

NOTE: This disposition is nonprecedential.

**United States Court of Appeals  
for the Federal Circuit**

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**SUNSPEC ALLIANCE,**  
*Appellant*

**v.**

**TIGO ENERGY, INC.,**  
*Appellee*

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2023-1741, 2023-1742

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Appeals from the United States Patent and Trademark  
Office, Patent Trial and Appeal Board in Nos. IPR2021-  
01286, IPR2021-01287.

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Decided: August 5, 2025

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OR.

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Before MOORE, *Chief Judge*, DYK and CUNNINGHAM,  
*Circuit Judges*.

PER CURIAM.

SunSpec Alliance (SunSpec) appeals from two final written decisions (FWD) of the Patent Trial and Appeal Board (Board) holding SunSpec failed to show certain challenged claims of U.S. Patent Nos. 8,933,321 and 10,256,770 are unpatentable. For the following reasons, we affirm-in-part, vacate-in-part, and remand-in-part.

#### BACKGROUND

Tigo Energy, Inc. (Tigo) owns the related '321 and '770 patents, which are directed to electrical safeguards in solar arrays that shut down or reduce power to a solar module when communication with the module is interrupted. '321 patent at 1:46–2:30; '770 patent at 2:40–61. SunSpec filed petitions for *inter partes* review challenging claims 1, 5–7, and 12–13 of the '321 patent based on three unpatentability grounds and claims 12–16 of the '770 patent based on four unpatentability grounds. J.A. 140–200; J.A. 1990–2068. SunSpec argued Kronberg<sup>1</sup>, in combination with other references, renders certain challenged claims obvious under ground two for the '321 patent and grounds two and four for the '770 patent. J.A. 7; J.A. 35. The Board held SunSpec showed by a preponderance of the evidence claims 12–13 of the '770 patent are unpatentable, but failed to show the remaining challenged claims of the '770 patent and all challenged claims of the '321 patent are unpatentable. J.A. 1–29; J.A. 30–83.

Except for claim 16 of the '770 patent, the claims at issue require a “predetermined number” of skips. For the '321 patent, independent claim 1 is illustrative.

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<sup>1</sup> U.S. Patent No. 5,054,023. J.A. 900–12.

1. A system comprising:

a watchdog unit coupled between a solar module and a power bus, the power bus configured to connect a plurality of solar modules to an inverter, the watchdog unit having:

a local controller configured to monitor a communication from a central controller remote from the solar module and determine whether the communication has been interrupted for a time period longer than a *predetermined number of allowed skips*; and

at least one switch configured to disconnect the solar module from the power bus in response to a determination by the local controller that the communication from the central controller has been interrupted for a time period longer than the *predetermined number of allowed skips*;

wherein the watchdog unit is configured to connect the solar module to the power bus when the communication is not interrupted.

For the '770 patent, claims 14 and 15, which depend from claims 12 and 13, are illustrative.

12. A photovoltaic panel, comprising:

at least one photovoltaic cell;

a local unit configured on the photovoltaic panel, the local unit having:

a voltage regulator coupled to the at least one photovoltaic cell to receive electric power generated by the at least one photovoltaic cell; and

a controller coupled to the voltage regulator;

wherein the voltage regulator provides a power output of the photovoltaic panel using the electric power generated by the at least one photovoltaic cell;

wherein the controller communicates with a remote unit, disposed at a location remote from the local unit, to control operations of the voltage regulator;

wherein the controller detects an anomaly in heartbeat signals from the remote unit; and

wherein in response to the anomaly, the controller causes the voltage regulator to reduce the power output of the photovoltaic panel.

13. The photovoltaic panel of claim 12, wherein the anomaly includes skips of heartbeat signals.

14. The photovoltaic panel of claim 13, wherein the controller causes the voltage regulator to reduce the power output of the photovoltaic panel when the anomaly includes a *predetermined number of skips* of the heartbeat signals.

15. The photovoltaic panel of claim 14, wherein when *skips* of the heartbeat signals *are less than the predetermined number*, the controller does not cause the voltage regulator to reduce the power output of the photovoltaic panel.

The Board held SunSpec’s prior art references failed to disclose or teach a “predetermined number” of skips. J.A. 9; J.A. 56, 67, 79, 81. SunSpec appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

#### DISCUSSION

SunSpec argues the Board erred by (1) failing to expressly construe “predetermined number” of skips; (2) misinterpreting “predetermined number” of skips; and

(3) failing to address SunSpec’s argument that Kronberg, in combination with other references, teaches a “predetermined number” of skips. SunSpec Br. 34–48, 50–60. We review the Board’s claim construction de novo except for subsidiary fact findings based on extrinsic evidence, which we review for substantial evidence. *Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 769 (Fed. Cir. 2018). We review the Board’s ultimate obviousness conclusion de novo and underlying fact findings for substantial evidence. *In re Sullivan*, 498 F.3d 1345, 1350 (Fed. Cir. 2007).

## I

SunSpec argues the Board erred by failing to expressly construe “predetermined number” of skips because it was an important limitation in the Board’s decisions, and the parties disputed the term’s scope. SunSpec Br. 34–37. Before the Board, the parties disputed the meaning of “skips,” which the Board construed in SunSpec’s favor, but neither party raised a claim construction dispute regarding a “predetermined number” of skips. J.A. 8–11; J.A. 38–43. There is therefore no error in the Board’s failure to formally interpret this term. *Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1375 (Fed. Cir. 2017) (holding the Board must resolve “actual” disputes regarding claim construction).

## II

SunSpec argues the Board erred in interpreting “predetermined number” of skips. SunSpec Br. 37–48. An implicit claim construction occurs, despite no express construction, when the Board’s findings establish the scope of a claim term. *Google LLC v. EcoFactor, Inc.*, 92 F.4th 1049, 1056 (Fed. Cir. 2024).

## A

In its FWD for the ’321 patent, the Board interpreted “predetermined number” of skips as requiring at least one

skip, excluding zero skips, and not being satisfied by merely detecting an interruption. J.A. 15–16, 18, 20, 27. SunSpec argues this was erroneous because the claim language does not require “the time period to actually pass, the skips to actually happen, or the device to actually count the skips.” SunSpec Br. 39; *see also id.* at 38–45. We see no error in the Board’s interpretation or application of “predetermined number” of skips.

The claim language requires “a local controller” that can “determine whether the communication has been interrupted for a time period longer than a predetermined number of allowed skips.” ’321 patent at claim 1. SunSpec’s interpretation makes the language after “interrupted” superfluous. *See Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) (“[C]laims are interpreted with an eye toward giving effect to all terms in the claim”). Moreover, SunSpec’s interpretation is at odds with the specification which teaches that the number of skips is measured. ’321 patent at 8:21–27, Fig. 4. The prosecution history also supports the Board’s construction. The patentee amended the claims changing “whether the communication is interrupted” to “whether the communication has been interrupted for a time period longer than a predetermined number of allowed skips” to overcome prior art. J.A. 332–36; J.A. 289. SunSpec’s interpretation would read out the very amendment it made to overcome prior art. The plain language of the claim, the specification, and the prosecution history are all consistent with the Board’s interpretation.

## B

In its FWD for the ’770 patent, the Board concluded that a “predetermined number of skips of the heartbeat signals” in claims 14 and 15 is different from “anomaly in heartbeat signals” in claim 12 and “anomaly includes skips of heartbeat signals” in claim 13. J.A. 56. SunSpec argues this was erroneous as each should have the same meaning.

SunSpec Br. 45–48. We see no error in the Board’s interpretation, and to the extent the Board implicitly construed “predetermined number of skips of the heartbeat signals,” SunSpec fails to show the Board erred.

SunSpec’s interpretation conflicts with the intrinsic record and violates the principle of claim differentiation. Unlike independent claim 12 and dependent claim 13, dependent claims 14 and 15 recite the additional limitation that “the anomaly includes a *predetermined number of skips* of the heartbeat signals.” ’770 patent at claims 12–15 (emphasis added). SunSpec’s interpretation, that the scope of claims 14 and 15 is the same as that of claims 12 and 13, would render “predetermined number of skips” superfluous. *Bicon*, 441 F.3d at 950. SunSpec’s interpretation also violates the principle of claim differentiation by equating dependent claims having additional limitations with the claims from which they depend. *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1377 (Fed. Cir. 2014) (“Under principles of claim differentiation, we presume that the claims without this limitation do not require it.”). SunSpec’s interpretation is therefore inconsistent with the plain language of the claims and unsupported by general claim construction principles.

SunSpec argues the Board erred by interpreting “predetermined number” of skips in the ’770 patent as requiring more than one skip because it contradicts the Board’s prior interpretation in the FWD for the ’321 patent that at least one skip is sufficient. SunSpec Br. 47 (citing J.A. 20). We do not agree. The Board did not interpret this term as requiring more than one skip. Rather, the Board held it did not agree with SunSpec’s argument that a prior art reference disclosed a “predetermined number” of skips, where SunSpec argued the reference “necessarily” requires a threshold of at least one skip to be set. J.A. 57. The Board explained the open-ended nature of the possible number of skips did not meet the “predetermined number” requirement. *Id.* The Board therefore did not conclude one skip

could never satisfy this requirement, and its interpretation between patents was consistent. *Id.*

### III

SunSpec argues the Board erred by failing to address its argument that Kronberg, in combination with other references, discloses a “predetermined number” of skips. SunSpec Br. 50–60. Under its second unpatentability ground for the ’321 patent, SunSpec argued certain challenged claims are obvious based on the combination of Moine<sup>2</sup> and Kronberg. J.A. 146. In its FWD, the Board determined the Moine-Kronberg combination did not render these claims unpatentable because the combination did not teach a “predetermined number” of skips. J.A. 23. The Board found SunSpec only relied on Moine to disclose this limitation, and Moine does not disclose it. *Id.* Accordingly, the Board never analyzed whether Kronberg, in combination with Moine, teaches this limitation.

The Board’s finding that SunSpec only relied on Moine is not supported by substantial evidence. The Board relied on a single sentence from SunSpec’s Reply. J.A. 23 (citing J.A. 1292). But SunSpec clearly argued that, to the extent Moine does not disclose a “predetermined number” of skips, Kronberg in combination with Moine does. Under the heading “The Combined Teachings of *Moine* and *Kronberg* Disclose the ‘Predetermined Number of Allowed Skips,’” SunSpec stated:

Contrary to Patent Owner’s argument, Petitioner does not rely on Kronberg to remedy any failure of Moine to disclose the “skips” limitations. As explained above and as outlined in the Petition, *Petitioner believes that Moine discloses this limitation.* (See Section IV.B, *supra.*) *But to the extent that a*

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<sup>2</sup> French Patent Application Publication No. 2894401. J.A. 866–99.



*traditional watchdog of the type described in Kronberg is required*, Petitioner with the support of its expert's testimony has shown that *the combination of Moine and Kronberg disclose and render this limitation obvious*.

J.A. 1292 (emphases added). This mirrors the language from SunSpec's petition. J.A. 173 ("*Moine* teaches this feature . . . . To the extent Patent Owner and/or the Board disagrees that *Moine* alone does not suggest this limitation, *Moine* in combination with *Kronberg* discloses or suggests this feature."). We therefore vacate and remand for the Board to consider this argument in the first instance.

SunSpec also argues the Board made this same error when addressing SunSpec's second and fourth unpatentability grounds for the '770 patent. SunSpec Br. 54–60. We do not agree. Under both grounds, the Board specifically addressed Kronberg and found Kronberg, in combination with other references, does not teach a "predetermined number" of skips. J.A. 67 (ground two); J.A. 81 (ground four). Because the Board addressed SunSpec's arguments regarding Kronberg under these grounds, we see no error.

#### CONCLUSION

We have considered SunSpec's remaining arguments and find them unpersuasive. For the foregoing reasons, we affirm the Board's FWD for the '321 patent as to grounds one and three and the Board's FWD for the '770 patent as to all grounds. We vacate the Board's FWD for the '321 patent as to ground two and remand for the Board to address whether Kronberg, in combination with Moine, teaches a "predetermined number" of skips.

#### **AFFIRMED-IN-PART, VACATED-IN-PART, AND REMANDED-IN-PART**

#### COSTS

No costs.