United States District Court
District of Massachusetts

KONINKLIJKE PHILIPS ELECTRONICS N.V., PHILIPS ELECTRONICS NORTH AMERICA CORPORATION, **Plaintiffs,**	)	
v.	)	**Civil No. 10-11041-NMG**
ZOLL MEDICAL CORPORATION **Defendant,**	)	

MEMORANDUM & ORDER

GORTON, J.

I. Background

A. The Parties

On June 18, 2010, Philips Electronics North America Corporation, a Delaware corporation with its principal place of business in Massachusetts, and its parent company Koninklijke Philips Electronics N.V., a Dutch corporation with its principal place of business in the Netherlands, (collectively, "Philips") filed a patent infringement suit against ZOLL Medical Corporation ("ZOLL"), a Massachusetts corporation with its principal place of business in Massachusetts.

Philips' complaint, in 15 counts, is for infringement of U.S. Patent No. 5,607,454, No. 5,721,482, No. 5,735,879, No. 5,749,905, No. 5,773,961, No. 5,800,460, No. 5,803,927, No. 5,836,978, No. 5,879,374, No. 6,047,212, No. 6,178,357, No.

6,304,783, No. 6,356,785, No. 6,441,582 and No. 6,871,093, which relate to components of automated external defibrillators ("AEDs").[1] Philips seeks a declaration that ZOLL is infringing the patents-in-suit, equitable relief, including an injunction, and monetary damages.

In a related, later-filed case, ZOLL brought suit against Philips for five counts of patent infringement of U.S. Patent No. 5,330,526, No. 5,391,187, No. 5,470,343, No. 5,575,807 and No. RE39,250, which also relate to components of defibrillators and supplemental products, including electrodes and power supplies. ZOLL seeks a declaration that Philips is infringing the ZOLL patents-in-suit, equitable relief, including an injunction, and damages. In August, 2011 the two cases were consolidated.

The parties submitted 35 claims for construction. The Court issued an order requesting that the parties narrow the claims for construction to 16. The Court conducted a Markman hearing on October 25, 2012 at which counsel offered arguments in support of their proposed claim construction of 15 disputed terms. The following is the Court's ruling with respect to those terms.

B. The Technology

1. Philips' '454, '879, '905, and '978 Patents

Six of Philip's patents ('454, '879, '905, '978, '212 and '927) are referred to as the "waveform patents" because they

[1] Hereinafter each patent will be referred to by its last three numbers.

relate to the electrical signal (or "waveform") that shocks the patient.

External defibrillators deliver energy to a patient's heart via electrodes applied to the surface of the patient's torso. Due to physiological differences among patients, the resistance to the flow of electricity through the tissue between the defibrillator electrodes and the patient's heart ("impedance") varies from patient to patient depending on the conductivity of their tissues. The intensity of the shock delivered to the heart by the defibrillator can also vary depending on that impedance. A shock that is effective to treat a low-impedance patient may not be effective to treat a high-impedance patient.

Prior art defibrillators required the operator to shock the patient first with an energy level appropriate for the average patient. If the first shock did not work, the operator could then raise the energy level and keep trying. The '454, '879, '905 and '978 patents overcome that problem by providing an external defibrillator that automatically compensates for the different levels of impedance in individual patients in real time by measuring the patient's impedence and adjusting the discharge accordingly.

2. Philips' '212 Patent

The particular waveform described in the waveform patents above is "biphasic." With a biphasic waveform, the system flips

a switch midway to change from positive voltage to negative. Biphasic waveforms had been used in implanted defibrillators but until this patent there was no circuitry that could generate the biphasic waveform at the higher voltages required by external defibrillators. The '212 patent discloses a circuit that can deliver the biphasic waveform at the higher voltages required by an external defibrillator.

3. Philips' '374 and '460 Patents

The '374 and '460 patents ("the self test patents") cover an external defibrillator that can perform self tests to ensure it is functional and ready to use. Prior art external defibrillators were generally designed for hospitals where equipment is frequently tested and maintained. Portable defibrillators designed for a home or office are much less frequently tested and thus might not be functional when needed. The '374 and '460 patents disclose a defibrillator that conducts automatic self tests, some while switched "on" and others while switched "off." After the test, the defibrillator indicates the result "visually and audibly." The patents also describe a "system monitor" that performs the various functions of the self tests.

4. Philips' '093 Patent

The '093 patent is directed to a defibrillator that includes an indicator (audible, visual or both) that reports whether the

defibrillator is functioning properly. The indicator can be activated automatically or in response to a "user-triggered inquiry."

5. Philips' '785 Patent

The '785 patent is directed to a defibrillator that uses voice and visual prompts to instruct the user on how to perform CPR correctly because the steps of CPR are often forgotten, even by trained professionals. The covered defibrillator also monitors the heart rhythm of the patient to determine whether it is treatable by shock and, if so, prompts the rescuer to deliver CPR and follow the shock protocol.

6. ZOLL's '187 Patent

The '187 patent is directed to a semi-automatic defibrillator which has an alarm. In previous defibrillators the alarm was activated by either the heart rate ("averaged QRS rate") or a shock advisory to indicate to the operator whether the electrocardiogram shows an abnormal heart rhythm of the sort that can be corrected by defibrillation shock. The '187 patent is directed to an alarm based on both of these inputs.

7. ZOLL's '807 Patent

The '807 patent relates to a power supply that provides an "AC disconnect alarm." Because a defibrillator is used in emergency situations it is crucial that it is charged when needed. Thus, as the patent explains, "to ensure[] that a

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