
IN THE UNITED STATES DISTRICT COURT
DISTRICT OF UTAH

POLAR ELECTRO OY,

Plaintiff,

v.

SUUNTO OY, AMER SPORTS WINTER &
OUTDOOR d/b/a/ SUUNTO USA, and
FIRSTBEAT TECHNOLOGIES OY,

Defendants.

**MEMORANDUM DECISION
AND ORDER CONSTRUING
CALCULATING UNIT**

Case No. 1:17-cv-0139 CW

Judge Clark Waddoups

INTRODUCTION

Plaintiff Polar Electro Oy (“Polar”) owns a patent for determining a person’s energy consumption during exercise based on a person’s fitness level (the ‘227 patent). Polar asserts that Firstbeat Technologies Oy (“Firstbeat”) has infringed the ‘227 patent. On December 11, 2019, the court issued a memorandum decision construing certain terms pursuant to *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995), *aff’d*, 517 U.S. 370 (1996). It reserved ruling, however, on the term “calculating unit for calculating” until after it received expert evidence on what that term means for one of ordinary skill in the art. This memorandum decision now sets forth the court’s claim construction for that term.

BACKGROUND

The patent at issue is U.S. Patent No. 6,537,227. As stated in the court's December 2019 decision, the '227 patent focuses on an improved method for determining a person's energy consumption during exercise that "take[s] into account that a fit person performs a larger amount of work at a given heart rate level than an unfit person," and that energy consumption is thereby impacted. '227 patent, col. 1:42-45 (ECF No. 205-1). To accomplish this objective, Claims 21 and 22¹ specify a calculating unit for calculating is a necessary component.

Polar contends the term may be understood according to its plain meaning, and that it is not in a means-plus-function format. Joint Claim Chart, at 4 (ECF No. 250).² Polar further contends "'calculating unit' connotes a structure for calculating. This is evident in the language itself which states that the calculating unit does calculating. The claim language thus recites a unit that calculates." *Id.* In supplemental briefing, Polar stated that, to the extent the term requires construction, it should be construed to mean "a computer or electronic component configured to calculate." Polar Supp. Brief, at 10 (ECF No. 369).

Firstbeat contends the term "is a means plus function term." Joint Claim Chart, at 4 (ECF No. 250). In the Joint Claim Chart, Firstbeat initially asserted, the structure is "limited to 'central

¹ The '227 patent has undergone three re-examinations that modified the original claims. The claims from the second reexamination are at issue in this memorandum decision. The third reexamination confirmed the patentability of those claims and added new claims. *See* '227 patent, Re-exam Cert. C3, col. 1:15-19 (ECF No. 205-4).

² When the court cites to a document in the record, the pincite refers to the ECF page number at the top of the page and not to any page number at the bottom of the page.

processor 524,” and the function is “calculating an assessment of the person’s energy consumption.”

Id. In supplemental briefing, Firstbeat notes that “unit for” is a nonce word per MPEP § 2181, and therefore is akin to using the word “means.” Firstbeat Supp. Brief, at 4–5 (ECF No. 376). Firstbeat then contends the ‘227 patent fails to disclose a structure for the “calculating unit,” so the claim fails.

Id. at 10–12. Alternatively, if the court finds a structure is present, Firstbeat contends the structure “in claim 21 is a central processing unit (CPU) programmed to perform both of the algorithms in formulae (4) and (5) of the ‘227 patent.” *Id.* at 14.

When construing a patent, “the words of a claim are generally given their ordinary and customary meaning, which is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Ruckus Wireless, Inc. v. Innovative Wireless Solutions, LLC*, 824 F.3d 999, 1002 (Fed. Cir. 2016) (quotations, citations, and alteration omitted). Because the court lacked sufficient information to know whether “calculating unit for calculating” had a customary meaning to one of ordinary skill in the art, the court requested that Polar and Firstbeat provide expert evidence on that issue.

Declaration of Sayfe Kiaei

Polar submitted the Declaration of Sayfe Kiaei. Polar retained Dr. Kiaei as a technical expert. Dr. Kiaei has a doctorate in Electrical and Computer Engineering, and is the Motorola Endowed Chair Professor in Electronics and Integrated Circuits at the School of Electrical, Computer and Energy Engineering at Arizona State University. Kiaei Decl., ¶ 3 (ECF No. 402); Curriculum Vitae (“CV”), Appendix B (ECF No. 402 at 13). His fields of specialization include, in part, “Analog & Digital Integrated Circuits, Sensors, Bio-Electronics, [and] Power Management IC.” CV,

Appendix B (ECF No. 402 at 13). He has “graduated over 100 MS and PhD students working under [his] supervision” during his 30 years in this field. Kiaei Decl., ¶¶ 5, 6. He also has “several patents related to bio-electronics, heart monitoring, and electronics,” and has published extensive papers on the topics of electronics, computing, and integrated circuits. *Id.* ¶¶ 6, 11, Appendix A. The court concludes Dr. Kiaei is well-qualified to opine as a person skilled in the art at the time of the relevant invention.

Based on Dr. Kiaei’s knowledge and experience over the past 30 years, he declared that “[a] calculating unit for calculating’ does have a known meaning” to one skilled in the art. *Id.* ¶ 19. Electronic systems, including bio-electronic systems “have calculating units that perform calculations.” *Id.* ¶ 20. They “take the inputs and calculate results from the inputs.” *Id.* In simple terms, “[c]alculating units are electronic devices that perform[] calculation[s].” *Id.* ¶ 21. They may take a variety of different forms such as “analog electronics, digital electronics, processor, microprocessor, computer, dedicated application specific integrated circuit (ASIC), dedicated electronics, neural network, software, or other forms.” *Id.*

In the world of electronics, a calculating unit that performs calculations is a key component, and “is well-known terminology for a person skilled in the art.” *Id.* ¶ 27. In Dr. Kiaei’s “opinion, any undergraduate student in electrical engineering, computer engineering, or computer science would be familiar with this terminology,” and one skilled in the art would “select the appropriate architecture, components and electronics for the calculating unit.” *Id.* ¶¶ 27 28. Dr. Kiaei also noted that “calculating unit” is a common term used in other patents. *Id.* ¶ 34. Within the ‘227 patent, Dr. Kiaei identified multiple “structures for calculating the person’s energy consumption

during exercise.” *Id.* ¶¶ 32–33. In his expert opinion, the ‘227 patent uses the term “in its ordinary and accepted manner,” and it connotes a structure. *Id.* ¶ 35.

Declaration of Thomas Blackadar

Firstbeat submitted the Declaration of Thomas Blackadar. Firstbeat retained Mr. Blackadar as a technical expert. In 1981, Mr. Blackadar obtained a Bachelor of Science degree in Biomedical and Electrical Engineering. Blackadar Decl., ¶ 4 (ECF No. 403-1). “Since then, [he has] devoted [his] career to the field of communications, wearable devices, sensor systems, and medical devices.” *Id.* For many years, Mr. Blackadar has “been working with sensor systems for collecting and analyzing data relating to an individual’s physiological state.” *Id.* ¶ 5. He has acted as a consultant and mentor to both professionals and students. *Id.* His “primary focus,” however, “has related to developing, identifying, demonstrating, testing, and consulting on wearable devices and sensor systems embodied in complex hardware and software products.” *Id.*

In particular, Mr. Blackadar has been involved in the following technologies:

near real-time data delivery for vital signs monitors, wearable accurate speed distance watch and sensors, real-time vital signs monitoring for broadcast TV, low power accelerometers, lower power electronic systems, personal area wireless networks, and Warfighter Physiological Status Monitors for determining human stress levels.

Id. ¶ 6. Additionally, he has “provided to customers advanced electrocardiogram (“ECG”) monitors, sensor data-fusion solutions, advanced low-power networking topologies designs, and design review services.” *Id.* He also has published works and is the “named inventor on 31 U.S. patents in the field of wearable devices and/or sensor systems for monitoring user activity.” *Id.* ¶¶ 10–11. Several of the patents are “in health monitors, wearable bandages and telemetry.” *Id.* ¶ 5. The court

concludes Mr. Blackadar is well-qualified to opine as a person skilled in the art at the time of the relevant invention.

Mr. Blackadar notes he has “*built* special purpose calculating units that had no other purpose than to do a specific polynomial calculation.” *Id.* ¶ 20 (emphasis added). When reviewing the ‘227 patent, however, he “find[s] no structure from which to draw from,” and a person skilled in the art also “would not find any structure from which to draw from.” *Id.* ¶ 21. Consequently, such a person “would not understand that the inventors of the ‘227 patent intended to include any specific structure that manipulates data or obtains its final results.” *Id.* A person skilled in the art “would therefore be required to design the algorithms, silicon FPGA, PLA, or some such *device*, without any guidance from the specification of the ‘227 patent.” *Id.* ¶ 22 (emphasis added). Even when the specification “attempts to describe neural networks,” Mr. Blackadar declared “the inputs and outputs do not adequately describe how data is moved and processed through the system.” *Id.*

In Mr. Blackadar’s opinion, “the ‘227 patent intended ‘the calculating unit’ to be the central processing unit 524,” but the term has no “special connotation” to one skilled in the art. *Id.* ¶¶ 26 27. This is so, according to Mr. Blackadar, because there are many types of “calculating units.” *See id.* ¶¶ 27 30 (listing different types of calculating units). Thus, if an individual “were to approach a [person skilled in the art] and ask to be *provided* with a ‘calculating unit,’” that person would have the following types of questions:

- (1) what type of calculating unit;
- (2) what is it being used for;
- (3) what types of demands will be made of the calculating unit, *e.g.*, what processing power should the calculating unit have;
- (4) is the calculating unit going to be used in combination with any software or other hardware;
- (5) is the calculating unit going to be software based

and implemented on a processor; and/or (6) does the calculating unit need to be done in discrete logic.

Id. ¶ 32 (emphasis added). Hence, Mr. Blackadar opined that “a ‘calculating unit’ does not connote only a single definition of a physical structure. Rather, it can mean multiple things depending on the context in which it is being used.” *Id.* ¶ 33. Notably, however, Mr. Blackadar’s declaration does not contain a question about what is a “calculating unit?”

ANALYSIS

I. STANDARD FOR CLAIM CONSTRUCTION

“The purpose of claim construction is to ‘determine the meaning and scope of the patent claims asserted to be infringed.’” *02 Micro Int’l, Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008) (quoting *Markman*, 52 F.3d at 976) (alteration omitted). Disputes about the meaning and scope of a claim must be resolved by the court, not the jury. *See id.* A court “must begin with the words of the claims themselves.” *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 457 F.3d 1293, 1301 (Fed Cir. 2006) (citation omitted). The court then construes a term based on its “ordinary and customary meaning . . . to a person of ordinary skill in the art . . . at the time of the invention.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (citation omitted). A court views the term “in the context of the entire patent, including the specification,” as well as the prosecution history. *Amgen Inc.*, 457 F.3d at 1301 (quotations and citations omitted). When needed, a court also may use extrinsic evidence to determine the meaning of a term. *Id.* (citations omitted).

II. CLAIM CONSTRUCTION

To determine if “calculating unit for calculating” has an ordinary and customary meaning to one of ordinary skill in the art, the court relies upon the declarations submitted by two experts in the

relevant field. Although Dr. Kiaei opines the term does connote a structure and Mr. Blackadar opines it does not connote a structure, Mr. Blackadar's opinion appears to be based on definiteness rather than construction.

In *Idenix Pharmaceuticals LLC v. Gilead Sciences Inc.*, 941 F.3d 1149 (Fed. Cir. 2019), the Court addressed whether a patent was enabled and definite to inform those in the art about the scope of the patent. The trial court had construed the terms of the patent and then held a two-week trial. *See id.* at 1153, 1159. Following the trial, the court granted judgment as a matter of law and invalidated the patent for lack of enablement. *Id.* at 1153. On appeal, issues about undue experimentation, whether the working examples were present, and the degree of guidance were addressed. Because claim construction had not been challenged, such construction then informed the Court about whether the patent was enabled and definite. *See id.* at 1156 n.3, 1159. The Court affirmed the trial court's decision that the patent was invalid for lack of enablement. *Id.* at 1153, 1165.

Much of Mr. Blackadar's declaration pertains to the issues raised in *Idenix*. The issue before the court, however, is not whether a figure provides sufficient guidance about how to practice the patent or whether the specification adequately describes how data is moved and processed in the system. Instead, the only issue before the court is how "calculating unit for calculating" should be construed.

When discussing a calculating unit, Mr. Blackadar reported he built such a device. Moreover, he identified a wide variety of calculating units, and then posed multiple questions necessary to design a calculating unit for a particular application. Each question presumed an

understanding, however, about what a calculating unit is and that it has structure. Thus, rather than rebut Dr. Kiaei's declaration, Mr. Blackadar's declaration supports that a "calculating unit for calculating" does have an ordinary and customary meaning in the art, and what varies is the type of structure.

As stated above, the purpose of claim construction is to determine the meaning and scope of the patent claims at issue. "A determination that a claim term 'needs no construction' or has the 'plain and ordinary meaning' may be inadequate when a term has more than one 'ordinary' meaning or when reliance on a term's 'ordinary' meaning does not resolve the parties' dispute." *02 Micro Int'l, Ltd.*, 521 F.3d at 1361. In this case, it is not sufficient to state the term is understood by its plain meaning due to the many types of calculating units. Although one with ordinary skill in the art knows what a "calculating unit" is, the court must still "determine what claim scope is appropriate in the context of the patent[]-in-suit." *Id.* This fact is supported by the other patents Polar and Dr. Kiaei cited because each states the type of calculating unit claimed by the respective patent.

An abacus and a slide rule are calculating units. The '227 patent, however, does not employ that type of calculating unit. Instead, the '227 patent refers to neural networks, central processors with exemplary algorithms, software, specific dedicated hardware such as ASIC, and other similar electronics. '227 patent, col. 8:45-48, col. 10:6-28 (ECF No. 205-1). Such scope is broader than the constructions proffered by Firstbeat. Accordingly, the court construes "calculating unit for calculating" to mean "a computer or electronic component configured to calculate." Whether the patent is enabled and sufficiently definite based on that construction is an issue for another day.

CONCLUSION

For the reasons stated above, the court construes “calculating unit for calculating” to mean “a computer or electronic component configured to calculate.” Claim construction is now complete. Accordingly, the court refers the parties to the Order re: Scheduling Matters (ECF No. 386) entered on September 30, 2019, which details the deadlines for expert reports, expert discovery, and dispositive motions.

DATED this 11th day of August, 2020.

BY THE COURT:

A handwritten signature in blue ink, appearing to read "Clark Waddoups", is written over a horizontal line.

Clark Waddoups
United States District Court