

**UNITED STATES DISTRICT COURT  
DISTRICT OF MAINE**

**FAIRCHILD SEMICONDUCTOR CORPORATION,** )

**PLAINTIFF** )

**v.** )

**THIRD DIMENSION (3D) SEMICONDUCTOR, INC.,** )

**DEFENDANT** )

**CIVIL No. 08-158-P-H**

**MEMORANDUM DECISION AND ORDER ON PLAINTIFF’S  
MOTION FOR PRELIMINARY INJUNCTION**

The underlying dispute in this case is whether Fairchild owes patent license royalties to Third Dimension (3D) on Fairchild SuperFET™ products under a patent License Agreement between the parties. Fairchild says that its SuperFet™ products are not “covered by” (license terminology) 3D’s patents. 3D says that they are, and has attempted to terminate the License Agreement because Fairchild has not paid royalties. In this ruling, I **GRANT** Fairchild’s motion for preliminary injunction against 3D, prohibiting it from terminating the License Agreement pending a decision on the merits of the underlying dispute.<sup>1</sup>

---

<sup>1</sup> 3D asserts that Fairchild has breached the license agreement by selling trench superjunction parts and that Fairchild owes royalties on those trench parts. But Fairchild’s original Complaint and 3D’s Answer and Counterclaims, the relevant pleadings at the time of the Preliminary Injunction hearing, do not raise any issues related to trench parts. My decision on the Motion for Preliminary Injunction addresses claims related only to Fairchild’s SuperFET™ products.

## PROCEDURAL POSTURE

Fairchild brought this lawsuit in this District seeking a declaratory judgment on the dispute over its obligation to pay patent royalties to 3D. Fairchild Compl. (Docket Item No. 1). It requested a temporary restraining order and a preliminary injunction to prevent 3D from terminating the License Agreement in the meantime. Mot. for Temporary Restraining Order (Docket Item No. 16). After oral argument, I granted the temporary restraining order on July 8, 2008, pending the preliminary injunction determination. Decision and Order on Mot. for Temporary Restraining Order (Docket Item No. 28). On December 10, 2008, I denied 3D's motion to dismiss Fairchild's claim concerning Chinese patent coverage and granted Fairchild's motion to dismiss 3D's infringement claims while the license remains in effect. After some discovery, a preliminary injunction evidentiary hearing was held on November 5, 2008. Further oral argument occurred on November 21, 2008.

## ANALYSIS

As the moving party, Fairchild bears the burden of persuasion to show: (1) a likelihood of success on the merits<sup>2</sup>; (2) a significant risk that Fairchild will suffer irreparable harm if the preliminary injunction is denied<sup>3</sup>; (3) that the harm that Fairchild will suffer outweighs any harm that the preliminary injunction will cause

---

<sup>2</sup> In considering "likelihood of success" courts sometimes employ adjectival modifiers with little effect. See Amazon.com Inc. v. Barnesandnoble.com, Inc., 239 F.3d 1343, 1350 (Fed. Cir. 2001) ("reasonable likelihood"); Ralph v. Lucent Techs., Inc., 135 F.3d 166, 167 (1st Cir. 1998) ("substantial likelihood"). The Supreme Court recently suggested in Winter v. Natural Resources Defense Council, Inc., 129 S. Ct. 365, 374-75 (2008), that no adjectival modifier is necessary.

<sup>3</sup> The Winter Court also noted that the standard here is that "irreparable injury is *likely* in the absence of an injunction." 129 S. Ct. at 375 (emphasis in original).

3D; and (4) that the preliminary injunction “will promote (or, at least, not denigrate) the public interest.” McGuire v. Reilly, 260 F.3d 36, 42 (1st Cir. 2001).

As I noted in issuing the temporary restraining order, there is no meaningful difference between First Circuit and Federal Circuit law on these standards. Decision and Order on Motion for Temporary Restraining Order, at 4 n.6 (citing Biogen Idec MA, Inc. v. Trustees of Columbia Univ., 332 F. Supp. 2d 286, 295 (D. Mass. 2004)).

**(1) Likelihood of Success**

Factor (1)—likelihood of success—is always the critical one. Weaver v. Henderson, 984 F.2d 11, 12 (1st Cir. 1993) (“The *sine qua non* of that formulation is whether the plaintiffs are likely to succeed on the merits.”); Narragansett Indian Tribe v. Guilbert, 934 F.2d 4, 5 (1st Cir. 1991) (labeling likelihood of success factor “critical”). In assessing likelihood of success, I must take into account who bears the burden of proof at trial. Gonzalez v. O Centro, 546 U.S. 418, 429 (2006); Amazon.com Inc. v. Barnesandnoble.com, Inc., 239 F.3d 1343, 1350 (Fed. Cir. 2001).

The relevant issue here is whether Fairchild can show a likelihood that 3D will not be able to prove at trial that Fairchild’s SuperFET™ products are “covered by” either of two patents within the meaning of the License Agreement. The parties dispute whether the products are covered by the so-called U.S. ’275, and the “Chinese ’845” patent from which U.S. ’275 claims priority. Both patents deal with superMOSFET technology for silicon semiconductors.

As I observed in my Order of December 10, 2008, the Federal Circuit generally construes the terminology “covered by” as meaning whether a product would infringe the patent in the absence of a license. Infringement analysis has two components that are applicable to this case: literal infringement and infringement under the doctrine of equivalents. If an accused product (here SuperFET™) does not satisfy any one of the claim limitations of the patent in question, then it does not infringe literally. Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co., 520 U.S. 17, 29, 40 (1997). Under the doctrine of equivalents, the question is whether a component of the accused product performs substantially the same function as the claimed limitation in substantially the same way to achieve substantially the same result. Graver Tank & Mfg. Co. v. Linde Air Prod. Co., 339 U.S. 605, 608 (1950); Malta v. Schulmerich Carillons, Inc., 952 F.2d 1320, 1327 (Fed. Cir. 1991). I deal with each patent separately.

**(a) U.S. '275**

**(i) *Literal Infringement***

The Eastern District of Texas and the Federal Circuit have already construed the '275 patent claims that 3D pursues here (claims 11, 12, 13). In that litigation, 3D's predecessor in interest lost an infringement case against other semiconductor manufacturers.<sup>4</sup> Power Mosfet Techs., L.L.C. v. Siemens AG, 2002 U.S. Dist. Lexis 27560 (E.D. Tex. Sept. 30, 2002), aff'd, 378 F.3d 1396 (Fed. Cir. 2004) (claims at issue: 11, 12, 13, 14 and 16). Under the doctrine of collateral

---

<sup>4</sup> 3D purchased the patents and an assignment of the patent license from Power Mosfet, the plaintiff in that lawsuit.

estoppel, I rely here upon the claims construction those courts performed. Pfaff v. Wells Elec., Inc., 5 F.3d 514, 517-18 (Fed. Cir. 1993).<sup>5</sup>

First, however, those cases provide a useful description of the semiconductor technology at issue in this dispute. Here in part is the Federal Circuit's description:

*A. Semiconductor Technology*

Semiconductor power devices control the flow of electricity through an electronic circuit. They are typically constructed of silicon, which, by itself, is not a very good conductor of electricity. Silicon's conductivity, however, can be enhanced by a process known as doping. Doping adds impurities to the crystal structure of pure silicon and creates either a surplus or deficiency of free electrons in the silicon material. Both conditions enable the flow of current through the material. When doping results in a surplus of electrons, the material is described as "n-type" because it has a net negative charge. When the result is a deficiency of electrons (i.e., a surplus of "holes") the material is described as "p type" because it has a net positive charge. Within the n-type and p-type categories, the material may be further categorized as heavily doped (n<sup>+</sup> or p<sup>+</sup> regions) or lightly doped (n<sup>-</sup> or p<sup>-</sup> regions).

Power Mosfet Techs., L.L.C. v. Siemens AG, 378 F.3d 1396, 1400-01 (Fed. Cir. 2004).

3D's '275 patent, originally pursued by the inventor Professor Chen, describes a semiconductor that can operate as a switch permitting electrical current to flow or stopping it from flowing. In summary,<sup>6</sup> it calls for a structure

---

<sup>5</sup> I rely upon it only for claims construction, not for its conclusion that certain semiconductors at issue there did not infringe.

<sup>6</sup> In greater detail, '275 Claim 11 describes in relevant part:

A semiconductor power device comprising:  
a first contact layer of a first conductivity type;  
a second contact layer of a second conductivity type; and  
a voltage sustaining layer between said first and second contact layers, said voltage sustaining layer comprising first semiconductor regions of the first conductivity type and second semiconductor regions of a second conductivity type, said first and second

*(continued on next page)*

that has a contact layer on the bottom (a substrate) and a contact layer on the top, of opposite conductivity types characterized as positive (p) or negative (n). Between these two layers (and this is the invention), the patent calls for a voltage-sustaining layer comprising a composite buffer (CB) region of alternating p and n regions.<sup>7</sup> The Eastern District of Texas and the Federal Circuit both held that although the voltage-sustaining layer can contain more than just the CB region in it, as a matter of claim construction of '275 claim 11, “the alternating semiconductor regions [the CB region] *must physically touch the contact layer.*” Power Mosfet, 378 F.3d at 1408 (emphasis added). The Federal Circuit rejected the patent holder’s argument that “regardless of what comprises the voltage sustaining layer,” it is sufficient that the voltage sustaining layer touch the contact layer. Id. The Federal Circuit instead agreed with the district court that “the claims require the interface to be *between the alternating semi-conductor regions of the CB-layer and the contact layer,*” id. at 1409 (emphasis added), and that the junction must be “necessarily physical,” a requirement not satisfied by electrical contact alone. Id. According to the Federal Circuit, “a physical boundary must be formed.” Id. at 1410. That claim construction was “necessary to the judgment of noninfringement in the previous case” and therefore is issue-preclusive here. Pfaff, 5 F.3d at 518.

---

semiconductor regions being alternately arranged, *the first contact layer contacting all said first semiconductor regions and said second semiconductor regions to form a first interface, the second contact layer contacting with all the first and second semiconductor regions to form a second interface . . . .*

'275 Patent, col.7, 1.58–col.8, 1.5 (Ex. C to Fairchild Compl.) (Docket Item No. 1-4) (emphasis added).

<sup>7</sup> 3D’s expert Dr. Fair also testified that the charge balancing in the CB layer is the “key to the *(continued on next page)*”

In this case, Fairchild’s expert, Dr. Chow, testified that the superjunction<sup>8</sup> semiconductor technology exemplified by ’275 was a significant positive step forward over previous semiconductor technology, resulting in less “on resistance” (resistance to power flow when the switch is on) and greater voltage blocking (voltage-sustaining function) when the switch is off. Prelim. Inj. Hr’g Tr. 107, 98, Nov. 5, 2008 (Docket Item No. 118). But it had the disadvantage of provoking a “snappy” response in the integral diode imbedded in superMOSFETs. *Id.* at 107. Dr. Chow testified that following Professor Chen’s ’275 invention, further improvements occurred in superjunction technology to modify the extreme characteristics. People in the field worked at combining the best features of the conventional MOSFET devices and the superjunction devices and developed what is referred to as semi-superjunction technology. *Id.* at 103-05.<sup>9</sup> Dr. Chow testified that this next stage in semiconductor technology was to insert an additional buffer region with a single conductivity type—between the CB region of alternating charges and the substrate. *Id.* at 106-07.

---

invention” and the “novelty of the [’245] patent.” Prelim. Inj. Hr’g Tr. 267, Nov. 5, 2008.

<sup>8</sup> “Superjunction” is a generic term for a class of semiconductors that use a composite buffer region. Prelim. Inj. Hr’g Tr. 106, Nov. 5, 2008.

<sup>9</sup> Overall, I found Dr. Chow to be a persuasive witness. Significantly, Dr. Chow does not appear to have an interest in the outcome of the case, unlike 3D’s principal, Samuel Anderson and, given his previous testimony in the earlier Power Mosfet case, 3D’s expert, Dr. Fair. Dr. Chow’s expertise in the field of electrical and electronic engineering is impressive, spanning over 30 years in various positions in the field including programming, research and development and graduate level teaching. My crediting of Dr. Chow’s testimony is not altered by the fact that he relied on Spreading Resistance Profiling results from a test wafer that Fairchild engineers produced, because that is how he said he would perform the tests, and there has been no evidence of fraud or manipulation in the construction of the test wafer. Prelim. Inj. Hr’g Tr. 158-59, Nov. 5, 2008. I was not persuaded by the Samuel Anderson testimony on this issue and not persuaded by Dr. Fair. See Power Mosfet Techs., L.L.C., 2002 U.S. Dist. Lexis 27560, at \*141-44.

The evidence shows that in Fairchild's SuperFET™ products, Fairchild has added an "n" buffer layer of single conductivity type (doped with phosphorus) in between the CB layer of alternating regions and the contact layer (which for SuperFET™ products is n+, doped with antimony),<sup>10</sup> and that this buffer layer performs a voltage-sustaining function, sustaining approximately 85 volts. Declaration of (Fairchild employee) Christopher Rexer in Support of Pl.'s Supplemental Br. in Supp. of Mot. for Prelim. Inj. ¶ 5 (Docket Item No. 75). 3D's expert, Dr. Richard Fair, does not challenge that voltage-sustaining role that this additional buffer layer performs, Prelim. Inj. Hr'g Tr. 268-69, 282, Nov. 5, 2008, but he says that the capacity is unnecessary 99% of the time. *Id.* at 268-69. At the hearing in this case, he testified:

most of the voltage is sustained across the [composite buffer] layer, primarily, but when you turn the transistor off, you get a spike of current and it drives the transistor into breakdown and you need to survive. So you need that N layer. It's kind of an over-voltage protection layer, and it's only less than one percent of the time does it ever need that over-voltage protection, but primarily the voltage is sustained between the terminals by the CB layer.

Prelim. Inj. Hr'g Tr. 268, Nov. 5, 2008. I conclude that since this additional layer does perform a voltage-sustaining function, although the function is not called upon regularly, it is nevertheless part of the voltage-sustaining region.<sup>11</sup> As the Eastern District of Texas held in construing 3D's patent claims there, "it is clear from the ["comprising"] language of the claims that the first and second

---

<sup>10</sup> 3D describes it just this way: "a superjunction device, like Fairchild's SuperFET, which additionally includes an n type buffer layer disposed between the n+substrate and CB layer." 3D Post-Hr'g Br. Concerning the Application of the Doctrine of Abstention at 11 (Docket Item No. 112). (The + sign denotes a stronger concentration of the charge, here n or negative, in the substrate.)

<sup>11</sup> Accord Power Mosfet Techs., L.L.C., 2002 U.S. Dist. Lexis 27560, at \*61.

semiconductor regions [the alternating regions composing the CB layer] do not need to occupy all of the voltage sustaining layer.” Power Mosfet Techs., L.L.C., 2002 U.S. Dist. Lexis 27560, at \*57. Instead, there can be “additional layers or structures” as part of the voltage-sustaining layer. Id. Thus, I include the added n layer in the voltage-sustaining region.

I return then to the claim as construed by the Eastern District of Texas and the Federal Circuit: the alternating regions must physically touch the contact layer. Here in Fairchild’s SuperFET™ products, the alternating regions do not physically touch the substrate in the manner called for by the patent, because of the intervening single-conductivity-type (n) layer.<sup>12</sup>

3D tries to avoid this conclusion on the basis that diffusion of atoms occurs within this intervening layer, antimony (n+) atoms diffusing upward from the contact layer and boron (p) atoms diffusing downward from the boron implants in the CB region, and that when some of them meet in this buffer layer, there is a covalent bond and “physical contact.”<sup>13</sup> But as the Eastern District of Texas found, the physical contact element of the claim has to do with “a junction

---

<sup>12</sup> There has been much discussion over where, in this n buffer layer, the p/n junction occurs, *i.e.*, where p and n are equal and neither predominates over the other. Although there was some quibbling over microns, 3D’s expert and its principal both agreed that there was a gap (5 to 7 microns) between the p/n junction and the antimony contact layer. Prelim. Inj. Hr’g Tr. 231, 249-51, 280, 285-86, Nov. 5, 2008. Thus, the physical boundary called for by the Federal Circuit’s claims construction is not formed. Power Mosfet Techs., L.L.C., 378 F.3d 1396, 1408, 1410 (Fed. Cir. 2004). The Eastern District of Texas reached the same conclusion for a different product, but I do not give its conclusion collateral estoppel effect. (I attach no significance to Fairchild’s failure to use the semi-superjunction terminology on its product literature, *see* Defendant’s Hr’g Ex. 14 at 2; Defendant’s Hr’g Ex. 62 at 2; Defendant’s Hr’g PowerPoint Presentation at 46 (Court Ex. 2), and no significance to where the label “drain” is placed on that document. *See* Power Mosfet Techs., L.L.C., 2002 U.S. Dist. Lexis 27560, at \*60-61.)

<sup>13</sup> Dr. Fair testified that epitaxial growth resulting from the heating process that is used to diffuse the boron atoms makes the original surface of the antimony (n+) substrate irrelevant. Prelim. Inj. Hr’g Tr. 260-61, Nov. 5, 2008. Tr. of Nov. 5, 2008.

between two semiconductor layers, the contact layer and the voltage sustaining layer,” Power Mosfet Techs., L.L.C., 2002 U.S. Dist. Lexis 27560, at \*67,<sup>14</sup> agreeing with Special Master’s claim construction; and as the Federal Circuit held, “a physical *boundary* must be formed.” Power Mosfet Techs., L.L.C., 378 F.3d at 1410 (emphasis added). Here, Fairchild’s addition of the buffer layer of single conductivity (n) type—although there may be boron and antimony atoms moving through it and connecting with each other—avoids the formation of a physical *boundary* between the CB layer and the contact (n+) layer.<sup>15</sup> I conclude that Fairchild has shown a substantial likelihood that 3D will not be able to prove that Fairchild’s SuperFET™ products are “covered by” U.S. ’275 under a literal infringement analysis.

**(ii) Doctrine of Equivalents**

Alternatively, 3D argues that it can prevail based upon the doctrine of equivalents, an argument that it failed to make in the Texas proceedings. I assume without deciding that there is no collateral estoppel consequence from that failure.<sup>16</sup>

---

<sup>14</sup> The Texas court also rejected this outward diffusion theory. Power Mosfet Techs., L.L.C., 2002 U.S. Dist. Lexis 27560, at \*112-\*14.

<sup>15</sup> Consistent with this conclusion Dr. Fair testified that the Spreading Resistance Profile of Fairchild’s SuperFET product establishes that the P/N junction, where the net doping goes to zero, is located “at some distance from the antimony dominated region.” Prelim. Inj. Hr’g Tr. 285, 279-80, Nov. 5, 2008 (P/N junction at 41 microns and antimony (n+) increases in concentration at 47 microns). Moreover, Dr. Fair agreed that if the n buffer layer is included in the voltage-sustaining layer, then there is a gap between the P/N junction at the base of the P column and the antimony region. *Id.* at 285-86. Nevertheless, under his outward diffusion theory, Dr. Fair concludes that there is a degree of physical interface between the CB layer and the antimony substrate.

<sup>16</sup> The Eastern District of Texas found that Power Mosfet had “waived” the equivalents issue in that case. Power Mosfet Techs., L.L.C., 2002 U.S. Dist. Lexis 27560, at \*3 n.1.

3D says that “[t]he only claim element where an equivalents argument is even made is the element of the alternating regions in the voltage sustaining layer contacting the second contact layer . . . .” 3D’s Bench Br. Regarding Availability of the Doctrine of Equivalents at 3 (Docket Item No. 91). That is the element, therefore, that I examine. Here is 3D’s equivalents argument:

The ’275 Patent recites “the second contact layer contacting with all the first and second semiconductor regions to form a second interface,” and the CN ’845 patent recites “each of the p region and n region has an interface interacting on the . . . two surfaces” that are “contacting the p+ region and n+ region.” The record demonstrates that these limitations are at least equivalently present in the SuperFET device. The function of the claimed “interface” is to separate the voltage sustaining layer from a contact layer. Fairchild’s expert admits that superFET’s buffer layer separates the CB layer, which is included in the voltage sustaining layer, from the n+ substrate, which comprises the second contact layer.

The way by which SuperFET accomplishes this separation is substantially the same as the literally claimed invention. As detailed by Dr. Fair and admitted by Dr. Chow, because of SuperFET’s thermal processing, boron dopants from the p regions diffuse toward the n+ substrate, and antimony dopants from the n+ substrate diffuse toward the p and n regions. As a consequence of such diffusion, the boron and phosphorus dopants and the antimony dopants migrate to the **same locations** in the silicon lattice, thereby physically touching.

3D’s Post-Hr’g Br. Concerning the Application of the Doctrine of Abstention to the Chinese Case and Application of the Doctrine of Equivalents Under Chinese Law to the ’845 Patent at 13 (Docket Item No. 112) (emphasis in original; footnotes omitted).

But the Federal Circuit has referred to 3D’s ’275 patent as describing a “structure.” Power Mosfet Techs., L.L.C., 378 F.3d at 1408-09 (Special Master’s discussion “is understandably confined to the structure actually described by the

'275 patent"; Special Master adopted a "structural interpretation of 'interface"). Indeed the "Summary of the Invention" begins: "In this invention, a new structure of the voltage sustaining layer is proposed by the inventor." '275 Patent, col. 1, ll. 55-56 (Ex. C to Fairchild Compl.); see also Power Mosfet Techs., L.L.C., 2002 U.S. Dist. Lexis 27560, at \*27. 3D's argument that "a three-dimensional interface that contains both p-type material from the p-regions and n-type material from the second contact layer is equivalent to, if not the same as, a one-dimensional interface forming a border between those structures," 3D's Resp. to Pl.'s Bench Mem. Regarding the Availability of the Doctrine of Equivalents at 3 (Docket Item No. 94), flies in the face of that claim construction.<sup>17</sup> I find that Fairchild is substantially likely to succeed on its claim that cases like Bicon, Inc. v. Straumann Co., 441 F.3d 945 (Fed. Cir. 2006), and Sage Products, Inc. v. Devon Industries, Inc., 126 F.3d 1420, 1425 (Fed. Cir. 1997), doom this equivalents argument in the face of the structural limitation. "A claim that contains a detailed recitation of structure is properly accorded correspondingly limited recourse to the doctrine of equivalents." Bicon, 441 F.3d at 955. Where a patent "claims a precise arrangement of structural elements that cooperate in a particular way to achieve a certain result," the doctrine of equivalents is not available to cover something that achieves the same results but "by a different arrangement of elements." Sage, 126 F.3d at 1425. I conclude that Fairchild has shown a substantial likelihood that 3D will not be able to prove that Fairchild's

---

<sup>17</sup> On the literal infringement claim, the Federal Circuit said of this issue on the '275 patent: "Comprising,' while permitting additional elements not required by a claim, does not remove the limitations that are present." Power Mosfet Techs., L.L.C., 378 F.3d at 1409.

SuperFET™ products are “covered by” U.S. ’275 under the doctrine of equivalents analysis.

**(b) China ’845**

I have rejected in a separate opinion 3D’s argument that I cannot interpret the License Agreement as to whether Fairchild’s SuperFET™ products are “covered by” the Chinese ’845 patent.

As I recounted in my Order of December 10, 2008, notwithstanding the License Agreement’s covenant not to sue and my TRO preventing termination of the License Agreement, 3D went ahead and filed suit in China after I issued the TRO. 3D says that it has obtained preliminary relief in the Chinese court in the form of an evidence and property preservation order. Its Chinese law expert Jie Sha says this means that a Chinese judge has found that 3D “has evidence proving that . . . the products infringe the patent at issue.” 3D’s Notice Under Federal Rule of Civil Procedure 44.1 ¶ 10 (Docket Item No. 92); Dec. of Jie Sha ¶ 4 (Ex. I to 3D’s Notice Under Federal Rule of Civil Procedure 44.1) (Docket Item No. 92-12).<sup>18</sup> 3D argues that Fairchild therefore cannot show a substantial likelihood of success here. Fairchild’s Chinese law expert says, however, that “no substantive examination of patent infringement is conducted” by the Chinese court at this stage. Dec. of Zhang Guang Liang (a former Chinese patent law

---

<sup>18</sup> The initial “Civil Indictment” reflects a belief and a finding *by the plaintiff 3D* that infringement has occurred. Translation of Civil Indictment filed with the Chengdu Intermediate People’s Court’s at 1, 7 (Ex. A3 to 3D’s Notice Under Federal Rule of Civil Procedure 44.1) (Docket Item No. 92-4). Later, the court found that the application for property preservation “complies with the provisions of applicable laws.” Translation of Chengdu Intermediate People’s Court’s Order at 12 (Ex. D to 3D’s Notice Under Federal Rule of Civil Procedure 44.1) (Docket Item No. 92-7).

judge) ¶ 10 (Fairchild’s Mem. in Resp. to Def.’s Notice under Federal Rule of Civil Procedure 44.1) (Docket Item No. 125-1). More specifically:

Typically, such an Order can be granted based on the Plaintiff’s allegations of infringement with prima facie evidence such as the validity of patent (like the certificate of patent) and the alleged tort[i]ous act of the defendant (like the accused infringing articles) alone, and where no technical report has been provided to the Court.

Id. ¶ 6.<sup>19</sup> 3D asks me to treat this statement as a Fairchild admission that 3D made a “prima facie showing of infringement in the Chinese action.” 3D’s Supplement to its Mot. to Strike Fairchild’s Supplemental Evidence at 1 (Docket Item No. 126).

I conclude that without a showing of what evidence 3D presented to the Chinese court, I can draw no inferences about what significance the Chinese court’s order has for Fairchild’s likelihood of success here. I turn therefore to the other evidence.

**(i) *Literal Infringement***

A certified translation of ’845 Claim 1<sup>20</sup> is as follows:

A semiconductor power device comprising a voltage-sustaining region between p+ regions and n+ regions, characterized in that: in the said voltage-sustaining region, between the flat surface contacting the p+ regions and the n+ region interface, there is a composite buffer layer composed of p regions and n regions alternately arranged, and, *in the composite buffer layer, each p region and each n region has a contact surface connecting with each of the two abovementioned surfaces*, and except for these two contact surfaces, regardless of the layout of the composite buffer layer, each p region therein is

---

<sup>19</sup> I have denied 3D’s motion to strike this Declaration of Zhang Guang Liang, see infra note 24.

<sup>20</sup> The parties have not addressed any of the other claims in the ’845 patent in their briefing or oral presentations on the Motion for Preliminary Injunction. See Expert Witness Report of Jie Sha ¶ 93 (Ex. D to 3D’s Pre-Hearing Br. in Opp’n to Fairchild’s Req. for Prelim. Inj.) (Docket Item No. 72) (“Claims 15 and 16 are not asserted at this time.”)

surrounded by the adjacent n regions and each n region is surrounded by the adjacent p regions.

Fairchild's Translation of '845 Patent at 2 (Ex. B to Aff. of Xun (Frank) Feng) (Docket Item No. 20-3) (emphasis added). The language certainly is similar to the relevant portion of '275's Claim 11 ("*the first contact layer contacting all said first semiconductor regions and said second semiconductor regions to form a first interface, the second contact layer contacting with all the first and semiconductor regions to form a second interface*"). '275 Patent col.7, 1.68–col.8, 1.5 (Ex. C to Fairchild Compl.) (emphasis added). As with U.S. '275, the critical issue is the nature of the required contact between the alternating regions in the CB layer and the substrate (here the n+ region).

But I do not rely on the U.S. federal courts' claims construction of U.S. '275. Instead I rely on the language of '845's claim 1, and I find persuasive the analysis of Xun (Frank) Feng, Fairchild's expert. He is a Chinese patent attorney and a patent scientist. He concludes after extensive analysis of the law of Chinese patent interpretation that the claim requires that each of the alternating regions in the composite buffer layer must "physically touch" the p+ and n+ regions, the latter here being the antimony-infused substrate, and that the n+ region cannot be interpreted to include an n region. Expert Witness Report of Xun (Frank) Feng ¶ 43 (Docket Item No. 106). I find unpersuasive the contrary conclusion of 3D's expert, Jie Sha. He too is a Chinese patent attorney. He uses a slightly different translation of '845 Claim 1:

A semiconductor power device, which includes a voltage sustaining area between a p+ region and an n+ region, characterized in that, in said voltage sustaining area, there is

a composite buffer layer comprising alternately arranged p region and n region between a surface contacting the p+ region and n+ region interface, *and in the composite buffer layer, each of the p region and n region has an interface interacting on the above two surfaces*; and other than the two interfaces, whatsoever the structural layout of the composite buffer layer is, each p region is surrounded by a neighboring n region, and each n region is surrounded by a neighboring p region.

Expert Witness Report of Jie Sha ¶ 31 (Ex. D to 3D’s Pre-Hearing Br. in Opp’n to Fairchild’s Request for Prelim. Inj.) (Docket Item No. 72)(emphasis added).<sup>21</sup> Both experts agree that the invention concerns the CB (composite buffer) or voltage-sustaining region. They disagree on the nature of the connection between that region and the p+ and n+ layers, or, as concerns us, the substrate. 3D’s expert Jie Sha concludes first that an n buffer region (as added in Fairchild’s SuperFET™ products) should be treated as part of the n+ region. *Id.* ¶¶ 69, 91. If the n addition is treated as part of the n+ region, then one could say that the n+ region physically contacts the CB region. But I have determined above, based upon the evidence submitted, that the n buffer region in the SuperFET™ products actually

---

<sup>21</sup> Both 3D and Fairchild have obtained translations of claim 1 of the ’845 patent from TransPerfect Translations, Inc. 3D’s translation includes an “Affidavit of Accuracy” sworn to by Devon Williams declaring that “to the best of [his] knowledge and belief [it is] a true and accurate translation of the document ‘Chinese Patent 1019720B’ translated from Chinese to English.” Translation of ’845 Patent (Ex. A to 3D’s Bench Br. Concerning the Admissibility of Exhibit 19 to the Prelim. Inj. Hr’g) (Docket Item No. 139-2). Likewise, Fairchild’s translation includes a “Certificate of Accuracy,” in which Marco Marino declares that the document attached was “translated by a team of TransPerfect’s linguists, is to the best of [his] knowledge and belief a true and correct translation of the following ‘Chinese Patent No. 91101845X’ from Chinese to English.” Fairchild’s Translation of ’845 Patent (Ex. B to Aff. of Xun (Frank) Feng). I note that each translator’s certification references a different “Chinese Patent” number. These differences appear to be insignificant, resulting from 3D’s translator using the Chinese “examination number” and Fairchild’s translator using the Chinese “patent application number.” Fairchild objects to the admission of 3D’s translation of claim 1 of the ’845 patent, which is marked as Defendant’s Exhibit 19. The translation differences do not determine the outcome of the Motion for Preliminary Injunction. Therefore, I **ADMIT** Defendant’s Exhibit 19 for purposes of resolving the Motion for Preliminary Injunction. If, however, the Chinese translation is a material issue at trial, I will expect a detailed explanation from TransPerfect Translations as to how that company can present to a court two different certified  
*(continued on next page)*

performs a voltage-sustaining function and thus is part of the voltage-sustaining region, not part of the n+ substrate. As a result, the Fairchild SuperFET™ products do not satisfy this element of the patent.

Alternatively, Jie Sha concludes under the '845 patent that it is only necessary that the CB region “electrically contact” the n+ region, *id.* ¶ 69, or, phrased differently, that “in the composite buffer layer, each p region and each n region provides conductivity to both the p+ region and the n+ region,” *id.* ¶ 80. I find his reasoning unpersuasive because the '845 patent, even according to his translation, does not refer to electrical contact, but describes a structure. Moreover, Dr. Chow’s testimony about how superconductor and semi-superconductor technology progressed (which I found persuasive) suggests that Sha’s analysis is a retrospective gloss on the Chinese '845 patent from which the US '275 claims priority. Finally, Sha still construes the claim to require that “in the CB layer, each p region is surrounded by n regions and each n region is surrounded by p regions *except for the sides facing the p+ region and the n+ region.*” *Id.* (emphasis added). This construction is consistent with a physical contact requirement. I also note that although I do not treat the Figures in the '845 patent as limiting, they do show touching. As a result, I conclude that Fairchild has shown a likelihood of success on the 3D claim that Fairchild’s SuperFET™ products are “covered by” 3D’s '845 patent.

That my conclusion results in a preliminary interpretation of '845 that parallels the claims construction of '275 should not be surprising to 3D. Indeed,

---

translations and which translation is more accurate.

3D's principal, Samuel Anderson, testified at the preliminary injunction hearing that he had never actually read the Chinese patent nor had it translated, thus giving reassurance to the conclusion that 3D did not obtain extra coverage in '845 that it was unable to obtain in '275.<sup>22</sup>

**(ii) Doctrine of Equivalents**

The experts on both sides agree that China uses the doctrine of equivalents. Although 3D talks about the applicability of the Chinese doctrine of equivalents in many places, the only place that 3D has articulated how the doctrine applies to '845 is in the post-trial brief, as quoted above in the discussion of U.S. '275. There 3D lumps the U.S. '275 and the Chinese '845 patents together and applies an undifferentiated equivalents analysis to them both, 3D's Post-Hr'g Br. Concerning the Application of the Doctrine of Abstention to the Chinese Case and Application of the Doctrine of Equivalents Under Chinese Law to the '845 Patent at 11-14, despite all its other talk about how complex and different Chinese patent law is.<sup>23</sup> Given that treatment, I shall do the same for purposes of this preliminary

---

<sup>22</sup> At the preliminary injunction hearing, Mr. Anderson who, through 3D owns both the US and Chinese patents, was asked about due diligence he conducted before purchasing the Chinese patent:

Q Now, as part of your assignment of these patents, you also acquired rights to the Chinese counterpart; didn't you?

A Yes.

Q Now, you knew you were getting an assignment of the Chinese patent?

A Yes. Yes, absolutely.

Q But you did no due diligence about the Chinese patent?

A I didn't -- I didn't read the Chinese patent.

Q You were focused entirely on the US patent?

A Yes, that's correct.

Q In fact, you never even got a translation of the Chinese patent?

A I did not, yes.

Prelim. Inj. Hr'g Tr. at 238-39, Nov. 5, 2008.

<sup>23</sup> In fact at oral argument in 3D's PowerPoint presentation, its lawyer said that China's Doctrine of (continued on next page)

injunction motion. I have already found that Fairchild has shown a substantial likelihood of success on any patent claim 3D might make under the U.S. '275 equivalents argument. That reasoning applies here as well.<sup>24</sup> In re Charter Co., 93 B.R. 286, 289 (Bankr. M.D. Fla.1988) (“[T]he parties were required to present sufficient proof to establish the principles of foreign law which they contend are applicable. Otherwise it is to be presumed that the law of the foreign state is the same as that of the present forum.”); Cunningham v. Quaker Oats Co., 107 F.R.D. 66, 77 (W.D.N.Y. 1985) (Under Rule 44 .1, a court is not required to engage in its own research and has the right to insist that the proponent of the foreign law present evidence on the question.); see also Banco de Credito Industrial v. Tesoreria Gen. de la Seguridad Soc. de Espana, 990 F.2d 827, 836 (5th Cir. 1993) (Where foreign law is not sufficiently established, the court will apply the law of the forum state.); Carey v. Bahama Cruise Lines, 864 F.2d 201, 205 (1st Cir. 1988) (The Court is under no obligation to undertake research of foreign law.); United States v. Westinghouse Elec. Corp., 648 F.2d 642, 647 n. 1 (9th Cir. 1981) (“Absent a showing to the contrary, it is presumed that foreign law is the same as the law of the forum.”).

In summary, Fairchild has satisfied the likelihood of success standard for preliminary injunction purposes.

---

equivalents standard is “the same as the U.S. Doctrine of Equivalents standard.” 3D’s PowerPoint presentation Prelim. Inj. Hr’g Nov. 21, 2008, at 14 (Court Ex. 2).

<sup>24</sup> 3D’s Motion to Strike the Expert Witness Report of Xun (Frank) Feng Regarding Doctrine of Equivalents in China (Docket Item No. 124) is **DENIED**, as is its request to strike the Declaration of Zhang Guang Liang and Shirley Kwok (Docket Item No. 126). In fact, I have not relied upon the Feng declaration or the Kwok declaration for purposes of this preliminary injunction motion. I have, however, used the Zhang Guang Liang declaration.

**(2) A significant risk that Fairchild will suffer irreparable harm if the preliminary injunction is denied.**

If I deny the preliminary injunction to Fairchild, 3D has announced that it will immediately terminate the license to Fairchild and grant an exclusive license to another. As a result, Fairchild will lose the benefit of the license to manufacture any products that are covered by any of the four enumerated patents or related patents. Fairchild paid for this license in 2001, and it would lose the entire value of its investment if the license is now terminated. One of the other benefits of the License Agreement is a “most favored licensee” clause by which Fairchild is entitled to a reduction of royalties to match any deal that 3D gives to another licensee. That too would be lost to Fairchild.

Additionally, 3D now has sued Fairchild in China. If the License Agreement is in effect, that lawsuit appears to be a breach of the License Agreement. Fairchild thus can use the covenant not to sue as a defense in the proceedings in China. But if the License Agreement is terminated, Fairchild will lose that defense in the Chinese courts going forward. Finally, under the License Agreement Fairchild can present its disputes with 3D to three U.S. forums where 3D has consented to jurisdiction. License Agreement § 5(A) (Ex. A to Compl.) (Docket Item No. 1-2). If the License Agreement is terminated, it is unclear where disputes between these parties will be heard.

These results create a significant risk of irreparable harm to Fairchild if the preliminary injunction is not issued.

**(3) That the harm that Fairchild will suffer outweighs any harm that the preliminary injunction will cause 3D.**

If 3D is correct in its position in this lawsuit, it will recover the royalties for which its predecessor bargained with Fairchild when it entered into the License Agreement in the first place. What 3D loses is the ability to claim patent law damages and related penalties instead. 3D also loses the ability to enter an exclusive license with another, but that is an opportunity that was surrendered when its predecessor first entered this nonexclusive license agreement with Fairchild. 3D's primary grievance (that it says was not contemplated by the original bargain) is that it is paying the litigation costs and suffering income delay in having to litigate with Fairchild over whether Fairchild's products generate royalties. Nevertheless, I find that Fairchild's harm outweighs the harm to 3D.

**(4) That the preliminary injunction “will promote (or, at least, not denigrate) the public interest.”**

This is an economic dispute between two private parties. As I said in the TRO, I do not find that issuance of a preliminary injunction affects the public interest one way or the other. If I am compelled to come down on one side, Winter v. Natural Resources Defense Council, Inc., 129 S. Ct. 365 (2008), I would find that the public interest favors enforcement of private agreements to license technology, and to provide a resolution of a coverage dispute before those agreements are terminated.

### **CONCLUSION**

I conclude that Fairchild has met the standards for issuance of a preliminary injunction. Therefore, its motion is **GRANTED** (Docket Item No. 21). Fairchild shall prepare an appropriate order reflecting this relief in accordance with the requirements of Fed. R. Civ. P. 65 and submit it to 3D for review as to

form, then present it to the Court. Since neither party has addressed Rule 65's bond requirement, I make no change in the bond previously ordered under the TRO.

I also **ADMIT** Defendant's Exhibit 19, which is a copy of 3D's certified translation of the '845 patent.

Finally, 3D's Motion to Strike the Expert Witness Report of Xun (Frank) Feng is **DENIED** (Docket Item No. 124), as is its request to strike the Declaration of Zhang Guang Liang and Shirley Kwok (Docket Item No. 126).

I **DIRECT** the Clerk of Court to seal this Memorandum of Decision and Order when docketed. The parties shall notify me within 48 hours of the docketing whether this Order contains any proprietary information that should remain sealed. If I do not hear from the parties within 48 hours, the opinion will be unsealed.

**SO ORDERED.**

**DATED THIS 14TH DAY OF JANUARY, 2009**

/s/D. BROCK HORNBY

**D. BROCK HORNBY**

**UNITED STATES DISTRICT JUDGE**

**U.S. DISTRICT COURT  
DISTRICT OF MAINE (PORTLAND)  
CIVIL DOCKET FOR CASE #: 2:08cv158 (DBH)**

**FAIRCHILD SEMICONDUCTOR  
CORPORATION,**  
  
**Plaintiff**

represented by **MICHAEL J. SULLIVAN  
ROBERT H. STIER  
SEAN L SWEENEY**  
Pierce Atwood LLP  
One Monument Square  
Portland, ME 04101-1110  
(207) 791-1100  
email: [msullivan@pierceatwood.com](mailto:msullivan@pierceatwood.com)  
[rstier@pierceatwood.com](mailto:rstier@pierceatwood.com)  
[ssweeney@pierceatwood.com](mailto:ssweeney@pierceatwood.com)

**STEPHEN H. GALEBACH**  
Pierce Atwood LLP  
160 Federal Street, 10th floor  
Boston, MA 02110  
(857) 277-6916  
email: [sgalebach@pierceatwood.com](mailto:sgalebach@pierceatwood.com)

**v.**

**THIRD DIMENSION (3D)  
SEMICONDUCTOR, INC.,**  
  
**Defendant**

represented by **MICHAEL W. SHORE  
ALFONSO G. CHAN  
GLENN EDWARD JANIK  
PATRICK J. CONROY  
PATRICK A. TRAISTER**  
Shore Chan Bragalone LLP  
901 Main Street, Suite 3300  
Dallas, TX 75202  
(214) 593-9110  
email: [shore@shorechan.com](mailto:shore@shorechan.com)  
[achan@shorechan.com](mailto:achan@shorechan.com)  
[gjanik@shorechan.com](mailto:gjanik@shorechan.com)  
[pconroy@shorechan.com](mailto:pconroy@shorechan.com)  
[ptreister@shorechan.com](mailto:ptreister@shorechan.com)

**JOHN S. WHITMAN**  
Richardson, Whitman, Large &  
Badger  
P.O. Box 9545  
Portland, ME 04112-9545  
(207) 774-7474  
email: [jwhitman@rwlb.com](mailto:jwhitman@rwlb.com)