

United States District Court,
D. New Jersey.

LG ELECTRONICS U.S.A., INC. and LG Electronics, Inc,
Plaintiffs.

v.

WHIRLPOOL CORPORATION,
Defendant.

Civ. No. 04-2306 (GEB)

April 2, 2007.

Kevin J. McKenna, Gibbons, Del Deo, Dolan, Griffinger & Vecchione, PC, Elvin Esteves, Gibbons, PC,
Newark, NJ, for Plaintiffs.

Liza M. Walsh, Agnieszka Antonian, Connell Foley, LLP, Roseland, NJ, for Defendant.

MEMORANDUM OPINION

BROWN, Chief Judge.

I. INTRODUCTION

This matter comes before the Court upon defendant Whirlpool Corporation's ("Defendant" or "Whirlpool") motion for summary judgment and the parties' request for claim construction in this patent infringement action. Plaintiffs LG Electronics U.S.A., Inc. and LG Electronics, Inc. (collectively "Plaintiffs" or "LG") claim that washing machines designed by Whirlpool infringe certain of LG's patents. LG claims that Whirlpool's Calypso washer infringes U.S. Patent No. 5,339,474 (the "474 Patent") and U.S. Patent No. 5,461,886 (the "886 Patent"). LG also claims that Whirlpool's Duet washer infringes U.S. Patent No. 5,768,731 (the "731 Patent"). LG filed the Complaint on May 17, 2004. On January 9, 2006, Whirlpool filed the present motion for summary judgment. The parties have also requested claim construction in this patent infringement action pursuant to *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed.Cir.1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996). This case was reassigned to the undersigned on September 26, 2006, and the undersigned requested the parties to submit a Joint Claim Construction Chart ("Chart"), which would identify the disputed claims, the parties' proposed constructions, and the intrinsic evidence supporting their respective constructions. The Chart was submitted on February 22, 2007, and the issues of claim construction and summary judgment are now ready for decision. The Court, having considered the parties' submissions and decided the matter without oral argument pursuant to Federal Rules of Civil Procedure Rule 78, and for the reasons set forth below, will grant in part and deny in part Defendant's motion for summary judgment.

II. DISCUSSION

A. Claim Construction

1. Standard for Claim Construction

The first step in a patent infringement analysis is to define the meaning and scope of the claims of the patent. *Markman*, 52 F.3d at 976. Claim construction, which serves this purpose, is a matter of law exclusively for the court. *Id.* at 979. The Federal Circuit Court of Appeals clarified the proper methodology for claim construction in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed.Cir.2005). The court stated that the claims of a patent serve as the proper starting point, noting the "bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Id.* at 1312 (internal quotations omitted). The court explained that words should generally be given their ordinary and customary meaning—particularly from the vantage point of a person of ordinary skill in the art. *Id.* at 1313. This provides an objective baseline from which claim construction should begin. *Id.*

The Federal Circuit Court of Appeals further noted that a "person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.* In attempting to discern the meaning of claim terms, the court identified various sources from which the proper meaning may be determined. The claim in which the term appears and other claims of a patent, including both asserted and unasserted claims, can serve as "valuable sources of enlightenment as to the meaning of the claim term." *Id.* at 1314.

The court also emphasized the primacy of the specification in a claim construction analysis, noting that it is usually dispositive and "the single best guide to the meaning of a disputed term." *Id.* at 1315. The specification may reveal whether the patentee acted as his own lexicographer by importing a special definition to the claim term, in which case the patentee's lexicography governs. *Id.* at 1316. Moreover, the specification can further reveal any intentional disavowal or disclaimer of claim scope. In such instances, "the inventor has dictated the correct claim scope, and the inventor's intention, as expressed in the specification, is regarded as dispositive." *Id.*

The prosecution history should also be taken into consideration if it is in evidence. Consisting of the complete record of the Patent and Trademark Office ("PTO") proceedings, "the prosecution history provides evidence of how the PTO and the inventor understood the patent." *Id.* at 1317. Unlike the specification, however, which represents the final product of ongoing negotiations between the PTO and the patentee, the prosecution history may lack clarity and serve as a less helpful tool in claim construction. *Id.* Nonetheless, this part of the intrinsic evidence "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.*

The Federal Circuit Court of Appeals cautioned against the use of extrinsic evidence during claim construction because this type of evidence suffers from certain inherent flaws which affect its reliability in a claim construction analysis. This class of evidence includes "all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Id.* (internal quotations omitted). Although extrinsic evidence may be useful, "it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." *Id.* at 1319. A court nonetheless is permitted to admit and use extrinsic evidence in its sound discretion, so long as the court remains mindful of the inherent flaws in this type of evidence and considers it accordingly. *Id.*

Phillips also clarified the role of dictionaries in claim construction. Placing undue reliance on dictionaries would improperly focus "the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent." *Id.* at 1321. The "ordinary meaning" of the claim term is properly viewed as the "meaning to the ordinary artisan after reading the entire patent." *Id.* Moreover, dictionaries are naturally suspect as they "provide an expansive array of definitions" and often collect all uses of a word "from the common to the obscure." *Id.* This may result in extending "patent protection beyond what should properly be afforded by the inventor's patent." *Id.* at 1322. Despite such concerns, however, courts are not precluded from using dictionaries in the appropriate manner during claim construction analysis. *Id.*

Lastly, a court must be mindful of the well-settled rule "that while proper claim construction requires an examination of the written description and relevant prosecution history to determine the meaning of claim limitations, additional limitations may not be read into the claims." *Storage Tech. Corp. v. Cisco Sys., Inc.*, 329 F.3d 823, 831 (Fed.Cir.2003). *See also* *In re Donaldson Co.*, 16 F.3d 1189, 1195 (Fed.Cir.1994) (noting the "general claim construction principle that limitations found only in the specification of a patent or patent application should not be imported or read into a claim.").

2. The Disputed Claim Terms

a. '474 Patent

LG claims that Whirlpool's Calypso machine infringes Claims 1, 3, and 4 of the '474 Patent. Claims 1, 3, and 4 recite:

1. An apparatus for determining a twist of clothes being washed in a washer, comprising:

clothes twist sensing means for sensing a torque occurring at a drive shaft of said washer due to the twist of clothes, to sense the distribution of impact applied to an agitator of the washer by said clothes, and generating a clothes twist signal according to the sensed impact distribution;

correlation coefficient operating means for converting said clothes twist signal into a digital signal indicative of a state value of the clothes twist signal, analyzing said state value of the clothes twist signal, and operating a correlation coefficient to be used for determining whether the clothes twist signal is a meaningful signal or a noise, based on the analysis; and

a microprocessor for performing a control for executing a clothes untwisting mode, when the clothes twist signal is determined to be said meaningful signal, from said correlation coefficient outputted from said correlation coefficient operating means.

3. A method of determining a twist of clothes being washed in a washer, comprising the steps of:

(a) determining whether the current mode of said washer is a washing mode or a rinsing mode;

(b) agitating said clothes normally and reversely for a predetermined time by driving a motor and an agitator equipped in the washer, sensing a torque occurring at a drive shaft of the washer due to an impact from the clothes, and generating a clothes twist signal according to the sensed torque;

(c) operating a correlation coefficient of said clothes twist signal outputted at said step (b), to determine

whether the clothes twist signal is a meaningful signal or a noise; and

(d) comparing said correlation coefficient outputted at step (c) with a predetermined reference value, executing a clothes untwisting mode when the correlation coefficient is higher than said reference value, determining whether the current mode has been completed when the correlation coefficient is not higher than the reference value, and reading a clothes twist signal inputted during an execution of said washing mode when the current mode has not been completed yet.

4. A method of determining a twist of clothes being washed in a washer, comprising the steps of:

(a) determining whether the current mode of said washer is a washing mode or a rinsing mode;

(b) checking whether the current mode has been completed;

[(c)] agitating said clothes normally and reversely for a predetermined time by driving a motor equipped in the washer, when the current mode has been determined as having been completed at said step (b), sensing a torque occurring at a drive shaft of the washer due to an impact from the clothes, and generating a clothes twist signal according to the sensed torque;

(d) operating a correlation coefficient of said clothes twist signal outputted at step (c), to determine whether the clothes twist signal is a meaningful signal or a noise; and

(e) comparing said correlation coefficient outputted at said step (d) with a predetermined reference value, and executing a clothes untwisting mode when the correlation coefficient is higher than said reference value.

'474 Patent, Claims 1, 3, and 4. The parties dispute a number of the terms contained in these claims.

(1) determining a twist of clothes being washed in a washer

The parties dispute the term "determining a twist of clothes being washed in a washer," which appears in Claims 1, 3, and 4. LG proposes construing the term to mean "determining a bundling [i.e., uneven distribution] of clothes being washed in a washer." (Chart at 1.) Whirlpool proposes instead that the term be construed to mean "deciding whether clothes being washed in a washer are entwined together." (*Id.*)

In arguing that the term "determining" should be construed as "deciding," Whirlpool refers to the written description, which states that "[w]hen the correlation coefficient of Y(n) has been determined to be higher than the [] reference value ..., the clothes is determined as having been twisted...." ('474 Patent, col. 9, ll. 19-22.) The Court finds nothing in that description to support Whirlpool's argument that the term "determining" means "deciding," rather than its plain meaning. The Court therefore rejects that aspect of Whirlpool's proposed construction.

With respect to the term "a twist of clothes," however, the Court agrees with Whirlpool that the term should be construed to mean "clothes ... entwined together." The background section of the patent states that "cloths of the clothes may be damaged when operations in the washing mode and the rinsing mode are continued under a condition that the clothes has been twisted...." (*Id.*, col. 1, ll. 40-43.) "Moreover, there is a problem that the washing degree is degraded at the twisted portion of clothes." (*Id.*, col. 1, ll. 44-46.) The summary section states that "an object of the invention is to provide an apparatus for and a method of determining a

twist of clothes being washed in a washer, ... so that when the clothes twist signal is a meaningful signal, an operation in a clothes untwisting mode is carried out for minimizing a damage of the clothes...." (Id., col. 1, ll. 49-57.) The written description states that the invention makes it "possible to minimize a damage of clothes and improve the washing degree degraded at the twisted portion of clothes." (Id., col. 9, ll. 32-35.) It is clear, then, that "a twist of clothes" was understood to result in damage to the clothes and degradation of the washing degree at the twisted portion. That limitation comports with Whirlpool's proposed construction, "clothes ... entwined together." In contrast, LG fails to explain how "bundling [i.e., uneven distribution]" of clothes would result in damage at a bundled, unevenly distributed portion of clothes.

The Court therefore construes the term "determining a twist of clothes being washed in a washer" as "determining whether clothes being washed in a washer are entwined together."

(2) "*sensing a torque occurring at a drive shaft of said washer due to the twist of clothes, to sense the distribution of impact applied to an agitator of the washer by said clothes*"

The parties also dispute the term "sensing a torque occurring at a drive shaft of said washer due to the twist of clothes, to sense the distribution of impact applied to an agitator of the washer by said clothes," which appears in Claim 1. LG proposes that the term be construed to mean "sensing torque occurring at a drive shaft of the washer due to the bundling [i.e., uneven distribution] of clothes, to sense the distribution of impact [i.e., contact] applied to an agitator of the washer by the clothes." (Chart at 5.) Whirlpool proposes instead that the term be construed to mean "sensing a torque occurring at a drive shaft of the washer due to clothes that are entwined together, to sense the distribution of collisions between the clothes and the agitator of the washer." (Id.)

Comparing the parties' proposed constructions, the main issue is whether the term "impact" should be construed to mean "contact" or "collision[]." Figure 3 is an illustration of a washer to which the invention was applied. ('474 Patent, col. 3, ll. 21-23.) The written description of Figure 3 states that "[i]n accordance with the present invention, the clothes twist determining apparatus comprises a clothes twist sensing unit 10 for sensing a torque occurring at the drive shaft 6 due to the distribution of impact applied to the agitator 8 and generating a clothes twist signal according to the sensed torque." (Id., col. 3, ll. 42-47.) The use of the word "applied" favors Whirlpool's argument that the term "impact" means "collision" rather than "contact." The written description also states that "[b]y the normal and reverse rotations of the agitator 8, the clothes 1 are agitated normally and reversely. The clothes 1 being agitated strike against the agitator 8, so that the agitator is subjected to an impact." (Id., col. 5, ll. 18-21.) The use of the word "strike" in describing how the "impact" is applied to the agitator further supports Whirlpool's proposed construction.

The claimed invention seeks to distinguish twisted and untwisted clothes based on the "distribution of impact applied to the agitator...." (Id., col. 3, ll. 42-47.) LG, however, fails to explain how determining the distribution of "contact"-for example, differences in the amount of surface area in contact with the agitator-would affect the torque occurring at the drive shaft.

The Court will therefore construe the term "sensing a torque occurring at a drive shaft of said washer due to the twist of clothes, to sense the distribution of impact applied to an agitator of the washer by said clothes" to mean "sensing a torque occurring at a drive shaft of the washer due to clothes that are entwined together, to sense the distribution of collisions between the clothes and the agitator of the washer."

(3) "*sensing a torque occurring at a drive shaft of the washer due to an impact from the clothes*"

The parties also dispute the term "sensing a torque occurring at a drive shaft of the washer due to an impact from the clothes," which appears in Claims 3 and 4. LG proposes construing the term to mean "sensing torque occurring at a drive shaft of the washer due to an impact [i.e., contact] from the clothes." (Chart at 6.) Whirlpool proposes instead that the term be construed to mean "sensing a torque occurring at a drive shaft of the washer due to a collision from the clothes." (Id.) For reasons already discussed, the Court will adopt Whirlpool's proposed construction. The term "sensing a torque occurring at a drive shaft of the washer due to an impact from the clothes" is therefore construed to mean "sensing a torque occurring at a drive shaft of the washer due to a collision from the clothes."

(4) "*generating a clothes twist signal*"

The parties also dispute the term "generating a clothes twist signal," which appears in Claims 1, 3, and 4. LG proposes construing the term to mean "generating a signal indicative of the bundling [i.e., uneven distribution] of clothes." (Id.) Whirlpool proposes instead that the term be construed to mean "generating a signal indicative of clothes that are entwined together." (Id.) For reasons already discussed, the Court will adopt Whirlpool's proposed construction. The term "generating a clothes twist signal" is therefore construed as "generating a signal indicative of clothes that are entwined together."

(5) "*executing a clothes untwisting mode*"

The parties also dispute the term "executing a clothes untwisting mode," which appears in Claims 1, 3, and 4. LG proposes construing the term to mean "executing a mode to unbundle [i.e., evenly distribute] clothes." (Chart at 8.) Whirlpool proposes instead that the term be construed to mean "carrying out an operation for separating clothes that are entwined together." (Id.)

Claim 1 states that what is claimed is "[a]n apparatus for determining a twist of clothes being washed in a washer...." ('474 Patent, col. 9, ll. 43-44.) The apparatus comprises a "clothes twist sensing means," "correlation coefficient operating means," and "a microprocessor for performing a control for executing a clothes untwisting mode...." (Id., col. 9, ll. 45-60.) The summary of the patent states that:

[a]n object of the invention is to provide an apparatus for and a method of determining a twist of clothes being washed in a washer, wherein a sensing signal indicative of the twist of clothes is analyzed, to determine whether the clothes twist signal is a meaningful signal or a noise, so that when the clothes twist signal is the meaningful signal, an operation in a clothes untwisting mode is carried out for minimizing a damage of the clothes....

(Id., col.1, ll.49-57.) The intrinsic evidence shows that the claimed invention determines whether to carry out an operation for untwisting clothes.

The Court will therefore construe the term "executing a clothes untwisting mode" to mean "carrying out an operation for separating clothes that are entwined together."

b. '886 Patent

LG claims that Whirlpool's Calypso machine also infringes Claims 1, 4, and 8 of the '886 Patent. Claims 1, 4, and 8 recite:

1. A low frequency vibration type washing machine comprising:

a washing tub for receiving a multi-phase washing medium therein, said washing tub including a fixed bottom wall having an inner surface;

a shaft extending through said bottom wall and having an upper end and a lower end connected to a drive unit mounted below said bottom wall;

a rigid vibrating disc having a lower side and operating in said washing tub to cause a resonance phenomena in said multi-phase washing medium, said disc connected to the upper end of the shaft to be driven by said drive unit, the lower side of the vibrating disc disposed in uniformly spaced relation to the inner surface to create a gap; and

shrinkable shielding means disposed in the gap to prevent clothes from becoming jammed in the gap during a clothes washing operation.

4. The low frequency vibration type washing machine according to any one of claims 1 to 3, wherein said shrinkable shielding means is made of rubber or sponge.

8. The low frequency vibration type washing machine according to any one of claims 1 to 3, wherein said shrinkable shielding means is a flexible thin film annularly placed in said gap at a lower edge of said vibrating disc.

'886 Patent, Claims 1, 4, and 8. The parties dispute the following terms contained in these claims.

(1) "a washing tub for receiving a multi-phase washing medium therein"

The parties dispute the term "a washing tub for receiving a multi-phase washing medium therein." The parties agree that the term "washing tub" should be construed to mean "container," but disagree regarding the term "receiving." LG proposes construing the term to mean "a washing tub [i.e., container] for receiving the multi-phase washing medium and clothes." (Chart at 11.) Whirlpool proposes instead that the term be construed to mean "a container that holds a multi-phase washing medium." (Id.)

In support of its proposed construction, Whirlpool refers to the background section of the patent, which describes the washing medium as "in" the washing tub, and describes the clothes in the washing bin as "circulating" in the washing medium in the tub. ('886 Patent, col. 1, ll. 20-21, ll. 54-55.) These descriptions, however, do not require that the washing tub hold the washing medium. For example, the clothes could be circulating in a washing medium that is continuously flowing in and out of the washing tub. Nothing in the patent limits the washing tub that is "receiving" the washing medium from releasing it as well.

The Court therefore construes the term "a washing tub for receiving a multi-phase washing medium therein" to mean "a container for receiving the multi-phase washing medium and clothes."

(2) "said washing tub including a fixed bottom wall"

The parties also dispute the term "said washing tub including a fixed bottom wall." LG proposes construing the term to mean "the washing tub including a fixed bottom wall [i.e., fixed wall at a bottom portion of the washing tub]." (Chart at 12.) Whirlpool proposes instead that the term be construed to mean "the washing tub includes a bottom wall that remains stationary." (Id.)

The background section of the patent states that the claimed invention relates to "an improved structure in [low frequency vibration type] washing machines for prevention of jamming of clothes in a gap between a low frequency vibrating disc and the inner bottom of a washing tub." (886 Patent, col. 1, ll. 9-14.)

According to that section, the typical washing machine "has a problem in that some of the clothes are often jammed in a gap between the vibrating disc 2 and the inner bottom of the washing tub 1." (*Id.*, col. 1, ll. 49-52.) The summary section states that it is "an object of the present invention to provide a low frequency vibration type washing machine ... whose shielding means totally or partially shields the gap between the low frequency vibrating disc and the tub bottom from the outside." (*Id.*, col. 1, ll. 60-67.) Figures 2, 3, and 4 are embodiments of the claimed invention, and each one depicts the bottom wall as the inner surface of the bottom wall. This intrinsic evidence suggests that the term "bottom wall" refers to the bottom wall of the washing tub, as Whirlpool argues, rather than a wall at a bottom portion of the washing tub, as LG argues.

The parties also refer to the prosecution history. The examiner originally rejected Claim 1 because it was anticipated by a patent that the parties refer to as the German '789 patent. (Def.'s Ex. 8 at 2.) Figure 1 of the German '789 patent disclosed a washing machine that included a washing container having a bottom "which is designed as a membrane." (Def.'s Ex. 10 at 2-3.) "When power is applied to the shaker device, the bottom membrane M is set into a strong and rapid up and down movement...." (*Id.* at 2.) LG acknowledges that "[b]y amending the claim to distinguish the prior art, the applicants narrowed the scope of the claim [sic] invention to exclude coverage for washing tub bottoms that were membrane-like (i.e., soft and flexible) and that *moved up and down.*" (Pl.'s Br. at 25 (emphasis added).)

The Court therefore construes the term "said washing tub including a fixed bottom wall" to mean "said washing tub including a bottom wall that remains stationary."

(3) "*vibrating disc*"

The parties also dispute the term "vibrating disc." LG proposes construing the term to mean "circular object that is moving back and forth." (Chart at 14.) Whirlpool proposes instead that the term be construed to mean "a 'disc' is a thin, flat circular object," and that a "vibrating disc" be construed to mean "a disc that moves back and forth between a maximum position of the disc and a minimum position of the disc." (*Id.* at 14-15 .)

The parties agree that "disc" should be construed to mean a circular object. Whirlpool, however, argues that the term should be further limited to mean thin and flat. It has identified no intrinsic evidence to support that limitation, and the Court therefore rejects its argument with respect to that term.

The background section to the patent states that "[i]n order to wash clothes in a conventional automatic washing machine using low frequency vibration, a low frequency vibrating disc placed in a washing tub generates a specified low frequency vibration.... The level of the low frequency is specified in accordance with the shape of the washing tub, the shape of the vibrating disc and the mixing ratio of the multi-phase washing medium." (886 Patent, col. 1, ll. 16-25.)

In support of its proposed construction for the term "vibrating," Whirlpool refers to the written description for Figure 2, which is a "sectional view of a low frequency vibration type washing machine having shrinkable shielding means in accordance with an embodiment of the present invention." (*Id.*, col. 2, ll. 22-24.) The written description states that "the height of the shrinkable shielder 4 is equal to the distance from

the inner bottom of the washing tub 1 to the maximum vibrating position of the disc 2," and that "the shrinkable shielder 4 should be designed such that it can be elastically shrunk and extended in the vibration stroke [between the maximum and minimum positions] of the vibrating disc." (*Id.*, col. 2, ll. 45-55.) That description, however, concerns only one of the preferred embodiments described in the patent. The patent describes two additional preferred embodiments. Although each of them refers to a vibrating disc, they do not discuss any maximum or minimum heights for the vibrating disc. (*See id.*, col. 3, ll. 5-25.)

Moreover, the written description states that "[a]lthough the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims." (*Id.*, col. 3, ll. 27-32.)

The Court therefore rejects Whirlpool's proposed construction, and construes the term "vibrating disc" to mean a "circular object that is moving back and forth."

(4) "*operating in said washing tub to cause a resonance phenomena in said multi-phase washing medium*"

The parties also dispute the term "operating in said washing tub to cause a resonance phenomena in said multi-phase washing medium." LG proposes construing the term to mean "operating [the vibrating disc] to cause a resonance phenomena [i.e., an increase in amplitude of oscillation due to low frequency vibration of the vibrating disc] in a multi-phase washing medium." (Chart at 16.) Whirlpool proposes instead that the term be construed to mean "vibrating a disc at a characteristic frequency to cause an observable wave pattern in the multi-phase washing medium." (*Id.*) The Court notes, as an initial matter, that the parties agree that the term "operating" refers to the vibrating disc.

The summary of the patent states that "a low frequency vibration type washing machine in accordance with an embodiment of the present invention comprises ... a vibrating disc placed in the washing tub for causing resonance phenomena in the multi-phase washing medium...." (886 Patent, col. 2, ll. 1-6.) The background of the patent states that "[i]n order to wash clothes in a conventional automatic washing machine using low frequency vibration, a low frequency vibrating disc placed in a washing tub generates a specified low frequency vibration which causes resonance phenomena in a multi-phase washing medium in the washing tub." (*Id.*, col. 1, ll. 16-21.) "The level of low frequency is specified in accordance with the shape of the washing tub, the shape of the vibrating disc and the mixing ratio of the multi-phase washing medium." (*Id.*, col. 1, ll. 23-25.)

Whirlpool argues that the prosecution history supports its construction of the term "resonance phenomena" to mean "characteristic frequency" that causes "an observable wave pattern." (Def.'s Br. at 32-33.) According to Whirlpool, "the Examiner found that the German patent anticipated claim 1," and that "[t]he German patent discloses an 'oscillating element ... which strongly vibrates the washing liquid' 'resulting in 'standing waves in the washing liquid.' " (*Id.* at 34.) LG, meanwhile, fails to identify any intrinsic evidence supporting its proposed construction of the term "resonance phenomena." The Court will therefore construe the term "operating in said washing tub to cause a resonance phenomena in said multi-phase washing medium" to mean "operating the vibrating disc at a characteristic frequency to cause an observable wave pattern in the multi-phase washing medium."

(5) "*the lower side of the vibrating disc disposed in uniformly spaced relation to the inner surface to*

create a gap"

The parties also dispute the term "the lower side of the vibrating disc disposed in uniformly spaced relation to the inner surface to create a gap." LG proposes construing the term to mean "the lower side of the vibrating disc disposed in uniformly spaced relationship to the inner surface [i.e., consistent degree of spacing between the lower side of the vibrating disc and the inner surface of the bottom portion of the washing tub] to create a gap." (Chart at 17-18.) Whirlpool proposes instead that the term be construed to mean "all points on the lower side of the vibrating disc have the same spacing relative to the inner surface of the bottom wall of the washing tub during vibration." (*Id.*)

Claim 1 describes "[a] low frequency vibration type washing machine comprising ... a rigid vibrating disc having a lower side ..., the lower side of the vibrating disc disposed in uniformly spaced relation to the inner surface to create a gap...." ('886 Patent, col. 3, l. 33 to col. 4, l. 9.) The summary of the patent states that an object of the invention is "to provide a low frequency vibration type washing machine having shrinkable shielding means ... whose shielding means totally or partially shields the gap between the low frequency vibrating disc and the tub bottom from the outside." (*Id.*, col. 1, ll. 60-67.)

Figures 2, 3, and 4 are embodiments of the claimed invention. Each one depicts the gap as the one between the lower side of the vibrating disc and the inner surface of the bottom wall. The written description for Figure 2 states that "[i]n this first embodiment, the shrinkable shielding means for prevention of clothes jamming comprises a shrinkable shielder 4 which is annularly placed in the gap between a low frequency vibrating disc 2 and the inner bottom of a washing tub 1 at the lower edge of the disc 2." (*Id.*, col. 2, ll. 37-41.) The written description for Figure 3 refers to the gap as "between the inner bottom of the tub 1 and the vibrating disc 2." (*Id.*, col. 3, ll. 11-12.) The written description for Figure 4 also refers to the gap as "between the inner bottom of the washing tub 1 and the disc 2 at the lower edge of the disc 2...." (*Id.*, col. 3, ll. 23-25.) The Court therefore agrees with Whirlpool that the "inner surface" refers to the inner surface of the bottom wall.

With respect to the rest of Whirlpool's proposed construction, however, it has identified no intrinsic evidence in support of its construction. The Court will therefore reject the other aspects of Whirlpool's proposed construction of the term.

For these reasons, the Court construes the term "the lower side of the vibrating disc disposed in uniformly spaced relation to the inner surface to create a gap" to mean "the lower side of the vibrating disc disposed in uniformly spaced relation to the surface of the bottom wall to create a gap."

(6) "*shrinkable shielding*"

The parties also dispute the term "shrinkable shielding." LG proposes construing the term to mean "flexible device to shield clothes from entering a gap." (Chart at 20.) Whirlpool proposes instead that the term be construed to mean "a shielding structure that is capable of being reduced in size by a vibration stroke of the vibrating disc." (*Id.*)

Claim 1 describes a "shrinkable shielding means disposed in the gap to prevent clothes from becoming jammed in the gap during a clothes washing operation." ('886 Patent, col. 4, ll. 10-12.) Claims 4 through 8 describe the different limitations applicable to the shrinkable shielding means. Those limitations include being "made of rubber or sponge," "a tube type shielder," "a spring type shielder," or "a flexible thin film annularly placed in said gap...." (*Id.*, col. 4, ll. 21-37.) The background section of the patent states that

"[t]he present invention relates ... to an improved structure in [low frequency vibration type] washing machines for prevention of jamming of clothes in a gap between a low frequency vibrating disc and the inner bottom of a washing tub." (*Id.*, col. 1, ll. 9-14.) Given these limitations, and the use of the proposed invention in washing machines with vibrating discs, the Court agrees with LG that the term "shrinkable" means "flexible." Moreover, insofar as the patent itself refers to the invention as relating to "an improved structure," the Court will construe the term "shielding" as "structure" for shielding clothes from entering a gap. (*Id.*, col. 1, l. 11.)

In arguing that "shrinkable" should be construed to mean "capable of being reduced in size by a vibration stroke of the vibrating disc," Whirlpool refers to the written description for Figure 2, which states that "the shrinkable shielder 4 should be designed such that it can be elastically shrunk and extended in the vibration stroke h_1-h_2 of the vibrating disc 2." (*Id.*, col. 2, ll. 52-55.) As the Court has already explained, however, the written description concerns only one of the preferred embodiments described in the patent. Nothing in the descriptions of the other preferred embodiments refers to a similar vibrating stroke. (*See id.*, col. 3, ll. 5-25.)

For these reasons, the Court construes the term "shrinkable shielding" to mean "flexible structure to shield clothes from entering a gap."

(7) "*disposed in the gap*"

The parties also dispute the term "disposed in the gap." LG proposes construing the term to mean "placed in the gap." (Chart at 22.) Whirlpool proposes instead that the term be construed to mean "placed in a space between the lower side of the vibrating disc and the inner surface of the bottom wall of the washing tub." (*Id.*)

The Court notes that the parties agree that the term "disposed" should be construed to mean "placed." Claim 1 describes "[a] low frequency vibration type washing machine comprising ... a rigid vibrating disc having a lower side ..., the lower side of the vibrating disc disposed in uniformly spaced relation to the inner surface to create a gap...." ('866 Patent, col. 3, l. 34 to col. 4, l. 9.) The machine also comprises "shrinkable shielding means disposed in the gap to prevent clothes from becoming jammed in the gap during a clothes washing operation." (*Id.*, col. 4, ll. 10-12.) Moreover, in construing the above terms, the Court has already noted that it is the space between the lower side of the vibrating disc and the inner surface of the bottom wall that creates the relevant gap.

The Court therefore agrees with Whirlpool that "disposed in the gap" should be construed to mean "placed in the space between the lower side of the vibrating disc and the inner surface of the bottom wall of the washing tub."

c. '731 Patent

LG claims that Whirlpool's Duet washer infringes Claims 1, 3, and 10 of the ' 731 Patent. Claims 1, 3, and 10 recite:

1. A drying method for a drum-type washing machine, the method comprising the steps of:

draining water from a load of laundry while maintaining a predetermined drying speed for a predetermined

time in an initial drying step performed during a drying stroke of the drum-type washing machine; and sensing whether an eccentricity exists after expiration of the predetermined time and, if the eccentricity is not sensed, accelerating the drying speed to accomplish drying of the laundry.

3. A drying method for a drum-type washing machine, the method comprising the steps of:

draining water from a load of laundry disposed in a drum of the drum-type washing machine in an initial drying step performed during a drying stroke of the drum-type washing machine;

comparing a reference value with a difference between a slow spinning speed and a fast spinning speed of the drum of the drum-type washing machine; and

based on a result of the comparing step, controlling a spinning operation of the drum.

10. A drying method for a drum-type washing machine, the method comprising the steps of:

draining water from a load of laundry disposed in a drum of the drum-type washing machine while maintaining a predetermined drying speed for a predetermined time in an initial drying step performed during a drying stroke of the drum-type washing machine;

comparing a reference value with a difference between a slow spinning speed and a fast spinning speed of the drum of the drum-type washing machine; and

based on a result of the comparing step, controlling a spinning operation of the drum.

'731 Patent, Claims 1, 3, and 10. The parties dispute two terms contained in these claims.

(1) "*maintaining a predetermined drying speed for a predetermined time in an initial drying step*"

The parties dispute the term "maintaining a predetermined drying speed for a predetermined time in an initial drying step," which appears in Claims 1 and 10. LG proposes construing the term to mean "maintaining a predetermined drying speed [i.e., a preset speed occurring during a drying step] for a predetermined time in an initial drying step [i.e., a first drying step in a sequence of drying steps]." (Chart at 23.) Whirlpool proposes instead that the term be construed to mean "spinning the drum at a preset speed that discharges water contained in the laundry for a predetermined time." (Id.)

The summary of the patent states that "[a]n object of the present invention is to provide a drying method for a drum-type washing machine which can prevent the drum from generating a flushing noise upon activation of a drying step, and which can also prevent laundry from sticking to the drum and thus becoming crumpled ." (731 Patent, col. 2, ll. 11-15.) "To achieve these and other advantages and in accordance with the purpose of the present invention, as embodied and broadly described, a drying method for a drum-type washing machine of the present invention includes ... draining water from a load of laundry by maintaining a predetermined drying speed for a predetermined time in an initial drying step...." (Id., col. 2, ll. 23-29.)

Figure 5 is "a flowchart showing a method of carrying out a drying stroke process by sensing an eccentricity in a drum washing machine according to the present invention...." (Id., col. 3, ll. 8-10.) Figure 6 is "a graph

showing characteristics of the drying stroke of [Figure] 5." (*Id.*, col. 3, ll. 12-13.) The written description for Figures 5 and 6 states that "the predetermined speed R2 is maintained in steps 53 S and 54S for a predetermined time t_c in order to discharge the water contained in the laundry, thereby preventing an eccentricity from being generated due to the water contained in the laundry." (*Id.*, col. 3, ll. 40-44.)

Based on the intrinsic evidence, the Court will adopt Whirlpool's construction of the term. It is clear that the patent uses the term "maintaining a predetermined drying speed" with respect to the spinning of the drum. It is also clear that the proposed invention engages in the initial drying step for the purpose of discharging water. The Court therefore construes the term "maintaining a predetermined drying speed for a predetermined time in an initial drying step" to mean "spinning the drum at a preset speed that discharges water contained in the laundry for a predetermined time."

(2) "*comparing a reference value with a difference between a slow spinning speed and a fast spinning speed of the drum*"

The parties also dispute the term "comparing a reference value with a difference between a slow spinning speed and a fast spinning speed of the drum," which appears in Claims 3 and 10. LG proposes construing the term to mean "comparing a reference value [i.e., a known value for measuring against] with a difference [i.e., change] between a slow spinning speed and a fast spinning speed of the drum." (Chart at 26.) Whirlpool proposes instead that the term be construed to mean "subtracting a slow measured drum speed from a fast measured drum speed and comparing the result with a standard value." (*Id.*)

According to the written description for Figures 5 and 6, "[t]he imbalance sensing operation is performed by calculating the difference between a speed X_2 at which the drum spins fastest so that the laundry is placed on the top of the drum, ... and the speed X_1 at which the drum spins slowest so that the laundry is placed in the lower part of the drum, ... and then comparing the calculated difference with a reference value in step 55S." ('731 Patent, col. 3, ll. 49-55.) Figure 5 shows this calculation in step 55S as " $X_2 - X_1 > \text{reference value.}$ "

The summary of the patent describes "a drying method for a drum-type washing machine, the method including the steps of ... comparing a reference value with a difference between a slow spinning and a fast spinning speed of a drum ... and based on a result of the comparing step, controlling a spinning operation of the drum." (*Id.*, col. 2, ll. 44-53.)

Based on the patent's use of the term "difference" when describing the comparison of values X_1 and X_2 , and its use of a subtraction calculation to describe the comparison performed, the Court agrees with Whirlpool that the term refers to the subtraction of the two values.

With respect to the terms "slow spinning" and "fast spinning," however, Whirlpool has failed to identify any intrinsic support for construing the terms to mean "slow measured" and "fast measured." With respect to Whirlpool's argument that the term "standard value" should apply, the Court also finds no basis to support that argument.

The Court will therefore construe the term "comparing a reference value with a difference between a slow spinning speed and a fast spinning speed of the drum" to mean "subtracting a slow spinning speed from a fast spinning speed of the drum and comparing the result with a reference value."

B. Whirlpool's Motion for Summary Judgment

1. Standard of Review for Motions for Summary Judgment

In deciding a motion for summary judgment, a court should grant the motion if "there is no genuine issue as to any material fact and ... the moving party is entitled to a judgment as a matter of law." Fed.R.Civ.P. 56(c). *See also* Celotex Corp. v. Catrett, 477 U.S. 317, 322-23 (1986); Orson, Inc. v. Miramax Film Corp., 79 F.3d 1358, 1366 (3d Cir.1996). The threshold inquiry is whether "there are any genuine factual issues that properly can be resolved only by a finder of fact because they may reasonably be resolved in favor of either party." Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 250 (1986). In deciding whether triable issues of fact exist, the court must view the underlying facts and draw all reasonable inferences in favor of the non-moving party. *See* Hancock Indus. v. Schaeffer, 811 F.2d 225, 231 (3d Cir.1987). In arguing against a motion for summary judgment, "an adverse party may not rest upon the mere allegations or denials of the adverse party's pleading, but the adverse party's response ... must set forth specific facts showing that there is a genuine issue for trial." Fed.R.Civ.P. 56(e).

2. Infringement

Patent infringement analysis entails a two-step process. *Research Plastics, Inc. v. Fed. Packaging Corp.*, 421 F.3d 1290, 1295 (Fed.Cir.2005). The first step, claim construction, involves the determination of the scope and meaning of the patent claims. *Id.* Claim construction is a matter of law. *Markman*, 52 F.3d at 979. Second, the allegedly infringing device must be compared against the properly construed claim. *Research Plastics*, 421 F.3d at 1295. This step requires a factual determination. *Id.* This Court has already construed the disputed claims terms identified by the parties. The Court must now determine whether the accused products infringe the asserted claims.

In order to succeed on a claim of literal infringement, the patentee must prove by a preponderance of evidence that an accused device contains "each and every limitation set forth in a claim...." *Frank's Casing Crew & Rental Tools, Inc. v. Weatherford Int'l, Inc.*, 389 F.3d 1370, 1378 (Fed.Cir.2004). "Even if an accused product differs enough from an asserted claim to preclude literal infringement, that product may infringe under the doctrine of equivalents if there is equivalence between those elements of the accused product and the claimed limitations of the patented invention that are not literally infringed." *Zelinski v. Brunswick Corp.*, 185 F.3d 1311, 1316 (Fed.Cir.1999). The doctrine of equivalents "does not require complete identity for every purpose and in every respect, ... but does require substantial identity of function, means, and result." *Lear Siegler, Inc. v. Sealy Mattress Co. of Mich., Inc.*, 873 F.2d 1422, 1425 (Fed.Cir.1989) (internal quotations omitted).

3. '474 Patent

a. Literal Infringement

In order to succeed on a claim of literal infringement, the patentee must prove by a preponderance of evidence that an accused device contains "each and every limitation set forth in a claim...." *Frank's Casing Crew*, 389 F.3d at 1378. LG claims that Whirlpool's Calypso washer literally infringes Claims 1, 3, and 4 of the '474 Patent. Whirlpool, however, has demonstrated that the Calypso washer does not satisfy at least one of the limitations contained in each of those claims. The '474 Patent describes methods for "determining a twist of clothes being washed in a washer." For reasons already explained, the Court construes that limitation to mean "determining whether clothes being washed in a washer are entwined together." The

undisputed record shows that the Calypso washer contains mechanisms for determining whether the clothes are in an off-balance condition. According to Whirlpool's software engineer Mr. Stenger, that off-balance condition can be caused by either twisted clothes or untwisted clothes. (Stenger Dep. (June 8, 2005) at 120.) The Calypso washer, then, does not determine whether clothes are twisted, as that term is construed by the Court.

LG argues that the Calypso washer literally infringes Claims 1, 3, and 4 of the '474 Patent. That argument is based on LG's proposed construction of the term "determining a twist of clothes being washed in a washer" to mean "determining a bundling [i.e., uneven distribution] of clothes being washed in a washer." (Pl.'s Br. at 5, 10.) The Court has, however, rejected LG's proposed construction of that term, as well as its proposed construction of the other disputed terms contained in the '474 Patent. LG has not identified any evidence showing a genuine issue of material fact concerning whether the Calypso washer literally infringed Claims 1, 3, and 4 of the '474 Patent, in light of the Court's construction of those claims. The Court therefore grants Whirlpool's motion with respect to LG's claim of literal infringement of the '474 Patent.

b. Doctrine of Equivalents

Whirlpool also argues that the Calypso washer does not infringe Claims 1, 3, and 4 of the '474 Patent pursuant to the doctrine of equivalents. In support of its argument, Whirlpool refers to statements made by its expert, Larry Hawkins, P.E., in his expert report. Hawkins's statements identify several differences between aspects of the Calypso washer and the limitations described by the '474 Patent. In opposing Whirlpool's motion, LG argues that those differences are insubstantial. To support its argument, LG refers to statements made by its own expert, Dr. Donald A. Coates, Ph.D., P.E. Unlike Hawkins, Coates explains the similarities between the Calypso washer and the claimed invention. The parties dispute the following limitations:

First, Hawkins states that "[t]he Whirlpool Calypso washers detect an off balance condition caused by a severe non-uniformity in the distribution of clothes in the washer." (Expert Report of Larry Hawkins, P.E. ("Hawkins Report") at 5.) He states that "unbalanced loads are generally the result of a non-uniform distribution of untwisted clothes rather than caused by twisted clothes." (*Id.* at 5-6.) In contrast, Coates states that "a detection of an uneven distribution of clothes could be a generally useful indication that clothes were twisted or entwined." (Decl. of Donald A. Coates, Ph.D., P.E. ("Coates Decl.") para. 13.)

Second, Hawkins states that "[t]he '474 patent describes a clothes twist determination that occurs during a washing mode or a rinsing mode," and that "[t]he determination is done in order to minimize damage to the clothes and to improve the degree of washing." (Hawkins Report at 6.) He states that the Calypso washers, in contrast, "do not check for an off balance condition during washing or rinsing but, rather, when the clothes are being spun to extract water from them." (*Id.*) Coates disagrees, and states that "the Calypso washer detects off balance during a washing mode and a rinsing mode because the basket spins at numerous times during these modes and, each time, a detection of an uneven distribution is performed." (Coates Decl. para. 14.)

Third, Hawkins distinguishes the Calypso washer from the claimed invention by stating that "the off balance detection [by the Calypso machines] is done to prevent damage to the washer and to prevent a 'walking' movement of the washer," whereas "the twist detection in the '474 patent is done in order to improve the washing results and to prevent damage to the clothes caused by twisting." (Hawkins Report at 6.) In contrast, Coates states that "Whirlpool's desired end result is insubstantially different (if not identical) to that

of the claimed invention, that is, to evenly distribute an unevenly distributed clothes load in hopes of overcoming the off balance condition." (Coates Decl. para. 17.)

In light of this record, the Court concludes that summary judgment of noninfringement is not proper at this stage. The record contains disputed facts regarding the equivalence between elements of the Calypso washer and the claimed limitations in the '474 Patent. The Court will therefore deny Whirlpool's motion for summary judgment with respect to infringement of Claims 1, 3, and 4 of the '474 Patent based on the doctrine of equivalents.

4. '886 Patent

a. Literal Infringement

Whirlpool also argues that summary judgment should be granted with respect to the '886 Patent. Although the Court disagreed with Whirlpool's proposed construction of most of the disputed terms contained in the patent, the Court agreed with Whirlpool that the term "disposed in the gap" should be construed to mean "placed in the space between the lower side of the vibrating disc and the inner surface of the bottom wall of the washing tub." LG's argument that the Calypso washer satisfied this limitation is based on its proposed construction of the term "disposed in the gap," which the Court has rejected for reasons already explained. There is no genuine dispute that the wash plate deflector for the Calypso washer is placed between the outer wash plate and the inside side wall of the wash basket surface, rather than between the lower side of the wash plate and the bottom inside wall. (See Pl.'s Br. at 42-43; Def.'s Br. at 43-44; Hawkins Report at 25.) Whirlpool has demonstrated that the Calypso washer fails to satisfy at least one of the limitations contained in the '886 Patent. The Court will therefore grant Whirlpool's motion with respect to LG's claim of literal infringement of the '886 Patent.

b. Doctrine of Equivalents

Whirlpool argues that the Calypso washer does not infringe Claims 1, 4, and 8 of the '886 Patent pursuant to the doctrine of equivalents. In support of its argument, Whirlpool again refers to Hawkins's report, which identifies a number of differences between the Calypso washer and the invention claimed by the '886 Patent. LG responds by referring to statements by Coates that challenge Hawkins's report. The parties dispute the following limitations:

First, Hawkins states that "the basket and the tub in the Calypso washer are two different things," and that "[t]he function of the basket in the Calypso washer is not to contain water but to contain the clothes." (Hawkins Report at 12.) "In contrast, the 'washing tub' in the '886 patent actually holds the multi-phase washing medium...." (Id.) Coates, however, states that "[a]lthough the Calypso wash basket allows the washing medium to flow through it, it also, nonetheless, retains a portion such that the washing medium may be seen splashing during operation." (Coates Decl. para. 32.) "Further, since the wash medium is continuously and immediately pumped back into the wash basket during the wash process, the medium is, for all intents and purposes, retained within the wash basket." (Id.)

Second, Hawkins states that "[i]n the '886 patent, the entire washing tub is stationary," whereas "the bottom wall of the Calypso wash basket is clearly not fixed because the wash basket can spin in order to extract water from the clothes." (Hawkins Report at 13.) Coates, however, states that "[t]he Calypso machine does not spin during most of the wash process, when the plate nutates and causes the cloth and detergent to move," and that "[e]ven when the basket spins, the portions of the basket remain fixed relative to each other

because the basket is a single unitary piece." (Coates Decl. para. 34.)

Third, with respect to the "vibrating disc" limitation, Hawkins states that "[t]he operational wash plate [for the Calypso washer] includes a dome and deflector in addition to the outer wash plate," and therefore is "clearly not a disc" as described by the '886 Patent. (Hawkins Report at 14.) He further describes the motion of the Calypso wash plate as being a " 'figure 8' motion [that] is indicative of a more complex motion than a 'back and forth' movement" for the vibrating disc described by the '886 Patent. (Id. at 19.) In contrast, Coates states that "the outer wash plate is capable, and does, move in a back and forth direction" as described by the '886 Patent. (Coates Decl. para. 38.)

Fourth, Hawkins states that, in the Calypso washer, "the transfer of mechanical movement to the clothes does not require the wash plate to operate at a particular, characteristic frequency, as would be the case in a resonant system," such as one described by the '886 Patent. (Hawkins Report at 20.) Coates, however, states that "[w]hile Whirlpool's wash plate may not operate at a single character frequency, the frequency at which it operates are sufficiently close to a characteristic frequency so as to both create an observable wave pattern in the multiphase washing medium and to assist in cleaning clothes effectively in the same manner as the character frequency would." (Coates Decl. para. 43.)

Fifth, with respect to the limitation "shrinkable shielding means," Hawkins states that "the deflector [in the Calypso washer] is designed with a hinge point about which the deflector is able to pivot," and is therefore "not shrinking or expanding." (Hawkins Report at 24.) In contrast, Coates states that "[t]he wash plate deflector [of the Calypso washer] moves by pivoting around a hinge point such that when the deflector does move, compression, or shrinkage, occurs at the hinge point." (Coates Decl. para. 50.)

Sixth, Hawkins states that, unlike the claimed invention, "the wash plate deflector [in the Calypso washer] is not placed between the lower side of the outer wash plate and the bottom wall of the wash basket," and that it instead "extends from the side of the outer wash plate to contact the side walls of the wash basket." (Hawkins Report at 25.) In contrast, Coates states that "the purpose of the gap is to provide some clearance between the plate and the tub, and the purpose of the shielder of the '886 patent is to prevent clothes from becoming lodged between the wash tub and the vibrating disc." (Coates Decl. para. 45.) "The purpose of the shielder of the Calypso washer is the same, that is, to keep clothes from entering the spacing between the wash plate and the wash basket ." (Id.)

Based on this record, the Court concludes that summary judgment of noninfringement is not proper at this stage. There remain genuine issues of material fact regarding the equivalence between elements of the Calypso washer and the claimed limitations in the '886 Patent. The Court will therefore deny Whirlpool's motion for summary judgment with respect to infringement of Claims 1, 4, and 8 of the '886 Patent based on the doctrine of equivalents.

5. '731 Patent

a. Literal Infringement

Whirlpool has demonstrated that the Calypso washer does not satisfy at least one of the limitations set forth in the '731 Patent. With respect to the limitation of "comparing a reference value with a difference between a slow spinning speed and a fast spinning speed of the drum," the Court construed the term to mean "subtracting a slow spinning speed from a fast spinning speed of the drum and comparing the result with a reference value." The parties do not dispute that for the Duet washer, the value that is compared with the

reference value is labeled "USUM," and that it consists of the sum of the differences between the instantaneous speed of the drum and a running average speed. (*See* Pl.'s Br. at 49, Def.'s Br. at 49.) There is also not dispute that, after making the appropriate adjustments, the USUM value is compared to preset threshold values labeled ULIM1, ULIM2, ULIM3, and ULIM4. (*See id.*) The Duet washer, then, does not satisfy the limitation that it subtract a slow spinning speed from a fast spinning speed. The record shows that the washer calculates instead the sum of the differences between the instantaneous speed of the drum and a running average speed. Moreover, unlike the claimed invention, the Duet washer uses more than one reference value. The Court therefore concludes that Whirlpool's Duet washer does not literally infringe the '731 Patent. Whirlpool's motion is granted with respect to LG's claim of literal infringement of the '731 Patent.

b. Doctrine of Equivalents

Whirlpool argues that the Duet washer does not infringe Claims 1, 3, and 10 of the '731 Patent pursuant to the doctrine of equivalents. In support of its argument, Whirlpool again refers to Hawkins's report, which identifies a number of differences between the Duet washer and the invention claimed by the '731 Patent. LG responds by referring to statements by Coates supporting its opposition. The parties dispute the following limitations:

First, Hawkins states that "[a]ccording to the '731 patent, the predetermined speed R2 is maintained for a predetermined time 'in order to discharge the water contained in the laundry.'" (Hawkins Report at 26.) "However, the lowest maintenance speed at which the drum spins in order to extract water from the clothes is 400 rpm," which exceeds the relevant speed of 80 to 110 rpm that is used by the Duet washer. (*Id.*) According to Coates, however, water can be extracted at a speed of 80 to 110 rpm. (Coates Decl. para. para. 57-58.)

Second, Hawkins states that, with respect to the limitation "comparing a reference value with a difference between a slow spinning speed and a fast spinning speed," "the Whirlpool approach is substantially different from the claimed approach." (Hawkins Report at 27.) According to Hawkins, "[t]he claimed approach allows three possible results, i.e., the reference value could be greater than the difference, less than the difference, or equal to the difference." (*Id.*) "In contrast, the Whirlpool approach determines which of the multiple ULIM ranges ... the USUM value lies in, thereby allowing more than just three possible results." (*Id.* at 28.) In contrast, Coates states that the Duet washer performs that function "in substantially the same way, that is, subtracting one drum speed from another then comparing it to a reference value." (Coates Decl. para. 73.) Moreover, Coates states that the Duet washer performs the function "to achieve substantially the same result, which is to determine if an off balance exists." (*Id.*)

Based on this record, the Court concludes that summary judgment of noninfringement is not proper at this stage. There remain genuine issues of material fact regarding the equivalence between elements of the Duet washer and the claimed limitations in the '731 Patent. The Court will therefore deny Whirlpool's motion for summary judgment with respect to infringement of Claims 1, 3, and 10 of the '731 Patent based on the doctrine of equivalents.

III. CONCLUSION

For these reasons, Defendant's motion for summary judgment is granted in part and denied in part. An appropriate form of order is filed herewith.

D.N.J.,2007.

LG Electronics U.S.A., Inc. v. Whirlpool corp.

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