United States District Court
District of Massachusetts

KONINKLIJKE PHILIPS, N.V. and PHILIPS ELECTRONICS NORTH AMERICA CORPORATION,	)	
Plaintiffs,	)	**Civil Action No. 12-12255-NMG**
v.	)	
ZOLL MEDICAL CORPORATION,	)	
Defendant.	)	

MEMORANDUM AND MARKMAN ORDER

GORTON, J.

Plaintiffs Koninklijke Philips Electronics, N.V. and Philips Electronics North America Corporation (collectively "Philips") bring suit against defendant ZOLL Medical Corporation ("ZOLL") for infringement of six patents directed to cardiac defibrillation technology: U.S. Patent No. 7,463,922 ("the '922 patent"), No. 6,405,083 ("the '083 patent"), No. 5,441,520 ("the '520 patent"), No. 6,021,349 ("the '349 patent"), No. 6,088,617 ("the '617 patent") and No. 6,314,320 ("the '320 patent").

The parties have submitted 21 claims of the several patents for construction. The Court convened a Markman hearing on March 20, 2014 at which counsel offered their proposed construction of 13 disputed claims. The Court's ruling as to those claims follows.

I. Overview of the Patented Technology

The patents-in-suit are directed in some fashion to cardiac defibrillators. Cardiac defibrillators are medical devices that can deliver an electrical shock to a patient who is experiencing ventricular fibrillation ("VF"), i.e. a rapid, erratic heartbeat.

While a defibrillator can be surgically implanted within a patient, the patents-in-suit are directed to external defibrillators that deliver shocks through electrodes placed on the torso of a patient. The electrodes sense the patient's heart rhythm to determine if it is "shockable", i.e. susceptible to correction with a defibrillator. The heart rhythm may be displayed on an electrocardiogram ("ECG").

External defibrillators can have both manual modes and semi-automatic modes. When a defibrillator is operated in manual mode, the operator analyzes the patient's heart rhythm to determine when a defibrillation shock is necessary. In contrast, when the device is operated in semi-automatic mode, a "shock advisory algorithm" evaluates the heart rhythm. Defibrillators with a semi-automatic mode may also issue visual or audio prompts to guide the operator through the rescue. Regardless of the mode, the operator must press a button on the external defibrillator device to deliver a shock to the patient through the electrodes.

III. Analysis

A. Principles of Claim Construction

In analyzing a patent infringement action, a court must 1) determine the meaning and scope of the patent claims asserted to be infringed and 2) compare the properly construed claims to the infringing device. Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), aff'd, 517 U.S. 370 (1996). The first step, known as claim construction, is an issue of law for the court to decide. Id. at 979. The second step is determined by the finder of fact. Id.

The Court's responsibility in construing claims is to determine the meaning of claim terms as they would be understood by persons of ordinary skill in the relevant art. Bell Atl. Network Servs., Inc. v. Covad Commc'ns Grp., Inc., 262 F.3d 1258, 1267 (Fed. Cir. 2001). The meanings of the terms are initially discerned from three sources of intrinsic evidence: 1) the claims themselves, 2) the patent specification and 3) the prosecution history of the patent. See Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582-83 (Fed. Cir. 1996).

The claims themselves define the scope of the patented invention. See Phillips v. AWK Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). Claim terms are generally given their "ordinary and customary meaning", which is the meaning that a person skilled in the art would attribute to the claim term. See

id. at 1312-13. Even if a particular term has an ordinary and customary meaning, however, a court may need to examine the patent as a whole to determine if that meaning controls. Id. at 1313 ("[A] person of ordinary skill in the art is deemed to read the claim term ... in the context of the entire patent...."); see also Medrad, Inc. v. MRI Devices Corp., 401 F.3d 1313, 1319 (Fed. Cir. 2005) (noting that a court cannot construe the ordinary meaning of a term "in a vacuum"). Ultimately, the correct construction will be one that

> stays true to the claim language and most naturally aligns with the patent's description of the invention....

Phillips, 415 F.3d at 1316 (quoting Renishaw PLC v. Marposs Societa' Per Azioni, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

The patent specification is

> the single best guide to the meaning of a disputed term [because it may reveal] a special definition given to a claim term that differs from the meaning it would otherwise possess [or contain] an intentional disclaimer, or disavowal, of claim scope by the inventor.

Id. at 1316, 1321. The Court should also consult the prosecution history to see how the inventor and PTO understood the patent and to ensure the patentee does not argue in favor of an interpretation it has disclaimed. Id. at 1317.

In the rare event that analysis of the intrinsic evidence does not resolve an ambiguity in a disputed claim term, the

Court may turn to extrinsic evidence, such as inventor and expert testimony, treatises and technical writings. Id. at 1317. Although extrinsic evidence may be helpful in construing claims, the intrinsic evidence is afforded the greatest weight in determining what a person of ordinary skill would have understood a claim to mean. V-Formation, Inc. v. Benetton Grp. SpA, 401 F.3d 1307, 1310-11 (Fed. Cir. 2005).

B. The '922 Patent

1. The Technology

Defibrillators that are operated in semi-automatic mode employ different shock advisory algorithms to determine whether a patient is experiencing VF. One prior art algorithm breaks the ECG into a series of successive, contiguous windows and then analyzes each of those windows using a "voting process" based on data from multiple contiguous windows.

The '922 patent is directed to an algorithm that analyzes overlapping ECG windows rather than successive, contiguous windows. In other words, each window except the first and last overlaps portions of the windows that immediately precede and follow it. The patented technique produces a shock-no shock advisory more quickly than the prior art method employing successive, contiguous windows. It also eliminates "boundary problems" wherein a signal on the edge of two contiguous windows might not be adequately accounted for in the analysis.

2. Disputed Claim Terms

a. wherein a window of one ECG waveform overlaps a portion of the window of at least one other ECG waveform (Claim 1)

each of the sections comprising the ECG heart waveform of a period of time which overlaps the time period of another of the sections (Claim 6)

The parties disagree about whether the terms require construction by the Court at all. Philips argues that the disputed terms have clear and unambiguous meanings when viewed against the backdrop of the claim as a whole. ZOLL proposes construing the terms to specify that

> at least some of the digital samples of the continuous ECG heart waveform found [in a first window/each section] are present also in the digital samples of the continuous ECG heart waveform found in at least [a second window/one other section].

With respect to the first term in dispute, it is helpful to view it in context of the portion of the claim in which it appears. Claim 1 recites, in relevant part,

> a processor unit coupled to the sensor and operable to analyze a plurality of ECG sections of the ECG segment for an indication of VF, each ECG section comprising digital samples of a continuous ECG heart waveform sensed during a window in time, wherein a window of one ECG waveform overlaps a portion of the window of at least one other ECG waveform and the processor is operable to analyze said window of the ECG waveform and said overlapping window of said ECG waveform to determine the indication of said VF....

There is no question that the subject portion of Claim 1 is poorly drafted and, worse, contains terms that do not appear in

the specification. It discloses the similar terms "ECG sections", an "ECG segment" and "[an] ECG waveform" without differentiating between them. "ECG waveform", in fact, appears nowhere in the specification, nor does the term "digital samples" as it is used in the claim.

The term in dispute, "wherein a window of one ECG waveform overlaps a portion of the window of at least one other ECG waveform", is an example of particularly problematic drafting. The Court agrees with ZOLL that the natural reading of the disputed term is that at least two ECG waveforms overlap. That reading is perhaps inconsistent with the immediately preceding term which teaches that "a continuous ECG heart waveform [is] sensed over a window of time" and suggests that it is not possible to have overlapping windows of two different ECG waveforms. Adding to the difficulty is the fact that the parties have not provided the Court with constructions of the terms "ECG waveform" and "digital samples" and the terms appear to have been added during the prosecution with no comment. See Amendment After Final Action, Docket No. 110, Ex. 3, at 5-6.

While the Court agrees with ZOLL that the patent, as worded, likely limits the scope of the claim more than the inventors intended, Philips suggests that no construction is required and that the Court should preserve the "careful balance" struck by the applicants and the Patent Office that

gave rise to the current wording. The construction proposed by ZOLL, moreover, goes beyond addressing the possible ambiguity. All that would be necessary to clarify the term is to construe it to mean

> wherein one window of the continuous ECG heart waveform overlaps a portion of at least one other window of the continuous ECG heart waveform.

In other words, it is unnecessary to construe the claim in terms of "digital samples" to avoid the ambiguity identified by ZOLL. The Court will therefore decline to construe the claim.

The Court also declines to construe the similar but unambiguous term that appears in Claim 6 because it is unnecessary to construe the language in terms of undefined "digital samples". While ZOLL may be correct that some digital samples that fall within one window or section also fall within another window or section, its preferred construction is not compelled by the claims or prosecution history and is certainly not compelled by the specification which omits the term entirely.

b. analyze said window of the ECG waveform and said overlapping window of said ECG waveform to determine the indication of said VF (Claim 1)

analyzing the ECG heart waveform sensed during each of the sections (Claim 6)

Philips contends that no construction is necessary because the plain meaning of the disputed terms is clear. ZOLL disagrees and proposes that the Court construe the terms to mean

> perform mathematical computations on the digital ECG samples in each window/section to classify said samples as VF (ventricular fibrillation) or not VF.

The Court agrees with Philips that the term "analyze" on its own is clear and declines to construe the term further to mean "to perform mathematical computations on." No such limitation exists in the patent claims, specification or prosecution history. Furthermore, the limitation "to classify said samples as VF (ventricular fibrillation) or not VF" improperly narrows the claim. Portions of the specification that discuss a distinction between analysis and voting in the prior art and certain embodiments do not limit "analysis" to classifying ECG sections as VF or not VF.

ZOLL is correct, however, that the term "analyze" makes no sense when applied to a "window" as recited in Claim 1, in which a window is a period of time. Time cannot be analyzed for the indication of VF. Instead, what is analyzed in Claim 1 is the ECG waveform sensed within each "window" of time where such windows have the property of overlapping with each other. That construction is consistent with Claim 6, which recites "analyzing the ECG heart waveform sensed during each of the sections," and does not import an additional limitation with

respect to the subject or nature of the analysis. As a result, the Court will adopt the following construction with respect to the disputed term in Claim 1:

> analyze the ECG waveform sensed during said window and said overlapping window to determine the indication of VF.

The disputed term in Claim 6 requires no construction. It teaches analysis of the ECG waveform and therefore does not suffer from the same lack of clarity as Claim 1.

C. The '083 Patent

1. The Technology

The '083 patent is directed to a defibrillator that communicates wirelessly "live" ECG signals to a remote location. The technology involves transmitting signals from a mobile telemetry transceiver in the defibrillator through a wireless radio telemetry link to a computer in a remote location.

2. **live ECG signals** (Claim 1)

The parties disagree about the meaning of the term "live ECG signals" in Claim 1.

Philips proposes construing the term to mean "ECG signals collected from the patient and transmitted to a remote location where the ECG waveform is displayed in real time." It relies on a description of Figure 11 in the specification that states:

> FIG. 11 is a simplified block diagram of the defibrillator 10 illustrating the defibrillator 10 with wireless communication to a radio telemetry link

> 299 for transmitting a live ECG signal according to another embodiment of the present invention. A live ECG signal is the ECG signal collected from the patient 14 and transmitted to a remote location such as the hospital emergency department 120 where the ECG waveform may be displayed in real time to the attending physician.

Philips contends that the above passage creates a controlling definition of the term "live ECG signal". The Court disagrees. The language in the quoted passage does not suggest that the inventor intended to create a controlling definition of "live ECG signals." Compare 3M Innovative Properties Co. v. Avery Dennison Corp., 350 F.3d 1365, 1369, 1371 (Fed. Cir. 2003) (finding that inventor "clearly acted as its own lexicographer" when it defined disputed terms by, for example, stating that "multiple embossed means ...."). Here, the context makes clear that the specification refers to a particular embodiment and does not create a controlling definition of "live". Moreover, the Federal Circuit has acknowledged that the term "real time" may itself require construction. Paragon Solutions, LLC v. Timex Corp., 566 F.3d 1075, 1087-93 (Fed. Cir. 2009).

ZOLL's proposed construction, on the other hand, imports a limitation that is not part of the claim with the phrase "ECG signals used ... as they are continuously generated by the patient's heart." The Court agrees with Philips that the term "continuously" would improperly preclude infringement if, for

instance, a patient's heart momentarily stopped beating and thus did not generate signals "continuously."

It is also unnecessary to include the terms "acquired", "transmitted", "received" or "displayed" in a definition of "live ECG signals" because such limitations are already imposed by the terms of Claim 1. (The term "sent" does not appear in Claim 1 and ZOLL does not explain why it is an appropriate limitation on the claim that is not addressed by "transmitted".)

Ultimately, while the parties offer competing constructions, they agree that "live" does not mean "instantaneous", that it depends on context and that the same "live" requirement applies to the acquisition, transmission, receipt and display of ECG signals. Compare Paragon, 566 F.3d at 1087 (reviewing dispute over the meaning of "displaying real-time data" where one party suggested a construction "displaying the measured parameter at the given moment in time that the measurement of the parameter occurs" that appeared to require instantaneous display). Moreover, the parties are essentially in agreement that "live" has an ordinary meaning that is understandable to the jury. See Markman Hearing Trans. 37:25-38:2 ("This term is easily understood by a jury. Live or real time is easily understood by a jury." (plaintiffs)); 45:13-15 ("They said, Get it there as quickly as you can. Then they

chose to use a term that has an ordinary meaning that reflects just that." (defendant)).

The Court finds that there is no real dispute about the scope of what is claimed by the term "live ECG signals" and that the jury is capable of applying the plain meaning in context. See O2 Micro, 521 F.3d at 1262 ("When the parties present a fundamental dispute regarding the scope of a claim term, it is the court's duty to resolve it."); Acumed LLC v. Stryker Corp., 483 F.3d 800, 806 (Fed. Cir. 2007) (explaining that court did not need to define "how sharp is too sharp" in construing "curved" to exclude "sharp corners or sharp angles"). As a result, it declines to further construe the term.

D. The '520 Patent

1. The Technology

The '520 patent discloses a system that automatically identifies the kind of pads or paddles assembly connected to the defibrillator. The invention improves on prior art defibrillators that 1) relied on user selection, which is subject to error, or 2) used signal lines that complicated the interface between the pads or paddles and the unit.

2. Disputed Claim Terms

All seven of the disputed claims in the '520 patent use the term "means." The term "means" triggers a rebuttable presumption that the claim is a "means plus function" claim

governed by 35 U.S.C. § 112, ¶ 6. EnOcean GmbH v. Face Int'l Corp., 742 F.3d 955, 958 (Fed. Cir. 2014) (citing Inventio AG v. ThyssenKrupp Elevator Ams. Corp., 649 F.3d 1350, 1356 (Fed. Cir. 2011)).

When construing a means plus function claim, the Court must first identify the function of the claimed limitation and then identify the structure disclosed in the specification that performs the claimed function. Telemac Cellular Corp. v. Topp Telecom., Inc., 247 F.3d 1316, 1324 (Fed. Cir. 2001). If the specification does not contain an "adequate disclosure" of the structure, the patent violates § 112, ¶ 6 and the claim should be found indefinite. In re Donaldson Co., 16 F.3d 1189, 1195 (Fed. Cir. 1994). Because patent claims are presumed valid, the party claiming that a means-plus-function claim lacks a corresponding structure bears the burden of proving indefiniteness through clear and convincing evidence. Budde v. Harley-Davidson, Inc., 250 F.3d 1369, 1376-77 (Fed. Cir. 2001) (citations omitted).

Whether a claim is invalid as indefinite "depends on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the specification." Atmel Corp. v. Info. Storage Devices, Inc., 198 F.3d 1374, 1378 (Fed. Cir. 1999) (quoting N. Am. Vaccine, Inc. v. Am. Cynamid Co., 7 F.3d 1571, 1579 (Fed. Cir. 1993)). In general, the

requirement of identifying the structure disclosed in the specification is "not a high bar." Biomedino, LLC v. Waters Techs. Corp., 490 F.3d 946l, 950 (Fed. Cir. 2007). Instead,

> [a]ll one needs to do to obtain the benefit of [§ 112, ¶ 6] is to recite some structure corresponding to the means in the specification, as the statute states, so that one can readily ascertain what the claim means and comply with the particularity requirement of [§ 112].

Id. (quoting Atmel, 198 F.3d at 1382.

a. at least two available types of **means for administering the electrical energy to the patient** (Claim 1)

The parties agree that the claimed function is "administering the electrical energy to the patient" but disagree about the corresponding structure. Their dispute centers on how to interpret the following disclosure:

> The types of available administering means may include, for example, a pair of external paddle assemblies, a pair of internal paddle assemblies and a pair of adhesive pads (or "patient pads").

'520 Patent, 2:12-15. ZOLL contends that the corresponding structure is "a pair of external paddle assemblies, a pair of internal paddle assemblies and a pair of adhesive pads (or "patient pads"), and all equivalents thereof."[1]

That disclosure does not have the limiting effect ZOLL asserts merely because it uses the conjunctive term "and" rather

[1]The Court declines at the claim construction stage of the case to specify that the claimed structure includes all equivalents because it is unnecessary to do so.

than the disjunctive term "or". Other language in that disclosure, including the terms "may include" and "for example," indicate that the subject disclosure does not require all three to perform the function of administering the electrical energy to the patient. That conclusion is supported by the requirement that the defibrillator system taught in Claim 1 have "at least two types of administering means." Philips' construction is also supported by Claim 2, which is dependent on Claim 1 and teaches the defibrillator system disclosed in Claim 1 wherein the types of administering means include "a pair of external paddle assemblies, a pair of internal paddle assemblies or a pair of patient pads."

In sum, the function of the subject term is "administering the electrical energy to the patient" and the corresponding structure is "a pair of external paddle assemblies, a pair of internal paddle assemblies or a pair of adhesive pads (or patient pads)."

b. For each type of administering means, a respective **identifying means** disposed in the corresponding type of administering means or in the corresponding cable assembly **for providing a corresponding analog voltage level to the base unit for identification when the administering means is connected to the base unit** (Claim 1)

The parties disagree about the claimed function of the "identifying means" and its corresponding structure.

With respect to the function, Philips contends that it is disclosed in the claim and is

> providing a corresponding analog voltage level to the base unit for identification when the administering means is connected to the base unit.

ZOLL agrees but urges the Court to construe "corresponding" further to mean that "each identifying means has a unique voltage level."

The Court declines to limit the scope of Claim 1 as requested by ZOLL. First, the patent teaches that the corresponding analog voltage could be a range and therefore requiring a "unique ... level" narrows the scope of what is claimed. Moreover, to the extent that ZOLL seeks to clarify that the analog voltage corresponding to a kind of assembly would not also correspond to a different kind of assembly, that limitation is already imposed by the ordinary meaning of the term "corresponding".

Turning to the structure, Philips proposes the following construction:

> a charge-done signal line, coupled to ground, a charge-done signal line coupled to a resistor, or a charge-done signal line coupled to a zener diode, and all equivalents.

Philips is correct that the specification teaches that those structures perform the "identification" function described in

the claims. See '520 patent, 5:57-61 (resistor), 6:14-16 (ground), 6:25-26 (zener diode). ZOLL objects to that construction, however, on the grounds that the items are static and do not provide sources of voltage. As a result, it asserts, the structures identified by Philips cannot perform the function of "providing a corresponding analog voltage level to the base unit."

That argument is intriguing. The Federal Circuit has explained that

> [t]h[e] duty to link or associate structure to function is the quid pro quo for the convenience of employing § 112, ¶ 6. Fulfillment of the § 112, ¶ 6 trade-off cannot be satisfied when there is a total omission of structure. While corresponding structure need not include all things necessary to enable the claimed invention to work, it must include all structure that actually performs the recited function.

Default Proof Credit Card Sys., Inc. v. Home Depot USA, Inc., 412 F.3d 1291, 1298 (Fed. Cir. 2005) (emphasis added) (internal citations and quotation marks omitted). Philips focuses on the first part of that instruction and suggests that the corresponding structure need not include a voltage source because all that Philips must do to avail itself of the § 112, ¶ 6 claiming structure is show that the specification includes structure that is associated with the identification function. ZOLL focuses on the latter half of the quoted passage and

contends that Philips' construction fails to include all structure that actually performs the recited function.

Neither party submitted an expert opinion concerning the mechanics of the circuit identified in Figure 6 of the specification. Based upon intrinsic evidence only, Philips has carried its burden of identifying the corresponding structure of the subject claim so that one skilled in the art of electronic circuitry would understand that it was the portion of the circuit that performed the claimed function. See Atmel, 198 F.3d at 1378.

Furthermore, some of the elements identified by ZOLL are not located in the "corresponding type of administering means" (i.e. pads or paddles) or in the "corresponding cable assembly" and therefore are not part of the corresponding structure for the subject term. ZOLL has not explained how to reconcile that limitation in the claim with the fact that its proposed structure includes resistors located in the base unit outside of the administering means and cable assembly.

In sum, the claimed function is "providing a corresponding analog voltage level to the base unit for identification when the administering means is connected to the base unit" and the corresponding structure is "a charge-done signal line, coupled to ground, a charge-done signal line coupled to a resistor or a charge-done signal line coupled to a zener diode."

c. means for automatically detecting that no administering means is connected to the base unit (Claim 1)

d. means for determining therefrom the type of administering means connected to the base unit (Claim 3)

The parties do not dispute that the claimed functions are "automatically detecting that no administering means is connected to the base unit" and "determining the type of administering means connected to the base unit," respectively. ZOLL argues that the patent does not disclose a corresponding structure with respect to either claim. Philips disagrees and suggests that the following disclosures are adequate:

> The ... controller is arranged to recognize an analog voltage in a range of approximately 0.5 to 3 ... volts as identifying the external paddles assembly. (6:2-5)
>
> The controller 80 is arranged to recognize a voltage greater than approximately 4 volts as an indication that no pads or paddles are connected to the base unit. (6:6-11)
>
> [T]he controller 80 is arranged to recognize a voltage of less than approximately 0.5 volts as identifying the internal paddles assembly. (6:16-19)

The dispute centers on whether those disclosures provide a sufficient description of the "algorithm" that performs the claimed functions of detecting the means (or lack thereof) attached to the base unit. See WMS Gaming, Inc. v. Int'l Game Tech., 184 F.3d 1339, 1349 (Fed. Cir. 1999) (describing steps performed by software as an algorithm). The Federal Circuit has

held that a patent must disclose "enough of an algorithm to provide the necessary structure ... at least to the satisfaction of one of ordinary skill in the art." Finisar Corp. v. DirecTV Grp., Inc., 523 F.3d 1323, 1340 (Fed. Cir. 2008). The patentee is not required to disclose lines of computer code, however, and may express such an algorithm in "any understandable terms such as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure." Typhoon Touch Techs., Inc. v. Dell, Inc., 659 F.3d 1376, 1385 (Fed. Cir. 2011) (quoting Finisar, 523 F.3d at 1340). Whether the specification contains adequate detail turns on the subject matter of the means-plus-function claim and the role of the structure in the invention as a whole. Id.

Philips has provided adequate detail to survive the challenge of indefiniteness, although it is a very close call. ZOLL is correct that the disclosures identified as enabling by Philips do not describe an algorithm in detail. Nevertheless, the specification provides more than the "black box" disclosures relating to software that have been found indefinite by the Federal Circuit. Compare Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech., 521 F.3d 1328 (Fed. Cir. 2008) (explaining that specification did not disclose adequately the corresponding structure when it disclosed only a standard micro-processor with "appropriate programming").

Here, the specification provides that the controller 1) receives a sensed voltage value, 2) recognizes that the voltage falls within one of several ranges disclosed in Table 2 of the specification and 3) identifies the sensed value as corresponding to the attached assembly. Other courts have found similar disclosures to be sufficient. See, e.g., Medtronic Minimed Inc. v. Animas Corp., No. 12-04471, 2014 WL 1830156, at *8-12 (C.D. Cal. May 8, 2014) (finding that specification that disclosed 1) receiving blood glucose data, 2) comparing to target value and 3) calculating recommended dose of insulin provided a sufficiently definite algorithm based on expert testimony that only simple arithmetic was required to compare the current and target blood glucose levels). ZOLL has not provided clear and convincing evidence that a person of ordinary skill in the art would not understand how to perform the recited function if provided with the specification.

The Court will adopt, in part, the construction proposed by Philips but it will omit the phrase "that operates under program control" because it appears to add undisclosed structure to what is claimed. With respect to the "automatically detecting" term, the corresponding structure is

> a resistor and a processor that receive a sensed voltage value, recognize that voltage, and identify if the sensed voltage corresponds to a predetermined voltage that is an indication that no pads or paddles are connected to the base unit.

With respect to the "determining ... the type of administering means" term, the corresponding structure is

> a processor that receives a sensed voltage value, recognizes a voltage value in a range and identifies the administering means based on a voltage in that range.

e. means for attenuating the supply voltage so as to form the corresponding analog voltage level (Claim 5)

f. means ... for cooperating with the pull-up means so as to drive the charge-done signal line to approximate a first predetermined voltage level (Claim 8)

The parties agree that the claimed functions are "attenuating the supply voltage to form the corresponding voltage level" and "cooperating with the pull-up means so as to drive the charge-done signal line to approximate a first pre-determined voltage level," respectively. They disagree about the corresponding structures that perform those functions. Philips suggests that, in both cases, the structure is "a resistor, a zener diode, or a connection to ground, and all equivalents." ZOLL proposes that, in both cases, it is "the identification resistor 62 that has a unique value for each identifying means and that is electrically connected to ground."

Philips' construction is overly broad because the claim is limited to structures associated with external paddle assemblies and Philips identifies structures associated with internal

paddle assemblies and pads. The other structures identified by Philips, i.e. a zener diode and connection to ground, are disclosed only with respect to pads or internal paddle assemblies. Id. at 6:12-19 (associating connection to ground with internal paddles), 6:20-27 (associating zener diode with adhesive patient pads). The patent discloses only that a resistor identified as 62 performs the stated function with respect to external paddle assemblies. See '520 patent, 5:57-66.

For the reasons stated above, the Court declines to construe the structures as involving a "unique value" because the patent uses the term "corresponding" rather than "unique" and the construction imports a functional claim into the specification.

In sum, the corresponding structure of both claims is "the resistor 62 that is electrically connected to ground."

g. pull-up means (Claim 8)

The parties disagree about the function and corresponding structure associated with the "pull-up means" identified in Claim 8. Philips asserts that the function is to "drive the charge-done signal line to approximate a first pre-determined voltage, where 'coupled to' means 'electrically connected'." ZOLL responds correctly that the function recited by Philips is that of the "means for cooperating with the pull-up means" and not the "pull-up means" as an independent element. The Court

agrees with ZOLL that "pull-up" is the only function disclosed in claim 8.

With respect to the structure, the scant briefing and argument on the issue indicates that the parties agree that the resistor identified as resistor 90 in the specification performs the pull-up function. The Court finds that "resistor 90" is the only corresponding structure.

E. The '349 and '617 Patents

1. The Technology

The '349 and '617 patents of Philips are directed to the user interfaces of the defibrillator apparatus. The purpose of the inventions is to make defibrillators safe and effective for a range of caregivers with different levels of expertise by allowing advanced users to manipulate the user interface in order to access quickly and safely the manual mode functions while preserving an easy-to-use interface for users who operate the device in AED mode.

2. Disputed Terms

a. AED buttons for operating said defibrillator according to said AED personality in an AED Mode (Claim 1 of the '349 patent)

a set of soft labels displayed on said display for labeling said AED buttons according to an AED personality in an AED mode (Claim 1 of the '617 patent)

The Court agrees with ZOLL that, at the very least, the term "AED personality" requires construction and lacks a plain meaning. "AED personality" is a term of art and it is unclear what it means for something to be "operated according to an AED personality." Furthermore, Philips does not dispute that the term "AED personality" refers to a three-step methodology where step 1 is "power on", step 2 is "analyze" and step 3 is "shock." That understanding is confirmed by the specification.

The crux of the dispute, then, is whether the specification should be read to narrow the claims to cover only defibrillators in which three buttons correspond with or carry out the three steps when the defibrillator is operated in AED mode. ZOLL contends that the specification should be understood to limit the claim accordingly because the specification consistently refers and depicts buttons corresponding with the three steps.

The Court declines to narrow the scope of the claim to cover only devices with three buttons associated with AED mode. The fact that Figure 7A depicts three buttons corresponding with the three steps does not narrow the claims to that depicted scope. See Agfa Corp. v. Creo Prods. Inc., 451 F.3d 1366, 1376-77 (Fed. Cir. 2006) (approving of construction that did not limit "stacks of plates" to plates that were stacked horizontally despite the fact that the preferred embodiment depicted a horizontal stack). Indeed, the specification teaches

that, in some embodiments, the defibrillator will automatically perform the second step of analyzing the ECG signal. See '349 patent, 4:56-60, 5:14-16.

On the other hand, Philips' argument that "there are countless variations for implementing those three functions – with or without buttons" is unsupported by the specification, which states that "[t]he user interface of the defibrillator comprises a set of buttons for implementing the AED personality of step 1, step 2, and step 3 ...." The Court will therefore construe the claims to cover buttons that initiate the steps "power on" and "shock" at the very least. It will also require at least two buttons given that the term is used in the plural throughout the claims and specification.

The Court will not construe the term "buttons" to mean "switches." That construction is unsupported by the specifications which use the term "switch" only when referring to 1) a possible embodiment that would allow the user to access manual mode using a "switch or sensor" and 2) a prior art defibrillator where the "manual and automatic modes are blended together on the same rotary switch on the front panel." Neither the specification nor the claims, in short, justify that substitution. Moreover, the meaning of the term "buttons" is sufficiently plain and within the ken of the average juror to require no construction. Similarly, the "semi-automatic

defibrillator" limitation proposed by ZOLL does not appear in the claim or the specification.

In sum, the Court will adopt the following constructions:

> a set of two or more logically grouped buttons for initiating at least the functions 'power on' and 'shock' when the defibrillator is in AED mode ('349 patent, Claim 1).
>
> a set of programmable labels which are displayed on said display and indicate which of a set of two or more buttons initiate at least the functions 'power on' and 'shock' when the defibrillator is in AED mode ('617 patent, Claim 1).

b. manual access button for placing said defibrillator into a manual mode for operation according to said manual personality (Claim 1 of '349 patent) **manual access button for placing said defibrillator in said manual mode** (Claim 1 of '617 patent)

The Court declines to adopt the construction proposed by ZOLL, "a dedicated switch that when operated places the defibrillator into manual mode," because there is no support for limiting the scope of the invention to interfaces where the button that places the defibrillator into manual mode has no other function. It also rejects the proposed "switch" construction for the reasons explained previously.

While the term "manual access button", read in isolation, is potentially ambiguous, it is clear from context that it refers to a button that places the defibrillator into manual mode. No construction is required.

F. The '320 Patent

1. The Technology

The '320 patent is directed to a method for inactivating or "silencing" audio or visual prompting features of defibrillators without disrupting other functions.

2. AED / a method of treating a patient with an AED comprising / an AED comprising (Claims 1, 13-19)

The crux of the dispute is whether "AED" should be read, in light of the specification, to refer only to a "semi-automatic external defibrillator designed for use by the lay responder," as ZOLL proposes. That construction is not supported by the specification, which states that the invention "relates in general to defibrillators, particularly automatic or semi-automatic defibrillators" and does not limit the scope of what is claimed to only semi-automatic defibrillators.

Furthermore, neither the claims nor the specification support limiting the claims to AEDs that are "designed for use by a lay responder." While the patent Abstract states that "AEDs are designed to be employed by lay responders" and the specification adds that a drawback of using AEDs is that the "prompts are designed for a lay responder," see '320 patent, 2:13-14, those statements do not create a controlling definition that limits the scope of the claims. See 3M Innovative, 350 F.3d at 1369, 1371). The Court declines to introduce a limitation

that is unsupported by the claims and likely to introduce a new element of uncertainty where infringement will turn on the purpose for which the accused device was designed. Moreover, it suspects that in proposing its construction ZOLL is attempting to stake out a non-infringement position at the claim construction stage. See Am. Piledriving Equip., Inc. v. Geoquip, Inc., 637 F.3d 1324, 1331 (Fed. Cir. 2011).

Because the Court declines to adopt the proposed construction, it need not reach the issue of whether the preambles of Claims 1 and 13 are limiting.

MARKMAN ORDER

In accordance with the foregoing,

1) the Court **declines to construe** the terms "wherein a window of one ECG waveform overlaps a portion of the window of at least one other ECG waveform" and "each of the sections comprising the ECG heart waveform of a period of time which overlaps the time period of another of the sections";

2) the term "analyze said window of the ECG waveform and said overlapping window of said ECG waveform to determine the indication of said VF" means

   "analyze the ECG waveform sensed during said window and said overlapping window to determine the indication of VF"

3) Court **declines to construe** "analyzing the ECG heart waveform sensed during each of the sections";

4) the Court **declines to construe** "live ECG signals";

5) the term "means for administering the electrical energy to the patient" is a means-plus-function claim

where the claimed function is **"administering the electrical energy to the patient"** and the corresponding structure is **"a pair of external paddle assemblies, a pair of internal paddle assemblies or a pair of adhesive pads (or "patient pads")"**;

6) the term "identifying means ... for providing a corresponding analog voltage level to the base unit for identification when the administering means is connected to the base unit" is a means-plus-function claim where the claimed function is **"providing a corresponding analog voltage level to the base unit for identification when the administering means is connected to the base unit"** and the corresponding structure is **"a charge-done signal line, coupled to ground, a charge-done signal line coupled to a resistor or a charge-done signal line coupled to a zener diode"**;

7) the term "means for automatically detecting that no administering means is connected to the base unit" is a means-plus-function claim where the claimed function is **"automatically detecting that no administering means is connected to the base unit"** and the corresponding structure is **"a resistor and a processor that receive a sensed voltage value, recognize that voltage, and identify if the sensed voltage corresponds to a predetermined voltage that is an indication that no pads or paddles are connected to the base unit"**;

8) the term "means for determining therefrom the type of administering means connected to the base unit" is a means-plus-function claim where the claimed function is **"determining the type of administering means connected to the base unit"** and the corresponding structure is **"a processor that receives a sensed voltage value, recognizes a voltage value in a range and identifies the administering means based on a voltage in that range"**;

9) the term "means for attenuating the supply voltage so as to form the corresponding analog voltage level" is a means-plus function claim where the claimed function is **"attenuating the supply voltage to form the corresponding voltage level"** and the corresponding

structure is **"the resistor 62 that is electrically connected to ground";**

10) the term "means ... for cooperating with the pull-up means so as to drive the charge-done signal line to approximate a first predetermined voltage level" is a means-plus-function claim where the claimed function is **"cooperating with the pull-up means so as to drive the charge-done signal line to approximate a first pre-determined voltage level"** and the corresponding structure is **"the resistor 62 that is electrically connected to ground";**

11) the term "pull-up means" is a means-plus-function claim where the claimed function is to **"pull-up"** and the corresponding structure is **"resistor 90";**

12) "AED buttons for operating said defibrillator according to said AED personality in an AED Mode" means

"a set of two or more logically grouped buttons for initiating at least the functions 'power on' and 'shock' when the defibrillator is in AED mode";

13) "a set of soft labels displayed on said display for labeling said AED buttons according to an AED personality in an AED mode" means

"a set of programmable labels which are displayed on said display and indicate which of a set of two or more buttons initiate at least the functions 'power on' and 'shock' when the defibrillator is in AED mode";

14) the Court **declines to construe** "manual access button"; and

15) the Court **declines to construe** "AED".

So ordered.

/s/ Nathaniel M. Gorton
Nathaniel M. Gorton
United States District Judge

Dated August 15, 2014