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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* THOMAS ALLMENDINGER, THILO HANNEMANN,  
ANDRE HENNING, JAVIER PENA, and FLORIAN PFANNER

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Appeal 2019-001621  
Application 14/294,521  
Technology Center 3700

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Before JENNIFER D. BAHR, BRANDON J. WARNER, and  
LEE L. STEPINA, *Administrative Patent Judges*.

STEPINA, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 1–4, 6, 9, and 11–15. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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<sup>1</sup> We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Siemens Aktiengesellschaft. Appeal Br. 3.

### CLAIMED SUBJECT MATTER

The claims are directed to “a method and a medical diagnostic or therapeutic device for determining the motion of an examination region.”

Spec. ¶ 2.

Claim 1, reproduced below with emphasis added, is illustrative of the claimed subject matter.

1. A method to determine motion of an examination region of a patient using a flat antenna arrangement having a plurality of individually actuatable transmitters and a plurality of individually readable receivers therein, the method comprising:
  - transmitting a temporal sequence of radar signals in a direction of the examination region by actuating the plurality of individually actuatable transmitters according to a control signal;
  - receiving radar signals reflected by the examination region using the plurality of receivers;
  - demodulating the received radar signals by at least one I/Q demodulator, thereby converting each of the received radar signals into a respective I component and a respective Q component;
  - assigning each of the received radar signals to a respective transmitter which transmitted the radar signals received, by correlating a position of each of the received signals to a position of the transmitter which transmitted the signals; and
  - adjusting values of the I and Q components obtained from the at least one I/Q demodulator to retrievably stored temporal series of I and Q components which correspond to known motions of the examination region, thereby obtaining the determined motion of the examination region of the patient.*

Appeal Br. 28 (Claims App.).

### REJECTIONS

- I. Claims 1–4, 6, 9, and 11–15 are rejected under 35 U.S.C. § 112(b) as indefinite.

- II. Claims 1–4, 6, 9, and 11–15 are rejected under 35 U.S.C. § 112(a) as failing to comply with the written description requirement.

## OPINION

### *Rejection I–Indefiniteness*

The Examiner determines that the last paragraph of claim 1 renders the claim indefinite, stating “[i]t appears that the expression ‘adjusting values’ is suggesting that the values of the obtained I and Q components are undergoing some change, but what this change is and how this change relates to the retrievably stored temporal series of I and Q components are not clear.” Final Act. 9. Additionally, the Examiner takes the position that it is unclear how the adjustment of the I and Q results in obtaining the determined motion of the examination region of the patient. *Id.*

Appellant argues that claim 1 is not indefinite when read in light of the Specification and explains that I and Q components are parameters that involve certain characteristics, such as mean frequency, width of a frequency distribution, and volume of a moving examination region. Appeal Br. 22–23 (citing Spec. ¶¶ 69, 71). Appellant states, “Model data may be created by training a model.” *Id.* at 22 n.24. Appellant then asserts that the measured I and Q components “can be adjusted to the model data in the form of stored I and Q components” and that stored model data relates to known motions of the examination region. *Id.* at 23 (citing Spec. ¶ 69) (emphasis added). Appellant next discusses how the model data is created. *See id.* at 23–25 (citing Spec. ¶¶ 72–74). Based on this discussion, Appellant concludes, “the specification provides [a] very specific description of the generation and

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usage of model data such that the claimed subject matter is not indefinite to one of skill in the art.” *Id.* at 25.

Appellant also proposes two interpretations of the term “adjusting” as it is recited in claim 1. Specifically, Appellant states, “one of skill in the art, upon reading the specification, would understand what the change (adjustment) is and how the change relates to the retrievably stored temporal series of I and Q components (model data).” Appeal Br. 26. Additionally, Appellant states, “according to the specification, the obtained I and Q components are adjusted by a comparison or correlation to known motions of an examination region (i.e., model data obtained from a plurality of patients).” *Id.* at 25. Thus, Appellant appears to contend that the recited adjustment is either of (i) a change, or (ii) a comparison or correlation.

In response, the Examiner takes the position that Appellant’s argument focuses merely on the process used to create a training model, not the adjustment to the I and Q data recited in the last paragraph of claim 1. Ans. 19–21.

In reply, Appellant reiterates how the model data is created and that “the ‘known motions’ recited in the claims relate to model data that is retrievably stored.” Reply Br. 7 (emphasis omitted). Appellant also restates that the I and Q components are adjusted by changing them (*id.* at 9) and that the I and Q components are adjusted by a comparison to model data. *Id.* at 8.

We agree with the Examiner that Appellant’s arguments do not address the rejection, which states that the step of adjusting the I and Q components appears to require a change of these quantities, but it is unclear what this change would be. *See* Final Act. 9.

Paragraph 41 of the Specification discloses that “model data is based on a trained model of the examination region.” Paragraphs 69 and 70 of the Specification explain that I and Q components undergo adjustment and that the adjustment may be “to” *model data*, i.e., model data undergoes an adjustment. Paragraphs 71–74 of the Specification further explain that model data can be adjusted and how model data is created via a mathematical process. Thus, these portions of the Specification imply that the meaning of the term “adjusting” is the same as “changing,” but only in the context of model data. In other words, the Specification describes changing model data. *See* Spec. ¶ 71. Appellant’s explanation of the process applied *to model data* does not clarify the adjustment process applied to the I and Q components obtained from the I/Q demodulator, which components, Appellant states, are different from model data.<sup>2</sup>

Even assuming for the sake of argument that, in light of the Specification, the broadest reasonable interpretation of the term “adjusting” is “changing,” as the Examiner points out (*see* Final Act. 9), this interpretation does not make sense in the context of the last paragraph of claim 1, which requires “adjusting the values of the I and Q components . . . to retrievably stored temporal series of I and Q components which correspond to known motions of the examination region.” It is unclear how changing the I and Q components, which are demodulated from received radar signals, to a retrievably stored temporal series, would result in the next step in claim 1 (namely, “obtaining the determined motion of the examination region of the patient”).

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<sup>2</sup> Appellant states that the I and Q components are compared to model data. *See* Appeal Br. 25; Reply Br. 8. Thus, according to Appellant, the terms “I and Q components” and “model data” do not refer to the same thing.

Appellant's proposed interpretation of "adjusting," in claim 1, as "a comparison or correlation to known motions of an examination region (i.e., model data obtained from a plurality of patients)" (Appeal Br. 25 (emphasis omitted)) is plausible in the context of the definition of model data set forth in paragraph 41 of the Specification. In other words, substituting the words "comparing" or "correlating" for "adjusting," such that the last paragraph of claim 1 requires Q and I data to be compared/correlated to a retrievably stored temporal series of I and Q components, may result in a grammatically correct statement. However, claim 1 uses the word "adjusting," and the words "adjusting" and "comparing" (and/or "correlating") are not synonyms. Further, Appellant's Specification does not provide sufficient guidance to reasonably interpret the term "adjusting" in claim 1 in a way similar to the acts of "comparing" or "correlating." This lack of guidance is reflected by Appellant's differing proposed interpretations of the term "adjusting." See Appeal Br. 25, 26; Reply Br. 8, 9. Thus, we agree with the Examiner that claim 1 is unclear. Accordingly, we sustain the rejection of claim 1, and claims 2–4, 6, and 9 depending therefrom, as indefinite. Claim 11 recites substantially similar language as discussed above regarding the rejection of claim 1, and, for the same reasons, we sustain the rejection of claim 11, and associated dependent claims 12–15, as indefinite.

*Rejection II—Written Description*

The Examiner's rejection for failure to comply with the written description requirement focuses on the same unclear language in claims 1 and 11 discussed above. See Final Act. 2–10. A determination of whether the scope of the claims is supported by Appellant's original disclosure requires first determining the broadest reasonable interpretation of the claims. As no reasonably definite meaning can be ascribed to the terms in

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these claims, we do not reach the issue of whether claims 1 and 11, and associated dependent claims 2–4, 6, 9, 12–15, fail to comply with the written description requirement.

### CONCLUSION

The Examiner’s decision to reject the claims is affirmed.

More specifically, we affirm Rejection I and do not reach Rejection II.

### DECISION SUMMARY

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Basis</b>	<b>Affirmed</b>	<b>Reversed</b>	<b>Not Reached</b>
1–4, 6, 9, 11–15	112(b)	Indefiniteness	1–4, 6, 9, 11–15		
1–4, 6, 9, 11–15	112(a)	Written Description			1–4, 6, 9, 11–15
<b>Overall Outcome</b>			1–4, 6, 9, 11–15		

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

**AFFIRMED**