

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

PROXENSE, LLC,
Patent Owner.

IPR2025-00562
Patent 9,049,188 B1

Before THU A. DANG, KEVIN F. TURNER, and DAVID C. McKONE,
Administrative Patent Judges.

DANG, *Administrative Patent Judge.*

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background

In response to a Petition (Paper 2, “Pet.”) filed by Apple Inc. (“Petitioner”), we instituted *inter partes* review of claims 1–20 (the “challenged claims”) of U.S. Patent No. 9,049,188 B1 (Ex. 1001, “the ’188 patent”). See Paper 9 (“Decision to Institute” or “Dec. Inst.”).

During trial, Proxense, LLC (“Patent Owner”) filed a Response (Paper 11 (“PO Resp.”)), to which Petitioner filed a Reply (Paper 12 (“Pet. Reply”)). In turn, Patent Owner filed a Sur-reply. Paper 13 (“PO Sur-reply”). Oral hearing was waived by the parties. Paper 18.

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has shown by a preponderance of the evidence that claims 1–20 of the ’188 patent are unpatentable under 35 U.S.C. § 103.

B. Related Proceedings

Petitioner identifies the ’188 patent as the subject of *Proxense, LLC v. Apple Inc.*, No. 6:24-cv-00143 (W.D. Tex. March 18, 2024) (pending, but dismissed with prejudice regarding the ’188 Patent). Pet. 3.

C. The ’188 Patent

The ’188 patent, titled “Hybrid Device Having a Personal Digital Key and Receiver-Decoder Circuit and Methods of Use,” issued on June 2, 2015, from Application No. 14/171,705, with a filing date of February 3, 2014. Ex. 1001, codes (54), (45), (21), (22). The ’188 patent provides a hybrid device including a personal digital key (PDK) and a receiver-decoder circuit (RDC) that are coupled for communication with each other. *Id.* at Abstract.

An illustration of the embodiment of the '188 patent's hybrid device is depicted in Figure 1, reproduced below:

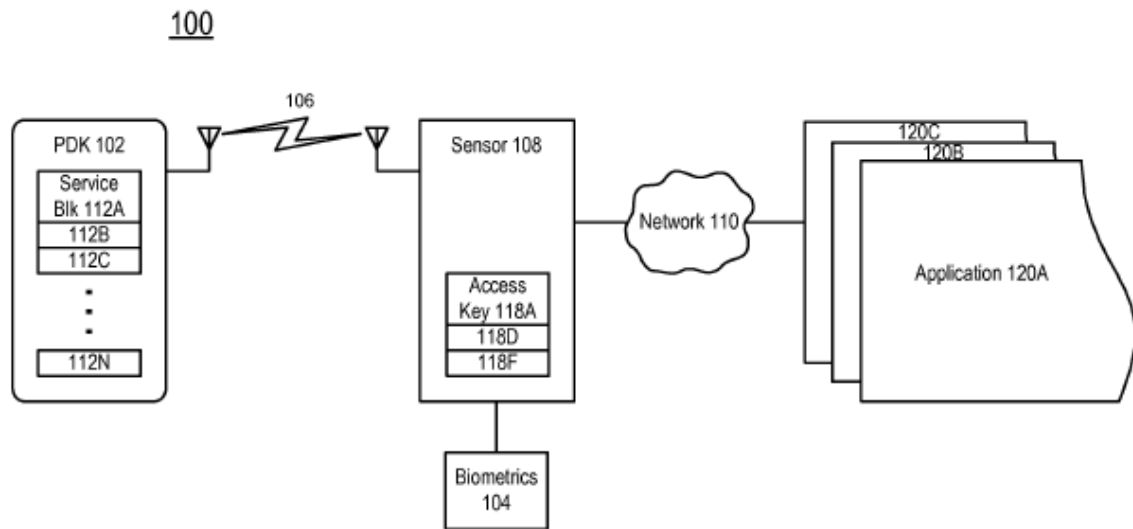


FIG. 1

Figure 1 is a block diagram of system 100 comprising PDK 102, sensor 108, network 110, and one or more applications 120 (including services).

Ex. 1001, 2:65–3:2. In Figure 1, sensor 108 is coupled to PDK 102 by wireless link 106 and coupled to network 110 by a wired or wireless link.

Id. at 3:2–4. In the exemplary embodiment shown in Figure 1, applications 120 are accessed over network 110, with sensor 108 being adapted to receive biometric input 104 from a user and displaying status to a user. *Id.* at 3:4–7.

In the example shown in Figure 1, sensor 108 contains three service block access keys 118A, 118D, 118F, wherein service block access keys 118 allow sensor 108 to unlock information stored in corresponding service blocks 112, which information is used as local secured information.

Ex. 1001, 3:14–21. In one example in which a biometric (e.g., a fingerprint) is required in order to access specific service blocks in PDK 102, service block 112A is used for verification of the biometric and sensor 108 uses

stored corresponding service block access key 118A to unlock biometric service 112A. *Id.* at 3:22–27. A current biometric is received using biometric input 104, and sensor 108 verifies the stored biometric (from service block 112A) against the recently acquired biometric (from input 104). *Id.* at 3:27–30.

An exemplary embodiment of sensor 108 is depicted in Figure 3, reproduced below:

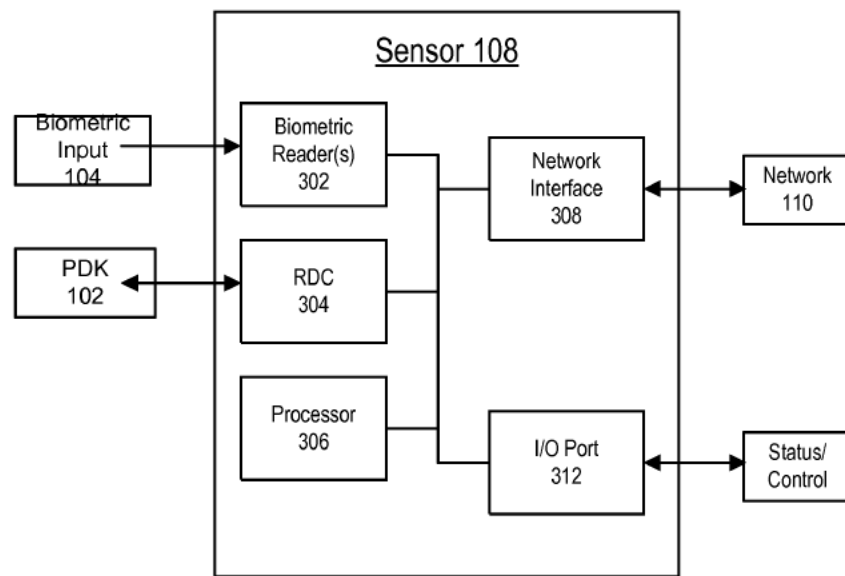


FIG. 3

Figure 3 is a block diagram of sensor 108 comprising one or more biometric readers 302, RDC 304, processor 306, network interface 308, and I/O port 312. Ex. 1001, 7:4–7. As shown in Figure 3, RDC 304 provides the wireless interface to PDK 102. *Id.* at 7:10–11.

Biometric reader 302 receives and processes biometric input 104 from an individual. Ex. 1001, 7:23–30. I/O port 312 provides general input and output interface to sensor 108. *Id.* at 7:42–48.

D. The Challenged Claims

Of the challenged claims, claims 1 and 10 are independent. Independent claim 1 is illustrative of the challenged claims, and is reproduced below:

1. A hybrid device comprising:

an integrated personal digital key (PDK) for storing local, secured biometric information for authenticating a user and capable of communicating wirelessly with an external receiver-decoder circuit (RDC); and

an integrated RDC for communicating wirelessly with at least one external PDK within a proximity zone, the integrated RDC coupled to the integrated PDK by a first signal line for communication, the integrated RDC coupled to at least one other component of the hybrid device by a second signal line, one or more of the integrated RDC and integrated PDK enabling one or more of an application, a function, and a service.

Ex. 1001, 21:50–62.

E. Asserted Grounds of Unpatentability

We instituted *inter partes* review of all challenged claims on all challenges in the Petition. Petitioner asserts that claims 1–20 of the '188 patent are unpatentable based on the following grounds (Pet. x):

Claim(s) Challenged	35 U.S.C. §¹	Reference(s)/Basis
1–20	103	Giobbi '157 ² , Giobbi '139 ³ , Dua ⁴
1–7, 9–15, 17, 18	103	Broadcom ⁵
8, 16, 19, 20	103	Broadcom, Giobbi '157

Petitioner relies on the Declarations of Dr. Andrew Wolfe, Ph.D., in support of its unpatentability contentions. Ex. 1003 (in support of the Petition); Ex. 1013 (in support of Petitioner's Reply).

Patent Owner relies on the Declaration of Dr. Markus Jakobsson, Ph.D. Ex. 2016 ("the Jakobsson Declaration"). However, as Petitioner points out in its Reply, the Jakobsson Declaration was not submitted with Patent Owner's Response. Pet. Reply 11. Nevertheless, with our authorization, Patent Owner subsequently submitted the Jakobsson Declaration as an exhibit 2016. *See* Paper 16 ("We find that making such cited document part of the record would be beneficial in bringing clarity to

¹ The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102, 103, effective March 16, 2013. Because the application from which the '188 patent issued was a continuation of applications filed before this date, the pre-AIA versions of §§ 102, 103 apply.

² U.S. Patent Publication No. 2007/0245157 A1, published October 18, 2007, filed May 5, 2007 (Ex. 1004, "Giobbi '157").

³ U.S. Patent Publication No. 2004/0255139 A1, published December 16, 2004, filed May 17, 2004 (Ex. 1005, "Giobbi '139").

⁴ U.S. Patent No. 9,042,819 B2, issued May 26, 2015, filed September 30, 2014 (Ex. 1006, "Dua").

⁵ European Patent Application No. EP 1,536,306 A1 published June 1, 2005, filed September 30, 2004 (Ex. 1007, "Broadcom").

the Response, especially in view of Petitioner’s acknowledgement of the lack of meaningful prejudice.”).

II. ANALYSIS

A. *Claim Construction*

We construe each 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) (2020). Under this standard, claim terms are generally given their plain and ordinary meaning as would have been understood by a person of ordinary skill in the art (POSITA) at the time of the invention and in the context of the entire patent disclosure. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc).

Only those terms in controversy need to be construed, and only to the extent necessary to resolve the controversy. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

Petitioner proposes a claim construction for “Personal Digital Key (PDK).” Pet. 8–9. Patent Owner contends that “[d]etermining whether the Petition raises sufficient grounds of invalidity requires construing claim terms present in independent claims 1 and 10.” PO Resp. 6. Patent Owner points out that independent claim 1 recites that the function of “enabling one or more of an application, a function and a service” is performed by an “integrated PDK” and/or an “integrated RDC,” while independent claim 10

recites the function is performed by an “enablement signal” generated by a “hybrid device.” *Id.* According to Patent Owner, “[t]hese terms must be construed in order to determine the corresponding structures performing the recited function,” and that “[o]nly then can it be determined whether the Petition demonstrates all elements of claims 1 and 10 can be found in the asserted references.” *Id.*

Patent Owner then asserts that, because claims 1 and 10 “do not recite a sufficiently definite structure” for performing the recited “enabling” function “*other than a general-purpose computer*,” “the claims invoke 35 U.S.C. § 112, ¶ 6.” PO Resp. 7. Thus, Patent Owner contends, “the claims must be construed to cover only the structure, material, or acts described in the specification as corresponding to the claimed structure,” wherein “[t]he corresponding structure is not simply a general purpose computer by itself but the special purpose computer *as programmed to perform the disclosed algorithm*.” *Id.*

Petitioner points out that Patent Owner “does not dispute the teachings of the prior art, Petitioner’s characterizations of the prior art, or the combinations asserted in the Petition against the Challenged Claims.” Pet. Reply 2. According to Petitioner, “[b]esides its attempt to improperly construe the claims narrowly under 35 U.S.C. § 112 ¶ 6 and add limitations, [Patent Owner] has no arguments to distinguish over the prior art.” *Id.* Petitioner argues that, despite Patent Owner’s 35 U.S.C. § 112 ¶ 6 assertions, the disputed claim limitations do not employ “means for” language (*id.* at 4), wherein, a POSITA would understand the disputed limitations, i.e., “integrated RDC,” “integrated PDK,” and “enablement signal,” to “connote structure,” and thus, Patent Owner “fails to overcome the rebuttable presumption against construing under 112 ¶ 6.” *Id.* at 6.

The parties' arguments and evidence turn on whether the claims invoke 35 U.S.C. § 112 ¶ 6. *See* PO Resp. 7; Pet. Reply 1; PO Sur-reply 2. However, we addressed similar arguments with respect to this issue in previous related proceedings. *See* IPR2024-00405, Paper 24 at 8–25; IPR2024-00407, Paper 25 at 8–26; IPR2024-00573, Paper 27 at 8–29; IPR2024-00782, Paper 32 at 8–23; IPR2024-00783, Paper 31 at 7–25. As set forth in the previous related proceedings, we determined that the claims at issue in those proceedings do not invoke 35 U.S.C. § 112 ¶ 6. *See id.* In this proceeding, we also determine that the claims do not invoke 35 U.S.C. § 112 ¶ 6, as discussed below.

1) 35 U.S.C. § 112 ¶ 6.

35 U.S.C. § 112 ¶ 6 is a provision in patent law that allows an element in a claim to be expressed as a means or step for performing a specific function without reciting the structure, material, or acts in support thereof. That is, § 112 ¶ 6 allows claiming a means for or step for accomplishing a particular function using purely functional language. Section 112 ¶ 6 reads as follows:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalent thereof.

A claim element using the term “means” is generally presumed to be a means-plus-function element. *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348–49 (Fed. Cir. 2015). There is a rebuttable presumption that a claim limitation is not drafted in a means-plus-function format and conveys sufficient definite structure if it does not contain the term “means.”

Id.; see also *Dyfan, LLC v. Target Corp.*, 28 F.4th 1360, 1365 (Fed. Cir. 2022).

Rather than “means for,” “nonce” terms have been used, which appear as a structure, but fail to identify a specific structure. If it is shown that a claim uses a “nonce” word lacking in sufficiently definite structure that substitutes for the term “means,” the presumption that the claim is not drafted in a means-plus-function format can be rebutted. See *Williamson*, 792 F.3d at 1348, 1350–51. In *Williamson*, the Court determined that the term “module” did not provide any indication of structure because “it sets forth the same black box recitation of structure for providing the same specified function as if the term ‘means’ had been used.” *Id.* That is, the rebuttable presumption can be overcome if a challenger demonstrates that the term fails to recite sufficiently definite structure. See *Dyfan*, 28 F.4th at 1367. However, in *Dyfan*, the Court found that the terms “code” and “application” are not generic place holders (i.e., terms that are substitutes for the term “means”) where persons of ordinary skill in the art would understand the terms in combination with the function performed as connoting structure. *Id.* at 1368–69.

In step-plus-function analysis, the absence of the word “step” sets up a rebuttable presumption that § 112 ¶ 6 is not invoked, but that presumption can be overcome if the claim element only recites a function without any associated acts for accomplishing that function. See *Generation II Orthotics Inc. v Med. Tech. Inc.*, 263 F.3d 1356, 1368 (Fed. Cir. 2001).

The Manual for Patent Examining Procedures (MPEP) § 2181 provides guidance on means-plus-function and step-plus-function claim limitations under 35 USC § 112 ¶ 6. Although MPEP § 2181 is provided as guidance to patent examiners, it reflects existing practices identifying and

interpreting 35 USC § 112 ¶ 6 limitations. In particular, § 2181 guides examiners in determining whether a claim limitation invokes 35 USC § 112 ¶ 6 by using the three-prong analysis, wherein examiners will apply § 112 ¶ 6 to a claim limitation if:

- (a) The claim limitation uses the term “means” or “step” or a term used as a substitute for “means” that is a generic placeholder (also called a nonce term or a non-structural term having specific structural meaning) for performing the claimed function;
- (b) The term “means” or “step” or the generic placeholder is modified by functional language, typically, but not always linked by the transitional word “for” (e.g., “means for”) or another linking word or phrase, such as “configured to” or “so that”; and
- (c) The term “means” or “step” or the generic placeholder is not modified by sufficient structure, material, or acts for performing the claimed function.

MPEP § 2181(I).

2) *Analysis*

a. Claim 1

Claim 1 recites, inter alia, “an integrated personal digital key (PDK) for storing local, secured biometric information” and “an integrated [reader-decoder circuit (RDC)] for communicating wirelessly with at least one external PDK within a proximity zone,” wherein “one or more of the integrated RDC and integrated PDK enabling one or more of an application, a function, and a service.” Ex. 1001, 21:50–62.

Patent Owner asserts that “the claims do not recite a sufficiently definite structure for performing the [recited ‘enabling’] function, but rather a general-purpose computer.” PO Resp. 7. Therefore, Patent Owner argues,

“the claims invoke 35 U.S.C. § 112, ¶ 6, and the claims must be construed to cover only the structure, material, or acts described in the specification as corresponding to the claimed structure.” *Id.* That is, according to Patent Owner, “the structure is the algorithm the general-purpose computers are programmed to perform.” *Id.* at 8. Patent Owner argues that, “[w]hen the structure disclosed for performing the function is a general-purpose computer,” the construction of the claim term “requires identifying an algorithm disclosed in the specification for accomplishing the function.” *Id.* at 11.

Patent Owner cites to *Rain* as “Applicable Law”:

To determine whether § 112 ¶ 6 applies to a claim limitation, we must inquire whether the words of the claim are understood by persons of ordinary skill in the art to have a ***sufficiently definite meaning as the name for structure. If those words lack a sufficiently definite meaning, § 112 ¶ 6 applies.*** If the limitation uses the word ‘means,’ there is a rebuttable presumption that § 112 ¶ 6 applies. If not, there is a rebuttable presumption that the provision does not apply. But that presumption can be overcome and § 112 para. 6 will apply if the challenger demonstrates that ***the claim term fails to recite sufficiently definite structure*** or else recites function without reciting sufficient structure for performing that function.

PO Resp. 9–10 (citing *Rain Computing Inc. v. Samsung Electrs. Am. Inc.*, 989 F.3d 1002, 1005 (Fed. Cir. 2021)).

Patent Owner then contends that “[t]he term ‘integrated PDK’ (Personal Digital Key) is not recognized by those of ordinary skill in the art to provide a sufficiently definite structure for performing the function of ‘enabling one or more of an application, a function and a service.’” PO Resp. 16 (citing Ex. 2016 ¶ 18). According to Patent Owner, the Specification states that “the PDK 102a includes an antenna and a

transceiver for communicating with a RDC . . . and a controller and memory for storing information particular to a user.” *Id.* at 17 (quoting Ex. 1001, 13:46–49). Patent Owner argues that “[a] PDK, therefore, legally and factually amounts to nothing more than a general-purpose computer.” *Id.* at 19. Patent Owner argues that, thus, “the specification must sufficiently disclose an algorithm to transform a general purpose microprocessor to the special purpose computer.” *Id.* at 20. Patent Owner then argues that “examples from the specification unmistakably link the algorithm of control logic 250 to the ability of an ‘integrated PDK’ to perform the [‘enabling’] function,” and therefore, “claim 1 must be construed as including the algorithm of control logic 250.” *Id.* at 31–32.

Similarly, Patent Owner contends that “[t]he term ‘integrated RDC’ is not recognized . . . to provide a sufficiently definite structure for performing the function of ‘enabling [of claim 1].” PO Resp. 32 (citing Ex. 2016 ¶¶ 18, 53). In particular, Patent Owner contends that “the recited structure is nothing more than the ability to receive data via Bluetooth, Wi-Fi, and other wireless protocols.” *Id.* at 33 (citing Ex. 2016 ¶¶ 53–55). According to Patent Owner, its expert, Dr. Jakobsson, characterizes the RDC as “just a wireless interface that can decode or decrypt received data.” *Id.* (citing Ex. 2016 ¶ 55). Patent Owner contends that the parties are in agreement that “an RDC is nothing more than a receiver.” *Id.* at 34. Patent Owner repeats its contention that “creating a wireless link facilitating the receipt of data does not enable an application.” *Id.* at 35. That is, “an algorithm is provided in the specification as control logic 250, which when executed allows an RDC to perform the [‘enabling’] function.” *Id.*

Patent Owner quotes MPEP 2181(II)(B):

In cases involving a special purpose computer implemented means-plus-function limitation, the Federal Circuit has consistently required that the structure be more than simply a general purpose computer or microprocessor and that the specification must disclose an algorithm for performing the claimed function.

PO Resp. 39–40.

Patent Owner acknowledges that the district court in the related litigation “construed each of the terms PDK and RDC.” PO Resp. 42 (citing Ex. 2001, 27). In particular, Patent Owner acknowledges that the district court construed “PDK” as an “operably connected collection of elements including an antenna and a transceiver for communicating with a RDC and a controller and memory for storing information particular to a user.” *Id.* Patent Owner further acknowledges that the district court construed “RDC” as a “component or collection of components, capable of wirelessly receiving data in an encrypted format and decoding the encrypted data for processing.” *Id.* at 43 (citing Ex. 2002, 36). However, Patent Owner contends that the district court construed “PDK” and “RDC” as “nothing more than a general-purpose computer,” and thus, according to the district court’s construction, a “hybrid device” is “a combination of two general-purpose computers.” *Id.* at 42–43.

Accordingly, Patent Owner contends that, absent construing claims 1 and 10 to include the algorithm implemented by control logic 250, or some other algorithm disclosed in the Specification, “the [d]istrict [c]ourt would have been required to find the claims indefinite.” PO Resp. 45. That is, according to Patent Owner, the terms “PDK” and “RDC” must be construed “consistent with the construction by all parties before the [d]istrict [c]ourt,” and thus, the Board must “(1) interpret claim 1 such that the algorithm

disclosed in the specification is the structure for performing the recited function, or 2) find claim 1 to be indefinite.” *Id.* at 46. Patent Owner contends that, if the Board does not interpret claim 1 as requiring the algorithm, the Board must determine whether the claim is “sufficiently definite to enable a determination on the merits of the Petition and so state in its decision.” *Id.*

Petitioner replies by arguing that Patent Owner “fails to overcome the rebuttable presumption against construing under 112 ¶ 6.” Pet. Reply 6. According to Petitioner, because none of the elements of claim 1 uses the word “means,” “the presumption is that each of the terms [‘integrated RDC,’ ‘integrated PDK’] conveys sufficiently definite structure or act” (*id.* at 4), whereas “a POSITA would understand that the terms ‘integrated RDC,’ ‘integrated PDK,’ . . . connote structure.” *Id.* at 6 (citing *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996)). Petitioner argues that, despite Patent Owner’s contention that the claimed limitations at issue are nothing more than a general-purpose computer, “[t]he essential inquiry remains ‘whether the words of the claims are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.’” *Id.* (citing *Williamson*, 792 F.3d at 1348). Petitioner then refers to the Declaration of Dr. Wolfe (Ex. 1013), in which he testified that “a POSITA would understand that the terms ‘integrated RDC,’ ‘integrated PDK,’ . . . connote sufficient structure to perform the [‘enabling’] function.” *Id.* at 7 (citing Ex. 1013 ¶¶ 28, 35–41, 43, 50–56, 65, 67).

With respect to *Rain* cited by Patent Owner, Petitioner contends that the caselaw is “inapposite” because the statement “when a claim term recites a function performed by a general-purpose computer” only applied “if it is

already clear or has been determined that the claim terms are means-plus-function terms.” Pet. Reply 12 (citing *Rain*, 989 F. 3d at 1006; *WMS Gaming Inc. v. Int’l Game Tech.*, 184 F.3d 1339 (Fed. Cir. 1999)). In particular, Petitioner argues that the Federal Circuit in *Rain* addressed the question whether a claim term triggers 112 ¶ 6 at all before proceeding to analyze the structures described in the specification to perform the claimed function. *Id.* (citing *Rain*, 989 F. 3d at 1008). Furthermore, according to Petitioner, the claim term at issue in *Rain* “included a ‘well-known nonce word’ (i.e., ‘module’) ‘that can operate as a substitute for “means,”” which “is not the situation here with the ’188 patent because . . . none of the claim terms [being disputed in the ’188 patent] is in means-plus-function . . . format, nor are they nonce words.” *Id.* at 12–13.

Petitioner similarly contends that MPEP 2181(II)(B) cited by Patent Owner is “inapposite.” Pet. Reply 13. According to Petitioner, MPEP 2181(II)(B) also applies “if the Examiner has already made a determination . . . that a claim limitation is subject to 112(f)[, i.e., 112 ¶ 6],” but, as discussed, “none of the claim terms [being disputed in the ’188 patent] is in means-plus-function . . . format, nor are they nonce words.” *Id.*

Based on the complete record before us, and consistent with our determinations in the previous proceedings (*see* IPR2024-00405, Paper 24 at 8–21; IPR2024-00407, Paper 25 at 8–22; IPR2024-00573, Paper 27 at 8–24; IPR2024-00782, Paper 32 at 8–23; IPR2024-00783, Paper 31 at 7–25), we determine that claim 1 does not invoke 35 U.S.C. § 112 ¶ 6.

Here, as Petitioner points out, none of the claim terms being disputed in the ’188 patent is in means-plus-function format, similar to the challenged claims in the previous related proceedings. Pet. Reply 12-13; *see also* IPR2024-00405, Ex. 1001, 22:43–60; IPR2024-00407, Ex. 1001, 22:36–49;

IPR2025-00562

Patent 9,049,188 B1

IPR2024-00573, Ex. 1001, 21:51–65; IPR2024-00782, Ex. 1001, 21:52–65; IPR2024-00783, Ex. 1001, 22:36–49. As the Federal Circuit stated, when a disputed claim limitation does not employ “means for” language, the presumption is that each of the terms conveys sufficiently definite structure or act and, thus, is not subject to § 112 ¶ 6. *See Dyfan*, 28 F.4th at 1367. Based on the record before us, this presumption that each of the terms is not subject to § 112 ¶ 6 is not overcome.

Although Patent Owner argues that, because the claims invoke 35 U.S.C. § 112 ¶ 6, “the claims must be construed to cover only the structure, material, or acts described in the specification as corresponding to the claimed structure” (PO Resp. 7), the question here is whether “means for” analysis under § 112 ¶ 6 applies at all. That is, we must determine first whether the claim is even claiming a “means for” performing a function before determining whether the structure designed to perform that function is a general purpose computer, as asserted. *Id.* As set forth in MPEP § 2181, the three-step analysis in determining whether § 112 ¶ 6 applies begins with determining whether a claim limitation uses 1) the term “means” or 2) a nonce term used as a substitute for “means” that is a generic placeholder. *See* MPEP § 2181(I). By contending that the determination as to whether § 112 ¶ 6 applies also includes determining is a general purpose computer structure (PO Resp. 7), Patent Owner is adding a *third* general purpose computer structure category for triggering means-plus-function treatment in addition to the “means” or nonce category, that is not supported by any case law.

Although Patent Owner cites to MPEP 2181(II)(B) (PO Resp. 39–40), we agree with Petitioner that the MPEP section is “inapposite” here. Pet. Reply 13. In particular, as Petitioner points out, MPEP 2181(II)(B) applies

“if . . . a determination . . . that a claim limitation is subject to 112(f) [i.e., 112 6],” but, as discussed, “none of the claim terms [being disputed] is in means-plus-function . . . format, nor are they nonce words.” *Id.* In fact, the language of MPEP 2181(II)(B) quoted by Patent Owner specifically indicates that the section applies “[i]n cases involving a special purpose computer implemented *means-plus-function limitation*.” PO Resp. 39–40 (emphasis added); *see also* MPEP 2181(II)(B).

As to Patent Owner’s citation to *Rain* as applicable law (PO Resp. 4–5), we agree with Petitioner that *Rain*, like MPEP 2181(II)(B) discussed above, is “inapposite” because the question of “when a claim term recites a function performed by a general-purpose computer” only applies “if it is already clear or has been determined that the claim terms are means-plus-function terms.” Pet. Reply 9. That is, the Court in *Rain* addressed the question of *whether a claim term triggers § 112 ¶ 6* at all *before* proceeding to analyze the structures described in the specification to perform the claimed function. *See Rain*, 989 F.3d at 1008 (“Having concluded ‘user identification module’ is a means-plus-function term, we must consider the term’s construction”); *see also Williamson*, 792 F.3d at 1348–49.

In *Williamson*, the determination of whether a particular term invoked § 112 ¶ 6 came down to “whether the words of the claims are understood by persons of ordinary skill in the art to have a sufficiently definite means as the name for structure.” *See Williamson*, 792 F.3d at 1348. The Federal Circuit has consistently determined that terms that connote structure do not trigger § 112 ¶ 6. *See Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996). In *Greenberg*, the Court determined that the term at issue, “detent mechanism,” conveyed sufficient structure to a person of ordinary skill in the art. *Id.*

Here, Patent Owner acknowledges that the district court in the related litigations construed “PDK” as “collection of elements” including “an antenna and a transceiver” and “memory,” and construed “RDC” as a “component or collection of components.” PO Resp. 43. We are unpersuaded by Patent Owner’s contention that collections of “elements” and “components” fail to connote sufficiently definite structure. *Id.* That is, similar to our findings in prior proceedings (*see*, for example, IPR2024-00573, Paper 27 at 21–24), we find that the “PDK” and “RDC” would be understood by a person of ordinary skill in the art to recite sufficiently definite structure.

We find persuasive Dr. Wolfe’s supporting testimony that a POSITA would have understood the terms “PDK” and “RDC” to have “definite structure.” Ex. 1013 ¶¶ 35–56. In particular, we find persuasive Dr. Wolfe’s testimony that the term “PDK,” for example, “encompasses at least ‘a collection of circuit components that includes an antenna, a transceiver, and a controller and memory for storing information particular to a user.’” *Id.* ¶ 35. Dr. Wolfe’s testimony is consistent with the Specification of the ’188 patent. *See* Ex. 1001, 5:42–6:7, 3:48–62. In particular, the Specification of the ’188 patent describes a microchip that stores information in memory and responds through an antenna when probed, which is consistent with Dr. Wolfe’s testimony. *Id.*; Ex. 1001, 1:30–62.

We similarly find persuasive Dr. Wolfe’s testimony that “a POSITA would have understood that the term ‘RDC’ alone is a definite structure.” Ex. 1013 ¶ 50. In particular, we find persuasive Dr. Wolfe’s testimony that “a POSITA would have understood that a ‘receiver-decoder circuit’ or ‘reader-decoder circuit (RDC)’ speaks to a class of structures used to

communicate wirelessly.” *Id.* at 20. Dr. Wolfe’s testimony is consistent with the Specification of the ’188 patent. *See* Ex. 1001, 1:40–62, 7:4–22.

As to Patent Owner’s contention that, if the Board does not interpret claim 1 as requiring the algorithm, the Board must determine whether the claim is “sufficiently definite to enable a determination on the merits of the Petition and so state in its decision” (PO Resp. 46), we note that claim terms can be non-means-plus-function, i.e., not requiring the algorithm as Patent Owner contends, and also be definite. Even Patent Owner acknowledged that “[a]s the Board recognized, the district court determined ‘that “hybrid device” is not indefinite’ under 35 U.S.C. 112.” PO Sur-reply 1.

The district court then specifically construed “personal digital key” as “An operably connected collection of elements including an antenna and a transceiver for communicating with a RDC and a controller and memory for storing information particular to a user”:

G. Term #7: “personal digital key” (188:1, 10; 700:1, 11)

Claim Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction	Court’s Final Construction
personal digital key	An operably connected collection of elements including an antenna and a transceiver for communicating with a RDC and a controller and memory for storing information particular to a user.	A device that includes an antenna, a transceiver for communicating with the RDC and a controller and memory for storing information particular to a user.	An operably connected collection of elements including an antenna and a transceiver for communicating with a RDC and a controller and memory for storing information particular to a user

See Ex. 2001, 27.

Further, the district court specifically construed “receiver-decoder circuit” as “A component or collection of components, capable of wirelessly receiving data in encrypted format and decoding the encrypted data for processing”:

J. Term #10: “receiver-decoder circuit” (188: 1, 10; 700:1, 11)

Claim Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction	Court’s Final Construction
“receiver-decoder circuit”	A component or collection of components, capable of wirelessly receiving data in an encrypted format and decoding the encrypted data for processing.	A device that provides a wireless interface to the PDK.	A component or collection of components, capable of wirelessly receiving data in an encrypted format and decoding the encrypted data for processing.

See Ex. 2001, 43.

That is, the district court provided specific constructions of “hybrid device,” “personal digital key,” and “receiver-decoder circuit” without any means-plus-function designation. *See* Ex. 2001, 26, 27, 43. And, as Petitioner points out, even Patent Owner did not propose means-plus-function designation during litigation at the district court, and thus, “has advanced entirely different positions for claim construction between this IPR proceeding and litigation.” Pet. Reply 17–18; *see* Ex. 2001, 27, 43.

On this complete record, we find that construing the terms “PDK” and “RDC” “consistent with the construction by all parties before the [d]istrict [c]ourt” (Ex. 2001, 27, 43) does not require the Board to “1) interpret claim 1 such that the algorithm disclosed in the specification is the structure for performing the recited function, or 2) find claim 1 to be indefinite.” PO Resp. 46.

Thus, although Patent Owner argues that claim 1 invokes § 112 ¶ 6 in this proceeding (PO Resp. 4), like in the previous related proceedings (IPR2024-00405, Paper 24 at 8–21; IPR2024-00407, Paper 25 at 8–22; IPR2024-00573, Paper 27 at 8–24; IPR2024-00782, Paper 32 at 8–23; IPR2024-00783, Paper 31 at 7–25), the presumption that claim 1 is not subject to § 112 ¶ 6 is not overcome.

b. Claim 10

Claim 10 recites, inter alia, a method comprising “creating a first wireless link between an integrated receiver-decoder circuit (RDC) of a hybrid device and an external personal digital key (PDK),” “receiving a first signal at the integrated RDC via the first wireless link from the external PDK,” and “generating an enablement signal enabling one or more of an application, a function and a service.” Ex. 1001, 22:21–31.

Similar to its contentions with respect to claim 1, Patent Owner contends that claim 10 also invokes 35 U.S.C. § 112 ¶ 6. PO Resp. 36–41. Patent Owner contends that the term “‘enablement signal’ is not recognized by those of ordinary skill in the art to provide a sufficiently definite structure for performing the function of ‘enabling one or more of an application, a function and a service,’” but rather “it is a meaningless nonce merely reciting the function to be performed.” *Id.* at 36. Patent Owner then contends that “claim 10 invokes § 112, ¶ 6, by failing to recite a sufficiently definite structure for performing the recited function,” and thus, “[t]he first step in construing a means-plus function claim is to ‘identify the claimed function.’” *Id.* (citing *Rain*, 989 F.3d at 1007).

Petitioner provides the same arguments for claim 10 as they do for claim 1. *See* Pet. Reply 2–19. Based on the complete record before us, we are also unpersuaded that claim 10 invokes 35 U.S.C. § 112 ¶ 6.

Claim 10 is a method claim comparable to the device in claim 1, and recites “generating an enablement signal enabling one or more of an application, a function, and a service.” *Compare* Ex. 1001, 21:50–62, *with id.* at 22:21–31. Although Patent Owner argues that “[t]he first step in construing a means-plus function claim is to ‘identify the claimed function’” (PO Resp. 36), claim 10 is not means-plus-function, but rather should be

evaluated to determine if it is a step-plus-function claim. As we determined in the previous proceedings, *Williamson* guides that the step-plus-function analysis follows a similar approach as means-plus-function analysis (IPR2024-00405, Paper 24 at 21–25; IPR2024-00407, Paper 25 at 22–26; IPR2024-00573, Paper 27 at 24–29; IPR2024-00782, Paper 32 at 20–23; IPR2024-00783, Paper 31 at 22–25; *see also Williamson*, 792 F.3d at 1349), wherein triggering the step-plus-function provisions of § 112 ¶ 6 follows a similar approach of rebuttable presumption, with “step” replacing “means,” and with recitation of acts substituting for recitation of structure. *See* 35 U.S.C. § 112 ¶ 6.

In step-plus-function analysis, if the claim does not recite the term “step for,” there is a presumption that these limitations are not subject to § 112 ¶ 6. *See Seal-Flex, Inc. v. Athletic Track and Court Const.*, 172 F.3d 836, 849 (Fed. Circ. 1999); *Generation II Orthotics*, 263 F.3d at 1368; *see also Watts v. XL Systems, Inc.*, 232 F.3d 877, 881 (Fed. Cir. 2000). Whereas claim 1 does not recite “means” language, here, claim 10 does not recite a “step” for performing a function. *Compare* Ex. 1001, 21:50–62, *with id.* at 22:21–31. The absence of the word “step” sets up a rebuttable presumption that § 112 ¶ 6 is not invoked. Although that presumption can be overcome if the claim element only recites a function without any associated acts for accomplishing that function, on this record, this presumption is not overcome.

Claim 10 recites the function of “enabling” with an associated act for accomplishing that function, i.e., the act of “generating an enablement signal.” *See* Ex. 1001, 22:30–31. We find that the act and function are apparent such that step-plus-function is not invoked. *Id.*; *see also Generation II Orthotics*, 263 F.3d at 1368. This is similar to our findings in

IPR2025-00562

Patent 9,049,188 B1

the previous proceedings. *See* IPR2024-00405, Paper 24 at 21–25; IPR2024-00407, Paper 25 at 22–26; IPR2024-00573, Paper 27 at 24–29; IPR2024-00782, Paper 32 at 20–23; IPR2024-00783, Paper 31 at 22–25.

Furthermore, we find Dr. Wolfe’s testimony supporting Petitioner’s contention that claim 10 recites sufficiently definite structure persuasive. Ex. 1013. In particular, we find persuasive Dr. Wolfe’s testimony that an “enablement signal” has sufficiently definite structure for performing the function of “enabling one or more of an application, a function and a service.” *Id.* ¶ 67. For example, Dr. Wolfe testified, “a POSITA would have understood an ‘enablement signal’ to be capable of enabling certain functions,” such as, a “SpeedPass enabl[ing] Exxon Mobile’s customers to pay at the pump with the wave of a key fob.” *Id.* ¶ 66 (quoting Ex. 1060).

Although Patent Owner contends that “enablement signal” is “meaningless nonce merely reciting the function [it performs]” and cites to *Rain* (PO Resp. 36), Patent Owner neither provides evidence that “enablement signal” in claim 10 is a generic placeholder like “means” (*see Dyfan*, 28 F.4th at 1368–69), nor provides evidence that “enablement signal” sets forth a “black box recitation of structure” (*see Williamson*, 792 F.3d at 1350–51).

Thus, although Patent Owner argues that claim 10 also invokes § 112 ¶ 6 (PO Resp. 36–41), similar to our determination in the previous proceedings (IPR2024-00405, Paper 24 at 21–25; IPR2024-00407, Paper 25 at 22–26; IPR2024-00573, paper 27 at 24–29; IPR2024-00782, Paper 32 at 20–23; IPR2024-00783, Paper 31 at 22–25), we also find unavailing Petitioner’s argument and evidence that claim 10 is not subject to § 112 ¶ 6.

B. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter 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.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved 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 ordinary skill in the art; and (4) objective evidence of non-obviousness. *See Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966).

C. Claims 1–20 as Obvious over Giobbi ’157, Giobbi ’139, Dua (Ground 1)

Petitioner provides evidence that claims 1–20 of the ’188 patent would have been obvious over by Giobbi ’157, Giobbi ’139, and Dua. Pet. 21–50. In response, Patent Owner contends that “the Petition fails to establish the combination of . . . Giobbi ’157, Giobbi ’139, and Dua invalidates claims 1–20.” PO Resp. 48–52.

1. Giobbi ’157

Giobbi ’157, titled “Two-Level Authentication for Secure Transaction,” published on October 18, 2007, with a filing date of May 5, 2007. Ex. 1004, codes (54), (43), (22). Giobbi ’157 discloses a PDK that stores biometric profiles in “a tamper-proof memory that is acquired in a secure trusted process,” wherein the biometric profiles comprise a “representation of physical or behavioral characteristics that are uniquely associated with an individual that owns and carries the PDK.” *Id.* at

Abstract. An illustration of Giobbi '157's system for securely authenticating an individual for transaction-processing and/or access control applications is depicted in Figure 1, reproduced below.

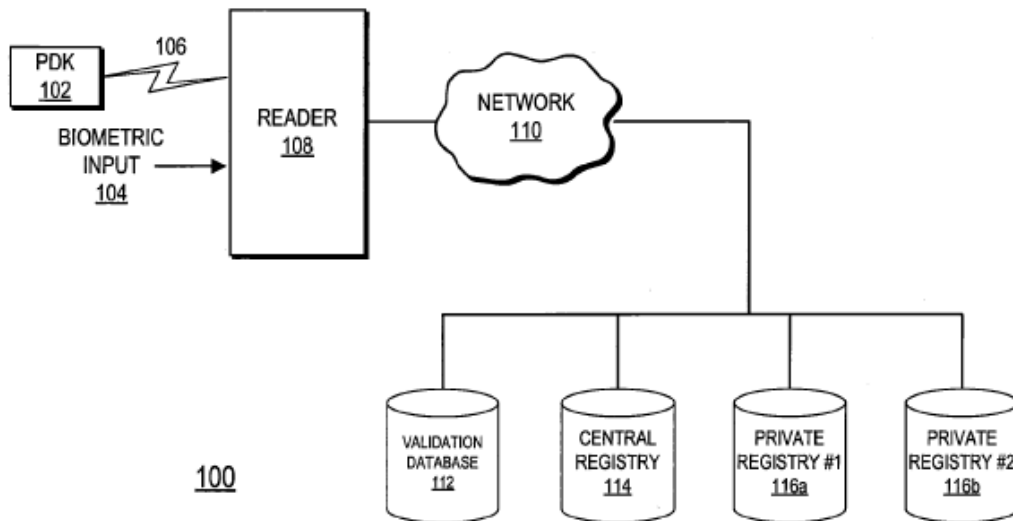


FIG. 1

Figure 1 is a block diagram of system 100 for secure electronic authentication comprising PDK 102, reader 108, network 110, and one or more external databases including validation database 112. *Id.* ¶ 26. As shown in Figure 1, reader 108 is coupled to PDK 102 by wireless link 106 and coupled to network 110 by either a wired or wireless link. *Id.* Reader 108 is also adapted to receive biometric input 104 from a user. Network 110 couples validation database 112, central registry 114 and two private registries 116 to reader 108. *Id.*

Reader 108 is depicted in Figure 3, reproduced below.

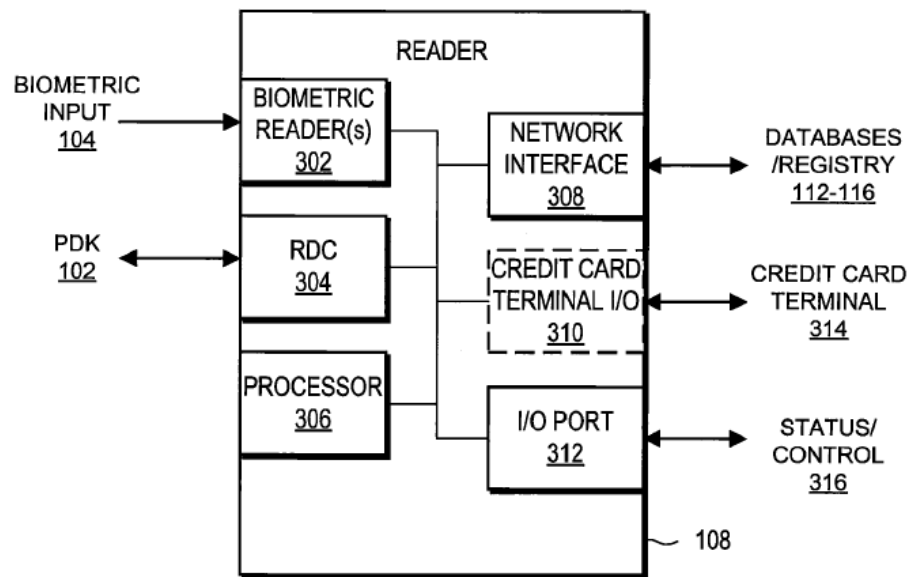


FIG. 3

Figure 3 is a block diagram of reader 108 that includes one or more biometric readers 302, receiver-decoder circuit (RDC) 304, processor 306, network interface 308, I/O port 312 and optionally credit card terminal I/O 310. Ex. 1004 ¶ 49. As shown in Figure 3, RDC 304 provides wireless interface to PDK 102, wherein RDC 304 wirelessly receives data from PDK 102 in an encrypted format and decodes the encrypted data for processing by processor 306. *Id.* ¶ 50. Generally, processor 306 processes data received by reader 108 or data to be transmitted by reader 108, wherein biometric input 104 received by biometric reader 302 can be processed and compared to biometric profile 220 received from PDK 102 in order to determine if a transaction should be authorized. *Id.* ¶ 52.

PDK 102 is depicted in Figure 2, reproduced below.

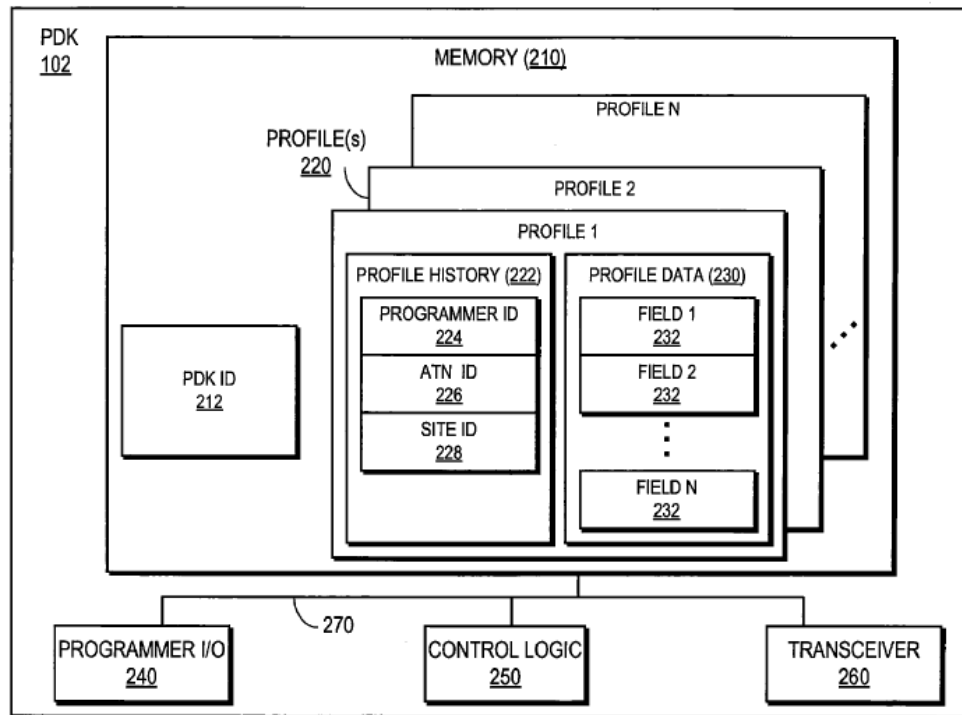


FIG. 2

Figure 2 is a block diagram of PDK 102 comprising memory 210, programmer I/O 240, control logic 250, and transceiver 260, coupled by bus 270. Ex. 1004 ¶ 35. Memory 210 can be any combination of memory types, including physical access secured and tamperproof memories, that stores unique PDK ID 212 and one or more profiles 220. *Id.* ¶ 36. Profiles 220 may comprise a biometric profile, for example, which includes profile data 230 representing physical and/or behavioral information that can uniquely identify the PDK owner. *Id.* ¶ 37.

2. Giobbi '139

Giobbi '139, titled "Digital Content Security System," published on December 16, 2004, with a filing date of May 17, 2004. Ex. 1005, codes (54), (43), (22). Giobbi '139 discloses a personal digital key digital content security system (PDK-DCSS) that is used to protect computers from

unauthorized use and protect the digital content stored on computers from being wrongfully accessed and copied. *Id.* at Abstract. Components of the PDK-DCSS are (1) a standard hard drive device, with the addition of a PDK receiver/decoder circuit (PDK-RDC) integrated into the hard drive's controller, and (2) a PDK key associated with the PDK-RDC. *Id.* To save batteries, RDCs use checks for presence of an associated PDK key on a periodic basis. *Id.* ¶ 89.

3. Dua

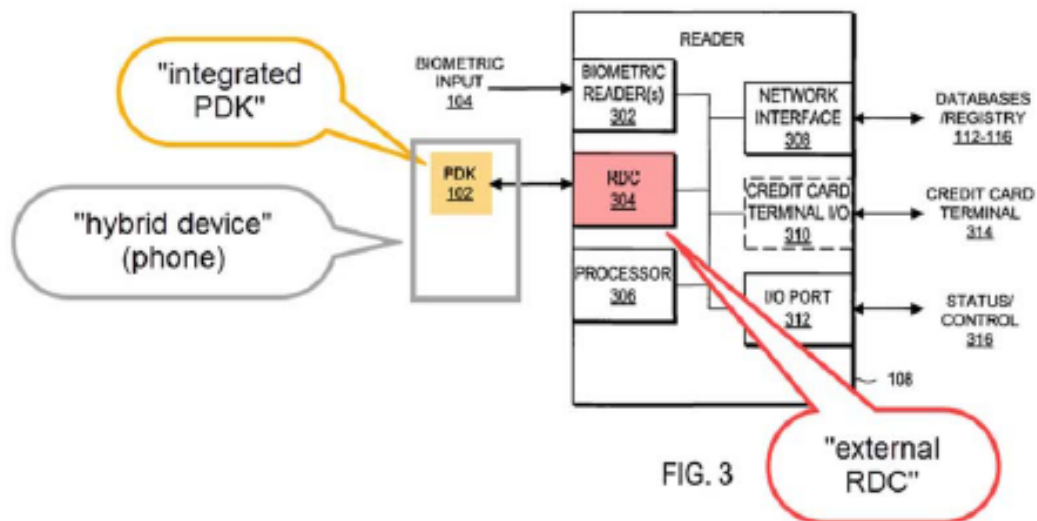
Dua, titled “Method, System, and Apparatus Having Near Field Communication (NFC) Chip With Configurable Memory That Is Updatable Via a Host Processor,” issued on May 26, 2015, with a filing date of September 30, 2014. Ex. 1006, codes (54), (45), (22). Dua discloses the use of Radio Frequency Identification (RFID) technology to exchange communication settings, media capability, and other parameters with an external device that also has integrated RFID technology. *Id.* at Abstract. In particular, Dua discloses a media player with cellular phone capability. *Id.* at 6:46–65, Fig. 1. An RFID tag-reader module is attached to or embedded within the media player, wherein the RFID tag-reader module is capable of functioning as both an RFID tag and an RFID reader, and allows interoperability with readers and tags compatible with existing international standards. *Id.* at 12:46–56. Compatibility with these standards gives the media player the ability to not only establish a wireless connection with other electronic devices using RFID for setup, but also allows the media player to function as an electronic key and wallet (for point-of-sale transactions). *Id.* at 12:56–61.

4. Analysis

Petitioner contends that the claims of the '188 patent recite a “hybrid device” that “includes both an internal PDK (key) and an internal RDC (lock)” wherein “this type of digital lock-and-key system was known years before the '188 patent was filed.” Pet. 1. Petitioner relies on Giobbi '157 for teaching an “integrated PDK” that is “capable of communicating wirelessly with an external receiver-decoder circuit (RDC).” *Id.* at 9.

i. Preamble, a “hybrid device” (claim 1)

Petitioner contends that, “[t]o the extent that the preamble is limiting, Giobbi '157 discloses a hybrid device, such as a cell phone.” Pet. 21 (citing Ex. 1004 ¶¶ 12, 35). Petitioner provides an annotated Figure 3 of Giobbi '157, shown below, to illustrate its contentions.



Annotated Figure 3 of Giobbi '157 in the Petition, according to Petitioner, illustrates “Giobbi’s hybrid device (cell phone) [that] carries an integrated PDK,” wherein the PDK “communicates with an external RDC.” *Id.* (citing Ex. 1003 ¶ 38).

Patent Owner does not present arguments in its Response addressing the specific merits of Petitioner's contentions with respect to the preamble of claim 1. *See generally* PO Resp. 48–52. We have reviewed Petitioner's explanations and supporting evidence regarding the preamble and we agree with and adopt them as our own. Pet. 21. Because Patent Owner does not separately address the preamble, Petitioner's positions regarding the preamble of independent claim 1 stand unopposed as a part of this trial.

Based on the complete record presented, we determine that Petitioner has persuasively shown that the combination of Giobbi '157, Giobbi '139, and Dua teaches a “hybrid device” as set forth in the preamble of claim 1.⁶

- ii. *“an integrated personal digital key (PDK) for storing local, secured biometric information for authenticating a user and capable of communicating wirelessly with an external receiver-decoder circuit (RDC)” (claim 1)*

Petitioner contends that “Giobbi '157 expressly discloses a ‘Personal Digital Key (PDK),’” wherein “[the] PDK is integrated into a hybrid device, such as a cell phone.” Pet. 22 (citing Ex. 1004 ¶¶ 11, 35). Pointing to Giobbi '157's Figure 3, Petitioner contends that “Giobbi '157's PDK 102 locally stores digital information ‘*in a tamper-proof format*’ that uniquely associates the PDK 102 with an individual.” *Id.* (citing Ex. 1004 ¶ 28, Fig. 3; Ex. 1003 ¶ 39). According to Petitioner, a person of ordinary skill in the art would understand “this disclosed storage of digital information to be

⁶ Because there is no dispute that Giobbi '157 in view of Giobbi '139 and Dua teaches a hybrid device, as recited in the preamble, we need not decide whether the preamble is limiting. *See Realtime*, 912 F.3d at 1375 (noting that “we need only construe terms ‘that are in controversy’”).

in a local memory,” and that the disclosure refers to “biometric information being secured in a tamper-proof (i.e., secured) format.” *Id.*

Petitioner then contends that “Giobbi ’157 teaches that its integrated PDK is capable of communicating wirelessly with an external receiver-decoder circuit (RDC).” Pet. 26. In particular, Petitioner contends that “Giobbi ’157 teaches that information stored on a PDK, such as fingerprint information, is transmitted to an external ‘RDC’ located, for example, on a ‘Reader 108,’” wherein “this communication between the integrated PDK and external RDC (on the Reader) is done wirelessly.” *Id.* at 26–27 (citing Ex. 1004 ¶¶ 30, 49–50, Fig. 3; Ex. 1003 ¶ 42).

Patent Owner does not present arguments in its Response addressing the specific merits of Petitioner’s contentions with respect to these limitations in claim 1. *See generally* PO Resp. 48–52. We have reviewed Petitioner’s explanations and supporting evidence regarding these limitations, and we agree with and adopt them as our own. Pet. 21–27. Because Patent Owner does not separately address the Petitioner’s positions regarding these limitations of independent claim 1, Petitioner’s positions regarding these limitations stand unopposed as a part of this trial.

Based on the complete record presented, we determine that Petitioner has persuasively shown that Giobbi ’157 in view of Giobbi ’139 and Dua teaches “an integrated personal digital key (PDK) for storing local, secured biometric information for authenticating a user and capable of communicating wirelessly with an external receiver-decoder circuit (RDC),” as recited in claim 1.

- iii. “an integrated RDC for communicating wirelessly with at least one external PDK within a proximity zone” (claim 1)

Petitioner relies on Giobbi '157 for disclosing RDC 304 for communicating wireless with PDK 102 within a proximity zone. Pet. 28 (citing Ex. 1004, Fig. 3). Further, Petitioner contends that a person of ordinary skill in the art “would have been motivated to integrate an RDC into Giobbi '157’s hybrid device for communication with external PDKs based, in part on the teachings of Giobbi '139.” *Id.* at 27. In particular, Petitioner contends that Giobbi '139 “**expressly** teaches integrating an RDC into the same type of hybrid device disclosed in Giobbi '157, a cell phone,” wherein “a ‘Personal Digital Key Digital Content Security System (PDK-DCSS) is used to protect computers from unauthorized use and protect the digital content stored on computers from being wrongfully accessed, copied, and/or distributed.”” *Id.* at 28 (citing Ex. 1005, Abstract).

According to Petitioner, “Giobbi '139 teaches that RDCs **should** be incorporated into hybrid devices like cell phones because these devices ‘commonly included’ data storage,” wherein “Giobbi '139 identified such a configuration as an ‘enhancement.” Pet. 29 (citing Ex. 1005 ¶¶ 87–88). Further, according to Petitioner, “Giobbi '157 teaches that it is advantageous to incorporate PDKs into ‘commonly carried items,’ like phones, since it would eliminate the need for a user to carry a separate PDK device and would reduce the risk of loss.” *Id.* at 30 (citing Ex. 1005 ¶ 35; Ex. 1003 ¶ 48). In addition, Petitioner contends that “the Dua patent’s RFID system configuration also provides motivation to integrate and RDC into Giobbi '157’s hybrid device.” *Id.* In particular, according to Petitioner, “Dua teaches a hybrid device—*e.g.*, a cell phone—which establishes wireless

connections with other devices to enable functions and exchange data.” *Id.* (citing Ex. 1006, 6:46–65).

Patent Owner does not present arguments in its Response addressing the specific merits of Petitioner’s contentions with respect to these limitations in claim 1. *See generally* PO Resp. 48–52. We have reviewed Petitioner’s explanations and supporting evidence regarding these limitations, and we agree with and adopt them as our own. Pet. 27–36. Because Patent Owner does not separately address the Petitioner’s positions regarding these limitations of independent claim 1, Petitioner’s positions regarding these limitations stand unopposed as a part of this trial.

Based on the complete record presented, we determine that Petitioner has persuasively shown that Giobbi ’157 in view of Giobbi ’139 and Dua teaches “an integrated RDC for communicating wirelessly with at least one external PDK within a proximity zone,” as recited in claim 1.

- iv. *“one or more of the integrated RDC and integrated PDK enabling one or more of an application, function, and service” (claim 1)*

Petitioner contends that “Giobbi ’157 enables a function or service for providing ‘efficient, secure, and highly reliable authentication for transaction processing’ using a PDK in conjunction with an RDC.” Pet. 40 (citing Ex. 1004, Abstract, ¶ 11). In particular, according to Petitioner, “[t]his transaction is made possible by transmitting authentication information from the integrated PDK to the external RDC,” and thus, “the integrated PDK enables this application/function/service.” *Id.*

Patent Owner responds that, as noted in the claim construction section, the algorithm of control logic 250 of the ’188 patent “requires exchanging an access key to retrieve and unlock information held within a

service block of a PDK.” PO Resp. 49. According to Patent Owner, although Petitioner alleges that the term “enabling one or more of an application, a function, and a service” can be found in the authentication process of Giobbi ’157, “Giobbi ’157 does not contemplate that the information is received in exchange for an access key.” *Id.* (citing Pet. 37–39, 53–57). According to Patent Owner, “[a]t most, Giobbi ’157 discloses starting an exchange with an unsecure connection,” but Giobbi ’157 fails to teach or describe that “this unsecure exchange of information can be accomplished by providing an access key in exchange for information held locally in the PDK’s service blocks, as required by the challenged claims.” *Id.* at 49–50. Patent Owner also contends that “Giobbi ’139 also fails to disclose that the ‘activation code’ is provided in exchange for an access key provided by the playing device.” *Id.* at 51–52. Accordingly, Patent Owner contends that “neither Giobbi ’157 nor Giobbi ’139 disclose ‘enabling one or more of an application, a function, and a service’ as the term has been construed by the District Court.” *Id.* at 52.

We find Patent Owner’s arguments unavailing. In particular, Patent Owner is relying on a proposed claim construction of “enabling” (PO Resp. 45) which we decline to adopt. In particular, although Patent Owner contends that it is applying the construction of the claims which the district court has construed (*id.*; PO Sur-reply 1), as discussed above in Section II(A)(1), we are unpersuaded that the district court construed that an application, function, or service is “enabled” when it receives information from a PDK in exchange for an access key. Instead, as Petitioner points out, “no district court has ever construed any claim terms of the ’188 patent or its related patents as means-plus-function terms” (Pet. Reply 14), and thus, contrary to Patent Owner’s arguments (PO Resp. 49), the district court did

not interpret the claims as to include an algorithm which “requires exchanging an access key to retrieve and unlock information held within a service block of a PDK.” *See* Ex. 2001, 27, 43. Even Patent Owner acknowledges that the district court construed “PDK” and “RDC” merely as a “collection” of components and components, without any means-plus-function designation. PO Resp. 43.

As discussed above, we determine that “enabling one or more of an application a function, and a service” does not require receiving information from a PDK in exchange for an access key. Thus, we disagree with Patent Owner’s contention that “neither Giobbi ’157 nor Giobbi ’139 disclose ‘enabling one or more of an application, a function, and a service’ as the term has been construed by the District Court.” PO Resp. 52.

Here, Petitioner relies on Giobbi ’157 for “enabl[ing] a function or service for providing ‘efficient, secure, and highly reliable authentication for transaction processing’ using a PDK in conjunction with an RDC,” wherein the transaction is made possible “by transmitting authentication information from the integrated PDK to the external RDC.” Pet. 40 (citing Ex. 1004, Abstract, ¶ 11). That is, as Patent Owner acknowledges, Petitioner asserts that the “enabling” limitation “can be found in the authentication process” in Giobbi ’157 (PO Resp. 49), which includes sending various messages between a PDK and RDC. Pet. 40–41; *see also* Ex. 1004, Abstract, ¶ 11.

In particular, Giobbi ’157 teaches that biometric input 104 is compared to biometric profile 220 received from PDK 102 in order to determine if a transaction should be authorized. Ex. 1004 ¶ 52. We are persuaded by Petitioner’s reliance on Giobbi ’157’s “transmitting [of] authentication information from the integrated PDK to the external RDC” to

make “possible” (i.e. enabling) an application, function, and service (i.e., the authorized transaction). *See* Pet. 40 (citing Ex. 1004, Abstract, ¶ 11).

On this complete record presented, we determine that Petitioner has also persuasively shown that Giobbi ’157 in view of Giobbi ’139 and Dua teaches “at least one or more of the integrated RDC and integrated PDK enabling one or more of an application, function, and service,” as recited in claim 1.

v. Remaining limitations of claim 1

Petitioner provides detailed explanations as to how the combination of Giobbi ’157, Giobbi ’139, and Dua teaches the remaining claim limitations as recited in independent claim 1, citing Dr. Wolfe’s testimony for support. Pet. 36–40 (citing Ex. 1004, Abstract, ¶¶ 27, 35, Fig. 3; Ex. 1005, Abstract, ¶¶ 22–44, 71–73, 87–90, 97, Figs. 11, 12, 14; Ex. 1006, Abstract, 1:41–51, 2:22–37, 6:46–65, 12:60–61, 13:19–14:64, 16:31–34, Figs. 4A, 6; Ex. 1003 ¶¶ 57–62). For example, Petitioner contends that “Giobbi ’139 *expressly* teaches coupling an integrated RDC and an integrated PDK by a signal line for communication” (*id.* at 37 (citing Ex. 1005 ¶¶ 41, 71–73)); and that “Giobbi ’139 further teaches that the integrated RDC is coupled to a variety of other components on the hybrid device” (*id.* at 39 (citing Ex. 1005 ¶¶ 88–89)).

Petitioner further provides detailed explanations as to why a POSITA would have found it obvious to combine the teachings of Giobbi ’157 and Giobbi ’139 (Pet. 27–30, 34–36), and, furthermore, combine the teachings of Dua with the teachings of Giobbi ’157 and Giobbi ’139 (*id.* at 30–36), citing Dr. Wolfe’s testimony for support. In particular, Petitioner contends that a POSITA would have been motivated to integrate an RDC into Giobbi ’157’s

hybrid device for communication with external PDKs based, in part, on the teachings of Giobbi '139, which describes such incorporation as an “enhancement,” wherein, according to Dr. Wolfe, “it would be desirable to include an RDC in a device holding the data that is meant to be secured to permit the use of hardware-key-based security.” *Id.* at 28–29 (citing Ex. 1003 ¶ 45). Petitioner then contends that, “[s]imilar to Giobbi '157 and Giobbi '139, Dua uses its[] RFID system to secure data and applications on its hybrid device,” wherein a POSITA would have been motivated to combine the teachings of the Giobbi references and Dua because, at least these references are all “in the *same field of endeavor*.” *Id.* at 31, 34.

Patent Owner does not present arguments in its Response addressing the specific merits of Petitioner’s contentions with respect to these limitations in claim 1, or regarding the proffered reasoning to combine the references. *See generally* PO Resp. 48–52. We have reviewed Petitioner’s explanations and supporting evidence regarding these limitations, as well as Petitioner’s proffered reasoning to combine the references, and we agree with and adopt them as our own. Pet. 36–40. Because Patent Owner does not separately address the Petitioner’s positions regarding these limitations of independent claim 1 or Petitioner’s proffered reasoning for combining the references, Petitioner’s positions regarding these limitations and combination of references stand unopposed as a part of this trial.

Based on the complete record presented, we determine that Petitioner has persuasively shown that the proposed combination of Giobbi '157 in view of Giobbi '139 and Dua teaches the remaining limitations in claim 1, and that a person of ordinary skill in the art would have combined these references.

vi. Claim 1 Conclusion

Based on the complete record presented, Petitioner has shown that the combination of Giobbi '157 in view of Giobbi '139 and Dua teaches all limitations of claim 1. Thus, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of claim 1 would have been obvious over Giobbi '157 in view of Giobbi '139 and Dua.

vii. Claims 2–20 over Giobbi '157, Giobbi '139, and Dua

Petitioner provides detailed explanations as to how the combination of Giobbi '157, Giobbi '139, and Dua renders the limitations as recited in claims 2–20 as obvious, citing Dr. Wolfe's testimony for support. Pet. 42–50 (citing Ex. 1004, Abstract, ¶¶ 12, 35, 63, 65, 74; Ex. 1003 ¶¶ 65–91). Patent Owner does not present separate arguments in its Response addressing the specific merits of Petitioner's contentions with respect to the limitations in claims 2–20 (see generally PO Resp. 48–52), but merely states that,

As neither Giobbi 157 nor Giobbi 139 disclose 'enabling one or more of an application, a function, and a service' as required by claims 1 and 10, and given that the Petition fails to assert Dua discloses this element, the Petition fails to establish the combination of Giobbi 157, Giobbi 139, and Dua invalidates claims 1, 5, 6, 8–11, 13 and 14.

PO Resp. 52.

We have reviewed Petitioner's explanations and supporting evidence regarding these limitations, and we agree with and adopt them as our own. Pet. 42–50. Because Patent Owner does not separately address the Petitioner's positions regarding these limitations of claims 2–20, Petitioner's positions regarding these limitations stand unopposed as a part of this trial.

Based on the complete record presented, we determine that Petitioner has persuasively shown that Giobbi '157 in view of Giobbi '139 and Dua teaches all limitations of claims 2–20. Thus, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of claim 2–20 would have been obvious over the combination of Giobbi '157, Giobbi '139, and Dua.

D. Claims 1–7, 9–15, 17, and 18 as obvious over Broadcom (Ground 2); and claims 8, 16, 19, and 20 as obvious over Broadcom and Giobbi '157 (Ground 3)

Petitioner additionally contends that claims 1–7, 9–15, 17, and 18 of the '188 patent also would have been obvious over Broadcom (Pet. 50–68), and that claims 8, 16, 19, and 20 of the '188 patent would have been obvious over Broadcom in view of Giobbi '157. *Id.* at 69–70. In response, Patent Owner contends that Petitioner fails to demonstrate that Broadcom discloses or renders obvious the claim limitations recited in claims 10, 11, 13, and 14. PO. Resp. 52–55.

1. Broadcom

Broadcom, titled “Proximity Authentication System,” published on June 1, 2005, with a filing date of September 30, 2004. Ex. 1007, codes (54), (43), (22). Broadcom discloses controlling access to secured services based on the proximity of a wireless token to a computing device through which access to the secured services is obtained, wherein an authorized user is provided access to a service only when the wireless token assigned to the user is in the proximity of the computing device. *Id.* at Abstract. A user’s credential may be stored on the token and a reader may be implemented within a security boundary on the computing device, and thus, the credential may be passed to the security boundary without passing through the

computing device via software messages or applications. *Id.* An illustration of Broadcom's proximity-based authentication system is depicted in Figure 1, reproduced below.

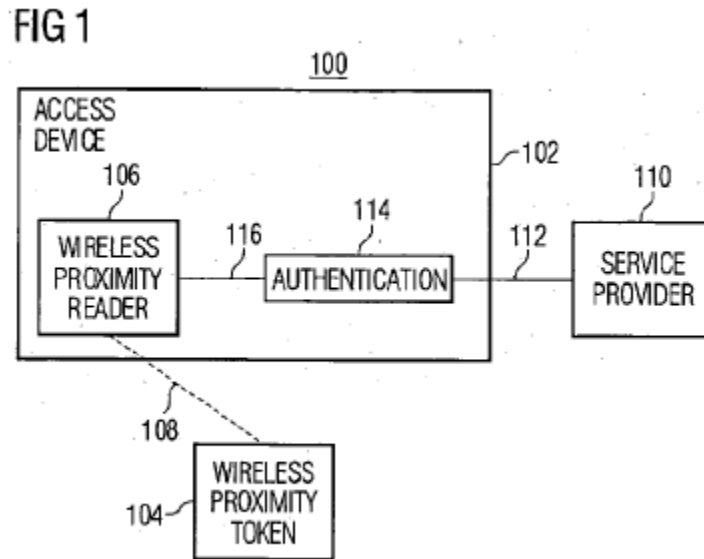


Figure 1 is a block diagram of system 100 comprising access device 102 used to determine whether wireless token 104 assigned to a user or users is proximate to access device 102. *Id.* ¶¶ 110–111. As shown in Figure 1, wireless proximity reader 106 is configured to receive signals 108 from wireless proximity token 104, wherein signals 108 includes information that uniquely identifies wireless proximity token 104 and includes credentials (e.g., a password) that may be used to access a secured service provided by service provider 110. *Id.* ¶ 111.

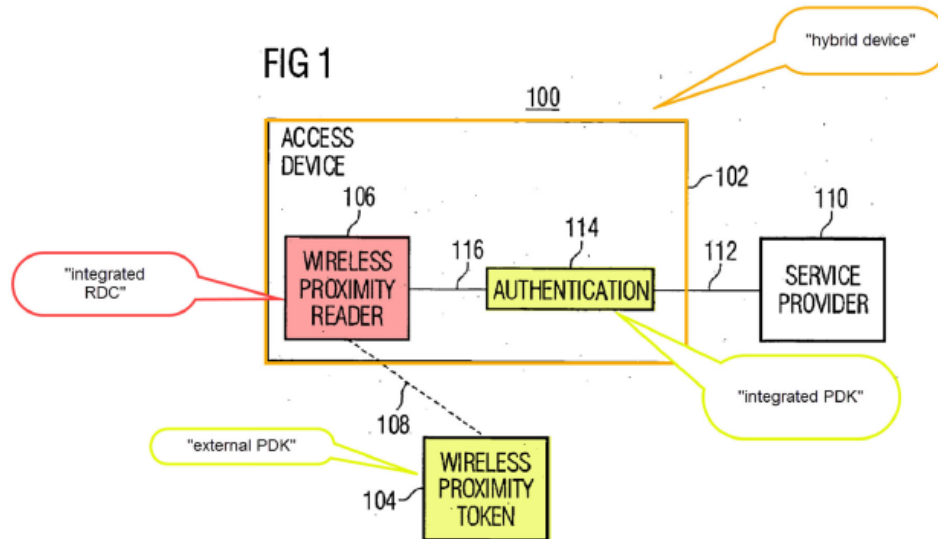
2. Analysis

a. Claims 1–7, 9–15, 17, and 18 over Broadcom

ii. Claims 1–7, and 9

As to claim 1, Petitioner contends that Broadcom teaches “a system for secured access to a service,” wherein a user’s credentials are stored on a token and this token is then read by a reader. Pet. 50 (citing Ex. 1007,

Abstract). In particular, according to Petitioner, the device including the reader authenticates the token and permits access to the secured service after authentication. *Id.* (citing Ex. 1003 ¶ 92). Petitioner provides an annotated Figure 1 of Broadcom, shown below, to illustrate its contentions.



Annotated Figure 1 of Broadcom in the Petition, according to Petitioner, illustrates access device 102 (orange) as the claimed “hybrid device,” that requests access to service 110 after verifying that information sent from wireless proximity token 104 (yellow) includes a credential associated with an authorized user and/or access device. *Id.* at 51 (citing Ex. 1007 ¶¶ 119, 113–118). As shown in annotated Figure 1, wireless proximity token (yellow) is wirelessly connected (108) to wireless proximity reader 106 (red).

Petitioner contends that “Broadcom teaches that its Access Device 102 includes an integrated PDK,” wherein “Broadcom’s internal memory—part the claimed PDK—is used for storing information locally.” Pet. 55 (citing Ex. 1007, Fig. 1, ¶¶ 135–137). In particular, according to Petitioner, “Broadcom teaches that Access Device includes ‘Data Memory 314’ which stores, *e.g.*, security keys.” *Id.*

Additionally, according to Petitioner, “besides a security key, a ‘biometric characteristic’ can be used to authenticate a user,” wherein “the user may be asked to input a password and/or provide a biometric (e.g., a 3 fingerprint) to a biometric reader to further verify the authenticity of the user.” Pet. 56 (quoting Ex. 1007 ¶ 114). Petitioner contends that “this secured biometric information is stored on data memory 314 (part of the integrated PDK).” *Id.* (quoting Ex. 1003 ¶ 96). According to Petitioner, information stored in memory is “secured, in particular, it is encrypted.” *Id.* (citing Ex. 1007 ¶ 14; Ex. 1003 ¶ 97).

Petitioner further contends that “Broadcom’s integrated PDK is capable of communicating wirelessly with an external receiver decoder circuit (RDC),” because “Broadcom’s hybrid device wirelessly through a network interface with an external access point.” Pet. 56 (citing Ex. 1007, Fig. 6). According to Petitioner, “Broadcom explains that a token may send authentication information to an integrated RDC (*i.e.*, the proximity reader).” *Id.* at 57 (citing Ex. 1007 ¶ 165). That is “[t]he access controller, which is involved in the determination whether to grant access to the service, is the claimed external RDC.” *Id.* (citing Ex. 1003 ¶ 99).

Petitioner contends that, furthermore, “Broadcom’s hybrid device includes an integrated RDC, the wireless proximity reader,” wherein “the wireless proximity reader communicates with an external token seeking access to a service,” “[t]his external token [being] the claimed external PDK.” Pet. 58 (citing Ex. 1007, Fig. 1; Ex. 1003 ¶ 100). Petitioner also contends that “the integrated PDK communicates with an external RDC to enable a wide variety of applications/functions/services,” wherein

service may enable an access device to, for example, read or write data in a data memory, access encrypted data, use

cryptographic keys, gain access to cryptographic material such as security association and keys, access a web page, access a data network or access a processing application.

Pet. 62 (quoting Ex. 1007 ¶ 120).

Petitioner then provides detailed explanations as to how Broadcom teaches the remaining claim limitations recited in independent claim 1, and claims 2–7, and 9 depending therefrom, citing Dr. Wolfe’s testimony for support. Pet. 57–61, 63–65 (citing Ex. 1007 ¶¶ 8, 114, 116, 130, 195, 198–199, 204, Figs. 1, 3; Ex. 1003 ¶¶ 101–103, 107–113).

Patent Owner does not present arguments in its Response addressing the specific merits of Petitioner’s contentions regarding Broadcom with respect to claim 1 or claims 2–7, and 9 depending therefrom. *See generally* PO Resp. 52–55.

We have reviewed Petitioner’s explanations and supporting evidence regarding the limitations of claim 1, and we agree with and adopt them as our own. Pet. 50–65. Because Patent Owner does not separately address the Petitioner’s positions regarding these limitations of claim 1, Petitioner’s positions regarding these limitations stand unopposed as a part of this trial.

Based on the complete record presented, we determine that Petitioner has persuasively shown that Broadcom teaches the limitations recited in claim 1, and claims 2–7 and 9 depending therefrom. Thus, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of claims 1–7 and 9 would have been obvious over Broadcom.

ii. Claims 10–15, 17, and 18

For independent claim 10, Petitioner mostly repeats its contentions with respect to claim 1, citing Dr. Wolfe’s testimony for support. Pet. 65–66 (citing Ex. 1003 ¶¶ 114–119). Petitioner contends, inter alia, that:

Broadcom teaches: “Typically, access to the service will be initiated by the user’s interactions with the access device 102 . . . the user may be asked to input a password and/or provide a biometric (e.g., a fingerprint) to a biometric reader to further verify the authenticity of the user.” . . . Thus, this user “input is an example of the claimed enablement signal, since it enables one or more of an application, a function and a service.

Pet. 66 (quoting Ex. 1007 ¶ 114; citing Ex. 1003 ¶ 119).

As to claim 11, citing Dr. Wolfe’s testimony for support, Petitioner contends that, as it discussed in claims 1 and 10, in Broadcom, “the integrated RDC enables a function, such as wireless network access.” Pet. 67 (citing Ex. 1003 ¶ 120). Petitioner also contends that, as to claim 12, as it discussed with respect to claim 1, “Broadcom teaches that a network interface seeks access to a wires network via ‘access controller 606,’ which grants access to the network in response to the RDC’s request.” *Id.* (citing Ex. 1003 ¶ 121). Petitioner then explains that Broadcom teaches the limitations recited in claims 13–15, 17, and 18 depending from claim 10, as it discussed regarding the limitations similarly recited in claims 1, 2, 4, 5, 9, and 10. *Id.* at 67–68 (citing Ex. 1003 ¶¶ 122–128).

Patent Owner replies that, with respect to claim 10, “Broadcom at most teaches sending messages containing credential information from a token activated by proximity,” which, according to Patent Owner, “is distinct from the invention claimed.” PO Resp. 52–53. In particular, although Patent acknowledges that Broadcom’s method “begins with a token sending a message containing authentication information,” Patent Owner argues that, in Broadcom, “no key is provided in exchange for the information.” *Id.* at 53–54.

We find Patent Owner’s arguments unavailing. In particular, Patent Owner is relying on a claim construction of “enabling one or more of an application, a function, and a service” as requiring a “key” being provided “in exchange” for information (PO Resp. 53–54), that is not required by our claim construction above. As discussed above, we determine that the term “enabling one or more of an application, a function or a service” is not limited to receiving information from a PDK in exchange for an access key.

We find availing Petitioner’s reliance on Broadcom for teaching “access” to a service, which “will be initiated by the user’s interactions with the access device 102,” wherein “the user may be asked to input a password and/or provide a biometric (e.g., a fingerprint) to a biometric reader to further verify the authenticity of the user.” Pet. 66 (quoting Ex. 1007 ¶ 114; citing Ex. 1003 ¶ 119). We are persuaded that this user input “is an example of the claimed enablement signal,” since it “enables one or more of an application, a function and a service.” *Id.* In fact, even Patent Owner acknowledges that Broadcom teaches sending messages containing credential information for access to a service. PO Resp. 52–53.

Accordingly, we find availing Petitioner’s reliance on Broadcom’s communication from the integrated PDK to the external RDC to teach “enabling” of an application, a function, or a service to be accessed. Pet. 62 (citing Ex. 1007 ¶ 120). Thus, we determine that Petitioner has persuasively shown that Broadcom teaches the recited limitations of claim 10.

With respect to claims 11, 13, and 14 depending from claim 10, Patent Owner merely contends that, “[a]s Broadcom fails to disclose ‘enabling one or more of an application, a function, and a service’ as required by claim 10, the Petition fails to establish that Broadcom invalidates [these claims].” PO Resp. 55. As for claims 12, 15, 17, and 18 depending from claim 10, Patent

Owner does not present any arguments in its Response addressing the specific merits of Petitioner's contentions regarding Broadcom. *See generally* PO Resp. Because Patent Owner does not separately address the Petitioner's positions regarding the limitations of claims 11–15, 17, and 18, Petitioner's positions regarding these limitations stand unopposed as a part of this trial.

We have reviewed Petitioner's explanations and supporting evidence regarding the limitations of claims 11–15, 17, and 18, and we agree with and adopt them as our own. *See* Pet. 65–68. We determine that Petitioner has shown that Broadcom teaches all limitations of claims 11–15, 17, and 18.

Based on the complete record presented, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of claim 10, and of claims 11–15, 17, and 18 depending therefrom, would have been obvious over Broadcom.

b. Claims 8, 16, 19, and 20 over Broadcom and Giobbi '157

Petitioner provides detailed explanations as to how the combination of Broadcom and Giobbi '157 teaches the limitations as recited in claims 8, 16, 19, and 20, and further provides detailed explanations as to why a POSITA would have found it obvious to combine the teachings of Broadcom and Giobbi '157, citing Dr. Wolfe's testimony for support. Pet. 69–70 (citing Ex. 1007 ¶ 130; Ex. 1003 ¶¶ 129–133). In particular, Petitioner contends that it would have been obvious “in view of Broadcom's disclosure including a PDK in a wearable, such as a badge, to include the external PDK in other wearables like jewelry.” *Id.* at 69.

Patent Owner does not present arguments in its Response addressing the specific merits of Petitioner's contentions with respect to these claims.

See generally PO Resp. 52–55. We have reviewed Petitioner’s explanations and supporting evidence regarding these limitations, and we agree with and adopt them as our own. Pet. 69–70. Because Patent Owner does not separately address the Petitioner’s positions regarding the limitations of claims 8, 16, 19, and 20, Petitioner’s positions regarding these claims stand unopposed as a part of this trial.

Based on the complete record presented, we determine that Petitioner has shown that the combination of Broadcom and Giobbi ’157 teaches all limitations of all limitations of claims 8, 16, 19, and 20, and that a person of ordinary skill in the art would have had reasons, with rational underpinning, to combine Broadcom and Giobbi ’157. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of claims 8, 16, 19, and 20 would have been obvious over Broadcom in further view of Giobbi ’157.

III. CONCLUSION⁷

For the foregoing reasons, we determine on the complete record at hand that Petitioner has demonstrated by a preponderance of the evidence that all challenged claims of the ’188 patent are unpatentable.

⁷ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–20		Giobbi '157, Giobbi '139, Dua	1–20	
1–7, 9–15, 17, 18		Broadcom	1–7, 9–15, 17, 18	
8, 16, 19, 20		Broadcom, Giobbi '157	8, 16, 19, 20	
Overall Outcome			1–20	

IV. ORDER

For the reasons given, it is

ORDERED that, based on the preponderance of the evidence, claims 1–20 of the '188 patent have been shown to be unpatentable; and

FURTHER ORDERED that, because this is a final written decision, parties to this proceeding seeking judicial review of our decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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Patent 9,049,188 B1
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