

**Keywords: claim construction; “circuit”; “circuitry”; “simultaneously”; means-plus-function; § 112, paragraph 6**

**General: A claim is presumptively not a means-plus-function claim under § 112, paragraph 6, absent a recitation of the term “means.”**

*Linear Technology Corp. v. Impala Linear Corp.*

71 U.S.P.Q.2d 1161 (Fed. Cir. 2004)

Decided June 17, 2004

## **I. Facts**

In 1997, Linear Technology Corporation (“Linear”) sued Impala Linear Corporation, as well as other manufacturers of switching voltage regulators, including Maxim Integrated Products (“Maxim”), for infringement of U.S. Patent Number 5,481,178 (“the ‘178 patent”). The voltage regulators in question were designed to provide a predetermined and constant voltage output to an energy-consuming device, i.e., a load, from a fluctuating voltage input, such as a battery. The switching voltage regulators at issue used transistors that can be switched on or off to control the flow of electrical power. In this manner, the switching voltage regulators transmit power to the load in discrete current pulses that are regulated by control circuitry. By selectively turning the transistors off, the power dissipated in the regulator itself is reduced, yielding higher efficiencies than seen in other regulator designs.

The ‘178 patent included claims covering two modes of operation of switching voltage regulators, a sleep mode and a current reversal prevention mode. The disclosed sleep mode involved switching both switching transistors off to further reduce the power consumed by the regulator itself, thereby improving efficiency. The disclosed current reversal prevention mode prevented the reverse flow of electrical current, thereby preventing power from being drained from the load.

On September 21, 2001, the district court granted summary judgment of non-infringement in favor of Maxim. In granting this judgment, the district court interpreted the terms “circuit” and “circuitry,” recited in independent claims 1, 44, 55, and 57, to be means-plus-function limitations under 35 U.S.C. § 112, paragraph 6. In addition, the district court construed independent claim 34 as a means-plus function claim that did not have corresponding structure in the specification in the form of the disclosed pulse width modulation (PWM) circuitry. Further, the district court construed the term “simultaneously” as requiring an action, not a state. Linear subsequently appealed from the judgment of non-infringement made in view of these claim constructions. \

## **II. Issues**

- A. Did the district court properly construe the terms “circuit” and “circuitry” as means-plus-function limitations?
- B. Did the district court properly exclude the disclosed PWM circuitry as corresponding structure for a means-plus-function limitation?
- C. Did the district court properly construe the term “simultaneously”?

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### III. Discussion

- A. No. A claim that does not recite the term “means” triggers a rebuttable presumption that § 112, paragraph 6 does not apply. Because the claims at issue recite the terms “circuit” or “circuitry” but do not include the word “means,” the district court legally erred by failing to apply the rebuttable presumption that § 112, paragraph 6 does not apply. In committing this error, the district court failed to impose upon Maxim the burden of overcoming the presumption by demonstrating that the claim fails to recite sufficiently definite structure or recites a function without reciting sufficient structure for performing that function. Instead the district court placed a burden upon Linear to establish that the claim recited sufficient structure.

In construing the claims in question, the panel notes that the determination of whether a claim term recites sufficient structure is based upon an examination of whether the term has an understood meaning in the art. With regard to the terms “circuit” and “circuitry,” the panel reviewed technical dictionaries and determined that the term circuit connotes structure. The panel further noted that “when the structure-connoting term “circuit” is coupled with a description of the circuit’s operation, sufficient structural meaning generally will be conveyed to persons of ordinary skill in the art and § 112 ¶ 6 presumptively will not apply.” In view of this construction, the panel held that the terms “circuit” and circuitry,” as used in the disputed claims, are not means-plus-function limitations subject to § 112, paragraph 6.

- B. No. In construing a means-plus-function claim limitation, the first step is to identify the recited function. The written description is then examined to determine the structure that corresponds to and performs that function.

In claim 34, the function of the second means is to generate a control signal to vary the duty cycle of the switching transistors. The ‘178 patent written description links this function to the structure of the PWM circuitry. The district court erred in excluding PWM circuits as corresponding structure for not referencing a specific structure, i.e., for being generic. In particular, persons of skill in the art would recognize that a PWM circuit refers to a discrete class of circuit structures that perform known functions. That the disputed term may be associated with more than one structure does not disqualify it as a corresponding structure if the class of structures is identifiable by a person of ordinary skill in the art. Therefore, the district court erred in excluding PWM circuits as corresponding structures for the “second means” of claim 34.

- C. No. The district court relied upon a definition of “*simultaneous*” that suggested an action was required. The district court, therefore, construed the act of switching both transistors off (not the state of being off) as occurring simultaneously. The panel, however, relied upon a different dictionary to obtain what the panel described as the “plain meaning” of the word “*simultaneously*.” The definition relied upon by the panel merely required that a condition exist at the same time or concurrently, resulting in a broader construction than that erroneously employed by the district court.

In support of the broader construction, the panel also relied upon the phrase “for a period of time” which followed the term “simultaneously” in the disputed claims. In particular, the panel noted that the narrow construction employed by the district court effectively read out the phrase “period of time” by limiting the modifier “simultaneously” to the act of turning off the transistors. Thus, the panel concluded that the ordinary and customary meaning of “simultaneously off,” in view of the “period of time” language, only requires that both switching transistors be held off for an overlapping period of time, not that the switching transistors need to be turned off at the same instant.