United States District Court,
E.D. Texas, Marshall Division.

O2 MICRO INTERNATIONAL LIMITED,
v.
SUMIDA CORPORATION.

Civil Action No. 2:03-CV-07

March 8, 2005.

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MEMORANDUM OPINION AND ORDER

T. JOHN WARD**, District Judge.**

After considering the submissions and the arguments of counsel, the court issues the following order concerning the claim construction issues:

1. Introduction.

The plaintiff, O2 Micro International Limited ("O2"), alleges that the defendant, Taiwan Sumida Electronics ("TSE"), infringes various claims of two United States Patents. The '615 and the '722 Patents are both titled "High-Efficiency Adaptive DC/AC converter."

The technology relates to power inverter circuitry used in connection with laptop and notebook computers. The circuit utilizes a DC power source and converts it to higher voltage alternating current used to power a load. In this context, the load is typically a cold cathode fluorescent lamp used to light the computer display screen. Broadly, the converter circuit can be described as a circuit with an input DC voltage connected to one side of a transformer through pluralities of switches, typically transistors, with the load connected to the other side of the transformer. Each plurality of switches forms a conduction path to connect the DC input to the primary side of the transformer in such a way that the DC current flows in one direction through the

primary side of the transformer when the first plurality of switches conducts and in the opposite direction when the second plurality of switches conducts. Alternating these two conduction paths results in current with an alternating polarity flowing through the primary side of the transformer. This generates an AC output on the secondary side of the transformer which is used to power to the load.

Drive circuitry determines when and for how long the switches in the plurality are turned on or off. The time that both switches in a plurality are turned on (the overlap time) determines the amount of power delivered to the load. The longer the overlap time, the more power is delivered to the load. The circuit includes a feedback signal to help adjust the amount of power delivered to the load. By comparing the feedback signal to a reference, the circuit determines whether an adjustment to the load power is necessary. The circuit can also detect an open lamp condition and operate in a mode where only a minimum amount of power is delivered to the load.

2. Law Governing Claim Construction.

"A claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using or selling the protected invention." Burke, Inc. v. Bruno Indep. Living Aids, Inc., 183 F.3d 1334, 1340 (Fed.Cir.1999). Claim construction is an issue of law for the court to decide. Markman v. Westview Instruments, Inc., 52 F.3d 967, 970-71 (Fed.Cir.1995) (en banc), *aff'd,* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996).

To ascertain the meaning of claims, the court looks to three primary sources: the claims, the specification, and the prosecution history. Markman, 52 F.3d at 979. Under the patent law, the specification must contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. A patent's claims must be read in view of the specification, of which they are a part. Markman, 52 F.3d at 979. For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. *Id*. "One purpose for examining the specification is to determine if the patentee has limited the scope of the claims." Watts v. XL Sys., Inc., 232 F.3d 877, 882 (Fed.Cir.2000).

Nonetheless, it is the function of the claims, not the specification, to set forth the limits of the patentee's claims. Otherwise, there would be no need for claims. SRI Int'l, v. Matsushita Elec. Corp., 775 F.2d 1107, 1121 (Fed.Cir.1985) (en banc). The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the specification. Intellicall, Inc. v. Phonometrics, 952 F.2d 1384, 1388 (Fed.Cir.1992). And, although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim language is broader than the embodiments. Electro Med. Sys., S.A. v. Cooper Life Sciences, Inc., 34 F.3d 1048, 1054 (Fed.Cir.1994).

To assess the ordinary meaning of terms used in a patent claim, a court may properly rely on dictionary definitions. The Federal Circuit has noted that "[i]t has long been recognized in the precedent of our predecessor court, the Court of Customs and Patent Appeals, that dictionaries, encyclopedias and treatises are particularly useful resources to assist the court in determining the ordinary and customary meaning of claim terms." Texas Digital Systems, Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202 (Fed.Cir.2002). The court reasoned that such sources are objective resources that serve as reliable sources of information on the established meanings that would have been attributed to the terms of the claims by those of skill in the art. Id. at 1202-03. According to the court, dictionaries, encyclopedias and treatises "constitute unbiased

reflections of common understanding not influenced by expert testimony or events subsequent to the fixing of the intrinsic record by the grant of the patent, not colored by the motives of the parties, and not inspired by litigation." Id. at 1203. Bearing these standards in mind, the court now turns to the task of construing the claims in this case.

3. Discussion.

There are several terms in dispute. The two patents, the '615 and the '722, are related. Many of the disputes are also inter-related; that is, resolution of certain broad disputes will resolve certain subsidiary questions. The court is aided with a construction from Judge Claudia Wilken of the Northern District of California, who has presided over a related case involving O2's assertion of the '615 patent against a supplier to Taiwan Sumida ("TSE"), Monolithic Power Systems ("MPS").

In the MPS case, Judge Wilken construed several of the claims of the '615 Patent. Both parties assert that their constructions are consistent with Judge Wilken's constructions in the previous case, with limited exceptions. The court has considered carefully the parties' arguments with respect to deviations from Judge Wilken's claim construction order. The court has attempted to reject any deviation from her order when construing the claim terms at issue in this case, even with respect to claim terms agreed to in Judge Wilken's court. This court's constructions of the pertinent terms are set forth below.

A. Agreed Terms.

1. A flow-through switch.

Pursuant to the parties' agreement, the court construes a flow-through switch to mean "a switch which passes a selected voltage signal to its output node."

2. Said pulse signal.

Pursuant to the parties' agreement, the court construes said pulse signal to mean "first pulse signal and the second pulse signal."

B. Disputed Terms.

1. Predetermined.

The parties dispute the meaning of the term "predetermined," which appears in all of the asserted claims. O2 contends the term needs no construction. TSE contends that the term means "fixed in advance or beforehand with intent or knowledge."

In support of its construction, TSE points to the district court's construction of a similar term in Koito Mfg., Ltd. v. Turn-Key-Tech, LLC, 381 F.3d 1142 (Fed.Cir.2004). That case, however, is distinguishable. In *Koito,* the court affirmed the district court's construction of predetermined because the patentee failed to object. Moreover, the Federal Circuit observed that the invention in that case logically required the mold designer to know the flow direction of the plastic. By contrast, the court is not persuaded that the patents in this case require intent or knowledge as inherent limitations. At the same time, the court disagrees with O2's primary position that *no* construction is needed. Therefore, the court construes predetermined in accordance with its ordinary meaning-"determined beforehand." Webster's Third International Dictionary, 1993.

2. Generate.

Again, O2 contends that this term needs no construction because it is readily understood. TSE, by contrast, suggests that the court should define this term to mean "to bring into existence." O2 argues that TSE's true motive in suggesting a definition of generate is to obtain new constructions of the pulse signal limitations found in the patent. As noted below, however, the court has adopted Judge Wilken's constructions of each of the pulse signal limitations, notwithstanding TSE's arguments to the contrary. With respect to the present term, the court construes "generate" in accordance with its ordinary meaning-"to bring into existence." Webster's Third International Dictionary, 1993.

3. Threshold.

The court construes the term "threshold" to mean "the value of current, voltage or other quantity at which something happens." The court has considered both of the parties' arguments on this point and has concluded that this definition is appropriate in the context of the claims. In particular, this construction gives meaning to the term threshold as it is used in claim limitations requiring certain events to occur if a value is at or above a threshold, and it also provides an appropriate meaning for use in limitations which may require something else to occur if the value is below the threshold. *See* '722 Patent, claim 14 (claiming "an inverter circuit as claimed in claim 12, wherein if said feedback signal is below said predetermined threshold ...").

4. Predetermined threshold.

O2 suggests that this term means "the value of current, voltage or other quality determined beforehand at which something happens." TSE contends that the term means "a fixed value determined beforehand with intent or foreknowledge, at or above which a first state occurs and below which a second state occurs." TSE thus incorporates is definitions of predetermined and threshold into this term-constructions that the court has previously rejected. The court construes this term consistent with its previous constructions to mean "the value of current, voltage or other quality determined beforehand at which something happens."

5. Said feedback signal

The term "said feedback signal" is used in all of the asserted claims. As used in independent claims 1 and 18 of the '615 patent, its antecedent basis is "a feedback signal indicative of power being supplied to said load." In the California action, pursuant to the parties' agreement, the court construed the phrase "a feedback signal indicative of power being supplied to said load" to mean "an electrical signal that can be used to determine current through the load." *See O2 Micro International, et al. v. Monolithic Power Systems, Inc.,* Case Nos. C-00-4071, C-01-3995, Claim Construction Order ("Claim Construction Order"), at 9. That construction is therefore appropriate in this case with respect to the same term as well as the term "said feedback signal." The court has considered the parties' remaining arguments on this term and rejects them in favor of the construction adopted by Judge Wilken.

6. First pulse signal

The court construes the term first pulse signal consistent with Judge Wilken's order to mean "in time domain, a first voltage or current waveform having two different amplitudes and a transition between the two amplitudes having a certain rate of rise and a certain rate of fall. The 'second pulse signal' and the 'first

pulse signal' are two discrete signals, but they can be part of the same pulse train or generated from different pulse trains."

7. Second pulse signal

The court construes the term "second pulse signal" consistent with Judge Wilken's order. That term means "in time domain, a second voltage or current waveform having two different amplitudes and a transition between the two amplitudes having a certain rate of rise and a certain rate of fall. The 'second pulse signal' and the 'first pulse signal' are two discrete signals, but they can be part of the same pulse train or generated from different pulse trains."

8. A feedback control loop circuit receiving a feedback signal indicative of power being supplied to said load, and adapted to generate a second signal pulse signal for controlling the conduction state of said second plurality of switches only if said feedback signal is above a predetermined threshold-'615 patent, claims 1, 2, 15-17.

The parties dispute whether the court should construe the phrase as a whole or whether the court should construe the various parts of the limitation. O2 proposes that the court construe separate portions of the limitation, as set forth more fully below. TSE proposes that the court adopt a definition for the entire phase which means "the second pulse signal uses the feedback signal for controlling the conduction state of the second plurality of switches only if the feedback signal is above a fixed value determined before generation of the second pulse signal."

After considering the parties' arguments and the briefs, the court agrees with O2 that TSE's proposed construction would require the court to adopt the additional limitation, not found in the claims, of requiring the second pulse signal to use the feedback signal for controlling the conduction state of the second plurality of switches. Therefore, the court will reject TSE's proposed construction and will construe this limitation in discrete portions and consistent with its own previous constructions as well as those issued by Judge Wilken.

a. second signal pulse signal.

The term "second signal pulse signal" is construed to mean the "second pulse signal." The court incorporates by reference its definition of second pulse signal.

b. a feedback signal indicative of power being supplied to said load.

Pursuant to the court's prior ruling, the court adopts the definition urged upon Judge Wilken in the California case. This term is defined to mean "an electrical signal that can be used to determine the current through the load."

c. controlling the conduction state of said second plurality of switches.

Pursuant to Judge Wilken's decision, the court construes this term to mean "controlling the amount of overlap time in the conduction state of both switches in the plurality of switches, where 'conduction state' means the mode of a switch, either on or off." In her claim construction order, Judge Wilken determined that "conduction state," in the context of this limitation, meant "the mode of a switch, either on or off." Claim Construction Order, at p. 11. She also determined that the "controlling" language in the limitation

meant that "it is the amount of overlap time in the conduction state of both switches in the plurality of switches that is being controlled." The court's construction of this limitation therefore incorporates these holdings.

d. only if said feedback signal is above a predetermined threshold.

The parties agree that "only if" refers to controlling the conduction state of the second plurality of switches only if the feedback is above a predetermined threshold. The court has previously rejected TSE's proposed construction of predetermined threshold; therefore, the court construes this term, in conjunction with the previous terms, to mean that "the second pulse signal controls the conduction state of the second plurality of switches only if the feedback signal is above a predetermined threshold." Claim Construction Order, at. 13. The court incorporates by reference its construction of the term "predetermined threshold."

9. A feedback circuit coupled to said load receiving a feedback signal indicative of power being supplied to said load, and adapted to generate a second signal pulse signal for controlling the conduction state of said second plurality of switches only if said feedback signal is above a predetermined threshold-'615 patent, claims 18, 29.

This term is almost identical to the preceding term, except for substituting "feedback circuit coupled to said load" for "feedback control loop circuit." Given the similarities, the parties agree that the court should construe this term consistently with the preceding term, although, as noted, they disagree over various aspects of each other's construction of the preceding term. Pursuant to the parties' agreement that the terms should be construed consistently, the court therefore incorporates by reference its construction of the preceding term.

10. Predetermined pulse width-'615 patent, claims 35, 39, and 40

Consistent with its prior definition of "predetermined," the court construes this term to mean "a pulse width determined beforehand."

11. Generating a first pulse signal having a predetermined pulse width-'615 patent, claims 35, 39, and 40.

The parties agree that the court's constructions of previous terms control the construction of this term. The court therefore incorporates by reference its constructions of "generating," "pulse signal," and "predetermined pulse width" to resolve the parties' disagreements over this term.

12. Generating a second pulse signal by comparing said feedback signal with a threshold signal-'615 patent, claims 35, 39, and 40.

As with the previous term, the court incorporates by reference its prior construction of the terms "generate," "threshold" and "second pulse signal" to resolve the parties' disagreements surrounding this term.

13. Generating an AC voltage by alternating the conduction state of said first and second transistors with said first pulse signal, and said third and fourth transistors with said second pulse signal only if said feedback signal exceeds said threshold signal-'615 patent, claims 35, 39, and 40.

The parties agree that the portions of this limitation containing the phrases "generating," "said first pulse

signal" and "said second pulse signal" should be construed consistently with the court's previous constructions of those same terms. With respect to the portion of the limitation which recites "only if said feedback signal exceeds such threshold signal," O2 contends that this means "the first pulse signal *controls* the conduction state of the first pair of transistors, and that the second pulse signal *controls* the conduction state of the second pair of transistors only if the feedback signal is above a predetermined threshold. If the feedback signal is below a predetermined threshold, the conduction state of the second plurality of switches is not controlled by the value of the feedback signal." (emphasis added).

TSE disputes O2's construction, and notes that it improperly incorporates a notion of "control" into the claim language. TSE contends that the claim as written is indefinite and that O2 is attempting to cure the indefiniteness with its proposed construction. As Judge Wilken noted in her order, however, "it is a general principle of claim construction that claims be construed so as to preserve their validity, if possible." *See* ACS Hosp. Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577 (Fed.Cir.1984); Claim Construction Order, at 13. O2 correctly points out that the language of independent method claim 35 is similar to the language describing the related apparatus claims in the '615 patent. In the context of this invention, the language of claim 35-"alternating" the conduction state of the transistors (between on and off) "with" the pulse signals-suggests that the pulse signals control the on/off states of the switches, as exemplified by the claim language describing the apparatus claims. By alternating the conduction state of the transistors with the pulse signals, the pulse signals are effectively controlling the on/off state of the switches. Moreover, the court agrees with O2's proposed construction that the second pulse signal controls the conduction state of the second pair of transistors only if the feedback signal is above a predetermined threshold; however, the court has concluded that TSE's objection to that portion of O2's construction regarding what happens if the feedback signal is "below" the predetermined threshold is well-taken. The court has not included it in the court's definition. The court construes this limitation to mean "the first pulse signal controls the conduction state of the first pair of transistors, and that the second pulse signal controls the conduction state of the second pair of transistors only if the feedback signal is above a predetermined threshold."

14. Said pulse generator-'615 patent, claims 39, 40.

Claims 39 and 40 are methods claims which depend from independent claim 35. The dependent claims refer to "said pulse generator" and therefore suggest that there should be a "pulse generator" in independent claim 35 which serves as the antecedent basis for the dependent claims. Because there is not, TSE has asked for this term to be included so that it may later argue that claims 39 and 40 are indefinite for lack of an antecedent basis. Without expressing an opinion on the indefiniteness argument, the court construes the term "pulse generator" (as opposed to said pulse generator) consistent with O2's proposed construction as "an instrumentality for producing a pulse signal."

15. A predetermined minimum overlap-'722 patent, claims 1, 2, 9, and 18.

The court construes this term to mean "a minimum overlap determined beforehand."

16. Said second pulse signal having a first state which overlaps said first pulse signal to deliver an amount of power to said load determined by said feedback signal, and a second state which overlaps the first signal with a predetermined minimum overlap to deliver a predetermined minimum power to the load-'722 patent, claims 1, 2, 9, and 18.

O2 contends that this term should be construed to mean "in a first state, or mode, the second pulse signal overlaps the first pulse signal to deliver an amount of power to the load determined by the feedback signal.

In a second state, or mode, the second pulse signal overlaps the first pulse signal by a predetermined minimum amount to deliver a predetermined minimum power to the load." TSE contends that the term should be construed to mean "the second pulse signal has a first state which overlaps the first pulse signal to deliver an amount of power to the load determined by the feedback signal and a second state which overlaps the first signal with a predetermined minimum overlap between the first and second pulse signals to deliver a predetermined minimum power to the load. The predetermined minimum overlap and the predetermined minimum power are determined before generation of the second pulse signal."

As O2 points out, TSE's construction seeks to explicitly define that the minimum overlap and minimum power must be determined before some event-in this case, the generation of the second pulse signal. The court concludes, however, that TSE's proposed definition is too restrictive and it is inconsistent with the court's definition of "predetermined" previously set forth above. In addition, the court agrees with O2 that the phrase "second state which overlaps the first signal with a predetermined minimum overlap" means that the second pulse signal has a second state which overlaps the first pulse signal with a predetermined minimum overlap so as to provide a predetermined minimum amount of power to the load. The court therefore adopts O2's proposed construction, where "the second pulse signal," "first pulse signal," "said feedback signal," "predetermined" and a "predetermined minimum overlap" are construed as previously set forth in this order.

17. A DC signal-'722 patent, claims 2, 9.

The court construes the term "DC signal" to mean "a signal whose polarity does not vary with time." *See* McGraw-Hill Dictionary of Scientific and Technical Terms, 6th Ed. ("electric current that flows in one direction only."). Although TSE contends that the term should be defined as "a signal whose polarity and amplitude does not vary with time," the court is persuaded that the ordinary meaning of DC signal is that adopted by the court. As such, the court rejects TSE's proposed definition.

18. Said second pulse signal having a phase overlap with said first pulse signal to deliver power to said load only if said feedback signal is above a predetermined threshold-'722 patent, claims 12, 14.

The court agrees with O2 that the court's constructions of the terms "second pulse signal," "first pulse signal," and "only if said feedback signal is above a predetermined threshold" control this term. The court rejects TSE's proposed limitations to this term. Specifically, the court agrees with the plaintiff that there is no support in the claim language which requires the second pulse signal to use the feedback signal to control the amount of overlap and there is likewise no support for a construction that requires the feedback signal to control that portion of the second pulse signal that overlaps with the first pulse signal. This term concerns, moreover, a phase overlap with the first pulse signal for controlling the first pair of switches. In the context of this claim term, the second pulse signal operates to control the conduction state of the switch plurality by controlling the conduction state of one switch in the plurality only when the feedback signal is above a predetermined threshold.

19. If said feedback signal is below said predetermined threshold, said feedback loop generating said second pulse signal to have a minimum phase overlap with said first pulse signal to reduce power delivered to said load to a predetermined minimum amount-'722 patent, claim 14.

This phrase refers, as its antecedent bases, to the feedback signal and feedback loop of claim 12. O2 contends that the phrase as a whole need not be construed. Rather, O2 contends that the phrase "if said feedback signal is below said predetermined threshold" means "if the feedback signal is below a given

threshold, the second pulse signal overlaps the first pulse signal by a predetermined minimum amount to deliver a predetermined minimum power to the load."

TSE contends that the term as a whole means "if the feedback signal is below the predetermined threshold, a second pulse signal is brought into existence which overlaps the first pulse signal with a minimum overlap between the first and second pulse signals to deliver a predetermined minimum power to the load. The predetermined threshold and the predetermined minimum power are determined before generation of the first and second pulse signal."

TSE's construction incorporates a definition of "predetermined" that the court has previously rejected. After considering the parties' briefs, and given that the parties have not requested construction of the antecedent terms, the court construes this term to mean that "if the feedback signal is below the predetermined threshold, a second pulse signal is brought into existence which overlaps the first pulse signal by a minimum amount to deliver a predetermined minimum power to the load." The court incorporates by reference its prior constructions of predetermined, predetermined threshold, first pulse signal, and second pulse signal.

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