

2016-1306, -1307, -1309, -1310, -1311

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

TECHNOLOGY PROPERTIES LIMITED LLC, PHOENIX DIGITAL
SOLUTIONS LLC, PATRIOT SCIENTIFIC CORPORATION,

Plaintiffs - Appellants,

v.

HUAWEI TECHNOLOGIES CO., LTD., FUTUREWEI TECHNOLOGIES,
INC., HUAWEI DEVICE CO., LTD., HUAWEI DEVICE USA INC., HUAWEI
TECHNOLOGIES USA INC., ZTE CORPORATION, ZTE USA, INC.,
SAMSUNG ELECTRONIC CO., LTD, SAMSUNG ELECTRONICS
AMERICA, INC., LG ELECTRONICS, INC., LG ELECTRONICS U.S.A.,
INC., NINTENDO CO., LTD., NINTENDO OF AMERICA, INC.,

Defendants - Appellees.

Appeal from the United States District Court for the Northern District of
California in Case Nos. 3:12-cv-03865-VC, 3:12-cv-03876-VC, 3:12-cv-03877-
VC, 3:12-cv-03880-VC, and 3:12-cv-03881-VC, Judge Vince Chhabria.

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CO., LTD., FUTUREWEI TECHNOLOGIES, INC., HUAWEI DEVICE CO., LTD.,
HUAWEI DEVICE USA INC., HUAWEI TECHNOLOGIES USA INC., ZTE
CORPORATION, ZTE USA, INC., SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC., LG ELECTRONICS, INC., LG
ELECTRONICS U.S.A., INC., NINTENDO CO., LTD., AND
NINTENDO OF AMERICA INC.

(caption with counsel continues on following page)

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UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Technology Properties Limited, LLC v. Huawei Technologies Co., Ltd., et al.

Case No. 16-1306, -1307, -1309, -1310, -1311

CERTIFICATE OF INTEREST

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Nintendo of America Inc. certifies the following (use "None" if applicable; use extra sheets if necessary):

1. The full name of every party or amicus represented by me is:

Nintendo of America Inc. and Nintendo Co., Ltd.

2. The name of the real party in interest (Please only include any real party in interest NOT identified in Question 3. below) represented by me is:

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3. All parent corporations and any publicly held companies that own 10 percent of the stock of the party or amicus curiae represented by me are listed below. (Please list each party or amicus curiae represented with the parent or publicly held company that owns 10 percent or more so they are distinguished separately.)

Nintendo Co., Ltd., is publicly traded in Japan, and owns 100% of Nintendo of America Inc. stock.

4. [] The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court (and who have not or will not enter an appearance in this case) are:

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12/28/2015

Date

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Signature of counsel

Please Note: All questions must be answered

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Printed name of counsel

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Technology Properties Limited v. Huawei Technologies Co., Ltd.

Case No. 16-1306, -1307, -1309, -1310, -1311

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1. The full name of every party or amicus represented by me is:

Huawei Technologies Co., Ltd.; Futurewei Technologies, Inc.; Huawei Device Co., Ltd.; Huawei Device USA Inc.; Huawei Technologies USA, Inc.

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See attached page 2.

4. [X] The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court (and who have not or will not enter an appearance in this case) are:

Step toe & Johnson LLP: Timothy C. Bickham, William F. Abrams, Michael Flynn-O'Brien, Huan-Yi Lin, Morgan Linscott Hector

May 23, 2016 Date

/s/ Timothy C. Bickham Signature of counsel

Please Note: All questions must be answered

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Timothy C. Bickham Printed name of counsel

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Technology Properties Limited v. Huawei Technologies Co., Ltd.

2016-1306, -1307, -1309, -1310, -1311

**CERTIFICATE OF INTEREST
(Attached Page 2)**

Counsel for the Appellee Huawei Technologies Co., Ltd.; Futurewei Technologies, Inc.; Huawei Device Co., Ltd.; Huawei Device USA Inc.; and Huawei Technologies USA, Inc. certifies the following:

3. All parent corporations and any publicly held companies that own 10 percent of the stock of the party or amicus curiae represented by me are listed below.

Huawei Technologies Co., Ltd. is a wholly owned subsidiary of Huawei Investment & Holding Co., Ltd. and no publicly held company owns 10% or more of its stock.

Huawei Device Co., Ltd. is jointly owned by Huawei Technologies Co., Ltd. and Huawei Tech. Investment Co., Ltd. and no publicly held company owns 10% or more of its stock.

Huawei Device USA Inc. is a wholly owned subsidiary of Huawei Device (Hong Kong) Co., Ltd. and no publicly held company owns 10% or more of its stock.

Futurewei Technologies, Inc. is a wholly-owned subsidiary of Huawei Technologies Coöperatief U.A. and that no publicly held company owns 10% or more of its stock.

Huawei Technologies USA, Inc. is a wholly owned subsidiary of Huawei Technologies Coöperatief U.A. and no publicly held company owns 10% or more of its stock.

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Technology Properties Limited

v.

Huawei Technologies Co., Ltd

Case No. 16-1306, -1307, -1309, -1310, -1311

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LG Electronics U.S.A., Inc.	LG Electronics U.S.A., Inc.	LG Electronics, Inc.

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May 20, 2016

Date

/s/ Christian A. Chu

Signature of counsel

Please Note: All questions must be answered

CHRISTIAN A. CHU

Printed name of counsel

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Reset Fields

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Technology Properties Limited LLC, et al. v. Huawei Technologies Co., Ltd. et al.

Case No. 16-1306, -1307, -1309, -1310, -1311

CERTIFICATE OF INTEREST

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1. The full name of every party or amicus represented by me is:

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Samsung Electronics America, Inc.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

Samsung Electronics Co., Ltd.
Samsung Electronics America, Inc.

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

Samsung Electronics Co., Ltd. – None

Samsung Electronics America, Inc. – Samsung Electronics America, Inc. is a wholly-owned subsidiary of Samsung Electronics Co., Ltd.

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court (and who have not or will not enter an appearance in this case) are:

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May 23, 2016

Date

/s/ Stanley J. Panikowski

Signature of counsel

Stanley J. Panikowski

Printed name of counsel

cc: All Counsel of Record

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ZTE Corporation and ZTE (USA) Inc.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

ZTE Corporation and ZTE (USA) Inc.

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

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STATEMENT OF RELATED CASES

Appellees certify that, to their knowledge, no appeal from this civil action was previously before this or any other appellate court. Further, there is no case known to counsel to be pending in this or any other court that will directly affect or be directly affected by this Court's decision in the pending appeal.

STATEMENT OF THE ISSUES

Whether the district court correctly construed the "entire oscillator" claim limitation to reflect the clear and unmistakable disclaimers made by the applicants during prosecution of U.S. Patent No. 5,809,336 (the "'336 patent")?

STATEMENT OF THE CASE

A. Introduction.

The district court correctly construed the '336 patent claim limitation "an entire oscillator disposed upon said integrated circuit substrate." The construction accurately reflects two clear and unambiguous disclaimers of claim scope made by the applicants during prosecution of the '336 patent. This Court's precedent requires the inclusion of both disclaimers in the construction of this limitation.

First, to overcome examiner claim rejections based on U.S. Patent No. 4,503,500 ("*Magar*"), the applicants clearly and repeatedly distinguished their claimed "entire oscillator" from *Magar's* oscillator on the ground that the frequency of *Magar's* oscillator is fixed by an external crystal. As a result, the

district court correctly construed “entire oscillator” to mean, in part, “an oscillator . . . whose frequency is not fixed by any external crystal.” Appx7, 9-10, 15 (Claim Construction Report and Recommendation (the “R&R”)).

Second, to overcome examiner claim rejections based on U.S Patent No. 4,670,837 (“*Sheets*”), the applicants clearly and repeatedly distinguished their claimed “entire oscillator” on the ground that the *Sheets* system requires control signals. Thus, the district court also correctly construed “entire oscillator” to mean, in part, “an oscillator . . . that does not require a control signal.” Appx7, 10-11, 16.

Therefore, the district court correctly construed the “entire oscillator” limitation to mean “an oscillator located entirely on the same semiconductor substrate as the central processing unit that does not require a control signal and whose frequency is not fixed by any external crystal.” Appx7.

B. Overview And Technical Description Of The Alleged Inventions Claimed In The '336 Patent.

The '336 patent is directed to a variable-speed clock (the “entire oscillator”) that controls the speed of a CPU and is incorporated on the same integrated circuit substrate as the CPU. Appx18 ('336 patent cover), Appx45-46 ('336 patent at 16:54-17:10). The variable-speed oscillator adjusts its frequency in real time based upon the microprocessor’s physical and environmental characteristics, including temperature, voltage and semiconductor manufacturing process quality to track the

then-existing processing capabilities of the CPU. Appx45-46 ('336 patent at 16:54-17:10); Appx8-9. In other words, the on-chip oscillator's frequency varies together with the frequency capability of the CPU. *Id.*

The '336 patent issued as a divisional patent from a specification that describes several different purported inventions. Appx18 ('336 patent cover); Appx8. As a result, the '336 patent's "Summary of the Invention" section contains material that is largely irrelevant to the asserted claims. Only lines 27 through 35 of column 3 pertain to the alleged invention. Appx39 ('336 patent at 3:27-35). Similarly, the "Detailed Description of The Invention" includes much extraneous material, with only the last 25 lines of column 16 and the first 37 lines of column 17 describing the '336 patent's claimed invention. Those portions are under the sub-headings "Optimal CPU Clock Scheme" and "Asynchronous/Synchronous CPU." Appx45-46 ('336 patent at 16:43-17:37); Appx8.

In the relevant portions, the specification explains that a high speed microprocessor must "operate over wide temperature ranges, wide voltage swings, and wide variations in semiconductor processing" that "all affect transistor gate propagation delays." Appx45 ('336 patent at 16:44-48); Appx9. These three parameters, "processing," "voltage" and "temperature," are referred to as "PVT" parameters.

As the specification explains, traditional prior art microprocessor systems are designed with a single fixed-speed clock for all parts of the system. Appx45-46 ('336 patent at 16:48-50, 17:12-13); Appx8. By design, this conventional fixed-speed clock always operates at a fixed speed that is slow enough to ensure error-free operation during worst-case PVT parameter conditions. *Id.* As a result, the traditional prior art microprocessor systems “must be clocked a factor of two slower than their maximum theoretical performance, so they will operate properly in worse [sic] case conditions” to ensure that a user always experiences error-free operation. Appx45 ('336 patent at 16:48-53).

To avoid the constrained speed of the prior art and to always operate “at the maximum frequency possible, but never too fast” for the existing PVT parameter conditions, the '336 patent uses an on-chip “ring counter variable speed system clock” (also referred to as a “ring oscillator variable speed system clock”). Unlike the prior art’s external fixed-speed crystal clock, the ring oscillator adjusts its speed in real time as a function of existing PVT parameters to match the CPU’s maximum frequency capability under those parameters. Appx39, 45-46 ('336 patent at 3:26-34, 16:54-17:10, 17:19-22); Appx8-9. In other words, the oscillator’s frequency varies together with the frequency of the CPU. Appx39, 45-46 ('336 patent at 3:26-34, 16:60-17:2).

Unlike the frequency of a fixed-speed clock, the frequency of the claimed internal variable speed oscillator varies significantly as a function of PVT parameters. Appx45 ('336 patent at 16:59-60 (“The ring oscillator frequency is determined by the parameters of temperature, voltage, and process.”)). For example, the '336 patent's specification discloses that the speed of the variable speed clock will be 100 megahertz at room temperature, but will slow to 50 megahertz if the temperature rises to 70°C (*i.e.*, 158° F). *Id.* at 16:59-63. The oscillator's speed may vary, according to the patent, by as much as a factor of four (*i.e.*, by as much as 400%) depending on all three PVT parameters. Appx46 ('336 patent at 17:21-22).

According to the '336 patent, the “optimum performance” of the variable speed oscillator supposedly results from fabricating and locating the variable speed oscillator on the same semiconductor substrate as the CPU, so that the same PVT parameters affect both the oscillator and the CPU. Appx45-46 ('336 patent at 16:57-58, 16:63-17:10). For example, if the temperature of the substrate rises, then the processing speed capability of the CPU decreases. But because the oscillator and CPU are fabricated on the same substrate, this temperature rise also causes the speed of the variable speed oscillator to decrease, so the oscillator leads the CPU to a slower maximum speed at which it can operate properly. *Id.* As the specification explains, this ensures that the

CPU “will always execute at the maximum frequency possible, but never too fast.” *Id.* (’336 patent at 16:67- 17:2).

Because certain devices that communicate with the CPU cannot tolerate a variable speed clock, the system requires a second clock that is independent of the variable speed oscillator. Appx46 (’336 patent at 17:22-34); Appx9. The independent second clock is connected to the input/output (I/O) interface, as illustrated in Figure 17 of the ’336 patent, with the second clock on Figure 17 being a conventional fixed speed “crystal clock” 434:

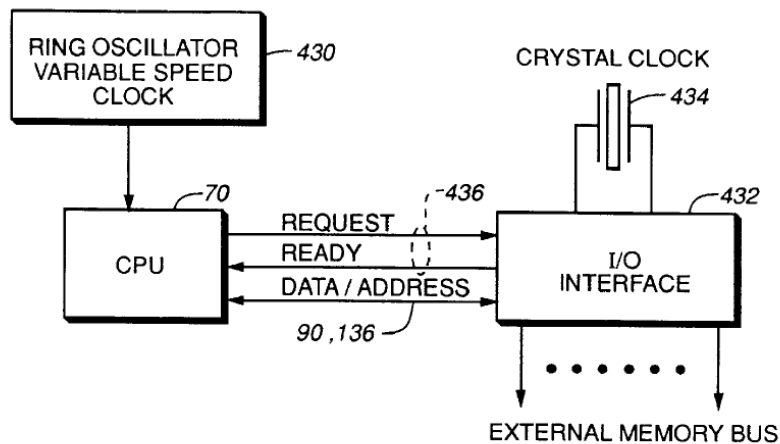


FIG. 17

Each independent claim of the ’336 patent (including asserted claims 6 and 13) provides for a fixed-speed, independent second clock that is connected to an input/output (“I/O”) interface. Appx46 (’336 patent at 17:14-34). The frequency of the second clock is fixed to allow the I/O interface to interact with off-chip memory and other off-chip components, and to perform operations that require a

fixed frequency, such as “video display updating and disc drive reading and writing.” *Id.* (’336 patent at 17:14-34). By connecting the variable speed oscillator to the CPU while separately connecting the independent fixed speed clock to the I/O interface, the variable speed CPU is decoupled from the fixed speed I/O interface. *Id.* (’336 patent at 17:32-34). This configuration allegedly optimizes the performance of the system by allowing the CPU to run as fast as possible under the current PVT conditions, while maintaining the I/O interface 432 at a stable fixed speed. *Id.*

C. The District Court’s Claim Construction.

By adopting the magistrate judge’s report and recommendation on *de novo* review, the district court construed the sole claim term the parties disputed: “an entire oscillator disposed upon said integrated circuit substrate.” Appx4-17. Based on the applicants’ clear and unmistakable disclaimers in distinguishing prior art during prosecution, the court construed the term to mean “an oscillator located entirely on the same semiconductor substrate as the central processing unit that does not require a control signal and whose frequency is not fixed by any external crystal.” Appx7.

The underlying report and recommendation analyzed the prosecution history to determine the existence and scope of two disclaimers. Appx9-16. The first disclaimer was based on the applicants’ arguments distinguishing the *Magar* prior

art patent during prosecution, and resulted in the “and whose frequency is not controlled by any external crystal” portion of the claim construction. Appx9-10, 15-16. The second disclaimer was based on the applicants’ arguments distinguishing the *Sheets* prior art patent during prosecution, and resulted in the “that does not require a control signal” portion of the claim construction. Appx10-11, 16.

The district court’s claim construction is consistent with the constructions of the same or related terms adopted by district courts or the International Trade Commission (ITC) on three prior occasions. Appx11-12. Each of these tribunals found a disclaimer of similar scope, with some variation in the precise wording in light of the various wordings that the applicants used in their repeated disavowals of claim scope during prosecution. *Id.* The report and recommendation acknowledged these other constructions and observed that “the recommended construction is consistent with the fundamental meaning of those earlier constructions.” Appx16.

Because the parties stipulated to non-infringement under the district court’s construction and agreed to dismiss without prejudice the pending counterclaims, the district court entered judgment in favor of Appellees. Appx1-3 (Final Judgment (Nov. 13, 2015)). This appeal followed.

SUMMARY OF THE ARGUMENT

The applicants received multiple prior art claim rejections from the examiner during prosecution of the '336 patent based upon the *Magar* and *Sheets* prior art patents. To save their claims, the applicants repeatedly, clearly and unmistakably argued that the frequency of the claimed “entire oscillator,” unlike the prior art, is not fixed by an external crystal and does not require a control signal. The district court’s construction accurately captures both disclaimers.

Appellants’ challenge to the district court’s disclaimer finding as to *Magar* is premised upon after-the-fact attorney arguments about what *Magar* discloses. The applicants never made these arguments to the examiner during prosecution. These arguments, in fact, contradict what the applicants actually told the examiner. Moreover, this Court’s precedent requires the scope of a disclaimer to be measured by what the applicants actually said during prosecution – not by what the prior art says, or by arguments that the applicants could have made but did not make to the examiner.

Appellants’ challenge to the district court’s disclaimer finding as to *Sheets* likewise fails. This challenge relies again on attorney argument about why *Sheets* allegedly is distinguishable from the claimed invention, rather than focusing on the applicants’ actual disclaiming statements to the examiner. Appellants also argue that the district court’s disclaimer ruling is too broad. But

the actual words the applicants used to disavow claim scope defeat that argument.

Because the district court correctly construed the disputed claim term, and the parties stipulated to non-infringement under that construction, the judgment should be affirmed.

ARGUMENT

A. Applicants Can Disavow Claim Scope Through Arguments Made to Distinguish Prior Art During Prosecution.

A prosecution history disclaimer must be “clear and unambiguous,” yet this Court recognizes that “applicants rarely submit affirmative disclaimers along the lines of ‘I hereby disclaim the following...’ during prosecution.” *Saffran v. Johnson & Johnson*, 712 F.3d 549, 559 (Fed. Cir. 2013). Thus, “[e]xplicit arguments made during prosecution to overcome prior art can lead to a narrow claim interpretation because ‘[t]he public has a right to rely on such definitive statements made during prosecution.’” *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319, 1325 (Fed. Cir. 2002) (quoting *Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1347 (Fed. Cir. 1998)); *see also Saffran*, 712 F.3d at 559 (holding that explicit statements distinguishing prior art during prosecution constitute a disclaimer of claim scope); *Am. Piledriving Equip., Inc. v. Geoquip, Inc.*, 637 F.3d 1324, 1336 (Fed. Cir. 2011) (holding that the applicants’ arguments distinguishing prior art during prosecution constituted a disavowal of claim scope even though

the applicant distinguished the prior art on other grounds as well). Moreover, the scope of the disclaimer is measured by the arguments actually made by the applicants, and it can be broader than what, in hindsight, was necessary to overcome the prior art. *See, e.g., North Am. Container Inc. v. Plastipak Packaging Inc.*, 415 F.3d 1335, 1345-46 (Fed. Cir. 2005).

In short, “[t]he patentee is held to what he declares during the prosecution of his patent.” *Gillespie v. Dywidag Sys. Int’l, USA*, 501 F.3d 1285, 1291 (Fed. Cir. 2007) (reversing district court’s construction and determination of literal infringement because patentee’s “construction was negated during prosecution”); *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1379 (Fed. Cir. 2008) (holding that “the sum of the patentees’ statements during prosecution would lead a competitor to believe that the patentee had disavowed” devices otherwise covered by the claim language). And a correct claim construction must reflect all disclaimers made during prosecution, not merely a subset of them. *See, e.g., Krippelz v. Ford Motor Co.*, 667 F.3d 1261, 1267 (Fed. Cir. 2012); *Am. Piledriving Equip.*, 637 F. 3d at 1336; *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 979 (Fed. Cir. 1999)).

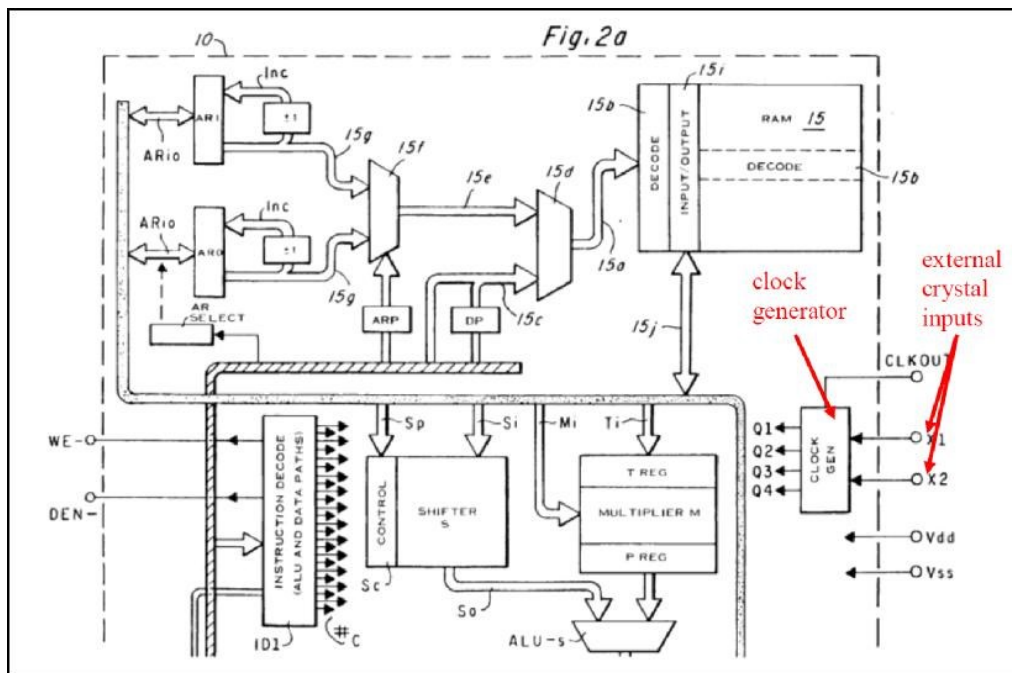
B. The Applicants Disclaimed Oscillators Whose Frequency Is Fixed By An External Crystal.

As the district court correctly concluded, the ’336 patent applicants clearly and unambiguously disclaimed oscillators whose frequency is fixed by an external

crystal. Faced with repeated rejections of their patent claims by the examiner in view of the prior art *Magar* patent (Appx2042-2074), applicants again and again distinguished *Magar* by arguing that, unlike their claimed invention, *Magar* used an external crystal to fix the frequency of the oscillator. These repeated, unambiguous arguments constitute a clear disclaimer that must be reflected in the construction of the “entire oscillator” limitation.

1. The District Court Correctly Concluded That The Applicants’ Arguments Distinguishing *Magar* Constitute Disclaimers.

The examiner’s first rejection over *Magar* noted that *Magar* disclosed a “clock generator” that is located on the same substrate as the central processing unit as shown in Figure 2a of *Magar*, reproduced below (annotations added for “clock generator” and “external crystal inputs”):



Appx2077 (April 3, 1997 Rejection); Appx2042 (*Magar* Fig. 2a/cover). The examiner found that “it would have been obvious . . . to have the components of Magar’[s] microprocessor and **clock (oscillator)** ma[d]e of the same process for ensuring processing frequency of the cpu to track the clock rate in response to parameter variations.” Appx2077 (April 3, 1997 Rejection) (emphasis added).

In response, the ’336 patent applicants distinguished *Magar* on the basis that an external, fixed-frequency crystal controlled the frequency of the *Magar* clock:

A review of the *Magar* reference shows that it is apparently no more pertinent than prior art acknowledged in the application, ***in that the clock disclosed in the Magar reference is in fact driven by a fixed frequency crystal, which is external to the Magar integrated circuit.***

Appx2091 (July 7, 1997, Amend.) (emphasis added). In the same amendment, the applicants emphasized that their claimed on-chip variable speed clock differs from the *Magar* clock because the *Magar* clock was “frequency controlled” by a “fixed frequency” external crystal that did not permit variations in oscillation speed due to PVT parameters. This was different from the claimed invention, in which the speed of the claimed variable speed clock varied with PVT parameters:

Contrary to the Examiner’s assertion in the rejection that ‘one of ordinary skill in the art should readily recognize that the speed of the cpu and the clock vary together due to manufacturing variation, operating voltage and temperature of the IC [integrated circuit],’ one of ordinary skill in the art should readily recognize that the speed of the cpu and clock *do not* vary together due to manufacturing variation, operating voltage and temperature of the IC in the *Magar* microprocessor . . . ***This is simply because the Magar microprocessor clock is frequency controlled by a crystal which is also external to***

the microprocessor. Crystals are by design fixed frequency devices whose oscillation speed is designed to be tightly controlled and to vary minimally due to variations in manufacturing, operating voltage and temperature. The Magar microprocessor in no way contemplates a variable speed clock as claimed.

Appx2092-3 (first emphasis in original; second emphasis added).

These statements are clear and unmistakable: the applicants told the examiner (and the world) that the *Magar* clock was different from the claimed invention because it was frequency controlled by an external fixed-frequency crystal. This clear disclaimer is accurately included in that part of the district court's construction that reads "an oscillator located entirely on the same semiconductor substrate as the central processing unit . . . whose frequency is not fixed by any external crystal." Appx7.

While these statements by the applicants alone establish disclaimer, the applicants then further told the examiner in the same amendment that even if the crystal that fixed the frequency of the *Magar* oscillator could be located entirely on the same chip as the CPU, *Magar still* would not practice the claimed invention because the *Magar* clock could not vary with PVT parameters:

[C]rystal oscillators have never, to Applicants' knowledge, been fabricated on a single silicon substrate with a CPU, for instance. Even if they were, as previously mentioned, crystals are by design fixed-frequency devices whose oscillation frequency is designed to be tightly controlled and to vary minimally due to variations in manufacturing, operating voltage and temperature. The oscillation frequency of a crystal on the same substrate with the microprocessor would inherently not vary due to variations in manufacturing,

operating voltage and temperature in the same way as the frequency capability of the microprocessor on the same underlying substrate, as claimed.

Appx2093.

The statement that the claimed frequency variation would be absent from *Magar* even if the crystal were fabricated on the same silicon substrate underscores the applicants' key distinction between their claimed variable speed clock and *Magar*: their claimed invention does not encompass microprocessor clocks whose frequency is fixed by a crystal. Thus, contrary to Appellants' current arguments, applicants did not distinguish their claims from *Magar* on whether the clock generator of *Magar* was an oscillator, or even ultimately on whether the crystal was external to the substrate (although, as established above, they did say that as well). Rather, they did so on the ground that the frequency of *Magar's* clock was controlled (*i.e.*, fixed) by the crystal.

The examiner was not convinced by the applicants' arguments and issued a second rejection based on *Magar*, stating that the *Magar* clock is on-chip and that it met this claim limitation. In response, the applicants amended their claims to explicitly require that the "entire oscillator" be on the same integrated circuit

substrate as the CPU. Appx2099-2100 (Feb. 10, 1998, Amend.).¹ In addition to this change, the applicants again distinguished *Magar* on the further ground that the “essential difference” between the claimed “entire oscillator” and the *Magar* oscillator is that the frequency of *Magar*’s clock signals was determined (*i.e.*, fixed) by an external crystal:

The ***essential difference*** is that the frequency or rate of the . . . signals [in the claimed invention] is determined by the processing and/or operating parameters of the integrated circuit containing the Fig. 18 circuit, ***while the frequency or rate of the . . . signals depicted in Magar Fig. 2a are determined by the fixed frequency of the external crystal . . .*** shown in *Magar* Fig. 2a.

Appx2102 (emphasis added). This disclaimer could not have been clearer: the “essential difference” between *Magar*’s oscillator and the claimed “entire oscillator” is that the frequency of *Magar*’s oscillator is “determined by the fixed frequency of the external crystal,” whereas the frequency of the claimed entire oscillator is not fixed by the crystal but instead varies with PVT parameters.

Earlier in the same amendment, the applicants had distinguished *Magar* from their claimed invention both on this same ground – that the frequency of the *Magar* oscillator was fixed by an external crystal – and on the separate basis that the *Magar* oscillator relied on the external crystal to oscillate:

¹ For example, prosecution claim 73, which ultimately issued as asserted claim 6, was amended to recite “an entire oscillator disposed upon said integrated circuit substrate.” Appx2100 (underlined text indicating addition through amendment).

Magar's clock generator *relies on an external crystal* connected to terminals X1 and X2 *to oscillate*, as is conventional in microprocessor designs. It is not an entire oscillator in itself. And with the crystal, the clock rate generated is also conventional in that it is at a fixed, not a variable, frequency. The Magar clock is comparable in operation to the conventional crystal clock 434 depicted in Fig. 17 of the present application for controlling the I/O interface *at a fixed rate frequency, and not at all like the clock on which the claims are based*, as has been previously stated.

Appx2101 (emphasis added).

The statement that *Magar's* clock is conventional in that its rate (*i.e.*, frequency) is fixed by the external crystal, and thus “not at all like the clock on which the claims are based,” further underscores the applicants’ disclaimer of clocks whose frequencies are fixed by external crystals. That the applicants *also* disclaimed reliance on an external crystal “to oscillate” does not negate the effect of the applicants’ repeated disclaimer of oscillators whose frequencies are fixed by external crystals. This is because, as the district court observed, a correct claim construction must reflect all disclaimers made during prosecution, not just some of them.² *See, e.g., Krippelz v. Ford Motor Co.*, 667 F.3d 1261, 1267 (Fed. Cir.

² The fact that the applicants’ additional disclaimer concerning reliance on a crystal to cause oscillation is not included in the district court’s construction is harmless error because the parties stipulated that Appellees do not infringe the asserted claims under the district court’s existing broader construction. Appx4468-79 (Stipulation for Entry of Final Judgment Based on the Court’s Claim Construction). *See Walker Digital, LLC v. Microsoft Corp.*, 590 Fed. App’x 956, 961 (Fed. Cir. 2014) (finding district court’s claim construction error harmless

2012); *Am. Piledriving Equip. v. Geoquip, Inc.*, 637 F. 3d 1324, 1336 (Fed. Cir. 2011); *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 979 (Fed. Cir. 1999) (all cited in Appx16 (R&R); see also *Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1374 (Fed. Cir. 2007).

Confirming yet again that they were disclaiming claim scope, the applicants concluded their arguments about *Magar* by “specifically distinguish[ing]” the claimed entire oscillator from *Magar* on two bases: (1) the frequency of the *Magar* oscillator was fixed by the crystal; and (2) the *Magar* oscillator required an external crystal:

The *Magar* teaching is well known in the art as a conventional crystal controlled oscillator. It is specifically distinguished from the instant case in that it is both fixed frequency (being crystal based) and requires an external crystal or external frequency generator.

Appx2103 (Feb. 10, 1998, Amend.).

The applicants’ disclaimers regarding *Magar* were clear: they repeatedly told the examiner the claimed “entire oscillator” does not include oscillators whose frequencies are fixed (*i.e.*, controlled or determined) by an external crystal. This Court’s precedent requires that the claim construction reflect the applicants’

when defendants’ accused products did not infringe even under the broader, correct claim construction).

disclaimers.³ The district court therefore was correct in concluding that there was a disclaimer, and that “the applicants surrendered any oscillator that like Magar’s is fixed by an off-chip crystal.” Appx15. Hence, the district court was correct in construing “entire oscillator” to mean, in part, “an oscillator . . . whose frequency is not fixed by any external crystal.” Appx7.

2. Appellants’ Criticisms Of The District Court’s Construction Lack Merit.

a. The Prior Constructions By Other Tribunals Do Not Preclude A Disclaimer Ruling.

Appellants first argue that because there were different previous constructions of the “entire oscillator” and related claim limitations in prior litigation – all of which found disclaimer – this somehow establishes that there was

³ *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576 (Fed. Cir. 1995) (“Claims may not be construed one way in order to obtain their allowance and in a different way against accused infringers.”); *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319, 1325 (Fed. Cir. 2002) (“Explicit arguments made during prosecution to overcome prior art can lead to a narrow claim interpretation because “[t]he public has a right to rely on such definitive statements made during prosecution.”) (quoting *Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1347 (Fed. Cir. 1998)); *Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282, 1289 (Fed. Cir. 2009) (*en banc*) (“the prosecution history can often inform the meaning of the claim language by demonstrating . . . whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.”) (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317) (Fed. Cir. 2005) (*en banc*)); *Gillespie v. Dywidag Sys. Int’l, USA*, 501 F.3d 1285, 1291 (Fed. Cir. 2007) (“The patentee is held to what he declares during the prosecution of his patent.”); *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1379 (Fed. Cir. 2008) (holding that “the sum of the patentees’ statements during prosecution would lead a competitor to believe that the patentee had disavowed” devices otherwise covered by the claim language).

no “clear” disavowal by the applicants during prosecution. Op. Br. at 6, 33-34. Appellants unsurprisingly cite no legal authority in support of this contention, because the applicants’ own words during prosecution determine whether a disavowal exists. *See North Am. Container Inc. v. Plastipak Packaging Inc.*, 415 F.3d 1335, 1345-46 (Fed. Cir. 2005). The mere fact that different tribunals chose different wordings to capture the applicants’ disclaimers – understandable in light of the various wordings the applicants used in their repeated disavowals of claim scope – is no barrier to the existence of a clear and unmistakable disclaimer.

To the extent the prior constructions have any bearing on the present appeal, their commonalities far outweigh any phrasing variations. Each of the prior rulings that addressed an “entire oscillator” claim limitation found: (1) a disclaimer of claim scope; (2) that the disclaimer encompassed the use of an external crystal; and (3) that the use of a control signal fell outside of the scope of the claims.

Specifically, in the prior *Matsushita* case in the Eastern District of Texas, the district court “agree[d] with the defendants that the applicant disclaimed the use of an input control signal and an external crystal/clock generator to generate a clock signal,” and issued a construction stating that the claimed “entire ring oscillator” “does not directly rely on a command control input signal or an external crystal/clock generator to generate a clock signal.” Appx2244 (Memorandum and Order (E.D. Tex. June 15, 2007) (the “Texas Claim Construction Order”)).

Appellants assert that this construction “left open the possible use of an external crystal/clock generator for a *reference signal*.” Op. Br. at 25 (emphasis in original). However, the district court’s order neither states nor suggests that an external crystal/clock generator may be used as a reference signal. Rather, the court explained that the dispute it addressed was “whether the ring oscillator may rely on a control signal or an external crystal/clock generator.” Appx2243 (Texas Claim Construction Order).

In the International Trade Commission proceeding, the Commission concluded “the applicants intended to disclaim, not only an external crystal/frequency generator, but also a fixed frequency, crystal controlled generator,” and affirmed the ALJ’s construction that the claimed “entire ring oscillator” “does not rely on a control signal or an external crystal/clock generator to generate a clock signal.” Appx2368, 2373-4 (Commission Opinion, Inv. No. 337-TA-853 (March 21, 2014) (“Commission Opinion”). And in the *HTC* case in the Northern District of California, the district court’s summary judgment order concluded that the applicants’ statements during prosecution precluded the claims from encompassing “any external clock used to generate a clock signal,” and also ruled that “there remains a factual dispute whether HTC’s products contain an on-chip ring oscillator that . . . does not rely on an input control to determine its frequency.” Appx1782 (Summary Judgment Order (N.D. Cal. Sept. 17, 2013)).

The *HTC* court’s ruling regarding the open factual issue concerning whether HTC’s products relied on an input control to determine frequency was relevant because that court’s construction (which also was issued by Judge Grewal), as here, excluded such reliance on an input control.⁴

Appellants also assert that “[i]n 2012, Judge Ware of the Northern District of California considered the phrase ‘entire ring oscillator variable speed system clock.’” Op. Br. at 25-26. This is incorrect. Judge Ware construed the term “ring oscillator” – not “entire oscillator,” or even “entire ring oscillator variable speed system clock.” Appx1563-6 (Ware Claim Construction Order (N.D. Cal. June 12, 2012)). In addition to mischaracterizing the subject of Judge Ware’s “ring oscillator” construction, Appellants neglect to mention that the focus of Judge Ware’s inquiry was whether the voltage controlled oscillator in the Talbot prior art

⁴ In response to the summary judgment order, HTC brought an emergency motion regarding the wording of the proposed jury instructions, in response to which the district court ruled that the jury would be instructed that the “entire oscillator” term “[is] properly understood to exclude any external clock used to generate a signal.” Appx1808 (Addendum to Jury Instructions (N.D. Cal. Sept. 20, 2013)). While, as Appellants note, the court did not grant HTC’s additional request to further instruct the jury that the “entire oscillator” cannot rely on an input control signal to determine its frequency, the court did not state its reasons for declining to do so (or otherwise discuss those additional requests in its order). *Id.* Indeed, when the court later addressed this issue in its JMOL order, the court noted only that the “Court chose not to adopt the second sentence of HTC’s proposal” Appx1819 (Order Denying JMOL Motion (N.D. Cal. Jan. 1, 2014)). The court did not explain why it chose not to do so.

reference was a ring oscillator – and not any other issue concerning frequency control or the meaning of “entire oscillator.” *Id.*

Appellants also state that “[i]n supplemental briefing, the parties continued to debate the meaning of the ‘*ring oscillator*.’” Op. Br. at 27. While this is correct, it is a red herring. “Ring oscillator” does not appear in either of the two asserted independent claims (claims 6 and 13) because those claims instead recite “an entire oscillator.” Appx18-70 (’336 patent at claims 6, 13). Moreover, the meaning of “ring oscillator” is not in dispute in this case because the parties agreed to the construction of the term “ring oscillator” in the asserted dependent claims (claims 9 and 15). Appx1463 (Joint Claim Construction Statement, Exhibit A at Item No. 32), construing “ring oscillator” to mean “an [oscillator] having 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”).

Finally, as discussed in greater detail below, Appellants’ heavy emphasis on the presence of the phrase “to generate” in the prior constructions is misplaced. The district court’s omission of that phrase from its construction in this case is more faithful to the intrinsic evidence and also avoids the unnecessary confusion that resulted from the use of “to generate” in the prior constructions.

b. Appellants Mischaracterize The District Court's Construction.

Appellants' arguments are based upon a mischaracterization of the district court's construction in this case. In particular, Appellants assert that "the disclaimer found by the district court explicitly finds that applicants disclaimed a system that has two oscillators with respect to *Magar*," and that "the construction found in the Grewal R&R contemplates the interaction of an on-chip oscillator with an off-chip one." Op. Br. at 35, 42. However, the district court's claim construction says nothing about two oscillators or any interaction between an on-chip oscillator and an off-chip oscillator. Rather, consistent with the applicants' above-discussed prosecution history disclaimers, the district court's claim construction requires "an [oscillator] . . . whose frequency is not fixed by any external *crystal*." Appx7 (emphasis added); *see also* Appx9 (stating applicants emphasized "the clock disclosed in *Magar* was fixed by a crystal that was external to the microprocessor, unlike their on-chip variable speed clock," and stating "applicants also argued that the *Magar* clock could not practice the claimed invention because of its reliance on a crystal"), Appx10 (stating applicants "emphasiz[ed] again that the claimed invention did not rely on an external crystal's fixed frequency to set the clock's frequency rate"). Appellants' argument fails for this reason alone.

c. Appellants' Two-Oscillator Strawman Argument Is Factually And Legally Incorrect.

Appellants' mischaracterization of the district court's construction is used as the springboard for their repeated strawman argument that the applicants could not have disclaimed systems with two oscillators (one an on-chip oscillator and one an off-chip oscillator) because *Magar* does not disclose such systems, but rather discloses a single oscillator system in which the oscillator is located off-chip. Op. Br. at 35-36, 39-43. This argument fails as a matter of both law and fact.

(1) Disclaimers Are Not Measured By The Scope Of The Prior Art Or By After-The-Fact Arguments About The Prior Art.

Appellants devote substantial attorney argument to what *Magar* allegedly does and does not disclose, and how the alleged invention of the '336 patent is allegedly distinguishable from *Magar* on those bases. Op. Br. at 34-38, 41-42. However, as a matter of law, the existence and scope of any disclaimer is determined solely by what the applicants actually said during prosecution. *North Am. Container*, 415 F.3d at 1345-46. Litigation counsel's subsequent arguments about what the prior art teaches and what positions the applicants could have taken, but did not take, during prosecution are irrelevant. *See id.*

In *North American Container*, the claim term at issue was "wherein said inner wall portions are generally convex." *Id.* at 1341. The applicants in that case

made the following argument to the examiner during prosecution to overcome two prior art patents, *Jakobsen* and *Dechenne*:

The shape of the base as now defined in the claims differs from those of both the Dechenne patent, wherein the corresponding wall portions 3 are *slightly concave* . . . and the Jakobsen patent, wherein the entire re-entrant portion is clearly *concave in its entirety*. This is also generally true of all of the prior art known to the applicant and/or referred to by the examiner.

Id. at 1340 (emphasis in original). A special master in subsequent district court litigation determined that the plain meaning of the “generally convex” limitation was broad enough to include walls with some straight and some concave points, so long as the majority of points were convex. However, notwithstanding that determination, the special master further concluded that the correct construction of “generally convex” required an additional negative limitation due to the above-stated argument made by the applicants during prosecution: the wall must have “no concave points.” *Id.* at 1342-43. In affirming this construction, this Court rejected the argument that the scope of the disclaimer was limited to walls that were entirely concave and therefore could encompass walls with some concave points:

We are not persuaded by NAC’s argument that the applicant intended only to distinguish his invention from the prior art on the basis that the inner walls in the prior art bottles are entirely concave. ***Although the inner walls disclosed in the Dechenne and Jakobsen patents may be viewed as entirely concave, that is not what the applicant argued during prosecution to gain allowance for his claims.*** The applicant stressed the difference in the extent of the concavity between the Dechenne and Jakobsen patents, noting that Dechenne is “slightly concave,” whereas Jakobsen is “clearly concave in its entirety.” Such

a distinction would have been unnecessary if the only point that the applicant intended to make was that both prior art patents disclosed inner walls that are entirely concave.

Id. at 1345-46 (emphasis added).

Thus, this Court made clear in *North American Container* that the scope of a disclaimer is measured by the words used by the applicants, and can be broader than what is necessary to overcome the prior art. Other cases from this Court likewise support this conclusion. *See, e.g., Atofina v. Great Lakes Corp.*, 441 F.3d 991, 998 (Fed. Cir. 2006) (“[t]hat the applicants only needed to surrender nickel-chromium catalysts to avoid a prior art reference does not mean that its disclaimer was limited to that subject matter”); *Marctec LLC v. Johnson & Johnson*, 394 Fed. App’x 685, 687 (Fed. Cir. 2010) (“[I]mitations clearly adopted by the applicant during prosecution are not subject to negation during litigation, on the argument that the limitations were not really needed in order to overcome the reference”); *Saffran v. Johnson & Johnson*, 712 F.3d 549, 559 (Fed. Cir. 2013) (holding that arguments made to distinguish prior art “preformed chamber” constitute a disclaimer of not only the prior art “preformed chamber” but also a broader disclaimer of anything other than a “sheet”). *See also* Appx14 (R&R) (quoting *Norian Corp. v. Stryker Corp.*, 432 F.3d 1356, 1361 (Fed. Cir. 2005) for the proposition that “[t]here is no principle of patent law that the scope of surrender of

subject matter made during prosecution is limited to what is absolutely necessary to avoid a prior art reference that was the basis for an examiner's rejection").

Accordingly, Appellants' attempt to reach beyond what the applicants actually said during prosecution – through attorney argument about what *Magar* allegedly discloses and how it allegedly is different than the claimed invention of the '336 patent – should be rejected.

(2) The Applicants Did Not Make Appellants' Current Argument.

Appellants' "two-oscillator" strawman argument is predicated at least in part on an after-the-fact attorney argument that the on-chip *Magar* clock generator is not part of an oscillator and does not oscillate, but only modifies the output of the off-chip crystal to produce the four derivative clocks shown in Figure 3 of *Magar*. Op. Br. at 35-37. The applicants did not make any such argument during prosecution. In fact, they said just the opposite, namely that *Magar's* "clock generator" oscillates and is part of *Magar's* oscillator.

Nowhere in the prosecution history do the applicants attempt to distinguish their claims from *Magar* on the basis that the *Magar* clock is not part of an oscillator. This is significant because, as established above, the examiner identified the *Magar* clock as constituting the applicants' allegedly inventive variable speed clock (the "entire oscillator" of asserted claims 6 and 13).

Appx2077 (April 3, 1997 Rejection) ("it would have been obvious . . . to have the

components of Magar'[s] microprocessor and clock (oscillator) ma[d]e of the same process for ensuring processing frequency of the cpu to track the clock rate in response to parameter variations.”). Indeed, in the excerpt quoted above (from applicants' February 10, 1998, amendment), the applicants themselves stated that “Magar's clock generator” in fact “oscillates”: “Magar's clock generator relies on an external crystal connected to terminals X1 and X2 to oscillate . . .” Appx2101.⁵ Later in that same amendment, applicants also state: “The ‘clock gen’ part of the oscillator circuit [of *Magar*] is clearly on the IC, but not the crystal.” Appx2102. And applicants clearly stated in their July 7, 1997, amendment “that the clock gen circuit in Fig. 2a in the Magar patent is equivalent to the ‘conventional crystal clock’ 434 in Fig. 17 of the present application.” Appx2091.

The applicants' July 7, 1997, amendment made clear that *Magar's* oscillator comprised both an off-chip crystal and on-chip components (connected to each other through the two X1 and X2 pins), and that this stood in contrast to the prior art system described in U.S. Patent No. 4,680,698 (*Edwards*), in which the entire oscillator was off chip:

Conventionally, a CPU is driven by a clock that is generated by an [sic] crystal. The crystal might be connected directly to two pins on the CPU, as in Magar, and be caused to oscillate by circuitry

⁵ This statement by the applicants directly contradicts Appellants' current wholly unsupported attorney assertion that “the CLOCK GEN circuitry does not itself oscillate.” Op. Br. at 37.

contained in the CPU with the aid of possibly other external components. Alternatively, the crystal may be contained in a package with the oscillation circuitry, the package component thus called an oscillator, and connected on one pin on the CPU as in Edwards et al., U.S. Pat. No. 4,680,698.

Appx2093. Thus, according to the applicants themselves, the oscillator in *Magar* comprised both the crystal and on-chip components connected to the crystal by the two pins. According to the applicants, this is distinct from *Edwards*, in which the oscillator comprised a package of off-chip components including the crystal.

The applicants made the same point in the next paragraph of their July 7, 1997, amendment, which Appellants only partially block quote in their brief. Op. Br. at 36 (quoting Appx2093). There, the applicants stated that “[i]n both cases” (*i.e.*, in the distributed oscillator circuitry described in *Magar*, or in the entirely off-chip oscillator of *Edwards*) “oscillator circuitry” outputs a clock signal. In describing the *Magar* design, the applicants stated: “The ‘clock gen’ connects to a crystal at external pins X1 and X2 and generates clock signals for the system . . .” Appx2093. Thus, the applicants once again made clear in this paragraph that the *Magar* clock generator is at least part of the *Magar* oscillator. Moreover, consistent with the disclaimers discussed above, this paragraph of the amendment goes on to say: “All these [prior art] systems operate at a frequency determined by the external crystal.” *Id.*

Rather than assert that the *Magar* clock generator was not part of the *Magar* oscillator and did not oscillate – as Appellants now do – the applicants instead distinguished their claimed “entire oscillator” from the *Magar* oscillator because the frequency of the *Magar* clock was fixed by an external crystal. Appx2091-3 (July 7, 1997, Amend.) (“the clock disclosed in the *Magar* reference is in fact driven by a fixed frequency crystal, which is external to the *Magar* integrated circuit”; “the *Magar* processor clock is frequency controlled by a crystal which is also external to the microprocessor”); Appx2101-3 (Feb. 10, 1998, Amend.) (“[t]he essential difference is that . . . the frequency or rate of [the clock] signals depicted in *Magar* Fig. 2a are determined by the fixed frequency of the external crystal”; “[a]nd with the crystal, the clock rate generated is also conventional in that it is a fixed, not variable, frequency”; “[t]he *Magar* teaching . . . is specifically distinguished from the instant case in that it is . . . fixed frequency (being crystal based)”).

As established above, these repeated, clear and unmistakable statements by the applicants – not Appellants’ current assertions – define the existence and scope of the applicants’ prosecution disclaimer. *See, e.g., North Am. Container*, 415 F.3d at 1345-46; *Marctec*, 394 Fed. App’x at 687. The district court’s construction of the “entire oscillator” limitation should be affirmed because it is based upon, and accurately reflects, the applicants’ statements.

(3) The Applicants' Second Distinction Over *Magar* Does Not Negate Their Separate Disclaimer Of Oscillators Whose Frequencies Are Fixed By Crystals.

Appellants also contend that “[a]pplicants distinguished *Magar* and *Sheets* on the basis of existing claim limitations.” Op. Br. at 34; *see also id.* at 36 (“Applicants were able to distinguish *Magar* based on the limitations already present in the asserted claims.”), 37 (“Applicants’ statements during prosecution distinguish *Magar* based on existing claim limitations, . . .”). Yet, when Appellants turn to the specific passages of the prosecution history that the district court relied on to find disclaimer, they consistently default to their appellate lawyer argument that the *Magar* clock is not part of the *Magar* oscillator. Op. Br. at 38-42. Moreover, to the extent the applicants also distinguished their claimed invention on the *additional* basis that the oscillator in *Magar* was not entirely on-chip, the applicants’ separate disclaimers regarding frequency control by the crystal still would apply to narrow the claims. *Am. Piledriving*, 637 F. 3d at 1336 (holding that the applicant’s arguments distinguishing prior art during prosecution constituted a disavowal of claim scope even though the applicant distinguished the prior art on other grounds as well).

In this vein, Appellants note in regard to the applicants’ February 10, 1998, amendment (reproduced again below) that “[a]pplicants clarif[ied] that the ‘clock generator’ is not an entire oscillator in itself.” Op. Br. at 42. This distinction,

however, was only one of the two distinctions made by the applicants in this passage of their February 10 submission. Specifically, in this passage, the applicants first state:

Magar's clock generator relies on an external crystal connected to terminals X1 and X2 to oscillate, as is conventional in microprocessor designs. It is not an entire oscillator in itself.

Appx2101. The applicants then state:

And with the crystal, the clock rate generated is also conventional in that it is a fixed, not a variable, frequency. The Magar clock is comparable in operation to the conventional crystal clock 434 depicted in Fig. 17 of the present application for controlling the I/O interface at a fixed rate frequency, and not at all like the clock on which the claims are based, as has been previously stated.

Id. The first argument in this passage consists of the first two sentences, and stands for the proposition that *Magar's* on-chip clock generator is not the claimed "entire oscillator" because it relies on the external crystal. As the district court correctly recognized, this is a disclaimer of the "use of an external crystal to cause clock signal oscillation." Appx10. However, the remainder of this passage is a second, separate argument: *Magar's* clock is different from the clock on which the '336 claims are based because *Magar's* clock has a "fixed, not a variable, frequency" due to its being controlled by a crystal. The summary statement at the end of the same submission confirms that the applicants were in fact making two separate arguments:

The Magar teaching . . . is specifically distinguished from the instant case in that it is *both* fixed frequency (being crystal based) and requires an external crystal or external frequency generator.

Appx2103 (emphasis added). As discussed above, both disclaimers must be reflected in the claim construction.

At bottom, Appellants' two-oscillator strawman argument fails because the applicants made clear that no oscillator is within the scope of the '336 patent claims if the oscillator's frequency is fixed by an external crystal. In light of the applicants' statements, it is irrelevant whether the oscillator is entirely off-chip as in *Edwards*, partially on-chip and partially off-chip as in *Magar*, or entirely on-chip as in the applicants' description of a variation of *Magar* in which the crystal is on-chip with the other oscillator components. The district court's claim construction therefore should be affirmed.

d. *Avid Is Inapplicable.*

Without elaboration, Appellants repeatedly cite *Avid Tech., Inc. v. Harmonic, Inc.*, 812 F.3d 1040 (Fed. Cir. 2016) in support of their position. Op. Br. at 34, 40. In that case, unlike this case, the district court misread the meaning of the prosecution history statements, and the statements in question were "readily susceptible to a narrower reading." *Id.* at 1046-47. Here, by contrast, the applicants repeatedly and clearly disclaimed oscillators whose frequencies are fixed by an external crystal.

3. Appellants' Proposed Alternative Construction Is Incorrect And Invites Confusion And Further Argument.

Appellants conclude their argument regarding *Magar* by stating: “[f]inally, if any disclaimer with respect to *Magar* is appropriate, it is one that prohibits a clock signal being *generated* from an off-chip oscillator.” Op. Br. at 43 (emphasis in original); *see also id.* at 42 (“Applicants’ statements could support a construction that the clock signal provided to the CPU does not originate from or is not generated by an external oscillator”). Appellants’ alternative construction must be rejected because it fails to accurately capture the full extent of the applicants’ prosecution history disclaimers. The construction also should be rejected because prior litigation over this patent has shown that the word “generate” is unclear, is likely to cause jury confusion, and invites continued argument over its meaning and scope.

First, Appellants’ substitution of “off-chip oscillator” in their proposed construction for “external crystal” improperly narrows the scope of the prosecution history arguments made by the applicants. As established above, each of the above-cited disclaimers refers to an external *crystal*, not an external *oscillator*. These disclaimers were made with the express understanding that an external crystal is only a part of an oscillator, and that the other parts of the oscillator may be on-chip or off-chip or some combination of the two. The correct construction should therefore be phrased in terms of an “external crystal,” as those were the

words that the applicants used. *North Am. Container*, 415 F.3d at 1345-46; *Atofina*, 441 F.3d at 998; *Marctec*, 394 Fed. App'x at 687; *Saffran*, 712 F.3d at 559.

Second, the term “generated” should not be used in place of stating that the frequency is “fixed.” As shown above, the terms “frequency” and “fixed” are used throughout the disclaimers (in the phrases “fixed frequency” and “fixed rate frequency”), and the disclaimers also use the comparable words “frequency controlled” and “frequency . . . determined” (in the phrase “the frequency or rate of the [clock] signals . . . are determined”). Each of these terms reflects the applicants’ disclaimer of an oscillator with a frequency fixed by the external crystal, which is the essence of the applicants’ primary disclaimer in *Magar*. Stating that the frequency is “fixed” directly reflects this disclaimer. “Generation” of the clock signal does not accurately reflect the disclaimer. Appellants do not even tie their proposed use of the term “generated” to the actual words of the applicants’ disclaimers.

Furthermore, the prior litigation history concerning this patent demonstrates that the use of the word “generate” in the claim construction is problematic. In the prior ITC proceeding, the ALJ adopted a construction that included the word “generate.” Appx2285-2304 (ITC Claim Construction Order). Appellants then proceeded to argue that the process of generating a clock signal did not include

fixing the frequency of the signal. *See, e.g.*, Appx2583-85 (ITC Initial Determination). As a result, this issue required further litigation, which led the ALJ ultimately to clarify that his “generate” construction excluded oscillators whose frequency was fixed by an external crystal: “the process of setting the frequency of a clock signal and generating a clock signal are inseparable, because a clock signal must have a frequency, since its sole purpose is to provide a frequency for timing the operation of devices.” Appx2596 (ITC Initial Determination). The Commission agreed. Appx2368 (ITC Commission Opinion) (“The patent applicants’ statement in the final sentence quoted above, in particular, shows that the applicants intended to disclaim, not only an external crystal/frequency generator, but also a fixed frequency, crystal controlled generator.”).

Likewise, in the prior *HTC* district court action, the court provided the jury with an instruction that the “entire oscillator” claim term “is properly understood to exclude any external clock used to generate the signal used to clock the CPU.” Appx2209 (Final Jury Instructions); Appx2231 (Order re Emergency Motion). However, during deliberations in the *HTC* trial, the jury expressed uncertainty as to the meaning of the word “generate” in the jury instruction and sought clarification of this term. Appx2449-52 (*HTC* Trial Transcript at 1641:21–1644:14).

Accordingly, the use of “fixed” (rather than “generated”) in the current construction more accurately reflects the applicants’ actual disclaimers. While

greater accuracy alone is dispositive, it has the added benefit of avoiding potential future argument and confusion over the meaning and scope of the word “generate.” Appellants’ alternative construction therefore should be rejected.

C. The Applicants Disclaimed Oscillators That Require A Control Signal.

In addition to disclaiming oscillators whose frequency is fixed by an external crystal, the applicants clearly and unambiguously disclaimed oscillators that require a control signal, as the district court correctly concluded. Appx6, 11-12, 16 (R&R). The applicants made these disclaimers in trying to distinguish their claimed “entire oscillator” from the prior art *Sheets* patent. *Sheets* discloses a voltage controlled oscillator whose frequency is set by writing a control word to the voltage controlled oscillator. Appx3500 (*Sheets* patent at 2:54-68).

1. The Applicants’ Arguments Regarding Sheets Constitute Disclaimers.

The applicants distinguished their “present invention” from *Sheets*’ voltage controlled oscillator on the basis that *Sheets*’ voltage controlled oscillator requires (*i.e.*, relies upon or needs) frequency control information from the on-chip microprocessor:

The present invention does not similarly 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. ***Sheets' system for providing clock control signals to an external clock is thus seen to be unrelated to the integral microprocessor/clock system of the present invention.***

Appx2117 (April 11, 1996, Amend.) (emphasis added); Appx10 (R&R). Because the applicants referred to the “present invention” in this statement, their disclaimer of clock control signals applies to all claims. *See, e.g., Ballard Med. Prods. v. Allegiance Healthcare Corp.*, 268 F.3d 1352, 1360-62 (Fed. Cir. 2001); Appx11 (R&R).

When the examiner disagreed with the applicants' assertion that *Sheets'* clock was external to the microprocessor, the applicants went further and disclaimed the use of controlled oscillators altogether, regardless of whether the oscillator is on-chip or not:

Even if the examiner is correct that the variable clock in *Sheets* is in the same circuit as the microprocessor of system 100, ***that still does not give the claimed subject matter. In Sheets, a command input is required to change the clock speed.*** In the present invention, the clock speed varies correspondingly to variations in operating parameters . . . ***No command input is necessary to change the clock frequency.***

Appx2127 (Jan. 8, 1997, Amend.) (emphasis added); Appx11 (R&R). Thus, according to the applicants, controlling even an on-chip oscillator's speed using a command input generated on the chip “does not give the claimed subject matter.” *Id.* Indeed, in a later amendment, the applicants left no doubt that, unlike “all cited

references,” the claimed oscillator is completely free of inputs and extra components:

Crucial to the present invention is that . . . when fabrication and environmental parameters vary, the oscillation or clock frequency and the frequency capability of the driven device will automatically vary together. ***This differs from all cited references in that . . . the oscillator or variable speed clock varies in frequency but does not require manual or programmed inputs or external or extra components to do so.***

Appx2094 (July 7, 1997, Amend.) (emphasis added); Appx11 (R&R).⁶

Thus, as the district court correctly concluded, the “applicants distinguished *Sheets* repeatedly on the ground that *Sheets* requires control signals, frequency control information or command inputs.” Appx16. These arguments, distinguishing the claimed “entire oscillator” from *Sheets*, constitute clear and unmistakable disclaimers that must be reflected in the claim construction. *See Am. Piledriving*, 637 F.3d at 1326. Accordingly, the district court correctly construed “entire oscillator” to exclude oscillators “that require a control signal.” Appx6, 10-11, 16); *Southwall Techs.*, 54 F.3d at 1576; *Rheox*, 276 F.3d at 1325.

⁶ When a patentee uses terms such as “crucial to” and “in the present invention,” this use has a special effect on the scope of the claim. *See Microsoft Corp. v. Multi-Tech. Sys., Inc.*, 357 F.3d 1340, 1351-52 (Fed. Cir. 2004) (construing claim to require a feature that was “central to the functioning of the claimed invention”).

2. Appellants' Criticisms Of The District Court's Construction Lack Merit.

Appellants criticize the “control signal” portion of the district court’s construction on three grounds. First, Appellants characterize how the system described in *Sheets* allegedly works (Op. Br. at 44-45), and then offer their current attorney argument as to why *Sheets* is distinguishable from the claimed invention of the ’336 patent. *Id.* at 47. However, as established above in connection with the *Magar* reference, this Court’s precedent is clear that a disclaimer is measured by what the applicants actually said during prosecution, not by what they could have said instead during prosecution, or by what the patentee argues during litigation. *North Am. Container*, 415 F.3d at 1345-46.

Second, Appellants assert that the disclaimer ruling is too broad because it applies to “‘control signals’ generally,” and that the disclaimer instead should instead be limited to “command, programmed or manual control inputs.” Op. Br. at 47, 50. However, as established above, the specific language the applicants actually used to distinguish *Sheets* includes not only “command input” and “manual or programmed inputs,” but also “clock control signals” and “frequency control information.” Again, the scope of the disclaimer must be measured by what the applicants actually said. Thus, to the extent there is an actual difference in scope between the use of the term “control signal” in the district court’s

construction and words used in Appellants' proposed alternative, Appellants' proposed alternative does not cover the full breadth of the applicants' disclaimers.

Third, Appellants argue that the district court's construction prohibits the entire oscillator from requiring a control signal "for ostensibly any purpose." Op. Br. at 48. However, it is clear from the district court's claim construction ruling that the prohibition on requiring control signals relates to requiring control signals to control or change frequency. *See* Appx10 ("the applicants distinguished their 'present invention' from microprocessors that rely on *frequency control information* from an external source") (emphasis added); Appx11 ("Thus, according to applicants, *controlling the on-chip oscillator's speed* using a command signal 'does not give the claimed subject matter.'") (emphasis added). These statements are consistent with the construction that Appellees proposed to the district court, which provided in relevant part that the claimed oscillator "does not rely on a control signal . . . to . . . control clock signal frequency." Appx13.

3. Appellants' Proposed Alternative Construction Is Incorrect.

As with *Magar*, Appellants propose an alternative construction, which they contend captures the scope of the applicants' disclaimers distinguishing *Sheets*. Specifically, Appellants contend that the disclaimer should be limited to an oscillator "that does not require 'command, manual and programmed inputs' sent off-chip to change its frequency." Op. Br. at 34, 50. Appellants' proposed

alternative construction should be rejected because it fails to fully and accurately capture the applicants' prosecution history disclaimers.

First, Appellants provide no explanation of how the scope of "control signals" in the district court's construction is somehow different from "command, manual and programmed inputs" in its proposed alternative construction. Op. Br. at 50. For example, Appellants do not explain how a "control signal" differs from a "command input." Nor do Appellants identify any type of control signal that is not either a "manual" input or a "programmed" input. But to the extent there is a material difference in scope between "control signals" and Appellants' proposed alternative, Appellants' proposed alternative is incorrect because it fails to cover the full breadth of the applicants' disclaimers. As established above, the applicants' disclaimers were not limited to "command, manual or programmed inputs." The specific language the applicants actually used to distinguish *Sheets* also included "clock control signals" and "frequency control information."

Second, Appellants' proposed construction is incorrectly limited to exclude only oscillators that do not require inputs to "change its frequency." Op. Br. at 50. Appellants' proposed construction thus includes oscillators having inputs used to "control" the frequency of the oscillator. This is incorrect because the applicants also distinguished *Sheets* because "the present invention does not similarly rely upon the provision of frequency control information." Appx2117 (April 11, 1996,

Amend.); Appx10 (R&R). Thus, while Appellees contend that no modification of the district court's construction is warranted, if this Court were to modify the portion of the district court's construction pertaining to the disclaimers over *Sheets*, the Court should adopt the construction previously proposed by Appellees in the district court: "an oscillator . . . that does not rely on a control signal . . . to . . . control clock signal frequency." Appx1962 (Defendants Opening Claim Construction Brief at 6). Compared to Appellants' proposal, this alternative construction more accurately captures the full scope of the multiple disclaimers made to distinguish the '336 patent claims over *Sheets*.

Finally, Appellants' proposed alternative incorrectly limits the disclaimer to inputs that are "sent off-chip." Op. Br. at 49-50. Appellants' attempt to limit the disclaimer over *Sheets* to off-chip external clocks is incorrect. It suffers from the same logical flaw as does their attempt to limit the disclaimer over *Magar*: namely, Appellants' fallacy that the scope of the disclaimer is limited by the prior art itself rather than by the applicants' actual words during prosecution.

As discussed above, when the examiner disputed the applicants' argument that *Sheets*' oscillator was off-chip, the applicants specifically told the examiner that:

Even if the examiner is correct that the variable clock in *Sheets* is in the *same circuit as the microprocessor* of system 100, *that still does not give the claimed subject matter. In Sheets, a command input is required to change the clock speed.* In the present invention, the

clock speed varies correspondingly to variations in operating parameters . . . ***No command input is necessary to change the clock frequency.***

Appx2127 (emphasis added). Thus, the applicants clearly and unambiguously disclaimed coverage of any oscillator that requires a command input to change clock speed regardless of whether the oscillator is on-chip or off-chip. As established above, the disclaimers are measured by the words used by the applicants, not by the prior art. *North Am. Container*, 415 F.3d at 1345-46; *Atofina*, 441 F.3d at 998; *Marctec*, 394 Fed. App'x at 687; *Saffran*, 712 F.3d at 559. The public is entitled to rely on the applicants' disclaimer.

Appellants' attempt to limit the scope of the applicants' disclaimer to off-chip oscillators is significant. As discussed in Appellants' brief, the products being accused by Appellants include on-chip circuitry that "can be programmed to generate a clock signal that is 20 times that of the reference signal – a 1 GHz signal. The same control circuitry can be programmed to cause the ring oscillator to generate clock signals that are other multiples of this reference signal." Op. Br. at 21. As explained in Appellants' brief, this programming can be used to "cause the frequency of the clock signal to increase or decrease, as needed." *Id.* at 20. This programming that changes the frequency of the clock signal is performed under the control of the CPU. *Id.* The CPU accomplishes this "programming" by writing a digital value (*i.e.*, a "programmed input") to the on-chip PLL circuitry in

the accused products when a clock speed change is desired, such as when the processing demand changes. Thus, even if Appellants were successful in limiting the scope of the disclaimer over *Sheets* to “command, manual and programmed inputs,” they still could not establish infringement unless they also successfully limited the disclaimer to command, manual and programmed inputs that are “sent off-chip,” as urged in their alternative proposed construction at page 50 of their Opening Brief. However, as established above, there is no basis for such a limitation on the disclaimer.

CONCLUSION

The applicants made clear and unmistakable disclaimers of claim scope in their arguments to overcome prior art during prosecution. The district court’s construction accurately reflects these disclaimers. And the parties stipulated to non-infringement under that construction. The judgment of the district court therefore should be affirmed.

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CERTIFICATE OF SERVICE

I hereby certify that on May 23, 2016, I electronically filed the foregoing RESPONSE BRIEF OF DEFENDANTS-APPELLEES HUAWEI TECHNOLOGIES CO., LTD., FUTUREWEI TECHNOLOGIES, INC., HUAWEI DEVICE CO., LTD., HUAWEI DEVICE USA INC., HUAWEI TECHNOLOGIES USA INC., ZTE CORPORATION, ZTE USA, INC., SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC., LG ELECTRONICS, INC., LG ELECTRONICS U.S.A., INC., NINTENDO CO., LTD., AND NINTENDO OF AMERICA INC with the Court's CM/ECF filing system, which constitutes service, pursuant to Fed. R. App. P. 25(c), Fed. Cir. R. 25(a), and the Court's Administrative Order Regarding Electronic Case Filing 6(A) (May 17, 2012).

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CERTIFICATE OF COMPLIANCE

This brief complies with the type-volume limitation of Federal Rule of Appellate Procedure 32(a)(7)(B). The brief contains 10,605 words, excluding the portions of the brief exempted by Federal Rule of Appellate Procedure 32(a)(7)(B)(iii).

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