

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AXON ENTERPRISE, INC. and DEDRONE HOLDINGS, INC.,
Petitioner,

v.

AIRSPACE SYSTEMS, INC.,
Patent Owner.

IPR2025-00525
Patent 10,713,959 B2

Before MICHAEL R. ZECHER, BARRY L. GROSSMAN, and
SCOTT C. MOORE, *Administrative Patent Judges*.

MOORE, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Axon Enterprise, Inc. and Dedrone Holdings, Inc. (collectively, “Petitioner”) filed a Petition requesting an *inter partes* review of claim 21 of U.S. Patent No. 10,713,959 B2 (Ex. 1001, “the ’959 Patent”). Paper 1 (“Pet.”). Airspace Systems, Inc. (“Patent Owner”) did not file a brief requesting discretionary denial of institution and, as a result, the proceeding was referred to this panel for consideration on the merits. See Paper 9. Patent Owner subsequently filed a Preliminary Response. Paper 10 (“Prelim. Resp.”).

We may institute an *inter partes* review when “the information presented in the petition . . . 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). If we institute an *inter partes* review, the trial must encompass all claims and grounds identified in the Petition. 37 C.F.R. § 42.108(a) (“When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”).

For the reasons set forth below, we conclude that there is a reasonable likelihood that Petitioner will prevail in establishing the unpatentability of claim 21, the sole challenged claim. We, therefore, institute *inter partes* review of claim 21 on the grounds asserted in the Petition.

B. *Real Parties in Interest*

Petitioner identifies Axon Enterprise, Inc. and Dedrone Holdings, Inc. as Petitioner’s real parties in interest. Pet. 1. Patent Owner identifies Airspace Systems, Inc. as Patent Owner’s real party in interest. Paper 4, 1.

C. Related Matters

The parties indicate that the '959 Patent is the subject of the following co-pending district court litigation: *Airspace Systems, Inc. v. Dedrone Holdings, Inc.*, No. 1-24-cv-01625 (E.D. Va). Pet. 1, Paper 4, 2. Petitioner is also pursuing two co-pending *inter partes* review proceedings against Patent Owner: IPR2025-00530 and IPR2025-00629. The patents challenged in those *inter partes* reviews are not related to the '959 Patent.

D. The '959 Patent

The '959 Patent, titled “Low Altitude Aircraft Identification System,” relates to identifying low altitude aircraft such as drones. Ex. 1001, codes (54), (57). For example, the '959 Patent discloses that a low altitude aircraft can be provided with an identification box that transmits identification information via color emitters that produce a visible light color sequence or by a radio frequency signal. *Id.* at 2:7–17, 5:1–23, Fig. 1. The '959 Patent also describes ground identification equipment that can receive the transmitted identification information and thereby detect the identity of the low altitude aircraft. *Id.* at 3:37–46, 5:55–6:19. The identification information transmitted by the identification box may be secured, e.g., by encryption, in a manner that allows the ground identification equipment to validate the identity of the low altitude aircraft. *See, e.g., id.* at 1:56–2:3, 10:20–41.

E. Challenged Claim

Petitioner challenges claim 21 of the '959 Patent. That claim is reproduced below with bracketed identifiers added.

[21p] 21. A device configured to communicate identification information associated with a low-altitude aircraft, the device comprising:

[21a] a radio frequency communication antenna; and

- [21b] a radio communication module coupled to the radio frequency communication antenna and configured to transmit identification information associated with the low-altitude aircraft through a transmitted radio signal,
- [21c] wherein the radio communication module is configured to receive a received radio signal and store the information in a storage,
- [21d] wherein the radio frequency communication antenna is coupled to the low-altitude aircraft and
- [21e] the radio communication module is configured to utilize a secure identifier, and
- [21f] the radio communication module is configured for two-way communication with a remote portable detection system; and
- [21g] wherein the device is coupled to the low-altitude aircraft and
- [21h] the remote portable detection system includes a user interface configured to provide to a user, information associated with a plurality of different low-altitude aircrafts detected by the remote portable detection system.

Ex. 1001, 17:17–18:17.

F. Asserted Grounds

Petitioner asserts the following grounds of unpatentability for the challenged claims:

Ground	Claims Challenged	35 U.S.C. § ¹	Reference(s)/Basis
1	21	103(a)	Beard ²

¹ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. §§ 102 and 103 that became effective on March 16, 2013. Because the applications from which the ’959 Patent claims priority were all filed after this date, the post-AIA versions of §§ 102 and 103 apply. *See* Ex. 1001, codes (60), (63).

² U.S. Pat. No. 10,733,894 B1, issued Aug. 4, 2020 (Ex. 1008).

Ground	Claims Challenged	35 U.S.C. § ¹	Reference(s)/Basis
2	21	103(a)	Taveira, ³ Wang, ⁴ Gong ⁵
3	21	103(a)	Taveira, Qi, ⁶ Gong
4	21	103(a)	Gong, Wang-II ⁷

Pet. 21. Petitioner also relies on the Declaration of Dr. Girish Chowdhary.

Ex. 1003. Patent Owner has not submitted declaration testimony at this stage of the proceeding.

II. ANALYSIS

A. *Level of Ordinary Skill in the Art*

The level of skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Petitioner contends that one of ordinary skill in the art would have had the following qualifications:

[E]ither (1) a Bachelor of Science in Mechanical Engineering, Electrical Engineering, Aerospace engineering, or an equivalent field, as well as at least 2 years of academic or industry experience in the aerospace, avionics, telecommunications, or electronic device manufacturing industry, or (2) at least four years of industry experience in any of the above industries.

Pet. 21 (citing Ex. 1003 ¶ 47). Patent Owner does not presently dispute Petitioner’s proposed formulation. *See generally* Prelim. Resp. For

³ U.S. Patent App. Pub. No. US 2016/0253907 A1, published Sept. 1, 2016 (Ex. 1010).

⁴ PCT Pub. No. WO 2016/078093 A1, published May 26, 2016 (Ex. 1011).

⁵ PCT Pub. No. WO 2016/154949 A1, published Oct. 6, 2016 (Ex. 1012).

⁶ U.S. Pat. App. Pub. No. US 2016/0127890 A1, published May 5, 2016 (Ex. 1013).

⁷ PCT Pub. No. WO 2015/043123 A1, published Apr. 2, 2015 (Ex. 1014).

purposes of this Decision, we adopt and apply Petitioner’s formulation regarding the level of ordinary skill in the art because it is (1) consistent with the ’959 Patent and the asserted prior art; and (2) it is supported by the testimony of Dr. Chowdhary.

B. Claim Construction

We interpret claims in the same manner used “in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). When applying that standard, we interpret the claim language as it would have been understood by one of ordinary skill in the art in light of the specification. *Wasica Fin. GmbH v. Cont’l Auto. Sys., Inc.*, 853 F.3d 1272, 1279–80 (Fed. Cir. 2017). Thus, we give claim terms their ordinary and customary meaning as understood by an ordinarily skilled artisan. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

Petitioner does not identify any claim terms that it contends require construction. Pet. 21–22. Patent Owner, however, contends that there is a dispute concerning the meaning of the claim term “secure identifier.” *See* Prelim. Resp. 5–6. Patent Owner contends that the proper construction of “secure identifier” is “an identifier that identifies a connection for exchanging information between a [unmanned aerial vehicle (“UAV”)] and a remote portable detection system, and that changes predictably to avoid spoofing and/or closing of UAV transmissions across the connection,

thereby providing a secure connection.” *Id.* at 14–15. To support its proposed construction, Patent Owner directs us to various disclosures in the Specification of the ’959 Patent. *Id.* at 7–14. We agree that a dispute exists, and will therefore construe this claim term.

We begin our analysis with the plain language of the claims. Claim 21 is directed to a “device configured to communicate identification information associated with a low-altitude aircraft” that is “coupled to the low-altitude aircraft. Ex. 1001, 17:17–18:17. The recited device comprises a “radio frequency communication module” that is “configured to utilize a secure identifier” and that is coupled to a “radio frequency communication antenna and configured to transmit identification information associated with the low-altitude aircraft.” *Id.* Independent claim 1 similarly recites a “device configured to communicate identification information associated with a low-altitude aircraft” that includes a “radio communication module . . . configured to utilize a secure identifier.” *Id.* at 15:53–16:8. It is apparent from this claim language that the recited “secure identifier” is a type of secure identification information that is associated with a device, such as the a low-altitude aircraft.

Independent claim 16 is directed to a “system configured to communicate with a low-altitude aircraft, the device being remote from the low-altitude aircraft,” wherein the system comprises “an image capture component configured to receive one or more images associated with a plurality of colors of light emitted from the low-altitude aircraft.” Ex. 1001, 16:50–17:3. The system also includes an image processing module “configured to analyze the one or more images to identify the low-altitude aircraft” and a “data communication module configured to utilize a secure identifier.” *Id.* Claim 16 thus suggests that the “secure identifier” need not

be radio frequency information, but may instead be a different type of information such as visual information transmitted via colored lights.

Finally, dependent claim 3, which depends from claim 1, discloses that the recited “secure identifier comprises a rotating Service Set Identifier (SSID) associated with headers of packets sent over a wireless local-area network.” Ex. 1001, 16:13–18. The recitation of this language in a dependent claim suggests that the recited “secure identifier” may be, but need not necessarily be, a rotating SSID.

The Specification of the ’959 Patent does not use the term “secure identifier.” The Specification indicates, however, that the disclosed invention is “directed to methods and systems for identification of airborne objects at low altitude” such as “low-altitude aircraft.” Ex. 1001, 1:28–31. It also describes a need for identification information that performs a function analogous to that of license plates, or other identification credentials issued by a division of motor vehicles. *Id.* at 1:45–50. The Specification additionally indicates that encrypting information “via a regular broadcast radio signal such as WiFi while using a static SSID for the identification and addressing of WiFi packets” is disadvantageous because “it may be possible to ‘clone’ the device and intercept packets intended for it.” *Id.* at 1:56–65. This portion of the Specification strongly suggests that the secure identifier of the ’959 Patent is intended to be identification information that is difficult for a different user or device to clone or impersonate.

Later, after discussing an example of a system for identifying a low-altitude aircraft, the Specification emphasizes the importance of credentials that allow a drone to securely identify a ground-based transmitter, and allow a ground-based transmitter to securely identify a drone:

[T]he drone must be able to trust that the server that is transmitting policy information from a remote location such as at ground level is authentic, and is providing verified policy information. Conversely, the server and transmitters at the ground must have trust that the target drone that is receiving the policy information is credentialed. If two-way trust is not verified, the risk of transmission and reception is high.

Ex. 1001, 10:22–29. The Specification then explains why the drone needs to be able to validate the credentials of a ground-based transmitter, and vice versa:

The risks of misidentification or erroneous validation by either the drone, or the ground transmitter and server, or both are substantial. For example, but not by way of limitation, a drone that accepts an unverified policy command could be receiving that information, which may result in the drone performing unauthorized commands, or commands provided by bad actors. Similarly, if a transmitter from the ground is unable to verify that the drone is credentialed, the transmitter from the ground may be providing policy or command information to an un-trusted party, or a bad actor that may use this information to avoid detection, or perform bad acts.

Id. at 10:30–41. The Specification then goes on to disclose a system in which secure identification is accomplished, in part, via a rotating SSID—a secure identifier of the type recited in dependent claim 3. *See id.* at 10:42–12:62; 16:13–18.

It is apparent from the foregoing claim language, and the supporting disclosures in the Specification, that the recited “secure identifier” is a credential that can be used to securely verify the identity of a device, such as an airborne object or a ground-based transmitter.

Patent Owner does not appear to dispute that a secure identifier is information used to securely verify the identity of a device, such as an airborne object or a ground-based transmitter. But Patent Owner cites

various embodiments from the Specification to argue that a secure identifier must also “identif[y] a connection for exchanging information between a UAV and a remote portable detection system,” and must “chang[e] predictably to avoid spoofing and/or cloning of UAV transmissions.” Prelim. Resp. 7–14.

But before describing the embodiments cited by Patent Owner, the Specification plainly states: “Any terms not expressly defined herein have their conventional meaning as commonly understood by those having skill in the relevant art(s).” Ex. 1001, 4:64–67. Thus, the Specification itself cautions against construing the claim terms such as “secure identifier” as limited to the scope of the disclosed embodiments.

Here, Patent Owner has not cited any express definition of “secure identifier,” or identified any explicit disclaimer of claim scope that might justify narrowing the scope of this claim term to specific embodiments disclosed in the Specification. In the absence of such a definition or disclaimer, we are not persuaded that the scope of the claim term “secure identifier” should be limited to specific aspects of the preferred embodiments cited by Patent Owner. See Prelim. Resp. 7–14.

On this record, and at this stage of the proceeding, we decline to adopt Patent Owner’s proposed construction and preliminarily construe “secure identifier” as “a credential that can be used to securely verify the identity of a device, such as an airborne object or ground-based transmitter.”⁸

⁸ Any determination, no matter how designated in this Institution Decision (except our ultimate decision to institute), is preliminary and non-binding. Our Final Written Decision, based on a fully developed record of arguments and evidence, will state our binding determinations, findings, and conclusions. If a party disagrees with this preliminary construction, or any

C. Priority Date of Claim 21 of the '959 Patent

The application that issued as the '959 Patent is a continuation of U.S. Patent Application No. 15/839,661, filed Dec. 12, 2017 (the "'661 Application"). Ex. 1001, code (63). The '661 Application claims priority from U.S. Provisional Patent Application No. 62/566,460, filed Oct. 1, 2017 (the "'460 Provisional"). *Id.* at code (60). The '661 Application also claims priority from PCT Application No. PCT/US2016/037071, filed June 10, 2016 (the "'071 Application"), which, in turn, claims priority from U.S. Provisional Patent Application No. 62/175,153, filed June 12, 2015 (the "'153 Provisional"). *Id.* at codes (60), (63).

Petitioner contends that claim 21 of the '959 Patent is not entitled to the priority date of the '153 Provisional or the '071 Application, and that the earliest-possible priority date of claim 21 is thus Oct. 1, 2017, the filing date of the '446 Provisional (the next-oldest application to which the '959 Patent claims priority). Pet. 7–16. In particular, Petitioner contends that the '153 Provisional and '071 Application do not disclose the "secure identifier" of claim 21 in the manner required by 35 U.S.C. § 112. *Id.* at 7–9, 14–16. Petitioner also contends that the '959 Patent's claim of priority to the '071 Application and '153 Provisional is defective under 35 U.S.C. § 120. *Id.* at 9–14.

other determination set forth in this Institution Decision, that party should present its arguments at trial. The parties are reminded that any arguments not made during trial will be considered waived. Patent Owner is further reminded that arguments in the Preliminary Response are not preserved and will be considered waived at trial unless those arguments are re-raised in the Patent Owner Response. The parties are additionally reminded that arguments raised in subsequent briefing must be set forth in full in the briefs themselves, and may not be incorporated by reference from prior filings such as the Preliminary Response. *See* 37 C.F.R. § 42.6(a)(3).

We first address Petitioner’s argument that the ’153 Provisional and ’071 Application lack adequate written description support for the “secure identifier” claim limitation. For a patent claim to be entitled to the priority date of an earlier-filed application, the earlier application must provide complete written description support for the claim as required by 35 U.S.C. § 112(a). *L.A. Biomedical Rsch. Inst. at Harbor-UCLA Med. Ctr. v. Eli Lilly & Co.*, 849 F.3d 1049, 1057 (Fed. Cir. 2017) (“*L.A. Biomed*”). To satisfy this requirement, the written description must “reasonably convey” to a person of ordinary skill in the art that the inventor had possession on the claimed priority date of each limitation of the later-claimed subject matter. *L.A. Biomed*, 849 F.3d at 1057. It is not enough that an earlier application’s disclosure “renders the later-claimed invention obvious;” as “the disclosure must describe the claimed invention with all its limitations.” *L.A. Biomed*, 849 F.3d at 1057.

On this record, we agree with Petitioner that the ’153 Provisional and ’071 Application lack adequate written description support for the “secure identifier” limitation of claim 21. We have preliminarily construed “secure identifier” as “a credential that can be used to securely verify the identity of a device, such as an airborne object or ground-based transmitter.” *See supra* § II.B. As discussed above, the Specification of the ’959 Patent does not use the term “secure identifier,” but the Specification contains extensive discussion of the need for an identification credential that is secure (e.g., difficult for a bad actor to clone or impersonate). *See, e.g.*, Ex. 1001, 1:56–65 (discussing the need for a system that is difficult to “clone”), 10:20–49 (discussing the need “trust” between a drone and ground-based equipment, and the need for a way to verifying the drone’s credentials), 11:5–12:62

(disclosing the use of encryption and a rotating SSID to generate a secure identifier for a drone).

None of the portions of the Specification cited above is present in the '153 Provisional or the '071 Application. *See generally* Ex. 1006, 1007. The '153 Provisional and '071 Application discuss the need for identifiers for low-altitude aircraft (*see, e.g.*, Ex. 1006, 2; Ex. 1007, 9), but there is no discussion of any need for an identification credential to be secure or resistant to cloning or impersonation. *See generally* Ex. 1006, 1007. The '153 Provisional and '071 Application do not disclose the use of encryption, SSIDs (much less rotating SSIDs), or any other technologies for the purpose of verifying the authenticity of an identification credential. *See generally id.* Based on our review of the '153 Provisional and '071 Application, we preliminarily conclude that neither of these applications would have reasonably conveyed to a person of ordinary skill in the art that the inventor then had possession of the concept of the “secure identifier” that was later claimed in the '959 Patent.

Patent Owner cites disclosure in the '959 Patent, and similar disclosures in the '153 Provisional and '071 Application, of cross-referencing visual and radio frequency (RF) information to “verify the authenticity” of a low-altitude aircraft, and of a system that compares the observed location of a low-altitude aircraft to the expected position of a delivery aircraft in order to determine whether the observed aircraft is a delivery aircraft destined for a ground device’s position. *See* Prelim. Resp. 26–31; Ex. 1001, 3:37–46, 6:20–7:30; Ex. 1006, 5, 7–8; Ex. 1007, 10–11, 13–14. But Patent Owner does not direct us to any disclosure in the '153 Provisional or '071 Application that this visual information, RF information, or observed position information is secured or protected in any way that

would make cloning or impersonation difficult. *See* Prelim. Resp. 26–31. On this record, we are not persuaded that these disclosures of verifying authenticity by cross-referencing two or more unsecure pieces of information would have reasonably conveyed to a person of ordinary skill in the art that the inventor then had possession of the concept of the “secure identifier.” And even if these disclosures could be argued to have been sufficient to render obvious to one of ordinary skill in the art the idea of secure identifier, that would be insufficient to demonstrate that the ’153 Provisional or ’071 Application contain adequate written description support for claim 21 of the ’959 Patent. *See L.A. Biomed*, 849 F.3d at 1057.

For the foregoing reasons, we determine on this record that claim 21 of the ’959 Patent is not entitled to the effective filing dates of the ’153 Provisional or the ’071 Application. Accordingly, the earliest-possible priority date of claim 21 is, thus, October 1, 2017, the filing date of the ’446 Provisional.⁹ In view of this determination, we need not address Petitioner’s alternative argument that the ’959 Patent’s claim of priority to the ’071 Application and ’153 Provisional is defective under 35 U.S.C. § 120.

D. Obviousness under 35 U.S.C. § 103

An invention is not patentable under 35 U.S.C. § 103 “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” The question of obviousness is resolved

⁹ For purposes of clarity, we note that this Decision does not express an opinion as to whether claim 21 is, in fact, entitled to a priority date of October 1, 2017. This Decision merely determines, based on the current record, that October 1, 2017 is the earliest possible priority date.

on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and, (4) where in evidence, so-called secondary considerations, including commercial success, long-felt but unsolved needs, and failure of others.¹⁰ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

1. *Ground 1: Obviousness of Claim 21 over Beard*

a) *Overview of Beard*

Beard discloses a remote identification (RID) device that is attachable to an unmanned aircraft system (UAS). Ex. 1008, code (57). Beard’s system can employ “cryptographic keys” that are decoded by a receiver “for verifying digital signatures encoded into the identifier signals (e.g., verifying the identity of a transmitting UAS).” *Id.* at 3:30–39.

Beard claims priority to U.S. Provisional Patent Application 62/480,031, filed March 31, 2017 (the “Beard Provisional”). Ex. 1008, code (60). Petitioner contends that Beard is entitled to the March 31, 2017, priority date of the Beard Provisional under the 35 U.S.C. § 102 under Board’s precedential decision in *Penumbra, Inc. v. Rapid Pulse, Inc.*, IPR2021-01466, Paper 34, at 32 (PTAB March 10, 2023) because (i) the Beard Provisional discloses the subject matter in Beard that Petitioner relies upon, (ii) Beard properly claims priority to the Beard Provisional, and (iii) Beard and the Beard Provisional share a common inventor. Pet. 16. Patent Owner does not substantively dispute Petitioner’s contention that Beard is entitled to the Beard Provisional’s priority date under *Penumbra*. See

¹⁰ At this stage of the proceeding, Patent Owner has not directed us to evidence of such secondary considerations. See *generally* Prelim. Resp.

Prelim. Resp. 32–36. Accordingly, on this record, we determine that Beard is entitled to the March 31, 2017, priority date of the Beard Provisional.

Because October 1, 2017, is the earliest possible priority date of claim 21 of the '959 Patent, Beard qualifies as prior art under at least 35 U.S.C.

§ 102(a)(2).

b) Claim 21

Preamble

The preamble (claim element [21p]) recites: “A device configured to communicate identification information associated with a low-altitude aircraft, the device comprising.” Ex. 1001, 17:17–18:1. Petitioner contends that Beard discloses a device so configured. *See* Pet. 34–35.¹¹ Patent Owner does not presently dispute this contention. *See* Prelim. Resp. 32–36. We find that Petitioner has made a sufficient showing that Beard discloses the subject matter of the preamble.

Limitation [21a]

Limitation [21a] recites “a radio frequency communication antenna.” Ex. 1001, 18:1–2. Petitioner contends that Beard’s RID device transmits RF information on designated frequencies, and that one of ordinary skill in the art would thus have understood Beard’s RID device to include an RF antenna. *See* Pet. 28. Patent Owner does not dispute Petitioner’s contention that Beard teaches or suggests the subject matter of limitation [21a]. *See*

¹¹ In discussing Ground 1, the Petition cites to disclosures from both Beard and the Beard Provisional. We note that Beard incorporates by reference the entire disclosure of Beard Provisional. Ex. 1008, 2:9–12. Accordingly, the subject matter disclosed in the Beard Provisional is properly considered part of Beard.

Prelim. Resp. 32–36. We find that Petitioner has made a sufficient showing regarding this limitation for purposes of institution.

Limitation [21b]

Limitation [21b] recites “a radio communication module coupled to the radio frequency communication antenna and configured to transmit identification information associated with the low-altitude aircraft through a transmitted radio signal.” Ex. 1001, 18:2–5. Petitioner contends that Beard’s RID device includes an “RF transceiver” that performs wireless communication for the disclosed RID device. Pet. 29. Petitioner further contends that Beard’s RF transceiver transmits an “identifier signal” that “uniquely identifies” the accompanying UAS. *Id.* at 30–31. Patent Owner does not dispute Petitioner’s contention that Beard teaches or suggests the subject matter of limitation [21b]. See Prelim. Resp. 32–36. We find that Petitioner has made a sufficient showing regarding this limitation for purposes of institution.

Limitation [21c]

Limitation [21c] recites “wherein the radio communication module is configured to receive a received radio signal and store the information in a storage.” Ex. 1001, 18:5–7. Petitioner contends Beard’s RF transceiver is able to receive RF transmissions broadcast by other RID devices, and that the identification information broadcast by Beard’s RF transceiver is stored in memory.¹² Pet. 32. Patent Owner does not dispute Petitioner’s contention

¹² Petitioner interprets the term “the information” in limitation [21c] as referring to the “identification information associated with the low-altitude aircraft” recited in limitation [21b]. See Pet. 32 n.4. Patent Owner does not presently dispute this construction. See Prelim. Resp. 5–15, 32–36. On this record, we agree with Petitioner that the recitation of “identification

that Beard teaches or suggests the subject matter of limitation [21c]. *See* Prelim. Resp. 32–36. We find that Petitioner has made a sufficient showing regarding this limitation for purposes of institution.

Limitation [21d]

Limitation [21d] recites “wherein the radio frequency communication antenna is coupled to the low-altitude aircraft.” Ex. 1001, 18:8–9. Petitioner contends that Beard’s RID device (which includes an antenna) is attachable to Beard’s UAS. Pet. 34. Patent Owner does not dispute Petitioner’s contention that Beard teaches or suggests the subject matter of limitation [21d]. *See* Prelim. Resp. 32–36. We find that Petitioner has made a sufficient showing regarding this limitation for purposes of institution.

Limitation [21e]

Limitation [21e] recites “the radio communication module is configured to utilize a secure identifier.” Ex. 1001, 18:9–10. Petitioner contends that Beard’s RF transceiver (i.e., communication module) transmits position data and identification information (i.e., an identifier). Pet. 34. Petitioner further contends that Beard’s identification information is encoded with “cryptographic keys” creating an “anti-spoofing digital signature” that allows the identity of the transmitting UAS to be verified. *Id.* at 34–35. In support of this contention, Petitioner cites disclosures from Beard that describes the use of cryptographic keys for “verifying the identity of a transmitting UAS.” *See* Ex. 1008, 8:39–42; *see also id.* at 3:30–36, 9:9–12; Ex. 1009, 7–8, 1.

information associated with the low-altitude aircraft” in limitation [21b] provides the antecedent basis for the recitation of “the information” in limitation [21c].

Patent Owner argues that Beard’s digital signature is a “TLS/SSI signature,” a “digitally signed, encrypted public-key certificate,” and that such a signature “do[es] not change from time-to-time . . . to avoid spoofing and/or cloning of UAV transmissions” Prelim. Resp. 33. This argument is not persuasive under our preliminary construction of the claim term “secure identifier,” which does not require a digital signature that rotates or changes predictably. *See supra* § II.B.

Patent Owner also argues that Beard’s “anti-spoofing” digital signature “does not ensure that the signature, the Drone [identifier], and/or the UAV transmissions have not been cloned” as part of a so-called “replay attack.” Prelim. Resp. 34–35. The ’959 Patent Specification certainly mentions that an advantage of frequently rotating the SSID (which in the ’959 Patent can function as a secure identifier) is that doing so reduces the likelihood of cloning. *See* Ex. 1001, 11:22–24. But, as Dr. Chowdhry explains, Beard’s system encrypts communications so that communications between Beard’s UAV and Beard’s portable receiver cannot be decrypted by other devices. *See* Ex. 1003 ¶ 130. Dr. Chowdhry testifies that this encryption is sufficient to render Beard’s identification information secure. *Id.* At this stage of the proceeding, Patent Owner has not offered contrary testimony. Thus, Dr. Chowdhry’s testimony currently stands unrebutted. Accordingly, on this record, we are not persuaded that the alleged vulnerability of Beard’s digital signature to a replay attack precludes that digital signature from satisfying the “secure identifier” limitation of claim 21. Patent Owner, of course, is free to re-raise this argument and present additional supporting evidence during trial.

Patent Owner additionally argues that one of ordinary skill in the art would not implement a digital signature that is “computationally intensive”

on a “UAV with limited computing and bandwidth capabilities.” Prelim. Resp. 36. This argument is not persuasive because Beard clearly teaches a UAV that encrypts data using such a digital signature. *See, e.g.*, Ex. 1008, 7:19–26, 12:25–29. The fact that one of ordinary skill in the art may have had reasons to make a different design choice does not contradict or undermine Petitioner’s contention that Beard discloses this limitation.

On this record, we find that Petitioner has made a sufficient showing regarding limitation [21e] for purposes of institution.

Limitation [21f]

Limitation [21f] recites “the radio communication module is configured for two-way communication with a remote portable detection system.” Ex. 1001, 18:10–12. Petitioner contends that Beard discloses a “portable receiver” that receives signals from the RID device, and that Beard’s RF transceiver “is both a transmitter and receiver.” Pet. 35–36. Patent Owner does not dispute Petitioner’s contention that Beard teaches or suggests the subject matter of limitation [21f]. *See* Prelim. Resp. 32–36. We find that Petitioner has made a sufficient showing regarding this limitation for purposes of institution.

Limitation [21g]

Limitation [21g] recites “wherein the device is coupled to the low-altitude aircraft.” Ex. 1001, 18:13–14. Petitioner contends that Beard’s RID device is attachable to Beard’s UAS. Pet. 37. Patent Owner does not dispute Petitioner’s contention that Beard teaches or suggests the subject matter of limitation [21g]. *See* Prelim. Resp. 32–36. We find that Petitioner has made a sufficient showing regarding this limitation for purposes of institution.

Limitation [21h]

Limitation [21h] recites “the remote portable detection system includes a user interface configured to provide to a user, information associated with a plurality of different low-altitude aircrafts detected by the remote portable detection system.” Ex. 1001, 18:14–17. Petitioner contends that Beard’s portable receiver includes a display surface that displays “identifier and position data” for a UAS, and that Beard teaches that this device can simultaneously display such data for multiple UASs. Pet. 37–39. Patent Owner does not dispute Petitioner’s contention that Beard teaches or suggests the subject matter of limitation [21h]. See Prelim. Resp. 32–36. We find that Petitioner has made a sufficient showing regarding this limitation for purposes of institution.

Conclusion regarding Claim 21

For the foregoing reasons, Petitioner has made a sufficient showing that Beard discloses, teaches, or suggests all limitations of claim 21 of the ’959 Patent. Accordingly, Petitioner has demonstrated a reasonable likelihood of proving that claim 21 is unpatentable as obvious over Beard.

2. *Remaining Grounds 2–4*

Petitioner sets forth three other challenges asserting that claim 21 is unpatentable over other prior art. Because Petitioner demonstrates a reasonable likelihood of success in showing that claim 21 is unpatentable as obvious over Beard, we institute an *inter partes* review as to all the challenges asserting this claim is unpatentable identified in the Petition. See 37 C.F.R. § 42.108(a). At this stage in the proceeding, we need not fully address these challenges to determine whether to institute review, and we express no opinion on the strength or weakness of those challenges at this stage of the proceeding.

III. CONCLUSION

For the reasons discussed above, Petitioner has shown a reasonable likelihood it will succeed in demonstrating that claim 21 is unpatentable under 35 U.S.C. § 103(a). We, therefore, institute an *inter partes* review as to claim 21 on all grounds set forth in the Petition. 35 U.S.C. § 314(a); 37 C.F.R. § 42.108(a).

This Decision does not reflect a final determination on the patentability of any claim. We further note that the burden remains on Petitioner to prove unpatentability of each challenged claim. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED, pursuant to 35 U.S.C. § 314(a), that an *inter partes* review of claim 21 of U.S. Patent No. 10,713,959 B2 is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), that this *inter partes* review shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

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Patent 10,713,959 B2

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