a finding that this is an exceptional case, there are numerous grounds which, separately or together, require the same outcome. If the Court grants AuthenTec's motion for summary judgment on the basis of a lack of "contact sensitive elements," it need not reach any of these issues (or, indeed, the claim construction issues which follow); however these issues further demonstrate how frivolous this entire case has been.

1. The AuthenTec Sensors Do Not Reconstitute a "Total" or "Global" Image.

Although Atmel devotes pages to arguing claim construction of the terms corresponding to means for or process of reconstructing as set forth in the second element of each of the asserted claims, the second element can in fact be distilled down to four common sub-elements. Each of the asserted claims requires: (1) reconstituting or reconstructing (agreed to have the same meaning) a (2) total or global image (agreed to have the same meaning) from (3) the series of partial images collected by the sensor by (4) "correlating overlapping partial images" (method claims) or using the algorithm disclosed in the specification (the means-plus-function apparatus claims). Applying Atmel's proposed constructions to these four basic elements, in order to infringe any asserted claim, Atmel must provide

evidence of an apparatus that is capable of: "constituting again" an image of the fingerprint by finding a mutual relationship between successive overlapping partial images and then combining the successive overlapping images, or finding the optimal position over overlap between successive partial images and then combining the successive overlapping images, and repeating this process until "the available set of partial images" is exhausted. (*See* Dkt. No. 398 at 12:3-9; 13:6-8; 15:13-15; 17:8-10; 19:11-13.) Put simply, to infringe in accordance with Atmel's proposed constructions, an apparatus must include software to implement an algorithm that combines all successive partial images collected by a sensor by repetitively combining successive slices until all the slices that have been collected are combined into a single image. (*Id.*; s*ee also* Ex. 7 at 72:17-74:10.)

The "evidence" that Atmel musters in support of its motion for summary judgment is so weak that it does not even shift the burden to AuthenTec to respond. Atmel asserts that the images generated by SlideToFullImage.exe shown in AML000510-11 (McKenzie Decl., Exhibit L) are evidence that AES products reconstitute a total image of a fingerprint. However, SlideToFullImage.exe is not an "AES Product;" ***SlideToFullImage.exe is a debugging tool***. Mr. Kraemer states that "the SlideToFullImage executable is an internal test tool." (Ex. 28 at 44:10-14.) Mr. Sengupta states that SlideToFullImage is an in-house tool. (Ex. 29 at 111:2-112:2.) Worse yet, even if provided to entities such as Oki, Atmel ignores the testimony of Mr. Kraemer that SlideToFullImage **cannot be used** other than as a debugging tool; i.e., that it cannot be used as part of a commercial product. (Ex. 28 at 179:5-180:15.)[23] Thus, under Atmel's theory, at best, the only potentially infringing activity could be certain debugging uses of SlideToFullImage.exe.

However, there is no evidence that even this potentially infringing activity actually occurred. Atmel identifies the "slices" that come from the sensor as the "series of partial images." (Dkt. No. 398 at 23, U, M, F, K.) For its evidence that there is a global or total image, Atmel relies upon an application note for incorporating an AuthenTec slide sensor with a third-party microcontroller and other hardware required to integrate the AuthenTec sensors into an end product. (*See* McKenzie Decl.,

[23] Moreover, the code used for any particular version of SlideToFullImage.exe depends on how certain parameters are set. (Kraemer Decl., ¶2.)

Ex. L.) The picture on which Atmel relies, however, is not a total or full image reconstruction of the fingerprint. (Kraemer Decl., ¶3.) Although hard to see, a close observation of the images (reproduced on this page) reveals distinct horizontal lines on the image, because this image is simply a representation of slices stacked upon each other; this image does not combine the slices into a reconstructed or reconstituted "total image" of a fingerprint.[24] (*Id.*) Atmel also points to the faster MatchSliceToSlice. However, this function does not create images at all. (*Id.*, at ¶4.) Because of Atmel's abject failure of proof, Atmel's motion for summary judgment of literal infringement must be denied.[25] Moreover, Atmel's lack of proof should result in summary judgment of noninfringement being granted to AuthenTec due to the lack of a reconstituted total image in the accused products. *Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986).

Figure 2-10. Screen Shot of Unsuccessful "Identify" Mode Operation



Recognizing that it cannot prove this element is literally present, Atmel has belatedly presented a theory that this element is present under the doctrine of equivalents in claim charts that were served on February 14, 2008, *after* Atmel's opening brief was filed. Even though these charts (and their equivalence claim) should be stricken as not authorized, [26] Atmel has not moved for summary

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[24] Remarkably, Atmel claims that Mr. Kraemer testified about "reconstituting the total image" but instead he simply read the page of exhibit L the Atmel attorney asked him to read. (Ex. 28 at 43:24-44:9.)

[25] If AuthenTec's claim constructions, set forth in Section IV, infra, are adopted, it is beyond doubt that the AuthenTec's products do not infringe and summary judgment can and should be granted in AuthenTec's favor on this basis as well. However, given the space limitations, there is not sufficient space to explain in detail the full range of imaging options made available to its customers, which its customers are free to use, or not, as they see fit and then explain why each option does not infringe. Unless Atmel comes forward with evidence, however, this Court can grant summary judgment in AuthenTec's favor on this issue because of Atmel's failure of proof.

[26] Atmel was granted leave by this Court to serve supplemental infringement contentions to bring certain new products into the case. (Dkt. No. 414.) Atmel, however, supplemented its contentions on all products, changing its infringement theories on many elements. The Court did not authorize such wide-ranging supplemental contentions, and, given Atmel's contention that all of the products function in significantly the same manner (Dkt. No. 398 at 24:9-10), AuthenTec believes that the Court's order should not be read to permit the new products to be accused on a different theory than the old products. *See, e.g., Genetech, Inc. v. Amgen, Inc.*, 289 F.3d 761 (Fed. Cir. 2002) (affirming a refusal to allow argument based on an doctrine of equivalents theory served without leave of court under this district's pre-2000 Patent Local Rules).

judgment of infringement under the doctrine of equivalents, prosecution history estoppel precludes any range of equivalents on this element. The original patent claims required a "means to reconstitute an image of the fingerprint from partial images obtained during [the relative sliding motion of the sensor and the finger with respect to each other]." (Ex. 9 at AML00061.) The claims, however, were rejected over Giles. (*See infra* p. 10.) "In response to these rejections," the applicant canceled claim 1 and added a new claim 17. (*Id.* at AML000115.) The applicant explained that:

> [t]he new independent claim 17 recites a sensor and that the reading means provides a series of partial images obtained during a relative sliding contact between the sensor and the finger. This is clearly shown in the Figures 1-2 and 5-12 wherein as the finger slides across the sensor (in the form of a bar) a series of partial images i_0-i_n at time periods t_o-t_n are formed and subsequently there is recited a means for reconciling these images ***to form the reconstituted total image of the fingerprint as shown in Figure 12***.

(*Id*. (emphasis added).) The second element of claim 17, which ultimately became claim 1, reads: "means for reconstituting a *total* image of the fingerprint from said partial images." (*Id*. at AML000113.) Thus, the requirement of a total image of the fingerprint was added to overcome the prior art, and there can be no range of equivalents granted to this element. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 739-741 (2002).

Besides prosecution history estoppel, the all-elements rule prevents equivalents for a limitation described as "total" because any equivalent would read this limitation out of the claim. *E.g., Moore U.S.A., Inc. v. Standard Register Co.*, 229 F.3d 1091, 1106 (Fed. Cir. 2000) ("[T]he applicant's use of the term 'majority' is not entitled to a scope of equivalents [because] to allow what is undisputedly a minority (i.e., 47.8%) to be equivalent to a majority would vitiate the requirement…."); *see also Asyst Technologies, Inc. v. Emtrak, Inc.*, 402 F.3d 1188 (Fed. Cir. 2005) (unmounted cannot be equivalent to "mounted"); *Cooper Cameron Corp. v. Kvaerner Oilfield Products, Inc.*, 291 F.3d 1317, 1322 (Fed. Cir. 2002) (above two plugs is not equivalent to a connection "between" two plugs).

In the end, Atmel's argument on the reconstruction element demonstrates precisely why this case is exceptional. Atmel has no evidence of infringement, even though Atmel insisted on a massive source code production in this case, and repeatedly insisted that more and more code be produced because that code was allegedly critical to Atmel's case — but now, it decides it does not need that

code for summary judgment. Furthermore, after recognizing that it had no legitimate infringement case on this element, Atmel belatedly and improperly added a new (and misguided) theory that this element was present under the doctrine of equivalents. This type of conduct designed purely to drive up costs makes this an exceptional case.

2. AuthenTec Does Not Directly Infringe.

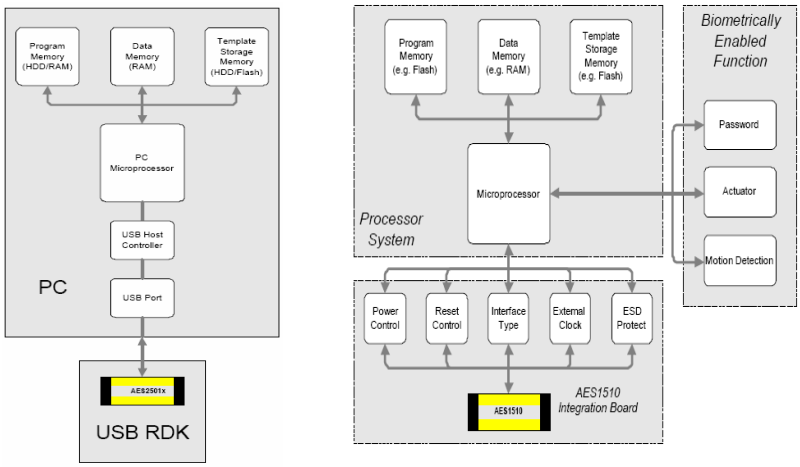
Atmel moved for summary judgment solely based on direct infringement. (Dkt. No. 398 at n.1.) AuthenTec does not and cannot directly infringe any of the asserted claims of either patent-in-suit by *making, selling, or offering for sale* any accused product even applying Atmel's claim constructions.[27] With regard to the asserted claims of the '114 patent, Atmel's proposed construction of each claim requires a microprocessor programmed with an algorithm for reconstructing a total or global image. (*See* Dkt. No. 398, at 10-11; Pltfs. Ex. C at 3, Pltfs. Ex. D at 7.) As described below, Atmel's proposed construction of the algorithm is wrong, but that is not significant for this issue because AuthenTec's sensors neither contain microprocessors for reconstructing a total image nor does AuthenTec make, use, sell, or offer to sell such a microprocessor, as even the most cursory review of AuthenTec documents, including most notably the AuthenTec "Primer," would have revealed to Atmel and its counsel.

AuthenTec's AES2501, AES2501A, and AES 2501B, and AES 1610 products are USB devices that must be connected to a host computer through its USB interface. (Ex. 30 at AUTH-A018757.) The microprocessor is entirely separate from the sensor sold by AuthenTec as depicted here in a simple picture (on the left below) from an AuthenTec Primer. (*Id.* at 018758.) The same is true for AuthenTec's sensors for embedded applications that are specifically designed and optimized for use in mobile devices such as cellular handsets, PDAs, and other embedded mobile applications where serial connectivity is required, including the AES2502, AES2510, AES1510 and AES1710 (depicted below). (Ex. 31 at 018272 & 018276.)[28]

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[27] For the reasons set forth elsewhere in this brief, AuthenTec's use of its own products does not directly infringe either.

[28] The AES2810 does contain a microprocessor, but it is not programmed with a global image reconstitution algorithms as required under Atmel's constructions.



Thus, the microprocessor, a required element of an allegedly infringing apparatus under either party's claim construction, is not a part of the PC or the embedded AES products, and is not supplied by AuthenTec. Thus, the AES products, standing alone, do not and cannot comprise an alleged infringing apparatus. Moreover, the asserted claims of the '804 patent relate to use of an allegedly infringing apparatus. Making, selling, or offering for sale any of the sensors above does not practice the method. Atmel's motion for summary judgment of direct infringement can be denied on these grounds; AuthenTec's motion for summary judgment should be granted.

3. AuthenTec's Foreign Sales Do Not Infringe.

Applying Atmel's proposed claim construction, as described above, the sensor alone is not capable of directly infringing any asserted claims under either claim construction. In addition to combining a microprocessor, memory, and other components with the sensor, the microprocessor must be programmed with software capable of infringing the claims. This Court has already ruled that supplying such software from the United States does not give rise to liability pursuant to 35 U.S.C. § 271(f). (Dkt. No. 414 at 9-10.) Because AuthenTec's products are manufactured outside the United States,[29] AuthenTec is not liable directly or indirectly for the sale, offer for sale, manufacture or use of

[29] All of AuthenTec's sensors are manufactured outside of the United States. AuthenTec uses Taiwan Semiconductor Manufacturing Corporation ("TSMC") to manufacture silicon chips. (Ex. 21 at 259:14-20; 261:1-13.) The drive ring for AuthenTec's sensors is made by Chipbond also located in Taiwan, or applied to the packaging at Signetics. (*Id.* at 258:24 – 259:3.) Packaging is completed at Signetics in Korea. (*Id.* at 264:3 (Continued...)

any sensors that remain outside of the United States, which comprises a large portion of the sensors sold by AuthenTec. Accordingly, even applying Atmel's claim construction, the Court should grant partial summary judgment that AuthenTec is not liable for any sales of any sensors that do not enter the United States.

4. Atmel Cannot Prove That AuthenTec Indirectly Infringes.

Atmel does not present a shred of evidence to support its indirect infringement claims. Atmel asserted indirect infringement in its Complaint in March of 2006, and its Preliminary Infringement Contentions cite alleged third party infringement by Fujitsu "on information and belief." Notwithstanding these manifestations of its understanding that it would need to seek third party discovery to prove indirect infringement, Atmel took no such discovery, and has no such evidence. Because of the lack of evidence of any direct infringement by a third party, AuthenTec is entitled to summary judgment of no indirect infringement. *Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986).

Atmel will likely argue that this Court should not grant this motion because of its "outstanding discovery motions" to take third party discovery of AuthenTec customers (Dkt. No. 398 at n.87), but the Court can and should dismiss such an argument. Late in the discovery period — two weeks before the expiration of the second extension of the discovery period — Atmel served deposition subpoenas in violation of this Court's Rule 16 Order (a violation that Atmel has admitted) by exceeding the deposition limit set by the Court; furthermore, Atmel knew the depositions could not be completed in compliance with Local Rule 26-2. Atmel acted first, and only requested permission later by filing a request to take the depositions on the last day of the discovery period. Atmel's motion was ***denied*** by Judge Laporte without prejudice on January 31, 2008. Thus, these motions are not now pending. Because Atmel has no evidence of indirect infringement two years into this case, summary judgment should be granted.

(...Continued)

– 13.) Indeed, AuthenTec's entire manufacturing process occurs at companies located outside the United States. (Exs. 35 at AML003453.)

But, even assuming that Atmel's motion to take this discovery is renewed and granted, an unlikely event, this Court can and should grant AuthenTec summary judgment that sales to customers other than the three who are the subject of that motion — Motion Computing, Prevaris, and Lexar — are noninfringing due to a lack of evidence of direct infringement.[30]

IV. CLAIM CONSTRUCTION

A. Legal Standard on Claim Construction

The Federal Circuit recently clarified the process of claim construction, including the types of evidence that a court may consider. *See generally Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). The Federal Circuit held that claim terms are to be construed based upon the intrinsic evidence, particularly the patent specification. *Id*. at 1315 ("[T]he specification ... is the single best guide to the meaning of a disputed term."). It furthermore expressly disapproved of prior decisions that "placed too much reliance on extrinsic sources such as dictionaries, treatises, and encyclopedias and too little on intrinsic sources, in particular the specification and prosecution history." *Id.* at 1320. Indeed, where the claim terms are unambiguous in light of the claims, specification, and prosecution history, "it is improper to rely on extrinsic evidence." *Vitronics Corp. v. Conceptronic*, 90 F.3d 1576, 1583 (Fed. Cir. 1996). A court should "discount any expert testimony that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent." *Phillips*, 415 F.3d at 1318 (internal quotation marks omitted). Moreover, "unsupported assertions by experts as to the definition of a claim term are not useful to a court." *Id.*

The flaws in Atmel's approach to claim construction are apparent in light of the law. Atmel relies extensively on extrinsic evidence, such as Dr. Jain's testimony and lay dictionary definitions, without making reference to the intrinsic record.[31] The prosecution histories were not even considered

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[30] As to the other subpoenas Atmel served, the subpoena to Lenovo was quashed by the Middle District of North Carolina, and Atmel did not timely move and has now waived the right to move to compel the depositions of Hewlett-Packard and American Power Conversion.

[31] Atmel retained Dr. Jain in June 2006. (Ex. 7 at 13:19-25.) Dr. Jain is an expert in biometric matching techniques; something that he readily concedes is not disclosed in the patents-in-suit. (Id. at 29:11-22; 39:13-40:20.) In March 2007, Atmel submitted a statement of Dr. Jain's proposed testimony, but did not ask Dr. Jain for an opinion on any issue, including claim construction, until January 11, 2008, right before the second

(Continued...)

by Dr. Jain, or included or discussed by Atmel. Atmel's reliance on Dr. Jain is particularly problematic, because Atmel does not contend (or demonstrate) that the claim terms are ambiguous. The Court should rely exclusively on the intrinsic evidence, as AuthenTec does.

B. AuthenTec's Proposed Claim Constructions Are Supported By Intrinsic Evidence And Should be Adopted

1. Contact Sensitive Elements

"Contact sensitive elements" and "sensing elements" should be construed to mean "elements of the sensor that directly read the fingerprint and are individually sensitive to patterns of pressure or temperature caused by physical contact between a finger and the sensing surface."[32] The intrinsic evidence definitively supports this construction. Starting with the Abstract and throughout the specification and the prosecution history, the invention is clearly limited to sensors that directly read patterns of temperature or pressure exerted on the surface of the sensor. (*See infra* pp. 4-10.) As set forth on pages 5-6 above, the patent speaks exclusively in terms of temperature and pressure sensitive sensors first described in the background of the invention. Indeed, the inventor specifically describes how his invention overcomes the limitations of "[t]hese types of sensors." (*See* Ex. 4 at 2:1-52.) Moreover, the claims, specification, and file history also describe a matrix of contact sensitive elements that individually respond to whether or not a ridge is in contact with it at a particular time. The inventor also clearly limited his invention by disclaiming indirect reading of a fingerprint. (*See infra* Section II.A.3.) AuthenTec's proposed construction should be adopted because it accurately reflects the scope of the invention as set forth by the intrinsic evidence.

(...Continued)

extension of the claim construction discovery period expired. (Ex. 7 at 8:7-25.) Atmel did not provide Dr. Jain with the file histories of the patents-in-suit. (Id. at 34:6-14.) Atmel served Dr. Jain's report on the night before Dr. Jain's scheduled deposition. Dr. Jain adopted all of Atmel's positions, but testified that he did not understand several critical portions of the specification of the patents-in-suit, including what was meant by "external excitation" or what was meant by "flexible" in the context of the protective coating being "flexible enough to transmit, vertically and without modification, the pattern of pressures being exerted upon it (the finger being pressed directly on this layer)." (Id. at 56:7-57:14; 91:22-92:16; 121:23-122:19.) Moreover, Dr. Jain testified that he would not rely on the dictionaries on which Atmel relies. (Id. at 167:7-169:6.)

[32] Atmel has changed its proposed construction as to "sensing elements" and several other elements. In response, AuthenTec has also modified some its positions. A complete chart setting forth the parties current positions is attached hereto as Exhibit A.

Atmel's proposed construction violates several cannons of claim construction. Atmel proposes that the "contact sensitive elements" be construed as "[t]wo or more component parts that are responsive to contact between a finger and the sensing surface[33] of the sensor wherein the sensor is integrated onto a semiconductor substrate and is not an optical sensor." (Dkt. No. 398 at 5.) The phrase "two or more component parts" is unnecessary and introduces an ambiguity because the claims already expressly specify either a "matrix of" elements in the case of the '114 claims, or "several lines of" elements in the case of the '804 claims. (Ex. 4 at 10:65; Ex. 5 at 11:12.) Integrated "onto" should be, if included, read integrated "into." (Ex. 4 at claim 4.) Finally, Atmel is right that the inventor clearly disclaimed significant subject matter, but wrong about what was disclaimed, which is all sensors that do not directly read patterns of temperature and pressure on sensing surface, *i.e.*, all non-contact sensors. (Ex. 9 at AML000150.)

2. Means for Reading a Fingerprint

It is black letter law that the language of this claim element creates a presumption that the claim is in means-plus-function form, and as depicted in Figure 4 above, the means requires more than sensor (50) (comprises of a matrix of contact sensitive elements coupled to sensing surface; it also includes the analog to digital converter (51) which is described as separate from the sensor but integrated into the same substrate. (Ex. 4 at 7:36-41.) The function of the "means for reading" is "reading the fingerprint and generating a series of partial images." As Atmel construes the claim, this function is basically read out of the claim no element is required to read the fingerprint; the sensitive elements are only responsive and the sensing surface only detect. However, because this is properly a means plus

[33] Atmel's proposed construction of "contact sensitive elements" includes reference to the "sensing surface." "Sensing surface" should be construed to be "a surface of the sensor coupled to the matrix of sensitive elements that when pressed on by the finger transmits patterns of temperature and pressure without modification to the contact sensitive elements." Atmel's proposed construction of "sensing surface" as "a surface of the sensor that detects finger contact wherein the sensor is integrated onto a semiconductor substrate and is not an optical sensor" is overbroad in view of the intrinsic evidence. In particular, detecting contact is not sufficient; the sensing surface must be coupled to the sensitive elements and transmit patterns of temperature and pressure to the sensitive elements. Moreover, the "wherein" clause constitutes an extraneous limitation. Further, "sensor" should be construed to be "a matrix of contact sensitive elements coupled to a sensing surface." Atmel's proposed construction is overly broad, and should not be adopted.

function element, the structure is limited to that sensor structures disclosed in the specification or equivalents.

Atmel devotes much of its brief to attempting to avoid a means plus function construction of this claim. However, in focusing so much attention on this issue, Atmel completely misses the bigger and dispositive issue. The means for reading includes significant structural limitations, as Atmel acknowledges, that cannot be read out of the claim regardless of whether or not the means for reading is a means-plus-function element. The Atmel proposes that the "means for reading a fingerprint" be construed to be solely a "sensor including a sensing surface," but the plain language of the claim and intrinsic evidence requires the means for reading to include "a matrix of contact sensitive elements." Accordingly, this term must be construed to include that limitation.

3. Global Or Total Image of a Fingerprint

The intrinsic evidence on the meaning of a "global" or "total" image of a fingerprint is clear. The specifications of both patents discuss the process of collecting partial images Io to In. (Ex. 4 at 7:50-61; Ex. 5 at 7:57-64.) The specifications then describe that images Io to In are transmitted and that the process of correlating successive slices starts with I_0 and I_1 and then moves to correlating the next image I_2 "and so on and so forth until the fingerprint is ***completely reconstituted***." (*Id.* at 8:10-23 (emphasis added).) Thus, the specifications describe creation of a global or total image as correlating all of the partial slices obtained from Io to In until a "global" or "total" image is reconstituted. Atmel's suggestion that a "global" or "total" image can be anything but what is described in the specification is unsupported. Moreover, Atmel is estopped from asserting otherwise. (*See* Section D.1., *supra*).

4. Reconstructing a Global Image of Said Fingerprint

Atmel proposes that "reconstructing a global image of said fingerprint"[34] means "reconstructing or constituting again the complete image of each fingerprint part that has been obtained from the series of partial images" is unsupported by the specification and other intrinsic evidence.[35]

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[34] Atmel agrees that this phrase is equivalent to the phrase "reconstituting a total image" as used in the '114 patent. (Ex. 7 at 61:15-22.)

[35] Atmel's citation to dictionary definitions for the terms "series" and "overlap" is puzzling considering that the phrase being construed contains neither term. In addition, such extrinsic evidence is of no moment and need not be considered.

The proposed phrase "constituting again" is nonsensical, as the complete image has not been previously constituted. Furthermore, "parroting" the word "reconstructing" in the claim construction is not helpful. Additionally, the specification and file history does not support any construction that requires reconstruction of only a "fingerprint part" as Atmel proposes. (*See* Section III.D.1., *supra*). Indeed, as described above, anything less than a total image of a fingerprint was disclaimed during prosecution.

5. Means for Reconstituting

Atmel claims that the structure corresponding to this means is only microprocessor. Atmel is wrong. The specification states that the partial images I_0 to I_n are transmitted to "the microprocessor 60 and stored in the random-access memory 61. The algorithm located in the read-only memory 63 performs operations for processing of the images stored in the random-access memory 61." (Ex. 4 at 8:11-14.) Thus, the microprocessor 60, the random-access memory 61, and the read-only memory 63 are all required structures for processing the partial images. (*See id.* at 7:36-47.)

As to the algorithm that is part of the structure, it is well-settled that an algorithm is limited by the specific structure programmed to perform the algorithm as disclosed in the specification. *See WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1348-49 (Fed. Cir. 1999). The specification further discloses only two methods of reconstituting a total image: "dot by dot" correlation as described in column 8, lines 31-67 correlating sets contours as described in column 9, lines 16-40. Thus, the microprocessor must be programmed with one of these two algorithms, or an equivalent.

With regard to Dr. Jain's extrapolated algorithm, the inclusion of the phrase "if any" as it relates to overlap is improper. All of the claims at issue in the case, with the exception of claim 1 (and the claims that depend therefrom) of the '114 patent, actually include the word overlap in the claims, thus, it would be improper to broaden the scope of these claims by suggesting that there need not be overlap. With regard to claim 1, it does not include the word overlap because a single line sensor is claimed in claim 13. Only multi-line sensors, however, are at issue here. The only means disclosed for multi-line sensors are means that require overlap, which Dr. Jain does not dispute. Thus, the Court

need not address the issue of the structure corresponding to a single line sensor, and should not include the phrase "if any" in Atmel's proposed construction, if it is adopted.

6. Correlation of Overlapping Partial Images

For the entire phrase "correlation of overlapping partial images" Atmel proposes "a mutual relationship between overlapping partial images." At best, however, the phrase "mutual relationship" relates only to the word "correlation." Thus, at a minimum, the phrase must be interpreted to mean finding a mutual relationship between overlapping partial images. Moreover, correlation as described in the specification requires finding a position of optimal overlap, not just any mutual relationship, and finding a position of optimal overlap between successive partial images and combining the images according to the determined optimal overlap between successive partial images, not just any mutual relationship, and combining the images according to the determined optimal overlap. (*See* Ex. 4 at 8:5-67.)

7. Active Layer

Atmel's proposed construction of this term as "[a] layer containing the sensing surface" is not supported by the specification. In fact, the specification states unequivocally, and Atmel agrees, the active layer is identified as the layer of "pyroelectric/piezoelectric material placed between an upper electrode and a matrix array of lower electrodes" in the specification. (*Id*. at 4:5-7; Dkt. No. 398 at 18.) Thus, Atmel's unsupported attempt to expand this term to encompass any sensing surface should not be permitted. Moreover, the active layer must, according to the specification, generate "electric charges induced by the variation in temperature and/or pressure." (*Id*. at 7:10-20.) The claims themselves require the active layer to be sensitive to pressure and/or temperature. (*See id*. at 10:9-10; 12-15.) Atmel's proposed construction should be rejected.

8. Active Surface

Atmel's proposed construction of this term as a "surface of the sensor that detects finger contact" is overbroad. The specification indicates the active surface "must be both rigid enough and flexible enough to transmit, vertically and without modification the pattern of pressures that is exerted

on it (the finger being pressed directly on this layer.)" (*Id.* at 7:3-6; col. 4:44-47.) AuthenTec's proposed construction properly limiting the phrase in light of the specification should be adopted.

9. Capacitive Elements

Atmel's construction of this phrase, relying upon extrinsic evidence provided by dictionary definitions, should be rejected. The phrase "capacitive elements" is contained only in dependent claim 7. Thus, the claimed capacitive elements must also be contact sensitive as required by claim 1. Atmel improperly omits this limitation, thereby impermissibly broadening this claim. Capacitive elements are contact sensitive elements that detect capacitance caused by the matrix of ridges and hollows on the surface of the sensor

V. CONCLUSION

For the foregoing reasons, AuthenTec respectfully requests that this Court adopt its proposed claim constructions, deny Atmel's motion for summary judgment, grant AuthenTec's motion for summary judgment and declare this case exceptional pursuant to 35 U.S.C. § 285.

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Respectfully submitted,

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