IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

AUDIO EVOLUTION DIAGNOSTICS, INC.,	:	
Plaintiff,	:	
v.	:	C.A. No. 16-1280-LPS
AMD GLOBAL TELEMEDICINE, INC.,	:	
Defendant.	:	

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MEMORANDUM OPINION

May 22, 2018
Wilmington, Delaware

STARK, U.S. District Judge:

Plaintiff Audio Evolution Diagnostics, Inc. ("Plaintiff" or "AED") filed suit against Defendant AMD Global Telemedicine, Inc. ("Defendant" or "AMD"), alleging infringement of U.S. Patent Nos. 8,920,343 and 8,870,791. The patents generally describe and claim a system and apparatus for acquiring, processing, and transmitting physiological sounds and auditory signals for use in telemedicine.

Presently before the Court is the issue of claim construction. The parties submitted technology tutorials (*see* D.I. 50, 51) and briefs (*see* D.I. 52, 53, 60, 62). The Court held a claim construction hearing on March 26, 2018. (*See* D.I. 76 ("Tr."))[1]

I. LEGAL STANDARDS

The ultimate question of the proper construction of a patent is a question of law. *See Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 837 (2015) (citing *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 388-91 (1996)). "It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (internal quotation marks omitted). "[T]here is no magic formula or catechism for conducting claim construction." *Id.* at 1324. Instead, the court is free to attach the appropriate weight to appropriate sources "in light of the statutes and policies that inform patent law." *Id.*

"[T]he words of a claim are generally given their ordinary and customary meaning . . .

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[1]In response to Plaintiff's request to present live testimony from the inventor of the patents-in-suit, the Court granted both parties permission to present testimony at the claim construction hearing. (*See* D.I. 64, 65) At the hearing, Plaintiff stated that it no longer intended to call a witness and would instead rely on portions of deposition testimony cited in its briefing. (Tr. at 3)

[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, i.e., as of the effective filing date of the patent application." *Id.* at 1312-13 (internal citations and quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to the ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). The patent specification "is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

While "the claims themselves provide substantial guidance as to the meaning of particular claim terms," the context of the surrounding words of the claim must also be considered. *Phillips*, 415 F.3d at 1314. Furthermore, "[o]ther claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment . . . [b]ecause claim terms are normally used consistently throughout the patent . . . ." *Id.* (internal citation omitted).

It is likewise true that "[d]ifferences among claims can also be a useful guide . . . . For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim." *Id.* at 1314-15 (internal citation omitted). This "presumption is especially strong when the limitation in dispute is the only meaningful difference between an independent and dependent claim, and one party is urging that the limitation in the dependent claim should be read into the independent claim." *SunRace Roots Enter. Co., Ltd. v. SRAM Corp.*, 336 F.3d 1298, 1303 (Fed. Cir. 2003).

It is also possible that "the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs." *Phillips*, 415 F.3d at 1316. It bears emphasis that "[e]ven

when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction." *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1372 (Fed. Cir. 2014) (quoting *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004)) (internal quotation marks omitted).

In addition to the specification, a court "should also consider the patent's prosecution history, if it is in evidence." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996). The prosecution history, which is "intrinsic evidence," "consists of the complete record of the proceedings before the PTO [Patent and Trademark Office] and includes the prior art cited during the examination of the patent." *Phillips*, 415 F.3d at 1317. "[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Id.*

In some cases, "the district court will need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period." *Teva*, 135 S. Ct. at 841. Extrinsic evidence "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Markman*, 52 F.3d at 980. For instance, technical dictionaries can assist the court in determining the meaning of a term to those of skill in the relevant art because such dictionaries "endeavor to collect the accepted meanings of terms used in various fields of science and technology." *Phillips*, 415 F.3d

at 1318. In addition, expert testimony can be useful "to ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field." *Id.* Nonetheless, courts must not lose sight of the fact that "expert reports and testimony [are] generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence." *Id.* Overall, while extrinsic evidence "may be useful" to the court, it is "less reliable" than intrinsic evidence, and its consideration "is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." *Id.* at 1318-19. Where the intrinsic record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper. *See Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308 (Fed. Cir. 1999) (citing *Vitronics*, 90 F.3d at 1583).

Finally, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GmbH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (quoting *Modine Mfg. Co. v. U.S. Int'l Trade Comm'n*, 75 F.3d 1545, 1550 (Fed. Cir. 1996)).

II. CONSTRUCTION OF DISPUTED TERMS[2]

A. "Physiological sounds"[3]

Plaintiff plain and ordinary meaning, "acoustic signals generated by human organs"
Defendant "Human organ sounds that are of interest to a medical professional such that they are desired to be captured (acquired) and analyzed/processed (and generally transmitted to a remote location) in connection with medical diagnosis and/or treatment"
Court "sounds generated by human organs that are intended to be captured for medical diagnosis"

For its proposed construction, Plaintiff points to dependent claim 33 of the '343 patent, which defines physiological sounds as "sounds generated by an organ in a frequency range up to 20,000 Hz inclusive." According to Plaintiff, Defendant's construction adds unnecessary, restrictive limitations to the claims that make them confusing to a jury. (D.I. 62 at 5)

Defendant contends that the breadth of Plaintiff's construction is unsupported, as the file history makes clear that the term is "intended to be construed as not just any sound a human body may make, but those sounds inextricably linked to and necessary for the medical diagnosis and treatment that is being sought." (D.I. 52 at 8) Specifically, Defendant contends that "physiological sounds" do not include the sounds associated with "the technician or nurse

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[2]In its responsive claim construction brief, AMD stated that it no longer disputes AED's construction of two terms – "measured frequency and measured energy," recited in claims 7 and 28 of the '343 patent, and "qualitative energy," recited in claims 13 and 38 of the '343 patent and claim 24 of the '791 patent. (D.I. 60 at 2 n.1) At the claim construction hearing, the parties agreed that no construction was necessary for the terms "first apparatus" and "second apparatus." (Tr. at 29-30) The Court will adopt all of the agreed-upon constructions.

[3]This term appears in claims 1, 6, 7, 10, 11, 13, 15, 19, 28, 29, 32, 33, 34, 35, 39, 40, and 43 of the '343 patent and claims 1, 3, 8, 17, 22, 24, and 25 of the '791 patent.

speaking to the remote doctor through a microphone," which are the sounds widely available in simple video conferencing. (D.I. 60 at 4) Instead, "physiological sounds" as used in the patents consist only of sounds "collected and analyzed by the software ***for medical purposes*** that [are] pertinent to the underlying patent claims." (*Id.*)[4]

In the Court's view, a person of ordinary skill in the art ("POSA") would not read the term in the manner proposed by either side. The Court agrees with Defendant that "physiological sounds" as used in the patent relates only to sounds intended to be analyzed for medical purposes, and does not include (for example) speech between local and remote doctors. *See* '791 pat. at 4:3-5 ("[O]rgans in the human body emit characteristic physiologic signals when they are functioning in the absence of pathology."); *see id.* at 4:40-43 ("[T]his disclosure relates to a system for recording and analyzing physiologic sounds to provide the clinician with information relating to functional status of the organ being examined."). Consistent with this conclusion, multiple dependent claims of the '343 patent define physiological signals as "sounds generated by an organ." '343 patent at cls. 6, 19, 24, 33, 35.

Plaintiff conceded at the claim construction hearing that its definition was not meant to capture "something unrelated to medical diagnosis" and that "there is no intent otherwise than for in a telemedicine context." (Tr. at 12) Thus, the Court's construction encompasses sounds intended for medical diagnosis, but does not otherwise capture speech. For example, as the parties recognized, "the larynx is an organ" and, thus, sounds from the larynx ***could*** be intended

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[4]Defendant also contends that Plaintiff "disavowed any other type of voice or sound system, sound pickup and transmission that is not related to the function of an organ." (Tr. at 15-16) But Defendant falls far short of identifying a clear and unambiguous disclaimer or disavowal of claim scope.

for medical diagnosis, and thus, those sounds would be within the scope of the claims. (*Id.* at 20, 22) However, to the extent the larynx sounds are "just simply transmitt[ed] . . . for nondiagnostic purposes, . . . that is not included in the claim." (*Id.* at 20) As Plaintiff stated, "the intent of the invention was not to pick up speech." (*Id.* at 23)

B. "sensor"[5]

Plaintiff plain and ordinary meaning, "transducer"
Defendant "a sound pick up device, including a diaphragm that is designed to vibrate in response to picked up sounds. The sensor is designed to be placed ON a patient to pick up physiologic sounds from one or more patient internal organs which are converted into electrical signals for further analysis and processing by a processing unit"
Court "a transducer designed to detect physiological sounds"

Plaintiff contends a "sensor" is a transducer. Plaintiff points to the '343 patent's recitation that the "system includes a transducer 1, such as an analogue condenser microphone, which can be placed at various sites around the patient to listen to sounds emitted by different organs." (D.I. 53 at 12) Plaintiff also cites to an IEEE dictionary which, in defining transducer, recites that "[n]early all transducers are sensors of some kind." (D.I. 62 at 9) Moreover, Plaintiff contends Defendant's proposal is both redundant – as it defines the sensor in terms of a diaphragm, a component which is already recited in the claims – and incorrect – as it requires the sensor to be placed "ON a patient," which improperly narrows claim scope. (*Id.* at 8-9)

Defendant counters that the diaphragm is "a necessary component in deciphering the

[5] This term appears in claims 1, 10, 11, 15, 23, 26, 29, 39, 40, 48, 49, 50, and 52 of the '343 patent and claims 1, 8, 17, and 22 of the '791 patent.

claim term as it relates to this technology" and, further, the construction of "sensor" must reflect the requirement of placement of the sensor on the human body. (D.I. 52 at 16) To Defendant, "a sensor is not simply anything that picks up sound or changes its energy in some way or converts energy from one form to another." (*Id.*) Instead, according to Defendant, the construction must limit a sensor to "medically relevant, physiologic sounds." (D.I. 60 at 6)

In the Court's view, the specification uses "sensor" and "transducer" interchangeably. *See* '343 patent at 10:1 ("[T]he ***sensors 1*** are affixed to any part of the body surface according to the discretion of the clinician.") (emphasis added); *id.* at 6:20-23 ("This system includes a ***transducer 1*** . . . which can be placed at various sites around the patient to listen to sounds emitted by different organs.") (emphasis added); *id.* at Abstract ("The system includes a plurality of transducers placed on the body surface at the operator's discretion."); *id.* at 2:3-5 ("The system disclosed contains a modifiable number of independent transducers to record physiologic sounds at any particular location, which the operator desires.").

The Court further agrees that construing "sensor" to include a diaphragm and to be placed on a patient is redundant, as the claims themselves specify these requirements (for those claims for which they are, in fact, requirements). *See, e.g., id.* at claim 1 ("a sensor comprising a diaphragm, wherein said sensor is configured to be positioned on a body surface, . . . "); *id.* at claim 10 ("each sensor of said plurality of sensors comprises a corresponding diaphragm . . ."); *id.* at 3:64-66 ("[T]he system includes a plurality of transducers, such as microphones embedded in small rubber tubes coupled to a thin plastic diaphragm(s) . . . ."); *id.* at Abstract ("The system includes a plurality of transducers placed on the body surface . . . "). The only scenario in which the sensor is not positioned on a patient is in the context of a "test transducer," which is

employed to "record[] sounds from sources that might corrupt the signal being recorded from the organ of interest." *Id.* at 7:65-67; *see also id.* at 7:64-65 ("This test transducer 1 may be affixed to body surface or exposed to the ambient environment."). However, consistent with the Court's construction of "physiological sounds," the Court agrees with Defendant that the "sensor" is limited to detecting medically relevant sounds. In the context of sensors being used to detect human organ sounds, at least one sensor must be affixed to the patient's body. *See* '343 patent at cls. 15, 39 ("An apparatus for acquiring and processing physiological sounds comprising: a plurality of sensors . . . , wherein ***at least one*** sensor is configured to be positioned on a body surface . . .") (emphasis added). By omitting "on a patient" from the construction of "sensor," the Court is not eliminating this limitation; if a claim requires at least one sensor (or transducer) be placed on the body, that limitation must still be met.

C. "characterization/characterized"[6]

Plaintiff plain and ordinary meaning, "representation/represented"
Defendant "the visualization and display, on a display device (i.e. computer monitor) of captured data after processing"
Court "representation/represented"

Plaintiff contends the term "characterization/characterized" should be given its plain and ordinary meaning, "representation/represented." (D.I. 53 at 13) Defendant argues, instead, the characterization of a signal must also "reflect[] the method or manner in which the captured and processed data is actually displayed upon the display device." (D.I. 52 at 18-19) To Defendant,

[6] This term appears in claim 8 of the '343 patent and claim 1 of the '791 patent.

then, the construction of "characterization" must be tied to the display (*id.* at 19) and must reflect that what is being "characterized" is "the captured data after processing" (D.I. 60 at 6). Plaintiff counters that Defendant's construction "improperly import[s] limitations from the specification." (D.I. 62 at 10)

The Court agrees with Defendant that the "characterization" is tied to a display device, but the claims already recite this requirement, making Defendant's construction unnecessary. *See* '343 patent at cl. 1, 29 ("[S]aid display device further is configured to display a characterization of said processed signal."); *see also* Tr. at 43-44 (Defendant's counsel acknowledging that calling out requirement of display device "would be unnecessary"). The Court also agrees with Defendant that the characterized data is always captured data – but this is not due to the term "characterization." It is because the claims specifically require that what is "characterized" is processed data. *See, e.g.,* '343 patent at cl. 29 ("said display device further is configured to display a characterization of said ***processed*** signal") (emphasis added). While the Court's construction by no means eliminates this requirement, the Court concludes it is unnecessary (and would be redundant) to include it in its construction.

III. CONCLUSION

The Court will construe the disputed terms as explained above. An appropriate Order follows.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

AUDIO EVOLUTION DIAGNOSTICS, INC.,	:	
Plaintiff,	:	
v.	:	C.A. No. 16-1280-LPS
AMD GLOBAL TELEMEDICINE, INC.,	:	
Defendant.	:	

ORDER

At Wilmington, this **22nd** day of **May, 2018**:

For the reasons set forth in the Memorandum Opinion issued this date,

IT IS HEREBY ORDERED that the disputed claim terms of U.S. Patent Nos. 8,920,343 and 8,870,791 are construed as follows:

Claim Term	**Court's Construction**
measured frequency and measured energy [claims 7 and 28 of the '343 patent]	a measurement of the number of complete oscillations (cycles) per unit time of a signal (analogue or digital) and the magnitude of energy transferred by the signal
qualitative energy [claims 13 and 38 of the '343 patent; claim 24 of the '791 patent]	non-numerical information
first apparatus [claims 32 and 46 of the '343 patent; claims 1, 3, and 8 of the '791 patent]	no construction necessary

second apparatus [claims 32 and 46 of the '343 patent; claims 1, 8, and 15 of the '791 patent]	no construction necessary
physiological sounds [claims 1, 6, 7, 10, 11, 13, 15, 19, 28, 29, 32, 33, 34, 35, 39, 40, and 43 of the '343 patent; claims 1, 3, 8, 17, 22, 24, and 25 of the '791 patent]	sounds generated by human organs that are intended to be captured for medical diagnosis
sensor [claims 1, 10, 11, 15, 23, 26, 29, 39, 40, 48, 49, 50, and 52 of the '343 patent; claims 1, 8, 17, and 22 of the '791 patent]	a transducer designed to detect physiological sounds
characterization [claim 8 of the '343 patent; claim 1 of the '791 patent]	representation/represented

UNITED STATES DISTRICT JUDGE