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

### Before the Honorable E. James Gildea Administrative Law Judge

In the Matter of

CERTAIN WIRELESS CONSUMER ELECTRONICS DEVICES AND COMPONENTS THEREOF **Investigation No. 337-TA-853** 

# COMMISSION INVESTIGATIVE STAFF'S REBUTTAL MARKMAN BRIEF

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#### I. INTRODUCTION

Pursuant to Order No. 15 (January 9, 2013), the Commission Investigative Staff ("Staff") respectfully submits its rebuttal *Markman* brief responding to the initial briefs submitted by the private parties. With respect to any issues initially briefed by the private parties, but not specifically addressed below by the Staff, the Staff respectfully refers the Judge to its Initial *Markman* Brief, filed February 8, 2013, for the proper constructions of the disputed claim terms in U.S. Patent No. 5,809,336 ("the '336 patent" or "Asserted Patent").

#### II. DISCUSSION

TPL has asserted claims 1, 6, 7, 9-11, and 13-16 of the '336 patent in this investigation. *See* 77 Fed. Reg. 51572-73 (August 24, 2012) ("Notice of Investigation"). Each disputed term is addressed below.

A. "an entire ring oscillator variable speed system clock in said single integrated circuit"/ "an entire oscillator/variable speed clock disposed upon said integrated circuit substrate"

The parties dispute the meaning of the phrases "an entire ring oscillator variable speed system clock in said single integrated circuit" in claim 1, "an entire oscillator disposed upon said integrated circuit substrate" in claims 6 and 13, and "an entire variable speed clock disposed upon said integrated circuit substrate" in claims 10 and 16 of the '336 patent. The parties' proposed constructions are as follows:

| Term                | Proposed Constructions  |                       |                         |
|---------------------|-------------------------|-----------------------|-------------------------|
| 161111              | Complainants            | Respondents           | Staff                   |
| "an entire ring     | a ring oscillator,      | a ring oscillator     | a ring oscillator       |
| oscillator variable | variable speed system   | variable speed system | variable speed system   |
| speed system        | clock, wherein the ring | clock that is located | clock that includes all |
| clock in said       | oscillator is located   | entirely on the same  | components that         |
| single integrated   | entirely on the same    | semiconductor         | determine clock         |

<sup>&</sup>lt;sup>1</sup> The private parties' initial briefs, filed pursuant to the procedural schedule on February 8, 2013, are referred to respectively herein as "Compl. Br." and "Resp. Br."

| circuit" (claim 1)  | semiconductor   | substrate as the CPU   | frequency located on  |
|---|---|--|---|
|   | substrate as the central processing unit  | and does not rely on a<br>control signal or an<br>external crystal/clock<br>generator to generate a<br>clock signal  | the same semiconductor substrate as the CPU   |
| "an entire oscillator disposed upon said integrated circuit substrate" (claims 6 and 13)                              | an oscillator that is<br>located entirely on the<br>same semiconductor<br>substrate as the central<br>processing unit             | an oscillator that is located entirely on the same semiconductor substrate as the CPU and does not rely on a control signal or an external crystal/clock generator to generate a clock signal          | an oscillator that includes all components that determine oscillator frequency located on the same semiconductor substrate as the CPU                       |
| "an entire variable<br>speed clock<br>disposed upon<br>said integrated<br>circuit substrate"<br>(claims 10 and<br>16) | a variable speed clock<br>that is located entirely<br>on the same<br>semiconductor<br>substrate as the central<br>processing unit | a variable speed clock that is located entirely on the same semiconductor substrate as the CPU and does not rely on a control signal or an external crystal/clock generator to generate a clock signal | a variable speed clock<br>that includes all<br>components that<br>determine clock<br>frequency located on<br>the same semiconductor<br>substrate as the CPU |

The parties' dispute over these limitations appears to turns on the meaning of the term "entire." Yet neither Complainants nor Respondents attempt to define that term. The word "entire" was added during prosecution to distinguish U.S. Patent No. 4,503,500 ("Magar"). Compl. Br. at 14. According to Complainants, "the oscillator in Magar was not on the same integrated circuit as the CPU," and thus Magar did not disclose an "entire oscillator" fabricated on the same integrated circuit, as claimed. *See id.* During prosecution, the applicant explained that "[a]s a self-contained on-chip circuit, Magar's clock gen[erator] is distinguished from an oscillator in at least that it lacks the crystal or external generator that it requires." JXM-0002, at TPL853\_00002402. Complainants argue that applicants' remarks were thus only an observation "that the 'entire oscillator' of the '336 invention needed to be physically integrated on the same

silicon die as the CPU." Compl. Br. at 14. As acknowledged by Complainants, this observation "is consistent with the '336 claims and specification." *Id*.

Similarly, in distinguishing U.S. Patent No. 4,670,837 ("Sheets"), the applicant asserted that "[t]he present invention does not [] rely upon provision of frequency control information to an external clock, but instead contemplates providing a ring oscillator clock and the microprocessor within the same integrated circuit. The placement of these elements within the same integrated circuit obviates the need for provision of the type of frequency control information described by Sheets, since the microprocessor and clock will naturally tend to vary commensurately in speed as a function of various parameters (e.g., temperature) affecting circuit performance." *Id.* at TPL853\_00002473.

With respect to Magar and Sheets, applicants thus set forth arguments distinguishing the claimed invention based on the prior art's failure to disclose an "entire" clock fabricated on the same substrate as the CPU. *See id.* at TPL853\_00002402, TPL853\_00002473. In each case, the "entire" clock (*e.g.*, oscillator, variable speed ring oscillator system clock, or ring oscillator) was not present in the prior art – some component necessary to determine clock frequency was not fabricated on the same substrate as the CPU. *See id.* 

Accordingly, the Staff respectfully submits that the phrase "an entire ring oscillator variable speed system clock in said single integrated circuit" should be interpreted to mean "a ring oscillator variable speed system clock that includes all components that determine clock frequency located on the same semiconductor substrate as the CPU," the phrase "an entire oscillator disposed upon said integrated circuit substrate" should be interpreted to mean "an oscillator that includes all components that determine oscillator frequency located on the same semiconductor substrate as the CPU," and the phrase "an entire variable speed clock disposed

upon said integrated circuit substrate" should be interpreted to mean "a variable speed clock that includes all components that determine clock frequency located on the same semiconductor substrate as the CPU."

#### B. "central processing unit"

The parties dispute the meaning of the phrase "central processing unit" in claims 1, 6, 10, 11, 13, and 16 of the '336 patent. The parties' proposed constructions are as follows:

| Term              | Proposed Constructions    |                          |                          |
|-------------------|---------------------------|--------------------------|--------------------------|
| Term              | Complainants              | Respondents              | Staff                    |
| "central          | No construction           | electronic circuit on an | electronic circuit on an |
| processing unit"  | necessary. But if         | integrated circuit that  | integrated circuit that  |
| (claims 1, 6, 10, | construed: electronic     | controls the             | controls the             |
| 11, 13, 16)       | circuit that controls the | interpretation and       | interpretation and       |
|                   | interpretation and        | execution of             | execution of             |
|                   | execution of              | programmed               | programmed               |
|                   | programmed                | instructions             | instructions             |
|                   | instructions              |                          |                          |

The parties' proposed constructions differ in only one respect—whether the claimed "central processing unit" must be located on an integrated circuit. Complainants contend that the central processing unit is separate and distinct from the integrated circuit. *See* Compl. Br. at 25. However, such a construction is inconsistent with the plain language of the claim. Claim 1 recites "a single integrated circuit including a central processing unit and an entire ring oscillator variable speed system clock in said single integrated circuit." JXM-0001, '336 patent, Ex Parte reexamination Certificate, US 5,809,336 C1, col. 1:59-62 (December 15, 2009). Thus, the plain language of the claim dictates that the "central processing unit" be included as part of the "single integrated circuit," and not as a separate discrete component as Complainants contend. Despite proposing a contrary construction, Complainants acknowledge in their initial brief that "in each claim, the CPU happens to be disposed on an integrated circuit." Compl. Br. at 25. Inexplicably, Complainants now seek a different construction than what each claim "happens" to require.

As discussed in the Staff's initial brief, Judge Ward of the U.S. District Court for the Eastern District of Texas construed the phrase "central processing unit" to mean "an electronic circuit on an integrated circuit that controls the interpretation and execution of programmed instructions." JXM-0007 at 9. This construction is consistent with the plain language of the claim and was agreeable to Complainants in prior litigation. *See* JXM-0011, Joint Claim Construction and Prehearing Statement, Exh. A, at 1. Accordingly, the Staff maintains that phrase "central processing unit" should be interpreted to mean "electronic circuit on an integrated circuit that controls the interpretation and execution of programmed instructions."

# C. "wherein said central processing unit operates asynchronously to said input/output interface"

The private parties dispute the meaning of the phrase "wherein said central processing unit operates asynchronously to said input/output interface" in claims 11, 13, and 16 of the '336 patent. The parties' proposed constructions are as follows:

| Term               | Proposed Constructions |                         |                         |
|--------------------|------------------------|-------------------------|-------------------------|
| Term               | Complainants           | Respondents             | Staff                   |
| "wherein said      | the timing control of  | the timing control of   | the timing control of   |
| central processing | the central processing | the central processing  | the central processing  |
| unit operates      | unit operates          | unit operates           | unit operates           |
| asynchronously to  | independently of (not  | independently of and is | independently of and is |
| said input/output  | derived from) the      | not derived from the    | not derived from the    |
| interface" (claims | timing control of the  | timing control of the   | timing control of the   |
| 11, 13, 16)        | input/output interface | input/output interface  | input/output interface  |
|                    | such that there is no  | such that there is no   | such that there is no   |
|                    | readily predictable    | readily predictable     | readily predictable     |
|                    | phase relationship     | phase relationship      | phase relationship      |
|                    | between them           | between them            | between them            |

On June 12, 2012, Judge Ware of the U.S. District Court for the Northern District of California construed this phrase to mean "the timing control of the central processing unit operates independently of and is not derived from the timing control of the input/output interface such that there is no readily predictable phase relationship between them." JXM-0008 at 20-21.

The Staff and Respondents agree with Judge Ware's construction. *See* Resp. Br. at 30. Although Complainants propose a slight modification, they acknowledge that "[t]here does not appear to be a meaningful dispute" with respect to this term. Compl. Br. at 23. In this regard, the Staff agrees that there does not appear to be a meaningful dispute at present.<sup>2</sup>

Accordingly, the Staff submits that the phrase "wherein said central processing unit operates asynchronously to said input/output interface" should be interpreted to mean "the timing control of the central processing unit operates independently of and is not derived from the timing control of the input/output interface such that there is no readily predictable phase relationship between them."

### D. "varying together/varying in the same way/varying...in the same way"

The parties dispute the meaning of the phrase "varying together" in claims 1 and 11, the phrase "varying in the same way" in claims 10 and 16, and the phrase "varying...in the same way" in claims 6 and 13 of the '336 patent. However, the parties agree that each of these phrases should be given the same meaning. The parties' proposed constructions are as follows:

| Term                                    | Proposed Constructions |                |                |  |
|---|------------------------|----------------|----------------|--|
| Term                                    | Complainants           | Respondents    | Staff          |  |
| "varying                                | No construction        | increasing and | increasing and |  |
| together" (claims                       | necessary. But if      | decreasing     | decreasing     |  |
| 1, 11)                                  | construed: changing in | proportionally | proportionally |  |
|   | a corresponding        |                |                |  |
| "varying in the                         | manner                 |                |                |  |
| same way"                               |                        |                |                |  |
| (claims 10, 16)                         |                        |                |                |  |
| "varyingin the same way" (claims 6, 13) |                        |                |                |  |

<sup>&</sup>lt;sup>2</sup> The Staff notes that the private parties' initial briefs foreshadow a potential dispute regarding the meaning of the word "independently," as it is used in each proposed construction. In the absence of an actual dispute, however, Judge Ware's prior construction should be adopted.

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In prior litigation, Judge Ward construed these phrases in a manner consistent with the claim language, specification, and prosecution history to mean "increasing and decreasing proportionally." JXM-0001 at 15-16. In more recent litigation, Complainants agreed with this construction. *See* JXM-0011, Joint Claim Construction and Prehearing Statement, Exh. A, at 5. However, Complainants have disavowed their former position, and now seek a different, but substantially similar, construction. Compl. Br. at 20. According to Complainants, the processing capability of the CPU and the clock frequency must vary "correspondingly" but not "proportionally." *See id.* at 21-22. But Complainant does not explain what it means by the term "correspondingly," or how its meaning substantively differs from "proportionally."

As noted by Complainants (Compl. Br. at 21), the '336 patent explains that the CPU processing capability and the clock speed vary in the same manner. JXM-0001, '336 patent, col. 16:43-17:10. According to the '336 patent, conventional CPU designs "must be clocked a factor of two slower than their maximum theoretical performance, so they will operate properly in wors[t] case conditions." JXM-0001, '336 patent, col. 16:50-53. "Temperature, voltage, and process [variations] all affect transistor propagation delays," and thus maximum CPU clock speed. *See id.* at col. 16:47-48. However, by implementing the system clock entirely on-chip using a ring oscillator, variations in temperature, voltage, and process affect the ring oscillator in the same manner as they affect the operating capability of the CPU. *See id.* at col. 16:59-17:10. Accordingly, "[t]he ring oscillator 430 is useful as a system clock...because its performance tracks the parameters which similarly affect all other transistors on the same silicon die." *Id.* at col. 16:63-67. In this manner, the clock frequency tracks the capability of the CPU by compensating for operating parameters. To the extent that Complainants propose a construction

that fails to capture the requisite relationship between the clock speed and the operating capability of the CPU, such a construction is inconsistent with the intrinsic evidence.

As discussed extensively in the initial briefs of the Staff and Respondents, Judge Ward's construction is consistent with the intrinsic evidence. *See* Staff Br. at 13-14; Resp. Br. at 36-42. Accordingly, the Staff submits that phrases "varying together," "varying in the same way," and "varying...in the same way" should be interpreted to mean "increasing and decreasing proportionally."

# E. "thereby enabling said processing frequency to track said clock rate in response to said parameter variation"

The parties dispute the meaning of the phrase "thereby enabling said processing frequency to track said clock rate in response to said parameter variation" in claims 6 and 13 of the '336 patent. The parties' proposed constructions are as follows:

| Term   | Proposed Constructions   |  |   |
|--|--|--|---|
| Term   | Complainants   | Respondents  | Staff   |
| "thereby enabling said processing frequency to track said clock rate in response to said parameter variation" (claims 6, 13) | [thereby enabling] the processing frequency of the central processing unit to follow said clock rate in response to said parameter variation | said parameter variation directly causing said processing frequency to track said clock rate | said parameter variation<br>directly causing said<br>processing frequency to<br>track said clock rate |

Here, as in one of the prior litigations, the parties dispute the nature of the relationship between operational parameter variation and the clock rate. Respondents contend that parameter variation directly causes the processing frequency to track the clock rate. Resp. Br. at 43-44. Complainants, on the other hand, argue that a causal relationship is not required. Compl. Br. at 18. Instead, Complainants contend that the plain language of the claim only requires that such direct causality be possible. *Id.* at 18-19. In this regard, the Staff agrees with Respondents.

Every term in a claim is presumed to have meaning and any construction that would render a claim term superfluous is discouraged. Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111 (Fed. Cir. 2004) ("While not an absolute rule, all claim terms are presumed to have meaning in a claim.") ("Innova"); Cardiac Pacemakers, Inc. v. St. Jude Med., Inc., 296 F.3d 1106, 1115 (Fed. Cir. 2002) ("An alternative construction would render the first monitoring term meaningless. That construction is therefore improper; this court will not rewrite claims."). Here, Complainants contend that the phrase "thereby enabling said processing frequency to track said clock rate in response to said parameter variation" is met simply by fabricating the oscillator and the CPU on the same substrate. See id. at 19 ("The specification explains that all of the transistors on the same silicon die – both the transistors of the ring oscillator and transistors of the CPU – will be affected 'similarly' because they are fabricated on the same piece of silicon. The invention *enables* a clocking system that takes advantage of the law of physics, which dictate that all of the transistors on the same chip will be affected 'similarly' as certain parameters vary."). However, the claim already requires that the oscillator and the CPU be fabricated on the same substrate. JXM-0001, '336 patent, Ex Parte reexamination Certificate, US 5,809,336 C1, at col. 2:14-19 ("a central processing unit disposed upon an integrated circuit substrate..., [and] an entire oscillator disposed upon said integrated circuit substrate."). Complainants' proposed construction would thus render the instant phrase entirely superfluous. Accordingly, Complainants' proposed construction is improper.

Furthermore, in construing claims, "[t]he claims themselves provide substantial guidance as to the meaning of particular claim terms." *Phillips v. A.W.H. Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc) ("*Phillips*"). In addition, "the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms."

ACTV, Inc. v. The Walt Disney Co., 346 F.3d 1082, 1088 (Fed. Cir. 2003) ("ACTV"). Within a larger context, the claim at issue here recites "varying the processing frequency...in the same way as a function of parameter variation in one or more fabrication or operational parameters associated with said integrated circuit substrate, thereby enabling said processing frequency to track said clock rate in response to said parameter variation." JXM-0001, '336 patent, Ex Parte reexamination Certificate, US 5,809,336 C1, at col. 2:22-31. The purpose of the variable speed clock is thus to overcome deficiencies in the prior art that require designers to limit performance such that the system will correctly function under worst case conditions. See id. at col. 16:44-53. This is done by "varying the processing frequency" in such a manner as to directly cause or "enabl[e] said processing frequency to track said clock rate in response to said parameter variation." Id. Accordingly, one of ordinary skill in the art at the time of invention would understand the invention as requiring direct causality between parameter variation and clock speed.

The Staff thus submits that the phrase "thereby enabling said processing frequency to track said clock rate in response to said parameter variation" should be interpreted to mean "said parameter variation directly causing said processing frequency to track said clock rate."

#### F. "ring oscillator"

The parties dispute the meaning of the phrase "ring oscillator" in claims 1, 9, 11, and 15 of the '336 patent. The parties' proposed constructions are as follows:

| Term              | Proposed Constructions   |                        |                        |
|-------------------|--------------------------|------------------------|------------------------|
| 161111            | Complainants             | Respondents            | Staff                  |
| "ring oscillator" | interconnected           | an oscillator having a | an oscillator having a |
| (claims 1, 9, 11, | electronic components    | multiple, odd number   | multiple, odd number   |
| 15)               | comprising multiple      | of inversions arranged | of inversions arranged |
|                   | odd numbers of           | in a loop, wherein the | in a loop, wherein the |
|                   | inversions arranged in a | oscillator is: (1)     | oscillator is variable |
|                   | loop, where three or     | noncontrollable; and   | based on the           |

| more inversions are     | (2) variable based on | temperature, voltage   |
|-------------------------|-----------------------|------------------------|
| required to maintain an | the temperature,      | and process parameters |
| oscillating output      | voltage, and process  | in the environment     |
|                         | parameters in the     |                        |
|                         | environment           |                        |

On December 4, 2012, Magistrate Judge Paul S. Grewal of the U.S. District Court for the Northern District of California issued an order construing "ring oscillator" to mean "an oscillator having a multiple, odd number of inversions arranged in a loop, wherein the oscillator is variable based on the temperature, voltage and process parameters in the environment." SXM-0003, App., Tab 3, at 0053 ("*Markman* Order III"). However, the private parties do not agree with this construction. *See* Compl. Br. at 6; Resp. Br. at 56.

Complainants contend that Judge Grewal's construction improperly imports limitations into the claim. Compl. Br. at 9 ("Importantly, there is nothing in the language of the asserted claims that indicates the claimed ring oscillator should include the improper additional limitations advocated by Respondents: (1) noncontrollable; and (2) variable based on the temperature, voltage, and process parameters in the environment."). In support of their position, Complainants primarily relies upon a declaration made by Dr. Vojin Oklobdzija.

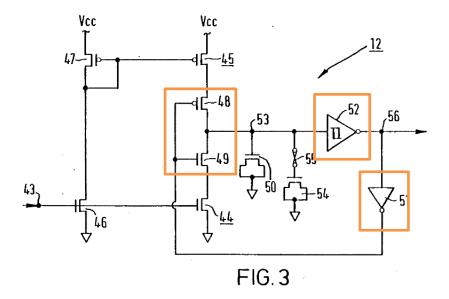
While expert testimony and other extrinsic evidence may be useful in some circumstances, "conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court." *Phillips*, 415 F.3d 1303, 1318 (Fed. Cir. 2005). Moreoever, "extrinsic evidence consisting of expert reports and testimony is generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence." *Id.* ("The effect of bias can be exacerbated if the expert is not one of skill in the relevant art or if the expert's opinion is offered in a form that is not subject to cross-examination."). Here, the Staff submits that the conclusory, unsupported testimony of Dr. Oklobdzija is not helpful in

construing the claim. Moreover, Dr. Obklobdzija did not submit an expert report pursuant to Ground Rule 5 by the January 30, 2013 deadline set forth in the procedural schedule, Order No. 15 (January 9, 2013). Accordingly, the Staff has not had an opportunity to cross-examine Dr. Oklobdzija regarding the opinions set forth in his declaration. The Staff submits that Dr. Oklobdzija's declaration should be given little, if any, weight.<sup>3</sup>

Respondents, on the other hand, contend that the claimed ring oscillator must be both "uncontrollable" and "variable based on the temperature, voltage, and process parameters in the environment" based on arguments made by patentee during reexamination of U.S. Patent No. 6,598,148 ("the '148 patent"). During reexamination of the '148 patent, the patentee argued that U.S. Patent No. 4,689,581 ("Talbot") does not teach a ring oscillator. JXM-0010, February 21, 2008 Response, at 11 ("Talbot does not teach, disclose, or suggest the ring oscillator recited in claim 4.... Talbot discloses a voltage-controlled oscillator (VCO) 12, but does not teach or disclose a ring oscillator. Talbot provides two different implementations of the VCO 12 in FIGS. 3-4, neither of which is a ring oscillator."). Yet, Talbot discloses an oscillator having a multiple, odd number of inversions arranged in a loop as Complainants contend the term "ring oscillator" should be construed. The three inversions in Talbot are demonstrated in the following figure::

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<sup>&</sup>lt;sup>3</sup> The Staff understands that the private parties reached some agreement concerning the use of experts declarations. However, such agreement was made without consulting with the Staff.



Talbot, Fig. 3 (emphasis added). Each of the highlighted components shown in Figure 3 represents an inverting element. Transistors 48 and 49 depict a textbook inverter – if the gate voltage of those transistors is high, current will flow through transistor 49 yielding a low output, and if the gate voltage is low, current will flow through transistor 48 yielding a high output. The remaining components 52 and 51 are explicitly depicted in Fig. 3 as having inverting outputs. Thus, Talbot discloses three inversions arranged in a loop. Yet the patentee made clear, unequivocal statements that Talbot did not teach a ring oscillator. Thus, the patentee has disclaimed the subject matter set forth in Talbot. The only remaining question is the scope of this disclaimer.

Respondents contend that this disclaimer extends to any "controllable" ring oscillators based on patentee's representations distinguishing Talbot made during an examiner interview.

Resp. Br. at 57. Complainants contend that examiner did not rely expressly upon the cited interview summary, but instead relied upon applicants' remarks set forth in its written response.

Compl. Br. at 12. In the Staff's view, it is a close call as to whether applicant clearly disclaimed non-controllable ring oscillators. However, it is clear that the claimed ring oscillator must have a

frequency that is determined, not by an external crystal or off-chip components, but by "the parameters of temperature, voltage, and process" as described in the specification and articulated throughout the intrinsic record. *See* JXM-0001, '336 patent, at col. 16:59-60. Otherwise, applicants' statements that Talbot does not disclose the claimed ring oscillator cannot be reconciled with the intrinsic evidence.

For at least these reasons, the Staff respectfully submits that the phrase "ring oscillator" should be interpreted to mean "an oscillator having a multiple, odd number of inversions arranged in a loop, wherein the oscillator is variable based on the temperature, voltage and process parameters in the environment."

#### III. CONCLUSION

For all of the foregoing reasons, the Staff respectfully submits that the disputed claim terms should be construed as set forth above.

Respectfully Submitted,

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February 20, 2013

#### CERTIFICATE OF SERVICE

The undersigned certifies that on February 20, 2013, he caused the foregoing **COMMISSION INVESTIGATIVE STAFF'S REBUTTAL MARKMAN BRIEF** to be served by hand upon Administrative Law Judge E. James Gildea (2 copies) and served upon the parties (1 copy each) in the manner indicated below:

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