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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/587,798	12/31/2014	Stephen J. KELLY	H0044450	5593

113760 7590 01/31/2020

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EXAMINER	
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ART UNIT	PAPER NUMBER
2688	

NOTIFICATION DATE	DELIVERY MODE
01/31/2020	ELECTRONIC

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte STEPHEN J. KELLY and PAVEL NIKITIN

Appeal 2018-004721
Application 14/587,798[1]
Technology Center 2600

Before JOSEPH L. DIXON, HUNG H. BUI, and
JON M. JURGOVAN, *Administrative Patent Judges*.

BUI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant seeks our review under 35 U.S.C. § 134(a) from the Examiner's Final rejection of claims 1–7 and 9–13. Claim 8 has beenwithdrawn from consideration. Appeal Br. A-2, Claims App. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.[2]

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[1] We use the word "Appellant" to refer to "applicant(s)" as defined in 37 C.F.R. § 1.42. The real party in interest is INTERMEC IP CORPORATION. Appeal Br. 1.

[2] Our Decision refers to Appellant's Appeal Brief filed November 24, 2017 ("Appeal Br."); Reply Brief filed April 2, 2018 ("Reply Br."); Examiner's Answer mailed February 1, 2018 ("Ans."); the Final Office Action mailed April 3, 2017 ("Final Act."); and the original Specification filed December 31, 2014 ("Spec.").

STATEMENT OF THE CASE

Appellant's invention is directed to adaptive reader systems (e.g., RFID readers) that "learn[] the state of each [RFID] tag and how long the tag takes to charge," thereby learning "how often it [(the RFID reader)] should query a particular RFID tag." (Spec. ¶¶ 6, 18.) According to Appellant, the RFID reader may "adjust its querying pattern, giving each RFID tag enough time to recharge," such that "[t]ags that charge relatively quickly can be accessed more frequently," but for "[tags] that do not charge as quickly, readings can be performed at much longer intervals allowing the tag a long time to gather enough energy to complete the transaction." (*Id.*)

Independent claims 1 and 9, reproduced below, are exemplary of the subject matter on appeal.

> 1. An RFID reader comprising:
> an antenna that sends, at first time intervals, interrogation signals to an RFID tag that harvests energy from a source other than the RFID reader;
> a controller that:
> identifies responses received from the RFID tag in response to the interrogation signals sent to the RFID tag,
> in response to a determination that the RFID tag did not respond to at least one of the interrogation signals, the controller increases the first time interval to a second time interval;
> sets an interrogation signal interval of the RFID reader to the second time interval so that the interrogation signals are sent at the second time intervals.
>
> 9. An RFID reader comprising:
> an antenna that sends, at first time intervals, interrogation signals to an RFID tag that harvests energy from a source other than the RFID reader;
> a controller that:
> identifies responses received from the RFID tag in response to the interrogation signals sent to the RFID tag,

> in response to a determination that the RFID tag responded to all of the interrogation signals, the controller decreases the first time interval to a second time interval;
>
> sets an interrogation signal interval of the RFID reader to the second time interval so that the interrogation signals are sent at the second time intervals.

Appeal Br. A-1, A-2, A-3 (Claims App.).

Evidence Considered

Name	Reference	Date
Bridgelall et al. ("Bridgelall")	US 2007/0096876 A1	May 3, 2007

Examiner's Rejections

(1) Claims 1–7 and 9–13 stand rejected under 35 U.S.C. § 112(b) as being indefinite. Final Act. 2–3.

(2) Claims 1–5 and 9–13 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bridgelall. Final Act. 3–4.

ANALYSIS

§ 112(b) Indefiniteness Rejection of Claims 1–7 and 9–13

Independent claims 1 and 9 recite a RFID reader comprising "an antenna that sends, at first time intervals, interrogation signals to *an RFID tag that harvests energy from a source other than the RFID reader*."

The Examiner asserts the "'RFID tag' is not an element of an RFID reader, and as such, the metes and bounds of the claim(s) [1 and 9] cannot be ascertained." Final Act. 2. The Examiner also finds claims 3, 4, 6, 7, and 11 indefinite because (i) "claims 6, 7 include limitations directed only to the RFID tag," (ii) "claim 3 (and similarly for claim 11), recites 'that the

interrogation signals sent to the RFID tag are sent at a higher frequency'" which "is vague, as it is not readily apparent whether 'frequency' pertains to the rate that the signals are sent or to the RF of the signal being transmitted," and in "claim 3, the language 'wherein the controller increases the first time interval to a third time interval,' is misdescriptive, since a previous claim already sets forth that the controller sets the 'interrogation signal interval' to a *second* time interval," and (iii) in claim 4, the claimed "controller *increases* the third time interval to a time interval between the first time interval and the third time interval" is "misdescriptive, as it is presumed that the 'third time interval' is the longest, so any time interval between the first and third time interval would be a *decrease* not an increase." Final Act. 2–3.

Whether a claim is indefinite is an issue of claim construction and a question of law. *Cordis Corp. v. Boston Scientific Corp*., 561, F.3d 1319, 1331 (Fed. Cir. 2009). "The legal standard for definiteness is whether a claim reasonably apprises those of skill in the art of its scope." *In re Warmerdam*, 33 F.3d 1354, 1361 (Fed. Cir. 1994). The "inquiry therefore is merely to determine whether the claims do, in fact, set out and circumscribe a particular area with a reasonable degree of precision and particularity." *In re Moore*, 439 F.2d 1232, 1235 (CCPA 1971). During prosecution, we apply the approach for assessing indefiniteness approved by the Federal Circuit in *Packard*, i.e., "[a] claim is indefinite when it contains words or phrases whose meaning is unclear" or "if a claim is amenable to two or more plausible claim constructions." *Ex parte McAward*, Appeal 2015-006416, 2017 WL 3669566, at *5 (PTAB Aug. 25, 2017) (precedential as to Section I.B) (citing *In re Packard*, 751 F.3d 1307, 1310 (Fed. Cir. 2014); *Ex parte Kenichi Miyazaki*, 89 USPQ2d 1207, 1211 (BPAI 2008) (precedential).

Here, we agree with Appellant's arguments regarding *claims 1 and 9*. Particularly, Appellant argues that the meaning of claims 1 and 9 is clear because claim 1 (and similarly, claim 9) is directed to an RFID reader that includes "an antenna that sends, at first time intervals, interrogation signals to an RFID tag that harvests energy from a source other than the RFID reader," thus "referenc[ing] a particular type of tag that the RFID reader, which claim 1 is directed to, communicates with." Appeal Br. 7.

We find the scope of the subject matter embraced by claims 1 and 9 is clear, i.e., claims 1 and 9 recite, *inter alia*, energy-harvesting characteristics of an RFID tag (i.e., the tag "harvests energy from a source other than the RFID reader") with which the claimed RFID reader's antenna communicates. We further agree with Appellant the scope of *claims 6 and 7* is clear as these claims merely clarify what claim 1's "source other than the RFID reader" may be: "an energy source from an antenna separate from the RFID reader" (per claim 6) or "a transducer producing an ultrasonic wave" (per claim 7). Appeal Br. 7–8. That is, claims 6 and 7 provide details regarding the energy-harvesting characteristics of the RFID tag with which claim 1's RFID reader communicates.

With respect to *claim 3*, we find the phrase "the interrogation signals sent to the RFID tag are sent *at a higher frequency*" is clear and refers to the *frequency* with which the interrogation signals are sent by the RFID reader's antenna to the RFID tag (e.g., a number of interrogation signals sent to tag in a unit of time), whereby—as recognized by a skilled artisan—the frequency is inversely proportional to the signals' time interval (as recited in claim 3, i.e., the "third time interval"). In other words, claim 3's "higher frequency" indicates that claim 3's *frequency* of sending interrogation signals (inversely proportional to the "third time interval") is set to be *higher* than claim 1's

frequency of sending interrogation signals (inversely proportional to claim 1's "second time interval"). Similarly, *claim 11's* "lower frequency" indicates claim 11's *frequency* of sending interrogation signals (inversely proportional to claim 11's "third time interval") is set to be *lower* than base claim 9's *frequency* of sending interrogation signals (inversely proportional to claim 9's "second time interval"). As such, we agree with Appellant that the scope of "wherein the controller increases the first time interval to a third time interval" in claims 3 and 11 is clear, as it merely indicates that "the time interval in claim 1 is increased to the second time interval and then in claim 3, the time interval is increased to the third time interval—resulting in the controller increasing the first time interval to a third time interval" (and, for claim 11, that the time interval in claim 9 is decreased from the first time interval to the second time interval, and then in claim 11 the time interval is increased to a third time interval). Reply Br. 2.

For these reasons, we decline to sustain the Examiner's rejection of claims 1, 9, 6, 7, 3, and 11 under 35 U.S.C. § 112(b) as being indefinite. We also decline to sustain the Examiner's rejection of claims 2, 5, 10, 12, and 13 that depend from claims 1 and 9.

With respect to *claim 4*, however, we agree with the Examiner that the limitation "the controller *increases* the *third time interval* to a time *interval between* the first time interval [smaller than the third time interval, per claim 3] *and the third time interval*" is unclear, because it would be unclear to a skilled artisan *how the third time interval can be increased* to a value that less than the *third time interval itself* or *increased* to a value is already equal to the *third time interval itself*. *See* Final Act. 2–3. That is, it is unclear how the range recited in claim 4 ("between the first time interval and the third time interval") could control an increase in the "third time interval" itself.

> [U]nder the broadest reasonable interpretation when read in light of the Specification, [the phrase 'the controller increases the third time interval to a time interval between the first time interval and the third time interval'] is vague and unclear, and a person having ordinary skill in the art would not be able to discern the metes and bounds of the claimed invention in light of this claim language.

Ex parte McAward, 2015–006416 (PTAB Aug. 25, 2017) (precedential).

Accordingly, we sustain the Examiner's rejection of claim 4 under 35 U.S.C. § 112(b) as indefinite

§ 103 Rejection of Claims 1–3, 5, and 9–13

With respect to claims 1 and 9, the Examiner finds Bridgelall teaches Appellant's claimed "controller" that "in response to a determination that the RFID tag did not respond to at least one [or responded to all] of the interrogation signals," "increases [or decreases] the first time interval to a second time interval" and "sets an interrogation signal interval of the RFID reader to the second time interval so that the interrogation signals are sent at the second time intervals." Final Act. 3–4 (citing Bridgelall ¶¶ 34, 36, 46–47, Fig. 3). Particularly, the Examiner finds "the number of interrogation signals sent [in each of claims 1 and 9] could be only one" and "the reader of Bridgelall would necessarily send at least one interrogation signal to the appropriate RFID tag, then modifying/optimizing the 'reader rate' interval depending on this data, would have been encompassed by the teachings of Bridgelall (see para [0046])." Ans. 6. The Examiner then asserts "decreas[ing] the frequency [of] interrogation signals as a consequence of not getting a response [per claim 1], or increasing frequency when there is a response [per claim 9]" would have been obvious "through routine engineering optimization and predictive modeling techniques (see Bridgelall para [0046]–[0047][)], in order to improve the reader's read rate and reduce

power consumption, both advantages . . . well known design goals in the art." Final Act. 4 (citing Bridgelall ¶¶ 36, 46–47). We do not agree.

We agree with Appellant that (1) both claims 1 and 9 require "a plurality of 'interrogation **signals**'" (not "only one" as the Examiner asserts, *see* Ans. 6), and (2) Bridgelall does not teach or suggest the "very specific condition [in claim 1] for the increasing to occur and [the] very specific condition [in claim 9] for the decreasing to occur—both of which are based on whether the previous interrogation signals have **all** been responded to or not by the RFID tag." Reply Br. 4; *see also* Appeal Br. 10–12. For example, paragraph 46 of Bridgelall describes "[p]redictive modeling techniques [that] can be used to automatically improve or optimize a reader's read rate" such as "a predictive model using historical read rate data over specified time period (e.g., 5 minutes, 10 minutes, 1 hour, 1 day, or more) [that] can cause the reader to read less or more often based on this information," and "[i]f tags are infrequently presented or the tag population infrequently changes, the reader can initiate a read less often." *See* Bridgelall ¶ 46. This section of Bridgelall merely teaches a predictive model determining the RFID read rate based on historical read rates, but "says nothing about changing an interrogation interval based on whether a tag has responded to **all** previous interrogations or not" and does not teach an increase or decrease in an RFID's read rate "in response to a determination that the RFID tag responded to **all of the interrogation signals**" (as in claim 9) or based on a "determination . . . that a *single* RFID tag does not respond to the interrogation signals" that are "sent at the *same* first time intervals" (as in claim 1). Appeal Br. 11; Reply Br. 3, 6. Paragraph 47 of Bridgelall also teaches two or more predictive models "such as a short term and long term model" being combined to adjust an RFID's read rate by "set[ting] the

maximum and minimum read rates" and "chang[ing] the read rate between the maximum and minimum read rates defined by the long term model." *See* Bridgelall ¶ 47. However, this section of Bridgelall does not teach or suggest the conditional changes in RFID read rates recited in claims 1 and 9.

Thus, we disagree with the Examiner that Bridgelall's teaching that "[i]f tags are infrequently presented or the tag population infrequently changes[sic], the reader can initiate a read less often" would suggests the conditional changes in RFID read rates recited in claims 1 and 9. *See* Ans. 5 (citing Bridgelall ¶ 46). We also agree with Appellant that the Examiner has not shown that "increasing or decreasing the interrogation signals *in response to whether the tag has responded to all of the previous interrogation signals*" would be a known design goal that could be gleaned from Bridgelall. Reply Br. 4; Appeal Br. 10.

Thus, for the reasons set forth above, we do not sustain the Examiner's obviousness rejection of independent claims 1 and 9, and claims 2, 3, 5, and 10–13 dependent therefrom. Because the above-discussed issues are dispositive as to the obviousness rejections of claims 1–3, 5, and 9–13, we do not reach additional issues raised by Appellant's arguments as to the § 103 rejections of claims 2, 3, 5, and 10–13. *See* Appeal Br. 12–13; Reply Br. 7.

§ 103 Rejection of Claim 4

Review of the rejection of claim 4 under 35 U.S.C. § 103 would require considerable speculation as to the scope of the claim. Such speculation would not be appropriate. *In re Steele*, 305 F.2d 859, 862 (CCPA 1962) ("[W]e do not think a rejection under 35 U.S.C. § 103 should be based on such speculations and assumptions."). We, therefore, decline to reach the 35 U.S.C. § 103 rejection of claim 4 as a result of our affirmance

of the indefiniteness rejection of claim 4, and the uncertain meaning of the phrase "the controller increases the third time interval to a time interval between the first time interval and the third time interval."

CONCLUSION

On the record before us, we conclude Appellant has demonstrated the Examiner erred in rejecting: (1) claims 1–3, 5–7, and 9–13 under 35 U.S.C. § 112(b) as being indefinite; and (2) claims 1–3, 5, and 9–13 under 35 U.S.C. § 103. However, we conclude Appellant has not demonstrated the Examiner erred in rejecting claim 4 under 35 U.S.C. § 112(b) as being indefinite.

DECISION SUMMARY

As such, we AFFIRM the Examiner's final rejection of claim 4 under 35 U.S.C. § 112(b) as being indefinite. However, we REVERSE (1) the Examiner's final rejection of claims 1–3, 5–7, and 9–13 under 35 U.S.C. § 112(b) as being indefinite, and (2) the Examiner's final rejection of claims 1–3, 5, and 9–13 under 35 U.S.C. § 103.

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–7, 9–13	112(b)	indefiniteness	4	1–3, 5–7, 9–13
1–3, 5, 9–13	103	Bridgelall		1–3, 5, 9–13

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
4	103	Bridgelall	Not reached[3]	Not Reached[4]
Overall Outcome			4	1–3, 5–7, 9–13

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

[3,4] As explained above, we do not reach this rejection. *Steele*, 305 F.2d at 862 ("[W]e do not think a rejection under 35 U.S.C. § 103 should be based on such speculations and assumptions.").