No. 19-GSR-4287

**UNITED STATES COURT OF APPEALS  
FOR THE FEDERAL CIRCUIT**

BALLISTIC HOLDINGS, INC. and BALISTIC MEMORY, INC.

*Appellant,*

v.

CONSUMERCAM, LLC

*Appellee*.

*Appeal from the United States District Court   
for the District of Pennyston*

BRIEF FOR THE APPELLEE

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# STATEMENT OF RELATED CASES

(DENNIS)

# STATEMENT OF JURISDICTION

(DENNIS)

# STATEMENT OF ISSUES

## Exhaustion

## Invalidity for Lack of Enablement

Whether it was error for the district court to enter summary judgement of validity where patent-in-suit’s specification did not enable use of the invention at widths between 15 and 35nm without undue experimentation.

# STATEMENT OF THE CASE

U.S. Patent No. GSR 784,314 (the ‘314 patent) is invalid because claim 1 would require undue experimentation to practice, claim 1 does not recite length, an essential element, and is therefore not enable. Additionally, the limitations claim 3 do not allow switching speeds between 1 T Hz and 1.2 T Hz for all widths recited in independent claim 1, and therefore is invalid. [SOMETHING ABOUT EXHAUSTION ISSUE]. This case arose when Ballistic Holdings, Inc. wrongly sought to limit ConsumerCam’s use of the ‘314 patent implement blockchain technology. R. at Prompt 3. On October 5, 2015, ConsumerCam received authorization from Ballistic Memory to sell 2,000,000 to OffTheBlockChain, a Swedish Company. R. at Prompt 3-4. On October 28, 2015, the Swedish Government imposed a retroactive 50% tax on products sold for use in blockchain technology. R. at Prompt 4. This tax was to be paid by the seller. R. at Prompt 4. ConsumerCam paid the tax, taking a $1,000,000 loss. R. at Prompt 4. ConsumerCam reported to Ballistic Memory it would make the required payment do the considerable loss. R. at Prompt 4.

On December 3, 2016, Ballistic Holdings sued ConsumerCam for patent infringement in the United States District Court for the District of Pennyston. R. at Prompt 4. Discovery occurred in December 2016. R. at Prompt 4. After Discovery, ConsumerCam moved for summary judgement on two grounds: 1) the ‘314 patent is invalid under 35 U.S.C. § 112(a) for lack of enablement, and 2) Ballistic Holdings’ delivery of the devices to ConsumerCam exhausted its patent rights. R. at Prompt 5. The District Court denied ConsumerCam’s motion for summary judgement on the enablement issue but granted it regarding patent exhaustion. R. at Prompt 5. Ballistic Holdings and Ballistic Memory appealed summary judgement to the United States Court of Appeals for the Fedearl Circuit, arguing that the holding on patent exhaustion incorrect. ConsumerCam cross-appealed on the issue of enablement. R. at Prompt 5.

# STATEMENT OF THE FACTS

(DENNIS First, seth add to it)

# SUMMARY OF THE ARGUMENT

## Exhaustion

## Invalidity for Lack of Enablement

The district court’s denial of summary judgement of non-enablement should be reversed. The claims at hand are not enabled because they would require undue experimentation to make and use. The claims recited widths of 5 to 15nm achieving speeds of 1 T Hz when the length is 22nm, +/- 1nm. R. at Appx7. However, nanoribbon widths 15 to 35nm, require undue experimentation to achieve switching’s speeds of 1 T Hz to 1.2 T Hz because the means of manufacturing nanoribbons of the length required to achieve those switching speeds is not practicable. Thus, because undue experimentation would be required for some of claim 1, the entirety of the scope of the claim is not enabled and the claim is invalid. Denial of summary judgement for lack of enablement was clear error.

Furthermore, holding claim 3 valid is clear error because Fig. 2 clearly shows that not all widths can achieve switching speeds from 1 T Hz to 1.2 Hz at lengths “approximately 22nm”. Claim 3 is dependent upon claim 1. Claim 1 recites nanoribbons with a width of 5 to 35nm achieving switching speeds 1 T Hz to 1.2 T Hz. R. at Appx7. Claim 3 recites the nanoribbons are “approximately 22nm”. R. at Appx7. It is clear from Fig. 2 of the patent that only widths of 5 to 15nm can achieve switching speeds of 1 T Hz to 1.2 T Hz when the length is “22nm +/- 1nm”. R. at Appx7; Appx9. Thus claim 3 is invalid because not all widths recited in claim 1 can achieve the recited switching speeds at lengths “22nm +/- 1nm”. The district court’s denial of summary judgement for lack of enablement was improper and should be reversed.

# STANDARD OF REVIEW

## Exhaustion

## Invalidity for Lack of Enablement

Summary judgment is appropriate if there is no genuine dispute of material fact and the moving party is entitled to judgement as a matter of law. *AK Steel Corp. v. Sollac and Ugine*, 344 F.3d 1234, 1238 (Fed. Cir. 2003). Patents are presumed valid and invalidity must be proven by clear and convincing evidence. *Auto. Tech. Int’l, Inc. v. BMW of N. Am., Inc.*, 501 F.3d 1274, 1281 (Fed. Cir. 2007). Claim construction is a question of law and is reviewed *de novo.* *Interactive Gift Exp., Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001).Whether an invention is enabled under 35 U.S.C. § 112(a) and would have required undue experimentation to practice is a question of law reviewed *de novo*, based on underlying factual inquiries reviewed for clear error. *ALZA Corp. v. Andrz Pharm., LLC*, 603 F.3d 935, 940 (Fed. Cir. 2014).

# ARGUMENT

## Exhaustion

## The District Court Erred by Denying Summary Judgement of Non-Enablement

### Relevant Legal Stands or Claim Construction

Words of a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art at the time of invention. *Phillips v. AWH Corp*., 415 F.3d 1303, 1312 (Fed. Cir. 2005); *Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1358 (Fed. Cir. 2004) (stating “customary meaning” refers to the “customary meaning in [the] art field”). The claims should be construed in the context of the other claims, specification, and prosecution history. *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005); *Phillips*, 415 F.3d at 1313. Patents have a presumption of validity, and claims should, if possible, be interpreted to preserve validity. *Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 736 (Fed. Cir. 2013) (requiring obviousness to be proven by clear and convincing evidence because patents are presumed valid); *Rhine v. Casio, Inc.*, 183 F.3d 1342, 1345 (Fed. Cir. 1999).

### Claim 1 Does Not Impose or Recite Limitations Nanoribbon Length

Claim 1 does not recite any limitation regarding the length of the graphene nanoribbon. R. at Appx7. In contrast, claim 1 does explicitly recite limitations on nanoribbon width. The claims only recite limitations regarding length in claim 3, stating that the nanoribbon is “approximately 22nm”. R. at Appx7. Claim 1 should be construed to include any length, because the claims explicitly set a limit on width in claim 1, but do not recite limitations on length until claim 3, therefore claim 1 recites no limitation on length.

Ballistic may argue an implied limitation within claim 1, as the specification states that its not always practicable to manufacture nanoribbons less than 20nm. R. at Appx6. They may also point the testimony of its expert stating that manufacturing nanoribbons of lengths greater than 22nm is not practicable. R. at Appx3. However, if this limit is cannot be implied in claim 1 because it is limit is recited in claim 3: “the length of the graphene nanoribbon is approximately 22nm.” R. at Appx7. “Approximately 22nm” shows the implied the limitation on manufacturing nanoribbons less than 20nm or greater than 22nm.

### Claim 1 Recites a Requirement of Switching Speeds 1 T Hz to 1.2 T Hz

Claim 1 requires the graphene nanoribbon channel to achieve switching speeds 1 T Hz to 1.2 T Hz. Claim 1 recites, “the graphene nanoribbon channel is configured for ballistic conduction of charge carriers at switching speeds between 1 T Hz and 1.2 T Hz”. R. at Appx7. Nanoribbon configurations with switching speeds outside of 1 T Hz and 1.2 T Hz are not within the scope of claim 1. The Graphene Nanoribbon Field-Effect Transistor (“GNRFET”) still exhibits non-ballistic semi-conducting properties when operating at lower switching speeds, they fall outside the scope of the claim. R. at Appx7. The specification makes special note: “switching speeds exceeded 1.048 T Hz, a critical frequency milestone in the semiconductor industry. R. at Appx6. The specification states that it is this switching speed that is novel and the important innovation of the invention; the high switching speed is the goal of the GNRFET, therefore any configuration that does not have speeds within the range of 1 T Hz and 1.2 T Hz are outside the scope of claim 1 because they are not novel.

### Claim 3 Is Invalid Because the Full Scope of Width Recited in Claim 1 Cannot Achieve Recited Switching Speeds at Lengths of “Approximately 22nm”

Claim 1 does not recite any limitations regarding length of the graphene nanoribbons, only requiring a width between 5 and 35nm, and “configured for” switching speeds between 1 and 1.2 T Hz. R. at Appx7. Fig. 2 shows that lengths within plus or minus 1nm (+/- 1nm) of 22nm when configured with widths from 15 to 35nm cannot achieve switching speeds above 1 T Hz. Claim 3 is dependent upon claim 1, which is states the nanoribbon channels are configured for switching speeds of 1 T Hz to 1.2 T Hz. R. at Appx7. However as shown in Fig. 2, widths of 15 to 35nm are not configured for switching speeds between 1 T Hz and 1.2 T Hz with lengths of 22nm +/- 1nm as recited in claim 1, only widths of 5 to 15nm. R. at Appx7, Appx9. Thus, claim 1 recites widths of 5 to 35nm, claim 3 is invalid because speeds of 1 T Hz to 1.2 T Hz can only be achieved when length is 22nm +/- 1nm for widths 5 to 15nm.

Ballistic may argue that the meaning of “approximately” as used in claim 3 is broader than “+/- 1nm” and that claim 3 is not invalid as shown by Fig. 2. Here, such an interpretation to preserve validity is impossible. The specification never recites “approximately 22nm” only “22nm +/- 1nm”, showing that “approximately 22nm” must mean “22nm +/- 1nm”. R. at Appx6, Appx7, Appx9. Terms must be considered in the context as they are used in the specification and claims. *Ortho-McNeil Pharm., Inc. v. Caraco Pharm. Labs., Ltd.*, 476 F.3d 1321, 1326 (Fed. Cir. 2007).

“Approximately” is used exclusively in the context of switching speed: “approximately 1 T Hz”. R. at Appx7. Perhaps “approximately 1 T Hz” means 1.048 T Hz as used in the specification, or a broader range as recited in claim 1, but the meaning of “approximately 1 T Hz” is not at issue here. R. at Appx6, Appx7. Ballistic may argue that because “approximately” is used in the specification in reference to 1 T Hz, it is used generally, showing that approximately has a broader meaning than “+/- 1”. While “approximately” can mean multiple things, it must be read in its context. Here, it must be read in relation to the measurement to which it describes. One imagines a broad range when reading “approximately one trillion hertz”, perhaps hundreds or thousands of hertz above or below one trillion, because hundreds or thousands in view of one trillion is trivial. That broadness is circumscribed when used in reference to nanometers, an imperceptivity small and precise measurement. Thus, approximately must have a narrower meaning when applied to nanometers. The specification repeated refers to “22nm +/- 1nm”, giving no other clues to meaning of approximate in this context. This is the only rational meaning of approximately in the context of 22nm is “+/- 1nm”. As previously stated, because the full range of widths recited in claim 1 cannot reach switching speed between 1 T Hz and 1.2 T Hz when the length of the nanoribbon is “approximately 22nm” claim 3 is invalid.

In *Ortho-McNeil Pharm., Inc. v. Caraco Pharm. Labs., Ltd.*, 476 F.3d 1321 (Fed. Circ. 2007), the court determined the meaning of “about 1:5”. The appellant argued the proper construction was 1:5, subject to measuring errors of 5 or 10%. The appellee argued the meaning encompasses a range of ratios of at least 1:3.6 to 1:7.1. The court held “about 1:5” encompassed a range no greater than 1:3.6 to 1:71. *Id.* at 1324. The court reached this conclusion relying on the claims and specification. *Id.* In *Ortho-McNeil*, the court noted although a range of values could have been claimed (about 1:1 to about 1:5), the patentee a choose a specific ratio. The dichotomy between the specific ratio and a broader range of other claims point to a narrow scope for that limitation. *Id.* at 1327-38. Likewise, here, Ballistic as claimed a specific measurement: “approximately 22nm”. In light of the lack of limitation on length in claim, “approximately 22nm” should be construed to a tight range close to 22nm: 22nm +/- 1nm. It follows that with this construction, claim 3 is invalid because widths of 15 to 35nm cannot reach the recited switching speeds when length is approximately 22nm.

### Relevant Legal Standards of Enablement

35 U.S.C. § 112(a) states, “[t]he specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art … to make and use the same.” The specification must enable the full scope of the claims, meaning it must enable all embodiments of a claim. *Genentech*, 108 F.3d at 1365; *Sitrick v. Dreamworks, LLC*, 516 F.3d 993, 1000 (Fed. Cir. 2008) (ruling because the asserted claims were broad enough to cover both movies and video games, it must enable both). The scope of claims must bear reasonable correlation to the scope of enablement within the specification. *In re Fisher*, 427 F.2d 833, 839 (C.C.P.A. 1970). The specification need not disclose what is well known in the art but must disclose the novel aspects of the invention. *Genentech*, 108 F.3d at 1366. Claims missing essential elements, are also invalid for non-enablement. *In re Mayhew*, 527 F.2d 1229, 1233 (C.C.P.A. 1976) (holding concluding that claims that fail to recite the use of a cooling zone, an essential element, are not enabled).

An enabling patent specification must allow a person of reasonable skill in the art to make and use the full scope of the claimed invention without undue experimentation. *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1385 (Fed. Cir. 1997); *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993). Some experimentation is allowed and even expected, however the amount of experimentation must not be undue. *ALZA Corp. v. Andrx Pharm., LLC*, 603 F.3d 935, 940 (Fed. Cir. 2010); *In re Wands*, 858 F.2d 731, 736-37 (Fed. Cir. 1988).

The Federal Circuit set forth factors in *In re Wands* to consider in determining whether undue experimentation would be required:1) quantity of experimentation necessary; 2) amount of direction or guidance presented; 3) presence or absence of working examples; 4) nature of the invention; 5) state of the prior art; 6) relative skill of those in art; 7); predictability or unpredictability of the art; 8) breadth of the claims. *In re Wands*, 858 F.2d at 737. Each factor should (but not required) be considered to determine if a disclosure is sufficiently enabled. *Enzo Biochem, Inc. v. Calgene, Inc.*, 188 F.3d 1371 (Fed. Cir. 1999).

### Claim 1 is Not Enabled for the Full Scope of the Invention at All Claimed Widths and Lengths Requires Undue Experimentation

#### Practicing the invention at all lengths would require undue experimentation.

The specification does not enable switching speeds at all lengths and widths as it would require undue experimentation. The specification describes achieving switching speeds over 1 T Hz when width is greater than 5nm and less than 15nm when length is approximately 22nm (5nm < W < 15nm; L approximately 22nm). R. at Appx6, Appx9. The specification states that the width and length are tuned to “specific values”. R. at Appx6. Within the claimed range of width, a there is a smaller range of length that will allow for switching speeds of 1 T Hz or higher. As shown in Fig. 2, for widths between 5 and 15nm, a length of 22nm achieves switching speed of 1 T Hz or higher. R. at Appx9. However, for over widths over 15nm, lengths of 22nm do not achieve the desired switching speed. R. at Appx9. Thus widths 5 to 15nm are tuned to length of 22nm, but widths greater than 15nm are not. Ballistic’s expert, Professor Hendricks, notes in his declaration that “[a]s for 15nm < W < 35nm, a person of skill in the art would have been able to find the operative range of L through routine experimentation”. R. at Appx25. Or in other words, he claims it would not require undue experimentation.

Ballistic’s expert states such experimentation would likely require adjusting the length, as a person of ordinary skill in the art would recognize that switching speed increases as length decreases. R. at Appx25. Suggesting that all one would need make and use the claimed invention at widths between 15 and 35nm would be to vary the length. However, this variation of length would require undue experimentation. The specification admits that it is not practicable to manufacture graphene nanoribbons shorter than 20nm. R. at Appx6. Professor Hendricks also explains that a person of reasonable skill in the art would be aware that it is not practicable to manufacture graphene nanoribbons “having lengths significantly greater than 22nm”. R. at Appx3. If a person of ordinary skill in the art cannot manufacture the nanoribbons required to experiment because the knowledge to do so is outside of the current state of the art, making and using the invention would require undue experimentation, and the claim is invalid for non-enablement.

The specification need not state what is well known in the art, but it must supply the novel aspects of the invention. *Genentech*, 108 F.3d at 1366. The use of this invention at widths between 15 and 35nm is novel. The specification and Ballistic’s expert admit the person of ordinary skill in the art would not know how to manufacture the graphene nanoribbons at the lengths required to make and use the invention. The specification must do more than provide a starting point for further research. *See* *Genentech*, 108 F.3d at 1366 (stating that when there is no disclosure of how to carry out a process, undue experimentation is required, and there is lack of enablement). The invention must be enabled at the time of filing. *ALZA*, 603 F.3d at 940. According to Ballistic in the specification no one knew how to manufacture the lengths required to enable use of widths between 15 and 35nm. R. at Appx6. Thus, the invention is not enabled across its entire scope because at the time of filing, it was not known how to make the invention and achieve switching speeds of 1 T Hz or higher at all widths. The conclusion of the district court that the claims were enabled was clear error, and summary judgement of invalidity for lack of enablement should not have been denied.

#### The wands factors suggest practicing the full scope of the claims would require undue experimentation

The third *Wands* factor, existence of working examples is also relevant here. The specification and Fig. 2 give limited examples, only showing the invention working at 22nm +/- 1nm. R. at Appx6, Appx9. There are no examples of the invention working at widths beyond 15nm. In the fifth factor, the court considers the state of the prior art. Both the specification and Ballistics’ expert acknowledges that it is not practicable to manufacture nanoribbons shorter than 20nm or significantly longer than 22nm. R. at Appx3, Appx6. However, as the desired switching speed of 1 T Hz or higher cannot be achieved at lengths of 22nm +/- 1nm for widths 15 nm to 35 nm. R. at Appx9. The technique required to practice the full scope of the invention are not well known in the art and the specification does not disclose how the invention would be practice in such instances. These *Wands* factors strongly suggest that undue experimentation would be required to practice the full scope of the invention and the claims are invalid for lack of enablement.

#### Claim 1 is not enabled because length is an essential element

The length of the nanoribbon is an essential element of the invention. A specific width is not enough to create ballistic conduction within the nanoribbon channel. The specification recites that length and widths are tuned to specific values. R. at Appx6. Fig. 2 of the specification makes clear how important the length is to achieve high switching speeds. *See* R. at Appx9. Ballistic’s expert states “switching speed increases as L is decreased”. Length of the nanoribbon is of great importance to the invention, and therefore a critical element. As claim 1 does not recite a requirement of length, it is not enabled. *See In re Mayhew*, 527 F.2d at 1233. In *In re Mayhew*, a method for producing corrosion-resistant, iron-zinc alloy coating required cooling baths. These baths were essential, and the claims failed to recite a cooling zone in relation to the baths. The claims were held invalid for lack of enablement. Here, claim 1 does not recite length, which is essential to achieving ballistic conduction within the nanoribbon channel. Thus, claim 1 is not enabled because it is missing an essential element.

# CONCLUSION

For the foregoing reasons the district court’s denial of summary judgement for lack of enablement was clear error because the full scope of the asserted claims is not enabled. Appellees respectfully request that the Court should reverse the district court’s grant of summary judgement of validity of the ‘314 patent.

CERTIFICATE OF SERVICE

I hereby certify that on this date, the 19 of February, 2019, a copy of the foregoing brief was served on Opposing Counsel via electronic delivery.

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Competitor Numbers