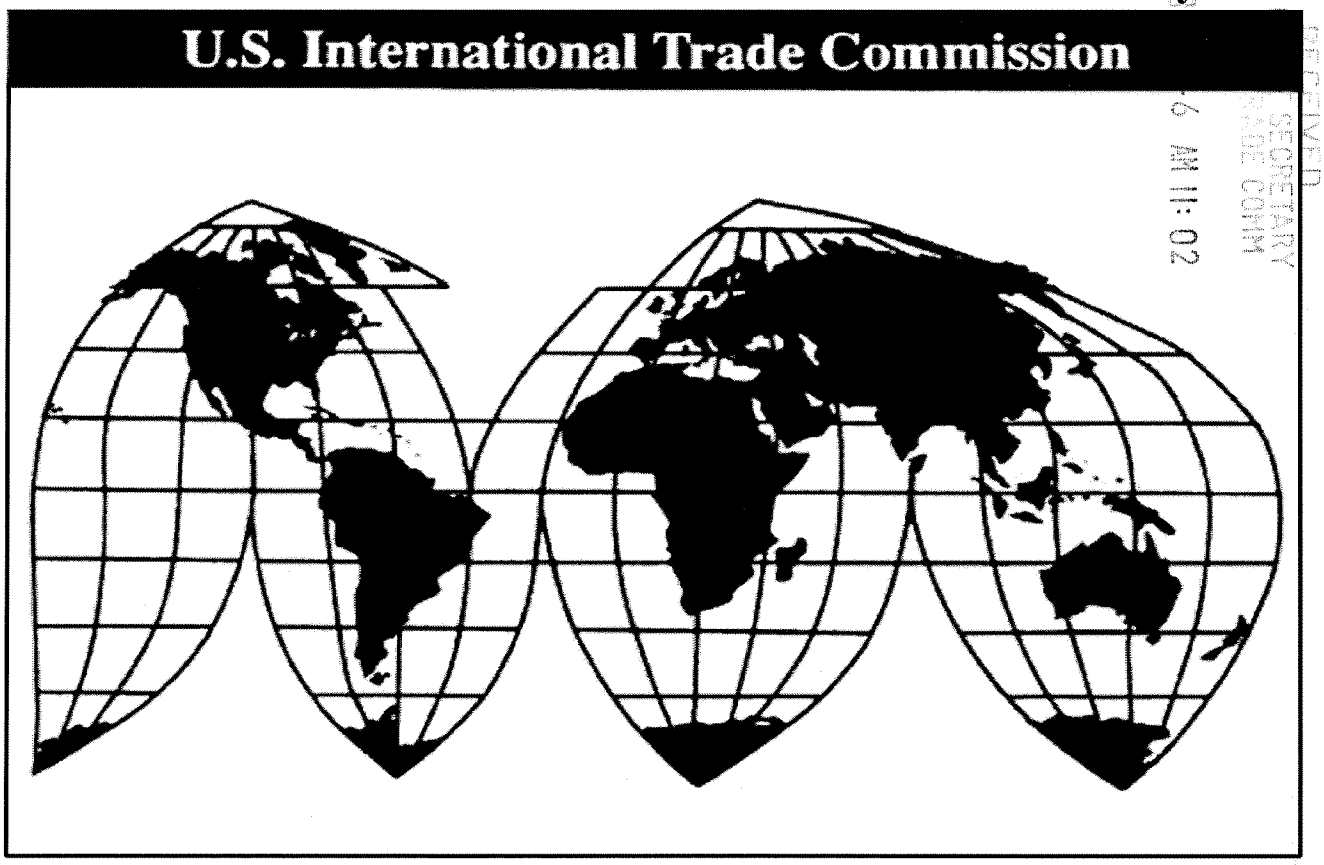
In the Matter of

Certain Power Supply Controllers and Products Containing Same

Investigation No. 337-TA-541

Publication 3993 **May 2008**

U.S. International Trade Commission



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*Commissioner Marcia E. Miller, whose term ended on September 6, 2005, participated in the decision to institute the investigation. Commissioner Shara L. Aranoff, whose term commenced on September 6, 2005, participated in all subsequent phases of the investigation. Commissioner Irving A. Williamson was sworn in on February 7, 2007, and Commissioner Dean A. Pinkert was sworn in on February 26, 2007; they did not participate in this investigation. Commissioner Stephen Koplan, whose term ended on February 6, 2007, and Commissioner Jennifer A. Hillman, whose term ended on February 23, 2007, did participate in this investigation.

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U.S. International Trade Commission

Washington, DC 20436
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In the Matter of

Certain Power Supply Controllers and Products Containing Same

Investigation No. 337-TA-541

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of CERTAIN POWER SUPPLY CONTROLLERS AND PRODUCTS CONTAINING SAME	Investigation No. 337-TA-541

ISSUANCE OF A LIMITED EXCLUSION ORDER; TERMINATION OF THE INVESTIGATION

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has issued a limited exclusion order in the above-captioned investigation directed against products of respondent System General Corporation ("SG") of Taipei, Taiwan. The investigation is terminated.

FOR FURTHER INFORMATION CONTACT: Michelle Walters, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 708-5468. Copies of non-confidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-2000. General information concerning the Commission may also be obtained by accessing its Internet server at *http://www.usitc.gov*. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at *http://edis.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on (202) 205-1810.

SUPPLEMENTARY INFORMATION: On June 13, 2005, the Commission instituted this investigation, based on a complaint filed by Power Integrations, Inc. ("PI") of San Jose, California. 70 *Fed. Reg.* 34149 (June 13, 2005). The complaint, as amended and supplemented, alleged violations of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain power supply controllers and products containing the same. The Commission determined that SG violated section 337 by reason of infringement of claims 1, 3, 5, and 6 of United States Patent No. 6,351,398 ("the '398 patent") and claims 26 and 27 of United

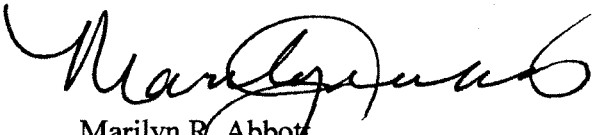
States Patent No. 6,538,908 ("the '908 patent"). The Commission requested written submissions from the parties relating to the appropriate remedy, whether the statutory public interest factors preclude issuance of that remedy, and the amount of bond to be imposed during the Presidential review period. All parties filed written submissions.

Having reviewed the record in this investigation, including the written submissions of the parties, the Commission has made its determination on the issues of remedy, the public interest, and bonding. The Commission has determined that the appropriate form of relief is a limited exclusion order prohibiting the unlicensed entry of power supply controllers that infringe one or more of claims 1, 3, 5, and 6 of the '398 patent or claims 26 and 27 of the '908 patent and that are manufactured by or on behalf of SG, its affiliated companies, parents, subsidiaries, licensees, contractors, or other related business entities, or successors or assigns. The Commission has also determined to prohibit the unlicensed entry of LCD computer monitors, AC printer adapters, and sample/demonstration boards containing such infringing power supply controllers.

The Commission further determined that the public interest factors enumerated in section 337(d)(1) (19 U.S.C. § 1337(d)(1)) do not preclude issuance of the limited exclusion order. Finally, the Commission determined that the amount of bond to permit temporary importation during the Presidential review period (19 U.S.C. § 1337(j)) shall be in the amount of thirty-eight (38) cents per power supply controller circuit or LCD computer monitor, AC printer adapter, or sample/demonstration board containing the same that are subject to the order. The Commission's order was delivered to the President and the United States Trade Representative on the day of its issuance.

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

By order of the Commission.



Marilyn R. Abbott
Secretary to the Commission

Issued: August 11, 2006

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	
CERTAIN POWER SUPPLY CONTROLLERS AND PRODUCTS CONTAINING SAME	**Inv. No. 337-TA-541**

LIMITED EXCLUSION ORDER

On June 13, 2005, the Commission instituted this investigation, based on a complaint filed by Power Integrations, Inc. ("PI") of San Jose, California. 70 *Fed. Reg.* 34149 (June 13, 2005). The complaint, as amended and supplemented, alleged violations of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain power supply controllers and products containing the same. The Commission determined that System General Corporation ("SG") of Taipei, Taiwan, violated section 337 by reason of infringement of claims 1, 3, 5, and 6 of United States Patent No. 6,351,398 ("the '398 patent") and claims 26 and 27 of United States Patent No. 6,538,908 ("the '908 patent").

Having reviewed the record in this investigation, including the written submissions of the parties, the Commission has made its determination on the issues of remedy, the public interest, and bonding. The Commission has determined that the appropriate form of relief is a limited exclusion order prohibiting the unlicensed entry of power supply controllers that infringe one or more of claims 1, 3, 5, and 6 of the '398 patent or claims 26 and 27 of the '908 patent and that

are manufactured by or on behalf of SG, its affiliated companies, parents, subsidiaries, licensees, contractors, or other related business entities, or successors or assigns. The Commission has also determined to prohibit the unlicensed entry of liquid crystal display ("LCD") computer monitors, AC printer adapters, and sample/demonstration boards containing such infringing power supply controllers.

The Commission has further determined that the public interest factors enumerated in 19 U.S.C. § 1337(d)(1) do not preclude issuance of the limited exclusion order and that the bond during the Presidential review period, pursuant to 19 U.S.C. § 1337(j), shall be in the amount of thirty-eight (38) cents per power supply controller or LCD computer monitor, AC printer adapter, or sample/demonstration board containing the same that are subject to this Order.

Accordingly, the Commission hereby **ORDERS** that:

1. Power supply controllers that infringe one or more of claims 1, 3, 5, and 6 of United States Patent No. 6,351,398 and that are manufactured abroad and/or imported by or on behalf of SG, or any of its affiliated companies, parents, subsidiaries, or other related business entities, or their successors or assigns, and LCD computer monitors, AC printer adapters, and sample/demonstration boards containing such infringing power supply controllers, are excluded from entry for consumption into the United States, entry for consumption from a foreign-trade zone, or withdrawal from a warehouse for consumption, for the remaining term of the patent, except under license of the patent owner or as provided by law.

2. Power supply controllers that infringe one or more of claims 26 and 27 of United States Patent No. 6,538,908 and that are manufactured abroad and/or imported by or on behalf of

SG, or any of its affiliated companies, parents, subsidiaries, or other related business entities, or their successors or assigns, and LCD computer monitors, AC printer adapters, and sample/demonstration boards containing such infringing power supply controllers, are excluded from entry for consumption into the United States, entry for consumption from a foreign-trade zone, or withdrawal from a warehouse for consumption, for the remaining term of the patent, except under license of the patent owner or as provided by law.

3. In accordance with PI's withdrawal of infringement allegations against certain of SG's products, the provisions of this Order shall not apply to SG's power supply controllers SG6105, SG68501, SG68502, SG38xx, SG5841, SG5848, SG6842J w/HV Start, SG6846, SG6846A, SG6848, SG6848x, SG6849, SG6850, and SG69xx.

4. Products that are excluded by paragraphs 1 or 2 of this Order are entitled to entry for consumption into the United States, entry for consumption from a foreign-trade zone, or withdrawal from a warehouse for consumption, under bond in the amount of thirty-eight (38) cents per power supply controller or LCD computer monitor, AC printer adapter, or sample/demonstration board containing the same that are subject to this Order from the day after this Order is received by the United States Trade Representative as delegated by the President, 70 *Fed. Reg.* 43251 (July 21, 2005), and until such time as the United States Trade Representative notifies the Commission that this action is approved or disapproved, but, in any event, not later than sixty (60) days after the date of receipt of this action.

5. When the United States Bureau of Customs and Border Protection ("Customs") is unable to determine by inspection whether power supply controllers, LCD computer monitors,

AC printer adapters, or sample/demonstration boards fall within the scope of this Order, it may, in its discretion, accept a certification, pursuant to procedures specified and deemed necessary by Customs, from persons seeking to import said products that they are familiar with the terms of this Order, that they have made appropriate inquiry, and thereupon state that, to the best of their knowledge and belief, the products being imported are not excluded from entry under paragraphs 1 or 2 of this Order. At its discretion, Customs may require persons who have provided the certification described in this paragraph to furnish such records or analyses as are necessary to substantiate the certification.

6. In accordance with 19 U.S.C. § 1337(l), the provisions of this Order shall not apply to power supply controllers, LCD computer monitors, AC printer adapters, or sample/demonstration boards containing the same that are imported by and for the use of the United States, or imported for, and to be used for, the United States with the authorization or consent of the Government.

7. The Commission may modify this Order in accordance with the procedures described in section 210.76 of the Commission's Rules of Practice and Procedure, 19 C.F.R. § 210.76.

8. The Secretary shall serve copies of this Order upon each party of record in this investigation and upon the Department of Health and Human Services, the Department of Justice, the Federal Trade Commission, and the Bureau of Customs and Border Protection.

9. Notice of this Order shall be published in the *Federal Register*.

By Order of the Commission.

Marilyn R. Abbott
Secretary to the Commission

Issued: August 11, 2006

CERTAIN POWER SUPPLY CONTROLLERS AND PRODUCTS CONTAINING SAME **337-TA-541**

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **ISSUANCE OF A LIMITED EXCLUSION ORDER; TERMINATION OF THE INVESTIGATION** has been served upon all parties and Commission Investigative Attorney, Everrette V. Snotherly, Esq., via first class mail or certified mail on August 11, 2006.

Marilyn R. Abbott, Secretary
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PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN POWER SUPPLY CONTROLLERS AND PRODUCTS CONTAINING SAME**	**Inv. No. 337-TA-541**

COMMISSION OPINION

Respondent System General Corporation ("SG") of Taipei, Taiwan, was found to be in violation of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the above-referenced investigation. 71 *Fed. Reg.* 38901 (July 10, 2006). For the reasons set forth herein, the Commission has determined to issue a limited exclusion order directed to SG's infringing power supply controllers[1] and liquid crystal display ("LCD") computer monitors, AC printer adapters, and sample/demonstration circuit boards containing the same.

I. BACKGROUND

On June 13, 2005, the Commission instituted this investigation, based on a complaint filed by Power Integrations, Inc. ("PI") of San Jose, California. 70 *Fed. Reg.* 34149 (June 13, 2005). The complaint, as amended and supplemented, alleges violations of section 337 in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain power supply controllers and products containing the same by reason

[1] The parties interchangeably refer to power supply controllers, power supply controller circuits, and power supply controller chips. Accordingly, we treat them the same.

of infringement of claims 1-3, 6, 9, and 17-19 of United States Patent No. 6,212,079 ("the '079 patent"), claims 1-3, 5, 6, 24, 28, and 29 of United States Patent No. 6,351,398 ("the '398 patent"), claims 8 and 12 of United States Patent No. 6,366,481 ("the '481 patent"), and claims 1, 4, 9-11, 13, 17, 19, 20, 22, 23, 26, 27, 30, 31, and 34 of United States Patent No. 6,538,908 ("the '908 patent"). The complaint named a single respondent: SG. During the investigation, the Commission allowed PI to terminate the investigation with regard to claims 1-3, 6, 9, and 17-19 of the '079 patent, claims 2, 24, 28, and 29 of the '398 patent, claims 8 and 12 of the '481 patent, and claims 1, 4, 9-11, 13, 17, 19, 20, 22, 23, 30, 31, and 34 of the '908 patent. As a result, only claims 1, 3, 5, and 6 of the '398 patent and claims 26 and 27 of the '908 patent remained in the investigation.

During the investigation, the administrative law judge ("ALJ") issued an initial determination ("ID") granting PI's motion to terminate the investigation with regard to certain accused products, because PI stated that it did not assert that the SG6105, SG68501, and SG68502 products infringe the claims of the '079 patent, the '398 patent, or the '908 patent and that it no longer asserts that the SG38xx, SG5841, SG5848, SG6842J w/HV Start, SG6846, SG6846A, SG6848, SG6848x, SG6849, SG6850, and SG69xx products infringe the claims of the '398 patent or the '908 patent. The Commission determined not to review the ALJ's determination.

After an evidentiary hearing, the ALJ issued his final ID finding SG in violation of section 337 with regard to claims 1, 3, 5, and 6 of the '398 patent and claims 26 and 27 of the '908 patent, and he issued a recommended determination on remedy and bonding. ID at 82-86,

90. The ALJ recommended that the Commission issue a limited exclusion order directed to infringing power supply controllers produced by SG, as well as LCD computer monitors, AC printer adapters, and sample/demonstration circuit boards containing the same. ID at 146. In addition, the ALJ recommended that the Commission specifically omit products SG6105, SG68501, SG68502, SG38xx, SG5841, SG5848, SG6842J w/HV Start, SG6846, SG6846A, SG6848, SG6848x, SG6849, SG6850, and SG69xx from the scope of the exclusion order. ID at 141. The ALJ also recommended that the Commission provide for a certification procedure and that the Commission set the bond during the Presidential review period at thirty-eight cents per infringing article or downstream product containing the same. ID at 147-48.

On June 30, 2006, the Commission determined not to review the ALJ's determination of violation. 71 *Fed. Reg.* 38901 (July 10, 2006). The Commission requested written submissions from the parties relating to the appropriate remedy, whether the statutory public interest factors preclude issuance of that remedy, and the amount of bond to be imposed during the Presidential review period.

On July 10, 2006, PI filed a brief, seeking a limited exclusion order excluding SG's infringing power supply controller chips, as well as LCD computer monitors, AC printer adapters, and sample/demonstration circuit boards containing the same. *See* Complainant Power Integration, Inc.'s Brief on Remedy, the Public Interest, and Bonding at 1 ("Comp. Brief"). PI asserts that exclusion of these downstream products is necessary to provide effective protection from infringing imports and that a certification provision would minimize the burden on third parties and on the Bureau of Customs and Border Protection ("Customs"). *Id.* at 6-7.

SG also filed a brief, requesting that any limited exclusion order directed to SG's infringing power supply controllers not include downstream products, because of the serious risk to disrupting trade and alleged lack of supporting evidence. *See* Respondent System General Corporation's Brief on Remedy, Bond, and the Public Interest at 1-5 ("Resp. Brief"). On July 14, 2006, the Commission investigative attorney ("IA") filed a brief, recommending that the Commission adopt the ALJ's recommendations on remedy in this investigation. *See* Brief of the Office of Unfair Import Investigations on Remedy, the Public Interest, and Bonding at 3. On July 19, 2006, complainant PI, respondent SG, and the IA each filed reply briefs on the issues of remedy, the public interest, and bonding.

II. ANALYSIS

We note at the outset, that we agree with the ALJ's recommendations on the scope of the remedy appropriate in this case and on the issue of bonding. Accordingly, we adopt his findings and determinations.

I. Remedy

A. Type of Remedy

The Commission is authorized to issue a limited exclusion order when the Commission determines that there is a violation of section 337. 19 U.S.C. § 1337(d). Because we determined that SG's power supply controllers infringe the asserted claims of the '398 patent and the '908 patent, we have issued a limited exclusion order directed to those controllers. In addition, because we allowed PI to terminate the investigation with regard to products SG6105, SG68501, SG68502, SG38xx, SG5841, SG5848, SG6842J w/HV Start, SG6846, SG6846A, SG6848,

SG6848x, SG6849, SG6850, and SG69xx, we have determined to omit these products from the remedial order. The sole remaining remedy issue, therefore, is whether to issue a limited exclusion order that covers downstream products.

The Commission may issue an exclusion order that covers downstream products, if the exclusion is necessary to give the complainant complete and effective relief. *Certain Erasable Programmable Read-Only Memories* ("*EPROMs*"), Inv. No. 337-TA-276, USITC Pub. 2196, Comm'n Op. at 124-26 (May 1989), *aff'd sub nom. Hyundai Elec. Indus. Co. v. U.S. Int'l Trade Comm'n*, 899 F.2d 1024 (Fed. Cir. 1990). At the same time, excluding downstream products has the potential to greatly expand the coverage of an exclusion order, thus increasing the risk of interfering with legitimate commerce. *Id.* The Commission has identified several factors for consideration when deciding whether to include downstream products in an exclusion order. These factors include: (1) the value of the infringing articles relative to the value of the downstream products in which they are incorporated; (2) the identity of the manufacturer of the downstream products in which they are incorporated, *i.e.*, whether it can be determined that the downstream products are manufactured by the respondent or by a third party; (3) the incremental value to the complainant of the exclusion of downstream products; (4) the incremental detriment to respondents of exclusion of such products; (5) the burdens imposed on third parties resulting from exclusion of downstream products; (6) the availability of alternative downstream products that do not contain the infringing articles; (7) the likelihood that the downstream products actually contain the infringing articles and are thereby subject to the exclusion order; (8) the opportunity for evasion of an exclusion order that does not include downstream products; and (9)

the enforceability of an order by the Customs. *Id.*

Consideration of the *EPROMs* factors leads us to conclude that downstream products should be included in this exclusion order. The parties agree that the value of the infringing articles is small relative to the value of the downstream products in which they are incorporated. Comp. Brief at 13. Complainant PI introduced evidence showing that SG's infringing power supply controllers cost anywhere from 18 cents to 22 cents. *See* Tr. at 693 (Renouard Direct). The LCD monitor in which the controllers are integrated range in cost from $200 to several hundred dollars. *Id.* A typical AC adapter, which incorporates a power supply controller, costs under $100. *Id.* at 725. Although the value of a SG power supply controller chip is small compared to the value of these downstream products, the chips are critical components to the operation of the products. *See EPROMs*, Comm'n Op. at 127 ("[C]omputer equipment requires EPROMs in order to function. Thus, while the actual value of EPROMs compared to the value of the equipment may be small, they are vital to its operation."). For example, in an LCD monitor, the power supply controller regulates how much power is delivered in the power supply for that monitor. Without it, the LCD monitor will not operate. Tr. at 693-694.

SG asserts that the power supply controllers are insignificant, because they relate to the basic power supply for the more complex downstream product. Resp. Brief at 11. The controllers, however, are fundamental to the operation of the downstream products and are not merely optional components that one could choose to leave out. *See EPROMs*, Comm'n Op. at 127 (In limiting the exclusion order to computers and not automobiles, the Commission stated that "unlike computers, automobiles can be built without EPROMs . . . ."). While SG asserts that

the Commission should focus on the importance of the patented technology, rather than the component itself, the Commission, in *EPROMs*, made clear that the focus should be on a comparison of the value and importance of the infringing articles with the downstream products. *EPROMs*, Comm'n Op. at 125.

With regard to the second *EPROMs* factor, several of the downstream manufacturers have already been identified. Although SG does not manufacture downstream products, the companies that do are well known and include Dell, Hewlett-Packard, Envision, Kodak, and Sony. Tr. at 697 (Renouard Direct). Moreover, complainant presented direct evidence that Dell's LCD monitor, Hewlett-Packard's LCD monitor, Envision's LCD monitor, Kodak's Easy Share printer, and Sony's adapter contain SG's infringing power supply controllers. Lum Decl. ¶¶ 17-19, RFF 724 & 726 (undisputed). The downstream manufacturers were not party to the investigation or themselves found to have committed an unfair act. However, these companies had opportunities to be involved with the investigation in other ways - their representatives were deposed and they could have intervened in the investigation or filed remedy briefs with the Commission, but chose not to do so.

With regard to the third *EPROMs* factor, the incremental value to the complainant of the exclusion of downstream products is significant. Although there is some evidence that the accused chips are imported into the United States separately, the vast majority of SG's infringing power supply controllers enter the country incorporated in downstream products. As a result, an order that does not include these products would essentially provide no relief to complainant. Accordingly, this factor weighs in favor of an order excluding downstream products.

With regard to the fourth *EPROMs* factor, the incremental detriment to respondents of exclusion of such products is minimized in light of the fact that several of SG's power supply controllers are specifically excluded from the exclusion order. In addition, we have included a certification provision in the limited exclusion order, which will help Customs ensure that non-infringing alternatives are not improperly excluded and will help protect both respondents and third parties. SG asserts that its distributors may just avoid its chips entirely, since it will be difficult to discern which chips can be imported into the United States and which cannot. SG's assertion, however, is mere speculation. Accordingly, this factor does not weigh against an exclusion order covering downstream products as SG suggests.

With regard to the fifth *EPROMs* factor, the burdens imposed on third parties resulting from exclusion of downstream products will be moderated. The exclusion order is narrowly tailored to cover only those downstream products that PI showed were actually imported with infringing SG chips. Originally, PI had sought an exclusion order directed to a broad range of downstream products, including LCD monitors, LCD TV monitors, printer adapters, game consoles, set-top boxes, notebook adapters, and DVD recorders and players. Comp. Brief at 19. PI eventually limited its requested relief to LCD monitors, printer adapters, and sample/demonstration circuit boards containing SG's infringing power supply controllers, because these are the products that it showed actually contain the infringing circuits and are available in the United States. *Id.* As discussed, complainant presented evidence that Dell's LCD monitor, Hewlett-Packard's LCD monitor, Envision's LCD monitor, Kodak's Easy Share

printer, and Sony's adapter contain SG's infringing power supply controllers.[2] Lum Decl. ¶¶ 17-19, RFF 724 & 726 (undisputed). Accordingly, the relief is properly tailored to avoid imposing undue burdens on third parties.

With regard to the sixth *EPROMs* factor, there are several alternative downstream products that do not contain the infringing articles. Indeed, there are downstream products that use SG's power supply controllers that were terminated from the investigation and are specifically not included in the exclusion order. Moreover, there are downstream products that use PI's power supply controllers. Thus, there are ample alternatives if downstream products containing SG's infringing power supply controllers are excluded, so this factor weighs in favor of an order excluding downstream products.

With regard to the seventh *EPROMs* factor, there are downstream products that actually contain the infringing articles. Specifically, the evidence shows that the downstream products that will be excluded have been found in the United States with SG's infringing power supply controllers. Tr. at 697-707 (Renouard Direct); Lum Decl. ¶¶ 17-19, RFF 724 & 726 (undisputed). Accordingly, this factor weighs in favor of excluding downstream products.

With regard to the eighth *EPROMs* factor, there would be a significant opportunity for evasion of an exclusion order that does not include downstream products. In fact, there would be little, if any, benefit to a narrow exclusion order that only covers SG's infringing power supply controllers, and PI would be left without any effective relief. This factor supports the exclusion

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[2] We agree with the ALJ that the exclusion order should cover sample/demonstration circuit boards, otherwise SG could circumvent the order by importing these circuit boards and then extracting the power supply controller chips. *See* ID at 143.

of downstream products.

Finally, with regard to the ninth *EPROMs* factor, Customs will not be overly burdened in enforcing this order, because the use of a certification process will greatly reduce any burden. Accordingly, the *EPROMs* factors weigh in favor of excluding certain downstream products.

II. Public Interest

When issuing an exclusion order under section 337(d), the Commission must weigh the remedy sought against the effect such a remedy would have on the following public interest factors: (1) the public health and welfare; (2) the competitive conditions in the United States economy; (3) the production of articles in the United States that are like or directly competitive with those subject to the investigation; and (4) United States consumers. *See* 19 U.S.C. § 1337(d)(1).

No public interest concerns will be raised by issuing a limited exclusion order directed to infringing power supply controllers produced by SG, as well as certain downstream products containing these controllers. Excluding infringing power supply controllers and certain downstream products containing the same will not harm the public health and welfare, nor will it harm United States consumers. In addition, the market will be supported by non-infringing alternatives. Finally, protection of intellectual property is favored. Accordingly, we conclude that the statutory public interest factors do not preclude issuance of the limited exclusion order.

III. Bonding

Section 337(j) provides for entry of infringing articles during the sixty (60) day Presidential review period upon posting of a bond and states that the bond is to be set at a level

"sufficient to protect the complainant from any injury." 19 U.S.C. § 1337(j)(3); *see also* 19 C.F.R. § 210.50(a)(3).

PI sells its controller chip as a combined pulse width modulation ("PWM") controller plus a power MOSFET[3] with some added "PI value" (the cost of discrete components that are incorporated into the PI product), while SG sells its chip separately. Therefore, we cannot directly compare the prices of the parties' commercial products. Instead, we compare the price of PI's controller as sold with a power MOSFET and connector components with a constructed price for a comparable product of SG - *i.e.*, a product that contained SG's controller plus a MOSFET and requisite connector components.

PI's witness Mr. Renouard testified on the pricing differences between a comparable SG PWM controller product and PI's "integrated" product in his deposition testimony and at the hearing. JX-8C at 173-74; Tr. at 689 (Renouard Direct). To get the comparable SG price, Renouard combined the cost of an SG chip with the cost of a power MOSFET, plus [ ] additional cents to account for additional PI value in the chip. JX-8C at 175. According to Mr. Renouard, the comparable SG price is about [ ]. *Id.* at 174-76 ("I'm going to say [ ] to make my case the worst, I get [ ]."). Mr. Renouard further testified that PI's price was originally [ ], but it dropped to [ ], when faced with competition from SG. Tr. at 689. Comparing the [ ] PI price to the constructed SG price of [ ], the price differential is thirty-eight cents, which is where we set the bond.

SG complains that a bond of thirty-eight cents is more than the entered value of its

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[3] "MOSFET" is a metal oxide silicon field effect transistor.

imported chip. Resp. Brief at 27-28. Section 337, however, only requires that the bond be set at a level "sufficient to protect the complainant from any injury." 19 U.S.C. § 1337(j)(3). SG asserts that the appropriate bond should be five (5) percent of the value of the imported chip. *Id.* SG identifies this percentage based on a royalty from a license of [

]. *Id.* at 28. A bond of five percent of the value of the imported chip is not appropriate in this investigation, because PI has not entered into a licensing arrangement where a comparable royalty rate has been established. The terms of the license agreement between PI and [ ], relied on by SG, do not merely license the patents-in-suit to [ ] for a royalty rate of five percent. Rather, [

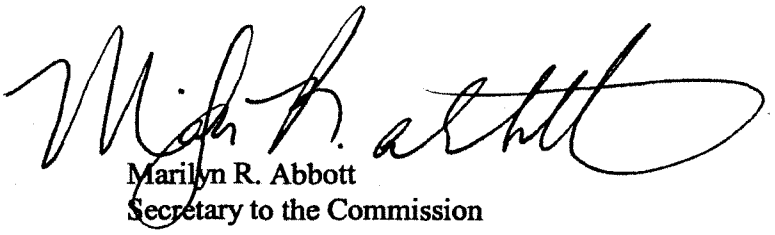
]. *See* RX-304C at ¶¶ 4.1, 4.2, 5.1. Accordingly, this license cannot be relied upon to establish a reasonable royalty rate for the patents at issue. Therefore, we set the bond during the Presidential review period at thirty-eight (38) cents per infringing article or product containing the same.

III. CONCLUSION

We have determined to exclude from entry for consumption into the United States SG's power supply controllers that infringe one or more of claims 1, 3, 5, and 6 of the '398 patent or claims 26 and 27 of the '908 patent and LCD computer monitors, AC printer adapters, and sample/demonstration circuit boards containing the same. The limited exclusion order covers power supply controllers that are manufactured abroad by or on behalf of, or imported by or on behalf of SG, or any of its affiliated companies, parents, subsidiaries, or other related business

entities, or their successors or assigns. The public interest factors found in 19 U.S.C. § 1337(d)(1) do not preclude issuance of this order. The amount of the bond for temporary importation during the Presidential review period is set at thirty-eight (38) cents per infringing article or product containing the same.

By order of the Commission.



Marilyn R. Abbott
Secretary to the Commission

Issued: August 29, 2006

CERTAIN POWER SUPPLY CONTROLLERS AND PRODUCTS CONTAINING SAME **337-TA-541**

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **COMMISSION OPINION** has been served upon all parties and Commission Investigative Attorney, Everrette V. Snotherly, Esq., via first class mail or certified mail on August 29, 2006.

Marilyn R. Abbott, Secretary
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500 E Street, SW
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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN POWER SUPPLY CONTROLLERS AND PRODUCTS CONTAINING SAME**	**Investigation No. 337-TA-541**

NOTICE OF COMMISSION DETERMINATION NOT TO REVIEW A FINAL INITIAL DETERMINATION OF VIOLATION OF SECTION 337; SCHEDULE FOR FILING WRITTEN SUBMISSIONS ON REMEDY, THE PUBLIC INTEREST, AND BONDING

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined not to review the Administrative Law Judge's ("ALJ") final Initial Determination ("ID") finding a violation of section 337. Notice is further given that the Commission is requesting briefing on remedy, public interest, and bonding with respect to the respondent found in violation.

FOR FURTHER INFORMATION CONTACT: Michelle Walters, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 708-5468. Copies of non-confidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-2000. General information concerning the Commission may also be obtained by accessing its Internet server at *http://www.usitc.gov*. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at *http://www.usitc.gov/secretary/edis.htm*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on (202) 205-1810.

SUPPLEMENTARY INFORMATION: On June 13, 2005, the Commission instituted this investigation, based on a complaint filed by Power Integrations, Inc. ("PI") of San Jose, California. The complaint, as amended and supplemented, alleges violations of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain power supply

controllers and products containing the same by reason of infringement of claims 1-3, 6, 9, and 17-19 of United States Patent No. 6,212,079; claims 1-3, 5, 6, 24, 28, and 29 of United States Patent No. 6,351,398 ("the '398 patent"); claims 8 and 12 of United States Patent No. 6,366,481; and claims 1, 4, 9-11, 13, 17, 19, 20, 22, 23, 26, 27, 30, 31, and 34 of United States Patent No. 6,538,908 ("the '908 patent"). During the investigation, the Commission allowed PI to terminate the investigation with regard to several claims, leaving only claims 1, 3, 5, and 6 of the '398 patent and claims 26 and 27 of the '908 patent in this investigation. The complaint named a single respondent, System General Corporation ("SG").

On May 15, 2006, the ALJ issued a final ID, including his recommended determination on remedy and bonding. In his ID, the ALJ found that SG's accused products infringe claims 1, 3, 5, and 6 of the '398 patent and claims 26 and 27 of the '908 patent. Moreover, he concluded that these claims are not invalid for anticipation under 35 U.S.C. § 102 and that the '398 patent and the '908 patent are not unenforceable due to inequitable conduct. Finally, the ALJ concluded that PI proved that there is a domestic industry in the United States with respect to both patents. As a result, the ALJ recommended issuing a limited exclusion order directed to infringing power supply controllers produced by SG, as well as certain downstream products containing these controllers.

On May 26, 2006, respondent SG filed a petition for review, challenging various aspects of the ALJ's final ID. On June 5, 2006, PI and the Commission investigative attorney separately filed responses to SG's petition for review, asserting that the ALJ properly determined that there was a violation of section 337 with regard to the asserted claims.

Having examined the record of this investigation, including the ALJ's final ID, the petitions for review, and the responses thereto, the Commission has determined not to review the ALJ's ID. To the extent SG attempts to challenge PI's satisfaction of the importation requirement of 19 U.S.C. § 1337(a)(1)(B) in its petition for review, we decline to reconsider the issue. SG failed to file a petition for review challenging the ALJ's December 12, 2005 ID granting PI's motion for summary determination that it satisfied the importation requirement, and therefore, SG waived the issue. 19 C.F.R. § 210.43(b)(2).

In connection with the final disposition of this investigation, the Commission may (1) issue an order that could result in the exclusion of the subject articles from entry into the United States, and/or (2) issue one or more cease and desist orders that could result in the respondent being required to cease and desist from engaging in unfair acts in the importation and sale of such articles. Accordingly, the Commission is interested in receiving written submissions that address the form of remedy, if any, that should be ordered. If a party seeks exclusion of an article from entry into the United States for purposes other than entry for consumption, the party should so indicate and provide information establishing that activities involving other types of entry either are adversely affecting it or likely to do so. For background, *see Certain Devices for Connecting Computers via Telephone Lines*, Inv. No. 337-TA-360, USITC Pub. No. 2843 (December 1994) (Commission Opinion).

If the Commission contemplates some form of remedy, it must consider the effects of that remedy upon the public interest. The factors the Commission will consider include the effect that an exclusion order and/or cease and desist orders would have on (1) the public health and welfare, (2) competitive conditions in the U.S. economy, (3) U.S. production of articles that are like or directly competitive with those that are subject to investigation, and (4) U.S. consumers. The Commission is therefore interested in receiving written submissions that address the aforementioned public interest factors in the context of this investigation.

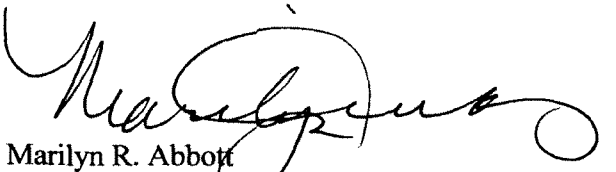
If the Commission orders some form of remedy, the U.S. Trade Representative, as delegated by the President, has 60 days to approve or disapprove the Commission's action. *See* Presidential Memorandum of July 21, 2005, 70 *Fed. Reg.* 43251 (July 26, 2005). During this period, the subject articles would be entitled to enter the United States under bond, in an amount determined by the Commission and prescribed by the Secretary of the Treasury. The Commission is therefore interested in receiving submissions concerning the amount of the bond that should be imposed if a remedy is ordered.

WRITTEN SUBMISSIONS: The parties to the investigation are requested to file written submissions on the issues identified in this notice. Parties to the investigation, interested government agencies, and any other interested parties are encouraged to file written submissions on the issues of remedy, the public interest, and bonding. Such submissions should address the recommended determination by the ALJ on remedy and bonding. Complainant and the Commission investigative attorney are also requested to submit proposed remedial orders for the Commission's consideration. Complainant is also requested to state the dates that the patents expire and the HTSUS numbers under which the accused products are imported. The written submissions and proposed remedial orders must be filed no later than close of business on July 10, 2006. Reply submissions must be filed no later than the close of business on July 17, 2006. No further submissions on these issues will be permitted unless otherwise ordered by the Commission.

Persons filing written submissions must file the original document and 12 true copies thereof on or before the deadlines stated above with the Office of the Secretary. Any person desiring to submit a document to the Commission in confidence must request confidential treatment unless the information has already been granted such treatment during the proceedings. All such requests should be directed to the Secretary of the Commission and must include a full statement of the reasons why the Commission should grant such treatment. *See* 19 C.F.R. § 210.6. Documents for which confidential treatment by the Commission is sought will be treated accordingly. All nonconfidential written submissions will be available for public inspection at the Office of the Secretary.

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

By order of the Commission.



Marilyn R. Abbott
Secretary to the Commission

Issued: June 30, 2006

CERTAIN POWER SUPPLY CONTROLLERS AND PRODUCTS CONTAINING SAME **337-TA-541**

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **NOTICE OF COMMISSION DETERMINATION NOT TO REVIEW A FINAL INITIAL DETERMINATION OF VIOLATION OF SECTION 337; SCHEDULE FOR FILING WRITTEN SUBMISSIONS ON REMEDY, THE PUBLIC INTEREST, AND BONDING** has been served upon all parties and Commission Investigative Attorney, Everrette V. Snotherly, Esq., via first class mail or certified mail on July 5, 2006

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PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
CERTAIN POWER SUPPLY CONTROLLERS AND PRODUCTS CONTAINING SAME	)	Investigation No. 337-TA-541
	)	
	)	
	)	

Final Initial and Recommended Determinations

This is the administrative law judge's Final Initial Determination, under Commission rule 210.42. The administrative law judge, after a review of the record developed, finds that there is jurisdiction; that the claims in issue of U.S. Patent Nos. 6,351,398 and 6,538,908 are not invalid; that said patents are enforceable; that the asserted claims are infringed; and that there is a domestic industry involving said patents. Thus, he finds a violation of section 337 of the Tariff Act of 1930, as amended has occurred.

This is also the administrative law judge's Recommended Determination on remedy and bonding, pursuant to Commission rules 210.36(a) and 210.42(a)(1)(ii). The administrative law judge recommends that the Commission issue a limited exclusion order directed to infringing chips produced by respondent, as well as certain downstream products containing said chips and produced by third parties. He further recommends that any bond, during the Presidential review period, be in the amount of 38 cents per infringing chip or product containing same.

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ABBREVIATIONS

CBr	Complainant's Post-hearing Brief
CPFF	Complainant's Proposed Finding
CORFF	Complainant's Objection To Respondent's Proposed Finding
COSFF	Complainant's Objection To Staff's Proposed Finding
CRBr	Complainant's Post-hearing Reply Brief
CRRFF	Complainant's Proposed Rebuttal Finding to RPFF
CX	Complainant's Exhibit
JX	Joint Exhibit
RBr	Respondent's Post-hearing Brief
RX	Respondent's Exhibit
RFF	Respondent's Proposed Finding
ROSFF	Respondent's Objection To Staff's Proposed Finding
ROCPFF	Respondents' Objection To Complainant's Proposed Finding
RRCPFF	Respondent's Proposed Rebuttal Finding To CPFF
RRSFF	Respondent's Proposed Rebuttal Finding To SFF
RRBr	Respondents' Post-hearing Reply Brief
SBr	Staff's Post-hearing Brief
SRBr	Staff's Post-hearing Reply Brief
SPFF	Staff's Proposed Finding
SRRPFF	Staff's Proposed Rebuttal Finding to RPFF
Tr.	Transcript Of Pre-hearing Conference and Hearing

TrC Transcript Of Closing Argument

I. Procedural History

By notice, which was published in the Federal Register on June 13, 2005 (70 Fed. Reg. No. 12 at 34149-50), the Commission instituted an investigation, pursuant to subsection (b) of section 337 of the Tariff Act of 1930, as amended, to determine whether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation into the United States, or the sale within the United States after importation of certain power supply controllers and products containing same by reason of infringement of claims 1, 2, 3, 6, 9, 17, 18, or 19 of U.S. Patent No. 6,212,079 ('079 patent), claims 1, 2, 3, 5, 6, 24, 28, or 29 of U.S. Patent No. 6,351,398 ('398 patent), claims 8 or 12 of U.S. Patent No. 6,366,481 ('481 patent), or claims 1, 4, 9-11, 13, 17, 19, 20, 22, 23, 26, 27, 30, 31, or 34 of U.S. Patent No. 6,538,908 ('908 patent), and whether an industry in the United States exists as required by subsection (a)(2) of section 337.

The complaint was filed with the Commission on May 9, 2005, under section 337 of the Tariff Act of 1930, as amended on behalf of Power Integrations, Inc. (PI) of San Jose, California. A supplement to the complaint was filed on May 24, 2005. The complaint requested that the Commission, issue a permanent limited exclusion order and a permanent cease and desist order.

The following was named in the notice of investigation, as a respondent, and was served with the complaint:

System General Corporation (SG)
8F, No. 205-3, Sec. 3, Beishin Road
Shindian City
Taipei, Taiwan

Order No. 3, which issued on July 20, 2005, set a target date of August 14, 2006. Hence, any final initial determination on violation should be filed no later than May 15, 2006.

Order No. 6, which issued on September 9, 2005, was an initial determination which terminated the investigation as to claims 2 and 29 of the '398 patent and as to claims 9, 10, 11, 13, 17 and 34 of the '908 patent. The Commission determined not to review Order No. 9 in a notice dated March 30, 2006. Order No. 7, which issued on November 1, 2005, was an initial determination which terminated the investigation as to claims 8 and 12 of the '481 patent and claims 1, 4, 19, 20, 22 and 23 of the '908 patent. The Commission determinated not to review Order No. 7 in a notice dated November 30.

Order No. 10, which issued on December 12, 2005, was an initial determination granting complainant's Motion No. 541-7 for summary determination regarding the economic prong of the domestic industry. The Commission, in a notice dated January 3, 2006, determined not to review Order No. 10.

Order No. 11, which issued on December 12, 2005, was an initial determination granting complainant's Motion No. 541-8 that the importation requirement has been satisfied. The Commission, in a notice dated January 3, 2006, determined not to review Order No.11.

Order No. 13, was an initial determination, which issued on December 21, 2005, and terminated the investigation as to certain accused products. Order No. 13 indicated that complainant had moved to terminate from the investigation allegations related to said certain accused products stating that "it has not asserted" that SG6105, SG68501, and SG68502 infringe the claims of the '079, '398 and '908 patents and that "it does not assert" that SG38xx, SG5841, SG5848, SG6842J w/HV Start, SG6846, SG6846A, SG6848, SG6848x, SG6849, SG6850, and SG69xx products infringe the claims of the '398 and '908 patent. In said order the administrative law judge recommended that if any remedial order issue, it should specifically

exclude said certain accused products (SG's SG6105, SG68501, SG68502, SG38xx, SG5841, SG5848, SG6842J w/HV Start, SG6846, SG6846A, SG6848, SG6848x, SG6849, SG6850, and SG69xx products). By notice dated January 17, 2006 the Commission determined not to review Order No. 13.

Order No. 14, which issued on December 22, 2005, was an initial determination which granted complainant's Motion No. 541-21 insofar as it terminated the investigation as to claims 1, 2, 3, 6, 9, 17, 18 and 19 of the '079 patent. The Commission determined not to review Order No. 14 by notice dated January 17, 2006.

Order No. 23, which issued on January 18, 2006, was an initial determination granting complainant's Motion No. 541-34 and terminating the investigation as to claims 30 and 31 of the '908 patent and claim 24 and 28 of the '398 patent. The Commission by notice dated February 8, determined not to review Order No. 23.

A pre-hearing conference was conducted on January 18, 2006, with the hearing also commencing on that date and continuing to January 24. The claims in issue at the hearing were claims 1, 3, 5 and 6 of the '398 patent and claims 26 and 27 of the '908 patent.
All parties participated in the hearing. Post-hearing submissions have been filed. On May 5 closing arguments were heard. The matter is now ready for a final decision.

The Final Initial and Recommended Determinations herein are based on the record compiled at the hearing and the exhibits admitted into evidence. The administrative law judge has also taken into account his observation of the witnesses who appeared before him during the hearing. Proposed findings of fact submitted by the parties not herein adopted, in the form submitted or in substance, are rejected as either not supported by the evidence or as involving

immaterial matters and/or as irrelevant. Certain findings of fact included herein have references to supporting evidence in the record. Such references are intended to serve as guides to the testimony and exhibits supporting the finding of fact. They do not necessarily represent complete summaries of the evidence supporting said findings.

II. Jurisdiction

The administrative law judge finds that the complaint and notice of investigation state a cause of action under section 337 of the Tariff Act of 1930, as amended. Moreover, the importation requirement has been satisfied. See Section I supra. Thus, the Commission has in rem jurisdiction over the subject matter of this investigation. See Certain Automated Mechanical Transmission Systems for Medium-Duty and Heavy-Duty Trucks and Components Thereof, Inv. No 337-TA-503, Final Initial and Recommended Determination at 4, Notice of Commission Nonreview (February 24, 2005) (Transmissions). Also respondent SG has appeared in this investigation. Hence, the Commission has in personam jurisdiction. See Transmissions at 4.

III. Parties

See FF 1-22.

IV. Witnesses

For PI, the following witnesses testified live at the hearing: Balu Balakrishnan (Tr. at 102), Bruce Renouard (Tr. at 671) and Robert Blauschild, who was qualified as an expert on the technology at issue (Tr. at 319-20). For SG, the following witnesses testified live at the hearing: Ta Yuang (Tr. at 838), Carl. T. Nelson (Tr. at 1140), Tsuang-Der "Chandler" Lin (Tr. at 1205), Mark Horenstein, who was qualified as an expert in the area of switching power supplies and related circuitry (Tr. at 936-37) and Deepakraj M. Divan, who was qualified as an expert in the

area of power switching and power switching electronic power controllers. (Tr. at 1307-08).

V. Overview Of The Technology In Issue

A power supply converts electrical power from a power source such as a wall outlet[1] into a form that is useable by a load, such as a computer or cell phone. (CPFF 29 (undisputed).) A switch mode power supply operates by supplying a current to a load from the supply's output capacitor. The output capacitor acts as a reservoir for storing electrical charge that is to flow through the load. (CPFF 31 (undisputed).) Switched mode power supplies surfaced initially in the 1960s and were well known to those of ordinary skill at the time of the '398 and '908 patent inventions. (CPFF 31.1 (undisputed).) As current is supplied from the output capacitor and flows through the load, the capacitor discharges. (CPFF 32 (undisputed).) The voltage across the capacitor is related to the amount of charge it stores. The more charge the capacitor stores, the higher its voltage. (CPFF 33 (undisputed).)

A switch mode power supply attempts to maintain the voltage at its output. To maintain the output voltage as the load draws current, the output capacitor must be recharged. (CPFF 34 (undisputed).) The power supply recharges the output capacitor with pulses of current so that the amount of charge held on the output capacitor remains roughly constant and the amount of charge supplied to the output capacitor is the same as the amount of charge drawn by the load current. (CPFF 35 (undisputed).) In addition to the output capacitor, the power supply includes a transformer and a power switch. The transformer includes at least a primary winding of wire and

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[1] Wall outlets around the world typically provide electrical power at about 110 to 240 volts alternating current (AC), while many appliances require low voltage direct current (DC) power at, for example, a 12 volts DC. DC is a steady one-directional flow of current while AC varies from positive to negative and back again, for example at a frequency of 60Hz in the U.S.. (CPFF 30 (undisputed).)

a secondary winding of wires wrapped around a piece of metal, for example. The primary winding is connected at one end to the input voltage source, which supplies a direct current version of the wall socket power, and at the other end to the power switch. The secondary winding is connected to the output capacitor. (CPFF 36 (undisputed).)

When the power switch is turned on, the current flowing through the primary winding and the power switch gradually builds up together with a magnetic field in the transformer. When the power switch is turned off, the current in the primary winding collapses. The magnetic field also collapses and induces a current in the transformer's secondary winding. Turning the power switch on and off generates pulses. The current in the secondary winding flows into the output capacitor and replenishes it. (CPFF 37 (undisputed).) If the amount of current flowing in the secondary winding into the output capacitor is greater than the amount of current flowing out of the output capacitor, the regulator's output voltage will increase. Conversely, if the current flowing through the secondary winding into the capacitor is less that the amount of current flowing out of the output capacitor the voltage will decrease. (CPFF 38 (undisputed).) The switch mode power supply monitors the voltage output and generates a feedback signal based on the output voltage. The feedback signal is passed to a switch timing control circuit which compares the feedback signal to a references and adjusts the width of the pulse widths as necessary. (CPFF 39 undisputed).)

The switch mode power supply controls the amount of current in the secondary winding by allowing the current in the primary winding more or less time to build up in the primary. The more the current in the primary winding is permitted to build up, the larger the current induced in the secondary winding and the more the output capacitor is recharged. (CPFF 40 (undisputed).)

If the power supply output voltage is too high, the switch timing control circuitry decreases the pulse width so that the output capacitor is charged more slowly. If the power supply output voltage is too low, the control circuitry increases the pulse width so the output capacitor is charged more quickly. This is pulse width modulation. (CPFF 41(undisputed).) The power supply controller, which is in issue in the asserted claims, is the brains of the power supply and controls the switch timing. There are two types of controllers, current mode controllers and voltage mode controllers. (CPFF 42 (undisputed).)

A PWM (pulse width modulator) controller IC, which has been known in the art prior to the filing for the patents in issue (TrC at 90) may either be integrated with the power switch it controls, or it may control a "discrete" power switch. (E.g.,compare CX-891 (showing the TOPSwitch-FX PWM controller with an integrated power switch) with CX-787 (showing a PWM controller controlling a discrete power switch)) (CPFF 42.1 (undisputed).) A voltage mode controller generally includes an oscillator, an on/off control, a comparator, and an error amplifier. (CPFF 43 (undisputed).)

In voltage mode control, the oscillator generates pulses that it sends to the on/off control to switch on the power switch. To determine when to turn the power switch off, the error amplifier monitors the output voltage and compares it to an internal reference voltage to generate an error voltage. The oscillator also generates a ramp timing signal that starts at a low level when the power switch is turned on and gradually increases over the course of a cycle. The comparator compares the error voltage and the ramp signal. When the ramp level reaches the level of the error voltage the comparator turns off the power switch. The error signal generated by the feedback signal controls when the switch is turned off. (CPFF 44 (undisputed).)

A current mode controller also generally includes an oscillator, an on/off control, a comparator, and an error amplifier. (CPFF 45 (undisputed).) In current mode control, the oscillator also generates pulses that it sends to the on/off control to switch on the power switch and compares the feedback signal to a reference at the error amplifier to generate an error voltage. However, instead of comparing the error voltage to a ramp signal from the oscillator, the comparator compares the error voltage to the voltage across a sense resistor that represents the current flowing through the power switch. As the current through the power switch increases, the voltage across the sense resistor increases to produce a ramp. The comparator turns off the power switch when the switch current ramp rises above the error voltage. So again, the error voltage generated by the feedback signal controls the pulse width. (CPFF 46 (undisputed).)

Integrated circuit power supply controllers may provide additional operating functions such as current limiting (preventing excessive and perhaps destructive current flow in a power switch), under- or over-voltage protection (preventing erratic or destructive operation if the start-up or supply voltage is not in the designed operating range), and/or ON/OFF control of the power supply (turning the power supply controller on or off in response to some specific external command). (Blauschild, Tr. at 344:14-353:15; CDX-37 to CDX-46.) On this point, at closing argument, the parties admitted the following:

> JUDGE LUCKERN: And would I -- I -- would I also be correct to assume that these integrated circuit power supply controllers have been around before this September 24th, 1999 file date of the patent, that they would have various operating functions or not? If you don't understand my question, say you don't understand. Mr. Scherkenbach.

MR. SCHERKENBACH: The answer is yes.

JUDGE LUCKERN: Yes?

MR. SCHERKENBACH: They existed and they performed certain functions, yes.

JUDGE LUCKERN: All right. And could you tell me the position of the complainant as to what functions these old integrated circuit power supply controllers would perform.

MR. SCHERKENBACH: Well, I guess at the most basic level, they all perform the critical functions of converting the high voltage alternating current power from your wall socket to a low voltage direct current or DC voltage, like something for -- something like a laptop computer. And in the process of performing that overall function, there are a number of subfunctions that they perform, including typically monitoring the power supply output voltage and using that in a feedback loop in order to control the timing of the power switch.

JUDGE LUCKERN: All right. Will you agree, Mr. Yoches, with what you've just heard Mr. Scherkenbach say?

MR. YOCHES: Well, I would agree. And add that there are many more functions that are available.

JUDGE LUCKERN: I don't have realtime here.

MR. YOCHES: I would agree that those functions were provided. There are also several additional functions provided.

JUDGE LUCKERN: In the old integrated circuit power supply controllers which were known before this application was filed September 24th,1999.

MR. YOCHES: Yes, Your Honor.

JUDGE LUCKERN: Could you enumerate on those and I'll find out if Mr. Scherkenbach agrees with that.

MR. YOCHES: I would refer Your Honor to RX-68, which is US Patent 4,823,070.

JUDGE LUCKERN: I don't have that down here.

But that enumerates various functions?

MR. YOCHES: Yes, several of them, including external shut down, including feedback, including soft start, including current limiting.

JUDGE LUCKERN: All right.

Mr. Scherkenbach, would you agree with the characterization -- Mr. Yoches is not testifying, but that's his position -- would you agree with respondents' position on that particular point?

Actually, he's really got two points there. So I can say, do you agree on the first point and then the second point when he brought in the patent. If you want to separate it, fine. If you agree with everything he said, fine.

MR. SCHERKENBACH: The '070 patent that Mr. Yoches is referring to is prior art. That controller performs functions in addition to those I listed for you. And I can't immediately say whether I agree with Mr. Yoches' characterization of what those functions are. There are additional functions that basically existed before the prior date of the patents at issue in this investigation.

JUDGE LUCKERN: All right. Mr. Wood, do you have any problem with what you heard the prior parties admit to?

MR. WOOD: No, Your Honor.

(TrC at 91-94.)

VI. Products In Issue

The products at issue are PWM power supply controllers for switched mode power supplies and chargers,{

}

In general, a power supply takes an electrical input having one voltage and produces an

electrical output having another voltage; typically the electrical input is that provided by a household outlet, i.e., an "alternating current" (AC) input having a high voltage of between 110-240 Volts AC and a low frequency of 50-60 Hz (cycles per second). (CDX-6; Blauschild, Tr. at 325:16-326:20; CX-8, col. 1, line 18. The output is typically a "direct current" (DC) output at a lower voltage. Id. (SFF 9 (undisputed).) In a "switched mode" power supply, as the '398 patent states:

> [A] low frequency (e.g. 50 Hz or 60 Hz mains frequency), high voltage alternating current (AC) is converted to high voltage direct current (DC) with a diode rectifier and capacitor. The high voltage DC is then converted to high frequency (*e.g.* 30 to 300 KHz) AC, using a switched mode power supply control circuit. This high frequency, high voltage AC is applied to a transformer to transform the voltage, usually to a lower voltage, and to provide safety isolation. The output of the transformer is rectified to provide a regulated DC output, which may be used to power an electronic device. The switched mode power supply control circuit provides usually output regulation by sensing the output controlling it in a closed loop.

(SFF10 (undisputed).)

Complainant has accused respondent's products SG6840, SG6841, SG6842, SG6843, SG6842J, and SG6841x3 "and any other SG products that include corresponding circuitry" of infringing claims 1, 3, 5, and 6 of the '398 patent and claims 26 and 27 of the '908 patent. (CBr at 44.)

Complainant's products in issue for the domestic industry requirement are TOPSwitch-GX, TOPSwitch-FX and DPA-Switch families of products. (CBr at 84.)

VII. Person of Ordinary Skill In The Art

Respondent's expert Divan testified that a person of ordinary skill in the art would be an

active practitioner in the area, with roughly a Bachelor's degree and maybe four or five years experience. (CPFF 198 (undisputed).) Respondent's expert Horenstein testified that a person of ordinary skill in the art would have a bachelor's degree in electrical engineering and 4 or 5 years of industrial experience. (Tr. at 1007-1008.)

The administrative law judge finds that a person of ordinary skill in the art would have a Bachelor of Science in electrical engineering and 5 to 7 years experience, or a Master of Science and 3 to 5 years working in analog circuits. (CPFF 197 undisputed).)

VIII. The Patents And Claims In Issue

The '398 patent, entitled "Method and Apparatus Providing a Multi-Function Terminal for a Power Supply Controller," issued on February 26, 2002, from U.S. Application No. 09/697,870 (the '870 application), filed on October 26, 2000. (CX-8). The '398 patent is assigned to PI. (Id.) The '398 patent issued on February 26, 2002 from application 09/697,870 filed on October 26, 2000. (CX-8.) The '398 patent relates to an externally adjustable current limit. (Tr. at 133, 365); CDX-49; CDX-50) (CPFF 50 (undisputed).)

The asserted claims of the '398 patent read:

> **1.** A power supply controller circuit, comprising:
>
> a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate a current limit adjustment signal in response to the current; and
>
> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal.
>
> **3.** The power supply controller circuit of claim 1 wherein the control circuit is a pulse width modulation circuit that generates a switching waveform coupled to be received by the power switch to regulate a power supply output.

5. The power supply controller of claim 3 wherein the control circuit includes a first comparator coupled to compare a voltage representative of the current through the power switch with the current limit adjustment signal such that the power switch is disabled in response to an output of the first comparator when the current limit set by the current limit adjustment signal is exceeded.

6. The power supply controller of claim 5 wherein the control circuit is to generate said switching waveform controlled in response to the output of the first comparator such that the switching waveform is coupled to limit the current through the power switch.

(CX-8, '398 patent at col. 23, 24.)

The '908 patent, also entitled "Method and Apparatus Providing a Multi-Function Terminal for a Power Supply Controller," issued on March 25, 2003 from U.S. Application No. 10/167,557 ("the '557 application"), filed on June 11, 2002. (CX-9.) The '908 patent is assigned to PI. (Id.) The '908 patent issued on March 25, 2003 from application 10/167,557 filed on June 11, 2002. (CX-9.)

The asserted claims of the '908 patent read:

26. A power supply controller circuit, comprising:

a multi-function circuit coupled to receive a signal at a multi-function terminal for adjusting a current limit of a power switch, the multi-function circuit to generate a current limit adjustment signal in response to the signal; and

a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal.

27. The power supply controller circuit of claim 26 wherein the control circuit is further coupled to an output of a power supply through a control terminal of the power supply controller circuit, the control circuit adapted to control a switching of the power switch in response to the output of the power supply.

(CX-9, '908 patent at col. 25, 26.)

The named inventors of both the '398 and '908 patents are Balu Balakrishnan, Alex B. Djenguerian, and Lief O. Lund. (CX-8, CX-9). The '398 and '908 patents have the same specifications, and both share a common parent application, 09/405,209, filed on September 24, 1999. (CX-2; CX-3.)

IX. Claim Construction

Claim interpretation is a question of law. Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), aff'd, 517 U.S. 370 (1996); see Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1455 (Fed. Cir. 1998). In construing claims, the court should first look to intrinsic evidence consisting of the language of the claims, the specification and the prosecution history as it "is the most significant source of the legally operative meaning of disputed claim language." Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996); see Bell Atl. Network Servs., Inc. v. Covad Comm. Group, Inc., 262 F.3d 1258, 1267 (Fed. Cir. 2001).

The claims themselves "provide substantial guidance as to the meaning of particular claim terms." Phillips v. AWH Corp., 415 F.3d 1303, 1314 (Fed. Cir. 2005), citing Vitronics, 90 F.3d at 1582. It is essential to consider the claim as whole when construing each term, because the context in which a term is used in a claim "can be highly instructive." Id. This requirement is consistent with the Federal Circuit's guidance that a claim term can only be understood "with a full understanding of what the inventors actually invented and intended to envelop with the claim." Phillips, 415 F.3d at 1316, citing Renishaw PLC v. Marposs Societá per Azioni,158 F.3d 1243, 1250 (Fed. Cir. 1998). Claim terms "are generally given their ordinary and accustomed meaning." Vitronics, 90 F.3d at 1582.

In Pause Technology, Inc. v. TIVD, Inc., 419 F.3d 1326 (Fed. Cir. 2005) the Court stated:

> . . . in clarifying the meaning of claim terms, courts are free to use words that do not appear in the claim so long as "the resulting claim interpretation . . . accord[s] with the words chosen by the patentee to stake out the boundary of the claimed property." Cf. Renishaw PLC v. Marposs Societá per Azioni, 158 F.3d 1243, 1248 (Fed. Cir. 1998) (noting that "[w]ithout any claim term susceptible to clarification . . . there is no legitimate way to narrow the property right").

Id. 419 F.3d at 1333. Also, claim terms are presumed to be used consistently throughout the patent, such that the usage of the term in one claim can often illuminate the meaning of the same term in other claims. Research Plastics, Inc. v. Federal Packaging Corp. 421 F.3d 1290, 1295 (Fed. Cir. 2005).

The ordinary meaning of a claim term may be determined by reviewing a variety of sources, which may include the claims themselves, dictionaries and treatises, and the written description, the drawings and the prosecution history. Ferguson Beauregard/Logic Controls v. Mega Sys., LLC, 350 F.3d 1327, 1338 (Fed. Cir. 2003). However, the use of a dictionary may extend patent protection beyond what should properly be afforded by a patent. Also, there is no guarantee that a term is used in the same way in a treatise as it would be by a patentee. Phillips 415 F.3d at 1322. Moreover, the presumption of ordinary meaning will be "rebutted if the inventor has disavowed or disclaimed scope of coverage, by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." ACTV, Inc. v. Walt Disney Co., 346 F.3d 1082, 1091 (Fed. Cir. 2003). In Terlap v. Brinkmann Corp. 418F.3d 1379, 1384 (Fed. Cir. 2005), the Court concluded that the district court "attached appropriate weight" to the dictionary definitions in the context of the intrinsic evidence in reaching its

construction of a claim term "clear."

The presence of a specific limitation in a dependent claim raises a presumption that the limitation is not present in the independent claim. Phillips, 415 F.3d at 1315. This presumption is especially strong when the only difference between the independent and dependant claims is the limitation in dispute. SunRace Roots Enter. Co., Ltd v. SRAM Corp., 336 F.3d 1298, 1303 (Fed. Cir. 2003). Differences between the claims are helpful in understanding the meaning of claim terms. Phillips, 415 F.3d at 1314. "[W]here the limitation that is sought to be 'read into' an independent claim already appears in a dependent claim, the doctrine of claim differentiation is at its strongest." Liebel – Flarsheim Co. v. Medrad, Inc., 358 F.3d 898, 910 (Fed. Cir. 2004). An independent claim usually covers a scope "broader than the preferred embodiment, especially if the dependent claims recite the precise scope of the preferred embodiment." RF Delaware v. Pacific Keystone Tech., 326 F.3d 1255, 1264 (Fed. Cir. 2003).

The specification of a patent "acts as a dictionary" both "when it expressly defines terms used in the claims" and "when it defines terms by implication." Vitronics, 90 F.3d at 1582. For example, the specification "may define claim terms by implication such that the meaning may be found in or ascertained by a reading of the patent documents." Phillips, 415 F.3d at 1323, quoting Iredto Access, Inc. v. Echostar Satellite Corp., 383 F.3d 1295, 1300 (Fed. Cir. 2004). Importantly, "the person of ordinary skill in the art is deemed to read the claim term not only in context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." Phillips, 415 F.3d at 1314. The Federal Circuit has explained that "although the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments."

Phillips, 415 F.3d at 1323.

The prosecution history, including "the prior art cited," is "part of the 'intrinsic evidence.'" Phillips, 415 F3d at 1317. The prosecution history "provides evidence of how the inventor and the PTO understood the patent." Id. Thus, the prosecution history can often inform the meaning of the claim language by demonstrating how an inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be. Vitronics, 90 F.3d at 1582-83; see also Chimi v. PPG Indus., Inc., 402 F.3d 1371, 1384 (Fed. Cir. 2005) ("The purpose of consulting the prosecution history in construing a claim is to exclude any interpretation that was disclaimed during prosecution"), quoting ZMI Corp. v. Cardiac Resuscitator Corp., 844 F.2d 1576, 1580 (Fed. Cir. 1988); Southwall Techs., Inc. v. Cardinal IG Co., F.3d 1570, 1576 (Fed. Cir. 1995). The prosecution history includes any reexamination of the patent. Intermatic Inc. v. Lamson & Sessions Co., 273 F.3d 1355, 1367 (Fed. Cir. 2001).

In addition to the intrinsic evidence, the administrative law judge may, but need not, consider extrinsic evidence when interpreting the claims. Extrinsic evidence consists of all evidence external to the patent and the prosecution history, including inventor testimony and expert testimony. This extrinsic evidence may be helpful in explaining scientific principles, the meaning of technical terms, and terms of art. See Vitronics Corp., 90 F.3d at 1583; Markman, 52 F.3d at 980. However, "[e]xtrinsic evidence is to be used for the court's understanding of the patent, not for the purpose of varying or contradicting the terms of the claims." Markman, 52 F.3d at 981. Moreover, the Federal Circuit has viewed extrinsic evidence in general as less reliable than the patent and its prosecution history in determining how to read claim terms.

Phillips, 415 F.3d at 1318. Also, while extrinsic evidence may be useful, it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence. Phillips, 415 F.3d at 1319. However, in Tap Pharmaceutical Products, Inc. v. Owl Pharmaceuticals, LLC 419 F.3d 1346 (Fed. Cir. 2005), the Court concluded that:

> In light of the two different possible meanings for the term "containing," it was entirely reasonable for the district court to look to the specification as well as extrinsic evidence to determine the manner in which the term was used in three patents at issue.

Id. 419 F.3d at 1354. In Nystrom v. Trex Company 424 F.3d 1136 (Fed. Cir. 2005), the Court stated:

> . . . as explained in Phillips, Nystrom is not entitled to a claim construction divorced from the context of the written description and prosecution history. The written description and prosecution history consistently use the term "board" to refer to wood decking materials cut from a log. Nystrom argues repeatedly that there is no disavowal of scope of the written description or prosecution history. Nystrom's argument is misplaced. Phillips, 415 F.3d at 1321 ("The problem is that if the district court starts with the broad dictionary definition in every case and fails to fully appreciate how the specification implicitly limits that definition, the error will systematically cause the construction of the claim to be unduly expansive."). What Phillips now counsels is that in the absence of something in the written description and/or prosecution history to provide explicit or implicit notice to the public– i.e., those of ordinary skill in the art– that the inventor intended a disputed term to cover more than the ordinary and customary meaning revealed by the context of the intrinsic record, it is improper to read the term to encompass a broader definition simply because it may be found in a dictionary, treatise, or other extrinsic source. Id.

Id. 424 F.3d at 1144, 1145. In Free Motion Fitness Inc. v. Cybex International, Inc. 423 F.3d 1343 (Fed. Cir. 2005), the Court concluded that:

> "under Phillips, the rule that 'a court will give a claim term the full range of its ordinary meaning', Rexnord Corp. v. Laitram Corp.,

> 274 F.3d 1336, 1342 (Fed.Cir. 2001), does not mean that the term will presumptively receive its broadest dictionary definition or the aggregate of multiple dictionary definitions. Phillips, 415 F.3d at 1320- 1322. Rather, in those circumstances, where references to dictionaries is appropriate, the task is to scrutinize the intrinsic evidence in order to determine the most appropriate definition

423 F.3d at 1348,49. In Network Commerce, Inc. v. Microsoft Corp. 422 F.3d 1353 (Fed. Cir. 2005), the Court concluded:

> As we recently reaffirmed in Phillips, "conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court." Phillips, 415 F.3d at 1318. Here [expert] Coombs does not support his conclusion [the "download component" need not contain the boot program] with any references to industry publications or other independent sources. Moreover, expert testimony at odds with the intrinsic evidence must be disregarded. Id. ("[A] court should discount any expert testimony that is clearly at odds with the claim construction mandated by . . . the written record of the patent." (internal quotations and citation omitted). That is the case here.

Id., at 1361.

Patent claims should be construed so as to maintain their validity. However, that maxim is limited to cases in which a court concludes, after applying all the available tools of claim construction, that the claim is still ambiguous. Phillips, 415 F.3d at 1327. If the only reasonable interpretation renders the claim invalid, then the claim should be found invalid. See, e.g., Rhine v. Casio, Inc., 183 F.3d 1342, 1345 (Fed. Cir. 1999).

A. The '398 Patent

The parties have put in issue the following claim phrases: "power supply controller circuit," "current input circuit," "coupled," "receive a current," "current limit," "current limit adjustment signal," "adjust the current limit," "control circuit," and "comparator."

1. The claim phrase "power supply controller circuit"

The claim phrase "power supply controller circuit" is a preamble found in asserted independent claim 1. Complainant argued that said phrase is not required to properly interpret the body of the claim, and therefore should not limit the claim. (CBr at 28-29.)

Respondent argued that the claim phrase "power supply controller circuit" appearing in the preamble of the asserted claims of the '398 patent, limits the claims and requires the inclusion of a power switch. (RBr at 41-43.)

The staff disagreed with respondent's argument that the term "power supply controller" limits the scope of the claims and requires the inclusion of a power switch. (SBr at 8-9.)

The Federal Circuit has held that a preamble is a claim limitation "if it recites essential structure or steps, or if it is 'necessary to give life, meaning, and vitality to the claim.'" Poly-America, L.P. v. GSE Lining Tech., Inc., 383 F.3d 1303, 1309-10 (Fed.Cir. 2004). A preamble, however, is not limiting "where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention." Id.

As indicated, supra, asserted independent claim 1 reads:

> A power supply controller circuit,[2] comprising:
>
> a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate a current limit adjustment signal in response to the current; and
>
> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a

[2] Referring to dependent claims 5 and 6 in issue (see Section IX, supra), a person of ordinary skill would read the "power supply controller" of said claims to mean the same thing as the "power supply controller circuit" of independent claim 1 and dependent claim 3 also in issue from which claims 5 and 6 depend. (CPFF 200 (undisputed).)

> current through the power switch in response to the current limit adjustment signal.

(Emphasis added.)

As seen from the plain language of claim 1, claim 1 refers to the claimed circuits being "coupled to receive" and "coupled to adjust," and "to generate" a response signal. Thus, the administrative law judge finds that the plain language of said claim refers to a circuit which, as recited in the body of the claim, has the ability to receive signals as input and the ability to generate or adjust outputs in response. Hence, from the plain language of independent claim 1, he finds the body of independent claim 1 to be structurally complete and that the preamble of said claim, which simply states "[a] power supply controller circuit," does not give life, meaning, or vitality to the claimed circuit.

Respondent relies on non-asserted dependent claim 2 of the '398 patent to support its argument that asserted independent claim 1 requires a power switch. (RBr at 42.) The administrative law judge finds that said claim 2 does not indicate that a power switch is required to be part of the claimed power supply controller of independent asserted claim 1. As indicated, supra, claim 2 states:

> The power supply controller circuit of claim 1 wherein the power switch is coupled to a primary winding of the power supply.

(Emphasis added.) Thus, the plain language of claim 2 merely states that "the power switch is coupled to a primary winding of the power supply." The plain language of claim 2 does not require that a primary winding be part of the power supply controller circuit. Consistent with said plain language, as shown in Figure 1 of the '398 patent, primary winding 111 is not part of the power supply controller circuit 138, although said primary winding is part of the power

supply 101.[3] Therefore, the administrative law judge finds that the power switch, as recited in asserted independent claim 1 and non-asserted dependent claim 2, is not part of the power supply controller circuit.

Based on the foregoing, the administrative law judge finds that one of ordinary skill in the art would find that the preamble phrase "power supply controller" is not a limitation and thus would not require inclusion of a power switch in the clauses of claim 1.

2. The claim phrase "current input circuit"

The claim phrase "current input circuit" is found in asserted independent claim 1. Complainant argued that the claim phrase "current input circuit" should be construed as "a circuit that senses the value of a current through a terminal, i.e., monitors the information content of the current present at the terminal." (CBr at 30.) Complainant further argued that it did not, in the prosecution history, "disavow[ ] any circuit that monitored an internal voltage" from being a current input circuit. (CRBr at 24.)

Respondent argued that a "current input circuit" is "a circuit that receives and analyzes a current, and thus generally has a relatively constant voltage and low input impedance, but does not monitor a voltage, especially using a voltage dividers or amplifiers." (RBr at 15 (emphasis added).) Respondent further argued that no terminal is required. (RBr at 15-16; RRBr at 13.)

The staff argued that a "current input circuit" is "a circuit that receives a current and produces an output signal of some sort in response to the current." (SBr at 13.) The staff further argued that voltage dividers and other circuits that monitor voltage but not current are excluded,

---

[3] A "power supply" is much broader than a "power supply controller circuit." See, Section V, supra, for an overview of the technology in issue.

although "a current input circuit may receive a current that is representative of a voltage." (SBr 13.)

Respondent, at closing argument, argued as to the interpretation of "current input circuit," that finding that the claimed phrase has low input impedance is not a "strict requirement." It was argued that respondent's language that current input circuit "generally has a relatively constant voltage and low input impedance" means that said circuit doesn't have to have such voltage or impedance if there is some other way one can analyze a current other than with a relatively constant voltage and low input impedance which "[w]e" don't know of and all of the witnesses said that "you needed both of those, low input impedance and relatively constant voltage." (TrC at 96.)

Respondent, at closing argument, when asked what evidence it was relying on to support the language "generally has a relatively constant voltage and low input impedance" argued that "current input circuit" is not a term of art (which was agreed to by complainant and the staff (TrC at 107)) and referenced col. 13, ln. 26, col. 5, lns. 11-17 and testimony of the inventor Balakrishnan and its expert Horenstein and complainant's expert Blauschild. (TrC at 97-100.) Respondent, however, admitted that the '398 patent is not saying that the relatively low constant voltage and low input impedance are required for current input circuit. (TrC at 100.)

Complainant, at closing argument responding to respondent's argument, argued that it does not think there is any substantive disagreement that current input circuits generally have certain other sorts of characteristics like low input impedance and a more or less constant voltage. However, it was argued that such was not required and the preferred embodiment shows a more or less constant voltage. Also reference was made to dependent claim 13 of the '398

patent which states that the current is received by the current input circuit on a low impedance terminal that has a reference voltage with respect to ground. (TrC at 101-103.) Respondent, in response, argued that dependent claim 13 relates to a fixed referenced potential which is a constant voltage while respondent is suggesting a relatively constant voltage and hence claim differentiation won't come into play. (TrC at 106.)

The staff, in closing argument, made reference to the prosecution history wherein it was stated in a response to a January 19, 2001 rejection:

> In the January 19, 2001 Office Action, claims 1,19 and 24 are rejected under 35 U.S.C. § 102(b) as being anticipated by Agiman, US Patent 5,266,884.
>
> Example independent claim 1 expressly recites a power supply controller circuit that includes "a current input circuit coupled to receive a current representative of an input voltage, the current input circuit to generate an enable/disable signal when the current crosses a threshold." Therefore, the Applicants' expressly claimed current generates the enable/disable signal in response to a current.
>
> Agiman is directed to threshold controlled circuit in which a hysteresis loop has a greater gain than a control voltage loop. A fair reading of Agiman reveals that Agiman's circuit monitors voltage rather than current. For example, in column 1, lines 32-35, Agiman describes a circuit that includes "a comparator which receives a supply monitoring voltage and a threshold voltage for comparison." In particular, Agiman describes resistor dividers including R5 and R6 to provide a supply monitoring voltage. (See, e.g., col. 2, lines 6-10). Accordingly, the Applicants respectfully submit that Agiman fails to disclose, teach or fairly suggest a current input circuit coupled to receive a current representative of an input voltage, the current input circuit to generate an enable/disable signal when the current crosses a threshold, as expressly recited in the Applicant's presently claimed invention.

(CX-51, response received May 22, 2001 at 1, 2 (emphasis in original).) Hence, the staff argued that what is being said in the claim in issue is that a current input circuit can receive a current

representative of an input while the Agiman circuit monitors voltage rather than current and includes comparator, which receives a supply monitoring voltage and a threshold voltage for comparison and describes resistor dividers, which are voltage dividers. (TrC at 115-116). The staff further made reference to Figure 2D of the '398 patent which shows that a current input circuit can receive a current representative of voltage. (TrC at 117.)

Complainant, at closing argument, did not think that the staff's interpretation was incorrect. (TrC at 123-124). However, complainant and respondent agreed that current input circuit can be construed as a circuit that senses a value of a current, i.e. monitors the information content of the current. (TrC at 126.)

At the outset, all parties agree that "current input circuit" is not a term of art. (TrC at 107.) Also, all of the experts in this investigation agree that the claimed "current input circuit" cannot monitor a voltage. (CPFF 238 (undisputed).) One of ordinary skill reading the '398 prosecution history would not think that a voltage divider is a current input circuit. (CPFF 239 (undisputed).) Moreover, it is not disputed that the file history of the '398 patent and in particular, responses to office actions in the parent '209 application, distinguished prior art voltage input circuits, such as resistor dividers or voltage dividers, from the claimed current input circuits. ((CPFF 240 (undisputed).) A voltage divider accepts an input voltage and provides a reduced version of the input voltage as an output voltage. (CPFF 241 (undisputed).) A resistor voltage divider made up of resistors provides an output voltage proportional to the values of the resistors. (CPFF 242 (undisputed).)

The specification of the asserted patent shows that although a "current input circuit" should exclude voltage dividers and other circuits that monitor voltage, said "current input

circuit" may receive a current that is representative of a voltage. Thus, in describing a preferred embodiment in Figure 2D, the specification states:

> Referring back the FIG. 2D, in one embodiment, multi-function terminal 149 is substantially fixed at a particular voltage when positive current flows into multi-function terminal 149. Therefore, the amount of positive current flowing through resistor 205 into multi-function terminal 149 is representative of line voltage 109, which is input to the primary winding 111. Since the positive current flowing through resistor 205 into multi-function terminal 149 represents the line voltage 109, power supply controller 139 can use this positive current to sense an under-voltage condition in line voltage 109 in one embodiment. An under-voltage condition exists when the line voltage 109 is below a particular under-voltage threshold value.

(CX-8 at 24:32-35 (emphasis added).) Hence, as the staff argued, the specification shows that said "current input circuit" may receive a current that is representative of a voltage.

Asserted independent claim 1 reads in part:

> A power supply controller circuit, comprising:
>
> a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate a current limit adjustment signal in response to the current.

(CX-8 at 23:37-41 (emphasis added).) Thus, the plain language of claim 1 requires that a current input circuit be able to receive a current without any reference to low impedance. Claim 1 also requires that the current input circuit generate a signal in response to the received current.

Respondent argued that a "current input circuit" is a circuit that "generally has a ... low input impedance." By modifying "constant" with "relatively," respondent concedes that some voltage variation is possible in a "current input circuit." However, respondent provides no

guidance for determining the quantity of said voltage variation.[4] Respondent, however, argued that adding the requirement of "through a terminal," as complainant proposed, is unnecessary and that there is no basis for adding said requirement to a current input circuit. In the proposed findings of fact relied on by complainant, complainant merely cited examples of preferred embodiments which show current flowing through a terminal. (See CPFF 208, 209, 212, 212.1.) Thus, the administrative law judge finds that complainant's construction in referring to a terminal, unnecessarily reads a characteristic of a preferred embodiment into the claim phrase "current input circuit."

Based on the foregoing, which includes the prosecution history, the administrative law judge finds that one of ordinary skill in the art would construe the claim phrase "current input circuit" to mean a circuit that receives a current and produces or generates an output signal in response to the received current; that a "current input circuit" does not include voltage dividers and other circuits that monitor voltage, although a "current input circuit" may receive a current that is representative of a voltage; and that a "current input circuit" does not require said circuit

---

[4] Indeed, respondent's expert Horenstein, stated:

> Q. Okay. And do all current input circuits have a constant voltage?
>
> A. Well, again, as I explained earlier, there's – there's not a hard dividing line. There's kind of a continuum. And at the far end are ideal current input circuits which have a voltage of zero. Then you can relax that category to make the voltage constant but nonzero. That would have most of the properties of the ideal circuit. Then if you relax that ideal a little bit more, the voltage wouldn't be perfectly constant. It would vary a little bit. If you find that the voltage is varying a lot, then you would no longer characterize that circuit as a current input circuit.

(Tr. at 1095:16-1096:4 (emphasis added).)

to have a low input impedance.

3. The claim phrase "coupled"

The claim phrase "coupled" is found in asserted independent claim 1 and dependent claims 3, 5 and 6. Complainant argued that the claim phrase "coupled" should refer to "the connection between the internal chip circuits and a terminal or pin that is accessible from outside of the chip package." (CBr at 32; CRBr at 26.)

Respondent argued that "coupled to receive a current" is a structural limitation "requiring a physical connection that allow[s] the current input circuit . . . to receive the current . . . for changing a current limit." (RBr at 30.)

The staff argued that complainant's claim construction of "coupled" is incorrect insofar as complainant restricts "coupled" to refer to connections between internal circuits and chip terminals, since this phrase is occasionally used in the context of connections to circuit elements outside of a controller chip and that "coupled" should be interpreted merely as "connected." (SRBr at 11.)

At closing argument all parties agreed that "coupled" means that a direct or indirect connection exists in order to be able to perform specific activities or actions. (TrC at 155.)

As seen, supra, asserted independent claim 1 reads:

> A power supply controller circuit, comprising:
>
> a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate a current limit adjustment signal in response to the current; and
>
> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit

adjustment signal.

(Emphasis added.)

Thus, claim 1 recites "coupled to receive a current," "coupled to receive the current limit adjustment signal," and "coupled to adjust the current limit." Hence, tracking the plain language of the claim, the claim phrase "coupled" would mean that a connection exists in order to be able to perform specific activities or actions. For example, the administrative law judge finds that the claim phrase "coupled to receive a current" would mean that a connection exists in order to be able to receive a current. Likewise, the administrative law judge further finds that the claim phrase "coupled to receive the current limit adjustment signal" would mean that a connection exists in order to be able to receive the current limit adjustment signal.

The claim phrase "coupled" is used frequently in the specification of the asserted patent in various contexts, but consistently, to mean "connected." Describing Figure 1, the specification also states:

> FIG. 1 is a block diagram illustrating one embodiment of a power supply 101 including a power supply controller 139 having a multi-function terminal 149 in accordance with the teachings of the present invention. As illustrated, power supply 101 includes an AC mains input 103, which is configured to receive an AC voltage input. A diode rectifier 105 is coupled to AC mains input to rectify the AC voltage. Capacitor 107 is coupled to diode rectifier 105 to convert the rectified AC into a steady DC line voltage 109, which is coupled to a primary winding 111 of a transformer. Zener diode 117 and diode 119 are coupled across primary winding 111 to provide clamp circuitry.
>
> As illustrated in FIG. 1, primary winding 111 is coupled to a drain terminal 141 of power supply controller 139. Power supply controller 139 includes a power switch 147 coupled between the drain terminal 141 and a source terminal 143, which is coupled to ground. When power switch 147 is turned on, current flows

> through primary winding 111 of the transformer. When current flows through primary winding 111, energy is stored in the transformer. When power switch 147 is turned off, current does not flow through primary winding 111 and the energy stored in the transformer is transferred to secondary winding 113 and bias winding 115.

(CX-8 at 4:25-49 (emphasis added).) Hence, the claim phrase "coupled" is used to refer to connections.

With respect to complainant's argument in its briefs that the claim phrase "coupled" should refer to the connection between the internal chip circuits and a terminal or pin that is accessible from outside of the chip package, the administrative law judge finds that said claim phrase is sometimes used in the context of connections to circuit elements outside of a controller chip. For example, the "Background of the Invention" discloses "an integrated circuit power supply controller coupled in series with a primary winding of the transformer." (CX-8 at 1:32-34 (emphasis added).) Also, in Figure 1, a primary winding 111 is shown as internal to the power supply 101 but external to the power supply controller circuit 138. Hence, the administrative law judge rejects complainant's argument restricting the claim phrase "coupled" to "internal chip circuits."

Based on the foregoing, the administrative law judge finds that one of ordinary skill in the art would construe the claim phrase "coupled" to mean that a direct or indirect connection exists in order to be able to perform specific activities or actions.

4. The claim phrase "receive a current"

The claim phrase "receive a current" is found in asserted independent claim 1. Complainant argued that the claim phrase "receive a current" should be construed to "encompass

receiving either a negative or a positive current and to cover the flow of current either into (i.e. a 'positive current') or out of (i.e. a 'negative current') the current input circuit." (CBr at 32-33.)

Respondent argued that "receive a current" means "to accept a current that can be positive or negative" and that there is no substantive difference between the parties. (RBr at 15; RRBr at 7.)

The staff argued that the specification does not mandate that the claimed current input circuit accept both positive and negative current in any single configuration. (SBr at 14.)

All parties agreed at closing argument that one of ordinary skill in the art would construe the claim phrase "receive a circuit" to mean receiving either a negative or a positive current and to cover the flow of current either into (positive current) or out of (negative current) the current input circuit. (TrC at 157.)

The specification of the '398 patent shows that the current limit may be adjusted by receiving a "negative current" – a current flowing from the terminal and out of the chip. For example, the specification states that "[i]n one embodiment, when the magnitude of the negative current flowing from multifunction terminal 149 is below a predetermined level, the current flowing through power switch 147 is limited to an amount directly proportional to the current flowing out of the power supply controller 139 from multi-function terminal 149." (CX-8 at 10:16-22.) Thus, the '398 patent contemplates adjusting a current limit using the flow of current irrespective of its direction. Therefore, a received current may have a positive or a negative polarity, but there is no requirement that a circuit be able to receive both polarities, to receive a current. Hence the administrative law judge finds that the ability to receive a single polarity, either positive or negative, satisfies the claims.

Based on the foregoing, the administrative law judge finds that one of ordinary skill in the art would construe the claim phrase "receive a current" to include receiving either a negative or a positive current and to cover the flow of current either into (i.e. a "positive current") or out of (i.e. a "negative current") the current input circuit.

5. The claim phrase "current limit"

The claim phrase "current limit" is found in asserted independent claim 1 and dependent claim 5. Complainant argued that the claim phrase "current limit" should be construed as "a current protection limit with a preset value, implemented by a current protection circuit, to protect power supply components against an overload or over-current condition that might result in physical damage to the power switch or other components in the regulator." (CBr at 17.)

Respondent initially argued that a "current limit" is "the maximum allowable current through a switch for each cycle, irrespective of the reason for the maximum." (RBr at 22.) It is argued that because the claims and the specification allow a "current limit" to be used for several purposes other than protection, a proper construction of "current limit" should not restrict the term to just protection. (RBr at 24.) During closing arguments, respondent changed its claim construction by deleting the phrase "for each cycle" from its proposed claim construction, thus proposing a new construction for "current limit" as "the maximum allowable current through a switch, irrespective of the reason for the maximum." (TrC at 159-60.)

The staff argued that a "current limit" is "a prescribed threshold of current through the power switch, such that when the current through the power switch reaches this threshold, the power switch turns off to prevent the current from exceeding the threshold." It is argued that when properly construed, said phrase is broad enough to include current limits established not

only to ensure the safety of the components of the power supply, but also as a means to regulate the output voltage of the power supply – so called "current mode control." (SRBr at 6.) It is also argued that the claim phrase "current limit" can refer to limits established for either (or both) of these purposes, i.e., for component protection and for output regulation, because the specification discusses "current limit" in the context of both purposes. The staff further argued that non-asserted claim 7 "indicates that a predetermined maximum level (i.e., a maximum value set for component safety) is not inherent in the term "current limit," but rather a current limit may be set at a level lower than such a maximum value." (SBr at 15.) Respondent, at closing argument, agreed with the staff that "current limit" can refer to limits established for either component protection or for output regulation or for both. (TrC at 163.) Complainant reiterated its position that "current limit" should refer only to component protection. (Id.)

Complainant, as to the staff's reliance on non-asserted dependent claim 7, argued that because the staff's argument with respect to said claim 7 was not raised before, it is now waived. However, it also argued that the staff's argument is wrong because the '398 patent describes that the predetermined maximum level simply is the default current limit that is hardwired into the part but that can be adjusted downward to better reflect the protection requirements of the actual design. (CRBr at 22.) Moreover, complainant, at closing argument, as to the staff's reliance on claim 7, argued that Diagram 503 of Figure 5 of the '398 patent shows that the 3 amps is just a flat line which is the hard-wired default current limit and "the angled line, the ramp to the right" is "where the user could choose where they want to be by choosing the external resistor" and "so that ramp has nothing to do with regulation per se." (TrC at 212-13.)

Respondent, at closing argument, argued that "you don't set that [angled line] only by the

external resistor," that one "can set that with feedback," that "[a]ll that that angled line represents is what current limits you will get in response to what current limit is going out of the multi-function terminal;" that "[i]f you control the current flowing out of the multi-function terminal by feedback in order to regulate, you will get a current limit that corresponds to someplace on that diagonal line," that "[i]f you use an external resistor or variable resistor for whatever purpose you want, you'll get a position on that diagonal line," and that "[t]hat diagonal line does not suggest the current limit is either for protection or regulation or for efficiency or for one of 100 other uses." (TrC at 213-14 (emphasis added).)

With respect to Figure 5, and particularly Diagram 503, which is titled CURRENT LIMIT THROUGH POWER SWITCH, the '398 patent states:

> FIG. 5 is a diagram illustrating some of the currents, voltages and duty cycles associated with the power supply controller 139 in accordance with teachings of the present invention...
>
> In diagram 503, [which has the angled line],the current limit through power switch 147 as adjusted by the present invention is illustrated... In one embodiment, when positive input current is provided into multi-function terminal 149 and there is neither an under-voltage condition nor an over-voltage condition, the current limit through power switch 147 is 3 amps. However, when negative current flows out from multi-function terminal 149, and the magnitude of the negative current rises above 50 microamps, which is illustrated as -50 microamps in FIG. 5, the current limit through power switch 149 is approximately 1 amp. As the magnitude of the negative current rises to 150 microamps, which is illustrated as -150 microamps in FIG. 5, the current limit through power switch 149 rises proportionally with the negative current to 3 amps. After the magnitude of the negative current rises above 150 microamps, the current limit of the power switch 149 remains fixed at 3 amps.

(CX-8 at 20:13-16, 20:60-21:12 (emphasis added).) Thus, the specification shows that along the

angled or diagonal line, as the negative current rises from 50 microamps to 150 microamps, the current limit through power switch 149 rises proportionally with the negative current from 1 amp to 3 amps. Significantly, Diagram 503 of Figure 5 does not indicate whether the current limit rises in response to an external resistor for protection or to feedback for regulation.

Referring to how the claim phrase "current limit" should be construed, as indicated, supra, asserted independent claim 1 reads:

> A power supply controller circuit, comprising:
>
> a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate a current limit adjustment signal in response to the current; and
>
> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal.

(Emphasis added.)

With respect to the plain meaning of the claim phrase "current limit," The POWER SOURCES MANUFACTURERS ASSOCIATION HANDBOOK OF STANDARDIZED TERMINOLOGY FOR THE POWER SOURCES INDUSTRY defines "current limiting" as "[a]n overload protection circuit which limits the maximum output current to a preset value." (SX-1 at 16.) This suggests that "current limit" is the maximum current value necessary to ensure overload protection. However, the IEEE AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS defines "current limit" as a "control function that prevents a current from exceeding its prescribed limits." (SX-3.) Thus, the IEEE definition suggests that a "current limit" is a maximum value that a circuit current is not allowed to exceed, regardless of the reason for establishing the maximum value.

At closing argument, the administrative law judge indicated some inconsistency in the two dictionary definitions. (TrC at 166.) In response, complainant argued that the two dictionary definitions are not inconsistent with each other. It was argued that the "plain meaning of prescribed [in the IEEE definition] means that it can be determined or set by somebody or something, by the user, by the circuit designer," and that in ordinary regulation, "[t]here's no way to prescribe what the current level is cycle by cycle, because it's a function of the output." (TrC at 166-68.) The administrative law judge finds complainant's argument unpersuasive. Complainant did not cite any evidence that a current level cannot be prescribed cycle by cycle. A dictionary definition of "prescribe" is "to lay down a rule" or "dictate." (Webster's Ninth New Collegiate Dictionary at 930 (1983).) Said definition suggests that a current limit can be "prescribed" cycle by cycle since the feedback is "dictating" how the current limit should be adjusted per each cycle. Hence, the administrative law judge finds that the definition of the word "prescribe" does not suggest the reason for establishing the value of the current limit in issue. Thus, based on the IEEE definition, the administrative law judge finds that the plain meaning of "current limit" suggests that it is a maximum value that a circuit current is not allowed to exceed, regardless of the reason for establishing the maximum value.

The SUMMARY OF THE INVENTION section of the '398 patent states:

> In another embodiment, a current limit of a power switch of the power supply controller is adjusted in response to the current.

(CX-8 at 2:15-18 (emphasis added).) Thus, said SUMMARY section does not suggest a reason or purpose for adjusting a "current limit." Said section merely discloses that a "current limit" is adjusted in response to a current. In closing argument, complainant agreed that there was

nothing in the wording of the SUMMARY (CX-8 at 2:7-22) that would lead one of ordinary skill in the art to conclude that "current limit" as used in claim 1, would not relate to a regulation circuit. (TrC at 183.) Significantly, it is not denied that the meaning of the term "current limit" depends on its context and can be used in different ways. (CPFF 245 (undisputed).)

All of the parties agreed that the descriptions of the preferred embodiments as shown in Figures 2A, 2C and 2F, disclose a current limit that can be adjusted to limit said current limit of a power switch for protection purposes. (TrC at 185, 192, 194-95.) For example, describing the preferred embodiment of Figure 2C, the specification states:

> FIG. 2C is a diagram illustrating yet another embodiment of a power supply controller 139 including resistor 201 and switch 203 coupled in series between multi-function terminal 149 and source terminal 143, which in one embodiment is ground. The configuration illustrated in FIG. 2C combines the functions illustrated and described in connection with FIGS. 2A and 2B above. That is, the configuration illustrated in FIG. 2C illustrates a power supply controller 139 having external adjustment of the current limit of power switch 147, through the selection of the resistance for resistor 201, and on/off functionality through switch 203. When switch 203 is on, power supply controller 139 will switch power switch 147 with a current limit set by resistor 201. When switch 203 is off, power supply controller 139 will not switch power switch 147 and power supply 101 will be disabled.

(CX-8 at 5:43-57 (emphasis added).) Hence, in the preferred embodiment of Figure 2C, power supply controller 139 externally adjusts the current limit of power switch 147, by selecting the resistance for resistor 201.

The specification of the '398 patent, however, also suggests additional reasons for adjusting a "current limit." Thus, the specification states:

> In another embodiment, the power supply controller is provided with the functionality of being able to externally set the current

> limit of a power switch in the power supply controller, which makes it easier to prevent saturation of the transformer reducing transformer size and cost. Externally settable current limit also allows the maximum power output to be kept constant over a wide input range reducing the cost of components that would otherwise have to handle the excessive power at high input voltages.

(CX-8 at 3:39-48 (emphasis added).) Hence, in one embodiment, the current limit of a power switch can be externally set to make it easier to prevent saturation of the transformer, i.e., to protect the transformer. Additionally, an externally settable current limit can be used to reduce the cost of the components by allowing the maximum power output to be kept constant over a wide input range. Therefore, the administrative law judge finds that the specification discloses additional reasons for adjusting a "current limit."

Additionally, the specification of the '398 patent also shows "current limit" in the context of output regulation. A preferred embodiment, shown in Figure 2F, is described:

> FIG. 2F is a diagram illustrating another embodiment of a power supply controller 139 using current mode control to regulate the current limit of the power supply. As shown, resistor 201 is coupled between the multi-function terminal 149 and the source terminal 143 and the transistor 209 of an opto-coupler coupled between multi-function terminal 149 and a bias supply, such as for example control terminal 145. Similar to FIG. 2A, the negative current that flows out from multi-function terminal 149 is used to set externally the current limit of power switch 147. In the embodiment illustrated in FIG. 2F, the current limit adjustment function can be used for controlling the power supply output by feeding a feedback signal from the output of the power supply into multi-function terminal 149. In the embodiment depicted in FIG. 2F, the current limit is adjusted in a closed loop to regulate the output of the power supply (known as current mode control) by adding the opto-coupler output between multi-function terminal 149 and the bias supply.

(CX-8 at 7:39-56 (emphasis added).) Figure 2F shows the same resistor 201 as in Figure 2A and

an additional element, transistor 209 through which a feedback current flows from the output. (CPFF 271 (undisputed).) Complainant argued that the specification's reference to the above phrase "current limit is adjusted in a closed loop to regulate the output of the power supply" refers to the second, added cycle by cycle limit, not the protection limit established using resistor 201. (CBr at 26.) However, the administrative law judge finds that the fact that the second current limit in the regulation context is different from the first protection current limit would not suggest to a person of ordinary skill in the art that a regulation current limit should be excluded altogether, for the reason that the specification of the '398 patent does show "current limit" in the context of output regulation (i.e., current mode control) in addition to a protection current limit. Thus, the specification discloses that in Figure 2F, "the current limit is adjusted in a closed loop to regulate the output of the power supply (known as current mode control)." (CX-8 at 7:39-56 (emphasis added).) On this point, complainant's expert Blauschild testified:

> Q. Let me ask you about this figure, this is Figure 2F of the '398 patent, just thinking about all that's been said over the past several days about the current limit, in the embodiment that's depicted here in 2F, is the current limit being adjusted?
>
> A. I would say not according to my understanding of current limit. The current limit is set by 201, resistor 201, and then this circuit on top of that regulates to a lower current level down from that.
>
> Q. So when the patent says the current limit is being adjusted, the patent is incorrect?
>
> A. That's kind of a loose description of it. I don't think that current limit, the maximum safe level is being adjusted, no.
>
> Q. So the patent specification is not correct in that regard?

A. I don't think it means that. It doesn't mean that to me.

* * *

Q. I guess what I'm saying is that you understand that the patent specifically says that the current limit is being adjusted with respect to this figure?

A. When it's discussing 2F, yes.

Q. And so you're saying the patent is wrong?

A. Yeah, I would say it's not adjusting the current limit.

(Tr. at 1732-33 (emphasis added).) Thus, Blauschild, despite the specific language in the '398 patent, that in Figure 2F, the current limit is "adjusted... to regulate the output of the power supply," some six years after the September 24, 1999 filing date for the patent, concluded that the patent is not adjusting the current limit as to regulation. The administrative law judge, based on the plain language of the specification, finds that a person of ordinary skill in the art would conclude to the contrary. Such finding is further supported by the testimony of one of the inventors of the '398 patent, Balakrishnan, regarding Figure 4:

Q Well, what in -- let's turn to figure 4...

* * *

Q Is there any element here that's shown which knows whether the current that's coming -- the negative current at the multi-function terminal 149 came from figure 2F or came from a system in which there was a resistance tied up to the high voltage – the input voltage, excuse me?

A So figure 2F meaning --

Q It was the feedback.

A The circuit doesn't know.

Q It doesn't know.

A This circuit. You talk about --

Q This circuit doesn't know?

A Yeah. Yeah. This circuit is just acting on the current that's coming in here and changing the threshold.

Q And this circuit will set the current limit regardless of the reason that the current is at a certain level.

A Yes.

(Balakrishnan, Tr. at 264- 65 (emphasis added).) Thus, Balakrishnan conceded that the circuit of Figure 4 will "set the current limit regardless of the reason that the current is at a certain level."

Moreover, during the redirect examination by complainant's counsel, complainant's expert Blauschild further testified:

Q. Mr. Blauschild, do persons of ordinary skill in the art use the term "current limit" in different ways, depending on the context?

A. Yes.

Q. And is one of the ways in which they use the term the way in which you say it's used in the patent, which is to define a safe maximum current limit for an integrated circuit?

A. Yes.

Q. Is it used in a different way in connection with the concept of current mode control?

A. Sometimes, it's talked about as cycle-by-cycle current limit, sometimes.

Q. Tell us a little bit more about that. When somebody skilled in the art says, "cycle-by-cycle current limit," in the context of current mode control, what do they mean?

A. Regulation of the peak inductor current to affect pulse width modulation, to in turn effect regulation of the output voltage of the regulator.

Q. And have you also heard the phrase "peak current limiting" in the context of a current mode control regulator?

A. Same thing as the last, what I talked about.

(Blauschild, Tr. at 1734-35 (emphasis added); CPFF 245 (undisputed).) Hence, complainant's expert Blauschild agreed that persons of ordinary skill in the art use the claim phrase "current limit" in different ways, depending on the context and that sometimes said claim phrase is used in the regulation context.

In support of its proposed claim construction, respondent argued that non-asserted dependent claim 4 "refers to regulating an output voltage by adjusting a current limit, rebutting Power Integrations's argument that the current limit plays no part in output voltage regulation." (RBr at 23.) Countering respondent's argument, complainant argued that claim 4 covers the use of the novel circuitry to provide protection and additional regulation, as shown in the preferred embodiment of Figure 2F. (CBr at 25.) Claim 4 states:

> The power supply controller of claim 3 wherein the current is representative of a feedback signal from the power supply output, wherein a power supply voltage is regulated through current limit adjustment of the power switch in response to the feedback signal.

(CX-8 at 23:53-57.) Thus, the plain language of non-asserted dependent claim 4 shows that a power supply voltage is regulated through current limit adjustment of the power switch in response to the feedback signal. Moreover, regarding claim 4, complainant's expert Blauschild testified:

Q. Claim 4 is, do you see the reference there to "the

current:"? And you may want to look back through Claim 3. But isn't the current that's being referred to in Claim 4 the current that's received here in Claim 1?

* * *

A. I think it is.

Q. Okay. And this current, however, is now representative of the feedback signal from a power supply output, correct?

A. Uh-huh.

Q. And Claim 4 indicates that a power supply is regulated through current limit adjustment, do you see that?

A. Yes.

Q. What current limit adjustment is Claim 4 talking about?

A. That's where the feedback is modulating that signal to do -- I guess it is current, the current mode control.

Q. So it's a current limit adjustment that's the same current limit that we see here in Claim 1, isn't it?

A. Yeah, I think it is.

(Blauschild, Tr. at 608-09 (emphasis added).) Hence, complainant's expert Blauschild agreed that claim 4 is claiming current limit in the regulation context (i.e., current mode control).

In support of its proposed claim construction of "current limit," the staff argued that non-asserted claim 7 "indicates that a predetermined maximum level (i.e., a maximum value set for component safety) is not inherent in the term "current limit," but rather a current limit may be set

at a level lower than such a maximum value." (SBr at 15.) At closing argument, the staff argued that "if there's anything to be taken from claim 7, is that it draws a distinction between the maximum current limit and the current limit per se." (TrC at 211.)[5]

Non-asserted dependent claim 7 states:

> The power supply controller circuit of claim 1 wherein the current limit of the current through the power switch is adjusted by the current when the current limit of the current through the power switch is below a predetermined maximum level.

(CX-8 at 24:3-7 (emphasis added).) Thus, the plain language of claim 7 describes adjusting the current limit of the power switch when said current limit is "below a predetermined maximum level." Complainant cited a preferred embodiment of Figure 3 in arguing that the "predetermined maximum level" is the default current limit that can be adjusted downward to coincide with the actual design requirements. (CRBr at 22.) Describing a preferred embodiment of Figure 3, the specification states:

> In one embodiment, when the magnitude of the negative current flowing from multi-function terminal 149 is below a predetermined level, the current flowing through power switch 147 is limited to an amount directly proportional to the current flowing out of power supply controller 139 from multi-function terminal 149. In one embodiment, predetermined level is approximately 150 microamps.

(CX-8 at 10:16-23 (emphasis added).) Thus, the specification merely discloses that when the negative current flowing from multi-function terminal 149 is below the predetermined level, then the current through the power switch 147 is limited. The administrative law judge finds nothing

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[5] At closing argument, respondent also argued that maximum current is different from current limit: "The mistake that I think has been made is Power Integration, the complainant is confusing maximum current with current limit." (TrC at 177.)

in the language of claim 7 nor in the specification of the '398 patent that limits said claim 7 to a preferred embodiment described in Figure 3. It is a fact that the plain language of claim 7 merely describes adjusting the current limit of the power switch when said current limit is "below a predetermined maximum level."

Based on the foregoing, the administrative law judge finds that one of ordinary skill in the art would construe the claim phrase "current limit" to mean a prescribed threshold of current through a power switch, such that when the current through the power switch reaches this threshold, the power switch turns off to prevent the current from exceeding said threshold, irrespective of the reason or purpose of said prevention, and hence may refer to limits established for either component protection or output regulation or both.

6. The claim phrase "current limit adjustment signal"

The claim phrase "current limit adjustment signal" is found in asserted independent claim 1 and dependent claim 5. Complainant argued that the claim phrase "current limit adjustment signal" should be construed as being "a signal that is used to vary, or adjust, the current limit value." (CBr at 33.)

Respondent argued that claim phrase "current limit adjustment signal" should be construed as "a signal used to change the current limit" and that there is no significant difference between the definitions of the parties. (RBr at 13; RRBr at 6.)

The staff argued that the plain meaning of the claim phrase "current limit adjustment signal" is "a signal that adjusts, or varies, the current limit." (SBr at 18.)

The parties' constructions are essentially the same except that complainant proposed using "current limit value" rather than "current limit." However, in closing argument, the parties

agreed that "current adjustment signal" refers to a signal that is used to adjust or vary the current limit value. (TrC at 222-25.)

As indicated, supra, asserted independent claim 1 reads:

> A power supply controller circuit, comprising:
>
> a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate a current limit adjustment signal in response to the current; and
>
> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal.

(Emphasis added.) As seen from the plain language of the first clause of claim 1, a "current limit adjustment signal" is generated by a current input circuit "for adjusting a current limit." Additionally, as seen from the plain language of the second clause of said claim, the "current limit adjustment signal" is used by a control circuit to "adjust the current limit." Thus, the administrative law judge finds that the plain language of said claim suggests that a "current limit adjustment signal" is a signal which is used to adjust or vary the "current limit."

Moreover, describing several embodiments of Figure 3, the specification of the asserted patent states:

> In one embodiment, external current limit adjuster 313 generates external current limit adjustment signal 315 in response to negative current sense signal 303. In one embodiment, when the magnitude of the negative current flowing from multi-function terminal 149 through an external resistance or switch to ground is below a predetermined level, the current limit adjuster 313 generates an external current limit adjustment signal to limit the current flowing through power switch 147. In one embodiment, when the magnitude of the negative current flowing from multi-function terminal 149 is below a predetermined level, the current flowing

> through power switch 147 is limited to an amount directly proportional to the current flowing out of power supply controller 139 from multi-function terminal 149. In one embodiment, predetermined level is approximately 150 microamps. In one embodiment, if the magnitude of the negative current flowing out of power supply controller 139 from multi-function terminal 149 is greater than the predetermined level, the current flowing through power switch 147 is internally limited or clamped to a fixed safe maximum level. Therefore, the current flowing through power switch 147 is clamped to a safe value, even when multi-function terminal 149 is shorted to ground. In one embodiment, the current flowing through power switch 147 is internally limited or clamped to value of 3 amps.

(CX-8 at 10:8-32 (emphasis added).) Hence, the specification discloses that when a current is below a predetermined level, an external "current limit adjustment signal" is generated to "limit the current flowing through power switch." The specification also discloses that when a current is above a predetermined level, the current flowing through power switch is "internally limited or clamped to a fixed safe maximum level." Thus, the specification shows that "current limit adjustment signal" is generated to adjust, or vary the value or the magnitude of the current limit.

Based on the foregoing, and in view of the agreement by the parties at the closing argument (TrC at 222-25), the administrative law judge finds that one of ordinary skill in the art would construe the claim phrase "current limit adjustment signal" to mean a signal that is used to adjust, or vary, the current limit value.

7. The claim phrase "adjust the current limit"

The claim phrase "adjust the current limit" is found in the second clause of the asserted independent claim 1. Respondent, in its briefs, argued that "adjust the current limit" means "to change the maximum allowable current for each cycle"; that the plain meaning of "adjust" is to change; and that therefore, "adjust the current limit" means "to change the maximum allowable

current for each cycle" (emphasis added);[6] It is also argued that the specification explains that the adjustment of the current limit is external; that contrary to what the claim states, the control circuit in the written description does not adjust a current limit; that components in the control circuit only respond to the current limit adjustment signal and have nothing to do with adjusting the current limit; and that the items complainant identifies as the control circuit just determine when to turn a power switch off. (RBr at 27-30; RRBr at 10-13.)

Complainant argued that the claim phrase "adjust the current limit" should be construed to mean "in response to the threshold set by the current limit adjustment signal, the control circuit turns off the power switch, thereby limiting the current flowing through the switch by stopping it before it can go beyond that threshold." It is argued that respondent's expert Divan agreed with complainant's expert Blauschild on this construction. Complainant also argued that, respondent's expert Horenstein believed that to "adjust the current limit" requires the control circuit to "return to its own input to adjust the current limit" and that as a result of this "unique" construction, Horenstein also asserted that the '398 patent fails to disclose a control circuit to "adjust the current limit" as claimed, and that complainant's own products also do not "adjust the current limit" as Horenstein believes the claim requires. Complainant argued that "this" cannot be correct; that Blauschild, Divan, and the staff all disagreed with Horenstein's interpretation; and that one of ordinary skill would think Horenstein's proposed construction nonsensical and inconsistent with the teachings of the patent. (CBr at 35-36.)

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[6] During closing arguments, respondent changed its claim construction of a related claim phrase "current limit" by deleting the phrase "for each cycle" from its proposed claim construction, thus proposing that "current limit" means "the maximum allowable current through a switch, irrespective of the reason for the maximum." (TrC at 159-60.)

Complainant further argued that respondent admitted that respondent's construction of "adjust the current limit" reads the preferred embodiment out of the claims; that respondent raised a new argument, in essence that the term "adjust the current limit" somehow requires the user to change an external configuration; that respondent's new argument on its face imports limitations from the specification because, according to respondent, "[t]he specification reveals no other way to adjust the current limit"; that to the contrary, the specification reveals that external current limit adjustment can be used to provide a constant output power limit, an application in which the current limit is adjusted dynamically according to the input line voltage, without changing any external components; and that on the other hand, the claimed adjustment can alternatively be of the "set it and forget it" variety where the designer picks the value of an external resistor and therefore adjusts the current limit down from the maximum default value to obtain certain of the inventions' benefits in a particular application. (CRBr at 29-30.)

The staff argued that there is apparently no dispute that the plain meaning of "adjust" is to change; that "current limit," means maximum allowable switch current; that therefore, to "adjust the current limit" simply means to change the maximum allowable switch current; and that respondent's argument that the adjustment of the current limit must be external is wrong because it ignores the context in which the phrase "adjust the current limit" appears in the claim. (SRBr at 9.)

As indicated, supra, asserted independent claim 1 reads:

> A power supply controller circuit, comprising:
>
> a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate a current limit adjustment signal in response to the current; and

> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal.

(Emphasis added.) As found in Section IX.A.6, supra, the plain language of the second clause of claim 1 shows that the "current limit adjustment signal" is used by a control circuit to "adjust the current limit" value. Thus, the administrative law judge finds that the plain language of said claim suggests that the claim phrase "adjust the current limit" means adjusting or varying the value of the "current limit."

With respect to respondent's argument that the claim phrase "adjust the current limit" is a requirement that the adjustment must be "external," respondent supports said argument by citing to several specific embodiments in which external components are used to determine the current limit adjustment signal. However, respondent ignored the context in which the phrase "adjust the current limit" appears in claim 1. The Federal Circuit has made clear that the context of the words surrounding a particular term must be considered in construing that term. Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc., 334 F.3d 1294, 1299 (Fed. Cir. 2003). As indicated, supra, the claim phrase "adjust the current limit" appears in the second clause of claim:

> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal.

(Emphasis added.) Thus, the context of claim 1 shows that the control circuit of the claimed power supply controller circuit is adjusting the current limit. As the control circuit is a part of the power supply controller circuit, i.e., internal to that circuit, then it would be improper to limit the

claim phrase "adjust the current limit" to external components. As for those portions of the specification that respondent alleges support the proposition that external components are used to adjust the current limit, the specification is referring to how these components affect the current limit adjustment signal. Describing an embodiment of Figure 3, the specification states for example:

> In one embodiment, when the magnitude of the negative current flowing from multi-function terminal 149 through an external resistance or switch to ground is below a predetermined level, the current limit adjuster 313 generates an external current limit adjustment signal to limit the current flowing through power switch 147.

(CX-8 at 10:10-16 (emphasis added).) Those portions of the specification however do not address what happens when the current limit adjustment signal is received by the control circuit.

Based on the foregoing, the administrative law judge finds that one of ordinary skill in the art would construe the claim phrase "adjust the current limit" to mean to adjust or vary the value of the properly construed "current limit"; and that the adjustment need not be external.

8. The claim phrase "control circuit"

The claim phrase "control circuit" is found in asserted independent claim 1 and dependent claims 3, 5 and 6. Complainant argued that the claim phrase "control circuit" should be construed as "the portion of the power supply controller that controls the switching of the power supply to effect regulation and also to perform protection current limiting." (CBr at 35.)

Respondent argued that a "control circuit" is "a circuit used in control operations." (RBr at 35.)

The staff argued that a "control circuit" is "the circuit that carries electrical signals that

direct the performance of the power supply, but that does not carry the main power circuit." (SBr at 18.) At closing argument, complainant agreed that there was not a significant difference between its interpretation and the staff's interpretation and respondent accepted the staff's interpretation. (TrC at 227.)

Asserted independent claim 1 reads in part:

> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal.

(CX-8 at 23:42-45 (emphasis added).)

Although the patentees do not provide an express definition for "control circuit" in the patent specification, this claim phrase has, however, been defined generically (in the IEEE dictionary) as "[t]he circuit that carries the electric signals directing the performance of a control device, but that does not carry the power which the device controls." (SX-1 at 14.) This definition is not contradicted by the specification. For example, in the "Background of the Invention" section of the specification, the control circuit is described as the device that converts the rectified line voltage into high-frequency AC voltage, which is applied to a transformer where it is transformed (usually at a lower voltage), rectified, and filtered for use by the load. (CX-8 at 1:21-27.) The control circuit is also the component that regulates the output of the power supply. (CX-8 `at 1:28-30.)

Based on the foregoing, the administrative law judge finds that one of ordinary skill in the art would construe the claim phrase "control circuit" to mean a circuit that carries electrical signals that direct the performance of the power supply, but that does not carry the main power

circuit.

9. The claim phrase "comparator"

The claim phrase "comparator" is found in asserted dependent claims 5 and 6. Complainant argued that the claim phrase "comparator" should be construed as "a circuit that has two inputs and compares them to determine if one is higher than the other." (CRBr at 30.)

Respondent argued that a "comparator" is "a circuit that generates two different outputs depending on the relationship of the input signals." (RBr at 14; RRBr at 7.) At closing argument respondent did not see a difference between its interpretation and complainant's interpretation and further could accept the latter. (TrC at 229-230.)

The staff did not provide a construction for this claim phrase.

The IEEE dictionary defines "comparator" as used in analog computers as a "circuit, having only two logic output states, for comparing the relative amplitude of two analog variables, or of a variable and a constant, such that the logic signal output of the comparator uniquely determines which variable is the larger at all times. (IEEE dictionary at 200.)

All parties agree that a person of ordinary skill would generally interpret the claim term "comparator" as a circuit block that has two inputs coming into it and compares the signals to see which one is larger, and based on that comparison, puts out a logic signal signifying which input is larger. (CPFF 193 (undisputed).) It is also undisputed that a comparator has two inputs and compares them and determines if one is higher than the other and based on the results of the comparison, the comparator puts out a logic signal, either high or low. (CPFF 325.1 (undisputed).)

Asserted dependent claim 5 reads:

> The power supply controller of claim 3 wherein the control circuit includes a first comparator coupled to compare a voltage representative of the current through the power switch with the current limit adjustment signal such that the power switch is disabled in response to an output of the first comparator when the current limit set by the current limit adjustment signal is exceeded.

(CX-8 at 23:58-64 (emphasis added).) As seen above, in claim 5, the two inputs in the comparator are a "voltage representative of the current through the power switch" and the other is a "current limit adjustment signal." When the voltage representative of the current through the power switch rises above the current limit adjustment signal, the comparator puts out a signal to disable the power switch. Accordingly, the power switch is disabled in response to the output of the comparator when the current limit is reached, i.e., when the "current limit adjustment signal is exceeded." (Blauschild, Tr. at 399:22-401:11; CX-8; CDX-87; CDX-88.)

Based on the foregoing, the administrative law judge finds that one of ordinary skill in the art would construe the claim phrase "comparator" to mean a circuit that has two inputs and compares them to determine if one is higher than the other.

B. The '908 Patent

The parties have put in issue the following claim phrases: "power supply controller circuit," "coupled," "current limit," "control circuit," "current limit adjustment signal," "multi-function terminal," and "multi-function circuit." With the exception of the claimed phrases "multi-function terminal" and "multi-function circuit" the parties have not differentiated their construction for the remaining phrases as they are recited in the asserted claims of the '398 and '908 patents. Therefore, for the proper construction of those claimed phrases in the '908 patent, see Section IX.A, supra.

1. The claim phrase "multi-function terminal"

The claim phrase "multi-function terminal" is found in independent claim 26. Complainant argued that the claim phrase "multi-function terminal" should be construed as "a terminal . . . coupled to the multi-function circuit which is distinct from and in addition to a control terminal used to regulate the power supply output." (CBr at 38.) Complainant further argued that the claim phrase "function" within the claim phrase "multi-function terminal" should be construed as "an operation or feature of a power supply controller that is provided in addition to the regulation mechanism of the controller." (CBr at 37.) Complainant also argued that the claim phrase "terminal" within the claim phrase "multi-function terminal" should be construed as "an externally accessible electrical node, such as a pin, on an integrated circuit." (CBr at 37.)

Respondent argued that a "multi-function terminal" is "a circuit node that receives a signal identifying the functions to implement." (RBr at 39.) Respondent further argued that a "multi-function terminal" may be a "control terminal." (RRBr at 15.) Respondent also argued that the claim phrase "function" within the claim phrase "multi-function terminal" is "a selectable operation determined by an input signal that can be implemented by a desired configuration." (RBr at 36.) Respondent further argued that a function is a selectable operation that is determined by an input signal that identifies a desired configuration. (RRCPFF 330 A.) Respondent also argued that a terminal is "an electrical node, such as a pin on an integrated circuit" and that there is no significant difference between the parties. (RRBr at 7.)

The staff argued that a "multi-function terminal" is "a terminal - other than the control, source, and drain terminals of a power supply controller - that performs more than one function." (SBr at 21.) The staff further argued that a "function," in the context of the '908 patent, is "an

action or activity performed by a power supply controller." (SBr at 20.) The staff also argued that a "terminal" is "a lead that connects an integrated circuit with the system in which the integrated circuit is installed, and which provides some function." (SBr at 19.)

At closing argument respondent argued that the only disagreement the parties had as to the phrase "multi-function terminal," was whether the multi-function terminal had always to be different from a control terminal or whether it could sometimes be a control terminal and that all parties agreed (which complainant and the staff confirmed) that the claimed multi-function terminal is connected to the multi-function circuit. (TrC at 234.) In addition all parties agreed that the claimed multi-function terminal receives a signal that identifies the function that is going to be performed by the multi-function circuit. (TrC at 235-37.) The parties, at closing argument, confirmed that a difference in their position is that while complainant and the staff argued that a control terminal cannot be a multi-function terminal, respondent's position is that there is nothing in the '908 patent that prevents the multi-function terminal from also acting as a control terminal. (TrC at 237.)

At closing argument all parties agreed that the claim phrase "function" is not specifically defined in the specification of the '908 patent. (TrC at 239.) However, respondent argued that respondent and complainant disagree with what the word function means; and that respondent believes that function has more to do with the configuration of the circuit while complainant does not. (Id.)

At closing argument respondent further agreed that a person of ordinary skill in the art, based on the abstract of the '908 patent, would interpret "function" as an action or activity appropriate to a thing. However, it was argued that there are other parts of the specification of

the '908 patent that "add to and inform what a function is" such as col. 1, lns. 52-63[7] which it was argued shows that the power supply designer essentially wants different configurations of the power supply for the different functions and so it relates functions and configurations and that the reason respondent has the word configuration in its interpretation is "because of this paragraph." Respondent, however, acknowledged that a configuration can correspond to more than one function. (TrC at 241-43.)

Complainant, at closing argument, argued that the cited portion of the '908 patent relied on by respondent does not indicate that configuration is a required portion of the function or required in order to define a function; that there are examples in the '908 patent where one has a single configuration with multiple functions; that the claimed invention in issue has a multi-function circuit that is on the chip, whether or not it is hooked up in any configuration; that the circuit is capable of performing all sorts of functions; that the figures in the '908 patent, such as Figures 2D and 2C that have a single configuration may perform multiple functions; and that the dotted box 302 in Figure 3 and which is called multi-function circuitry, includes subboxes that perform a number of different functions including the current limit adjustment function. (TrC at 243-45.)

Respondent, at closing argument, responding to complainant's argument, argued that when one uses a multi-function circuit with the proper signal, one ends up configuring it in a certain way and that is all that respondent meant by referencing configuration. Respondent however, argued that while "too much is made over the configuration" one needs to be able "to select a function." However, neither complainant nor the staff finds support in the '908 patent

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[7] Col. 1, lns. 52-63 is in the "2. Background Information" section of the '908 patent.

for the concept of selectability. (TrC at 246-7.) Thus, they argued,

> JUDGE LUCKERN: All right.
>
> Mr. Scherkenbach, do you agree with that argument?
>
> MR. SCHERKENBACH: No, because I don't know what it means. I mean, there's no notion of selectability, I think, in the way that they're describing it in the patent. I don't know what the support for it could be.
>
> JUDGE LUCKERN: Mr. Wood, do you have -- I left you alone for a few minutes. You ought to be very happy. But do you have any comments you want to make as to what you heard Mr. Scherkenbach argue and how you heard Mr. Yoches argue?
>
> MR. SCHERKENBACH: [sic] I'm generally in agreement with Mr. Scherkenbach. I, as well, don't understand this concept of selectability. You know, by what means is it selected? By whom, perhaps, is it selected or selectable. I just don't understand what is meant by that term.

(Id.)

The claim phrase "function," standing alone, is not specifically defined in the patent specification as all parties agreed. (TrC at 239.) The term function, however, is commonly defined as an action or activity appropriate to a thing. (SFF 42 (undisputed).) While the specification does not define function it has such language as "functions including on/off control, external current limit adjustments, under-voltage detection, over-voltage detection and maximum duty cycle adjustment." (CX-9, Abstract.) The administrative law judge interprets said language as describing actions or activities appropriate to the claimed circuit, i.e. a function of the circuit. The specification discloses that said functions are initiated by the multi-function terminal. (CX-9, Abstract.) A multi-function controller is a portion of the power supply controller circuit, and said circuit also performs the functions, as per the asserted claims.

Complainant argued that the word "feature" be added to the construction of the claim phrase "function." (CBr at 37.) The terms "feature" and "function" are used interchangeably in the patent specification, both to actually mean "function." For example, the specification discloses an "over-voltage detection feature" in one section, whereas "over-voltage detection" is specifically mentioned as a function elsewhere. (See CX-9 at 8:5-6; Abstract.) Also, the specification describes an "over-voltage signal" and an "over-voltage comparator." If signals and comparators are required to perform a "feature," then that feature must be a function. Therefore, complainant's argument to expand the construction of "function" to include "features" is rejected.

Respondent, in its proposed interpretation, has made reference to configuration. According to the specification:

> In one embodiment, the power supply controller configurations described in connection with FIGS. 2A through 2F all utilize the same multi-function terminal 149. Stated differently, in one embodiment, the same power supply controller 139 may be utilized in all of the configurations described. Thus, the presently described power controller 139 provides a power supply designer with added flexibility. As a result, a power supply designer may implement more than one of the above functions at the same time using the presently described power supply controller 139. In addition, the same functionality may be implemented in more than one way. For example, power supply 101 can be remotely turned on and off using either power or ground. In particular, the power supply 101 can be turned on and off by switching to and from the control terminal (supply terminal for the power supply controller) using the over-voltage detection feature, or by switching to and from ground using the on/off circuitry.

(CX-9, 7:57-8:7 (emphasis added).) Thus, the configurations mentioned in the specification all use the same power supply controller, and could use any function able to be performed by said

power supply controller. Therefore, the administrative law judge finds no particular function can be linked to a particular, unique configuration, and no configuration can be linked to a particular, unique function. Hence, he finds that no signal analysis is required to select a configuration.

Respondent has argued that a control terminal and a multi-function terminal may be the same. (RRBr at 15.) However, Figures 1, 2A-F, 3, 4 and 7 of the '908 patent all show a control terminal separate from a multi-function terminal, as shown by control terminal "C" 145 and multi-function terminal "M" 149. For example, the description of Figure 2E reads:

> FIG. 2E is a diagram illustrating yet another embodiment of a power supply controller 139 including resistor 205, as described above, coupled between the line voltage 109 and multi-function terminal 149. FIG. 2E also includes a switch 207 coupled between control terminal 145 and multi-function terminal 149.

(CX-9, 7:1-6 (emphasis added).) In another example, Figure 4 is described:

> FIG. 4 is a schematic of one embodiment of a power supply controller 139 in accordance with the teachings of the present invention. As illustrated, negative current sensor 301 includes a current source 401 coupled to control terminal 145. Transistors 403 and 405 form a current mirror coupled to current source 401. In particular, transistor 403 has a source coupled to current source 401 and a gate and drain coupled to the gate of transistor 405. The source of transistor 405 is also coupled to current source 401. Transistor 407 is coupled between the drain and gate of transistor 403 and multi-function terminal 149.

(CX-9, 13:16-27 (emphasis added).) None of the remaining figures shows otherwise, as they are timing diagrams or other types of figures that would not normally show circuitry. Also, although asserted independent claim 26 does not mention a control terminal, it does disclose a multi-function terminal in the first clause, and a control circuit in the second clause. Asserted dependent claim 27 in issue discloses a control terminal related to the control circuit which

recited in the second clause of claim 26. Therefore, the administrative law judge finds that the control terminal is related to the control circuit of the second clause of claim 26 while the multi-function terminal is related to the multi-function circuit of the first clause of claim 26. Hence, he finds additional support for concluding that a control terminal is not related to a multi-function terminal. In addition each of the non-asserted claims of the '908 patent that includes a control terminal (claims 1, 11, 19, 28, 29 and 31), discloses a multi-function terminal and a control terminal in different elements. For example, claim 1 of the '908 patent reads:

> 1. A power supply controller, comprising:
>
> a power switch having first, second and third terminals, the first terminal to be coupled to a transformer of a power supply and the second terminal to be coupled to an input of the power supply;
>
> a control circuit coupled to a control terminal of the power supply controller and the third terminal of the power switch, the control terminal coupled to an output of the power supply, the control circuit to generate a switching waveform to control the power switch; and
>
> multi-function circuitry coupled between a multi-function terminal of the power supply controller and the control circuit, the switching waveform generated in response to the control terminal and the multi-function terminal.

(CX-9, 23:37-45 (emphasis added).)

Complainant argued that the claimed " terminal" in the claimed phrase "multi-function terminal" must be 'externally' accessible, and the staff argued that said terminal 'provides some function.' The specification of the '908 patent states "[i]n order to provide the specific functions to the power supply controller, additional pins or electrical terminals are added for each function to the integrated circuit power supply controllers." (CX-9 at 1:63-66 (emphasis added).) All

parties agree that a terminal is the same as a pin, and that the pin is where an integrated circuit makes contact with either the substrate on which the integrated circuit is mounted, or some other part of the overall system. (RRBr at 7; CBr at 37; SBr at 19.) Moreover, the IEEE definition defines pin as "[t]he point at which connection is made between the integrated circuit and the substrate on which it is mounted." (IEEE Authoritative Dictionary of IEEE Standards Terms 828 (7th ed. 2000).) Therefore, the administrative law judge finds that a terminal is 'externally accessible'. He also finds that the terminal provides some function. Thus, the background section of the specification of the '908 patent associates one or more pins with one function. ("In order to provide the specific functions to the power supply controller, additional pins or electrical terminals are added for each function to the integrated circuit power supply controllers." (CX-9 at 1:63-66).) Also said specification later describes an embodiment as adding functionality without adding additional terminals ("[I]n one embodiment, a plurality of additional functions are provided to power supply controller without the consequence of adding a corresponding plurality of additional terminals or pins to the integrated circuit package of the power supply controller." (CX-9 at 4:8-13).) Hence, associating some function with a terminal is supported by the specification.

Based on the foregoing, the administrative law judge finds that one of ordinary skill in the art would construe the claim phrase "multi-function terminal" to mean an electrical node, such as a pin, on an integrated circuit, that connects said circuit with an external system and that provides more than one action or activity performed by a power supply controller, where said electrical node is coupled to the multi-function circuit and is distinct from and in addition to a control terminal used to regulate the power supply output.

2. The claim phrase "multi-function circuit"

The claim phrase "multi-function circuit" is found in independent claim 26. Complainant argued that the claim phrase "multi-function circuit" should be construed as "circuitry coupled to the multi-function terminal to perform different functions in response to the values of the signals received at the terminal." (CBr at 40.)

Respondent argued that a "multi-function circuit" is "a circuit that analyzes a signal from a multi-function terminal to select a configuration (or a function or functions to implement). (RBr at 14.)

The staff argued that complainant is correct, as selecting a particular configuration is not required by the claims. (SRBr at 11-12.)

The administrative law judge notes that all parties agree that a "multi-function circuit" is a circuit that incorporates a multi-function terminal. As discussed, supra, the use of a multi-function terminal does not involve a direct link between selecting a configuration and what functions are allowed. Respondent has also disclaimed any argument that the multi-function circuit must process both positive and negative currents. (RBr at 18, fn. 4; RRBr at 8.) Therefore, there is no remaining disagreement between the parties concerning the claim phrase "multi-function circuit."

Based on the foregoing, the administrative law judge finds that one of ordinary skill in the art would construe the claim phrase "multi-function circuit" to mean a circuitry coupled to the multi-function terminal to perform different functions in response to the values of the signals received at the terminal.

X. The Phrase "hysteresis" In The "908 Patent

Respondent, argued that hysteresis, as used in the '908 patent, is a function. (RRCPFF937A.) The staff argued that hysteresis, as used in the 908 patent, is a function. (TrC at 326.) Complainant argued that the '908 patent teaches that hysteresis as used in said patent is not a function but rather is a characteristic of a function. (CRBr at 10-12.) The administrative law judge has construed the claim phrase "function" to be "an action or activity performed by a power supply controller." (See Section IX.B.) He further finds that the specification describes "hysteresis" only as a change in a threshold amount for particular functions. For example:

> "In one embodiment, when the current flowing from multi-function terminal 149 is greater than a predetermined on/off threshold level, on/off circuitry 309 generates on/off signal 311 to switch on the power supply 101. In one embodiment, the magnitude of the on/off threshold level is approximately 40 to 50 microamps, including hysteresis." (CX-9 at 10:1-7 (emphasis added).)
>
> "In one embodiment, when the current flowing into multi-function terminal 149 falls below a second predetermined threshold, under-voltage comparator 317 generates under-voltage signal 319 to disable the power supply. In one embodiment, the first predetermined threshold is greater than the second predetermined threshold to provide hysteresis. By providing hysteresis or a hysteretic threshold, unwanted switching on and off the power supply 101 resulting from noise or ripple is reduced." (CX-9 at 10:61-66 (emphasis added).)
>
> "In one embodiment, when the current flowing into multi-function terminal 149 falls below a fourth predetermined threshold, over-voltage comparator 321 generates over-voltage signal 323 to enable the power supply. In one embodiment, the third predetermined threshold is greater than the fourth predetermined threshold to provide hysteresis. By providing hysteresis or a hysteretic threshold, unwanted switching on and off the power supply resulting from noise is reduced." (CX-9 at 11:13-18 (emphasis added).)

In other words, the administrative law judge finds that the thresholds used for disabling the power supply determine whether or not hysteresis is supplied; that the function is still disabling the power supply; and that hysteresis cannot be said to do anything on its own. The administrative law judge therefore finds that a person of ordinary skill in the art, based on the plain language of the specification of the '908 patent, would interpret "hysteresis", as recited in the '908 patent, as a characteristic of a function and not as a function.

XI. Infringement

Under the provisions of 35 U.S.C. § 271, liability for infringement arises if "whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor." 35 U.S.C. § 271(a). This infringement of a patented invention is the usual meaning of the expression "direct infringement." See Joy Techs., Inc. v. Flakt, Inc., 6 F.3d 770, 773 (Fed. Cir. 1993).

A determination of infringement requires a two-step analysis. First, the patent claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process. Zelinski v. Brunswick Corp., 185 F.3d 1311, 1315 (Fed. Cir. 1999), citing Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed. Cir. 1995). Whereas claim construction is a matter of law and therefore, the exclusive province of the court, "whether a claim encompasses an accused device, either literally or under the doctrine of equivalents, is a question of fact." Zelinski, 185 F.3d at 1315, citing N. Am. Vaccine, Inc. v. Am. Cyanamid Co., 7 F.3d 1571, 1574 (Fed. Cir. 1993).

To prove literal infringement, the patentee must show, by a preponderance of the

evidence, that the accused device contains every limitation in the asserted claims. WMS Gaming Inc. v. Int'l Game Tech., 184 F.3d 1339, 1350 (Fed. Cir. 1999), citing Mas-Hamilton Group v. LaGard, Inc., 156 F.3d 1206, 1211 (Fed. Cir. 1998).

Complainant has accused each of SG 6840, SG 6841, and SG 6842 (which it has termed the SG 6840 family) and SG 6842J, SG 6841 X3 and SG 6843 (which it has termed the SG 6842J family) of infringing the asserted claims in issue of each of the '398 and '908 patents. (CBr at 35, 50; CPFF 356, 357 (undisputed).) Respondent has termed the six accused products as the SG 684X products.[8] (RBr at 55.) Respondent further argued that, at a block diagram level, each of the six accused products is the same and although they differ somewhat at the schematic level, neither complainant nor respondent relies on those differences for arguments regarding infringement and thus an explanation of the SG 6840 applies to all of the accused products. (RBr at 55.)[9]

U.S. Patent No. 6,611,439 (the '439 patent) (CX-1170), which issued on August 26, 2003 with Yang as the inventor, also relates to the VIN[10] pin of the SG6840 product and the other respondent's accused products. (CPFF 365 (undisputed).) The '439 patent refers to a PWM controller. (CPFF 367 (undisputed).) Thus, the specification of the '439 patent states:

> A PWM controller has a line voltage input that allows using an input resistor for both start-up and power-limit compensation, thus

---

[8] Respondent noted that there are other respondent's products "in the SG 6840 family" that complainant has not accused. (RBr at 55.)

[9] Complainant argued that the analysis for the SG 6842J product family is identical to the SG 6840 Family. (CBr at 60.) Neither respondent nor the staff distinguish the product families in their respective arguments.

[10] The parties have used the word "VIN" interchangeably with "V_{IN}."

> saving the power consumption, easing the PCB layout, and shrinking the power supply size. In the integrated circuit, a mirrored-resistor used for the power limit compensation is composed of a mirror MOSFET, which is associated with an op amplifier, a constant voltage and a constant current to provide a precise resistance. Thus, by properly selecting the value of the input resistor, an identical output power limit for low line and high line voltage input can be achieved.

(CX-1170 at Abstract (emphasis added).) All of respondent's parts in issue include a VIN pin. (CPFF 376 (undisputed).) {

} The objective of the '439 patent design was to improve over the prior art and to use only one resistor to accomplish both the start-up and the constant output power limiting functions. (CPFF 372 (undisputed).) Referring to the '439 patent, Yang testified that the prior art of Figure 1 required three resistors, (220, 222, and 225) to perform the functions provided by the single resistor 40 of Figure 2. (CPFF 373 (undisputed).)

A. The '398 Patent

1. Independent Claim 1

As indicated, supra, asserted independent claim 1 reads:

> A power supply controller circuit, comprising:
>
> a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate

> a current limit adjustment signal in response to the current; and
>
> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal.

(Emphasis added.)

Referring to the claim phrase "a current input circuit coupled to receive a current for adjusting a current limit of a power switch" (the first portion of first clause) complainant argued that the SG6840 family is a group of power supply controller circuits, each with a current input circuit coupled to receive a current for adjusting the current limit of a power switch. (CBr at 44.) It is argued that under the proper claim construction, transistors 22 and 23 in the SG6840 schematic are disposed at the input of the current input circuit, and are in fact coupled to receive current from the VIN terminal. (CRBr at 41.) Complainant also argued that "current limit" refers to the protection current limit and not to the regulation mechanism (CBr at 44), that the VIN terminal current controls the current limit (CBr at 47), and that both respondent's accused products and the '398 patent use a current to set the protection current limit externally using an input resistor. (CBr at 50.)

Respondent argued that the claim phrase "current input circuit coupled to receive a current for adjusting a current limit" is a "structural limitation[] requiring a physical connection that allow[s] the current input circuit . . . to receive the current or signal for changing a current limit." (RBr at 30.) It is argued that respondent's accused products monitor voltage, not current, and therefore cannot infringe. (RBr at 54-55.) Specifically, respondent argued that its products lack a current input circuit because the "current divider in the SG684X controllers is not a current

mirror." (RBr at 60-62.) Respondent also argued that complainant has offered no evidence that any of the accused products use VIN to set a current limit. (RRBr at 30.)

The staff argued that the current input circuit of the accused products is coupled to receive a current for adjusting a current limit of a power switch, and generates a current limit adjustment signal in response to that current. (SBr at 29.) It is argued that respondent's accused products contain a "current input circuit," as the 'current divider' used in the accused products "has the same structure as a current mirror, and operates in the same manner as a current mirror" and a current mirror is a current input circuit. (SBr at 29.)

The claim phrase "a current input circuit coupled to receive a current for adjusting a current limit of a power switch" appears as a part of the first clause of independent claim 1 of the '398 patent, and said phrase includes the disputed claim phrases "current input circuit," "coupled," "receive a current" and "current limit." The first clause of independent claim 1 reads:

> a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate a current limit adjustment signal in response to the current.

(CX-8 at 23:38-41 (emphasis added).)

The administrative law judge has found, in Sections IX.A.2-A5, supra, that one of ordinary skill in the art would construe (1) the claim phrase "current input circuit" to mean a circuit that receives a current and produces or generates an output signal in response to the received current, that a "current input circuit" does not include voltage dividers and other circuits that monitor voltage, although a "current input circuit" may receive a current that is representative of a voltage, and that a "current input circuit" does not require said circuit to have a low input impedance; (2) the claim phrase "coupled" to mean that a direct or indirect

connection exists in order to be able to perform specific activities or actions; (3) the claim phrase "receive a current" to mean receiving either a negative or a positive current and to cover the flow of current either into (i.e. a "positive current") or out of (i.e. a "negative current") the current input circuit; and (4) the claim phrase "current limit" to mean a prescribed threshold of current through a power switch, such that when the current through the power switch reaches this threshold, the power switch turns off to prevent the current from exceeding said threshold, irrespective of the reason or purpose of said prevention, and hence may refer to limits established for either component protection or output regulation or both.

Respondent argued that the accused products monitor voltage, not current. However, at the hearing, complainant's expert Blauschild testified that the accused respondent's products monitor a current at their VIN terminals. (Blauschild, Tr. at 510:18-511:7; CDX-191; CDX-192.) Significantly, describing Figure 2 of the '439 patent, respondent's witness Yang, respondent's president and CEO, admitted that respondent's parts do receive a current at the VIN terminal:

> Q. Okay. Now, let's go back to Figure 2, please. All right. Now, what you call the current divider receives a current input at the pin that we've highlighted here in yellow on CDX-257, true?
>
> A. True.
>
> Q. And that input current is created by applying the line voltage VIN across the resistor 40, true?
>
> A. True.

(Yang, Tr. at 892:17-893:1 (emphasis added).)

With respect to respondent's argument that the current divider in its SG684X controllers is not a current mirror, current mirrors are an essential building block of analog integrated

circuits and{ } At the hearing, respondent's expert Horenstein, drew by hand a current mirror made up of MOSFET transistors, showing how they are connected together. (SDX-3; Horenstein, Tr. at 1116:3-1119:4.) In Horenstein's drawing of a current mirror, the source terminals of the two MOSFETs are connected together and the gate terminals of the two transistors are connected together, so that the "gate to source" voltages of both transistors are the same. (Horenstein, Tr. at 1113:3-9; SDX-3.) This allows the two transistors to "share information. Id. In addition, the gate and drain of one of the transistors is connected to the gate of the other transistor. (SDX-3; SDX-2; Horenstein, Tr. at 1114:15-1116:2.)

The current divider 10 of Figure 2 of the '439 patent is structurally identical to the current mirror that Horenstein drew. Thus, current divider 10 comprised of two MOSFET transistors, MOSFET 11 and MOSFET 12. The source terminals of MOSFETs 11 and 12 (the terminals depicted with the arrows) are connected together, and the gate and drain terminals of MOSFET 11 and the gate of MOSFET 12 are all connected together. (CX-1170 at 3:45-58 and Figure 2.)[11]

Furthermore, the administrative law judge finds that the current divider used in the accused devices operates in the same manner as does a current mirror. Thus, in a current mirror, one of the MOSFETs is connected in such a way (its drain and gate terminals are connected together) that it is a "reference transistor." (Horenstein, Tr. at 951:10-17; RDX-125; SDX-3.) The current flowing through the other transistor is either the same as the current through the reference transistor, a fraction of the current through the reference transistor, or a multiple of the

[11] The current divider used by the accused products is also identical to the circuit shown in SDX-2, which Horenstein characterized as a "classic current mirror." (Horenstein, Tr. at 1114:15-23; SDX-2.)

current through the reference transistor. (Horenstein, Tr. at 950:4-14; 951:13-952:8.) This is how current divider 10 in Figure 2 of the '439 patent operates. For example, the specification of the '439 patent states:

> Once the power supply is turned on, the input current flows into the current divider 10 consisting of MOSFET 11 and MOSFET 12 through the input resistor 40.... If the MOSFET 11 is geometrically in proportion to the MOSFET 12, the currents that flow through the MOSFET 11 and the MOSFET 12 will be proportional to each other as well. In other words, the MOSFET 12 will mirror a proportional mirror current flowing from the MOSFET 11... I_M is the mirror current that flows through MOSFET 12.

(CX-1170 at 4:3-5, 11-16, 26-27 (emphasis added).) Hence, the current divider 10 of Figure 2 of the '439 patent operates as a current mirror where the replicated current is a fraction of the reference current. Moreover, complainant's expert Blauschild agreed that a current mirror can be used to divide current. (Blauschild, Tr. at 1556:24-1558:15.)

Since the "current divider" used in the accused products has the same structure as a current mirror, and operates in the same manner as a current mirror, and because a current mirror can be used to divide an input current, the administrative law judge finds that the current divider 10 of the '439 patent is a current mirror. Furthermore, because a current mirror is a current input circuit (CPFF 403.2 (undisputed)), the accused products comprise a current input circuit.

Furthermore, respondent's product literature shows that the VIN terminal current controls the current limit and the VIN terminal voltage does not. Respondent's accused parts and the '398 patent both use a current to set the protection current limit using an input resistor, and both provide charts showing that the current limit is a function of the input current. (CDX-187, 188, 200C, 201.) Furthermore, respondent's expert Horenstein admitted that he has never seen a

graph in the System General datasheets that shows the current limit plotted as a function of the voltage at the V_{IN} pin. (Horenstein, Tr. at 1019:11-22.) Moreover, respondent's schematics also show that the accused parts monitor current, not voltage. (Blauschild, Tr. at 435:24-436:9.) Respondent's products use a current mirror at the VIN terminal input, and respondent's expert Horenstein acknowledged that a current mirror satisfies the claimed current input circuit of the '398 patent. (CPFF 403.2 (undisputed); SDX-3.) Hence, respondent's argument that its products lack a current input circuit because the "current divider in the SG684X controllers is not a current mirror," is rejected.

With respect to whether respondent's products contain current input circuits which are "coupled to receive a current" as recited in the first clause of claim 1, the reference circuit in the datasheets for the accused parts teaches a resistor connected between the VIN pin and the rectified line voltage. (CDX-192, CDX-199.) Moreover,{

} Thus, the datasheets and

{ } show circuits coupled or connected to receive current. Hence, the administrative law judge, finds that respondent's accused parts have a "current input circuit" which is "coupled" to the VIN terminal and said coupling makes the current input circuits capable of receiving a current.

Finally, with respect to current limit as recited in the first clause of claim 1, as indicated, supra, respondent's product literature shows that the VIN terminal current controls the current limit and the VIN terminal voltage does not. Additionally, as indicated, supra, respondent's accused parts and the '398 patent both use a current to set the protection current limit using an input resistor, and both provide charts showing that the current limit is a function of the input

current. (CDX-187, 188, 200C, 201.)

Based on the foregoing, the administrative law judge finds that the accused parts literally meet all of the limitations of the claim phrase "a current input circuit coupled to receive a current for adjusting a current limit of a power switch."

Referring to "the current input circuit to generate a current limit adjustment signal in response to the current" (the second portion of the first clause), complainant argued that{

}

Respondent argued that claim 1 requires that the current input circuit generate a current limit adjustment signal in response to the received current; that the SG684X products, however, do not operate in this manner; that instead, what complainant calls the current limit adjustment signal, V_{limit}, is generated from several voltages;{

} and that whatever the analysis, the V_{limit} signal is generated in response to a voltage, not a current. (RBr at 63.)

The staff argued that the accused products contain an "adjustment signal in response to that current." (SBr at 29.) The staff further argued that the current limit adjustment signal is

generated in response to the current received via the V_{IN} pin. (SRBr at 18.)

The claim phrase "the current input circuit to generate a current limit adjustment signal in response to the current" is part of the first clause of independent claim 1 of the '398 patent." The first clause of independent claim 1 reads:

> a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate a current limit adjustment signal in response to the current.

(CX-8 at 23:38-41 (emphasis added).)

The administrative law judge has found, in Section IX.A.6, supra, that the claim phrase "current limit adjustment signal" should be construed to mean a signal that adjusts, or varies, the current limit value.

It is undisputed that{

} This output voltage "limit" is the current limit adjustment signal. {

}

The current input circuit of the accused parts monitors the current into the VIN terminal. (Blauschild, Tr. at 510-14.) {

} The administrative law judge has found, supra, that current divider is a current mirror. Thus, the current mirror of SG6840 is made up of{ }

The SG6840 schematics show that before the voltage $V_{limit\text{-}lmt}$ is established, the current mirror comprising{ } processes the incoming current at the VIN terminal. (Blauschild, Tr. at 510-14.) Thus, the SG6840 monitors the current received at the VIN terminal. (Id.)

Moreover, the '439 patent shows that the output Vlimit signal is a function of the input current received via the VIN terminal, and therefore responds to said current. {

} The '439 patent explains:

> An input resistor is connected from the input voltage to the current divider to provide an input current for the PWM controller, wherein the variation of the input current is directly proportional to the change of the input voltage. The current divider includes two MOSFETs. A first MOSFET transparently drives the input current to charge up the start-up capacitor. Once the voltage in the start-up capacitor reaches the threshold voltage, the PWM controller starts to operate. A second MOSFET proportionally mirrors a mirror current from the first MOSFET in accordance with the geometric size of the first MOSFET and the second MOSFET. The mirror current flows into the mirror-R to generate an offset voltage. . . . Because the offset voltage is a function of the input voltage, the variation of the maximum current-sense voltage is inversely proportional to the deviation of the input voltage, and by selecting a proper input resistor an identical output power limit can be achieved for low line and high line voltage input.

(CX-1170 at 2:45-67 (emphasis added).)

{

} Specifically, in describing Figure 2, the '439 patent states:

> An input resistor 40 is connected between the input voltage VIN and the input of the current divider 10...
>
> Once the power supply is turned on, the input current flows into

the current divider 10 consisting of MOSFET 11 and MOSFET 12 through the input resistor 40. Most of the input current flows through the MOSFET 11 and starts to charge up the start-up capacitor 42. When the voltage in the capacitor 42 reaches the threshold voltage, the PWM controller starts to operate and output a PWM signal. And after that, the supply voltage VCC will be provided from the auxiliary winding of a transformer 400. If the MOSFET 11 is geometrically in proportion to the MOSFET 12, the currents that flow through the MOSFET 11 and the MOSFET 12 will be proportional to each other as well. In other words, the MOSFET 12 will mirror a proportional mirror current flowing from the MOSFET 11. This mirror current will vary proportionately to the line input voltage VIN.

R40 is the resistance of resistor 40... Voffset is the voltage across the resistor 15. The offset voltage Voffset is connected to the negative input terminal of the adder 20. The positive input terminal of the adder 20 is connected to the reference voltage 25, which is 1V for instance. The adder 20 will output a voltage Vlimit, which determines the maximum current-sense voltage for output power limit...

Vlimit is the maximum current-sense voltage, V25 is the voltage of the reference voltage 25, and IM is the mirror current that flows through the MOSFET 12 and resistor 15. The resistor 230, which is connected to the source of the power MOSFET 300, plays the role of I-to-V transformation. As the current IL, which flows through the power MOSFET 300 increases, the voltage VS in the resistor 230 will also rise up.

The first comparator 30 will compare the voltage VS and the voltage Vlimit. When the Vs is greater than Vlimit, the first comparator 30 will output a logic low signal to the input of a NAND gate 33. Thus, the NAND gate 33 will output a logic high signal to reset the flip-flop to turn off the power MOSFET 300. Therefore, the output power limit is achieved.

(CX-1170 at 3:54-56, 4:3-17, 4:27-35, 4:42-56 (emphasis added).) Thus, Figure 2 of the '439 patent shows that the current divider 10 receives a current from VIN through resistor 40. The received current flows through MOSFET 11 and MOSFET 12 (the "mirror current"). This

mirror current flows through resistor 15, thus creating a voltage ("Voffset") that is input into adder 20. The output of adder 20 is "Vlimit." This output voltage "Vlimit" is the current limit adjustment signal. "Vlimit", in turn, is connected to the positive input to "first comparator 30." The negative input to first comparator 30 is a voltage representing the current through the power switch ("Vs").

In supporting its argument of non-infringement of the claim phrase "the current input circuit to generate a current limit adjustment signal in response to the current," respondent argued that the V_{limit} signal is generated in response to a voltage, not a current. However, the administrative law judge has already found, supra, that respondent's schematics show that the accused parts monitor current, not voltage; and as properly construed, respondent's accused parts have a "current input circuit" which is "coupled" to the VIN terminal and said coupling makes the current input circuits capable of receiving a current. Hence, the administrative law judge rejects respondent's argument that the V_{limit} signal is generated in response to a voltage, not a current.

Based on the foregoing, the administrative law judge finds that the accused parts literally meet all of the limitations of the claim phrase "the current input circuit to generate a current limit adjustment signal in response to the current."

Referring to the claim phrase "a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal" (the second clause of claim 1) complainant argued that the accused products incorporate the claimed control circuit. (CBr at

61.)[12]

Respondent argued that complainant has not proven that the accused products have a "control circuit that adjusts a current limit" under respondent's construction of "adjust the current limit," and thus the accused products cannot infringe. (RRBr at 29; RBr at 63-65.)

The staff argued that "[e]ach of the accused products has a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through th power switch in response to the current limit adjustment signal."

The claim phrase "control circuit" appears as a part of the second clause of independent claim 1 of the '398 patent." The second clause of independent claim 1 reads:

> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal.

(CX-8 at 23:42-45 (emphasis added).)

The administrative law judge has found, in Section IX.A.8, supra, that one of ordinary skill in the art would construe the claim phrase "control circuit" to mean a circuit that carries electrical signals that direct the performance of the power supply, but that does not carry the main

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[12] Complainant argued that the SG6842J family includes a control circuit coupled to receive the current limit adjustment signal, because the accused product:

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}

(CBr at 65.) Neither respondent nor the staff made an argument distinguishing the product families.

power circuit. The administrative law judge also found in Section IX.A.7, supra, that one of ordinary skill in the art would construe the claim phrase "adjust the current limit" to mean to adjust or vary the value of the properly construed "current limit," and that the adjustment need not be external. The administrative law judge further found in Section IX.A.5, supra, that the claim phrase "current limit" means a prescribed threshold of current through a power switch, such that when the current through the power switch reaches this threshold, the power switch turns off to prevent the current from exceeding said threshold, irrespective of the reason or purpose of said prevention, and hence may refer to limits established for either component protection or output regulation or both.

{

}

Therefore the control circuit is coupled to adjust the current limit through the power switch in response to the current limit adjustment signal internally.

Furthermore, as indicated, supra, in describing Figure 2, the '439 patent states:

> The first comparator 30 will compare the voltage VS and the

> voltage Vlimit. When the Vs is greater than Vlimit, the first comparator 30 will output a logic low signal to the input of a NAND gate 33. Thus, the NAND gate 33 will output a logic high signal to reset the flip-flop to turn off the power MOSFET 300. Therefore, the output power limit is achieved.

(CX-1170 at 4:50-56 (emphasis added).) Thus, Figure 2 of the '439 patent shows that the "first comparator 30," NAND gate 33 and flip flop are part of the control circuit of the '439 patent, as they carry electrical signals that direct the performance of the power supply. The first comparator 30 compares a voltage signal representing the current through the power switch (Vs) with the current limit adjustment signal (Vlimit). When Vs exceeds Vlimit, the control circuit acts to turn the power switch off. As Vlimit changes, the current threshold at which the control circuit turns the power switch off also changes. Thus, in the '439 patent, the control circuit "adjusts" the current limit of the current through the power switch internally.

The administrative law judge has already rejected respondent's claim construction arguments with respect to the claim phrase "adjust the current limit," i.e. the adjustment must be external. (See Section IX.A.7, supra.) As respondent's argument with respect to whether the accused products meet the second clause of independent claim 1 is based on respondent's proposed construction of "adjust the current limit," respondent's argument that complainant has not proven that the accused products have a "control circuit that adjusts a current limit," is rejected.

Based on the foregoing, the administrative law judge finds that the accused parts literally meet all of the limitations of the claim phrase "a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal."

Based on the foregoing, the administrative law judge finds that complainant has established, by a preponderance of the evidence, that the accused parts literally infringe independent claim 1.

2. Dependent Claim 3

As indicated, supra, asserted dependent claim 3 reads:

> The power supply controller circuit of claim 1 wherein the control circuit is a pulse width modulation circuit that generates a switching waveform coupled to be received by the power switch to regulate a power supply output.

(Emphasis added.)

Complainant argued that the accused products incorporate "a PWM controller that regulates the power supply output in response to the signal received at the feedback, or FB, pin." (CBr at 67.)

Respondent made no specific argument against infringement of claim 3.

The staff argued that the accused products infringe claim 3, as "the control circuit of each of the accused products is a pulse width modulation circuit that generates a switching waveform." (SBr at 30.)

All parties agree that a person of ordinary skill would interpret the claim phrase "pulse width modulation circuit" as a circuit that modulates the width of the pulses that are turning the power switch on. (CPFF 190 (undisputed).) The definition provided in the Power Sources Manufacturers Association Handbook is consistent with this definition. (Id.) It is also undisputed that a person of ordinary skill would interpret the claim phrase "switching waveform" as the signal that goes to the power switch to turn it on and off. (CPFF 189 (undisputed).) It's basically

the output of the PWM circuit and the control circuit. (Id.)

The SG6840 incorporates a PWM controller that regulates the power supply output in response to the signal received at the feedback, or "FB" pin. (CPFF 571 (undisputed); CDX-211.) Additionally, the SG6840 incorporates a PWM block that generates a PWM switching signal. (CPFF 572 (undisputed); CDX-212C; CDX-213C.) {

}

Based on the foregoing, the administrative law judge finds that complainant has established, by a preponderance of the evidence, that the accused parts literally infringe of asserted dependent claim 3.

3. Dependent Claim 5

As indicated, supra, asserted dependent claim 5 reads:

> The power supply controller of claim 3 wherein the control circuit includes a first comparator coupled to compare a voltage representative of the current through the power switch with the current limit adjustment signal such that the power switch is disabled in response to an output of the first comparator when the current limit set by the current limit adjustment signal is exceeded.

(Emphasis added.)

Complainant argued that "[t]he 'first comparator' recited in claim 5 corresponds to the

comparator{ } (CBr at 68.)[13]

Respondent made no specific argument regarding claim 5.

The staff argued that the accused products infringe claim 5, as the accused products have a pulse width modulation controller, which is a traditional technology used in switching mode power converters. (SBr at 31.)

It is undisputed that a comparator has two inputs and compares them and determines if one is higher than the other and based on the results of the comparison, the comparator puts out a logic signal, either high or low. (CPFF 325.1 (undisputed).) Thus, the administrative law judge found, in Section IX.A.9, supra, that one of ordinary skill in the art would construe the claim phrase "comparator" to mean a circuit that has two inputs and compares them to determine if one is higher than the other.

The analysis regarding claim 1 of the '398 patent, supra, is incorporated herein. The "first comparator" recited in dependent claim 5 corresponds to the comparator{ } (CDX-218; CPFF 581; CPFF 582.) As shown in the SG6840 block diagram, the power switch is shut down in response to the output of a first comparator that compares the current limit adjustment signal with the voltage representative of the current through the power switch. (CDX-218.) {

}

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[13] Complainant argued that "[t]he 'first comparator' of claim 5 in this case corresponds to { } (CBr at 68.) Neither respondent nor the staff distinguished between the product families.

Based on the foregoing, the administrative law judge finds that complainant has established, by a preponderance of the evidence, that the accused parts literally infringe asserted dependent claim 5.

4. Dependent Claim 6

As indicated, supra, asserted dependent claim 6 reads:

> The power supply controller of claim 5 wherein the control circuit is to generate said switching waveform controlled in response to the output of the first comparator such that the switching waveform is coupled to limit the current through the power switch.

(Emphasis added.)

Complainant argued that the SG6840 schematics show a first comparator, { } that compares the current limit adjustment signal to a voltage representative of the current through the power switch, and that the output of the comparator adjusts the switching waveform that controls the power switch in order to terminate a switch cycle when the limit set by the current limit adjustment signal is exceeded, thereby limiting the current through the power switch. (CBr at 69.)[14]

Respondent made no specific argument regarding claim 6.

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[14] Complainant argued that:

> { }
> compares the current limit adjustment signal to a voltage representative of the current through the power switch. The output of the comparator adjusts the switching waveform that controls the power switch in order to terminate a switch cycle when the limit set by the current limit adjustment signal is exceeded, thereby limiting the current through the power switch.

(CBr at 69.)

Neither respondent nor the staff made a distinction between the product families.

The staff argued that the accused products infringe claim 6, as the accused control circuit "includes a first comparator{ }coupled to compare a voltage representative of the current through the power switch (Vs) with the current limit adjustment signal (Vlimit.) (SBr at 31.)

The analysis with respect to claims 1 and 5 of the '398 patent, supra, is incorporated herein. {

}

Based on the foregoing, the administrative law judge finds that complainant has established, by a preponderance of the evidence, that accused parts literally of asserted dependent claim 6.

B. The '908 Patent

1. Independent claim 26

Independent claim 26 reads:

> A power supply controller circuit, comprising:
>
> a multi-function circuit coupled to receive a signal at a multi-function terminal for adjusting a current limit of a power switch, the multi-function circuit to generate a current limit adjustment signal in response to the signal; and
>
> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal.

(CX-9, 25:62-26:7 (emphasis added).)

As to the claim phrases "multi-function circuit coupled to receive a signal at a multi-function terminal" and "the multi-function circuit to generate a current limit adjustment signal in response to the signal" in the first clause of independent claim 26 complainant argued that, just as the '908 patent discloses the use of a multi-function terminal in addition to the control terminal to overcome a failing in the prior art, "[t]he V_{IN} pin of [respondent's] infringing products likewise serves multiple functions and provides the benefits taught by the '908 patent." (CBr at 70.) Specifically, complainant argued that "the V_{IN} terminal allows for external adjustment of the protection current limit, and also is used in its default configuration to provide start-up for the chip." (CBr at 71.)[15]

Respondent argued that its accused products cannot infringe, because they lack a multi-function circuit, the V_{IN} pin is not a multi-function pin, and because none of the products have a power switch as is required by the claims. (RBr at 65-68; RRBr at 28.) Respondent further argued that its accused products also are not able to receive a current or other signal for adjusting a current limit (RBr at 68) and that the accused products "have no circuit that analyzes the incoming signal to determine which functions to implement." (RBr at 65.)

The staff argued that the accused products contain multi-function circuitry that generates a current limit adjustment signal in response to a signal sent to a multifunction terminal, and therefore infringe claim 26 of the '908 patent. (SBr at 33.)

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[15] The conclusions regarding SG6840 also applies to SG6842J, but is based on other datasheets in evidence, and a different circuit description. (CX-868 at SG0389602, SG0389604; CX-875 at 8.) Neither respondent nor staff consider the product families separately, and the argument of complainant is functionally the same for each.

Based on the construction of the claim phrase "power supply controller circuit," a power switch is not a required component of the circuit. See Section IX.B, supra. Also the VIN pin is used for multiple functions, described in the documentation as:

1) "the internal threshold voltage is adjusted through the VIN pin." (CX-853 at 10.)

2) "line voltage compensation is used to maintain a constant output power limit." (CX-853 at 2)

3) "The start-up current input. A start-up resistor is connected from the line-input to this pin." (CX-853 at 2.)

In addition, the VIN pin is involved in the Under Voltage Lockout (UVLO) function, as it provides the initial power required to begin switching operations, by charging an external capacitor to a threshold voltage. (CX-853 at 2-3, 10; CPFF 604, 606 (undisputed).) Also, as the VIN terminal is used in external adjustment of the protection current limit, and is also used to provide start-up functionality, the overall circuit involving those functions is a multi-function circuit. (CX-853 at 2-3, 10; CX-852 at 2; CX-850C at SG0366624.)

Respondent's argument requiring a signal analysis to select a function is rejected, as the administrative law judge has found supra no such requirement in the claim construction of claims 26 and 27. Likewise, the UVLO operation is a function, as the administrative law judge has construed that term within the claim phrase "multi-function terminal," supra, as it is an operation performed by the circuit. Respondent's argument that complainant "offers no evidence of any imported product ever operating in a manner in which the VIN pin would set the current limit" (RBr at 30) is also rejected. To the contrary, the administrative law judge finds that the VIN pin is intended to be used to set the current limit, as it controls several key aspects of the chip functionality. Also the administrative law judge finds that, respondent's "examples" of products

not using the VIN pin are simplifications not intended to be full chip schematics. (See RBr at 62-63.) Therefore, the administrative law judge finds that respondent has no basis for claiming that any user of respondent's chip does not use the chip as it was built and intended to be used.

Based on the foregoing, the administrative law judge finds that respondent's accused products meet the limitations of the first clause of claim 26 of the '908 patent.

Regarding the claim phrase "a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal" (the second clause), the administrative law judge finds that the current limit adjustment function disclosed by the '908 patent is the same as the current limit adjustment function disclosed in the '398 patent. (CPFF 598 (undisputed).) Analysis of said claim phrase is identical to the analysis of claim 1 of the '398 patent, supra. Based on the foregoing, the administrative law judge finds that the accused products meet the second clause of claim 26 of the '908 patent.

Based on the foregoing, the administrative law judge finds that complainant has established, by a preponderance of the evidence, that the accused products infringe claim 26 of the '908 patent.

2. Dependent claim 27

Dependent claim 27 of the '908 patent reads:

> The power supply controller circuit of claim 26 wherein the control circuit is further coupled to an output of a power supply through a control terminal of the power supply controller circuit, the control circuit adapted to control a switching of the power switch in response to the output of the power supply.

(CX-9, 26:8-14.)

Complainant incorporates its analysis of claim 3 of the '398 patent.

Respondent made no distinct argument against claim 27.

The staff argued that:

> The evidence shows that the products comprise a control circuit coupled to an output of a power supply through a control terminal of the power supply controller circuit, where the control circuit is adapted to control a switching of the power switch in response to the output of the power supply.

(SBr at 34.)

The administrative law judge has found that the accused products infringe claim 26 of the '908 patent. Claim 27 of the '908 patent depends from claim 26 of the '908 patent. The administrative law judge finds that the analysis of claim 27 is identical to the analysis of claim 3 of the '398 patent, supra, which he found to be infringed. Based on the foregoing, the administrative law judge finds that the accused products meet the limitation of dependent claim 27 of the '908 patent and therefore that complainant has established, by a preponderance of the evidence, that the accused products infringe claim 27 of the '908 patent.

XII. Domestic Industry

There can be a violation of section 337 "only if an industry in the United States, relating to articles protected by the patent ... exists or is in the process of being established." 19 U.S.C. § 1337(a)(2); see also Certain Methods of Making Carbonated Candy Products, Inv. No. 337-TA-292, USITC Pub. 2390, (Mar. 1990). The existence of a domestic industry is measured at the time the complaint is filed. See Bally/Midway Mfg. Co. v. U.S. Int'l Trade Comm'n, 714 F.2d 1117, 1121-22 (Fed. Cir. 1983).

The Commission has established a two-prong test for determining whether a complainant

has satisfied the domestic industry requirement. The technical prong considers "whether the complainant is exploiting or practicing the patent in controversy," while the economic prong addresses "whether there is significant or substantial commercial exploitation." Certain Microsphere Adhesives, Process for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes, Inv. No. 337-TA-366, USITC Pub. 2949 (Jan. 1995). As complainant, SigmaTel bears the burden of proving that it has satisfied both the technical prong and the economic prong.

Only the technical prong of domestic industry remains relevant in this investigation, as complainant has satisfied the economic prong of the domestic industry requirement through a summary determination motion granted by the administrative law judge. See Section 1, supra.

Complainant argued that each of its three product families, TOPSwitch-FX[16], TOPSwitch-GX[17], and DPA-Switch[18], are similar enough that the identical analysis applies to all three. (CPFF 638, 656, 674, 675 (undisputed); CBr at 86; RBr at 74-75.)

Respondent argued that the only dispute between the parties regarding the technical prong of domestic industry involves claim construction. (RRBr at 33.) Specifically, respondent argued that if "adjust the current limit," "coupled to receive a current," or "coupled to receive a signal" are construed as respondent argued, then complainant has offered no proof of satisfying the

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[16] The TOPSwitch-FX® Family includes the TOP232, TOP233, and TOP234 products. (CPFF 636.1 (undisputed).)

[17] The TOPSwitch-GX® Family includes the TOP242 through TOP 250 products. (CPFF 636.2 (undisputed).)

[18] The DPA-Switch® Family includes the DPA423 through DPA426 products. (CPFF 636.3 (undisputed).)

technical prong of domestic industry. (RBr at 75, RRBr at 33.)

The staff argued that the three families of complainant's products{

} for the purpose of this analysis and that said three families practice at least claim 1 of the '398 patent, and at least claim 26 of the '908 patent. (SBr at 34-35.)[19]

A. The '398 Patent

The first clause of claim 1 reads:

> a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate a current limit adjustment signal in response to the current.

(CX-8, 32:37-41.)

Complainant argued that:

> The TOPSwitch-FX is a power supply controller circuit that has a current input circuit coupled to receive a current for adjusting the protection current limit of a power switch. CPFF 645. CPFF 646. The current input circuit generates a current limit adjustment signal in response to the received current.

(CBr at 87.)

Respondent argued that complainant "has provided no proof of its products coupled to receive a current or voltage signal for adjusting a current limit." (RRCPFF 644A, RRCPFF 645A.)

The staff argued that the "evidence shows that the TOPSwitch FX family of products incorporates a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate a current limit adjustment signal in response to

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[19] Respondent does not dispute that the three families of complainant's products contain { }for the technical prong analysis.

the current." (SBr at 35.)

The administrative law judge has construed, in Sections IX.A.2-5, supra, that: (1) the claim phrase "current input circuit" to mean a circuit that receives a current and produces or generates an output signal in response to the received current, that a "current input circuit" does not include voltage dividers and other circuits that monitor voltage, although a "current input circuit" may receive a current that is representative of a voltage; and that a "current input circuit" does not require said circuit to have a low input impedance; (2) the claim phrase "coupled" to mean that a direct or indirect connection exists in order to be able to perform specific activities or actions; (3) the claim phrase "receive a current" to mean to include receiving either a negative or a positive current and to cover the flow of current either into (i.e. a "positive current") or out of (i.e. a "negative current") the current input circuit; and (4) the claim phrase "current limit" to mean a prescribed threshold of current through a power switch, such that when the current through the power switch reaches this threshold, the power switch turns off to prevent the current from exceeding said threshold, irrespective of the reason or purpose of said prevention, and hence may refer to limits established for either component protection or output regulation or both.

With respect to the first clause of claim 1, the current input circuit of complainant's products incorporates{ }as disclosed in the '398 patent, as well as other analogous components. (CX-891; CX-8 Patent, Figure 4; CX-889 at PI0184464, CX-889 at PI0184474; CPFF 647, 649, 650, 650.1, 651, 652, 653 (undisputed).) Complainant's products also have an {

} (CX-889C at PI0184474; CPFF 650 (undisputed).) Complainant's

products also include a current limit adjustment signal, which is{

}(CX-891 at 30; CX-889C at PI0184474; CPFF 647 (undisputed).) Hence, the administrative law judge finds that complainant's products practice the first clause of claim 1 of the '368 patent.

The second clause of claim 1 reads:

> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal.

(CX-8, 23:42-45.)

Complainant argued that:

> The TOPSwitch-FX has a control circuit coupled to receive the current limit adjustment signal. CPFF 680; CPFF 681. The control circuit is coupled to adjust the current limit of the current through the power switch in response to the current limit adjustment signal. CPFF 679.

(CBr at 89.)

Respondent argued that complainant "has provided no proof of its products having a control circuit coupled to adjust a current limit in response to a current limit adjustment signal." (RBr at 75.) Respondent further argued that if the "proper construction of 'adjust the current limit' means to change the maximum allowable current for each cycle," that complainant's products do not practice the claim phrase. (RBr at 75.)

The staff argued that the "evidence also shows that each of the FX products comprises a control circuit coupled to receive the current limit adjustment signal and coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal. (SBr at 35.)

The administrative law judge has construed, in Sections IX.A.8, IX.A.3, IX.A.6, and IX.A.7, respectively, supra, that: (1) the claim phrase "control circuit" to mean a circuit that carries electrical signals that direct the performance of the power supply, but that does not carry the main power circuit; (2) the claim phrase "coupled" to mean that a direct or indirect connection exists in order to be able to perform specific activities or actions; (3) the claim phrase "current limit adjustment signal" to mean a signal that is used to adjust, or vary, the current limit value; and (4) the claim phrase "adjust the current limit" to mean to adjust or vary the value of the properly construed "current limit," and that the adjustment need not be external.

As to the second clause of claim 1, complainant's products{

} (Blauschild, Tr. at 420-21, 470-71, 1528; CX-889 at PI0184474; CX-889C at PI0184476; CX-891, Figure 2.)

{ } (Blauschild, Tr. at 420-21, 470-71, 1528; CX-889C at PI0184476.) Hence, the administrative law judge finds that complainant's products practice the second clause of the '398 patent.

Based on the foregoing, the administrative law judge finds that complainant's products practice claim 1 of the '398 patent in issue. Therefore, he finds the technical prong of the domestic industry requirement regarding the '398 patent has been established by complainant.

B. The '908 Patent

The first clause of claim 26 reads:

> A power supply controller circuit, comprising:
> a multi-function circuit coupled to receive a signal at a
> multi-function terminal for adjusting a current limit of a power

> switch, the multi-function circuit to generate a current limit adjustment signal in response to the signal. . .

(CX-9, 25:63-26:3.)

Complainant argued that

> The TOPSwitch-FX is a power supply controller circuit that includes a multi-function circuit coupled to receive a signal at a multi-function terminal for adjusting the current limit of a power switch. CPFF 728; CPFF 729; see generally Hearing Tr. at 483:9-48613 and CDX-168 through CDX-171C. Indeed, the TOPSwitch-FX datasheet describes a MULTI-FUNCTION pin that provides functions including current limit adjustment:. . . The external adjustment of the protection current limit is described fully above with respect to claim 1 of the '398 patent. For brevity, that description is not repeated here, but is incorporated by reference.

(CBr at 93-94.)

Respondent argued that complainant "has provided no proof of its products being coupled to receive a current or voltage signal for adjusting a current limit." (RRCPFF 726A.)

The staff argued that "the evidence shows that each of the FX products is a power supply controller comprising a multi-function circuit coupled to receive a signal at a multi-function terminal for adjusting a current limit of a power supply, the multi-function circuit generating a current limit adjustment signal in response to the signal." (SBr at 36.)

With respect to the first clause of claim 26, complainant's product documentation describes a multi-function pin used in a multi-function circuit, one function of which is a current limit adjustment. (CX-891, Figure 2, Figure 9; CX-892 at 4; CX-889C at PI0184464.) Adjustment of the current limit is described in the analysis of claim 1 of the '398 patent, for the domestic industry requirement. (See Section XII.A.) Hence, the administrative law judge finds that complainant's products practice the first clause of claim 26 of the '908 patent.

The second clause of claim 26 reads:

> a control circuit coupled to receive the current limit adjustment signal, the control circuit coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal.

(CX-9, 26:4-7.)

Complainant incorporated "its analysis of the TOPSwitch-FX with respect to claim 1 of the '398 patent." (CBr at 94.)

Respondent argued that complainant "has provided no proof of its TOPSwitch-FX Family of products being coupled to receive a current or voltage signal for adjusting a current limit." (RRCPFF 728A.)

The staff argued that "the evidence further shows that each of the FX products comprises a control circuit coupled to receive the current limit adjustment signal and coupled to adjust the current limit of a current through the power switch in response to the current limit adjustment signal." (SBr at 36.)

The administrative law judge finds that the analysis of the second clause of claim 1 of the '398 patent regarding domestic industry, supra, is the same as the analysis of the second clause of claim 26 of the '908 patent for domestic industry. The administrative law judge has found, supra, that complainant's products practice claim 1 of the '398 patent. Thus, he finds that complainant's products practice the second clause of claim 26.

Based on the foregoing, the administrative law judge finds that complainant has established that its products practice claim 26 of the '908 patent. Therefore, he finds that complainant has established the technical prong requirement regarding the '908 patent.

XIII. Validity

A. The '398 Patent

Respondent argued that each of a Billings reference (RX-154) a Pressman publication (RX-149) U.S. Patent No. 5,245,526 (the '526 patent) (RX-23), Japanese published application JP-11-215820 (the '820 application) (RX-147), and U.S. Patent No. 4,415,960 (the '960 patent) (RX-44), discloses all elements of asserted claims 1, 3, 5, and 6 of the '398 patent, making said claims invalid under 35 U.S.C. §102. (RBr at 77-104.)

Complainant argued that none of the references relied on by respondent anticipate the '398 patent, and in fact that the '820 application is not even prior art. (CBr at 100-15.)

The staff argued that the Billings reference, the Pressman publication, the '820 published application, and the '960 patent do not anticipate under 35 U.S.C. § 102, and that the '820 published application is not prior art. (SBr at 39 - 48.) The staff further argued that the '526 patent anticipates claims 1 and 3 of the '398 patent, but does not anticipate claims 5 and 6, under 35 U.S.C. § 102. (SBr at 44-45.)

1. The Billings Reference

Respondent argued that the Billings reference's Figure 3.10.5 discloses a power supply controller circuit that includes a current input circuit under all of the parties' claim constructions. (RBr at 79-80.) Respondent further argued that Billings discloses a pulse-width modulation circuit (oscillator OSC, the flip-flop SRQ, and the DRIVE) as in claim 3, a comparator A1 that acts as disclosed in claim 5, and a control circuit that generates a switching waveform in response to the output of comparator A1, as disclosed by claim 6. (RBr at 81.)

Complainant argued that the Billings reference cannot disclose a current input circuit

because it discloses voltage input circuits. (CBr at 101-102.) Complainant further argued that "classic current mode control" is all that is disclosed in Billings, and that is different from the claimed current limiting. (CBr at 102-103.)

The staff argued that R3 and R4 operate as a voltage divider, providing a voltage input to amplifier A2, which compares that voltage to a reference voltage in order to adjust the control voltage Vc, and thus A2, even with R2 and C2, is not a current input circuit. (SBr at 42.)

Keith Billings, Switchmode Power Supply Handbook, McGraw-Hill, Inc. (1989) (Billings), discusses a power supply. (RFF383 (undisputed).) Specifically, the reference describes the effect of what happens when current-mode control initially adjusts the ratio in response to the main (power) inductor current changes, instead of the duty ratio control adjusting the ratio only in response to output voltage changes. (RX-154 at SG 0402036.)

The administrative law judge also found, in Section IX.A.2, supra, that one of ordinary skill in the art would construe the claim phrase "current input circuit" to mean a circuit that receives a current and produces or generates an output signal in response to the received current; that a "current input circuit" does not include voltage dividers and other circuits that minor voltage, although a "current input circuit" may receive a current that is representative of a voltage; and that a "current input circuit" does not require said circuit to have a low input impedance. However, the circuit in issue in the Billings reference senses voltage. Resistors R3 and R4 in the Billings reference form a voltage divider that divides down the value of the power supply output voltage to a lower level that's more comparable to the chip. (Blauschild, Tr. at 1612:9-1613:7; RX-154 at Fig. 3.10.5; CDX-560.) Hence, the Billings reference does not disclose a "current input circuit" as properly construed.

Based on the foregoing, the administrative law judge finds that respondent has not established, by clear and convincing evidence, that the Billings reference anticipates asserted independent claim 1 and dependent claims 3, 5 and 6 of the '398 patent.

2. The Pressman Reference

Respondent argued that the Pressman reference teaches all limitations of claim 1 of the '398 patent, as it discloses a power supply controller circuit with a current input circuit that receives and analyses a current for implementing control functions. (RBr at 86.) Respondent further argued that said current input circuit is coupled to receive a current through R1 and generates a current limit adjustment signal labeled Veao, (RBr at 87) and that the Pressman reference also discloses a control circuit comprised of comparator PWM, flip-flops FF1 and BC1, and gates G1 and G2, that "receives the current limit adjustment signal Veao and turns off the switch when Vi exceeds Veao." (RBr at 87.) Respondent further argued that the Pressman reference teaches all limitations of asserted claims 3, 5, and 6 of the '398 patent. (RBr at 87.)

Complainant argued that the Pressman reference does not disclose a current input circuit, as it uses "a form of resistor divider network to receive a voltage input, not on a current input circuit coupled to receive a current." (CBr at 108.) Complainant further argued that the Pressman reference does not disclose a "current input circuit coupled to receive a current for adjusting a current limit of a power switch" because it instead discloses "using the voltage monitored by voltage divider R1/R2 as a feedback signal to regulate peak current through the power switch" (CBr at 109) and therefore does not describe a protection current limit. (CBr at 109.)

The staff argued that, like the Billings reference, the Pressman reference likewise has a voltage divider, and that respondent's argument discusses components that are not even disclosed

by the Pressman reference. (SBr at 43-44.)

The book Switching Power Supply Design, (2nd ed.) by Abraham I. Pressman (Pressman), describes current mode circuitry in the context of the Unitrode 1846, called the first integrated circuit current-mode chip. (RFF 425 (undisputed).) The book, in the relevant chapters, discusses current-mode control circuitry and the advantage of using current-mode. (RX 149 at SG0401986-88.)

Referring to RDX-40 (Pressman, RX-149), respondent's expert Divan admitted that Pressman Fig. 3 on which he relies shows standard current mode control regulation. (CPFF 825 (undisputed).) The PWM comparator in Figure 5.3 of the Pressman reference is typical of current mode control. (CPFF 827 (undisputed).) Other than the current mode control PWM comparator, the Pressman reference does not disclose any separate comparator or other mechanism that allows for the setting of a maximum safe current level. (CPFF 828 (undisputed).) Thus, the Pressman reference discloses a current limit in the context of regulation but not protection. However, the administrative law judge has found, in Section IX.A.5, supra, that one of ordinary skill in the art would construe the claim phrase "current limit" to mean a prescribed threshold of current through a power switch, such that when the current through the power switch reaches this threshold, the power switch turns off to prevent the current from exceeding said threshold, irrespective of the reason or purpose of said prevention and hence may refer to limits established for either component protection or output regulation or both. Hence, the Pressman reference does disclose a "current limit" as properly construed.

The administrative law judge has also found, in Section IX.A.2, supra, that one of ordinary skill in the art would construe the claim phrase "current input circuit" to mean a circuit

that receives a current and produces or generates an output signal in response to the received current; that a "current input circuit" does not include voltage dividers and other circuits that monitor voltage, although a "current input circuit" may receive a current that is representative of a voltage; and that a "current input circuit" does not require said circuit to have a low input impedance. However, the Error Amplifier EA of the Pressman reference is a "voltage sensing error amplifier" and has voltages as its inputs. (CPFF 832 (undisputed).) Furthermore, Divan testified that resistor R1 of the Pressman reference is not part of the current input circuit but couples the current input circuit to receive a current, and that resistor R2 is part of the current input circuit. (CPFF 843 (undisputed).) However, one of ordinary skill would not cut into the voltage divider to identify the bottom resistor as being part of a current input circuit, as Divan did with respect to the Pressman reference. (Blauschild, Tr. at 1616:15-1617:10; RDX-37; CDX-564.) That would defeat the purpose of a voltage divider, which is to take an input voltage and provide a divided down value at the mid-point of the two resistors. (Id.) One of ordinary skill would not arbitrarily separate the voltage divider and say there is a current there. Thus, the administrative law judge rejects respondent's argument that the Pressman reference discloses a current input circuit which is coupled to receive a current through R1. Hence, the Pressman reference does not disclose a "current input circuit" as properly construed.

Based on the foregoing, the administrative law judge finds that respondent has not established, by clear and convincing evidence, that the Pressman reference anticipates asserted independent claim 1 and dependent claims 3, 5 and 6 of the '398 patent.

3. The '526 Patent

Respondent argued that the '526 patent teaches all of the elements of claims 1, 3, 5 and 6 of the '398 patent. Specifically, with respect to the independent claim 1 of the '398 patent, and describing Figure 6 of the '526 patent, respondent argued that the '526 patent discloses a power supply controller circuit and a current input circuit that receives and analyzes a current (out of the terminal connected to resistor 118) for implementing control functions; that the current input circuit includes current source 124, control current 122, and node 120; that the "current input circuit of the '526 patent is coupled to receive a current for adjusting a current limit through resistor 118, and generates a current limit adjustment signal as the voltage at node 120"; that the '526 patent discloses a control circuit, with comparator 126, flip-flop 130, and oscillator 128; that the control circuit receives a current limit adjustment signal as the voltage at node 120, and compares this voltage with the current through the switch 112 represented by the voltage across resistor 116; and that when the voltage across the resistor 116 exceeds the voltage across resistor 118, comparator 126 turns switch 112 off. (RBr at 90-91.)

Respondent further argued that dependent claim 3 of the '398 patent is anticipated because the '526 patent discloses a pulse-width modulation circuit that generates a switching waveform (Q output of flip-flop 130) coupled to be received by the power switch 112 to regulate the power supply output; that dependent claim 5 of the '398 patent is anticipated because the '526 patent discloses a comparator 126 coupled to compare a voltage representative of current through the switch with the current limit adjustment signal, such that the power switch 112 is disabled in response to the output of the comparator when the current limit set by the current limit adjustment signal is exceeded; and that dependent claim 6 of the '398 patent is anticipated

because the '526 patent discloses that the control circuit generates the switching waveform (Q output of flip-flop 130) in response to the output of the comparator 126, such that the switching waveform is coupled to limit the current through the power switch 112. (RBr at 91.)

The staff argued that the '526 patent anticipates claims 1 and 3 of the '398 patent, but not claims 5 and 6. (SBr at 44.) The staff argued that Figure 6 of the '526 patent discloses a constant current source 124, a control current 122, and a current summing node 120; that the current received by this current input circuit is "I_{CL}"; that I_{CL} is the difference between Iref (from the constant current source 124) and the control current 122; that the control current, in turn, is the sum of a feedback current, a feedforward current, and a slope compensation current; that the current limit adjustment signal is V_{CL}, which is a function of I_{CL}, external resister R_{CL}, and a voltage Vs that represents the current through the power switch; and thus, V_{CL} is generated "in response to" I_{CL}. (SBr at 44-45.)

Complainant argued that the'526 patent does not anticipate any of the claims of the '398 patent. (CRBr at 2.) Specifically, complainant argued that respondent identifies the same signal as both the current received by the current input circuit and the current limit adjustment signal generated by the current input circuit, which is contrary to the express language of the claims; that the '526 patent discloses a voltage input circuit, not the claimed current input circuit; that the '526 patent is a conventional current mode controller, very different than the invention of the '398 patent; and that the '526 patent does not compare a current limit adjustment signal with a voltage representative of the current through the power switch, as required by claims 5 and 6 of the '398 patent. (CRBr at 2-3.)

Complainant, at closing argument, referring to Figure 6 of the '526 patent, reiterated its

prior arguments that what respondent and staff identified as the current input circuit is actually a voltage input circuit, and the alleged current input circuit does not generate the current limit adjustment signal. (TrC at 283-84.)

Respondent, at closing argument, referring to Figure 6 of the '526 patent, argued that "the current limit adjustment signal, the voltage" is different from the current because one is a current and one is a voltage; that the circuit in issue "is clearly a current input circuit" since there is "IREF one current, coming in pointing to a second current"; that there is "nothing in claim 1 of the '398 patent that prevents external connections"; that "it is the operation as described by itself in the '526 patent, it is the operation of the current input circuit, which by taking a fixed current source and a variable current input and combining them together and forcing that resulting current through a resistor, that creates, that generates that voltage." (TrC at 286, 287, 289.)

The staff, at closing argument, referring to Figure 6 of the '526 patent, argued that the circuit in issue "is a current input circuit because it receives a current and it uses that value to produce an output"; that there are input currents, "122 and the current going through resistor 118"; that the "value of the current through resistor 118 is dependent on the control current 122"; and that either the control current generated by 122 or the current going through 118 is what generates the voltage at node 120. (TrC at 277.)

The title of the '526 patent is "Below Ground Current Sensing With Current Input To Control Threshold." As for the disclosure of the '526 patent, its abstract reads:

> An embodiment of the present invention is a switching power supply with high voltage positive and negative power inputs, a system ground, a sensing resistor placed between the negative power input and system ground, first and second load outputs with the first load output connected to the positive power input, and a

> comparator having first and second comparison inputs and a comparison output with the second comparison input connected to the system ground. A constant-current source is connected to the first comparison input of the comparator. A power MOSFET switch transistor has its drain connected to the second load output, its source connected to the system ground, and its gate controlled by the comparison output of the comparator. And a control resistor is connected between the second power input and said first comparison input of the comparator. The constant-current source, control resistor, and sensing resistor are such that when a predetermined current flowing through the first and second load outputs reaches a predetermined level (the current limit), the voltage developed across the sensing resistor will be equal to the voltage dropped across the control resistor, and the comparator will turn off the transistor to prevent further current increases.

(RX-23, Abstract (emphasis added).)

All parties in their arguments rely on Figure 6 of the '526 patent. Describing Figure 6, the '526 patent states:

> In FIG. 6, a current mode controller 110, according to a fourth embodiment of the present invention, comprises a switch transistor 112, a transformer 114, a sense resistor (Rs) 116, a current limit control resistor 118, a current summing node 120 that receives a control current 122 and a current (Iref, typically 500 microamperes) from constant current source 124, a comparator 126, an oscillator 128, and a set-reset flip-flop 130. Control current 122 comprises a slope compensation (Isc), a soft start (Iss), a feed forward (Iff), and a feed back (Ifb, typically 0-500 microamperes) constituent currents. The current limit current (I_{CL}) flowing through resistor 118 is Iref-Ifb-Iff-Isc-Iss.

(RX-23, 4:15-27 (emphasis added).)

It is undisputed that Figure 6 of the '526 patent shows a power supply controller and circuit (RFF 448 (undisputed)); that as shown in Figure 6, controller 110 includes switch transistor 112, transformer 114, sense resistor (Rs) 116, current summing node 120, control current 122, comparator 126, oscillator 128, and set-reset flip-flop 130 (RFF 449 (undisputed));

that as also shown in Figure 6, the current through switch 112 establishes a voltage across resistor 116 (RFF 450 (undisputed)); and that Figure 6 additionally shows that the current through node 120 equals the current from constant current source 124 minus control current 122, which can include components for feedback, feedforward, slope compensation, and soft start (RFF 452 (undisputed)).

Claim 1 of the '398 patent states in part:

> a current input circuit coupled to receive a current for adjusting a current limit of a power switch, the current input circuit to generate a current limit adjustment signal in response to the current.

(CX-8 at 23:38-41 (emphasis added).) The plain language of this claim requires that the current input signal receive one signal, i.e., "a current," then the same current input circuit must generate a second signal, i.e., "a current limit adjustment signal" in response to the first signal, which is the current.

Referring to Figure 6 of the '526 patent, both respondent and the staff argued that constant current source 124, control current 122, and current summing node 120 form a current input circuit. (Id.) Both respondent and the staff also identified the current through current limit control resistor 118 as the "received current," and the voltage across said resistor 118 (i.e., the voltage at current summing node 120) as the "current limit adjustment signal." (Id.) Thus, as indicated, supra, the staff, in its SBr at 44-45, argued that the current received by this current input circuit is "I_{CL}" and that the current limit adjustment signal is V_{CL}, which is a function of I_{CL}, external resister R_{CL}, and a voltage Vs that represents the current through the power switch; and thus, V_{CL} is generated "in response to" I_{CL}. (Emphasis added.) Likewise, as indicated, supra, respondent, in its RBr at 90-91, argued that the "current input circuit of the '526 patent is

coupled to receive a current for adjusting a current limit through resistor 118, and generates a current limit adjustment signal as the voltage at node 120." (Emphasis added.) Therefore, the staff argued that the current received is I_{CL} and that the generated current limit adjustment signal is V_{CL}, and respondent argued that a current is received and then a current limit adjustment signal is generated as a voltage. Figure 6 of the '526 patent, however, shows that the voltage V_{CL} across resistor 118 is the same voltage at node 120, and the current through resistor 118, i.e., I_{CL}, and the voltage across said resistor 118, i.e., V_{CL}, is the same signal. Thus, I_{CL} and V_{CL} are merely the current and the voltage, respectively, of the same signal. In contrast, the plain language of claim 1 of the '398 patent requires that the "current" which is received and the "current limit adjustment signal" which is generated be separate and different signals. As indicated, supra, respondent, at closing argument, referring to Figure 6 of the '526 patent, argued that "the current limit adjustment signal, the voltage" is different from the current because one is a current and the other a voltage. (TrC at 286.) As indicated, supra, however, I_{CL} and V_{CL} are merely the current and the voltage, respectively, of the same signal. Hence, the administrative law judge finds that Figure 6 of the '526 patent does not show that the current received by the current input circuit, is separate and distinct from the current limit adjustment signal which is generated in response to said received current.

Referring to what was argued by respondent and the staff at closing arguments, supra, it is undisputed that in Figure 6 of the '526 patent, the comparator 126 senses the voltage at node 120, not the current. (CPFF 773 (undisputed).) Referring to said Figure 6, respondent's expert Divan testified that current source124 is a fixed current source, that resistor 118 is an external resistor, and that changing the value of resistor 118 will not change the amount of current flowing through

resistor 118. (CPFF 783 (undisputed).) Divan admitted that changing the value of resistor 118 would not change the value of the current flowing from either current source 124 or 122, but will only change the value of the voltage at the input to the circuit. (CPFF 785 (undisputed by respondent).) Divan also admitted that the voltage asserted to be the current limit adjustment signal actually is generated by resistor 118, a component that is not part of the alleged current input circuit, which respondent and the staff identified as the constant current source 124, control current 122, and current summing node 120:

> Q In fact, the '526 patent calls resistor 118 the current limit control resistor, right?
>
> A Yes.
>
> Q Now, that resistor, that's outside the integrated circuit represented by the dotted line, right?
>
> A. Yes.
>
> Q And so the voltage across resistor 118, that's an input to that integrated circuit, right?
>
> A Yes.

(Divan, Tr. at 1423:18-1424:4.)

Thus, the administrative law judge finds that the alleged "current input circuit" of the '526 patent neither receives the identified current nor generates the voltage at node 120 in response to a received current. In contrast, it is undisputed that an embodiment of Figure 4 of the '398 patent provides a negative current input circuit to receive a negative current (e.g., from resistor 201 shown in Figure 2A). (CPFF 209-10 (undisputed).) It is also undisputed that the negative current input circuit processes the negative current internally—not externally—to

generate an output voltage as a current limit adjustment signal. (CPFF 212, 212.1, 212.3 (undisputed).) Thus, as required by claim 1, the negative current input circuit receives a current as an input and itself generates a current limit adjustment signal as an output. More importantly, the plain meaning of claim 1 requires that "the current input circuit to generate a current limit adjustment signal in response to the current," where said current was received by said current input circuit. Hence, the administrative law judge finds that the plain language of claim 1 requires that the current input circuit must generate the current limit adjustment signal. The administrative law judge further finds, however, that the circuit components identified by respondent as the alleged "current input circuit" in the '526 patent do not generate the current limit adjustment signal.

Regarding whether the alleged circuit is a current input circuit, Blauschild, Balakrishnan, and Divan all agreed that the alleged current input circuit receives a voltage at node 120 (generated by resistor 118). (CPFF 773, 783 (undisputed), CPFF 784, 785, 789 (undisputed by respondent).) Referring to Figure 6 of the '526 patent, comparator 126 senses the voltage at node 120, not the current. (CPFF 773 (undisputed).) In the prosecution history of the '398 patent, prior art voltage input circuits, such as resistor dividers or voltage dividers were distinguished from the claimed current input circuits. (CPFF 240 (undisputed).) In addition, the experts Horenstein, Divan, and Blauschild all agreed that a current input circuit cannot monitor a voltage. (CPFF 238 (undisputed).) The administrative law judge has found in Section IX.A.2, supra, that one of ordinary skill in the art would construe the claim phrase "current input circuit" to mean a circuit that receives a current and produces or generates an output signal in response to the received current; that a "current input circuit" does not include voltage dividers and other circuits

that monitor voltage, although a "current input circuit" may receive a current that is representative of a voltage; and that a "current input circuit" does not require said circuit to have a low input impedance. As indicated, supra, resistor 118 of the '526 patent is used to generate a voltage input, while resistor 201 of the '398 patent provides a current input. Hence, the administrative law judge finds that the circuit formed by current source 124, control current 122 and node 120 is a voltage input circuit, not a current input circuit. The administrative law judge further finds that the input identified by respondent in the '526 patent is a voltage input and thus, the components respondent identified do not form a current input circuit.

Based on the findings supra that (1) Figure 6 of the '526 patent does not show that the current received by the current input circuit, is separate and distinct from the current limit adjustment signal which is generated in response to said received current; (2) the circuit components identified by respondent as the alleged "current input circuit" in the '526 patent do not generate the current limit adjustment signal; and (3) the input identified by respondent in the '526 patent is a voltage input and thus the components that respondent identified do not form a current input circuit, the administrative law judge finds that respondent and the staff have failed to prove, by clear and convincing evidence, that the '526 patent anticipates the asserted independent claim 1 of the '398 patent.

With respect to the asserted dependent claim 3, the administrative law judge has found that respondent and the staff failed to prove, by clear and convincing evidence, that the '526 patent anticipates the asserted independent claim 1 of the '398 patent on several bases. Hence, the administrative law judge finds that respondent and the staff failed to prove, by clear and convincing evidence, that the '526 patent anticipates the asserted dependent claim 3 of the '398

patent.

Referring to the asserted dependent claims 5 and 6, said claims 5 and 6 of the '398 patent read:

> 5. The power supply controller of claim 3 wherein the control circuit includes a first comparator coupled to compare a voltage representative of the current through the power switch with the current limit adjustment signal such that the power switch is disabled in response to an output of the first comparator when the current limit set by the current limit adjustment signal is exceeded.
>
> 6. The power supply controller of claim 5 wherein the control circuit is to generate said switching waveform controlled in response to the output of the first comparator such that the switching waveform is coupled to limit the current through the power switch.

(CX-8 at 23:58-24:2 (emphasis added).) Regarding the asserted dependent claims 5 and 6, respondent's expert Divan believes that comparator 126 in Figure 6 of the '526 patent corresponds to the claimed comparator in said dependent claims. (CPFF 816 (undisputed).) The administrative law judge has found, in Section IX.A.9, supra, that one of ordinary skill in the art would construe the claim phrase "comparator" to mean a circuit that has two inputs and compares them to determine if one is higher than the other. Figure 6 of the '526 patent shows the lower input of comparator 126 connected to the circuit/chip ground. Divan admitted that because the lower input is connected to ground, it will remain at zero volts irrespective of the current flowing trough the switch 112. (Divan, Tr. at 1426-27.) Moreover, it is undisputed that the comparator 126 senses the voltage at node 120, not the current (CPFF 773 (undisputed)), and the voltage at node 120 is a combination of the voltages across resistors 118 and 116. Thus, comparator 126 compares the combined voltage across resistors 118 and 116 at its upper terminal

to a constant, zero voltage at its lower terminal. Hence, the administrative law judge finds that comparator 126 does not "compare a voltage representative of the current through the power switch with the current limit adjustment signal," as required by claim 5. As seen, supra, dependent claim 6 depends on claim 5. Based on his finding that Figure 6 of the '526 patent does not disclose the claimed comparator, the administrative law judge finds that respondent failed to prove, by clear and convincing evidence, that the '526 patent anticipates the asserted dependent claims 5 and 6 of the '398 patent.

4. The '820 Application

Respondent argued that the '820 application (RX-147) anticipates the asserted claims of the '398 patent. In support, it is argued that figure 2B of the '820 published patent application discloses a current input circuit that receives and analyzes a current through terminal 30b, which includes a current generator, resister R4, and the conductor from terminal 30b to V1, coupled via a connector to receive a current from optocoupler 29 for adjusting a current limit for power switch Q1, and generates a current limit adjustment signal voltage V16 from R4. (RBr at 96.) Respondent also argued that Figure 2b shows a control circuit, comprised of comparator 33, oscillator 32, flip-flop 24, NAND gate 25, and the driver 26, that limits current flow through switch Q1. (RBr at 96.) Respondent further argued that figure 2B also discloses each element of claim 3, 5, and 6 of the '398 patent. (RBr at 96-97.) Regarding figure 3B, respondent argued that it discloses a current input circuit, comprised of current mirror Q2/Q3, mode V3, the conductor from terminal 40b to Q2, and resistor Ra, that "is coupled from terminal 40b to terminal 18b to receive a current from optocoupler 29, to generate a current limit adjustment signal as the portion of the voltage V3 formed by current from Q3 flowing through resistor Ra." (RBr at 97.)

Respondent further argued that figure 3B also discloses a control circuit, including comparator 50, flip-flop 24, NAND gate 25, driver 26, and the oscillator output V1, that limits current flow through Switch Q1 in response to the current limit adjustment signal. (RBr at 97.) Respondent further argued that figure 3B also discloses the elements of claim 3, 5, and 6 of the '398 patent. (RBr at 97-98.)

Complainant argued that the '820 published application is not prior art, as it was published three days after the invention of the '398 patent was conceived and reduced to practice as set forth in an "Invention Disclosure Form" (the Form) signed by Balakrishnan and Djenguerian on August 3, 1999. (CBr at 112-13; CRBr at 59; RX-232C.) It is also argued that the '820 published application "merely discloses current mode control circuits that do not include a separate protection current limit comparator" (Id. at 113); that the "circuit in box 18 clearly monitors a voltage input using a voltage divider" and therefore said published application cannot disclose a current limit adjustment signal (Id. at 114); and that a voltage representative of the current through the switch is never compared with the feedback voltage, let alone with the current limit adjustment signal recited in claim 5, and therefore cannot disclose the elements of claims 5 or 6. (Id. at 114-15.)

The staff argued that the '820 published application is not prior art to either of the asserted patents, as the invention was reduced to practice before the '820 application was published. (SBr at 45-48.)

With respect to complainant's argument that the '820 published patent application is not prior art because the '398 patent's invention was conceived and reduced to practice before the August 6, 1999 publication of said unexamined Japanese application, complainant relies on the

Form and hearing testimony of inventor Balakrishnan and the fact that the inventors of the '398 patent filed an application covering their invention with the PTO on September 24, 1999. (CRRFF 492, CRRFF492A and CRRFF492B.) It is undisputed that the Form was not signed until August 3, 1999. Moreover, the administrative law judge does not find that the Form establishes an actual reduction to practice. In addition, testimony of an inventor some six years after the patent was applied for is not sufficient to establish corroboration. See Shu-Hui Chen v. Bouchard 347 F. 3d 1299 (Fed. Cir. 2003) and Medichem, S.A. v. Rolabo, S.I. 437 F. 3d 1157 (Fed. Cir. 2006). Hence, based on the record, the administrative law judge rejects complainant's argument that the '820 published patent application is not prior art.

With respect to whether the'820 application anticipates independent claim 1 and dependent claim 3, critical to those asserted claims is the claimed "current input circuit" of the '398 patent. As to whether the '820 application discloses the claimed current input circuit of the '398 patent, respondent's expert Divan was unable to identify the alleged current input circuit of the '820 application in a manner consistent with the claimed current input circuit of claim 1 of the '398 patent. For example, with reference to Figure 2B of the '820 application, Divan testified that the current input circuit is inside the chip (shown in solid green in RDX-61 and excluding the circuit in box 18). (Tr at 1620-21.) Yet, Divan at one point admitted that he probably identified box 18 [which is outside the chip] in Figure 2B as part of the current input circuit. (Tr at 1439-40.) Divan also testified that the current limit adjustment signal is generated outside the chip in box 18 and that "the part of the circuit that is receiving the current is the part connected outside constituting the optocoupler." (Tr at 1346.)

The administrative law judge has found, in Section IX.A.2, supra, that one of ordinary

skill in the art would construe the claim phrase "current input circuit" to mean a circuit that receives a current and produces or generates an output signal in response to the received current; that a "current input circuit" does not include voltage dividers and other circuits that monitor voltage, although a "current input circuit" may receive a current that is representative of a voltage; and that a "current input circuit" does not require said circuit to have a low input impedance. Accordingly, receiving a current and generating the current limit adjustment signal are both functions to be performed by the current input circuit.

As found, supra, Divan at one point admitted that he probably identified box 18 in Figure 2B as part of the current input circuit. (Tr at 1439-40.) But during the redirect examination, Divan changed his testimony again, this time to identify the current input circuit as the current source coupled to R4 and the connection to the negative input of comparator 33[sic] and pin 30b of the chip. (Tr at 1474.) The administrative law judge finds Divan's testimony inconsistent and unreliable with respect to which components make up the current input circuit of the '820 application.

Additionally, in Figure 3B of the '820 application, the point C senses the output voltage, divides it using voltage divider R5 and R6, and drives an optocoupler 29 that provides a current to current mirror Q2 and Q3, which causes a current to flow into resistor RA. (CPFF 885 (undisputed).) Figures 2B and 3B of the '820 application shows that the structure of each box 18 of Figures 2B and 3B are identical. Hence, Figure 2B of the '820 reference also shows that the point C senses the output voltage, divides it using voltage divider R5 and R6. Thus, the circuit in box 18 monitors a voltage input using a voltage divider. As indicated, supra, however, the administrative law judge has found that a "current input circuit" does not include voltage

dividers and other circuits that monitor voltage.

Based on the foregoing, the administrative law judge finds that respondent has not established, by clear and convincing evidence, that the '820 application discloses a "current input circuit" as claimed in independent claim 1 or dependent claim 3 of the '398 patent and hence anticipates said claims.

With respect to dependent claims 5 and 6 of the '398 patent, in addition to not disclosing a "current input circuit," in Figure 3B of the '820 application, comparator 50 compares the voltage at node V3 with a ramp signal generated by an oscillator to regulate the power supply's output voltage. (Tr at 1624.) The voltage at node V3 is a combination of a voltage representing the feedback signal and a voltage representing the current through power switch Q1. (CPFF 885, 886, 887 (undisputed).) Also, Divan admitted that one of the inputs of comparator 50 is a triangle, or ramp, input from an oscillator and testified that the comparator compares this signal to the combined signal from the optocoupler (representing feedback) and power switch current. (Tr at 1349-51.) Hence, based on Divan's testimony, and since the voltage at node V3 is a combination of a voltage representing the feedback signal and a voltage representing the current through power switch Q1, the administrative law judge finds that a voltage representative of the current through the switch is not compared with the feedback voltage. Thus, the administrative law judge finds that the '820 application fails to disclose a "comparator coupled to compare a voltage representative of the current through the power switch with the current limit adjustment signal," as recited in dependent claims 5 and 6 of the '398 patent.

Based on the foregoing, the administrative law judge finds that respondent has not established, by clear and convincing evidence, that the '820 application anticipates said

dependent claims 5 and 6 of the '398 patent.

5. The '960 Patent

Respondent argued that the '960 patent discloses a current input circuit, comprising signal shaper 31, coupled to receive a current at terminal A, and that said signal shaper 31 generates a voltage at point B of signal shaper 31 that acts as a current limit adjustment signal. (RBr at 102.) Respondent further argued that the '960 patent shows a control circuit for limiting current flow through switch Q1, that includes comparator 26 and control circuit 21. (RBr at 102.) Respondent also argued that the '960 patent discloses each element of claims 3, 5, and 6 of the '398 patent. (RBr at 102-103.)

Complainant argued that signal shaper 31 is a voltage input circuit, not a current input circuit, and that the '960 patent relates to power limiting in a power supply regulator as a function of the regulator's input voltage. (CBr at 110-11.) Complainant further argued that, regarding asserted claims 5 and 6 of the '398 patent, comparator 26 does not compare voltage representative of the current through the power switch to a current limit adjustment signal, and therefore cannot correspond to the claimed comparator.

The staff argued that "the evidence does not show that the '960 patent discloses a current input circuit that generates a current limit adjustment signal in response to a received current." (SBr at 48.)

The '960 patent issued on November 15, 1983 (RFF 529 (undisputed)) and discloses "[a] voltage converter of the transformer type which incorporates at least one switching transistor coupled to control the application of current to the transformer primary and circuitry for switching the transistor off in response to the current drawn through the primary winding and the

level of the input line voltage. Overcurrent shutdown may thus be tailored to approximate constant power dissipation within the voltage converter." (RX 44, Abstract.)

The administrative law judge has found, in Section IX.A.2, supra, that one of ordinary skill in the art would construe the claim phrase "current input circuit" to mean a circuit that receives a current and produces or generates an output signal in response to the received current; that a "current input circuit" does not include voltage dividers and other circuits that monitor voltage, although a "current input circuit" may receive a current that is representative of a voltage; and that a "current input circuit" does not require said circuit to have a low input impedance. Referring to RDX-56 ('960 patent Fig. 1, RX-44), Divan asserted at the hearing that the current input circuit is signal shaper 31. (CPFF 850 (undisputed).) Divan admitted that the '960 patent refers to resistor 30 as providing a sample of the input DC voltage to the signal shaper. (CPFF 852 (undisputed) (emphasis added).) Divan also admitted that the '960 patent refers to the signal shaper 31 as receiving a voltage at 2:67-3:2. (CPFF 853 (undisputed) (emphasis added).) Furthermore, in describing Figure 3A, the '960 patent states:

> In operation resistors 51, 52, 53, and 54 are coupled between terminal A and ground and act as a first resistive divider. Similarly resistors 57, 60, and 61 are coupled between a fixed voltage VDC and ground acting as a second resistive divider.

(RX-44 at 3:56-60 (emphasis added).) Thus, these resistive dividers of the '960 patent, which are part of the internal circuitry of signal shaper 31, appear to be voltage dividers. Hence, the '960 patent shows that the internal circuitry of signal shaper 31 comprises a voltage divider and thus, signal shaper 31 is not a current input circuit.

Based on the foregoing, the administrative law judge finds that respondent has not

established, by clear and convincing evidence, that the '960 patent anticipates asserted independent claim 1 and dependent claims 3, 5 and 6 of the '398 patent.

B. The '908 Patent

Respondent argued that each of the '070 patent (RX-68), LT070 publication (RX-177) LT1070 data sheet (RX-177), and CS5124 data sheet (RX-182) teaches all the element of claims 26 and 27 of the '908 patent, rendering those claims invalid. (RBr at 104-116.)

1. The '070 Patent

U.S. Patent No. 4,823,070 (the '070 patent) issued on April 18, 1989, more than ten years before the filing date of the '908 patent, and is therefore valid prior art under 35 U.S.C. § 102(b). This patent was not listed by the examiner during prosecution of the patents in issue. (RX-68, cover; CX-8, cover.)

Respondent argued that the '070 patent teaches all elements of claims 26 and 27 of the '908 patent, as it discloses a power supply controller circuit with a multi-function circuit coupled to receive a signal at a multi-function terminal for adjusting a current limit of a power switch. (RBr at 106.) Respondent further argued that external circuitry as a multi-function circuit in both the '070 and '908 patents. (RBr at 107-108.)

Complainant argued that the '070 patent does not disclose a multi-function circuit because the components referred to by respondent "do not perform different functions in response to the values of the signals received at the Vc terminal. (CBr at 117.) Complainant further argued that the '070 patent requires more external circuitry for each function added, which is at odds with the teaching of the '908 patent. (CBr at 117.)

The staff argued that the '070 patent does not anticipate claims 26 and 27 of the '908

patent, as "the '070 patent does *not* disclose a multifunction circuit that generates a current limit adjustment signal in response to the signal received at the Vc terminal." (SBr at 49.)

The '070 patent issued on April 18, 1989 (RFF 556 (undisputed)) and discloses:

> An integrated circuit for use in implementing a switching voltage regulator, the integrated circuit including a power switching transistor, driver circuitry and control circuitry, which is operable in a normal feedback mode or an isolated flyback mode. The integrated circuit includes shutdown circuitry for placing the regulator in a micro-power sleep mode, and can be packaged in a five-pin conventional power transistor package. The terminals of the integrated circuit regulator perform multiple functions. A compensation terminal is used for frequency compensation, current limiting, soft-start operation and shutdown. A feedback terminal is used as a feedback input when the integrated circuit is in feedback mode, and as a logic pin to program the regulator for isolated flyback operation. The feedback terminal is also used to trim the flyback reference voltage.

(RX 68, Abstract.)

Respondent's expert Divan testified that adding additional functions to the circuit disclosed in the '070 patent would require circuitry external to the chip. (CPFF 918 (undisputed in relevant part, see RRCPFF 918A); CPFF 920 (undisputed in relevant part, see RRCPFF 920A); CPFF 921 (undisputed); CPFF 922 (undisputed in relevant part, see RRCPFF 922A); CPFF 923 (undisputed).) The claims of the '070 patent disclose that external circuitry is required to perform all multiple functions. (CPFF 913 (undisputed).) For example, " first and second function terminals for connection to discrete external components to implement the switching voltage regulator circuit . . ." (RX-68 at 48-51.) A requirement of external circuitry is not disclosed in the specification or claims of the '908 patent, as one of the '908 patent's main purposes was to use a multi-function circuit to reduce the need for more external circuitry with

each function. (CPFF 186, 187 (undisputed).) Respondent's argument that the products based on the '070 patent use external circuitry in the same way as products based on the '908 patent is rejected.

Also, no current limit adjustment signal is generated in response to a signal received at the multi-function terminal. Respondent identifies Vc as the recited signal that is both received by the alleged multi-function circuit and the current limit adjustment signal. (RBr at 106; CPFF 927 (undisputed).) As found, supra (Section IX.B), claim 26 requires that the multi-function circuit generate the current limit adjustment signal. Said current limit adjustment signal cannot be the same signal that is received. (See RX-68 at Figure 1, 2.)

Based on the foregoing, the administrative law judge finds that respondent has not established, by clear and convincing evidence, that the '070 patent anticipates claims 26 and 27 of the '908 patent in issue.

2. The LT1070 Publication

Respondent argued that the LT1070 publication teaches all elements of claims 26 and 27 of the '908 patent, as it discloses a power supply controller circuit with a multi-function circuit coupled to receive a signal at a multi-function terminal for adjusting a current limit of a power switch. (RBr at 109.)

Complainant and the staff both point refer to their arguments, discussed supra, concerning the '070 patent.

The LT1070 publication is a data sheet for products based on the '070 patent, and was published before or during 1989. (RFF 568 (undisputed in relevant part, see CRRFF 568); RFF 574 (undisputed).)

Besides the reasoning stated for the '070 patent, supra, respondent further argued that the USPTO has granted a reexamination request, stating that the LT1070/LT1071 Data Sheet raises a substantial new question of patentability with respect to the '908 patent. (RFF 581.1; RFF 581.2.) Complainant states that such a conclusion is premature, as the USPTO has not heard or considered complainant's explanations of the art. (CORFF581.1; CORFF581.2.) The administrative law judge does not see the USPTO's statement as barring a decision on this matter.

The parties agree that the subject matter disclosed by the LT1070 datasheet and the '070 patent are substantially the same. (CPFF 909 (undisclosed).)

The administrative law judge finds that the reasoning applied to the '070 patent, supra, also applies to the LT1070 publication, and therefore that respondent has not established, by clear and convincing evidence, that said publication anticipates asserted claims 26 and 27 of the '908 patent.

3. The LT1074 Data Sheet

Respondent argued that the LT1074 data sheet teaches all elements of claims 26 and 27 of the '908 patent, as it discloses a power supply controller circuit that has a multi-function circuit coupled to receive a signal at a multi-function terminal for adjusting a current limit of a power switch. (RBr at 112-13.)

Complainant argued that the LT1074 data sheet does not anticipate the '908 patent, as the pin I_{LIM} is dedicated to current limiting and performs no other function, and is therefore not a multi-function terminal.

The staff argued that the I_{LIM} pin performs both "hysteresis" and current limiting, and is

therefore a multi-function terminal. (SBr at 51-52.) The staff further argued that the LT1074 data sheet also has a control circuit coupled to receive the current limit adjustment signal that also adjusts the current limit of a current through the power switch in response to the current limit adjustment signal. (SBr at 52.) Hence, the staff argued that all limitations of claims 26 and 27 of the '908 patent are invalid based on anticipation by the LT1074 data sheet (Id.)

The LT1074 data sheet was published during or before 1994. (RFF 591 (undisputed).) The LT1074 data sheet discloses a switching regulator that controls the duty cycle by controlling a switch in series with a power transfer element and turning control pulses off when the switch current reaches a certain level set externally. (RFF 582 (undisputed).)

The administrative law judge has construed the claim phrase "function" to be "an action or activity performed by a power supply controller." He further has construed the word "hysteresis" as found in the '908 patent as a characteristic of a function and not a function. (See Section X, supra. The staff argued that "current limit adjustment" and "hysteresis" are similar, and since the '908 patent claims "current limit adjustment" as a function, "hysteresis" must be a function as well. (SBr at 51, 52.) The administrative law judge finds that the function of "current limit adjustment" is to adjust the current limit; it can be said to do something. "Hysteresis," on the other hand, cannot do something on its own. See Section X, supra.

In addition, the LT1074 data sheet discloses hysteresis as being achieved externally to the circuit described. (CPFF 939 (undisputed).) Therefore, hysteresis is achieved by circuitry other than the circuitry alleged by respondent to be multi-function circuitry in the LT1074 data sheet. (Divan, Tr. at 1456:7-13; RX-161 at LTCS00000054.)

Respondent argued that the very circuitry "inside of the chip" in the LT1074 data sheet

"is involved in the hysteresis" (TrC at 327-8.) However, the administrative law judge finds that the LT1074 data sheet shows that D1 isolates the I_{LIM} pin from the added external circuitry (RX-161 at 10, "D1 prevents the shutdown divider from altering current limit"). The administrative law judge finds that the testimony of respondent's expert Divan is consistent with that in the LT1074 data sheet, i.e. that the added external components generate hysteresis, not the LT1074 internal circuits:

> Q. Can you explain then what a person of ordinary skill in the art would understand Figure 7 to be showing?
>
> A. By connecting R3 and D1 to ILIM for the application note, you are able to controllably set up a hysteresis level for the under-voltage lockout. If the supply voltage drops down to a certain value, the pin can shut down. And if you have a voltage that's still hovering around the same value, you can have the power supply chattering on and off. That is very undesirable. So you want to build a hysteresis so that the voltage at which it turns on is different from the voltage that turns off and allows you a little bit of safe operating region out there. And that's really the function that R1, R2, and R3 and D1 going into ILIM are able to do. And then by connecting a resistor between ILIM and the lower most bus, you are able to further adjust the value of the current limit that you are getting from the signal, from the IC.

(Tr. at 1380:25-1381:22 (emphasis added).)

Based on the foregoing, the administrative law judge finds that neither respondent nor the staff has established, by clear and convincing evidence, that the LT1074 data sheet anticipates any asserted claim of the '908 patent.

4. The CS5124 Data Sheet

Respondent argued that the CS5124 data sheet teaches all elements of claims 26 of the '908 patent, as it:

> discloses a multi-function circuit (RAMP, Subtraction block, Divider block, VFB COMP) coupled to receive a signal at multi-function terminal VFB and generate a current limit adjustment signal for adjusting the current limit of the power supply. RFF606; RFF946-948; RFF953; RFF954. The VFB pin is used for implementing the functions of soft-start, for detecting high output voltage, and for current limiting by PWM COMP. RFF600. The current limit adjustment signal is received at the negative input of PWM COMP. RFF607; RFF949-952. The multi-function circuit is coupled from the multi-function pin VFB to an optocoupler (not shown) for receiving a signal.

(RBr at 115.)

Complainant argued that the data sheet discloses a current mode controller with a separate current limit comparator which has a "fixed threshold and does not provide the adjustable current limit disclosed in the '908 patent." (CBr at 120.) Complainant further argued that the VFB pin of the data sheet is analogous to the control pin of the '908 patent, not a multi-functional terminal as argued by respondent. (CBr at 120.)

The staff argued that respondent "has not shown by clear and convincing evidence that the CS5124 Data Sheet discloses a multi-function circuit and multi-function terminal." (SBr at 52-53.)

The CS5124 data sheet was published on or before June 24, 1999. (RFF 604 (undisputed).) It describes a "fixed frequency current mode controller designed specifically for DC-DC converters found in the telecommunications industry. The CS5124/6 integrates many commonly required current mode power supply features and allows the power supply designer to

realize substantial cost and board space savings." (RX-182 at SG0186848.)

The data sheet discloses a current limit comparator; PWM. (RX-183 at SG0186853.) The current limit comparator has a fixed threshold, and the signals compared are manipulated in specific ways that do not vary. (RX-183 at SG0186853; Divan, Tr. at 1460:8-22.) The administrative law judge finds that PWM does not provide an adjustable current limit. Respondent, through their expert Divan, contended that the normal regulator circuitry shown in the CS5124 datasheet is the claimed multi-function circuit. (CPFF 948 (undisputed).) Divan included the PWM comparator in the multi-function circuit and identified the VFB or feedback input pin as the multi-function terminal. (CPFF 948, 949, 950 (undisputed).) The VFB pin corresponds to the control pin of the '908 patent, as both the VFB pin in the datasheet and the control pin of the '908 patent receive the feedback signal and are connected to regulation circuits. (CPFF 949 (undisputed).) As the administrative law judge has found, in Section IX.B.1, supra, that the '908 patent discloses a multi-function terminal that is distinct from and in addition to the control terminal used to regulate the power supply output. The VFB pin does not receive a signal for adjusting a current limit of a power switch, and none of the comparators disclosed in the 10:44 AMCS5124 datasheet adjusts a current limit. (RX-183.) While there is a current limit comparator separate from the current mode control regulation comparator, the current limit is fixed and cannot be adjusted. (RX-183.)

Based on the foregoing, the administrative law judge finds that respondent has not established, by clear and convincing evidence, that the CS5124 data sheet anticipates either of asserted claims 26 or 27 of the '908 patent.

XIV. Unenforceability Due To Inequitable Conduct ('398 and '908 Patents)

To establish unenforceability, due to inequitable conduct, a respondent must prove, by clear and convincing evidence, that a patentee failed to disclose material information during prosecution of a patent with an intent to mislead the Patent Office. Bristol-Myers Squibb Co. v. Rhone-Poulenc Rorer, Inc., 326 F.3d 1226, 1233 (Fed. Cir. 2003). Affirmative misrepresentation of material fact or submissions of false material information to the Patent Office can also form the basis of an inequitable conduct defense. Id. Within the context of an inequitable conduct analysis, "[i]nformation is deemed material if there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a part." Brasseler, U.S.A. I,L.P. v. Stryker Sales Corp., 267 F.3d 1370, 1380 (Fed. Cir. 2001); accord Baxter Int'l Inc. v. McGaw, Inc. 149 F.3d 1321, 1327, (Fed. Cir. 1998). In a case involving an omission of a material reference to the Patent Office, there must be clear and convincing evidence that the applicant made a deliberate decision to withhold a known material reference. Baxter Int'l, Inc., 149 F.3d at 1329, citing Molins PLC v Textron, Inc., 48 F.3d 1172, 1181 (Fed. Cir. 1995).

Respondent argued that PI committed inequitable conduct during the prosecution of the '398 and '908 patents because the '526 patent is highly material to the claims of the '398 patent and although the inventors and PI knew of the '526 patent they failed to disclose it to the PTO and because PI and the inventors knew of several articles and patents by the inventors of the '908 patent that are highly material to the claims of the '908 patent, they failed to disclose in the prosecution of the '908 patent said articles and patent. (RBr at 119-31.)

Referring to the '526 patent, respondent argued that the '526 patent is prior art and anticipates claims 1, 3, 5, and 6 of the '398 patent and claims 26 and 27 of the '908 patent because the '526 patent discloses external control of current limits and receiving a current with information used by the power supply controller to analyze the current limit. (RBr at 119.) Moreover, respondent argued that two of the inventors of the asserted patents, Balakrishnan and Leif Lund, were also two inventors of the '526 patent, and that the '526 patent covered a product sold by complainant in the 1990's, and therefore both the inventors and complainant had knowledge of the '526 patent. (RBr at 120.)

Complainant argued that the '526 patent is about a way of sensing the switch current in a switching regulator by sensing below ground, which is completely unrelated to the '398 patent; that both Figures 4 and 6 of the '526 patent disclose controller chips that use a voltage input generated by the flow of a fixed current across an external resistor to set a current limit; that they are, therefore, no more material than references already before the examiner that disclosed voltage input circuits; that the current mode control technique of regulating a power supply output voltage using a feedback signal, which is described in figure 6, was well known to those skilled in the art in 1999, and was described in the '851 patent already before the Examiner; and that the inventors of the asserted patents reasonably believed that the references were not material to either of the asserted patents, and so respondent has failed to prove deceptive intent. (CBr at 124-25.)

The staff argued that, as the '526 patent anticipates two claims of the '398 patent, it is material to the patentability of the '398 patent. (SBr at 54.) The staff further argued that deceptive intent cannot be inferred solely from the failure to disclose information, and that the

evidence on the record suggests that Balakrishnan's failure to disclose the '526 patent to the PTO may, at worst have been negligence been on his part rather than an intent to deceive, and therefore there is not clear and convincing evidence that the '526 patent was withheld as a result of an intent to deceive the PTO on the part of the inventors. (SBr at 54-56.)

Complainant's witness Balu Balakrishnan (Balakrishnan) was an inventor of the '526 patent as well as the '398 and '908 patents. (CX-8, cover page; RX-23, cover page.) Inventor Balakrishnan's hearing testimony does point out similarities between the '526 patent and the two patents in issue. See Tr., 230:4-232:23. However, in Section XIII.A.3, supra, the administrative law judge found that (1) Figure 6 of the '526 patent does not show that the current received by the current input circuit, is separate and distinct from the current limit adjustment signal which is generated in response to said received current; (2) the circuit components identified by respondent as the alleged "current input circuit" in the '526 patent do not generate the current limit adjustment signal; and (3) the input identified by respondent in the '526 patent is a voltage input and thus the components respondent identified do not form a current input circuit. Hence, the administrative law judge finds that the '526 patent is not material to the patentability of the asserted claims of the '398 patent.

With respect to the '908 patent and the "several articles and patents by the inventors of the '908 patent," respondent argued that a key component of the '908 patent is using a single pin for multiple functions in order to reduce the total number of pins, and that said several patents and articles published by the inventors of the asserted patents relate to that concept yet were not put before the examiner. (RBr at 121-25.) Respondent further argued that the inventors and complainant were aware of all of said articles and patents, and had previously disclosed that said

articles and patents had overlapping features with both the '398 and '908 patents in issue. (RBr at 126.)

Complainant argued that each of the references listed are cumulative of the '639 patent cited on the face of the '908 patent, and do not disclose a multi-function circuit and multi-function terminal claimed by the asserted patents. (CBr at 126-27.) Complainant further argued that the inventors of the asserted patents reasonably believed that the '639 patent was the most recent patent concerning the cumulative technology, and therefore respondent has not proved deceptive intent. (CBr at 127-28.)

The staff argued that each of the references cited by respondent is cumulative with the '639 patent, and is therefore not material. (SBr at 56-57.) The staff further argued that no deceptive intent has been shown, as there are many potential references that could have been disclosed by the inventors for this technology, and the inventors chose the most recent one. (SBr at 57-58.)

It is a fact that complainant did not disclose to the PTO the following articles and patents referenced by respondent:

> Balu Balakrishnan, Three Terminal Off-Line Switching Regulator Reduces Cost and Parts Count, Official Proceedings of the Twenty-Ninth International Power Conversion Conference, at 267 (1994) (Three Terminal Article) (RX-18)
>
> Balu Balakrishnan, Low-power Switchers Expand Reach, Electronic Engineering Times, at 52 (August 29, 1994) (EETimes Article) (RX-20)
>
> U.S. Patent No. 5,313,381 by Balakrishnan, issued May 17, 1994 (the '381 patent) (RX-88)
>
> U.S. Patent No. 5,285,369 by Balakrishnan, issued February 8,

1994 (the '369 patent) (RX-86)

U.S. Patent No. 6,147,883 by Balakrishnan et al., issued November 14, 2000 (the '883 patent) (RX-17)

Complainant did, however, disclose U.S. Patent No. 5,982,639 (the '639 patent). (CPFF 989 (undisputed); CX-9, cover.) The '639 patent discloses a TOPSwitch product in the schematics, and does disclose a control pin with more than one function. (CPFF 999, 1000 (undisputed); Balakrishnan, Tr. at 178.) The '639 patent was the most recent of the patents mentioning TOPSwitch at the time the '908 patent was filed. (Balakrishnan, Tr. at 176; 220-221.) The '639 patent discloses a three-terminal power supply controller that includes a control terminal. (RX-127 at 2:7-11.) The portions of each of the five references relied on by respondent as material to the multi-function terminal of the asserted patents all refer to the control or feedback pin. (CPFF 995 (undisputed).) The administrative law judge has found in Section IX.B.1, supra, that the multi-function terminal is distinct and separate from a control terminal. Thus, the administrative law judge finds that each of the five references cited by respondent is cumulative with the '639 patent.

It is undisputed that Balakrishnan, one of the inventors of the '908 patent, wrote or was an inventor listed on each of the five references cited by respondent, so knowledge of the references may be presumed. (RX-17; RX-18; RX-20; RX86; RX-88.) Balakrishnan, however, did not believe that the control pin was part of the invention. (CPFF 992 (undisputed).) Each of the five references relied on by respondent concerned a control terminal. Therefore, the administrative law judge finds that respondent has not established that the patentees of the '908

patent failed to disclose material information during the prosecution of the '908 patent with an intent to deceive the PTO.

Based on the foregoing, the administrative law judge finds that respondent has not established, by clear and convincing evidence, that complainant committed inequitable conduct during the prosecution of the '398 and '908 patents.

XV. Remedy

Under Commission rules 210.36(a) and 210.42(a)(1)(ii), the administrative law judge is to consider evidence and argument on the issues of remedy and issue a recommended determination thereon. Under Section 337(d), 19 U.S.C. § 1337(d), the Commission may issue a limited exclusion order against a respondent that has been determined to be in violation of section 337. Such an order directs the Customs and Border Protection (CBP) to exclude from entry into the United States articles that are covered by, and thus infringe, the intellectual property rights at issue. Certain Flash Memory Circuits and Products Containing Same, Inv. No. 337-TA-382, USITC Pub. No. 3046, Comm'n Op. at 26 (June 1997).

An exclusion order may cover not only articles specifically found to infringe, but also so-called downstream products, i.e., those products that incorporate the infringing articles as components, if the Commission decides that exclusion of downstream products is necessary to give a complainant complete and effective relief. Thus, under a limited exclusion order, the Commission may prohibit importation of downstream products that contain SG's infringing goods. See, e.g., Certain Microsphere Adhesives, Process for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes, Inv. No. 337-TA-366, Comm'n Op. at 21 (January 16, 1996). In determining whether an exclusion order with respect to

downstream products is appropriate:

> [t]he Commission balances the complainant's interest in obtaining complete protection from all infringing imports by means of exclusion of downstream products against the inherent potential of even a limited exclusion order, when extended to downstream products, to disrupt legitimate trade in products which were not themselves the subject of a finding of violation of section 337.

Certain Erasable Programmable Read-Only Memories, Components Thereof, Products Containing Such Memories, and Processes for Making Such Memories, Inv. No. 337-TA-276, Comm'n Opinion at 125 (May 1989) (EPROMs), aff'd sub. nom., Hyundai v. U.S. Int'l Trade Comm'n, 899 F.2d 1204, 548 (Fed. Cir. 1990). (Hyundai Electronics)

To assist in any balancing, the Commission, in EPROMs, identified the following relevant factors for consideration:

1. the value of the infringing articles compared to the value of the downstream products in which they are incorporated;

2. the identity of the manufacturer of the downstream products, i.e., whether it can be determined that the downstream products are manufactured by a respondent or by a third party;

3. the incremental value to a complainant of the exclusion of downstream products;

4. the incremental detriment to a respondent from exclusion of such products;

5. the burdens imposed on third parties resulting from exclusion of downstream products;

6. the availability of alternative downstream products that do not contain the infringing articles;

7. the likelihood that the downstream products actually contain the infringing articles and are thereby subject to exclusion;

8. the opportunity for evasion of an exclusion order that does not include downstream products; and

9. the enforceability of an order by Customs.[20]

See Comm'n Op. at 124-26, 136. The so-called "EPROMs factors" are not meant to be exclusive of other considerations, as "the Commission may identify and take into account any other factors which it believes bear on the question of whether to extend remedial exclusion to downstream products, and if so to what specific products." EPROMs at 125-26. Thus, the Commission may exclude downstream products even though not all of the factors weigh in favor of doing so. See EPROMs at 127.

Under Section 337(f)(1), the Commission may issue a cease and desist order in addition to, or instead of, an exclusion order. 19 U.S.C. § 1337(f)(1). A factor to consider as to whether a cease and desist order should issue is a respondent maintaining a "commercially significant" inventory of infringing products in the United States, the sale of which could undercut the effect of any exclusion order. See Certain Abrasive Products Made Using a Process for Powder Preforms, and Products Containing Same, Inv. No. 337-TA-449, USITC Pub. 3530, Comm'n Op. at 7 (August 2002). Complainant bears the burden of proving that a respondent has a commercially significant inventory of the accused products in the United States. Certain Integrated Repeaters, Switches, Transceivers, and Products Containing Same, Inv. No.

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[20] The Federal Circuit in Hyundai Electronics described the EPROMs factors to be "a careful and common-sense balancing of the parties' conflicting interests as well as other relevant factors." 899 F.2d at 1209.

337-TA-435, USITC Publication No. 3547, Comm'n Op. at 27 (October 2002).

A. Exclusion Order

PI initially requested that the administrative law judge issue an exclusion order prohibiting: (a) importation of SG's SG6840, SG6841, SG6841x3, SG6842, SG6842J, and SG6843x1 products, carriers containing such products, and demonstration and sample boards containing such products from entering the U.S. for any purpose, specifically including testing, sampling, sale, promotion and demonstration purposes; (b) LCD TVs and monitors containing SG's SG6840, SG6841, SG6841x3, SG6842, SG6842J, and SG6843x1 products, including those manufactured by or on behalf of Dell, Hewlett-Packard, Envision Peripherals and/or AOC, Philips, Sony, LG, AmTran, Compal, Acer, Sharp, TDK, and others; (c) printer adapters containing SG's SG6840, SG6841, SG6841x3, SG6842, SG6842J, and SG6843x1 products, including those manufactured by or on behalf of Sony, Kodak, Canon, Hewlett-Packard, ALPS, and others; (d) game consoles containing SG's SG6840, SG6841, SG6841x3, SG6842, SG6842J, and SG6843x1 products, including the Sony PlayStation 2 and/or any associated power supply incorporating an infringing SG PWM controller; (e) set-top boxes containing SG's SG6840, SG6841, SG6841x3, SG6842, SG6842J, and SG6843x1 products, including those manufactured by or on behalf of Motorola, Thomson, and others; (f) notebook adapters containing SG's SG6840, SG6841, SG6841x3, SG6842, SG6842J, and SG6843x1 products, including those manufactured by or on behalf of PowerNet, Gateway, Fuji, Intel, Sony and others; and (g) DVD recorders and players, including those manufactured by Sony and Philips. (CBr at 147-8.)

PI further argued that the exclusion order should extend to SG's principals, stockholders, officers, directors, employees, agents, licensees, distributors, representatives, customers,

controlled and/or majority owned business entities (including their employees and agents), successors and assigns to prevent SG from circumventing the order. (CBr at 148.)

PI argued that the primary issue to be determined on remedy "is the scope of the order, and the evidence is clear that to provide effective relief the order should encompass downstream products. " (CBr at 129.) PI, with regard to LCD monitors, argued that billions are sold worldwide; that of the eight LCD monitors examined by Mr. Lum on behalf of PI, 50% contained infringing SG PWM controllers; that while the evidence is unclear that certain LCD monitors incorporate the infringing products and are then imported into and sold in the UnitedStates, {

} and that under those circumstances, and given the number of LCD monitors sold in the United States, the exclusion order should encompass all LCD monitors regardless of the brand manufacturer. (CBr at 148.)

PI in its reply brief, argued that it agrees to narrow the breadth of its LCD monitor category to LCD computer monitors and to narrow its adapter category to printer and notebook computer adapters, but believed that additional products known to contain the accused products and to be available in the U.S. should be excluded as well, including the Sony Playstation and Motorola and Thomson set top boxes. (CRBr at 64-5.)

SG argued that a limited exclusion order directed to the accused "PWM controller chips" imported by or on behalf of SG is the only appropriate remedy if SG is found to have violated section 337; and that any limited exclusion order should not extend to downstream products. (RBr at 132, 142.)

The staff argued that if a violation is found a limited exclusion order should issue covering the infringing products produced by SG, as well as "certain downstream products produced by third parties" viz. "LCD computer monitors, AC printer adapters, and sample/downstation circuit boards containing the accused infringing SG chips." (SBr at 58, 64.)

At closing argument complainant limited its request, as to downstream products, to what the staff recommended plus LCD TV monitors. (TrC at 69-70.) However, it was admitted by complainant that there is no evidence in the record where someone from complainant has bought in the United States an LCD TV monitor with the accused chips. (TrC at 71.) Morever there is no evidence in the record that anyone in the United States has bought an LCD TV monitor with the accused chips or that there has even been an importation of an LCD TV monitor, containing an accused chip.

Complainant, in its CRBr at 64, fn. 29, in requesting that "LCD computer monitor" be included in the recommended exclusion order did state that "'LCD computer monitors' should include any monitor usable as a computer monitor, even if also usable as a TV, but exclude monitors that are for use solely as TVs" (emphasis added). As to said footnote, at closing argument complainant's counsel argued:

> JUDGE LUCKERN: Let me get back to Mr. Scherkenbach before you continue. What about that footnote? Mr. Brittingham read it well. That's what it says. Are you now enlarging something that you've already had in a footnote that you're excluding monitors that are used -- let me ask you this question: 5 minutes ago you said you want to include LCD TV monitors.
>
> Now, are those monitors that are for use solely as TVs?
>
> MR. SCHERKENBACH: Yes.

JUDGE LUCKERN: Well, then how -- so you're really, then, you're asking for more than what you wanted in your reply brief. Is that what your position is today?

MR. SCHERKENBACH: I don't know the answer to that. It wasn't our intent. I'll tell you that.
JUDGE LUCKERN: It wasn't your intent for what? I can only read what's before me.

MR. SCHERKENBACH: Right. And I thought we were excluding from the computer monitor category, computer monitors that could only be used --

JUDGE LUCKERN: How am I to read this footnote 29 on your brief at page 64?

MR. SCHERKENBACH: The answer to that is I think we were talking here about only the category of LCD computer monitors. LCD TVs are a separate category. Because the sentence concludes, we believe the additional products known to contain the accused products and to be available in the US should be excluded as well. We say the PlayStation and set-top boxes.
But to whatever extent there is an inconsistency, Your Honor, our position is we would like the monitors, okay, the TV monitors. If that's inconsistent with this footnote --

JUDGE LUCKERN: In other words, TV monitors used solely as TVs?

MR. SCHERKENBACH: Yes. Yes. And part of the reason for that, in all candor, is what has happened in the marketplace between here and today.[21]

(TrC at 8.)

Complainant, at closing argument (TrC at 322), relied on CPFF 1020, 1096, 1091, 1103, 1137 and 1147 in support of its argument that any limited exclusion order should include LCD TVs. There is, however, no testimony in support of or explaining CX-1110C, CX-1117C, CX-

[21] Evidence as to what happened in the marketplace between the hearing and the May 5, 2006 argument date is not in the record.

1119C, CX-1182C, and/or CX-1121C relied on in the proposed findings. CX-1110C on its face, indicates that it was issued by Albert Chunag (SAC). Neither SAC nor any known customer of SAC provided any testimony in this investigation. CX-1182C on its face, indicates that it was issued by "Brian." There is no testimony by Brian. CX-1117C, CX-1119C, CX-1121C, on their face, indicate that they were issued by LUMAX/Steven Chen and each is a "Design Tracking Report." There is no testimony by either LUMAX or Chen. Moreover, there is testimony that a design tracking report does not identify actual sales that have happened. In addition each of CX-117C, CX-119C and CX-1121C identifies, inter alia, SG6848 which is not in issue in this investigation. (Lin, Tr. at 1285.) While CPFF 1137 refers to a customer design service request in response to a request from Yasun for use of the SG6841 or SG6842 in an LCD TV for Chi Mei, Yasun and Chi Mei provided no testimony in this investigation and there is no indication that Chi Mei ever imported to the United States a LCD TV containing an accused chip.

The staff argued that, in the absence of some limited downstream relief, PI effectively has no remedy "given that its power supply controllers are not imported individually in commercial quantities." (RBr at 58-59.) However, the administrative law judge in Order No. 11 granted complainant's Motion No. 541-8 that the importation requirement has been satisfied. See Section I. supra. As Order No. 11 found, reference was made to merely chips:

> at Power Integrations' direction, a Mr. Francis Lum ordered from System General and received at his business address in Rancho Palos Verdes, California, samples of the accused SG6841 product. (Declaration of Francis Lum in Support of Motion No. 541-8 (Lum Decl.) ¶ 8, Exh. E.) The package in which the samples arrived indicated that it was shipped from System General in Taiwan. (Lum Decl., Exh. E.)
>
> On a second occasion, again at Power Integrations'

> direction, Lum ordered and received a sample of System General's SG6840 power supply controllers from Silicon Standard Corp. ("SSC"), a company located in Sunnyvale, California, that System General has described as one of its distributors. (Lum Decl. ¶¶ 11-14.) System General has acknowledged that it gave approximately 100 power supply controller samples to a representative of SSC in System General's office in Taipei. (Sekyi Decl., Exh. 9 at 3.)

(Order No. 11 at 3.) Moreover, as indicated in the Lum declaration, referenced in Order No. 11, SG has advertised the accused SG6840 and SG6841 products on the internet for sale worldwide and in the United States. (Lum Decl. ¶¶ 3, 4, 9, 10, 12, 16.) SG's website claims that it works with distributors in the United States and with sales agencies around the world (Id.) and at least as recently as June 2004, SG's General's website offered samples of the accused products in the United States to users who register. (Id.) Hence, if a violation is found, the administrative law judge recommends a limited exclusion order excluding entry of infringing chips of SG or any of its affiliated companies, parents, subsidiaries, licensees, or other related business entities, or their successors or assigns. However, said order should specifically exclude SG6105, SG68501, and SG68502 as well as SG38xx, SG5841, SG5848, SG6842J w/HV Start, SG6846, SG6846A, SG6848, SG6848x, SG6849, SG6850, and SG69xx. See Order No. 13 referenced in Section I.

As for downstream products containing accused products, Order No. 11 also found:

> Also there is unrebutted evidence that System General power supply controllers have been imported into the United States as components of downstream products, such as LCD monitors. For example, Lum purchased in the United States several LCD monitors, including Dell models 1704FPV and 1905FP, an Envision model EN7220, and a Hewlett Packard model HP L1740, all of which contain System General's SG6841 power supply controllers. (Lum Decl. ¶¶ 17-19.) The product labels of each of these monitors indicate the monitors were made in China. (Lum Decl., Exhs. I, J, K, and L.)

(Order No. 11 at 4.) In addition PI purchased in the United States the Kodak Easy Share printer, which included an adapter and which printer contained an SG 6843 (RFF723 (undisputed).) (RFF 724 (undisputed).) Also PI purchased in the United States a Sony adapter containing an SG 6840 (RFF 726 (undisputed).) Hence, the administrative law judge finds support for including in any exclusion order the downstream LCD computer monitors and AC printer adapters.

With respect to the first EPROMs factor i.e. the value of the infringing articles compared to the value of the LCD computer monitors and AC printer adapters in which they are incorporated, the importance of the infringing component is to be considered when comparing the value of the infringing articles to the value of the downstream products in which they are incorporated. Complainant introduced evidence showing that the power supply controllers at issue cost anywhere from 18 cents to 22 cents. (Renouard, Tr. at 693.) Power supply controllers are a component of downstream LCD monitors and AC adapters. The cost of an LCD monitor ranges from $100 to several hundred dollars. (Id.) at 693: 10-15. The typical AC adapter costs under $100. (Id. at 725.) However, although the value of one of SG's power supply controller chips is small compared to the value of these downstream products, the chips are critical components thereof. For example, in an LCD monitor, the power supply controller regulates how much power is delivered in the power supply for that monitor. Without it, the LCD monitor will not operate. (Id. at 693-694.)

Respondent argued that since the downstream products are all electronic devices, they will stop working if one removes any of the components and as a result, this first EPROM factor would essentially disappear in the majority of section 337 investigations since so many involve electronic products and components. (RRBr at 63-4.) However, as complainant argued at closing

argument (Tr. at 14) if that were the case one could only get exclusion where the component at issue was some large percentage of the value of the price of the downstream product. It is a fact that the accused chip is vital to the operation of a downstream device such as LCD computer monitors and AC printer adopters even though the value of said downstream goods exceed the value of said chip. Hence, an exclusion order including said downstream products is appropriate. See Certain Integrated Circuit Telecommunication Chips and Products Containing Same, Including Dialing Apparatus, Inv. No. 337-TA-337, Comm'n Op. at 29, n. 33 (August 3, 1993)(Telecommunication). In Telecommunication tone dialer chips were vital to the operation of the operation of telephones. Here the accused chips are vital to the operation of LCD computer monitors and AC printer adapters. Thus, the administrative law judge finds that the first EPROMs factor weights in favor of an order excluding LC computer monitors and AC printer adapters (certain downstream products). Moreover, the administrative law judge if the exclusion order does not include the test sample/demonstration circuit boards which contain the accused infringing chips, then any order could be circumvented by importing circuit boards from which the chips can be easily extracted. See Certain Flash Memory Circuits and Products Containing the Same, Inv. No. 337-TA-382, USITC Pub. 3046, Comm'n Op. at 37-38 (July 1996).

With respect to the second EPROMs factor, the identity of the manufacturer of the downstream products, the identity of some manufacturers has already been determined. At the hearing, evidence was presented that downstream products containing the accused controllers were manufactured at least by third parties Dell, Hewlett-Packard, Envision, Kodak and Sony. (Id. at 697.) SG does not manufacture any downstream products. Respondent argued that the

manufacturers of the downstream products were not respondents in this investigation. However, respondent has cited no precedent that every manufacturer of a downstream product in issue should be named as a respondent and the administrative law judge knows of no such precedent. Hence, he finds that the second EPROMs factor weights in favor of an order excluding the certain downstream products given the existence of some identified third-party manufacturers.

With regard to the third EPROMs factor, the incremental value to complainant for excluding the downstream products, while there is evidence of the accused chips being imported into the United States that evidence is limited to specific orders by complainant and involving 100 power supply controller samples given to a representative of SSC by SG in SG's office in Taipei. Hence, the administrative law judge finds that the third EPROMs factor weights in favor of an order excluding the certain downstream products.

With respect to the fourth EPROMs factor, the incremental detriment to respondent if downstream products are excluded, SG argued that some of SG's parts are not accused in this investigation; and that PI's infringement allegations against a limited number of parts destined for the United States should not be permitted to devastate the many sales that do not implicate either the patent at issue or the U.S. market. (RRBr at 67-8.) However, the administrative law judge is recommending a certification process which should eliminate SG's concerns.

As to the fifth EPROMs factor, the burden borne by third parties as a result of excluding downstream products and unnecessarily increasing the risk of interfering with legitimate commerce,[22] the administrative law judge has taken that burden into consideration in not

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[22] See Presidential Disapproval of a Section 337 Determination (disapproving Commission Order excluding computers, facsimile machines, telecommunications switching equipment and printers regardless of their origin or manufacturer), 52 Fed. Reg. 46011 (Dec. 3,

recommending that the exclusion order include LCD TV monitors that may contain SG's infringing controllers. While the administrative law judge is recommending that an exclusion order be limited to LCD computer monitors, AC printer adapters, and sample/demonstration circuit boards containing the accused infringing chips, any burden can be eased by a certification provision giving CBP discretion as to said provision for excluding said downstream products.[23] See Telecommunication Comm'n Op. at 32-34. Hence, although there is a burden on third parties, with an exclusion order so narrowly defined and with a certification provision the administrative law judge finds that the burden will be limited.

With respect to the sixth EPROMs factor, the availability of alternative downstream products that do not contain the infringing articles, there are manufacturers of the certain downstream products besides those specifically identified herein whose products do not contain the alleged infringing SG chips. For example, there are downstream products that use PI's own chips, instead of the SG's infringing chips. Hence, this factor weighs in favor of an exclusion order covering the certain downstream products.

As to the seventh EPROMs factor, the likelihood that the certain downstream products actually contain the infringing article and thus are subject to the exclusion order, evidence adduced at the hearing showed that imported LCD computer monitors and AC printer adapters contained the accused SG PWM controllers. (Renouard, Tr. at 697.) These products were Dell

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1987); Certain Dynamic Random Access Memories, Components Thereof and Products Containing Same, Inv. No. 337-TA-242.

[23] See certification provision in the limited exclusion order the Commission issued on September 28, 2005 in Certain Optical Disk Controllers Chips And Chipset And Products Containing Same, Including DVD Players And PC Optical Storage Devices, Inv. No. 337-TA-506.

LCD monitors, an HP LCD monitor, an Envision LCD monitor, an AC adapter for a Kodak "Easyshare" Printer/Dock, and a Sony 24 volt adapter. This factor weighs in favor of an exclusion order covering the recommended certain downstream products.

As to the eighth EPROMs factor, the opportunity for evasion of an exclusion order, the administrative law judge finds that an exclusion order which does not exclude the certain downstream products would provide ineffective relief. Thus, the accused infringing PWM controllers could be imported and concealed in said certain downstream products. Hence, the eighth EPROMs factor weighs in favor of the certain downstream products.

With respect to the ninth EPROMs factor, the enforceability of an order by CBP, the administrative law judge finds that if a certification provision is included with the exclusion order giving discretion to the CBP in drafting the certification provision then only a reasonable burden would be placed on CBP to enforce the order.

On balance, the administrative law judge finds that the EPROMs factors weigh in favor of excluding LCD computer monitors, AC printer adapters, and sample/demonstration circuit boards containing the accused infringing SG chips. Hence, he recommends that said downstream products be included in any limited exclusion order.

B. Cease And Desist Order

SG has no inventory in the United States. (RFF 751 (undisputed).) Moreover, PI has stated that it does not seek a cease and desist order. (RFF 752 (undisputed).) Hence, the administrative law judge does not recommend any cease and desist order should the Commission find that a violation of section 337 has occurred.

XVI. Bond

PI argued that the bond should be set at 100 percent of entered value of the infringing SG products, or the value of any imported downstream product containing the infringing SG products. (CBR at 149.)

SG argued that the bond to be imposed during the 60-day Presidential review period to be sufficient to protect complainant from injury should be set, if at all, at a reasonable royalty and that because PI negotiated an arm's length transaction licensing the patents-in-issue for a percent royalty rate, which "may now be as low as 3%", a rate of no more than 5 percent should apply. (RBr at 143-4.) It later argued that if there is to be a price comparison, it should be between PI's "current price" and the comparable SG "constructed" price of $0.62. (RRBr at 73-74.)

The staff argued, in the event a violation of section 337 is found, that a bond should be set in the amount of 38 cents per infringing article or product containing the same.[24] (SBr at 66-7.)

PI, in its reply brief argued that based on an alleged price differential of $0.38 between an infringing SG product and a patented PI product, the staff proposed a bond in the amount of $0.38 per infringing article or downstream product containing the same; that while PI is satisfied with the staff's proposed bond, if, however, the administrative law judge is inclined to reject the staff's proposal, he should set a 100% bond as set forth in PI's. (CRBr at 72.)

The administrative law judge rejects SG's argument that any bond should be at a rate of

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[24] The staff noted that normally the bond rate is set as a percentage of the "entered value" of the imported infringing products; that entered value is determined by CBP based on its appraisal of the goods at the time of importation; that since SG's accused products are "generally" not imported separately, it is unlikely that the entered value of the accused products would be readily ascertainable by CBP and that accordingly, a fixed bond amount is recommended. (SBr at CBP 67.)

no more than 5 percent. Contrary to SG's argument, PI has not entered into a licensing arrangement where a comparable royalty rate has been established such that a bond in this matter can be set at 5%. The terms of the license{ } relied on by SG, do not merely{

}See RX-304C at ¶¶ 4,1, 4.2, 5.1.

PI's witness Renouard, however, did testify on the pricing differences between a comparable SG PWM controller "solution" and PI's "integrated" product in his deposition testimony and at the hearing. (JX-8C at 173:18 - 174:2; and Renouard, Tr. at 689:1-16.) As said testimony shows, PI sells its PWM controller chip as combined PWM controller plus a power MOSFET with some added "PI value" (essentially the cost of discrete components that are incorporated into the PI product) while SG sells its chip separately. {

} Hence, in the event a violation of section 337 is found, the administrative law judge recommends a bond, in the Presidential review period, be set in the

amount of 38 cents per infringing article or products containing the same.

XVII. Additional Findings Of Fact

1. Complainant PI, a Delaware corporation, has its principal place of business in San Jose, California. (Complaint, ¶ 2.1, p. 2.).

2. Balu Balakrishnan is currently president and chief executive officer of PI. (Tr. at 102.)

3. Balakrishnan has been the president of PI since about April of 2001 and has been chief executive officer for approximately four years. (Tr. at 102.)

4. Balakrishnan started working at PI around April 1989 as director of engineering in charge of design. (Tr. at 103.)

5. Balakrishnan has been involved in the technical design of several PI products including members of the SMP Family, the TOPSwitch Family, for which he was a principal designer and an inventor on related intellectual property, and the TINYSwitch Family. Balakrishnan has also been technically involved in Power Integrations' DPA Switch and Link Switch products. (Tr. at 104-105.)

6. With respect to the TOPSwitch Family of products, Balakrishnan has specifically been involved in the design of the TOPSwitch FX and TOPSwitch GX. (Tr. at 104-105.)

7. Balakrishnan is listed as an inventor on 61 patents, all assigned to Power Integrations, for his design work on Power Integrations' products, and several more patent applications are pending. (Tr. at 106-108.)

8. Respondent is a Taiwanese corporation with its principal peace of business in Taipei, Taiwan. (Complaint ¶ 3.1, at 3.)

9. Tom Yang is the chairman and the chief executive officer (CEO) of System

General Corporation. (Tr. at 838.)

10. Yang founded SG in 1983 as a power supply design company. (Tr. at 873.)

11. Yang has been CEO of System General for 21 years, since SG was founded.(Tr. at 838.)

12. In about 1985, SG decided to develop a device for programming certain types of integrated circuits as part of its business. (Tr. at 873, 874.)

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14. {

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15. {

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17. {

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18. {

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19. SG develops, manufactures, and/or markets PWM controllers. (CX-14, CX-16.)

20. One of the first semiconductors that SG developed was the SG3842G. (Tr. at 841.)

21. The SG3842G is based on the 3842 current mode control PWM controller developed by Unitrode 20 years ago. (Tr. at 841.)

22. SG had sales last year of around 40 million U.S. dollars. (Tr. at 843.)

CONCLUSIONS OF LAW

1. The Commission has in rem jurisdiction and in personam jurisdiction.

2. There has been an importation of certain power supply controllers and products containing same which are the subject of the alleged unfair trade allegations.

3. An industry exists in the United States, as required by subsection (a)(2) of section 337, that exploits the '398 and '908 patents in issue.

4. Respondent's accused products infringe the asserted claims of the '398 and '908 patents.

5. The asserted claims of the '398 and '908 patents are not invalid and are enforceable.

6. There is a violation of section 337.

7. The record supports issuance of a limited exclusion order directed to infringing products produced by respondent, as well as certain downstream products produced by third parties and imposition of a bond in the amount of 38 cents per infringing article or product containing same, during the Presidential review period.

ORDER

Based on the foregoing, and the record as a whole, it is the administrative law judge's Final Initial Determination that there is a violation of section 337 in the importation into the United States, sale for importation, and the sale within the United States after importation of certain power supply controllers and products containing same. It is also the administrative law judge's recommendation that a limited exclusion order should issue directed to infringing products produced by respondent, as well as certain downstream products produced by third parties. The administrative law judge further recommends that a bond of 38 cents per infringing article or product containing same, be imposed during the Presidential review period.

The administrative law judge hereby CERTIFIES to the Commission his Final Initial and Recommended Determinations together with the record consisting of the exhibits admitted into evidence. The pleadings of the parties filed with the Secretary and the transcript of the pre-hearing conference, and the hearing, including closing arguments, are not certified, since they are already in the Commission's possession in accordance with Commission rules.

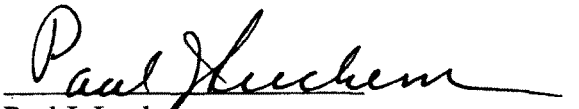
Further it is ORDERED that:

1. In accordance with Commission rule 210.39, all material heretofore marked in camera because of business, financial and marketing data found by the administrative law judge to be cognizable as confidential business information under Commission rule 201.6(a), is to be given in camera treatment continuing after the date this investigation is terminated.

2. Counsel for the parties shall have in the hands of the administrative law judge those portions of the final initial and recommended determinations which contain bracketed confidential business information to be deleted from any public version of said determinations,

no later than June 2, 2006. Any such bracketed version shall not be served via facsimile on the administrative law judge. If no such bracketed version is received from a party, it will mean that the party has no objection to removing the confidential status, in its entirety, from these initial and recommended determinations.

3. The initial determination portion of the Final Initial and Recommended Determinations, issued pursuant to Commission rule 210.42(h)(2), shall become the determination of the Commission forty-five (45) days after the service thereof, unless the Commission, within that period shall have ordered its review or certain issues therein or by order has changed the effective date of the initial determination portion. The recommended determination portion, issued pursuant to Commission rule 210.42(a)(1)(ii), will be considered by the Commission in reaching a determination on remedy and bonding pursuant to Commission rule 210.50(a).



Paul J. Luckern
Administrative Law Judge

Issued: May 15, 2006

CERTAIN POWER SUPPLY CONTROLLERS AND PRODUCTS CONTAINING SAME **Investigation No. 337-TA-541**

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **Public Version Final Initial and Recommended Determinations** was served by hand upon Commission Investigative Attorney Everrette V. Snotherly, Esq. and upon the following parties via first class mail, and air mail where necessary, on July 19, 2006.

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