IN THE UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

KILOPASS TECHNOLOGY INC.,

Plaintiff,

v.

SIDENSE CORPORATION,

Defendant.
_____/

No. C 10-02066 SI

ORDER GRANTING DEFENDANT'S MOTION FOR SUMMARY JUDGMENT OF NON-INFRINGEMENT

Defendant Sidense Corp. filed a motion for summary judgment of non-infringement in this patent case. A hearing was held on this matter on August 10, 2012. Having considered the papers submitted, and for good cause shown, the Court GRANTS defendant's motion for summary judgment.

BACKGROUND

Plaintiff Kilopass Technology, Inc., is a company that markets "a novel way of storing data permanently inside integrated circuits . . . by creating a breakdown in the transistor, safely and reliably." Third Am. Compl. ("TAC") ¶ 8. Kilopass alleges that defendant Sidense Corporation "has knowingly copied Kilopass' patented technology and has been selling and offering for sale Kilopass' patented technology without authorization from Kilopass." TAC ¶ 18. In particular, Kilopass alleges that defendant infringed U.S. Patent Nos. 6,940,751 ("'751 Patent"), 6,777,757 ("'757 Patent"), and 6,856,540 ("'540 Patent") (collectively, the "patents-in-suit"). TAC ¶¶ 29, 38, 45. Kilopass also alleges that Sidense has been "sowing deceit in the marketplace" by "falsely alleg[ing] in the marketplace statements to the effect that Kilopass has no intellectual property issues with Sidense." TAC ¶ 24.

Kilopass originally filed suit in this Court on May 14, 2010. Kilopass filed its Second Amended

Complaint on October 14, 2010. On December 13, 2010, the Court granted in part and denied in part a motion to dismiss, leaving six causes of action in the case: three patent infringement claims, one false advertisement and disparagement claim, one intentional interference with prospective economic relations claim, and one unfair competition claim. On August 31, 2012, the Court issued its *Markman* Claim Construction Order. On May 22, 2012, Kilopass filed the Third Amended Complaint.[1]

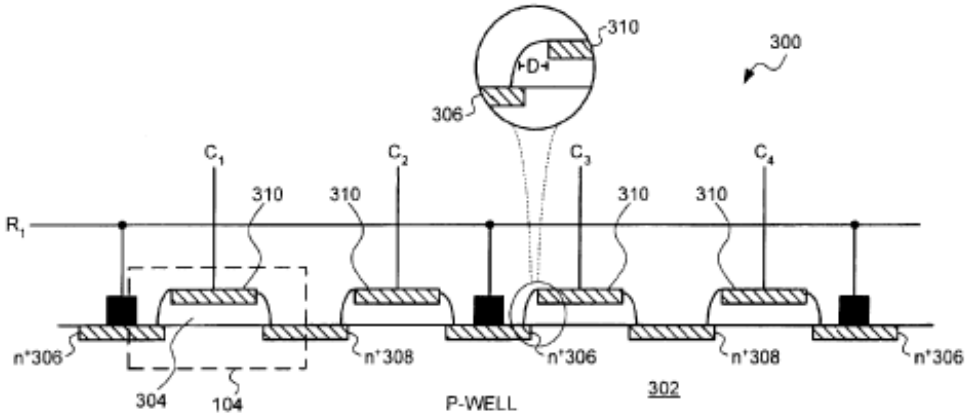
1. The Patents-in-Suit

The patents-in-suit all generally relate to memory devices and arrays of such devices. Hutchins Decl., Ex. 10 (Neikirk Expert Report), ¶ 10. Specifically, they relate to non-volatile memory devices, which are memory devices that retain their state even when power is removed. *Id.* The programmable memory cell is comprised of a transistor located at the cross point of a column bitline and a row wordline. *See* '751, Abstract. The transistor has a gate formed from the column bitline and a source connected to the row wordline. *Id.*[2] There is a substrate underlying the gate. The memory cell is programmed by applying a voltage potential between the column bitline and the row wordline to produce a "programmed n+ region" in the substrate. *Id.* The key to programming the cell is "breaking down" the gate dielectric into a damaged state. Breaking down the gate oxide requires applying a sufficient voltage to the gate. In an undamaged state, during a read operation, very little current will be able to flow from the gate into the channel region and then out to the device; this will provide knowledge to the device that the cell is in its first binary state. Neikirk Exp. Rep. ¶ 10. In the damaged state, current flow will be easier during the reading operation, and will provide knowledge that the cell is in its second binary state. *Id.*

Figure 3 of the patents-in-suit depicts the memory cell:

[1]On August 19, 2011, Sidense filed suit against Kilopass in a related case, *Sidense v. Kilopass*, CV 11-4112 SI, asserting various business torts against Kilopass, including defamation, false advertising, and intentional interference with contractual relations.

[2]The use of only two electrical connections (one to the gate and one to the source) differentiates the patents-in-suit from other metal-oxide semiconductor field effect transistors (MOSFETs) which have three outside electrical connections: one to the gate, one to the source, and one to the drain. Neikirk Ex. Rep. ¶ 31. The use of only two connections rather than three enhances the density of the memory device, making it smaller. Neikirk Exp. Rep. ¶ 35.



'757, Fig. 3. R_1 depicts the row wordline (connected to the source) and C_1 depicts the column bitline (connected to gate). The gate structure is demarcated as 310 and the source region is 306. As noted, the gate oxide layer (304) is broken down by the voltage potential during programming.

For the sake of example, in one embodiment described in the patents-in-suit, the voltage on a selected row wordline is zero volts and the voltage on the column bitline is 8 volts. '757, 6:22-24. Thus, the voltage across the gate (which is connected to the bitline) of the transistor and the source (connected to the wordline) is 8 volts. The gate oxide of the transistor is designed to break down at this potential difference, which programs the cell. *Id.* "During programming, the voltage potential breaks down the gate oxide and results in a leakage current through the gate oxide into the underlying substrate and collected mostly by the N+ source/drain, which is connected to the ground." *Id.*, 6:30-34. In this broken down state, during a later read operation (using 1.8 volts), current will flow from the column bitline, through the gate oxide of the transistor (104), and out through the wordline – indicating the cell is programmed. *Id.*, 8:1-6. If, however, during programming, the voltage on the wordline is zero volts and the voltage on the bitline is 3.3 volts, the potential difference of 3.3 volts is insufficient to break down the gate oxide for the transistor at the crosspoint, and the memory cell does not program. *Id.*, 6:51-55. During a read operation, because the gate oxide is not broken down, no current will flow, which will indicate to the device that the memory cell is not programmed. *Id*, 8:2-12.

2. The Alleged Infringing Technology

Defendant Sidense Corporation is active in "the emerging market for 'one transistor' (1T bitcell), one-time programmable (OTP) embedded non-volatile memory ('eNVM')." *Sidense v. Kilopass*, CV 11-4112, SI, First Amend. Compl. ("FAC") ¶ 7. Sidense's product is called the 1T-Fuse, and is used by its customers in a "variety of integrated circuits, which are then placed in a consumer electronics product such as a smartphone or set top box." *Id.*, ¶ 7. Sidense does not make, use, or sell any apparatus or method; rather, it licenses the design of its technology to customers, who in turn use those designs to build embedded bit cells and bit cell arrays in chips manufactured by or for them. *See* Def.'s Mot. to Dismiss at 11 (Dkt. 12). Sidense's only product is its memory macro-cell design, which Sidense licenses to customers who download "GDS" files containing those designs from its servers. *Id.*

Sidense's technology was invented by Wlodek Kurjanowicz. Hutchins Decl., Ex. 1 (Kurjanowicz Dep.), 34:2-5. Kurjanowicz testifies that in an earlier memory circuit he had worked on, gate oxide breakdown was a problem. *Id.*, 32:18-22. In 2003, he realized that in fact gate oxide breakdown could be useful, and "tried to use that knowledge to develop memory that would use [gate oxide breakdown] as a programming phenomenon." *Id.* He began to work on developing memory cells that utilize the breakdown. However, on the night of February 4, 2004, his partner informed him about Kilopass and its one-time programmable memory patents. In reviewing the patents, Kurjanowicz recognized that Kilopass had disclosed 1.5T cells that "looked very similar or if not identical to what [he] was designing for last many months." *Id.*, 35:16-18. He then undertook a new design, which he recorded in his notebook that night, of a "half transistor" anti-fuse memory design. *Id.*, 34:2-5; Def.'s Opp. at 7. This is the technology that Sidense uses to this day.[3] Def.'s Opp. at 7. Sidense has received 16 patents on its technology, including a patent for its "Split Channel Antifuse Array Architecture," Patent No. 7,402,855 (the "'855 Patent").

Kilopass seeks to establish infringement based on a chip it received from one of Sidense's customers, XMOS. The chip includes Sidense's 1T OTP technology. Neikirk Exp. Rep. ¶ 38. Kilopass provided the chip to a third company to "decap" the chip, which involved cutting the chip and

[3]The product Sidense markets as the 1T-Fuse is the "half a T memory architecture" designed by Kurjanowicz. *Id.*, 34:2-5.

examining it under a Transmission Electron Microscope ("TEM"). The images provided from that analysis form the basis of Kilopass' expert's analysis of Sidense's 1T OTP memory structure. Kilopass also points to aspects of Sidense's '855 patent to demonstrate infringement.

3. The Asserted Claims

Kilopass asserts claims 1, 2, 7, 8, and 14 of the '757 patent; claims 1, 3, 5, 6, 9, 12, and 14 of the '751 patent; and claims 1 and 5 of the '540 patent. Claim 1 of '751 claims the following (terms relevant to Sidense's motion in bold):

> 1. A programmable memory cell useful in a memory array having column bitlines and row wordlines, the memory cell comprising:
>
> a transistor having a gate, a gate dielectric between the gate and over a substrate, and **first and second doped semiconductor regions** formed in said substrate adjacent said gate and **in a spaced apart relationship** to define a channel region therebetween and under said gate; and
>
> wherein the **second doped semiconductor region of the transistor** is **connected to one of said row wordlines**, and wherein said gate dielectric is formed such that the gate dielectric is more susceptible to breakdown near the first doped semiconductor region than said second doped semiconductor region.

'751, 14:29-44. Sidense argues that four of the limitations described in this claim, which are shared by all of the asserted claims, are not found in its technology: (1) a "row wordline" connected to the "second doped semiconductor region"; (2) a "transistor"; and (3) "first and second doped semiconductor regions" that are (4) "in a spaced apart relationship." Def.'s Mot. at 9.

Sidense moved for summary judgment of non-infringement on July 11, 2012. Sidense only moves on the patent claims, not Kilopass' tort claims. Kilopass filed an opposition to the motion for summary judgment on July 20, 2012. Dkt. 250. Along with its motion for summary judgment, Sidense filed a *Daubert* motion to exclude the testimony of Kilopass' expert Neikirk. Dkt. 248. For its part, Kilopass filed an objection to the declaration of Sidense's expert filed along with Sidense's motion.

Dkt. 253.[4] Kilopass also filed a motion to strike Sidense's reply. Dkt. 268.[5]

LEGAL STANDARD

Summary adjudication is proper when "the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed.R.Civ.P. 56(a). In a motion for summary judgment, "[if] the moving party for summary judgment meets its initial burden of identifying for the court those portions of the materials on file that it believes demonstrate the absence of any genuine issues of material fact, the burden of production then shifts so that the nonmoving party must set forth, by affidavit or as otherwise provided in Rule 56, specific facts showing that there is a genuine issue for trial." *See T.W. Elec. Service, Inc., v. Pac. Elec. Contractors Ass'n*, 809 F.2d 626, 630 (9th Cir.1987) (citing *Celotex Corp. v. Catrett*, 477 U.S. 317, 106 S.Ct. 2548, 91 L.Ed.2d 265 (1986)). In judging evidence at the summary judgment stage, the Court does not make credibility determinations or weigh conflicting evidence, and draws all inferences in the light most favorable to the non-moving party. *Id.* at 630–31 (citing *Matsushita Elec. Indus. Co., Ltd. v. Zenith Radio Corp.*, 475 U.S. 574, 106 S.Ct. 1348, 89 L.Ed.2d 538 (1986)). The evidence presented by the parties must be admissible. See Fed.R.Civ.P. 56(c)(4). Conclusory, speculative testimony in affidavits and moving papers is insufficient to raise genuine issues of fact and defeat summary judgment. See *Thornhill Publ'g Co., Inc. v. GTE Corp.*, 594 F.2d 730, 738 (9th Cir.1979).

To find infringement, "the court must determine that every claim limitation is found in the accused device." *Playtex Products, Inc. v. Procter & Gamble Co.*, 400 F.3d 901, 909 (Fed. Cir. 2005) (internal citations omitted). Summary judgment of non-infringement is a two-step analysis. First, the claims of the patent must be construed to determine their scope, as a question of law. *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1304 (Fed. Cir. 1999) (internal citation omitted). Second, "a determination must be made as to whether the properly construed claims read on the accused device."

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[4]Because the Court does not rely on that declaration, it need not address this objection.

[5]Kilopass moves to strike Sidense's reply on the grounds that it was filed 38 minutes late and presents new argument with respect to the rowline/wordline limitation. The Court does not rely on Sidense's new argument in this Order. The Court otherwise DENIES the motion to strike.

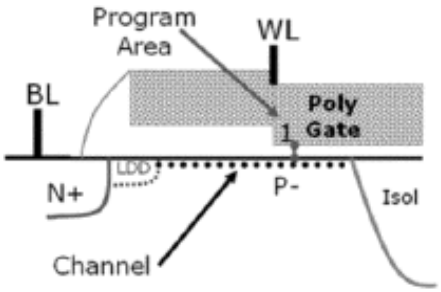
Id. The determination of infringement is generally a question of fact. *Lockheed Martin Corp. v. Space Sys./Loral, Inc.*, 324 F.3d 1308, 1318 (Fed. Cir. 2003). Since the ultimate burden of proving infringement rests with the patentee, an accused infringer may establish that summary judgment is proper "either by providing evidence that would preclude a finding of infringement, or by showing that the evidence on file fails to establish a material issue of fact essential to the patentee's case." *Novartis Corp. v. Ben Venue Labs., Inc.*, 271 F.3d 1043, 1046 (Fed. Cir. 2001).

DISCUSSION

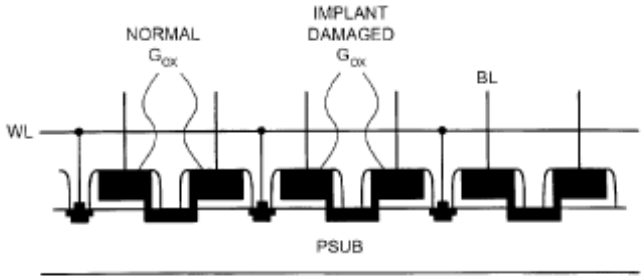
As noted above, Sidense argues that four of the limitations set forth in all of the asserted claims are not present in its technology: (1) "row wordlines" connected to the "second doped semiconductor region"; (2) a "transistor"; and (3) "first and second doped semiconductor regions" that are (4) "in a spaced apart relationship." Def.'s Mot. at 1. Sidense argues that no question of material fact exists with respect to any of the four limitations. Because a finding of infringement requires that every claim limitation is found in the accused device, the lack of a question of material fact on any of the four limitations warrants summary judgment in this case. *See Playtex Products, Inc. v. Procter & Gamble Co.*, 400 F.3d 901, 909 (Fed. Cir. 2005).

1. "Row Wordlines" Connected to the "Second Doped Semiconductor Region"

All claims of the '757 and '540 patents have the limitation of "a row wordline segment coupled to the second doped semiconductor region." '757, 10:46-47 and 11:15-16; '540, 11:6-7. Sidense argues that its technology does not meet this limitation because its memory cell has a row wordline connected to the gate and a column bitline connected to the second doped semiconductor region, the opposite configuration of Kilopass' patents-in-suit. Sidense argues that this is undisputed, and points out that Kilopass' infringement expert cites to the following illustration of Sidense's technology:



Neikirk Exp. Rep. ¶ 69. In the illustration, Sidense's wordline [WL] is connected to the gate, while the bitline [BL] is attached to the second doped semiconductor region (the N+ diffusion region). *See* Pl.'s Mot. at 17. As noted, this is the opposite configuration from diagrams disclosed in Kilopass' patents-in-suit, which connect the gate to the bitline and the second doped semiconductor to the wordline:



'751, Fig. 27.

Recognizing its opposite configuration, Kilopass originally argued at claim construction that wordlines and bitlines were interchangeable terms. *See* Kilopass's Opening Claim Const. Br. at 5 ("[O]ne of ordinary skill in the art would understand that the current flows can be detected in both the bitline and the wordline, again showing the interchangeability of the two, and with the naming of 'bitline' or 'wordline' being simply a matter of perspective."). As interchangeable terms, Kilopass proposed they be defined identically as "a line that connects to one terminal of each memory cell in a memory array." Sidense argued that a bitline was limited to a "line that connects the memory cell to the sensing circuit during the read operation," while a wordline is a "line connected to the memory cell, which is selected by the row addresses." Claim Const. Order at 8.

The Court did not adopt Kilopass's construction, but largely found in its favor. The Court noted that wordlines and bitlines always appeared orthogonal to one another in a memory array, and thus "the

Court will not define two different terms to mean precisely the same thing when they are not identical." Claim Const. Order at 9. However, the Court limited the differences between bitlines and wordlines to their positions in relation to one another: it defined bitline/column bitline as "a line orthogonal to the row wordline that connects to a terminal of each memory cell in a memory array," and wordline/row wordline as "a line orthogonal to the column bitline that connects to a terminal of each memory cell in a memory array." *Id.*

However, during *inter partes* reexamination proceedings of its own patents before the Patent & Trademark Office, Kilopass adopted a contradictory position from its earlier argument before this Court in order to overcome prior art. *See* May 1, 2012 Order Upon Reconsideration, Dkt. 224, at 5. Sidense, which instigated the reexamination, had argued to the PTO that the Kilopass' '751 patent was anticipated by an earlier patent, Tanaka et al. (U.S. Patent No. 5,331,181) ("Tanaka"). In Tanaka, unlike Kilopass's '751 patent but like Sidense's cell, the doped semiconductor region is connected to a bitline. The patent examiner at the PTO proceeding ruled that Kilopass overcame Tanaka because "it is well known to one of ordinary skill in the art at the time of the invention that the bitlines and wordlines have distinct functional effect on the operation of memory devices and thus are not interchangeable." *See* Khaliq Decl., Ex. 4 (Feb. 18, 2011 USPTO Office Action). After Sidense appealed that decision to the PTO's Board of Patent Appeals and Interferences (the "BPAI"), Kilopass filed a brief explicitly agreeing with the Patent Examiner's finding:

> With respect to claims 5 and 11, the Patent Owner agrees with the Examiner that Tanaka does not show a gate formed from a column bit line. As can been seen [sic] in Figure 2(b) of Tanaka, the gates of the transistors are coupled to row wordlines. Therefore claims 5 and 11 are not anticipated by Tanaka.

See Hutchins Decl., Ex. 6 at 8 (Kilopass's Jan. 6, 2012 BPAI Brief).

The position Kilopass took before the BPAI was clearly irreconcilable with its "interchangeability" position before this Court. In a May 1, 2012 Order, this Court found that by taking the contrary position it did before the BPAI, Kilopass clearly and unmistakably disavowed claim scope where gates of transistors are connected to row wordlines. *See* Dkt. 224 at 9 (*citing Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1374 (Fed. Cir. 2008) (noting that a patentee can disavow claim scope "by clearly characterizing the invention in a way to try to overcome rejections based on

prior art"); *Spectrum Intern., Inc. v. Sterilite Corp.*, 164 F.3d 1372, 1379 (Fed. Cir. 1998) ("Claims may not be construed one way in order to obtain their allowance and in a different way against accused infringers.")).

Kilopass has therefore disavowed claim scope for transistors with gates connected to wordlines, and the figures relied on by Kilopass's expert illustrate that Sidense's gates are connected to wordlines.[6] To avoid summary judgment on this issue, Kilopass has introduced a new theory. In his June 1, 2012 rebuttal expert report, Neikirk argues that Sidense's wordlines – the lines connected to the gates – actually "perform the identical function of the bitlines of the Asserted Patents, while the lines connected to the sources in Sidense products perform the identical function of the wordlines of the Asserted Patents." Neikirk Reb. Rep. ¶ 42. According to Neikirk, the "function" of a bitline in the patents-in-suit is to "supply a higher voltage than that supplied to the source terminal via the line that is orthogonal to the line connected to the gate terminal (wordline). This creates a voltage potential across the gate terminal and the source terminal (a higher voltage at the gate and ground or lower voltage at the source)" which allows for a breakdown of the gate oxide. *Id.* ¶ 78. Because Sidense's "row wordline" provides for the higher voltage, according to this theory, it is *de facto* a bitline. And because it is a bitline, it is not affected by the Court's disavowal order. *Id.*¶¶ 88-89.

One problem with Kilopass's new theory, however, is that it is new. Kilopass did not argue a function/voltage theory of bitlines and wordlines during claim construction, let alone prevail on such an argument. Instead, Kilopass argued that the two terms should be given the same definition. *See* Kilopass's Opening Claim Const. Br. at 4-5. "Once a district court has construed the relevant claim terms, and unless altered by the district court, then that legal determination governs for purposes of trial. No party may contradict the court's construction to a jury." *Exergen Corp. v. Wal-Mart Stores, Inc.*, 575 F.3d 1312, 1321 (Fed. Cir. 2009). Kilopass cannot now successfully argue that a bitline is defined as the higher voltage line.

Moreover, Kilopass's theory would render the May 1, 2012 disavowal Order meaningless. In

[6]A February 7, 2008 internal email from Kilopass to its patent counsel at Perkins Coie notes that Sidense has "changed the bit line with word line in the split gate bit cell since apparently we did not manage our patents in the beginning as well as we might have done." Hutchins Decl., Ex. 7.

the preferred embodiment described in Tanaka, the line connected to the gate (Tanaka's "wordline") is set to 20 volts, and the line connected to the source (Tanaka's "bitline") is set to zero volts. Hutchins Decl., Ex. 18 (U.S. Patent No. 5,331,181), 3:66-4:9. Under Kilopass's voltage theory, the Tanaka wordline, as the line providing higher voltage, would in fact be the bitline. However, Kilopass argued that its patents were not anticipated by Tanaka because Tanaka connected the gates to row wordlines. *See* Hutchins Decl., Ex. 6 at 8 (Kilopass's Jan. 6, 2012 BPAI Brief) ("As can been seen [sic] in Figure 2(b) of Tanaka, the gates of the transistors are coupled to row wordlines. Therefore claims 5 and 11 are not anticipated by Tanaka."). To accept Kilopass's definition of bitlines as simply the lines that provide higher voltage would also recapture the Tanaka configuration, which Kilopass expressly disclaimed.

The Court finds that there is no genuine issue of material fact that Sidense connects its gate to a row wordline, and that Kilopass expressly disavowed that claim scope from the patents-in-suit. The "row wordline segment coupled to the second doped semiconductor region" limitation is not met.

2. "First Doped Semiconductor Region"

All the of the asserted claims describe a "transistor" having a "gate, a gate dielectric between the gate and over a substrate, and first *and* second doped semiconductor regions" formed in the substrate. '751, 14:34-35; '540, 10:67-11:1 (emphasis added). The parties agree that Sidense's memory cell has only one "doped semiconductor region," the "second doped semiconductor region." The parties also agree that Sidense does *not* have a "first doped semiconductor region" and thus this limitation is not literally infringed. Kilopass argues, however, that the shallow trench isolation ("STI") insulator contained in Sidense's memory cell is the equivalent of a first doped semiconductor region under the doctrine of equivalents.

The doctrine of equivalents holds that even if an accused product does not literally infringe the asserted claims of a patent, the product may infringe if the differences between the element of the accused product at issue and the claim limitation at issue are insubstantial. *Dawn Equip. Co. v. Kentucky Farms, Inc.*, 140 F.3d 1009, 1015-16 (Fed.Cir.1998). To oppose a defendant's motion for summary judgment of non-infringement under the doctrine of equivalents, the plaintiff has the burden of producing "particularized testimony and linking argument on a limitation-by-limitation basis that

create[s] a genuine issue of material fact as to equivalents." *AquaTex Indus., Inc. v. Techniche Solutions*, 479 F.3d 1320, 1328–29 (Fed.Cir.2007). Whether equivalency exists may be determined based on the "insubstantial differences" test or based on the "function-way-result," which asks whether the element of the accused device "performs substantially the same function in substantially the same way to obtain the same result." *TIP Systems, LLC v. Phillips & Brooks/Gladwin, Inc.*, 529 F.3d 1364, 1376-77 (Fed. Cir. 2008) (*citing Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 38-40 (1997)).

As an initial matter, Sidense argues – and the Court agrees – that Kilopass amended its infringement contentions with respect to the doctrine of equivalents far past the applicable deadlines without Court approval. This District has adopted Patent Local Rules that "require parties to state early in the litigation and with specificity their contentions with respect to infringement and invalidity." *O2 Micro Int'l, Ltd. v. Monolithic Power Sys., Inc.*, 467 F.3d 1355, 1359 (Fed.Cir.2006).[7] Kilopass served its Amended Infringement Contentions pursuant to Patent Local Rule 3-1 and 3-2 on April 4, 2011. Hutchins Decl., Ex. 21 (Ex. 3). In those contentions, Kilopass asserted the following "function, way, result" theory:

> Additionally, the STI is the equivalent of the first doped region. The function of the first doped region is to provide a channel stop. The way it functions is to prevent current from the channel to flow in the area of the STI. The result is that the end of the channel is defined. Sidense's STI performs substantially the same function, functions in substantially the same way, and achieves the substantially same result.

Id. at 3. Sidense provides evidence that it expended resources to prepare a defense to this theory, including deposing the named inventors on the patents-in-suit as well as Kilopass' CTO and VP of Engineering on issues relating to "channel stop." Giardina Decl. ¶ 10. A year later, on April 13, 2012, Kilopass filed its expert report from Dr. Neikirk with a different equivalency theory. In that report, Neikirk asserts that:

> The function of the first and second regions is clearly stated: to geometrically delineate or define a channel region between them . . . The way in which each region functions to geometrically delineate or define a channel region is by being

[7]Patent Local Rule 3-1 provides that, "Not later than 14 days after the Initial Case Management Conference, a party claiming patent infringement shall serve on all parties a 'Disclosure of Asserted Claims and Infringement Contentions.'"

> separated from each other in a cross section of the device, by being in the substrate, and by being adjacent to the gate . . . The result produced by the two regions required by this claim limitation is to create or delineate a defined region of the device that is a channel region.

Id. ¶¶ 62-64. This equivalence theory focuses on the geometry of the cell, rather than the electrical properties of the "channel stop." Kilopass argues that its new theory does not "substantially depart" and is "consistent" with its original theory. Pl.'s Opp. to Def.'s Daubert Mot. at 9-10. However, the Patent Local Rules allow amendment of infringement contentions "only by order of the Court upon a timely showing of good cause." P.L.R. 3-6. It is for the Court to make the determination of whether a new theory is consistent with an earlier contention or otherwise appropriate, not the party asserting it.[8] *See Spectros Corp. v. Thermo Fisher Sci.*, 2012 WL 1965887, *6 (N.D. Cal. May 31, 2012) (Armstrong, J.) (procedurally barring doctrine of equivalents theory for failure to amend infringement contentions). The failure to provide and support an admissible equivalents theory in the opposition papers warrants summary judgment on the "first doped semiconductor region" limitation.

Moreover, Kilopass's doctrine of equivalence theory fails on the merits. It is undisputed that the STI is an insulator. *See* Pl.'s Opp. at 18 (referring to an "STI Insulator"). It is also undisputed that the "first doped semiconductor region" is a semiconductor. At claim construction, the parties agreed that a "semiconductor" is "a material, like silicon, whose conductivity is in the range *between that of metals and insulators*, and whose conductivity can be altered by the introduction of an impurity." *See* Claim Const. Order at 14. By the definition set forth at Claim Construction, a semiconductor is not an

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[8]Kilopass's assertion of a new theory of equivalence is particularly inappropriate in light of evidence that Kilopass has known for many years that Sidense does not literally infringe its patents. On January 20, 2006, Kilopass' patent counsel at Perkins Coie emailed Kilopass regarding Sidense's technology:

> "[W]e speculated that Sidense may have eliminated the first doped region and replaced it with a shallow trench isolation of some sort. While possible, it is interesting that they have emphasized the need for the floating diffusion doped region as being advantageous to their design . . . Still, if in fact they have eliminated the first doped region, then they would NOT infringe our claims literally. If that is the case, then we would have to go through a 'reissue' proceeding in the patent office that may take 2 years in order to modify our claims to include the situation where there is no first doped region."

Hutchins Decl., Ex. 6 at 2. (emphasis in original).

insulator, nor its equivalent. Kilopass has provided no evidence that insulators are the equivalent of semiconductors. Instead, the evidence shows the contrary. *See* Gosney Ex. Rep. at ¶ 151 ("[I]nsulators have substantially different characteristics from semiconductors"). The uncontroverted evidence demonstrates that there is a non-trivial difference between insulators and semiconductors. *See Festo Corp. v. Shoketsu Kogyo Kabushiki Co.*, 535 U.S. 722 (2002) (stating that "[t]he doctrine of equivalents allows the patentee to claim those insubstantial alterations that were not captured in drafting the original patent claim but which could be created through *trivial* changes.") (emphasis added).

Instead of arguing that insulators are equivalent to semiconductors, Kilopass's expert argues that the electrical properties of the "first doped semiconductor region" are irrelevant; he argues that "the function required by this claim element is only geometrical/structural." Neikirk Reb. Rep. ¶ 68. However, this would render the term "semiconductor" – a term defined with respect to its electrical conductivity – superfluous. This would be improper under Federal Circuit precedent. *See Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) ("Allowing a patentee to argue that physical structures and characteristics specifically described in a claim are merely superfluous would render the scope of the patent ambiguous, leaving examiners and the public to guess about which claim language the drafter deems necessary to his claimed invention and which language is merely superfluous, nonlimiting elaboration."). The Court will not ignore the actual terms in the claim element.

Kilopass also ignores the not-insubstantial difference that its use of a first doped semiconductor region, rather than an STI, renders its memory cell smaller. In the specifications of the patents-in-suit, Kilopass distinguishes prior art by stating that "in each of the memory cells described above, the cell size is relatively large. The present invention provides a much smaller cell size, thereby allowing a higher density." '757, 4:45-47. Kilopass does not dispute that use of a "first doped semiconductor region" allows it to achieve higher density by combining the first doped semiconductor regions of adjacent cells rather than use STI regions. At deposition, the lead inventor of the patents-in-suit, Jack Peng, stated that the reason for having two diffusions per cell was "because we want to do this to make it a higher density . . ." Hutchins Decl., Ex. 20 (Peng Dep.), 133:7-11. In an email from Peng to Kilopass' patent counsel, Peng stated that the reason Kilopass did not implement Sidense's cell design "in our product, [is] because this split gate cell is not self-aligned, so their practical cell size will be

larger than our 1.5T cell." Hutchins Decl, Ex.3 (Nov. 19, 2005 Peng email).[9] In the nanometer world of memory cells, a feature allowing for higher density and smaller size is more than an ancillary benefit; it is one of the central purposes of the design. The use of the first doped semiconductor over an STI therefore represents more than an insubstantial difference.

Kilopass attempts to avoid the numerous differences between its first doped semiconductor region and the STI insulator by proposing a broad "function-way-result" of the claim element. As noted above, Kilopass argues that the "function" of the first doped semiconductor region is to "geometrically delineate or define a channel region between" it and the second doped semiconductor region; the "way" is "by being separated from each other in a cross section of the device"; and the "result" produced is "to create or delineate a defined region of the device that is a channel region." Neikirk Exp. Rep. ¶¶ 62-64. In *Instituform Technologies, Inc. v. Cat Contracting, Inc.*, 161 F.3d 668 (Fed. Cir. 1998), the Federal Circuit reversed a District Court's finding of infringement under the doctrine of equivalents where the plaintiff argued that defendant's use of a needle was the same as plaintiff's use of a cup in a method for creating a vacuum. *Id.* at 690. The District Court agreed with the plaintiff that there was equivalence after determining the function of the cup was to "suck a vacuum," the "way" as "being connected to a vacuum source," and the "result" being to "produce a satisfactory vacuum at the resin front." *Id.* The Federal Circuit reversed the finding of infringement, by "hold[ing] that the district court's function-way-result analysis involves too much overlapping and is overly broad.'" *Id.* at 693-94. Similarly here, Kilopass seeks to avoid the numerous differences between its "first doped semiconductor region" and the STI insulator by simply providing an overly broad function-way-result of the claim element, a definition that focuses on the fact that the "first doped semiconductor region" is separated from the second region, but ignores the "way" of using semiconductive (rather than insulative) material, and the "result" that it produces a higher density memory array. As the Federal Circuit held in *Instituform*, a plaintiff's broad, overlapping definition of the function-way-result of a claim term cannot vitiate the differences between the claim and the allegedly infringing technology. *Instituform*, 161 F.3d at 693-94.

[9]The email references the fact that the patents-in-suit use a first doped semiconductor region in a "self-aligned" design, whereas Sidense's STI region is "masked-aligned." Gosney Ex. Rep. ¶ 164. The fact that Kilopass uses a self-alignment process rather than a mask-aligned process represents another difference between the two cells. *See* Gosney Decl. ¶ 158.

Summary judgment is therefore warranted on the claim limitation of a "first doped semiconductor region," which is neither present in Sidense's memory cell nor equivalent to the STI insulator.

3. "Spaced Apart Relationship"

The asserted claims require that the first and second doped semiconductor regions be "in a spaced apart relationship." '751, 14:35-37. Assuming for the purposes of this discussion that an STI insulator is equivalent to the first doped semiconductor region, the question is whether the STI and the second doped semiconductor region are in "a spaced apart relationship." At claim construction, the parties agreed that "a spaced apart relationship" means "not in physical contact." Kilopass does not dispute the fact that the STI and the second doped semiconductor region are, in fact, in physical contact. Kilopass argues that they nonetheless meet the "spaced apart" limitation because they are not in physical contact in a cross-section of the cell. Kilopass points to the space between the STI and the second doped semiconductor region, which forms the channel region. For its part, Sidense provides a diagram of a top down view of the cell, which clearly shows the STI in physical contact with the second doped semiconductor region. *See* Gosney Exp. Rep. ¶ 140.

Kilopass argues that "nowhere in the Asserted Patents is the three dimensional (3D) construct of a bitcell mentioned or described. Particularly, none of the elements in a bitcell structure is defined in the context of other than a 2D cross section." Pl.'s Opp. at 20. However, Kilopass's construction would require the Court to import a new limitation into the claim language: first and second doped semiconductor regions "in a spaced apart relationship *in a cross section*." This would be an improper construction of the claim language. *See Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 950 (Fed.Cir.1993) ("It is improper for a court to add extraneous limitations to a claim, that is limitations added wholly apart from any need to interpret what the patentee meant by particular words or phrases in the claim."). It would also render the "spaced apart" requirement superfluous, because first and second doped semiconductor regions viewed from the side would always be spaced apart under to the claim language: the first and second doped semiconductor regions are . . . "in a spaced apart relationship to define a channel region *therebetween* . . ." '757, 10:43-44 (emphasis added). Kilopass's definition

would "ascibe no meaning[] to the term . . . not already implicit in the rest of the claim." *Mangosoft Inc. v. Oracle Corp.*, 525 F.3d 1327, 1330-31 (Fed. Cir. 2008).

The Court therefore finds summary judgment is warranted on the limitation that the first and second doped semiconductor regions be "in a spaced apart relationship."[10]

CONCLUSION

The Court finds that there is no genuine dispute of material fact that Sidense's technology does not infringe three of the claim limitations of the patents-in-suit. The Court therefore GRANTS Sidense's motion for summary judgment. This Order does not dispose of Kilopass' tort claims against Sidense for trade libel and defamation, intentional interference with prospective economic relations, and false advertising and disparagement. TAC ¶¶ 51-65.

Docket Nos. 241, 248, 250, 251, 257, 268.

IT IS SO ORDERED.

Dated: August 16, 2012

SUSAN ILLSTON
United States District Judge

[10]Having found summary judgment is warranted on three of the claim limitations, the Court does not address Sidense's argument with respect to the "transistor" claim.