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Paper 8
Date: September 16, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOGO BUSINESS AVIATION LLC,
Petitioner,

v.

SMARTSKY NETWORKS, LLC,
Patent Owner.

IPR2020-00709
Patent 9,312,947 B2

Before MELISSA A. HAAPALA, NATHAN A. ENGELS, and KRISTI L. R. SAWERT, *Administrative Patent Judges*.

ENGELS, *Administrative Patent Judge.*

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Gogo Business Aviation LLC ("Petitioner") filed a Petition under 35 U.S.C. § 311 requesting *inter partes* review of claims 1–20 of U.S. Patent No. 9,312,947 B2 (Ex. 1001, "the '947 patent"). Paper 2 ("Pet."). Smartsky Networks LLC ("Patent Owner") filed a Preliminary Response. Paper 7 ("Prelim. Resp.").

We have authority under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted unless the information presented in the Petition and the Preliminary Response shows that "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a); *see also* 37 C.F.R § 42.4(a) ("The Board institutes the trial on behalf of the Director."). The Supreme Court has held that under 35 U.S.C. § 314, we may not institute review of fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu,* 138 S. Ct. 1348, 1359–60 (2018).

Having considered the arguments and evidence of record, for the reasons described below, we deny the Petition and do not institute *inter partes* review.

II. BACKGROUND

A. Real Party-in-Interest

Petitioner states that it, Gogo Business Aviation LLC, is the sole real party-in-interest. Pet. 67. Patent Owner states it, Smartsky Networks, is the real party-in-interest. Paper 4, 3.

B. Related Proceedings

Petitioner states that there are currently no litigation matters that could be affected by a decision in this proceeding. Pet. 67. Patent Owner does not identify any related matters in its Mandatory Notices. Paper 4, 3.

C. The '947 Patent (Ex. 1001)

Titled "Terrestrial Based High Speed Data Communications Mesh Network" (Ex. 1001, code (54)), the '947 patent "relates to a broadband data communications system for in-flight aircraft." Ex. 1001, 1:22–23. The '947 patent describes a system of providing high speed data communications for in-flight airliners using a series of ground based transmitters along established common flight paths. *Id.* at 2:35–40. The data communications between the transmitters on the ground and the aircraft use an IEEE 802.16 Air Interface Standard or OFDM "WiMax" connection. *Id.*

The ground transmitters are located in a pattern to provide overlapping coverage as an aircraft passes from one transmitter to the other, allowing passengers on the aircraft to have uninterrupted high speed data communications while in the air. *Id.* at 2:40–44. The high speed data communications link between the passenger and the ground allows for a direct link that is continuous and uninterrupted in time. *Id.* at 2:44–46. The direct link may be between the passenger and the ground station, or alternatively the direct link may be between the aircraft and the ground station where the passenger accesses an on-board network. *Id.* at 2:46–49.

D. Challenged Claims

Petitioner challenges claims 1–20 of the '947 patent. Claims 1 and 11 are independent claims. Claim 1, reproduced below, is illustrative of the claimed subject matter.

> 1. A network base station within a network including at least one in-flight communication node, the network base station comprising:
>
> a radio configured via software defined radio to utilize beamforming to generate a plurality of steerable beams, to enable multiple reuses of a same frequency to communicate with respective different in-flight communication nodes via respective different communication links;
>
> wherein the respective different communication links are high speed data communications links that are enabled to be maintained continuous and uninterrupted in time while one of the respective different in-flight communication nodes transitions between a first steerable beam associated with a first coverage area defined by the network base station and a second steerable beam associated with a second coverage area defined by another network base station, the first and second coverage areas at least partially overlapping.

Ex. 1001, 10:2–19.

E. Prior Art and Asserted Grounds of Unpatentability

Petitioner asserts the following grounds:

Claims	35 U.S.C. §	Reference(s)/Basis
1–3, 5, 7–13, 15, 17–20	102(b)	IEEE-2004[1]
4, 14	103	IEEE-2004, Xu[2]
6, 16	103	IEEE-2004, DiFonzo[3]
1–3, 7–13, 17–20	103	Miura[4], Agee[5]
5, 15	103	Miura, Agee, Holst[6]
4, 14	103	Miura, Agee, Xu
6, 16	103	Miura, Agee, DiFonzo

Petitioner relies on the Declaration of C. Douglass Locke (Ex. 1002) to support the Petition. Pet. 6.

III. 35 U.S.C. § 325(d)

A. Discretionary Denial under 35 U.S.C. § 325(d)

Patent Owner urges us to deny institution under 35 U.S.C. § 325(d) because, according to Patent Owner, "Petitioner Submits the Same or Substantially the Same Prior Art and Arguments Previously Presented to the

[1] IEEE Standard for Local and metropolitan networks, Part 16: Air Interface for Fixed Broadband Wireless Access Systems. Ex. 1003.
[2] Xu (US 2008/0233974 A1; filed June 29, 2007; published Sept. 25, 2008). Ex. 1004.
[3] DiFonzo et al. (US 2005/0164664 A1; filed Mar. 14, 2005; published July 28, 2005). Ex. 1005.
[4] Japanese Pub. No. 2005-159448, published June 16, 2005. Ex. 1006. Also included in the record is an English language translation of Miura (Ex. 1007) and a certificate of translation (Ex. 1007, 24). All citations are to Ex. 1007.
[5] Agee et al. (US 2004/0095907 A1; filed June 10, 2001; published May 20, 2004). Ex. 1008.
[6] Holst et al. (US 7,356,389 B2; filed July 14, 2003; issued Apr. 8, 2008). Ex. 1009.

Patent Office." Prelim. Resp. 36. Because we deny the Petition based on our determination that Petitioner has not satisfied its burden to establish a reasonable likelihood of prevailing with respect to at least one of the challenged claims, we do not substantively address Patent Owner's arguments for discretionary denial under § 325(d).

IV. UNPATENTABILITY ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner contends a person of ordinary skill in the art ("POSITA") would have had a degree in electrical engineering or computer science, or a similar discipline, along with 4–5 years of experience with real-time systems architecture, design, and implementation. Pet. 21–22 (citing Ex. 1002 ¶¶ 12–13). Patent Owner does not dispute Petitioner's position regarding the level of ordinary skill. Prelim. Resp. 11.

For purposes of this Decision, we adopt Petitioner's description, which we determine to be consistent with the level of skill reflected by the disclosure of the '947 patent and the asserted prior art.

B. Claim Construction

Because the Petition was filed after November 13, 2018, we construe claims of the challenged patent using the same claim construction standard used to construe claims in a civil action under 35 U.S.C. § 282(b), including construing the claims in accordance with the ordinary and customary meaning as understood by one of ordinary skill in the art reading the claims in light of the intrinsic evidence. 37 C.F.R. § 42.100(b) (2019); *see Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (*en banc*).

Both parties suggest applying the plain and ordinary meaning for all claim terms, but the parties advance different versions of the plain and

ordinary meaning of the "software defined radio" limitation recited in claims 1 and 11. Specifically, Petitioner contends the plain and ordinary meaning of the phrase "software defined radio to utilize beamforming to generate a plurality of steerable beams" is "to form and/or steer radio waves in a particular direction using software." *Id.* (citing Ex. 1001, 4:5–8, 6:7–8; Ex. 1002 ¶ 39). Patent Owner, in response, notes that "software defined radio" is part of a larger phrase, "a radio configured via software defined radio to utilize beamforming to generate a plurality of steerable beams," and contends the plain and ordinary meaning of that phrase is "a radio configured using physical layer elements (including mixers, filters, amplifiers, modulators/demodulators, detectors, etc.), which are typically implemented in hardware, using software that is implemented on a programmed computer or embedded system in order to form and/or steer radio waves in a particular direction." Prelim. Resp. 14 (quoting Ex. 2001 ¶ 56).

We determine Petitioner's proposal is not adequately supported by evidence of record. Petitioner's cited support amounts to only two sentences of the '947 patent's Specification, along with portions of the Locke Declaration that essentially mirror the language in the Petition. Pet. 24 (citing Ex. 1001, 4:5–8, 6:7–8; Ex. 1003 ¶ 39).

The first of the two sentences cited reads: "Beam forming also enables the signal to be electronically adapted (null steering) to connect with a fast-moving aircraft." Ex. 1001, 4:5–8. The second sentence reads: "In the present invention, reuse of frequencies made possible with 'beam forming' of the signal down to a 4 degree wide 'pencilbeam' by a 'software definable radio (SDR).'" *Id.* at 6:6–8.

Petitioner correctly notes that Patent Owner cited the second sentence as written description support for the "software defined radio" limitation in the "Summary of the Claimed Invention" portion of an appeal brief filed during prosecution of the '947 patent (Pet. 24 (citing Ex. 1012 p. 477)), but neither of those sentences provides a definition or evidence of the plain and ordinary meaning of the "software defined radio" limitation. The sentences state reasons for beam forming, but the claim language itself includes equivalent language: "a radio configured via software defined radio *to utilize beamforming to generate a plurality of steerable beams, to enable multiple reuses of a same frequency to communicate with respective difference in-flight communication nodes via respective different communication links*."

Rather than defining or clarifying the "software defined radio" limitation, Petitioner's proposed language essentially rearranges the claim language while changing "software defined radio" to just "software." Patent Owner argues, and we agree, that Petitioner's version of the purported plain and ordinary meaning effectively broadens the claim language by reading "software defined radio" out of the claim (*see* Prelim. Resp. 13), and we agree with Patent Owner that a radio configured via "software" is not synonymous with a radio configured via "software defined radio." *See* Ex. 2001 ¶¶ 50–52, 55 (stating that beamforming conducted using software does not mean that the beamforming is done using software defined radio).

To that point, Patent Owner and its declarant, Gerard James Hayes, Ph.D., cite an IEEE standard (Ex. 2002) that defines "software defined radio" as a term distinct from "hardware radio" and "software-controlled radio," among other types of "advanced radio system concepts." Prelim. Resp. 14 (citing Ex. 2001 ¶¶ 46–56; Ex. 2002, 16, 18). Specifically, the

IEEE standard defines "software-defined radio" as "[a] type of radio in which some or all of the physical layer functions are software defined. *Contrast:* hardware radio." Ex. 2002, 4 (emphasis omitted). Separately, the IEEE standard defines "software-controlled radio" as "[a] type of radio where some or all of the physical layer functions are software controlled." *Id.* (emphasis omitted).

Although we do not adopt these definitions, the IEEE's definitions highlight the flaw in Petitioner's proposal to effectively broaden claims 1 and 11 by replacing "software defined radio" with only "software." Further, we determine the "software defined radio" limitation is not commensurate in scope with a radio configured "to form and/or steer radio waves in a particular direction using software," as Petitioner contends. For purposes of this Decision and in view of our analysis below, we do not find it necessary to explicitly construe the "software defined radio" limitation other than to point out the deficiency in Petitioner's proposed construction. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (explaining the need to construe only terms that are in controversy and only to the extent necessary to resolve the controversy) (citations omitted).

C. Petitioner's Challenges

Petitioner challenges independent claims 1 and 11 on two separate grounds, first alleging anticipation by IEEE-2004 and second alleging obviousness based on the combination of Miura and Agree. As explained below, both grounds reflect Petitioner's proposed version of the "software defined radio" limitation, and we analyze Petitioner's showings regarding that limitation below.

1. IEEE-2004

For the "software defined radio" limitation, Petitioner cites IEEE-2004's disclosures of beamforming with an adaptive antenna system. Pet. 27–29 (citing Ex. 1003, 162–165, 509–510; Ex. 1002 ¶¶ 66, 68; Ex. 1010, 1:56–2:21 (describing signal processing algorithms in adaptive array antenna systems). According to Petitioner, a person of ordinary skill would have understood the disclosures in IEEE-2004 to mean that software is used to steer a beam or to "include software-based beamforming processes." Pet. 28. Referring to its proposed meaning of the "software defined radio" limitation, Petitioner contends a person of ordinary skill "would [have understood] that software is used to form and/or steer a beam (i.e. beamforming)" (Pet. 29 (citing Ex. 1002 ¶ 68)).

Even if Petitioner is correct that a person of ordinary skill would have understood IEEE-2004 to disclose software used to form and/or steer a beam, Petitioner has not established that IEEE-2004 discloses "a radio configured via software defined radio to utilize beamforming to generate a plurality of steerable beams," as claimed. Accordingly, based on the record before us, we determine that Petitioner has not demonstrated a reasonable likelihood that it will succeed in showing that IEEE-2004 anticipates claims 1 or 11. Petitioner relies on the same arguments for the "software defined radio" limitation for each challenged dependent claim, and for the same reasons, Petitioner has not demonstrated a reasonable likelihood that it will succeed in showing dependent claims 2–10 or 12–20 are anticipated by IEEE-2004 or would have been obvious in view of IEEE-2004 in combination with Xu or DiFonzo.

2. Miura and Agee

For the "software defined radio" limitation, Petitioner cites Miura's disclosures of base stations that use digital signal processing to generate multiple beams that are steered to track moving vehicles such as airplanes. Pet. 43–45. Petitioner notes that Miura does not use the term "software defined radio" (Pet. 44), but Petitioner contends that, based on Miura's disclosures of digital signal processing for beamforming, a person of ordinary skill would have understood "that software is used to steer a beam (i.e. beamforming)" (Pet. 45).

Petitioner additionally argues "should the Board find Miura does not expressly disclose a software-defined radio, such a radio is taught by Agee." Pet. 45 (citing Ex. 1002 ¶ 91). According to Petitioner, Agee discloses spatial filtering techniques to enable frequency reuse and digital signal processing such that a person of ordinary skill would have understood Agee to mean that software is used to form and/or steer a beam. Pet. 47.

Even if Petitioner is correct that a person of ordinary skill would have understood Miura and Agee disclose software used to form and/or steer a beam, Petitioner has not established that the combined teachings of Miura and Agee teach "a radio configured via software defined radio to utilize beamforming to generate a plurality of steerable beams," as claimed. Accordingly, based on the record before us, we determine that Petitioner has not demonstrated a reasonable likelihood that it will succeed in showing that claims 1 or 11 would have been unpatentable as obvious in view of the combined teachings of Miura and Agee. Petitioner relies on the same arguments for the "software defined radio" limitation for each challenged dependent claim, and for the same reasons, Petitioner has not demonstrated a

reasonable likelihood that it will succeed in showing dependent claims 2–10 or 12–20 would have been obvious in view of Miura and Agee in further combination with Holst, Xu, or DiFonzo.

D. Summary

For the reasons discussed above, Petitioner has not demonstrated a reasonable likelihood of prevailing in demonstrating that at least one challenged claim of the ’947 patent is unpatentable over the prior art of record. Accordingly, we do not institute *inter partes* review.

V. ORDER

In view of the foregoing, it is hereby:

ORDERED that the Petition is denied and no trial is instituted.

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