In the Matter of

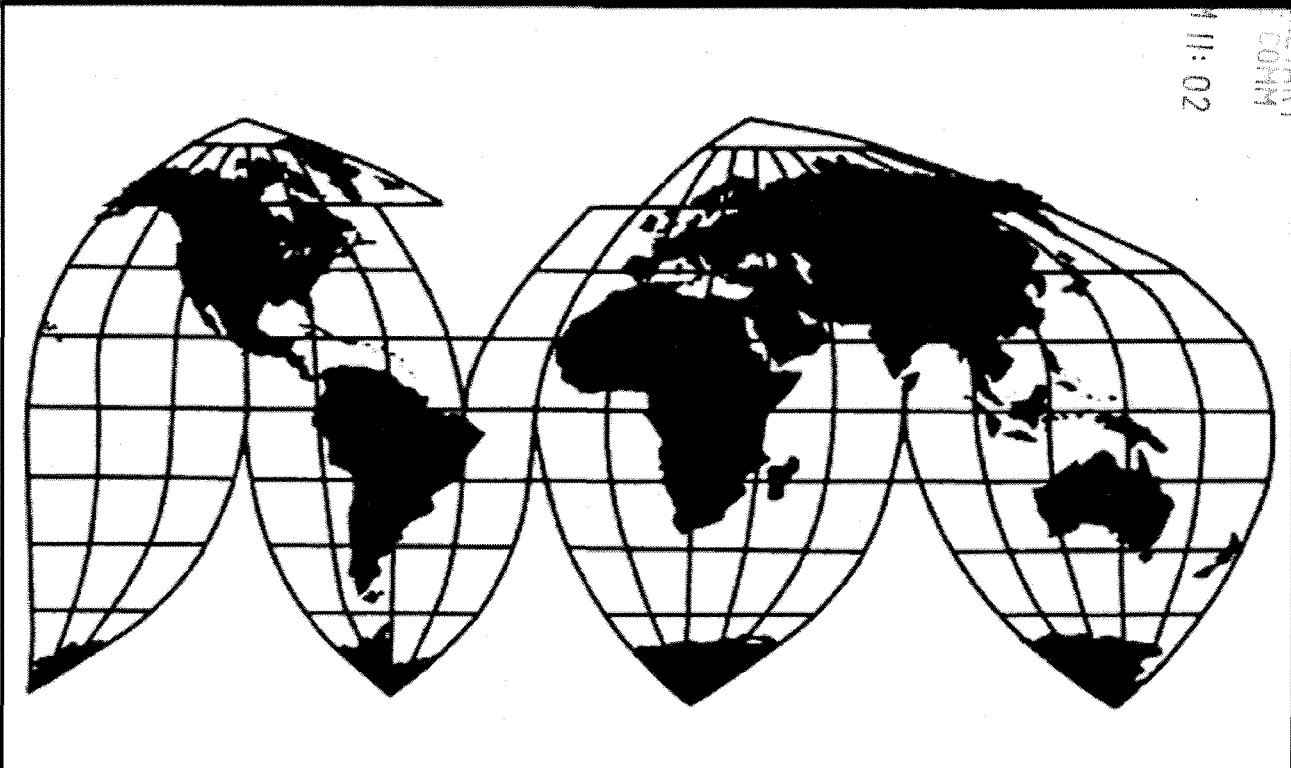# Certain Audio Processing Integrated Circuits and Products Containing Same

Investigation No. 337-TA-538

U.S. International Trade Commission

Washington, DC 20436

In the Matter of

Certain Audio Processing Integrated Circuits and Products Containing Same

Investigation No. 337-TA-538

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of	)
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CERTAIN AUDIO PROCESSING INTEGRATED	) Inv. No. 337-TA-538
CIRCUITS AND PRODUCTS CONTAINING SAME	)
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NOTICE OF COMMISSION FINAL DETERMINATION OF A VIOLATION OF SECTION 337 AS TO TWO PATENTS AND ISSUANCE OF A LIMITED EXCLUSION ORDER; TERMINATION OF INVESTIGATION

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined that there is a violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, by Actions Semiconductor Co. of Guangdong, China ("Actions") with respect to United States Patent Nos. 6,633,187 ("the '187 patent"), and 6,366,522 ("the '522 patent") and has issued a limited exclusion order in the above-captioned investigation.

FOR FURTHER INFORMATION CONTACT: Steven W. Crabb, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 708-5432. Copies of the public version of the ALJ's initial determination ("ID") and all other nonproprietary 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 (*http://www.usitc.gov*). The public record for this investigation may be viewed on the Commission's electronic docket (EDIS-ON-LINE) 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: The Commission instituted this investigation on April 18, 2005, based on a complaint filed on behalf of SigmaTel, Inc. ("complainant") of Austin, Texas. 70 *Fed. Reg.* 20172. The complaint alleged violations of section 337 in the importation into the United States, sale for importation, and sale within the United States after importation of certain audio processing integrated circuits and products containing same by reason of infringement of claim 10 of U.S. Patent No. 6,137,279 ("the '279 patent"), and claim

13 of the '187 patent. *Id.* The notice of investigation named Actions as the only respondent.

On June 9, 2005, the ALJ issued an ID (Order No. 5) granting complainant's motion to amend the complaint and notice of investigation to add further allegations of infringement of the previously asserted patents and to add an allegation of a violation of section 337 by reason of infringement of claims 1, 6, 9, and 13 of the '522 patent. That ID was not reviewed by the Commission.

On October 13, 2005, the ALJ issued an ID (Order No. 9) granting complainant's motion to terminate the investigation as to the '279 patent. On October 31, 2005, the Commission determined not to review the ID.

On March 20, 2006, the ALJ issued his final ID and recommended determination on remedy and bonding. The ALJ concluded that there was a violation of section 337. Specifically, he found that claim 13 of the '187 patent was not invalid and was infringed by Actions' accused product families 207X, 208X, and 209X. The ALJ also determined that claims 1, 6, 9, and 13 of the '522 patent were not invalid and were infringed by Actions' accused product families 208X and 209X.

On May 5, 2006, the Commission determined to review the ALJ's construction of a claim limitation of the '522 patent, infringement of the '522 patent, and the ALJ's determination that SigmaTel met the technical prong of the domestic industry requirement in regard to the '522 patent. 71 *Fed. Reg.* 27512 (May 11, 2006). The Commission also determined to review the ALJ's claim construction of the term "memory" in claim 13 of the '187 patent and simultaneously to modify that construction by removing the apparently inadvertent inclusion of the word "firmware." *Id.* The Commission declined to review the remainder of the ID. *Id.* The Commission requested briefing on the issues under review and on remedy, the public interest, and bonding. *Id.* Briefs and responses on the issues under review and on remedy, the public interest, and bonding were filed by all parties in a timely manner.

On June 12, 2006, Actions filed a paper with the Commission titled "Actions' Identification of Erroneous Citations to the Evidentiary Record by SigmaTel and the Initial Determination that are Material to Remedy Issues" alleging that testimony regarding the size of memory typically used in MP3 players incorporating the accused chips was inaccurately portrayed by SigmaTel and the ALJ. SigmaTel filed an opposition on June 13, 2006, and the Commission investigative attorney ("IA") filed a response on June 15, 2006. SigmaTel filed another submission on the same subject on August 21, 2006. On August 24, 2006, Actions' filed a motion to strike SigmaTel's August 21, 2006, submission. Because the allegedly erroneous citations were not raised in Actions' petition for review, and were in fact expressly agreed to by Actions in response to SigmaTel's proposed findings of fact, we do not consider Actions' arguments. Thus, SigmaTel's June 13, 2006, and August 21, 2006, submissions; the IA's June 15, 2006, submission; and Actions' August 24, 2006, submission have all been rendered moot and have not been considered.

On August 24, 2006, SigmaTel filed "Complainant SigmaTel, Inc.'s Motion for Leave to File a Short Brief to Correct an Error in Actions' Reply to SigmaTel's Comments on the ALJ's Remand Findings and Determination." Both Actions and the IA filed responses to SigmaTel's motion. We hereby deny this motion.

On review, the Commission construed the disputed claim phrase "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine" to mean that both the system clock control signal and the power supply control signal are required to be produced during operation of the integrated circuit such that the voltage and the frequency of the integrated circuit are adjusted based on a processing transfer characteristic, but that the processing transfer characteristic is not determined in any particular manner. 71 *Fed. Reg.* 36358-36359 (June 26, 2006). The Commission determined, with respect to the accused products that do not use the version 952436 firmware, that the ALJ made sufficient findings to find infringement of the asserted claims of the '522 patent under the Commission's claim construction, and adopted his findings with respect to those products. *Id.* The Commission determined that SigmaTel's products satisfy the technical prong of the domestic industry requirement with regard to the '522 patent under the Commission's claim construction. *Id.* The Commission remanded the investigation to the ALJ for the sole issue of determining whether Actions' products using the 952436 version firmware infringe the asserted claims of the '522 patent. The Commission deferred addressing issues relating to remedy, public interest, and bonding, for both the '187 patent and the '522 patent. *Id.*
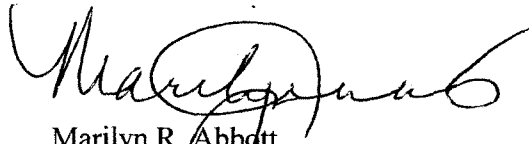
The ALJ issued a remand initial determination ("Remand ID") on August 3, 2006, finding that Actions' accused products using the 952436 version firmware, other than the 2051, 2180, and PMA 300 models, do not infringe claims 1, 6, 9, and 13 of the '522 patent.

In its remand notice, the Commission invited comments from the parties addressing the ALJ's determination on remand (71 *Fed. Reg.* 36358 (June 26, 2006)). On August 11, 2006, SigmaTel filed non-responsive comments addressing the appropriate remedy, and Actions and the IA filed comments supporting the ALJ's determination on remand. On August 18, 2006, Actions and the IA each filed responses to SigmaTel's comments, supporting the ALJ's determinations on remand and noting that SigmaTel's comments addressed only remedy issues. Because the Commission limited the parties' comments to the remand issue, it has disregarded SigmaTel's additional comments on remedy.

Having examined the record of this investigation, including the ALJ's final ID and Remand ID and the submissions of the parties, the Commission has determined (1) that there is a violation of section 337 by Actions with regard to claim 13 of the '187 patent; (2) that there is a violation of section 337 by Actions with regard to claims 1, 6, 9, and 13 of the '522 patent, except with respect to those products using the 952436 version firmware as noted in the ALJ's Remand ID; and (3) to issue a limited exclusion order with respect to Actions' infringing products. The Commission's order was delivered to the President and to the U.S. 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 sections 210.45, 210.49, and 210.50 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.45, 210.49, and 210.50).

By order of the Commission.

Marilyn R. Abbott
Secretary to the Commission
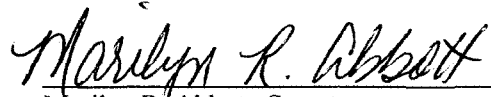
Issued: September 15, 2006

CERTAIN AUDIO PROCESSING INTEGRATED CIRCUITS,   337-TA-538
AND PRODUCTS CONTAINING SAME

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **NOTICE OF COMMISSION FINAL DETERMINATION OF A VIOLATION OF SECTION 337 AS TO TWO PATENTS AND ISSUANCE FO A LIMITED EXCLUSION ORDER; TERMINATION OF INVESTIGATION** has been served on upon all parties and Commission Investigative Attorney, David Hollander, Esq., on September 15, 2006.

Marilyn R. Abbott, Secretary
U.S. International Trade Commission
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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of

CERTAIN AUDIO PROCESSING
INTEGRATED CIRCUITS, AND
PRODUCTS CONTAINING SAME

Inv. No. 337-TA-538

LIMITED EXCLUSION ORDER

The Commission has determined that there is a violation of section 337 of

the Tariff Act of 1930 (19 U.S.C. § 1337), as amended, in the unlawful

importation and sale by respondent Actions Semiconductor Co. ("Actions") of

certain audio processing integrated circuits by reason of infringement of claim 13

of U.S. Patent No. 6,633,187, and claims 1, 6, 9, and 13 of U.S. Patent No.

6,366,522.

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 infringing audio processing integrated circuits

manufactured by or on behalf of Actions and or any of its affiliated companies,

parents, subsidiaries, licensees, or other related business entities, or their

successors or assigns, and also extending to MP3 players with two (2) gigabytes

or less of flash memory that contain any of Actions' infringing audio processing

integrated circuits. The Commission has further determined that the public

interest factors enumerated in 19 U.S.C. §§ 1337(d) and (f) do not preclude issuance of the limited exclusion order, and that the bond during the Presidential review period shall be in the amount of $0.29 per imported audio processing integrated circuit and $0.29 per MP3 player containing the audio processing integrated circuits that are subject to this Order.

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

1. Audio processing integrated circuits covered by claim 13 of U.S. Patent No. 6,633,187, or claims 1, 6, 9, or 13 of U.S. Patent No. 6,366,522, that are manufactured abroad or imported by or on behalf of Actions, or any of its affiliated companies, parents, subsidiaries, or other related business entities, or their successors or assigns, and MP3 players with two (2) gigabytes or less of flash memory that contain any such audio processing integrated circuits 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. Notwithstanding paragraph 1 of this Order, the aforesaid audio processing integrated circuits and MP3 players with two (2) gigabytes or less of flash memory that contain any such audio processing integrated circuits 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 $0.29 for each of such articles, from the day after this

Order is received by the U.S. Trade Representative until such time as she notifies

the Commission that she approves or disapproves this action but, in any event, not

later than sixty (60) days after the date of receipt of this Order pursuant to

subsection (j) of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C.

§ 1337(j), and the Presidential Memorandum of July 21, 2005 (70 *Fed. Reg.*

43251).

3. When U.S. Customs and Border Protection ("Customs") is unable to

determine by inspection whether the aforesaid audio processing integrated circuits

and MP3 players with two (2) gigabytes or less of flash memory that contain any

such audio processing integrated circuits 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 paragraph 1 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.

4. In accordance with 19 U.S.C. § 1337(l), the provisions of this Order

shall not apply to audio processing integrated circuits and MP3 players that
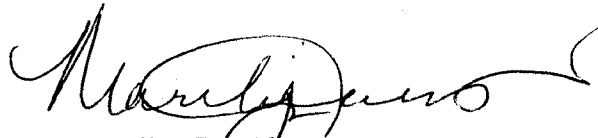
contain any such audio processing integrated circuits that are imported by and for

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.

5. 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.

6. The Commission 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

U.S. Customs and Border Protection.

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

By Order of the Commission.
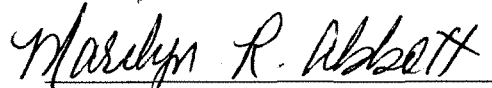
Marilyn R. Abbott
Secretary to the Commission

Issued: September 15, 2006

4

CERTAIN AUDIO PROCESSING INTEGRATED CIRCUITS,   337-TA-538
AND PRODUCTS CONTAINING SAME

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **LIMTED EXCLUSION ORDER** has been served on upon all parties and Commission Investigative Attorney, David Hollander, Esq., on September 15, 2006.

Marilyn R. Abbott, Secretary
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In the Matter of

CERTAIN AUDIO PROCESSING
INTEGRATED CIRCUITS AND
PRODUCTS CONTAINING SAME

Inv. No. 337-TA-538

COMMISSION OPINION

This investigation is before us for final disposition of the issues under review and for

determinations on remedy, the public interest, and bonding. We conclude that there is a violation

of section 337 by Actions Semiconductor Co. of Guangdong, China ("Actions") with regard to

claim 13 of U.S. Patent No. 6,633,187 ("the '187 patent") and that there is a violation of section

337 by Actions with regard to claims 1, 6, 9, and 13 of U.S. Patent No. 6,366,522 ("the '522

patent"). We determine that the appropriate remedy is a limited exclusion order, that the public

interest does not preclude the issuance of that remedy, and that the amount of the bond during the

60-day Presidential review period shall be 29 cents per imported infringing Actions integrated

circuit or per imported downstream MP3 player with two (2) gigabytes or less of flash memory

containing an infringing Actions integrated circuit.

I. BACKGROUND

A.   **Procedural History**

The Commission instituted this investigation on April 18, 2005, based on a complaint

filed on behalf of SigmaTel, Inc. ("SigmaTel") of Austin, Texas. 70 *Fed. Reg.* 20172. The

complaint alleged violations of section 337 in the importation into the United States, sale for

importation, and sale within the United States after importation of certain audio processing

integrated circuits ("chips") and products containing same by reason of infringement of claim 10 of U.S. Patent No. 6,137,279 ("the '279 patent") and claim 13 of the '187 patent. *Id.* Actions was the only named respondent.

On June 9, 2005, the presiding administrative law judge ("ALJ") issued an initial determination ("ID") (Order No. 5) granting SigmaTel's motion to amend the complaint and notice of investigation to add additional allegations of infringement of the previously asserted patents, and to add an allegation of a violation of section 337 by reason of infringement of claims 1, 6, 9, and 13 of the '522 patent. On October 13, 2005, the ALJ issued an ID (Order No. 9) granting SigmaTel's motion to terminate the investigation as to the '279 patent. The Commission did not review either of these IDs.

The ALJ issued his final ID and recommended determination on remedy and bonding on March 20, 2006, concluding that a violation of section 337 had occurred. Specifically, he found that the asserted claims of the '187 and '522 patents are not invalid and are infringed by the accused Actions' products.

On April 3, 2006, respondent Actions petitioned for review of portions of the final ID. On April 10, 2006, SigmaTel and the investigative attorney ("IA") filed responses opposing the petition for review.

On May 5, 2006, the Commission issued notice that it had determined to review the ID in part as follows: (1) with respect to the '187 patent, the Commission determined to review the ALJ's construction of the claim term "memory" in claim 13 and simultaneously to modify the claim construction by removing the apparent inadvertent inclusion of the word "firmware" from the ALJ's claim construction; and (2) with respect to the '522 patent, the Commission

determined to review the ALJ's construction of the following limitation of claims 1 and 9: "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine." The Commission also determined to review the ALJ's findings of fact and conclusions of law concerning infringement of claims 1, 6, 9, and 13 of the '522 patent by the accused Actions chips, and to review the ALJ's findings of fact and conclusions of law concerning whether SigmaTel's chips satisfy the technical prong of the domestic industry requirement of section 337 in regard to the '522 patent. The Commission, however, declined to review, and thus adopted, the remainder of the ID. The Commission also requested briefing on remedy, the public interest, and bonding. 71 *Fed. Reg.* 27512 (May 11, 2006).

On review, the Commission (1) construed the claim phrase under review for the asserted claims of the '522 patent, and remanded this part of the investigation to the ALJ to determine whether there was infringement of the '522 patent by the accused products using the 952436 version firmware; (2) determined with respect to the accused products that do not use the 952436 version firmware, that the ALJ made sufficient findings to find infringement of the asserted claims of the '522 patent under the Commission's claim construction, and adopted his findings with respect to those products; (3) determined that SigmaTel's 35XX products satisfy the technical prong of the domestic industry requirement with regard to the '522 patent under the Commission's claim construction; (4) deferred addressing issues relating to remedy, public interest, and bonding until after the ALJ issued his initial determination on remand regarding the '522 patent; and (5) extended the target date for completion of the investigation until September 15, 2006. 71 *Fed. Reg.* 36358-36359 (June 26, 2006).

The ALJ issued a remand initial determination ("Remand ID") on August 3, 2006. In his Remand ID, the ALJ determined that Actions' accused products using the 952436 version firmware, other than the 2051, 2180, and PMA 300 models,[1] do not infringe claims 1, 6, 9, and 13 of the '522 patent. On August 11, 2006, SigmaTel filed comments, arguing that the ALJ's findings on remand should not alter the appropriate form of relief. SigmaTel did not contest the ALJ's remand findings that, under the Commission's claim construction, the accused products using the 952436 version firmware do not infringe. Actions and the IA also filed comments, asserting that the ALJ's Remand ID was decided correctly. All parties filed timely responses.

B. The Patents in Issue

The '187 patent and the '522 patent have been asserted in this investigation. Both are generally directed to controlling power consumption in devices that receive and store digital information and then convert that information to an audio output. Both patents incorporate by reference U.S. Patent No. 6,204,651, which provides a more detailed disclosure of the on-chip power converter claimed in the '187 and '522 patents.

The '187 patent, entitled "Method and Apparatus for Enabling a Stand Alone Integrated Circuit," issued on October 14, 2003. SigmaTel alleged that the chips in Actions' ATJ207X, ATJ208X, and ATJ209X product families infringe claim 13 of the '187 patent. The '522 patent, entitled "Method and Apparatus for Controlling Power Consumption of an Integrated Circuit,"

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[1]These model numbers were previously determined by the Commission to literally infringe the asserted claims. *Certain Audio Processing Integrated Circuits and Products Containing Same*, Inv. 337-TA-538, Comm'n Opinion at 15 (June 19, 2006) ("Comm'n Opinion").

issued on April 2, 2002. SigmaTel alleged that the chips in Actions' ATJ208X and ATJ209X

product families infringe claims 1, 6, 9, and 13 of the '522 patent.

C.   The Accused Products

The accused products are audio processing integrated circuits used in digital music

players ("MP3 players"). The commercial product numbers of respondent Actions' accused

devices are ATJ2075, ATJ2075L (collectively "the 207X family" or "ATJ207X"); ATJ2085,

ATJ2087, ATJ2089, PMA-300, ATJ2051, ATJ2053, ATJ2180, ATJ2181 (collectively "the 208X

family"); and ATJ2095, ATJ2097, and ATJ2099 (collectively "the 209X family"). SFF 23, 25

(undisputed); Actions' Pre-Hearing Statement at 6-7.

II. DISCUSSION

A.   The '522 Patent

1.   Infringement

Infringement involves a comparison of the properly construed claims with the allegedly

infringing device. See *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454 (Fed. Cir. 1998)

(en banc). Infringement is a question of fact that requires the patentee to establish that the

accused device includes every claim limitation. *Warner-Jenkinson Co. v. Hilton Davis Chem.*

Co., 520 U.S. 17, 29 (1997).

Independent claim 1 of the '522 patent is representative of the independent claims at

issue, and reads as follows:

> 1. A power efficient integrated circuit comprising:
>
> > phase lock loop operably coupled to receive a reference clock and to
> > produce therefrom a system clock based on a system clock control
> > signal;

on-chip power supply control module operably coupled to regulate at least one supply from a power source and an inductance based on a power supply control signal;

memory operably coupled to store at least one application; and

computational engine operably coupled to **produce the system clock control signal and the power supply control signal based on a processing transfer characteristic of the computation engine** and processing requirements associated with processing at least a portion of the at least one application.

'522 patent, col. 6, l. 57 - col. 7, l. 4 (claim phrase at issue emphasized).

In our opinion dated June 19, 2006, we construed the disputed claim phrase "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine" to mean that both the system clock control signal and the power supply control signal are required to be produced during operation of the integrated circuit such that the voltage and the frequency of the integrated circuit are adjusted based on a processing transfer characteristic, but that the processing transfer characteristic is not determined in any particular manner. Comm'n Op. at 6-12. Now we consider the ALJ's remand findings that Actions' products using (*i.e.*, running) the 952436 version firmware, other than model numbers 2051, 2180, and PMA 300, do not infringe the asserted claims of the '522 patent.

In his Remand ID, the ALJ determined that Actions established that its 952436 version firmware for the model ATJ2085 of the 208X family has a voltage level set at [   ] regardless of the application to be run. Remand ID at 5. Additionally, the ALJ found that SigmaTel had admitted that for the ATJ2087 model of the 208X family, the voltage level is set by the firmware regardless of the application to be run. Remand ID at 6. The ALJ also determined that Actions' ATJ2053 and ATJ209X models maintain a default voltage level, and

6

there are no instances when the 952436 version firmware sets different voltage levels based on an application. Thus, the ALJ concluded that respondent Actions' products running the 952436 version firmware, other than the 2051, 2180, and PMA 300 products, do not infringe claims 1, 6, 9, and 13 of the '522 patent. Remand ID at 8. No party contests the ALJ's remand findings regarding infringement. We see no error in the ALJ's determinations, and accordingly adopt his factual findings that Actions' products using the 952436 version firmware, other than model numbers 2051, 2180, and PMA 300, do not infringe claims 1, 6, 9, and 13 of the '522 patent.

B. Remedy, the Public Interest, and Bonding

1. Remedy

The Commission has broad discretion in selecting the form, scope, and extent of the remedy in a section 337 proceeding. *Viscofan, S.A. v. United States International Trade Comm'n*, 787 F.2d 544, 548 (Fed. Cir. 1986). 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). The ALJ recommended that the Commission issue a limited exclusion order directed to Actions' infringing audio processing chips and extend the order to include MP3 players with two (2) gigabytes or less of flash memory that use Actions' audio processing chips that infringe the asserted claims of the '187 and '522 patents. ID at 144. The ALJ also recommended that a certification provision be included to ease any burden on U.S. Customs and Border Protection ("Customs") in enforcing the order and to protect legitimate trade. ID at 144. The ALJ did not recommend, and no party requested, a cease and desist order. ID at 133.

The Commission may issue an exclusion order that covers downstream products, if their exclusion is necessary to give the complainant complete and effective relief. At the same time,

the exclusion of downstream products has the potential to greatly expand the coverage of an exclusion order, thus increasing the risk of interference with legitimate commerce. 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 Customs. *Certain Eraseable 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).

The ALJ determined that EPROMs factors 1, 3, 4, 6, 7, and 8 weigh in favor of an exclusion order directed to downstream products and rejected Actions' arguments that factors 2, 5, and 9 militate against issuing a limited exclusion order directed to downstream MP3 players. ID 131-145.

Our consideration of the EPROMs factors leads us to concur with the ALJ's well reasoned recommendation that the limited exclusion order apply to the infringing Actions chips and extend to downstream MP3 players having flash memory of two (2) gigabytes or less that contain the infringing Actions chips. In particular, we agree with the ALJ that Actions' audio processing chips are vital to the operation of downstream MP3 players. ID at 136-137. The accused Actions' chips provide audio decoders, digital signal processing, and microcontrollers in addition to the power saving features at issue. Therefore, absent the accused Actions multi-purpose audio processing chips, the MP3 players are useless and undesirable. Grassian Tr. at 703; CX-172 at 3. Moreover, Actions' infringing chips are imported as components of MP3 players manufactured by other companies. *See* ID at 137-138, 142; CX-236 at 13; CX-355 at 11; Hsieh Tr. at 1022-1024; Martin Tr. at 1710-1713. Actions' U. S. Securities and Exchange Commission filings indicate that between 5 percent and 10 percent of Actions' chips have been incorporated into downstream products, [

]. Hseih Tr. at 1022-1024; Martin Tr. at 1710-1713. Additionally, there are 100 to 600 different manufacturers of MP3 players producing thousands of models. Martin Tr. 1606. Moreover, Actions' witness on remedy issues, Mr. Hseih, testified that Actions does not track where manufacturers that purchase its chips sell their end products. Hseih Tr. 930-939. Thus, in our view, the only effective remedy for SigmaTel is an exclusion order extending to the downstream products, *i.e.*, MP3 players, that incorporate the infringing Actions chips.

Regarding the type and size of memory in the downstream MP3 players that would be subject to certification or exclusion, the ALJ did not make any finding restricting the flash

memories to a particular type of flash memory such as NAND or NOR. The ALJ recommended,

however, that the exclusion order cover MP3 players having flash (without regard to type)

memories of two (2) gigabytes or less. ID 144. [

] ID 145.

Actions also agreed to SigmaTel's proposed findings of fact that the ATJ2085 chip could work

with one or two gigabytes of flash memory.[2] *See* Actions' Proposed Rebuttal Findings to

Complainant's Proposed Findings of Fact and Complainant's Proposed Conclusions of Law at 7-

101. Thus, we agree with the ALJ's recommendation to issue a limited exclusion order covering

Actions' infringing chips and extending to MP3 players with two (2) gigabytes or less of memory

that contain the infringing Actions chips. ID 144. We believe that the burdens on third parties

and Customs will be minimized by the certification provision we have included in the limited

exclusion order.

2. 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

---

[2]There were several filings, rejected by the Commission as untimely or moot, relating to the ALJ's holding regarding whether Actions' chips work with several giga "bit" or "bytes" of memory. We do not believe the ALJ erred in determining that the memory in question is expressed in terms of "gigabytes." [

].

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).

We do not believe that the public interest factors are implicated by issuance of a limited exclusion order in this investigation. The public health and welfare will not be harmed by the exclusion of certain infringing audio processing chips, because audio processing chips are not products that affect the public health and welfare. Further, the public interest favors protection of intellectual property over the availability of infringing products. *In the Matter of Certain Integrated Telecommunication Chips and Products Containing Same, Including Dialing Apparatus*, Inv. No. 337-TA-337, Comm'n Op. at 40-41 (June 30, 1993). Finally, a limited exclusion order would not harm competition, because the evidence shows that there are sufficient non-infringing replacements to supply the domestic market. The evidence also showed there are hundreds of manufacturers of MP3 players producing thousands of models. Martin Tr. 1606. Moreover, the certification provision in the limited exclusion order will ameliorate any burdens on Customs and third party importers. Accordingly, we find that the public interest factors do not preclude issuance of our limited exclusion order.

3.   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). The ALJ recommended that the Commission set the amount of the bond at 29 cents per imported Actions infringing chip and per imported downstream MP3 player
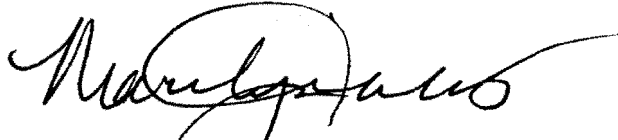
containing an infringing Actions chip based on market share, profit, and sales price. ID 147. No party disputes the ALJ's recommended bond amount. Thus, we adopt the ALJ's bond recommendation of 29 cents per imported infringing Actions chip or per imported downstream MP3 player with two (2) gigabytes or less of flash memory containing an infringing Actions chip.

II. CONCLUSION

For the reasons discussed herein, the Commission terminates this investigation with a finding of a violation with regard to the '187 patent and the '522 patent, adopts the ALJ's remedy and bonding recommendations, and finds that the public interest factors do not preclude the remedy.

By Order of the Commission.

Marilyn R. Abbott
Secretary to the Commission
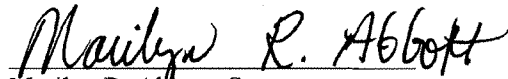
Issued: November 7, 2006

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **COMMISSION OPINION** has been served on upon all parties and Commission Investigative Attorney, David Hollander, Esq., via first class mail or air mail where necessary on November 8, 2006.

Marilyn R. Abbott, Secretary
U.S. International Trade Commission
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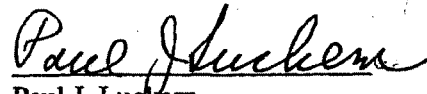
In the Matter of)
)
CERTAIN AUDIO PROCESSING) Investigation No. 337-TA-538
INTEGRATED CIRCUITS, AND) Remand
PRODUCTS CONTAINING SAME)
)
)

Notice To The Parties

A determination, including remand findings, of the administrative law judge was filed on

August 3, 2006. In said determination he found that respondent Actions' products using the

version 952436 firmware do not infringe the asserted claims of the '522 patent under the

Commission's claim construction. If a party wants to pick up a copy of what was filed on

August 3 from the Secretary's Office, it should telephone the Secretary's Office after 11:00 am

on August 4 to determine when the filing will be so available.

Counsel for complainant, respondent and the staff received a copy of this notice on

August 3, 2006.

Paul J. Luckern
Administrative Law Judge
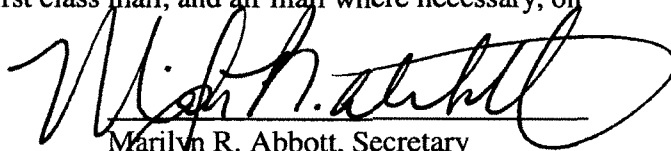
Issued: August 3, 2006

CERTAIN AUDIO PROCESSING INTEGRATED   **Investigation No. 337-TA-538**
CIRCUITS, AND PRODUCTS CONTAINING SAME

<u>CERTIFICATE OF SERVICE</u>

I, Marilyn R. Abbott, hereby certify that the attached **Notice To The Parties** was served by hand upon Commission Investigative Attorney David H. Hollander, Jr. Esq. and Bryan F. Moore, Esq. and upon the following parties via first class mail, and air mail where necessary, on August 4, 2006.

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CERTAIN AUDIO PROCESSING INTEGRATED CIRCUITS, AND PRODUCTS CONTAINING SAME   **Investigation No. 337-TA-538**

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(PARTIES NEED NOT SERVE COPIES ON LEXIS OR WEST PUBLISHING)

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
CERTAIN AUDIO PROCESSING	)	Investigation No. 337-TA-538
INTEGRATED CIRCUITS, AND	)	Remand
PRODUCTS CONTAINING SAME	)	
	)	

Remand Findings And Determination

This is the administrative law judge's determination including remand findings. The

administrative law judge, after a review of the record developed, finds that respondent Actions'

products using the version 952436 firmware do not infringe the asserted claims of the '522 patent

under the Commission's claim construction.

TABLE OF CONTENTS

I.   Procedural History

On June 19, 2006, the Commission issued its Notice, Order and Opinion remanding this investigation to the administrative law judge and specifically ordered that "[t]he ALJ shall determine whether Actions' products using the version 952436 firmware infringe the asserted claims [1, 6, 9 and 13] of the '522 patent under the Commission's claim construction" within "forty-five (45) days [by August 3, 2006] of issuance of this Order." The administrative law judge was directed to make his remand findings and determination "based on the existing record if practicable." (Order at 3).

On June 20, 2006, Order No. 23 issued, which required the filing of initial briefs and proposed findings of fact as well as reply briefs and proposed rebuttal findings of fact on "whether Actions' products using the version 952436 firmware infringe the asserted claims of the '522 patent under the Commission's claim construction."

Order No. 24, which issued on July 11, 2006, denied complainant's motion to reopen the evidentiary record.

Filings, pursuant to Order No. 23 having been made, the matter is now ready for remand findings and determination.

II.   Claims In Issue And Commission Claim Interpretation

In issue are apparatus claims 1 and 6 and method claims 9 and 13 of the '522 patent. Said claims read:

> 1. A power efficient integrated circuit comprising:
>
> phase lock loop operably coupled to receive a reference clock and to produce therefrom a system clock based on a system clock control signal;
>
> on-chip power supply control module operably coupled to regulate

at least one supply from a power source and an inductance based on a power supply control signal;

memory operably coupled to store at least one application; and

computational engine operably coupled to produce the system clock control signal and the power supply control signal based on a processing transfer characteristic of the computation engine and processing requirements associated with processing at least a portion of the at least one application.

6. The power efficient integrated circuit of claim 1, wherein the phase lock loop further comprises:

at least one divider module; and

a register operably coupled to the at least one divider module, wherein the register stores various divider values that are selected based on the system clock control signal.

9. A method for controlling power consumption of an integrated circuit, the method comprises the steps of:

producing a system clock from a reference clock based on a system clock control signal;

regulating at least one supply from at least one of: a linear regulator and a power source and an inductance based on a power supply control signal; and

producing the system clock control signal and the power supply control signal based on a processing transfer characteristic of a computation engine and processing requirements associated with processing at least a portion of an application by the computation engine.

13. The method of claim 9, wherein the producing the system clock from a reference clock based on a system clock control signal further comprises:

accessing a register based on the system clock control signal to retrieve a selected divider setting; and

2

adjusting a divider setting of a dividing in a phase lock loop that
produces the system clock based on the selected divider setting.

(JX-1, 6:57-7:4, 7:36-42, 7:54-65, 8:18-26.)

The Commission interpreted the claim limitation "produce the system clock control

signal and power supply control signal based on a processing transfer characteristic of the

computation engine," as found in independent claims 1 and 9, to mean that:

> both the system clock control signal and the power supply control
> signal are required to be produced during operation of the
> integrated circuit such that the voltage and the frequency of the
> integrated circuit are adjusted based on a processing transfer
> characteristic, but that the processing transfer characteristic is not
> required to be determined in any particular manner.

(Opinion, at 12.) Hence, the sole issue before the administrative law judge is "whether Actions'

products using the version 952436 firmware infringe the asserted claims of the '522 patent"

when the claim limitation "produce the system clock control signal and power supply control

signal based on a processing transfer characteristic of the computation engine" is so interpreted.

III. Infringement

Complainant argued that Actions' products using the 952436 version of firmware infringe

the asserted claims of the '522 patent under the Commission's claim construction. Respondent

argued that its products using the version 952436 firmware do not infringe the asserted claims in

issue under the Commission's claim construction. The staff argued that the evidence of record

demonstrates that the products under remand do not practice the "produce the system clock

control signal and power supply control signal based on a processing transfer characteristic of the

computational engine" element of the claims as construed by the Commission.

Elgin Lee was retained by respondent Actions to offer opinions relating to the operation

3

of Actions' software and their firmware for the products at issue. (Tr. at 1202-03.) At the

hearing, Lee was qualified as an expert in computer programming. (Tr. at 1207.)

Liu Shu Wei is the head of Actions' customer service department (FF 21).[1] The customer

service department is part of a multimedia business unit. (FF 22.) Said department deals with

distributors that have problems with Actions' parts. (FF 23.)

Lee testified:

> Q. Thank you. In summary, what is your opinion regarding
> the 2085 device products UP36A11, S11, S16D, and S12?
>
> A. You're asking me about the 2085 UP36A11, S11, S16D, S12?
>
> Q. Yes, that's correct.
>
> A. My opinion is that <u>the 952436 versions of those
> products for the 2085 device all set a voltage of 2.1
> volts, and there is no setting other than 2.1 volts</u>.

(Tr. at 1219 (emphasis added).) Also, Liu testified:

> Q. I'll ask another question, Mr. Liu. For the code, for
> the 952436 code, what voltage levels are assumed
> for the 2085?
>
> A. The VDD voltage for 2085 is 2.1 volts.
>
> Q. For the 952436 version of code, what voltage levels
> are established for the 2087 chip?
>
> A. It's also 2.1 volts.

(Tr. at 1086.) See also CDX-6. Thus, the administrative law judge finds that Actions' 952436

version of code for the ATJ2085 device, and its corresponding commercial product names

---

[1] The FF refers to findings of the Final Initial and Recommended Determinations which issued on March 20, 2006.

UP36A11, S11, S12, and S16D, establishes a VDD voltage of 2.1 volts; the 2.1 VDD voltage set

by Actions' 952436 version of code for the ATJ2085 device and its corresponding commercial

product names UP36A11, S11, S12, and S16D is set by the firmware regardless of the

application to be run; for Actions' ATJ2085 device and its corresponding commercial product

names UP36A11, S11, S12, and S16D, the 952436 version of code does not set a VDD voltage

other than 2.1 volts; and for Actions' ATJ2085 device and its corresponding commercial product

names UP36A11, S11, S12, and S15D, there are no instances in the 952436 version of code

where different VDD voltage levels are set within the same version of firmware and/or source

code based on an application.

In addition, SigmaTel has admitted that the Actions' 952436 version of code for the

ATJ2087 device and its corresponding commercial product names UP37B11 and S23 does not

set the voltage to 2.0 volts. Thus, SigmaTel's Goldberg testified:

> Q.   Is it your testimony that the actos file sets that
>   default level to 2.0?
>
> A.   No. My testimony is that it leaves the, my
>   testimony is that the actos leaves the voltage level at
>   the default, and then the AP main is the application
>   that changes the voltage level.
>
> Q.   I don't understand what you mean by actos leads it.
>
> A.   Leaves it, l-e-a-v-e-s, leaves.
>
> Q.   So actos has no effect on the default level; is that
>   what you are saying?
>
> A.   The default level is determined by the hardware.
>   And when the machine boots up it is at 2.0. For
>   those devices we have been talking about, actos
>   does nothing to change it. It is the application, the

AP main that changes the voltage level.

(Tr. at 1798-99 (emphasis added).) In addition, Goldberg testified:

> A. So if you look in the actos.msa for any of those, you
> will see that, in fact, there is no -- the code that
> would have set the voltage to some other value than
> 2.0 has either been removed or been commented
> out.

(Tr. at 1796.) Also, Actions' 952436 version of code for the ATJ2087 device and its

corresponding commercial product names UP37B11 and S23 establishes a VDD voltage of 2.1

volts. (E. Lee Tr. at 1223, 1227, 1229; Liu Tr. at 1086.) In addition, the 2.1 VDD voltage set by

Actions' 952436 version of code for the ATJ2087 device and its corresponding commercial

product names UP37B11 and S23 is set by the firmware regardless of the application to be run.

(E. Lee Tr. at 1223, 1227-29; CDX-139.) For Actions' ATJ2087 device and its corresponding

commercial product names UP37B11 and 523, the 952436 version of code does not set a VDD

voltage other than 2.1 volts. (E. Lee Tr. at 1223, 1227, 1229; CDX-139.) For Actions' ATJ2087

device and its corresponding commercial product names UP37B11 and S23, there are no

instances in the 952436 version of code where different VDD voltage levels are set within the

same version of firmware and/or source code based on an application. (E. Lee Tr. at 1227-29; see

also CDX-139.)

Actions' 952436 version of code for the ATJ2089 device and its corresponding

commercial product name SD2 establishes a VDD voltage of 2.1 volts. (E. Lee Tr. at 1223, 1227,

1229; Liu Tr. at 1087; CDX-8.) The 2.1 VDD voltage set by Actions' 952436 version of code

for the ATJ2089 device and its corresponding commercial product name SD2 is set by the

firmware regardless of the application to be run. (E. Lee Tr. at 1230; Liu Tr. at 1087; CDX-8.)

For Actions' ATJ2089 device and its corresponding commercial product name SD2, the 952436 version of code does not set a VDD voltage other than 2.1 volts. (E. Lee Tr. at 1230; Liu Tr. at 1087; CDX-8.) For Actions' ATJ2089 device and its corresponding commercial product name SD2, there are no instances in the 952436 version of code where different VDD voltage levels are set within the same version of firmware and/or source code based on an application. (E. Lee Tr. at 1230; Liu Tr. at 1087; CDX-8.)

In addition, Actions' 952436 version of code for the ATJ2053 device establishes a VDD voltage of 2.1 volts. (E. Lee Tr. at 1339; Liu Tr. at 1092.) The 2.1 VDD voltage set by Actions' 952436 version of code for the ATJ2053 device is set by the firmware regardless of the application to be run. (E. Lee Tr. at 1339-40; Liu Tr. at 1092.) For Actions' ATJ2053 device the 952436 version of code does not set a VDD voltage other than 2.1 volts. (E. Lee Tr. at 1339-40; Liu Tr. at 1092.) For Actions' ATJ2053 device, there are no instances in the 952436 version of code where different VDD voltage levels are set within the same version of firmware and/or source code based on an application. (E. Lee Tr. at 1340; Liu Tr. at 1092.)

Actions' 952436 version of code for the ATJ209X devices establishes a VDD voltage of 2.5 volts. (Liu Tr. at 1086-87.) The 2.5 VDD voltage set by Actions' 952436 version of code for the ATJ209X devices is set by the firmware regardless of the application to be run. (Liu Tr. at 1087-87.) For Actions' ATJ209X devices, the 952436 version of code does not set a VDD voltage other than 2.5 volts. (Liu Tr. at 1086-87). For Actions' ATJ209X devices, there are no instances in the 952436 version of code where different VDD voltage levels are set within the same version of firmware and/or source code based on an application. (Liu Tr. at 1086-87.)

Based on the foregoing, the administrative law judge finds that Actions' products using

7

the version 952436 firmware do not infringe the asserted claims of the '522 patent.

CONCLUSIONS OF LAW

1.   Respondent Actions' accused products running the 952436 version of Actions' code, other than the 2051, 2180, and PMA 300, do not infringe claims 1, 6, 9, and 13 of the '522 patent, under the Commission's claim construction.

ORDER

Based on the foregoing, it is the administrative law judge's determination that respondent Actions' products using the version 952436 firmware do not infringe the asserted claims of the '522 patent under the Commission's claim construction.
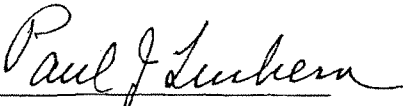
The administrative law judge hereby CERTIFIES to the Commission his determination, including remand findings. The filings of the parties are not certified, since they are already in the Commission's possession in accordance with Commission rules.

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 determination which contain bracketed confidential business information to be deleted from any public version of said determination, no later than August 18, 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 said determination.

3.   Pursuant to the Commission Order of June 19, 2006, the parties may file comments on the administrative law judge's remand determination within five (5) business days after service of said determination and responses to said comments within five (5) business days after service of the comments. Also, pursuant to said Order, no extensions should be required to meet said time frames, and the parties' comments and responses are limited to issues raised in the said determination.

Paul J. Luckern
Administrative Law Judge
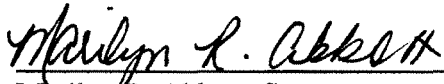
Issued: August 3, 2006

9

CERTAIN AUDIO PROCESSING INTEGRATED   Investigation No. 337-TA-538
CIRCUITS, AND PRODUCTS CONTAINING SAME

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **Public Version Remand Findings and Determination** was served by hand upon Commission Investigative Attorney David H. Hollander, Jr. Esq. and Bryan F. Moore, Esq. and upon the following parties via first class mail, and air mail where necessary, on September 10, 2007.

Marilyn R. Abbott, Secretary
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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of)
)
)
CERTAIN AUDIO PROCESSING INTEGRATED)   Inv. No. 337-TA-538
CIRCUITS AND PRODUCTS CONTAINING SAME)
)

NOTICE OF COMMISSION DECISION TO REMAND A PORTION OF AN INITIAL DETERMINATION FINDING A VIOLATION OF SECTION 337, AND TO EXTEND THE TARGET DATE FOR COMPLETION OF THE INVESTIGATION

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to remand a portion of the investigation to the presiding administrative law judge ("ALJ"). The Commission has also determined to extend the target date for completion of the investigation until September 15, 2006.

FOR FURTHER INFORMATION CONTACT: Steven W. Crabb, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 708-5432. Copies of the public version of the ALJ's initial determination ("ID") and all other nonproprietary 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 (*http://www.usitc.gov*). The public record for this investigation may be viewed on the Commission's electronic docket (EDIS-ON-LINE) 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: The Commission instituted this investigation on April 18, 2005, based on a complaint filed on behalf of SigmaTel, Inc. ("complainant") of Austin, Texas. 70 *Fed. Reg.* 20172. The complaint alleged violations of section 337 in the importation into the United States, sale for importation, and sale within the United States after importation of certain audio processing integrated circuits and products containing same by reason of infringement of claim 10 of U.S. Patent No. 6,137,279 ("the '279 patent"), which was

subsequently terminated pursuant to complainant's motion, and claim 13 of U.S. Patent No. 6,633,187 ("the '187 patent"). *Id.* The notice of investigation named Actions Semiconductor Co. of Guangdong, China ("Actions") as the only respondent.

On June 9, 2005, the ALJ issued an ID (Order No. 5) granting complainant's motion to amend the complaint and notice of investigation to add allegations of infringement of the previously asserted patents and to add an allegation of a violation of section 337 by reason of infringement of claims 1, 6, 9, and 13 of U.S. Patent No. 6,366,522 ("the '522 patent"). That ID was not reviewed by the Commission.

On October 13, 2005, the ALJ issued an ID (Order No. 9) granting complainant's motion to terminate the investigation as to the '279 patent. On October 31, 2005, the Commission determined not to review the ID.

On October 31, 2005, the ALJ issued an ID (Order No. 14) granting complainant's motion for summary determination that the importation requirement of section 337 has been satisfied. On November 1, 2005, the ALJ issued an ID (Order No. 15) granting complainant's motion for summary determination that complainant has satisfied the economic prong of the domestic industry requirement of section 337 for the patents in issue. Those IDs were not reviewed by the Commission.

On March 20, 2006, the ALJ issued his final ID and recommended determination on remedy and bonding. The ALJ concluded that there was a violation of section 337. Specifically, he found that claim 13 of the '187 patent was valid and infringed by Actions' accused product families 207X, 208X, and 209X. The ALJ also determined that claims 1, 6, 9, and 13 of the '522 patent were valid and infringed by Actions' accused product families 208X and 209X.

On April 3, 2006, respondent Actions petitioned for review of portions of the final ID. On April 10, 2006, complainant SigmaTel and the Commission investigative attorney ("IA") filed responses in opposition to the petition for review.

On April 17, 2006, respondent Actions filed a motion for leave to file a reply to complainant SigmaTel's response to Actions' petition for review. On April 19, 2006, complainant SigmaTel filed a motion in opposition to Actions' motion. The Commission determined to deny Actions' motion for leave to file a reply.

On May 5, 2006, the Commission determined to review the ALJ's construction of a claim limitation of the '522 patent, infringement of the '522 patent, and whether SigmaTel met the technical prong of the domestic industry requirement in regard to the '522 patent. 71 *Fed. Reg.* 27512 (May 11, 2006). The Commission also determined to review the ALJ's claim construction of the term "memory" in claim 13 of the '187 patent. *Id.* The Commission declined to review the remainder of the ID. *Id.*

On May 15, 2006, the IA filed its brief on the issues under review and on remedy, the public interest, and bonding. On May 16, 2006, both SigmaTel and Actions filed briefs on the issues under review and on remedy, the public interest, and bonding.

On May 17, 2006, SigmaTel filed a motion to strike portions of Actions' initial brief concerning the issues under review or in the alternative for an extension of two days to respond. On May 19, 2006, Actions filed an opposition to SigmaTel's motion to strike. Also on May 19, 2006, the Chairman of the Commission granted the motion for the two-day extension, thus rendering the motion to strike moot.
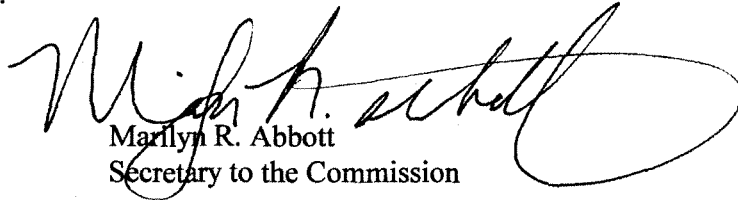
On May 24, 2006, all parties filed responses to the initial briefs concerning the issues under review and on remedy, the public interest, and bonding.

Having examined the record of this investigation, including the ALJ's final ID and the submissions of the parties, the Commission has (1) determined to reverse the ALJ's construction of the claim phrase "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine" and provide as its own construction that both the system clock control signal and the power supply control signal are required to be produced during operation of the integrated circuit such that the voltage and the frequency of the integrated circuit are adjusted based on a processing transfer characteristic, but that the processing transfer characteristic is not determined in any particular manner; (2) determined to remand this investigation in part to the ALJ for the purpose of determining whether the accused products utilizing the version 952436 firmware infringe the '522 patent under the Commission's claim construction; (3) determined with respect to the accused products that do not use the version 952436 firmware, that the ALJ made sufficient findings to find infringement of the asserted claims of the '522 patent under our claim construction, and to adopt his findings with respect to those products; (4) determined that SigmaTel's 35XX products satisfy the technical prong of the domestic industry requirement with regard to the '522 patent under the Commission's claim construction; (5) determined to delete the term "firmware" from the ALJ's construction of the claim term "memory" in claim 13 of the '187 patent; (6) determined to defer addressing issues relating to remedy, public interest, and bonding, for both the '187 patent and the '522 patent until after the ALJ issues his initial determination on remand regarding the '522 patent; and (7) determined to extend the target date in the investigation until September 15, 2006.

Further, the Commission has determined not to consider Actions' discussion in its submissions on the issues under review with respect to the '187 patent because this discussion is outside the scope of the Commission's review.

This action is taken under the authority of section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and in sections 210.45 and 210.51 of the Commission's Rules of Practice and Procedure (19 C.F.R. §§ 210.45, 210.51).

By order of the Commission.

Marilyn R. Abbott
Secretary to the Commission

Issued: June 19, 2006

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of

CERTAIN AUDIO PROCESSING
INTEGRATED CIRCUITS AND
PRODUCTS CONTAINING SAME

Inv. No. 337-TA-538

ORDER

The Commission instituted this investigation on April 18, 2005, based on a complaint filed

on behalf of SigmaTel, Inc. ("SigmaTel") of Austin, Texas. 70 *Fed. Reg.* 20172. The complaint

alleged violations of section 337 in the importation into the United States, sale for importation, and

sale within the United States after importation of certain audio processing integrated circuits and

products containing same by reason of infringement of claim 10 of U.S. Patent No. 6,137,279 ("the

'279 patent") and claim 13 of U.S. Patent No. 6,633,187 ("the '187 patent"). *Id.* Actions

Semiconductor Co. of Guangdong, China ("Actions") was the only named respondent.

On June 9, 2005, the presiding administrative law judge ("ALJ") issued an initial

determination ("ID") (Order No. 5) granting complainant's motion to amend the complaint and notice

of investigation to add allegations of infringement of the previously asserted patents and to add an

allegation of a violation of section 337 by reason of infringement of claims 1, 6, 9, and 13 of U.S.

Patent No. 6,366,522 ("the '522 patent"). That ID was not reviewed by the Commission.

On October 13, 2005, the ALJ issued an ID (Order No. 9) granting complainant's motion to terminate the investigation as to the '279 patent. On October 31, 2005, the Commission determined not to review the ID.

The ALJ issued his ID and recommended determination ("RD") on remedy, the public interest, and bonding in this investigation on March 20, 2006, concluding that there was a violation of section 337. Specifically, he found that the asserted claims of the '187 and '522 patents are not invalid and are infringed by Actions' accused products.

On May 5, 2006, the Commission issued notice that it had determined to review the ID in part as follows: (1) with respect to the '187 patent, the Commission determined to review the ALJ's construction of the claim term "memory" in claim 13 to remove the inadvertent inclusion of the word "firmware" from his claim construction; and (2) with respect to the '522 patent, the Commission determined to review the ALJ's construction of the following limitation found in independent claims 1 and 9: "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine." The Commission also determined to review the ALJ's findings of fact and conclusions of law concerning infringement of the asserted claims of the '522 patent by the accused Actions chips, and to review the ALJ's findings of fact and conclusions of law concerning whether SigmaTel's chips satisfy the technical prong of the domestic industry requirement of section 337 in regard to the '522 patent. The Commission declined to review, and thus adopted, the remainder of the ID.

Having examined the record of this investigation, including the ALJ's final ID and the submissions of the parties, the Commission has (1) determined to reverse the ALJ's construction of the claim phrase "produce the system clock control signal and power supply control signal based on

2

a processing transfer characteristic of the computation engine" and provide as its own construction that both the system clock control signal and the power supply control signal are required to be produced during operation of the integrated circuit such that the voltage and the frequency of the integrated circuit are adjusted based on a processing transfer characteristic, but that the processing transfer characteristic is not determined in any particular manner; (2) determined to remand this investigation in part to the ALJ for the purpose of determining whether the accused products utilizing the version 952436 firmware infringe the '522 patent under the Commission's claim construction; (3) determined that SigmaTel's 35XX products satisfy the technical prong of the domestic industry requirement with regard to the '522 patent under the Commission's claim construction; (4) determined to delete the term "firmware" from the ALJ's construction of the claim term "memory" in claim 13 of the '187 patent; (5) determined to defer addressing issues relating to remedy, public interest, and bonding, for both the '187 patent and the '522 patent until after the ALJ issues his initial determination on remand regarding the '522 patent; and (6) determined to extend the target date in the investigation until September 15, 2006.

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

1.   The ALJ shall determine whether Actions' products using the version 952436 firmware infringe the asserted claims of the '522 patent under the Commission's claim construction.

2.   The ALJ shall make his determination of whether there is infringement within forty-five (45) days of issuance of this Order.

3.   The ALJ is directed to make his remand findings and determination based on the existing record if practicable.

4.   The parties are invited to file comments on the ALJ's remand determination within

five (5) business days after service of the ALJ's determination and to file responses

to the comments within five (5) business days after service of the comments. No

extensions should be required to meet these time frames, and the parties' comments

and responses are limited to issues raised in the remand determination and findings.

5.   The target date for termination of the investigation is extended to September 15,

2006.

6.   The Secretary shall serve copies of this Order upon each party of record in this

investigation.

By Order of the Commission.
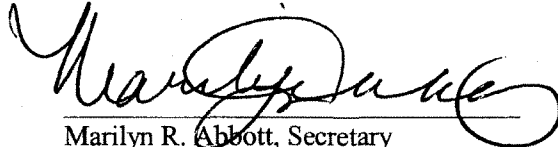
Marilyn R. Abbott
Secretary

Issued: **June 19, 2006**

4

CERTAIN AUDIO PROCESSING INTEGRATED CIRCUITS,   337-TA-538
AND PRODUCTS CONTAINING SAME

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **NOTICE OF COMMISSION DECISION TO REMAND A PORTION OF AN INITIAL DETERMINATION FINDING A VIOLATION OF SECTION 337, AND TO EXTEND THE TARGET DATE FOR COMPLETION OF THE INVESTIGATION** has been served on upon all parties and Commission Investigative Attorney, David Hollander, Esq., on June 19, 2006.

Marilyn R. Abbott, Secretary
U.S. International Trade Commission
500 E Street, SW – Room 112
Washington, D.C. 20436

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In the Matter of **CERTAIN AUDIO PROCESSING INTEGRATED CIRCUITS AND PRODUCTS CONTAINING SAME**	Inv. No. 337-TA-538

COMMISSION OPINION

This investigation is before the Commission on review of certain claim construction

issues, infringement and domestic industry with respect to U.S. Patent No. 6,366,522 ("the '522

patent").

I.   BACKGROUND

A.   Procedural History

The Commission instituted this investigation on April 18, 2005, based on a complaint

filed on behalf of SigmaTel, Inc. ("SigmaTel"). 70 *Fed. Reg.* 20172. The complaint alleged

violations of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, in the

importation into the United States, sale for importation, and sale within the United States after

importation of certain audio processing integrated circuits and products containing same by

reason of infringement of claim 10 of U.S. Patent No. 6,137,279 ("the '279 patent") and claim 13

of U.S. Patent No. 6,633,187 ("the '187 patent"). *Id.* Actions Semiconductor Co. ("Actions") of

Guangdong, China is the only named respondent.

On June 9, 2005, the administrative law judge ("ALJ") issued an initial determination

("ID") (Order No. 5) granting SigmaTel's motion to amend the complaint and notice of

investigation to add additional allegations of infringement of the previously asserted patents, and

to add an allegation of a violation of section 337 by reason of infringement of claims 1, 6, 9, and 13 of the '522 patent. On October 13, 2005, the ALJ issued an ID (Order No. 9) granting SigmaTel's motion to terminate the investigation as to the '279 patent. Neither ID was reviewed by the Commission.

The ALJ issued his final ID and recommended determination on remedy and bonding on March 20, 2006, concluding that there was a violation of section 337. Specifically, he found that the asserted claims of the '187 and '522 patents are not invalid and are infringed by Actions' accused products.

On April 3, 2006, respondent Actions petitioned for review of portions of the final ID. On April 10, 2006, SigmaTel and the Commission investigative attorney ("IA") filed responses opposing the petition for review. The Commission determined to review certain portions of the ALJ's findings and conclusions with respect to those patents and requested briefing from the parties on those issues. 71 *Fed. Reg.* 27512 (May 11, 2006). All parties filed timely submissions.

B.   The Patents in Issue

The '187 patent and the '522 patent have been asserted in this investigation. Both are generally directed to controlling power consumption in devices that receive and store digital information and then convert that information to an audio output. Both patents incorporate by reference U.S. Patent No. 6,204,651, which provides a more detailed disclosure of the on-chip power converter claimed in the '187 and '522 patents.

The '187 patent entitled "Method and Apparatus for Enabling a Stand Alone Integrated Circuit" issued on October 14, 2003. The named inventors are Michael R. May and Marcus W. May. SigmaTel alleged that the chips in Actions' ATJ207X, ATJ208X, and ATJ209X product

families infringe claim 13 of the '187 patent. SigmaTel also alleged that its 35XX series products practice claim 13 of the '187 patent and thus satisfy the domestic industry requirement of section 337.

The '522 patent entitled "Method and Apparatus for Controlling Power Consumption of an Integrated Circuit" issued on April 2, 2002. The named inventors are Marcus W. May and Daniel Mulligan. SigmaTel alleged that the chips in Actions' ATJ208X and ATJ209X product families infringe claims 1, 6, 9, and 13 of the '522 patent. SigmaTel also alleged that its 35XX series products practice claim 1 of the '522 patent, and therefore that it satisfies the domestic industry requirement of section 337.

C. The Accused Products

The accused products are audio processing integrated circuits ("ICs") used in digital music players ("MP3 players"). The commercial product numbers of respondent Actions' accused devices are ATJ2075, ATJ2075L (collectively "the 207X family" or "ATJ207X"); ATJ2085, ATJ2087, ATJ2089, PMA-300, ATJ2051, ATJ2053, ATJ2180, ATJ2181 (collectively "the 208X family"); and ATJ2095, ATJ2097, and ATJ2099 (collectively "the 209X family"). SFF 23, 25 (undisputed); Actions' pre-hearing statement at 6-7.

II. DISCUSSION

A. The '522 Patent

The ALJ found that Actions' accused products violated section 337 by reason of infringement of asserted claims 1, 6, 9, and 13 of the '522 patent. Specifically, the ALJ found the accused 208X and 209X products met all the limitations of the asserted claims of the '522 patent under his construction of the claims. He also found that SigmaTel satisfied the technical

3

prong of the domestic industry requirement.[1] We decline to adopt the ALJ's determination with respect to the construction of one claim limitation for the following reasons.

1.   Claim Construction

Claim construction is a matter of law and is reviewed *de novo* on appeal. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996). Claims are construed primarily in light of "intrinsic evidence" -- consisting of the language of the claim, the patent's specification, and the patent's prosecution history before the United States Patent and Trademark Office (PTO) -- and, as appropriate, "extrinsic evidence," such as expert testimony. *Id.* at 979-80.

In *Phillips v. AWH Corporation* the Court of Appeals for the Federal Circuit (Federal Circuit) confirmed that "[t]he inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation." 415 F.3d 1303, 1312 (Fed. Cir. 2005). The claim must be read in light of the specification, which can serve as a sort of dictionary to explain the invention and claim terms. *Markman*, 52 F.3d at 980-81. The Federal Circuit has emphasized that "the person of ordinary skill in the art is deemed to read the claim term not only in the 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 1312. Likewise, the patent's prosecution history, which is a record of the proceedings at the PTO leading to issuance of the patent, can be used to understand the language of the claim. *Markman*, 52 F.3d at 980-81. The specification, prosecution history, and extrinsic evidence are used only to

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[1] The ALJ previously found that SigmaTel satisfied the economic prong of the domestic industry requirement for both the '187 and the '522 patents. ALJ's Order No. 15 (unreviewed ID).

understand the claim language; they cannot be used to enlarge, diminish, vary, or contradict the

claim itself. *Markman*, 52 F.3d at 980-81.

Turning to the asserted claims, the ALJ construed several terms of the asserted claims of

the '522 patent, but the construction of only a single claim phrase, which is found in both of the

asserted independent claims, is at issue on review. Independent claim 1 of the '522 patent is an

apparatus claim, which reads as follows:

1. A power efficient integrated circuit comprising:

> phase lock loop operably coupled to receive a reference clock and to
> produce therefrom a system clock based on a system clock control
> signal;

> on-chip power supply control module operably coupled to regulate at least
> one supply from a power source and an inductance based on a
> power supply control signal;

> memory operably coupled to store at least one application; and

> computational engine operably coupled to **produce the system clock
> control signal and the power supply control signal based on a
> processing transfer characteristic of the computation engine**
> and processing requirements associated with processing at least a
> portion of the at least one application.

'522 patent, col. 6, l. 57 - col. 7, l. 4 (claim phrase at issue emphasized).

Independent claim 9 is a method claim, which reads as follows:

9. A method for controlling power consumption of an integrated circuit, the
method comprises the steps of:

> producing a system clock from a reference clock based on a system clock
> control signal;

> regulating at least one supply from at least one of: a linear regulator and a
> power source and an inductance based on a power supply control
> signal; and

5

> **producing the system clock control signal and the power supply control signal based on a processing transfer characteristic of a computation engine** and processing requirements associated with processing at least a portion of an application by the computation engine.

'522 patent, col. 7, ll. 53 - 65 (claim phrase at issue emphasized).

The ALJ determined that the claim limitation "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine" should be interpreted to mean that the processing transfer characteristics are used, but not determined in any particular manner, and that either the voltage or the frequency or both are adjusted.[2] ID at 69-70. He based his determination that the processing transfer characteristics do not need to be determined in any particular manner on the specification of the '522 patent and the doctrine of claim differentiation. Because dependent claims 3 and 11 of the '522 patent are directed to how the processing transfer characteristics are determined, the ALJ concluded that, under the doctrine of claim differentiation, the independent claims did not contain such a requirement. He based his findings with respect to voltage and/or frequency on the specification of the '522 patent and its prosecution history.

We decline to adopt part of the ALJ's claim construction of this limitation because, in our view, nothing in the intrinsic evidence requires that the plain meaning of the conjunctive form "and" be interpreted to mean "and/or." The Federal Circuit has stated that "[t]here is a "heavy presumption" that the terms used in claims "mean what they say and have the ordinary meaning that would be attributed to those words by persons skilled in the relevant art." *SuperGuide Corp.*

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[2]It was undisputed that the "system clock control signal" referenced in the claims adjusts the system clock frequency and that the "power supply control signal" adjusts the supply voltage. *See* ID at 65-67.

v. DirecTV Enters., Inc., 358 F.3d 870 , 873 (Fed. Cir. 2004) (quoting *Tex. Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1202 (Fed. Cir. 2002)). The Court went on to state that "claim terms take on their ordinary and accustomed meanings unless the patentee demonstrated an intent to deviate from the ordinary and accustomed meaning of a claim term by redefining the term or by characterizing the invention in the intrinsic record using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." *Id.* (citations omitted). Finally, the Court stated that "the written description, however, is not a substitute for, nor can it be used to rewrite, the chosen claim language." *Id.* With respect to the prosecution history, the Court stated that "[a]lthough it is correct that the prosecution history is always relevant to claim construction, it is also true that the prosecution history may not be used to infer the intentional narrowing of a claim absent the applicant's clear disavowal of claim coverage." *Id.* at 875. Also, in *Renishaw PLC v. Marposs Societa' Per Azioni*, the Federal Circuit stated that "[t]he patentee's lexicography must, of course, appear with reasonable clarity, deliberateness, and precision before it can affect the claim." 158 F.3d 1243, 1249 (Fed. Cir. 1998) (citations omitted). Thus, under Federal Circuit precedent a change to the plain meaning of a claim term must be clear, and we see nothing in the '522 specification or prosecution history that clearly alters the plain meaning of the word "and" used in the claim limitation under review.

The ALJ stated that the specification of the '522 patent discloses no instances where both frequency and voltage must be changed in order to optimize power consumption. ID at 67. He summarized three examples in the specification of the '522 patent that each set the frequency of the system clock and then varied the voltage. ID at 67-69. We determine, however, that whether the frequency is set first and then the voltage is varied, or vice versa, does not alter the plain

meaning of the asserted claims. In each of the examples discussed by the ALJ both the system clock control signal and the power supply control signal set the values of the frequency and the voltage for the chip. We find that nothing in the examples cited by the ALJ expressly changes the plain meaning of the word "and" in the asserted claims, which requires that both voltage and frequency are set, and can be adjusted by, the corresponding control signals.

The plain language of the asserted claims require that both the system clock control signal and the power supply control signal are produced, and then the frequency of the system clock and the voltage of the supply are set by the corresponding control signal. JX-1 at 6:57-7:4 and 7:53-7:65. We acknowledge that the specification includes some general statements that the system clock and/or the supply voltage may be adjusted to conserve power. See JX-1 at 1:44-47; 6:48-50. But the specification of the '522 patent also describes generating both the system clock control signal and the power supply control signal when discussing the operation of the computational engine of the integrated circuit in FIG. 1. The specification also discloses that the computational engine produces the system clock control signal based on the particular application being performed and sets the value of the system clock control signal such that the system clock produces a desired frequency value, in this example 5 Mhz. JX-1 at·2:56-67. The specification goes on to describe that the computational engine also produces a power supply control signal in addition to generating the system clock control signal, and that the power supply produces the desired voltage based on the power supply control signal. JX-1 at 3:7-20. Thus, the '522 patent specification indicates that both the frequency and the voltage levels are adjusted based on the produced control signals. As an example, the '522 patent specification describes that once the system clock has been set, the voltage of the supply may be varied in order to

8

optimize the processing of the application. JX-1 at 3:17-20. This describes the invention in a scenario that is consistent with the ordinary and accustomed understanding of the plain claim language, *viz.*, that both the system clock control signal and the power supply control signal are produced during operation and that the frequency and the voltage are variably set by those signals. We therefore determine that the asserted claims as properly construed require both the frequency and the voltage to be adjusted by the corresponding control signals.

We find that the language at issue in claims 1 and 9, "and," has a plain meaning that does not require resort to the specification for clarification. *See Phillips*, 415 F.3d at 1314 ("[i]n some cases, the ordinary meaning of claim language, as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words"). The Federal Circuit has required a precision and clarity when a patentee acts as his own lexicographer to vary the ordinary meaning of claim terms that we find in the '522 patent specification. *See Markman*, 52 F.3d at 980.

Moreover, in *Chef America, Inc. v. Lamb-Weston, Inc.*, the Court stated that when words are ordinary and simple English words they mean what they say absent an indication that their use is altered. 358 F.3d 1371, 1373 (Fed. Cir. 2004). The Court went on to state that "courts may not redraft claims, whether to make them operable or to sustain their validity." *Id.* at 1374. Nothing in the '522 patent specification expressly defines "and" to mean "and/or" in the context of the two control signals. In this case, we find that the applicants chose to claim their invention as requiring that both the system clock control signal and the power supply control signal are

9

produced to adjust the values of the frequency of the system clock and the voltage of the power supply.

We disagree with the ALJ that the plain language of this limitation requires only producing and not adjusting the signals. *See* ID at 66. The "producing" limitation is part of the asserted claims that all parties recognize recites an apparatus and method for controlling power consumption of an integrated circuit. We find that producing the power supply control signal and the system clock control signal is not divorced from the concept of adjusting the corresponding voltage and frequency levels. The ALJ correctly recognized this relationship when he stated that "the specification states that there is a need for a method and apparatus that adjust the system clock and/or the supply voltage to conserve power." ID at 67. The asserted claims, however, recite regulating, or adjusting, the voltage level and setting the frequency of the system clock using the corresponding control signals that are produced in order to control power consumption. JX-1 at 6:57-7:4 and 7:53-7:65. Thus, the limitation requiring "producing" the power supply and system clock control signals is not construed in isolation, and requires that the production of the control signals adjusts both the values of the voltage and frequency in the integrated circuit.

The ALJ also looked to the prosecution history and determined that his construction was supported by the arguments that the applicants made to overcome a rejection by the examiner based on U.S. Patent No. 6,067,627, issued to *Reents*. ID at 67. The ALJ noted that during the prosecution of the '522 patent, the applicants stated:

> "Reents does not teach or suggest having a computational engine generate the system clock control signal and the power supply control signal to [conserve] power. As disclosed in the specification of the present application on page 10 at lines 24-26 by adjusting the system clock and/or

10

the supply based on the application being executed by the IC, power consumption <u>may be optimized</u>."

ID at 67 (citing JX-2 at ST 0274464; Callahan, Tr. at 458) (emphasis in original). Thus, the ALJ concluded that the inventors distinguished *Reents* in part by arguing that power consumption may be optimized by adjusting the system clock and/or the supply based on the application being executed by the IC. *Id.* But the language relied upon by the ALJ, and recited by the applicants in the amendment, is a description of the language of the specification of the '522 patent, and not the language found in the claims. *See* JX-1 6:48-50. Moreover, in our view, that same language supports exactly the opposite conclusion because it indicates that the inventors knew how to express adjusting one or the other or both, namely by using the phrase "and/or." The inventors did not, however, use this phrase in the asserted claims, rather the inventors used the conjunctive word "and."

However we adopt the ALJ's construction and analysis of the claim phrase "processing transfer characteristics" referred to in the claim limitation under review. The ALJ found that this phrase was not explicitly defined in either independent claim 1 or 9, but that dependent claims 3 and 11 are specifically directed to the process of determining the processing transfer characteristics. ID at 61-62. Moreover, the specification of the '522 patent supports this claim construction by disclosing multiple embodiments, illustrated in figures 1 and 2, to determine the processing transfer characteristics while the language of the independent claims remains general. ID at 63 (citing JX-1, 3:27-29, 49-50). Actions argued in its petition for review that the processing transfer characteristics must be determined on-the-fly during operation of the chip before the system clock control signal and power supply control signal can be produced. Actions' Petition for Review at 45. Actions' own expert witness, Dr. Razavi, testified, however,

11

that the '522 patent distinguished between determining the processing transfer characteristics on the one hand, and setting the voltage and frequency on the other. ID at 63-65. Thus, in our view the ALJ's determination that the asserted claims do not require that the processing transfer characteristics be determined in a particular manner or on an on-going basis during chip operation is correct.

Based on our analysis, we determine that the claim phrase "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine" should be interpreted to mean that both the system clock control signal and the power supply control signal are required to be produced during operation of the integrated circuit such that the voltage and the frequency of the integrated circuit are adjusted based on a processing transfer characteristic, but that the processing transfer characteristic is not required to be determined in any particular manner.

2. Infringement

Once claims have been construed, they are compared to the allegedly infringing device. *See Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454 (Fed. Cir. 1998) (*en banc*). Infringement findings are questions of fact that require the patentee to establish that the accused device includes every claim limitation. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 29 (1997). The ID did not analyze whether the 952436 version of Actions' software would infringe the asserted claims of the '522 patent under the Commission's claim construction. We therefore remand the issue of infringement with respect to the accused 208X and 209X products using the 952436 version of firmware to the ALJ for consideration and factual findings.

12

We note that the parties apparently agree that at least three model numbers using the 952436 version firmware satisfy our claim construction. This is because Actions admits model numbers 2051, 2180, and PMA 300 in the 208X product family using the 952436 version firmware adjust both voltage and frequency during operation. *See* Actions' submission at 5; OUII's submission at 6-7; SigmaTel's submission at 26.

In addition, with regard to the accused 208X and 209X products that do not use the 952436 version firmware, we find that the ALJ made sufficient findings to find infringement of the asserted claims under our claim construction, and thus adopt his findings with respect to those products. The ALJ determined that SigmaTel's expert witness, Mr. Callahan, demonstrated in his tests that the ATJ2085 product operated at multiple voltage and frequency settings depending on the application. ID at 83, 98-99. The ALJ found that Actions' ATJ208X family includes off-chip components such as inductors, capacitors and diodes, and also includes on-chip components that control the power converters, therefore satisfying the on-chip power supply control module limitation. ID at 93. The ALJ further found that the claim limitation computational engine is not limited to a single microprocessor that manipulates signals based on operational instructions, but rather encompasses any circuitry that performs such functions. Thus, he found that Actions' accused chips include circuits such as the MCU and the DSP that literally satisfy the computational engine limitation. *See* ID at 95.

Furthermore, our claim construction requires that both the power supply control signal and the system clock control signal be produced and used to adjust the voltage and frequency, respectively. The ALJ determined that [

] in an example of the power supply control signal in Actions ATJ2085

product. ID at 93 (citing Callahan Tr. at 268). The ALJ also determined that "[i]t is significant that all versions of Actions firmware produced for each of the accused products, including the 952436 firmware, change frequencies based on an application, for example, based on the song's bit rate." ID at 97 (citing CX-9C at 12-15). Moreover, the ALJ stated that Mr. Callahan's tests showed that the Actions ATJ2085, which uses non-952436 firmware, changes the voltage and frequency settings of the device depending on the application [

]. *See* ID at 98 (citing Callahan Tr. at 201, 285-288; CX-161); ID at 104-105. Thus, for products not using 952436 firmware, the record evidence relied upon by the ALJ establishes by a preponderance of the evidence that Actions accused 208X products literally infringe claims 1 and 9 of the '522 patent under our claim construction, which requires that both the voltage and frequency are adjusted.

The ALJ also determined that the claim limitations in the asserted dependent claims 6 and 13 are literally infringed based on Actions' phase lock loop (PLL) and PLL control register. ID at 103, 105 (citing CDX-122, which is an Actions ATJ2085 data sheet). The ATJ2085 data sheet shows that the PLL includes a divider module as recited in each of the asserted claims 6 and 13 of the '522 patent. Thus, the record evidence relied upon by the ALJ establishes by a preponderance of the evidence that Actions accused 208X products which use non-952436 firmware, literally infringe dependent claims 6 and 13.

The ALJ also found that Mr. Callahan's testimony was persuasive regarding the infringement of the ATJ209X family. ID at 105-107. The ALJ rejected Actions' arguments that because the ATJ209X family uses different bits for control compared to the ATJ208X family that there is a substantive difference between the families for analysis of infringement. ID at 106.

14

Thus, in our view, the ALJ correctly found, and we accordingly adopt, that Actions'

accused 208X and 209X products that do not use the 952436 version of firmware literally

infringe the asserted claims of the '522 patent. Additionally, we find that 208X model numbers

2051, 2180, and PMA 300 that use the 952436 version firmware literally infringe the asserted

claims based on of Actions' admitted adjustment of both voltage and frequency in these models

and the ALJ's findings regarding the remaining claim limitations. However, a remand is

necessary for the ALJ to determine which of the remaining accused Actions products using the

952436 version of firmware infringe the asserted claims of the '522 patent under our claim

construction.

3.   Domestic Industry

To establish a violation of section 337, complainant must establish that "an industry in the

United States, relating to the articles protected by the patent ... concerned, exists or is in the

process of being established." 19 U.S.C. § 1337(a)(3). Typically, the domestic industry

requirement is viewed as consisting of two prongs: (1) the technical prong and (2) the economic

prong. *Certain Variable Speed Wind Turbines and Components Thereof*, Inv. No. 337-TA-376,

Comm'n Opinion 14-17 (1996). The economic prong requires investment in a domestic industry,

and the technical prong requires that the complainant actually practice at least one claim of the

asserted patent. *Certain Microsphere Adhesives*, Inv. No. 337-TA-366, Comm'n Opinion at 7-16

(1996).

The Commission has previously determined not to review the ALJ's initial determination

that SigmaTel satisfied the economic prong of the domestic industry requirement of section 337,

and thereby has adopted that determination. Thus, the only remaining issue with regard to

domestic industry is whether SigmaTel has satisfied the technical prong of the domestic industry requirement with respect to the '522 patent.

While the ID did not construe claim 1 of the '522 patent to require that both the frequency and the voltage must be adjustable during operation of the chip the ALJ's findings of fact indicate that the SigmaTel 35XX products do in fact adjust both. *See* ID 114-121. The ALJ found that the power supply control signal was embodied in the [   ] register bits that may be programmed to change the voltage. ID at 117 (citing Callahan Tr. at 300; CX-181 at 358-360); ID at 120. The ALJ also found that the system clock control signal was embodied in register [ ] that could be programmed by the DSP to change the frequency of the system clock. ID at 120. Furthermore, the ALJ determined that SigmaTel conducted experiments to [

] which indicates that the system clock and the power supply control signals are based on the processing transfer characteristics of the computational engine. *Id.* Moreover, the ALJ found that the 35XX software sets voltage and frequency for the [

] application. *Id.*
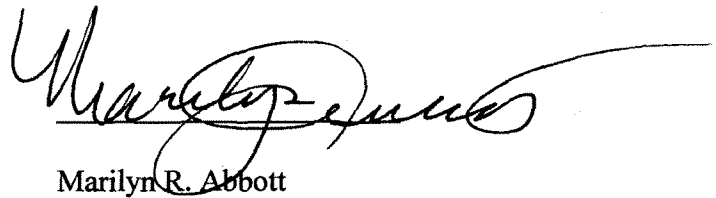
These findings by the ALJ support a determination that SigmaTel's 35XX products satisfy the technical prong of the domestic industry requirement with respect to claim 1 of the '522 patent under our new claim construction. Therefore, we adopt the ALJ's findings of fact on this issue and conclude that the technical prong of the domestic industry requirement has been met under the new claim construction.

II. CONCLUSION

For the reasons discussed herein, the Commission remands this investigation to the ALJ

for a determination of infringement of the asserted claims of the '522 patent with regard to the

accused 208X and 209X products using the 952436 version firmware.

By Order of the Commission.

Marilyn R. Abbott

Secretary to the Commission
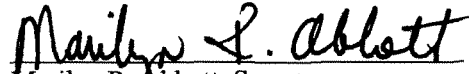
Issued: July 11, 2006

CERTAIN AUDIO PROCESSING INTEGRATED CIRCUITS,   **337-TA-538**
AND PRODUCTS CONTAINING SAME

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **Letter** has been served on upon all parties and Commission Investigative Attorney, David Hollander, Esq., on July 12, 2006.

Marilyn R. Abbott, Secretary
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Washington, D.C. 20436

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of   )
)
)
CERTAIN AUDIO PROCESSING INTEGRATED   )   Inv. No. 337-TA-538
CIRCUITS AND PRODUCTS CONTAINING SAME   )
)

NOTICE OF COMMISSION DECISION TO REVIEW PORTIONS OF AN INITIAL DETERMINATION FINDING A VIOLATION OF SECTION 337 OF THE TARIFF ACT OF 1930 AND TO DENY RESPONDENT'S MOTION FOR LEAVE TO FILE A REPLY TO THE RESPONSES TO RESPONDENT'S PETITION FOR REVIEW

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to review certain portions of a final initial determination ("ID") of the presiding administrative law judge ("ALJ") finding a violation of section 337 of the Tariff Act of 1930, as amended, in the above-captioned investigation. The Commission has also denied respondent's motion for leave to file a reply in support of its petition for review.

FOR FURTHER INFORMATION CONTACT: Steven W. Crabb, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 708-5432. Copies of the public version of the ALJ's ID and all other nonconfidential 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 (*http://www.usitc.gov*). The public record for this investigation may be viewed on the Commission's electronic docket (EDIS-ON-LINE) 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.

1

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on April 18, 2005, based on a complaint filed on behalf of SigmaTel, Inc. ("complainant") of Austin, Texas. 70 *Fed. Reg.* 20172. The complaint alleged violations of section 337 in the importation into the United States, sale for importation, and sale within the United States after importation of certain audio processing integrated circuits and products containing same by reason of infringement of claim 10 of U.S. Patent No. 6,137,279 ("the '279 patent") and claim 13 of U.S. Patent No. 6,633,187 ("the '187 patent"). *Id.* The notice of investigation named Actions Semiconductor Co. of Guangdong, China ("Actions") as the only respondent.

On June 9, 2005, the ALJ issued an ID (Order No. 5) granting complainant's motion to amend the complaint and notice of investigation to add allegations of infringement of the previously asserted patents and to add an allegation of a violation of section 337 by reason of infringement of claims 1, 6, 9, and 13 of U.S. Patent No. 6,366,522 ("the '522 patent"). That ID was not reviewed by the Commission.

On October 13, 2005, the ALJ issued an ID (Order No. 9) granting complainant's motion to terminate the investigation as to the '279 patent. On October 31, 2005, the Commission determined not to review the ID.

On October 31, 2005, the ALJ issued an ID (Order No. 14) granting complainant's motion for summary determination that the importation requirement of section 337 has been satisfied. On November 1, 2005, the ALJ issued an ID (Order No. 15) granting complainant's motion for summary determination that complainant has satisfied the economic prong of the domestic industry requirement of section 337 for the patents in issue. Those IDs were not reviewed by the Commission.

A five-day evidentiary hearing was held from November 29, 2005, through December 3, 2005. On March 20, 2006, the ALJ issued his final ID and recommended determination on remedy and bonding. The ALJ concluded that there was a violation of section 337. Specifically, he found that claim 13 of the '187 patent was valid and infringed by Actions' accused product families 207X, 208X, and 209X. The ALJ also determined that claims 1, 6, 9, and 13 of the '522 patent were valid and infringed by Actions' accused product families 208X and 209X.

On April 3, 2006, respondent Actions petitioned for review of portions of the final ID. On April 10, 2006, complainant SigmaTel and the Commission investigative attorney ("IA") filed responses in opposition to the petition for review.

On April 17, 2006, respondent Actions filed a motion for leave to file a reply to complainant SigmaTel's response to Actions' petition for review. On April 19, 2006, complainant SigmaTel filed a motion in opposition to Actions' motion. The Commission has determined to deny Actions' motion for leave to file a reply.

Having examined the record in this investigation, including the ID, the petitions for

2

review, and the responses thereto, the Commission has determined to review the ID in part:

(1) With respect to the '187 patent, the Commission has determined to review the ALJ's construction of the claim term "memory" in claim 13 to remove the apparent inadvertent inclusion of the word "firmware" from his claim construction.

(2) With respect to the '522 patent, the Commission has determined to review the ALJ's construction of the following limitation of claims 1 and 9: "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine." The Commission has also determined to review the ALJ's findings of fact and conclusions of law concerning infringement of claims 1, 6, 9, and 13 of the '522 patent by the accused Actions chips, and to review the ALJ's findings of fact and conclusions of law concerning whether SigmaTel's chips satisfy the technical prong of the domestic industry requirement of section 337 in regard to the '522 patent.

The Commission has determined not to review the remainder of the ID.

On review, the Commission requests briefing based on the evidentiary record on all issues under review. In particular, the Commission requests that the parties brief the following questions, with all answers supported by citations to legal authority and the evidentiary record:

1. Does Federal Circuit case law support reference to the specification of the patent to vary the plain meaning of a claim term that is a simple English word such as "and?" See e.g. *Phillips v. AWH Corporation*, 415 F.3d 1303, 1314 (Fed. Cir. 2005); *Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1373 (Fed. Cir. 2004).

2. Please discuss the impact on the ALJ's infringement analysis if the claim term "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine" in claims 1 and 9 of the '522 patent is interpreted to require that both the frequency and voltage must be adjusted.

3. Please discuss the impact on the ALJ's analysis of the technical prong of the domestic industry requirement in this investigation if the claim term "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine" in claim 1 of the '522 patent is interpreted to mean that both the frequency and voltage must be adjusted.

In connection with the final disposition of this investigation, the Commission may issue (1) an order that could result in the exclusion of the subject articles from entry into the United States, and/or (2) cease and desist orders that could result in respondents 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 are likely to do so. For background information, see the Commission Opinion, *In the Matter of Certain Devices for Connecting Computers via Telephone Lines*, Inv. No. 337-TA-360.

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 President has 60 days to approve or disapprove the Commission's action. During this period, the subject articles would be entitled to enter the United States under a bond, in an amount to be 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.
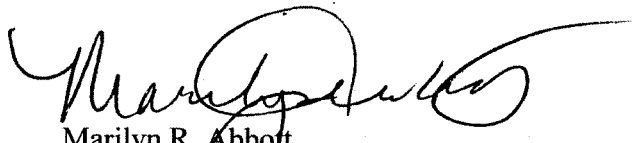
WRITTEN SUBMISSIONS: The parties to the investigation are requested to file written submissions on the issues under review. The submission should be concise and thoroughly referenced to the record in this investigation, including references to exhibits and testimony. Additionally, the parties to the investigation, interested government agencies, and any other interested persons are encouraged to file written submissions on the issues of remedy, the public interest, and bonding. Such submissions should address the ALJ's March 20, 2006, recommended determination 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 requested to supply the expiration dates of the patents at issue and the HTSUS numbers under which the accused products are imported. The written submissions and proposed remedial orders must be filed no later than the close of business on May 15, 2006. Reply submissions must be filed no later than the close of business on May 22, 2006. No further submissions will be permitted unless otherwise ordered by the Commission.

Persons filing written submissions must file with the Office of the Secretary the original and 12 true copies thereof on or before the deadlines stated above. Any person desiring to submit

a document (or portion thereof) 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 § 201.6. Documents for which confidential treatment is granted by the Commission will be treated accordingly. All nonconfidential written submissions will be available for public inspection at the Office of the Secretary.

This action is taken under the authority of section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and in sections 210.42 - .46 of the Commission's Rules of Practice and Procedure (19 C.F.R. §§ 210.42 - .46).

By order of the Commission.
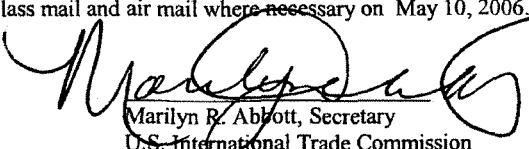
Marilyn R. Abbott
Secretary to the Commission

Issued: May 5, 2006

5

CERTAIN AUDIO PROCESSING INTEGRATED CIRCUITS,   337-TA-538
AND PRODUCTS CONTAINING SAME

CERTIFICATE OF SERVICE

I Marilyn R. Abbott, hereby certify that the attached **NOTICE OF COMMISSION DECISION TO REVIEW PORTIONS OF AN INITIAL DETERMINATION FINDING A VIOLATION OF SECTION 337 OF THE TARIFF ACT OF 1930 AND TO DENY RESPONDENT'S MOTION FOR LEAVE TO FILE A REPLY TO THE RESPONSES TO RESPONDENT'S PETITION FOR REVIEW** has been served on upon all parties and Commission Investigative Attorney, Steven W. Crabb, Esq. via first class mail and air mail where necessary on May 10, 2006.

Marilyn R. Abbott, Secretary
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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of)	
)	
CERTAIN AUDIO PROCESSING)	Investigation No. 337-TA-538
INTEGRATED CIRCUITS, AND)	
PRODUCTS CONTAINING SAME)	
)	

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

importation; that the claims in issue of U.S. Patent Nos. 6,633,187 and 6,366,522 are not invalid;

that the asserted claims are infringed; and that there is a domestic industry in complainant's

35XX product line. Thus, he finds a violation of section 337 of the Tariff Act of 1930, as

amended (19 U.S.C. § 1337), 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

audio processing ICs of two gigabytes or less of flash memory and extending to MP3 players

containing said infringing ICs. He further recommends that any bond, during the Presidential

review period, be in the amount of 29 cents per imported Actions infringing IC chip and per

imported downstream MP3 player containing said infringing chip.

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TABLE OF CONTENTS

ABBREVIATIONS

CBr	Complainant's Post-hearing Brief
CFF	Complainant's Proposed Finding
CORPFF	Complainant's Objection To Respondent's Proposed Finding
COSFF	Complainant's Objection to Staff's Proposed Finding
CRBr	Complainant's Post-hearing Reply Brief
CRRPFF	Complainant's Proposed Rebuttal Finding to RPFF
CX	Complainant's Exhibit
JX	Joint Exhibit
RBr	Respondent's Post-hearing Brief
RX	Respondent's Exhibit
RPFF	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

I.   Procedural History

By notice, which issued on April 12, 2005, 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 audio processing integrated circuits, and products containing same, by reason of infringement of claim 10 of U.S. Patent No. 6,137,279 (the '279 patent) or claim 13 of U.S. Patent No. 6,633,187 (the '187 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 March 14, 2005, under section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, on behalf of SigmaTel, Inc. (SigmaTel) of Austin, Texas. A letter supplementing the complaint was filed on April 6. The complaint requested that the Commission issue a permanent limited exclusion order and a permanent cease and desist order.

Named in the notice of investigation, as respondent and served with the complaint, was:

Actions Semiconductor Co. (Actions)
15-1 NO.1, HIT Road
Tangjia, Zhuhai, Guangdong
China 519085

Order No. 3, which issued on May 16, 2005, set a target date of June 19, 2006.

Order No. 5, which issued on June 9, 2005 granted complainant's Motion No. 538-1 to amend the complaint and notice of investigation to: (1) add allegations of infringement of the asserted claims by the ATJ2085 device of respondent Actions; and (2) to assert claims 1, 6, 9 and 13 of SigmaTel's U.S. Patent No. 6,366,522 (the '522 patent) against said ATJ2085 device. The

Commission determined not to review Order No. 5 on July 12.

Order No. 9, which issued on October 13, 2005, granted complainant's Motion No. 538-16 to terminate the investigation as to the '279 patent. The Commission determined not to review Order No. 9 on October 31.

Order No. 10, which issued on October 14 denied complainant's Motion No. 538-10 to amend the complaint and notice of investigation to add allegations of infringement of claim 9 of the '187 patent.

Order No. 14, which issued on October 31, 2005, granted complainant's Motion No. 538-15 for summary determination on the importation issue. The Commission determined not to review said order on November 30.

Order No. 15, which issued on November 1, 2005, granted complainant's Motion No. 538-14 for summary determination that complainant has satisfied the economic prong of the domestic industry requirement.[1] The Commission determined not to review Order No. 15 on November 30.

A pre-hearing conference was conducted on November 29, 2005, with the hearing also commencing on that date and continuing to December 3. At the pre-hearing conference, the administrative law judge (1) granted respondent's Motion No. 538-28 in limine to preclude complainant's expert Benjamin Goldberg from offering evidence on the validity and enforceability of the asserted claims (Tr. at 19); (2) denied complainant's Motion No. 538-29 in limine to exclude from the record any alleged evidence respondent seeks to offer in support of its affirmative defenses that was not previously disclosed to complainant by respondent in its

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[1] A corrected copy of Order No. 15 issued on November 1, 2005.

interrogatory responses (Tr. at 19); (3) denied respondent's Motion No. 538-26 in limine to preclude complainant from offering evidence or argument of indirect infringement (Tr. at 20); (4) granted respondent's Motion No. 538-27 in limine to submit six additional trial exhibits (Tr. at 10); and (5) denied respondent's Motion No. 538-30 in limine to preclude complainant from offering evidence or argument relating to infringement under the doctrine of equivalents. (Tr. at 20.)

All parties participated in the hearing. Post-hearing submissions have been filed. The matter is now ready for a final decision.[2]

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.

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[2] On November 28, 2005 complainant moved for sanctions against respondent. (Motion Docket No. 538-31.) On December 9, respondent moved to strike certain testimony of complainant's expert Callahan from complainant's rebuttal case. (Motion Docket No. 538-33.) On February 1, 2006 complainant moved to reopen the record to admit additional evidence. (Motion Docket No. 538-35.) Motion Nos. 538-31, 538-33 and 538-35 are treated infra.

On January 10, 2006, respondent moved for leave to file one date late certain post hearing submissions. (Motion Docket No. 538-34.) In a filing dated January 11 complainant opposed Motion No. 538-34. Motion No. 538-34 is granted.

II.   Parties And Experts

        See FF 1-61.

III.   Jurisdiction

        The administrative law judge finds that SigmaTel's complaint and amended complaint

state a cause of action under Section 337. Also the administrative law judge has issued Order

No. 14 granting SigmaTel's motion for summary determination that the accused articles have

been imported into the United States which decision the Commission determined not to review.

See Section I supra. Thus, the Commission has in rem jurisdiction over the subject matter of this

investigation. See Amgen, Inc. v. United States International Trade Commission, 902 F.2d 1532,

1536 (Fed. Cir. 1990). Actions has responded to the complaint and notice of investigation. It

also has participated in the investigation. Hence, the Commission has in personam jurisdiction.

IV.   The Products In Issue

        It is admitted that the products at issue are audio processing integrated circuits. (Callahan,

Tr. at 147-48.) (SFF 23 (undisputed).) It is also admitted that said products are configured to

receive power from a host device, such as a PC, and from a battery power source when used in a

portable mode; that as a result, those products include power saving features and specific chip

enablement techniques that can be used depending upon the particular power source that is being

utilized; that products at issue may be included as a component in single-chip highly-integrated

digital music circuits that are included in consumer products such as portable, battery-powered

MP3 players; and that products at issue may also include dynamic, application-independent

power saving features. (Callahan, Tr. at 147-48.) (SFF 24 (undisputed).)

        The commercial product numbers accused of infringement are ATJ2075, ATJ2075L

4

(collectively the 207X family), ATJ2085, ATJ2087, ATJ2089, including PMA-300, ATJ2051, ATJ2053, ATJ2180, ATJ2181 (collectively the 208X family), ATJ2095, ATJ2097, and ATJ2099 (collectively the 209X family). Actions' chips have base designs which are internal product numbers relating to the commercial product numbers. The 207X family is supported by base designs designated as{

} The 208X family is supported by base designs designated as{

} The 209X family is supported by a base design designated as {   } (Callahan, Tr. at 151-54; CDX 61.) (SPFF 25 (undisputed).) Complainant has put in issue its 35XX products with respect to the domestic industry requirement. (CBr at 99, 106.)

V.   The Patents In Issue

The '187 patent, entitled "Method and Apparatus for Enabling a Stand Alone Integrated Circuit," issued on October 14, 2003 to inventors Michael May and Marcus May. (JX-3.) The '187 patent is based on United States Patent Application Serial No. 09/716,731, filed on November 20, 2000. (JX-3.)

The '522 patent, entitled "Method and Apparatus for Controlling Power Consumption of an Integrated Circuit," issued April 2, 2002, to inventors Marcus May and Daniel Mulligan. (JX-1.) The '522 patent is based on United States Patent Application Serial No. 09/716,616, filed on November 20, 2000. (JX-1.)

United States Letters Patent No. 6,204,651 (the '651 patent), entitled "Method and Apparatus for Regulating an Output Voltage of a Switch Mode Converter," issued on March 20, 2001, to said inventors Marcus May and Michael May, from Application Serial No. 09/551,123, filed on April 18, 2000. (JX-7.) The '187 patent refers to the application for the '651 patent for a

5

"more detailed discussion of the on-chip power converter 18." (JX-3 at 2:60-65.) The '522

patent also refers to said application for a "more detailed discussion on the on-chip power supply

20." (JX-1 at 3:22-27.)

VI.   Person Of Ordinary Skill In The Art

A person of ordinary skill in the art relevant to the claimed inventions of the '187 and

'522 patents is a person with at least a BSEE from an accredited university or college, with three

to four years of experience in the design of mixed-signal integrated circuits. Alternatively, a

person of ordinary skill in the art could have both a BSEE and an MSEE from an accredited

university or college, plus one to two years of experience in the design of mixed-signal integrated

circuits. In addition to the foregoing requirements for educational and industrial experience, a

person of ordinary skill in the art would have some experience working with integrated voltage

regulator circuits and microcontrollers, microprocessors, or digital signal processors. (Callahan,

Tr. at 104-105; CDX-60C.) (CPFF 4.4 (undisputed).)

VII.   Motion No. 538-33

Respondent, on December 9, 2005, pursuant to Commission rule 210.15, moved to strike

certain testimony of complainant's expert, M. J. Callahan, Jr. from the evidentiary record.

(Motion Docket No. 538-33.)[3]

Complainant, in a response dated December 19, 2005, opposed Motion No. 538-33.

The staff, in a response dated December 19, 2005, argued that Motion No. 538-33 should

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[3] Specifically respondent seeks to strike the following hearing transcript portion: (1) 1837, line 22 through 1842, line 5; (2) 1842, lines 7-12 and 1843, line 15 through 1844, line 15; (3) 1852, line 11 through 1857, line 1; (4) 1815, line 21 through 1826, line 11; and (5) 1829, line 2 through 1831, line 18 and 1857, line 13 through 1861, line 20.

be granted only to the extent that the testimony at page 1857, line 13 through page 1861, line 20 should be stricken.

In issue is whether the following testimony should be stricken: (1) Callahan's supplemental infringement contention about "processing module," "memory" and "operational instructions" for establishing an idle state in Actions' accused chip and in SigmaTel's chip, (2) Callahan's testimony concerning the DCDIS NMI signal as infringing and testimony and testimony concerning an "overvoltage condition" and (3) certain testimony of Callahan relating to infringement under the doctrine of equivalents.

Regarding alleged infringement involving the "operational instructions" of asserted claim 13 of the '187 patent, in Callahan's direct testimony in SigmaTel's case in chief he quoted the following deposition testimony of Actions' fact witness Shao Chaun Li: "[Question: In regard to CDX-117,] would you agree that when the signal reset bar is low in the 2085, that all the digital blocks that I identified will be reset to their initial state, correct . . . . [Answer:] Personally, I think this understanding is okay." (Callahan, Tr. at 181.) Claim 13 explicitly recites a reset condition. Thus, the administrative law judge finds that Callahan's testimony in SigmaTel's case in chief gives notice of his opinion that at least the {   } signal satisfies the limitation regarding operational instructions that hold at least part of the integrated circuit in a reset condition. Additionally, the {   } signals are mentioned on page 17, paragraph h, and page 27 paragraph a, of Callahan's initial expert report. Also, Actions' expert Razavi acknowledged during Actions' case in chief that "Mr. Callahan further stated that the signal called {   } on the right-hand side [of CDX-114] is created by the signal on the left-hand side [of CDX-114] called{   } (Razavi, Tr. at 1389), which testimony

7

was given in connection with Razavi's opinion that the "operational instructions" limitation was not met by Actions' accused products. (Id. 2-16.) In addition Exhibit CX-32C is a representation of a circuit (Actions-934841) that was referred to in Callahan's expert report at page 10, paragraph c, and is related to testimony Callahan gave in SigmaTel's case in chief regarding the { } Also, a portion of the circuit shown in CX-32C is identical to a circuit shown in Callahan's initial expert report at page 17, paragraph i. Hence, Callahan's testimony at page 1837, line 22 through 1842, line 5, should not be stricken.

As for the "operational instructions" limitation of asserted claim 13 with reference to the domestic industry, in Callahan's initial expert report at page 51, paragraph b (in the section entitled "Memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to: ") he specifically states that

{

} is the signal that enables functioning of a portion of the IC, if it is held low the IC [is] in an idle state. Hence, Callahan tied the { } to the idle state.

Additionally, in Callahan's direct testimony during SigmaTel's case in chief, Callahan testified, in association with CDX-129 and the "latch" mentioned above, that{

} (Callahan, Tr. at 239.) This testimony was given in regard to a question about "operational instructions." (Callahan, Tr. at 237-238.) The administrative law judge finds it is clear from CDX-129 that one of the AND gates he is referring to{ }It is also clear that the signal he is referring to, the signal that is given to the digital section and comes out

of the AND gate is {   } Hence, he finds in Callahan's

direct testimony in SigmaTel's case in chief, Callahan identified the output signal

{   } that corresponds to the "operational instructions." Thus,

Callahan's testimony at page 1852, line 11, through 1857, line 1 should not be stricken.

Regarding the{   }signal, the programming module for the Actions 2075 device

describes the{   } as a term that refers to the{   }(CDX-

118.) Callahan testified as to that register entry during his deposition on November 17, 2005.

(Exhibit 1, Callahan's Deposition Tr. at 66-67.) On cross-examination by Actions' counsel at the

hearing, Callahan also testified regarding the{   }signal during SigmaTel's case in chief

and stated that the{   } is a memory component. (Callahan, Tr. at 423-424.) Hence,

Callahan's testimony at page 1837, line 22, through 1842, line 5, should not be stricken.

Referring to Callahan's testimony regarding an "overvoltage condition" Actions' Lee

discussed the{   } signal on his own without being specifically asked about this signal.

(Lee, Tr. at 1146, 1150.) Moreover, he suggested that this signal may prevent infringement. Id.

Also, Callahan was asked on rebuttal to explain why the{   } signal mentioned by Lee

did not affect Callahan's infringement opinion regarding the{   }(Callahan, Tr. at 1824-

1825.) Callahan testified that{   } and

thus, it does not affect his infringement analysis regarding the normal operation of the accused

Actions device. Id. The administrative law judge finds that Callahan was responding to an

argument raised by a fact witness in Actions' case in chief. Thus, Callahan's testimony at page

1815, line 21, through 1826, line 11, should not be stricken.

As for Callahan's testimony regarding the doctrine of equivalents SigmaTel contends that

9

Callahan's testimony was proper rebuttal to Razavi's claim constructions (memo at 10, 11).

Such rebuttal however, should not be used for new legal theories of infringement that could have been presented in SigmaTel's case in chief. Given the fact that this issue was raised during the final hours of the hearing and complainant had notice at the pre-hearing conference that it could offer evidence on the doctrine of equivalents in its case in chief,[4] the administrative law judge finds that Actions was denied the ability to present an adequate sur-rebuttal case on the doctrine of equivalents. Thus, Actions' Motion No. 538-33 is granted to the extent that page 1857, line 13, through 1861, line 20, are stricken based on Actions' objection at the hearing.[5]

Motion No. 538-33 is granted to the extent indicated.

VIII.   Motion No. 538-35

Complainant, on January 31, 2006, pursuant to Commission rule 210.42(g), moved to reopen the evidentiary record for the purpose of admitting into evidence an exhibit identified as CX-217C-A, which consists of two pages of Commission rule 30(b)(6) testimony from the deposition of respondent's corporate witness Raymond Liu,[6] and an exhibit identified as CX-349, which is a page from the IEEE dictionary that includes a definition of the term "random access memory."

Respondent, in a response filed on February 8, 2006, opposed Motion No. 538-35.

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[4] In denying respondent's Motion No. 538-30 in limine complainant was put on notice that it could offer evidence on the doctrine of equivalents in its case in chief.

[5] Actions did not preserve its objection to pages 1829, line 2, through 1831, line 18, of the transcript. Therefore, any objection to that testimony is found to be waived.

[6] The administrative law judge has already admitted into evidence other portions of Liu's testimony at the request of both parties. See CX-275C, CX-276C, RX-232C, RX-233C and RX234C.

The staff did not respond to Motion No. 538-35.

Complainant, in support of Motion No. 538-35 argued that the IEEE definition (CX-349) should be admitted into evidence because it relates to the meaning of the claimed term "memory" of asserted claim 13 of the '187 patent. It is argued that the deposition testimony (CX-271C-A) relates to respondent's assertion that no remedy should issue in this investigation, assuming that the administrative law judge finds that only the '522 patent is infringed, because all of respondent's customers are now exclusively using a "952436" version of software that allegedly designs around the '522 patent; and that respondent's corporate witness Liu confirmed at his deposition that once respondent distributes different versions of its software, it cannot be certain which versions are used with its infringing integrated circuits because respondent has neither authority nor control over its customers with respect to the software that they use.

Respondent, in its opposition, argued that Liu's testimony predates the 952436 firmware (952436 version of software) and thus, is not relevant. It also argued that the "term 'RAM' is not claimed and does not require construction, so the IEEE dictionary definition is not relevant."

The administrative law judge may take judicial notice of dictionary definitions. Hence, Motion No. 538-35 is granted as it relates to CX-349. Referring to CX-271C-A it is a fact that said exhibit predates the 952436 firmware. However, as the administrative law judge repeatedly stated during the hearing, respondent had the opportunity to argue the weight given to any evidence. Moreover, in evidence is other testimony of this Commission rule 30(b)(6) witness. Hence, Motion No. 538-35, as it relates to CX-271C-A, is granted.

IX.   Motion No. 538-31

On November 28, 2005, complainant filed a motion for sanctions against respondent

11

Actions, under Commission rules 210.4, 210.25, and 210.27(d)(3). (Motion Docket No. 538-31.)

In a response filed November 29, 2006, respondent opposed Motion No. 538-31.

The staff, in a response dated November 29, 2006 treating Motion No. 538-31 as a motion to compel discovery, supported said motion to the extent it sought "a deposition."

Motion No. 538-31 is based on an alleged inconsistency between Actions' representations in discovery responses and in a motion response and its disclosures in a registration statement filed with the Securities and Exchange Commission on October 24, 2005 ("Form F-1," Motion Exhibit 1). SigmaTel sought a variety of proposed sanctions, including additional discovery, adverse inferences, production of an attorney-client communications log, and other non-monetary sanctions, as well as monetary sanctions. (Motion at 4-6.) However, as seen infra, there was a shifting of positions at the hearing on the pending motion.

On November 29, 2006, at the hearing, the administrative law judge referenced an application by complainant for subpoena ad testificandum and duces tecum of Credit Suisse First Boston received in a letter dated November 28 from complainant. (Tr. at 190-91.) The administrative law judge stated that he would sign the subpoena and in asking about its relationship to Motion No. 538-31, complainant initially represented:

> MR. COUGHLAN: Yes, Your Honor, this is Jim Coughlan for Complainant, and some of the topics that I believe are in the, that we're seeking discovery relate to the identity of downstream products that contain the accused device, and therefore, this information is relevant to any remedy that the Commission may issue if, indeed, they determine that there's been a violation of Section 337, so in that respect, it [the subpoena] doesn't all, it doesn't necessarily relate to the sanctions as much as it does to any remedy that might issue.

(Tr. at 191-2 (emphasis added).) In response respondent argued:

> MR. JARVIS: Yes. Thank you, Your Honor.
> Credit Suisse obviously is not represented here in
> the hearing, and I do not represent them, so I can't
> speak for them. But as an interested party, Actions
> would object and move to quash because the period
> for discovery on remedy issues is long closed.
> You've just heard the representation of SigmaTel
> that this is primarily directed toward remedy issues.
>
> Interrogatory responses were given that identified,
> by model number, MP3 players that were known to
> incorporate Actions' ICs. This seems to me, Your
> Honor, far past the pale of late discovery.

(Tr. at 192-3.) The administrative law judge asked again the relationship of the subpoena to

Motion No. 538-31 and complainant responded:

> MR. COUGHLAN: One point, Your Honor, is that
> I'm very certain that Respondent does not have
> standing to --
>
> * * *
>
> MR. COUGHLAN: Yes, Your Honor. In all
> honesty, it is entwined with the motion for
> sanctions, but it's not -- what we're trying to do,
> Your Honor, is find out the identity of downstream
> products that contain these articles. Now, during
> this investigation, it was represented to us by
> Actions that in fact they had no such knowledge of
> any downstream products that incorporate their
> accused products that are sold in the United States.

(Tr. at 195-96 (emphasis added).) Complainant then indicated that Motion No. 538-31 was

"ripe" for action. (Tr. at 196.)

On November 30, 2006 at the hearing the administrative law judge questioned the staff

on its response to Motion No. 538-31 and the staff responded:

MR. MOORE: The staff's position is the
deposition person would be somewhat
knowledgeable of the SEC filing. The issue goes
directly to whether the SEC filing was inconsistent
with what was said during discovery, so, you know,
the staff doesn't know and I guess Respondents
should be able to determine who would be the
person most knowledgeable to answer those
questions. But the staff still believes that a
deposition of a person, whoever that person may be,
would probably be necessary to fully resolve this
issue.

(Tr. at 417-19 (emphasis added).) Complainant then represented:

MR. COUGHLAN: Briefly what the staff just
stated is essentially what we would like to do, that I
would be very happy if we could have that
deposition, Your Honor. And essentially the staff's
-- the Complainant's position is that if this had
arisen during the discovery period, then we would
have had the ability to serve interrogatories, take
depositions.

But since it happened after that close, we don't want
to be prejudiced by that fact. We would like to get
as much discovery -- that the appropriate amount of
discovery as we would have been entitled to if this
had all erupted during the discovery period.

(Tr. at 419-20 (emphasis added).) Respondent responded:

MR. JARVIS: Thank you, Your Honor, this is Tom
Jarvis. I believe that the essential fact is that the
SEC filing was available to Complainant and to the
staff as of October 24th. We're over a month now
of having had this available, discovery could have
been sought earlier.

Scheduled for testimony during the trial is Mr. Leo
Hsieh, who is the assistant to the chairman of
Actions who will be able to give testimony in the
courtroom. And so I believe that might be a more

14

> expeditious approach to obtaining the information
> sought by the staff and Complainant.

(Tr. at 420 (emphasis added).)

On December 1, 2006, at the hearing the administrative law judge again questioned the

parties about Motion No. 538-31. Thus, the record reads:

> JUDGE LUCKERN: Before we have any
> redirect, Mr. Moore, I do have before me the
> staff's response to Complainant's motion for
> sanctions, which is dated November 29.
>
> On page 3 you had represented the staff believes or
> actually Mr. Hollander, he is over there too, so he is
> the one, Mr. Hollander represented that the staff
> believes further discovery into the information
> gathered by Actions from its customers is
> appropriate.
>
> I understand that there was some deposition taken
> yesterday afternoon, I believe, of this witness or
> something like that. Is the staff satisfied now that
> any discovery that they had in mind has been
> completed and, of course, we have had this
> examination of this witness before me this
> morning. What is the staff's position?
>
> MR. HOLLANDER: Well, Your Honor, it is
> always possible to delve further into discovery. We
> did just have a limited amount of time with the
> witness yesterday, but we're satisfied with where
> things stand, given where we are and the testimony
> we have been able to get, I think that we're not
> seeking any further discovery, let's put it that way.
>
> * * *
>
> MR. HOLLANDER: Based on the record as it
> stands now, we don't support the motion for
> sanctions. The reason we left that open in our

filing is, was the possibility that further discovery might lend more support to the idea that there was a discrepancy between what had been provided in discovery and the knowledge, for example, of this witness about this filing, but I don't really believe the testimony has provided further support for that.

I think there is not a sanctionable -- a big enough discrepancy to warrant sanctions.

So as the record stands now, we don't support any further sanctions.

JUDGE LUCKERN: Is it the position of the staff that the motions for sanctions now is ripe for action by the Administrative Law Judge?

MR. HOLLANDER: I believe so. Yes, Your Honor.

JUDGE LUCKERN: Does Complainant, I will give them the opportunity, do they want to do any more examination of this witness in light of what they just heard? I just throw that out. If there is some opposition to that by somebody, let me know. Certainly Mr. Kovalick is going to have an opportunity for any redirect. Mr. Jacobi or Mr. Taylor, somebody on your side?

MR. JACOBI: Your Honor, the deposition that we took of Mr. Hseih yesterday lasted about an hour and 15 minutes because Mr. Hseih was supposed to appear as a witness beginning at 4 p.m. yesterday afternoon, so he had to get back to the court.

And we didn't complete our examination of Mr. Hseih. In addition, Mr. Hseih testified during his deposition that he could not answer some of the questions and he was not the person with most knowledge about this particular filing.

We don't feel that we have had a sufficient opportunity to delve into the background of the

discrepancies between this particular filing and
some of the positions that Actions has taken during
the course of this proceeding.

JUDGE LUCKERN: Well, let me ask the
Complainant this question. As far as
Complainant is concerned, based on the record so
far and deposition yesterday, which obviously is not
in this record now, but is the motion for sanctions
filed by Complainant ripe for action by me right
now or is Complainant requesting that I hold off? I
want to get rid of everything that I can when I can.

So what is your position, Mr. Jacobi?

MR. JACOBI: This is Mr. Taylor, Your Honor. To
the extent that we have any further arguments about
the sanctions motion, we prefer, first of all, to get
the witness off the stand. We would like to hear
the remainder of the testimony. I don't know if Mr.
Kovalick has any redirect, but we would like to hear
that first.

And then we would like to come forward with your
position on whether we should move forward with
the sanctions determination.

(Tr. at 1024-25, 1027-29 (emphasis added).)

Complainant then was asked by the administrative law judge whether Motion No. 538-31

was ripe for action, and complainant responded:

MR. TAYLOR: Well, we don't think so.
And the reason is, Your Honor, the witness just
testified that{

                                                  }
and so we would like to follow up on that. We have
only had a limited time to depose Mr. Hseih. We
would like to follow up on those questions.

> We have an outstanding deposition subpoena that
> we would like to follow up on with the banks and
> they may have further information, may confirm
> what Mr. Hseih is saying or may be inconsistent
> with what Mr. Hseih is stating.
>
> We should have that opportunity to follow up, Your
> Honor, especially in light of the fact that now there
> appears to be no dispute that at the time Actions
> was telling the court and telling us, taking the
> position that there was no importation, no evidence
> of importation, and, in fact, accusing, accusing
> SigmaTel of fabricating the importation, that we
> should be allowed to continue the investigation and
> determine whether or not there is sanctionable
> conduct here.
>
> * * *
>
> MR. TAYLOR: I think so, Your Honor. We think
> it is likely that there is sanctionable conduct here
> and the motion could stand on its own, but we think
> that we should follow up, have the opportunity to
> discover more facts and supplement that motion, so,
> in essence, if we are able to continue to get
> discovery on this matter, then we would be a
> happy to withdraw the motion for sanctions,
> pending that discovery, with the opportunity to
> refile later and have the opportunity to add in the
> testimony that we have heard today as well as any
> future testimony.

(Tr. at 1030-31, 1033 (emphasis added).) The administrative law judge then indicated that any

party may file a motion while the judge has jurisdiction. (Tr. at 1033-34.) It was then argued:

> MR. JARVIS: They have had plenty of time to
> conduct any discovery that they needed to. Second,
> they have already had two depositions, one of Dr.
> Martin, who conducted an investigation of this
> issue, and another of Mr. Hseih, and have now
> today obtained the court testimony of Mr. Hseih.

18

They did complain that yesterday's deposition was brief. We offered Mr. Hseih beginning at noon yesterday. SigmaTel declined until 2:00 o'clock to commence the deposition and then didn't show up until about 2:20, I'm told.

Mr. Hseih was scheduled to begin his testimony yesterday afternoon and, therefore, had to return to court in order to be here for timely testimony. So I believe, Your Honor, a fair evaluation here is they have had good opportunity for discovery, there is no need for more and the issue is now ripe for decision.

JUDGE LUCKERN: Let me ask you this, Mr. Jarvis. I haven't read the deposition. I have had a few other things to be doing in this hearing. But what about the argument that was made that Mr. Hseih was not able to answer some of these questions because he had to check with whatever it is -- whatever I heard Mr. Jacobi just say, what about that argument?

MR. KOVALICK: Your Honor, I can address that. This is Vince Kovalick. I believe the way it was phrased was very careful. He said there was some portions of this filing that Mr. Hseih could not address.

Mr. Hseih just testified to the exact same thing on the stand.

But what Mr. Hseih made very clear was with respect to the issue that SigmaTel is raising concerning the estimates and the numbers that are provided in this filing, I believe Mr. Hseih did testify that he was the person most knowledgeable about that information.

If I may just correct the record, it was represented to you that the witness testified that he had knowledge of importations that were ongoing into the U.S. And I believe what Mr. Hseih testified about was gaining some knowledge about some past products

19

that may have ended up in the U.S., but that he
didn't have knowledge about importations currently
going on into the U.S.

JUDGE LUCKERN: All right. Mr. Jacobi or Mr.
Taylor, do you want to add anything new -- and I
can't emphasize when I say new -- to the arguments
you have just heard Respondents counsel make for
the record?

MR. JACOBI: First off, the discrepancy in the
ambiguity that Mr. Kovalick is trying to read into
Mr. Hseih's testimony is precisely the reason we
believe we need further discovery. Beyond that, the
facts surrounding Mr. Hseih's deposition yesterday,
are not quite as Mr. Jarvis represented.

We arrived at that deposition at Finnegan's offices
at 2:00 o'clock and were left in the lobby for
approximately 15 minutes before somebody came
out and got us. So we did not arrive at 20 after 2.
We arrived on time.

With regard to the start time of it, Finnegan's
lawyers first offered Mr. Hseih at 12:00 o'clock,
subsequently agreed with Mr. Coughlan that some
time was necessary to prepare for that deposition,
since it was sprung on us for the first time yesterday
morning.

And Mr. Coughlan was here in court all morning.
So they agreed that 2:00 o'clock was an acceptable
time. As soon as the deposition began, Mr. Allison,
who is appearing on behalf of the witness, Mr.
Hseih at the deposition, said that he was instructed
that the witness had to be returned to court to
appear as their first witness in the opening of their
case-in-chief by 4:00 o'clock and so that beginning
around 3:20 we should start to try and wind down
the deposition.

We agreed to do that, because we didn't want to
delay this proceeding, but when that time came

around we specifically stated on the record that we didn't believe we had an opportunity to finish our deposition or our examination of Mr. Hseih.

When we finally got to court then, Mr. Hseih came in the door and was turned around and left again. It was fairly clear right from the start that he was not going to appear as a witness.

So we truly don't believe that we had a fair and sufficient opportunity to examine him on all of these subjects. His testimony today regarding his knowledge of this particular paragraph of the F-1 filing that we examined him on was not entirely consistent, I believe, with the record in his deposition, so there is, I think, room for additional investigation and discovery that might help clarify and solidify the issues that are before Your Honor on our motion for sanctions.

That, I believe, is why Mr. Taylor offered that we could withdraw that motion with the stipulation that we would be entitled to further discovery. Mr. Jarvis also represented to the court that we have had that F-1 filing since October 24th and had opportunities to take discovery between then and now.

Well, while it is true that we did discover that on our own and it had not been produced to us by Actions, we discovered that when it was filed in late October. We didn't have an opportunity to take the necessary discovery related to that because, first, we were preparing for this hearing and, second, the witnesses that were necessary to be deposed were all over in China.

So it would have required us to take attorneys over to China. I sincerely doubt that counsel for Respondents would have agreed to make the witnesses available during that critical period of preparation for the hearing.

Nor would they have, nor would they have sent their attorneys over there to defend those depositions. Lastly, and certainly not least, that would have required discovery to be extended in this case. Discovery under Your Honor's procedural order ended on October 27th.

If we were to take additional discovery beyond that period, that would have required us to come in and seek leave of the Court to extend the discovery deadline.

JUDGE LUCKERN: All right. Do Respondents counsel want to say anything new in light of the arguments I just heard from Mr. Jacobi?

MR. KOVALICK: In terms of the timing issue, Your Honor, we have no control over the SEC filings. Public offering occurred yesterday, is my understanding. We certainly had no control over the documents going into SEC. You set a discovery cutoff. They got whatever they got and they could have moved at any time for additional discovery on that. With respect to his comments what we would have, should have done if they moved, obviously I can't respond to that hypothetical, Your Honor.

JUDGE LUCKERN: Does the staff have anything new they want to say in light of the arguments they heard the private parties make since the staff stated its position?

MR. HOLLANDER: Yes, Your Honor. We would not oppose a reasonable amount of additional discovery as proposed by Mr. Taylor.

What I would think, at least, we would not oppose would be follow-up on the subpoena that's already issued and see what comes out of that.

And given that Mr. Hseih is here in the United States on the East Coast and the time was limited for the deposition yesterday, we would not oppose some additional time to depose him.

And I think that beyond that, if other witnesses are sought, I think we may have to revisit it. I mean, we are getting to the point where we're chasing down a side issue while we're in the middle of trial, but to a limited extent, we would support some additional discovery.

JUDGE LUCKERN: All right. Well, first of all, I signed the subpoena the other day with respect to this, since I mischaracterized the one, I had to correct the thing earlier, the Cirrus, whatever it is, and I have set a motion to quash period. And I don't know what's going to come in here. So I'm not going to do anything, at least until we see what happens.

I may, there may be a motion to quash filed, and I may grant it. And then as far as I'm concerned, that's it, and there is nothing more for me to do other than decide the motions for sanctions.

In my Order Number 3, I set a target date of June 19th, 2006. And I said in that order, and I issued that on May 16th, 2005, that any final initial determination of violation should be filed no later than Monday, March 20th. And here we're in December 1st And we have got post-hearing submissions, et cetera, et cetera, et cetera, to go.

So I am making reference again to what Mr. Taylor argued. We think it is likely there is sanctionable conduct here and the motion could stand on its own, but we think that we should follow-up and have the opportunity to discover more facts and supplement that motion, so in essence we are able to continue to get discovery on this matter, then we would be happy to withdraw the motion for sanctions pending that discovery with the opportunity to

23

refile later and have the opportunity to add in the testimony that we have heard today, as well as any other testimony.

Well, the only thing that's outstanding right now is this subpoena which I signed the other day, which may come to nothing, if there is a motion to quash filed by this third-party or if Respondents has a standing, and that's questionable, at least in Complainant's mind, and so if I deny it -- so if I grant a motion to quash on the subpoena I signed two days ago, then that ends the matter and I can decide the issue, unless Complainant comes in and files another motion to compel and then I have to hear the parties' position, position of all the other parties and see where we're going to go, but this investigation has got to end and we have a target date here.

That's what I'm faced with.

So I don't really see that there is anything more to be said on the record with respect to this point than what I have said now. That's where it is. Mr. Taylor or Mr. Jacobi, do you want to say anything more?

MR. TAYLOR: No, Your Honor.

JUDGE LUCKERN: Respondent's counsel, say anything more?

MR. KOVALICK: Yes, Your Honor, for the record, the most relevant, most important witness is here in this room right now and he was just subject to cross-examination on the very issue that these people now have an issue with.

And they had a deposition yesterday.

They have got him here on cross. They got all the answers they wanted or they needed and I think that needs to be the end of the issue.

24

JUDGE LUCKERN: All right. Do you have anything new you want to say, Mr. Taylor?

MR. TAYLOR: Yes, Your Honor. The testimony today, what came out today was revealing to us. It is troublesome that this person indeed had information that there were U.S. sales, this was not disclosed in this litigation, it was not disclosed in this litigation, and we're not able and we shouldn't have to spend, eat up much of our time in this trial, which as Your Honor has appropriately said to be very limited trying to get to the bottom with lots of follow-up discovery questions of what, in fact, happened.

We don't want to spend our time doing that. That's why additional discovery would be appropriate. And we will file, we will file a motion for that, if Your Honor will entertain it.

JUDGE LUCKERN: Well, I mean, as I said, you can file anything you want to. The only way you can get a file is through a motion. Whether I grant it is another question. I mean, I have to hear or at least give parties and the staff an opportunity to respond to the motion. So that's where I stand.

And I'm not going to do anything with the motion for sanctions, at least until I know what's happened with respect to the subpoena that I signed. Other than that, that's where I stand. I don't know what else to put on the record on that point. Does staff have anything more, new, I am going to read this transcript, boy, I have it here. It is going to be all laid out but I don't know anything more that I can add other than what I have already said.

(Tr. at 1034-45.)

In view of the arguments and representations at the hearing supra and the fact that no

further action has been taken by complainant on the matter before the administrative law judge,

the administrative law judge finds that Motion No. 538-31 has been mooted.

X.   Claims In Issue

The two patents in issue are U.S. Patent No. 6,633,187 (the '187 patent) and U.S. Patent No. 6,366,522 (the '522 patent). Complainant is asserting claims 1, 6, 9, and 13 of the '522 patent, and claim 13 of the '187 patent. (CBr at 62; JX-1, 6:57-7:4, 7:36-42, 7:54-65, 8:18-26; JX-3, 6:47-63.) Claim 13, the only asserted claim of the '187 patent, is an apparatus claim. It reads:

> 13. A stand-alone IC comprises:
>
> on-chip power converter;
>
> processing module; and
>
> memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to:
>
> establish an idle state that holds at least a portion of the stand-alone IC in a reset condition when a power source is operably coupled to the stand-alone IC;
>
> receive a power enable signal;
>
> enable, in response to the power enable signal, the on-chip power converter of the stand-alone IC to generate at least one supply from the power source; and
>
> when the at least one supply has substantially reached a steady-state condition, enable functionality of the stand-alone IC.

(JX-3, 6:47-63.)

In the '522 patent, claims 1 and 6 are apparatus claims and claims 9 and 13 are method claims. Said claims read:

26

1. A power efficient integrated circuit comprising:

phase lock loop operably coupled to receive a reference clock and to produce therefrom a system clock based on a system clock control signal;

on-chip power supply control module operably coupled to regulate at least one supply from a power source and an inductance based on a power supply control signal;

memory operably coupled to store at least one application; and

computational engine operably coupled to produce the system clock control signal and the power supply control signal based on a processing transfer characteristic of the computation engine and processing requirements associated with processing at least a portion of the at least one application.[7]

6. The power efficient integrated circuit of claim 1, wherein the phase lock loop further comprises:

at least one divider module; and

a register operably coupled to the at least one divider module, wherein the register stores various divider values that are selected based on the system clock control signal.

9. A method for controlling power consumption of an integrated circuit, the method comprises the steps of:

producing a system clock from a reference clock based on a system clock control signal;

regulating at least one supply from at least one of: a linear regulator and a power source and an inductance based on a power supply control signal; and

producing the system clock control signal and the power supply control signal based on a processing transfer characteristic of a

_____

[7] It is noted that "computational engine" and "computation engine" are used interchangeably in said claim. No party has taken issue with this variance and the administrative law judge finds none.

27

computation engine and processing requirements associated with
processing at least a portion of an application by the computation
engine.

13. The method of claim 9, wherein the producing the system clock
from a reference clock based on a system clock control signal
further comprises:

accessing a register based on the system clock control signal to
retrieve a selected divider setting; and

adjusting a divider setting of a dividing in a phase lock loop that
produces the system clock based on the selected divider setting.

(JX-1, 6:57-7:4, 7:36-42, 7:54-65, 8:18-26.)

XI.   Claim Interpretation

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 Corporation, 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

29

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

31

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

32

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 '187 Patent

The parties have put in issue the following claimed phrases of claim 13: "stand-alone IC," "on-chip power converter," "processing module," "memory," "operational instructions," "memory operably coupled to the processing module," "establish an idle state that holds at least a portion of the stand-alone IC in a reset condition when a power source is operably coupled to the stand-alone IC," "power enable signal," "when," and "steady-state."

1. The claimed phrase "stand-alone IC"

Complainant argued that the phrase "stand-alone IC" appears in the preamble, but constitutes a limitation on the claim, as it also appears in the body of the claim. (CBr at 13-14.) Complainant further argued that a stand-alone IC is

> a self-contained integrated circuit that operates without support
> from an external controller, host device, or equivalent logic
> circuits, which includes a micro-controller or equivalent circuitry
> on-chip; the integrated circuit must also exhibit a high-level of
> circuit integration so that it can handle certain system level
> functions on its own, i.e., it must integrate within i[t] most of the
> functional circuitry necessary to perform those system-level
> functions.

(CBr at 14.)

Respondent argued that "stand-alone IC" has an obvious meaning: "a single integrated circuit that includes the structures and functions recited in the body of the claim." (RRBr at 75-76.)

The staff argued that the phrase "stand-alone IC" should be construed to limit the claim, and should be construed as "an integrated circuit including generally an on-chip power converter, and some functional circuitry." (SBr at 8.)

34

There does not appear to be a significant difference between the positions of the parties. All the parties agree, and the administrative law judge so finds, that "stand-alone IC" is a limitation on the claim. It is used in both the preamble and the body of the claim, and its use in the preamble is an antecedent to the use in the body. Further, the meaning of the claim language depends on the use of the claimed phrase "stand-alone IC" in the body of the claim. The relevant portion of the body of claim 13 in issue reads "establish an idle state that holds at least a portion of the stand-alone IC in a reset condition when a power source is operably coupled to the stand-alone IC. . ." (See JX-3, 6:53-55.) The specification states that "[a] stand-alone integrated circuit includes generally an on-chip power converter, a reset circuit and some functional circuitry which may be a microprocessor, digital signal processor, digital circuitry, state machine, logic circuitry, analog circuitry, and/or any type of components and/or circuits that perform a desired electrical function." (JX-3, 1:66-2:5.) Thus, the administrative law judge finds that both a processing module and memory are examples of functional circuitry. Also, each of non-asserted independent claim 9 and dependant claim 11 specifically claim a reset circuit. Claim 9, for example, reads "[a] stand-alone integrated circuit (IC) comprises: a reset circuit operable to place the stand-alone IC in an idle state until a supply lock signal is enabled . . ." (JX-3, 6:6-7.) Therefore, while a reset circuit is included in the definition of functional circuit, claim differentiation shows that a specific reset circuit need not be included in the construction of asserted claim 13. Based on the foregoing, the administrative law judge finds that "a stand-alone IC" is an integrated circuit including an on-chip power converter and some functional circuitry.

2.   The claimed phrase "on-chip power converter"

Complainant argued that an on-chip power converter is "a dc-dc switching power supply

35

that uses an inductor and has its low-power control, logic, startup, and clocking circuits integrated in the stand-alone IC." (CBr at 16.)

Respondent argued that an on-chip power converter is

> All the circuits that change or regulate the power supply level for the integrated circuit are located on the integrated circuit, except for one external element that is capable of charging and discharging energy.

(RBr at 72.)

The staff argued that the on-chip power converter

> should be construed as a power converter that requires a clock signal to produce the power supply level, in which all circuits associated with the power converter are located on the integrated circuit and in which certain of its components unrelated to the control function such as inductors, capacitors, diodes, and switching transistors may be fabricated off-chip.

(SBr at 9-10.)

The key difference between the parties appears to be in the nature and number of components that may be located off-chip. Respondent argued that only one external element may be off-chip, while complainant and the staff argued that any number of components may be off-chip.

The '187 patent references U.S. Patent No. 6,204,651 (the '651 patent) to more fully describe a power converter.[8] The '651 patent shows, in a preferred embodiment, that the on-chip converter includes two off-chip elements: an inductor ("external element 20") and an off-chip capacitor ("load 24"). Since the '651 patent is referenced for the detailed discussion on the on-

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[8] The '187 patent states that "[f]or a more detailed discussion of the on-chip power converter 18, refer to co-pending patent application having a . . . Ser. No. of 09/551,123 and a filing date of Apr. 18, 2000." (JX-3, 2:60-65.) Said application issued as U.S. Patent 6,204,651. (JX-7.)

chip power supply, said preferred embodiment is intrinsic evidence that more than a single external element may be included in an on-chip power converter.

The '651 patent also refers to power converters as DC to DC converters. In the section titled "BRIEF DESCRIPTION OF THE DRAWINGS," Figures 1, 2, 3 and 4 each specifically mention a DC to DC converter. (JX-7, 2:13-22.) The specification of the '651 patent later describes Figure 1 as a "switch mode converter," Figure 2 as a "DC to DC converter," and each of Figures 3 and 4 as a "schematic block diagram of the DC to DC converter." (JX-7, 2:62-3:53; 4:36-7; 5:1-2.) The '651 patent discloses that the external element 20 may be a device capable of storing and discharging energy, such as an inductor. (JX-7, 2:65-3:1; 2:48-50; 6:60-61 and Figure 1.) The specification of the '187 patent also shows that the power converter requires a clock signal, as it states "[i]f, however, the power converter is on-chip with the digital circuitry and the power converter requires a clock signal to produce a supply voltage, a difficulty arises in enabling such a stand-alone integrated circuit." (JX-3, 1:36-39.) Moreover, extrinsic evidence shows that complainant used 'on-chip' to describe components of its products, and yet still had several off-chip components. For example, one of complainant's datasheets, dated prior to the filing date of the '187 patent, describes the power converter as "[t]he unique on-chip, multi-channel, single-inductor DC-DC converter." (JX-8 at 4.) A circuit diagram of the power converter, in the same datasheet, shows several external components. (JX-8 at 13.)

Based on the foregoing, the administrative law judge finds that an on-chip power converter is a power converter that requires a clock signal to produce the power supply level, in which all circuits associated with the control function of the power converter are located on the integrated circuit and in which certain of its components unrelated to the control function such as

37

inductors, capacitors, diodes, and switching transistors may be fabricated off-chip.

3.   The claimed phrase "processing module"

Complainant argued that a processing module is "any circuitry that performs the function claimed by the '187 patent." (CBr at 27.)

Respondent argued that a processing module is "a microprocessor, microcomputer, digital signal processor, state machine, logic circuitry, and/or any device that manipulates signals (analog or digital) based on operational instructions." (RBr at 66.)

The staff argued that the processing module "can be one of the devices listed in the specification, or something similar that manipulates operational instructions. Thus, the [s]taff agrees with Actions's construction of processing module.") (SBr at 11.)

The parties appear to disagree whether or not "operational instructions" are required to operate the "processing module."

The claim language states that a 'processing module' performs all the functionality of the stand-alone IC. (JX-3, 6:50-63.) The language in the specification is very broad. For example, the specification reads:

> The processing module 52 may be a single processing device or a
> plurality of processing devices. Such a processing device may be a
> microprocessor, microcomputer, digital signal processor, state
> machine, logic circuitry, and/or any device that manipulates signals
> (analog or digital) based on operational instructions.

(JX-3, 3:27-32.) A "logic circuit" is "[a] circuit that is designed to perform one or more logic operations or to represent logic functions." (See The Authoritative Dictionary of IEEE Standards Terms at 637.) A "circuit" is defined as "[a]n arrangement of interconnected electronic components that can perform specific functions upon application of proper voltages and signals."

(See The Authoritative Dictionary of IEEE Standards Terms at 168.) Therefore, the specification

includes circuitry, as urged by complainant, and also "any device" as urged by respondent and the

staff. Based on the foregoing, the administrative law judge finds that a processing module is any

circuitry or device that manipulates signals based on operational instructions.

4.   The claimed phrase "memory"

The claimed phrase "memory" appears several times in the body of asserted claim 13,

reading, "memory operably coupled to the processing module, wherein the memory includes

operational instructions. . ." (JX-3, 6:50-52.)

Complainant argued that the claimed phrase "memory" includes RAM, ROM, latches,

flip-flops, registers, that store digital information that affects the claimed operations of the

processing module. (CBr at 29-30.)

Respondent argued that memory is "any device that stores digital information, including

read only memory, random access memory, and/or system memory." (RBr at 67.) Respondent

further argued that memory cannot be implemented in hardware. (RBr at 67.)

The staff argued that the claimed phrase "memory" includes a memory embedded in the

circuitry, as discussed in the specification, including an implementation in hardware or logic

circuits. (SBr 12.)

The only substantive difference between the arguments of the parties appears to be

whether or not memory can be implemented by hardware.

The specification of the '187 patent reads:

> The memory 54 may be a single memory device or a plurality of
> memory devices. Such a memory device may be read only
> memory, random access memory, system memory, and/or any

39

device that stores digital information. Note that when the
processing module 52 implements one or more of its functions via
a state machine or logic circuit, the memory storing the
corresponding operational instruction is <u>embedded within the
circuitry comprising the state machine and/or logic circuit.</u>

(JX-3, 3:32-40 (emphasis added).) A logic circuit is hardware, as indicated, <u>supra</u>. and "any

device that stores digital information" indicates that an exclusive list of memory implementations

is not disclosed by the specification. As the specification discloses memory implemented in

hardware, respondent is incorrect in arguing that hardware memory implementations have no

support in the specification. (RBr at 67.) Also, the administrative law judge has, in granting

Motion No. 538-35, allowed the IEEE definition of "random-access memory" into evidence, and

reiterated that the administrative law judge may take judicial notice of any such technical

dictionary definitions. Random-access memory is specifically mentioned in the '187 patent as an

example of a memory type contemplated by the patent. Based on the foregoing, the

administrative law judge finds that memory is any device that stores digital information,

including an implementation in hardware, firmware, or logic circuits.

5.   The claimed phrase "operational instructions"

        The claimed phrase "operational instructions" is found in the body of asserted claim 13,

reading "memory includes operational instructions that cause the processing module. . ." (JX-3,

6:51-52.) Complainant argued that "operational instructions" means "digital information that

affects the claimed operations of the processing module." (CBr at 30.) Respondent argued that

operational instructions are "a line of code or command in a computer program that causes a

processor to perform an operation." (RBr at 60.) The staff agreed with complainant's

constructions, specifically arguing that "operational instructions" should be broad enough to

40

encompass hardware instructions. (SBr at 13.)

The parties strongly disagree on the construction of this claimed phrase. Respondent argued that "operational instructions" must be software-based and used in a computer program, while complainant and staff argued that "operational instructions" are not restricted to only a software implementation.

While the parties agree that the claimed phrase "operational instructions" is not defined in the specification, and has no ordinary meaning in the art, (see CBr at 33; RBr at 60; SBr at 12-13), one part of the specification reads:

> Note that when the processing module 52 implements one or more of its functions via a state machine or logic circuit, the memory storing the corresponding operational instruction is embedded within the circuitry comprising the state machine and/or logic circuit.

(JX-3, lns. 36-41 (emphasis added).) A "logic circuit" is "[a] circuit that is designed to perform one or more logic operations or to represent logic functions." (See supra.) A "circuit" is defined as "[a]n arrangement of interconnected electronic components that can perform specific functions upon application of proper voltages and signals." (See supra.) "State machine" is defined as "[a] model of a system in which all values are discrete, as in a digital computer." (See The Authoritative Dictionary of IEEE Standards Terms at 1102.) As also indicated, supra, "logic circuit" must be hardware, rather than software, and a "state machine" can be used to model hardware, as indicated by the use of a piece of hardware, viz. a digital computer, in the definition of "state machine," supra. Therefore, the administrative law judge finds that the claimed phrase "operational instructions" cannot be limited to just lines of code, as argued by respondent. The administrative law judge finds that the portion of the specification emphasized supra, indicates

41

that a person of ordinary skill in the art would not restrict the phrase in issue to a software-based implementation as respondent argued. Moreover, as the administrative law judge has construed a "processing module" as requiring "operational instructions" for its function, see supra, respondent's construction of "operational instructions" would restrict the "processing module" to receiving all instructions from software, which the administrative law judge finds is at odds with the specification's description of the processing module, discussed supra. The administrative law judge therefore finds that operational instructions are digital information implemented by any combination of hardware, software, or firmware that affects the claimed operations of the processing module.

6. The claimed phrase "memory operably coupled to the processing module"

Respondent argued that said claimed phrase discloses, in light of the specification (specifically Figure 2), that "memory" and "processing module" are separate elements. (RBr at 67.)

The staff argued, however, that no requirement of being totally separate exists. (SBr at 12.)

Complainant provided no specific construction for "operably coupled," but agreed with the staff and argued against respondent's construction of "operably coupled." (CRBr at 32, fn. 12.)

The specification of the '187 patent discusses 'memory' and 'processing module' as having separate functions, and being 'operably coupled,' but no language in the specification defines "operably coupled." (JX-3, 1:65; 2:21; 2:26; etc.) The plain meaning of "operably coupled" is, as used in the language of the claim, that the components are in communication and

may operate together. Nothing in the language of the specification contradicts the plain meaning.

In fact, the specification of the '187 patent discloses an embodiment where the memory is

embedded in the processing module. The specification states:

> Note that when the processing module 52 implements one or more
> of its functions via a state machine or logic circuit, the memory
> storing the corresponding operational instruction is embedded
> within the circuitry comprising the state machine and/or logic
> circuit.

(JX-3, 3:36-41 (emphasis added).) The administrative law judge therefore construes "memory

operably coupled to the processing module" to mean that the memory and the processing module

are in communication and may operate together, with no requirement of being distinctly separate.

7.   The claimed phrase "establish an idle state that holds at least a portion of the stand-alone
      IC in a reset condition when a power source is operably coupled to the stand-alone IC"

Complainant argued that "establish an idle state" means that "[t]he stand alone IC is in an

inactive state and that many of its functional circuits are held in a known initial state when a

power source is operably coupled to the stand alone IC. In addition, complainant argued that the

stand alone IC must be able to remain in that state until a power enable signal is received." (CBr

at 35.)

Respondent argued that "establish an idle state" means "[i]nitiating and creating a change

from a non-idle state to an idle state that holds at least a portion of the stand-alone I.C. in an idle

or inactive condition when a power source is operably coupled to the stand-alone I.C." (RBr at

69.)

The staff argued that complainant is correct, except that "many of its function circuits"

should read "at least a portion of its functional circuits." (SBr at 14.)

43

There does not appear to be a substantive difference between the arguments of the parties

on this claim construction, beyond respondent arguing that its construction adheres more closely

to the language of the specification.

The specification of the '187 patent shows that the "at least a portion of the stand alone

IC" is defined as functional circuitry. For example, the specification reads:

> The reset module 24 holds the reset signal 30 low such that the
> functional circuitry 22 is held in an idle condition until the supply
> lock signal 44 is asserted as well as the clock lock signal 34. The
> function of circuitry 22 may be a microprocessor, digital signal
> processor, state machine, logic circuitry, analog circuitry, and/or
> any combination of electrical components to perform a desired
> electrical response given an electrical stimulus.

(JX-3, 2:40-48.) Further, in going through the entire sequence of a start from idle to functioning,

the specification defined "idle" as an "inactive state," as indicated by the following:

> FIG. 3 illustrates a logic diagram of a method for enabling a
> stand-alone integrated circuit. The process begins at Step 60 where
> an idle state is established. The idle state holds at least a portion of
> the stand-alone integrated circuit in a reset condition when a power
> source is operably coupled to the stand-alone integrated circuit. For
> example, when a battery is coupled to the stand-alone integrated
> circuit the functional circuitry is held in an idle, or inactive state.
> The process then proceeds to Step 62 where a power enable signal
> is received. The process then proceeds to Step 64 where, in
> response to the power enable signal, an on-chip power converter of
> the stand-alone integrated circuit is enabled to generate at least one
> supply from the power source. The on-chip power converter may
> produce one or more supplies, which may be a voltage supply, or a
> current supply, for powering different functional circuits of the
> stand-alone integrated circuit. The process then proceeds to Step 56
> where the functional circuitry of the stand-alone circuit is enabled
> when the at least one supply has substantially reached a steady state
> condition.

(JX-3, 3:50 - 4:3 (emphasis added).) Based on the foregoing, the administrative law judge finds

that "establish an idle state" is construed as the stand alone IC is in an inactive state and a portion of its functional circuits are held in a known initial state when a power source is operably coupled to the stand alone IC. In addition, the stand-alone IC must also be able to remain in the inactive state until a power enable signal is received.

8.   The claimed phrase "power enable signal"

Complainant argued that a power enable signal is "an external input signal to the stand-alone IC that can be used to enable an on-chip power converter." (CBr at 38 (emphasis added).)

Respondent argued that a power enable signal is "a signal that starts the on-chip power converter." (RBr at 70.) Respondent does not contest complainant's argument that the signal is from an external source. (RBr at 71.)

The staff argued that a power enable signal is "an input signal that can be used to enable an on-chip power converter." (SBr at 15.) The staff also argued that the power enable signal may come from either an external or internal source. (SBr at 15.)

With respect to complainant's argument that the power enable signal is from an external source, the specification in Figure 2, a preferred embodiment, shows the power enable signal is external to the stand alone IC. The power enable signal is independent from the power supply (CPFF 4.192 (unopposed).), and complainant's witness Callahan testified that making the power enable signal independent from the power supply means, to a person of ordinary skill in the art, that the power enable signal would have to come from a source external to the stand-alone IC. (CPFF 4.193 (unopposed).) The staff, however, argued:

> Mr. Callahan relies on statements in the specification of the '187 patent that refer to conserving power and providing power to limited portions of the chip to support his construction of "receive

45

a power enable signal" as requiring an external signal, however, the statement refers to limited portions of the chip which may include an internal power enable signal. Callahan, Tr. 140-41.

(SFF 103.) The administrative law judge finds nothing in the text of the specification, however, that discloses whether the power enable signal must be external to the stand-alone IC. Referring to respondent's construction, he also finds nothing in the specification that discloses the sole function of a power enable signal is to enable the on-chip power converter. To the contrary, the specification suggests that it can be used for other purposes; for example, delaying the clock signal. Thus, the specification reads:

> As one of average skill in the art may further appreciate, the clock signal 32 may be delayed from generation until the power enable signal is activated as opposed to being generated upon application of power source 12.

(JX-3, 3:18-22.) Based on the foregoing, the administrative law judge finds that a "power enable signal" is an input signal that can be used to enable an on-chip power converter.

9.   The claimed phrase "when"

The claimed phrase "when" is in the body of asserted claim 13. Complainant argued that the plain meaning of "when" should be adopted, and in the context of claim 13 of the '187 patent, that means "whenever the circuit is in a desired state." (CBr at 40.)

Respondent argued that "when" means "the claimed result occurs in response to and at the time that the corresponding claimed condition occurs ('as soon as')." (RBr at 57.)

The staff appears to be agreeing with complainant, stating that "'when' is a broad, imprecise term that can mean different things depending on the context in which it is used." (SRBr at 3.)

46

None of the parties has presented, and the administrative law judge has not found, a technical definition for the word "when" in the context of electrical engineering. Asserted claim 13 uses "when" twice, viz "when a power source is operably coupled to the stand-alone IC . . ." and "when the at least one supply has substantially reached a steady-state condition. . . " ('187 Patent, 6:54-55, 6:61-62.) The specification does not specifically define "when," but does state, "[w]hen a power enable signal is received, the on-chip power converter is enabled to generate at least 1 supply (e.g. a voltage supply or current supply) from the power source (e.g. a battery)." (JX-3, 2:5-8) The language of the asserted claim 13 and the other uses of "when" in the specification indicate that while the power converter is enabled to generate a supply, it doesn't say that it must generate that supply at any particular time. Moreover, the word 'when' is used in several places in the specification of the '187 patent in such a manner that it cannot be used as respondent would construe it, supra. For example, the specification reads:

> The clock lock module 26 monitors the clock signal 32 to
> determine when it has reached a steady state condition. The clock
> signal 32 has reached a steady state condition typically when it is
> producing a clock signal at approximately 10% of the ideal
> frequency of the desired clock signal.

(JX-3, 2:33-38 (emphasis added).) Thus, a delay, or at least imprecision, is introduced by using such language as "typically" and "approximately."

Respondent further argued that since no delay circuits are disclosed in the '187 patent, its construction of "when" must be correct. The specification of the '187 patent states, however, "once the external power supply is up and running, the integrated circuit may be activated in a known state." (JX-3, 1:20-22 (emphasis added).) Thus, the administrative law judge finds nothing in the specification which contradicts using delay circuits to prevent premature activation

Based on the foregoing, the administrative law judge therefore finds that the word "when" is a non-technical phrase that, given the context in the specification and asserted claim 13, means "after a desired state has been reached or condition has been achieved."

10.   The claimed phrase "steady-state"

Complainant argued that "steady-state" is "a condition in which the signal of interest is no longer time varying." (CBr at 40.)

Respondent argued that "steady-state" is when "the supply reaches 90% of its desired value." (RBr at 71.)

The staff argued that complainant's construction is correct. (SBr at 15.)

Respondent is arguing for a narrow, specific definition, The specification states, however, that "[t]he clock signal 32 has reached a steady state condition typically when it is producing a clock signal at approximately 10% of the ideal frequency of the desired clock signal." (JX-3, 2:33-38 (emphasis added).) Later, the specification states that "[t]he supply lock circuit 20 determines that the supply 42 reaches a steady state when the supply reaches at least 90% of its desired value." (JX-3, 2:67-3:3 (emphasis added).) Thus, the administrative law judge finds that the language of the specification of the '187 patent does not support a narrow, specific definition for steady-state. Further, respondent's expert witness Razavi does not refute complainant's position, in testifying that:

> THE WITNESS: The term steady state in electrical engineering
> conveys a certain, certain state, meaning that some transients have
> to be completed, have to be finished before we consider the system
> to be in a steady state. And a person who is not in this field may
> not think of a steady state as that.
>
> . . .
>
> THE WITNESS: Well, a person of ordinary skill in the art would

48

know that the exact definition of steady state is somewhat arbitrary because it depends where we set that threshold. Is it 90 percent? Is it 95 percent? Is it 99 percent?

So that's why I have to choose a number. And the number I chose was in the patent specification. So if I asked a person who's practicing in the art have you reached a steady state, there must be some understanding what the threshold is for steady state, because in mathematical terms it may take infinite time to reach steady state but that would mean 99.999 percent and that usually is not required.

So you would have to set a threshold and that number has to have, has to be according to some mutual understanding.

(Razavi, Tr. at 1379-80 (emphasis added).) The administrative law judge finds that said

testimony indicates that a number for "steady state" must be arrived at through "mutual

understanding" and is "arbitrary," and further finds that a person of ordinary skill in the art would

not read a specific percentage from a preferred embodiment into the claims.

Based on the foregoing, the administrative law judge finds that a person of ordinary skill

in the art would interpret "steady state" as a condition in which the signal of interest is no longer

time varying.

B.   The '522 Patent

The parties have put in issue the following claimed phrases: "on-chip power supply

control module," "computational engine," "processing transfer characteristic," "system clock,"

and "produce the system clock control signal and power supply control signal based on a

processing transfer characteristic of the computation engine."

1.   The claimed phrase "on-chip power supply control module"

The claimed phrase "on-chip power supply control module" is found in claim 1 of the

'522 patent. Complainant argued that "on-chip power supply control module" is "control circuitry for a DC-DC switching power supply that uses an inductance, the control circuitry being integrated on the power efficient integrated circuit." (CBr at 43.)

Respondent argued that an on-chip power supply control module is "[a]ll of the circuits that change or regulate the power supply level for the integrated circuit are located on the integrated circuit, except for one external element that is capable of charging and discharging energy." (RBr at 27.)

The staff argued that the "on-chip power supply control module" of the '522 patent should be read to only limit the control module portion of the power supply to being on-chip, while portions of the power supply not related to the control function, such as inductors, capacitors, diodes, and switching transistors may be off-chip. (SBr at 18.)

As seen from the foregoing, respondent's interpretation is narrower in that it would allow only one external (off-chip) element that is capable of charging and discharging energy, whereas complainant's and the staff's interpretations would require that only control circuitry be on-chip and would also allow more than one element that is capable of charging and discharging energy to be off-chip.

Claim 1 is an independent apparatus claim which recites a "power efficient integrated circuit" which includes, in addition to several other elements, an "on-chip power supply control module operably coupled to regulate at least one supply from a power source and an inductance based on a power supply control signal." (JX-1 at 6:56-63 (emphasis added).) The claimed phrase "on-chip power supply control module" is not explicitly defined in claim 1. However, the administrative law judge finds that the plain language of claim 1 shows that the power supply

50

must regulate a voltage using an inductance, i.e., the power supply must be a switching power supply that uses an inductance. Additionally, Figures 1 and 2 of the '522 patent specification show switch-mode power supplies using inductance and switching transistors.

Respondent argued that the '651 patent (which was referenced in the '522 patent for "a more detailed discussion on the on-chip power supply"), shows that the on-chip converter actually includes only one external element, "external element 20" (citing Figure 1 of JX-7). Describing Figure 1, the specification of the '651 patent states:

> FIG. 1 illustrates a schematic block diagram of a switch mode converter 10 that includes a comparator 12, a decimator 14, an interpolator 16, a switching circuit 18, an external element 20, a source 22, and a load 24. The external element 20 may be a device capable of storing and discharging energy. For example, in the illustrated embodiment, the external element 20 is an inductor. The load 24 is also a device that is capable of storing and dissipating energy. In the illustrated example, the load 24 is a capacitor, which may be coupled in parallel to a resistor. The source 22 is shown as a battery, but as one of average skill in the art would readily appreciate, the source 22 may be a DC output from a switch mode power supply or any power supply device that produces DC output voltages.

(JX-7 at 2:61-3:8 (emphasis added).) As seen supra, Figure 1 of the '651 patent discloses, in addition to an "external element 20", an off-chip capacitor ("load 24") as one of several off-chip components of switching circuit 18. Thus, the administrative law judge finds that respondent's limitation of only "one external element" that is capable of charging and discharging energy, is too restrictive in view of the embodiment disclosed in Figure 1 of the '651 patent. Like Figure 1, Figure 3 also shows an off-chip capacitor ("load 24"). Additionally, describing Figure 4, the specification of the '651 patent states:

> FIG. 4 illustrates a schematic block diagram of a DC to DC converter 70 that includes multiple outputs. The DC to DC converter 70

51

includes a differential comparator 76, a combining module 72, a
common mode comparator 74, the decimator 14, the interpolator 16,
an expanded switching module 18, an <u>external element 20</u>, a source
22, a <u>first load 24</u>, a <u>second load 80</u>, and a differencing module 81.
<u>Load 24</u> produces a first output voltage 26 while <u>load 80</u> produces a
second output voltage 82.

(JX-7 at 5:1-29 (emphasis added).) Figure 4 discloses, in addition to an "external element 20,"

two off-chip capacitors ("first load 24" and "second load 80") as two of several off-chip

components of switching circuit 18. Therefore, the administrative law judge finds respondent's

limitation of only "one external element that is capable of charging and discharging energy" also

too restrictive in light of the embodiment disclosed in Figure 4 of the '651 patent.

Based on the foregoing, the administrative law judge finds that one of ordinary skill in the

art would interpret the claimed phrase "on-chip power supply control module" to mean that a

control module portion of the power supply must be on-chip, while portions of the power supply

not related to the control function, such as inductors, capacitors, diodes, and switching

transistors, may be off-chip.

2.   The claimed phrase "computational engine"

The claimed phrase "computational engine" is found in claims 1 and 9 of the '522 patent.

Complainant argued that a "computational engine" is "one or more computational units (e.g.,

microprocessors and microcontrollers), each capable of performing substantial computations

such as arithmetic and logic operations on digital information, working together and under

firmware/software control." (CBr at 45.)

Respondent argued that a computational engine is "a microprocessor, processor, digital

signal processor, logic circuit, state machine, analog circuit, and/or circuitry that manipulates

signals." (RBr at 5.)

The staff argued that a "computational engine" should be construed as "a microprocessor, compressor, digital signal processor, logic circuit, state machine, analog circuit, and/or circuitry that manipulates signals (analog or digital) based on operational instructions." (SBr at 19.) The staff further argued that its interpretation is consistent with the interpretation of the phrase "operational instructions" in claim 13 of the '187 patent, i.e., "the computational engine can manipulate signals based on instructions that are software or hardware based." (SBr at 19.)

Although both respondent and the staff agree that the "computational engine" should be defined as it is in the specification, a key difference between the interpretations of respondent and the staff is that respondent omitted the phrase "based on operational instructions." Complainant's interpretation is different in that it requires that the "computational engine" "work[ ] together and under firmware/software control."

Claim 1 is an independent apparatus claim which recites a "power efficient integrated circuit" which includes, in addition to several other elements, a:

> computational engine operably coupled to produce the system clock
> control signal and the power supply control signal based on a processing
> transfer characteristic of the computation engine and processing
> requirements associated with processing at least a portion of the at least
> one application.

(JX-1 at 6:56-7:4 (emphasis added).) Claim 9 is an independent method claim which recites a "method for controlling power consumption of an integrated circuit," said method comprising in addition to several other steps, "producing the system clock control signal and the power supply control signal based on a processing transfer characteristic of a computation engine and processing requirements associated with processing at least a portion of an application by the

computation engine." (JX-1 at 7:57-65 (emphasis added).) Although claims 1 and 9 disclose what the computational engine does and how it is used, it does not define what it is. Describing Figure 1, the specification of the '522 patent however states, "[t]he computational engine 112 may be a microprocessor, compressor, digital signal processor, logic circuit, state machine, analog circuit, and/or any circuitry that manipulates signals (analog or digital) based on operational instructions." (JX-1 at 2:34-38 (emphasis added).)

Based on the foregoing, the administrative law judge finds that the claimed phrase "computational engine" may be a microprocessor, compressor, digital signal processor, logic circuit, state machine, analog circuit, and/or any circuitry that manipulates signals (analog or digital) based on operational instructions.

3.   The claimed phrase "processing transfer characteristic"

The claimed phrase "processing transfer characteristic" is found in claims 1 and 9 of the '522 patent. Complainant initially argued that a "processing transfer characteristic" is one of "those circuit characteristics that affect the speed at which digital information may be processed by the computation engine, and which can be determined by laboratory tests or other experimentation using representative devices." (CBr at 48.)

Respondent argued that a "processing transfer characteristic" of a computational engine is "measured characteristics of a computational engine including propagation delays through logic circuits, slew rates of transistors within memory, logic circuits, read/write processing speed, and other characteristics of a logic circuit, digital signal processor, or microprocessor that indicates the speed at which a computational engine on an integrated circuit processes digital information." (RBr at 8, citing JX-1 at 3:49-57.)

The staff disagreed with respondent's interpretation and agreed with complainant's initial interpretation with the exception of the last portion of complainant's interpretation following the word "determined." The staff argued that said last portion is "unnecessary and inappropriate." (SBr at 20-22.)

Complainant later agreed with the staff's interpretation and proposed that it be adopted and thus, that "processing transfer characteristics" should be construed as "the circuit characteristics that affect the speed at which digital information may be processed by the computational engine." (CRBr at 61.)

The main difference between the parties' claim interpretations is that respondent's interpretation would require that a processing transfer characteristic of a computational engine be a "measured characteristic" that "indicates" the speed, rather than "corresponding to" the speed, at which a computational engine on an integrated circuit processes digital information. The proposed interpretation of complainant and the staff does not require that a processing transfer characteristic of a computational engine be a "measured characteristic."

Claim 1 recites a "power efficient integrated circuit" which includes, in addition to several other elements, a "computational engine operably coupled to produce the system clock control signal and the power supply control signal based on a processing transfer characteristic of the computation engine and processing requirements associated with processing at least a portion of the at least one application." (JX-1 at 6:57-7:4 (emphasis added).) Claim 9 recites a "method for controlling power consumption of an integrated circuit," said method comprising in addition to several other steps, "producing the system clock control signal and the power supply control signal based on a processing transfer characteristic of a computation engine and processing

55

requirements associated with processing at least a portion of an application by the computation

engine." (JX-1 at 7:53-65 (emphasis added).)

Respondent, in support of its proposed claim interpretation, argued that the inventors

expressly defined what they meant by processing transfer characteristics in the specification.

(RBr at 15, citing JX-1 at 3:49-57.) However, in describing the training module 72 of the

embodiment shown in Figure 2, the specification of the '522 patent states:

> The training module 72, based on the application to be executed by the
> computational engine 12 establishes the rate of the system clock 42 and
> the values of supplies 58 and 84. To do this, the training module 72
> determines the processing transfer characteristics of the computational
> engine. The processing transfer characteristics of the computational
> engine include propagation delays through logic circuits, slew rates of
> transistors within memory, logic circuits, read/write processing speed, et
> cetera, and any other characteristic of a logic circuit, digital signal
> processor, microprocessor, et cetera that corresponds to the speed at which
> digital information may be processed.

(JX-1 at 3:46-57 (emphasis added).) Thus, the administrative law judge finds that the

specification discloses that the processing transfer characteristic "corresponds to the speed at

which digital information may be processed." As indicated supra, respondent argued that a

"processing transfer characteristic of a computational engine" is a

> measured characteristic of a computational engine including propagation
> delays through logic circuits, slew rates of transistors within memory,
> logic circuits, read/write processing speed, and other characteristics of a
> logic circuit, digital signal processor, or microprocessor that indicates the
> speed at which a computational engine on an integrated circuit processes
> digital information.

(RBr at 8 (emphasis added).) Although respondent argued that its claim interpretation is based

on the specification, respondent relied on the terms "measured characteristics" and "indicates,"

which terms are not found in the section of the specification which respondent cited as the source

56

for its claim interpretation, i.e., JX-1 at 3:46-57, supra. Said specification section however, uses the phrase "corresponds to" rather than "indicates." Moreover, said specification section is silent as to whether the "process transfer characteristic" is a "measured characteristic." Furthermore, the administrative law judge finds that the words "include" and "et cetera" in the above quote, supra, would indicate to one skilled in the art that there may be other processing transfer characteristics which may correspond to the speed at which digital information may be processed. Also, the specification, supra, discloses that the processing transfer characteristic "corresponds to the speed at which digital information may be processed," i.e., it has a relationship to the speed at which digital information may be processed.

Based on the foregoing, the administrative law judge finds that a person of ordinary skill in the art would interpret the claimed phrase "processing transfer characteristic" as the circuit characteristics that affect the speed at which digital information may be processed by the computational engine.

4.   The claimed phrase "system clock"

The claimed phrase "system clock" is found in claims 1, 9 and 13 of the '522 patent. Complainant argued that a system clock is "a clock signal used to control software/firmware operations in at least a part of the computational engine." (CRBr at 85.)

Respondent argued that the "system clock" is "a clock signal for any circuit on the integrated circuit device." (RBr at 30.)

The staff agreed with complainant's interpretation of this claimed phrase "because it simply tracks the plain meaning of the claim." (SBr at 22.)

Respondent's proposed interpretation is broader in that the "system clock" may be a clock

57

signal for <u>any circuit</u> on the integrated circuit device.

Asserted independent claim 1 recites a "power efficient integrated circuit" which includes, in addition to several other elements, a "phase lock loop operably coupled to receive a reference clock and to produce therefrom a <u>system clock</u> based on a system clock control signal." (JX-1 at 6:57-60, emphasis added.) Asserted independent claim 9 recites a "method for controlling power consumption of an integrated circuit," said method comprising in addition to several other steps, "producing a <u>system clock</u> from a reference clock based on a system clock control signal." (JX-1 at 7:53-65 (emphasis added).) Claim 13, depended on claim 9, recites a further limitation of the "producing the <u>system clock</u>..." step, <u>i.e.</u>, "adjusting a divider setting of a dividing in a phase lock loop that produces the <u>system clock</u> based on the selected divider setting." (JX-1 at 8:18-26, emphasis added.) The administrative law judge finds that the plain language of each of the asserted independent claims 1 and 9 discloses that the system clock is produced from a reference clock based on a system clock control signal, with asserted dependent claim 13 adding a limitation that the system clock is based on the selected divider setting.

The specification of the '522 patent does not give a definition of the claimed phrase "system clock." The specification however, gives an example of how a system clock is produced. Thus, in describing Figure 6, the specification discloses "a method for controlling power consumption of an integrated circuit, and that the "process begins at Step 130 where a <u>system clock</u> is produced from a reference clock based on a system clock control signal." (JX-1 at 5:43-48 (emphasis added).)

Also, the '522 patent references the '651 patent. (JX-7.) The '651 patent provides details regarding one of the component circuits of the power-efficient integrated circuit (IC) of the '522

58

patent, namely, the on-chip dc-dc converter. Thus, the '651 patent expressly teaches that the dc-dc converter itself may require the use of multiple clock signals, operating at different clock rates. Additionally, the specification states, "[o]ne embodiment has the first and third clock rates equal to the highest clock rate in the system and the second clock rate at 1/32 of the first clock rate." (JX-7, at 3:31-34.) The dc-dc converter described in the '651 patent is one of many components of the IC disclosed and claimed in the '522 patent. Hence, the administrative law judge finds that a person of ordinary skill in the art would not limit the larger IC claimed in the '522 patent, which includes the on-chip dc-dc converter of the '651 patent, to having a single clock for all of its circuits, as respondent argued.

Based on the foregoing, the administrative law judge finds that the claimed phrase "system clock" is a clock signal used to control operations in at least a part of the computational engine.

5. The claimed phrase "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine"[9]

The claimed phrase "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine," appears in independent apparatus claim 1 of the '522 patent. Also, the substance of the claimed phrase appears in independent method claim 9 as follows: "producing the system clock control signal

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[9] As for the language "processing transfer characteristic" in the claimed phrase, the administrative law judge has interpreted that language as the circuit characteristics that affect the speed at which digital information may be processed by the computational engine. See supra. As for the language "computation engine" in the claimed phrase, the administrative law judge found that "computation engine" may be a microprocessor, compressor, digital signal processor, logic circuit, state machine, analog circuit, and/or any circuitry that manipulates signals (analog or digital) based on operational instructions. See supra.

and the power supply control signal based on a processing transfer characteristic of a computation engine." Complainant argued that the phrase "producing the system clock control signal and the power supply control signal based on a processing transfer characteristic" does not require the processing transfer characteristics to be "determined" or "measured." (CRBr at 49.) Complainant also argued that the claimed "power supply control signal" and "system clock control signal" produced by the computational engine are, respectively, supply voltage and clock frequency "control" knobs that can be used flexibly to set the clock frequency based on some applications, set the supply voltage based on other applications, or set both voltage and frequency based on applications as warranted. (CRBr at 64.) Complainant further argued that the asserted claims do not speak to the method (or even whether) those characteristics are, in fact, determined. (CRBr at 49.)

Respondent argued that this claimed phrase should be construed so that "[t]he processing transfer characteristics of the computational engine are determined during operation of the integrated circuit and are used to produce the system clock control signal and the power supply control signal." (RBr at 18.) Respondent further asserted that the claims in issue require that the processing transfer characteristics be "measured" (i.e., determined) at all times during operation of the chip, by specific methods. (RBr at 11-12.)

The staff argued that the claims "require adjusting the system clock and/or the power supply based on the application being executed by the IC." (SBr at 22.) The staff further argued that the asserted claims only claim the use of processing transfer characteristics, but do not suggest or require that they be "determined in any particular manner." (SBr at 21-22.)

The main point of contention among the parties is whether or not the processing transfer

60

characteristics of the computational engine are <u>determined</u> during operation of the integrated circuit and are used to produce the system clock control signal and the power supply control signal.

Claim 1 recites a "power efficient integrated circuit" which includes, in addition to several other elements, a "computational engine operably coupled to <u>produce the system clock control signal and the power supply control signal based on a processing transfer characteristic of the computation engine</u> and processing requirements associated with processing at least a portion of the at least one application." (JX-1 at 6:57-7:4 (emphasis added).) Claim 9 recites a "method for controlling power consumption of an integrated circuit," said method comprising in addition to several other steps, "<u>producing the system clock control signal and the power supply control signal based on a processing transfer characteristic of a computation engine</u> and processing requirements associated with processing at least a portion of an application by the computation engine." (JX-1 at 7:53-65 (emphasis added).)

The claimed phrase "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine," is not explicitly defined in claim 1 or claim 9. However, non-asserted claim 3, dependent on asserted independent claim 1, and non-asserted claim 11, dependent on asserted independent claim 9, are directed to <u>determining</u> the processing transfer characteristics. Additionally, the plain language of claim 3 also shows that a "training module" is used to "determine the processing transfer characteristic." Thus, dependent claim 3 states:

> The power efficient integrated circuit of claim 1, wherein the computational engine further comprises:

training module operably coupled to <u>determine the processing transfer characteristic</u> and the processing requirements based on a known executional requirements of a given function, wherein the known executional requirements includes at least one of: millions of instructions per second (MIPS), timing requirement between dependent operations, and speed of execution.

(JX-7 at 7:9-18 (emphasis added).) Dependent claim 11 states:

The method of claim 9 further comprises:
<u>determining the processing transfer characteristic</u> and the processing requirements based on a known executional requirements of a given function, wherein the known executional requirements includes at least one of: millions of instructions per second (MIPS), timing relationship between dependent operations, and speed of execution.

(JX-7 at 8:1-8 (emphasis added).) Hence, the plain language of each of the non-asserted dependent claims 3 and 11 shows that said claims are directed to <u>determining</u> the processing transfer characteristics. In contrast, asserted independent claims 1 and 9 are directed to "producing the system clock control signal and the power supply control signal <u>based on</u> a processing transfer characteristic." Therefore, comparing the asserted independent claims 1 and 9 to the non-asserted claims 3 and 11, dependent respectively on claims 1 and 9, the administrative law judge finds that one of ordinary skill in the art would interpret said asserted claims as claiming only the <u>use</u> of processing transfer characteristics, and do <u>not</u> require that said processing transfer characteristics be <u>determined</u> in any particular manner.

Additionally, the specification of the '522 patent is consistent with the plain language of the asserted claims and non-asserted claims. Thus, Figure 1 of the '522 patent, states in part: "the power savings algorithm 22 would cause the computational engine 12 to set the system clock control signal 44 .... In addition to generating the system clock control signal 44, the computational engine 12 also produces a power supply control signal 64." (JX-1, at 2:65-3:8.)

By contrast, in Figure 2, which the specification describes as "an alternate integrated circuit in accordance with the present invention," "the training module 72 determines the processing transfer characteristics of the computational engine." (JX-1, 3:27-29, 49-50.) Significantly, the embodiment of Figure 1 does not include a training module 72 which "determines the processing transfer characteristics of the computational engine," but the embodiment of Figure 2 does include said training module. Therefore, Figures 1 and 2 of the '522 patent disclose two distinct inventions, one that does not disclose determining the processing transfer characteristics (Figure 1) and one that does (Figure 2).

Moreover, respondent's expert Razavi admitted during the hearing that there is a distinction between "determining" the process transfer characteristics, and setting the voltage and frequency "based on" those characteristics. Thus, he testified:

Q. Would you agree that the '522 patent distinguishes between determining processing transfer characteristics on the one hand and merely basing voltage and frequency settings on processing transfer characteristics on the other hand?

A. ... Okay. So the question, in my understanding, is one task is determining the processing transfer characteristics, another task is setting the voltage and frequency based on transfer characteristics?

Q. Yes.

A. And your question is, does '522 distinguish between these two?

Q. Yes.

A Okay. Okay. So I'll just repeat that, and then I'll answer the question. So we have two tasks. One is determine the processing transfer characteristic of a circuit, and the other task is set the frequency and voltage based on the transfer characteristic?

Q. Yes.

63

A.   Are these two tasks distinguished by '522, right?

Q.   Yes.

A.   That was the question? Yes, I believe they are distinguished by
      '522.

(Razavi, Tr. at 1489-90 (emphasis added).)

Respondent argued that claims 1 and 9 require a "real time" determination of processing

transfer characteristics (i.e., "on the fly" and chip-by-chip) on the sole basis of the word "the"

before the words "computational engine." (RBr at 24-26.) With respect to how the processing

transfer characteristic is determined, the specification shows that at least in one embodiment (as

shown in Figure 3), the processing transfer characteristic is determined by experimentation

testing, and not during actual use by an end-user. Describing Figure 3, the specification of the

'522 patent, states: "The processing transfer characteristics of the computational engine will map

the processing characteristics of the multiply accumulator 90 and will vary depending on the

voltage set for the supply. In this embodiment, what voltage to set for the supply is determined

by experimentation once the processing requirements of an application are determined (i.e. the

MIPS required)." (JX-1 at 4:2-8 (emphasis added).) Moreover, as expressly stated in the

specification, the "determining" method recited in the '522 patent is by its very nature, a

learning, trial-and-error process which, if performed while a consumer is listening to a song,

would disrupt the operation of the device. Thus, the specification states:

> If, on the other hand, the accumulated value is not as expected, the supply
> voltage is increased at an incremental rate of 10 mVolts to 500 mVolts,
> and the accumulation process is repeated. Once the accumulated value is
> as expected, i.e., the correct value has been accumulated, the supply is set
> to this value.

(JX-1 at 4:14-19 (emphasis added).) Describing Figure 4, the specification further states:

> FIG. 4 illustrates a graphical representation of determining the processing transfer characteristics and processing requirements associated with processing at least a portion of an application. The application may include the MIPS required for processing the entire application or it may include separate indications for each sub routine contained therein. Alternatively, a default processing requirement may be selected for certain applications or all applications. As one of average skill in the art will appreciate, there is a multitude of ways in which the processing requirements associated with an application may be derived.

(JX-1 at 4:20-30 (emphasis added).) Hence, the description of Figure 4 shows that a default processing requirement may be selected for certain applications.

Moreover, the administrative law judge has already found, supra, that asserted independent claims 1 and 9 do not contain a determination requirement. Since said claims 1 and 9 do not have a determination requirement, he finds that a person of ordinary skill in the art would interpret said claims 1 and 9 as not requiring a particular type of determination of processing transfer characteristics (i.e., "on the fly" and "chip-by-chip"). Also, the administrative law judge finds that respondent's argument that processing requirements are determined in "real time" (i.e., "on-the-fly"), is contradicted by the specification, which recites a "default [i.e., unchanging] processing requirement." (JX-1 at 4:25-27.) Furthermore, respondent's own expert Razavi explained that processing transfer characteristics were routinely determined without resort to chip-by-chip or "on the fly" testing. (Razavi, Tr. at 1486-8.)

Additionally, the administrative law judge finds that nothing in claim 1 would preclude the processing transfer characteristics of the "computational engine" from being "based on" representative samples of that chip during design, testing or manufacturing. Such testing was a well-known technique and the only practical way to determine processing transfer characteristics

65

in the prior art, as Razavi admitted under cross-examination at trial. (Razavi, Tr. at 1484-5.)

Respondent further argued that "the patent specification repeatedly discloses that the frequency **and/or** the voltage can be controlled, but the asserted claims specifically require that the frequency **and** the voltage are controlled." (RBr at 26.)

Complainant argued that the claimed "power supply control signal" and "system clock control signal" produced by the computational engine are, respectively, supply voltage and clock frequency "control" knobs that can be used flexibly to set the clock frequency based on some applications, set the supply voltage based on other applications, or set both voltage and frequency based on applications as warranted; and that the claims require the ability to allow changes to both frequency and voltage, but do not require that both be changed in every instance. (CRBr at 64-65.)

The staff argued that "while prosecuting the '522 patent the inventors distinguished their invention from the prior art by citing the ability to adjust voltage <u>and</u> frequency during the operation of an application." However it then argued that "[t]his indicates that claims 1, 6, 9, and 13 of the '522 patent require adjusting the system clock <u>and/or</u> the power supply based on the application being executed by the IC." (SBr at 22 (emphasis added).)

The asserted independent claims 1 and 9 of the '522 patent require "producing the system clock control signal and the power supply control signal based on" processing transfer characteristics and processing requirements. (JX-1, 6:65-7:4.) The plain language of claims 1 and 9 requires <u>producing</u> both the system clock control signal and the power supply control signal, not adjusting said signals. However, the Background of the Invention section (Background) of the '522 patent shows that the '522 patent is based on a need "for a method and

66

apparatus that <u>adjust</u> the system clock <u>and/or</u> the supply voltage based on the processing

capabilities of an integrated circuit and the application being performed to conserve power."

(RPFF 348 (undisputed) (emphasis added); JX-1 at 1:44-48.) Thus, the specification states that

there is a need for a method and apparatus that <u>adjust</u> the system clock <u>and/or</u> the supply voltage

to conserve power. (RPFF 348 (undisputed) (emphasis added); JX-1 at 1:44-48.)

   In the prosecution of the '522 patent, the August 2001 Amendment and Response states:

> "Reents does not teach or suggest having a computational engine <u>generate</u>
> <u>the system clock control signal and the power supply control signal</u> to
> [conserve] power. As disclosed in the specification of the present
> application on page 10 at lines 24-26 by <u>adjusting</u> the system clock <u>and/or</u>
> the supply based on the application being executed by the IC, power
> consumption <u>may be optimized</u>."

(JX-2 at ST 0274464 (emphasis added); Callahan, Tr. at 458.) Hence, the inventors of the '522

patent distinguished Reents by arguing that Reents does not teach or suggest having a

computational engine <u>generate</u> the system clock control signal and the power supply control

signal to conserve power. The inventors further distinguished Reents by arguing that power

consumption may be <u>optimized</u> by <u>adjusting</u> the system clock <u>and/or</u> the supply based on the

application being executed by the IC.

   Significantly, the specification never shows any instance where <u>both</u> frequency and

voltage must be changed within an application. Thus, for example, describing the embodiment

shown in Figure 1, the specification of the '522 patent states:

> Based on the power supply control signal 64, the on-chip power supply 20
> sets the programmable divider such that the regulation module produces
> supply 58 at a desired value. For example, once the system clock 42 has
> been set, the supply 58 may be <u>varied</u> such that the processing of the
> application 24 with the computational engine 12 is <u>optimized</u>.

67

(CX-1 at 3:15-20 (emphasis added).) Hence, as described in the embodiment of Figure 1,

voltage supply 58 should be changed in order to optimize the processing of the application 24

with the computational engine 12.

In another example, Figure 4 illustrates a graphical representation of <u>determining</u> the

processing transfer characteristics and processing requirements associated with processing at

least a portion of an application. In describing Figure 4, the specification of the '522 patent

states:

> <u>Based on the most difficult processing requirements of an application</u>, the
> system clock 42 is set to provide a clock that at least meets the processing
> requirements. For example, if the processing requirement is 6 MIPS, the
> system clock will be set at a rate of at least 6 Mhz. Having done this, the
> <u>supply 58 or 84</u>, which may be a regulated voltage supply or a regulated
> current output, <u>is varied</u> to change the processing speed of the circuitry
> within the computational engine.

(CX-1 at 3:15-20 (emphasis added).) Hence, the embodiment of Figure 4, <u>supra</u>, "[b]ased on the

most difficult processing requirements of an application," is one example where the voltage

supply 58 or 84 "<u>is varied</u> to change the processing speed of the circuitry within the

computational engine." (<u>Id</u>. (emphasis added).) However, the above description of example

shown in Figure 4, is a description of non-asserted claims 3 and 11.[10]

In yet another example, Figure 6 shows a logic diagram of a method for controlling power

consumption of an integrated circuit. Describing Figure 6, the specification states:

> For example, if the processing requirements of the known function is 6
> MIPS, the system clock is set to a value of 6 Mhz or slightly greater than 6
> Mhz. At Step 136-B, the power supply control signal is incremented

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[10] The administrative law judge has already found, <u>supra</u>, that non-asserted claim 3,
dependent on asserted independent claim 1, and non-asserted claim 11, dependent on asserted
independent claim 9, are directed to <u>determining</u> the processing transfer characteristics.

causing the at least one <u>supply to be incrementally increased</u> for each processing of the given function until the given function provides an anticipated result.

(CX-1 at 6:19-23 (emphasis added).) Therefore, the example in Figure 6 shows that once a frequency of a processing requirement function is known, such as 6 Mhz, the power supply control signal is incremented causing the <u>supply to be incrementally increased</u> for each processing of the said function until the given function provides an anticipated result. This example does <u>not</u> show changing the power supply control signal (voltage) and the system clock (frequency) at the same time. Rather, it shows that for a given frequency, which is set to a specific value (in the above example, at 6 Mhz), the supply (voltage) is incrementally increased.

Thus, the descriptions of the Figures 1, 4 and 6, <u>supra</u>, do show that voltages may be changed in order to optimize. Significantly however, the above examples and the remaining parts of the specification never show any instance where <u>both</u> frequency and voltage must be changed within an application. Hence, the administrative law judge rejects respondent's contention that "the asserted claims specifically require that [both] the frequency **and** the voltage are controlled."

Hence, the administrative law judge finds that the asserted claims and the specification of the '522 patent teach conserving power by adjusting the system clock (frequency) <u>and/or</u> the supply (voltage) based on the application being executed by the IC.

Based on the foregoing, the administrative law judge finds that a person of ordinary skill in the art would interpret the claimed phrase "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine" as (1) using processing transfer characteristics, but not requiring that they be "determined" in any

69

particular manner, including "real time" (i.e., "on-the-fly"), and (2) requiring that either the

frequency or the voltage, or both, are adjusted.

XII.   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). An accused device that does not literally

infringe a claim may nonetheless infringe under the doctrine of equivalents if differences

between the accused device and the claimed invention are "insubstantial." <u>Desper Prods. Inc. v.</u>

<u>QSound Labs, Inc.</u>, 157 F.3d 1325, 1338 (Fed. Cir. 1998). Equivalency of a claimed element to

an element of an accused device is determined on an element-by-element basis at the time of

infringement. <u>Warner-Jenkinson Co. v. Hilton Davis Chem. Co.</u>, 520 U.S. 17, 40 (1997).

A.   The '187 Patent

Complainant argued that the accused ATJ207X, ATJ208X and ATJ209X families

literally infringe claim 13 of the '187 patent. (CBr at 62.) Complainant, in its analysis, used the

ATJ208 series, as a representative product.[11]

1.   The "capability" and testing of ATJ2085

Complainant argued that testing of an actual ATJ2085 device[12] confirmed that said

ATJ2085 device contains circuitry and software capable of performing the start-up sequence

claimed in claim 13. (CBr at 74-76.) Moreover, it is argued that all that is required for

infringement of claim 13 is that the stand-alone IC of claim 13 has the claimed structure, and that

this structure have the <u>capability</u> of functioning as described by claim 13. (CBr at 57.)

Respondent argued that SigmaTel does not address the sequence issue or recite any

supporting evidence to suggest that even under its constructions the accused Actions' circuits are

placed in a reset condition prior to enabling the DC-DC converters, as required by claim 13, and

thus, SigmaTel is relying exclusively on its "capable of infringing" argument based on

_____

[11] The 208X family and the 207X family are similar in all respects that relate to
infringement. (Callahan, Tr. at 211-12.) Also, in all ways that relate to infringement, {
                                          } (Callahan, Tr. at 221-23.) Neither respondent nor
the staff challenged complainant's use of ATJ208X as a representative sample of all accused
infringing articles as to the '187 patent.

[12] The ATJ2085 device is a member of the ATJ208X family, <u>See</u> Section IV, <u>supra</u>.

71

Callahan's modified configuration and tests of an MP3 player with an Actions chip. (CRBr at 76.) It is argued that there is no general doctrine that "any device capable of infringing necessarily infringe" and that to the extent such precedent exists to consider the capabilities of an accused device, SigmaTel has violated that precedent by significantly modifying the chip and the MP3 player and by failing to show that any third party is actually using the chip MP3 player in the "same unusual, modified way as SigmaTel did." (RRBr at 76-77.)

The staff argued that the 208X accused products, when operating in a "two-battery" mode under Callahan's testing, met all the limitations of claim 13; that Actions' datasheets make clear that a two battery mode is a normal and intended mode of the products; that although it remains unclear from a table in one datasheet admitted as CX-161 whether the DCDIS pin is recommended to go high as required by Callahan's testing, Actions' representative testified that

{   }

as was done in Callahan's testing; that under SigmaTel's and the staff's construction, the DCDIS pin could be activated some time after the battery is connected to the chip which would enable the power converters as required by claim 13; that although there is no evidence that anyone has used the Actions chip in this manner, the evidence does show that the Actions chip contains instructions that would perform the required functions when operated in at least one intended mode; and that while the evidence has not shown any commercially available two-battery device that incorporates the accused Actions chip, the Actions chip itself is a direct infringement of claim 13 of the '187 patent because of its ability to operate in an infringing manner. (SBr at 26-27.)

CX-161, entitled "Appendix B - ATJ2085 Test Report," is a test report documenting

72

certain tests performed by Callahan on an MP3 player incorporating an Actions ATJ2085 chip. (Callahan, Tr. at 201.) Callahan testified that the testing documented in CX-161 helps confirm that his analysis regarding infringement of claim 13 of the '187 patent by the ATJ208X products is correct. (Callahan, Tr. at 206.)

Callahan performed the tests (CX-161) sometime in September 2005. (Tr. at 202.) As to said tests, a modification was made to the MP3 player circuit board but no modification was made to the Actions chip as documented in CX-161. Thus, Callahan testified:

> Q.   And can you explain how you set up those tests?
>
> A.   Certainly. There's some photographs in here, one of which is on page six of the report, that shows the laboratory equipment which was used. Some of the other pictures prior to that show the MP3 player that was used, and in order to be able to make measurements at certain places, we had to attach a few wires and do a few other little things which I will describe.
>
>   In order to understand what would happen when the device was powered up, we needed to have control of this power enable signal. This particular power enable signal was connected through a switch. We had to make a minor modification to the board in order to make that happen. And then when that happened, we were able to perform some of these tests that we see photographs of later in the report, including Figure 11 and Figure 12.
>
> * * *
>
> Q.   What is this document?
>
> A.   This is a test report that describes some tests that I performed on this ATJ2075.
>
> Q.   Can you explain how you set up those tests?

A.   In a similar manner, on page three, it shows the same laboratory set up with the same type of equipment. On page four, it shows an MP3 player that was purchased, and then on page five, it shows the setup that we actually used with modifications made to the board, to the circuit board, but not the chip. And then pages six and seven show some wave forms that are associated with the results of this particular test.

* * *

Q.   Okay. Now, this test setup was for a 1 battery MP3 player, correct?

A.   Yes, that's how it was originally configured.[13]

Q.   Now, would you please tell the Court how you modified that one battery MP3 player to run these tests that are referred to in this exhibit CX-161 at Tab B, please?

A.   We modified, as I indicated in this report, we modified the printed circuit board on the player in order to be able to switch a couple of pins around, and one of which was battery select and the other was DCDIS. That was indicated in the report.

Measurements on page 10 were in a one-battery mode. Measurements on page 11 were in a two-battery mode.

Q.   Measurements on page 11 that refer to the 2085 device, that was a two-battery mode, right?

A.   That's correct.

Q.   And so you were running a 2085 two-battery mode

---

[13] The original configuration for one-battery mode for the MP3 player under test occurred when the chip had been soldered into a board by the manufacturer who built the MP3 player. (Callahan, Tr. at 352.) The manufacturers of MP3 players configure the Actions' chips to operate in either a one-battery player or a two-battery player. (Callahan, Tr. at 352.)

startup test, right?

A.   Yes, that's right.

Q.   Now, please tell us exactly how you modified the
      BAT select pin and the DCDIS pin to run your test.

A.   As indicated in the test report, they were run
      through switches that could be taken either high or
      low.

Q.   Where did you get those switches?

A.   Those switches were provided by SigmaTel.

Q.   Did those switches come with the MP3 player that
      you tested?

A.   No, they didn't.

Q.   SigmaTel gave you switches?

A.   Yes.

Q.   What kind of switches?

A.   Slide switches. They are little common, little itty-bitty, on/off switches.
      In some cases it is a single pole, single throw-type case, single pole,
      double throw.

Q.   Where can I get those kind of switches, sir?

A.   Radio Shack.

Q.   Radio Shack sells them?

A.   Sure.

Q.   Are those switches shown in any of those figures?

A.   They are. These figures here, the copy quality is such that you really can't
      see them. Well, you really can't see it very well on the figure even with
      color, but it is something that we did modify and we did not try to hide

that information.

Q.   I appreciate that you did not. I just want to know more about it.

       The MP3 player that you tested did not have those switches for its ordinary operation, right?

A.   They were not part of the MP3 player as it was originally procured.

Q.   And obviously Actions, well, any Actions chip doesn't have these external switches for part of their ordinary operation, right?

A.   I am not sure I would personally know that.

Q.   How were the switches connected? Did you have to solder them in someplace?

A.   Yeah, there were wires that had to be soldered into the printer circuit board in order to make an electrical connection.

Q.   Who did the soldering?

A.   One of the technicians in the laboratory there at SigmaTel.

Q.   You took a special lab technician to solder in those switches, sir?

A.   Yes. They are surface components and these components are very tight, tightly spaced, one to another. And so you have to do it properly or else you can make a mistake and then the data won't be valid.

Q.   So do you think Judge Luckern could solder in those switches if he had to?

A.   Depends on how skillful you are. We have to use a magnifying glass so you can see what you are

doing.

Q.   Do you need a special soldering gun or anything?

A.   It has to have a small tip.

(Tr. at 202-03, 207-08, 344-48 (emphasis added).)

While Callahan used an external switch to toggle back and forth between one and two battery modes of operation, Actions 2085 chip can be configured to go high to low. Thus, he testified:

Q.   So was the MP3 player operational when you got it?

A.   Not until we gave it a battery voltage.

Q.   So when you gave it a battery, it operated, right?

A.   Yes.

Q.   And it operated with that -- did you give it one battery or did you apply something else to it?

A.   We applied one battery and two battery voltages to it.

Q.   All right. So let me ask you this: Did you plug in a battery to the MP3 player like it was intended to be configured or did you apply some general power source to it?

A.   The tests that we run were using a power source that could be varied in voltage.

Q.   So you didn't plug in a portable double A battery, for example, into the MP3 player, right?

A.   Not during our tests.

Q.   Okay. You didn't plug in two double A batteries during your tests, did you?

77

A.   No.

Q.   In fact, you couldn't because the MP3 player
      couldn't accommodate two batteries, right?

A.   In order -- if you look at the figures that we had, we
      took the printed circuit board out of the casing.
      Once it is out of the casing, there is no battery
      holder left. So we could have configured two
      batteries and wired them up into the battery
      connections if we had so desired.

Q.   Now, looking at the figure 12 on page 11, you
      testified this morning that the period of time from
      the start of the left-hand side of the screen up until
      the red line at the bottom went from high to low,
      was the -- or, rather, met the establishing an idle
      state limitation of claim 13, right?

A.   Yes.

                    * * *

Q.   I would like to know what you had to do to the chip
      or the MP3 player to create the period of time that
      you show from the left-hand screen over to the red
      line going from high to low.

A.   First applied a power source to the chip and then
      later at a subsequent time caused the DC to -- the
      DCDIS pin to switch from high to low.

Q.   About how much time passed between the time
      when you first applied the power source and then
      later at a subsequent time caused the DCDIS pin to
      switch from high to low?

A.   We performed a number of different tests. This
      particular test that's on the screen only shows
      perhaps 250 milliseconds worth of idle state, but the
      amount of time would have been much longer than
      that in the actual experiment.

78

Q.   And that's because you configured the test to be able to hold the reset state as long as you wanted to until you supplied the DCDIS going from high to low, right?

A.   That's correct.

Q.   But Actions' 2085 chip is not configured to go high to low, right?

A.   Certainly it is.

Q.   For the startup routine of an Actions 2085, does the DCDIS signal ever go from high to low?

A.   It can, yes, it can.

Q.   It can if you force it to, right?

A.   These are input pins that can be controlled.

Q.   Okay. So you have to force it to go from high to low, correct?

A.   You have to do something to make it do anything.

Q.   So you have to force it to go from high to low, right?

A.   Yes, we did.

Q.   Okay. And that's because the DCDIS signal in an Actions 2085 for a one-battery operation is configured low to start with, right?

A.   It is configured however I choose to configure it.

(Tr. at 353-56 (emphasis added).)

While respondent argued that there is no general doctrine that any device capable of

infringing necessarily infringe, the Commission, over twenty-years ago, in Certain Apparatus for

79

the Continuous Production of Copper Rod, Inv. No. 337-TA-89 Comm'n Op. at 13, 14 USITC

Pub. No. 1132 (April 1981), acknowledged the doctrine that "infringement may be determined by

the use to which the device may reasonably be put or of which it is reasonably capable." That

doctrine is applicable even though in the testing, external aids, with no modification of the

accused device, are employed. Thus, in Bionx Implants. Inc. v. Linvantec Corp., 299 F.3d 1378

(Fed. Cir. 2002) the Court in reversing a summary judgement finding no infringement found that

a test performed by the patentee Bionx with the aid of an external device designed specifically

for the purpose of the test indicated that the product could infringe. In so reversing, the Court

stated:

> In the district court, Bionx offered as evidence a videotaped
> demonstration that showed the BioStinger being pushed into uncut
> meniscal tissue. The district court discounted the videotape,
> however, because "the insertion was made possible only by use of
> a special 'insertion rod' that plaintiffs concede was designed
> specifically for the videotaped demonstration." Citing this court's
> decision in High Tech Medical Instrumentation, Inc. v. New Image
> Industries, Inc., 49 F.3d 1551, 33 USPQ2d 2005 (Fed.Cir.1995),
> the district court concluded that the demonstration was insufficient
> to defeat summary judgment because it ran afoul of "the
> well-established rule that a device does not infringe merely because
> it can be altered to make it infringe."
>
> In High Tech, the asserted claim recited a "camera ... rotatably
> coupled" to a "body member." The camera in the accused device
> could be made to rotate, but only if the user loosened two set
> screws that secured the camera to its housing. The High Tech
> court noted that the fact that it was possible to alter the camera so
> that it could be made to rotate was not enough, by itself, to justify a
> finding of infringement. The court explained that there was no
> evidence that the device was designed to be altered in that manner,
> there was no reference to the rotation of the camera in the
> defendant's manual or promotional materials, and there was no
> evidence that any user of the camera had loosened or removed the
> set screws in actual use. For that reason, we held that there was

80

"no reason to disregard the set screws" in the infringement
analysis. 49 F.3d at 1556, 33 USPQ2d at 2009.

In this case, Bionx did not modify the BioStinger in the course of
conducting its videotaped demonstration, but instead, used a
cannula, or hollow rod, to assist in the process of inserting the
BioStinger into meniscus tissue. The district court regarded the
use of the cannula as a modification of the device that made the
videotaped demonstration irrelevant as evidence of infringement.

We do not believe the use of the cannula constituted an
impermissible alteration of the accused device analogous to
removal of the set screws in High Tech. Applying the rationale
underlying the High Tech decision, we determine whether the
accused shaft was "rigid" within the meaning of that term as used
in the '976 patent by determining whether the shaft is rigid enough
to be pushed through uncut meniscal tissue in the same general
circumstances in which the patented device was designed to be
used. Thus, the accused device would not be shown to be "rigid" if
it were frozen in liquid nitrogen before being inserted into the
meniscus tissue, or if it were shot as a high-speed projectile into
the meniscus. Those conditions would differ too dramatically from
the conditions of contemplated use for the patented device; the
definition of "rigid" that the district court derived from the text and
prosecution history of the patent would not be satisfied in those
circumstances.

In this case, however, the use of a cannula to insert the BioStinger
into meniscal tissue was within the context in which the patent
contemplated that the claimed invention would be used. The
written description of the '976 patent describes two methods of
inserting the claimed suture. In the first embodiment, the suture is
inserted into the tissue to be repaired through a "hollow outer
sleeve or cylinder" using a "pusher" sized to fit through the center
of the cylinder. '976 patent, col. 3, ll. 50-57. The patent also
describes an embodiment in which a pusher mechanism with
"spring grasping means" forces the suture through an applicator
cylinder into the tissue. Id., col. 4, ll. 1-5.

The '976 patent therefore makes clear that a suture that is inserted
into uncut tissue through an applicator cylinder is "rigid." For that
reason, the fact that Bionx used an "insertion rod" in its videotaped
demonstration presented to the district court does not, by itself,

81

constitute an impermissible alteration of the accused device that
renders the videotaped demonstration an invalid test of whether the
accused device is "rigid." Accordingly, we conclude that the
district court erred by granting summary judgment to Linvatec
based primarily on the fact that Bionx used a cannula in its
videotaped demonstration.

299 F.3d at 1382-83 (emphasis added).)

In this investigation, with respect to the Callahan test, Callahan made no modifications of

the accused IC itself.[14] Moreover, the administrative law judge finds that the external

connections used by Callahan were within the context of what the '187 patent contemplates that

the concepts of claim 13 would be used. Thus, the use of the stand-alone IC described in the

'187 patent may include an MP3 player as the '187 patent discloses:

> The circuitry may perform a wide variety of functions such as a
> microprocessor, digital signal processor, operational amplifier,
> integrator, audio encoder, audio decoder, video encoder, video
> decoder, et cetera.

(JX-3, 1:13-17.) Such use is contemplated by the accused products as well. As stated in one of

respondent's datasheets, "ATJ2085 is a single-chip for flash-based digital music player . . .

ATJ2085's programable architecture supports the MP3, WMA and other digital audio

standards."[15] (JX-6 at 4.) Also, the precise nature of the power source used to power the IC is not

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[14] One of the modifications in the Callahan test created the capability of testing a single-
battery MP3 player as either a single or two battery MP3 player by "[a]dding an ON/OFF switch
to the signal path of the BATSEL input pin (external to the chip) . . ." (CBr at 18.) The other
change in the Callahan test was to "add[] an ON/OFF switch to allow toggling of the DCDIS
input pin." (CBr at 18.)

[15] Complainant during the discovery phase of the investigation unsuccessfully sought
discovery to obtain the identities of all of the manufacturers, importers and resellers of
downstream products that are imported into the United States and contain Actions' ICs. If
complainant had been successful in obtaining such discovery, it would have had the opportunity
to determine what said manufacturers were doing with Actions' ICs. However, although

in the claims. In other words, using either one or two batteries to power the IC would make no difference to the patent.

> The stand-alone integrated circuit 10 is operably coupled to an external power source 12, which may be a battery, solar power generator, or other power source. . .

(JX-3, 2:20-23.) Moreover, respondent's datasheets disclose that the accused products can be used in a one or two battery configurations. For example, one of respondent's datasheets describes four separate modes: "One battery with more external components, but more efficiency," "two battery," "One battery with less external components, but less efficiency," and "USB power or DC power line-in." (JX-6 at 15.) Therefore, the administrative law judge finds that complainant's testing of an example of an accused product in an MP3 player with a variable "power supply input" (CBr at 18, fn. 5) is within the contemplated usage of both the '187 patent and the accused products.

Based on the foregoing, the administrative law judge finds that the Callahan test is a valid test for determining whether or not the accused products are capable of performing the startup sequence of claim 13 of the '187 patent.

Actions' datasheets make reference to downstream products, including "MP3" (JX-6 at 4), Actions in discovery took the position that it has "no knowledge of the downstream devices that utilize its ICs." (CPFF 7.378 (undisputed).) However, complainant is able to identify where its audio processing ICs are sold because it tracks such activity with a program called "CPM." (Grassian, Tr. at 717). Actions' position is that the distribution channel for its chips is complex and intricate (RRCPFF 7.97(c));{

}

2.   The start-up sequence of claim 13 and the Callahan test

In order to follow the start-up sequence of claim 13, the accused product must 1) establish

and idle state 2) receive a power enable signal 3) enable the power converter and 4) after steady-

state has been reached, enable the functionality of the IC. Callahan performed the test on an

ATJ2085 chip. The testing involved the startup sequence of claim 13 by taking current traces.

After a battery is inserted (or a power source detected){

} (CX-163 at 11.)

Toggling the DCDIS signal (emulating the pressing of a power button on the MP3 player)

{   } (CX-163 at 11.) {

} Hence, the administrative law

judge finds that the Callahan test confirms that the accused products do perform said start-up

sequence of claim 13.

3.   The claimed phrase "stand-alone IC"

Complainant argued that Mr. Leo Hsieh, one of respondent's witnesses, agreed that

respondent's products are "system-on-a-chip" devices. (Hsieh, Tr. at 1014-1015; CBr at 63-64.)[16]

Complainant further argued that respondent's technical documentation, including the ATJ208X

Data Sheet (CDX 110), show that respondent's chips have components of a "system-on-a-chip."

(CBr at 64.)

Respondent does not rebut that the accused products satisfy the "stand-alone IC"

limitation.

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[16] Complainant states that the witness who called respondent's products "system-on-a-chip" was Mr. Shawn Li in its brief (CBr at 64) while its finding claims the witness' name was Mr. Leo Hsieh. (CPFF No. 5.9)

The staff argued that respondent's products meet all limitations of claim 13. (SBr at 23.)

The administrative law judge has found that a stand-alone IC is "an integrated circuit including an on-chip power converter and some functional circuitry." No party disputes that respondent's accused products comprise "functional circuitry," and both the Hsieh testimony and the technical documentation in CDX 110 show said "functional circuitry." Based on the foregoing, and the administrative law judge's finding, infra, that respondent's accused products literally have an on-chip power converter, the administrative law judges finds that respondent's accused products meet the claim limitation "stand-alone IC."

4.   The claimed phrase "on-chip power converter"

Complainant argued that the accused products have a power converter with several off-chip components, and that is sufficient to infringe.

Respondent argued that "under [respondent's] proposed construction the accused chips do not infringe because they include numerous circuit elements of the converter circuits off the chip." (RBr at 106.)

The staff argued that the accused products have an "on-chip power converter"with external inductor, diode, and capacitors, and therefore meets this limitation. (SBr at 23-24.)

Respondent admits that the accused products have a power converter{

        } (ROCPFF No. 5.10(a) citing Razavi, Tr. at 1397; RRCPFF No. 510(c) citing Razavi, Tr. at 1398; RDX-57.) Respondent's witness Li testified that the accused products had a DC-DC converter. (Li, Tr. at 1154-1155; others.) A "DC-DC converter" is a "power converter." (Razavi, Tr. at 1395-98; RDX-56; RRCPFF 5.10(b); RRCPFF 5.11(a).) Respondent also admits that{

85

} (RRCPFF No. 5.10(c).) Respondent further admits that in

its ATJ207X series of accused products,{

} (RRCPFF 5.10(b).) The administrative law judge

has found that the"on-chip power converter" may have such components off-chip. See Section

XI.A.2 supra. Therefore, the administrative law judge finds that respondent's accused products

literally contain an on-chip power converter.

5.   The claimed phrase "memory operably coupled to the processing module, wherein the
        memory includes operational instructions that cause the processing module to: establish
        an idle state that holds at least a portion of the stand-alone IC in a reset condition when a
        power source is operably coupled to the stand-alone IC"

Complainant argued that {   } is generated in the accused products

that holds a portion of the chip in a reset condition, after a battery is added to the system (CBr at

67) and that the memory holding the reset signal includes several flip-flops. (CBr at 68.)

Respondent argued that the reset signal is not an input to the processing circuits, and therefore,

cannot be signaling the circuits to do anything, and that in any case its chips{

} (RBr at 97-98; RRBr at 95.) The staff argued that

respondent's accused products infringe. (SBr at 24.)

The administrative law judge has found that the processing module is "any circuitry that

manipulates signals based on operational instructions." As found, supra, in section XI.A.3,

respondent's accused products have functional circuitry that manipulates signals; therefore, the

administrative law judge finds that respondent's accused products have a processing module.

Regarding operational instructions, respondent has consistently argued{

} (RRCPFF 5.29(c).) Respondent has further

86

argued that{   } that can meet this

limitation. (RBr at 61-62.) The administrative law judge has found that operational instructions

are "digital information that affects the claimed operations of the processing module." See

Section XI.A.5. Therefore, both of respondent's arguments, supra, are unpersuasive. Moreover,

in the accused devices,{

} (CDX-114C; CX-32; CPFF 5.37.) A flip-flop is a memory device. (CPFF 5.65

(unopposed in relevant part).) A battery is a power source. As stated by Razavi:

> THE WITNESS: Okay. I would like to perform the
> same analysis on the Actions' chips. So, again, let's
> suppose that I bought an MP3 player with an
> Actions chip in it and I plug in the batteries at some
> point in time. So what does that chip do? So,
> again, the horizontal axis is time axis, and at some
> point in time, I have insert the batteries. Well, as
> soon as we insert the battery the{
>
>
>
>   }
>
> Q.   At what point in time, sir?
>
> A.   When the batteries are inserted. {
>   }

(Razavi, Tr. at 1372-73 (emphasis added).) The{   } mentioned by Razavi, supra,

therefore affects the processing module. Also, a purely hardware implementation is supported by

87

the claims and the specification, as circuitry is hardware, as found in Section XI.A.4, supra.

Therefore, the administrative law judge finds that respondent's products{

}

Based on the foregoing, the administrative law judge finds that respondent's accused products literally meet this claim limitation.

6.   The claimed phrase "memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to: . . . receive a power enable signal"

Complainant argued that the input signal labeled{

} (CBr at 69.) Respondent argued that said signal only disables the power converter, and that{

} (RBr at 100.) The staff argued that{

} (SBr at 24.)

The Callahan test, supra, also shows the{   }as respondent's witness Razavi testified. (Tr. at 1524.) Also, respondent's own documentation labels said signal as{   } (JX-6; CX-172C; CX-174C.) Thus, the administrative law judge finds that{

} As found, supra, a processing module operably coupled to memory elements exists in the accused products. As shown in JX-6C, which is an ATJ2085 Product Data Sheet,

{   } (JX-6C; Callahan, Tr. at 173.) A register is memory. (CPFF 4.145 (undisputed).) Moreover,{

} referred to by respondent, is the "operating instructions" and is also contained in memory, as indicated in the following quote from Razavi:

88

{

}

(Razavi, Tr. at 1373.) (See also CPFF 5.75 (undisputed in relevant part); CPFF 5.76

(undisputed).)

Based on the foregoing, the administrative law judge finds that operational instructions in

memory causes{

}and therefore, that respondent's accused products literally meet the

limitation of this claimed phrase.

7.   The claimed phrase "memory operably coupled to the processing module, wherein the
        memory includes operational instructions that cause the processing module to: . . . enable,
        in response to the power enable signal, the on-chip power converter of the stand-alone IC
        to generate at least one supply from the power source"

Complainant pointed out which parts of the circuitry is the processing module and

memory. (CBr at 71-72.) Respondent argued that the circuitry and signals pointed out by

complainant do not enable the power converter, and that complainant has not pointed out any

operational instructions corresponding to this claimed limitation. (RRBr at 100-101.) The staff

argued that respondent infringes. (SBr at 24.)

As found, supra, a processing module is any functional circuitry. The circuitry operably

coupled to the memory allowing the power enable signal to enable the on-chip power converter is

the control circuitry and switching transistors of the{   } As also found

supra,{   } and can turn off or on the power converter. As Razavi

testified:

{

89

}

(Tr. at 1524.)

Based on the foregoing, the administrative law judge finds that the accused products

literally "generate at least one supply from the power source" when the power enable signal

{   } is received and enables the power converter.

8.   The claimed phrase "memory operably coupled to the processing module, wherein the
      memory includes operational instructions that cause the processing module to: . . . when
      the at least one supply has substantially reached a steady-state condition, enable
      functionality of the stand-alone IC."

Complainant argued that respondent's accused products detect when there is sufficient

power to enable their IC, and that this function is activated{   } (CBr at

72-73.) Respondent argued that its circuits are started too long after the power converter reaches

steady state to reach the "when" limitation in the claim. (RBr at 103-104.) The staff argued that

respondent infringes. (SBr at 24.)

Respondent admits that{   } (read only memory) on the chip.

(CPFF 5.76 (undisputed).) Respondent also admits that, in its accused products,{

} (Razavi, Tr. at 1377; RDX-75.) (RRCPFF No. 5.74(a).) Respondent further admits that

{   } (RRCPFF 5.72(c),

citing Razavi, Tr. at 1378, RDX-75.) The length of time measured{   } is covered by the

administrative law judge's construction of the claimed phrase "when." See supra, Section XI.A.9.

90

Likewise, the exact number reached when the system is in steady-state is immaterial, under the construction of steady-state by the administrative law judge, see Section XI.A.10, supra. Therefore, the accused products contain operational instructions in memory that cause the processing module to enable the functionality of the IC after the power supply has reached steady state. Based on the foregoing, the administrative law judge finds that the claimed limitation in issue is literally met by respondent's accused products.

9.   Conclusion

Based on the foregoing, the administrative law judge finds that complainant has established, by a preponderance of the evidence, that the accused ATJ207X, ATJ208X and ATJ209X families literally infringe claim 13 of the '187 patent.

B.   The '522 Patent

Complainant argued that respondent's ATJ208X and ATJ209X families infringe the asserted claims of the '522 patent.[17] (CBr at 79 and 86-87.)

Respondent argued that its accused products do not infringe the asserted claims of the '522 patent. (RBr at 32.)

The staff initially argued that "[a]ll limitations of claim 1 and 6 [of the '522 patent] are found in the accused Actions products and all limitations of claim 9 and 13 are found in Actions's 2051 and 2087 products combined with an end product MP3 player." (SBr at 27 (emphasis added).)[18] Thus, the staff appears to be arguing that all of the accused Actions

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[17]   Callahan testified that{
                        } to the asserted claims of the '522 patent. (Callahan, Tr. at 295.)

[18]   The 207X, 208X, and 209X families of products make up the entirety of the "accused Actions products," for both the '187 and the '522 patents, with the 2051 and 2087 products

91

products, viz., all of the ATJ208X and ATJ209X products infringe claims 1 and 6 of the '522 patent. However, the staff, later in a concluding paragraph argued that:

> In conclusion, Actions's 2051 and 2087 products should be found to infringe claims 1, 6, 9, and 13 of the '522 patent. Complainant has failed to prove infringement by any other Actions products.

(SBr at 29 (emphasis added).) Thus, according to said concluding paragraph, the staff appears to be arguing that only 2051 and 2087 products of the 208X family should be found to infringe claims 1, 6, 9, and 13 of the '522 patent. Furthermore, consistent with said concluding paragraph, the staff argued infringement only with respect to the 2051 and 2087 products. See SBr at 27-29.

1.   The ATJ208X family: independent apparatus claim 1

a.   The claimed phrase "on-chip power supply control module"

Complainant SigmaTel argued that its expert Callahan testified that, under SigmaTel's claim construction, the 208X products satisfy the "on-chip power supply control module..." limitation; that it is uncontroverted that Actions ATJ208X devices{

} and that it also cannot be disputed that Actions integrates both{

} into the ATJ208X chips. (CBr at 81.)

Respondent Actions argued that when the claimed phrase is construed as proposed by respondent, "this limitation cannot be infringed, because, as the evidence showed, Actions' chips include several off-chip components." (RBr at 46.) Respondent further argued that "[e]ven under SigmaTel's construction there is no infringement, because the{

_____

included in the 208X family. See Section IV, supra.

92

} and these circuits are "off the chip." (RRBr at 33.)

The staff argued that products in the 208X product have{

} and which is intended to be used in conjunction with the on-chip circuitry to create or to perform the activity that is described in the claim 1 of the '522 patent. (SBr at 28.)

As seen in Section XI.B.1, supra, the administrative law judge found that one of ordinary skill in the art would interpret the claimed phrase "on-chip power supply control module" to mean that a control module portion of the power supply must be on-chip, while portions of the power supply not related to the control function, such as inductors, capacitors, diodes, and switching transistors, may be off-chip.

The programming guide for respondent's ATJ2085 product shows that{

} (CX-21 at 49.) For example,{

}(Callahan, Tr. at 268.) Thus, the administrative law judge finds that the ATJ2085 product has its control module portion of the power supply on-chip. Moreover, RX-191 shows that respondent's ATJ208X devices include multiple off-chip components,{

} (RPFF 423 (undisputed).) Thus, the administrative law judge finds that in respondent's ATJ208X family, portions of the power supply not related to the control function,

{   } are off-chip.

Based on the foregoing, the administrative law judge finds that respondent's ATJ208X

family literally meets the limitation of the claimed phrase "on-chip power supply control

module" of claim 1 of the '522 patent.

b.   The claimed phrase "computational engine"

Complainant argued that "[i]n the Actions chips, the computational engine includes the

{   } (CBr at 82.)

Respondent argued that the distributed processing configuration of Actions' accused

chips,{

        } leads to no infringement under Actions' claim construction for the

computational engine; that the simple language of the claims requires that the same

computational engine that produces the two control signals must also be the same computational

engine that is executing the application and that serves as the basis for the processing transfer

characteristics; that since in an Actions' accused chip{

                        } the chips must produce the control signals based on

the processing transfer characteristics{   } that the relationship between voltage and

frequency that complainant's expert Callahan points to as the processing transfer characteristic at

best corresponds to{

        } and that therefore, the accused Actions' chips fail to meet the claim

limitation requirement that the accused control signals be produced based on processing transfer

characteristics of the same computational engine that runs the applications and that serves as the

basis for the processing transfer characteristic. (RBr at 36-37.)

94

The staff argued that the "208X family contains a 'computational engine' which is at least

{   } (SBr at 28.)

As seen in Section XI.B.2, supra, the administrative law judge already found that the

claimed phrase "computational engine" may be a microprocessor, compressor, digital signal

processor, logic circuit, state machine, analog circuit, and/or any circuitry that manipulates

signals (analog or digital) based on operational instructions. Thus, contrary to respondent's

arguments, the administrative law judge finds the "and/or any" language before the phrase

"circuitry that manipulates signals...," supra, shows that a "computational engine" need not be

limited to a single microprocessor{   }

Based on his finding that a "computational engine" need not be limited to a single

microprocessor, the administrative law judge finds that respondent's ATJ208X family literally

meets the limitation of the claimed phrase "computational engine" of claim 1 of the '522 patent.

c.   The claimed phrase "produce the system clock control signal and power supply control
       signal based on a processing transfer characteristic of the computation engine"

Complainant argued that all of the ATJ208X products satisfy this claim limitation, as

properly construed under complainant's claim constructions; that testing confirmed that the

ATJ208X devices infringe the asserted claims of the '522 patent; and that the ATJ209X products

infringe the asserted claims of the '522 patent. (CBr at 82-91.)

Respondent argued that complainant offered no evidence that the accused respondent's

chips contain or determine processing transfer characteristics as construed by Actions' proposed

construction; and that if the Court adopts respondent's interpretation for "processing transfer

characteristic," then the accused chips do not infringe the asserted claims. (RBr at 32-36.)

95

The staff argued that "the 2051 and 2087 products change {   } which meets the limitation of the claimed phrase. (SBr at 28 (emphasis added).)

As seen in Section XI.B.3, supra, the administrative law judge found that one of ordinary skill in the art would interpret the claimed phrase "processing transfer characteristic" as the circuit characteristics that affect the speed at which digital information may be processed by the computational engine. Furthermore, in Section XI.B.5, supra, he found that a person of ordinary skill in the art would interpret the claimed phrase "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine" as (1) using processing transfer characteristics, but not requiring that they be "determined" in any particular manner, including "real time" (i.e., "on-the-fly"), and (2) requiring that either the frequency or the voltage, or both, are adjusted.

Respondent argued that the claims in issue require that the processing transfer characteristics be "measured" (i.e., determined) at all times during operation of the chip, by specific methods. (RBr at 11-12.) Complainant argued that the asserted claims do not speak to the method (or even whether) those characteristics are, in fact, determined. (CRBr at 49.) The staff agreed with complainant, stating that the asserted claims only claim the use of processing transfer characteristics, but do not suggest or require that they be "determined in any particular manner." (SBr at 21-22.)

The administrative law judge has found that a person of ordinary skill in the art would interpret the claimed phrase in issue as using processing transfer characteristics, but not requiring that they be determined in any particular manner, including "real time" (i.e., "on-the-fly").

Respondent further argued that claim 1 requires a "real time" determination of processing

transfer characteristics (i.e., "on the fly" and chip-by-chip) on the sole basis of the word "the" before the words "computational engine." (RBr at 24-26.) However, the administrative law judge has already found that a person of ordinary skill in the art would interpret the claimed phrase in issue as using processing transfer characteristics, but not requiring that they be determined in any particular manner, including "real time" (i.e., "on-the-fly").

Respondent also argued that some of its products do not infringe the '522 patent because "the claim requires that both the clock frequency and the supply voltage be adjusted at the same time," (RBr. at 40 (emphasis added)), while respondent's chips{

} (RBr at 44 (emphasis added.).) Complainant argued that the claimed

{   } produced by the

computational engine are, respectively, supply voltage and clock frequency "control" knobs that can be used flexibly to set the clock frequency based on some applications, set the supply voltage based on other applications, or set both voltage and frequency based on applications as warranted. (CRBr at 64.)

The administrative law judge has already rejected respondent's contention that "the asserted claims specifically require that [both] the frequency **and** the voltage are controlled." Thus, as indicated supra he found that a person of ordinary skill in the art would interpret the claimed phrase in issue as requiring that either the frequency or the voltage, or both, are adjusted.

Respondent's accused products change frequency or voltages or both. It is significant that all versions of Actions firmware produced for each of the accused products,{

} (CX-9C at 12-15.) Thus, CDX-1 shows the variations in frequency settings for the

97

2085, 2087, 2089 and PMA300 devices. For example, the 2089 device shows{

}

Moreover, with respect to the claimed phrase, Callahan, as part of his infringement

analysis, tested a commercial MP3 player with an Actions ATJ2085 chip in it, and the frequency

and voltage measurements he took showed that the ATJ2085 unit under test{

} (Callahan, Tr. at 201, 285-288;

CX-161.)

Callahan testified that the frequency and voltage measurements he performed

(documented in CX-161) were taken while the ATJ2085 operated in different modes, such as

WMA/MP3 playback mode, voice record mode, and menu mode. (Callahan, Tr. at 287; CX-161.)

In Figure 11 of CX-161, the green trace (top curve) is{

} (Callahan, Tr. at 288.)

Callahan's test results documented in CX-161 also confirmed that the ATJ2085 unit

under test{

}

Respondent further argued that "the trial evidence clearly demonstrated that . . . Actions'

{

} and that an MP3 player with an Actions' chip

running the 952436 of firmware would not directly infringe the asserted claims.[20] (RBr at 44-45.)

It is argued that Liu testified that{

} (Liu, Tr. at 1092-93.)

Complainant argued that the 952436 version of respondent's software is "reasonably

capable of infringing, and therefore infringes the claims" (CRBr at 78); and that "[e]ven

assuming that respondent could somehow establish that the 952436 version of software — and

only the 952436 version — was being used and sold by every one of its customers and end users

without modification, respondent's 2051, 2180 and PMA300 devices would still infringe."

(CRBr at 79.)

---

[19] The 2051, 2180 and PMA300 products are included in the 208X family. See Section IV, supra.

[20] Respondent's infringement argument is thus based on its proposed claim interpretation of the claimed phrase "produce the system clock..." as requiring that both the frequency and the voltage are controlled.

99

The staff argued that the evidence shows that the accused products do not infringe unless the firmware is programmed in a particular way; that the firmware is not intended to be changed by the customer in that way (citing, Liu, Tr. 1109, 1271-74; Goldberg, Tr. 549; SFF 223, 225); that "[t]herefore, only respondent's chips in which the firmware that allows for changes in voltage infringe claims 1, 6, 9, and 13 of the '522 patent, specifically the 2051 and 2087 products." (SBr at 28.)[21]

The administrative law judge has already found in Section XI.B.5, supra, that the specification of the '522 patent never shows any instance where both frequency and voltage must be changed within an application. He also found that during the prosecution of the '522 patent, the inventors distinguished Reents by arguing that power consumption may be optimized by adjusting the system clock and/or the supply based on the application being executed by the IC. He further found that the asserted claims and the specification of the '522 patent teach conserving power by adjusting the system clock (frequency) and/or the supply (voltage) based on the application being executed by the IC.

---

[21] As seen supra, there is a discrepancy between positions of the parties as to which specific accused products are alleged to infringe when using the new 952436 software. Thus, complainant and respondent are in agreement that 2051, 2180 and PMA300 products are in issue with respect to the 952436 software. (See RPFF 313, 314, 338, 339, 342, 343 (undisputed by complainant).) The staff, however, states that only the 2051 and 2087 products are in issue (SBr at 28) although the staff later argued that{

} (SRBr at 6.) The administrative law judge finds that 2051, 2180 and PMA300 products are in issue and he further finds that 2087 product is not in issue with respect to the 952436 software. (See RPFF 294-96 (undisputed by the staff); SRRPFF 314 {

}

Based on the foregoing and his finding that the claimed phrase requires that either the frequency or the voltage, or both, are adjusted, the administrative law judge finds that respondent's ATJ208X family literally meets the limitation of the claimed phrase "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine" of claim 1 of the '522 patent.

d.   The claimed phrase "system clock"

Complainant argued that{

} (CBr at 79-80.)

Respondent argued that the{

} Thus, it is argued, that "under Actions' construction for system clock, the accused chips do not infringe." Respondent further argued that "under SigmaTel's construction, there is also no infringement because{

} (RBr at 37.)

101

The staff argued that the 208X family of products has a {

} (SBr at 28 (emphasis added).)

As seen in Section XI.B.4, <u>supra</u>, the administrative law judge found that one of ordinary skill in the art would interpret the claimed phrase "system clock" as a clock signal used to control operations in at least a part of the computational engine.

Respondent's non-infringement argument is not persuasive. Respondent argued that the

{

} The "any circuit" language in respondent's own interpretation shows that respondent is inconsistent even with its own claim interpretation. Respondent cannot now replace the word "any" with "all" to fit its no-infringement argument.

Based on his finding that one of ordinary skill in the art would interpret the claimed phrase "system clock" as a clock signal used to control operations in at least a part of the computational engine, the administrative law judge finds that respondent's ATJ208X family literally meets the limitation of the claimed phrase "system clock" of claim 1 of the '522 patent.

102

e.   Conclusion

In view of the findings in Section XII.B.1.a-d, supra, the administrative law judge finds

that the 208X family of products literally infringe claim 1 of the '522 patent.

2.   The ATJ208X family: dependent apparatus claim 6

Complainant argued that Callahan testified that Actions 208X products meet all of the

elements of claim 6 which depends on claim 1; and that{

} as claimed in claim 6 of the '522 patent. (CBr at 86.)

Respondent did not make specific arguments regarding claim 6 of the '522 patent.

The staff argued that "products in the 208X family has{

} (SBr at 28-29, citing Callahan, Tr. at 290; SFF 209.)

The administrative law judge finds that the block diagram of{

} Based on the foregoing and the findings in Section XII.B.1.a-e,

supra, the administrative law judge finds that respondent's 208X family literally infringes

dependent claim 6 of the '522 patent.

3.   The ATJ208X family: independent method claim 9

Complainant argued that all of the elements of claim 9 are satisfied. (CBr at 86.)

103

Respondent argued that Actions chips do not directly infringe method claim 9 because Actions chips perform their methods in MP3 players and SigmaTel offered no evidence on MP3 players. (RRBr at 32.)

With respect to the independent apparatus claim 1, the staff argued that all limitations of independent method claim 9 are found in "Actions's 2051 and 2087 products combined with an end product MP3 player." (SBr at 27.)

Regarding respondent's argument that complainant offered no evidence on MP3 players, see, Section XII.B.6, infra.

As for the claimed elements, the administrative law judge finds that the first claim element of claim 9, "producing a system clock ...", is satisfied by the phase lock loop discussed in the context of claim 1; that the second claim element of claim 9, "regulating at least one supply ...", is satisfied by the dc-dc converter discussed in the context of claim 1; and that the third claim element of claim 9, "producing the system clock control signal and the power supply control signal ...", is satisfied by the register bits that control the system clock frequency and the power supply voltage set forth in the context of claim 1.

Based on the foregoing and the findings in Section XII.B.1.a-e, supra, the administrative law judge finds that respondent's 208X family literally infringes claim 9 of the '522 patent.

4.   The ATJ208X family: dependent method claim 13

Complainant argued that Callahan testified that the ATJ208X products meet all of the elements of dependent method claim 13, and that his testimony relating to infringement of dependent apparatus claim 6 applies to said claim 13. (CBr at 87.)

Respondent, as it argued with the independent method claim 9, argued that Actions chips do not directly infringe dependent method claim 13. (RRBr at 32.)

The staff argued that "products in the 208X family has{

} (SBr at 28-29, citing Callahan, Tr. at 290; SFF 209.)

The administrative law judge finds that the block diagram of the{

}

Based on the foregoing and the findings in Section XII.B.3, supra, the administrative law judge finds that respondent's 208X family literally infringes claim 13 of the '522 patent.

5.   The ATJ209X family

Complainant argued that its expert Callahan testified that the ATJ209X products meet every element of each of the asserted claims of the '522 patent. (CBr at 87; Callahan, Tr. at 294.)

Respondent made no specific infringement arguments regarding the ATJ209X products in its briefs, except its argument that said products do not infringe the asserted claims when said products are used with the new 952436 software. (RBr at 139; RRBr at 121.) However, respondent also made several arguments in its rebuttal findings. (RRCPFF 5.517(a)-(e).)

The staff made no specific infringement arguments regarding the ATJ209X products although it had earlier argued that only the "2051 and 2087 products" infringe all of the asserted

105

claims, thus indicating that the remaining members of the 208X family of products and none of

the ATJ209X family of products infringe the asserted claims. (SBr at 27-29.)

Complainant's expert Callahan testified that the ATJ209X products meet every element

of each of the asserted claims of the '522 patent. (Callahan, Tr. at 294.) He also testified that he

reviewed the same type of information for the ATJ209X products that he reviewed for the

ATJ208X products to reach that conclusion and, in particular, the ATJ209X product datasheet,

programming guide and schematics, and did not find any differences between the ATJ208X and

the ATJ209X products that are material to the asserted claims of the '522 patent. (Callahan, Tr.

at 294-95; CPFF 5.513-5.516 (undisputed); CPFF5.517.) The administrative law judge finds

Callahan's testimony persuasive. In rebuttal, respondent argued that different bits are used in the

ATJ209X products when compared to the ATJ208X products. (RRCPFF 5.517(a).) However,

the administrative law judge finds that the asserted claims are not dependent on the use of

specific bits.

Respondent also argued that an accused Actions chip by itself cannot infringe

independent apparatus claim 1 and independent method claim 9 of the '522 patent. (RRCPFF

5.517(b) and (e).) Regarding respondent's argument that an accused Actions chip by itself

cannot infringe independent apparatus claim 1 and independent method claim 9 of the '522

patent, see, Section XII.B.6, infra.

Respondent further argued that for Actions' ATJ209X devices,{

} (RRCPFF 5.517(c) and (d).) However,

106

the administrative law judge has already found, supra, that{

} and that the claimed phrase "produce

the system clock control signal and power supply control signal based on a processing transfer

characteristic of the computation engine" requires that either the frequency or the voltage, or

both, are adjusted. Thus, the administrative law judge rejects respondent's argument regarding

Actions' ATJ209X family using the 952436 version of code.

Based on the foregoing, the administrative law judge finds that respondent's ATJ209X

family meets all of the limitations of the claimed phrases in issue, supra, and further, in view of

Sections XII.B.1-4, supra, the administrative law judge finds that respondent's ATJ209X family

literally infringes claims 1, 6, 9 and 13 of the '522 patent.

6.   Indirect infringement

Respondent argued that its chips do not infringe unless they are connected to a power

supply. (RBr at 44.) However, respondent's ATJ2085 Product Data Sheet states: {

Significantly, respondent has pointed to no other use for its products other than in products which would necessarily have the power source it maintains is lacking.

Hence, administrative law judge finds that ATJ2085 is a single-chip for a digital music player. Additionally, the administrative law judge finds that the normal and intended use of respondent's ICs are in portable music playback devices, which contain batteries and run respondent's firmware. Hence, the administrative law judge rejects respondent's indirect infringement argument that its chips do not infringe unless they are connected to a power supply.

Based on the foregoing, the administrative law judge finds that respondent's 208X and 209X families need not be connected to a power supply in order to infringe the asserted claims of the '522 patent.

XIII.   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 has argued that its 35XX product line satisfies the technical prong requirement. (CBr at 99.)

A.   The '187 Patent

1.   The claimed phrase "stand-alone IC"

Complainant argued that its circuits are self contained, including a processor, and are described in their datasheets as "system on [a] chip." (CX-181C.) Respondent argued that the claims read on MP3 players, not chips, and complainant makes only chips. (RBr at 106-107.) The staff agreed with complainant. (SBr at 31.)

The administrative law judge has found that a stand-alone IC is an integrated circuit including an on-chip power converter and some functional circuitry. (See Section XI.A.1.) Respondent has admitted that complainant's 35XX products contain some functional circuitry, as shown in CX-181C, CX-187C, and as testified by Goldberg. (Tr. at 564-67; CPFF 6.1-6.7 (undisputed).) The administrative law judge has found, infra, that complainant's 35XX products also include an on-chip power converter.

109

Based on the foregoing, the administrative law judge finds that complainant's 35XX products do practice this claimed phrase.

2.   The claimed phrase "on-chip power converter"

Complainant argued that under its interpretation, its chips have an on-chip power converter, as shown by their datasheets. (CBr at 100-101.) Respondent argued that it and complainant have the same power converter, and similarly have off-chip components, and therefore, complainant does not practice this limitation. (RBr at 106-107.) The staff argued that complainant's DC-DC converter is on-chip, and a power converter. (SBr at 31.)

Respondent has admitted that complainant's 35XX products include a DC-DC converter that is like its own. (RBr at 106; RPFF 844.) The technical datasheet CX-181, likewise shows that said products have such an on-chip power converter. The administrative law judge has, however, found that an on-chip power converter can have components off-chip. (See Section XI.A.2.)

Based on the foregoing, the administrative law judge finds that complainant's 35XX products have the claimed an on-chip power converter.

3.   The claimed phrases "processing module" and "operational instructions"

Complainant argued that its 35XX products have "a 'processing module' that performs the processing sequences described in the 35XX datasheet. . ." (CBr at 101.) Complainant further argued that when a power source is inserted into the system,{

                                                }(CBr at 101-104.) Respondent argued

that{   } and therefore, under its construction, have

{

110

} (RBr at 106-107.) The staff argued that complainant's products meet this claim limitation. (SBr at 31.)

The administrative law judge has found, in Section XI.A.3, that a processing module is any circuitry or device that manipulates signals based on operational instructions. The administrative law judge has also found, in Section XI.A.5, that operational instructions are digital information implemented by any combination of hardware, software, or firmware that affects the claimed operations of the processing module. Several sequences listed in CX-181C, including{   } are initiated via{

} (CDX-21C; CX-181C at 345-50; Callahan, Tr. at 1853-54.)

Based on the foregoing, the administrative law judge finds that complainant's 35XX products have a processing module that manipulates signals based on operational instructions as claimed.

4.   The claimed phrase "establish an idle state that holds at least a portion of the stand-alone IC in a reset condition when a power source is operably coupled to the stand-alone IC"

Complainant argued that{

}establishes an idle state and holds a portion of the 35XX in a reset condition, and{   }(CBr at 102.) Respondent did not argue this particular claim limitation in its briefs, but argued in the rebuttal findings that complainant's 35XX products do not have "memory," do not use "operational instructions," and do not have a "power converter." (RRCPFF 6.88a-c.) The staff argued that{

111

}and that when power is applied to the chip,{

} (SBr at 31.)

The administrative law judge has found that a "latch" is an example of memory, supra, in

Section XI.A.4. The signal that controls the idle state and the reset condition are therefore stored

in memory. (CDX-129; CX-21.) As found, supra, complainant's 35XX products do have a

power converter. (See Section XIII.A.2.) The power source is{

}(CDX-129; CX-21.)

Based on the foregoing, the administrative law judge finds that complainant's 35XX

products meet this claim limitation.

5.   The claimed phrase "receive a power enable signal"

Complainant argued that{

} Respondent did not argue against this position in the briefs, but

argued in the rebuttal findings that complainant's products have no "memory", "operational

instructions," or "power converter". (RRCPFF 6.106a-c.) The staff argued that the{

}

As found, supra, a latch is a form of memory. The{

}When{

}(CX-181C at 347.) Therefore, the administrative law judge finds

that{   }

Based on the foregoing, the administrative law judge finds that complainant's 35XX

products meet this claim limitation.

6.   The claimed phrase "enable, in response to the power enable signal, the on-chip power converter of the stand-alone IC to generate at least one supply from the power source"

Complainant argued that{

                                        } Respondent did not argue against this position in

the briefs, but argued in the rebuttal findings that complainant's products have no "memory",

"operational instructions," or "power converter". (RRCPFF 6.114a-c.) The staff argued that the

{   } (SBr at 31.)

As found, supra, a latch is a form of memory. The{

                    }When the{   } and

begin the power up sequence. (CX-181C at 347.)

Based on the foregoing, the administrative law judge finds that complainant's 35XX

products meet this claim limitation.

7.   The claimed phrase "when the at least one supply has substantially reached a steady-state condition, enable functionality of the stand-alone IC"

Complainant argued that the 35XX has a comparator that{

                                        } (CBr at 105.) Complainant

further argued that once steady state is reached,{

        } Respondent does not argue this limitation in the briefs, but argued in the

rebuttal findings that the 35XX products have no "memory," "operational instructions," or

"power converter". (RRCPFF 6.17a-c.) The staff argued that the 35XX products meet this

limitation. (SBr at 31.)

As found, supra, a latch is a form of memory. The 35XX products{

} The{   }

named{

                    }Therefore, the 35XX products{   } and then

enable functionality of the IC.

Based on the foregoing, the administrative law judge finds that complainant's 35XX

products meet this claim limitation.

8.   Conclusion

In view of the findings, supra, the administrative law judge finds that complainant has

established that its 35XX product line satisfies the technical prong requirement of the domestic

industry for the '187 patent.

B.   The '522 Patent

1.   The claimed phrase "power efficient integrated circuit"

Respondent did not make any specific argument with respect to the claimed phrase

"power efficient integrated circuit," which is the preamble of claim 1. Rather, in its rebuttal

findings, respondent made arguments with respect to the second and fourth elements of claim 1.

(RRCPFF 6.19a-c and 6.20a-c.) Complainant argued that SigmaTel's 35XX products meet the

preamble of claim 1, which recites "a power efficient integrated circuit." (CBr at 107.) The staff

did not make any arguments with respect to the preamble of claim 1 although it argued that

SigmaTel's audio processing integrated circuits, specifically those sold under the product line

name 35XX, contain all the elements of claims 1, 6, 9, and 13 of the '522 patent. (SBr at 30.)

The 35XX datasheet states that the 35XX is{

} Based on the foregoing, the administrative law judge finds

that 35XX is a power efficient integrated circuit.

2.   The claimed phrase "phase lock loop operably coupled to receive a reference clock and to
        produce therefrom a system clock based on a system clock control signal"

Respondent, did not make any arguments with respect to the claimed phrase in issue.

Rather, in its rebuttal findings, respondent made arguments with respect to the second and fourth

elements of claim 1. (RRCPFF 6.21a-c – 6.33a-c.) Complainant argued the SigmaTel 35XX

datasheet, at{   } depicts{

                } The staff argued that SigmaTel's 35XX family of products

meet the limitation "phase lock loop ..." and that CDX 124 shows{

                }

        The SigmaTel 35XX datasheet, at{   } depicts{

                        }Also, as shown in Figure 18, the{

                        }Moreover, the{

        } Furthermore, the 35XX datasheet shows{

} (Callahan, Tr. at 299-300; CDX-125.) Thus, these program

changes represent the "system clock control signal" of the 35XX.

Based on the foregoing, the administrative law judge finds that 35XX products meet the

limitations of the claimed phrase in issue.

3. The claimed phrase "on-chip power supply control module operably coupled to regulate
    at least one supply from a power source and an inductance based on a power supply
    control signal"

Respondent argued that under respondent's claim construction, complainant's products

do not use an on-chip supply control module since respondent's proposed interpretation for the

claimed phrase "on-chip power supply control module" allows for only one external element, but

complainant's products include{   } Complainant

argued that the 35XX products contain{

} The staff argued that devices in SigmaTel's 35XX family of products contain{

}

Contrary to respondent's proposed claim interpretation, the administrative law judge has

found, in Section XI.B.1, supra, that a person of ordinary skill in the art would interpret the

claimed phrase "on-chip power supply control module" to mean that a control module portion of

the power supply must be on-chip, while portions of the power supply not related to the control

function, such as inductors, capacitors, diodes, and switching transistors, may be off-chip.

The 35XX products contain{

116

}

Moreover, the 35XX datasheet shows{

} Thus, these{   }

represent the "power supply control signal" of the 35XX.

Based on the foregoing, the administrative law judge finds that 35XX products meet the

limitations of the claimed phrase in issue.

4.   The claimed phrase "memory operably coupled to store at least one application"

Respondent argued that for the same reasons as the Actions' chips, SigmaTel's 3500 does

not meet the "memory" limitation of claim 1; and like Actions, the application firmware for the

SigmaTel 3500 is{

} Complainant argued that the 35XX products have

memory that includes{   }

The staff argued that the 35XX products meet the limitation "memory operably coupled to store

at least one application" because{

}

The 35XX products have memory that includes{

    }

Based on the foregoing, the administrative law judge finds that 35XX products meet the

limitations of the claimed phrase in issue.

5.   The claimed phrase "*computational engine operably coupled to produce the system clock
      control signal and the power supply control signal based on a processing transfer
      characteristic of the computation engine and processing requirements associated with
      processing at least a portion of the at least one application*"

Respondent argued that <u>under respondent's claim construction</u>, complainant's products

do not include any circuits or firmware for determining the processing transfer characteristics of

the computational engine on the chip or for producing the two claimed control signals based on

processing transfer characteristics of the computational engine. (RBr at 108.) Respondent further

argued that for the same reasons as the Actions' chips, SigmaTel's 3500 does not meet the

"computational engine" limitation of claim 1; and that like Actions, the application firmware for

the SigmaTel 3500 is {

    }

Complainant argued that SigmaTel's 35XX products contain{

                                                                      }

118

The staff argued that SigmaTel's 35XX products meet the limitation "computational engine operably coupled ..." (Callahan, Tr. 304-06; CDX 127; SFF 251); that for example, SigmaTel's STMP 3500 product has{

}

that would correspond to the processing transfer characteristic of the computation engine. (SBr at 32.) The staff further argued that the 35XX family{

}

The administrative law judge has already found, contrary to respondent's proposed claim interpretation, in Section XI.B.5, supra, that a person of ordinary skill in the art would interpret the claimed phrase "produce the system clock control signal and power supply control signal based on a processing transfer characteristic of the computation engine" as (1) using processing transfer characteristics, but not requiring that they be "determined" in any particular manner, including "real time" (i.e., "on-the-fly"), and (2) requiring that either the frequency or the voltage, or both, are adjusted.

119

SigmaTel's 35XX products contain a computational engine, including{

} The 35XX datasheet shows the relationship between{

}

SigmaTel's 35XX firmware provides for{

} For example,{

}

Moreover, inventor Mark May testified that to maximize battery life during play mode of an MP3 player, SigmaTel{

}

Based on the foregoing, the administrative law judge finds that 35XX products meet the limitations of the claimed phrase in issue.

6.   Conclusion

In view of the findings, supra, the administrative law judge finds that complainant has

established that its 35XX products satisfy the technical prong requirement of the domestic

industry for the '522 patent.

XIV.   Validity (The '522 Patent)

A.   Anticipation

Respondent argued that independent method claim 9 of the '522 patent is invalid under

35 U.S.C. § 102(b) in view of a 1996 article by Vadim Gutnik that appeared in the IEEE

Symposium on VLSI Circuits Digest of Technical Papers. The article is entitled, "An Efficient

Controller for Variable Supply-Voltage Low Power Processing" (Gutnik) (RX-111; RBr at 111,

114.)

Complainant argued that Gutnik does not teach a method for producing a system clock

from a reference clock based on a system clock control signal, and that Gutnik does not enable

one of skill in the art to practice the invention since it is a one-page article that is attempting to

describe eight figures, most of which are graphical in nature. (RX-111; CRRPFF 852I.) (CRBr at

88-89.)

The staff agreed with complainant, arguing that VDD is a voltage signal not a reference

clock so Gutnik does not "produc[e] a system clock from a reference clock based on a system

clock control signal," and therefore, when properly construed, claim 9 of '522 patent has not

been shown to be anticipated. (SBr at 34.)

A patent issued from the Patent Office bears the presumption of validity. 35 U.S.C. §

282. The party challenging a patent's validity has the burden of overcoming this presumption by

121

clear and convincing evidence. Advanced Display Sys., Inc. v. Kent State Univ., 212 F.3d 1272

(Fed. Cir. 2000). An analysis for anticipation under section 102 is a two-step inquiry. Power

Mosfet Technologies, L.L.C. v. Siemens AG, 378 F.3d 1396, 1406 (Fed. Cir. 2004). The first

step requires construing the claim, which is a question of law to be decided by the administrative

law judge. Oakley, Inc. v. Sunglass Hut Int'l, 316 F.3d 1331, 1339 (Fed. Cir. 2003); Markman v.

Westview Instruments, Inc., 52 F.3d 967, 970-71 (Fed. Cir. 1995). The second step requires a

comparison of the properly construed claims to the prior art, which is a question of fact. Power

Mosfet, 378 F.3d at 1406; Oakley, 316 F.3d at 1339.

A patent claim is invalid for anticipation if a prior art reference discloses, either expressly

or inherently, all of the limitations of a claim. EMI Group N. Am., Inc. v. Cypress Semiconductor

Corp., 268 F.3d 1342, 1350 (Fed. Cir. 2001) (citation omitted). As to any inherent disclosure of

a prior art reference, the Federal Circuit has stated:

> To serve as an anticipation when the reference is silent about the asserted inherent
> characteristic, such gap in the reference may be filled with recourse to extrinsic
> evidence. Such evidence must make clear that the missing descriptive matter is
> necessarily present in the thing described in the reference, and that it would be so
> recognized by persons of ordinary skill.

Metabolite Labs. Inc. v. Laboratory Corp. Of America Holdings, 370 F.3d 1354, 1367 (Fed. Cir.

2004).

The Gutnik article relates to a chip which has been designed to test the implementation of

a PLL-based dynamic supply controller. Gutnik states that separating the rate transitions from V_T

and temperature drift improves loop transient response and that buffering and explicit averaging

can be used to smooth workload. Gutnik further discloses that active damping minimizes loss in

the supply filter due to voltage transitions. (RX-111 at 158.)

122

Gutnik discloses the following basic considerations:

> There are many applications in signal processing and general
> purpose processing where the workload varies with time. An
> approach to reduce the energy consumption of such systems has
> been proposed which involves the dynamic adjustment of supply
> voltage based on processing load. The idea is to slow computation
> and lower VDD during reduced processing loads instead of
> working at a fixed high voltage and allowing the processor to idle.
> Even if workload is fixed, energy can be lowered by tracking the
> process and temperature variations, thus keeping voltage at the
> lowest level possible.

(Id.)

Claim 9 of the '522 patent is an independent method claim which states in part: "A

method for controlling power consumption of an integrated circuit, the method comprises the

steps of: producing a system clock from a reference clock based on a system clock control

signal." (JX-1 at 7:54-57.) Thus, "producing a system clock from a reference clock based on a

system clock control signal" is a required element in claim 9.

Gutnik states that he uses a standard synchronous design, with a ring-oscillator based

clock and a simple switching supply as shown in Figure 1, titled: System Control and Data Flow

Diagram. Significantly, Gutnik further states that the "clock frequency is controlled by a digital

phase-locked loop with VDD as the control signal for the ring-oscillator." (Id. (emphasis added).)

However, VDD is a voltage signal, not a reference clock. Thus, Figure 1 of Gutnik shows that

the reference clock signal (Ref_CLK) does not directly input to the Ring Oscillator. (RX-111 at

159.) Moreover, respondent's expert Razavi admitted that the ring oscillator produces frequency

Var_CLK based on the supply voltage VDD (i.e., Var_V_{DD}) alone, not the reference clock.

> Q.   It produced a voltage var_CLK based on VDD
>   alone?

A.   Not a voltage, a frequency.

Q.   It produced a frequency var_CLK based on the
      supply voltage VDD alone, right?

A.   Yes.

(Razavi, Tr. at 1534:21-1535:1 (emphasis added).)

Razavi also testified that Var_CLK, shown in Figure 1 of Gutnik as the output of the

ring-oscillator, was a variable clock.

Q.   I believe we have some demonstrative aids to help
      illustrate your opinion. Could I please have
      RDX-17? Sir, can you please explain to the Court
      the reasons supporting your opinion why Claim 9 is
      anticipated by

A.   Well, on the left-hand side, we see the claim, the
      limitations of Claim 9, and on the right-hand side,
      we see Figure 1 from the Gutnik paper, and I would
      like to go through the limitations and see how
      Figure 1 features map into the limitations of Claim
      9.

Q.   Please do.

A.   The first limitation says, "producing a system clock
      from a reference clock based on a system clock
      control signal." Now, if I look at the figure, I see
      that the block titled, "Ring Oscillator," on the
      right-hand side produces what's called **var_CLK**.
      So that's a variable clock. And this clock, the
      frequency is controlled by an arrow coming from
      the left into this box, so it has the control voltage
      that varies this clock frequency. Now, to go to the
      next limitation --

(Razavi, Tr. at 1428:25-1429:24 (emphasis added).) As seen from the above testimony regarding

Var_CLK, Razavi also testified that the system clock control signal was shown by the arrow

124

coming from the left into the Ring Oscillator box. (Razavi, Tr. at 1530:10-13.) Razavi further

testified that the reference clock was shown as Ref_CLK that comes into the left of the Rate

Controller box in Figure 1 of Gutnik. (Id. at 1533:4-7.) Thus, Razavi's testimony regarding the

system clock control signal and the reference clock shows that Gutnik does not show a system

clock being produced from a reference clock based on a system clock control signal.

Based on the foregoing, the administrative law judge finds that Gutnik does not disclose a

method step of "producing a system clock from a reference clock based on a system clock control

signal," which is a required element in independent method claim 9 of the '522 patent. Hence,

the administrative law judge finds that respondent has failed to prove, by clear and convincing

evidence, that the Gutnik reference anticipates independent method claim 9 of the '522 patent.

B.   Inventorship

Respondent has challenged the named inventorship of the '522 patent. It is argued that

'522 patent lists two named inventors, Marcus May and Daniel Mulligan; that the '522 patent

makes clear that a phase lock loop is a necessary part of the claimed integrated circuit and in

particular, the specification states that Figure 1 illustrates an integrated circuit 10 that includes a

phase lock loop 16; that Figure 1 shows an integrated circuit, including phase lock loop 16 and

its components; and that as Figure 2 illustrates, an alternative embodiment of the integrated

circuit also includes phase lock loop 16. It is argued that not only does the '522 patent describe

phase lock loop 16 and its components in detail, it explains the operation of the computation

engine 12 using phase look loop 16 and thus, according to the '522 patent specification, phase

lock loop 16 is necessary to the architecture and the operation of the integrated circuit. (RBr at

115-16.)

Respondent further argued that independent apparatus claim 1 and its dependent claim 6 and dependent method claim 13,[22] expressly recite a phase lock loop; that both of the named inventors, however, admitted that they did not invent the phase lock loop for the claimed integrated circuit; and that instead Mulligan admitted at his deposition, the person responsible for designing the claimed element phase lock loop 16 of the '522 patent is Michael May. Hence, it is argued, that Michael May who contributed to three of the four asserted claims of the '522 patent by designing the expressly recited phase lock loop, should have been named as a co-inventor of the '522 patent. (Id.)

Complainant, in opposition, argued that there is no dispute that phase lock loops, as claimed, existed in the prior art and naturally, then, Marcus May and Mulligan did not invent phase lock loops; and that rather, Marcus May and Mulligan invented the ability to set frequency and voltage based upon certain criteria, claimed in independent claims 1 and 9, in combination with the phase lock loops of claims 6 and 13. (CRBr at 92-93.)

The staff argued that the deposition testimony that Actions relies upon does suggest that Michael May designed the 34XX commercial implementation of the phase lock loop but does not establish that he conceived the phase lock loop; and that Michael May testified at his deposition that the phase lock loop was a "standard design." Hence, the staff argued that Actions has not shown, under the clear and convincing standard of proof, that the particular solution claimed in claims 1 and 6 of the '522 patent was invented by anyone other than the named inventors. (SBr at 36-37.)

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[22] Method claim 13 is dependent on independent method claim 9, which claim 9 respondent did not put in issue as to inventorship.

The Patent Act accords each patent a presumption of validity. 35 U.S.C. § 282. Concomitant with that is the presumption that a patent's named inventors are the true and only inventors. Trovan, Ltd. v. Sokymat SA, Irori, 299 F.3d 1292, 1301 (Fed. Cir. 2002) (citing Hess v. Advanced Cardiovascular Sys., Inc., 106 F.3d 976, 980 (Fed. Cir.), cert. denied, 117 S. Ct. 2459 (1997)). EPROM, EEPROM, Flash Memory, And Flash Microcontroller Semiconductor Devices And Products Containing Same, Final Initial And Recommended Determinations, 1998 WL 223194 at 47-48, U.S.I.T.C. Inv. No. 337-TA-395 (March 19, 1998) (quoting Hess, 106 F.3d at 979-80). See, Amax Fly Ash Corp. v. United States, 514 F.2d 1041, 1047 (Ct. Cl. 1975). A clear and convincing standard of proof applies without regard to the circumstances of a particular case. Id. The law does not require naming as an inventor the designer of a prior art device that the named inventors incorporate as an element in the overall invention. See, Acromed Corp. v. Sofamor Danek Group, Inc., 253 F.3d 1371, 1379 (Fed. Cir. 2001) (holding an inventor can incorporate the work of others without losing patent rights). In Acromed, the Court held that a consultant whose work contributed to the development of plaintiff's spine plate was not a co-inventor of plaintiff's patent claiming same. Acromed, 253 F.3d at 1381. The Court reasoned that although the consultant's work was incorporated into the claimed combination, the defendants did not prove that the consultant's contribution was an inventive conception in light of the fact that the contribution appeared in the prior art. Id.

"Inventorship is a question of who actually invented the subject matter claimed in a patent." Sewall v. Walters, 21 F.3d 411, 417 (Fed.Cir.1994) (quoting Beech Aircraft Corp. v. EDO Corp., 990 F.2d 1237, 1248 (Fed.Cir.1993)). "Conception is the touchstone of inventorship." Burroughs Wellcome Co. v. Barr Lab., Inc., 40 F.3d 1223, 1227 (Fed.Cir.1994).

Accordingly, each person claiming to be a joint inventor must have contributed to the conception of the invention. Fina Oil & Chem. Co. v. Ewen, 123 F.3d 1466, 1473 (Fed.Cir.1997). To prove that contribution, the purported inventor must "provide corroborating evidence of any asserted contributions to the conception." Id. at 1474; see Price v. Symsek, 988 F.2d 1187, 1194 (Fed.Cir.1993) ("[T]he case law is unequivocal that an inventor's testimony respecting the facts surrounding a claim of derivation or priority of invention cannot, standing alone, rise to the level of clear and convincing proof."). Beyond conception, a purported inventor must show that he made "a contribution to the claimed invention that is not insignificant in quality, when that contribution is measured against the dimension of the full invention, and [did] more than merely explain to the real inventors well-known concepts and/or the current state of the art." Pannu v. Iolab Corp., 155 F.3d 1344, 1351 (Fed.Cir.1998) (emphasis added).

Independent apparatus claim 1 reads:

1. A power efficient integrated circuit comprising:

phase lock loop operably coupled to receive a reference clock and to produce therefrom a system clock based on a system clock control signal;

on-chip power supply control module operably coupled to regulate at least one supply from a power source and an inductance based on a power supply control signal;

memory operably coupled to store at least one application; and

computational engine operably coupled to produce the system clock control signal and the power supply control signal based on a processing transfer characteristic of the computation engine and processing requirements associated with processing at least a portion of the at least one application.

128

(JX-1 at 6:57-7:4 (emphasis added).) As seen from independent apparatus claim 1, said claim includes a preamble and four specific elements, where the "phase lock loop" in issue is one of the four elements.[23] Also, each of the Figures 1 and 2 of the specification includes a phase lock loop. According to independent apparatus claim 1, a phase lock loop receives a reference clock and produces from said reference clock, a system clock based on a system clock control signal. Thus, said phase lock loop generates a system clock. Dependent apparatus claim 6 merely provides further details of the phase lock loop recited in claim 1.

The record shows that software programmable phase lock loops existed prior to the inventions claimed in the '522 patent. (RX-209C at 27:6-9.) Thus, the prior art taught integrating a phase lock loop on a chip. (Id. at 33:6-12; RX-21C at ST 2213812; RX-209C at 40:14-41:2; RX-22C at ST 2199842, 2199843, and 2199845.) For example, RX-21, dated October 1998 and revised in June 1999 (a datasheet for TI's TMS320VC5410, which is a fixed-point digital signal processor), describes six on-chip peripherals, including an "On-Chip Programmable Phase-Locked Loop (PLL) Clock Generator With Internal Oscillator or External Clock Source." (RX-21C at ST 2213812.)

In addition, the "Background of the Invention" section of the '522 patent states:

> As processing speeds of microprocessors, digital signal processors, et cetera increase, such devices are capable of processing larger software applications in less time. While some applications push the processing engine to its processing speed limits, most applications do not. However, the processing engine must be designed to support the highest processing requirements. Thus, the processing engine needs to have a supply voltage and system clock to handle the most taxing applications. When the processing

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[23] Independent method claim 9, not put in issue by respondent, does not include a phase lock loop.

engine is executing less taxing applications, the voltage and system clock remain the same, thus power consumption of the integrated circuit remains the same even though the application could accurately be performed with a lower supply voltage and/or a lower system clock.

Therefore, a need exists for a method and apparatus that adjust the system clock and/or the supply voltage based on the processing capabilities of an integrated circuit and the application being performed to conserve power.

(JX-1 at 1:30-48.) In order to "adjust the system clock and/or the supply voltage based on the processing capabilities of an integrated circuit and the application being performed to conserve power," independent apparatus claim 1 set out a combination of four separate elements.[24]

Also, in the prosecution of the '522 patent, the August 2001 Amendment and Response states:

"Reents does not teach or suggest having a computational engine generate the system clock control signal and the power supply control signal to [conserve] power. As disclosed in the specification of the present application on page 10 at lines 24-26 by adjusting the system clock and/or the supply based on the application being executed by the IC, power consumption may be optimized."

(JX-2 at ST 0274464 (emphasis added); Callahan, Tr. at 458.) Thus, the inventors of the '522 patent distinguished Reents by arguing that Reents does not teach or suggest having a computational engine generate the system clock control signal and the power supply control signal to conserve power. The inventors further distinguished Reents by arguing that power consumption may be optimized by adjusting the system clock and/or the supply based on the

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[24] Claim 9, not in issue, includes a method for "producing a system clock." However, it does not recite a phase lock loop as does dependent claim 13, and hence, the method of claim 9 can be carried out without a phase lock loop.

application being executed by the IC. Thus, the prosecution history shows that the claimed invention is directed to the ability to set frequency (system clock) and voltage (supply) based upon certain criteria (i.e., the "processing transfer characteristic of the computation engine and processing requirements") of independent apparatus claim 1 and independent method claim 9, in combination with phase lock loops.

As seen from the foregoing, the administrative law judge finds that the claims in issue are directed to a combination and the patentable invention resided in a combination. Moreover, the record establishes that software programmable phase lock loops existed prior to the inventions claimed in the '522 patent. Hence, the administrative law judge finds that respondent has failed to prove, by clear and convincing evidence, that claims 1, 6, and 13 of the '522 patent are invalid due to incorrect inventorship.

XV. Remedy

In the event the Commission finds respondent in violation of section 337, complainant argued that the Commission should exclude respondent's infringing audio processing ICs and MP3 players containing those ICs from entry into the United States. Complainant further argued that any exclusion order should require certain importers to certify that their MP3 players do not contain respondent's infringing IC. (CBr at 112-20.) Complainant thereafter, referring to the exclusion order which issued in Certain Integrated Circuit Telecommunication Chips and Products Containing Same, Including Dialing Apparatus, Inv. No. 337-TA-337, Comm'n Op. at 30-31 (Public Version, August 3, 1993) (Telecommunication Chips) and Certain Erasable Programmable Read-Only Memories Inv. No. 337-TA-276, Comm'n Op. at 125, U.S.I.T.C., Pub. 2196 (May 1989) (EPROMs), aff'd sub nom Hyundai Electronics Industries Col., Ltd. v. U.S,

Intern'l Trade Comm'n, 899 F.2d 1204 (Fed. Cir. 1990) (Hyundai Electronics), proposed the

following language for any limited exclusion order (CBr at 121-2):

The Commission Orders that:

1. Audio processing integrated circuits covered by claim 13 of U.S. Letters Patent 6,633,187, or claims 1, 6, 9, or 13 of U.S. Letters Patent No. 6,366,522 and manufactured by or on behalf of Actions Semiconductor, Co. Ltd. or any of its affiliated companies, parents, subsidiaries, licensees, or other related business entities, or their successors or assigns, including but not limited to the ATJ2085, ATJ2087, ATJ2089, ATJ2051, ATJ2053, ATJ2180, ATJ2181, PMA300, ATJ2095, ATJ2097, and ATJ2099, are excluded from entry into the United States for the remaining term of the patent, except under license of the patent owner or as provided by law.

2. Audio processing integrated circuits excluded under paragraph 1 of this Order that are incorporated into a carrier of any form, mounted on a circuit board of any configuration, or contained in an MP3 Player are excluded from entry into the United States for the remaining term of the patent, except under license of the patent owner or as provided by law.

3. Pursuant to procedures to be specified by the Department of Customs and Border Protection, MP3 Players having the following characteristics:

    a) two (2) gigabytes or less of flash memory;

    b) not manufactured by, for, or on behalf of Apple Computer, Inc., Toshiba Corporation, SanDisk Corporation, Samsung, Ltd., Creative Technologies, Ltd., Dell, Inc., or any of their affiliated companies, parents, subsidiaries, licensees, or other related business entities, or their successors or assigns; and

    c) not subject to or under license of the patent owner or as provided by law;

132

shall be excluded from entry into the United States except where the importer provides a certification to accompany the invoice (whether filed electronically or otherwise) stating that, upon appropriate inquiry and to the best of its knowledge and belief, the MP3 Player to be imported does not contain audio processing integrated circuits excluded under paragraph 1 of this Order.

Later complainant made it clear that it is seeking an exclusion order "only to downstream MP3 player products, and not to other devices that might contain Actions' accused articles, such as car radios, PCs, and cell phones." (CRBr at 97.)

Respondent argued that a limited exclusion order directed to MP3 players is not justified. (RBr at 118-46.) It also argued that a cease and desist order is not justified.

The staff argued that if a violation is found, the appropriate remedy is a limited exclusion order directed to respondent's infringing chips and to "certain downstream MP3 player products" that contain respondent's chips. It further argued that a certification provision is advisable. (SBr at 37-42.) The staff did not believe that a cease and desist order is appropriate relying on testimony of respondent's Hsieh that respondent has no inventory of the ATJ2075 device in the United States and no plans to remanufacture the ATJ2075 device. (SFF296 (undisputed).)[25]

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 U.S. Customs Service to exclude from entry into the United States articles that are covered by, and thus infringe, the intellectual property rights at

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[25] Complainant in its post-hearing submissions did not request any cease and desist order.

issue. <u>Certain Flash Memory Circuits and Products Containing Same</u>, 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, <u>i.e.</u>, 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. On the other hand, including downstream products has the potential to expand the coverage of the exclusion order, thus increasing the risk of interfering with legitimate commerce. Hence, a balancing of factors may be appropriate.

To assist in any balancing, the Commission, in <u>EPROMs</u>, Comm'n Op. at 124-26, 136 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, <u>i.e.</u>, 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.[26]

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.

EPROMs factor 1

Respondent argued that the value of Actions' accused chips to downstream products is very low. (RBr at 122.)

In determining the value of the accused article, the Commission will consider the importance of the component to the downstream product into which it is incorporated. See Certain Electrical Connectors and Articles Containing the Same, Inv. No. 337-TA-374, USITC Pub. 2981 Comm'n Op. (July 1996) (Electrical Connectors). In Electrical Connectors, the Commission stated:

> On the facts of this investigation, we believe there is justification for exclusion of motherboards containing infringing electrical connectors. While the actual value of the electrical connectors in relation to the value

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[26] 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.

of the motherboard appears to be small, they are of significant value to the
assembled product for reasons apart from their cost. Without the presence
of such connectors, the motherboard is rendered useless as it is incapable
of receiving memory cards.

Id. at 11 (emphasis added); see also Telecommunication Chips, Comm'n Op. 30-31 (exclusion of

downstream products is appropriate where the infringing chips are vital to the operation of such

downstream products); EPROMs, at 127 ("... while the actual value of the EPROMs compared to

the value of the equipment may be small, they are vital to its operation."). Hence, it is the value

of the infringing article to the downstream product that must be compared.

A primary downstream product for audio processing ICs are MP3 players. (Grassian, Tr.

at 703-04.) Respondent argued that Grassian's testimony is irrelevant since it relate to MP3

player containing SigmaTel's chips. (ROCPFF 7.21a). Respondent however has not denied that

the accused products can be used in MP3 players. Moreover, its datasheets indicate that

ATJ2085 supports the MP3 standard (See e.g. JX-6 at 4.) Also, an MP3 player will not function

without an audio processing IC because it is the engine that drives the player. (Grassian, Tr. at

703.)

Regarding the cost of an audio processing chip, as compared to an MP3 product in which

the chip is used, Actions' Martin testified that the United States sales price for low end or entry

level MP3 players with memory capacity of 128 megabytes to 512 megabytes containing the

chips ranges from $20.50 to $150. (Martin, Tr. at 1634-1637.) Actions' Hseih testified that

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} which cost ratio of player to chip is relatively low where compared to Certain

Audio Digital-to-Analog Converters and Products Containing Same Inv. No. 337-TA-499

Comm'n Op. at 19 (2005) in which the Commission declined to issue downstream relief where

the downstream products cost $1000 and the accused articles represented less than 1 percent of the cost of downstream product.

Considering the importance of the accused product to the operation of the MP3 player, the administrative law judge finds that EPROMs factor 1 weighs in favor of an exclusion order which includes downstream MP3 players that contain the infringing chips.

EPROMs factor 2

This factor relates to the identity of the manufacturer of the downstream product. There is no dispute that the MP3 player is manufactured by third parties. Actions argued that an order directed to downstream products should not issue because SigmaTel failed to name as respondents all the manufacturers of downstream MP3 player products imported into the U.S. that incorporate Actions accused chips. (RBr, at 125-27.) Under the Commission's in rem jurisdiction, the authority to exclude an infringing article however, does not hinge on each customer of Actions' chips being named as a respondent or even named in the request for relief. However, it is well settled that an exclusion order may cover a third party downstream product. The administrative law judge finds no precedent for any requirement that the third party be specifically named or identified.

Moreover, complainant during the discovery phase of the investigation before the hearing unsuccessfully sought discovery to obtain the identities of all of the manufacturers, importers and resellers of downstream products that are imported into the United States and contain Actions' ICs. Actions' position was that the distribution channel for its chips is complex and intricate (RRCPFF 7.97(c));{

137

7.97(f)).

Based on the foregoing, the administrative law judge finds that EPROMs factor 2 is not a

hinderance to the issuance of an exclusion order which includes MP3 players containing the

infringing chips.

EPROMs factor 3

This factor considers the incremental value to complainant of an exclusion order that

includes MP3 players. The Commission has held that the incremental value to a complainant of

an exclusion order directed to downstream products will be high, and thus weigh in favor of

implementing such an order, where the accused articles are only imported as components of

downstream products. See Certain Display Controllers With Upscaling Functionality And

Products Containing Same, 337-TA-481 Comm'n Op., (February 4, 2005). It is a fact that{

}See RRCPFF 7, 97 (d).

Audio processing ICs enter the United States as components of MP3 players. (Grassian, Tr. at

726.) Companies that manufacture MP3 players are located primarily outside the United States,

and mostly in Asia. (Grassian, Tr. at 711; (undisputed).){

} and the importation of the MP3 market to

audio processing IC manufacturers, the administrative law judge finds that an exclusion order

that allowed infringing audio processing ICs to enter the United States as a component of

imported MP3 player would not constitute an effective remedy. See Telecommunication Chips,

Comm'n Op. at 28-32 (virtually all tone-dialer chips were being imported into the United States

already installed in telephones, with virtually no imports of the chips into the United States, and thus the incremental value to complainant of exclusion of downstream telephones was very substantial). Hence, the administrative law judge finds that EPROMs factor 3 weights in favor of an exclusion order including downstream MP3 players that contain the infringing chips.

EPROMs factor 4

This factor relates to the increment detriment to a respondent from exclusion of the downstream MP3 player. Actions argued that an exclusion order will harm Actions in the China MP3 player market. (RBR at 132-33.) Actions Martin testified that downstream MP3 product exclusion order will raise Actions' costs in legitimate trade in sales entirely outside of the United Stated and/or products that are not imported into the United States. (Tr. at 1661-62, 1666.) The administrative law judge is not aware of any legal authority for the proposition that the Commission should withhold a remedy that would protect a U.S. patent holder's interests in the United States due to some effect that a remedy may have on a respondent's foreign market. Also, there is testimony that Actions costs will not be raised since it is easy for IC customers to switch suppliers because most MP3 manufacturers have different MP3 circuit boards for different IC suppliers products. (Grassian, Tr. at 739.)

The administrative law judge finds that EPROMs factor 4 weighs in favor of an exclusion order including downstream MP3 players containing infringing chips.

EPROMs factor 5

Regarding any burden imposed on third parties, Actions argued that "between 100 and 600 third party manufacturers" will be adversely affected by an exclusion order covering downstream products because it will "raise the costs of operation." (RBr at 134-36.) Actions

139

however, provided no evidence to show that each and every one of those manufacturers uses

Actions chips and makes products for the U.S. market. To the contrary, Actions' position is that

{   }See RRCPFF 7.97(c). Hence,

the administrative law judge rejects respondent's argument.

EPROMs factor 6

This factor relates to the availability of alternative downstream products without the

infringing chips. Actions argued that the availability of MP3 players will be disrupted if the

Commission issues an order including MP3 players. However, there is testimony that there is

currently a shortage of flash memory in the market and as a result complainant is in a position to

satisfy market demand for audio processing IC's. (Grassian, Tr. at 744-45.) The administrative

law judge finds the e-mail relied on by Actions (RX-242C at ST2222669) inconclusive especially

in light of Grossman's unrebutted testimony. Thus, the administrative law judge finds that

EPROMs factor 6 weighs in favor of an exclusion order including downstream MP3 player

containing infringing chips.

EPROMs factor 7

This factor relates to the likelihood that MP3 players found in the United States actually

contain the infringing chip. The administrative law judge in his Order No. 14, which the

Commission determined not to review (see Section 1, supra) found that accused articles have

been imported into the United States. Also, unrefuted is the following testimony of Aaron

Grassian:

> Q.   Do you have any knowledge of MP3 players that are
>   sold in the United States that incorporate an audio
>   processor made by Actions?

140

A. 	Yes, I do.

Q. 	Can you tell us any specific ones?

A. 	There's one specific I know about that is a Batman MP3 player.

Q. 	When you say Batman, are you talking about our friend, the caped crusader?

A. 	Yes, I am.

Q. 	Is SigmaTel – would you turn to SigmaTel Exhibit 317, please, CPX-317?

A. 	Okay.

Q. 	And would you tell the Court what those series of pictures reflect? Or actually, if you can just tell him what the first three pages reflect, please, sir.

A. 	This is the product package and the Batman MP3 player.

Q. 	Do you actually have one in front of you?

A. 	Yes, there is.

Q. 	And what is the Exhibit Number on that, sir?

A. 	Exhibit Number CPX-317-1.

Q. 	And is that the same one that there are pictures of in your binder?

A. 	Yes.

Q. 	Would you check and see what audio processing integrated circuit is contained within that device?

A. 	Yes, I would be able to do that.

Q. 	And how would you do that?

A.   I can open up the casing.

Q.   Would you do that, sir? And just for purposes of the record, would you tell the Court how long it took you to do that?

A.   Maybe 10 seconds, 15 seconds.

Q.   <u>Could you tell the Court what audio processing integrated circuit is contained in CPX-Exhibit Number 317, the Batman MP3 player?</u>

A.   <u>ATJ2087 Actions.</u>

Q.   Okay. How would you characterize that with respect to entry, mid, or high-level product?

A.   This would be an entry-level product.

(Tr. at 756-58 (emphasis added).) See also CPFF 7-84-86 (undisputed). Actions also has

admitted that two other models of downstream MP3 players actually contain Actions' chips.

(RBr at 138.) Hence, MP3 players containing infringing chips have been imported into the

United States. The administrative law judge finds that EPROMs factor 7 weights in favor of an

exclusion order directed to MP3 players that contain infringing chips.

EPROMs factor 8

     Actions argued that there would be little opportunity for evasion of an exclusion order

that is limited to its un-mounted ICs. (RBr at 140-41.) However, if an exclusion order were

limited to Actions' un-mounted ICs, the administrative law judge finds that the infringing ICs

would be able to enter the United States inside MP3 players which the evidence shows is a fact.

Morever, the Commission has stated that this factor weighs in favor of a downstream product

exclusion where there was virtually no importation of accused products. Thus, in Electrical

Connectors, the Commission stated:

> There would be a significant opportunity to evade any exclusion
> order that did not prohibit the importation of motherboards
> containing infringing Hon Hai/Foxconn connectors because Hon
> Hai and Foxconn connectors are typically sold in Taiwan,
> incorporated onto motherboards, and then exported to the United
> States. Thus, an exclusion order that covered only electrical
> connectors would not exclude Hon Hai and Foxconn connectors
> that could be imported into the United States on motherboards, ...

Electrical Connectors, at 11-12 (emphasis added).) {

} (RRCPFF 7.97(h). Hence, EPROMs

factor 8 weighs in favor of an exclusion order including downstream MP3 players that contain

Actions infringing chips.

EPROMs factor 9

Actions argued that an order covering MP3 players would place too great a burden on

Customs. (RBr at 141-44.) However, complainant is seeking an exclusion order that includes a

certification requirement. See supra The Federal Circuit has affirmed the use of certification

requirements in Commission exclusion orders. See Hyundai Electronics, 899 F.2d at 1209-10

("[The Commission concluded that the certification provision 'is a reasonable means of ensuring

the effectiveness of the remedy to which Intel has proven itself entitled.' We agree."). A

certification requirement was included in an exclusion order issued in the later

Telecommunication Chips, where the infringing articles were integrated circuits and the

downstream products were telephones and telephone sets manufactured by third parties.

Telecommunications Chips, at 30-31. Customs has flexibility in drafting the language of any

certification provision. Thus in a recent limited exclusion order, issued on September 28, 2005 in Certain Optical Disk Controllers Chips And Chips Products Containing Same, Including DVD Players And PC Optical Storage Devices, Inv. No. 337-TA-506, the Commission concluded that the certification therein gave Customs more discretion in determining whether it will allow importation based on certification from importers. Hence, the administrative law judge rejects respondent's argument that an order covering MP3 players which contain infringing chips would place too great a burden on Customs.

Considering the evidence in light of the EPROMs factors, if a violation is found, the administrative law judge recommends a limited exclusion order excluding entry of infringing audio processing ICs (chips) of two (2) gigabytes or less of flash memory of Actions or any of its affiliated companies, parents, subsidiaries, licensees, or other related business entities, or their successors or assigns, and also extending to MP3 players that contain any of Actions' accused audio processing ICs found to be infringing with the exclusion order containing a certification provision to protect legitimate trade in noninfringing goods and to ease any burden on Customs of enforcing the order.

Respondent argued that complainant's request that the proposed exclusion order be limited to "low end" MP3 players that have 2 gigabytes or less of flash memory incredibly expands the scope of relief sought because there is absolutely no evidence that Actions' devices are imported in the United States in MP3 players that have 1 gigabyte or more of flash memory; and that the only evidence of record demonstrates that Actions' devices have been imported in three models of MP3 players, each having only 256 megabytes of memory. (RRBr at 120.) Respondent's Hsieh however did testify, when asked what is the capacity size of flash memory

144

that the 2085 is designed to operate with,{

} (Tr.

at 939 (emphasis added).) Hence, respondent's argument is rejected.

XVI.   Bond

Section 337(j) (3) provides for the entry of infringing articles upon the payment of a bond

during the 60-day Presidential review period. 19 U.S.C. § 1337(j) (3). The bond is to be set at a

level sufficient to "offset any competitive advantage resulting from the unfair method of

competition or unfair act enjoyed by persons benefiting from the importation." In re Certain

Dynamic Random Access Memories, Components Thereof and Products Containing Same, Inv.

No. 337-TA-242, Comm'n Op., USITC Pub. No. 2034, (Sept. 21, 1987). When reliable price

information is available, the Commission has set the bond by eliminating the price differential

between the domestic and the imported infringing product. In re Certain Digital Satellite System

(DSS) Receivers and Components Thereof, Inv. No. 337-TA-392, Final Initial and

Recommended Determination on Remedy and Bonding, USITC Pub. No. 3418 (April 2001).

Where reliable price information is not available, however, Commission precedent establishes

that the bond should be set at 100 percent of entered value. In re Certain Flash Memory Circuits

and Products Containing Same, Inv. No. 337-TA-382, USITC Pub. 3046, Commission Opinion

26-27 (June 1997).

Complainant argued that sales of Actions' ATJ2085 ICs{

}and thus, for purposes of calculating bond, it is reasonable to rely on prices for that IC.

It is argued that{

145

} that SigmaTel 3502 IC competes with ATJ2085

IC; and the current average selling price for SigmaTel's 3502 IC is {   } and that the Actions'

ICs therefore{   } Thus, to protect itself

against injury, SigmaTel proposed that the bond during the 60-day Presidential review period be

set at{   } of the entered value of Actions' audio processing ICs. (CBr at 126.)

Respondent argued that SigmaTel bases its request for{   }bond on the erroneous

conclusion that Actions' accused chips average selling price is{   } that in fact, however,

Actions' accused 2085 chip's current average selling price is{   } and SigmaTel admits that

the current average selling price of its competing 3502 chip{   } Thus, it argued that the

price differential is {   } that, at most, SigmaTel will capture only{   } of the market

vacated by Actions; and that{   } of that{   } Hence, respondent

argued that the appropriate bond is{   } cents; and that applying this specific monetary value,

rather than a percentage, is the appropriate form of bond because if the Actions' chip is imported

via a downstream product, there will be no entered value of the chip and thus no way to calculate

the bond. (RRBr at 123.)

The staff argued that Actions' accused products sell for approximately{   } that

{   }

that SigmaTel has approximately 60% of the global market for audio processing ICs and that

SigmaTel has an operating profit of approximately{   } It is argued that adjusting for

SigmaTel's portion of the market and the profit it makes on that market was suggested by

146

Actions as a basis for a bond and that the staff "accepts that method as a reasonable way to determine the bond amount." (SBr at 43.)

SigmaTel's Form 10-K filed with the SEC indicates that it has an operating profit of 27%. (RPFF 1077 (undisputed).) The ATJ2085 chips represents between{   }of all of Actions' sales of chips (RPFF 1078 (undisputed).) The current average sales price of Actions' ATJ 2085 chip is{   } (RPFF 1079 (undisputed).) Twenty-seven percent of{   }is{   } which can be rounded to{   } cents. (RPFF 1080 (undisputed).)

While SigmaTel argued that it may be able to capture all of the market space vacated by Actions because SigmaTel has thus far been deprived of the opportunity to have been a part of that business (CRRPFF 1081A), other companies such as Philips, Portal Player, Samsung, Sunplus, Telechips, Texas Instruments, ALI, Three Star, Ten Chip, ActPlus, Atmel, AccFast, Silicon Motion, and Freescale are competitors to SigmaTel and Actions. (RPFF 1082 (undisputed).) Moreover, SigmaTel's MP3 industry witness Grassian admitted that at least Atmel, Sunplus, and Accfast are competitors of SigmaTel's for the "promotional market." (RPFF 1082 (undisputed).) SigmaTel has approximately{   } of the audio processing integrated circuit market in Greater China. (RPFF 1085 (undisputed).) Also, it is not unreasonable to assume that SigmaTel would capture{   } of the Greater China market vacated by Actions. (RPFF1086 (undisputed).)

Based on the foregoing, the administrative law judge recommends imposition of a bond of 29 cents{   } per imported Actions infringing IC chip and per imported downstream MP3 player containing said infringing chip, during the Presidential review period.

XVII. Additional Findings Of Fact

A.   Parties

1.   Complainant SigmaTel is a corporation organized under the laws of the State of Delaware, having its principal place of business at 1601 South Mo-Pac Expressway, Suite 100, Austin, Texas 78746. (Amended Complaint, at 6; CX-253, at 1 of 81.)

2.   SigmaTel is in the business of designing, developing, and marketing log-intensive mixed-signal integrated circuits (ICs) for a variety of products in the consumer electronics and computing markets, including MP3 players, notebook and desktop PCs, DVD players, digital televisions, set-top boxes, and Universal Serial Bus (USB) storage devices. (Amended Complaint, at 2; CX-253, at 4.)

3.   Respondent Actions is a corporation organized and existing under the laws of the Cayman Islands, having its principal place of business at 15-1 No. 1, HIT Road, Tangja, Zhuhai, Guangdong, China 519085. (CX-236, at 1.)

4.   Actions is in the business of designing and selling semiconductor devices, including audio processing integrated circuits for use in electronic devices. (Response to the Amended Complaint, at 3; CX-236C, at 5.)

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B.   Experts

34.   Michael Callahan testified at trial as an expert witness on behalf of complainant SigmaTel. (Callahan, Tr. at 91-92.)

35.   Callahan is an expert in the design of integrated circuits. (Callahan, Tr. at 91-92.)

36.   Exhibit CX-256 is the witness statement of Callahan. (Callahan, Tr. at 91-92; CX-256.)

37.   Exhibit CX-165 is Callahan's CV, which accurately reflects his educational and professional experience. (Callahan, Tr. at 88-89, 91-92; CX-165; CX-256.)

38.   Exhibits CX-165 and CX-256 accurately reflect Callahan's educational and professional background. (Callahan, Tr. at 88-89, 91-92; CX-165; CX-256.)

39.   During the course of his professional career, Callahan has been the principal designer for more than 50 integrated circuits. Thus, Callahan performed more than 90 percent of the original work in the design of these integrated circuits. In addition, Callahan further has contributed to the design of many other integrated circuits during his professional career. The circuits designed by Callahan have been primarily analog and mixed signal integrated circuits. (Callahan, Tr. at 89-90.)

40.   Callahan testified that approximately 25 U.S. patents and approximately 25 foreign patents have issued naming him as an inventor. All of those patents are in the area of integrated circuit design. (Callahan, Tr. at 90; CX-165.)

41.   Dr. Benjamin Goldberg was retained as an expert in this matter to testify on behalf of the complainant on the operation of the Actions and SigmaTel software. (Goldberg, Tr. at

151

503.)

42.   Goldberg was qualified as an expert in the field of computer programming.

(Goldberg, Tr. at 506.)

43.   Exhibit CX-188 is a true and accurate copy of Goldberg's CV. (Goldberg, Tr. at

504.)

44.   Exhibit CX-258 is the Witness Statement of Benjamin R. Goldberg. (CX-258.)

45.   Exhibits CX-188 and CX-258 are a true and correct recitation of Goldberg's

education, professional and academic background, publications and experience. (Goldberg, Tr. at

504.)

46.   Goldberg is currently a tenured professor of computer science at New York

University. (CX-188 at 1; Goldberg, Tr. at 504.)

47.   Goldberg is also the director of undergraduate studies for the computer science

department at New York University. (CX-188 at 1; Goldberg, Tr. at 504-05.)

48.   Goldberg teaches courses in programming languages, including courses which

cover the C programming language and assembly language. (CX-188; Goldberg, Tr. at 505.)

49.   Goldberg taught and designed a course called the Design and Programming of

Embedded Systems which concerns the programming of a number of devices, including hand-

held devices. (CX-188; Goldberg, Tr. at 505.)

50.   Goldberg has more than 30 publications, including journal papers, book chapters,

and symposia publications. (CX-188 at 3-5.)

51.   Most of Goldberg's publications are on computers and computer science. (CX-

188 at 3-5.)

52. The National Science Foundation, the Defense Advanced Research Projects Agency and the Office of Naval Research have provided funding for the research for papers that Goldberg has authored. (CX-188; Goldberg, Tr. at 505.)

53. Goldberg periodically serves on panels that review grant proposals for the National Science Foundation. (CX-188 at 6; Goldberg, Tr. at 505-06.)

54. Dr. Behzard Razavi was qualified as respondent's expert in the design of integrated circuits. (Tr. at 1350.)

55. Razavi is an expert in the design of integrated circuits. (Razavi, Tr. at 1350.)

56. Razavi's research deals with the design of integrated circuits for high performance communication applications, including wireless chips and chips used in broadband data communications. (Razavi, Tr. at 1347.)

57. Razavi is currently designing integrated circuits at UCLA, including integrated circuits for wireless communications and integrated circuits for low-power phase lock loops. (Razavi, Tr. at 1347-48.)

58. Razavi teaches undergraduate and graduate courses on analog design,basic integrated circuits, RSM wireless circuits, and analog-to-digital and digital-to-analog converters. (Razavi, Tr. at 1348.)

59. During his four years at AT&T Bell Laboratories, Razavi's principle job was to design integrated circuits. (Razavi, Tr. at 1349.)

60. Razavi has authored about 100 publications, almost all dealing with the design of integrated circuits. (Razavi, Tr. at 1349-50.)

61. Donald L. Martin was qualified as an expert, on behalf of respondent, in the fields

of financial and economic analysis, including market definition and evaluation, intellectual property damage analysis, lost market analyses, competitive analyses, and related remedy issues. (Martin, Tr. at 1589.)

CONCLUSIONS OF LAW

1. The Commission has <u>in rem</u> jurisdiction and <u>in personam</u> jurisdiction.

2. There has been an importation of certain audio processing integrated circuits 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 '187 and '522 patents in issue.

4. Respondent's accused products infringe the asserted claims of the '187 and '522 patents.

6. The asserted claims of the '522 and '187 patents are not invalid.

7. There is a violation of section 337.

8. The record supports issuance of a limited exclusion order directed to infringing audio processing ICs of two gigabytes or less of flash memory and extending to MP3 players containing said infringing ICs, and imposition of a bond in the amount of 29 cents per imported Actions infringing IC chip and per imported downstream MP3 player containing said infringing chip, 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 audio processing integrated circuits and products containing same. It is also the administrative law judge's recommendation that a limited exclusion order should issue directed to infringing audio processing ICs of two gigabytes or less of flash memory and extending to MP3 players containing said infringing ICs. The administrative law judge further recommends that a bond of 29 cents per imported Actions infringing IC chip and per imported downstream MP3 player containing said infringing chip, be imposed during the Presidential review period.
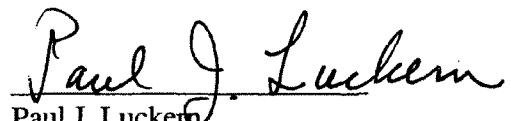
The administrative law judge hereby CERTIFIES to the Commission his Final Initial and Recommended Determinations together with the record consisting of the exhibits admitted into evidence. The pleadings of the parties filed with the Secretary and the transcript of the pre-hearing conference, and the 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 April 7, 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).

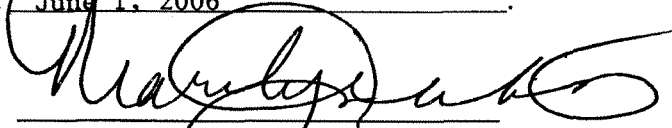Paul J. Luckern
Administrative Law Judge

Issued: March 20, 2006

CERTAIN AUDIO PROCESSING INTEGRATED   Investigation No. 337-TA-538
CIRCUITS, AND PRODUCTS CONTAINING SAME

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 David H. Hollander, Jr. Esq. and Bryan F. Moore, Esq. and upon the following parties via first class mail, and air mail where necessary, on (June 1, 2006   .

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CERTAIN AUDIO PROCESSING INTEGRATED　　　Investigation No. 337-TA-538
CIRCUITS, AND PRODUCTS CONTAINING SAME

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